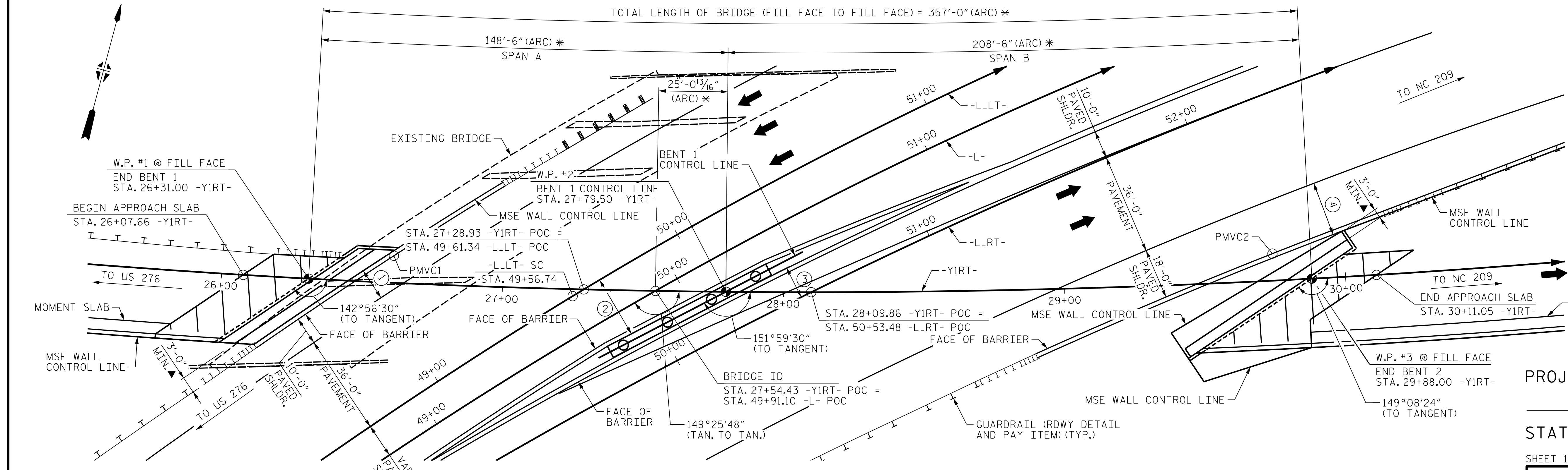


SECTION ALONG -Y1RT-

(SECTIONS AT END BENTS AND BENT SHOWN AT RIGHT ANGLES TO BENTS)

SEE ROADWAY PLANS FOR MSE WALL ALIGNMENTS



PLAN

(PILES NOT SHOWN FOR CLARITY)

HORIZONTAL CURVE DATA -Y1RT-

PI STA.	23+10.19
Δ	33°39'34" (LT.)
D	01°44'10"
T	998.19'
L	1,938.64'
R	3,300.00'

HORIZONTAL CLEARANCE DIMENSIONS (RADIAL)

- ① 11'-0" MIN. HORIZ. CLR. TO FACE OF COPING
- ② 21'-3" MIN. HORIZ. CLR. TO FACE OF CAP
20'-1" MIN. HORIZ. CLR. TO BARRIER
- ③ 11'-1" MIN. HORIZ. CLR. TO FACE OF CAP
10'-0" MIN. HORIZ. CLR. BARRIER
- ④ 19'-0" MIN. HORIZ. CLR. TO FACE OF COPING

* = DIMENSION MEASURED ALONG -Y1RT-
 ▲ = MSE WALL CONTROL LINE TO FRONT FACE OF END BENT CAP

POINTS OF MINIMUM VERTICAL CLEARANCE (PMVC1 & PMVC2)

LOCATION	ROADWAY ABOVE		ELEV. ON ROADWAY ABOVE	ROADWAY BELOW		ELEV. ON ROADWAY BELOW
	STATION	OFFSET		STATION	OFFSET	
PMVC1	26+60.92 -Y1RT-	9.63' (LT.)	2621.32'	49+11.17 -L-LT-	46.00' (LT.)	2595.19'
PMVC2	29+74.45 -Y1RT-	9.63' (LT.)	2626.20'	52+11.25 -L-RT-	54.00 (RT.)	2600.98'

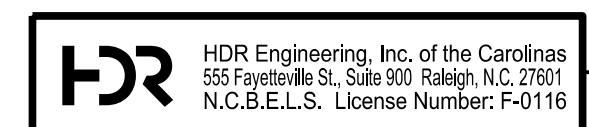
PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -Y1RT- POC
49+91.10 -L- POC
 SHEET 1 OF 4 REPLACES BRIDGE #430168



W. Brian Watson 1/24/2022

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE ON -Y1RT- (US 19) OVER -L-,
 -L-LT- AND -L-RT- (US 74/US 23)
 BETWEEN US 276 AND NC 209

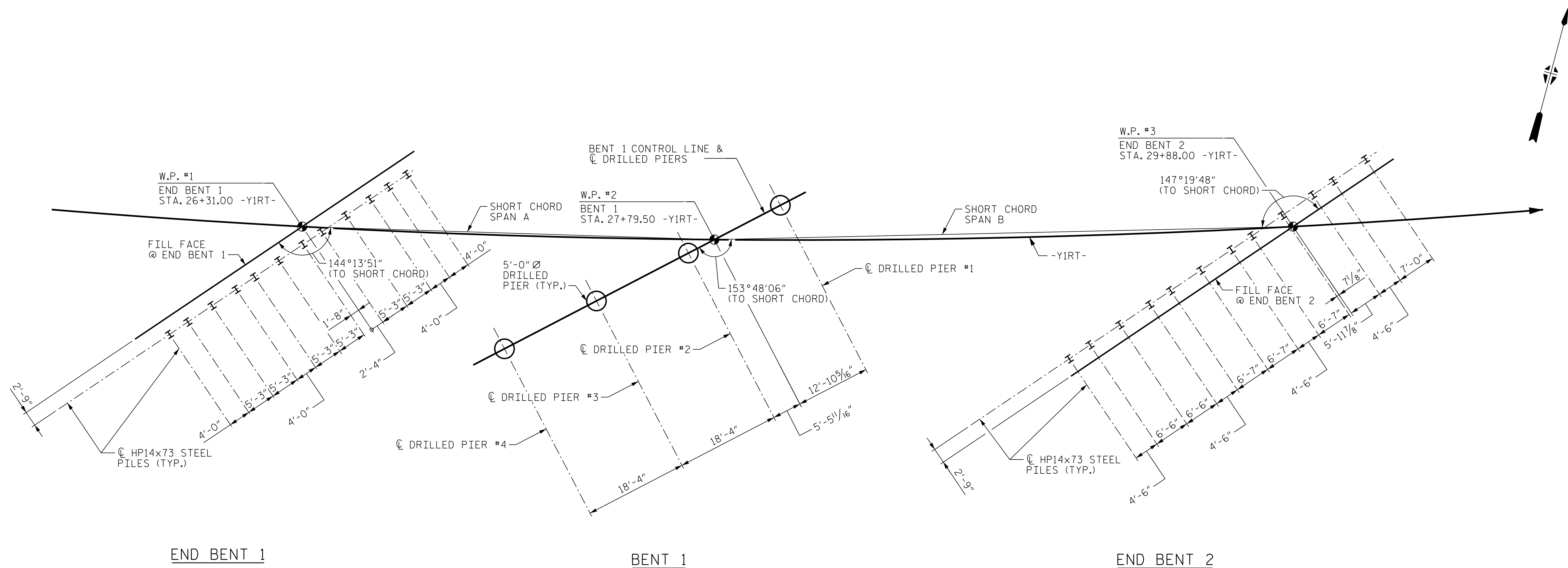
REVISIONS						SHEET NO. 502-01 TOTAL SHEETS 48
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2	--	--	4	--	--	



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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DES BY: B. WATSON DATE: 02/21 DWG BY: B. PETERSON DATE: 02/21
 DES CHK: S. NIFONG DATE: 02/21 CHK BY: S. NIFONG DATE: 07/21



FOUNDATION LAYOUT
(PILE SLEEVES AT END BENTS NOT SHOWN FOR CLARITY)

NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 85 TONS PER PILE.

DRIVE PILES AT END BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 195 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAG.

PILES AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 145 TONS PER PILE.

DRIVE PILES AT END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 285 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAG.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT NO.2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 50 TO 60 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO.1 AND NO.2. THESE ESTIMATED ENERGY RANGES DO NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D) (2) OF THE STANDARD SPECIFICATIONS.

TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAYBE REQUIRED. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS (AND FOR PILE DRIVING CRITERIA, SEE PILE DRIVING CRITERIA PROVISION).

PILE SLEEVES ARE REQUIRED TO BE INSTALLED AT END BENT NO.1 AND END BENT NO.2. THE SLEEVES SHALL BE 24-INCH DIA., 16 GAUGE CORRUGATED METAL PIPE. AFTER INSTALLATION, THE SLEEVES SHALL BE FILLED WITH LOOSE SAND. ALTERNATIVES TO PILE SLEEVES MAY BE CONSIDERED BY THE ENGINEER.

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

DRILLED PIERS AT BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 640 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 70 TSF.

INSTALL DRILLED PIERS AT BENT NO.1 TO A TIP ELEVATION NO HIGHER THAN 2540 FEET AND WITH THE REQUIRED TIP RESISTANCE AND PENETRATION OF AT LEAST 5 FT INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. FOR SID INSPECTIONS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

CSL TUBES AND TESTING MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO.1. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

OBSERVE A TWO-MONTH WAITING PERIOD AFTER CONSTRUCTING THE MECHANICALLY STABILIZED EARTH (MSE) ABUTMENT WALL, END BENT AND REINFORCED BRIDGE APPROACH FILL, IF APPLICABLE, BEFORE BEGINNING APPROACH SLAB CONSTRUCTION AT END BENT NO.1 AND END BENT NO.2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.

LEGEND

- H HP14X73 VERTICAL PILE
- 5'-0" Ø DRILLED PIER



W. Brian Watson 1/24/2022

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

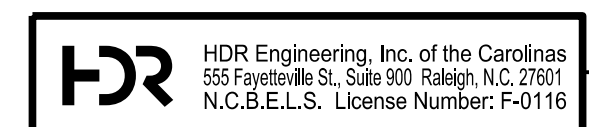
STATION: 27+54.43 -Y1RT-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

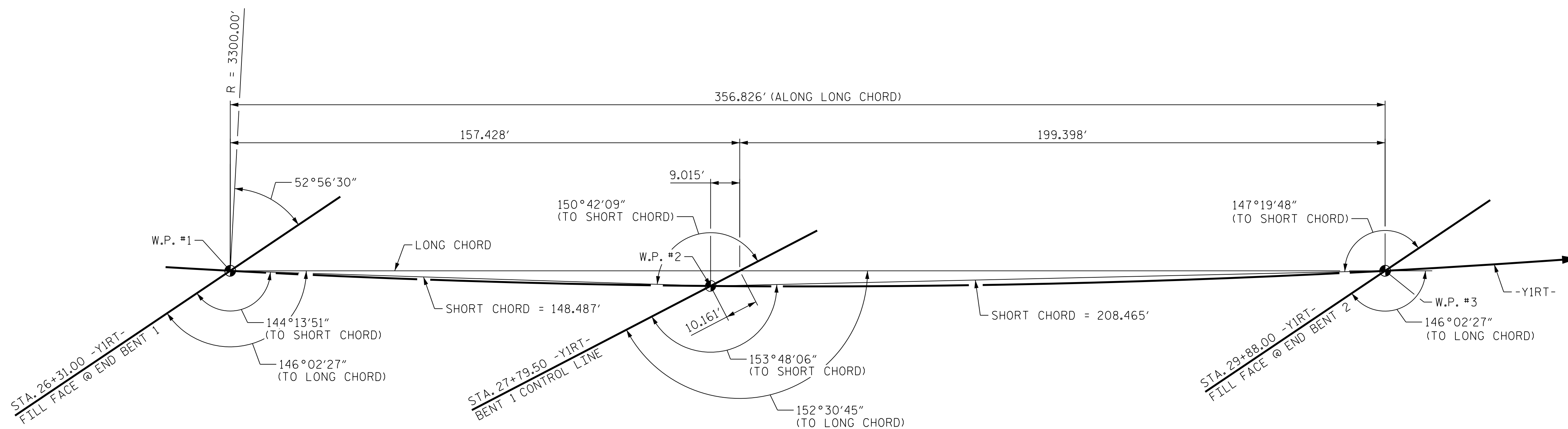
GENERAL DRAWING
BRIDGE ON -Y1RT- (US 19) OVER -L-,
-L-LT- AND -L-RT- (US 74/US 23)
BETWEEN US 276 AND NC 209

REVISIONS						SHEET NO. 502-02 TOTAL SHEETS 48
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	
2	--	--	4	--	--	



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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LONG CHORD LAYOUT

HORIZONTAL CURVE DATA -YIRT-
 PI STA. 23+10.19
 $\Delta = 33^\circ 39' 34''$ (LT.)
 D = 01°44'10"
 T = 998.19'
 L = 1,938.64'
 R = 3,300.00'

PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -YIRT-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 BRIDGE ON -YIRT- (US 19) OVER -L-,
 -L.LT- AND -L.RT- (US 74/US 23)
 BETWEEN US 276 AND NC 209



W. Brian Watson 1/24/2022

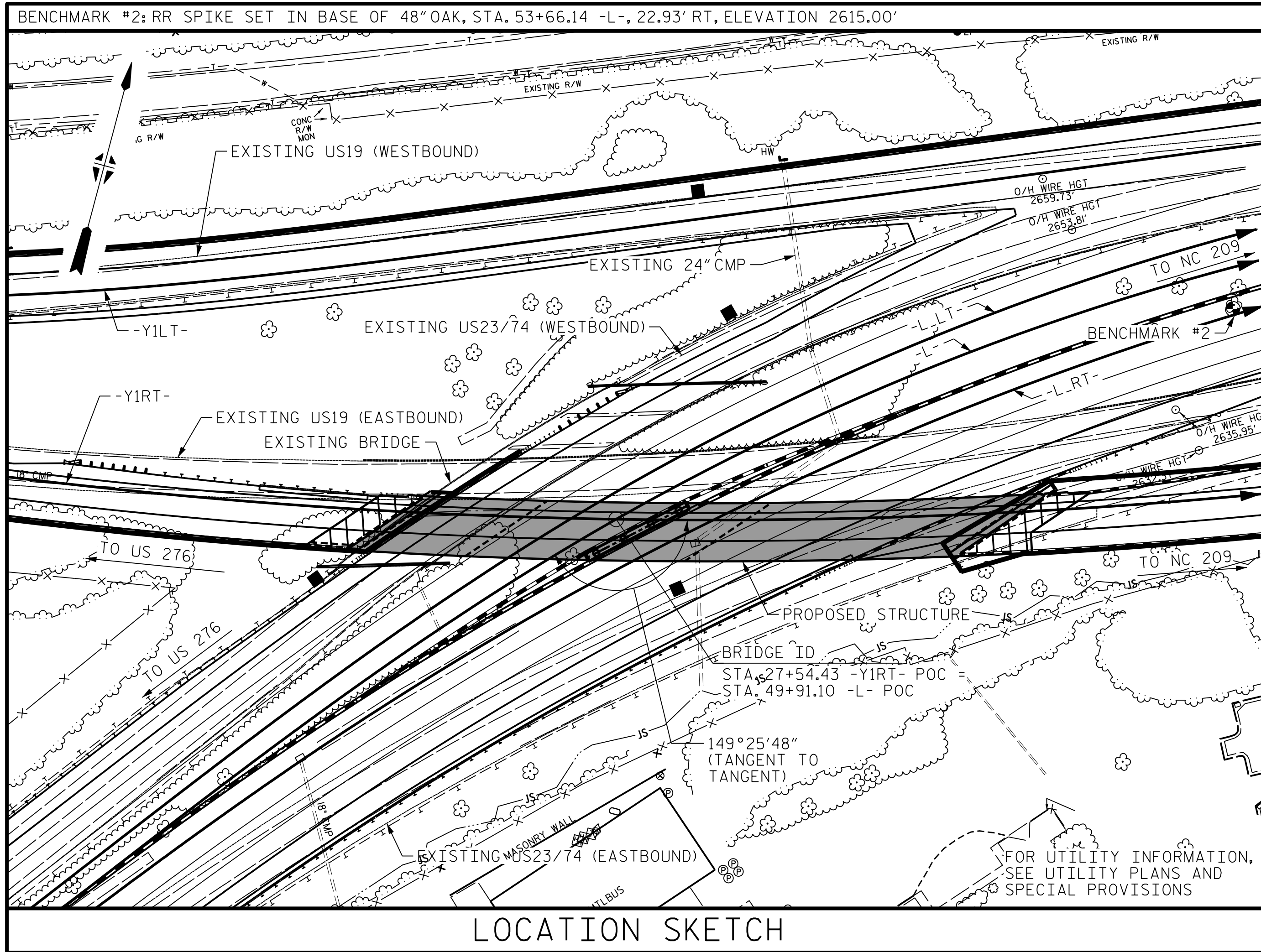


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2	--	--	4	--	--	48	

DES BY: <u>B. WATSON</u>	DATE : <u>02/21</u>	DWG BY: <u>B. PETERSON</u>	DATE : <u>02/21</u>
DES CHK: <u>S. NIFONG</u>	DATE : <u>02/21</u>	CHK BY: <u>S. NIFONG</u>	DATE : <u>07/21</u>

PLOT DRIVER: NCDOT_STRUCTURES_DEFAULT_PLOTTER.plt
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LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

THE 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 27+54.43 -YIRT-, 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.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 27+54.43 -YIRT-."

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

THE EXISTING STRUCTURE CONSISTING OF 4 STEEL GIRDERS AND 4 SPANS EACH WITH 28'-0" OF CLEAR ROADWAY ON A REINFORCED CONCRETE DECK ON REINFORCED CONCRETE BENT CAPS ON STEEL H-PILES LOCATED AT THE SITE OF THE PROPOSED BRIDGE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

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 FT. BELOW THE GROUND LINE.

FOR TEMPORARY BENTS, SEE SPECIAL PROVISIONS.

FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.

FOR DISC BEARINGS, SEE SPECIAL PROVISIONS.

ALL ELEVATIONS ARE IN FEET.

SEE ROADWAY PLANS FOR MSE WALL AND MOMENT SLAB DETAILS.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE @ STA. 27+54.43 -YIRT-	ASBESTOS ASSESSMENT	5'-0" Ø DRILLED PIERS IN SOIL	5'-0" Ø DRILLED PIERS NOT IN SOIL	PDA TESTING	SID INSPECTION	CSL TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS @ STA. 27+54.43 -YIRT-	REINFORCING STEEL
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	EA.	EA.	EA.	SO. FT.	SO. FT.	CU. YDS.	LUMP SUM	LB.
SUPERSTRUCTURE	LUMP SUM	LUMP SUM						11,870	10,740		LUMP SUM	
END BENT 1										58.7		8,190
BENT 1			162.6	20		4				123.1		43,402
END BENT 2										72.7		10,050
TOTAL	LUMP SUM	LUMP SUM	162.6	20	1	4	1	11,870	10,740	254.5	LUMP SUM	61,642

	SPIRAL COLUMN REINFORCING STEEL	APPROX. 660,000 LBS. STRUCTURAL STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP14x73 STEEL PILES	HP14x73 STEEL PILES	STEEL PILE POINTS	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	DISC BEARINGS	EXPANSION JOINT SEALS	
	LB.	LUMP SUM	EA.	NO.	LIN. FT.	EA.	LIN. FT.	SO. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE		LUMP SUM					804.5		LUMP SUM	LUMP SUM
END BENT 1			12	12	840			22.0		
BENT 1	9,662									
END BENT 2			12	12	840	12		37.3		
TOTAL	9,662	LUMP SUM	24	24	1680	12	804.5	59.3	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 $f_y = 60\text{ksi}$.

PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -YIRT-

SHEET 4 OF 4

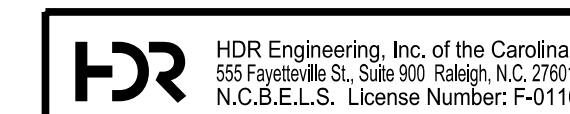
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 BRIDGE ON -YIRT- (US 19) OVER -L-,
 -L-LT- AND -L-RT- (US 74/US 23)
 BETWEEN US 276 AND NC 209



W. Brian Watson 1/24/2022

DES BY: B. WATSON	DATE: 02/21	DWG BY: B. PETERSON	DATE: 02/21
DES CHK: S. NIFONG	DATE: 02/21	CHK BY: S. NIFONG	DATE: 07/21



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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	502-04
1	--	--	3	--	--	TOTAL SHEETS 48
2	--	--	4	--	--	

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 _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	LIVE-LOAD FACTORS (γ _{LL})		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.14	--	1.75	--	1.14	B	4	125.23	--	1.20	B	2	203.81	1.30	--	1.79	B	4	125.23	--	
	HL-93 (OPERATING)	N/A		1.48	--	1.35	--	1.48	B	4	125.23	--	1.56	B	2	203.81	1.00	--	2.33	B	4	125.23	--	
	HS-20 (INVENTORY)	36.00	②	1.91	68.76	1.75	--	1.91	B	4	125.23	--	4.66	B	3	206.28	1.30	--	3.00	B	4	125.23	--	
	HS-20 (OPERATING)	36.00		2.48	89.13	1.35	--	2.48	B	4	125.23	--	6.04	B	3	206.28	1.00	--	3.90	B	4	125.23	--	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		4.05	54.68	1.40	--	4.05	B	1	0.00	--	4.47	B	2	203.81	1.30	--	5.38	B	1	0.00	--
		SNGARBS2	20.000		3.12	62.40	1.40	--	3.12	B	1	0.00	--	3.46	B	3	206.28	1.30	--	4.15	B	1	0.00	--
		SNAGRIS2	22.000		2.91	64.02	1.40	--	2.91	B	1	0.00	--	3.27	B	3	206.28	1.30	--	3.87	B	1	0.00	--
		SNCOTTS3	27.250		2.33	63.49	1.40	--	2.48	B	1	0.00	--	2.33	B	3	206.28	1.30	--	3.28	B	1	0.00	--
		SNAGGRS4	34.925		2.05	71.60	1.40	--	2.05	B	1	0.00	--	2.05	B	3	206.28	1.30	--	2.71	B	1	0.00	--
		SNS5A	35.550		1.97	70.03	1.40	--	2.04	B	1	0.00	--	1.97	B	2	203.81	1.30	--	2.70	B	1	0.00	--
		SNS6A	39.950		1.80	71.91	1.40	--	1.88	B	1	0.00	--	1.80	B	2	203.81	1.30	--	2.49	B	1	0.00	--
	SNS7B	42.000		1.83	76.86	1.40	--	1.83	B	1	0.00	--	1.83	B	2	203.81	1.30	--	2.42	B	1	0.00	--	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.16	71.28	1.40	--	2.16	B	1	0.00	--	2.50	B	3	206.28	1.30	--	2.85	B	1	0.00	--
		TNT4A	33.075		2.18	72.10	1.40	--	2.18	B	1	0.00	--	2.18	B	3	206.28	1.30	--	2.89	B	1	0.00	--
		TNT6A	41.600		1.86	77.38	1.40	--	1.86	B	1	0.00	--	1.94	B	2	203.81	1.30	--	2.46	B	1	0.00	--
		TNT7A	42.000		1.86	78.12	1.40	--	1.87	B	1	0.00	--	1.86	B	2	203.81	1.30	--	2.48	B	1	0.00	--
		TNT7B	42.000		1.87	78.54	1.40	--	1.87	B	1	0.00	--	1.94	B	2	203.81	1.30	--	2.48	B	1	0.00	--
		TNAGRIT4	43.000		1.76	75.68	1.40	--	1.76	B	1	0.00	--	1.86	B	2	203.81	1.30	--	2.32	B	1	0.00	--
TNAGT5A		45.000	③	1.71	76.95	1.40	--	1.71	B	1	0.00	--	1.86	B	2	203.81	1.30	--	2.26	B	1	0.00	--	
TNAGT5B	45.000	③	1.71	76.95	1.40	--	1.71	B	1	0.00	--	1.78	B	2	203.81	1.30	--	2.26	B	1	0.00	--		
FATIGUE	HL-93 (INVENTORY)	γ _{LL} =0.75		--																				

LOAD FACTORS:

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

NOTES:

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

COMMENTS:

1. 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.
2. DISTANCE FROM LEFT END OF SPAN IS GIVEN WITH RESPECT TO CENTERLINE OF BEARING AND IS MEASURED ALONG THE CONTROLLING GIRDER.
3. FATIGUE RATING IS NOT REQUIRED OR REPORTED SINCE GIRDER DESIGN DOES NOT INCLUDE FATIGUE-PRONE DETAILS.
4. LARSA 4D VERSION 8.00 r8101 WAS USED FOR INFLUENCE SURFACE ANALYSIS.
5. 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)

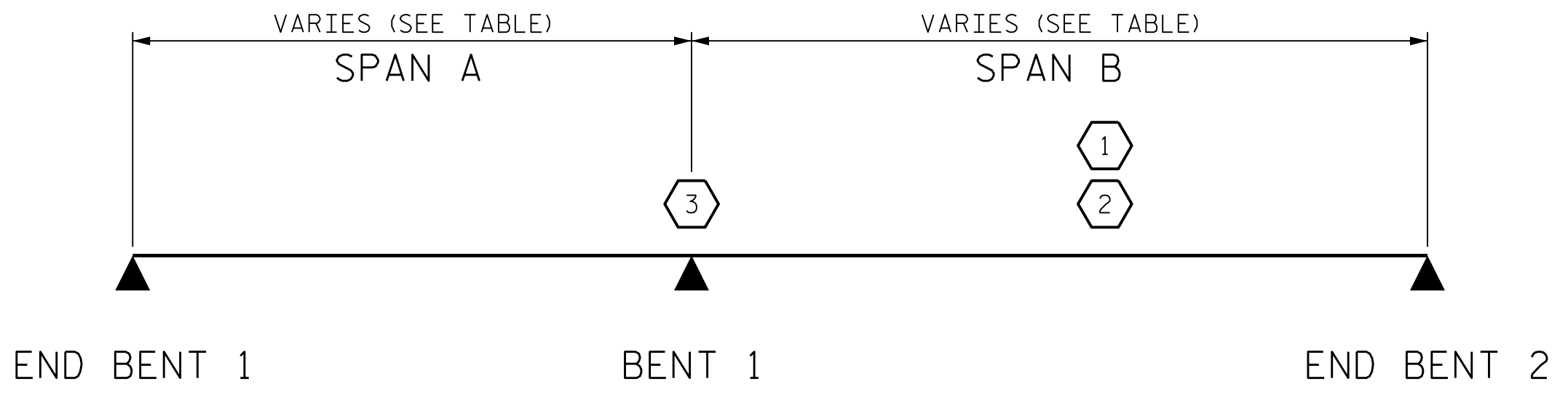
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

GIRDER LOCATION IS PROVIDED USING GIRDER NUMBER, WHERE GIRDER 1 IS THE EXTERIOR GIRDER TO THE LEFT OF -Y1RT-



C BRG - C BRG SPAN LENGTHS		
GIRDER	SPAN A	SPAN B
1	147'-4 ³ / ₄ "	201'-3 ³ / ₈ "
2	142'-8 ¹ / ₂ "	203'-9 ¹¹ / ₁₆ "
3	138'-1 ⁹ / ₁₆ "	206'-3 ³ / ₈ "
4	133'-7 ⁷ / ₈ "	208'-8 ⁹ / ₁₆ "

LRFR SUMMARY

PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -Y1RT-

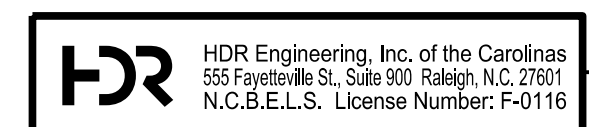


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**LRFR SUMMARY FOR
 STEEL GIRDERS
 (NON-INTERSTATE TRAFFIC)**

REVISIONS						SHEET NO. S02-05 TOTAL SHEETS 48
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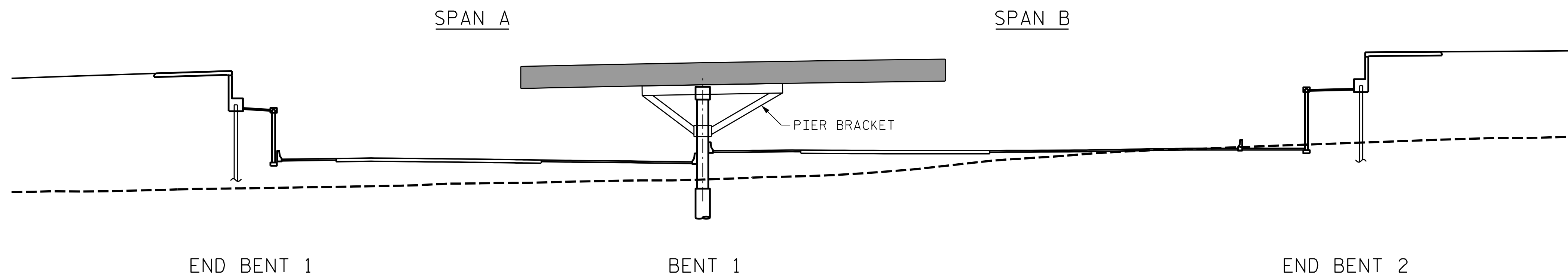
W. Brian Watson 1/24/2022



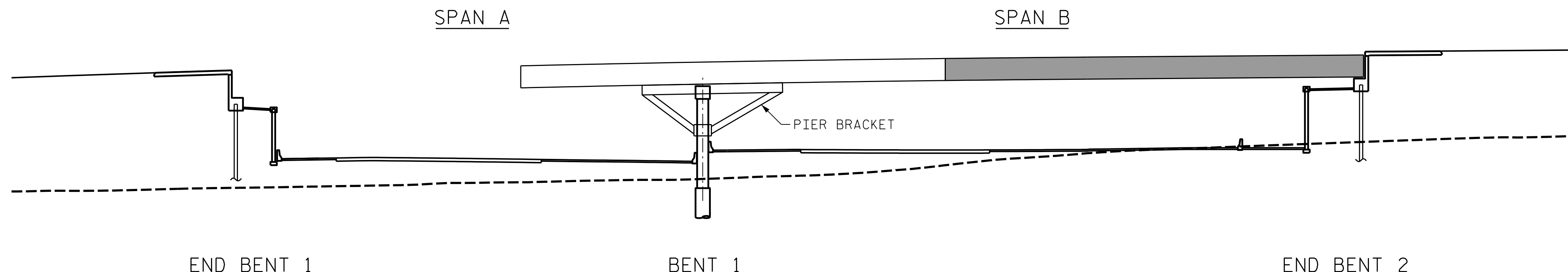
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 UNLESS ALL SIGNATURES COMPLETED**

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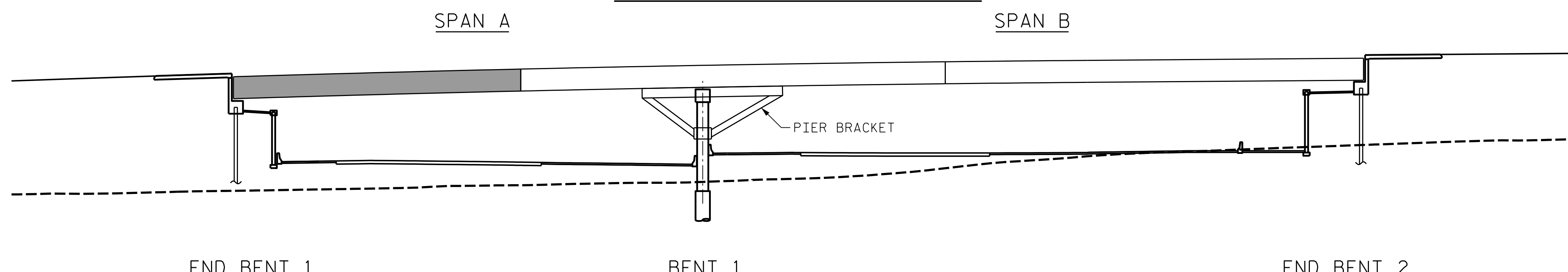
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DES CHK: <u>B. WATSON</u>	DATE: <u>07/21</u>	CHK BY: <u>B. WATSON</u>	DATE: <u>07/21</u>



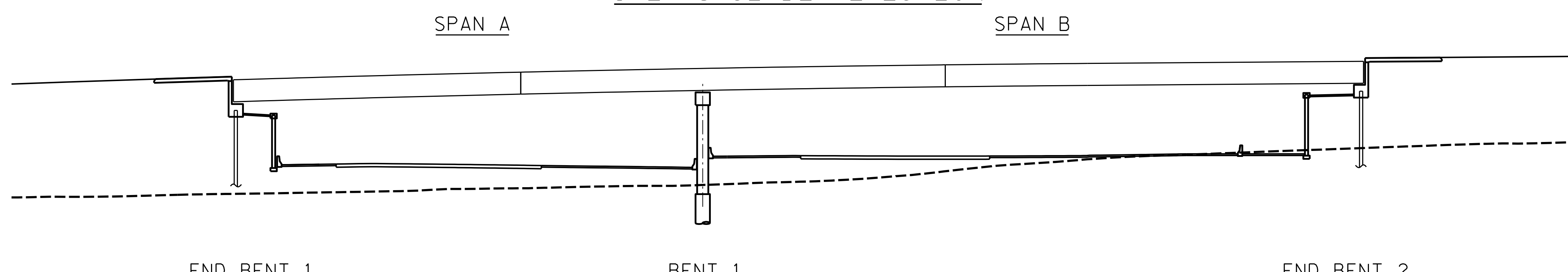
STEP 1 GIRDER ERECTION



STEP 2 GIRDER ERECTION



STEP 3 GIRDER ERECTION



COMPLETED STRUCTURE

NOTES

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

STEPS 1 AND 2 SHALL BE ACCOMPLISHED PRIOR TO SHIFTING ANY WESTBOUND US 74 / US 23 TRAFFIC TO EASTBOUND US 74 / US 23 LANES. SEE TRANSPORTATION MANAGEMENT PLAN (TMP) FOR MORE DETAILS.

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

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

THE STRUCTURAL STEEL SHALL REMAIN SUPPORTED DURING ERECTION. TEMPORARY SUPPORTS (PIER BRACKETS) AS SHOWN SHALL BE USED.

PIER BRACKETS SHALL REMAIN IN PLACE UNTIL ALL DIAPHRAGMS ARE IN PLACE AND ALL HIGH STRENGTH BOLTS ARE TIGHTENED.

PIER BRACKETS 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 AND PIER BRACKET ERECTION AND REMOVAL SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

THE CONTRACTOR IS RESPONSIBLE FOR DESIGNING THE TEMPORARY BENTS AND PIER BRACKETS. 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 GEOMETRY OF THE GIRDERS.

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.

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

PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -Y1RT-

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GIRDER ERECTION DETAILS



W. Brian Watson 1/24/2022

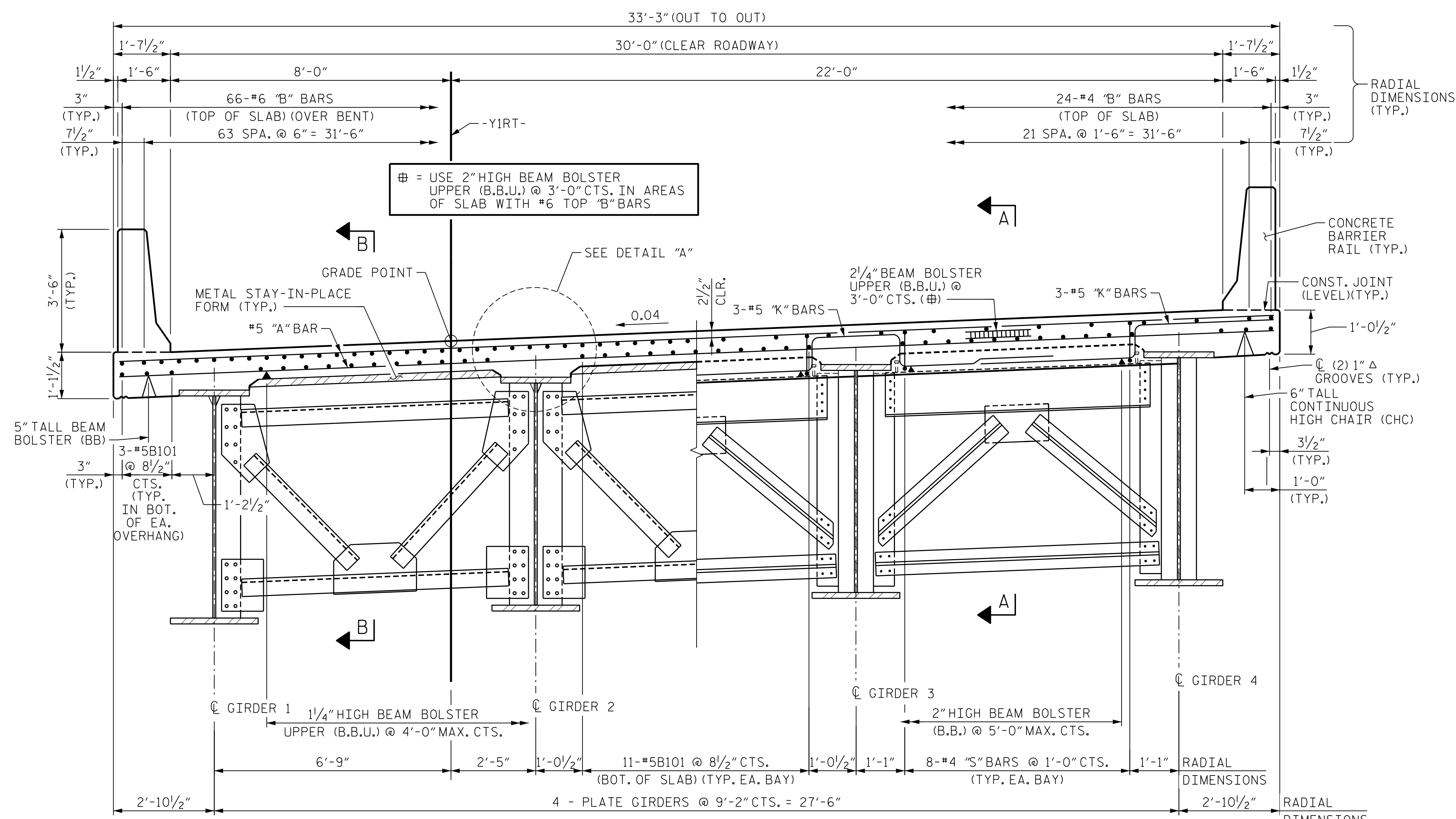
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HDR Engineering, Inc. of the Carolinas
 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
 N.C.B.E.L.S. License Number: F-0116

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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DES CHK: <u>S. NIFONG</u>	DATE: <u>07/21</u>	CHK BY: <u>S. NIFONG</u>	DATE: <u>07/21</u>



NOTES

PROVIDE 1/4" HIGH BEAM BOLSTER 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.) AT 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.

FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.

METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO GIRDER FLANGES IN THE ZONES REQUIRING CHARPY V-NOTCH TEST. SEE STRUCTURAL STEEL DETAILS SHEETS.

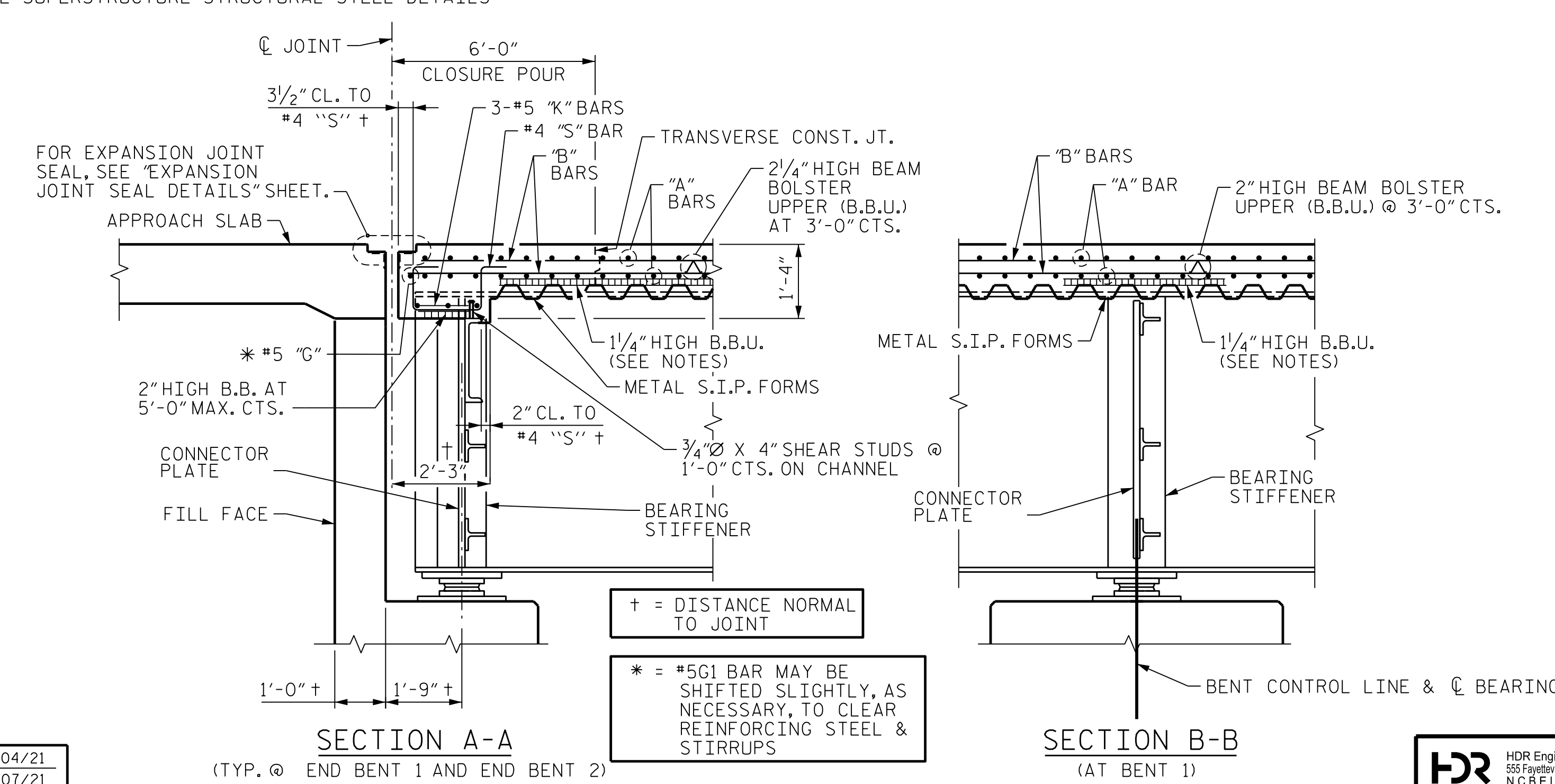
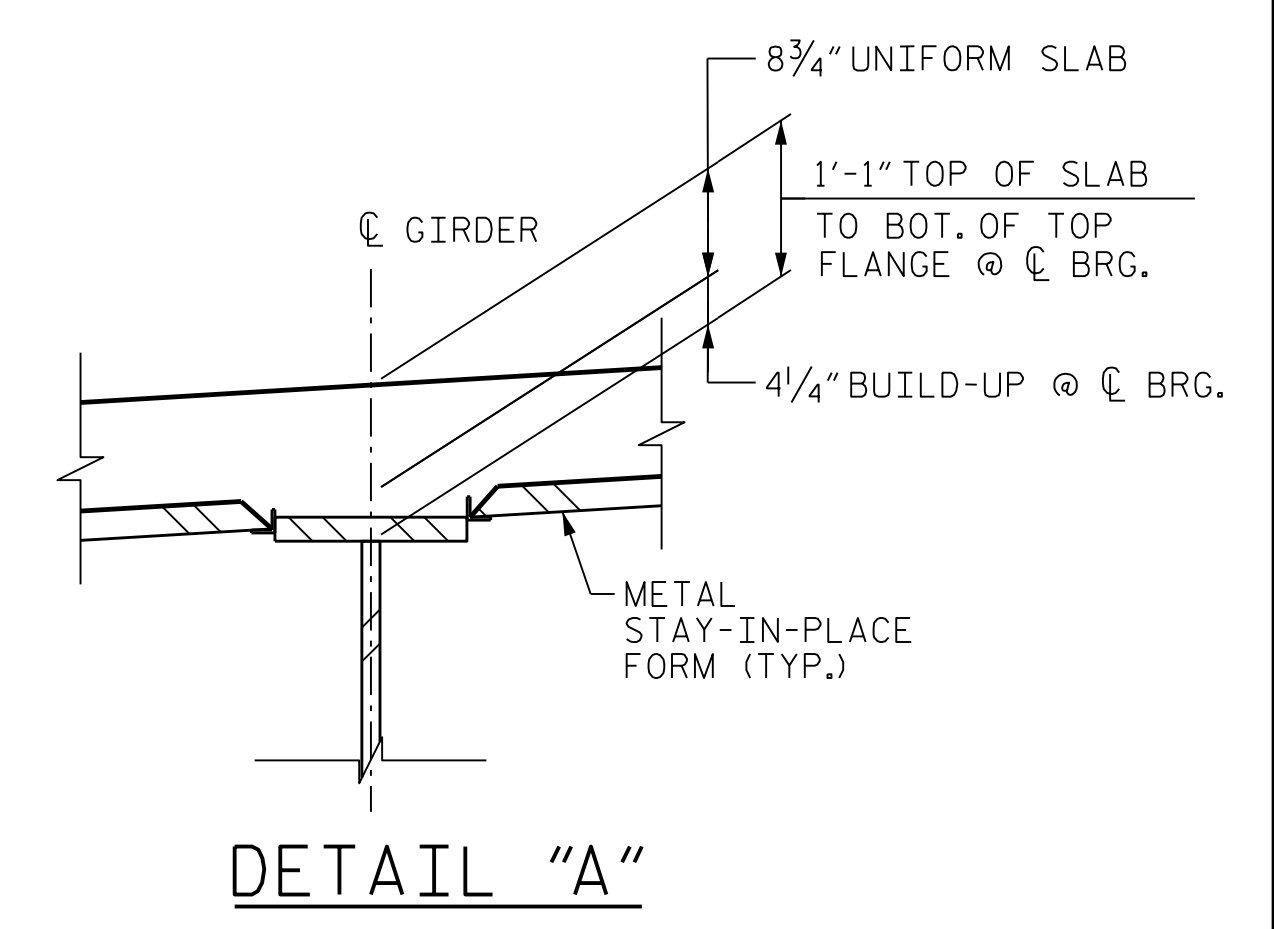
PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

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

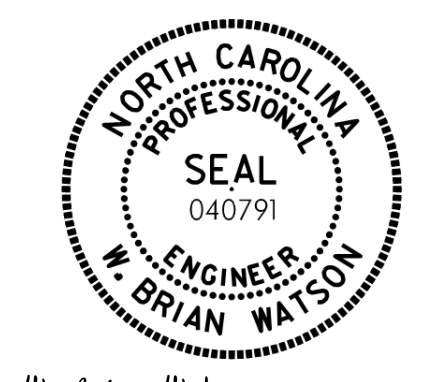
THE CONTRACTOR MAY, WHEN NECESSARY, PROPOSE A SCHEME FOR AVOIDING INTERFERENCE BETWEEN METAL STAY-IN-PLACE FORM SUPPORTS OR FORMS AND BEAM/GIRDER STIFFENERS OR CONNECTOR PLATES. THE PROPOSAL SHALL BE INDICATED, AS APPROPRIATE, ON EITHER THE STEEL WORKING DRAWINGS OR THE METAL STAY-IN-PLACE FORM WORKING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

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

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL UNLESS OTHERWISE NOTED.

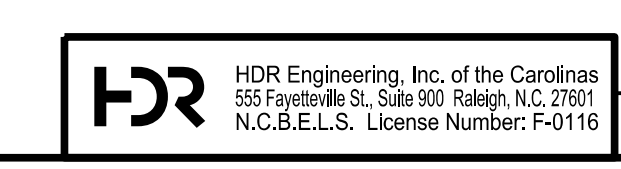


PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
STATION: 27+54.43 -Y1RT-



W. Brian Watson 1/24/2022

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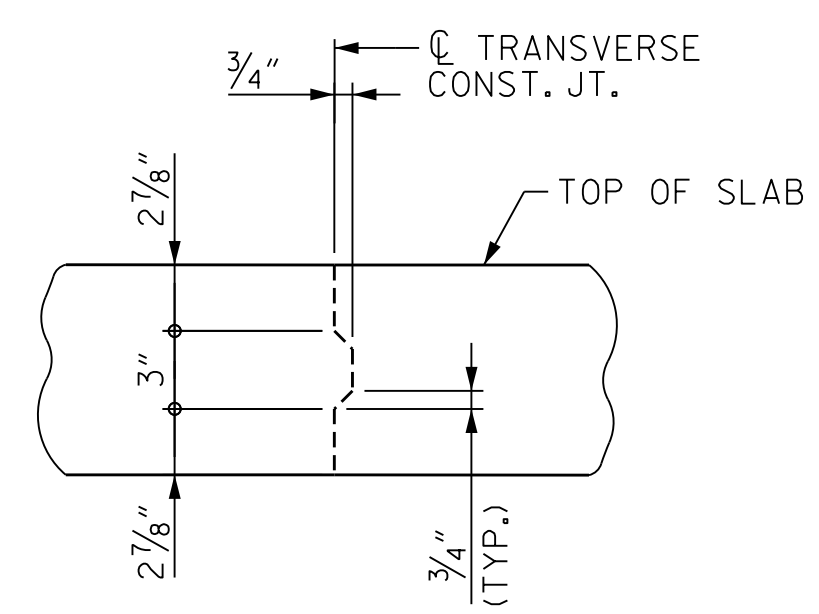
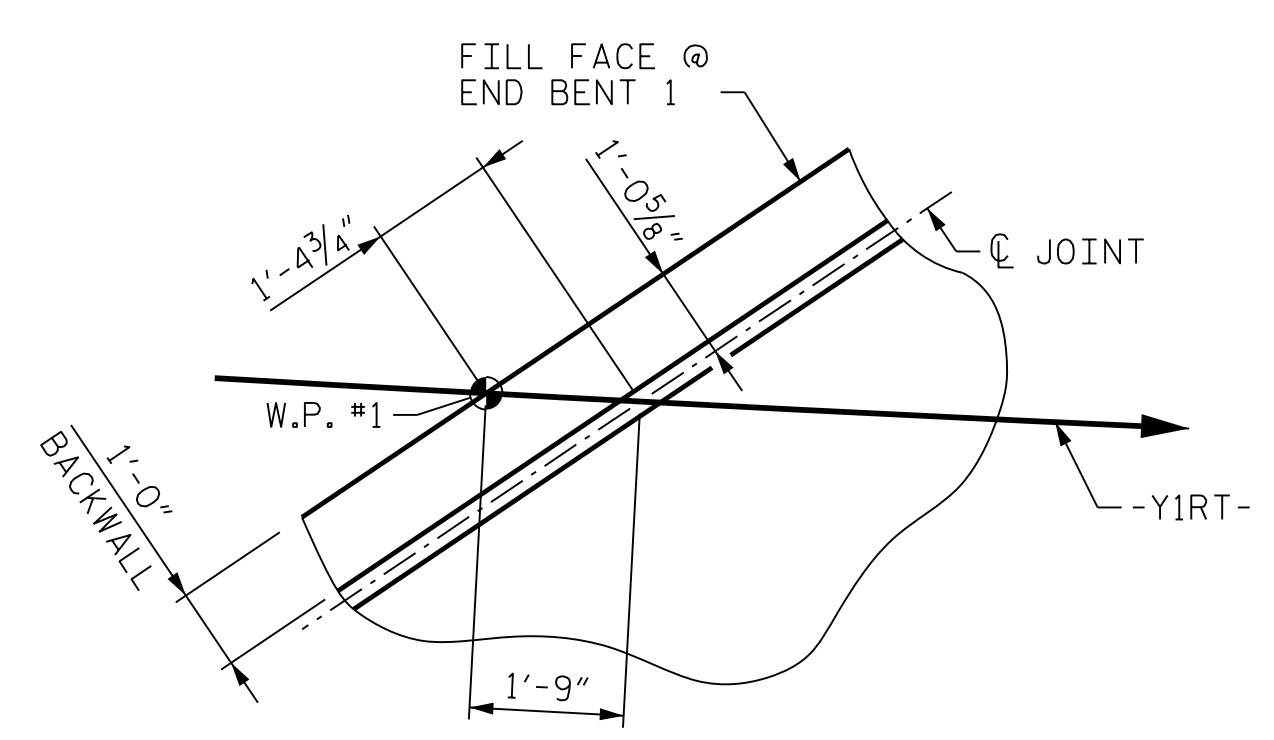
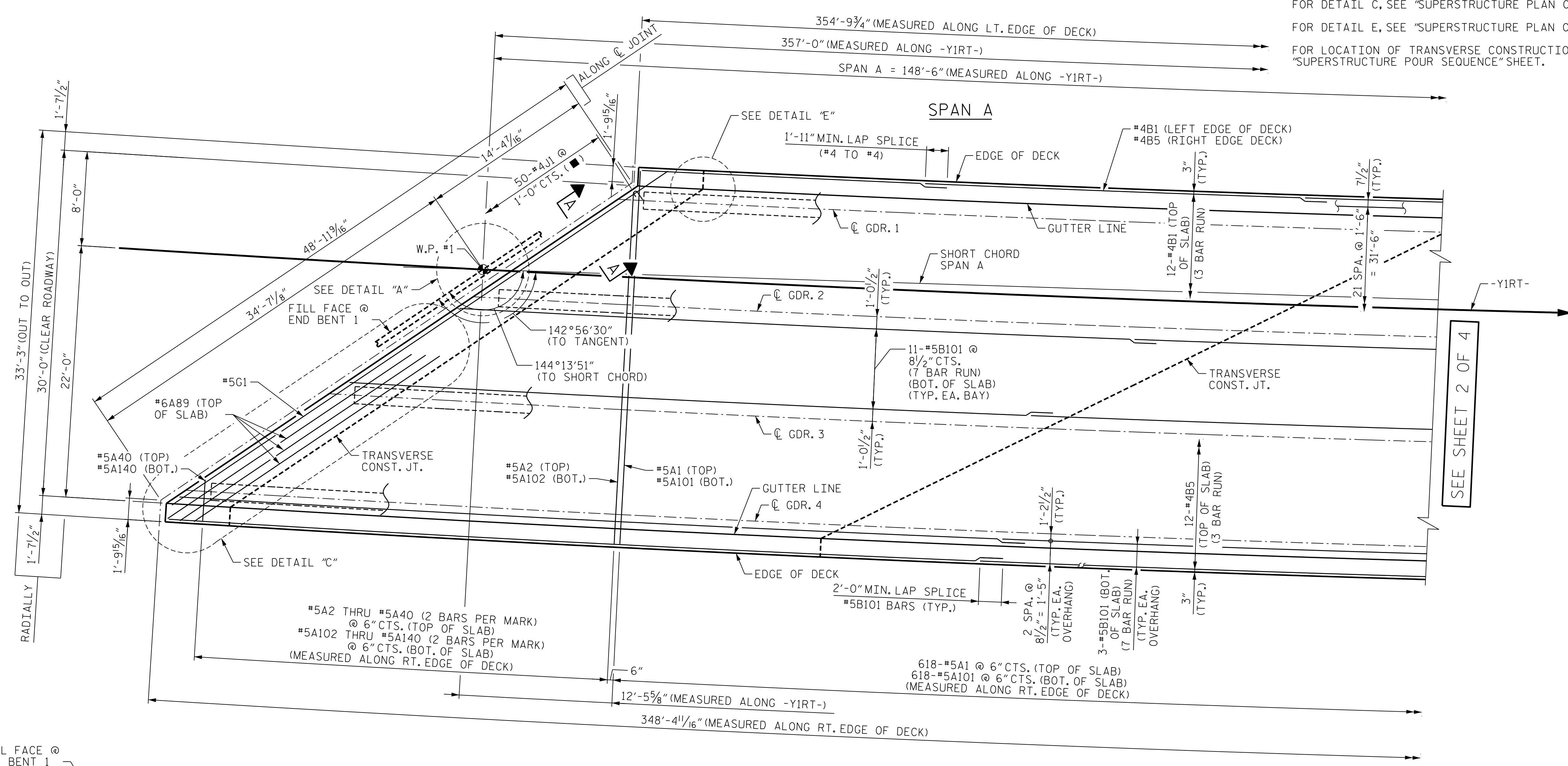


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DES BY: S. NIFONG	DATE: 04/21	DWG BY: M. SELLS	DATE: 04/21
DES CHK: H. ABU NIMEH	DATE: 07/21	CHK BY: H. ABU NIMEH	DATE: 07/21

NOTES
 FOR SECTION A-A, SEE "SUPERSTRUCTURE TYPICAL SECTION" SHEET.
 SEE "SUPERSTRUCTURE PLAN OF SPANS ARC OFFSETS" SHEET 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 @ 6" CTS. ALONG RIGHT OUTSIDE EDGE OF SUPERSTRUCTURE.
 FOR DECK POURING SEQUENCE, SEE "SUPERSTRUCTURE POUR SEQUENCE" SHEET.
 FOR DETAIL C, SEE "SUPERSTRUCTURE PLAN OF SPANS" SHEET 4 OF 4.
 FOR DETAIL E, SEE "SUPERSTRUCTURE PLAN OF SPANS" SHEET 2 OF 4." SHEET.
 FOR LOCATION OF TRANSVERSE CONSTRUCTION JOINTS, SEE "SUPERSTRUCTURE POUR SEQUENCE" SHEET.



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

PARTIAL PLAN OF SPANS - SPAN A

DETAIL "A" **TRANSVERSE CONSTRUCTION JOINT DETAIL**

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

PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -YIRT-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 PLAN OF SPANS**



W. Brian Watson 1/24/2022

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
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DES BY: S. NIFONG	DATE: 04/21	DWG BY: M. SELLS	DATE: 04/21
DES CHK: H. ABU NIMEH	DATE: 07/21	CHK BY: H. ABU NIMEH	DATE: 07/21

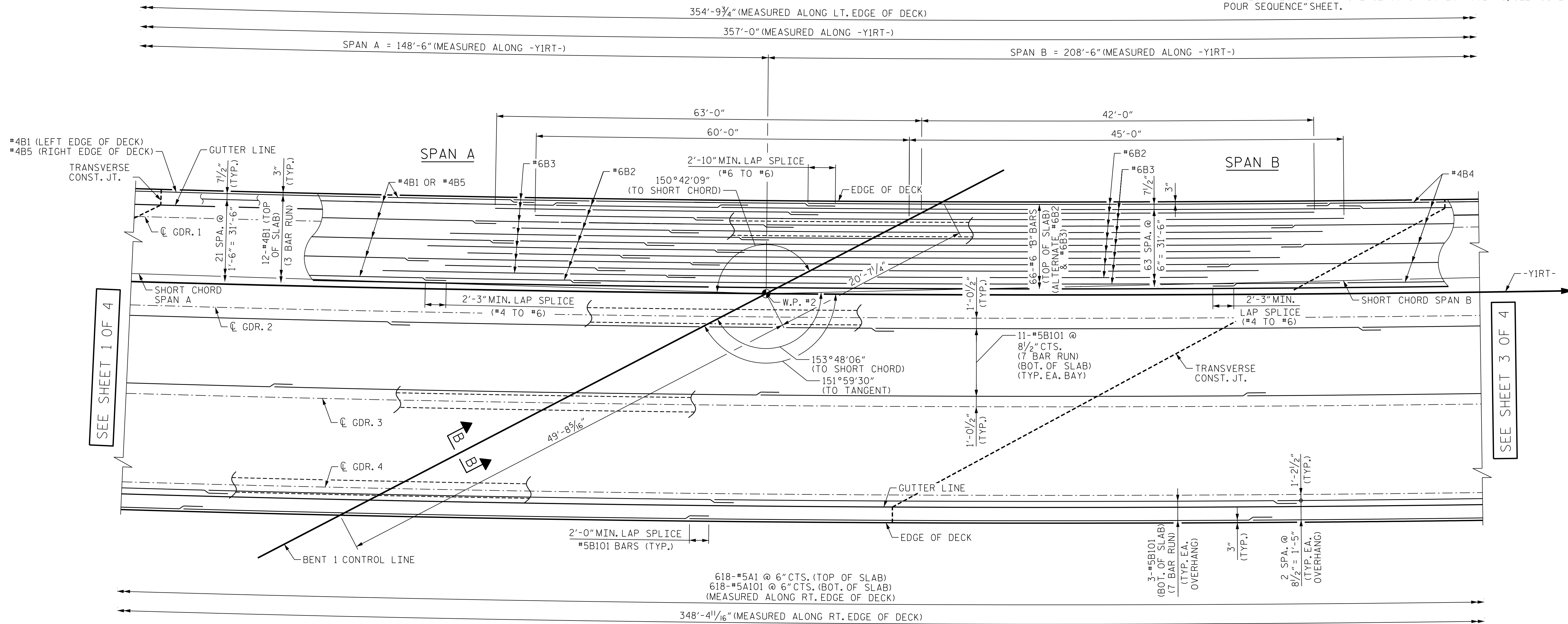


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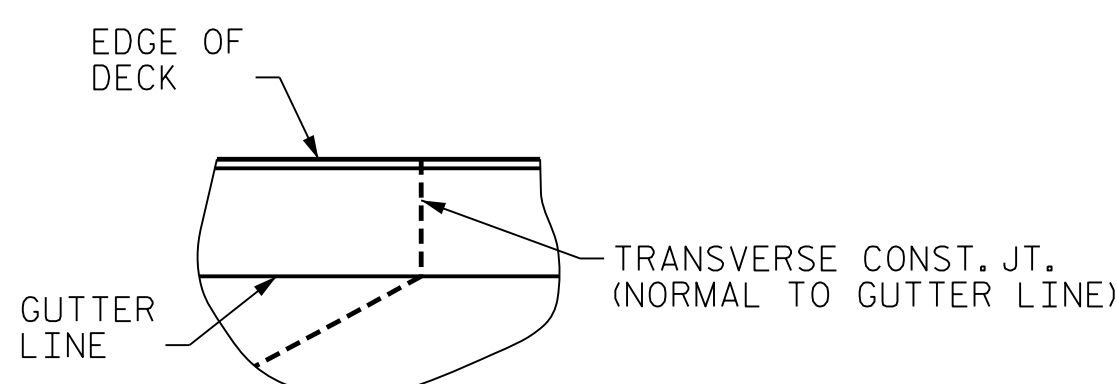
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- SEE "SUPERSTRUCTURE PLAN OF SPANS ARC OFFSETS" SHEET FOR OUTSIDE EDGE OF DECK CURVE OFFSETS.
- FOR REINFORCING STEEL IN CONCRETE BARRIER RAIL, SEE "SUPERSTRUCTURE CONCRETE BARRIER RAIL" SHEETS.
- #5 "A" BARS ARE TO BE PLACED RADIALLY SPACED @ 6" CTS. ALONG RIGHT OUTSIDE EDGE OF SUPERSTRUCTURE.
- FOR DECK POURING SEQUENCE SEE "SUPERSTRUCTURE POUR SEQUENCE" SHEET.
- FOR LOCATION OF TRANSVERSE CONSTRUCTION JOINTS, SEE "SUPERSTRUCTURE POUR SEQUENCE" SHEET.



PARTIAL PLAN OF SPANS - SPAN A & B

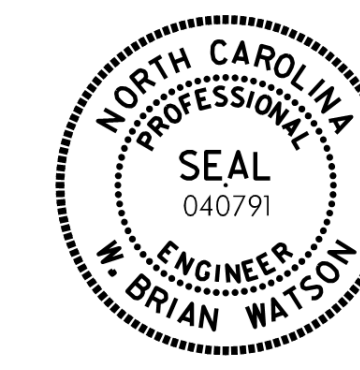
PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -Y1RT-

SHEET 2 OF 4



DETAIL "E"

(TYPICAL EACH TRANSVERSE CONSTRUCTION JOINT)



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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 PLAN OF SPANS**

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
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SHEET NO. 502-09
 TOTAL SHEETS 48



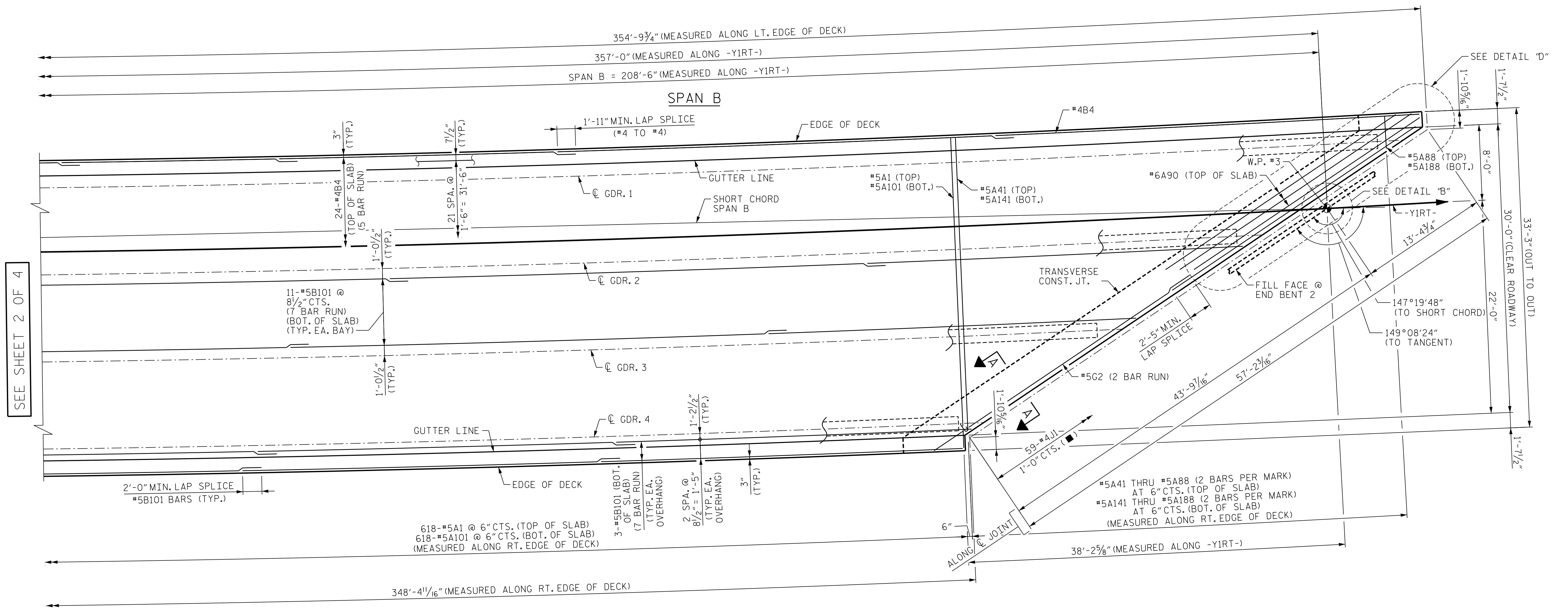
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DES CHK: H. ABU NIMEH	DATE: 07/21	CHK BY: H. ABU NIMEH	DATE: 07/21

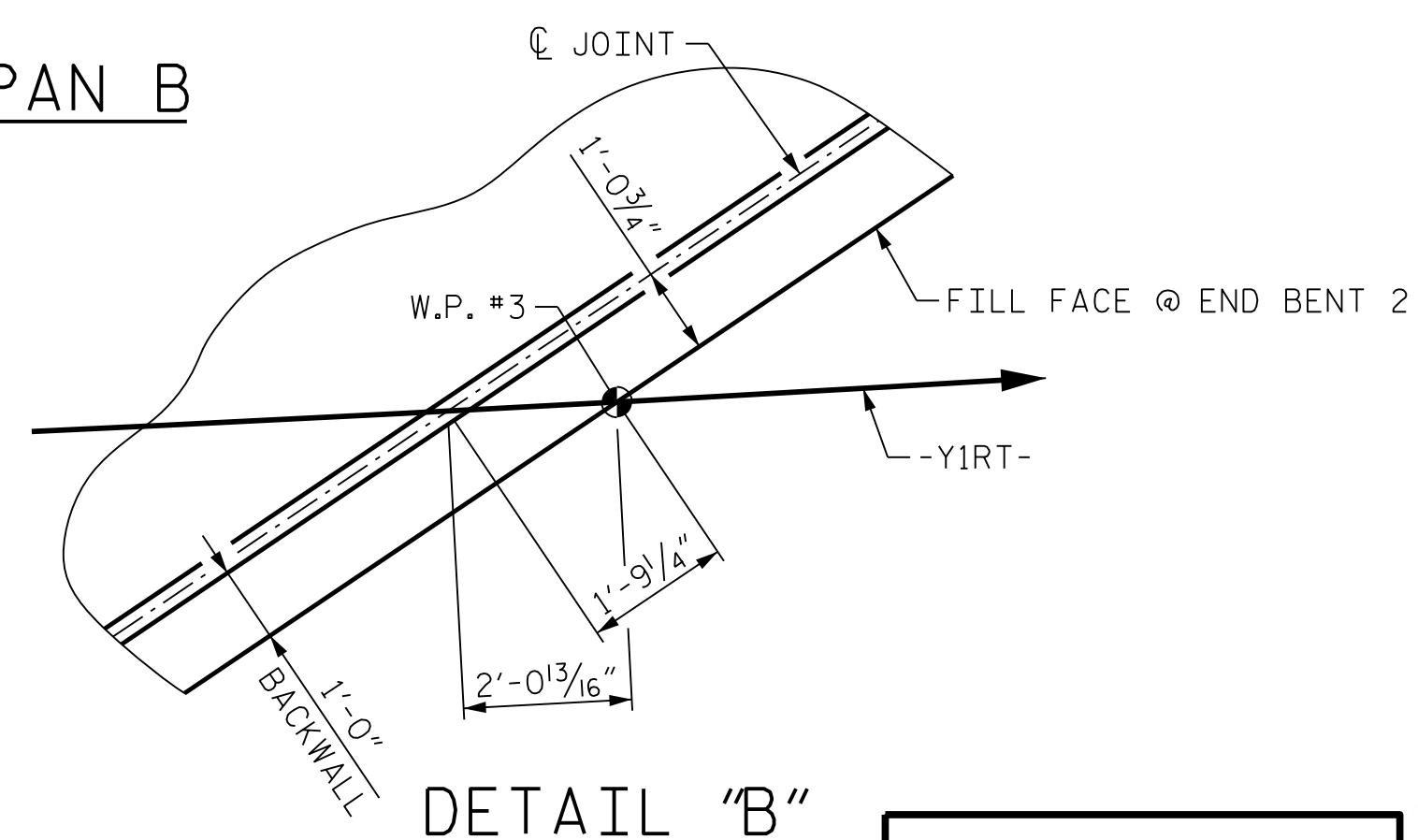
NOTES

- FOR SECTION A-A, SEE "SUPERSTRUCTURE TYPICAL SECTION" SHEET.
- SEE "SUPERSTRUCTURE PLAN OF SPANS ARC OFFSETS" SHEET 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 @ 6" CTS. ALONG RIGHT OUTSIDE EDGE OF SUPERSTRUCTURE.
- FOR DECK POURING SEQUENCE, SEE "SUPERSTRUCTURE POUR SEQUENCE" SHEET.
- FOR DETAIL D, SEE "SUPERSTRUCTURE PLAN OF SPANS" SHEET 4 OF 4.
- FOR LOCATION OF TRANSVERSE CONSTRUCTION JOINTS, SEE "SUPERSTRUCTURE POUR SEQUENCE" SHEET.



PARTIAL PLAN OF SPANS - SPAN B

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

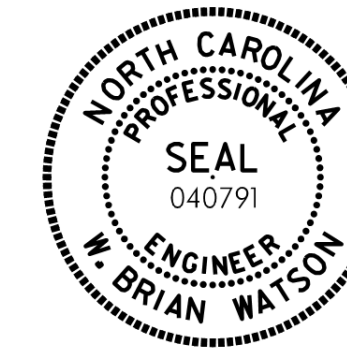


PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -Y1RT-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

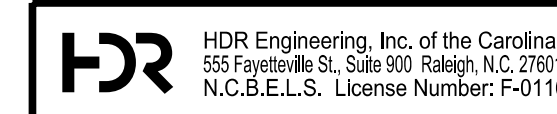
SUPERSTRUCTURE PLAN OF SPANS



W. Brian Watson 1/24/2022

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
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SHEET NO. 502-10
 TOTAL SHEETS 48



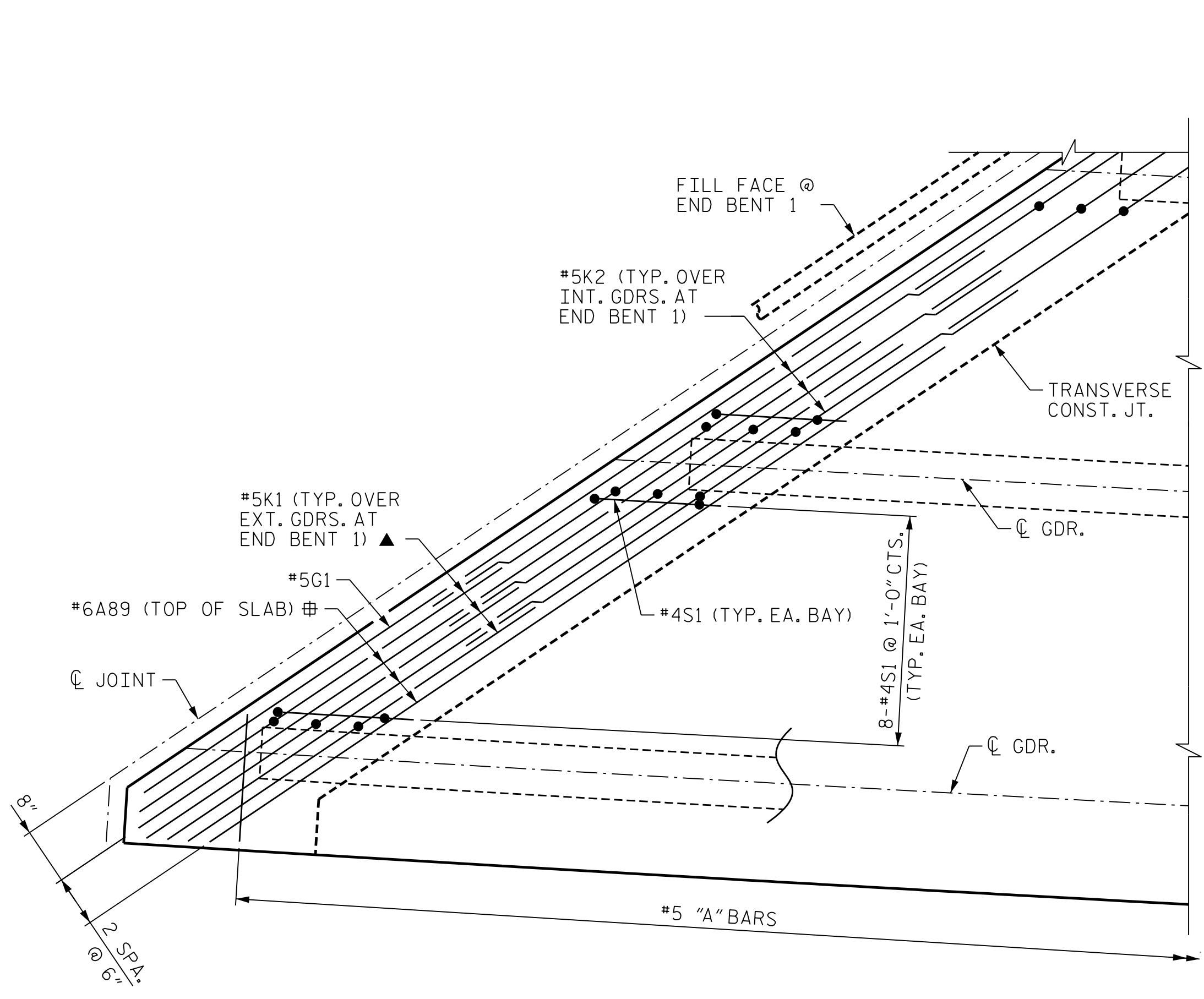
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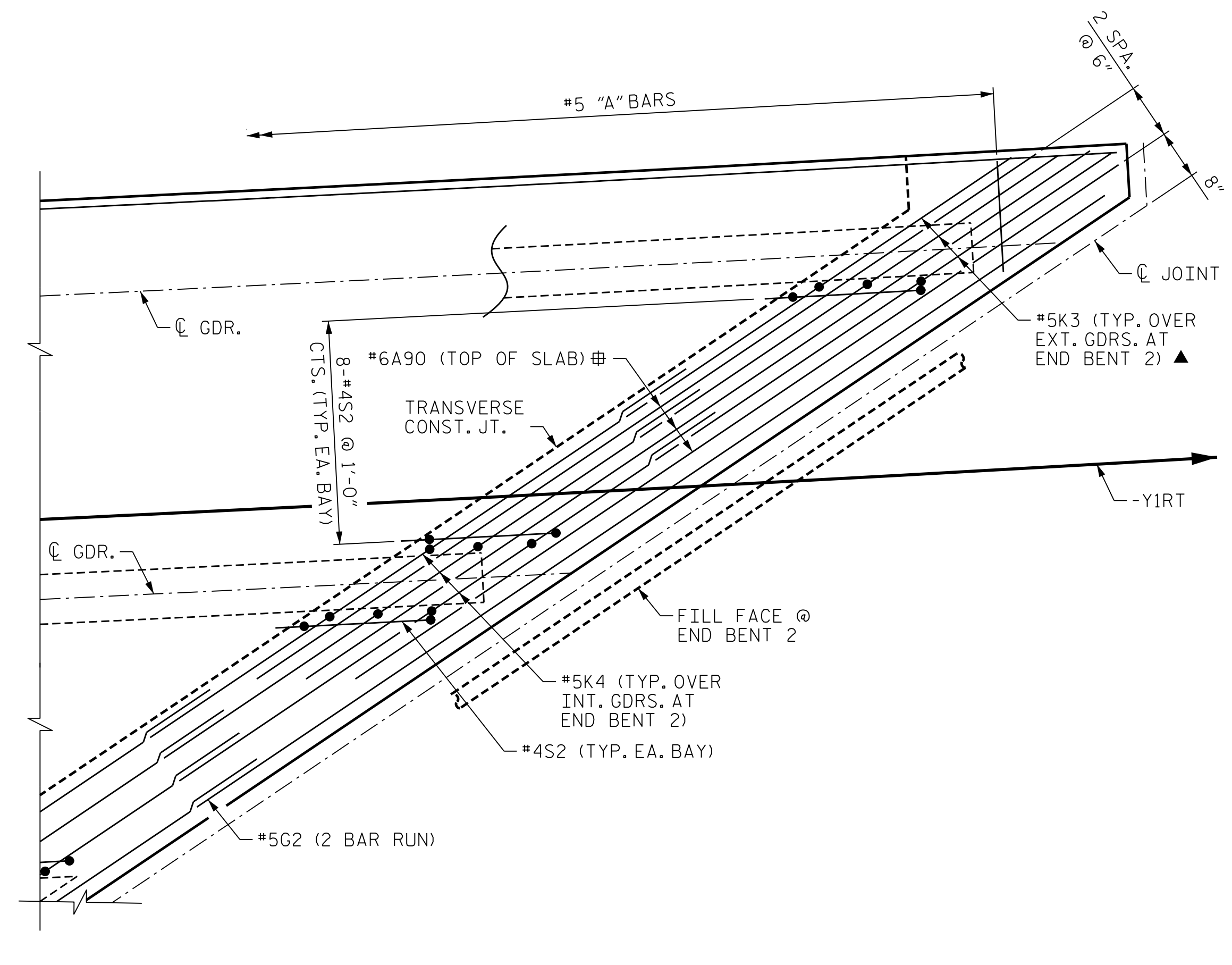
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DES CHK: H. ABU NIMEH	DATE: 07/21	CHK BY: H. ABU NIMEH	DATE: 07/21

NOTES

FOR NOTES, SEE "SUPERSTRUCTURE PLAN OF SPANS" SHEETS 1 THRU 3 OF 4.
FOR #4J1 BARS PLACEMENT, SEE "EXPANSION JOINT SEAL DETAILS" SHEET.



DETAIL "C"
#4J1 BAR NOT SHOWN FOR CLARITY



DETAIL "D"
#4J1 BAR NOT SHOWN FOR CLARITY

▲ = FIELD CUT AS NECESSARY TO MAINTAIN 2" CLEARANCE TO EDGE OF DECK
 ⊕ = TO BE PLACED DIRECTLY UNDER MAIN #5 "A" BARS

PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -Y1RT-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE PLAN OF SPANS



W. Brian Watson 1/24/2022

REVISIONS					
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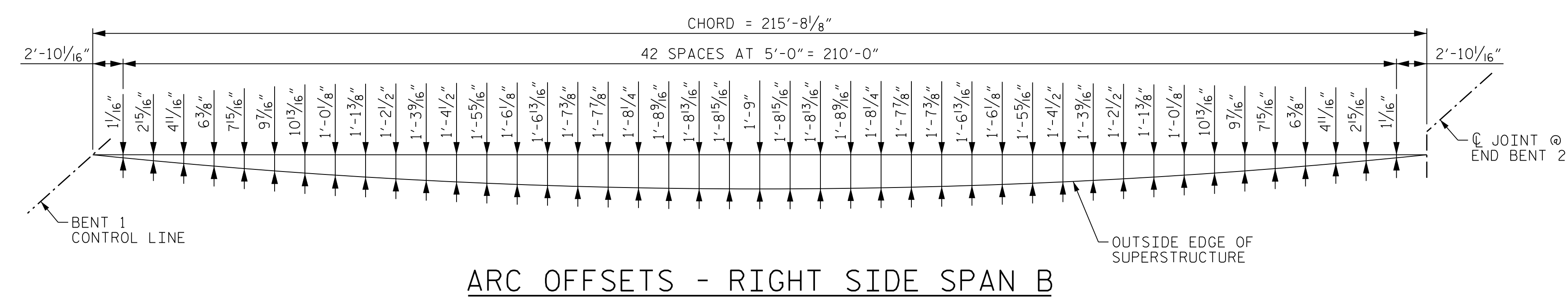
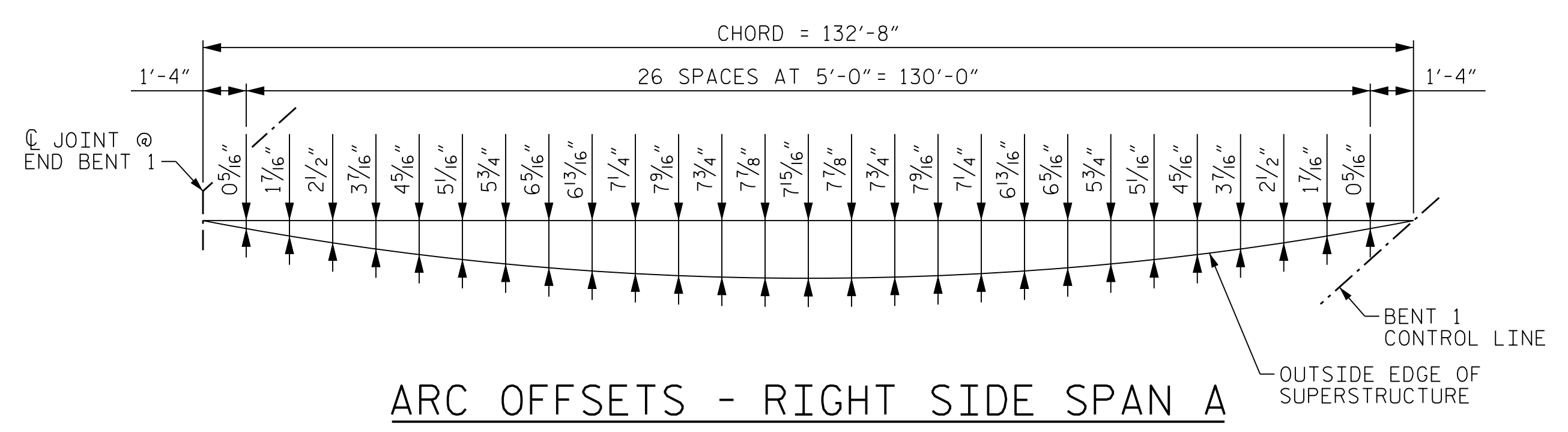
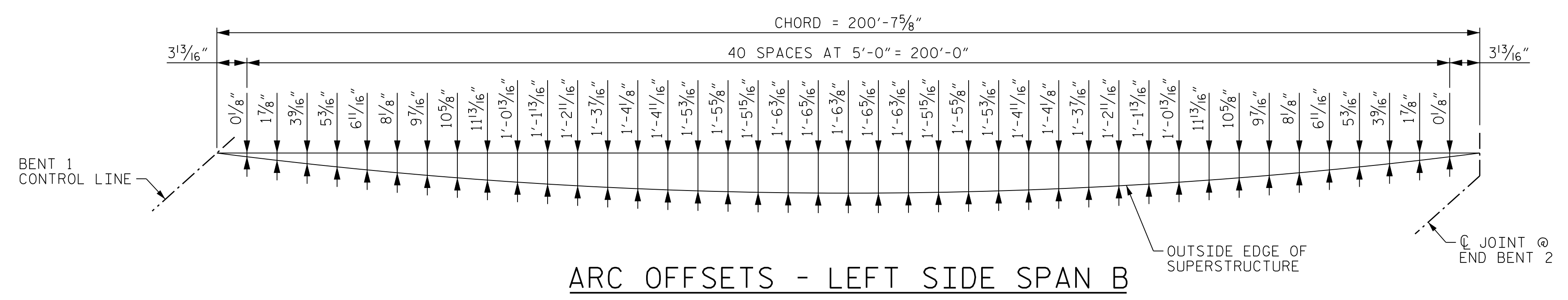
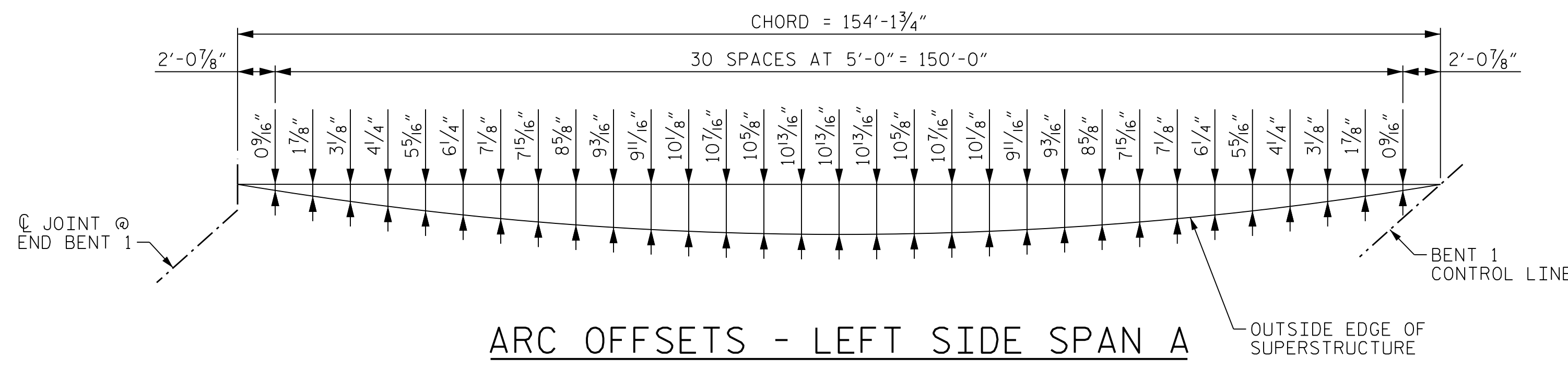
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 TOTAL SHEETS 48

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 CHK: <u>H. ABU NIMEH</u>	DATE: <u>07/21</u>	CHK BY: <u>H. ABU NIMEH</u>	DATE: <u>07/21</u>



PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -Y1RT-

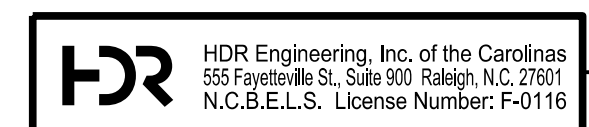


W. Brian Watson 1/24/2022

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 PLAN OF SPANS
 ARC OFFSETS**

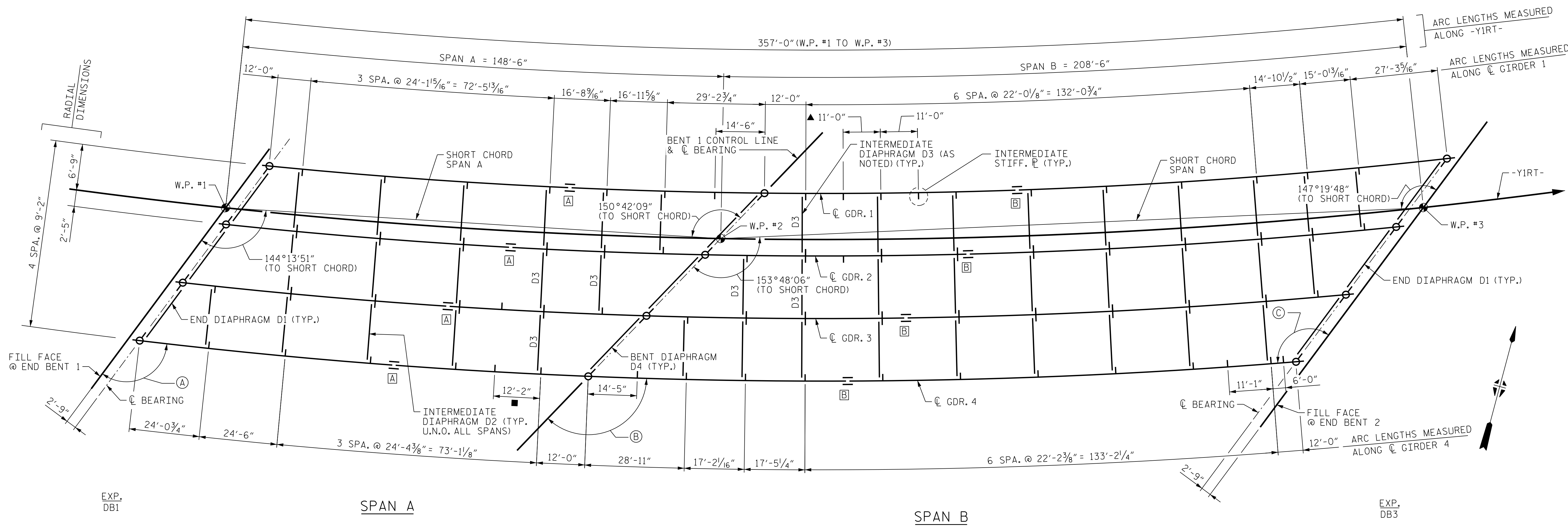
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DES BY: <u>S. NIFONG</u>	DATE: <u>05/21</u>	DWG BY: <u>B. PETERSON</u>	DATE: <u>05/21</u>
DES CHK: <u>B. WATSON</u>	DATE: <u>06/21</u>	CHK BY: <u>B. WATSON</u>	DATE: <u>06/21</u>



GIRDER	A	B	C
1	143°05'51"	152°12'48"	149°20'14"
2	142°53'10"	151°54'47"	149°04'12"
3	142°40'38"	151°37'02"	148°48'22"
4	142°28'12"	151°19'33"	148°32'46"

FRAMING PLAN
(CURVATURE AND SKEW EXAGGERATED FOR CLARITY)

- ☒ = FIELD SPLICE TYPE
- ▲ = GIRDERS 1 & 2
- = GIRDERS 3 & 4

STRUCTURAL STEEL NOTES

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.

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.

BEARING STIFFENERS ARE TO BE PLACED NORMAL TO THE WEB OF THE GIRDER AND SHALL BE PLUMB IN THE FINAL CONDITION.

PERMITTED FLANGE AND WEB SHOP SPLICES SHALL NOT BE LOCATED WITHIN 15 FEET OF MAXIMUM DEAD LOAD DEFLECTION (NOR WITHIN 15 FEET OF INTERMEDIATE BEARINGS OF CONTINUOUS UNITS). KEEP 2 FEET MINIMUM BETWEEN WEB AND FLANGE SHOP SPLICES. KEEP 6" MINIMUM BETWEEN CONNECTOR PLATE OR TRANSVERSE STIFFENER WELD AND WEB OR FLANGE SHOP SPLICES.

STUDS ON GIRDERS MAY BE SHIFTED UP TO 1" IF NECESSARY TO CLEAR FLANGE SPLICE WELDS.

TENSION ON THE AASHTO M164 BOLTS SHALL BE CALIBRATED USING DIRECTED TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-8 OF THE STANDARD SPECIFICATIONS.

ENDS OF GIRDERS SHALL BE PLUMB IN THE FINAL CONDITION.

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

FABRICATORS SHALL DETAIL DIAPHRAGM MEMBERS AND CONNECTIONS FOR STEEL DEAD LOAD FIT UP.

FOR FIELD SPLICE TYPES, SEE "SUPERSTRUCTURE BOLTED FIELD SPLICE DETAILS" SHEETS.

FOR DIAPHRAGM TYPES, SEE "SUPERSTRUCTURE STRUCTURAL STEEL GIRDER DETAILS" SHEETS.

HALF-ROUND BEARING STIFFENERS MAY BE FABRICATED FROM BENT PLATE CONFORMING TO AASHTO M270 GRADE 50W OR, AT THE CONTRACTORS OPTION, HALF-ROUND BEARING STIFFENERS MAY BE FABRICATED FROM HSS SECTIONS (CUT IN HALF) CONFORMING TO ASTM A1085, Fy = 50 ksi.

THE INSIDE FACE OF THE HALF-ROUND BEARING STIFFENERS SHALL BE PAINTED IN ACCORDANCE WITH SYSTEM 1 OR SYSTEM 2 OF THE STRUCTURAL STEEL SHOP COATINGS PROGRAM FOR EITHER AASHTO M270 OR ASTM A1085 STEEL.

IF ASTM A1085 STEEL IS USED TO FABRICATE THE HALF-ROUND BEARING STIFFENERS PAINT SYSTEM 1 OR SYSTEM 2 SHALL BE APPLIED OVER THE FULL HEIGHT OF THE GIRDERS AND STIFFENERS FOR A HORIZONTAL DISTANCE OF 1.0 TIMES THE DEPTH OF THE GIRDER CENTERED ON THE INTERIOR BENT BEARINGS AND FOR A DISTANCE OF 1.5 TIMES THE DEPTH OF THE GIRDER FROM THE ENDS OF THE GIRDERS.

PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -Y1RT-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE FRAMING PLAN



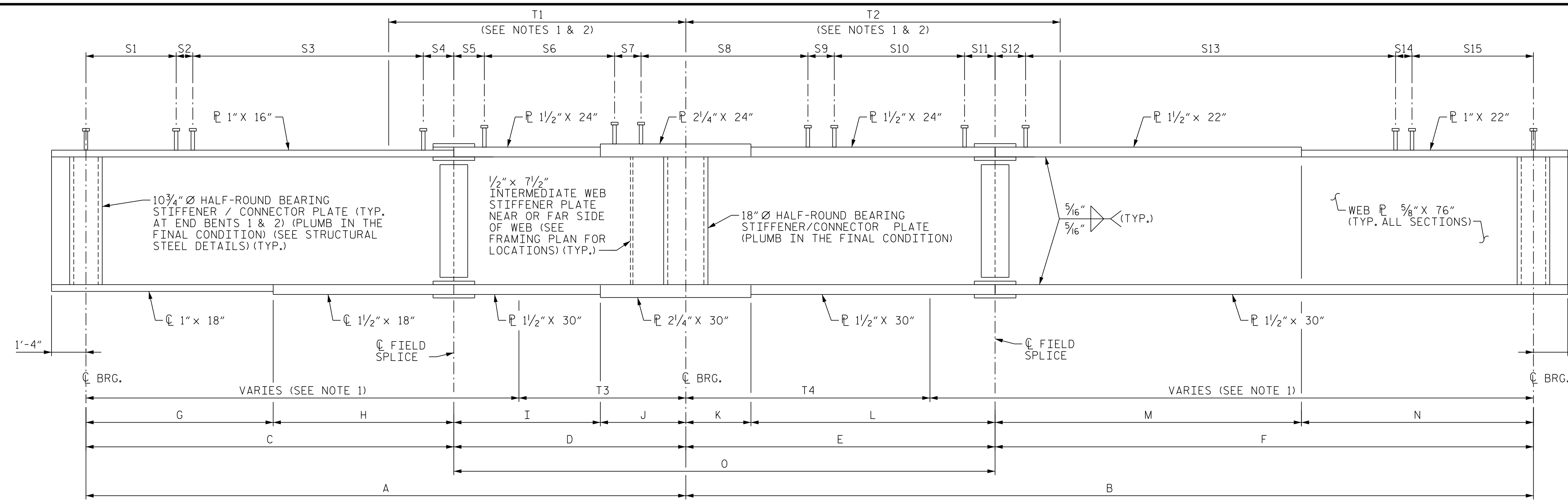
W. Brian Watson 1/24/2022

REVISIONS						SHEET NO. 502-13 TOTAL SHEETS 48
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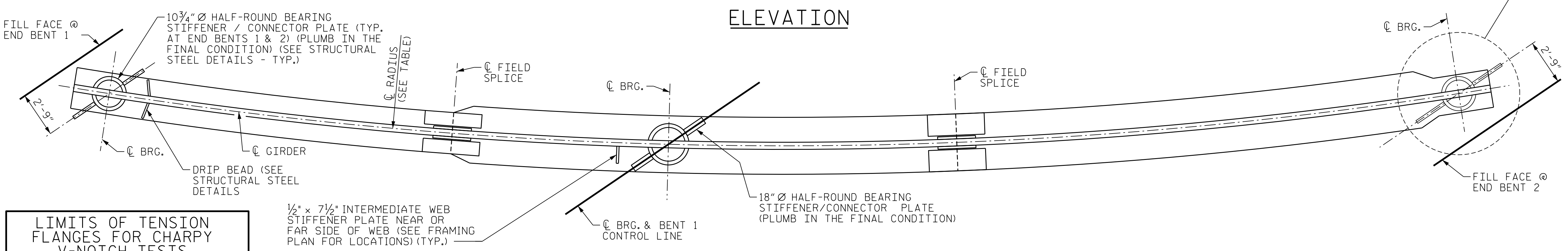
HDR HDR Engineering, Inc. of the Carolinas
 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
 N.C.B.E.L.S. License Number: F-0116

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- NOTES**
1. CHARPY V-NOTCH TESTS ARE REQUIRED FOR ALL TOP OR BOTTOM FLANGE PLATES WHICH FALL WITHIN THESE LIMITS, ALL WEB PLATES AND ALL SPLICE PLATES. IF A PERMITTED SHOP FLANGE SPLICE IS NOT USED, CHARPY V-NOTCH TESTS WILL BE REQUIRED FOR THE ENTIRE FLANGE PLATE. FOR CHARPY V-NOTCH TESTS, SEE ARTICLE 1072-7 OF THE STANDARD SPECIFICATIONS.
 2. NO WELDING OF FORMS OR FALSEWORK TO THE TOP FLANGE WILL BE PERMITTED IN THIS REGION.
 3. DIMENSIONS ARE HORIZONTAL ARC DIMENSIONS ALONG THE C OF GIRDER. NO CORRECTIONS HAVE BEEN MADE TO ADJUST FOR THE DISTANCE ALONG THE GRADE.
 4. FOR SHEAR CONNECTOR TRANSVERSE SPACING, SEE "STRUCTURAL STEEL DETAILS" SHEET 4 OF 4.
 5. FOR CHARPY V-NOTCH TEST, SEE SPECIAL PROVISIONS.
 6. FOR DETAIL "A", SEE "STRUCTURAL STEEL DETAILS" SHEET 4 OF 4.



LIMITS OF TENSION FLANGES FOR CHARPY V-NOTCH TESTS

GIRDER	T1	T2	T3	T4
1	101'-5"	56'-0"	46'-1"	34'-0"
2	94'-3"	51'-5"	42'-9"	29'-4"
3	92'-2"	61'-11"	41'-5"	29'-1"
4	85'-2"	62'-8"	40'-1"	41'-8"

GIRDER DIMENSIONS

GIRDER	C RADIUS	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	3293'-3"	147'-4 3/4"	201'-3 3/8"	90'-4 3/4"	57'-0"	74'-0"	127'-3 3/8"	46'-0"	44'-4 3/4"	36'-0"	21'-0"	16'-0"	58'-0"	77'-3 3/8"	50'-0"	131'-0"
2	3302'-5"	142'-8 1/2"	203'-9 1/16"	85'-8 1/2"	57'-0"	77'-0"	126'-9 1/16"	46'-0"	39'-8 1/2"	36'-0"	21'-0"	16'-0"	61'-0"	76'-9 1/16"	50'-0"	134'-0"
3	3311'-7"	138'-1 9/16"	206'-3 3/8"	81'-1 9/16"	57'-0"	76'-0"	130'-3 3/8"	46'-0"	35'-1 9/16"	36'-0"	21'-0"	16'-0"	60'-0"	80'-3 3/8"	50'-0"	133'-0"
4	3320'-9"	133'-7 7/8"	208'-8 9/16"	76'-7 7/8"	57'-0"	76'-0"	132'-8 9/16"	46'-0"	30'-7 7/8"	36'-0"	21'-0"	16'-0"	60'-0"	82'-8 9/16"	50'-0"	133'-0"

STUD SPACING DIMENSIONS

GIRDER	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15
1	22 SPA. @ 8"	1'-1"	67 SPA. @ 1'-1"	2'-0 3/4"	2'-0"	40 SPA. @ 1'-3"	0'-11"	47 SPA. @ 0'-11"	0'-11"	25 SPA. @ 1'-3"	2'-10"	2'-8 3/8"	84 SPA. @ 1'-3"	1'-3"	22 SPA. @ 0'-10"
2	23 SPA. @ 8"	1'-1"	62 SPA. @ 1'-1"	2'-1 1/2"	1'-11"	37 SPA. @ 1'-3"	1'-1"	23 SPA. @ 1'-1"	1'-1"	44 SPA. @ 1'-3"	2'-8"	3'-1 1/16"	83 SPA. @ 1'-3"	1'-3"	28 SPA. @ 0'-8"
3	18 SPA. @ 10"	1'-2"	54 SPA. @ 1'-2"	1'-11 9/16"	1'-11"	36 SPA. @ 1'-3"	1'-1"	38 SPA. @ 1'-1"	1'-1"	32 SPA. @ 1'-3"	2'-9"	2'-8 3/8"	96 SPA. @ 1'-1"	1'-1"	27 SPA. @ 0'-10"
4	22 SPA. @ 10"	1'-3"	44 SPA. @ 1'-3"	2'-0 7/8"	1'-11"	17 SPA. @ 1'-3"	1'-0"	34 SPA. @ 1'-0"	1'-0"	61 SPA. @ 1'-2"	2'-8"	2'-8 9/16"	87 SPA. @ 1'-2"	1'-2"	41 SPA. @ 0'-8"

PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -Y1RT-
 SHEET 1 OF 4

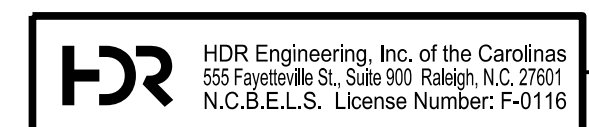


W. Brian Watson 1/24/2022

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 STRUCTURAL STEEL
 GIRDER DETAILS**

DES BY: <u>B. WATSON</u>	DATE: <u>05/21</u>	DWG BY: <u>B. PETERSON</u>	DATE: <u>05/21</u>
DES CHK: <u>S. NIFONG</u>	DATE: <u>05/21</u>	CHK BY: <u>B. WATSON</u>	DATE: <u>05/21</u>



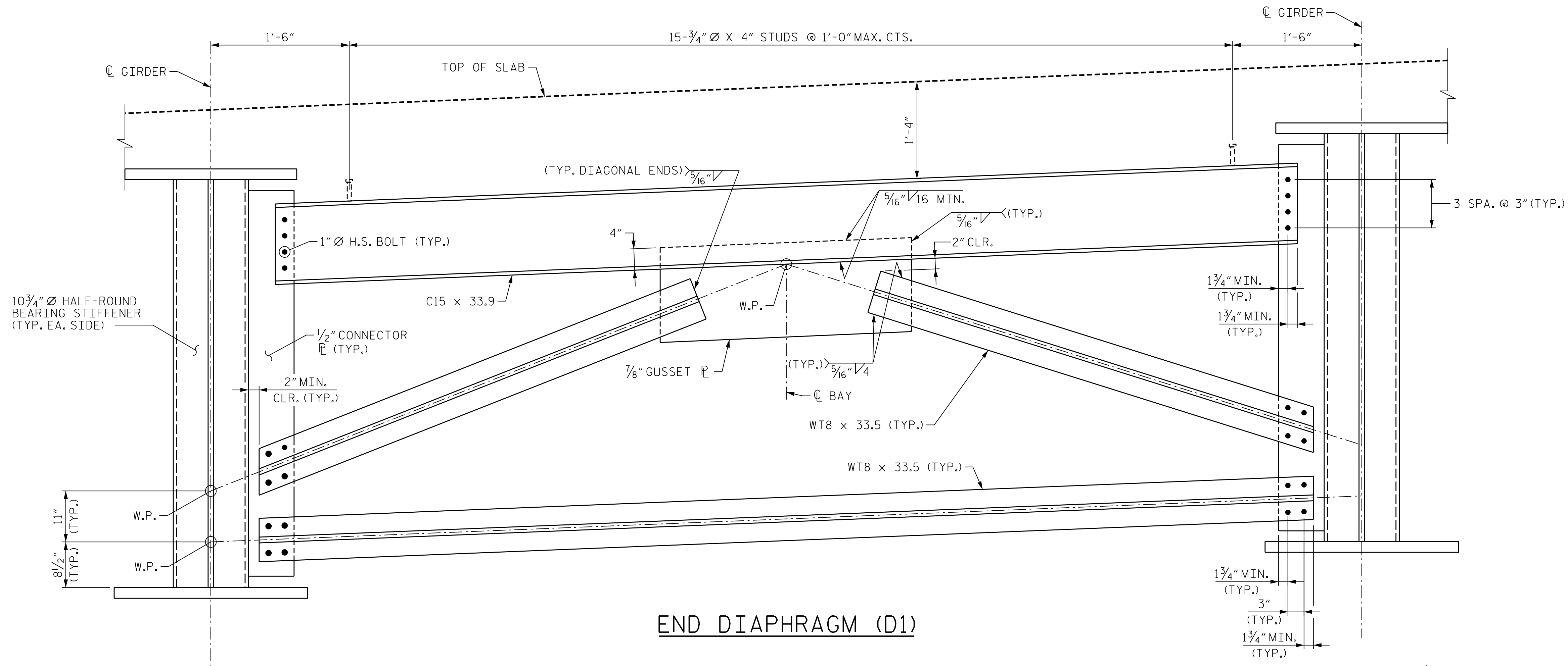
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REVISIONS

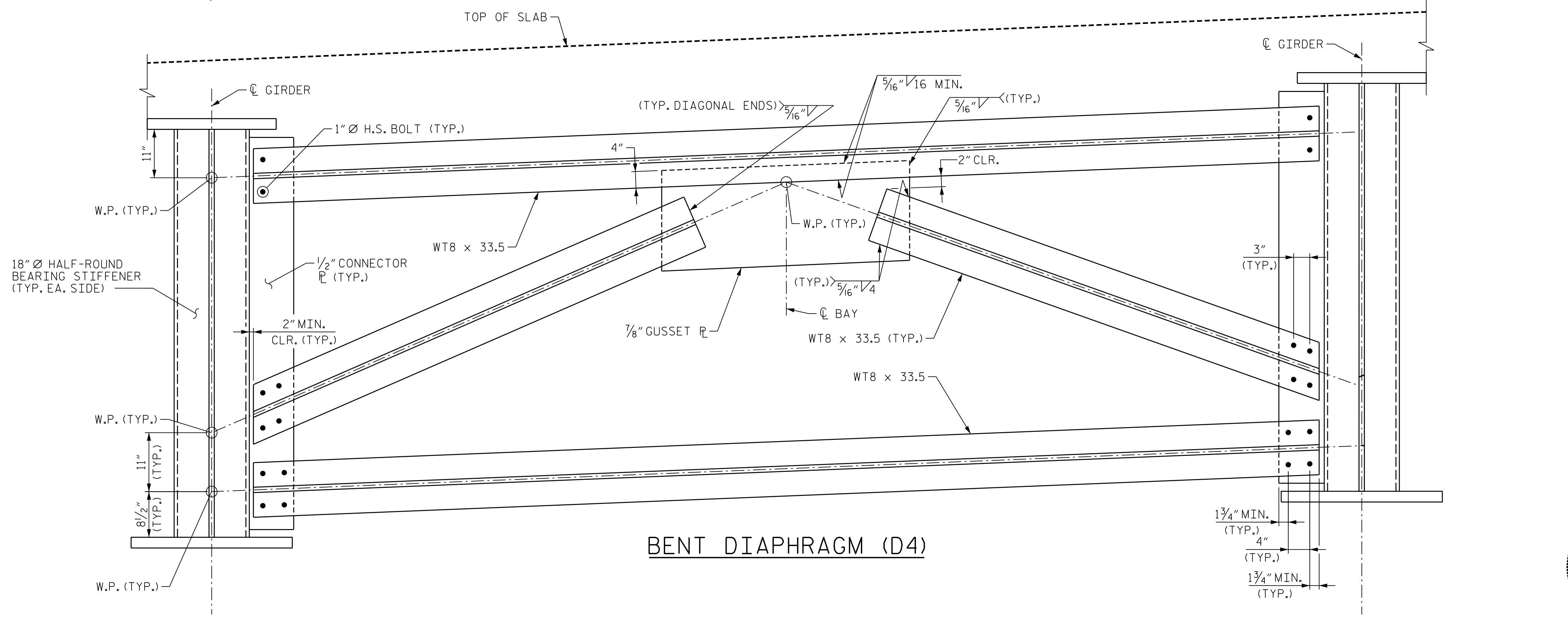
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SHEET NO. 502-14
 TOTAL SHEETS 48

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END DIAPHRAGM (D1)



BENT DIAPHRAGM (D4)

PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -Y1RT-
 SHEET 2 OF 4



W. Brian Watson 1/24/2022

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 STRUCTURAL STEEL
 GIRDER DETAILS**

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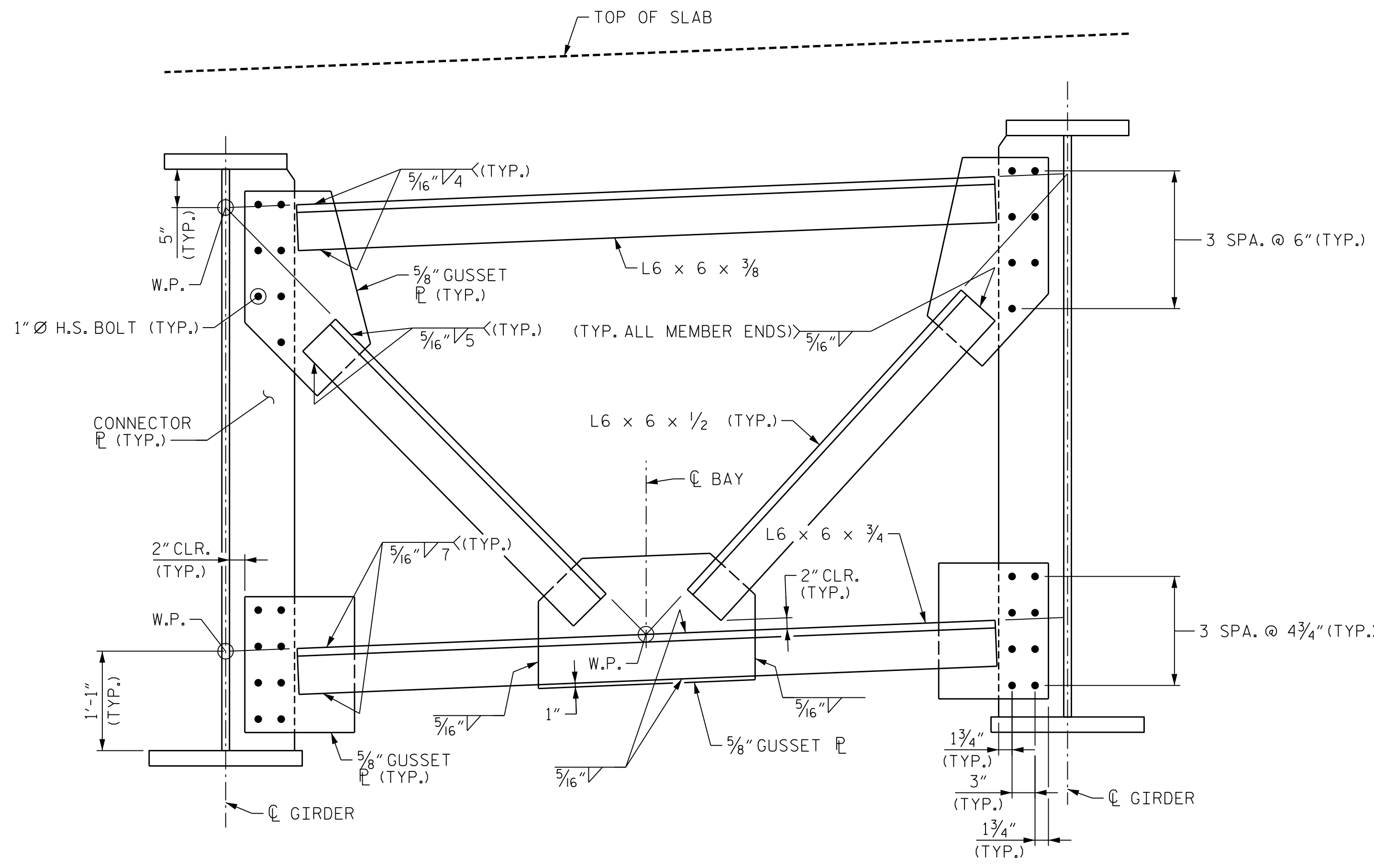
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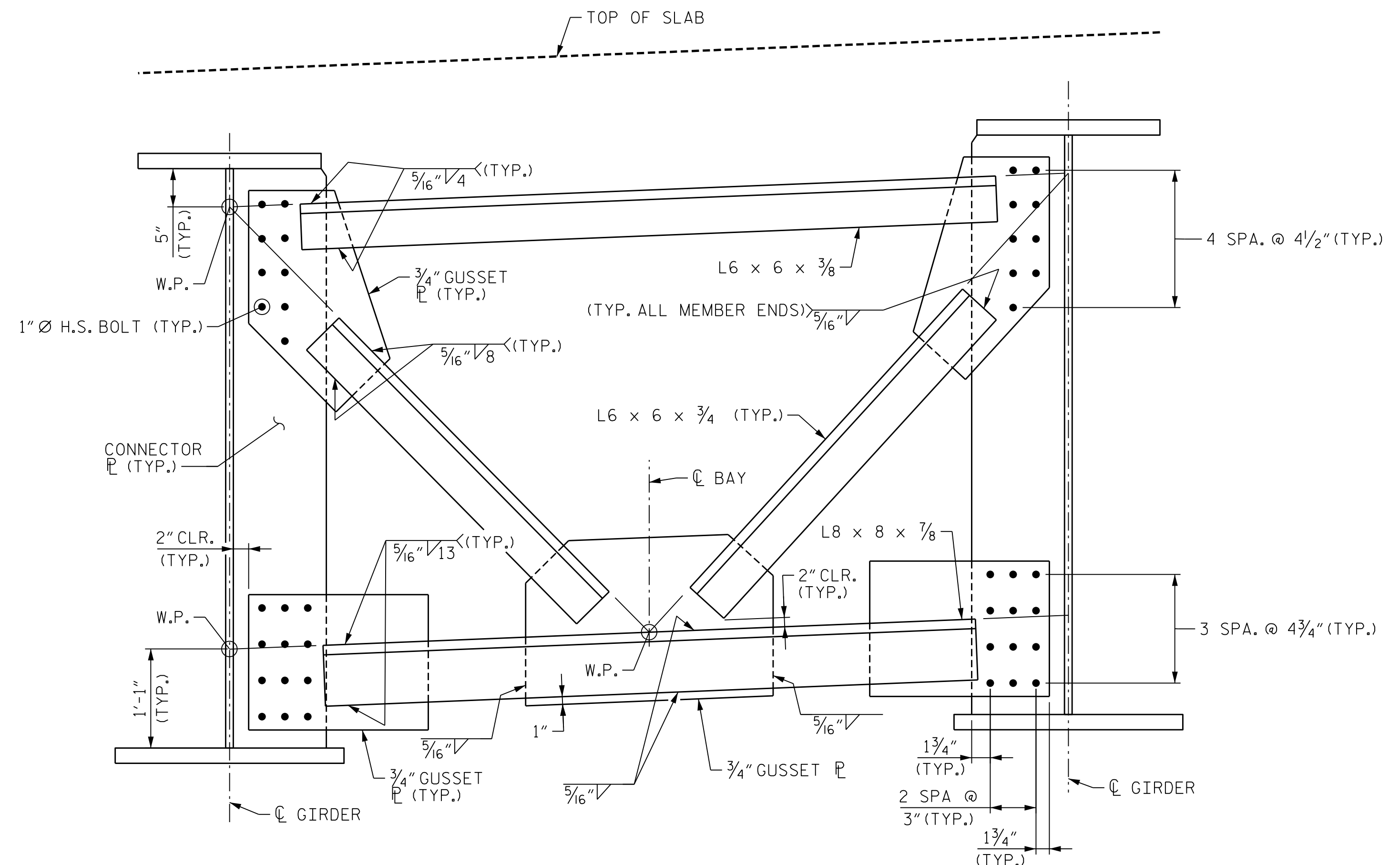
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SHEET NO. S02-15
 TOTAL SHEETS 48



INTERMEDIATE DIAPHRAGMS (D2)



INTERMEDIATE DIAPHRAGMS (D3)

PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -Y1RT-

SHEET 3 OF 4



W. Brian Watson 1/24/2022

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 STRUCTURAL STEEL
 GIRDER DETAILS**

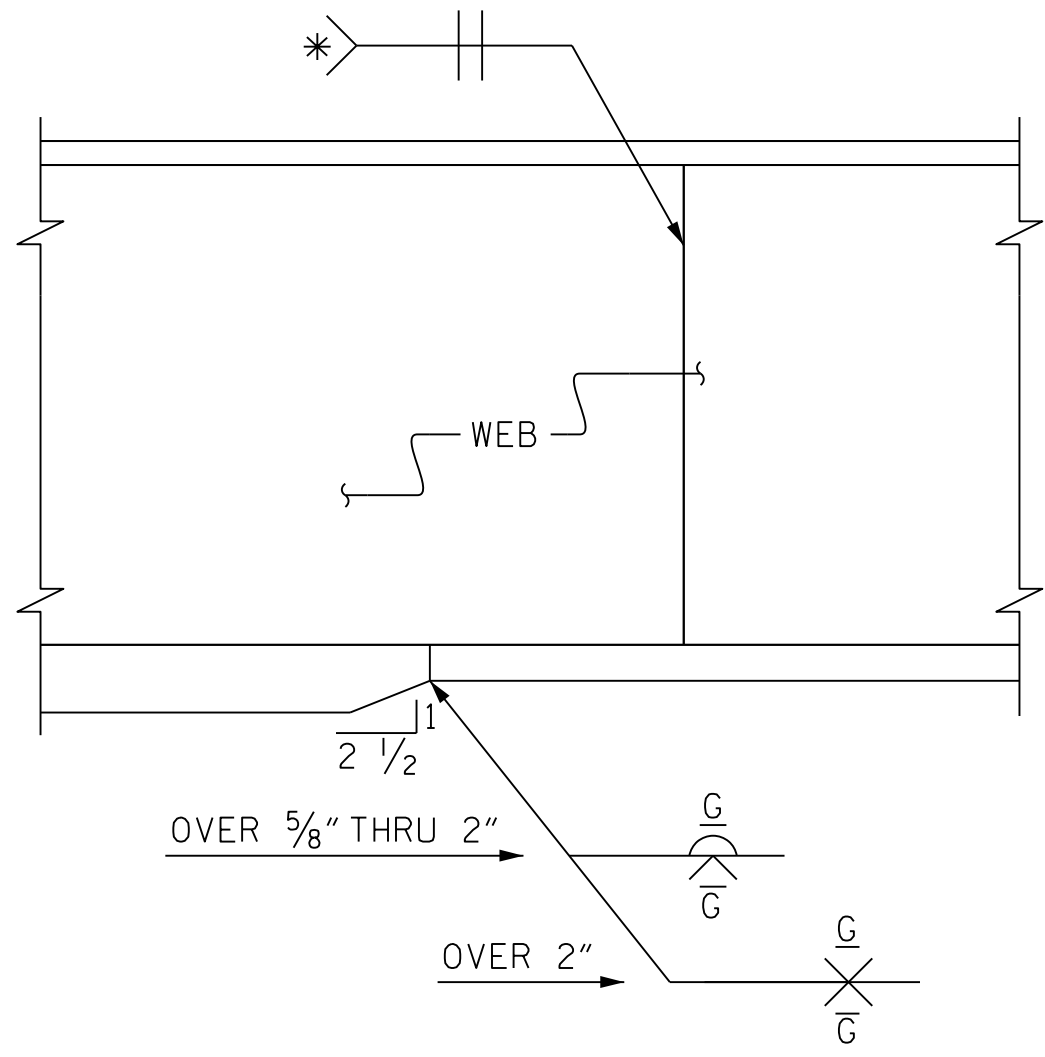
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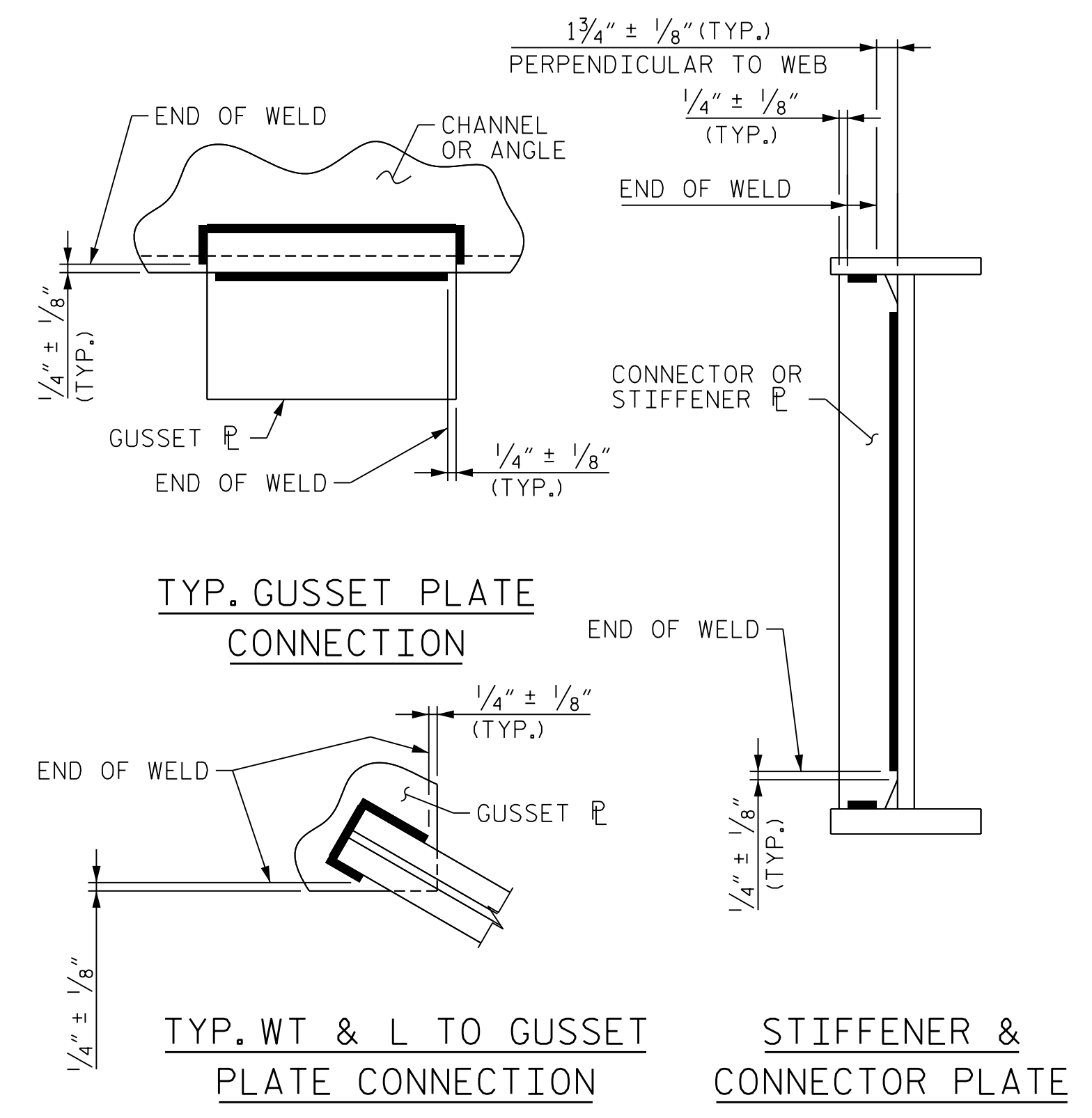
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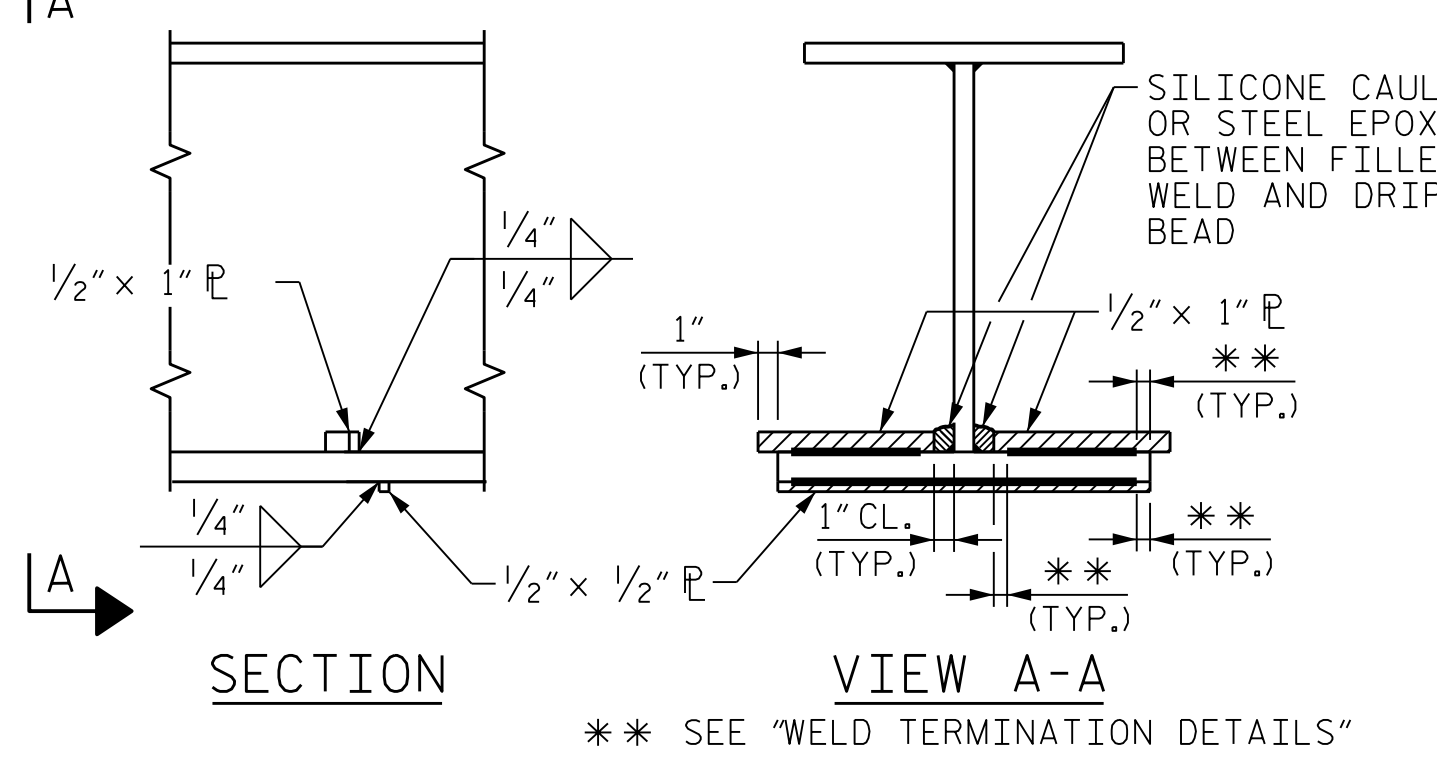
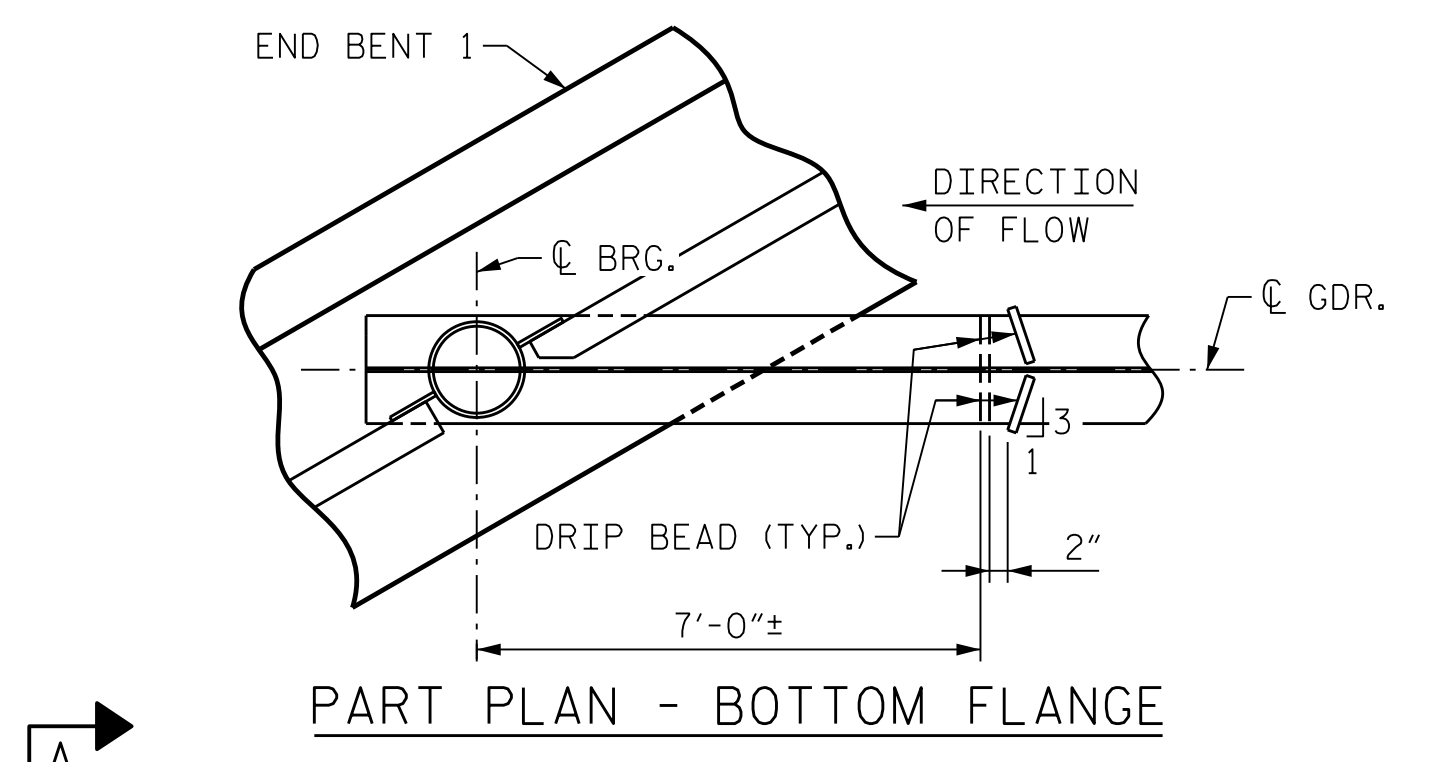


TYPICAL FLANGE AND WEB BUTT JOINT
SHOP SPLICE DETAILS

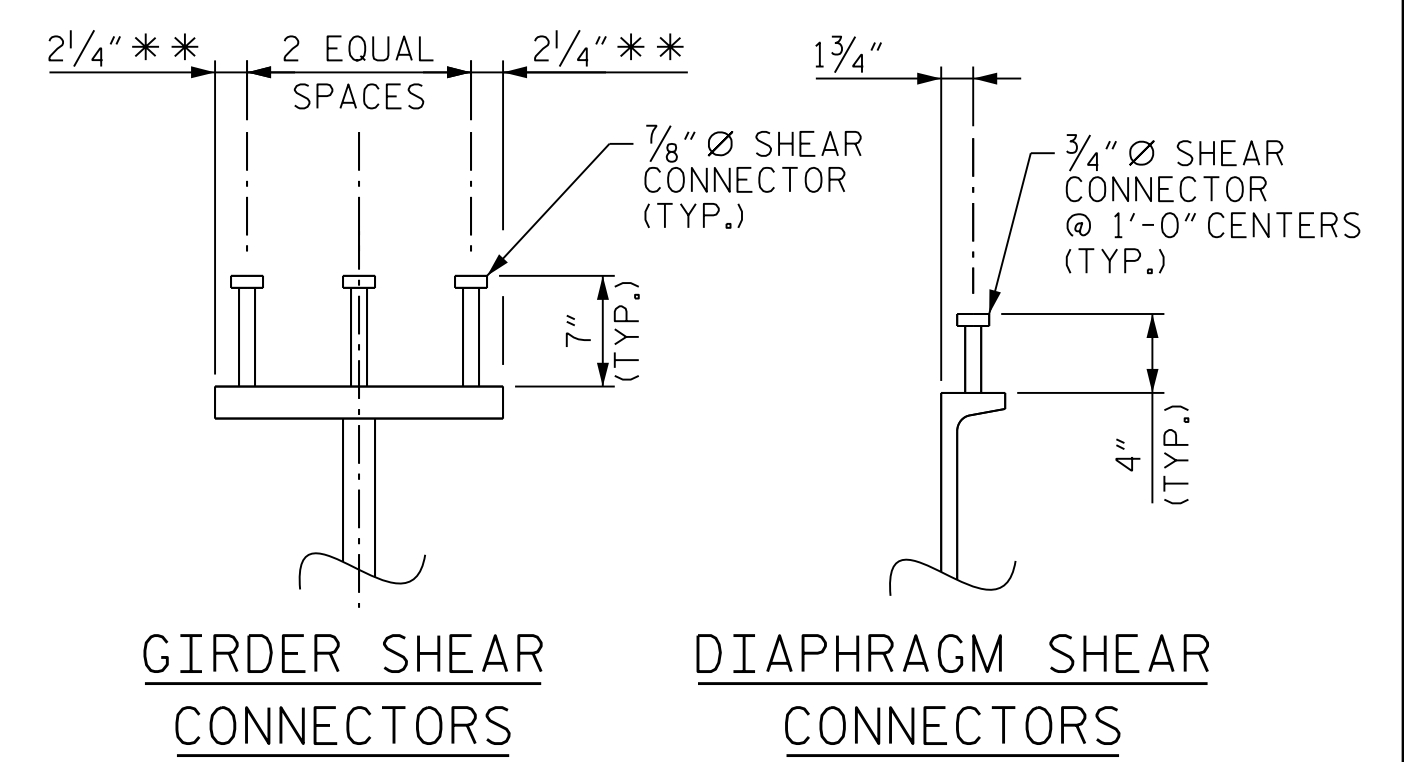
* GRIND SMOOTH AND FLUSH ON OUTER FACE OF EXTERIOR BEAMS/ GIRDERS.



WELD TERMINATION DETAILS

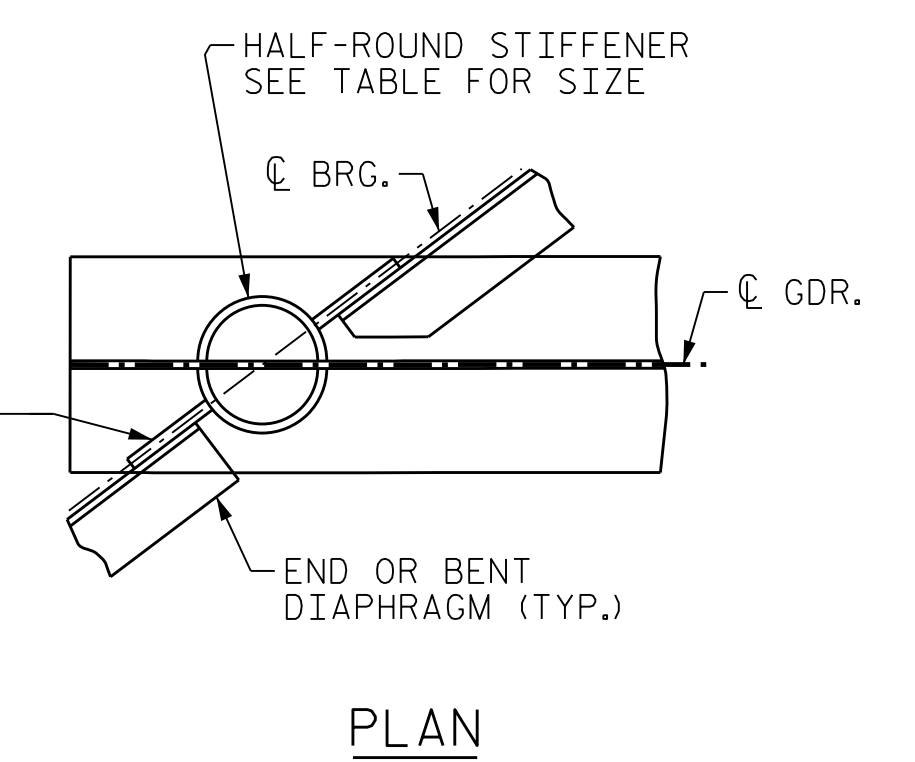
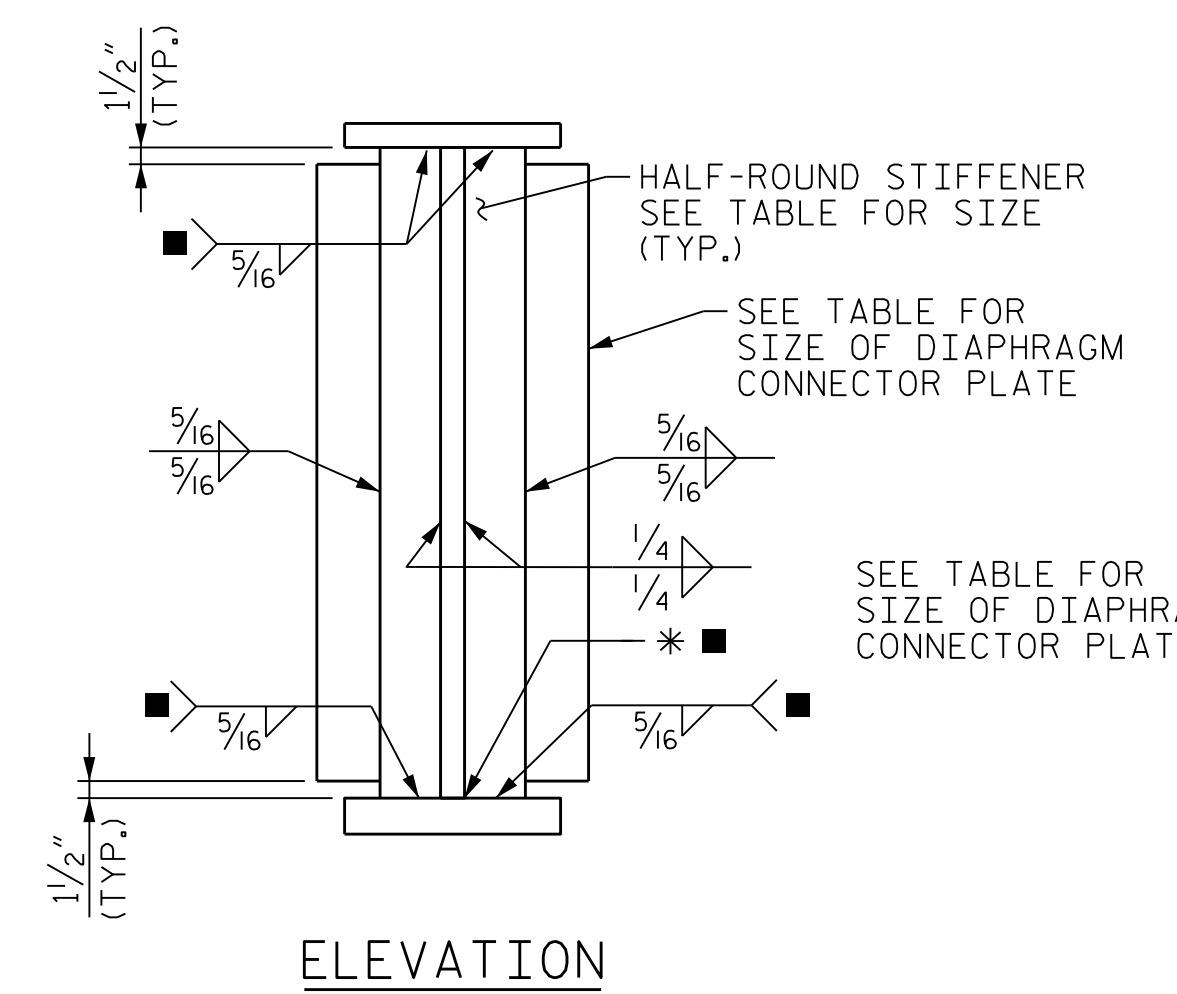


DRIP BEAD DETAILS

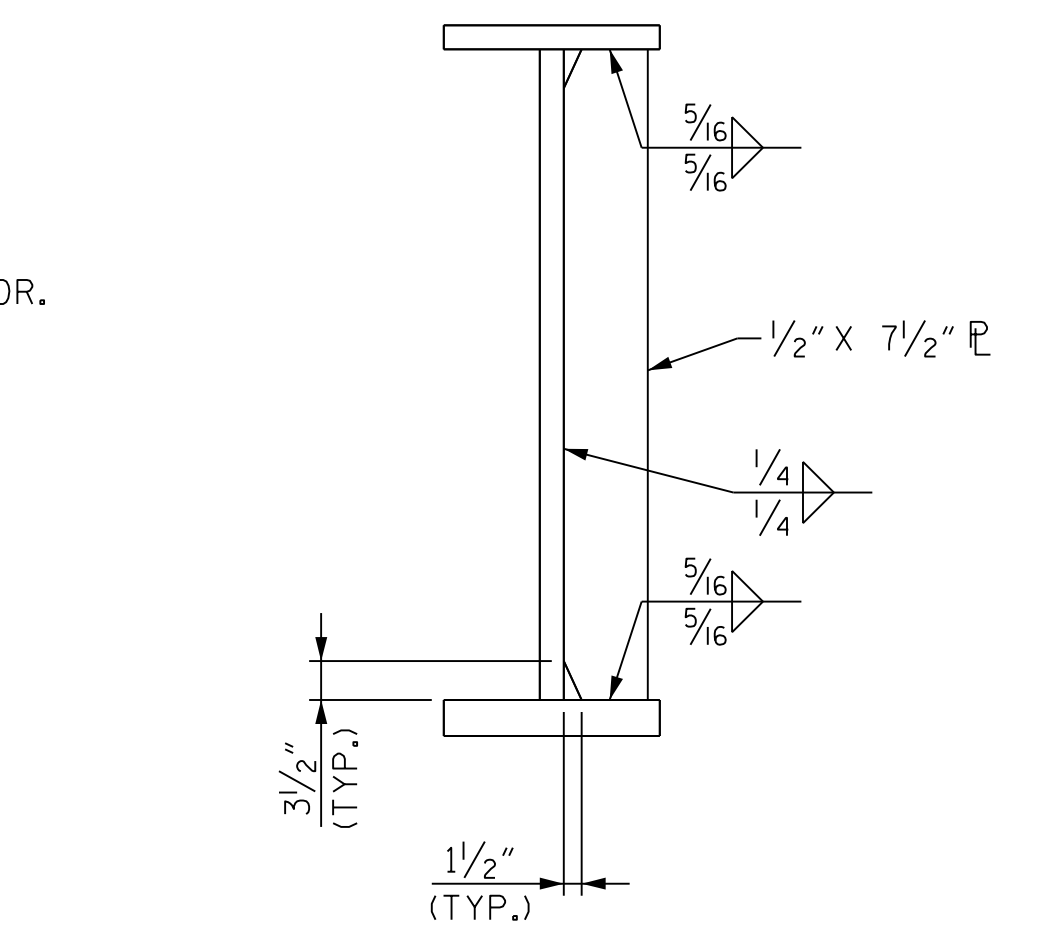


SHEAR CONNECTOR DETAILS

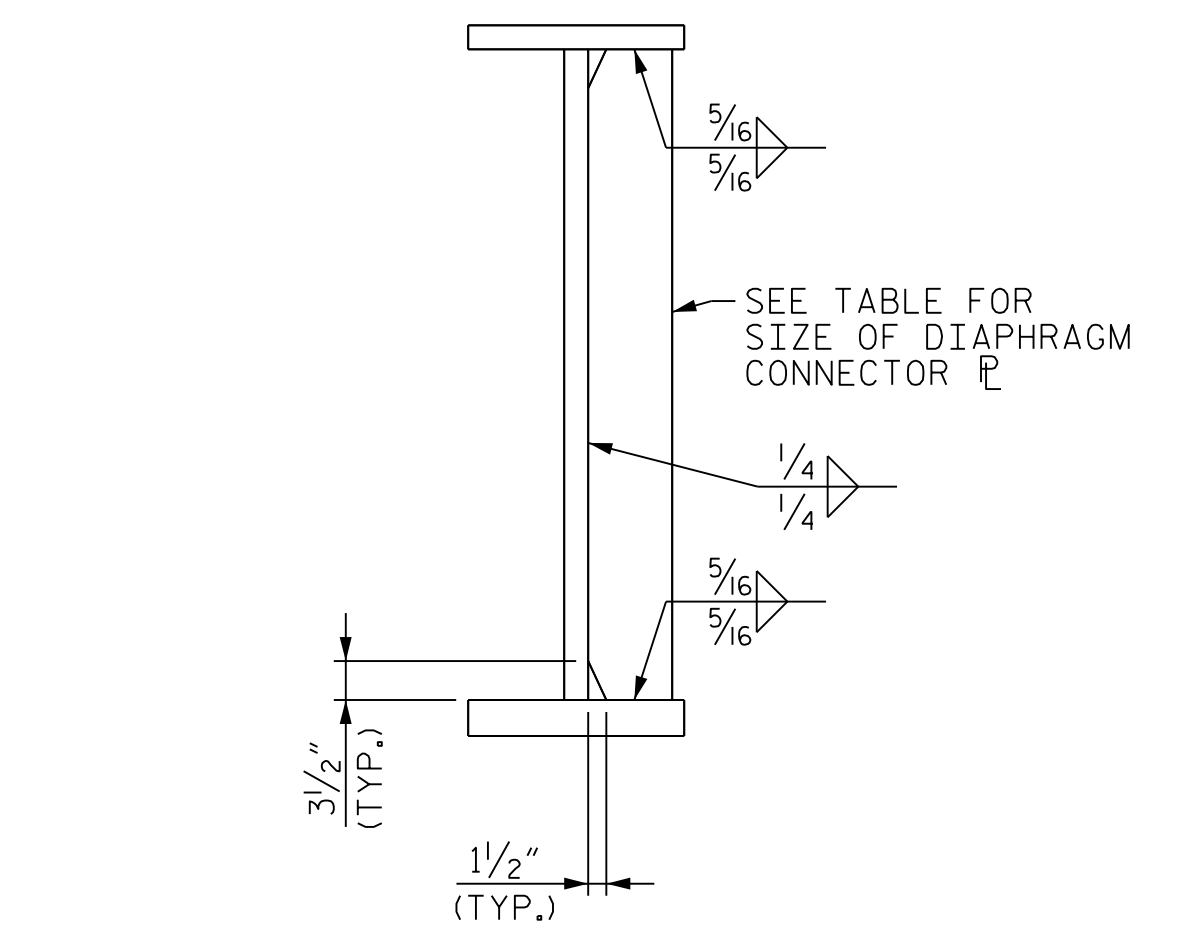
** FOR SPACING OF SHEAR CONNECTORS ON TOP PLATE OF FIELD SPLICES, SEE "SUPERSTRUCTURE BOLTED FIELD SPLICE DETAILS" SHEETS.



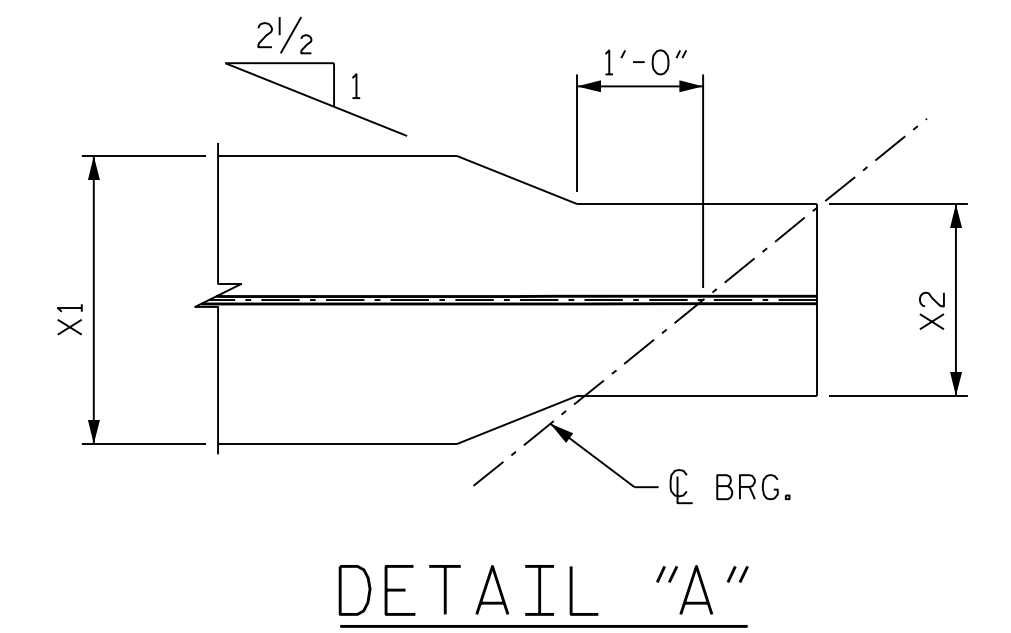
HALF-ROUND BEARING STIFFENER & CONNECTOR PLATE



INTERMEDIATE STIFFENER



INTERMEDIATE DIAPHRAGM CONNECTOR PLATE



LOCATION	X1	X2
END BENT 2 TOP FLANGE	22"	20"
END BENT 2 BOTTOM FLANGE	30"	20"

PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -Y1RT-

SHEET 4 OF 4

HALF-ROUND BEARING STIFFENERS	
LOCATION	SIZE
END BENT 1 & 2	10 3/4" Ø x 1/2" WALL
BENT 1	18" Ø x 5/8" WALL

DIAPHRAGM CONNECTOR PLATES	
END OR BENT DIAPHRAGM	MIN. SIZE
D1	1/2" x 8 1/2"
D4	1/2" x 9 1/2"

DIAPHRAGM CONNECTOR PLATES	
INTERMEDIATE DIAPHRAGM	MIN. SIZE
D2	1/2" x 8 1/2"
D3	1/2" x 11 1/2"



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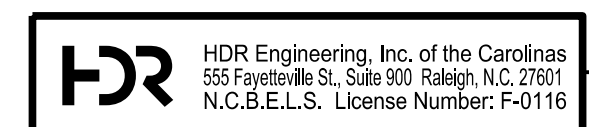
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 STRUCTURAL STEEL
 GIRDER DETAILS

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

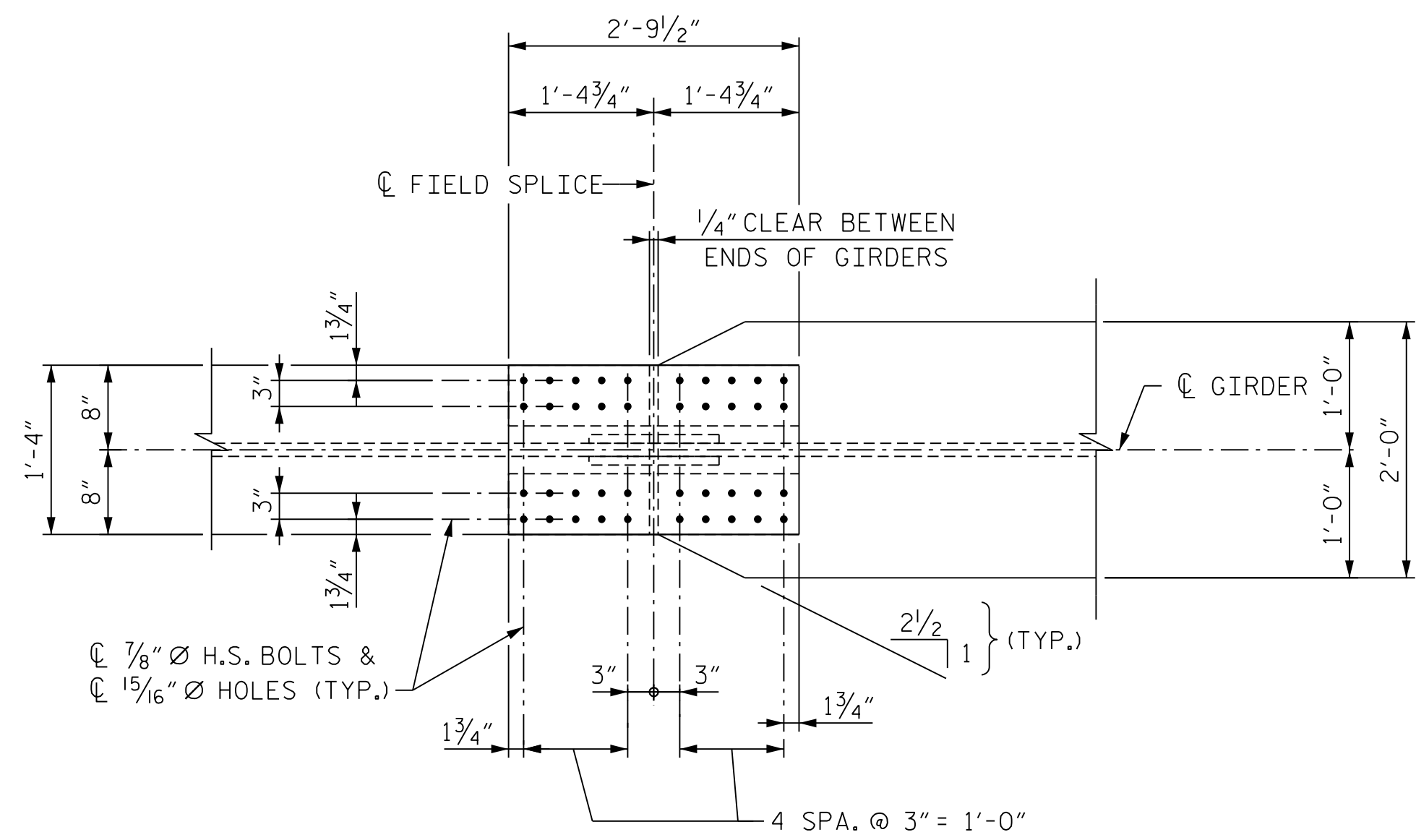
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DES BY: <u>B. WATSON</u>	DATE: <u>05/21</u>	DWG BY: <u>B. PETERSON</u>	DATE: <u>05/21</u>
DES CHK: <u>S. NIFONG</u>	DATE: <u>05/21</u>	CHK BY: <u>B. WATSON</u>	DATE: <u>05/21</u>



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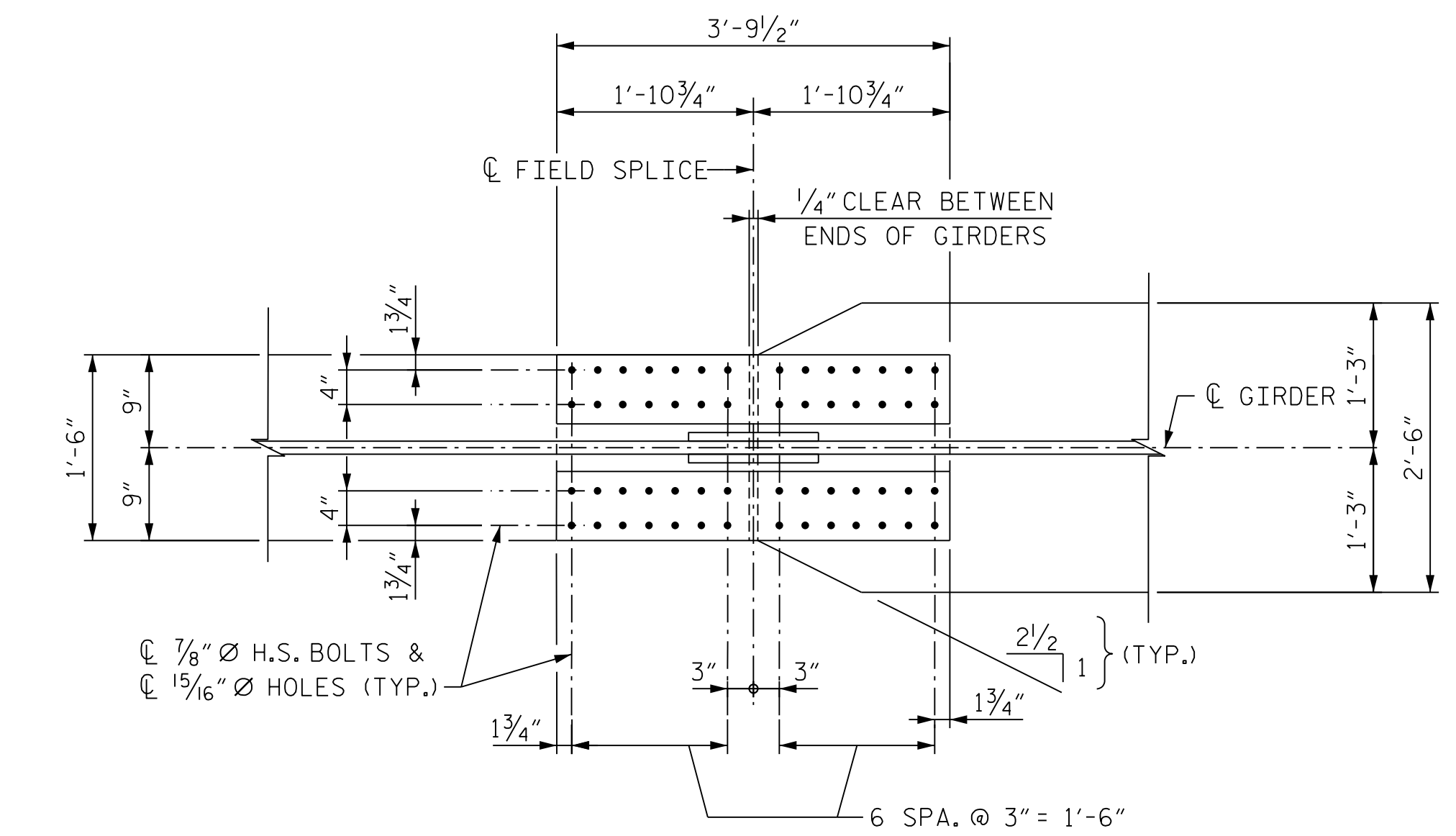
SHEET NO. S02-17
 TOTAL SHEETS 48



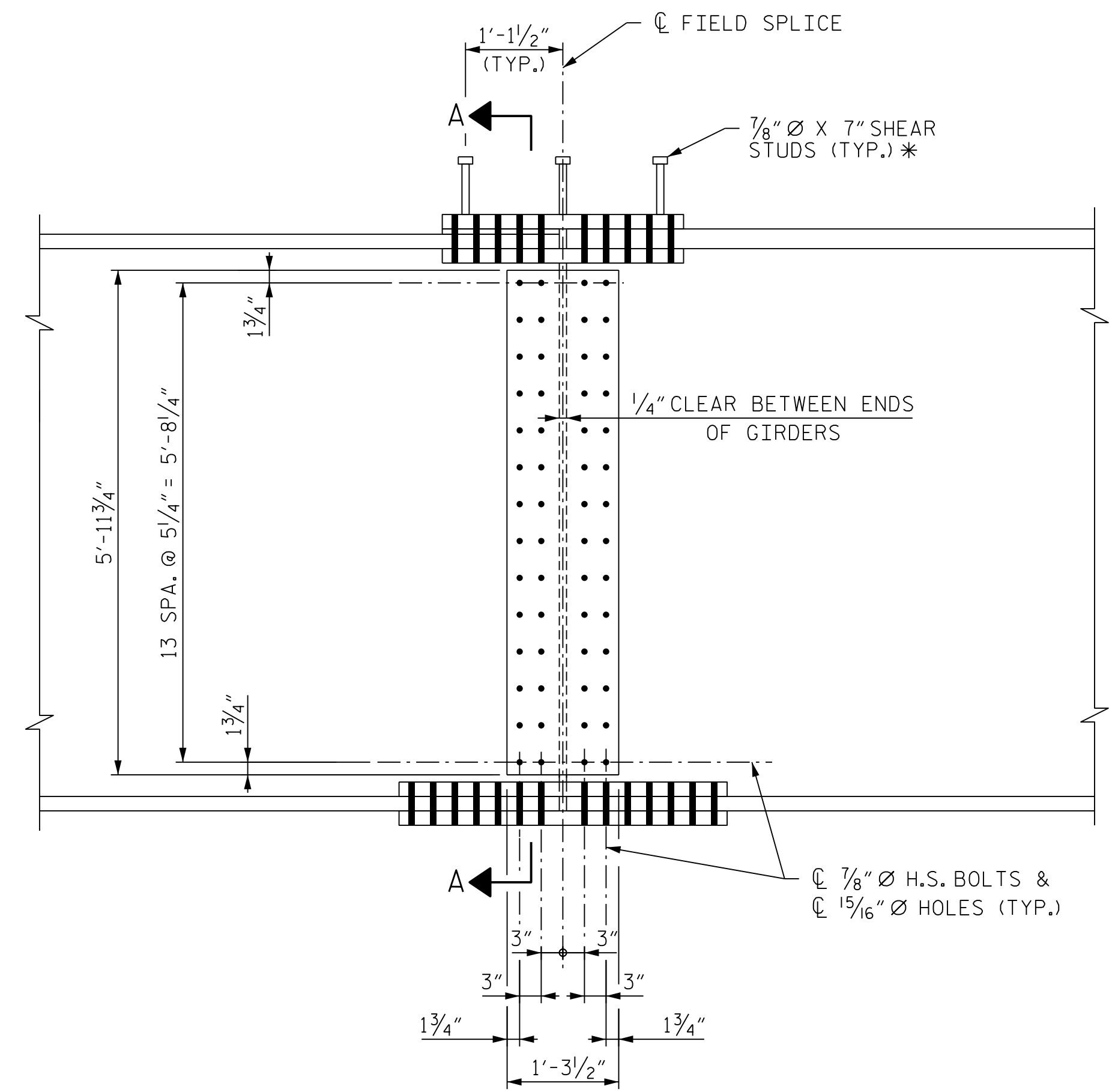
PLAN (TOP OF TOP FLANGE)

(STUDS NOT SHOWN FOR CLARITY)

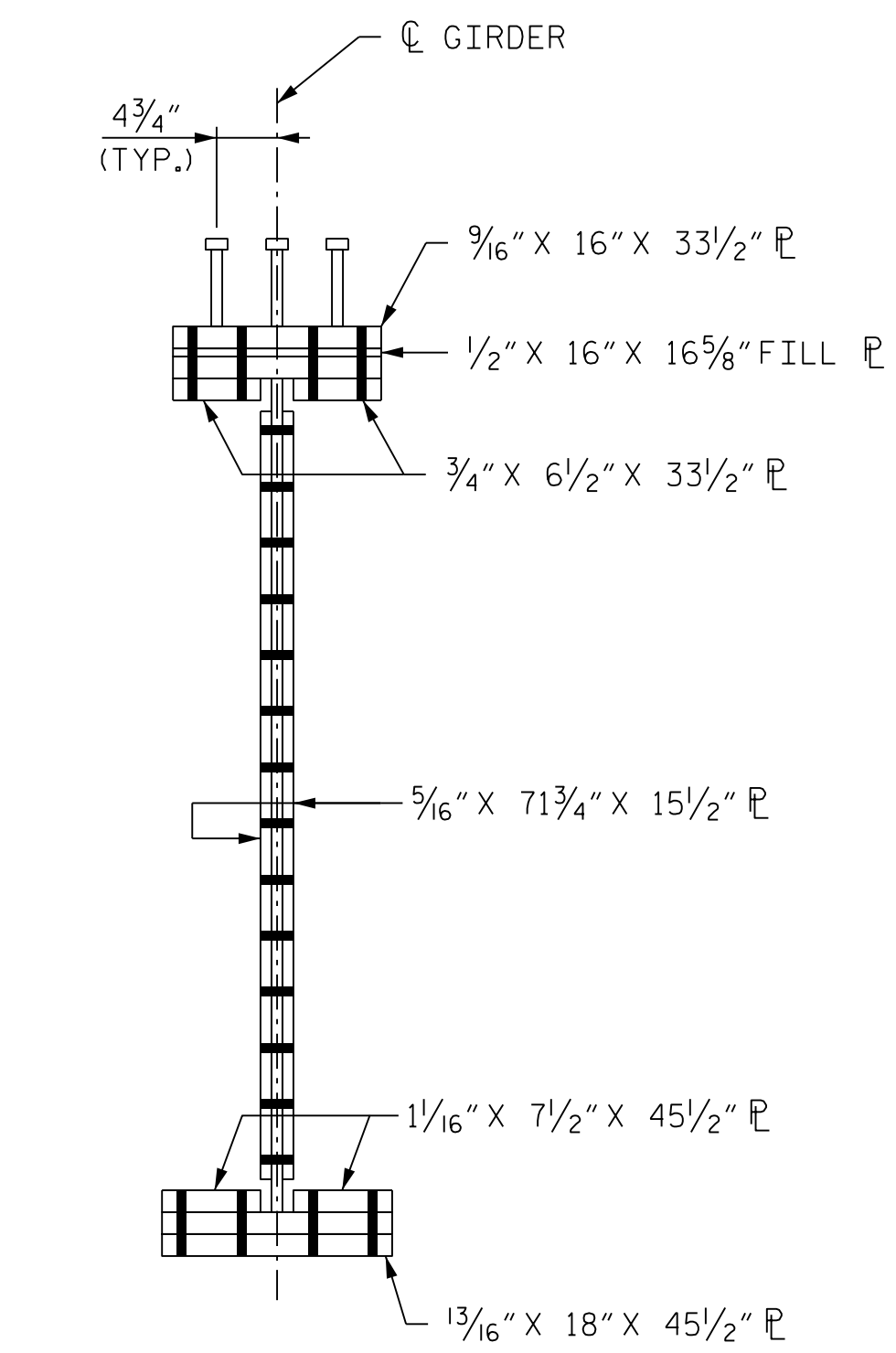
* = SHEAR STUDS ARE TO BE SHOP WELDED ON TOP OF PLATE BEFORE FIELD ASSEMBLY



PLAN (TOP OF BOTTOM FLANGE)



ELEVATION



SECTION A-A

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 27+54.43 -Y1RT-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUPERSTRUCTURE
BOLTED FIELD SPLICE
DETAILS - TYPE "A"**



W. Brian Watson 1/24/2022

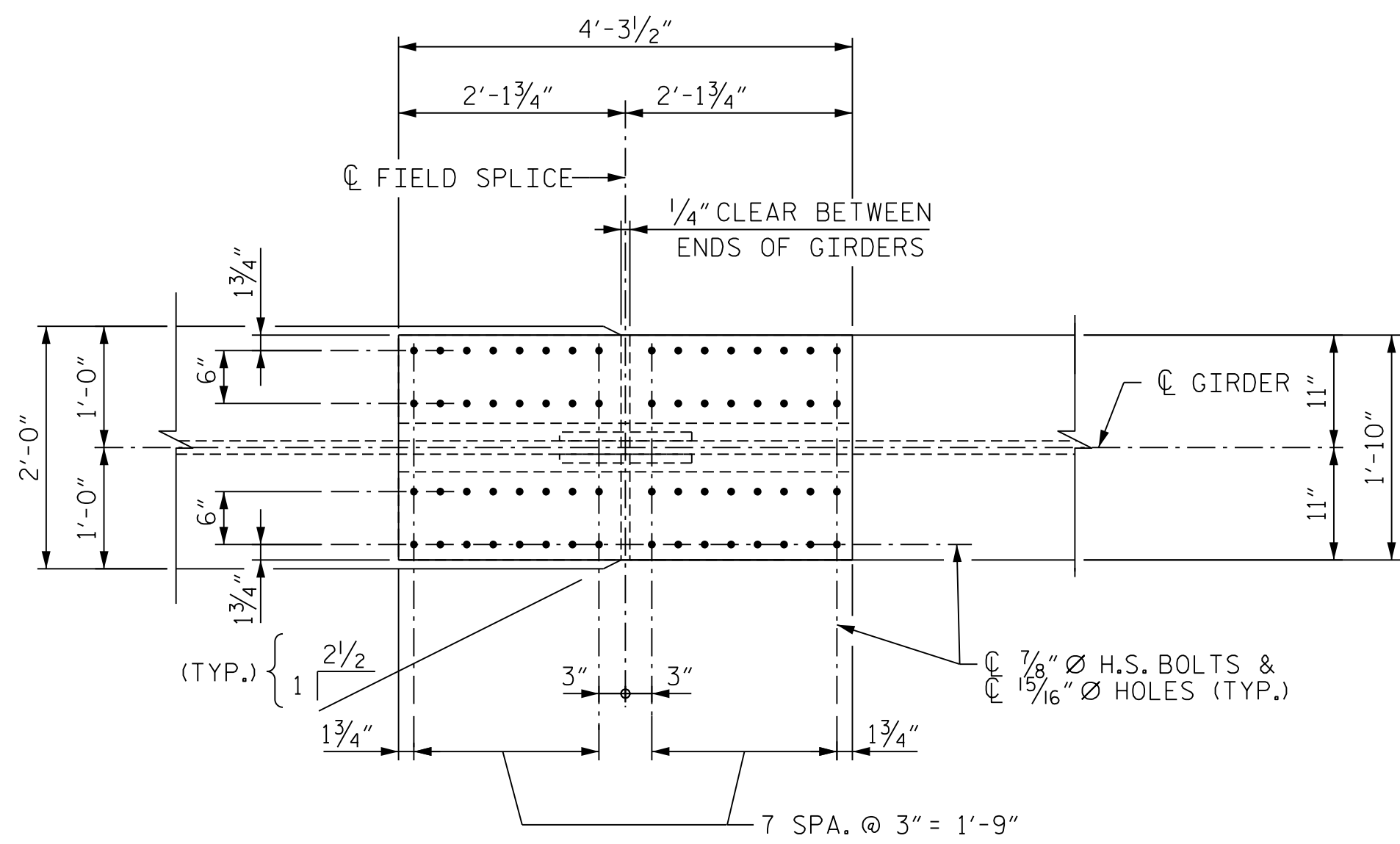
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555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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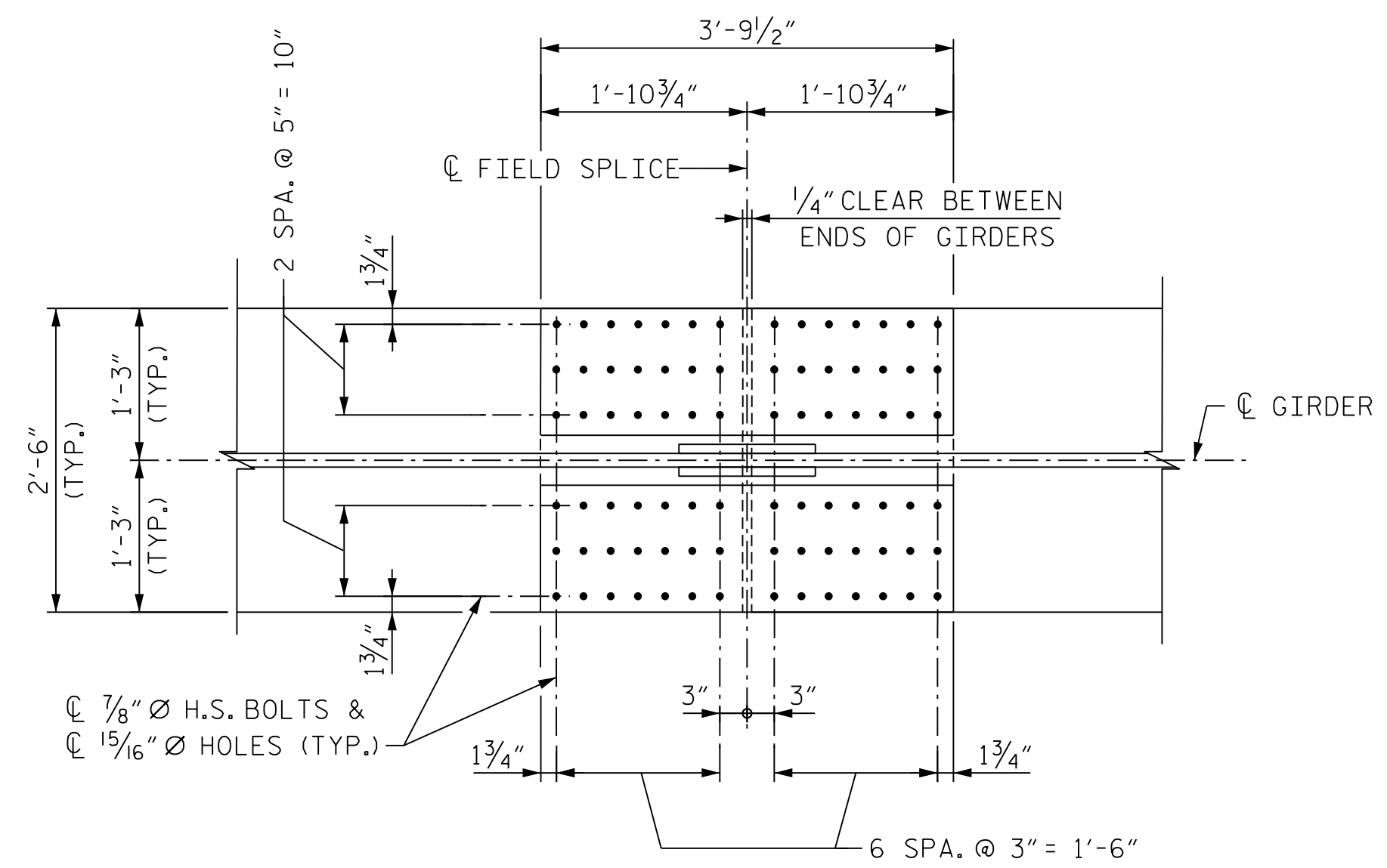
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DES CHK: <u>B. WATSON</u>	DATE: <u>05/21</u>	CHK BY: <u>B. WATSON</u>	DATE: <u>05/21</u>



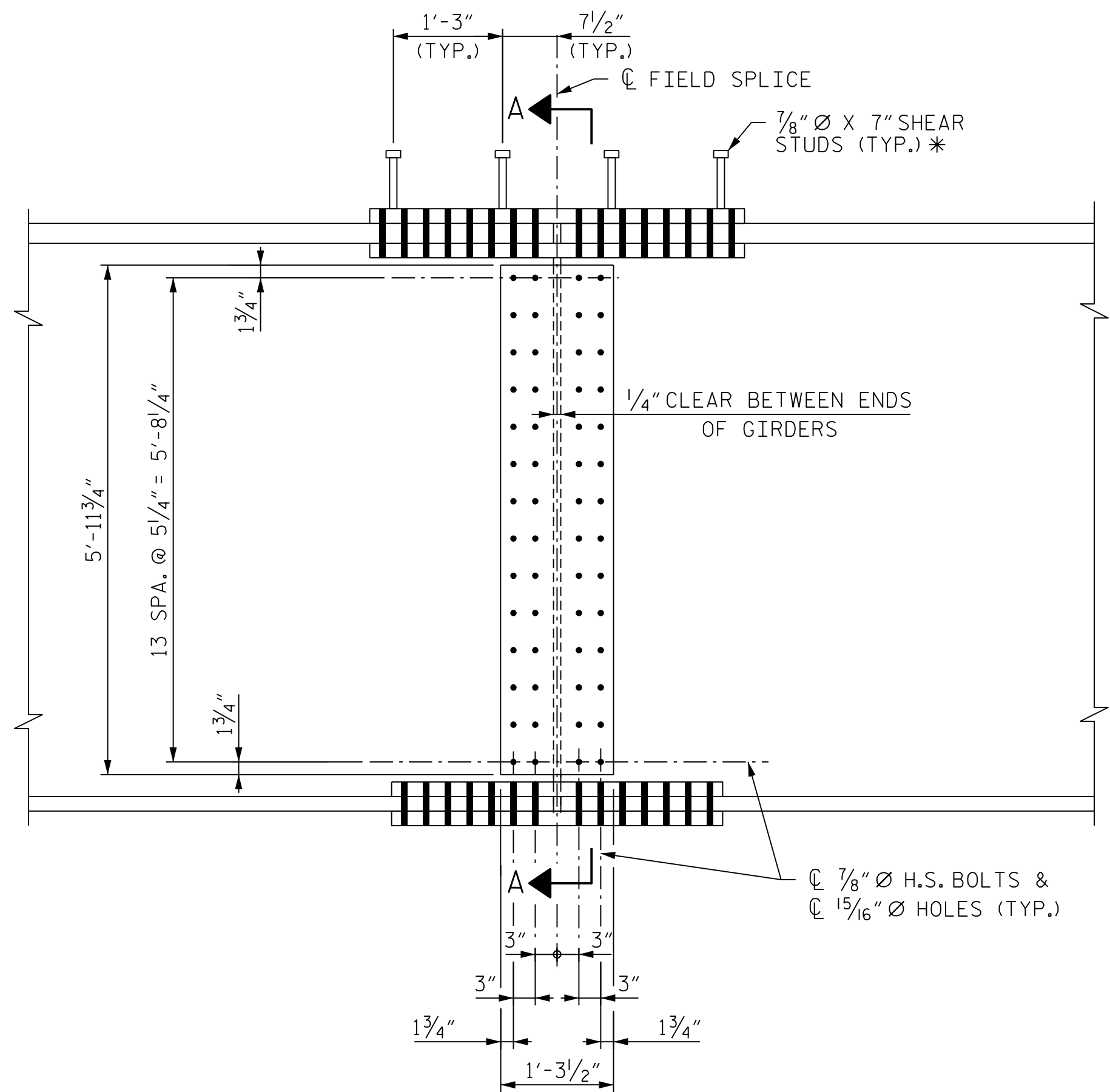
PLAN (TOP OF TOP FLANGE)

(STUDS NOT SHOWN FOR CLARITY)

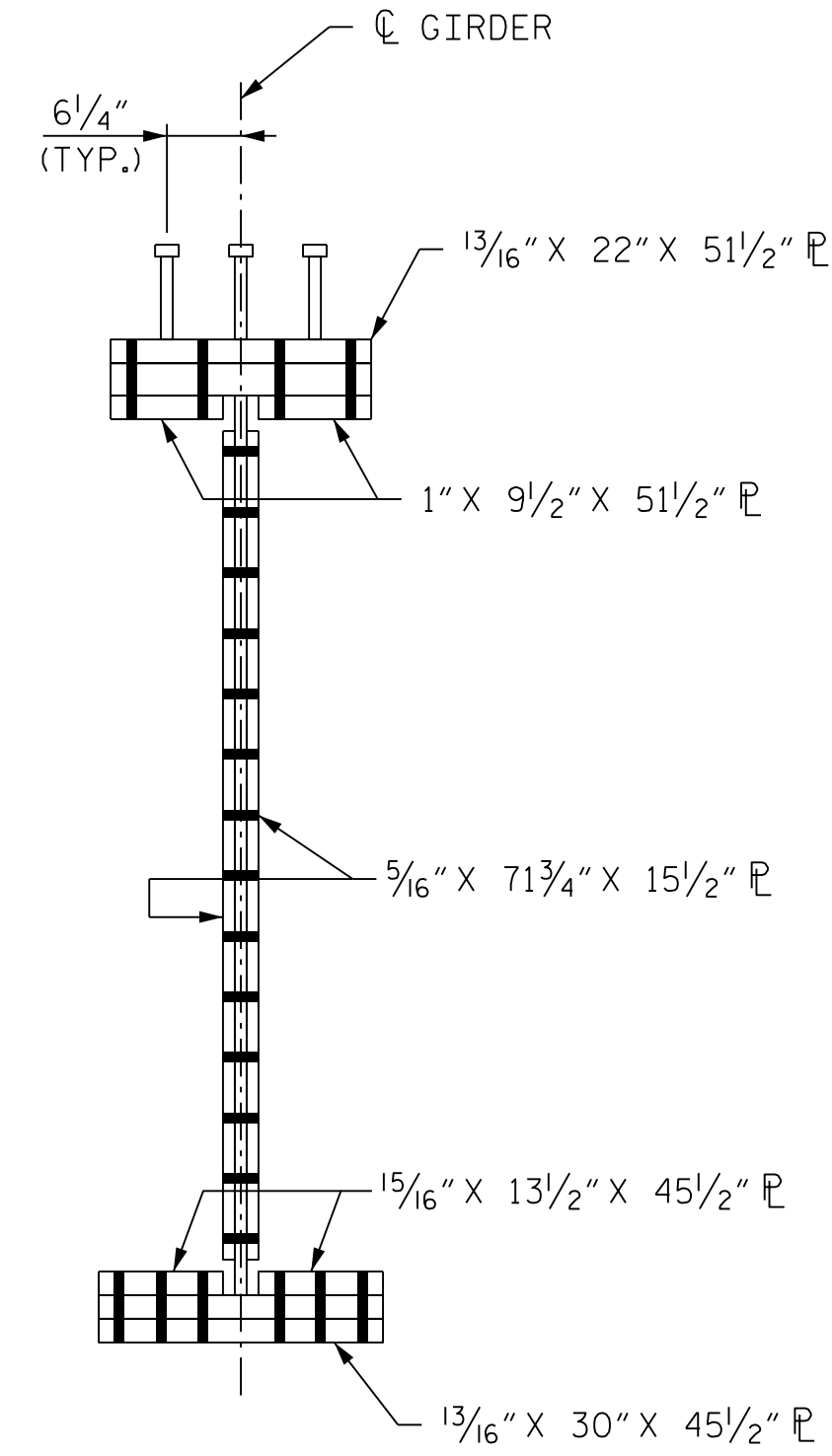
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PLAN (TOP OF BOTTOM FLANGE)



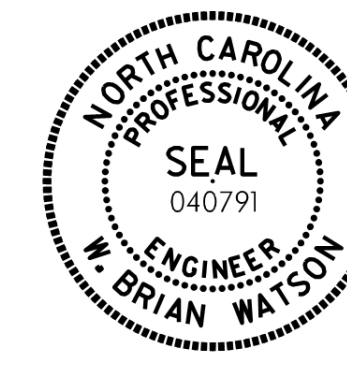
ELEVATION



SECTION A-A

PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -Y1RT-

SHEET 2 OF 2



W. Brian Watson 1/24/2022

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE BOLTED FIELD SPLICE DETAILS - TYPE "B"					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1	--	--	3	--	--
2	--	--	4	--	--
					SHEET NO. S02-19 TOTAL SHEETS 48

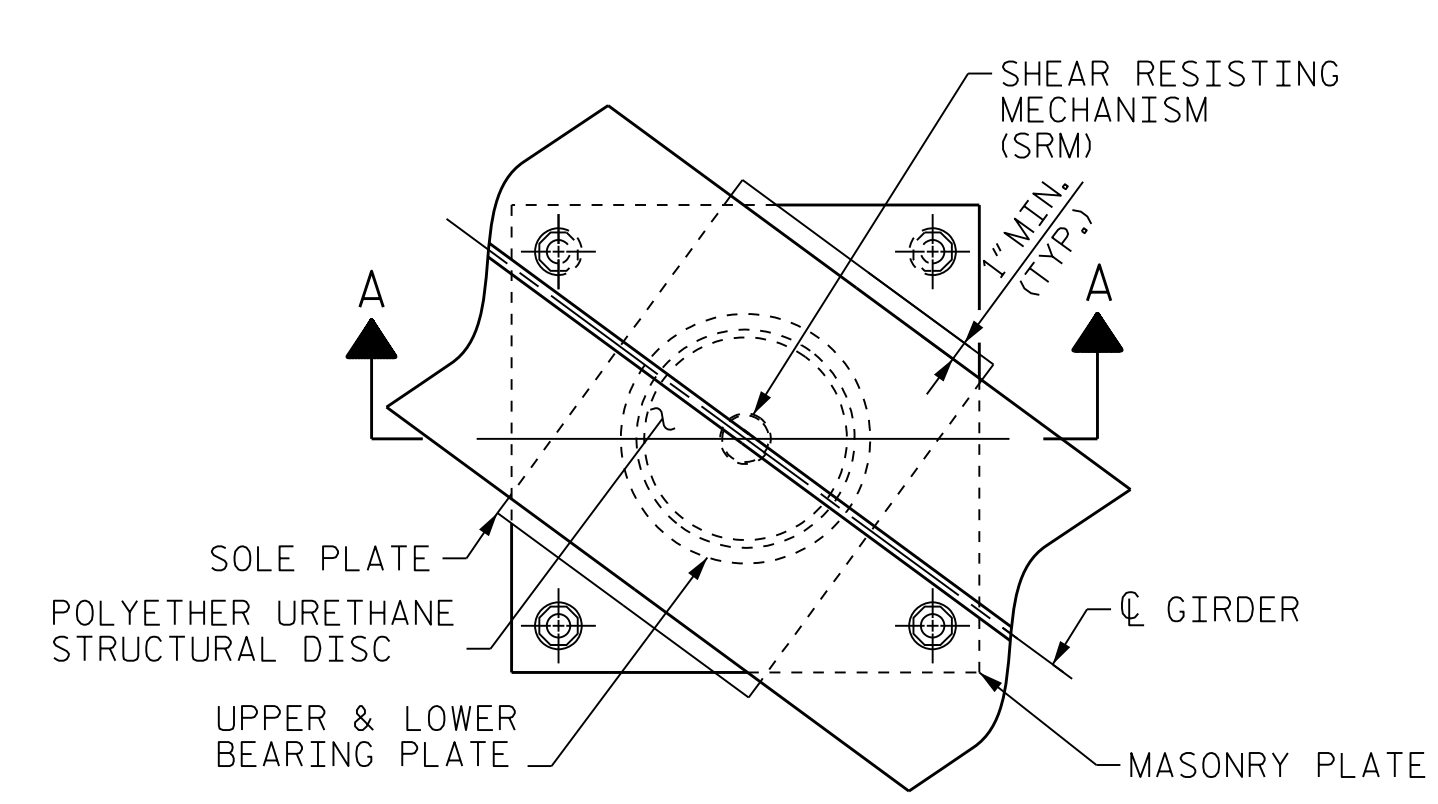


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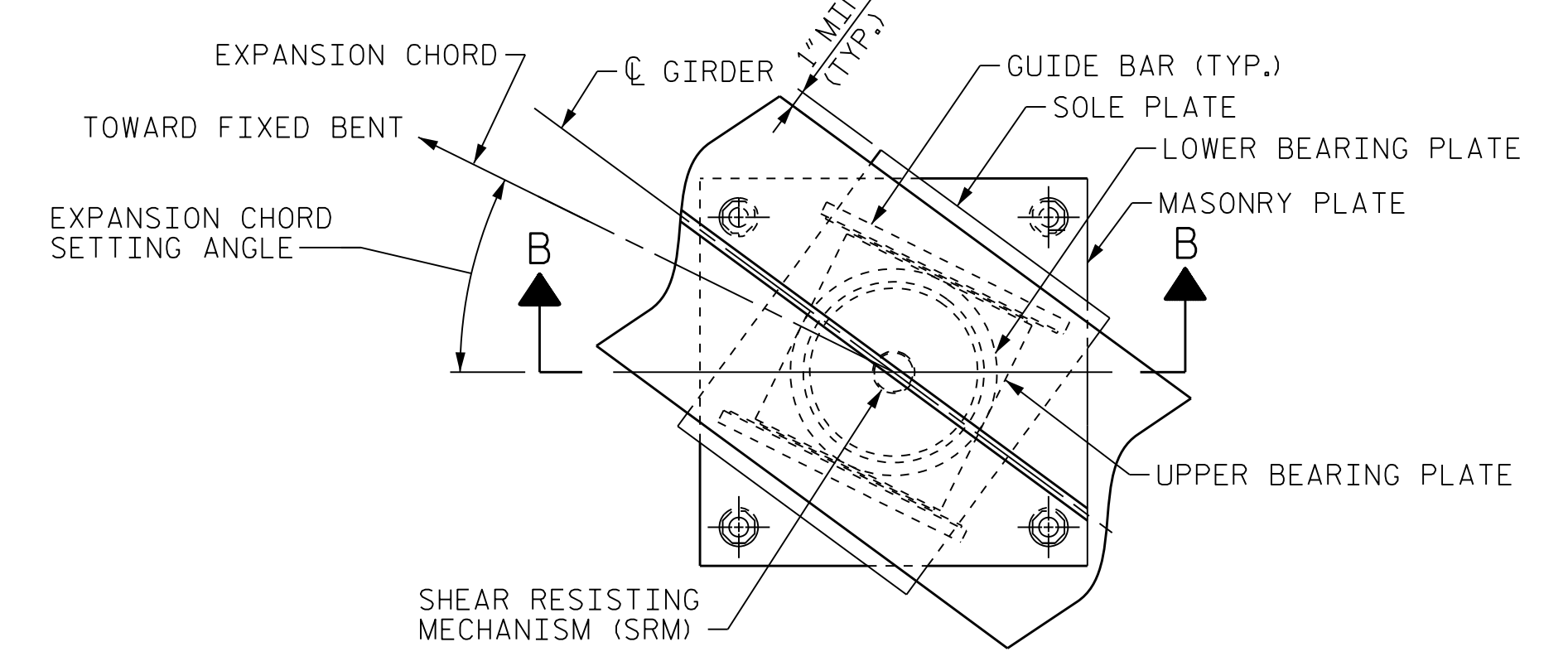
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DES BY: <u>S. NIFONG</u>	DATE: <u>05/21</u>	DWG BY: <u>B. PETERSON</u>	DATE: <u>05/21</u>
DES CHK: <u>B. WATSON</u>	DATE: <u>05/21</u>	CHK BY: <u>B. WATSON</u>	DATE: <u>05/21</u>

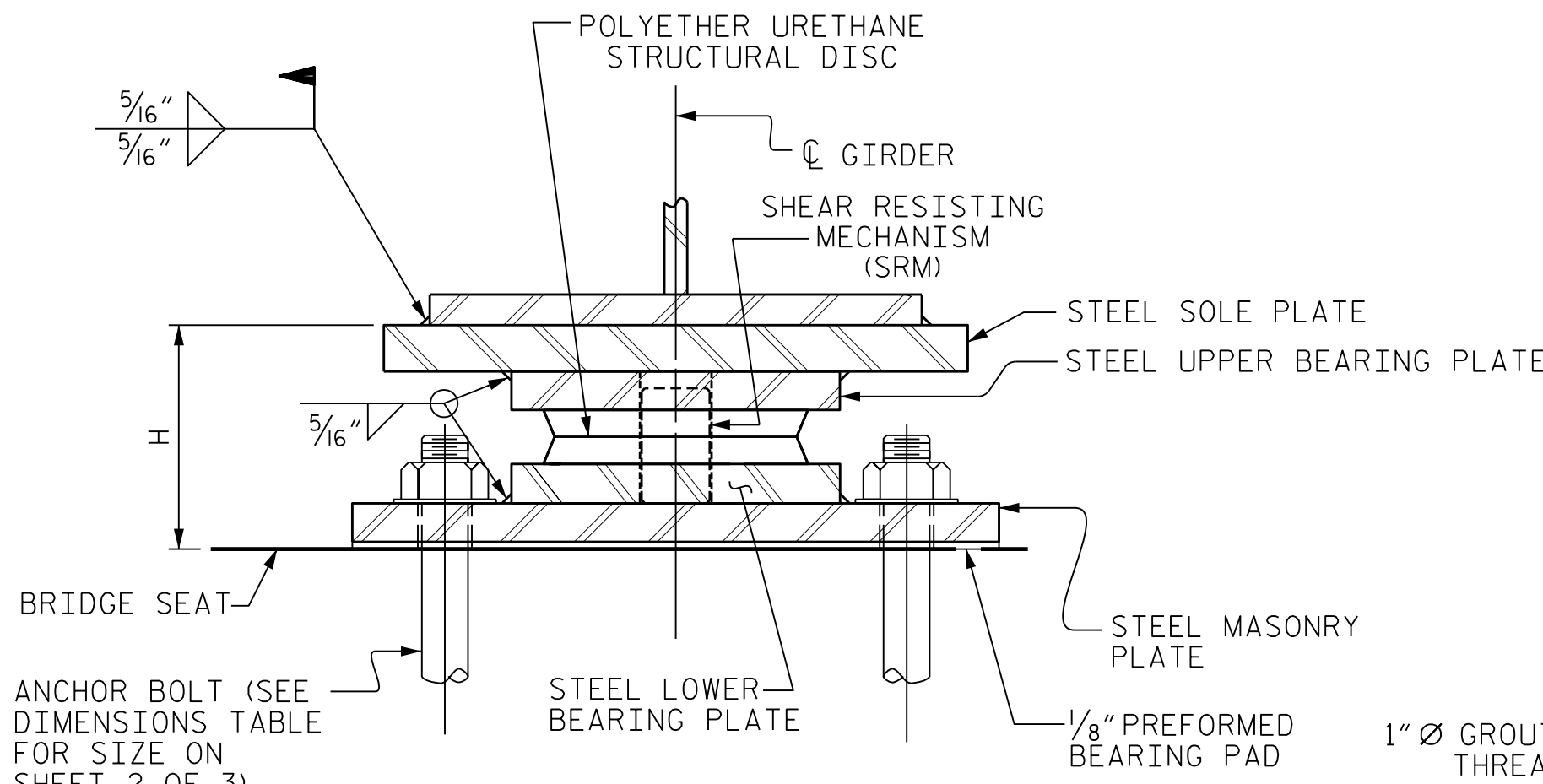
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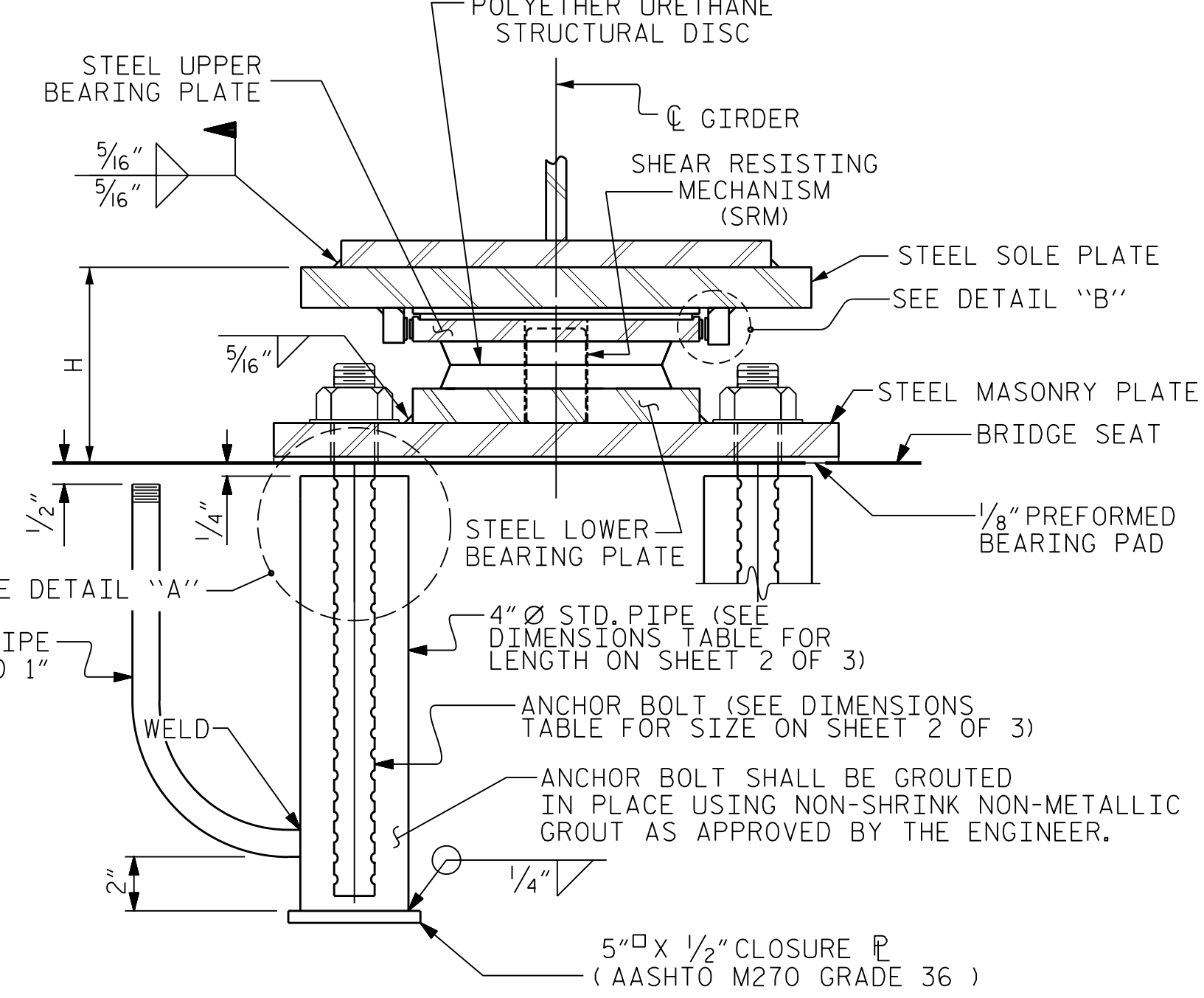
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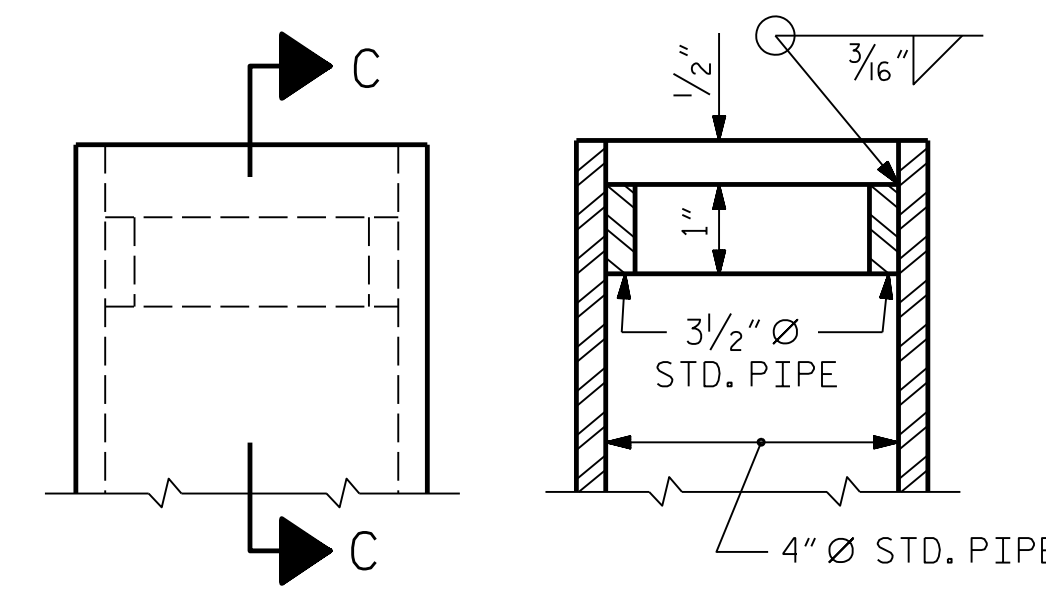
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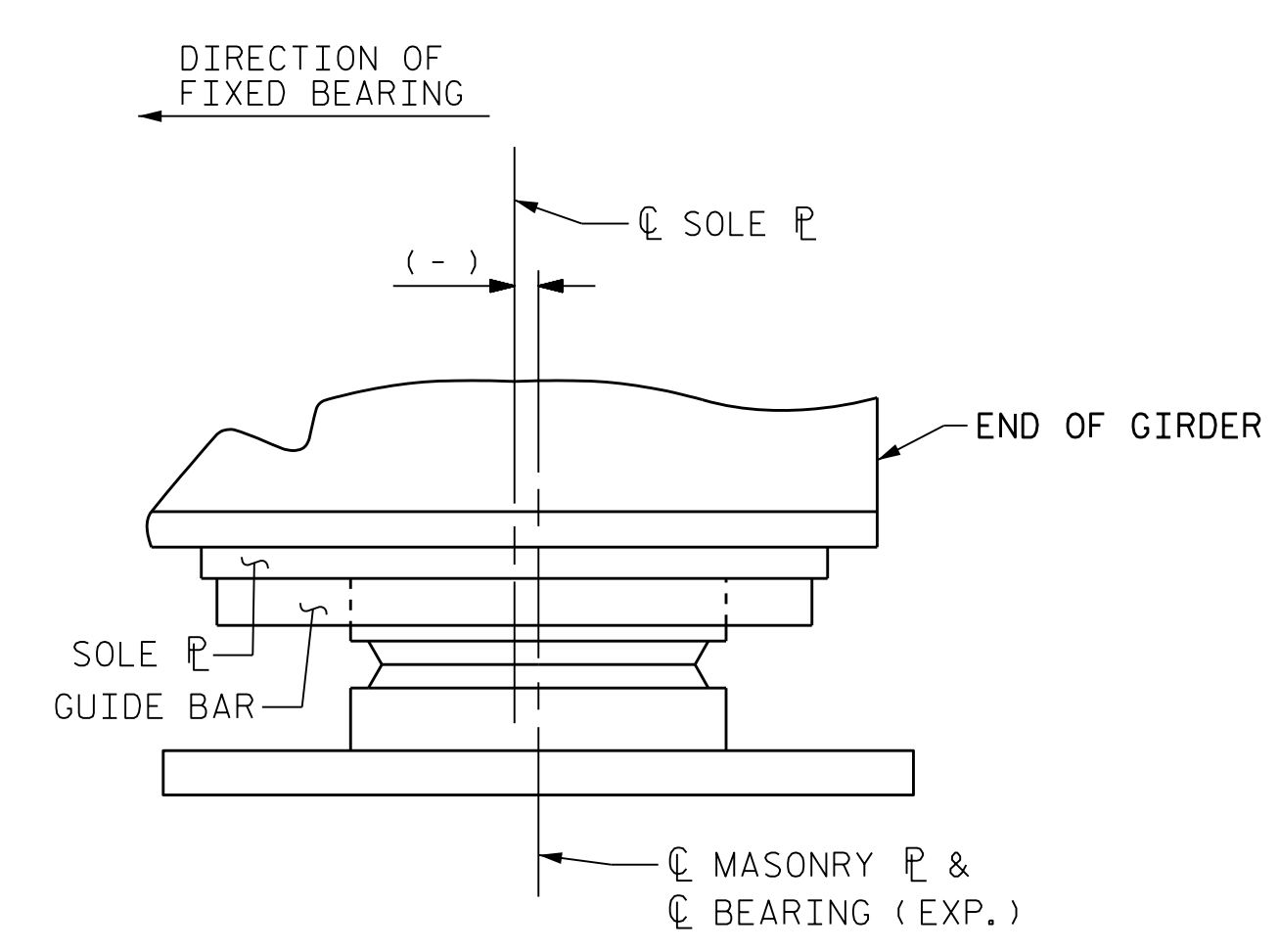
SECTION A-A
FIXED



SECTION B-B
EXPANSION



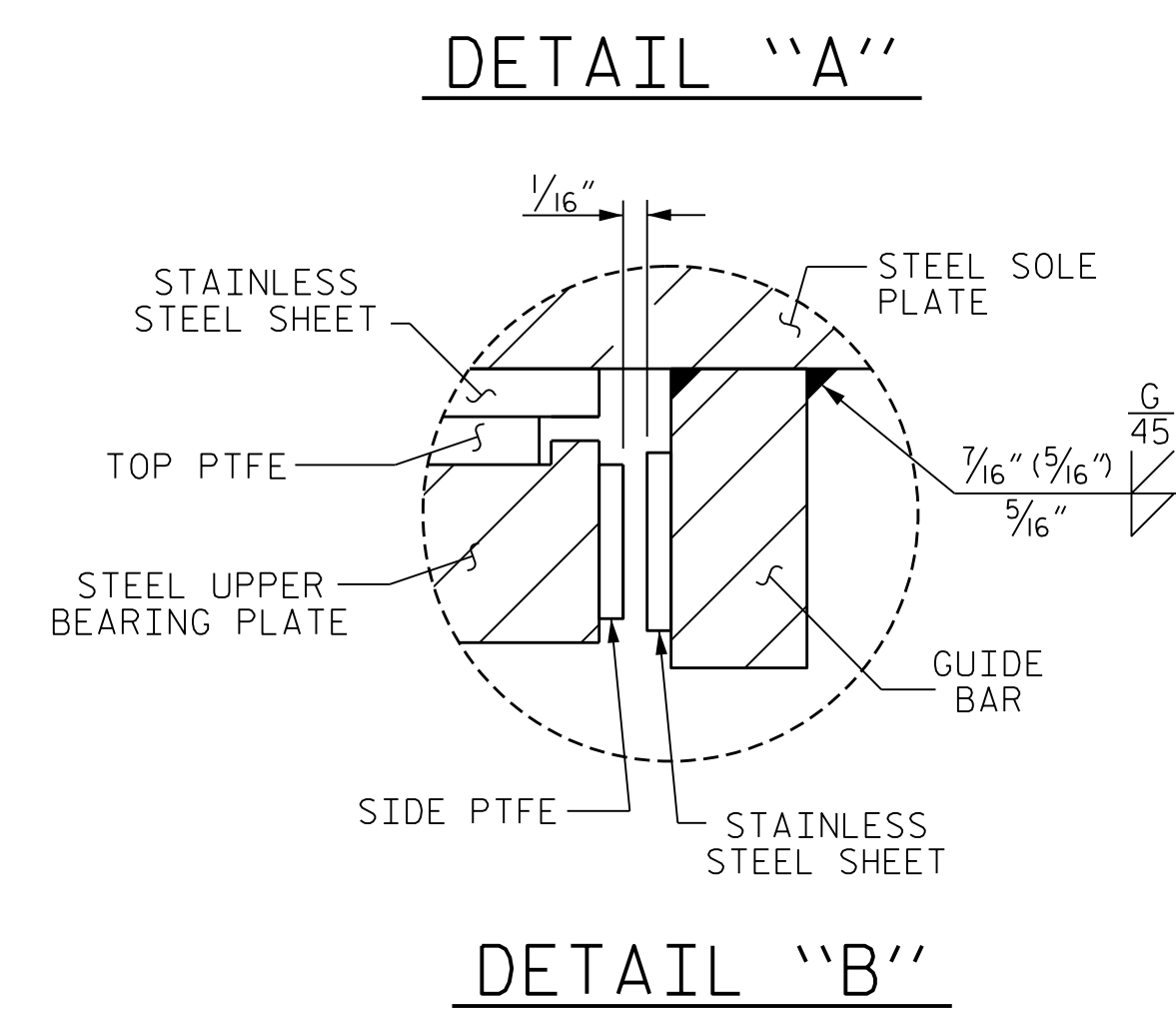
SECTION C-C



TEMPERATURE SETTING DETAIL

PLATE SETTING DATA (EXPANSION DISC BEARINGS)				
LOCATION	TEMPERATURE AT TIME OF SETTING			*
	45° F	60° F	90° F	
END BENT 1	-3/16"	0"	-5/16"	0"
END BENT 2	-1/4"	0"	-1/2"	-1/16"

* CORRECTION FOR END ROTATION DUE TO WEIGHT OF SLAB AND COMPOSITE DEAD LOAD.



DETAIL "A"

DETAIL "B"

NOTES

- FOR DISC BEARINGS, SEE SPECIAL PROVISIONS.
- ALL BEARING PLATES SHALL BE AASHTO M270 GRADE 50W OR GRADE 50.
- AT ALL POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS SHALL BE FINGER-TIGHTENED PLUS AN ADDITIONAL 1/4 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.
- WHEN WELDING THE SOLE PLATE TO THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE BEARING DOES NOT EXCEED 250°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE TFE OR URETHANE DISC.
- AFTER BEARING ASSEMBLY IS IN PLACE AND ANCHOR BOLTS HAVE BEEN FINALLY POSITIONED, THEY SHALL BE GROUTED IN PLACE AS SHOWN.
- THE CLOSURE PLATE, GROUT PIPE, AND STANDARD PIPE FOR THIS ASSEMBLY NEED NOT BE GALVANIZED.
- SOLE PLATES SHOULD BE WELDED TO GIRDER FLANGES AND ANCHOR BOLTS SHOULD BE GROUTED BEFORE FALSEWORK IS PLACED.
- ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.
- FOR ATTACHMENT OF THE STAINLESS STEEL SHEETS TO THE STEEL SOLE PLATE AND GUIDE BARS, AS WELL AS THE TOP AND SIDE PTFE SHEETS TO THE STEEL UPPER BEARING PLATE, SEE SPECIAL PROVISIONS.
- FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.
- THE MINIMUM ROTATIONAL CAPACITY FOR ALL BEARINGS SHALL BE 0.02 RADIAN.
- SEE SHEET 2 OF 3 FOR SOLE PLATE DETAILS.
- SEE TABLE ON SHEET 2 OF 3 FOR BEARING AND MASONRY PLATE DESIGNATIONS, LOCATIONS, BEARING HEIGHTS, MASONRY PLATE DIMENSIONS, TOP OF SOLE PLATE SLOPE, LOADS AND MOVEMENTS.
- SEE SHEET 3 OF 3 FOR EXPANSION CHORD SETTING ANGLES.

PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -Y1RT-

SHEET 1 OF 3

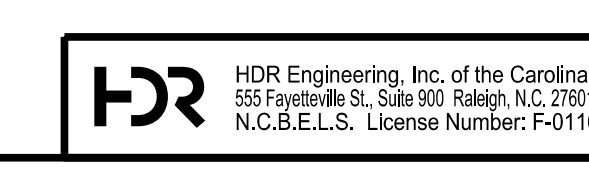
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 DISC BEARING
 DETAILS



W. Brian Watson 1/24/2022

DES BY: S. NIFONG	DATE: 05/21	DWG BY: M. SELLS	DATE: 05/21
DES CHK: N. DAVIS	DATE: 05/21	CHK BY: S. NIFONG	DATE: 06/21



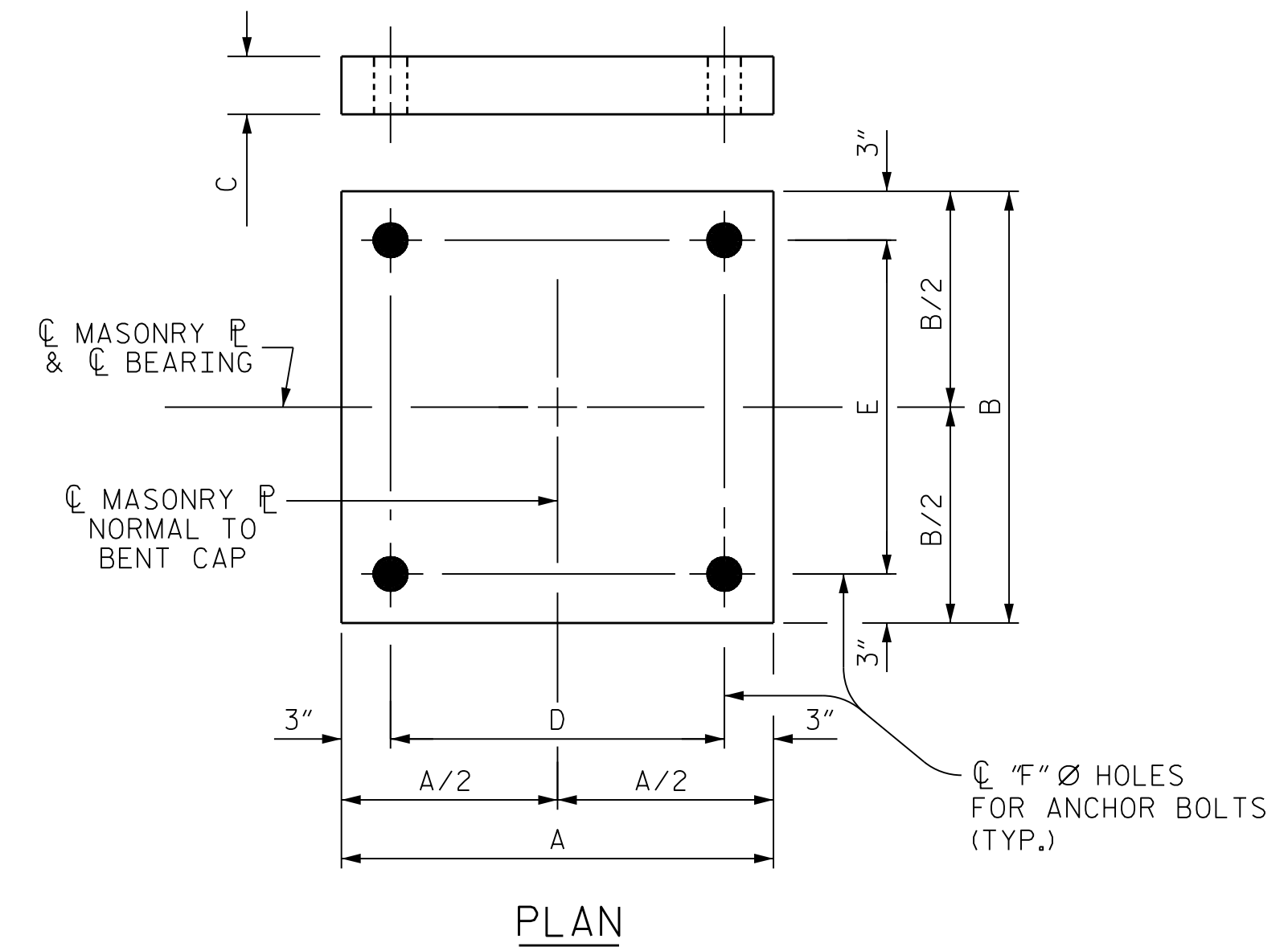
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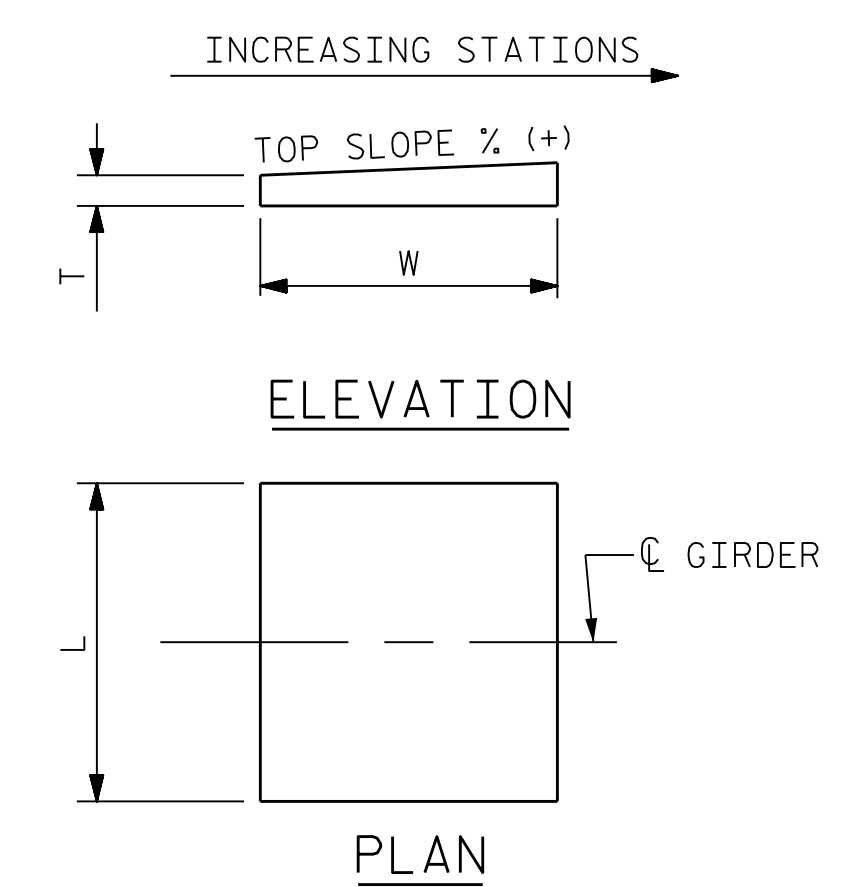
DESIGNATIONS				DIMENSIONS												LOADS AND MOVEMENT				
BEARINGS	MASONRY	LOCATION	NUMBER OF BEARINGS	BEARING	MASONRY PLATE						SOLE PLATE	ANCHOR BOLT DIAMETER	ANCHOR BOLT PROJECTION	TOTAL ANCHOR BOLT LENGTH	4" Ø STD. PIPE LENGTH	UNFACTORED VERTICAL LOAD (KIPS)			FACTORED HORIZONTAL LOAD (KIPS)	** ONE-WAY MOVEMENT
					H	A	B	C	D	E						F	TOP SLOPE (%)	DEAD		
DB1 (EXP.)	M1	END BENT 1	4	5 7/8"	2'-1 1/2"	2'-1 1/2"	3/4"	1'-7 1/2"	1'-7 1/2"	1 15/16"	3.1002%	1 1/2"	3"	1'-6"	1'-3 1/4"	78	11	107	36	1 1/8"
DB2 (FIXED)	M2	BENT 1	4	7 1/2"	2'-6"	2'-6"	1"	2'-0"	2'-0"	2 7/16"	1.9145%	2"	4"	1'-10"	N/A	506	66	282	179	0"
DB3 (EXP.)	M3	END BENT 2	4	6"	2'-3"	2'-3"	3/4"	1'-9"	1'-9"	1 15/16"	0.7860%	1 1/2"	3"	1'-6"	1'-3 1/4"	190	25	145	72	1 5/8"

** "ONE-WAY MOVEMENT" REPRESENTS THE FULL MOVEMENT RANGE EXPECTED TO OCCUR OVER A TEMPERATURE RANGE FROM 10° F TO 110° F. THE BEARING SOLE PLATE AND UPPER SLIDING SURFACE SHOULD BE CENTERED ON THE BEARING AT 60° F. SEE TABLE FOR "PLATE SETTING DATA" FOR SETTING DATA FOR OTHER TEMPERATURES.

▲ ANCHOR BOLT PROJECTION IS MEASURED ABOVE TOP OF BRIDGE SEAT.



MASONRY PLATE DETAILS



NOTE: DIMENSIONS "L", "W", AND "T" SHALL BE DETERMINED BY THE BEARING MANUFACTURER, SET DIMENSION "L" SUCH THAT THE MINIMUM EDGE DISTANCE TO THE GIRDER FLANGE IS 1".

SOLE PLATE DETAILS

PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -Y1RT-

SHEET 2 OF 3

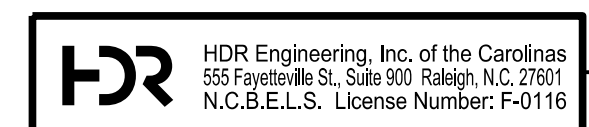


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**SUPERSTRUCTURE
 DISC BEARING
 DETAILS**

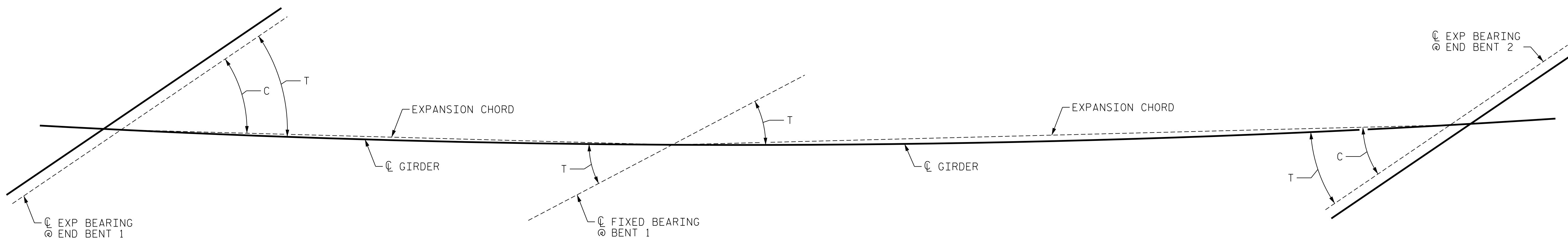
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2	--	--	4	--	--	48	



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DES BY: <u>S. NIFONG</u>	DATE: <u>05/21</u>	DWG BY: <u>M. SELLS</u>	DATE: <u>05/21</u>
DES CHK: <u>N. DAVIS</u>	DATE: <u>05/21</u>	CHK BY: <u>S. NIFONG</u>	DATE: <u>06/21</u>



EXPANSION BEARING ORIENTATION DIAGRAM

EXPANSION CHORD SETTING ANGLES					
LOCATION	END BENT 1		BENT 1	END BENT 2	
	T	C	T	T	C
GIRDERS 1-4	37°08'18"	35°55'17"	28°13'58"	31°09'09"	32°55'42"

NOTES

- C = ANGLE FROM C BRG TO EXPANSION CHORD
- T = ANGLE FROM C BRG TO LOCAL TANGENT TO CURVE

PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -Y1RT-

SHEET 3 OF 3



W. Brian Watson 1/24/2022

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SUPERSTRUCTURE DISC BEARING DETAILS

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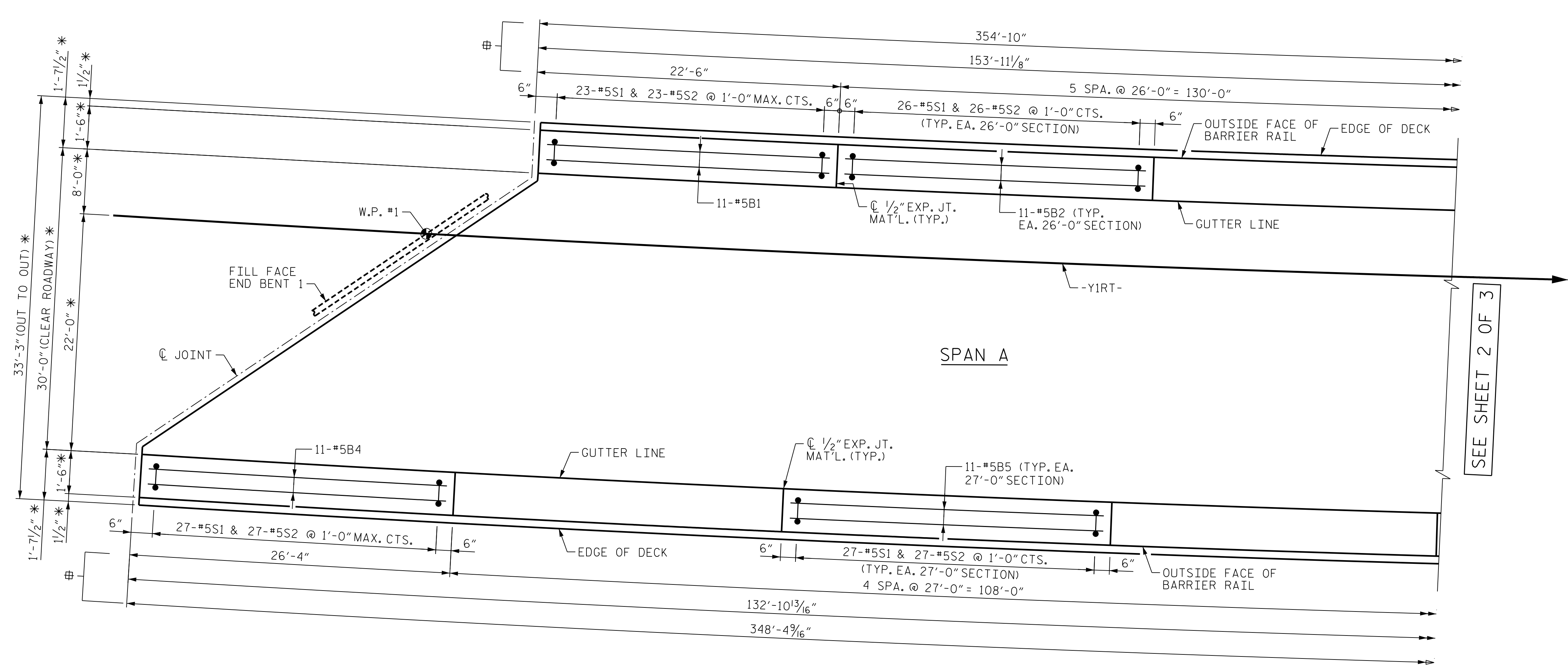
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DES BY: <u>S. NIFONG</u>	DATE: <u>05/21</u>	DWG BY: <u>M. SELLS</u>	DATE: <u>05/21</u>
DES CHK: <u>N. DAVIS</u>	DATE: <u>05/21</u>	CHK BY: <u>S. NIFONG</u>	DATE: <u>06/21</u>



SEE SHEET 2 OF 3

PARTIAL PLAN OF BARRIER RAIL

⊕ = MEASURED ALONG OUTSIDE FACE OF BARRIER RAIL
 * = MEASURED RADIAL TO -Y1RT-

PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -Y1RT-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 CONCRETE
 BARRIER RAIL**



W. Brian Watson 1/24/2022

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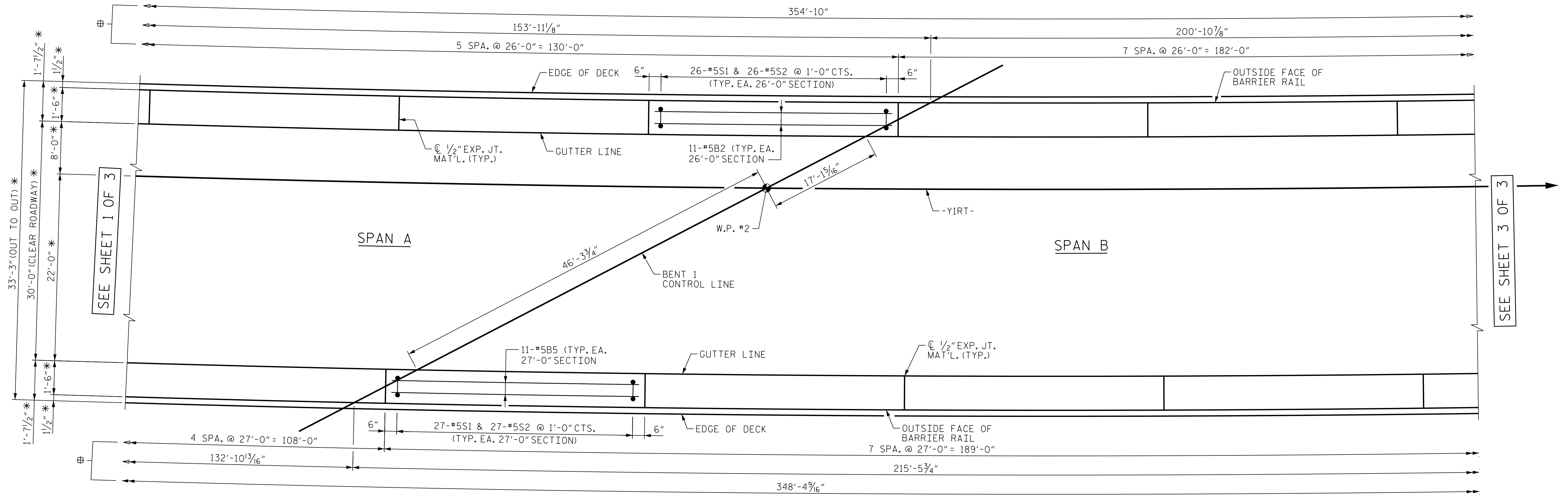
DES BY: S. NIFONG	DATE: 04/21	DWG BY: M. SELLS	DATE: 04/21
DES CHK: H. ABU NIMEH	DATE: 07/21	CHK BY: H. ABU NIMEH	DATE: 07/21



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SHEET NO. 502-27
TOTAL SHEETS 48



SEE SHEET 1 OF 3

SEE SHEET 3 OF 3

PARTIAL PLAN OF BARRIER RAIL

= MEASURED ALONG OUTSIDE FACE OF BARRIER RAIL
 * = MEASURED RADIAL TO -Y1RT-

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

STATION: 27+54.43 -Y1RT-

SHEET 2 OF 3

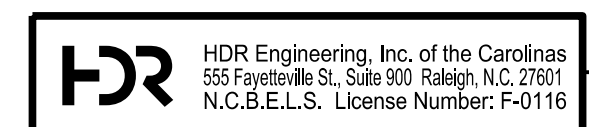
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SUPERSTRUCTURE
 CONCRETE
 BARRIER RAIL



W. Brian Watson 1/24/2022

REVISIONS						SHEET NO. 502-28
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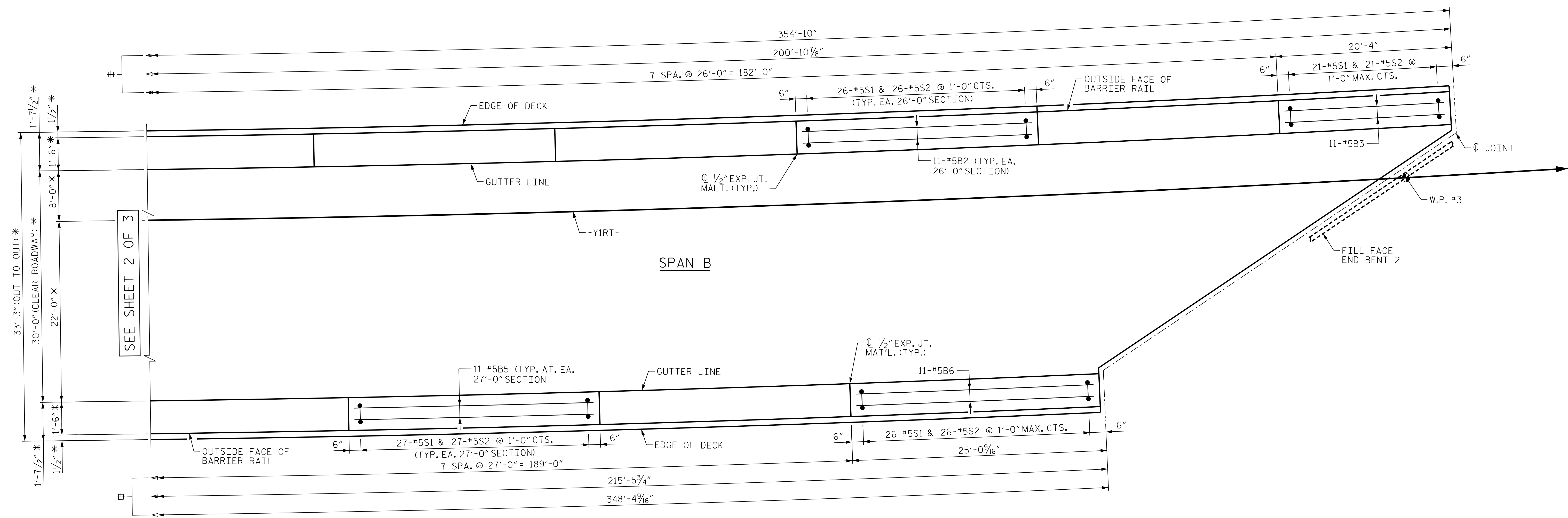


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DES BY: <u>S. NIFONG</u>	DATE: <u>04/21</u>	DWG BY: <u>M. SELLS</u>	DATE: <u>04/21</u>
DES CHK: <u>H. ABU NIMEH</u>	DATE: <u>07/21</u>	CHK BY: <u>H. ABU NIMEH</u>	DATE: <u>07/21</u>

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PARTIAL PLAN OF BARRIER RAIL

= MEASURED ALONG OUTSIDE FACE OF BARRIER RAIL
* = MEASURED RADIAL TO -Y1RT-

PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
STATION: 27+54.43 -Y1RT-

SHEET 3 OF 3

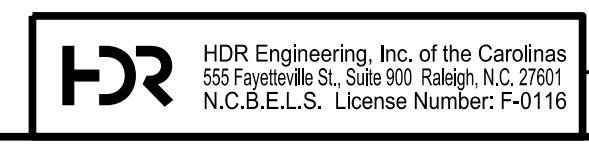
STATE OF NORTH CAROLINA
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RALEIGH

**SUPERSTRUCTURE
CONCRETE
BARRIER RAIL**



W. Brian Watson 1/24/2022

DES BY: S. NIFONG	DATE: 04/21	DWG BY: M. SELLS	DATE: 04/21
DES CHK: H. ABU NIMEH	DATE: 07/21	CHK BY: H. ABU NIMEH	DATE: 07/21



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SHEET NO. 502-29
TOTAL SHEETS 48

NOTES

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

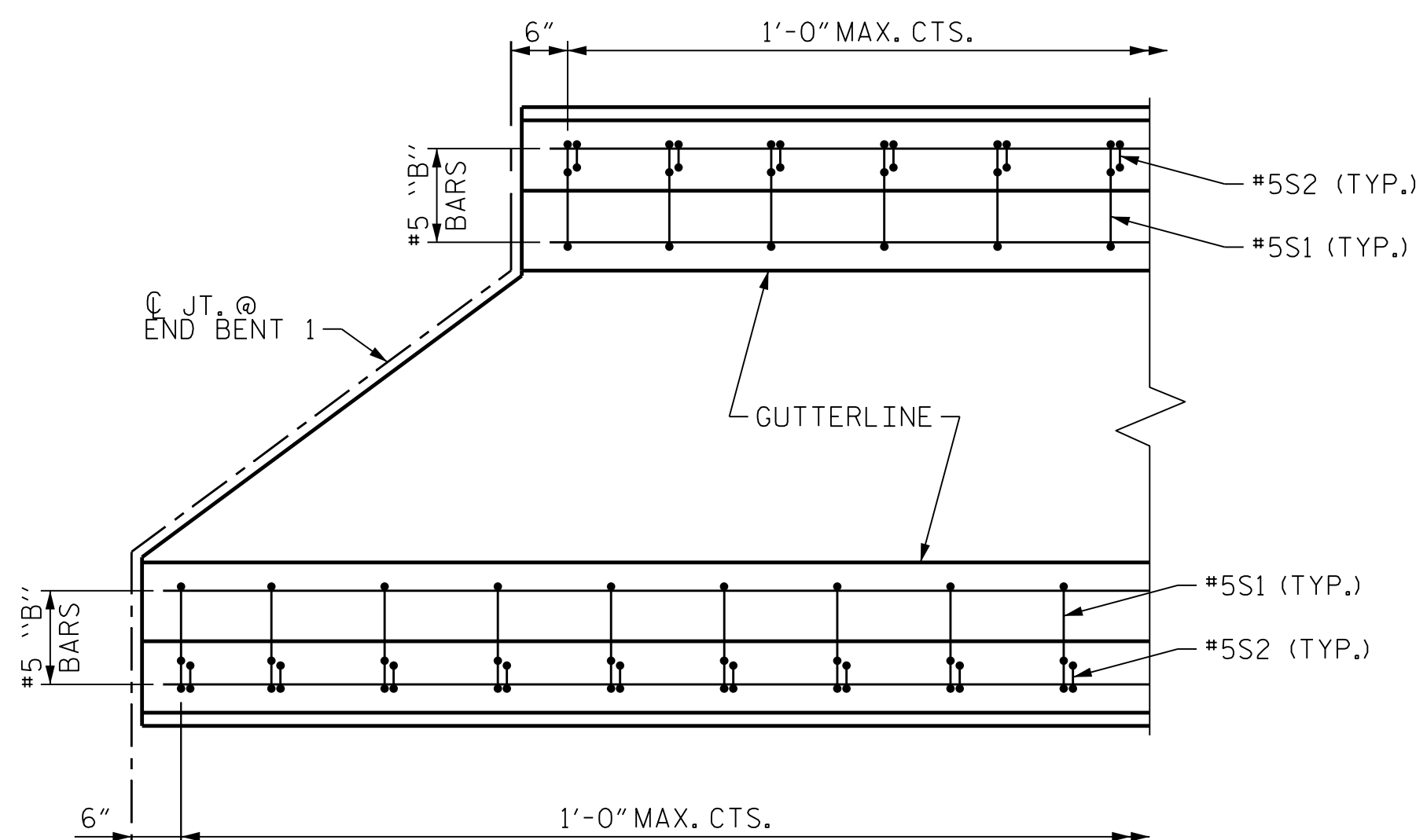
ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

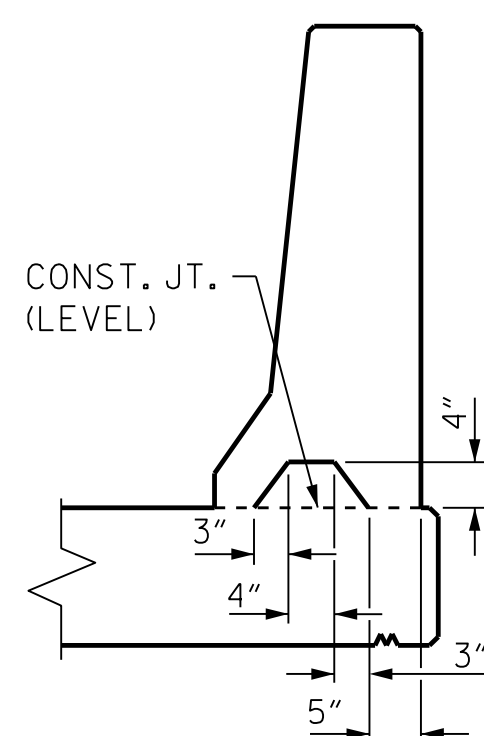
SEE "BRIDGE APPROACH SLAB DETAILS" SHEETS FOR BARRIER RAIL CONSTRUCTED ON APPROACH SLABS AND END OF RAIL DETAILS.

THE #5 S1 AND S2 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL.

BAR TYPES		BILL OF MATERIAL				
FOR CONCRETE BARRIER RAIL ON BRIDGE DECK ONLY						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*B1	11	#5	STR	22'-1"	254	
*B2	132	#5	STR	25'-7"	3523	
*B3	11	#5	STR	19'-11"	229	
*B4	11	#5	STR	25'-11"	298	
*B5	121	#5	STR	26'-7"	3355	
*B6	11	#5	STR	24'-7"	283	
*S1	706	#5	1	4'-6"	3314	
*S2	706	#5	2	7'-0"	5155	
*EPOXY COATED REINFORCING STEEL					16,411 LBS.	
CLASS AA CONCRETE					95.7 CU. YDS.	
CONCRETE BARRIER RAIL					703.2 LIN. FT.	

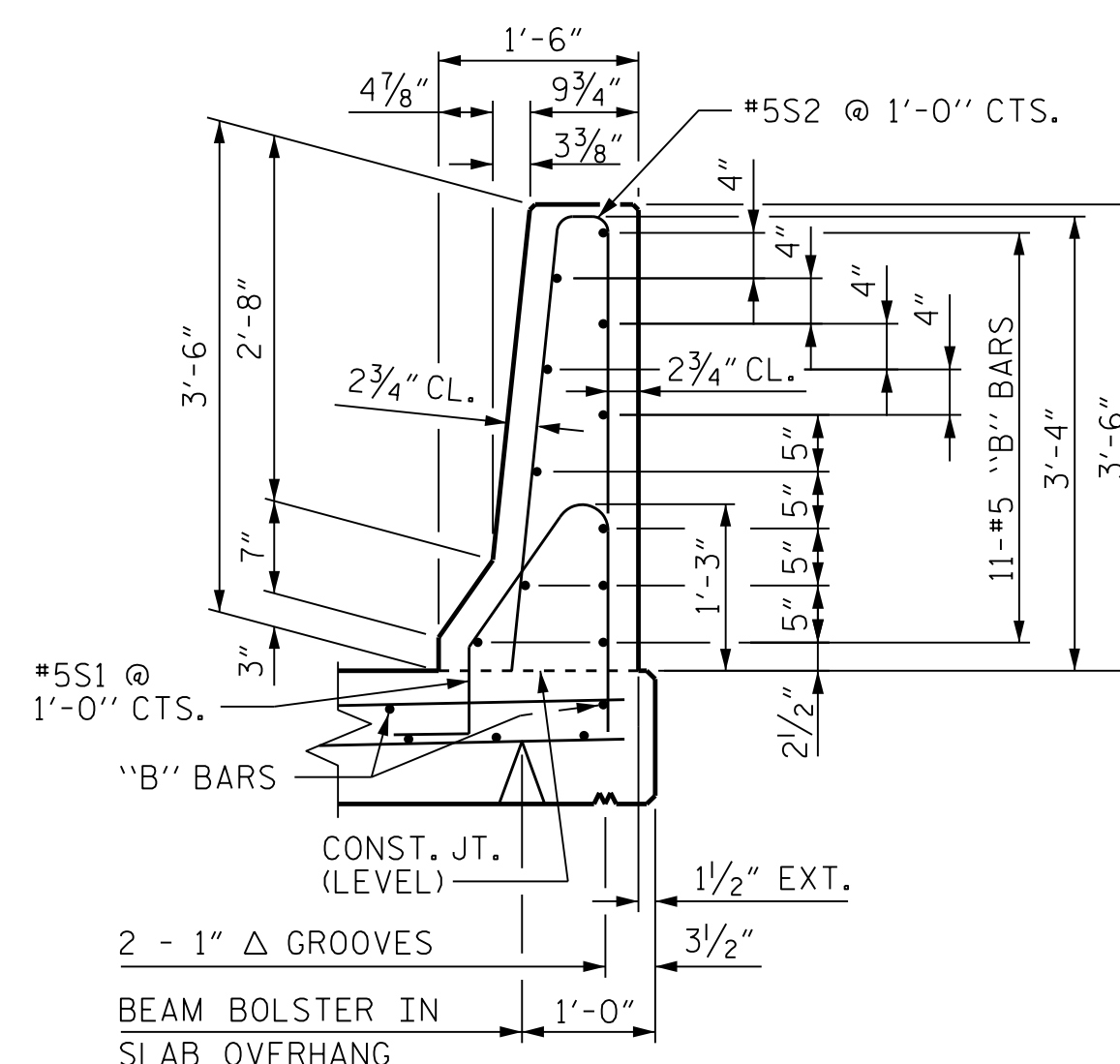


PLAN
RAIL DETAILS AT EXPANSION JOINTS
(END BENT 1 SHOWN, END BENT 2 SIMILAR)

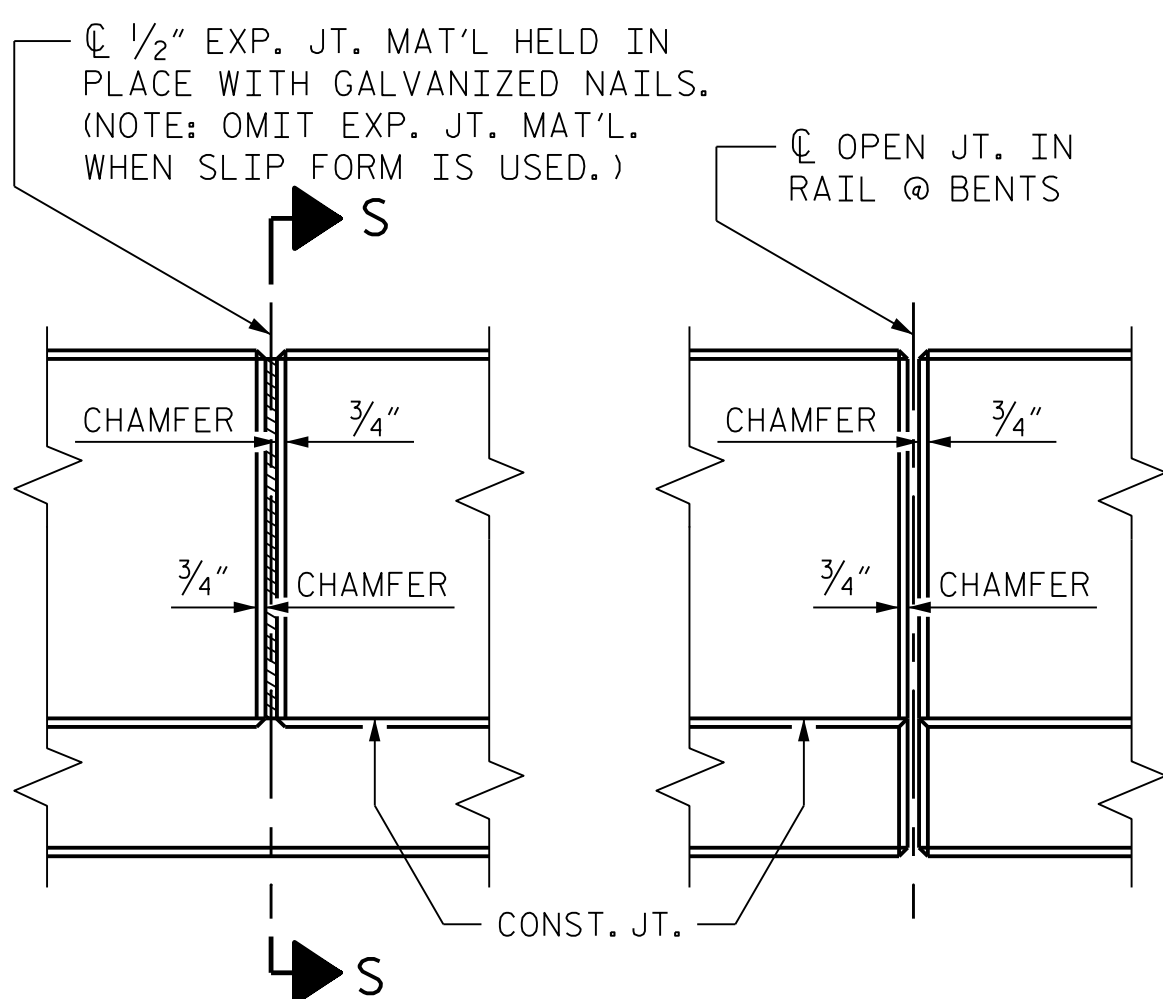


SECTION S-S

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



SECTION THROUGH RAIL



ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS

PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
STATION: 27+54.43 -Y1RT-

STATE OF NORTH CAROLINA
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RALEIGH

**SUPERSTRUCTURE
CONCRETE BARRIER
RAIL DETAILS**

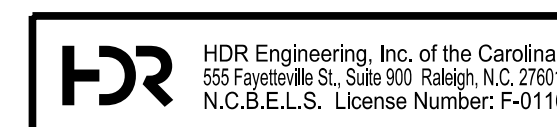


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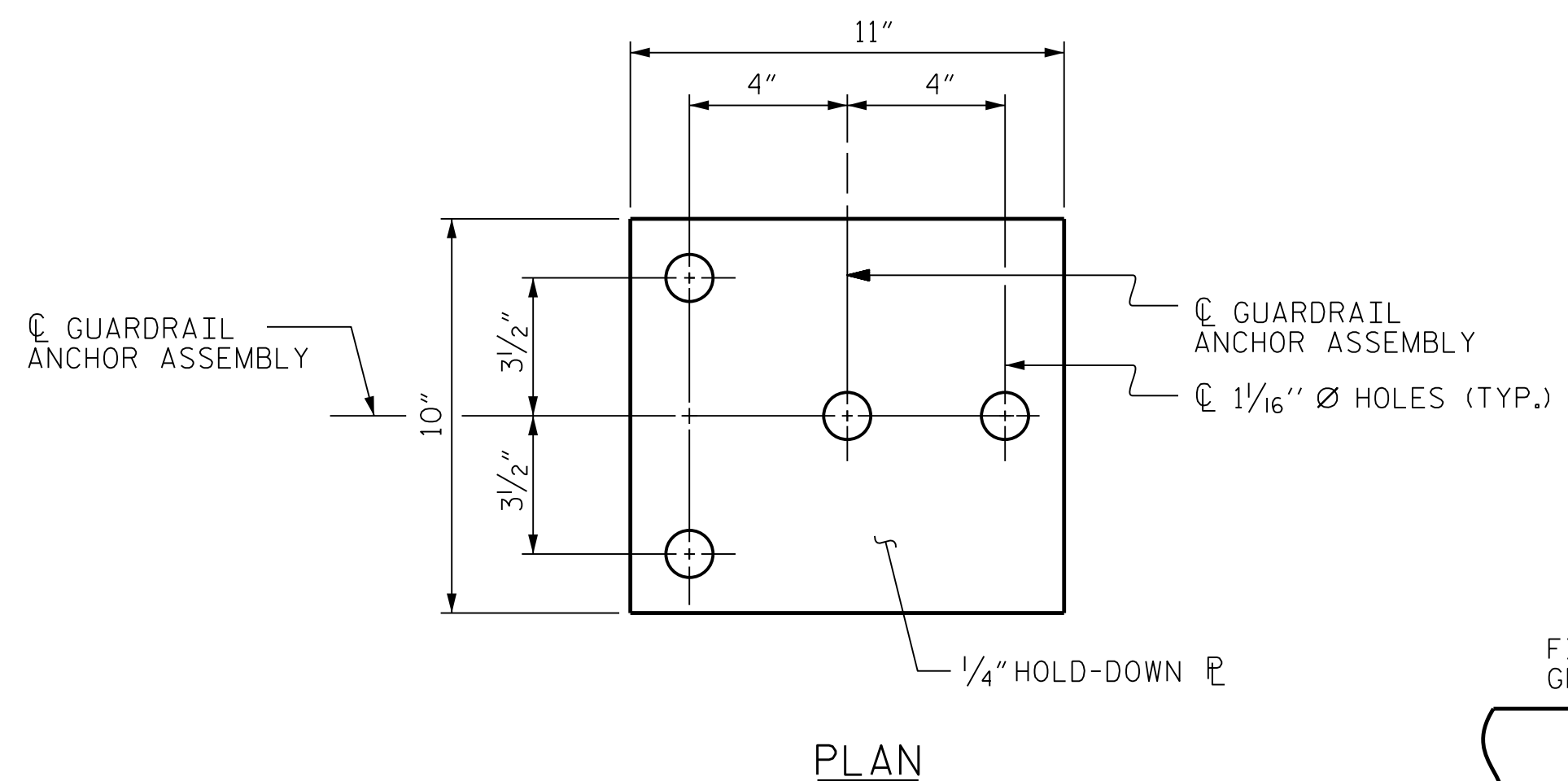
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TOTAL SHEETS 48



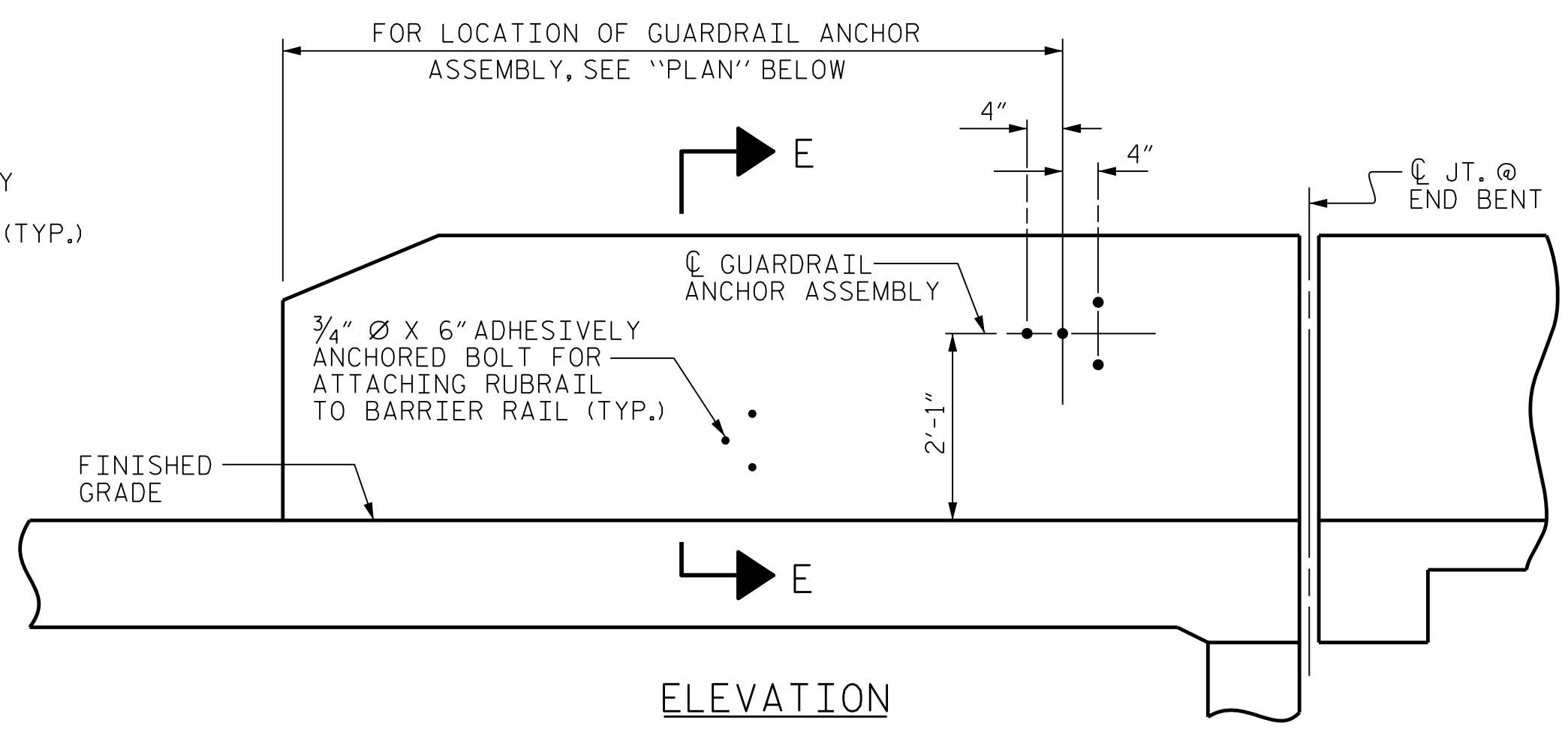
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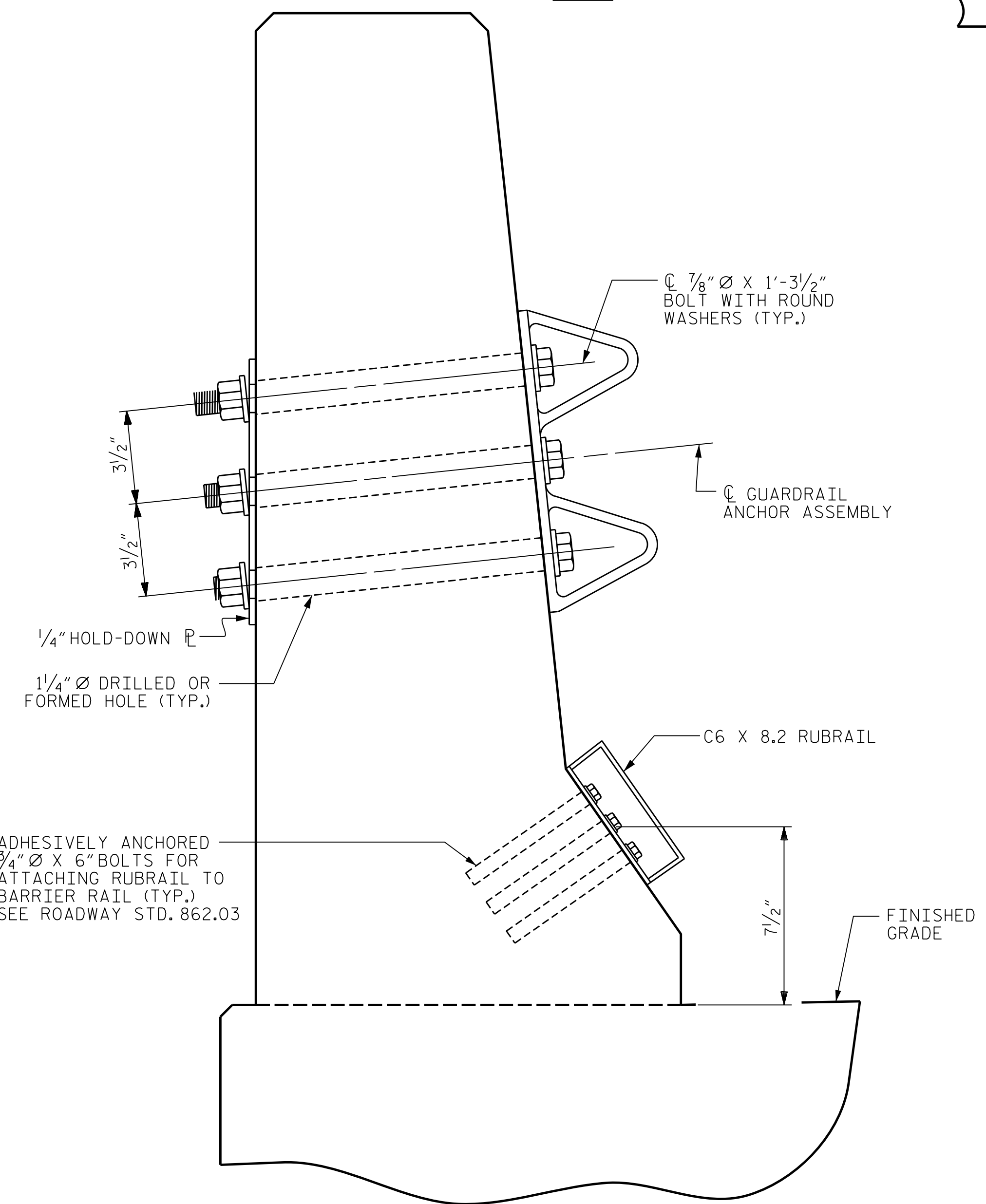
DES BY: S. NIFONG	DATE: 04/21	DWG BY: M. SELLS	DATE: 04/21
DES CHK: H. ABU NIMEH	DATE: 07/21	CHK BY: H. ABU NIMEH	DATE: 07/21



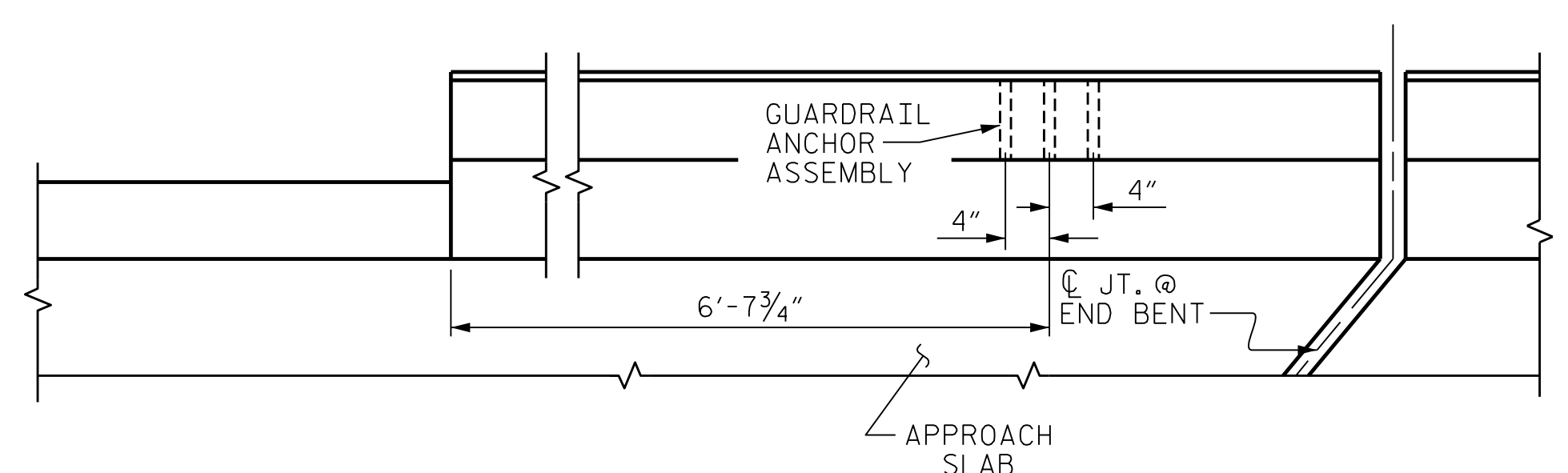
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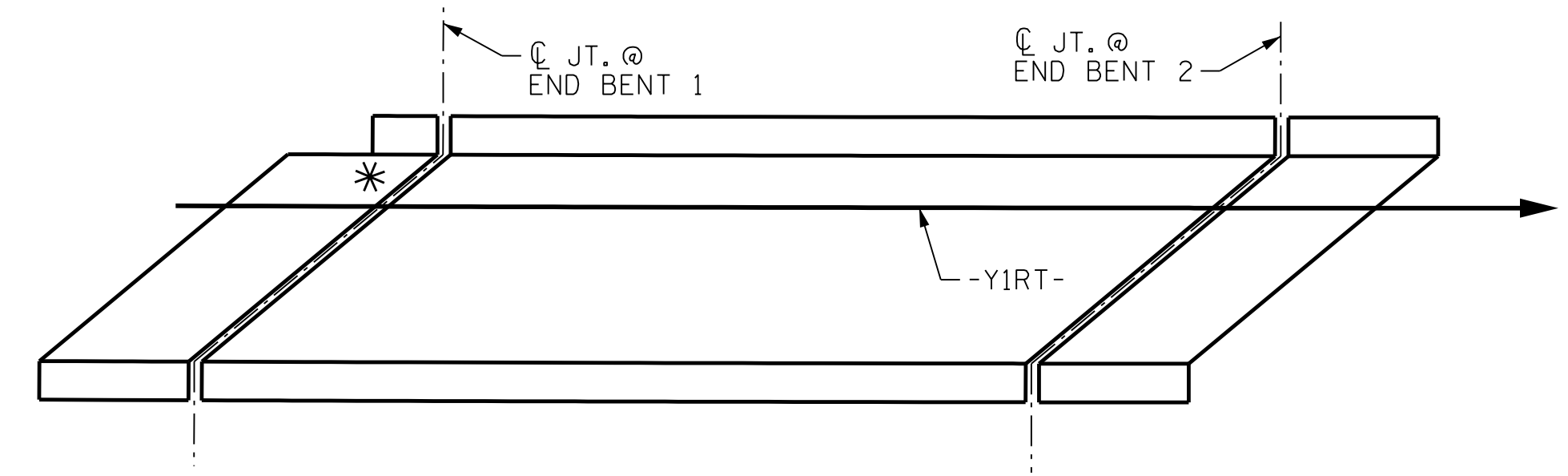
ELEVATION



SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL
END BENT #1 SHOWN



SKETCH SHOWING POINTS OF ATTACHMENTS
* DENOTES GUARDRAIL ANCHOR ASSEMBLY

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.

PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -Y1RT-

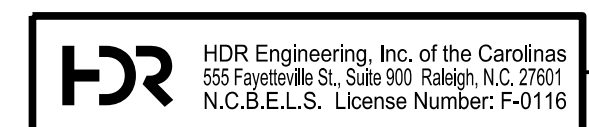


W. Brian Watson 1/24/2022

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 GUARDRAIL ANCHORAGE
 FOR BARRIER RAIL**

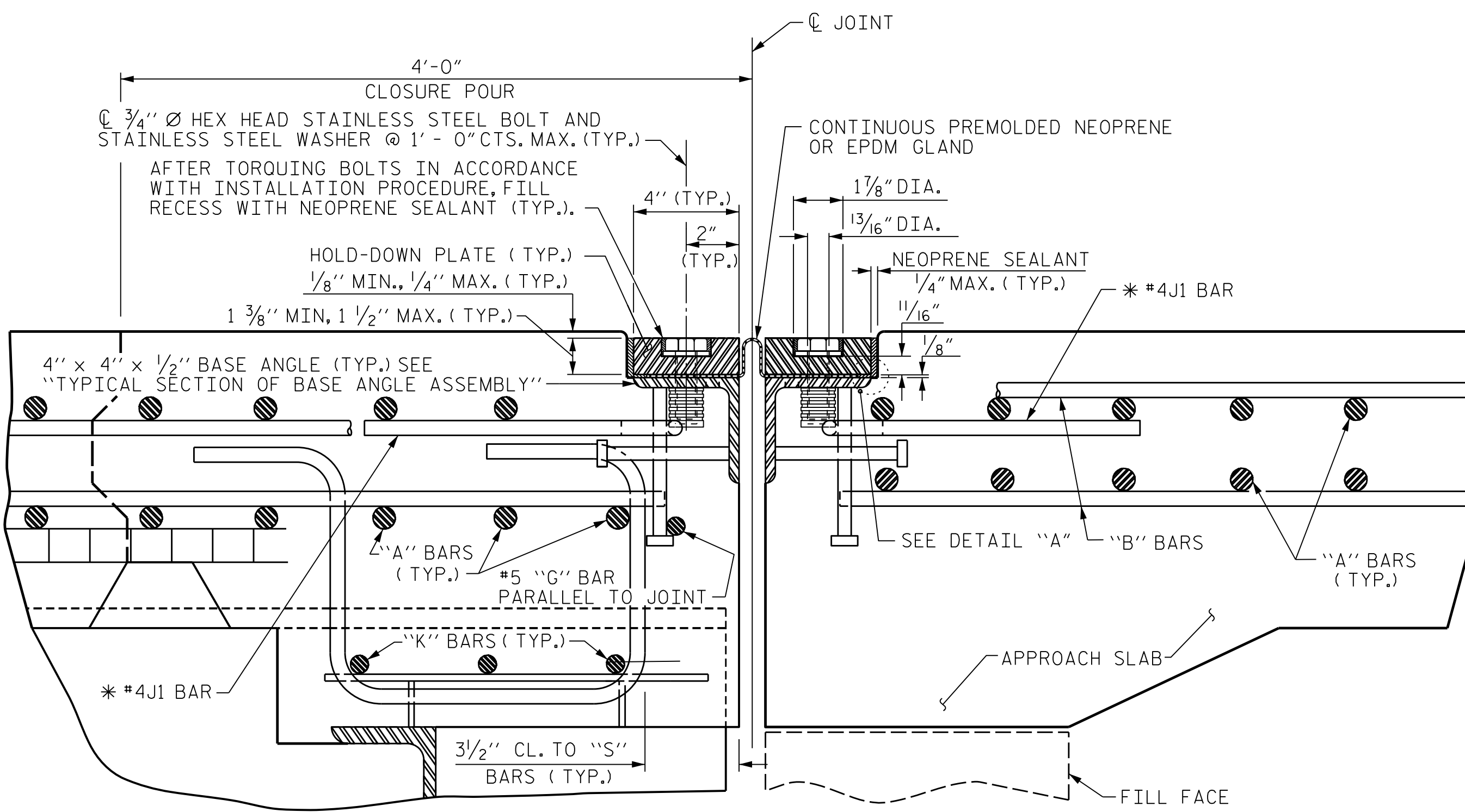
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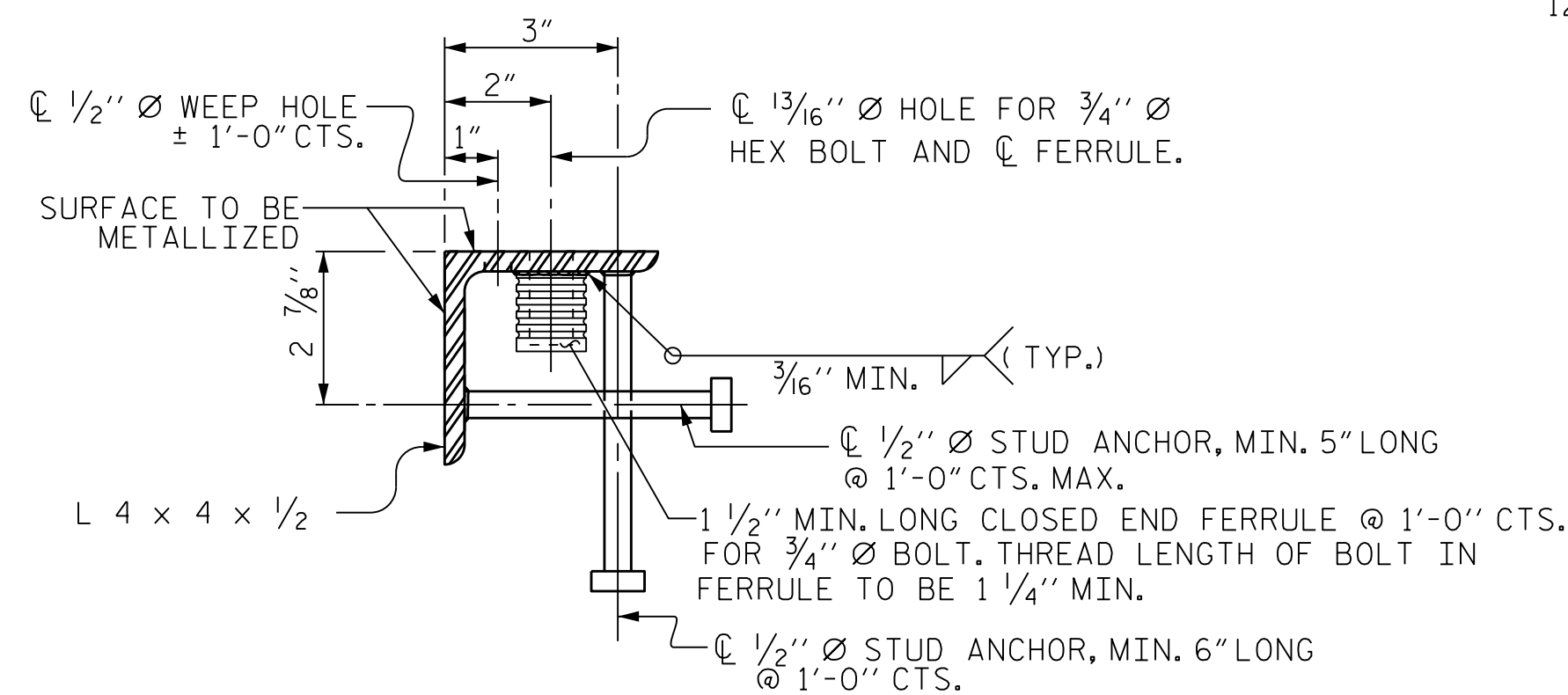
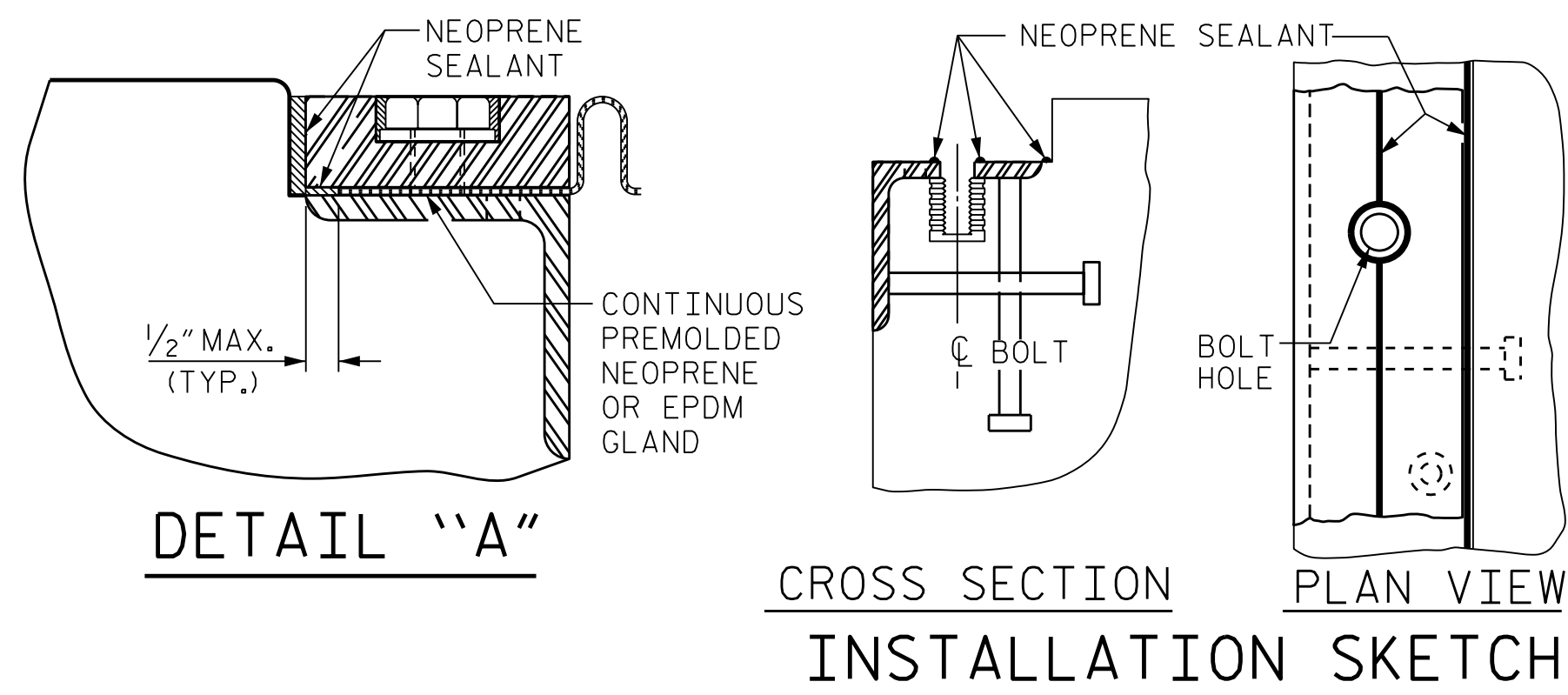
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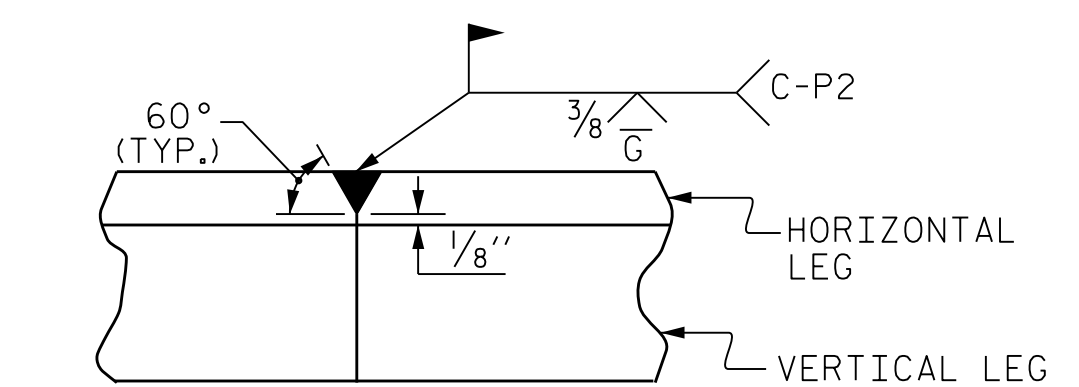
EXPANSION JOINT DETAILS

SECTION NORMAL TO JOINT -- STEEL SUPERSTRUCTURE

* = THE QUANTITY OF #4J1 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.



TYPICAL SECTION OF BASE ANGLE ASSEMBLY



DETAIL - FIELD WELD SPLICE OF BASE ANGLE

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 ENSURING 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 AND 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 3/4" Ø 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.

MOVEMENT AND SETTING AT JOINT					
LOCATION	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
END BENT #1	142°56'30"	0 5/8"	1 1/16"	1 3/16"	1 1/8"
END BENT #2	149°08'24"	0 7/8"	1 1/16"	1 1/16"	1 3/16"

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W. Brian Watson 1/24/2022

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

REVISIONS					
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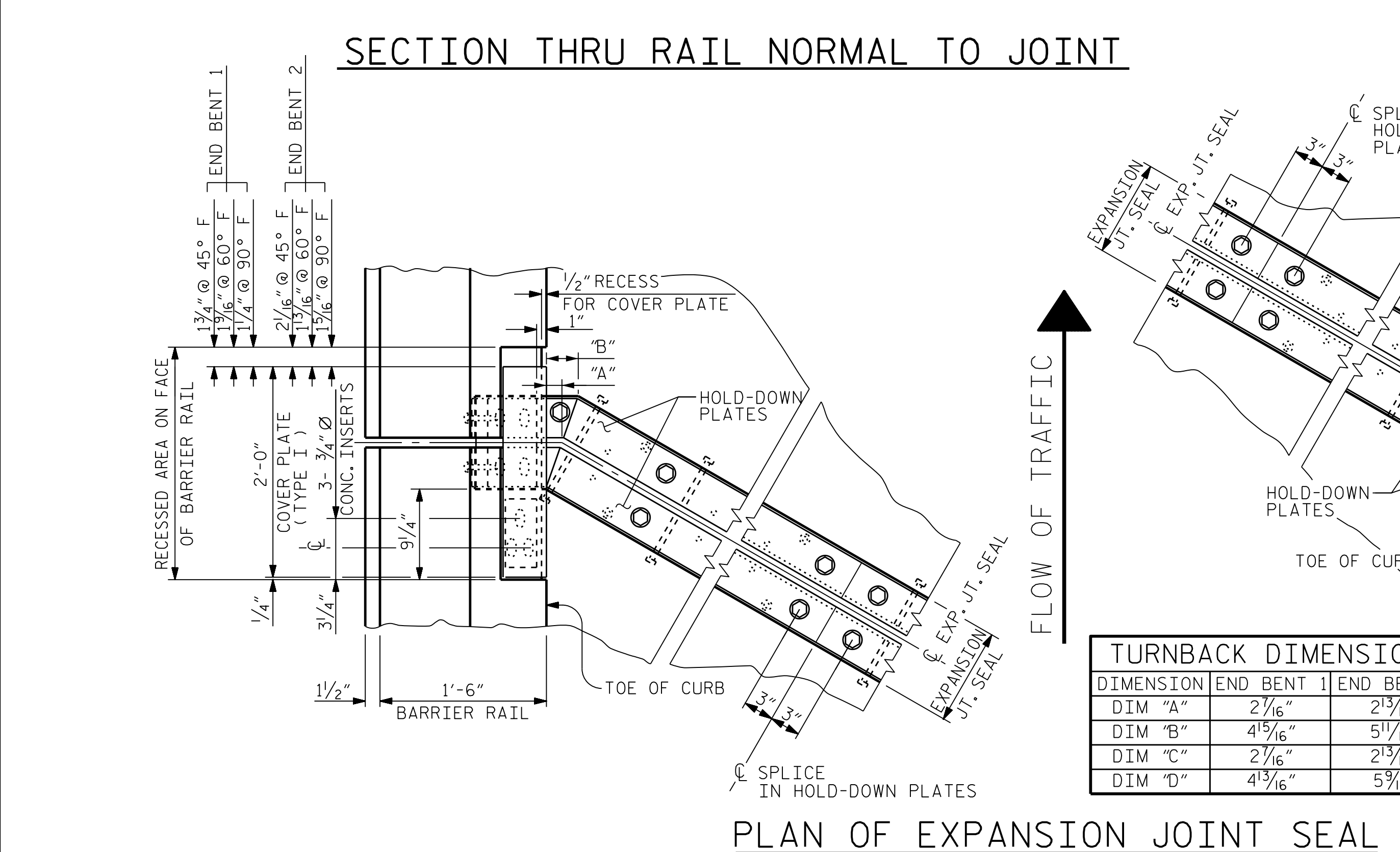
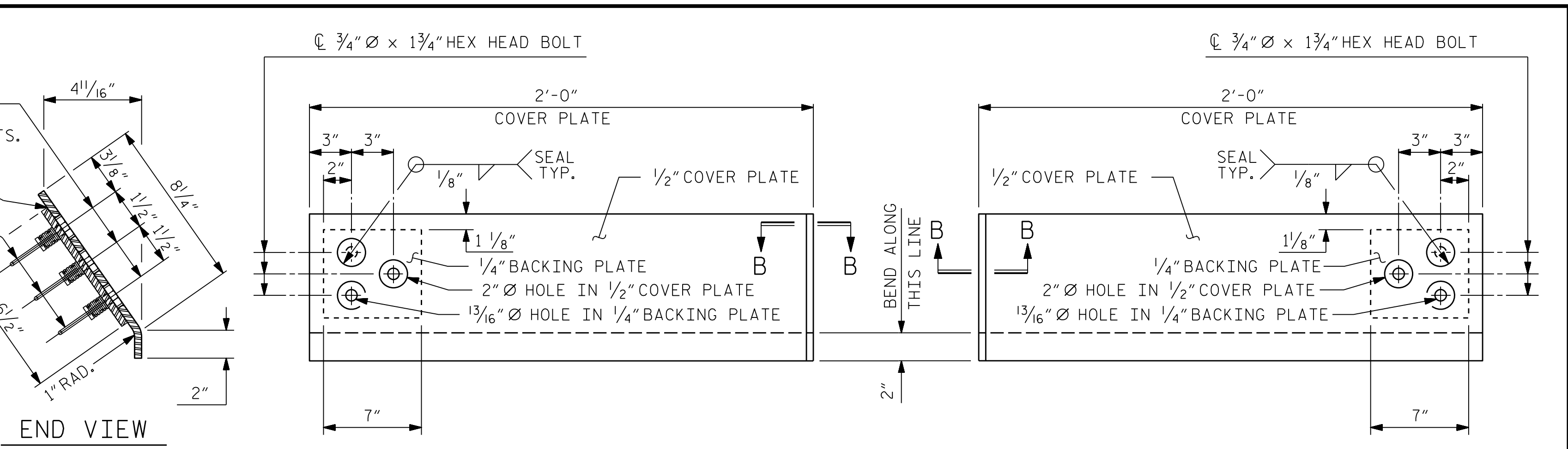
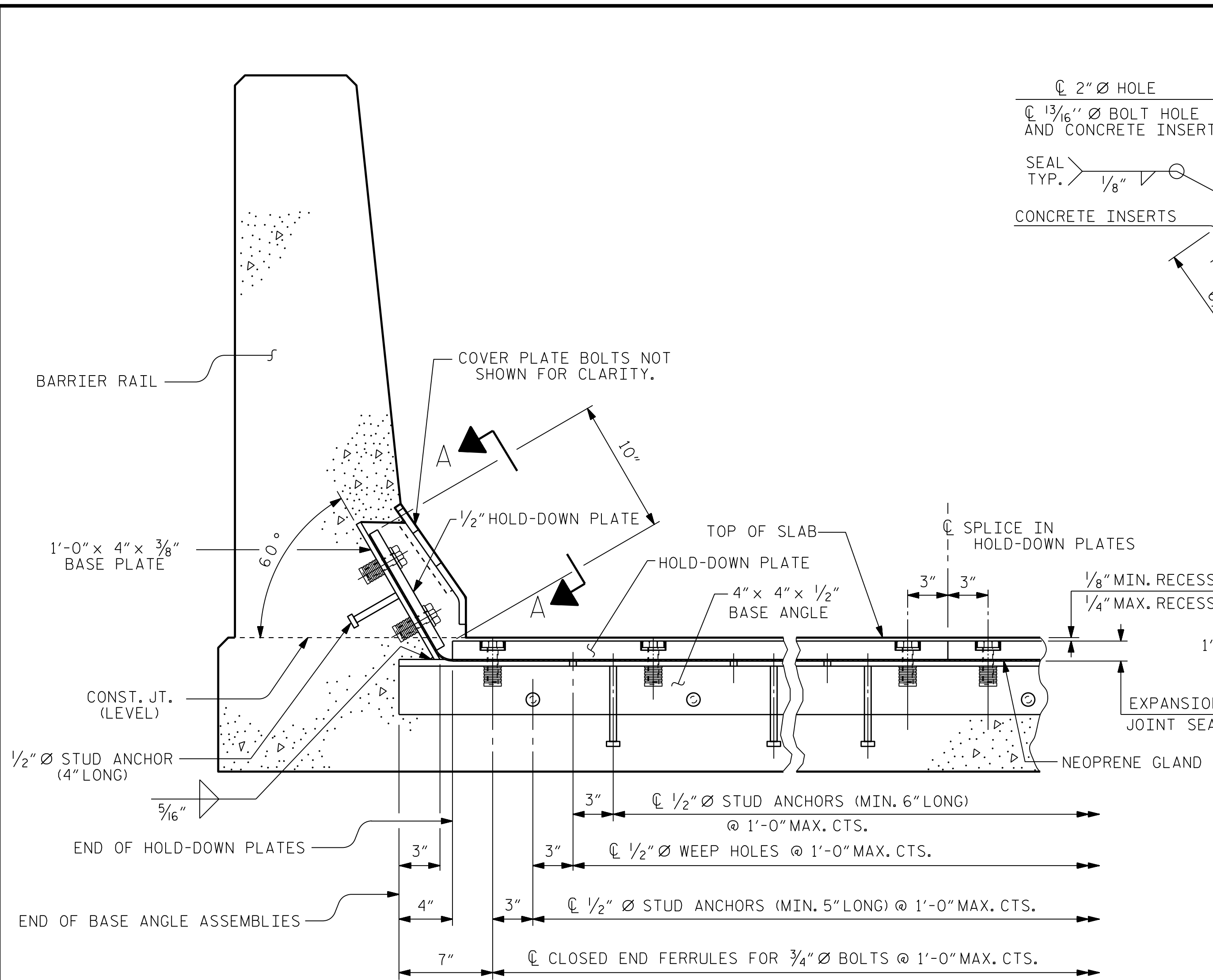
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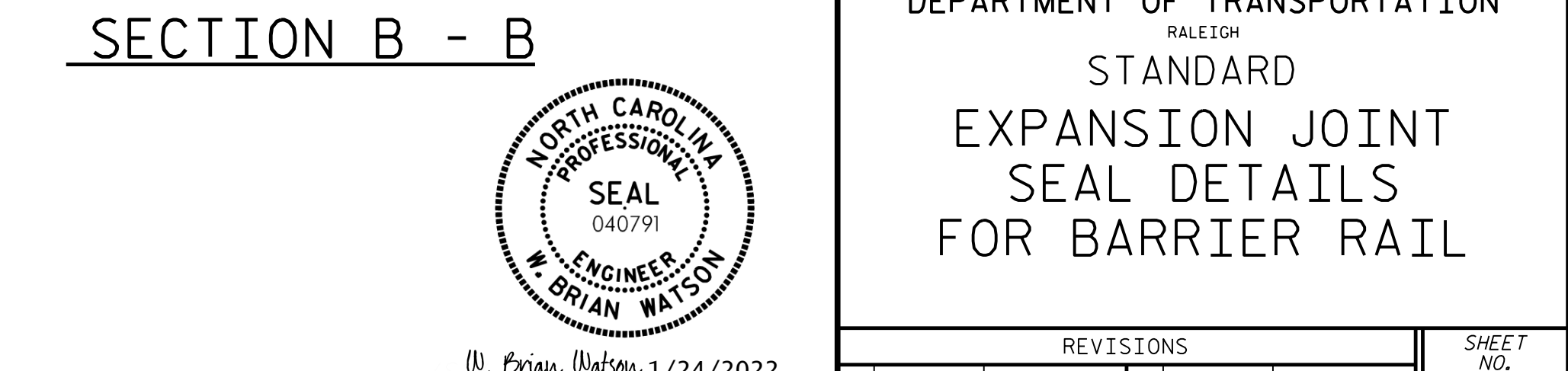
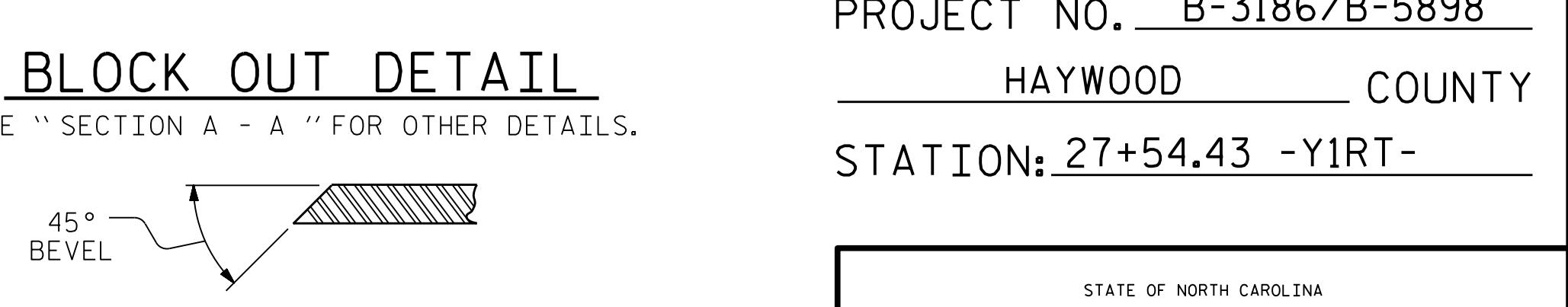
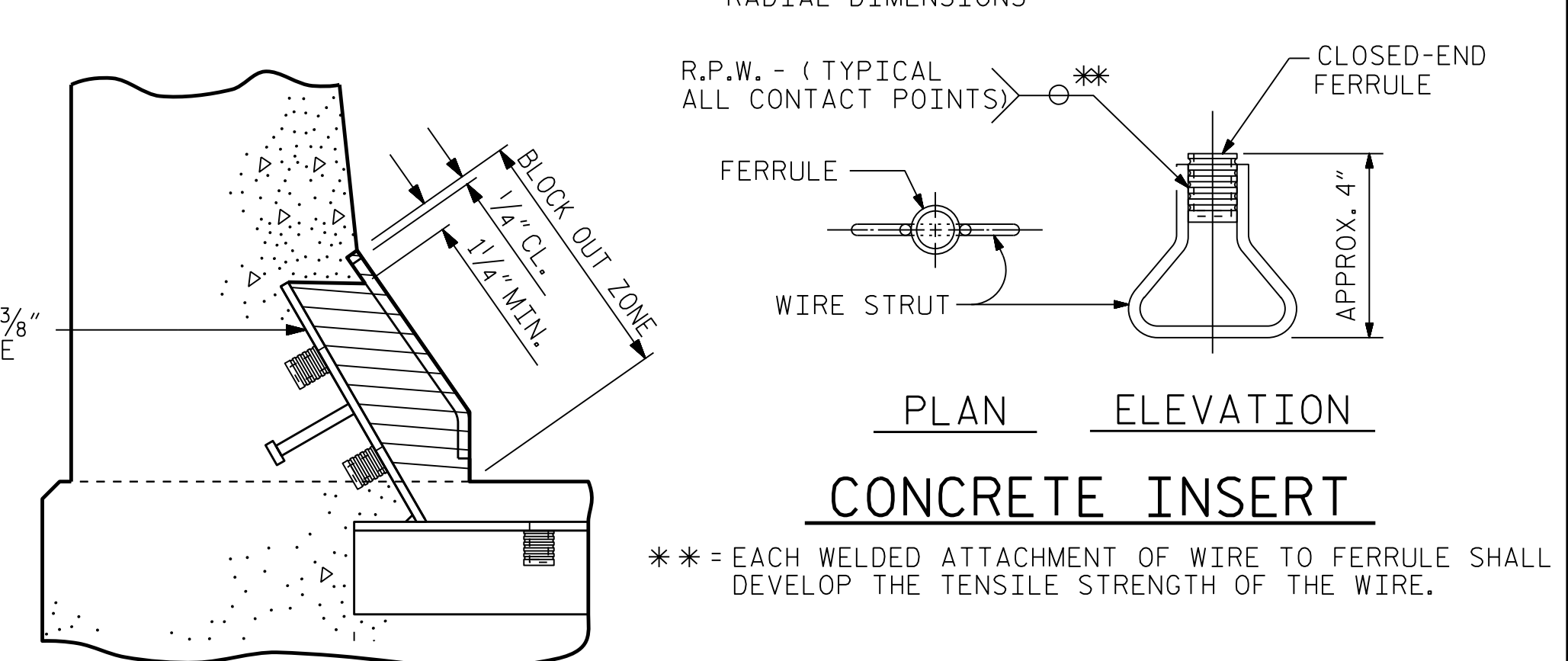
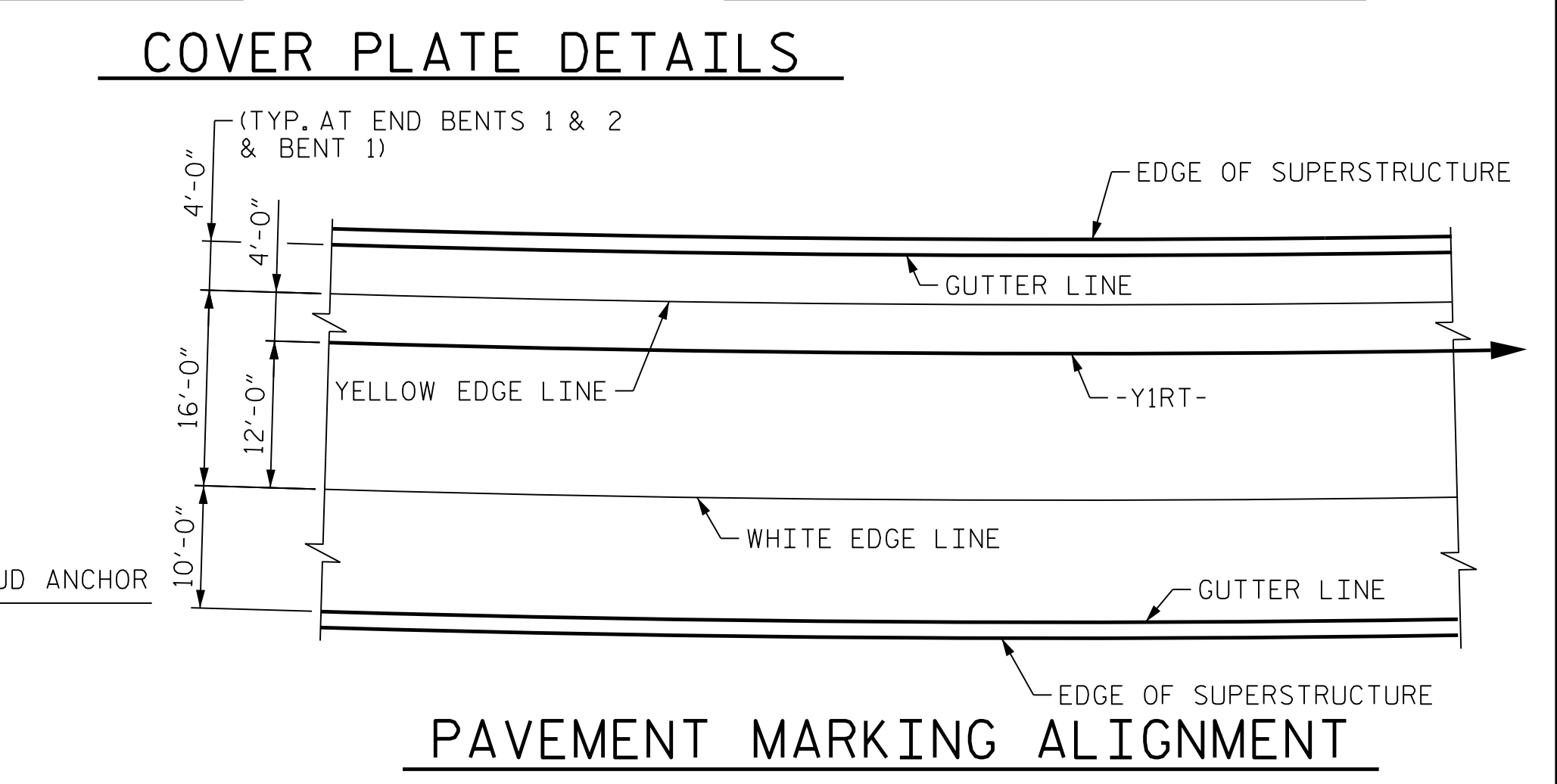
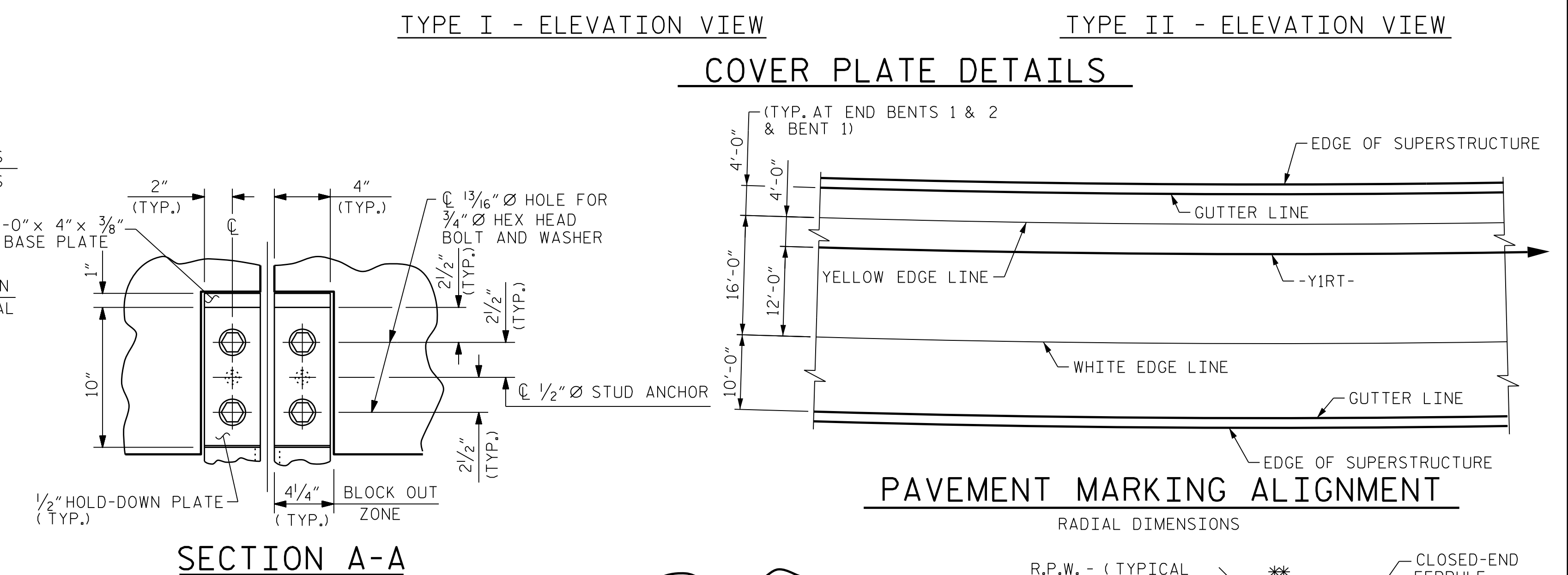
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DES BY: S. NIFONG DATE: 04/21
 DES CHK: N. DAVIS DATE: 04/21
 DWG BY: M. SELLS DATE: 04/21
 CHK BY: S. NIFONG DATE: 06/21



TURNBACK DIMENSIONS		
DIMENSION	END BENT 1	END BENT 2
DIM "A"	2 1/16"	2 13/16"
DIM "B"	4 5/16"	5 11/16"
DIM "C"	2 7/16"	2 13/16"
DIM "D"	4 13/16"	5 9/16"



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

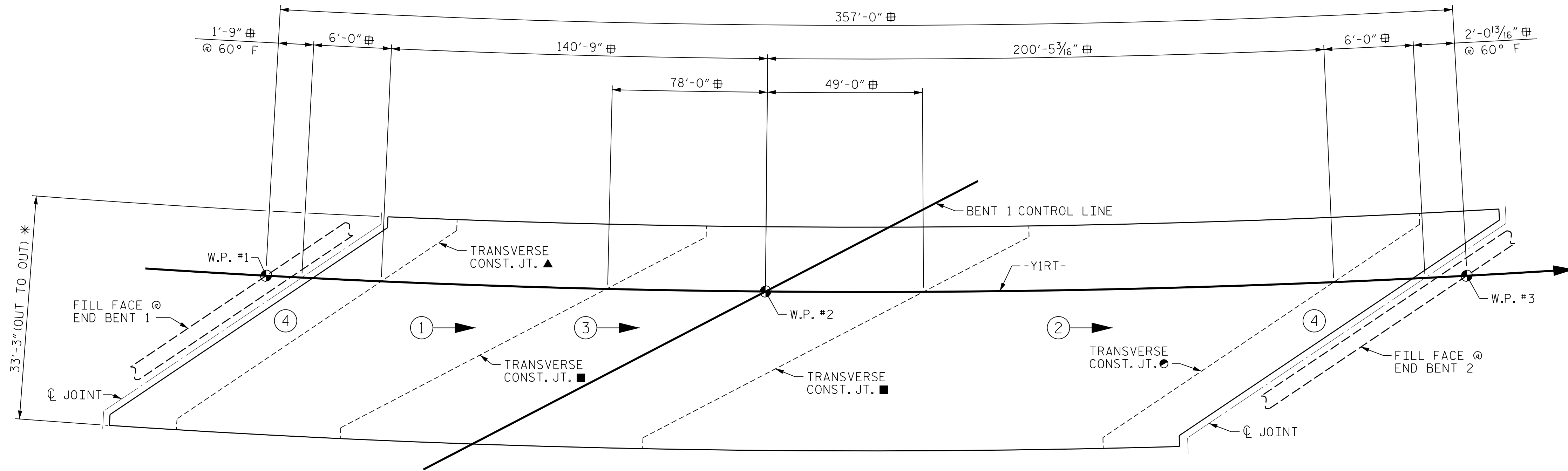
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HR HDR Engineering, Inc. of the Carolinas
 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
 N.C.B.E.L.S. License Number: F-0116

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POUR SEQUENCE

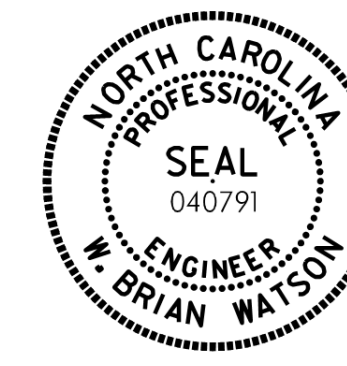
⊕ → INDICATES POUR NUMBER AND DIRECTION OF POUR

- ⊕ MEASURED ALONG -Y1RT-
- * MEASURED RADIAL TO -Y1RT-
- ▲ PARALLEL TO FILL FACE @ END BENT 1
- PARALLEL TO BENT 1 CONTROL LINE
- PARALLEL TO FILL FACE @ END BENT 2

PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -Y1RT-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE POUR SEQUENCE



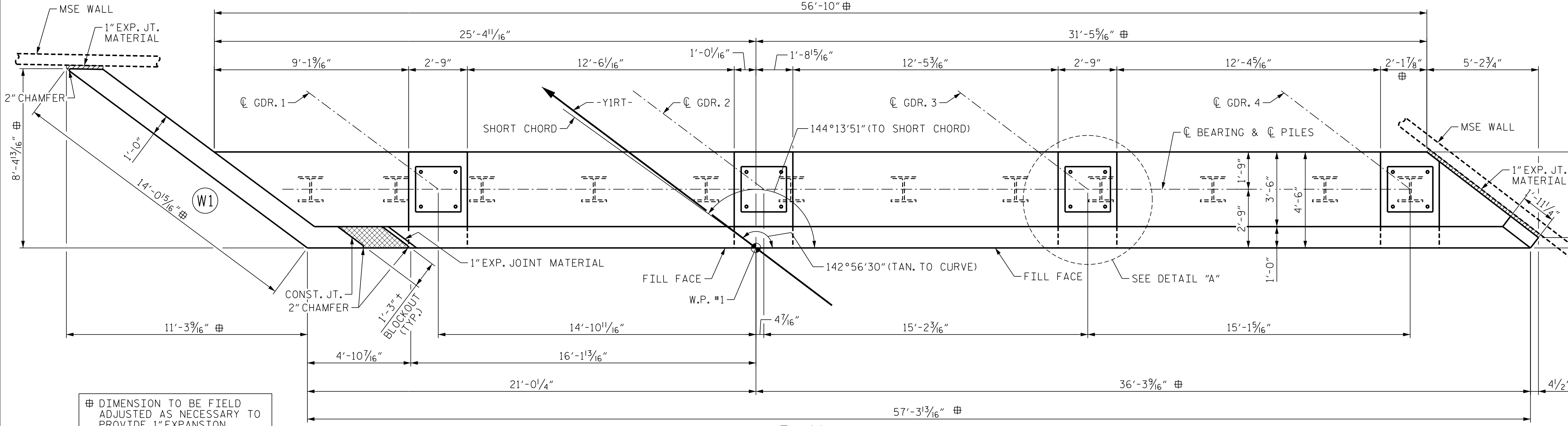
W. Brian Watson 1/24/2022

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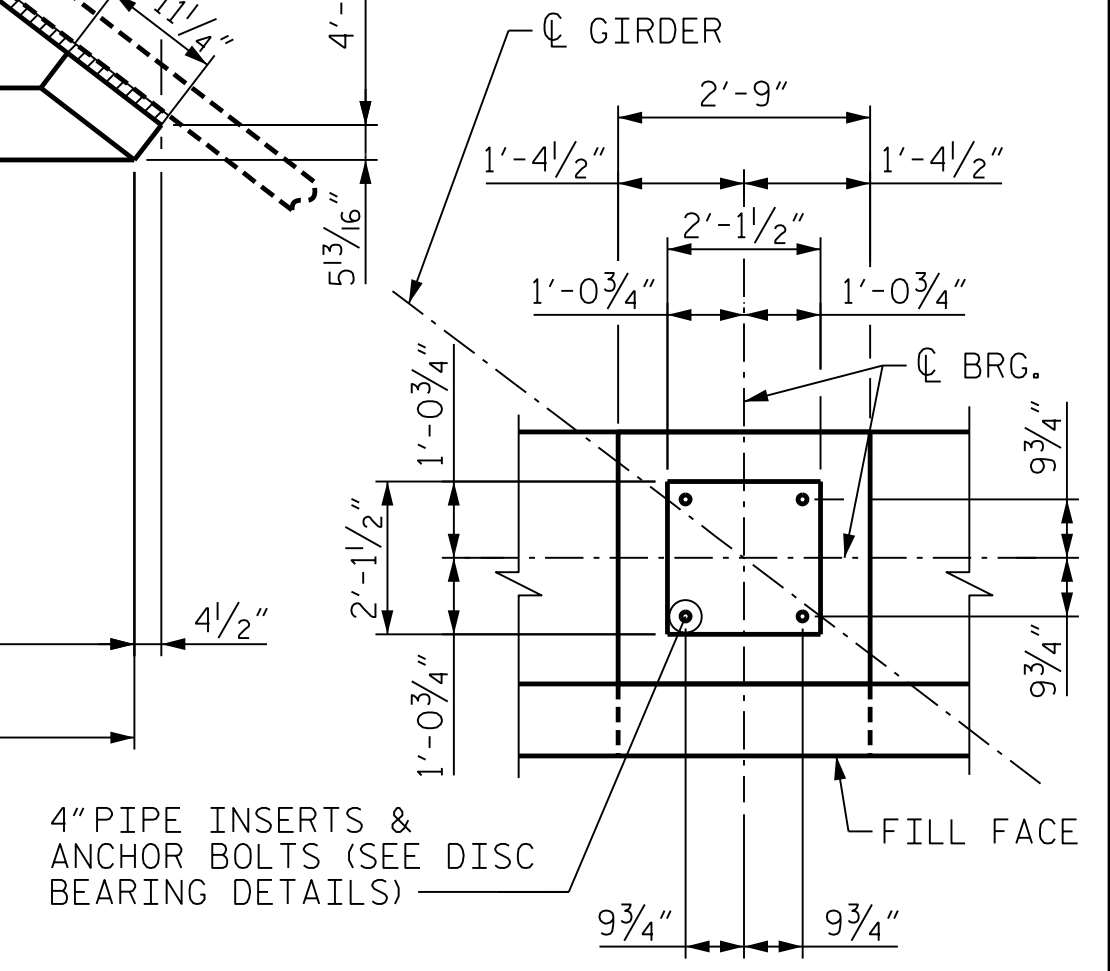
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DES CHK: <u>B. WATSON</u>	DATE: <u>05/21</u>	CHK BY: <u>H. ABU NIMEH</u>	DATE: <u>07/21</u>



NOTES
 FOR SECTIONS A-A AND B-B, VIEW C-C, DETAILS "B" AND "C" AND ADDITIONAL NOTES, SEE "END BENT 1 SECTIONS AND DETAILS" SHEET.
 FOR SECTION D-D, SEE "END BENT 1 CHEEKWALL DETAILS" SHEET.

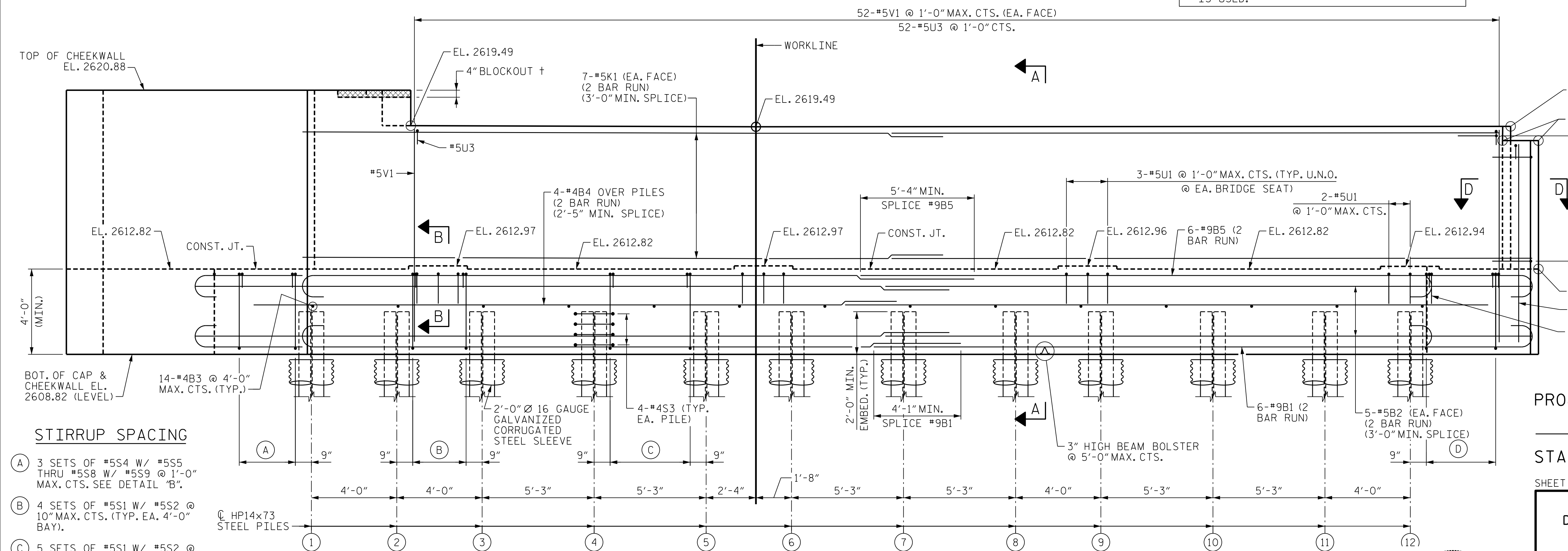
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† THE CONCRETE IN THE SHADED AREA OF THE CHEEKWALL SHALL BE POURED AFTER THE BARRIER RAILS ARE CAST IF SILP FORMING IS USED.



PLAN

DETAIL "A"

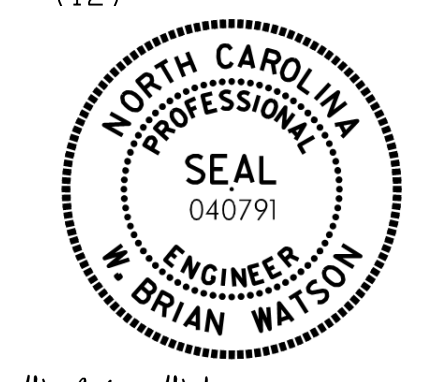


ELEVATION

STIRRUP SPACING

- (A) 3 SETS OF #5S4 W/ #5S5 THRU #5S8 W/ #5S9 @ 1'-0" MAX. CTS. SEE DETAIL "B".
- (B) 4 SETS OF #5S1 W/ #5S2 @ 10" MAX. CTS. (TYP. EA. 4'-0" BAY).
- (C) 5 SETS OF #5S1 W/ #5S2 @ 1'-0" MAX. CTS. (TYP. EA. 5'-3" BAY).
- (D) 3 SETS OF #5S10 W/ #5S11 THRU #5S14 W/ #5S15 @ 1'-0" MAX. CTS. SEE DETAIL "C".

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HAYWOOD COUNTY
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 SHEET 1 OF 3

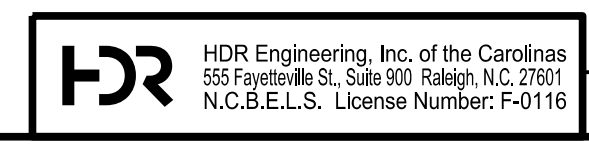


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**SUBSTRUCTURE
 END BENT 1
 PLAN AND ELEVATION**

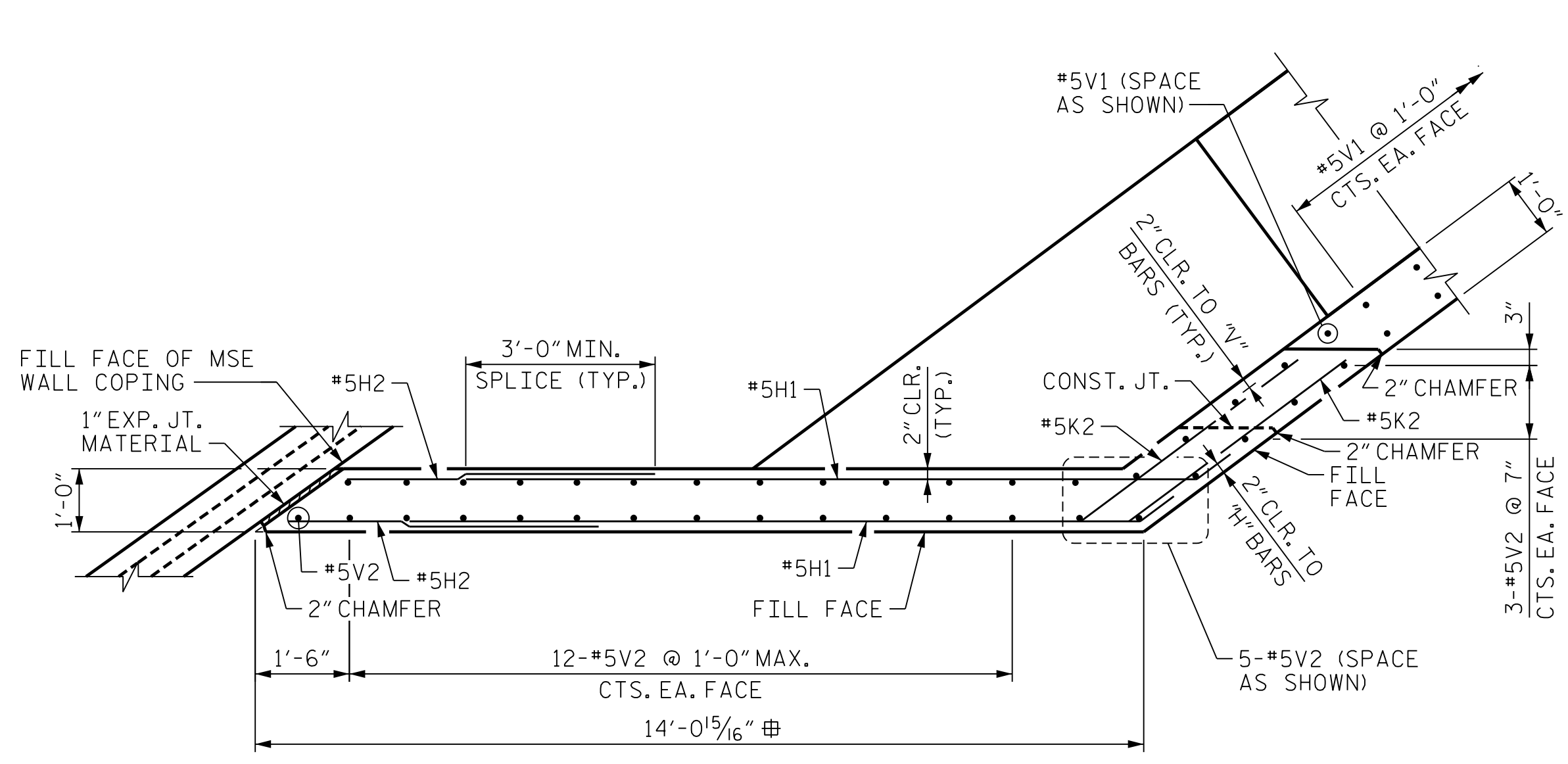
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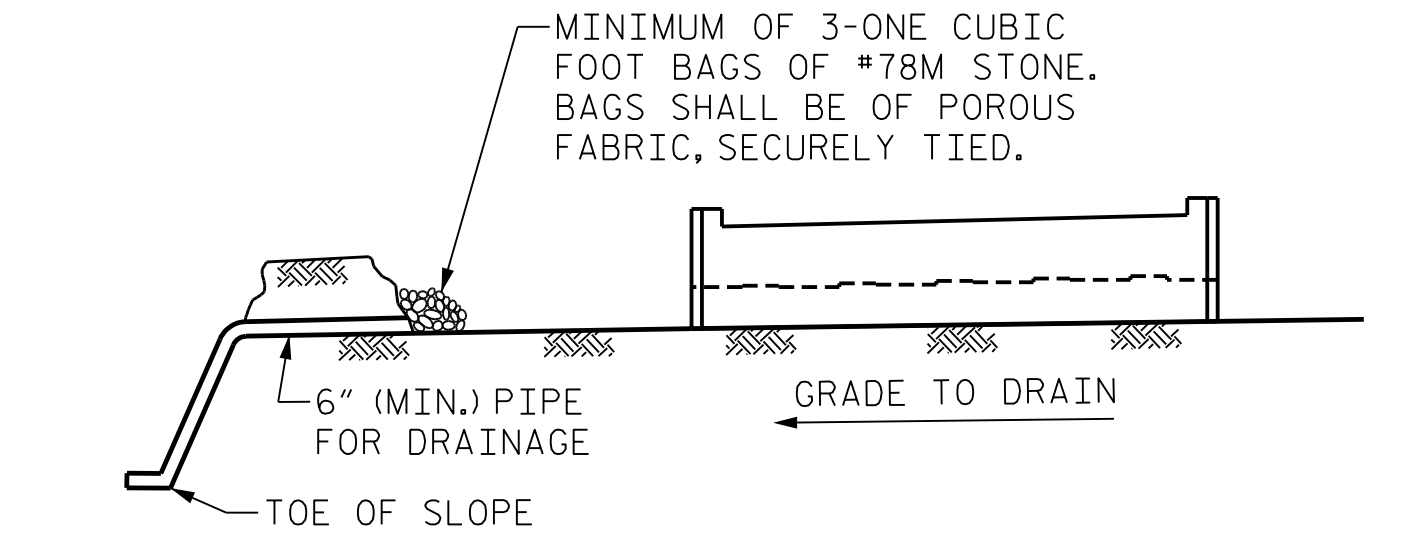
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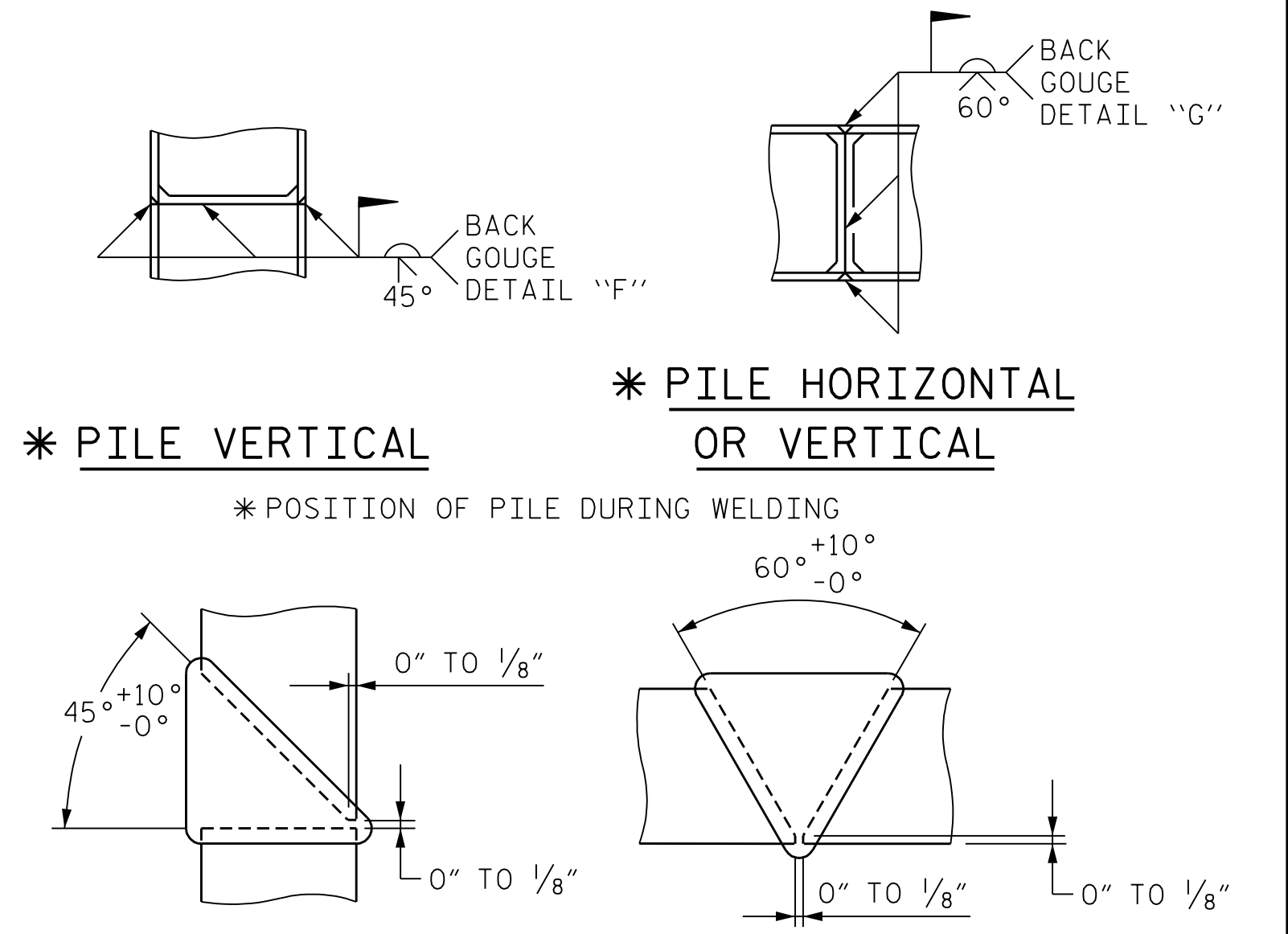


PLAN - CHEEKWALL (W1)

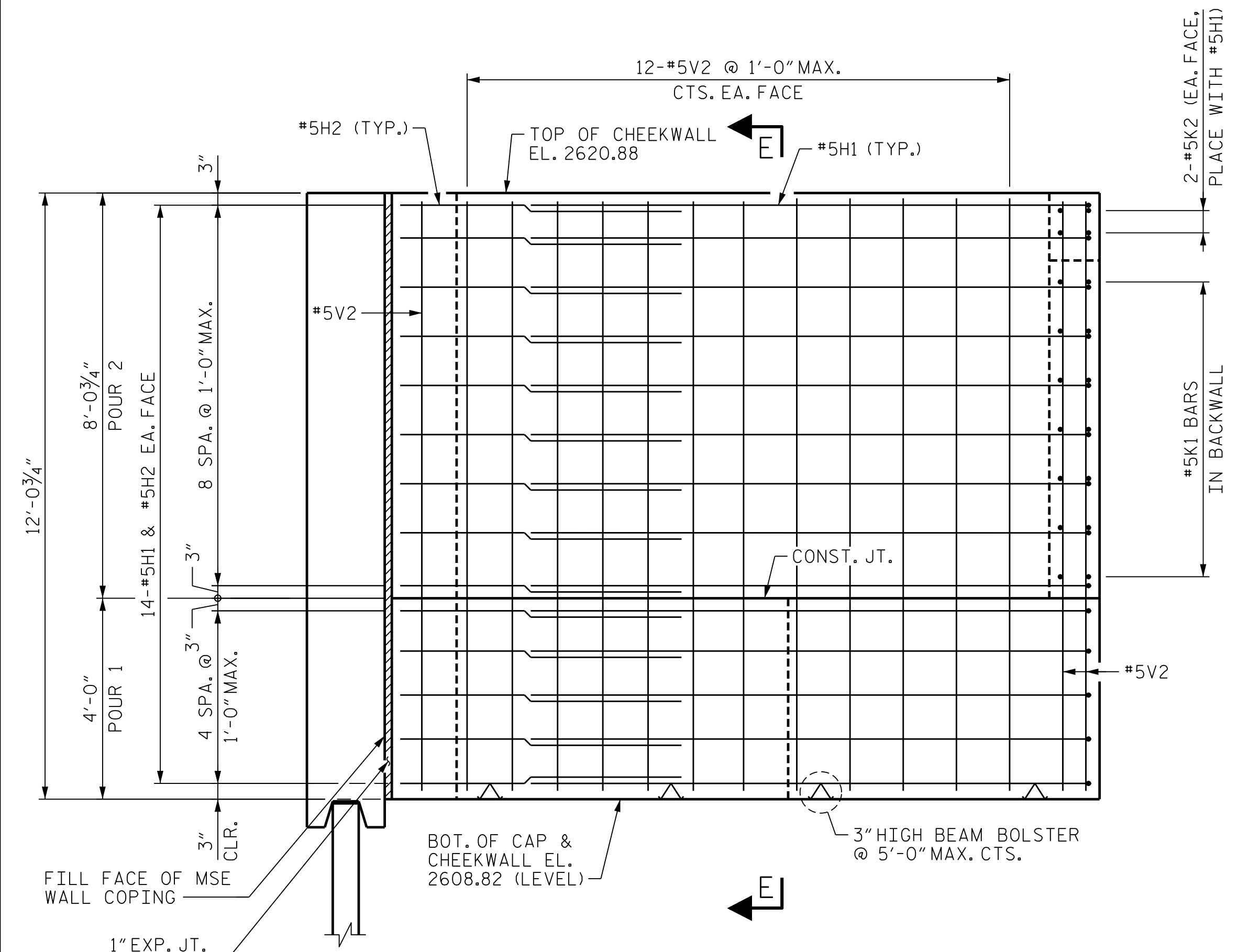


NOTES:
 BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.
 BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT 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 FOR THE SEVERAL PAY ITEMS.

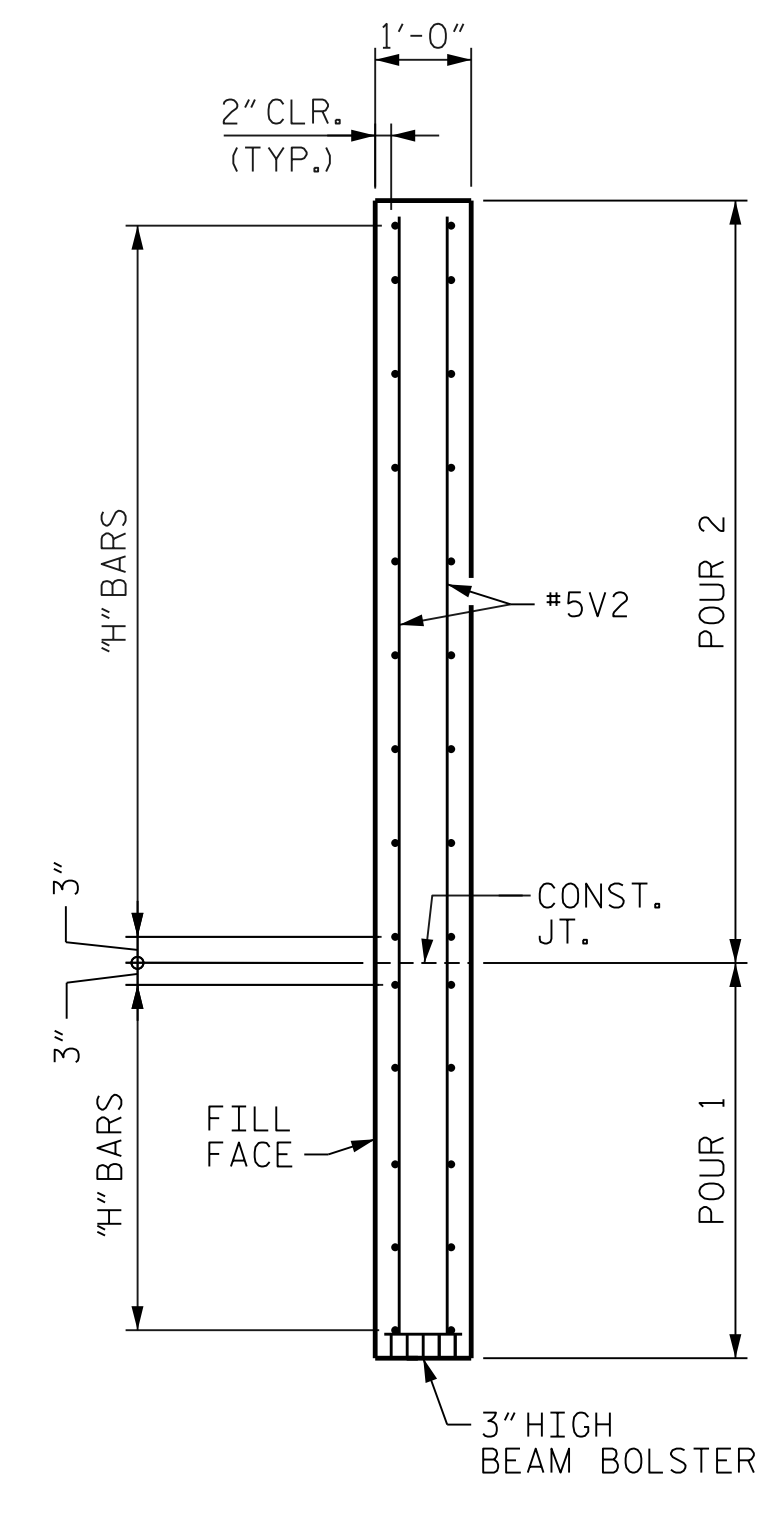
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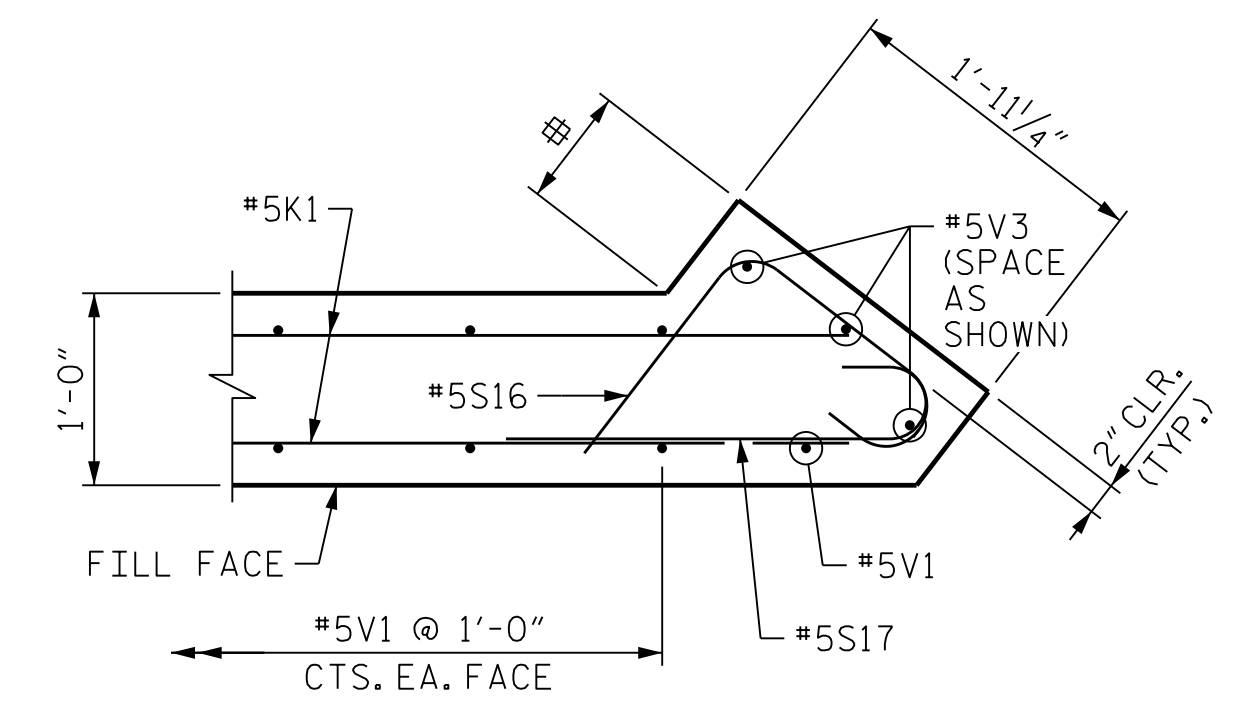
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ELEVATION - CHEEKWALL (W1)



SECTION E-E



SECTION D-D

DIMENSION TO BE FIELD ADJUSTED AS NECESSARY TO PROVIDE 1" EXPANSION JOINT MATERIAL BETWEEN THE MSE RETAINING WALL AND THE CHEEKWALL OR CAP

PROJECT NO. B-3186/B-5898
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 SHEET 2 OF 3

STATE OF NORTH CAROLINA
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**SUBSTRUCTURE
 END BENT 1
 CHEEKWALL DETAILS**



W. Brian Watson 1/24/2022

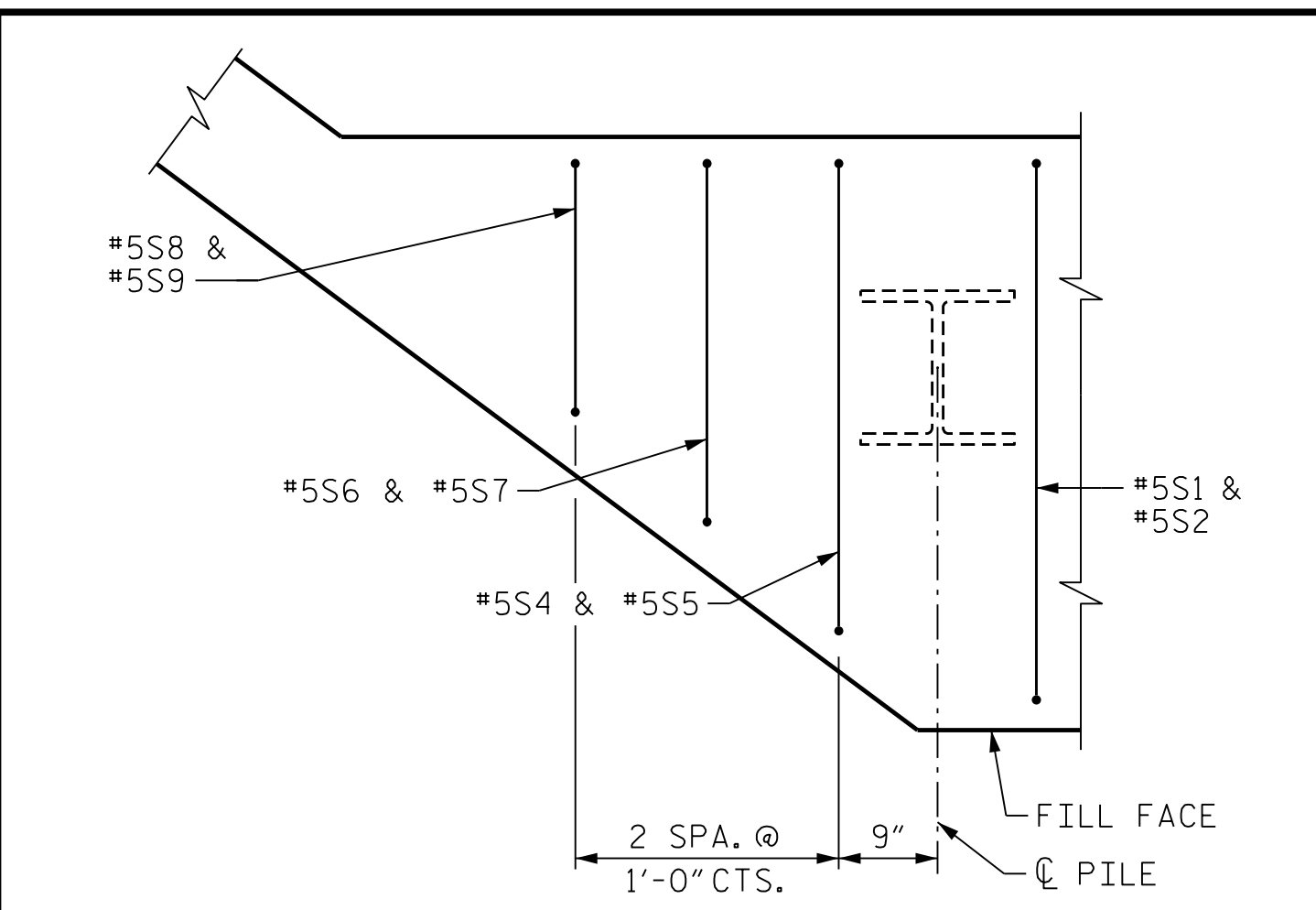
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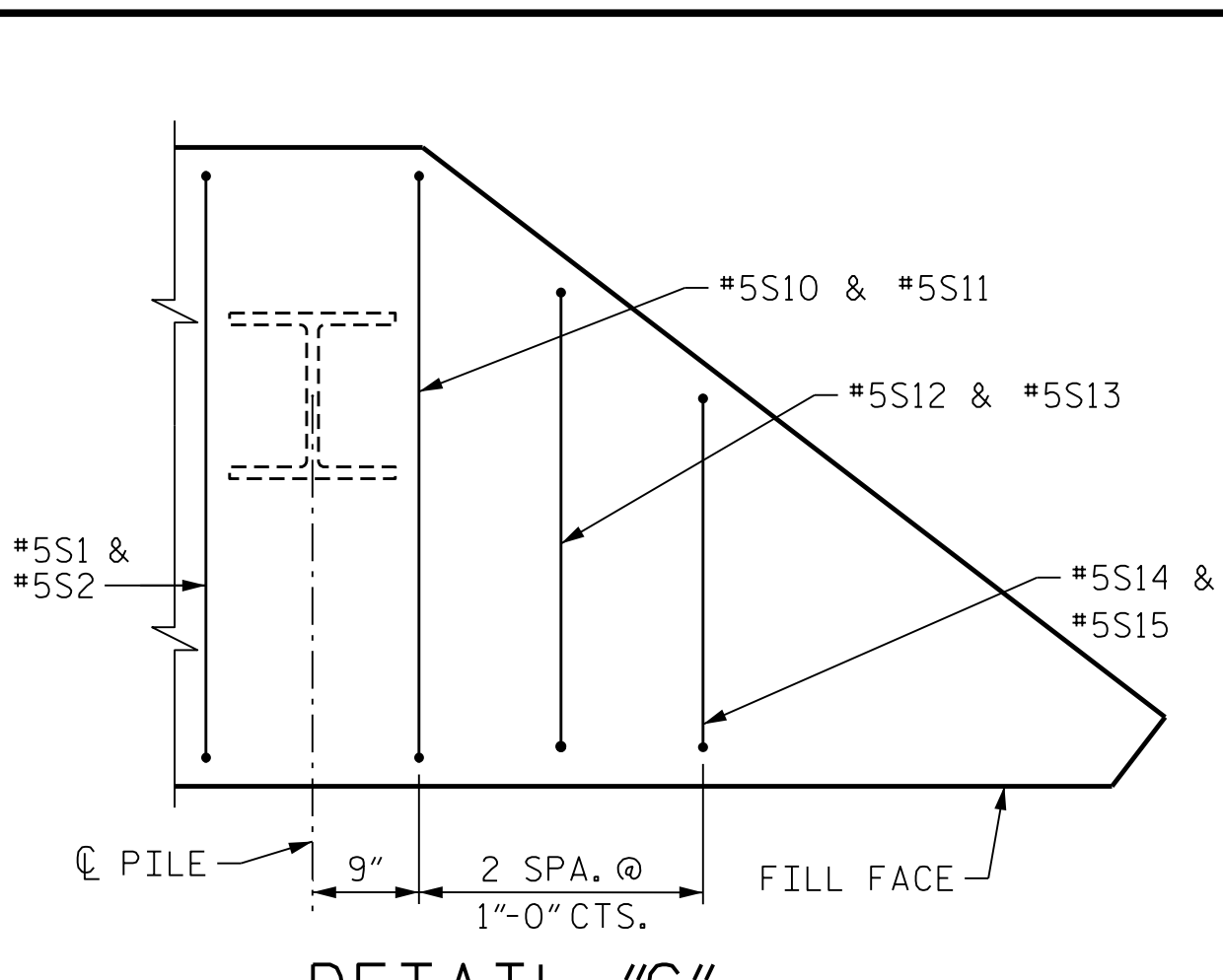
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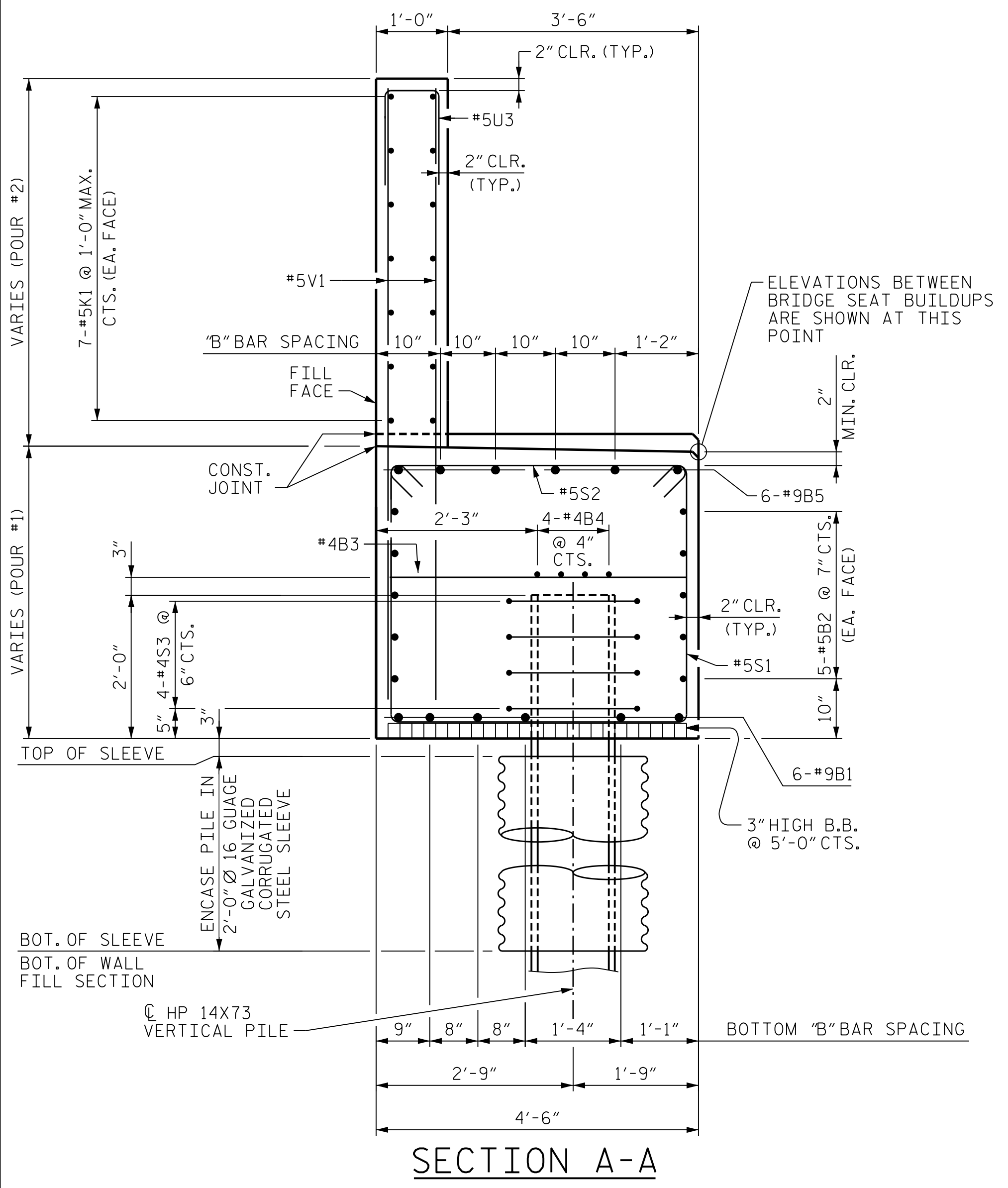
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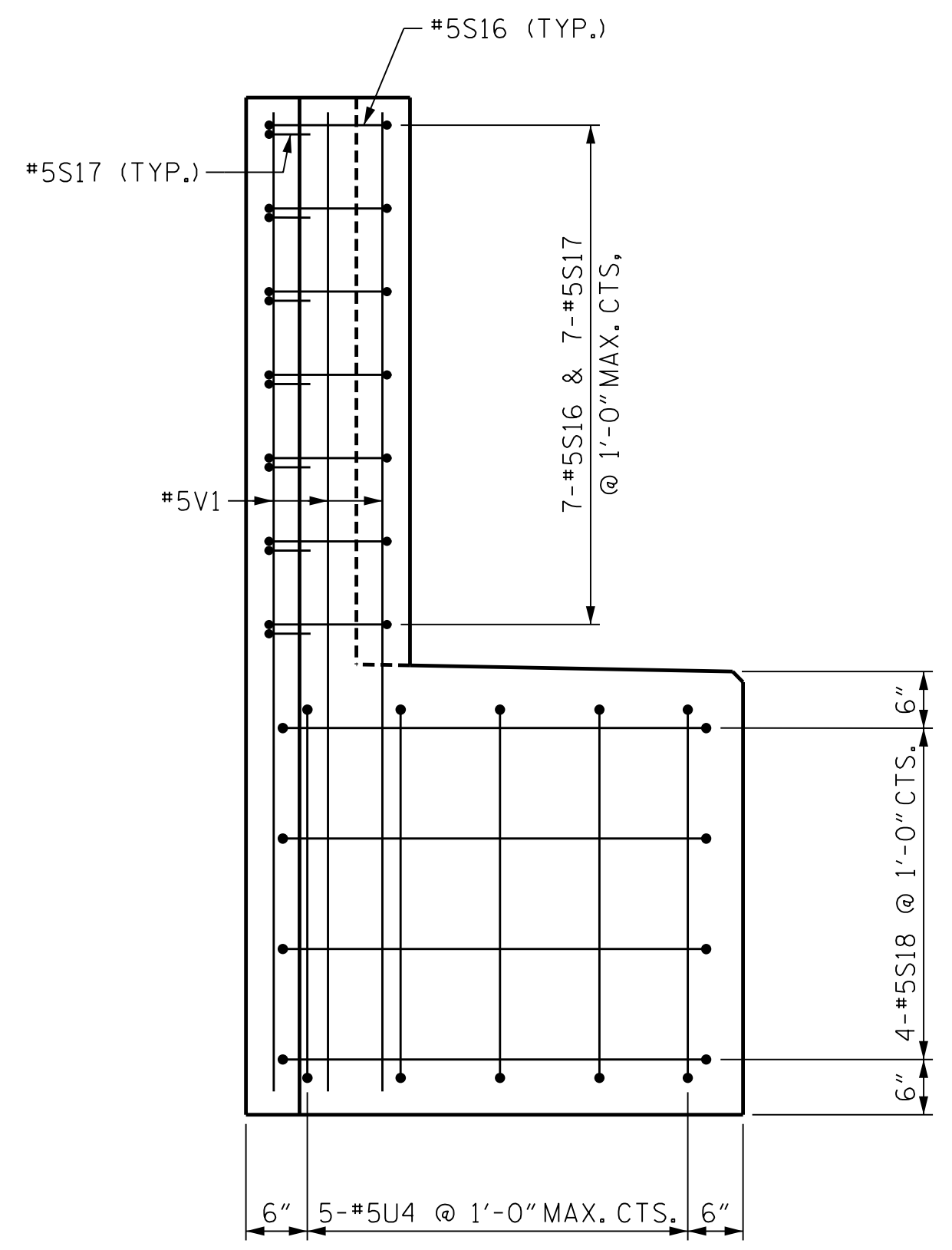
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(*H" & "B" BARS NOT SHOWN FOR CLARITY)



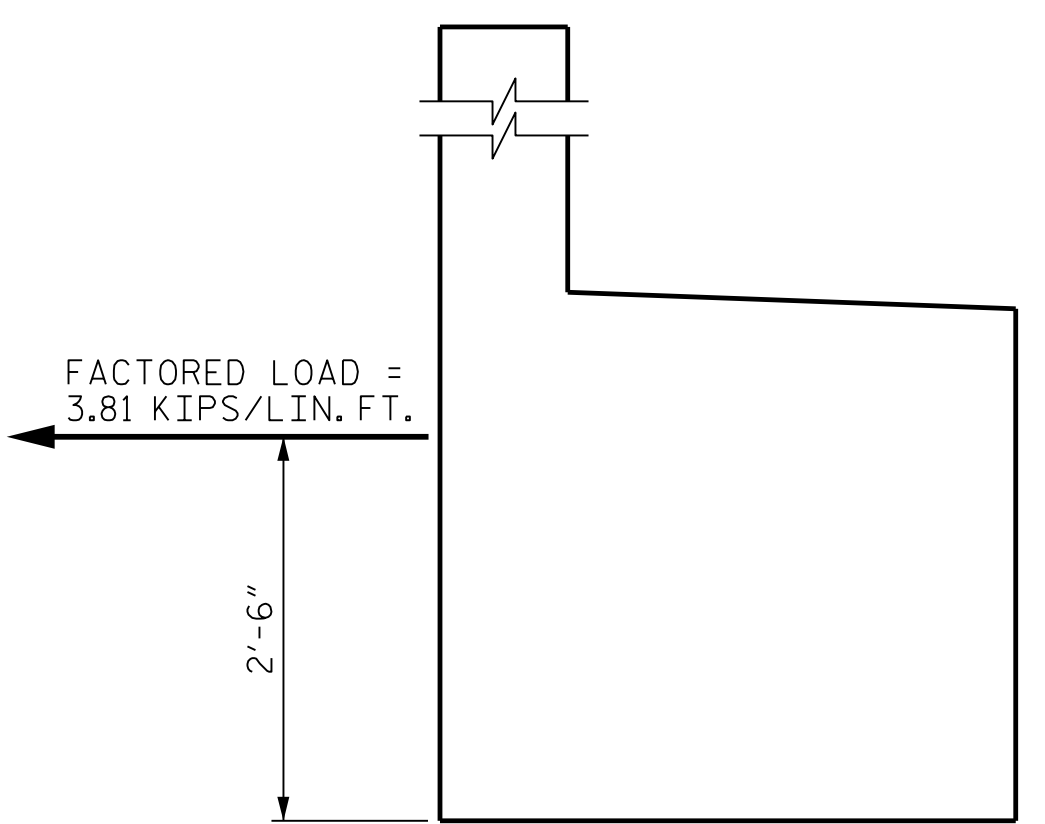
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(*B", S18, AND U4 BARS NOT SHOWN FOR CLARITY)



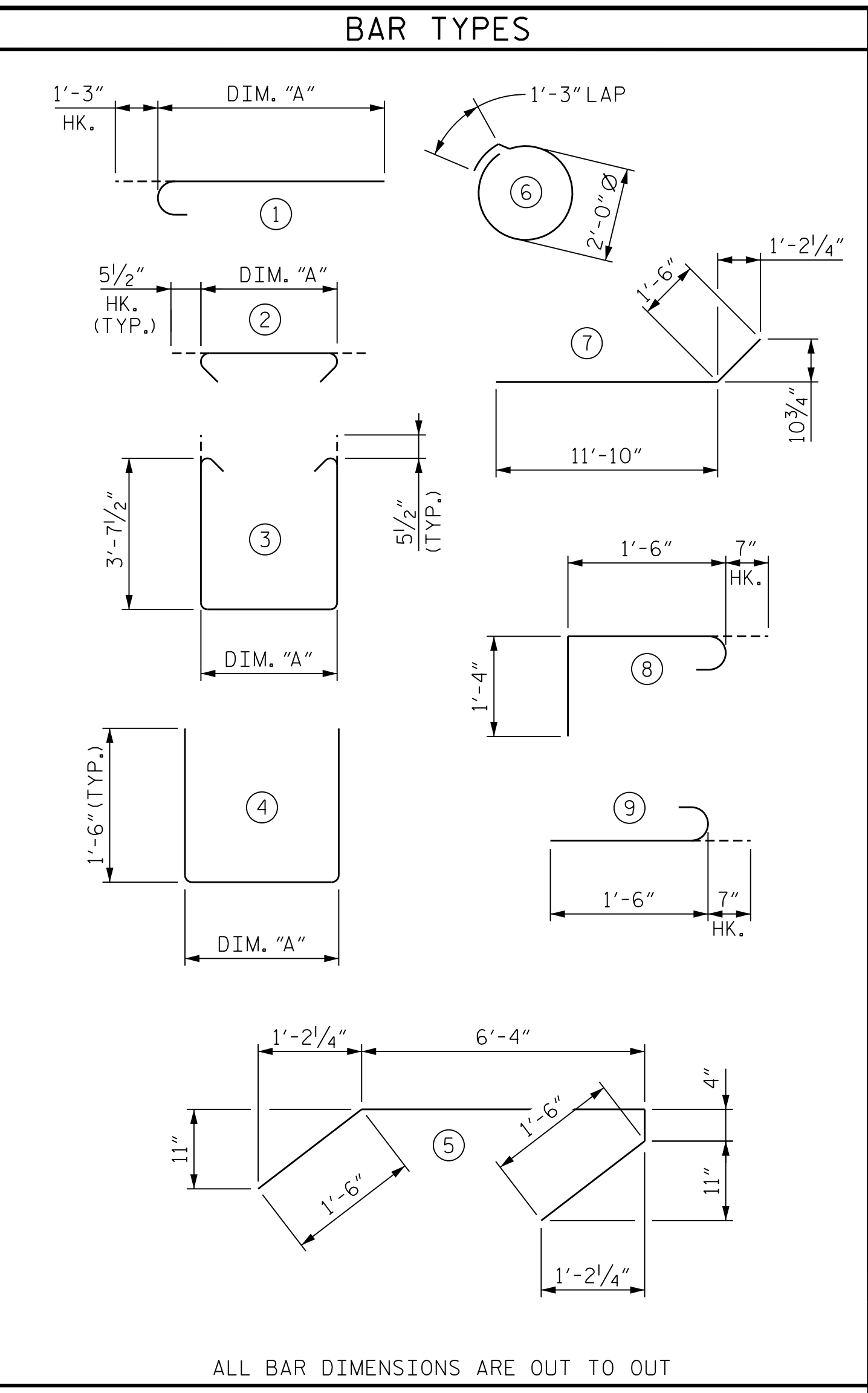
SECTION A-A



VIEW C-C



TIE BACK DETAIL
(SEE MSE RETAINING WALL PLANS FOR NOTES)



NOTES

THE TOP SURFACE 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.

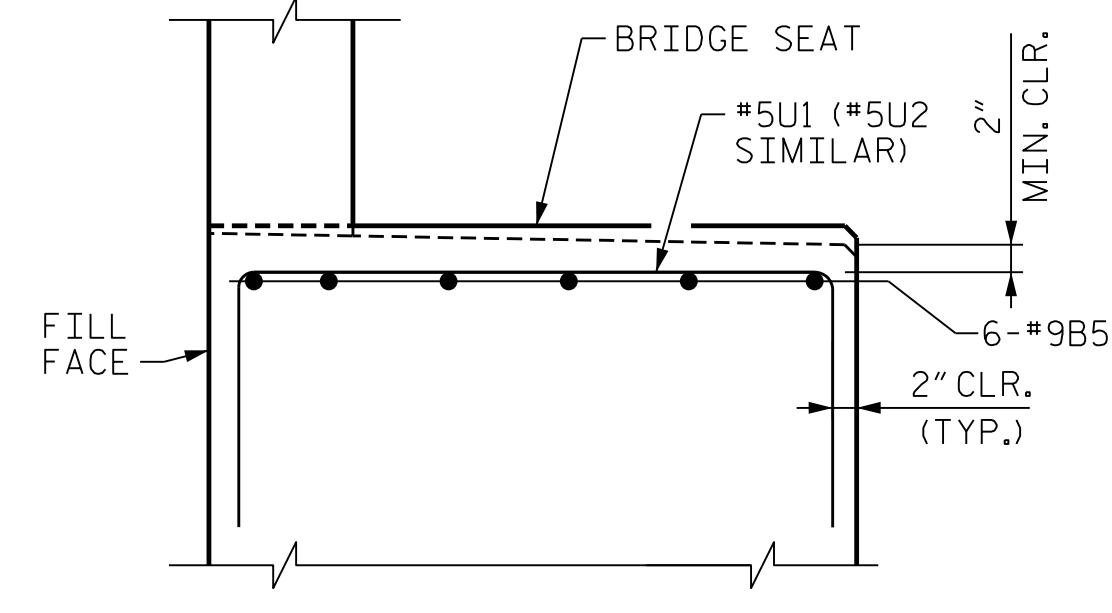
THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

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

BACKWALL SHALL BE PLACED BEFORE APPLYING THE PROTECTIVE COATING.

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

THE 2'-0" Ø 16 GAUGE GALVANIZED CORRUGATED STEEL SLEEVE SHALL MEET THE REQUIREMENTS SPECIFIED IN ARTICLE 1032-3 OF THE STANDARD SPECIFICATIONS AND SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



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

BILL OF MATERIAL						
BAR	NO.	SIZE	TYPE	DIM. "A"	LENGTH	WEIGHT
B1	12	#9	1	31'-1"	32'-4"	1320
B2	20	#5	STR.	--	30'-6"	637
B3	14	#4	STR.	--	4'-2"	39
B4	8	#4	STR.	--	30'-3"	162
B5	12	#9	1	31'-8"	32'-11"	1343
H1	28	#5	7	--	13'-4"	390
H2	28	#5	STR.	--	5'-0"	147
K1	28	#5	STR.	--	30'-5"	889
K2	4	#5	STR.	--	4'-5"	19
S1	50	#5	3	4'-2"	12'-4"	644
S2	50	#5	2	4'-2"	5'-1"	266
S3	48	#4	6	--	7'-7"	244
S4	1	#5	3	2'-2"	10'-4"	11
S5	1	#5	2	2'-2"	3'-1"	4
S6	1	#5	3	2'-11"	11'-1"	12
S7	1	#5	2	2'-11"	3'-10"	4
S8	1	#5	3	3'-8"	11'-10"	13
S9	1	#5	2	3'-8"	4'-7"	5
S10	1	#5	3	4'-1"	12'-3"	13
S11	1	#5	2	4'-1"	5'-0"	6
S12	1	#5	3	3'-4"	11'-6"	12
S13	1	#5	2	3'-4"	4'-3"	5
S14	1	#5	3	2'-7"	10'-9"	12
S15	1	#5	2	2'-7"	3'-6"	4
S16	7	#5	8	--	3'-5"	25
S17	7	#5	9	--	2'-1"	16
S18	4	#5	5	--	9'-8"	41
U1	11	#5	4	4'-2"	7'-2"	83
U2	1	#5	4	3'-8"	6'-8"	7
U3	52	#5	4	8"	3'-8"	199
U4	5	#5	4	3'-6"	6'-6"	34
V1	106	#5	STR.	--	10'-0"	1106
V2	36	#5	STR.	--	11'-11"	448
V3	3	#5	STR.	--	9'-4"	30
REINFORCING STEEL						LBS. 8,190
CLASS A CONCRETE						
POUR #1 (CAP, LOWER PART OF WINGS)					CU. YDS.	40.1
POUR #2 (BACKWALL & UPPER PART OF WINGS)					CU. YDS.	18.6
TOTAL					CU. YDS.	58.7
HP 14x73 STEEL PILES NO. 12					LIN. FT.	840
PILE DRIVING EQUIPMENT SETUP FOR HP14x73 STEEL PILES					EA.	12

PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -Y1RT-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 1
 SECTIONS AND DETAILS**



W. Brian Watson 1/24/2022

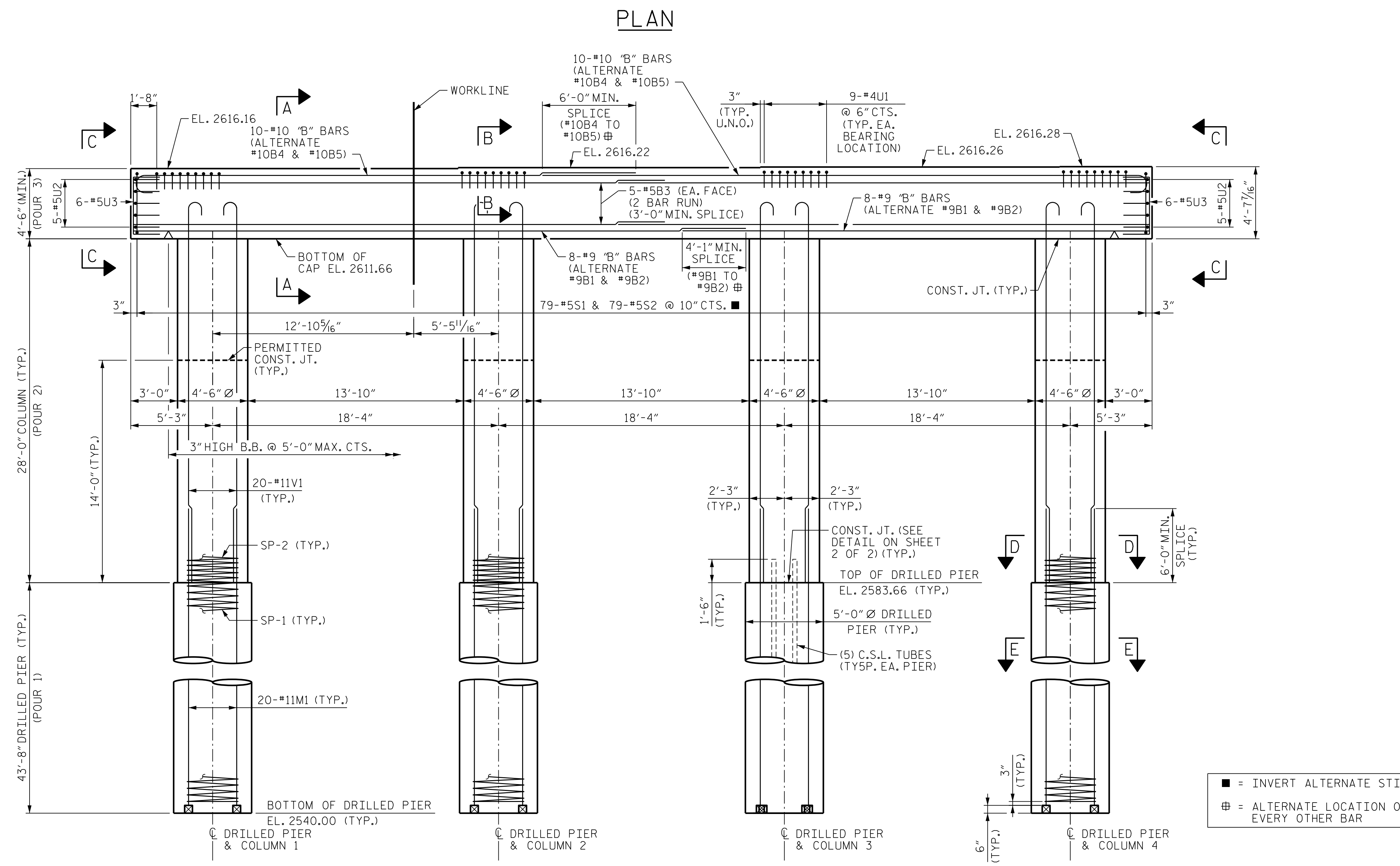
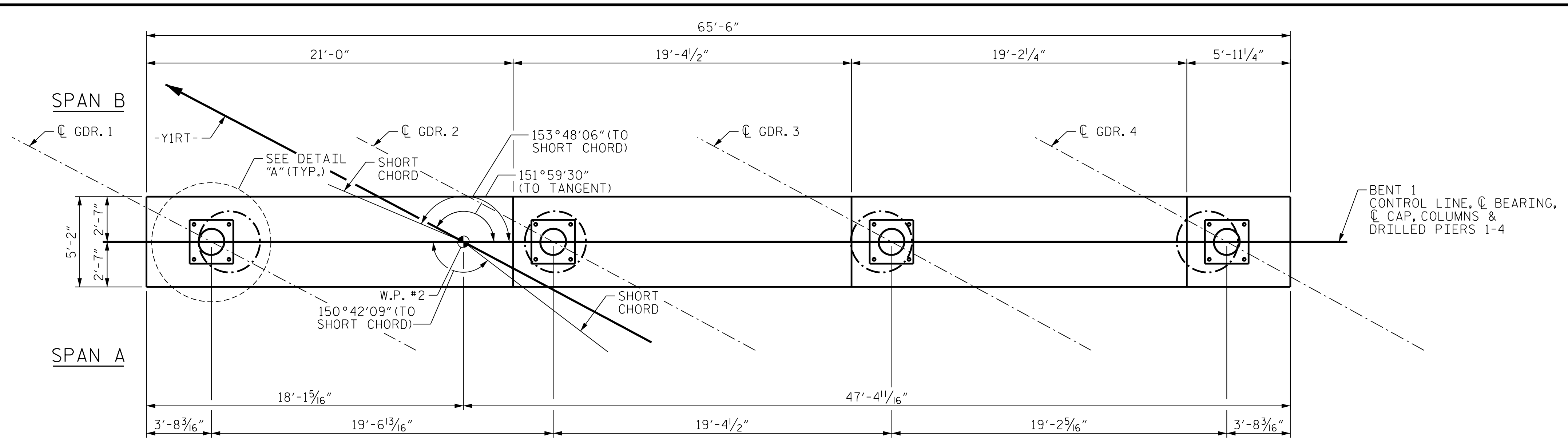
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DES BY: N. DAVIS	DATE: 06/21	DWG BY: B. PETERSON	DATE: 06/21
DES CHK: R. BECK	DATE: 07/21	CHK BY: R. BECK	DATE: 07/21

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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SHEET NO. 502-38
 TOTAL SHEETS 48



NOTES

FOR END ELEVATIONS AND SECTION VIEWS SEE SHEET 2 OF 2.

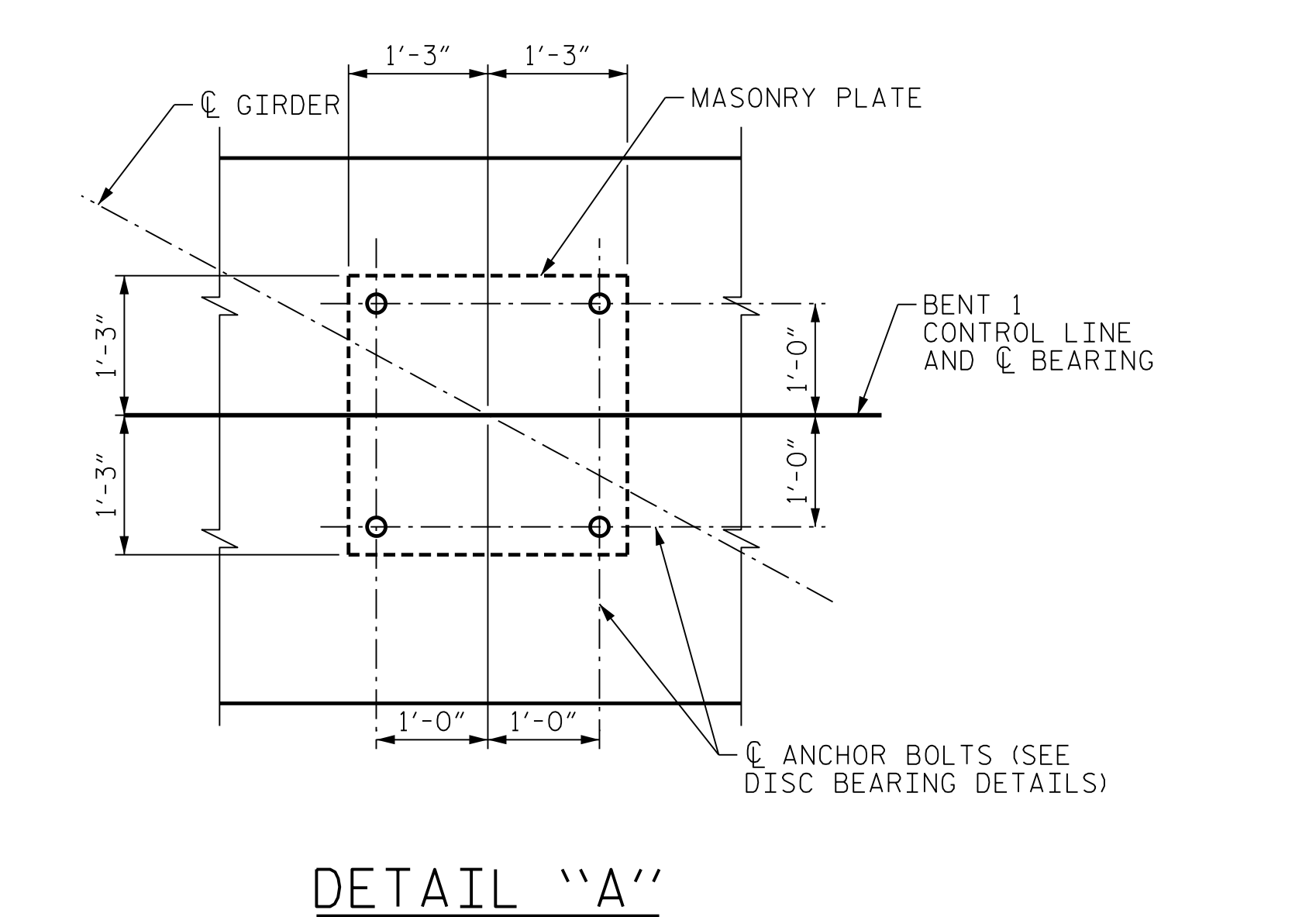
STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR ANCHOR BOLTS.

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. B-3186/B-5898

HAYWOOD COUNTY

STATION: 27+54.43 -Y1RT-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUBSTRUCTURE
BENT 1
PLAN AND ELEVATION**



■ = INVERT ALTERNATE STIRRUPS
= ALTERNATE LOCATION OF SPLICE EVERY OTHER BAR

W. Brian Watson 1/24/2022

REVISIONS						SHEET NO. 502-39
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	TOTAL SHEETS 48
2	--	--	4	--	--	

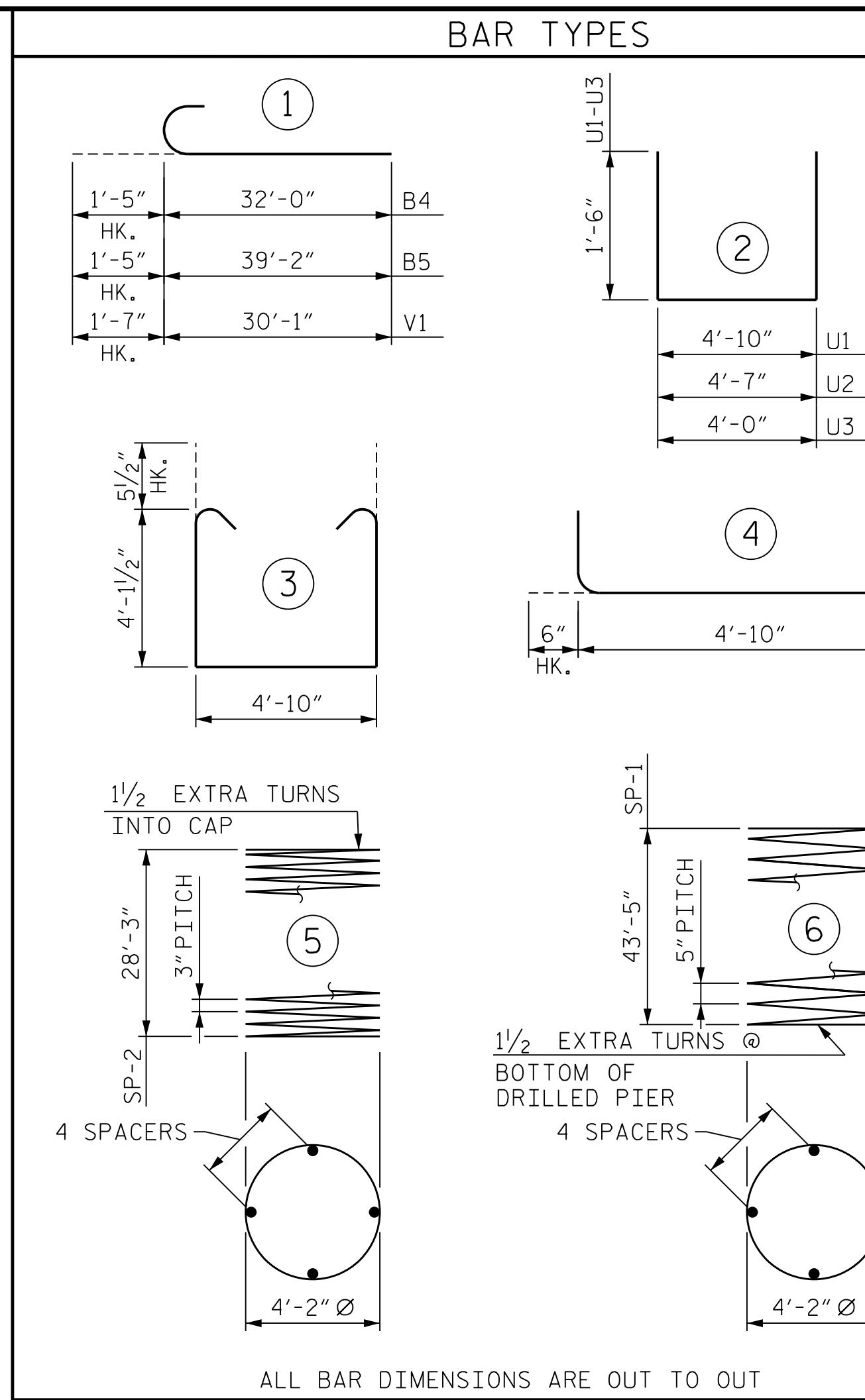
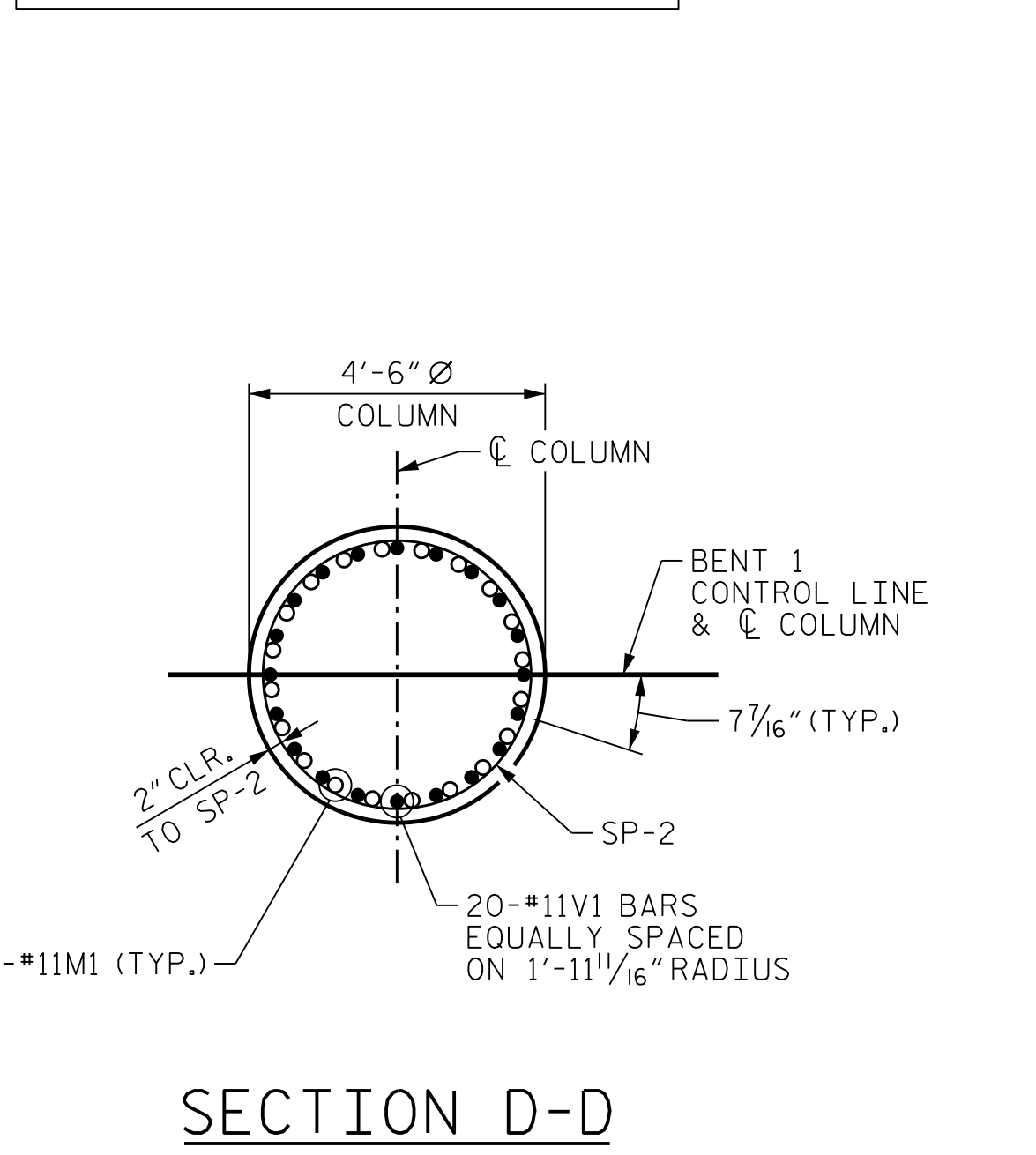
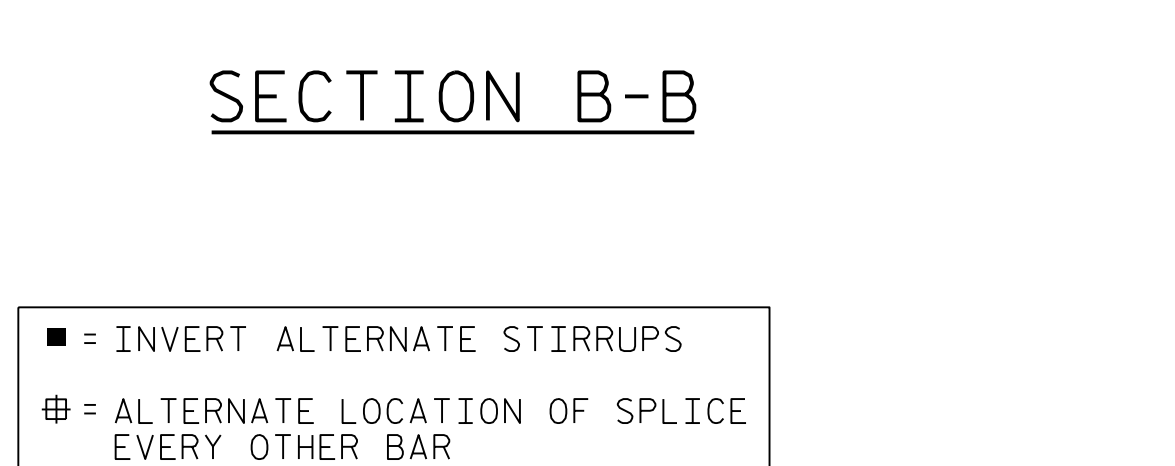
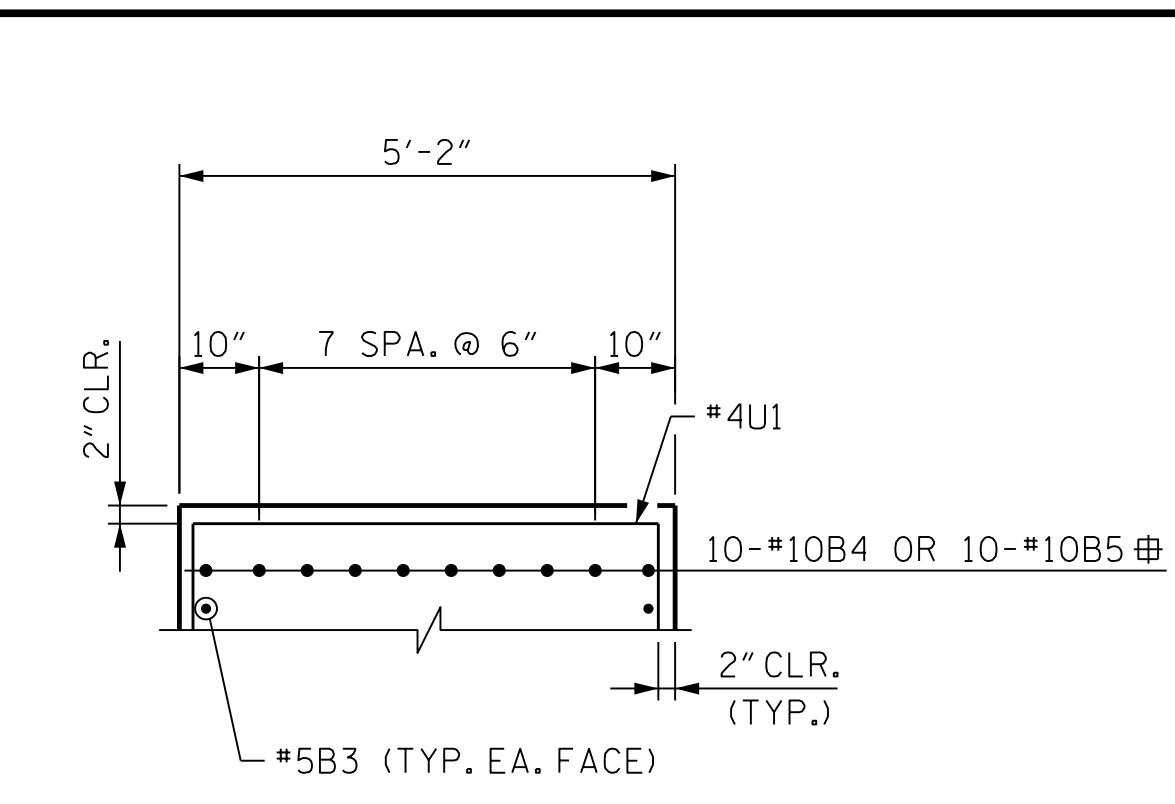
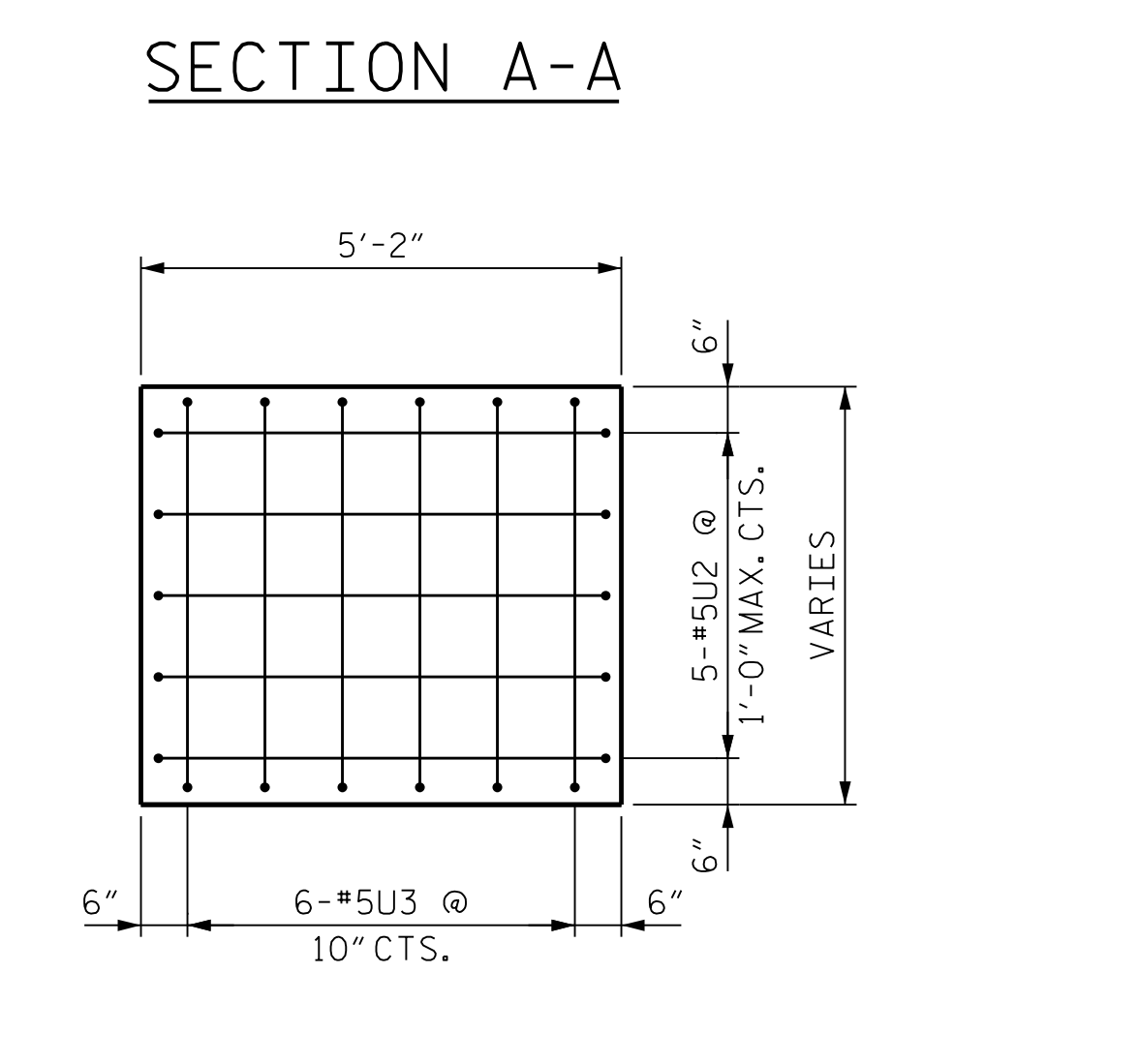
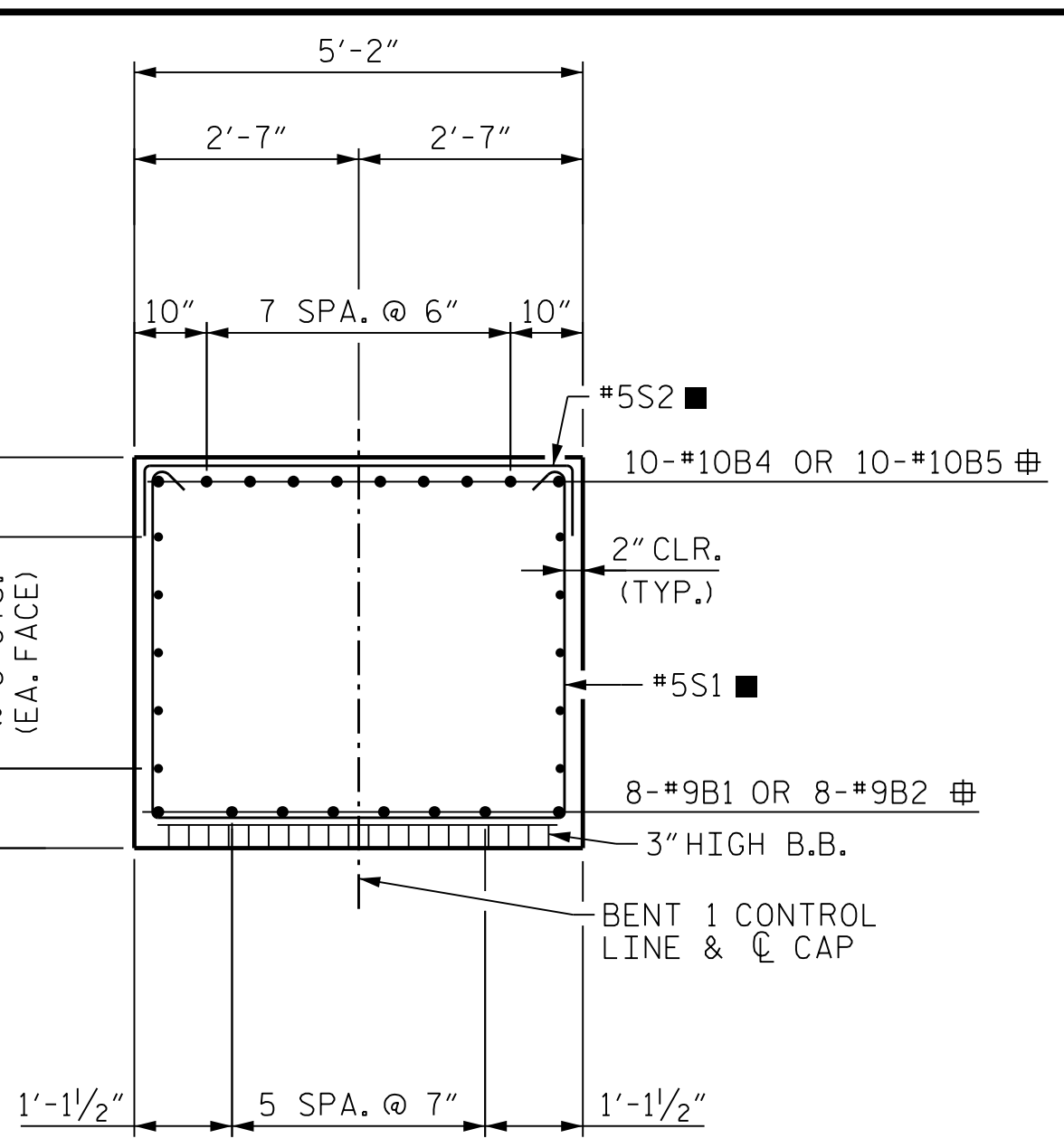
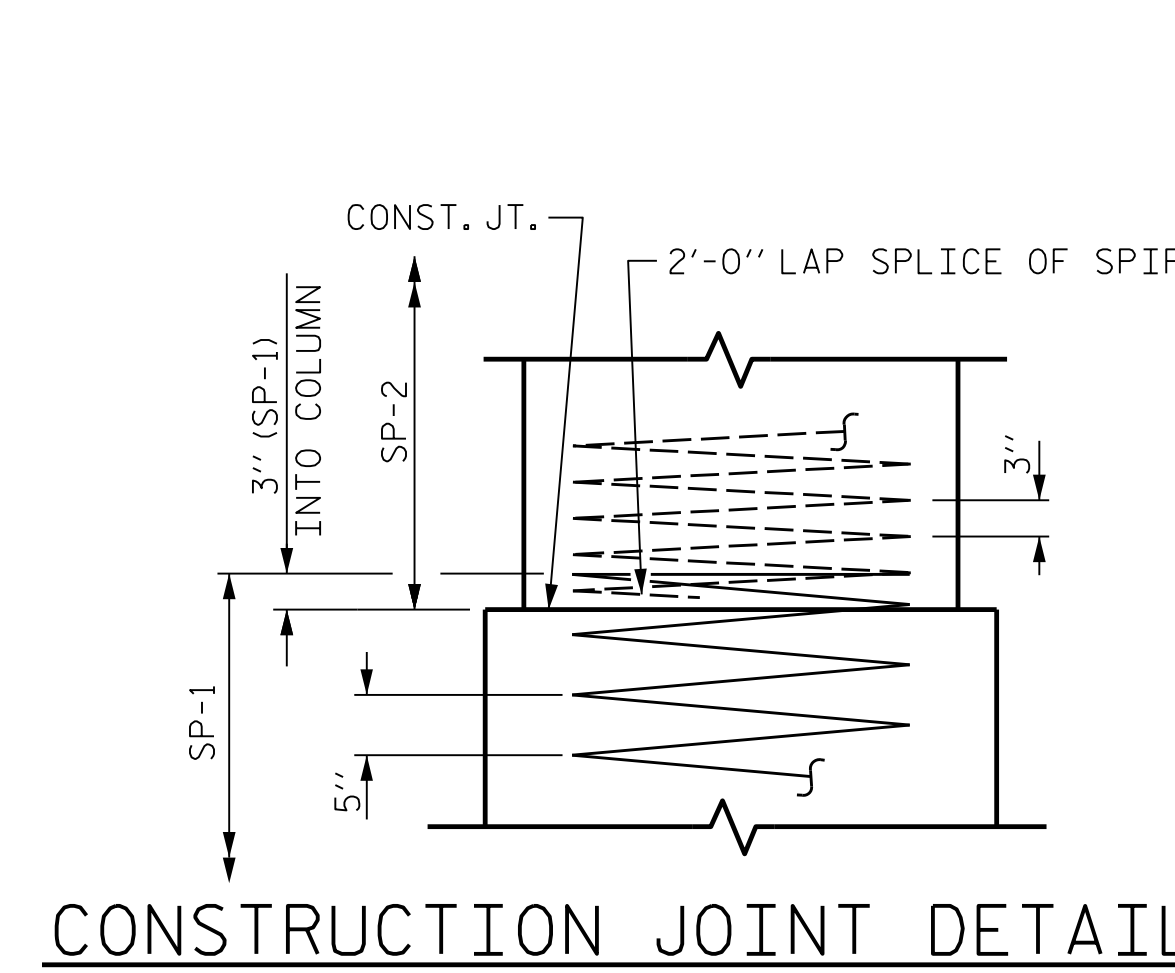
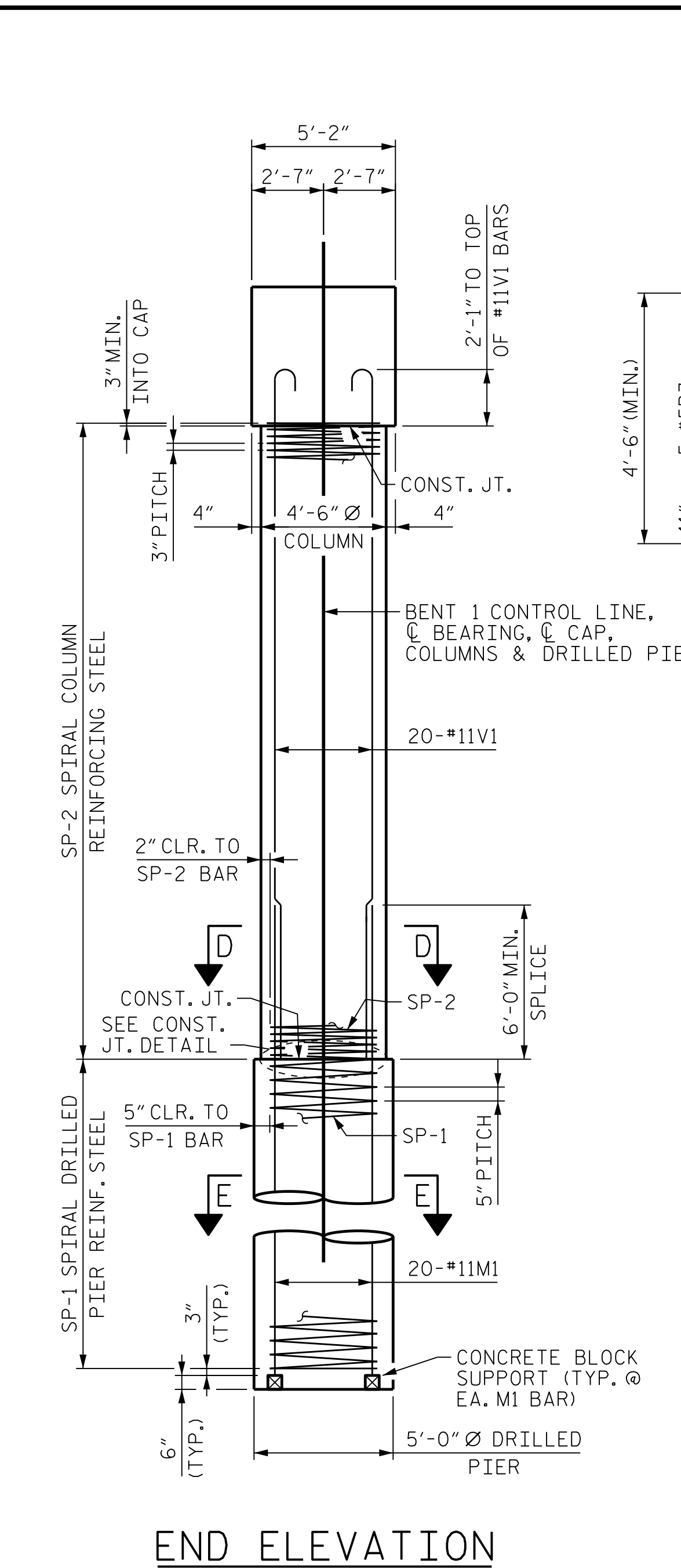
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DES BY: R. BECK	DATE: 05/21	DWG BY: D. CARTER	DATE: 05/21
DES CHK: S. NIFONG	DATE: 06/21	CHK BY: R. BECK	DATE: 06/21

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BILL OF MATERIAL					
BENT 1					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	8	#9	STR 39'-6"	1075	
B2	8	#9	STR 29'-9"	809	
B3	20	#5	STR 34'-1"	711	
B4	10	#10	1 33'-5"	1438	
B5	10	#10	1 40'-7"	1746	
M1	80	#11	STR 52'-2"	22173	
S1	79	#5	3 14'-0"	1154	
S2	79	#5	4 5'-10"	481	
U1	36	#4	2 7'-10"	188	
U2	10	#5	2 7'-7"	79	
U3	12	#5	2 7'-0"	88	
V1	80	#11	1 31'-8"	13460	
REINFORCING STEEL				LBS.	43,402
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
SP-1	4	**	6 1368'-10"	5711	
SP-2	4	*	5 1478'-6"	3951	
SPIRAL REINF. STEEL				LBS.	9,662
CLASS A CONCRETE					
POUR 2 (COLUMNS)				CU. YDS.	66.0
POUR 3 (CAP)				CU. YDS.	57.1
TOTAL CLASS A CONCRETE				CU. YDS.	123.1
DRILLED PIER CONCRETE					
POUR 1 (DRILLED PIERS)				CU. YDS.	127.0
CSL TUBES				LIN. FT.	903.4
DRILLED PIERS IN SOIL				LIN. FT.	162.6
DRILLED PIERS NOT IN SOIL				LIN. FT.	12.0

* THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

** THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -Y1RT-
 SHEET 2 OF 2



W. Brian Watson 1/24/2022

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 BENT 1
 SECTIONS AND DETAILS**

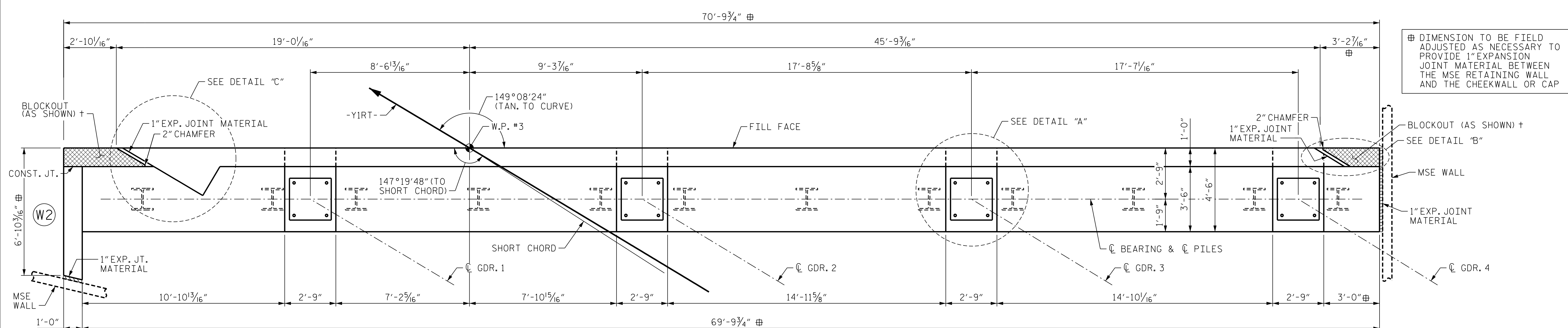
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NO.	BY:	DATE:	NO.	BY:	DATE:
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2	--	--	4	--	--

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**DOCUMENT NOT CONSIDERED FINAL
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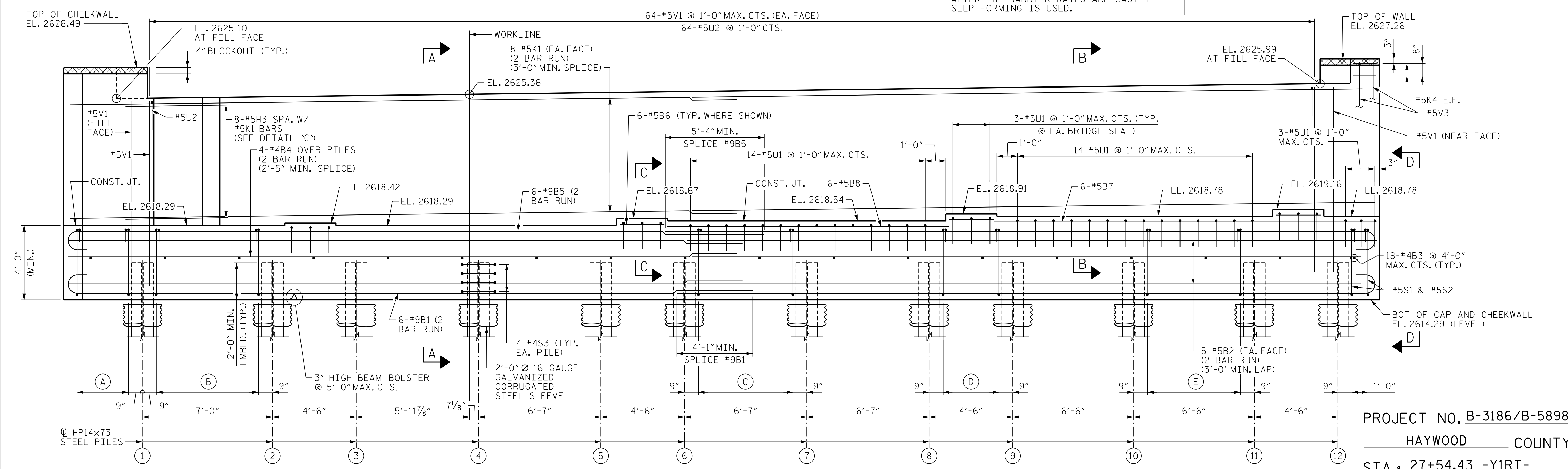
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DES CHK: S. NIFONG	DATE: 06/21	CHK BY: R. BECK	DATE: 06/21

SHEET NO.	TOTAL SHEETS
502-40	48



PLAN

† THE CONCRETE IN THE SHADED AREA OF THE CHEEKWALL AND BACKWALL SHALL BE POURED AFTER THE BARRIER RAILS ARE CAST IF SILP FORMING IS USED.



ELEVATION

STIRRUP SPACING

- (A) 4 SETS OF #5S1 W/ #5S2 @ 1'-0" CTS.
- (B) 7 SETS OF #5S1 W/ #5S2 @ 11" CTS.
- (C) 7 SETS OF #5S1 W/ #5S2 @ 1'-0" MAX. CTS. (TYP. EA. 6'-7" BAY)
- (D) 4 SETS OF #5S1 W/ #5S2 @ 1'-0" CTS. (TYP. EA. 4'-6" BAY)
- (E) 6 SETS OF #5S1 W/ #5S2 @ 1'-0" CTS. (TYP. EA. 6'-6" BAY)

NOTES

FOR SECTIONS A-A, B-B, AND C-C, VIEW D-D AND ADDITIONAL NOTES, SEE "END BENT 2 SECTIONS AND DETAILS" SHEET.
 FOR DETAILS "A", "B", AND "C" SEE "END BENT 2 CHEEKWALL DETAILS" SHEET.



PROJECT NO. **B-3186/B-5898**
HAYWOOD COUNTY
 STA.: **27+54.43 -Y1RT-**

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 2
 PLAN AND ELEVATION**

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
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2	--	--	4	--	--	48	

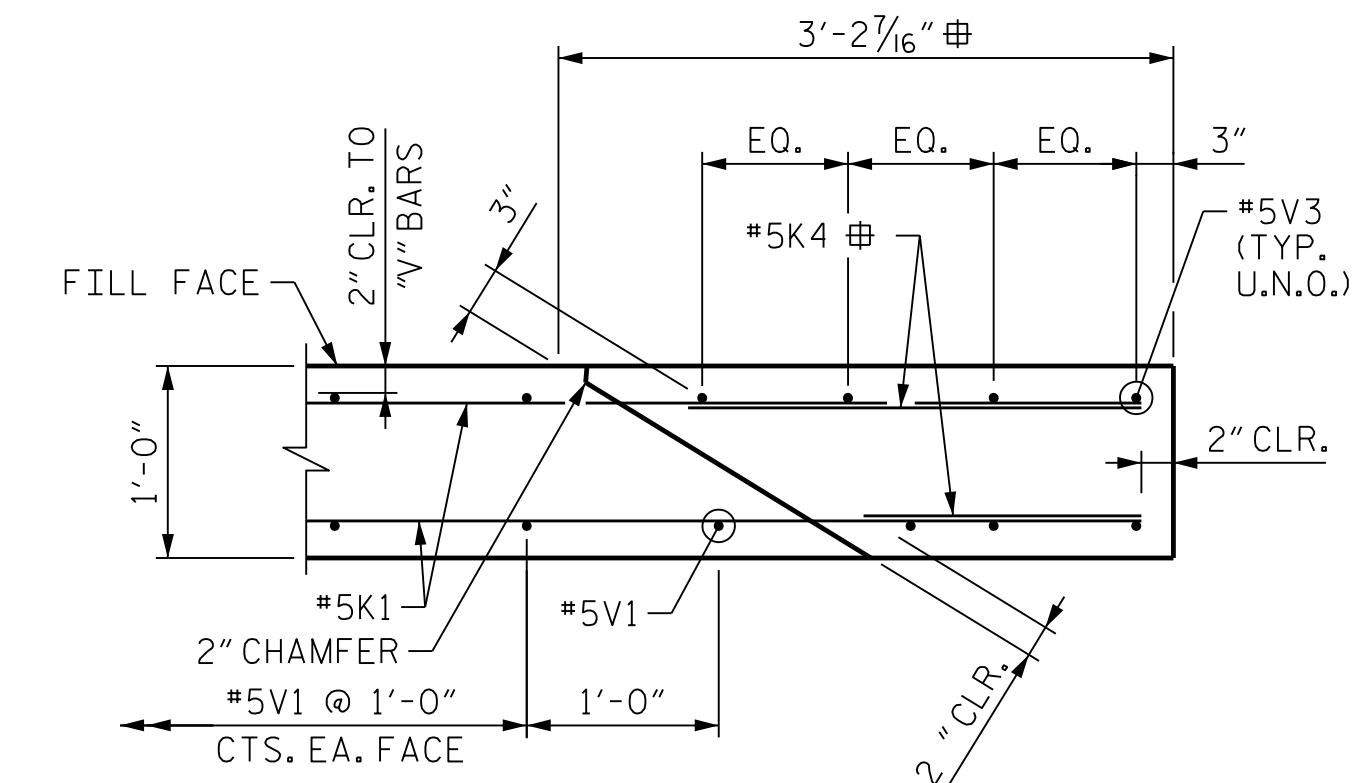
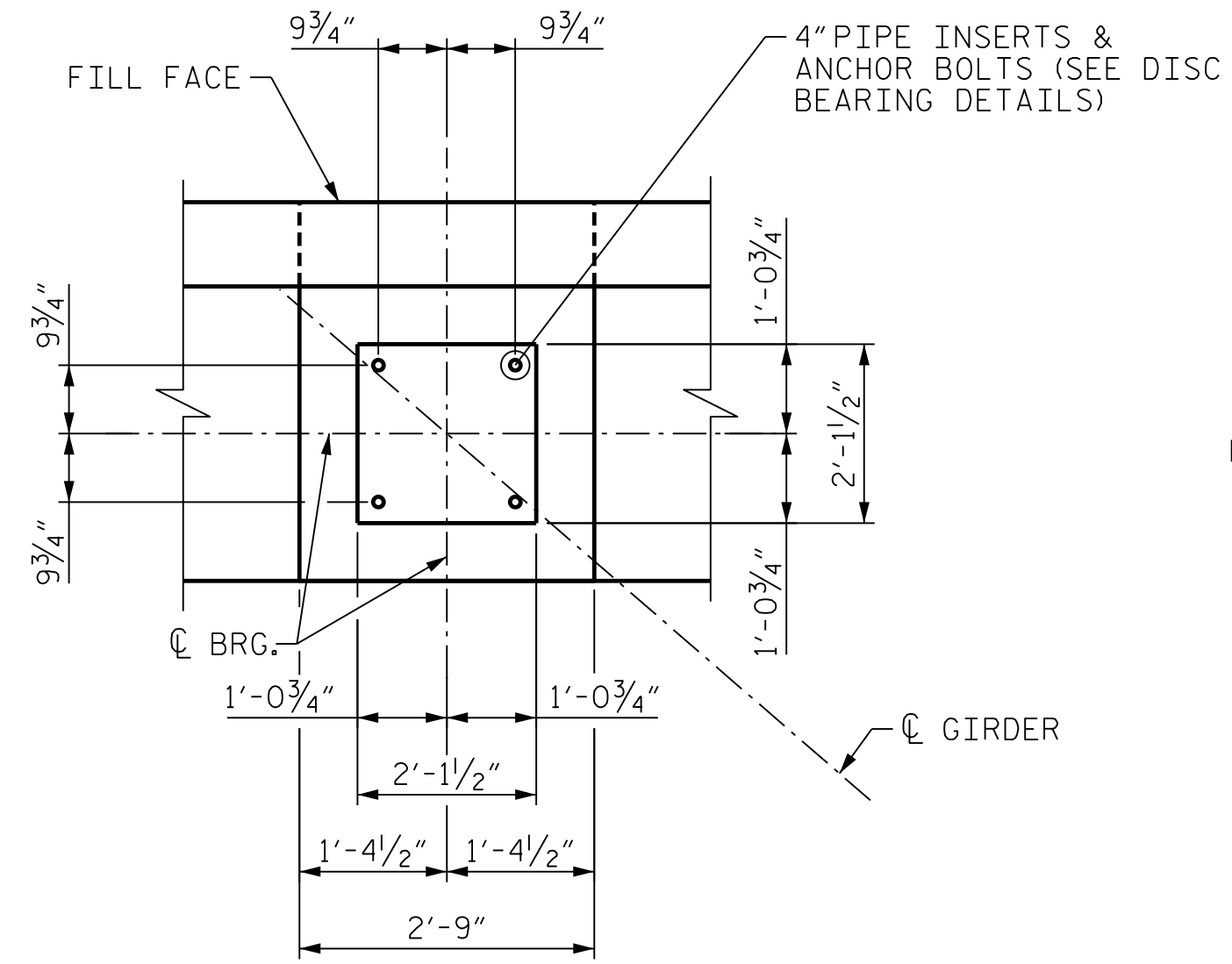
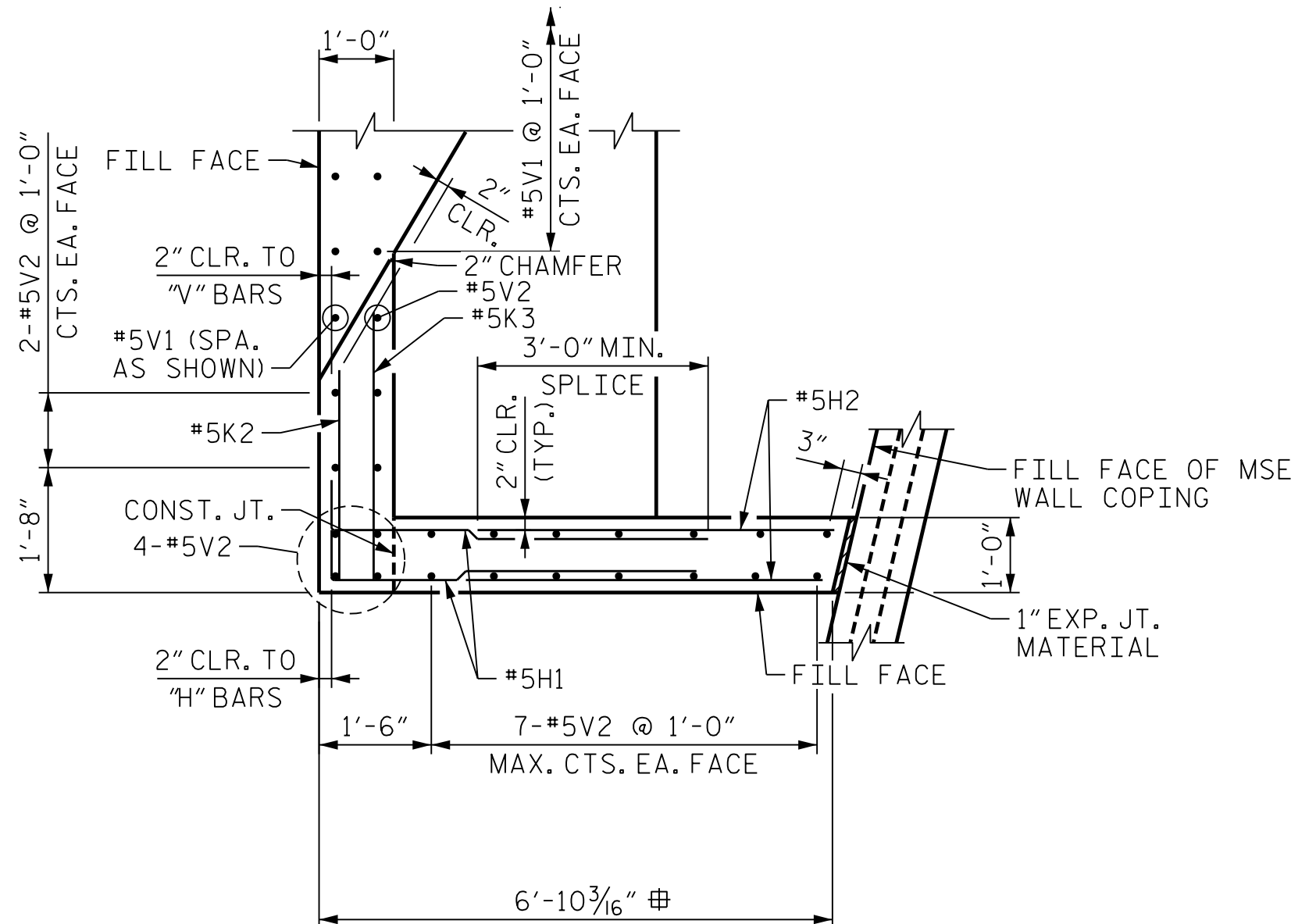
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DES CHK: R. BECK	DATE: 07/21	CHK BY: R. BECK	DATE: 07/21

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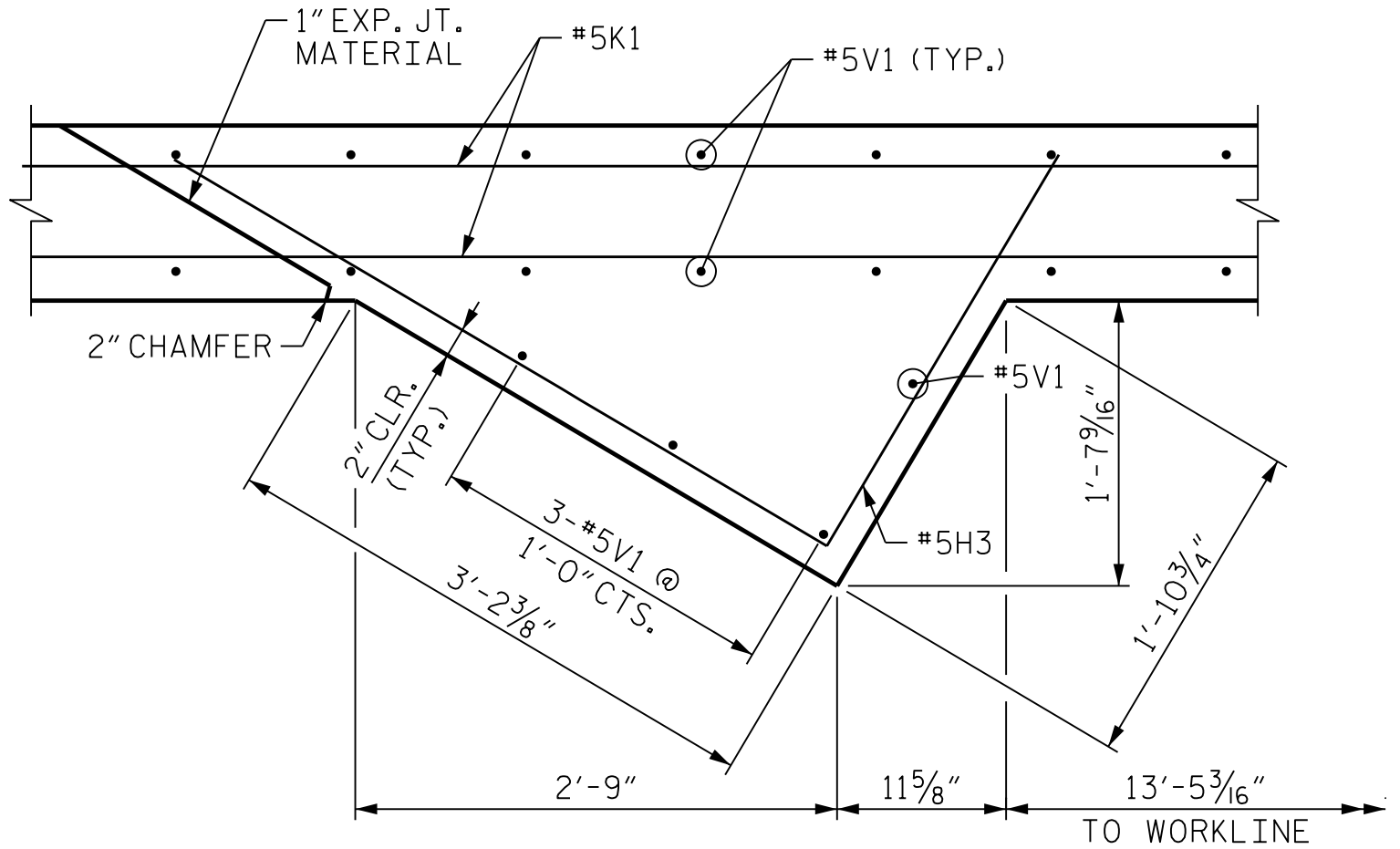
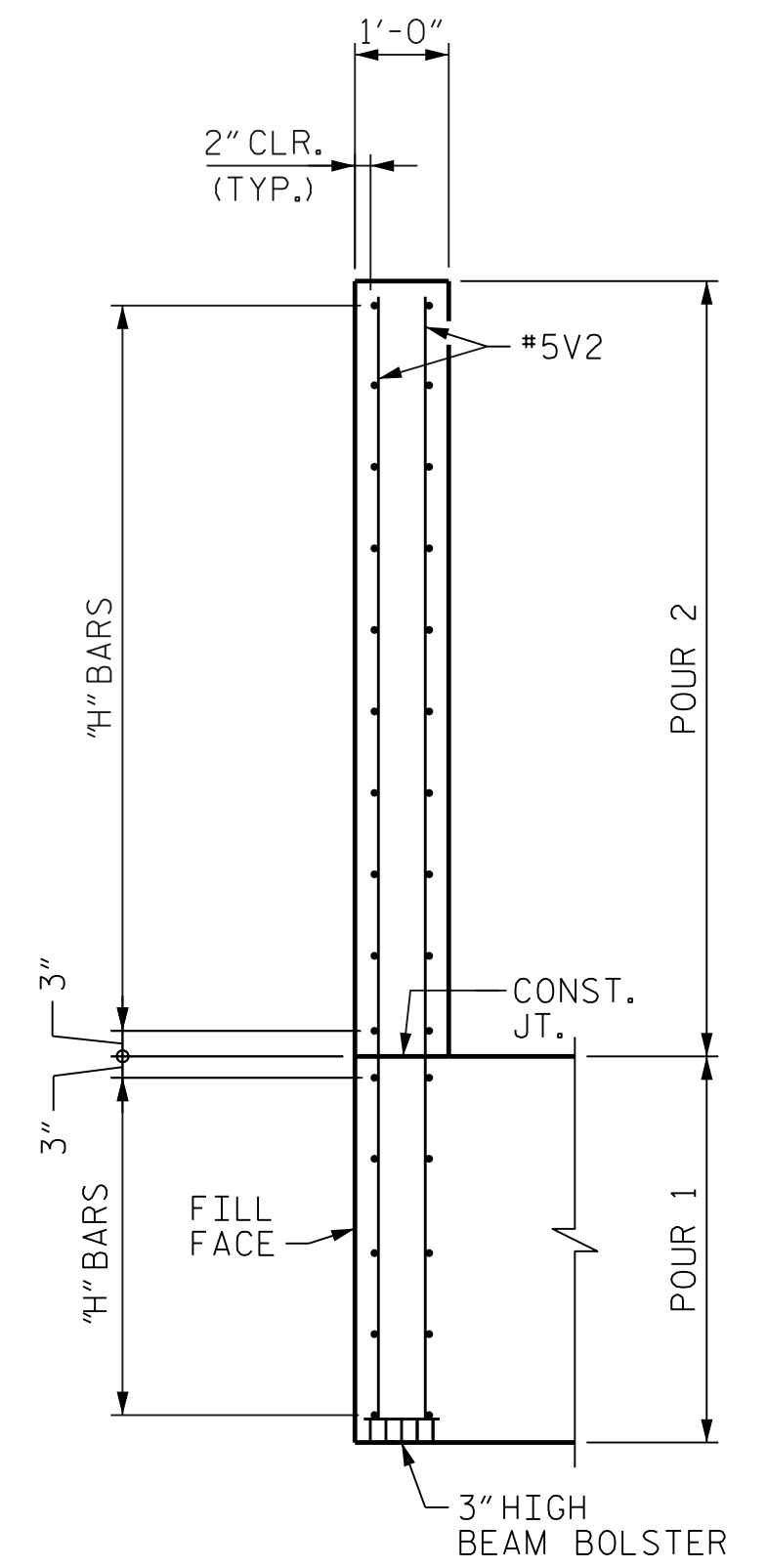
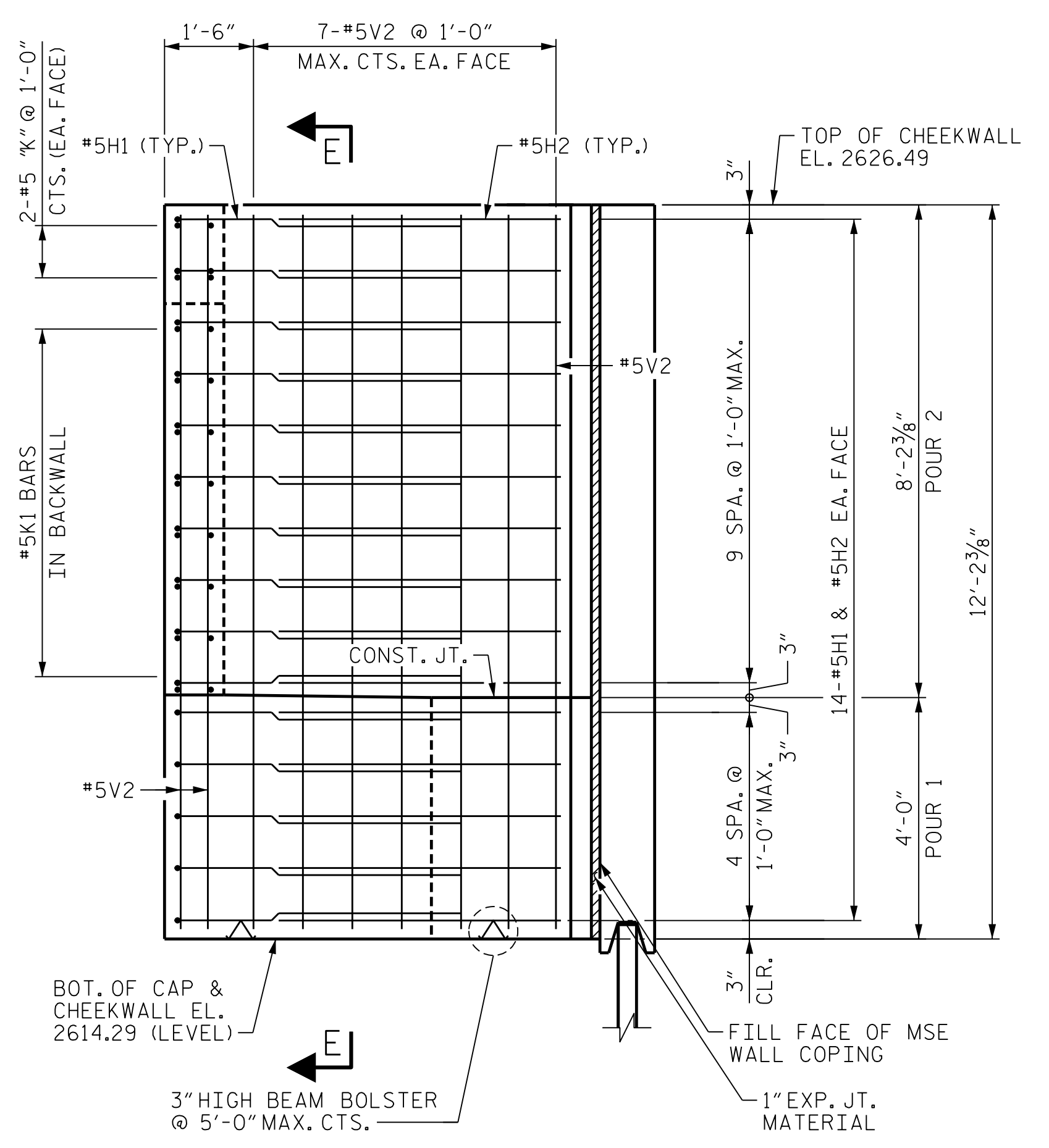
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⊕ DIMENSION TO BE FIELD ADJUSTED AS NECESSARY TO PROVIDE 1" EXPANSION JOINT MATERIAL BETWEEN THE MSE RETAINING WALL AND THE CHEEKWALL OR CAP. FIELD CUT #5 "K" BARS AS REQUIRED.



PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -Y1RT-
 SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

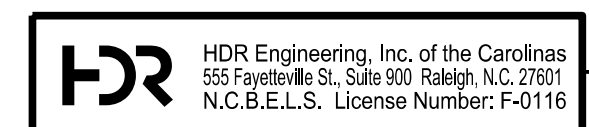
SUBSTRUCTURE
 END BENT 2
 CHEEKWALL DETAILS



W. Brian Watson 1/24/2022

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

DES BY: N. DAVIS	DATE: 06/21	DWG BY: B. PETERSON	DATE: 06/21
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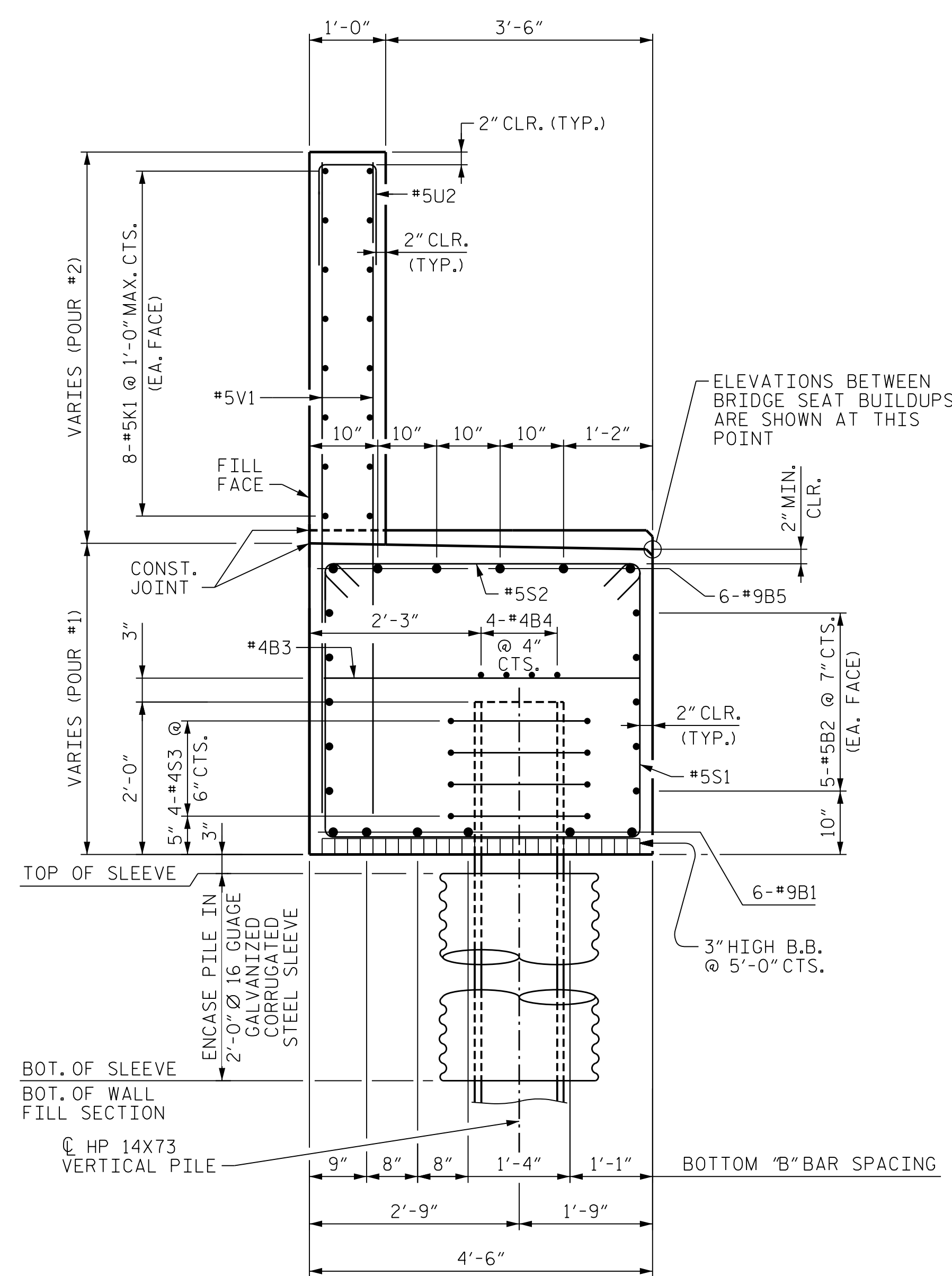


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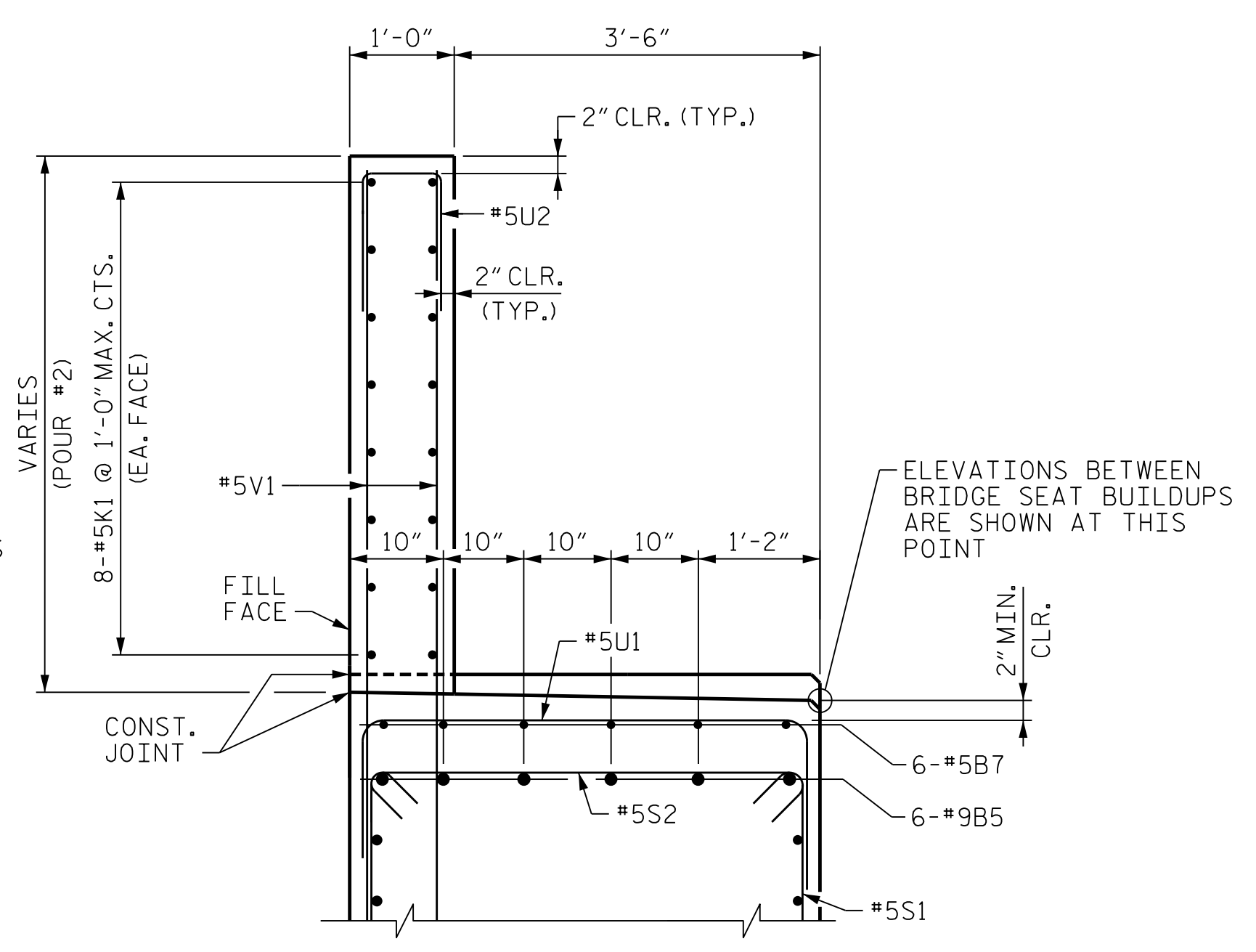
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 TOTAL SHEETS 48

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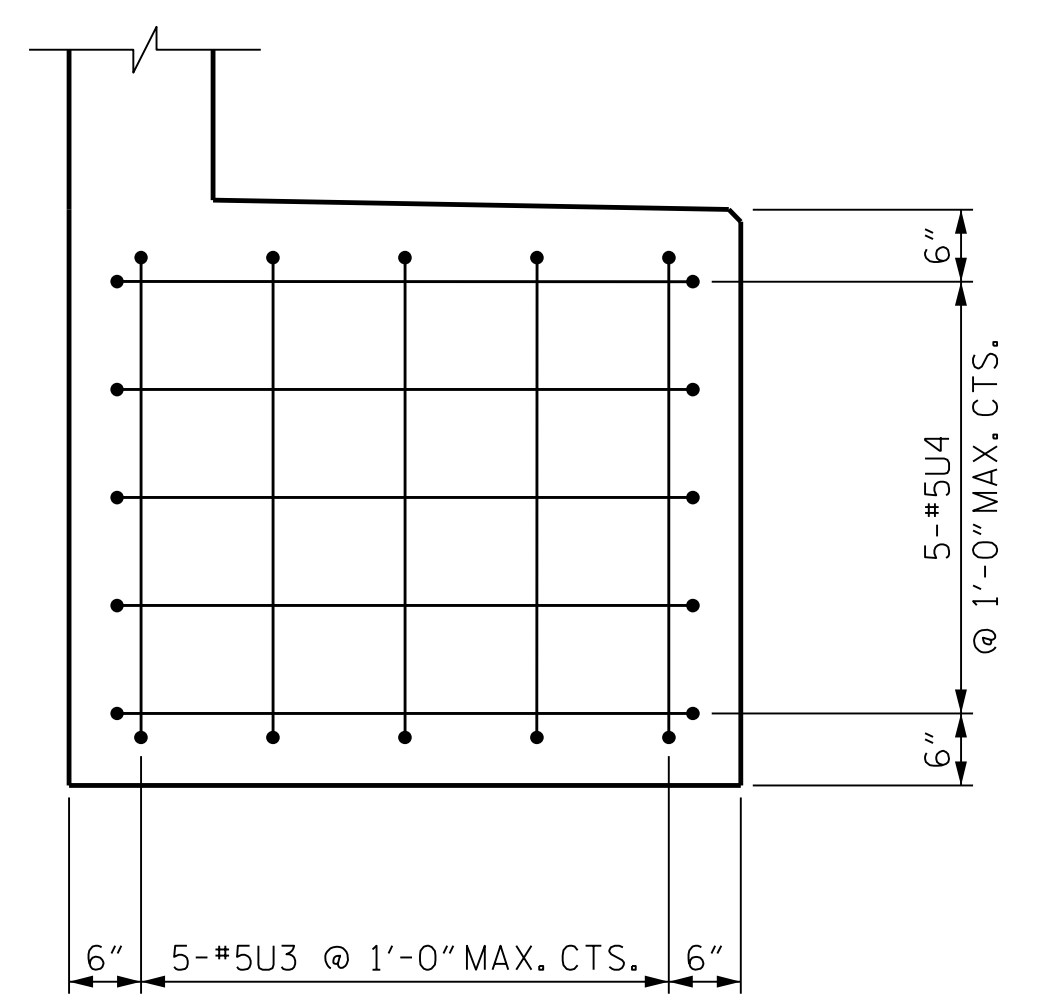
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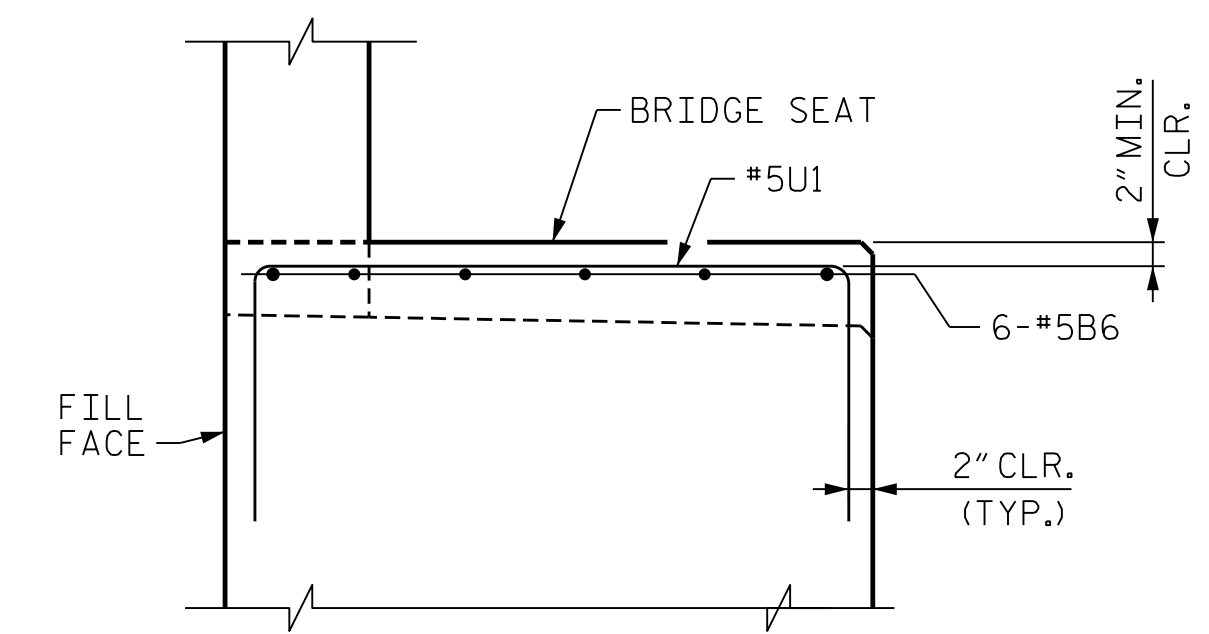
SECTION A-A



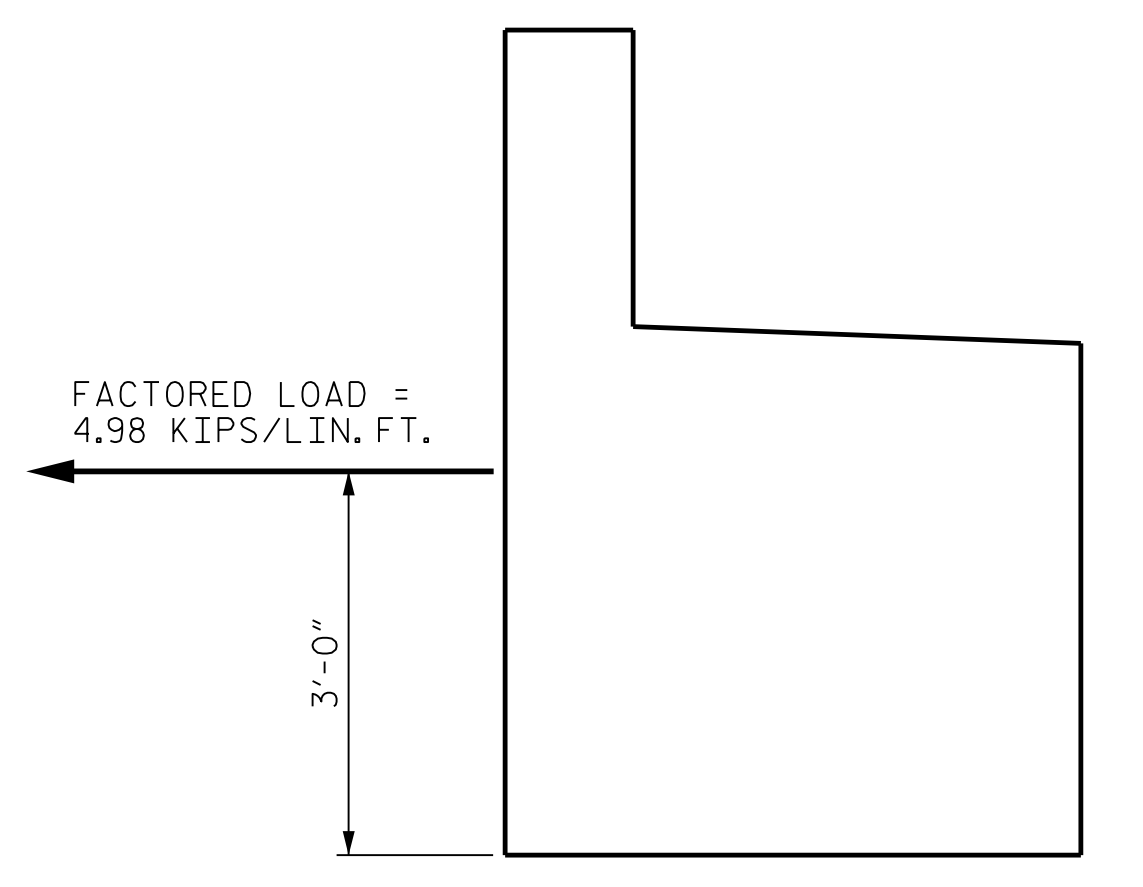
PARTIAL SECTION B-B



VIEW D-D



PARTIAL SECTION C-C
(TYPICAL WHERE INDICATED AT BRIDGE SEATS)



TIE BACK DETAIL
(SEE MSE RETAINING WALL PLANS FOR NOTES)

BAR TYPES

BILL OF MATERIAL

BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	#9		38'-7"	1575
B2	20	#5	STR.	36'-9"	767
B3	18	#4	STR.	4'-2"	51
B4	8	#4	STR.	36'-6"	196
B5	12	#9		39'-2"	1598
B6	18	#5	STR.	2'-5"	46
B7	6	#5	STR.	20'-4"	128
B8	6	#5	STR.	15'-0"	94
H1	28	#5		5'-2"	151
H2	28	#5	STR.	5'-9"	168
H3	8	#5		6'-11"	58
K1	32	#5	STR.	36'-9"	1227
K2	2	#5	STR.	2'-9"	6
K3	2	#5	STR.	3'-6"	8
K4	4	#5	STR.	2'-9"	12
S1	69	#5		12'-4"	888
S2	69	#5		5'-1"	366
S3	48	#4		7'-7"	244
U1	43	#5		7'-2"	322
U2	64	#5		3'-8"	245
U3	5	#5		7'-0"	37
U4	5	#5		7'-2"	38
V1	134	#5	STR.	10'-4"	1445
V2	23	#5	STR.	12'-0"	288
V3	7	#5	STR.	12'-7"	92
REINFORCING STEEL					LBS. 10,050
CLASS A CONCRETE					
POUR #1 (CAP, LOWER PART OF WINGS)				CU. YDS.	50.6
POUR #2 (BACKWALL & UPPER PART OF WINGS)				CU. YDS.	22.1
TOTAL				CU. YDS.	72.7
HP 14x73 STEEL PILES		NO. 12	LIN. FT.	840	
STEEL PILE POINTS					EA. 12
PILE DRIVING EQUIPMENT SETUP FOR HP14x73 STEEL PILES					EA. 12

ALL BAR DIMENSIONS ARE OUT TO OUT

NOTES

THE TOP SURFACE 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 CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

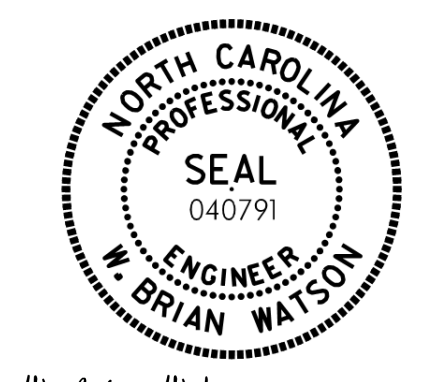
BACKWALL SHALL BE PLACED BEFORE APPLYING THE PROTECTIVE COATING.

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

THE 2'-0" Ø 16 GAUGE GALVANIZED CORRUGATED STEEL SLEEVE SHALL MEET THE REQUIREMENTS SPECIFIED IN ARTICLE 1032-3 OF THE STANDARD SPECIFICATIONS AND SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

FOR PILE SPLICE DETAILS AND TEMPORARY DRAINAGE AT END BENT DETAIL, SEE "SUBSTRUCTURE END BENT 1 CHEEKWALL DETAILS" SHEET.

PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -Y1RT-
 SHEET 3 OF 3



W. Brian Watson 1/24/2022

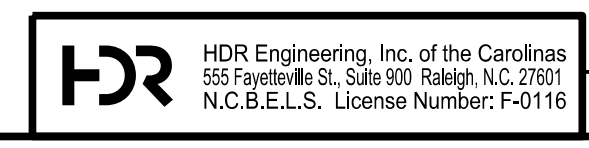
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 2
 SECTIONS AND DETAILS**

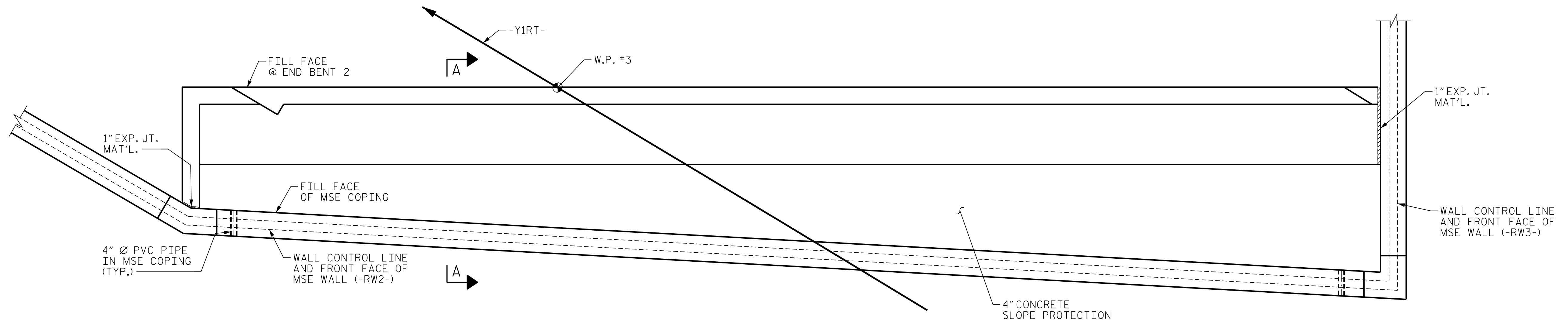
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SHEET NO. S02-43
 TOTAL SHEETS 48

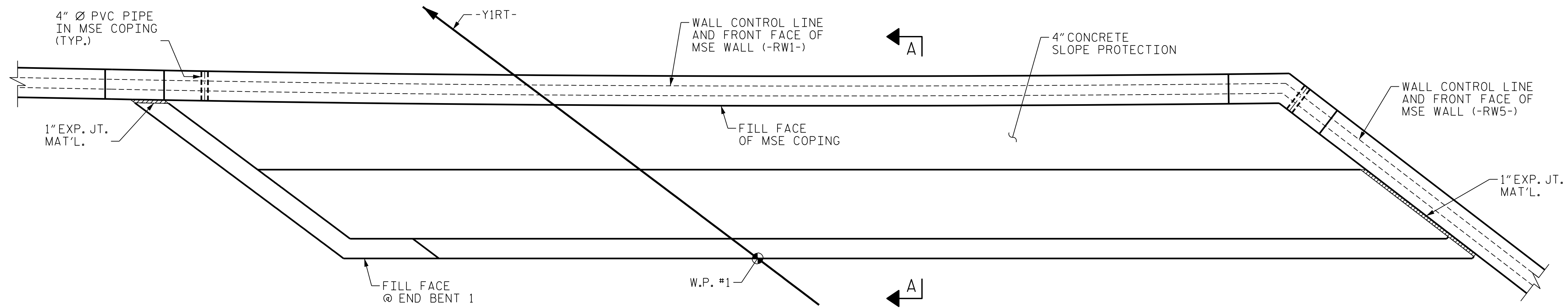
DES BY: N. DAVIS	DATE: 06/21	DWG BY: B. PETERSON	DATE: 06/21
DES CHK: R. BECK	DATE: 07/21	CHK BY: R. BECK	DATE: 07/21



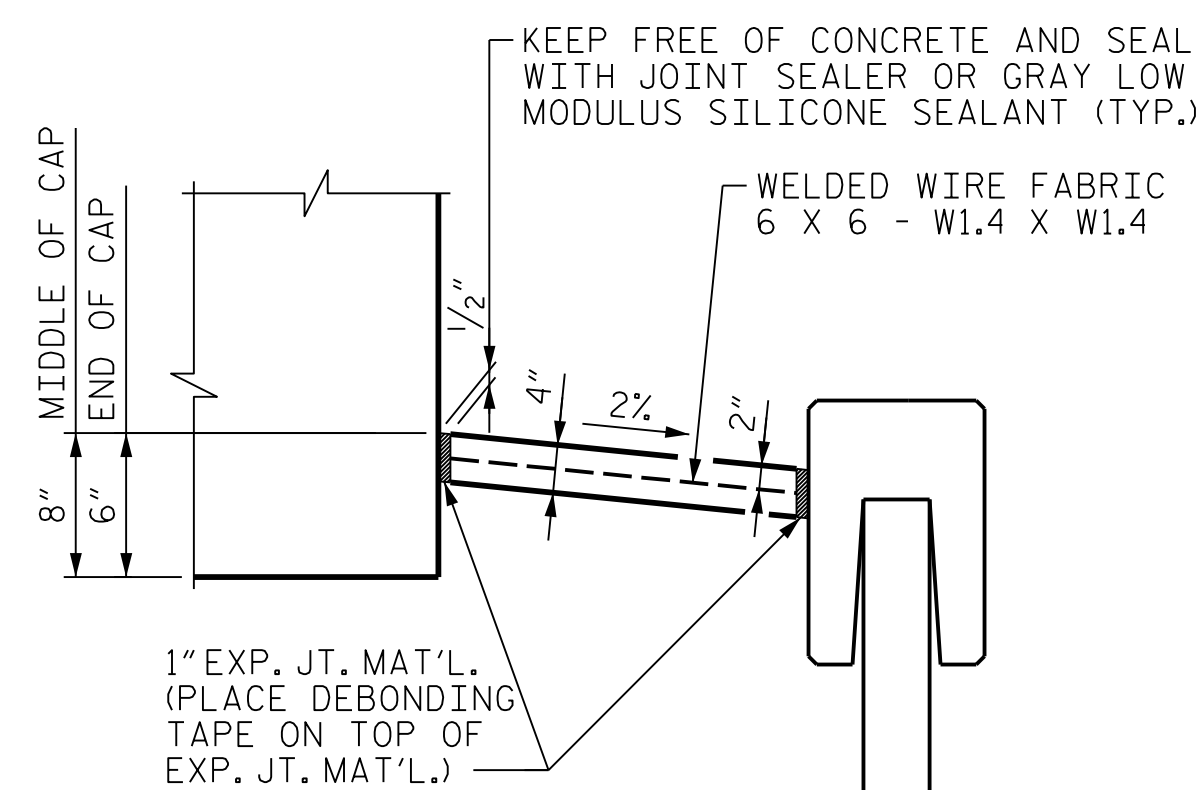
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PLAN - END BENT 2



PLAN - END BENT 1



SECTION A-A

NOTE

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.

BRIDGE @ STA. 27+54.43 -YIRT-	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60" WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	22.0	39.6
END BENT 2	37.3	67.0

* = QUANTITY SHOWN IS BASED ON 5' POURS

PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -YIRT-

STATE OF NORTH CAROLINA
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SLOPE PROTECTION DETAILS



W. Brian Watson 1/24/2022

REVISIONS						SHEET NO. 502-44 TOTAL SHEETS 48
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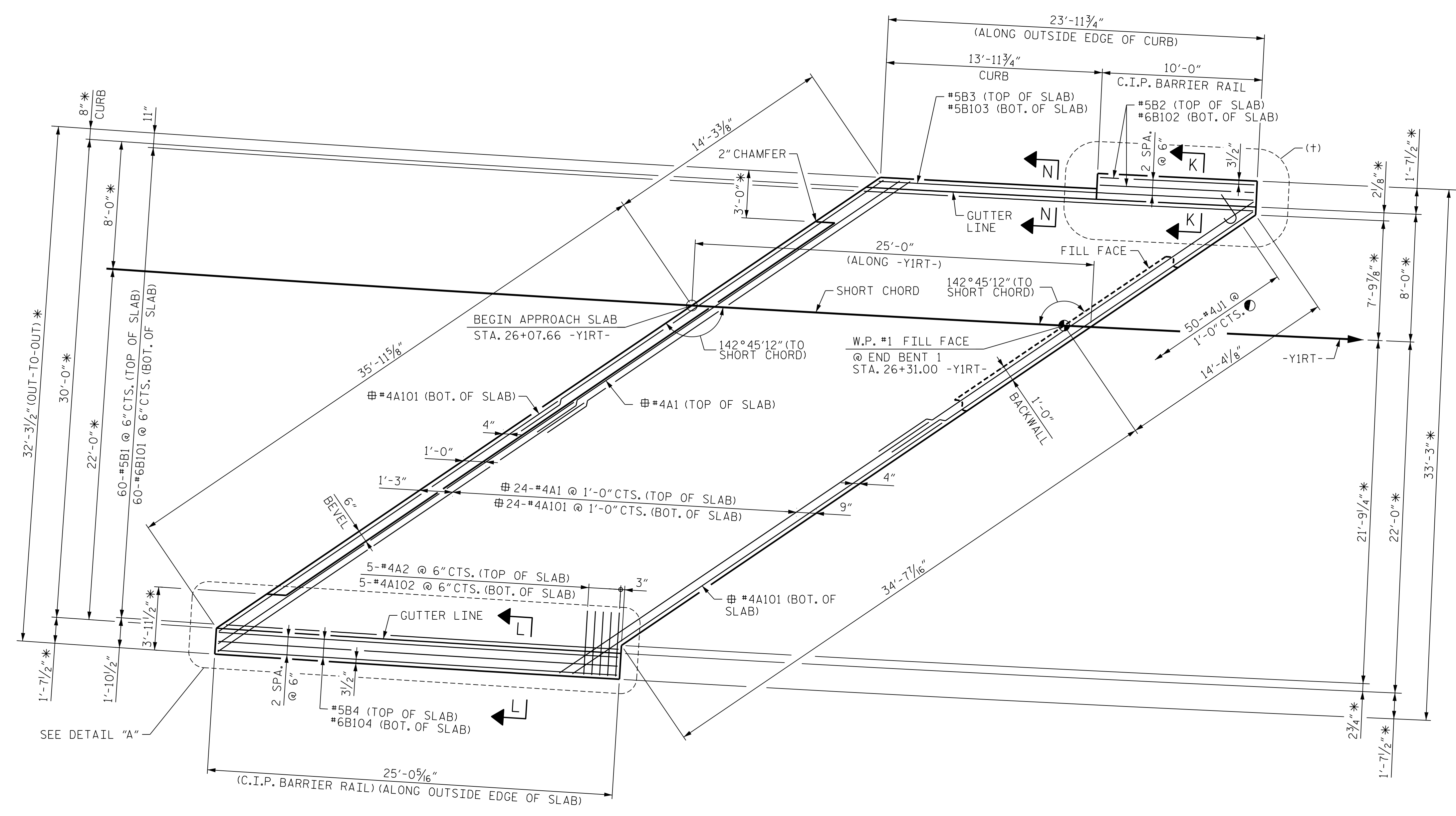


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DES BY: <u>B. WATSON</u>	DATE: <u>07/21</u>	DWG BY: <u>D. CARTER</u>	DATE: <u>05/21</u>
DES CHK: <u>H. ABU NIMEH</u>	DATE: <u>07/21</u>	CHK BY: <u>H. ABU NIMEH</u>	DATE: <u>08/21</u>

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PLAN OF APPROACH SLAB AT END BENT 1

NOTES

FOR BILL OF MATERIALS, SEE "BRIDGE APPROACH SLAB DETAILS" SHEET 4 OF 4.

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

FOR DETAIL "A" AND SECTION L-L, SEE "BRIDGE APPROACH SLAB DETAILS" SHEET 3 OF 4.

- + FOR BARRIER RAIL DETAILS AND REINFORCING, SEE "BRIDGE APPROACH SLAB DETAILS" SHEET 3 OF 4.
- # 2 BAR RUN
- FOR PLACEMENT OF #4J1 BARS, SEE "SUPERSTRUCTURE EXPANSION JOINT SEAL DETAILS" SHEET.
- * RADIAL TO -Y1RT-

PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -Y1RT-
 SHEET 1 OF 4

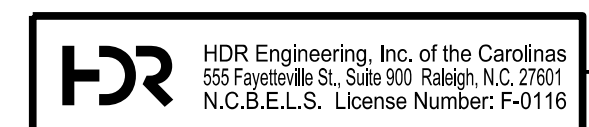


W. Brian Watson 1/24/2022

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**BRIDGE APPROACH
 SLAB DETAILS**

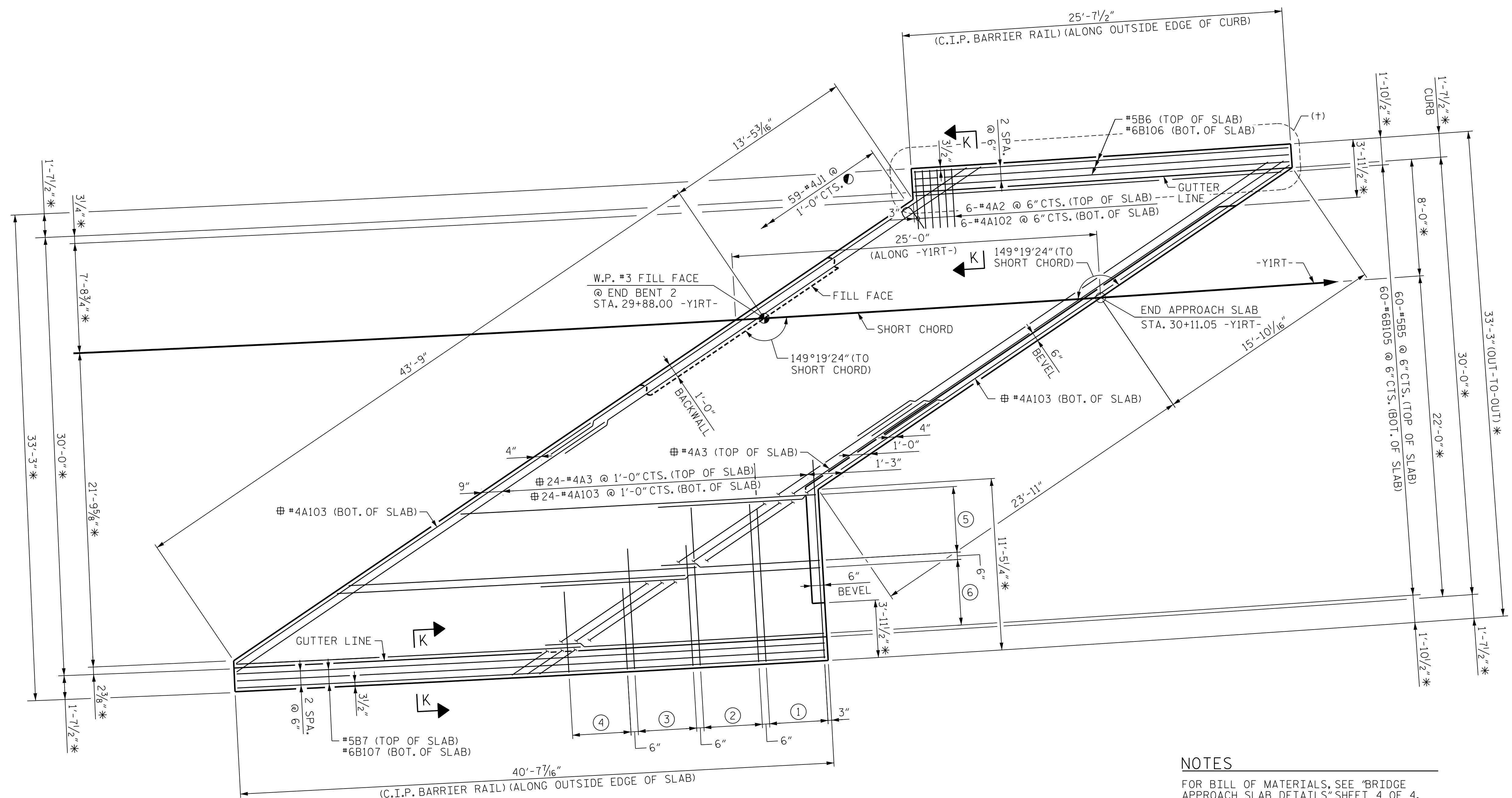
DES BY: H. ABU NIMEH	DATE: 08/21	DWG BY: B. PETERSON	DATE: 08/21
DES CHK: S. NIFONG	DATE: 08/21	CHK BY: S. NIFONG	DATE: 08/21



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SHEET NO. S02-45
TOTAL SHEETS 48



PLAN OF APPROACH SLAB AT END BENT 2

- ① 9-#4A4 @ 6" CTS. (TOP OF SLAB) **
9-#4A104 @ 6" CTS. (BOT. OF SLAB)
- ② 9-#4A5 @ 6" CTS. (TOP OF SLAB)
9-#4A105 @ 6" CTS. (BOT. OF SLAB)
- ③ 9-#4A6 @ 6" CTS. (TOP OF SLAB)
9-#4A106 @ 6" CTS. (BOT. OF SLAB)
- ④ 9-#4A7 @ 6" CTS. (TOP OF SLAB)
9-#4A107 @ 6" CTS. (BOT. OF SLAB)
- ⑤ 10-#5B8 @ 6" CTS. (TOP OF SLAB)
10-#6B108 @ 6" CTS. (BOT. OF SLAB)
- ⑥ 10-#5B9 @ 6" CTS. (TOP OF SLAB)
10-#6B109 @ 6" CTS. (BOT. OF SLAB)

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

† FOR BARRIER RAIL DETAILS AND REINFORCING, SEE "BRIDGE APPROACH SLAB DETAILS" SHEET 3 OF 4.
 # 2 BAR RUN
 ● FOR PLACEMENT OF #4J1 BARS, SEE "SUPERSTRUCTURE EXPANSION JOINT SEAL DETAILS" SHEET.
 * RADIAL TO -Y1RT-
 ** FIELD CUT AS NECESSARY TO MAINTAIN CLEARANCE TO BEVEL.

PROJECT NO. B-3186/B-5898
HAYWOOD COUNTY
 STATION: 27+54.43 -Y1RT-
 SHEET 2 OF 4

STATE OF NORTH CAROLINA
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**BRIDGE APPROACH
 SLAB DETAILS**



W. Brian Watson 1/24/2022

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SHEET NO. S02-46
 TOTAL SHEETS 48

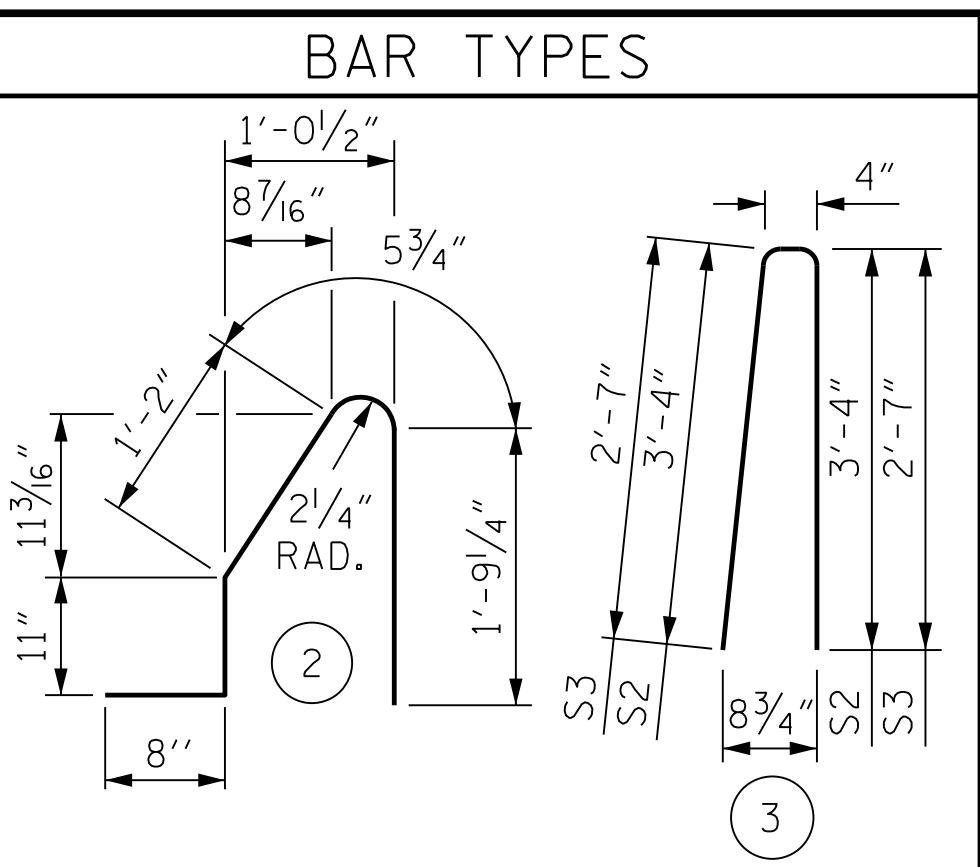
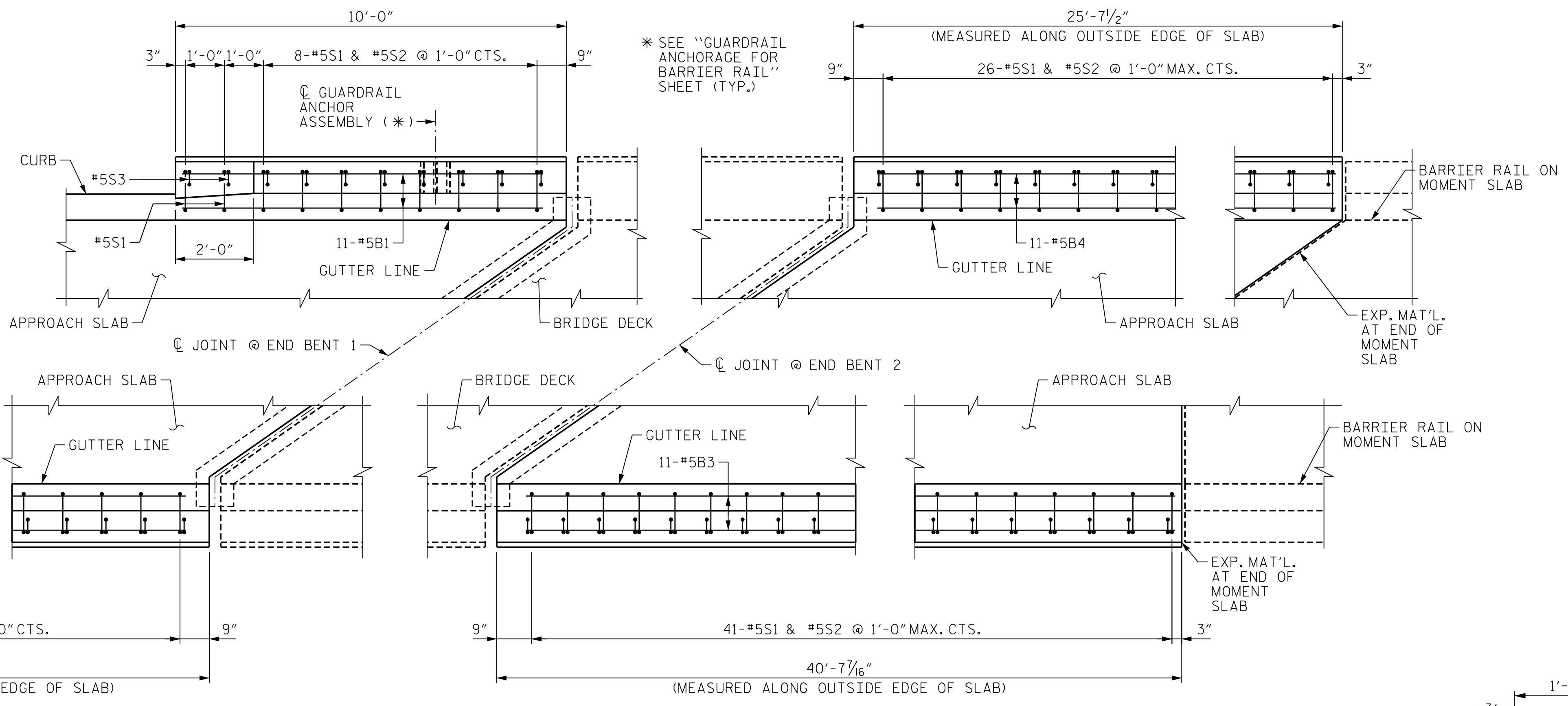
HDR HDR Engineering, Inc. of the Carolinas
 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
 N.C.B.E.L.S. License Number: F-0116

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DES BY: <u>H. ABU NIMEH</u>	DATE: <u>08/21</u>	DWG BY: <u>B. PETERSON</u>	DATE: <u>08/21</u>
DES CHK: <u>S. NIFONG</u>	DATE: <u>08/21</u>	CHK BY: <u>S. NIFONG</u>	DATE: <u>08/21</u>

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ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BARRIER RAIL ONLY					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	11	#5	STR	9'-8"	111
*B2	11	#5	STR	24'-8"	284
*B3	11	#5	STR	40'-3"	462
*B4	11	#5	STR	25'-3"	290
*S1	102	#5	2	5'-0"	532
*S2	100	#5	3	7'-0"	731
*S3	2	#5	3	5'-6"	12

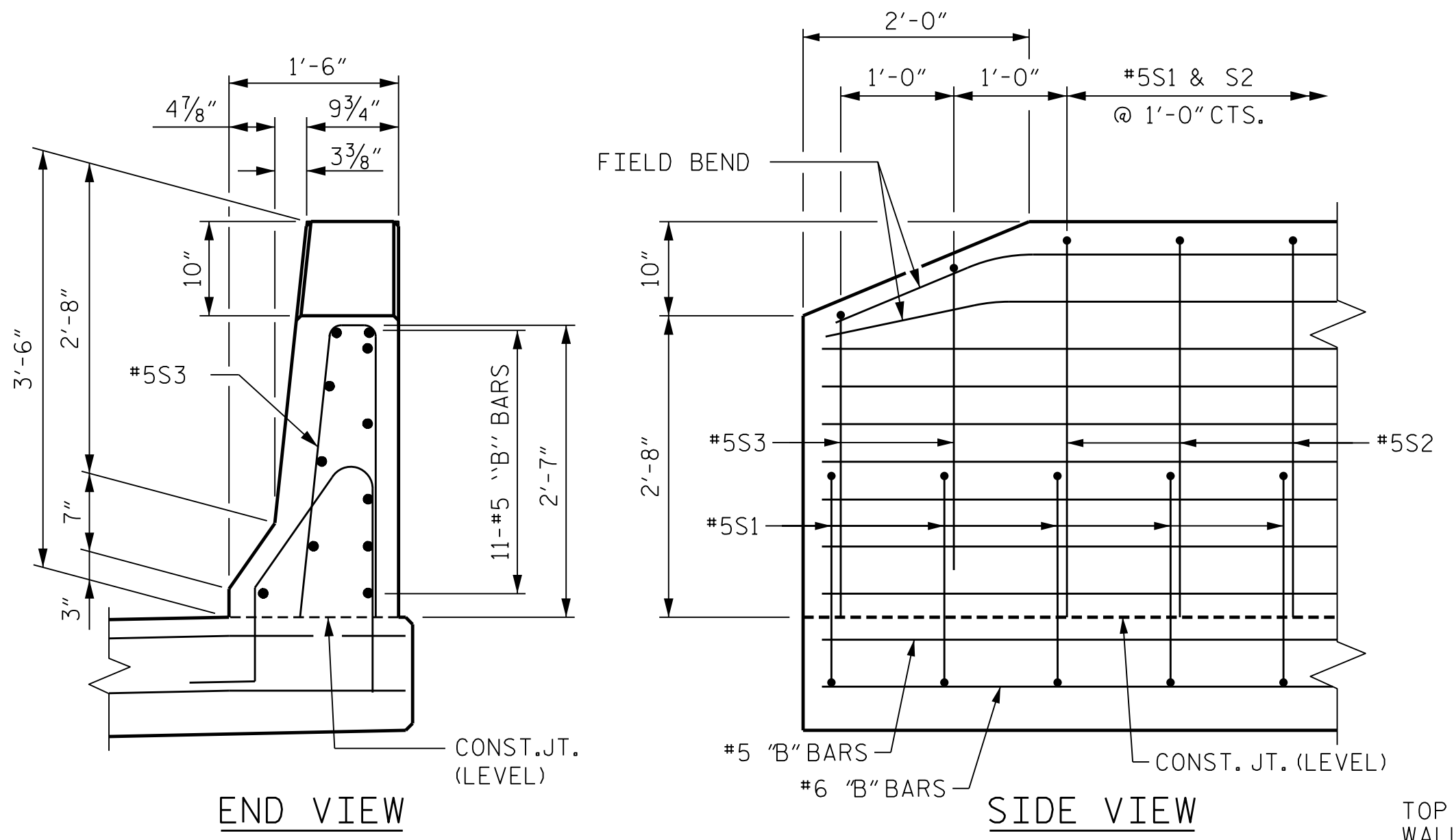
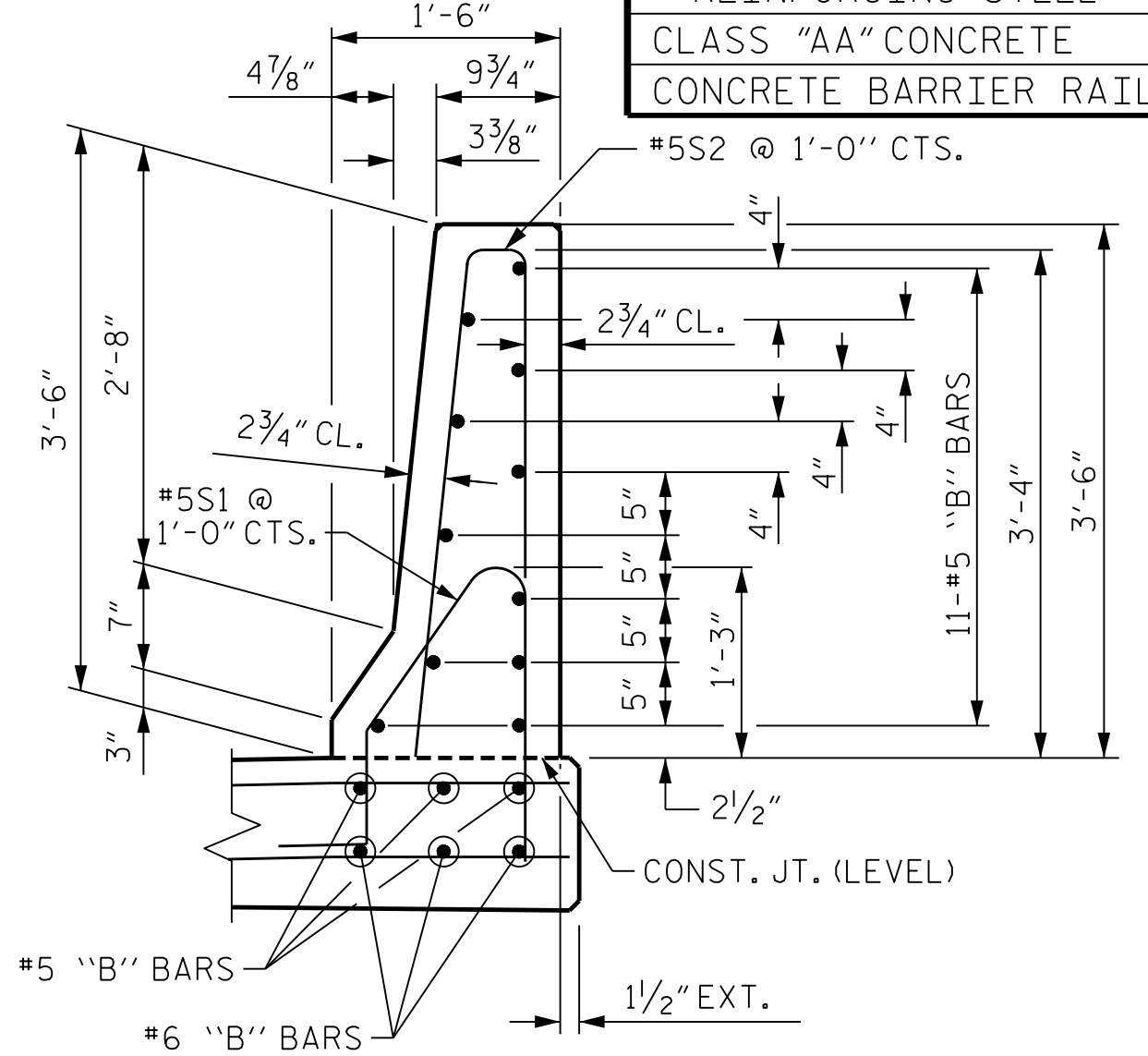
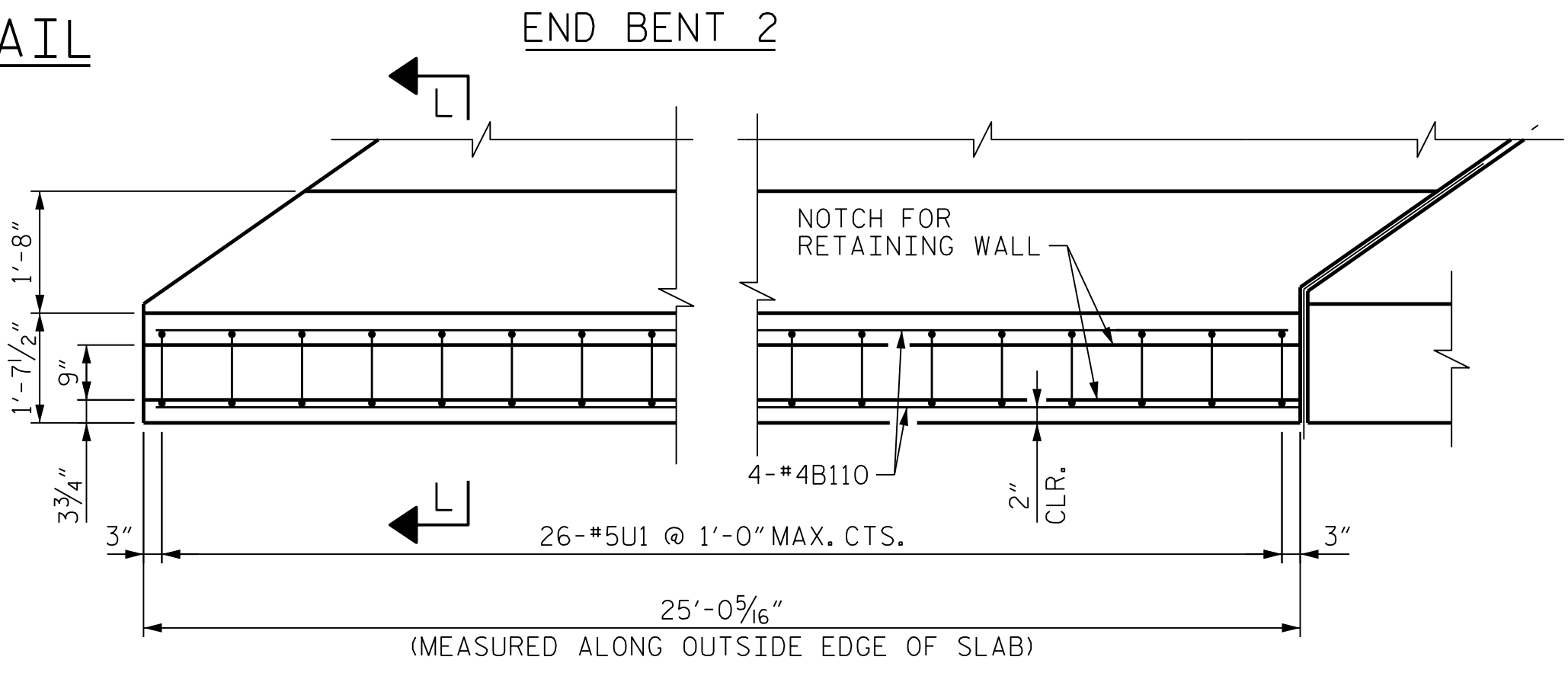
* EPOXY COATED REINFORCING STEEL	LBS.	2422
CLASS "AA" CONCRETE	C. Y.	13.8
CONCRETE BARRIER RAIL	LIN. FT.	101.3

NOTES

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

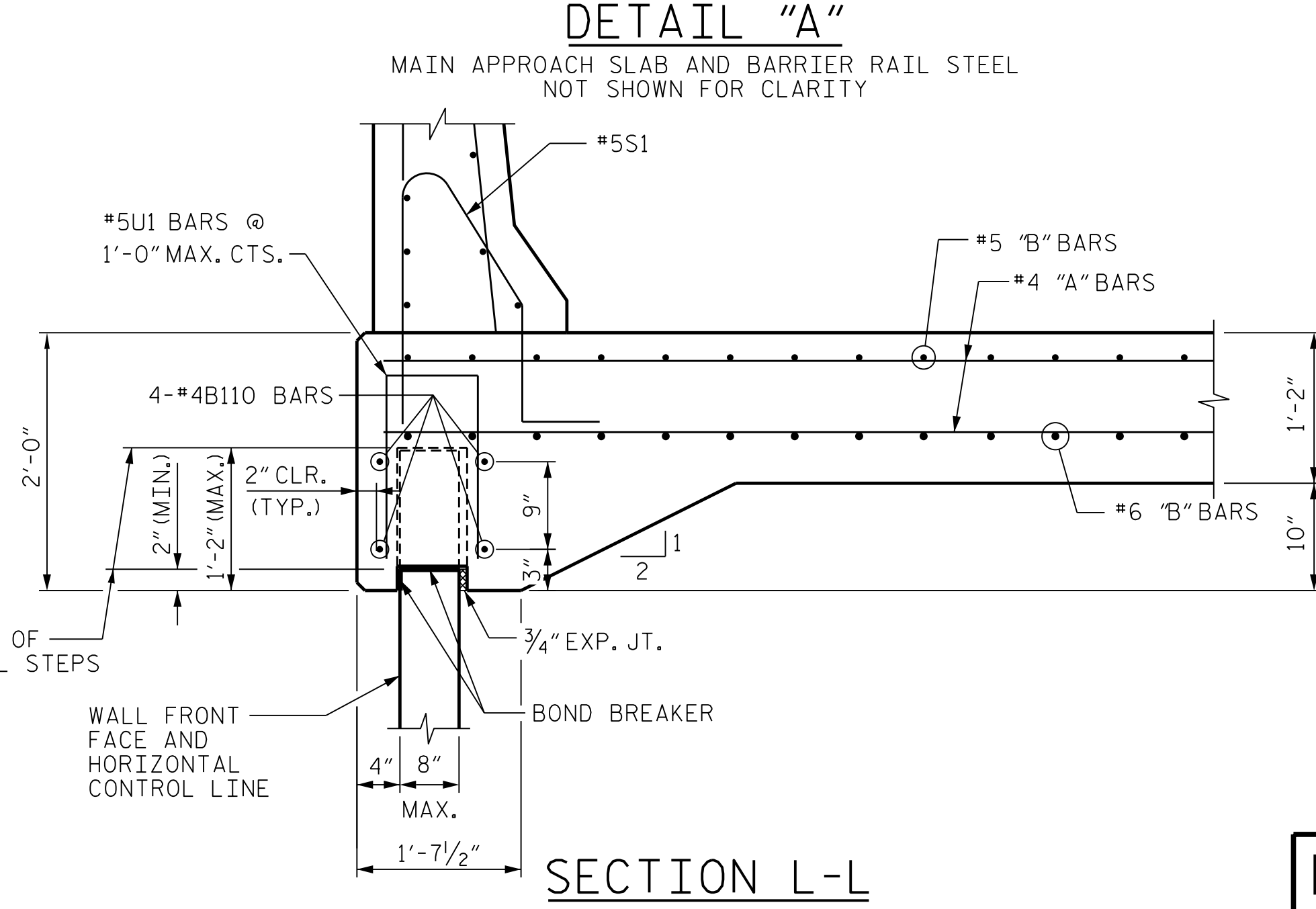
THE BARRIER RAIL ON EACH APPROACH SLAB SHALL NOT BE CAST UNTIL ALL APPROACH SLAB CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.



END OF RAIL DETAILS

(DETAILS APPLICABLE TO END BENT 1 LEFT SIDE AND END BENT 2 LEFT SIDE)



W. Brian Watson 1/24/2022

PROJECT NO. B-3186/B-5898

HAYWOOD COUNTY

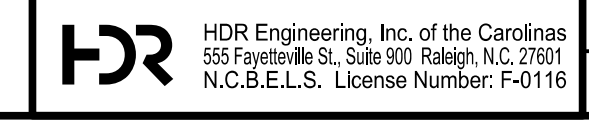
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SHEET 3 OF 4

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DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB DETAILS

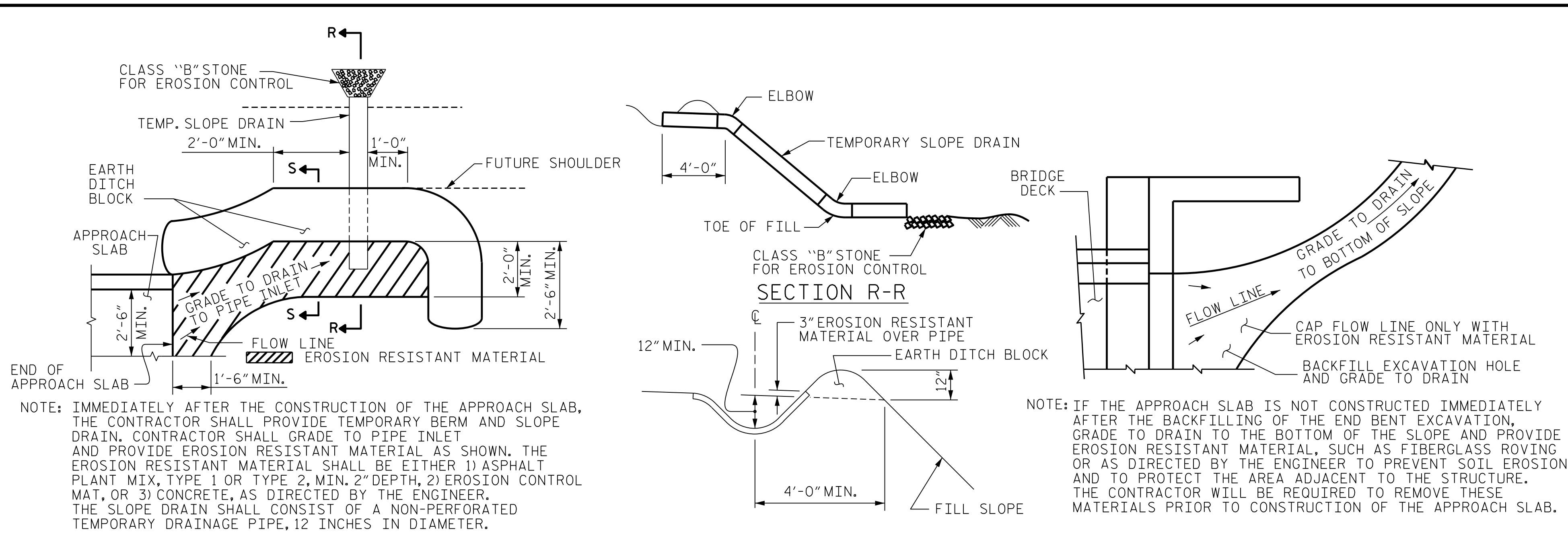
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DES CHK: S. NIFONG	DATE: 08/21	CHK BY: S. NIFONG	DATE: 08/21



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SHEET NO. S02-47
TOTAL SHEETS 48



TEMPORARY BERM AND SLOPE DRAIN DETAILS

BILL OF MATERIAL

APPROACH SLAB AT END BENT 1						APPROACH SLAB AT END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	50	#4	STR	28'-4"	947	* A2	6	#4	STR	4'-0"	17
A101	52	#4	STR	28'-2"	979	* A3	50	#4	STR	33'-1"	1105
* A2	5	#4	STR	4'-0"	14	* A103	52	#4	STR	32'-11"	1144
A102	5	#4	STR	4'-0"	14	* A4	9	#4	STR	13'-4"	81
* B1	60	#5	STR	23'-11"	1497	A104	9	#4	STR	13'-4"	81
B101	60	#6	STR	24'-5"	2201	* A5	9	#4	STR	10'-8"	65
* B2	2	#5	STR	9'-8"	21	A105	9	#4	STR	10'-8"	65
B102	2	#6	STR	9'-8"	30	* A6	9	#4	STR	8'-0"	49
* B3	1	#5	STR	23'-11"	25	A106	9	#4	STR	8'-0"	49
B103	1	#6	STR	23'-11"	36	* A7	9	#4	STR	5'-3"	32
* B4	3	#5	STR	24'-8"	78	A107	9	#4	STR	5'-3"	32
B104	3	#6	STR	24'-8"	112	* B5	60	#5	STR	23'-10"	1492
B110	4	#4	STR	24'-8"	66	B105	60	#6	STR	24'-4"	2193
* J1	50	#4	1	1'-5"	48	* B6	3	#5	STR	25'-3"	80
U1	26	#5	4	4'-4"	109	B106	3	#6	STR	25'-3"	114
REINFORCING STEEL						3547 LBS.					
* EPOXY COATED REINFORCING STEEL						2630 LBS.					
CLASS "AA" CONCRETE						35.6 C. Y.					
* J1						59 #4 1 1'-5" 56					
REINFORCING STEEL						4303 LBS.					
* EPOXY COATED REINFORCING STEEL						3400 LBS.					
CLASS "AA" CONCRETE						40.6 C. Y.					

SPLICE LENGTHS

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

NOTES

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

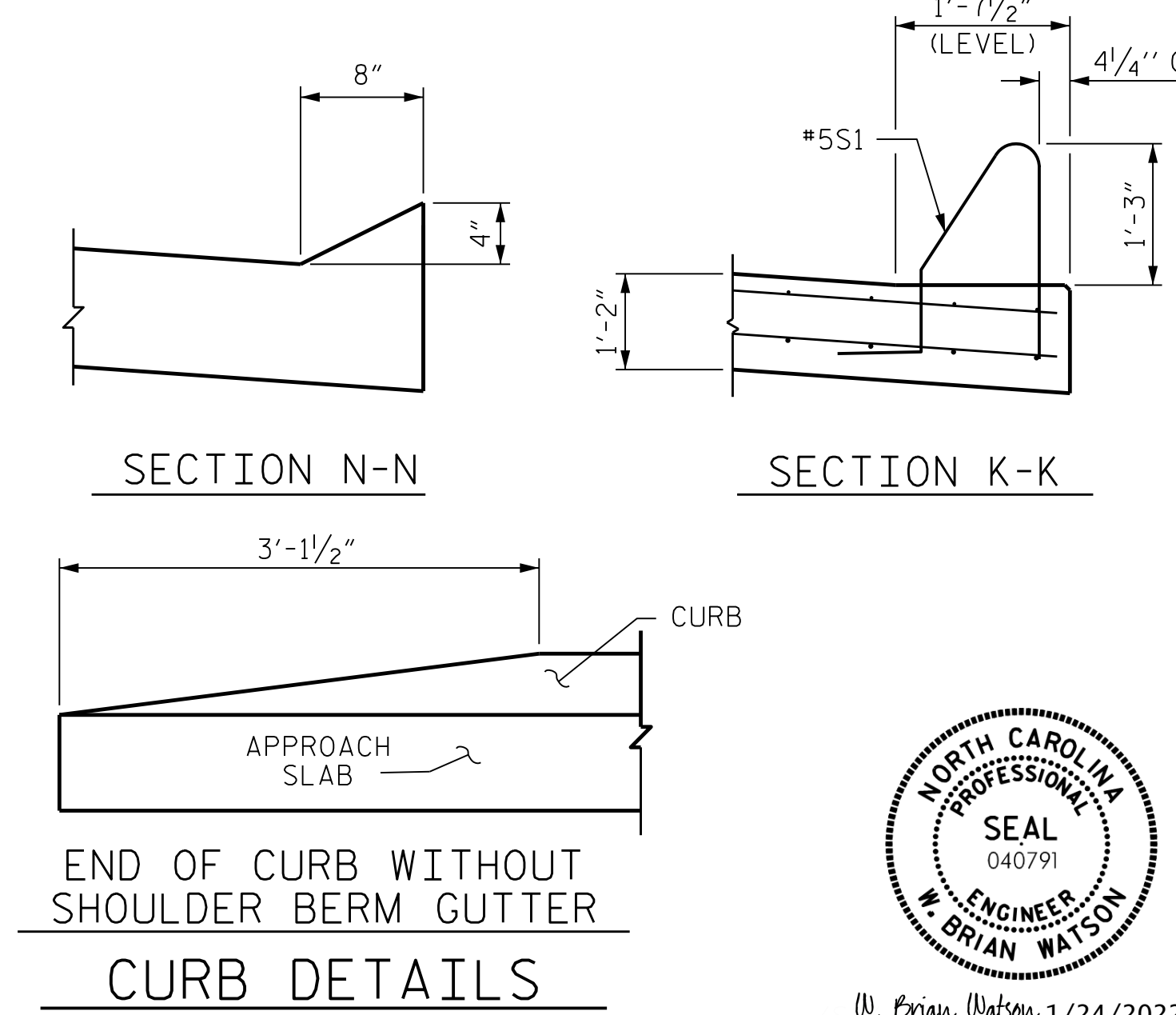
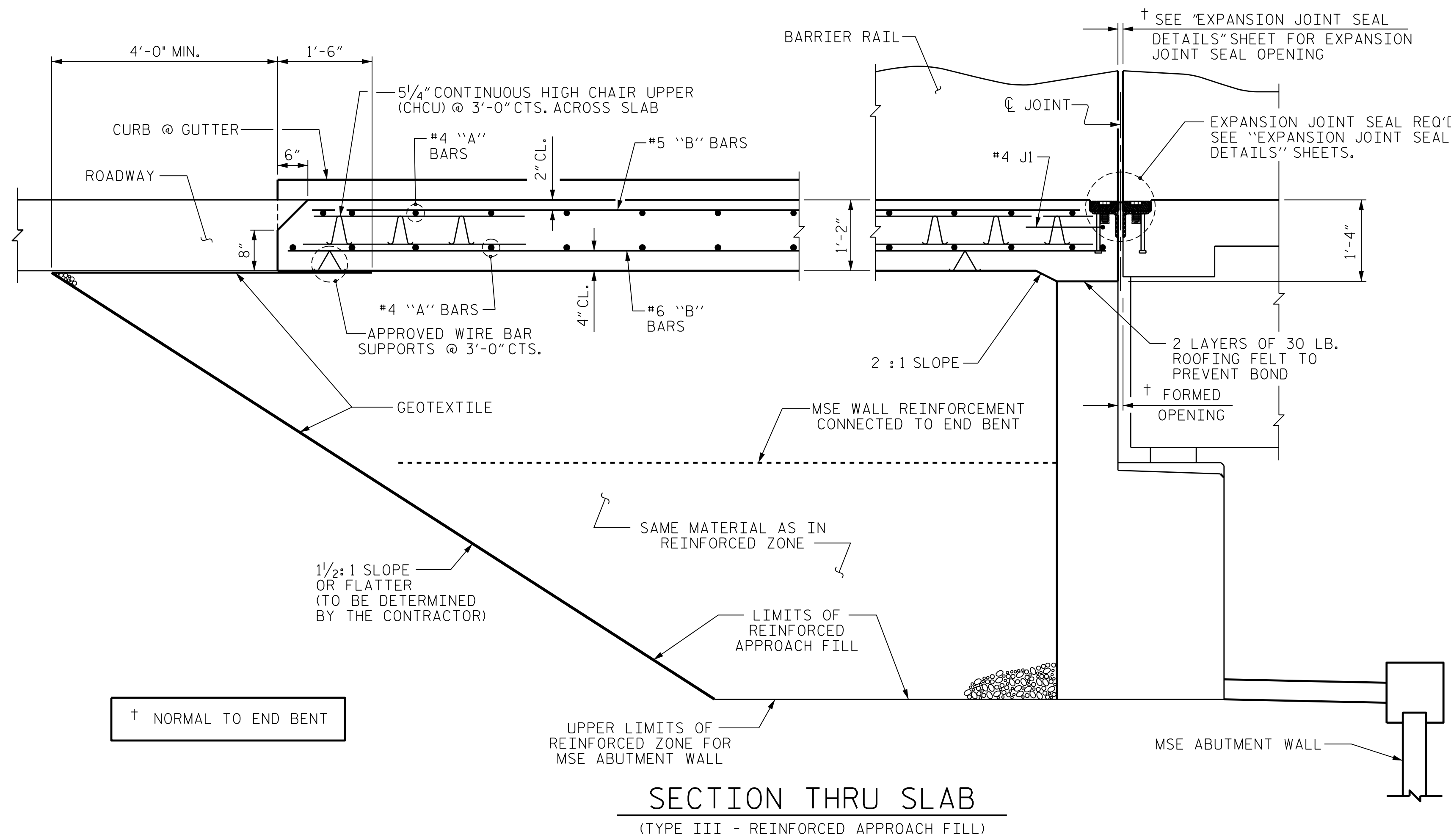
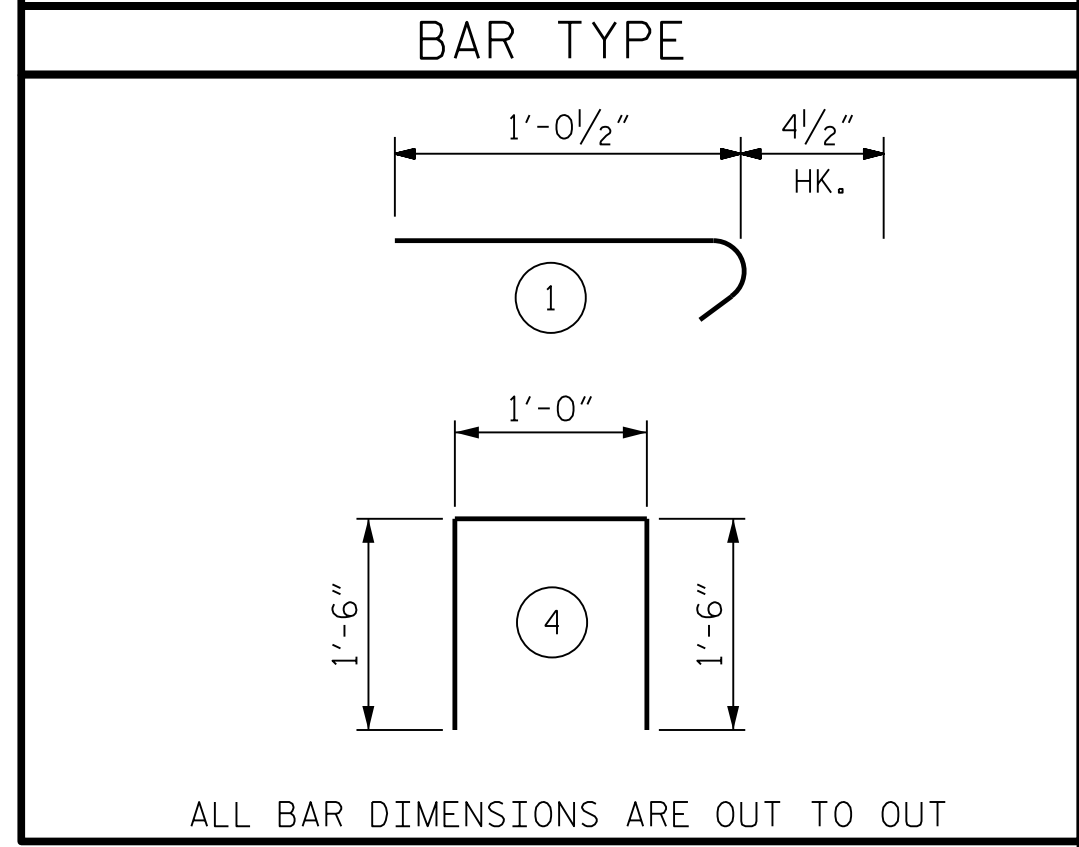
GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

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

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

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.



** QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED. SEE SHEET 3 OF 4.

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.

PROJECT NO. B-3186/B-5898

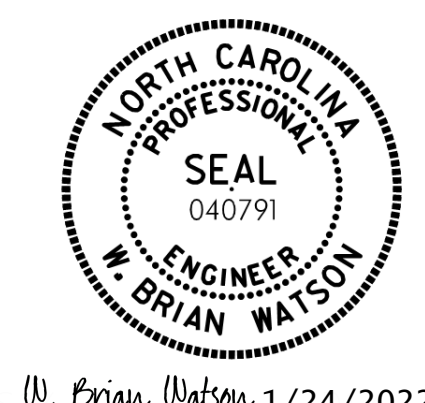
HAYWOOD COUNTY

STATION: 27+54.43 -Y1RT-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**BRIDGE APPROACH
 SLAB DETAILS**



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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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SHEET NO. S02-48
 TOTAL SHEETS 48

DES BY: <u>H. ABU NIMEH</u>	DATE: <u>08/21</u>	DWG BY: <u>B. PETERSON</u>	DATE: <u>08/21</u>
DES CHK: <u>S. NIFONG</u>	DATE: <u>08/21</u>	CHK BY: <u>S. NIFONG</u>	DATE: <u>08/21</u>

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