


09.08/99

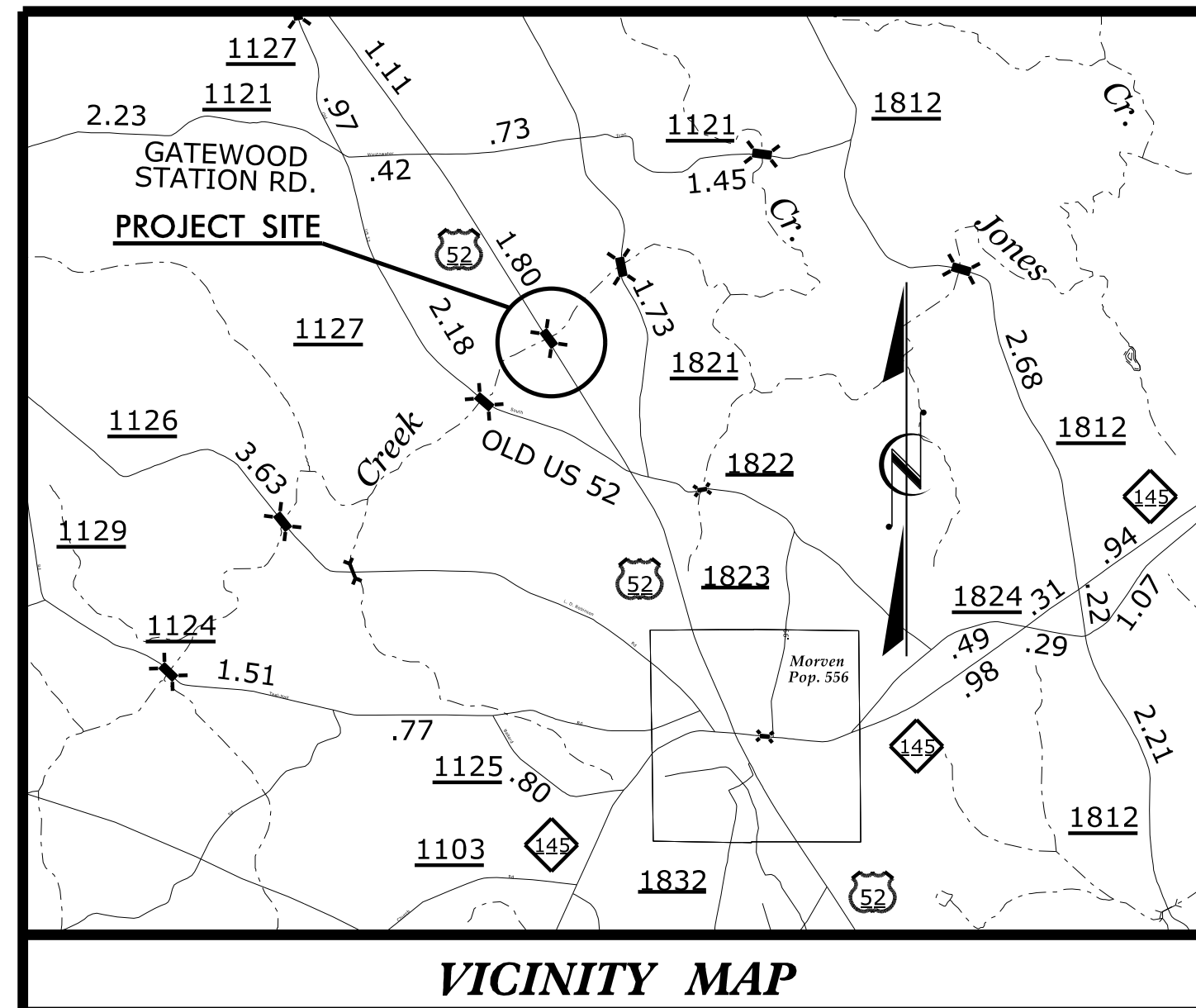
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# ANSON COUNTY

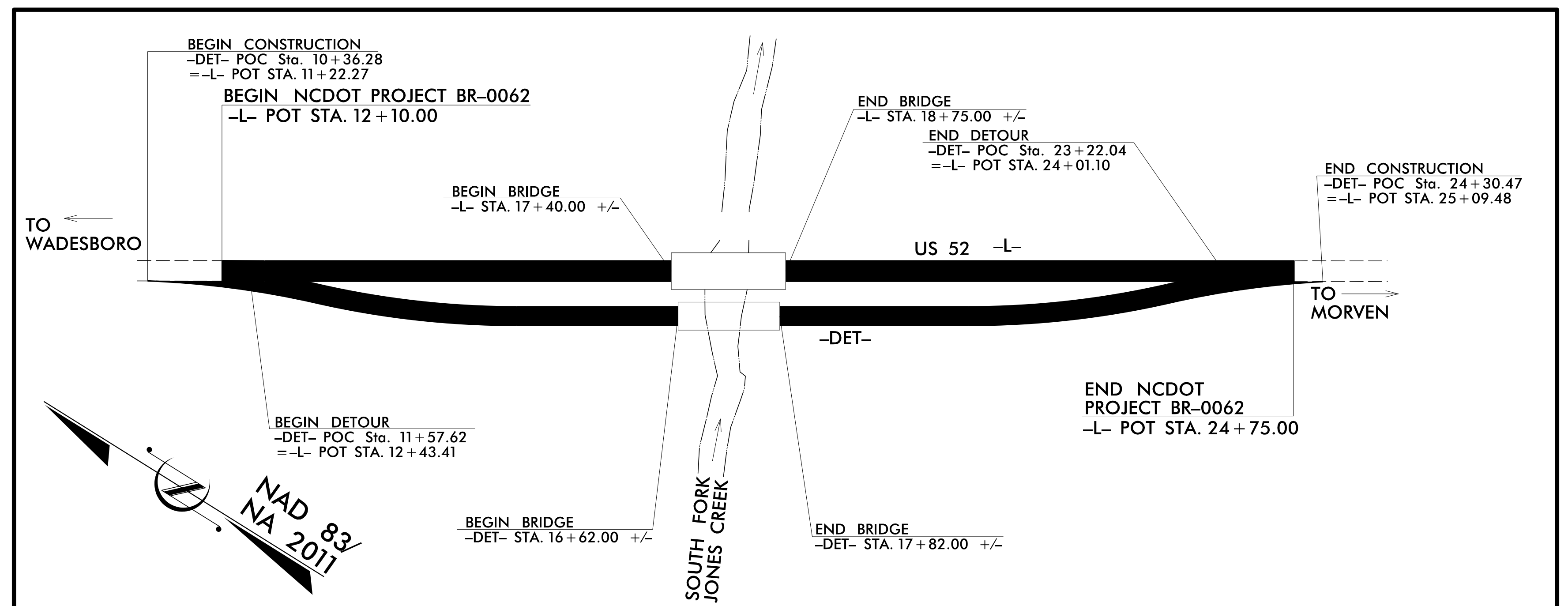
**LOCATION: REPLACEMENT OF BRIDGE 030014 OVER SOUTH FORK JONES CREEK ON US 52**

**TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0062		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
67062.1.1		PE	
			
1223 Jones Franklin Rd. Raleigh, N.C. 27606 License No. F-0377 Bus: 919 851 8077 Fax: 919 851 8107			
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION			



## STRUCTURE PLANS



INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT: BR-0062

CONTRACT: C204950

**DESIGN DATA**  
 ADT 2024 = 4,110  
 ADT 2045 = 4,700  
 K = 8 %  
 D = 55 %  
 T = 16 % \*  
 V = 60 MPH  
 \* (TTST = 12% +  
 DUAL = 4%)  
 FUNC CLASS =  
 MINOR ARTERIAL  
 REGIONAL TIER

### PROJECT LENGTH

LENGTH ROADWAY PROJECT BR-0062 =	0.214 MILES
LENGTH STRUCTURE PROJECT BR-0062 =	0.026 MILES
<b>TOTAL LENGTH PROJECT BR-0062 =</b>	<b>0.240 MILES</b>

NCDOT CONTACT: GARLAND HAYWOOD, PE  
BRIDGE PROGRAM MANAGER - NCDOT DIVISION 10

Prepared for:  
**DIVISION OF HIGHWAYS**  
**DIVISION TEN**  
 716 West Main Street, Albemarle NC, 28001

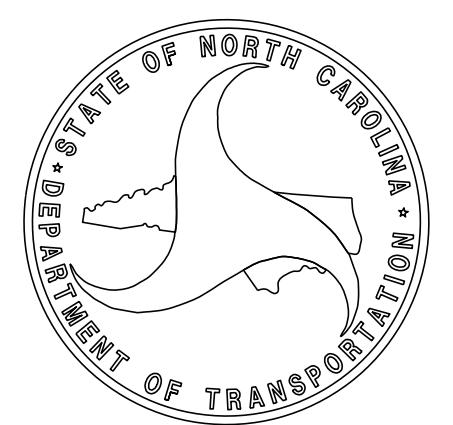
2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:  
JANUARY 20, 2023

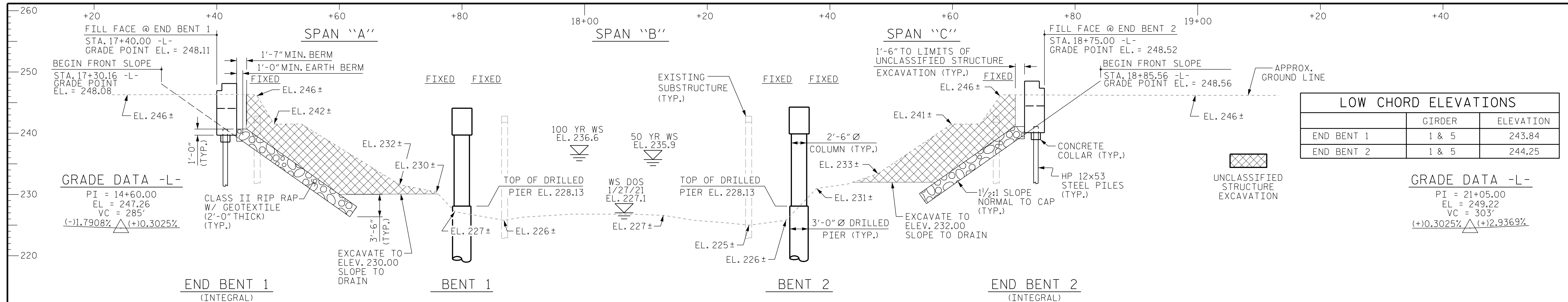
LETTING DATE:  
JUNE 18, 2024

EDWARD G. WETHERILL, PE  
PROJECT ENGINEER

JOHN A. DILWORTH, PE  
PROJECT DESIGN ENGINEER

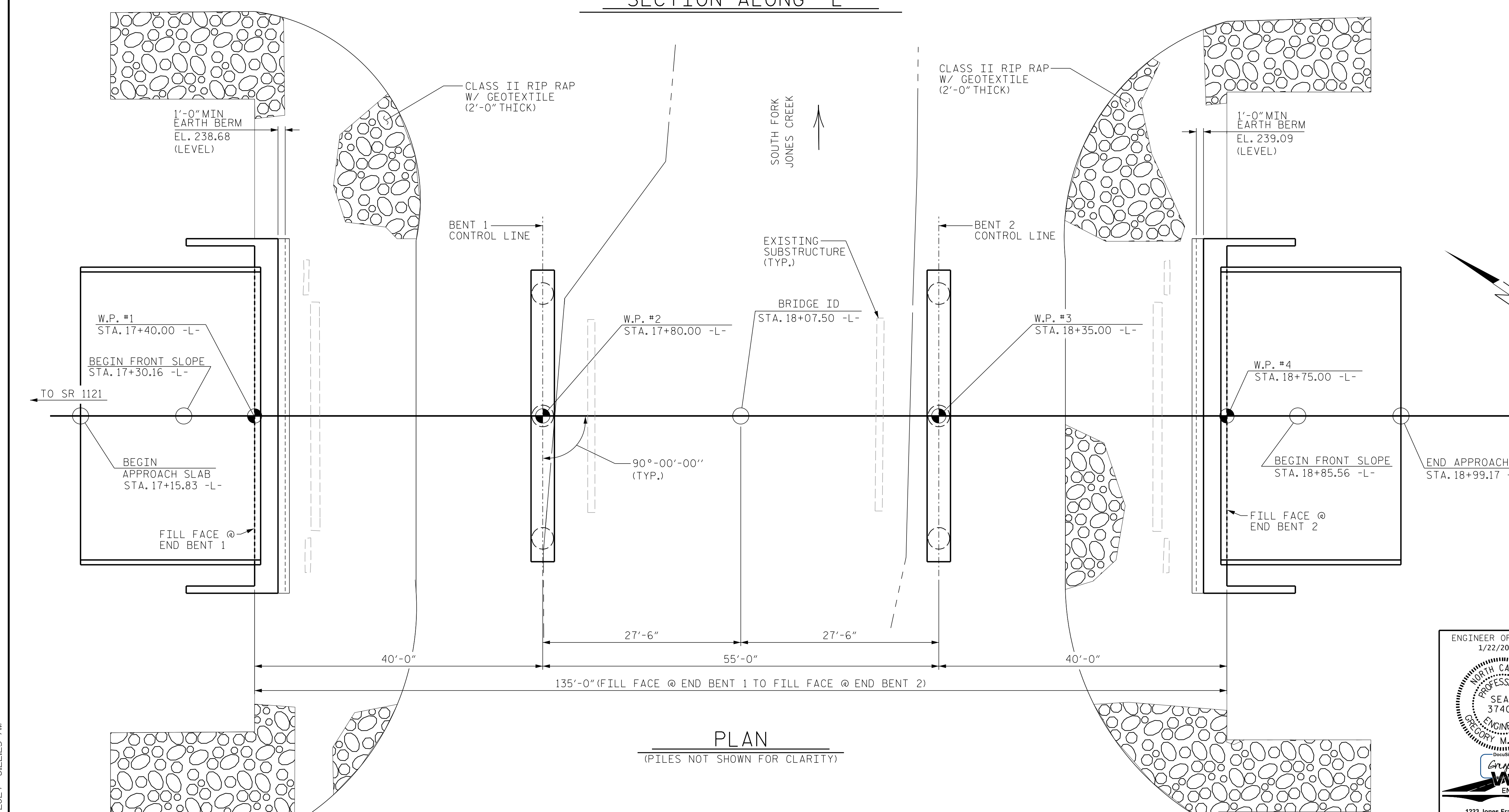


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LOW CHORD ELEVATIONS		
	GIRDER	ELEVATION
END BENT 1	1 & 5	243.84
END BENT 2	1 & 5	244.25

HYDRAULIC DATA	
DESIGN DISCHARGE	= 4200 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 50 YRS.
DESIGN HIGH WATER ELEVATION	= 235.9
DRAINAGE AREA	= 34.2 SQ. MI.
BASE DISCHARGE (010Q)	= 4800 C.F.S.
BASE HIGH WATER ELEVATION	= 236.6
OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE	= 20,000 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	= 500+ YRS.
OVERTOPPING FLOOD ELEVATION	= 247.6 *
WS EL. Taken @ River Station 6791	



I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. BR-0062  
 ANSON COUNTY  
 STATION: 18+07.50 -L-  
 SHEET 1 OF 4 REPLACES BRIDGE 030014

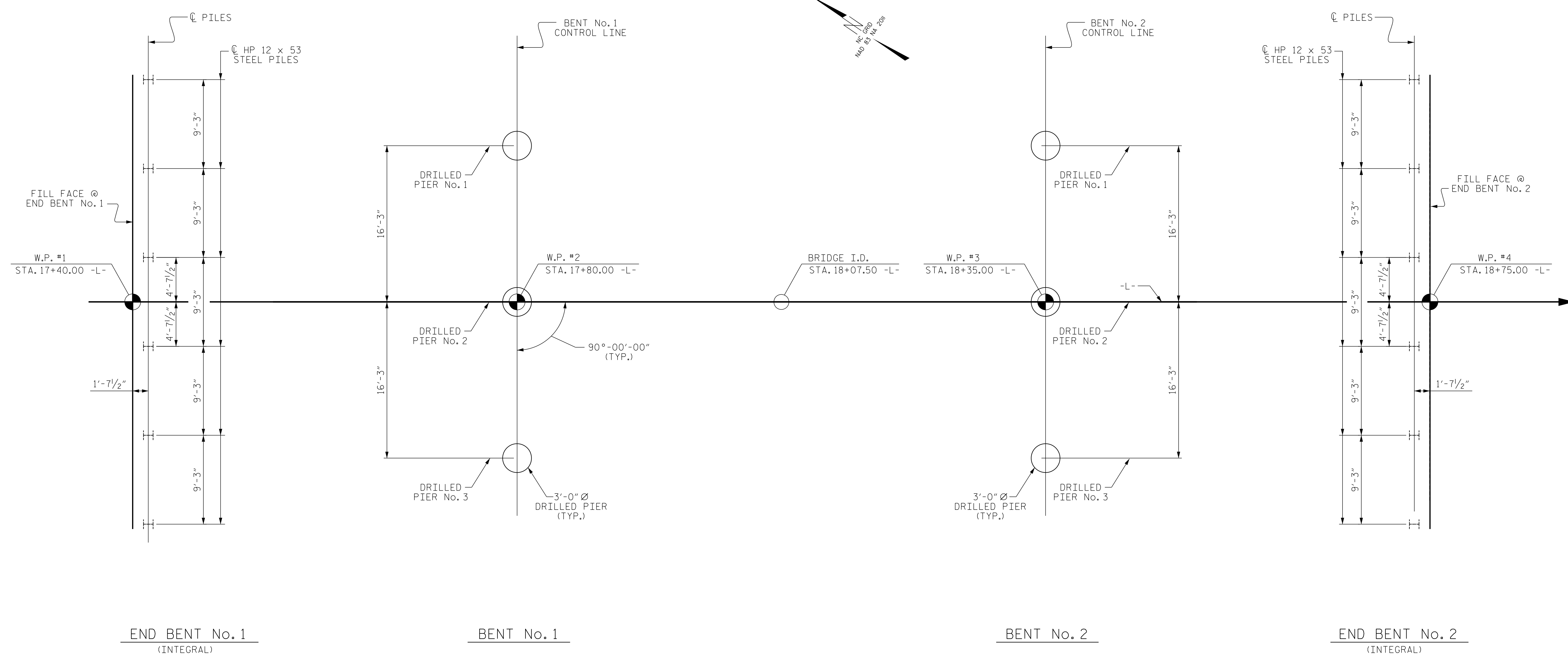
ENGINEER OF RECORD  
 1/22/2024  
 NORTH CAROLINA PROFESSIONAL SEAL 37400  
 ENGINEER  
 GREGORY M. GILLILAND  
 GREGORY M. GILLILAND  
 WETHERILL ENGINEERING  
 1223 Jones Franklin Rd.  
 Raleigh, N.C. 27606  
 Bus: 919 851 8077  
 Fax: 919 851 8107  
 LICENSE NO. F-0377

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-01
1			3			TOTAL SHEETS
2			4			35

DRAWN BY: J. PERDERGRAFT DATE: 10/23  
 CHECKED BY: G. GILLAND DATE: 10/23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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### FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THEIR CENTERLINE

### FOUNDATION NOTES:

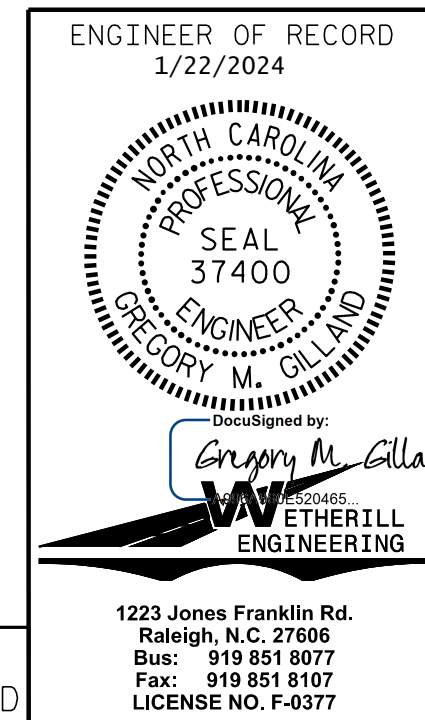
- FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
- PILES AT END BENTS 1 AND 2 ARE DESIGNED TO ACCOUNT FOR ABUTMENT SCOUR.

PROJECT NO. BR-0062  
ANSON COUNTY  
 STATION: 18+07.50 -L-  
 SHEET 2 OF 4

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DRAWN BY : J. PENDERGRAFT DATE : 10-23  
 CHECKED BY : G. GILLAND DATE : 10-23

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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 GENERAL DRAWING  
 BRIDGE ON US 52  
 OVER SOUTH FORK  
 JONES CREEK BETWEEN  
 SR 1121 AND SR 1127

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

SHEET NO. S-02  
 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						
						LIVE-LOAD FACTORS (γ <sub>LL</sub> )	MOMENT			SHEAR			LIVE-LOAD FACTORS (γ <sub>LL</sub> )	MOMENT										
							DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	DISTRIBUTION FACTORS (DF)		RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)							
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.07	--	1.75	0.790	1.370	B	ER	26.670	0.910	1.160	B	I	48.530	0.80	0.760	1.070	B	I	26.670		
	HL-93 (OPERATING)	N/A		1.53	--	1.35	0.790	1.780	B	ER	26.670	0.910	1.530	B	I	48.530	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.33	47.880	1.75	0.790	1.720	B	ER	26.670	0.910	1.410	B	I	48.530	0.80	0.760	1.330	B	I	26.670		
	HS-20 (OPERATING)	36.000		1.85	66.600	1.35	0.790	2.230	B	ER	26.670	0.910	1.850	B	I	48.530	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		2.79	37.665	1.40	0.820	4.410	A	I	18.770	0.910	4.130	B	I	48.530	0.80	0.760	2.790	B	I	26.670	
		SNGARBS2	20.000		2.17	43.400	1.40	0.790	3.490	B	ER	26.670	0.910	2.980	B	I	48.530	0.80	0.760	2.170	B	I	26.670	
		SNAGRIS2	22.000		2.10	46.200	1.40	0.790	3.370	B	ER	26.670	0.910	2.780	B	I	48.530	0.80	0.760	2.100	B	I	26.670	
		SNCOTTS3	27.250		1.39	37.878	1.40	0.820	2.210	A	I	18.770	0.910	2.030	B	I	48.530	0.80	0.760	1.390	B	I	26.670	
		SNAGGRS4	34.925		1.20	41.910	1.40	0.790	1.930	B	ER	26.670	0.910	1.720	B	I	48.530	0.80	0.760	1.200	B	I	26.670	
		SNS5A	35.550		1.17	41.594	1.40	0.790	1.880	B	ER	26.670	0.910	1.770	B	I	48.530	0.80	0.760	1.170	B	I	26.670	
		SNS6A	39.950		1.09	43.546	1.40	0.790	1.750	B	ER	26.670	0.910	1.620	B	I	48.530	0.80	0.760	1.090	B	I	26.670	
		SNS7B	42.000		1.04	43.680	1.40	0.790	1.670	B	ER	26.670	0.910	1.620	B	I	48.530	0.80	0.760	1.040	B	I	26.670	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.33	43.890	1.40	0.790	2.140	B	ER	26.670	0.910	1.930	B	I	48.530	0.80	0.760	1.330	B	I	26.670	
		TNT4A	33.075		1.34	44.321	1.40	0.790	2.160	B	ER	26.670	0.910	1.860	B	I	48.530	0.80	0.760	1.340	B	I	26.670	
		TNT6A	41.600		1.11	46.176	1.40	0.790	1.790	B	ER	26.670	0.910	1.780	B	I	48.530	0.80	0.760	1.110	B	I	26.670	
		TNT7A	42.000		1.12	47.040	1.40	0.790	1.810	B	ER	26.670	0.910	1.660	B	I	48.530	0.80	0.760	1.120	B	I	26.670	
		TNT7B	42.000		1.17	49.140	1.40	0.790	1.890	B	ER	26.670	0.910	1.560	B	I	48.530	0.80	0.760	1.170	B	I	26.670	
		TNAGRIT4	43.000		1.11	47.730	1.40	0.790	1.790	B	ER	26.670	0.910	1.500	B	I	48.530	0.80	0.760	1.110	B	I	26.670	
TNAGT5A	45.000		1.04	46.800	1.40	0.790	1.670	B	ER	26.670	0.910	1.520	B	I	48.530	0.80	0.760	1.040	B	I	26.670			
TNAGT5B	45.000		③	1.02	45.900	1.40	0.790	1.640	B	ER	26.670	0.910	1.420	B	I	48.530	0.80	0.760	1.020	B	I	26.670		
EMERGENCY VEHICLE (EV)	EV2	28.750		1.55	44.563	1.30	0.790	2.680	B	ER	26.670	0.910	2.280	B	I	48.530	0.80	0.760	1.550	B	I	26.670		
	EV3	43.000		④	1.01	43.430	1.30	0.790	1.740	B	ER	26.670	0.910	1.520	B	I	48.530	0.80	0.760	1.010	B	I	26.670	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ <sub>DC</sub>	γ <sub>DW</sub>
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

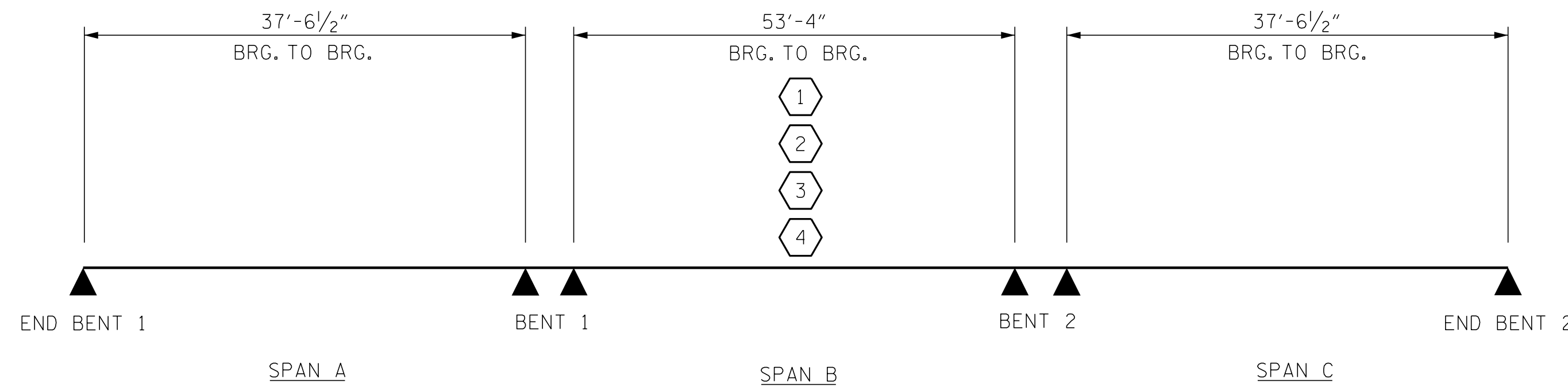
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

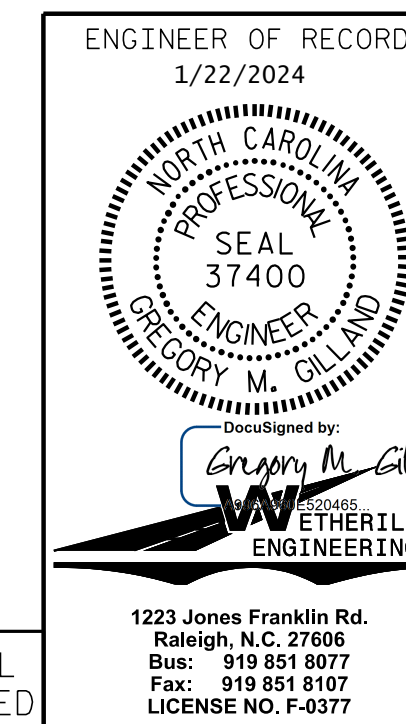


PROJECT NO. BR-0062  
ANSON COUNTY  
 STATION: 18+07.50 -L-

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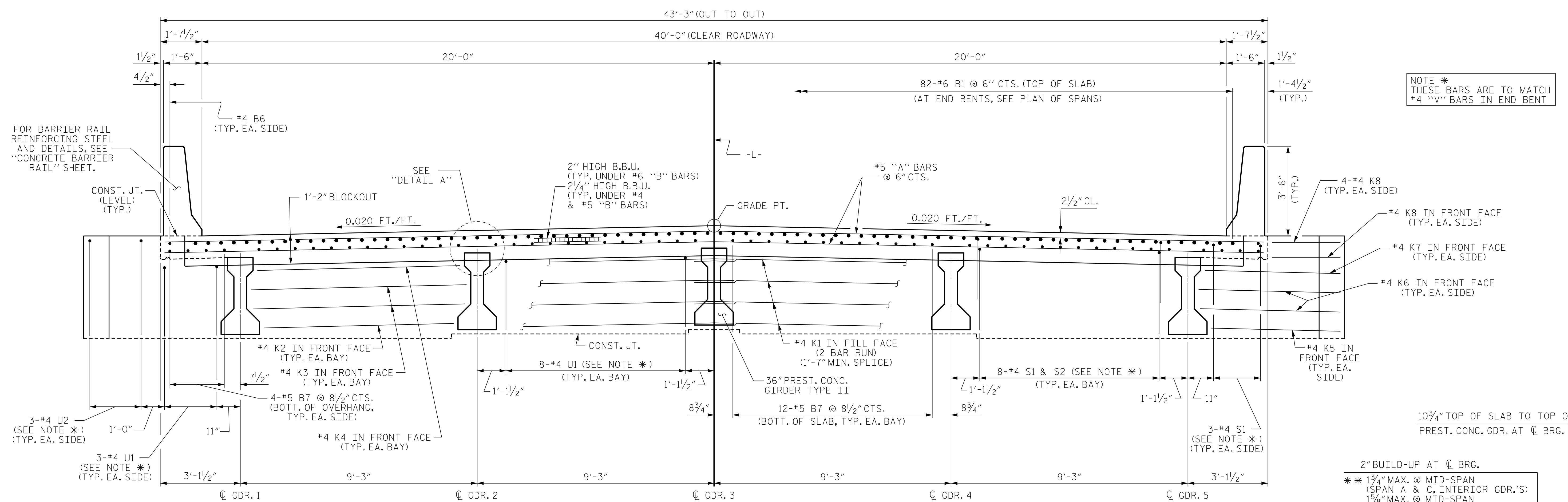
ASSEMBLED BY : J. PENDERGRAFT	DATE : 6-23
CHECKED BY : G. GILLAND	DATE : 7-23
DRAWN BY : MAA 1/08	REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

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 UNLESS ALL SIGNATURES COMPLETED

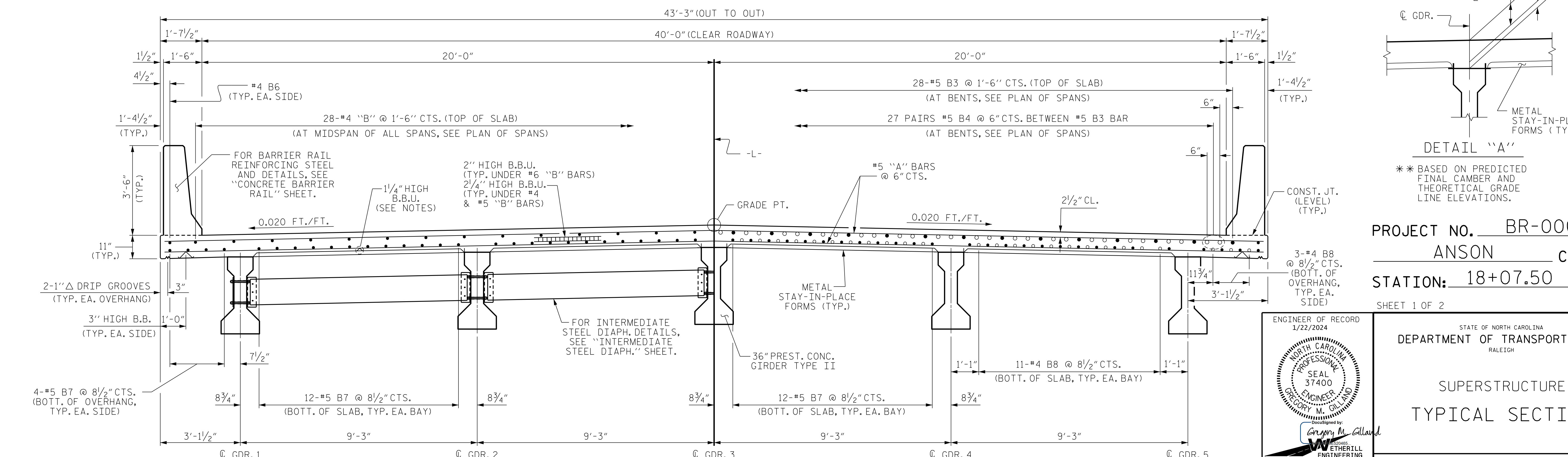


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH	
STANDARD LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS (NON-INTERSTATE TRAFFIC)	
REVISIONS	
NO.	BY: DATE:
1	3
2	4
SHEET NO. S-05	
TOTAL SHEETS 35	

STD. NO. LRFR1



TYPICAL SECTION AT INTEGRAL END BENT



TYPICAL HALF SECTION

TYPICAL HALF SECTION

(SHOWING INTERMEDIATE STEEL DIAPHRAGM)

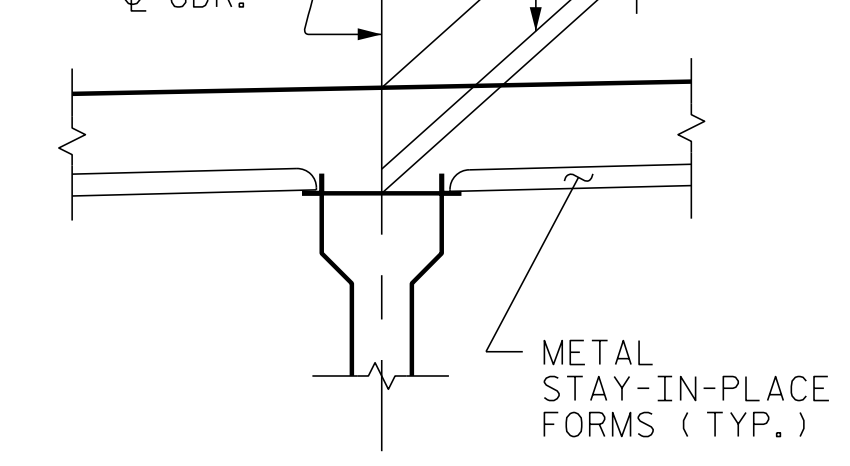
(THRU LINK SLAB @ INTERIOR BENT)

NOTE \* THESE BARS ARE TO MATCH #4 "V" BARS IN END BENT

10 3/4" TOP OF SLAB TO TOP OF PREST. CONC. GDR. AT C BRG.

2" BUILD-UP AT C BRG. \*\* 1 3/4" MAX. @ MID-SPAN (SPAN A & C, INTERIOR GDR.'S) 1 1/8" MAX. @ MID-SPAN (SPAN B, INTERIOR GDR.'S)

8 3/4" TOP OF SLAB TO TOP OF S.I.P. FORMS @ C BRG.



DETAIL "A"

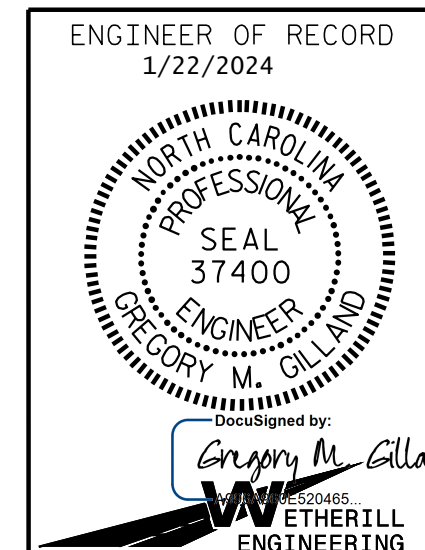
\*\* BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS.

PROJECT NO. BR-0062

ANSON COUNTY

STATION: 18+07.50 -L-

SHEET 1 OF 2



1223 Jones Franklin Rd. Raleigh, N.C. 27606 Bus: 919 851 8077 Fax: 919 851 8107 LICENSE NO. F-0377

STATE OF NORTH CAROLINA					
DEPARTMENT OF TRANSPORTATION					
RALEIGH					
SUPERSTRUCTURE					
TYPICAL SECTION					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

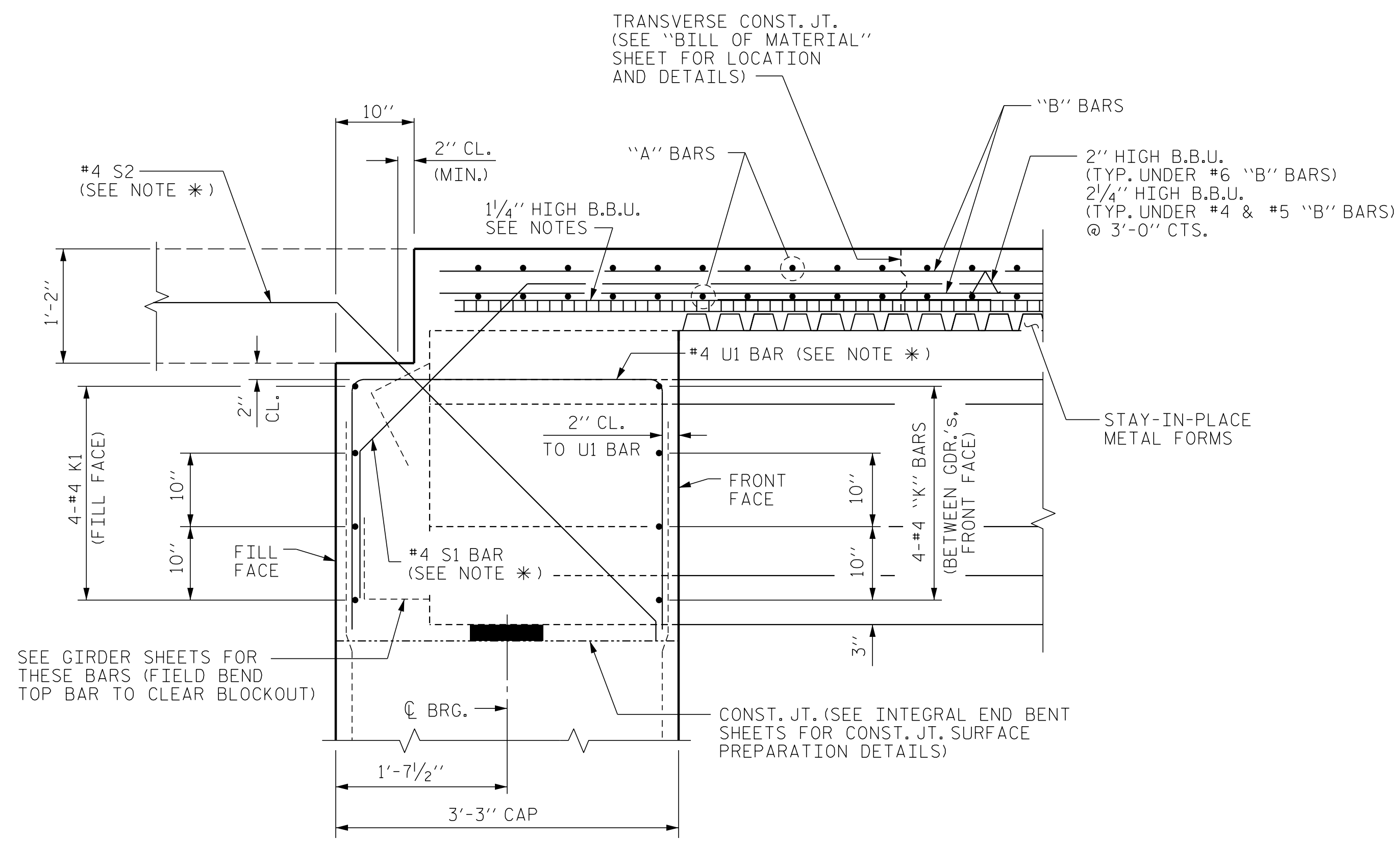
SHEET NO. S-06 TOTAL SHEETS 35

DRAWN BY: D. HODGE DATE: 4/23 CHECKED BY: G. GILLAND DATE: 5/23

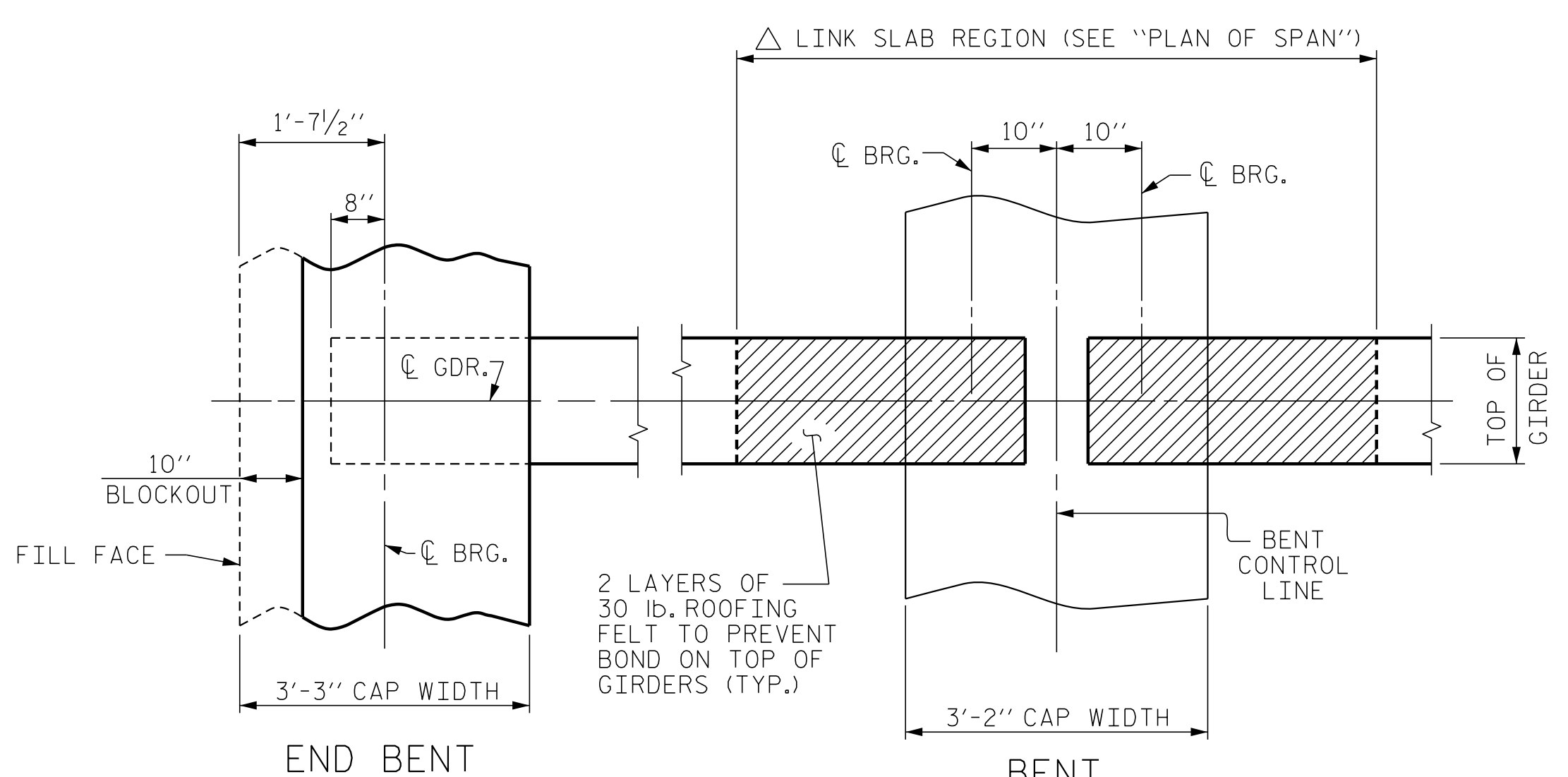
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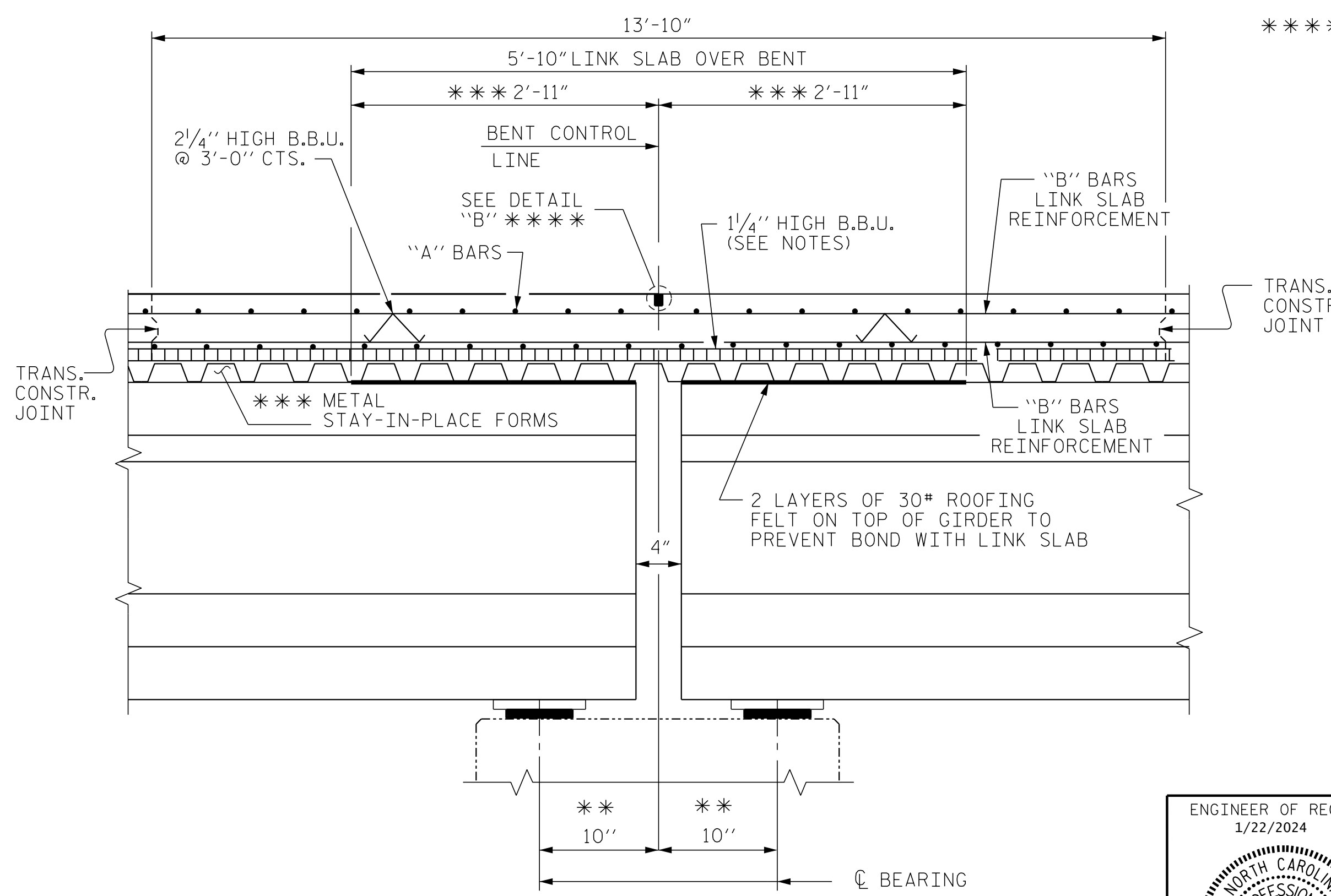




**SECTION THRU INTEGRAL END BENT**  
 \* THESE BARS ARE TO MATCH #4 "V" BARS IN END BENT.

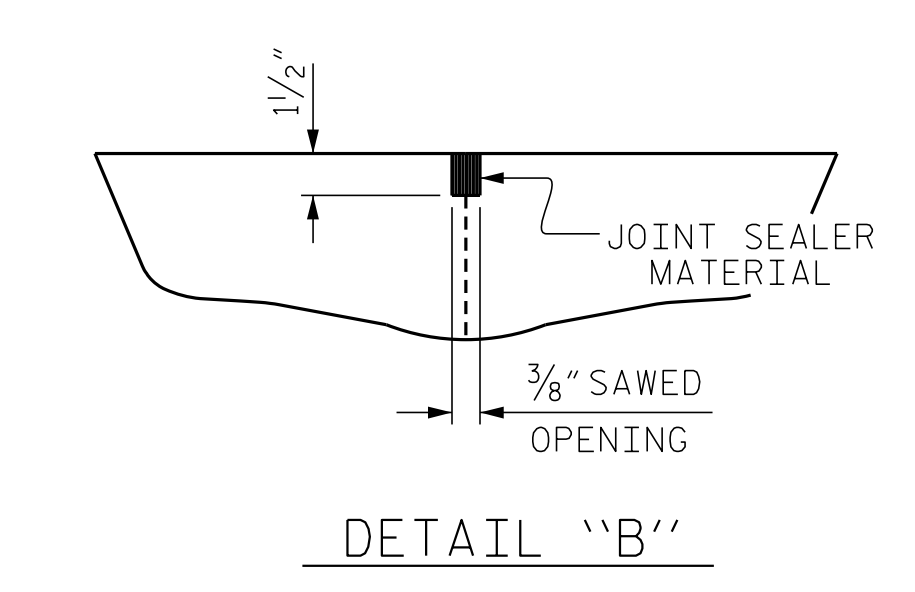


**PLAN**  
 △ THE TOP OF THE GIRDER IN THE REGION OF THE LINK SLAB SHALL BE SMOOTH (NOT RAKED) AND FREE OF STIRRUPS, DECK FORMWORK ATTACHMENTS AND OVERHANG FALSEWORK/FORMWORK ATTACHMENTS.



**SECTION THRU LINK SLAB @ BENTS**  
 (SHOWN PERPENDICULAR TO BENT CONTROL LINE)  
 \*\* DIMENSION IS MEASURED ALONG THE C GIRDER

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



PROJECT NO. BR-0062  
ANSON COUNTY  
 STATION: 18+07.50 -L-  
 SHEET 2 OF 2

**NOTES:**

- PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF 'A' BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.
- LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.
- PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.
- CONCRETE BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

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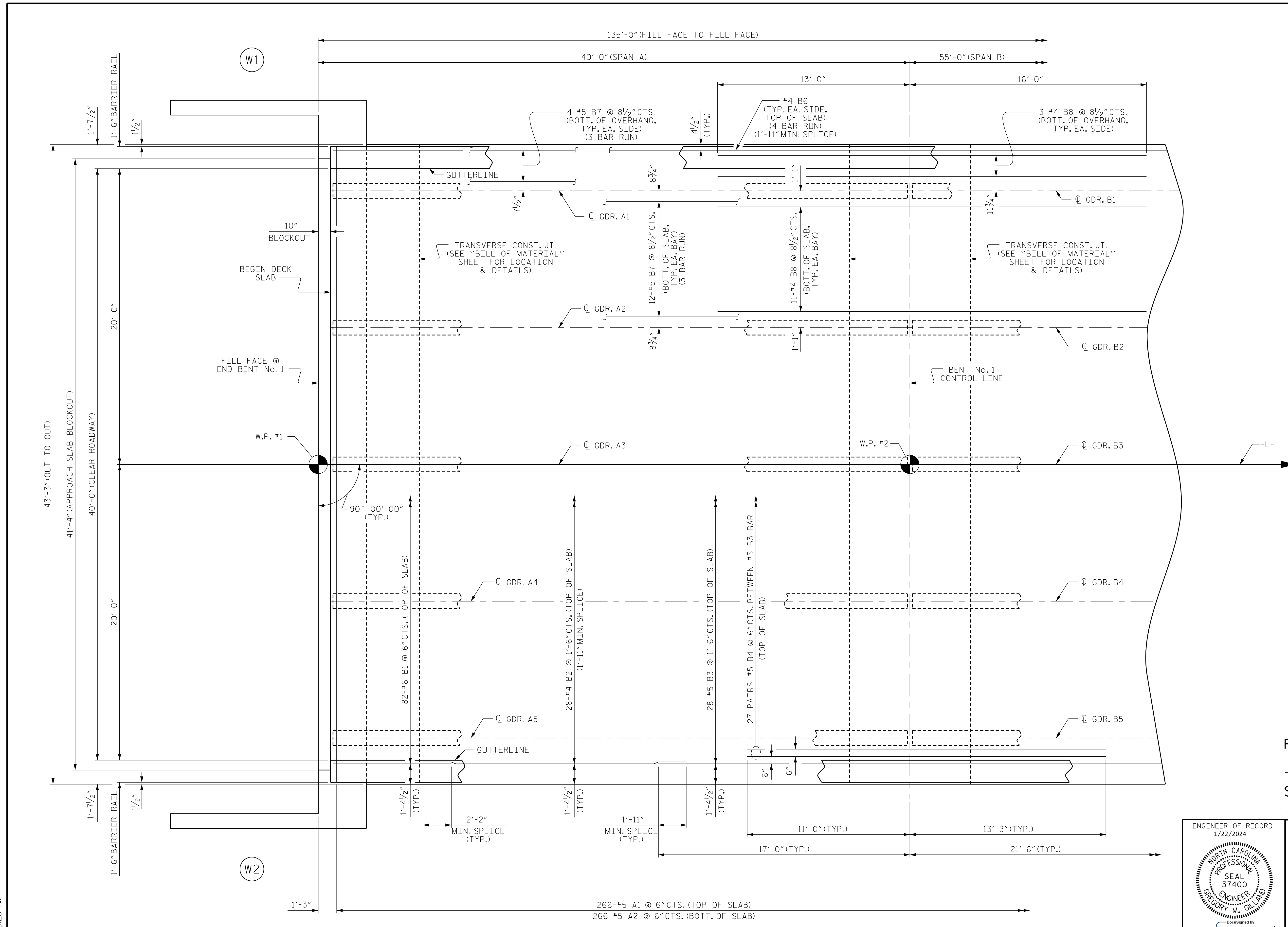
DRAWN BY: D. HODGE DATE: 4/23  
 CHECKED BY: G. GILLAND DATE: 5/23

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD  
 1/22/2024  
  
 Designed by  
  
 GREGORY M. GILLAND  
 ETHERILL ENGINEERING

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE TYPICAL SECTION					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-07
TOTAL SHEETS					35

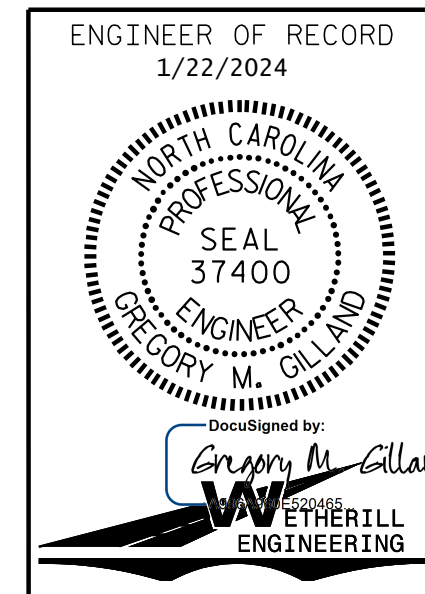




### PLAN OF SPAN A

FOR REINFORCING STEEL IN END BENT, SEE "PLAN OF SPAN DETAILS" SHEET.

PROJECT NO. BR-0062  
ANSON COUNTY  
 STATION: 18+07.50 -L-  
 SHEET 1 OF 4



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 PLAN OF SPAN

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

SHEET NO. S-08  
 TOTAL SHEETS 35

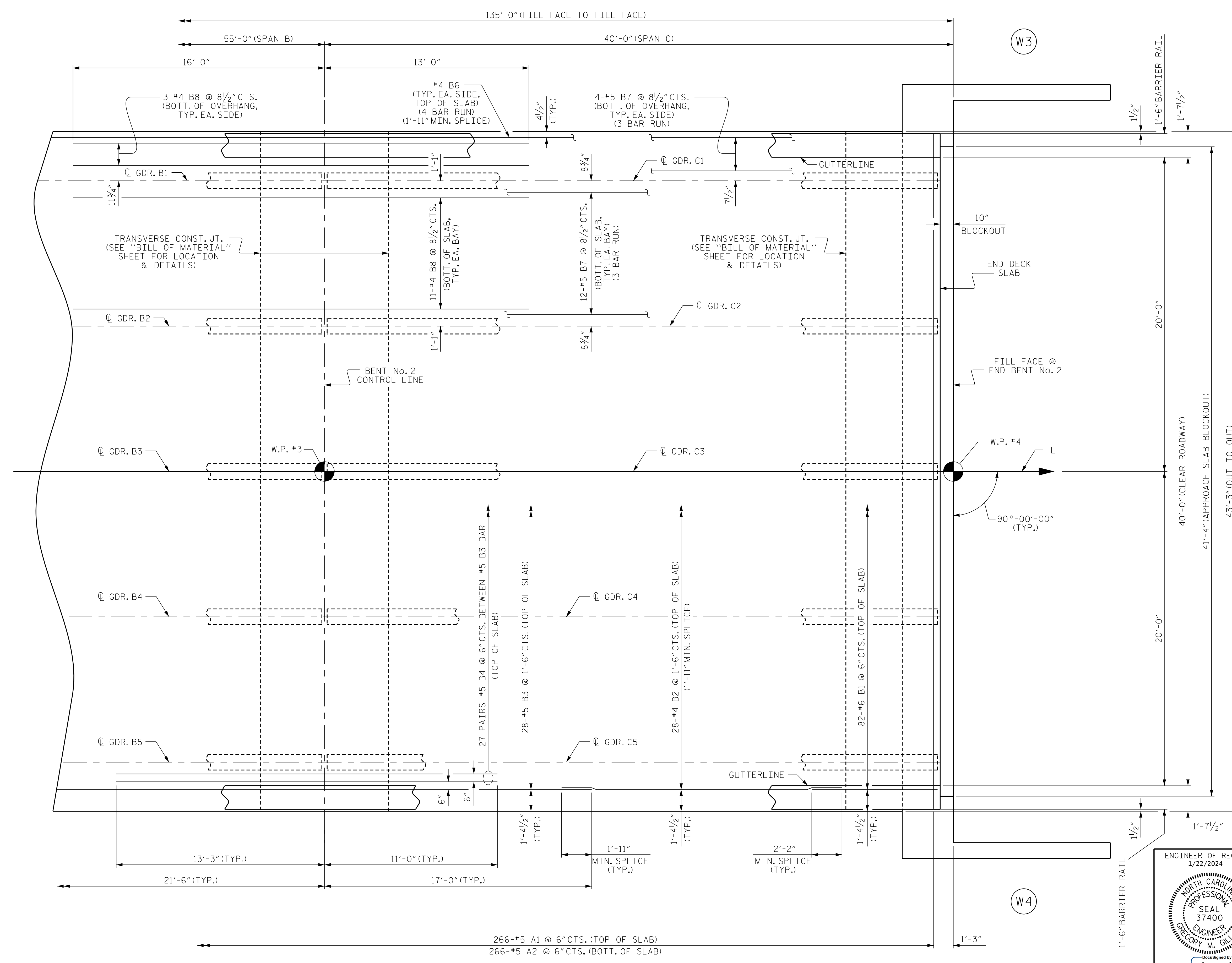
DRAWN BY: D. HODGE DATE: 4/23  
 CHECKED BY: G. GILLAND DATE: 5/23

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

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PROJECT NO. BR-0062  
ANSON COUNTY  
 STATION: 18+07.50 -L-  
 SHEET 3 OF 4

**PRELIMINARY PLANS**  
 DO NOT USE FOR CONSTRUCTION

PA\2020\20130\01\_BR-0062\Structures\DWG\BR-0062-SD\_PS\_0300 14.dgn  
 1/19/2024 8:51:07 AM

**PLAN OF SPAN C**

FOR REINFORCING STEEL IN END BENT, SEE "PLAN OF SPAN DETAILS" SHEET.

DRAWN BY: D. HODGE DATE: 4/23  
 CHECKED BY: G. GILLAND DATE: 5/23

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

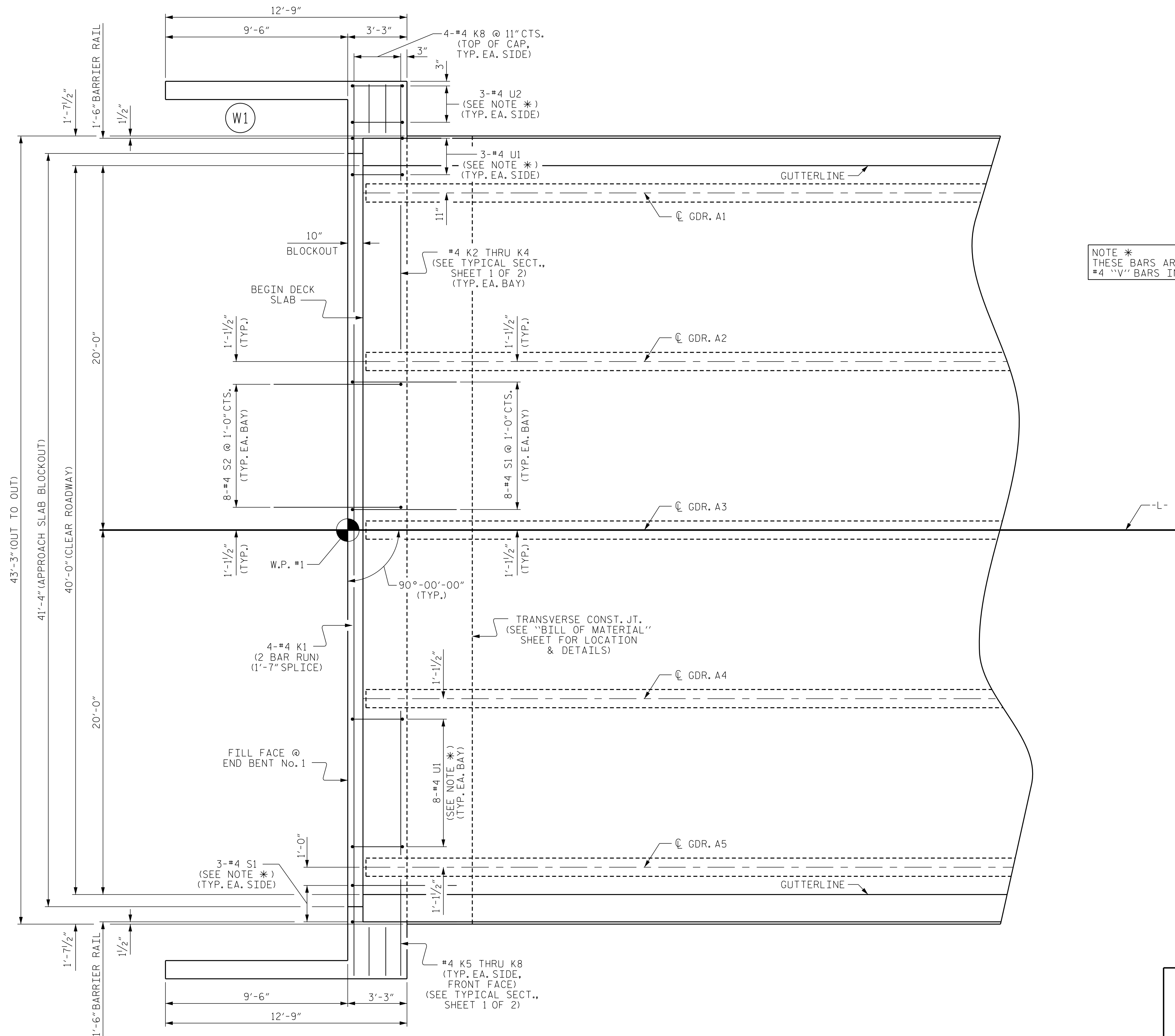
ENGINEER OF RECORD  
 1/22/2024  
  
 Designed by:  
  
 GREGORY M. GILLAND  
 WETHERILL ENGINEERING  
 1223 Jones Franklin Rd.  
 Raleigh, N.C. 27606  
 Bus: 919 851 8077  
 Fax: 919 851 8107  
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUPERSTRUCTURE  
 PLAN OF SPAN**

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

SHEET NO. S-10				
TOTAL SHEETS 35				

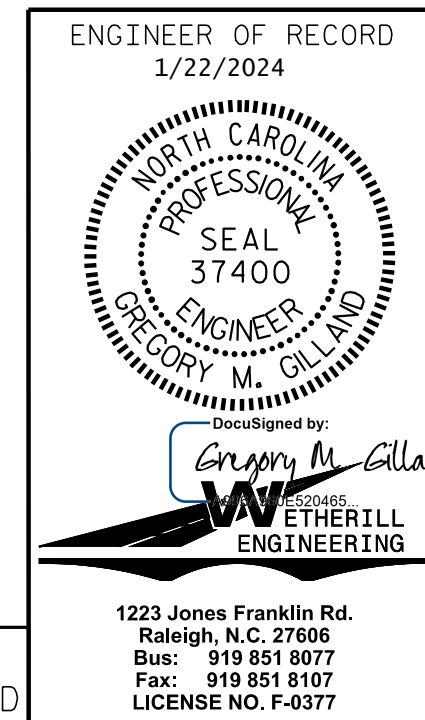


NOTE \*  
THESE BARS ARE TO MATCH  
#4 "V" BARS IN END BENT

PLAN OF INTEGRAL END BENT No. 1

(END BENT No. 2 SIMILAR BY ROTATION.)

PROJECT NO. BR-0062  
ANSON COUNTY  
STATION: 18+07.50 -L-  
SHEET 4 OF 4



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUPERSTRUCTURE  
PLAN OF SPAN  
DETAILS

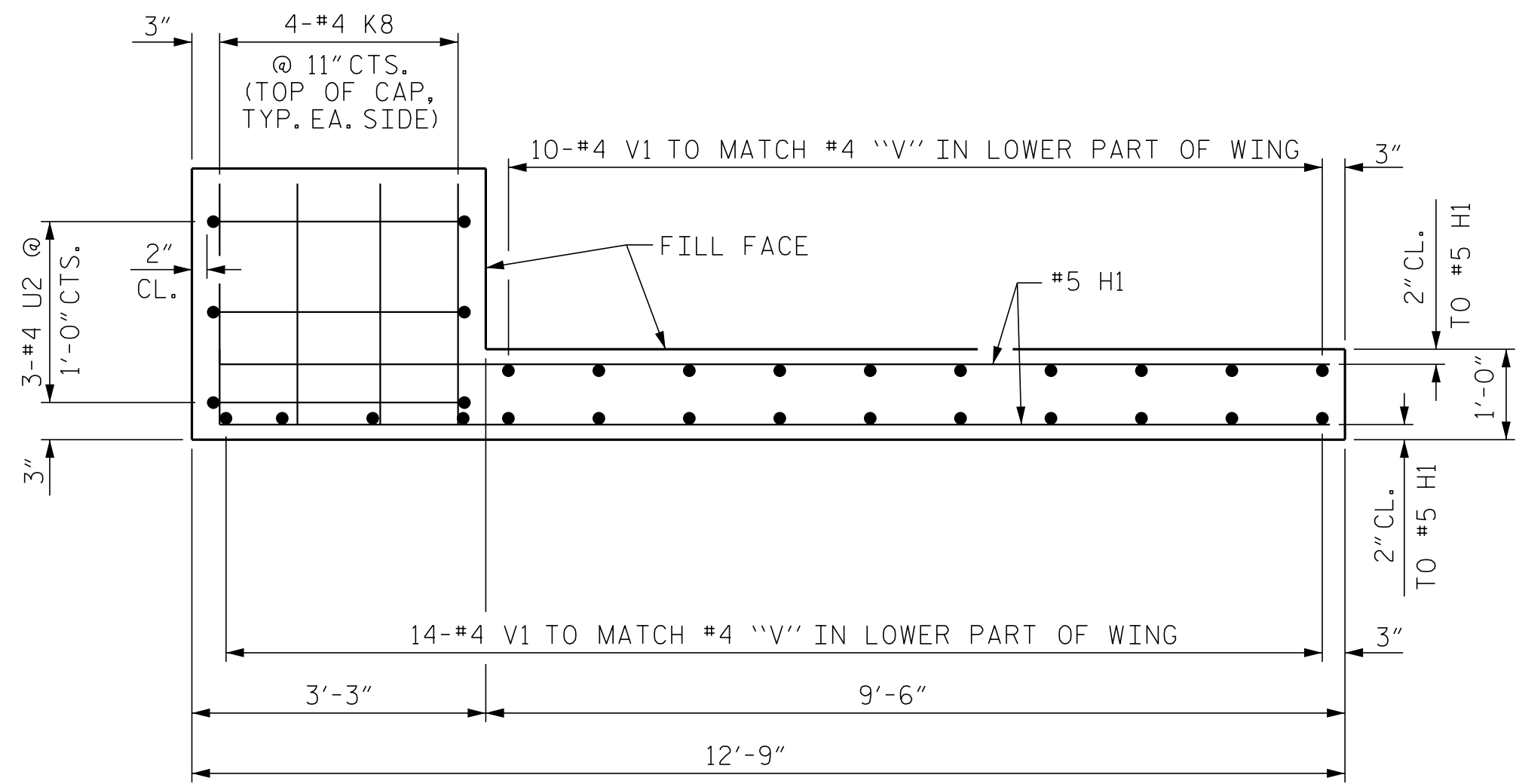
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
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2			4			35

DRAWN BY: D. HODGE DATE: 4/23  
CHECKED BY: G. GILLAND DATE: 5/23

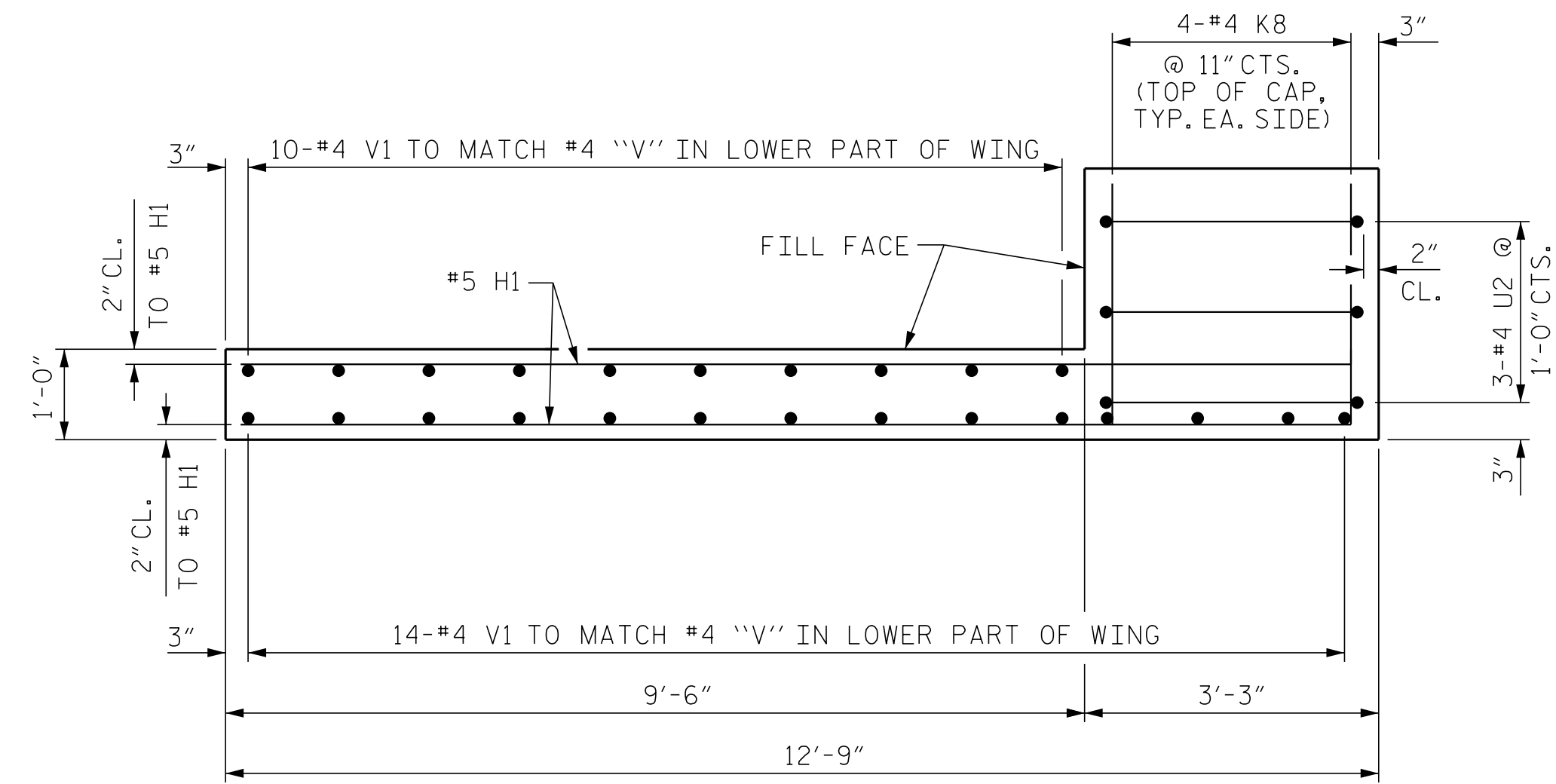
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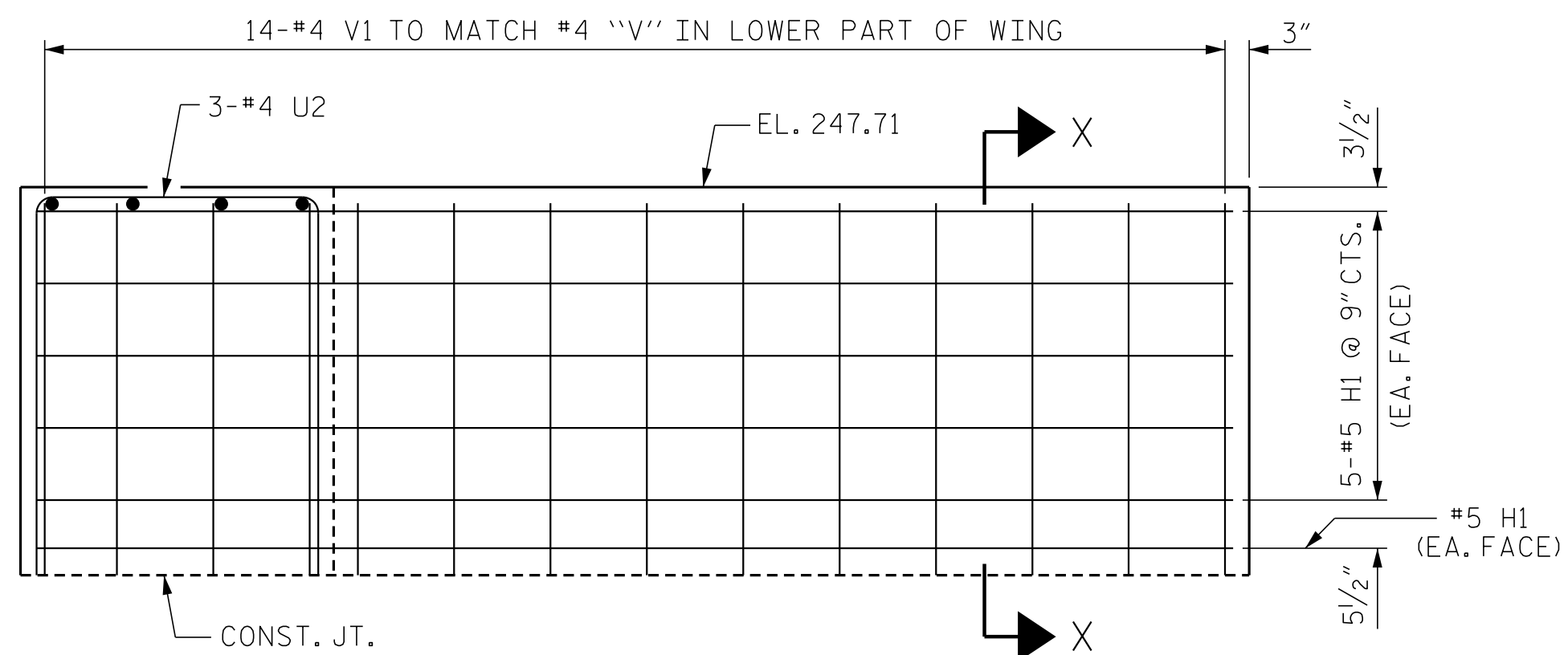




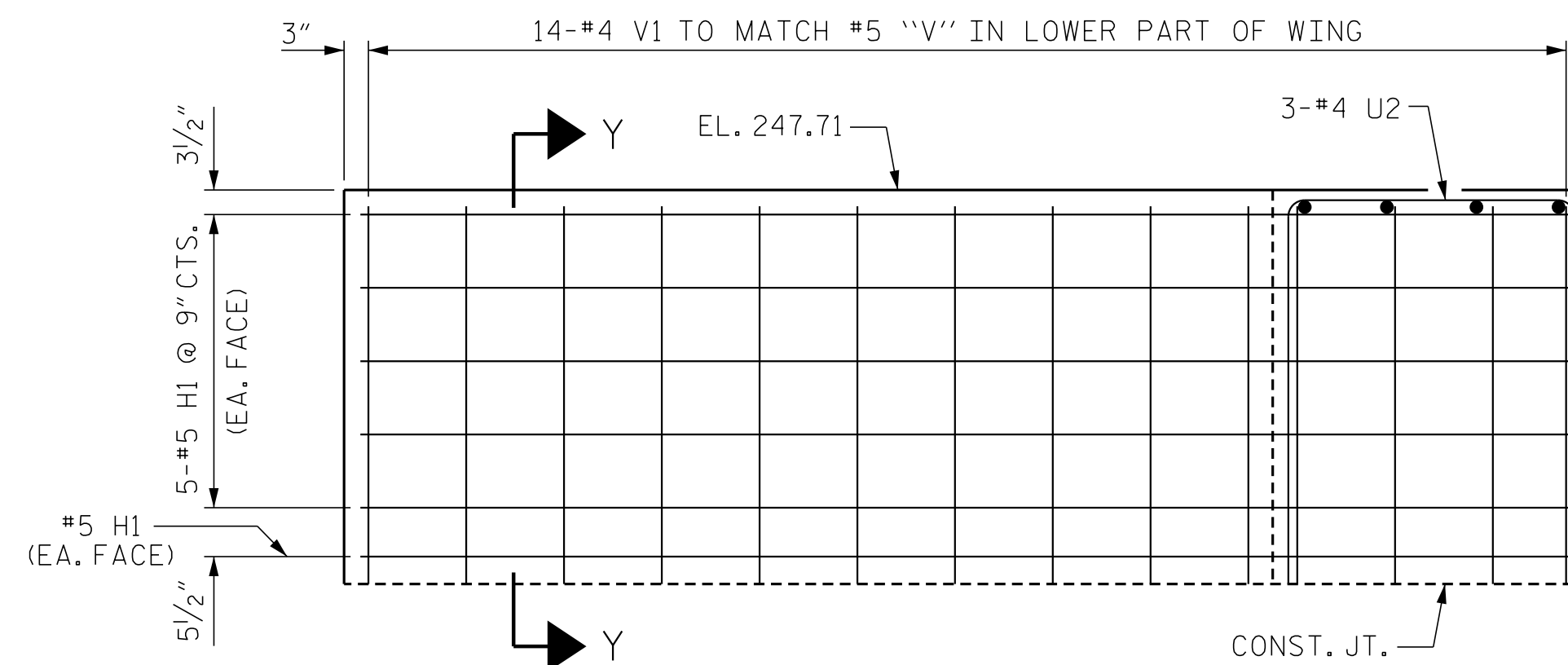
PLAN OF LEFT WING (W1)



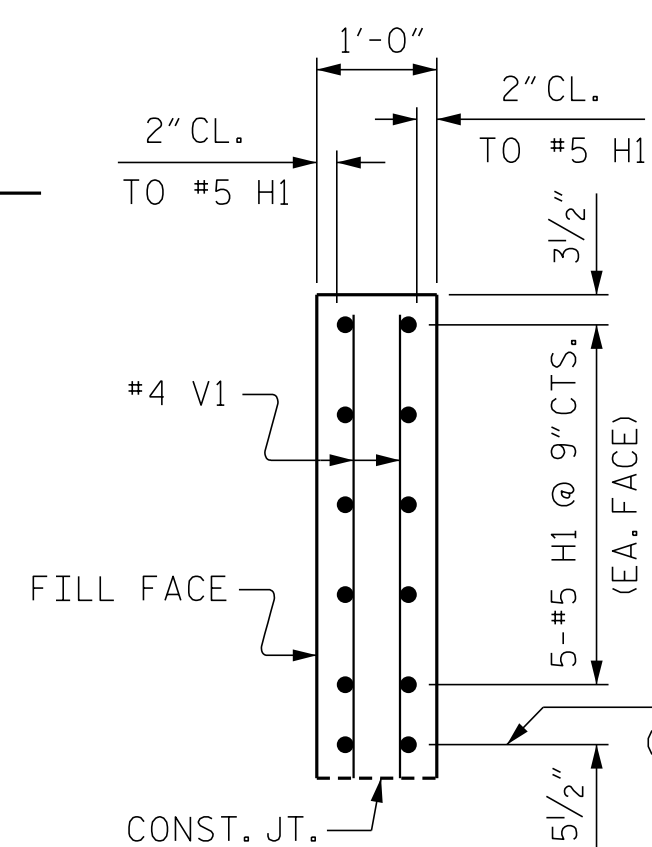
PLAN OF RIGHT WING (W2)



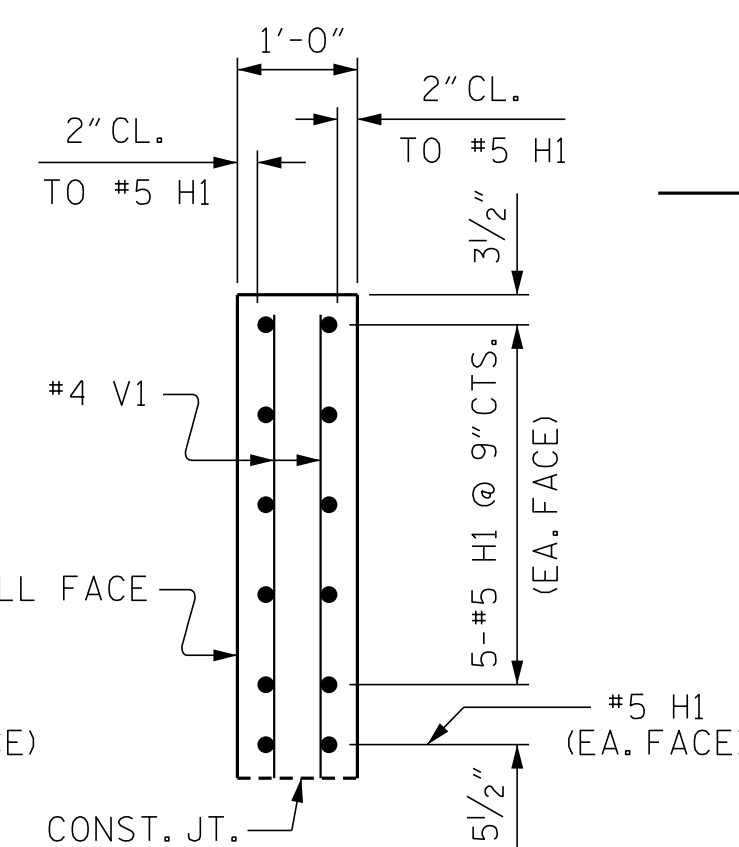
ELEVATION OF LEFT WING (W1)



ELEVATION OF RIGHT WING (W2)



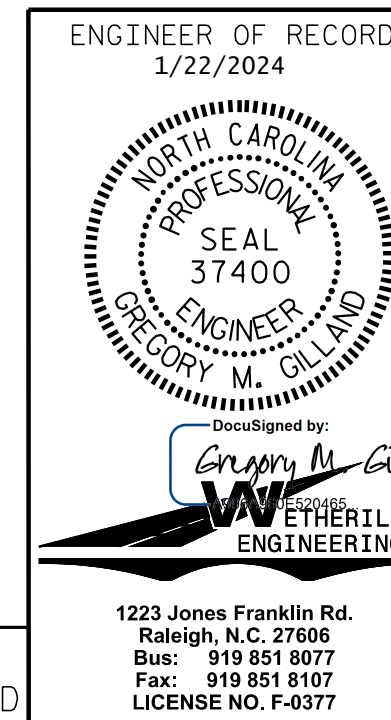
SECTION X-X



SECTION Y-Y

PROJECT NO. BR-0062  
 ANSON COUNTY  
 STATION: 18+07.50 -L-

SHEET 1 OF 2



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 UPPER PART OF WING  
 AT INTEGRAL  
 END BENT No. 1

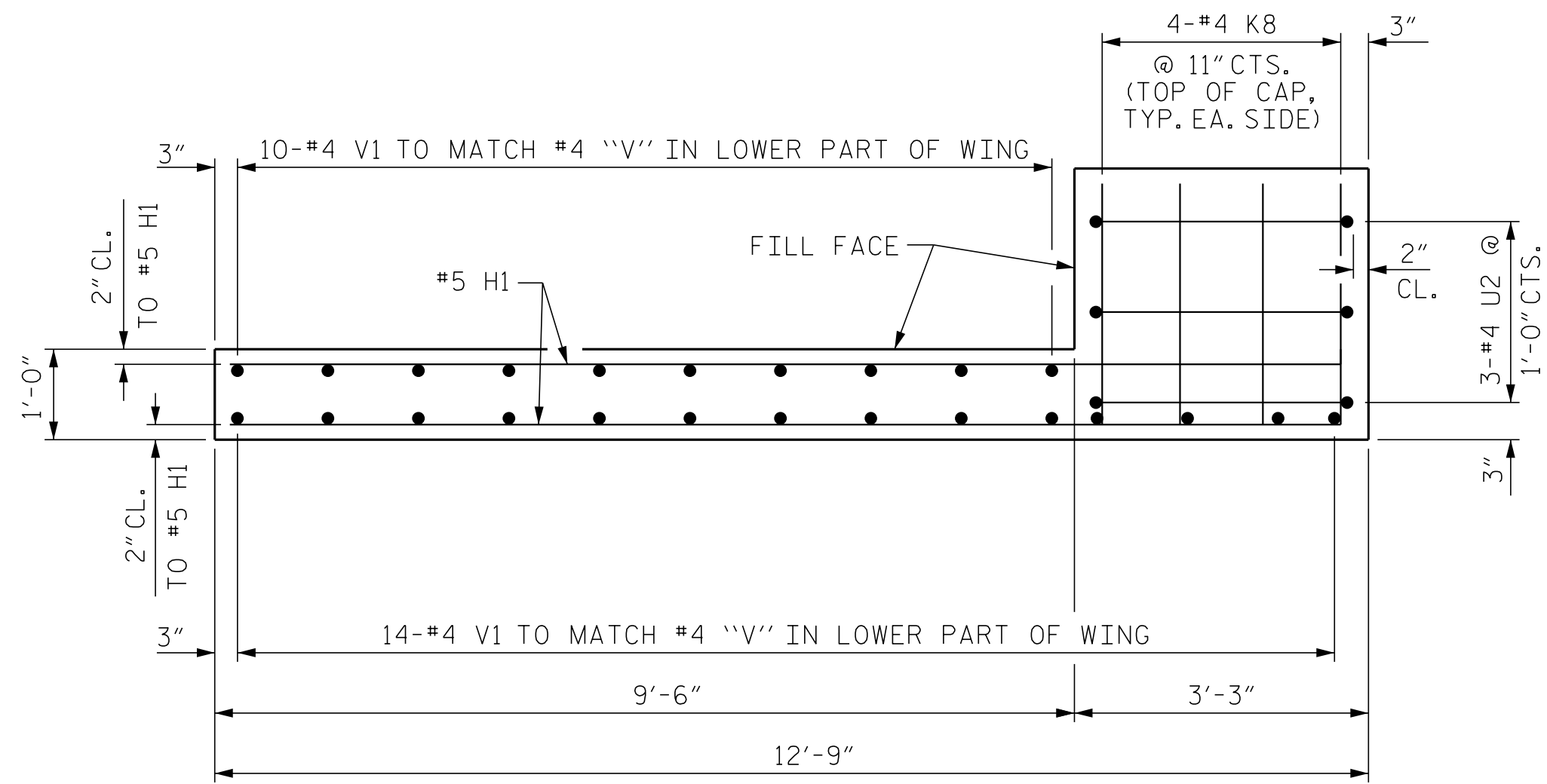
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NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
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TOTAL SHEETS: 35

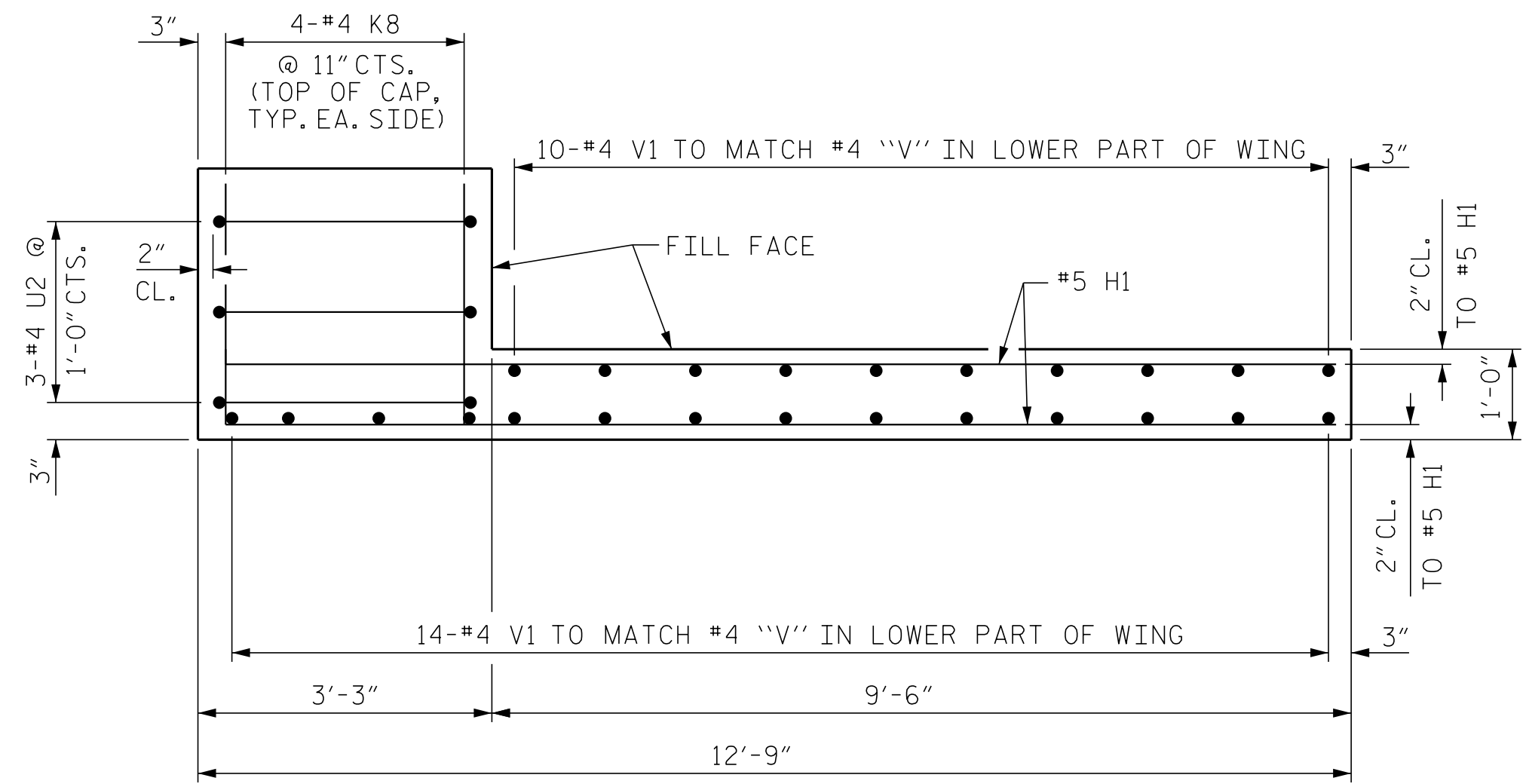
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 CHECKED BY: G. GILLILAND DATE: 5/23

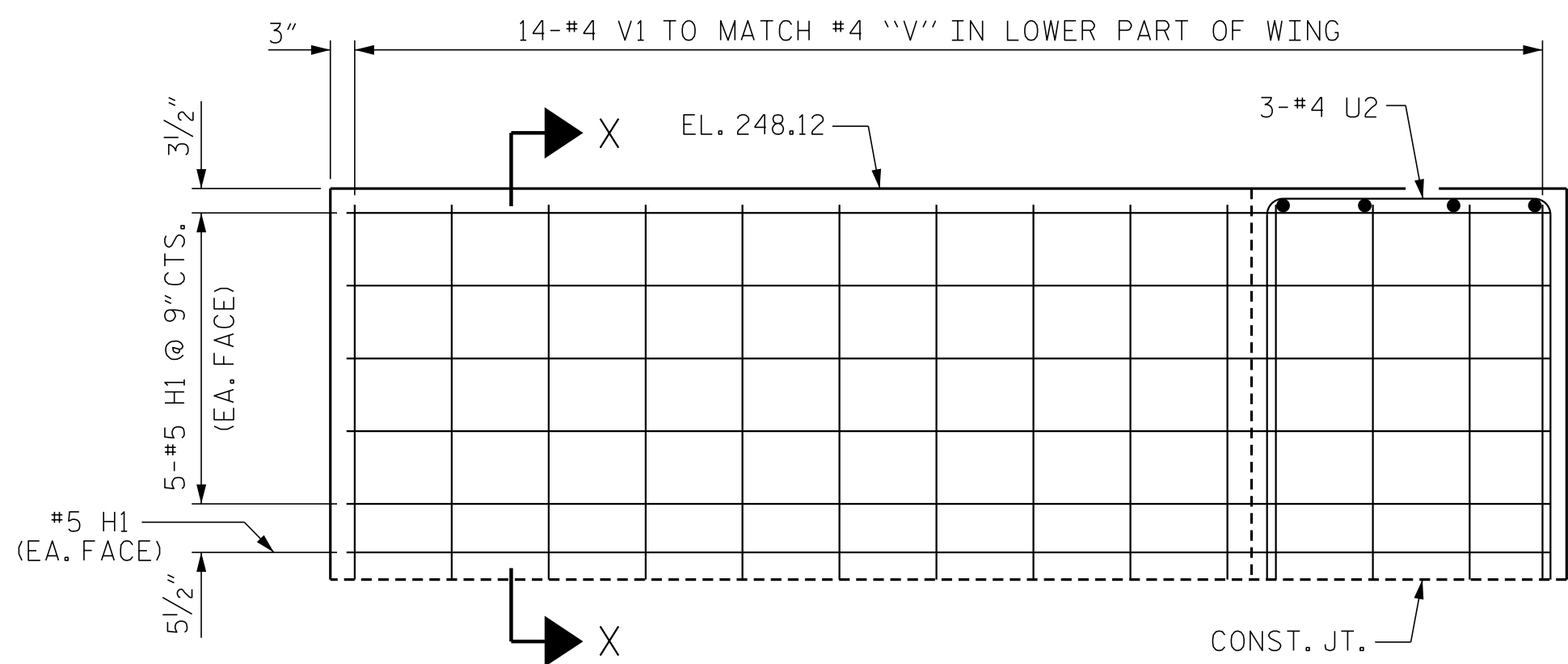
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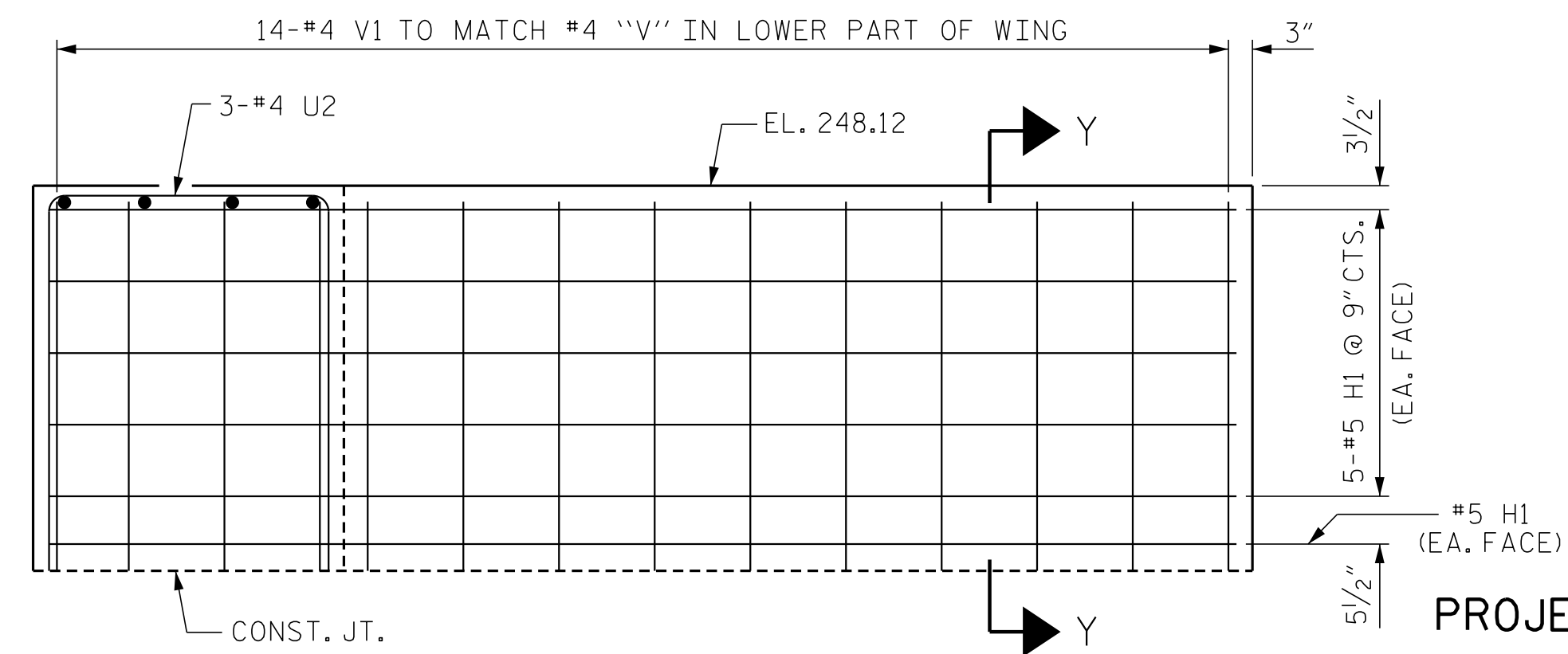
PLAN OF LEFT WING (W3)



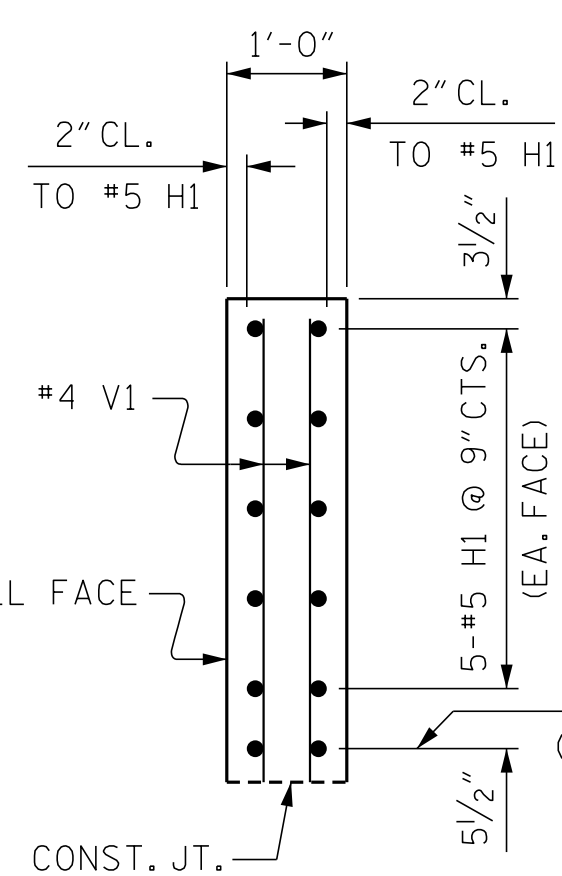
PLAN OF RIGHT WING (W4)



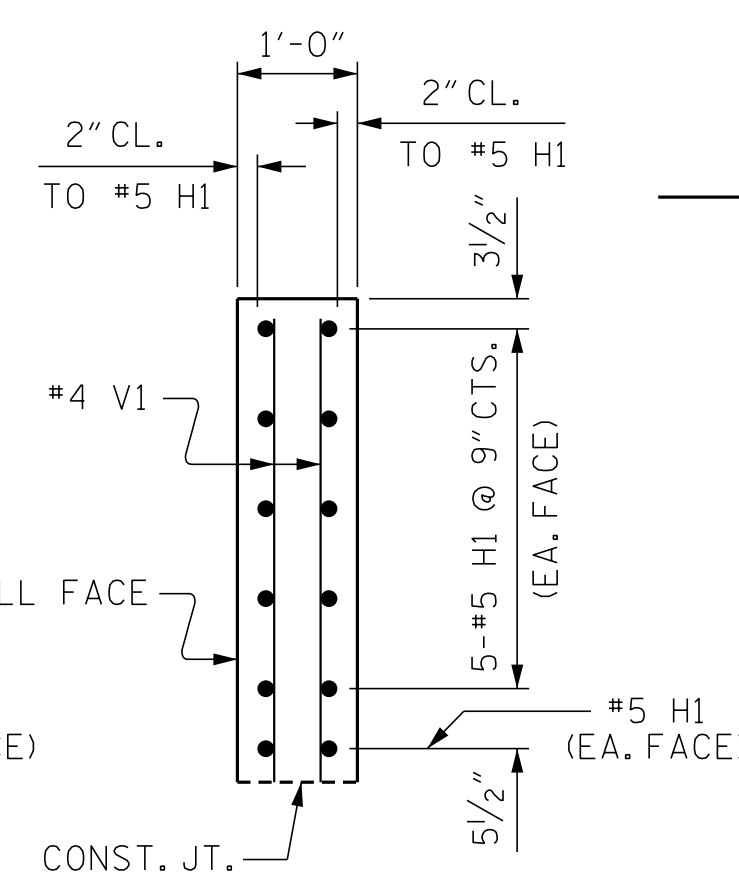
ELEVATION OF LEFT WING (W3)



ELEVATION OF RIGHT WING (W4)



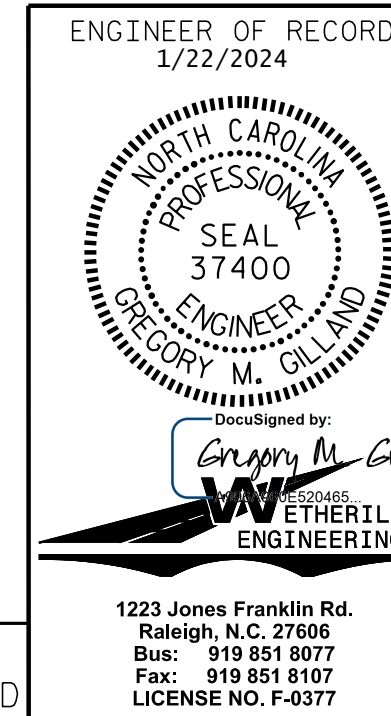
SECTION X-X



SECTION Y-Y

PROJECT NO. BR-0062  
 ANSON COUNTY  
 STATION: 18+07.50 -L-

SHEET 2 OF 2



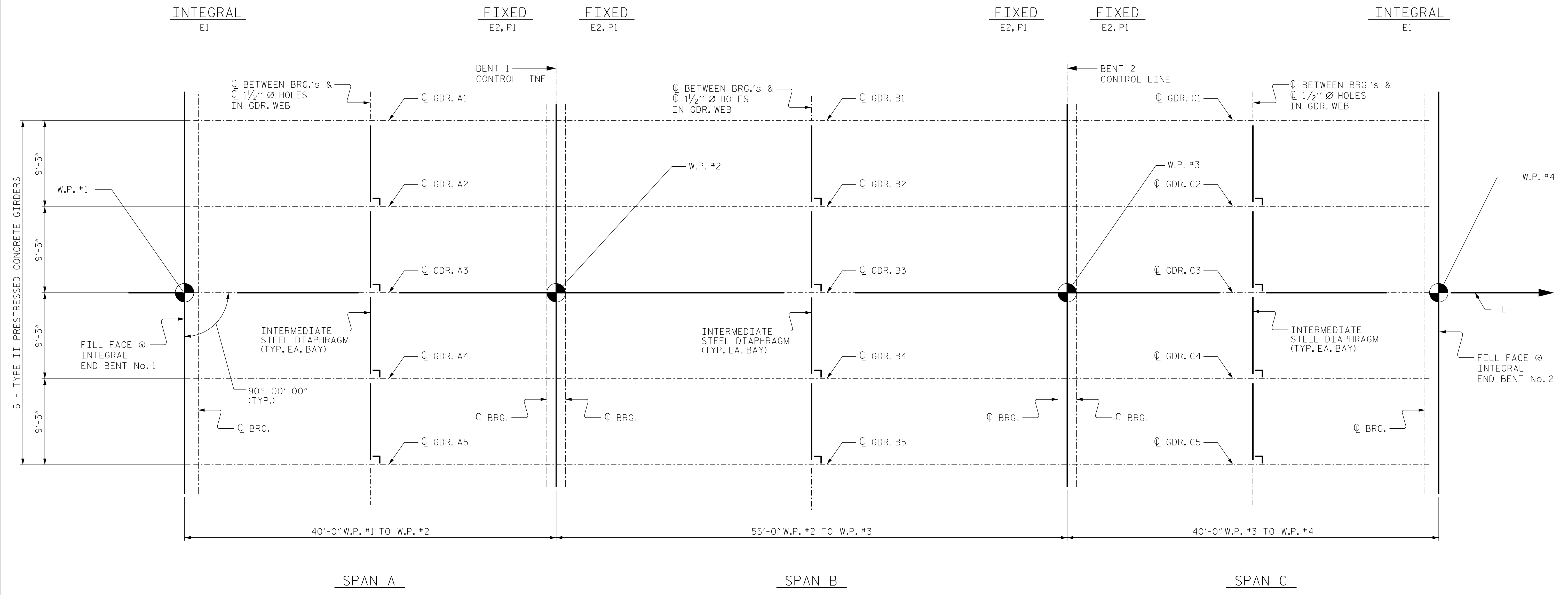
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE UPPER PART OF WING AT INTEGRAL END BENT No. 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-13
					TOTAL SHEETS 35

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DRAWN BY: D. HODGE DATE: 5/23  
 CHECKED BY: G. GILLAND DATE: 5/23

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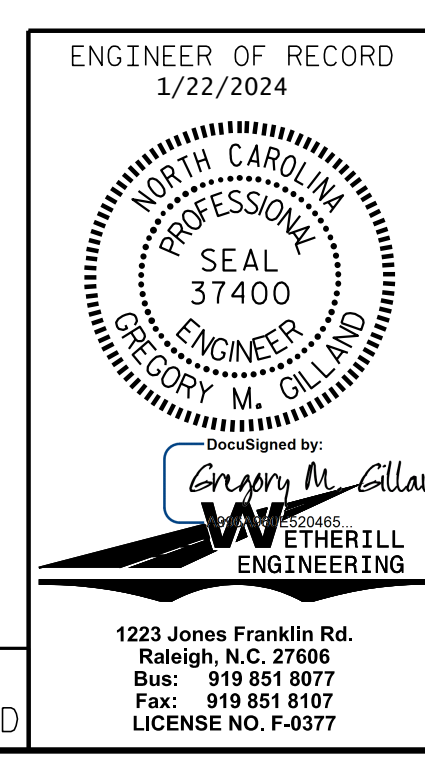
### GIRDER LAYOUT

PROJECT NO. BR-0062  
ANSON COUNTY  
 STATION: 18+07.50 -L-

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DRAWN BY : J. PENDERGRAFT DATE : 11-22  
 CHECKED BY : J. DILWORTH DATE : 11-22

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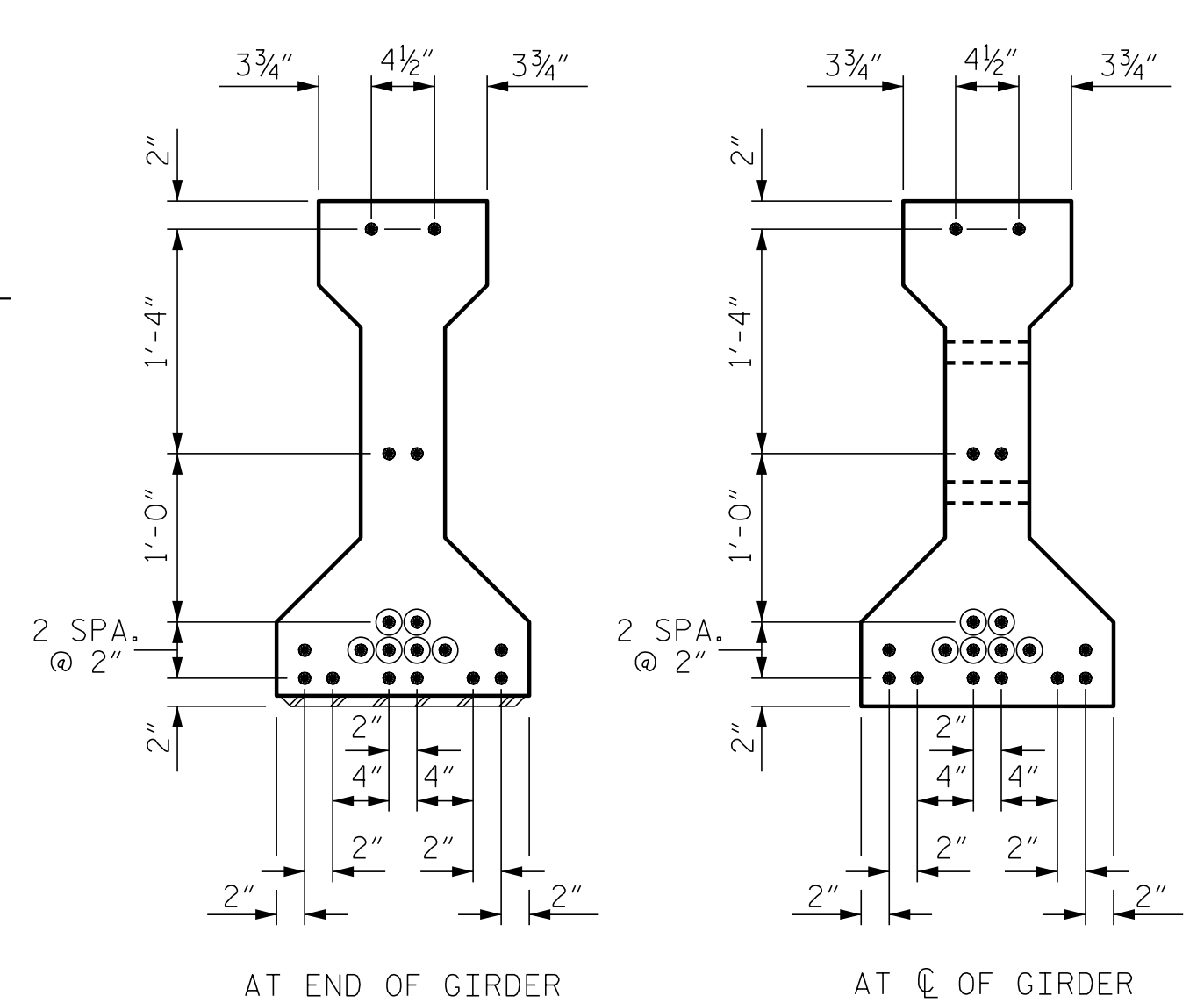
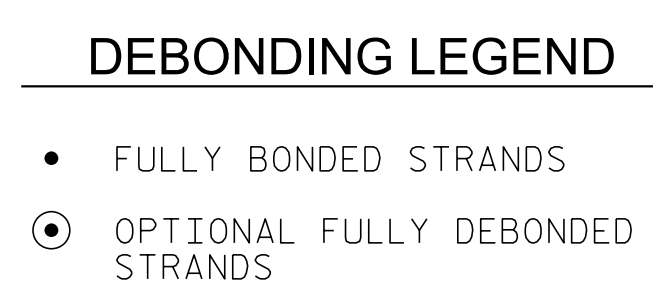
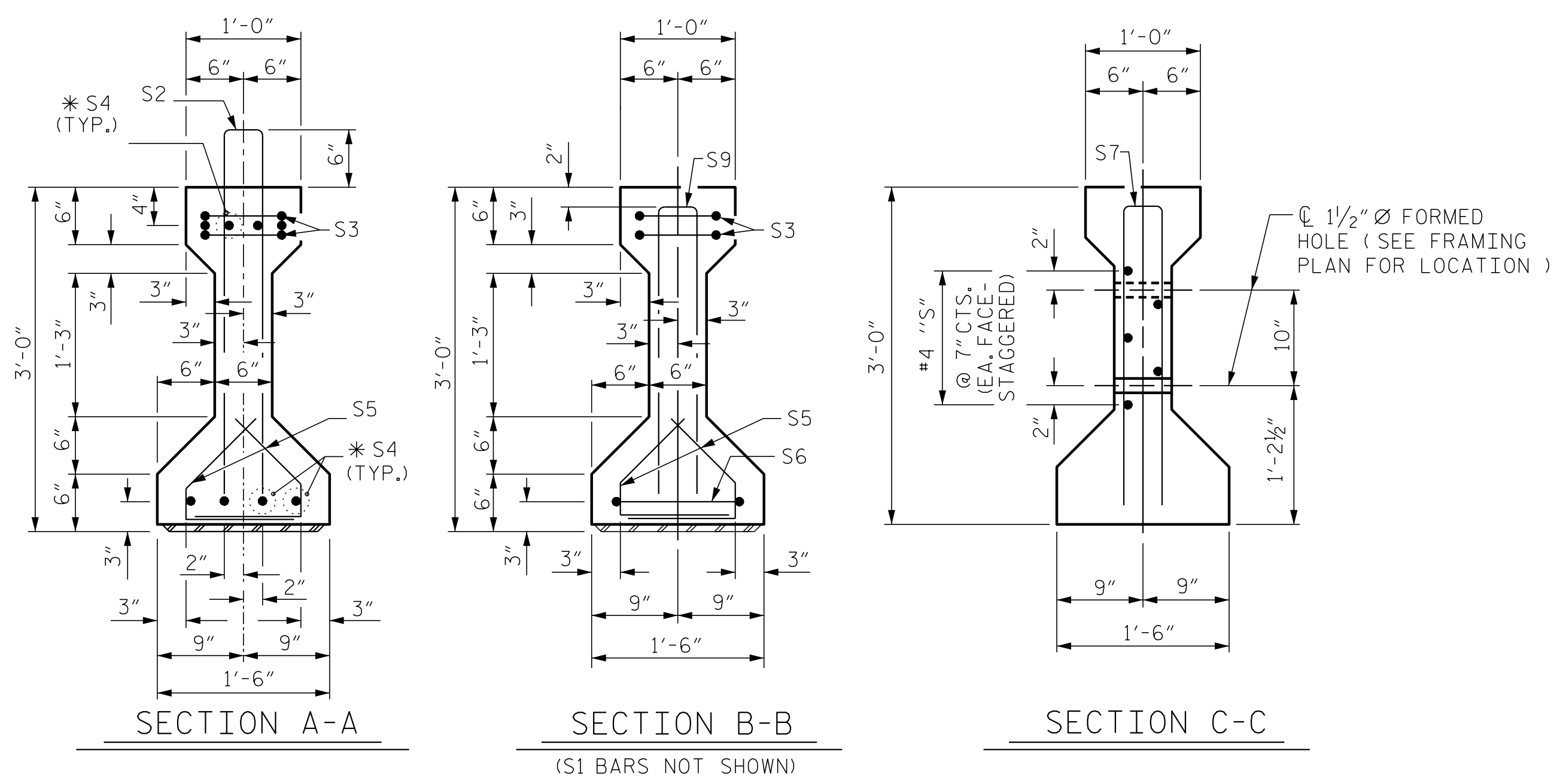


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE GIRDER LAYOUT					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
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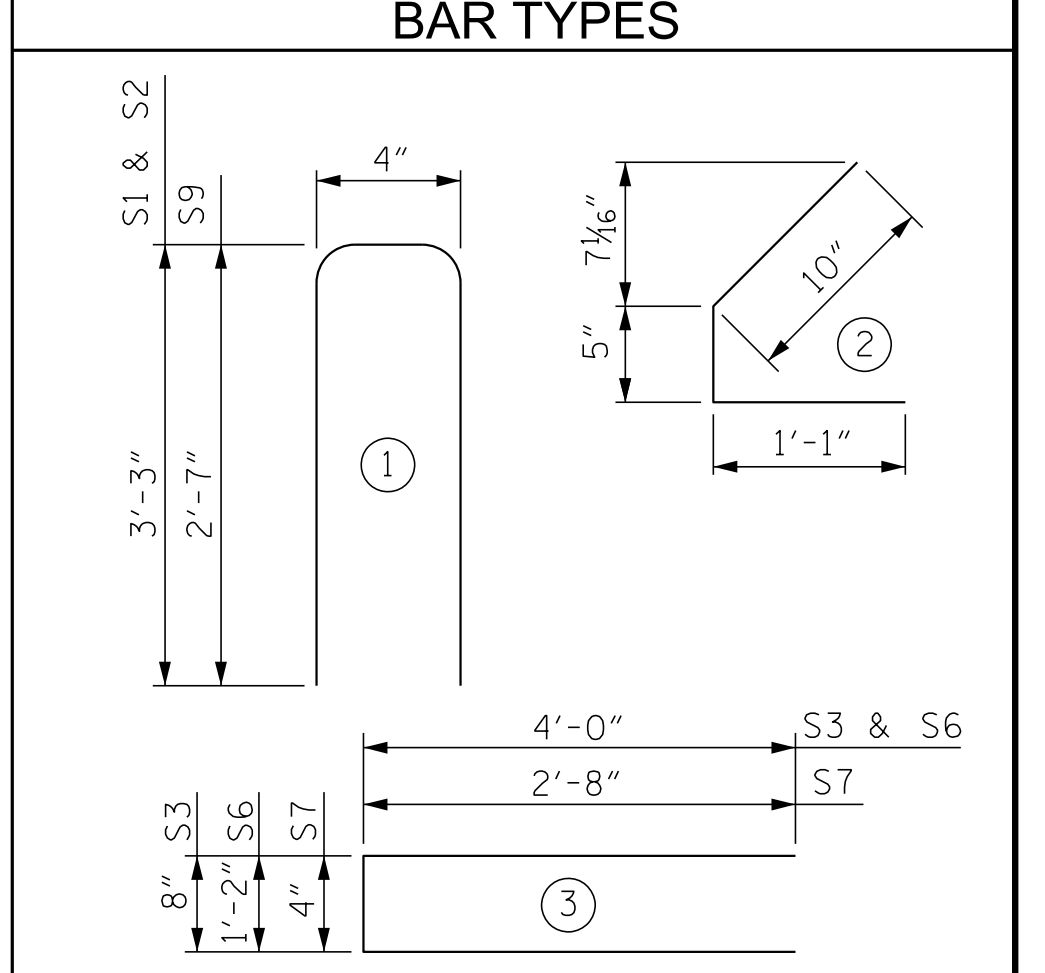
**0.6" Ø LOW RELAXATION STRAND LAYOUT**

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

**REINFORCING STEEL FOR ONE GIRDER**

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	39	#4	1	6'-10"	178
S2	6	#5	1	6'-10"	43
S3	4	#4	3	8'-8"	23
*S4	8	#5	STR	3'-8"	31
S5	48	#4	2	2'-4"	75
S6	1	#4	3	9'-2"	6
S7	2	#5	3	5'-8"	12
S8	5	#4	STR	7'-0"	23
S9	7	#5	1	5'-6"	40

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

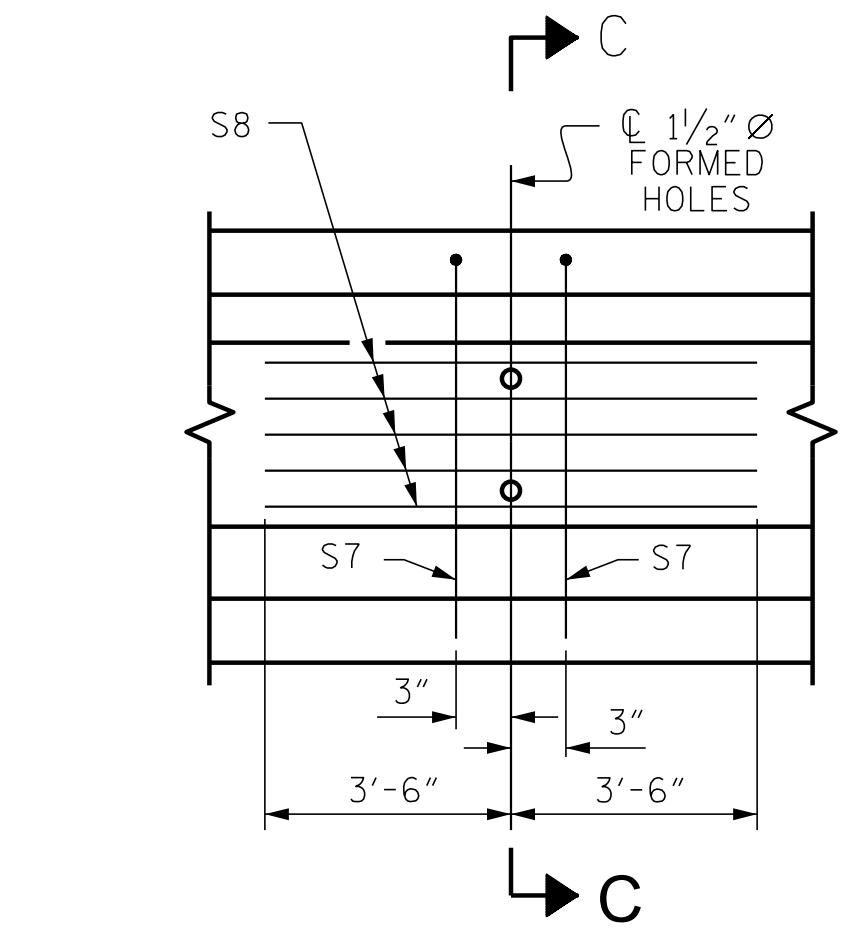
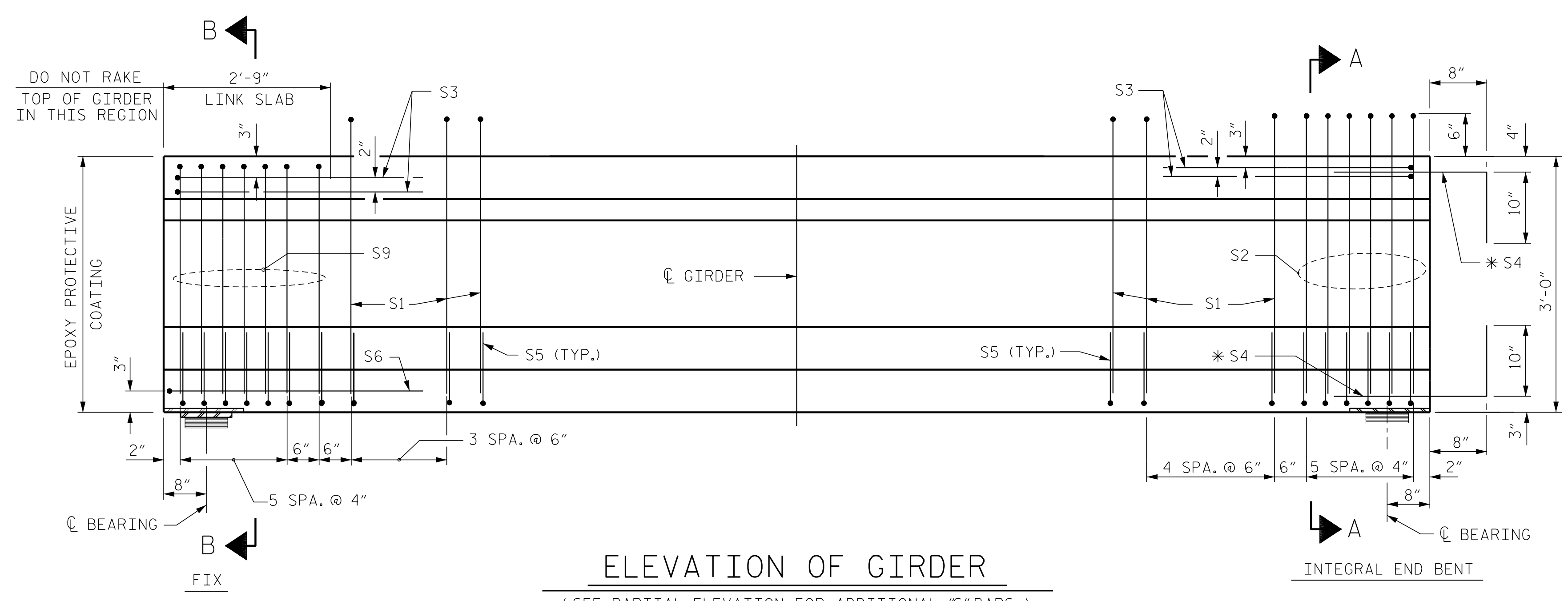
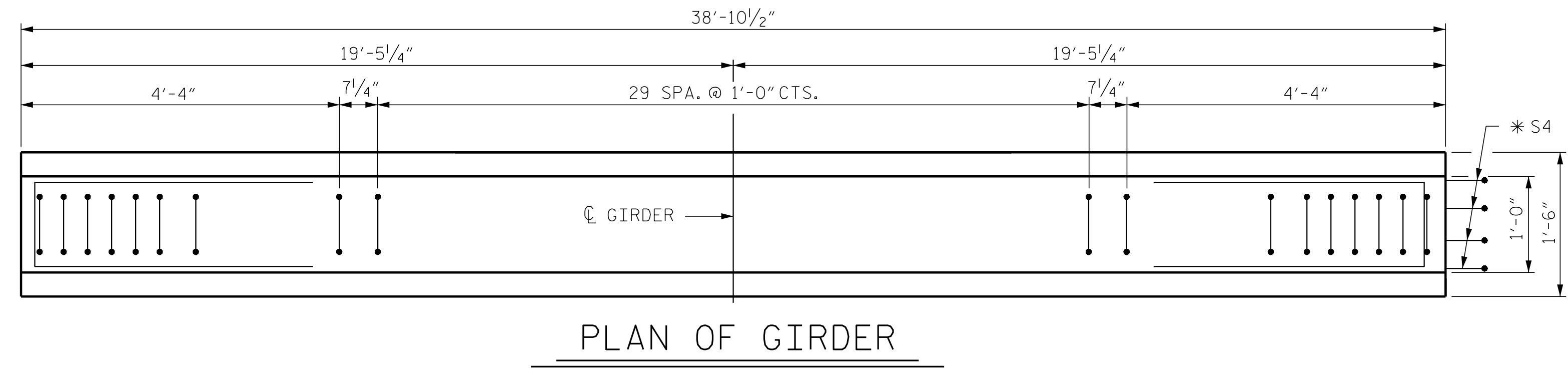


**QUANTITIES FOR ONE GIRDER**

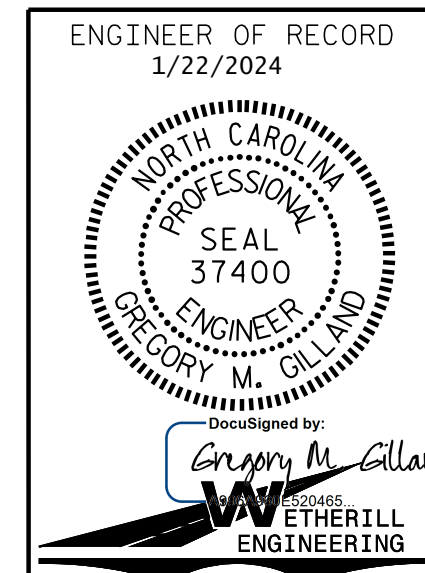
	REINFORCING STEEL	5000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
GIRDER	431	3.7	12

**GIRDERS REQUIRED**

NUMBER	LENGTH	TOTAL LENGTH
5	38'-10 1/2"	194.38



PROJECT NO. BR-0062  
 ANSON COUNTY  
 STATION: 18+07.50 -L-  
 SHEET 3 OF 5



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**STANDARD AASHTO TYPE II PRESTRESSED CONCRETE GIRDER - LINK SLAB SPAN C**

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

SHEET NO. S-17  
 TOTAL SHEETS 35

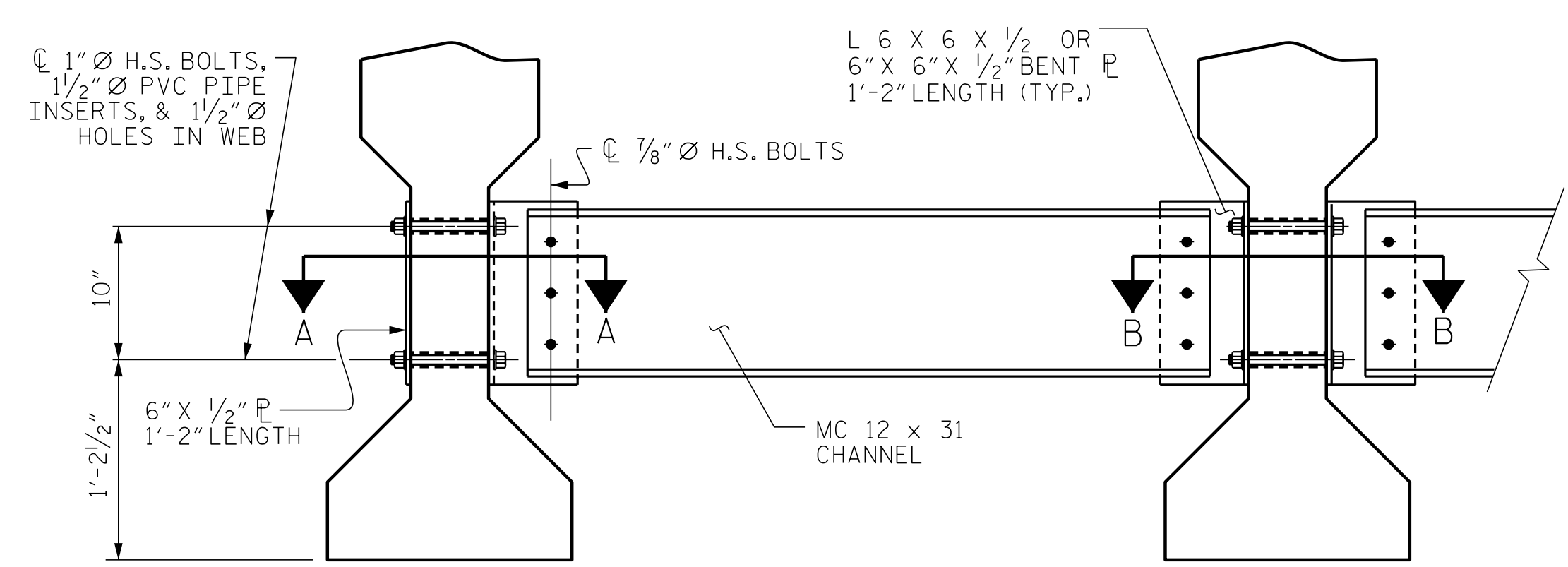
ASSEMBLED BY : D. HODGE      DATE : 5/23  
 CHECKED BY : G. GILLAND      DATE : 7/23  
 DRAWN BY : BNB 09/21  
 CHECKED BY : AAI 09/21

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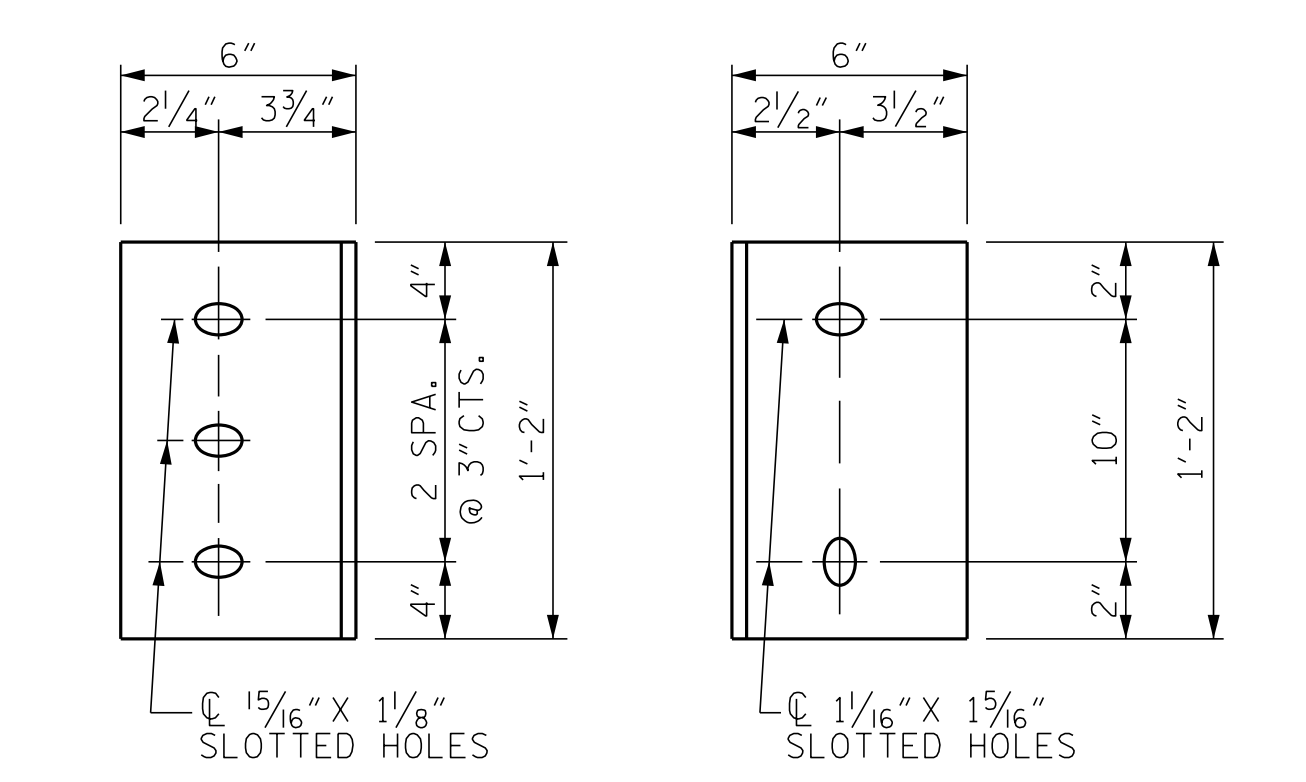
1223 Jones Franklin Rd.  
 Raleigh, N.C. 27606  
 Bus: 919 851 8077  
 Fax: 919 851 8107  
 LICENSE NO. F-0377

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EXTERIOR GIRDER INTERIOR GIRDER  
PART SECTION AT INTERMEDIATE DIAPHRAGM



DIAPHRAGM FACE WEB FACE  
CONNECTOR PLATE DETAILS

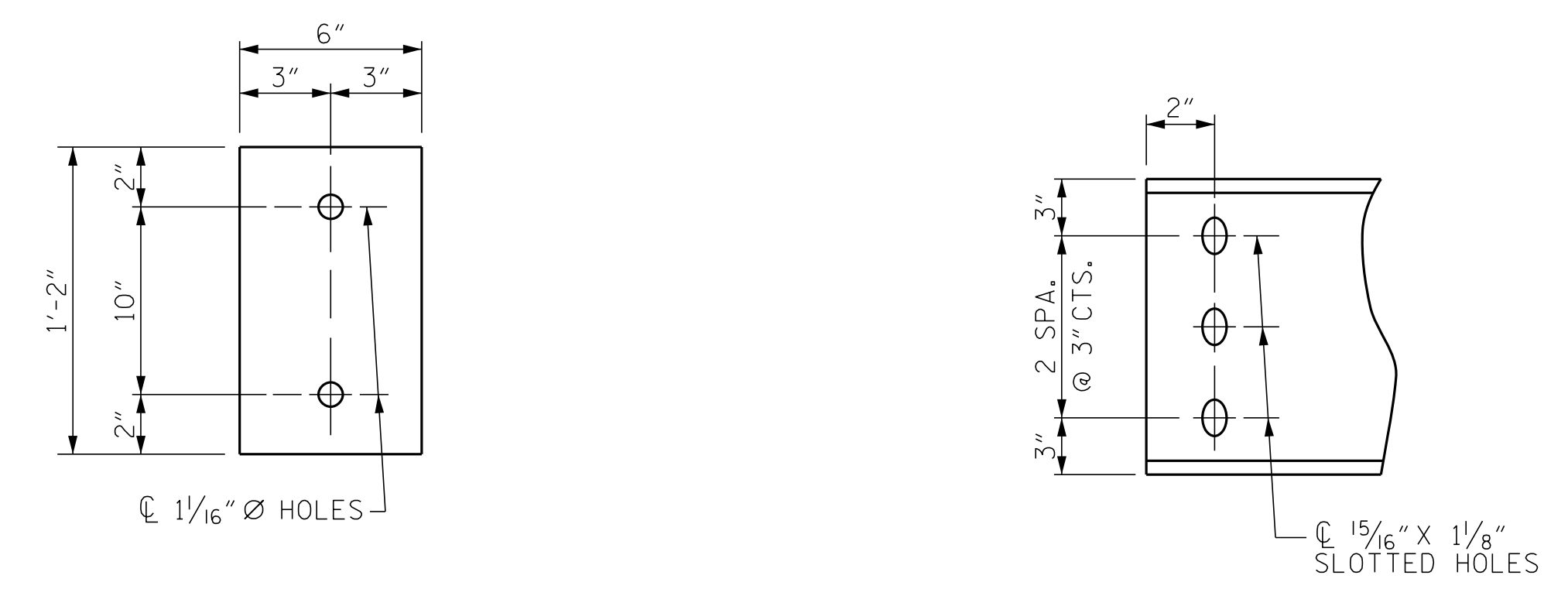
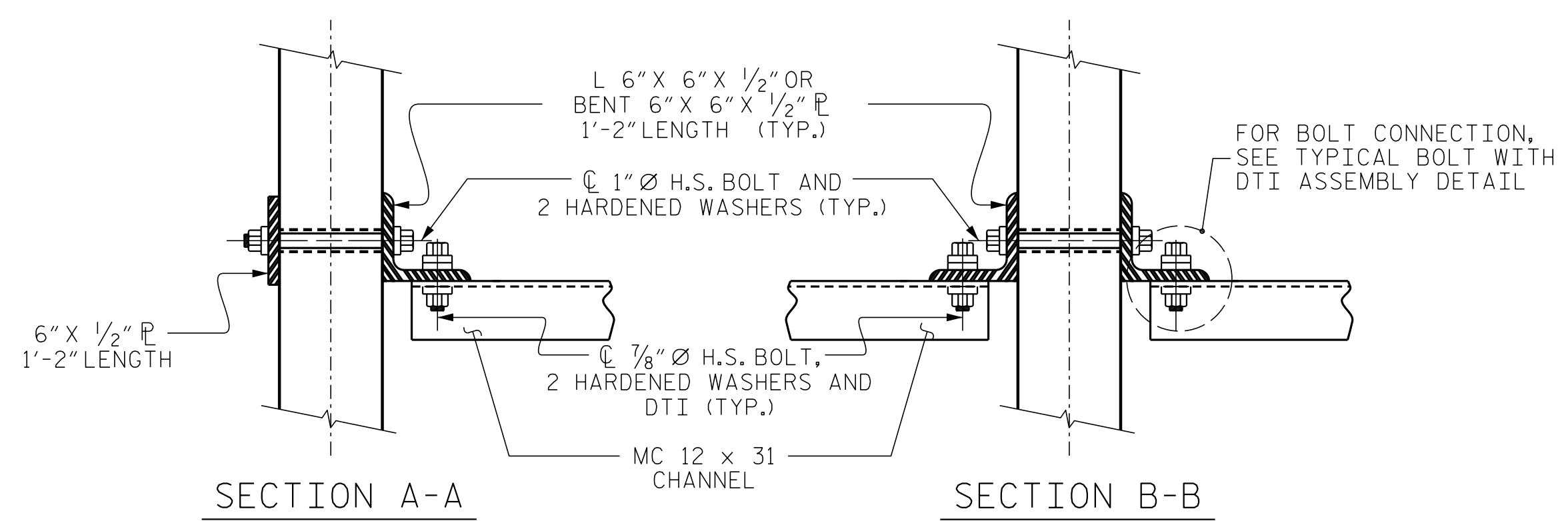
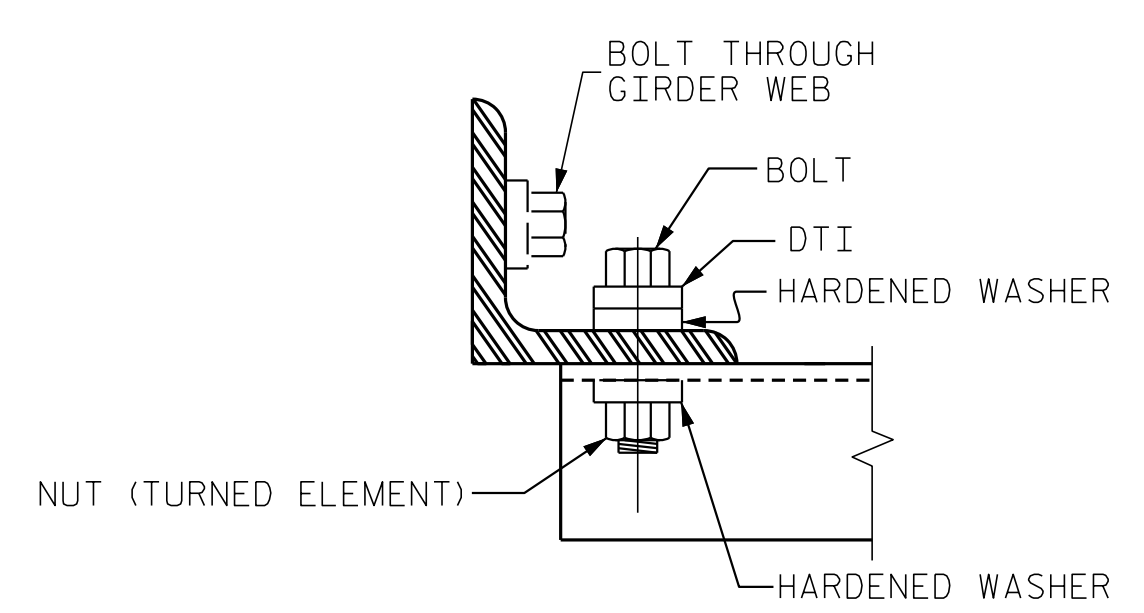


PLATE DETAILS CHANNEL END



SECTION A-A SECTION B-B  
CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

STRUCTURAL STEEL NOTES

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

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

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

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

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

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

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

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

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

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

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

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

PROJECT NO. BR-0062  
ANSON COUNTY  
STATION: 18+07.50 -L-

SHEET 4 OF 5

ENGINEER OF RECORD  
1/22/2024  
NORTH CAROLINA PROFESSIONAL SEAL 37400  
ENGINEER  
GREGORY M. GILLAND  
GREGORY M. GILLAND  
ETHERILL ENGINEERING  
1223 Jones Franklin Rd.  
Raleigh, N.C. 27606  
Bus: 919 851 8077  
Fax: 919 851 8107  
LICENSE NO. F-0377

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE II PRESTRESSED CONCRETE GIRDERS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 35
					S-18

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ASSEMBLED BY : D. HODGE	DATE : 5/23
CHECKED BY : G. GILLAND	DATE : 7/23
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

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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

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

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

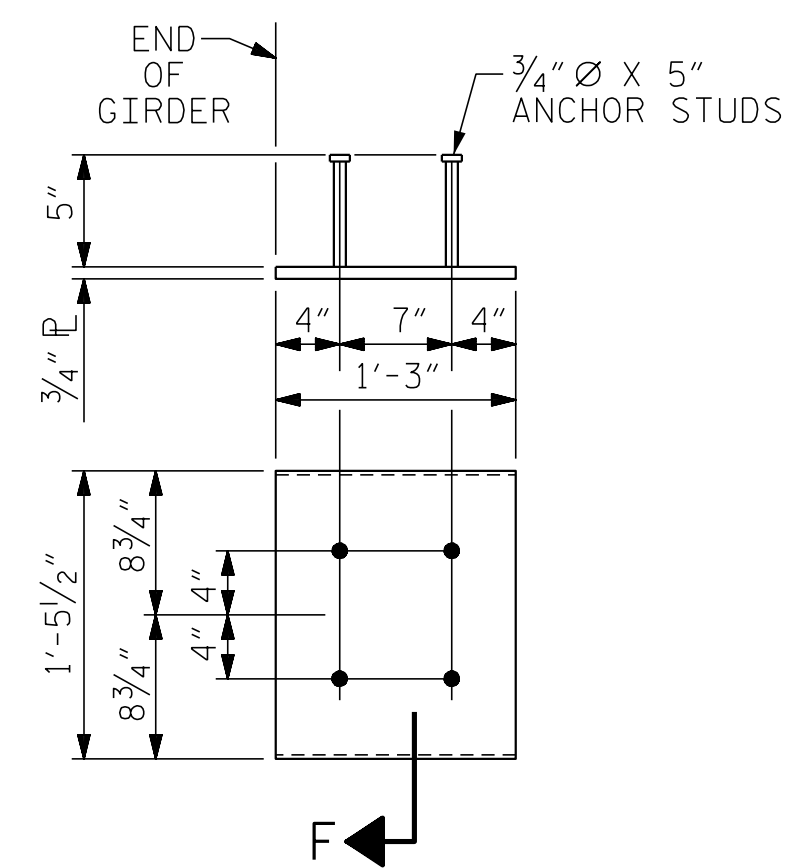
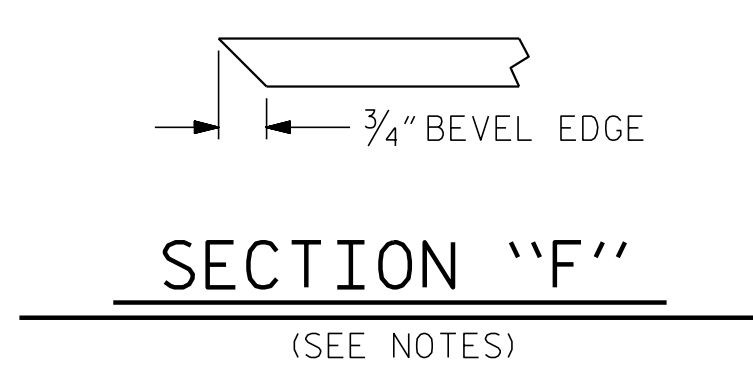
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI FOR SPANS A & C AND 5600 PSI FOR SPAN B.

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

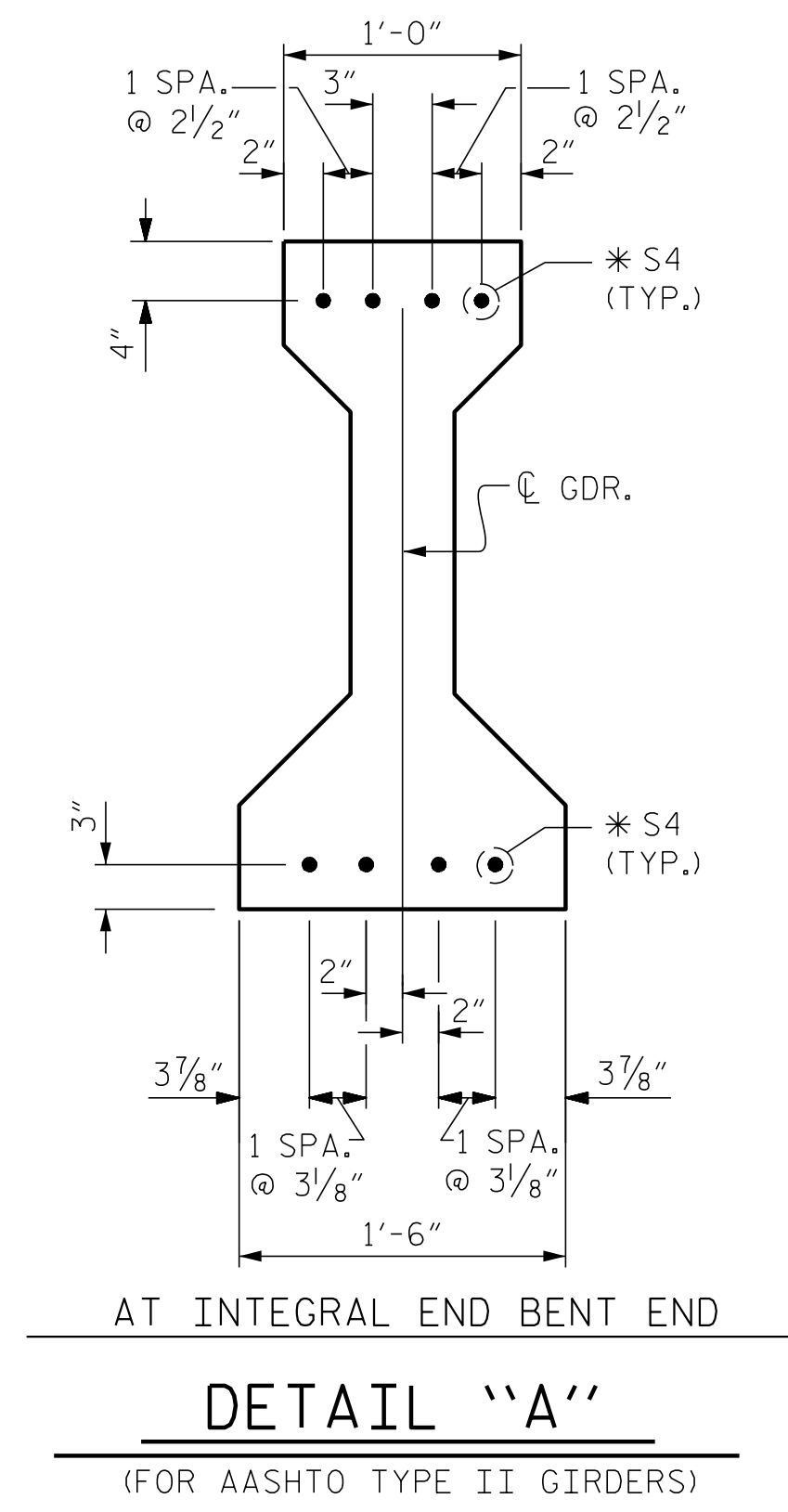
THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4" AND THE PORTION WITHIN THE LINK SLAB AREA, SHALL BE RAKED TO A DEPTH OF 1/4".

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

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



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



\* NOTE: S4 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
0.6" Ø LOW RELAXATION	SPAN A & SPAN C																				
	GIRDERS 1 THRU 5																				
	TWENTIETH POINTS	0	.050	.100	.150	.200	.250	.300	.350	.400	.450	.500	.550	.600	.650	.700	.750	.800	.850	.900	.950
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.006	0.013	0.018	0.024	0.028	0.032	0.036	0.038	0.039	0.040	0.039	0.038	0.036	0.032	0.028	0.024	0.018	0.013	0.006	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.003	0.005	0.008	0.010	0.012	0.015	0.016	0.017	0.018	0.018	0.018	0.017	0.016	0.015	0.012	0.010	0.008	0.005	0.003	0
FINAL CAMBER ↑	0	1/16"	1/16"	1/8"	3/16"	3/16"	3/16"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	3/16"	3/16"	3/16"	1/8"	1/16"	1/16"	0

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
0.6" Ø LOW RELAXATION	SPAN B																				
	GIRDERS 1 THRU 5																				
	TWENTIETH POINTS	0	.050	.100	.150	.200	.250	.300	.350	.400	.450	.500	.550	.600	.650	.700	.750	.800	.850	.900	.950
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.016	0.032	0.046	0.059	0.072	0.082	0.090	0.095	0.099	0.100	0.099	0.095	0.090	0.082	0.072	0.059	0.046	0.032	0.016	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.010	0.019	0.029	0.039	0.046	0.054	0.059	0.064	0.065	0.067	0.065	0.064	0.059	0.054	0.046	0.039	0.029	0.019	0.010	0
FINAL CAMBER ↑	0	1/16"	1/8"	3/16"	1/4"	5/16"	5/16"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	5/16"	5/16"	1/4"	3/16"	1/8"	1/16"	0

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

PROJECT NO. BR-0062  
ANSON COUNTY  
STATION: 18+07.50 -L-

SHEET 5 OF 5

ASSEMBLED BY : D. HODGE	DATE : 5/23
CHECKED BY : G. GILLAND	DATE : 7/23
DRAWN BY : ELR 11/91	REV. 1/15 MAA/TMG
CHECKED BY : GRP 11/91	REV. 2/15 MAA/TMG
	REV. 12/17 MAA/THC

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ENGINEER OF RECORD  
1/22/2024  
NORTH CAROLINA PROFESSIONAL SEAL  
37400  
ENGINEER  
GREGORY M. GILLAND  
Designed by  
Gregory M. Gilland  
ETHERILL ENGINEERING  
1223 Jones Franklin Rd.  
Raleigh, N.C. 27606  
Bus: 919 851 8077  
Fax: 919 851 8107  
LICENSE NO. F-0377

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
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.

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.

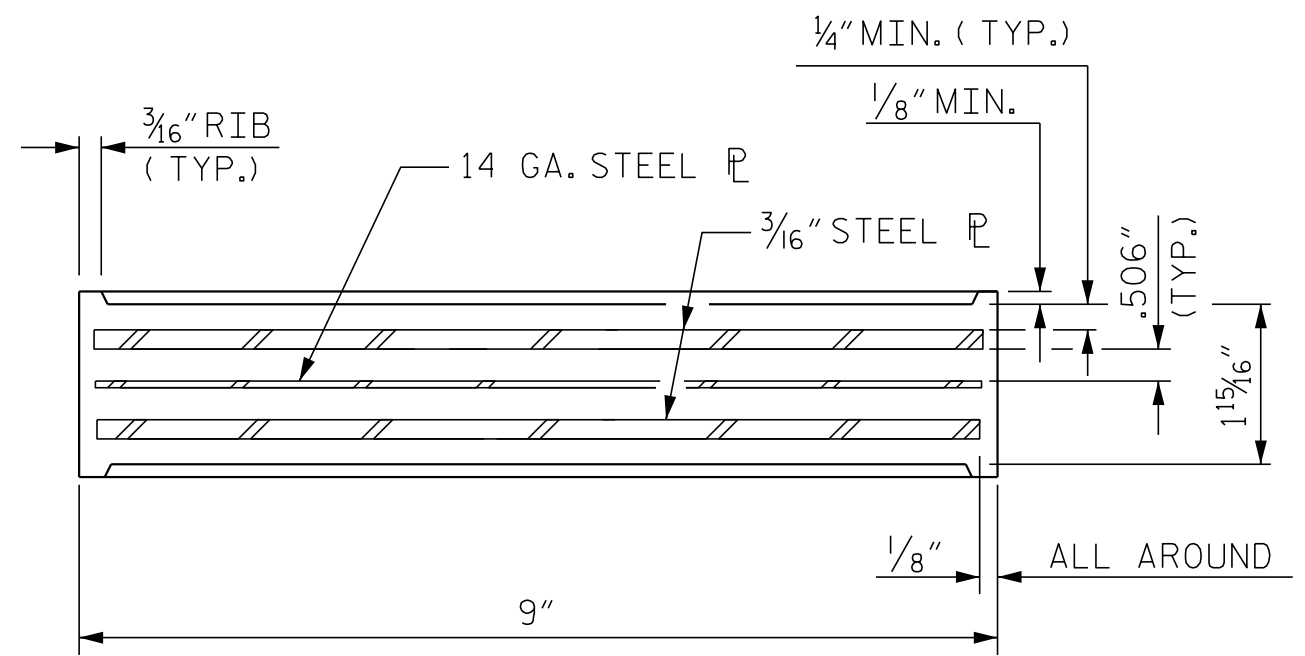
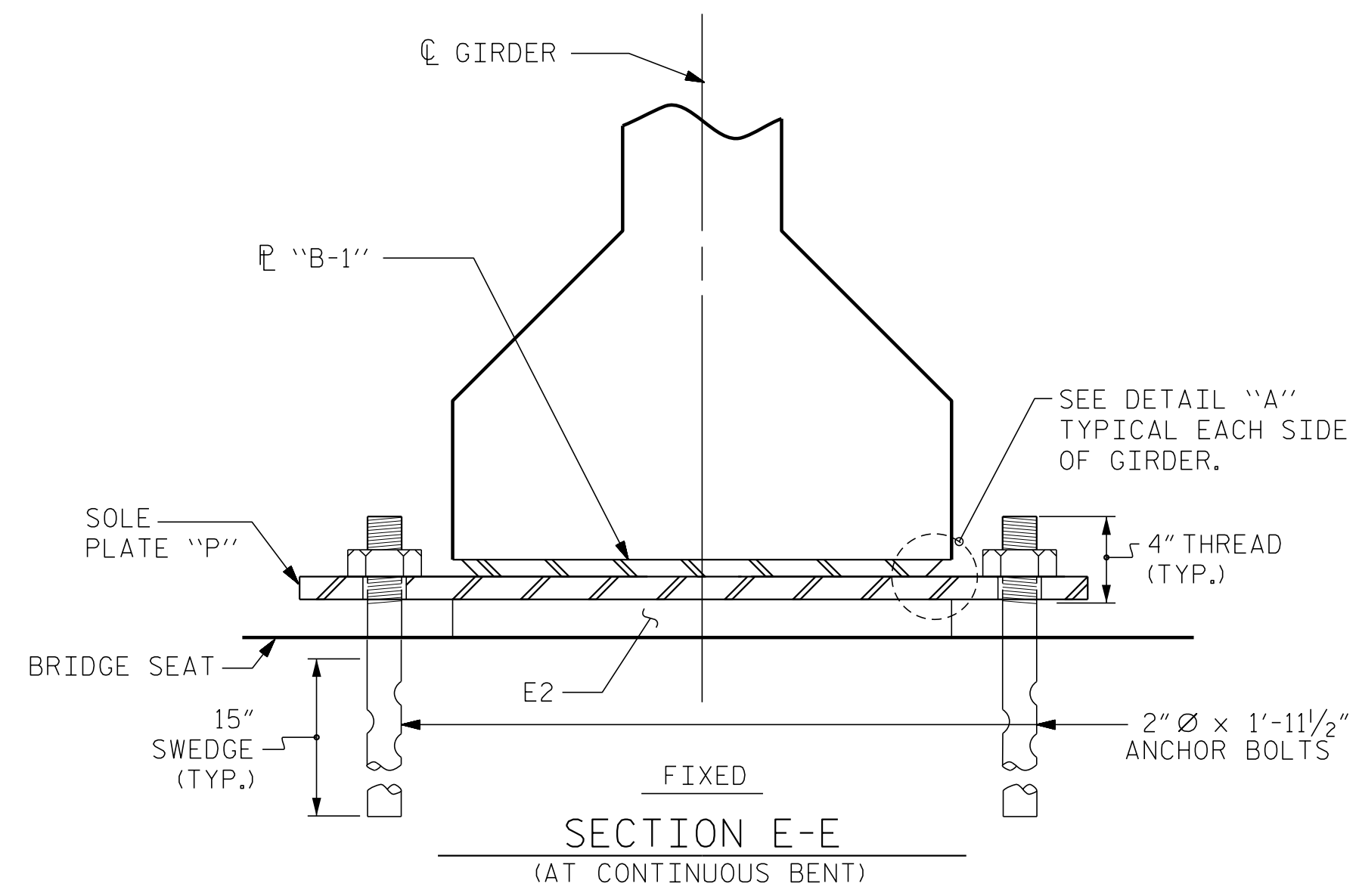
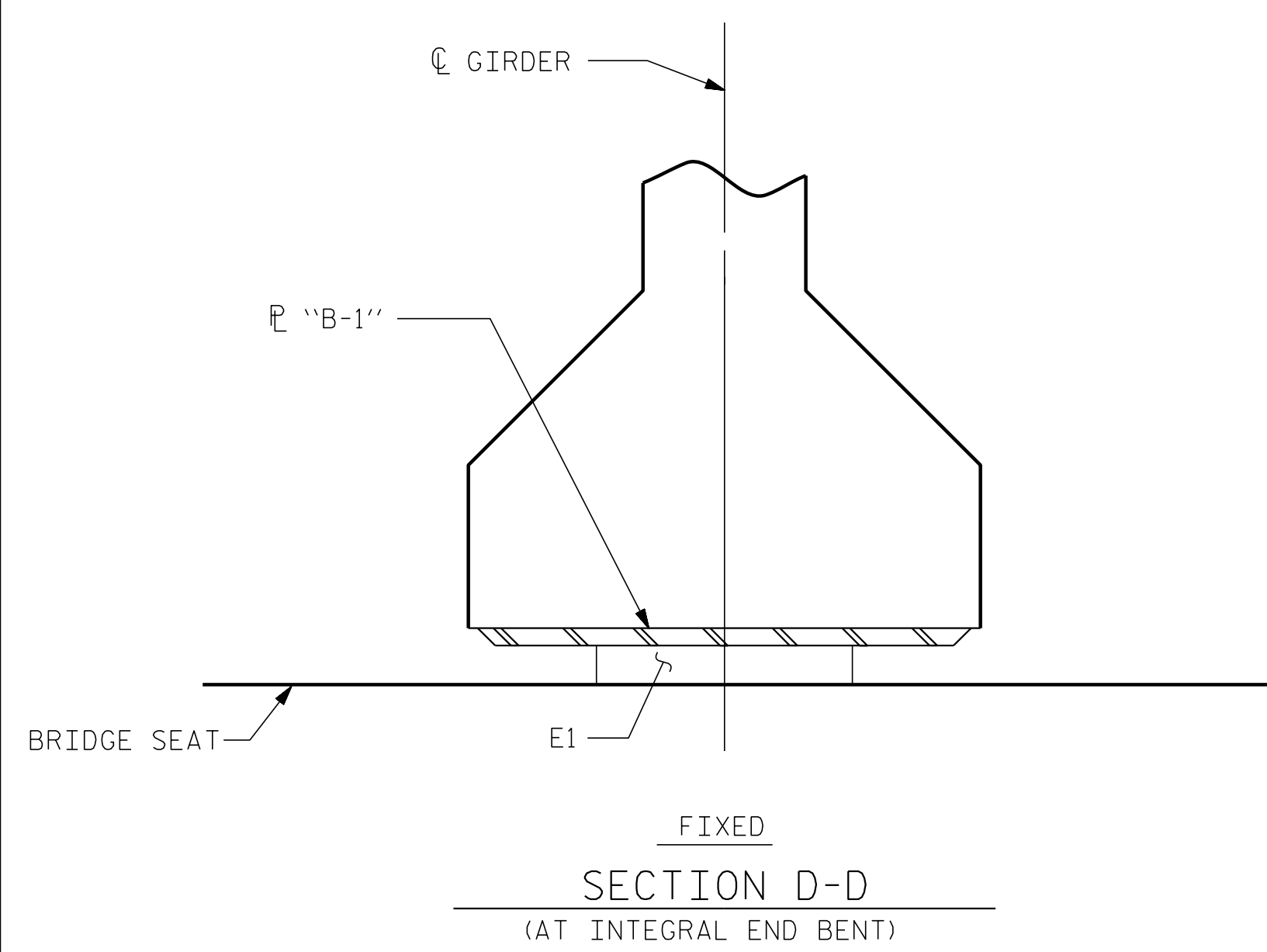
SOLE PLATE "P", BOLTS, NUTS, AND WASHERS SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

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.

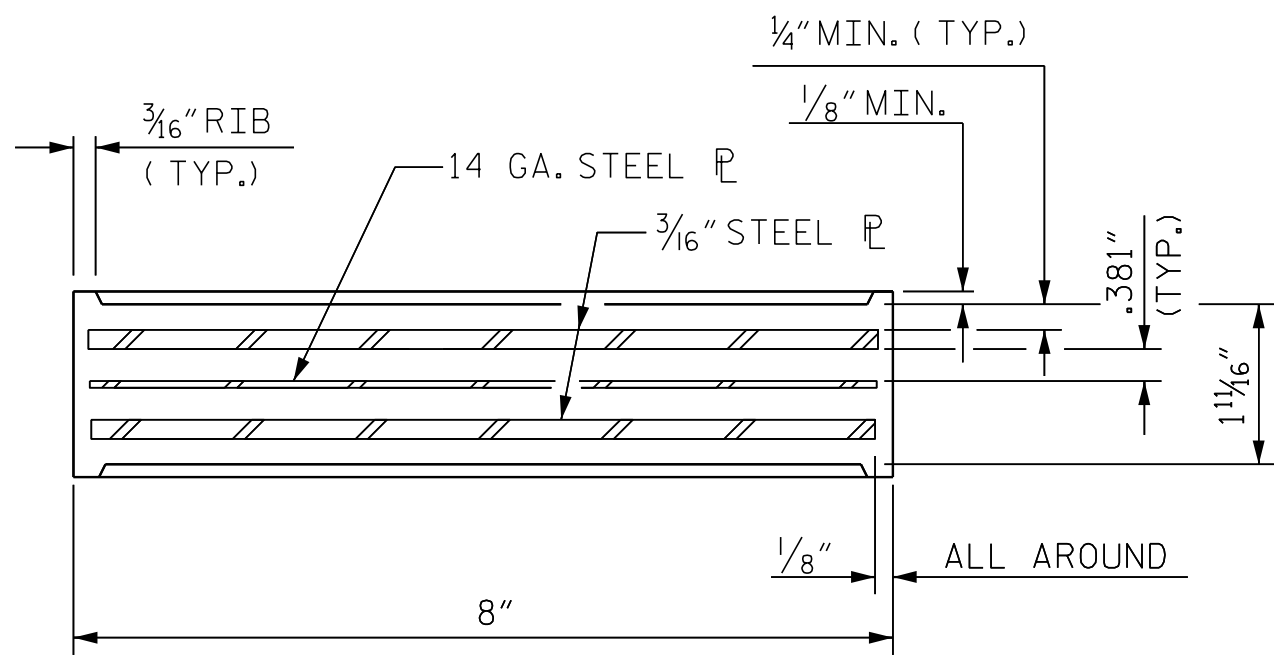
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

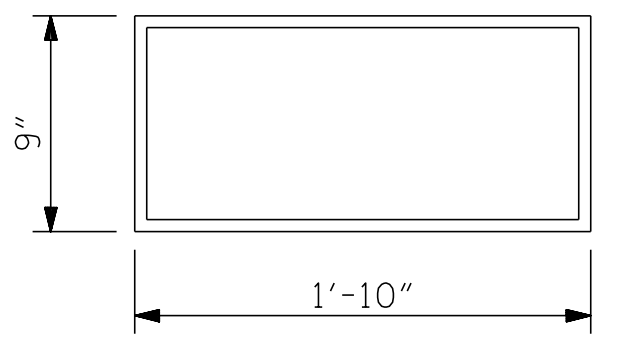
ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



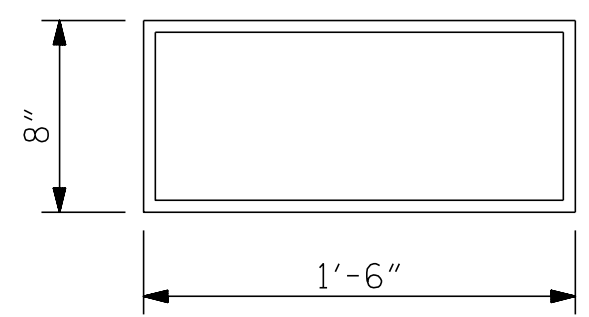
TYPICAL SECTION OF ELASTOMERIC BEARINGS



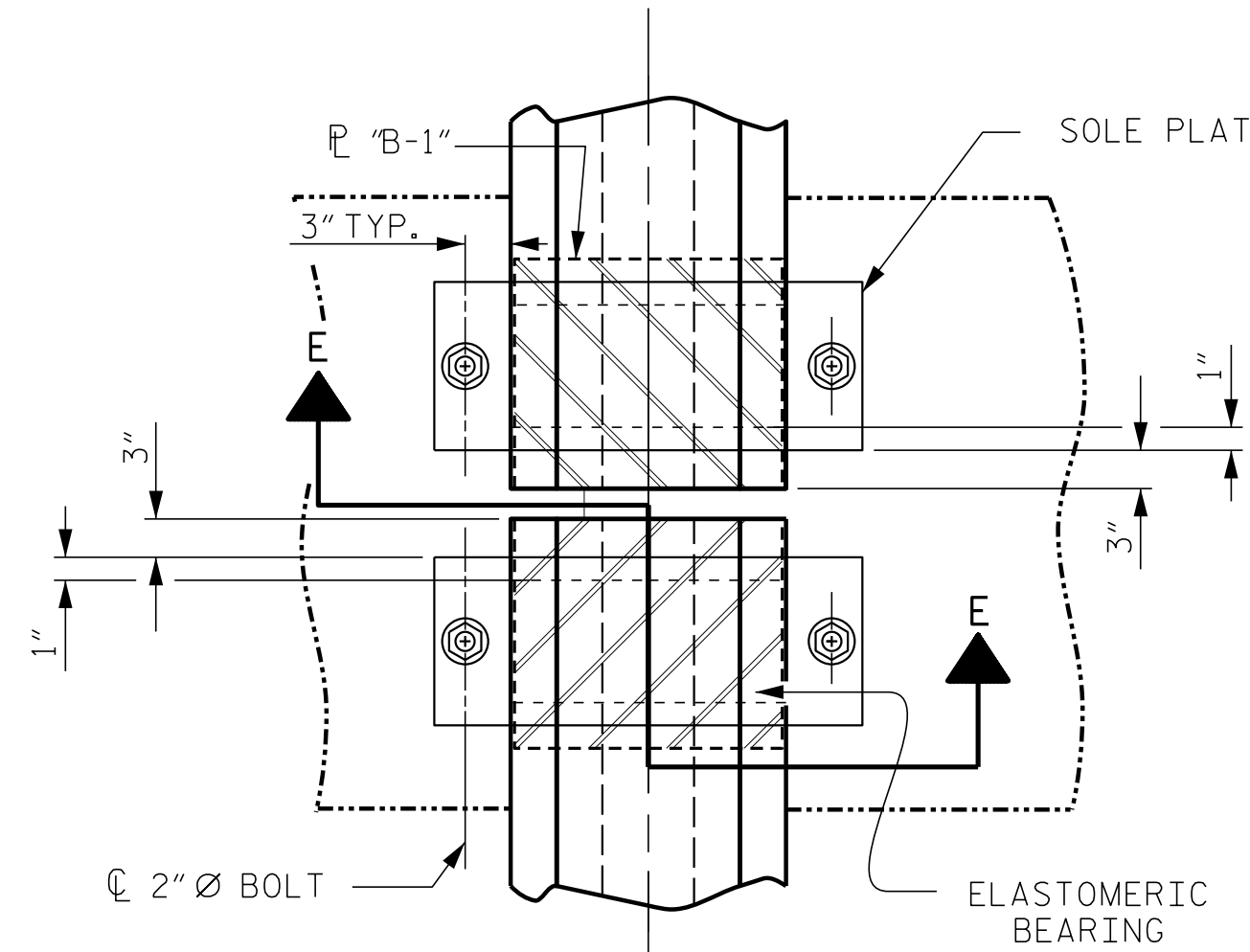
TYPICAL SECTION OF ELASTOMERIC BEARINGS



E1 (10 REQ'D)  
PLAN VIEW OF ELASTOMERIC BEARING  
TYPE IV

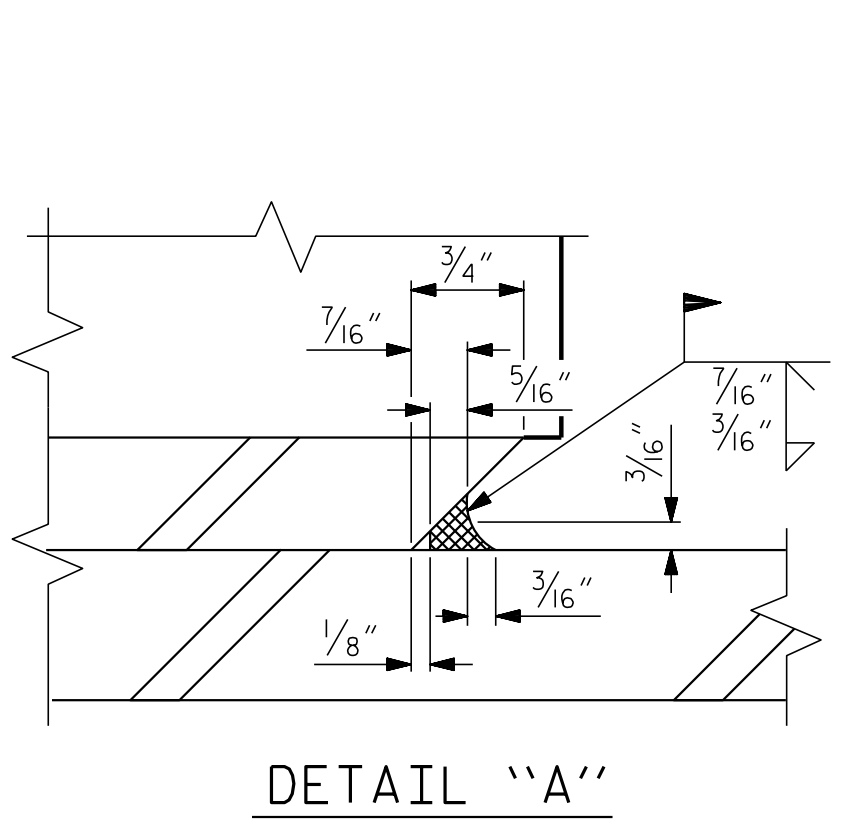


E2 (20 REQ'D)  
PLAN VIEW OF ELASTOMERIC BEARING  
TYPE III

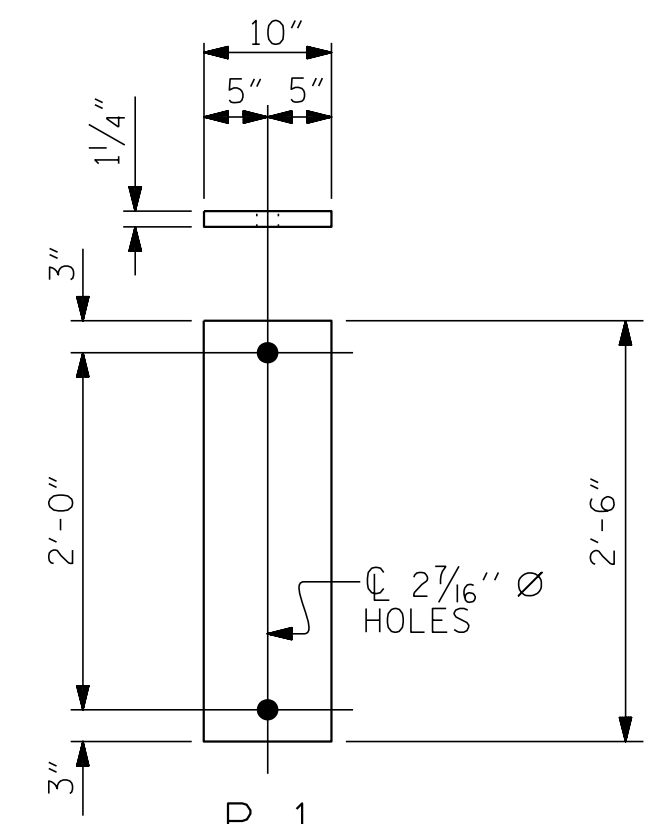


TYPICAL HALF-PLAN  
(SHOWING LINK SLAB BENT)

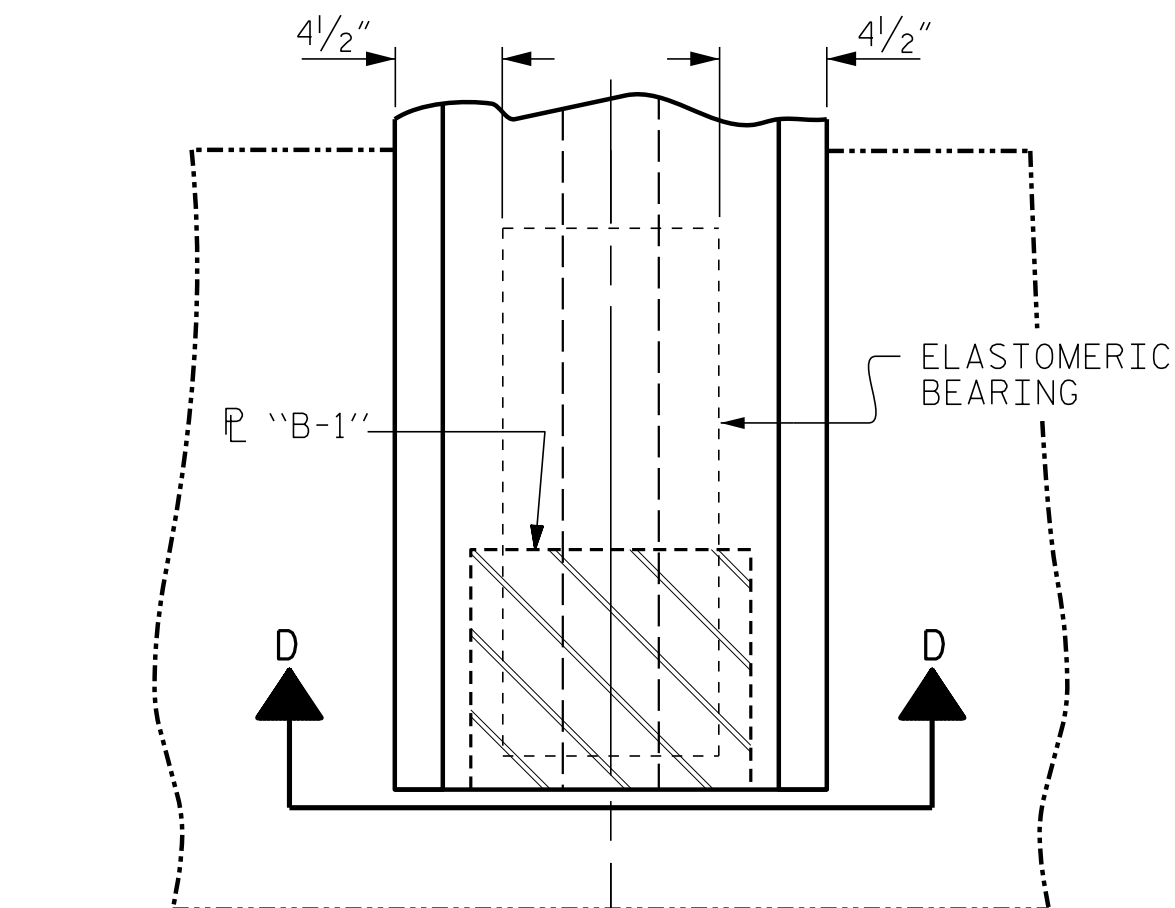
MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE III	205 k
TYPE IV	225 k



DETAIL "A"



P 1 (FIXED)  
P1 (20 REQ'D)  
SOLE PLATE DETAILS ("P")



TYPICAL PLAN OF INTEGRAL END BENT

PROJECT NO. BR-0062  
ANSON COUNTY  
STATION: 18+07.50 -L-

ENGINEER OF RECORD  
4/2/2024  
NORTH CAROLINA PROFESSIONAL SEAL 37400  
ENGINEER  
GREGORY M. GILLAND  
GREGORY M. GILLAND  
ETHERILL ENGINEERING  
1223 Jones Franklin Rd.  
Raleigh, N.C. 27606  
Bus: 919 851 8077  
Fax: 919 851 8107  
LICENSE NO. F-0377

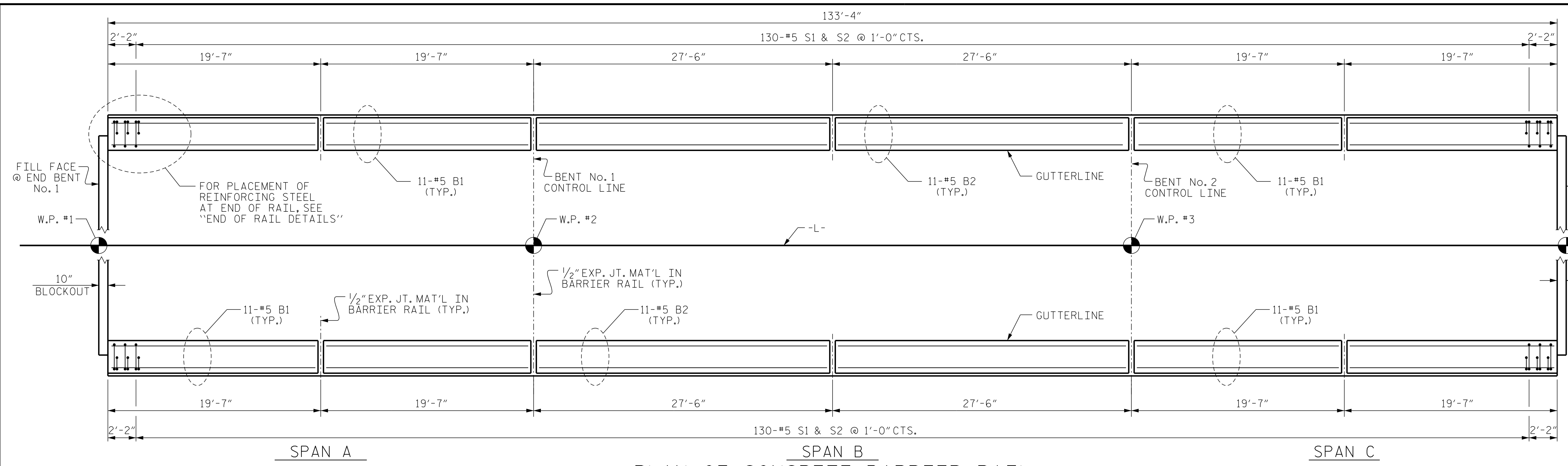
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
ELASTOMERIC BEARING  
DETAILS  
PRESTRESSED CONCRETE GIRDER  
SUPERSTRUCTURE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			35

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

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ASSEMBLED BY : J. PENDERGRAFT	DATE : 11-22
CHECKED BY : J. DILWORTH	DATE : 11-22
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

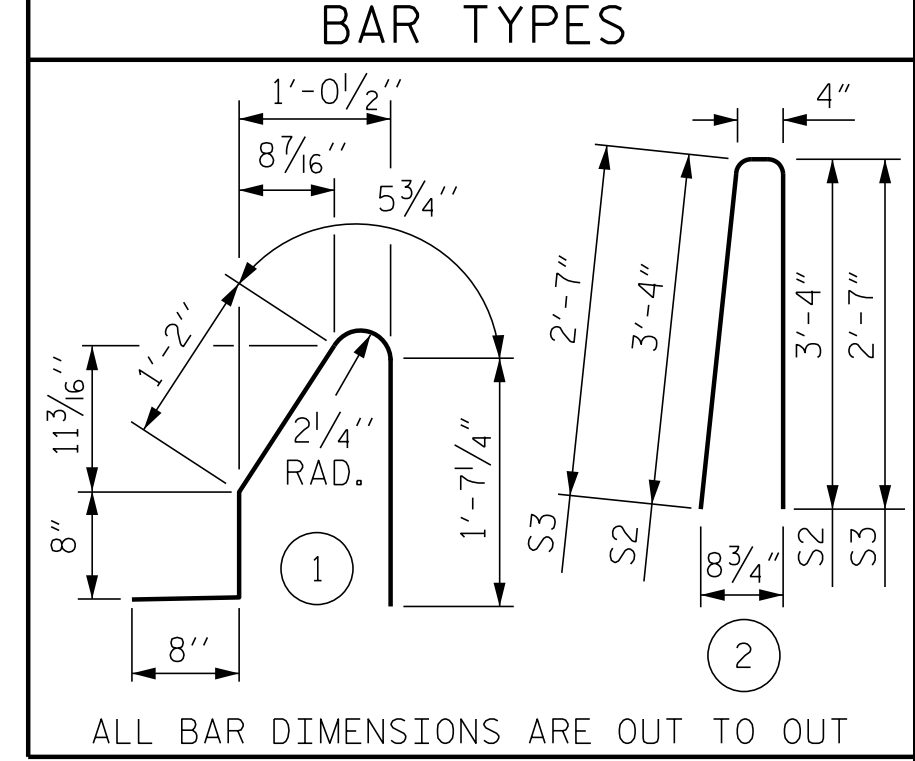


PLAN OF CONCRETE BARRIER RAIL

**BILL OF MATERIAL**  
 FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* S1	268	#5	1	4'-7"	1281
* S2	260	#5	2	7'-0"	1898
* S3	8	#5	2	5'-6"	46
* B1	88	#5	STR	19'-2"	1759
* B2	44	#5	STR	27'-1"	1242

\* EPOXY COATED REINFORCING STEEL 6226 LBS.  
 CLASS AA CONCRETE 36.2 CU. YDS.  
 CONCRETE BARRIER RAIL 266.67' LIN. FT.



**NOTES**

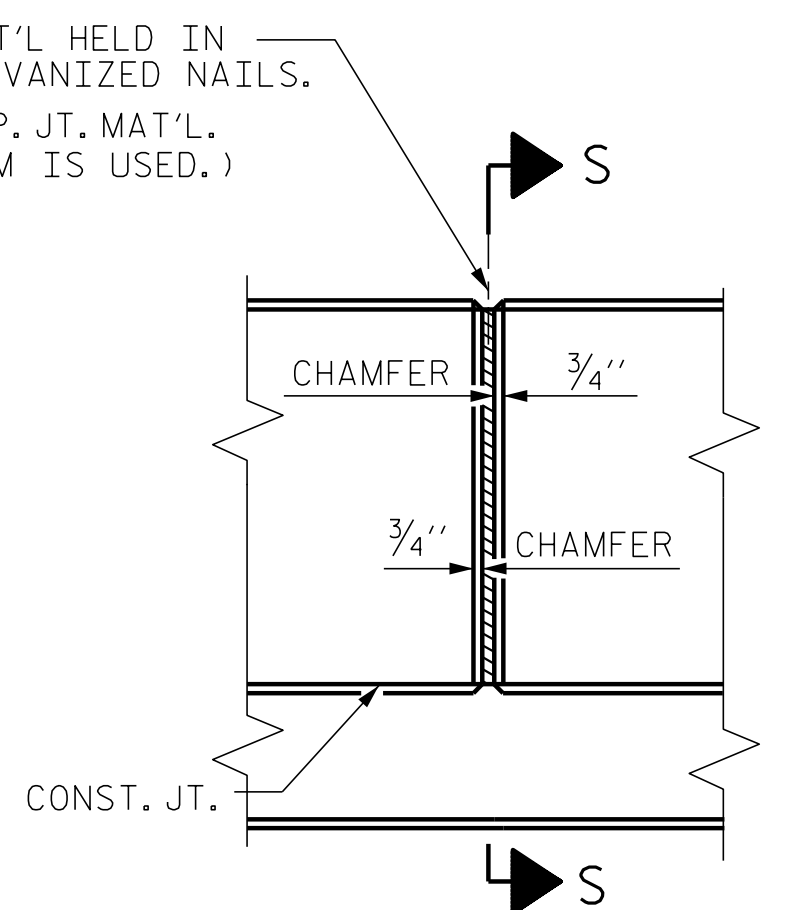
THE BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

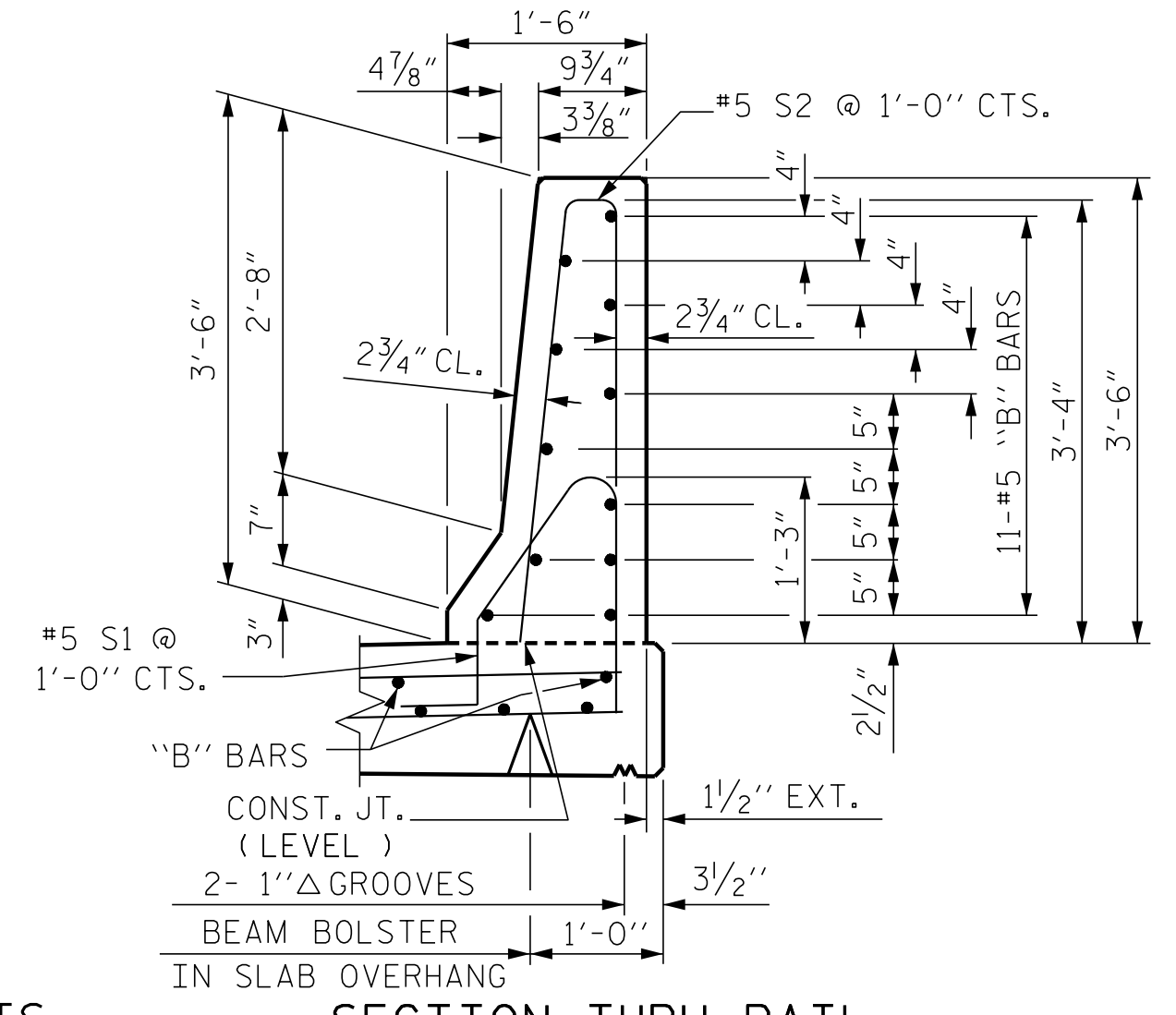
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS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

THE #5 S1 & S2 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN THE BARRIER RAIL.

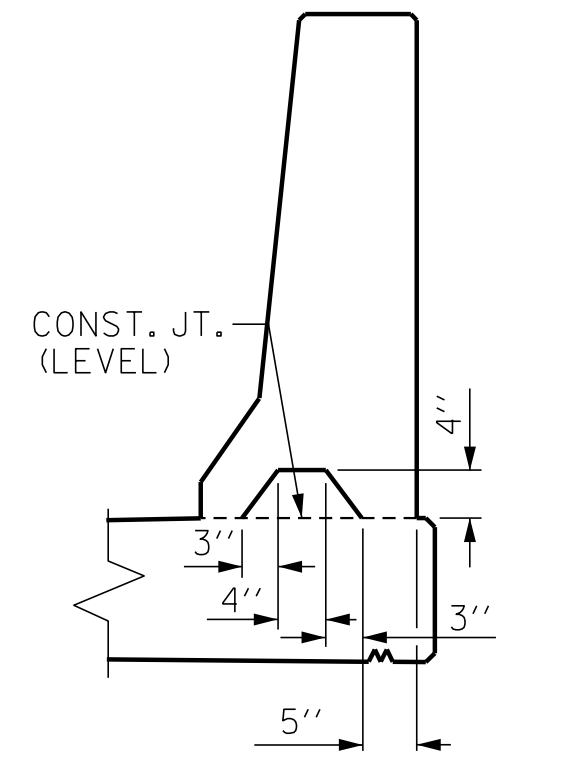
1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS.  
 (NOTE: OMIT EXP. JT. MAT'L WHEN SLIP FORM IS USED.)



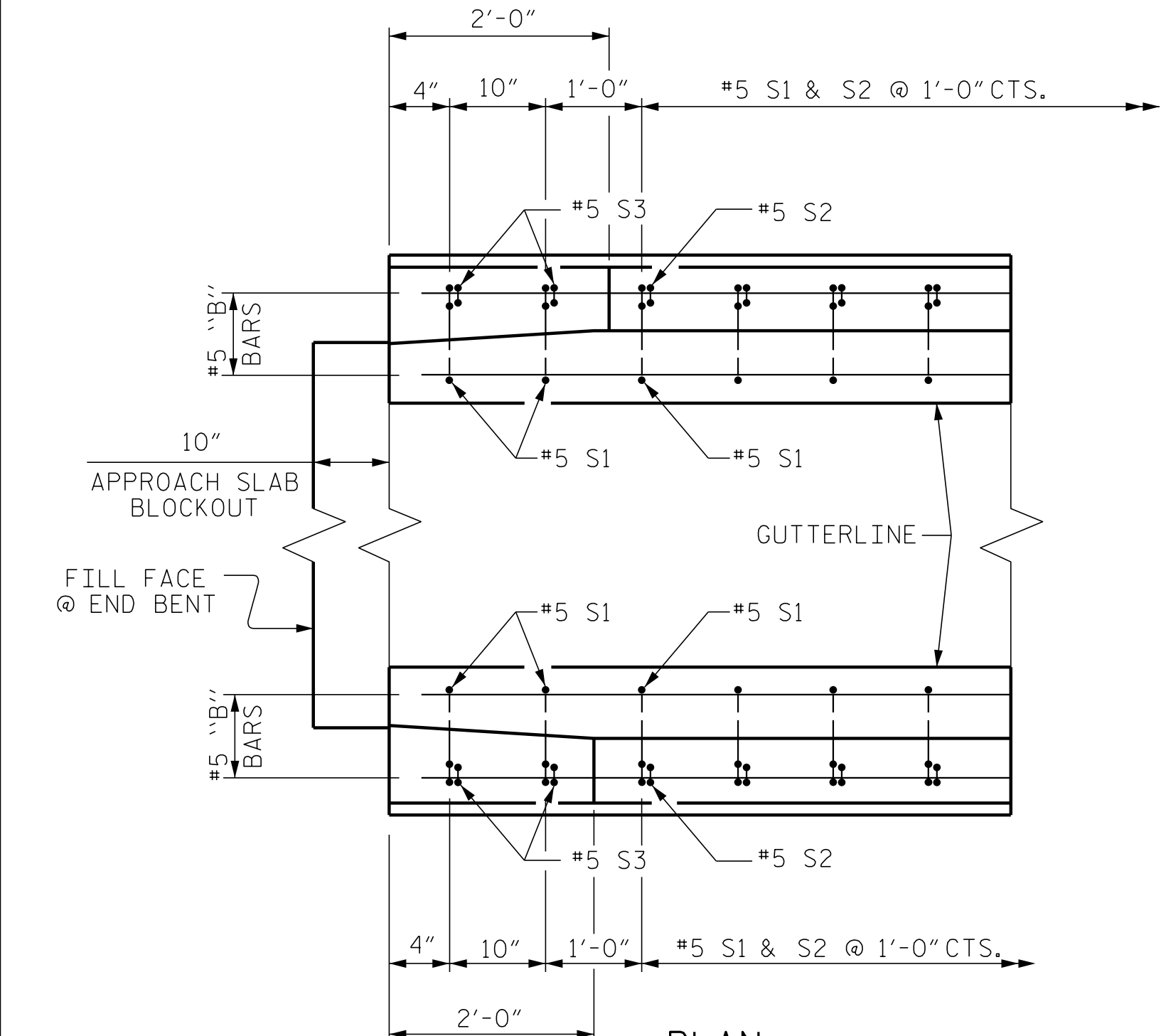
ELEVATION AT EXPANSION JOINTS



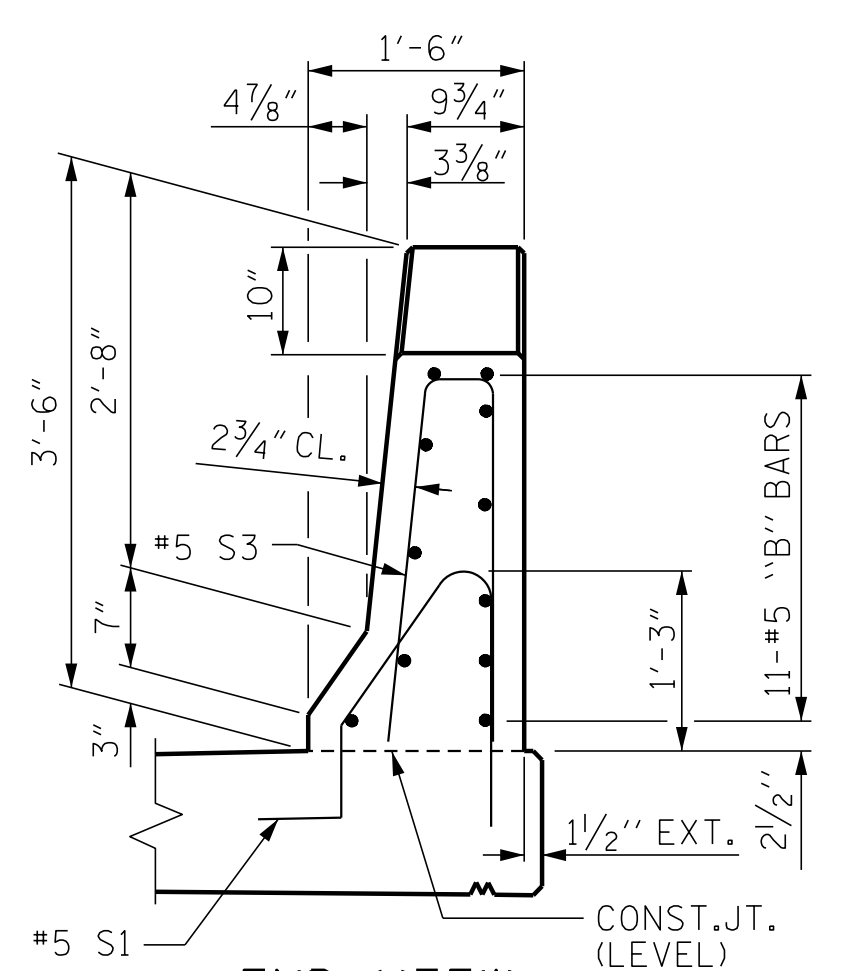
SECTION THRU RAIL BARRIER RAIL DETAILS



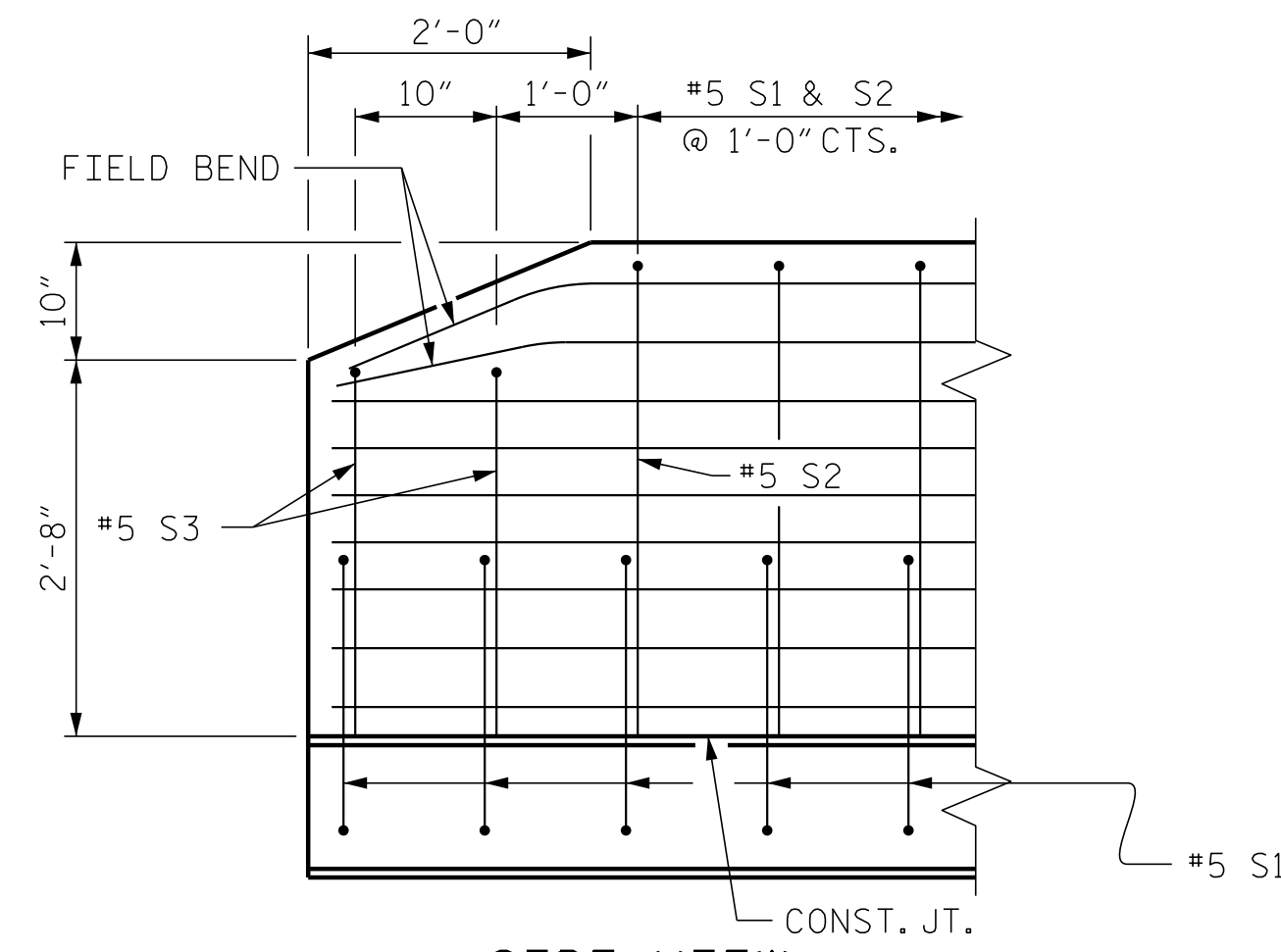
SECTION S-S AT DAM IN OPEN JOINT (THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



PLAN



END VIEW END OF RAIL DETAILS

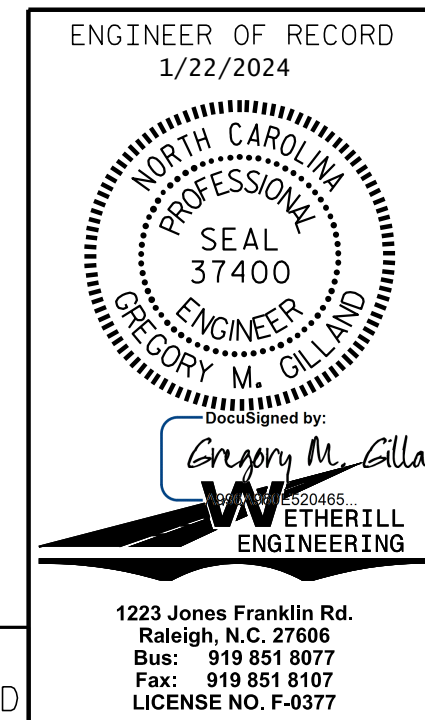


SIDE VIEW

ASSEMBLED BY: J. PENDERGRAFT DATE: 11-22  
 CHECKED BY: J. DILWORTH DATE: 11-22

DRAWN BY: ARB 5/87 REV. 7/12 MAA/GM  
 1/19/2024 9:29:48 AM REV. 6/13 MAA/GM  
 CHECKED BY: SJD 9/87 REV. 12/17 MAA/THC

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PROJECT NO. BR-0062  
 ANSON COUNTY  
 STATION: 18+07.50 -L-

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS 35
2			4			



NOTES

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

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 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.)

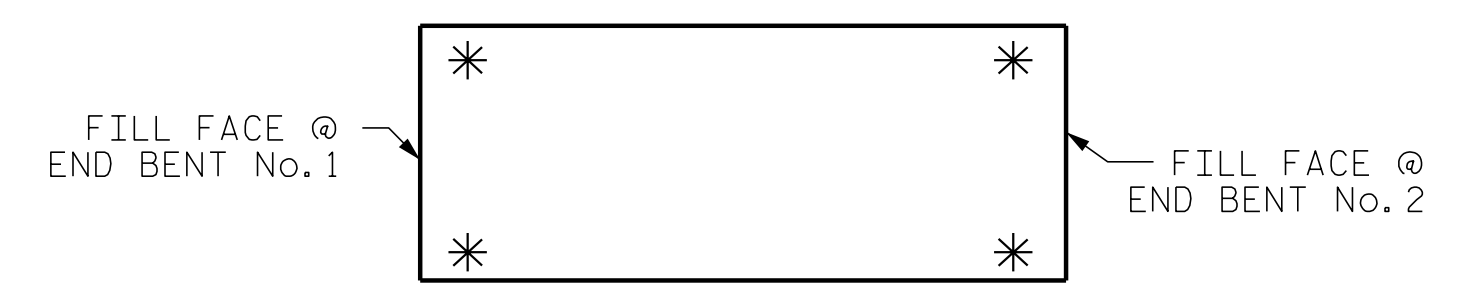
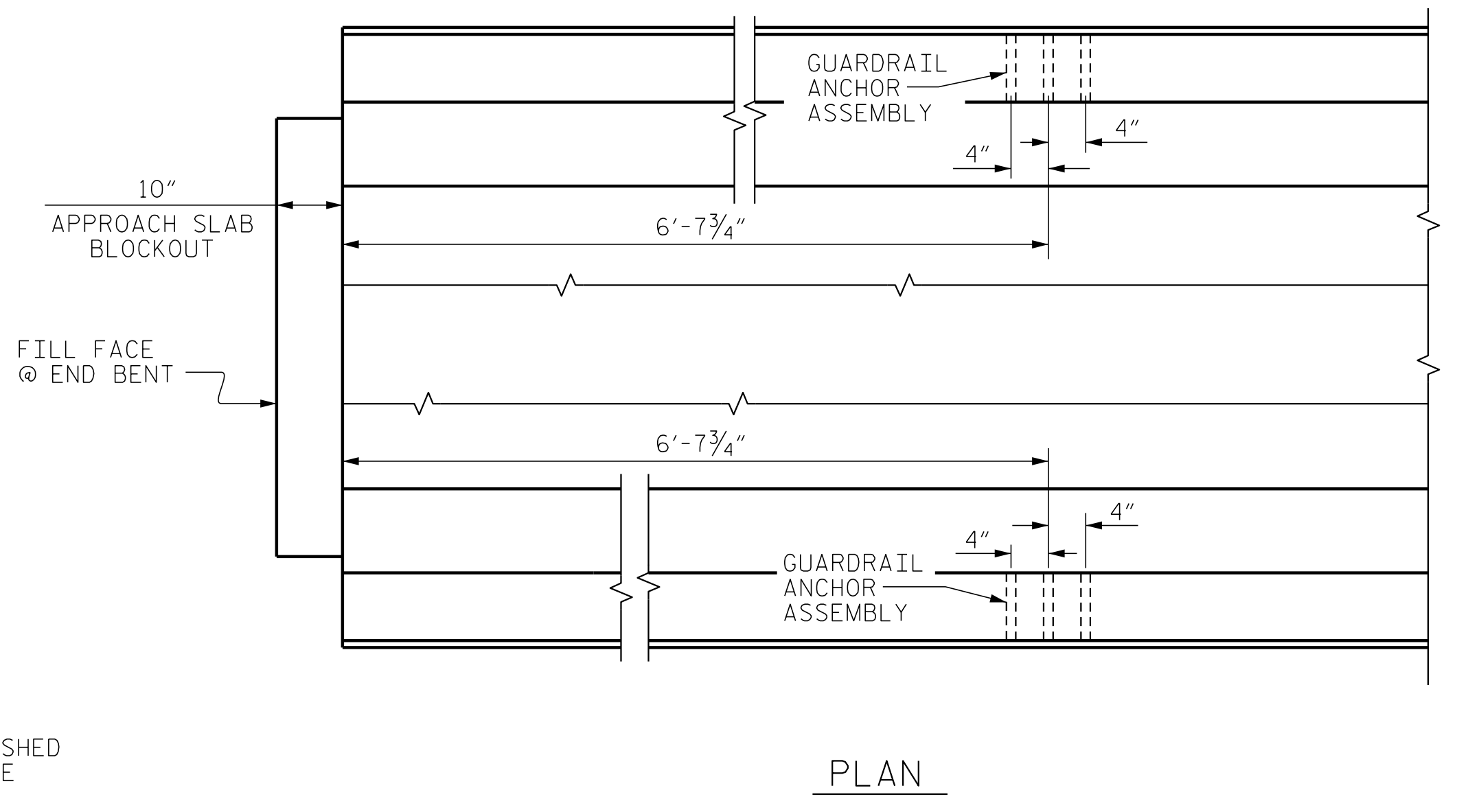
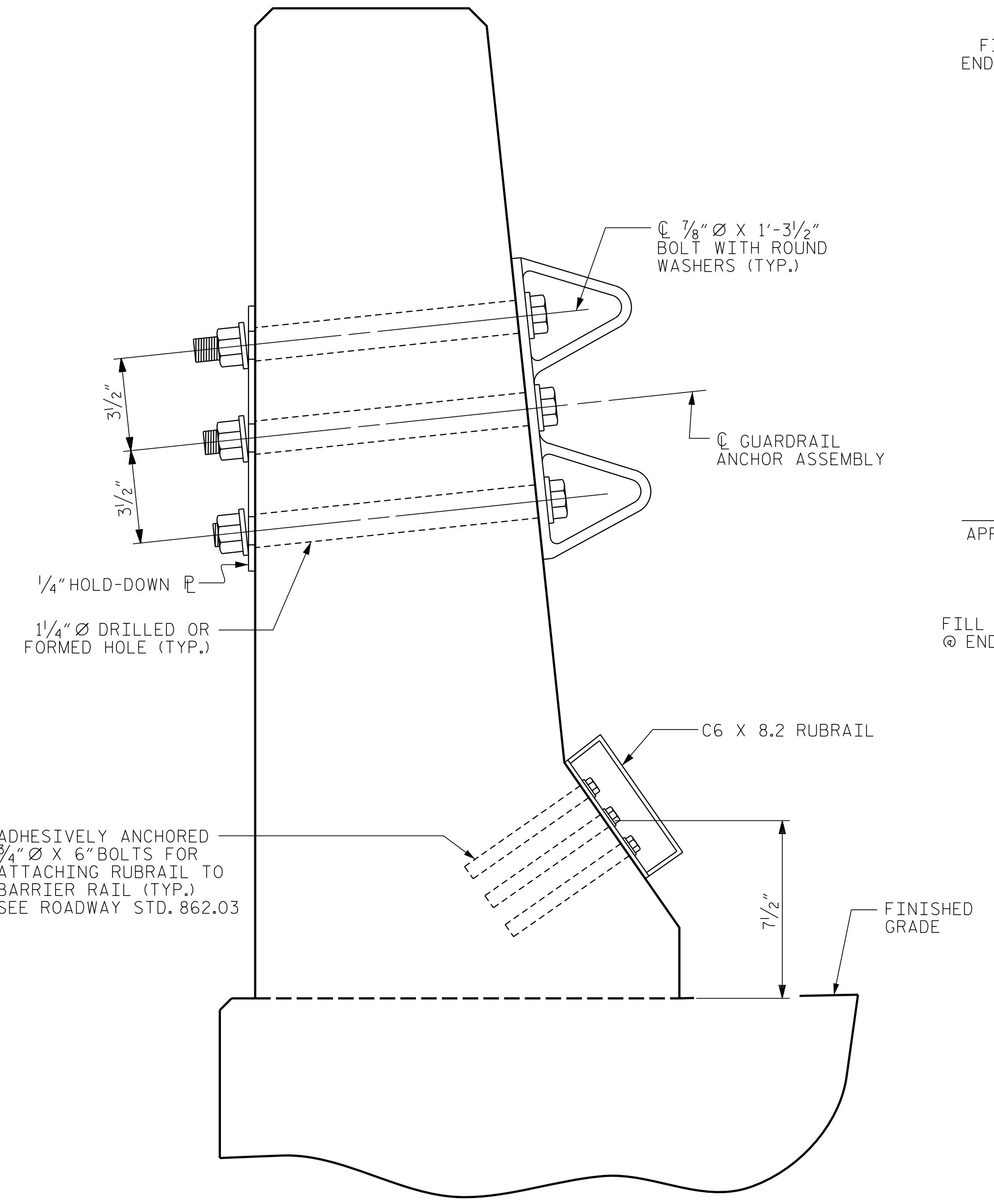
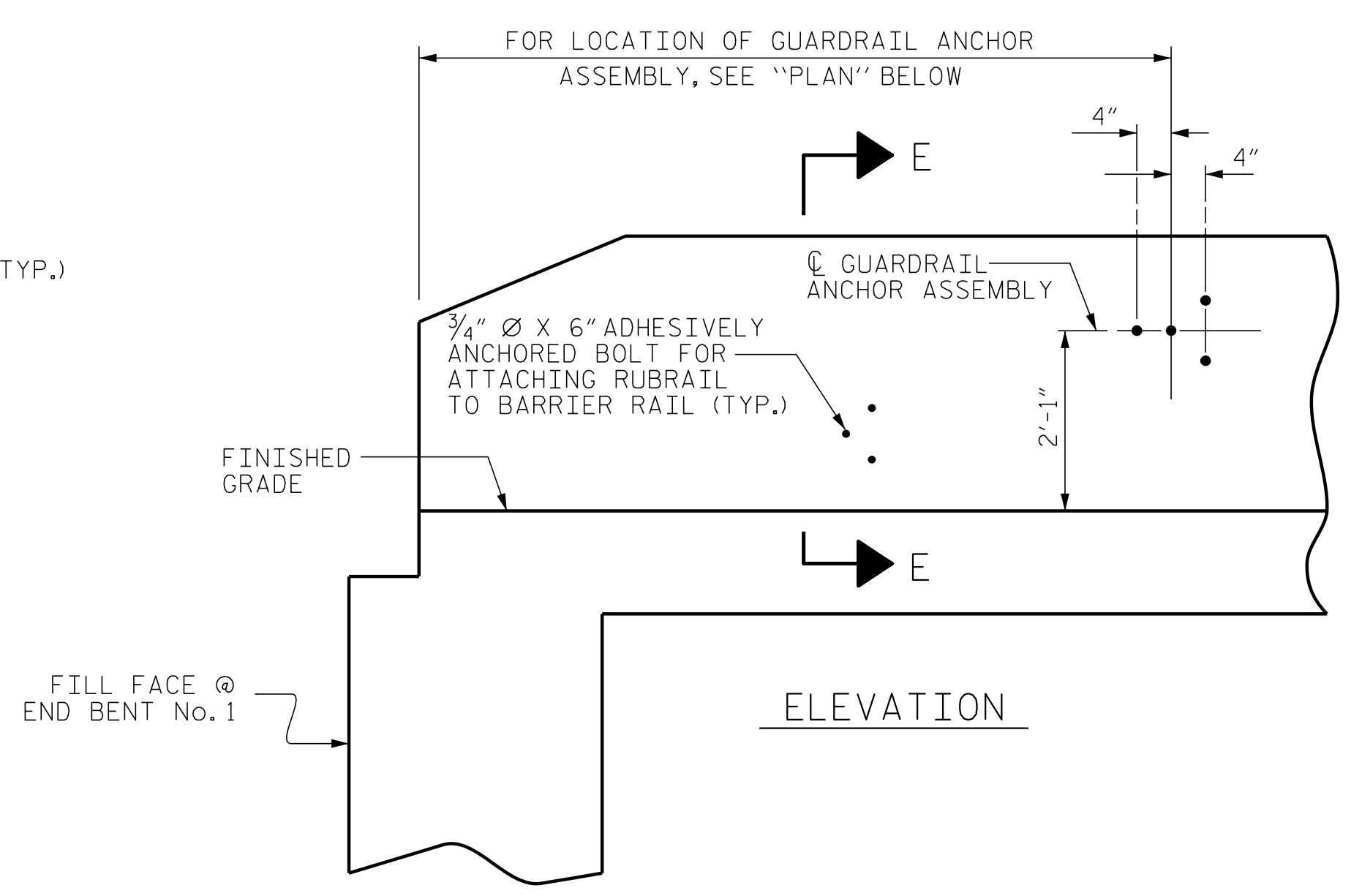
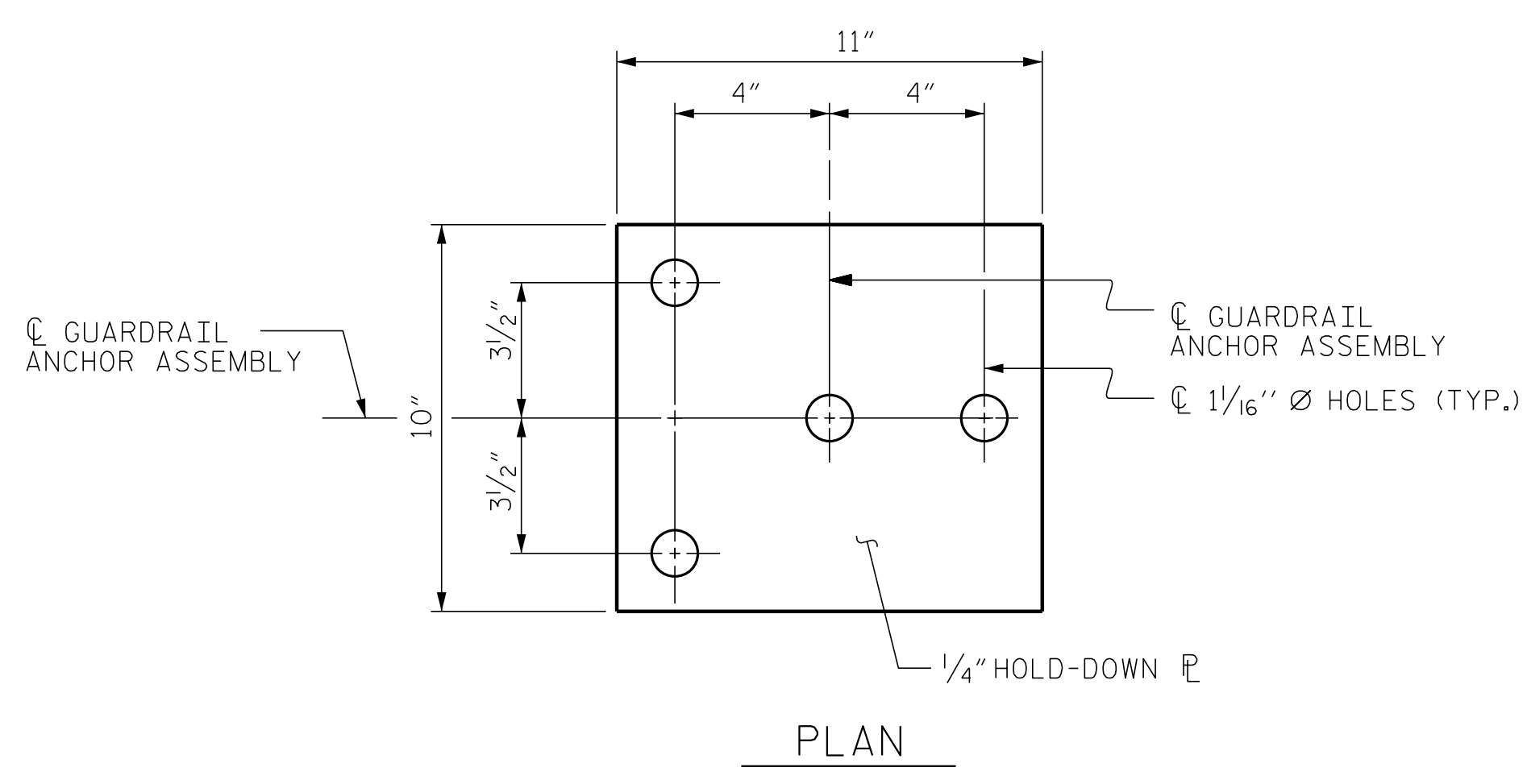
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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 CONCRETE BARRIER RAIL.

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

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



SKETCH SHOWING POINTS OF ATTACHMENTS  
\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

LOCATION OF ANCHORS FOR GUARDRAIL

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

PROJECT NO. BR-0062  
ANSON COUNTY  
STATION: 18+07.50 -L-

SECTION E-E  
GUARDRAIL ANCHOR ASSEMBLY DETAILS

ASSEMBLED BY : J. PENDERGRAFT	DATE : 11-22
CHECKED BY : J. DILWORTH	DATE : 11-22
DRAWN BY : TLA 5/06	REV. 7/12 MAA/GM
CHECKED BY : GM 5/06	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

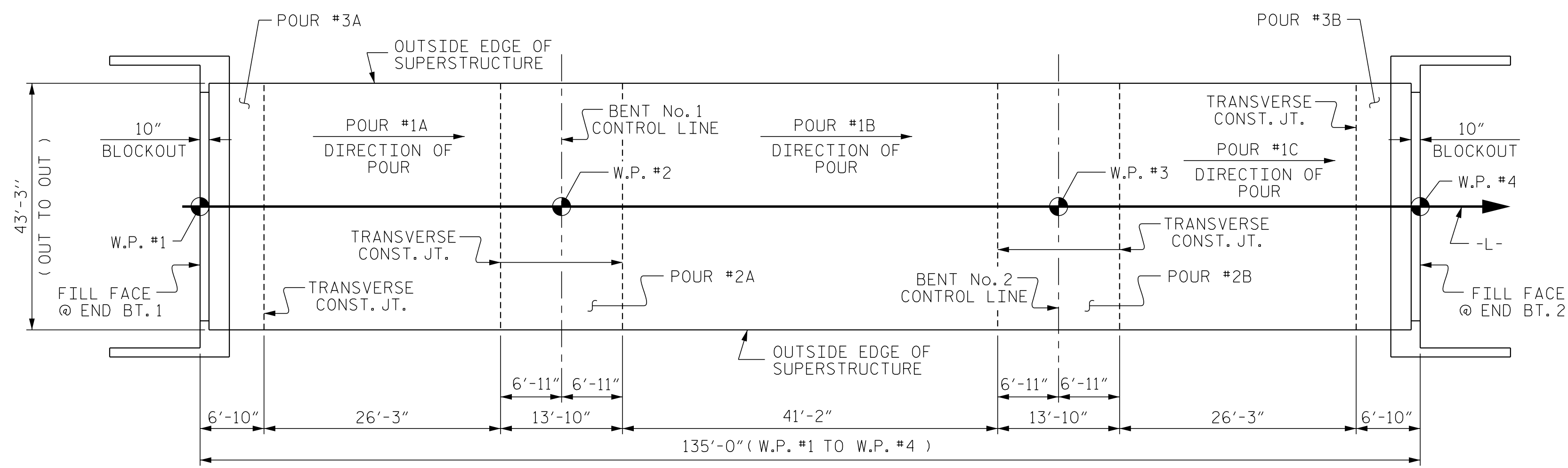
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD  
1/22/2024  
NORTH CAROLINA PROFESSIONAL SEAL 37400  
ENGINEER  
GREGORY M. GILLAND  
GREGORY M. GILLAND  
ETHERILL ENGINEERING  
1223 Jones Franklin Rd.  
Raleigh, N.C. 27606  
Bus: 919 851 8077  
Fax: 919 851 8107  
LICENSE NO. F-0377

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

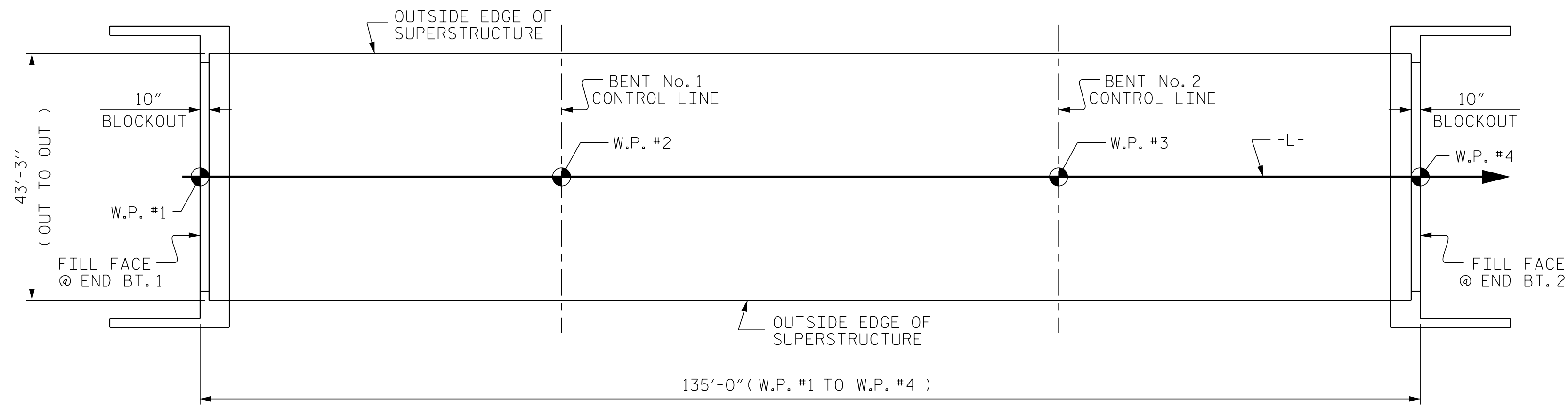
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			35

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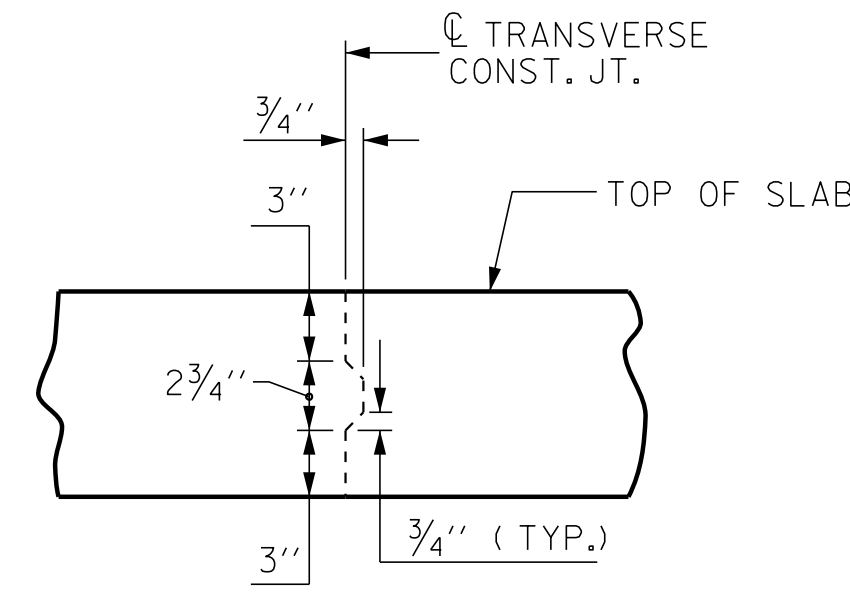
**POUR SEQUENCE SKETCH**

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



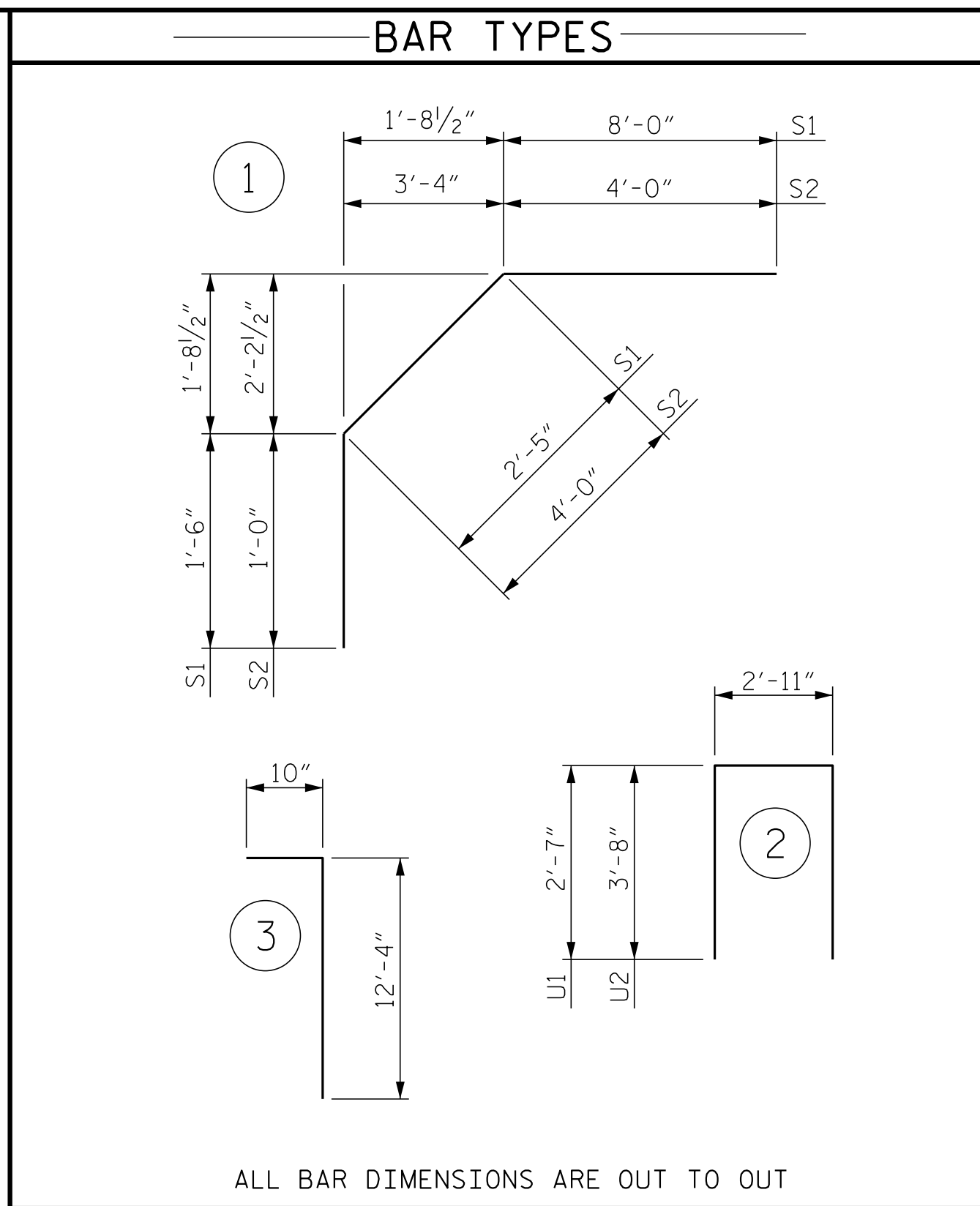
**LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB**  
(SQ. FT. = 5,839)

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



**TRANSVERSE CONSTRUCTION JOINT DETAIL**

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



**SUPERSTRUCTURE BILL OF MATERIAL**

	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	* EPOXY COATED REINFORCING STEEL (LBS.)
TOTALS**	219.3	23,775	21,007

\*\* QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

**CONCRETE BREAKDOWN**

	CLASS AA CONCRETE (CU. YDS.)
POUR #1A	34.8
POUR #1B	54.7
POUR #1C	34.8
POUR #2A	18.4
POUR #2B	18.4
POUR #3A	29.1
POUR #3B	29.1
TOTALS **	219.3

\*\* QUANTITIES FOR BARRIER RAILS ARE NOT INCLUDED

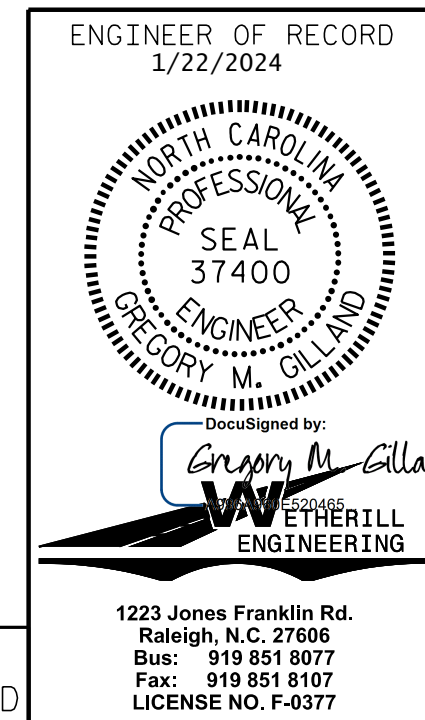
**BILL OF MATERIAL**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	266	#5	STR	42'-11"	11,907
A2	266	#5	STR	42'-11"	11,907
*B1	164	#6	STR	8'-0"	1,971
*B2	56	#4	STR	18'-1"	676
*B3	56	#5	STR	38'-6"	2,249
*B4	108	#5	STR	24'-3"	2,732
*B5	28	#4	STR	15'-10"	296
*B6	8	#4	STR	34'-9"	186
B7	168	#5	STR	45'-8"	8,002
B8	100	#4	STR	29'-0"	1,937
H1	48	#5	3	13'-2"	659
K1	16	#4	STR	25'-3"	270
K2	8	#4	STR	7'-5"	40
K3	16	#4	STR	8'-3"	88
K4	8	#4	STR	7'-11"	42
K5	4	#4	STR	5'-0"	13
K6	8	#4	STR	5'-5"	29
K7	4	#4	STR	5'-3"	14
K8	20	#4	STR	2'-8"	36
*S1	76	#4	1	11'-11"	605
*S2	64	#4	1	9'-0"	385
U1	76	#4	2	8'-1"	410
U2	12	#4	2	10'-3"	82
V1	96	#4	STR	3'-10"	246

REINFORCING STEEL	LBS.	23,775
*EPOXY COATED REINFORCING STEEL	LBS.	21,007
* THESE BARS ARE EPOXY COATED.		

GROOVING BRIDGE FLOORS	
APPROACH SLABS	1,801 SQ.FT.
BRIDGE DECK	4,933 SQ.FT.
TOTAL	6,734 SQ.FT.

PROJECT NO. BR-0062  
ANSON COUNTY  
STATION: 18+07.50 -L-



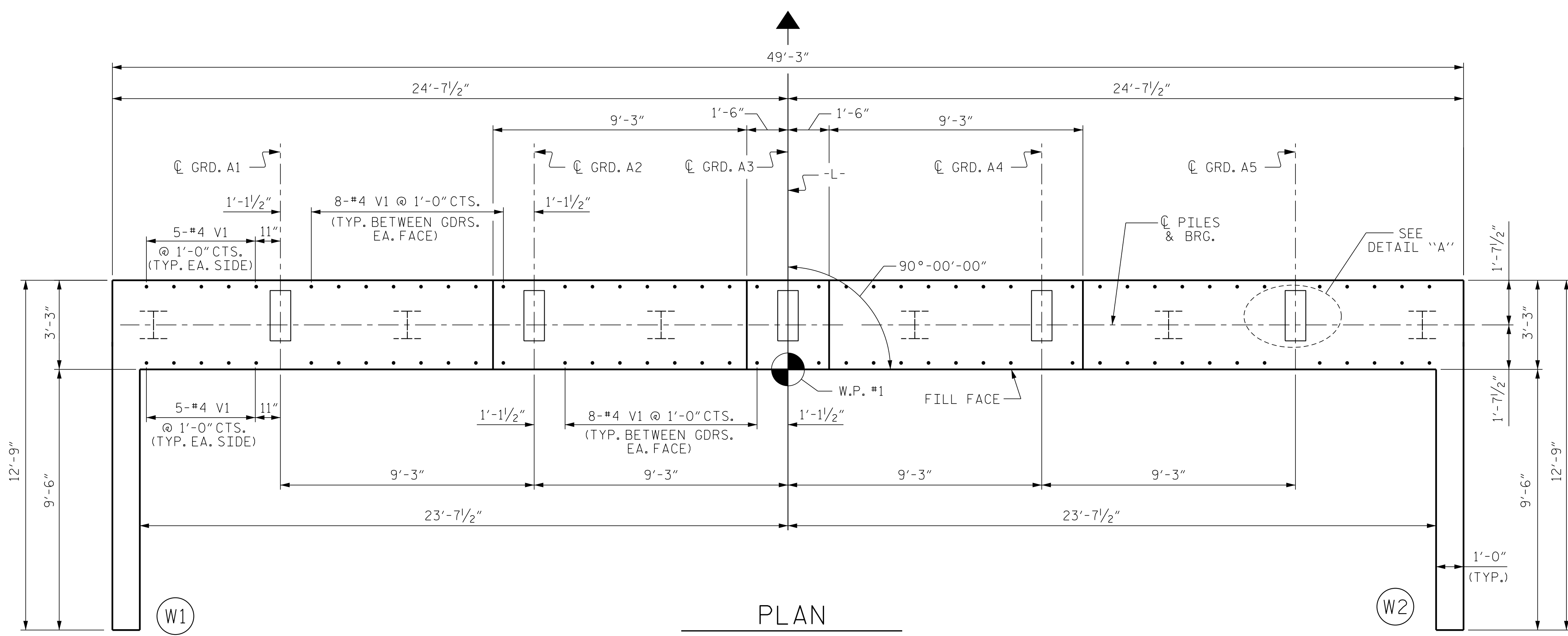
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE BILL OF MATERIAL					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-23
					TOTAL SHEETS 35

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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DRAWN BY: D. HODGE DATE: 5/23  
CHECKED BY: G. GILLAND DATE: 5/23



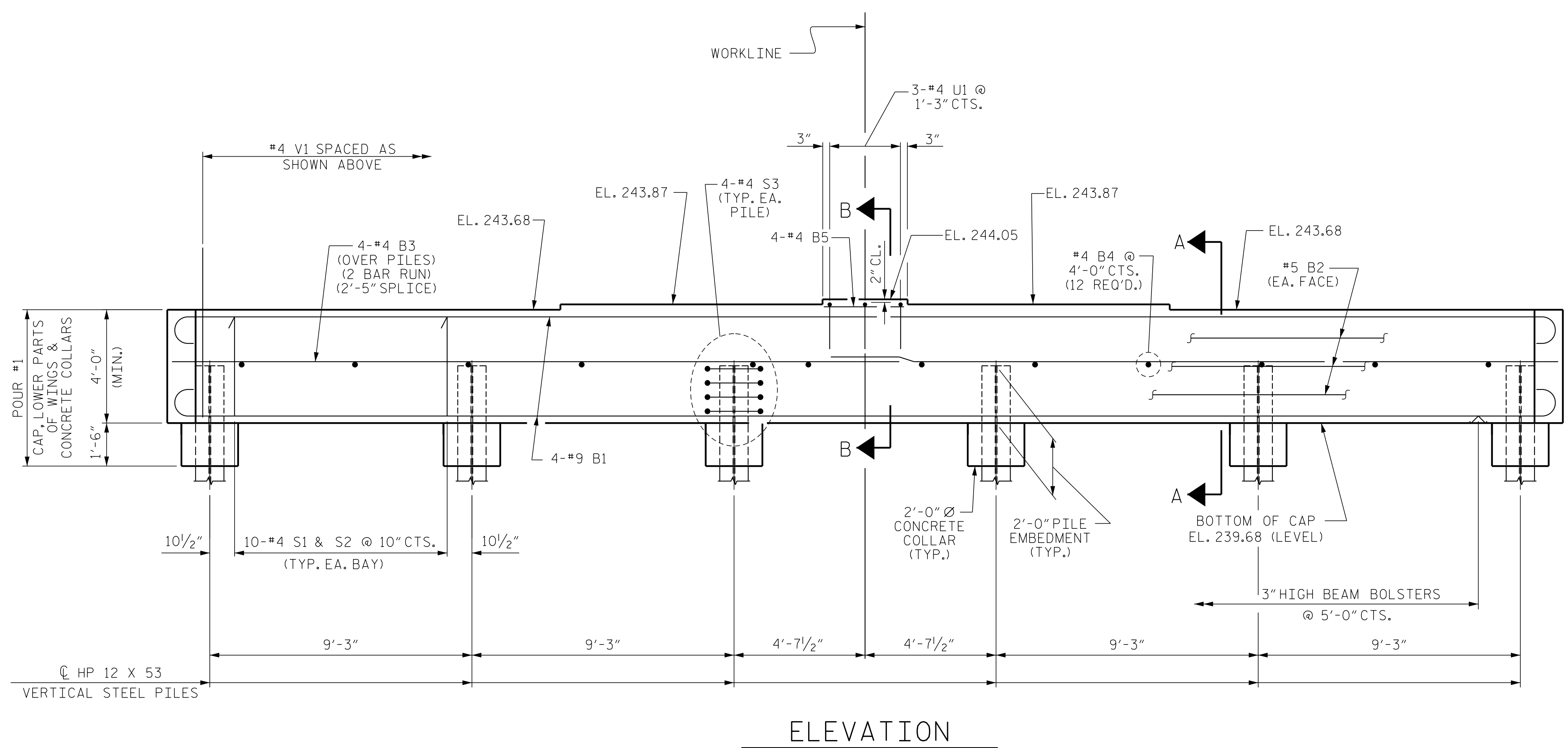
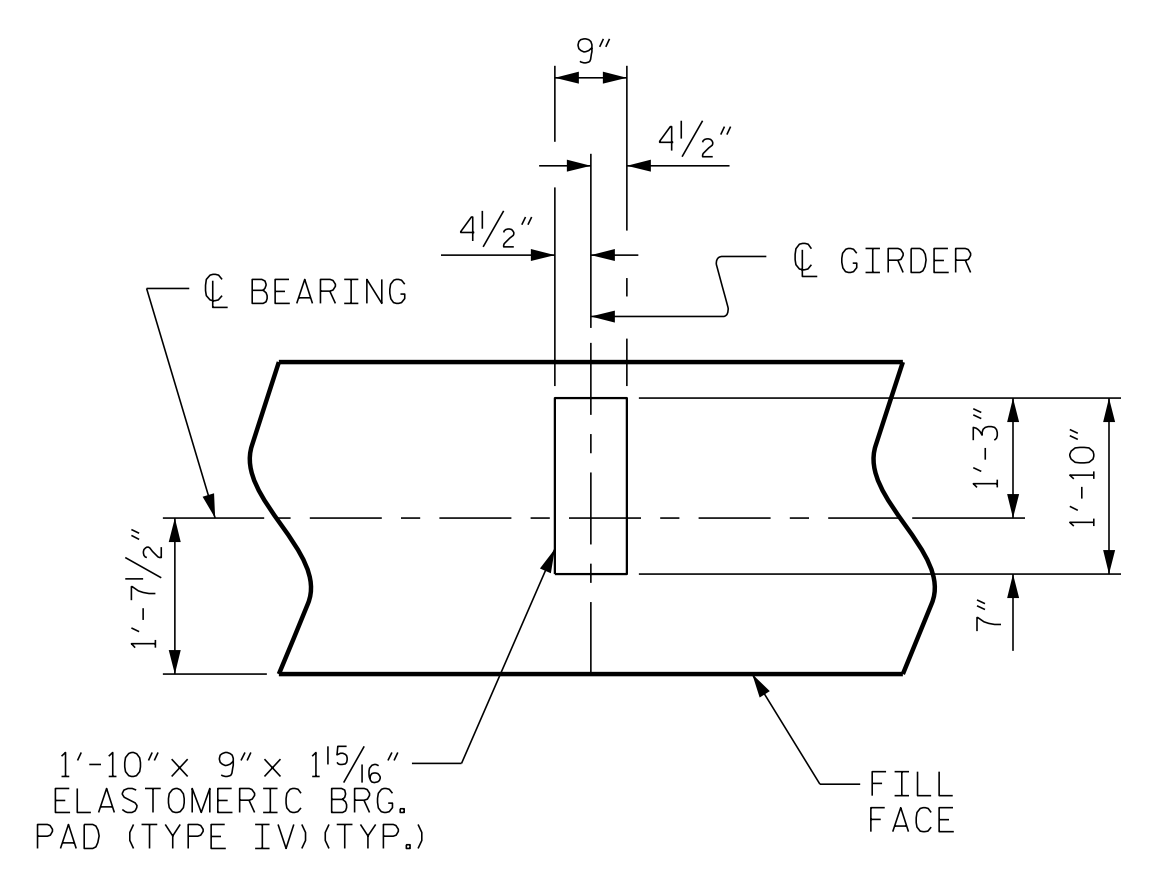


**NOTES**

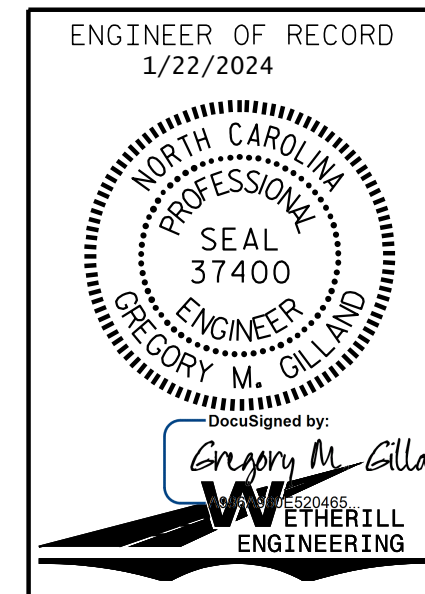
THE TOP SURFACE OF THE END BENT CAP, EXCEPT THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".

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

THE UPPER PART OF INTEGRAL PORTION AND WINGS SHALL BE POURED WITH THE SUPERSTRUCTURE. SEE SUPERSTRUCTURE PLAN OF SPANS.



PROJECT NO. BR-0062  
 ANSON COUNTY  
 STATION: 18+07.50 -L-  
 SHEET 1 OF 3



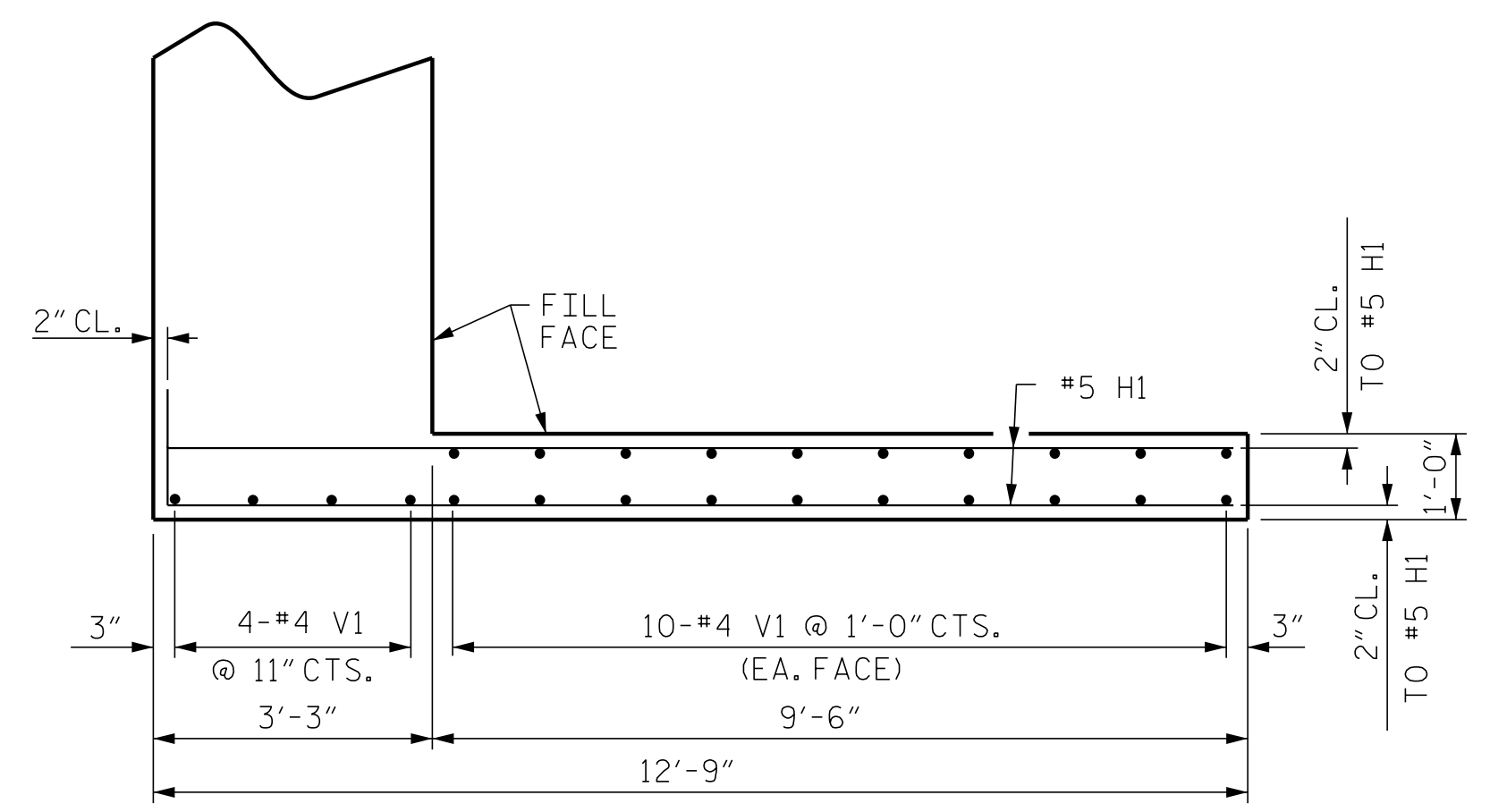
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH		SUBSTRUCTURE END BENT No. 1	
REVISIONS			
NO.	BY:	DATE:	SHEET NO.
1			S-24
2			TOTAL SHEETS 35

DRAWN BY: J. PENDERGRAFT/DAH DATE: 5/23  
 CHECKED BY: G. GILLAND DATE: 10/23

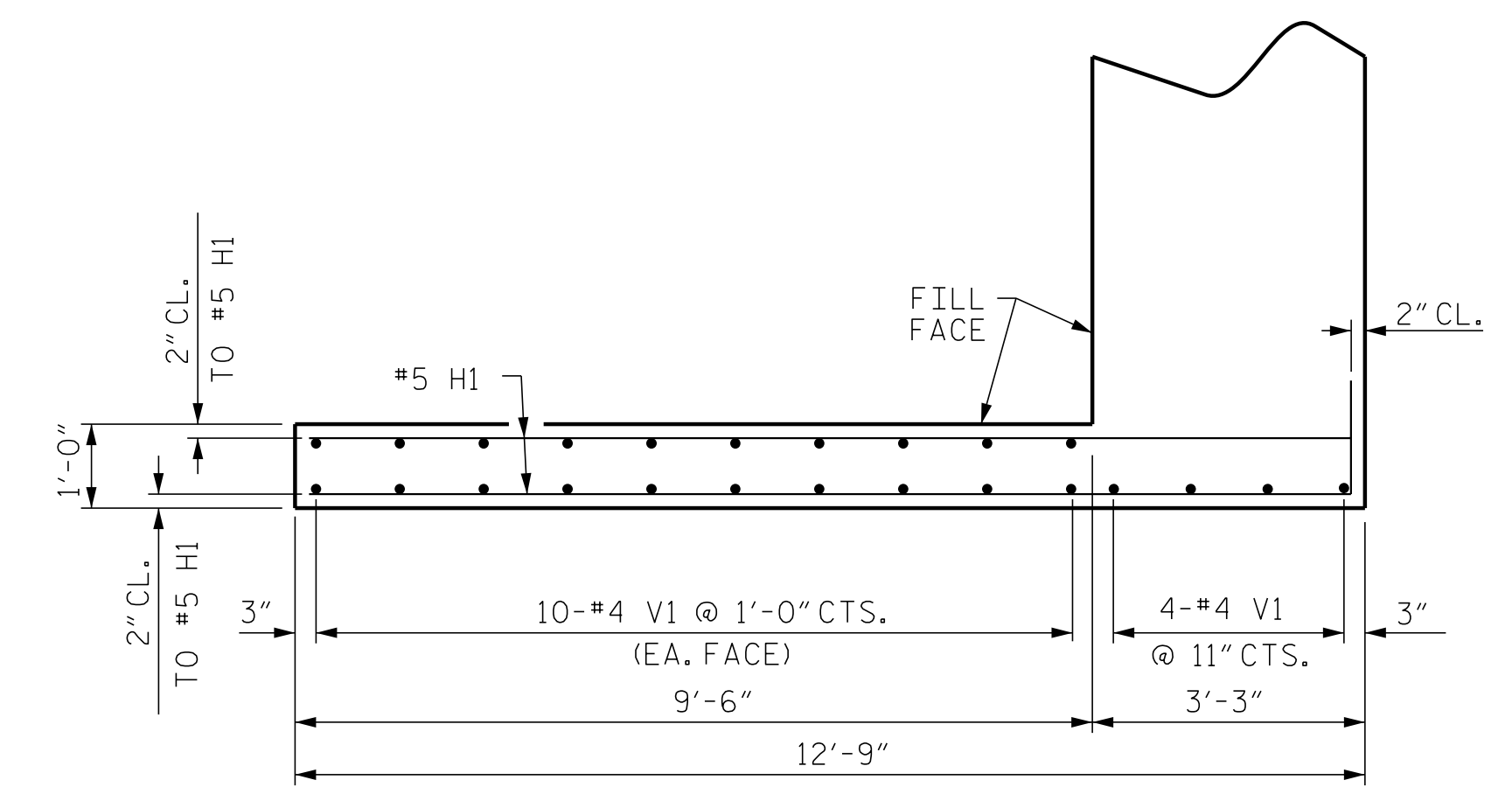
DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

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 Raleigh, N.C. 27606  
 Bus: 919 851 8077  
 Fax: 919 851 8107  
 LICENSE NO. F-0377

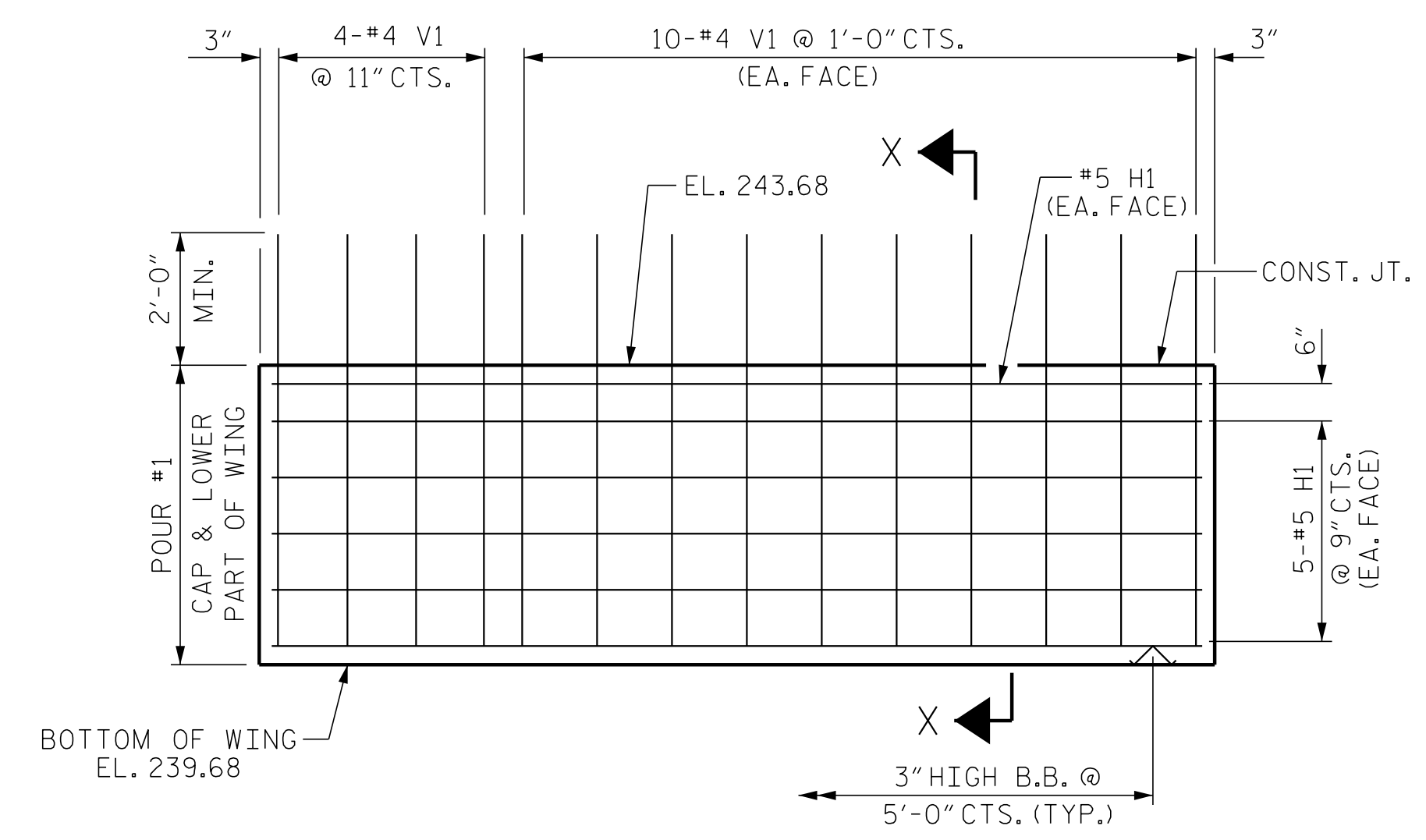
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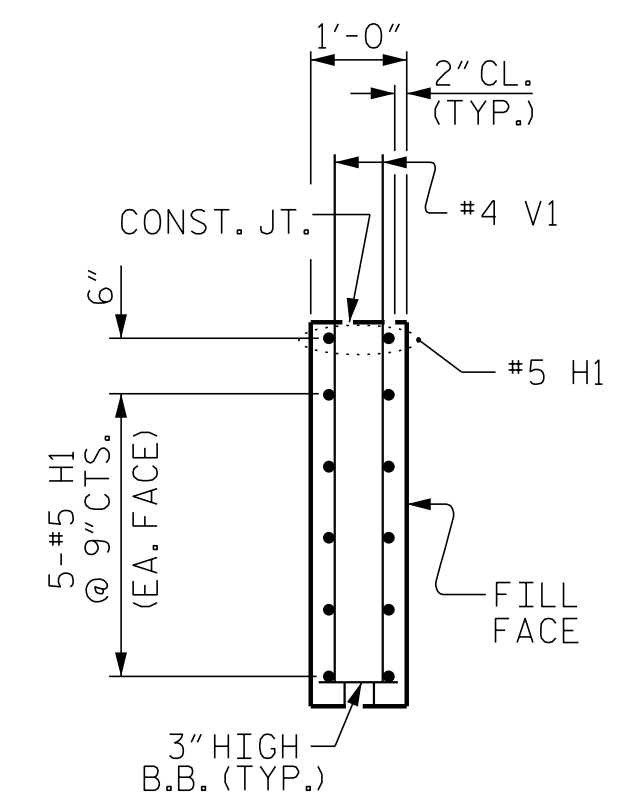
PLAN OF WING - W1



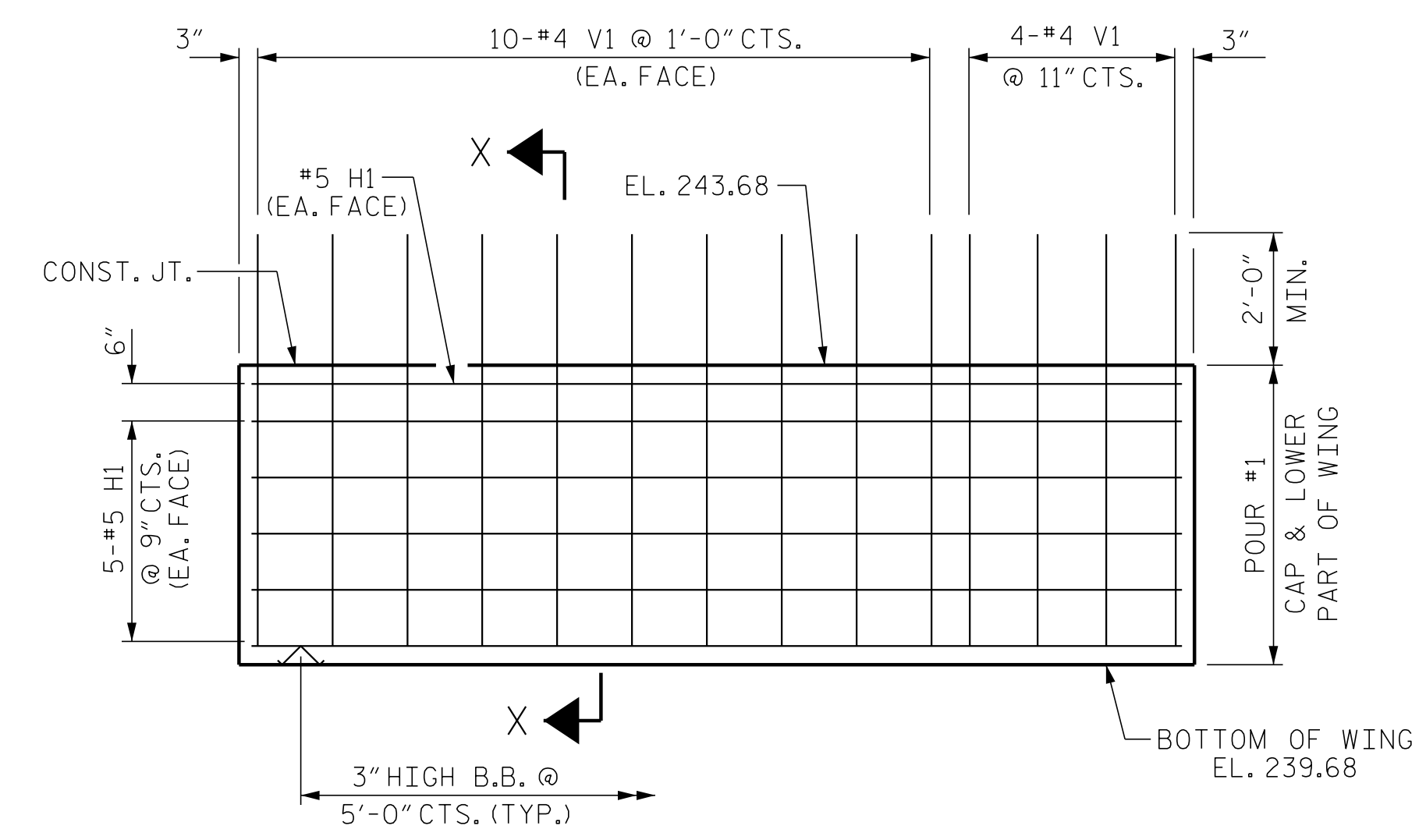
PLAN OF WING - W2



ELEVATION OF WING - W1

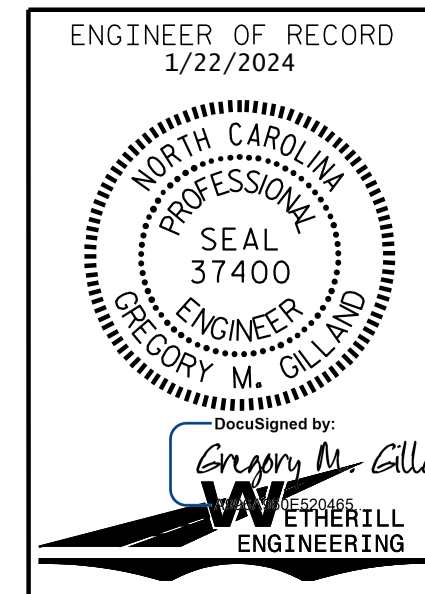


SECTION X-X



ELEVATION OF WING - W2

PROJECT NO. BR-0062  
ANSON COUNTY  
 STATION: 18+07.50 -L-  
 SHEET 2 OF 3



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT No. 1

1223 Jones Franklin Rd.  
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 Fax: 919 851 8107  
 LICENSE NO. F-0377

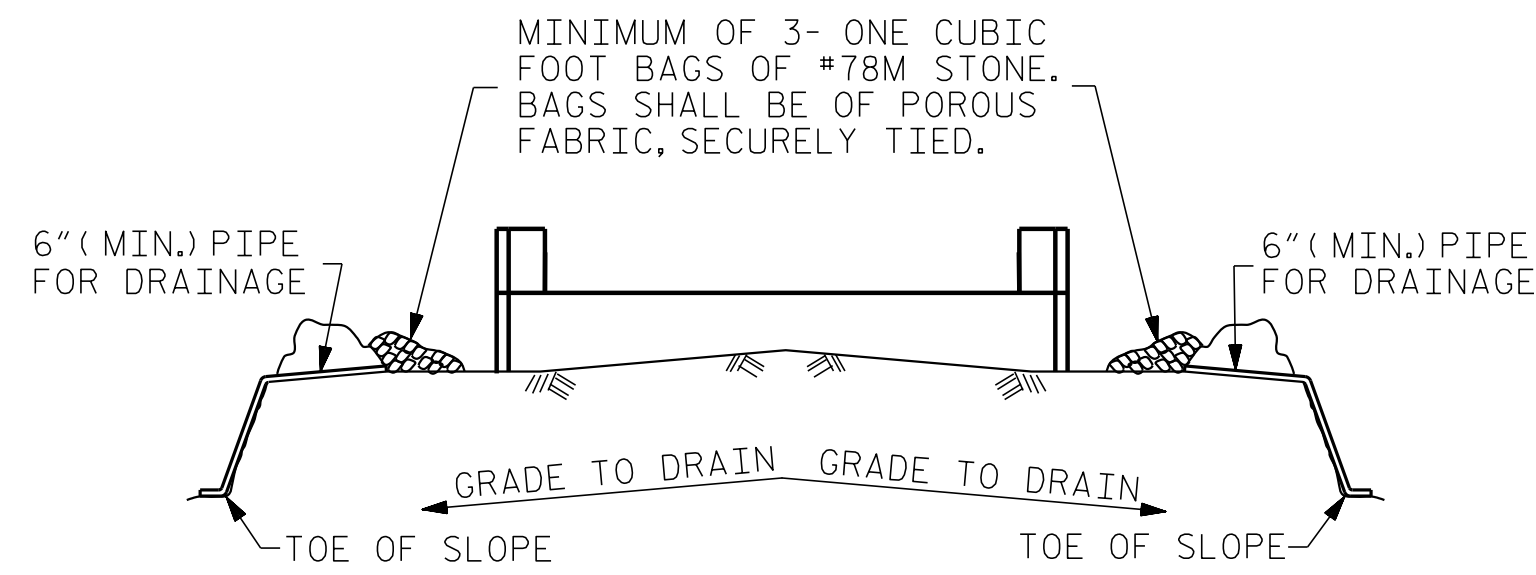
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			35

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

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DRAWN BY : J. PENDERGRAFT/DAH DATE : 5/23  
 CHECKED BY : G. GILLAND DATE : 10/23



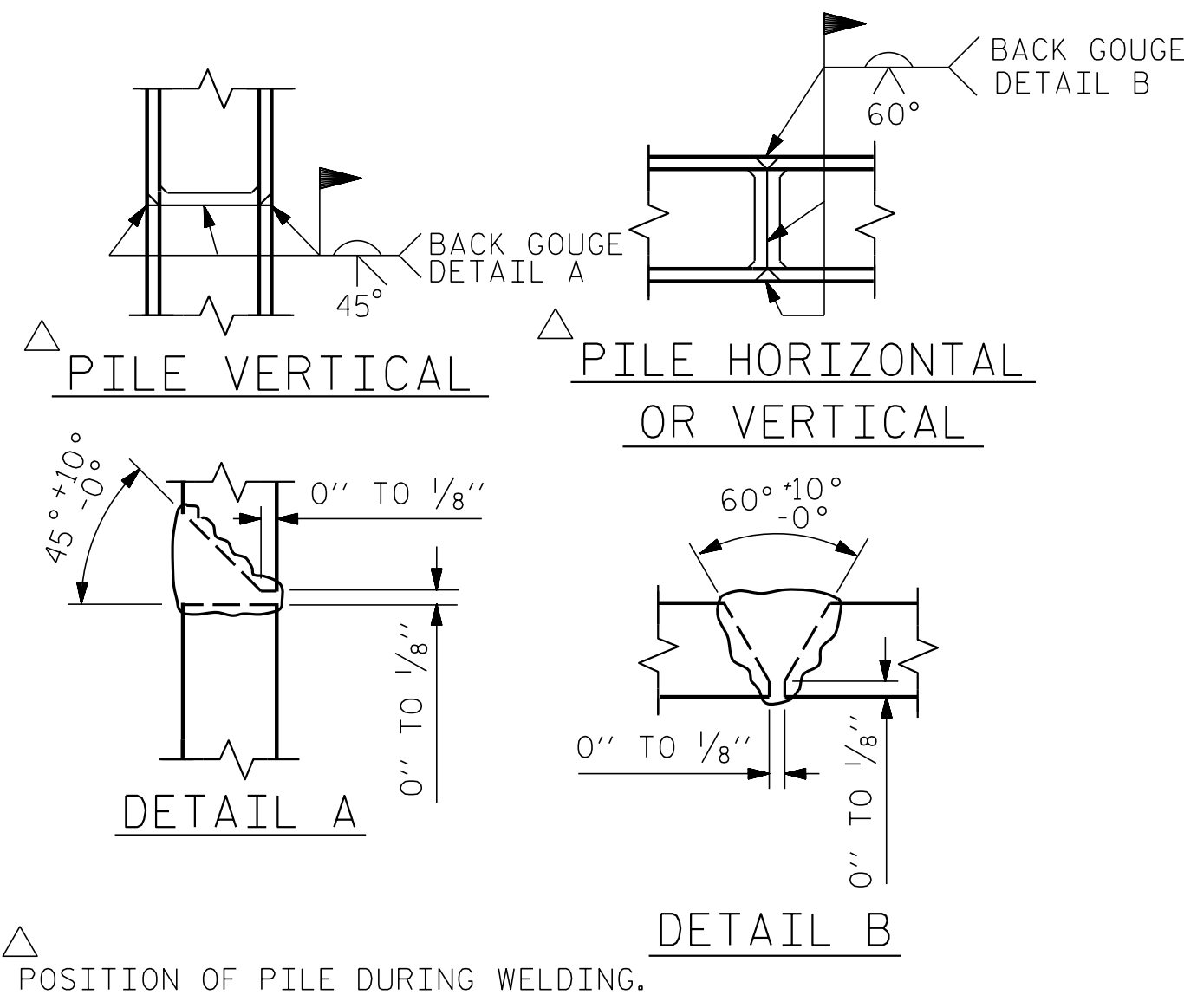


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

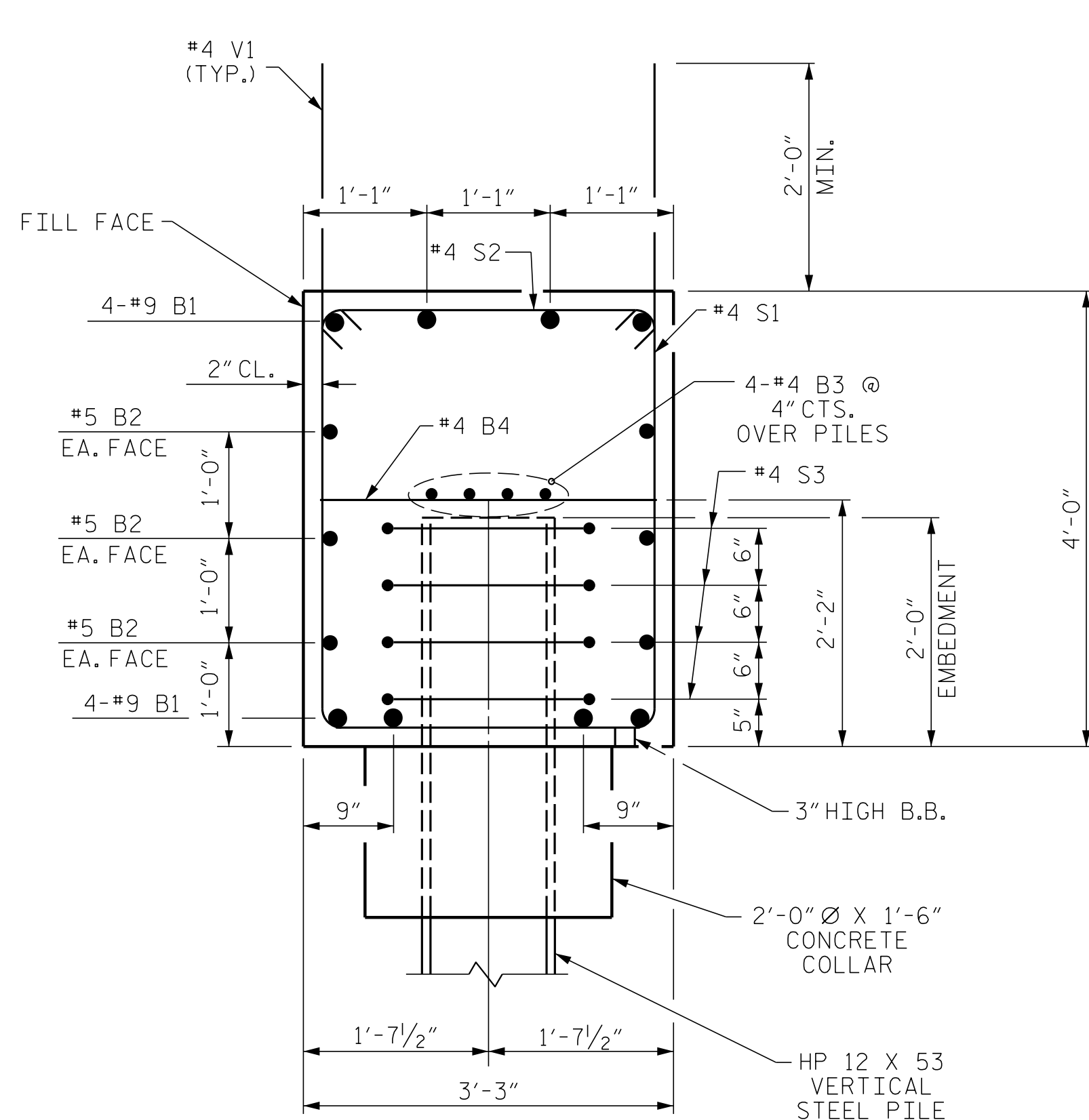
### TEMPORARY DRAINAGE AT END BENT



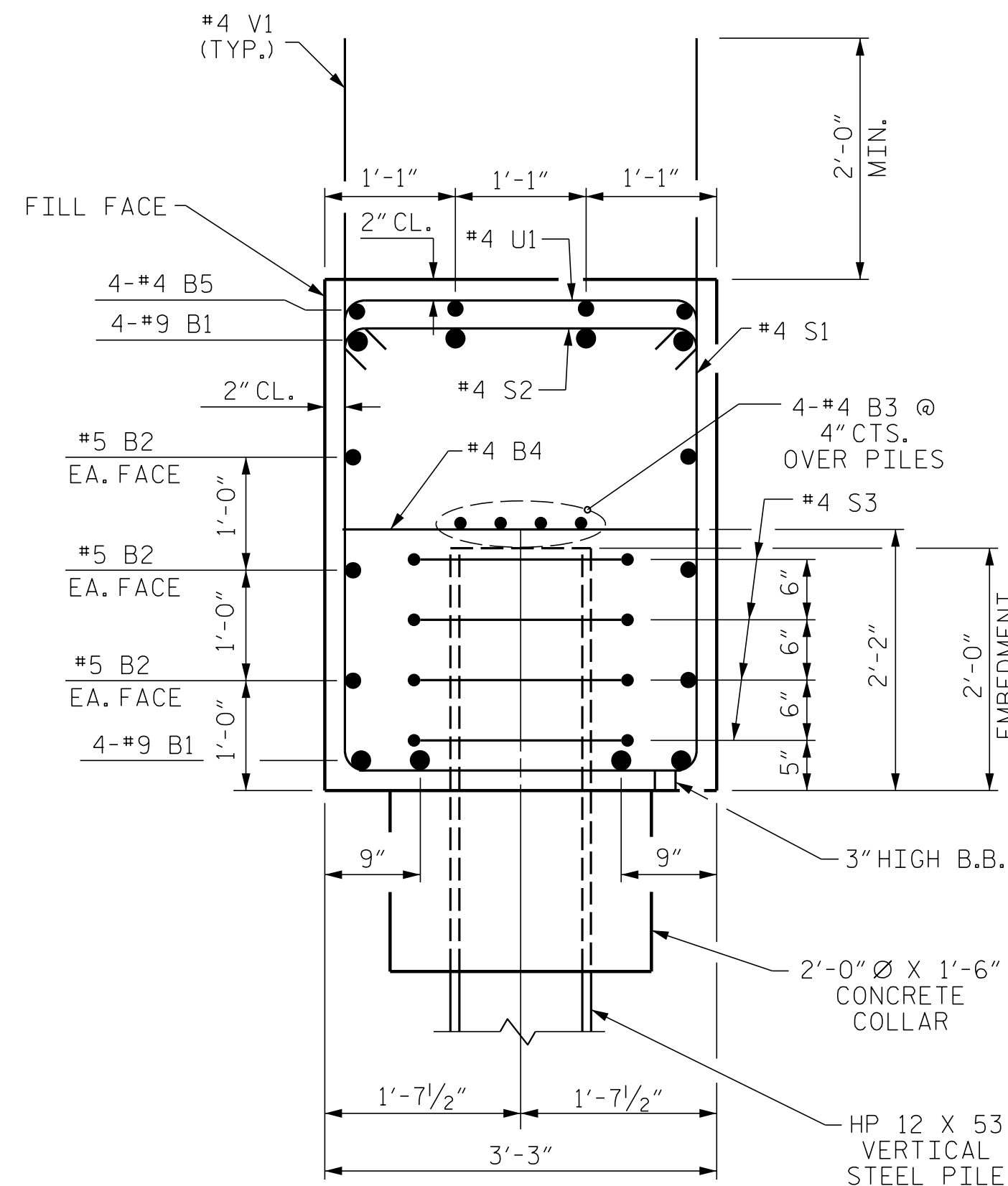
### PILE SPLICE DETAILS

BAR TYPES					BILL OF MATERIAL						
					END BENT No. 1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		51'-3"	1,394	B1	8	#9		51'-3"	1,394
B2	6	#5	STR	48'-11"	306	B2	6	#5	STR	48'-11"	306
B3	8	#4	STR	25'-8"	137	B3	8	#4	STR	25'-8"	137
B4	12	#4	STR	2'-11"	23	B4	12	#4	STR	2'-11"	23
B5	4	#4	STR	2'-8"	7	B5	4	#4	STR	2'-8"	7
H1	24	#5		13'-3"	332	H1	24	#5		13'-3"	332
S1	50	#4	3	10'-11"	365	S1	50	#4	3	10'-11"	365
S2	50	#4	4	3'-8"	122	S2	50	#4	4	3'-8"	122
S3	24	#4	5	6'-6"	104	S3	24	#4	5	6'-6"	104
U1	3	#4	6	5'-11"	12	U1	3	#4	6	5'-11"	12
V1	132	#4	STR	6'-0"	529	V1	132	#4	STR	6'-0"	529
REINFORCING STEEL					3,331 LBS.						
CLASS A CONCRETE BREAKDOWN											
POUR #1 CAP, CONC. COLLARS & LOWER PART OF WINGS					28.1 C.Y.						
TOTAL CLASS A CONCRETE					28.1 C.Y.						

ALL BAR DIMENSIONS ARE OUT TO OUT.

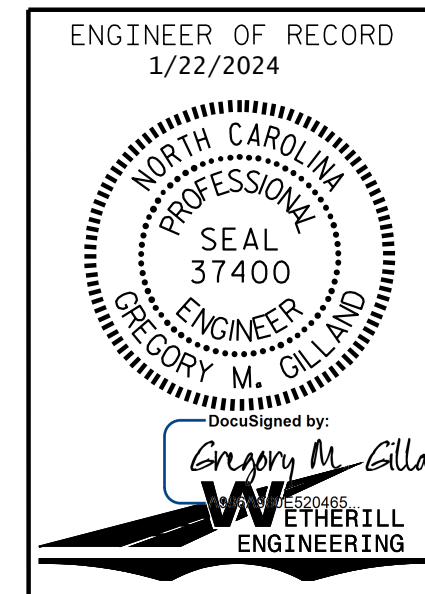


SECTION A-A



SECTION B-B

PROJECT NO. BR-0062  
 ANSON COUNTY  
 STATION: 18+07.50 -L-  
 SHEET 3 OF 3



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT No. 1

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

TOTAL SHEETS: 35

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

1223 Jones Franklin Rd.  
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 LICENSE NO. F-0377

PA:2020.20130.01\_BR-0062 Structures\DCM\BR-0062\_SD\_EB\_0300 14.dgn  
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DRAWN BY: J. PENDERGRAFT/DAH DATE: 5/23  
 CHECKED BY: G. GILLAND DATE: 10/23

**NOTES**

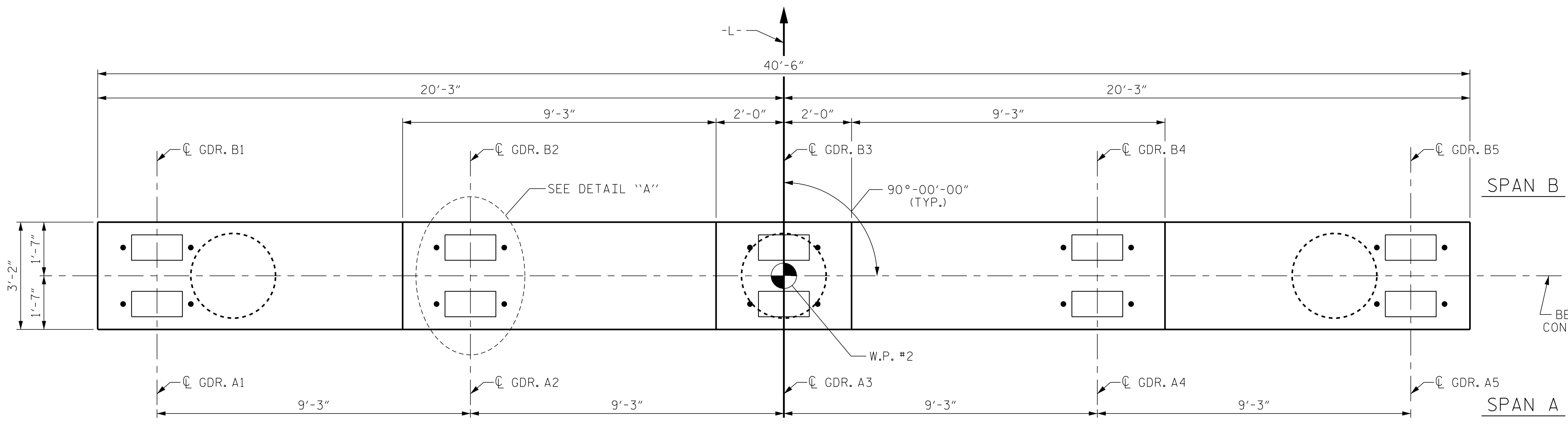
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

HOOKS ON V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

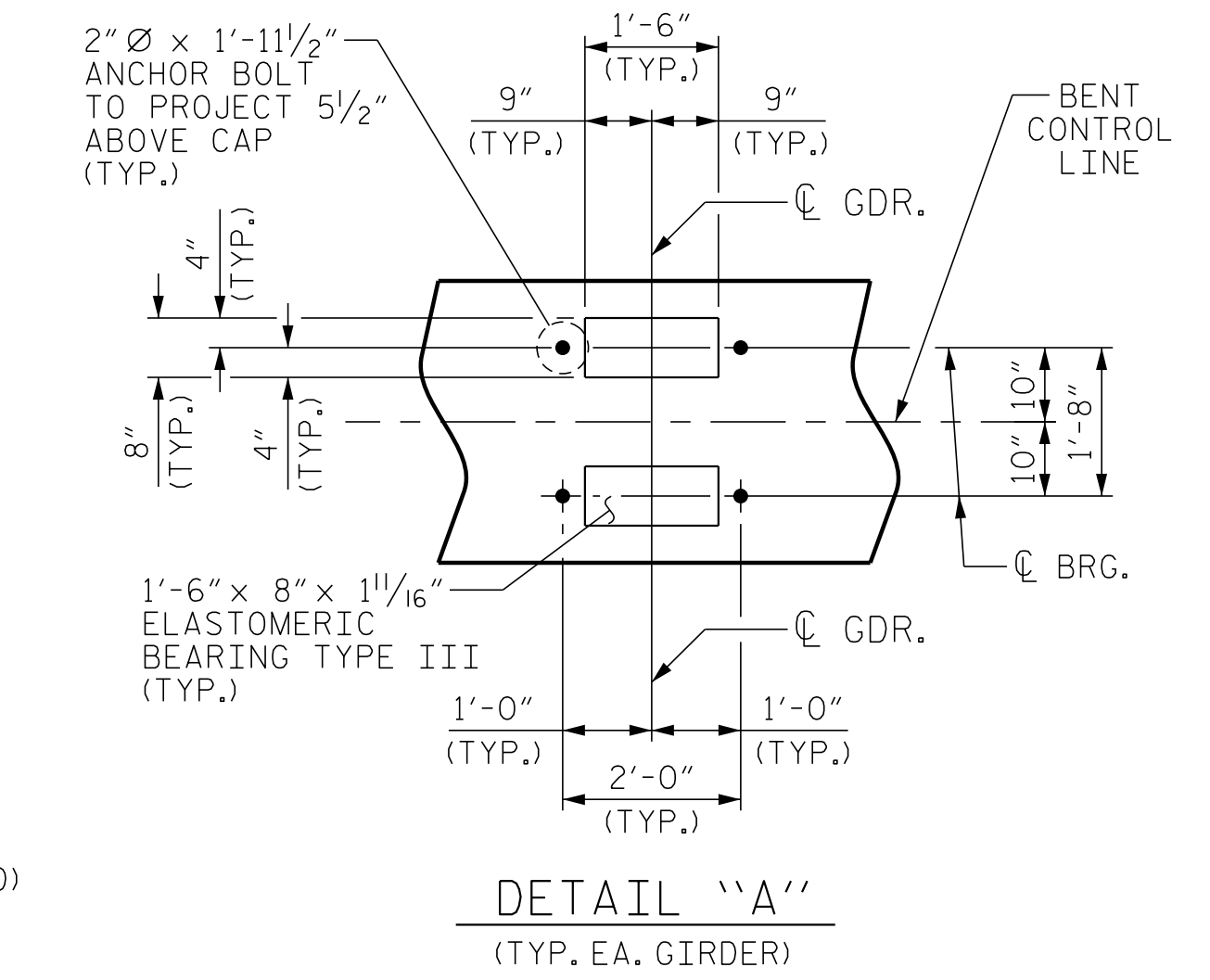
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

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

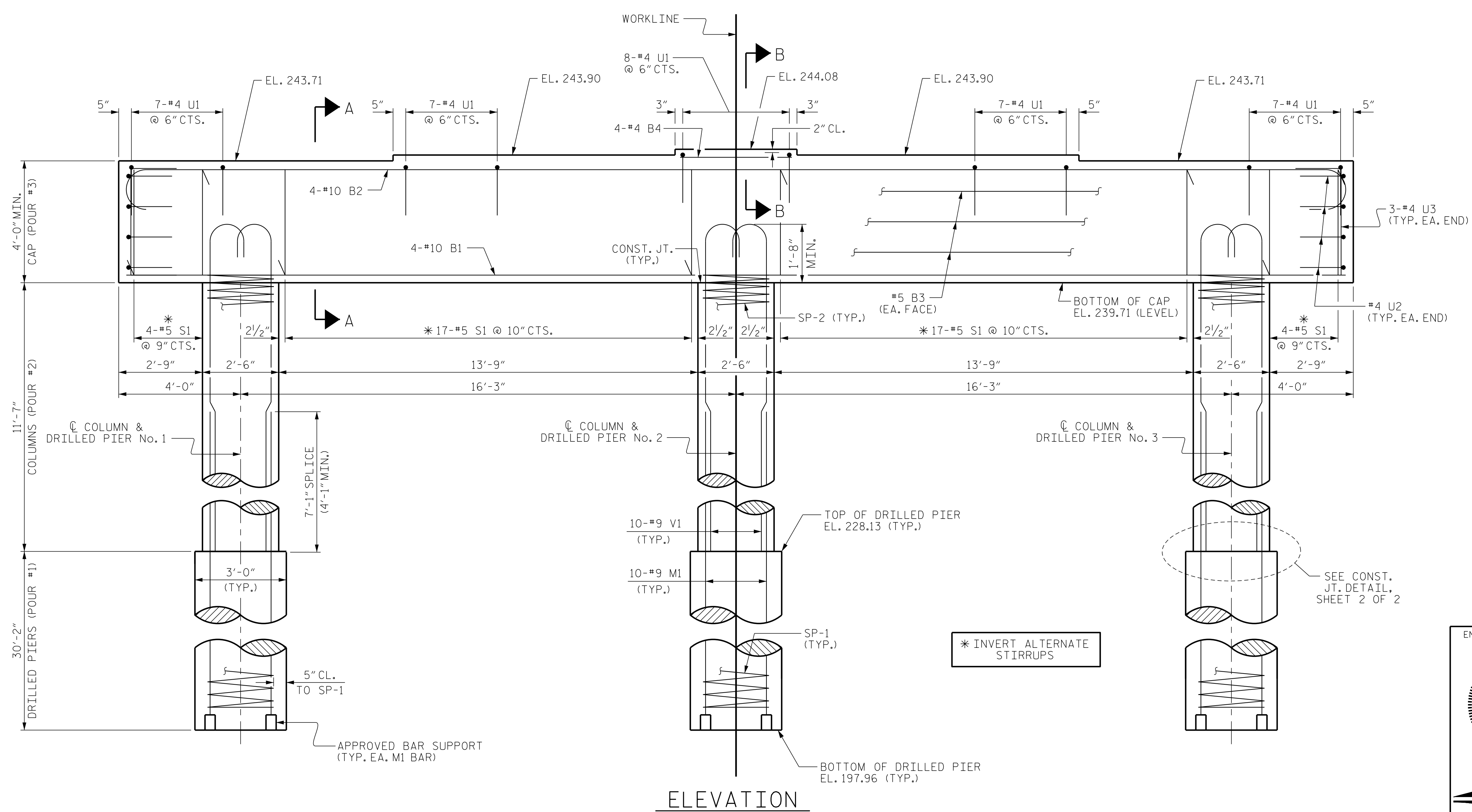
SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.



**PLAN**

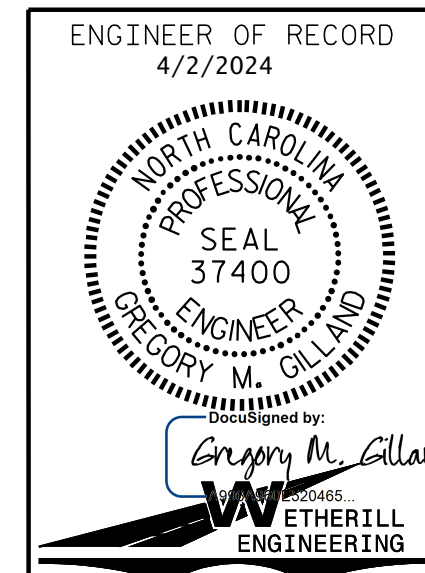


**DETAIL "A"**  
(TYP. EA. GIRDER)



**ELEVATION**

PROJECT NO. BR-0062  
ANSON COUNTY  
 STATION: 18+07.50 -L-  
 SHEET 1 OF 2



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 BENT No. 1

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

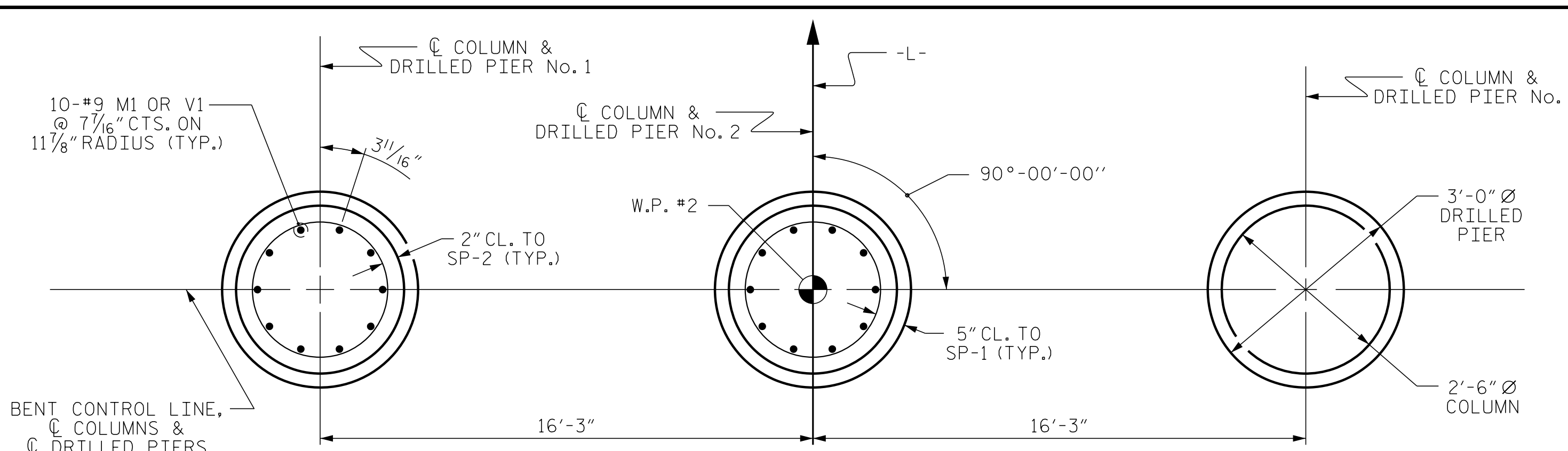
DRAWN BY: G. GILLAND DATE: 10-23  
 CHECKED BY: J. DILWORTH DATE: 10-23

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

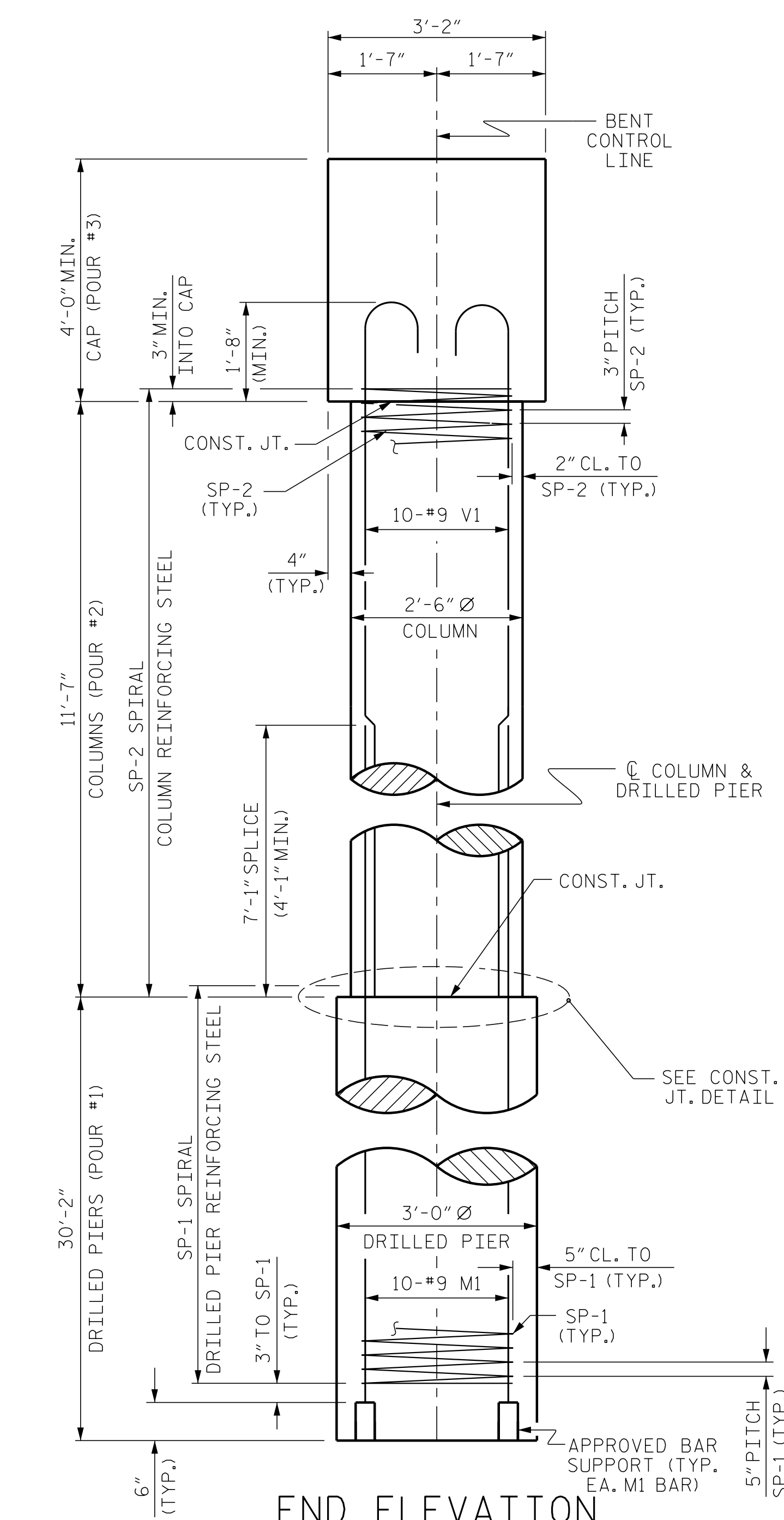
1223 Jones Franklin Rd.  
 Raleigh, N.C. 27606  
 Bus: 919 851 8077  
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 LICENSE NO. F-0377

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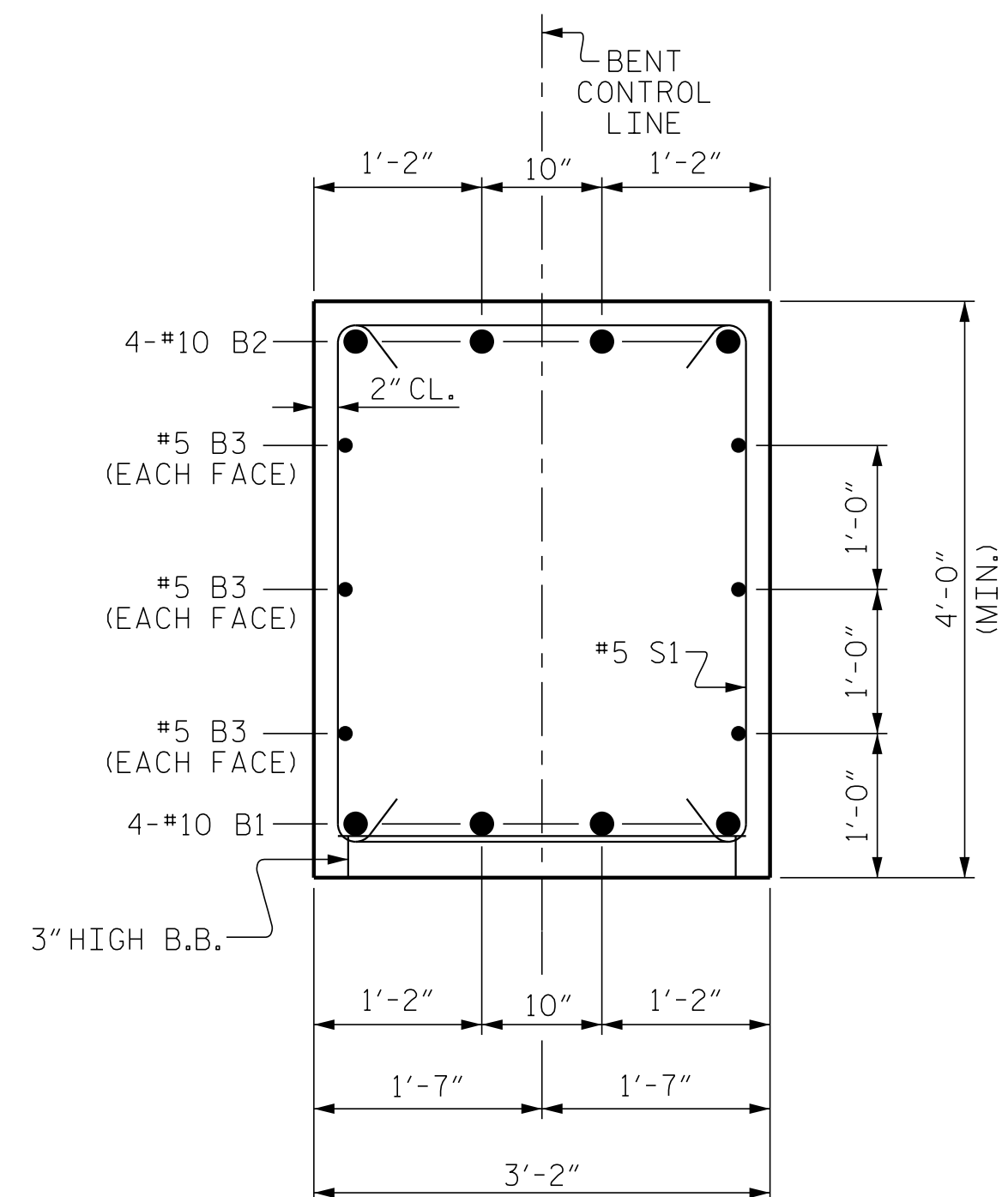




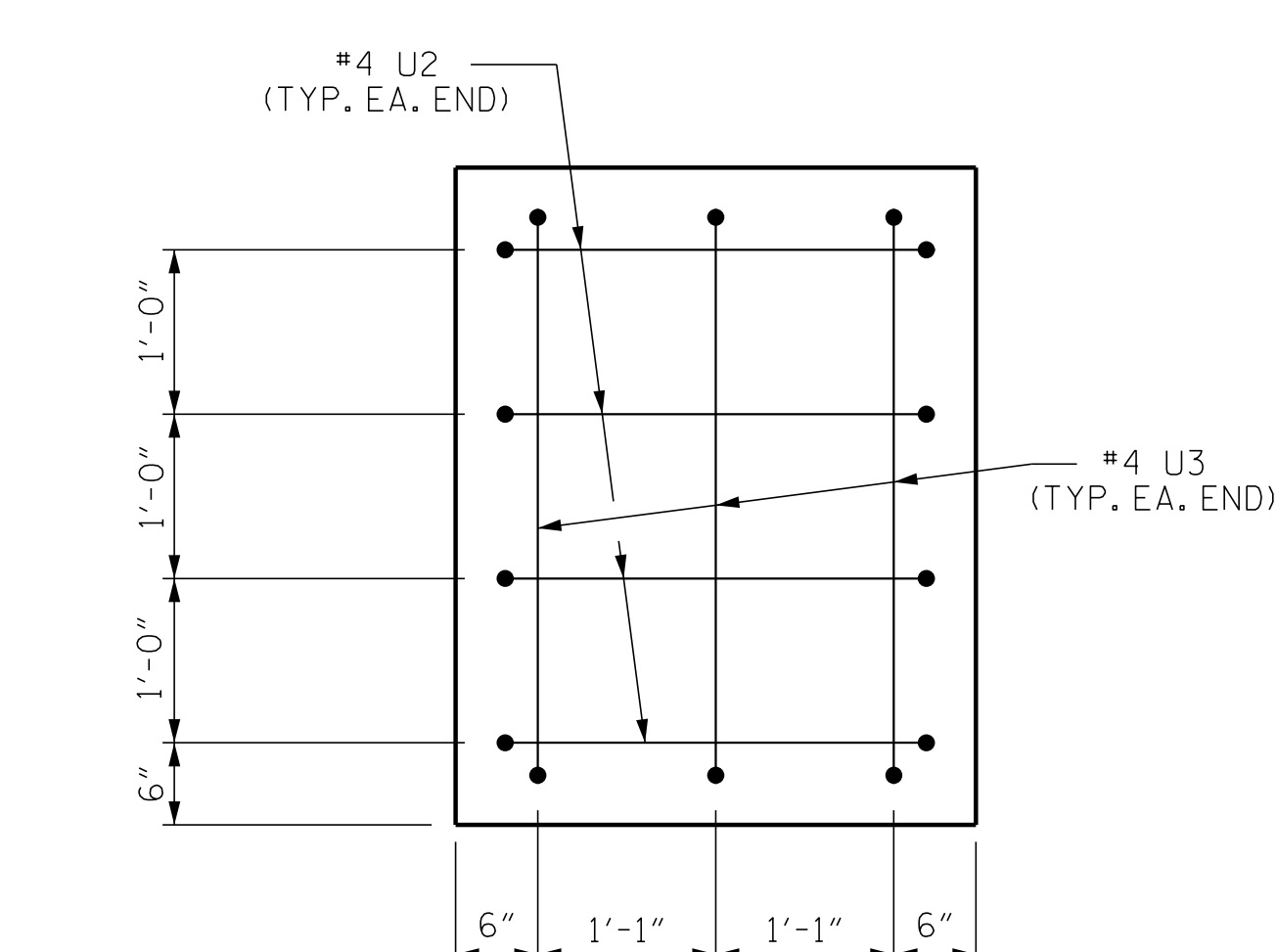
PLAN OF DRILLED PIERS & COLUMNS



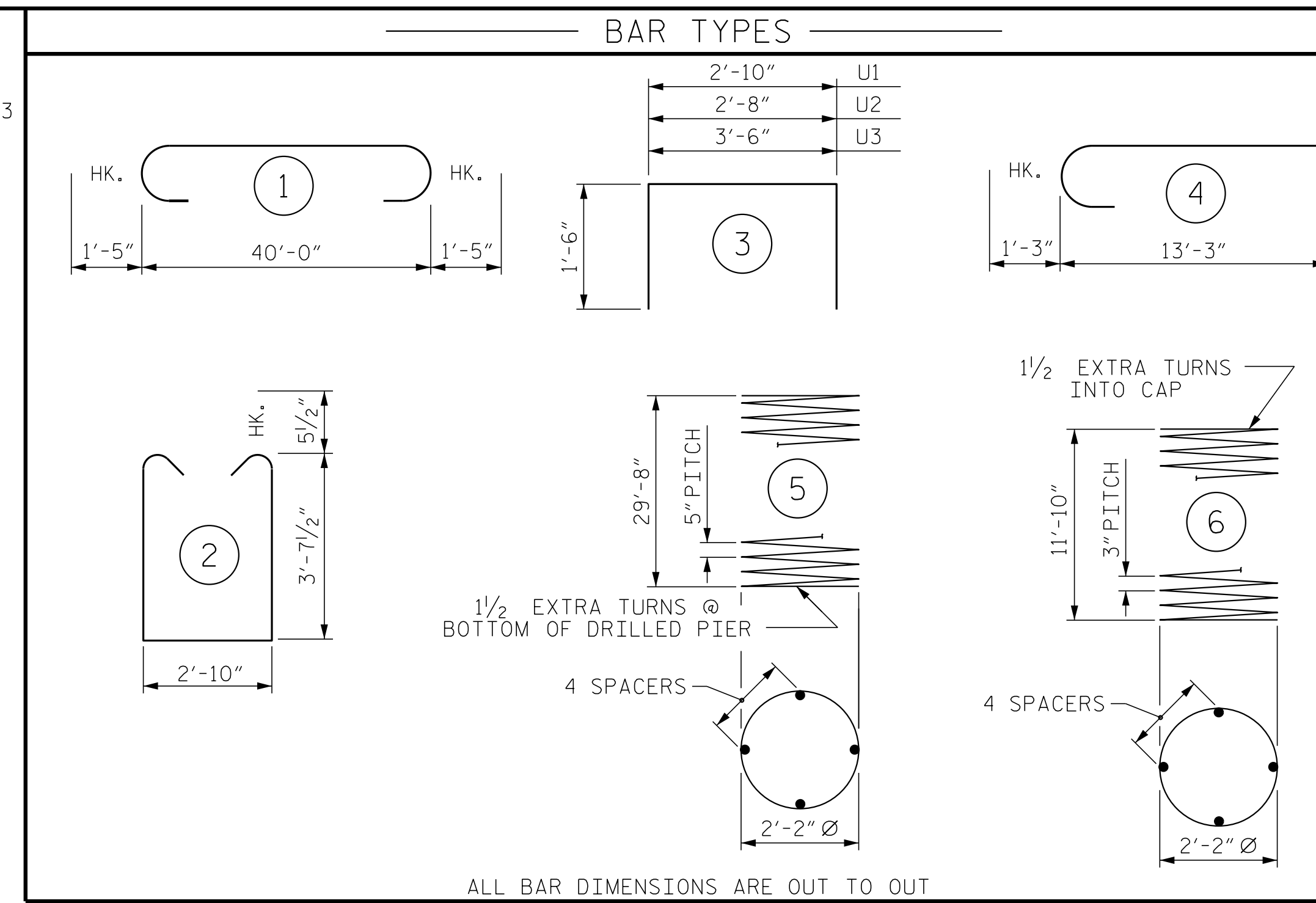
END ELEVATION



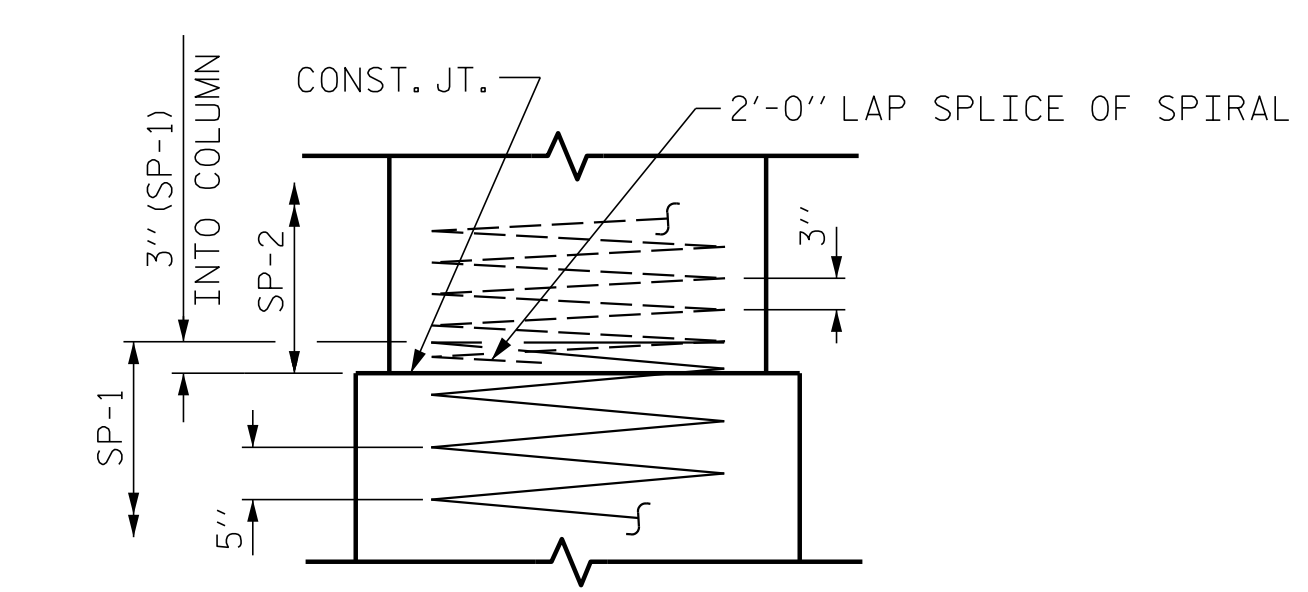
SECTION A-A



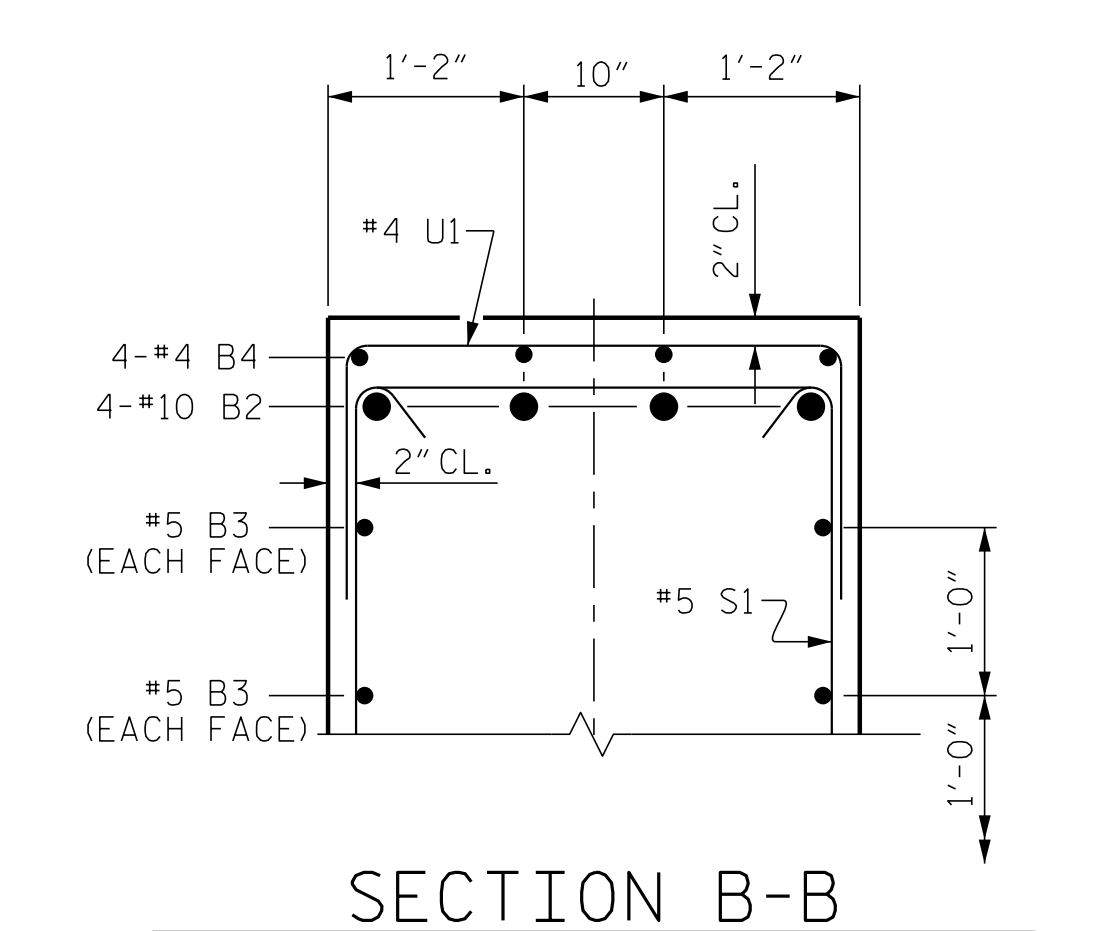
END OF CAP VIEW  
(TYPICAL BOTH ENDS)



ALL BAR DIMENSIONS ARE OUT TO OUT



CONSTRUCTION JOINT DETAIL



SECTION B-B

BILL OF MATERIAL

BENT No. 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	STR	40'-0"	688
B2	4	#10	1	42'-10"	737
B3	6	#5	STR	40'-2"	251
B4	4	#4	STR	3'-8"	10
M1	30	#9	STR	36'-9"	3,749
S1	42	#5	2	11'-0"	482
U1	36	#4	3	5'-10"	140
U2	8	#4	3	5'-8"	30
U3	6	#4	3	6'-6"	26
V1	30	#9	4	14'-6"	1,479

REINFORCING STEEL 7,592 LBS.

SP-1	3	*	5	484'-3"	1,515
SP-2	3	**	6	327'-5"	656

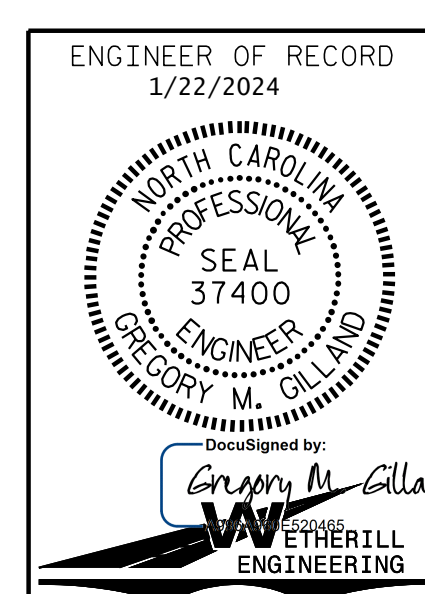
SPIRAL COLUMN REINFORCING STEEL 2,171 LBS.

\* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR  
 \*\* THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR

CLASS A CONCRETE BREAKDOWN

POUR #2 (COLUMNS)	6.3 C.Y.
POUR #3 (CAP)	19.6 C.Y.
<b>TOTAL CLASS A CONCRETE</b>	<b>25.9 C.Y.</b>

PROJECT NO. BR-0062  
 ANSON COUNTY  
 STATION: 18+07.50 -L-  
 SHEET 2 OF 2



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 BENT No. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			35

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DRAWN BY: G. GILLAND DATE: 10-23  
 CHECKED BY: J. DILWORTH DATE: 10-23

### NOTES

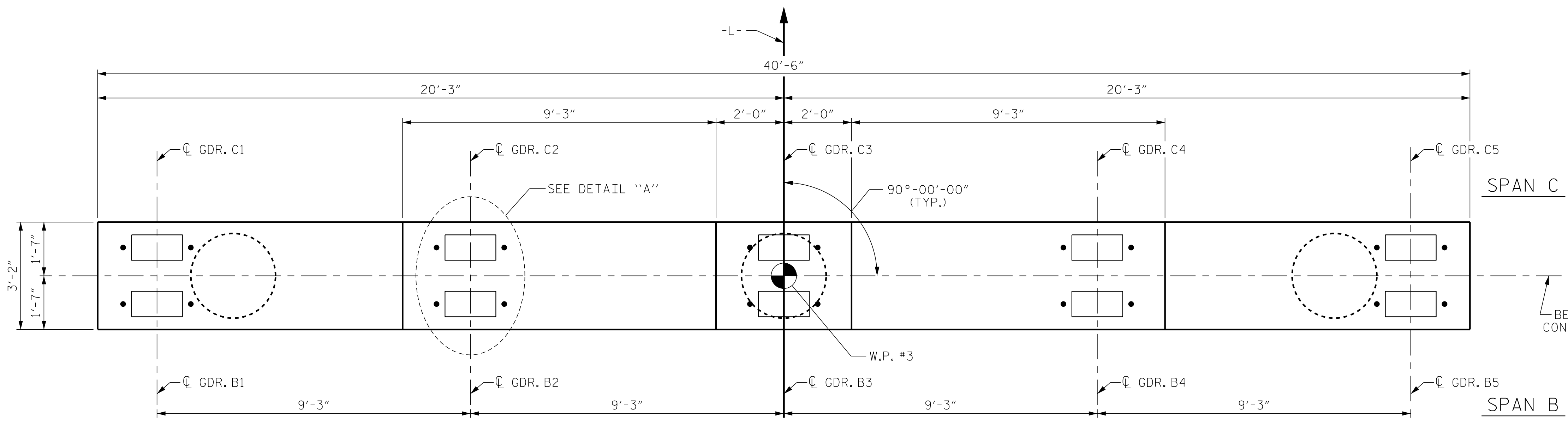
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

HOOKS ON V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

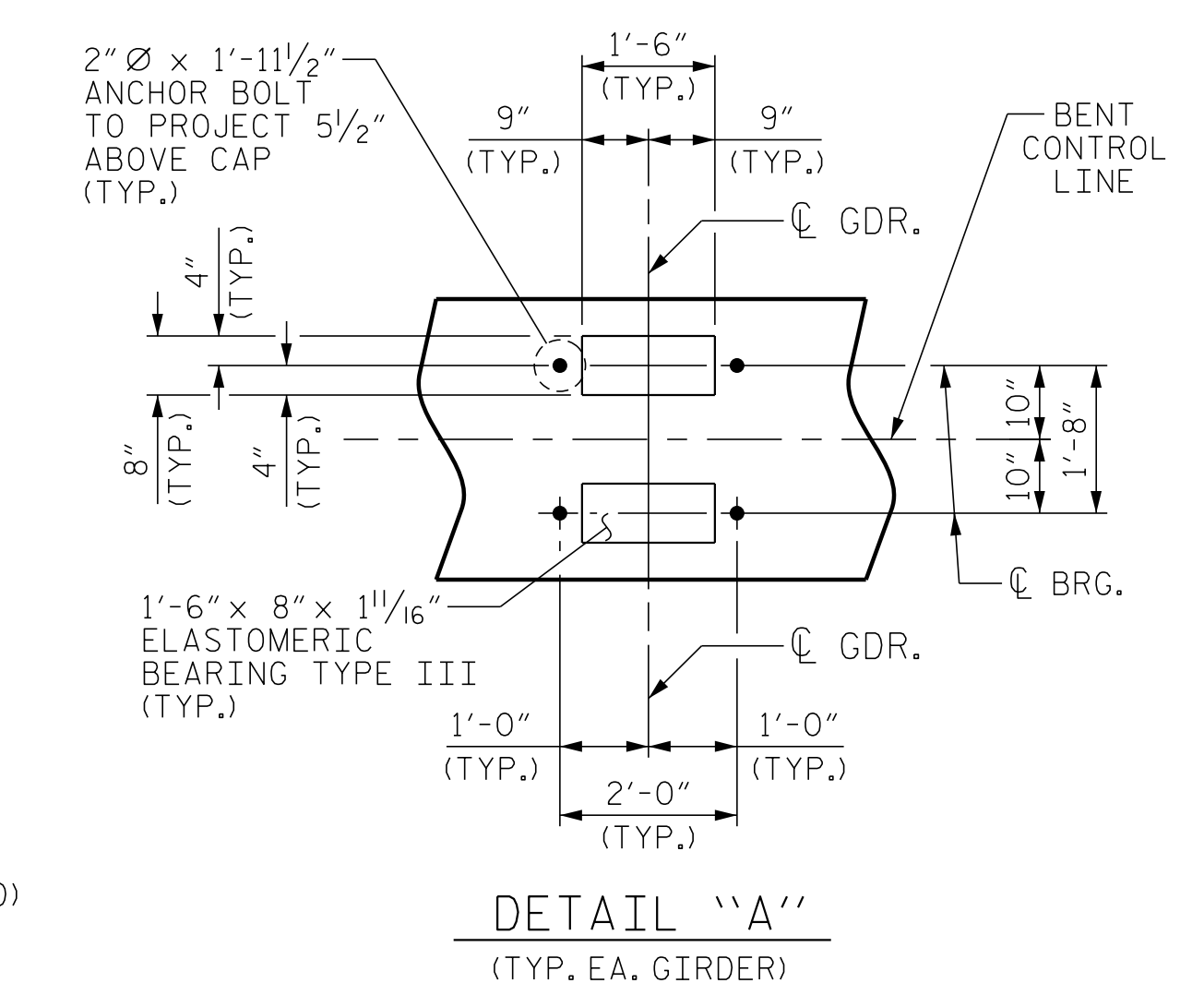
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

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

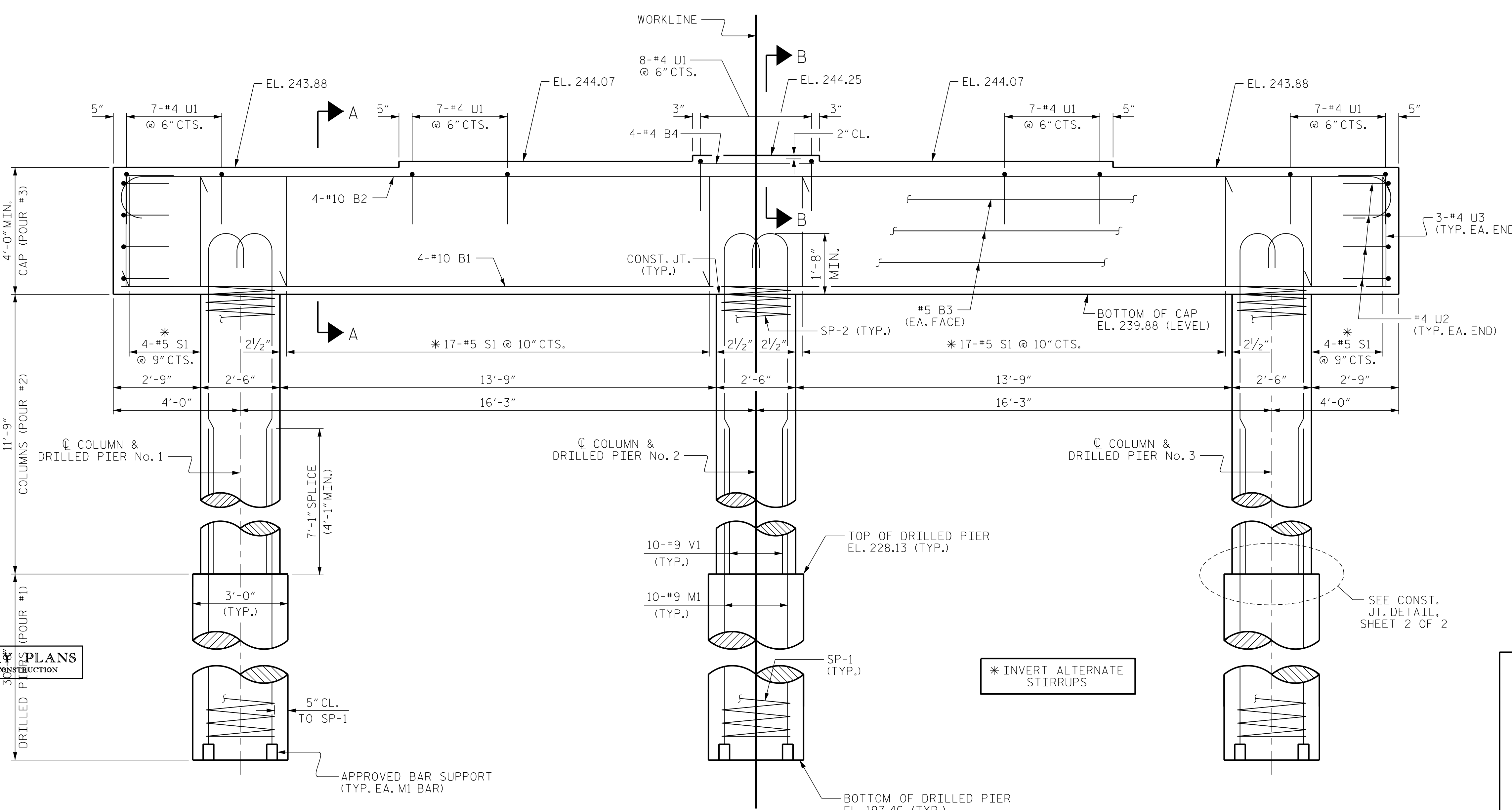
SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.



### PLAN



### DETAIL "A"



### ELEVATION

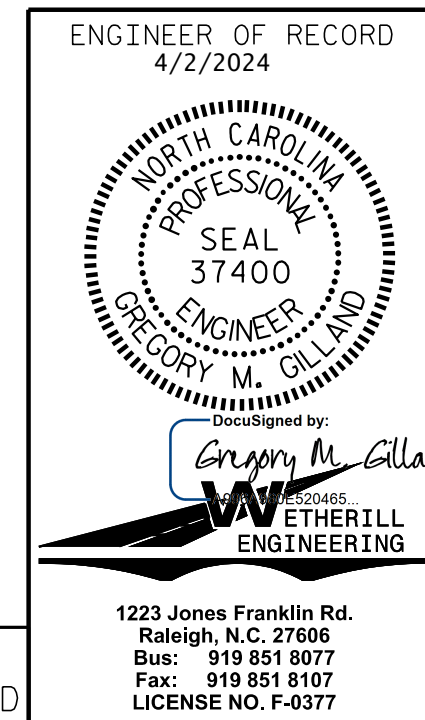
PROJECT NO. BR-0062  
ANSON COUNTY  
 STATION: 18+07.50 -L-  
 SHEET 1 OF 2

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**PRELIMINARY PLANS**  
 DO NOT USE FOR CONSTRUCTION

DRAWN BY: G. GILLAND DATE: 10-23  
 CHECKED BY: J. DILWORTH DATE: 10-23

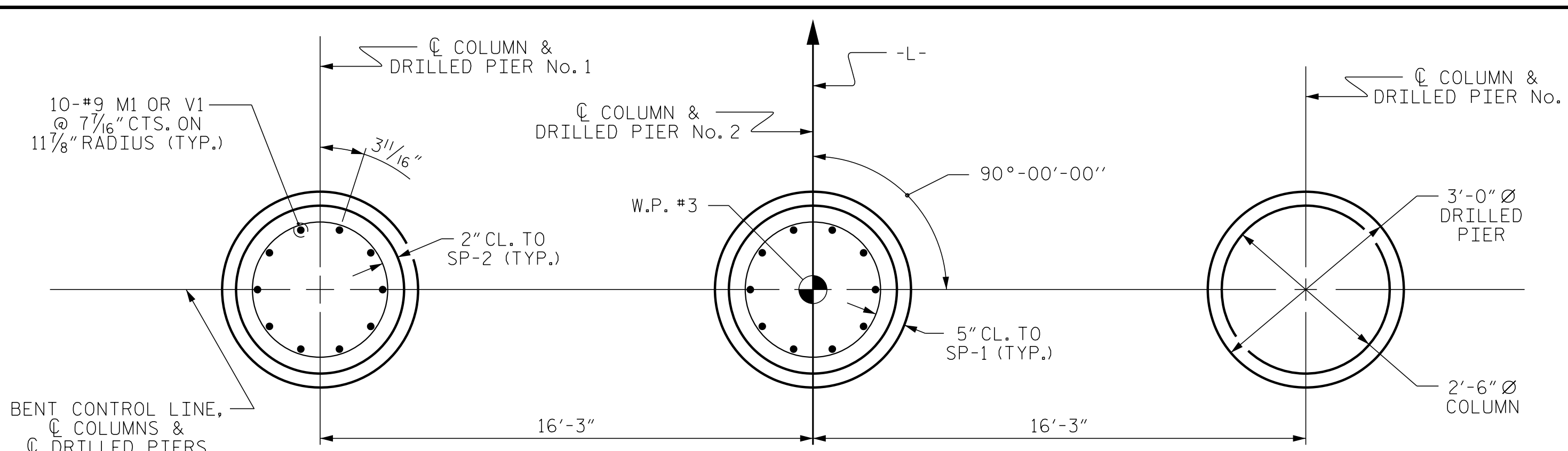
DOCUMENT NOT CONSIDERED FINAL  
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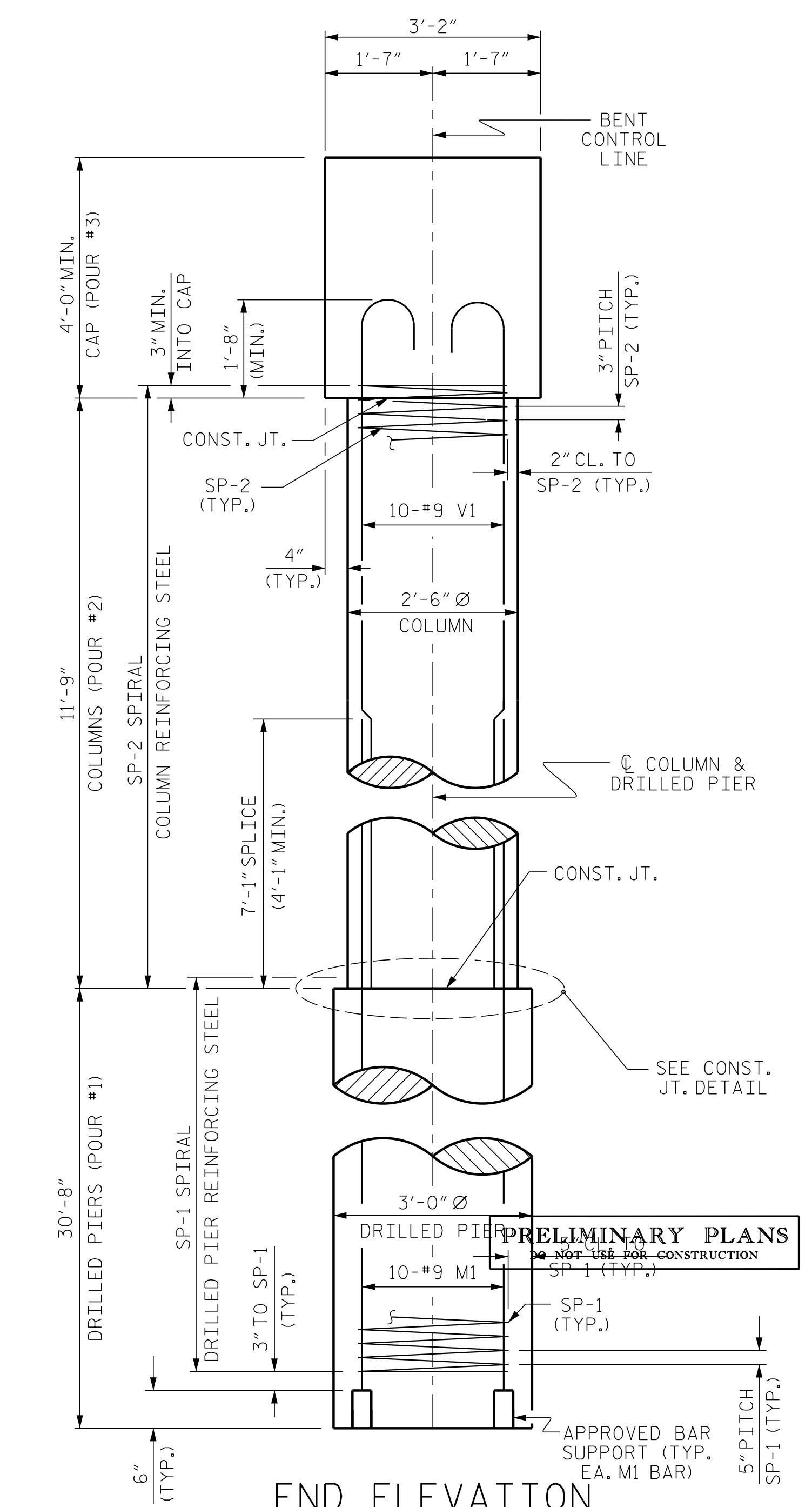
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT No. 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-29
					TOTAL SHEETS 35

1223 Jones Franklin Rd.  
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 LICENSE NO. F-0377

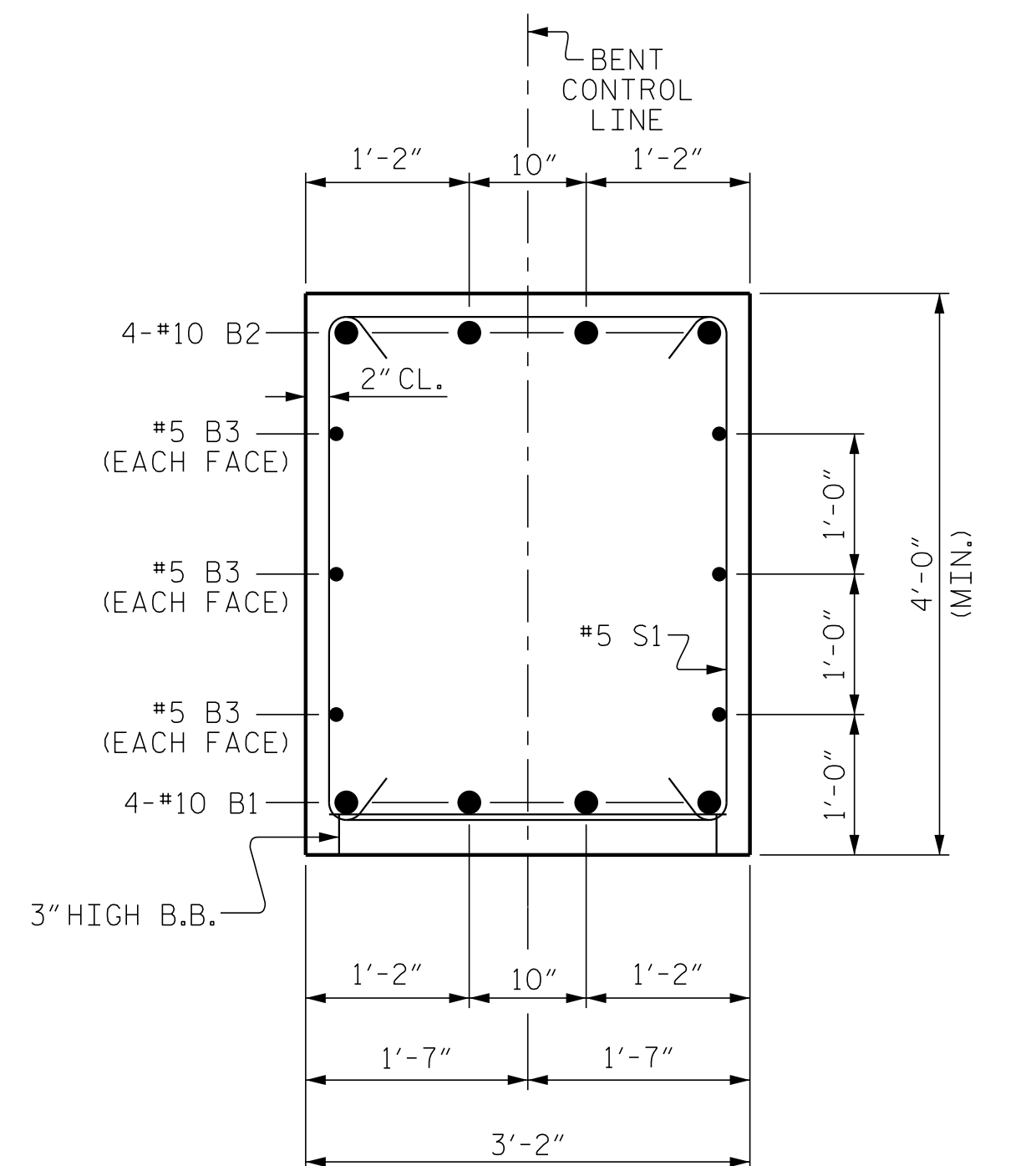




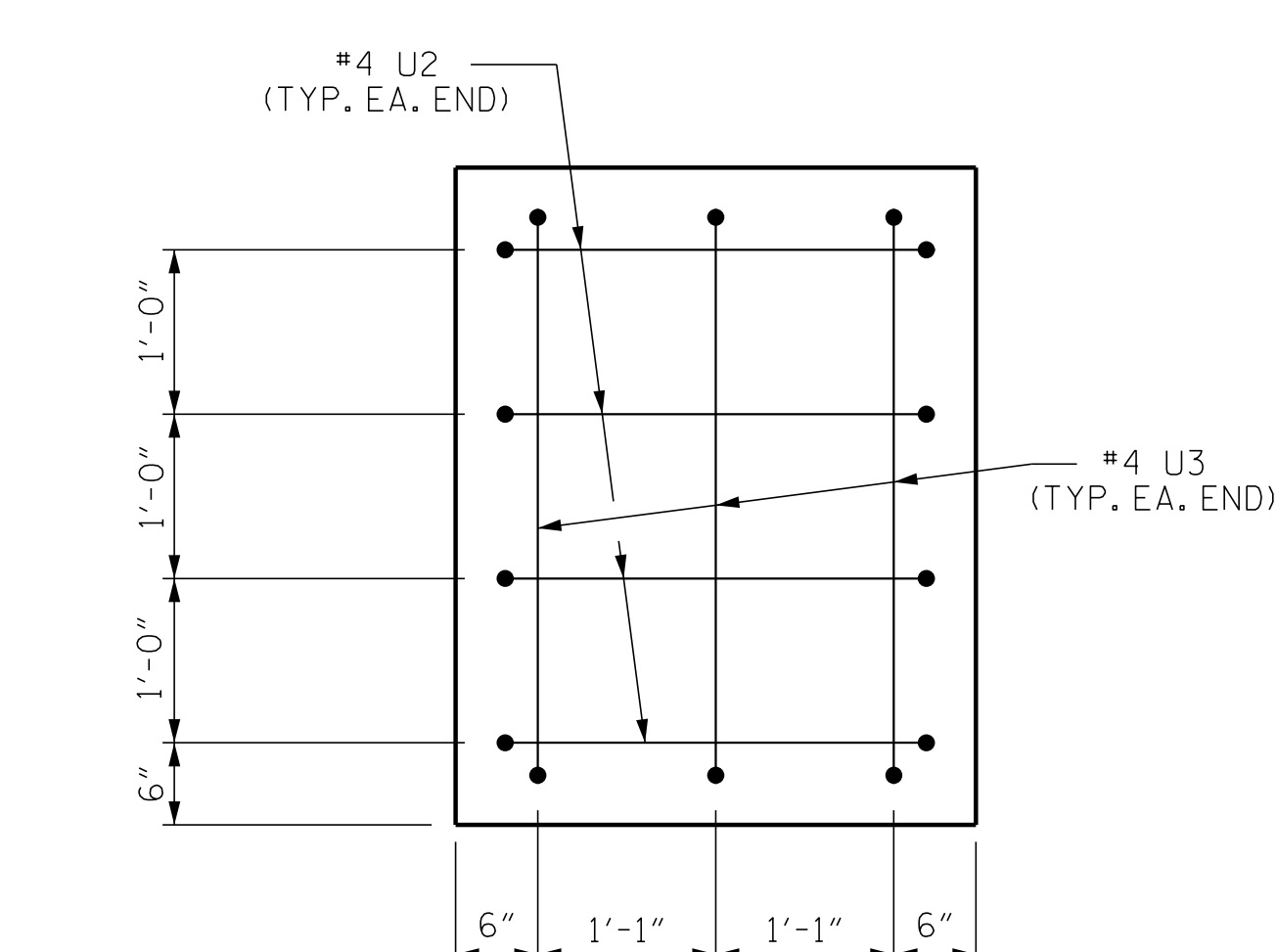
PLAN OF DRILLED PIERS & COLUMNS



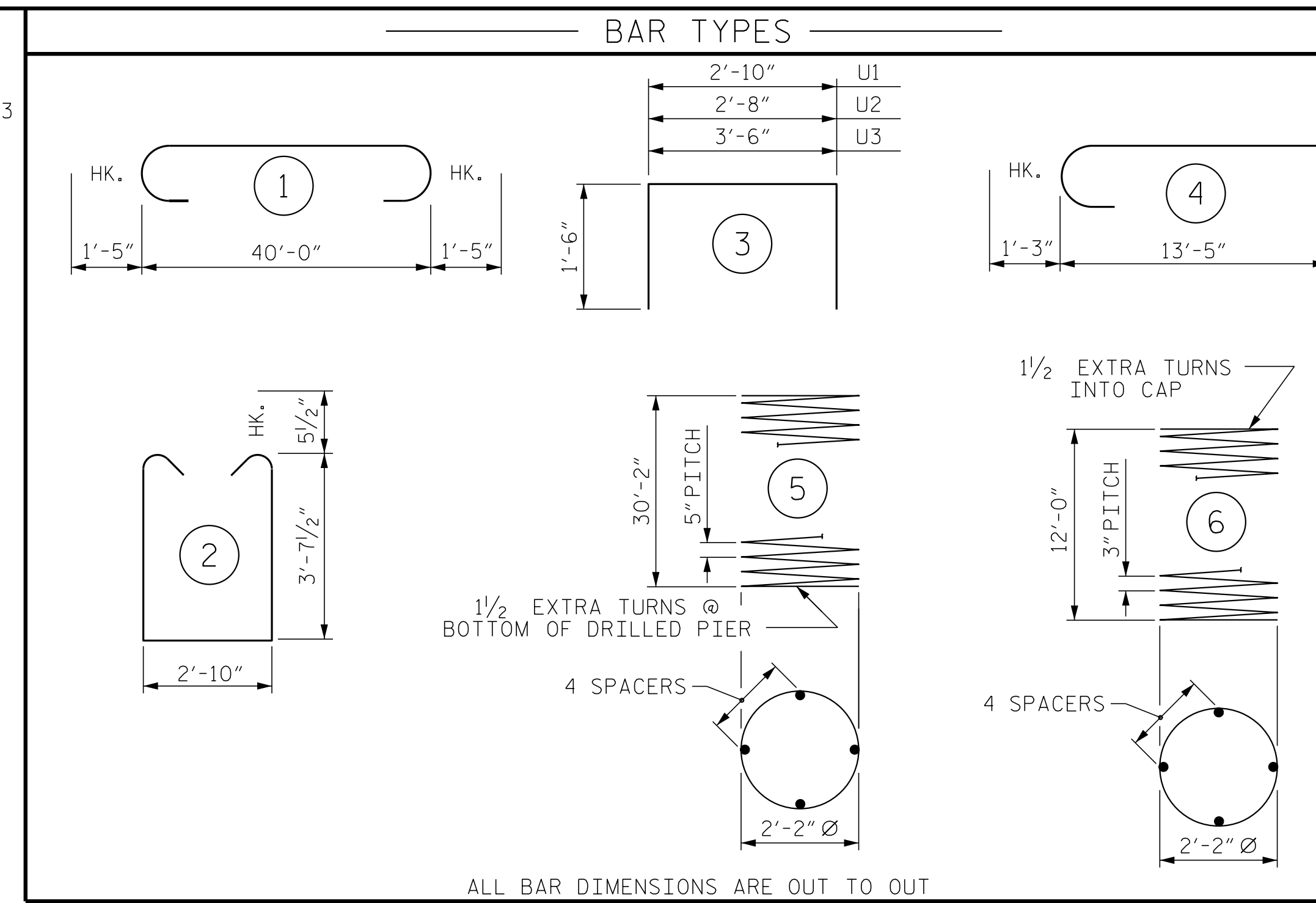
END ELEVATION



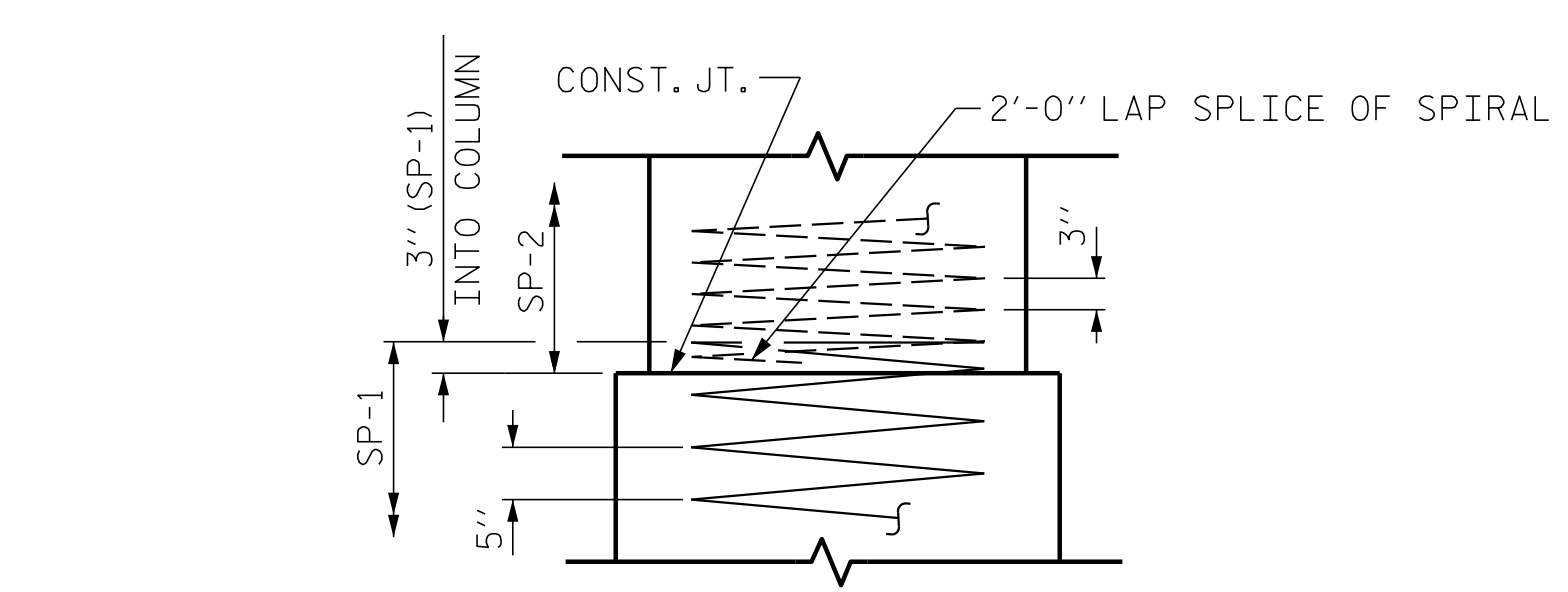
SECTION A-A



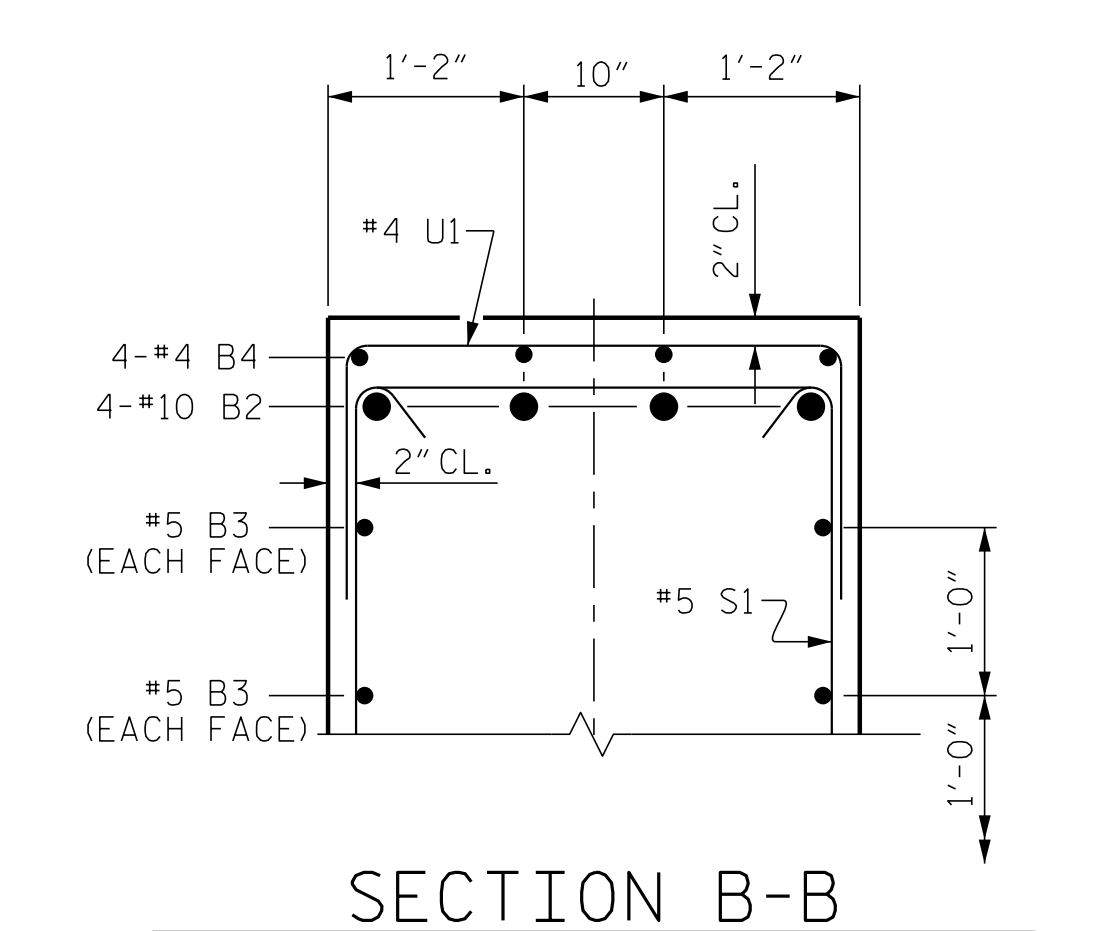
END OF CAP VIEW (TYPICAL BOTH ENDS)



ALL BAR DIMENSIONS ARE OUT TO OUT



CONSTRUCTION JOINT DETAIL

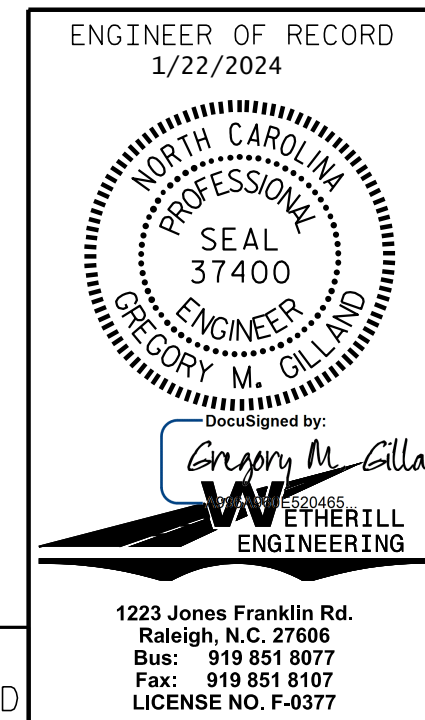


SECTION B-B

BILL OF MATERIAL

BENT No. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	STR	40'-0"	688
B2	4	#10	1	42'-10"	737
B3	6	#5	STR	40'-2"	251
B4	4	#4	STR	3'-8"	10
M1	30	#9	STR	37'-3"	3,800
S1	42	#5	2	11'-0"	482
U1	36	#4	3	5'-10"	140
U2	8	#4	3	5'-8"	30
U3	6	#4	3	6'-6"	26
V1	30	#9	4	14'-8"	1,496
REINFORCING STEEL					7,660 LBS.
SP-1	3	*	5	492'-7"	1,541
SP-2	3	**	6	330'-9"	663
SPIRAL COLUMN REINFORCING STEEL					2,204 LBS.
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR					
** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR					
CLASS A CONCRETE BREAKDOWN					
POUR #2 (COLUMNS)					6.4 C.Y.
POUR #3 (CAP)					19.6 C.Y.
TOTAL CLASS A CONCRETE					26.0 C.Y.

PROJECT NO. BR-0062  
 ANSON COUNTY  
 STATION: 18+07.50 -L-  
 SHEET 2 OF 2



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT No. 2

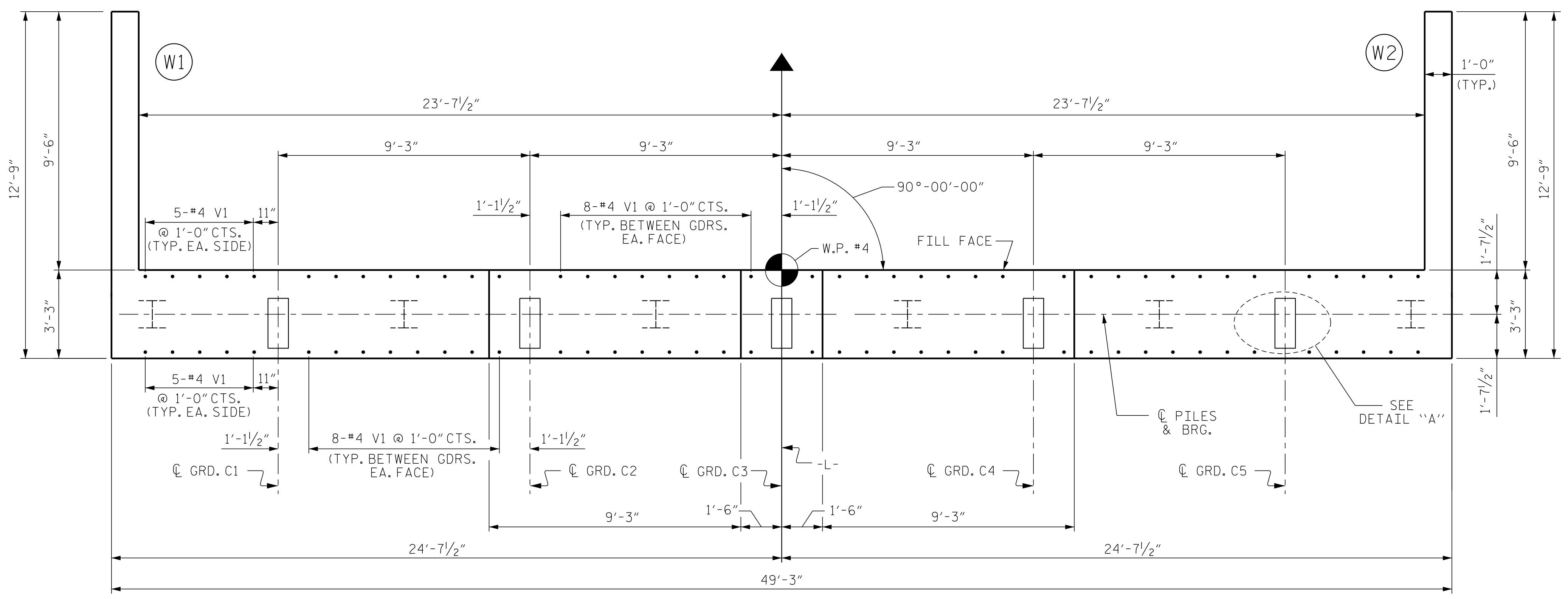
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-30  
 TOTAL SHEETS 35

DRAWN BY: G. GILLAND DATE: 10-23  
 CHECKED BY: J. DILWORTH DATE: 10-23

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PLAN

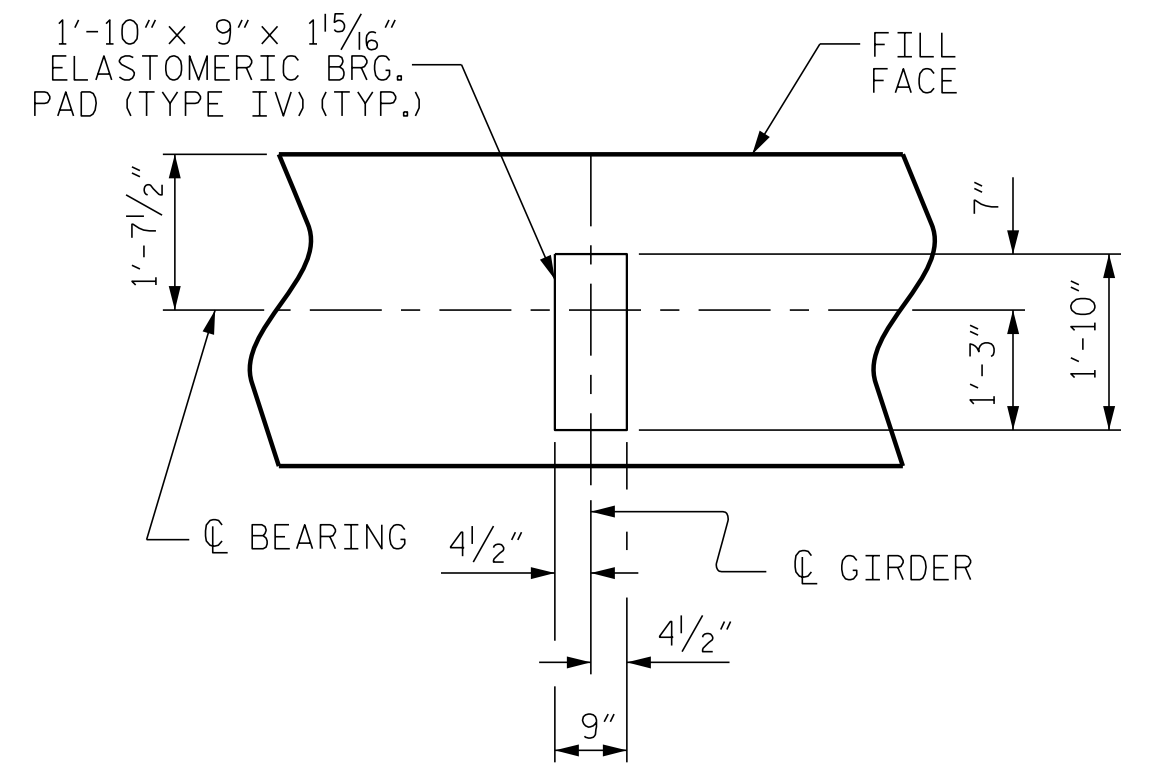
(CONCRETE COLLARS NOT SHOWN FOR CLARITY)

**NOTES**

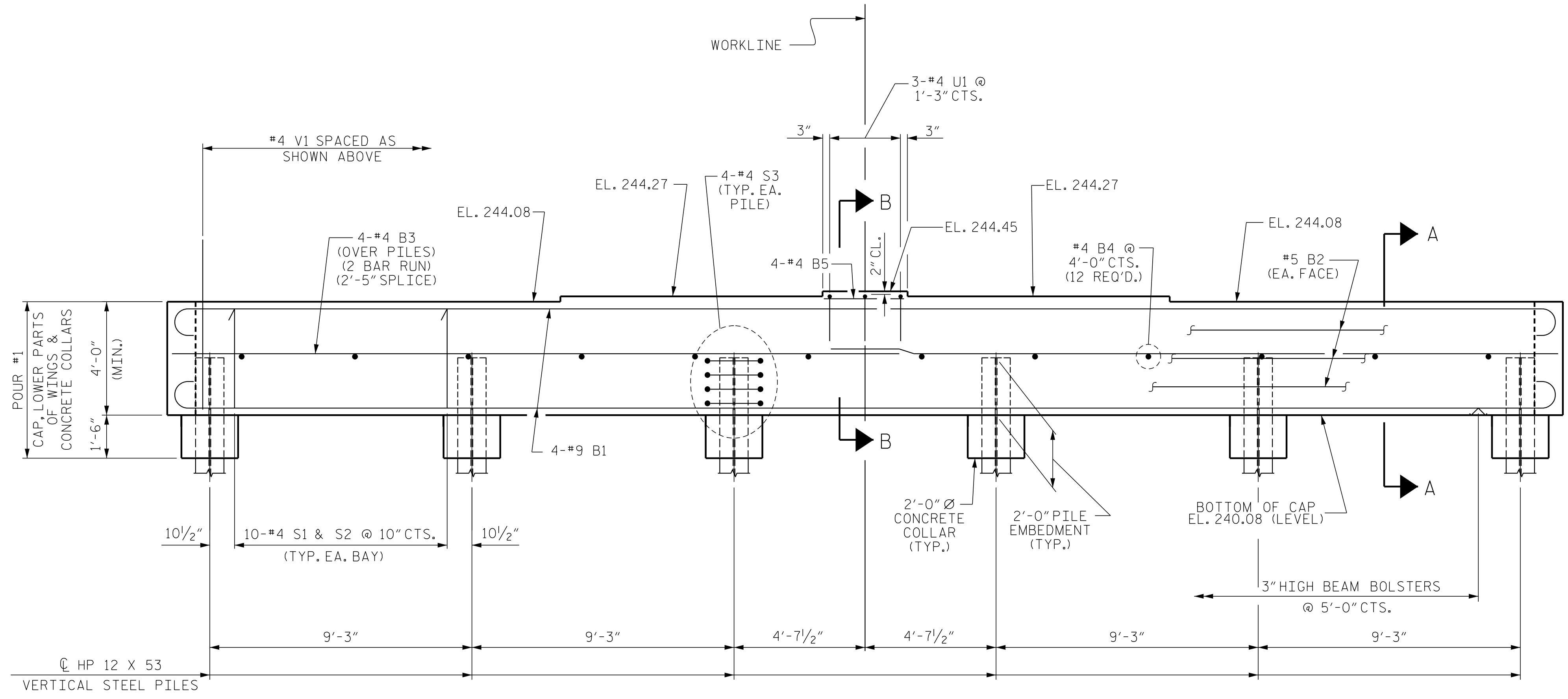
THE TOP SURFACE OF THE END BENT CAP, EXCEPT THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".

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

THE UPPER PART OF INTEGRAL PORTION AND WINGS SHALL BE POURED WITH THE SUPERSTRUCTURE. SEE SUPERSTRUCTURE PLAN OF SPANS.



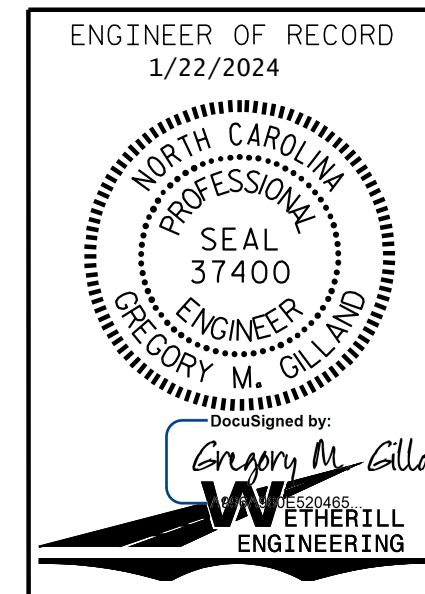
DETAIL A  
(TYP. EA. GIRDER)



ELEVATION

FOR SECTION A-A & B-B, SEE SHEET 3 OF 3.

PROJECT NO. BR-0062  
ANSON COUNTY  
 STATION: 18+07.50 -L-  
 SHEET 1 OF 3



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT No. 2

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

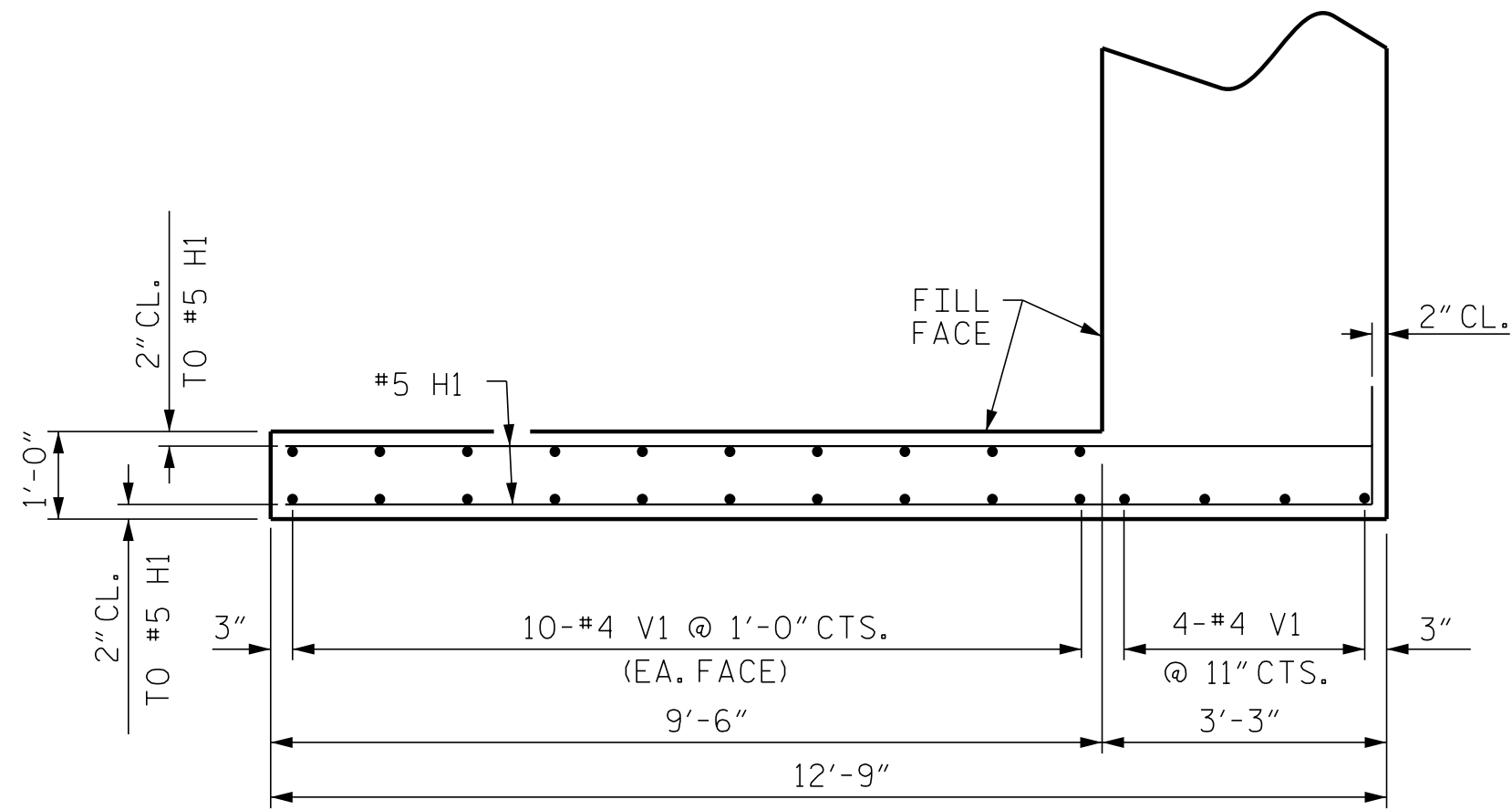
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 CHECKED BY: G. GILLAND DATE: 10/23

DOCUMENT NOT CONSIDERED FINAL  
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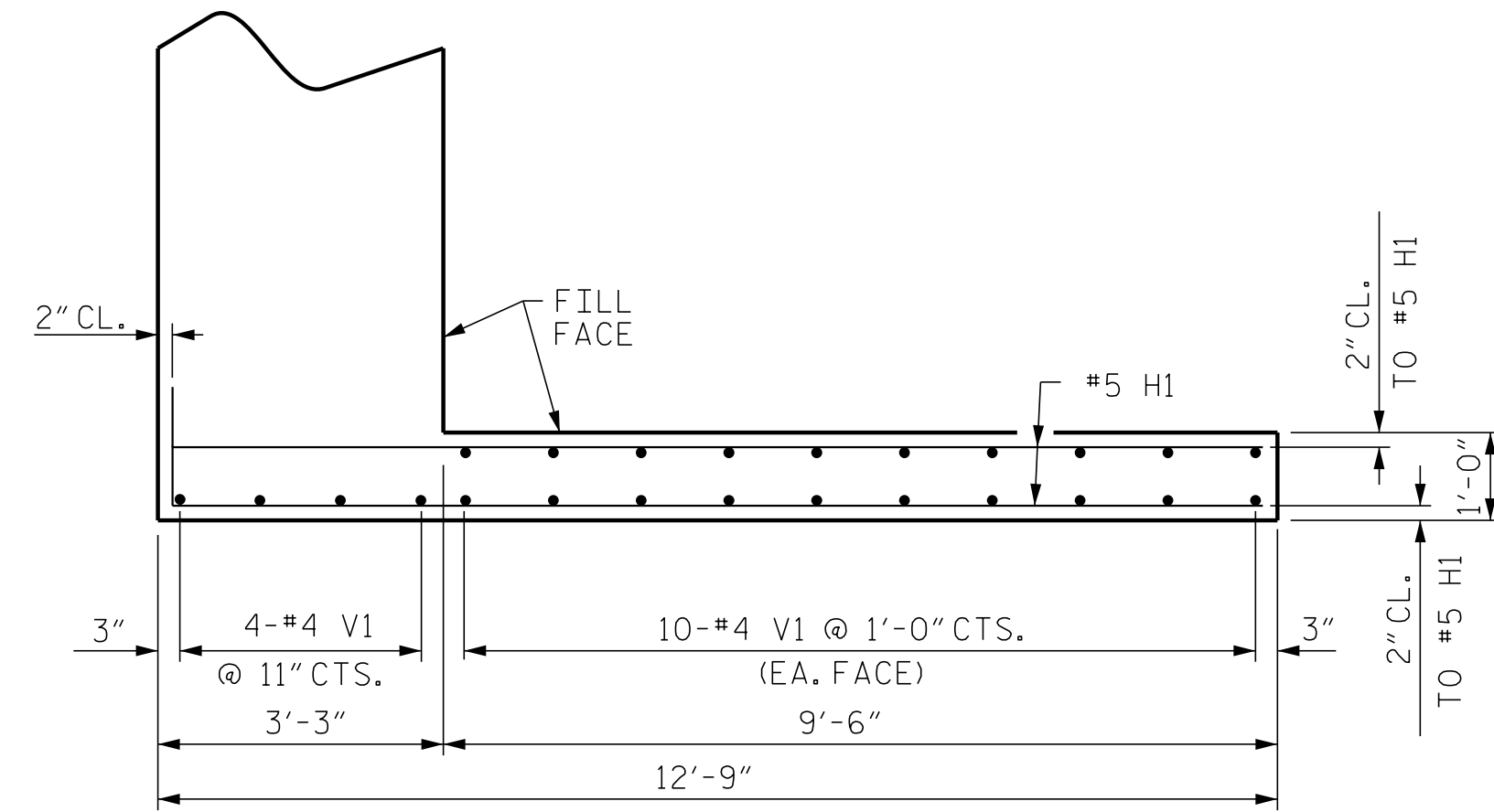
1223 Jones Franklin Rd.  
 Raleigh, N.C. 27606  
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 LICENSE NO. F-0377

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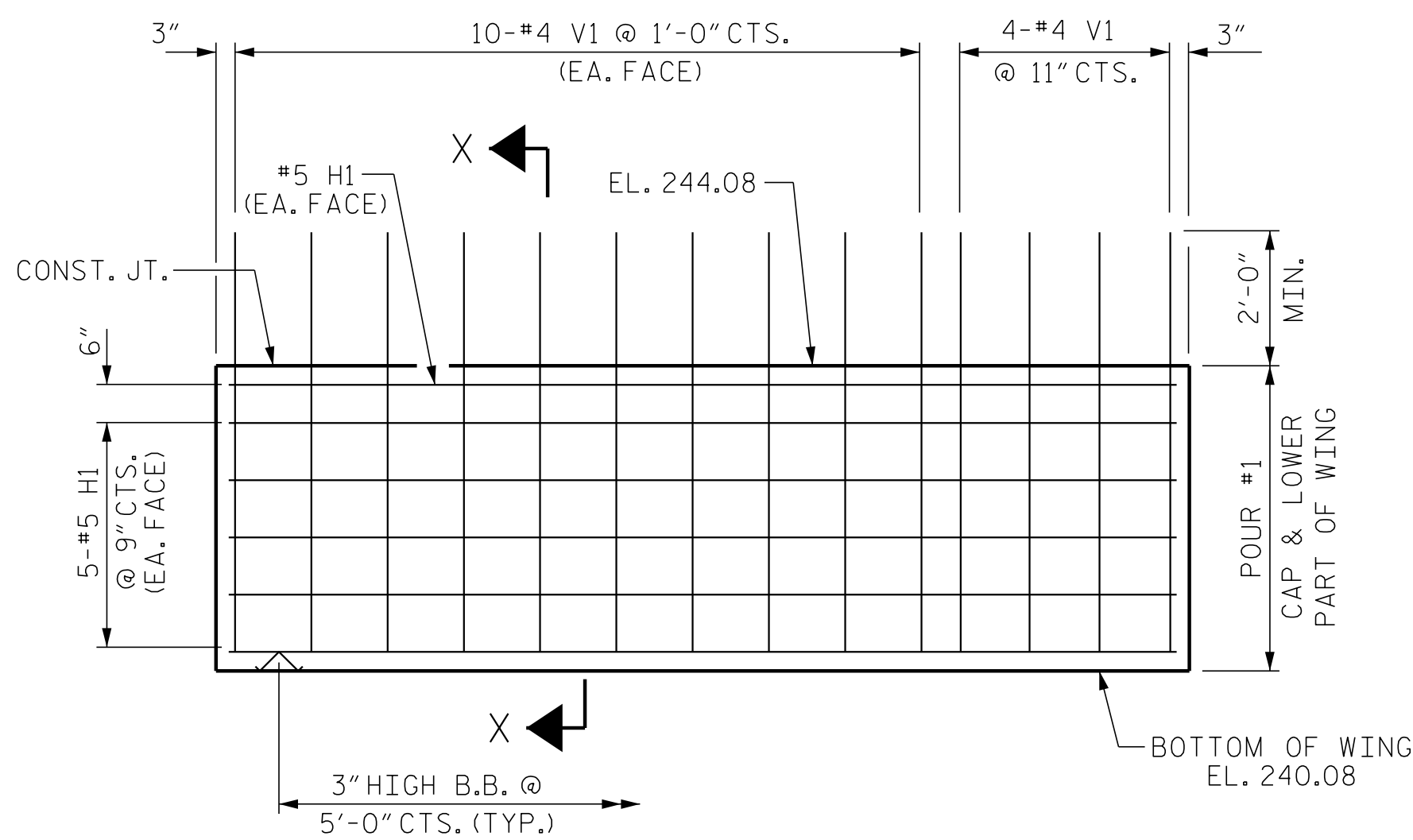




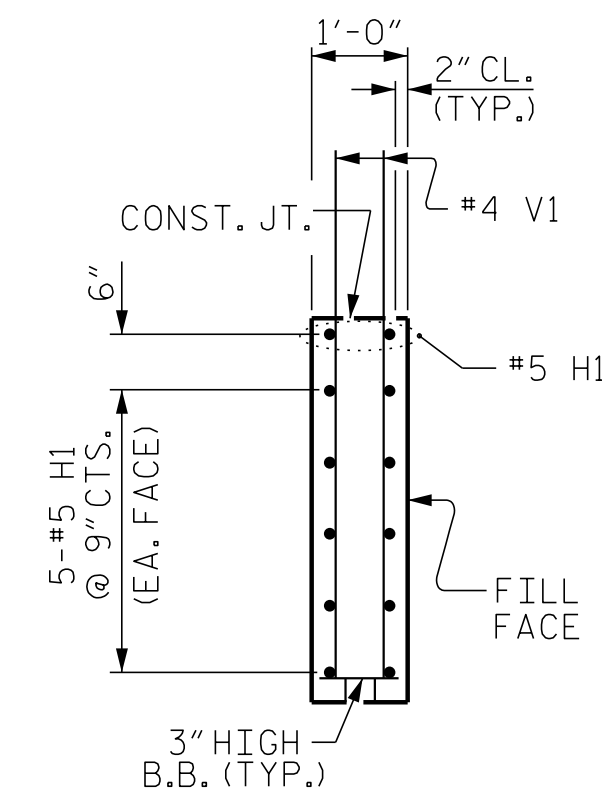
PLAN OF WING - W1



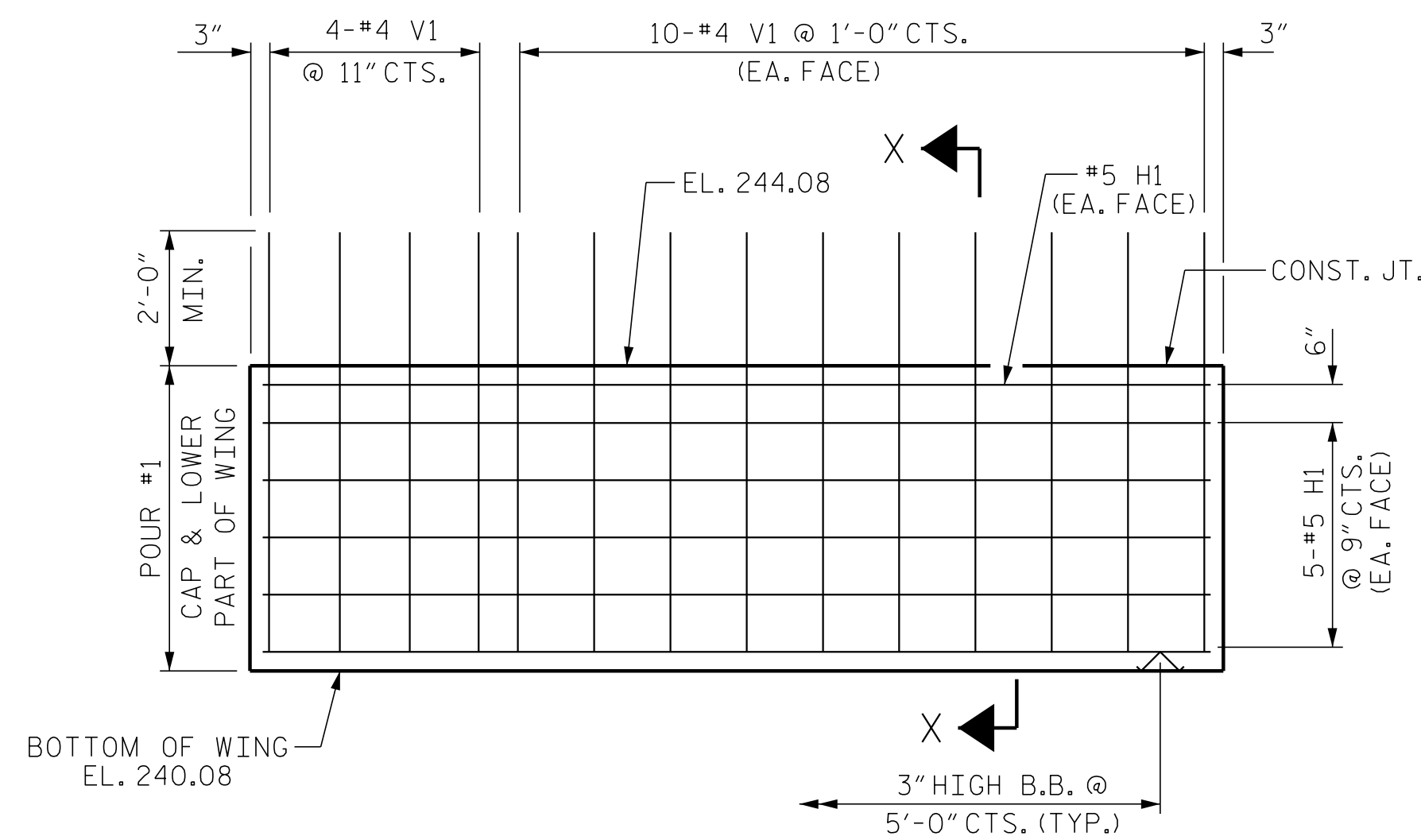
PLAN OF WING - W2



ELEVATION OF WING - W1



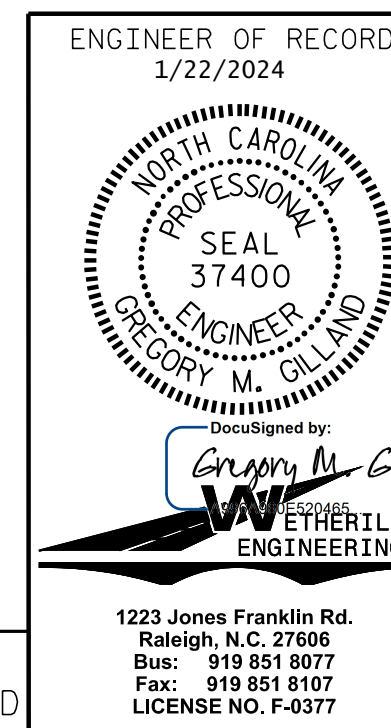
SECTION X-X



ELEVATION OF WING - W2

PROJECT NO. BR-0062  
 ANSON COUNTY  
 STATION: 18+07.50 -L-

SHEET 2 OF 3

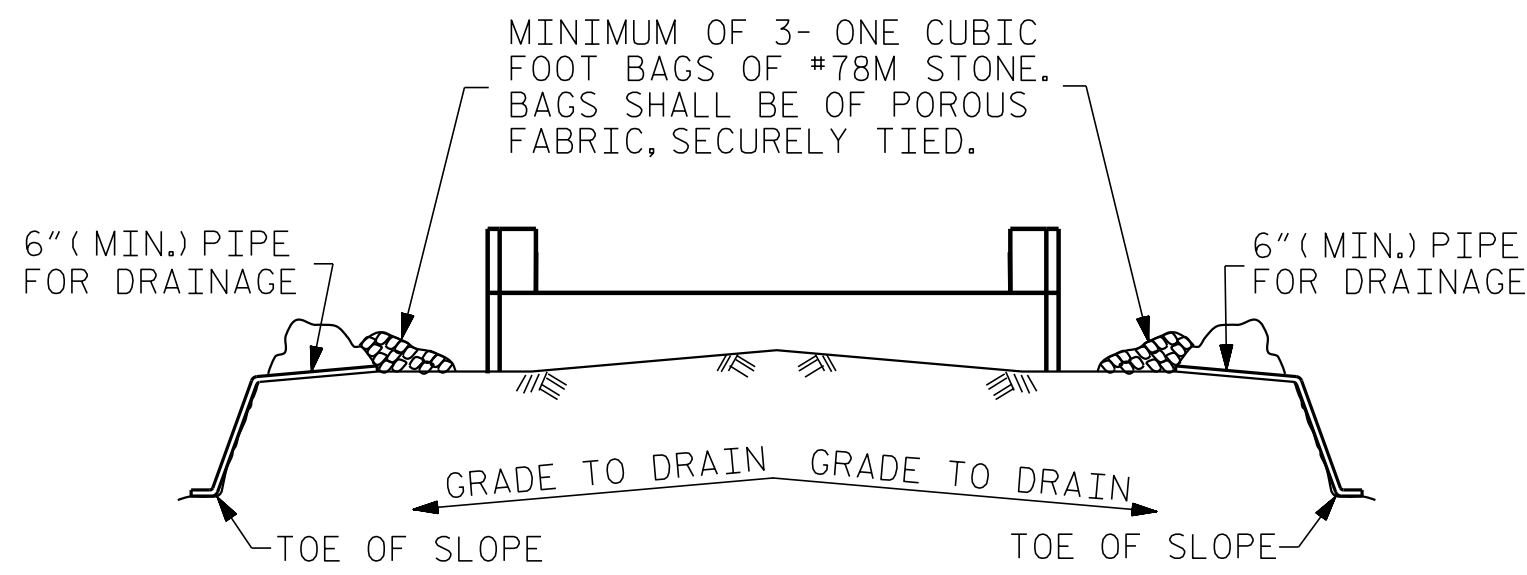


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT No. 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-32
					TOTAL SHEETS 35

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

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DRAWN BY: D. HODGE DATE: 5/23  
 CHECKED BY: G. GILLAND DATE: 10/23

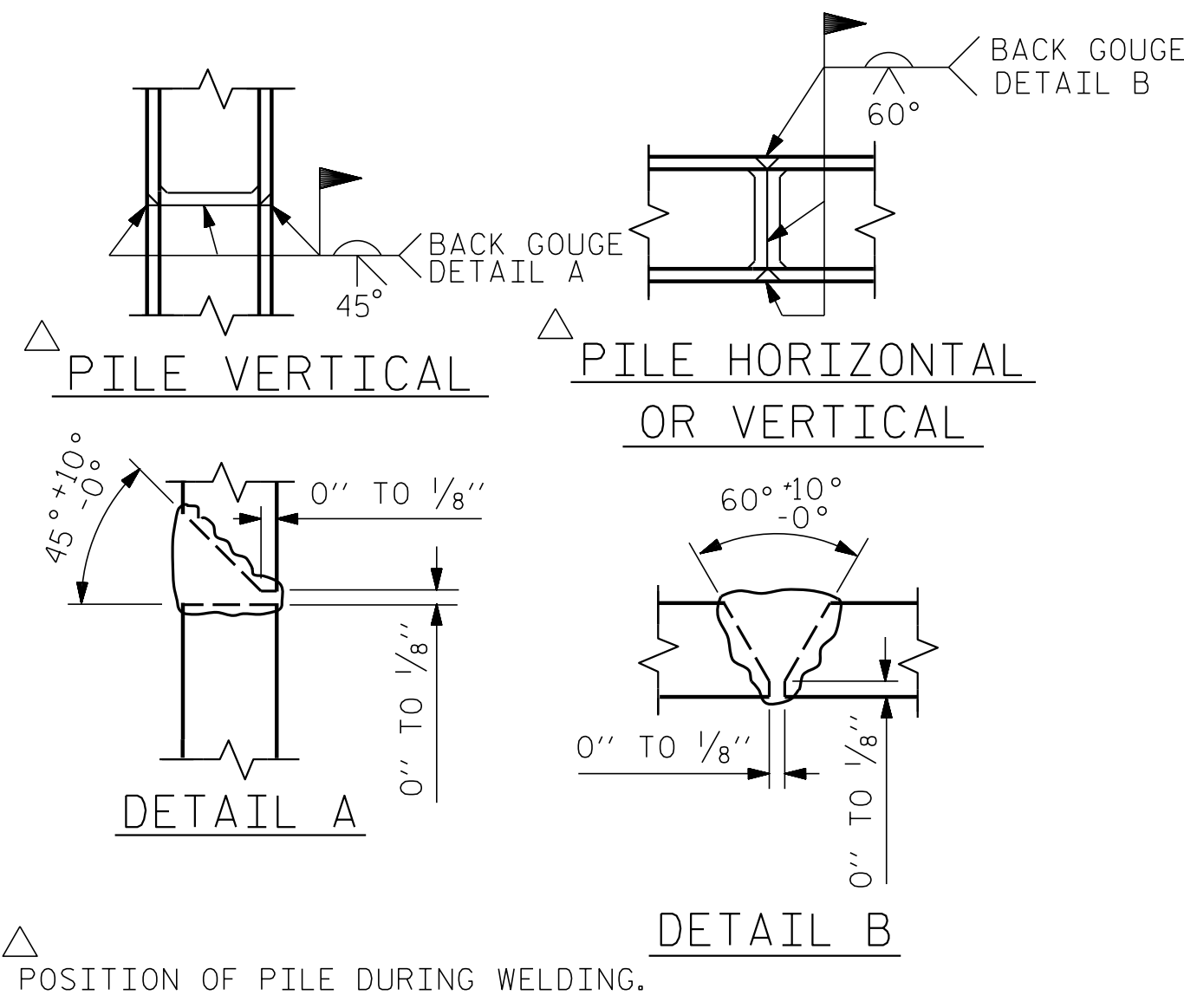


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

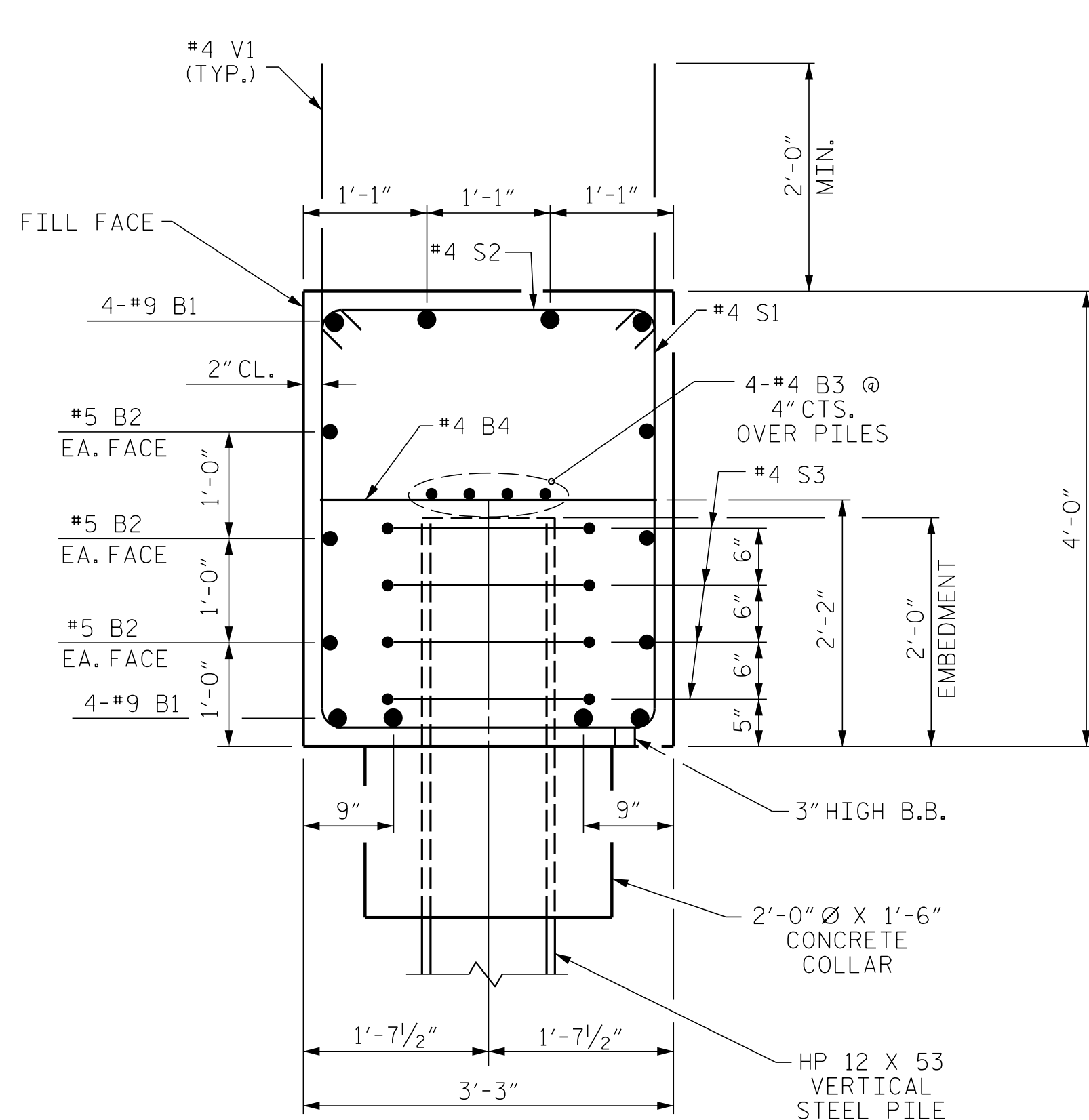
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

### TEMPORARY DRAINAGE AT END BENT

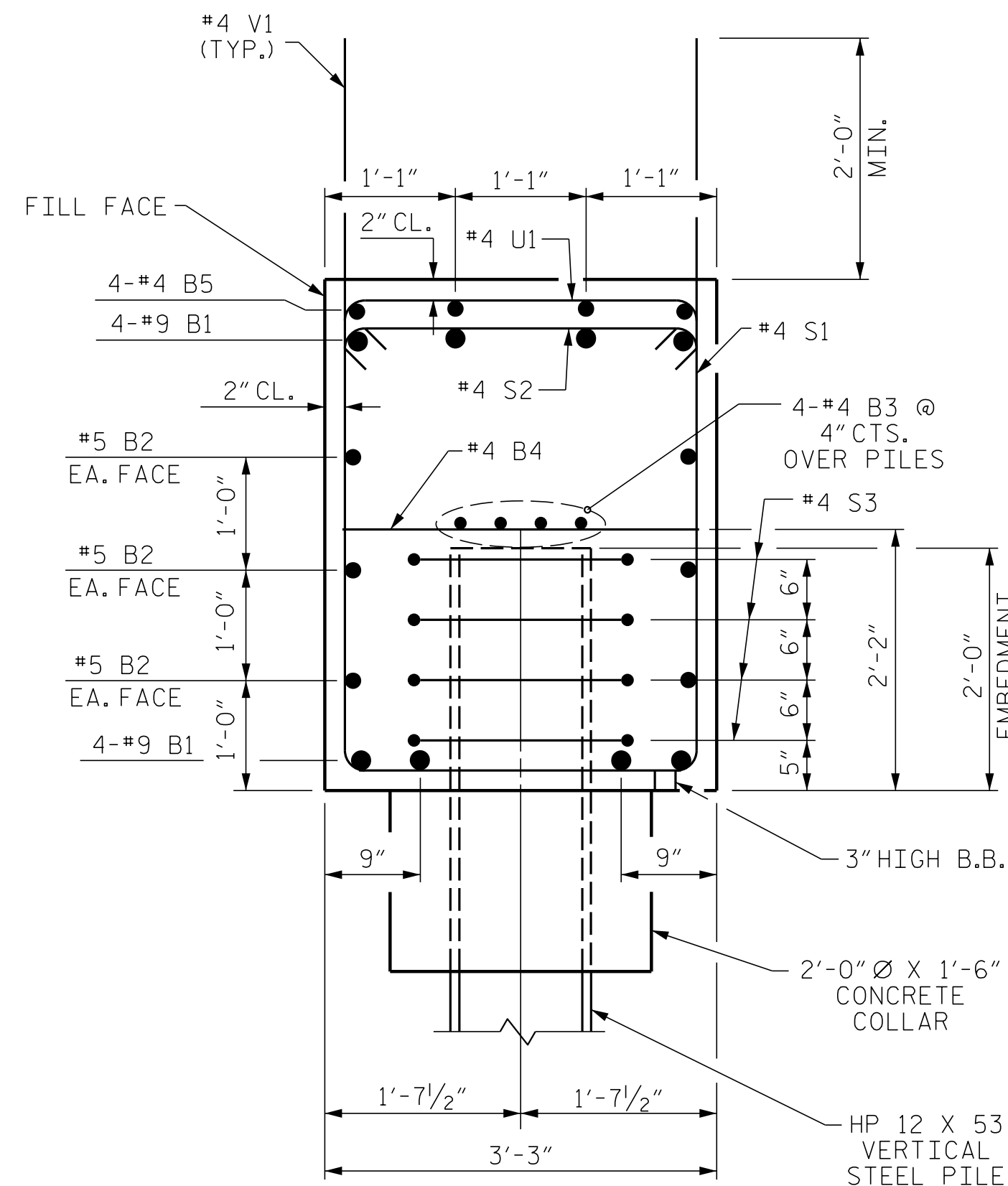


### PILE SPLICE DETAILS

BAR TYPES					BILL OF MATERIAL						
					END BENT No. 2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		51'-3"	1,394	B1	8	#9		51'-3"	1,394
B2	6	#5	STR	48'-11"	306	B2	6	#5	STR	48'-11"	306
B3	8	#4	STR	25'-8"	137	B3	8	#4	STR	25'-8"	137
B4	12	#4	STR	2'-11"	23	B4	12	#4	STR	2'-11"	23
B5	4	#4	STR	2'-8"	7	B5	4	#4	STR	2'-8"	7
H1	24	#5		13'-3"	332	H1	24	#5		13'-3"	332
S1	50	#4	3	10'-11"	365	S1	50	#4	3	10'-11"	365
S2	50	#4	4	3'-8"	122	S2	50	#4	4	3'-8"	122
S3	24	#4	5	6'-6"	104	S3	24	#4	5	6'-6"	104
U1	3	#4	6	5'-11"	12	U1	3	#4	6	5'-11"	12
V1	132	#4	STR	6'-0"	529	V1	132	#4	STR	6'-0"	529
REINFORCING STEEL					3,331 LBS.						
CLASS A CONCRETE BREAKDOWN											
POUR #1 CAP, CONC. COLLARS & LOWER PART OF WINGS					28.1 C.Y.						
TOTAL CLASS A CONCRETE					28.1 C.Y.						

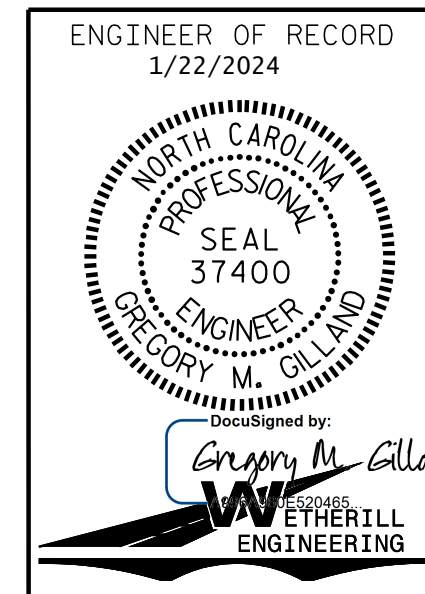


SECTION A-A



SECTION B-B

PROJECT NO. BR-0062  
 ANSON COUNTY  
 STATION: 18+07.50 -L-  
 SHEET 3 OF 3



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT No. 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33
1			3			TOTAL SHEETS
2			4			35

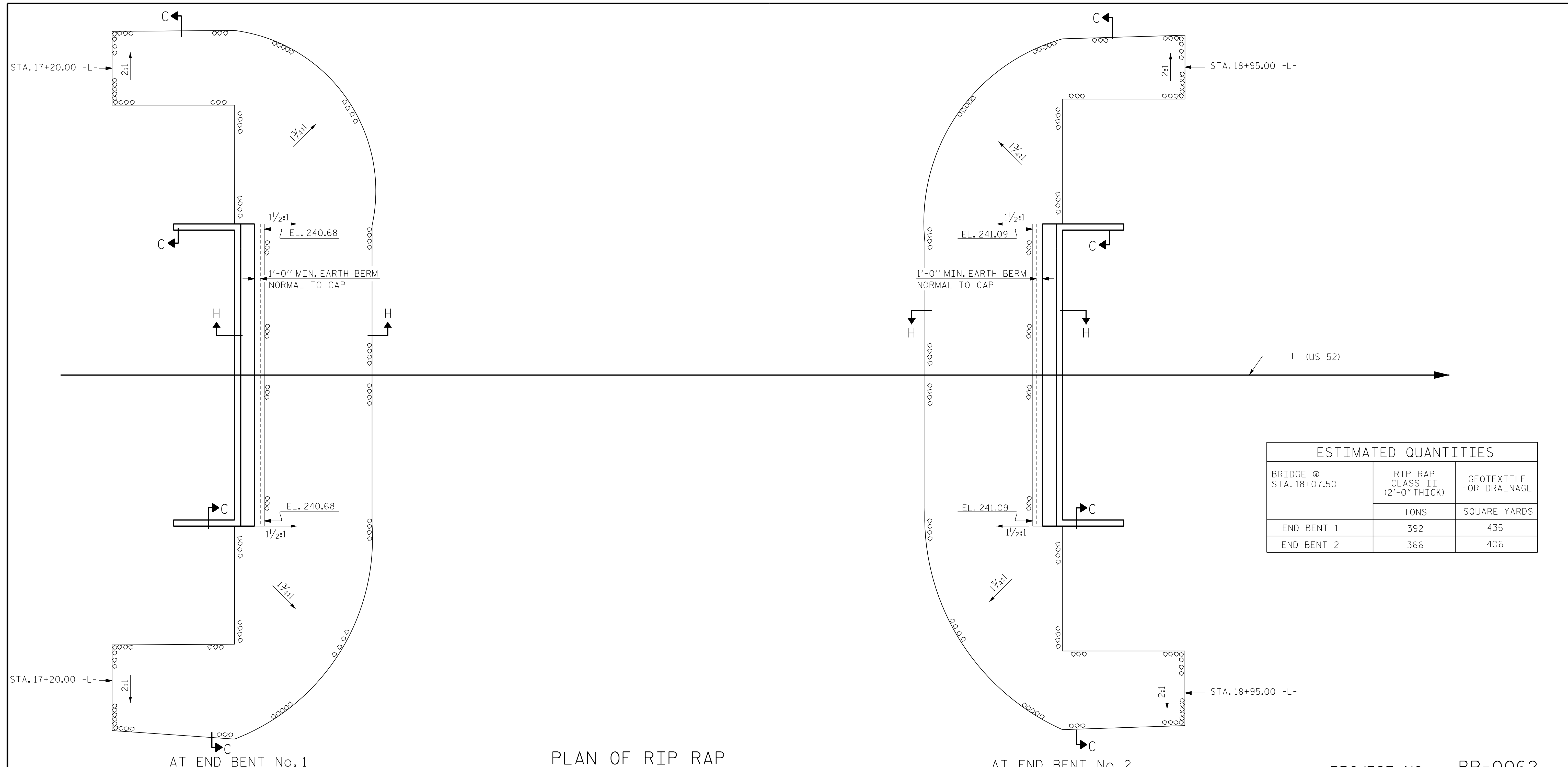
DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

1223 Jones Franklin Rd.  
 Raleigh, N.C. 27606  
 Bus: 919 851 8077  
 Fax: 919 851 8107  
 LICENSE NO. F-0377

PA:2020\20130.01\_BR-0062\Structures\DCM\BR-0062\_SD\_EB\_0300 14.dgn  
 1/19/2024 9:44:42 AM

DRAWN BY: D. HODGE DATE: 5/23  
 CHECKED BY: G. GILLAND DATE: 10/23



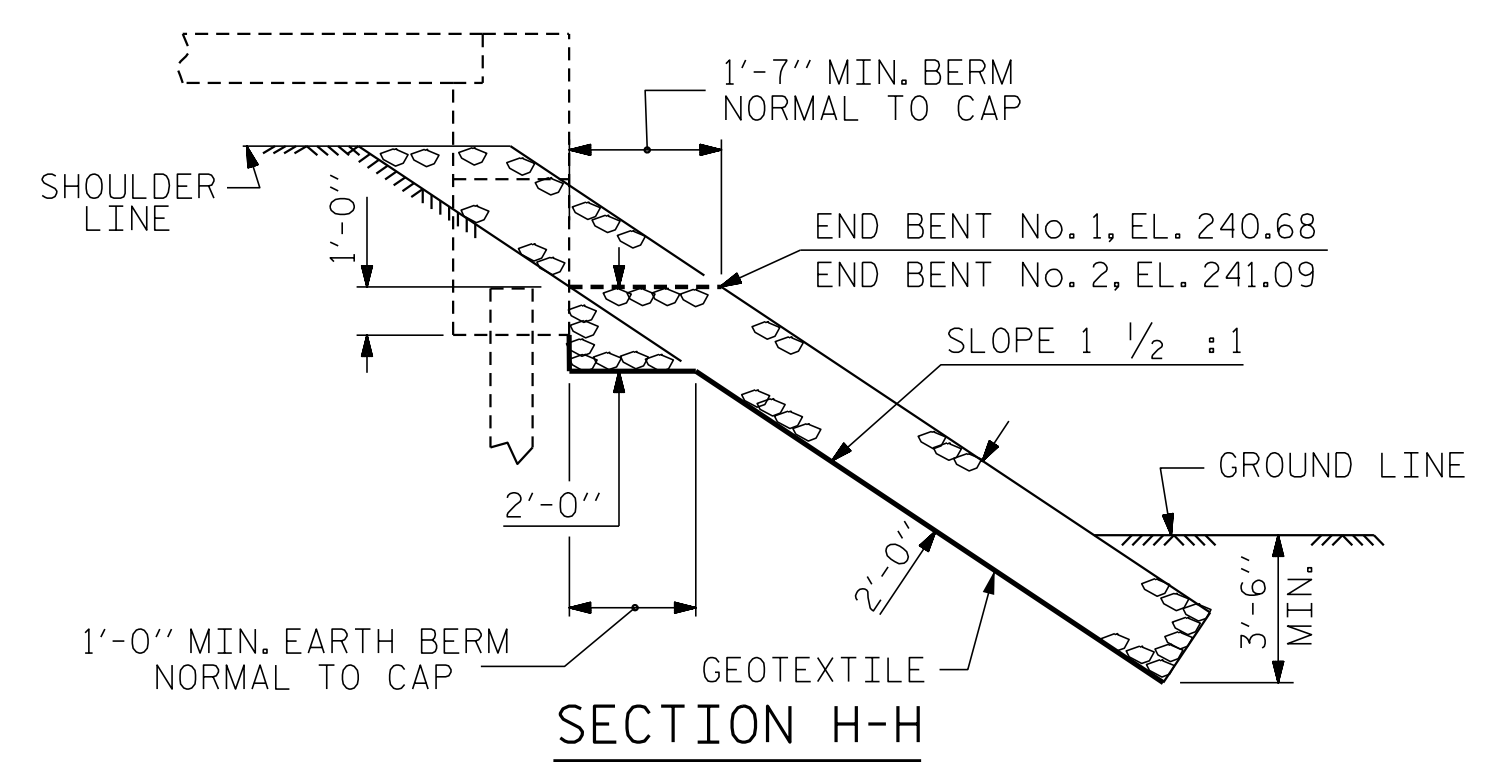


ESTIMATED QUANTITIES		
BRIDGE @ STA. 18+07.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	392	435
END BENT 2	366	406

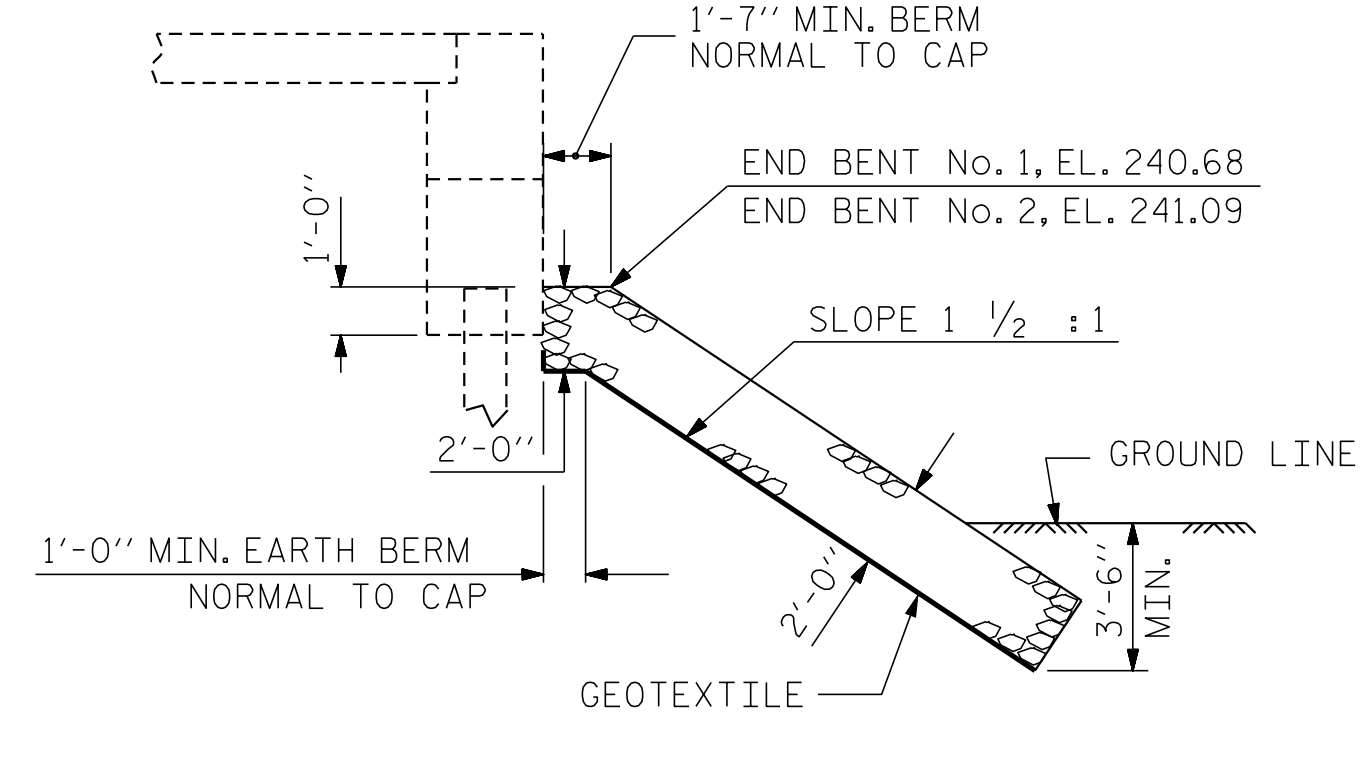
AT END BENT No. 1

PLAN OF RIP RAP

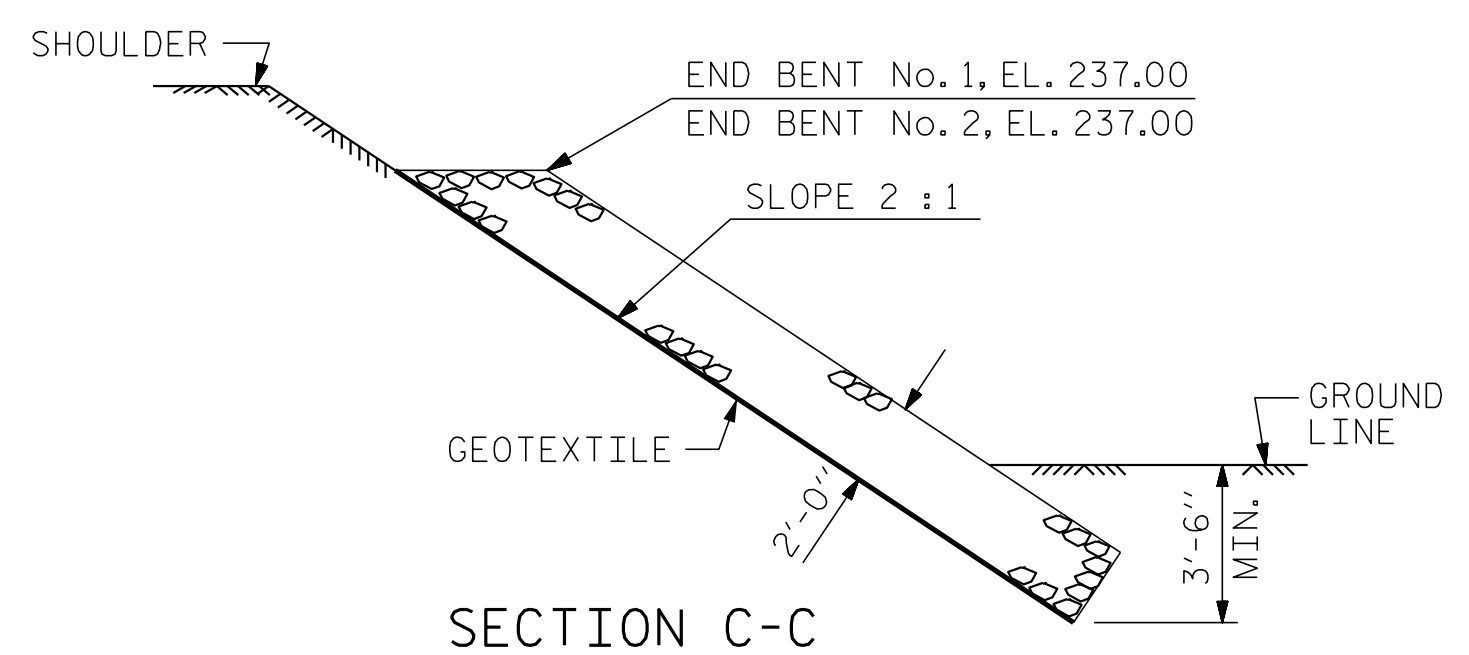
AT END BENT No. 2



SECTION H-H



SECTION C-C



SECTION C-C

BERM RIP RAPPED

PROJECT NO. BR-0062  
 ANSON COUNTY  
 STATION: 18+07.50 -L-

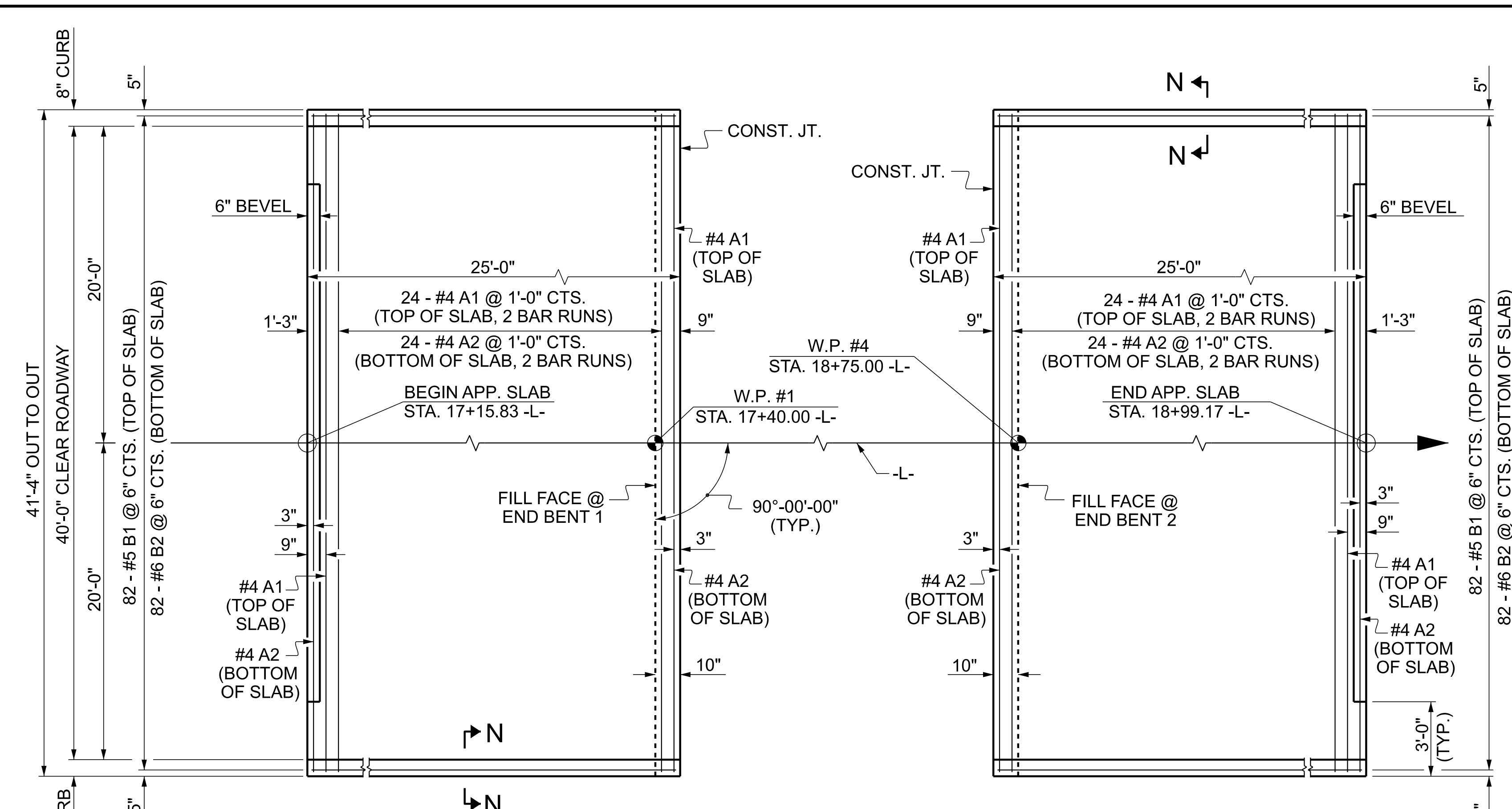
ENGINEER OF RECORD  
 1/22/2024  
  
 Designed by  
  
 1223 Jones Franklin Rd.  
 Raleigh, N.C. 27606  
 Bus: 919 851 8077  
 Fax: 919 851 8107  
 LICENSE NO. F-0377

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-34
1			3			TOTAL SHEETS
2			4			35

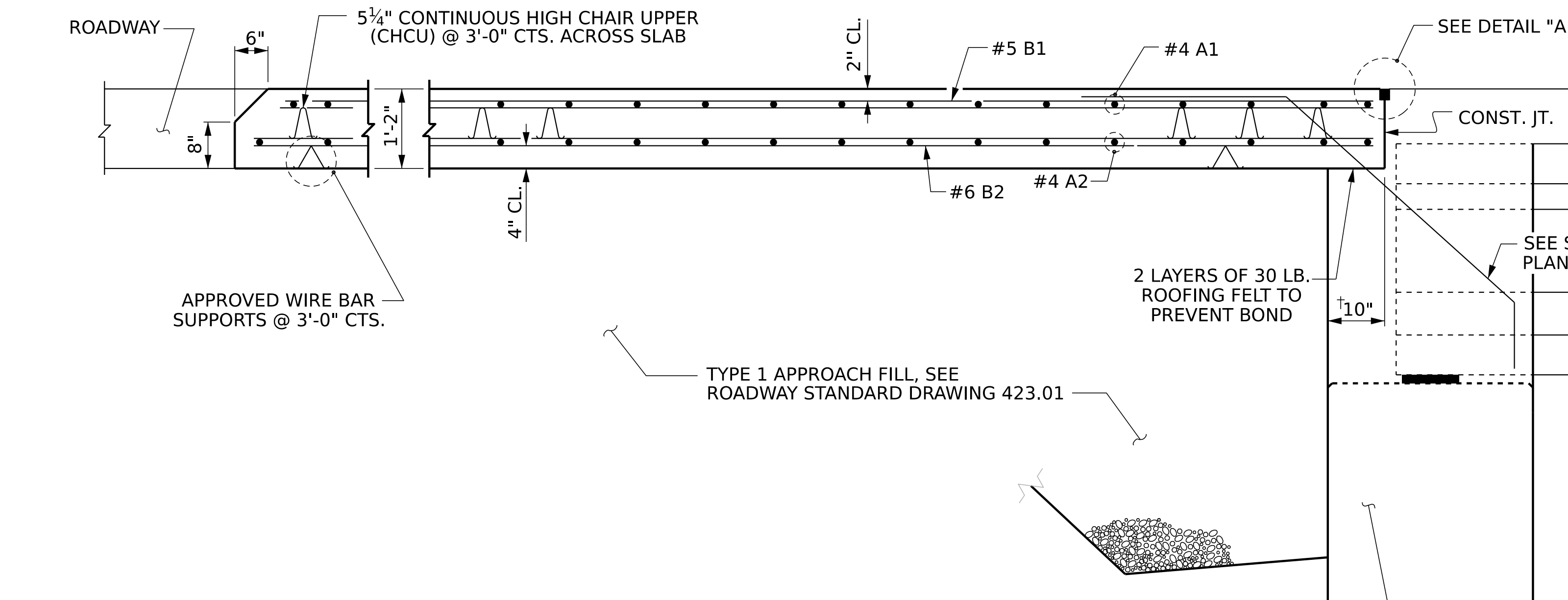
DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

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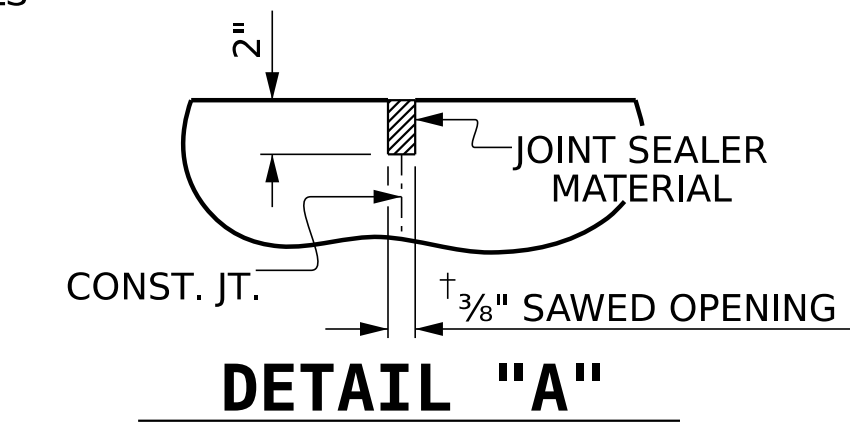
ASSEMBLED BY : J. PENDERGRAFT	DATE : 11-22
CHECKED BY : J. DILWORTH	DATE : 11-22
DRAWN BY : REK 1/84	REV. 10/11/II MAA/GM
CHECKED BY : RDU 1/84	REV. 12/21/II MAA/GM
	REV. 12/17 MAA/THC



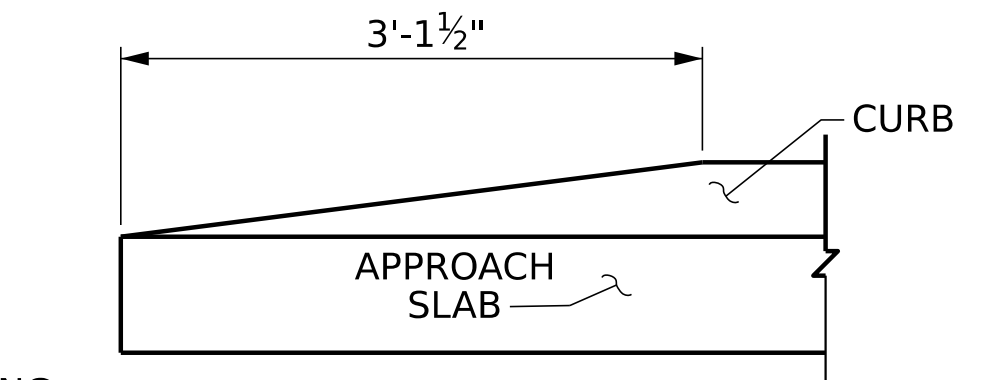
**PLAN @ END BENT 1**      **PLAN @ END BENT 2**  
 DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



**SECTION THRU SLAB**



**DETAIL "A"**

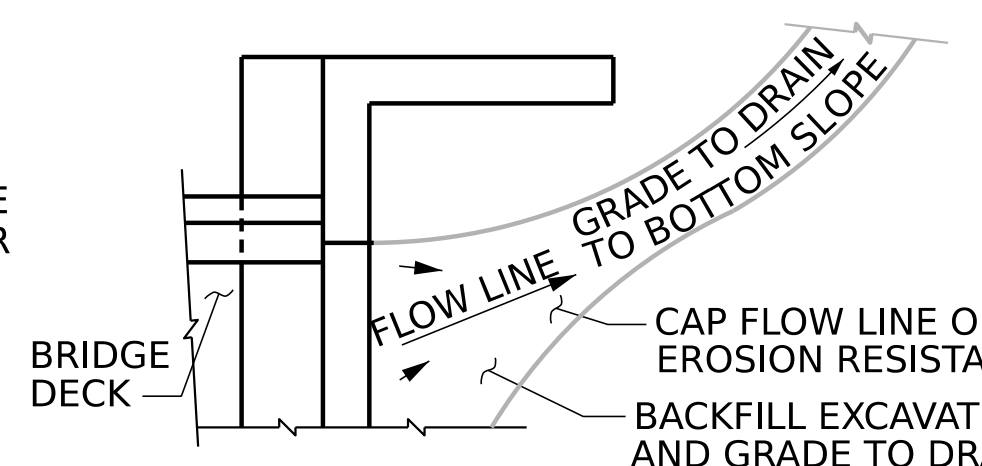


**END OF CURB WITHOUT SHOULDER BERM GUTTER**

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**

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



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.

**TEMPORARY DRAINAGE DETAIL**

ENGINEER OF RECORD  
 1/22/2024  
  
 Designed by:  
  
 GREGORY M. GILLILAND  
 ETHERHILL ENGINEERING  
 1223 Jones Franklin Rd.  
 Raleigh, N.C. 27606  
 Bus: 919 851 8077  
 Fax: 919 851 8107  
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**STANDARD**  
**BRIDGE APPROACH SLAB**  
**FOR INTEGRAL ABUTMENT**  
**WITH FLEXIBLE PAVEMENT**

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

SHEET NO. S-35  
 TOTAL SHEETS 35

**NOTES**

FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.  
 APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.  
 AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.  
 THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.  
 AT THE CONTRACTORS OPTION "TYPE 1A - ALTERNATE APPROACH FILL" (ROADWAY STD. 423.02) MAY BE CONSTRUCTED AT NO ADDITIONAL COST TO THE DEPARTMENT IN LIEU OF "TYPE 1 - APPROACH FILL".

**BILL OF MATERIAL**

FOR ONE APPROACH SLAB  
 (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	52	#4	STR	21'-6"	747
A2	52	#4	STR	21'-5"	744
*B1	82	#5	STR	24'-2"	2,067
B2	82	#6	STR	24'-8"	3,038
REINFORCING STEEL					3,782 LBS.
* EPOXY COATED REINFORCING STEEL					2,814 LBS.
CLASS AA CONCRETE					44.5 C. Y.

\* THESE BARS ARE EPOXY COATED

**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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ASSEMBLED BY: J. PENDERGRAFT/DAH	DATE: 11-23
CHECKED BY: G. GILLAND	DATE: 11-23
DRAWN BY: TLA 10/05	REV. 12/17 MAA/THC
CHECKED BY: GM 5/06	REV. 06/19 BNB/THC
	REV. 07/23 BNB/SNM

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED



## STANDARD NOTES

### DESIGN DATA:

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

### MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2024 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N.C. DEPARTMENT OF TRANSPORTATION.

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

### CONCRETE:

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

### CONCRETE CHAMFERS:

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

### DOWELS:

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

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

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

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

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

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

### REINFORCING STEEL:

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

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

### STRUCTURAL STEEL:

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

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 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