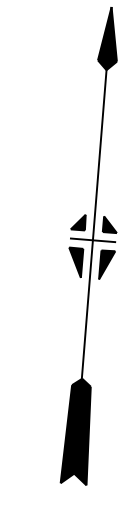
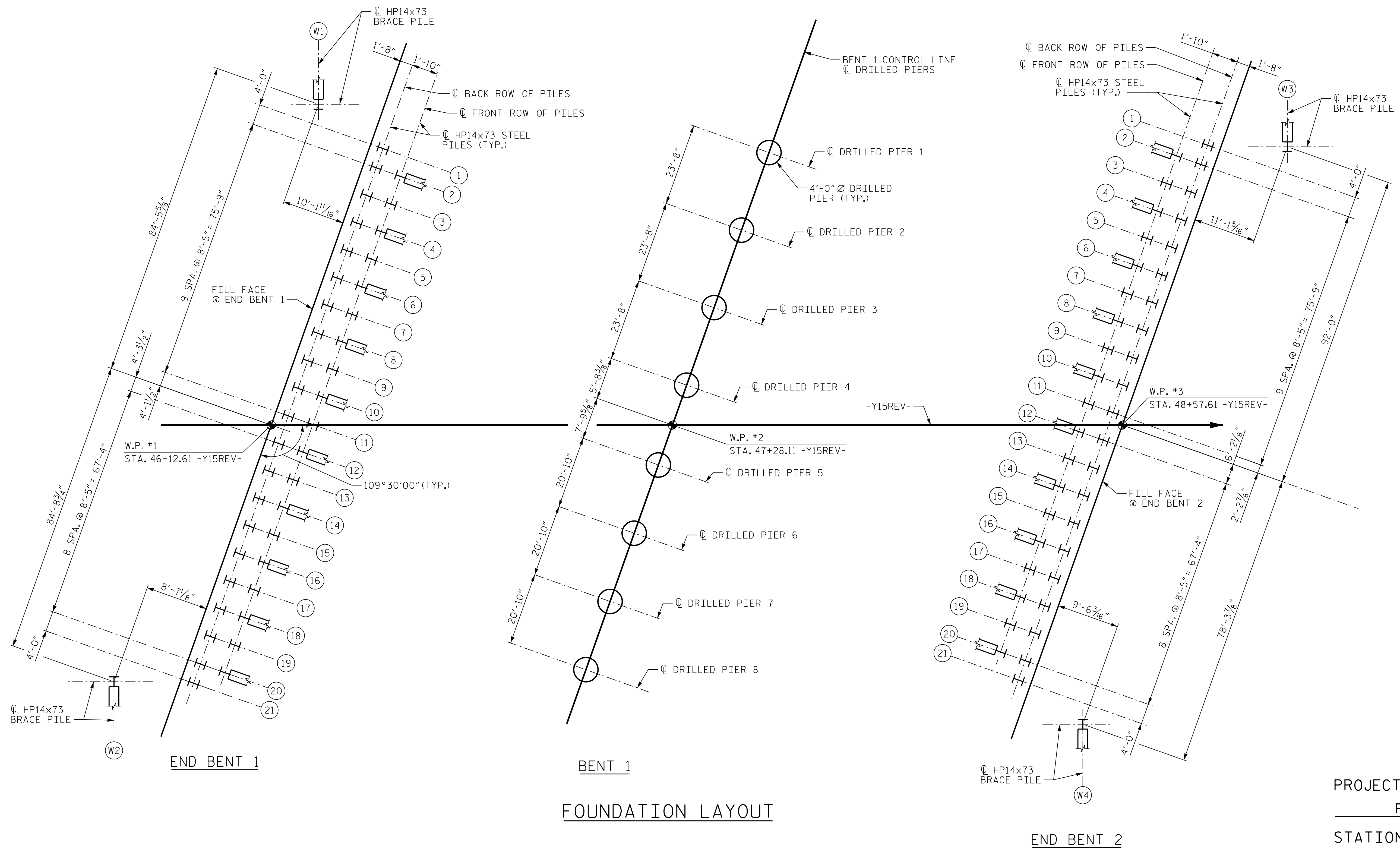


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FOUNDATION LAYOUT

NOTES  
FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.  
PILES AT END BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 100 TONS PER PILE.  
DRIVE PILES AT END BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 170 TONS PER PILE.  
FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.  
DRILLED PIERS AT BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 863 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 155 TSF.

INSTALL DRILLED PIERS AT BENT NO.1 TO A TIP ELEVATION NO HIGHER THAN 838.4 FT (PIER 1), 837.5 FT (PIER 2), 839.3 FT (PIER 3), 840.5 FT (PIER 4), 839.0 FT (PIER 5), 836.4 FT (PIER 6), 828.4 FT (PIER 7), AND 832.5 FT (PIER 8) WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 8 FT INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.  
CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.  
PILES AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 100 TONS PER PILE.  
DRIVE PILES AT END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 170 TONS PER PILE.

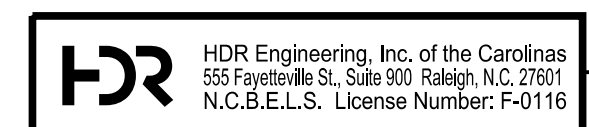
- LEGEND  
HP14X73 VERTICAL PILE  
HP14X73 BRACE PILE (BATTER 3H:12V)  
PILE GROUP NUMBER



10/18/2021

PROJECT NO. U-2579AB  
FORSYTH COUNTY  
STATION: 47+28.33 -Y15REV-  
SHEET 2 OF 4

Table with columns: DES BY, DATE, DWG BY, DATE, DES CHK, DATE. Includes names S. NIFONG, B. PETERSON, M. NEIHEISEL and dates 03/19, 05/19.

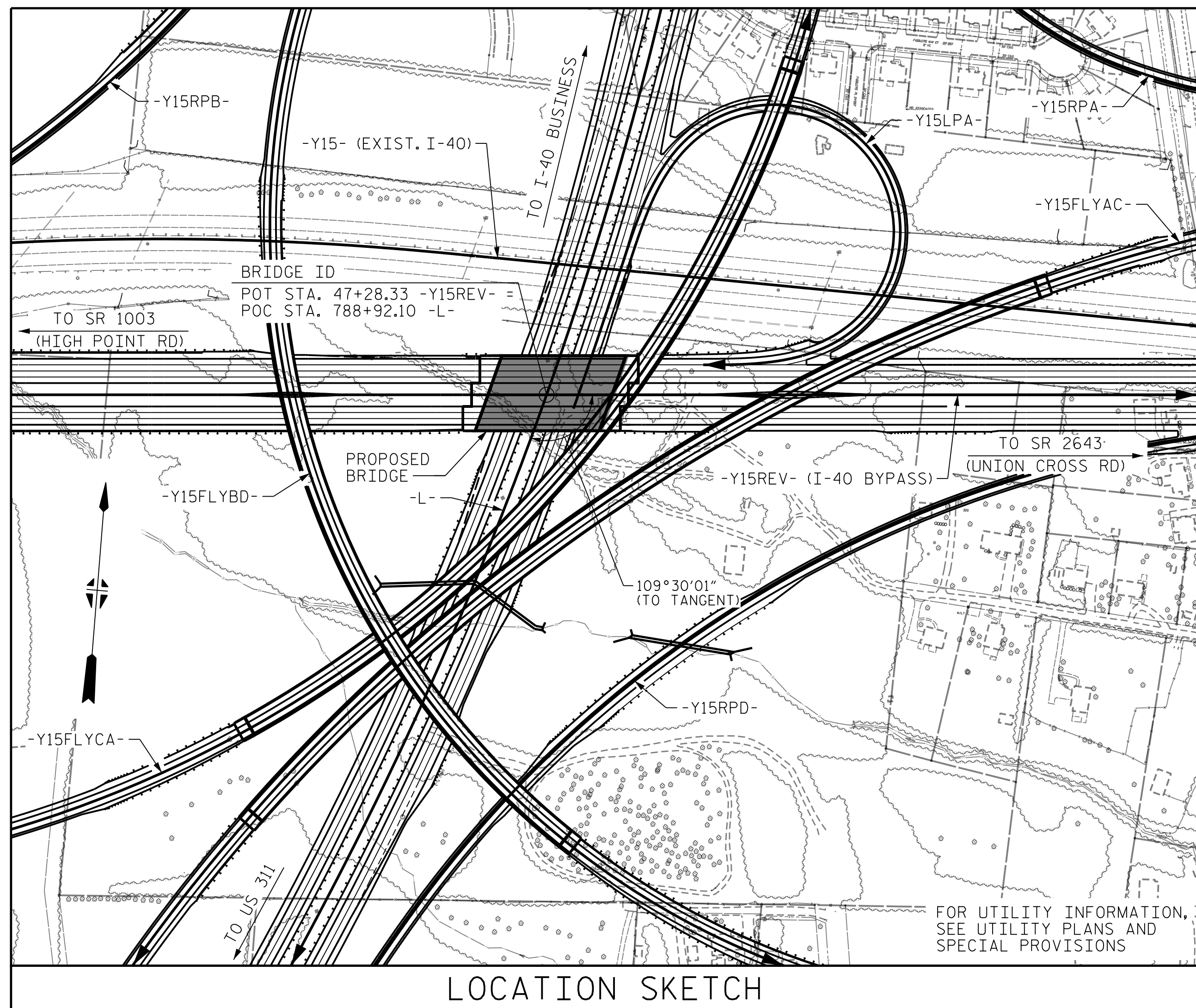


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DEPARTMENT OF TRANSPORTATION  
RALEIGH  
GENERAL DRAWING  
FOUNDATION LAYOUT  
REVISIONS table with columns: NO., BY, DATE, NO., BY, DATE. Includes sheet info: SHEET NO. 503-02, TOTAL SHEETS 61.



BENCHMARK #2: RR SPIKE SET IN BASE OF 15" MAPLE , STA. 759+77.80 -L-, 680' LT, EL. 844.44'



**NOTES**

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE SAMPLE BARS SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR THE SAMPLE BARS AND REPLACEMENT REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

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

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

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

WORK SHALL NOT BE STARTED ON THIS BRIDGE UNTIL ROADWAY SECTION HAS BEEN EXCAVATED.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

**SAMPLE BAR REPLACEMENT**

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

NOTE:  
 SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30" (SAMPLE LENGTH) PLUS TWO SPLICE LENGTHS AND  $f_y = 60\text{ksi}$ .

**TOTAL BILL OF MATERIAL**

	4'-0" DIA. DRILLED PIERS IN SOIL	4'-0" DIA. DRILLED PIERS NOT IN SOIL	CSL TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS, STA. 47+28.33 -Y15REV-	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP14X73 STEEL PILES	HP14X73 STEEL PILES	CONCRETE BARRIER RAIL	CONCRETE MEDIAN BARRIER	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	EXPANSION JOINT SEALS	63" PRESTRESSED CONCRETE FLORIDA I-BEAM GIRDERS		
	LIN. FT.	LIN. FT.	EA.	SO. FT.	SO. FT.	CU. YDS.	LUMP SUM	LB.	LB.	EA.	NO.	LIN. FT.	LIN. FT.	SO. YDS.	LUMP SUM	LUMP SUM	NO.	LIN. FT.	
SUPERSTRUCTURE				36,717	43,072		LUMP SUM					526.6	309.7		LUMP SUM	LUMP SUM	38	4,566.33	
END BENT NO. 1						213.2		24,653		42	42	1,630		552.2					
BENT NO. 1	70	117				239.6		56,019	9,206										
END BENT NO. 2						215.7		24,951		42	42	1,700		707.0					
TOTAL	70	117	1	36,717	43,072	668.5	LUMP SUM	105,623	9,206	84	84	3,330	526.6	1,259.2	LUMP SUM	LUMP SUM	38	4,566.33	

PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-

SHEET 3 OF 4



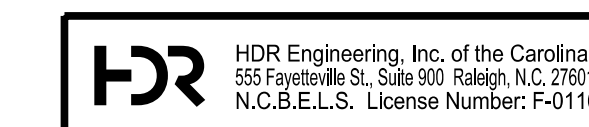
10/18/2021

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING  
 LOCATION SKETCH  
 AND GENERAL NOTES**

**REVISIONS**

NO.	BY:	DATE:	NO.	BY:	DATE:
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SHEET NO. S03-03  
 TOTAL SHEETS 61



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DES BY: M. NEIHEISEL DATE: 03/19 DWG BY: B. PETERSON DATE: 03/19  
 DES CHK: S. NIFONG DATE: 04/19 CHK BY: M. NEIHEISEL DATE: 05/19



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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γ <sub>LL</sub> )	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	LIVE-LOAD FACTORS (γ <sub>LL</sub> )	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.25	--	1.75	0.80	1.56	B	E	62.83	0.84	1.37	B	E	11.97	0.80	0.80	1.25	B	E	62.83		
	HL-93 (OPERATING)	N/A		1.82	--	1.35	0.80	2.02	B	E	62.83	0.84	1.82	B	E	11.97	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36,000	②	1.84	66.24	1.75	0.80	2.31	B	E	62.83	0.84	1.99	B	E	11.97	0.80	0.80	1.84	B	E	62.83		
	HS-20 (OPERATING)	36,000		2.63	94.68	1.35	0.80	2.99	B	E	62.83	0.84	2.63	B	E	11.97	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SH		4.87	60.88	1.40	0.80	7.62	B	E	62.83	0.84	7.10	A	E	21.88	0.80	0.80	4.87	B	E	62.83		
		S3C		2.84	61.06	1.40	0.80	4.45	B	E	62.83	0.84	4.08	A	E	21.88	0.80	0.80	2.84	B	E	62.83		
		S3A		2.69	61.20	1.40	0.80	4.21	B	E	62.83	0.84	3.86	A	E	21.88	0.80	0.80	2.69	B	E	62.83		
		S4A		2.34	62.60	1.40	0.80	3.66	B	E	62.83	0.84	3.33	A	E	21.88	0.80	0.80	2.34	B	E	62.83		
		S5A		2.06	62.83	1.40	0.80	3.23	B	E	62.83	0.84	2.99	B	E	11.97	0.80	0.80	2.06	B	E	62.83		
		S6A		1.86	64.17	1.40	0.80	2.90	B	E	62.83	0.84	2.66	B	E	11.97	0.80	0.80	1.86	B	E	62.83		
		S7B		1.68	64.68	1.40	0.80	2.63	B	E	62.83	0.84	2.44	B	E	11.97	0.80	0.80	1.68	B	E	62.83		
		S7A		1.65	66.00	1.40	0.80	2.57	B	E	62.83	0.84	2.43	B	E	11.97	0.80	0.80	1.65	B	E	62.83		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	T4A			2.28	64.41	1.40	0.80	3.56	B	E	62.83	0.84	3.19	B	E	11.97	0.80	0.80	2.28	B	E	62.83	
		T5B			2.00	64.00	1.40	0.80	3.14	B	E	62.83	0.84	2.94	B	E	11.97	0.80	0.80	2.00	B	E	62.83	
		T6A			1.82	65.52	1.40	0.80	2.84	B	E	62.83	0.84	2.65	B	E	11.97	0.80	0.80	1.82	B	E	62.83	
		T7A			1.67	66.80	1.40	0.80	2.61	B	E	62.83	0.84	2.37	A	E	21.88	0.80	0.80	1.67	B	E	62.83	
	T7B			1.74	69.60	1.40	0.80	2.69	A	E	55.83	0.84	2.34	B	E	11.97	0.80	0.80	1.74	B	E	62.83		

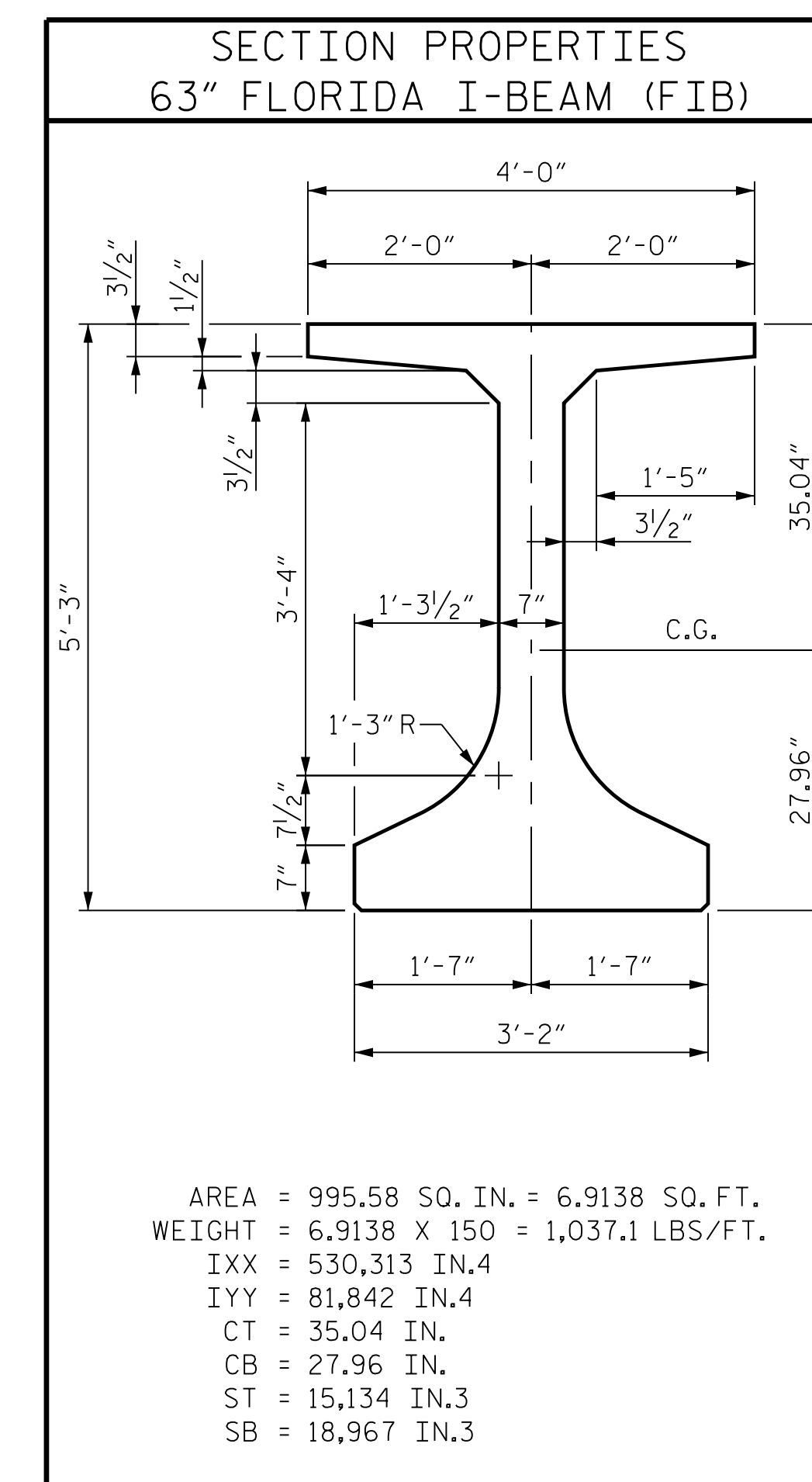
### LOAD FACTORS

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.



③ CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

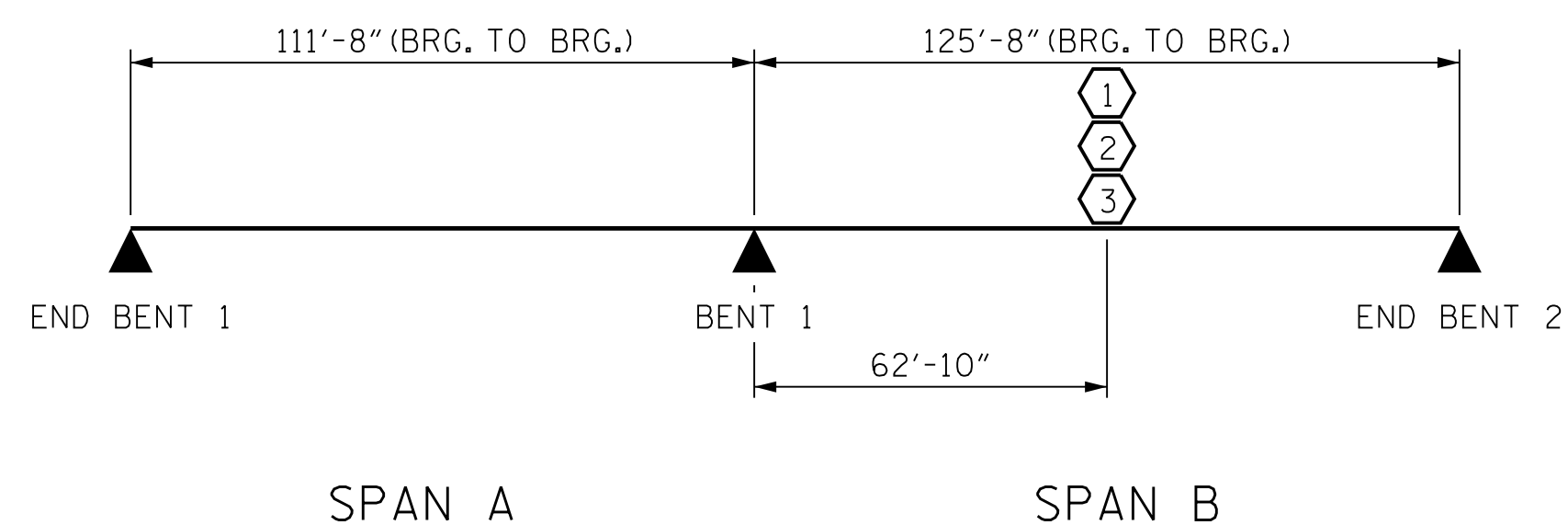
③ LEGAL LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

---

GIRDER LOCATION

I - INTERIOR GIRDER  
E - EXTERIOR GIRDER



LRFR SUMMARY

PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-

SHEET 4 OF 4



10/18/2021

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 GENERAL DRAWING  
 LRFR SUMMARY FOR  
 PRESTRESSED  
 CONCRETE GIRDERS  
 (INTERSTATE TRAFFIC)

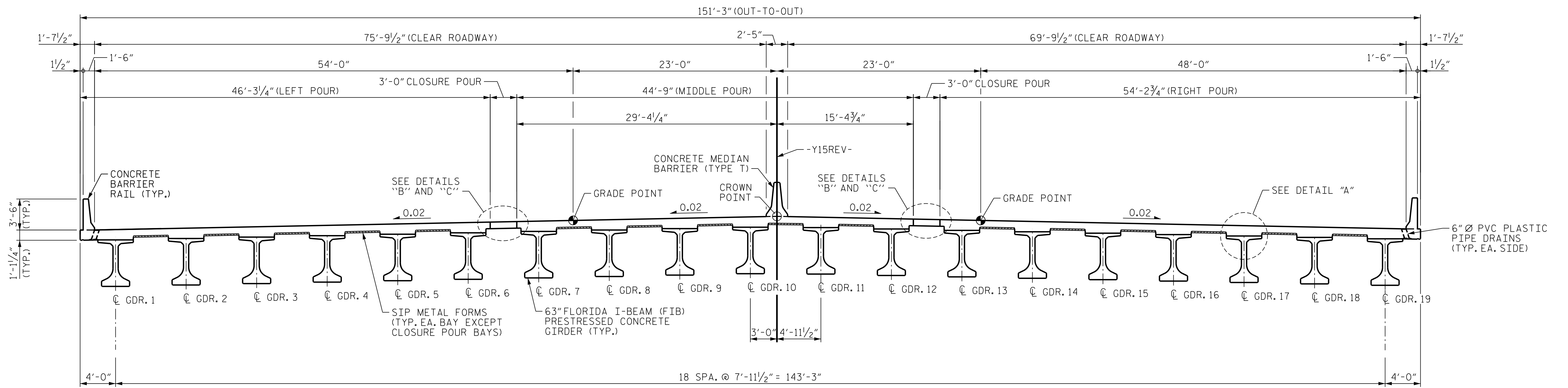
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S03-04  
TOTAL  
SHEETS  
61

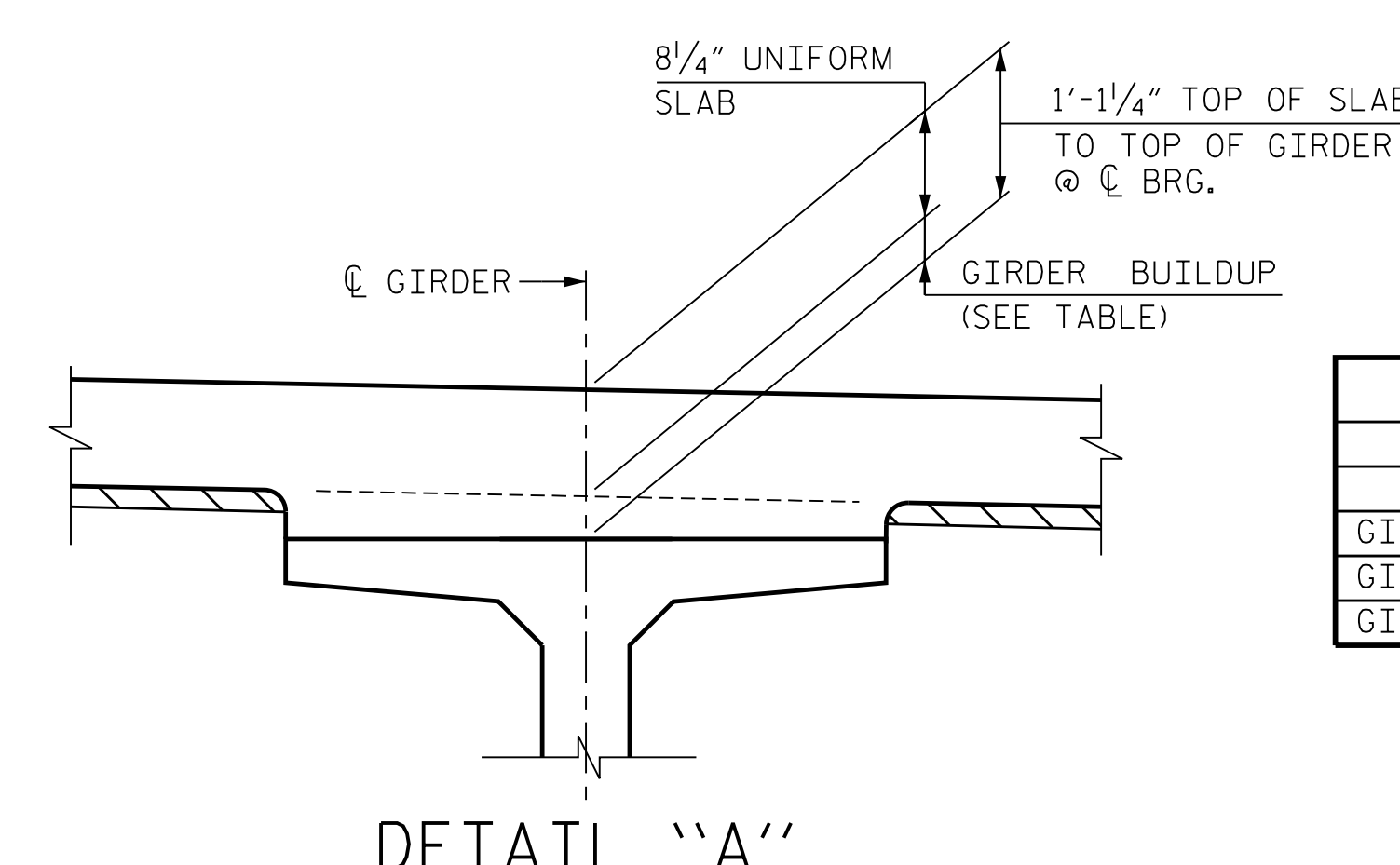


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**TYPICAL SECTION**

(SEE "SUPERSTRUCTURE TYPICAL SECTION" SHEETS 2, 3 AND 4 OF 5 FOR ADDITIONAL DETAILS NOT SHOWN HERE)



	SPAN A		SPAN B	
	C. BRG	@ MIDSPAN ▲	C. BRG	@ MIDSPAN ▲
GIRDERS 1, 19	5"	4 7/16"	5"	4 7/16"
GIRDERS 2-5, 8-11, 14-18	5"	4 1/8"	5"	4 3/16"
GIRDERS 6, 7, 12, 13	5"	3 15/16"	5"	3 15/16"

▲ = MAXIMUM BUILDUP BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS.

**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.

DOWELS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AS THE TOP AND BOTTOM SLAB REINFORCING STEEL.

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.

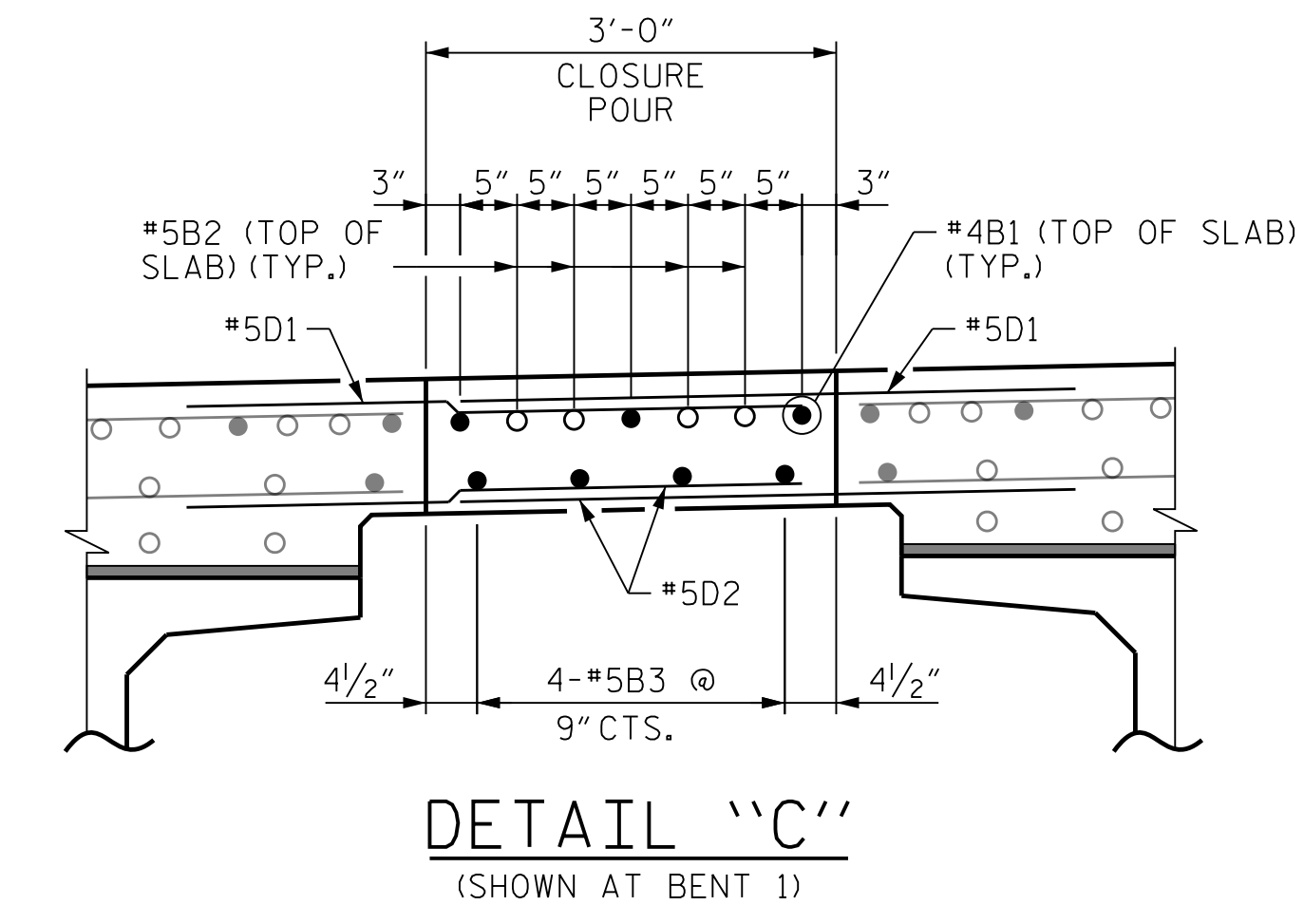
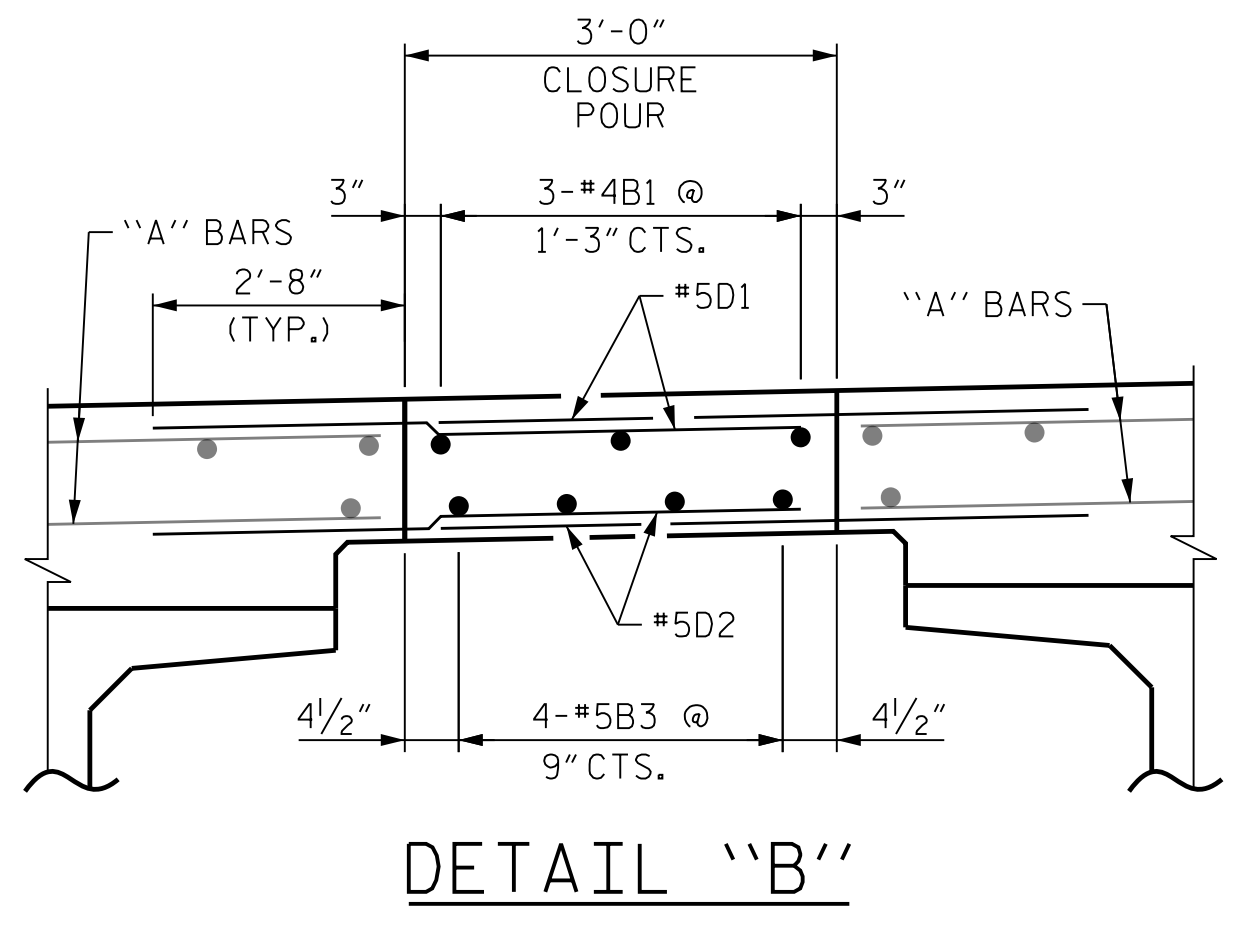
BARRIER RAIL AND CONCRETE MEDIAN BARRIER IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

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

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL UNLESS OTHERWISE NOTED.

THE INTERMEDIATE STEEL DIAPHRAGMS IN THE CLOSURE POUR BAYS SHALL BE INSTALLED AFTER THE TWO ADJACENT DECK SECTIONS ARE PLACED, AND BEFORE THE CLOSURE POUR IS PLACED.

FOR LOCATIONS OF 6" Ø PVC PLASTIC PIPE DRAINS, SEE "SUPERSTRUCTURE PLAN OF SPANS" SHEET 12 OF 12.



PROJECT NO. U-2579AB  
FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-

SHEET 1 OF 5

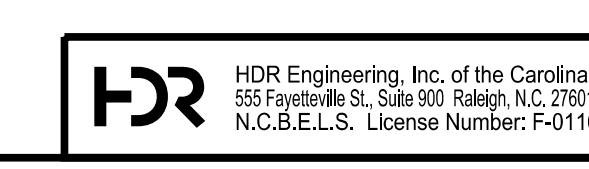
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUPERSTRUCTURE TYPICAL SECTION**

REVISIONS						SHEET NO. 503-05 TOTAL SHEETS 61
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DOMINIC A. COLETTI 10/18/2021

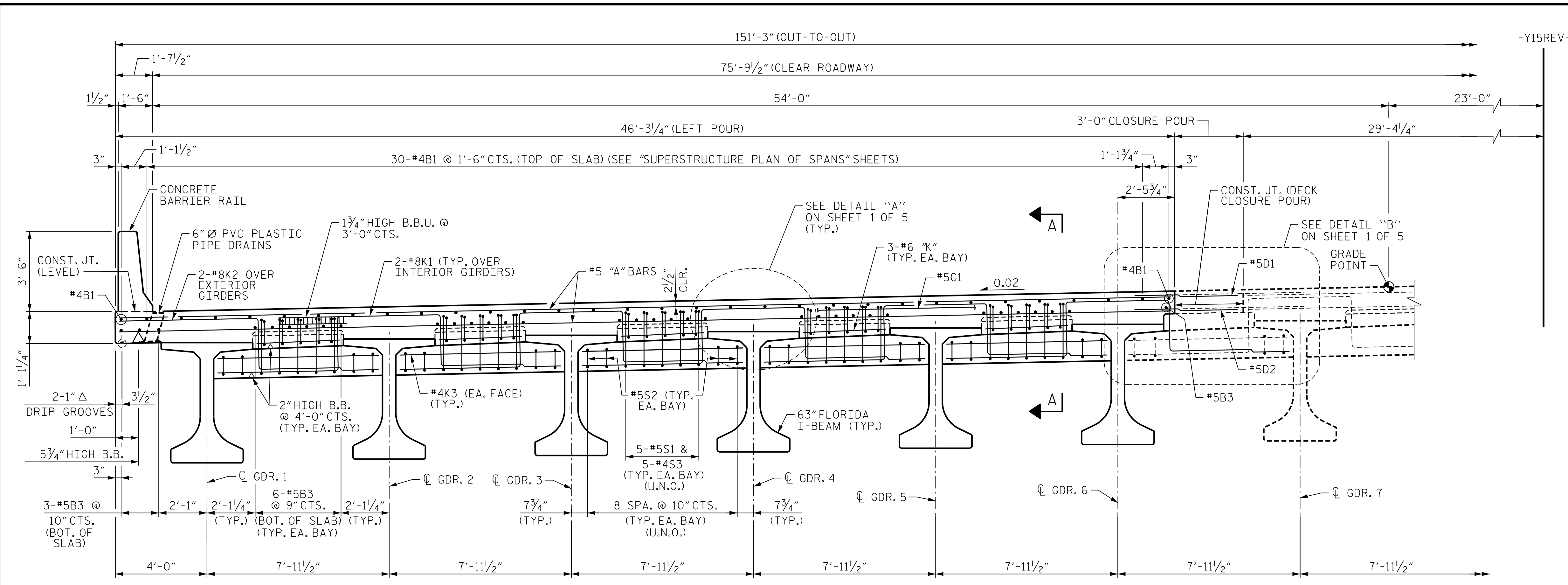


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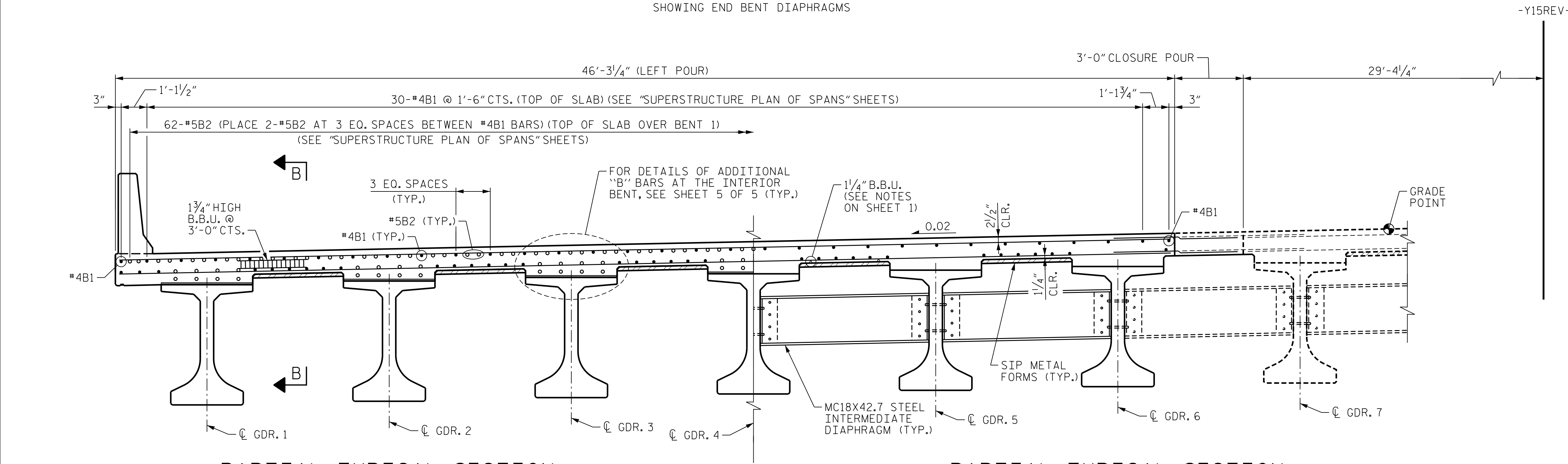
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 DES CHK: S. NIFONG DATE: 04/19  
 DWG BY: B. PETERSON DATE: 03/19  
 CHK BY: S. NIFONG DATE: 05/19





**TYPICAL SECTION**  
SHOWING END BENT DIAPHRAGMS



**PARTIAL TYPICAL SECTION**  
AT BENT 1

**PARTIAL TYPICAL SECTION**  
SHOWING INTERMEDIATE DIAPHRAGMS

**NOTES**  
FOR SECTION A-A AND B-B, SEE SHEET 5 OF 5

PROJECT NO. U-2579AB  
FORSYTH COUNTY  
STATION: 47+28.33 -Y15REV-

SHEET 2 OF 5

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

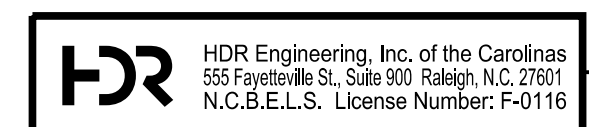
**SUPERSTRUCTURE**  
**TYPICAL SECTION**



10/18/2021

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DES BY: M. NEHEISEL	DATE: 03/19	DWG BY: B. PETERSON	DATE: 03/19
DES CHK: S. NIFONG	DATE: 04/19	CHK BY: S. NIFONG	DATE: 05/19



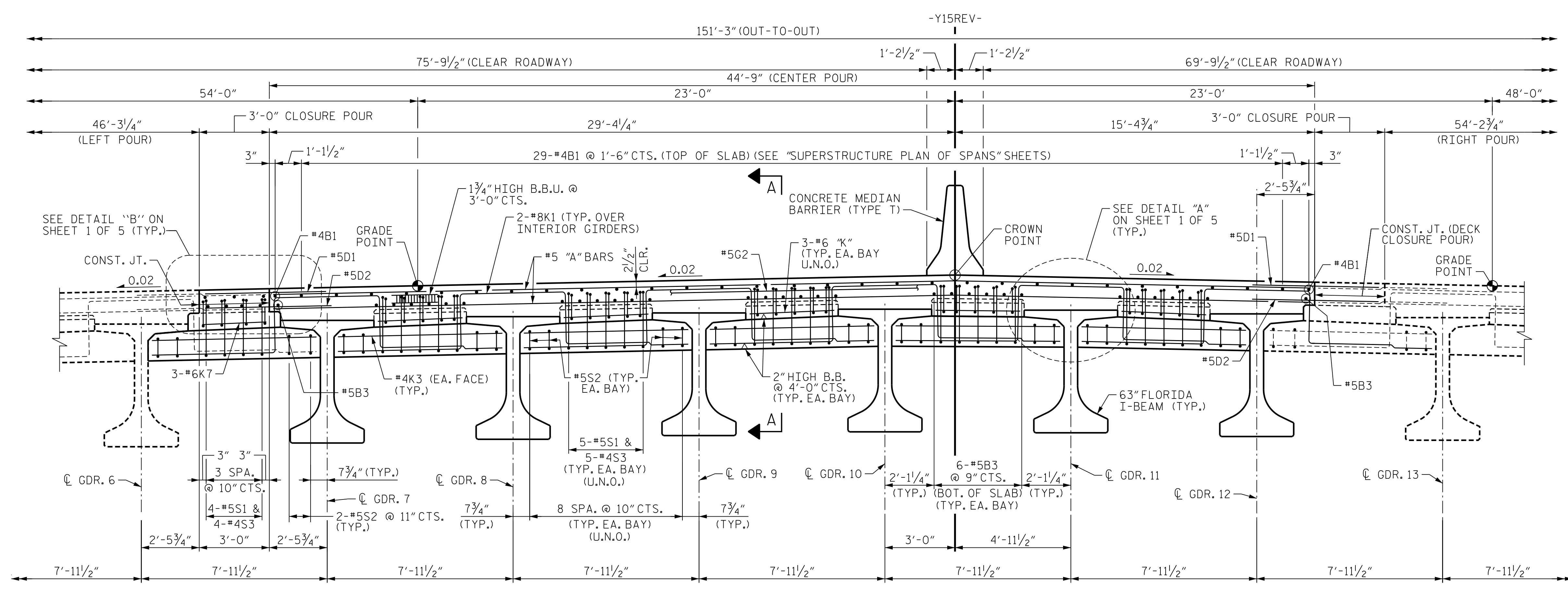
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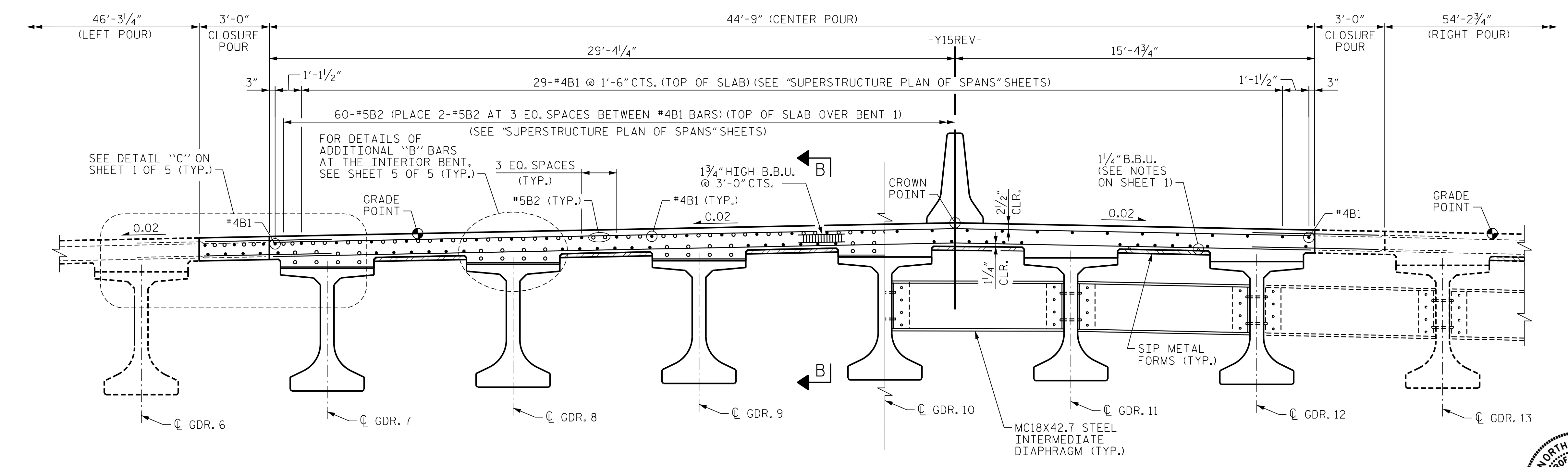
SHEET NO. 503-06  
TOTAL SHEETS 61



NOTES  
FOR SECTION A-A AND B-B, SEE SHEET 5 OF 5.



TYPICAL SECTION  
SHOWING END BENT DIAPHRAGMS



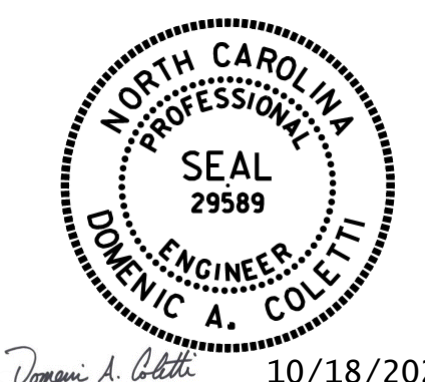
PARTIAL TYPICAL SECTION  
AT BENT 1

PARTIAL TYPICAL SECTION  
SHOWING INTERMEDIATE DIAPHRAGMS

PROJECT NO. U-2579AB  
FORSYTH COUNTY  
STATION: 47+28.33 -Y15REV-  
SHEET 3 OF 5

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**SUPERSTRUCTURE  
TYPICAL SECTION**



10/18/2021

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FILE: ...SUPERSTRUCTURE\_TYP

DES BY: M. NEHEISEL	DATE: 03/19	DWG BY: B. PETERSON	DATE: 03/19
DES CHK: S. NIFONG	DATE: 04/19	CHK BY: S. NIFONG	DATE: 05/19

**HDR** HDR Engineering, Inc. of the Carolinas  
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601  
N.C.B.E.L.S. License Number: F-0116

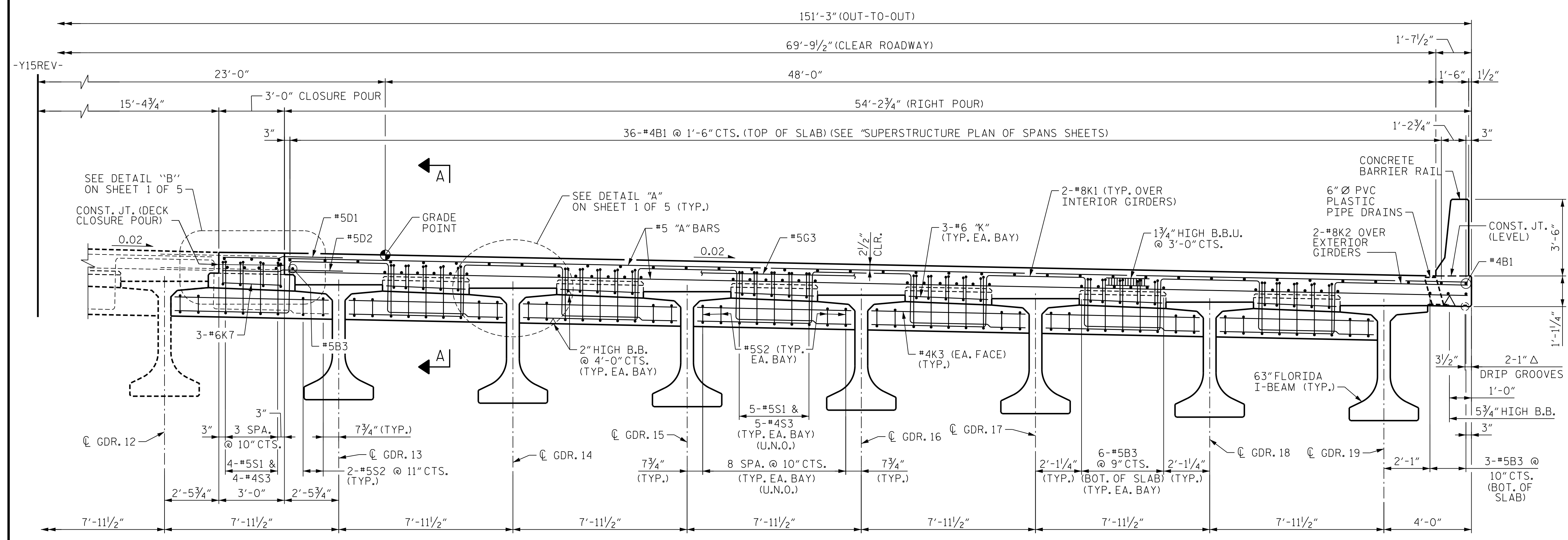
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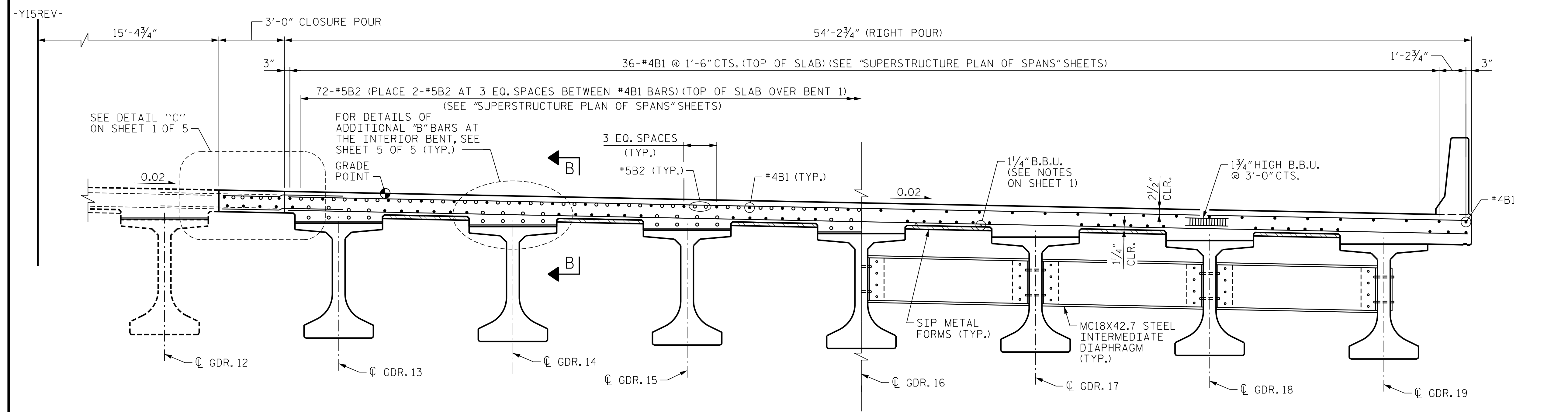
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TOTAL SHEETS 61



NOTES  
FOR SECTION A-A AND B-B, SEE SHEET 5 OF 5



TYPICAL SECTION  
SHOWING END BENT DIAPHRAGMS



PARTIAL TYPICAL SECTION  
AT BENT 1

PARTIAL TYPICAL SECTION  
SHOWING INTERMEDIATE DIAPHRAGMS

PROJECT NO. U-2579AB  
FORSYTH COUNTY  
STATION: 47+28.33 -Y15REV-  
SHEET 4 OF 5

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

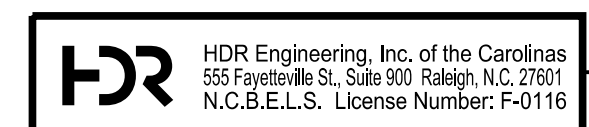
SUPERSTRUCTURE  
TYPICAL SECTION



10/18/2021

PLOT DRIVER: NCDOT... PENTABLE: NCDOT... USER: PETERSON... DATE: 10/14/2021... FILE: ...SUPERSTRUCTURE.TYP

DES BY: M. NEHEISEL	DATE: 03/19	DWG BY: B. PETERSON	DATE: 03/19
DES CHK: S. NIFONG	DATE: 04/19	CHK BY: S. NIFONG	DATE: 05/19

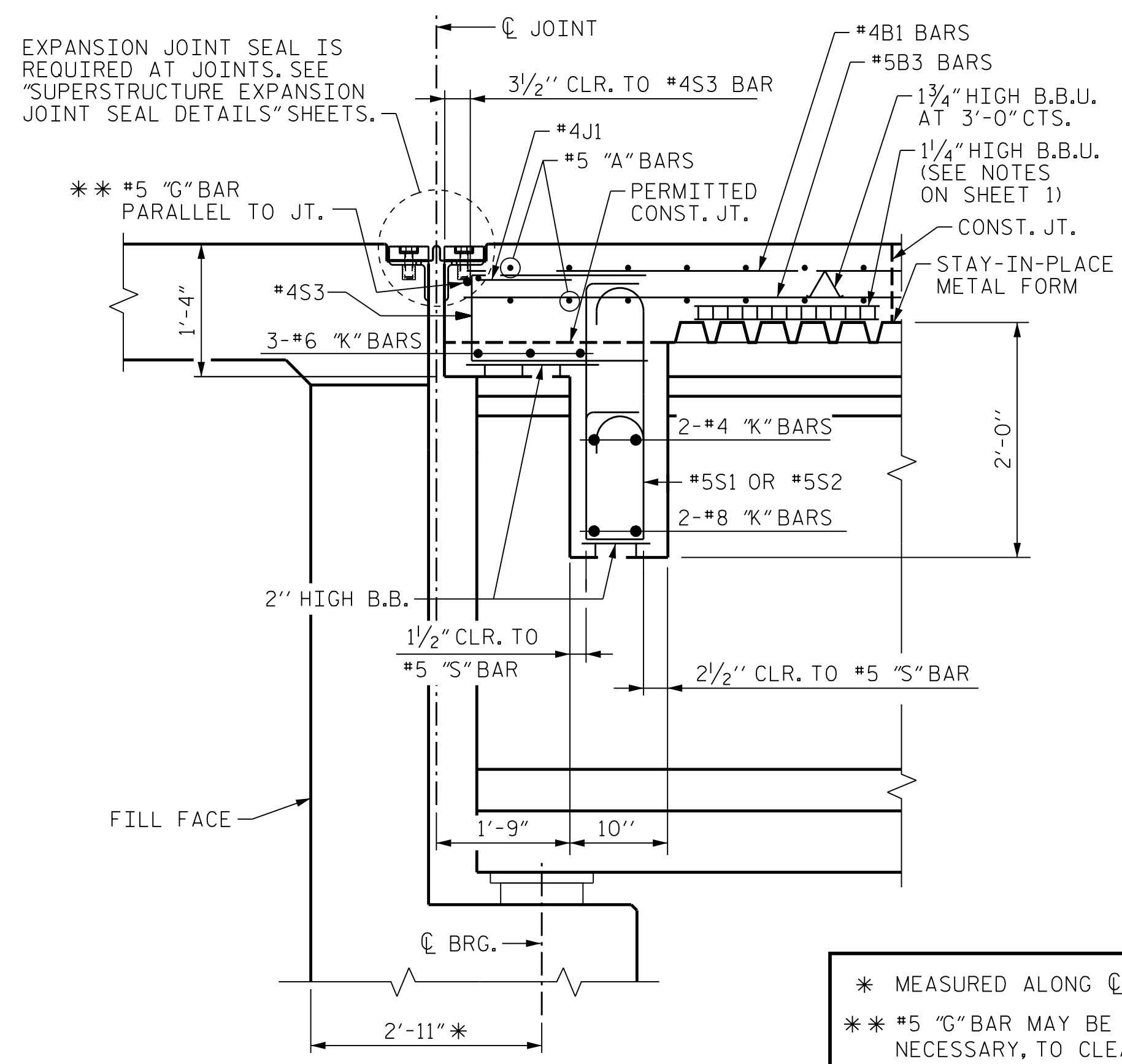


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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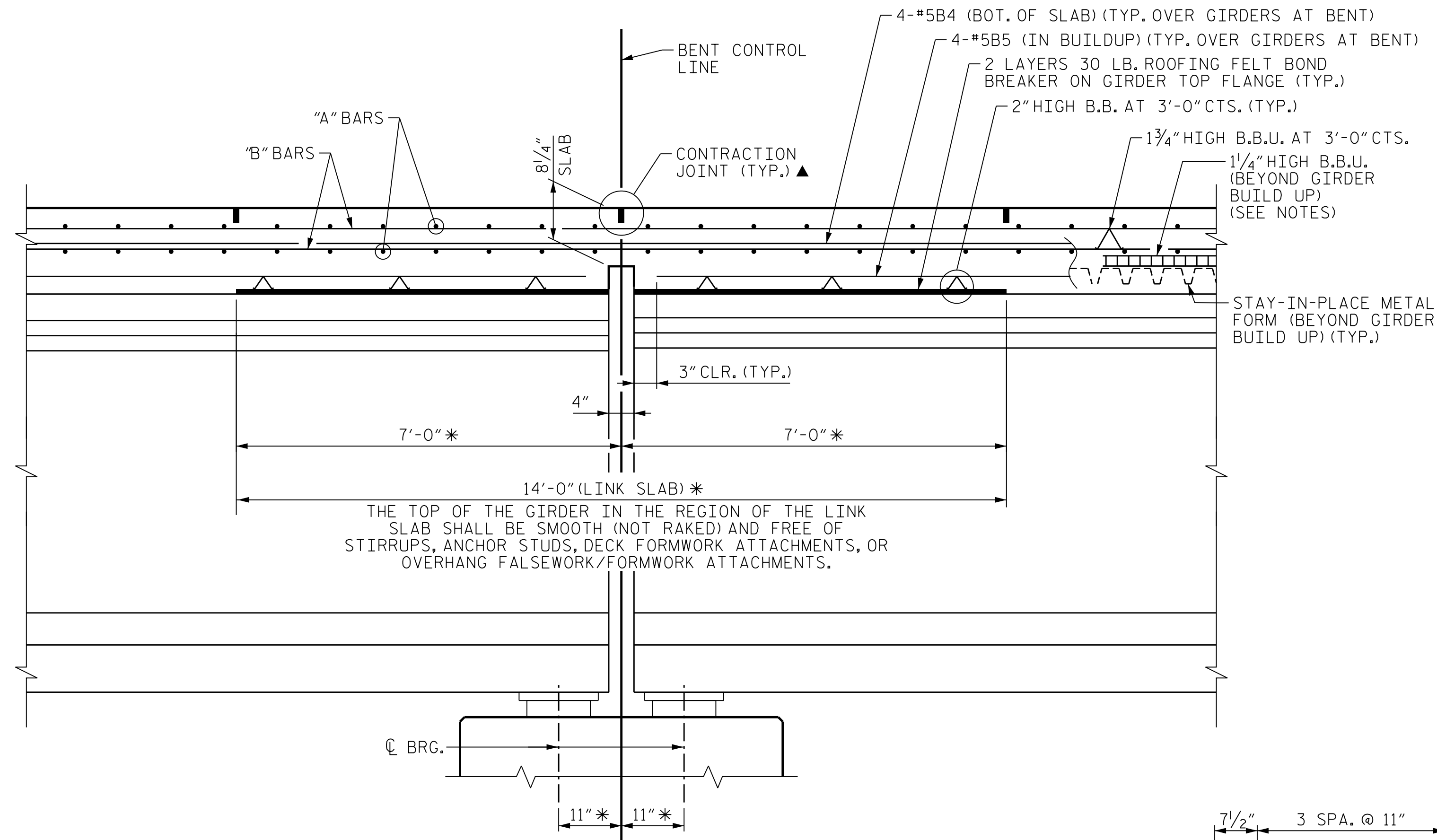
SHEET NO. 503-08  
TOTAL SHEETS 61



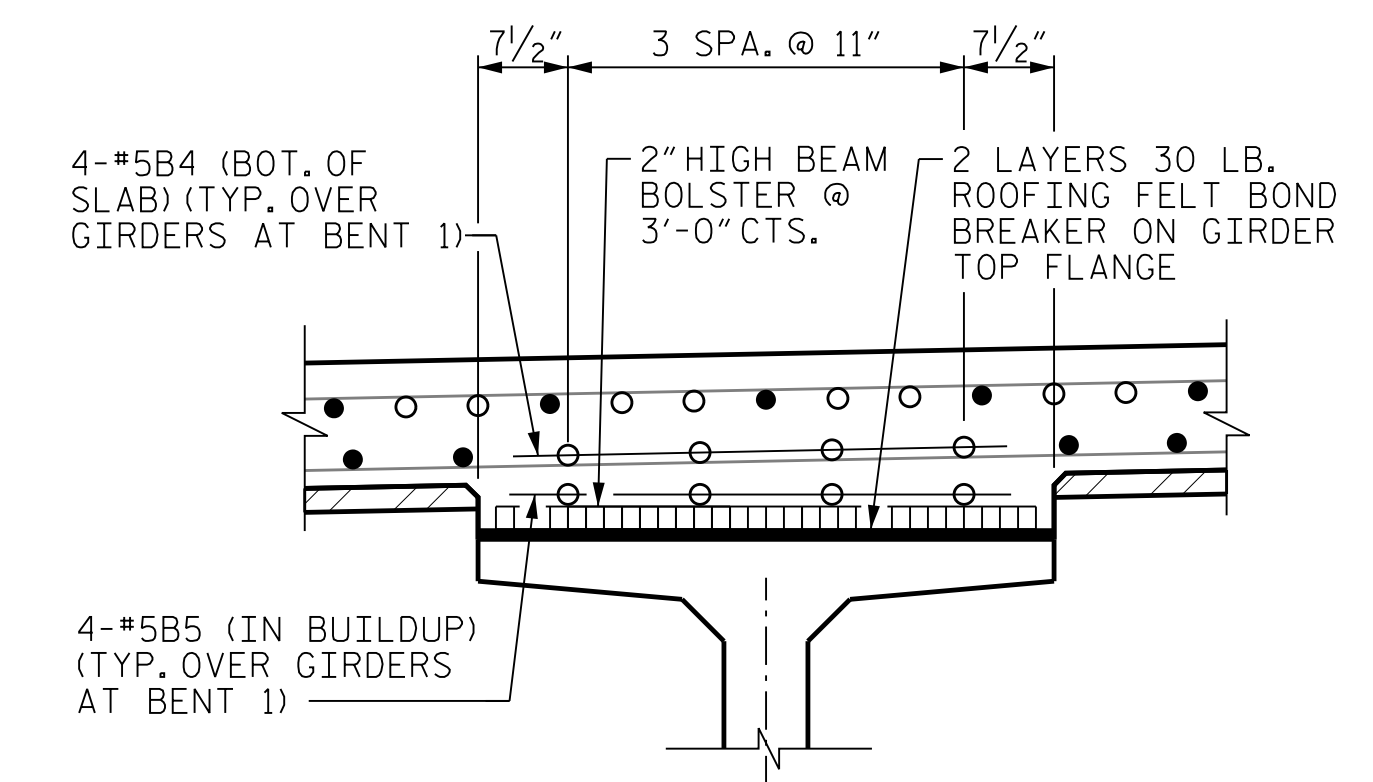


**SECTION A-A**  
(AT END BENTS)

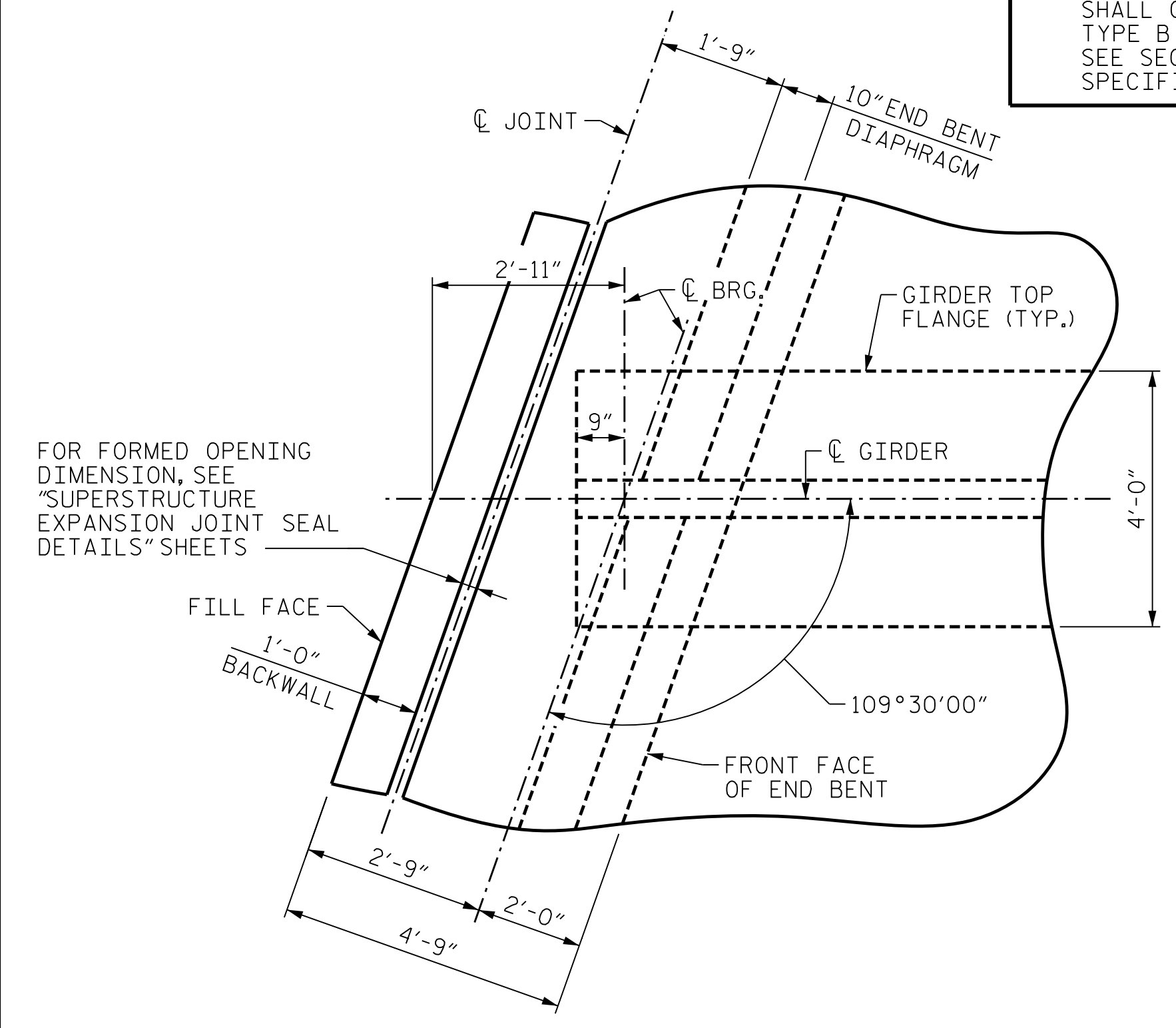
\* MEASURED ALONG C OF GIRDER  
 \*\* #5 "G" BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.  
 ▲ A 1/2" DEEP, 3/8" WIDE CONTRACTION JOINT AT BENT CONTROL LINE AND AT ENDS OF LINK SLAB SHALL BE SAWN WITHIN 24 HOURS OF POURING THE DECK. THE JOINT SHALL BE FILLED WITH JOINT SEALER MATERIAL. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE B LOW MODULUS SILICONE SEALANT. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.



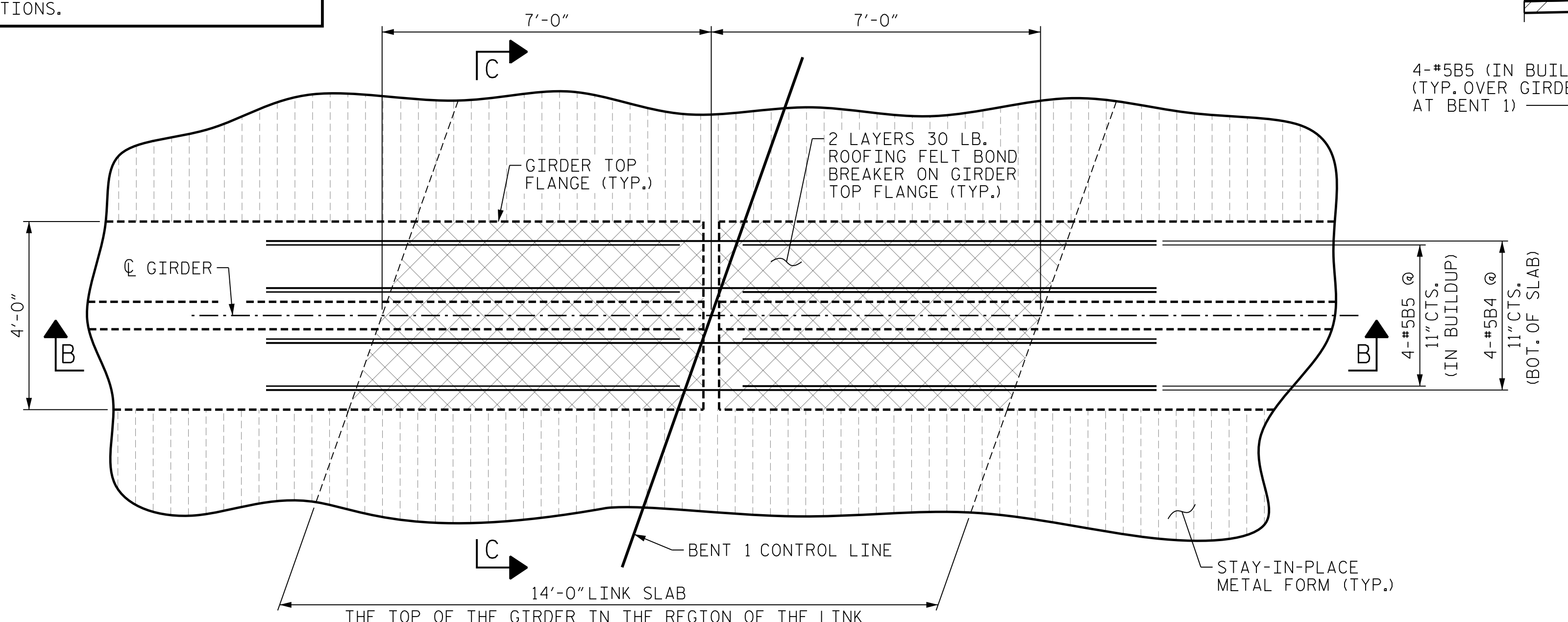
**SECTION B-B**  
(LINK SLAB AT INTERIOR BENT)



**SECTION C-C**



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



**PLAN OF GIRDERS AT BENT**

PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-  
 SHEET 5 OF 5



Domini A. Coletti 10/18/2021

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUPERSTRUCTURE  
 TYPICAL SECTION  
 DETAILS**

DES BY: M. NEHEISEL	DATE: 03/19	DWG BY: B. PETERSON	DATE: 03/19
DES CHK: S. NIFONG	DATE: 04/19	CHK BY: S. NIFONG	DATE: 05/19

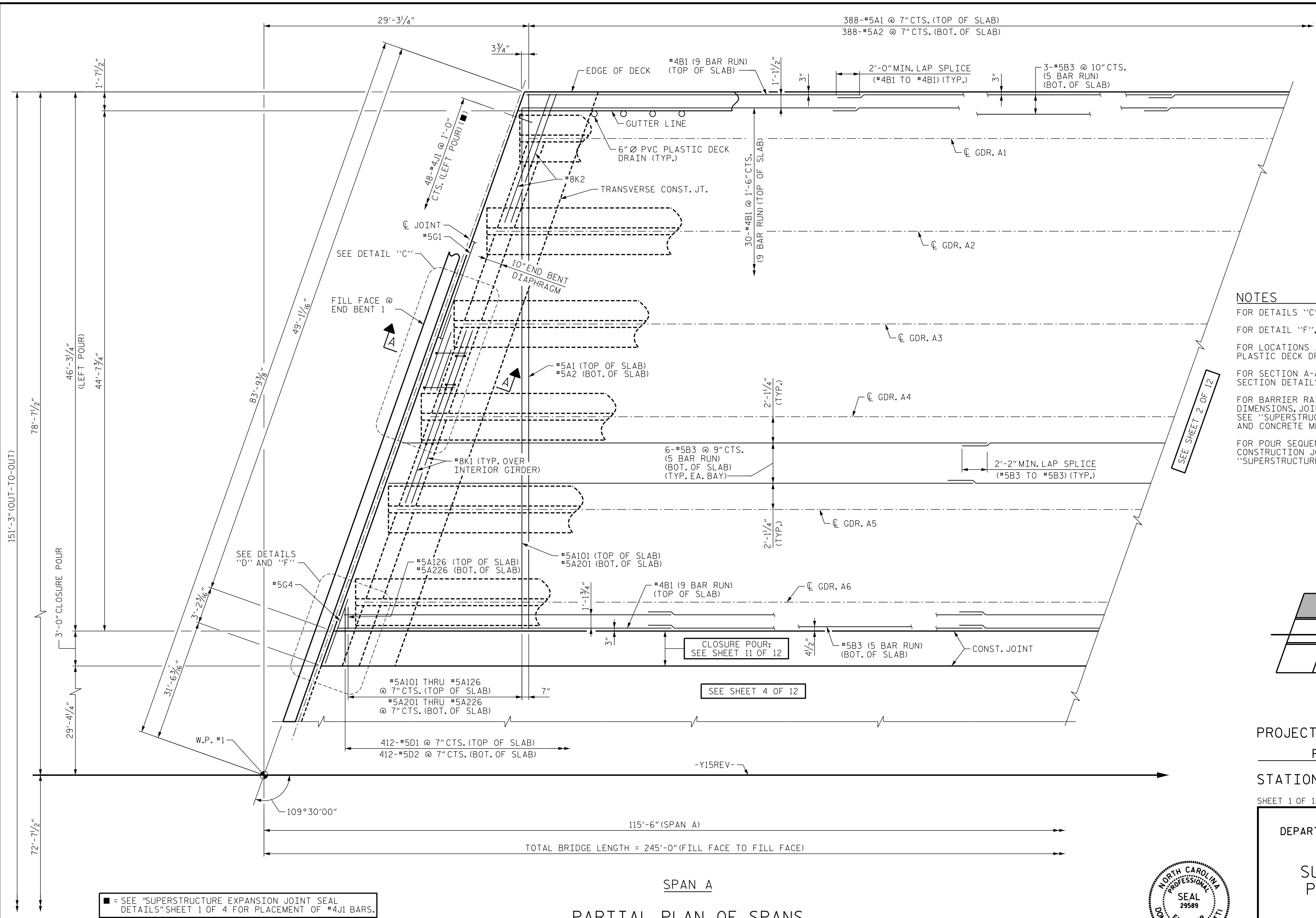


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 UNLESS ALL SIGNATURES COMPLETED

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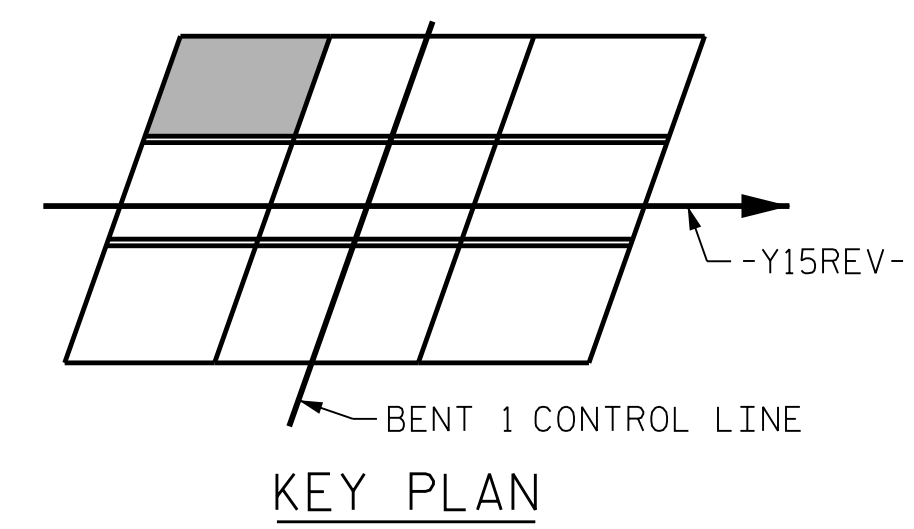
SHEET NO. S03-09  
 TOTAL SHEETS 61

PLOT DRIVER: NCDOT... PENTABLE: NCDOT... USER: PPETERSO... DATE: 10/14/2021... FILE: ...SUPERSTRUCTURE\_TYP



**NOTES**

FOR DETAILS "C" AND "D", SEE SHEET 10 OF 12.  
 FOR DETAIL "F", SEE SHEET 11 OF 12.  
 FOR LOCATIONS AND DETAILS OF 6" Ø PVC PLASTIC DECK DRAINS, SEE SHEET 12 OF 12.  
 FOR SECTION A-A SEE "SUPERSTRUCTURE TYPICAL SECTION DETAILS" SHEET 5 OF 5.  
 FOR BARRIER RAIL AND MEDIAN BARRIER DIMENSIONS, JOINT SPACING, AND REINFORCEMENT, SEE "SUPERSTRUCTURE CONCRETE BARRIER RAIL AND CONCRETE MEDIAN BARRIER" SHEETS.  
 FOR POUR SEQUENCE DIAGRAM AND TRANSVERSE CONSTRUCTION JOINT LOCATIONS, SEE "SUPERSTRUCTURE BILL OF MATERIALS" SHEETS.



PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-  
 SHEET 1 OF 12

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUPERSTRUCTURE  
 PLAN OF SPANS**



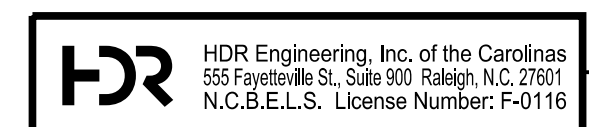
10/18/2021

■ = SEE "SUPERSTRUCTURE EXPANSION JOINT SEAL DETAILS" SHEET 1 OF 4 FOR PLACEMENT OF #4J1 BARS.

SPAN A  
 PARTIAL PLAN OF SPANS

PLOT DRIVER: NCDOT...  
 USER: PETERSON...  
 DATE: 10/14/2021...  
 FILE: ...SUPERSTRUCTURE\_PLA

DES BY: M. NEHEISEL	DATE: 03/19	DWG BY: B. PETERSON	DATE: 03/19
DES CHK: S. NIFONG	DATE: 04/19	CHK BY: S. NIFONG	DATE: 05/19

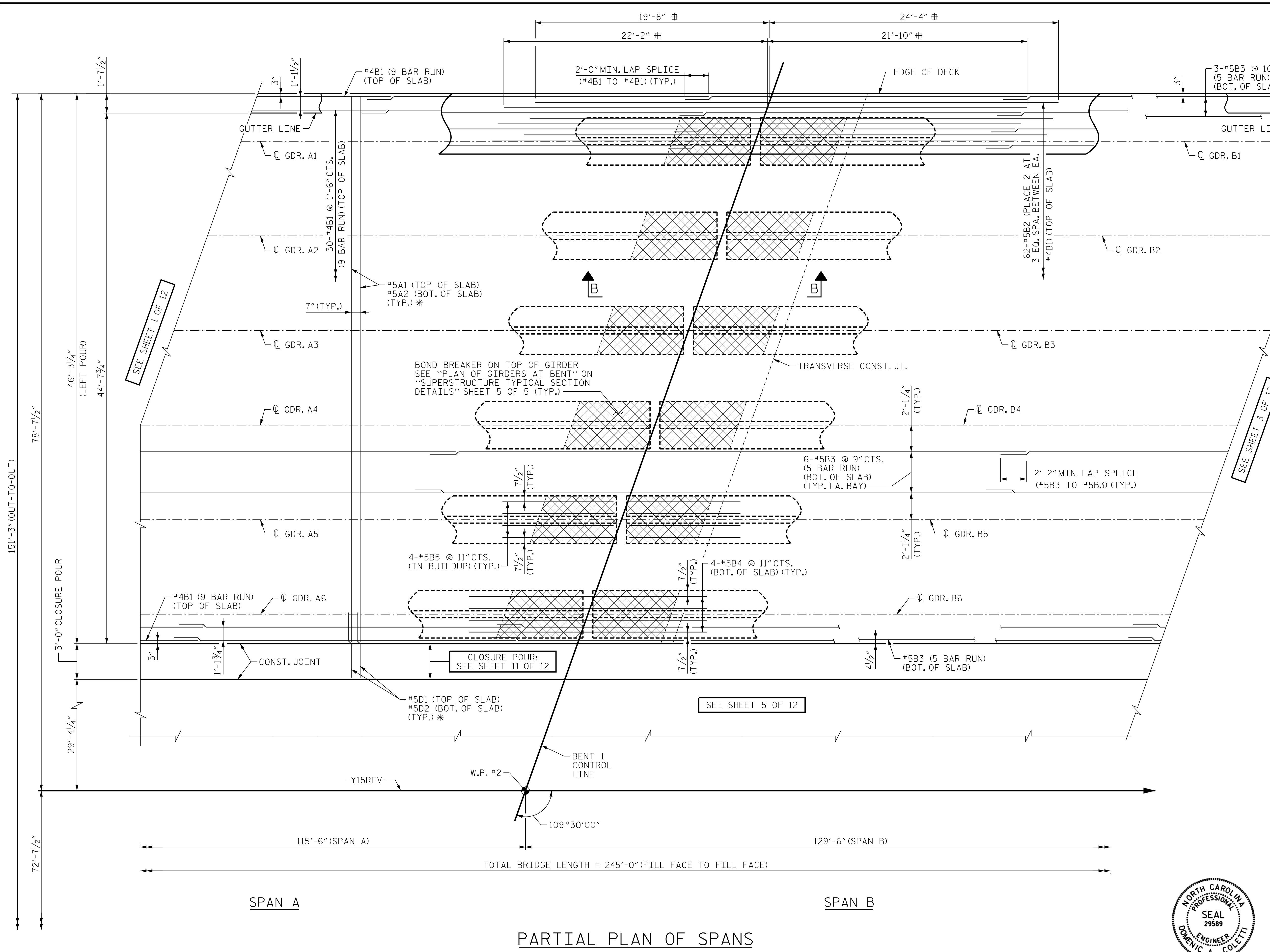


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 UNLESS ALL SIGNATURES COMPLETED

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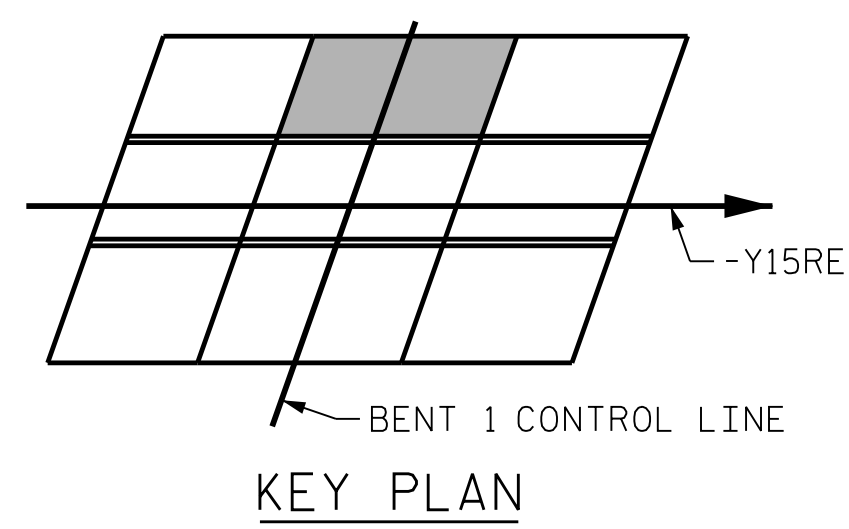
SHEET NO. 503-10  
 TOTAL SHEETS 61



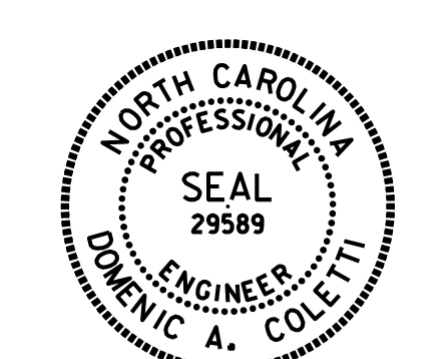


\* SEE SHEETS 1 AND 3 FOR PLACEMENT OF MAIN "A" BARS AND "D" DOWELS  
 # STAGGER #5B2 BARS AS SHOWN IN EACH SPACE BETWEEN #4B1 BARS

**NOTES**  
 FOR SECTION B-B, SEE "SUPERSTRUCTURE TYPICAL SECTION DETAILS" SHEET 5 OF 5.  
 DECK DRAINS NOT SHOWN FOR CLARITY. SEE SHEET 12 OF 12 FOR LOCATIONS.



PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-  
 SHEET 2 OF 12



10/18/2021

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUPERSTRUCTURE PLAN OF SPANS**

REVISIONS					
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1	--	--	3	--	--
2	--	--	4	--	--

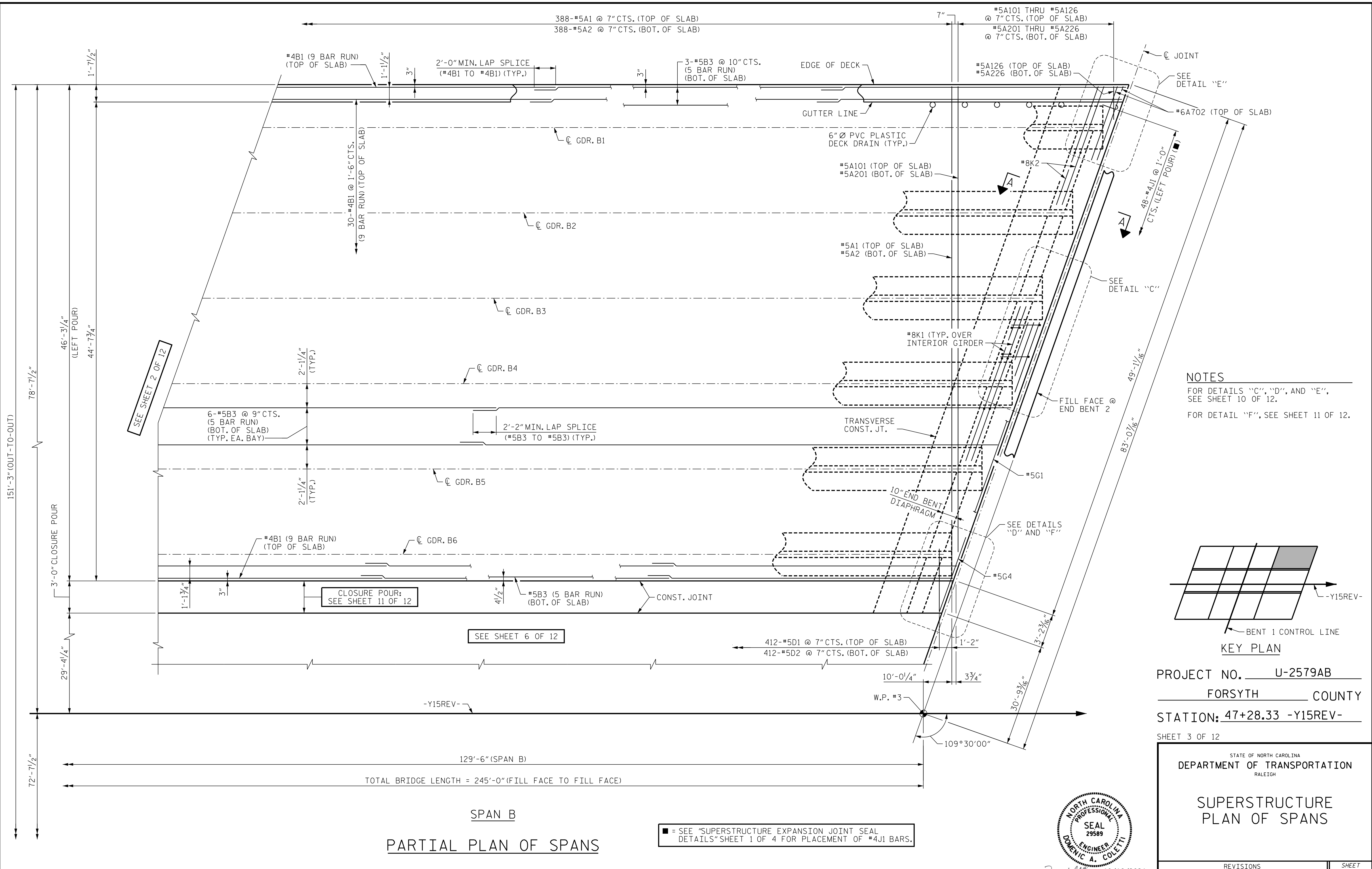
SHEET NO. S03-11  
 TOTAL SHEETS 61

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 USER: PPRETERSO  
 DATE: 10/14/2021  
 TIME: 3:46:17 PM  
 FILE: ...SUPERSTRUCTURE\_PLA

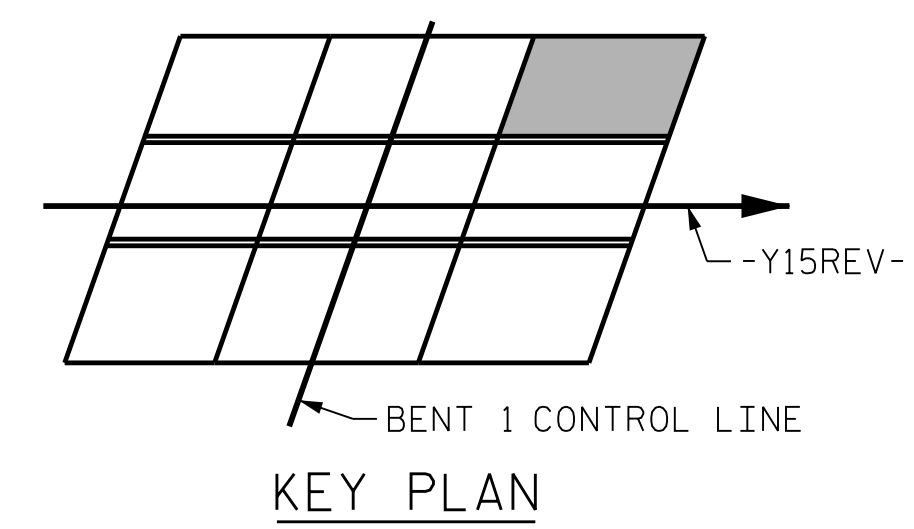
DES BY: <u>M. NEHEISEL</u>	DATE: <u>03/19</u>	DWG BY: <u>B. PETERSON</u>	DATE: <u>03/19</u>
DES CHK: <u>S. NIFONG</u>	DATE: <u>04/19</u>	CHK BY: <u>S. NIFONG</u>	DATE: <u>05/19</u>



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



**NOTES**  
 FOR DETAILS "C", "D", AND "E",  
 SEE SHEET 10 OF 12.  
 FOR DETAIL "F", SEE SHEET 11 OF 12.



PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-  
 SHEET 3 OF 12

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUPERSTRUCTURE  
 PLAN OF SPANS**



10/18/2021

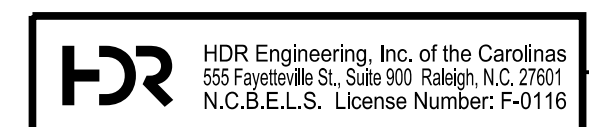
■ = SEE "SUPERSTRUCTURE EXPANSION JOINT SEAL DETAILS" SHEET 1 OF 4 FOR PLACEMENT OF #4J1 BARS.

**PARTIAL PLAN OF SPANS**

129'-6" (SPAN B)  
 TOTAL BRIDGE LENGTH = 245'-0" (FILL FACE TO FILL FACE)

PLOT DRIVER: NCDOT\_pdfs\_color\_eng-50dpi  
 USER: PETERSON DATE: 10/14/2021  
 FILE: ...SUPERSTRUCTURE\_PLA

DES BY: M. NEHEISEL	DATE: 03/19	DWG BY: B. PETERSON	DATE: 03/19
DES CHK: S. NIFONG	DATE: 04/19	CHK BY: S. NIFONG	DATE: 05/19



DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

REVISIONS					
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SHEET NO. 503-12  
 TOTAL SHEETS 61

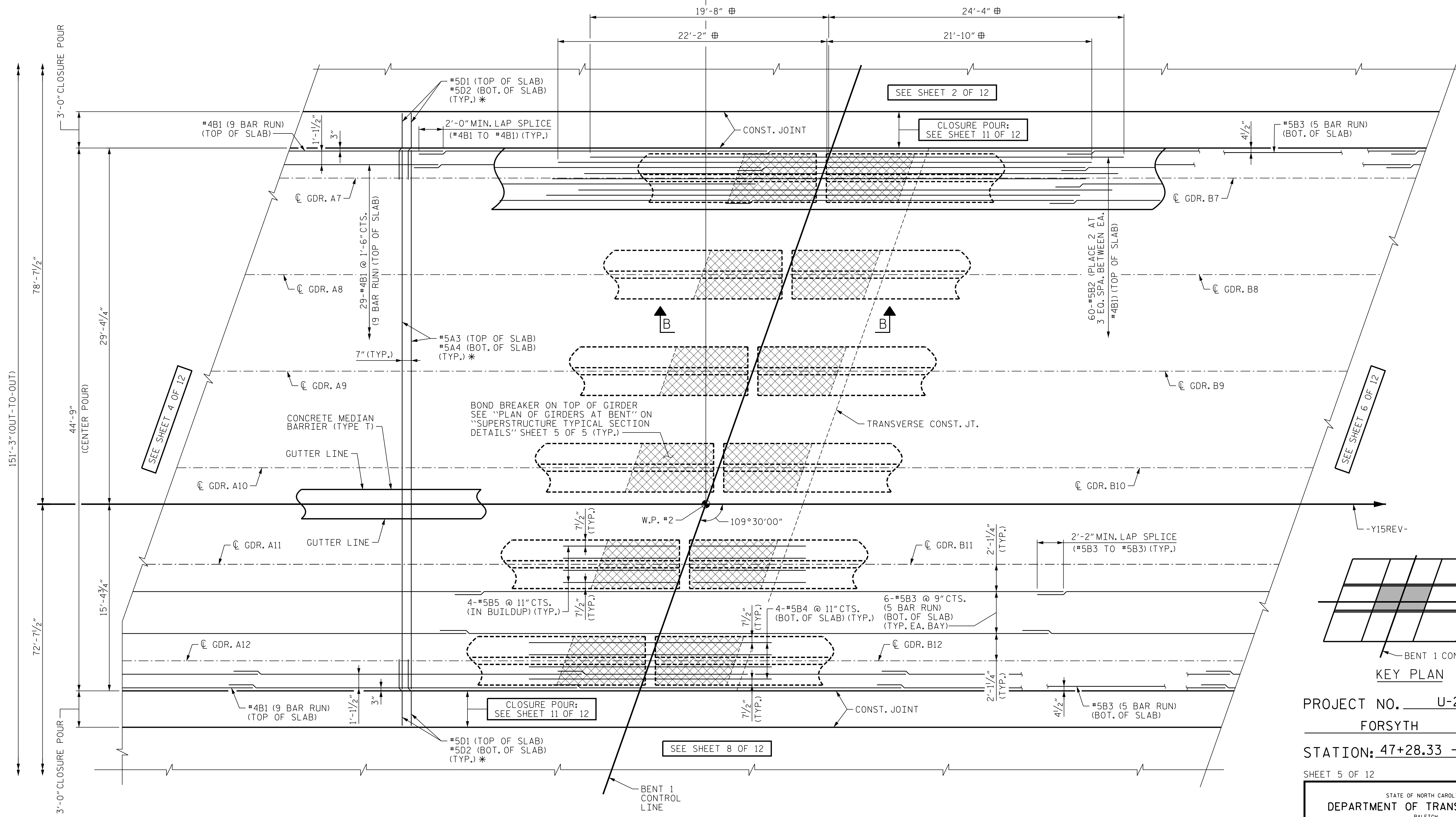




TOTAL BRIDGE LENGTH = 245'-0" (FILL FACE TO FILL FACE)

115'-6" (SPAN A)

129'-6" (SPAN B)

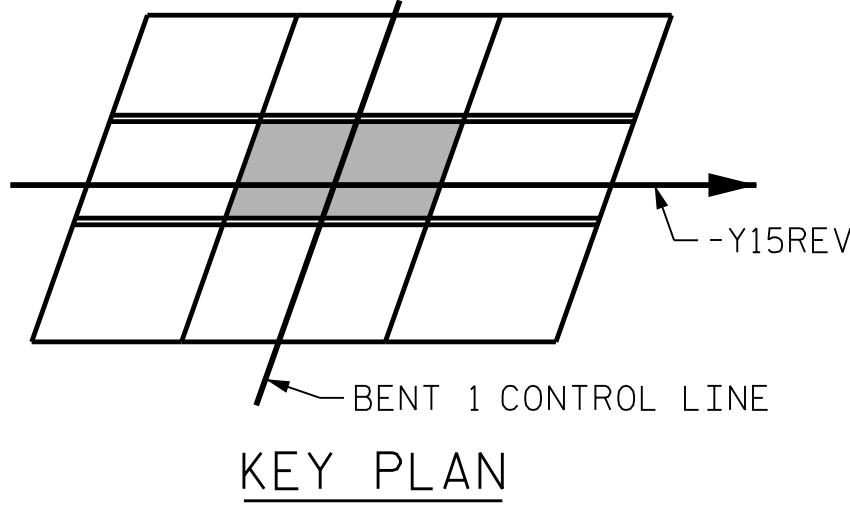


SEE SHEET 4 OF 12

SEE SHEET 2 OF 12

SEE SHEET 6 OF 12

SEE SHEET 8 OF 12



PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-  
 SHEET 5 OF 12

### PARTIAL PLAN OF SPANS

NOTES  
 FOR SECTION B-B, SEE "SUPERSTRUCTURE TYPICAL SECTION DETAILS" SHEET 5 OF 5.

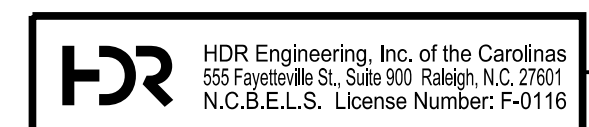
\* SEE SHEETS 4 AND 6 FOR PLACEMENT OF MAIN "A" BARS AND "D" DOWELS  
 # STAGGER #5B2 BARS AS SHOWN IN EACH SPACE BETWEEN #4B1 BARS



10/18/2021

PLOT DRIVER: NCDOT\_pdf\_color\_eng-50dpi  
 USER: PPETERSO DATE: 10/14/2021 TIME: 3:46:26 PM  
 FILE: ...SUPERSTRUCTURE\_PLA

DES BY: M. NEIHEISEL	DATE: 03/19	DWG BY: B. PETERSON	DATE: 03/19
DES CHK: S. NIFONG	DATE: 04/19	CHK BY: S. NIFONG	DATE: 05/19



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

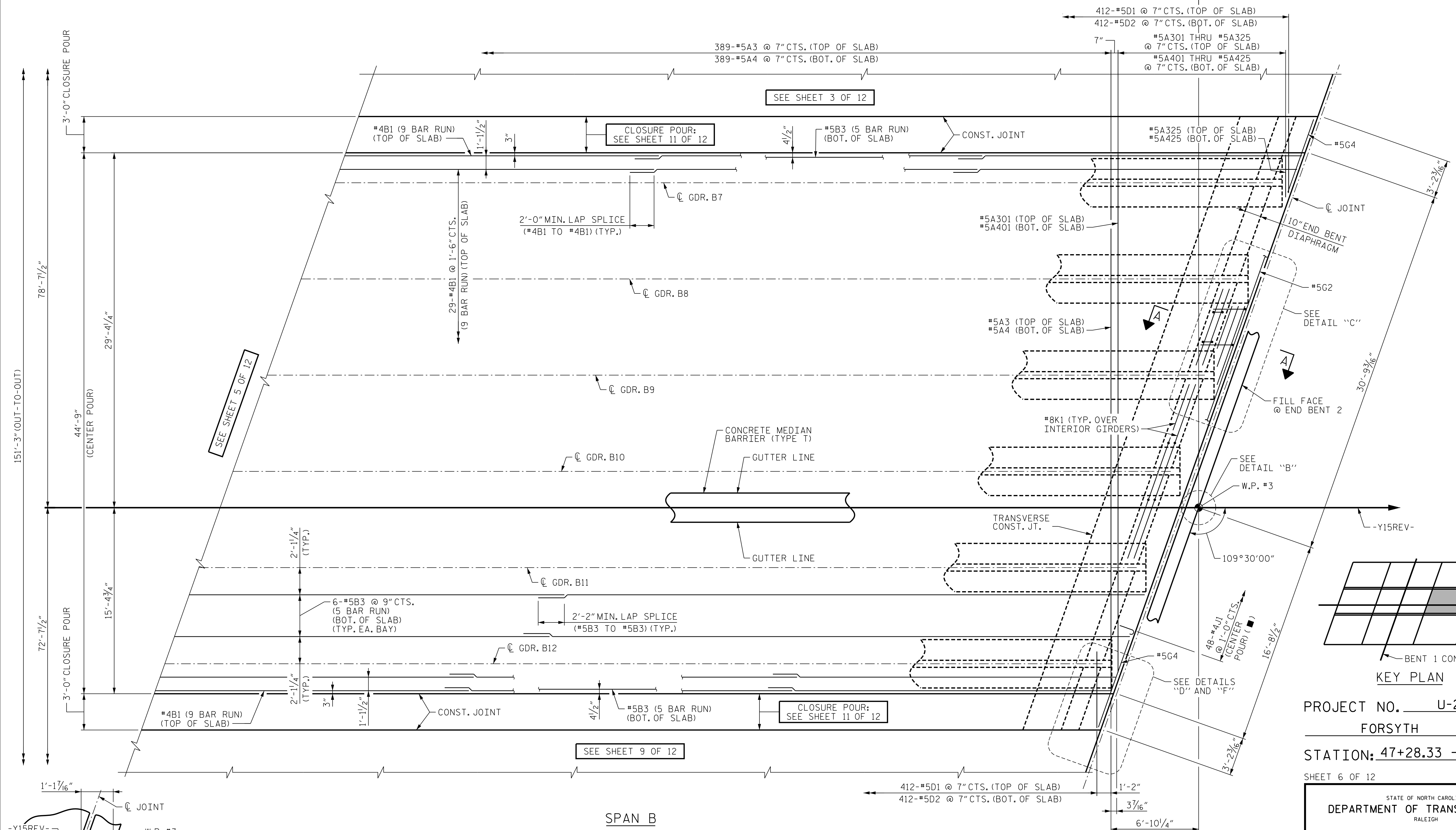
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SHEET NO. 503-14  
TOTAL SHEETS 61



TOTAL BRIDGE LENGTH = 245'-0" (FILL FACE TO FILL FACE)

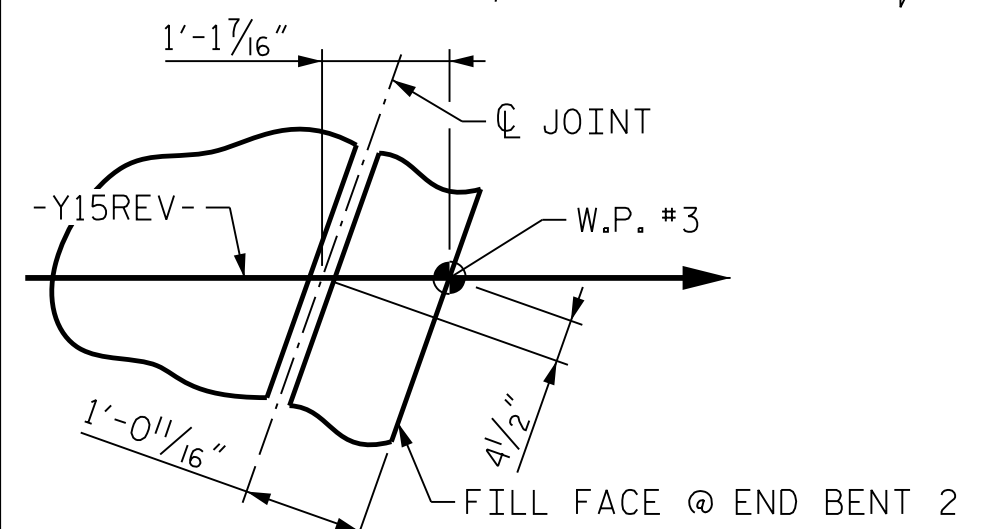
129'-6" (SPAN B)



SEE SHEET 5 OF 12

SEE SHEET 3 OF 12

SEE SHEET 9 OF 12

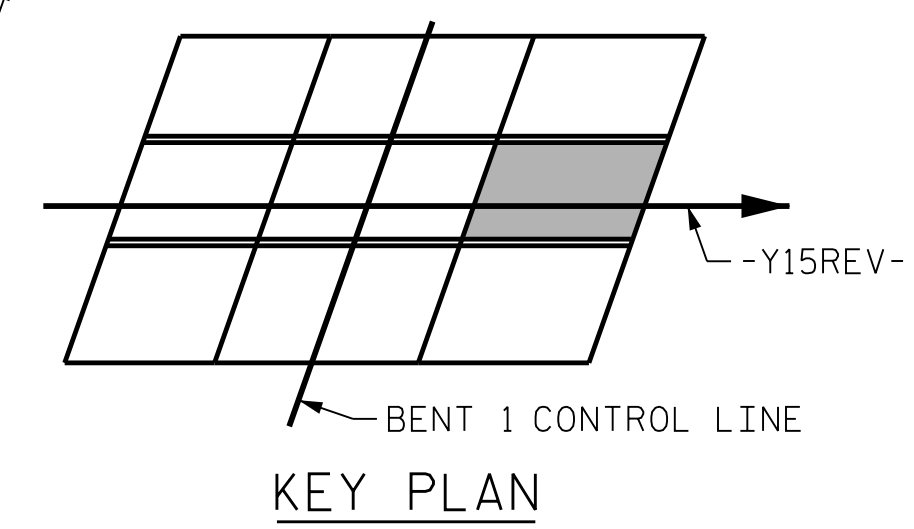


DETAIL "B"

PARTIAL PLAN OF SPANS

**NOTES**  
 FOR DETAILS "C" AND "D", SEE SHEET 10 OF 12.  
 FOR DETAIL "F", SEE SHEET 11 OF 12.

■ = SEE "SUPERSTRUCTURE EXPANSION JOINT SEAL DETAILS" SHEET 1 OF 4 FOR PLACEMENT OF #4J1 BARS.



PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-  
 SHEET 6 OF 12

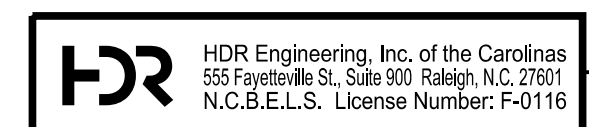


10/18/2021

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 PLAN OF SPANS

DES BY: M. NEIHEISEL	DATE: 03/19	DWG BY: B. PETERSON	DATE: 03/19
DES CHK: S. NIFONG	DATE: 04/19	CHK BY: S. NIFONG	DATE: 05/19



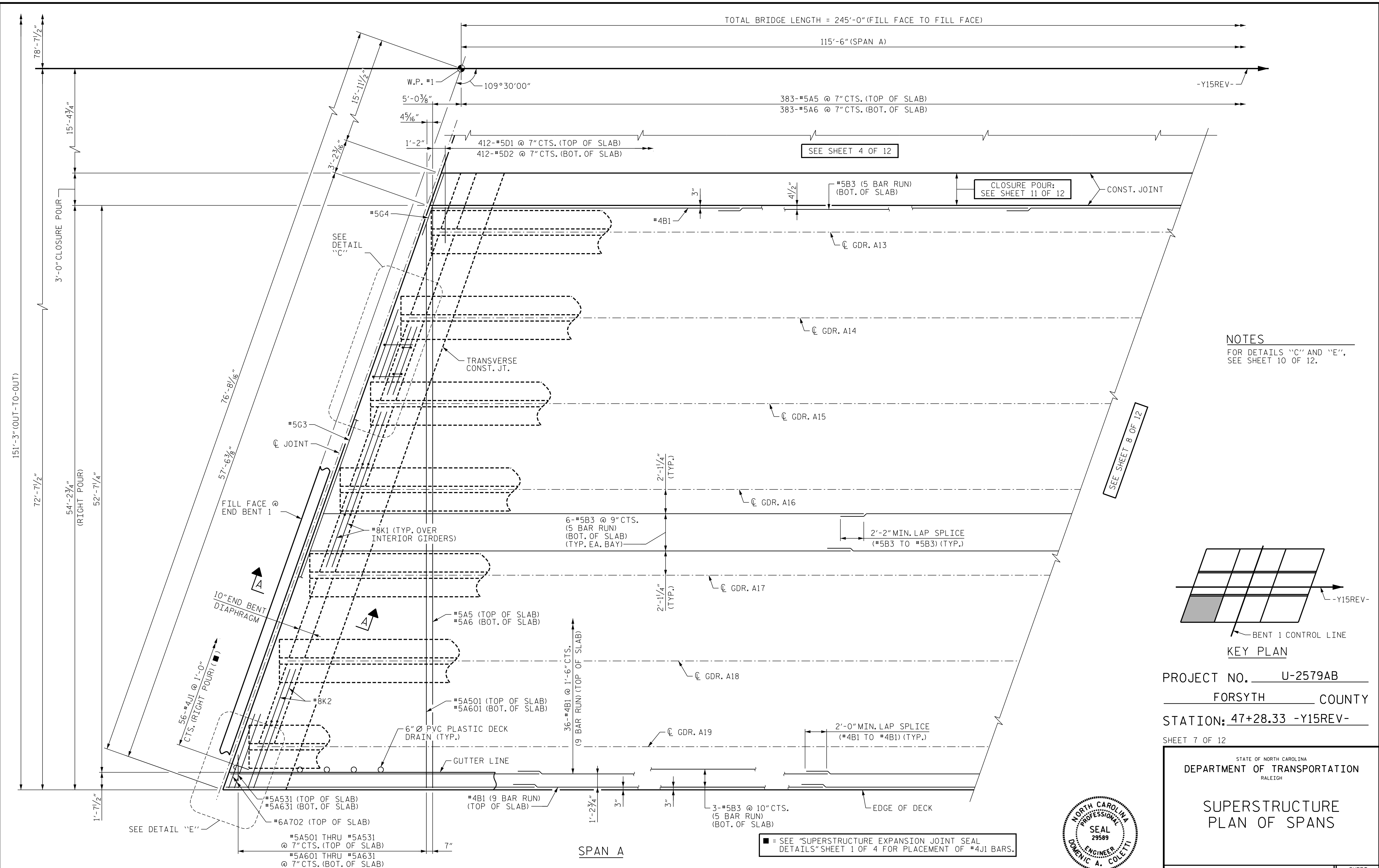
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SHEET NO. S03-15  
 TOTAL SHEETS 61

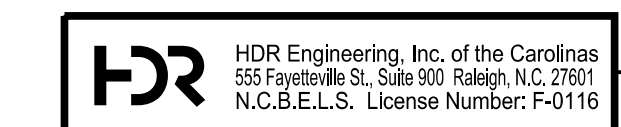
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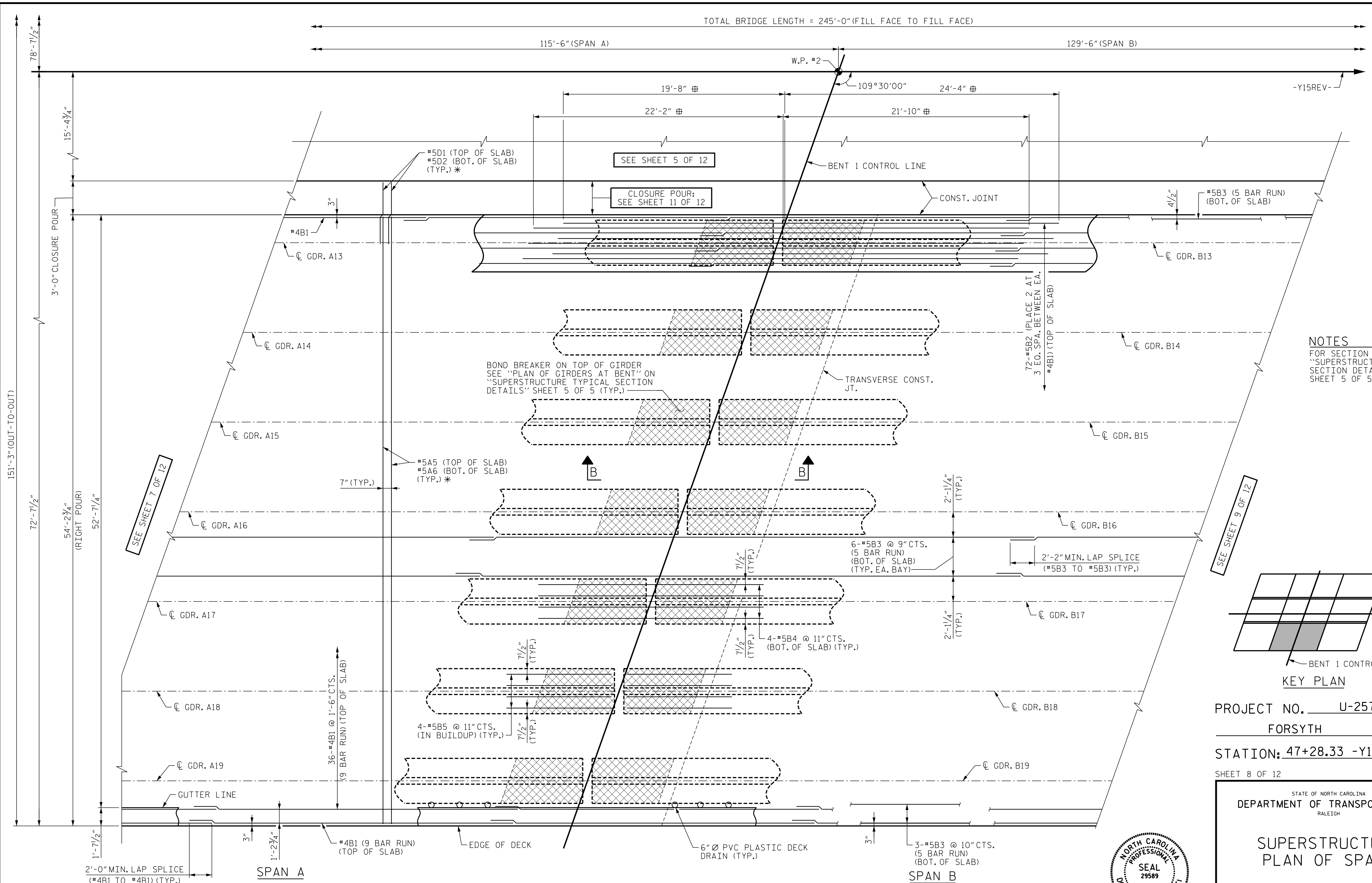
**PARTIAL PLAN OF SPANS**

DES BY: M. NEIHEISEL	DATE: 03/19	DWG BY: B. PETERSON	DATE: 03/19
DES CHK: S. NIFONG	DATE: 04/19	CHK BY: S. NIFONG	DATE: 05/19



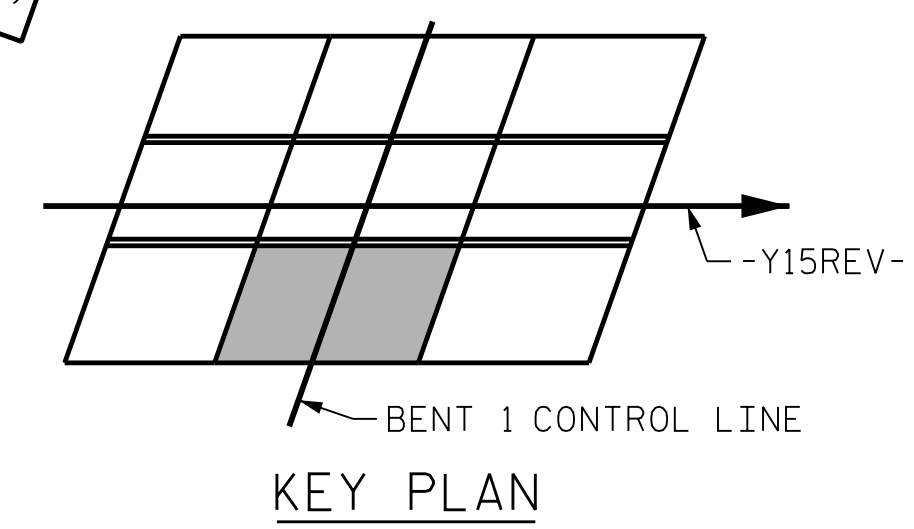
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**NOTES**  
FOR SECTION B-B, SEE  
"SUPERSTRUCTURE TYPICAL  
SECTION DETAILS"  
SHEET 5 OF 5.

SEE SHEET 9 OF 12



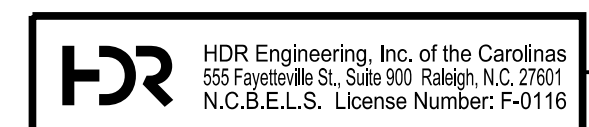
PROJECT NO. U-2579AB  
FORSYTH COUNTY  
STATION: 47+28.33 -Y15REV-  
SHEET 8 OF 12

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**SUPERSTRUCTURE  
PLAN OF SPANS**



\* SEE SHEETS 7 AND 9 FOR PLACEMENT  
OF MAIN "A" BARS AND "D" DOWELS  
# STAGGER #5B2 BARS AS SHOWN IN  
EACH SPACE BETWEEN #4B1 BARS



DOCUMENT NOT CONSIDERED FINAL  
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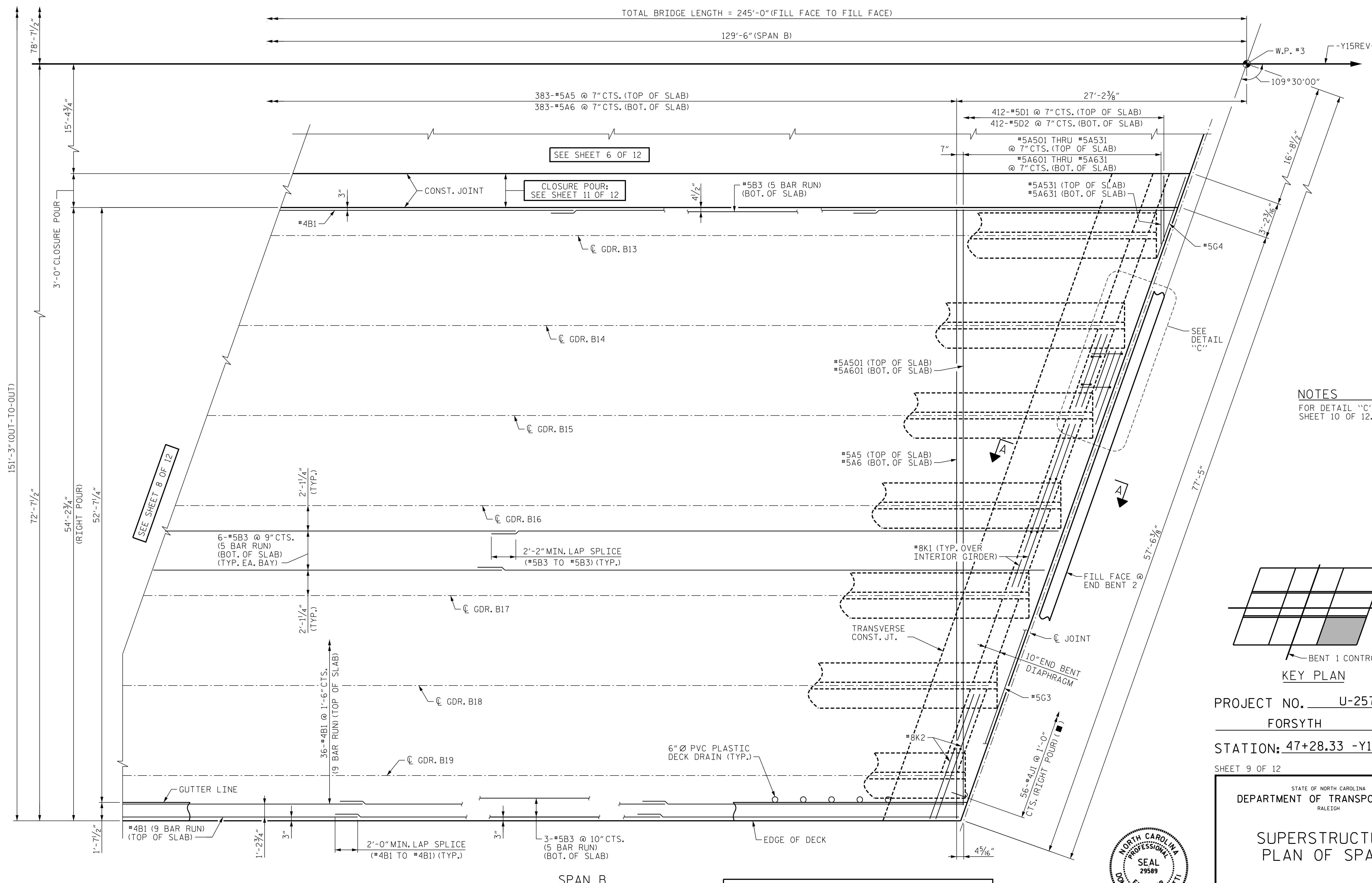
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DES BY: M. NEHEISEL	DATE: 03/19	DWG BY: B. PETERSON	DATE: 03/19
DES CHK: S. NIFONG	DATE: 04/19	CHK BY: S. NIFONG	DATE: 05/19

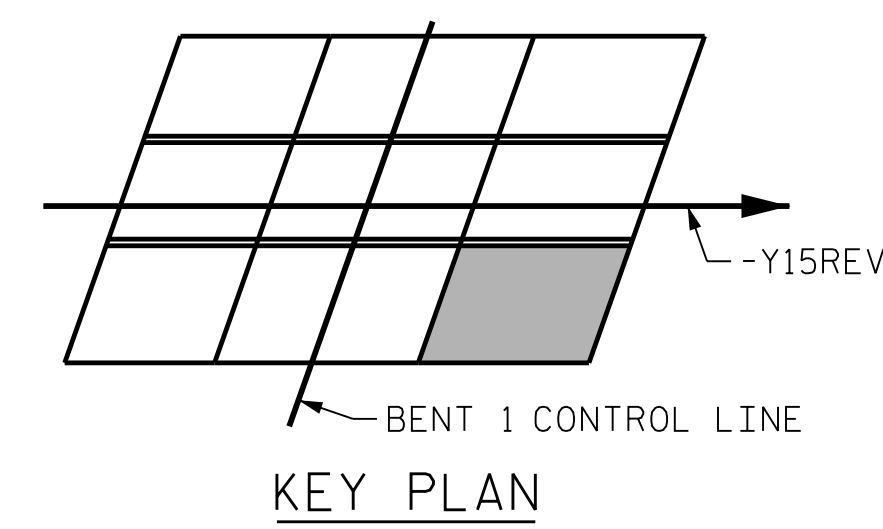
SHEET NO. 503-17  
TOTAL SHEETS 61

TOTAL BRIDGE LENGTH = 245'-0" (FILL FACE TO FILL FACE)

129'-6" (SPAN B)



**NOTES**  
 FOR DETAIL 'C', SEE SHEET 10 OF 12.



PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-  
 SHEET 9 OF 12

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUPERSTRUCTURE PLAN OF SPANS**



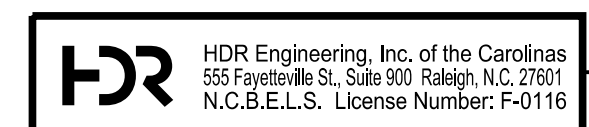
10/18/2021

■ = SEE "SUPERSTRUCTURE EXPANSION JOINT SEAL DETAILS" SHEET 1 OF 4 FOR PLACEMENT OF #4J1 BARS.

**PARTIAL PLAN OF SPANS**

SPAN B

DES BY: M. NEIHEISEL	DATE: 03/19	DWG BY: B. PETERSON	DATE: 03/19
DES CHK: S. NIFONG	DATE: 04/19	CHK BY: S. NIFONG	DATE: 05/19



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

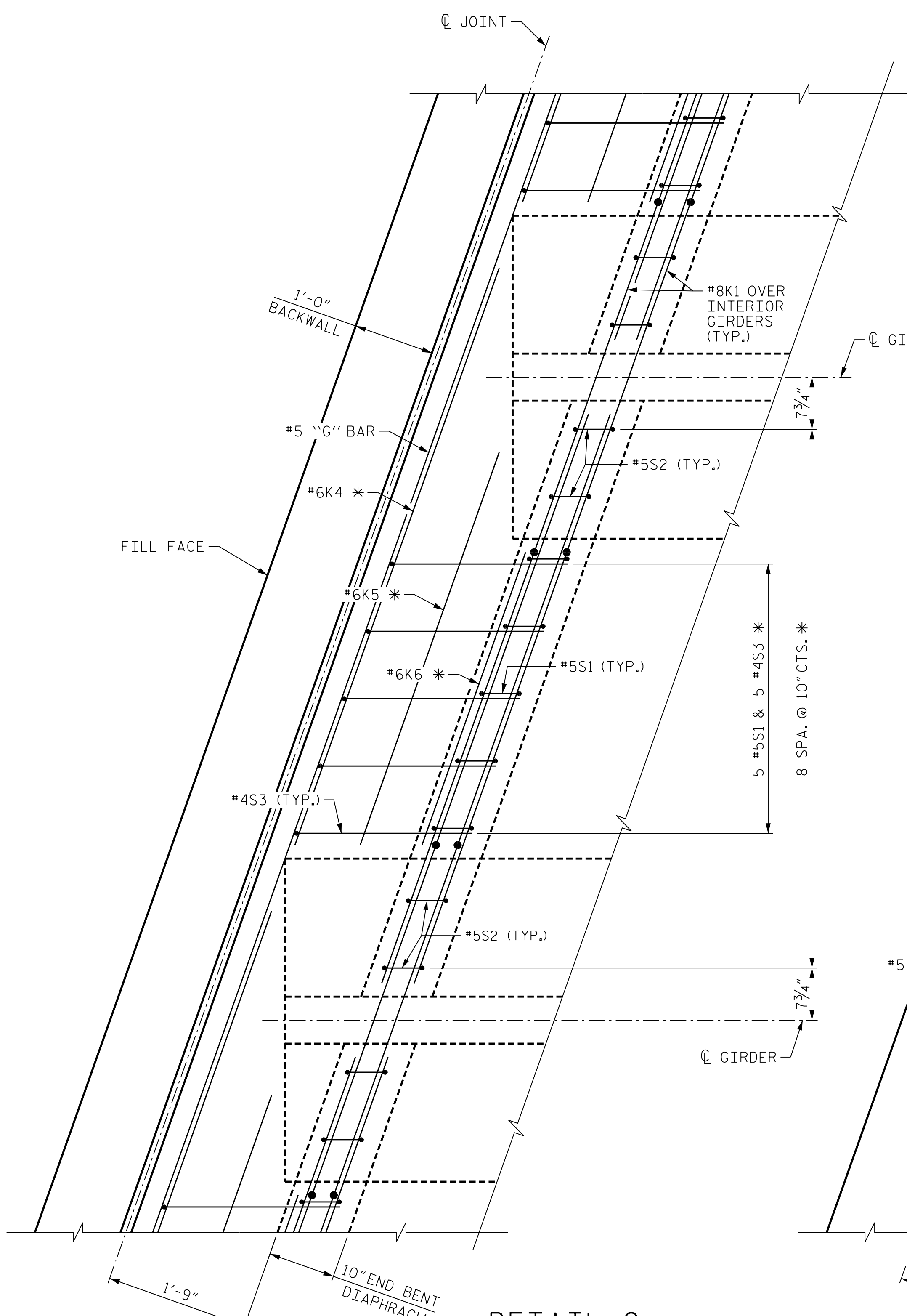
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SHEET NO. SO3-18  
 TOTAL SHEETS 61

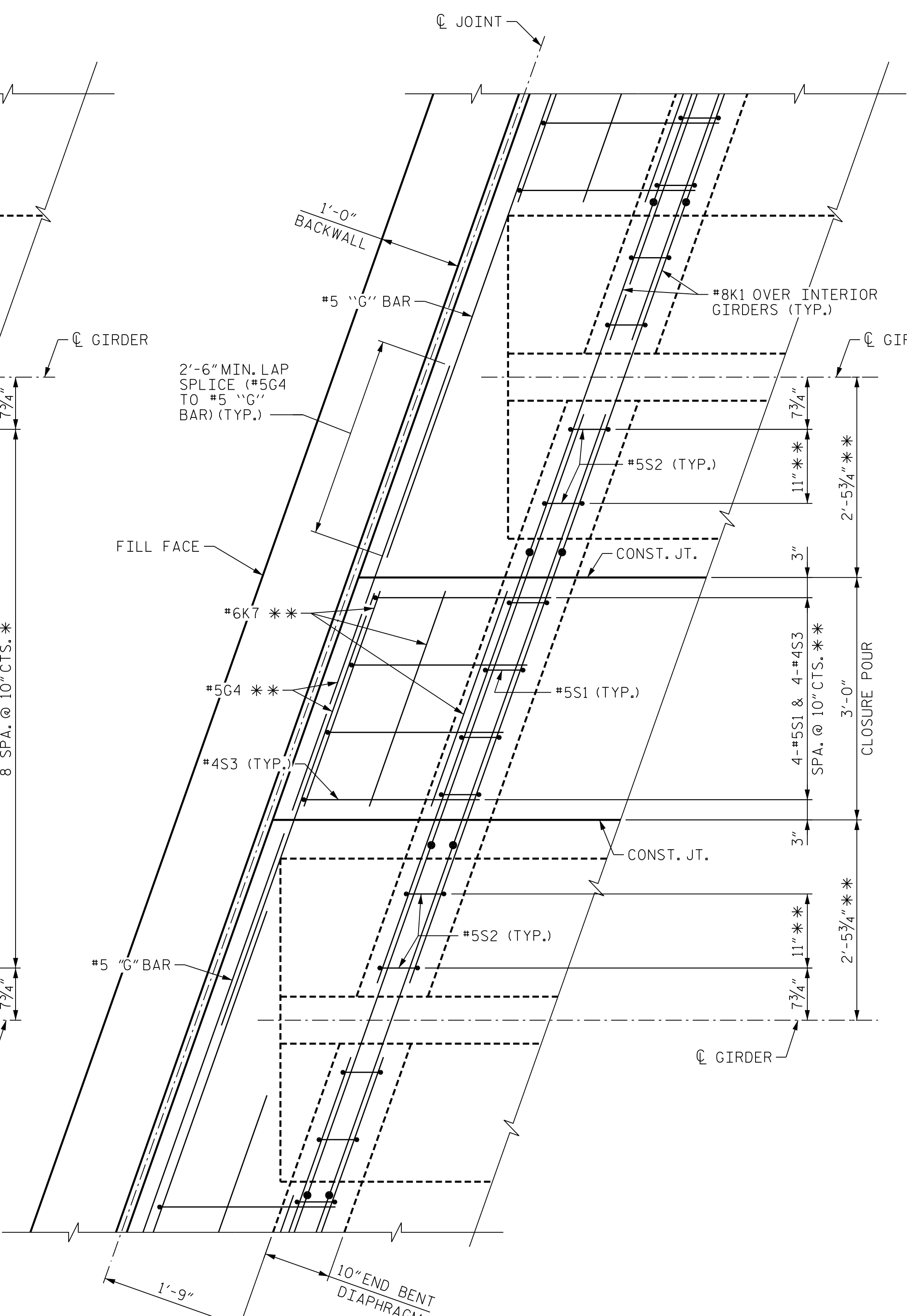
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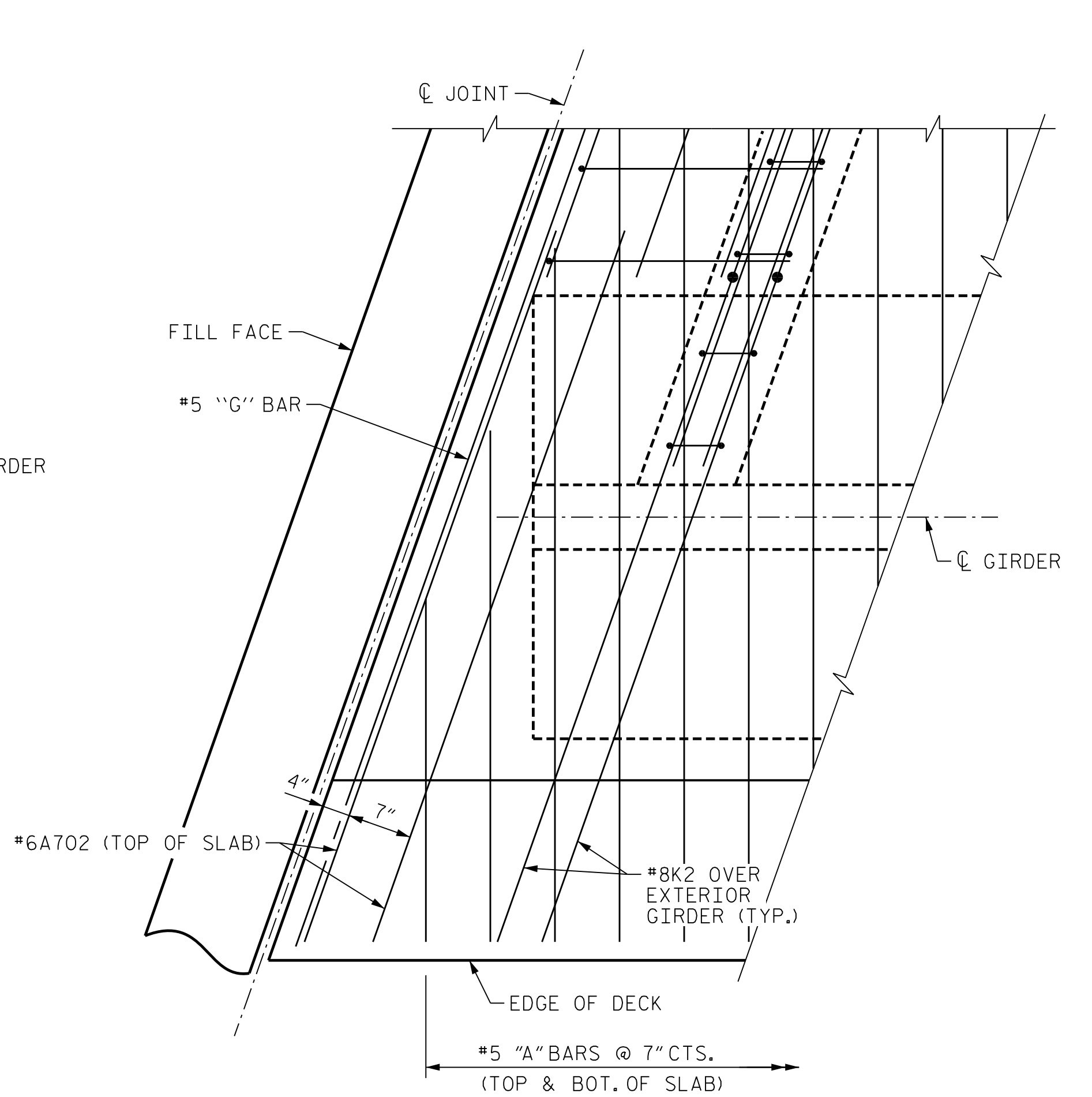
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**DETAIL C**  
 "A" AND "B" BARS NOT SHOWN FOR CLARITY  
 (END BENT 1 SHOWN, END BENT 2 SIMILAR)  
 \* TYPICAL EACH BAY EXCEPT CLOSURE POUR BAYS.



**DETAIL D - CLOSURE POURS**  
 FOR "A", "B", "D" AND "J" BARS, SEE SHEET 11 OF 12  
 (END BENT 1 SHOWN, END BENT 2 SIMILAR)  
 \*\* TYPICAL EACH CLOSURE POUR BAY. DIAPHRAGM BARS AND  
 DIAPHRAGM CONCRETE IN THE CLOSURE POUR BAY ARE  
 INCLUDED WITH THE CLOSURE POUR BILL OF MATERIALS.



**DETAIL E**  
 "B" BARS NOT SHOWN FOR CLARITY  
 (END BENT 1 SHOWN, END BENT 2 SIMILAR)

PROJECT NO. U-2579AB  
FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-  
 SHEET 10 OF 12

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUPERSTRUCTURE  
 PLAN OF SPANS  
 DETAILS**



*Dominic A. Coletti* 10/18/2021

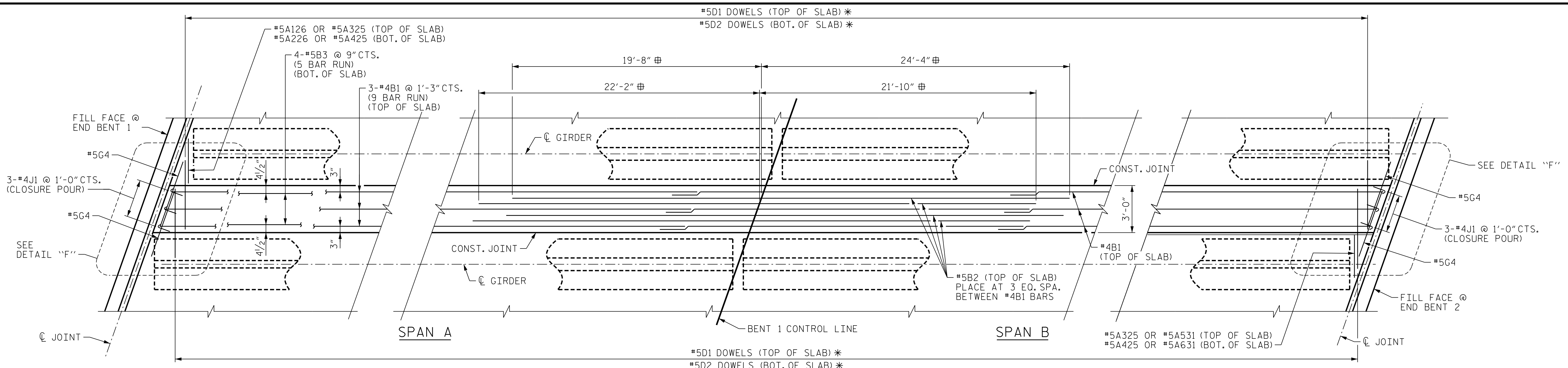
DES BY: <u>M. NEIHEISEL</u>	DATE: <u>03/19</u>	DWG BY: <u>B. PETERSON</u>	DATE: <u>03/19</u>
DES CHK: <u>S. NIFONG</u>	DATE: <u>04/19</u>	CHK BY: <u>S. NIFONG</u>	DATE: <u>05/19</u>



**DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED**

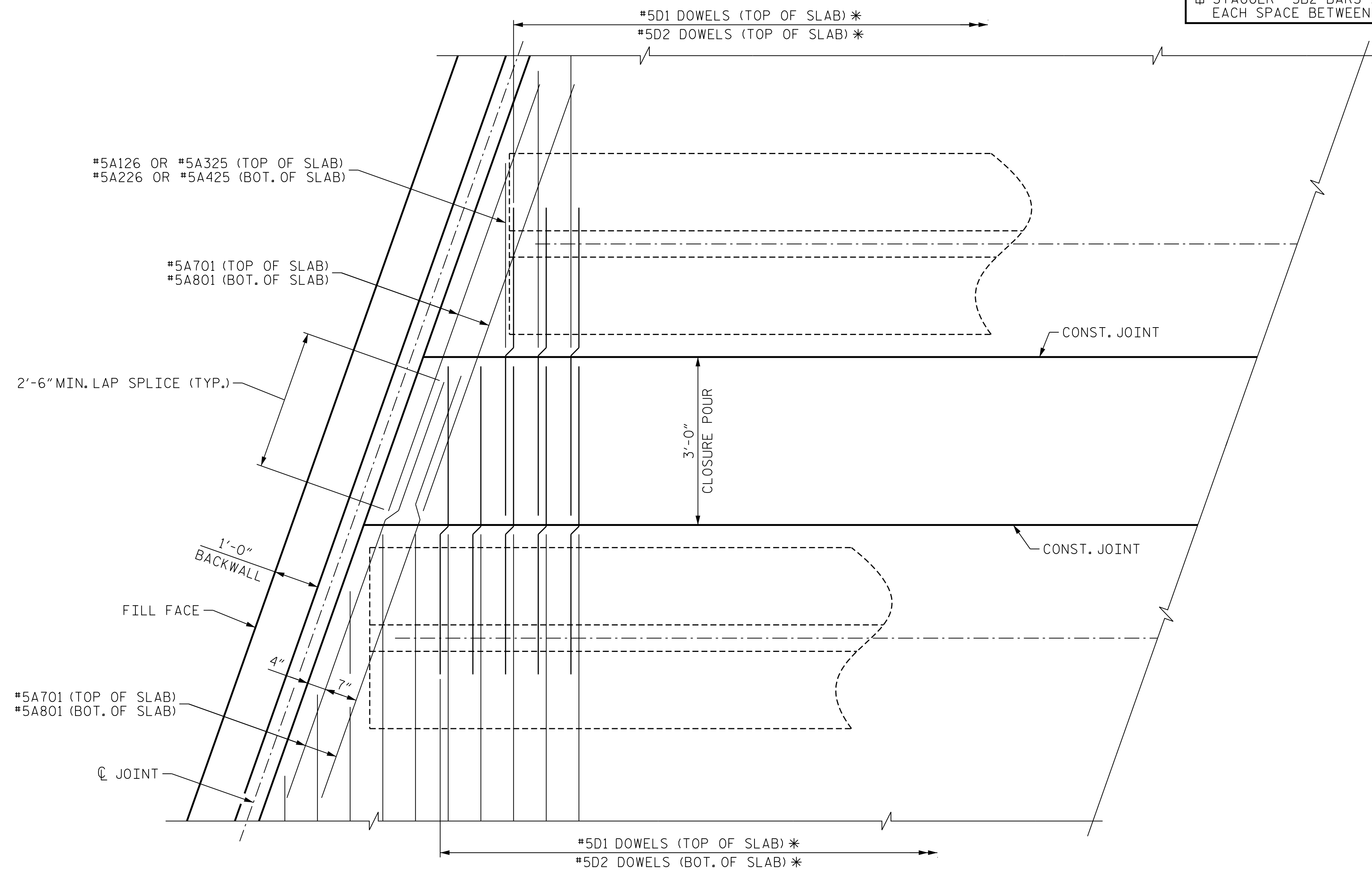
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SHEET NO. 503-19  
 TOTAL SHEETS 61



**PLAN OF CLOSURE POUR**  
(TYPICAL AT EACH CLOSURE POUR)

\* SEE SHEETS 1-9 FOR PLACEMENT  
 # STAGGER #5B2 BARS AS SHOWN IN EACH SPACE BETWEEN #4B1 BARS



**DETAIL "F"**

(END BENT 1 SHOWN, END BENT 2 SIMILAR)  
 ("B" BARS NOT SHOWN FOR CLARITY)

PROJECT NO. U-2579AB  
FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-  
 SHEET 11 OF 12

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUPERSTRUCTURE  
 PLAN OF SPANS  
 DETAILS**



*Dominic A. Coletti* 10/18/2021

REVISIONS						SHEET NO. 503-20
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	TOTAL SHEETS 61
2	--	--	4	--	--	

**HDR** HDR Engineering, Inc. of the Carolinas  
 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601  
 N.C.B.E.L.S. License Number: F-0116

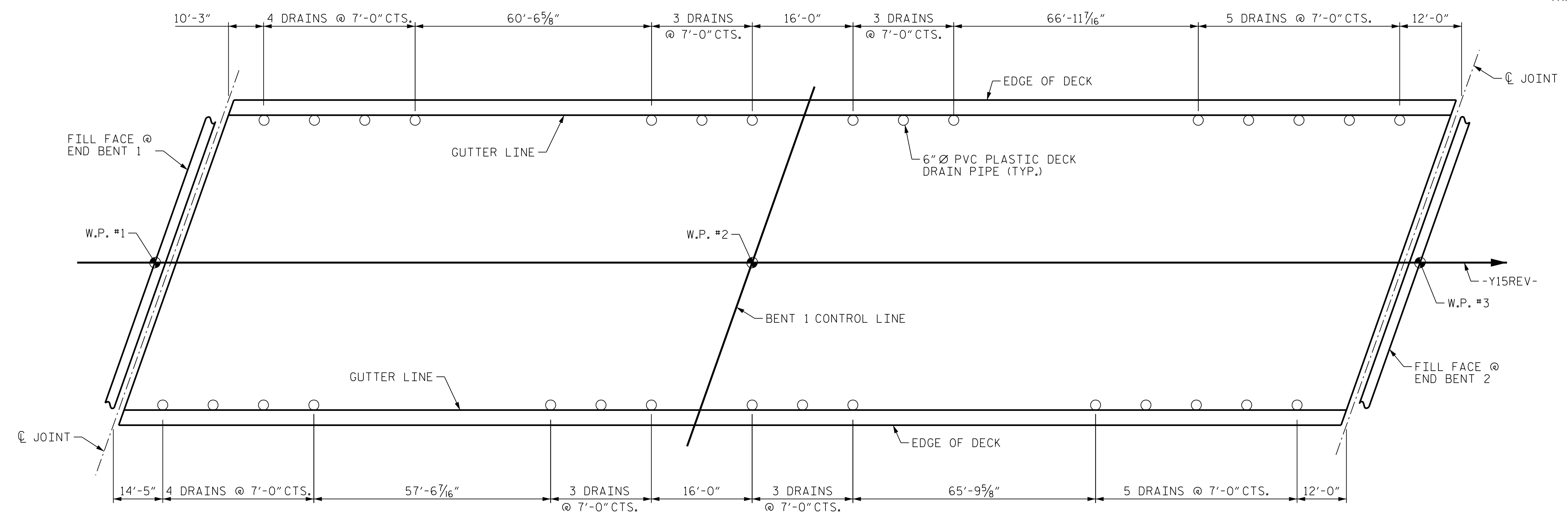
**DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED**

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 USER: PPETERSO DATE: 10/14/2021  
 FILE: ...SUPERSTRUCTURE\_PLA

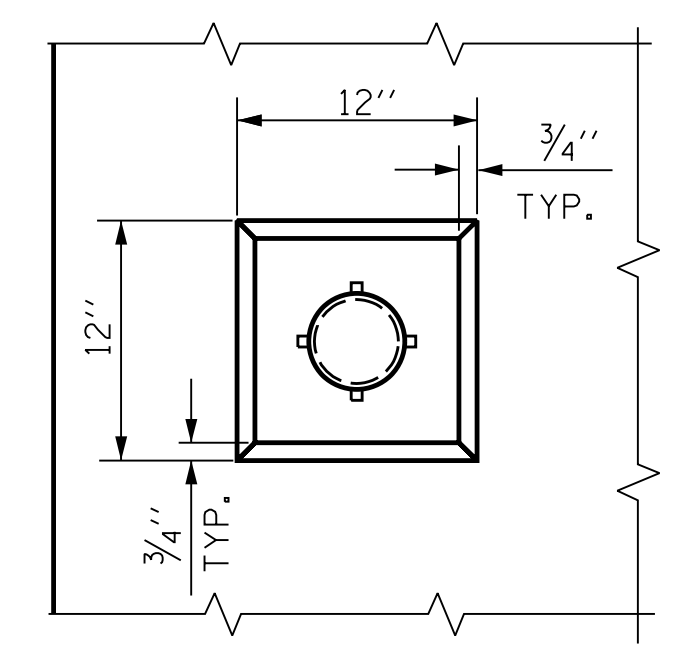
DES BY: <u>M. NEHEISEL</u>	DATE: <u>03/19</u>	DWG BY: <u>B. PETERSON</u>	DATE: <u>03/19</u>
DES CHK: <u>S. NIFONG</u>	DATE: <u>04/19</u>	CHK BY: <u>S. NIFONG</u>	DATE: <u>05/19</u>



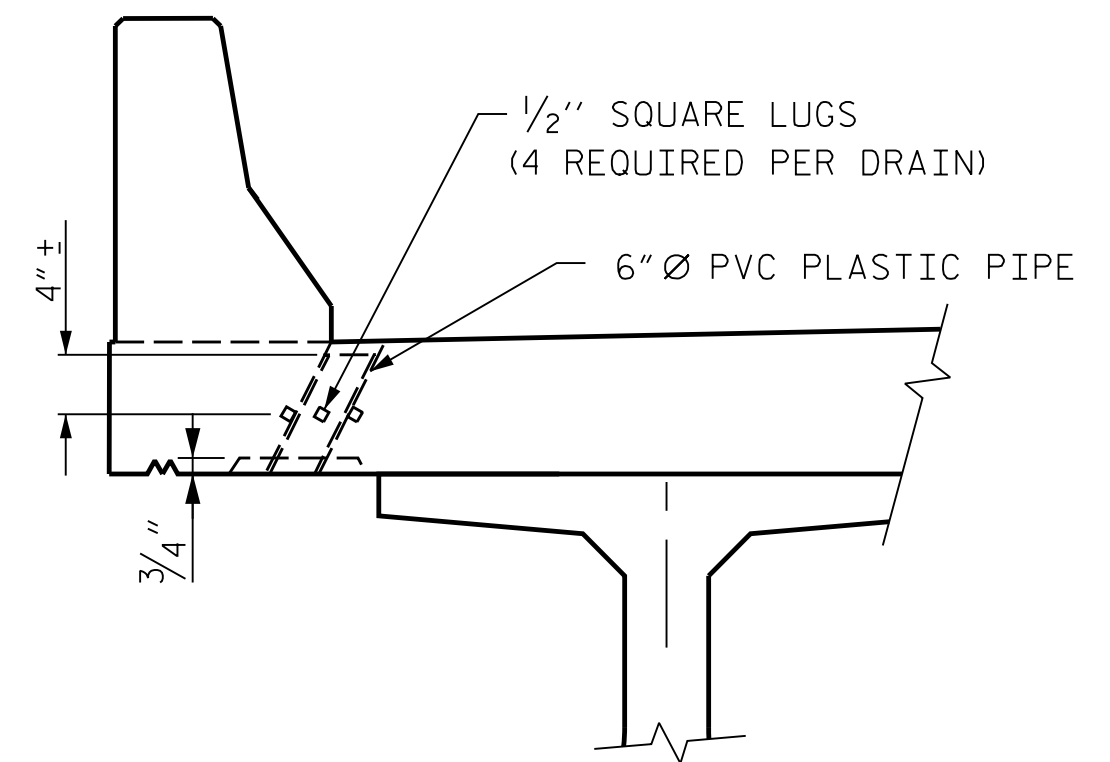
**NOTE**  
DECK DRAINS MAY BE SHIFTED UP TO 4"  
IN THE LONGITUDINAL DIRECTION TO AVOID  
CONFLICTS WITH TRANSVERSE REINFORCING OR  
TRANSVERSE CONSTRUCTION JOINTS IN THE DECK.



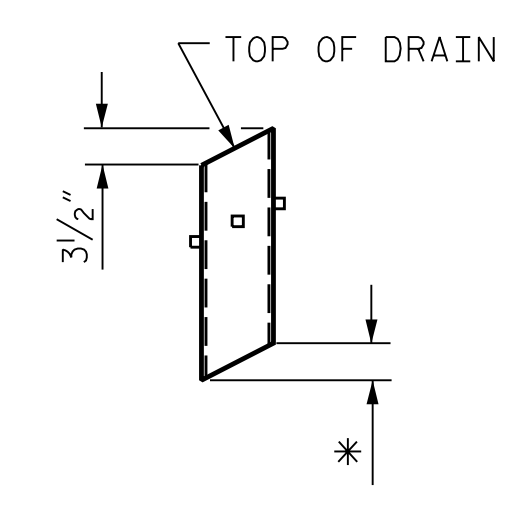
**PLAN OF DECK DRAINS**



**PLAN OF RECESS**



**ELEVATION**



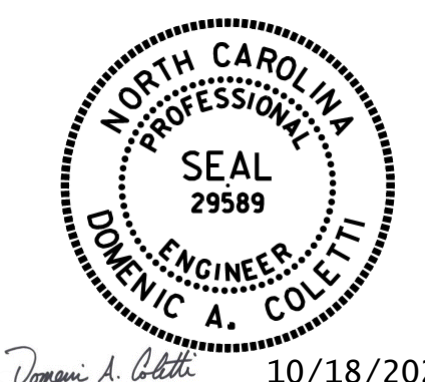
**PIPE DETAIL**  
(30 DRAINS REQUIRED)

\* = TO BE SET TO MATCH SLOPE OF OVERHANG.

**DRAIN DETAILS**

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

PROJECT NO. U-2579AB  
FORSYTH COUNTY  
STATION: 47+28.33 -Y15REV-  
SHEET 12 OF 12



*Dominic A. Coletti* 10/18/2021

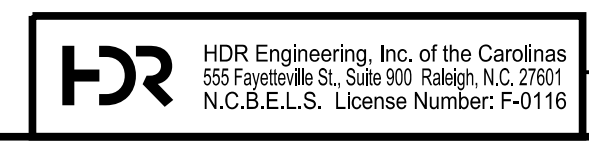
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
**SUPERSTRUCTURE  
PLAN OF SPANS  
DETAILS**

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

SHEET NO. 503-21  
TOTAL SHEETS 61

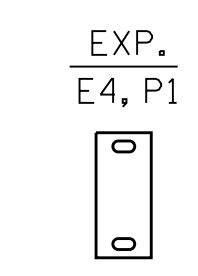
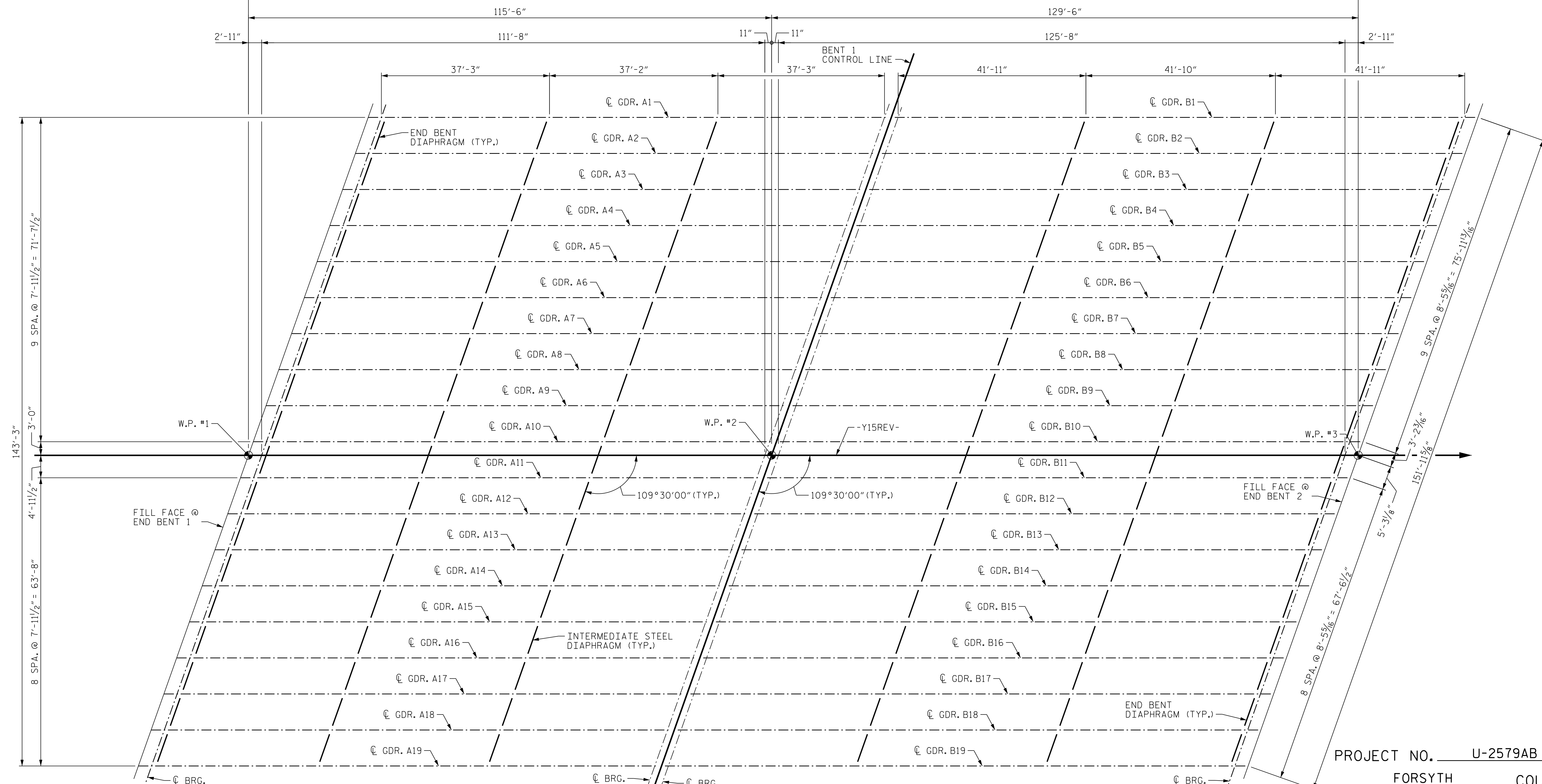
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USER: PPETERSO DATE: 10/14/2021  
FILE: ...SUPERSTRUCTURE PLA  
PENTABLE: NCDOT STRUCTURES DEFAULT PEN.tbl  
TIME: 3:47:16 PM

DES BY: <u>M. NEHEISEL</u>	DATE: <u>03/19</u>	DWG BY: <u>B. PETERSON</u>	DATE: <u>03/19</u>
DES CHK: <u>S. NIFONG</u>	DATE: <u>04/19</u>	CHK BY: <u>S. NIFONG</u>	DATE: <u>05/19</u>

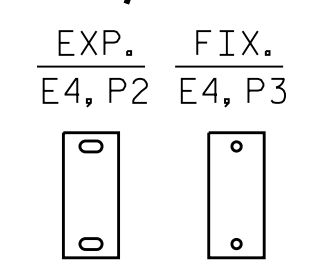


**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

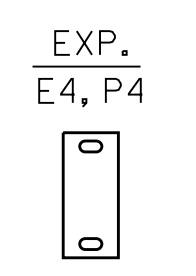
245'-0" (FILL FACE END BENT 1 TO FILL FACE END BENT 2)



SPAN A



SPAN B



### FRAMING PLAN

#### NOTES

FOR ELASTOMERIC BEARING AND SOLE PLATE DETAILS, SEE "SUPERSTRUCTURE ELASTOMERIC BEARING DETAILS" SHEET.

FOR DIAPHRAGM DETAILS, SEE "SUPERSTRUCTURE INTERMEDIATE STEEL DIAPHRAGMS" SHEET.

FOR END BENT DIAPHRAGM DETAILS, SEE "SUPERSTRUCTURE TYPICAL SECTION" SHEETS.

THE INTERMEDIATE STEEL DIAPHRAGMS IN THE CLOSURE POUR BAYS, BETWEEN GIRDERS 6 AND 7 AND GIRDERS 12 AND 13, SHALL BE INSTALLED AFTER THE TWO ADJACENT DECK SECTIONS ARE PLACED, AND BEFORE THE CLOSURE POUR IS PLACED.

FOR THE INTERMEDIATE DIAPHRAGMS IN CLOSURE BAYS, THE NUTS AND BOLTS FOR CONNECTING THE DIAPHRAGM TO CONNECTOR PLATE SHALL BE LEFT LOOSE FOR PURPOSE OF ADJUSTMENT UNTIL BOTH SIDES OF SLAB HAVE BEEN POURED.

PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

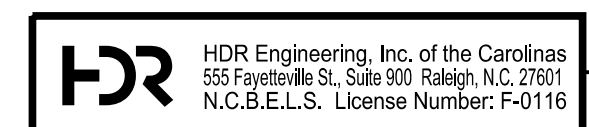
## SUPERSTRUCTURE FRAMING PLAN

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

SHEET NO. 503-22  
TOTAL SHEETS 61



*Dominic A. Coletti* 10/18/2021



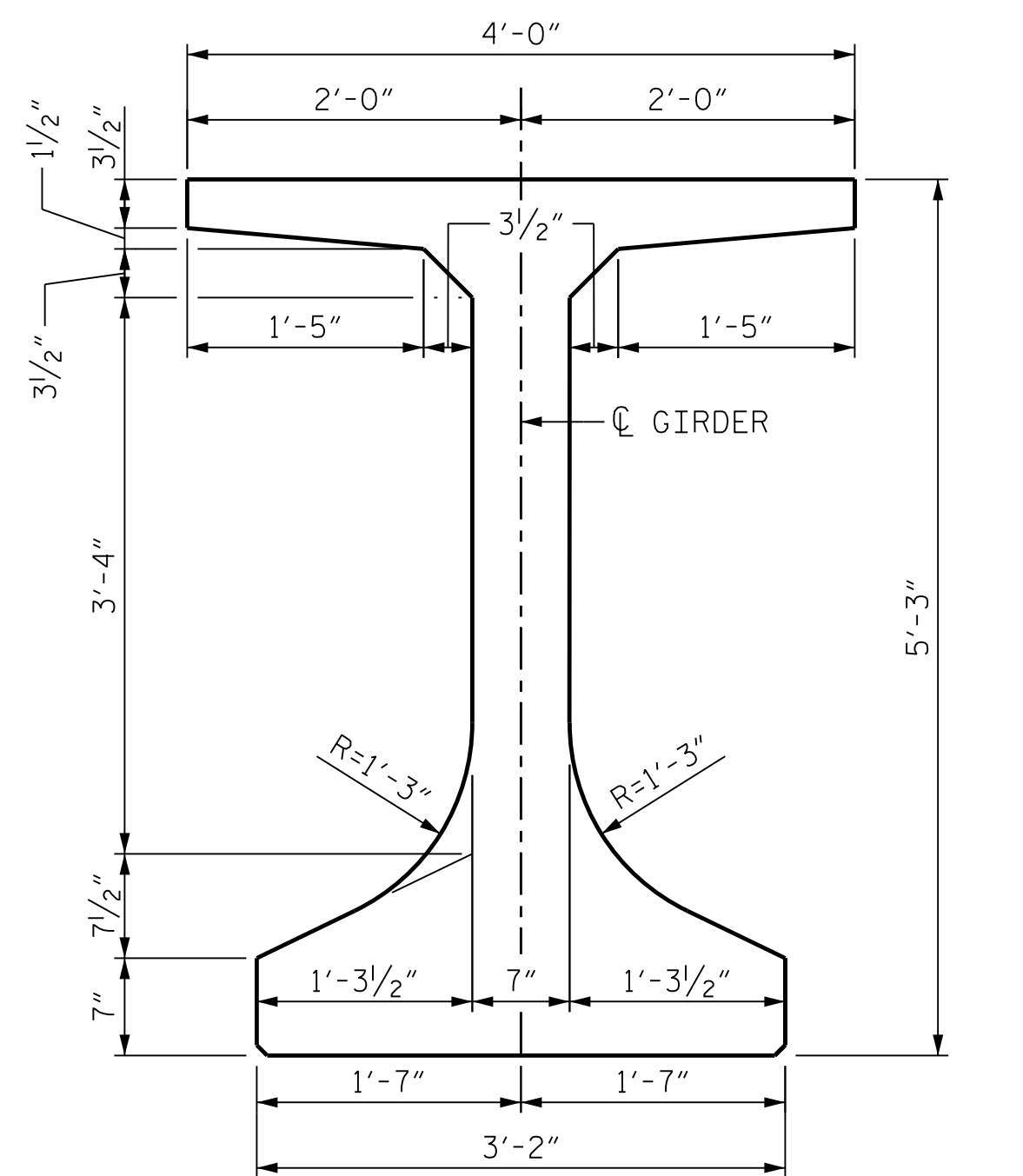
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 USER: PPETERSO DATE: 10/14/2021  
 FILE: ...SUPERSTRUCTURE\_FRA

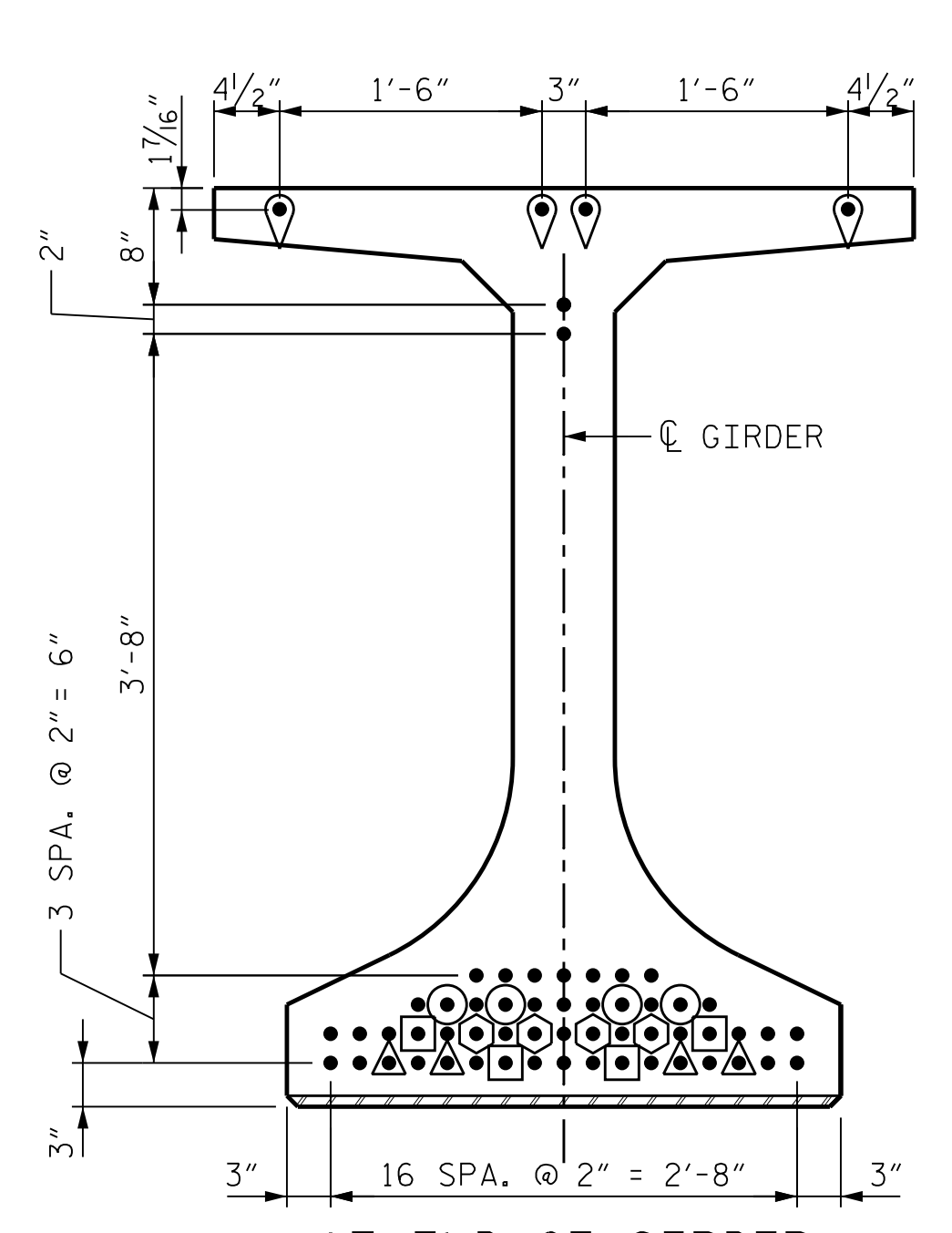
DES BY: M. NEIHEISEL DATE: 03/19 DWG BY: B. PETERSON DATE: 03/19  
 DES CHK: S. NIFONG DATE: 03/19 CHK BY: S. NIFONG DATE: 05/19







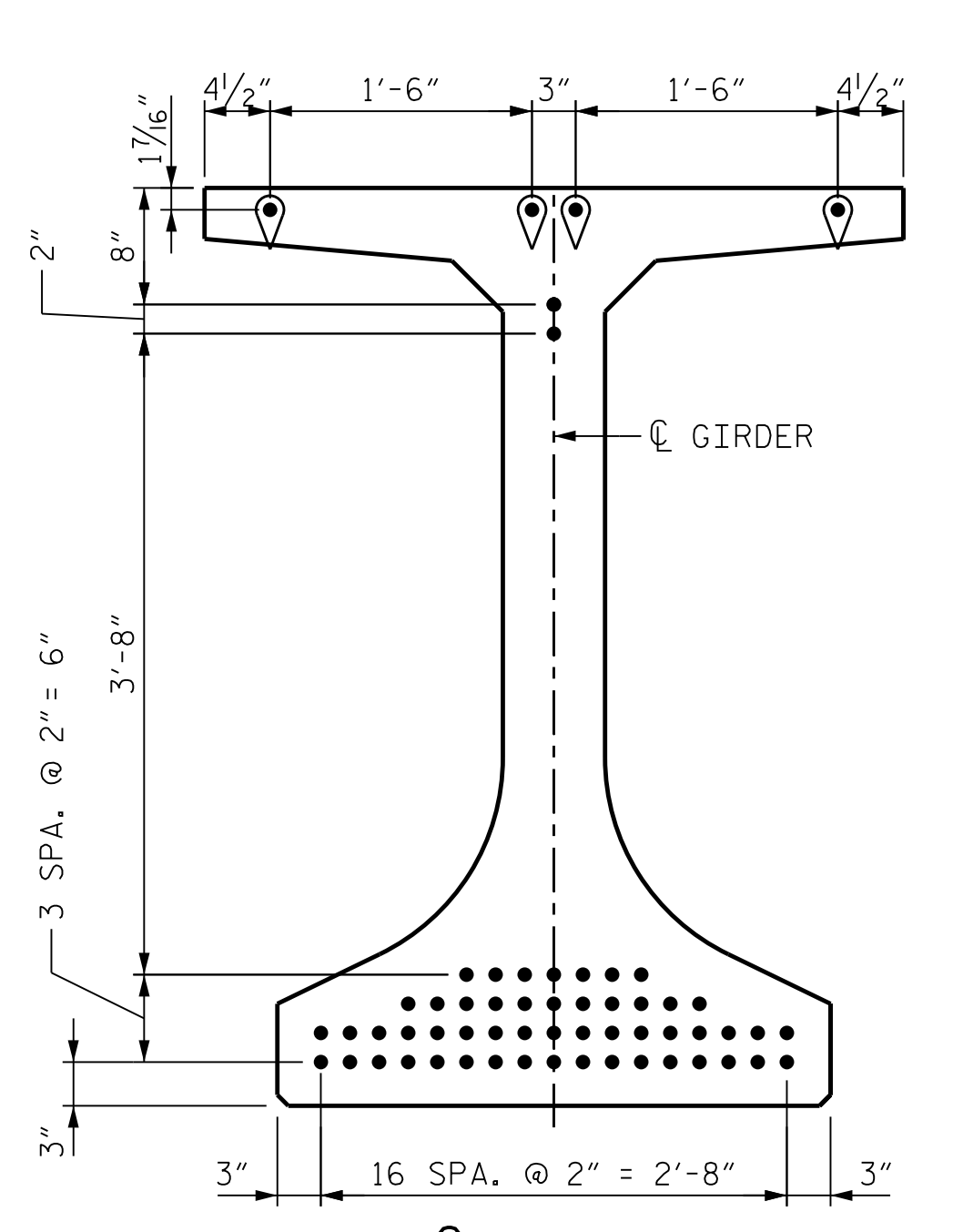
GIRDER OUTSIDE DIMENSIONS



AT END OF GIRDER

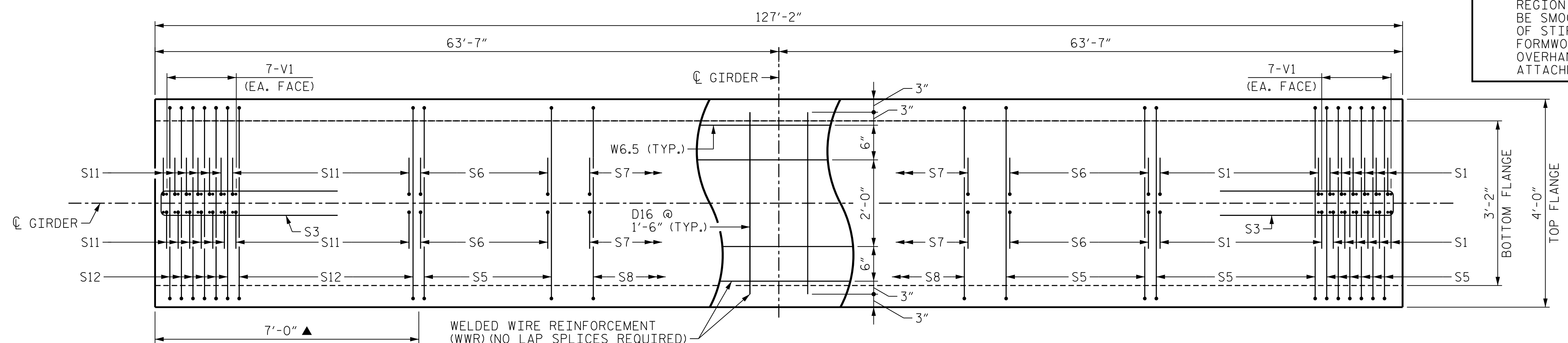
**DEBONDING LEGEND**

- FULLY BONDED STRANDS
- ▲ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ◻ STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER
- ◉ STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER
- ⊙ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER
- ⓪ 0.6" Ø "SLACK" STRANDS TO BE TENSIONED TO 10,000 LBS. (MAX.)



AT C OF GIRDER

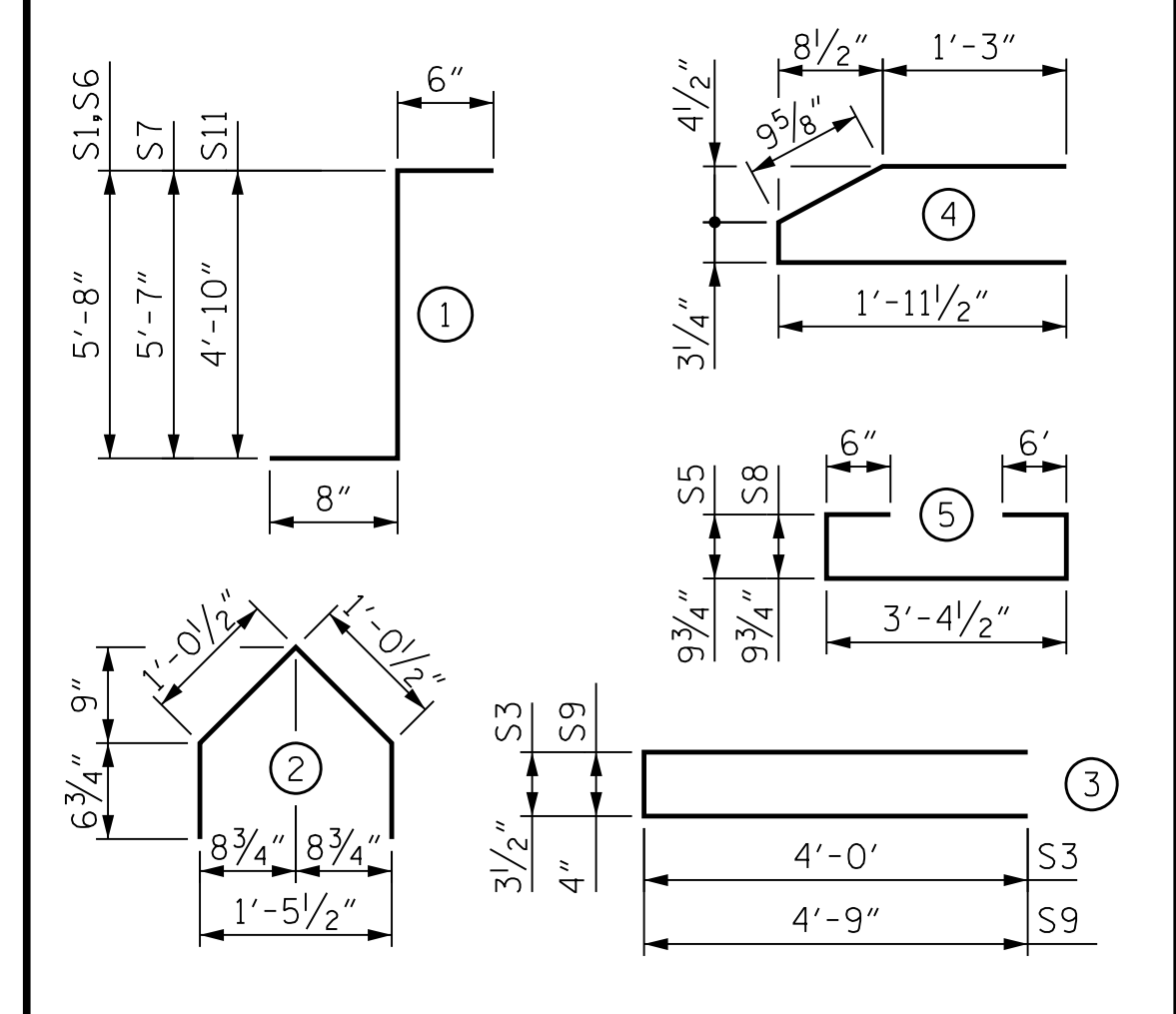
0.6" Ø LOW RELAXATION STRAND LAYOUT



PLAN OF GIRDER

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

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 GDR.					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	34	#5	1	6'-10"	242
S2	34	#3	2	3'-3"	42
S3	10	#3	3	8'-4"	31
S4	246	#3	4	4'-4"	401
S5	57	#4	5	6'-0"	229
S6	80	#4	1	6'-10"	366
S7	98	#4	1	6'-9"	442
S8	49	#4	5	5'-10"	191
S9	8	#5	3	9'-10"	82
S10	10	#4	STR	8'-0"	53
S11	34	#5	1	6'-0"	213
S12	17	#4	STR	3'-6"	40
V1	28	#5	STR	4'-9"	139
WWR	-	-	-	-	274
BAR TYPES					



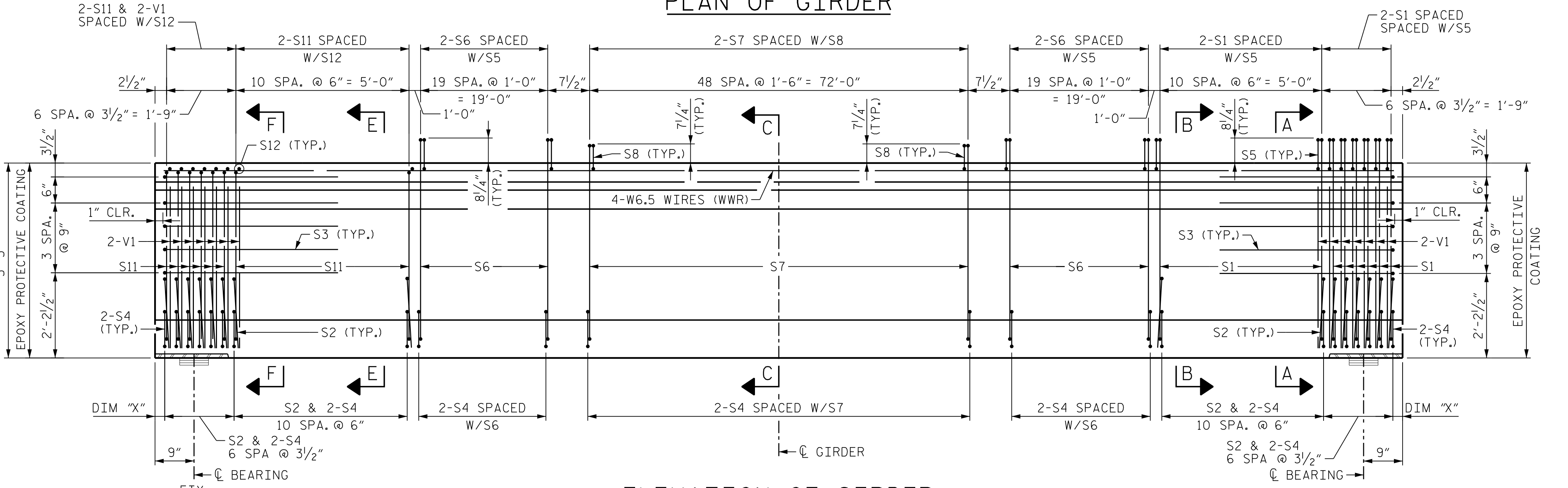
ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER

WWR	REINF. STEEL	8,000 PSI CONCRETE	0.6" Ø L.R. STRANDS
LB.	LB.	C.Y.	No.
274	2,471	32.6	58

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
19	127'-2"	2,416'-2"



ELEVATION OF GIRDER

FOR LOCATION OF 1/2" Ø FORMED HOLES, SEE "SUPERSTRUCTURE PRESTRESSED CONCRETE GIRDER FOR LINK SLAB DETAILS" SEE SHEET 4 OF 4.

DIM. "X":  
1 13/16" CLR. TO S2 BARS  
1 1/16" MIN. CLR. TO S4 BARS



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PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+28.33 -Y15REV-

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUPERSTRUCTURE  
63" PRESTRESSED CONCRETE  
FLORIDA I-BEAM (FIB)  
FOR LINK SLAB  
SPAN B

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

SHEET NO.
S03-24
TOTAL SHEETS
61

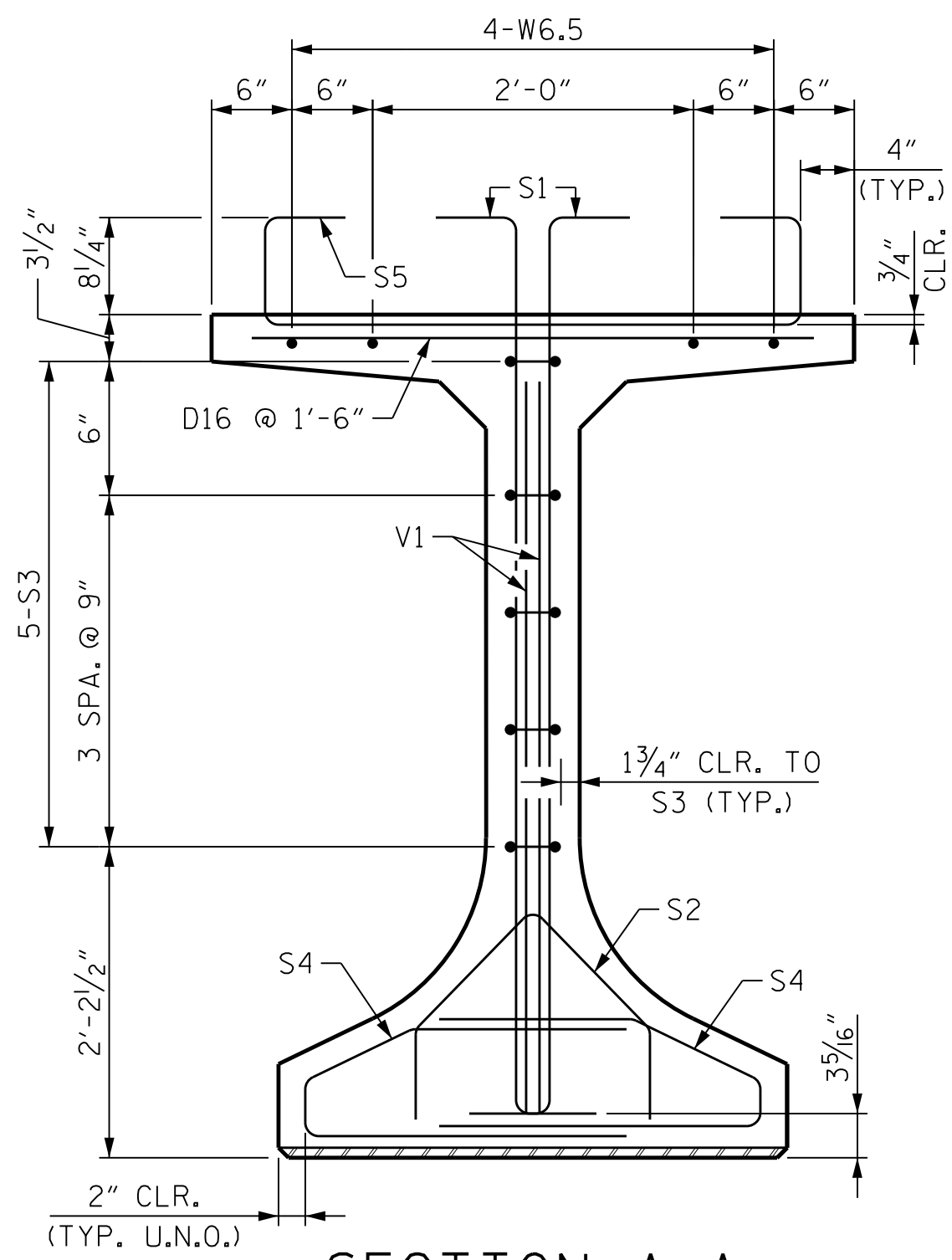
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 USER: PETERSON  
 DATE: 10/14/2021  
 TIME: 3:47:38 PM  
 FILE: ...SUPERSTRUCTURE 63"

DES BY: M. NEIHEISEL	DATE: 02/19	DWG BY: D. CARTER	DATE: 02/19
DES CHK: S. NIFONG	DATE: 02/19	CHK BY: A. MILLER	DATE: 04/19

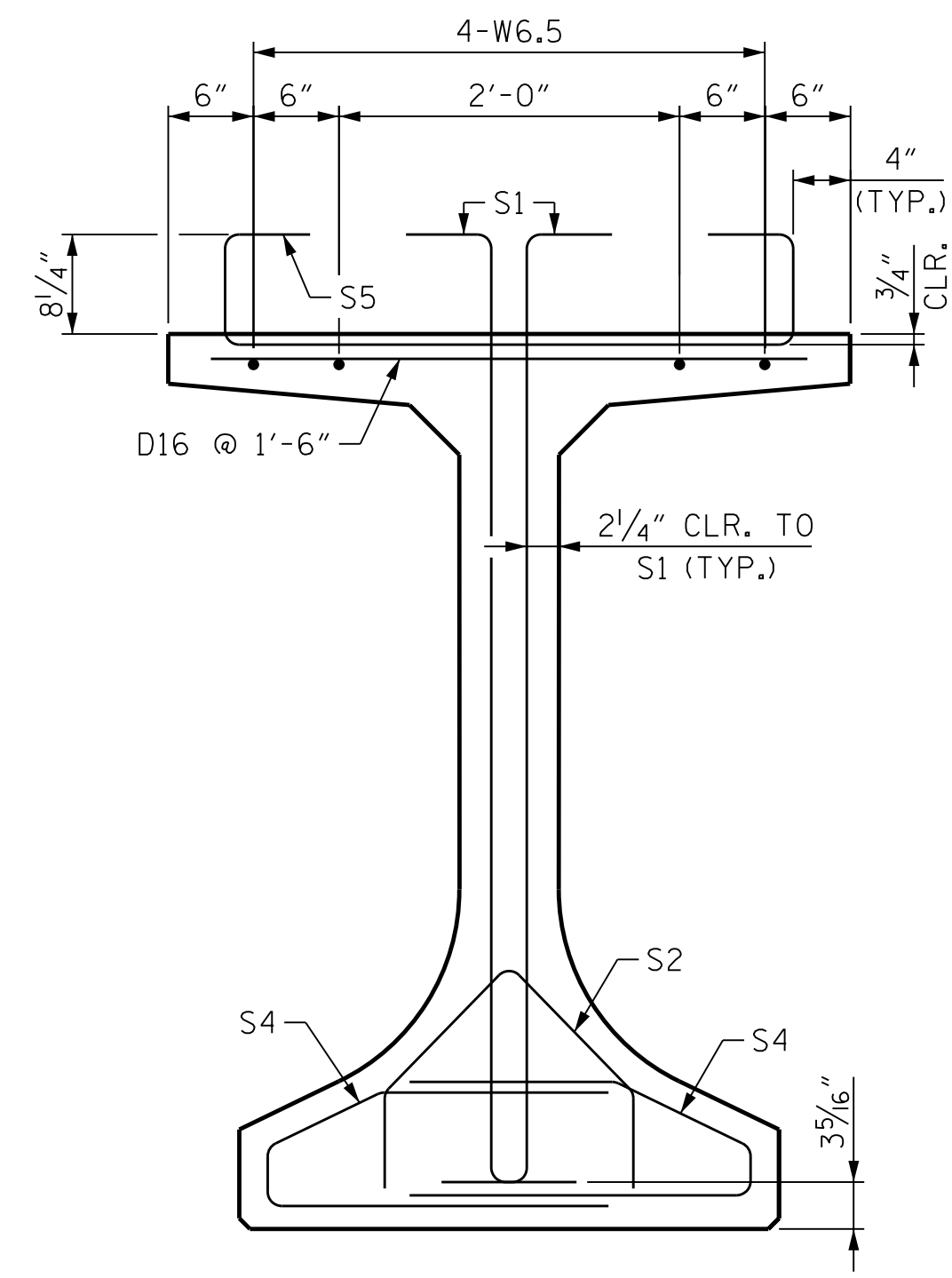


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

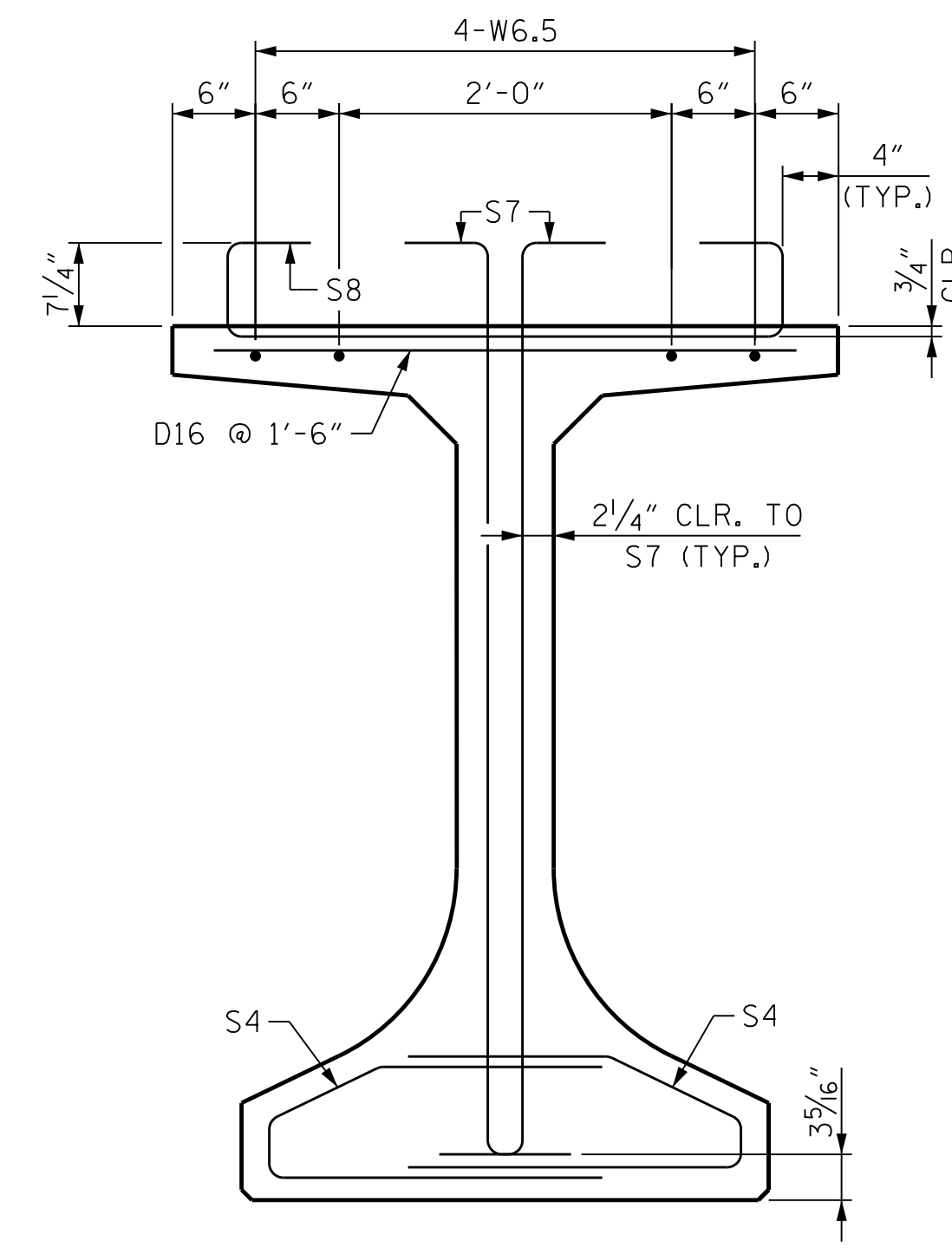




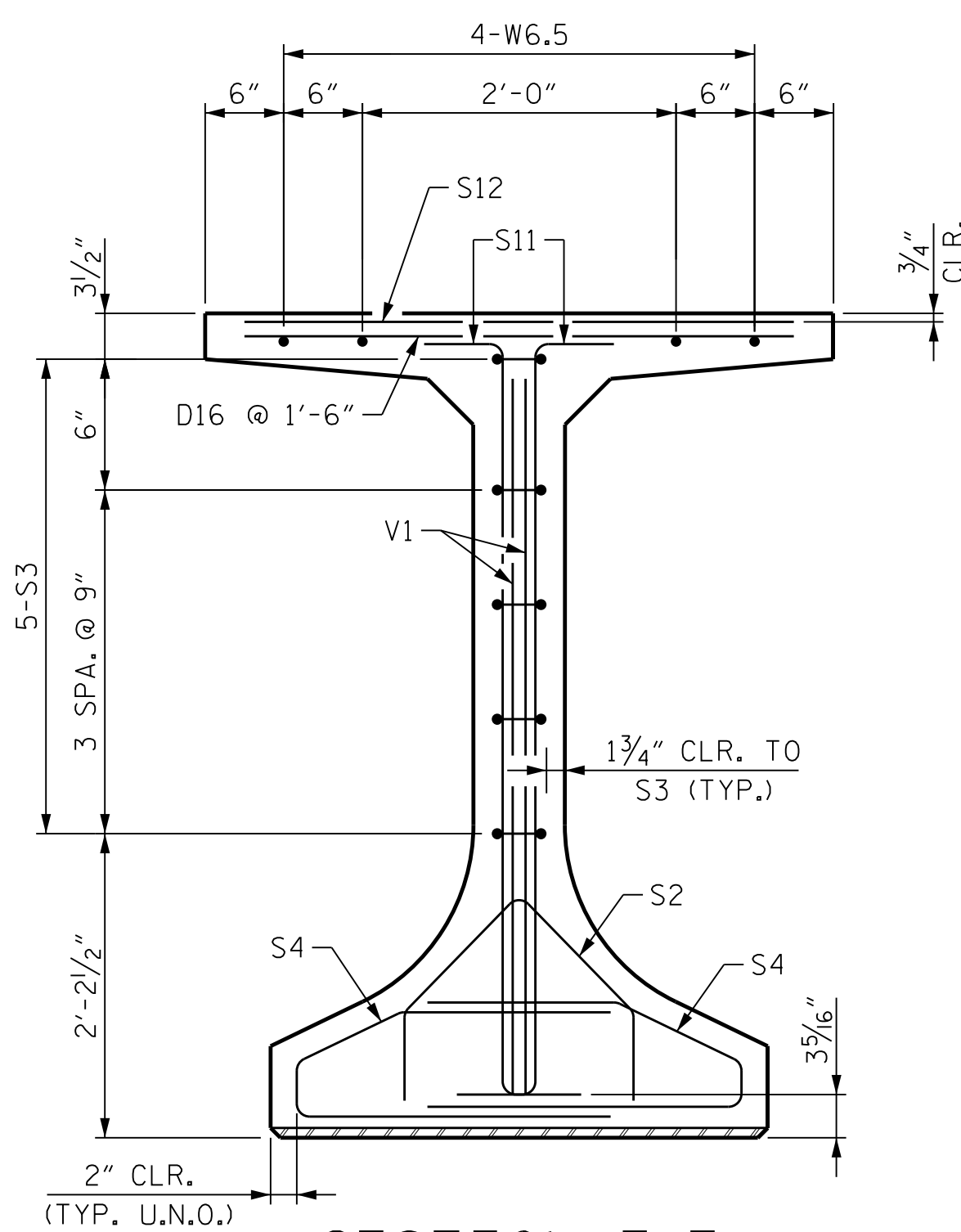
SECTION A-A



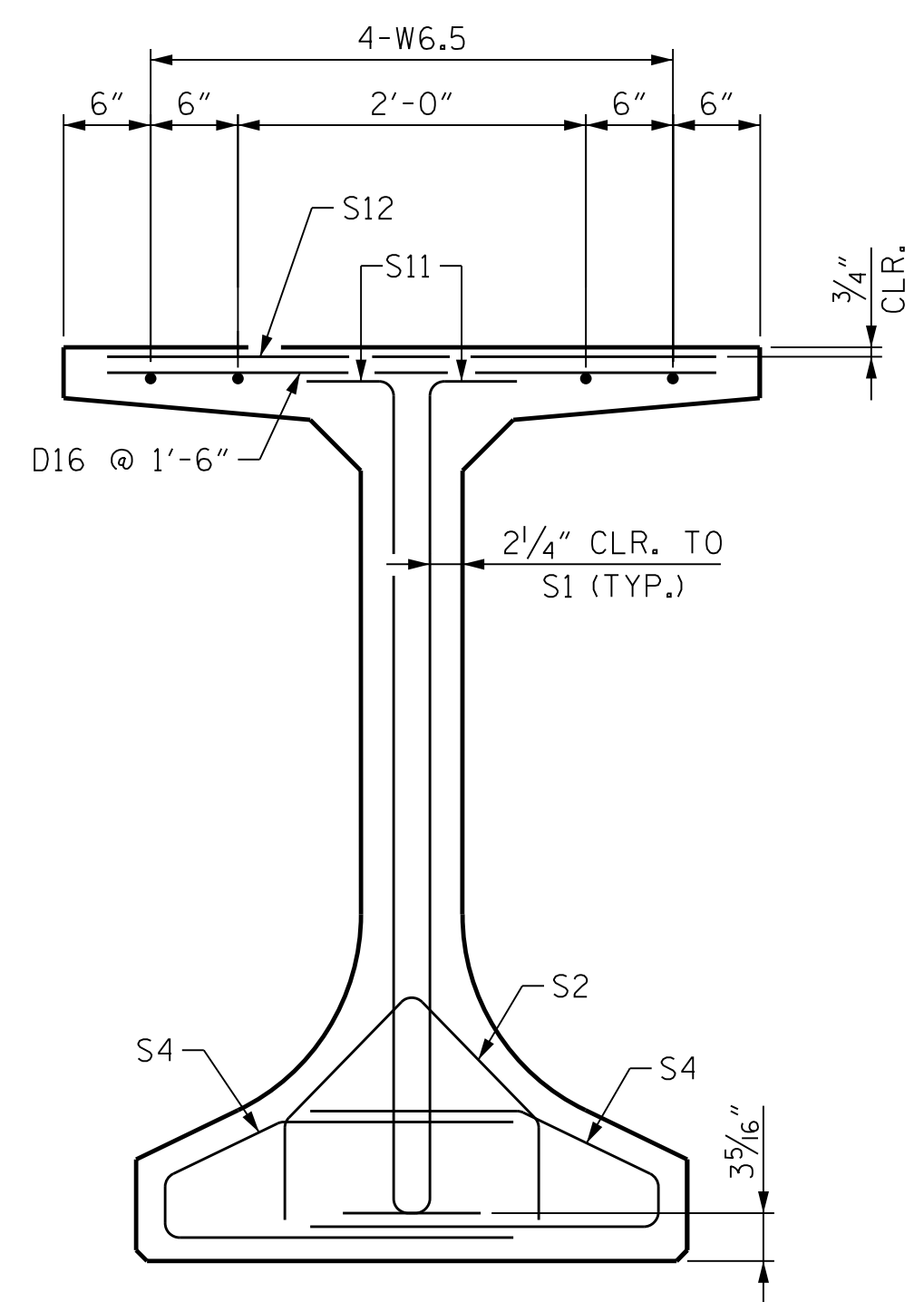
SECTION B-B



SECTION C-C



SECTION F-F



SECTION E-E

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 ON SHEETS 1 OF 4 AND 2 OF 4.

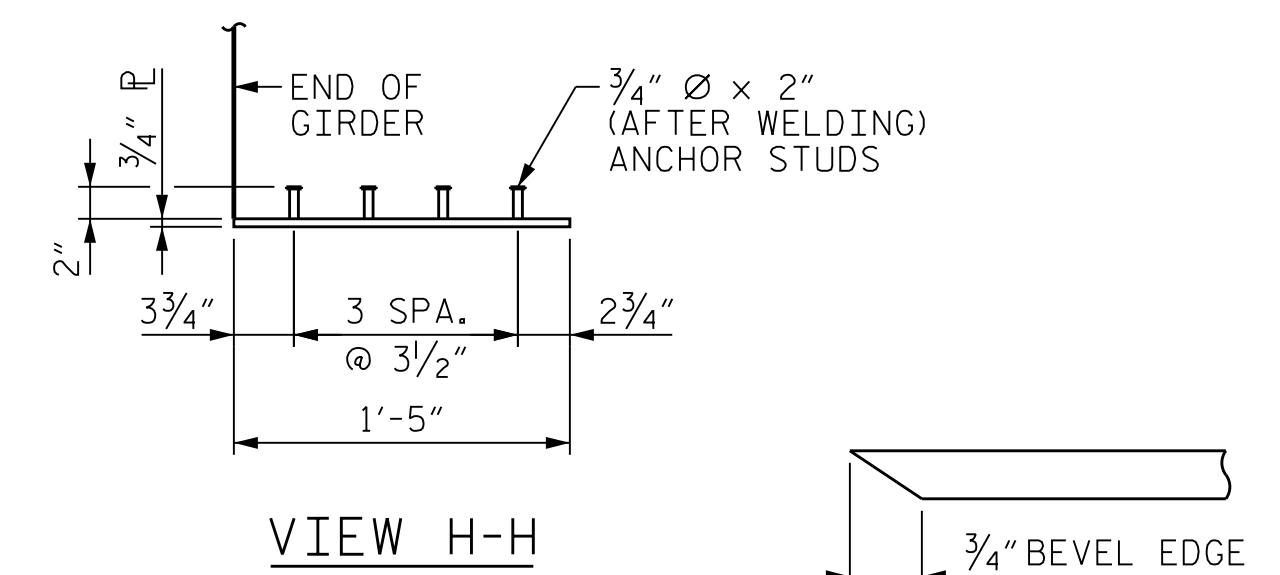
EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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.

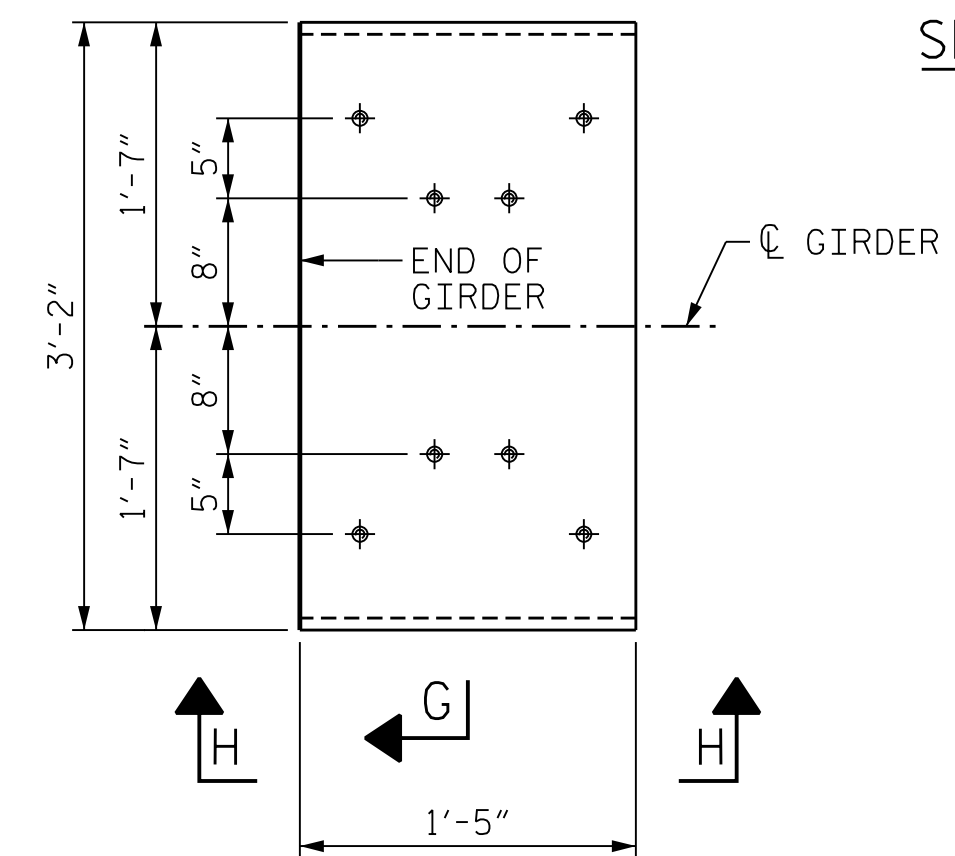
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6400 PSI.

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

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



VIEW H-H



SECTION "G"  
(SEE NOTES)

EMBEDDED PLATE "B-1"  
DETAILS  
(2 REQ'D PER GIRDER)

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+28.33 -Y15REV-

SHEET 3 OF 4



10/18/2021

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUPERSTRUCTURE  
PRESTRESSED CONCRETE  
GIRDER FOR LINK SLAB  
DETAILS

REVISIONS						SHEET NO. S03-25 TOTAL SHEETS 61
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	
2	--	--	4	--	--	



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UNLESS ALL SIGNATURES COMPLETED

PLOT DRIVER: NCDOT\_pdf\_color\_eng-50.ppt  
USER: PPETERSO DATE: 10/14/2021  
FILE: ...SUPERSTRUCTURE PRE

DES BY: M. NEHEISEL	DATE: 02/19	DWG BY: D. CARTER	DATE: 02/19
DES CHK: S. NIFONG	DATE: 02/19	CHK BY: A. MILLER	DATE: 04/19

### DEAD LOAD DEFLECTION TABLE FOR GIRDERS, SPAN A

EXTERIOR GIRDERS																						
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.033	0.065	0.095	0.123	0.147	0.168	0.185	0.197	0.204	0.207	0.204	0.197	0.185	0.168	0.147	0.123	0.095	0.065	0.033	0.000	
DEFLECTION DUE TO SDL *	↓	0.000	0.022	0.044	0.066	0.086	0.104	0.119	0.131	0.140	0.146	0.147	0.146	0.140	0.131	0.119	0.104	0.086	0.066	0.044	0.022	0.000
FINAL CAMBER ↑	0"	1/8"	1/4"	3/8"	1/2"	5/8"	3/4"	13/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	5/8"	9/16"	1/2"	7/16"	3/8"	1/4"	1/8"	0"

INTERIOR GIRDERS 2-5, 8-11, 14-18																						
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.033	0.065	0.095	0.123	0.147	0.168	0.185	0.197	0.204	0.207	0.204	0.197	0.185	0.168	0.147	0.123	0.095	0.065	0.033	0.000	
DEFLECTION DUE TO SDL *	↓	0.000	0.020	0.040	0.061	0.079	0.096	0.109	0.121	0.129	0.134	0.135	0.134	0.129	0.121	0.109	0.096	0.079	0.061	0.040	0.020	0.000
FINAL CAMBER ↑	0"	1/8"	5/16"	7/16"	1/2"	5/8"	11/16"	3/4"	13/16"	13/16"	7/8"	13/16"	13/16"	3/4"	11/16"	5/8"	1/2"	7/16"	5/16"	1/8"	0"	

CLOSURE POUR INTERIOR GIRDERS 6-7 AND 12-13																						
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.033	0.065	0.095	0.123	0.147	0.168	0.185	0.197	0.204	0.207	0.204	0.197	0.185	0.168	0.147	0.123	0.095	0.065	0.033	0.000	
DEFLECTION DUE TO SDL *	↓	0.000	0.019	0.037	0.055	0.071	0.086	0.098	0.107	0.114	0.119	0.120	0.119	0.114	0.107	0.098	0.086	0.071	0.055	0.037	0.019	0.000
FINAL CAMBER ↑	0"	3/16"	5/16"	1/2"	5/8"	3/4"	13/16"	15/16"	1"	1"	1 1/16"	1"	1"	15/16"	13/16"	3/4"	5/8"	1/2"	5/16"	3/16"	0"	

↑ = UPWARD CAMBER  
 ↓ = DOWNWARD DEFLECTION  
 \* INCLUDES FUTURE WEARING SURFACE IN SUPERIMPOSED DEAD LOAD.  
 ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER" WHICH IS SHOWN IN INCHES (FRACTION FORM).  
 SDL = SUPERIMPOSED DEAD LOAD

### DEAD LOAD DEFLECTION TABLE FOR GIRDERS, SPAN B

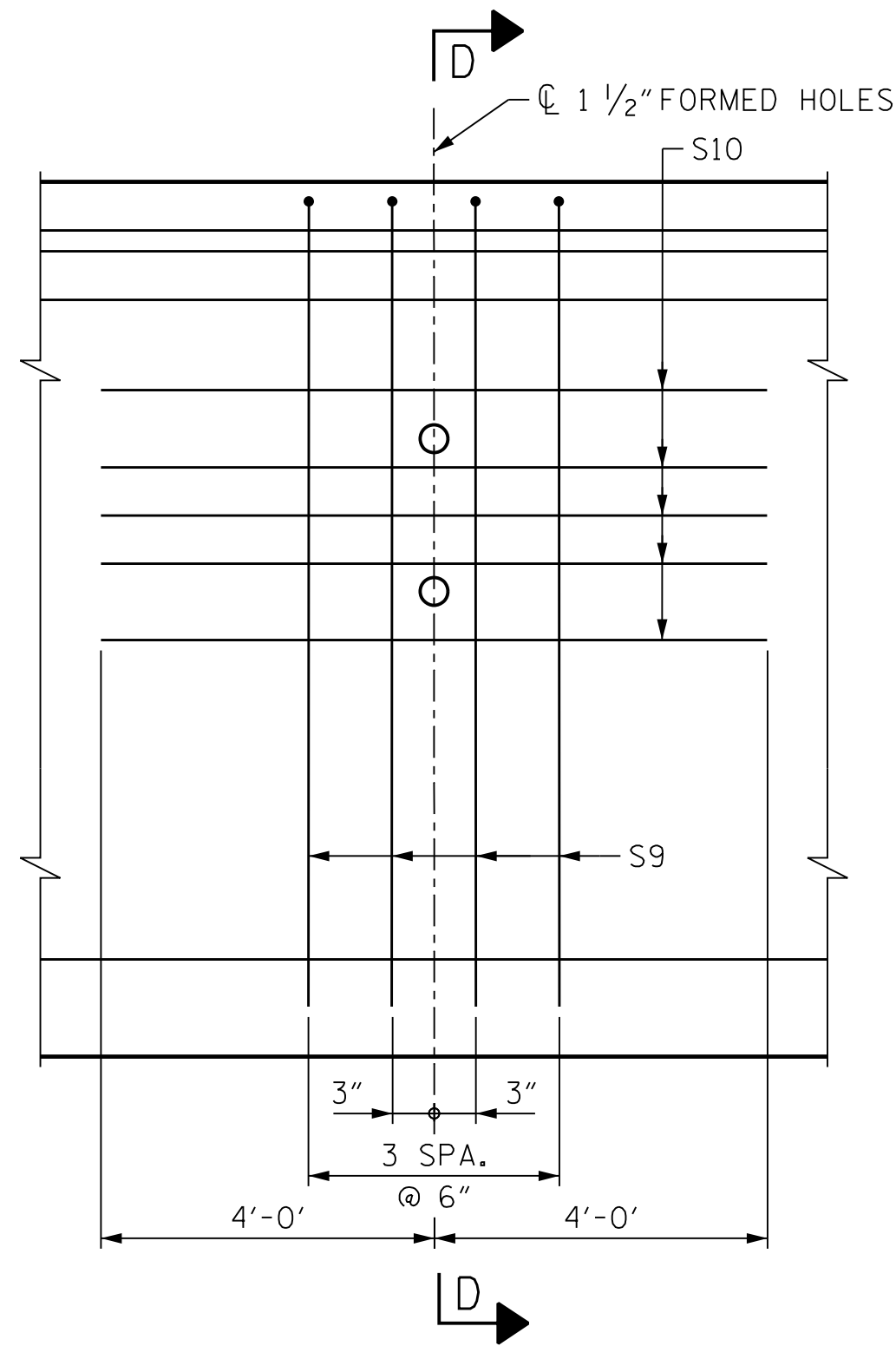
EXTERIOR GIRDERS																						
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.045	0.089	0.131	0.169	0.202	0.231	0.254	0.270	0.280	0.284	0.280	0.270	0.254	0.231	0.202	0.169	0.131	0.089	0.045	0.000	
DEFLECTION DUE TO SDL *	↓	0.000	0.036	0.071	0.106	0.138	0.167	0.191	0.211	0.225	0.234	0.237	0.234	0.225	0.211	0.191	0.167	0.138	0.106	0.071	0.036	0.000
FINAL CAMBER ↑	0"	1/8"	1/4"	5/16"	3/8"	1/2"	5/8"	1 1/16"	3/4"	1 1/16"	9/16"	9/16"	9/16"	9/16"	1/2"	1/2"	7/16"	3/8"	5/16"	1/4"	1/8"	0"

INTERIOR GIRDERS 2-5, 8-11, 14-18																						
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.045	0.089	0.131	0.169	0.202	0.231	0.254	0.270	0.280	0.284	0.280	0.270	0.254	0.231	0.202	0.169	0.131	0.089	0.045	0.000	
DEFLECTION DUE TO SDL *	↓	0.000	0.033	0.065	0.098	0.127	0.154	0.176	0.194	0.207	0.215	0.217	0.215	0.207	0.194	0.176	0.154	0.127	0.098	0.065	0.033	0.000
FINAL CAMBER ↑	0"	1/8"	5/16"	3/8"	1/2"	5/8"	13/16"	1 1/16"	3/4"	1 1/16"	13/16"	13/16"	13/16"	3/4"	3/4"	11/16"	9/16"	1/2"	3/8"	5/16"	1/8"	0"

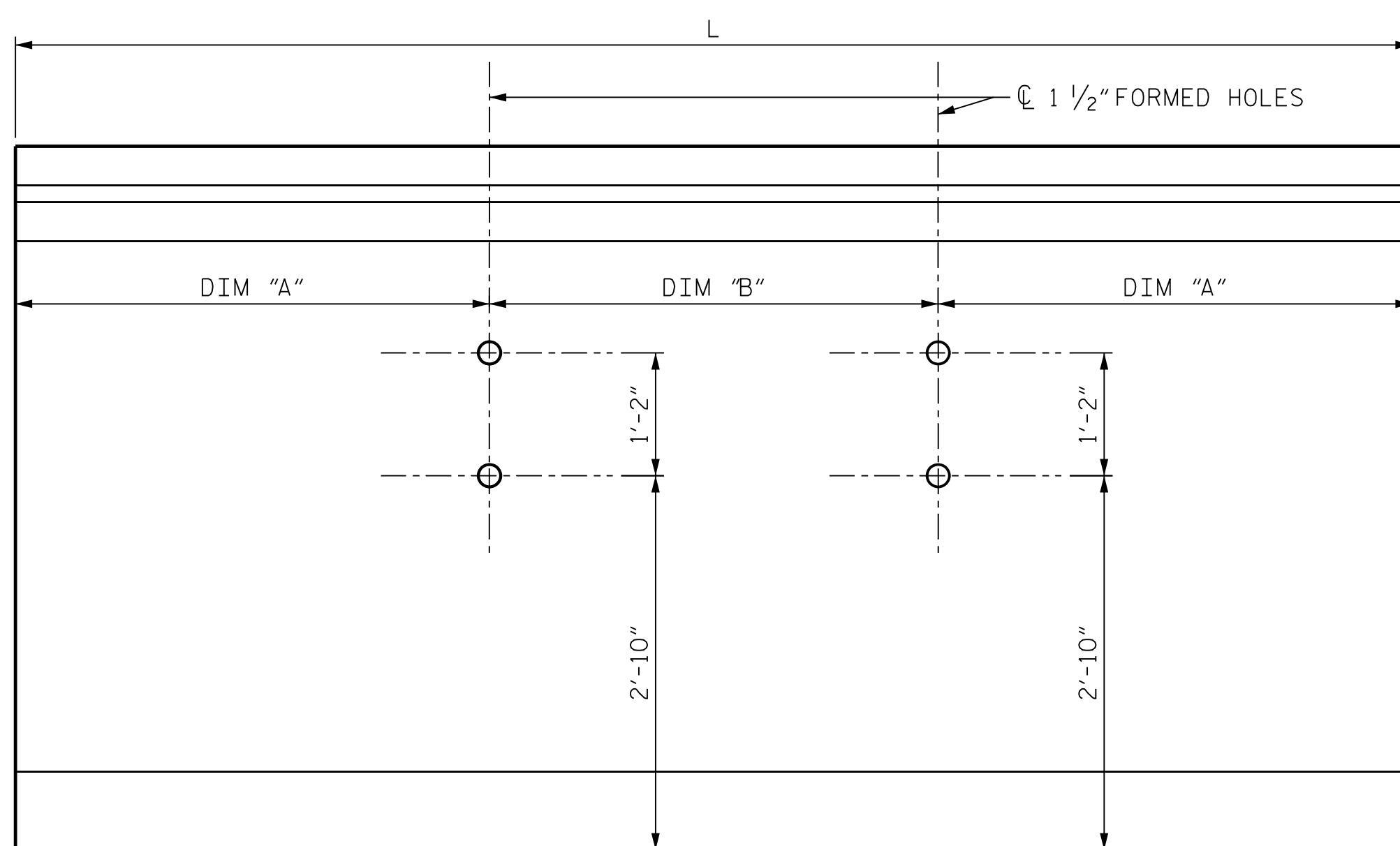
  

CLOSURE POUR INTERIOR GIRDERS 6-7 AND 12-13																						
TWENTIETH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.045	0.089	0.131	0.169	0.202	0.231	0.254	0.270	0.280	0.284	0.280	0.270	0.254	0.231	0.202	0.169	0.131	0.089	0.045	0.000	
DEFLECTION DUE TO SDL *	↓	0.000	0.030	0.060	0.088	0.114	0.137	0.157	0.172	0.184	0.190	0.193	0.190	0.184	0.172	0.157	0.137	0.114	0.088	0.060	0.030	0.000
FINAL CAMBER ↑	0"	3/16"	3/8"	1/2"	5/8"	13/16"	7/8"	1"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1"	7/8"	13/16"	5/8"	1/2"	3/8"	3/16"	0"	



**PARTIAL ELEVATION**

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDERS 1 THRU 19

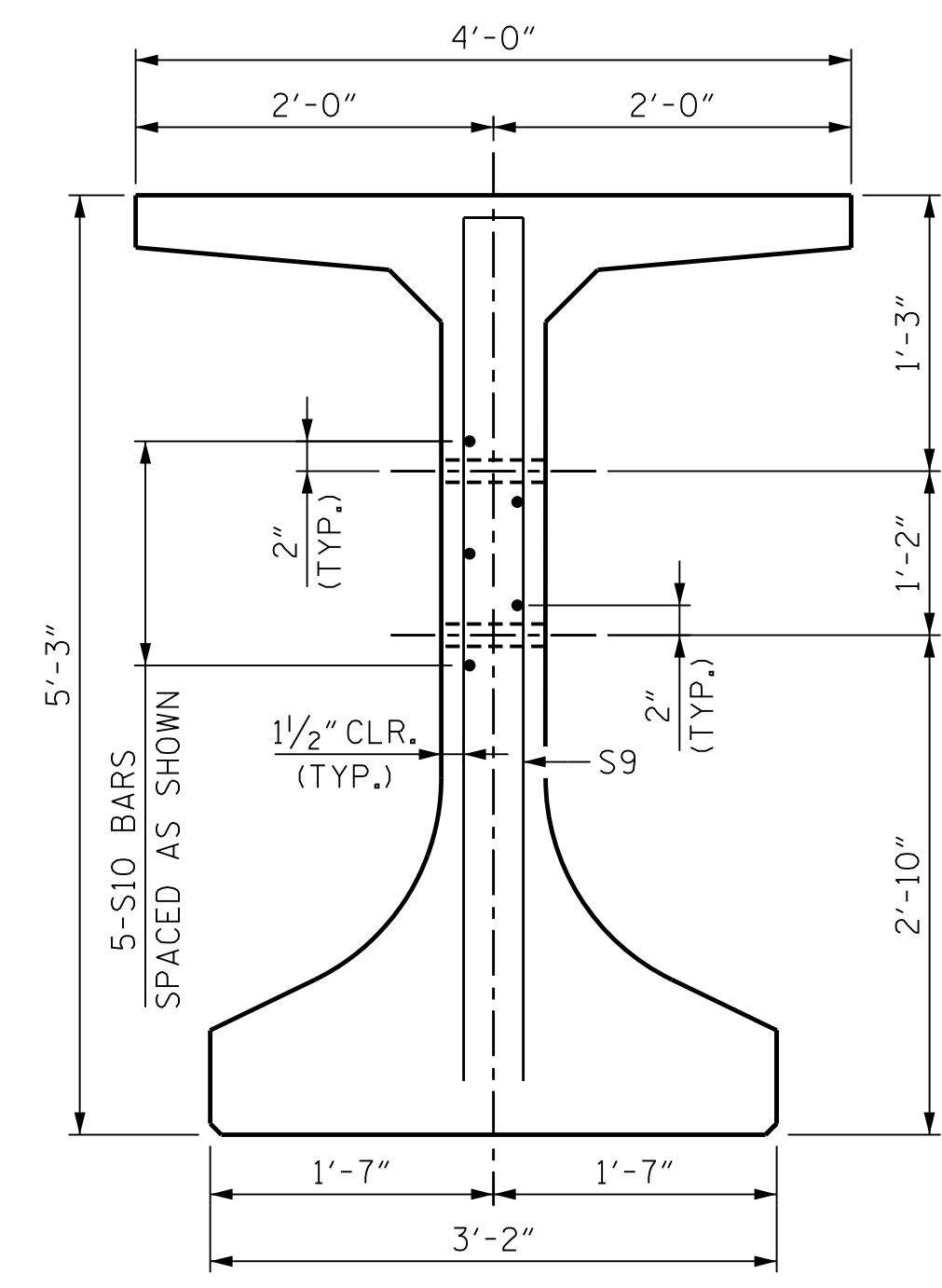


**LOCATION OF 1 1/2" Ø FORMED HOLES**

GIRDERS 1-19

**TABLE OF 1 1/2" Ø FORMED HOLE DIMENSIONS**

GIRDER	L	DIM "A"	DIM "B"
A1 THRU A19	113'-2"	38'-0"	37'-2"
B1 THRU B19	127'-2"	42'-8"	41'-10"



**SECTION D-D**

(MAIN GIRDER REINFORCING NOT SHOWN FOR CLARITY)



10/18/2021

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+28.33 -Y15REV-

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUPERSTRUCTURE  
 PRESTRESSED CONCRETE  
 GIRDER FOR LINK SLAB  
 DETAILS**

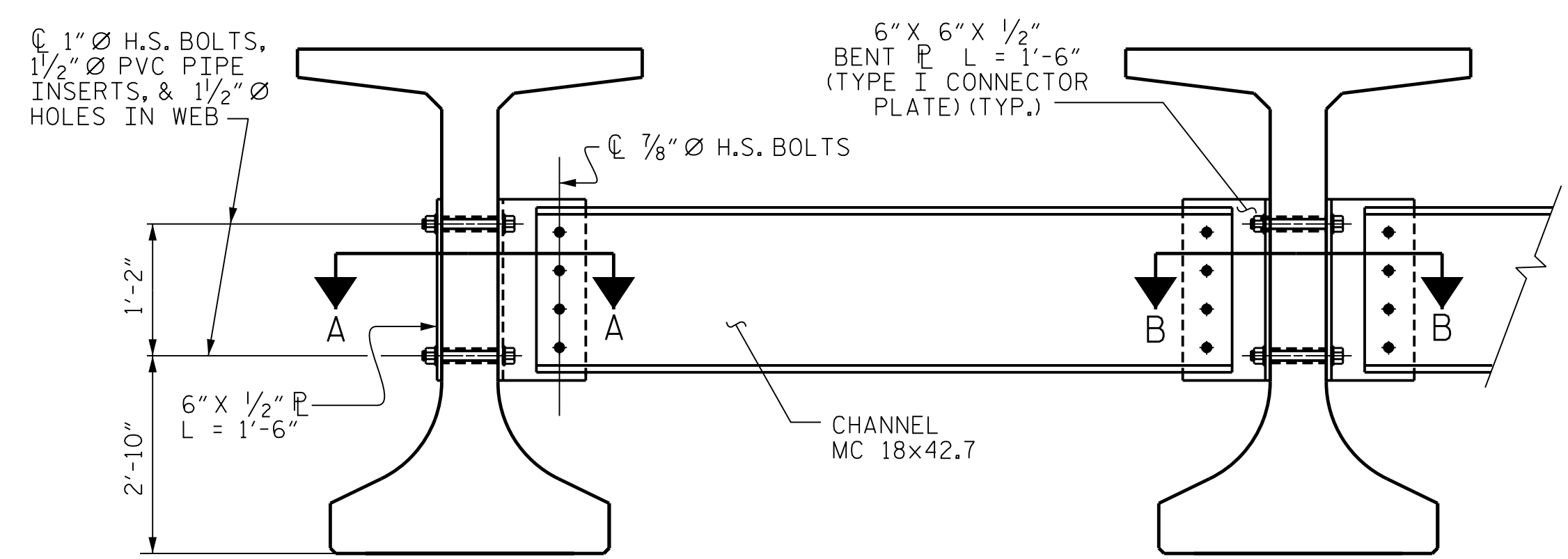
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NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
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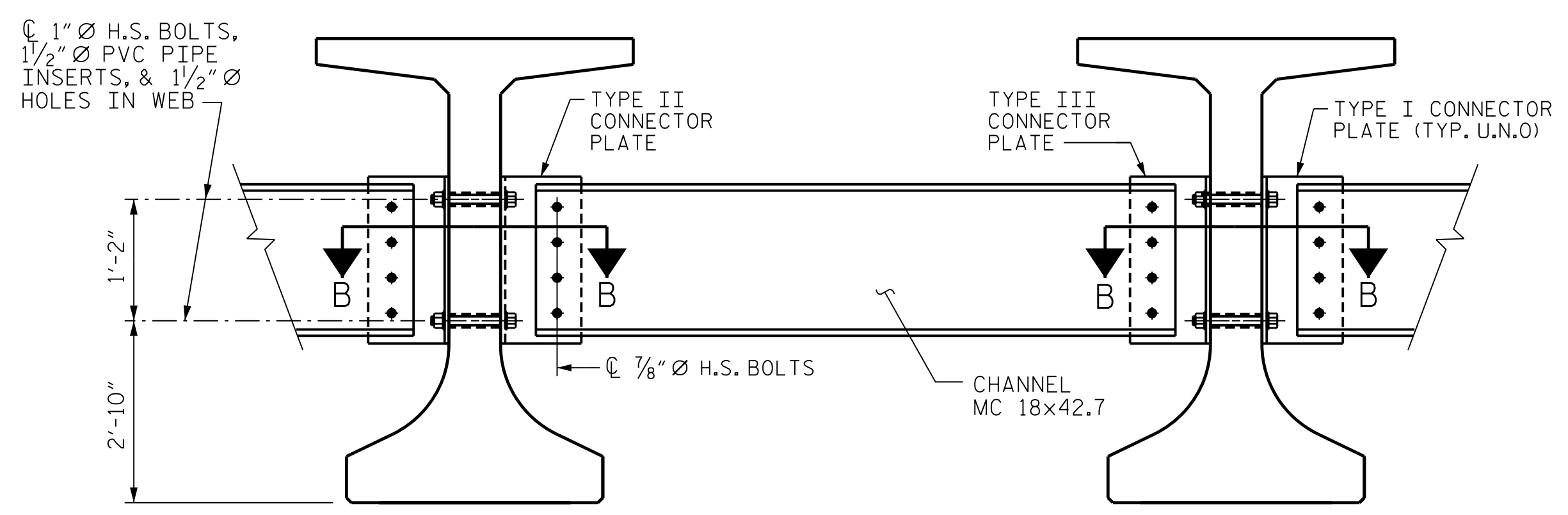
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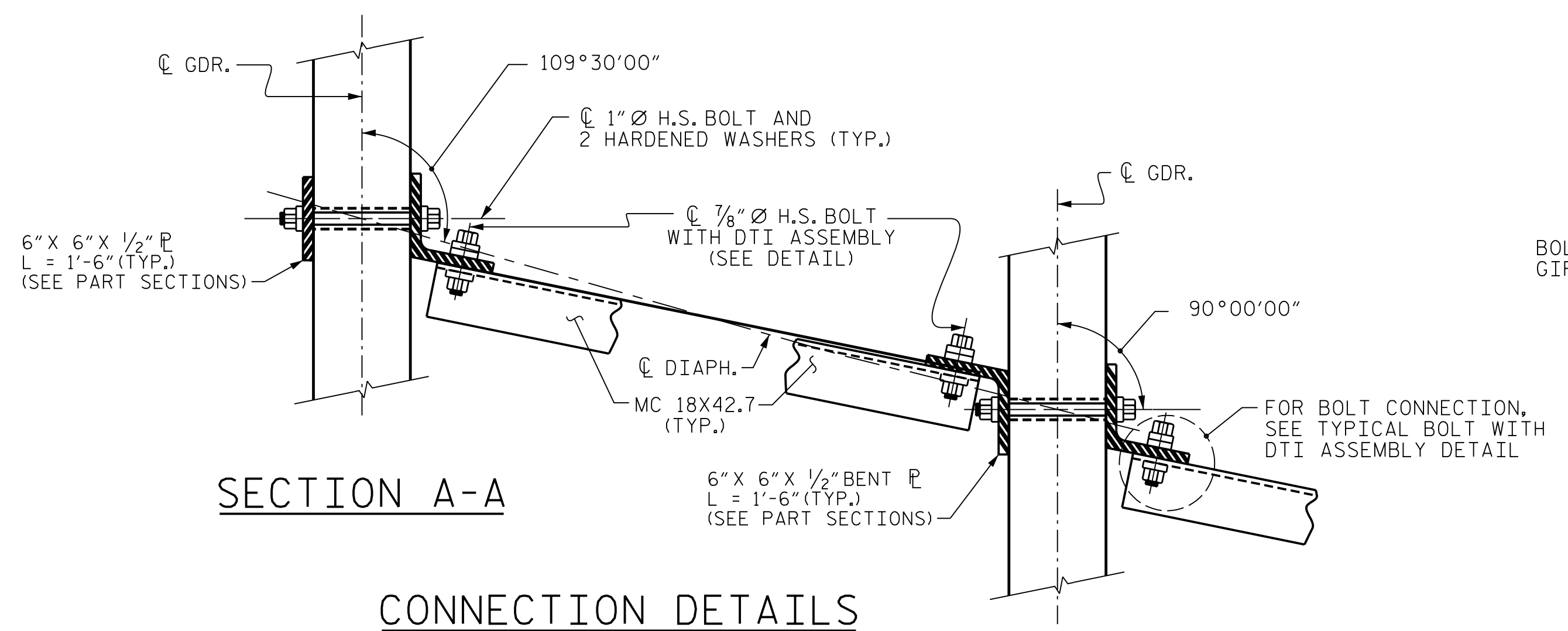




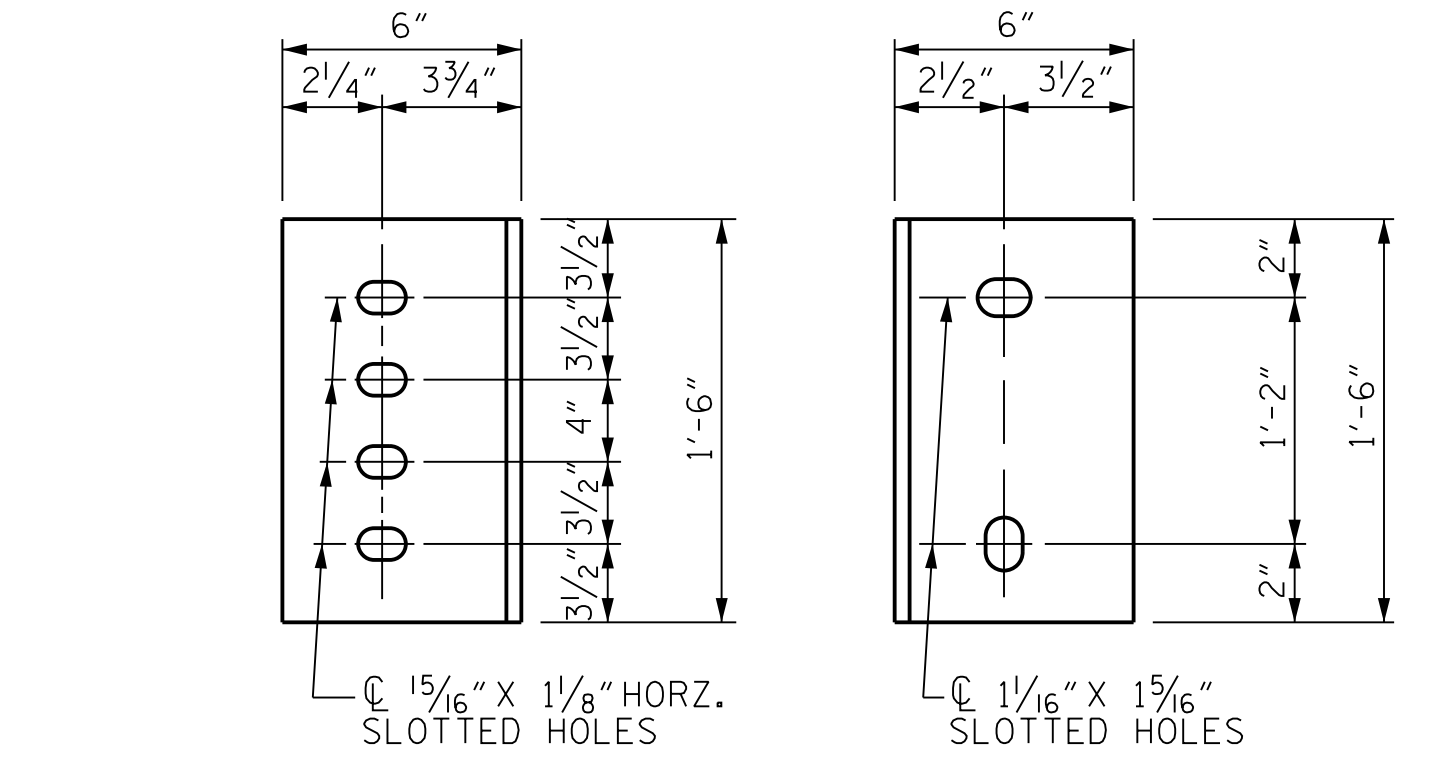
EXTERIOR GIRDERS INTERIOR GIRDERS  
PART SECTION AT INTERMEDIATE DIAPHRAGM  
(DETAIL TYPICAL EXCEPT AT CLOSURE POURS)



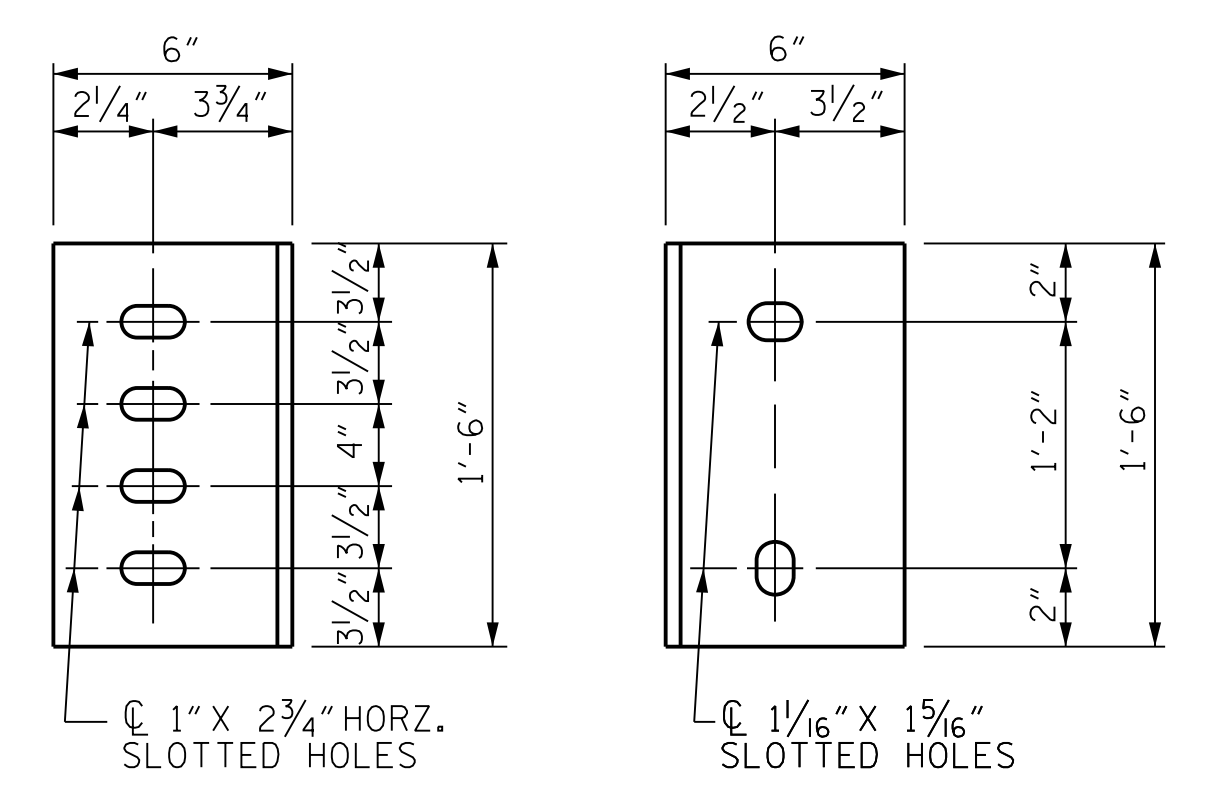
GIRDER 6 OR 12 GIRDER 7 OR 13  
PART SECTION AT INTERMEDIATE DIAPHRAGM  
IN CLOSURE POUR BAY



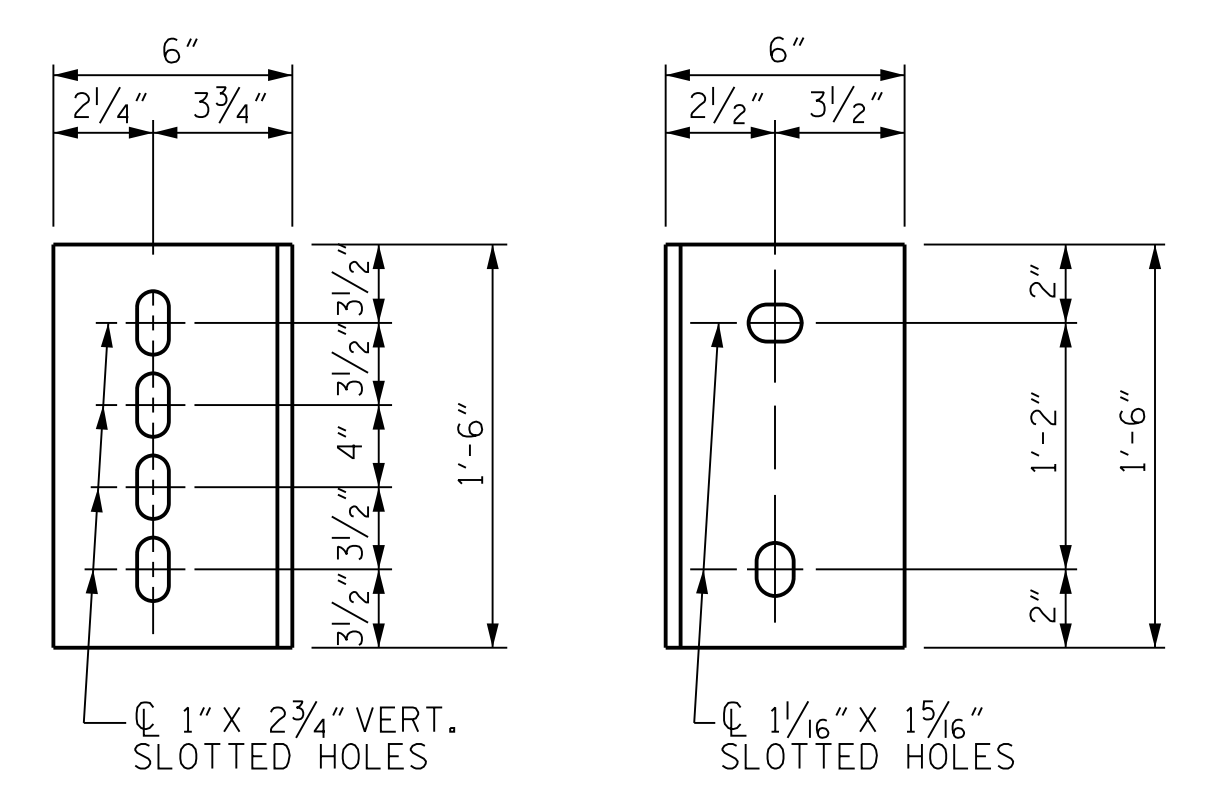
SECTION A-A SECTION B-B  
CONNECTION DETAILS



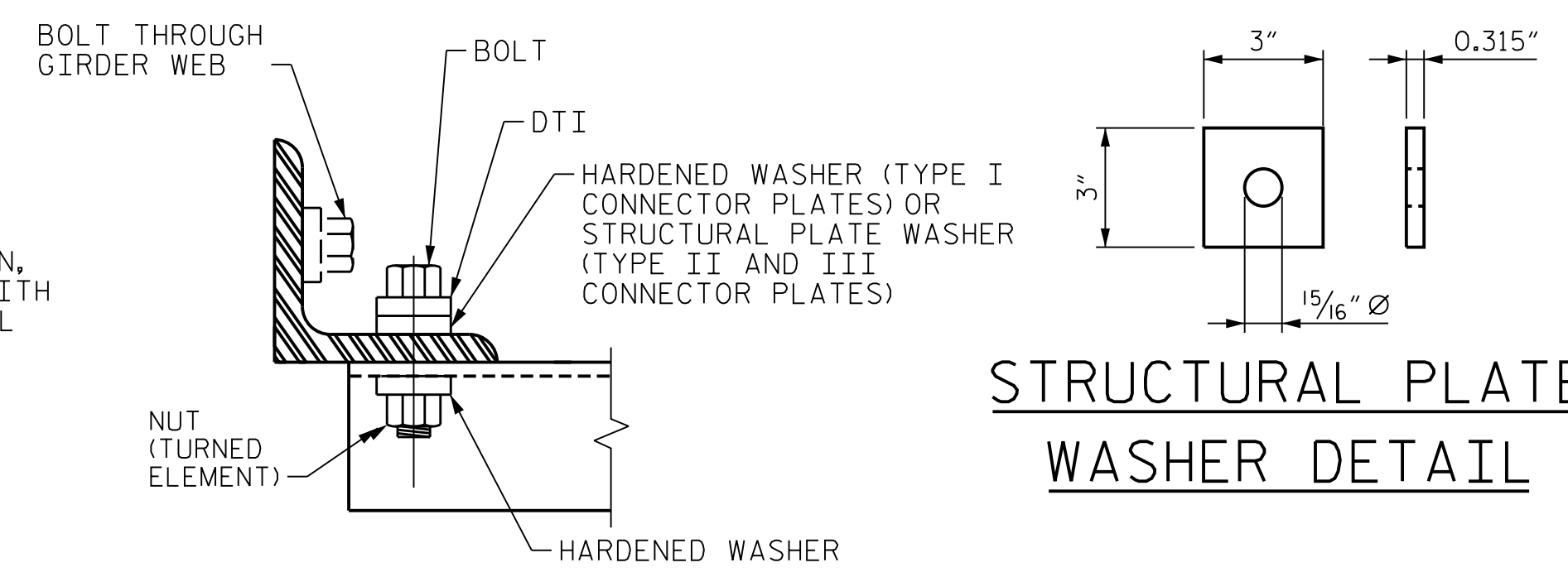
DIAPHRAGM FACE WEB FACE  
TYPE I CONNECTOR PLATE DETAILS



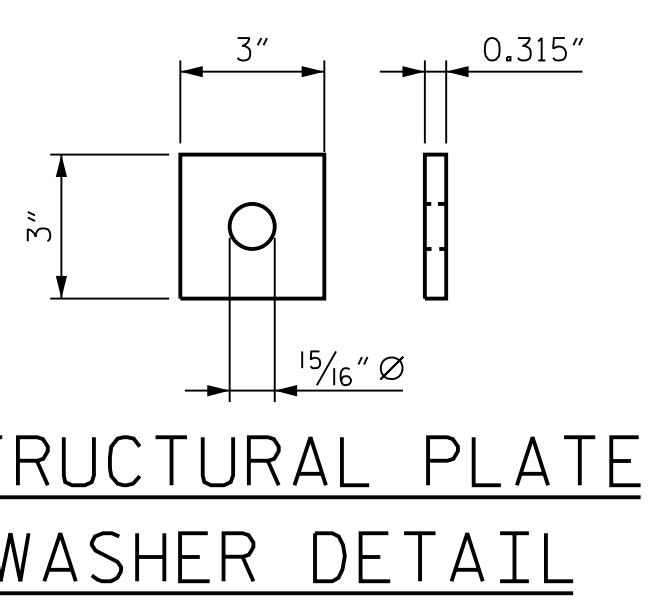
DIAPHRAGM FACE WEB FACE  
TYPE II CONNECTOR PLATE DETAILS



DIAPHRAGM FACE WEB FACE  
TYPE III CONNECTOR PLATE DETAILS



BOLT WITH DTI ASSEMBLY DETAIL



STRUCTURAL PLATE WASHER 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.

THE INTERMEDIATE STEEL DIAPHRAGMS IN THE CLOSURE BAYS SHALL BE INSTALLED AFTER THE TWO ADJACENT DECK SECTIONS ARE PLACED, AND BEFORE THE CLOSURE POUR IS PLACED.

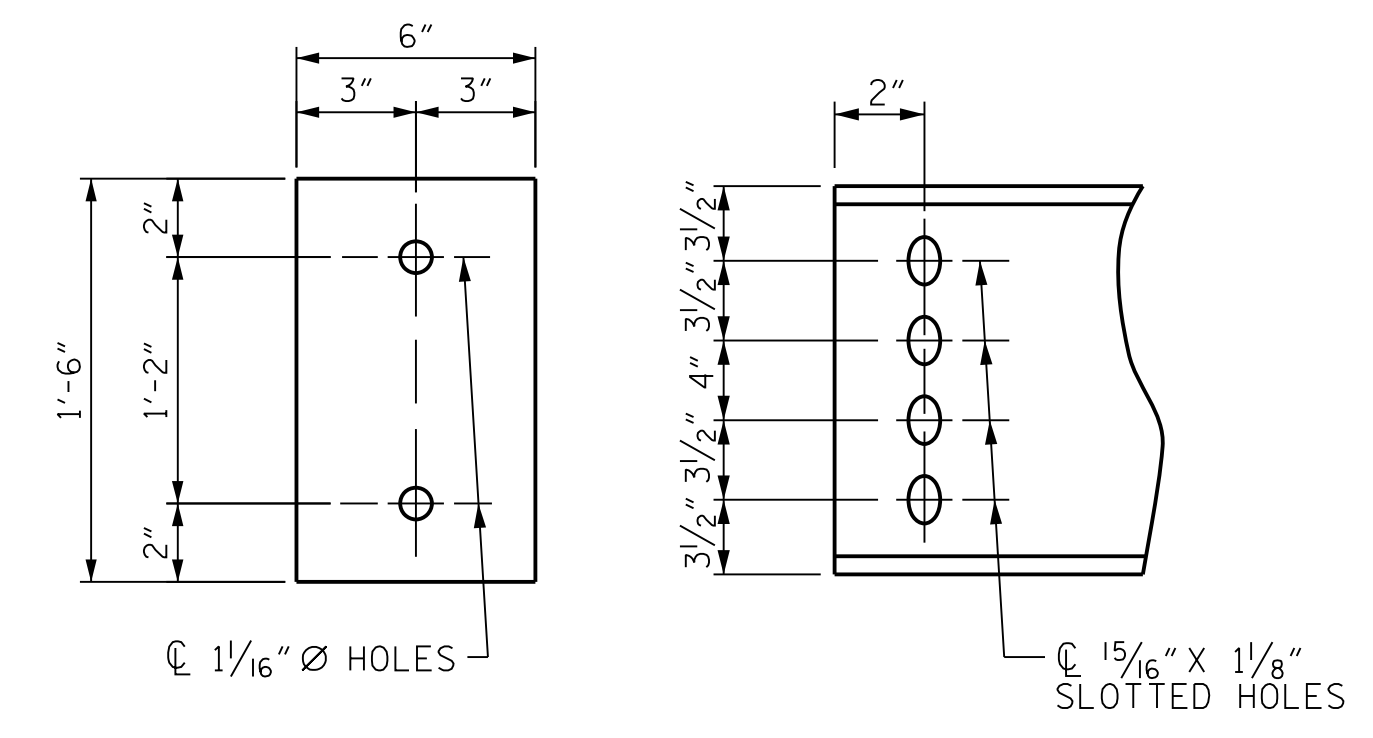
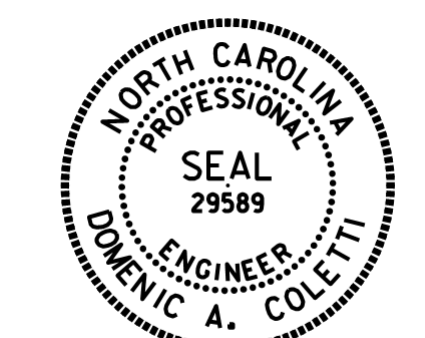


PLATE DETAIL CHANNEL END

PROJECT NO. U-2579AB  
FORSYTH COUNTY  
STATION: 47+28.33 -Y15REV-

STATE OF NORTH CAROLINA  
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RALEIGH

SUPERSTRUCTURE  
INTERMEDIATE STEEL  
DIAPHRAGMS



Domini A. Coletti 10/18/2021

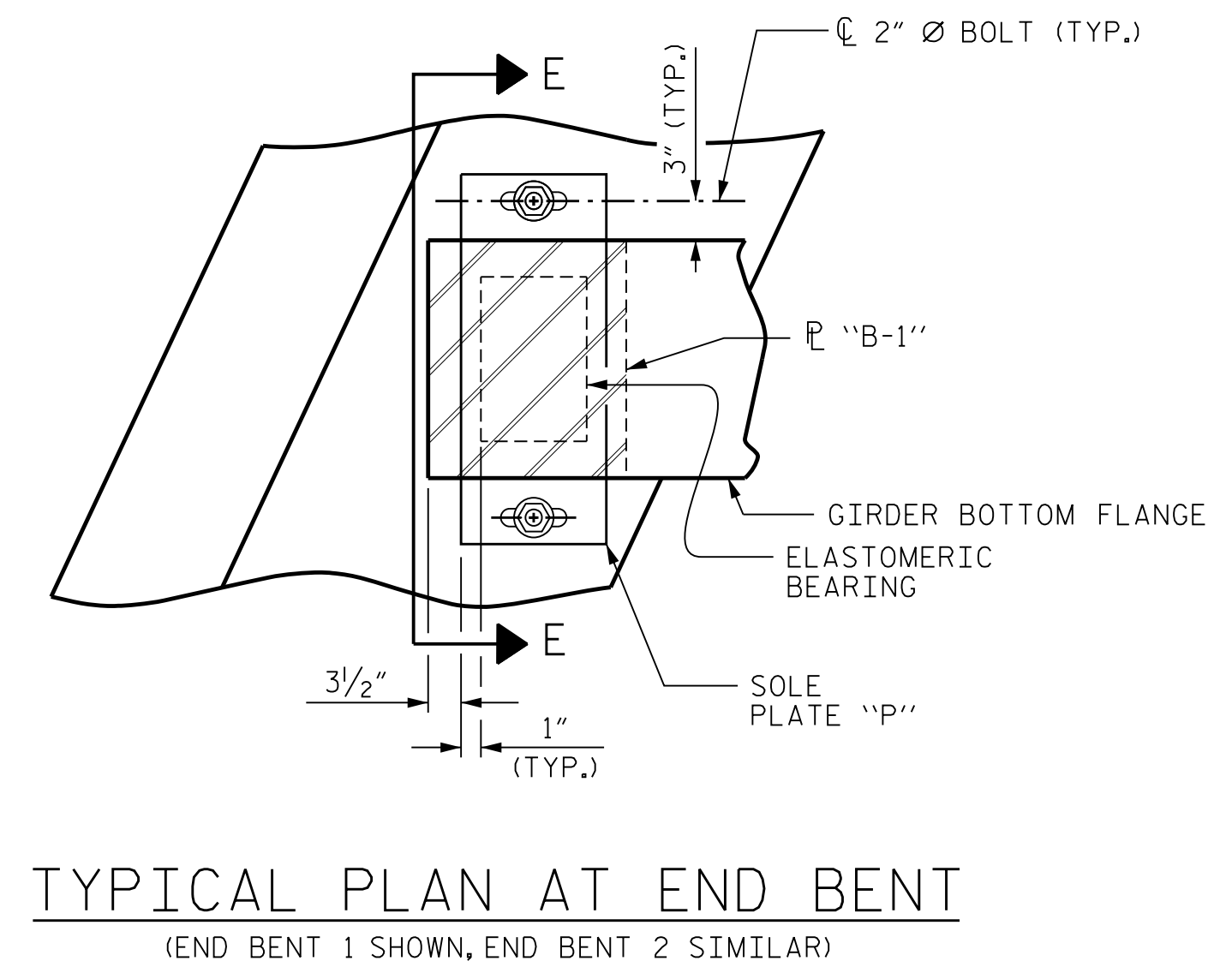
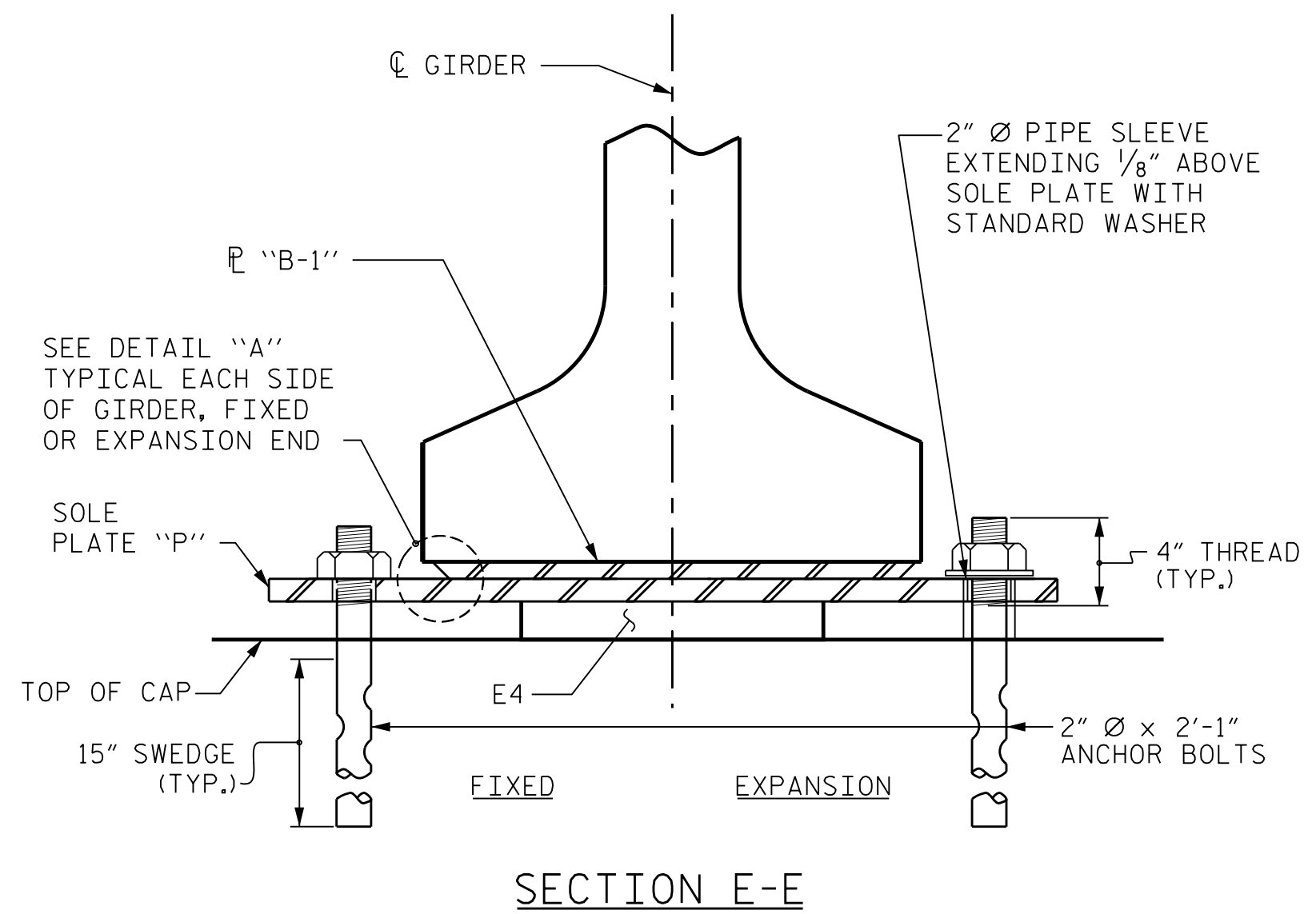
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SHEET NO. S03-27  
TOTAL SHEETS 61

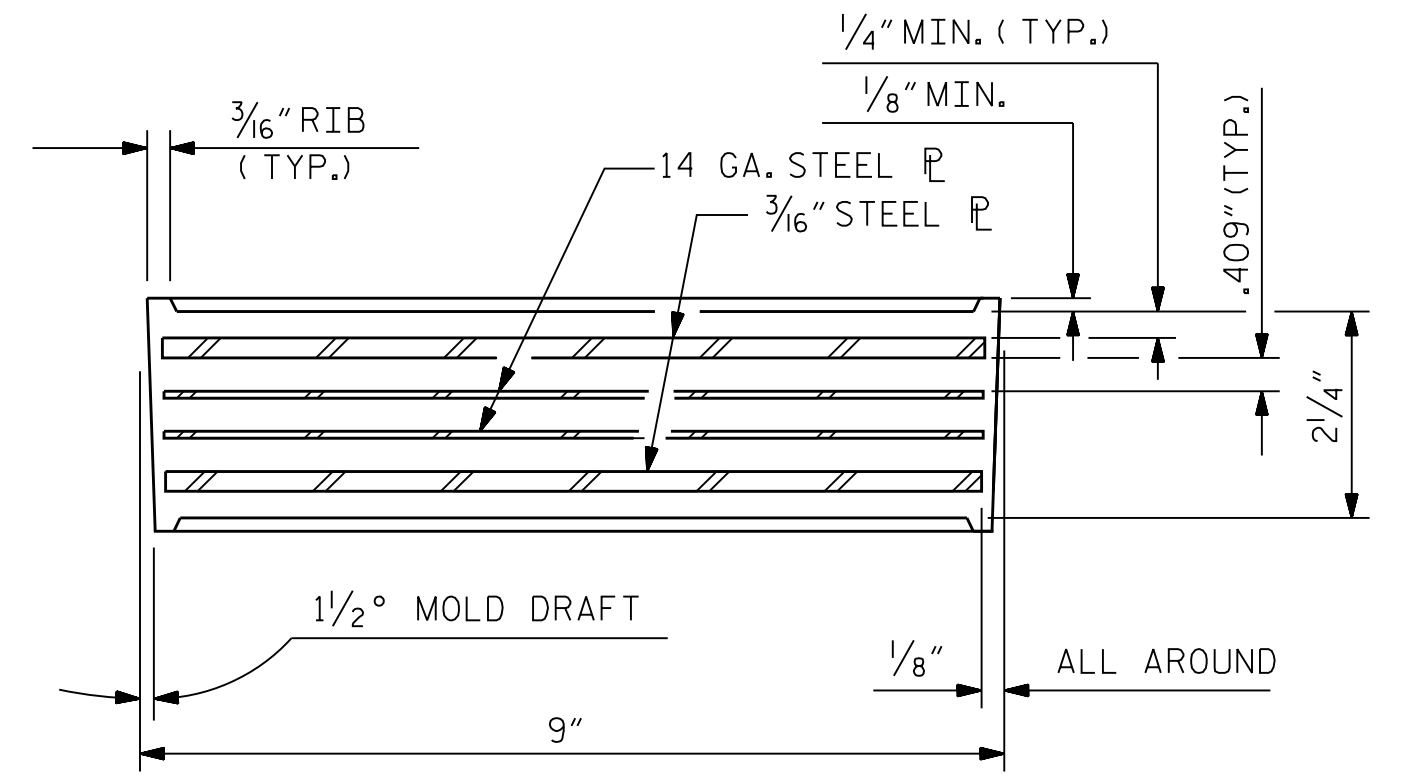
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DES CHK: S. NIFONG	DATE: 02/19	CHK BY: M. NEIHEISEL	DATE: 02/19

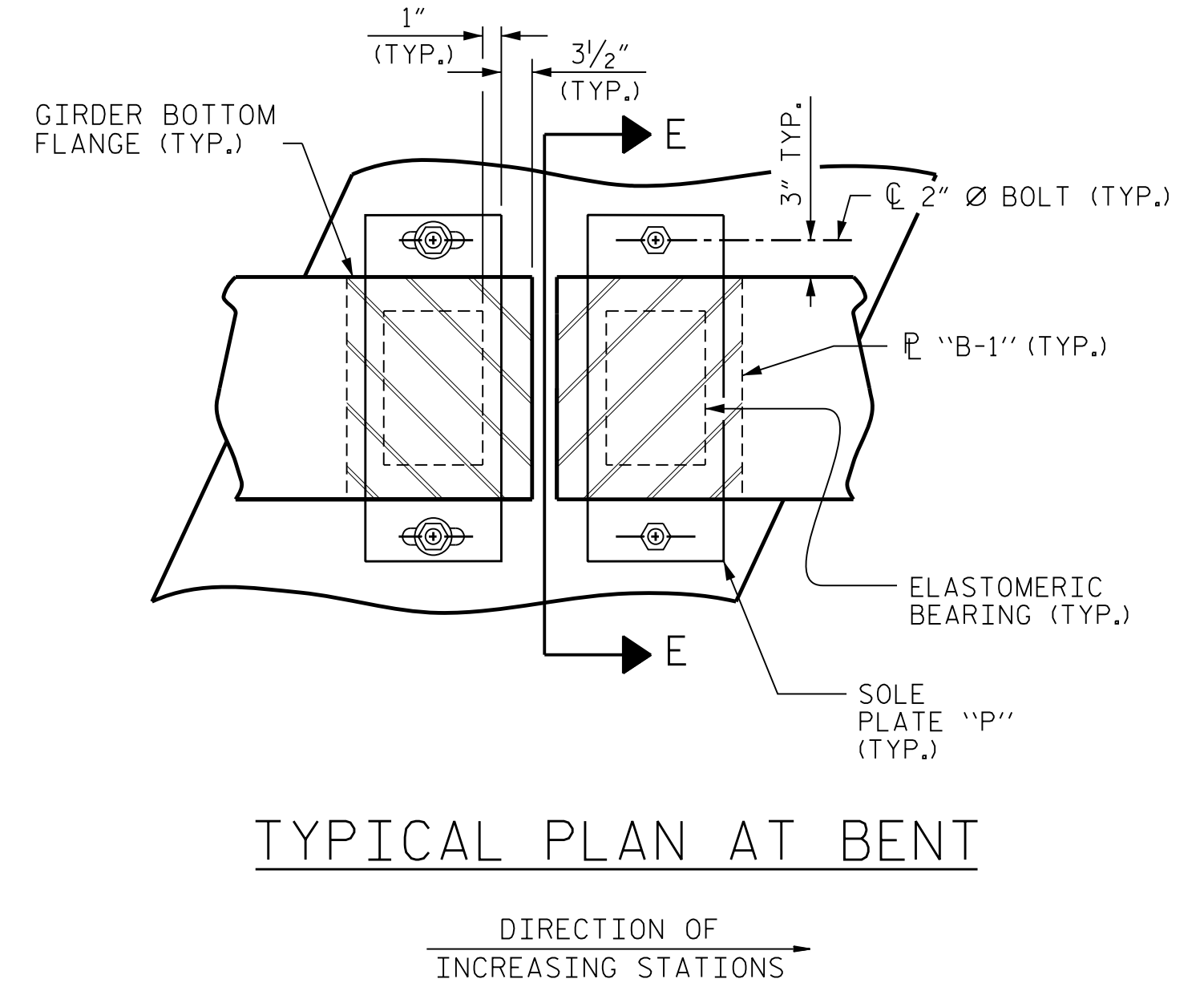
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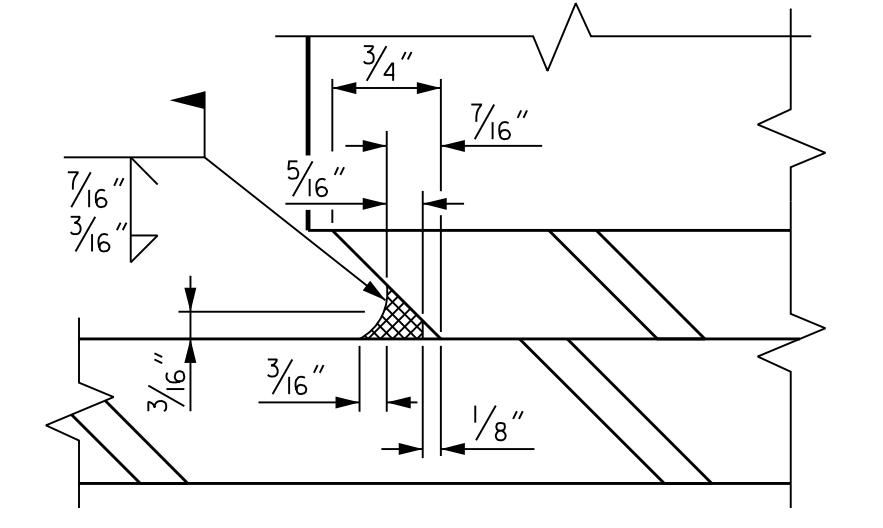
TYPICAL PLAN AT END BENT  
(END BENT 1 SHOWN, END BENT 2 SIMILAR)



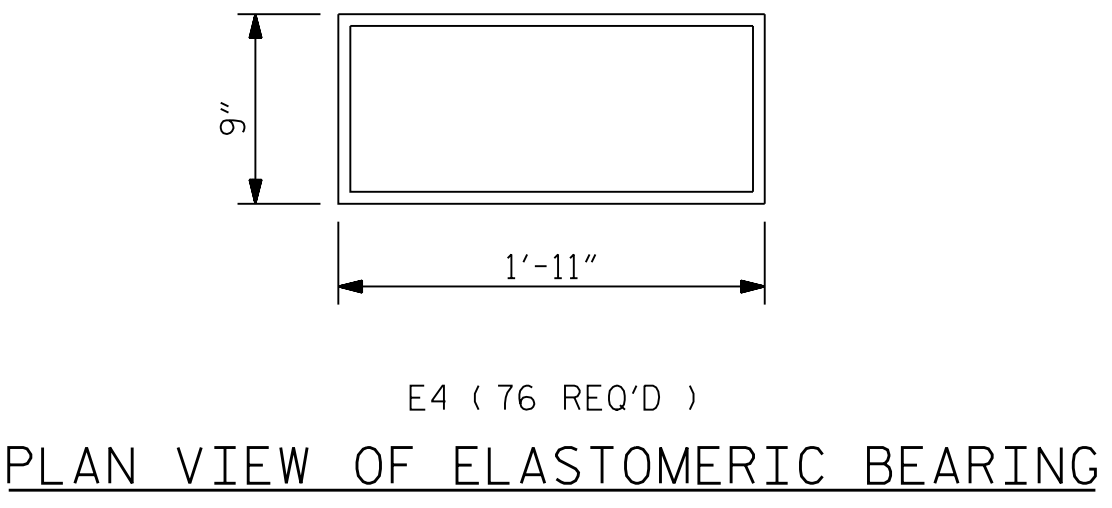
TYPICAL SECTION OF ELASTOMERIC BEARINGS



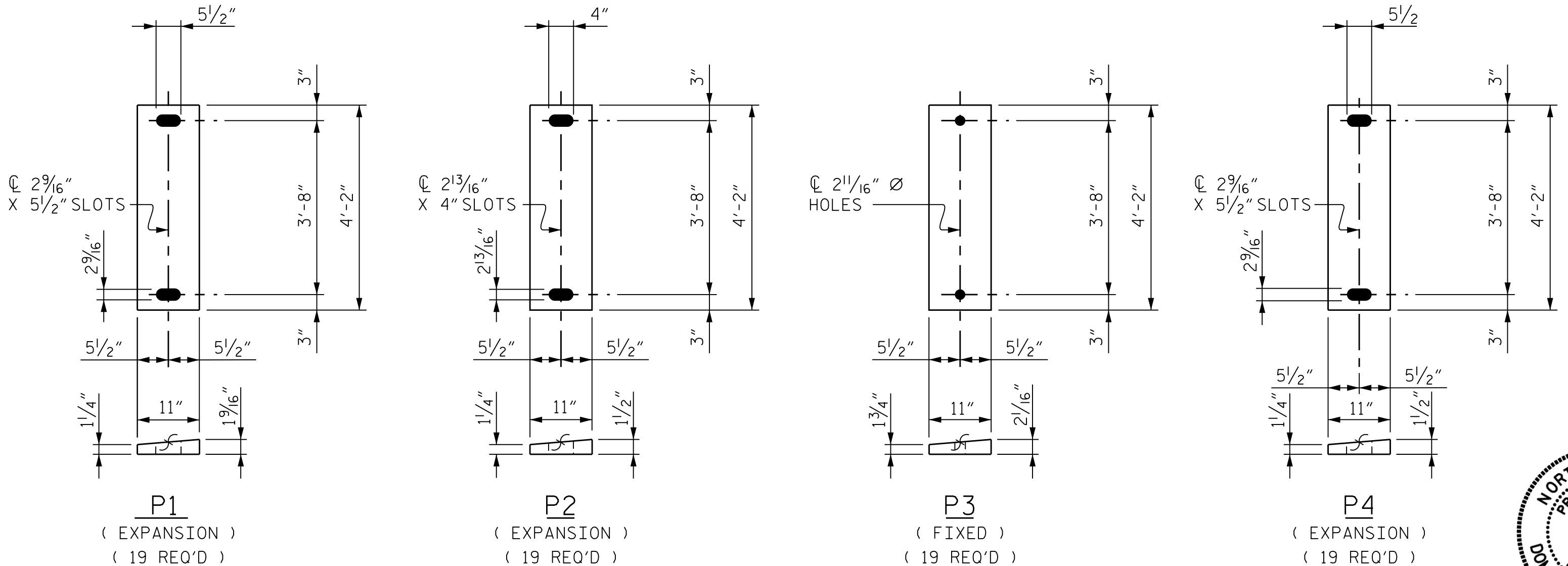
TYPICAL PLAN AT BENT



DETAIL "A"



TYPE V



SOLE PLATE DETAILS ("P")

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L. + L.L. (NO IMPACT)	
TYPE V	365 K

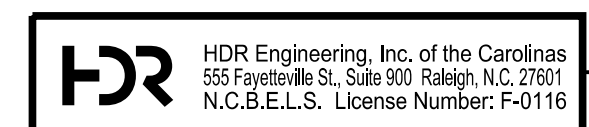
PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-



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 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUPERSTRUCTURE ELASTOMERIC BEARING DETAILS**

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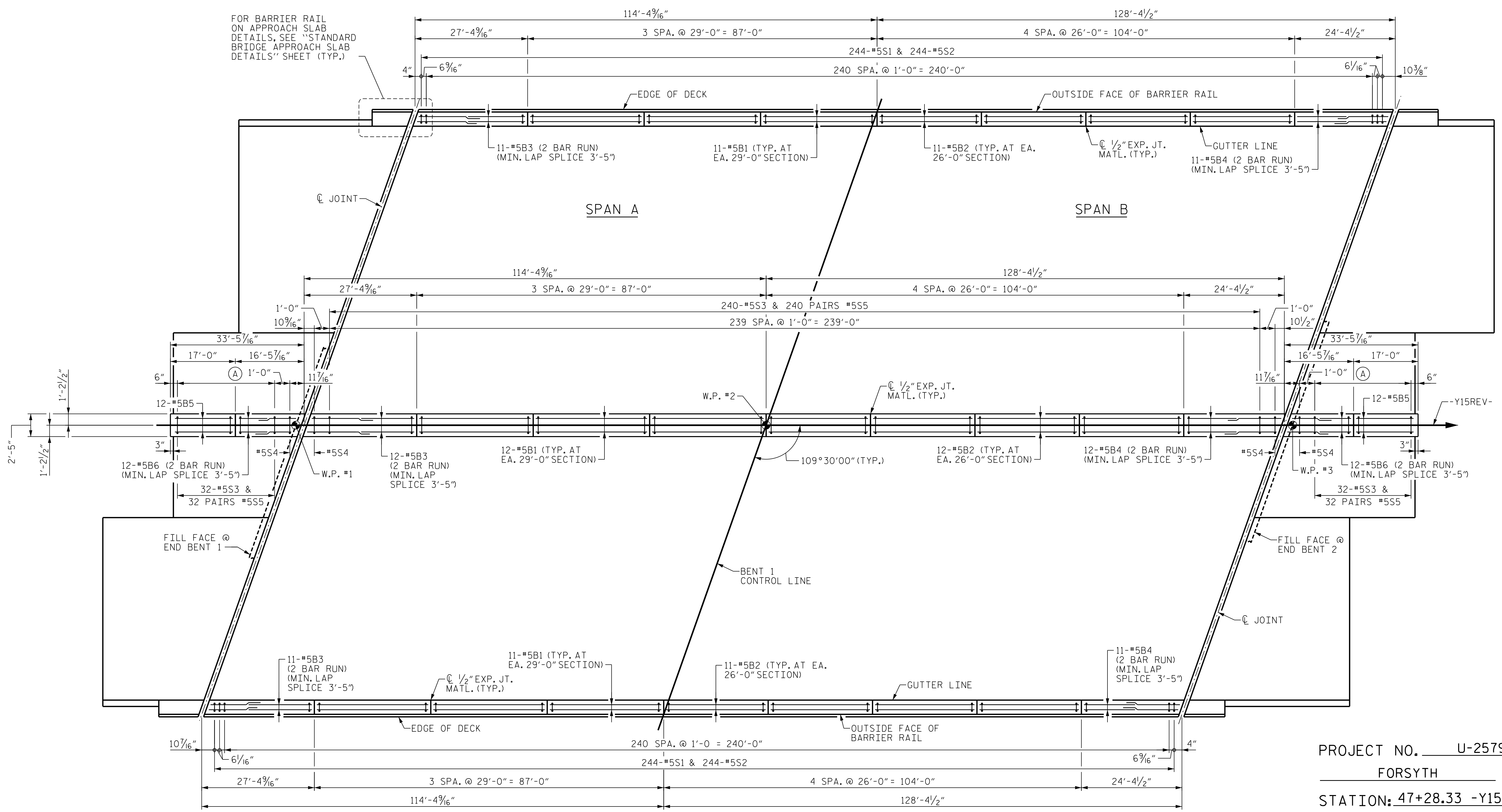
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DES CHK: S. NIFONG	DATE: 02/19	CHK BY: S. NIFONG	DATE: 05/19



FOR BARRIER RAIL ON APPROACH SLAB DETAILS, SEE "STANDARD BRIDGE APPROACH SLAB DETAILS" SHEET (TYP.)



### PLAN OF BARRIER RAILS AND MEDIAN BARRIER

ALL DIMENSIONS FOR BARRIER RAIL ARE MEASURED ALONG THE OUTSIDE FACE OF THE BARRIER RAIL.  
ALL DIMENSIONS FOR MEDIAN BARRIER ARE MEASURED ALONG THE C OF THE MEDIAN BARRIER.

(A) 31 SPA. @ 1'-0" = 31'-0"

PROJECT NO. U-2579AB  
FORSYTH COUNTY  
STATION: 47+28.33 -Y15REV-

SHEET 1 OF 2



10/18/2021

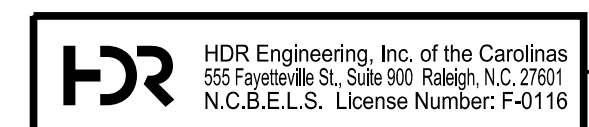
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**SUPERSTRUCTURE  
CONCRETE BARRIER RAIL  
AND CONCRETE  
MEDIAN BARRIER**

REVISIONS						SHEET NO. 503-29 TOTAL SHEETS 61
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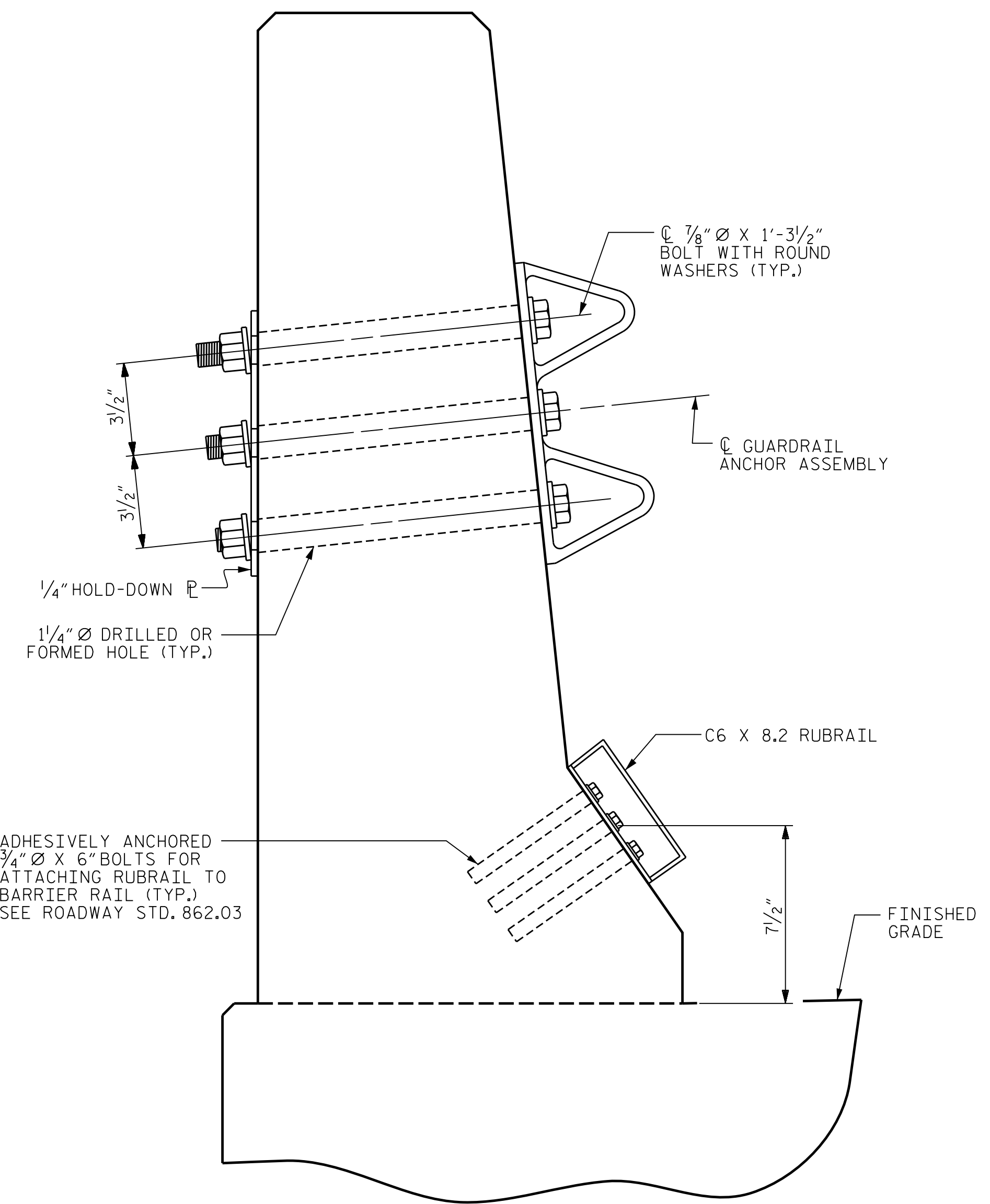
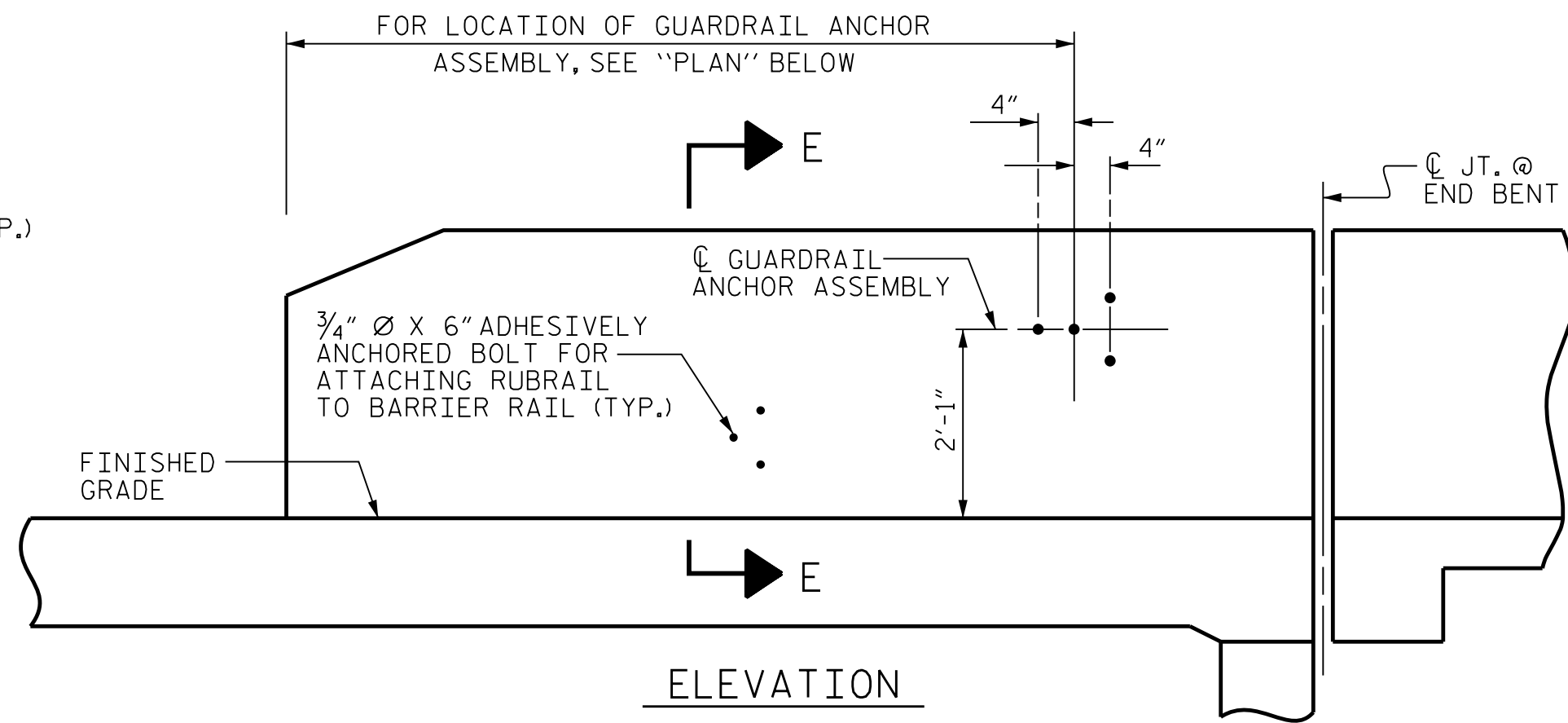
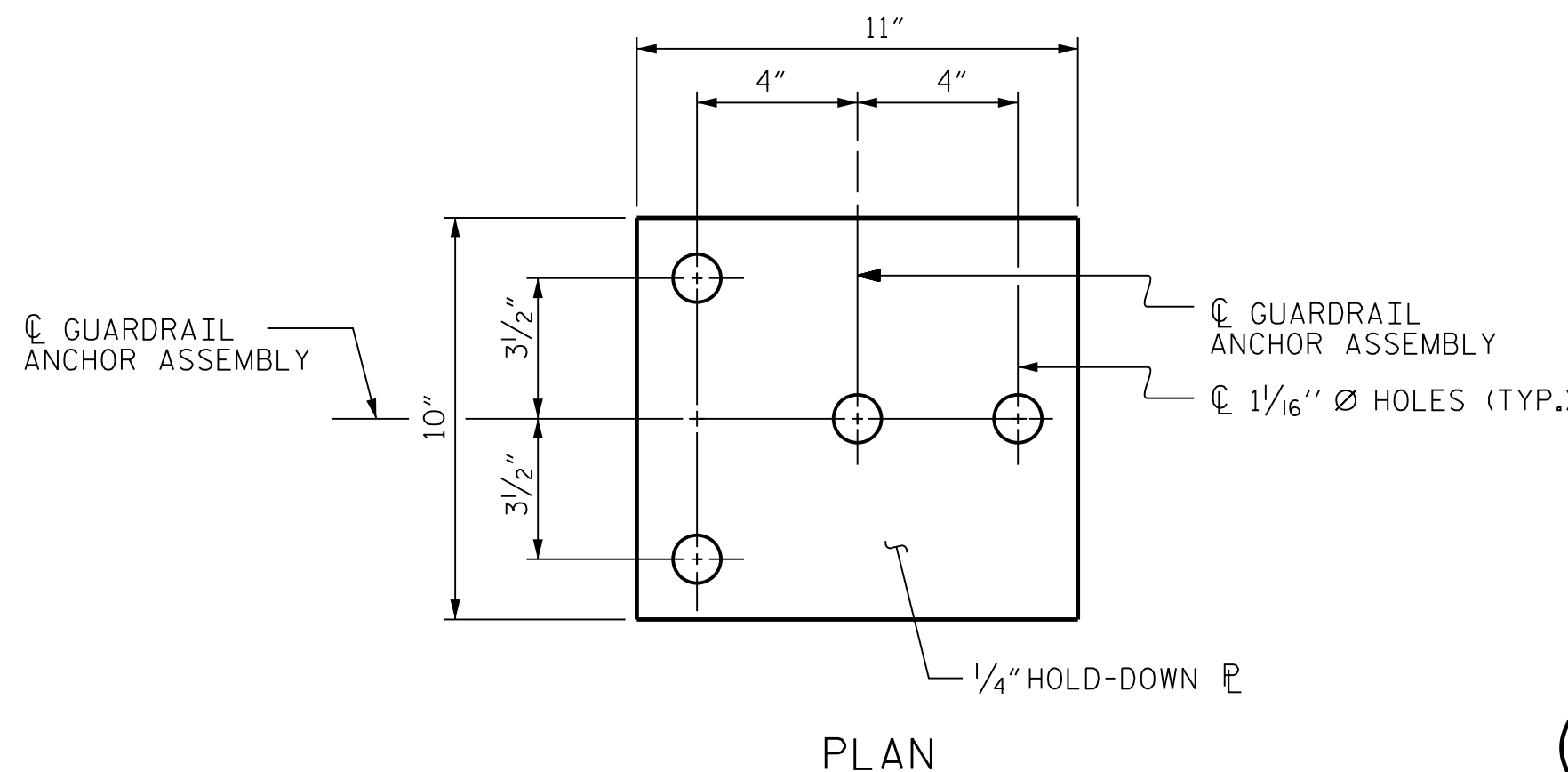
DES BY: A. MILLER	DATE: 04/19	DWG BY: M. SELLS	DATE: 03/19
DES CHK: M. NEIHEISEL	DATE: 05/19	CHK BY: M. NEIHEISEL	DATE: 05/19



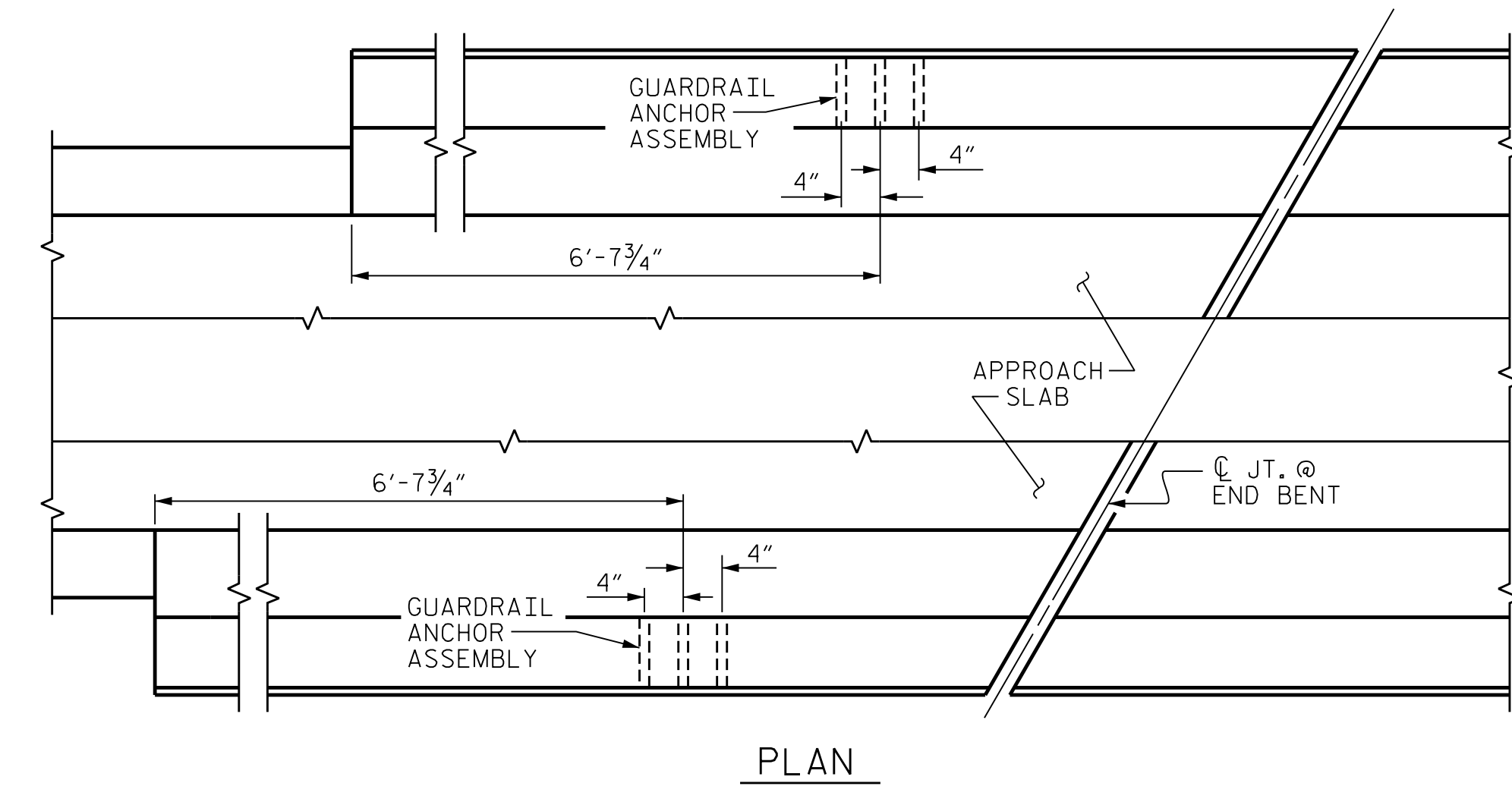
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SECTION E-E  
GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL  
END BENT #1 SHOWN, END BENT #2 SIMILAR.

**NOTES**

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

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

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

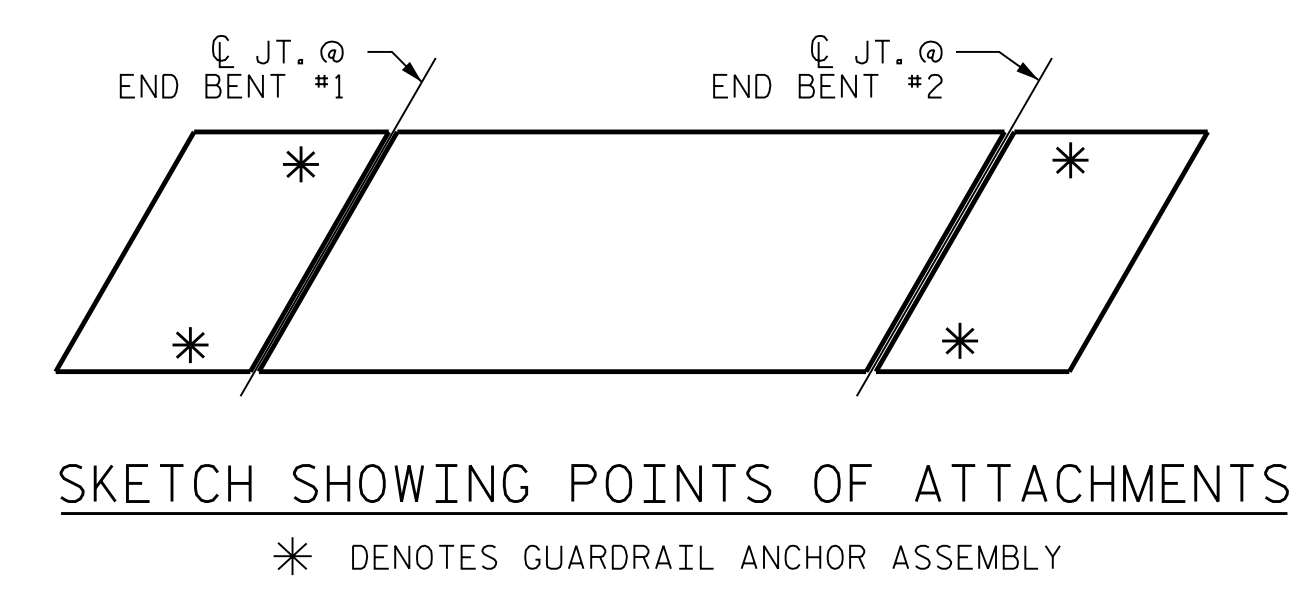
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

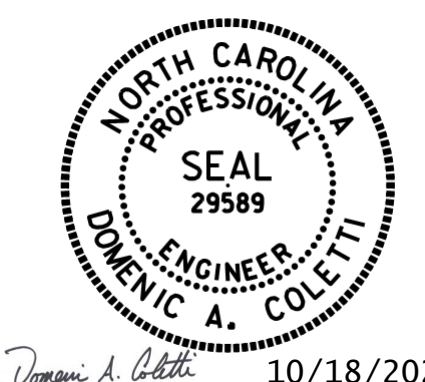
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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

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



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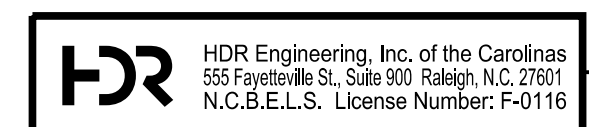


Dominic A. Coletti 10/18/2021

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**SUPERSTRUCTURE  
GUARDRAIL ANCHORAGE  
FOR BARRIER RAIL**

REVISIONS						SHEET NO. 503-31 TOTAL SHEETS 61
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DES CHK: M. NEIHEISEL	DATE: 05/19	CHK BY: M. NEIHEISEL	DATE: 05/19

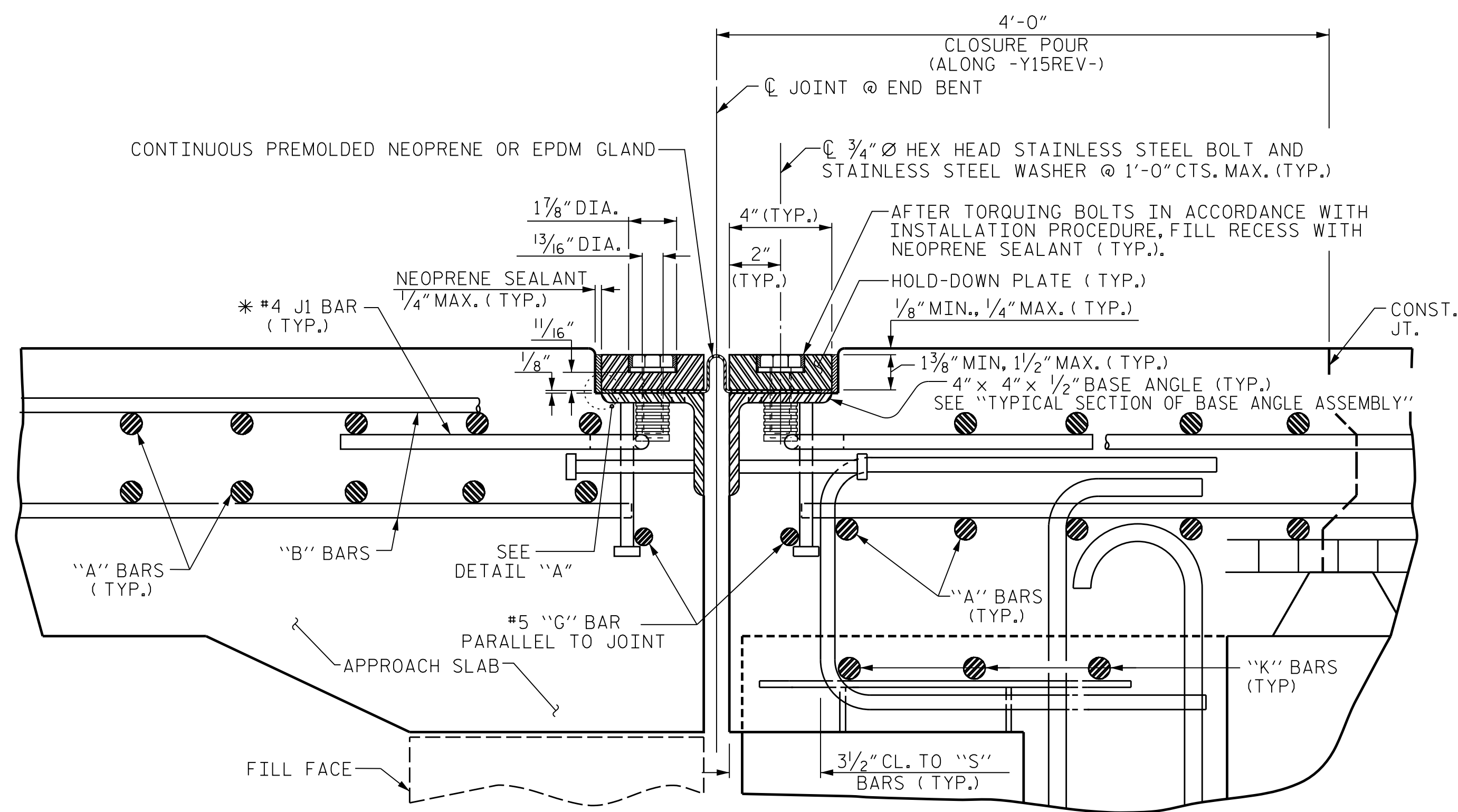


**INSTALLATION PROCEDURE**

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

**GENERAL NOTES**

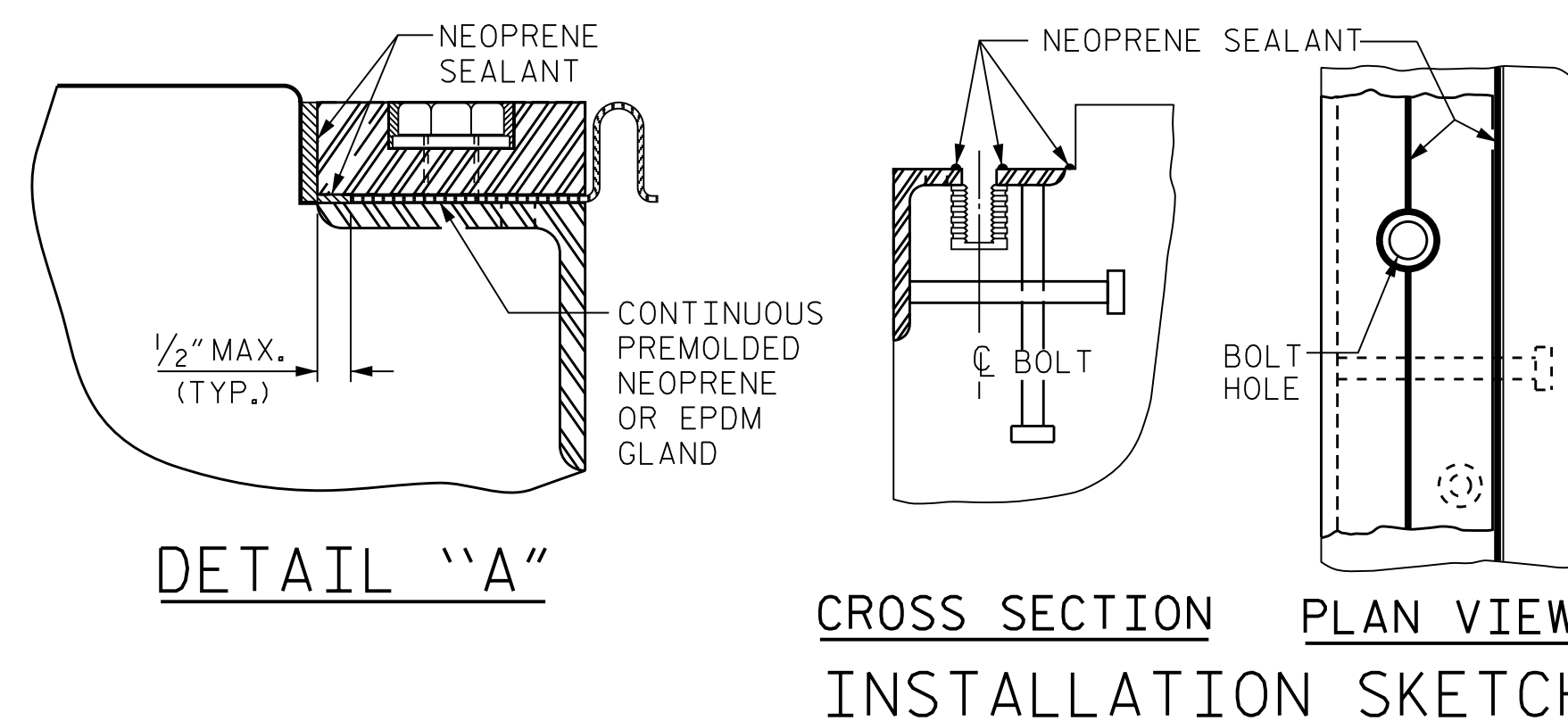
1. FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.
2. ALL PLATES AND ANGLES SHALL CONFORM TO AASHTO M270 GRADE 36 STEEL OR APPROVED EQUAL. ALL HOLD-DOWN BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL CONFORM TO ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS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



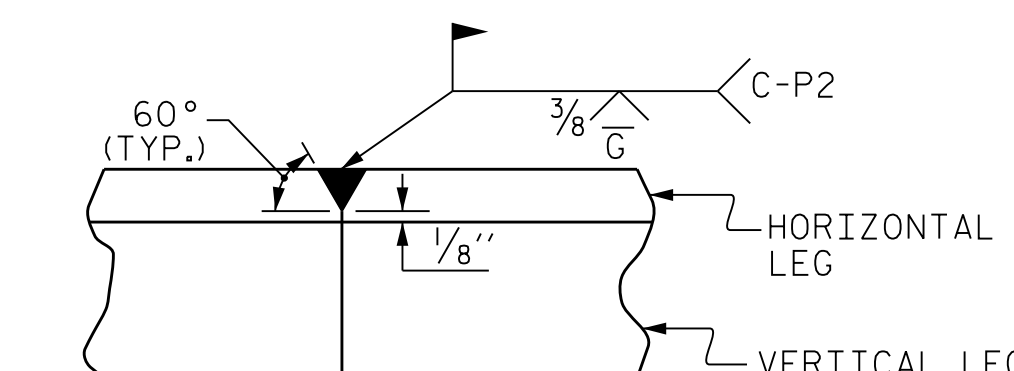
**EXPANSION JOINT DETAILS**

SECTION NORMAL TO JOINT -- PRESTRESSED GIRDER SUPERSTRUCTURE

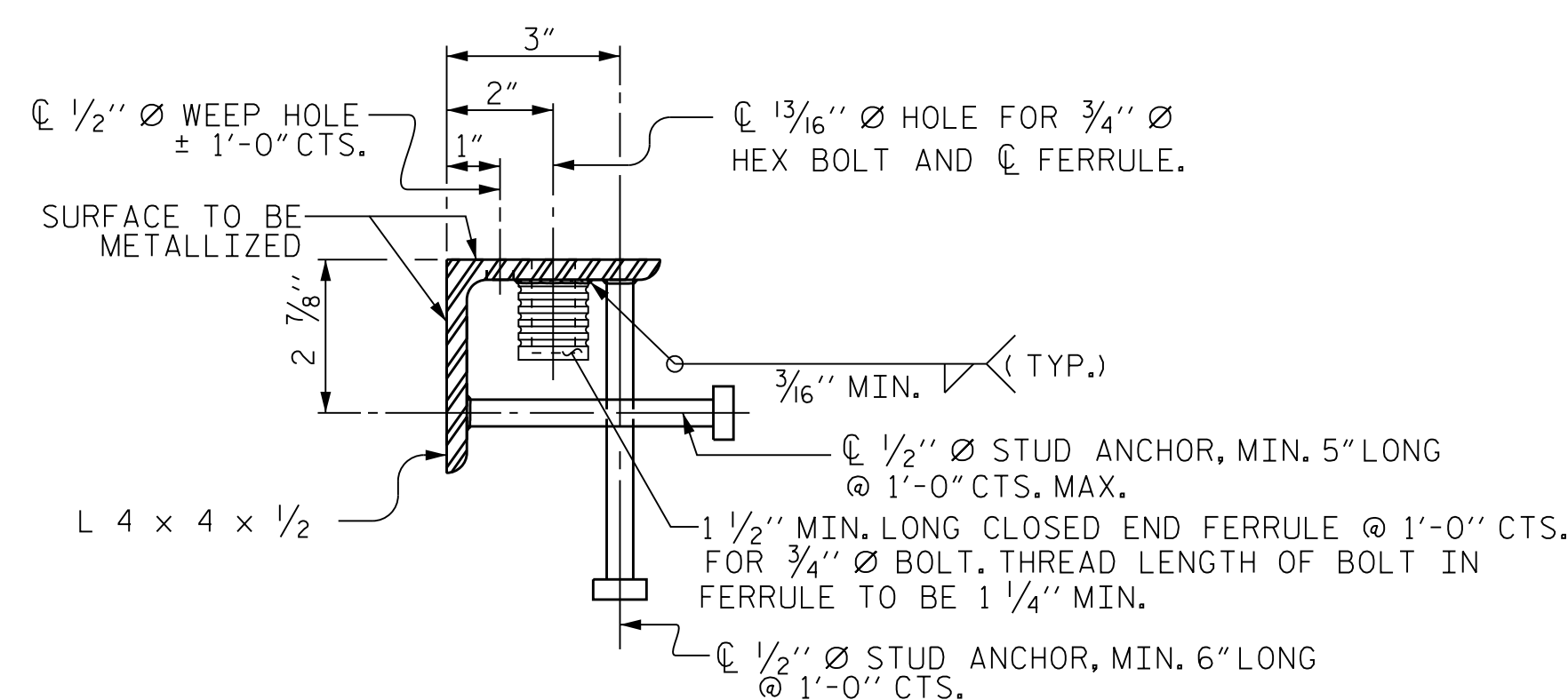
\* THE QUANTITY OF #4 J1 BARS ON THE BILL OF MATERIAL IS BASED ON 1'-0" CENTERS. J1 BARS SHALL BE PLACED AT EACH VERTICAL STUD ANCHOR BOLT. IN THE EVENT THAT THE NUMBER OF VERTICAL STUD ANCHORS EXCEEDS THE NUMBER OF J1 BARS SPECIFIED, ADDITIONAL J1 BARS WILL NOT BE REQUIRED.



MOVEMENT AND SETTING AT JOINT					
END BENT NO.	SKEW ANGLE	TOTAL MOVEMENT (ALONG CL RDWY)	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
#1	109° 30' 00"	1 1/16"	1 1/2"	1 3/8"	1 1/8"
#2	109° 30' 00"	3/4"	1 1/2"	1 3/8"	1 1/8"



**DETAIL - FIELD WELD SPLICE OF BASE ANGLE**



**TYPICAL SECTION OF BASE ANGLE ASSEMBLY**



10/18/2021

PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-

SHEET 1 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

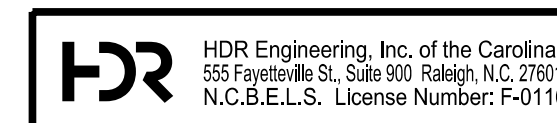
**SUPERSTRUCTURE EXPANSION JOINT SEAL DETAILS**

REVISIONS

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

SHEET NO. 503-32  
 TOTAL SHEETS 61

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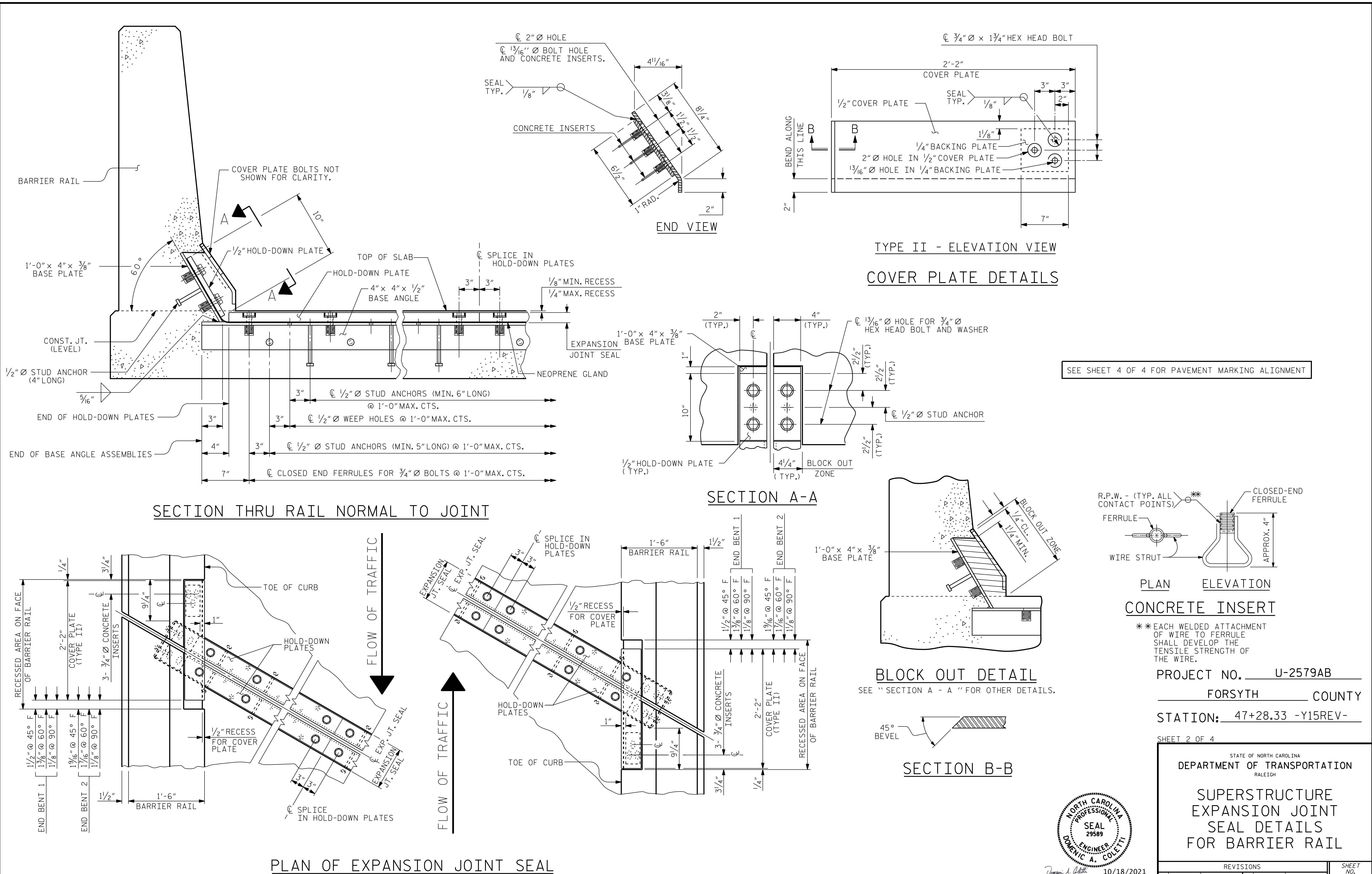


DES BY: M. NEIHEISEL DATE: 02/19  
 DES CHK: S. NIFONG DATE: 02/19  
 DWG BY: M. SELLS DATE: 02/19  
 CHK BY: S. NIFONG DATE: 05/19

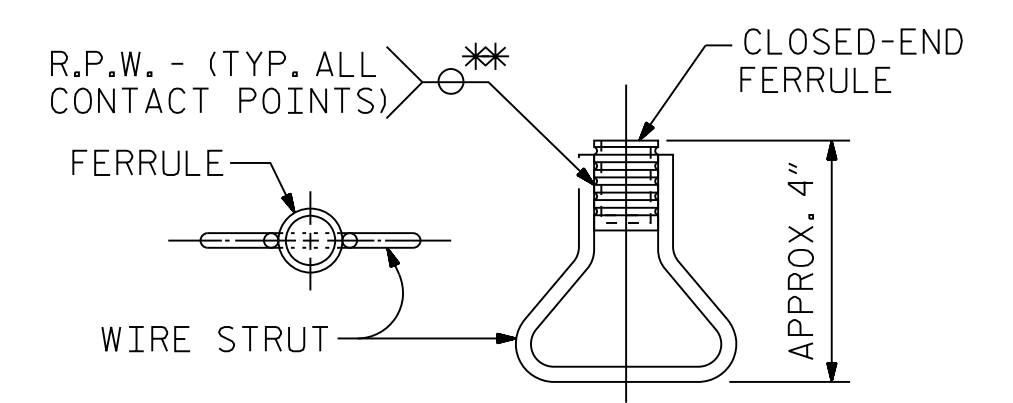
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 FILE: ...SUPERSTRUCTURE\_EXP

PENTABLE: NCDOT STRUCTURES DEFAULT PEN.tbl  
 TIME: 3:49:07 PM





SEE SHEET 4 OF 4 FOR PAVEMENT MARKING ALIGNMENT



CONCRETE INSERT

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

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+28.33 -Y15REV-

SHEET 2 OF 4



10/18/2021

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

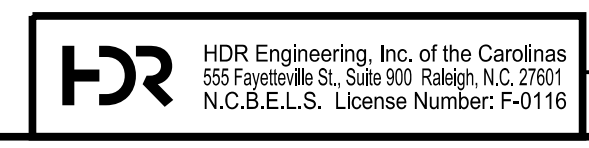
**SUPERSTRUCTURE  
EXPANSION JOINT  
SEAL DETAILS  
FOR BARRIER RAIL**

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

SHEET NO. 503-33  
TOTAL SHEETS 61

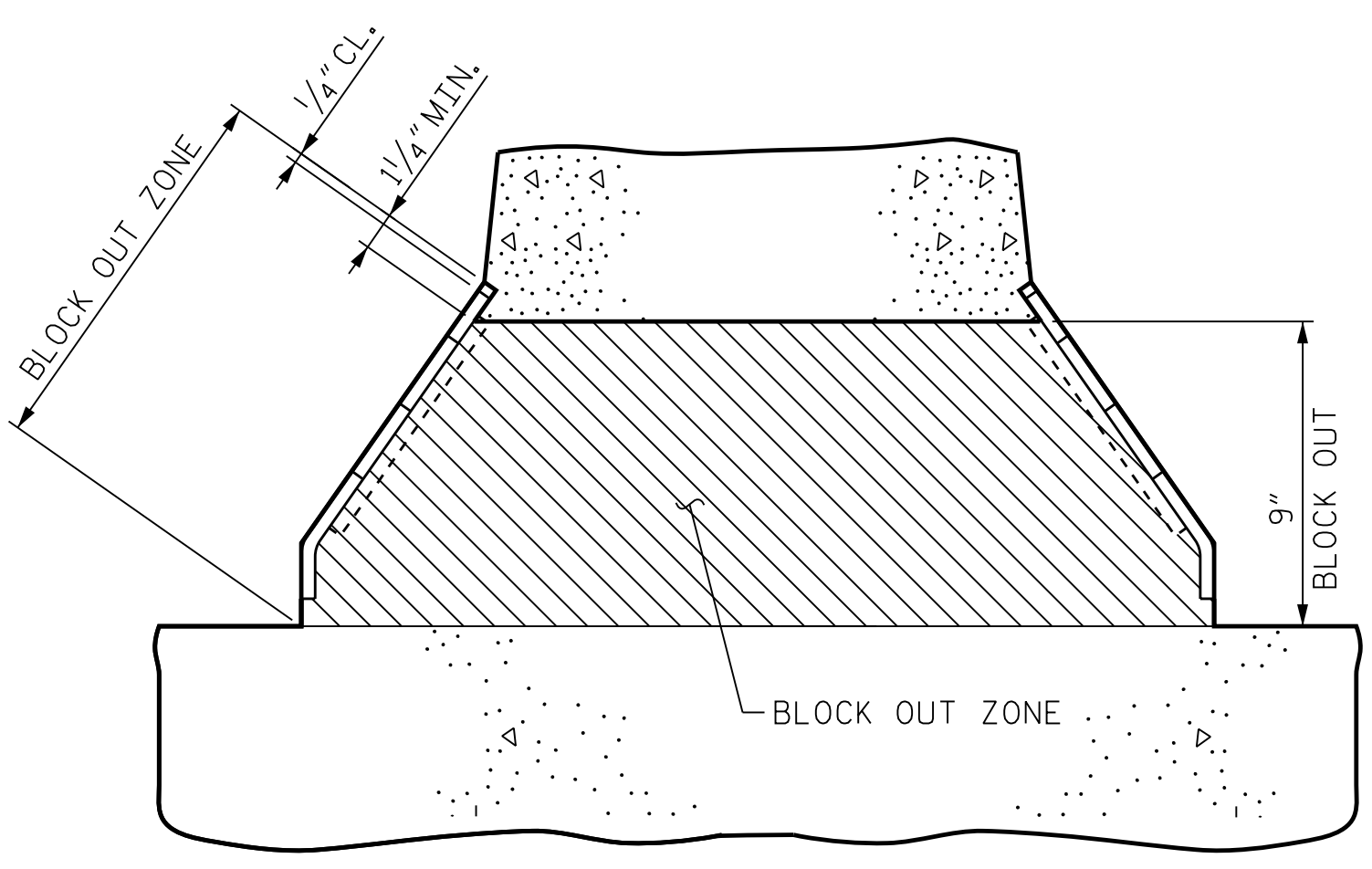
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USER: PPETERSO DATE: 10/14/2021  
FILE: ...SUPERSTRUCTURE\_EXP

DES BY: M. NEIHEISEL	DATE: 02/19	DWG BY: M. SELLS	DATE: 02/19
DES CHK: S. NIFONG	DATE: 02/19	CHK BY: S. NIFONG	DATE: 05/19

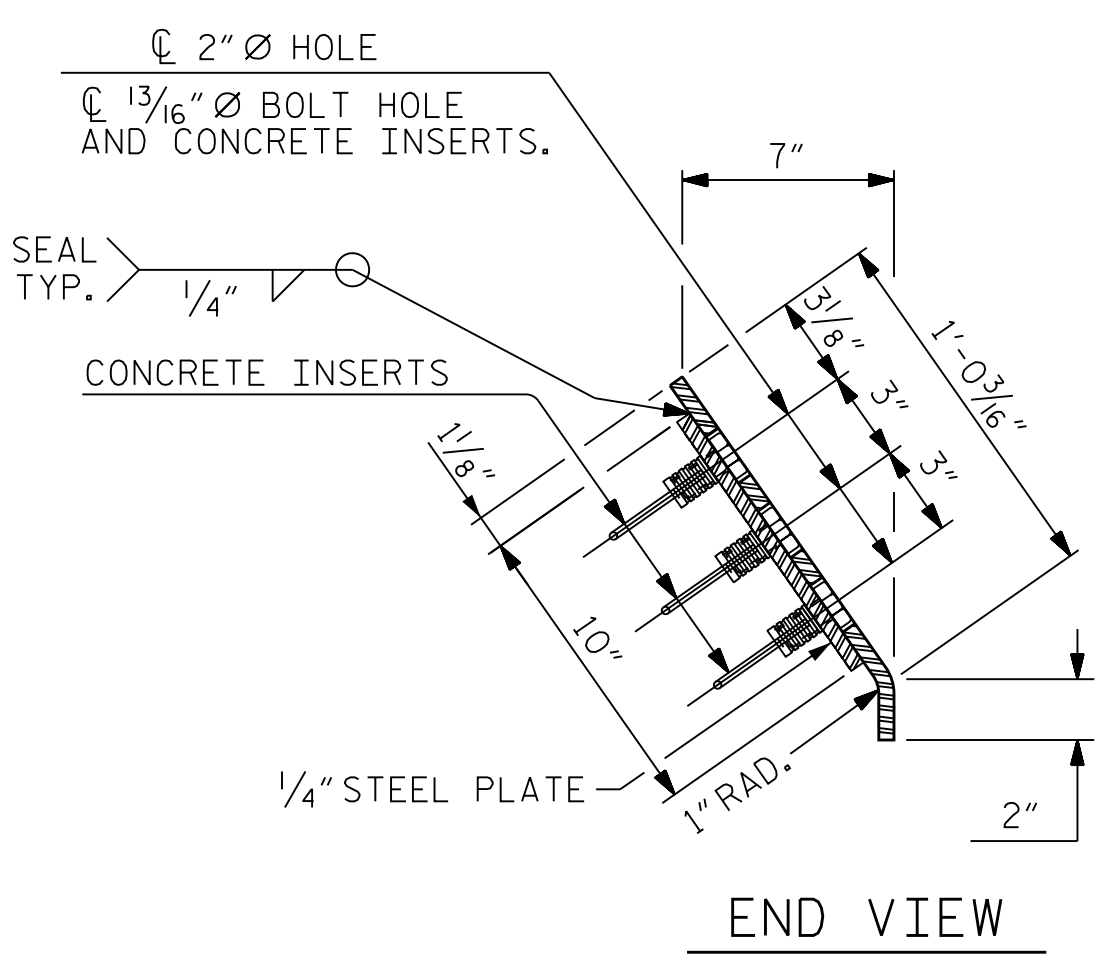


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UNLESS ALL SIGNATURES COMPLETED

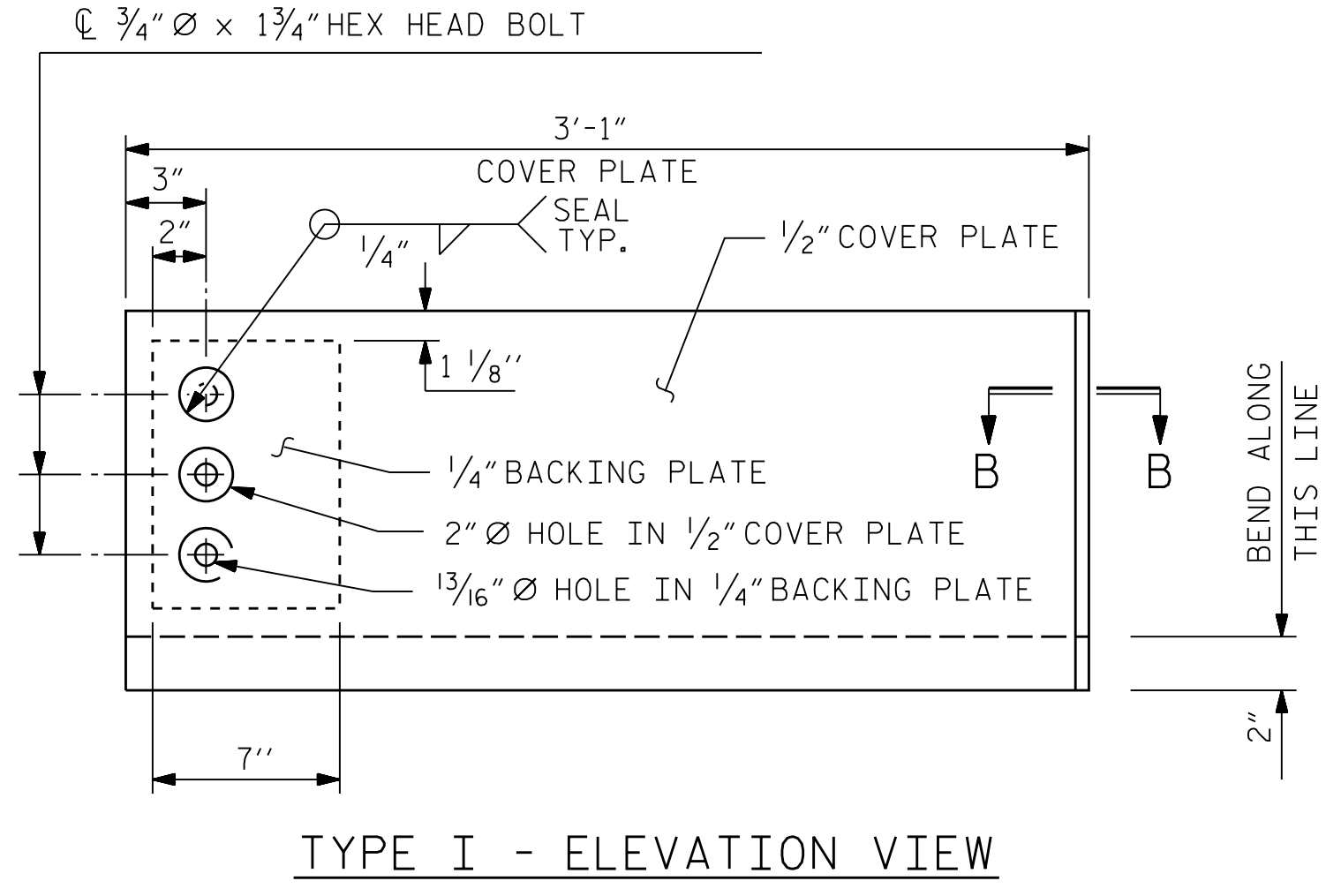




**BLOCK OUT DETAIL**

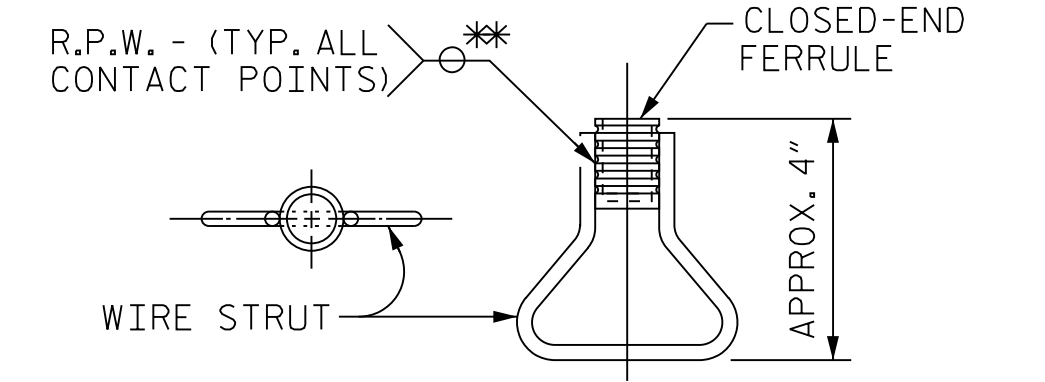


**END VIEW**



**TYPE I - ELEVATION VIEW**

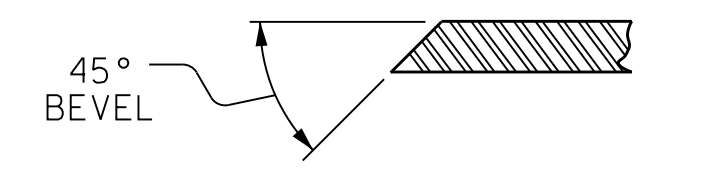
**COVER PLATE DETAILS**



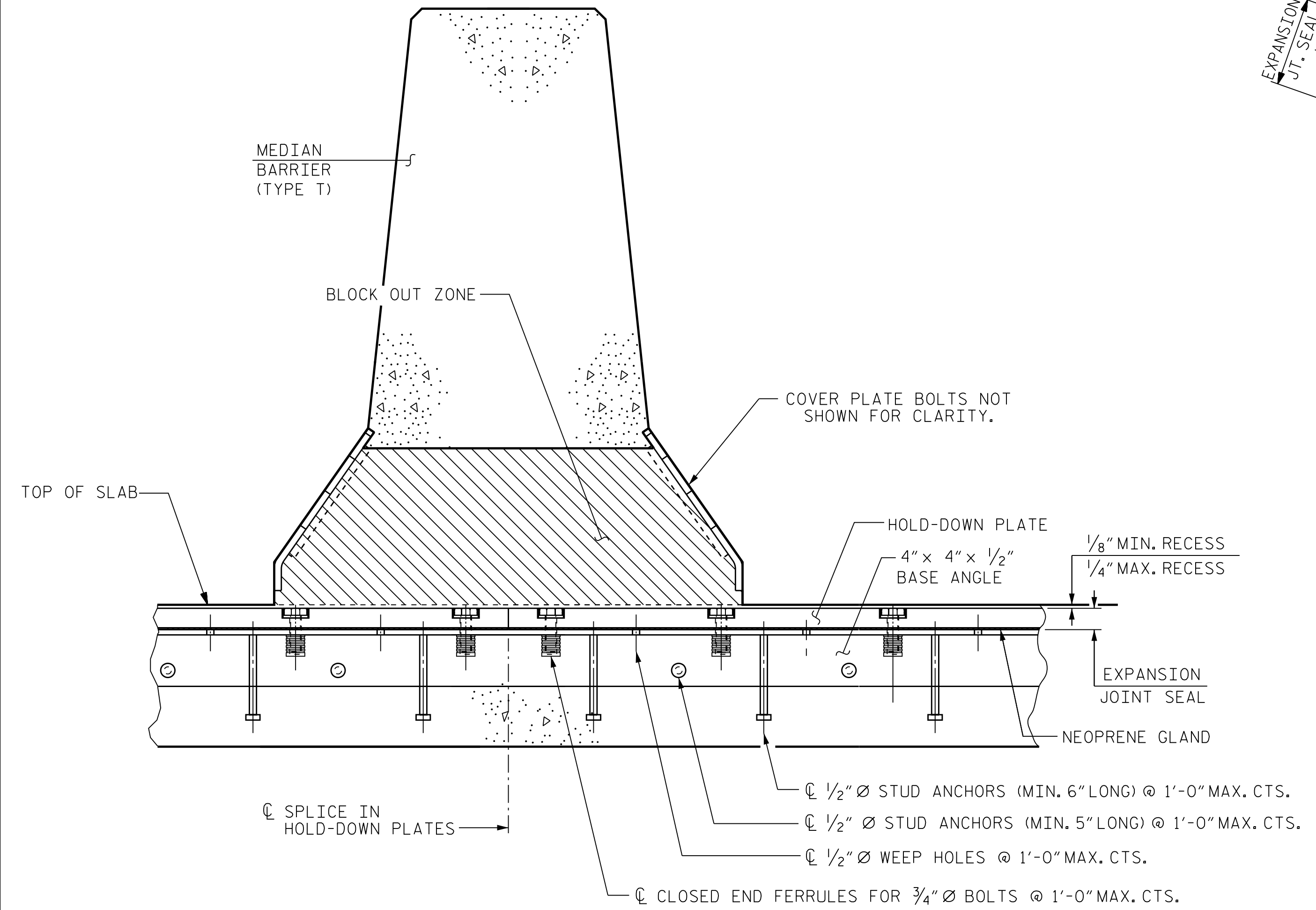
**PLAN ELEVATION**

**CONCRETE INSERT**

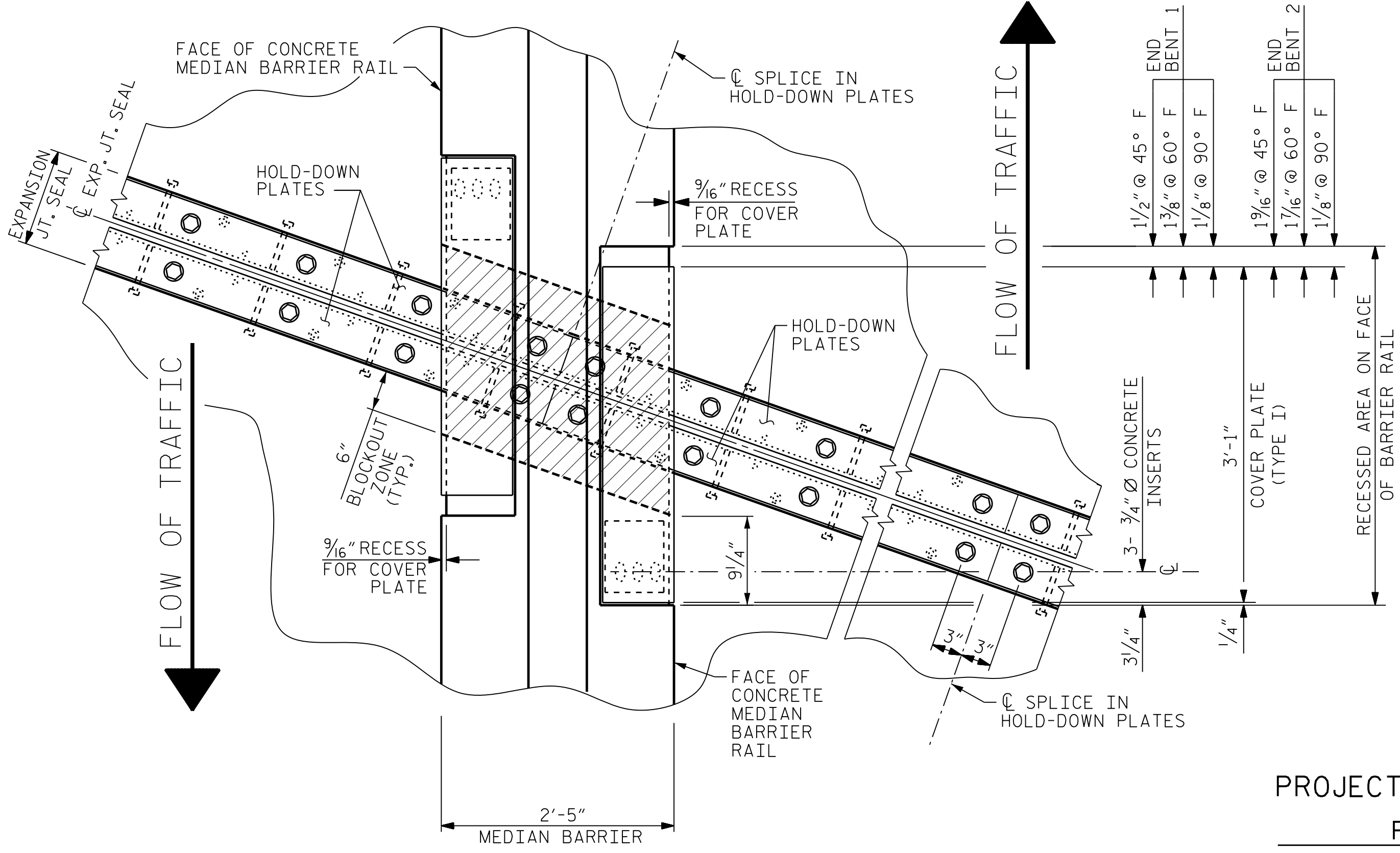
\*\* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.



**SECTION B-B**



**SECTION THRU MEDIAN BARRIER**



**PLAN OF EXPANSION JOINT SEAL (DETAILS TYPICAL BOTH SIDES)**

PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-  
 SHEET 3 OF 4

PLOT DRIVER: NCDOT...  
 USER: PPETERSO  
 DATE: 10/14/2021  
 FILE: ...SUPERSTRUCTURE\_EXP

DES BY: M. NEIHEISEL DATE: 03/19  
 DES CHK: S. NIFONG DATE: 03/19  
 DWG BY: B. PETERSON DATE: 03/19  
 CHK BY: S. NIFONG DATE: 05/19

HDR Engineering, Inc. of the Carolinas  
 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601  
 N.C.B.E.L.S. License Number: F-0116



10/18/2021

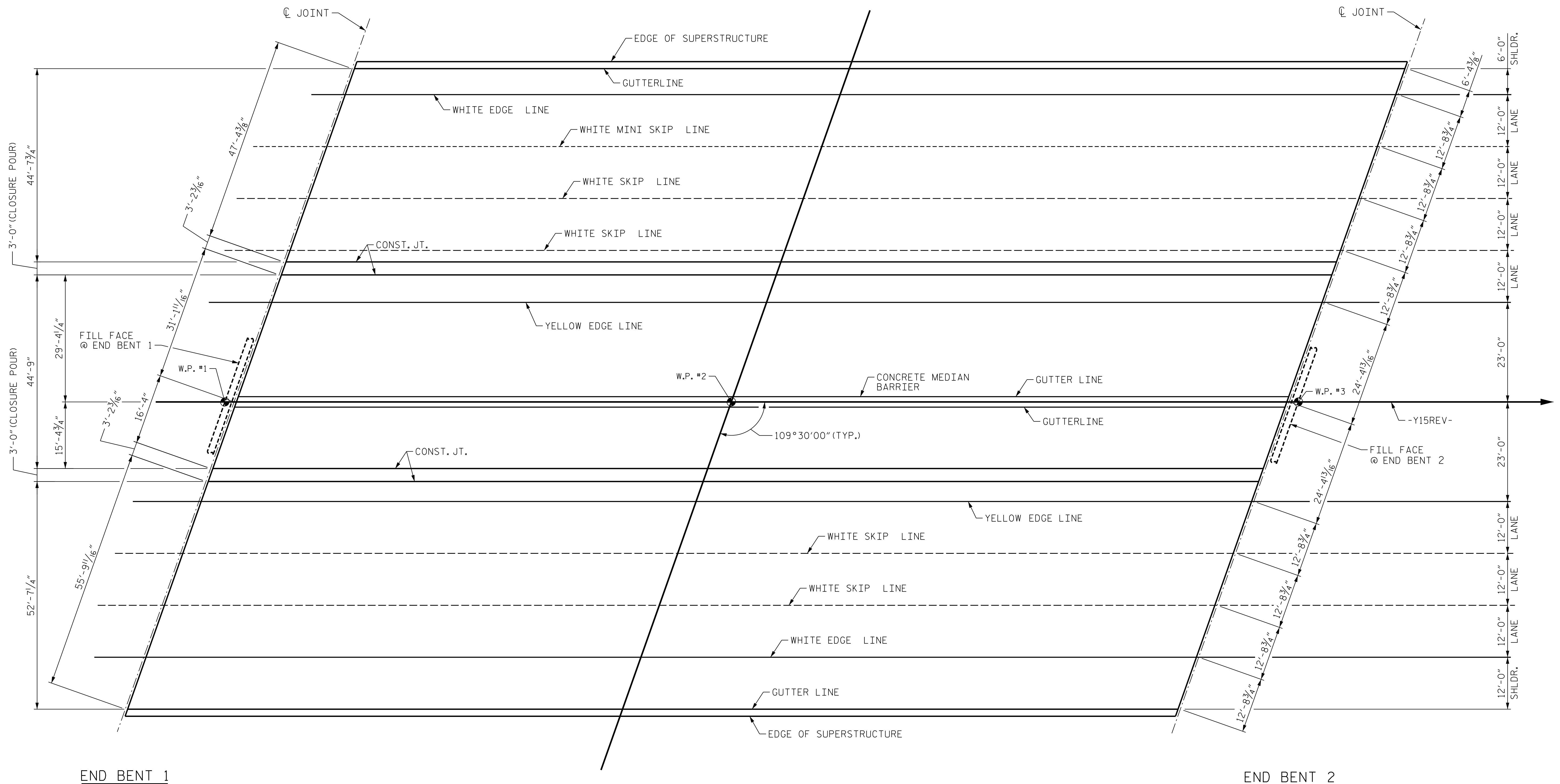
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 EXPANSION JOINT  
 SEAL DETAILS FOR  
 MEDIAN BARRIER RAIL

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

SHEET NO. 503-34  
 TOTAL SHEETS 61

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END BENT 1

END BENT 2

### PAVEMENT MARKING ALIGNMENT

#### NOTES

ALL DIMENSIONS MEASURED ALONG CL JOINT.  
DIMENSIONS ARE TYPICAL AT EACH END BENT.

PROJECT NO. U-2579AB

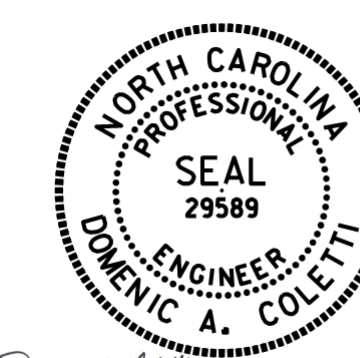
FORSYTH COUNTY

STATION: 47+28.33 -Y15REV-

SHEET 4 OF 4

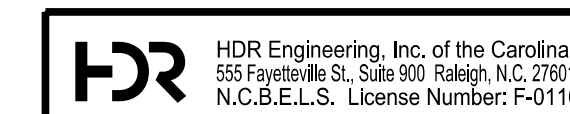
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
EXPANSION JOINT  
SEAL DETAILS



10/18/2021

DES BY: M. NEIHEISEL	DATE: 02/19	DWG BY: B. PETERSON	DATE: 02/19
DES CHK: S. NIFONG	DATE: 02/19	CHK BY: S. NIFONG	DATE: 05/19

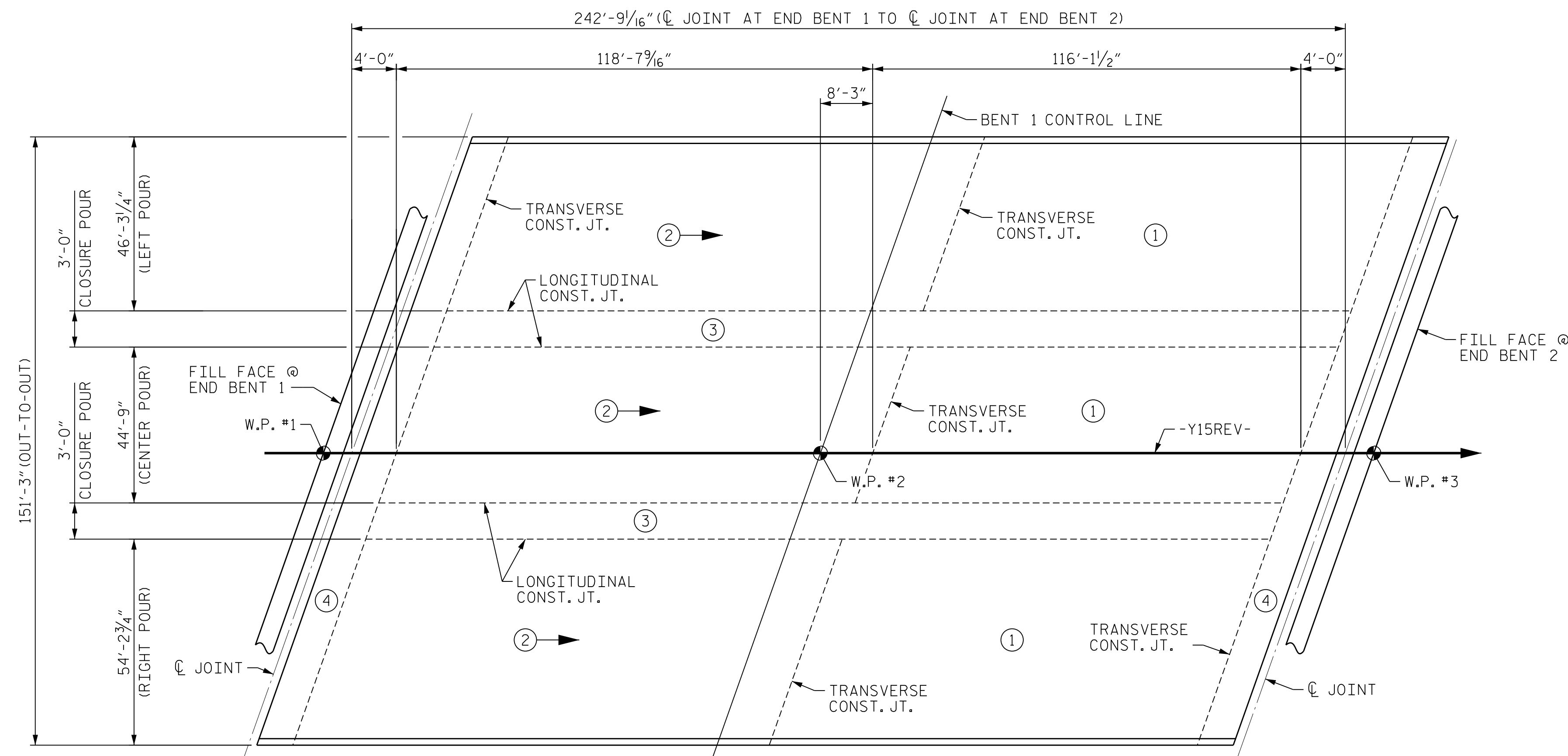


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REVISIONS					
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SHEET NO. 503-35  
TOTAL SHEETS 61

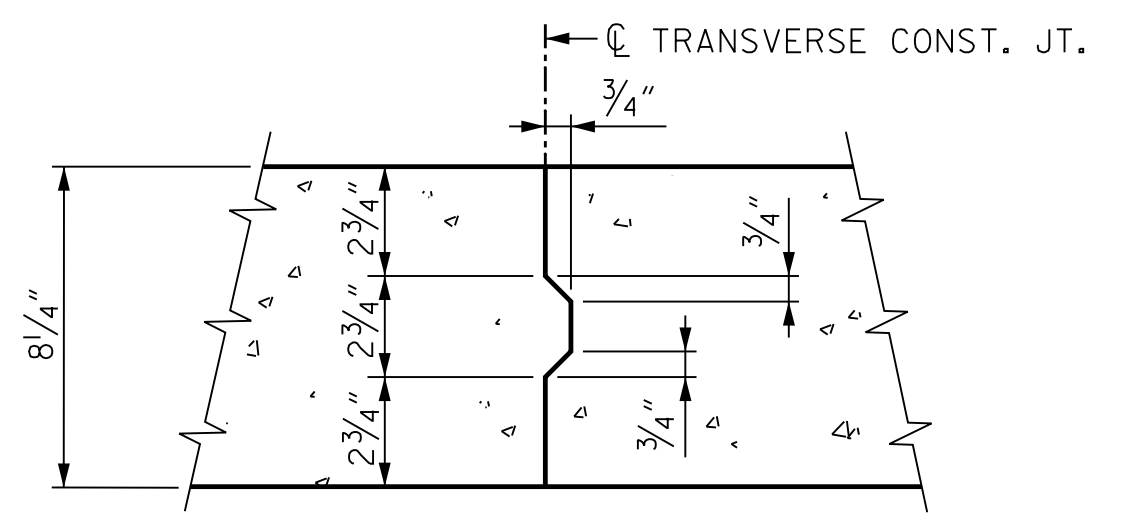
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### POURING SEQUENCE

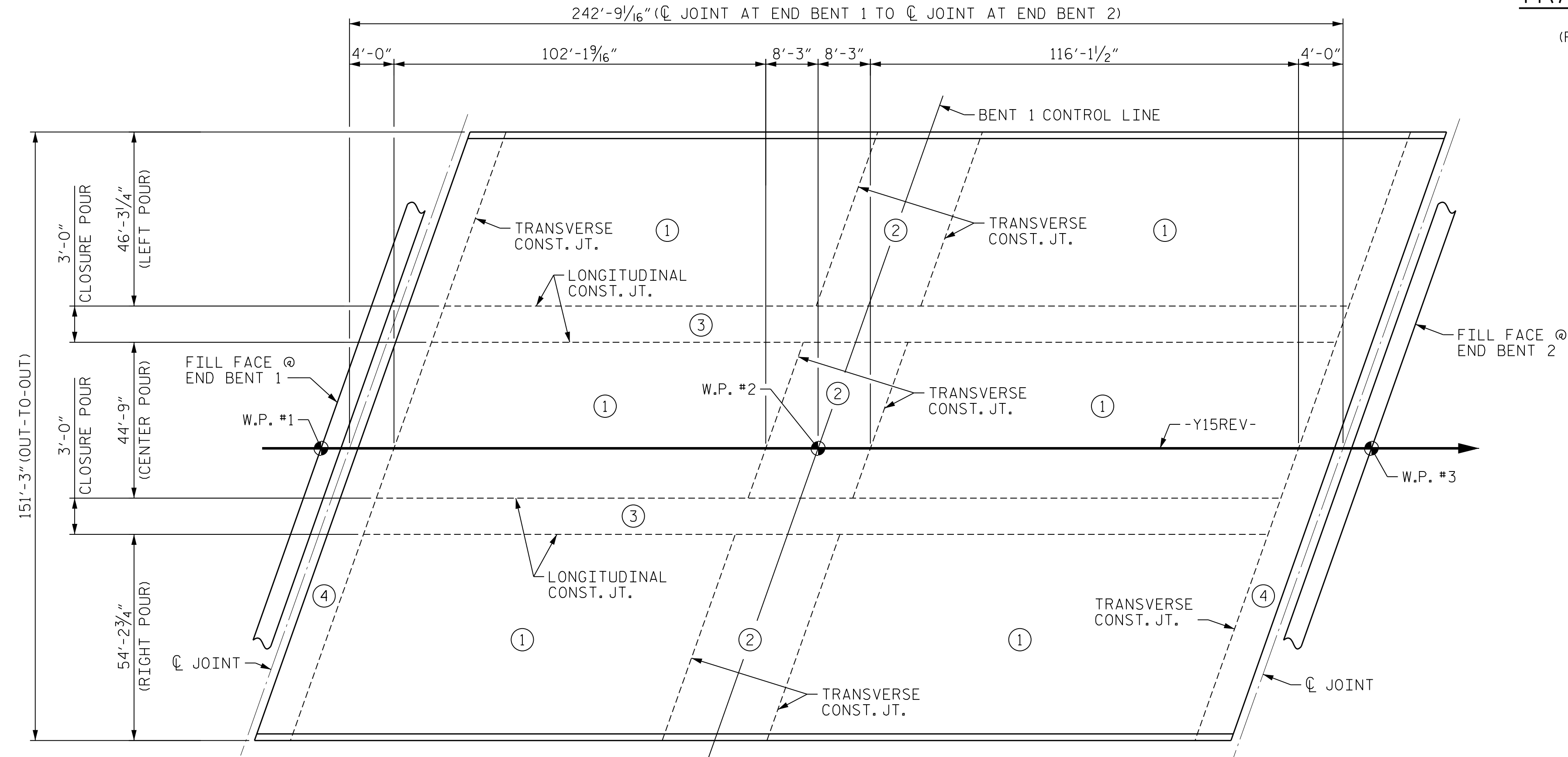
⊕ → INDICATES POUR NUMBER AND DIRECTION OF POUR

**NOTE**  
 PERMISSIBLE TO PLACE CLOSURE POUR 3 AFTER ADJACENT POURS 1 AND 2 HAVE BEEN PLACED AND REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI.



### TRANSVERSE CONSTRUCTION JOINT

(REINFORCING STEEL IN SLAB NOT SHOWN)  
(REINFORCING STEEL SHALL BE CONTINUOUS THROUGH JOINT)



### OPTIONAL POURING SEQUENCE

POUR ② OF THE OPTIONAL POUR SEQUENCE MAY NOT BE STARTED UNTIL BOTH ADJACENT ① POURS HAVE REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI.

PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-  
 SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUPERSTRUCTURE  
 BILL OF MATERIALS**



10/18/2021

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

SHEET NO. 503-36  
 TOTAL SHEETS 61

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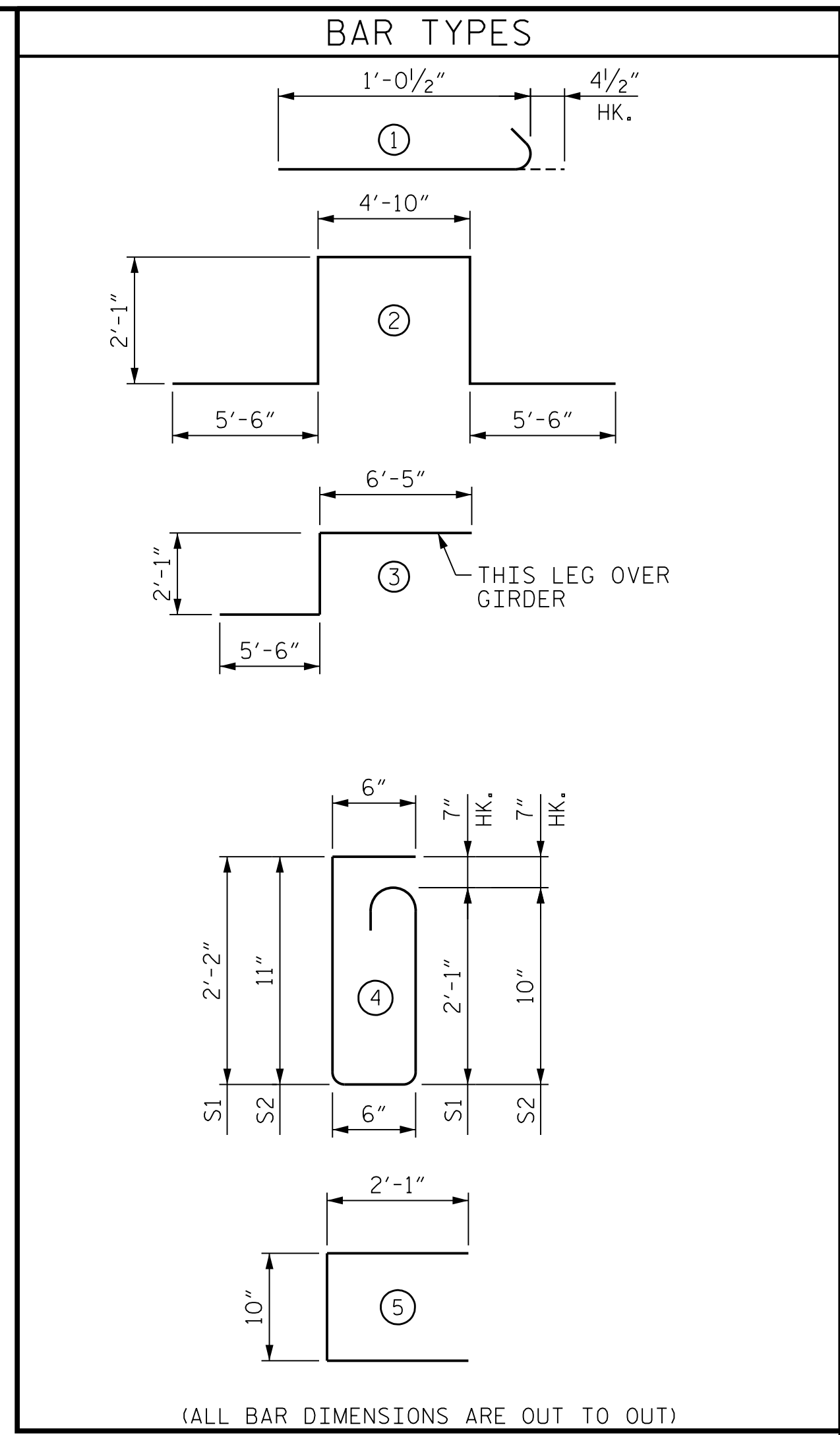
DES BY: M. NEIHEISEL	DATE: 03/19	DWG BY: B. PETERSON	DATE: 03/19
DES CHK: S. NIFONG	DATE: 03/19	CHK BY: S. NIFONG	DATE: 05/19

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BILL OF MATERIAL

LEFT POUR											CENTER POUR												
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	388	#5	STR.	45'-11"	18582	A218	2	#5	STR.	16'-4"	34	* A3	389	#5	STR.	44'-5"	18021	A419	2	#5	STR.	13'-2"	27
A2	388	#5	STR.	45'-11"	18582	A219	2	#5	STR.	14'-9"	31	A4	389	#5	STR.	44'-5"	18021	A420	2	#5	STR.	11'-6"	24
						A220	2	#5	STR.	13'-1"	27							A421	2	#5	STR.	9'-10"	21
* A101	2	#5	STR.	44'-5"	93	A221	2	#5	STR.	11'-5"	24	* A301	2	#5	STR.	42'-9"	89	A422	2	#5	STR.	8'-2"	17
* A102	2	#5	STR.	42'-9"	89	A222	2	#5	STR.	9'-9"	20	* A302	2	#5	STR.	41'-2"	86	A423	2	#5	STR.	6'-7"	14
* A103	2	#5	STR.	41'-1"	86	A223	2	#5	STR.	8'-2"	17	* A303	2	#5	STR.	39'-6"	82	A424	2	#5	STR.	4'-11"	10
* A104	2	#5	STR.	39'-5"	82	A224	2	#5	STR.	6'-6"	14	* A304	2	#5	STR.	37'-10"	79	A425	2	#5	STR.	3'-3"	7
* A105	2	#5	STR.	37'-9"	79	A225	2	#5	STR.	4'-10"	10	* A305	2	#5	STR.	36'-2"	75						
* A106	2	#5	STR.	36'-2"	75	A226	2	#5	STR.	3'-2"	7	* A306	2	#5	STR.	34'-7"	72	* A701	8	#5	STR.	8'-2"	68
* A107	2	#5	STR.	34'-6"	72							* A307	2	#5	STR.	32'-11"	69	A801	8	#5	STR.	8'-2"	68
* A108	2	#5	STR.	32'-10"	68	* A701	4	#5	STR.	8'-2"	34	* A308	2	#5	STR.	31'-3"	65						
* A109	2	#5	STR.	31'-2"	65	* A702	2	#6	STR.	7'-1"	21	* A309	2	#5	STR.	29'-7"	62	* B1	279	#4	STR.	28'-9"	5358
* A110	2	#5	STR.	29'-7"	62	A801	4	#5	STR.	8'-2"	34	* A310	2	#5	STR.	27'-11"	58	* B2	60	#5	STR.	44'-0"	2754
* A111	2	#5	STR.	27'-11"	58							* A311	2	#5	STR.	26'-4"	55	B3	160	#5	STR.	50'-3"	8386
* A112	2	#5	STR.	26'-3"	55	* B1	288	#4	STR.	28'-9"	5531	* A312	2	#5	STR.	24'-8"	51	B4	24	#5	STR.	19'-9"	494
* A113	2	#5	STR.	24'-7"	51	* B2	62	#5	STR.	44'-0"	2845	* A313	2	#5	STR.	23'-0"	48	B5	48	#5	STR.	9'-3"	463
* A114	2	#5	STR.	23'-0"	48	B3	170	#5	STR.	50'-3"	8910	* A314	2	#5	STR.	21'-4"	45						
* A115	2	#5	STR.	21'-4"	45	B4	24	#5	STR.	19'-9"	494	* A315	2	#5	STR.	19'-9"	41	* D1	824	#5	STR.	5'-6"	4727
* A116	2	#5	STR.	19'-8"	41	B5	48	#5	STR.	9'-3"	463	* A316	2	#5	STR.	18'-1"	38	D2	824	#5	STR.	5'-6"	4727
* A117	2	#5	STR.	18'-0"	38							* A317	2	#5	STR.	16'-5"	34						
* A118	2	#5	STR.	16'-4"	34	* D1	412	#5	STR.	5'-6"	2363	* A318	2	#5	STR.	14'-9"	31	* G2	2	#5	STR.	47'-1"	98
* A119	2	#5	STR.	14'-9"	31	D2	412	#5	STR.	5'-6"	2363	* A319	2	#5	STR.	13'-2"	27	* G4	4	#5	STR.	5'-9"	24
* A120	2	#5	STR.	13'-1"	27							* A320	2	#5	STR.	11'-6"	24						
* A121	2	#5	STR.	11'-5"	24	* G1	2	#5	STR.	48'-8"	102	* A321	2	#5	STR.	9'-10"	21	* J1	96	#4	1	1'-5"	91
* A122	2	#5	STR.	9'-9"	20	* G4	2	#5	STR.	5'-9"	12	* A322	2	#5	STR.	8'-2"	17						
* A123	2	#5	STR.	8'-2"	17							* A323	2	#5	STR.	6'-7"	14	* K1	24	#8	2	20'-0"	1282
* A124	2	#5	STR.	6'-6"	14	* J1	96	#4	1	1'-5"	91	* A324	2	#5	STR.	4'-11"	10	* K3	20	#4	STR.	7'-2"	96
* A125	2	#5	STR.	4'-10"	10							* A325	2	#5	STR.	3'-3"	7	* K4	10	#6	STR.	7'-6"	113
* A126	2	#5	STR.	3'-2"	7	* K1	20	#8	2	20'-0"	1068							* K5	10	#6	STR.	5'-2"	78
						* K2	4	#8	3	14'-0"	150	A401	2	#5	STR.	42'-9"	89	* K6	10	#6	STR.	3'-10"	58
A201	2	#5	STR.	44'-5"	93	* K3	20	#4	STR.	7'-2"	96	A402	2	#5	STR.	41'-2"	86						
A202	2	#5	STR.	42'-9"	89	* K4	10	#6	STR.	7'-6"	113	A403	2	#5	STR.	39'-6"	82	* S1	50	#5	4	5'-10"	304
A203	2	#5	STR.	41'-1"	86	* K5	10	#6	STR.	5'-2"	78	A404	2	#5	STR.	37'-10"	79	* S2	40	#5	4	3'-4"	139
A204	2	#5	STR.	39'-5"	82	* K6	10	#6	STR.	3'-10"	58	A405	2	#5	STR.	36'-2"	75	* S3	50	#4	5	5'-0"	167
A205	2	#5	STR.	37'-9"	79							A406	2	#5	STR.	34'-7"	72						
A206	2	#5	STR.	36'-2"	75	* S1	50	#5	4	5'-10"	304	A407	2	#5	STR.	32'-11"	69						
A207	2	#5	STR.	34'-6"	72	* S2	40	#5	4	3'-4"	139	A408	2	#5	STR.	31'-3"	65	* EPOXY COATED REINFORCING STEEL					34,578 LBS.
A208	2	#5	STR.	32'-10"	68	* S3	50	#4	5	5'-0"	167	A409	2	#5	STR.	29'-7"	62	REINFORCING STEEL					33,359 LBS.
A209	2	#5	STR.	31'-2"	65							A410	2	#5	STR.	27'-11"	58	* DENOTES EPOXY COATED REINFORCING STEEL					
A210	2	#5	STR.	29'-7"	62	* EPOXY COATED REINFORCING STEEL					33,045 LBS.	A411	2	#5	STR.	26'-4"	55						
A211	2	#5	STR.	27'-11"	58	REINFORCING STEEL						A412	2	#5	STR.	24'-8"	51						
A212	2	#5	STR.	26'-3"	55	REINFORCING STEEL					32,137 LBS.	A413	2	#5	STR.	23'-0"	48						
A213	2	#5	STR.	24'-7"	51	* DENOTES EPOXY COATED REINFORCING STEEL						A414	2	#5	STR.	21'-4"	45						
A214	2	#5	STR.	23'-0"	48							A415	2	#5	STR.	19'-9"	41						
A215	2	#5	STR.	21'-4"	45							A416	2	#5	STR.	18'-1"	38						
A216	2	#5	STR.	19'-8"	41							A417	2	#5	STR.	16'-5"	34						
A217	2	#5	STR.	18'-0"	38							A418	2	#5	STR.	14'-9"	31						



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

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

PROJECT NO. U-2579AB  
FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-  
 SHEET 2 OF 3

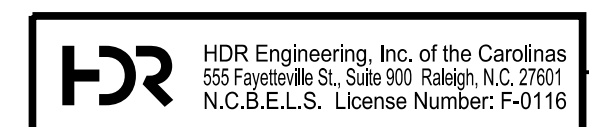


*Dominic A. Coletti* 10/18/2021

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUPERSTRUCTURE  
 BILL OF MATERIALS**

REVISIONS						SHEET NO. S03-37 TOTAL SHEETS 61
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	
2	--	--	4	--	--	



**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

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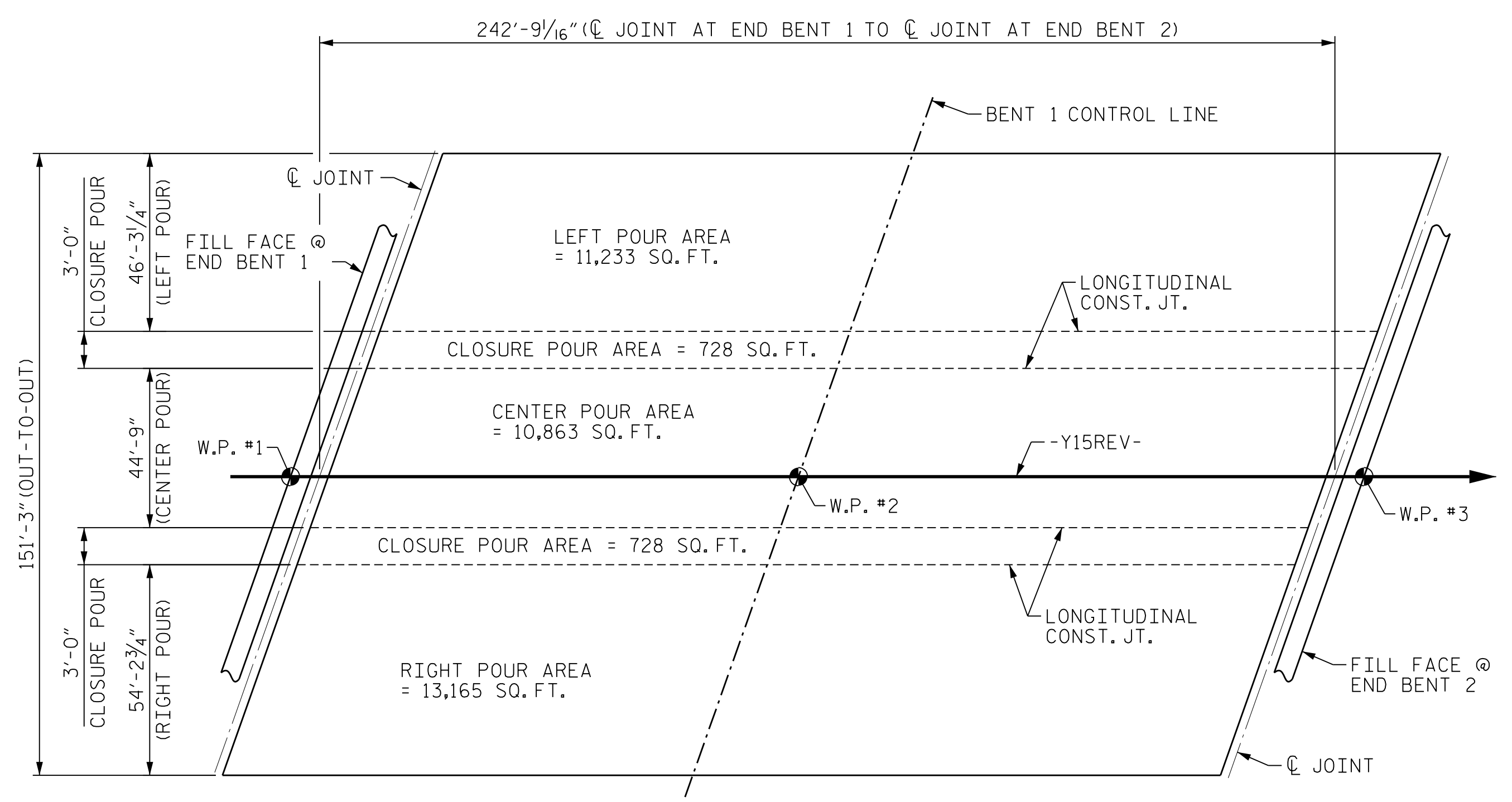
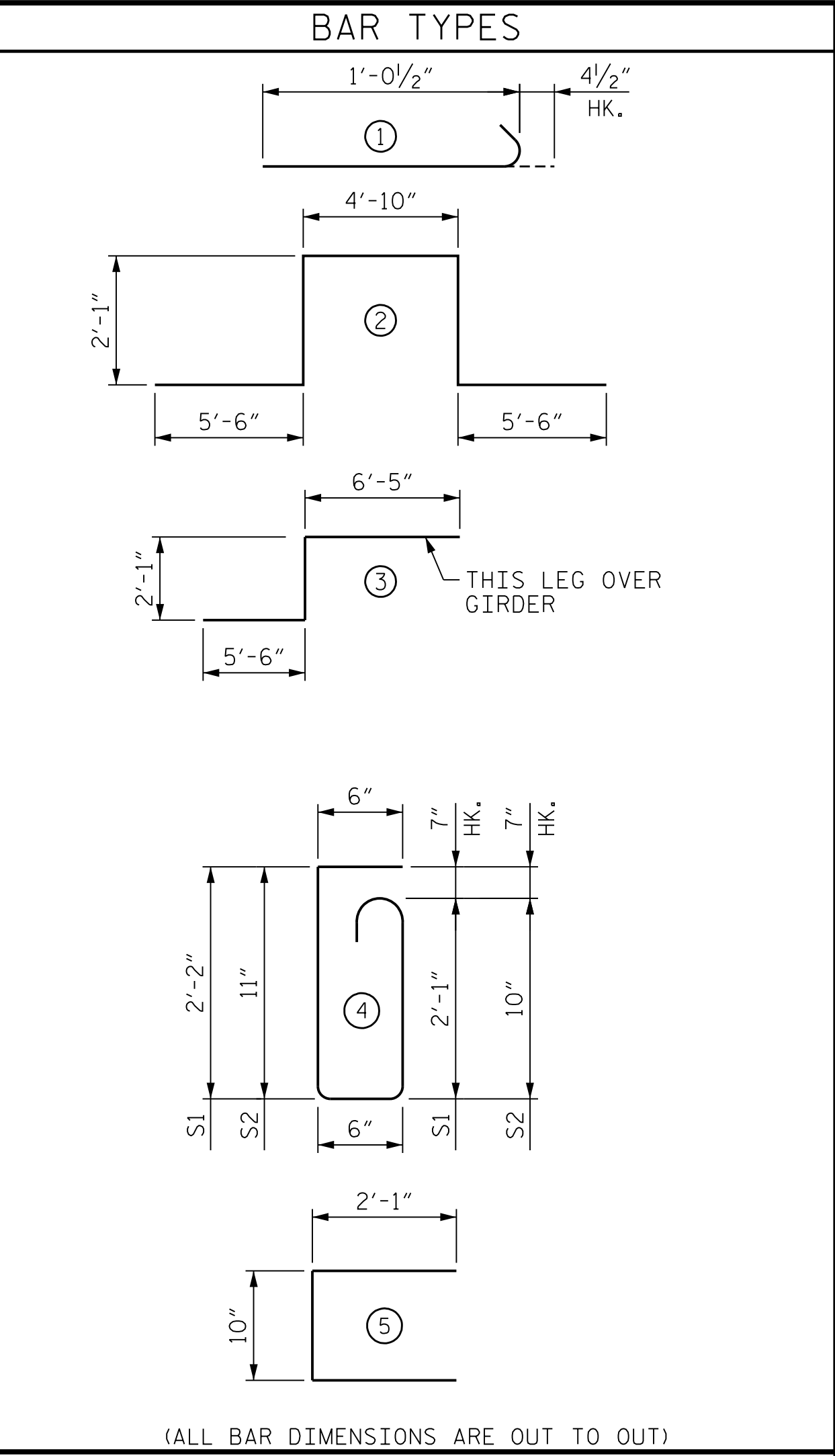
DES BY: M. NEIHEISEL DATE: 03/19 DWG BY: B. PETERSON DATE: 03/19  
 DES CHK: S. NIFONG DATE: 03/19 CHK BY: S. NIFONG DATE: 05/19

BILL OF MATERIAL

RIGHT POUR						CLOSURE POURS (TOTAL FOR BOTH CLOSURE POURS)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A5	383	#5	STR.	53'-10"	21505	A618	2	#5	STR.	24'-6"	51
A6	383	#5	STR.	53'-10"	21505	A619	2	#5	STR.	22'-10"	48
* A501	2	#5	STR.	52'-6"	110	A620	2	#5	STR.	21'-2"	44
* A502	2	#5	STR.	50'-10"	106	A621	2	#5	STR.	19'-6"	41
* A503	2	#5	STR.	49'-2"	103	A622	2	#5	STR.	17'-10"	37
* A504	2	#5	STR.	47'-6"	99	A623	2	#5	STR.	16'-3"	34
* A505	2	#5	STR.	45'-11"	96	A624	2	#5	STR.	14'-7"	30
* A506	2	#5	STR.	44'-3"	92	A625	2	#5	STR.	12'-11"	27
* A507	2	#5	STR.	42'-7"	89	A626	2	#5	STR.	11'-3"	23
* A508	2	#5	STR.	40'-11"	85	A627	2	#5	STR.	9'-8"	20
* A509	2	#5	STR.	39'-3"	82	A628	2	#5	STR.	8'-0"	17
* A510	2	#5	STR.	37'-8"	79	A629	2	#5	STR.	6'-4"	13
* A511	2	#5	STR.	36'-0"	75	A630	2	#5	STR.	4'-8"	10
* A512	2	#5	STR.	34'-4"	72	A631	2	#5	STR.	3'-1"	6
* A513	2	#5	STR.	32'-8"	68	* A701	4	#5	STR.	8'-2"	34
* A514	2	#5	STR.	31'-1"	65	* A702	2	#6	STR.	7'-1"	21
* A515	2	#5	STR.	29'-5"	61	A801	4	#5	STR.	8'-2"	34
* A516	2	#5	STR.	27'-9"	58						
* A517	2	#5	STR.	26'-1"	54	* B1	333	#4	STR.	28'-9"	6395
* A518	2	#5	STR.	24'-6"	51	* B2	72	#5	STR.	44'-0"	3304
* A519	2	#5	STR.	22'-10"	48	B3	200	#5	STR.	50'-3"	10482
* A520	2	#5	STR.	21'-2"	44	B4	28	#5	STR.	19'-9"	577
* A521	2	#5	STR.	19'-6"	41	B5	56	#5	STR.	9'-3"	540
* A522	2	#5	STR.	17'-10"	37						
* A523	2	#5	STR.	16'-3"	34	* D1	412	#5	STR.	5'-6"	2363
* A524	2	#5	STR.	14'-7"	30	D2	412	#5	STR.	5'-6"	2363
* A525	2	#5	STR.	12'-11"	27						
* A526	2	#5	STR.	11'-3"	23	* G3	2	#5	STR.	57'-2"	119
* A527	2	#5	STR.	9'-8"	20	* G4	2	#5	STR.	5'-9"	12
* A528	2	#5	STR.	8'-0"	17						
* A529	2	#5	STR.	6'-4"	13	* J1	112	#4	1	1'-5"	106
* A530	2	#5	STR.	4'-8"	10						
* A531	2	#5	STR.	3'-1"	6	* K1	24	#8	2	20'-0"	1282
						* K2	4	#8	3	14'-0"	150
A601	2	#5	STR.	52'-6"	110	* K3	24	#4	STR.	7'-2"	115
A602	2	#5	STR.	50'-10"	106	* K4	12	#6	STR.	7'-6"	135
A603	2	#5	STR.	49'-2"	103	* K5	12	#6	STR.	5'-2"	93
A604	2	#5	STR.	47'-6"	99	* K6	12	#6	STR.	3'-10"	69
A605	2	#5	STR.	45'-11"	96						
A606	2	#5	STR.	44'-3"	92	* S1	60	#5	4	5'-10"	365
A607	2	#5	STR.	42'-7"	89	* S2	48	#5	4	3'-4"	167
A608	2	#5	STR.	40'-11"	85	* S3	60	#4	5	5'-0"	200
A609	2	#5	STR.	39'-3"	82						
A610	2	#5	STR.	37'-8"	79	* EPOXY COATED REINFORCING STEEL					38,230 LBS.
A611	2	#5	STR.	36'-0"	75	REINFORCING STEEL					37,296 LBS.
A612	2	#5	STR.	34'-4"	72	* DENOTES EPOXY COATED REINFORCING STEEL					
A613	2	#5	STR.	32'-8"	68						
A614	2	#5	STR.	31'-1"	65						
A615	2	#5	STR.	29'-5"	61						
A616	2	#5	STR.	27'-9"	58						
A617	2	#5	STR.	26'-1"	54						

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

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



LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 36,717)

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE			REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
	(CU. YDS.)				
	POUR #1	POUR #2	TOTAL		
LEFT POUR	190.6	194.6	385.2	32,137	33,045
CENTER POUR	182.4	186.4	368.8	33,359	34,578
RIGHT POUR	222.7	227.5	450.2	37,296	38,230
CLOSURE POURS			40.4	2,096	1,710
POUR #4			71.6		
TOTAL **			1316.2	104,888	107,563

\*\* QUANTITIES FOR CONCRETE BARRIER RAIL AND MEDIAN BARRIER NOT INCLUDED

GROOVING BRIDGE FLOORS

LEFT POUR	10,426	SQ. FT.
CENTER POUR	9,504	SQ. FT.
RIGHT POUR	12,349	SQ. FT.
CLOSURE POURS	1,450	SQ. FT.
APPROACH SLABS	9,343	SQ. FT.
TOTAL	43,072	SQ. FT.

PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-  
 SHEET 3 OF 3



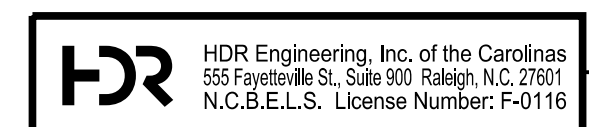
10/18/2021

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE BILL OF MATERIALS

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

SHEET NO. 303-38  
 TOTAL SHEETS 61



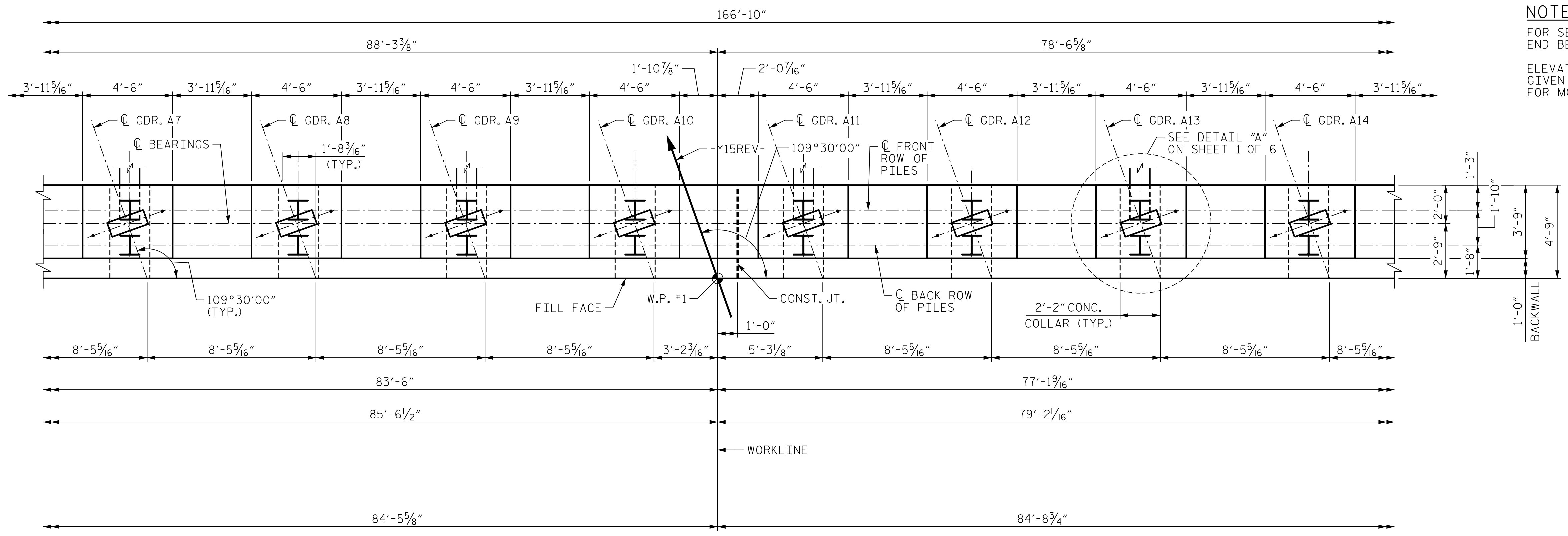
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DES BY: M. NEIHEISEL DATE: 03/19  
 DES CHK: S. NIFONG DATE: 03/19  
 DWG BY: B. PETERSON DATE: 03/19  
 CHK BY: S. NIFONG DATE: 05/19

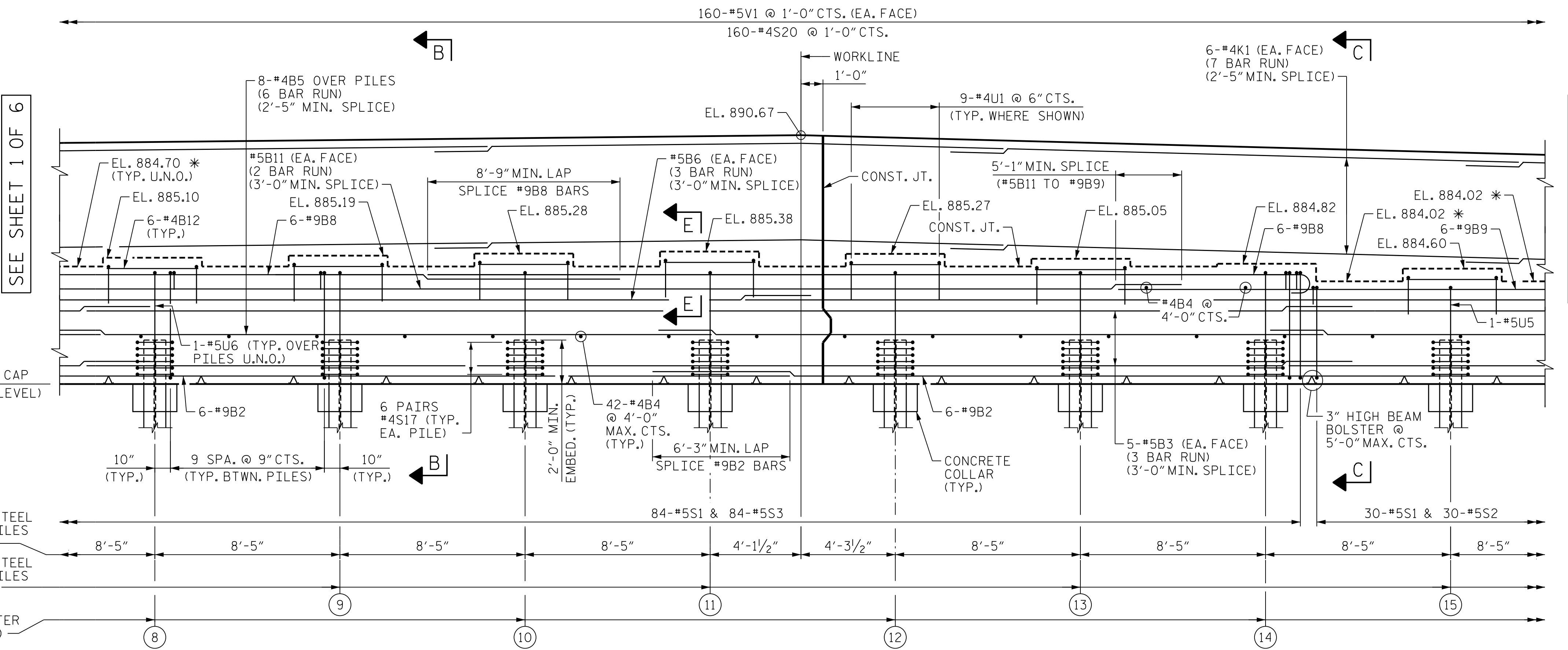




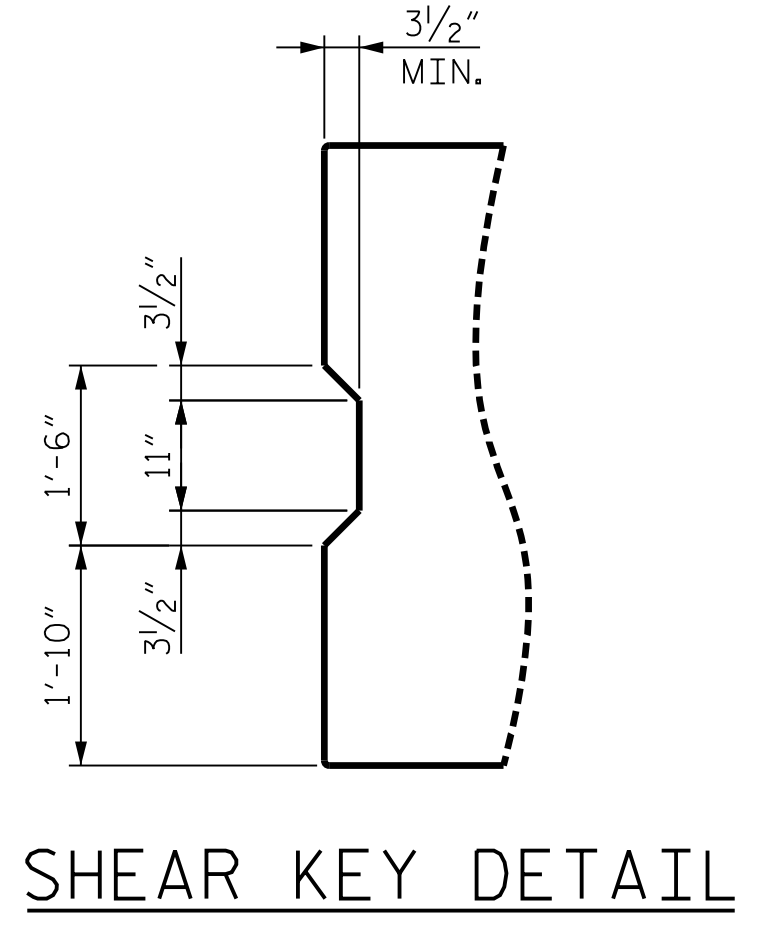


PLAN

**NOTES**  
 FOR SECTIONS B-B, C-C AND E-E, SEE "SUBSTRUCTURE END BENT 1 SECTIONS AND DETAILS" SHEET 5 OF 6.  
 ELEVATIONS MARKED WITH AN ASTERISK (\*) ARE GIVEN AT THE FRONT OF THE CAP. SEE SECTION A-A FOR MORE INFORMATION.



ELEVATION



SHEAR KEY DETAIL

PROJECT NO. U-2579AB  
FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-  
 SHEET 2 OF 6



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE  
 END BENT 1**

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 USER: PPETERSO DATE: 10/14/2021 TIME: 3:50:17 PM  
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DES BY: S. NIFONG	DATE: 02/19	DWG BY: B. PETERSON	DATE: 02/19
DES CHK: M. NEIHEISEL	DATE: 02/19	CHK BY: M. NEIHEISEL	DATE: 05/19

**HDR** HDR Engineering, Inc. of the Carolinas  
 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601  
 N.C.B.E.L.S. License Number: F-0116

10/18/2021  
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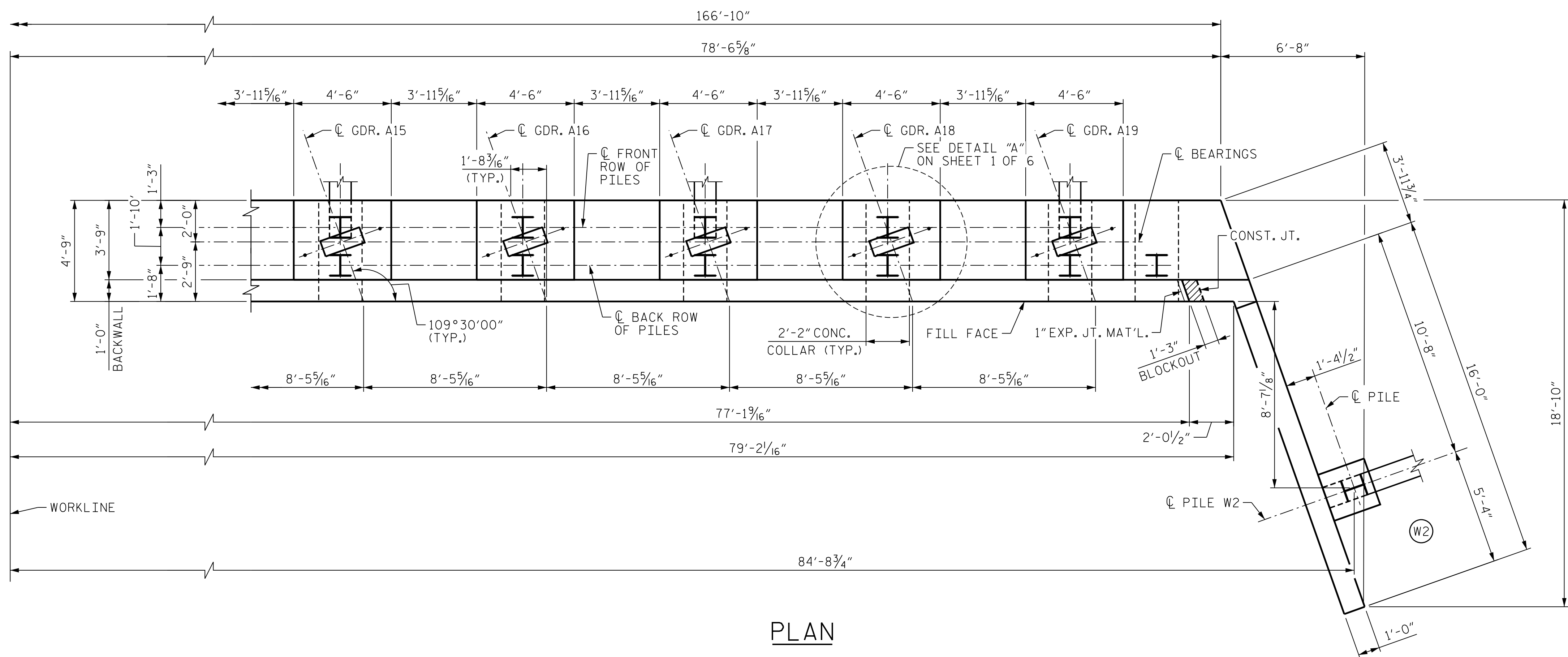
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SHEET NO. 503-40  
 TOTAL SHEETS 61





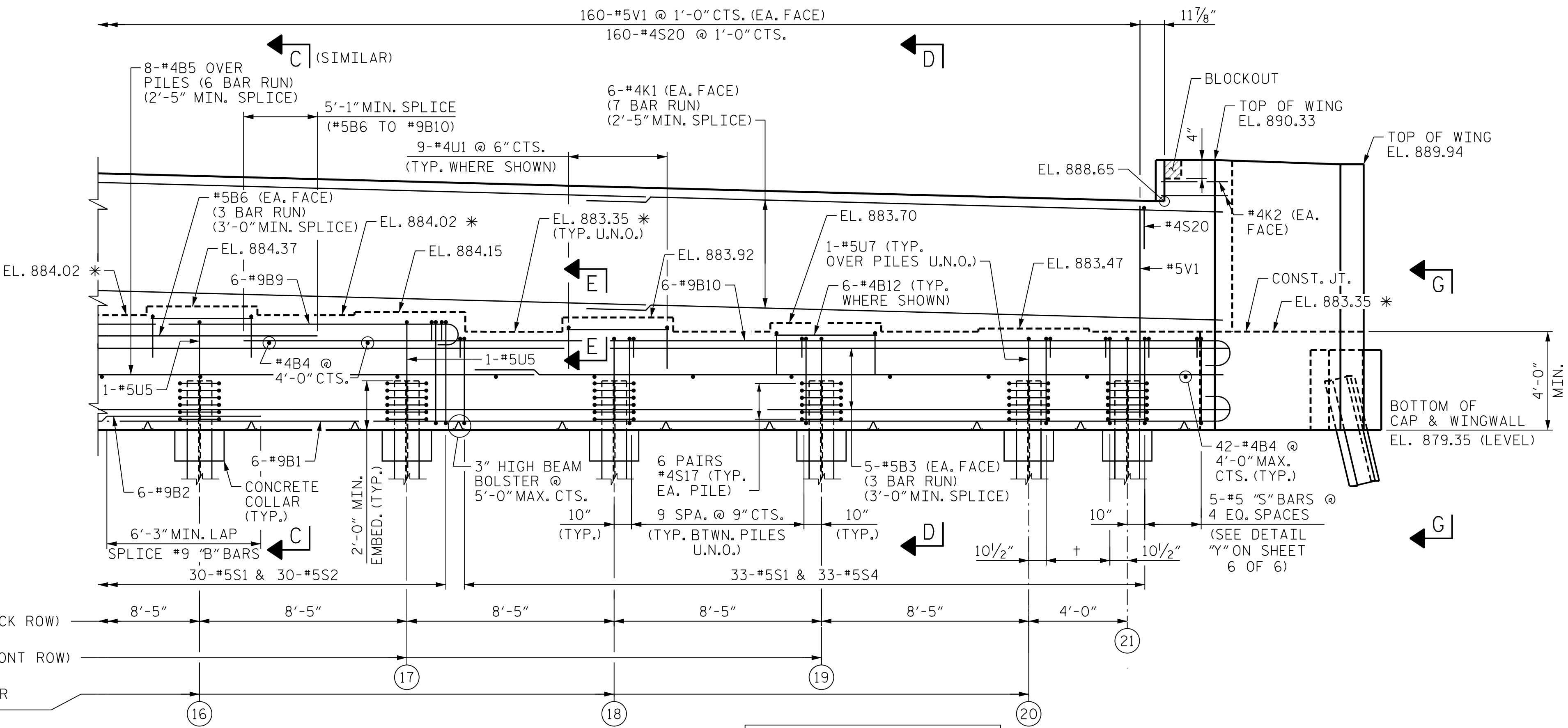
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 DATE: 10/14/2021...  
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PLAN

**NOTES**  
 FOR SECTIONS C-C, D-D AND E-E, SEE "SUBSTRUCTURE END BENT 1 SECTIONS AND DETAILS" SHEET 5 OF 6.  
 ELEVATIONS MARKED WITH AN ASTERISK (\*) ARE GIVEN AT THE FRONT OF THE CAP. SEE SECTION A-A FOR MORE INFORMATION.

SEE SHEET 2 OF 6



ELEVATION

+ = 4 - #5 "S" BARS @ 9" CTS.

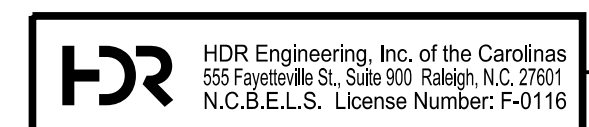
PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-  
 SHEET 3 OF 6



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

## SUBSTRUCTURE END BENT 1

DES BY: S. NIFONG	DATE: 02/19	DWG BY: B. PETERSON	DATE: 02/19
DES CHK: M. NEIHEISEL	DATE: 02/19	CHK BY: M. NEIHEISEL	DATE: 05/19

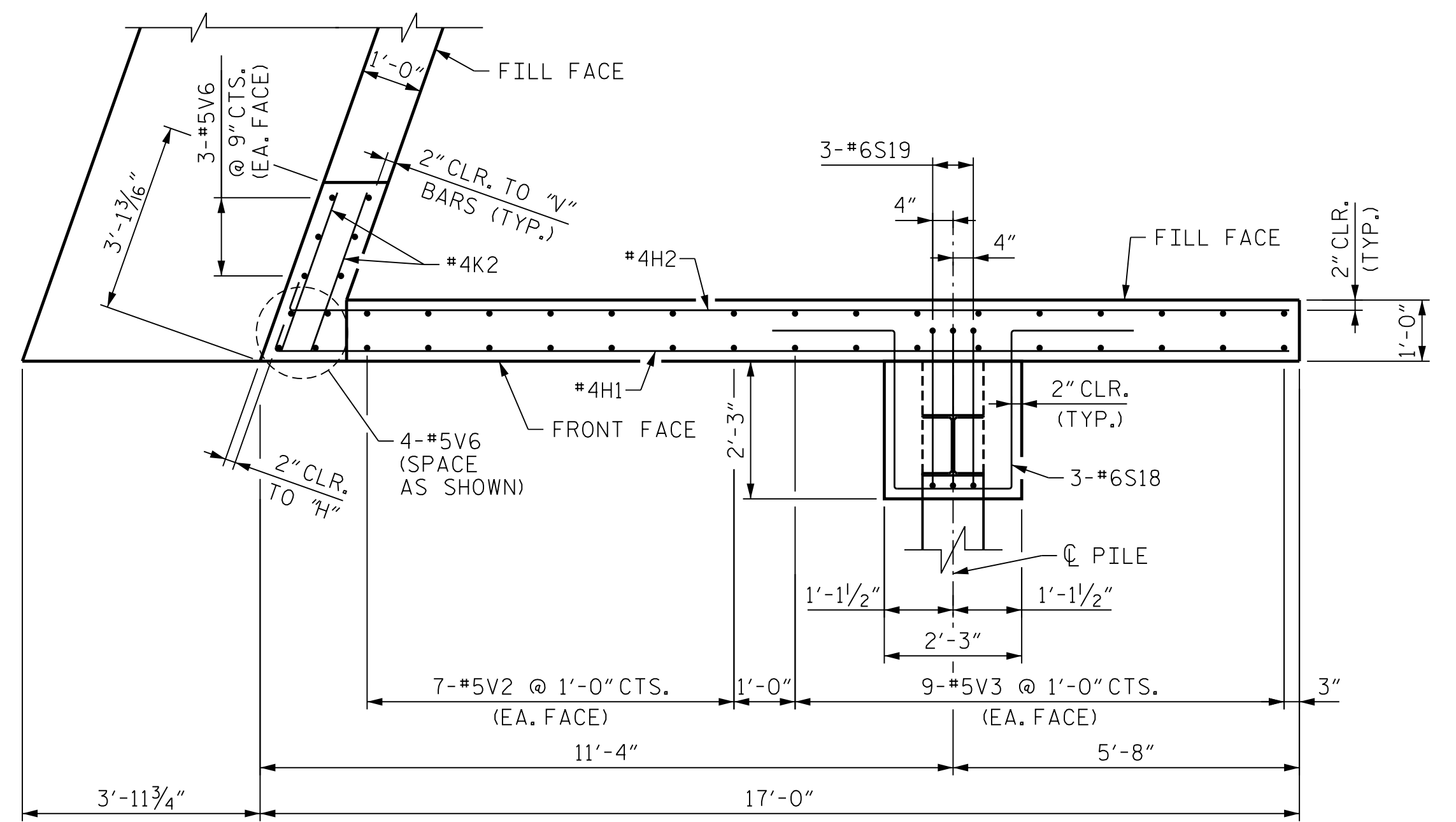


10/18/2021  
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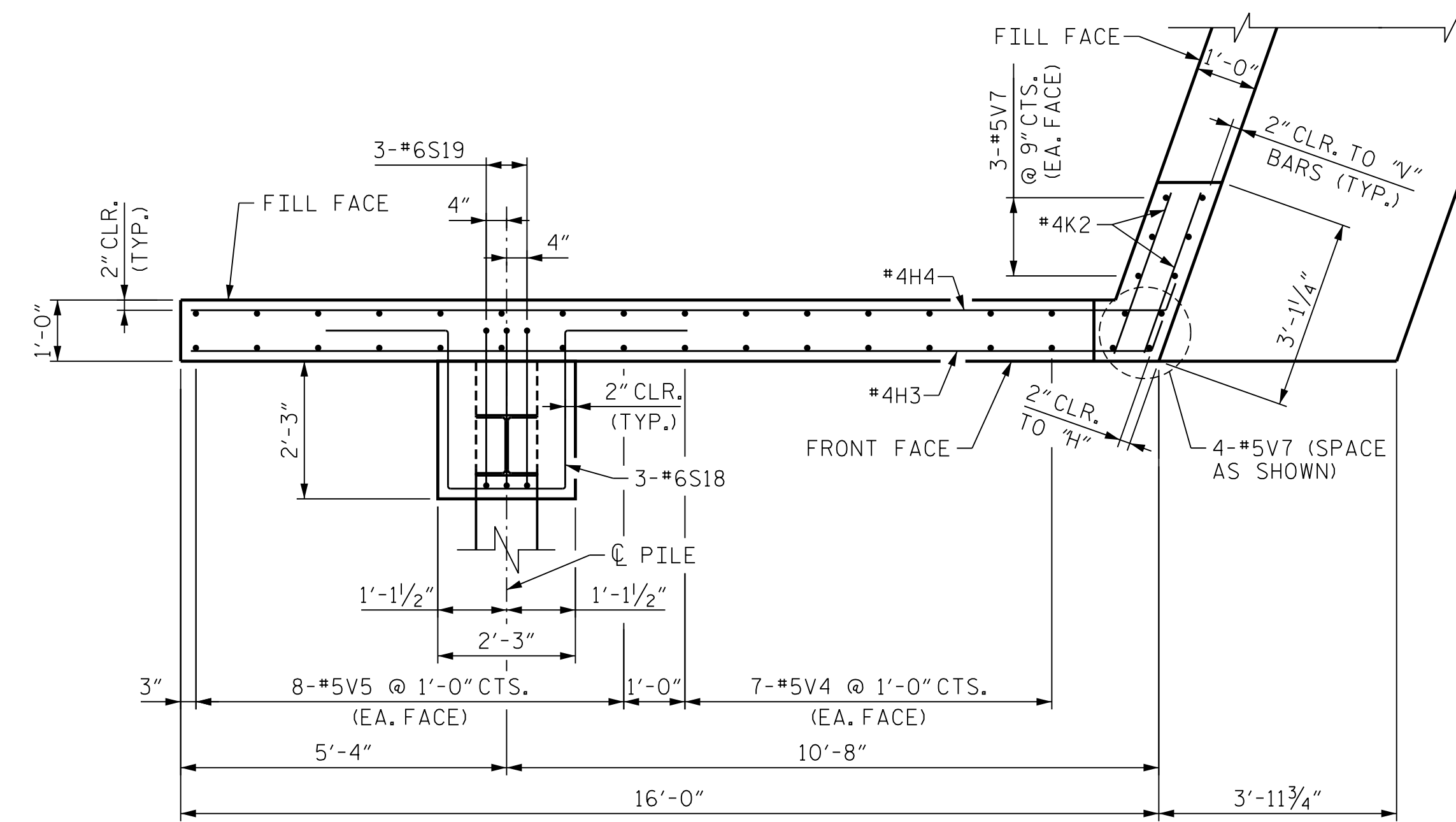
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SHEET NO. 503-41
TOTAL SHEETS 61

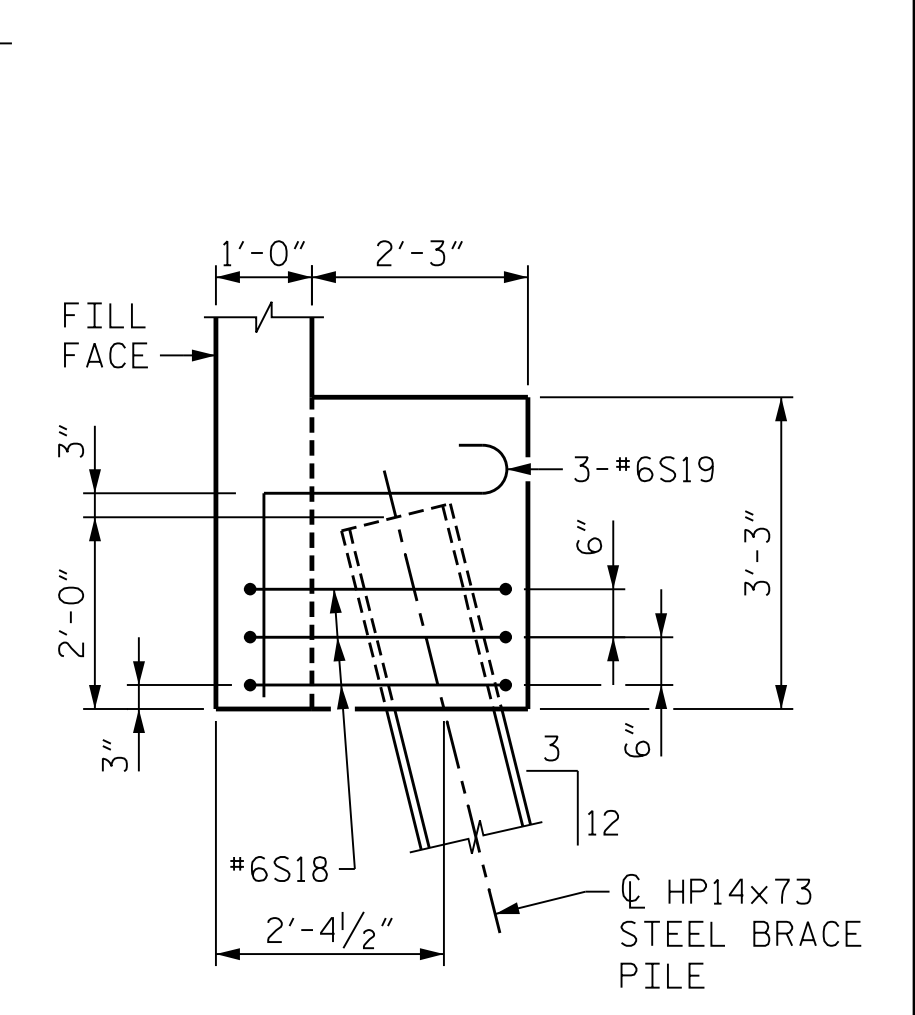




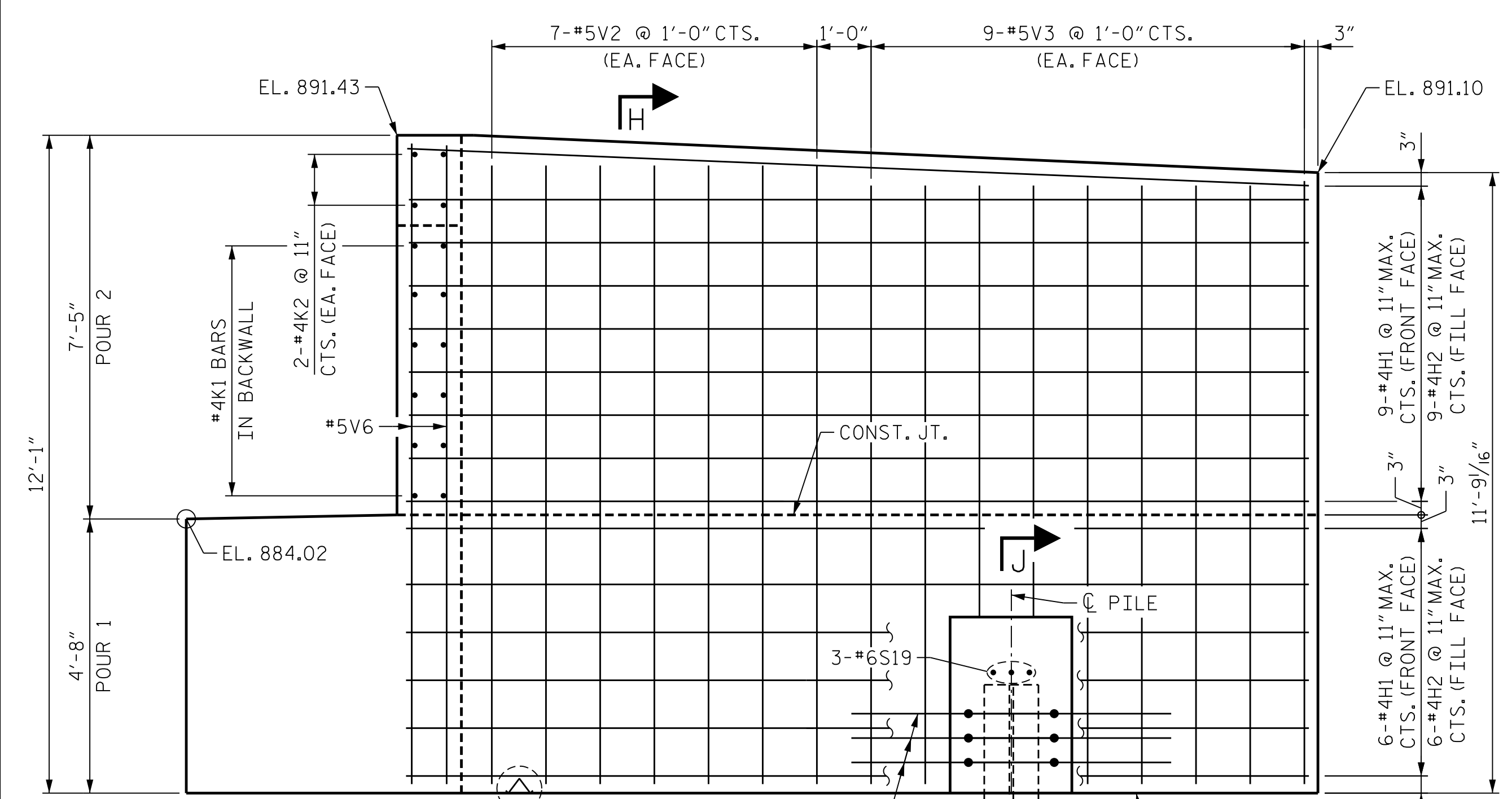
PLAN - WINGWALL "W1"



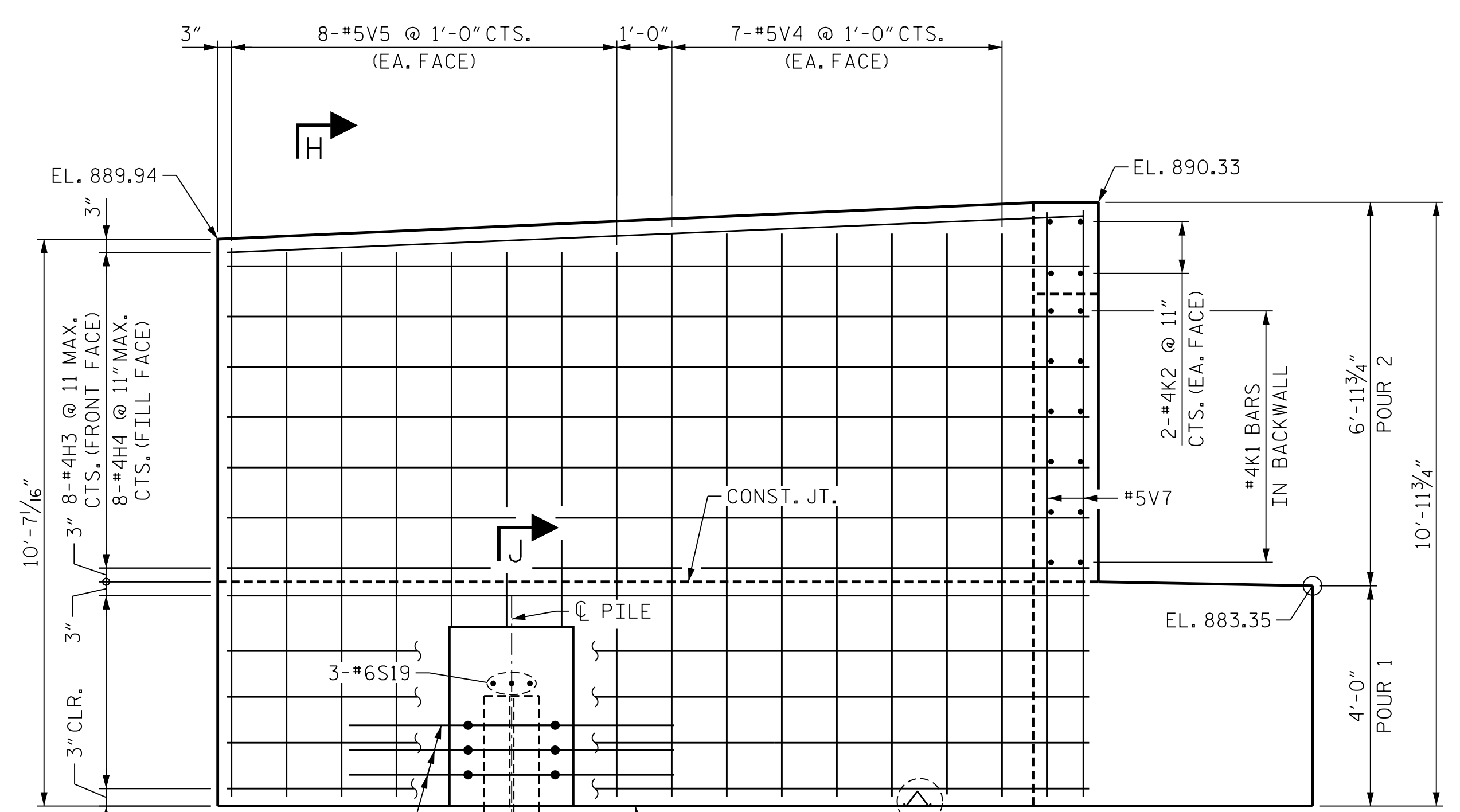
PLAN - WINGWALL "W2"



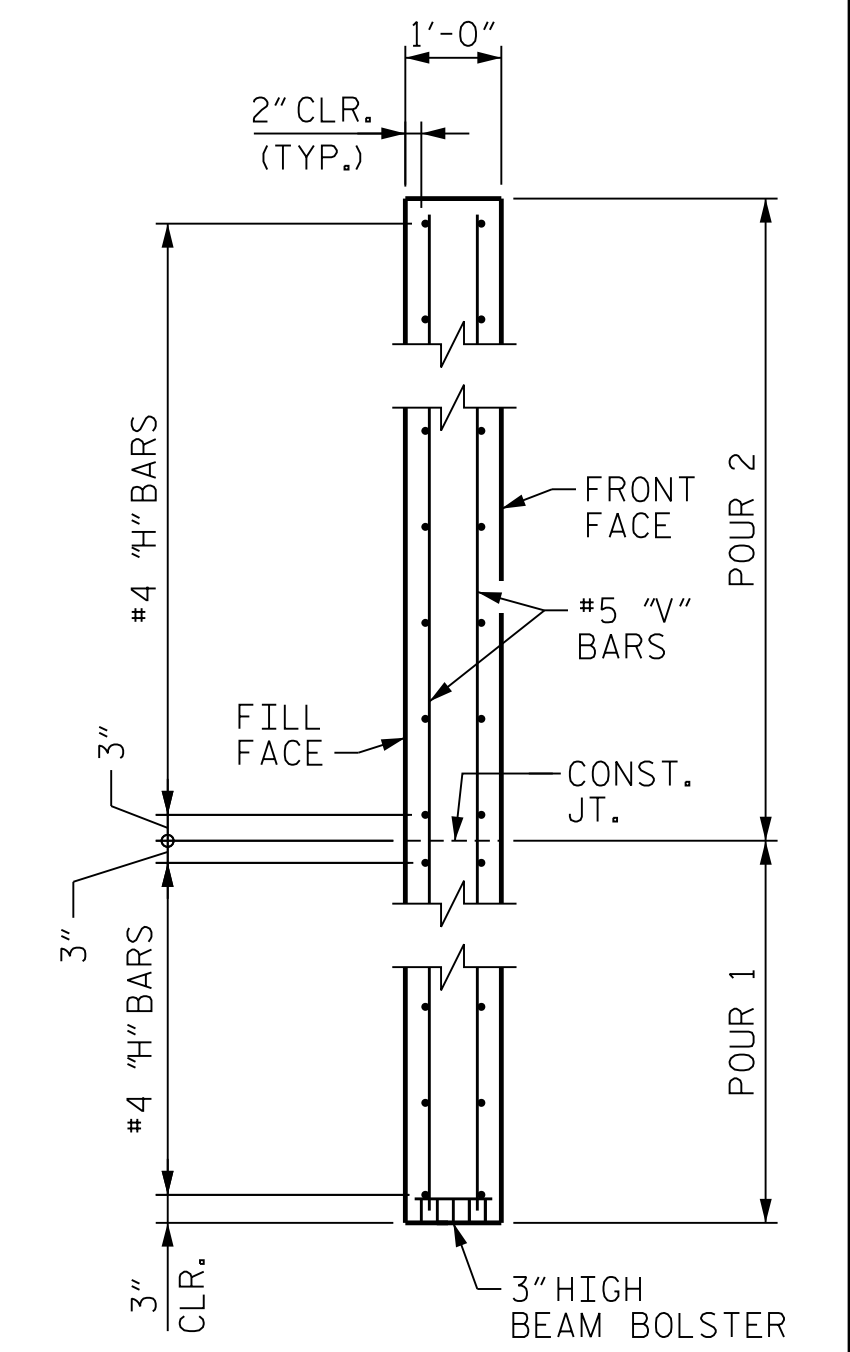
SECTION J-J



ELEVATION - WINGWALL "W1"



ELEVATION - WINGWALL "W2"



SECTION H-H

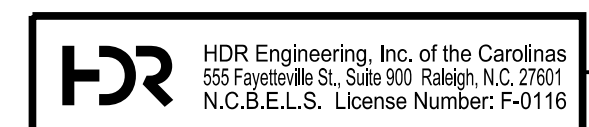
PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-  
 SHEET 4 OF 6



10/18/2021

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DES BY: S. NIFONG	DATE: 02/19	DWG BY: B. PETERSON	DATE: 03/19
DES CHK: M. NEIHEISEL	DATE: 03/19	CHK BY: M. NEIHEISEL	DATE: 05/19



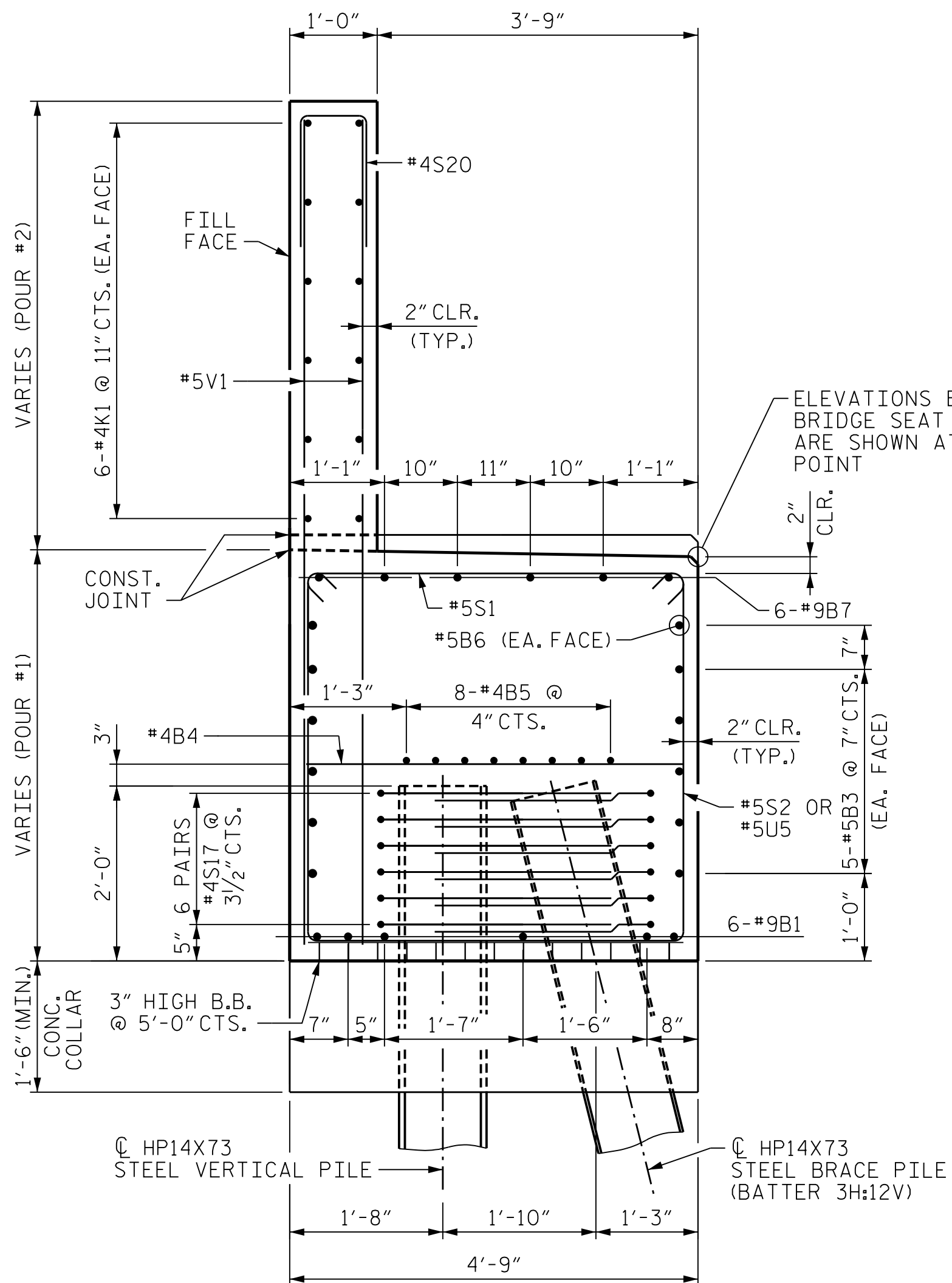
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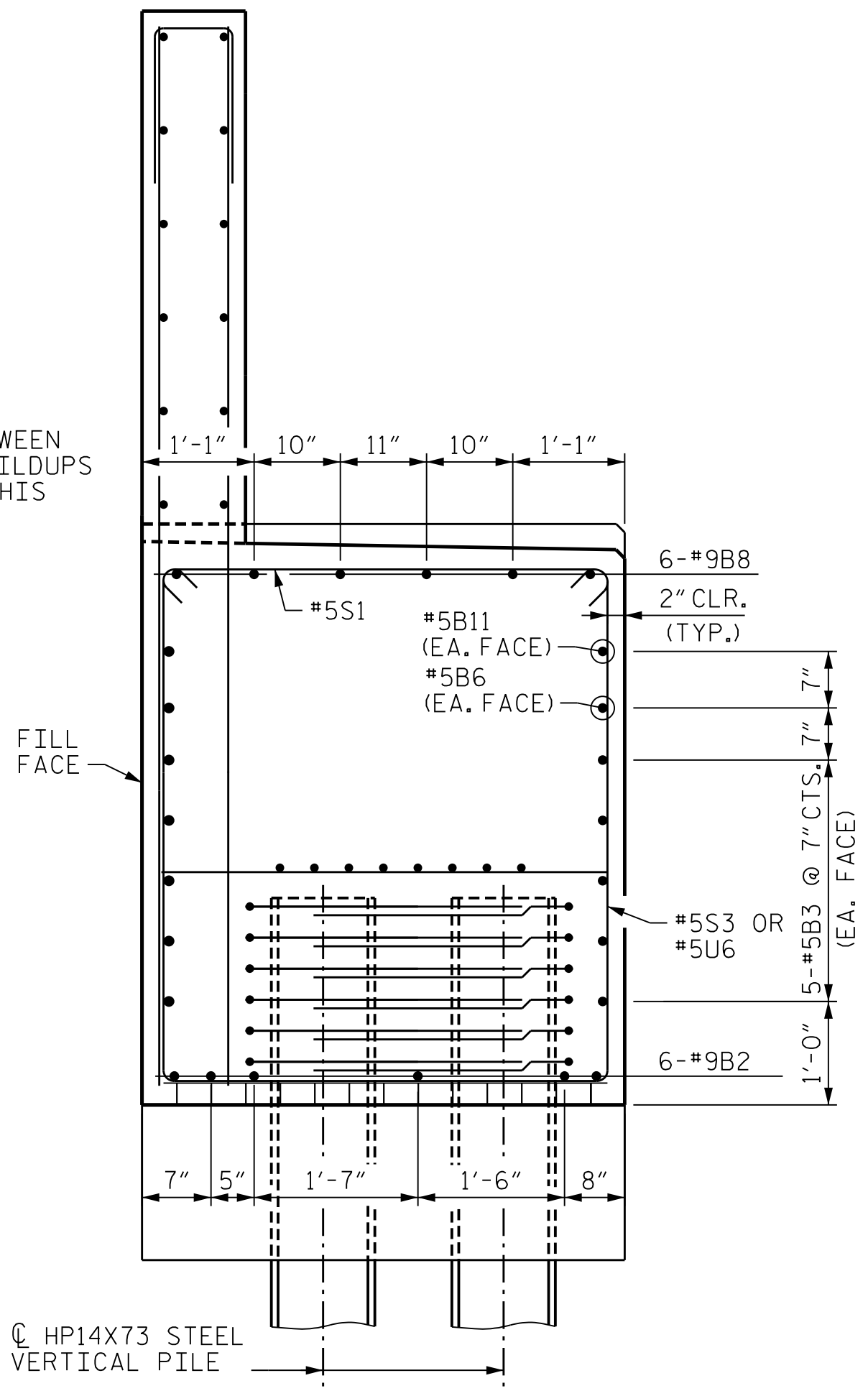
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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

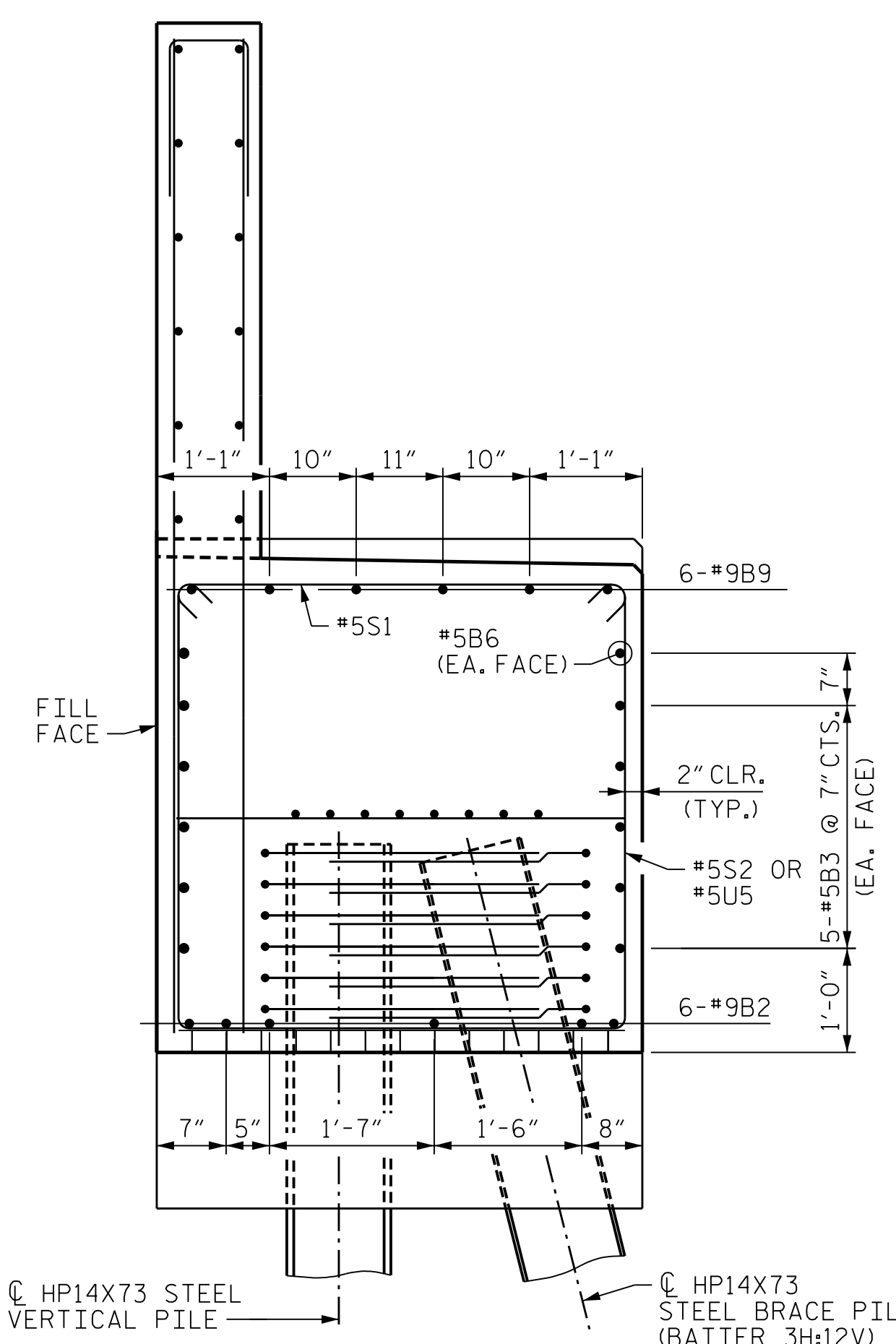
**SUBSTRUCTURE  
 END BENT 1  
 WINGWALLS**



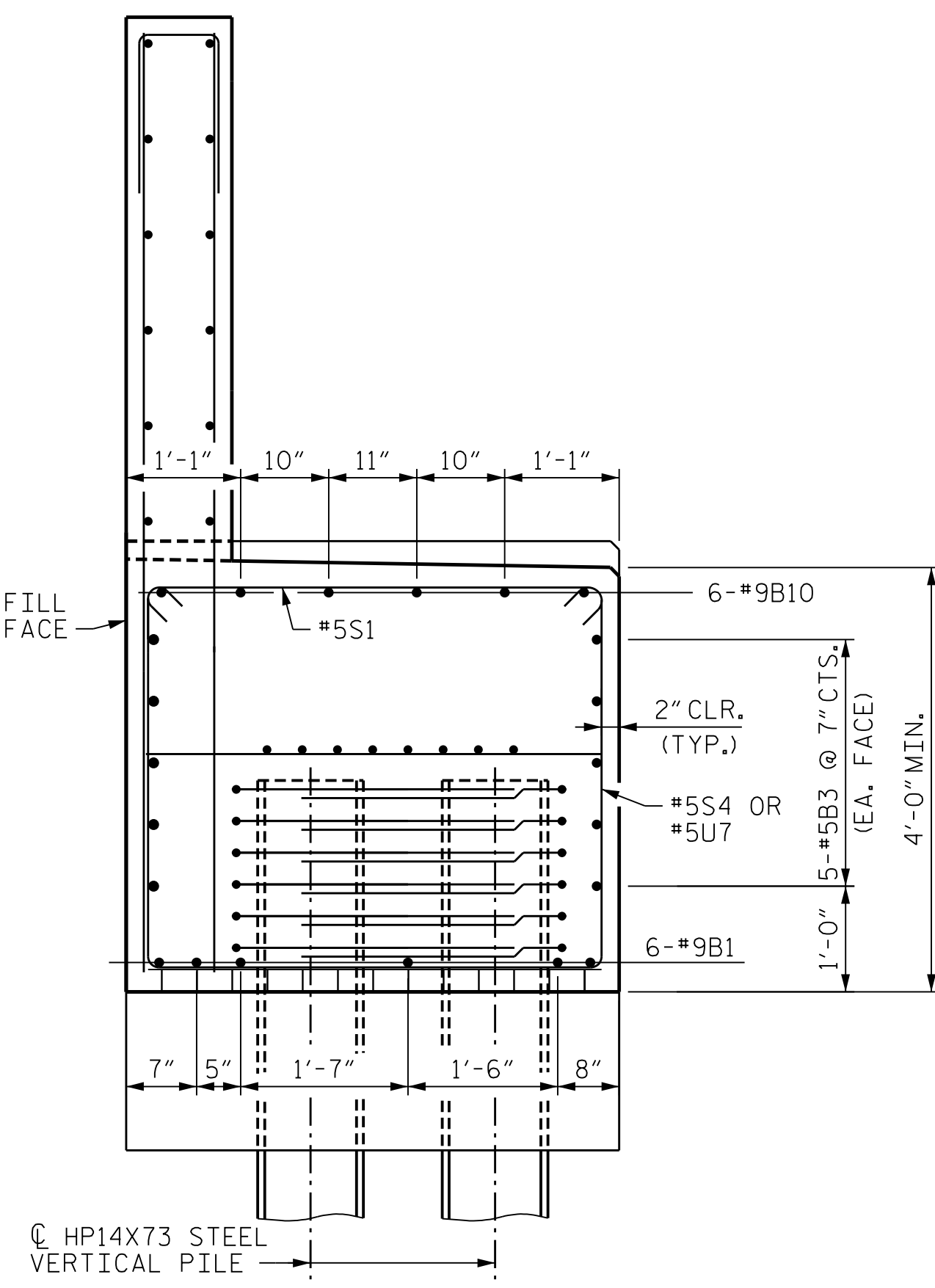
SECTION A-A



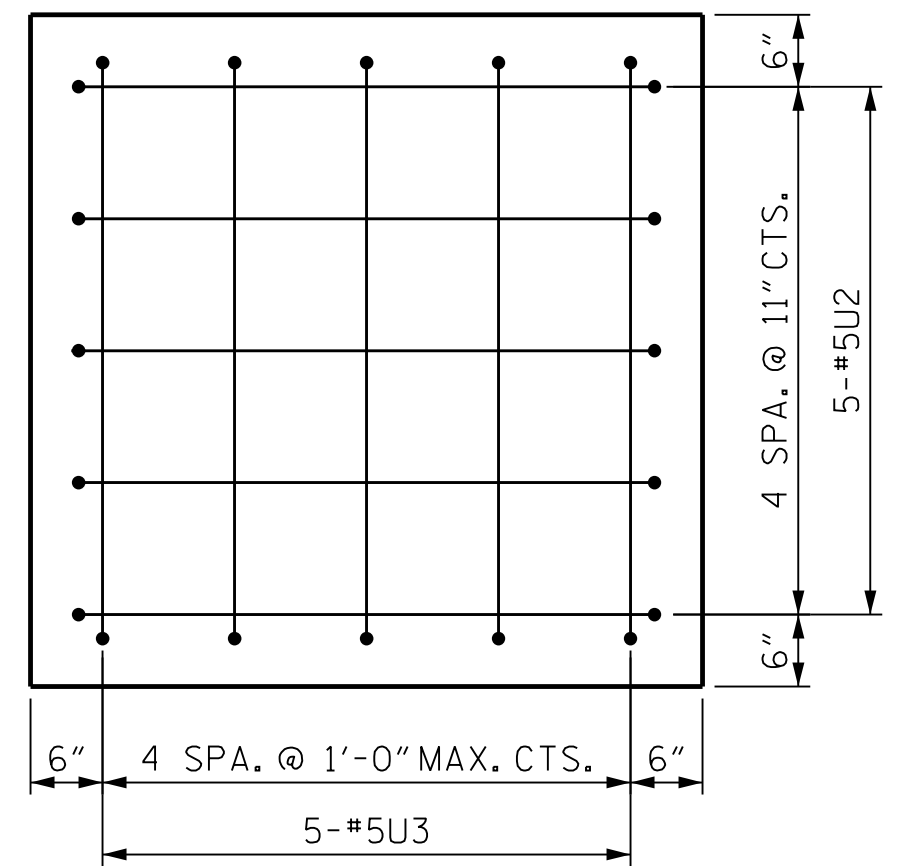
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(SEE SECTION A-A FOR ADDITIONAL INFORMATION NOT SHOWN HERE)



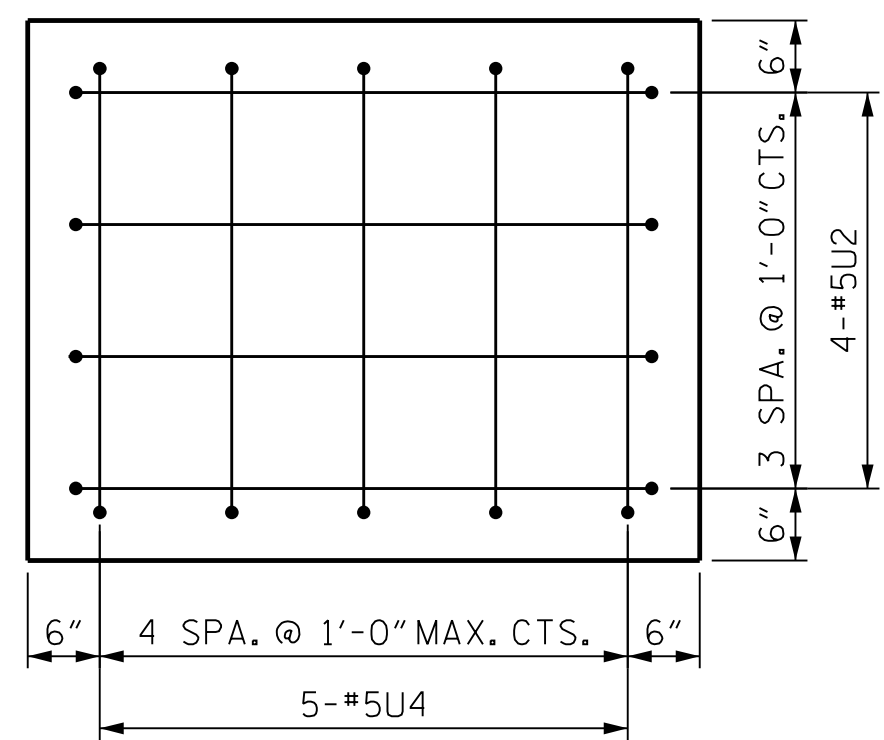
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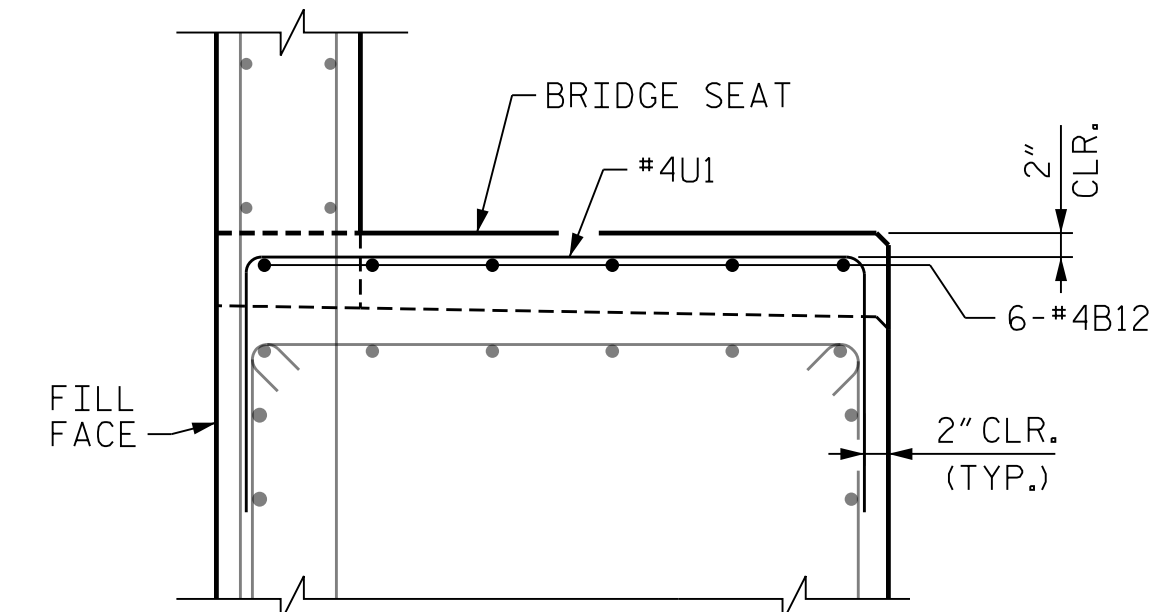
SECTION D-D  
(SEE SECTION A-A FOR ADDITIONAL INFORMATION NOT SHOWN HERE)



VIEW F-F



VIEW G-G



SECTION E-E  
(TYPICAL WHERE INDICATED AT BRIDGE SEATS)

PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-  
 SHEET 5 OF 6



10/18/2021

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT 1  
 SECTION AND DETAILS

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
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2	--	--	4	--	--

SHEET NO. S03-43  
 TOTAL SHEETS 61

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DES BY: S. NIFONG	DATE: 02/19	DWG BY: B. PETERSON	DATE: 02/19
DES CHK: M. NEIHEISEL	DATE: 02/19	CHK BY: M. NEIHEISEL	DATE: 05/19

HDR Engineering, Inc. of the Carolinas  
 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601  
 N.C.B.E.L.S. License Number: F-0116

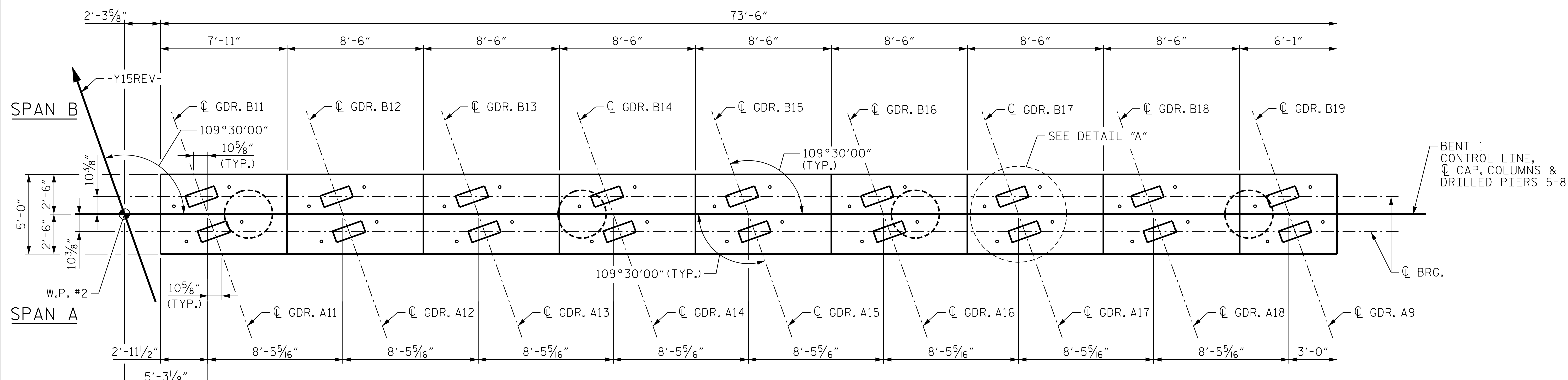
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**NOTES**

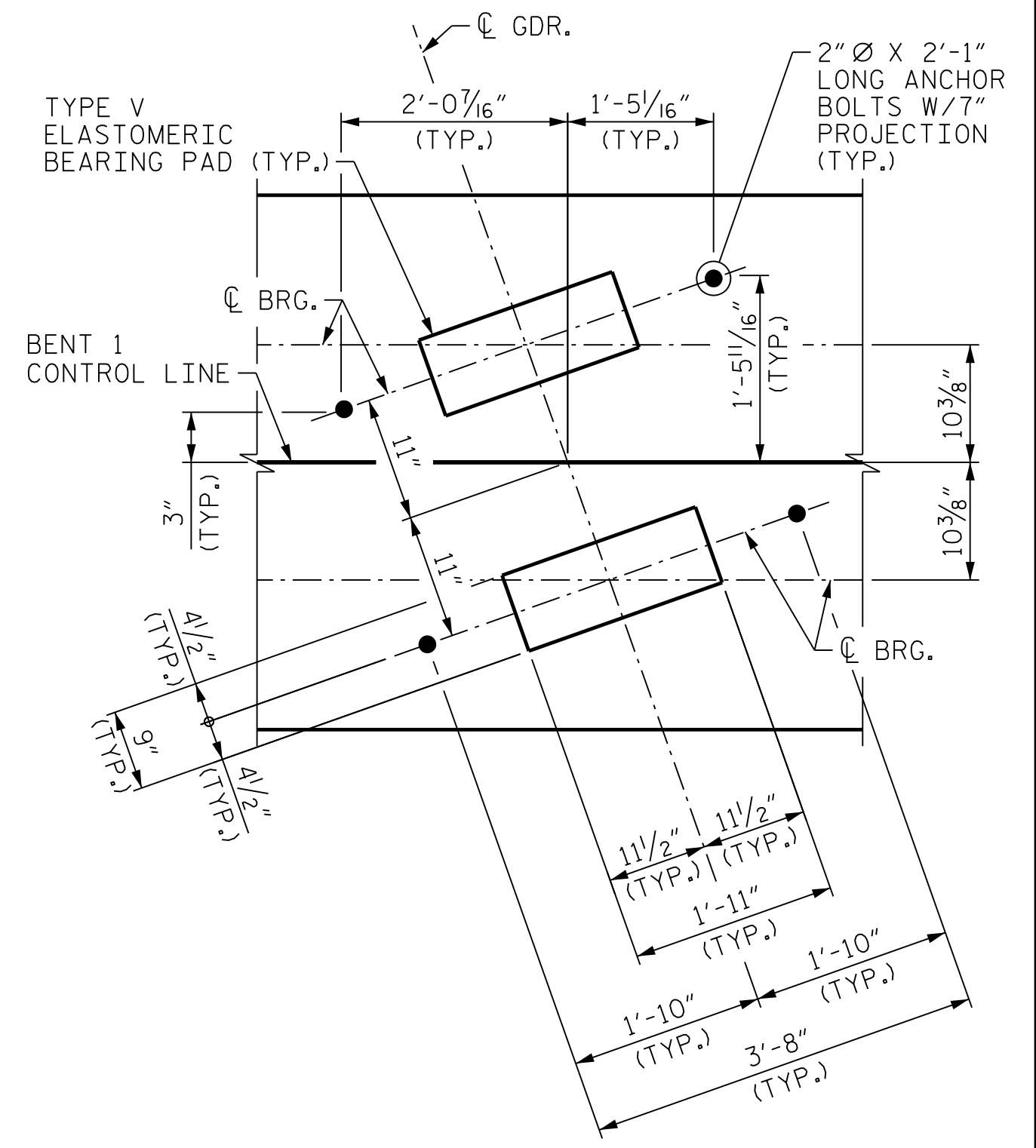
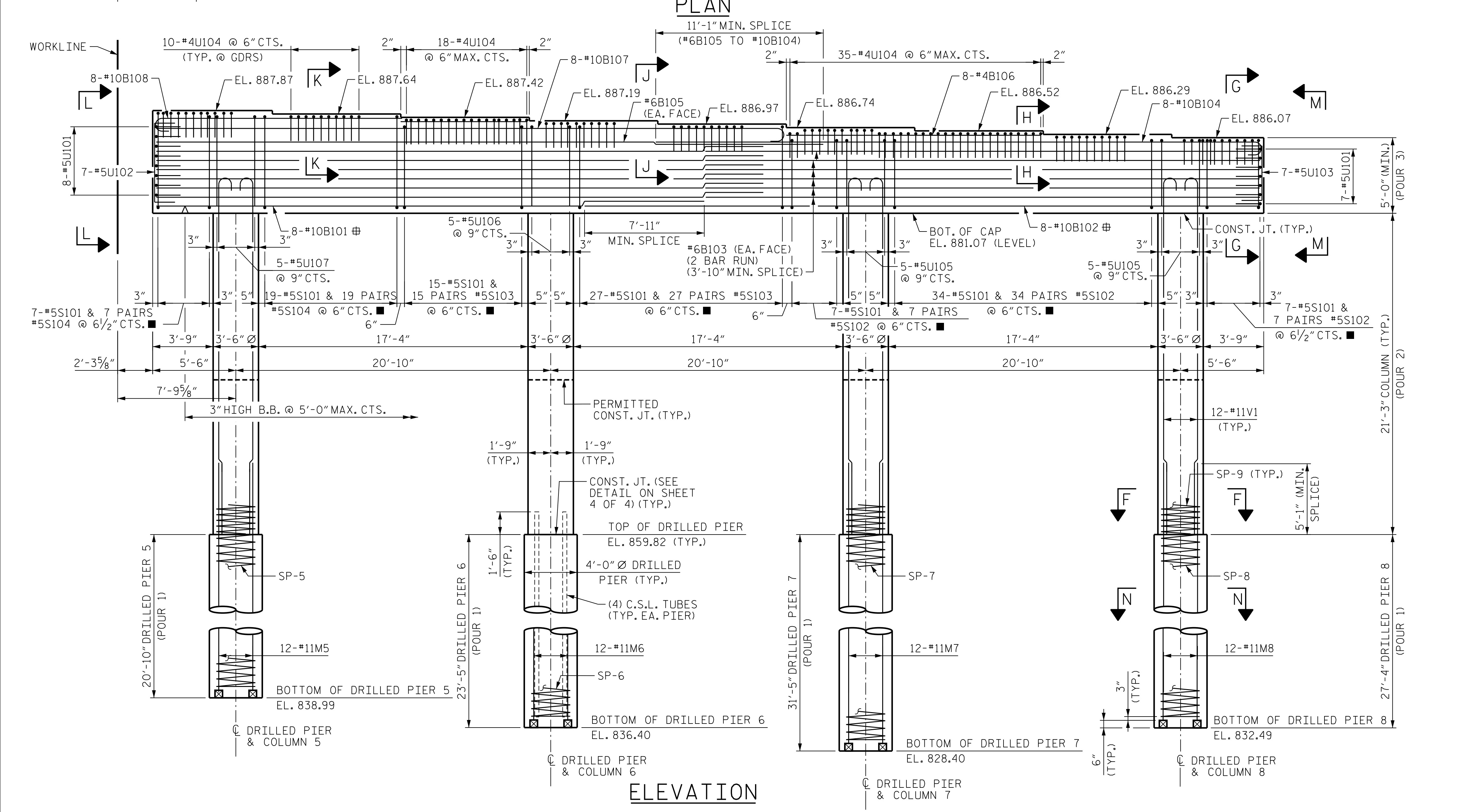
STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR ANCHOR BOLTS.

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

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

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

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



PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 47+28.33 -Y15REV-

SHEET 2 OF 4



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
<b>SUBSTRUCTURE BENT 1B PLAN AND ELEVATION</b>					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1	--	--	3	--	--
2	--	--	4	--	--
					SHEET NO. 503-46 TOTAL SHEETS 61

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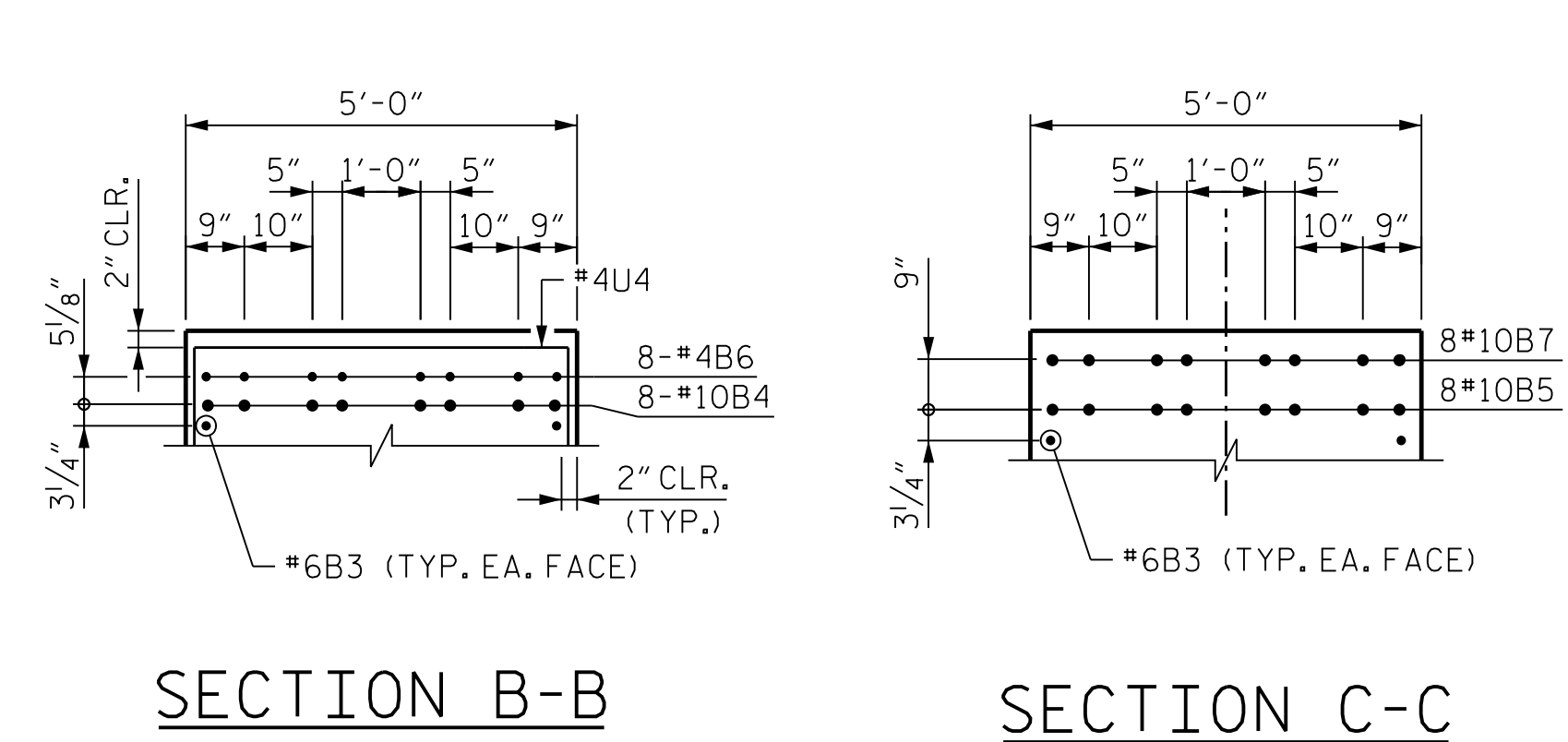
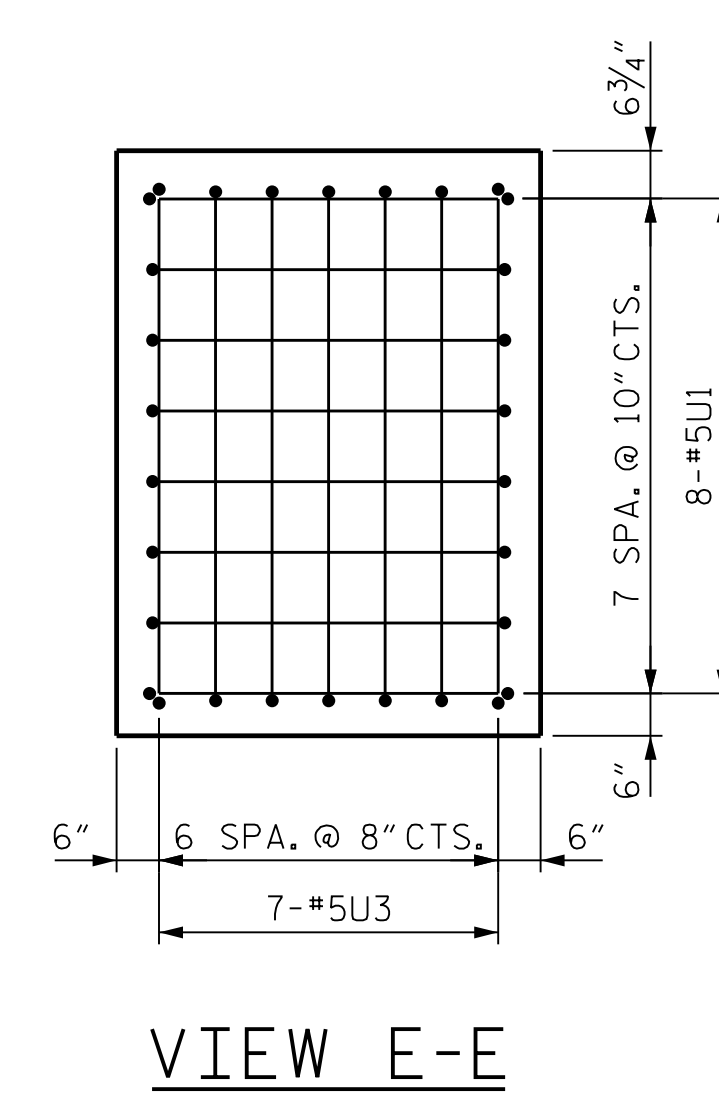
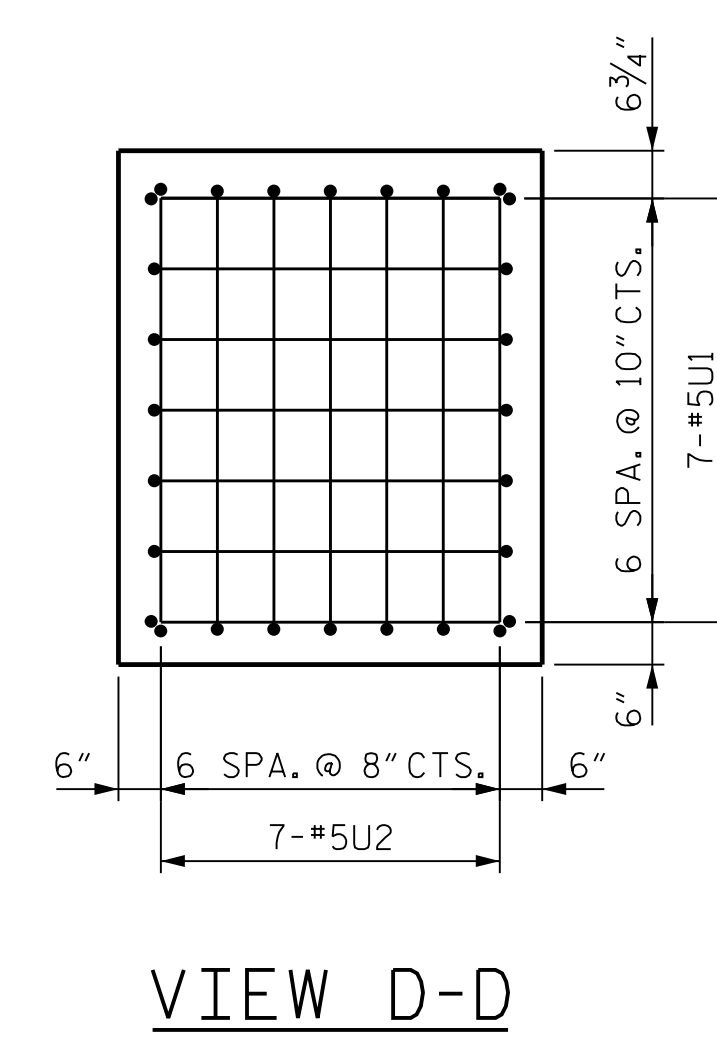
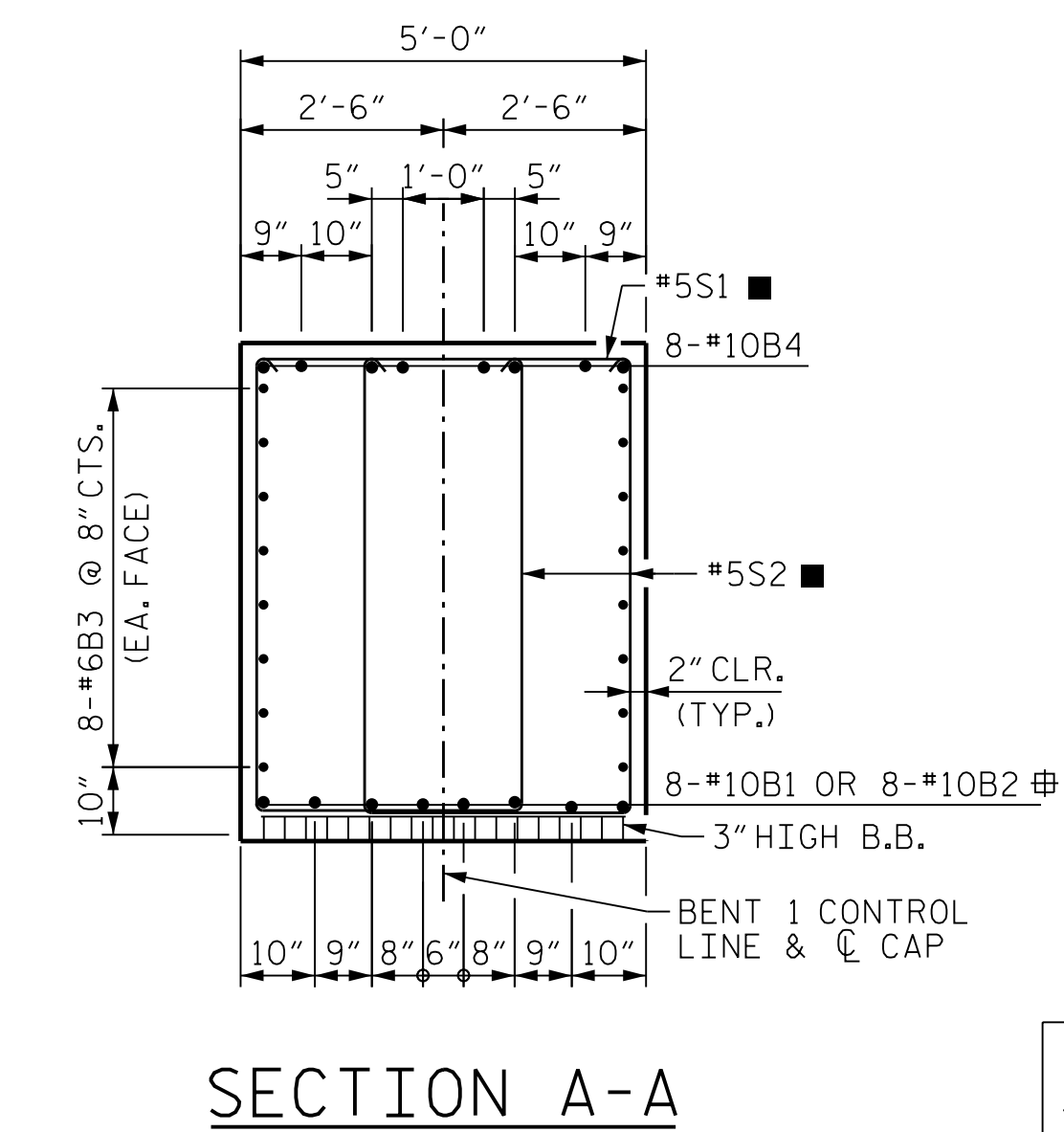
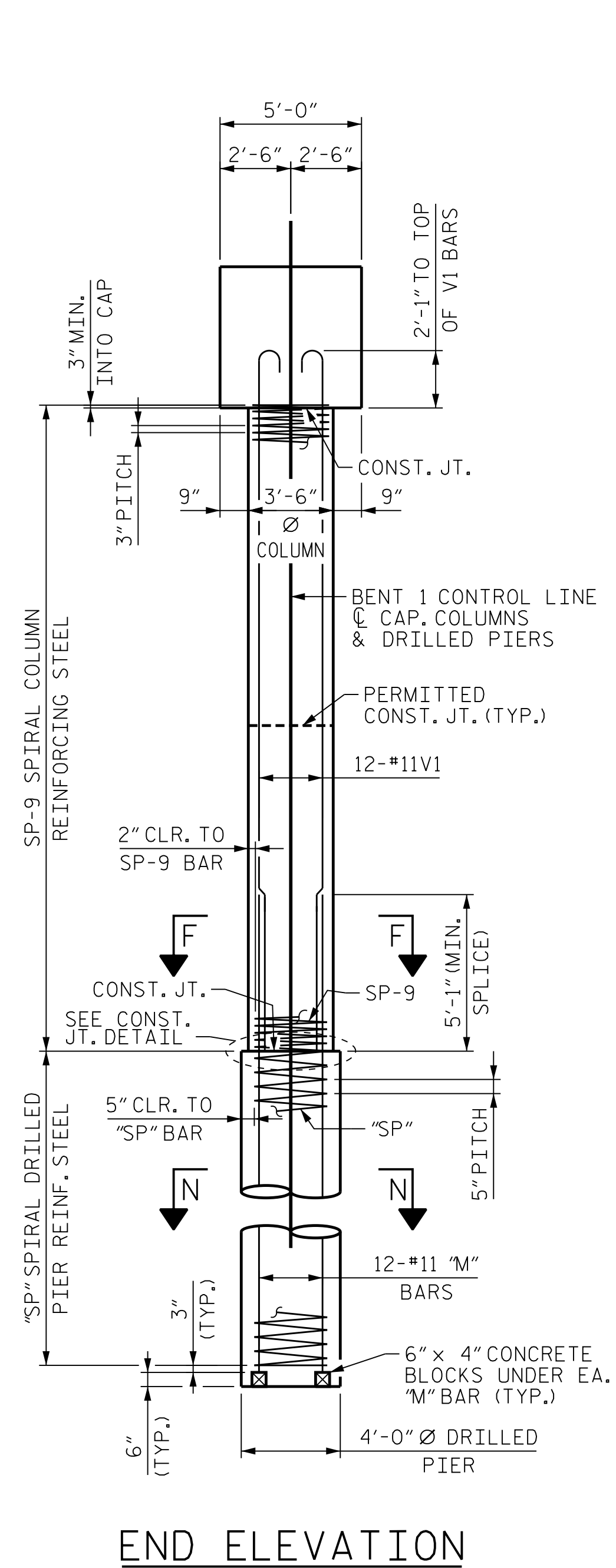
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 DES CHK: J. ROBERTS DATE: 03/19  
 DWG BY: M. SELLS DATE: 03/19  
 CHK BY: S. NIFONG DATE: 03/19



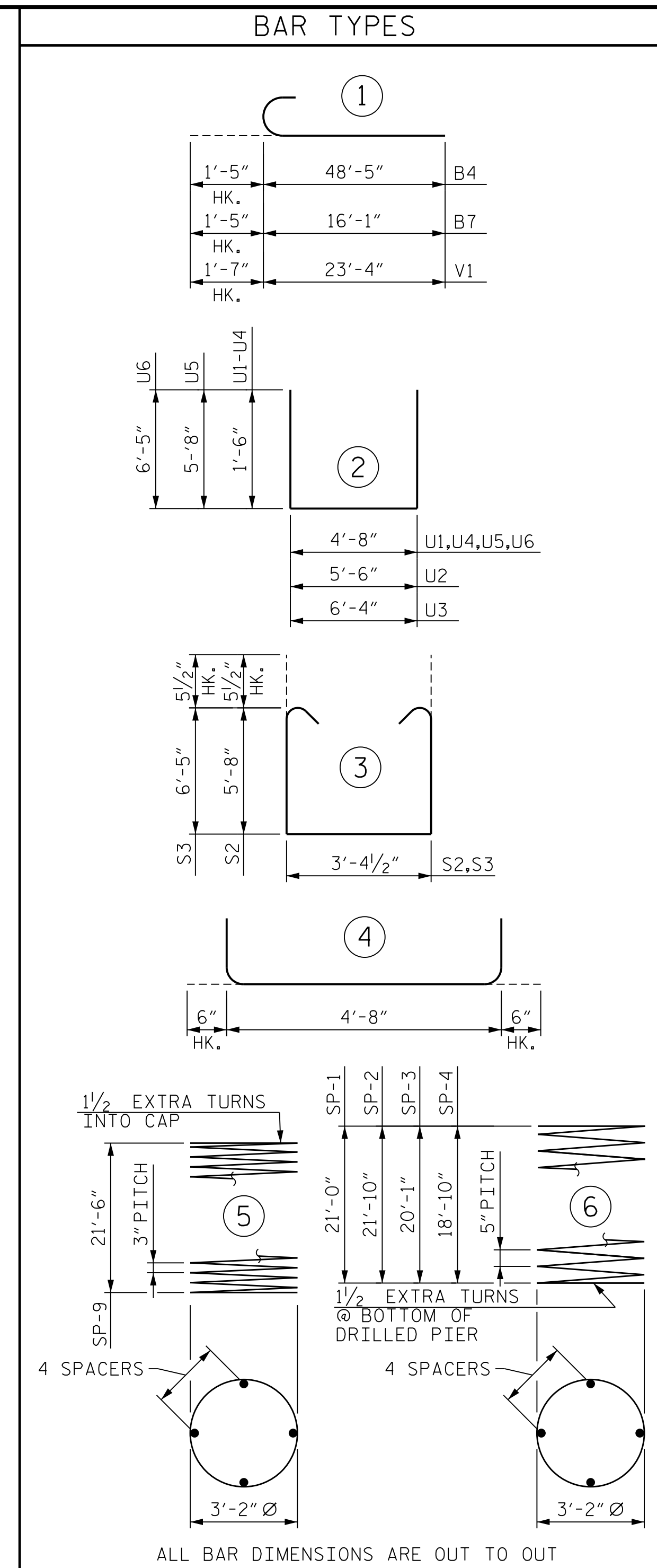
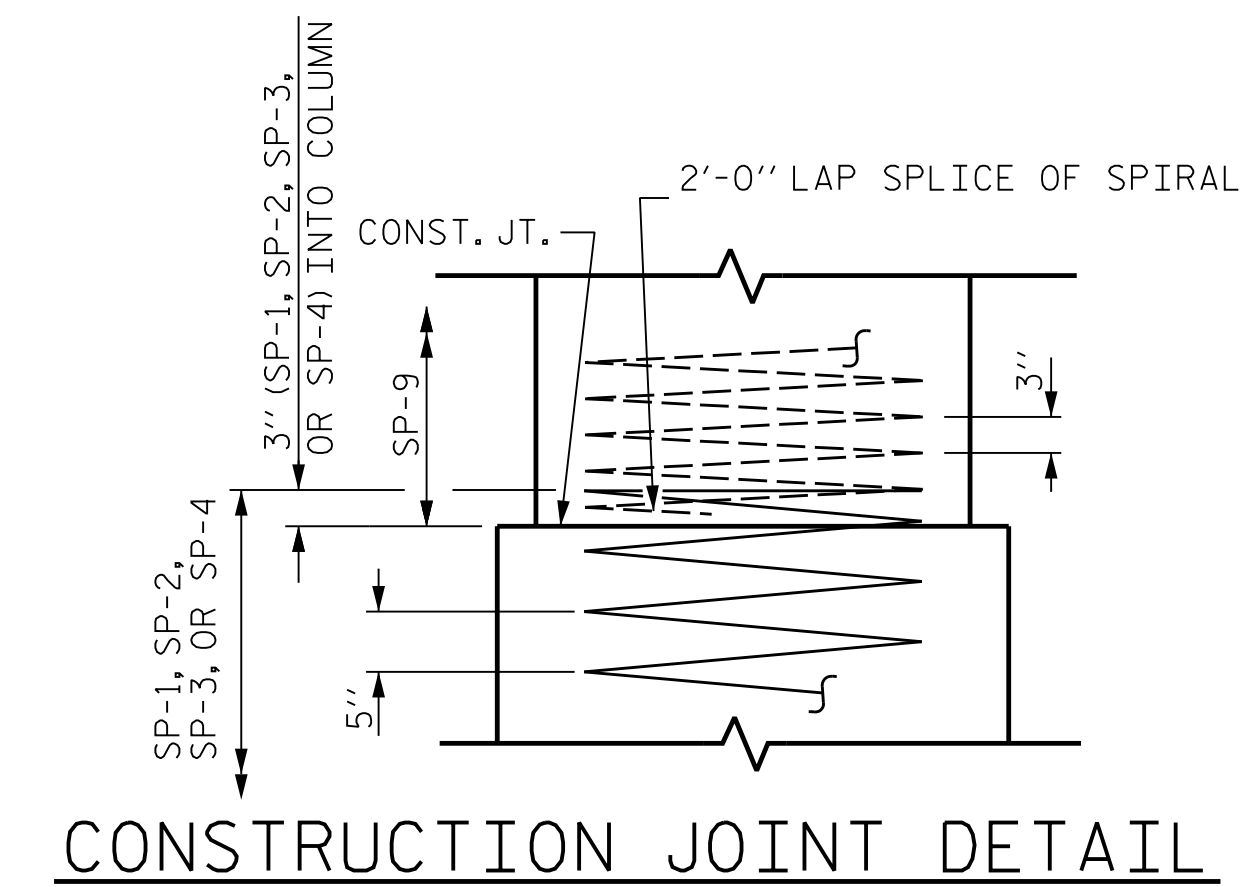
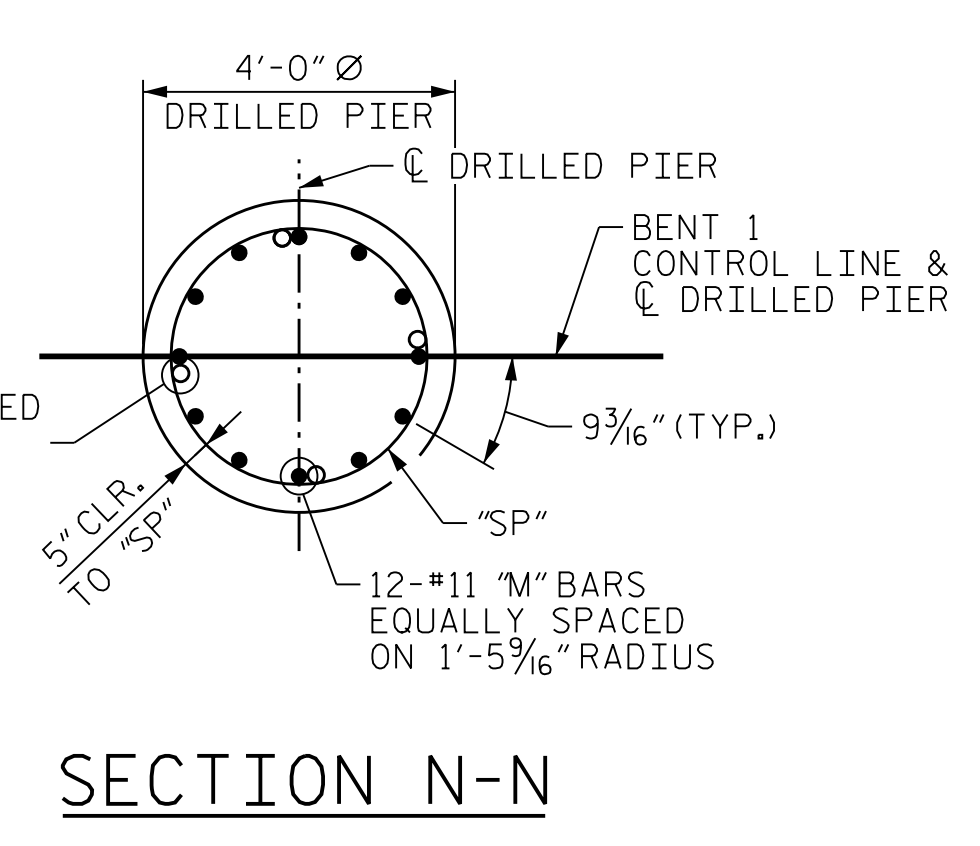
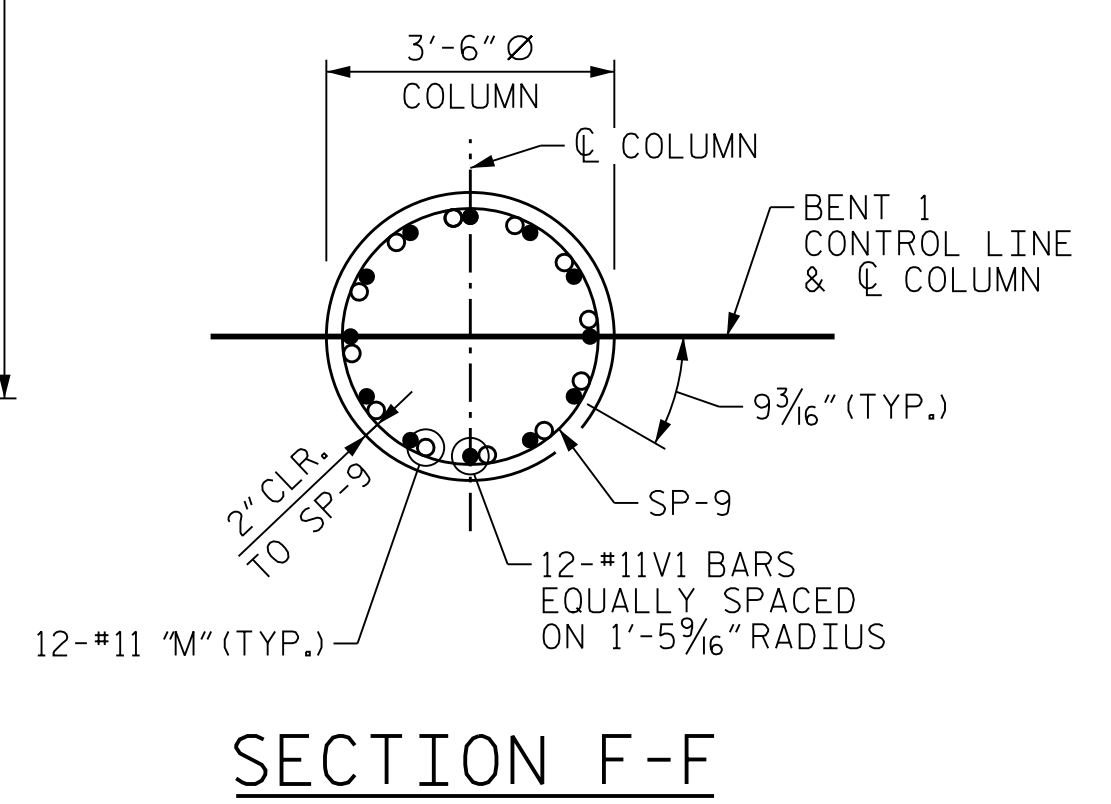
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UNLESS ALL SIGNATURES COMPLETED

10/18/2021

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 FILE: ...SUBSTRUCTURE BENT  
 PENTABLE: NCDOT STRUCTURES DEFAULT PEN.tbl  
 TIME: 3:51:34 PM



■ = INVERT ALTERNATE STIRRUPS  
 ⊕ = STAGGER LOCATIONS OF #10B1 AND #10B2 BAR SPLICES



BILL OF MATERIAL					
BENT 1A					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	8	#10	STR	38'-5"	1323
B2	8	#10	STR	51'-2"	1762
B3	32	#6	STR	42'-9"	2055
B4	8	#10	1	49'-10"	1716
B5	8	#10	STR	44'-6"	1532
B6	8	#4	STR	34'-0"	182
B7	8	#10	1	17'-6"	603
M1	12	#11	STR	29'-1"	1855
M2	12	#11	STR	29'-11"	1908
M3	12	#11	STR	28'-2"	1796
M4	12	#11	STR	26'-11"	1717
S1	93	#5	4	5'-8"	550
S2	150	#5	3	15'-8"	2452
S3	36	#5	3	17'-2"	645
U1	15	#5	2	7'-8"	120
U2	7	#5	2	8'-6"	63
U3	7	#5	2	9'-4"	69
U4	129	#4	2	7'-8"	661
U5	15	#5	2	16'-0"	251
U6	5	#5	2	17'-6"	92
V1	48	#11	1	24'-11"	6355

REINFORCING STEEL LBS. 27,707

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
SP-1	1	**	6	508'-4"	531
SP-2	1	**	6	527'-11"	551
SP-3	1	**	6	486'-9"	508
SP-4	1	**	6	457'-5"	478
SP-9	4	*	5	859'-4"	2297

SPIRAL REINF. STEEL LBS. 4365

CLASS A CONCRETE		
POUR 2 (COLUMNS)	CU. YDS.	30.3
POUR 3 (CAP)	CU. YDS.	98.5

TOTAL CLASS A CONCRETE CU. YDS. 128.8

DRILLED PIER CONCRETE		
POUR 1 (DRILLED PIERS)	CU. YDS.	38.9

CSL TUBES LIN. FT. 359.0

\* THE SP-9 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.  
 \*\* THE SP-1, SP-2, SP-3 AND SP-4 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-

SHEET 3 OF 4



Domini A. Coletti 10/18/2021

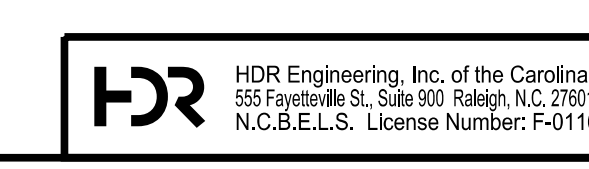
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

## SUBSTRUCTURE BENT 1A SECTION AND DETAILS

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
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2	--	--	4	--	--

SHEET NO. S03-47  
 TOTAL SHEETS 61

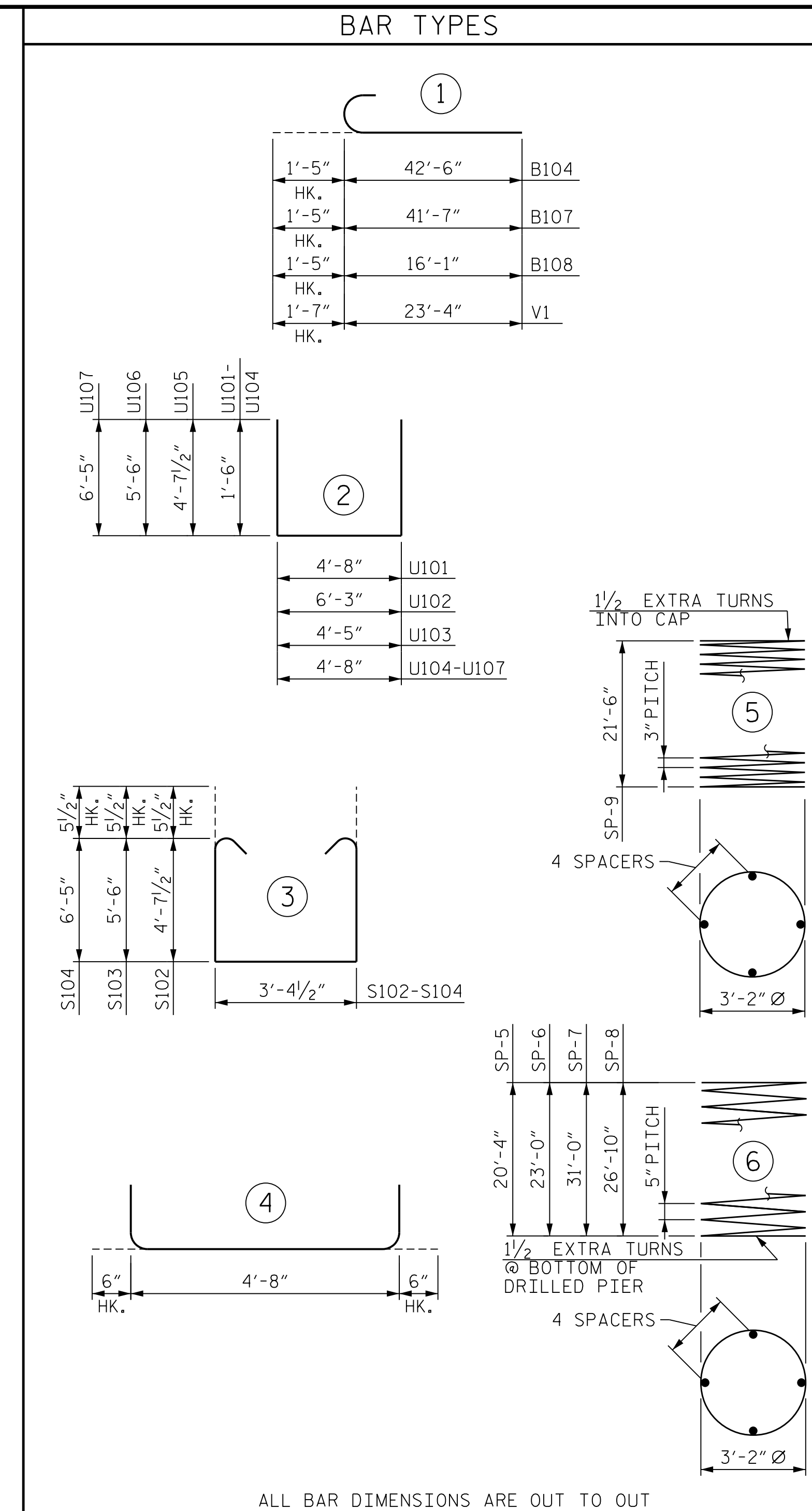
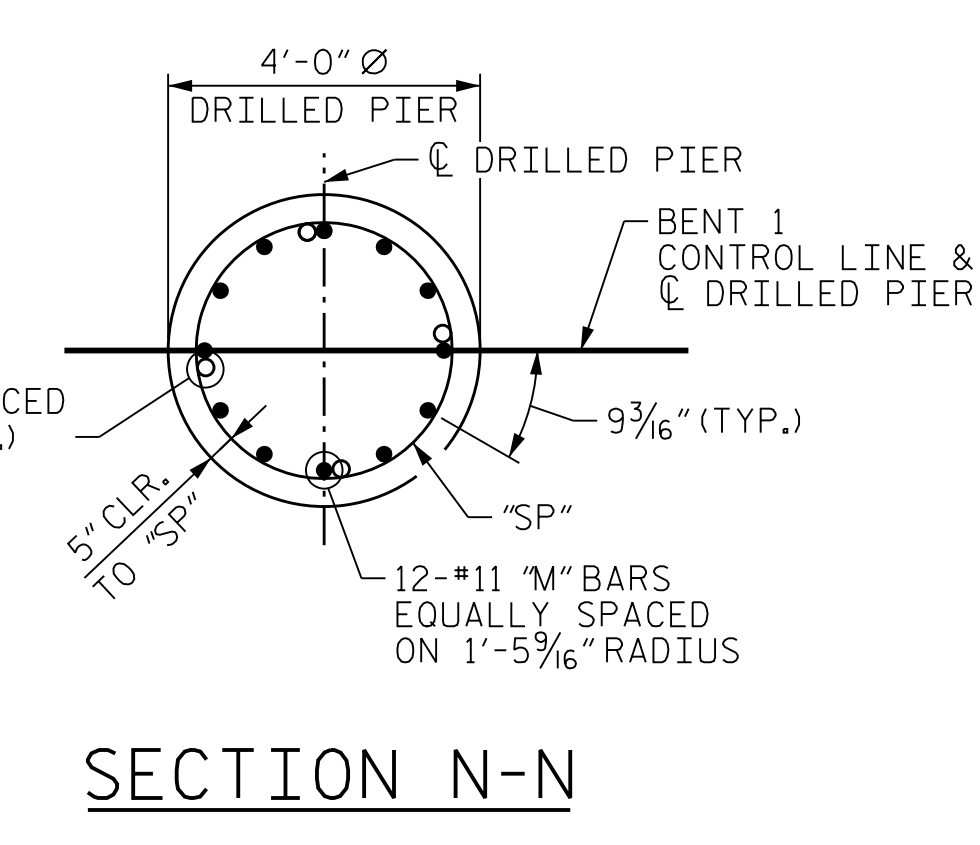
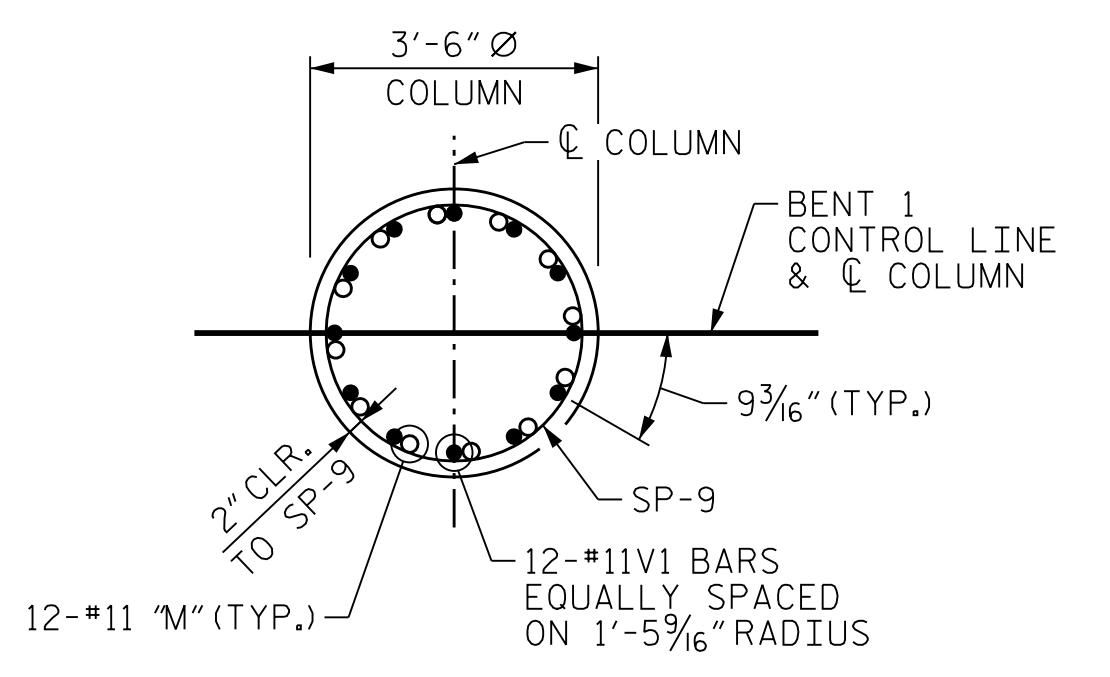
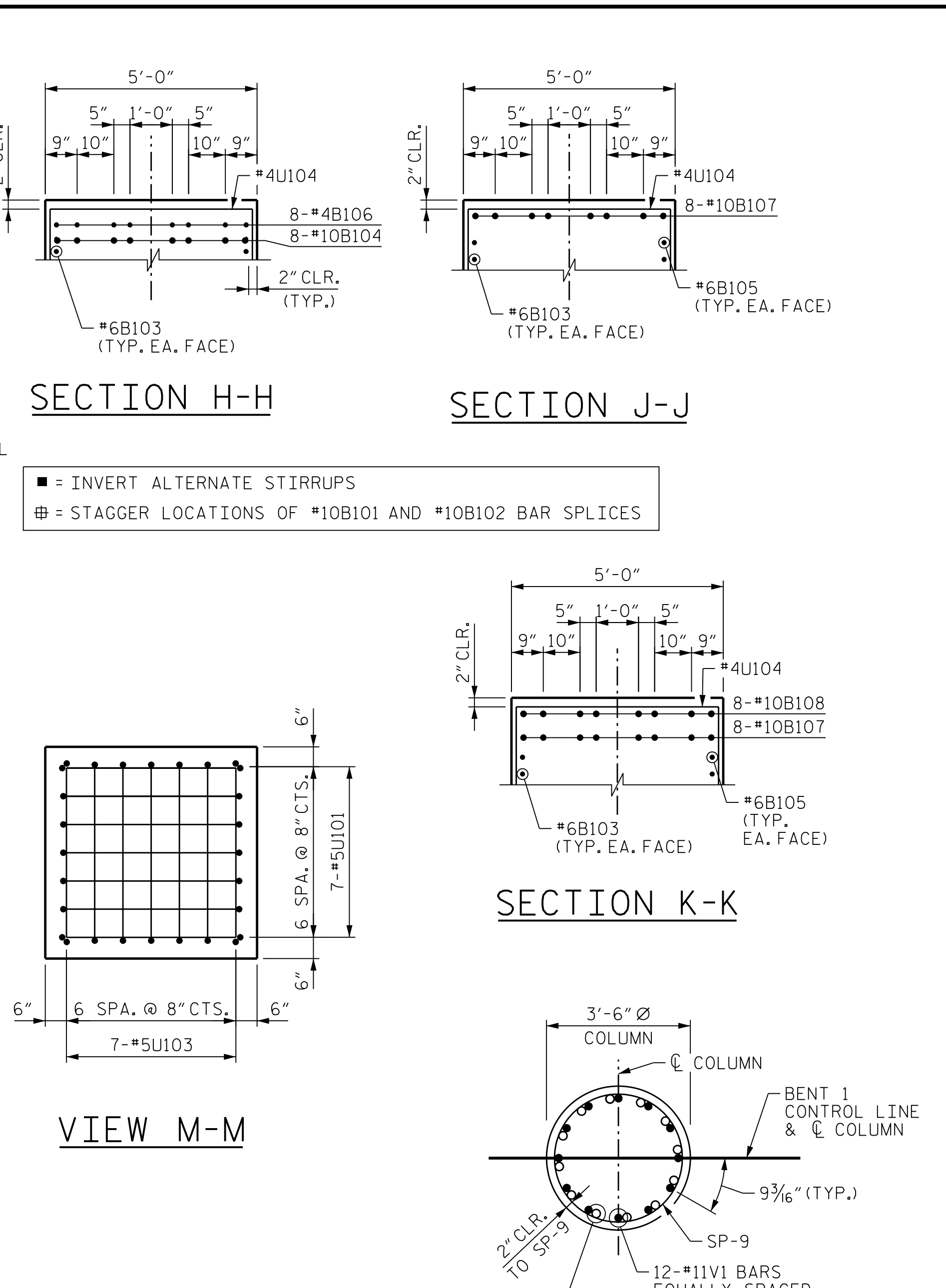
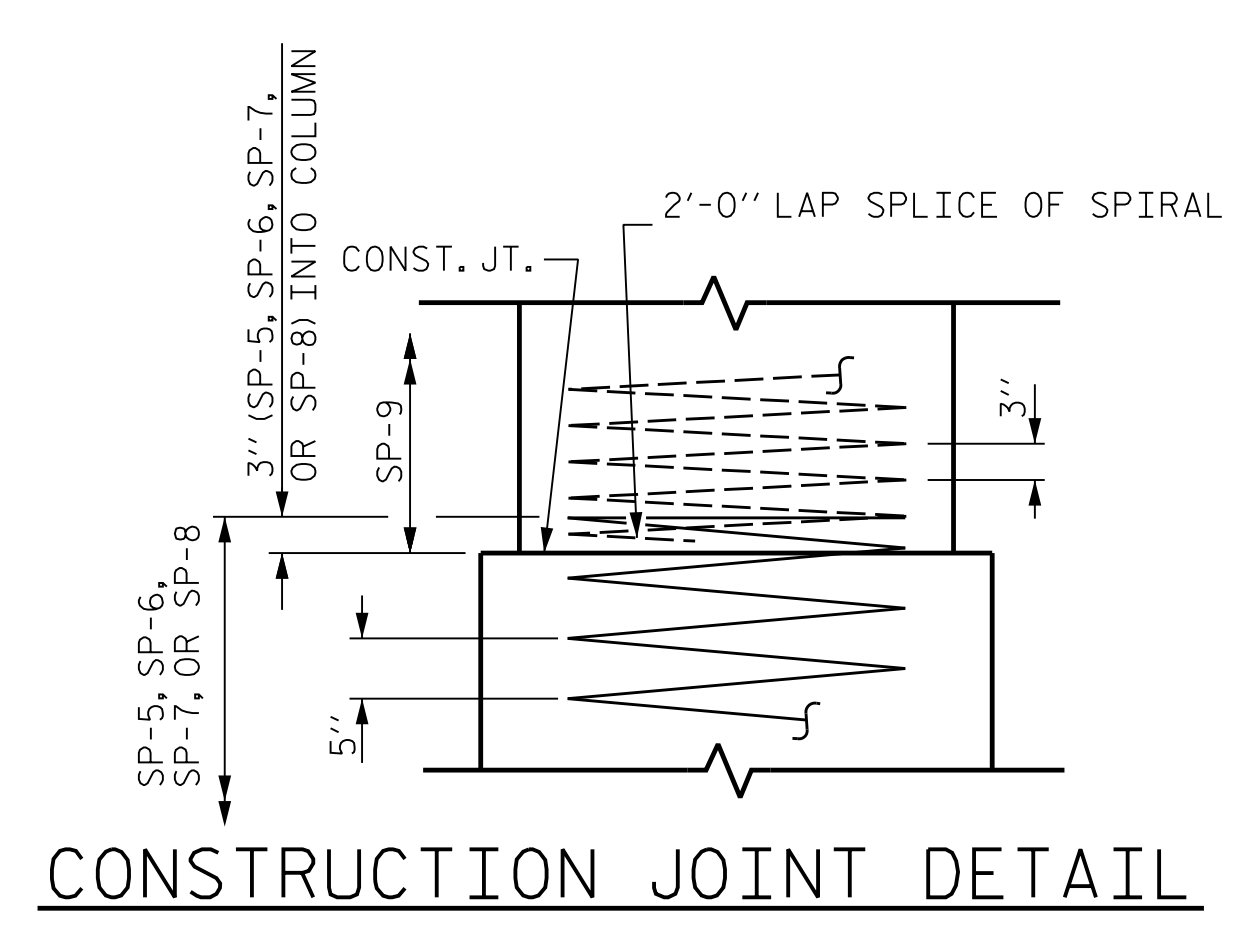
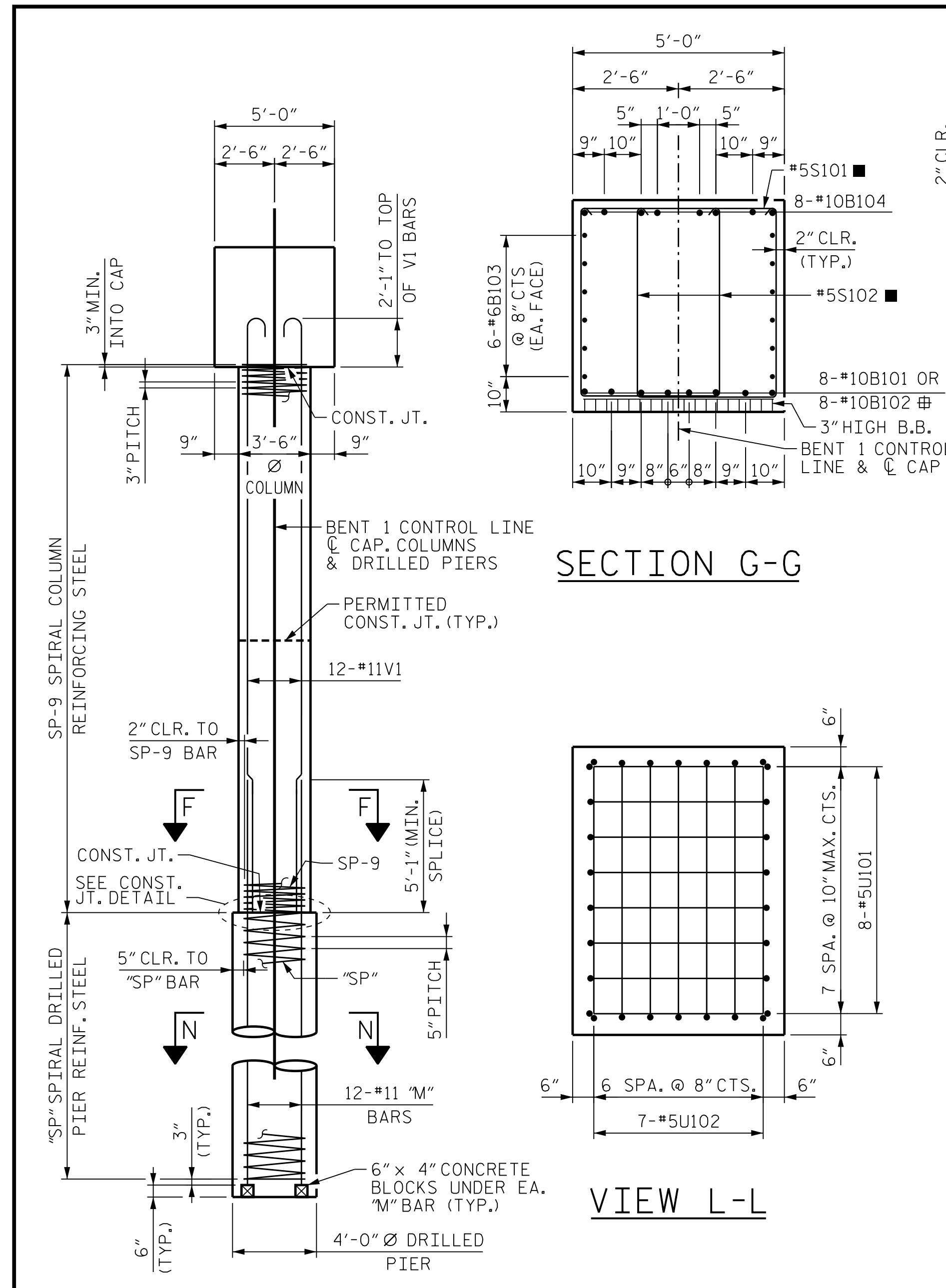
DES BY: <u>S. NIFONG</u>	DATE: <u>03/19</u>	DWG BY: <u>M. SELLS</u>	DATE: <u>03/19</u>
DES CHK: <u>J. ROBERTS</u>	DATE: <u>03/19</u>	CHK BY: <u>S. NIFONG</u>	DATE: <u>03/19</u>



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PLOT DRIVER: NCDOT.pdf\_color\_eng-50.ppt  
 USER: PPETERSO DATE: 10/14/2021  
 FILE: ...SUBSTRUCTURE BENT



PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-  
 SHEET 4 OF 4

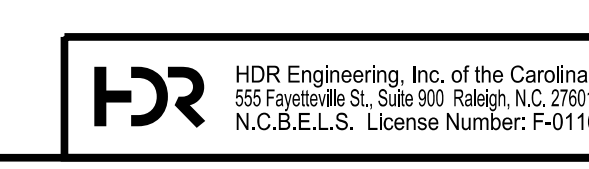


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**SUBSTRUCTURE BENT 1B**  
**SECTION AND DETAILS**

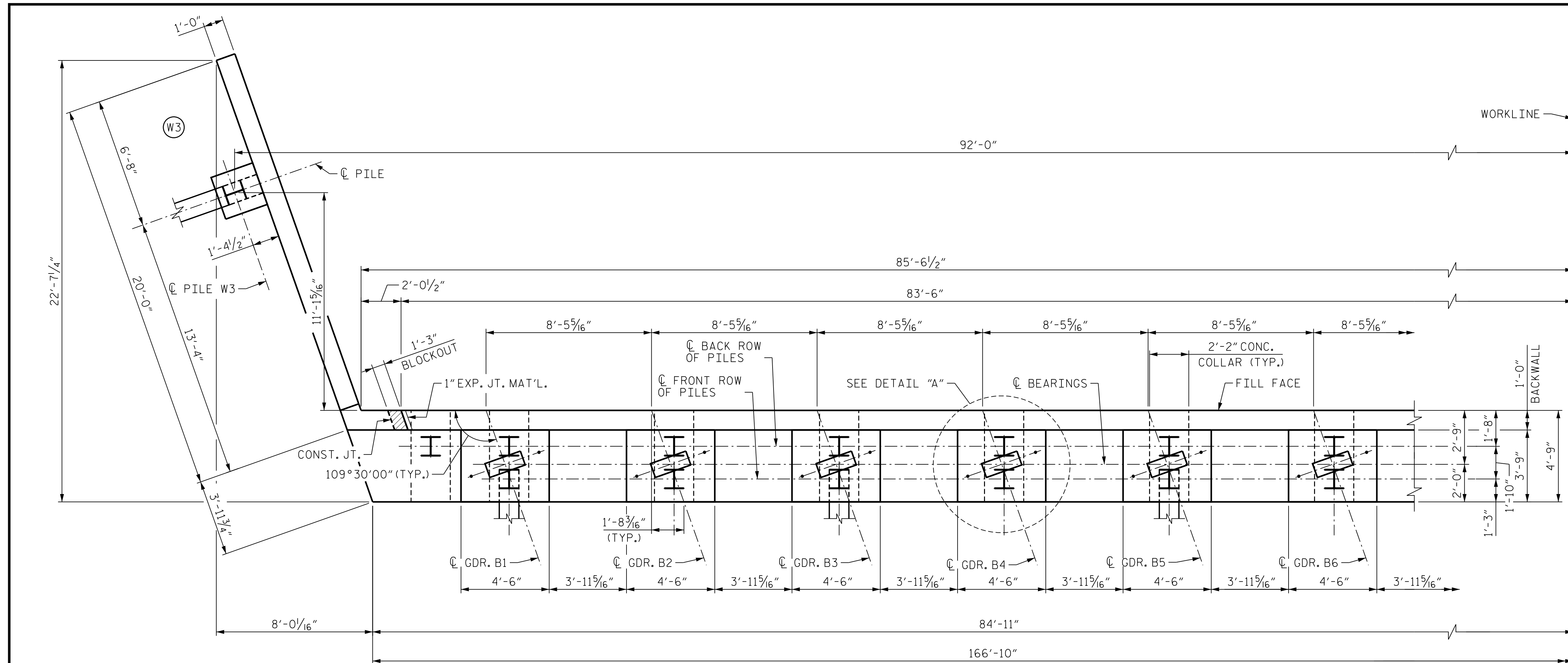
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2	--	--	4	--	--

SHEET NO. S03-48  
 TOTAL SHEETS 61

DES BY: S. NIFONG DATE: 03/19  
 DES CHK: J. ROBERTS DATE: 03/19  
 DWG BY: M. SELLS DATE: 03/19  
 CHK BY: S. NIFONG DATE: 03/19



10/18/2021  
 DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED



**NOTES**

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

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

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

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

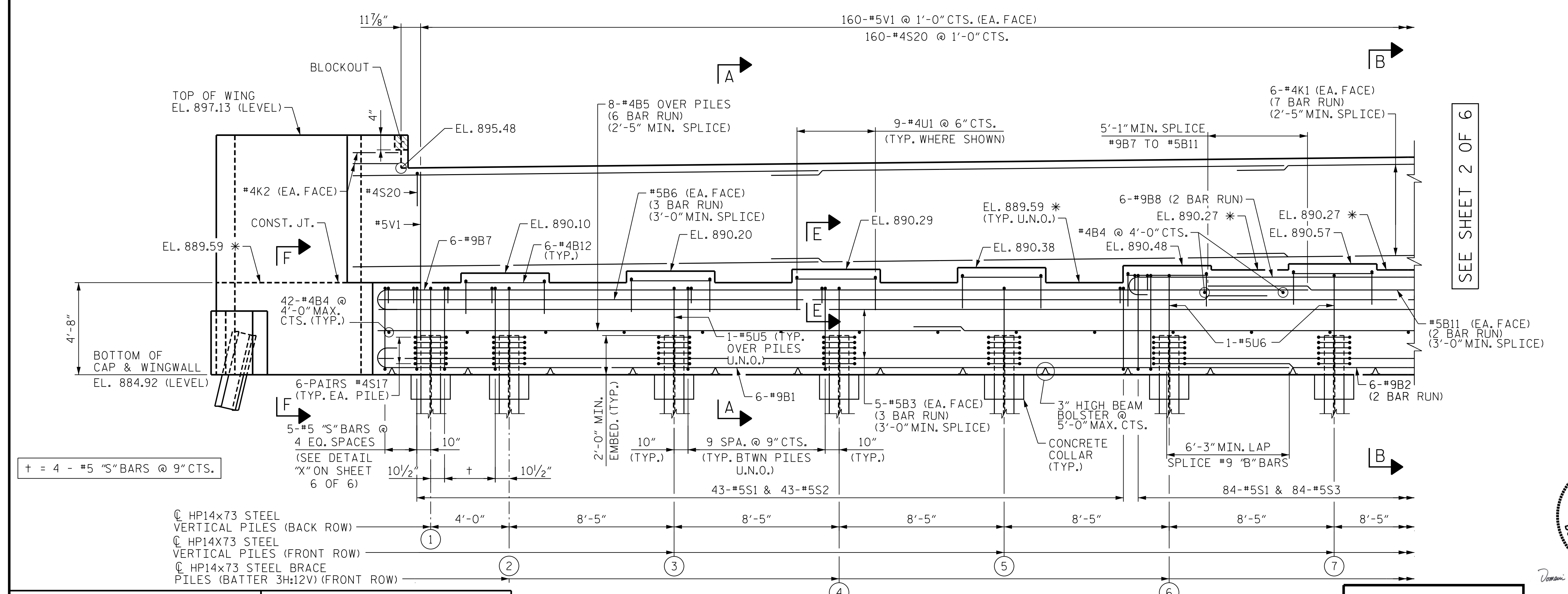
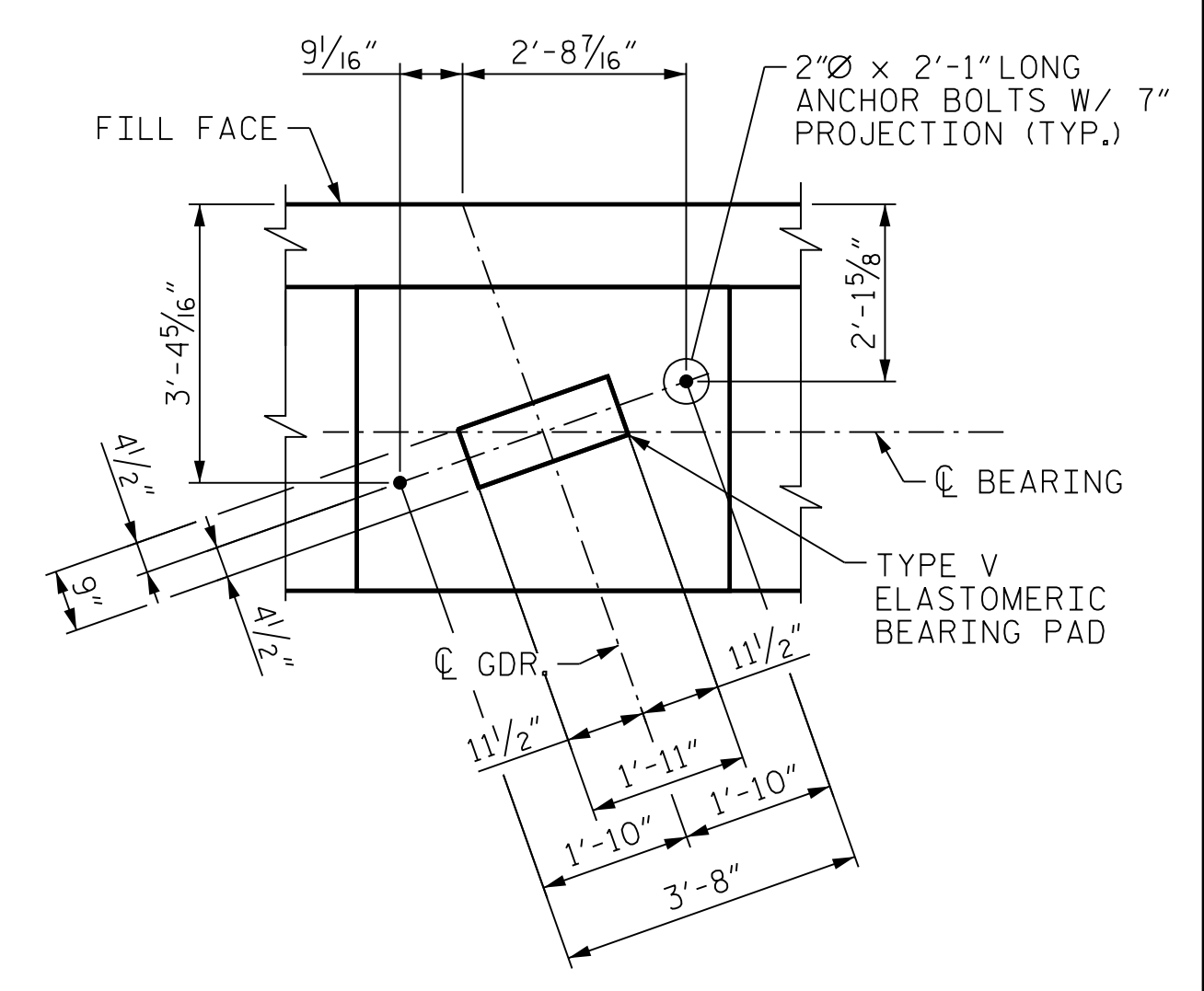
BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

SEE "GENERAL DRAWING LAYOUT" FOR ADDITIONAL NOTES FOR DRIVING PILES.

FOR SECTIONS A-A, B-B AND E-E, SEE "SUBSTRUCTURE END BENT 2 SECTIONS AND DETAILS" SHEET 5 OF 6.

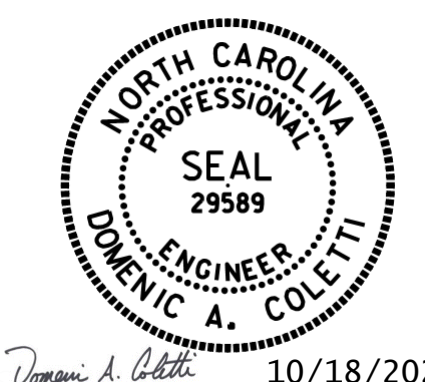
FOR PILE SPLICE DETAILS AND TEMPORARY DRAINAGE AT END BENT DETAIL, SEE "SUBSTRUCTURE END BENT 2 COMMON DETAILS" SHEET 6 OF 6.

ELEVATIONS MARKED WITH AN ASTERISK (\*) ARE GIVEN AT THE FRONT OF THE CAP. SEE SECTION A-A FOR MORE INFORMATION.



SEE SHEET 2 OF 6

PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-  
 SHEET 1 OF 6



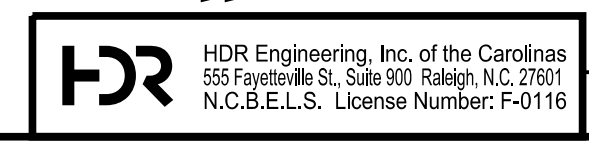
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE  
 END BENT 2**

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

DATE: 10/18/2021

DES BY: S. NIFONG DATE: 02/19  
 DES CHK: M. NEIHEISEL DATE: 02/19  
 DWG BY: B. PETERSON DATE: 02/19  
 CHK BY: M. NEIHEISEL DATE: 05/19



DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

SHEET NO. S03-49  
 TOTAL SHEETS 61

PLOT DRIVER: NCDOT.pdf\_color\_eng-50dpi  
 USER: PPETERSO DATE: 10/14/2021 TIME: 3:52:00 PM  
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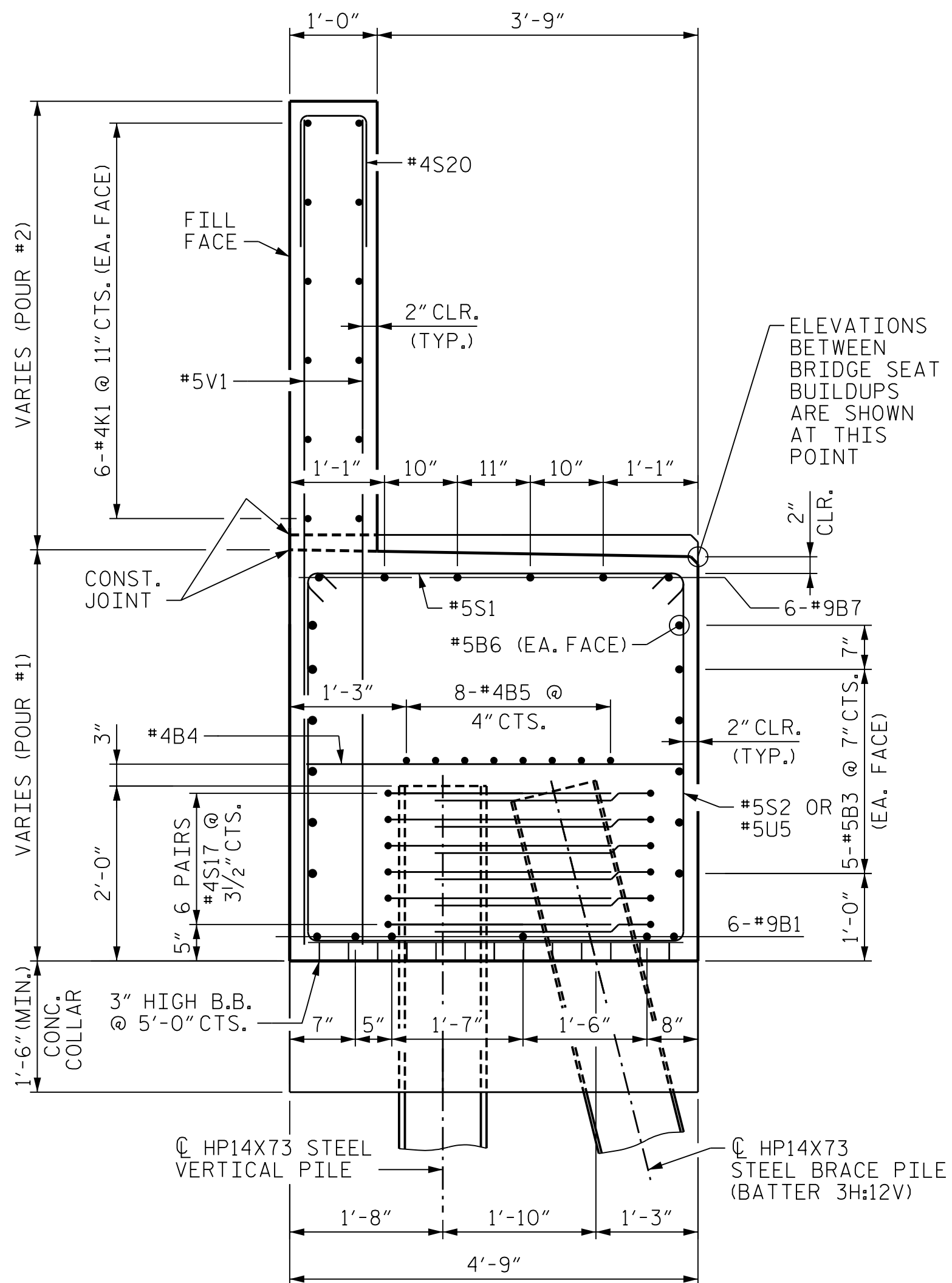




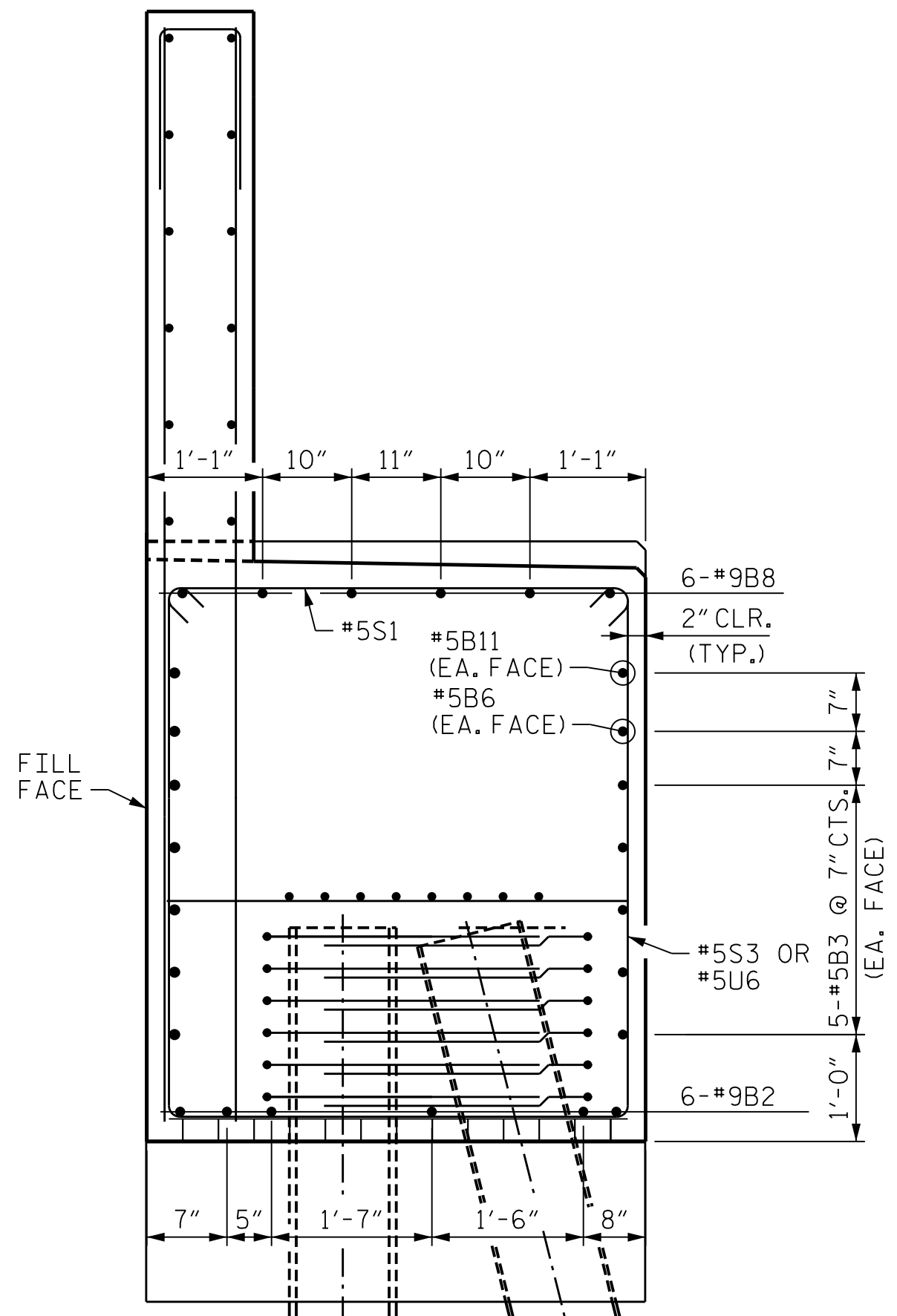




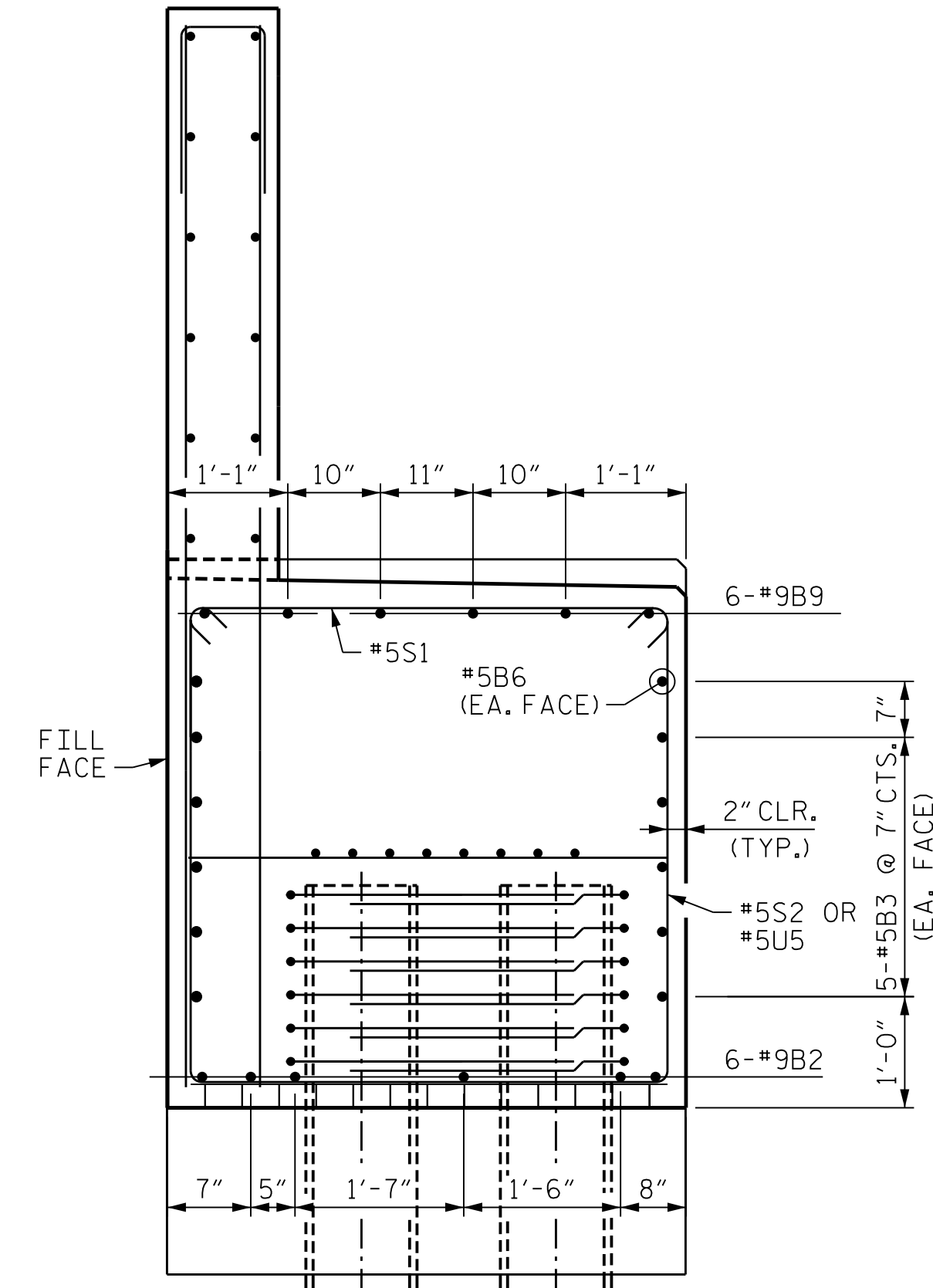




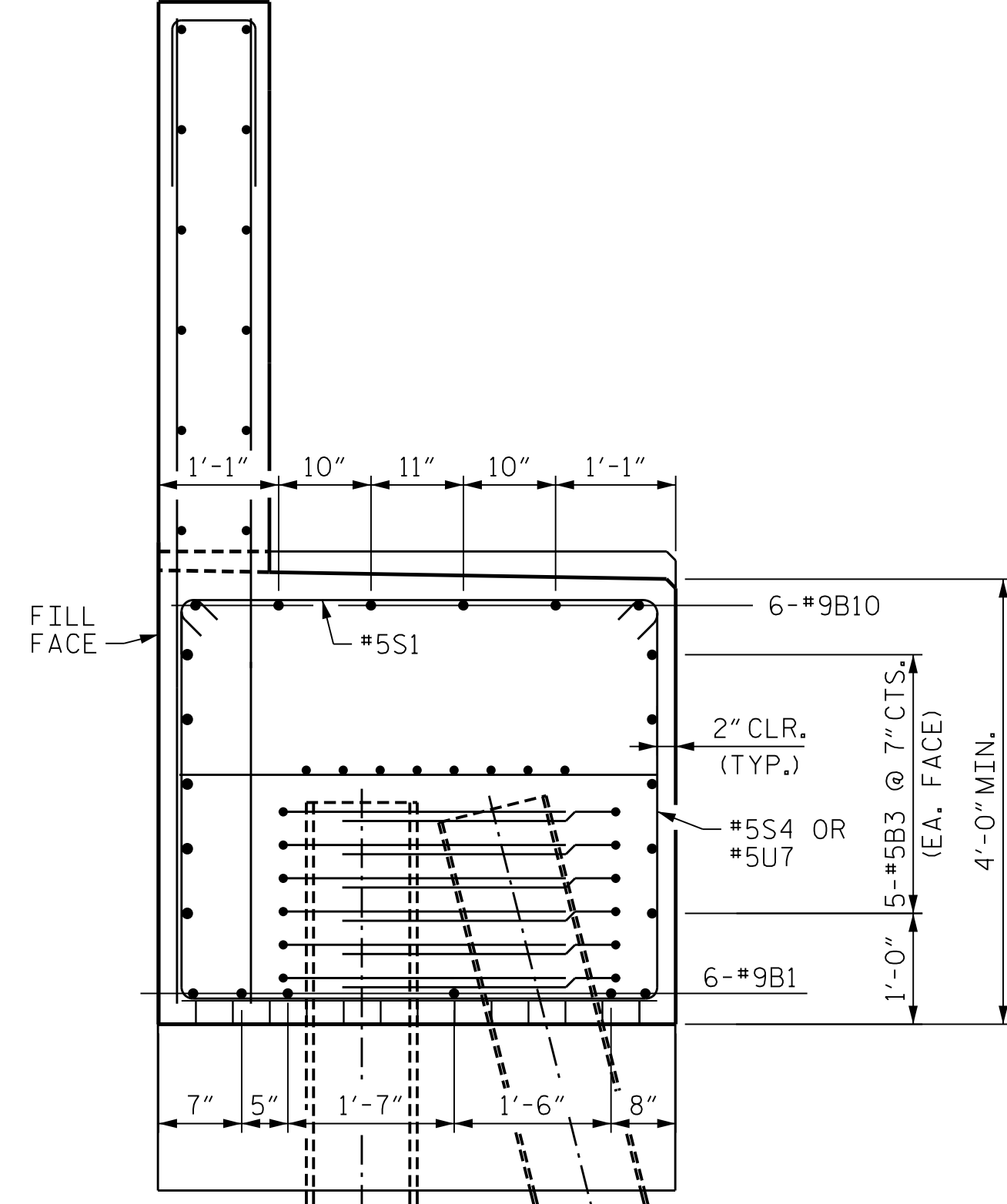
SECTION A-A



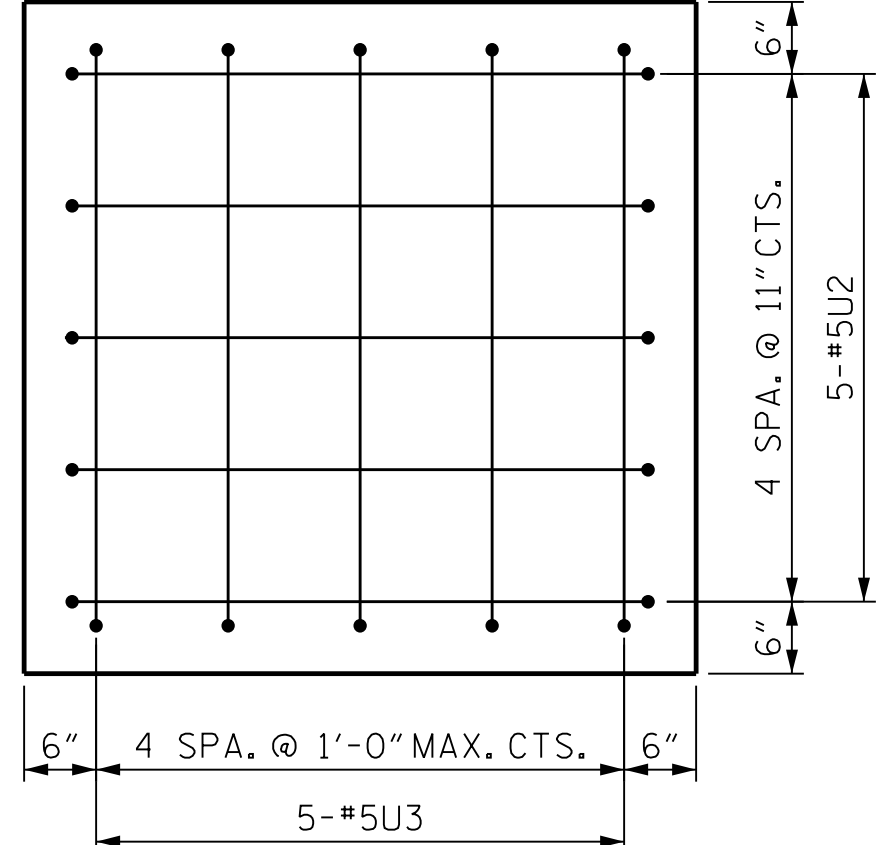
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(SEE SECTION A-A FOR ADDITIONAL INFORMATION NOT SHOWN HERE)



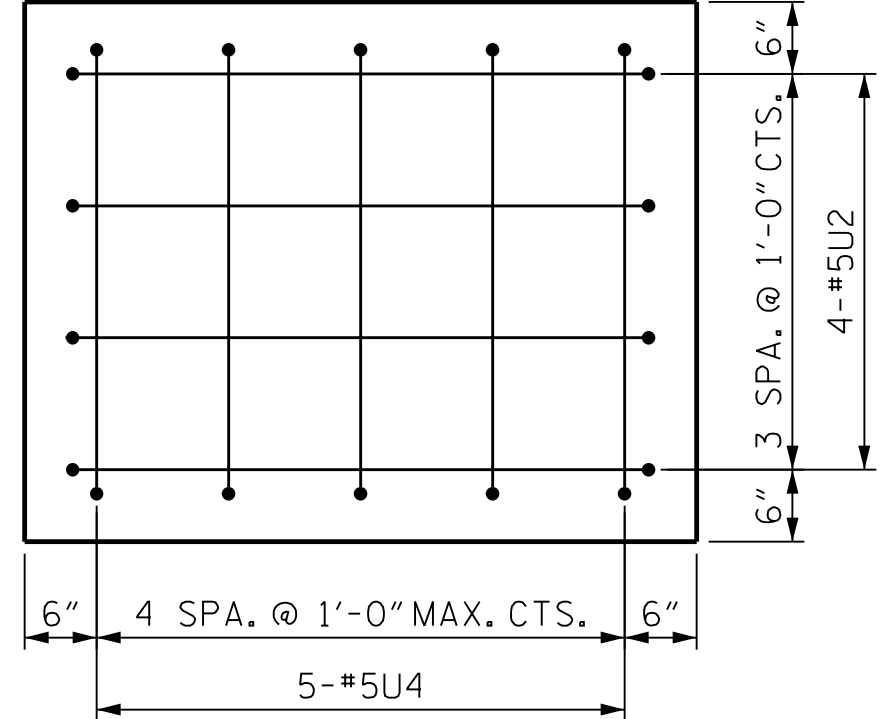
SECTION C-C  
(SEE SECTION A-A FOR ADDITIONAL INFORMATION NOT SHOWN HERE)



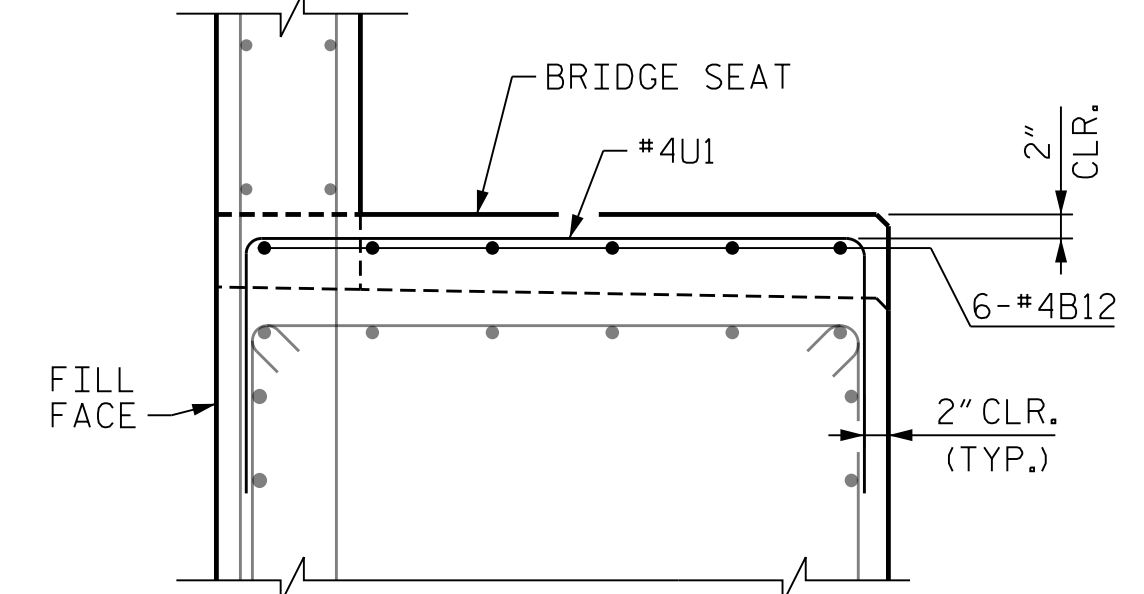
SECTION D-D  
(SEE SECTION A-A FOR ADDITIONAL INFORMATION NOT SHOWN HERE)



VIEW F-F



VIEW G-G



SECTION E-E  
(TYPICAL WHERE INDICATED AT BRIDGE SEATS)

PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-  
 SHEET 5 OF 6

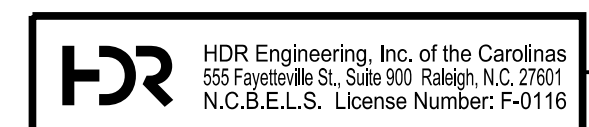


10/18/2021

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE  
 END BENT 2  
 SECTION AND DETAILS**

DES BY: S. NIFONG	DATE: 02/19	DWG BY: B. PETERSON	DATE: 02/19
DES CHK: M. NEIHEISEL	DATE: 02/19	CHK BY: M. NEIHEISEL	DATE: 05/19



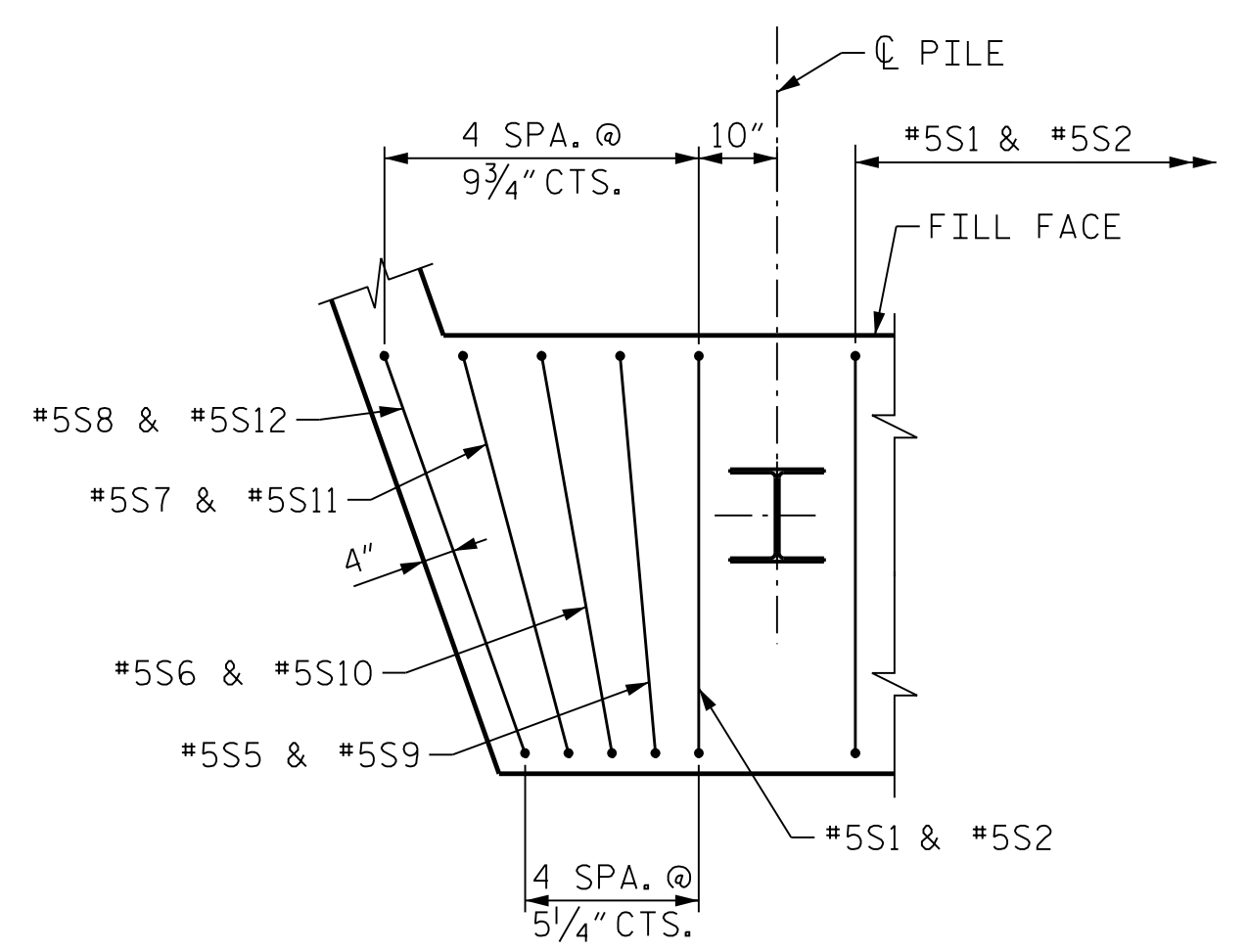
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 UNLESS ALL SIGNATURES COMPLETED

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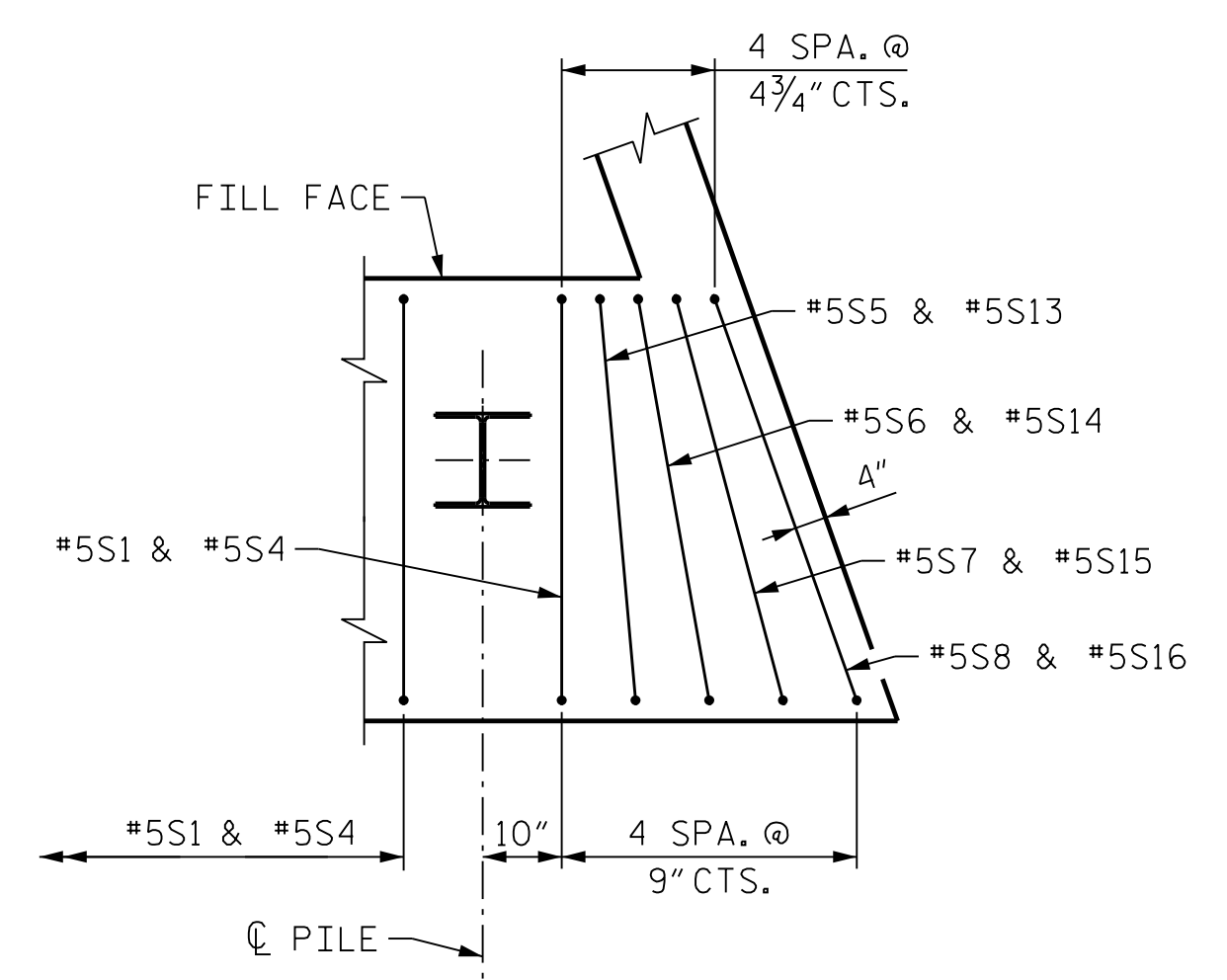
SHEET NO. 503-53  
 TOTAL SHEETS 61

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 USER: PPETERSO...  
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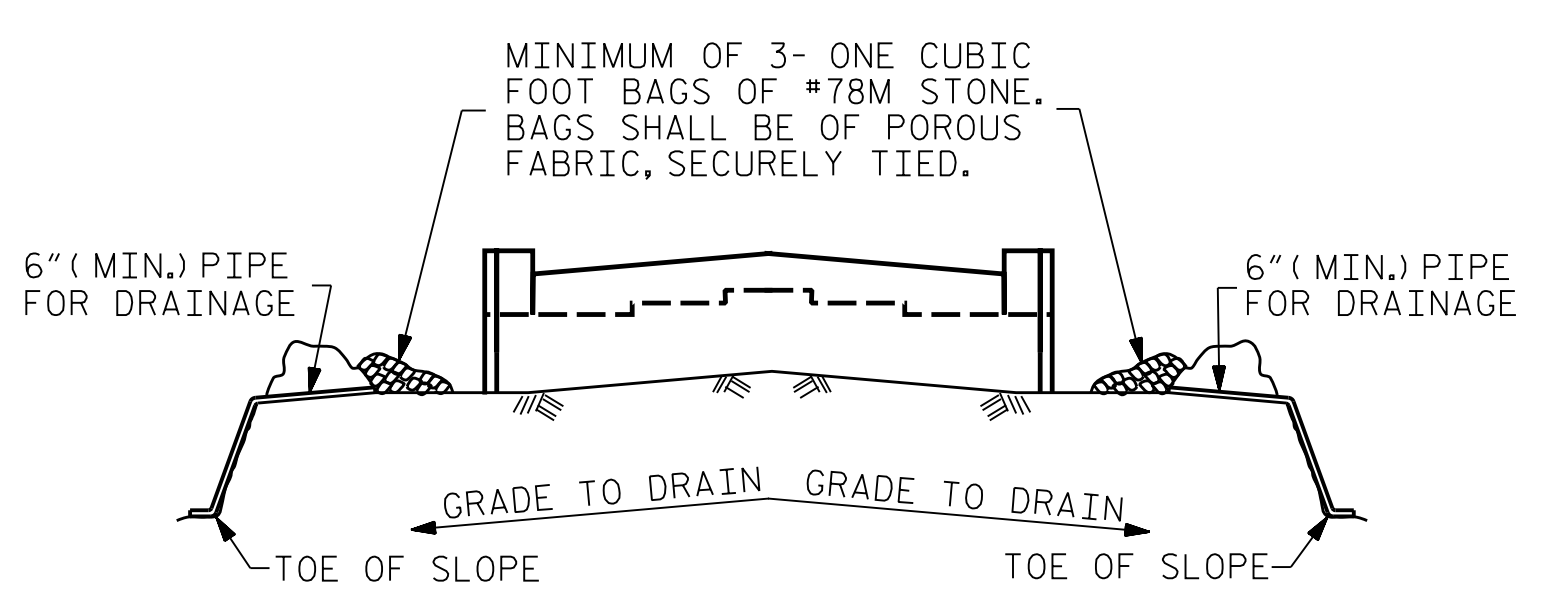




**DETAIL "X"**  
(SHOWING STIRRUPS ONLY)



**DETAIL "Y"**  
(SHOWING STIRRUPS ONLY)



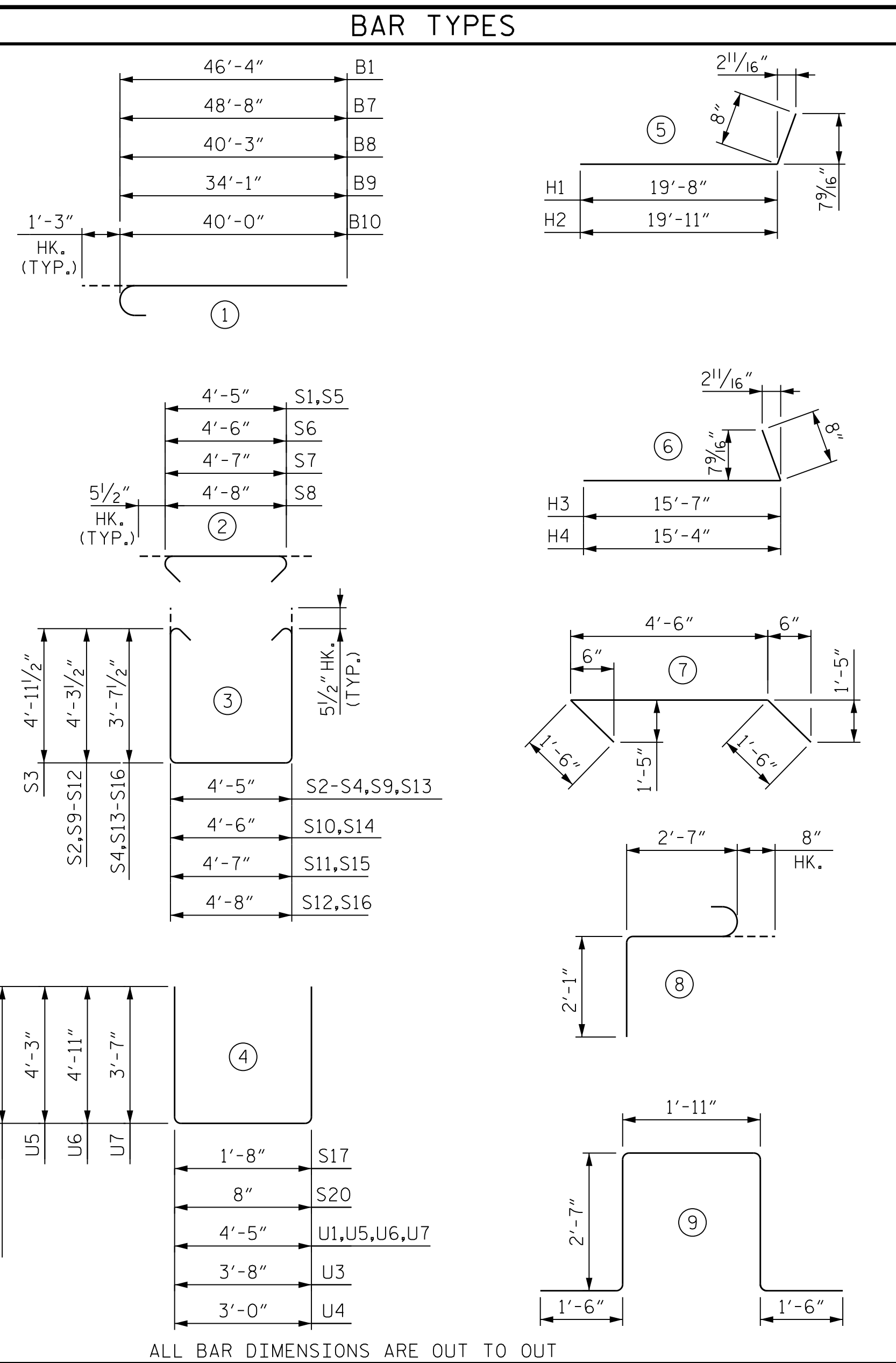
MINIMUM OF 3- ONE CUBIC FOOT BAGS OF #78M STONE. BAGS SHALL BE OF POROUS FABRIC, SECURELY TIED.

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.

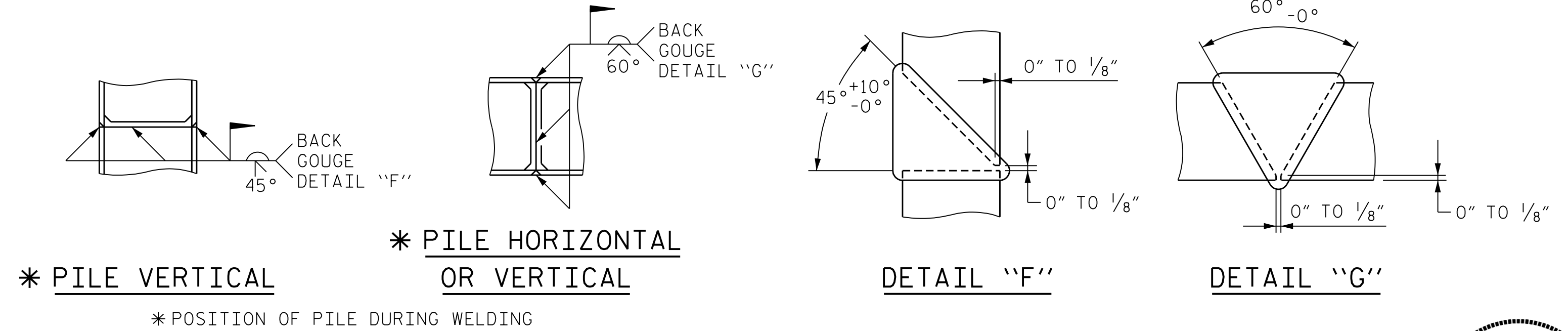
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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



ALL BAR DIMENSIONS ARE OUT TO OUT



**PILE SPLICE DETAILS**

BILL OF MATERIAL												
END BENT 2												
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	12	#9	1	47'-7"	1942	V1	320	#5	STR	9'-0"	3004	
B2	12	#9	STR	46'-4"	1891	V2	48	#5	STR	11'-9"	589	
B3	30	#5	STR	57'-6"	1800	V3	40	#5	STR	10'-8"	446	
B4	48	#4	STR	4'-5"	141	REINFORCING STEEL					LBS.	24,951
B5	48	#4	STR	29'-10"	957	CLASS A CONCRETE						
B6	6	#5	STR	46'-4"	290	POUR #1 (COLLARS, CAP, LOWER PART OF WINGS)					CU. YDS.	166.8
B7	6	#9	1	49'-11"	1019	POUR #2 (BACKWALL & UPPER PART OF WINGS)					CU. YDS.	48.9
B8	12	#9	1	41'-6"	1694	TOTAL					CU. YDS.	215.7
B9	6	#9	1	35'-4"	721	HP 14x73 STEEL PILES						
B10	6	#9	1	41'-3"	842	NO.					LF.	
B11	4	#5	STR	33'-9"	141	PILES W3, 2-7 (FRONT ROW), 1-7 (BACK ROW)					14	660
B12	96	#4	STR	4'-2"	268	PILES 8-14 (FRONT ROW), 8-14 (BACK ROW)					14	520
H1	18	#4	5	20'-4"	245	PILES 15-20 (FRONT ROW), 15-21 (BACK ROW), W4					14	520
H2	18	#4	5	20'-7"	248	TOTAL					42	1700
H3	13	#4	6	16'-3"	142	PILE DRIVING EQUIPMENT SETUP FOR HP14x73 STEEL PILES					EA.	42
H4	13	#4	6	16'-0"	139	PILE LENGTHS ARE BASED ON ESTIMATED TIP ELEVATIONS AND INCLUDE 2' MIN. EMBEDMENT INTO CAP.						
S1	190	#5	2	5'-4"	1057							
S2	73	#5	3	13'-11"	1060							
S3	84	#5	3	15'-3"	1337							
S4	33	#5	3	12'-7"	434							
S5	2	#5	2	5'-4"	12							
S6	2	#5	2	5'-5"	12							
S7	2	#5	2	5'-6"	12							
S8	2	#5	2	5'-7"	12							
S9	1	#5	3	13'-11"	15							
S10	1	#5	3	14'-0"	15							
S11	1	#5	3	14'-1"	15							
S12	1	#5	3	14'-2"	15							
S13	1	#5	3	12'-7"	14							
S14	1	#5	3	12'-8"	14							
S15	1	#5	3	12'-9"	14							
S16	1	#5	3	12'-10"	14							
S17	252	#4	4	7'-4"	1235							
S18	6	#6	9	10'-1"	91							
S19	6	#6	8	5'-4"	49							
S20	160	#4	4	3'-8"	392							
U1	144	#4	4	7'-5"	714							
U2	9	#5	7	7'-6"	71							
U3	5	#5	4	6'-8"	35							
U4	5	#5	4	6'-0"	32							
U5	8	#5	4	12'-11"	108							
U6	9	#5	4	14'-3"	134							
U7	4	#5	4	11'-7"	49							

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PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-  
 SHEET 6 OF 6

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE  
 END BENT 2  
 COMMON DETAILS**

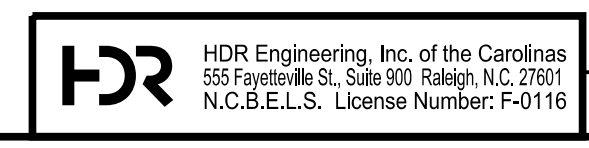
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SHEET NO. S03-54  
 TOTAL SHEETS 61

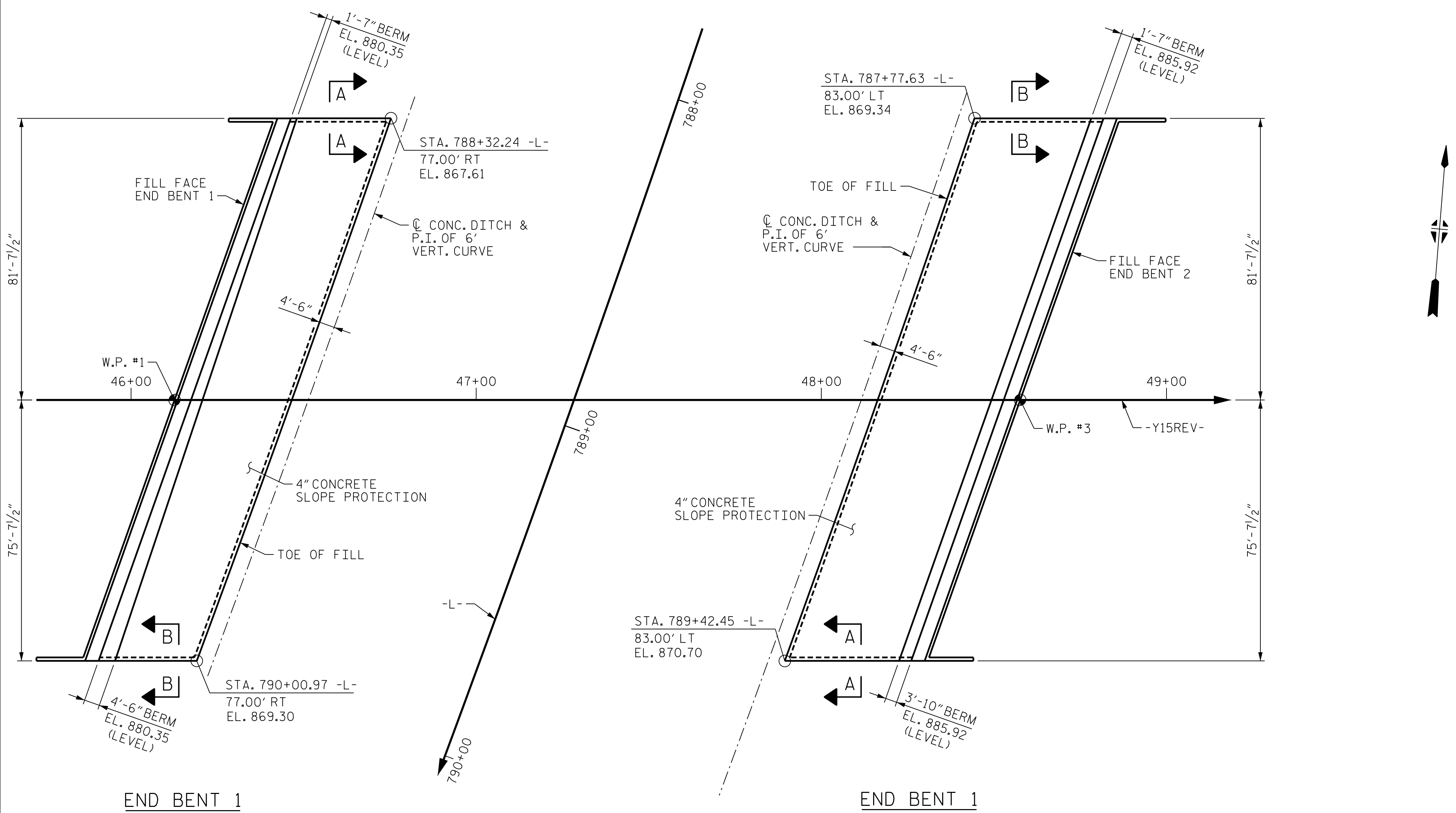


10/18/2021

DES BY: <u>S. NIFONG</u>	DATE: <u>02/19</u>	DWG BY: <u>B. PETERSON</u>	DATE: <u>02/19</u>
DES CHK: <u>M. NEIHEISEL</u>	DATE: <u>02/19</u>	CHK BY: <u>M. NEIHEISEL</u>	DATE: <u>05/19</u>



DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED



**PLAN**  
ALL ELEVATIONS ARE GIVEN AT THE TOP OF SLOPE PROTECTION.

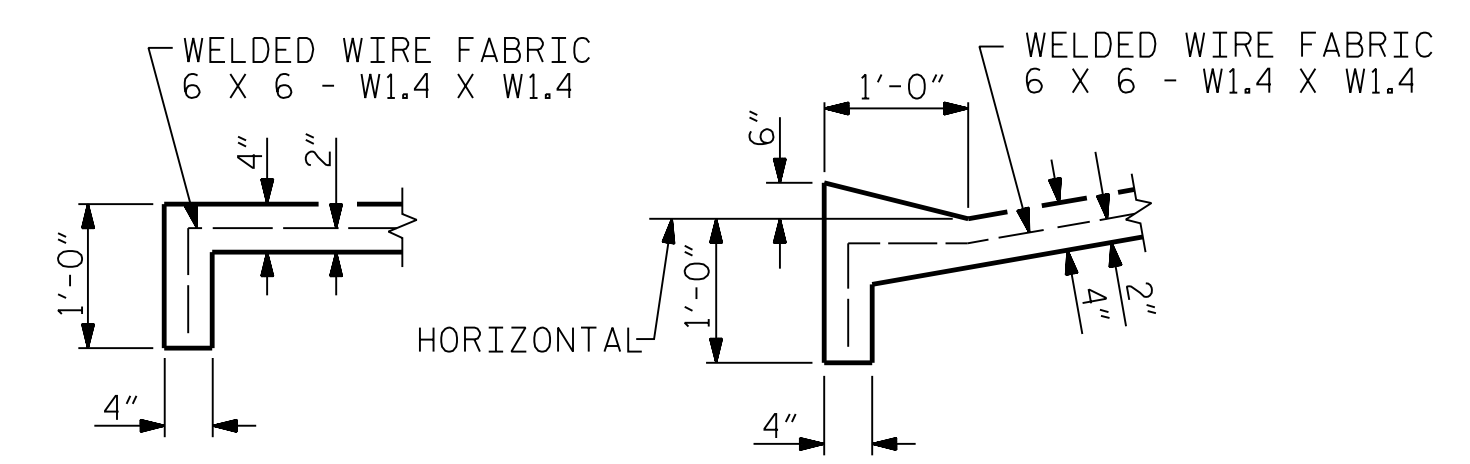
**GENERAL NOTES**

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS. FOR BERM WIDTH, SEE GENERAL DRAWING.

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

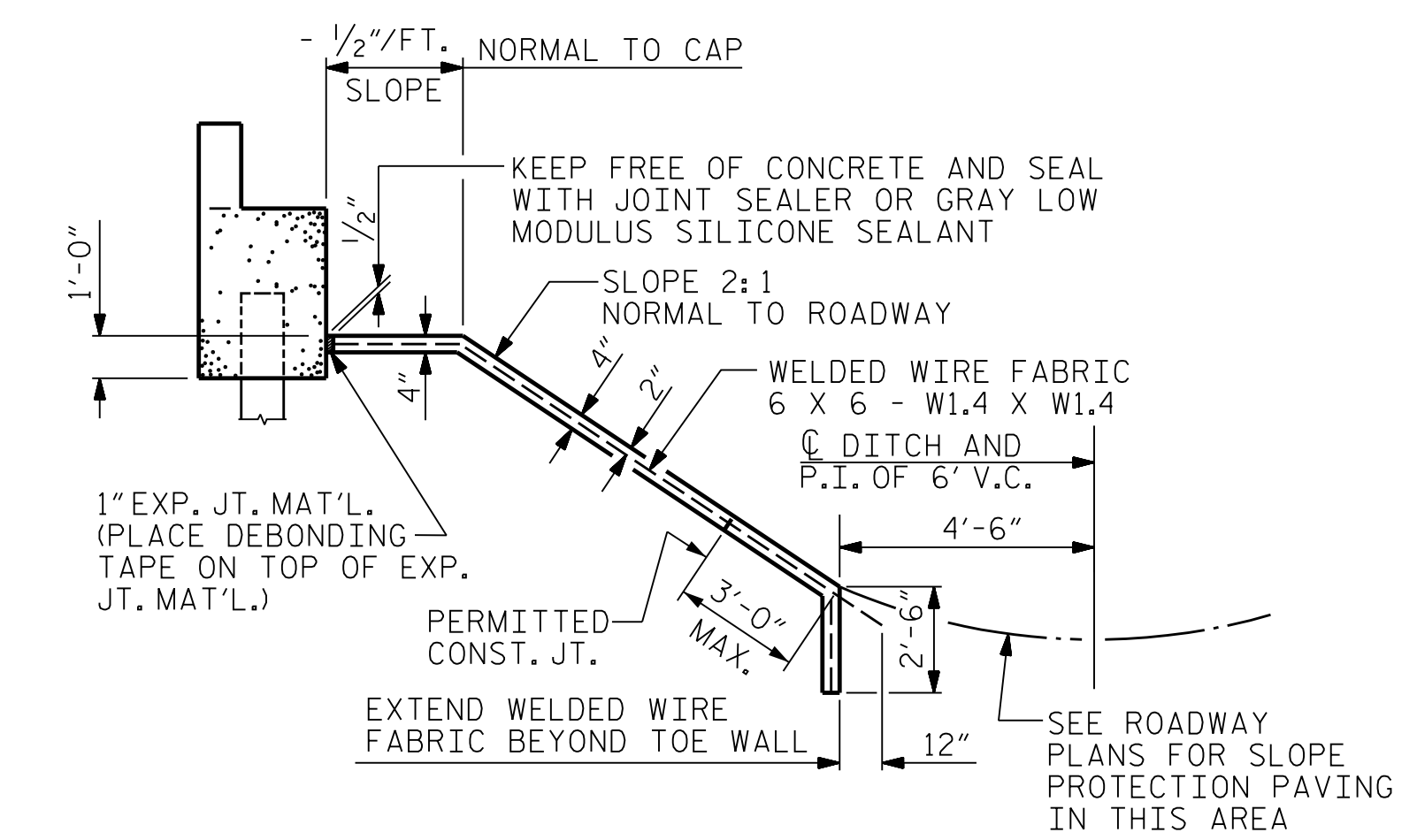
BRIDGE @ STA. 47+28.33 -Y15REV-	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	552.2	995
END BENT 2	707.0	1273

\* QUANTITY SHOWN IS BASED ON 5' POURS.



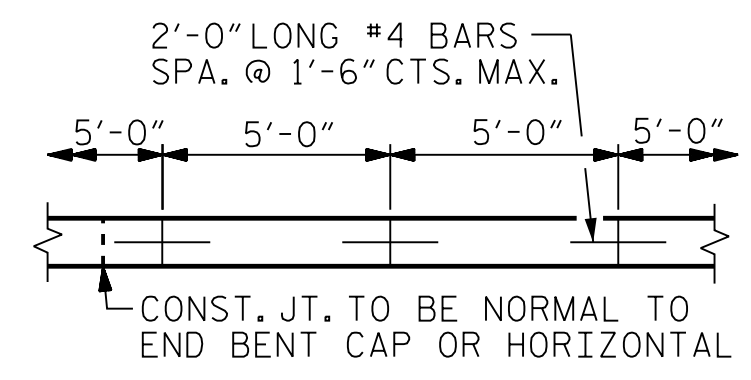
**SECTION A-A**

**SECTION B-B**

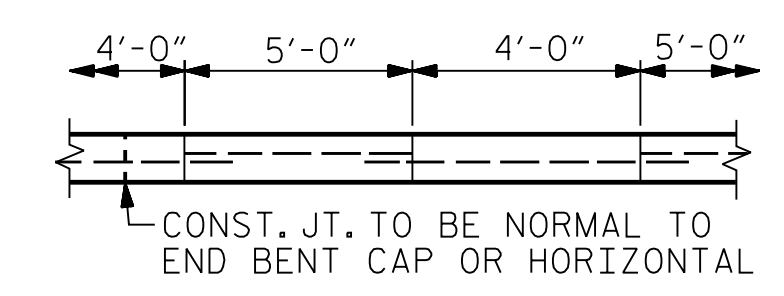


**SECTION ALONG C SURVEY WHEN FILL CATCHES IN DITCH**

PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-



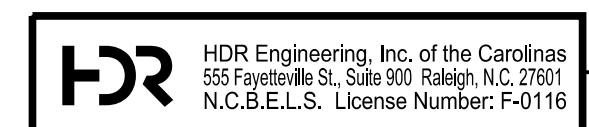
**POURING DETAIL**  
STRIP WIDTHS MAY VARY IN CURVED PORTION.



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

PLOT DRIVER: NCDOT.pdf\_color\_eng-50dpi  
 USER: PPEIERSO DATE: 10/14/2021  
 FILE: ...SLOPE PROTECTION D

DES BY: S. NIFONG	DATE: 03/19	DWG BY: M. SELLS	DATE: 03/19
DES CHK: A. MILLER	DATE: 05/19	CHK BY: A. MILLER	DATE: 05/19



10/18/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

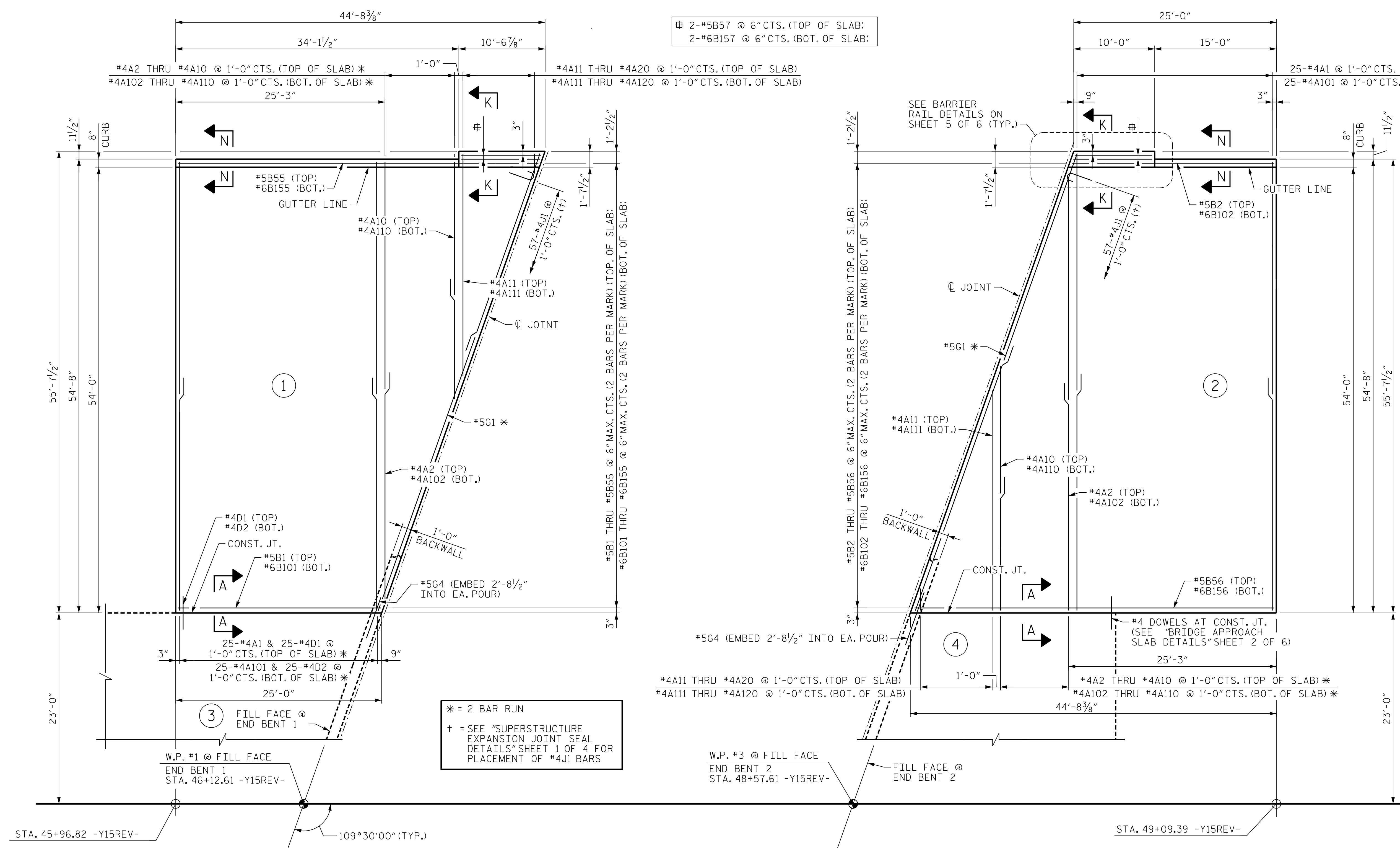
**SLOPE PROTECTION DETAILS**

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

SHEET NO. 503-55  
 TOTAL SHEETS 61



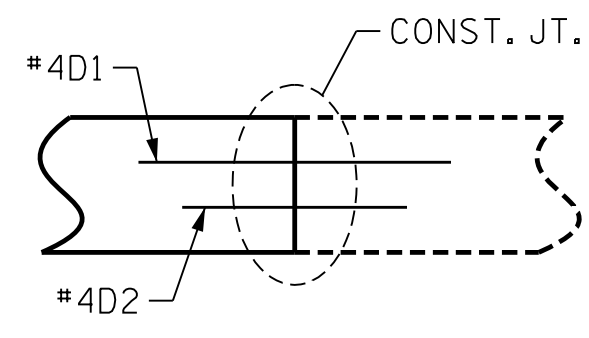
**NOTES**  
 FOR SECTIONS K-K AND  
 N-N, SEE "BRIDGE APPROACH  
 SLAB DETAILS" SHEET 4 OF 6.



**PLAN AT END BENT 1**  
 (APPROACH SLAB 1)

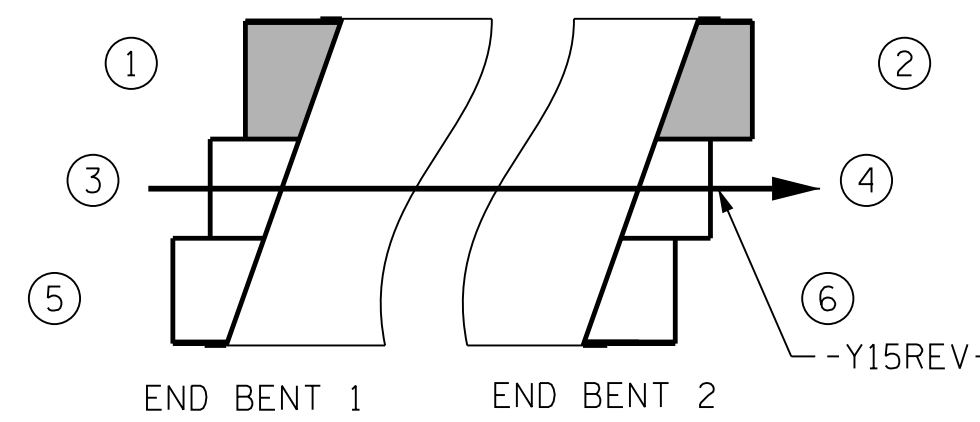
**PLAN AT END BENT 2**  
 (APPROACH SLAB 2)

SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"



**SECTION A-A**

SPACE #4D1 AND #4D2 DOWELS WITH #4 "A" BARS. PROVIDE 2'-0" AND 1'-9" MIN. LAP SPLICE FOR TOP AND BOTTOM BARS RESPECTIVELY.



**KEY PLAN**

PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-

SHEET 1 OF 6

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BRIDGE APPROACH  
 SLAB DETAILS**



10/18/2021

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

SHEET NO. 503-56  
 TOTAL SHEETS 61

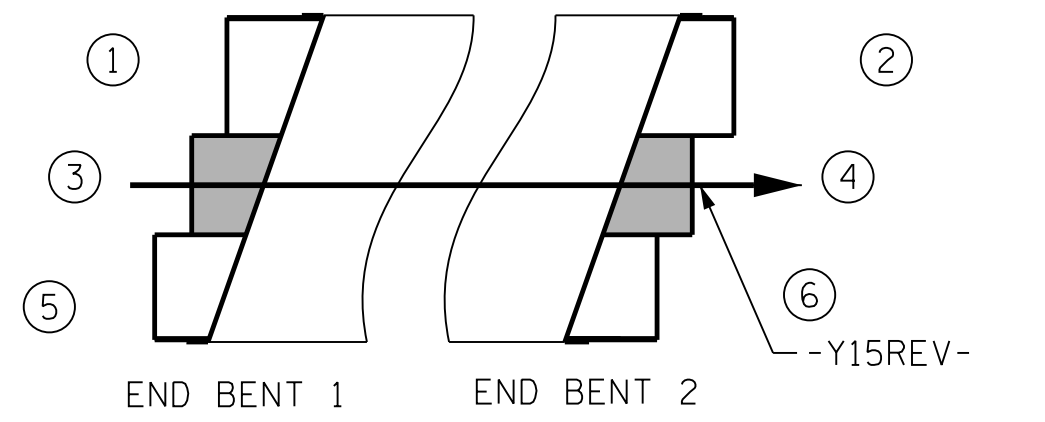
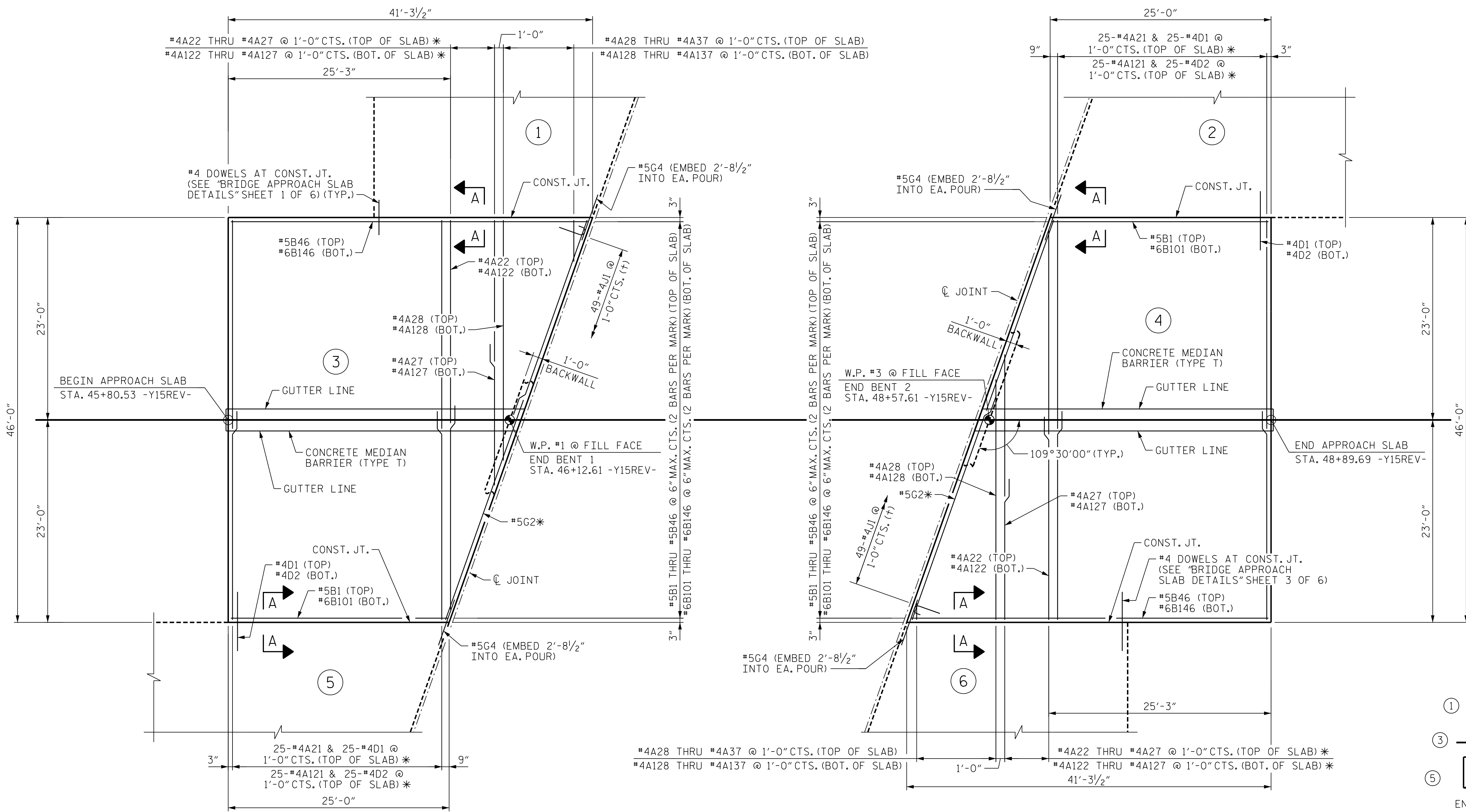
PLOT DRIVER: NCDOT\_PDF\_PEN\_COLOR ENG-50.ppt  
 USER: PPETERSO DATE: 10/14/2021 TIME: 3:52:45 PM  
 FILE: ...BRIDGE APPROACH SL

DES BY: A. MILLER DATE: 04/19 DWG BY: B. PETERSON DATE: 02/19  
 DES CHK: S. NIFONG DATE: 04/19 CHK BY: S. NIFONG DATE: 05/19

**HDR** HDR Engineering, Inc. of the Carolinas  
 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601  
 N.C.B.E.L.S. License Number: F-0116

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**NOTES**  
 FOR REINFORCEMENT IN CONCRETE MEDIAN BARRIER, SEE "SUPERSTRUCTURE CONCRETE BARRIER RAILS AND MEDIAN BARRIER DETAILS" SHEET.  
 FOR SECTION A-A, SEE "BRIDGE APPROACH SLAB DETAILS" SHEET 1 OF 6.



\* = 2 BAR RUN  
 † = SEE "SUPERSTRUCTURE EXPANSION JOINT SEAL DETAILS" SHEET 1 OF 4 FOR PLACEMENT OF #4J1 BARS

SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"



10/18/2021

PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-  
 SHEET 2 OF 6

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

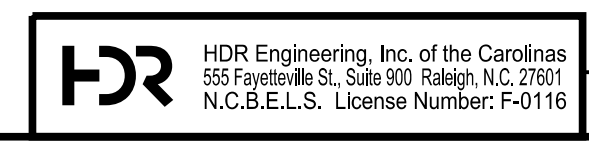
**BRIDGE APPROACH SLAB DETAILS**

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

SHEET NO. 503-57  
 TOTAL SHEETS 61

PLOT DRIVER: NCDOT...  
 USER: PETERSON...  
 DATE: 10/14/2021...  
 FILE: ...BRIDGE APPROACH SL

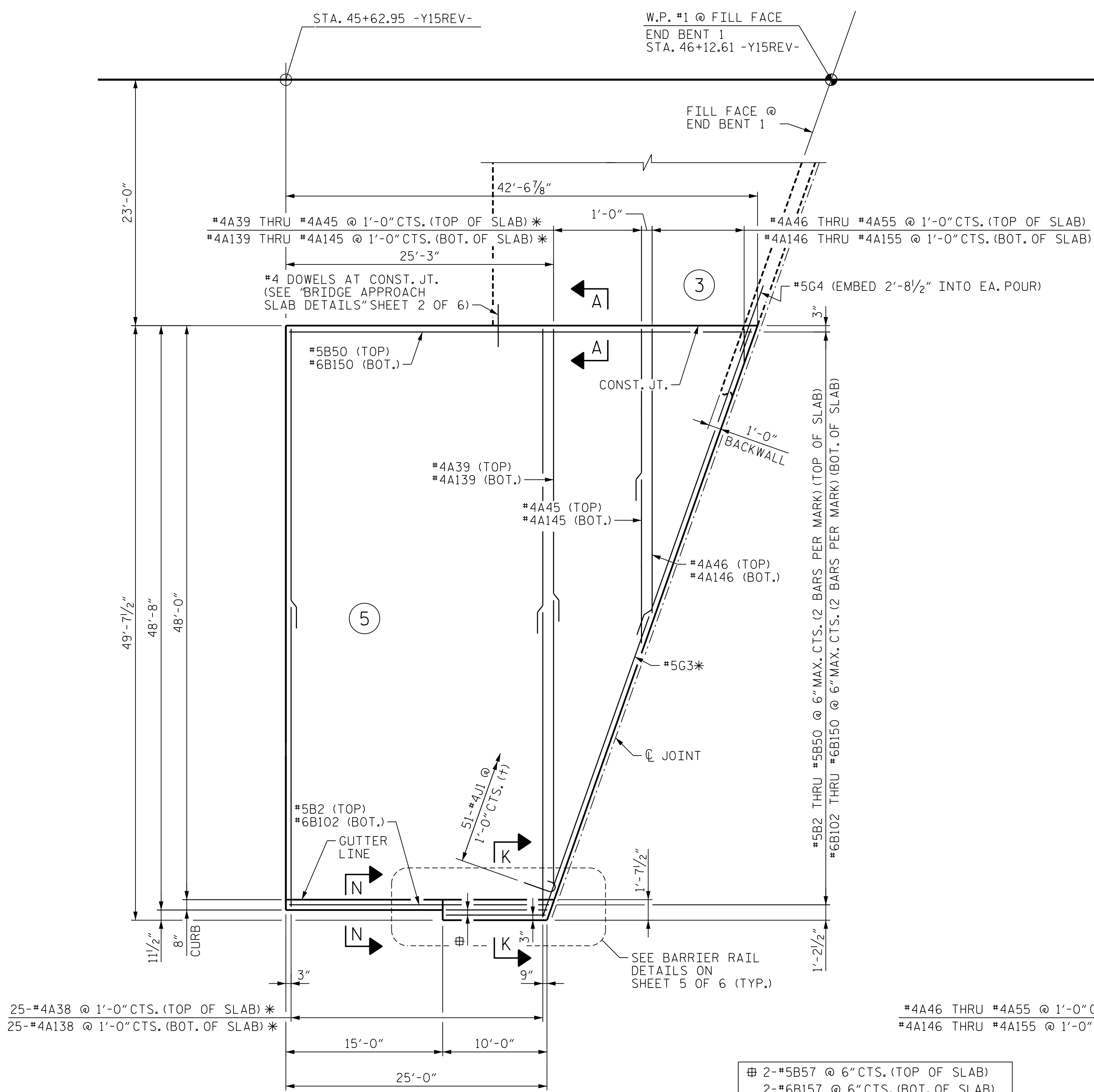
DES BY: A. MILLER DATE: 04/19  
 DES CHK: S. NIFONG DATE: 04/19  
 DWG BY: B. PETERSON DATE: 02/19  
 CHK BY: S. NIFONG DATE: 05/19



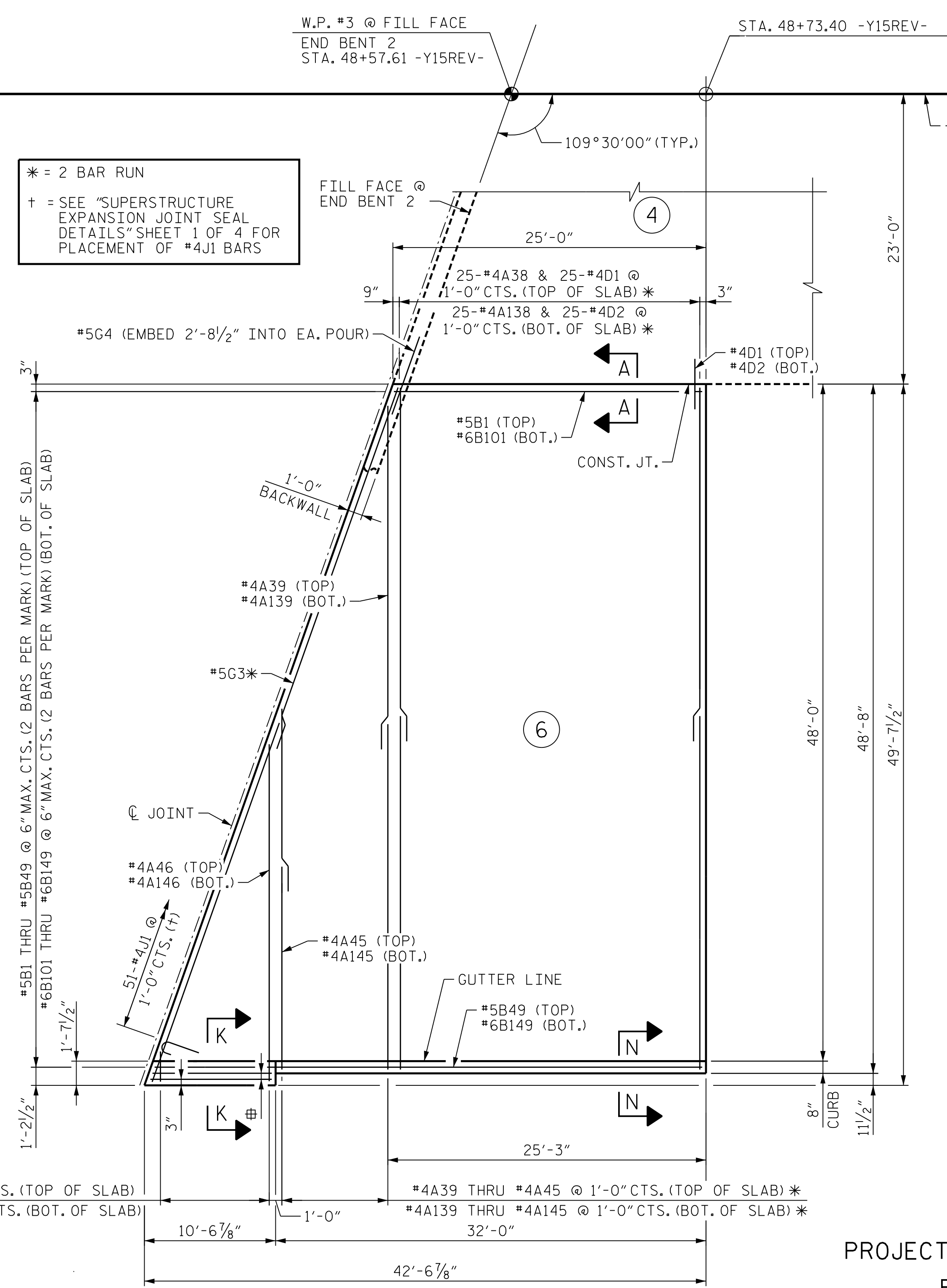
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



**NOTES**  
 FOR SECTION A-A, SEE "BRIDGE APPROACH SLAB DETAILS" SHEET 1 OF 6.  
 FOR SECTIONS K-K AND N-N, SEE "BRIDGE APPROACH SLAB DETAILS" SHEET 4 OF 6.



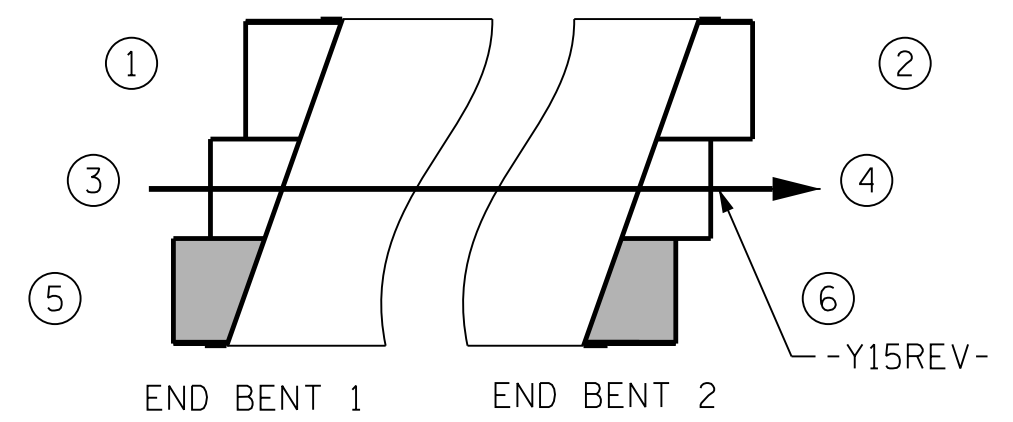
**PLAN AT END BENT 1**  
 (APPROACH SLAB 5)



**PLAN AT END BENT 2**  
 (APPROACH SLAB 6)

**SPLICE LENGTHS**

BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"



**KEY PLAN**



10/18/2021

PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-  
 SHEET 3 OF 6

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BRIDGE APPROACH SLAB DETAILS**

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

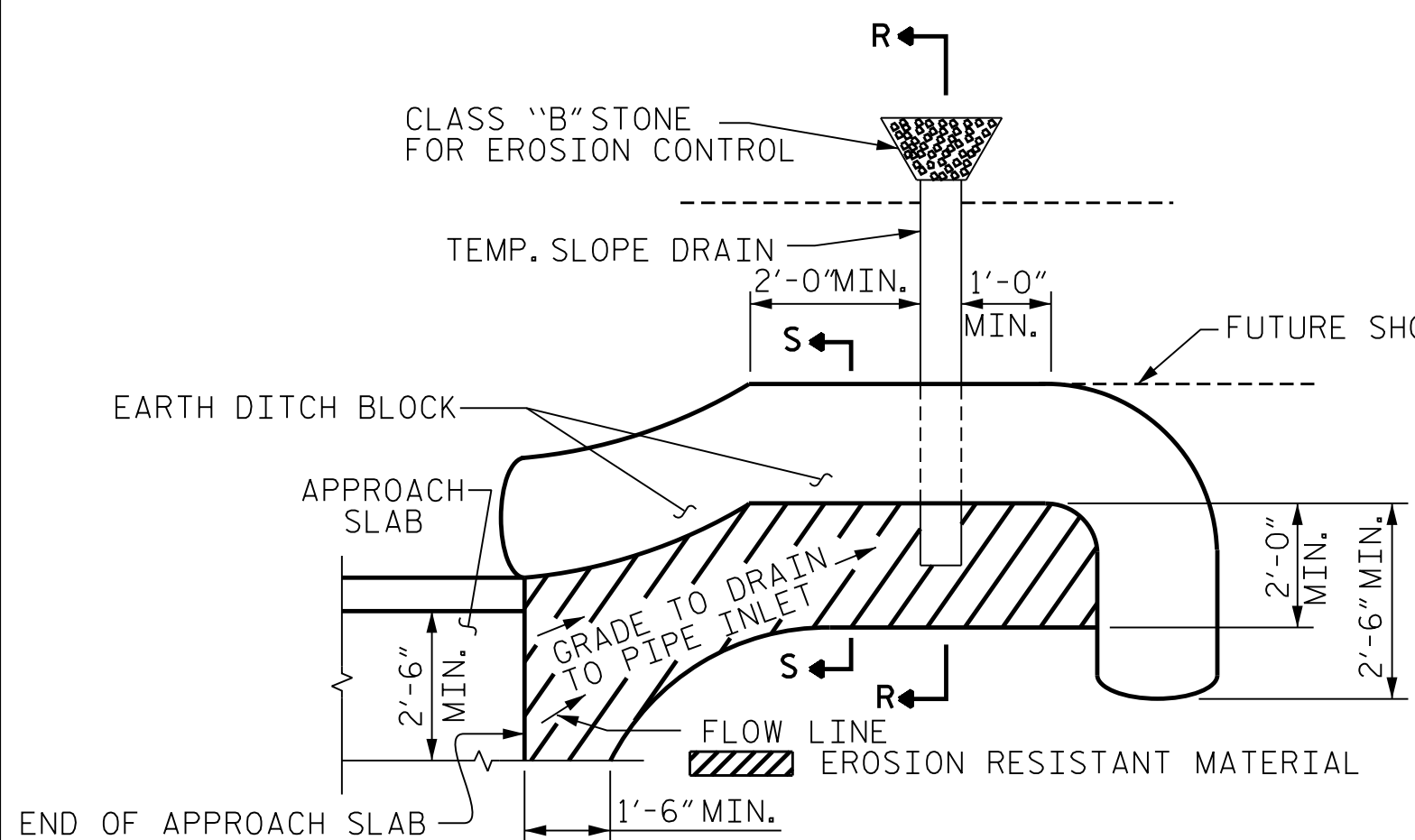
SHEET NO. 503-58  
 TOTAL SHEETS 61

PLOT DRIVER: NCDOT\_PDF\_PEN\_COLOR ENG-50.ppt  
 USER: PETERSON DATE: 10/14/2021  
 FILE: ... \BRIDGE APPROACH SL

DES BY: A. MILLER DATE: 04/19  
 DES CHK: S. NIFONG DATE: 04/19  
 DWG BY: B. PETERSON DATE: 02/19  
 CHK BY: S. NIFONG DATE: 05/19

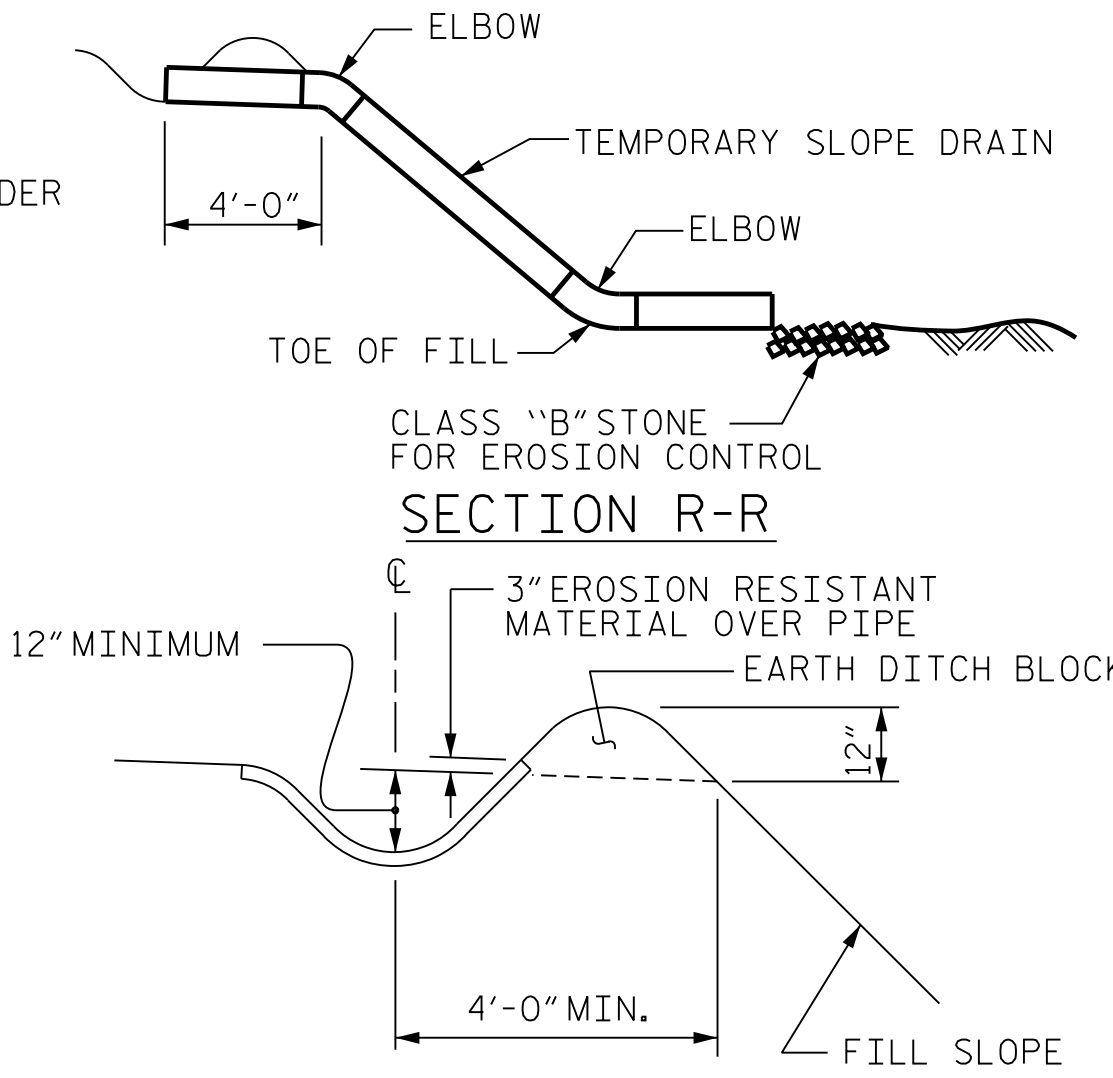
**HDR** HDR Engineering, Inc. of the Carolinas  
 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601  
 N.C.B.E.L.S. License Number: F-0116

**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

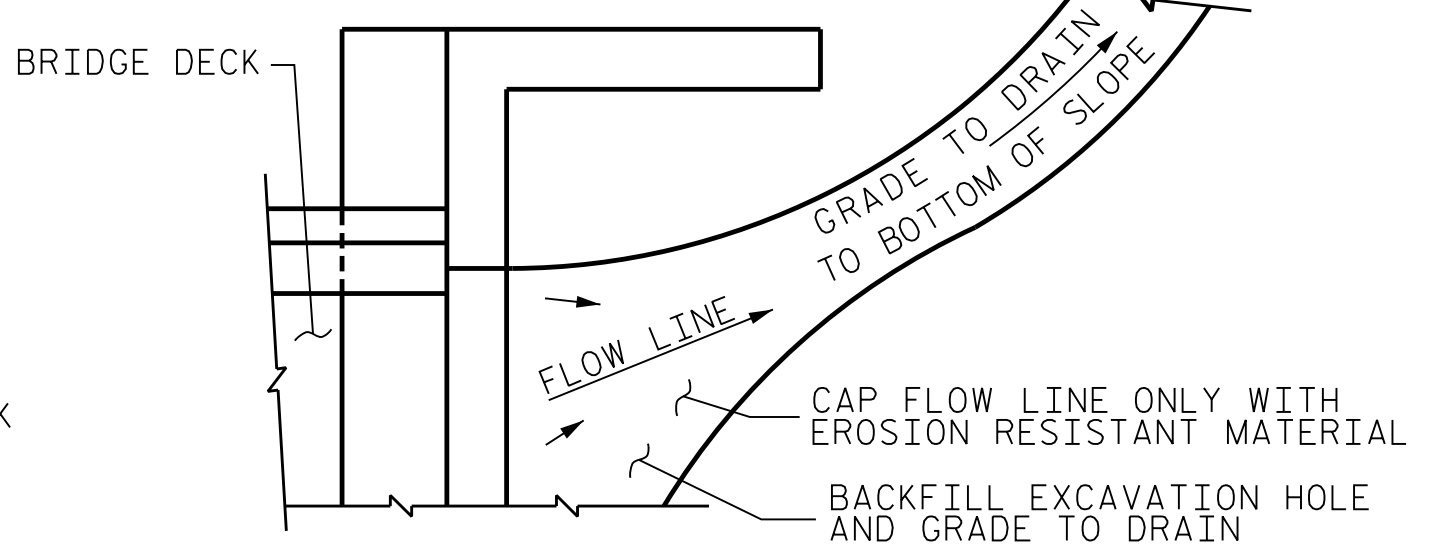


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 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.

PLAN VIEW



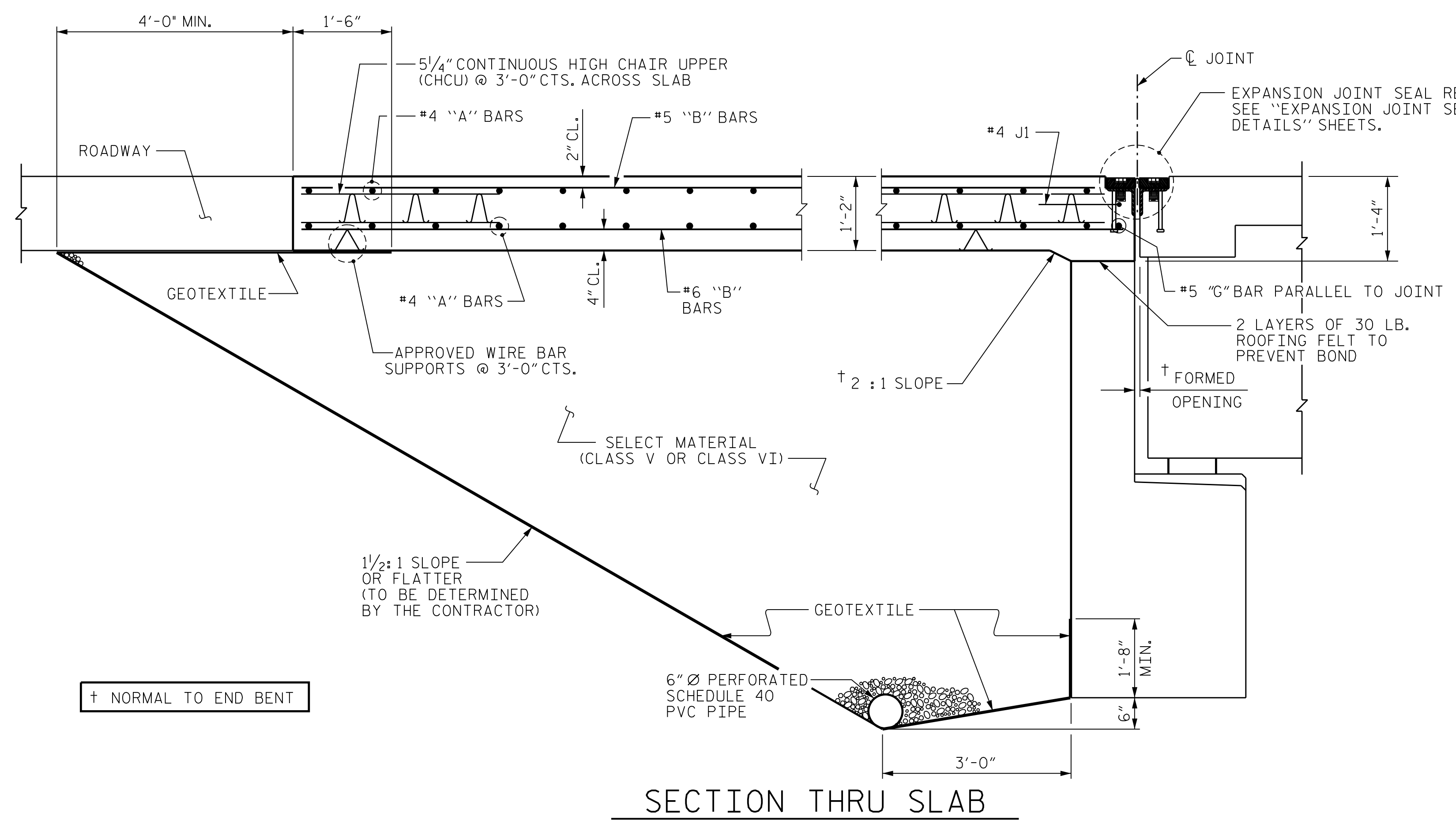
SECTION S-S



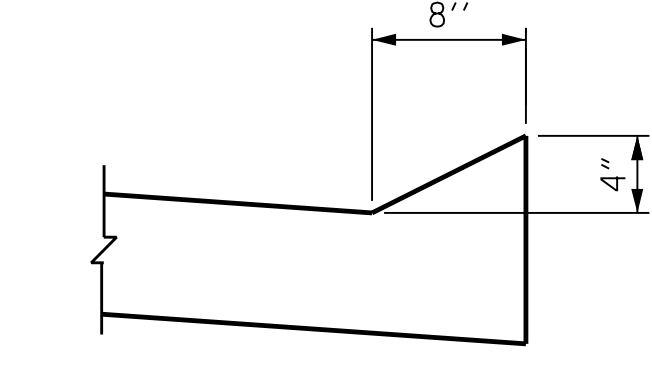
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

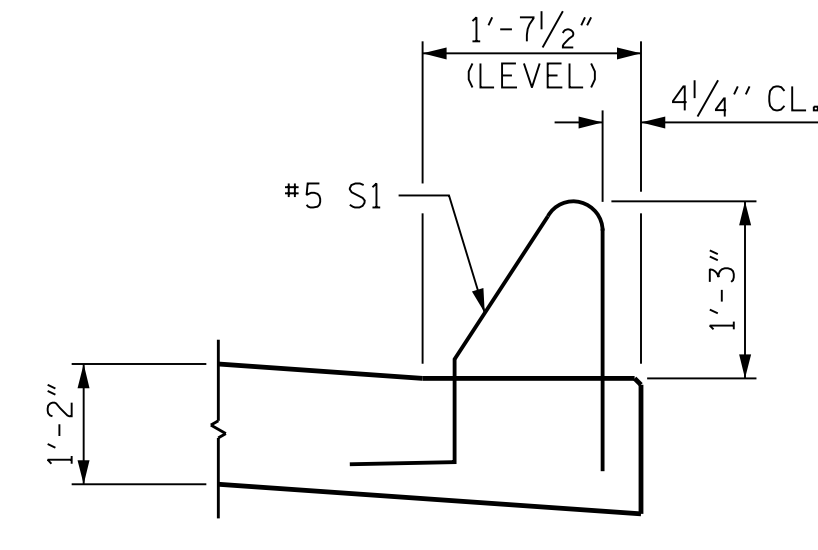
TEMPORARY BERM AND SLOPE DRAIN DETAILS  
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



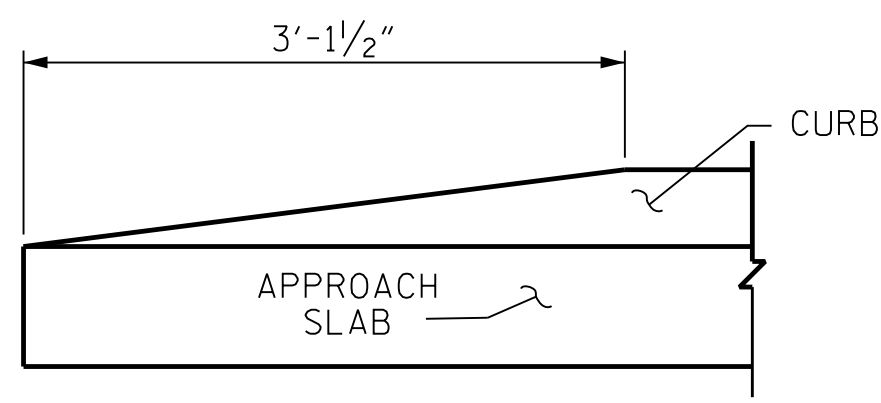
SECTION THRU SLAB



SECTION N-N



SECTION K-K



END OF CURB WITHOUT SHOULDER BERM GUTTER  
CURB DETAILS

SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"

**NOTES**

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

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

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

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

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

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

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

FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.

PROJECT NO. U-2579AB  
FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-  
 SHEET 4 OF 6

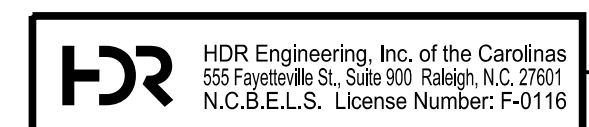
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**BRIDGE APPROACH SLAB DETAILS**



10/18/2021

REVISIONS						SHEET NO. 503-59 TOTAL SHEETS 61
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	
2	--	--	4	--	--	

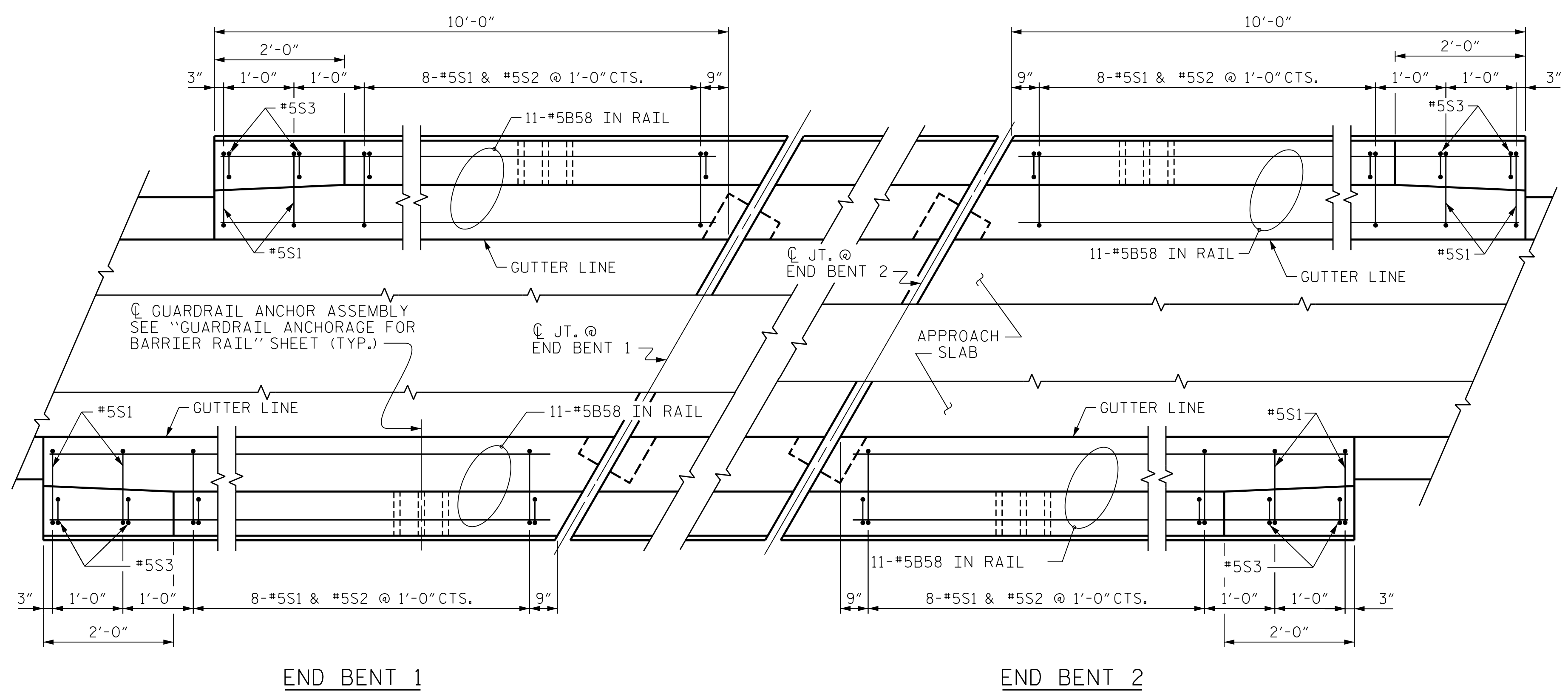


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

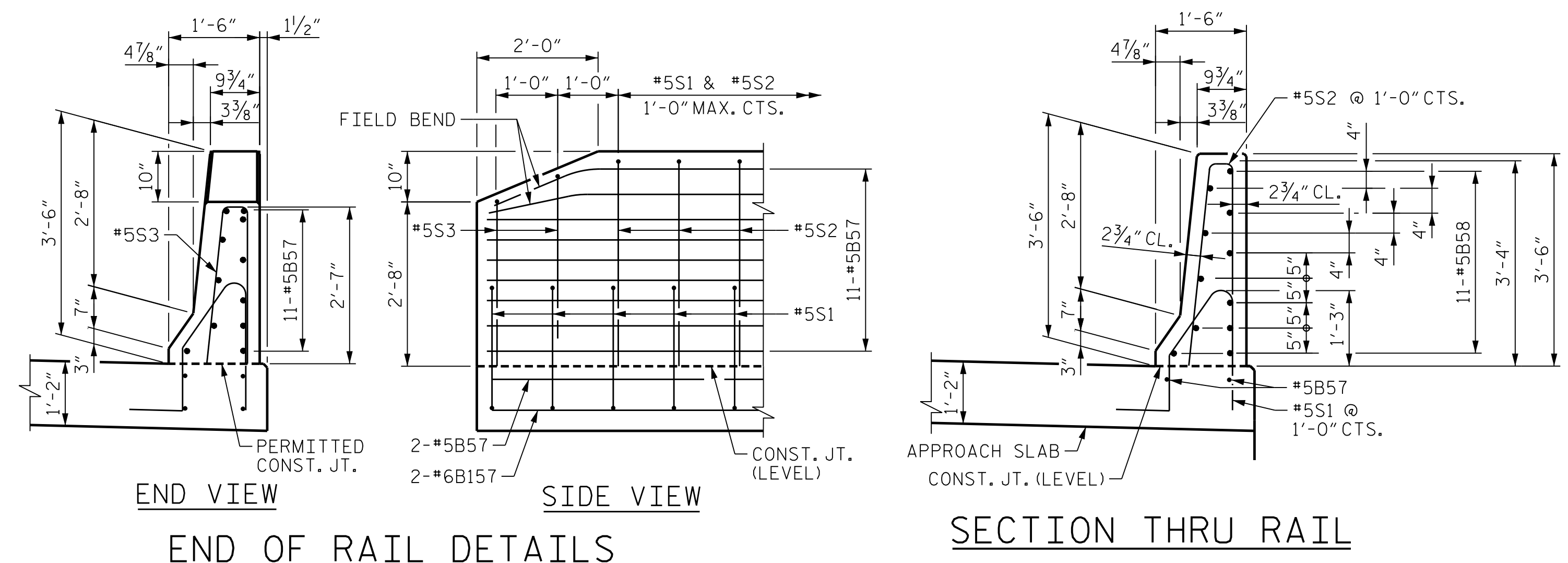
PLOT DRIVER: NCDOT\_pdf\_color\_eng-50dpi  
 USER: PPETERSO DATE: 10/14/2021 TIME: 3:53:11 PM  
 FILE: ... \BRIDGE APPROACH SL

DES BY: <u>A. MILLER</u>	DATE: <u>04/19</u>	DWG BY: <u>B. PETERSON</u>	DATE: <u>04/19</u>
DES CHK: <u>S. NIFONG</u>	DATE: <u>04/19</u>	CHK BY: <u>S. NIFONG</u>	DATE: <u>05/19</u>





PLAN OF BARRIER RAIL

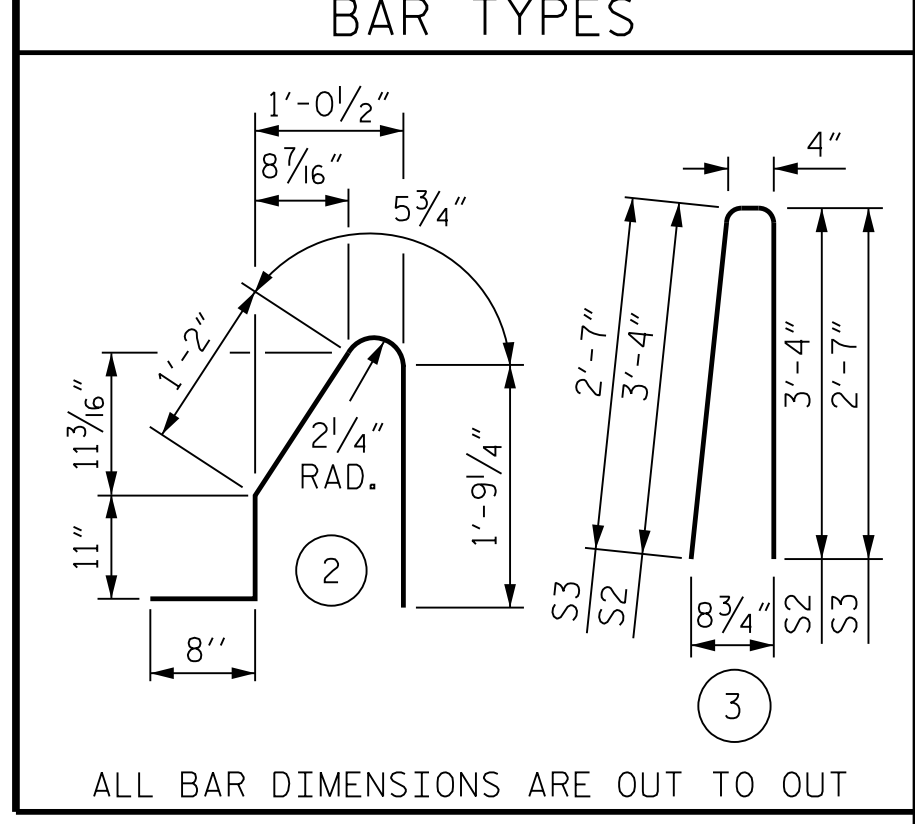


END OF RAIL DETAILS

SECTION THRU RAIL

BILL OF MATERIAL					
BARRIER RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B58	44	#5	STR	9'-7"	440
* S1	40	#5	2	5'-0"	209
* S2	32	#5	3	7'-0"	234
* S3	8	#5	3	5'-6"	46

\* EPOXY COATED REINFORCING STEEL LBS. 929  
 CLASS "AA" CONCRETE CU. YDS. 5.6  
 CONCRETE BARRIER RAIL LIN. FT. 41.1



NOTES

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED

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

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

PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 47+28.33 -Y15REV-  
 SHEET 5 OF 6

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

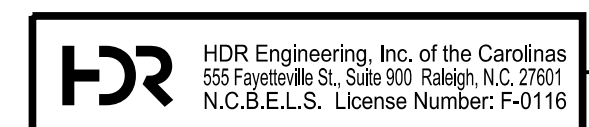
BRIDGE APPROACH  
 SLAB DETAILS



10/18/2021

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
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2	--	--	4	--	--

SHEET NO. 503-60  
 TOTAL SHEETS 61



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

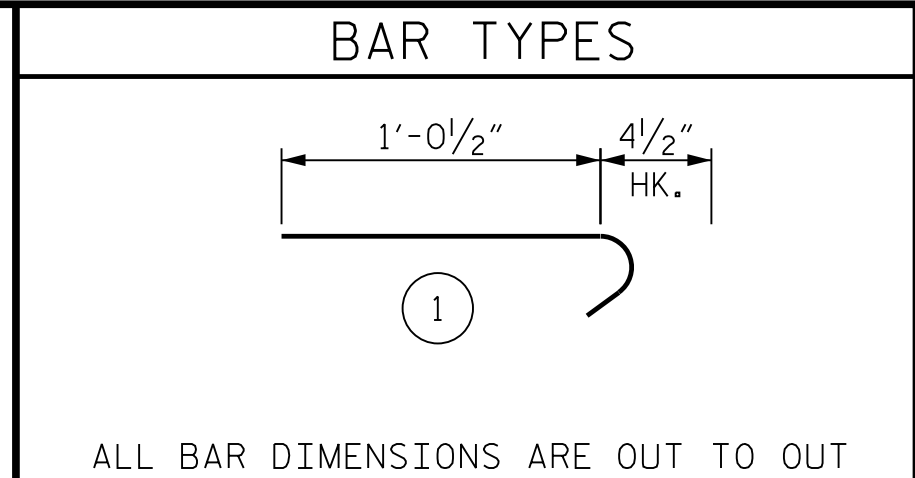
PLOT DRIVER: NCDOT\_pdf\_color\_eng-50.ppt  
 USER: PPETERSO DATE: 10/14/2021  
 FILE: ...BRIDGE APPROACH SL

DES BY: A. MILLER DATE: 04/19  
 DES CHK: S. NIFONG DATE: 04/19  
 DWG BY: B. PETERSON DATE: 04/19  
 CHK BY: S. NIFONG DATE: 05/19

BILL OF MATERIAL

FOR ALL APPROACH SLABS

Table with columns: BAR NO., SIZE, TYPE, LENGTH, WEIGHT. Contains multiple rows of material specifications for various bar types and lengths.



ALL BAR DIMENSIONS ARE OUT TO OUT

NOTE
\* DENOTES EPOXY COATED BARS

Summary table for REINFORCING STEEL (LBS. 37,707), EPOXY COATED REINFORCING STEEL (LBS. 29,152), and CLASS 'AA' CONCRETE BREAKDOWN (APPROACH 1-6).

PLOT DRIVER: NCDOT... PEN: FBI... USER: PETERSON... DATE: 10/14/2021... FILE: ... BRIDGE APPROACH SLAB

PROJECT NO. U-2579AB
FORSYTH COUNTY
STATION: 47+28.33 -Y15REV-

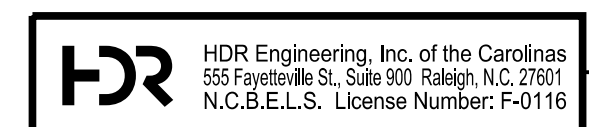
SHEET 6 OF 6



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
BRIDGE APPROACH SLAB
BILL OF MATERIALS

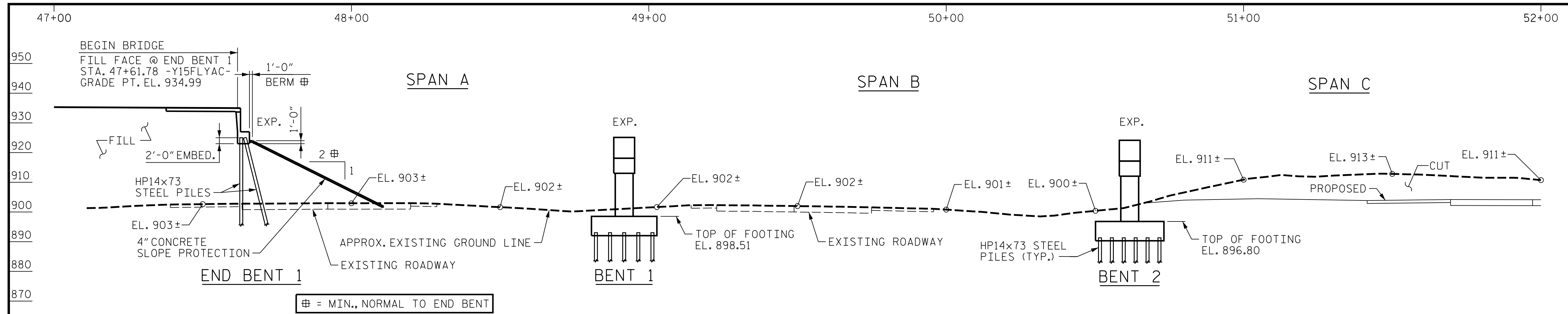
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DES CHK: S. NIFONG DATE: 04/19 CHK BY: S. NIFONG DATE: 05/19

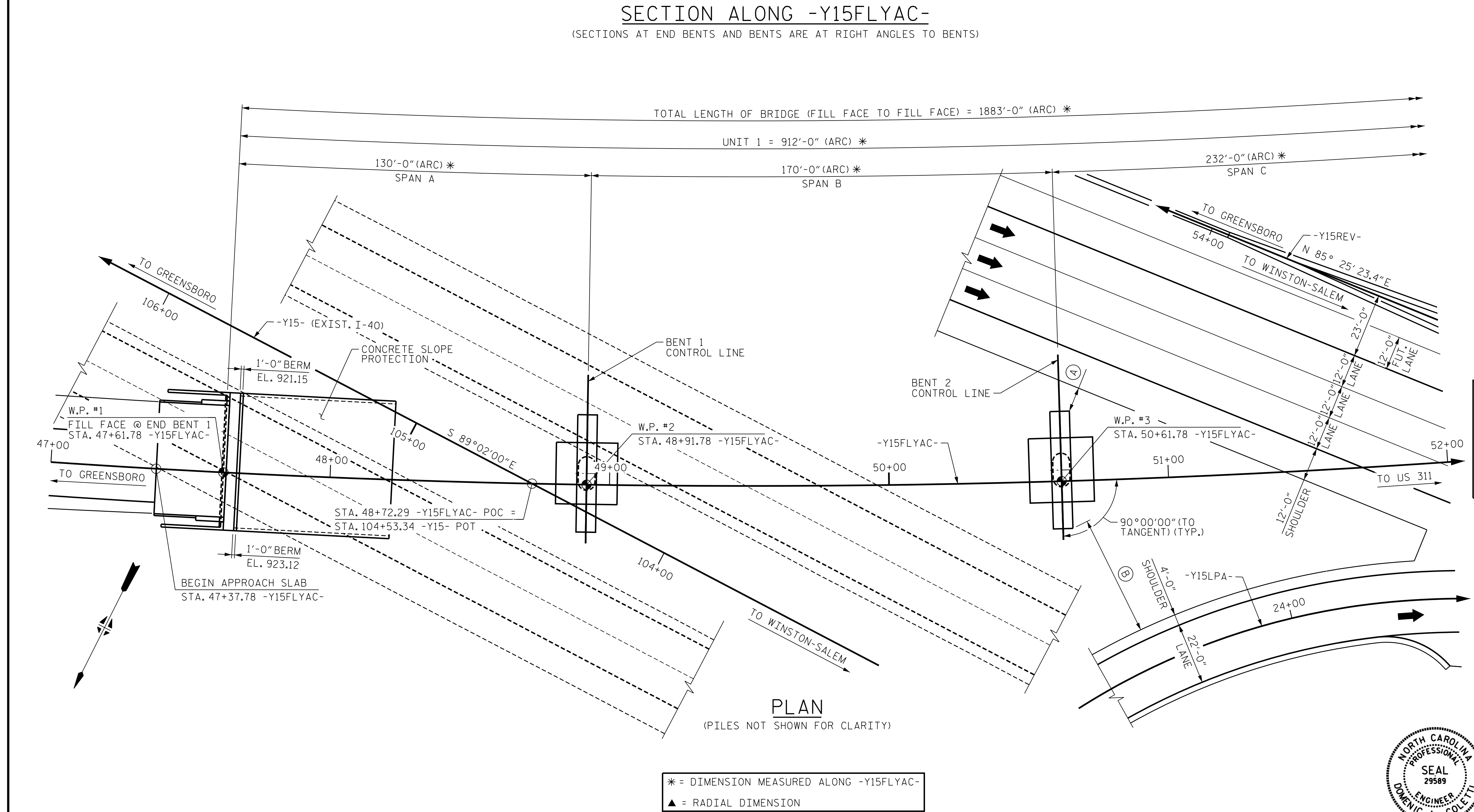


10/18/2021
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED





HORIZONTAL CLEARANCE DIMENSIONS	
(A)	8'-9" MIN. HORIZ. CLEAR TO FACE OF CAP
(B)	43'-2" MIN. HORIZ. CLEAR TO FACE OF CAP ▲



HORIZONTAL CURVE DATA -Y15FLYAC-	
PI STA.	54+77.32
Δ	82°37'38.4" (LT.)
D	01°33'55.7"
L	5,278.16'
T	3,216.94'
R	3,660.00'

PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 60+66.06 -Y15FLYAC-  
793+45.42 -L-  
 SHEET 1 OF 11 BRIDGE NO. 725

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**  
 BRIDGE ON -Y15FLYAC- IN  
 INTERCHANGE CONNECTING WINSTON-SALEM  
 NORTHERN BELTWAY AND I-40 BYPASS  
 BETWEEN SR 4315 AND SR 2679



10/15/2021

\* = DIMENSION MEASURED ALONG -Y15FLYAC-  
 ▲ = RADIAL DIMENSION

DES BY: M. NEIHEISEL	DATE: 07/19	DWG BY: B. PETERSON	DATE: 07/19
DES CHK: S. NIFONG	DATE: 07/19	CHK BY: S. NIFONG	DATE: 07/19

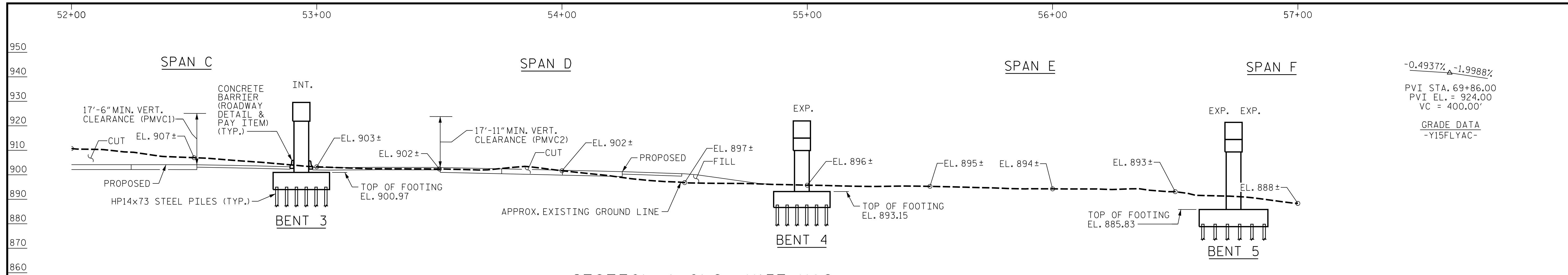
**HDR** HDR Engineering, Inc. of the Carolinas  
 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601  
 N.C.B.E.L.S. License Number: F-0116

DOCUMENT NOT CONSIDERED FINAL  
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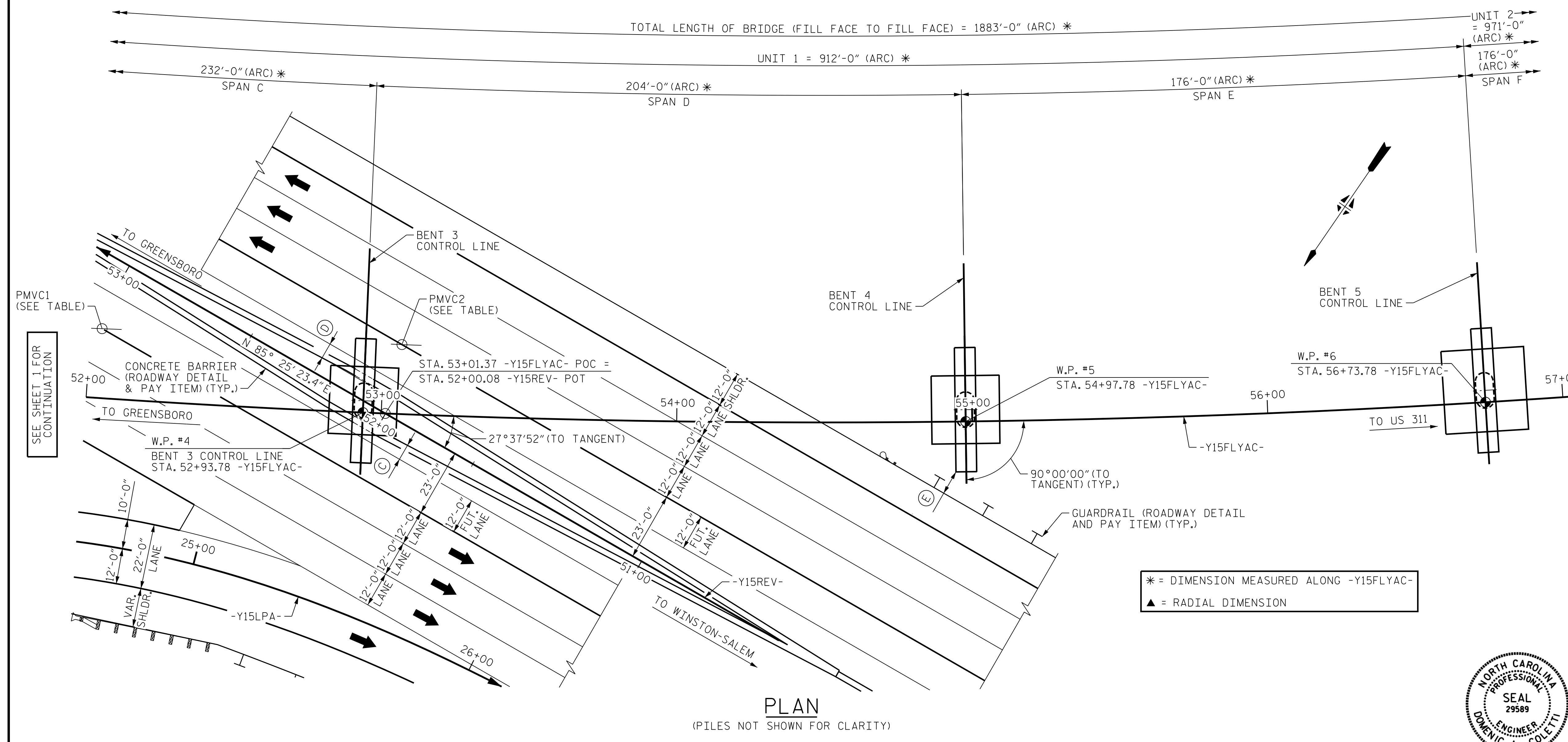
REVISIONS						SHEET NO. S04-001 TOTAL SHEETS 144
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2	--	--	4	--	--	

PLOT DRIVER: NCDOT\_pdf\_color\_eng-50.ppt  
 USER: PPRETerso  
 DATE: 10/14/2021  
 TIME: 3:57:04 PM  
 FILE: ... \GENERA





LOCATION	ROADWAY ABOVE		ELEV. ON ROADWAY ABOVE	ROADWAY BELOW		ELEV. ON ROADWAY BELOW
	STATION	OFFSET		STATION	OFFSET	
PMVC1	52+03.78	-Y15FLYAC- 23.50' (LT)	931.86	52+97.47	-Y15REV- 23.00' (LT)	904.66
PMVC2	53+06.10	-Y15FLYAC- 23.50' (LT)	931.36	52+06.82	-Y15REV- 23.00' (RT)	903.66



**HORIZONTAL CLEARANCE DIMENSIONS**

- C 5'-4" MIN. HORIZ. CLEAR TO FACE OF COLUMN
- D 5'-3" MIN. HORIZ. CLEAR TO FACE OF COLUMN
- E 8'-3" MIN. HORIZ. CLEAR TO FACE OF CAP

**HORIZONTAL CURVE DATA -Y15FLYAC-**

PI STA. 54+77.32  
Δ = 82°37'38.4" (LT.)  
D = 01°33'55.7"  
L = 5,278.16'  
T = 3,216.94'  
R = 3,660.00'

PROJECT NO. U-2579AB  
FORSYTH COUNTY  
STATION: 60+66.06 -Y15FLYAC-  
SHEET 2 OF 11

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**GENERAL DRAWING**  
BRIDGE ON -Y15FLYAC- IN INTERCHANGE CONNECTING WINSTON-SALEM NORTHERN BELTWAY AND I-40 BYPASS BETWEEN SR 4315 AND SR 2679

REVISIONS						SHEET NO. 504-002 TOTAL SHEETS 144
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2	--	--	4	--	--	



10/15/2021

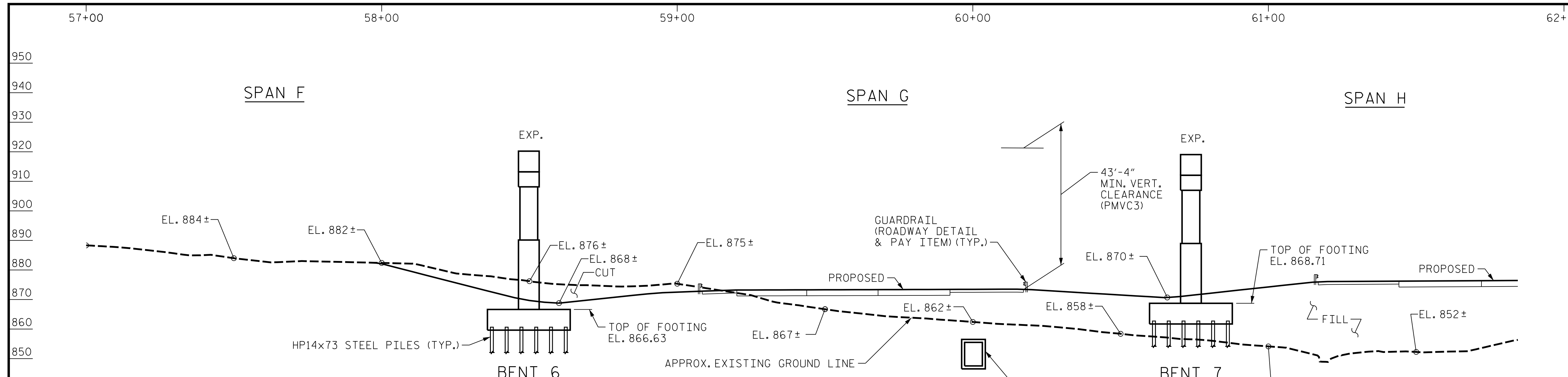
**HDR** HDR Engineering, Inc. of the Carolinas  
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601  
N.C.B.E.L.S. License Number: F-0116

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLOT DRIVER: NCDOT\_pdf\_color\_eng-50.ppt  
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 TIME: 3:57:09 PM

DES BY: M. NEIHEISEL	DATE: 07/19	DWG BY: B. PETERSON	DATE: 07/19
DES CHK: S. NIFONG	DATE: 07/19	CHK BY: S. NIFONG	DATE: 07/19





**HORIZONTAL CLEARANCE DIMENSIONS**

- (F) 22'-6" MIN. HORIZ. CLEAR TO FACE OF COLUMN ▲
- (G) 16'-10" MIN. HORIZ. CLEAR TO FACE OF COLUMN ▲
- (H) 16'-10" MIN. HORIZ. CLEAR TO FACE OF COLUMN ▲

**POINT OF MINIMUM VERTICAL CLEARANCE (PMVC3)**

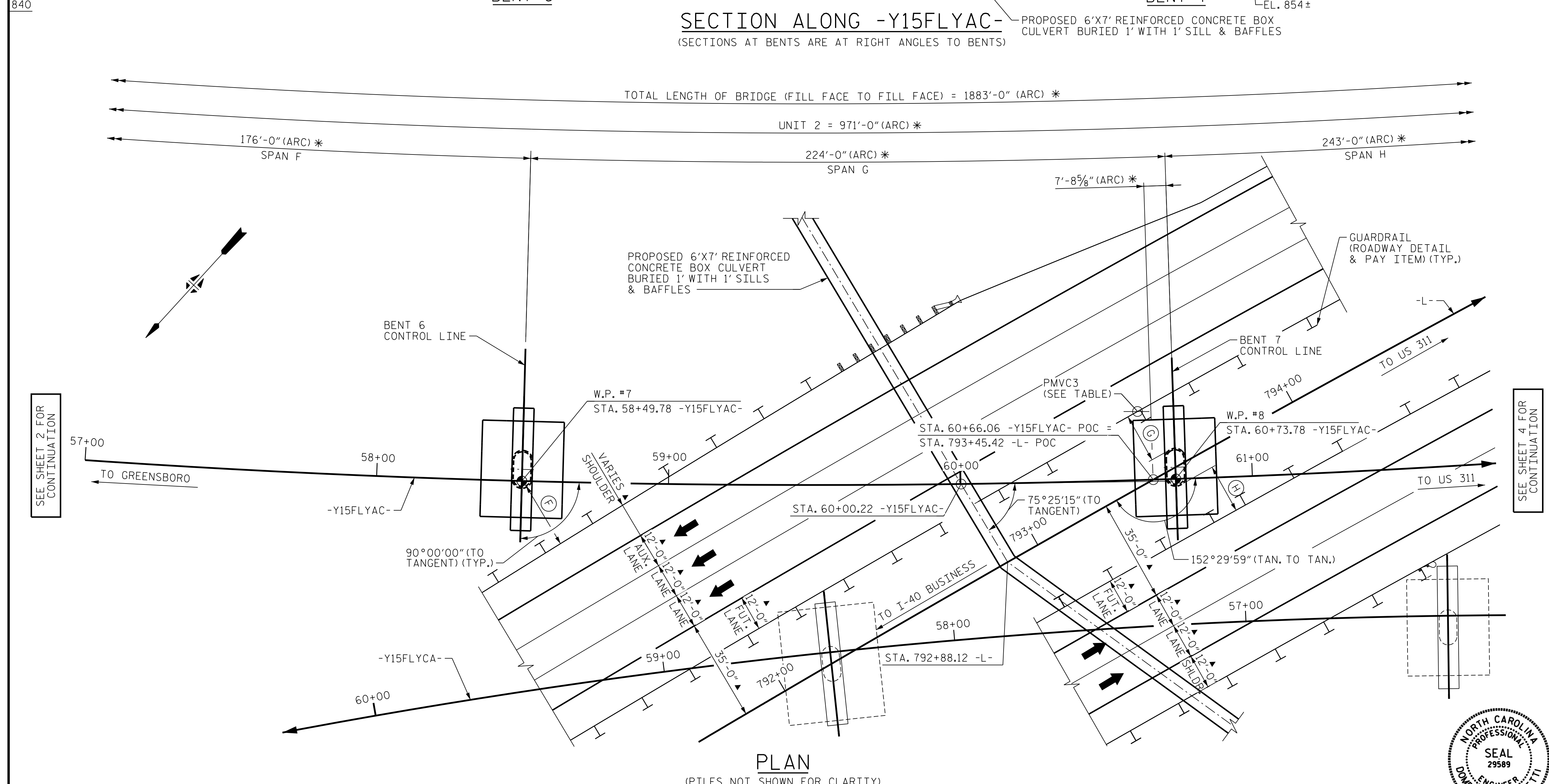
ROADWAY ABOVE		ELEV. ON ROADWAY ABOVE
STATION	OFFSET	
60+61.37 -Y15FLYAC-	23.50' (LT)	927.63
ROADWAY BELOW		ELEV. ON ROADWAY BELOW
STATION	OFFSET	
793+52.13 -L-	23.00' (LT)	874.54

**HORIZONTAL CURVE DATA -Y15FLYAC-**

PI STA. 54+77.32  
 $\Delta = 82^\circ 37' 38.4''$  (LT.)  
 $D = 01^\circ 33' 55.7''$   
 $L = 5,278.16'$   
 $T = 3,216.94'$   
 $R = 3,660.00'$

**HORIZONTAL CURVE DATA -L-**

PI STA. 795+15.62  
 $\Delta = 29^\circ 47' 50.6''$  (RT.)  
 $D = 00^\circ 44' 58.0''$   
 $L = 3,975.88'$   
 $T = 2,033.99'$   
 $R = 7,645.00'$



PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 60+66.06 -Y15FLYAC-  
 SHEET 3 OF 11



10/15/2021  
 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**  
 BRIDGE ON -Y15FLYAC- IN INTERCHANGE CONNECTING WINSTON-SALEM NORTHERN BELTWAY AND I-40 BYPASS BETWEEN SR 4315 AND SR 2679

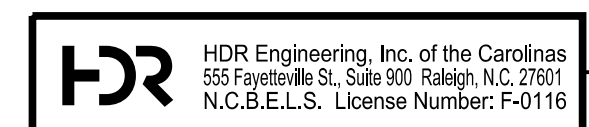
**REVISIONS**

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2	--	--	4	--	--

SHEET NO. 004-003  
 TOTAL SHEETS 144

DES BY: M. NEIHEISEL DATE: 07/19  
 DES CHK: S. NIFONG DATE: 07/19  
 DWG BY: B. PETERSON DATE: 07/19  
 CHK BY: S. NIFONG DATE: 07/19

\* = DIMENSION MEASURED ALONG -Y15FLYAC-  
 ▲ = RADIAL DIMENSION



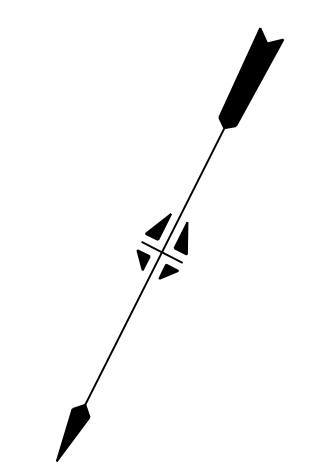
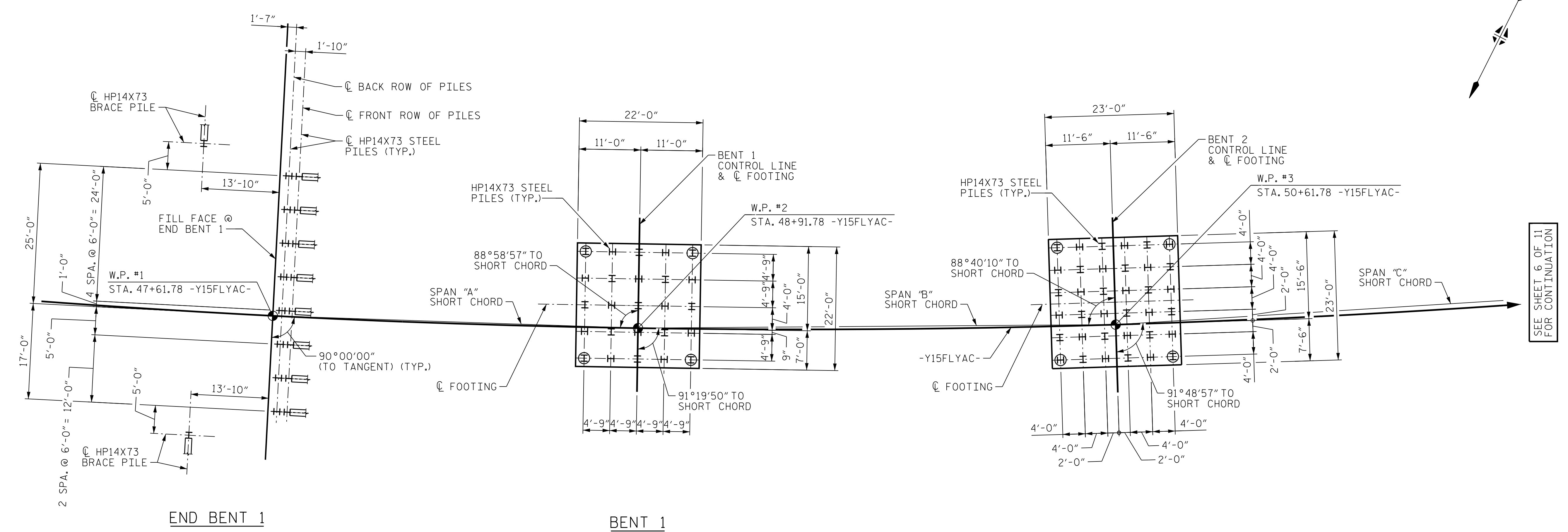
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PLOT DRIVER: NCDOT\_pdf\_color\_eng-50.ppt  
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FILE: ... \GENERAL



SEE SHEET 6 OF 11  
FOR CONTINUATION

**NOTES**

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NOS.1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 75 TONS PER PILE.  
DRIVE PILES AT END BENT NOS.1 AND 2 TO A REQUIRED DRIVING RESISTANCE OF 125 TONS PER PILE.

PILES AT BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 150 TONS PER PILE.  
DRIVE PILES AT BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 250 TONS PER PILE.

PILES AT BENT NOS. 2, 4 AND 5 ARE DESIGNED FOR A FACTORED RESISTANCE OF 135 TONS PER PILE.  
DRIVE PILES AT BENT NOS. 2, 4 AND 5 TO A REQUIRED DRIVING RESISTANCE OF 225 TONS PER PILE.

PILES AT BENT NOS.3 AND 6 ARE DESIGNED FOR A FACTORED RESISTANCE OF 143 TONS PER PILE.  
DRIVE PILES AT BENT NOS.3 AND 6 TO A REQUIRED DRIVING RESISTANCE OF 238 TONS PER PILE.

PILES AT BENT NO.7 ARE DESIGNED FOR A FACTORED RESISTANCE OF 158 TONS PER PILE.  
DRIVE PILES AT BENT NO.7 TO A REQUIRED DRIVING RESISTANCE OF 263 TONS PER PILE.

PILES AT BENT NO.8 ARE DESIGNED FOR A FACTORED RESISTANCE OF 180 TONS PER PILE.  
DRIVE PILES AT BENT NO.8 TO A REQUIRED DRIVING RESISTANCE OF 300 TONS PER PILE.

PILES AT BENT NO.9 ARE DESIGNED FOR A FACTORED RESISTANCE OF 175 TONS PER PILE.  
DRIVE PILES AT BENT NO.9 TO A REQUIRED DRIVING RESISTANCE OF 292 TONS PER PILE.

TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED AT BENT NOS.1-9. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS AND FOR PILE DRIVING CRITERIA, SEE PILE DRIVING CRITERIA PROVISION.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 45,000 TO 72,600 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT NOS.1-9. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.


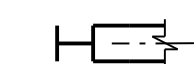

**FOUNDATION LAYOUT**

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE AT BOTTOM OF THE CAP OR FOOTING, MEASURED FROM THE TANGENT TO -Y15FLYAC- AT EACH WORK POINT.

FOOTING IN THE TRANSVERSE DIRECTION IS COINCIDENT WITH THE BENT CONTROL LINE, AND RADIAL TO -Y15FLYAC-, AT ALL BENTS.

OBSERVE PILE ORIENTATION AND LOCATION OF OMITTED PILES IN EACH FOOTING.

**LEGEND**

-  HP14X73 VERTICAL PILE
-  HP14X73 BRACE PILE (BATTER 3H:12V)
-  HP14X73 TENSION PILE



PROJECT NO. U-2579AB  
FORSYTH COUNTY  
 STATION: 60+66.06 -Y15FLYAC-  
793+45.42 -L-  
 SHEET 5 OF 11 BRIDGE NO. 725

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

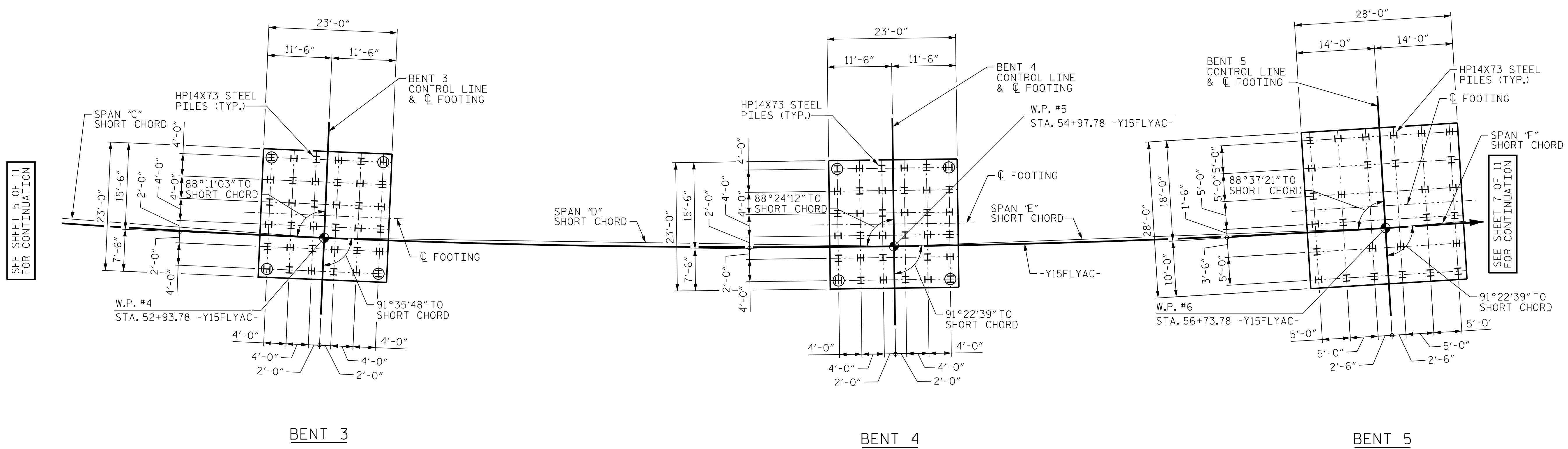
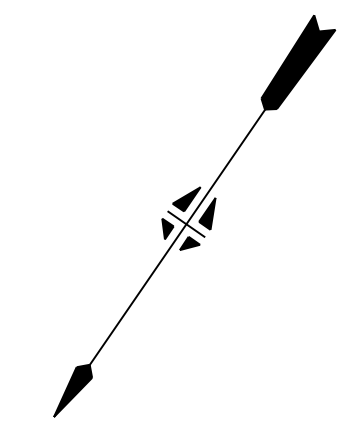
**GENERAL DRAWING**  
 BRIDGE ON -Y15FLYAC- IN  
 INTERCHANGE CONNECTING WINSTON-SALEM  
 NORTHERN BELTWAY AND I-40 BYPASS  
 BETWEEN SR 4315 AND SR 2679

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
1	--	--	3	--	--	144	
2	--	--	4	--	--	144	

DES BY: <u>J. CABABE</u>	DATE: <u>10/19</u>	DWG BY: <u>D. CARTER</u>	DATE: <u>11/19</u>
DES CHK: <u>S. CHAUDHARI</u>	DATE: <u>10/19</u>	CHK BY: <u>M. WERNER</u>	DATE: <u>12/19</u>

**HDR** HDR Engineering, Inc. of the Carolinas  
 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601  
 N.C.B.E.L.S. License Number: F-0116

10/15/2021  
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 UNLESS ALL SIGNATURES COMPLETED



SEE SHEET 5 OF 11 FOR CONTINUATION

SEE SHEET 7 OF 11 FOR CONTINUATION

BENT 3

BENT 4

BENT 5

### FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE AT BOTTOM OF THE CAP OR FOOTING, MEASURED FROM THE TANGENT TO -Y15FLYAC- AT EACH WORK POINT.

☉ FOOTING IN THE TRANSVERSE DIRECTION IS COINCIDENT WITH THE BENT CONTROL LINE, AND RADIAL TO -Y15FLYAC-, AT ALL BENTS.

OBSERVE PILE ORIENTATION AND LOCATION OF OMITTED PILES IN EACH FOOTING.

**NOTE**  
SEE NOTES ON SHEET 5 OF 11.

PROJECT NO. U-2579AB  
FORSYTH COUNTY  
STATION: 60+66.06 -Y15FLYAC-  
SHEET 6 OF 11

- LEGEND**
- HP14X73 VERTICAL PILE
  - HP14X73 BRACE PILE (BATTER 3H:12V)
  - HP14X73 TENSION PILE



*Domenic A. Colletti* 10/15/2021

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**GENERAL DRAWING**  
BRIDGE ON -Y15FLYAC- IN  
INTERCHANGE CONNECTING WINSTON-SALEM  
NORTHERN BELTWAY AND I-40 BYPASS  
BETWEEN SR 4315 AND SR 2679

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
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2	--	--	4	--	--	144	

**HDR** HDR Engineering, Inc. of the Carolinas  
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601  
N.C.B.E.L.S. License Number: F-0116

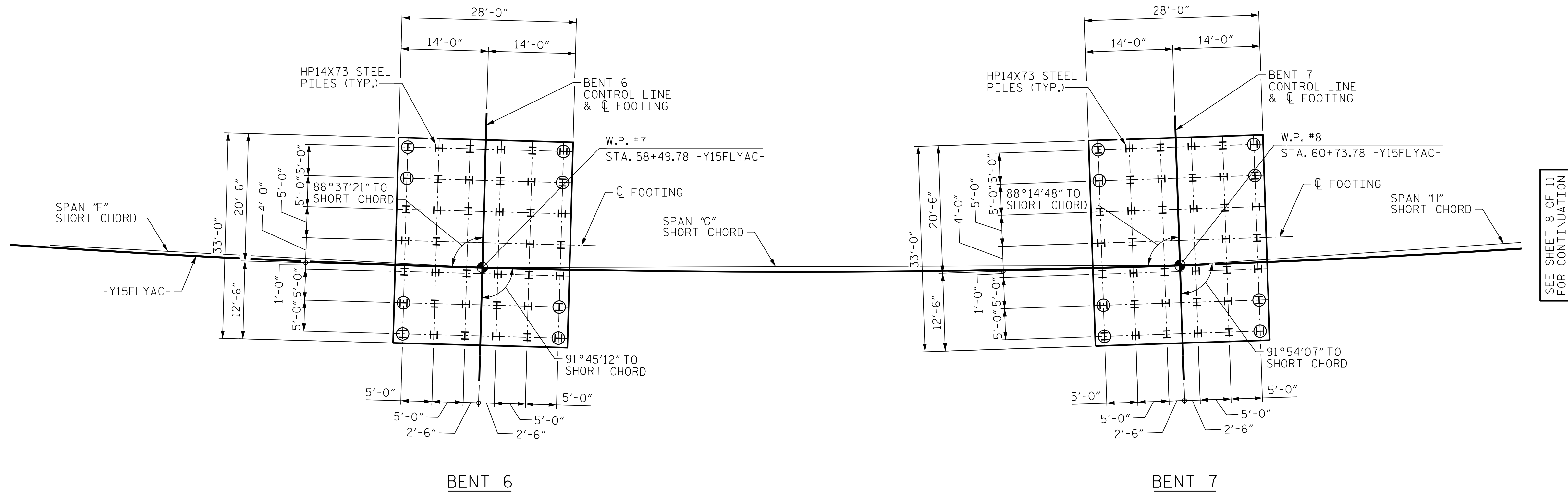
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DES BY: J. CABABE	DATE: 10/19	DWG BY: D. CARTER	DATE: 11/19
DES CHK: S. CHAUDHARI	DATE: 10/19	CHK BY: M. WERNER	DATE: 12/19



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SEE SHEET 6 OF 11 FOR CONTINUATION

SEE SHEET 8 OF 11 FOR CONTINUATION

### FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE AT BOTTOM OF THE CAP OR FOOTING, MEASURED FROM THE TANGENT TO -Y15FLYAC- AT EACH WORK POINT.

☉ FOOTING IN THE TRANSVERSE DIRECTION IS COINCIDENT WITH THE BENT CONTROL LINE, AND RADIAL TO -Y15FLYAC-, AT ALL BENTS.

OBSERVE PILE ORIENTATION AND LOCATION OF OMITTED PILES IN EACH FOOTING.

**NOTE**  
SEE NOTES ON SHEET 5 OF 11.

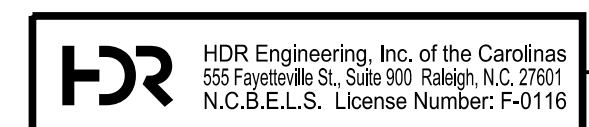
PROJECT NO. U-2579AB  
FORSYTH COUNTY  
STATION: 60+66.06 -Y15FLYAC-  
SHEET 7 OF 11

- LEGEND**
- ⊥ HP14X73 VERTICAL PILE
  - ⊥---⊥ HP14X73 BRACE PILE (BATTER 3H:12V)
  - ⊙ HP14X73 TENSION PILE



*Dominic A. Colletti* 10/15/2021

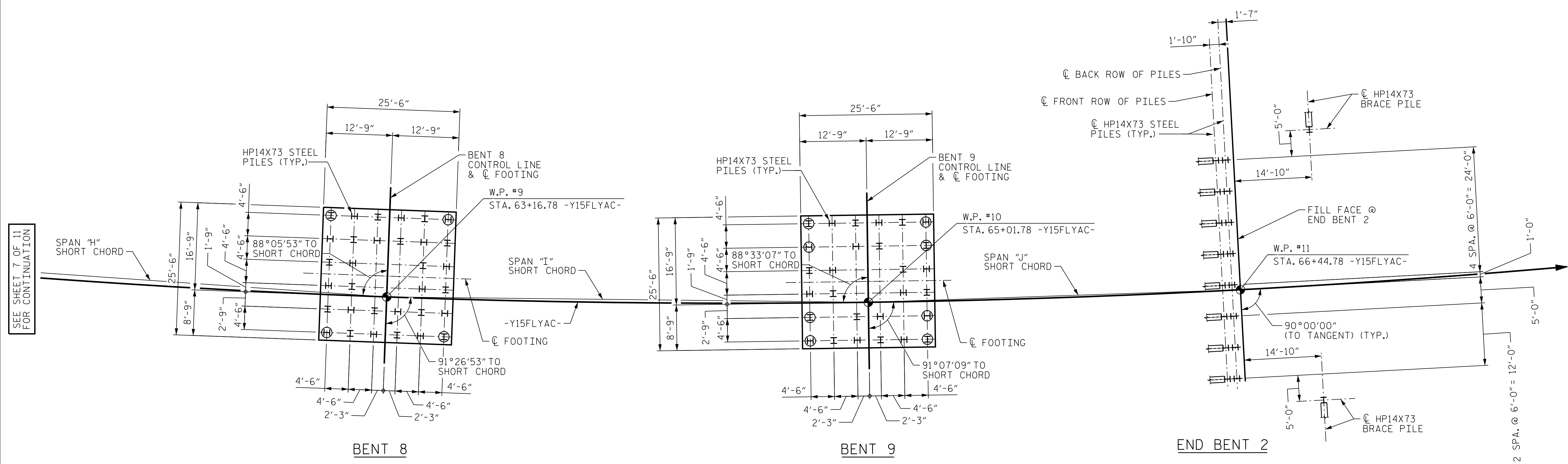
DES BY: J. CABABE	DATE: 10/19	DWG BY: D. CARTER	DATE: 11/19
DES CHK: S. CHAUDHARI	DATE: 10/19	CHK BY: M. WERNER	DATE: 12/19



**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
<b>GENERAL DRAWING</b>					
BRIDGE ON -Y15FLYAC- IN INTERCHANGE CONNECTING WINSTON-SALEM NORTHERN BELTWAY AND I-40 BYPASS BETWEEN SR 4315 AND SR 2679					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
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2	--	--	4	--	--
					SHEET NO. S04-007 TOTAL SHEETS 144

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### FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE AT BOTTOM OF THE CAP OR FOOTING, MEASURED FROM THE TANGENT TO -Y15FLYAC- AT EACH WORK POINT.

☐ FOOTING IN THE TRANSVERSE DIRECTION IS COINCIDENT WITH THE BENT CONTROL LINE, AND RADIAL TO -Y15FLYAC-, AT ALL BENTS.

OBSERVE PILE ORIENTATION AND LOCATION OF OMITTED PILES IN EACH FOOTING.

**NOTE**  
SEE NOTES ON SHEET 5 OF 11.

PROJECT NO. U-2579AB  
FORSYTH COUNTY  
 STATION: 60+66.06 -Y15FLYAC-  
 SHEET 8 OF 11

- LEGEND**
- ⊥ HP14X73 VERTICAL PILE
  - ⊥--- HP14X73 BRACE PILE (BATTER 3H:12V)
  - ⊕ HP14X73 TENSION PILE



*Domenic A. Coletti* 10/15/2021

DES BY: J. CABABE	DATE: 10/19	DWG BY: D. CARTER	DATE: 11/19
DES CHK: S. CHAUDHARI	DATE: 10/19	CHK BY: M. WERNER	DATE: 12/19



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

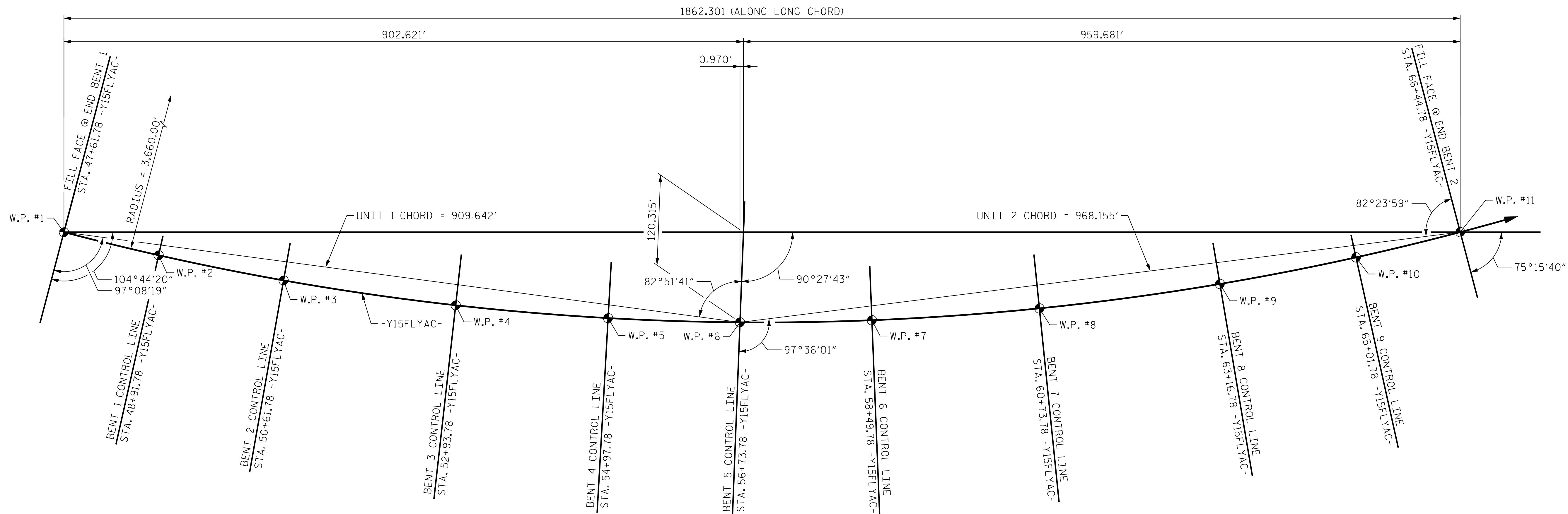
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**  
 BRIDGE ON -Y15FLYAC- IN INTERCHANGE CONNECTING WINSTON-SALEM NORTHERN BELTWAY AND I-40 BYPASS BETWEEN SR 4315 AND SR 2679

REVISIONS					
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1	--	--	3	--	--
2	--	--	4	--	--

SHEET NO. 504-008	TOTAL SHEETS 144
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### LONG CHORD LAYOUT

ALL BENTS ARE RADIAL TO -Y15FLYAC-

#### HORIZONTAL CURVE DATA -Y15FLYAC-

PI STA. 54+77.32  
 Δ = 82°37'38.4" (LT.)  
 D = 01°33'55.7"  
 L = 5,278.16'  
 T = 3,216.94'  
 R = 3,660.00'

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 9 OF 11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

### GENERAL DRAWING

BRIDGE ON -Y15FLYAC- IN  
 INTERCHANGE CONNECTING WINSTON-SALEM  
 NORTHERN BELTWAY AND I-40 BYPASS  
 BETWEEN SR 4315 AND SR 2679



*Dominic A. Colletti* 10/15/2021

#### REVISIONS

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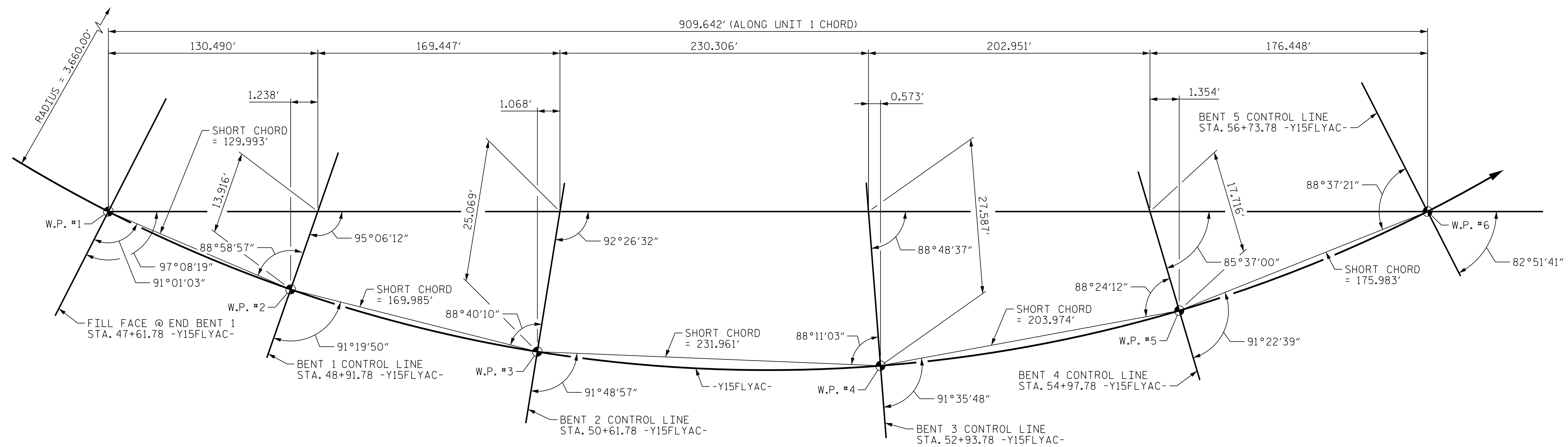
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DES BY: <u>S. NIFONG</u>	DATE: <u>07/19</u>	DWG BY: <u>B. PETERSON</u>	DATE: <u>07/19</u>
DES CHK: <u>M. NEIHEISEL</u>	DATE: <u>07/19</u>	CHK BY: <u>S. NIFONG</u>	DATE: <u>10/19</u>

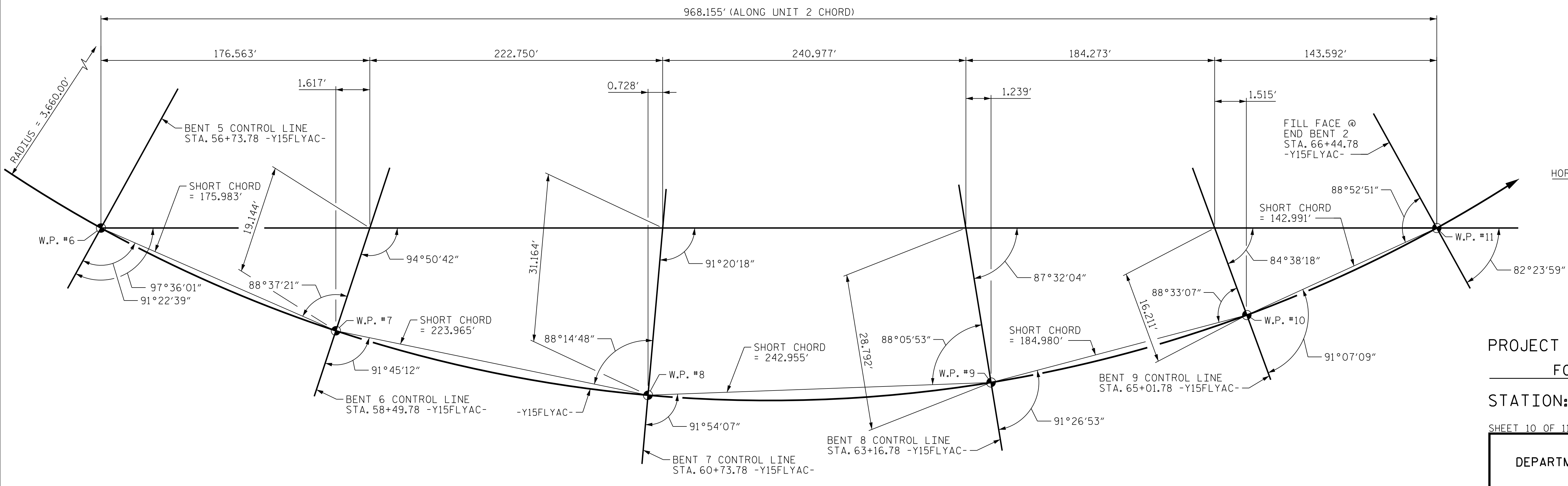


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**UNIT 1 CHORD LAYOUT**  
ALL BENTS ARE RADIAL TO -Y15FLYAC-



**UNIT 2 CHORD LAYOUT**  
ALL BENTS ARE RADIAL TO -Y15FLYAC-

HORIZONTAL CURVE DATA -Y15FLYAC-

PI STA.	54+77.32
Δ	82°37'38.4" (LT.)
D	01°33'55.7"
L	5,278.16'
T	3,216.94'
R	3,660.00'

PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 60+66.06 -Y15FLYAC-  
 SHEET 10 OF 11

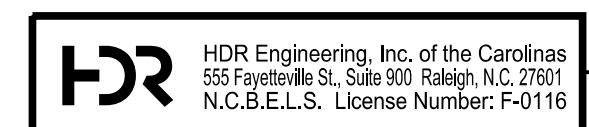


10/15/2021

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**  
 BRIDGE ON -Y15FLYAC- IN  
 INTERCHANGE CONNECTING WINSTON-SALEM  
 NORTHERN BELTWAY AND I-40 BYPASS  
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REVISIONS						SHEET NO.	
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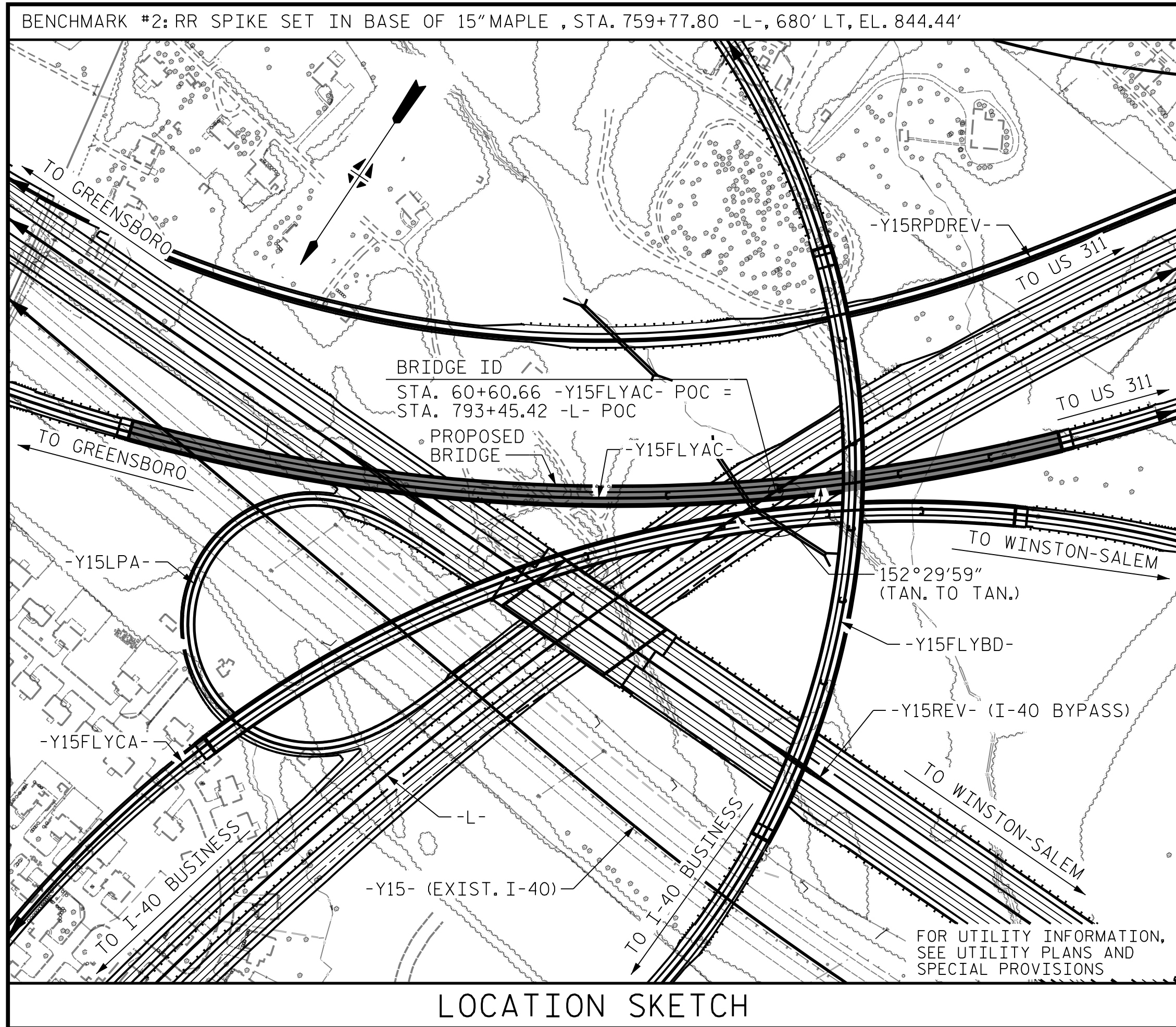


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DES BY: S. NIFONG	DATE: 07/19	DWG BY: B. PETERSON	DATE: 07/19
DES CHK: M. NEIHEISEL	DATE: 07/19	CHK BY: S. NIFONG	DATE: 10/19





TOTAL BILL OF MATERIAL										
	FOUNDATION EXCAVATION FOR BENT	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS AA CONCRETE	CLASS A CONCRETE	BRIDGE APPROACH SLABS, STA. 60+66.06 -Y15FLYAC-	REINFORCING STEEL	APPROX. 3,635,000 LBS. STRUCTURAL STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP14X73 STEEL PILES
	LUMP SUM	EA.	SQ. FT.	SQ. FT.	CU. YDS.	CU. YDS.	LUMP SUM	LB.	LUMP SUM	EA.
SUPERSTRUCTURE			81,227	71,208			LUMP SUM		LUMP SUM	
END BENT 1						83.3				18
BENT 1	LUMP SUM				259.2			10,880		25
BENT 2	LUMP SUM				271.8			50,124		36
BENT 3	LUMP SUM				173.0			54,139		36
BENT 4	LUMP SUM				275.3			48,066		36
BENT 5	LUMP SUM				367.3			62,150		28
BENT 6	LUMP SUM				460.6			83,276		40
BENT 7	LUMP SUM				451.1			81,642		40
BENT 8	LUMP SUM				388.1			75,432		32
BENT 9	LUMP SUM				385.9			72,399		28
END BENT 2						79.6		10,704		18
TOTAL	LUMP SUM	1	81,227	71,208	3,032.3	162.9	LUMP SUM	594,871	LUMP SUM	337
	HP14x73 STEEL PILES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	DISC BEARINGS	EXPANSION JOINT SEALS	MODULAR EXPANSION JOINT SEALS	6000 PSI CONCRETE	POST TENSIONING TENDONS	POST TENSIONING ENCASEMENT	
	NO.	LIN. FT.	LIN. FT.	SQ. YDS.	LUMP SUM	LUMP SUM	LUMP SUM	CU. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE			3,797.5		LUMP SUM	LUMP SUM	LUMP SUM			
END BENT 1	18	1,440		267						
BENT 1	25	938								
BENT 2	36	1,260								
BENT 3	36	2,160					95.2	LUMP SUM	LUMP SUM	
BENT 4	36	2,250								
BENT 5	28	1,820								
BENT 6	40	1,400								
BENT 7	40	2,800								
BENT 8	32	1,600								
BENT 9	28	1,820								
END BENT 2	18	1,620		435						
TOTAL	337	19,108	3,797.5	702	LUMP SUM	LUMP SUM	LUMP SUM	95.2	LUMP SUM	LUMP SUM

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

NOTE: SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30" (SAMPLE LENGTH) PLUS TWO SPLICE LENGTHS AND  $f_y = 60\text{ksi}$ .

**NOTES**

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE "STANDARD NOTES" SHEET (SN).

ALL ELEVATIONS ARE IN FEET.

THE ELEVATION(S) AND CLEARANCE(S) SHOWN ON THE PLANS AT THE POINT(S) OF MINIMUM VERTICAL CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE, PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATION(S) ON THE EXISTING PAVEMENT AND CHECK THE CLEARANCE. REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE ENGINEER.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE SAMPLE BARS SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR THE SAMPLE BARS AND REPLACEMENT REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE AT STATION 60+66.06 -Y15FLYAC-, SEE SPECIAL PROVISIONS.

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

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

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 5 OR SYSTEM 6 OF THE STRUCTURAL STEEL SHOP COATINGS PROGRAM AND SECTION 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

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

WORK SHALL NOT BE STARTED ON BENT 6 UNTIL ROADWAY SECTION HAS BEEN EXCAVATED.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

FOR TEMPORARY BENTS, SEE SPECIAL PROVISIONS.

FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS

SPECIAL SNOWPLOW PROTECTION IS REQUIRED. SEE SPECIAL PROVISION FOR MODULAR EXPANSION JOINT SEALS.

FOR MASS CONCRETE, SEE SPECIAL PROVISIONS. BENTS 1, 2, 3, 4, 5, 6, 7, 8, AND 9 INCLUDE MASS CONCRETE.

FOR BRIDGE DECK RIDEABILITY AND GROOVING, SEE SPECIAL PROVISIONS.

FOR DISC BEARINGS, SEE SPECIAL PROVISIONS.

FOR POST-TENSIONING TENDONS, SEE SPECIAL PROVISIONS.

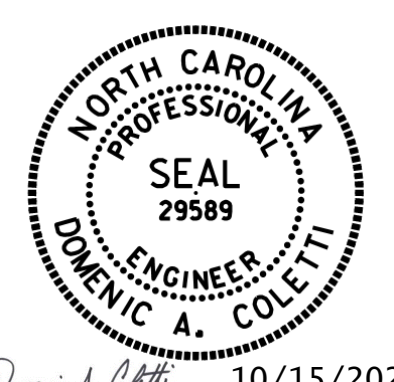
FOR 6000 PSI CONCRETE, SEE SPECIAL PROVISIONS.

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

CLASS AA CONCRETE SHALL BE USED IN CAST-IN-PLACE COLUMNS, INTERIOR BENT CAPS, AND FOOTINGS, AS NOTED ON THE PLANS.

PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 60+66.06 -Y15FLYAC-

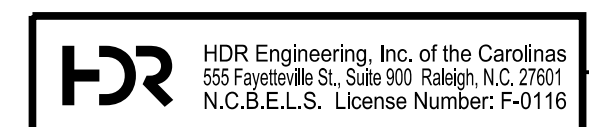
SHEET 11 OF 11



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**  
 BRIDGE ON -Y15FLYAC- IN INTERCHANGE CONNECTING WINSTON-SALEM NORTHERN BELTWAY AND I-40 BYPASS BETWEEN SR 4315 AND SR 2679

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	NO.
1	--	--	3	--	--	TOTAL SHEETS 144
2	--	--	4	--	--	



10/15/2021  
 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 USER: PPETERSO  
 DATE: 10/14/2021  
 TIME: 3:58:26 PM  
 FILE: ... \GENERA

DES BY: D. COLETTI	DATE: 12/19	DWG BY: B. PETERSON	DATE: 12/19
DES CHK: B. PETERSON	DATE: 12/19	CHK BY: S. NIFONG	DATE: 12/19



## LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR STEEL GIRDERS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE II LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γ <sub>LL</sub> )	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ <sub>LL</sub> )	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.08	--	1.75	--	1.08	D	4	0.00	--	1.45	B	3	0.00	1.30	--	1.60	D	4	0.00	--	
	HL-93 (OPERATING)	N/A		1.40	--	1.35	--	1.40	D	4	0.00	--	1.88	B	3	0.00	1.00	--	2.08	D	4	0.00	--	
	HS-20 (INVENTORY)	36.000	②	2.19	78.84	1.75	--	2.21	E	4	104.95	--	2.19	B	3	0.00	1.30	--	3.20	E	4	79.76	--	
	HS-20 (OPERATING)	36.000		2.84	102.20	1.35	--	2.86	E	4	104.95	--	2.84	B	3	0.00	1.00	--	4.16	E	4	79.76	--	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SH		3.76	47.00	1.40	--	3.76	D	4	0.00	--	6.81	C	4	212.39	1.30	--	4.43	D	4	0.00	--	
		S3C	21.500		2.70	58.05	1.40	--	2.70	D	4	0.00	--	4.02	B	3	0.00	1.30	--	3.18	D	4	0.00	--
		S3A	22.750		2.59	58.92	1.40	--	2.59	D	4	0.00	--	3.83	B	3	0.00	1.30	--	3.05	D	4	0.00	--
		S4A	26.750		2.34	62.60	1.40	--	2.34	D	4	0.00	--	3.34	B	3	0.00	1.30	--	2.75	D	4	0.00	--
		S5A	30.500		2.14	65.27	1.40	--	2.14	D	4	0.00	--	2.93	B	3	0.00	1.30	--	2.52	D	4	0.00	--
	TRUCK TRACTOR SEMI-TRAILER (T/ST)	S6A	34.500		1.97	67.97	1.40	--	1.97	D	4	0.00	--	2.66	B	3	0.00	1.30	--	2.32	D	4	0.00	--
		S7B	38.500		1.83	70.46	1.40	--	1.83	D	4	0.00	--	2.43	B	3	0.00	1.30	--	2.15	D	4	0.00	--
		S7A	40.000	③	1.80	72.00	1.40	--	1.80	D	4	0.00	--	2.59	B	3	0.00	1.30	--	2.12	D	4	0.00	--
		T4A	28.250		2.27	64.13	1.40	--	2.27	D	4	0.00	--	3.24	B	3	0.00	1.30	--	2.67	D	4	0.00	--
		T5B	32.000		2.09	66.88	1.40	--	2.09	D	4	0.00	--	3.09	B	3	0.00	1.30	--	2.46	D	4	0.00	--
T6A	36.000		1.93	69.48	1.40	--	1.93	D	4	0.00	--	2.91	B	3	0.00	1.30	--	2.28	D	4	0.00	--		
T7A	40.000		1.81	72.40	1.40	--	1.81	D	4	0.00	--	2.68	B	3	0.00	1.30	--	2.13	D	4	0.00	--		
T7B	40.000		1.81	72.40	1.40	--	1.81	D	4	0.00	--	2.48	B	3	0.00	1.30	--	2.14	D	4	0.00	--		
FATIGUE	HL-93 (INVENTORY)	γ <sub>LL</sub> =0.75		--																				

### LOAD FACTORS:

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

### NOTES:

- MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE II LIMIT STATES.
- ALLOWABLE STRESS FOR SERVICE II LIMIT STATE ARE AS REQUIRED FOR DESIGN.

### COMMENTS:

- THE ORIGINAL DESIGN AND RATING OF THIS BRIDGE WAS BASED ON AN INFLUENCE SURFACE ANALYSIS. LIVE LOAD DISTRIBUTION FACTORS WERE NOT USED AND ARE NOT PROVIDED.
- DISTANCE FROM LEFT END OF SPAN IS GIVEN WITH RESPECT TO CENTERLINE OF BEARING AND IS MEASURED ALONG THE CONTROLLING GIRDER.
- FATIGUE RATING IS NOT REQUIRED OR REPORTED SINCE GIRDER DESIGN DOES NOT INCLUDE FATIGUE-PRONE DETAILS.
- LARSA 4D VERSION 8.00 r8101 WAS USED FOR INFLUENCE SURFACE ANALYSIS.
- AS APPLICABLE FOR THIS UNIT, LEGAL LOAD RATING INCLUDES CONSIDERATION OF THE FOLLOWING (PER AASHTO MANUAL FOR BRIDGE EVALUATION, 3RD ED., 2018, 6A.4.4.2.1a):
  - 100% OF ONE LEGAL LOAD VEHICLE WITH NO LANE LOAD
  - 75% OF ONE LEGAL LOAD VEHICLE WITH 0.200 KLF LANE LOAD
  - 75% OF TWO LEGAL LOAD VEHICLES SEPARATED BY 30 FEET WITH 0.200 KLF LANE LOAD (NEGATIVE MOMENT ONLY)

**# CONTROLLING LOAD RATING**

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

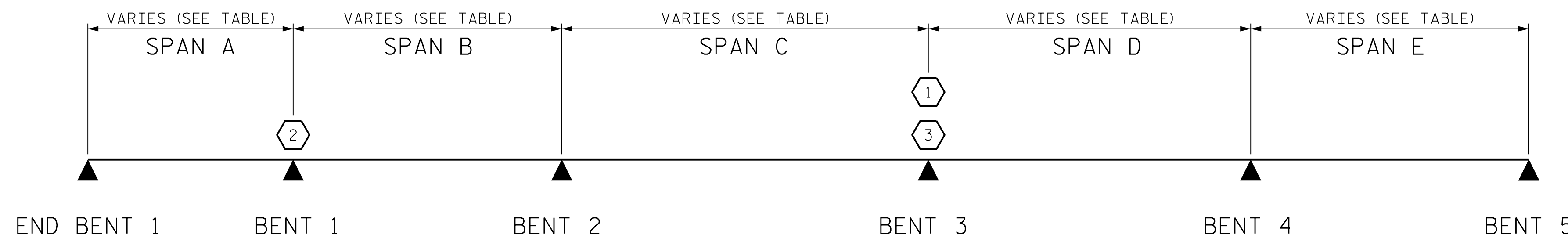
③ LEGAL LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

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**GIRDER LOCATION**

GIRDER LOCATION IS PROVIDED USING GIRDER NUMBER, WHERE GIRDER 1 IS THE EXTERIOR GIRDER TO THE LEFT OF -Y15FLYAC-

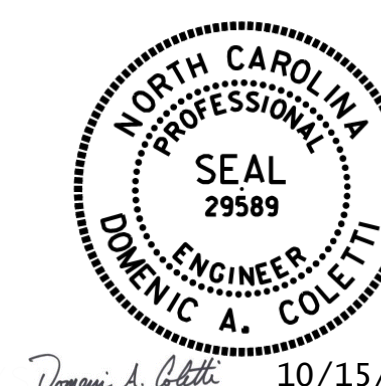


CL BRG - CL BRG SPAN LENGTHS					
GIRDER	SPAN A	SPAN B	SPAN C	SPAN D	SPAN E
1	126'-4 <sup>5</sup> / <sub>8</sub> "	168'-11 <sup>3</sup> / <sub>4</sub> "	230'-7 <sup>1</sup> / <sub>4</sub> "	202'-9 <sup>5</sup> / <sub>16</sub> "	173'-2 <sup>5</sup> / <sub>16</sub> "
2	126'-9 <sup>3</sup> / <sub>4</sub> "	169'-6 <sup>7</sup> / <sub>16</sub> "	231'-4 <sup>3</sup> / <sub>8</sub> "	203'-5 <sup>5</sup> / <sub>16</sub> "	173'-9 <sup>1</sup> / <sub>4</sub> "
3	127'-2 <sup>7</sup> / <sub>8</sub> "	170'-1 <sup>1</sup> / <sub>8</sub> "	232'-1 <sup>1</sup> / <sub>2</sub> "	204'-1 <sup>5</sup> / <sub>16</sub> "	174'-4 <sup>1</sup> / <sub>8</sub> "
4	127'-7 <sup>15</sup> / <sub>16</sub> "	170'-7 <sup>13</sup> / <sub>16</sub> "	232'-10 <sup>5</sup> / <sub>8</sub> "	204'-9 <sup>3</sup> / <sub>8</sub> "	174'-11 <sup>1</sup> / <sub>16</sub> "

### LRFR SUMMARY

PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 60+66.06 -Y15FLYAC-

SHEET 1 OF 2



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

## LRFR SUMMARY FOR STEEL GIRDERS (INTERSTATE TRAFFIC) (UNIT 1)

REVISIONS						SHEET NO. S04-012 TOTAL SHEETS 144
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	
2	--	--	4	--	--	

DES BY: G. SCHMITZ DATE: 07/19 DWG BY: M. SELLS DATE: 07/19  
 DES CHK: S. NIFONG DATE: 10/19 CHK BY: S. NIFONG DATE: 07/19



**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

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 USER: PPETERSO DATE: 10/14/2021 TIME: 3:58:36 PM  
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# LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR STEEL GIRDERS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE II LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γ <sub>LL</sub> )	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ <sub>LL</sub> )	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.15	--	1.75	--	1.15	H	4	0.00	--	1.48	G	3	0.00	1.30	--	1.72	F	4	95.16	--	
	HL-93 (OPERATING)	N/A		1.49	--	1.35	--	1.49	H	4	0.00	--	1.92	G	3	0.00	1.00	--	2.24	F	4	95.16	--	
	HS-20 (INVENTORY)	36.000	②	1.99	71.64	1.75	--	1.99	F	4	45.13	--	2.49	G	3	0.00	1.30	--	2.94	F	4	69.97	--	
	HS-20 (OPERATING)	36.000		2.58	92.87	1.35	--	2.58	F	4	45.13	--	3.23	G	3	0.00	1.00	--	3.82	F	4	69.97	--	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SH		4.44	55.50	1.40	--	4.44	H	4	0.00	--	6.38	G	3	0.00	1.30	--	5.52	I	4	0.00	--	
		S3C	21.500		3.26	70.09	1.40	--	3.26	I	4	22.10	--	4.47	G	3	0.00	1.30	--	4.00	J	4	0.00	--
		S3A	22.750		3.13	71.21	1.40	--	3.13	I	4	22.10	--	4.28	G	3	0.00	1.30	--	3.85	J	4	0.00	--
		S4A	26.750		2.80	74.90	1.40	--	2.80	I	4	22.10	--	3.87	G	3	0.00	1.30	--	3.49	J	4	0.00	--
		S5A	30.500		2.56	78.08	1.40	--	2.56	I	4	22.10	--	3.40	G	3	0.00	1.30	--	3.20	J	4	0.00	--
		S6A	34.500		2.34	80.73	1.40	--	2.34	I	4	22.10	--	3.06	G	3	0.00	1.30	--	2.97	I	4	0.00	--
		S7B	38.500		2.17	83.55	1.40	--	2.17	I	4	22.10	--	2.89	G	3	0.00	1.30	--	2.70	F	4	45.13	--
	STA	40.000	③	2.13	85.20	1.40	--	2.13	I	4	22.10	--	2.99	G	3	0.00	1.30	--	2.65	F	4	69.97	--	
	TRUCK TRACTOR SEMI-TRAILER (TTS)	T4A	28.250		2.72	76.84	1.40	--	2.72	I	4	22.10	--	3.76	G	3	0.00	1.30	--	3.40	I	4	0.00	--
		T5B	32.000		2.49	79.68	1.40	--	2.49	I	4	22.10	--	3.52	G	3	0.00	1.30	--	3.14	I	4	0.00	--
T6A		36.000		2.30	82.80	1.40	--	2.30	I	4	22.10	--	3.34	G	3	0.00	1.30	--	2.91	I	4	0.00	--	
	T7A	40.000		2.14	85.60	1.40	--	2.14	I	4	22.10	--	3.06	G	3	0.00	1.30	--	2.66	F	4	69.97	--	
	T7B	40.000		2.14	85.60	1.40	--	2.14	I	4	22.10	--	2.82	G	3	0.00	1.30	--	2.72	F	4	45.13	--	
FATIGUE	HL-93 (INVENTORY)	γ <sub>LL</sub> =0.75		--																				

### LOAD FACTORS:

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

### NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE II LIMIT STATES.  
ALLOWABLE STRESS FOR SERVICE II LIMIT STATE ARE AS REQUIRED FOR DESIGN.

### COMMENTS:

- THE ORIGINAL DESIGN AND RATING OF THIS BRIDGE WAS BASED ON AN INFLUENCE SURFACE ANALYSIS. LIVE LOAD DISTRIBUTION FACTORS WERE NOT USED AND ARE NOT PROVIDED.
- DISTANCE FROM LEFT END OF SPAN IS GIVEN WITH RESPECT TO CENTERLINE OF BEARING AND IS MEASURED ALONG THE CONTROLLING GIRDER.
- FATIGUE RATING IS NOT REQUIRED OR REPORTED SINCE GIRDER DESIGN DOES NOT INCLUDE FATIGUE-PRONE DETAILS.
- LARSA 4D VERSION 8.00 r8101 WAS USED FOR INFLUENCE SURFACE ANALYSIS.
- AS APPLICABLE FOR THIS UNIT, LEGAL LOAD RATING INCLUDES CONSIDERATION OF THE FOLLOWING (PER AASHTO MANUAL FOR BRIDGE EVALUATION, 3RD ED., 2018, 6A.4.4.2.1a):
  - 100% OF ONE LEGAL LOAD VEHICLE WITH NO LANE LOAD
  - 75% OF ONE LEGAL LOAD VEHICLE WITH 0.200 KLF LANE LOAD
  - 75% OF TWO LEGAL LOAD VEHICLES SEPARATED BY 30 FEET WITH 0.200 KLF LANE LOAD (NEGATIVE MOMENT ONLY)

③ CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

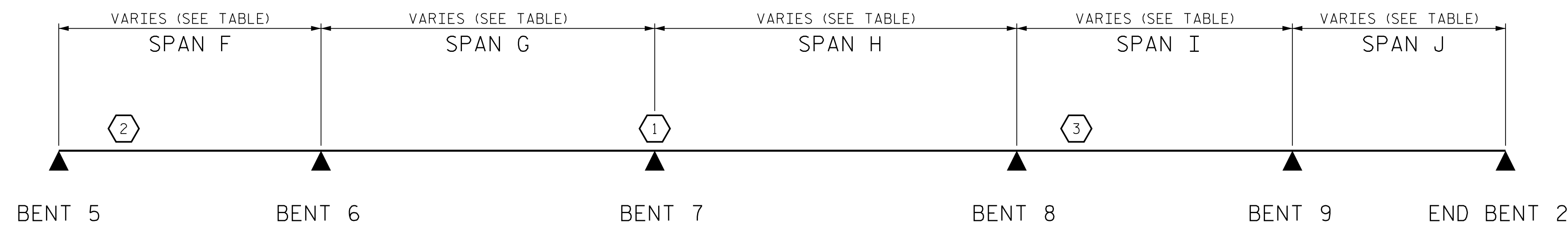
③ LEGAL LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

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GIRDER LOCATION

GIRDER LOCATION IS PROVIDED USING GIRDER NUMBER, WHERE GIRDER 1 IS THE EXTERIOR GIRDER TO THE LEFT OF -Y15FLYAC-



C BRG - C BRG SPAN LENGTHS					
GIRDER	SPAN F	SPAN G	SPAN H	SPAN I	SPAN J
1	173'-2 <sup>5</sup> / <sub>16</sub> "	222'-7 <sup>7</sup> / <sub>8</sub> "	241'-6 <sup>7</sup> / <sub>16</sub> "	183'-10 <sup>5</sup> / <sub>8</sub> "	139'-3 <sup>11</sup> / <sub>16</sub> "
2	173'-9 <sup>1</sup> / <sub>4</sub> "	223'-4 <sup>5</sup> / <sub>16</sub> "	242'-4 <sup>1</sup> / <sub>16</sub> "	184'-5 <sup>15</sup> / <sub>16</sub> "	139'-9 <sup>5</sup> / <sub>16</sub> "
3	174'-4 <sup>1</sup> / <sub>8</sub> "	224'-1 <sup>1</sup> / <sub>16</sub> "	243'-1 <sup>5</sup> / <sub>8</sub> "	185'-1 <sup>3</sup> / <sub>16</sub> "	140'-2 <sup>15</sup> / <sub>16</sub> "
4	174'-11 <sup>1</sup> / <sub>16</sub> "	224'-10 <sup>5</sup> / <sub>16</sub> "	243'-11 <sup>3</sup> / <sub>16</sub> "	185'-8 <sup>1</sup> / <sub>2</sub> "	140'-8 <sup>9</sup> / <sub>16</sub> "

## LRFR SUMMARY

PROJECT NO. U-2579AB  
FORSYTH COUNTY  
 STATION: 60+66.06 -Y15FLYAC-

SHEET 2 OF 2



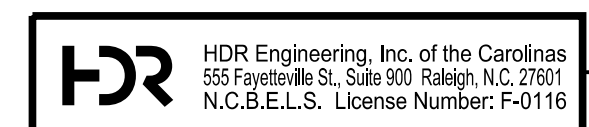
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**LRFR SUMMARY FOR  
STEEL GIRDERS  
(INTERSTATE TRAFFIC)  
(UNIT 2)**

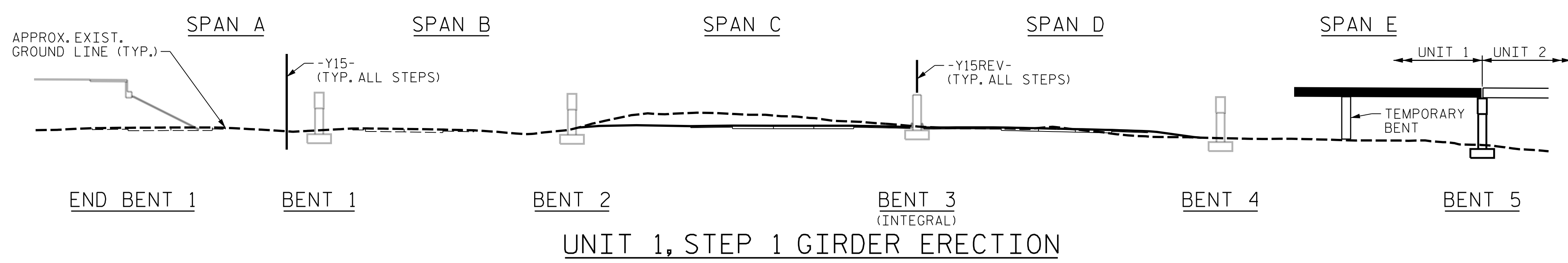
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1	--	--	3	--	--	TOTAL SHEETS 144
2	--	--	4	--	--	

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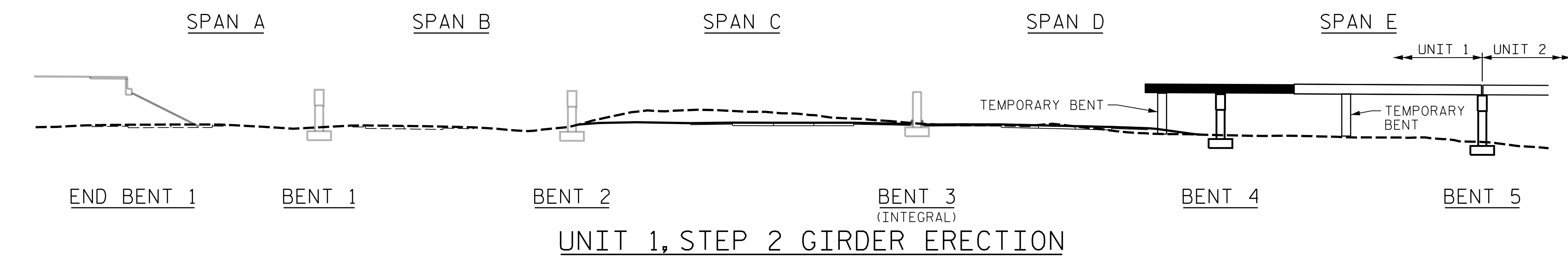
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 DES CHK: D. OLDS DATE: 10/19 CHK BY: T. ANDREWS DATE: 10/19



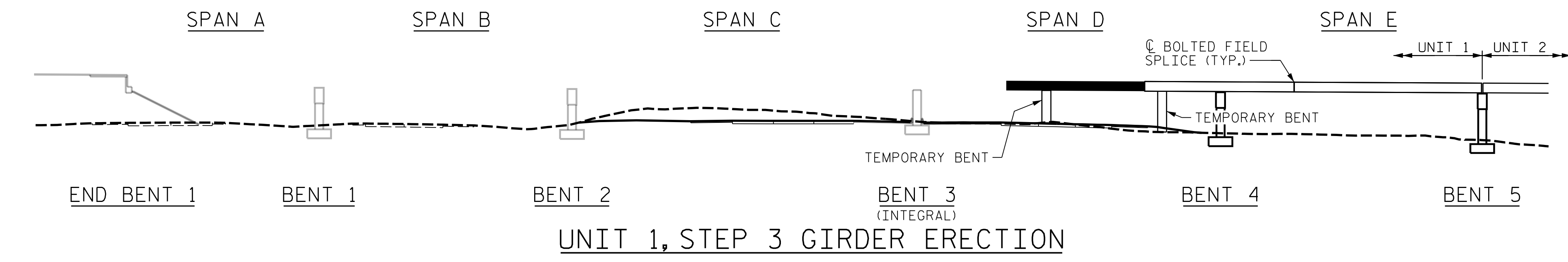
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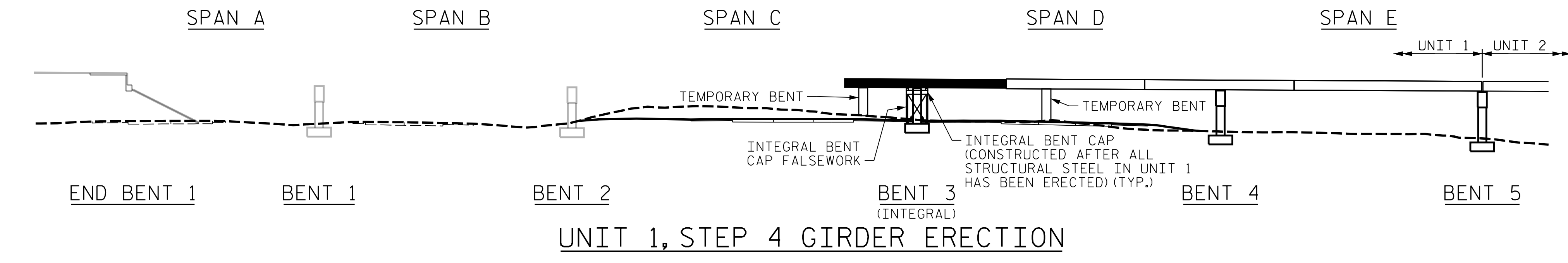
UNIT 1, STEP 1 GIRDER ERECTION



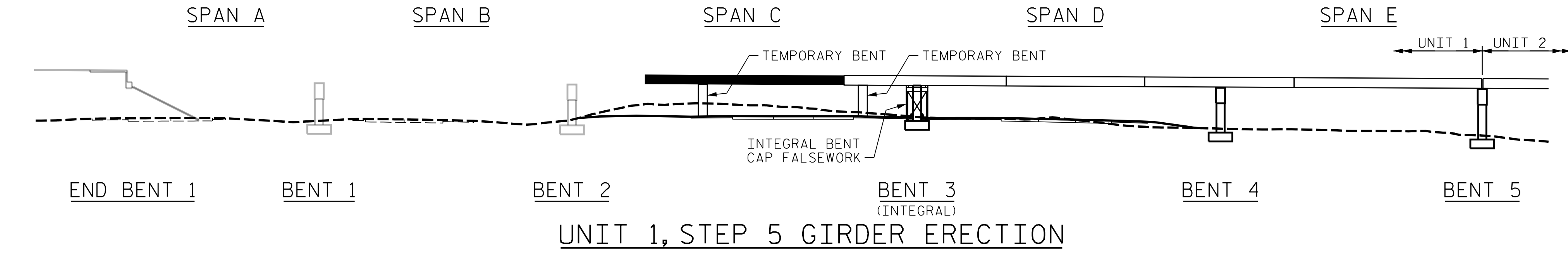
UNIT 1, STEP 2 GIRDER ERECTION



UNIT 1, STEP 3 GIRDER ERECTION



UNIT 1, STEP 4 GIRDER ERECTION



UNIT 1, STEP 5 GIRDER ERECTION

NOTES

SEE SHEET "SCHEMATIC SEQUENCE OF CONSTRUCTION AND NOTES INTEGRAL BENT 3" FOR ADDITIONAL NOTES.

UNIT 2 SHALL BE ERECTED BEFORE UNIT 1.

UNIT 2 STEPS 1 THROUGH 9 AND UNIT 1 STEPS 1 THROUGH 5 SHALL BE ACCOMPLISHED PRIOR TO SHIFTING ANY I-40 TRAFFIC FROM -Y15- TO -Y15REV-. UNIT 1 STEP 6 SHALL BE ACCOMPLISHED AFTER SHIFTING EB I-40 TRAFFIC FROM -Y15- TO -Y15REV-. UNIT 1 STEPS 7 THROUGH 9 SHALL BE ACCOMPLISHED AFTER SHIFTING WB I-40 TRAFFIC FROM -Y15- TO -Y15REV-. SEE TRANSPORTATION MANAGEMENT PLAN (TMP) FOR MORE DETAILS.

END BENTS AND INTERIOR BENTS MAY BE CONSTRUCTED IN STEPS EARLIER THAN SHOWN, PROVIDED SUCH CONSTRUCTION DOES NOT CONFLICT WITH THE TRANSPORTATION MANAGEMENT PLAN (TMP).

PROPOSED FILL MAY NOT BE IN PLACE AT TIME OF GIRDER ERECTION.

PROPOSED LATERAL VEE DITCH MAY OR MAY NOT HAVE BEEN CONSTRUCTED AT TIME OF GIRDER ERECTION.

ERECT A MINIMUM OF TWO GIRDERS WITH ALL DIAPHRAGMS/CROSSFRAMES BETWEEN THE GIRDERS IN PLACE AND THE BOLTS TIGHTENED PRIOR TO RELEASING THE GIRDERS.

ERECT EACH SUBSEQUENT GIRDER WITH DIAPHRAGMS/CROSSFRAMES CONNECTING TO THE ADJACENT PREVIOUSLY ERECTED GIRDER AND TIGHTEN ALL BOLTS BEFORE RELEASING.

THE STRUCTURAL STEEL SHALL REMAIN SUPPORTED DURING ERECTION IN ITS NO-LOAD POSITION. TEMPORARY SUPPORTS, TEMPORARY BENTS, PIER BRACKETS AND INTEGRAL BENT CAP FALSEWORK AS SHOWN SHALL BE USED.

TEMPORARY BENTS, PIER BRACKETS AND INTEGRAL BENT CAP FALSEWORK SHALL REMAIN IN PLACE UNTIL ALL DIAPHRAGMS/CROSSFRAMES ARE IN PLACE AND ALL HIGH STRENGTH BOLTS ARE TIGHTENED.

TEMPORARY BENTS, PIER BRACKETS AND INTEGRAL BENT CAP FALSEWORK SHALL PROVIDE BEARING AT CONNECTOR PLATE LOCATIONS. WHEN CONNECTOR PLATES ARE USED AS TEMPORARY BEARING STIFFENERS, DIAPHRAGMS MUST BE ATTACHED.

THE CONTRACTOR'S ERECTION PLANS SHALL INCLUDE A METHOD OF TEMPORARY BENT REMOVAL THAT WILL TRANSFER THE STRUCTURAL WEIGHT TO THE PERMANENT STRUCTURAL STEEL FRAMING SYSTEM SUCH THAT THE GIRDERS WILL DEFLECT GRADUALLY AND UNIFORMLY TO THEIR INTENDED STEEL DEAD LOAD POSITION, WITHOUT EXPERIENCING UPLIFT OR OTHER ADVERSE INTERIM CONDITIONS.

PLANS FOR TEMPORARY BENT, PIER BRACKETS AND INTEGRAL BENT CAP FALSEWORK ERECTION AND REMOVAL SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

THE CONTRACTOR IS RESPONSIBLE FOR DESIGNING THE TEMPORARY BENTS, PIER BRACKETS AND INTEGRAL BENT CAP FALSEWORK. THE DESIGN SHALL BE COMPLETED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA. THE CONTRACTOR SHALL SUBMIT SIGNED AND SEALED WORKING DRAWINGS AND CALCULATIONS FOR APPROVAL BY THE ENGINEER.

DURING THE GIRDER ERECTION PROCEDURE, THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TEMPORARY SUPPORTS, BLOCKING, LATERAL BRACING, AND/OR OTHER MEANS OF SUPPORT, AS REQUIRED, TO MAINTAIN STABILITY, PREVENT UPLIFT OF THE GIRDERS AT TEMPORARY BENTS, PERMANENT BENTS, AND END BENTS, AND TO MAINTAIN PLUMBNESS OF THE GIRDERS IN THEIR SHORED (APPROXIMATELY NO-LOAD) CONDITION.

NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE FOR PROVIDING THE TEMPORARY SUPPORTS, TEMPORARY LATERAL BRACING OR OTHER MEANS OF SUPPORT. THE COST FOR ALL MATERIALS, EQUIPMENT, TOOLS, DESIGN, LABOR AND ANY INCIDENTALS NECESSARY TO PROVIDE THE TEMPORARY SUPPORTS SHALL BE CONSIDERED INCIDENTAL TO THE LUMP SUM BID PRICE FOR STRUCTURAL STEEL.

THE CONTRACTOR IS ADVISED THAT THE EXISTING GROUND UNDER THE PROPOSED BRIDGE MAY HAVE STEEP SLOPES, STREAMS, AND/OR HEAVY VEGETATION.

THE CONTRACTOR MAY SUBMIT AN ALTERNATE ERECTION METHOD TO THE ENGINEER FOR REVIEW AND APPROVAL.

FOR TEMPORARY BENTS (AND PIER BRACKETS AND INTEGRAL BENT CAP FALSEWORK, WHICH ARE CONSIDERED A SUBSET OF TEMPORARY BENTS), SEE SPECIAL PROVISIONS.

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 60+66.06 -Y15FLYAC-

SHEET 1 OF 2



10/15/2021

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

GIRDER ERECTION  
DETAILS  
UNIT 1

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

SHEET NO. S04-014  
TOTAL SHEETS 144

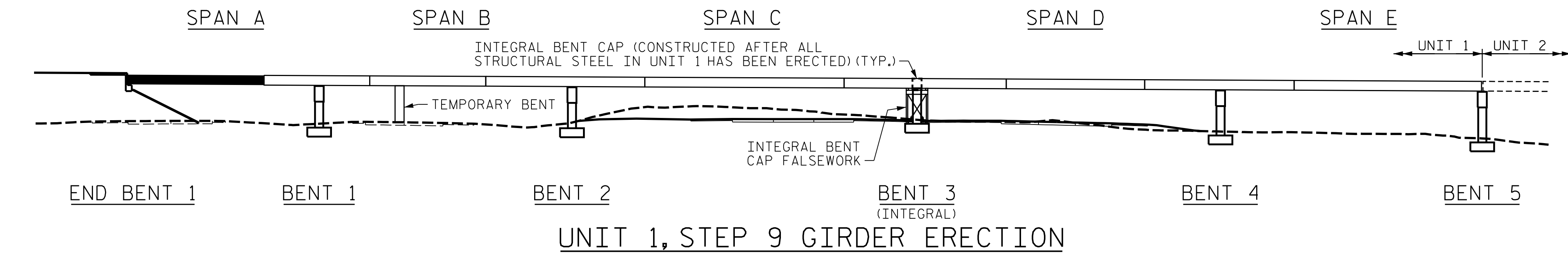
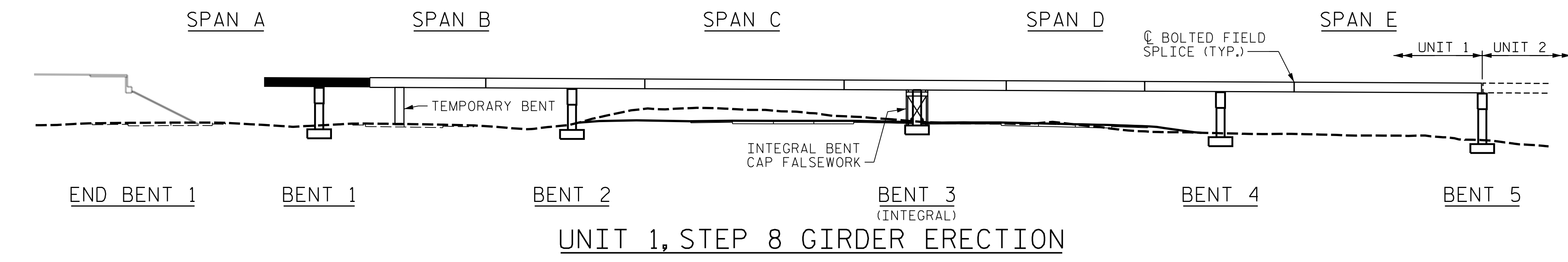
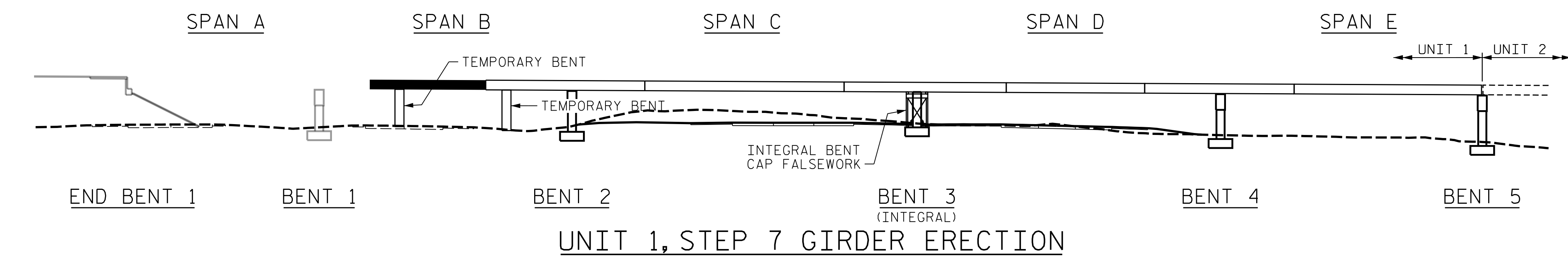
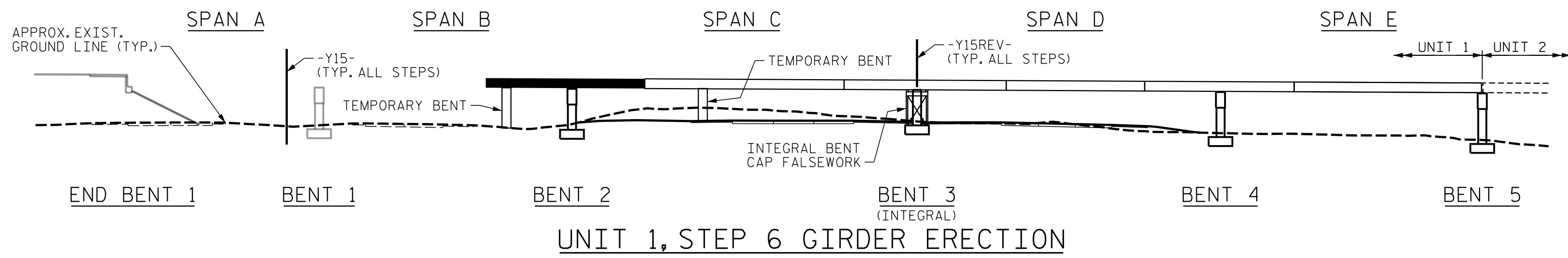


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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DATE: 10/14/2021  
FILE: ...GIRDER

DES BY: D. COLETTI	DATE: 07/19	DWG BY: B. PETERSON	DATE: 07/19
DES CHK: D. OLDS	DATE: 11/19	CHK BY: D. OLDS	DATE: 11/19





**NOTES**  
SEE "GIRDER ERECTION DETAILS UNIT 1" SHEET 1 OF 2 FOR NOTES.

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PROJECT NO. U-2579AB  
FORSYTH COUNTY  
 STATION: 60+66.06 -Y15FLYAC-  
 SHEET 2 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

GIRDER ERECTION  
DETAILS  
UNIT 1

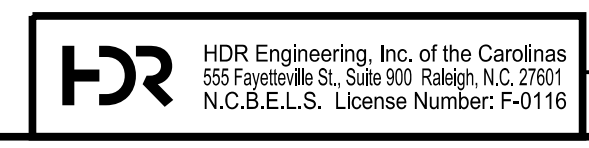
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SHEET NO.  
S04-015  
TOTAL SHEETS  
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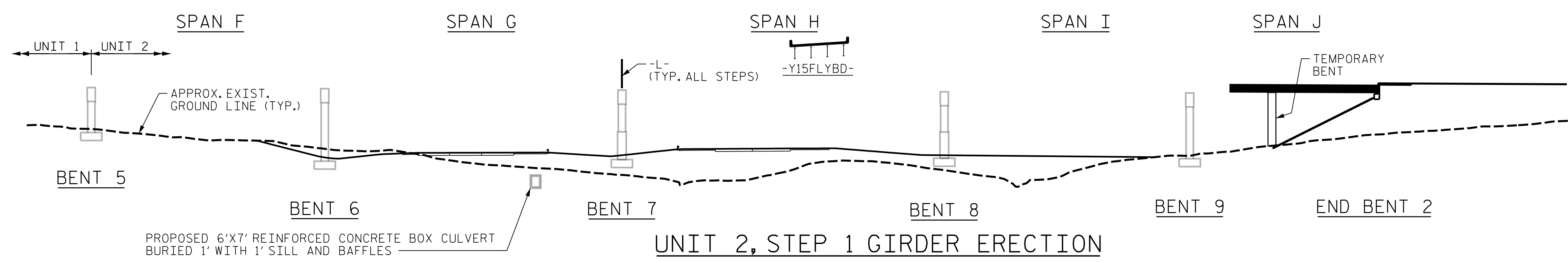
*Domini A. Coletti* 10/15/2021

DES BY: <u>D. COLETTI</u>	DATE: <u>07/19</u>	DWG BY: <u>B. PETERSON</u>	DATE: <u>07/19</u>
DES CHK: <u>D. OLDS</u>	DATE: <u>11/19</u>	CHK BY: <u>D. OLDS</u>	DATE: <u>11/19</u>

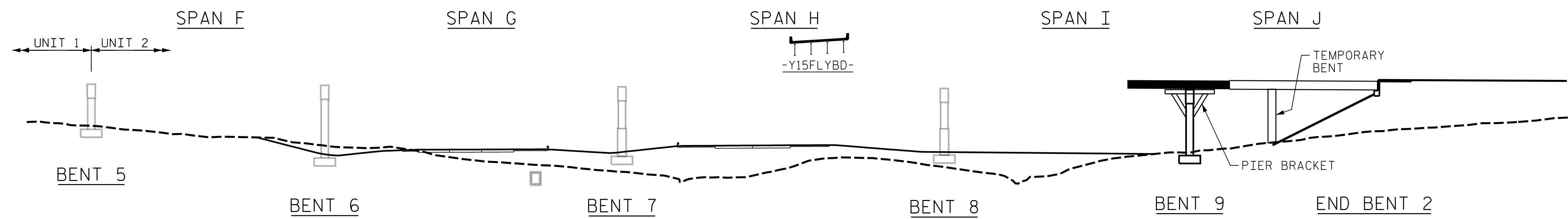


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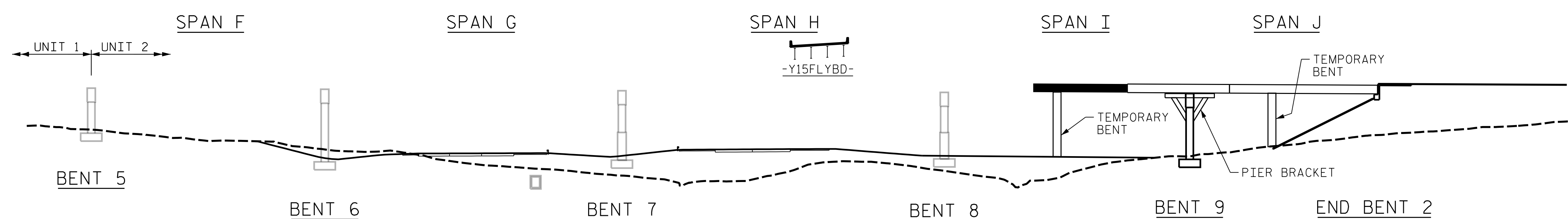
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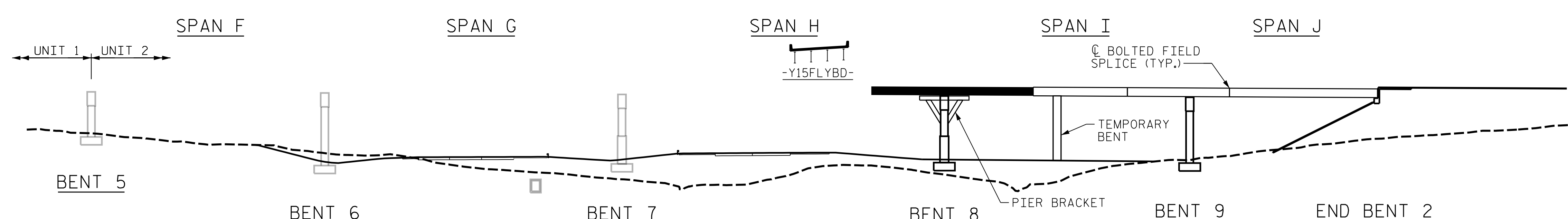
UNIT 2, STEP 1 GIRDER ERECTION



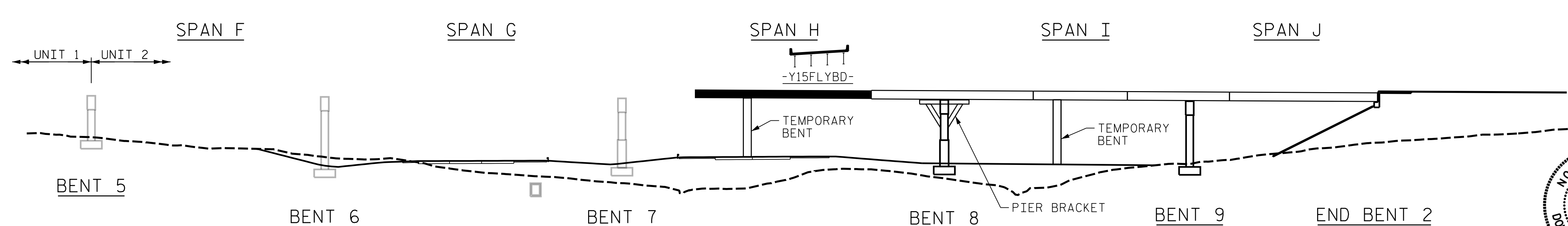
UNIT 2, STEP 2 GIRDER ERECTION



UNIT 2, STEP 3 GIRDER ERECTION



UNIT 2, STEP 4 GIRDER ERECTION



UNIT 2, STEP 5 GIRDER ERECTION

PROJECT NO. U-2579AB  
FORSYTH COUNTY  
STATION: 60+66.06 -Y15FLYAC-  
SHEET 1 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

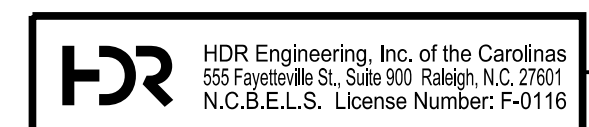
GIRDER ERECTION  
DETAILS  
UNIT 2



10/15/2021

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DES CHK: D. OLDS	DATE: 11/19	CHK BY: D. OLDS	DATE: 11/19

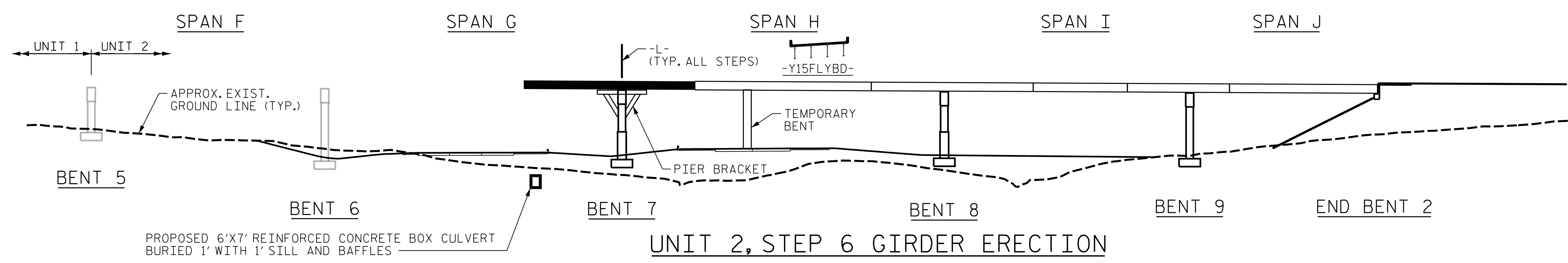


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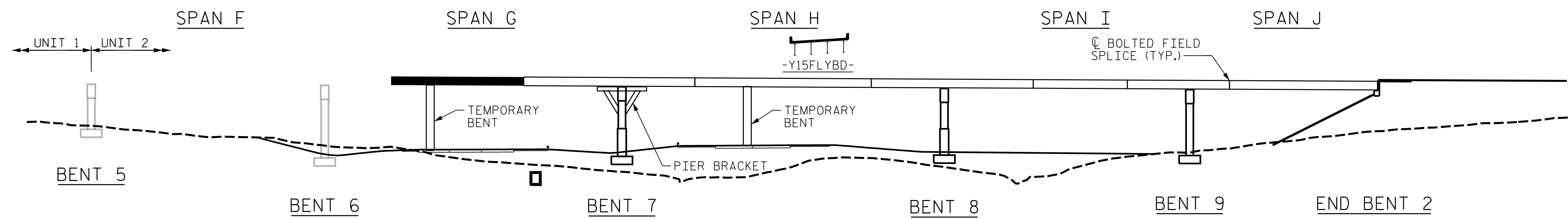
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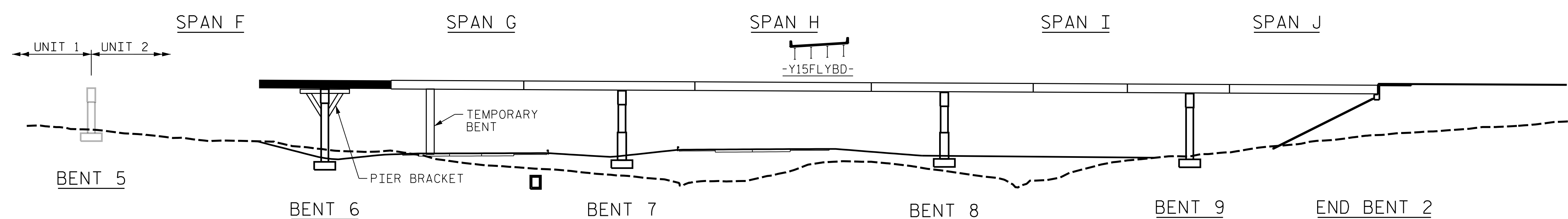
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SHEET 1 OF 2 FOR NOTES.



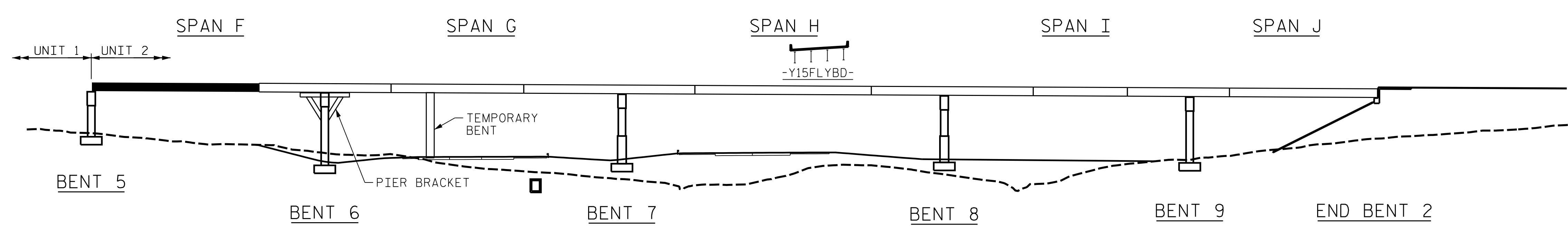
UNIT 2, STEP 6 GIRDER ERECTION



UNIT 2, STEP 7 GIRDER ERECTION



UNIT 2, STEP 8 GIRDER ERECTION



UNIT 2, STEP 9 GIRDER ERECTION

PROJECT NO. U-2579AB  
FORSYTH COUNTY  
STATION: 60+66.06 -Y15FLYAC-  
SHEET 2 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**GIRDER ERECTION  
DETAILS  
UNIT 2**



10/15/2021

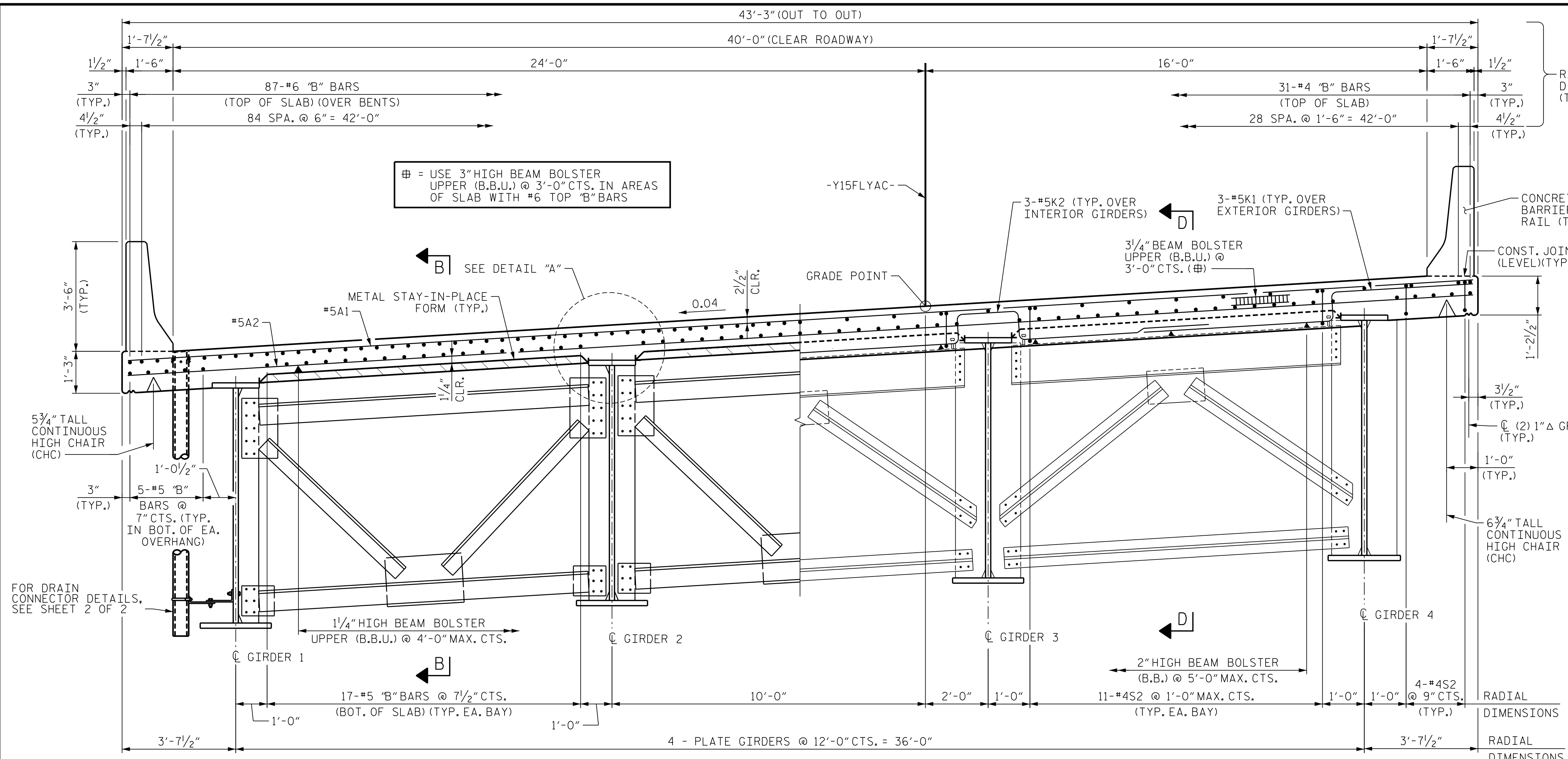
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555 Fayetteville St., Suite 900 Raleigh, N.C. 27601  
N.C.B.E.L.S. License Number: F-0116

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DES BY: <u>D. COLETTI</u>	DATE: <u>07/19</u>	DWG BY: <u>B. PETERSON</u>	DATE: <u>07/19</u>
DES CHK: <u>D. OLDS</u>	DATE: <u>11/19</u>	CHK BY: <u>D. OLDS</u>	DATE: <u>11/19</u>



**NOTES**

PROVIDE 1/4" HIGH BEAM BOLSTER UPPER (BBU) AT 4'-0" MAX. CENTERS 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" MAX. CENTERS WITH HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.

FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.

METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO GIRDER FLANGES IN THE ZONES REQUIRING CHAPPY V-NOTCH TEST. SEE "SUPERSTRUCTURE GIRDER DETAILS" SHEETS.

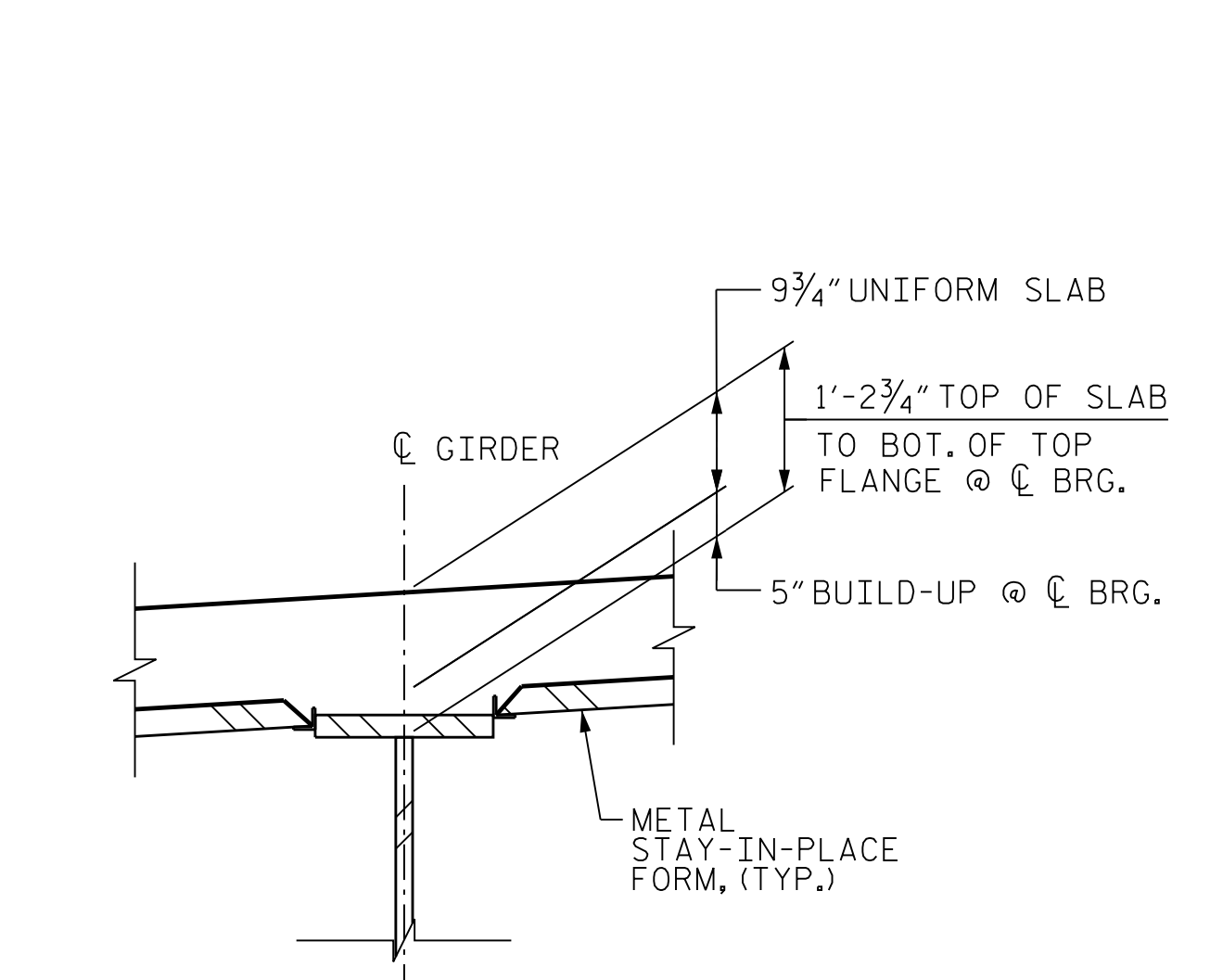
PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

STRUCTURAL STEEL ERECTION IN A CONTINUOUS UNIT SHALL BE COMPLETE BEFORE FALSEWORK OR FORMS ARE PLACED ON THE UNIT.

THE CONTRACTOR MAY, WHEN NECESSARY, PROPOSE A SCHEME FOR AVOIDING INTERFERENCE BETWEEN METAL STAY-IN-PLACE FORM SUPPORTS OR FORMS AND BEAM/GIRDERS STIFFENERS OR CONNECTOR PLATES. THE PROPOSAL SHALL BE INDICATED, AS APPROPRIATE, ON EITHER THE STEEL WORKING DRAWINGS OR THE METAL STAY-IN-PLACE FORM WORKING DRAWINGS.

FOR TYPICAL SECTION INFORMATION AT BENT 3, SEE "SUBSTRUCTURE BENT 3 BENT CAP DETAILS" SHEETS.

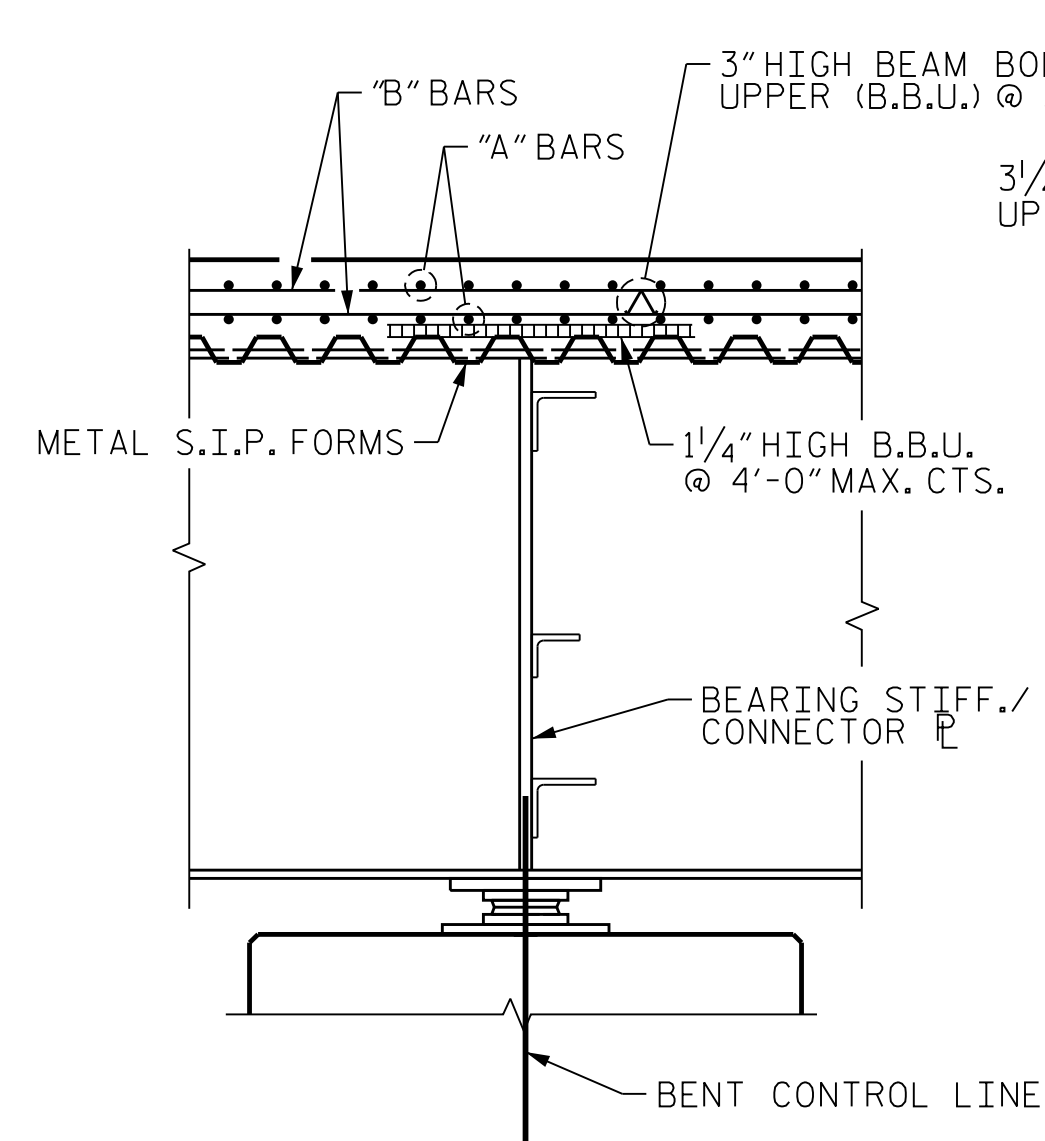
BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.



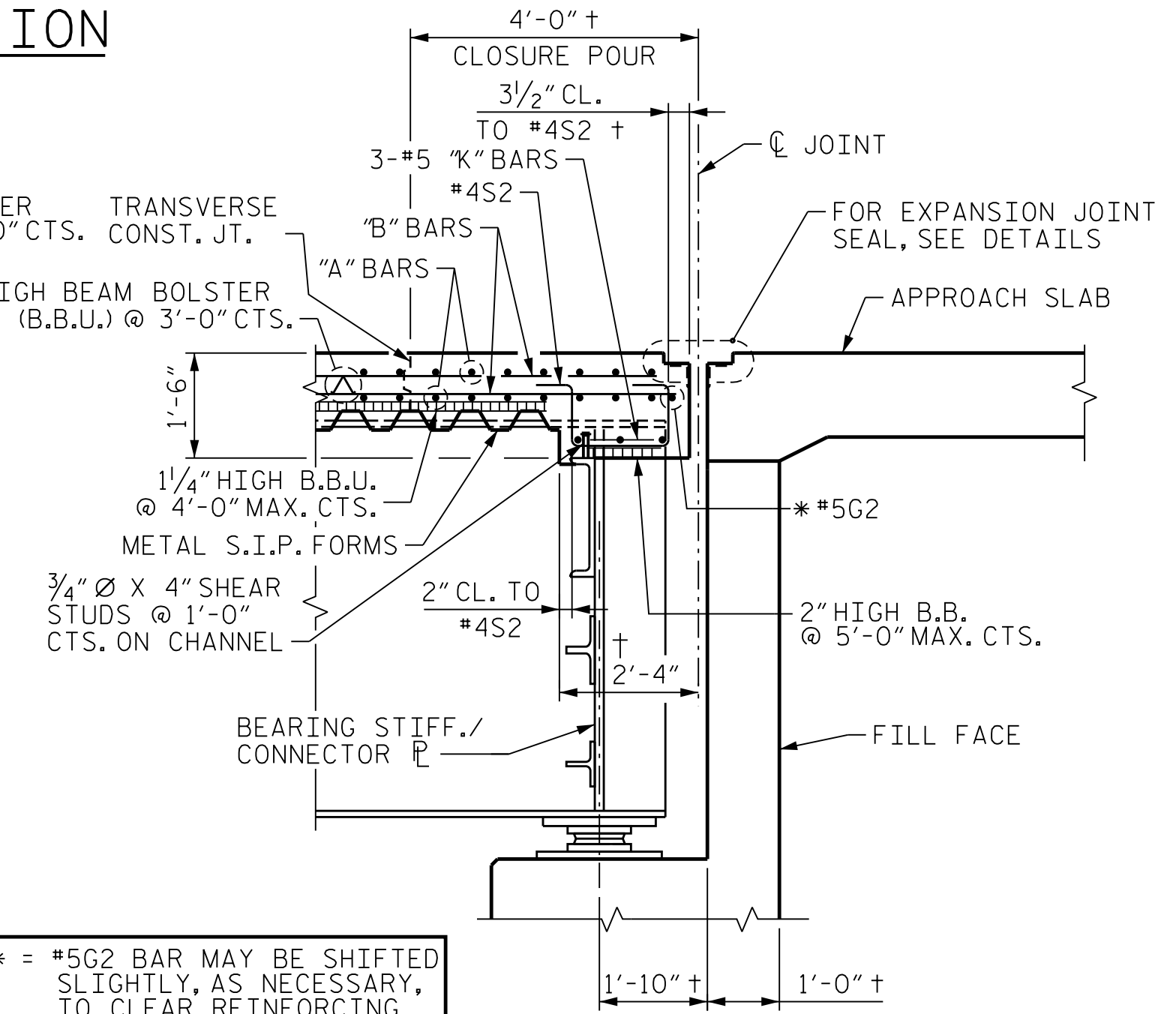
SECTION AT INTERMEDIATE & BENT DIAPHRAGM (TYP. @ BENTS 1, 2, 4, 6, 7, 8 & 9)

SECTION AT END BENT DIAPHRAGM (@ END BENT 2)

**TYPICAL SECTION**



SECTION B-B (TYP. @ BENTS 1, 2, 4, 6, 7, 8 & 9)



SECTION D-D (@ END BENT 2)

\* = #5G2 BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL & STIRRUPS  
 † = DISTANCE NORMAL TO JOINT

PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 60+66.06 -Y15FLYAC-  
 SHEET 1 OF 2

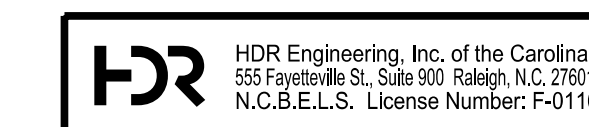
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUPERSTRUCTURE TYPICAL SECTION**



10/15/2021

REVISIONS						SHEET NO. S04-018 TOTAL SHEETS 144
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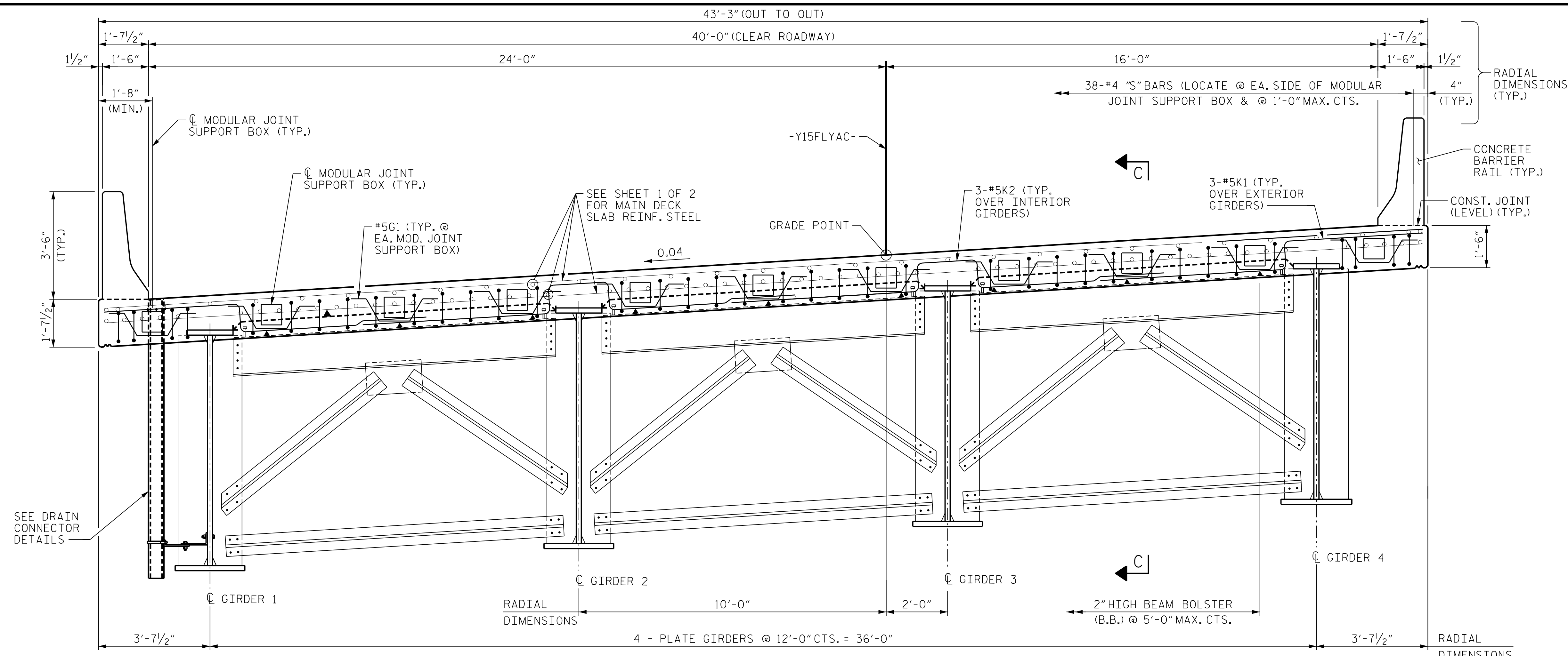


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DES BY: I. ANDREWS	DATE: 07/19	DWG BY: B. PETERSON	DATE: 07/19
DES CHK: M. NEIHEISEL	DATE: 06/19	CHK BY: G. SCHMITZ	DATE: 11/19





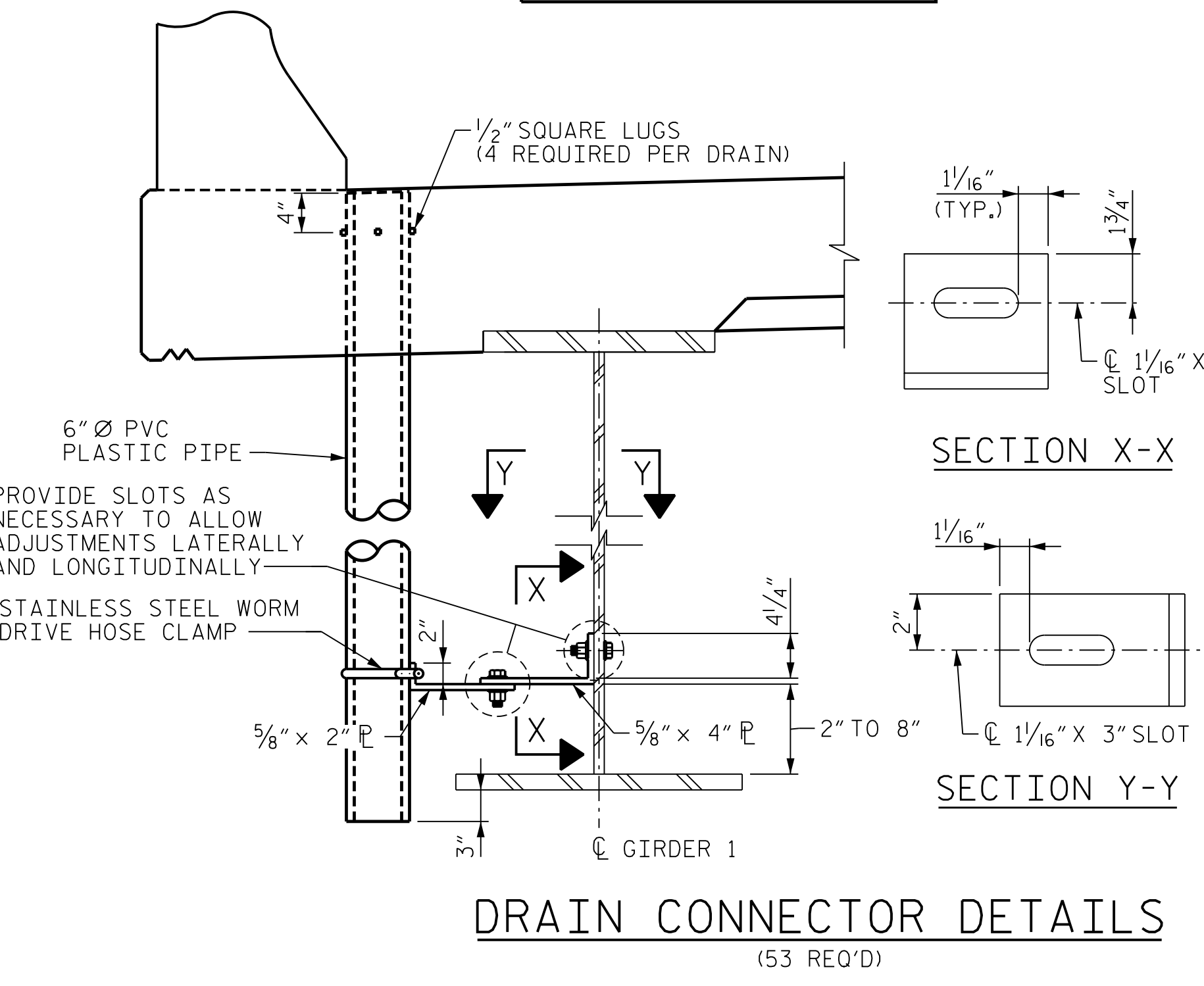
**NOTES**  
 SEE SHEET 1 OF 2 FOR ADDITIONAL NOTES NOT SHOWN HERE.  
 THE "B" BARS IN THE DECK SLAB MAY BE CUT AS DIRECTED BY THE ENGINEER TO CLEAR THE MODULAR JOINT SUPPORT BOXES.  
 FOR MODULAR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.  
 SPECIAL SNOWPLOW PROTECTION IS REQUIRED. SEE SPECIAL PROVISION FOR MODULAR EXPANSION JOINT SEALS.  
 SET TOP OF MODULAR EXPANSION JOINT SEAL DEVICE A MINIMUM OF 1/8" AND A MAXIMUM OF 1/4" BELOW THE TOP SLAB.  
 FOR LOCATION OF SECTION A-A, SEE "SUPERSTRUCTURE PLAN OF SPANS UNIT 1" SHEET 1 OF 4.

**DECK DRAIN NOTES**  
 PVC DECK DRAINS SHALL BE PAINTED WITH TWO COATS OF BROWN PRIMER MEETING THE REQUIREMENTS OF ARTICLE 1080-09 OF THE STANDARD SPECIFICATIONS. EACH COAT SHALL BE 2 DRY MILS THICK. DECK DRAINS SHALL BE ROUGHENED PRIOR TO PAINTING. NO SEPARATE PAYMENT SHALL BE MADE FOR PAINTING PVC DECK DRAINS AS THIS IS CONSIDERED INCIDENTAL TO THE PAY ITEM FOR REINFORCED CONCRETE DECK SLAB.  
 TOP OF FLOOR DRAIN TO BE SET 3/8" BELOW SURFACE OF SLAB.  
 4 - 1/2" SQUARE LUGS TO BE GLUED TO THE PVC PLASTIC PIPE AT EQUAL SPACES AROUND THE PIPE DRAIN APPROXIMATELY 4" FROM THE TOP OF THE PIPE.  
 COUPLING IN DRAIN PIPE WILL BE PERMITTED AS APPROVED BY THE ENGINEER.  
 BOLT SIZE TO BE SAME AS DIAPHRAGMS AND CROSSFRAME CONNECTIONS. STAINLESS STEEL WORM DRIVE HOSE CLAMP SHALL BE COMMERCIAL QUALITY.  
 THE 6" DIA. PVC PIPE AND FITTINGS SHALL BE SCHEDULE 40 AND CONFORM TO ASTM D1785.  
 PLATES SHALL CONFORM TO AASHTO M270 GRADE 50W STEEL OR APPROVED EQUAL.

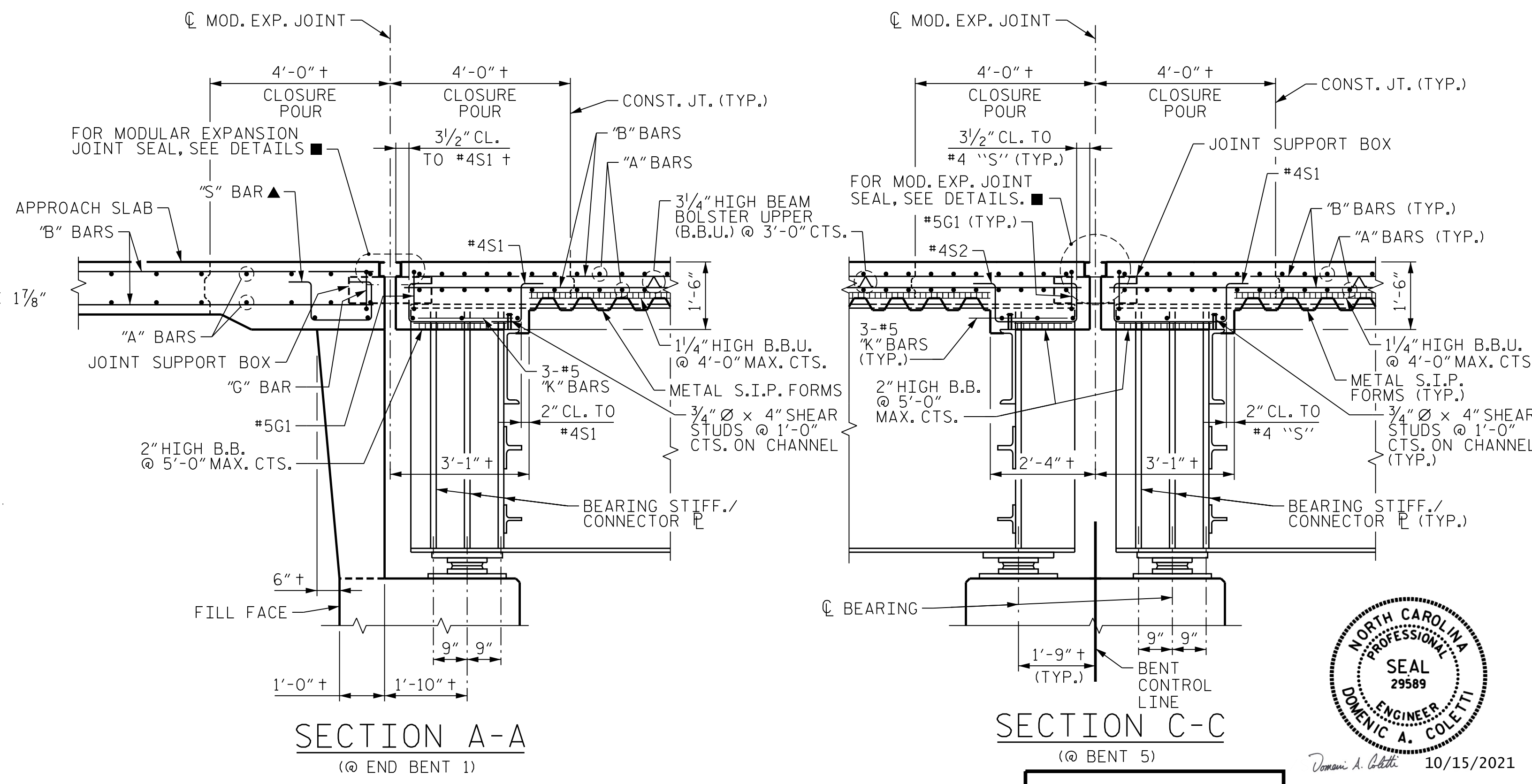
**TYPICAL SECTION AT BENT DIAPHRAGM**  
 (SHOWING MODULAR JOINT DETAILS @ BENT 5. DETAILS AT END BENT 1 SIMILAR)

■ = SEE "MODULAR EXPANSION JOINT SEAL DETAILS FOR BARRIER RAIL" SHEET  
 ▲ = SEE "APPROACH SLAB PLAN AND SECTION" SHEET

† = DISTANCE NORMAL TO JOINT



**DRAIN CONNECTOR DETAILS**  
 (53 REQ'D)



**SECTION A-A**  
 (@ END BENT 1)

**SECTION C-C**  
 (@ BENT 5)

PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 60+66.06 -Y15FLYAC-  
 SHEET 2 OF 2



STATE OF NORTH CAROLINA  
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 RALEIGH

**SUPERSTRUCTURE TYPICAL SECTION**

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
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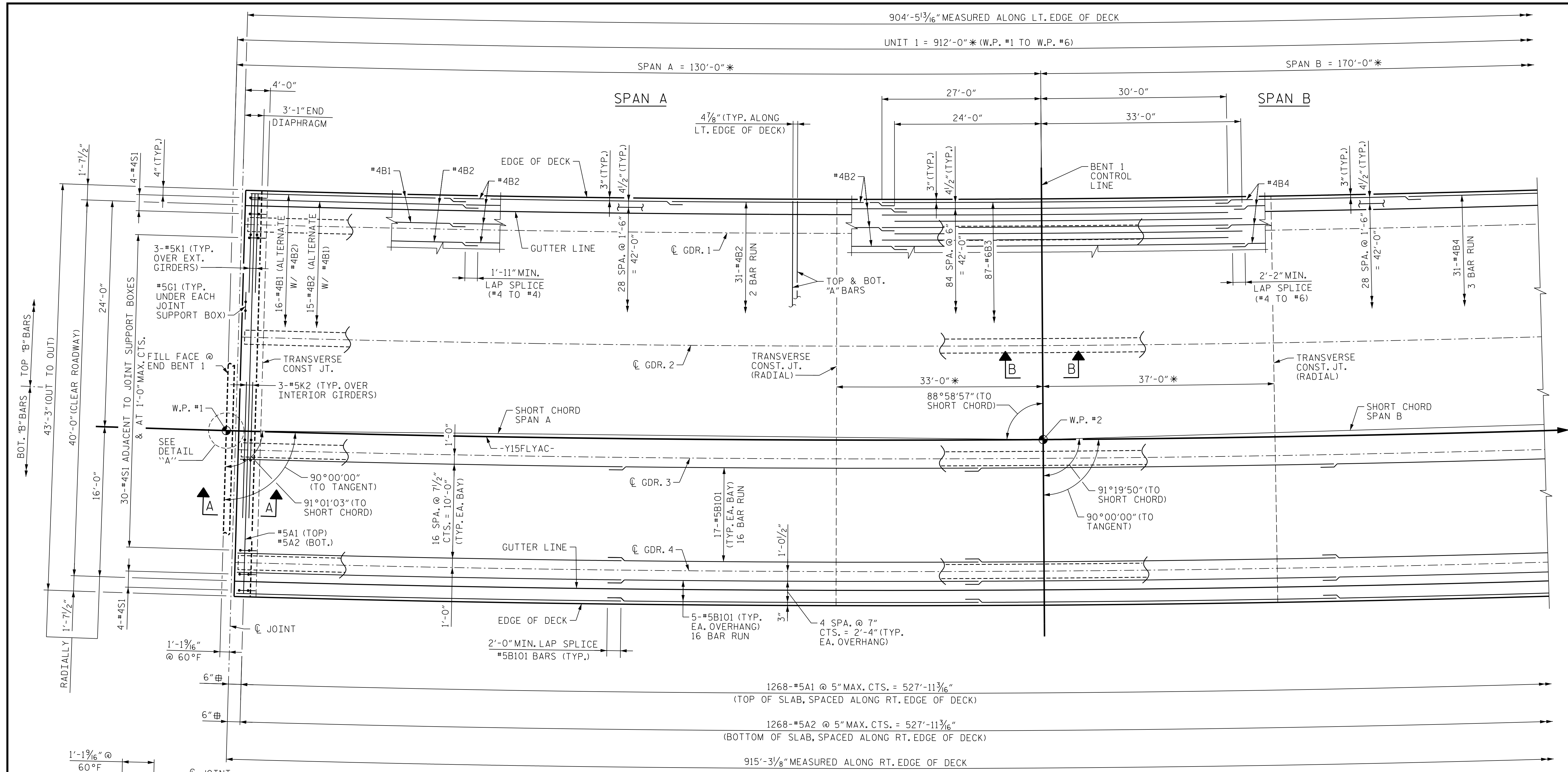
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DES BY: T. ANDREWS	DATE: 07/19	DWG BY: B. PETERSON	DATE: 07/19
DES CHK: M. NEIHEISEL	DATE: 06/19	CHK BY: G. SCHMITZ	DATE: 11/19

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 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601  
 N.C.B.E.L.S. License Number: P-0116

10/15/2021  
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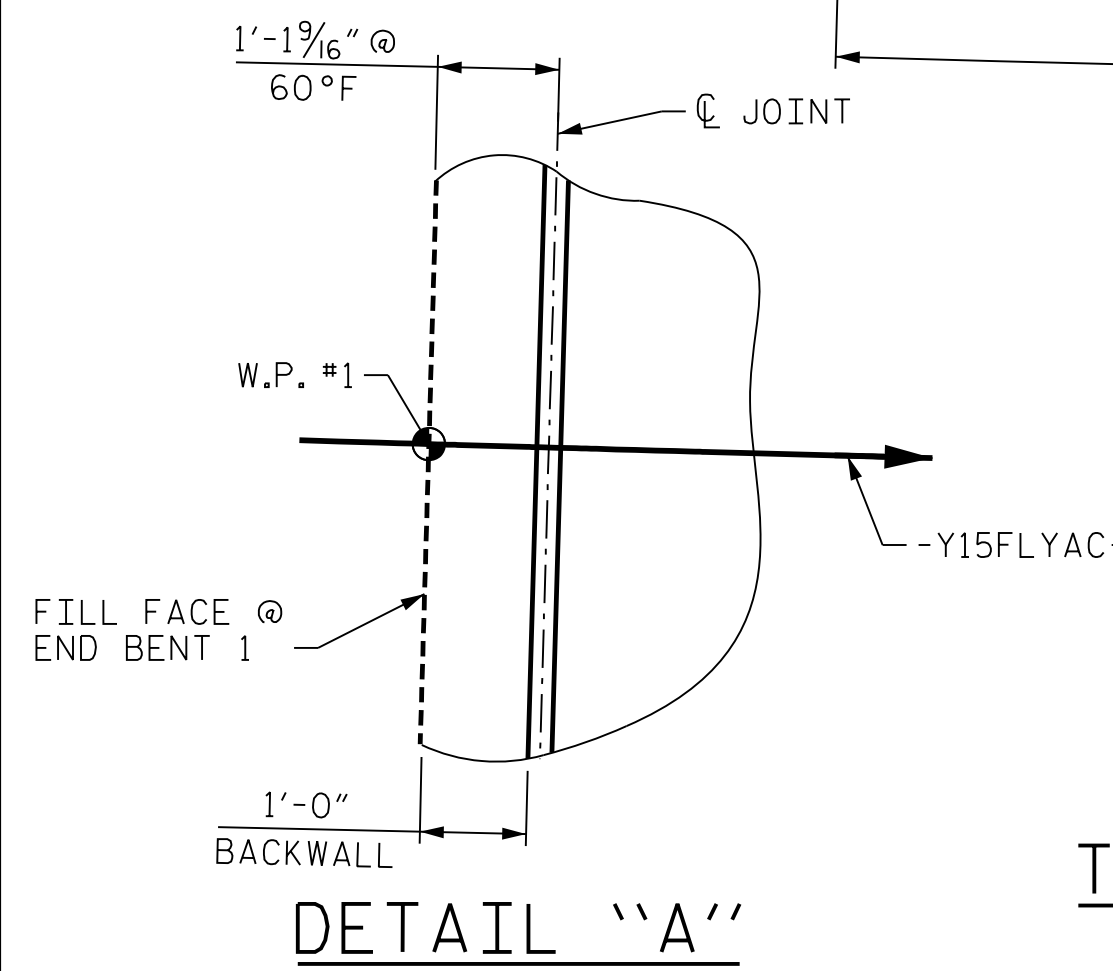




**PARTIAL PLAN OF SPANS - UNIT 1**

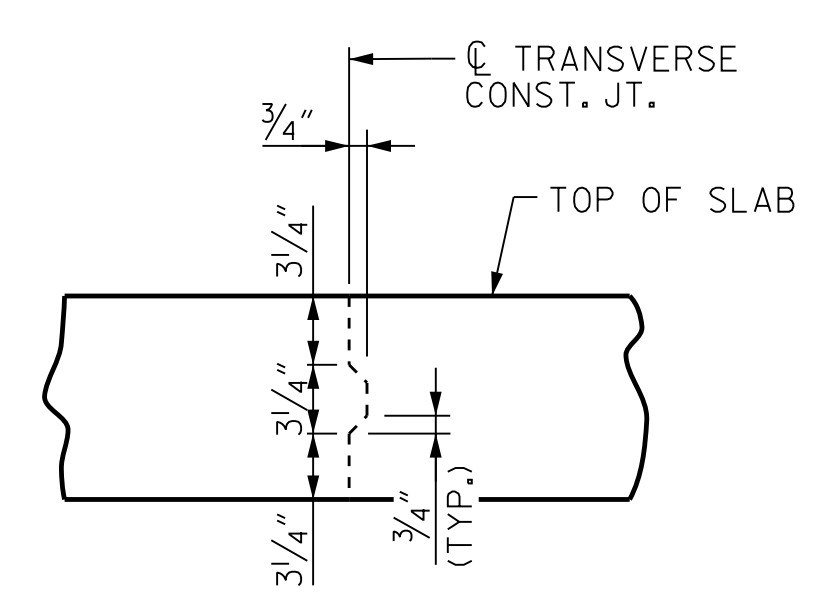
\* = DIMENSIONS MEASURED ALONG -Y15FLYAC-  
 # = ADJUST AS REQUIRED TO CLEAR MODULAR EXPANSION JOINT ASSEMBLY

PROJECT NO. U-2579AB  
 FORSYTH COUNTY  
 STATION: 60+66.06 -Y15FLYAC-  
 SHEET 1 OF 4



**TRANSVERSE CONSTRUCTION JOINT DETAIL**

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



**NOTES**

- FOR SECTIONS A-A AND B-B, SEE "SUPERSTRUCTURE TYPICAL SECTION" SHEETS.
- SEE "SUPERSTRUCTURE PLAN OF SPANS ARC OFFSETS" SHEET 1 OF 4 FOR OUTSIDE EDGE OF DECK CURVE OFFSETS.
- FOR REINFORCING STEEL IN CONCRETE BARRIER RAIL, SEE "SUPERSTRUCTURE CONCRETE BARRIER RAIL" SHEETS.
- #5 "A" BARS ARE TO BE PLACED RADIALLY SPACED AT 5" MAX. CTS. ALONG RIGHT OUTSIDE EDGE OF SUPERSTRUCTURE.
- FOR DECK POURING SEQUENCE, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.

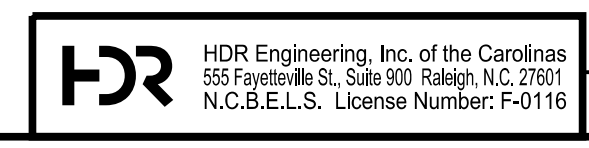


10/15/2021

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUPERSTRUCTURE PLAN OF SPANS UNIT 1**

DES BY: G. SCHMITZ	DATE: 06/19	DWG BY: B. PETERSON	DATE: 07/19
DES CHK: D. COLETTI	DATE: 06/19	CHK BY: G. SCHMITZ	DATE: 11/19



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SEE SHEET 2 OF 4