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**TIP PROJECT: B-5905**

**CONTRACT: C204330**

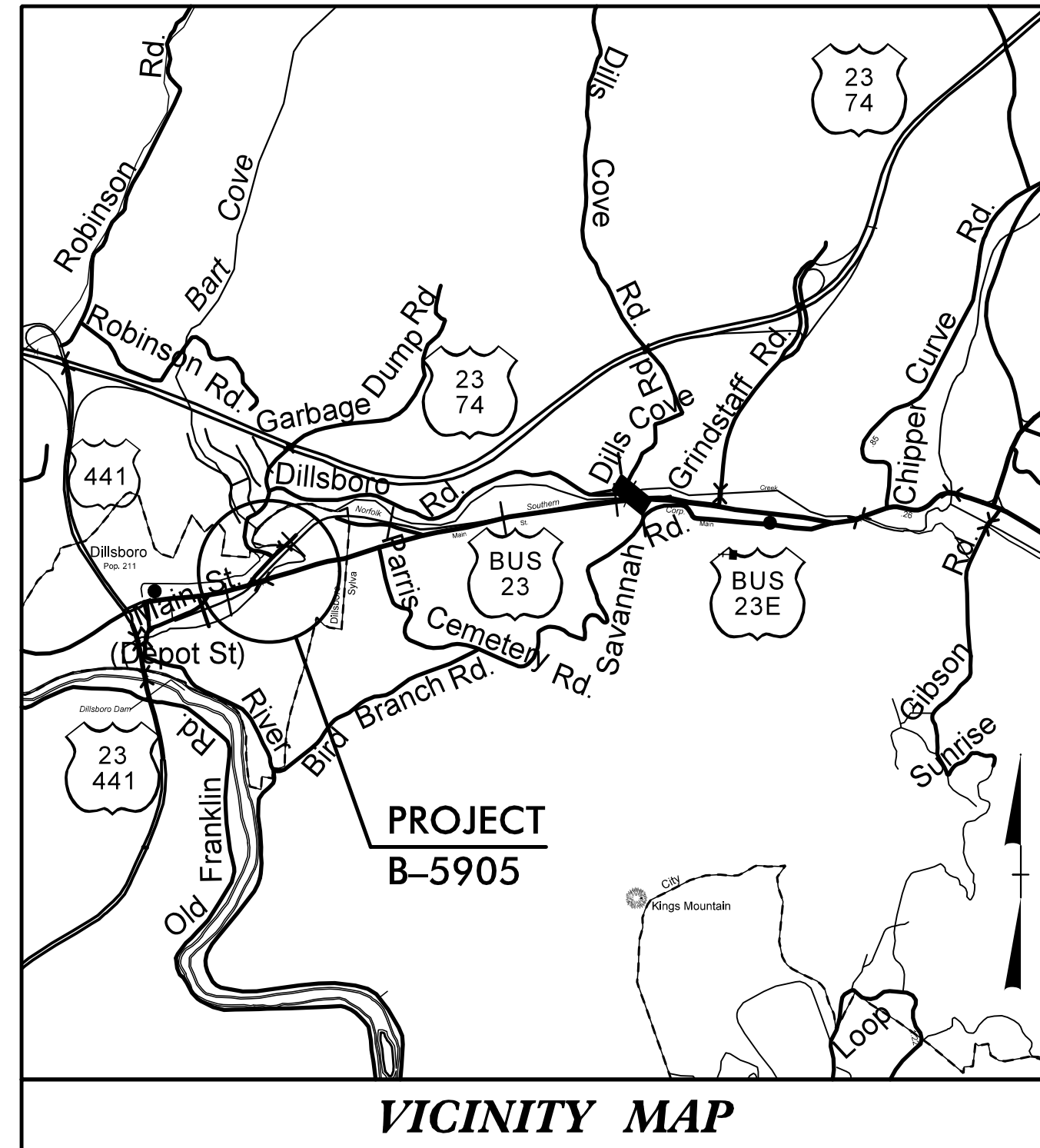
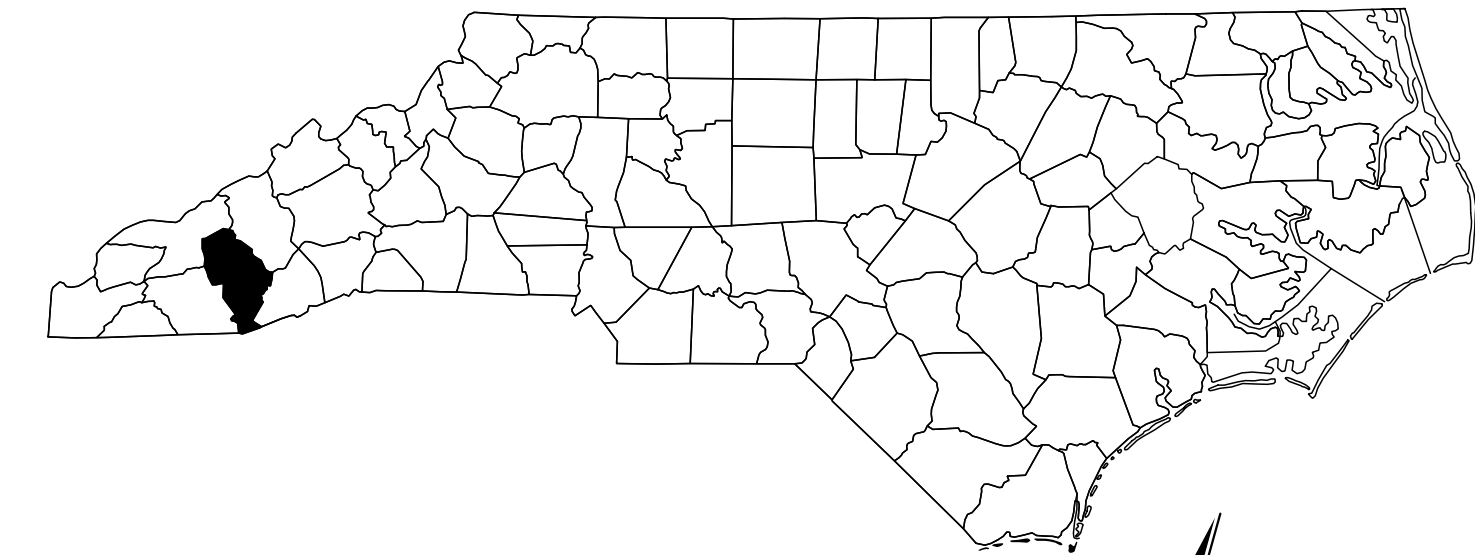
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# JACKSON COUNTY

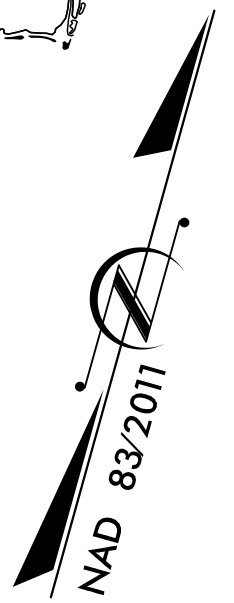
**LOCATION: BRIDGE 27 OVER SCOTT CREEK AND  
SOUTHERN RAILROAD ON US 23 BUSINESS**

**TYPE OF WORK: GRADING, DRAINAGE, PAVING, RETAINING WALLS,  
SIGNAL, AND STRUCTURE**

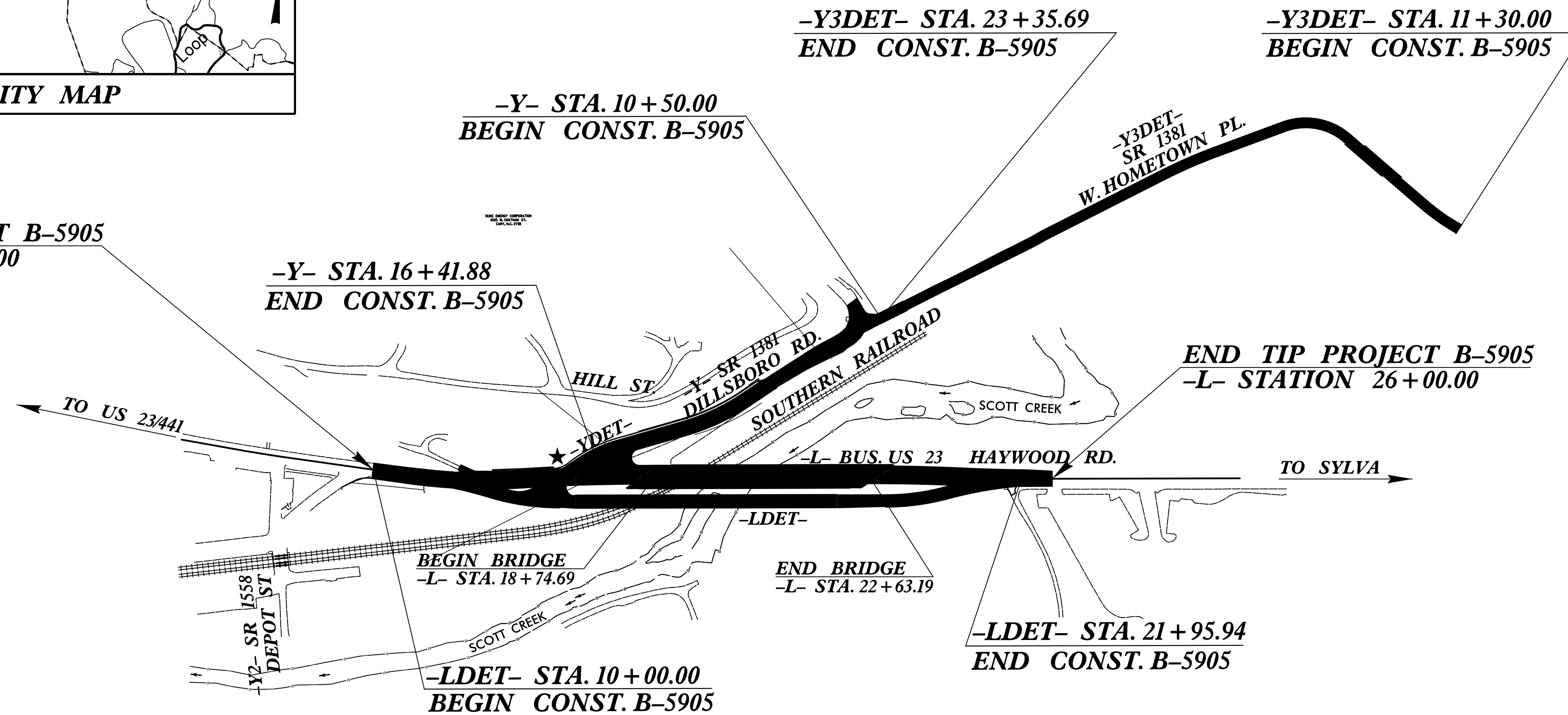
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5905		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
48037.1.1	BRNHS-0023(28)	P.E.	
48037.2.2	BRNHS-0023(28)	R/W & UTILITIES.	
48037.3.3	BRNHS-0023(28)	CONSTRUCTION	



VICINITY MAP



**BEGIN TIP PROJECT B-5905**  
**-L- STATION 13+55.00**



## STRUCTURES

★ PROPOSED TRAFFIC SIGNAL

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

**DESIGN DATA**

ADT 2018 =	9,605
ADT 2038 =	12,423
K =	9 %
D =	65 %
T =	6 % *
V =	40 MPH
* TTST =	1 DUAL 5
FUNC CLASS =	MINOR ARTERIAL
STATEWIDE TIER	

**PROJECT LENGTH**

LENGTH OF ROADWAY TIP PROJECT B-5905	=	0.162 Mi.
LENGTH OF STRUCTURE TIP PROJECT B-5905	=	0.074 Mi.
TOTAL LENGTH OF TIP PROJECT B-5905	=	0.236 Mi.

Prepared for the North Carolina Department of Transportation  
In the Office of:

**HNTB**  
HNTB NORTH CAROLINA, P.C.  
NC License No. C-1554  
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

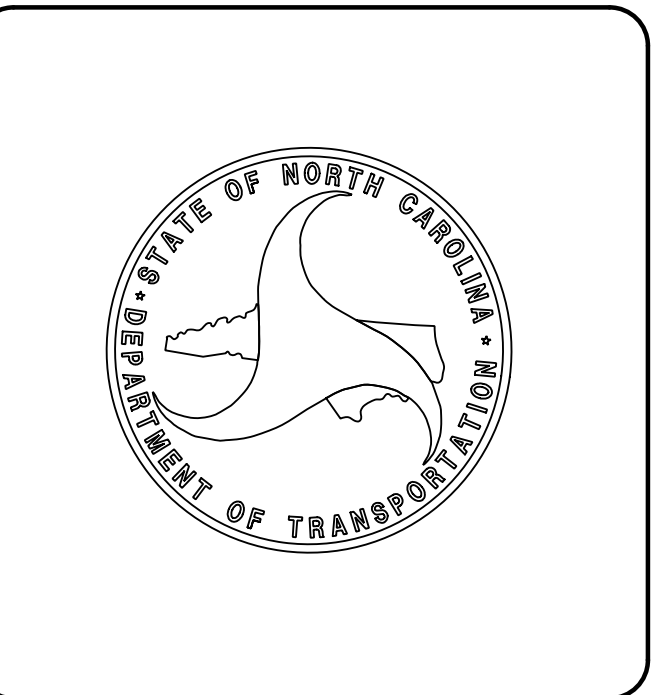
2018 STANDARD SPECIFICATIONS

LETTING DATE:  
JUNE 18, 2019

**STRUCTURES ENGINEER**

DocuSigned by:  
David W. Hawkins  
P.E.

SIGNATURE:



**CURVE DATA -L-**

PI STA. 17+31.07 -L- PI STA. 23+51.35 -L-  
 $\Delta = 3^\circ-32'-38''$  (RT)  $\Delta = 2^\circ-51'-22''$  (RT)  
 $D = 1^\circ-46'-46''$   $D = 1^\circ-46'-46''$   
 $T = 99.62'$   $T = 80.27'$   
 $L = 199.17'$   $L = 160.52'$   
 $R = 3,220.00'$   $R = 3,220.00'$

**CURVE DATA -RR1-**

PI STA. 18+94.40 -RR1-  
 $\Delta = 6^\circ-03'-10''$  (LT)  
 $D = 5^\circ-52'-35''$   
 $T = 51.55'$   
 $L = 103.00'$   
 $R = 975.00'$

**CURVE DATA -RR2-**

PI STA. 19+11.99 -RR2-  
 $\Delta = 8^\circ-18'-06''$  (LT)  
 $D = 8^\circ-25'-33''$   
 $T = 49.35'$   
 $L = 98.53'$   
 $R = 680.00'$

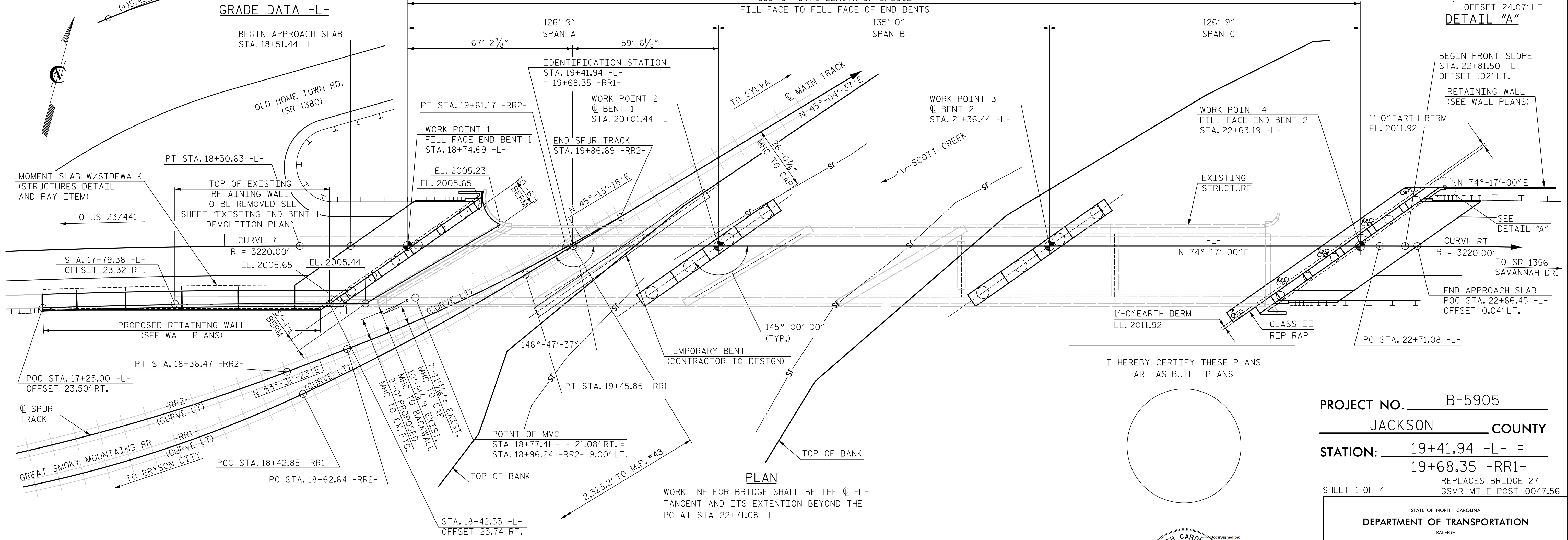
PI = 18+00.00  
 EL = 2,012.85'  
 VC = 130'

PI = 23+30.00  
 EL = 2,024.33'  
 VC = 100'

**GRADE DATA -L-**

(+15.4306%) (+)2.1666% (+)2.6818%

BEGIN APPROACH SLAB  
 STA. 18+51.44 -L-



**PLAN**

WORKLINE FOR BRIDGE SHALL BE THE  $\text{C}$  -L- TANGENT AND ITS EXTENSION BEYOND THE PC AT STA 22+71.08 -L-

**BRIDGE HYDRAULIC DATA (BRIDGE 27)**

DESIGN DISCHARGE	=	8,900 CFS
FREQUENCY OF DESIGN FLOOD	=	50 YR
DESIGN HIGH WATER ELEVATION	=	1985.6 FT.
DRAINAGE AREA	=	59 SQ. MI.
BASIC DISCHARGE (Q100)	=	11,000 CFS
BASIC HIGH WATER ELEVATION	=	1987.0 FT.

**OVERTOPPING FLOOD DATA**

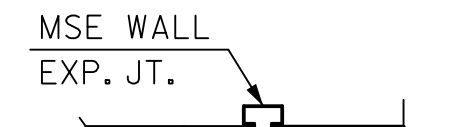
OVERTOPPING DISCHARGE	=	> 14,000 CFS
FREQUENCY OF OVERTOPPING FLOOD	=	> 500 YR
OVERTOPPING FLOOD ELEVATION	=	2013 FT.

NOTE: OVERTOPPING OF WESTERN ABUTMENT INTO ROADWAY

**TOP OF RAIL ELEVATIONS**

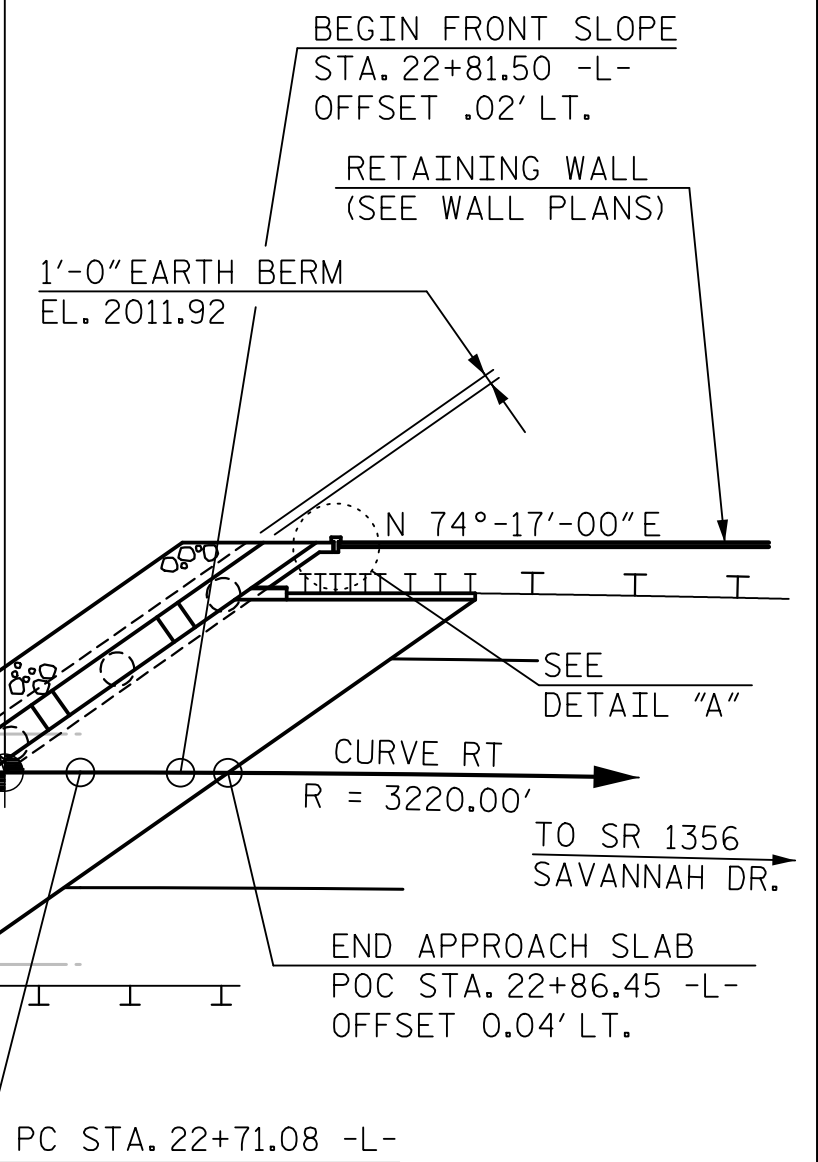
STATION -RR1-	EL.	STATION -RR2-	EL.
18+50	1,985.95	18+50	1,985.89
19+00	1,986.45	19+00	1,986.57
19+50	1,986.92	19+50	1,986.93
20+00	1,987.12		
20+50	1,987.44		

NOTE: TOP OF RAIL ELEVATIONS ARE BASED ON AVAILABLE SURVEY INFORMATION.

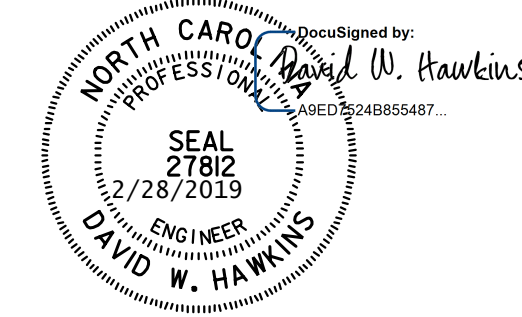


STA. 22+97.21 -L- OFFSET 24.07' LT

**DETAIL "A"**



I HEREBY CERTIFY THESE PLANS ARE AS-BUILT PLANS



PROJECT NO. B-5905  
 JACKSON COUNTY  
 STATION: 19+41.94 -L- = 19+68.35 -RR1-  
 REPLACES BRIDGE 27  
 GSMR MILE POST 0047.56

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 BRIDGE ON US 23 BUSINESS OVER GREAT SMOKY MOUNTAINS RAILROAD AND SCOTT CREEK BETWEEN US 23/441 AND SR 1356

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-1
1			3			TOTAL SHEETS
2			4			54

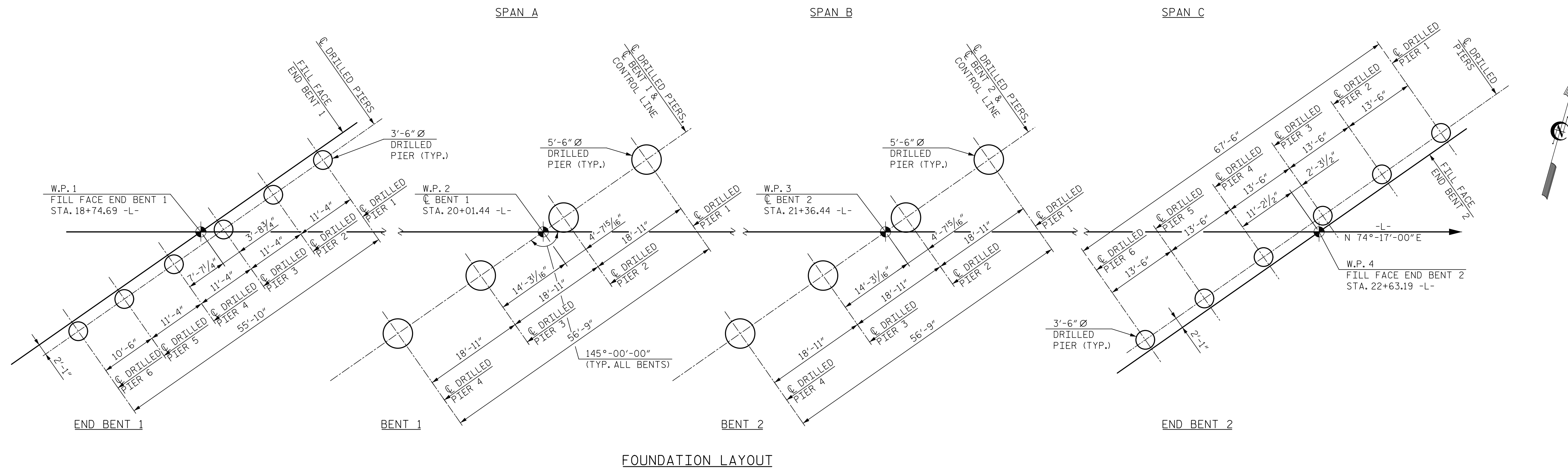
NOTE: THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 22'-3 1/2" LEFT AND 24'-11" RIGHT OF THE CENTERLINE ROADWAY AT END BENT NO. 1 AND FOR A DISTANCE OF 23'-11 1/2" LEFT AND 27'-9 1/2" RIGHT OF THE CENTERLINE ROADWAY AT END BENT NO. 2 AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

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 NC License No. C-1554  
 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY	M. WRIGHT	DATE	10/18
CHECKED BY	P. BARBER	DATE	11/18
DESIGN ENGINEER OF RECORD	D. HAWKINS	DATE	11/18

DWG. NO. 1



**FOUNDATION NOTES**

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

INSTALL DRILLED PIERS AT END BENT NO.1 TO A TIP ELEVATION NO HIGHER THAN 1,978.6 FT WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 7 FT INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

DRILLED PIERS AT END BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 200 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30 TSF.

INSTALL DRILLED PIERS AT BENT NO.1 TO A TIP ELEVATION NO HIGHER THAN 1,953.1 FT WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 11 FT INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

DRILLED PIERS AT BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 540 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30 TSF.

PERMANENT STEEL CASING IS REQUIRED FOR DRILLED PIERS AT BENT NO.1. IF REQUIRED, DO NOT EXTEND PERMANENT CASING BELOW ELEVATION 1,964.1 FT. WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.1 IS ELEVATION 1,960.0 FT. THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

INSTALL DRILLED PIERS AT BENT NO.2 TO A TIP ELEVATION NO HIGHER THAN 1,966.7 (PIER 1), 1,960.8 FT (PIERS 2-3), AND 1,957.8 FT (PIER 4) WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 11 FT INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

DRILLED PIERS AT BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 540 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30 TSF.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.2 IS ELEVATION 1,974.5 FT (PIER 1) 1,965.5 FT (PIERS 2-3), AND 1,960.0 FT (PIER 4). THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

INSTALL DRILLED PIERS AT END BENT NO.2 TO A TIP ELEVATION NO HIGHER THAN 2,002.4 (PIERS 1-3), 1,991.6 FT (PIERS 4-5), AND 1,985.0 FT (PIER 6) WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 7 FT INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

DRILLED PIERS AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 190 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30 TSF.

CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR THE DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

DRILLED PIER NO.6 AT END BENT 1 WILL ENCOUNTER REINFORCED CONCRETE ASSOCIATED WITH THE EXISTING RETAINING WALL.

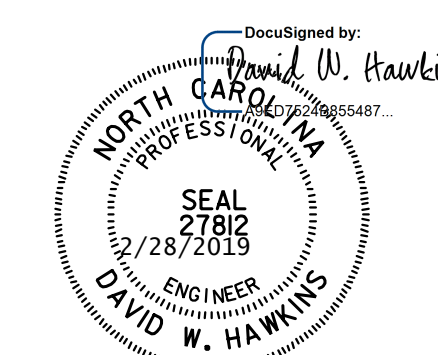
DRILLED PIER NO.6 AT END BENT 2 COULD ENCOUNTER REINFORCED CONCRETE ASSOCIATED WITH THE EXISTING RETAINING WALL.

**NOTES:**  
 ALL DIMENSIONS ARE PARALLEL OR NORMAL TO BENT CONTROL LINES AND FILL FACES.  
 FOR FOUNDATION ELEVATIONS AND DETAILS, SEE BENT AND END BENT SHEETS.

PROJECT NO. B-5905  
JACKSON COUNTY  
 STATION: 19+41.94 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 GENERAL DRAWING  
 FOUNDATION LAYOUT



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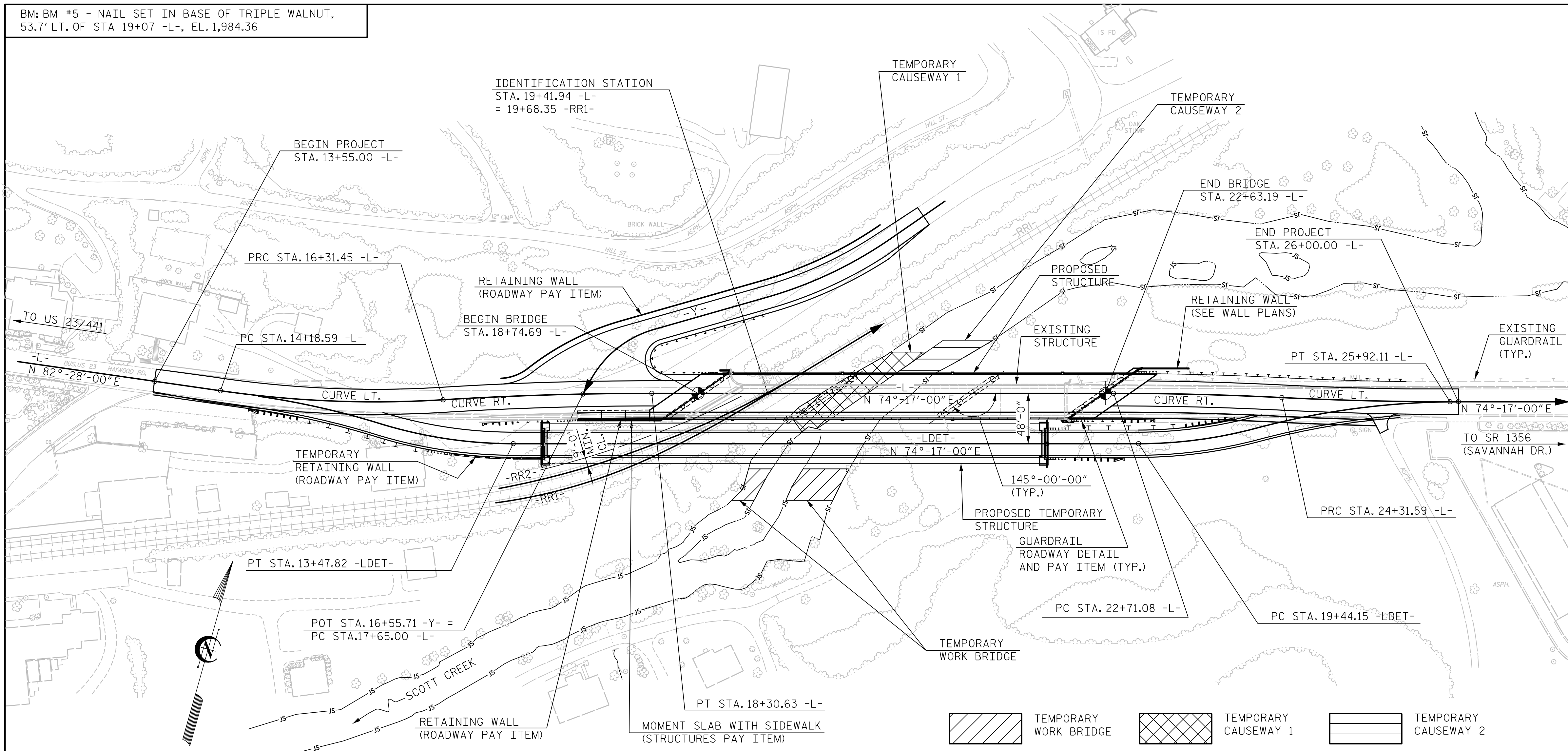
DRAWN BY: M. WRIGHT DATE: 5/18  
 CHECKED BY: N. SALAS ZAMUDIO DATE: 5/18  
 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 11/18

DWG. NO. 2

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REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-2
1			3			TOTAL SHEETS
2			4			54

BM: BM #5 - NAIL SET IN BASE OF TRIPLE WALNUT,  
53.7' LT. OF STA 19+07 -L-, EL. 1,984.36



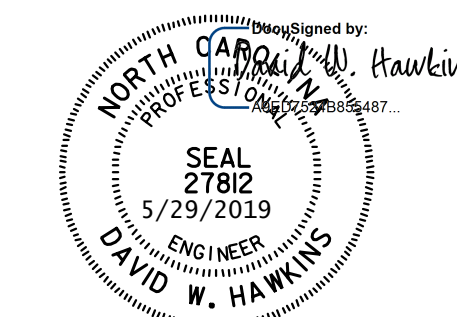
NOTE: TEMPORARY CAUSEWAY 1 AND TEMPORARY CAUSEWAY 2 SHALL NOT BE INSTALLED CONCURRENTLY.

LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE AT STATION 16+15.80 -LDET-	CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY STRUCTURE AT STATION 13+30.84 -Y3DET-	CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS AT STATION 19+41.94 -L-	REMOVAL OF EXISTING STRUCTURE AT STATION 19+41.94 -L-	ASBESTOS ASSESSMENT	3'-6" DIA. DRILLED PIERS IN SOIL	5'-6" DIA. DRILLED PIERS IN SOIL	3'-6" DIA. DRILLED PIERS NOT IN SOIL	5'-6" DIA. DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 5'-6" DIA. DRILLED PIER	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION 19+41.94 -L-	REINFORCED CONCRETE DECK SLAB
	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	L.F.	L.F.	L.F.	L.F.	L.F.	EACH	LUMP SUM	SQ. FT.
SUPERSTRUCTURE	—	—	—	—	—	—	—	—	—	—	—	—	16,962
END BENT 1	—	—	—	—	—	72.0	—	84.0	—	—	—	LUMP SUM	—
BENT 1	—	—	—	—	—	—	1.0	—	77.0	33.6	—	—	—
BENT 2	—	—	—	—	—	—	27.1	—	51.0	—	—	—	—
END BENT 2	—	—	—	—	—	57.8	—	44.0	—	—	—	LUMP SUM	—
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	129.8	28.1	128.0	128.0	33.6	1	LUMP SUM	16,962



PROJECT NO. B-5905  
JACKSON COUNTY  
 STATION: 19+41.94 -L-

	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS, STATION 19+41.94 -L-	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	APPROX. 550,300 LBS STRUCTURAL STEEL	TWO BAR METAL RAIL	1'-2" x 2'-6" CONCRETE PARAPET	1'-2" x 3'-2 3/4" CONCRETE PARAPET	4" SLOPE PROTECTION	RIP-RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	DISC BEARINGS	EXPANSION JOINT SEALS	MOMENT SLAB WITH SIDEWALK
	SQ. FT.	CU. YD.	LUMP SUM	LBS.	LBS.	LUMP SUM	L.F.	L.F.	L.F.	SQ. YD.	TON	SQ. YD.	LUMP SUM	LUMP SUM	L.F.
SUPERSTRUCTURE	14,162	—	LUMP SUM	—	—	LUMP SUM	844.18	393.71	505.38	—	—	—	LUMP SUM	LUMP SUM	—
END BENT 1	—	55.8	—	21,263	3,515	—	—	—	57.0	—	—	—	—	—	—
BENT 1	—	174.8	—	37,764	7,969	—	—	—	—	—	—	—	—	—	—
BENT 2	—	157.0	—	35,655	7,144	—	—	—	—	—	—	—	—	—	—
END BENT 2	—	66.1	—	29,249	2,329	—	—	—	—	—	67.3	74.8	—	—	—
TOTAL	14,162	453.7	LUMP SUM	123,931	20,957	LUMP SUM	844.18	393.71	505.38	57.0	67.3	74.8	LUMP SUM	LUMP SUM	102.75

SHEET 3 OF 4  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 GENERAL DRAWING  
 LOCATION SKETCH,  
 & TOTAL  
 BILL OF MATERIAL

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DRAWN BY: M. WRIGHT DATE: 10/18  
 CHECKED BY: P. BARBER DATE: 11/18  
 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 11/18

DOCUMENT NOT CONSIDERED FINAL  
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DWG. NO. 3

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-3
1			3			TOTAL SHEETS
2			4			54

**GENERAL NOTES**

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

AT THE CONTRACTOR'S OPTION, AND UPON THE REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 19+41.94 -L-.

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

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

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

THE 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.

THE EXISTING 6 SPAN STRUCTURE WITH ONE END SPAN LENGTH OF 67'-0", INTERIOR SPAN LENGTHS OF 62'-6", 62'-6", 24'-3", AND 62'-6", AND ONE END SPAN LENGTH OF 64'-10" WITH REINFORCED CONCRETE DECK SUPPORTED BY 5 LINES OF 33" REINFORCED CONCRETE BEAMS AT 7'-0" CTS. AND 26'-0" CLEAR ROADWAY ON REINFORCED CONCRETE END BENTS ON PILE FOOTINGS AND REINFORCED CONCRETE SOLID BENTS ON PILE FOOTINGS, LOCATED ±50' DOWNSTREAM OF PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY 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.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THE RAILROAD TRACK TOP OF RAIL ELEVATIONS ON THE PLANS ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE TOP OF RAIL ELEVATIONS AND REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.

ALL PAVEMENT MARKING WILL BE IN ACCORDANCE WITH THE PAVEMENT MARKING PLANS AND SHALL PROVIDE FOR BICYCLES.

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 19+41.94 -L-.

THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY STRUCTURE AT STATION 19+41.94 -L- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE, SEE SPECIAL PROVISIONS.

THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY STRUCTURE AT STATION 13+30.84 -Y3DET- FOR USE DURING CONSTRUCTION OF THE DETOUR BRIDGE RETAINING WALL WALL-Y. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE, SEE SPECIAL PROVISIONS.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS AT BENT 2 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 ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

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

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

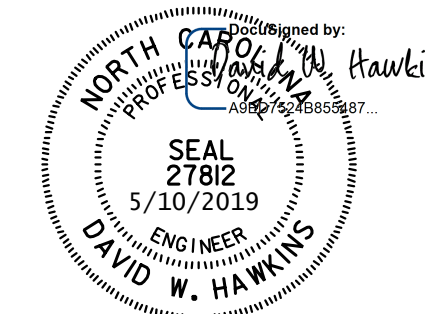
PROJECT NO. B-5905  
JACKSON COUNTY  
STATION: 19+41.94 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

GENERAL DRAWING

GENERAL NOTES



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343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY: M. WRIGHT DATE: 4/18  
CHECKED BY: N. SALAS ZAMUDIO DATE: 5/18  
DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 11/18

DWG. NO. 4

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REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-4
1			3			TOTAL SHEETS
2			4			54

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	$\gamma_{DC}$	$\gamma_{DW}$
	STRENGTH I	1.25	1.50
	SERVICE II	1.00	1.00

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 ( $\gamma_{LL}$ )	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 ( $\gamma_{LL}$ )	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.02	--	1.75	--	1.08	C	EL	0.0	--	1.02	A	EL	0.0	1.30	--	1.64	C	EL	67.3	①	
	HL-93 (OPERATING)	N/A		1.32	--	1.35	--	1.41	C	EL	0.0	--	1.32	A	EL	0.0	1.00	--	2.13	C	EL	67.3	①	
	HS-20 (INVENTORY)	36.00	②	1.38	49.7	1.75	--	1.63	C	EL	72.6	--	1.38	A	I	0.0	1.30	--	2.39	C	EL	72.6	①	
	HS-20 (OPERATING)	36.00		1.79	64.4	1.35	--	2.11	C	EL	72.6	--	1.79	A	I	0.0	1.00	--	3.10	C	EL	72.6	①	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13,500		4.17	56.3	1.40	--	4.88	C	EL	72.6	--	4.17	A	I	0.0	1.30	--	5.73	C	EL	72.6	①
		SNGARBS2	20,000		2.98	59.6	1.40	--	3.49	C	EL	72.6	--	2.98	A	I	0.0	1.30	--	4.10	C	EL	72.6	①
		SNAGRIS2	22,000		2.73	60.1	1.40	--	3.25	C	EL	72.6	--	2.73	A	I	0.0	1.30	--	3.81	C	EL	72.6	①
		SNCOTTS3	27,250		2.10	57.2	1.40	--	2.43	C	EL	73.4	--	2.10	A	I	0.0	1.30	--	2.84	C	EL	67.3	①
		SNAGGRS4	34,925		1.71	59.7	1.40	--	1.98	C	EL	73.4	--	1.71	A	I	0.0	1.30	--	2.32	C	EL	67.3	①
		SNS5A	35,550		1.70	60.4	1.40	--	1.94	C	EL	73.4	--	1.70	A	I	0.0	1.30	--	2.27	C	EL	67.3	①
		SNS6A	39,950		1.55	61.9	1.40	--	1.76	C	EL	73.4	--	1.55	A	I	0.0	1.30	--	2.06	C	EL	67.3	①
		SNS7B	42,000		1.49	62.6	1.40	--	1.68	C	EL	73.4	--	1.49	A	I	0.0	1.30	--	1.97	C	EL	67.3	①
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33,000		1.85	61.1	1.40	--	2.16	C	EL	67.3	--	1.85	A	I	0.0	1.30	--	2.52	C	EL	67.3	①
		TNT4A	33,075		1.85	61.2	1.40	--	2.14	C	EL	73.4	--	1.85	A	I	0.0	1.30	--	2.51	C	EL	67.3	①
		TNT6A	41,600		1.59	66.1	1.40	--	1.74	C	EL	72.6	--	1.59	A	I	0.0	1.30	--	2.04	C	EL	67.3	①
		TNT7A	42,000		1.58	66.4	1.40	--	1.73	C	EL	73.4	--	1.58	A	I	0.0	1.30	--	2.03	C	EL	67.3	①
		TNT7B	42,000		1.51	63.4	1.40	--	1.75	C	EL	73.4	--	1.51	A	I	0.0	1.30	--	2.06	C	EL	73.4	①
		TNAGRIT4	43,000		1.45	62.4	1.40	--	1.70	C	EL	73.4	--	1.45	A	I	0.0	1.30	--	1.99	C	EL	73.4	①
TNAGT5A	45,000		1.42	63.9	1.40	--	1.62	C	EL	73.4	--	1.42	A	I	0.0	1.30	--	1.90	C	EL	67.3	①		
TNAGT5B	45,000		③	1.38	62.1	1.40	--	1.60	C	EL	73.4	--	1.38	A	I	0.0	1.30	--	1.88	C	EL	67.3	①	
FATIGUE	HL-93 (INVENTORY)	$\gamma_{LL}=0.75$		1.23																				

NOTES:

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

COMMENTS:

- THE LIVE LOAD DISTRIBUTION WAS BASED ON A REFINED METHOD OF ANALYSIS USING A GRILLAGE ANALOGY METHOD. LIVE LOAD DISTRIBUTION FACTORS VARY ALONG THE LENGTH OF THE SPAN AND WITH EACH VEHICLE.
- 
- 
- 

# CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93) \*\*

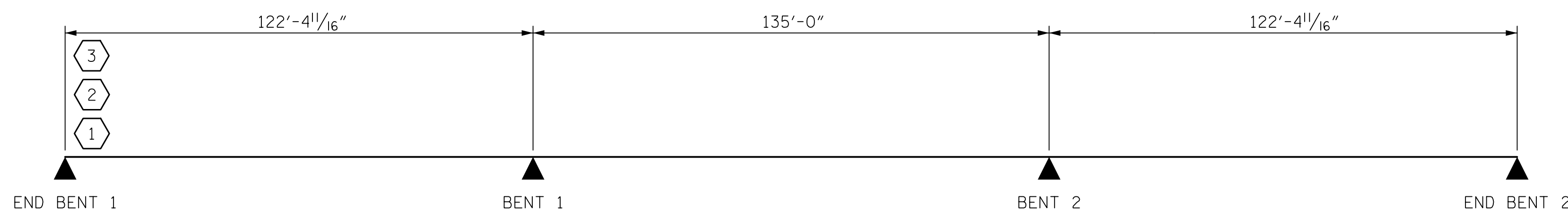
② DESIGN LOAD RATING (HS-20) \*\*

③ LEGAL LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

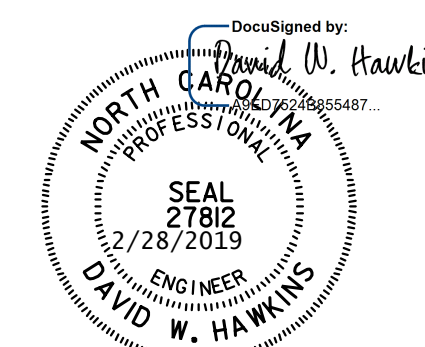
I - INTERIOR GIRDER  
EL - EXTERIOR LEFT GIRDER  
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

NOTE: SPAN LENGTH PROVIDED IS BEARING TO BEARING LENGTH.

PROJECT NO. B-5905  
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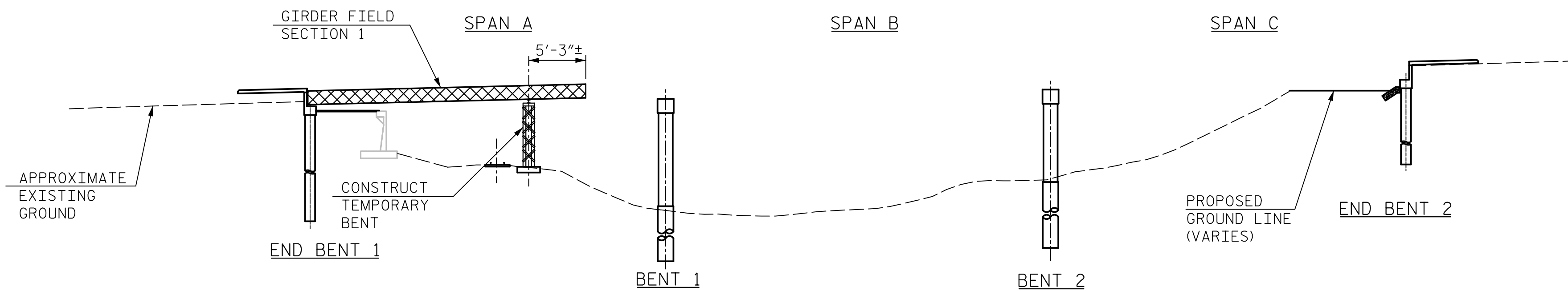
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
LRFR SUMMARY FOR  
STEEL GIRDERS  
(NON-INTERSTATE TRAFFIC)

ASSEMBLED BY : M. WRIGHT	DATE : 7/18
CHECKED BY : D. HAWKINS	DATE : 7/18
DRAWN BY : MAA	1/08
CHECKED BY : GM/DI	2/08
REV. 11/12/08RR	MAA/GM
REV. 10/1/11	MAA/GM
REV. 12/17	MAA/THC

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DRAWN BY : M. WRIGHT	DATE : 7/18
CHECKED BY : D. HAWKINS	DATE : 7/18
DESIGN ENGINEER OF RECORD : D. HAWKINS	DATE : 11/18
DWG. NO. 5	

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-5
1			3			TOTAL SHEETS
2			4			54

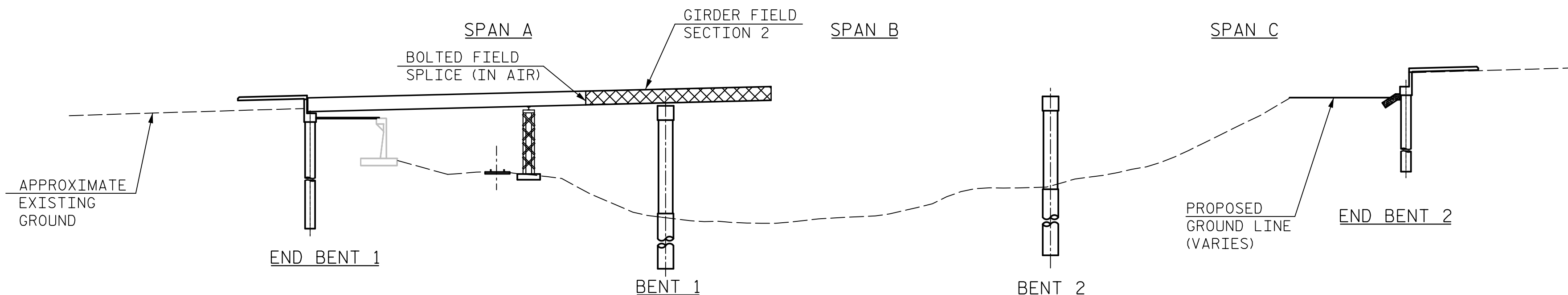
2020  
2010  
2000  
1990  
1980  
1970  
1960  
1950



**STEP 1 GIRDER ERECTION - ELEVATION**

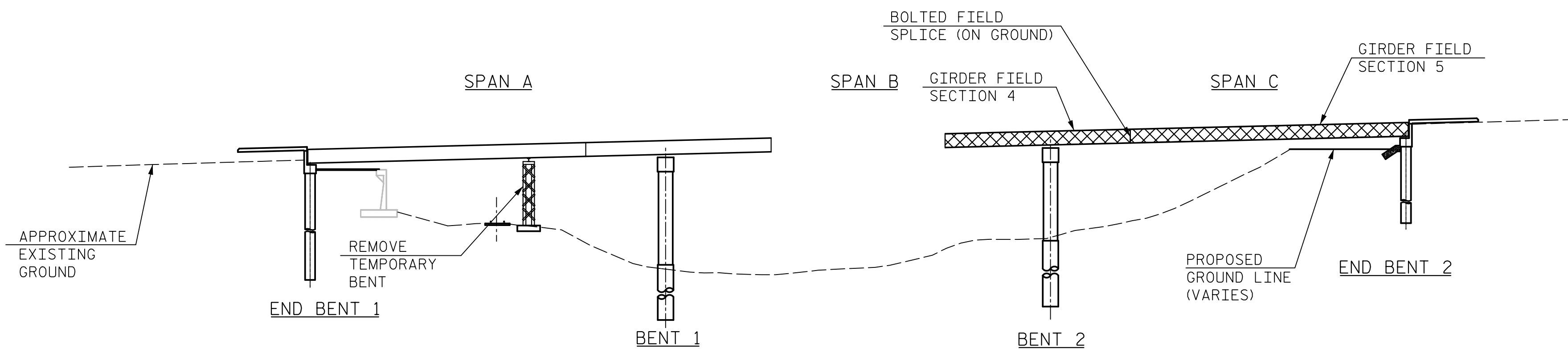
NOTE: ERECT GIRDER FIELD SECTION 1 AFTER TEMPORARY BENT IS COMPLETED.

2020  
2010  
2000  
1990  
1980  
1970  
1960  
1950



**STEP 2 GIRDER ERECTION - ELEVATION**

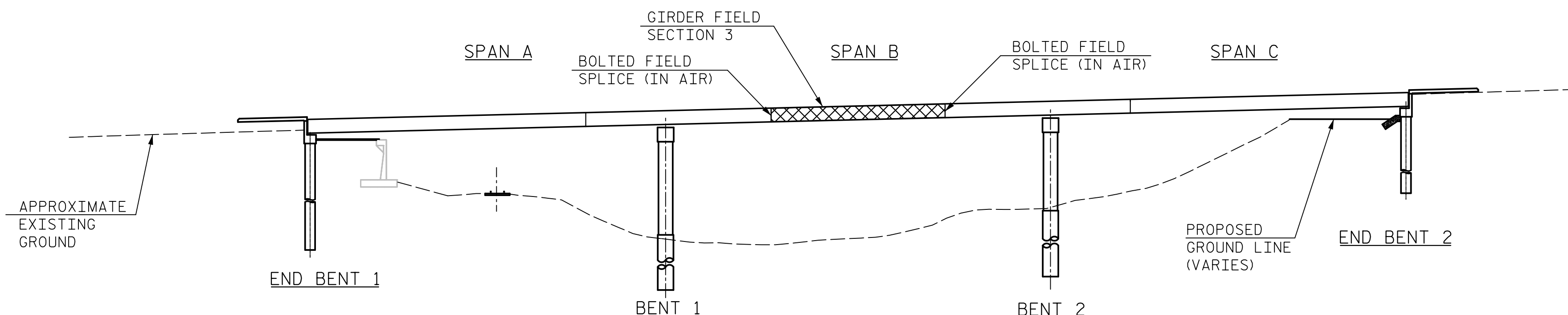
2020  
2010  
2000  
1990  
1980  
1970  
1960  
1950



**STEP 3 GIRDER ERECTION - ELEVATION**

NOTE: REMOVE TEMPORARY BENT ONCE GIRDER FIELD SECTION 1 & 2 ARE CONNECTED AND SUPPORTED BY END BENT 1 AND BENT 1.

2020  
2010  
2000  
1990  
1980  
1970  
1960  
1950



**STEP 4 GIRDER ERECTION - ELEVATION**

**NOTES:**

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

PLANS FOR TEMPORARY BENT ERECTION AND REMOVAL SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

NO SEPARATE PAYMENT WILL BE MADE FOR PROVIDING THE TEMPORARY BENT, TEMPORARY BRACING OR OTHER MEANS OF TEMPORARY SUPPORT. THE COST FOR ALL MATERIALS, EQUIPMENT, TOOLS AND LABOR NECESSARY FOR THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE LUMP SUM BID PRICE FOR STRUCTURAL STEEL.

THE CONTRACTOR IS RESPONSIBLE FOR DESIGNING THE TEMPORARY BENT. THE DESIGN SHALL BE COMPLETED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA. THE CONTRACTOR'S ENGINEER SHALL SUBMIT SIGNED AND SEALED WORKING DRAWINGS FOR APPROVAL BY THE ENGINEER.

DURING GIRDER ERECTION, THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TEMPORARY LATERAL BRACING AND OTHER MEANS OF SUPPORT AS REQUIRED TO ENSURE THE STABILITY OF THE GIRDERS, AVOID UPLIFT, AND ENSURE PLUMBNESS OF THE GIRDERS IN THE FINAL POSITION.

ERECT GIRDER SEGMENTS IN PAIRS WITH ALL CROSS FRAMES IN PLACE AND BOLTS TIGHTENED PRIOR TO RELEASING GIRDERS.

TEMPORARY SUPPORTS SHALL REMAIN IN PLACE UNTIL ALL GIRDER SEGMENTS AND CROSS FRAMES IN GIRDER FIELD SECTIONS 1 AND 2 ARE IN PLACE AND BOLTS ARE TIGHTENED.

THE CONTRACTOR'S ERECTION PLANS SHALL INCLUDE A METHOD OF TEMPORARY SUPPORT REMOVAL THAT WILL UNIFORMLY TRANSFER THE LOAD TO THE BEARINGS.

A TRACK OUTAGE IS REQUIRED FOR INSTALLATION, USAGE AND REMOVAL OF TEMPORARY BENT. CONTRACTOR SHALL COORDINATE WITH THE ENGINEER AND THE GREAT SMOKY MOUNTAIN RAILROAD FOR THE NECESSARY TRACK OUTAGE.

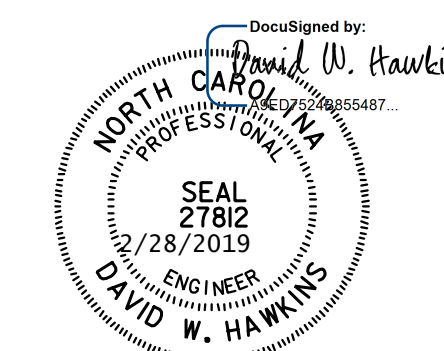
CONTRACTOR SHALL PROTECT THE TRACK STRUCTURE DURING TEMPORARY BENT CONSTRUCTION. RAILS AND TIES SHALL REMAIN IN PLACE.

UNLESS OTHERWISE APPROVED BY AN AUTHORIZED REPRESENTATIVE OF THE RAILROAD AND THE DEPARTMENT, THE CONTRACTOR SHALL MAINTAIN AT ALL TIMES A MINIMUM VERTICAL TRACK CLEARANCE OF TWENTY-ONE FEET, THREE INCHES (21'3") FROM THE TOP OF THE HIGHEST RAIL AND A MINIMUM HORIZONTAL TRACK CLEARANCE OF TWELVE FEET (12') FROM THE CENTERLINE OF TANGENT TRACK OR THIRTEEN FEET (13') FROM THE CENTERLINE OF THE CURVED TRACK. NO PHYSICAL OBSTRUCTION SHALL BE PLACED WITHIN THESE CLEARANCES WITHOUT THE EXPRESS, WRITTEN PERMISSION OF THE AUTHORIZED REPRESENTATIVE OF THE RAILROAD. SUCH PHYSICAL OBSTRUCTIONS SHALL INCLUDE STOCKPILED MATERIALS, PARKED EQUIPMENT, PLACEMENT OR DRIVING OF PILES, AND BRACING OR OTHER CONSTRUCTION SUPPORTS.

THE CONTRACTOR SHALL MAINTAIN AN UNOBSTRUCTED CONTINUOUS SPACE A DISTANCE OF TEN FEET (10') FROM THE CENTERLINE ON EACH SIDE OF ANY RAILROAD TRACK WITHIN, ON, OR NEAR RAILROAD PROPERTY. THIS SPACE SHALL BE MAINTAINED SO THAT IT IS SUITABLE FOR THE RAILROAD'S USE IN WALKING ALONG TRAINS. ANY TEMPORARY OBSTRUCTIONS WITHIN THIS TEN FEET (10') OF SPACE SHALL BE REMOVED BEFORE THE CLOSE OF EACH WORK DAY. IF THERE IS ANY EXCAVATION NEAR THIS TEN FEET (10'), THE CONTRACTOR SHALL PLACE A HANDRAIL AT LEAST TEN FEET (10') FROM THE CENTERLINE OF TRACK THAT IS IN CONFORMANCE WITH AREMA AND FRA STANDARDS.

FOR TEMPORARY BENTS, SEE SPECIAL PROVISIONS.

PROJECT NO. B-5905  
JACKSON COUNTY  
 STATION: 19+41.94 -L-



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 GIRDER  
 ERECTION DETAILS

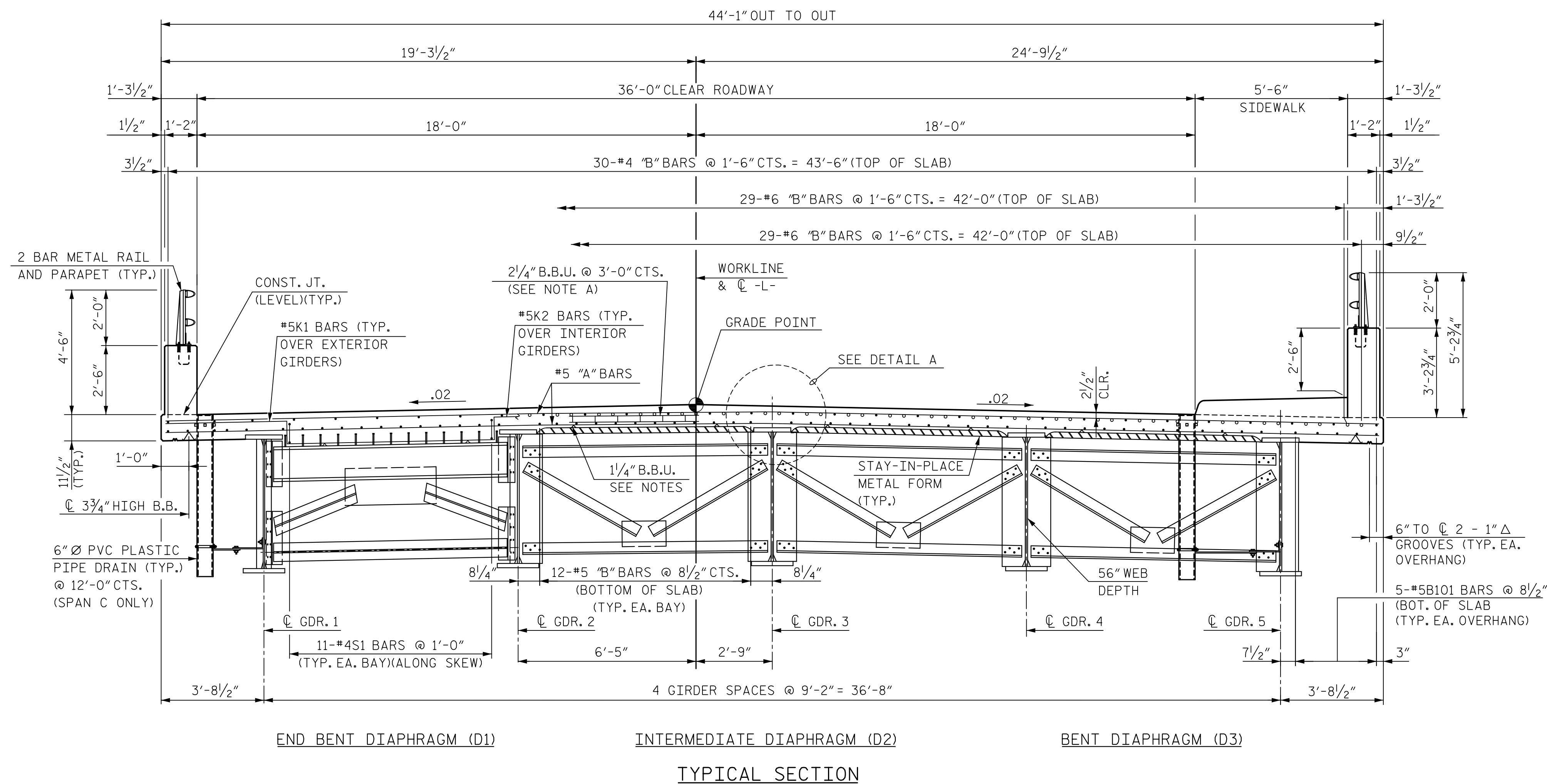
<b>HNTB</b>		HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	
DRAWN BY	M. WRIGHT	DATE	7/18
CHECKED BY	P. BARBER	DATE	8/18
DESIGN ENGINEER OF RECORD	D. HAWKINS	DATE	11/18

DWG. NO. 6

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REVISIONS						SHEET NO. S1-6
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 54
2			4			





**NOTES**

ALL HORIZONTAL DIMENSIONS SHOWN ARE NORMAL TO THE WORKLINE UNLESS NOTED OTHERWISE.

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

NO CHAMFER IS REQUIRED ON CORNERS OF GIRDER BUILDUPS.

PVC DECK DRAINS SHALL BE PAINTED WITH TWO COATS OF BROWN PRIMER MEETING THE REQUIREMENTS OF ARTICLE 1080-09 OF THE STANDARD SPECIFICATIONS. EACH COAT SHALL BE 2 DRY MILS THICK. DECK DRAINS SHALL BE ROUGHENED PRIOR TO PAINTING. NO SEPARATE PAYMENT SHALL BE MADE FOR PAINTING PVC DECK DRAINS AS THIS IS CONSIDERED INCIDENTAL TO THE PAY ITEM FOR REINFORCED CONCRETE DECK SLAB.

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

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

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

#5G1 BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.

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.

FOR DIAPHRAGM LOCATIONS AND DETAILS, SEE "FRAMING PLAN" SHEETS AND "STRUCTURAL STEEL DETAILS" SHEET.

FOR DETAIL A, SEE "TYPICAL SECTION" SHEET 2 OF 2.

**"B" BAR KEY:**

- = CONTINUOUS BAR RUN
  - = NON CONTINUOUS BAR RUN
- FOR NEGATIVE MOMENT REGIONS, SEE PLAN OF SPAN SHEETS.

NOTE A: TO MAINTAIN PROPER LOCATION OF "A" BARS IN TOP OF SLAB, BBU DEPTH MUST VARY IN UNIT AS THE MAXIMUM SIZE OF THE "B" BARS IN THE TOP OF THE SLAB VARIES. A 2 1/4" BBU SHALL BE USED WHERE #4 "B" BARS ARE PRESENT. WHERE #6 "B" BARS ARE PRESENT, A 2" BBU SHALL BE USED.

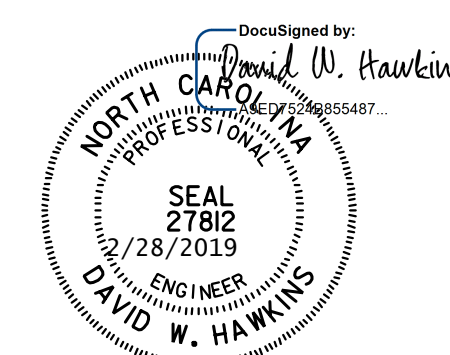
PROJECT NO. B-5905  
JACKSON COUNTY  
 STATION: 19+41.94 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

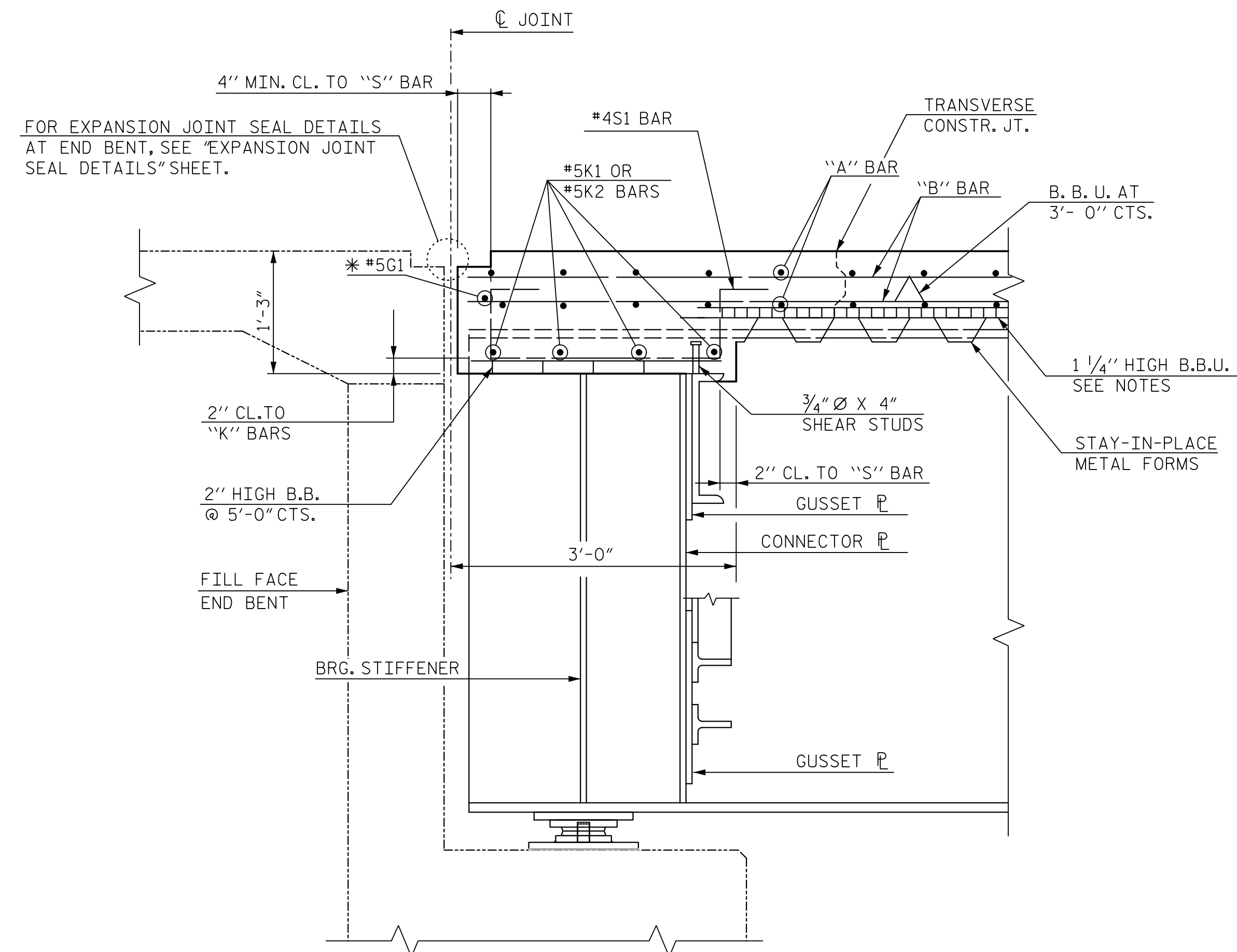


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DRAWN BY: M. WRIGHT DATE: 4/18  
 CHECKED BY: N. SALAS ZAMUDIO DATE: 5/18  
 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 11/18  
 DWG. NO. 7

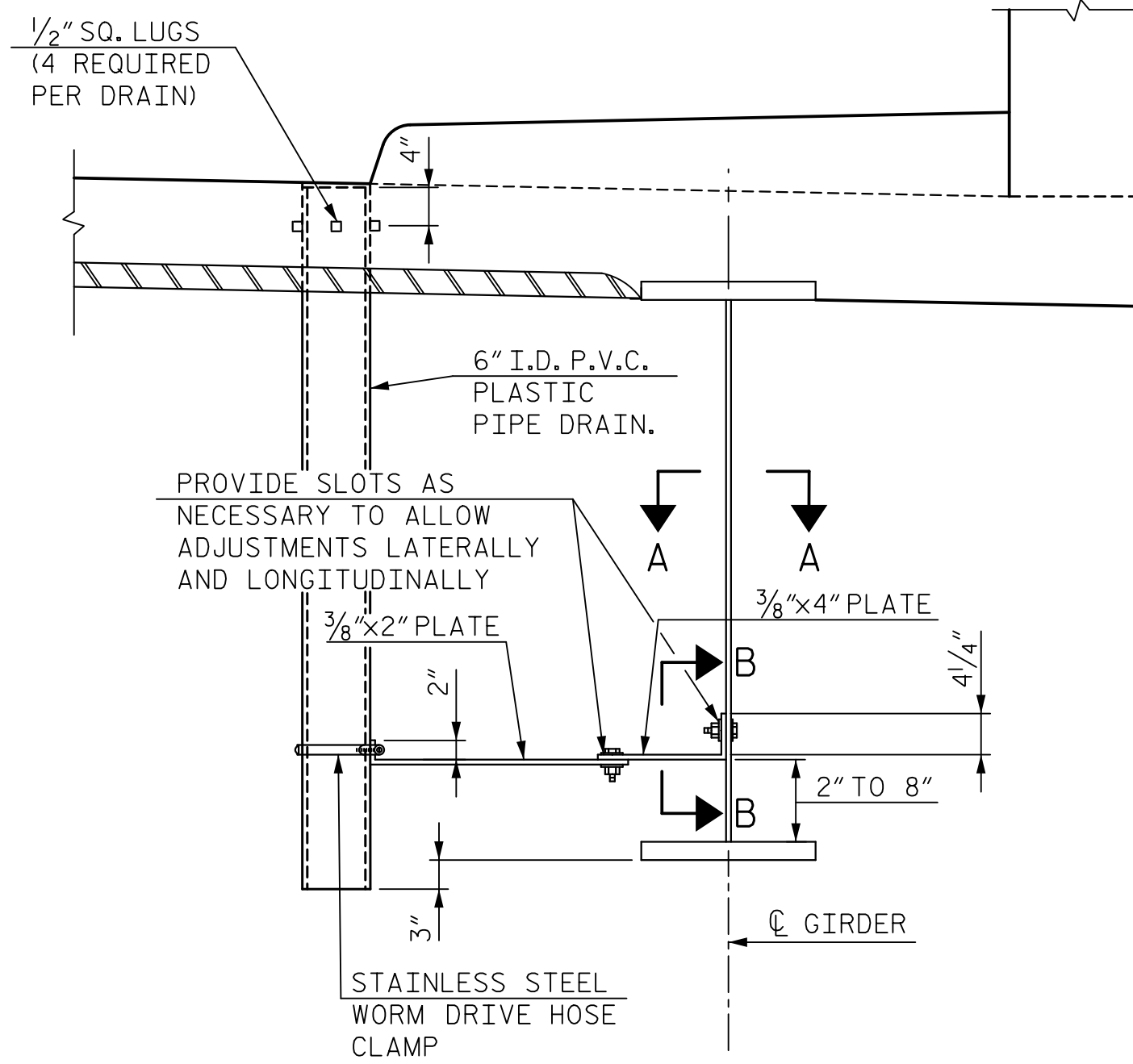
**DOCUMENT NOT CONSIDERED FINAL  
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REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-7
1			3			TOTAL SHEETS
2			4			54



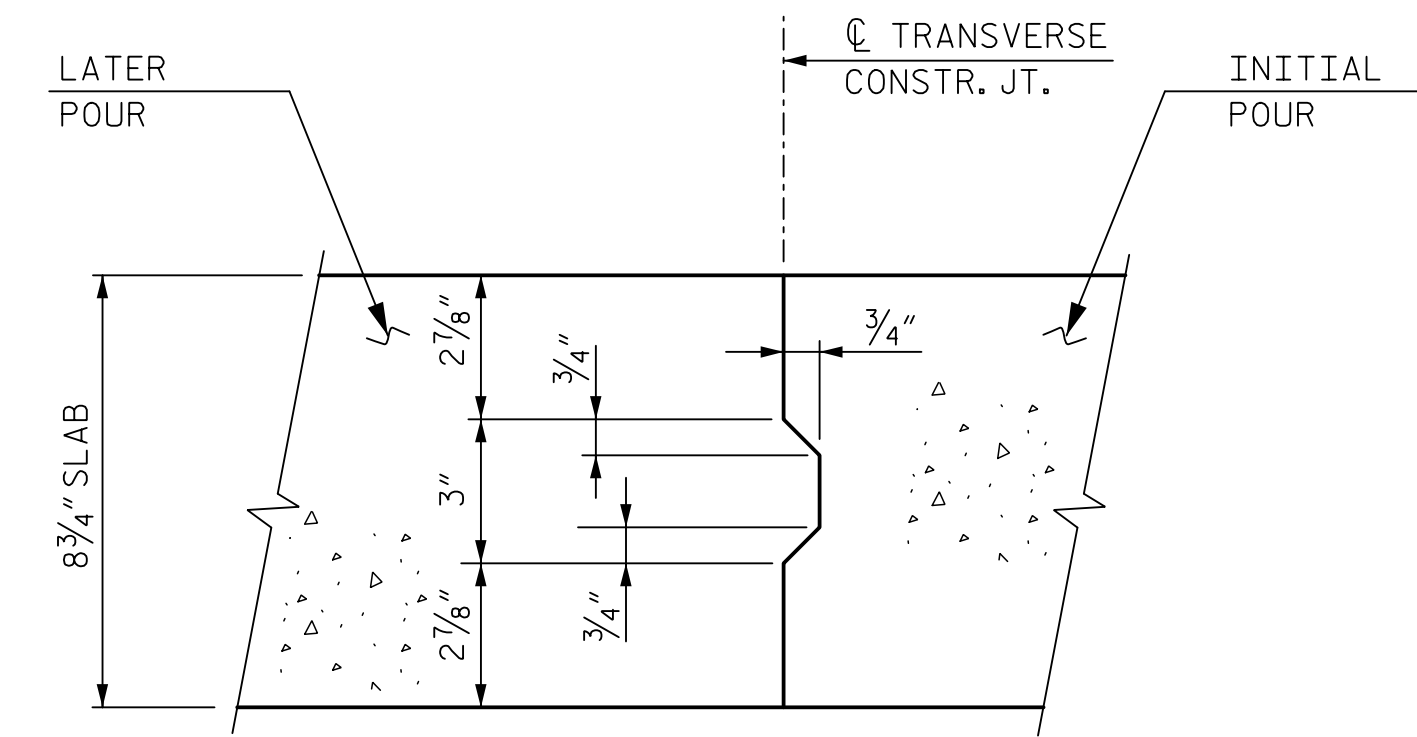
SECTION A-A

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

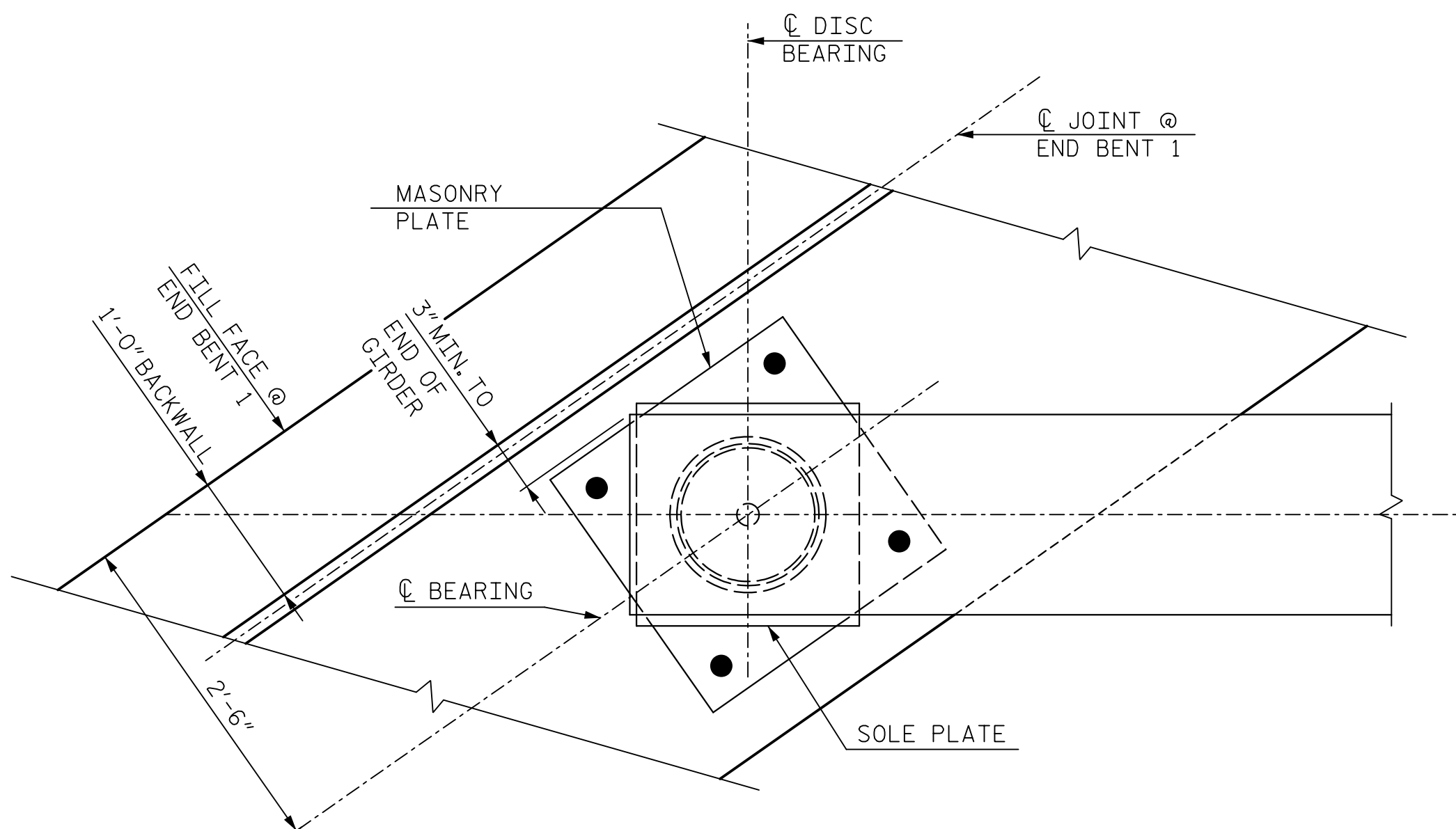
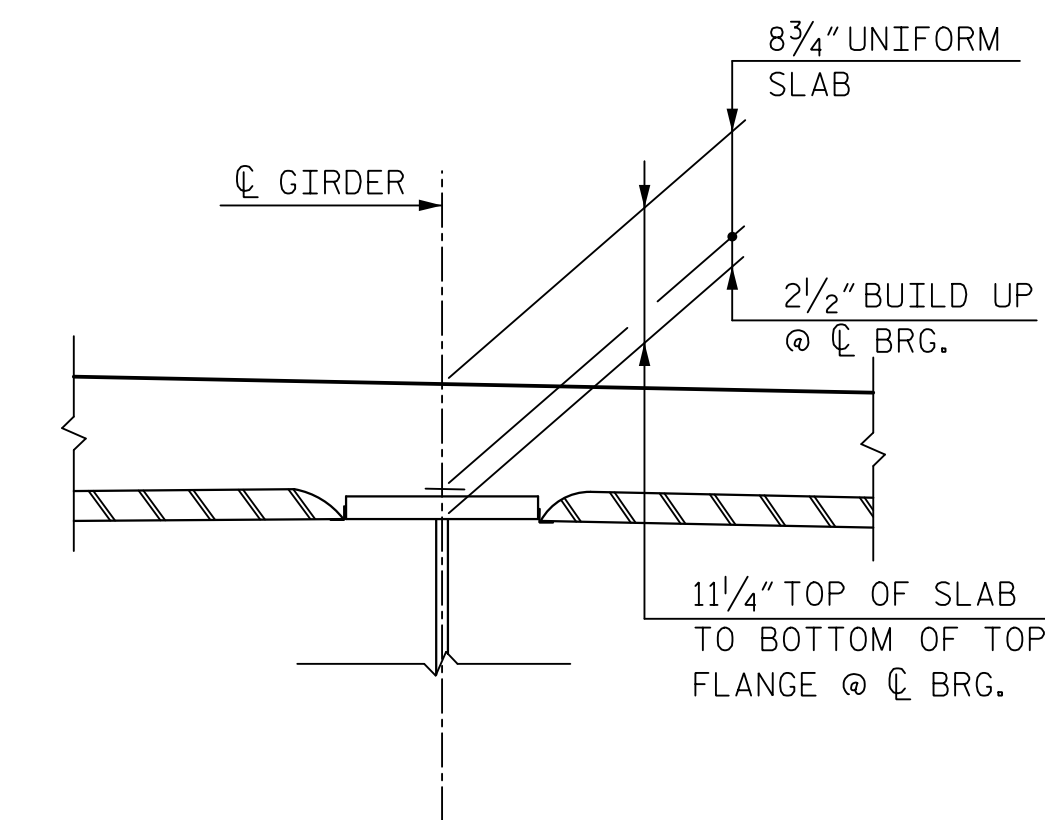
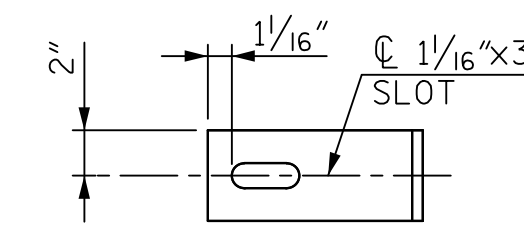
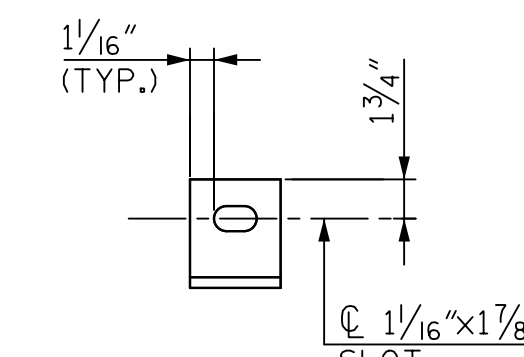


NOTES

- TOP OF FLOOR DRAIN TO BE SET 3/8" BELOW SURFACE OF SLAB.
- 4 - 1/2" SQUARE LUGS TO BE GLUED TO THE PVC PLASTIC PIPE AT EQUAL SPACES AROUND THE PIPE DRAIN APPROXIMATELY 4" FROM THE TOP OF THE PIPE.
- BOLT SIZE TO BE SAME AS DIAPHRAGMS AND CROSSFRAME CONNECTIONS. STAINLESS STEEL WORM DRIVE HOSE CLAMP SHALL BE COMMERCIAL QUALITY.
- THE 6" DIA. PVC PIPE AND FITTINGS SHALL BE SCHEDULE 40 AND CONFORM TO ASTM D1785.
- COUPLING IN DRAIN PIPE WILL BE PERMITTED AS APPROVED BY THE ENGINEER.
- PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 STEEL OR APPROVED EQUAL.

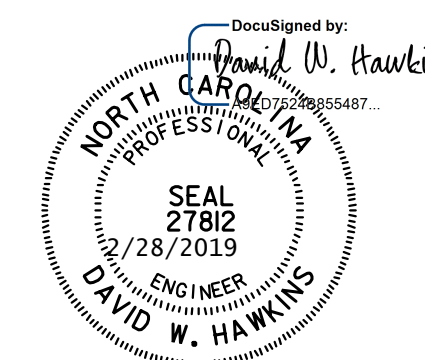


NOTE:  
REINFORCING STEEL IN SLAB NOT SHOWN. REINFORCING STEEL SHALL BE CONTINUOUS THROUGH JOINT.



PROJECT NO. B-5905  
JACKSON COUNTY  
STATION: 19+41.94 -L-

SHEET 2 OF 2



**HNTB** HNTB NORTH CAROLINA, P.C.  
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343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY M. WRIGHT DATE 4/18  
CHECKED BY J. WHEATLEY DATE 4/18  
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 11/18

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-8
1			3			TOTAL SHEETS
2			4			54

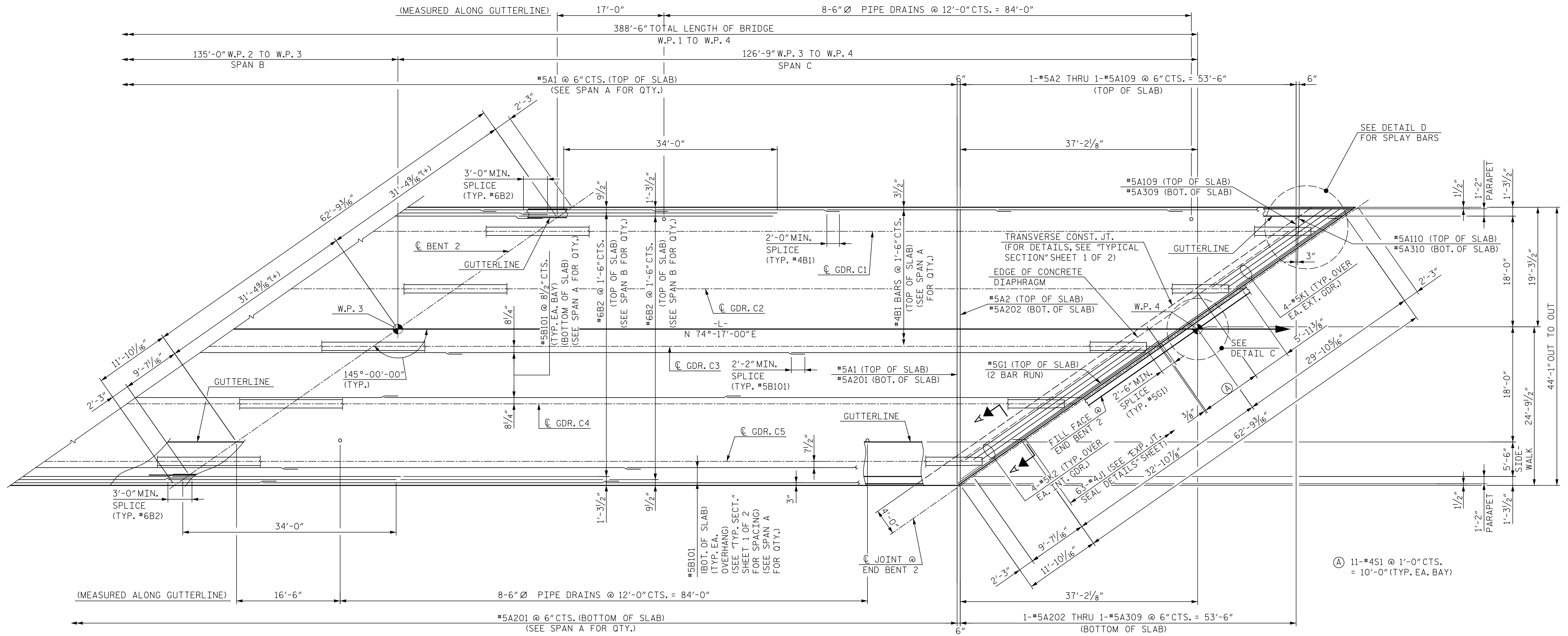
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DWG. NO. 8

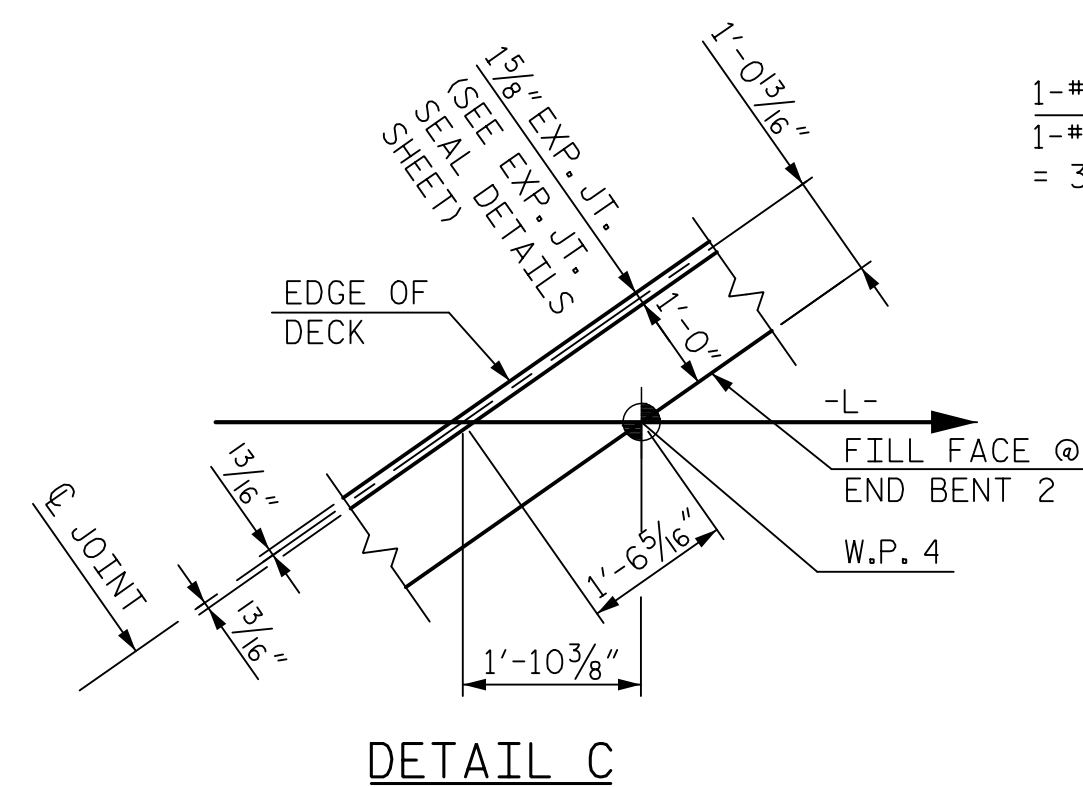




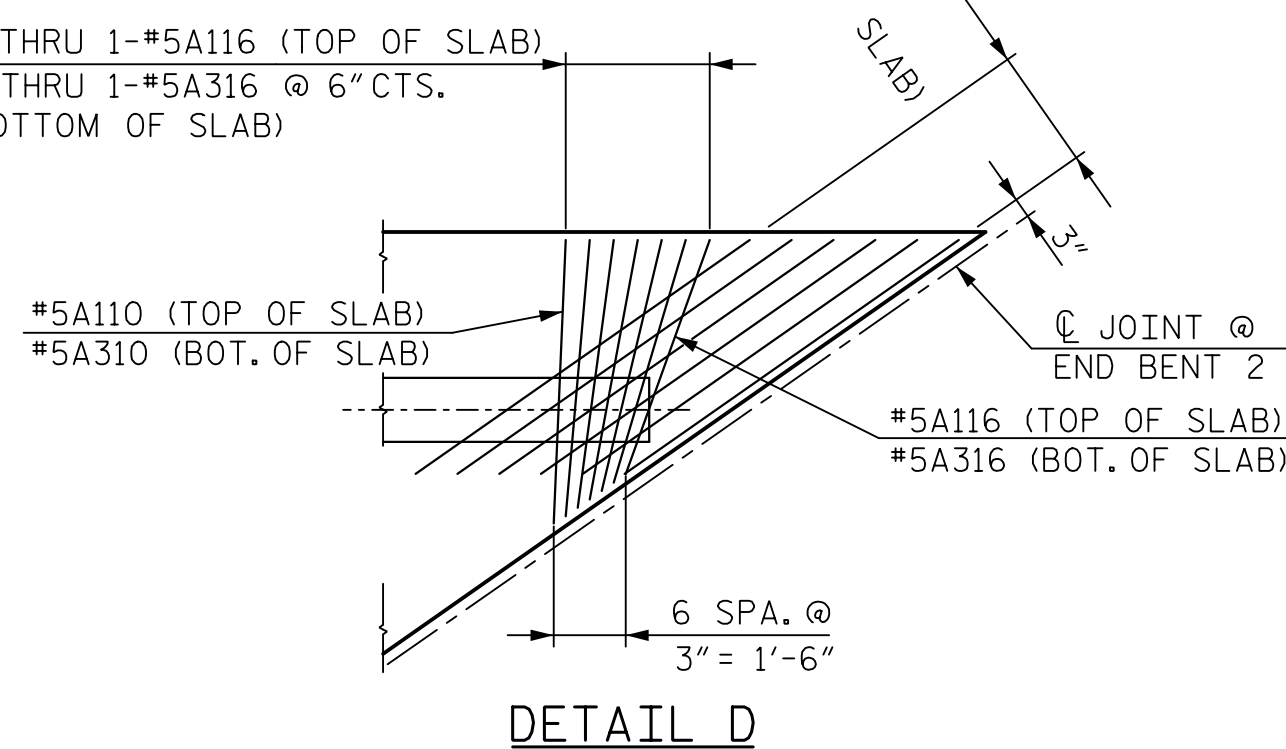
**NOTES:**  
 FOR NOTES, SEE "SUPERSTRUCTURE - PLAN OF SPAN A" SHEET.  
 WORKLINE FOR SPAN C SHALL BE THE -L- TANGENT AND ITS EXTENSION BEYOND THE PC AT STA. 22+71.08 -L-.



PLAN OF SPAN C



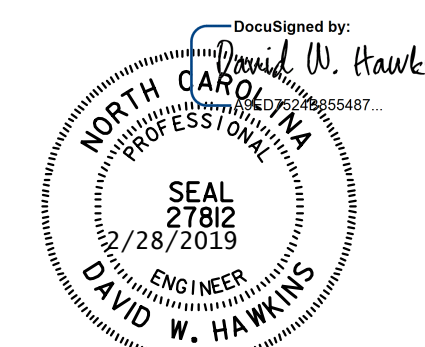
DETAIL C



DETAIL D

PROJECT NO. B-5905  
JACKSON COUNTY  
 STATION: 19+41.94 -L-

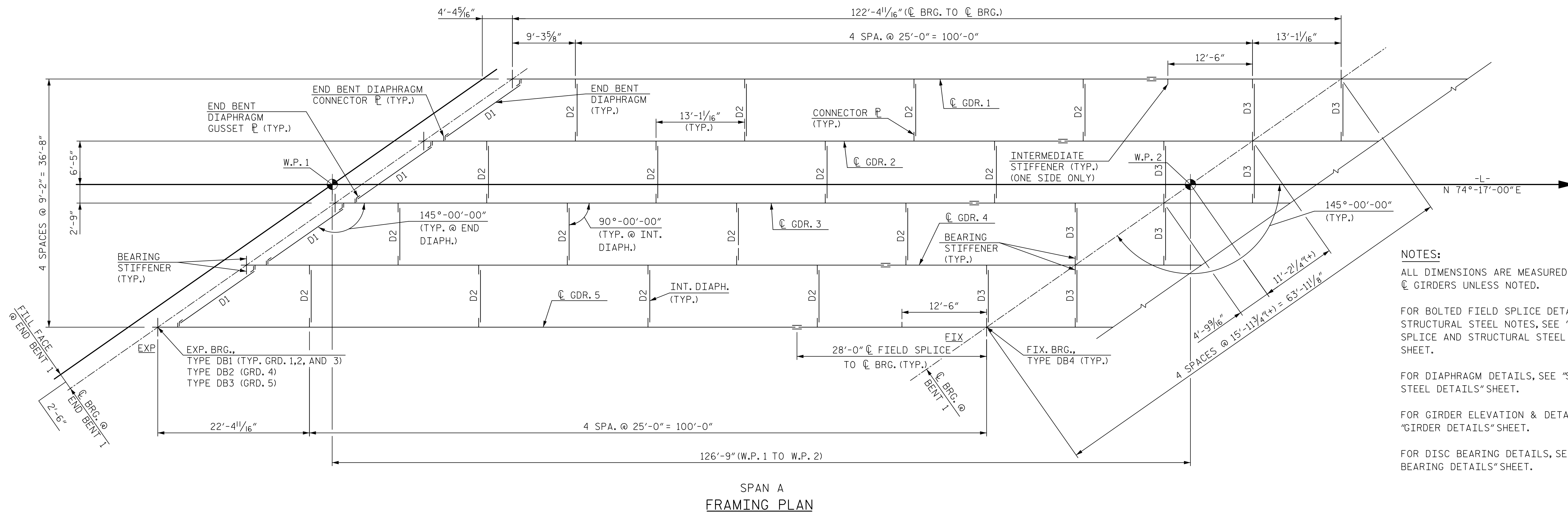
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 PLAN OF SPAN C



<b>HNTB</b>		HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	
DRAWN BY: M. WRIGHT	DATE: 3/18	DWG. NO. II	
CHECKED BY: J. WHEATLEY	DATE: 4/18		
DESIGN ENGINEER OF RECORD: D. HAWKINS	DATE: 11/18		

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REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-11
1			3			TOTAL SHEETS
2			4			54



**NOTES:**  
 ALL DIMENSIONS ARE MEASURED ALONG  
 GIRDERS UNLESS NOTED.

FOR BOLTED FIELD SPLICE DETAILS AND  
 STRUCTURAL STEEL NOTES, SEE "FIELD  
 SPLICE AND STRUCTURAL STEEL NOTES"  
 SHEET.

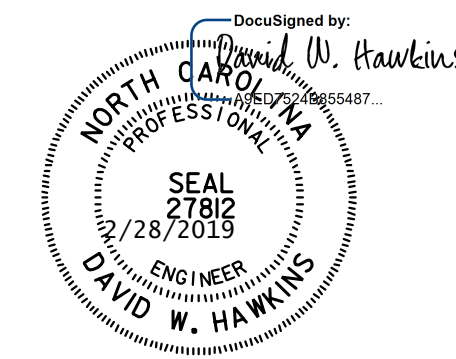
FOR DIAPHRAGM DETAILS, SEE "STRUCTURAL  
 STEEL DETAILS" SHEET.

FOR GIRDER ELEVATION & DETAILS, SEE  
 "GIRDER DETAILS" SHEET.

FOR DISC BEARING DETAILS, SEE "DISC  
 BEARING DETAILS" SHEET.

SPAN A  
 FRAMING PLAN

PROJECT NO. B-5905  
JACKSON COUNTY  
 STATION: 19+41.94 -L-



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 FRAMING PLAN - SPAN A

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 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

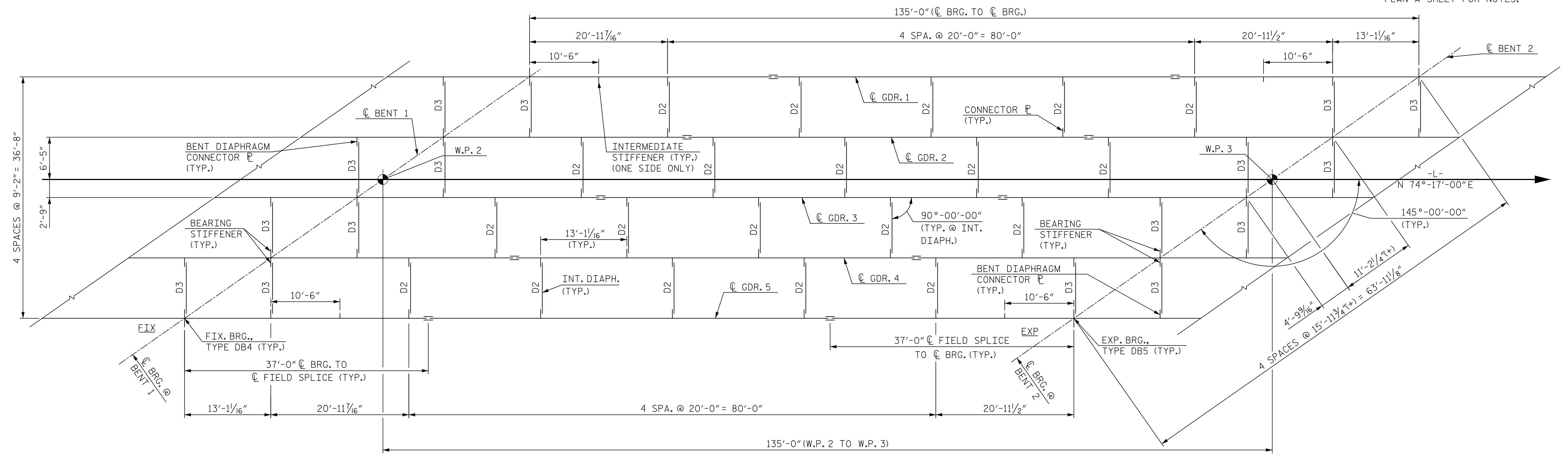
DRAWN BY: M. WRIGHT DATE: 4/18  
 CHECKED BY: J. WHEATLEY DATE: 4/18  
 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 11/18

DWG. NO. 12

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

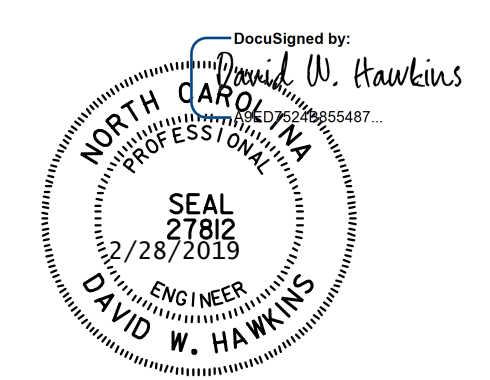
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-12
1			3			TOTAL SHEETS
2			4			54

NOTES:  
FOR NOTES, SEE "SUPERSTRUCTURE FRAMING PLAN A" SHEET FOR NOTES.



SPAN B  
FRAMING PLAN

PROJECT NO. B-5905  
JACKSON COUNTY  
STATION: 19+41.94 -L-



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUPERSTRUCTURE  
FRAMING PLAN - SPAN B

**HNTB** HNTB NORTH CAROLINA, P.C.  
NC License No. C-1554  
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

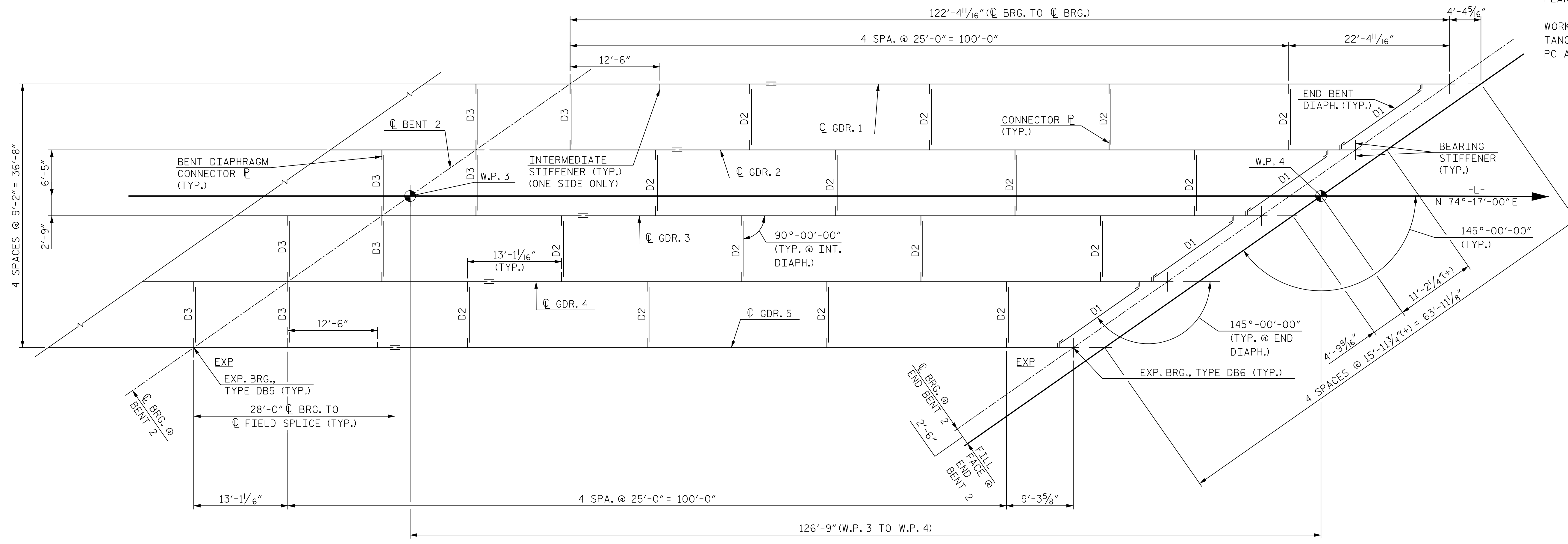
DRAWN BY: M. WRIGHT DATE: 4/18  
CHECKED BY: J. WHEATLEY DATE: 4/18  
DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 11/18

DWG. NO. 13

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

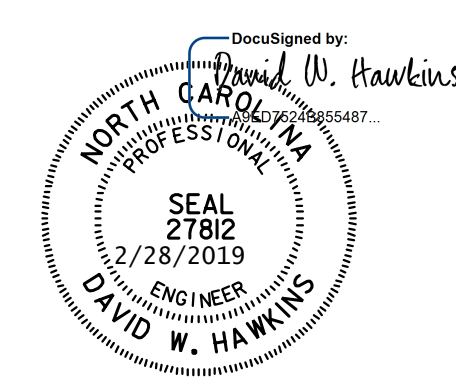
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-13
1			3			TOTAL SHEETS
2			4			54

**NOTES:**  
 FOR NOTES, SEE "SUPERSTRUCTURE FRAMING PLAN A" SHEET FOR NOTES.  
 WORKLINE FOR SPAN C SHALL BE THE -L- TANGENT AND ITS EXTENSION BEYOND THE PC AT STA. 22+71.08 -L-.



SPAN C  
FRAMING PLAN

PROJECT NO. B-5905  
JACKSON COUNTY  
 STATION: 19+41.94 -L-



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 FRAMING PLAN - SPAN C

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DRAWN BY: M. WRIGHT DATE: 4/18  
 CHECKED BY: J. WHEATLEY DATE: 4/18  
 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 11/18

DWG. NO. 14

REVISIONS						SHEET NO. S1-14
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 54
2			4			



**NOTES:**

ALL DIMENSIONS ON THIS SHEET ARE HORIZONTAL OR VERTICAL UNLESS NOTED OTHERWISE.

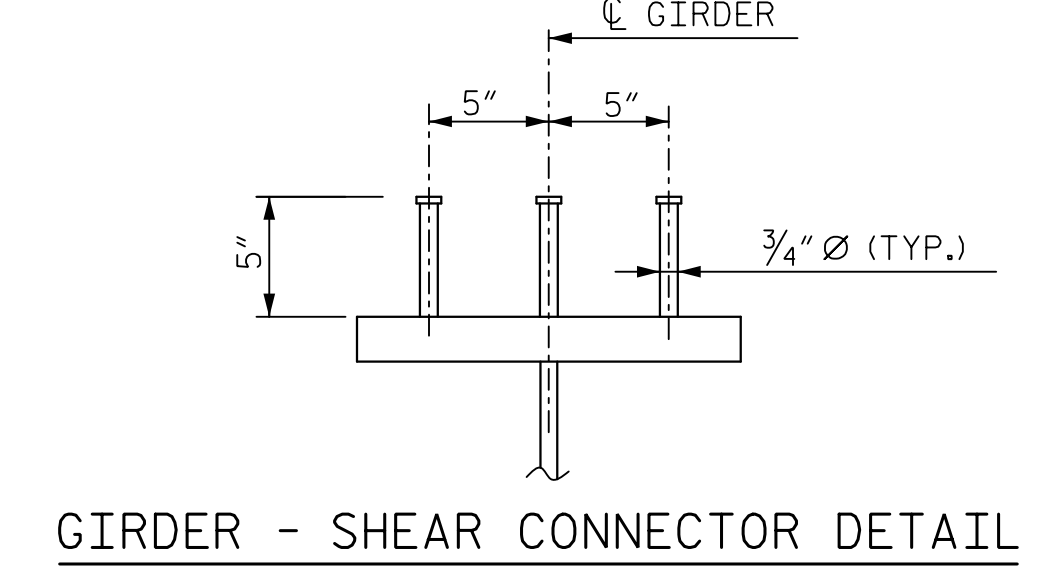
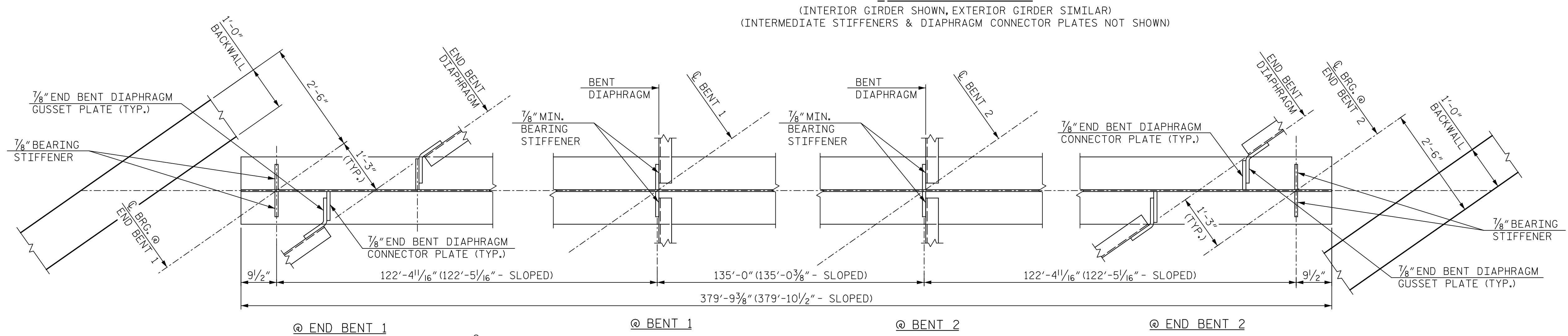
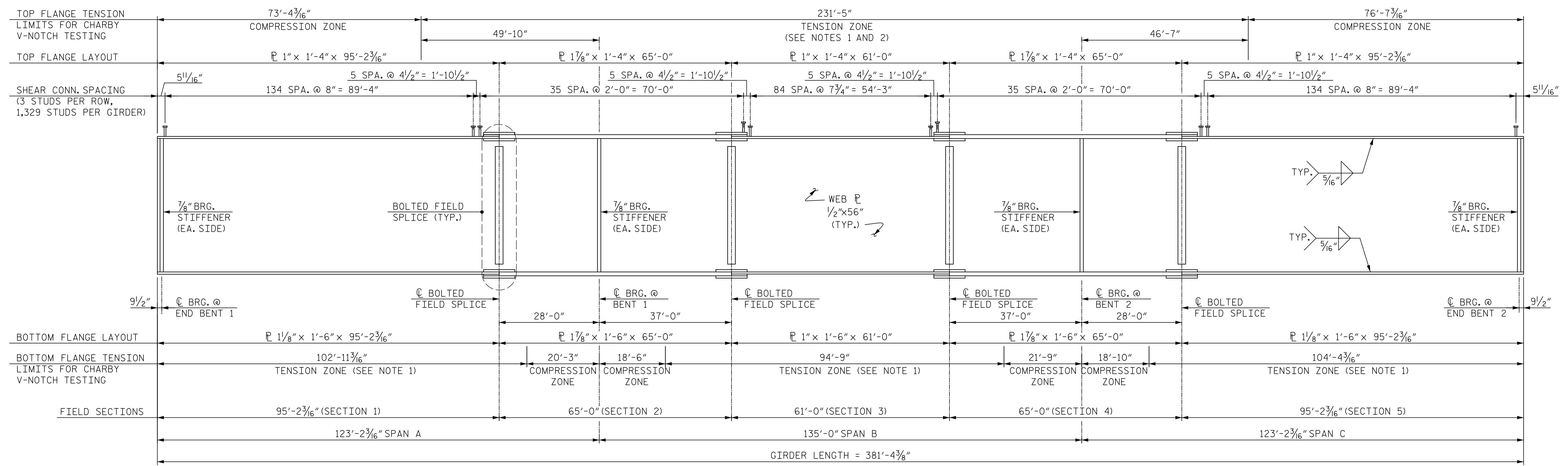
FOR FRAMING PLAN, SEE "FRAMING PLAN" SHEETS.

FOR DETAILS OF BOLTED FIELD SPLICES AND STRUCTURAL STEEL NOTES, SEE "FIELD SPLICE DETAILS AND STRUCTURAL STEEL NOTES" SHEET.

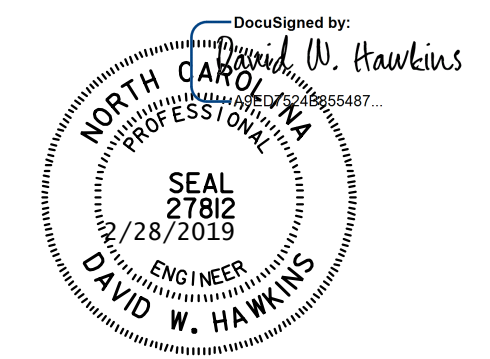
STUDS MAY BE MOVED SLIGHTLY TO AVOID BOLTS IN FLANGE SPLICE AT BOLTED FIELD SPLICE.

NOTE 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.

NOTE 2: NO WELDING OF FORMS OR FALSEWORK TO THE TOP FLANGE WILL BE PERMITTED IN THIS REGION.



PROJECT NO. B-5905  
 JACKSON COUNTY  
 STATION: 19+41.94 -L-

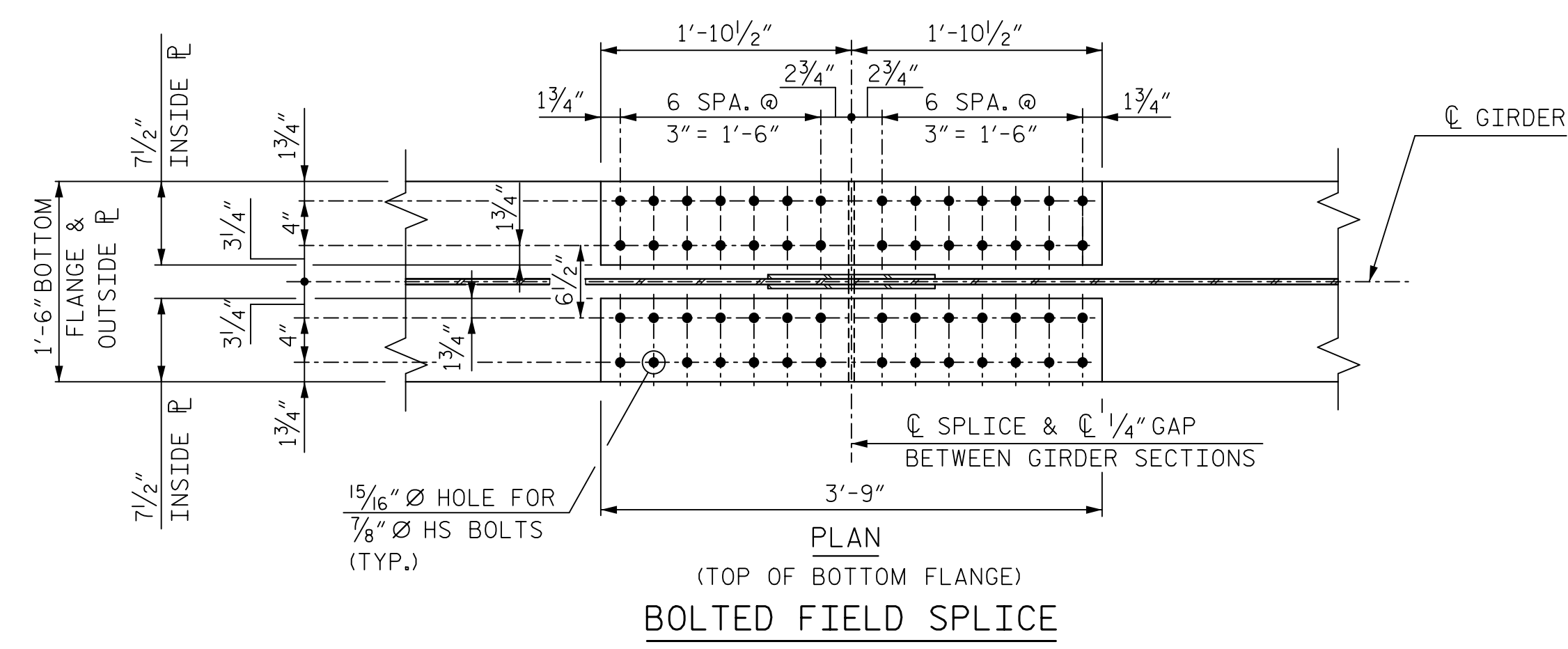
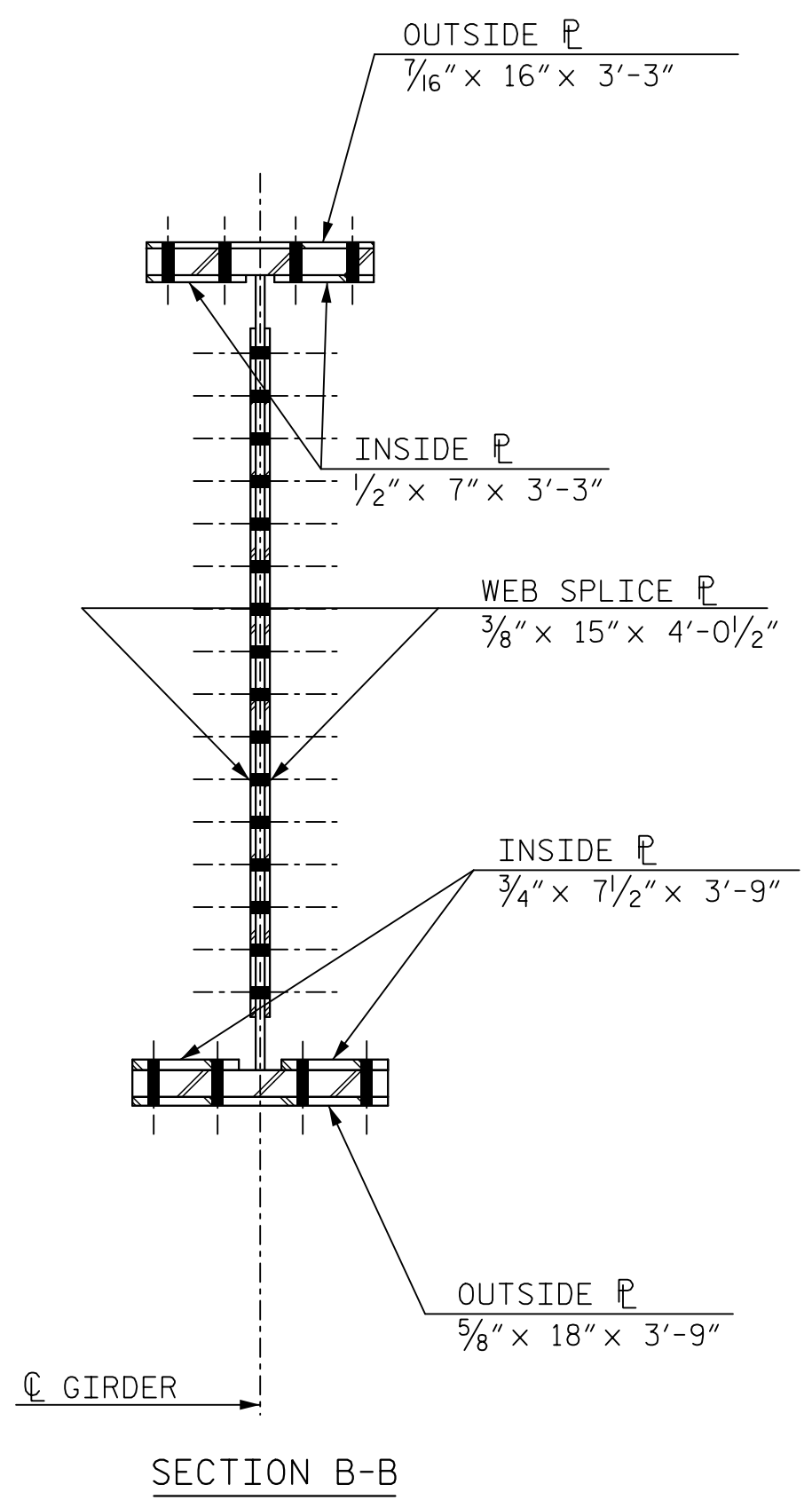
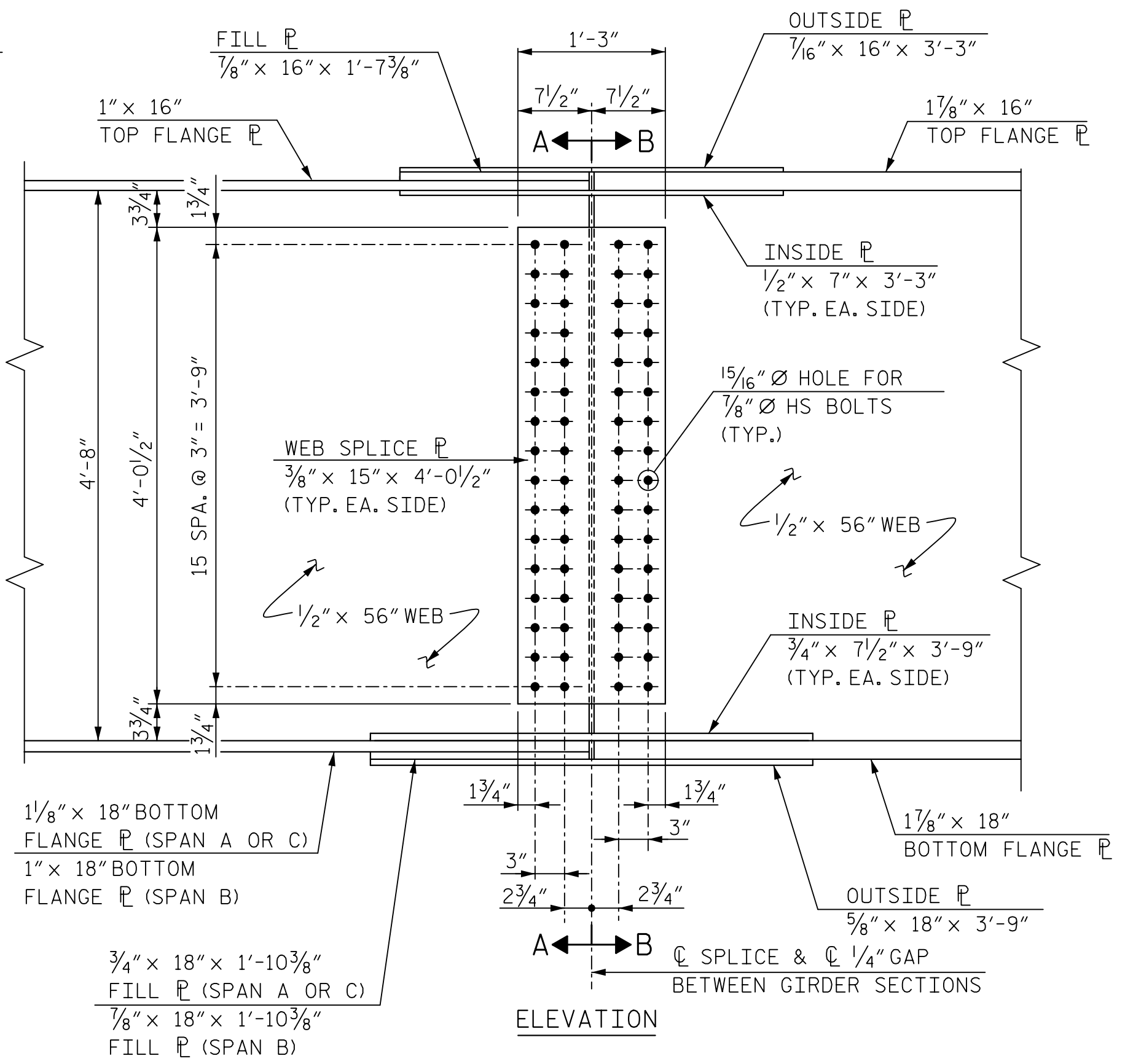
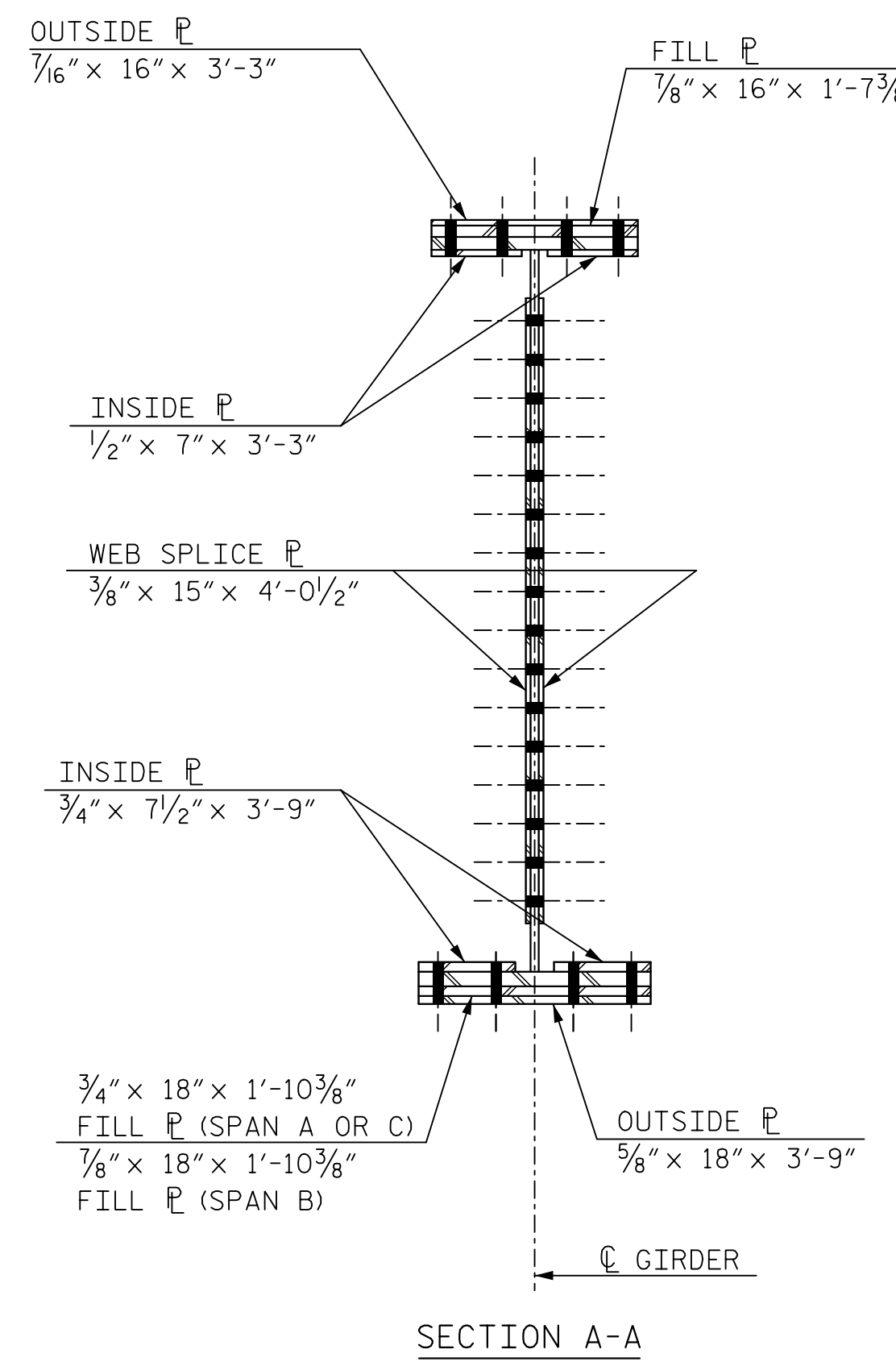
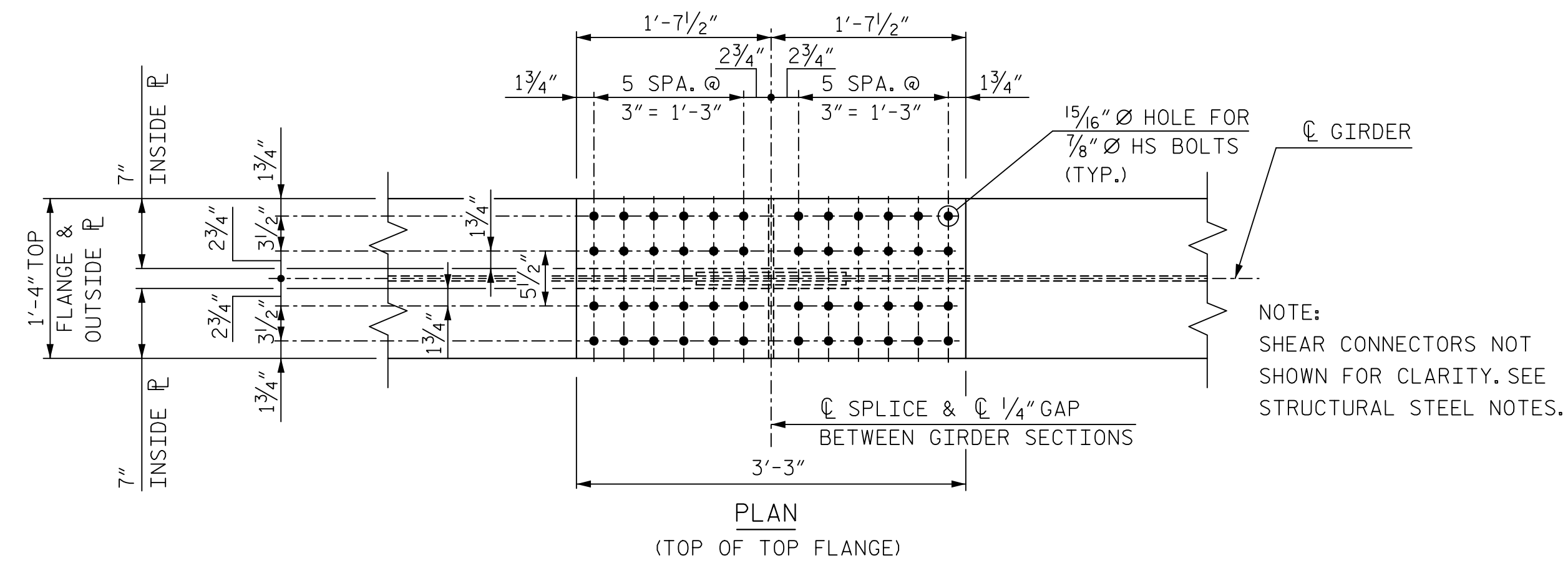


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 GIRDER DETAILS

<b>HNTB</b>		HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	
DRAWN BY: M. WRIGHT	DATE: 5/18	DWG. NO. 15	
CHECKED BY: D. HAWKINS	DATE: 6/18		
DESIGN ENGINEER OF RECORD: D. HAWKINS	DATE: 11/18		

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-15
1			3			TOTAL SHEETS
2			4			54

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**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 ON THE PLANS.

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

ALL FIELD CONNECTIONS TO BE 7/8" DIA. HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED.

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

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 WELDS AND WEB OR FLANGE SHOP SPLICES.

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

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.

SOLE PLATES SHOULD BE WELDED TO GIRDER FLANGES AND ANCHOR BOLTS SHOULD BE GROUTED BEFORE FALSEWORK IS PLACED.

TENSION ON THE ASTM A325 BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-8 OF THE STANDARD SPECIFICATIONS.

END OF BEAMS AND GIRDERS SHALL BE PLUMB.

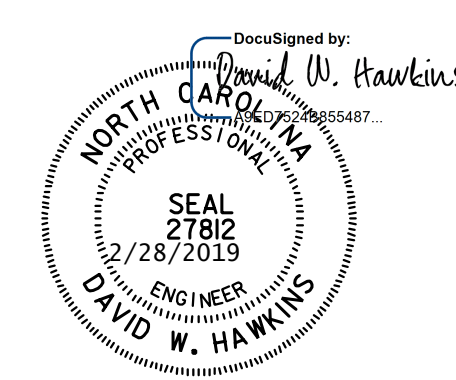
BEARING STIFFENER MAY REQUIRE COPING IF WIDER THAN BOTTOM FLANGE.

FABRICATORS SHALL DETAIL DIAPHRAGM MEMBERS AND CONNECTIONS FOR FULL DEAD LOAD FIT UP. GIRDERS SHALL BE PLUMB AFTER THE FULL AMOUNT OF DEAD LOAD IS APPLIED.

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

FOR GIRDER ERECTION SEQUENCE AND TEMPORARY BENT REQUIREMENTS, SEE "GIRDER ERECTION DETAILS" SHEET.

PROJECT NO. B-5905  
JACKSON COUNTY  
 STATION: 19+41.94 -L-



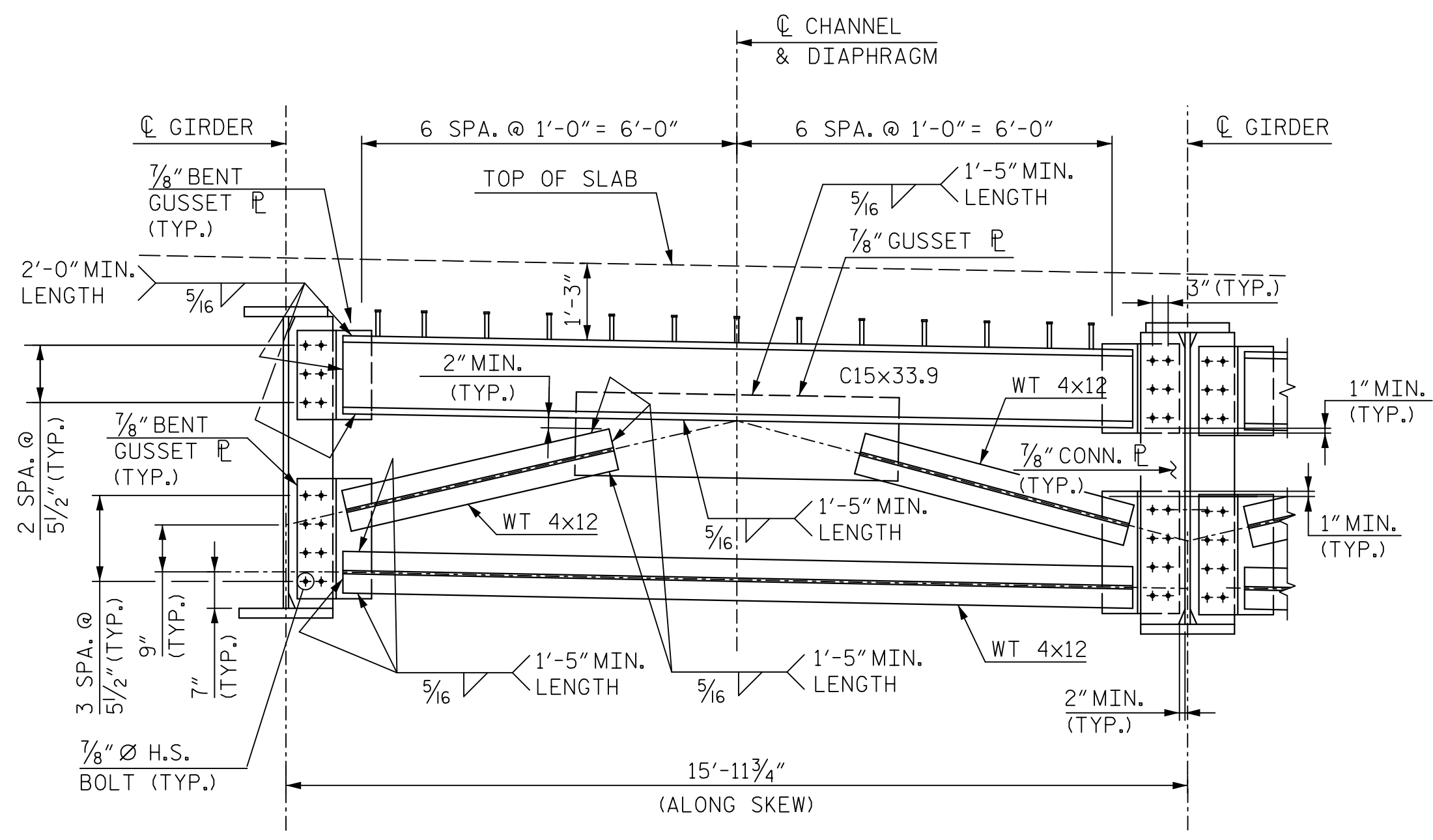
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**SUPERSTRUCTURE**  
 FIELD SPLICE  
 AND STRUCTURAL  
 STEEL NOTES

<b>HNTB</b>		HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	
DRAWN BY: M. WRIGHT	DATE: 5/18	DWG. NO. 16	REVISIONS
CHECKED BY: D. HAWKINS	DATE: 7/18		
DESIGN ENGINEER OF RECORD: D. HAWKINS	DATE: 11/18		

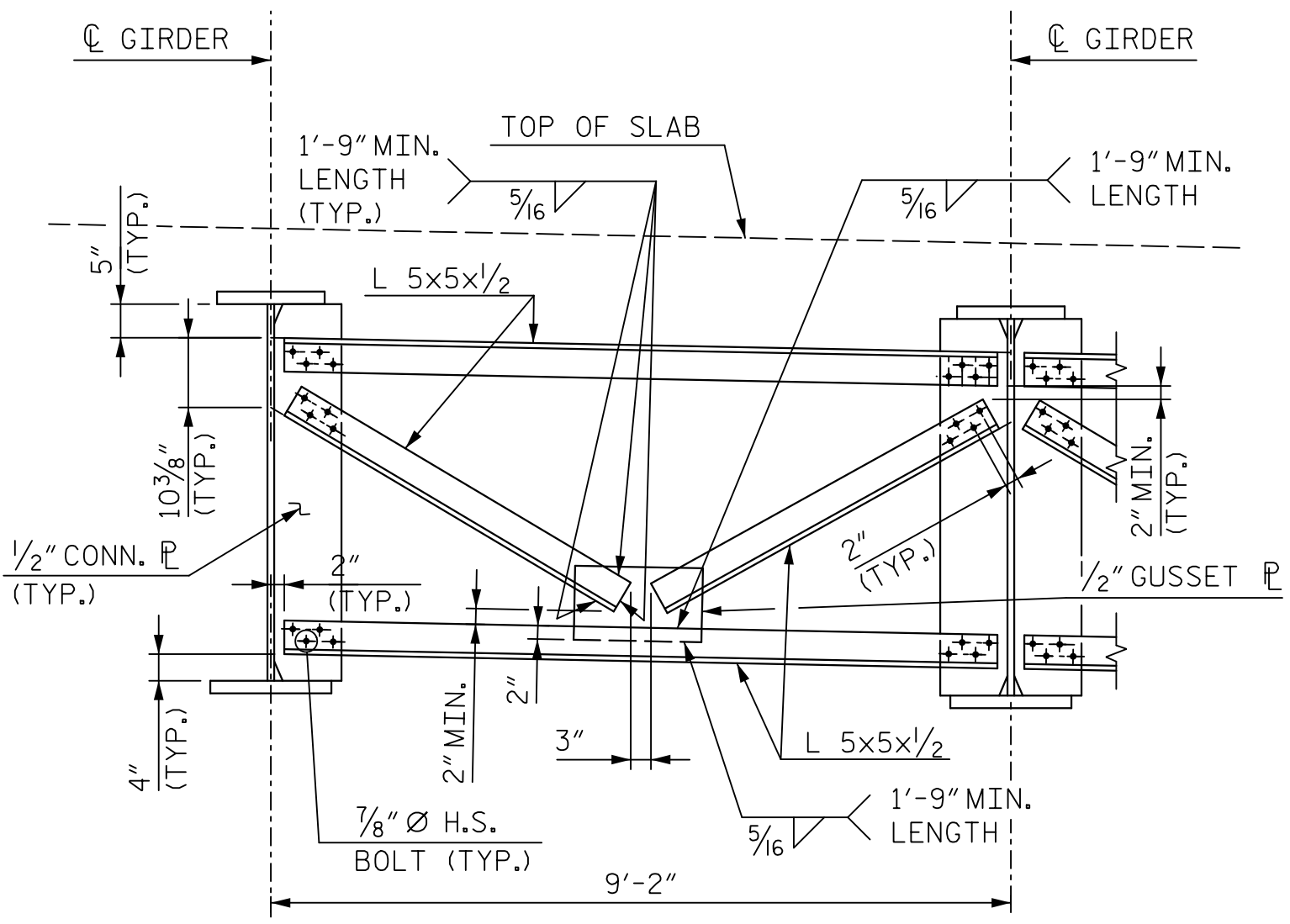
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. S1-16  
 TOTAL SHEETS 54

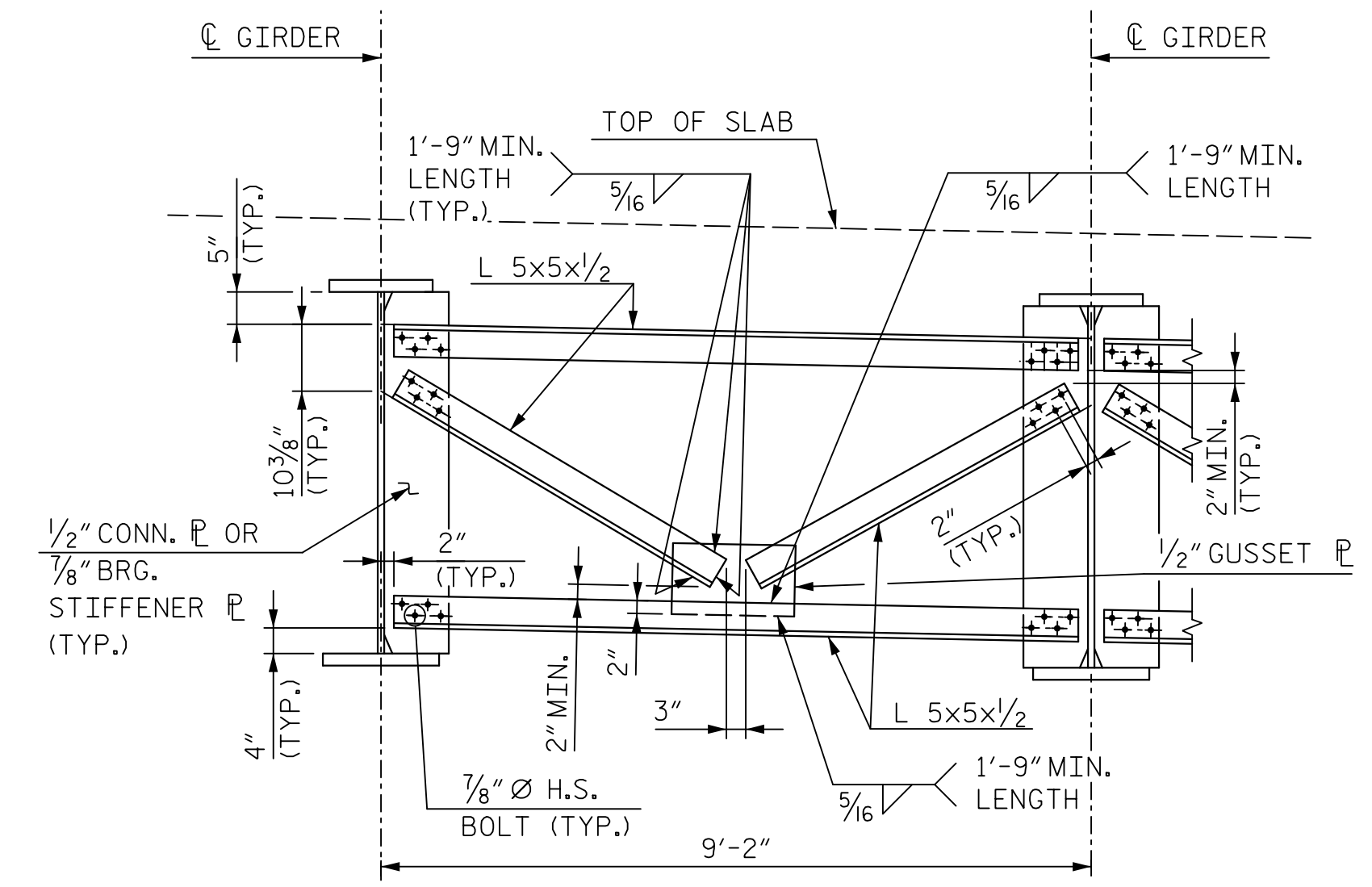
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**



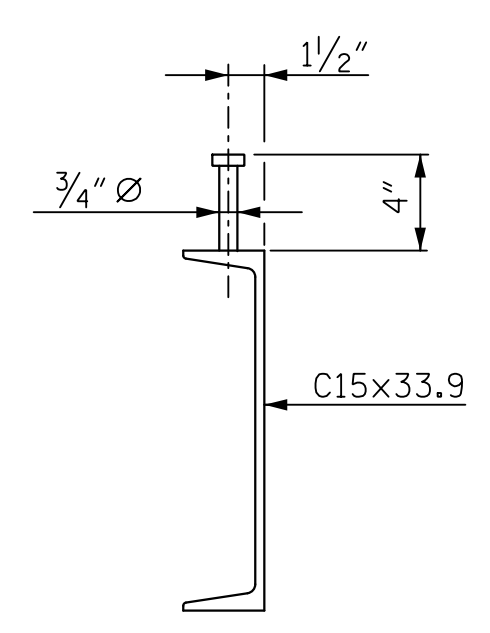
END BENT DIAPHRAGM (D1)



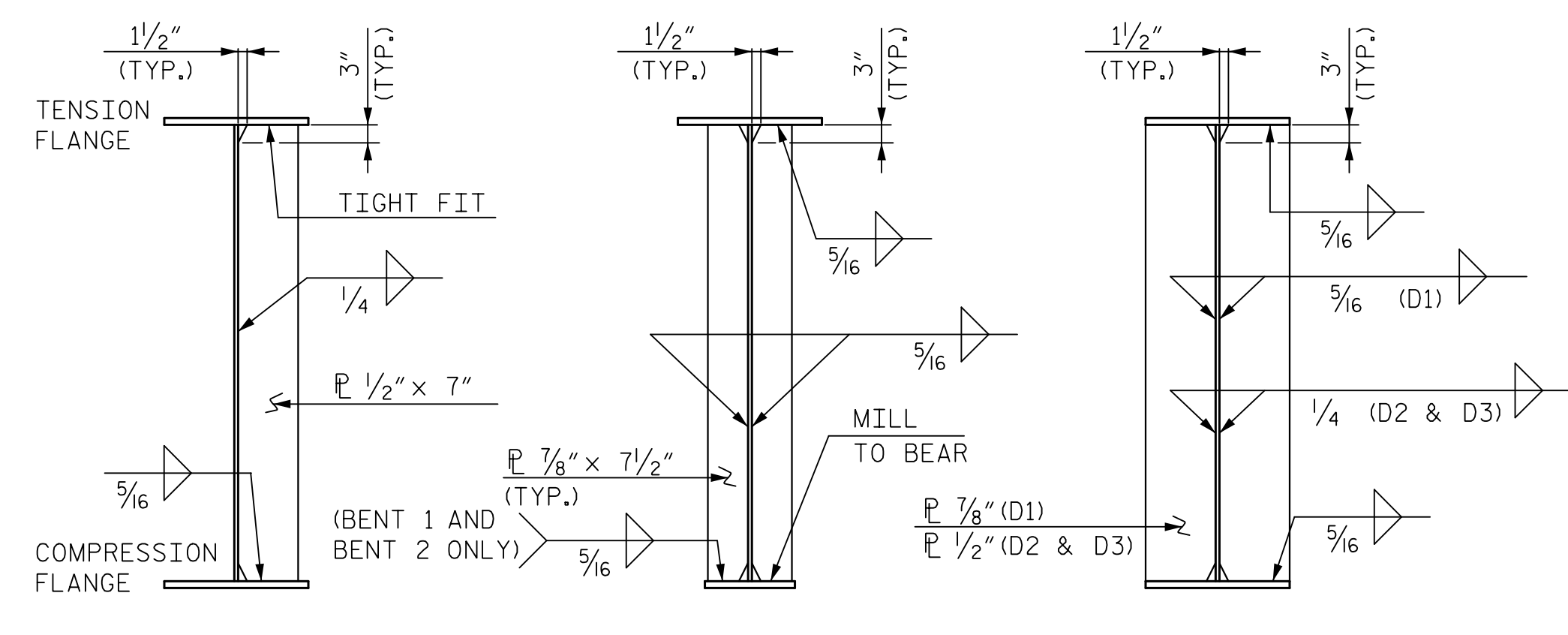
INTERMEDIATE DIAPHRAGM (D2)



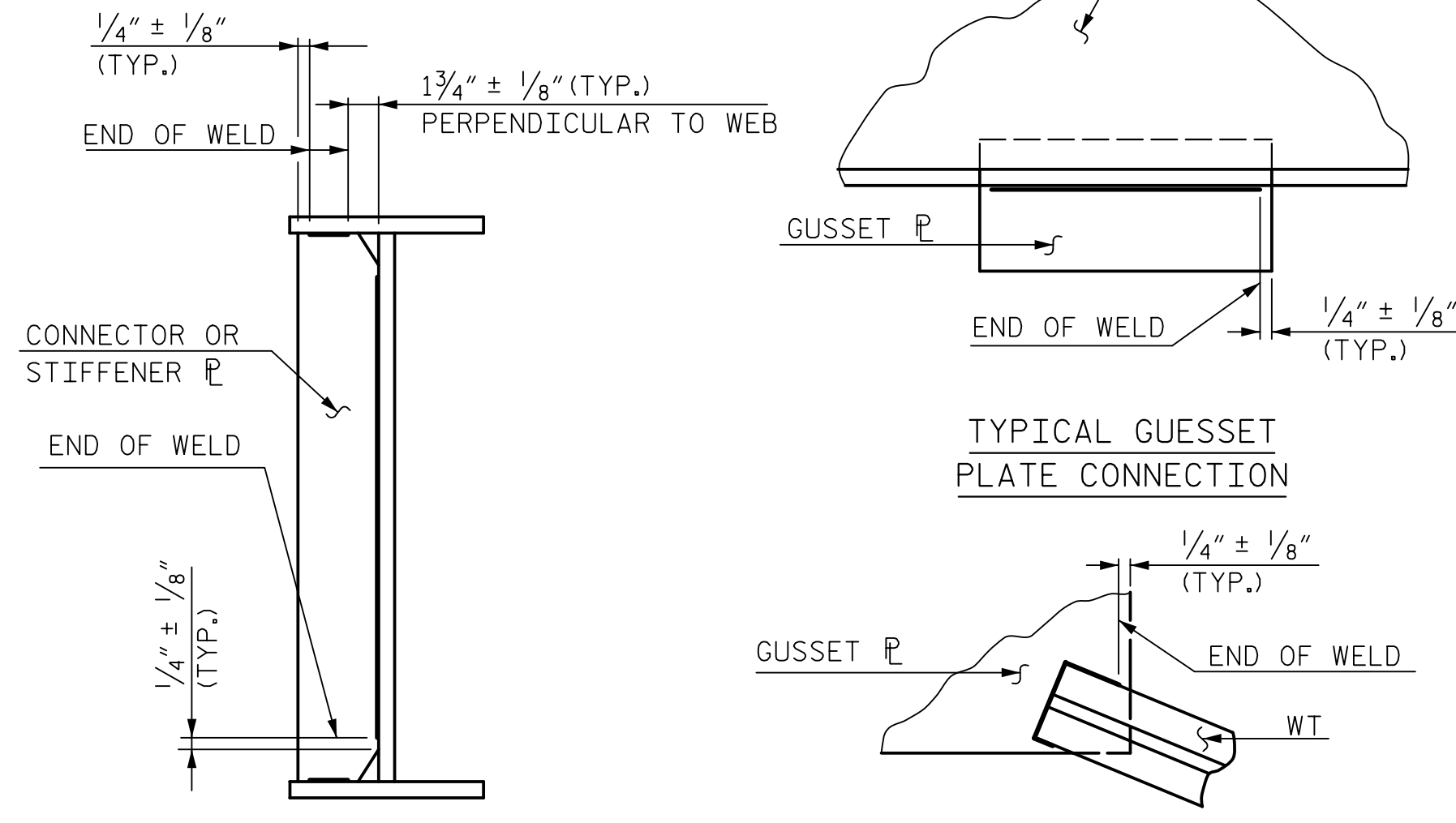
BENT DIAPHRAGM (D3)



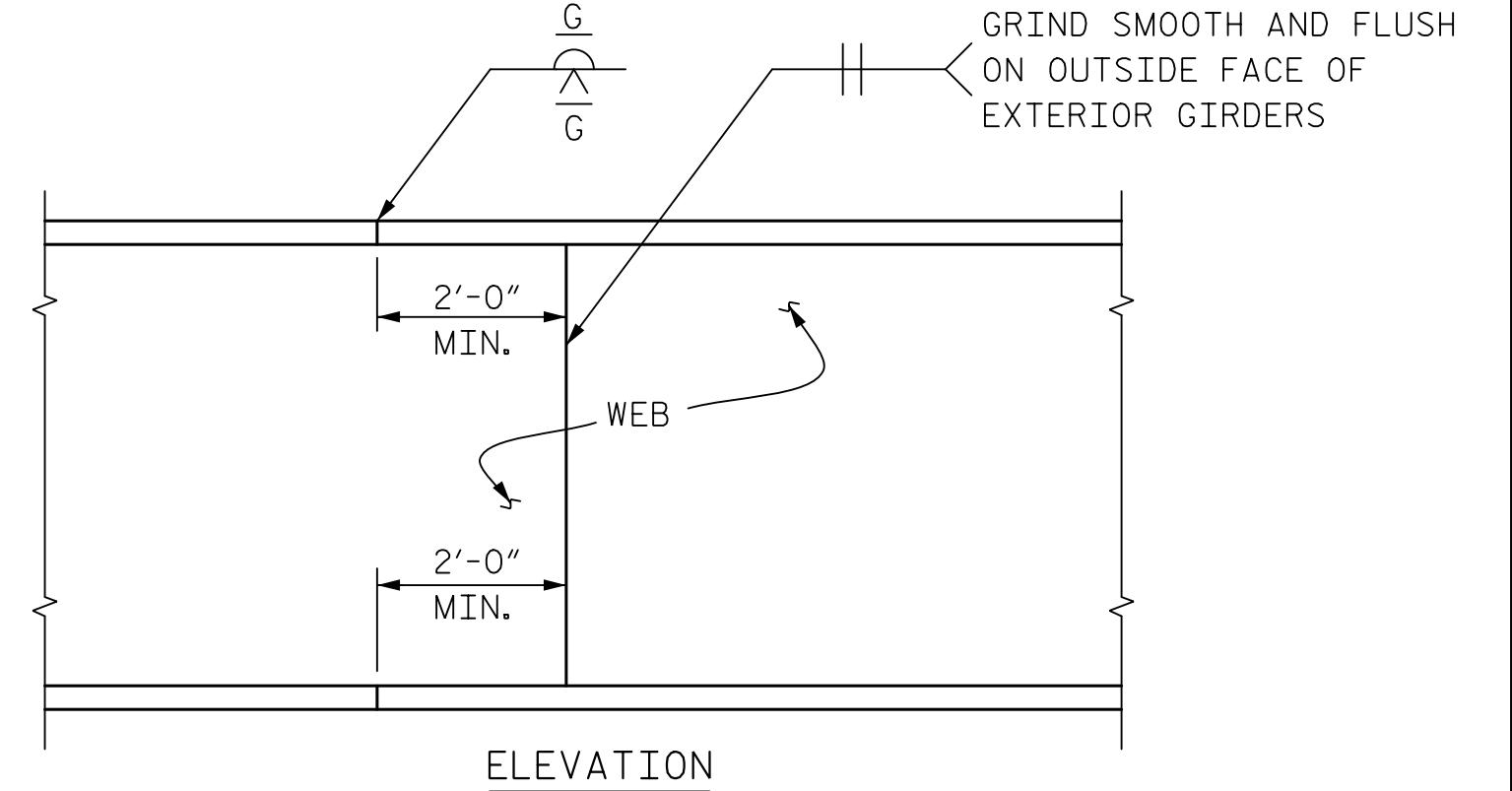
CHANNEL - SHEAR STUD DETAIL



STIFFENER & CONNECTOR PLATE DETAILS



WELD TERMINATION DETAILS



TYPICAL FLANGE AND WEB BUTT JOINT

PROJECT NO. B-5905  
 JACKSON COUNTY  
 STATION: 19+41.94 -L-



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 STRUCTURAL STEEL DETAILS

<b>HNTB</b> HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	DRAWN BY: M. WRIGHT DATE: 4/18 CHECKED BY: D. HAWKINS DATE: 7/18 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 11/18	DWG. NO. 17
	REVISIONS	
	NO. BY DATE NO. BY DATE	SHEET NO. S1-17 TOTAL SHEETS 54

DOCUMENT NOT CONSIDERED FINAL  
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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.

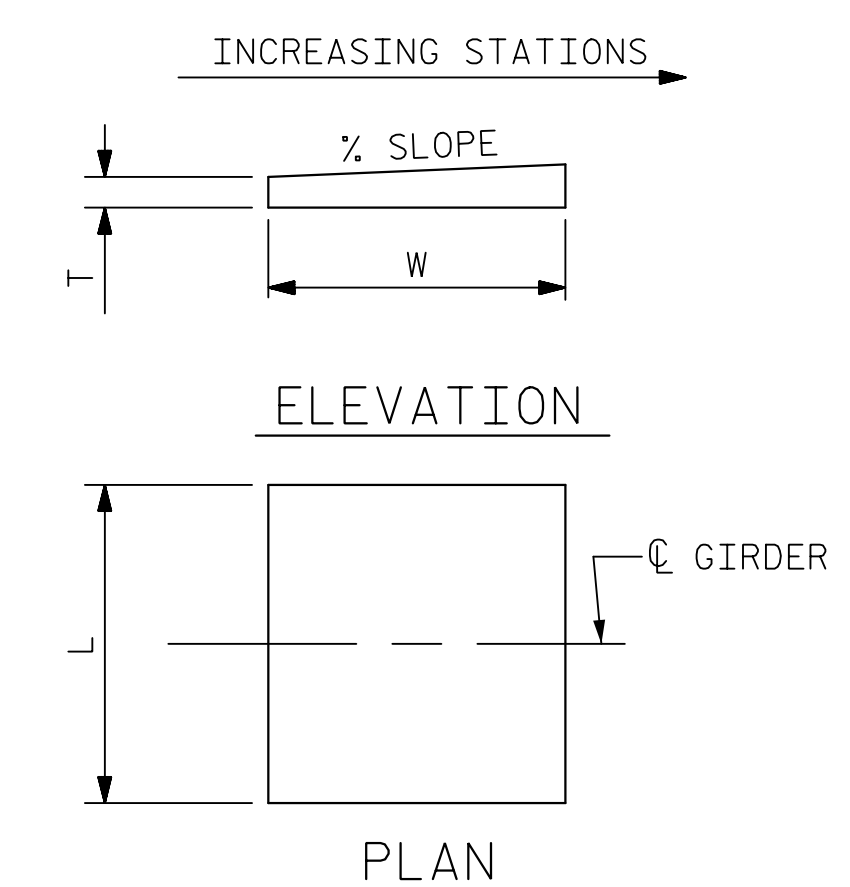
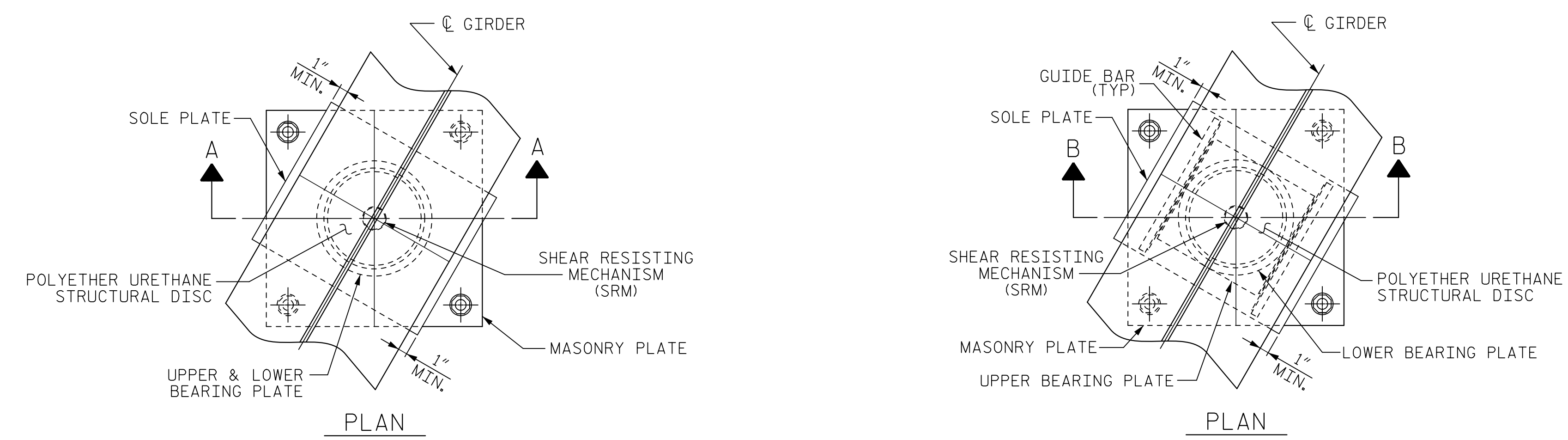
SOLE PLATES SHOULD BE WELDED TO GIRDER FLANGES AND ANCHOR BOLTS SHOULD BE GROUTED BEFORE FALSEWORK IS PLACED.

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.

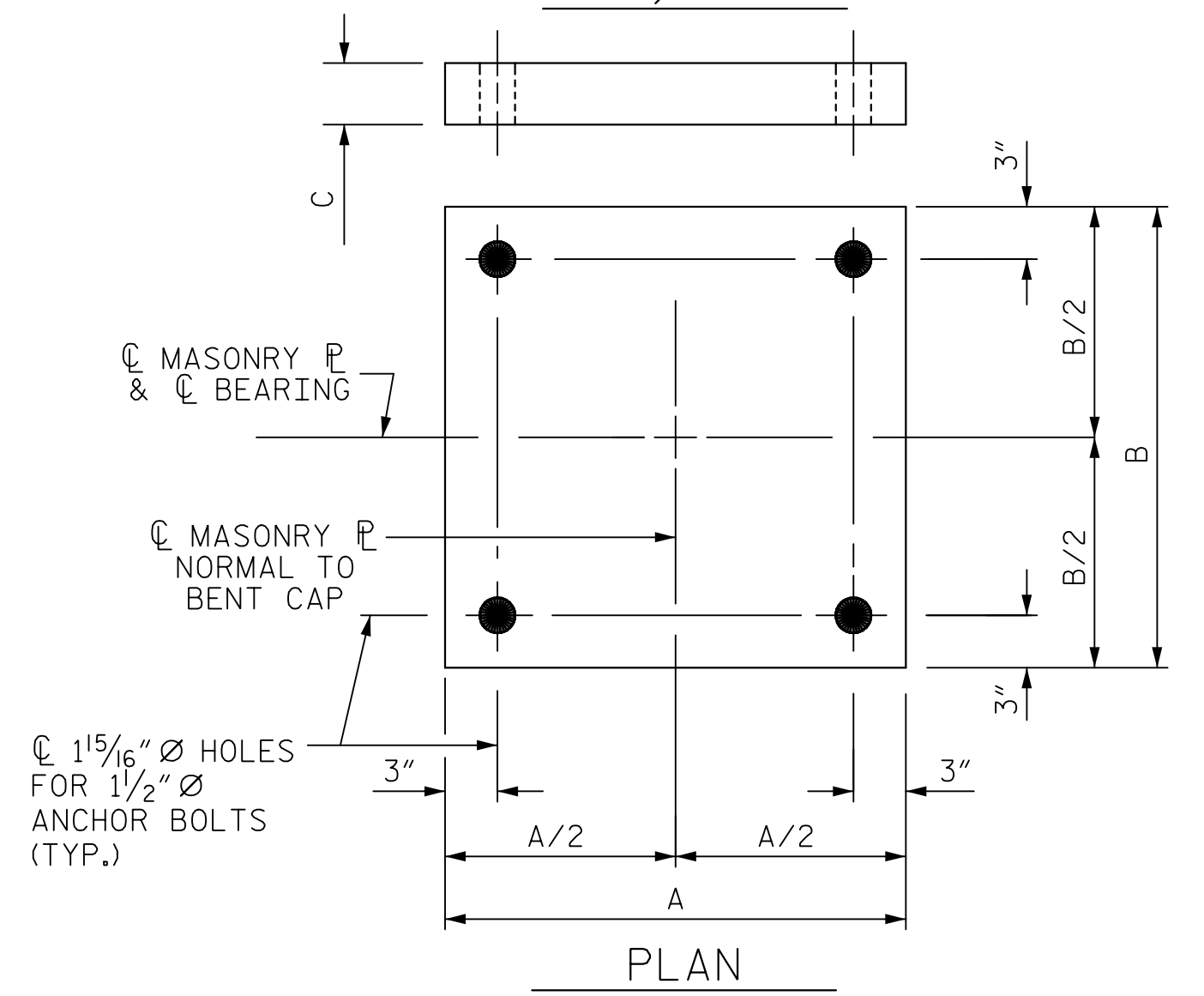
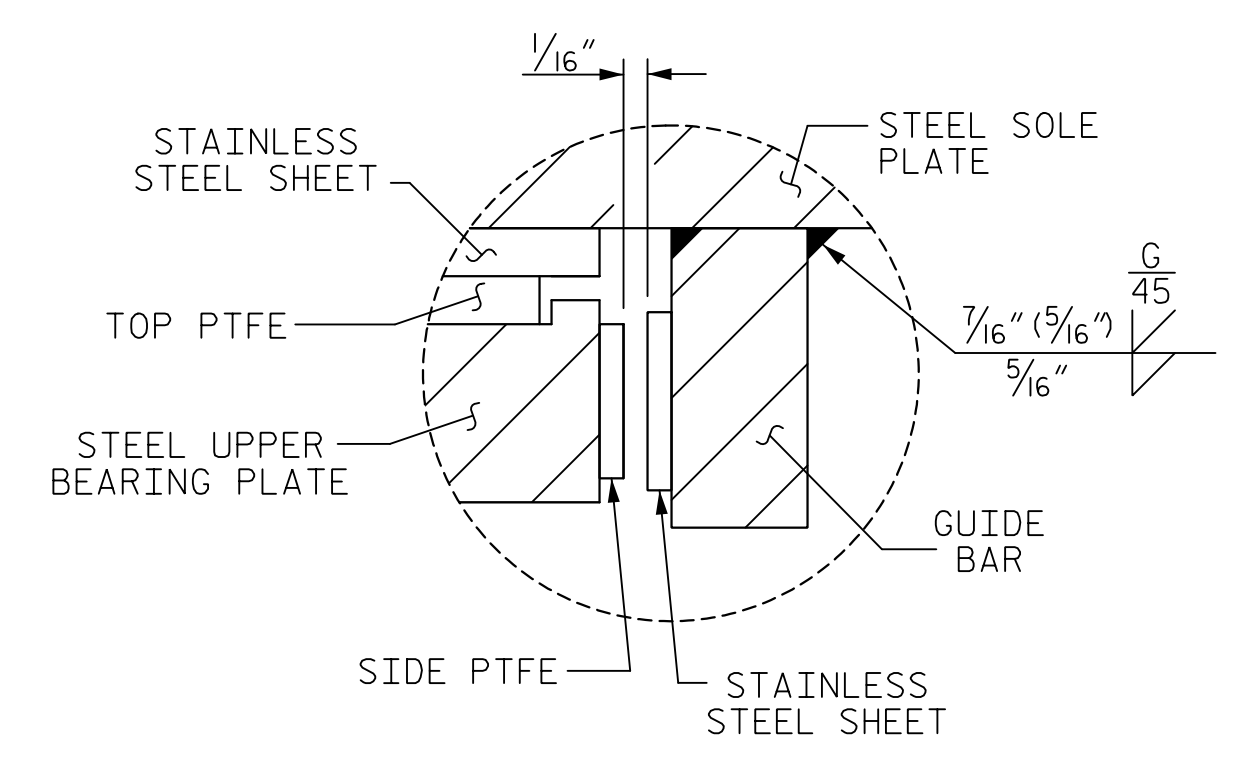
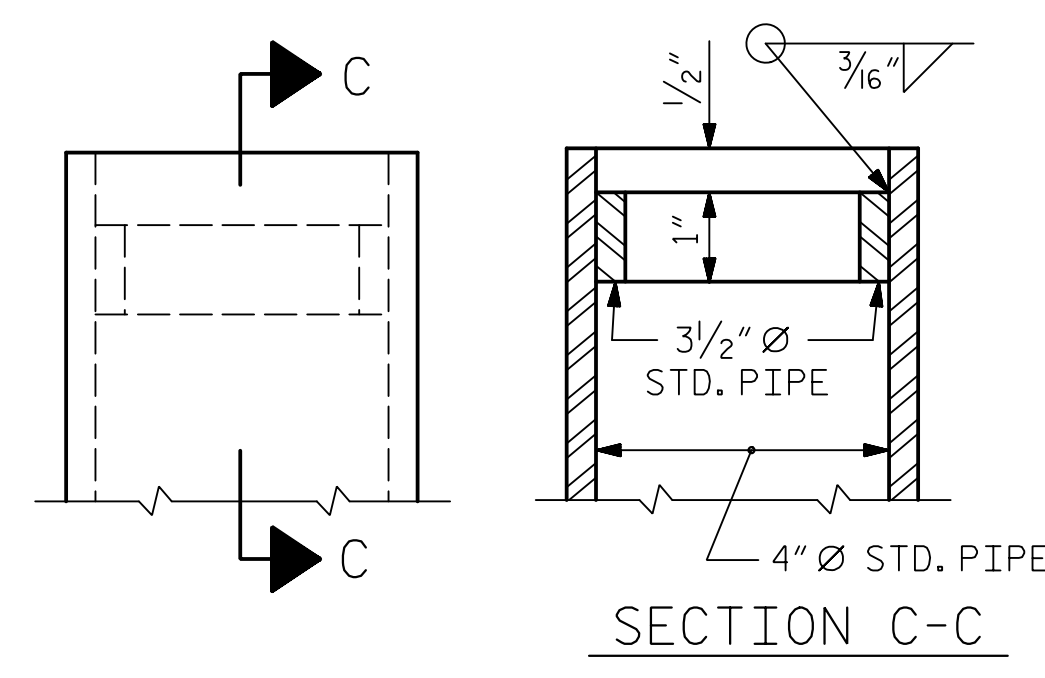
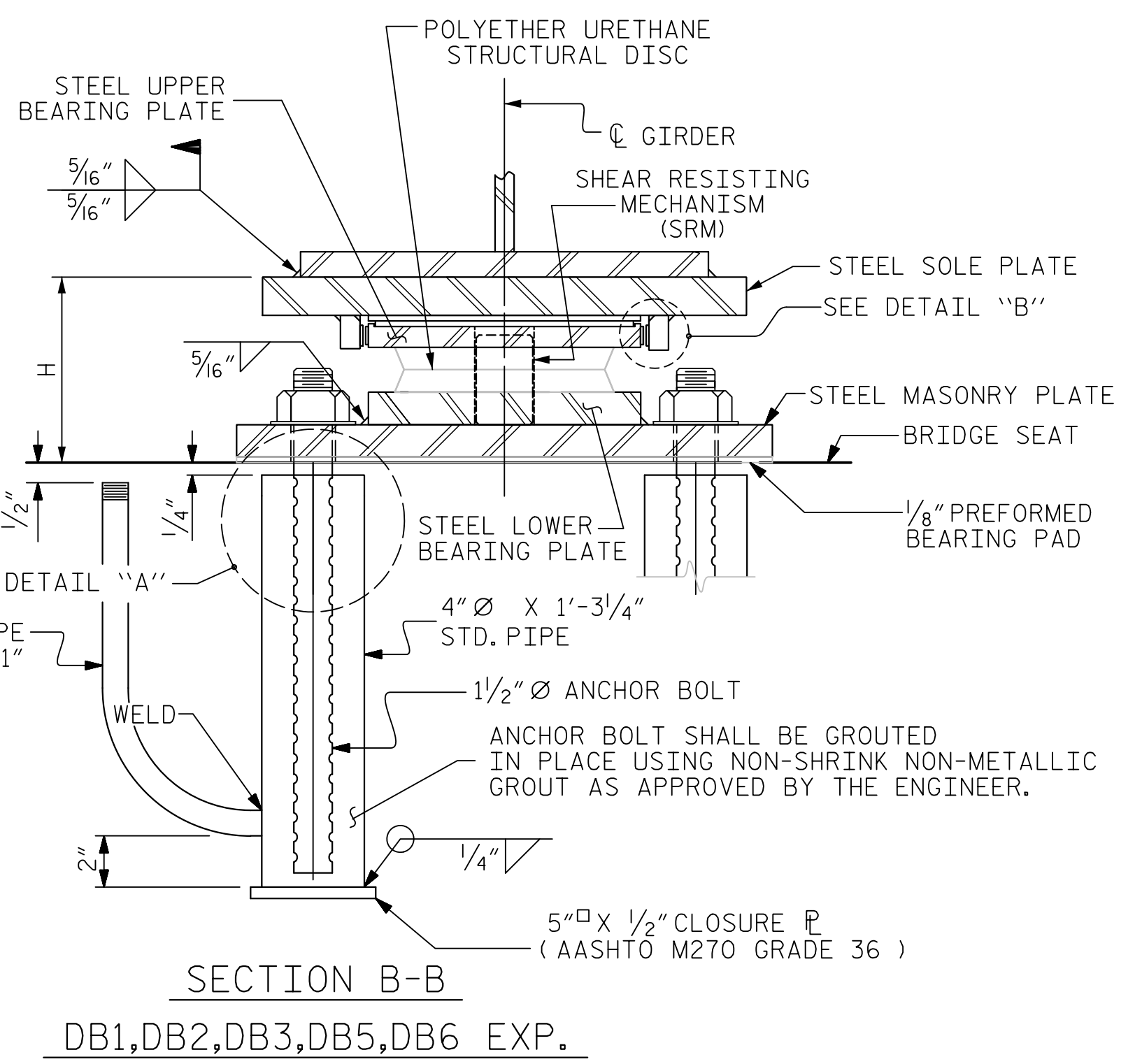
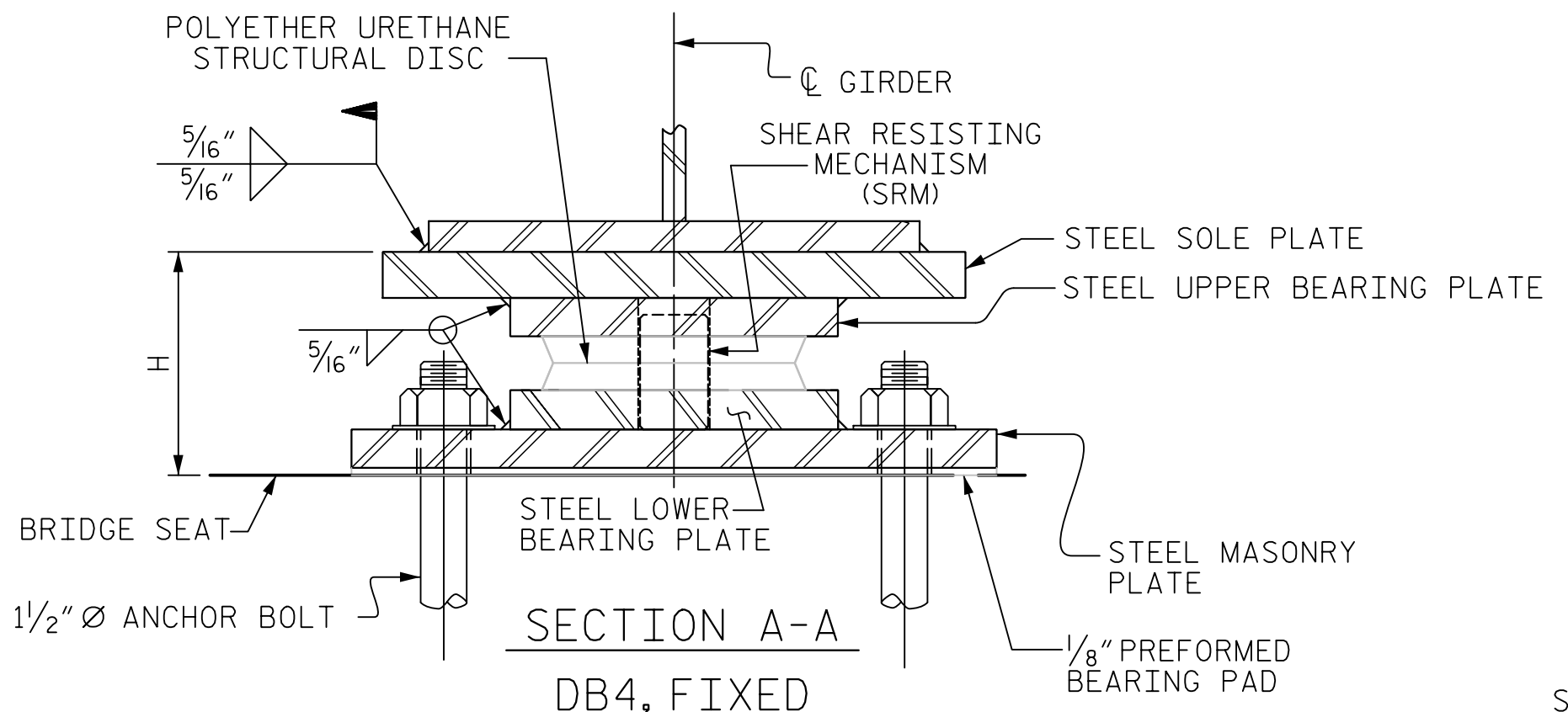
FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

THE MINIMUM ROTATIONAL CAPACITY FOR ALL BEARINGS SHALL BE 0.02 RADIAN.



NOTE: DIMENSIONS "W" AND "T" SHALL BE DETERMINED BY THE BEARING MANUFACTURER.

SOLE PLATE DETAILS



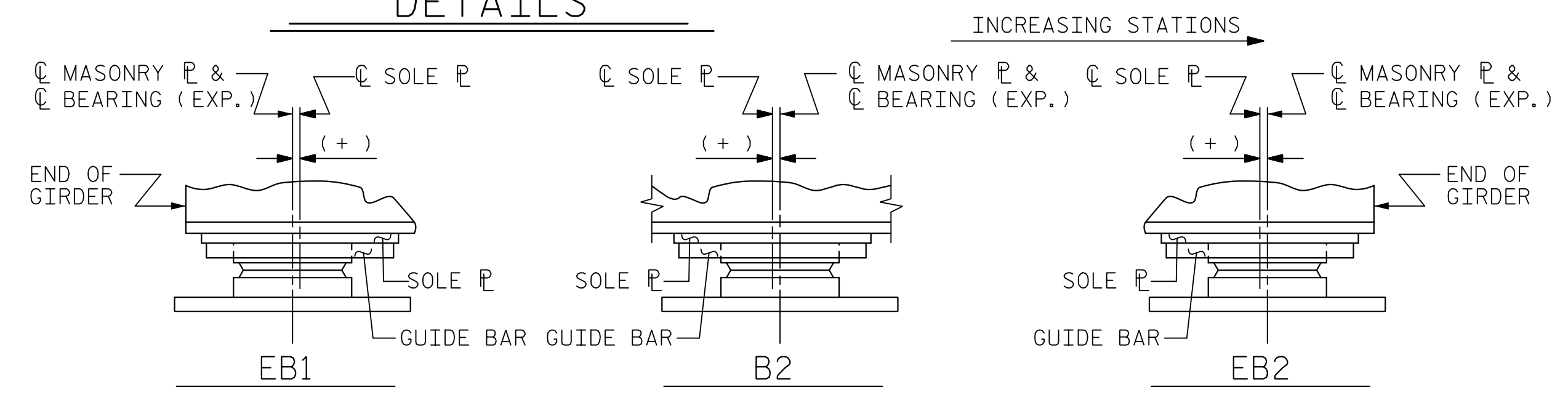
MASONRY PLATE DETAILS

DESIGNATIONS		LOCATION	NUMBER OF BEARINGS	DIMENSIONS					LOADS AND MOVEMENT					
BEARINGS	MASONRY PLATE			BEARING H (IN.)	MASONRY PLATE A (IN.)	MASONRY PLATE B (IN.)	MASONRY PLATE C (IN.)	SOLE PLATE TOP SLOPE (%)	SOLE PLATE L (IN.)	UNFACTORED VERTICAL LOAD (KIPS)		FACTORED HORIZONTAL LOAD (KIPS)	ONE-WAY MOVEMENT (IN.)	
									DC	DW	LIVE LL+IM			
DB1 (EXP.)	MP1	END BENT 1	3 (GIRDERS 1,2,3)	5 3/4	25 1/2	25 1/2	3/4	2.17	20	83.6	11.7	121.6	57.00	±0.77
DB2 (EXP.)	MP1	END BENT 1	1 (GIRDER 4)	5 3/4	25 1/2	25 1/2	3/4	2.24	20	83.6	11.7	121.6	57.00	±0.77
DB3 (EXP.)	MP2	END BENT 1	1 (GIRDER 5)	5 7/8	25 1/2	25 1/2	3/4	2.57	20	83.6	11.7	121.6	57.00	±0.77
DB4 (FIXED)	MP3	BENT 1	5	6 1/2	24 1/2	24 1/2	1	2.17	20	260.0	31.3	220.5	140.00	0
DB5 (EXP.)	MP4	BENT 2	5	7 5/8	30 1/2	30 1/2	1	2.17	20	260.0	31.8	220.5	140.00	±0.24
DB6 (EXP.)	MP1	END BENT 2	5	5 3/4	25 1/2	25 1/2	3/4	2.17	20	83.5	12.2	121.6	57.00	±0.71

PLATE SETTING DATA (EXPANSION DISC BEARINGS)

LOCATION	TEMPERATURE AT TIME OF SETTING			*
	45° F	60° F	90° F	
EB1	+0.23	0	-0.46	+0.58
B2	+0.07	0	-0.14	+0.16
EB2	+0.21	0	-0.43	+0.58

\* CORRECTION FOR END ROTATION DUE TO WEIGHT OF SLAB AND COMPOSITE DEAD LOAD (IN).

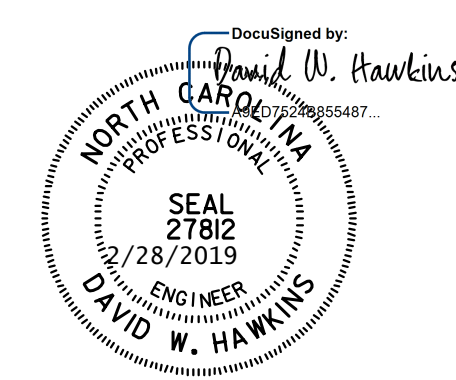


TEMPERATURE SETTING DETAIL

ASSEMBLED BY : M. WRIGHT DATE : 5/18  
 CHECKED BY : D. HAWKINS DATE : 7/18  
 DRAWN BY : TMG 08/13 REV. 12/17 MAA/THC  
 CHECKED BY : EXP 10/13

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

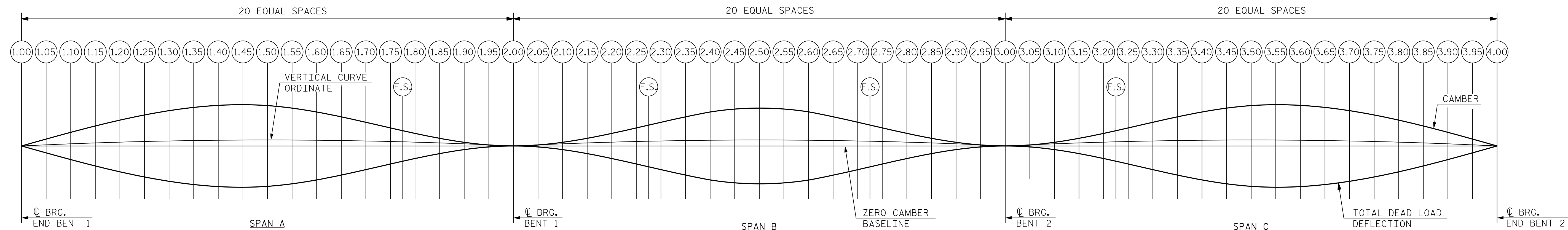
**HNTB** HNTB NORTH CAROLINA, P.C.  
 NC License No. C-1554  
 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609  
 DRAWN BY: M. WRIGHT DATE: 5/18  
 CHECKED BY: D. HAWKINS DATE: 7/18  
 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 11/18  
 DWG. NO. 18



PROJECT NO. B-5905  
 JACKSON COUNTY  
 STATION: 19+41.94 -L-

REVISIONS					SHEET NO. S1-18
NO.	BY	DATE	NO.	DATE	
1			3		TOTAL SHEETS 54
2			4		

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 DISC BEARING  
 DETAILS



**SCHEMATIC DEFLECTION AND CAMBER ORDINATES**  
(F.S. = FIELD SPLICE)

DEAD LOAD DEFLECTION & CAMBER SCHEDULE - GIRDER 1																							
TWENTIETH POINTS	SPAN A																						
	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	F.S.	1.80	1.85	1.90	1.95	2.00	
DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.008	0.016	0.024	0.030	0.036	0.040	0.042	0.044	0.044	0.042	0.040	0.036	0.032	0.027	0.021	0.019	0.016	0.011	0.006	0.003	0.000	
DEFLECTION DUE TO WEIGHT OF SLAB	0.000	0.037	0.073	0.106	0.135	0.159	0.177	0.189	0.195	0.196	0.190	0.179	0.163	0.143	0.121	0.097	0.087	0.073	0.050	0.030	0.012	0.000	
DEFLECTION DUE TO WEIGHT OF RAIL	0.000	0.005	0.010	0.015	0.019	0.022	0.024	0.026	0.027	0.027	0.026	0.025	0.023	0.020	0.017	0.013	0.012	0.010	0.006	0.003	0.001	0.000	
TOTAL DEAD LOAD DEFLECTION	0.000	0.050	0.099	0.145	0.184	0.217	0.241	0.257	0.266	0.267	0.258	0.244	0.222	0.195	0.165	0.131	0.118	0.099	0.067	0.039	0.016	0.000	
VERTICAL CURVE ORDINATE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
REQUIRED CAMBER	0	3/8	1/2	5/8	3/4	2/3	1/2	1/3	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	0	

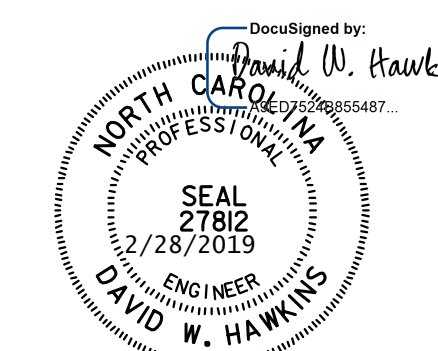
DEAD LOAD DEFLECTION & CAMBER SCHEDULE - GIRDER 1																							
TWENTIETH POINTS	SPAN B																						
	2.00	2.05	2.10	2.15	2.20	2.25	F.S.	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	F.S.	2.75	2.80	2.85	2.90	2.95	3.00
DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.000	0.001	0.003	0.005	0.008	0.009	0.010	0.013	0.014	0.015	0.015	0.015	0.013	0.011	0.008	0.007	0.006	0.003	0.001	-0.001	-0.001	0.000
DEFLECTION DUE TO WEIGHT OF SLAB	0.000	-0.004	-0.003	0.002	0.010	0.019	0.023	0.028	0.036	0.042	0.045	0.046	0.043	0.037	0.029	0.019	0.014	0.010	0.001	-0.005	-0.009	-0.007	0.000
DEFLECTION DUE TO WEIGHT OF RAIL	0.000	0.000	0.001	0.003	0.006	0.008	0.009	0.010	0.012	0.013	0.014	0.014	0.013	0.012	0.010	0.008	0.007	0.005	0.003	0.001	0.000	-0.001	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	-0.004	-0.001	0.008	0.021	0.035	0.041	0.048	0.061	0.069	0.074	0.075	0.071	0.062	0.050	0.035	0.028	0.021	0.007	-0.003	-0.010	-0.009	0.000
VERTICAL CURVE ORDINATE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
REQUIRED CAMBER	0	-1/16	0	1/8	1/4	1/4	1/2	3/8	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/4	1/16	-1/16	-1/8	-1/8	0

DEAD LOAD DEFLECTION & CAMBER SCHEDULE - GIRDER 1																							
TWENTIETH POINTS	SPAN C																						
	3.00	3.05	3.10	3.15	3.20	F.S.	3.25	3.30	3.35	3.40	3.45	3.50	3.55	3.60	3.65	3.70	3.75	3.80	3.85	3.90	3.95	4.00	
DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.003	0.008	0.013	0.019	0.022	0.025	0.030	0.036	0.041	0.044	0.047	0.048	0.048	0.046	0.043	0.038	0.032	0.025	0.017	0.009	0.000	
DEFLECTION DUE TO WEIGHT OF SLAB	0.000	0.016	0.036	0.060	0.085	0.100	0.111	0.137	0.161	0.181	0.197	0.208	0.213	0.212	0.204	0.190	0.169	0.143	0.113	0.078	0.040	0.000	
DEFLECTION DUE TO WEIGHT OF RAIL	0.000	0.002	0.005	0.009	0.013	0.015	0.017	0.021	0.024	0.027	0.029	0.031	0.031	0.029	0.027	0.024	0.020	0.016	0.011	0.006	0.000	0.000	
TOTAL DEAD LOAD DEFLECTION	0.000	0.021	0.049	0.082	0.117	0.137	0.153	0.188	0.221	0.249	0.270	0.286	0.292	0.291	0.279	0.260	0.231	0.195	0.154	0.106	0.055	0.000	
VERTICAL CURVE ORDINATE	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.000	
REQUIRED CAMBER	0	1/4	3/8	1	1 1/16	1 1/8	1 1/8	2 1/4	2 1/16	3	3 1/4	3 1/16	3 1/2	3 1/2	3 3/8	3 3/8	2 13/16	2 3/8	1 3/8	1 1/16	1 1/16	0	

**NOTES:**  
SLOPE FOR THE ZERO CAMBER BASELINE VARIES.  
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT 'REQUIRED CAMBER', WHICH IS GIVEN IN INCHES (FRACTION FORM).  
TWENTIETH POINTS ARE TAKEN FROM C BEARING TO C BEARING.

PROJECT NO. B-5905  
JACKSON COUNTY  
STATION: 19+41.94 -L-

SHEET 1 OF 3



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUPERSTRUCTURE  
GIRDER CAMBER  
AND  
DEFLECTIONS

**HNTB** HNTB NORTH CAROLINA, P.C.  
NC License No. C-1554  
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

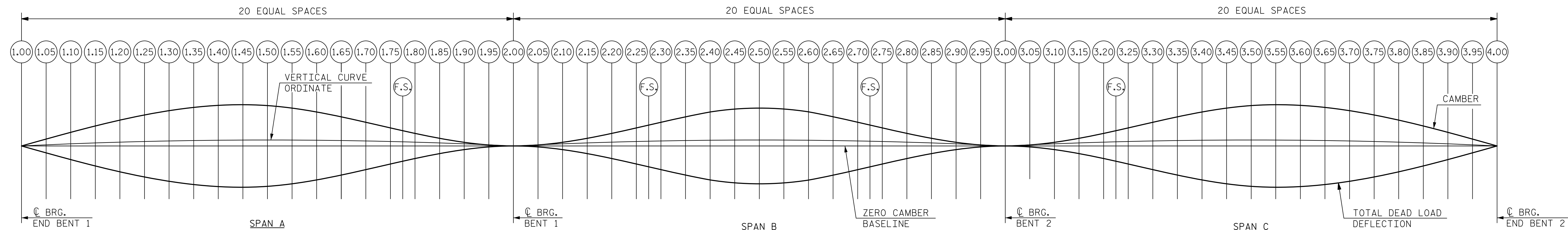
DRAWN BY: M. WRIGHT DATE: 5/18  
CHECKED BY: N. SALAS ZAMUDIO DATE: 5/18  
DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 11/18

DWG. NO. 19

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

REVISIONS						SHEET NO. S1-19
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			

TOTAL SHEETS: 54



**SCHMATIC DEFLECTION AND CAMBER ORDINATES**  
(F.S. = FIELD SPLICE)

DEAD LOAD DEFLECTION & CAMBER SCHEDULE - GIRDERS 2 THRU 4																							
TWENTIETH POINTS	SPAN A																						
	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	F.S.	1.80	1.85	1.90	1.95	2.00	
DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.008	0.016	0.024	0.030	0.035	0.040	0.042	0.044	0.044	0.043	0.040	0.037	0.032	0.027	0.022	0.020	0.017	0.011	0.007	0.003	0.000	
DEFLECTION DUE TO WEIGHT OF SLAB	0.000	0.038	0.074	0.107	0.137	0.161	0.180	0.193	0.200	0.200	0.195	0.184	0.168	0.149	0.126	0.102	0.091	0.077	0.053	0.032	0.013	0.000	
DEFLECTION DUE TO WEIGHT OF RAIL	0.000	0.005	0.010	0.014	0.018	0.022	0.024	0.026	0.027	0.027	0.027	0.025	0.023	0.021	0.018	0.014	0.013	0.011	0.007	0.004	0.002	0.000	
TOTAL DEAD LOAD DEFLECTION	0.000	0.051	0.100	0.145	0.185	0.218	0.244	0.261	0.271	0.271	0.265	0.249	0.228	0.202	0.171	0.138	0.124	0.105	0.071	0.043	0.018	0.000	
VERTICAL CURVE ORDINATE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
REQUIRED CAMBER	0	3/8	1 1/8	1 3/4	2 1/4	2 5/8	2 5/8	3 1/8	3 1/4	3 1/4	3 3/8	3	2 3/4	2 1/8	2 1/8	1 5/8	1 1/2	1 1/4	1/2	1/2	3/8	0	

DEAD LOAD DEFLECTION & CAMBER SCHEDULE - GIRDERS 2 THRU 4																							
TWENTIETH POINTS	SPAN B																						
	2.00	2.05	2.10	2.15	2.20	2.25	F.S.	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	F.S.	2.75	2.80	2.85	2.90	2.95	3.00
DEFLECTION DUE TO WEIGHT OF STEEL	0.000	-0.001	0.000	0.002	0.004	0.007	0.008	0.010	0.012	0.014	0.015	0.015	0.015	0.014	0.012	0.010	0.008	0.007	0.004	0.002	0.000	-0.001	0.000
DEFLECTION DUE TO WEIGHT OF SLAB	0.000	-0.005	-0.005	0.000	0.008	0.017	0.021	0.026	0.035	0.043	0.047	0.049	0.047	0.042	0.035	0.026	0.021	0.017	0.008	0.000	-0.005	-0.005	0.000
DEFLECTION DUE TO WEIGHT OF RAIL	0.000	0.000	0.001	0.002	0.004	0.006	0.007	0.009	0.010	0.012	0.013	0.013	0.013	0.012	0.010	0.009	0.007	0.006	0.004	0.002	0.001	0.000	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	-0.006	-0.004	0.004	0.016	0.030	0.036	0.045	0.057	0.069	0.075	0.077	0.075	0.068	0.057	0.045	0.036	0.030	0.016	0.004	-0.004	-0.006	0.000
VERTICAL CURVE ORDINATE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
REQUIRED CAMBER	0	-1/16	-1/16	1/16	3/16	3/8	7/16	3/8	11/16	13/16	7/8	15/16	7/8	13/16	11/16	3/8	3/8	3/16	1/16	-1/16	-1/16	0	

DEAD LOAD DEFLECTION & CAMBER SCHEDULE - GIRDERS 2 THRU 4																							
TWENTIETH POINTS	SPAN C																						
	3.00	3.05	3.10	3.15	3.20	F.S.	3.25	3.30	3.35	3.40	3.45	3.50	3.55	3.60	3.65	3.70	3.75	3.80	3.85	3.90	3.95	4.00	
DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.003	0.007	0.011	0.017	0.020	0.022	0.027	0.032	0.037	0.040	0.043	0.044	0.044	0.042	0.040	0.035	0.030	0.024	0.016	0.008	0.000	
DEFLECTION DUE TO WEIGHT OF SLAB	0.000	0.014	0.032	0.053	0.077	0.091	0.102	0.126	0.149	0.168	0.184	0.195	0.200	0.200	0.193	0.180	0.161	0.137	0.107	0.074	0.038	0.000	
DEFLECTION DUE TO WEIGHT OF RAIL	0.000	0.002	0.004	0.007	0.011	0.013	0.014	0.018	0.021	0.023	0.025	0.027	0.027	0.027	0.026	0.024	0.022	0.018	0.014	0.010	0.005	0.000	
TOTAL DEAD LOAD DEFLECTION	0.000	0.019	0.043	0.071	0.105	0.124	0.138	0.171	0.202	0.228	0.249	0.265	0.271	0.271	0.261	0.244	0.218	0.185	0.145	0.100	0.051	0.000	
VERTICAL CURVE ORDINATE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
REQUIRED CAMBER	0	1/4	1/2	3/8	1/4	1/2	1 1/8	2 1/8	2 1/8	2 3/4	3	3 3/8	3 1/4	3 1/4	3 1/8	2 5/8	2 1/4	1 3/4	1 3/8	1 1/8	5/8	0	

**NOTES:**

SLOPE FOR THE ZERO CAMBER BASELINE VARIES.

ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT 'REQUIRED CAMBER', WHICH IS GIVEN IN INCHES (FRACTION FORM).

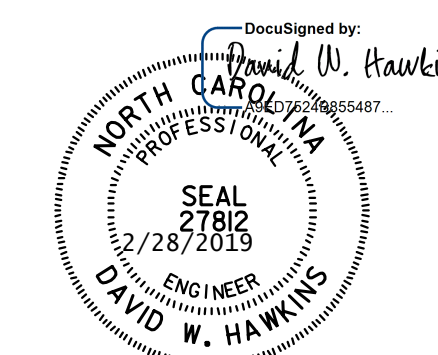
TWENTIETH POINTS ARE TAKEN FROM C BEARING TO C BEARING.

PROJECT NO. B-5905  
JACKSON COUNTY  
 STATION: 19+41.94 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 GIRDER CAMBER  
 AND  
 DEFLECTIONS

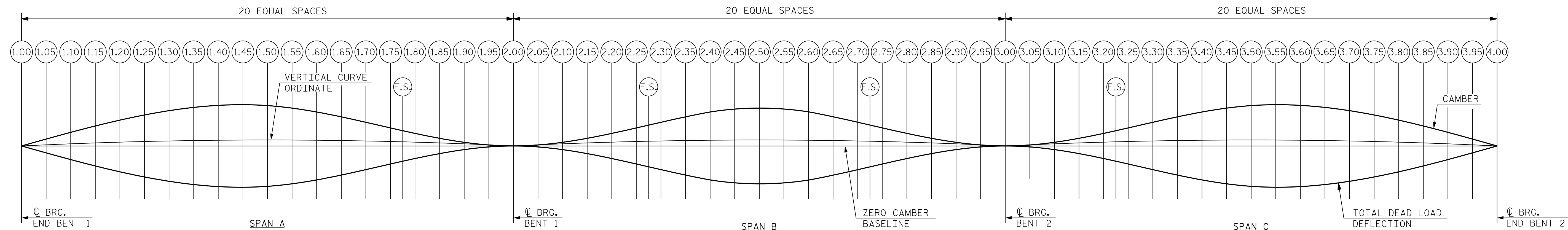


<b>HNTB</b>	HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609
DRAWN BY: M. WRIGHT	DATE: 5/18
CHECKED BY: N. SALAS ZAMUDIO	DATE: 5/18
DESIGN ENGINEER OF RECORD: D. HAWKINS	DATE: 11/18

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

REVISIONS						SHEET NO. S1-20
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			

TOTAL SHEETS  
54



**SCHEMATIC DEFLECTION AND CAMBER ORDINATES**  
(F.S. = FIELD SPLICE)

DEAD LOAD DEFLECTION & CAMBER SCHEDULE - GIRDER 5																							
TWENTIETH POINTS	SPAN A																						
	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	F.S.	1.80	1.85	1.90	1.95	2.00	
DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.009	0.017	0.025	0.032	0.038	0.043	0.046	0.048	0.048	0.047	0.044	0.041	0.036	0.030	0.025	0.022	0.019	0.013	0.008	0.003	0.000	
DEFLECTION DUE TO WEIGHT OF SLAB	0.000	0.040	0.078	0.113	0.144	0.169	0.190	0.204	0.212	0.213	0.208	0.197	0.181	0.161	0.137	0.111	0.100	0.085	0.060	0.036	0.016	0.000	
DEFLECTION DUE TO WEIGHT OF RAIL	0.000	0.006	0.011	0.016	0.020	0.024	0.027	0.029	0.031	0.031	0.031	0.029	0.027	0.024	0.021	0.017	0.015	0.013	0.009	0.005	0.002	0.000	
TOTAL DEAD LOAD DEFLECTION	0.000	0.055	0.106	0.154	0.196	0.231	0.260	0.279	0.291	0.292	0.286	0.270	0.249	0.221	0.188	0.153	0.137	0.117	0.082	0.049	0.021	0.000	
VERTICAL CURVE ORDINATE	0.000	0.018	0.027	0.028	0.026	0.024	0.023	0.021	0.019	0.018	0.016	0.015	0.013	0.011	0.010	0.008	0.007	0.006	0.005	0.003	0.002	0.000	
REQUIRED CAMBER	0	1/8	1/8	2/16	2 1/16	3/16	3/8	3/8	3/4	3/4	3/8	3/16	3/8	2 1/16	2/8	1 5/16	1 3/4	1/2	1/16	5/8	1/4	0	

DEAD LOAD DEFLECTION & CAMBER SCHEDULE - GIRDER 5																							
TWENTIETH POINTS	SPAN B																						
	2.00	2.05	2.10	2.15	2.20	2.25	F.S.	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	F.S.	2.75	2.80	2.85	2.90	2.95	3.00
DEFLECTION DUE TO WEIGHT OF STEEL	0.000	-0.001	-0.001	0.001	0.003	0.006	0.007	0.008	0.011	0.013	0.015	0.015	0.015	0.014	0.013	0.010	0.009	0.008	0.005	0.003	0.001	0.000	0.000
DEFLECTION DUE TO WEIGHT OF SLAB	0.000	-0.007	-0.009	-0.005	0.001	0.010	0.014	0.019	0.028	0.037	0.042	0.046	0.045	0.042	0.036	0.028	0.023	0.019	0.010	0.002	-0.003	-0.004	0.000
DEFLECTION DUE TO WEIGHT OF RAIL	0.000	-0.001	0.000	0.001	0.003	0.005	0.007	0.008	0.010	0.012	0.013	0.014	0.014	0.013	0.010	0.009	0.008	0.006	0.003	0.001	0.000	0.000	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	-0.009	-0.010	-0.003	0.007	0.021	0.028	0.035	0.049	0.062	0.070	0.075	0.074	0.069	0.061	0.048	0.041	0.035	0.021	0.008	-0.001	-0.004	0.000
VERTICAL CURVE ORDINATE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
REQUIRED CAMBER	0	-1/8	-1/8	-1/16	1/16	1/4	5/16	7/16	9/16	3/4	13/16	7/8	7/8	13/16	3/4	9/16	1/2	7/16	1/4	1/8	0	-1/16	0

DEAD LOAD DEFLECTION & CAMBER SCHEDULE - GIRDER 5																							
TWENTIETH POINTS	SPAN C																						
	3.00	3.05	3.10	3.15	3.20	F.S.	3.25	3.30	3.35	3.40	3.45	3.50	3.55	3.60	3.65	3.70	3.75	3.80	3.85	3.90	3.95	4.00	
DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.003	0.006	0.011	0.016	0.019	0.021	0.027	0.032	0.036	0.040	0.042	0.044	0.044	0.042	0.040	0.036	0.030	0.024	0.016	0.008	0.000	
DEFLECTION DUE TO WEIGHT OF SLAB	0.000	0.012	0.030	0.050	0.073	0.087	0.097	0.120	0.143	0.162	0.178	0.189	0.195	0.195	0.189	0.177	0.158	0.134	0.106	0.073	0.037	0.000	
DEFLECTION DUE TO WEIGHT OF RAIL	0.000	0.001	0.003	0.006	0.010	0.012	0.013	0.017	0.020	0.023	0.025	0.026	0.027	0.027	0.026	0.024	0.022	0.019	0.015	0.010	0.005	0.000	
TOTAL DEAD LOAD DEFLECTION	0.000	0.016	0.039	0.067	0.099	0.118	0.131	0.164	0.195	0.221	0.243	0.257	0.266	0.266	0.257	0.241	0.216	0.183	0.145	0.099	0.050	0.000	
VERTICAL CURVE ORDINATE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
REQUIRED CAMBER	0	3/16	1/16	13/16	13/16	1 1/16	1 1/16	1 5/16	2 3/16	2 5/8	2 15/16	3/16	3 3/16	3 3/16	3/16	2 1/8	2 3/16	2 3/16	1 3/4	1 3/16	5/8	0	

**NOTES:**

SLOPE FOR THE ZERO CAMBER BASELINE VARIES.

ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT 'REQUIRED CAMBER', WHICH IS GIVEN IN INCHES (FRACTION FORM).

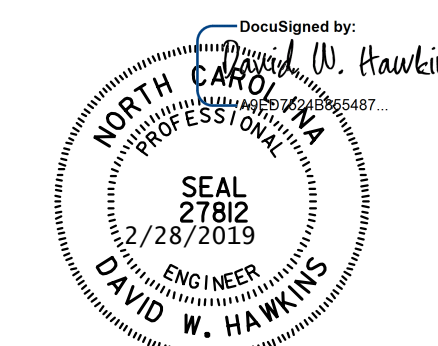
TWENTIETH POINTS ARE TAKEN FROM C BEARING TO C BEARING.

PROJECT NO. B-5905  
JACKSON COUNTY  
 STATION: 19+41.94 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 GIRDER CAMBER  
 AND  
 DEFLECTIONS



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 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

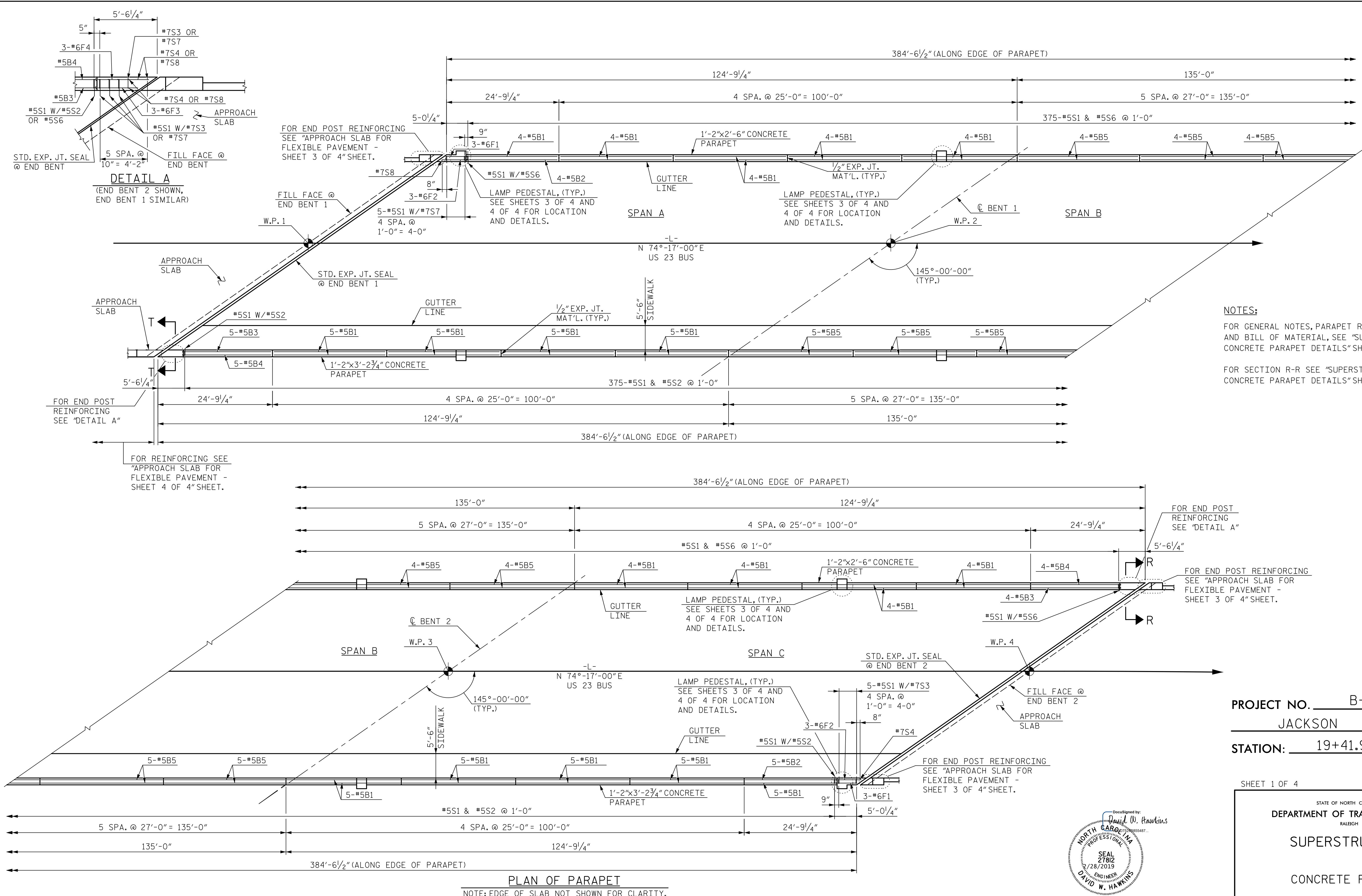
DRAWN BY: M. WRIGHT DATE: 5/18  
 CHECKED BY: N. SALAS ZAMUDIO DATE: 5/18  
 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 11/18

DWG. NO. 21

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

REVISIONS						SHEET NO. S1-21
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			

TOTAL SHEETS: 54

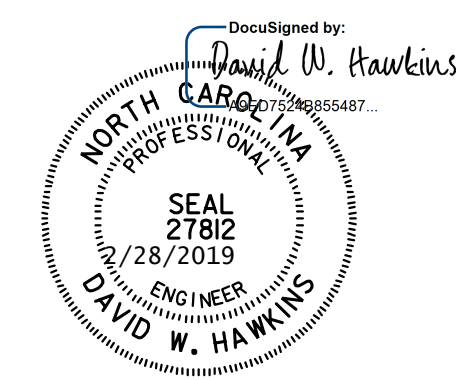


PROJECT NO. B-5905  
JACKSON COUNTY  
 STATION: 19+41.94 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUPERSTRUCTURE**  
**CONCRETE PARAPET**



<b>HNTB</b>		HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	
DRAWN BY: M. WRIGHT	DATE: 2/18	DWG. NO. 22	
CHECKED BY: J. WHEATLEY	DATE: 3/18		
DESIGN ENGINEER OF RECORD: D. HAWKINS	DATE: 11/18		

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REVISIONS						SHEET NO. S1-22
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 54
2			4			



**NOTES:**

ALL REINFORCING STEEL IN PARAPET SHALL BE EPOXY COATED.

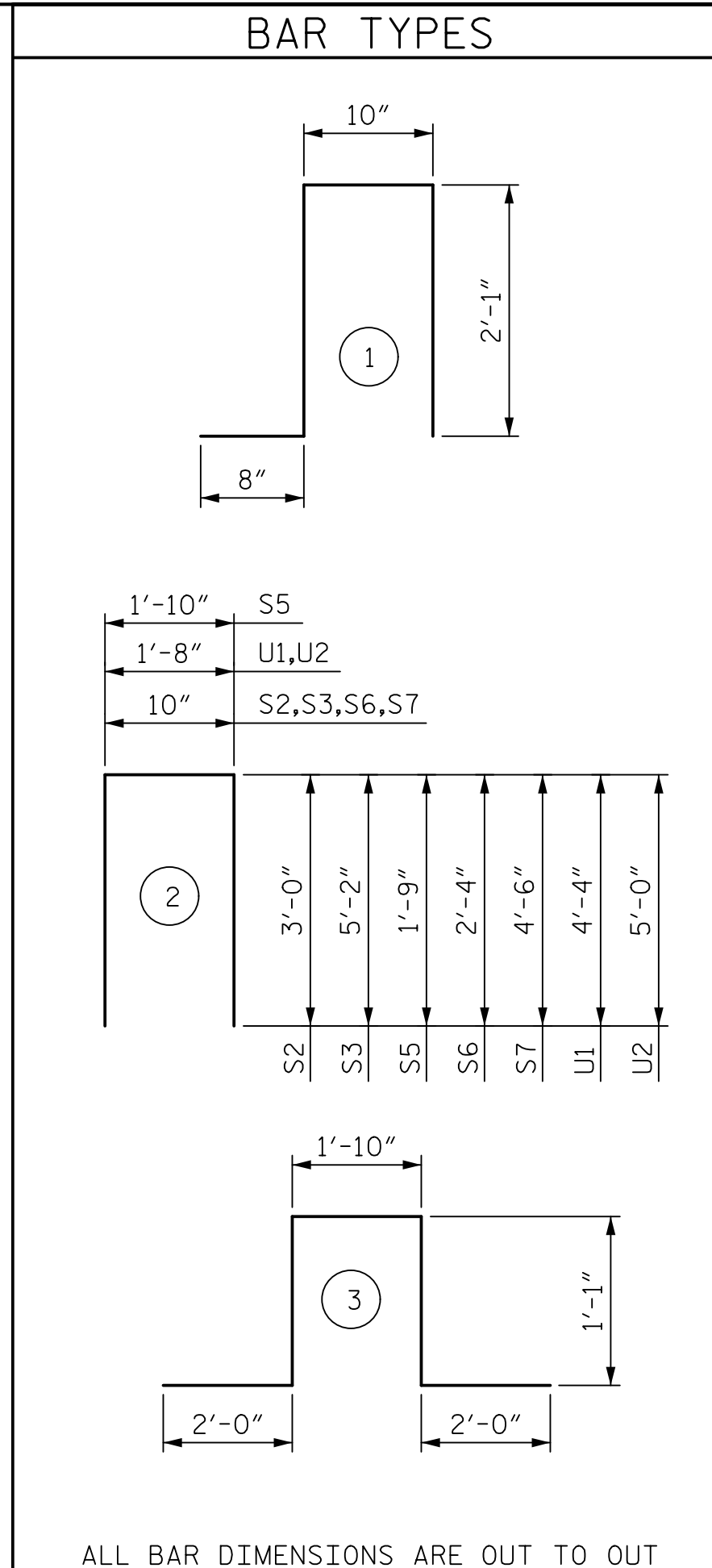
THE #5 "S" BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN THE PARAPETS.

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

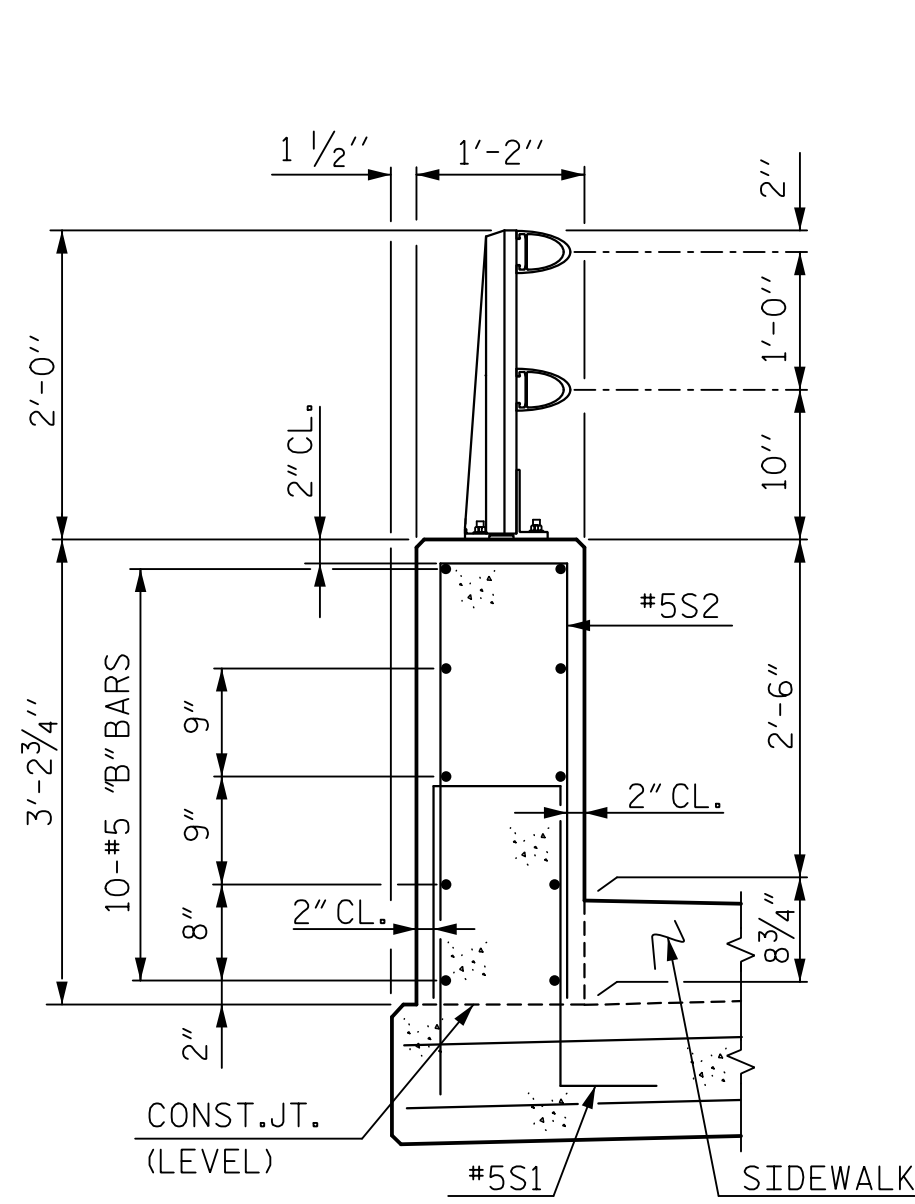
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT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

FOR DETAILS OF CONCRETE INSERTS IN LAMP PEDESTALS, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET.

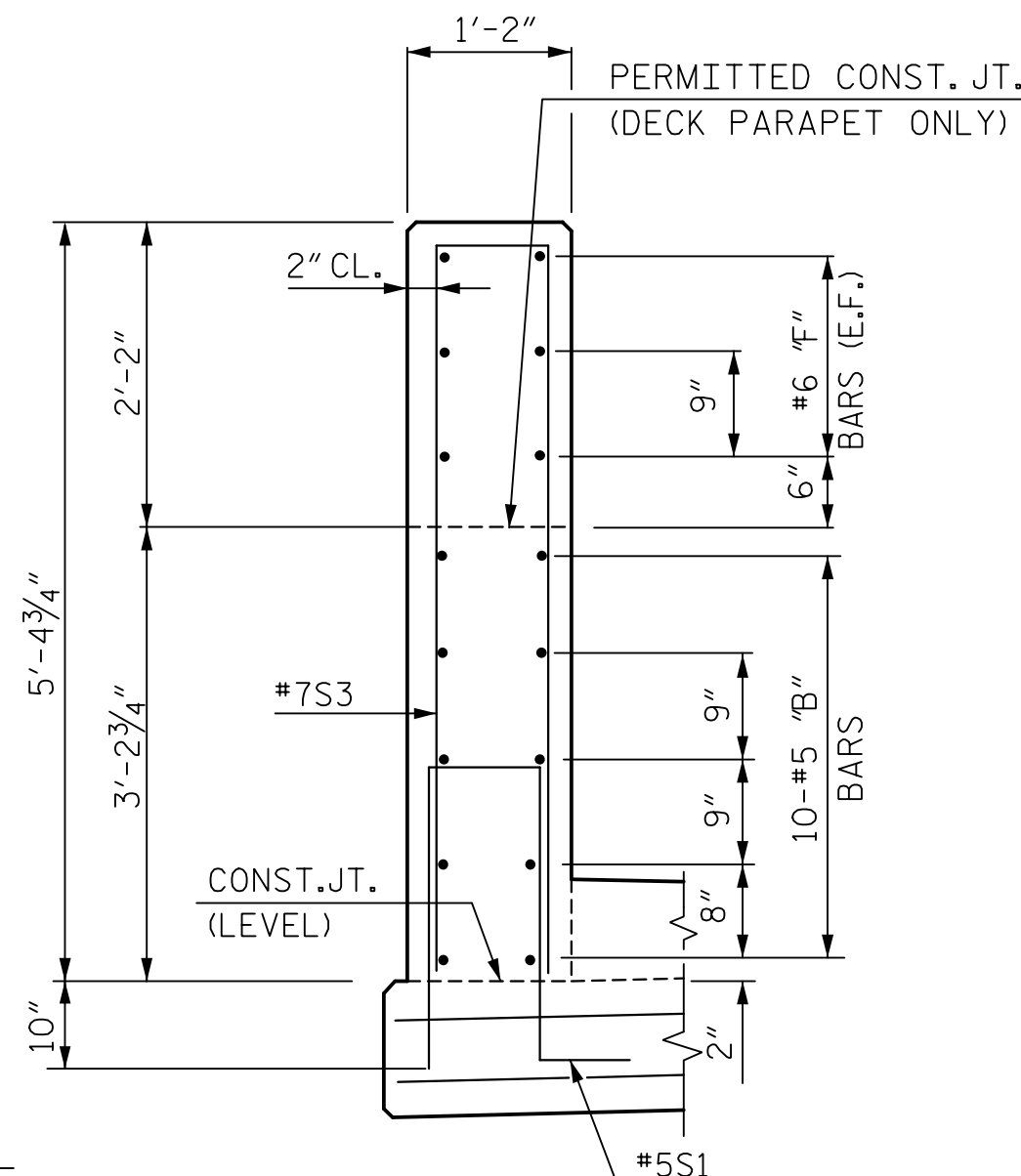
FOR SECTIONS THRU END POSTS AND LAMP PEDESTALS, SEE "SUPERSTRUCTURE - PARAPET, END POSTS AND LAMP PEDESTALS" SHEET.



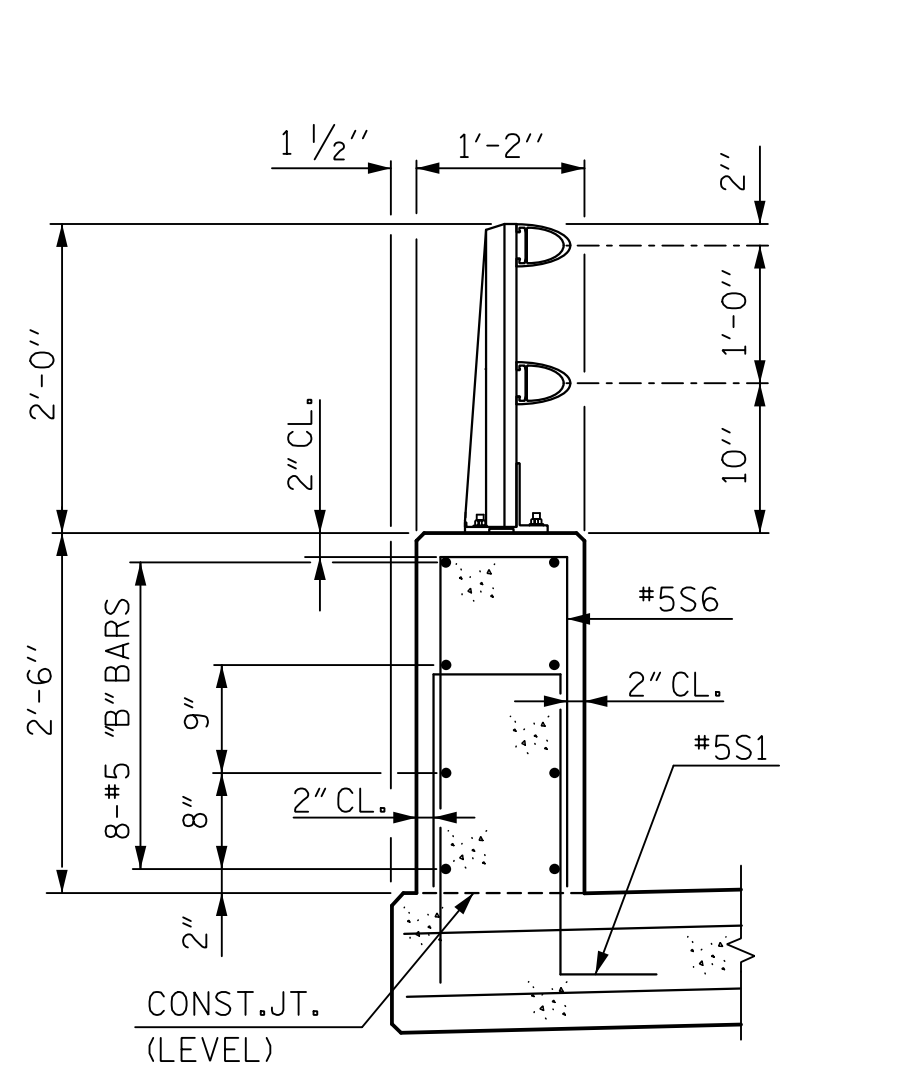
FOR CONCRETE PARAPET RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	153	#5	STR	24'-7"	3,923
* B2	9	#5	STR	25'-6"	239
* B3	9	#5	STR	22'-11"	215
* B4	9	#5	STR	23'-10"	224
* B5	90	#5	STR	26'-7"	2,495
* F1	6	#6	STR	4'-5"	40
* F2	6	#6	STR	5'-4"	48
* F3	6	#6	STR	3'-6"	32
* F4	6	#6	STR	4'-5"	40
* H1	36	#5	3	8'-0"	300
* S1	766	#5	1	5'-8"	4,527
* S2	375	#5	2	6'-10"	2,673
* S3	9	#7	2	11'-2"	205
* S4	5	#7	STR	6'-1"	62
* S5	48	#5	2	5'-4"	267
* S6	375	#5	2	5'-6"	2,151
* S7	9	#7	2	9'-10"	181
* S8	5	#7	STR	5'-5"	55
* U1	12	#5	2	10'-4"	129
* U2	12	#5	2	11'-8"	146
* EPOXY COATED REINFORCING STEEL LBS. 17,952					
CLASS AA CONCRETE					
BRIDGE PARAPET	CU. YDS.	94.6			
BRIDGE LIGHT PEDESTALS	CU. YDS.	7.0			
APPROACH SLAB PARAPET	CU. YDS.	4.8			
MOMENT SLAB PARAPET	CU. YDS.	14.5			
TOTAL:		CU. YDS.	120.9		
1'-2"x2'-6" CONCRETE PARAPET					
BRIDGE	LIN. FT.	384.54			
APPROACH SLAB	LIN. FT.	9.17			
TOTAL:		LIN. FT.	393.71		
1'-2"x3'-2 3/4" CONCRETE PARAPET					
BRIDGE	LIN. FT.	384.54			
APPROACH SLAB	LIN. FT.	18.09			
MOMENT SLAB	LIN. FT.	102.75			
TOTAL:		LIN. FT.	505.38		



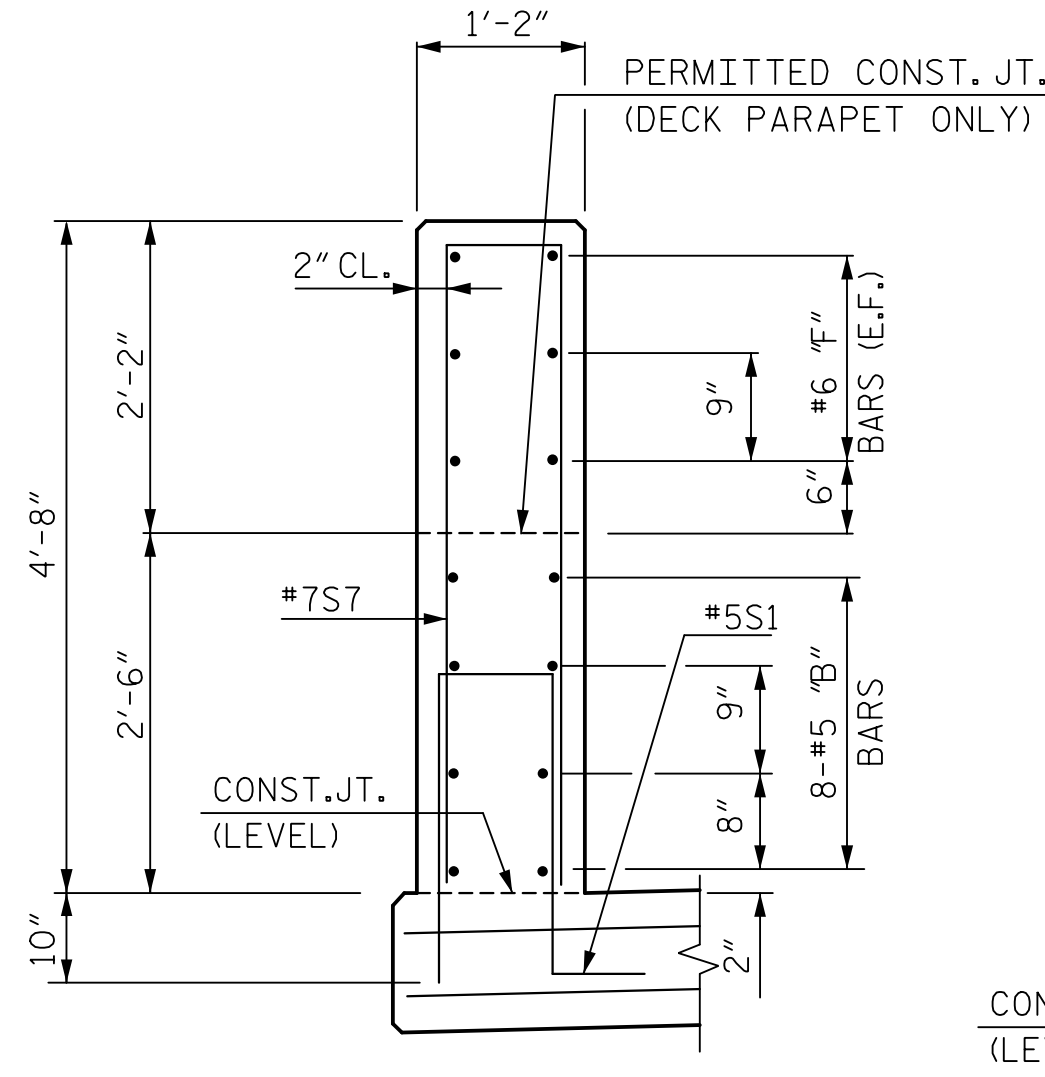
SECTION THRU RIGHT PARAPET RAIL



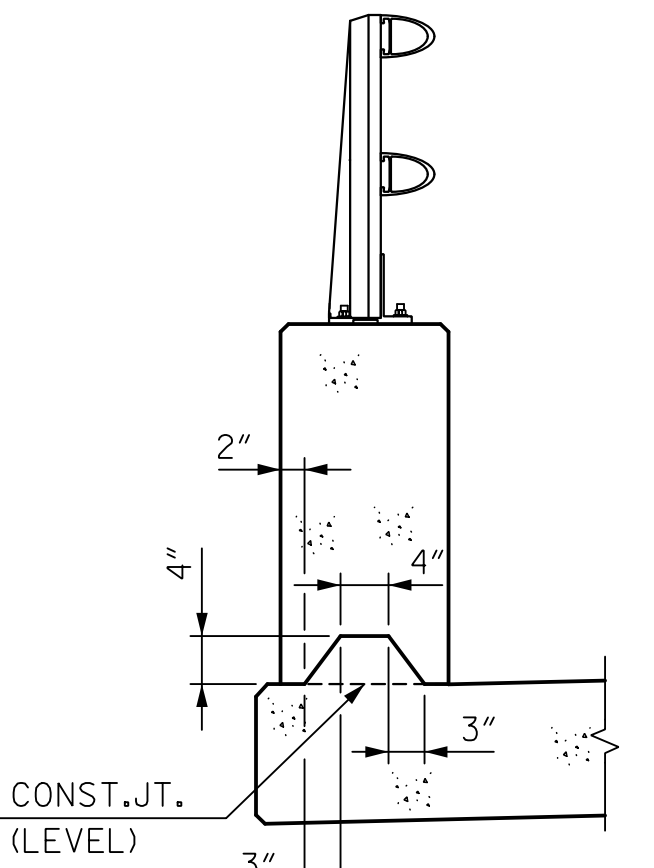
SECTION T-T



SECTION THRU LEFT PARAPET RAIL

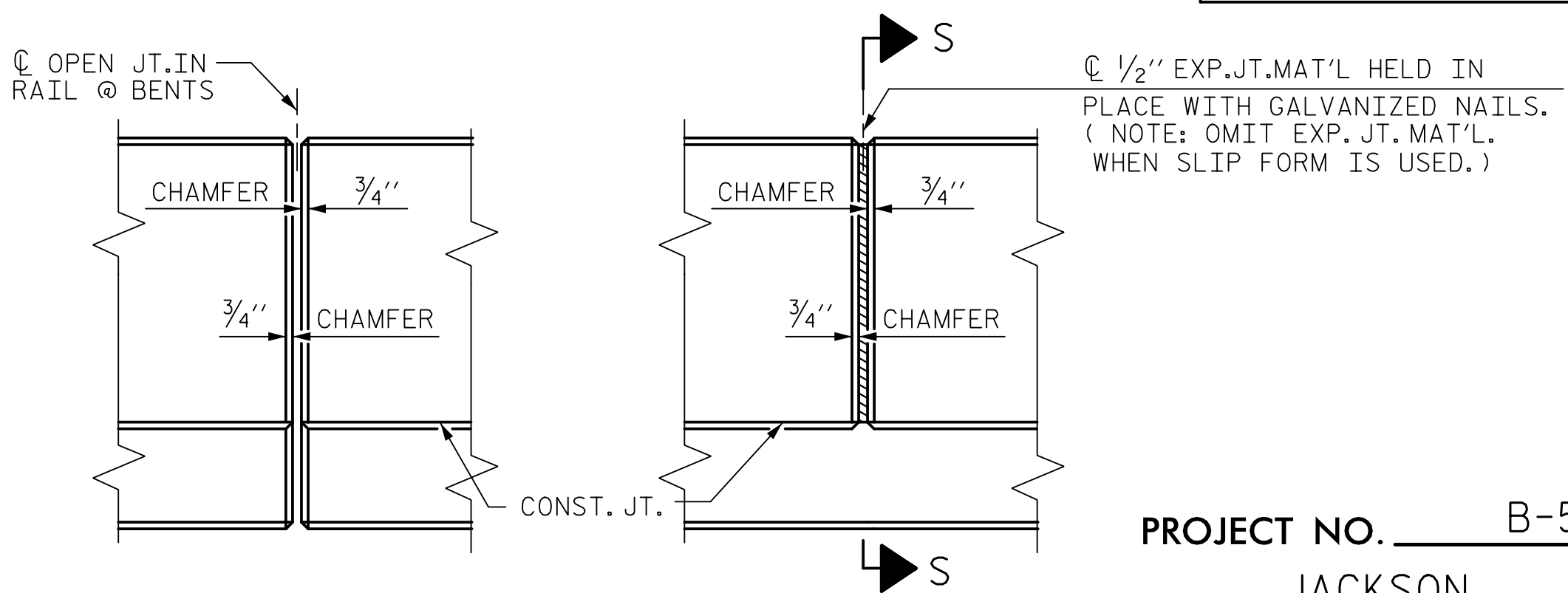


SECTION R-R



SECTION S-S

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



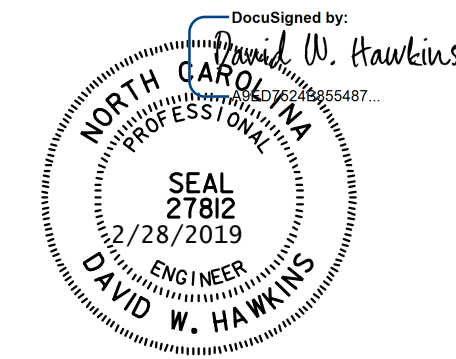
ELEVATION AT EXPANSION JOINTS PARAPET RAIL DETAILS

PROJECT NO. B-5905  
JACKSON COUNTY  
 STATION: 19+41.94 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 CONCRETE PARAPET  
 DETAILS



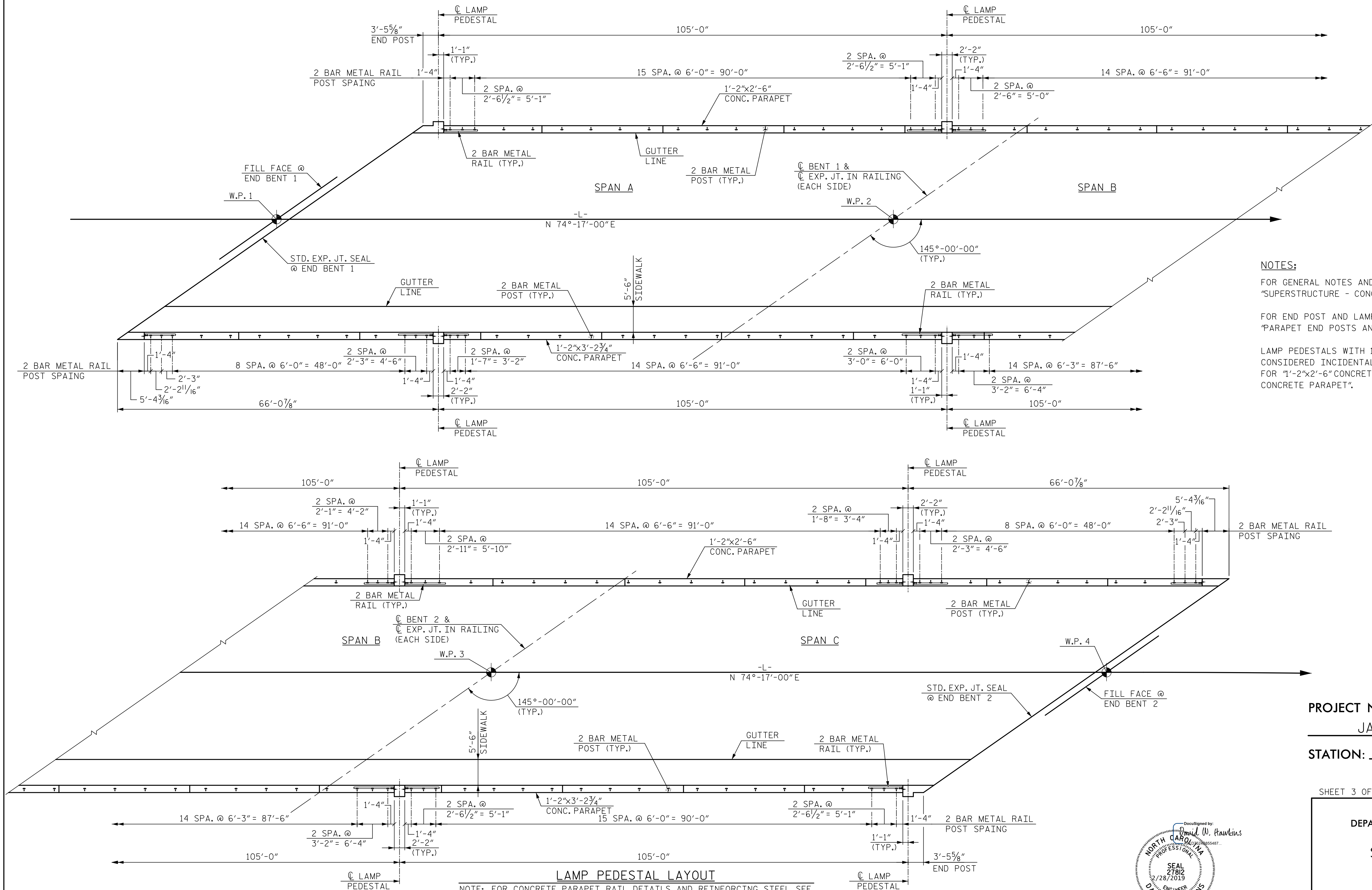
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 NC License No. C-1554  
 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY: M. WRIGHT DATE: 3/18  
 CHECKED BY: J. WHEATLEY DATE: 3/18  
 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 11/18

DWG. NO. 23

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REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-23
1			3			TOTAL SHEETS
2			4			54



**NOTES:**  
 FOR GENERAL NOTES AND BILL OF MATERIAL, SEE "SUPERSTRUCTURE - CONCRETE PARAPET DETAILS" SHEET.  
 FOR END POST AND LAMP PEDESTAL REINFORCEMENT, SEE "PARAPET END POSTS AND LAMP PEDESTALS" SHEET.  
 LAMP PEDESTALS WITH 1/4" Ø PVC CONDUIT SHALL BE CONSIDERED INCIDENTAL TO THE SEVERAL PAY ITEMS FOR "1'-2"x2'-6" CONCRETE PARAPET" AND "1'-2"x3'-2 3/4" CONCRETE PARAPET".

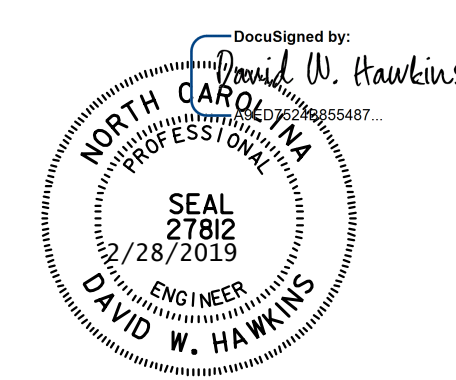
**LAMP PEDESTAL LAYOUT**  
 NOTE: FOR CONCRETE PARAPET RAIL DETAILS AND REINFORCING STEEL, SEE "SUPERSTRUCTURE PARAPET, END POSTS AND LAMP PEDESTALS" SHEET.

PROJECT NO. B-5905  
JACKSON COUNTY  
 STATION: 19+41.94 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUPERSTRUCTURE  
 LAMP PEDESTALS  
 AND  
 PARAPET DETAILS**



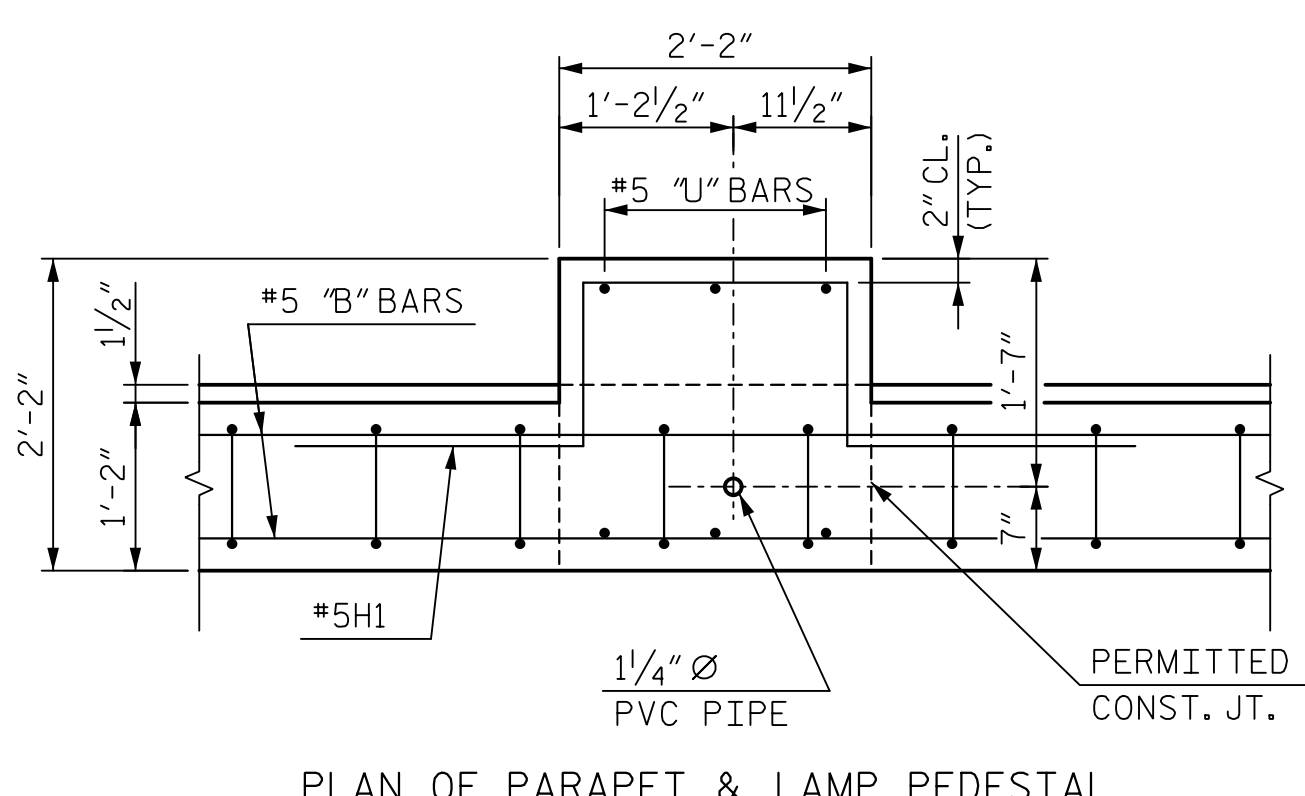
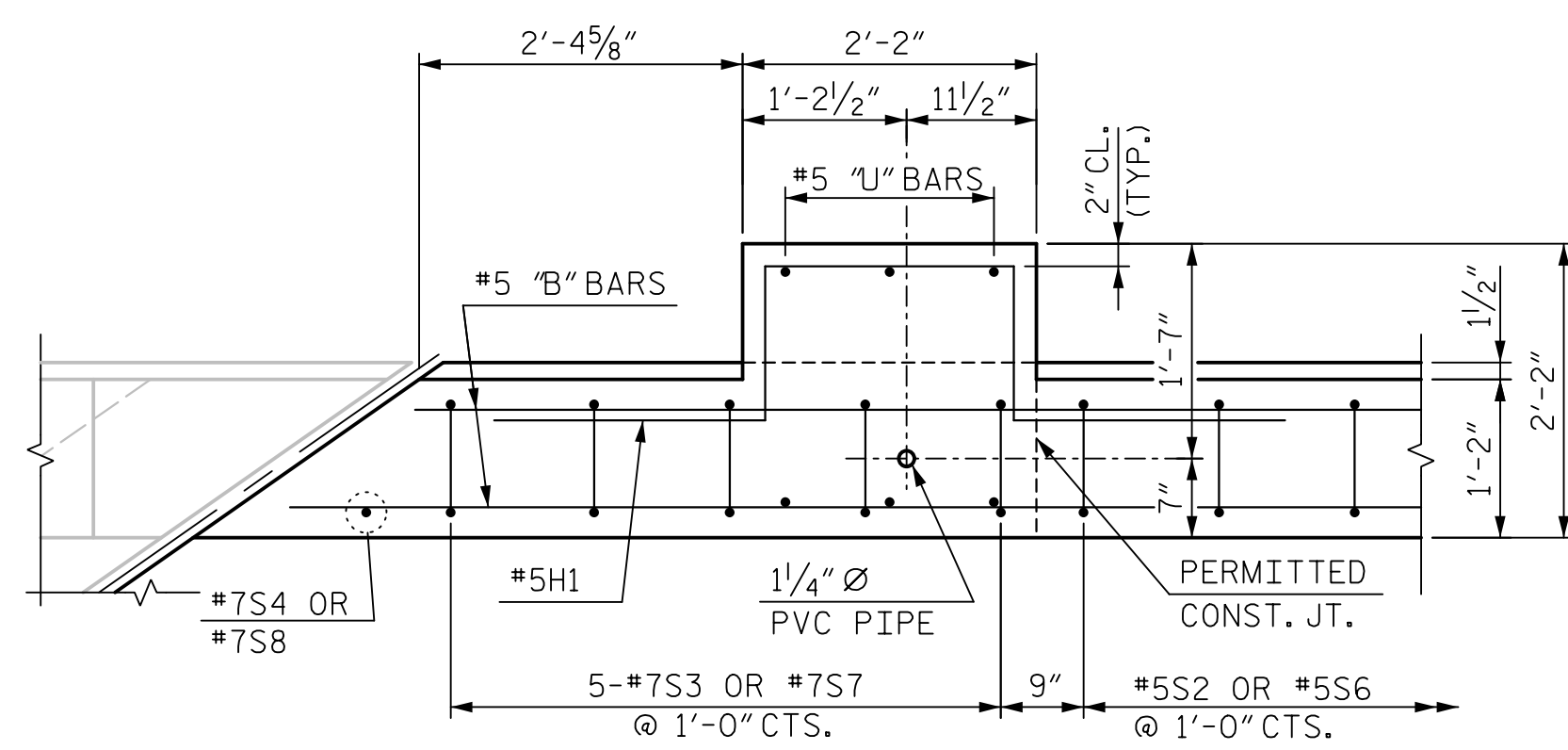
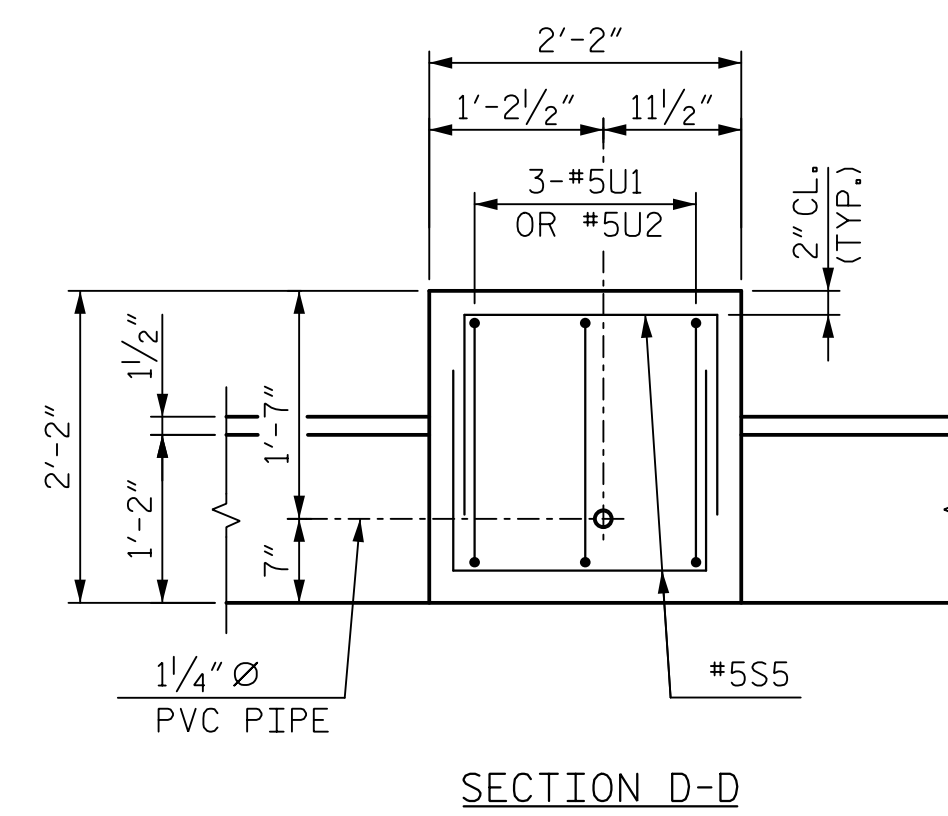
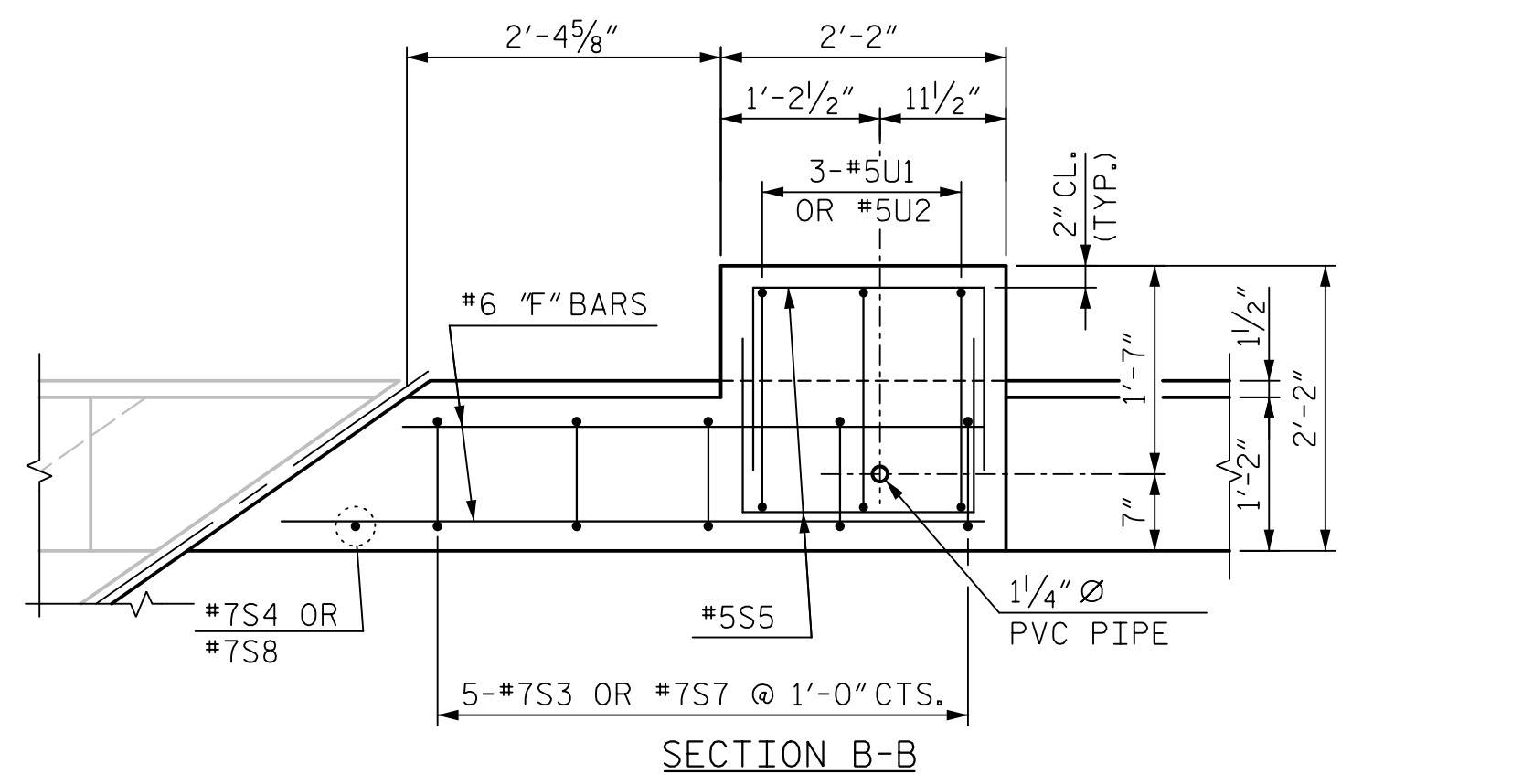
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 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY: M. WRIGHT DATE: 3/18  
 CHECKED BY: J. WHEATLEY DATE: 3/18  
 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 11/18

DWG. NO. 24

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REVISIONS						SHEET NO. S1-24
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 54
2			4			



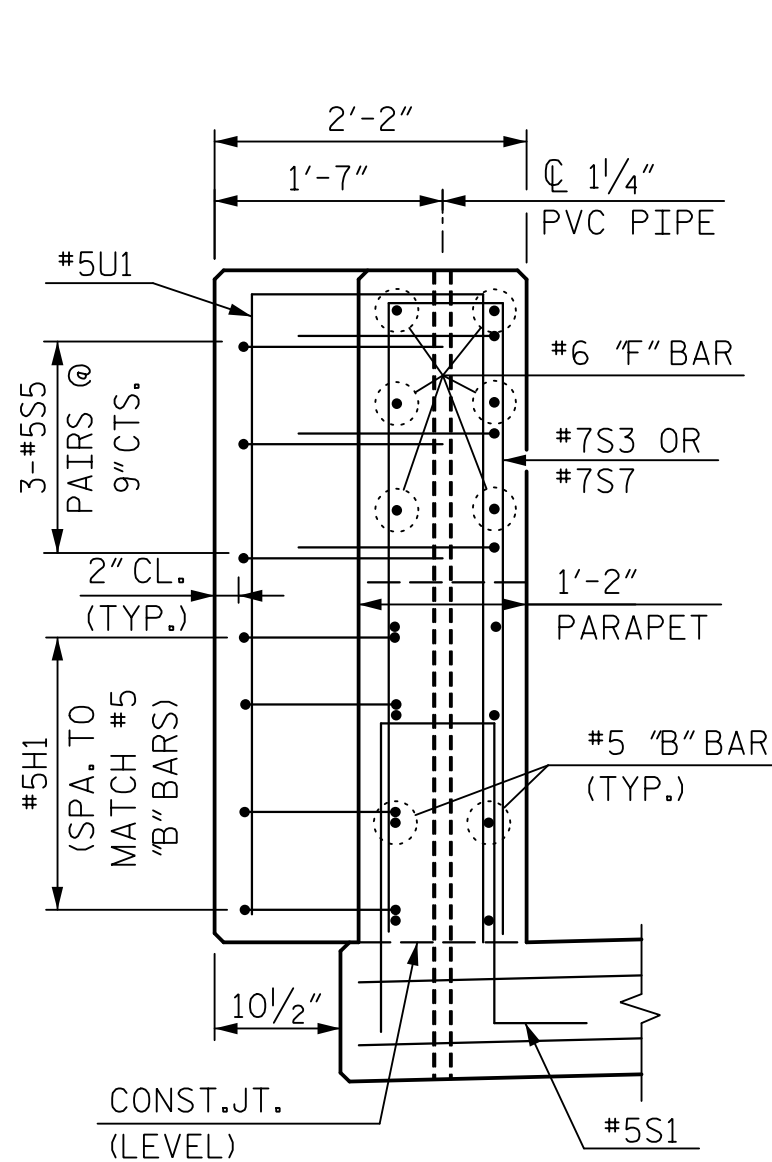
PLAN OF END POST/LAMP PEDESTAL  
(END POST SHOWN AT END BENT 1. END POST AT END BENT 2 SIMILAR)

PLAN OF PARAPET & LAMP PEDESTAL

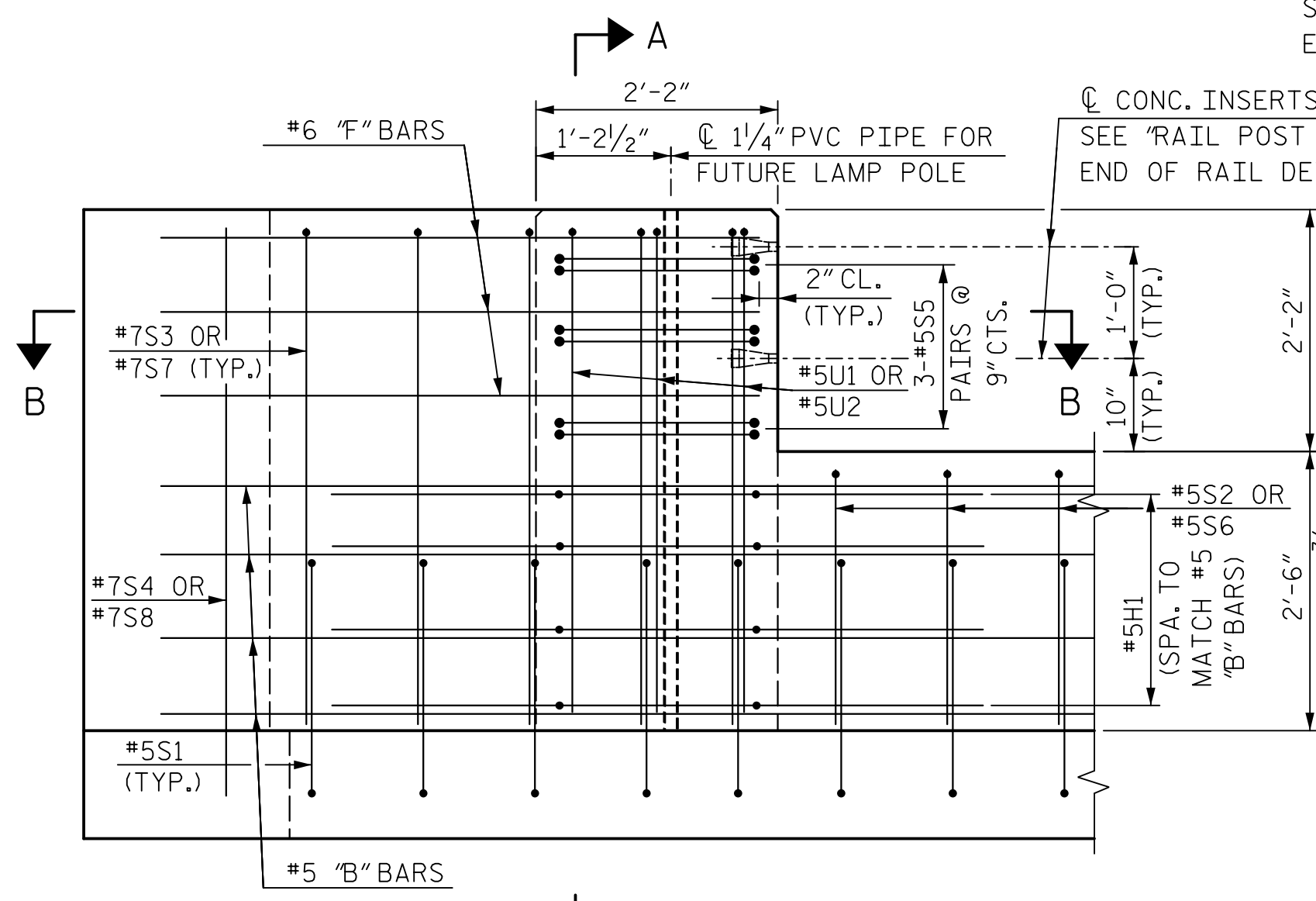
NOTES: DETAILS ARE DRAWN FOR 1'-2"x2'-6" PARAPET. DETAILS ARE SIMILAR FOR 1'-2"x3'-2 3/4" PARAPET. SEE SHEET 1 AND SHEET 2 FOR BAR LOCATIONS.

#5U1 BARS SHALL BE USED WITH LEFT SIDE LIGHT PEDESTALS.

#5U2 BARS SHALL BE USED WITH RIGHT SIDE LIGHT PEDESTALS.



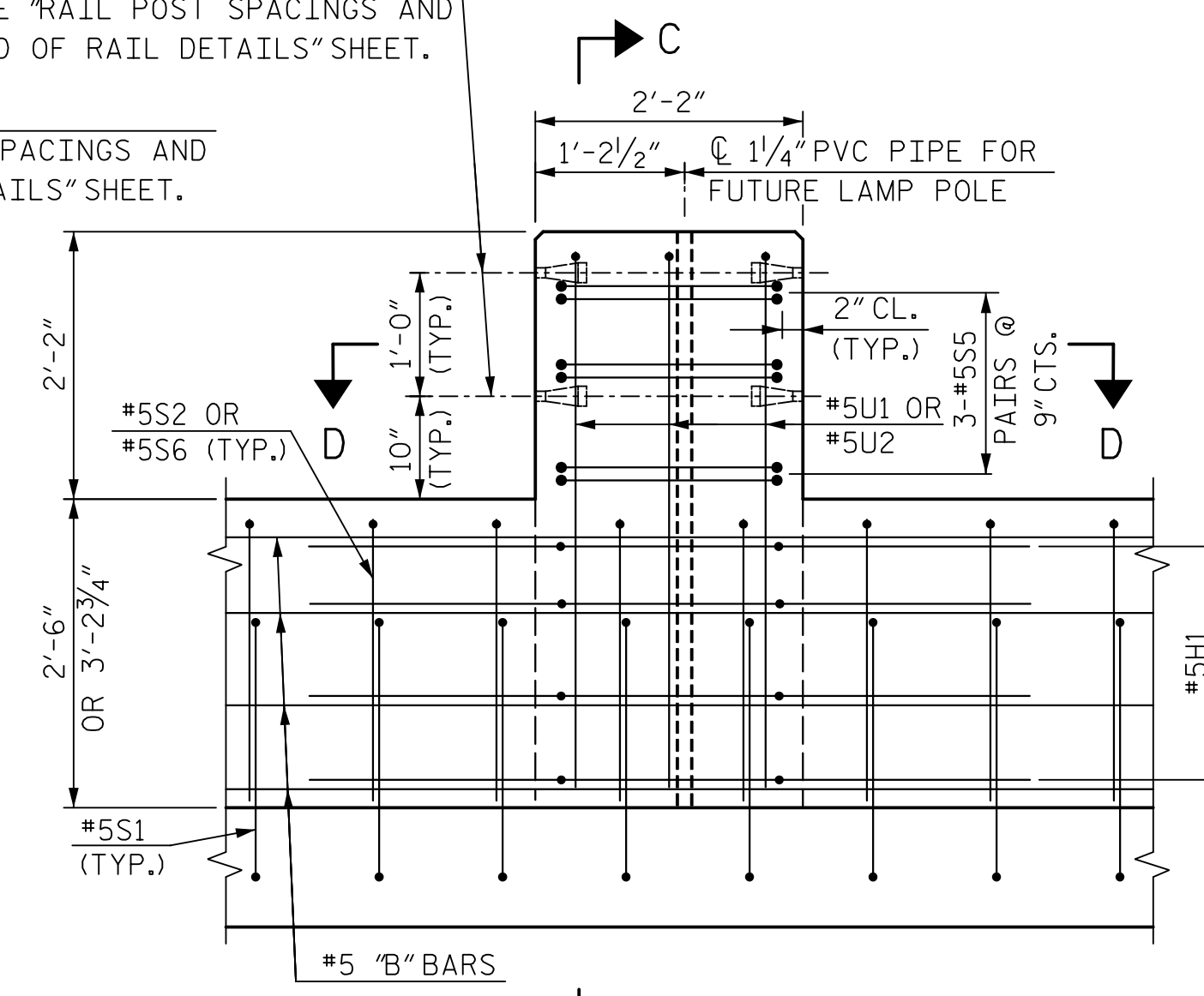
SECTION A-A



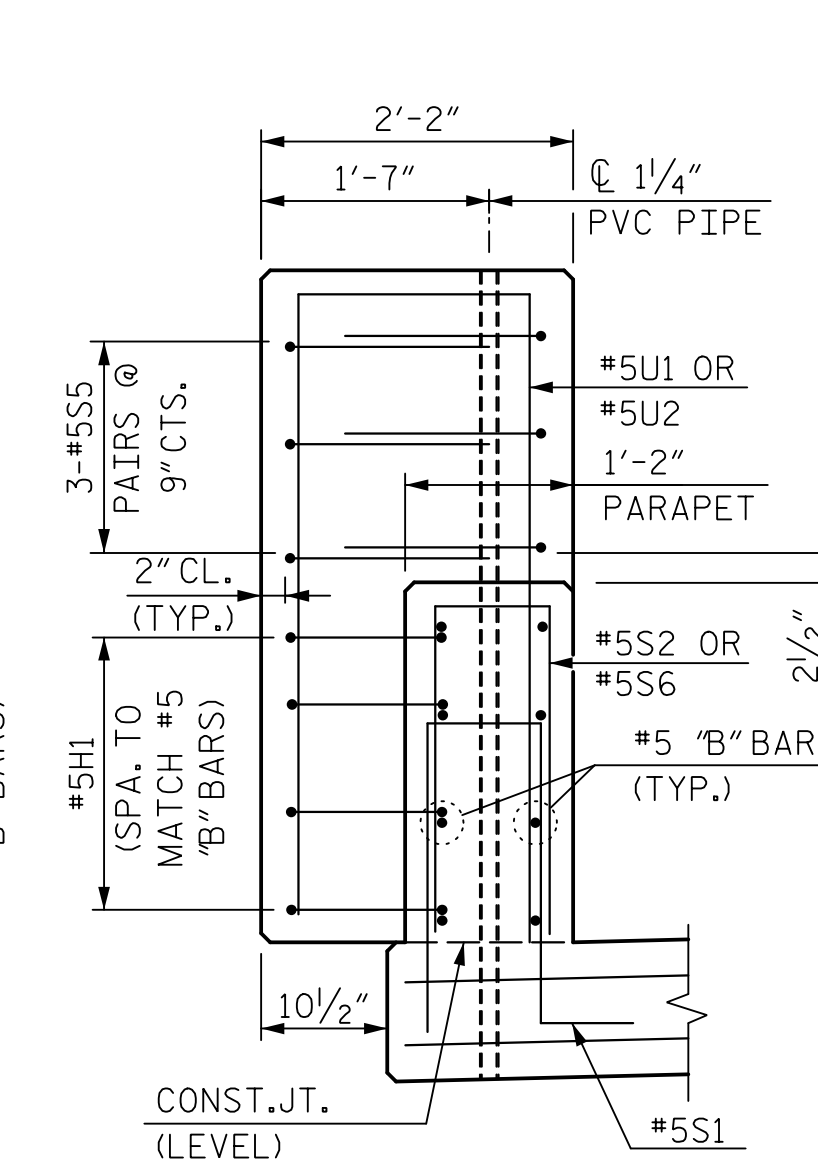
END POST ELEVATION  
(INTERIOR VIEW)

CONC. INSERTS  
SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET.

CONC. INSERTS  
SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET.



2'-2"x2'-2" PEDESTAL ELEVATION  
(INTERIOR VIEW)



SECTION C-C

2'-2"x2'-2" END POST LAMP PEDESTAL DETAILS

(LAMP POLE & ANCHORAGE TO BE PROVIDED BY OTHERS)

2'-2"x2'-2" LAMP PEDESTAL DETAILS

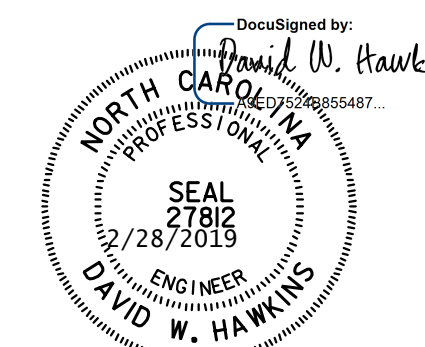
(LAMP POLE & ANCHORAGE TO BE PROVIDED BY OTHERS)

PROJECT NO. B-5905  
JACKSON COUNTY  
STATION: 19+41.94 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

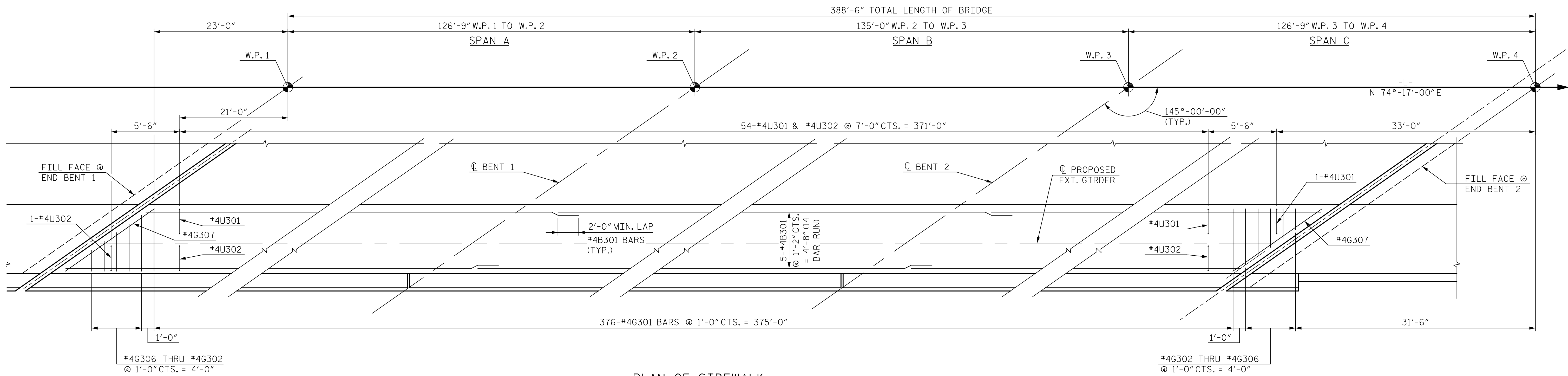
SUPERSTRUCTURE  
PARAPET,  
END POSTS AND  
LAMP PEDESTALS



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DRAWN BY: M. WRIGHT	DATE: 3/18	DWG. NO. 25	NO. BY DATE NO. BY DATE
CHECKED BY: J. WHEATLEY	DATE: 3/18		
DESIGN ENGINEER OF RECORD: D. HAWKINS	DATE: 11/18		

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NO.		BY		DATE		TOTAL SHEETS 54
1		3				
2		4				

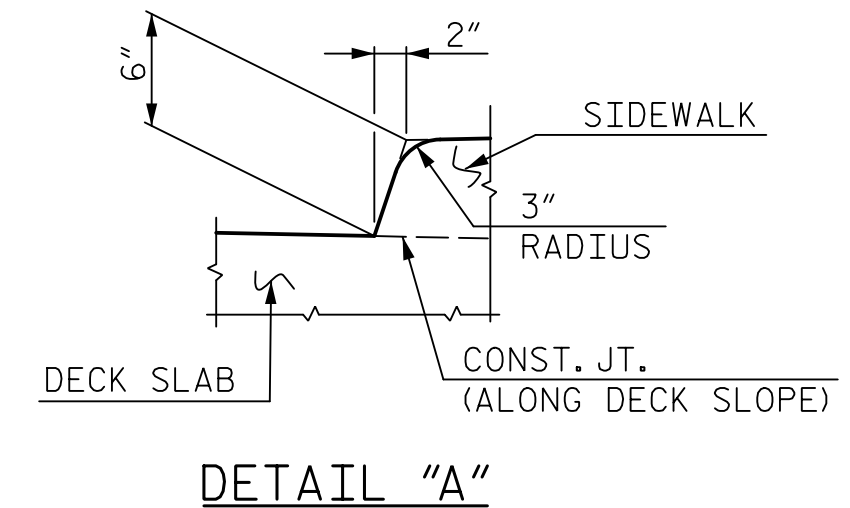
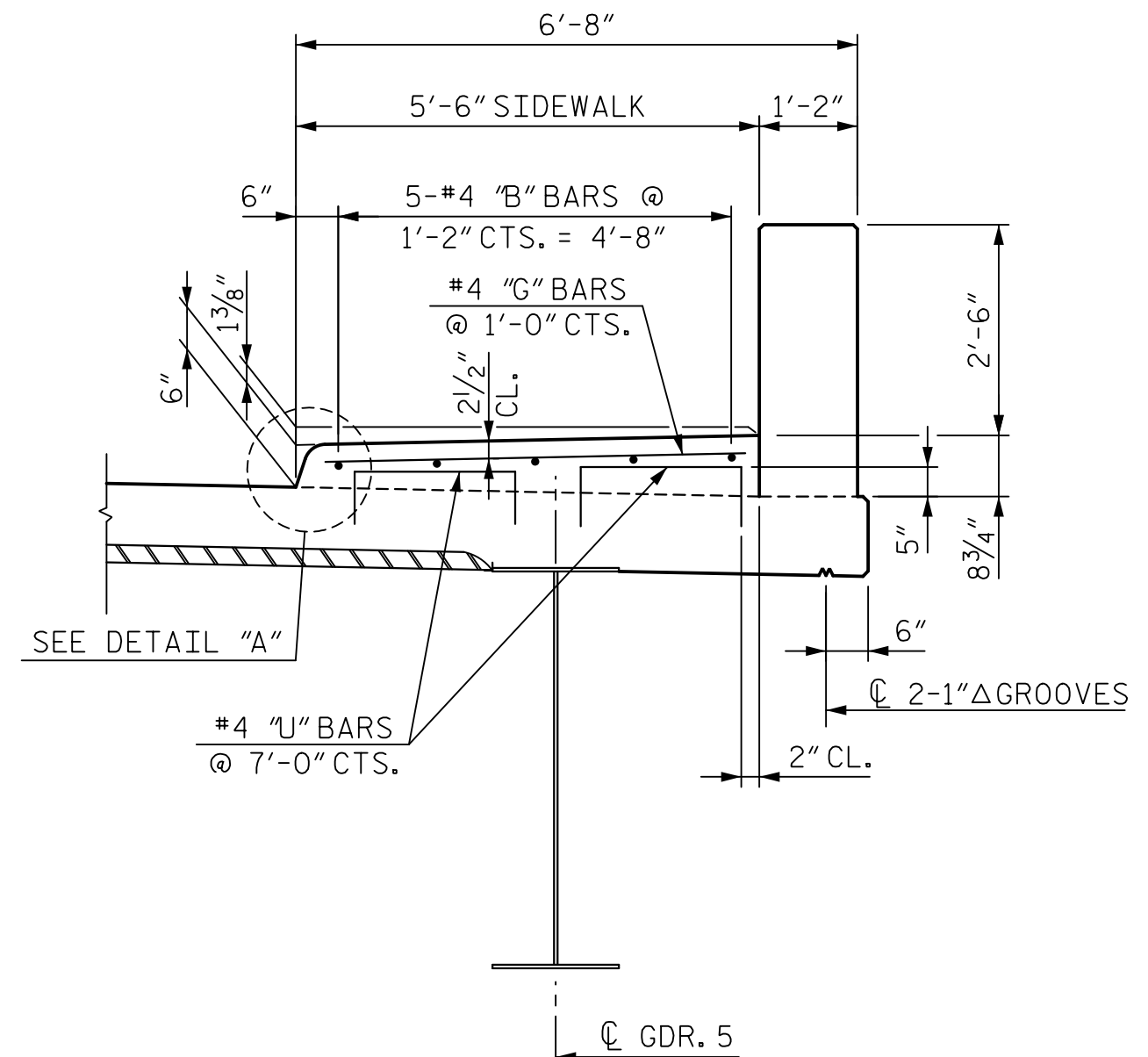


PLAN OF SIDEWALK

BAR TYPES		
ALL BAR DIMENSIONS ARE OUT TO OUT		
SIDEWALK BILL OF MATERIAL		
	CLASS AA CONCRETE (CU.YDS.)	* EPOXY COATED REINFORCING STEEL (LBS.)
SIDEWALK	47.6	2,906
TOTALS	47.6	2,906

BILL OF MATERIAL					
EPOXY COATED					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT (LBS.)
*B301	70	4	STR	29'-3"	1,368
*G301	376	4	STR	5'-0"	1,256
*G302	2	4	STR	4'-5"	6
*G303	2	4	STR	3'-9"	5
*G304	2	4	STR	3'-1"	4
*G305	2	4	STR	2'-4"	3
*G306	2	4	STR	1'-8"	2
*G307	2	4	STR	8'-7"	11
*U301	55	4	1	3'-4"	122
*U302	55	4	1	3'-6"	129
EPOXY COATED TOTAL:					2,906

\*DENOTES EPOXY COATED REINFORCING STEEL



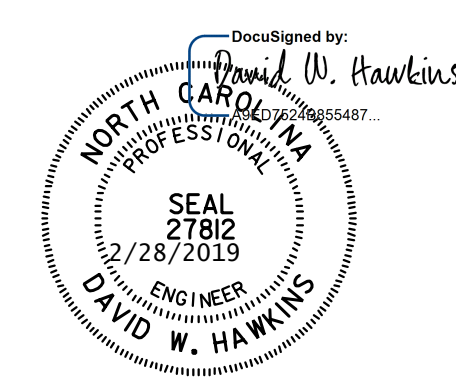
NOTES:

- ALL REINFORCING STEEL IN SIDEWALK SHALL BE EPOXY COATED.
- PAYMENT FOR THE SIDEWALK SHALL BE INCLUDED IN THE SQUARE FEET PRICE BID FOR REINFORCED CONCRETE DECK SLAB.
- FOR SIDEWALK COVER PLATE DETAILS AT END BENTS, SEE "EXPANSION JOINT SEAL DETAILS FOR SIDEWALK" SHEETS.
- GROOVED CONTRACTION JOINTS 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF SIDEWALK IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FT. TO 10 FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH. SEE "RAIL POST SPACING AND END OF RAIL DETAILS" SHEET FOR ADDITIONAL NOTES.
- CONTRACTION JOINTS SHALL BE NORMAL TO WORKLINE.

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JACKSON COUNTY

STATION: 19+41.94 -L-



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
SIDEWALK DETAILS

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DRAWN BY: M. WRIGHT DATE: 3/18  
CHECKED BY: J. WHEATLEY DATE: 3/18  
DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 11/18

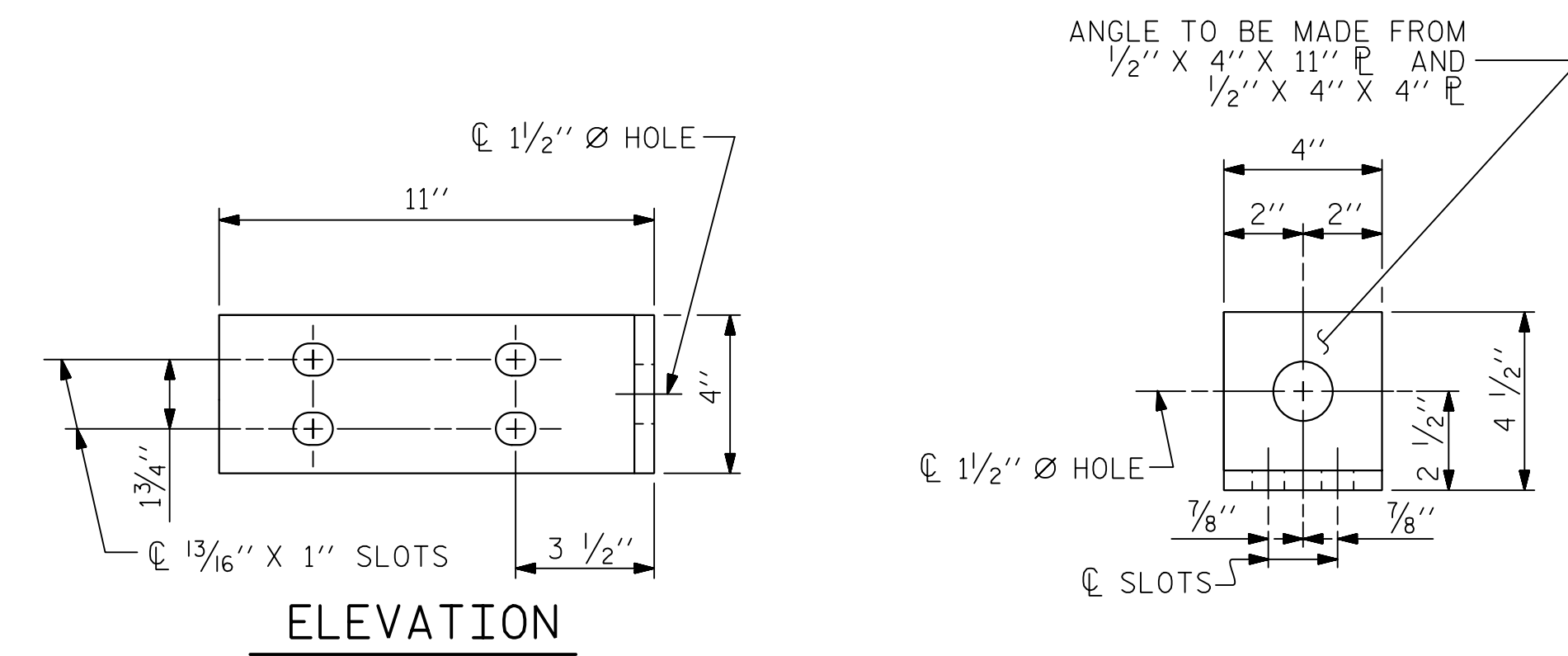
DWG. NO. 26

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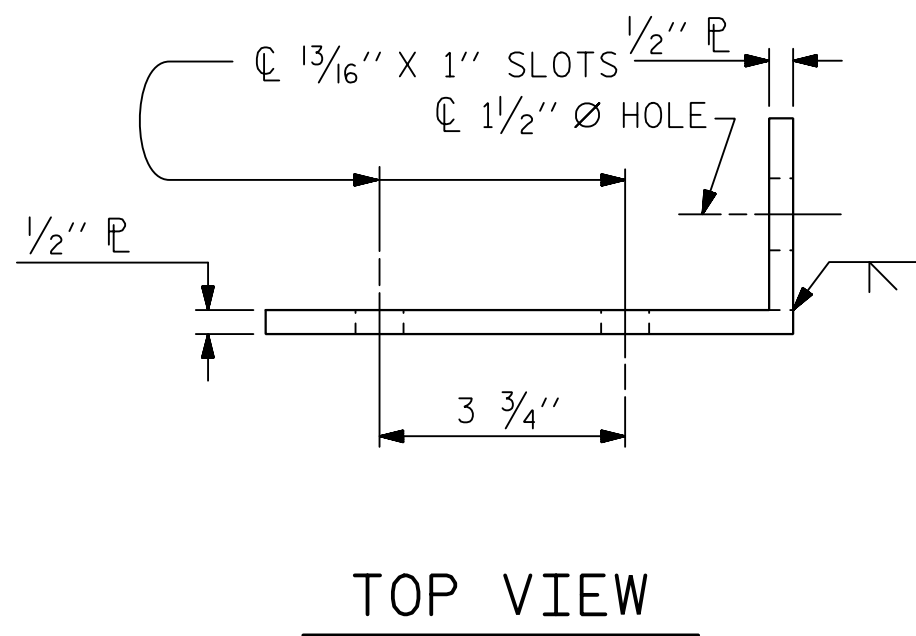
REVISIONS						SHEET NO. S1-26
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 54
2			4			

FOR PLAN OF RAIL POST SPACINGS, SEE SHEET  
"SUPERSTRUCTURE LAMP PEDESTALS AND PARAPET DETAILS".

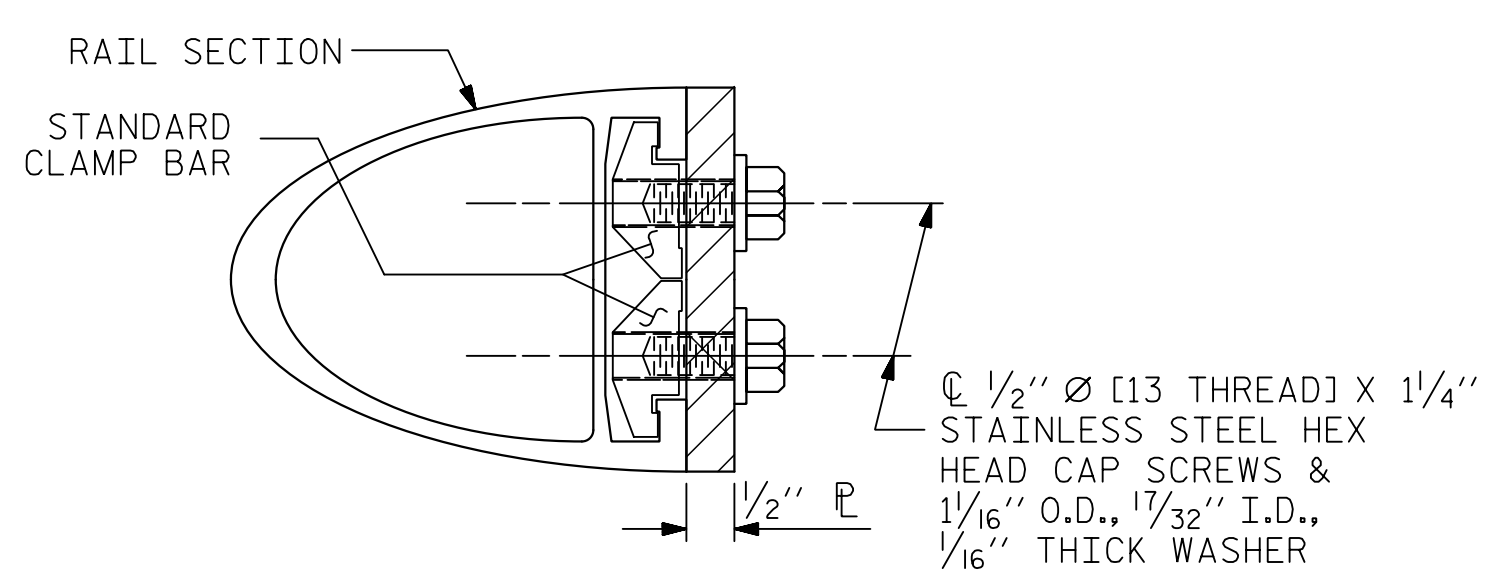
### PLAN OF RAIL POST SPACINGS



END VIEW (FIX AND EXP.)

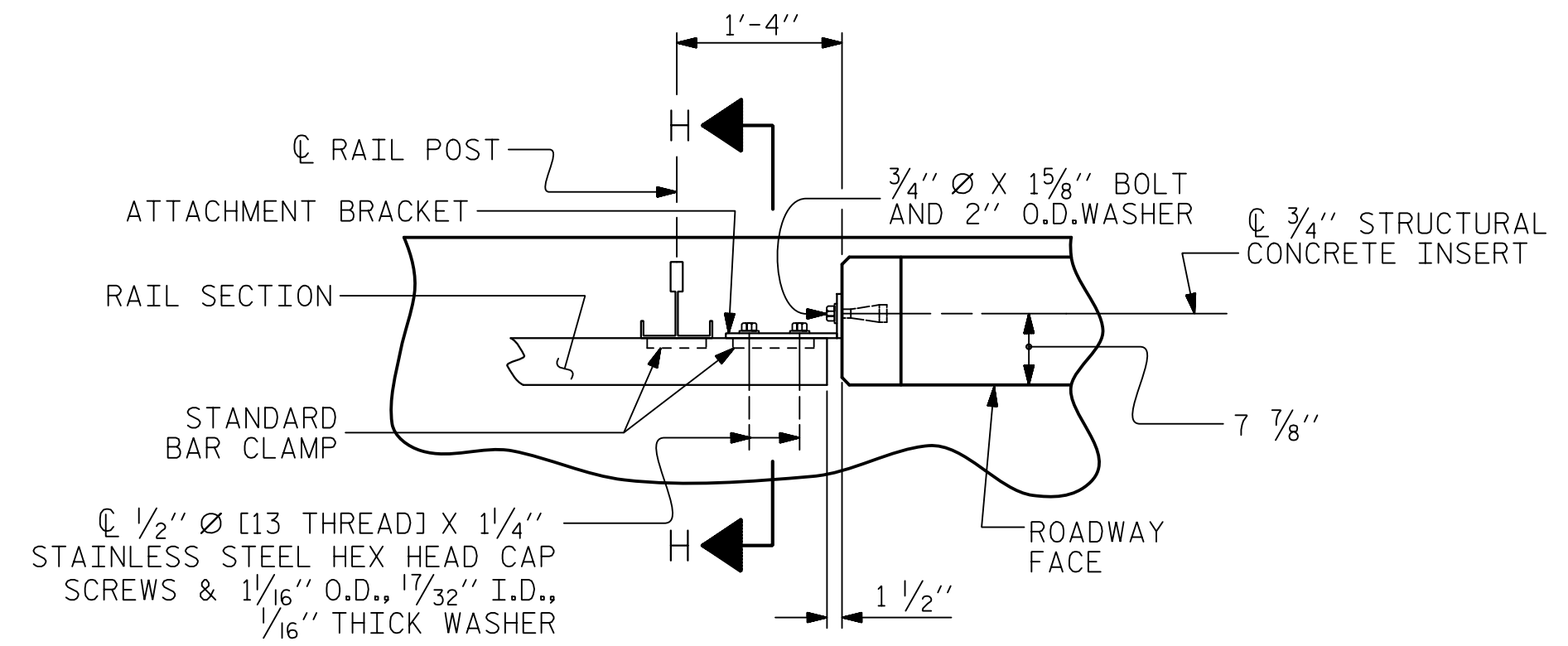


TOP VIEW

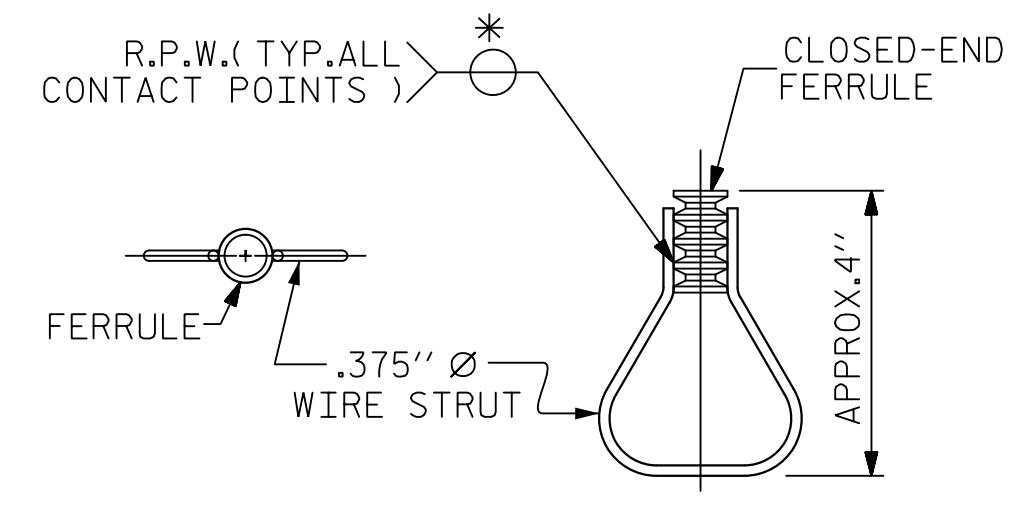


SECTION H-H (FIX)

FIXED



PLAN - RAIL AND END POST



PLAN ELEVATION  
STRUCTURAL CONCRETE INSERT

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

### DETAILS FOR ATTACHING METAL RAIL TO END POST

### NOTES

#### STRUCTURAL CONCRETE INSERT

- THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".
  - B. 1 - 3/4" Ø X 1 5/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 1 5/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
  - C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

### NOTES

#### METAL RAIL TO END POST CONNECTION

- THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
  - B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 5/8" BOLT SHALL HAVE N. C. THREADS.
  - C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.
  - D. STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
  - E. 1/2" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

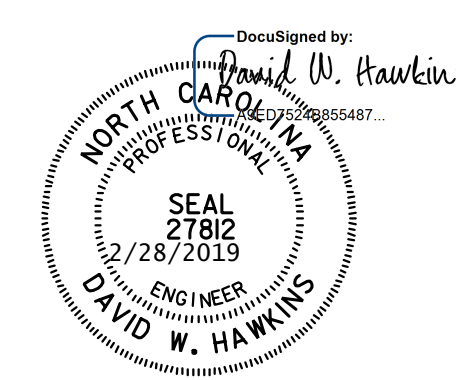
THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 5/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

PROJECT NO. B-5905  
JACKSON COUNTY  
STATION: 19+41.94 -L-

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
RAIL POST SPACINGS  
AND  
END OF RAIL DETAILS  
FOR ONE OR TWO BAR METAL RAILS



ASSEMBLED BY : M. WRIGHT	DATE : 3/18
CHECKED BY : J. WHEATLEY	DATE : 3/18
DRAWN BY : FCJ 1/88	REV. 5/1/06 TLA/GM
CHECKED BY : CRK 3/89	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

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DRAWN BY : M. WRIGHT	DATE : 3/18	DWG. NO. 27	
CHECKED BY : J. WHEATLEY	DATE : 3/18		
DESIGN ENGINEER OF RECORD : D. HAWKINS	DATE : 11/18		

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-27
1			3			TOTAL SHEETS
2			4			54



NOTES

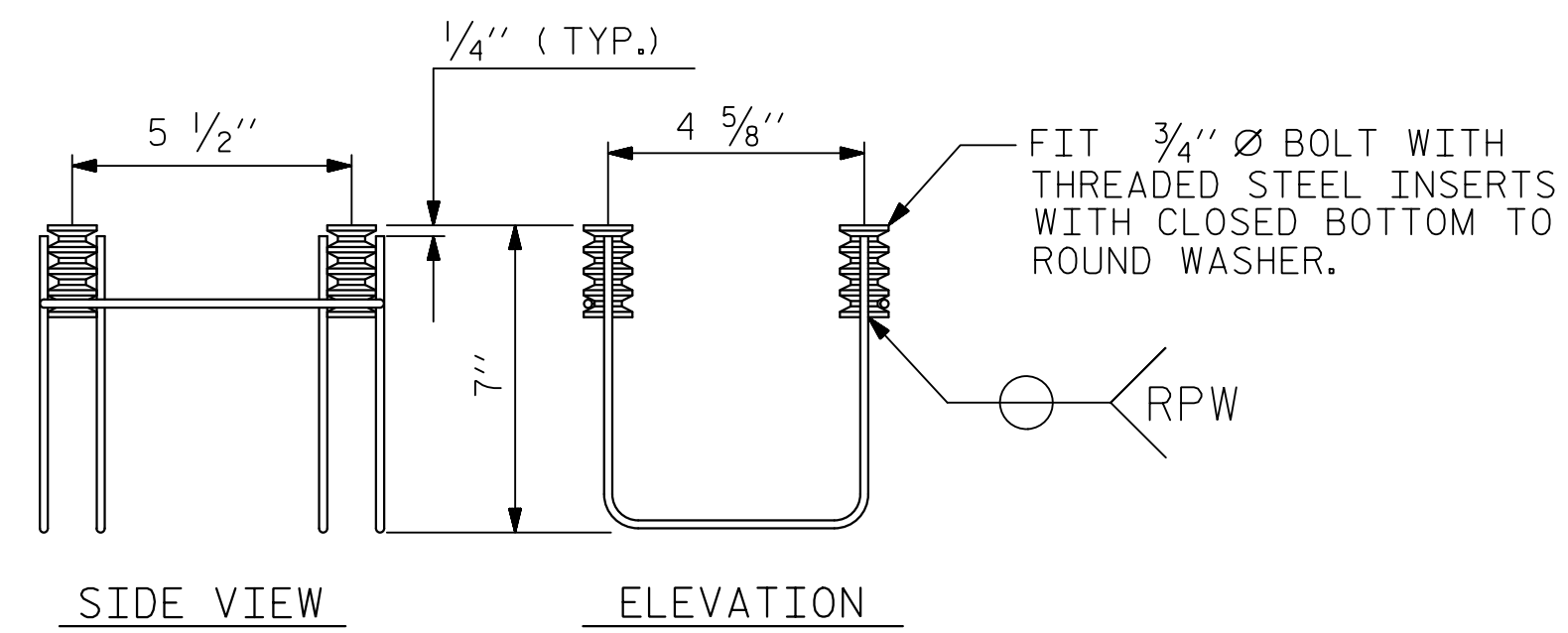
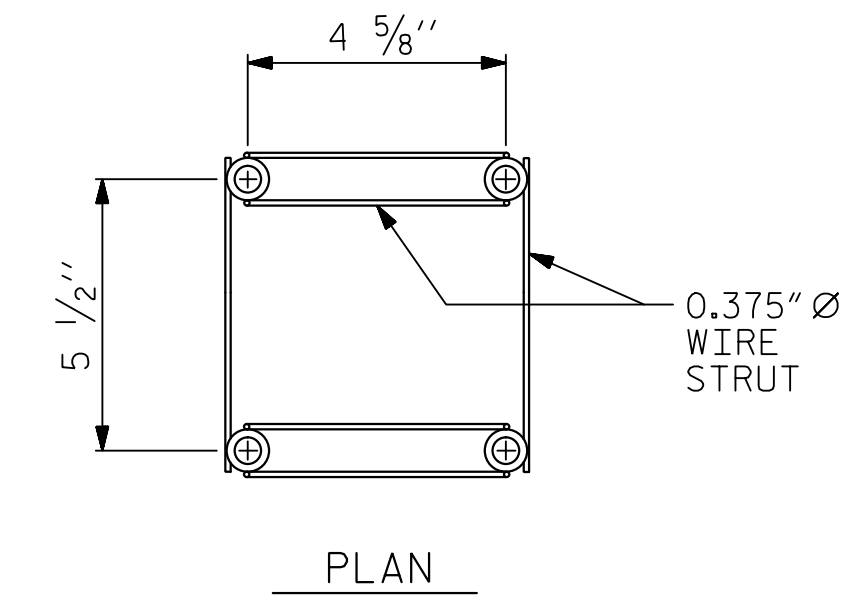
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

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

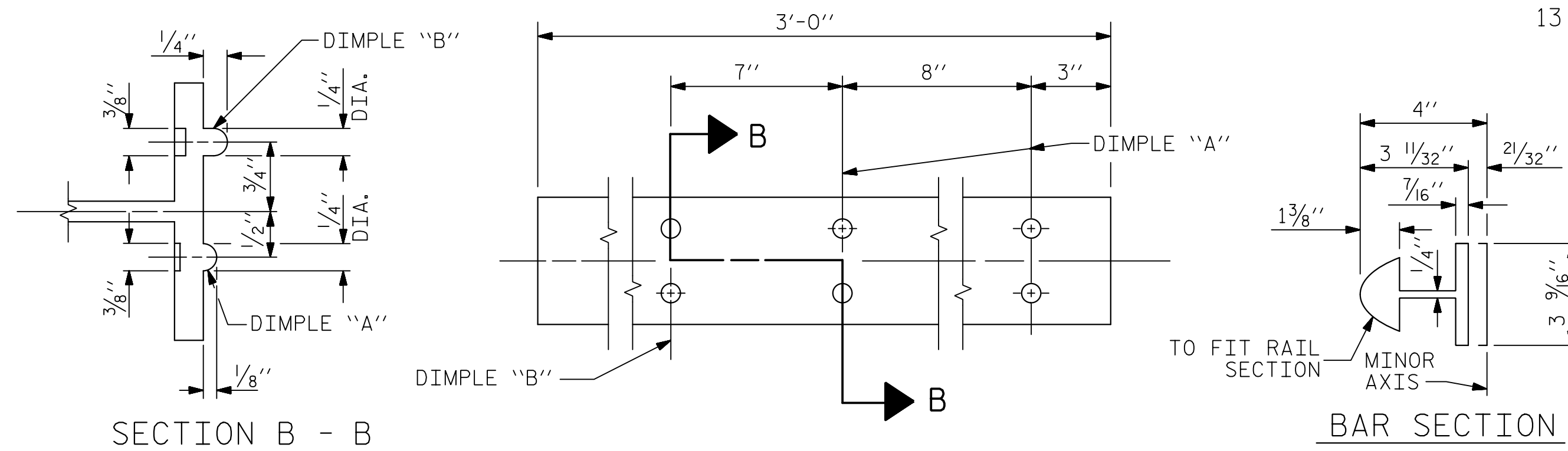
THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

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

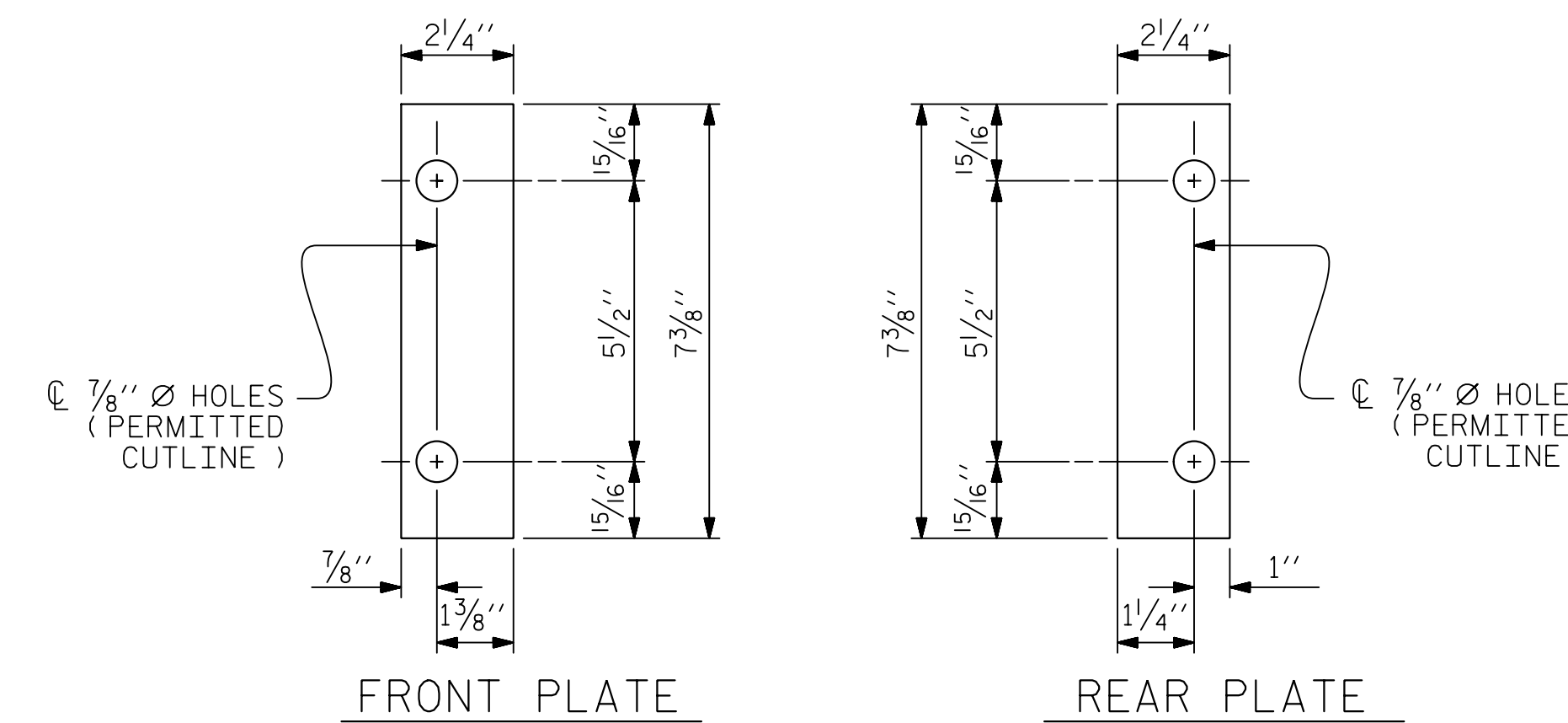


4-BOLT METAL RAIL ANCHOR ASSEMBLY

( 142 ASSEMBLIES REQUIRED ON BRIDGE,  
3 ASSEMBLIES REQUIRED ON APPROACH SLAB,  
13 ASSEMBLIES REQUIRED AT MOMENT SLAB )

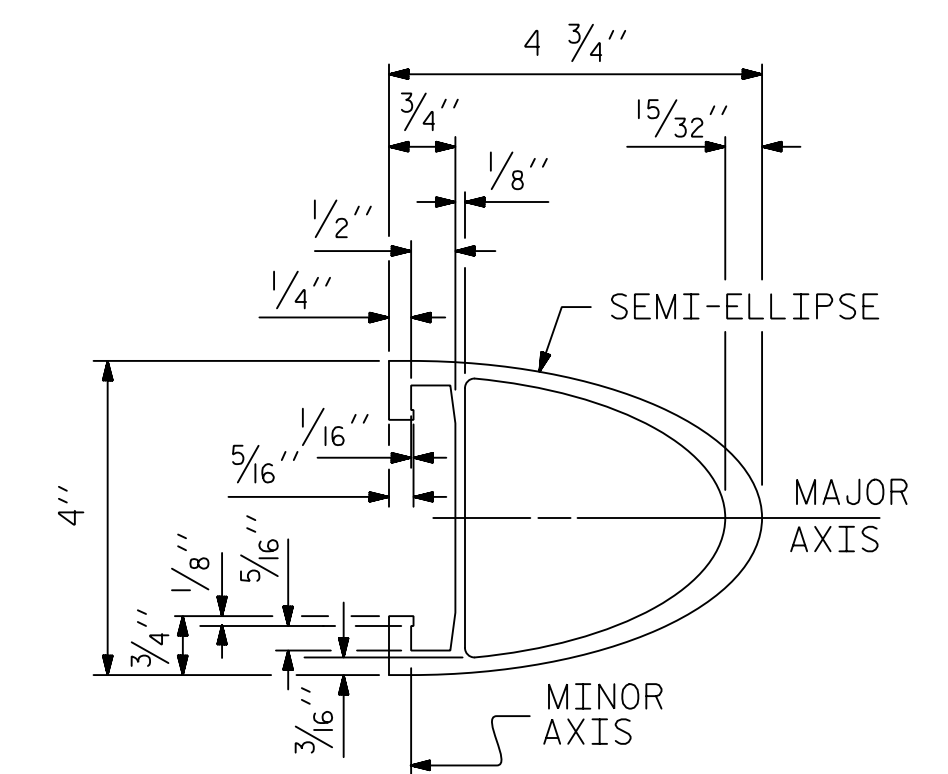


EXPANSION BAR DETAILS

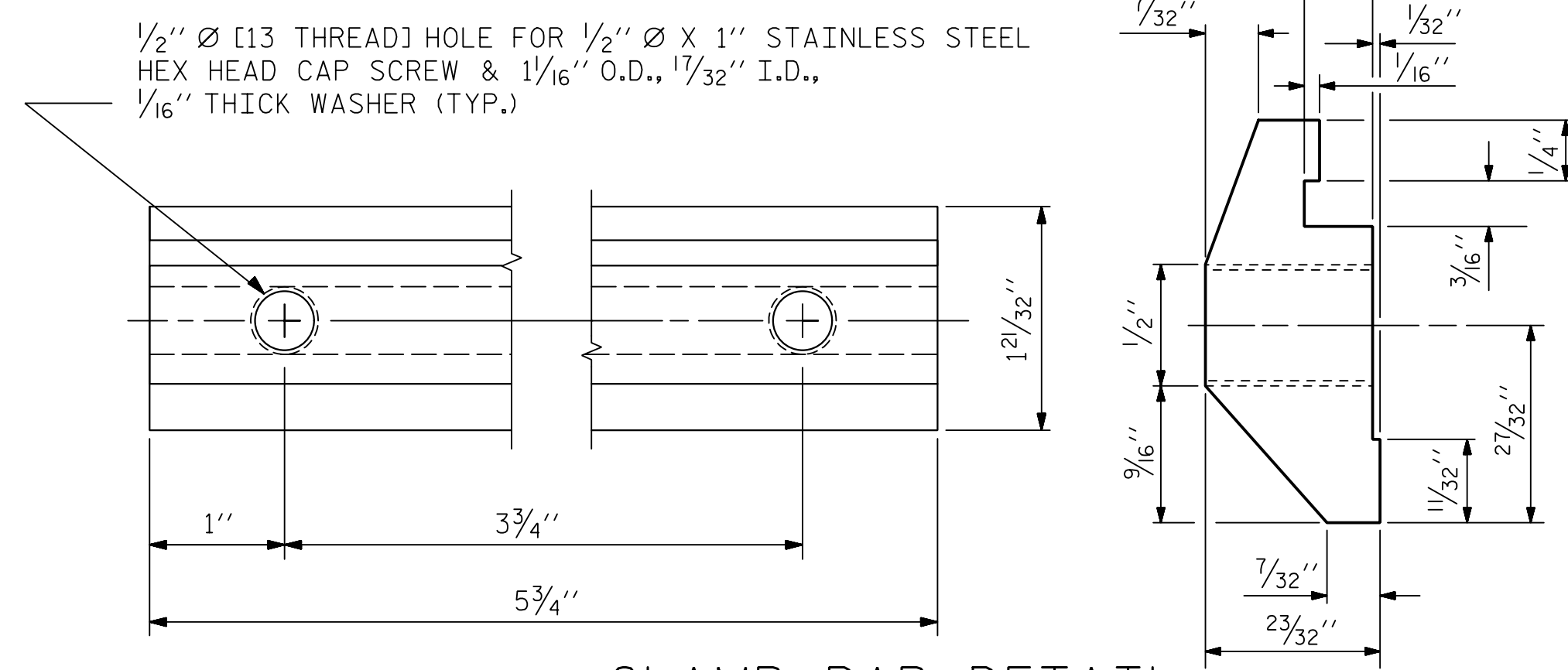


SHIM DETAILS

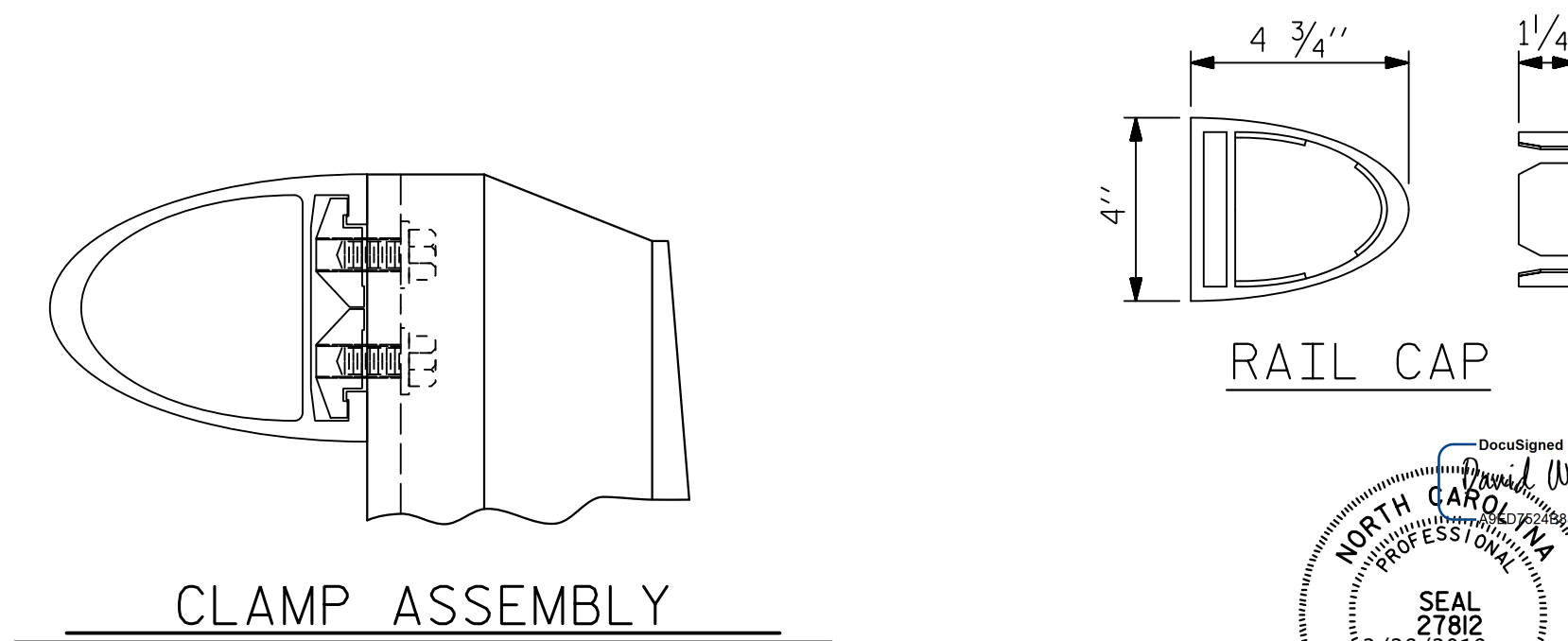
NOTE :  
SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



RAIL SECTION

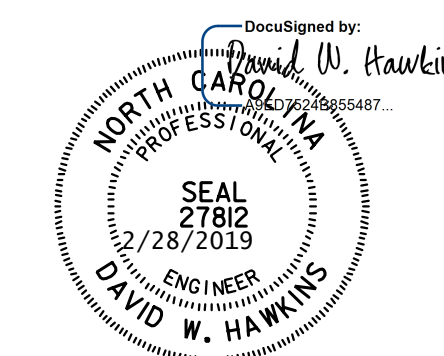


CLAMP BAR DETAIL  
( 4 REQUIRED PER POST )



CLAMP ASSEMBLY

RAIL CAP



PROJECT NO. B-5905  
JACKSON COUNTY  
STATION: 19+41.94 -L-

SHEET 2 OF 2

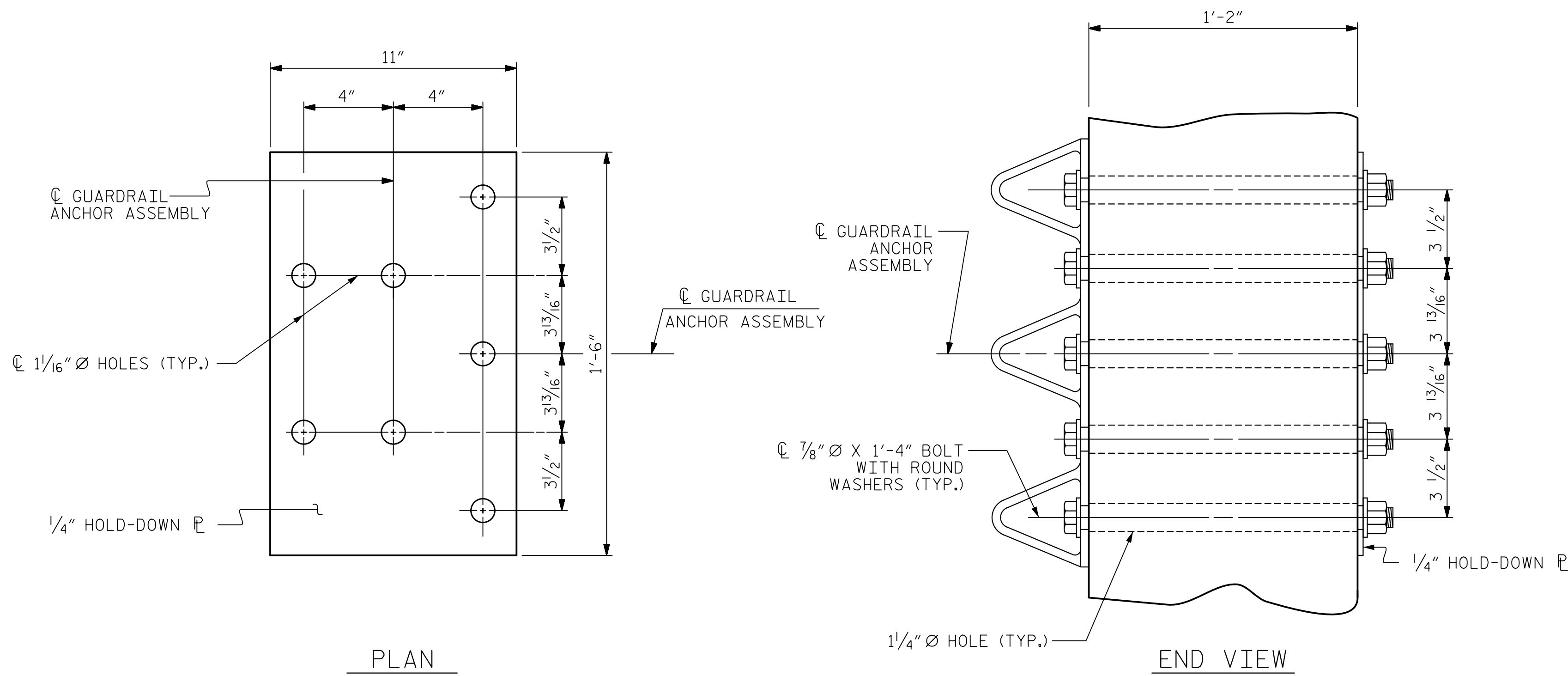
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
2 BAR METAL RAIL

ASSEMBLED BY : M. WRIGHT	DATE : 3/18
CHECKED BY : J. WHEATLEY	DATE : 3/18
DRAWN BY : EEM 6/94	REV. 5/1/06R KMM/GM
CHECKED BY : RGW 6/94	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

<b>HNTB</b>		HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	
DRAWN BY : M. WRIGHT	DATE : 3/18	DWG. NO. 29	
CHECKED BY : J. WHEATLEY	DATE : 3/18		
DESIGN ENGINEER OF RECORD : D. HAWKINS	DATE : 11/18		

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

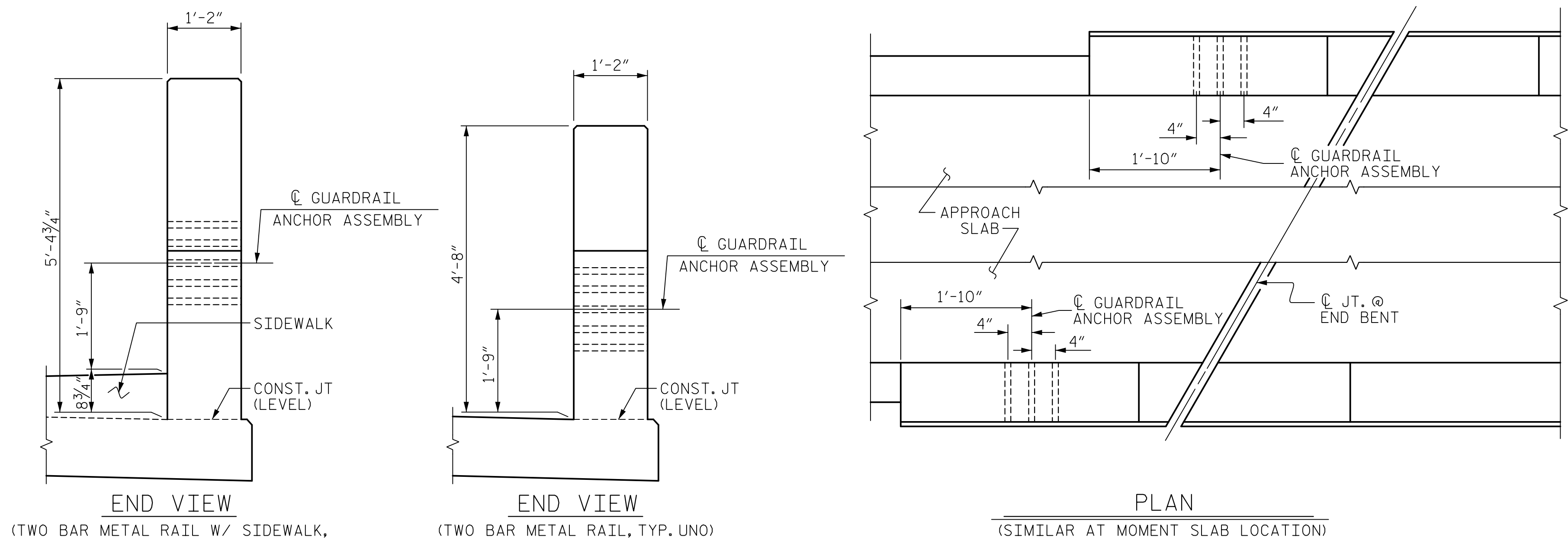
TOTAL SHEETS: 54



PLAN

END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS



END VIEW

END VIEW

PLAN

(TWO BAR METAL RAIL W/ SIDEWALK, EB1 & EB2 RIGHT SIDE ONLY)

(TWO BAR METAL RAIL, TYP. UNO)

(SIMILAR AT MOMENT SLAB LOCATION)

LOCATION OF GUARDRAIL ANCHOR AT END POST

**NOTES**

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

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

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

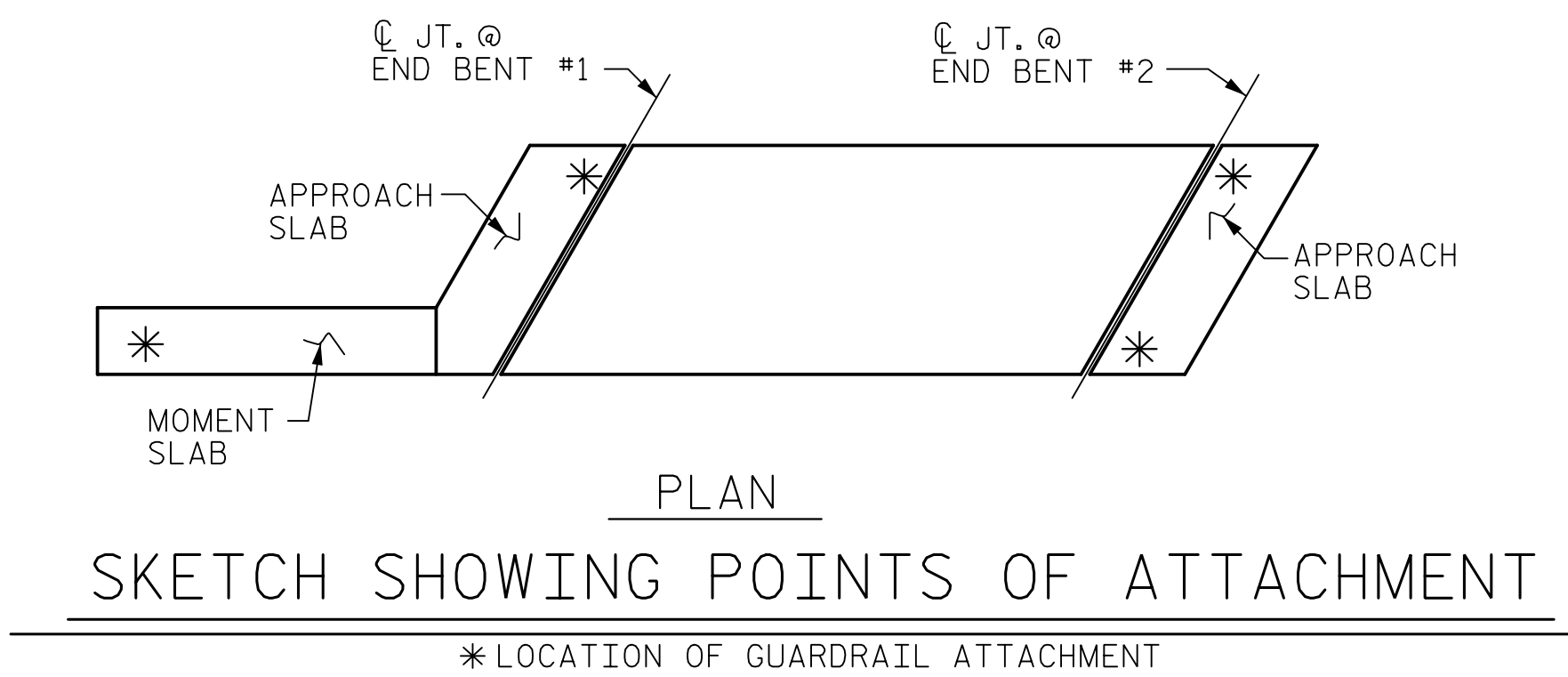
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

THE 1/4" 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.

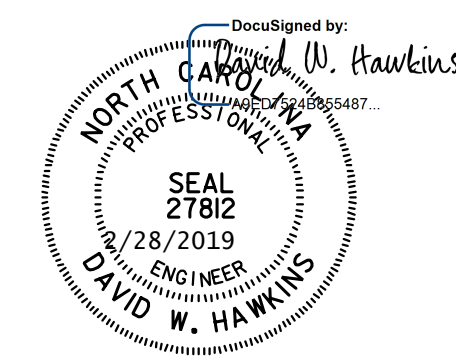


PLAN

SKETCH SHOWING POINTS OF ATTACHMENT

\* LOCATION OF GUARDRAIL ATTACHMENT

PROJECT NO. B-5905  
JACKSON COUNTY  
 STATION: 19+41.94 -L-



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

ASSEMBLED BY : M. WRIGHT	DATE : 3/18
CHECKED BY : J. WHEATLEY	DATE : 3/18
DRAWN BY : MAA 5/10	REV. 6/13 MAA/GM
CHECKED BY : GM 5/10	REV. 1/15 MAA/TMG
	REV. 12/17 MAA/THC

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DRAWN BY : M. WRIGHT	DATE : 3/18	DWG. NO. 30	
CHECKED BY : J. WHEATLEY	DATE : 3/18		
DESIGN ENGINEER OF RECORD : D. HAWKINS	DATE : 11/18		

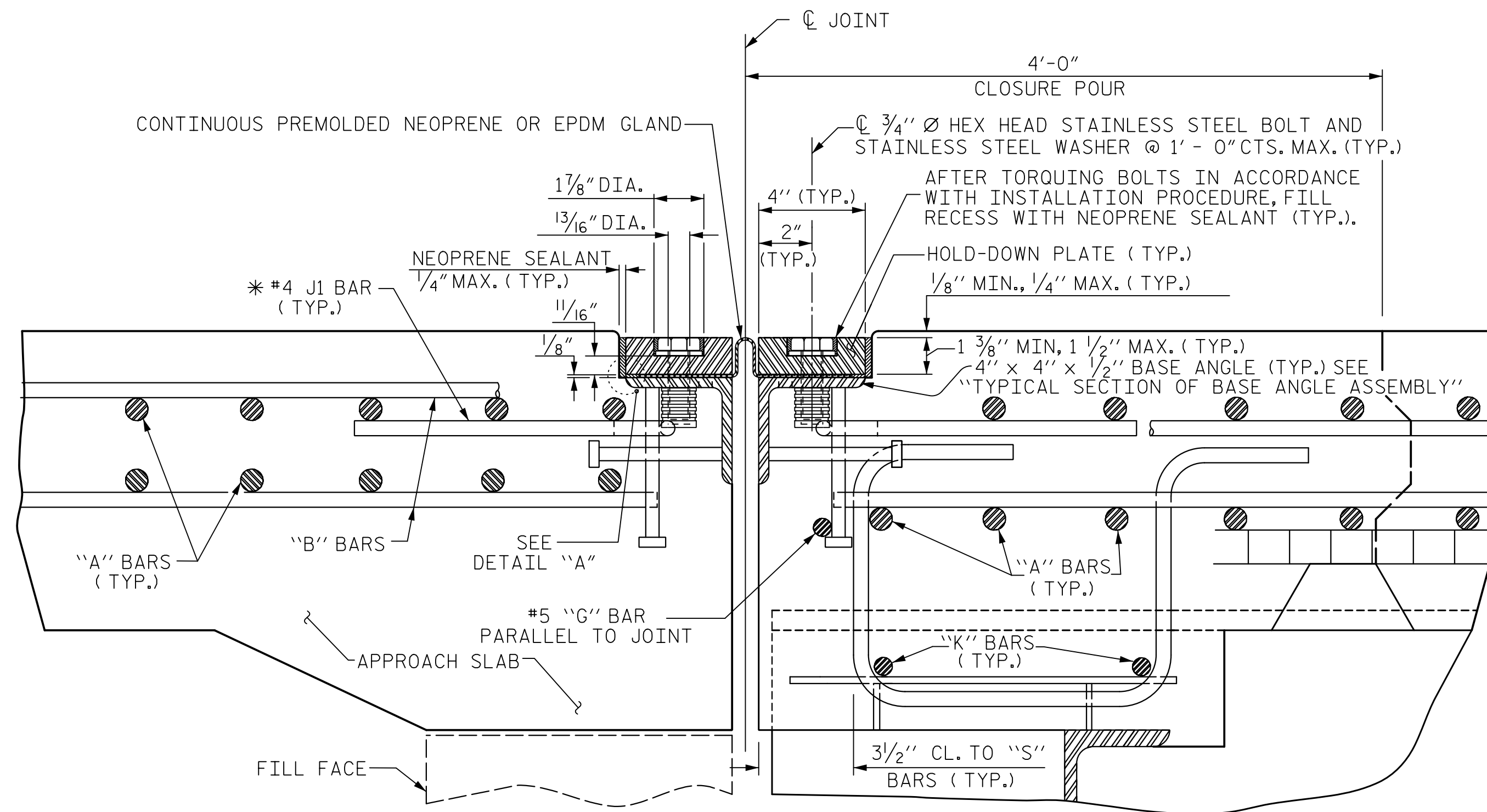
REVISIONS					SHEET NO.
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

TOTAL SHEETS 54



INSTALLATION PROCEDURE

GENERAL NOTES



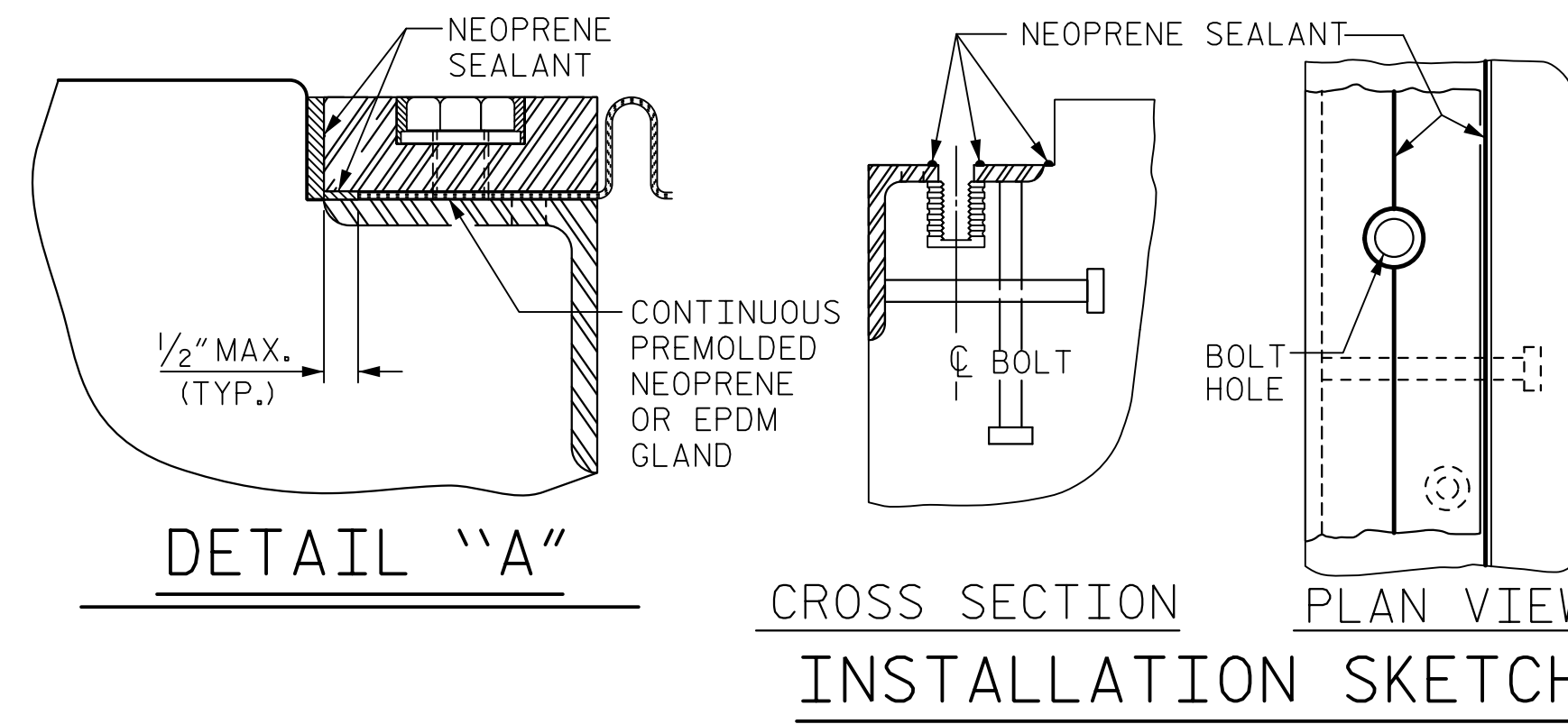
EXPANSION JOINT DETAILS

SECTION NORMAL TO JOINT -- STEEL SUPERSTRUCTURE

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

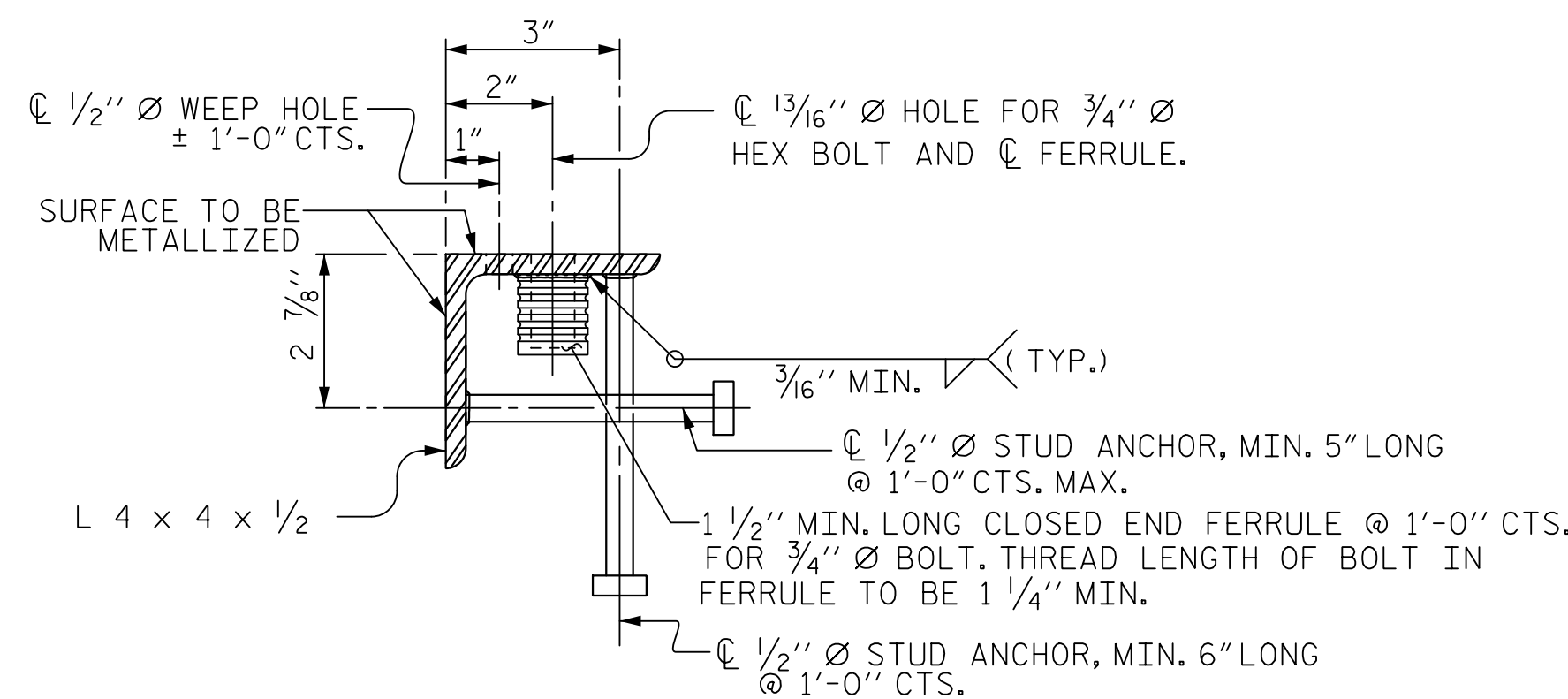
1. A TEMPLATE OR OTHER SUITABLE DEVICE SHALL BE USED TO FORM THE TOP OF THE EXPANSION JOINT SEAL BLOCKOUT TO THE PROPER DEPTH AND WIDTH. THE TEMPLATE SHALL BE 4/8" TO 4/4" WIDE AND OF SUCH THICKNESS AS TO PROVIDE FOR CORRECT FINAL ELEVATION OF TOP OF HOLD-DOWN PLATES. THE TEMPLATE SHALL BE ATTACHED TO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

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.

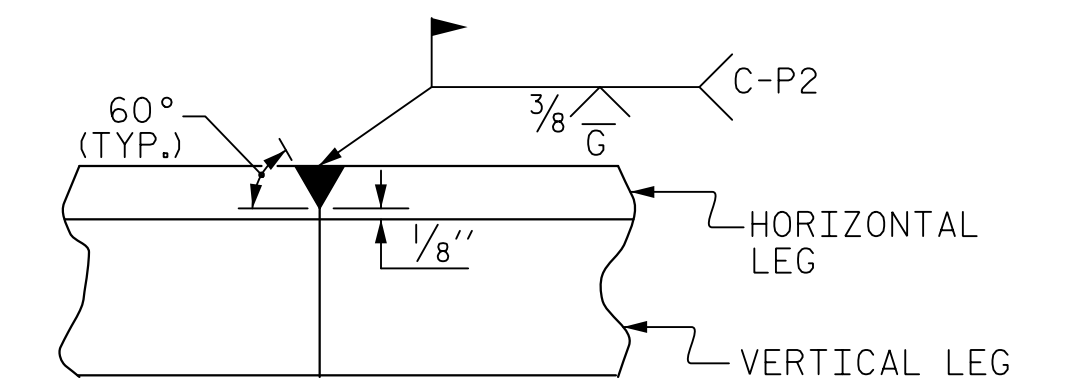


DETAIL "A"

CROSS SECTION  
PLAN VIEW  
INSTALLATION SKETCH



TYPICAL SECTION OF BASE ANGLE ASSEMBLY



DETAIL - FIELD WELD  
SPLICE OF BASE ANGLE

MOVEMENT AND SETTING AT JOINT					
BENT NO.	SKEW ANGLE	TOTAL MOVEMENT (ALONG C. RDWY)	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
END BENT 1	145°-00'-00"	2"	1 13/16"	1 5/8"	1 1/4"
END BENT 2	145°-00'-00"	1 7/8"	1 13/16"	1 5/8"	1 5/16"

PROJECT NO. B-5905  
JACKSON COUNTY  
 STATION: 19+41.94 -L-

SHEET 1 OF 4

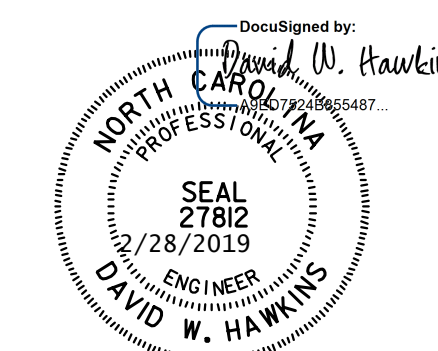
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD  
 EXPANSION JOINT  
 SEAL DETAILS

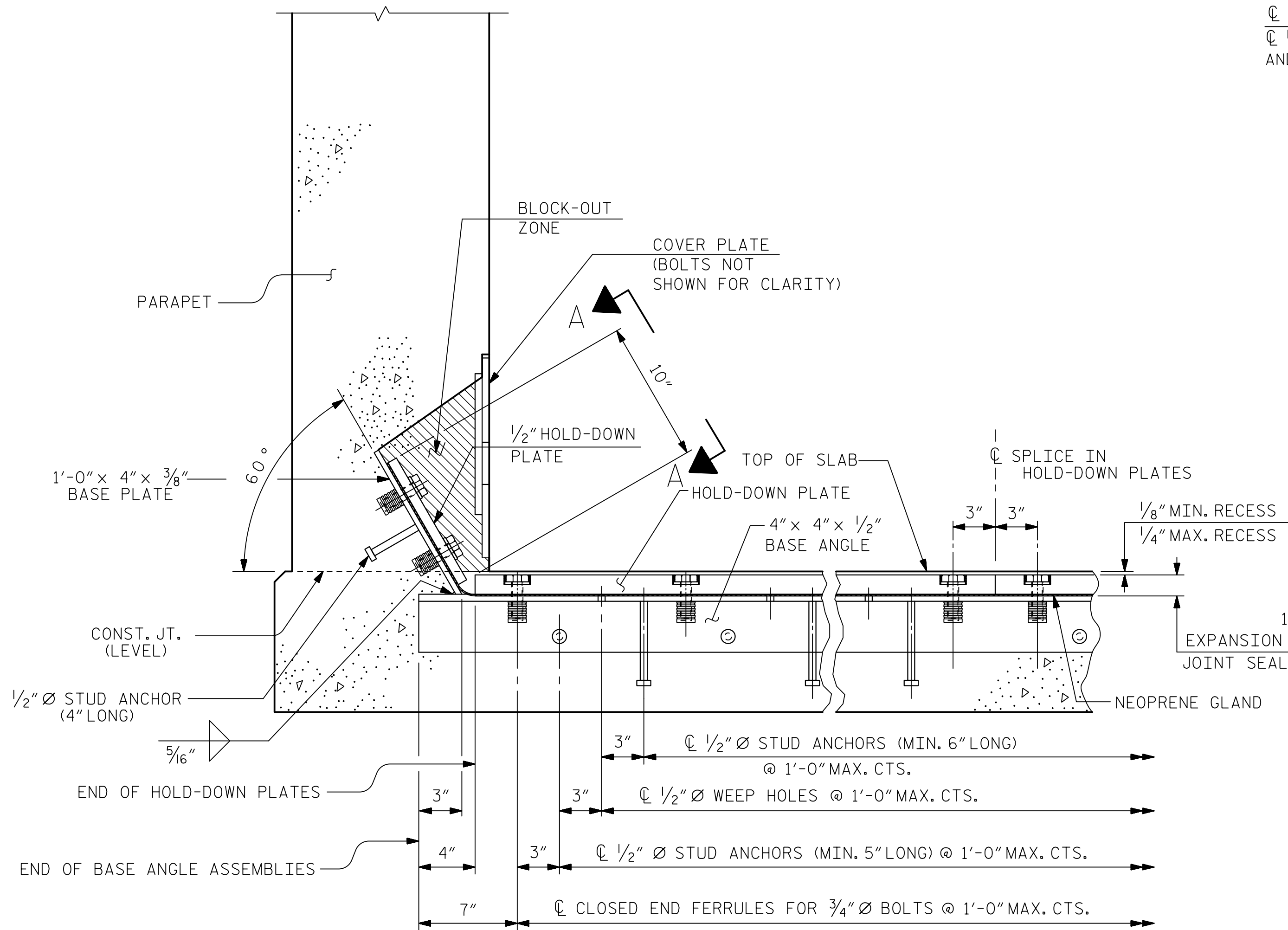
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-31
1			3			TOTAL SHEETS
2			4			54

ASSEMBLED BY : M. WRIGHT DATE : 4/18  
 CHECKED BY : J. WHEATLEY DATE : 4/18  
 DRAWN BY : REK 9/87 REV. 10/11 MAA/GM  
 CHECKED BY : CRK 10/87 REV. 10/17 MAA/THC  
 REV. 6/18 MAA/THC

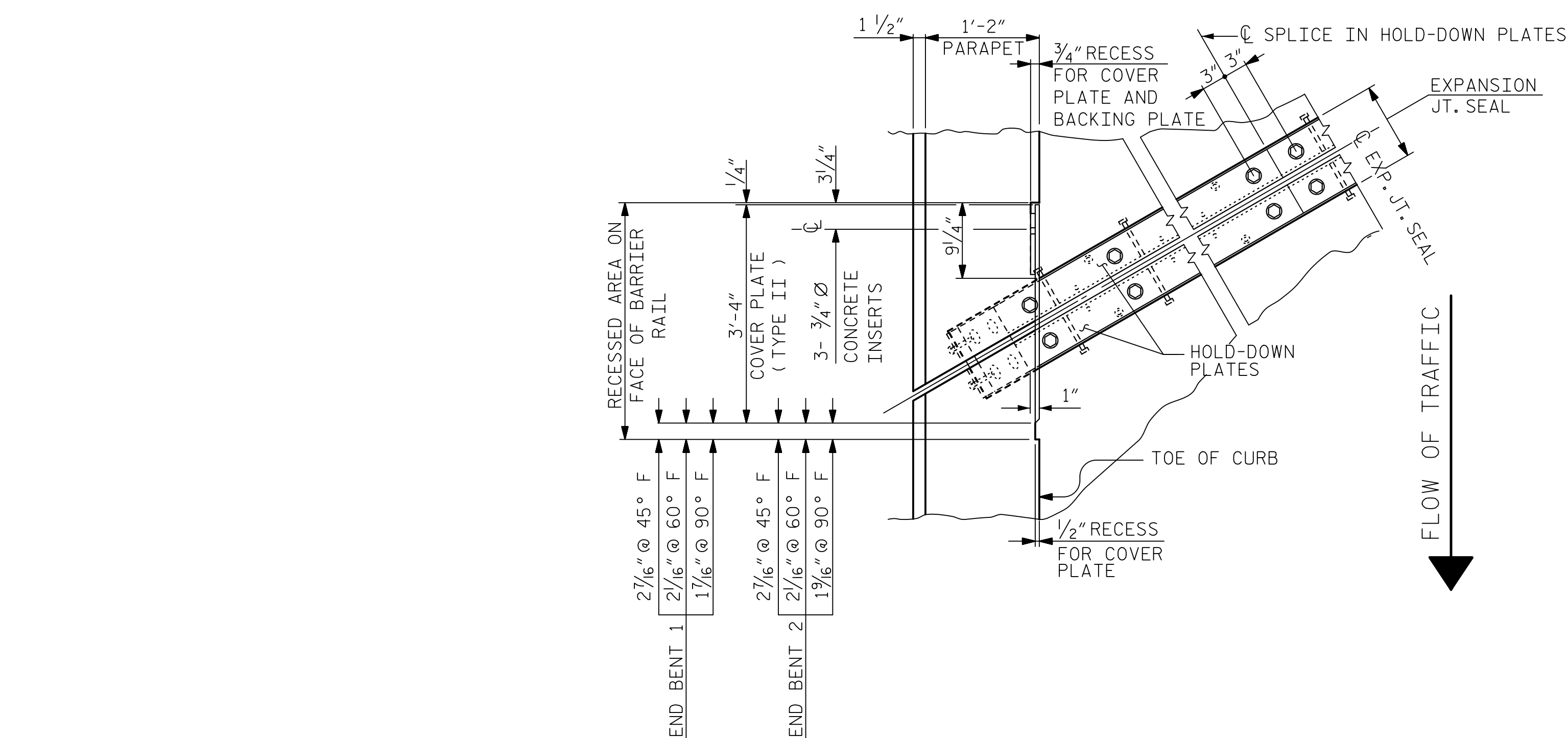
**HNTB** HNTB NORTH CAROLINA, P.C.  
 NC License No. C-1554  
 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609  
 DRAWN BY: M. WRIGHT DATE: 4/18  
 CHECKED BY: J. WHEATLEY DATE: 4/18  
 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 11/18  
 DWG. NO. 31



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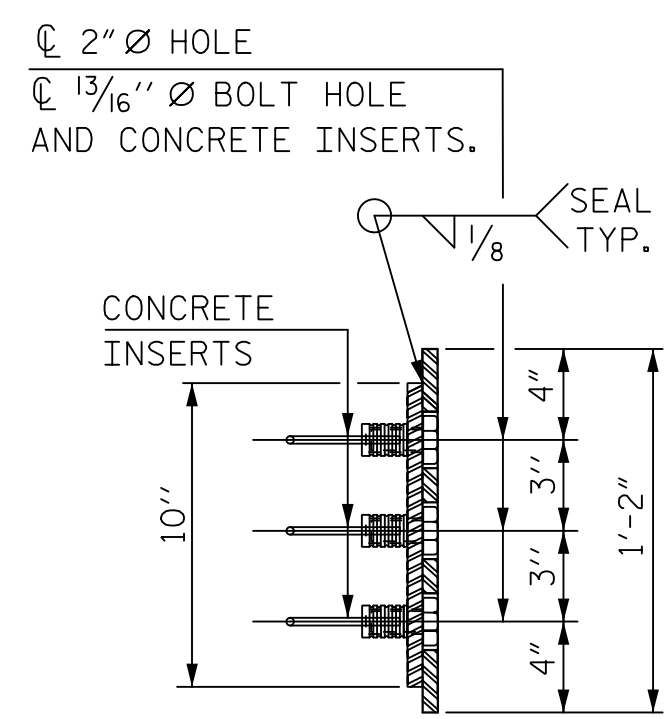


**SECTION THRU RAIL NORMAL TO JOINT**

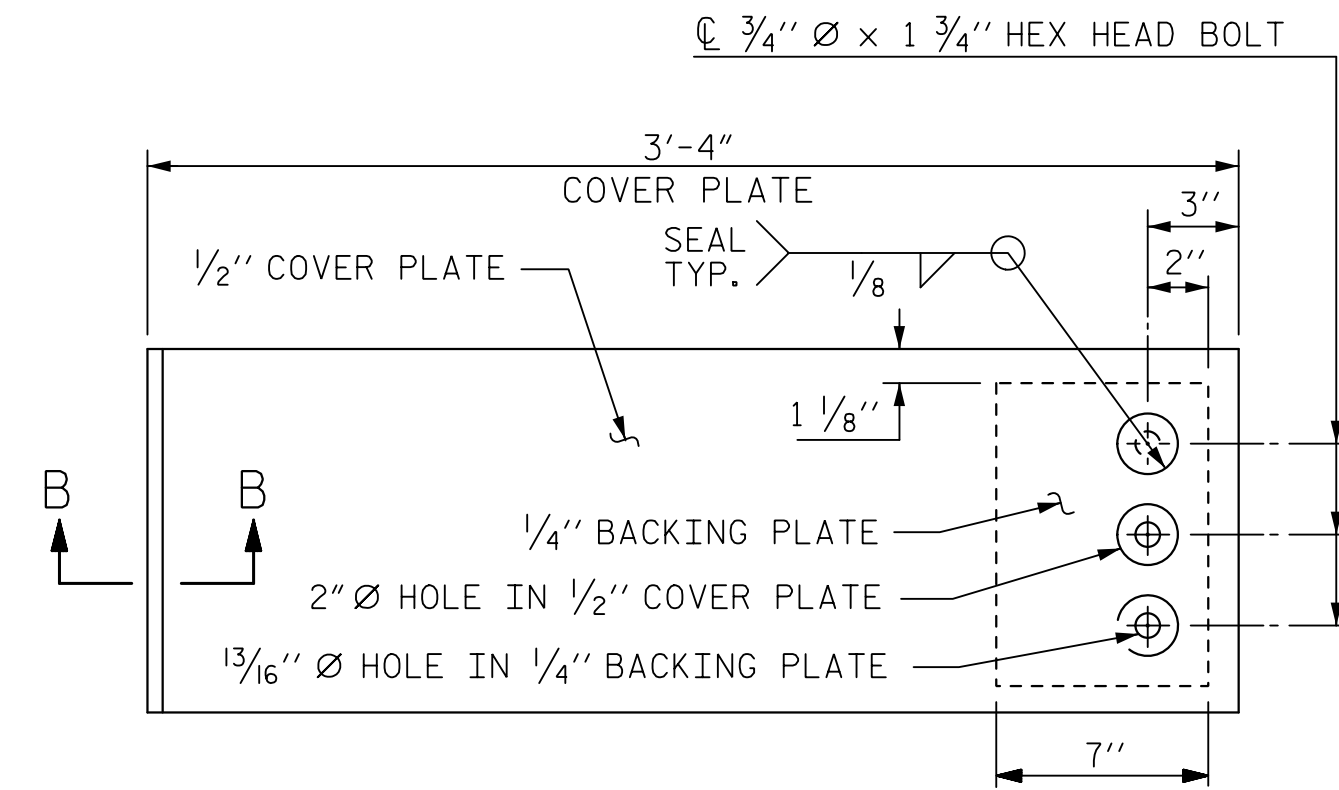


**PLAN OF EXPANSION JOINT SEAL**

ASSEMBLED BY : M. WRIGHT	DATE : 4/18
CHECKED BY : J. WHEATLEY	DATE : 4/18
DRAWN BY : REK 9/87	REV. 7/12 MAA/GM
CHECKED BY : CRK 10/87	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

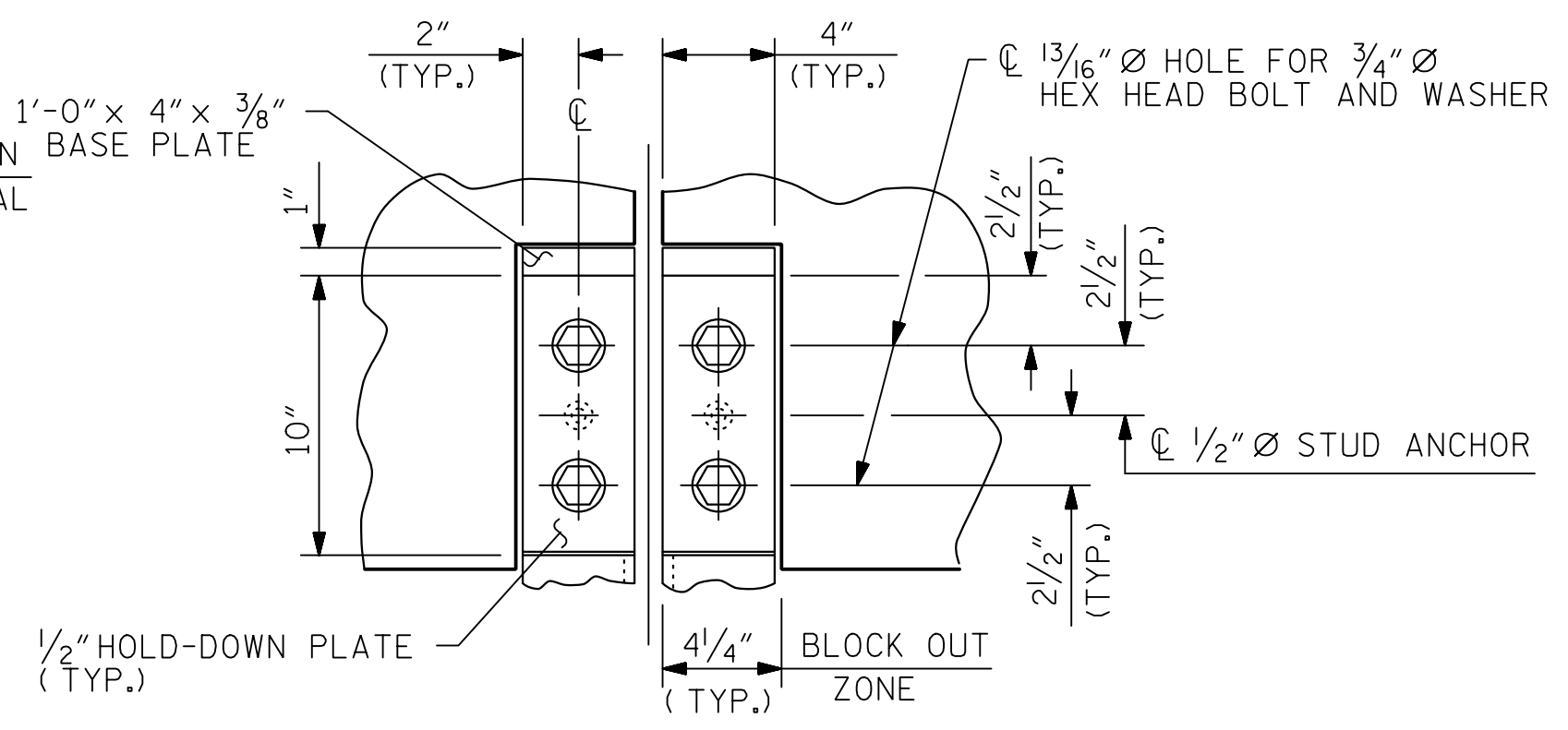


**END VIEW**

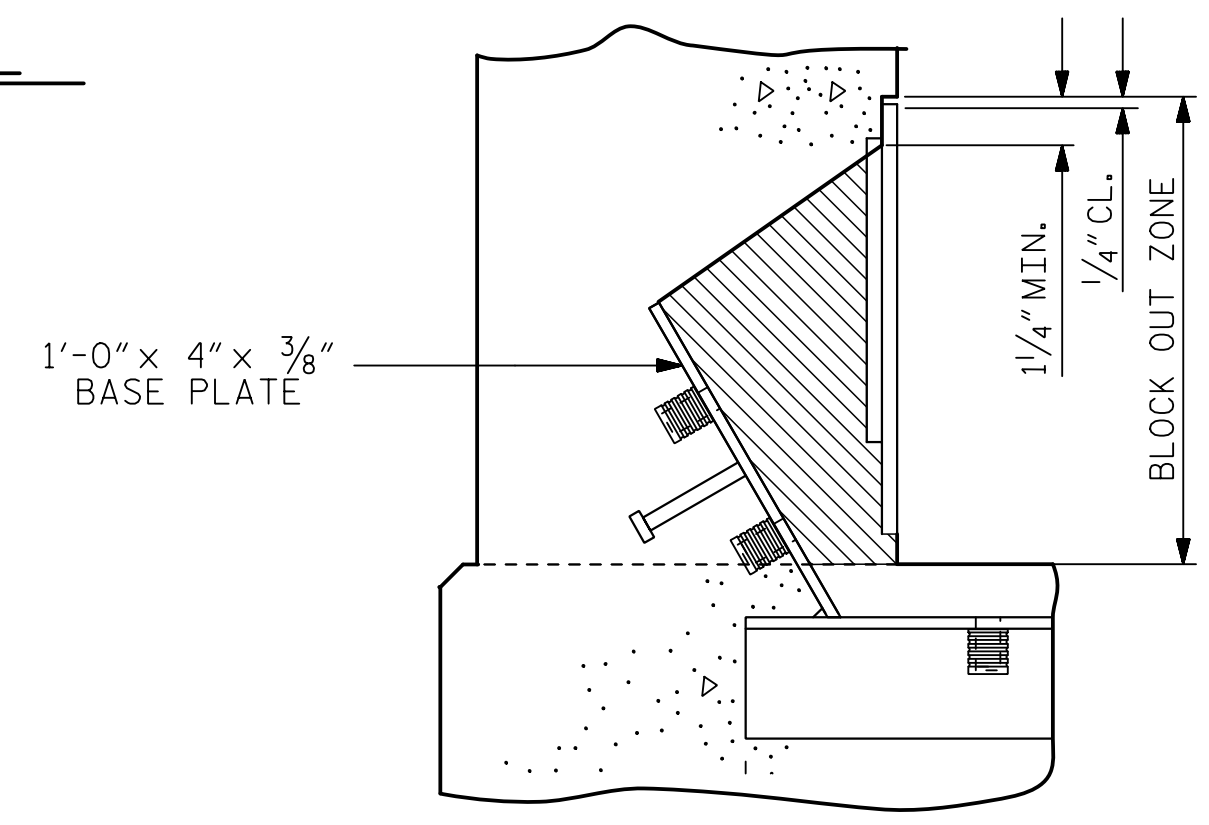


**TYPE II - ELEVATION VIEW**

**COVER PLATE DETAILS**

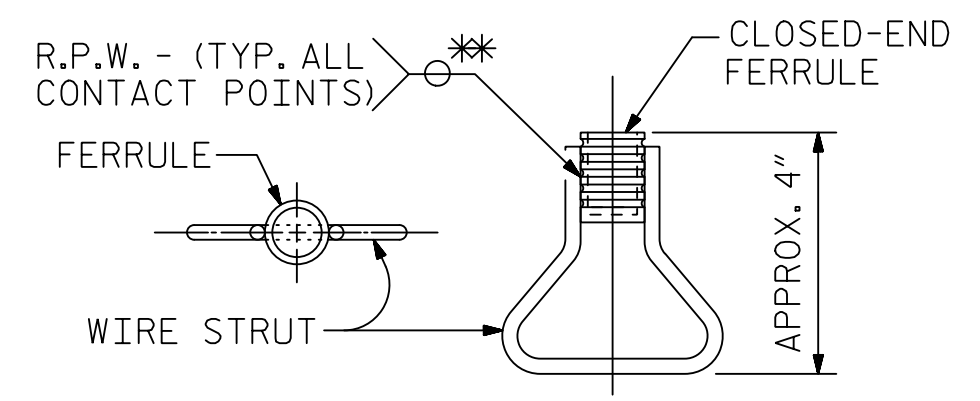


**SECTION A - A**



**BLOCK OUT DETAIL**

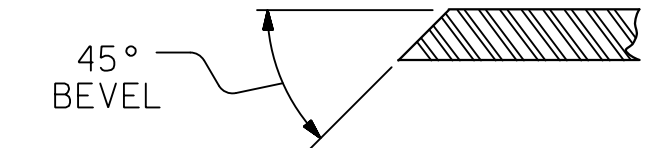
SEE "SECTION A - A" FOR OTHER DETAILS.



**PLAN ELEVATION**

**CONCRETE INSERT**

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

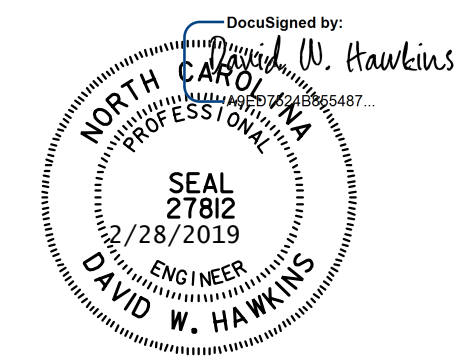


**SECTION B - B**

PROJECT NO. B-5905  
JACKSON COUNTY  
 STATION: 19+41.94 -L-

SHEET 2 OF 4

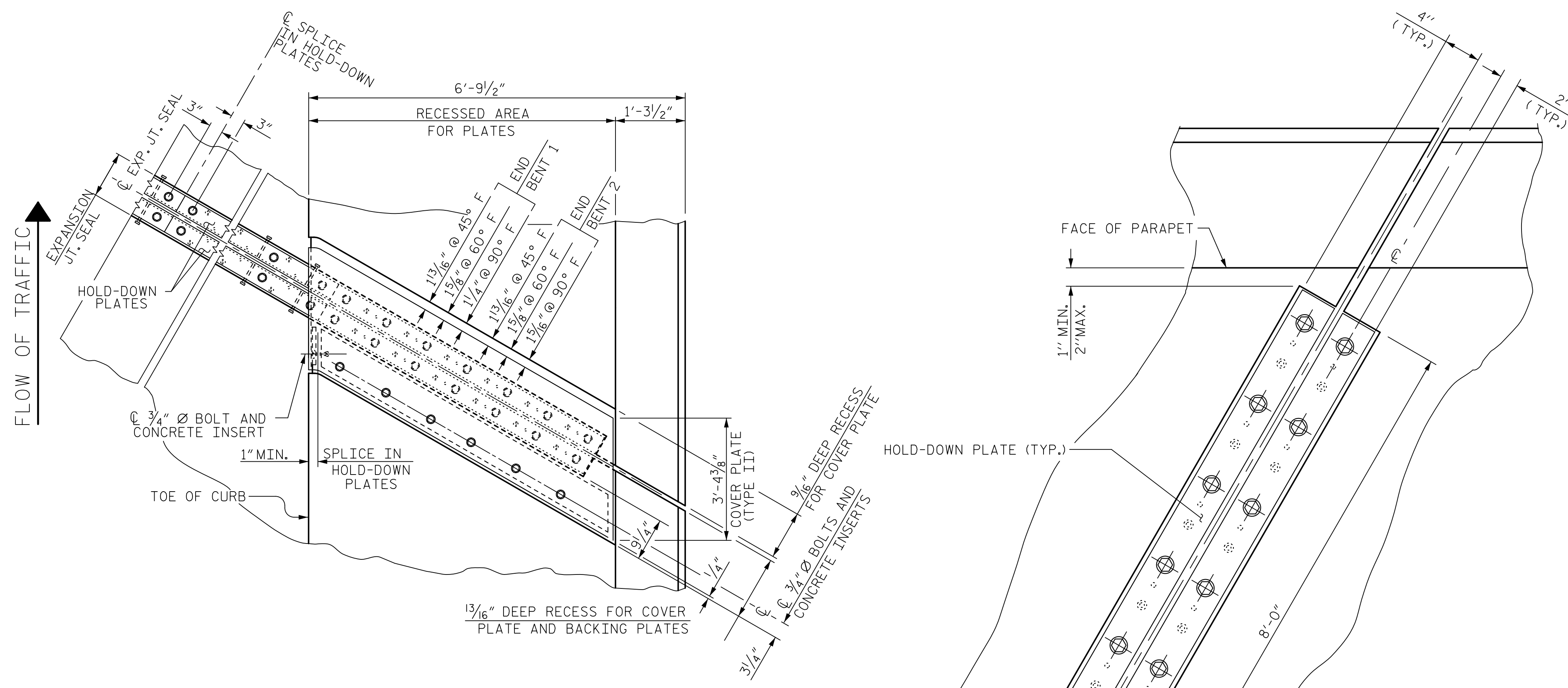
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**STANDARD**  
 EXPANSION JOINT  
 SEAL DETAILS  
 FOR PARAPET RAIL



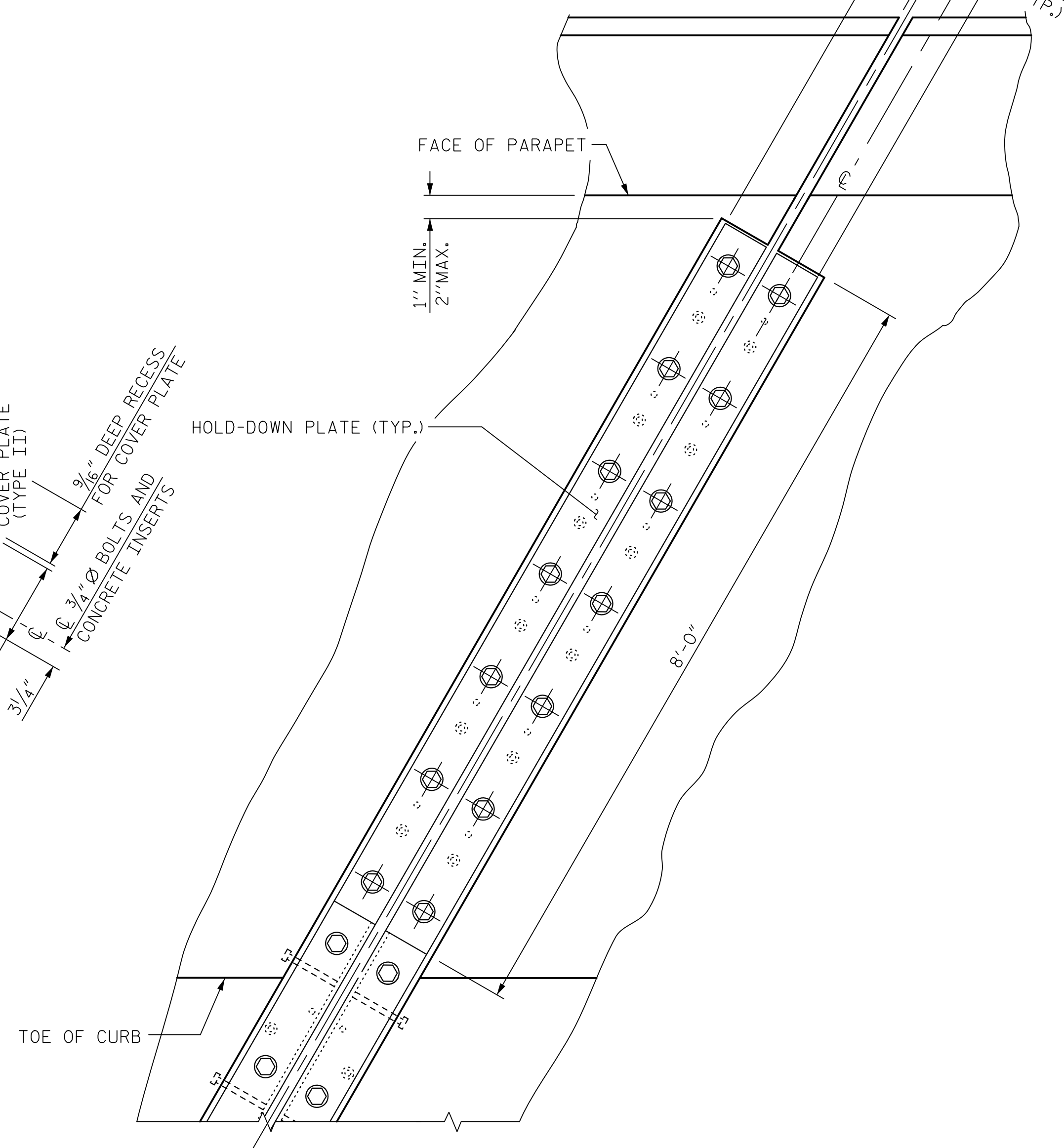
<b>HNTB</b>	HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609
DRAWN BY : M. WRIGHT	DATE : 4/18
CHECKED BY : J. WHEATLEY	DATE : 4/18
DESIGN ENGINEER OF RECORD : D. HAWKINS	DATE : 11/18

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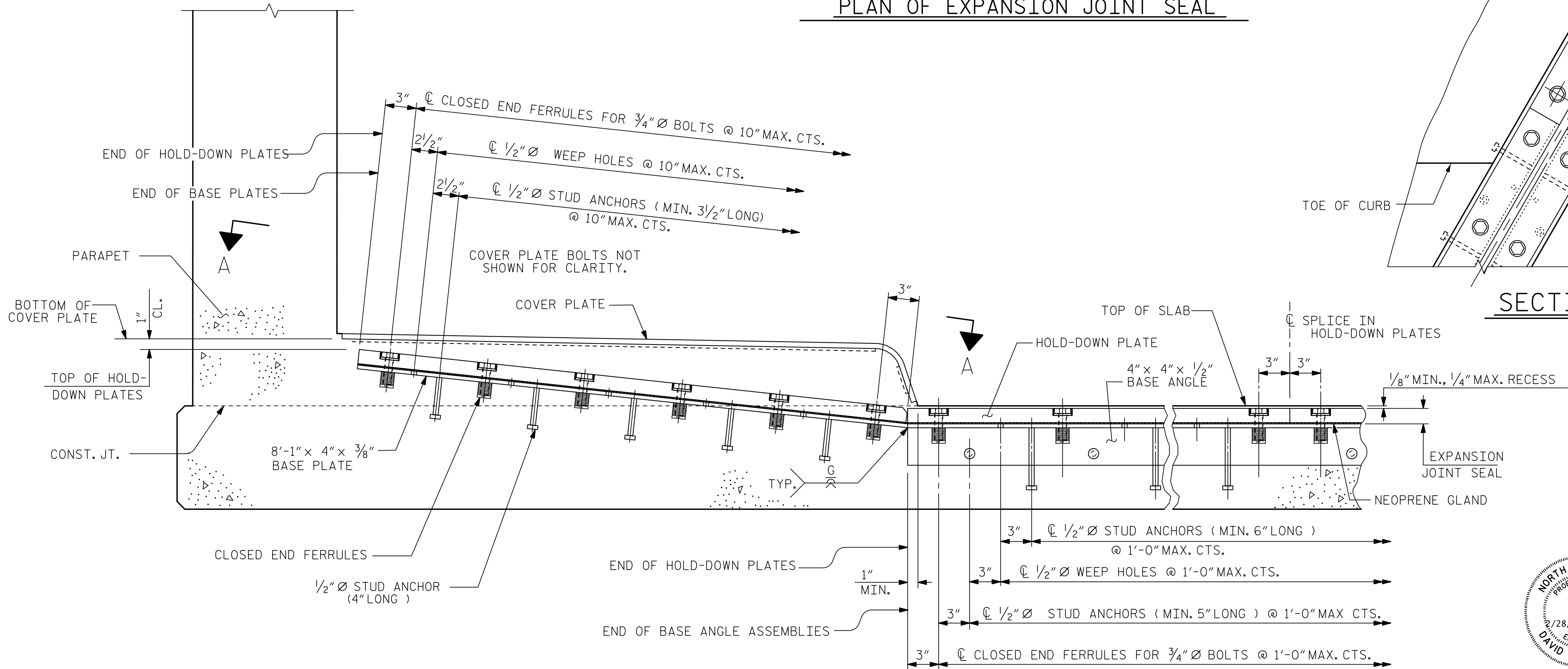
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-32
1			3			TOTAL SHEETS
2			4			54



PLAN OF EXPANSION JOINT SEAL



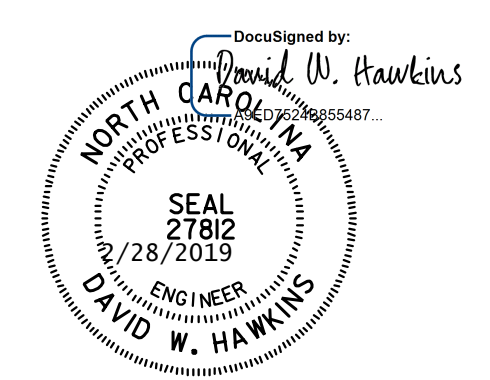
SECTION A - A



SECTION THRU SIDEWALK NORMAL TO JOINT

PROJECT NO. B-5905  
 JACKSON COUNTY  
 STATION: 19+41.94 -L-

SHEET 3 OF 4  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 EXPANSION JOINT  
 SEAL DETAILS  
 FOR SIDEWALK

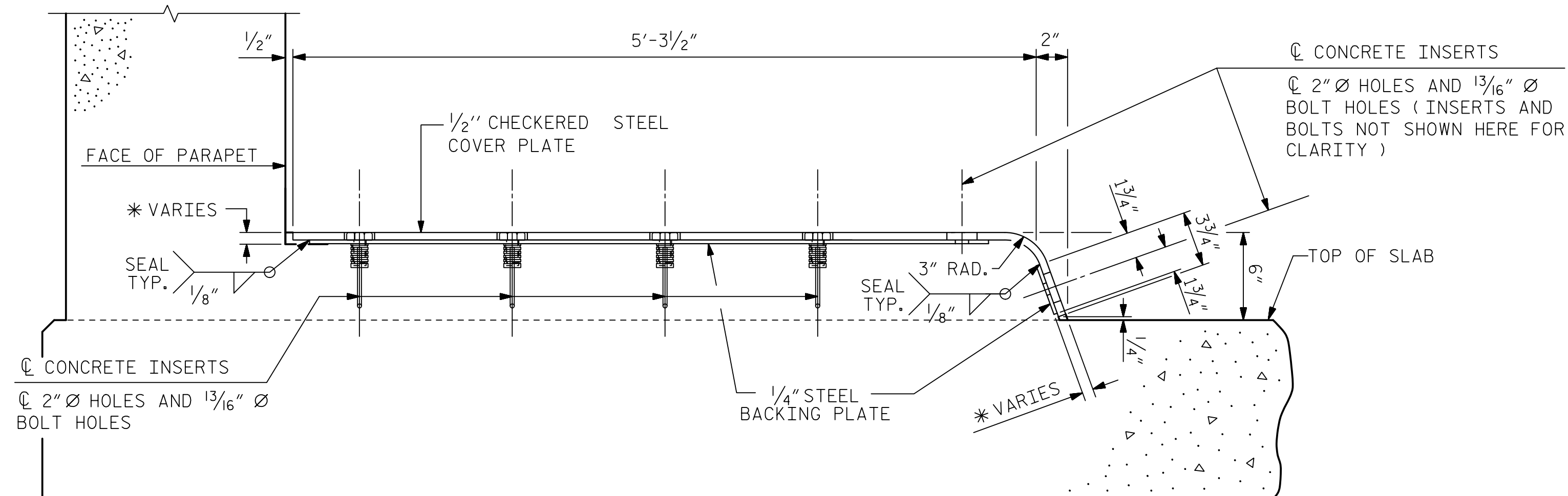


ASSEMBLED BY : M. WRIGHT	DATE : 4/18
CHECKED BY : J. WHEATLEY	DATE : 4/18
DRAWN BY : REK 10/87	REV. 5/1/06 TLA/GM
CHECKED BY : CRK 1/88	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

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DRAWN BY : M. WRIGHT	DATE : 4/18
CHECKED BY : J. WHEATLEY	DATE : 4/18
DESIGN ENGINEER OF RECORD : D. HAWKINS	DATE : 11/18

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-33
1			3			TOTAL SHEETS
2			4			54

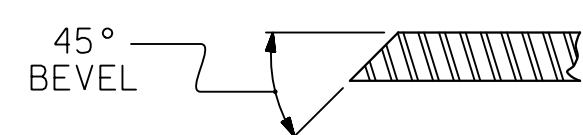


END VIEW  
(NORMAL TO SIDEWALK)

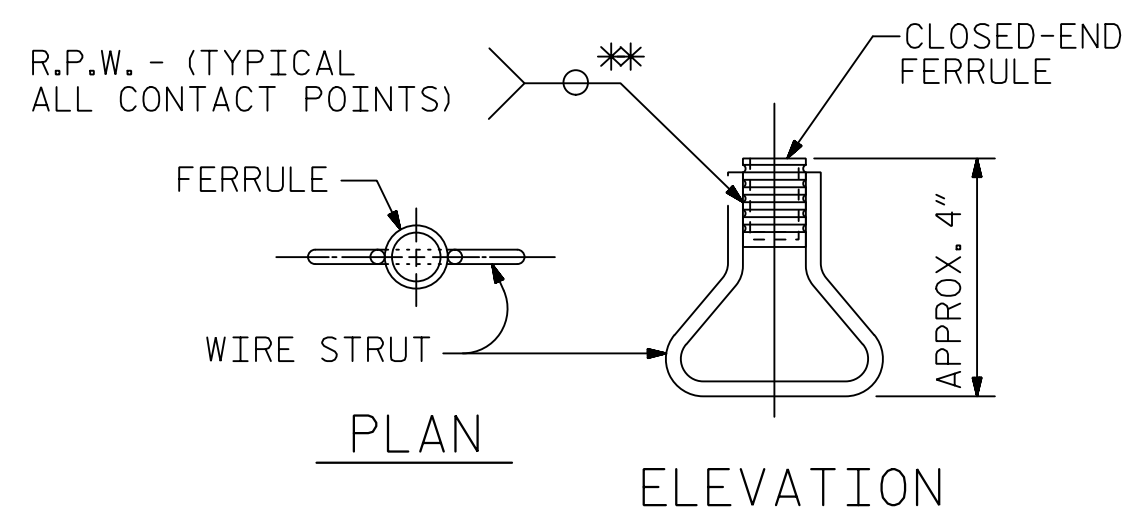
\* CONCRETE RECESS DIMENSIONS:

1 3/16" FOR THE SIDE OF THE JOINT HAVING THE 1/2" COVER PLATE WITH A 1/4" BACKING PLATE.

9/16" FOR THE SIDE OF THE JOINT HAVING ONLY THE 1/2" COVER PLATE.

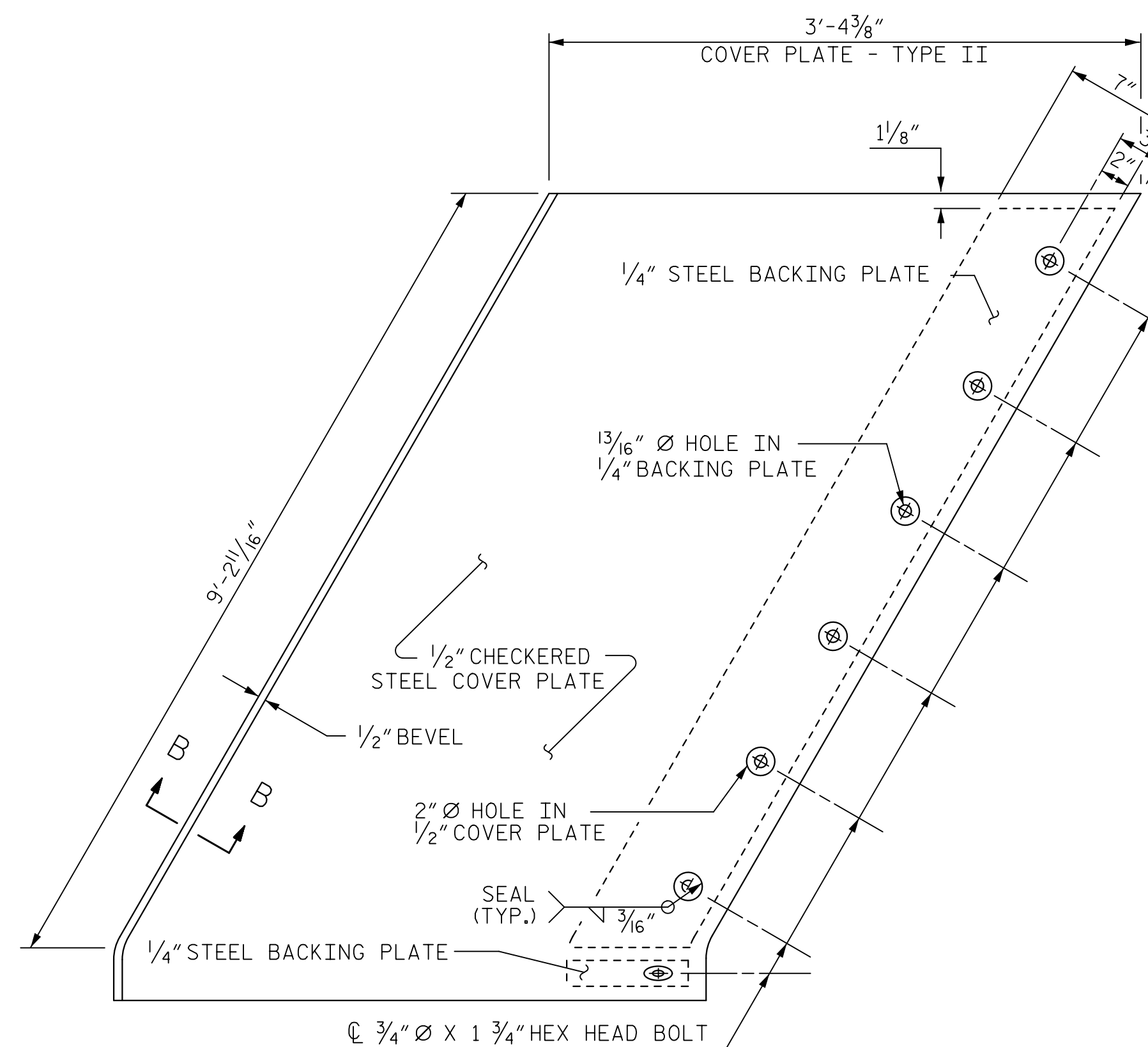


SECTION B - B



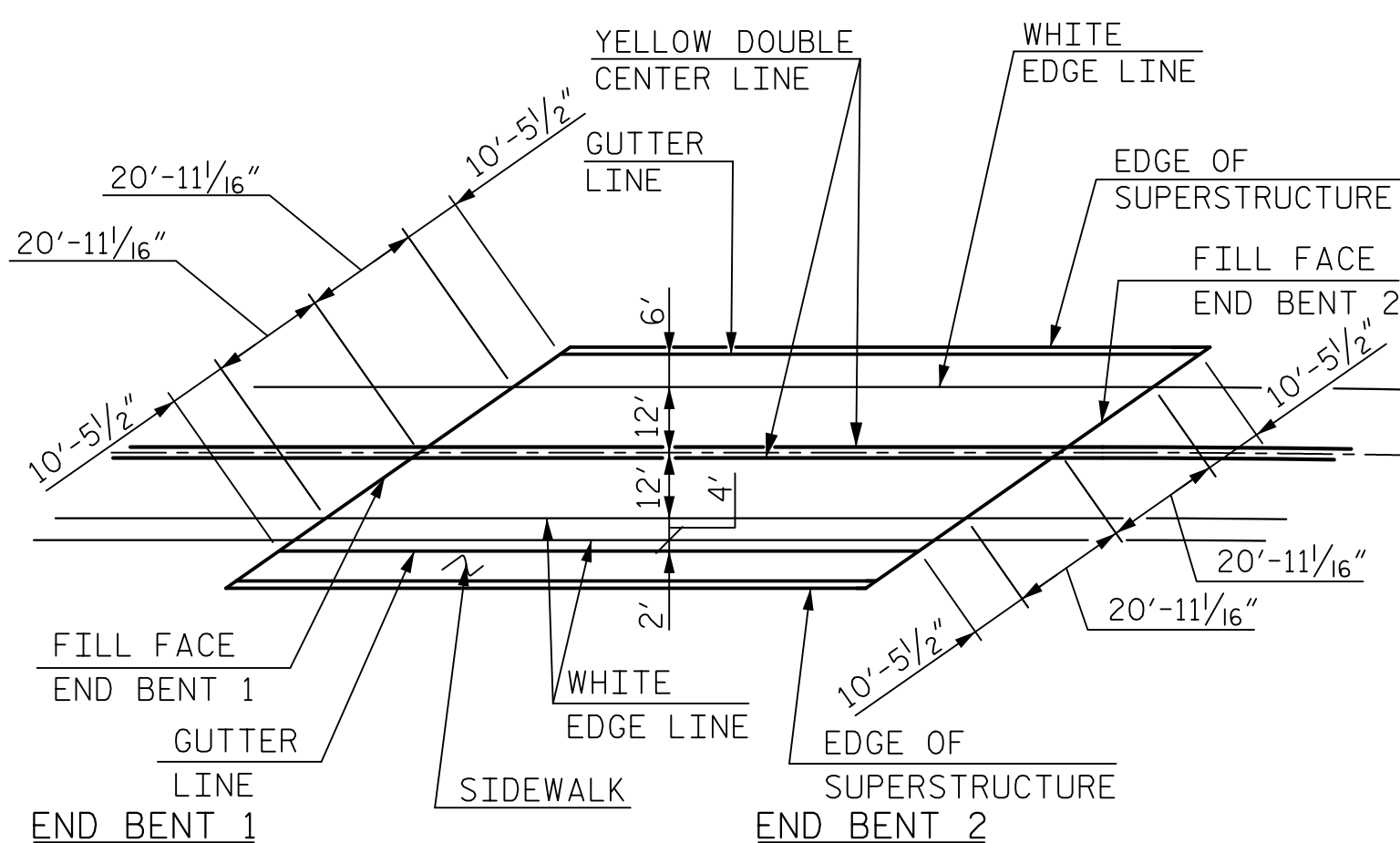
CONCRETE INSERT

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



TYPE II - PLAN VIEW

COVER PLATE DETAILS

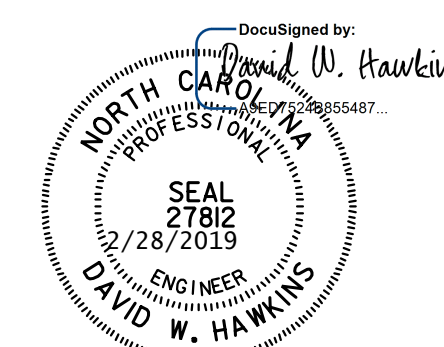


PAVEMENT MARKING ALIGNMENT

PROJECT NO. B-5905  
JACKSON COUNTY  
 STATION: 19+41.94 -L-

SHEET 4 OF 4

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



ASSEMBLED BY : M. WRIGHT	DATE : 4/18
CHECKED BY : J. WHEATLEY	DATE : 4/18
DRAWN BY : REK 10/87	REV. 5/1/06 TLA/GM
CHECKED BY : CRK 1/88	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

<b>HNTB</b>		HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	
DRAWN BY : M. WRIGHT	DATE : 4/18	DWG. NO. 34	
CHECKED BY : J. WHEATLEY	DATE : 4/18		
DESIGN ENGINEER OF RECORD : D. HAWKINS	DATE : 11/18		

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-34
1			3			TOTAL SHEETS
2			4			54

BILL OF MATERIAL					
EPOXY COATED					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT (LBS.)
*A1	643	5	STR	43'-9"	29,341
*A2	2	5	STR	43'-6"	91
*A3	2	5	STR	43'-2"	90
*A4	2	5	STR	42'-10"	89
*A5	2	5	STR	42'-5"	88
*A6	2	5	STR	42'-1"	88
*A7	2	5	STR	41'-9"	87
*A8	2	5	STR	41'-5"	86
*A9	2	5	STR	41'-1"	86
*A10	2	5	STR	40'-8"	85
*A11	2	5	STR	40'-4"	84
*A12	2	5	STR	40'-0"	83
*A13	2	5	STR	39'-8"	83
*A14	2	5	STR	39'-4"	82
*A15	2	5	STR	38'-11"	81
*A16	2	5	STR	38'-7"	80
*A17	2	5	STR	38'-3"	80
*A18	2	5	STR	37'-11"	79
*A19	2	5	STR	37'-7"	78
*A20	2	5	STR	37'-2"	78
*A21	2	5	STR	36'-10"	77
*A22	2	5	STR	36'-6"	76
*A23	2	5	STR	36'-2"	75
*A24	2	5	STR	35'-10"	75
*A25	2	5	STR	35'-5"	74
*A26	2	5	STR	35'-1"	73
*A27	2	5	STR	34'-9"	72
*A28	2	5	STR	34'-5"	72
*A29	2	5	STR	34'-1"	71
*A30	2	5	STR	33'-8"	70
*A31	2	5	STR	33'-4"	70
*A32	2	5	STR	33'-0"	69
*A33	2	5	STR	32'-8"	68
*A34	2	5	STR	32'-4"	67
*A35	2	5	STR	31'-11"	67
*A36	2	5	STR	31'-7"	66
*A37	2	5	STR	31'-3"	65
*A38	2	5	STR	30'-11"	64
*A39	2	5	STR	30'-7"	64
*A40	2	5	STR	30'-2"	63
*A41	2	5	STR	29'-10"	62
*A42	2	5	STR	29'-6"	62
*A43	2	5	STR	29'-2"	61
*A44	2	5	STR	28'-10"	60
*A45	2	5	STR	28'-5"	59
*A46	2	5	STR	28'-1"	59
*A47	2	5	STR	27'-9"	58
*A48	2	5	STR	27'-5"	57
*A49	2	5	STR	27'-1"	56
*A50	2	5	STR	26'-8"	56
*A51	2	5	STR	26'-4"	55
*A52	2	5	STR	26'-0"	54
*A53	2	5	STR	25'-8"	54
*A54	2	5	STR	25'-4"	53
*A55	2	5	STR	24'-11"	52
*A56	2	5	STR	24'-7"	51
*A57	2	5	STR	24'-3"	51
*A58	2	5	STR	23'-11"	50
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*A60	2	5	STR	23'-2"	48
*A61	2	5	STR	22'-10"	48
*A62	2	5	STR	22'-6"	47
*A63	2	5	STR	22'-2"	46
*A64	2	5	STR	21'-10"	46
*A65	2	5	STR	21'-5"	45
*A66	2	5	STR	21'-1"	44
*A67	2	5	STR	20'-9"	43
*A68	2	5	STR	20'-5"	43
*A69	2	5	STR	20'-1"	42
*A70	2	5	STR	19'-8"	41
*A71	2	5	STR	19'-4"	40
*A72	2	5	STR	19'-0"	40
*A73	2	5	STR	18'-8"	39
*A74	2	5	STR	18'-4"	38

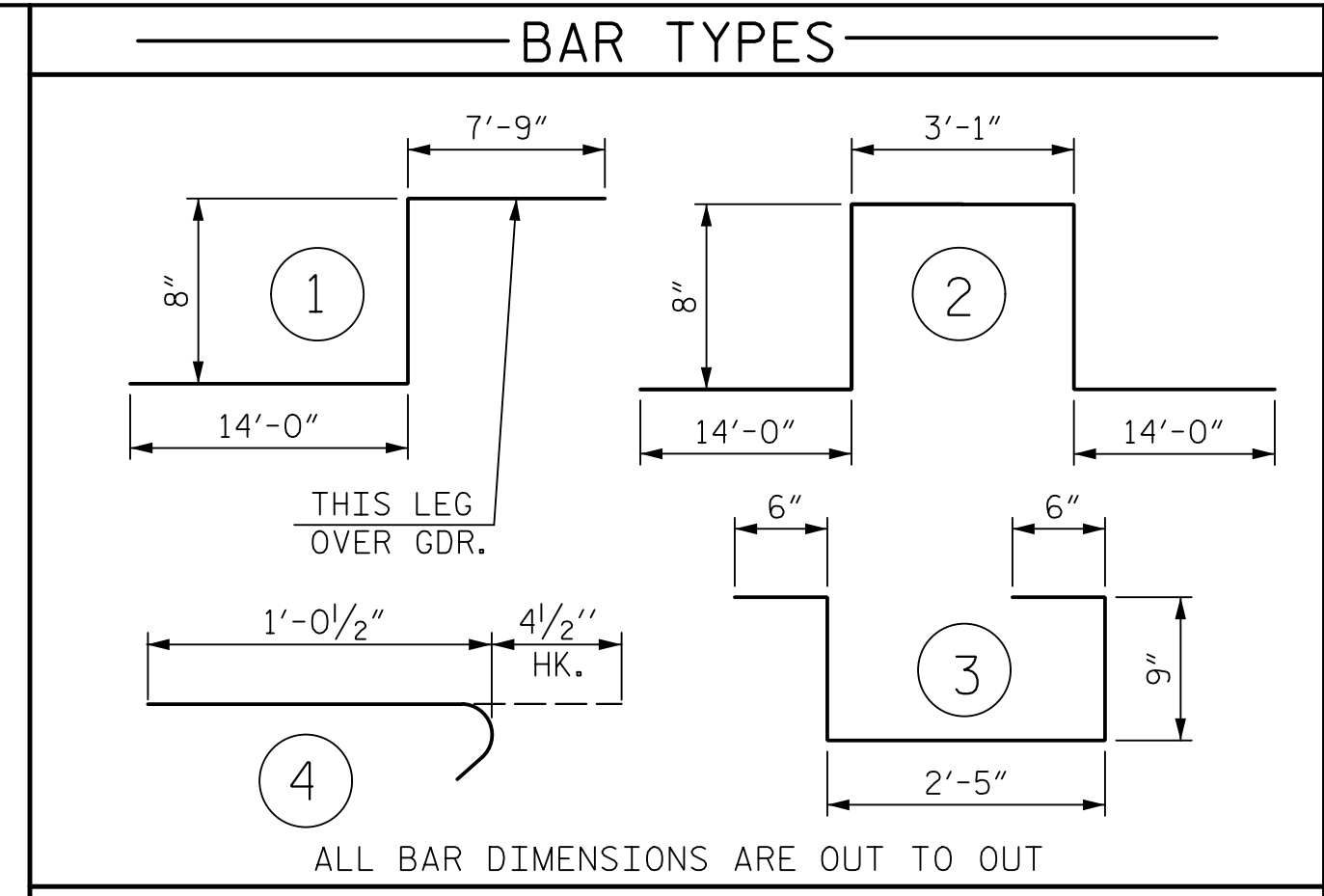
BILL OF MATERIAL					
EPOXY COATED					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT (LBS.)
*A75	2	5	STR	17'-11"	37
*A76	2	5	STR	17'-7"	37
*A77	2	5	STR	17'-3"	36
*A78	2	5	STR	16'-11"	35
*A79	2	5	STR	16'-7"	35
*A80	2	5	STR	16'-2"	34
*A81	2	5	STR	15'-10"	33
*A82	2	5	STR	15'-6"	32
*A83	2	5	STR	15'-2"	32
*A84	2	5	STR	14'-10"	31
*A85	2	5	STR	14'-5"	30
*A86	2	5	STR	14'-1"	29
*A87	2	5	STR	13'-9"	29
*A88	2	5	STR	13'-5"	28
*A89	2	5	STR	13'-1"	27
*A90	2	5	STR	12'-8"	26
*A91	2	5	STR	12'-4"	26
*A92	2	5	STR	12'-0"	25
*A93	2	5	STR	11'-8"	24
*A94	2	5	STR	11'-4"	24
*A95	2	5	STR	10'-11"	23
*A96	2	5	STR	10'-7"	22
*A97	2	5	STR	10'-3"	21
*A98	2	5	STR	9'-11"	21
*A99	2	5	STR	9'-7"	20
*A100	2	5	STR	9'-2"	19
*A101	2	5	STR	8'-10"	18
*A102	2	5	STR	8'-6"	18
*A103	2	5	STR	8'-2"	17
*A104	2	5	STR	7'-10"	16
*A105	2	5	STR	7'-5"	15
*A106	2	5	STR	7'-1"	15
*A107	2	5	STR	6'-9"	14
*A108	2	5	STR	6'-5"	13
*A109	2	5	STR	6'-1"	13
*A110	2	5	STR	5'-10"	12
*A111	2	5	STR	5'-9"	12
*A112	2	5	STR	5'-7"	12
*A113	2	5	STR	5'-6"	11
*A114	2	5	STR	5'-4"	11
*A115	2	5	STR	5'-3"	11
*A116	2	5	STR	5'-1"	11
*A117	12	6	STR	8'-6"	153
*B1	420	4	STR	29'-4"	8,230
*B2	232	6	STR	40'-0"	13,939
*C1	4	5	STR	39'-5"	164
*J1	126	4	4	1'-5"	119
*K1	16	5	1	22'-5"	374
*K2	24	5	2	32'-5"	811
*S1	88	4	3	4'-11"	289

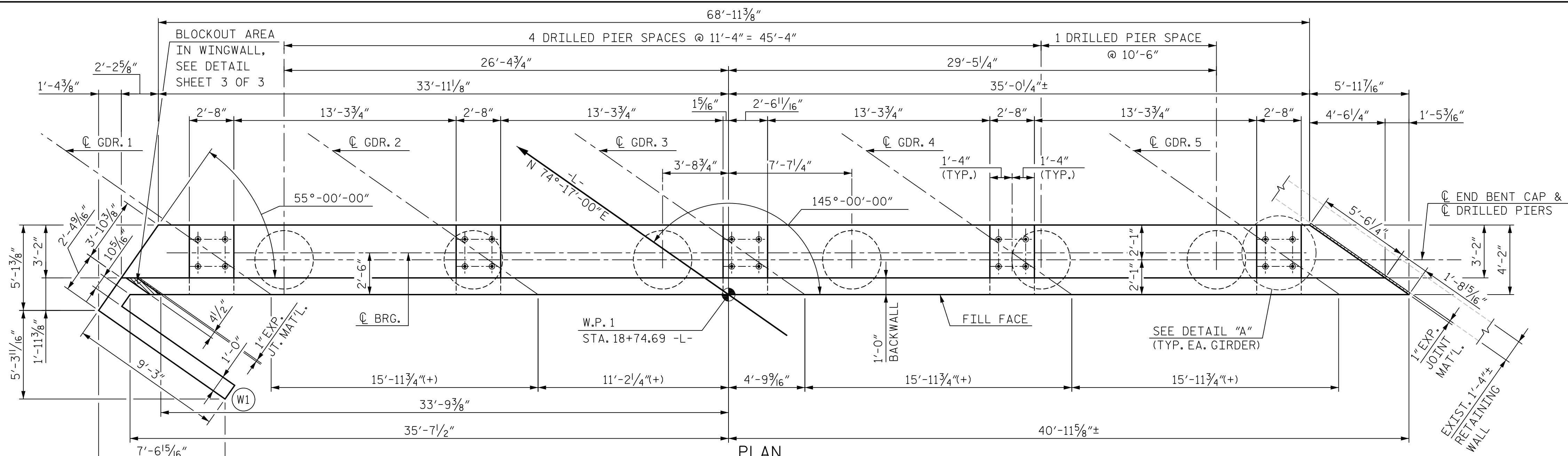
\*DENOTES EPOXY COATED REINFORCING STEEL

BILL OF MATERIAL					
UNCOATED					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT (LBS.)
A201	643	5	STR	43'-9"	29,341
A202	2	5	STR	43'-6"	91
A203	2	5	STR	43'-2"	90
A204	2	5	STR	42'-10"	89
A205	2	5	STR	42'-5"	88
A206	2	5	STR	42'-1"	88
A207	2	5	STR	41'-9"	87
A208	2	5	STR	41'-5"	86
A209	2	5	STR	41'-1"	86
A210	2	5	STR	40'-8"	85
A211	2	5	STR	40'-4"	84
A212	2	5	STR	40'-0"	83
A213	2	5	STR	39'-8"	83
A214	2	5	STR	39'-4"	82
A215	2	5	STR	38'-11"	81
A216	2	5	STR	38'-7"	80
A217	2	5	STR	38'-3"	80
A218	2	5	STR	37'-11"	79
A219	2	5	STR	37'-7"	78
A220	2	5	STR	37'-2"	78
A221	2	5	STR	36'-10"	77
A222	2	5	STR	36'-6"	76
A223	2	5	STR	36'-2"	75
A224	2	5	STR	35'-10"	75
A225	2	5	STR	35'-5"	74
A226	2	5	STR	35'-1"	73
A227	2	5	STR	34'-9"	72
A228	2	5	STR	34'-5"	72
A229	2	5	STR	34'-1"	71
A230	2	5	STR	33'-8"	70
A231	2	5	STR	33'-4"	70
A232	2	5	STR	33'-0"	69
A233	2	5	STR	32'-8"	68
A234	2	5	STR	32'-4"	67
A235	2	5	STR	31'-11"	67
A236	2	5	STR	31'-7"	66
A237	2	5	STR	31'-3"	65
A238	2	5	STR	30'-11"	64
A239	2	5	STR	30'-7"	64
A240	2	5	STR	30'-2"	63
A241	2	5	STR	29'-10"	62
A242	2	5	STR	29'-6"	62
A243	2	5	STR	29'-2"	61
A244	2	5	STR	28'-10"	60
A245	2	5	STR	28'-5"	59
A246	2	5	STR	28'-1"	59
A247	2	5	STR	27'-9"	58
A248	2	5	STR	27'-5"	57
A249	2	5	STR	27'-1"	56
A250	2	5	STR	26'-8"	56
A251	2	5	STR	26'-4"	55
A252	2	5	STR	26'-0"	54
A253	2	5	STR	25'-8"	54
A254	2	5	STR	25'-4"	53
A255	2	5	STR	24'-11"	52
A256	2	5	STR	24'-7"	51
A257	2	5	STR	24'-3"	51
A258	2	5	STR	23'-11"	50
A259	2	5	STR	23'-7"	49
A260	2	5	STR	23'-2"	48

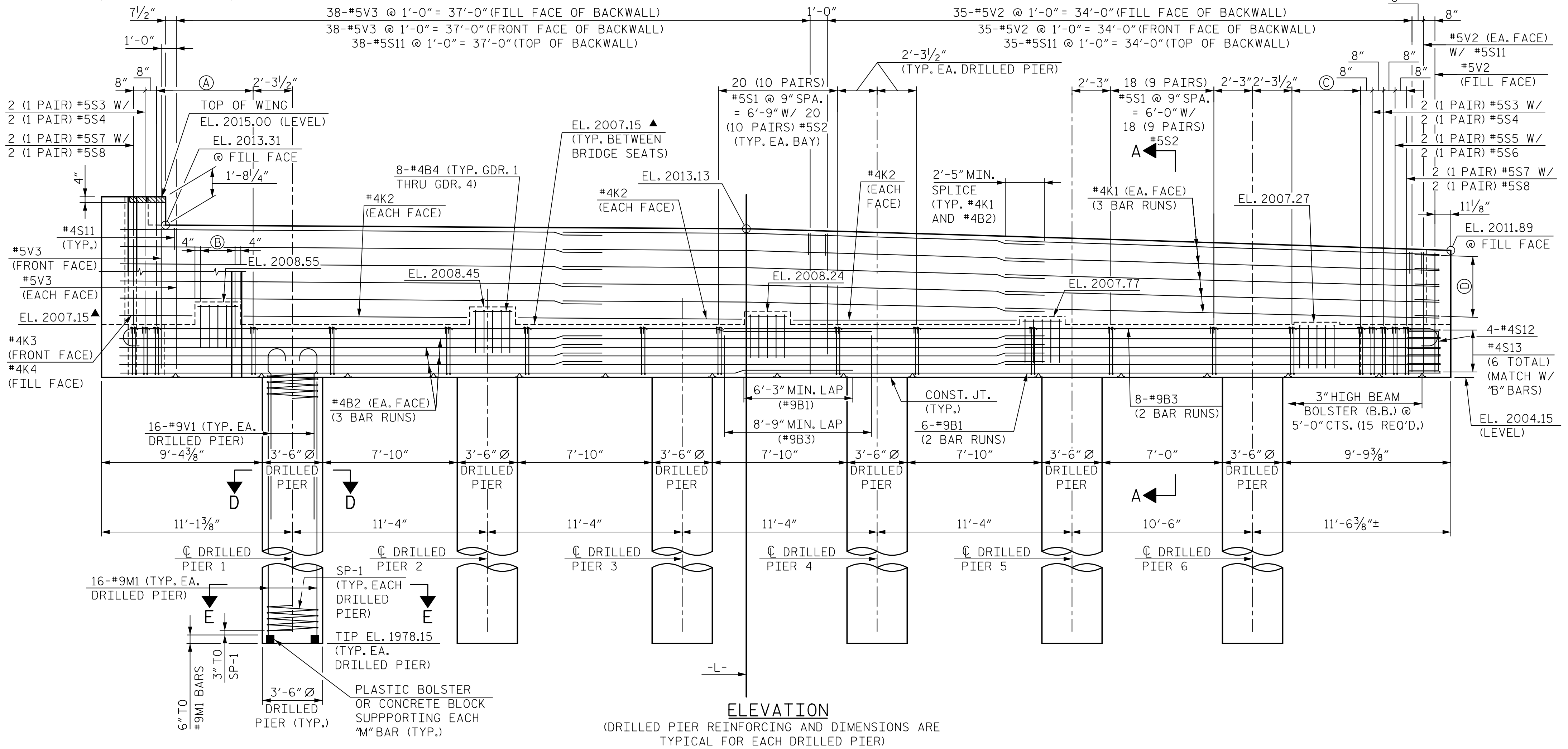
BILL OF MATERIAL					
UNCOATED					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT (LBS.)
A261	2	5	STR	22'-10"	48
A262	2	5	STR	22'-6"	47
A263	2	5	STR	22'-2"	46
A264	2	5	STR	21'-10"	46
A265	2	5	STR	21'-5"	45
A266	2	5	STR	21'-1"	44
A267	2	5	STR	20'-9"	43
A268	2	5	STR	20'-5"	43
A269	2	5	STR	20'-1"	42
A270	2	5	STR	19'-8"	41
A271	2	5	STR	19'-4"	40
A272	2	5	STR	19'-0"	40
A273	2	5	STR	18'-8"	39
A274	2	5	STR	18'-4"	38
A275	2	5	STR	17'-11"	37
A276	2	5	STR	17'-7"	37
A277	2	5	STR	17'-3"	36
A278	2	5	STR	16'-11"	35
A279	2	5	STR	16'-7"	35
A280	2	5	STR	16'-2"	34
A281	2	5	STR	15'-10"	33
A282	2	5	STR	15'-6"	32
A283	2	5	STR	15'-2"	32
A284	2	5	STR	14'-10"	31
A285	2	5	STR	14'-5"	30
A286	2	5	STR	14'-1"	29
A287	2	5	STR	13'-9"	29
A288	2	5	STR	13'-5"	28
A289	2	5	STR	13'-1"	27
A290	2	5	STR	12'-8"	26
A291	2	5	STR	12'-4"	26
A292	2	5	STR	12'-0"	25
A293	2	5	STR	11'-8"	24
A294	2	5	STR	11'-4"	24
A295	2	5	STR	10'-11"	23
A296	2	5	STR	10'-7"	22
A297	2	5	STR	10'-3"	21
A298	2	5	STR	9'-11"	21
A299	2	5	STR	9'-7"	20
A300	2	5	STR	9'-2"	19
A301	2	5	STR	8'-10"	18
A302	2	5	STR	8'-6"	18
A303	2	5	STR	8'-2"	17
A304	2	5	STR	7'-10"	16
A305	2	5	STR	7'-5"	15
A306	2	5	STR	7'-1"	15
A307	2	5	STR	6'-9"	14
A308	2	5	STR	6'-5"	13
A309	2	5	STR	6'-1"	13
A310	2	5	STR	5'-10"	12
A311	2	5	STR	5'-9"	12
A312	2	5	STR	5'-7"	12
A313	2	5	STR	5'-6"	11
A314	2	5	STR	5'-4"	11
A315	2	5	STR	5'-3"	11
A316	2	5	STR	5'-1"	11
B101	406	5	STR	56'-9"	24,031

UNCOATED TOTAL: 59,032





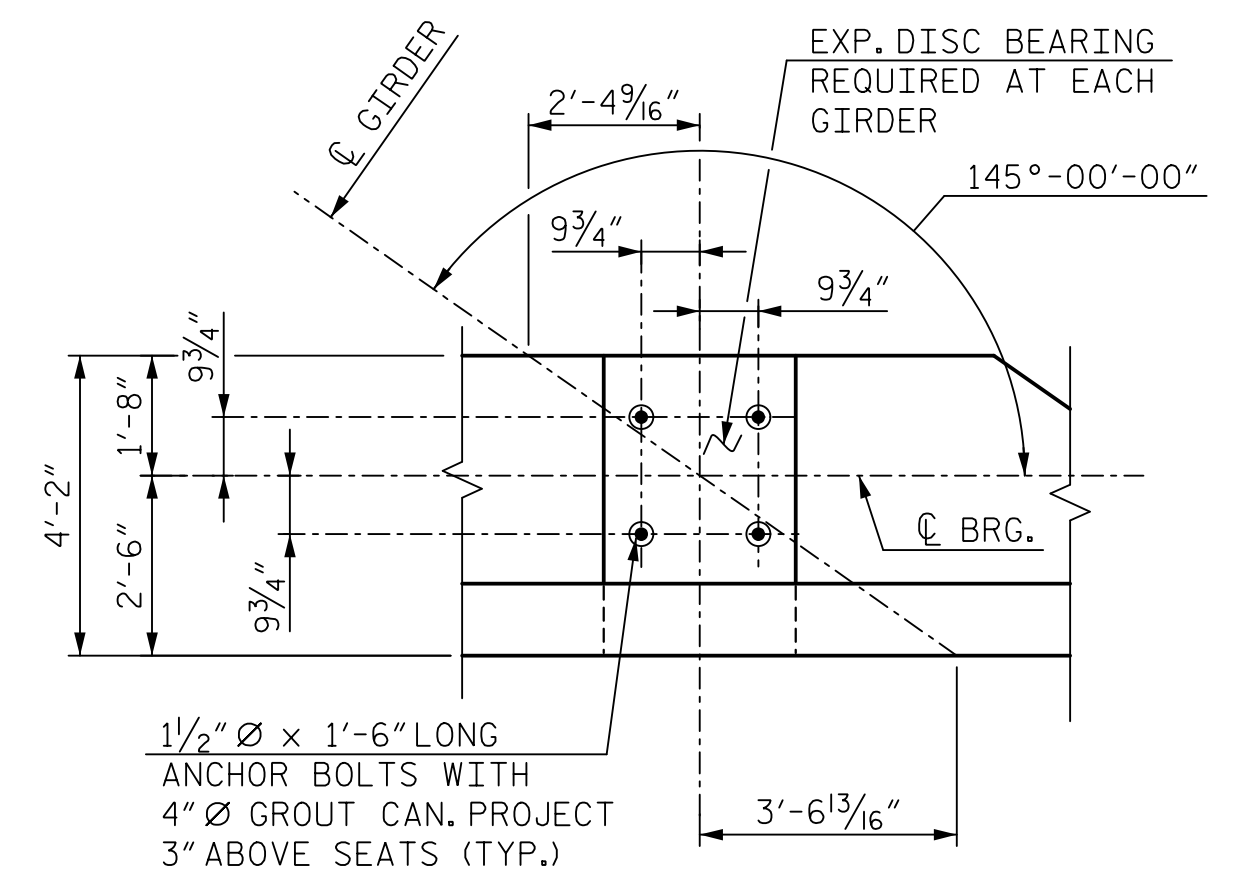
PLAN



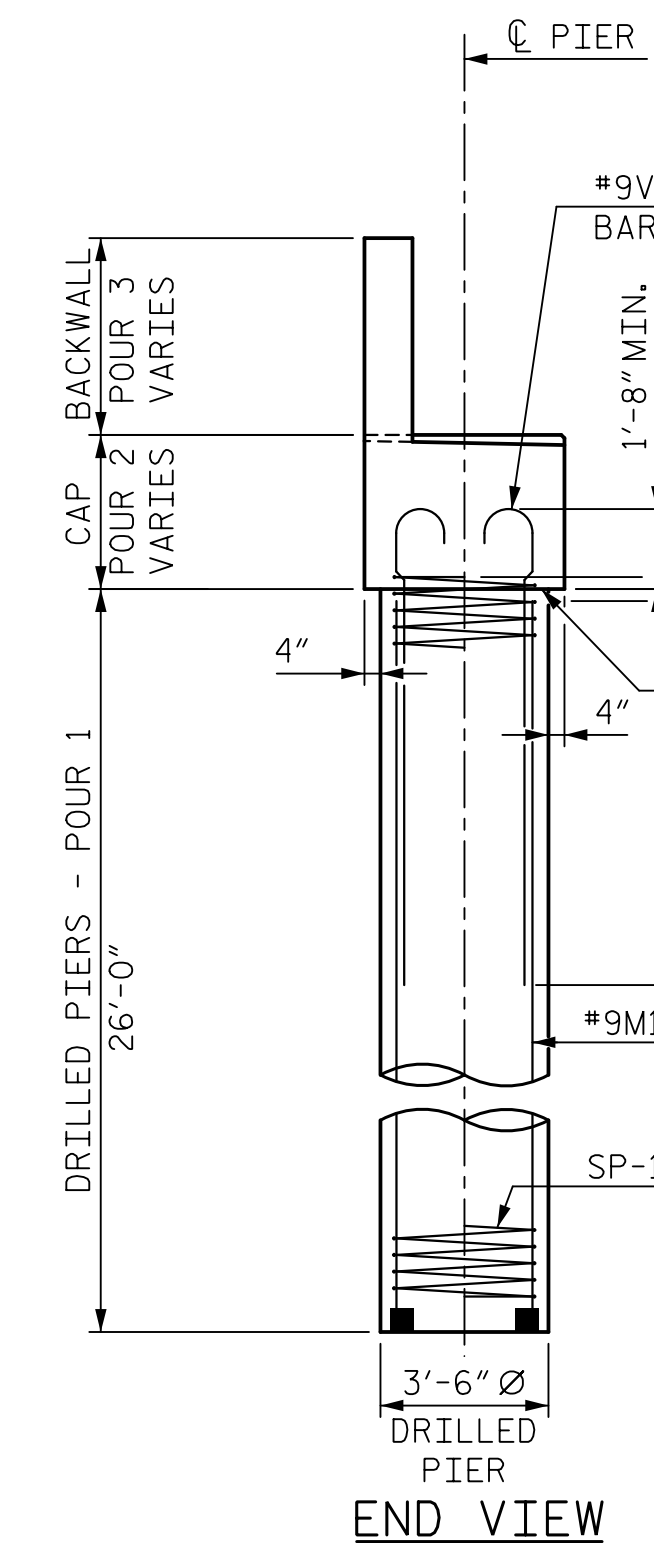
ELEVATION

(DRILLED PIER REINFORCING AND DIMENSIONS ARE TYPICAL FOR EACH DRILLED PIER)

**NOTES:**  
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.  
 HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.  
 ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".  
 FOR PIPE INSERT DETAILS, SEE BEARINGS SHEET.  
 FOR SECTIONS A-A, D-D, & E-E, SEE SHEET 2 OF 3.



DETAIL "A"



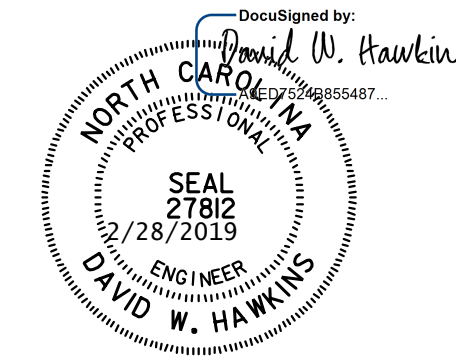
END VIEW

- (A) 18 (9 PAIRS) #5S1 @ 8" SPA. = 5'-4" W/ 18 (9 PAIRS) #5S2
- (B) 5-#4S9 @ 6" CTS. = 2'-0" (TYP. EA. SEAT)
- (C) 14 (7 PAIRS) #5S1 @ 8" SPA. = 4'-0" W/ 14 (7 PAIRS) #5S2
- (D) 5-#4S10 (MATCH W/ K1 BARS)

▲ FOR ELEVATIONS BETWEEN BRIDGE SEATS, SEE SECTION A-A, SHEET 2 OF 3.

PROJECT NO. B-5905  
 JACKSON COUNTY  
 STATION: 19+41.94 -L-

SHEET 1 OF 3  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**SUBSTRUCTURE**  
 END BENT 1

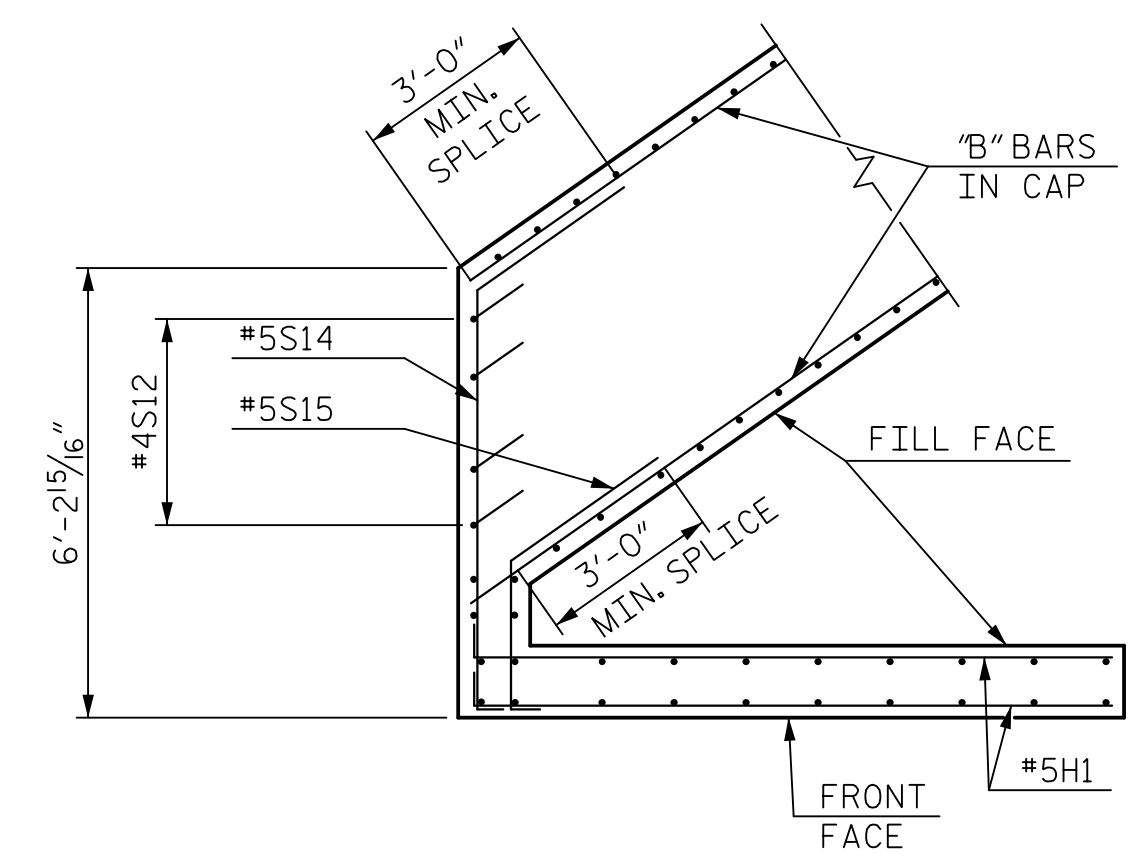


<b>HNTB</b>		HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	
DRAWN BY: M. WRIGHT	DATE: 4/18	CHECKED BY: N. SALAS ZAMUDIO	DATE: 5/18
DESIGN ENGINEER OF RECORD: D. HAWKINS	DATE: 11/18	DWG. NO. 36	

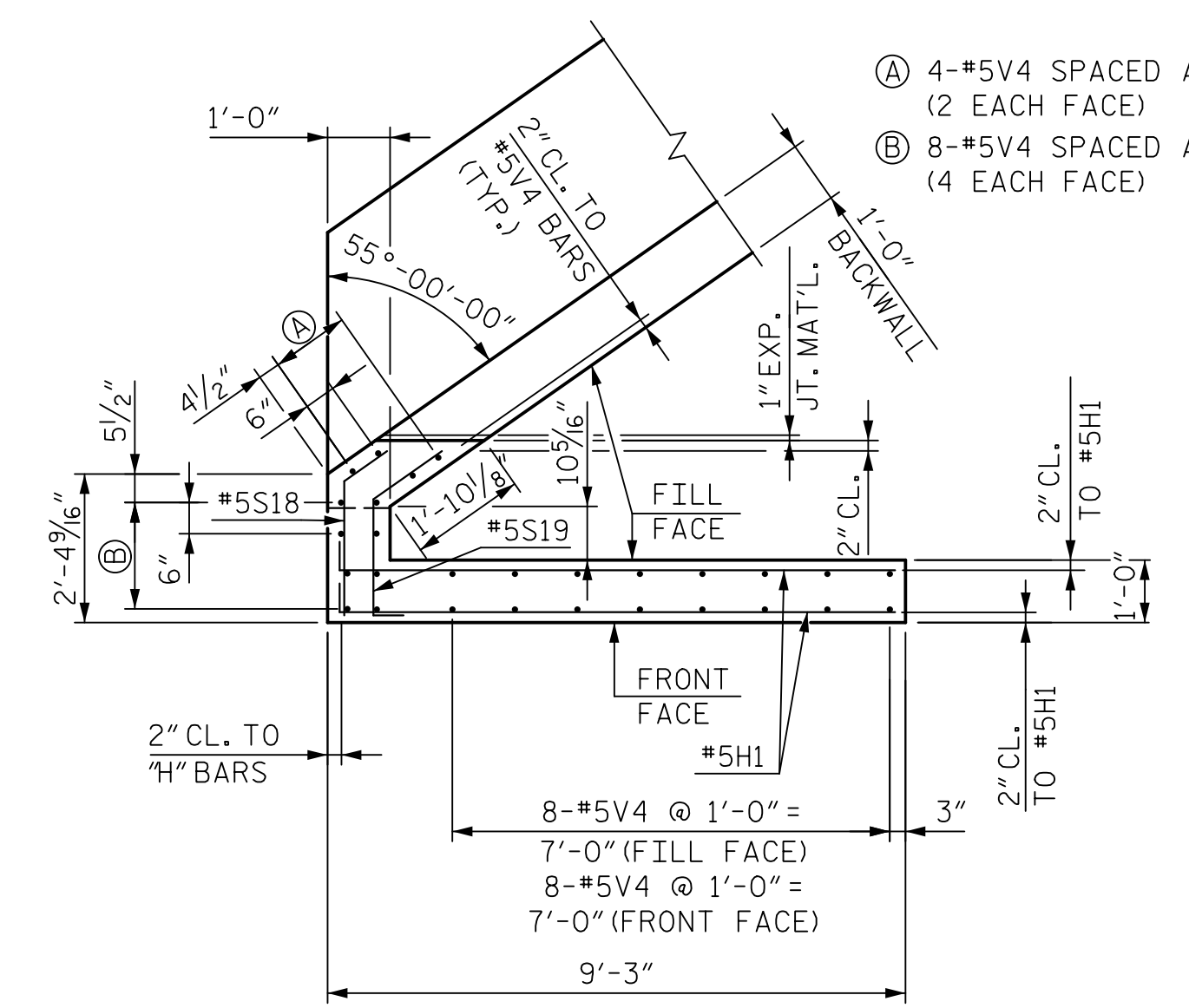
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

REVISIONS					SHEET NO. S1-36
NO.	BY	DATE	NO.	DATE	
1			3		TOTAL SHEETS 54
2			4		

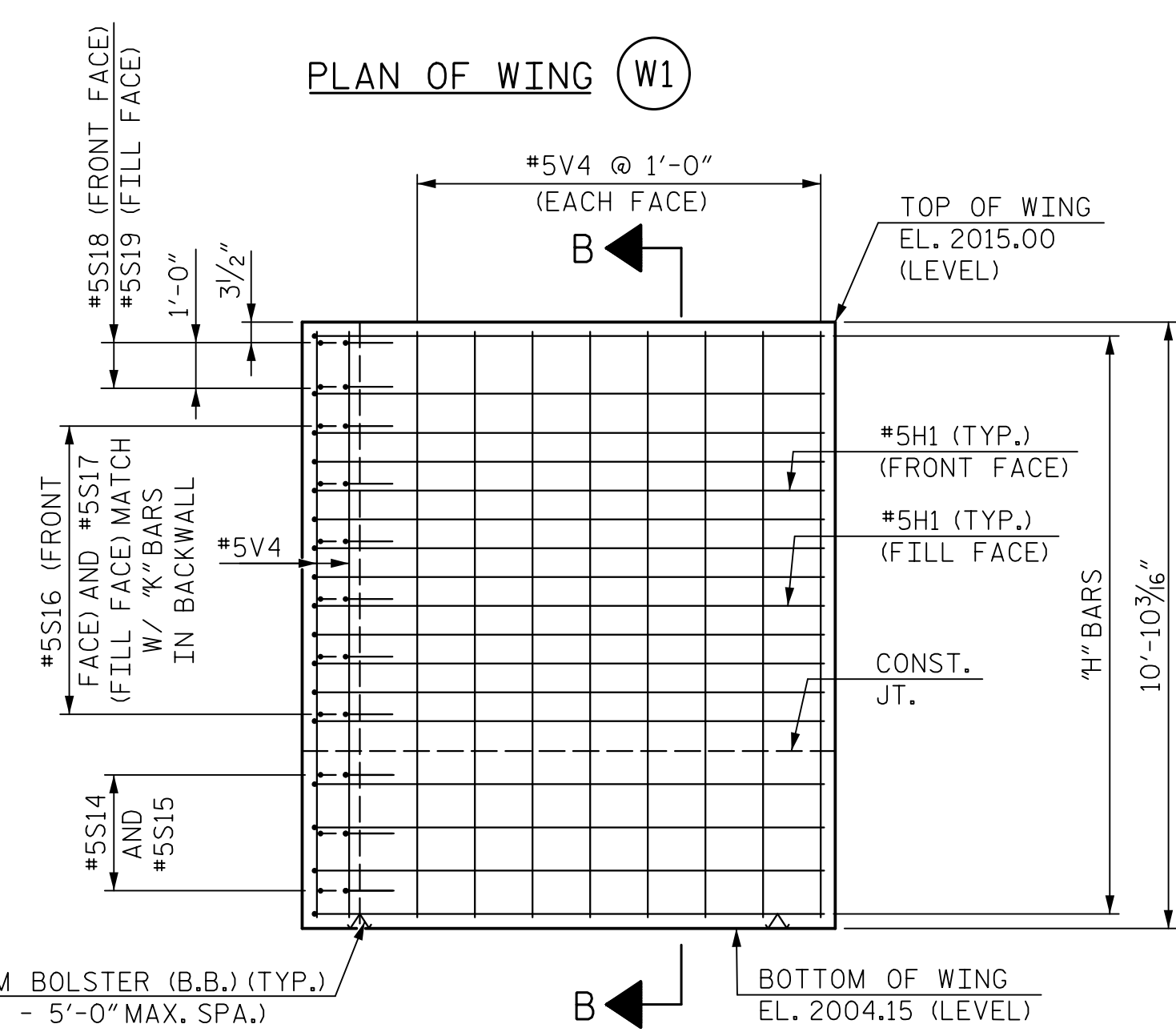
NOTES:  
 FOR NOTES, SEE SHEET 3 OF 3.  
 FOR BLOCKOUT IN WINGWALL, SEE SHEET 3 OF 3.



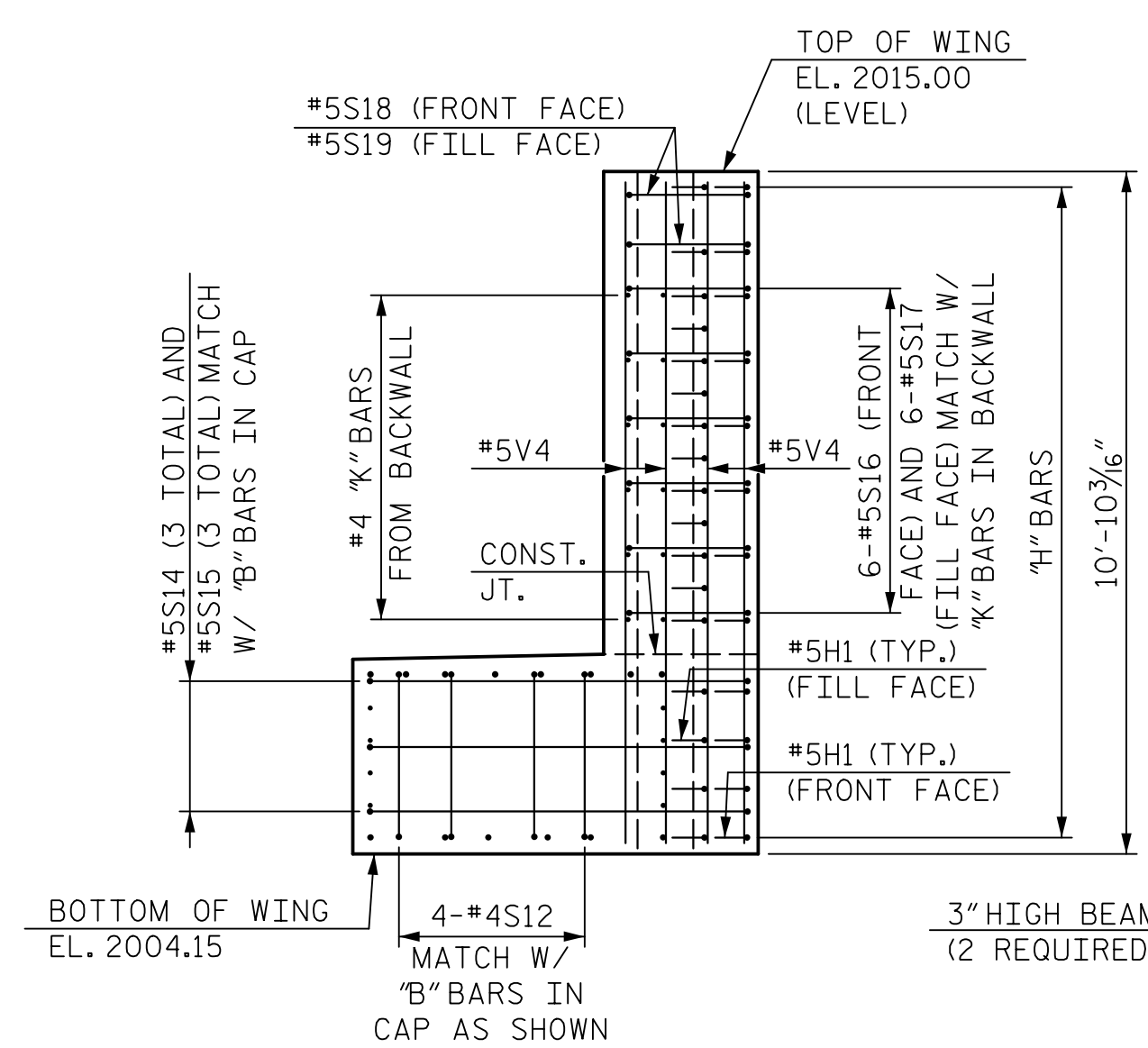
SECTION OF WING (W1)  
THRU CAP



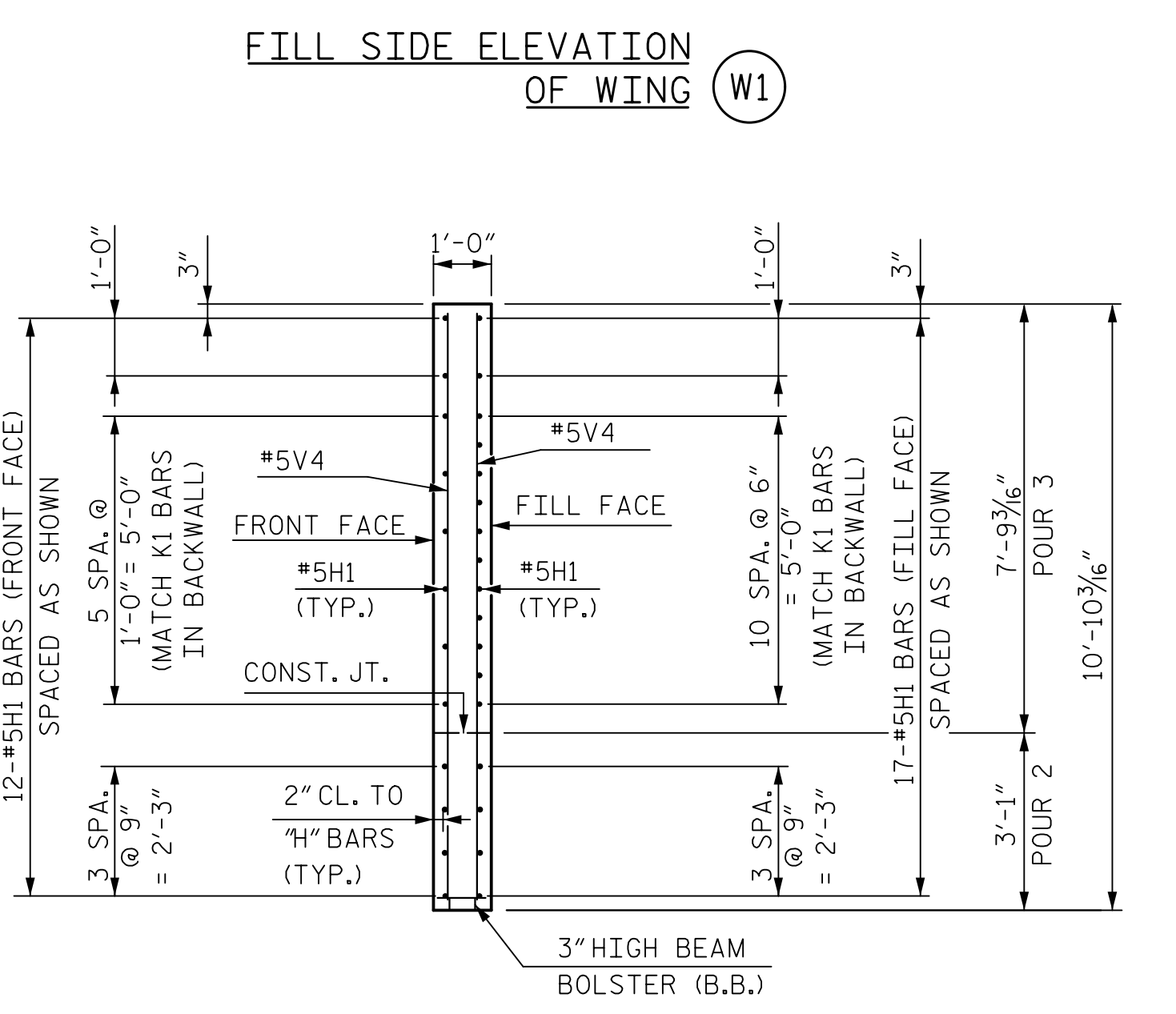
SECTION OF WING (W1)  
THRU BACKWALL



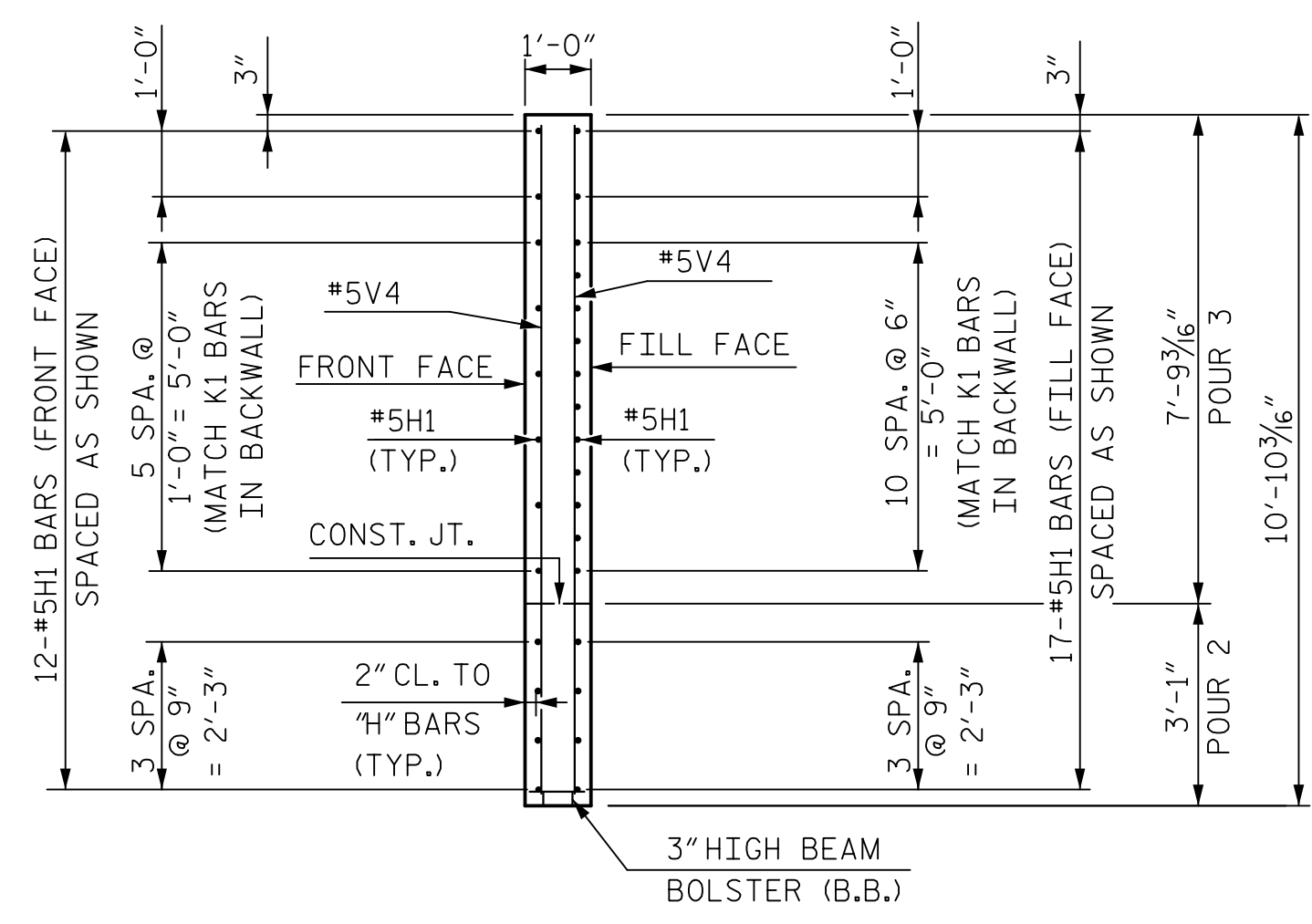
PLAN OF WING (W1)



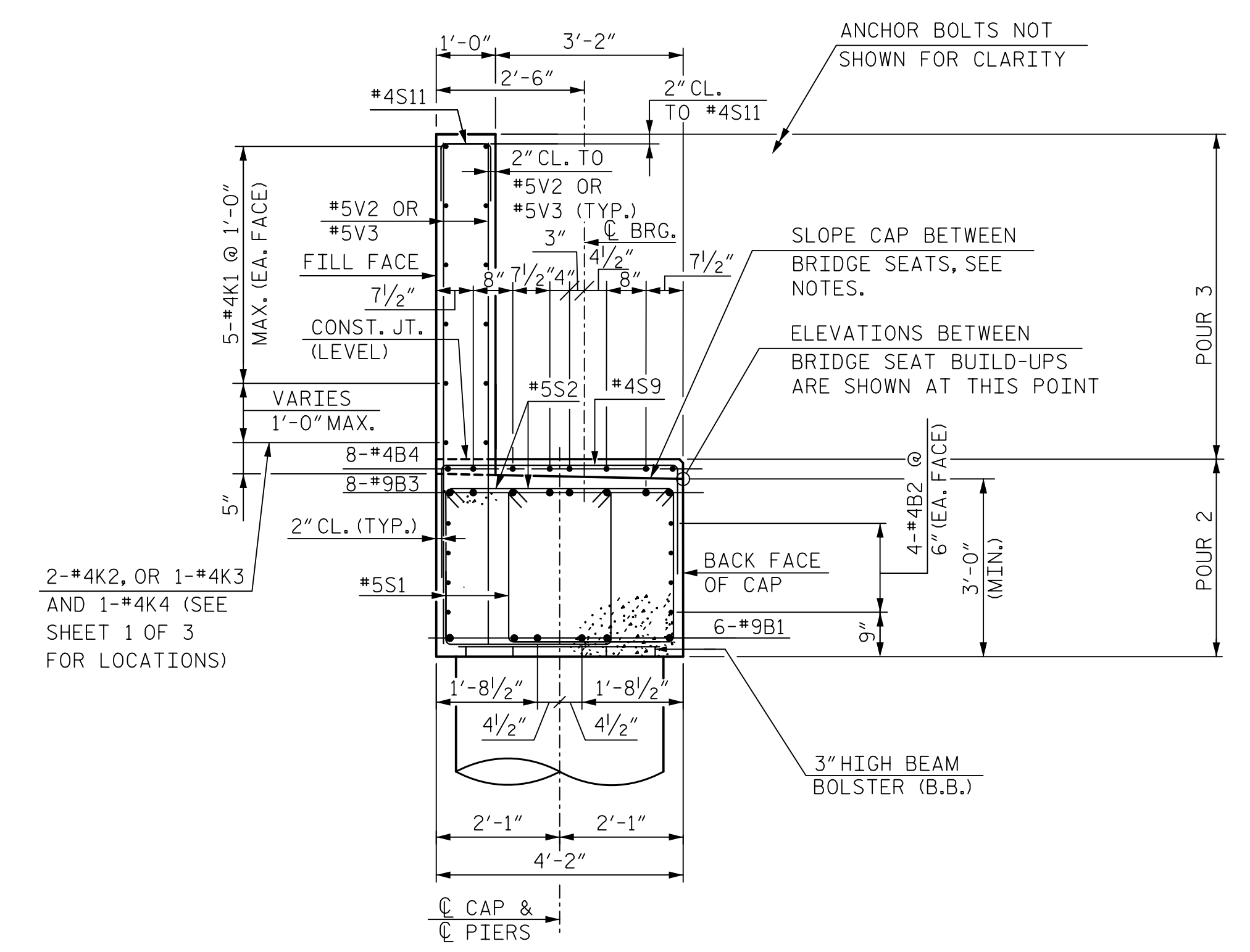
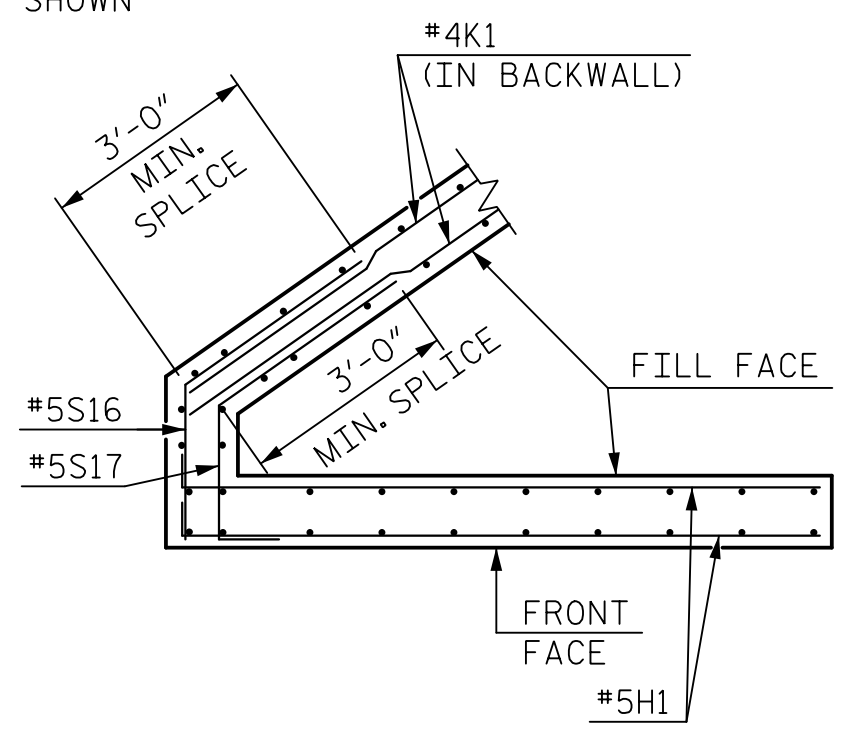
CAP SIDE ELEVATION  
OF WING (W1)



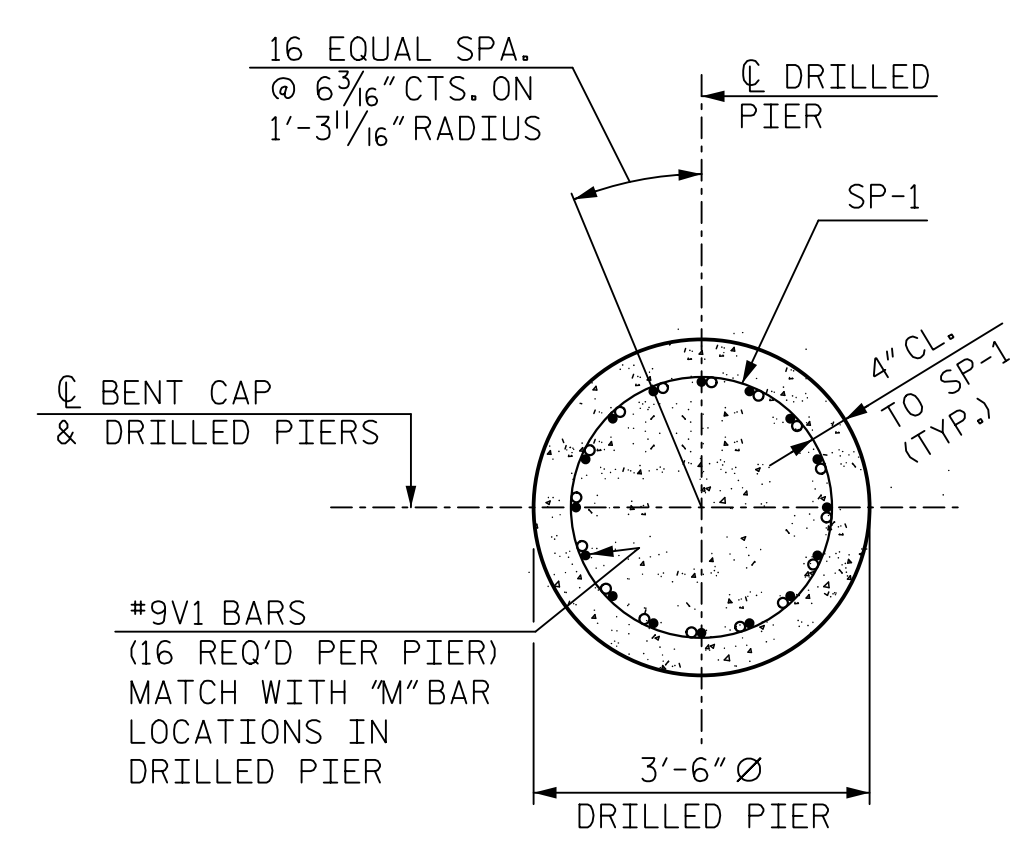
FILL SIDE ELEVATION  
OF WING (W1)



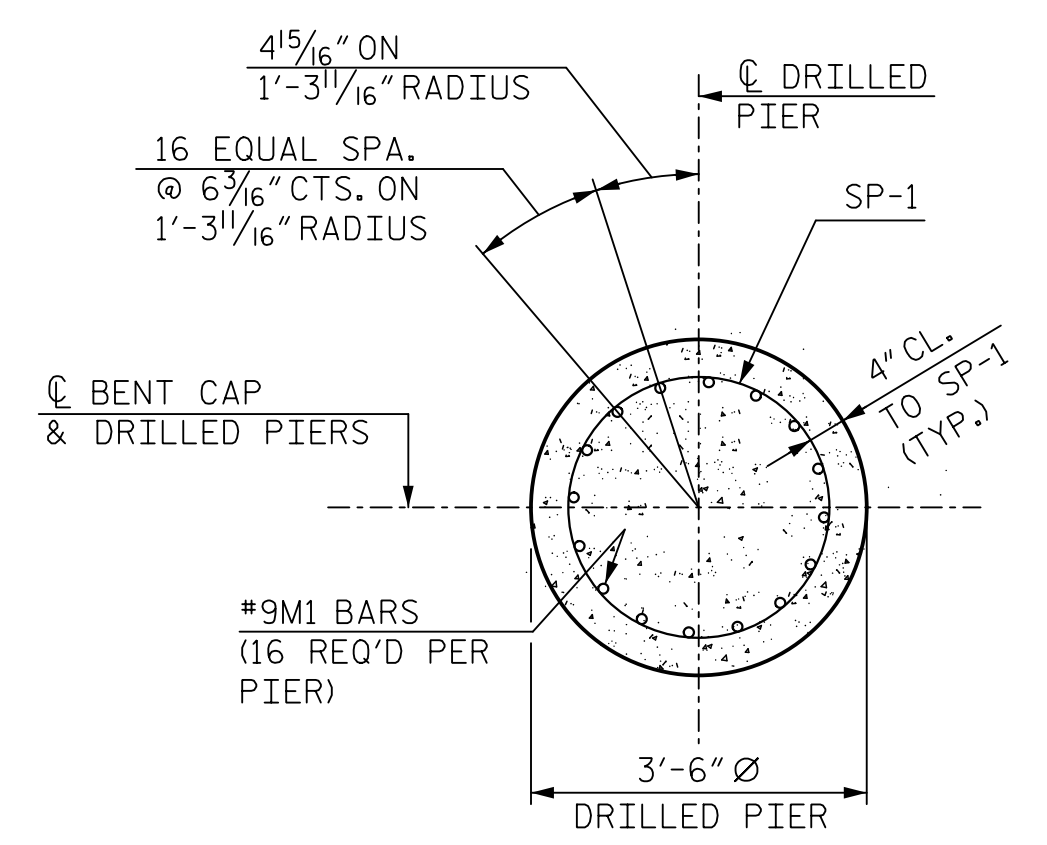
SECTION B-B



SECTION A-A



SECTION D-D



SECTION E-E

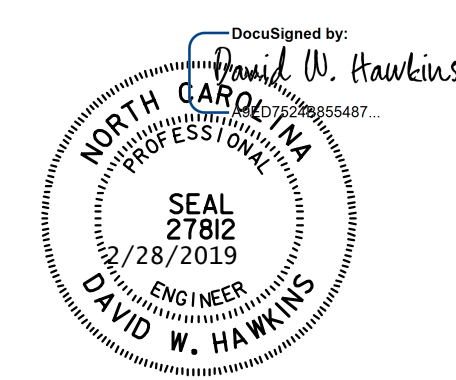
2-#4K2, OR 1-#4K3  
 AND 1-#4K4 (SEE  
 SHEET 1 OF 3  
 FOR LOCATIONS)

PROJECT NO. B-5905  
JACKSON COUNTY  
 STATION: 19+41.94 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT 1



<b>HNTB</b>		HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	
DRAWN BY: M. WRIGHT	DATE: 4/18	DWG. NO. 37	TOTAL SHEETS: 54
CHECKED BY: N. SALAS ZAMUDIO	DATE: 5/18		
DESIGN ENGINEER OF RECORD: D. HAWKINS	DATE: 11/18		

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO. S1-37
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS: 54
2			4			





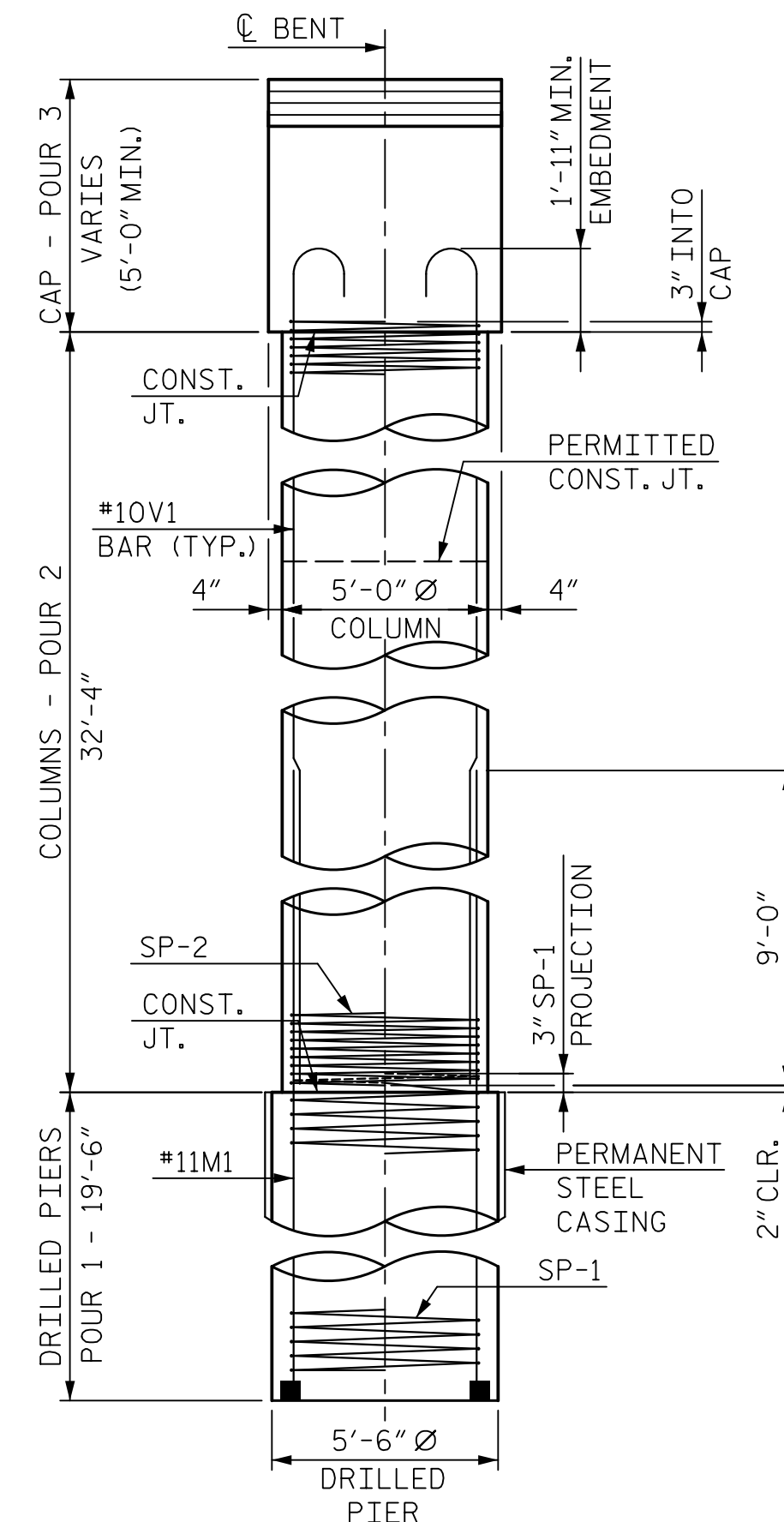
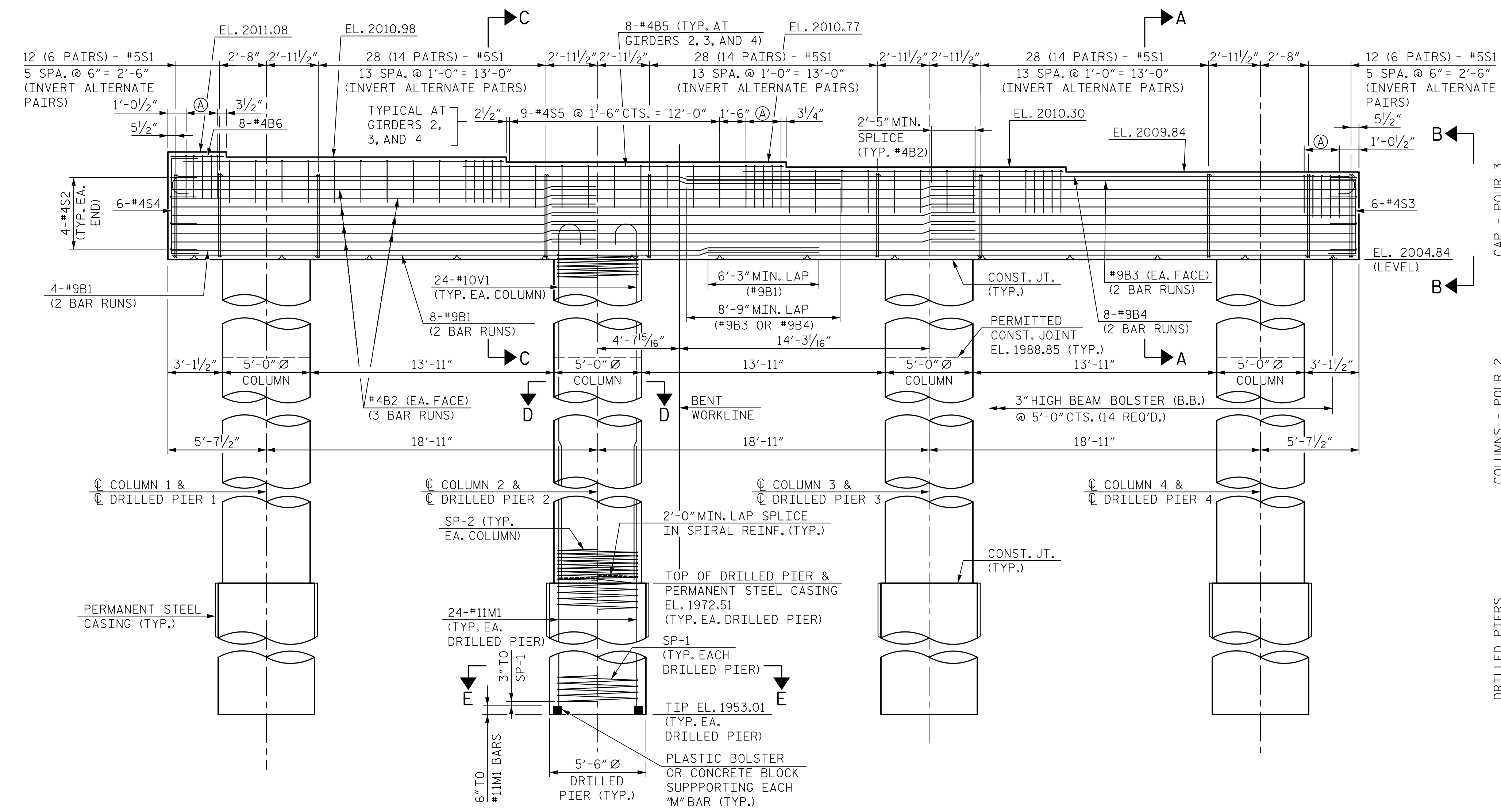
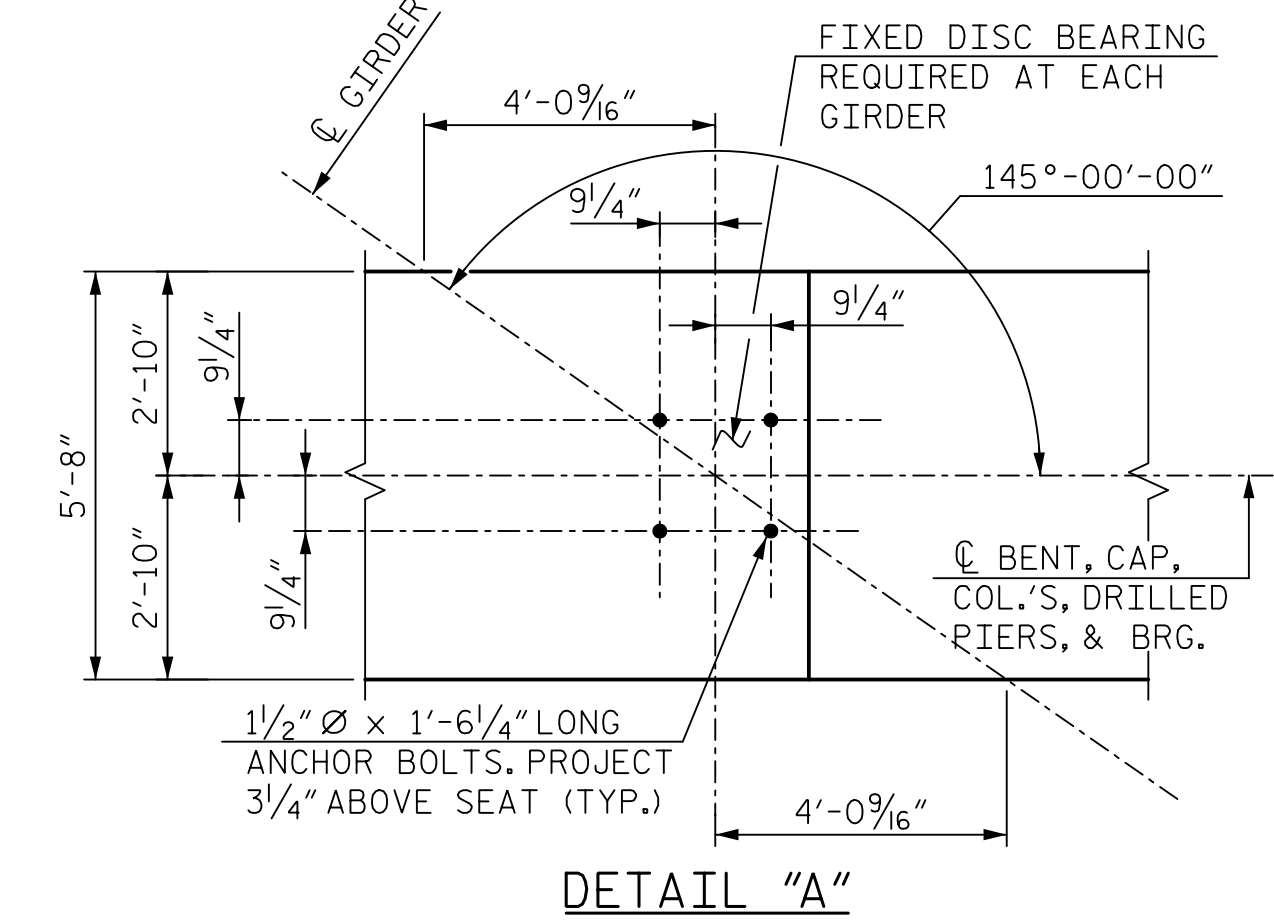
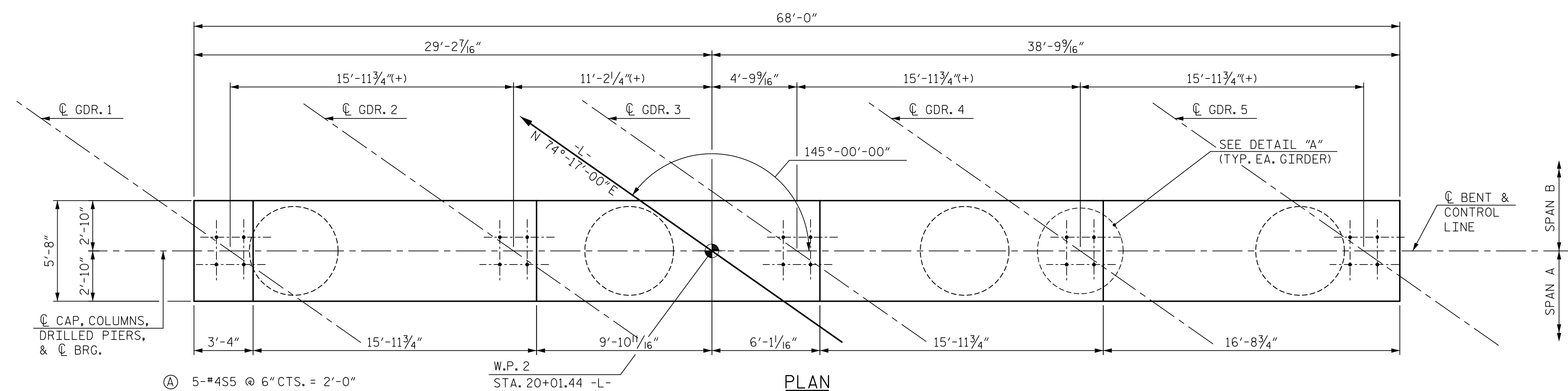
**NOTES:**

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

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

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

FOR SECTIONS A-A, C-C, D-D, E-E AND VIEW B-B, SEE SHEET 2 OF 2.



**ELEVATION**  
(COLUMN/DRILLED PIER REINFORCING AND DIMENSIONS ARE TYPICAL FOR EACH COLUMN/DRILLED PIER)

PROJECT NO. B-5905  
JACKSON COUNTY  
STATION: 19+41.94 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**SUBSTRUCTURE**

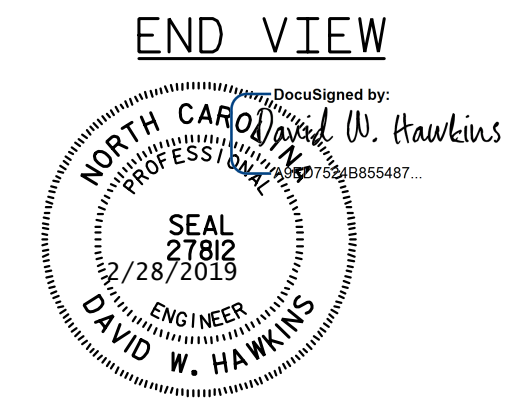
BENT 1

**HNTB** HNTB NORTH CAROLINA, P.C.  
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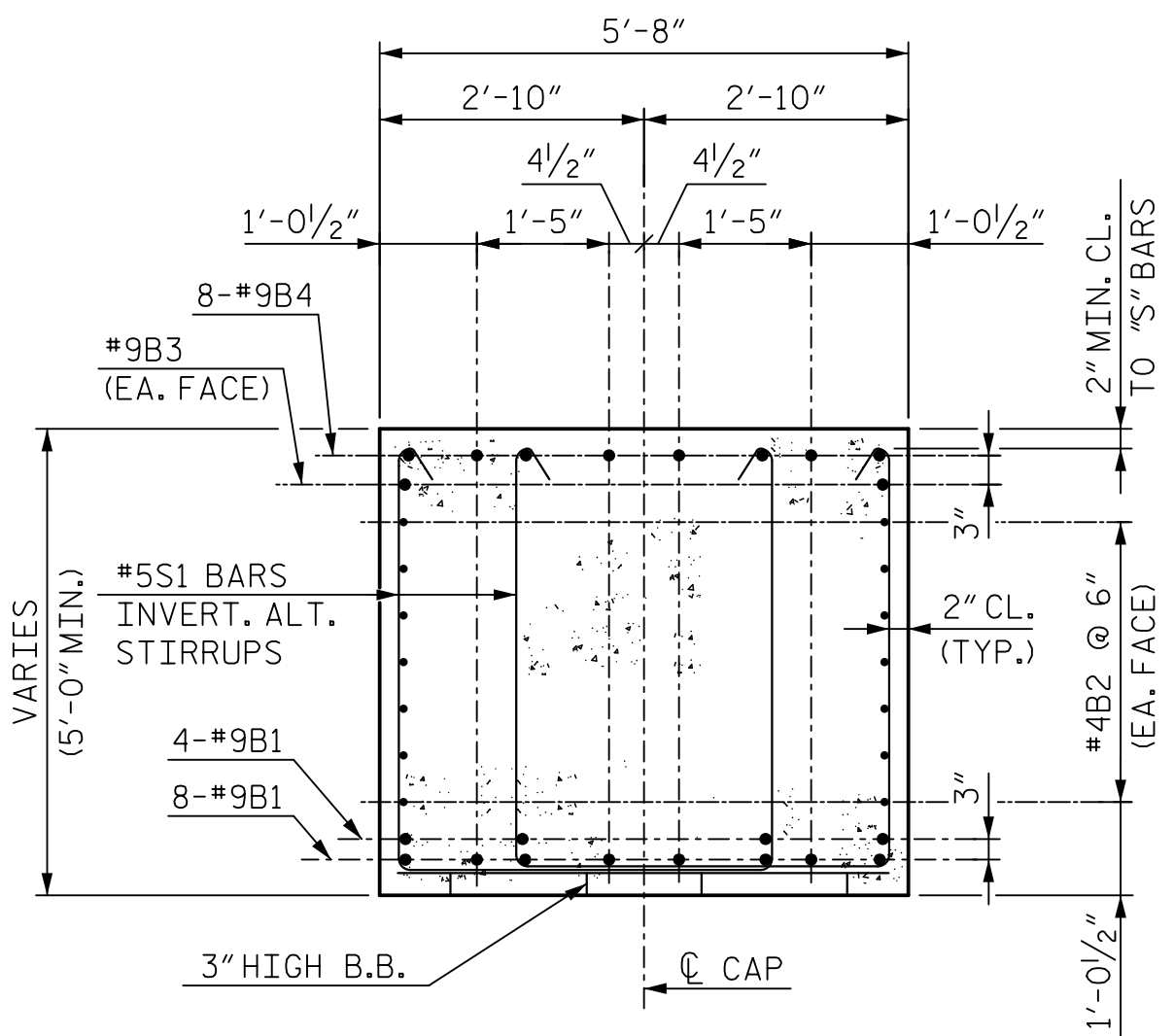
DRAWN BY: M. WRIGHT DATE: 4/18  
CHECKED BY: N. SALAS ZAMUDIO DATE: 4/18  
DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 11/18

DWG. NO. 39

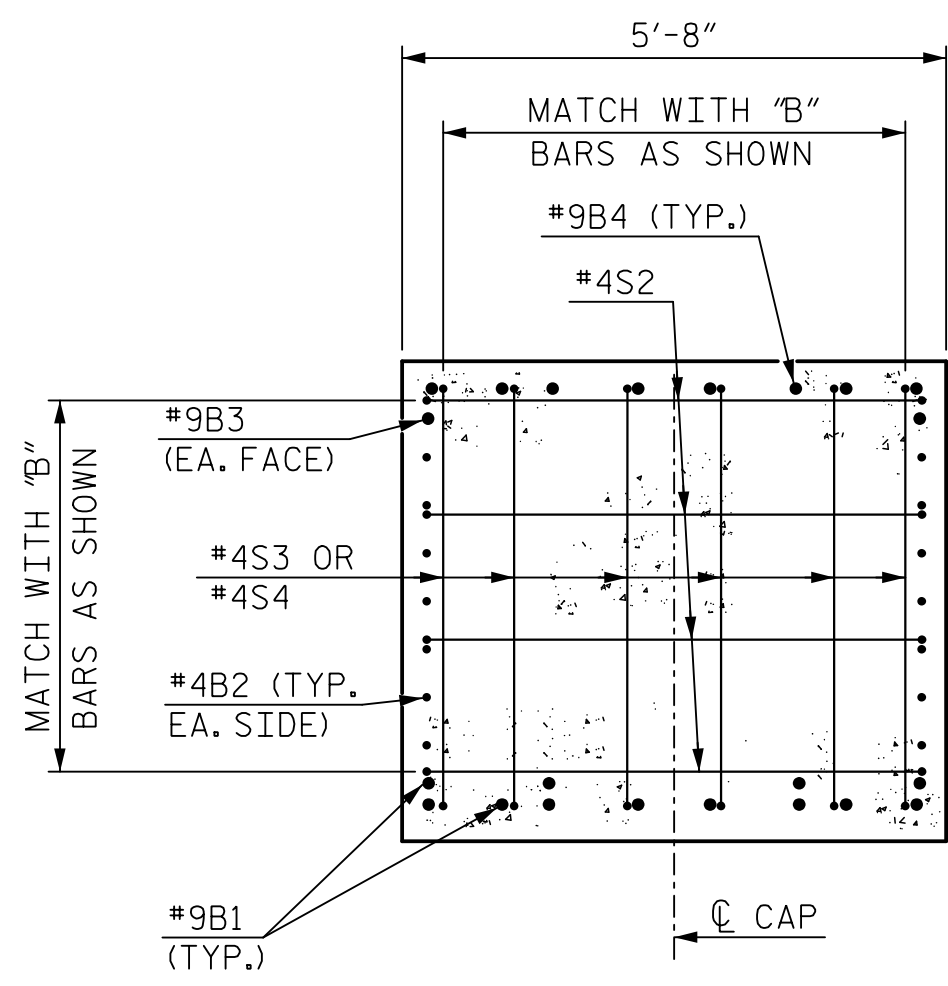
**DOCUMENT NOT CONSIDERED FINAL  
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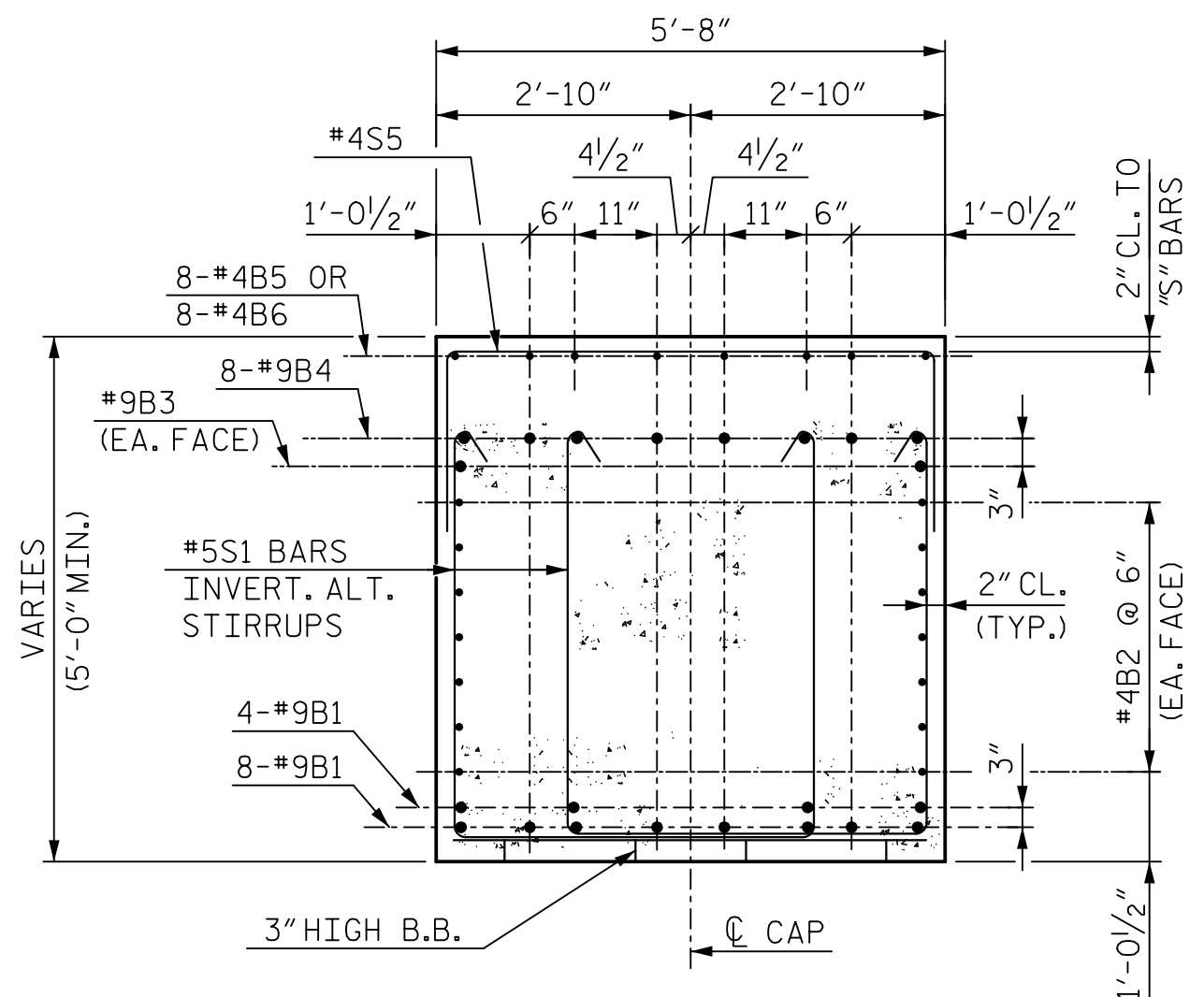
REVISIONS						SHEET NO. S1-39
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 54
2			4			



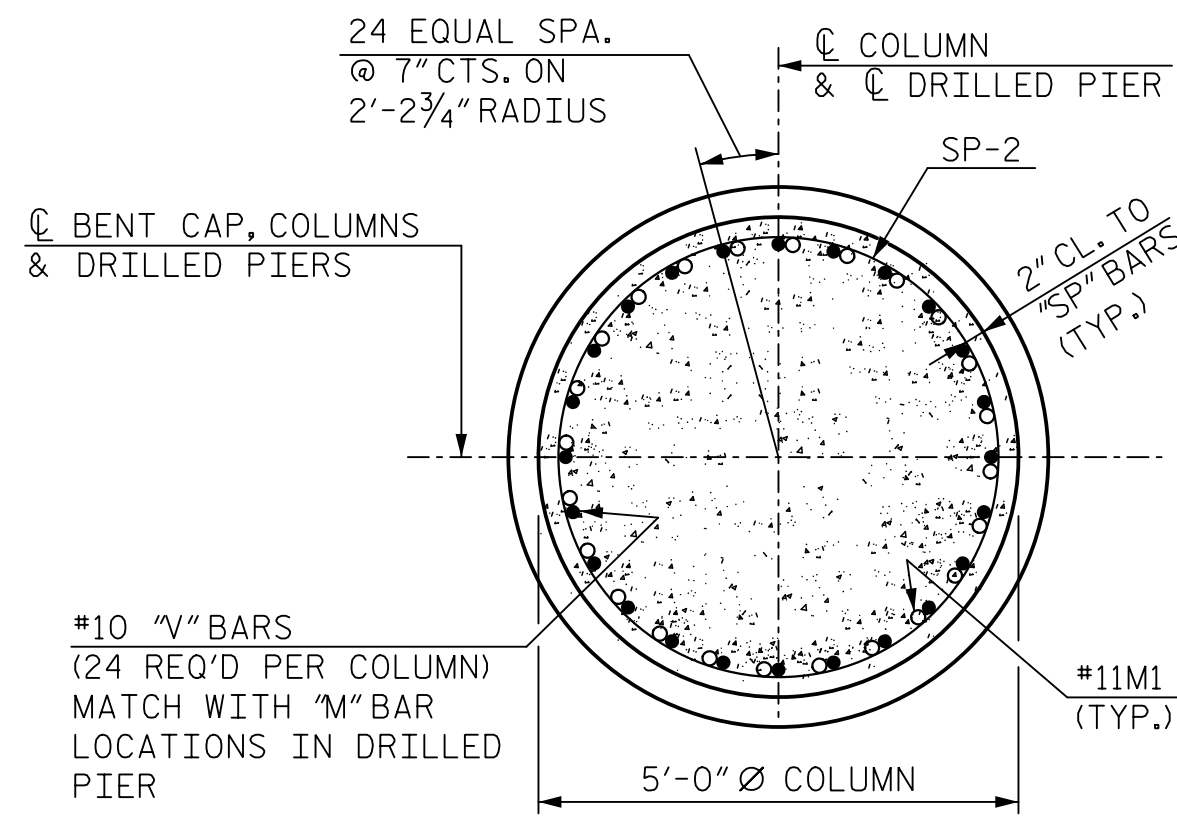
SECTION A-A



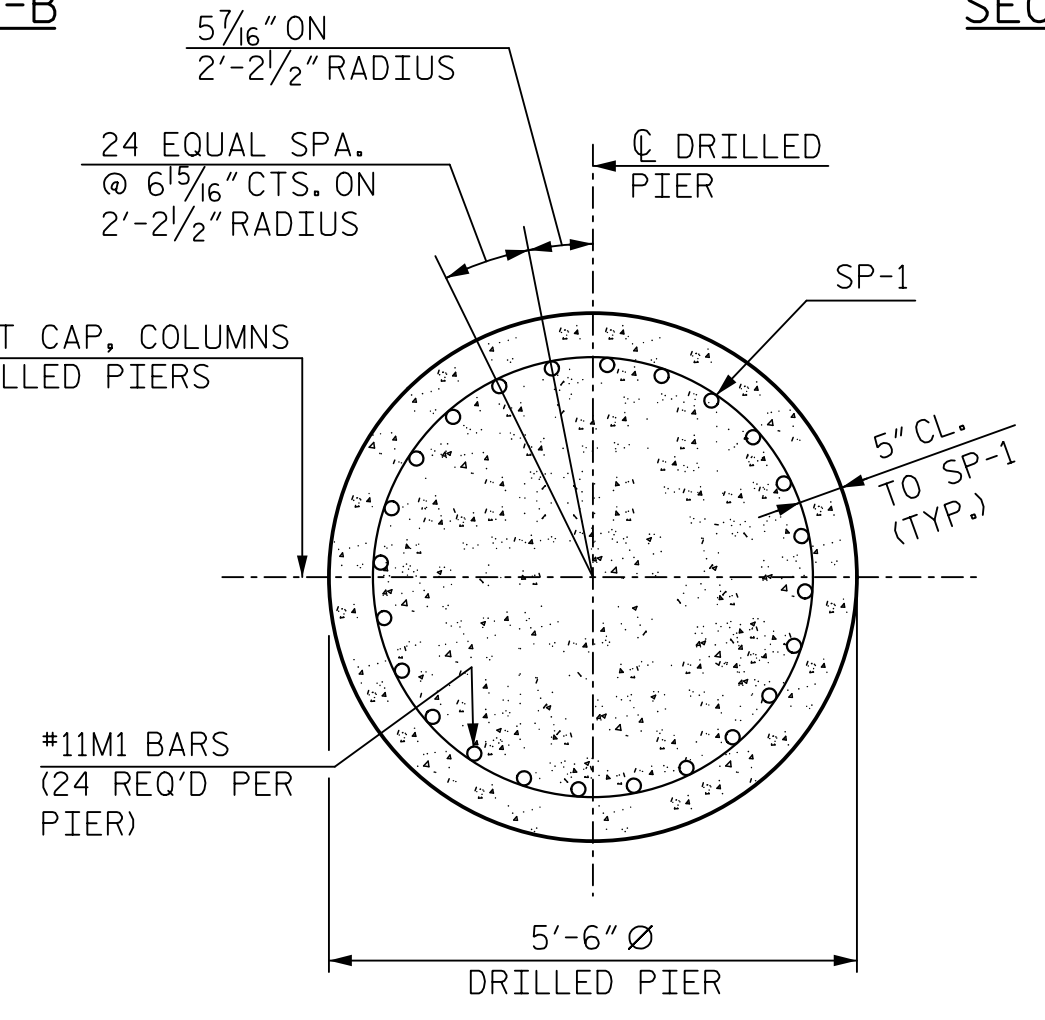
VIEW B-B



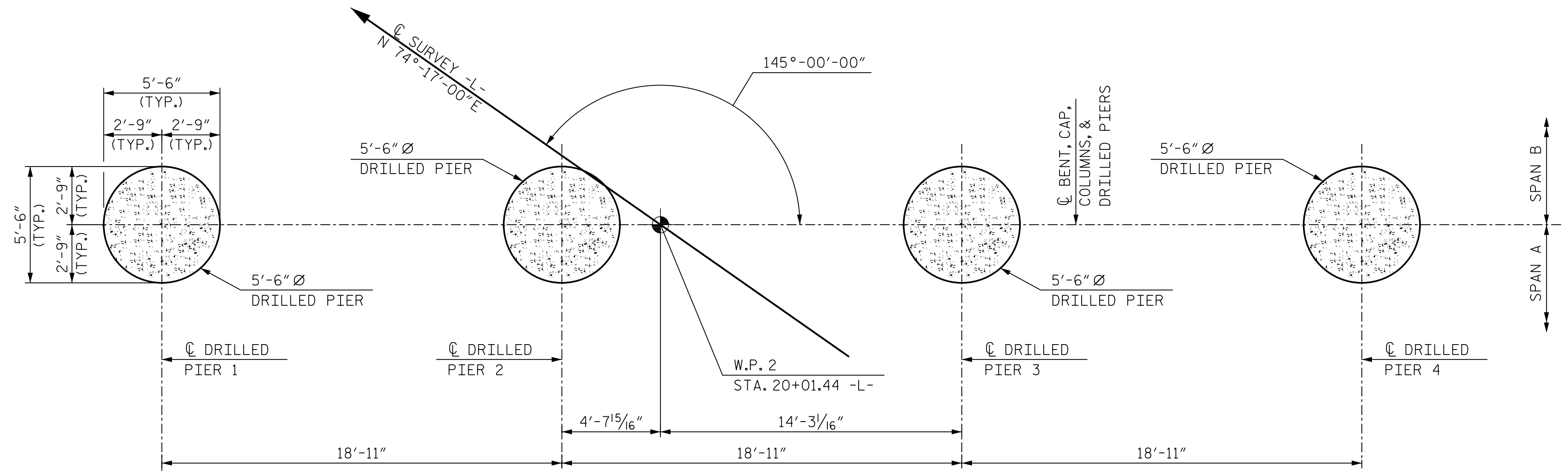
SECTION C-C



SECTION D-D



SECTION E-E



DRILLED PIER PLAN

NOTE: SEE SECTION E-E FOR TYPICAL DRILLED PIER REINFORCING.

BAR TYPES					BILL OF REINFORCING								
					BENT 1								
					BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT			
					B1	24	9	STR	37'-0"	3,019			
					B2	42	4	STR	24'-2"	678			
					B3	4	9	STR	38'-3"	520			
					B4	16	9	1	39'-6"	2,149			
					B5	24	4	STR	18'-3"	293			
					B6	8	4	STR	3'-0"	16			
					M1	96	11	STR	28'-2"	14,366			
					S1	108	5	2	14'-3"	1,605			
					S2	8	4	3	8'-0"	43			
					S3	6	4	3	7'-4"	29			
					S4	6	4	3	8'-5"	34			
					V1	96	10	1	35'-6"	14,665			
					SP-1	4	*	4	683'-2"	2,850			
					SP-2	4	**	4	1,915'-8"	5,119			
										QUANTITIES			
					REINFORCING STEEL			LBS.	37,764				
					SPIRAL COLUMN REINFORCING STEEL			LBS.	7,969				
					CLASS A CONCRETE								
					COLUMN POUR 2			CU. YDS.	94.1				
					CAP POUR 3			CU. YDS.	80.7				
					TOTAL			CU. YDS.	174.8				
					DRILLED PIER CONCRETE POUR 1			CU. YDS.	68.6				
					5'-6" Ø DRILLED PIERS, IN SOIL			LIN. FT.	1.0				
					5'-6" Ø DRILLED PIERS, NOT IN SOIL			LIN. FT.	77.0				
					PERMANENT STEEL CASING FOR 5'-6" Ø DRILLED PIER			LIN. FT.	33.6				

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

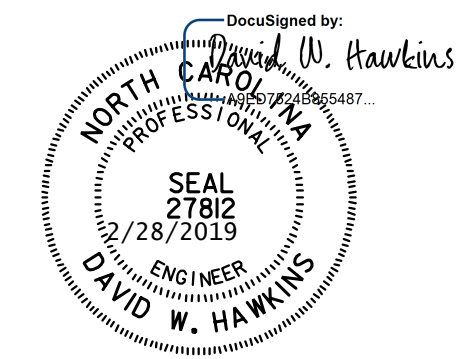
\* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

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

PROJECT NO. B-5905  
JACKSON COUNTY  
 STATION: 19+41.94 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 BENT 1



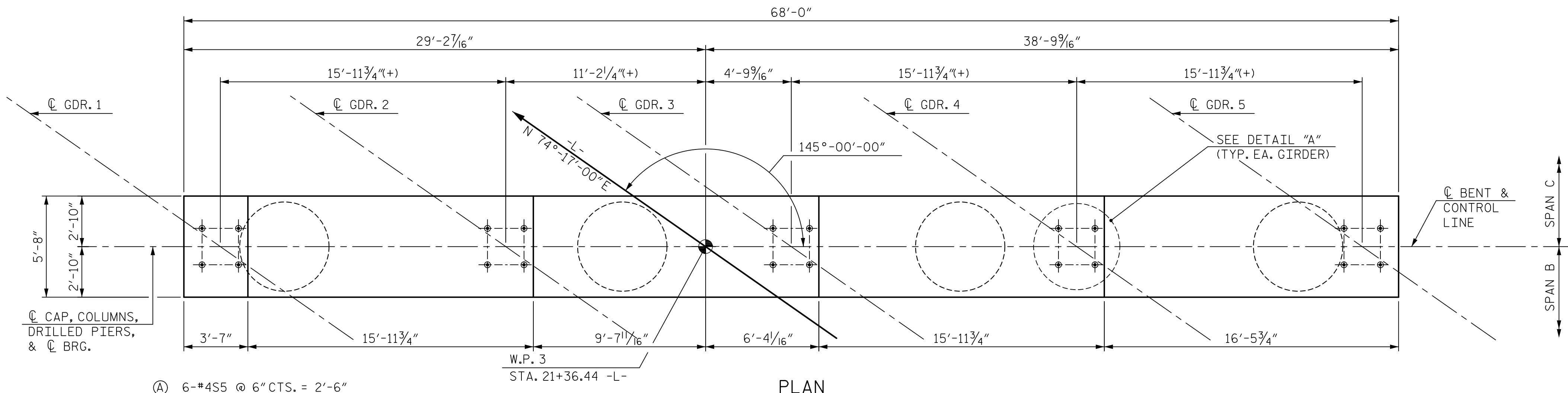
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 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY: M. WRIGHT DATE: 4/18  
 CHECKED BY: N. SALAS ZAMUDIO DATE: 4/18  
 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 11/18

DWG. NO. 40

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-40
1			3			TOTAL SHEETS
2			4			54

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**NOTES:**

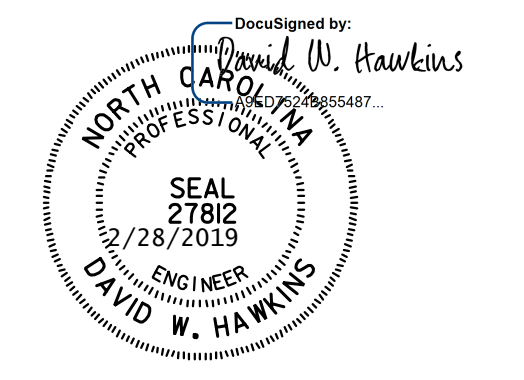
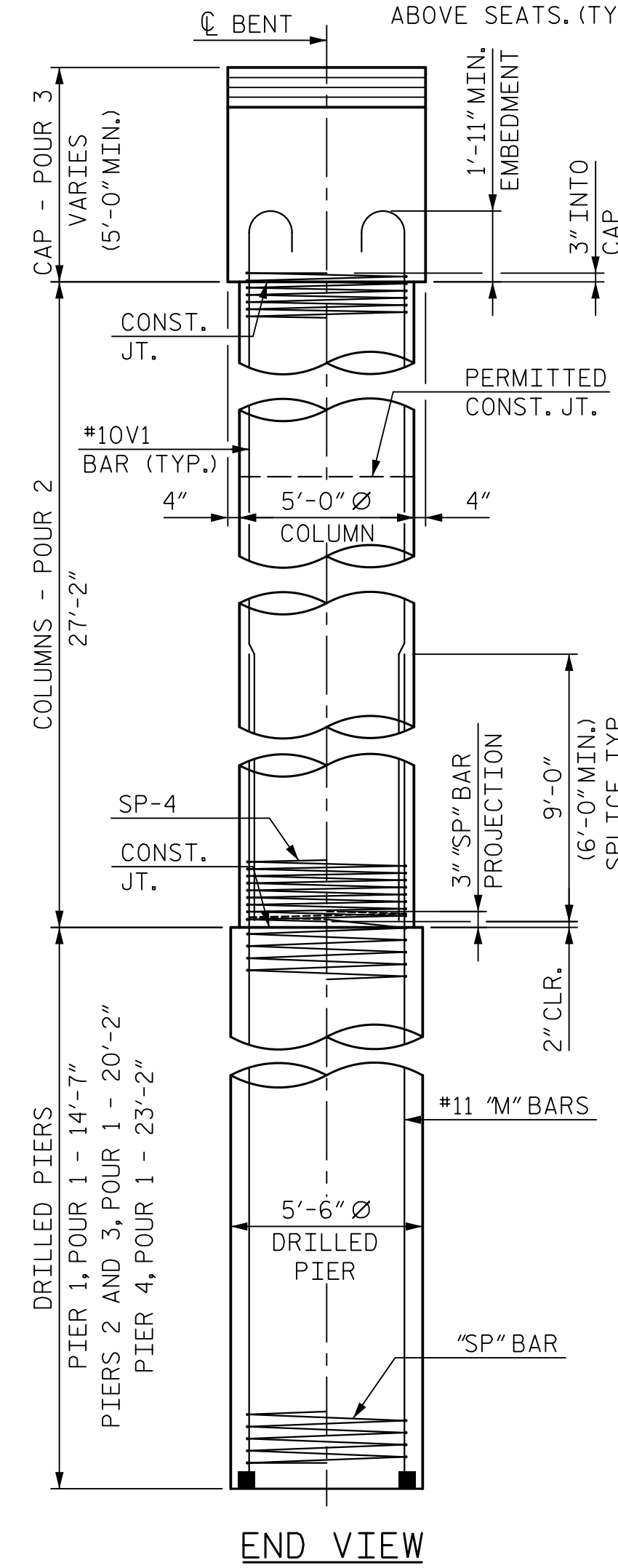
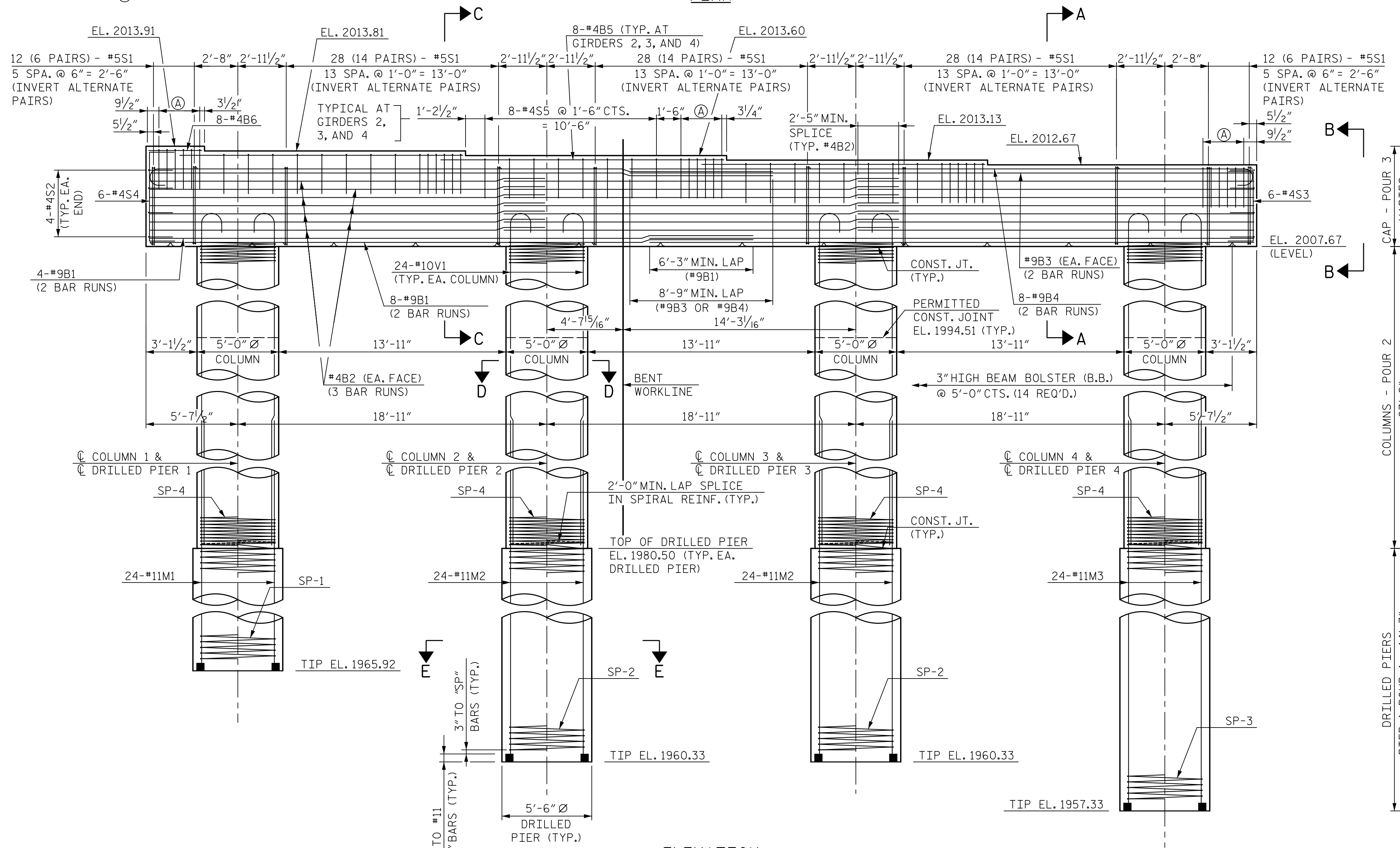
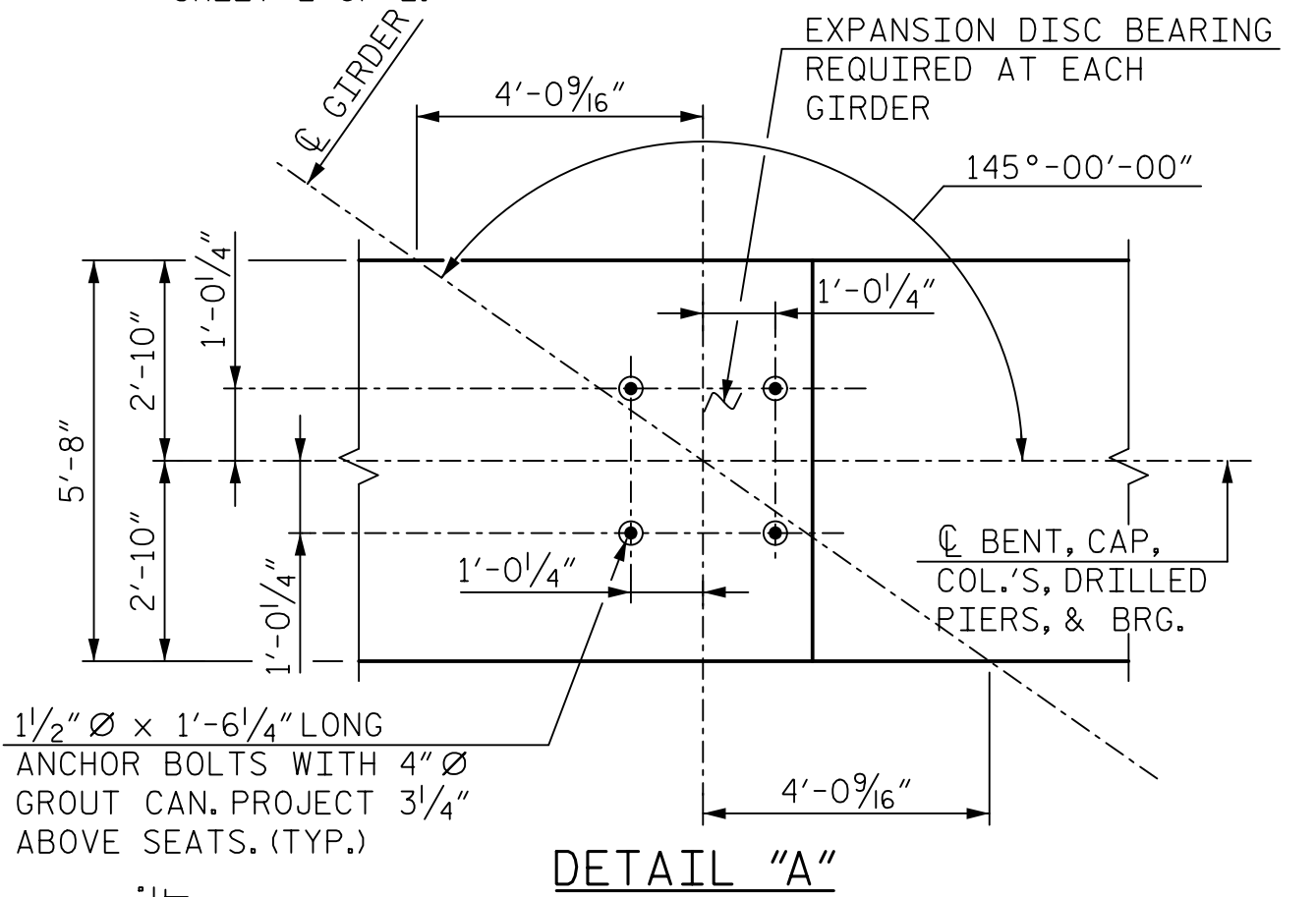
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

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

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

FOR PIPE INSERT DETAILS, SEE BEARINGS SHEET.

FOR SECTIONS A-A, C-C, D-D, E-E AND VIEW B-B, SEE SHEET 2 OF 2.



PROJECT NO. B-5905  
 JACKSON COUNTY  
 STATION: 19+41.94 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE

BENT 2

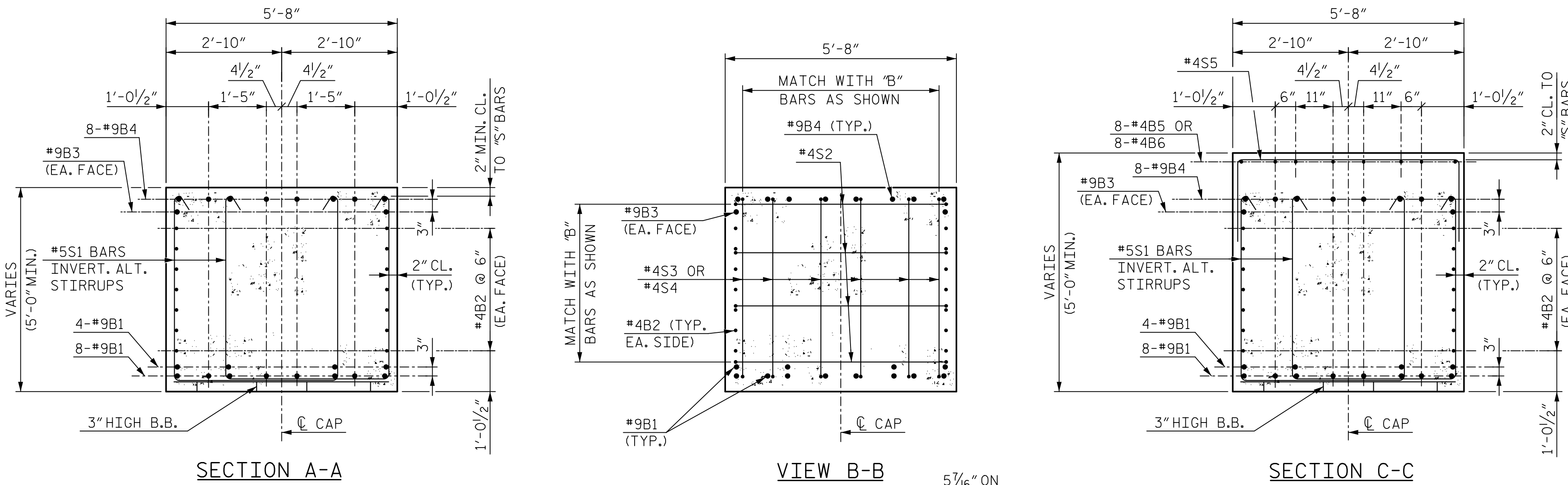
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CHECKED BY: N. SALAS ZAMUDIO	DATE: 4/18
DESIGN ENGINEER OF RECORD: D. HAWKINS	DATE: 11/18

DWG. NO. 41

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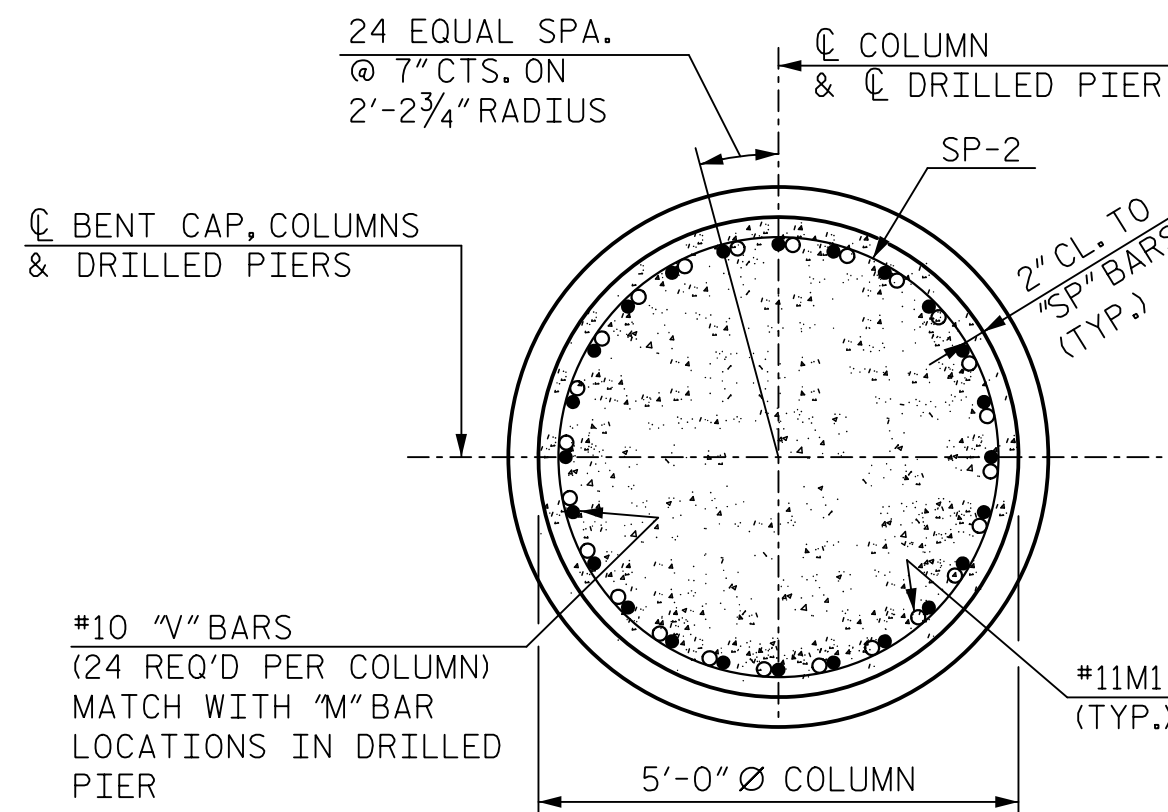
REVISIONS						SHEET NO.	
NO.	BY	DATE	NO.	BY	DATE	S1-41	
1			3			TOTAL SHEETS	
2			4			54	



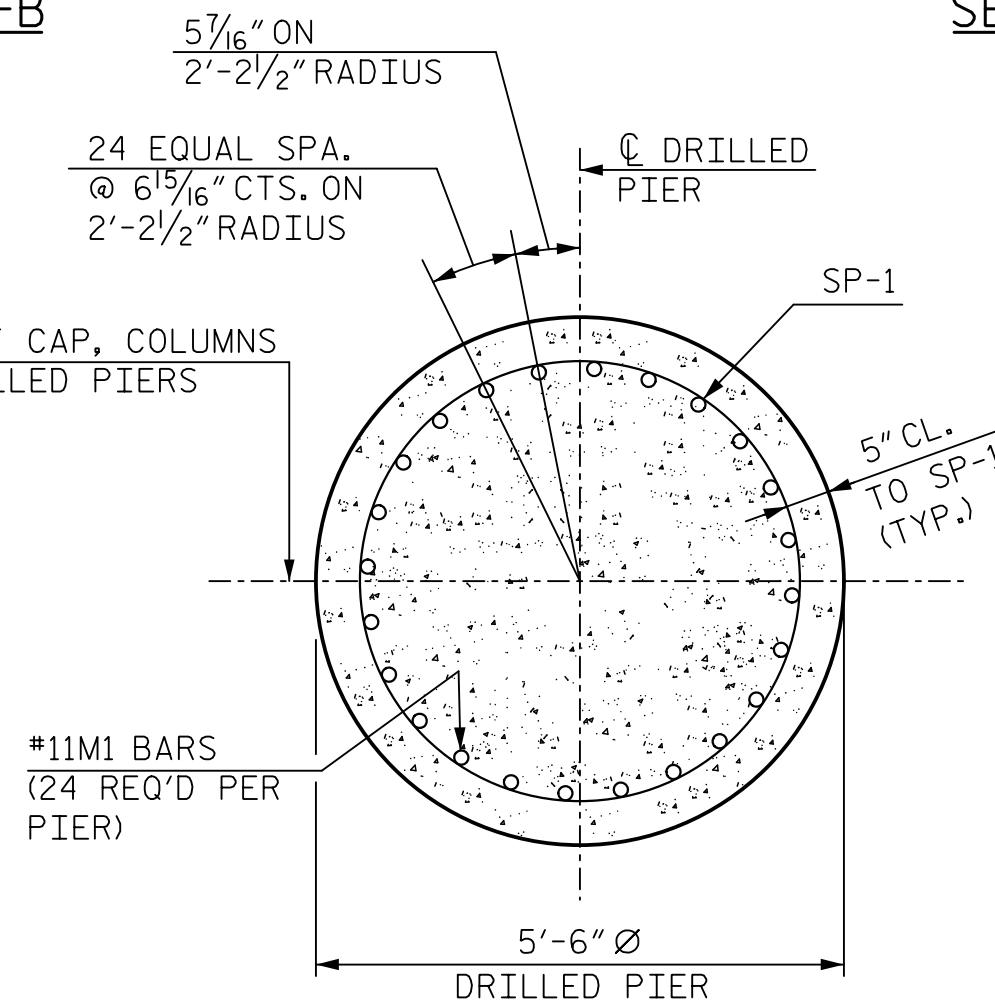
SECTION A-A

VIEW B-B

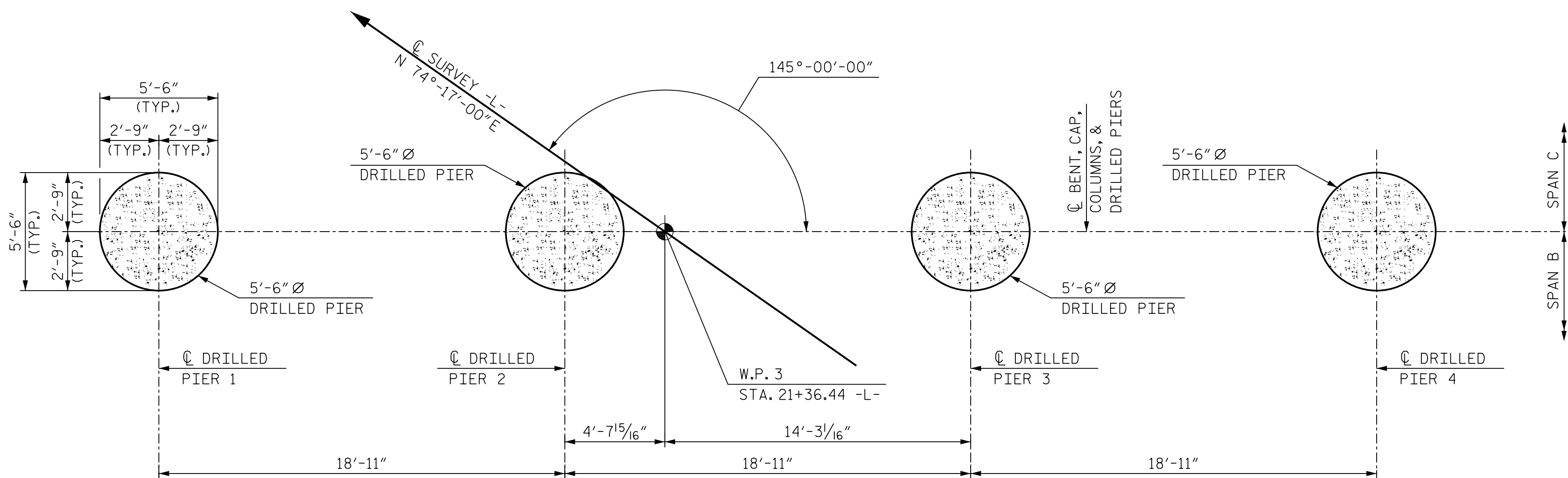
SECTION C-C



SECTION D-D



SECTION E-E



DRILLED PIER PLAN

NOTE: SEE SECTION E-E FOR TYPICAL DRILLED PIER REINFORCING.

BAR TYPES		BILL OF REINFORCING					
		BENT 2					
		BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
		B1	24	9	STR	37'-0"	3,019
		B2	42	4	STR	24'-2"	678
		B3	4	9	STR	38'-3"	520
		B4	16	9	1	39'-6"	2,149
		B5	24	4	STR	18'-3"	293
		B6	8	4	STR	3'-3"	17
		M1	24	11	STR	23'-3"	2,965
		M2	48	11	STR	28'-10"	7,353
		M3	24	11	STR	31'-10"	4,059
		S1	108	5	2	14'-3"	1,605
		S2	8	4	3	8'-0"	43
		S3	6	4	3	7'-4"	29
		S4	6	4	3	8'-5"	34
		S5	54	4	3	10'-0"	361
		V1	96	10	1	30'-4"	12,530
		SP-1	1	*	4	512'-0"	534
		SP-2	2	*	4	706'-4"	1,473
		SP-3	1	*	4	810'-9"	846
		SP-4	4	**	4	1,605'-10"	4,291
QUANTITIES							
REINFORCING STEEL						LBS.	35,655
SPIRAL COLUMN REINFORCING STEEL						LBS.	7,144
CLASS A CONCRETE							
COLUMN POUR 2						CU. YDS.	79.0
CAP POUR 3						CU. YDS.	78.0
TOTAL						CU. YDS.	157.0
DRILLED PIER CONCRETE POUR 1						CU. YDS.	68.7
5'-6" Ø DRILLED PIERS, IN SOIL						LIN. FT.	27.1
5'-6" Ø DRILLED PIERS, NOT IN SOIL						LIN. FT.	51.0

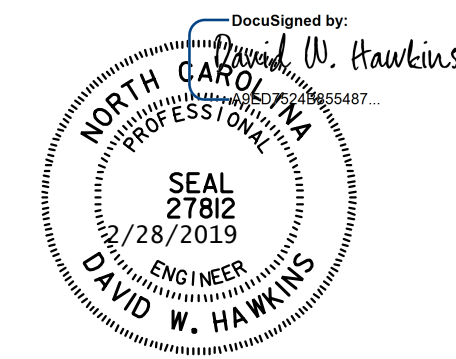
NOTE: THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

\* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.  
 \*\* THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

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DRAWN BY: M. WRIGHT DATE: 4/18  
 CHECKED BY: N. SALAS ZAMUDIO DATE: 4/18  
 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 11/18

DWG. NO. 42

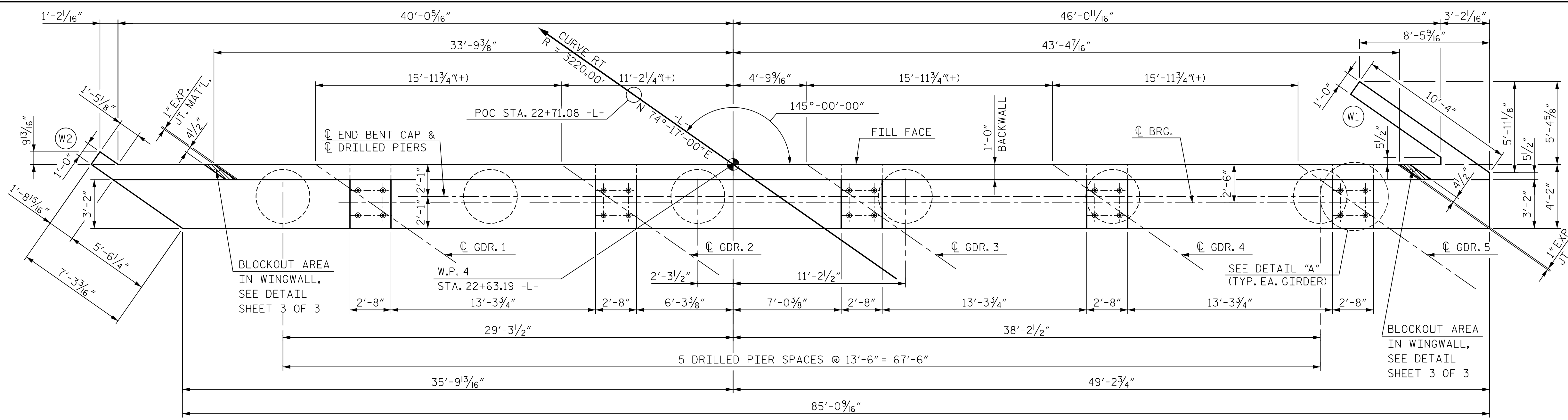


PROJECT NO. B-5905  
JACKSON COUNTY  
 STATION: 19+41.94 -L-

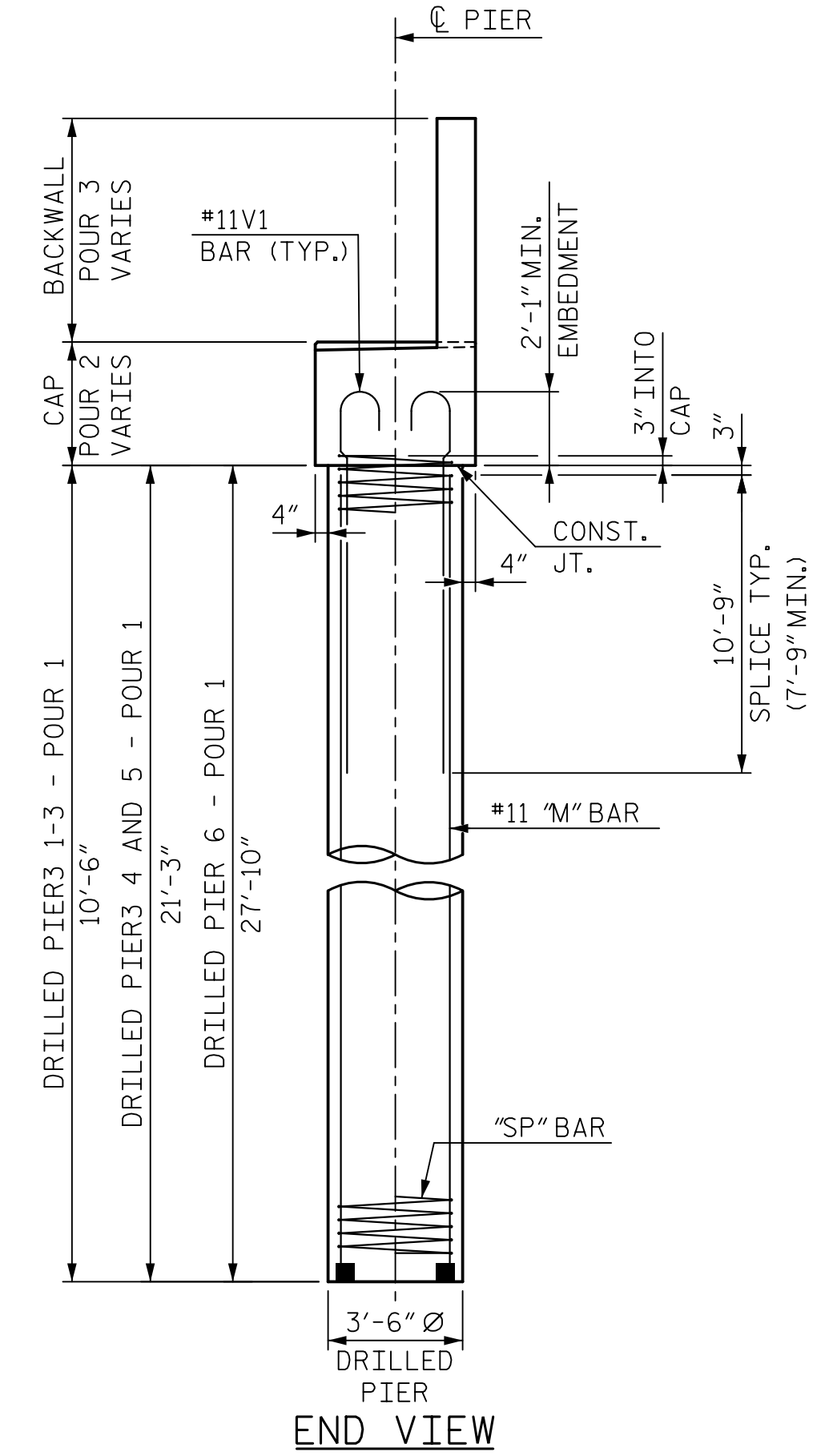
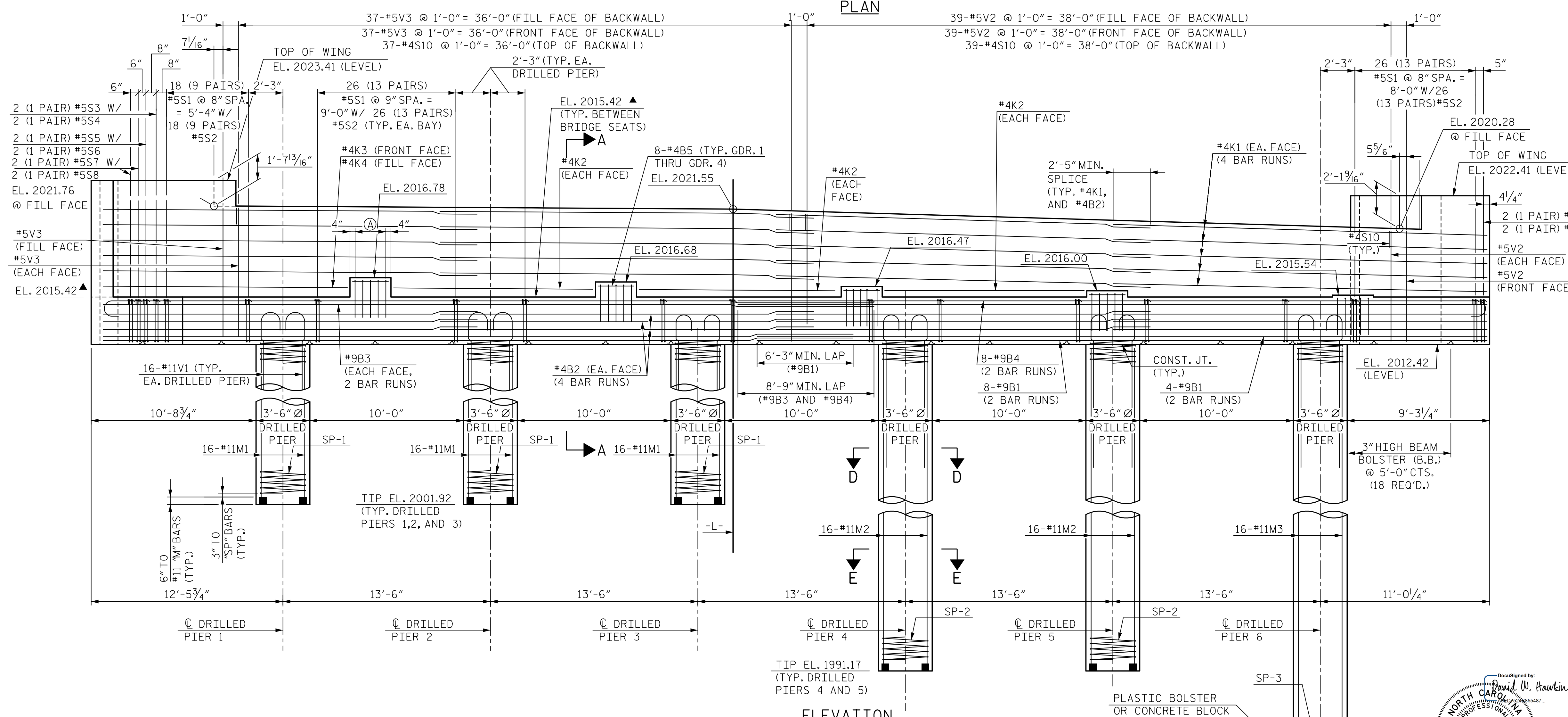
SHEET 2 OF 2  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 BENT 2

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-42
1			3			TOTAL SHEETS
2			4			54

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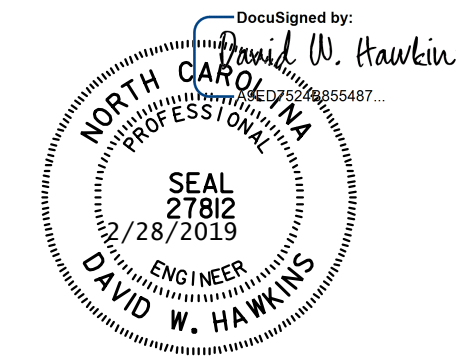


**NOTES:**  
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.  
 HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.  
 ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".  
 FOR DETAIL "A", SEE SHEET 2 OF 3.  
 FOR PIPE INSERT DETAILS, SEE BEARINGS SHEET.  
 FOR SECTIONS A-A, D-D, & E-E, SEE SHEET 2 OF 3.



PROJECT NO. B-5905  
 JACKSON COUNTY  
 STATION: 19+41.94 -L-

SHEET 1 OF 3  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**SUBSTRUCTURE**  
 END BENT 2

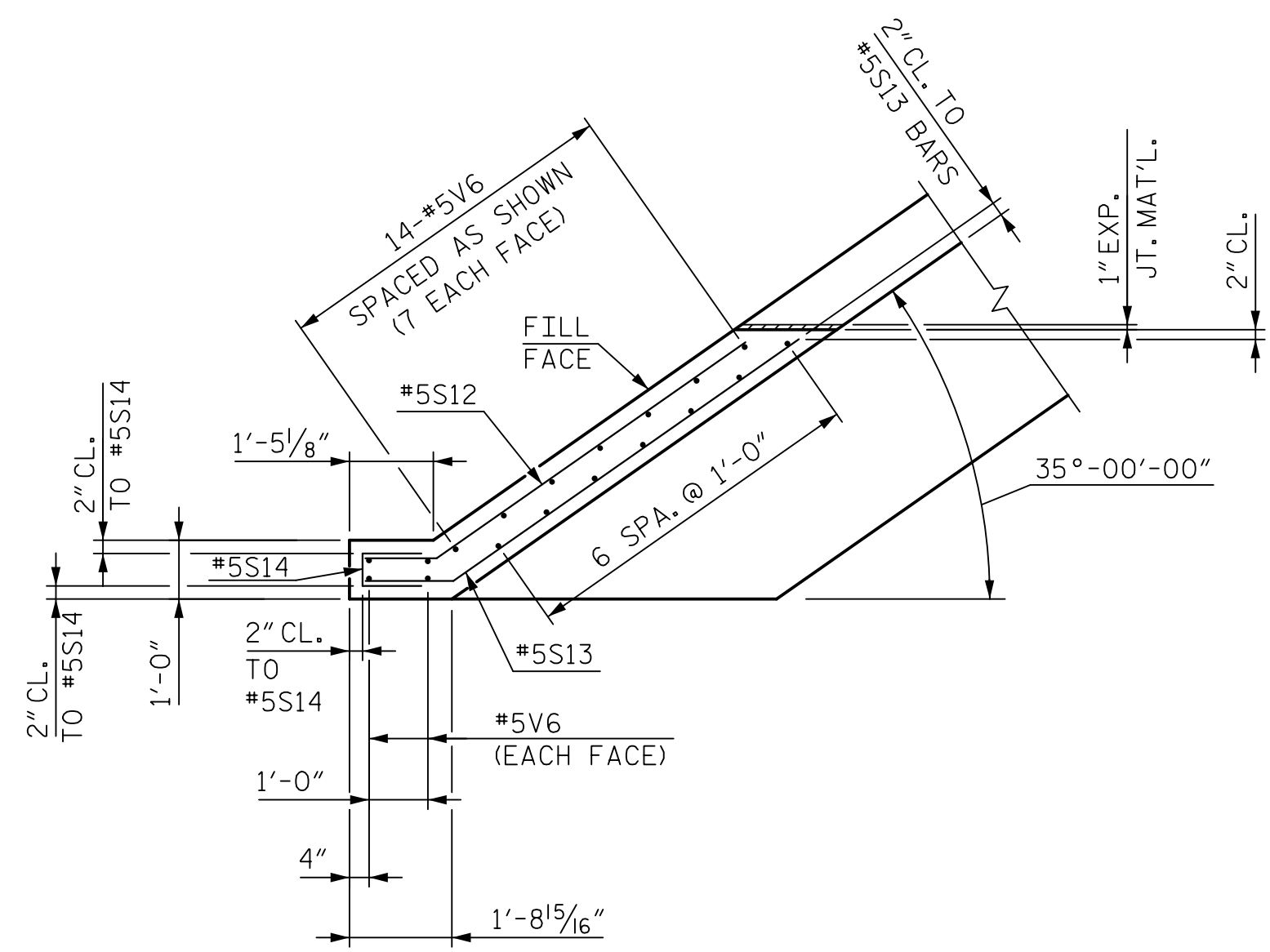


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DRAWN BY: M. WRIGHT	DATE: 4/18	CHECKED BY: N. SALAS ZAMUDIO	DATE: 5/18
DESIGN ENGINEER OF RECORD: D. HAWKINS	DATE: 11/18	DWG. NO. 43	

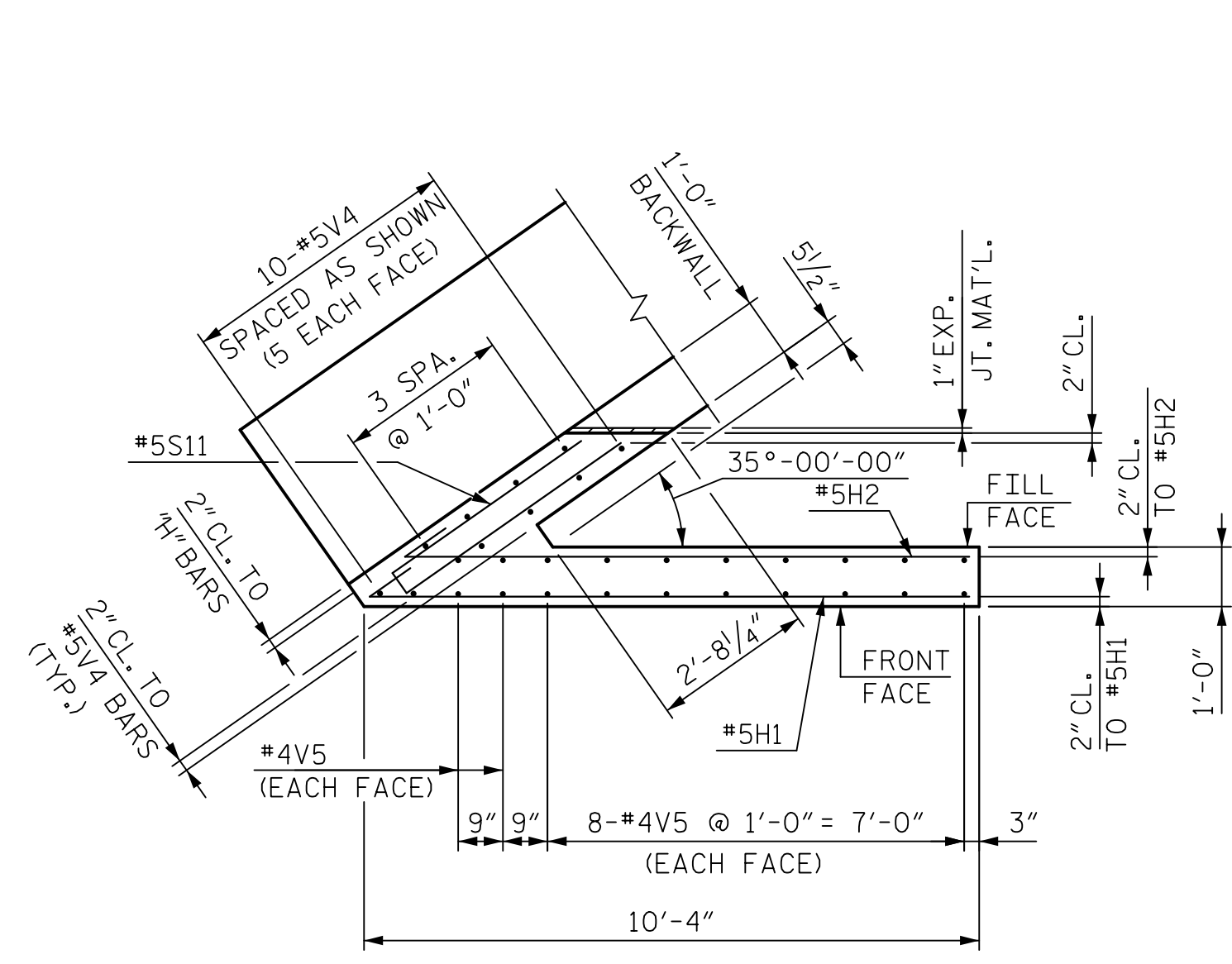
**DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED**

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

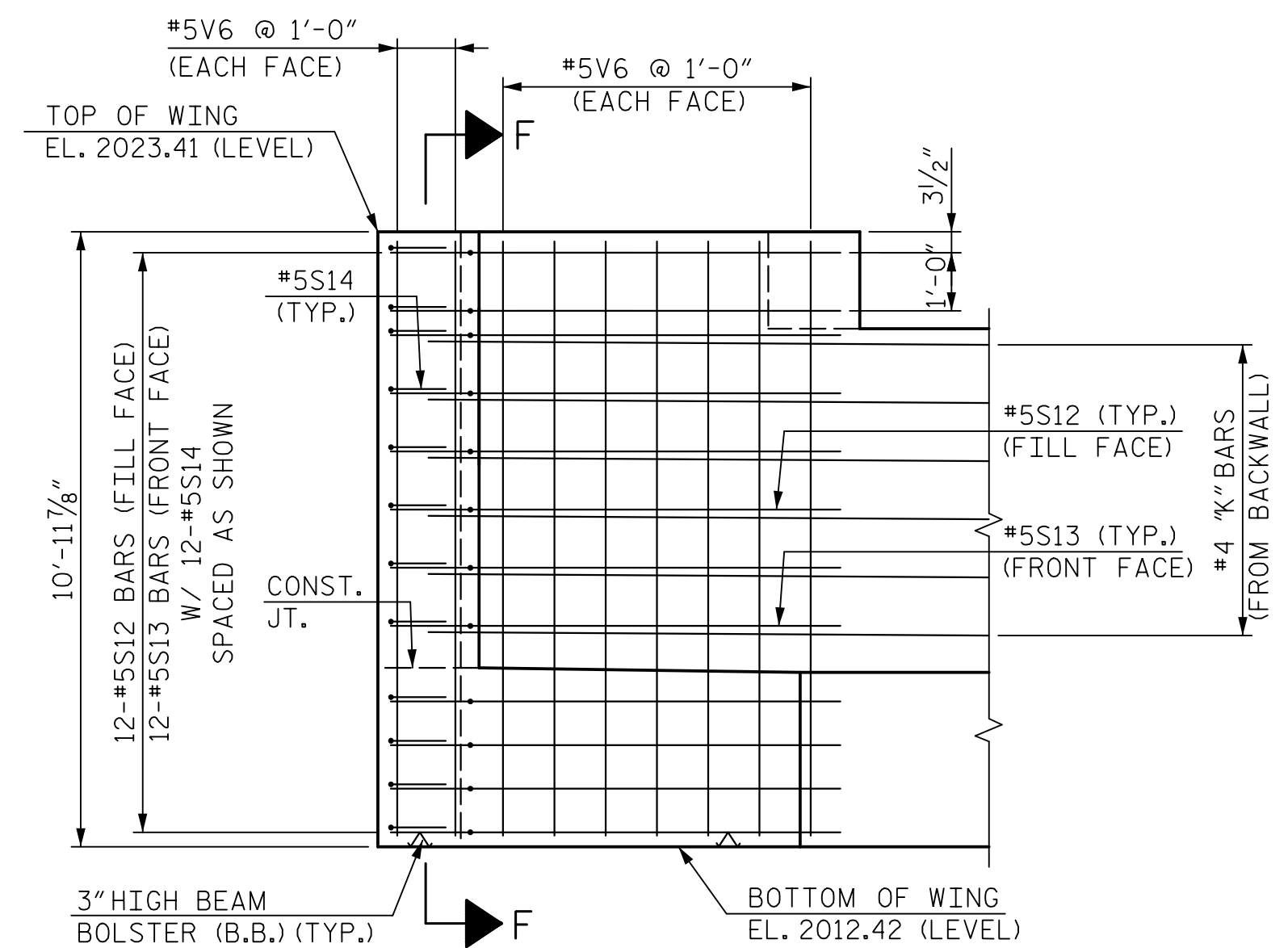
TOTAL SHEETS: 54



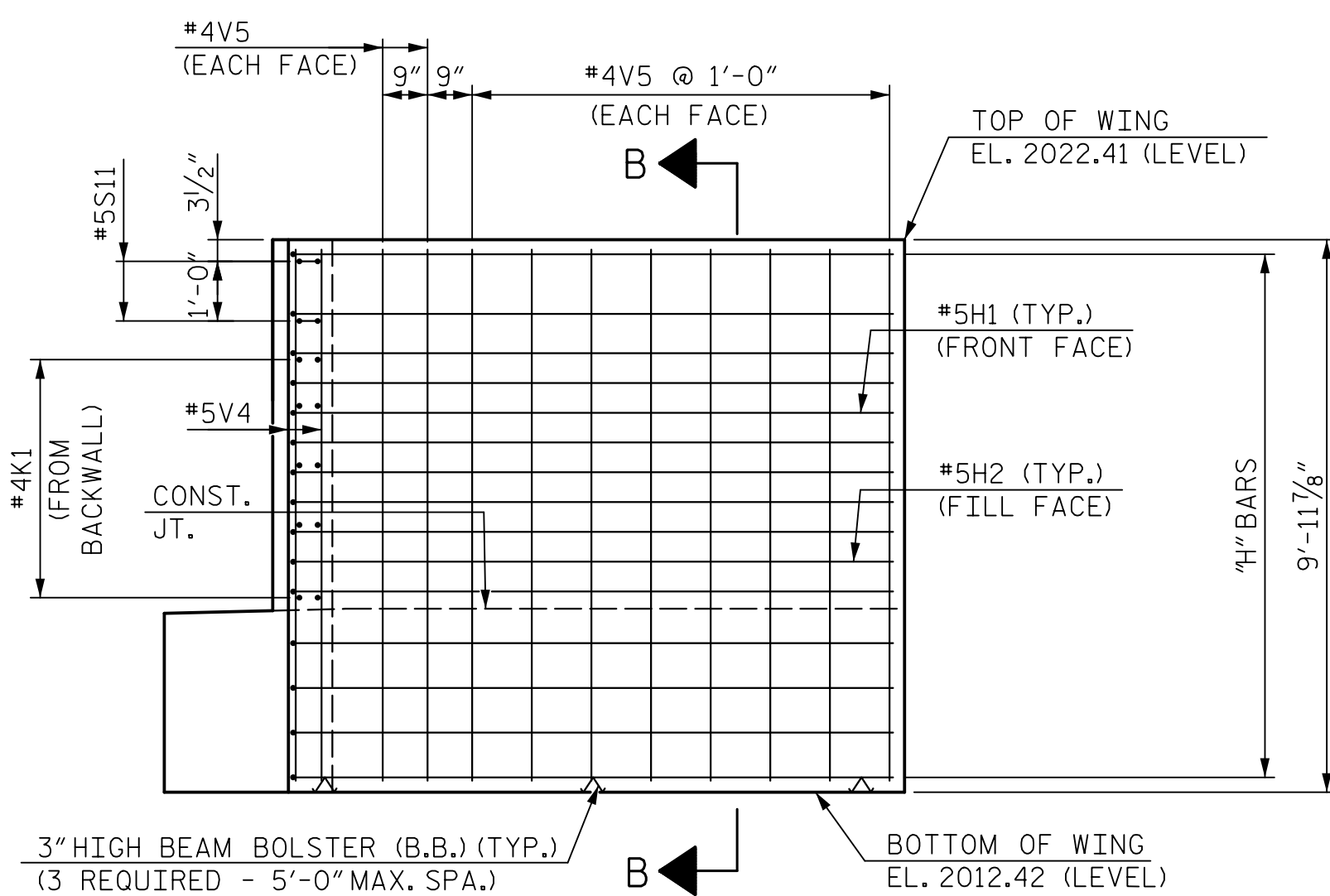
PLAN OF WING W2



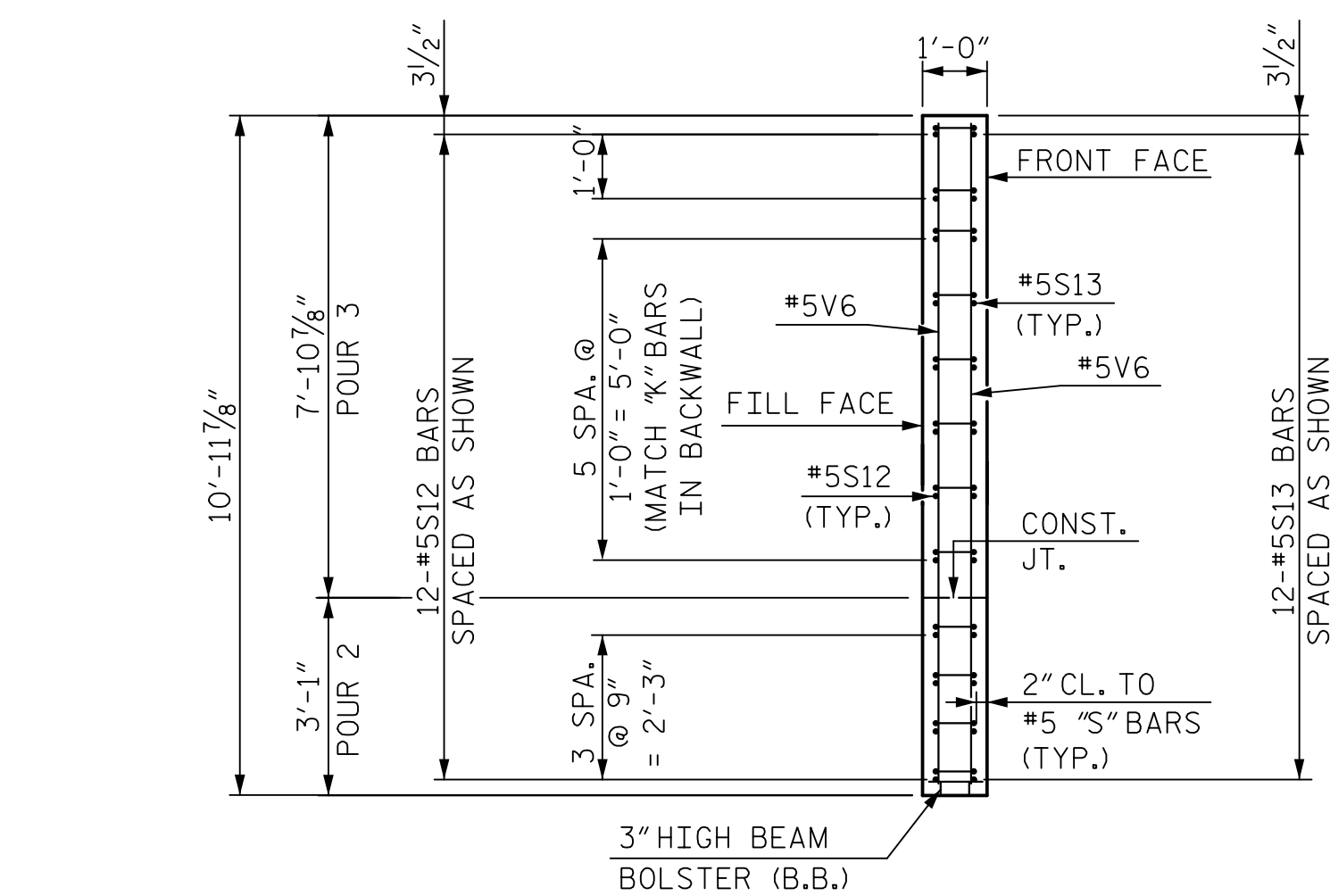
PLAN OF WING W1



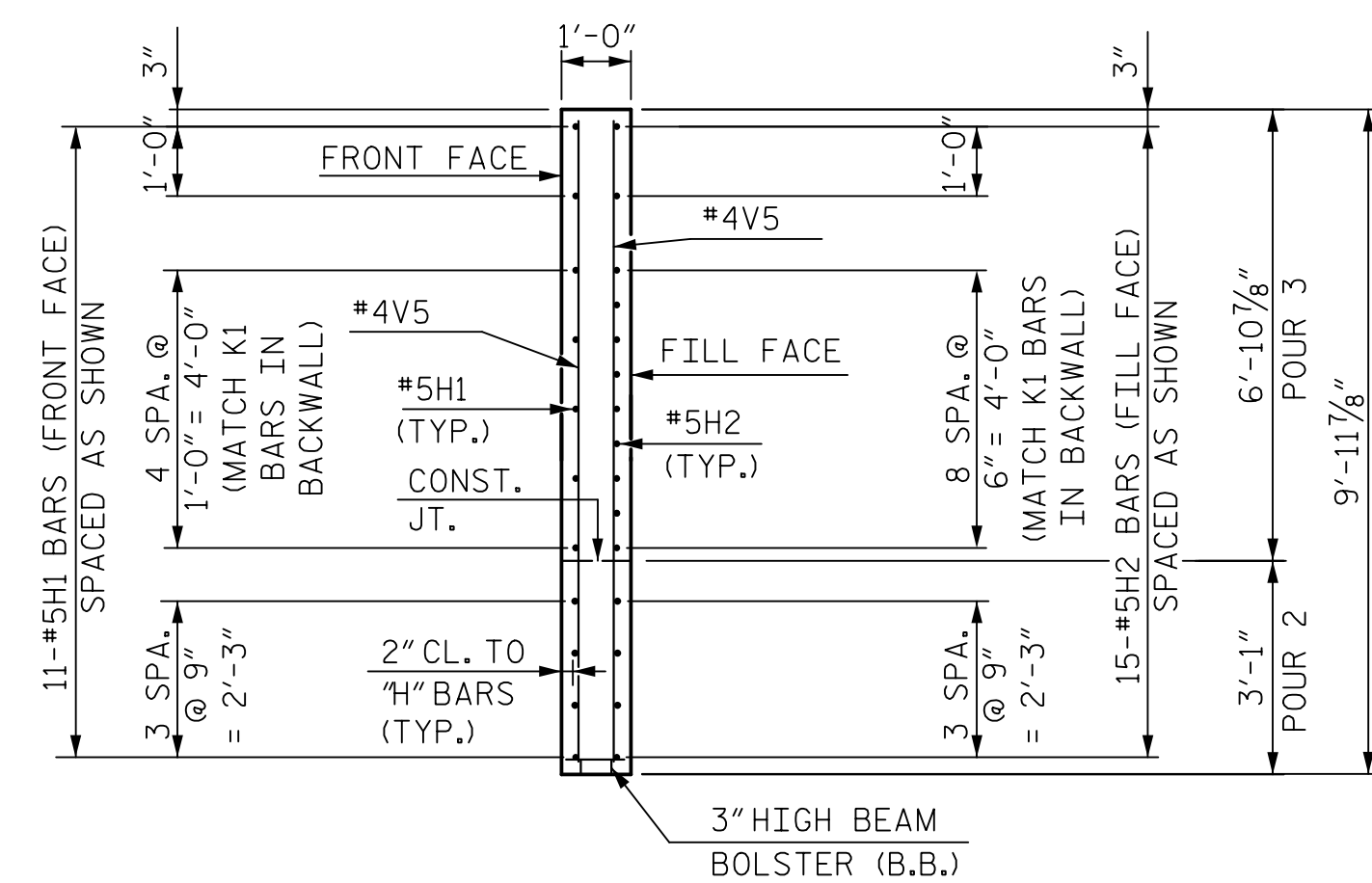
ELEVATION WING W2



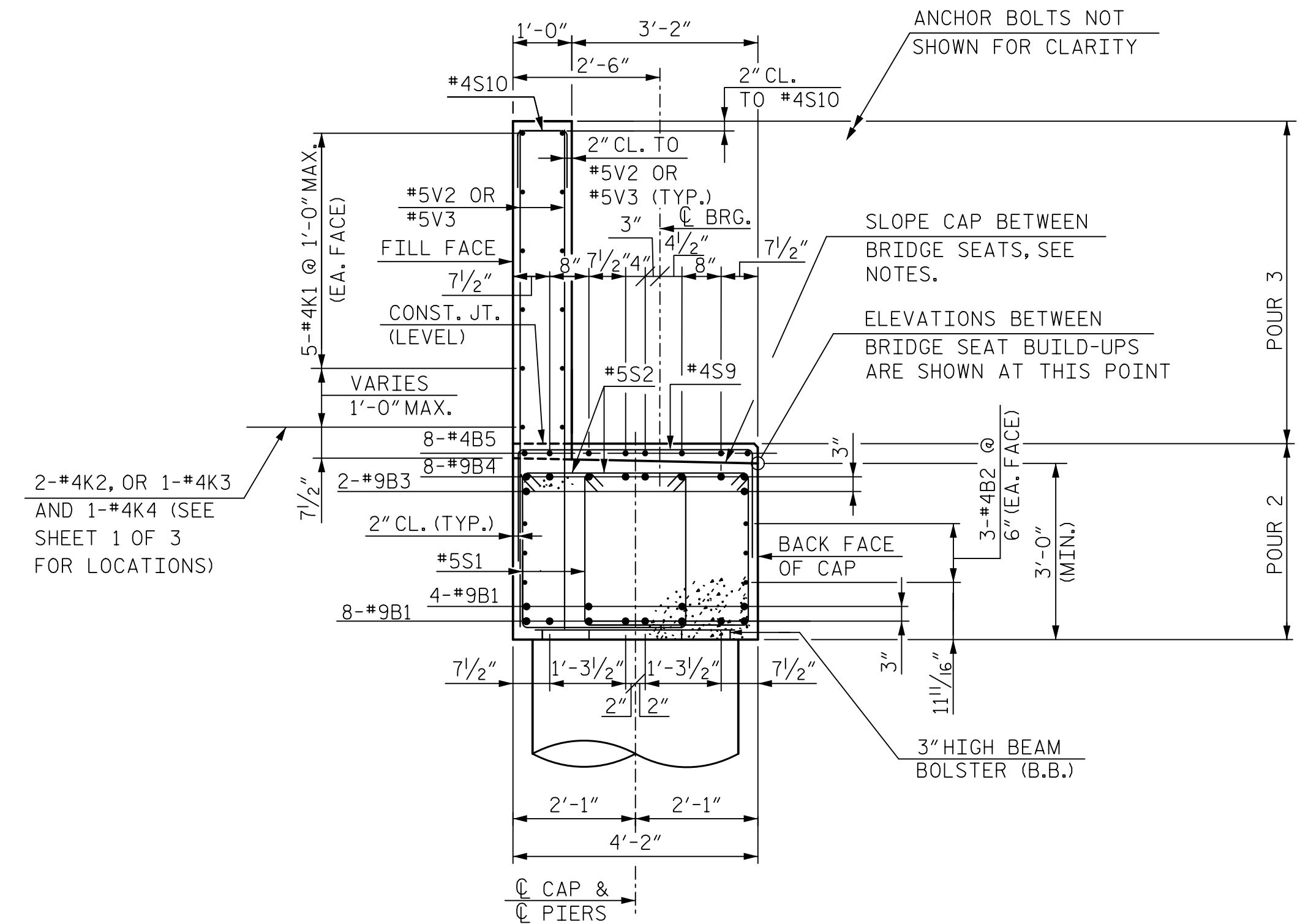
ELEVATION WING W1



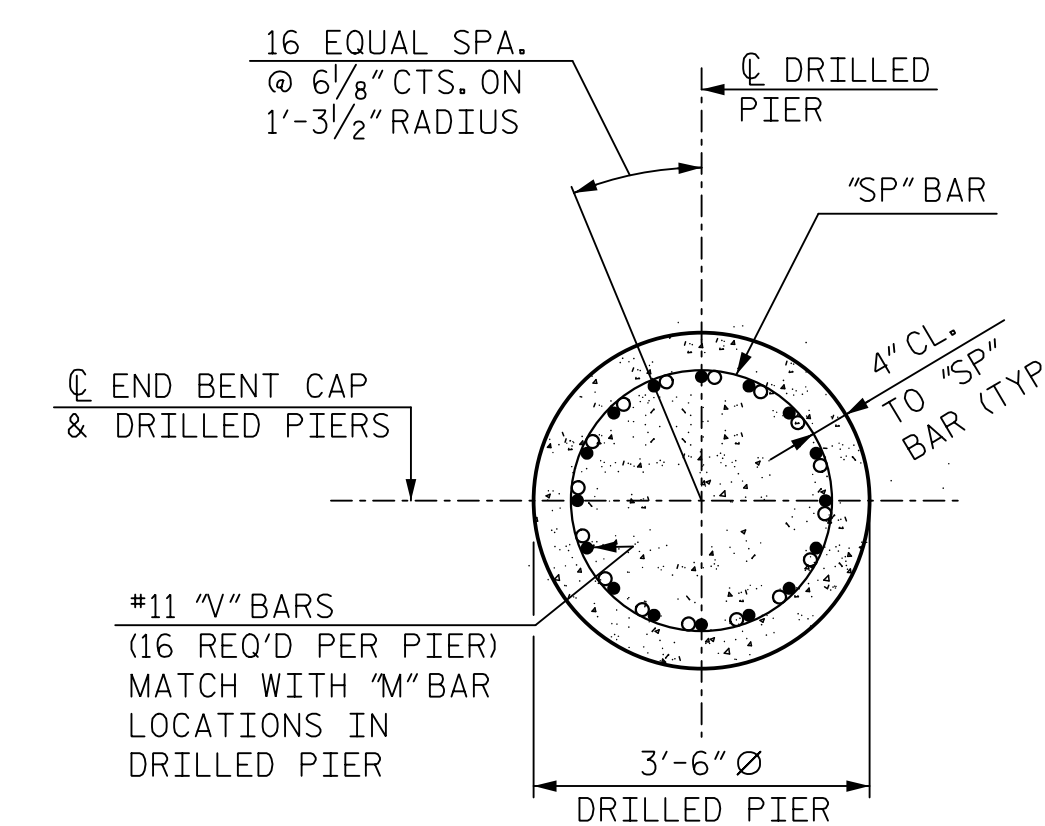
SECTION F-F



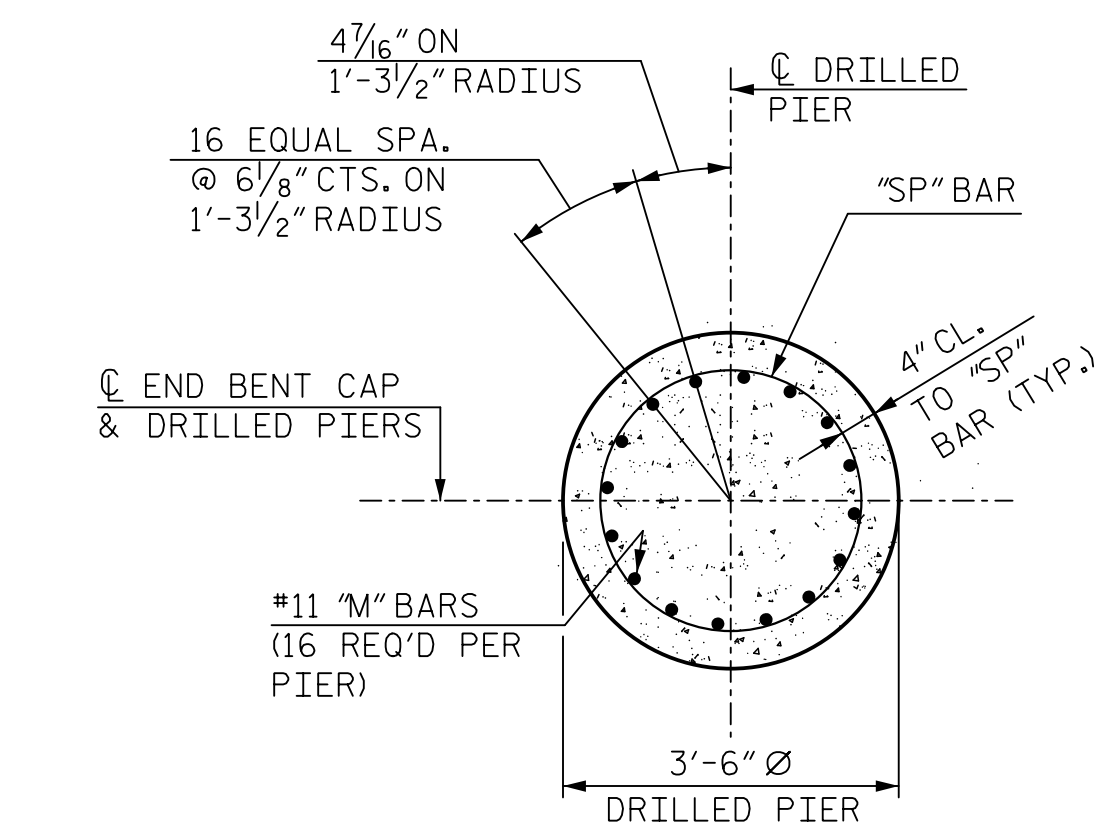
SECTION B-B



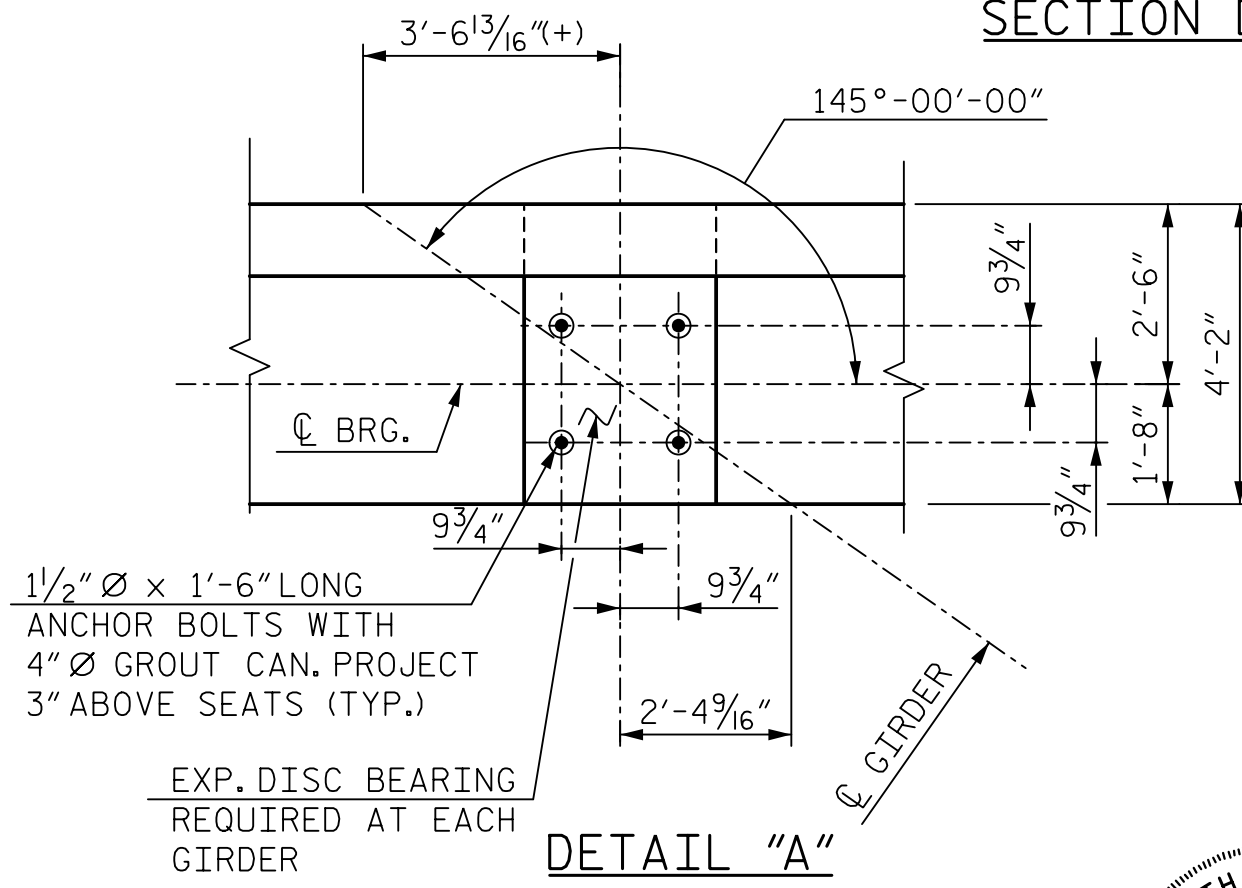
SECTION A-A



SECTION D-D



SECTION E-E



DETAIL A

PROJECT NO. B-5905  
 JACKSON COUNTY  
 STATION: 19+41.94 -L-

SHEET 2 OF 3  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT 2

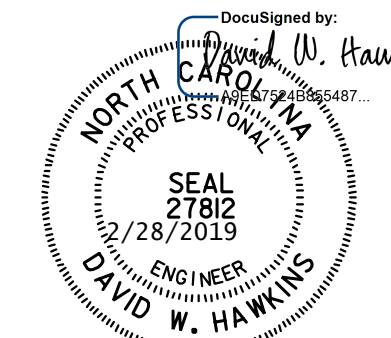
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 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

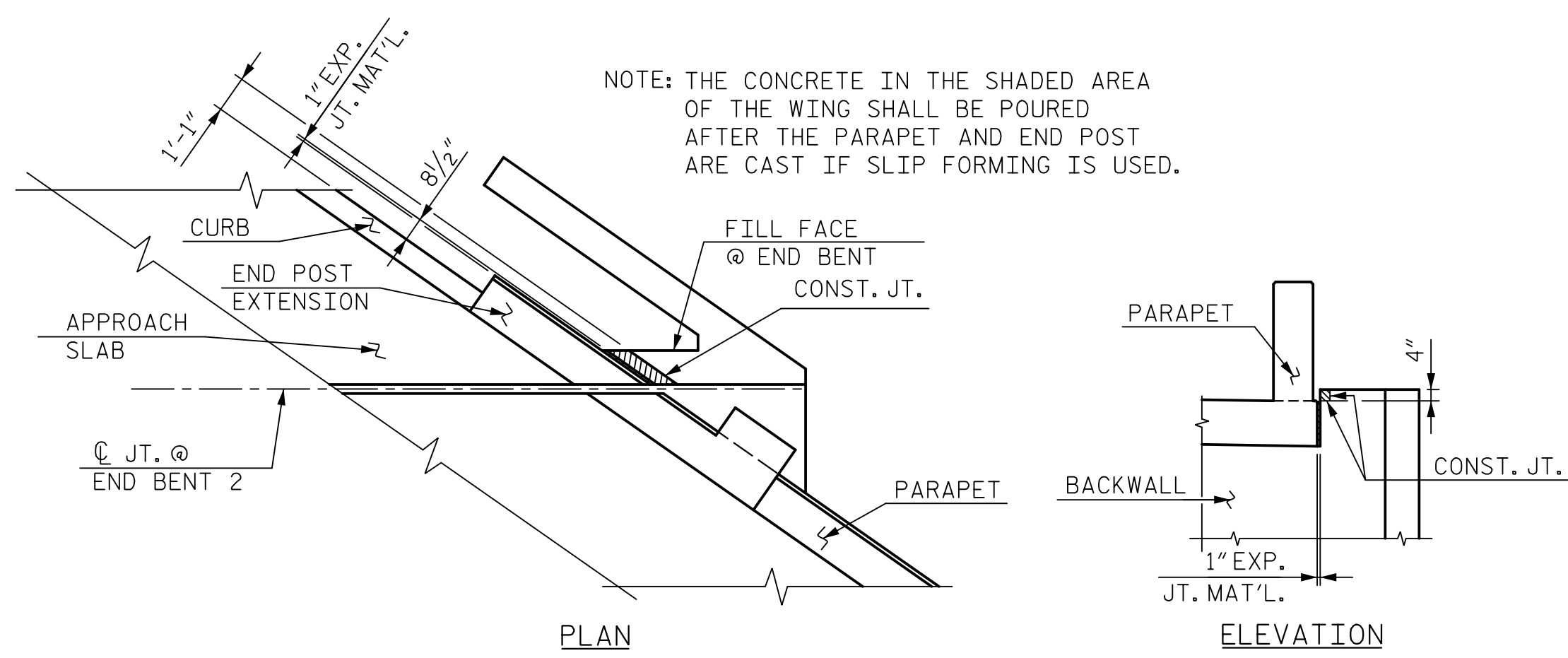
DESIGNED BY: M. WRIGHT DATE: 4/18  
 CHECKED BY: N. SALAS ZAMUDIO DATE: 5/18  
 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 11/18

DWG. NO. 44

REVISIONS						SHEET NO. S1-44
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 54
2			4			

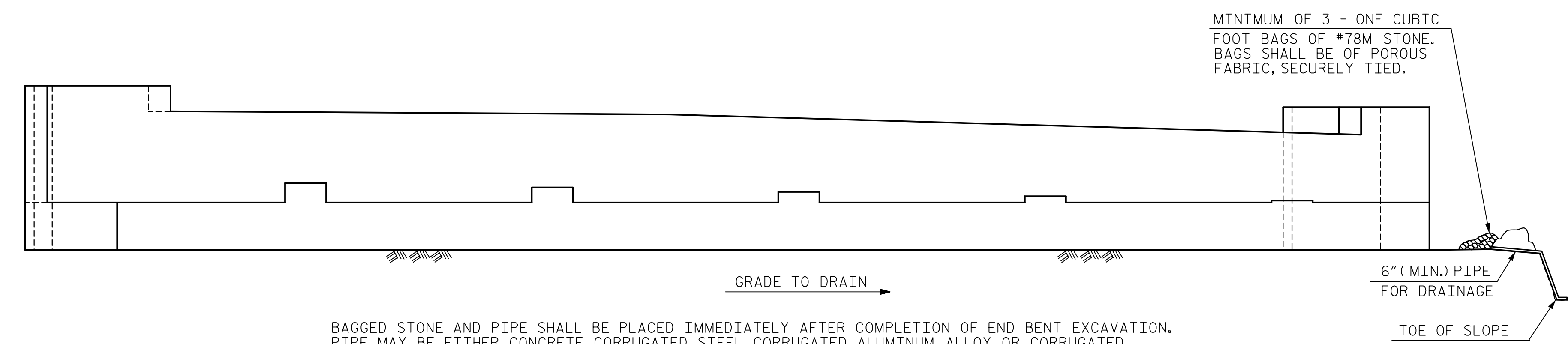
DOCUMENT NOT CONSIDERED FINAL  
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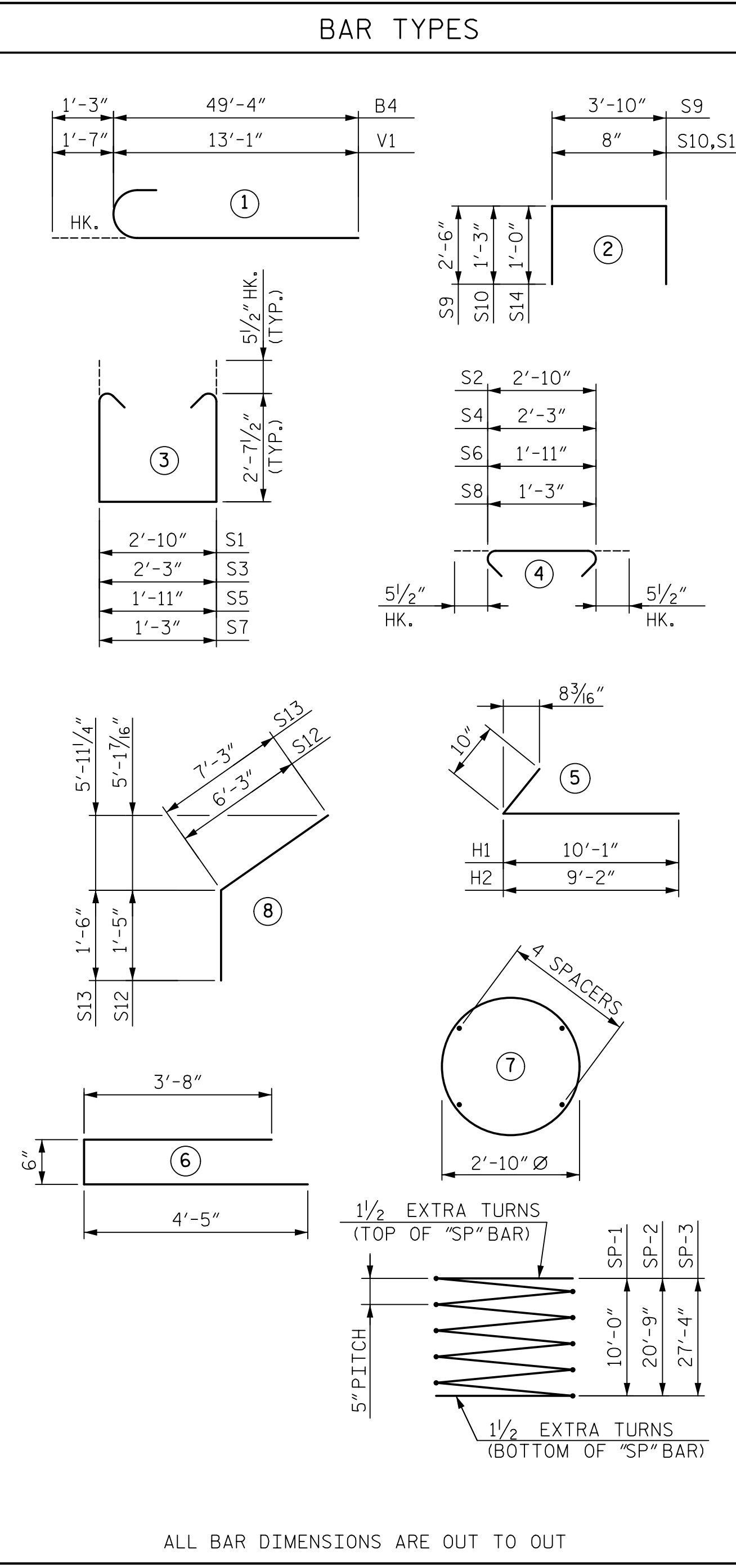
BLOCKOUT IN WINGWALL

NOTES:  
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.  
 BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING. THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.  
 THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.



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.

TEMPORARY DRAINAGE AT END BENT 2



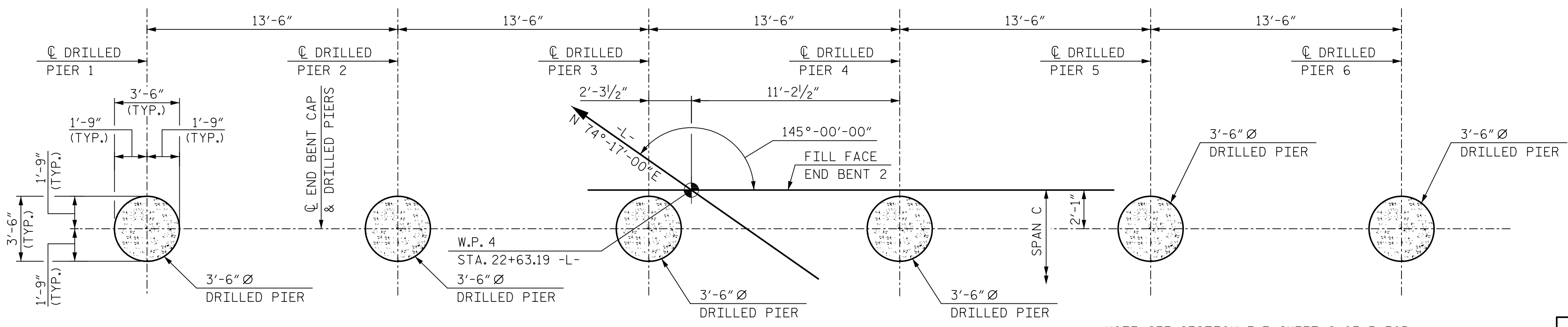
BAR TYPES

BILL OF REINFORCING					
END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	24	9	STR	48'-1"	3,924
B2	24	4	STR	24'-4"	390
B3	4	9	STR	49'-4"	671
B4	16	9	1	50'-7"	2,752
B5	32	4	STR	2'-4"	50
H1	11	5	5	10'-11"	125
H2	15	5	5	10'-0"	156
K1	40	4	STR	24'-3"	648
K2	6	4	STR	12'-11"	52
K3	1	4	STR	15'-3"	10
K4	1	4	STR	15'-10"	11
M1	48	11	STR	9'-9"	2,486
M2	32	11	STR	20'-6"	3,485
M3	16	11	STR	27'-1"	2,302
S1	176	5	3	9'-0"	1,652
S2	176	5	4	3'-9"	688
S3	2	5	3	8'-5"	18
S4	2	5	4	3'-2"	7
S5	2	5	3	8'-1"	17
S6	2	5	4	2'-10"	6
S7	4	5	3	7'-5"	31
S8	4	5	4	2'-2"	9
S9	25	4	2	8'-10"	148
S10	76	4	2	3'-2"	161
S11	2	5	6	8'-7"	18
S12	12	5	8	7'-8"	96
S13	12	5	8	8'-9"	110
S14	12	5	2	2'-8"	33
V1	96	11	1	14'-8"	7,481
V2	79	5	STR	7'-6"	618
V3	75	5	STR	8'-7"	671
V4	10	5	STR	9'-6"	99
V5	20	4	STR	9'-6"	127
V6	18	5	STR	10'-6"	197
SP-1	3	*	7	236'-3"	739
SP-2	2	*	7	461'-11"	964
SP-3	1	*	7	600'-1"	626

QUANTITIES

REINFORCING STEEL	LBS.	29,249
SPIRAL COLUMN REINFORCING STEEL	LBS.	2,329
CLASS A CONCRETE		
POUR 2 - CAP & BOT. OF WINGS	CU. YDS.	44.1
POUR 3 - TOP OF WINGS & BACKWALL	CU. YDS.	22.0
TOTAL	CU. YDS.	66.1
POUR 1 - DRILLED PIER CONCRETE	CU. YDS.	36.3
3'-6" Ø DRILLED PIERS, IN SOIL	LIN. FT.	57.8
3'-6" Ø DRILLED PIERS, NOT IN SOIL	LIN. FT.	44.0

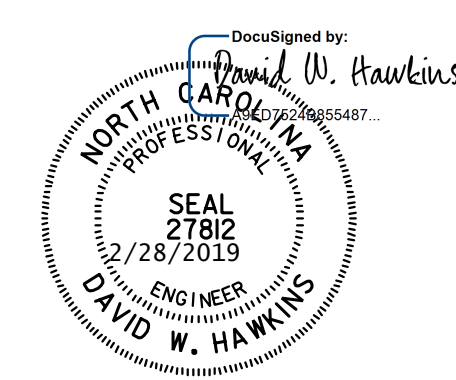
NOTE: THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH. \* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.



DRILLED PIER PLAN

PROJECT NO. B-5905  
 JACKSON COUNTY  
 STATION: 19+41.94 -L-

SHEET 3 OF 3  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT 2



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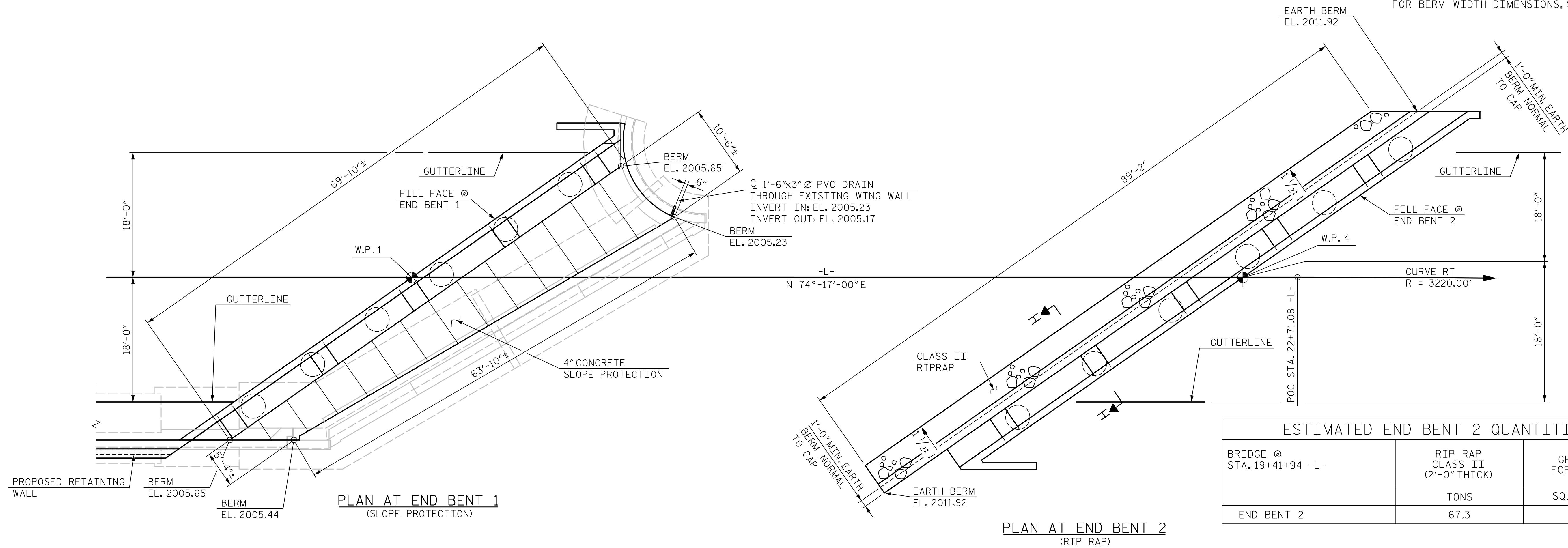
DRAWN BY: M. WRIGHT	DATE: 4/18
CHECKED BY: N. SALAS ZAMUDIO	DATE: 5/18
DESIGN ENGINEER OF RECORD: D. HAWKINS	DATE: 11/18

DWG. NO. 45

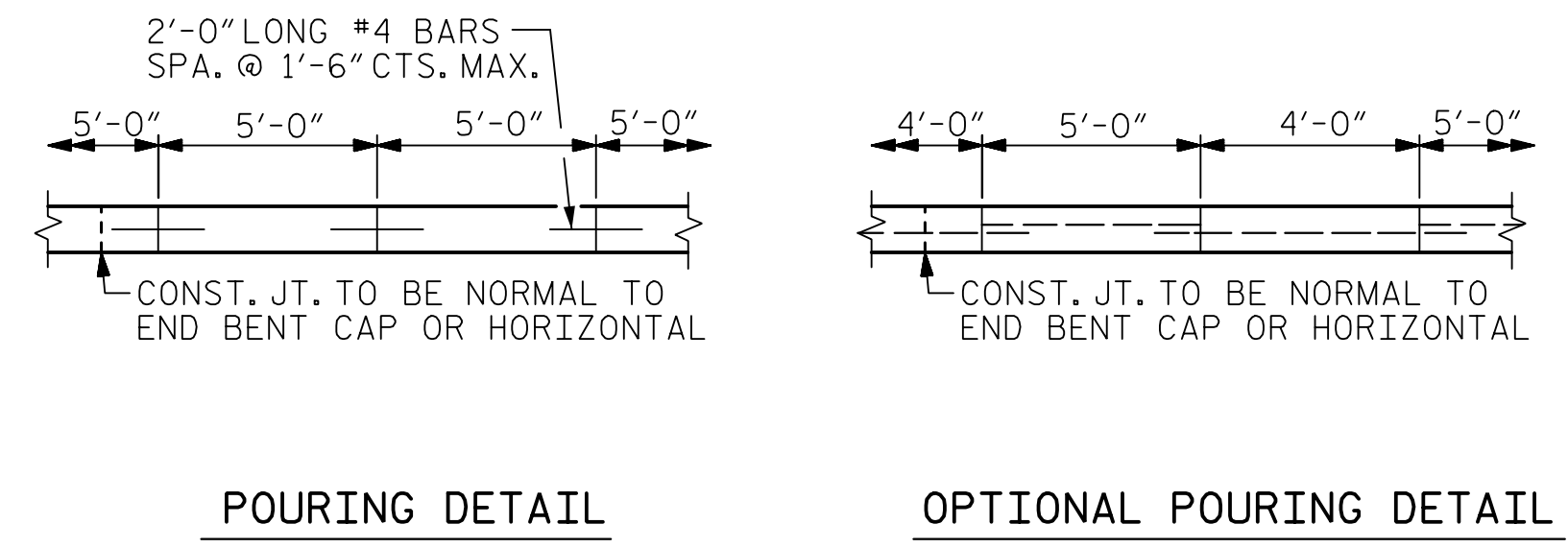
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-45
1			3			TOTAL SHEETS
2			4			54

NOTES :  
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.



ESTIMATED END BENT 2 QUANTITIES		
BRIDGE @ STA. 19+41+94 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 2	67.3	74.8

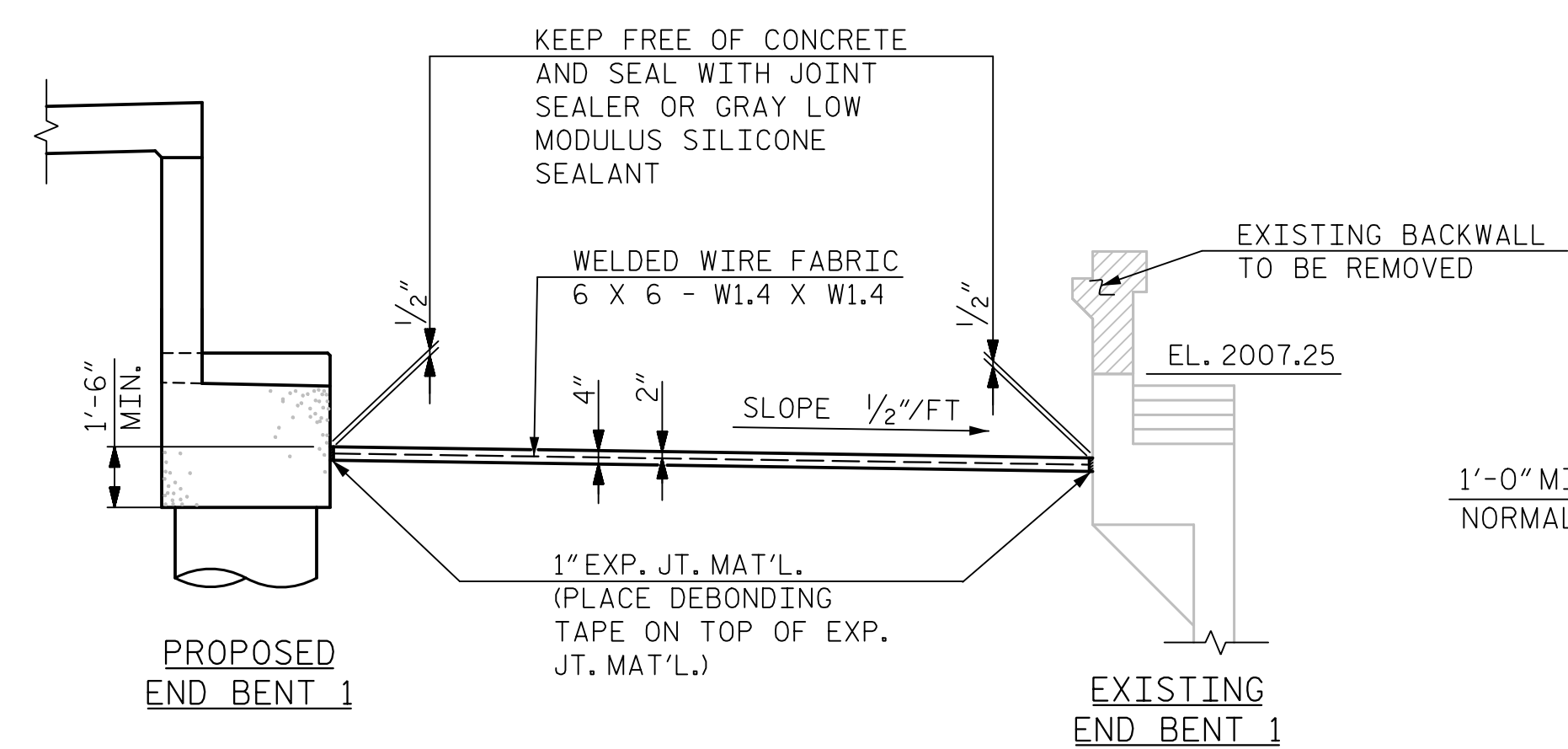


**SLOPE PROTECTION GENERAL NOTES**

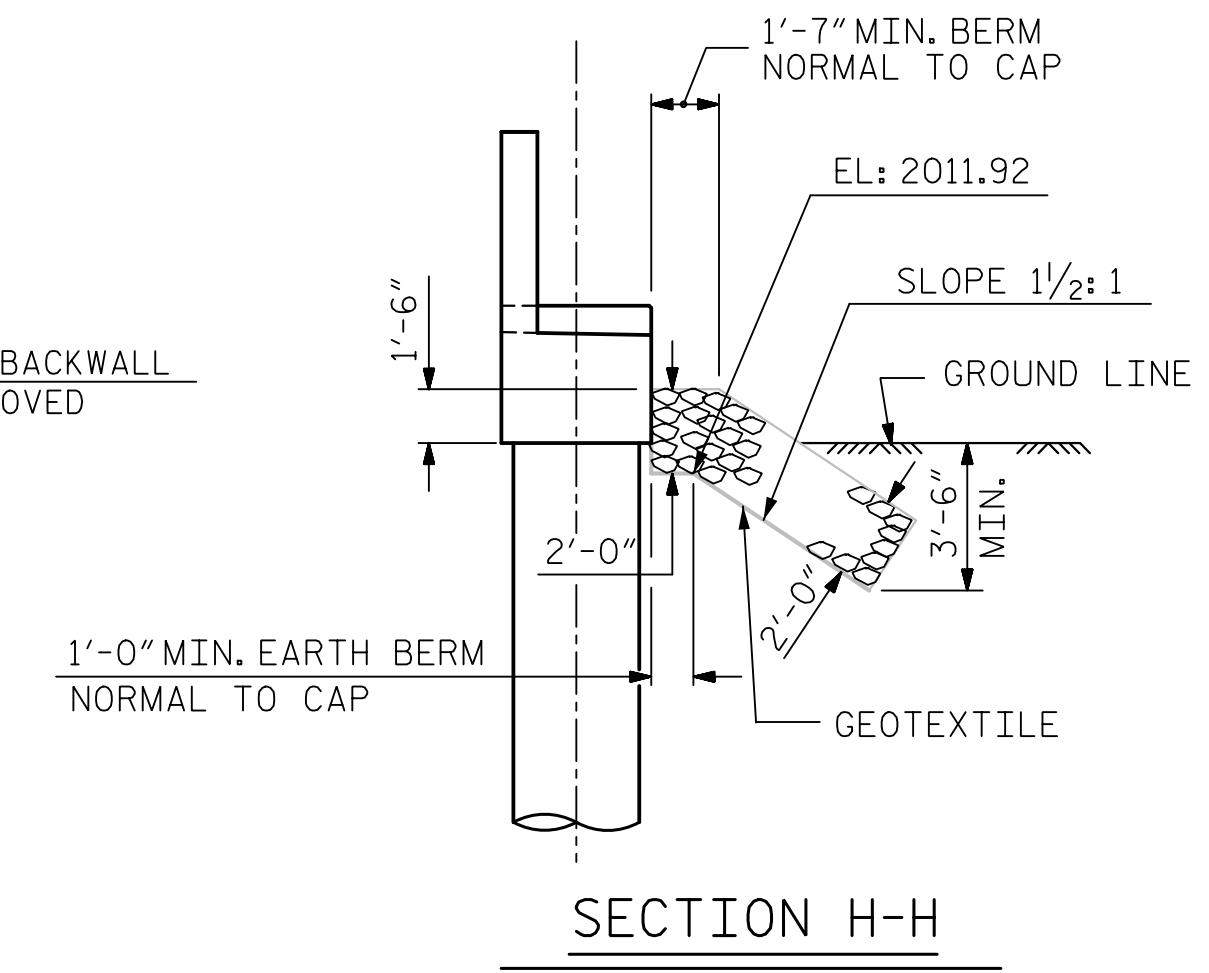
STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS. FOR BERM WIDTH, SEE GENERAL DRAWING. SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60" WIDE. SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6". THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.

ESTIMATED END BENT 1 QUANTITIES		
BRIDGE @ STA. 19+41.94 -L-	4" INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	57.0	113.0

\* QUANTITY SHOWN IS BASED ON 5' POURS.

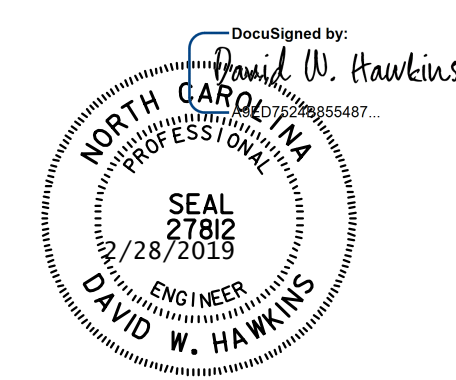


SECTION ALONG C SURVEY -L-  
(PROPOSED END BENT AND EXISTING END BENT ON SECTION AT RIGHT ANGLES TO END BENTS)



SECTION H-H

PROJECT NO. B-5905  
JACKSON COUNTY  
STATION: 19+41.94 -L-



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**SLOPE PROTECTION  
AND  
RIP RAP DETAILS**

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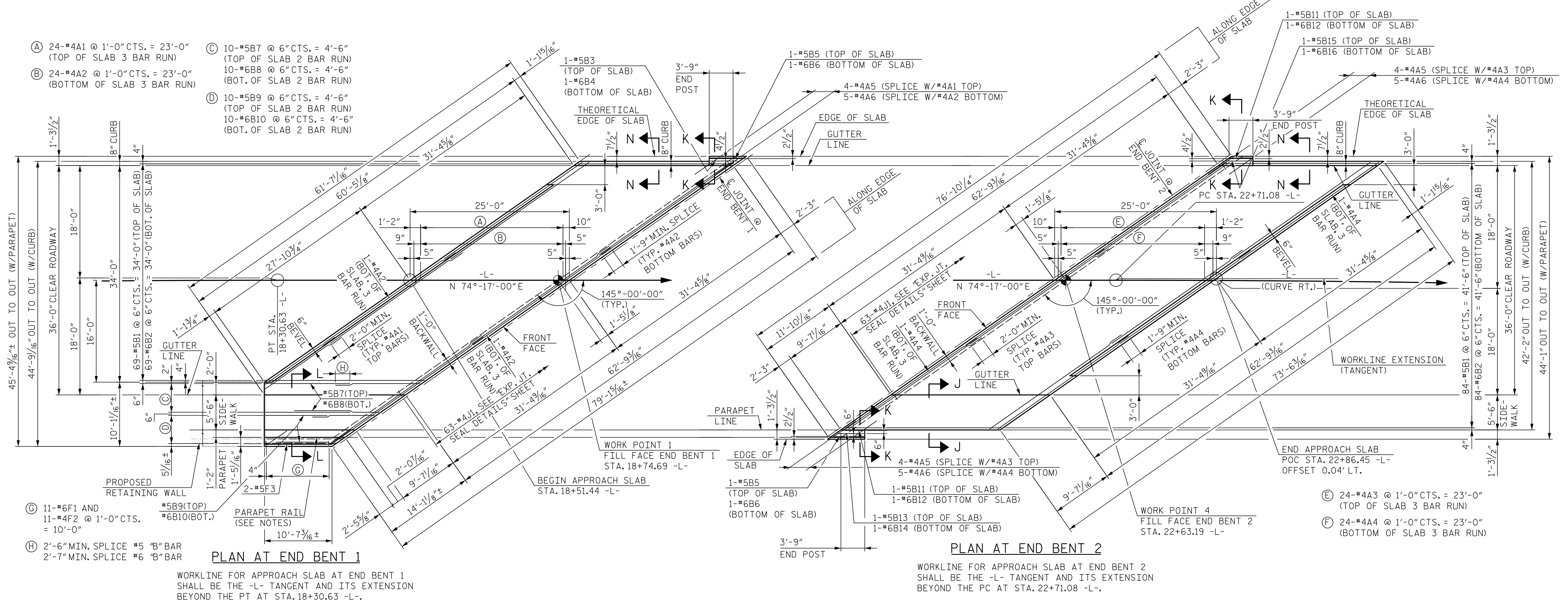
DRAWN BY: M. WRIGHT DATE: 5/18  
CHECKED BY: N. HART DATE: 10/18  
DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 11/18

DWG. NO. 46

REVISIONS						SHEET NO. S1-46
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 54
2			4			

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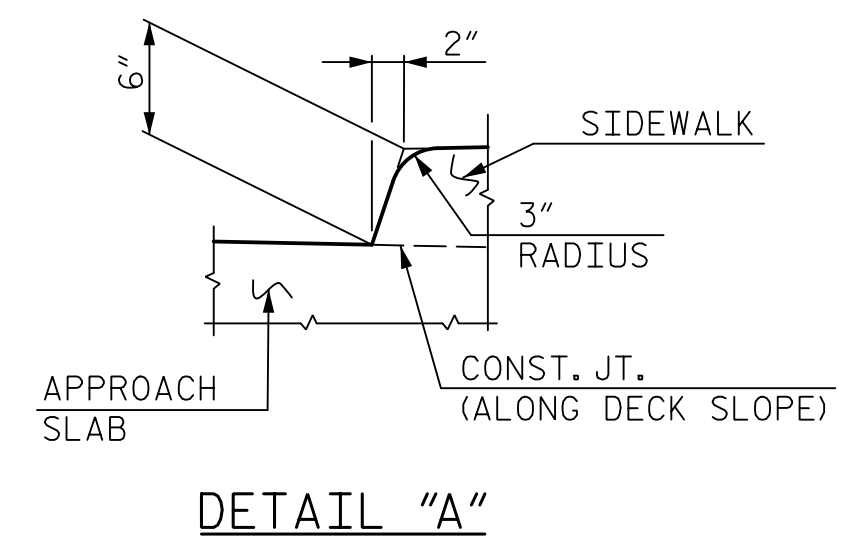
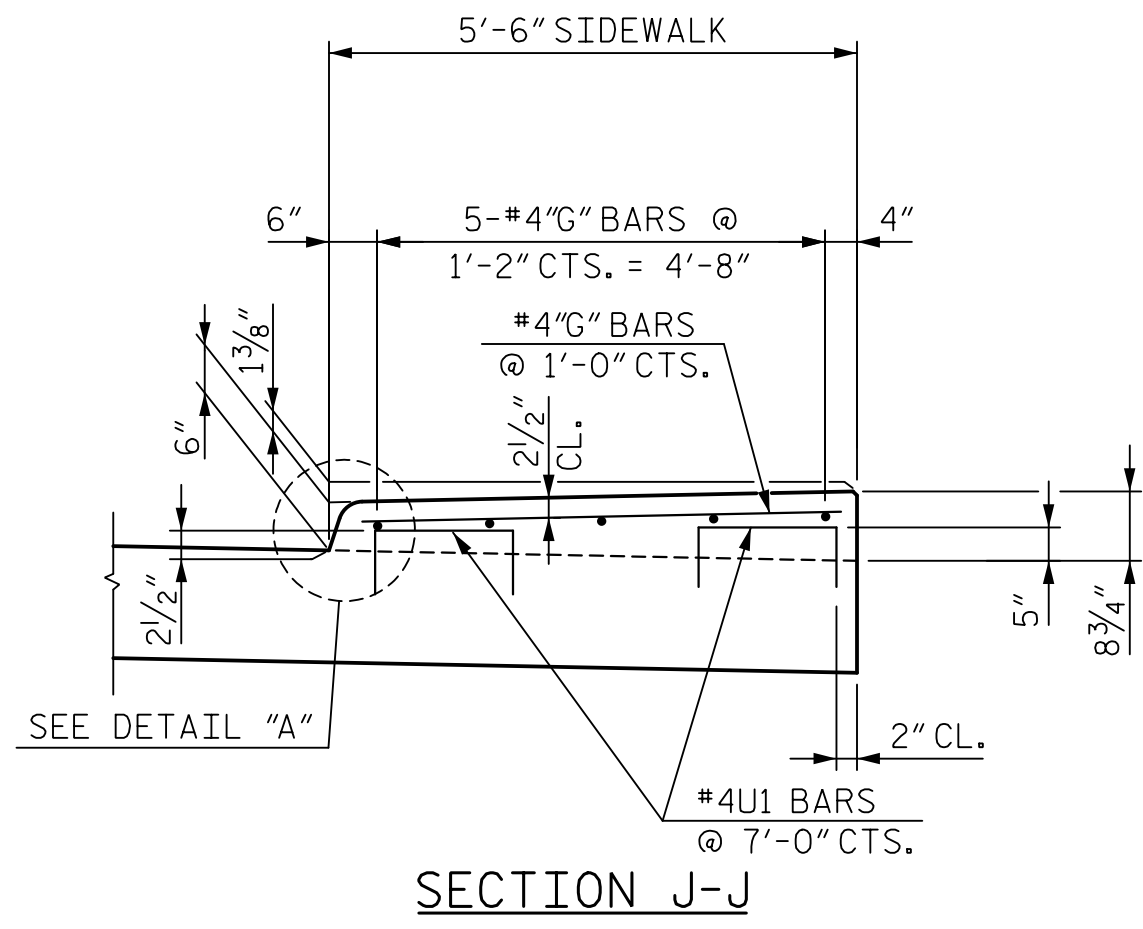


**PLAN AT END BENT 1**  
 WORKLINE FOR APPROACH SLAB AT END BENT 1 SHALL BE THE -L- TANGENT AND ITS EXTENSION BEYOND THE PT AT STA. 18+30.63 -L-.

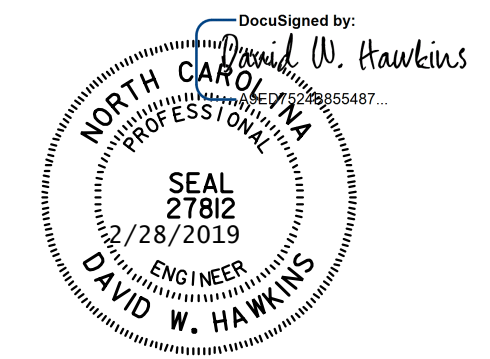
**PLAN AT END BENT 2**  
 WORKLINE FOR APPROACH SLAB AT END BENT 2 SHALL BE THE -L- TANGENT AND ITS EXTENSION BEYOND THE PC AT STA. 22+71.08 -L-.

- (A) 24-#4A1 @ 1'-0" CTS. = 23'-0" (TOP OF SLAB 3 BAR RUN)
- (B) 24-#4A2 @ 1'-0" CTS. = 23'-0" (BOTTOM OF SLAB 3 BAR RUN)
- (C) 10-#5B7 @ 6" CTS. = 4'-6" (TOP OF SLAB 2 BAR RUN)
- 10-#6B8 @ 6" CTS. = 4'-6" (BOT. OF SLAB 2 BAR RUN)
- (D) 10-#5B9 @ 6" CTS. = 4'-6" (TOP OF SLAB 2 BAR RUN)
- 10-#6B10 @ 6" CTS. = 4'-6" (BOT. OF SLAB 2 BAR RUN)
- (E) 11-#6F1 AND 11-#4F2 @ 1'-0" CTS. = 10'-0"
- (H) 2'-6" MIN. SPLICE #5 'B' BAR  
2'-7" MIN. SPLICE #6 'B' BAR

- (E) 24-#4A3 @ 1'-0" CTS. = 23'-0" (TOP OF SLAB 3 BAR RUN)
- (F) 24-#4A4 @ 1'-0" CTS. = 23'-0" (BOTTOM OF SLAB 3 BAR RUN)



**NOTES:**  
 FOR SECTION K-K, SECTION N-N AND SECTION L-L, SEE "BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT" SHEET 2 OF 4.  
 FOR APPROACH SLAB BILL OF MATERIAL, SEE "BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT" SHEET 2 OF 4.  
 FOR END POST REINFORCING STEEL PLACEMENT AND BILL OF MATERIAL, SEE "BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT" SHEET 3 OF 4.  
 FOR CONCRETE PARAPET RAIL REINFORCING STEEL PLACEMENT AND BILL OF MATERIAL, SEE "BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT" SHEET 4 OF 4.  
 FOR STANDARD EXPANSION JOINT SEAL DETAILS, SEE "EXPANSION JOINT SEAL DETAILS" SHEET.  
 FOR SIDEWALK QUANTITIES, SEE BILL OF MATERIAL FOR APPROACH SLABS ON "BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT" SHEET 2 OF 4.  
 FOR SIDEWALK REINFORCING STEEL PLACEMENT, SEE "BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT" SHEET 2 OF 4.



PROJECT NO. B-5905  
 JACKSON COUNTY  
 STATION: 19+41.94 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BRIDGE APPROACH  
 SLAB FOR  
 FLEXIBLE PAVEMENT

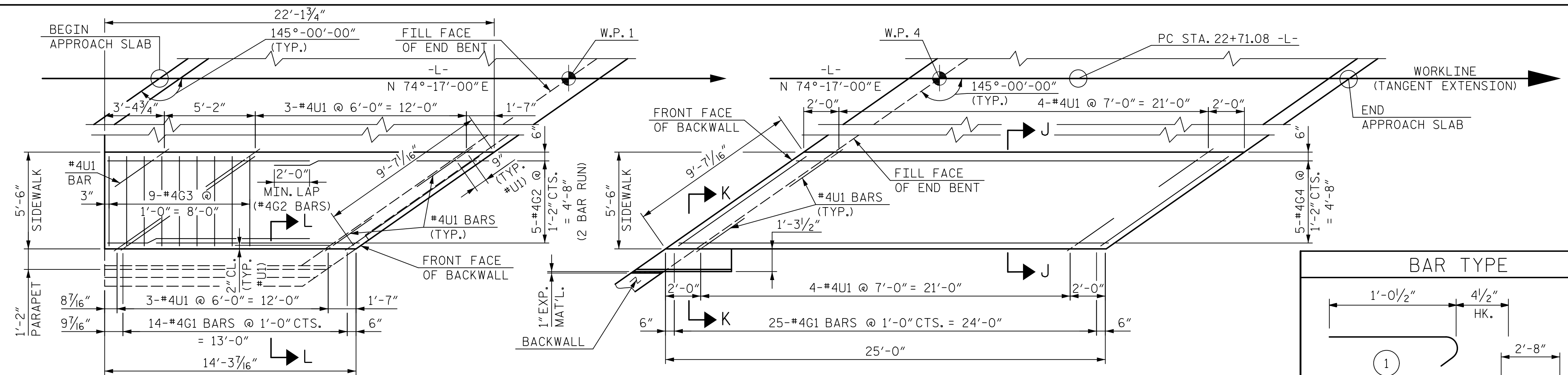
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-47
1			3			TOTAL SHEETS
2			4			54

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DRAWN BY: M. WRIGHT DATE: 7/18  
 CHECKED BY: P. BARBER DATE: 9/18  
 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 11/18

DWG. NO. 47

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**SIDEWALK PLAN ON APPROACH SLAB**  
(END BENT 1)

NOTE: PLACE #4G3 BARS BENEATH #4G2 BARS.  
FOR SECTION THRU SIDEWALK, SEE SHEET 4 OF 4.

**SIDEWALK PLAN ON APPROACH SLAB**  
(END BENT 2)

**PLAN**

FOR PLAN VIEW OF APPROACH SLABS AT END BENT 1  
AND END BENT 2, SEE SHEET 1 OF 4

**NOTES**

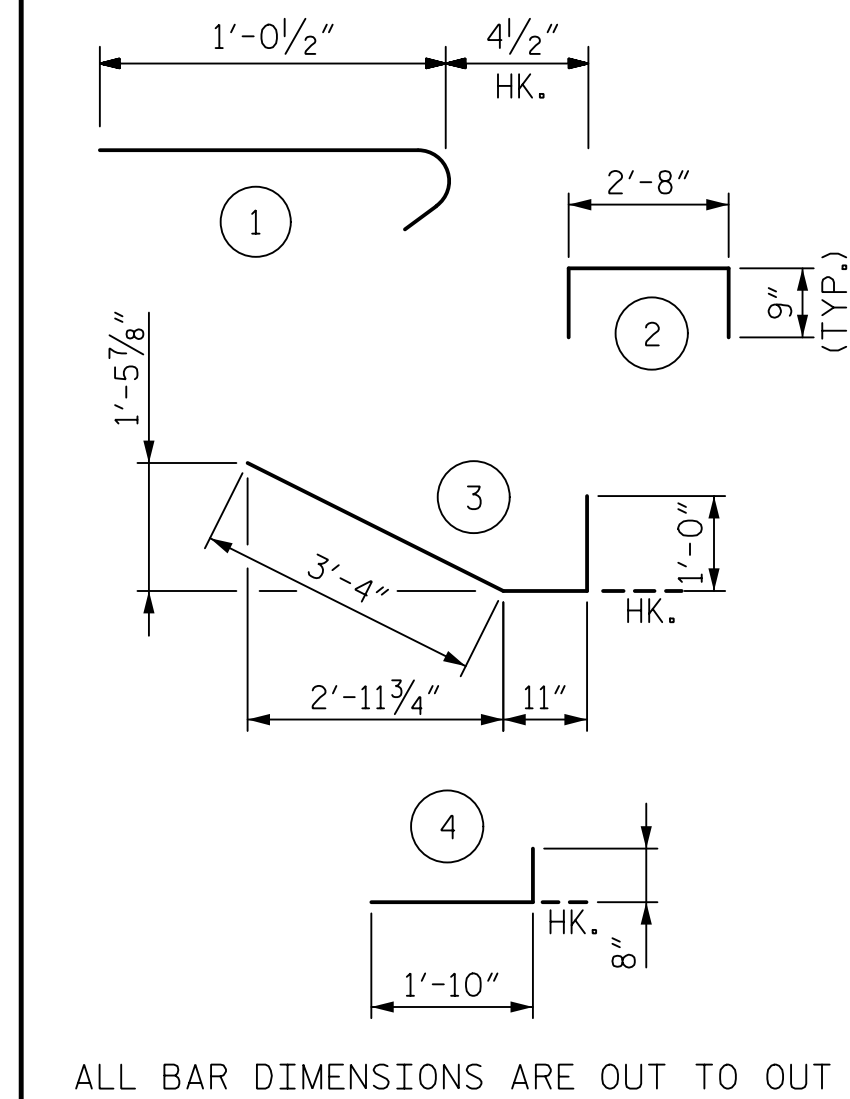
- FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.
- GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.
- SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.
- SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.
- APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

- FOR THE 6" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.
- AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.
- FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.
- FOR SIDEWALK QUANTITIES, SEE BILL OF MATERIAL FOR APPROACH SLABS. THE PAYMENT FOR SIDEWALK ON THE APPROACH SLAB SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR "BRIDGE APPROACH SLABS, STA. 19+41.94 -L-"

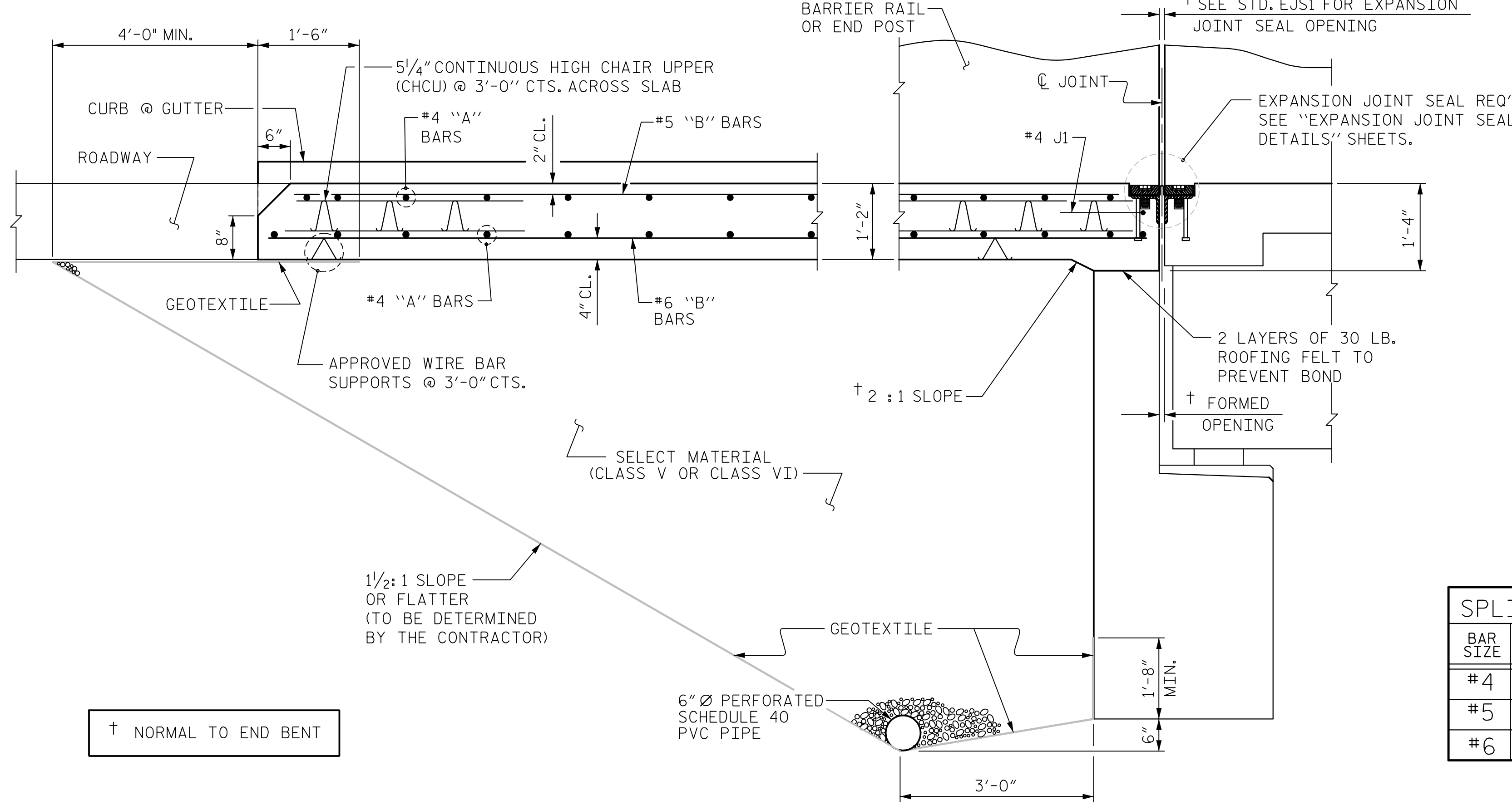
**BILL OF MATERIAL**

APPROACH SLAB AND SIDEWALK AT EB #1						APPROACH SLAB AND SIDEWALK AT EB #2							
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT		
*A1	72	#4	STR	27'-2"	1,307	*A3	72	#4	STR	25'-8"	1,234		
A2	78	#4	STR	27'-0"	1,407	A4	78	#4	STR	25'-6"	1,329		
*A5	4	#4	STR	4'-4"	12	*A5	8	#4	STR	4'-4"	23		
A6	5	#4	STR	4'-1"	14	A6	10	#4	STR	4'-1"	27		
*B1	69	#5	STR	23'-0"	1,655	*B1	84	#5	STR	23'-0"	2,015		
B2	69	#6	STR	24'-3"	2,513	B2	84	#6	STR	24'-3"	3,060		
*B3	1	#5	STR	4'-3"	4	*B5	1	#5	STR	4'-9"	5		
B4	1	#6	STR	4'-3"	6	B6	1	#6	STR	4'-9"	7		
*B5	1	#5	STR	4'-9"	5	*B11	2	#5	STR	3'-4"	7		
B6	1	#6	STR	4'-9"	7	B12	2	#6	STR	3'-4"	10		
*B7	20	#5	STR	13'-3"	276	*B13	1	#5	STR	4'-0"	4		
B8	20	#6	STR	13'-6"	406	B14	1	#6	STR	4'-0"	6		
*B9	20	#5	STR	9'-11"	207	*B15	1	#5	STR	3'-10"	4		
B10	20	#6	STR	9'-11"	298	B16	1	#6	STR	3'-10"	6		
F1	11	#6	3	5'-3"	87	*G1	25	#4	STR	8'-9"	146		
F2	11	#4	4	2'-6"	18	*G4	5	#4	STR	24'-4"	81		
F3	3	#5	STR	10'-3"	32	*J1	63	#4	1	1'-5"	60		
*G1	14	#4	STR	8'-9"	82	*U1	8	#4	2	4'-2"	22		
*G2	10	#4	STR	11'-6"	77					REINFORCING STEEL**	LBS.	4,445	
*G3	9	#4	STR	5'-0"	30					*EPOXY COATED REINFORCING STEEL**	LBS.	3,601	
										CLASS AA CONCRETE			
										APPROACH SLAB**		C. Y.	46.3
										SIDEWALK**		C. Y.	3.1
										TOTAL CLASS AA CONCRETE		C. Y.	49.4
										REINFORCING STEEL**		LBS.	4,788
										*EPOXY COATED REINFORCING STEEL**		LBS.	3,734
										CLASS AA CONCRETE			
										APPROACH SLAB**		C. Y.	45.7
										SIDEWALK**		C. Y.	2.3
										TOTAL CLASS AA CONCRETE		C. Y.	48.0

**BAR TYPE**



ALL BAR DIMENSIONS ARE OUT TO OUT  
\*\* QUANTITIES FOR END POST AND PARAPET EXTENSION ARE NOT INCLUDED, SEE SHEET 3 OF 4 AND 4 OF 4 RESPECTIVELY.



**SECTION N-N**

**SECTION K-K**

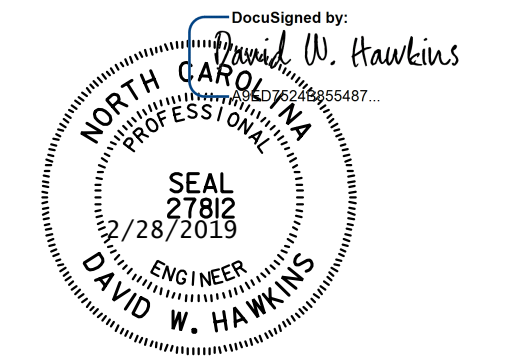
**SECTION L-L**  
SEE SECTION A-A & B-B FOR ADDITIONAL DETAILS, SHEET 4 OF 4.

**CURB DETAILS**

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.

**SPLICE LENGTHS**

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



ASSEMBLED BY : M. WRIGHT	DATE : 2/18
CHECKED BY : P. BARBER	DATE : 9/18
DRAWN BY : EEM 3/95	REV. 12/21/11 MAA/GM
CHECKED BY : VAP 3/95	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

**SECTION THRU SLAB**

(TYPE I - STANDARD APPROACH FILL)

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DRAWN BY: M. WRIGHT DATE: 7/18  
CHECKED BY: P. BARBER DATE: 9/18  
DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 11/18

DWG. NO. 48

PROJECT NO. B-5905  
JACKSON COUNTY  
STATION: 19+41.94 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH				
STANDARD BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT				
REVISIONS				
NO.	BY	DATE	NO.	DATE
1			3	
2			4	

SHEET NO. S1-48  
TOTAL SHEETS 54

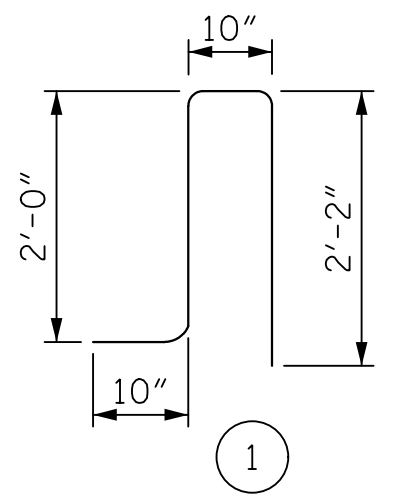
NOTES

THE COST OF THE END POST ON THE APPROACH SLAB SHALL BE INCLUDED IN THE LINEAR FOOT CONTRACT PRICE BID FOR "1'-2" x 2'-6" CONCRETE PARAPET" AND "1'-2" x 3'-2 3/4" CONCRETE PARAPET".

THE END POST 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 END POSTS SHALL BE EPOXY COATED.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR 3 END POSTS

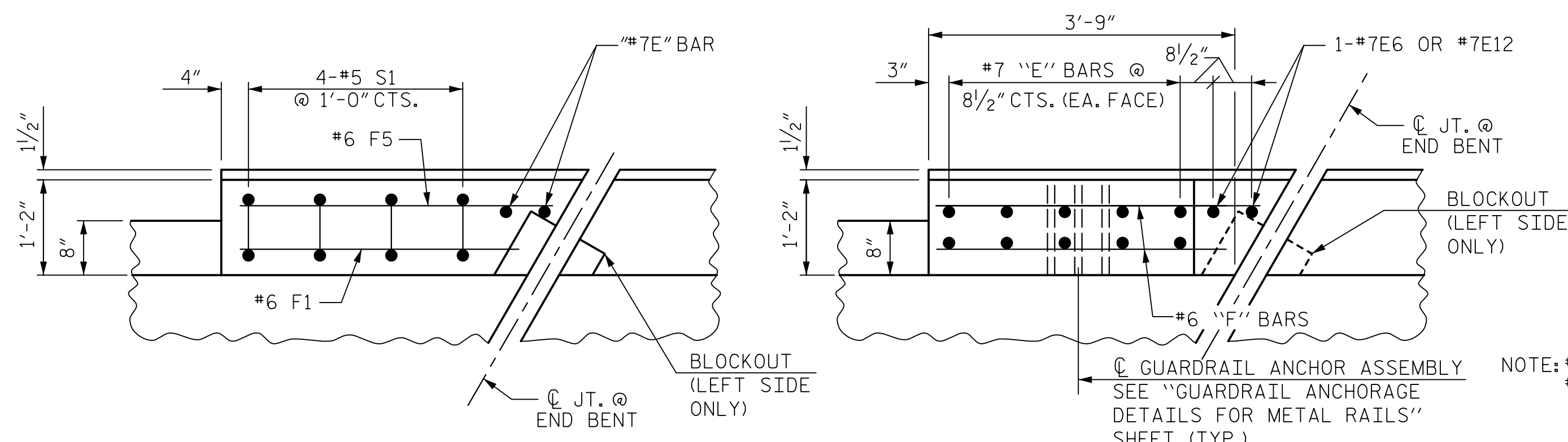
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
*E1	2	#7	STR	3'-2"	13
*E2	2	#7	STR	3'-7"	15
*E3	2	#7	STR	4'-1"	17
*E4	2	#7	STR	4'-6"	18
*E5	2	#7	STR	5'-0"	20
*E6	2	#7	STR	5'-2"	21
*E7	4	#7	STR	2'-6"	20
*E8	4	#7	STR	2'-11"	24
*E9	4	#7	STR	3'-5"	28
*E10	4	#7	STR	3'-10"	31
*E11	4	#7	STR	4'-4"	35
*E12	4	#7	STR	4'-6"	37
*F1	13	#6	STR	3'-5"	67
*F2	3	#6	STR	2'-5"	11
*F3	3	#6	STR	1'-4"	6
*F4	6	#6	STR	3'-8"	33
*F5	13	#6	STR	4'-3"	83
*F6	3	#6	STR	3'-3"	15
*F7	3	#6	STR	2'-2"	10
*S1	12	#5	1	5'-10"	73

\* EPOXY COATED REINFORCING STEEL LBS. 577

CLASS AA CONCRETE CU.YDS. 2.5

TOTAL LIN. FT. OF 1'-2" x 2'-6" CONCRETE PARAPET 9.17

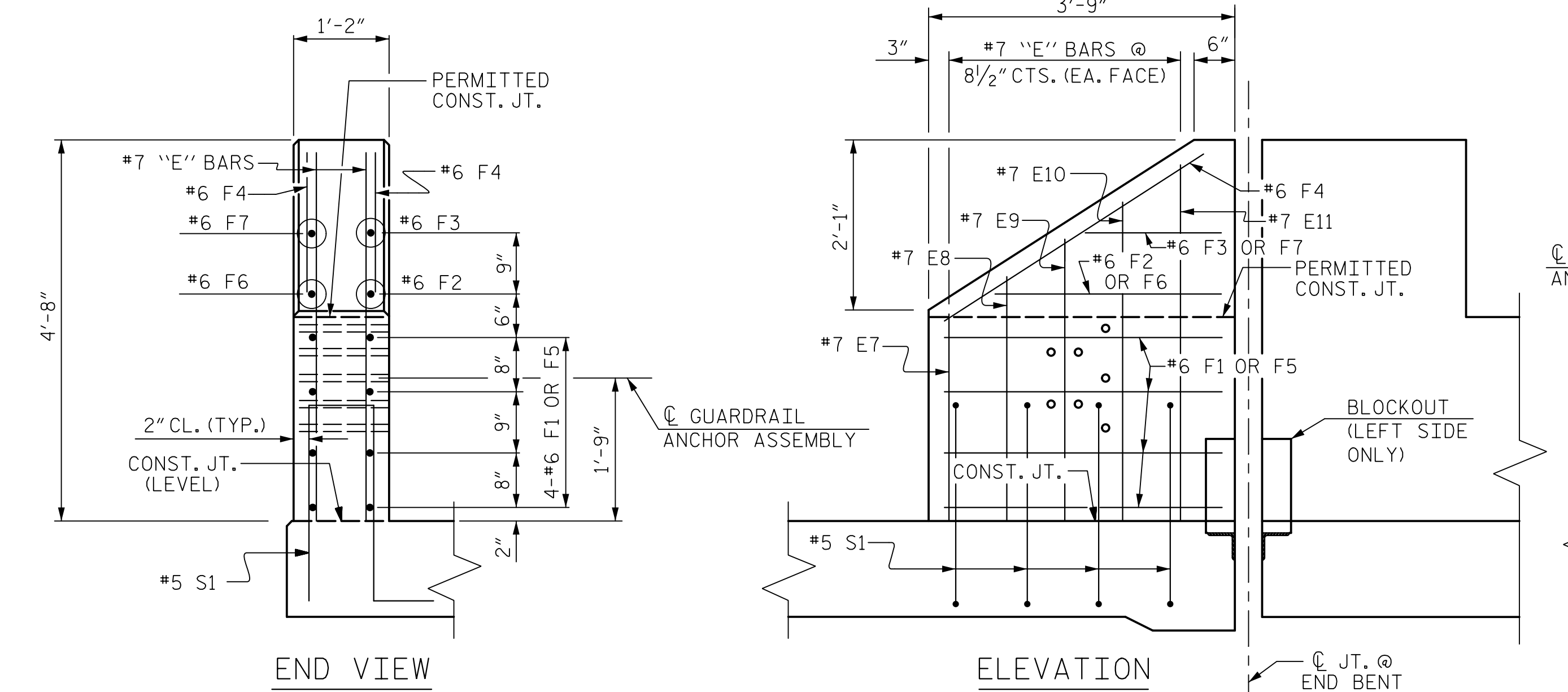
TOTAL LIN. FT. OF 1'-2" x 3'-2 3/4" CONCRETE PARAPET 4.58



PLAN OF PARAPET

PLAN OF END POST

NOTE: #7E6 SHALL BE USED FOR RIGHT SIDE END POST. #7E12 SHALL BE USED FOR LEFT SIDE END POSTS.

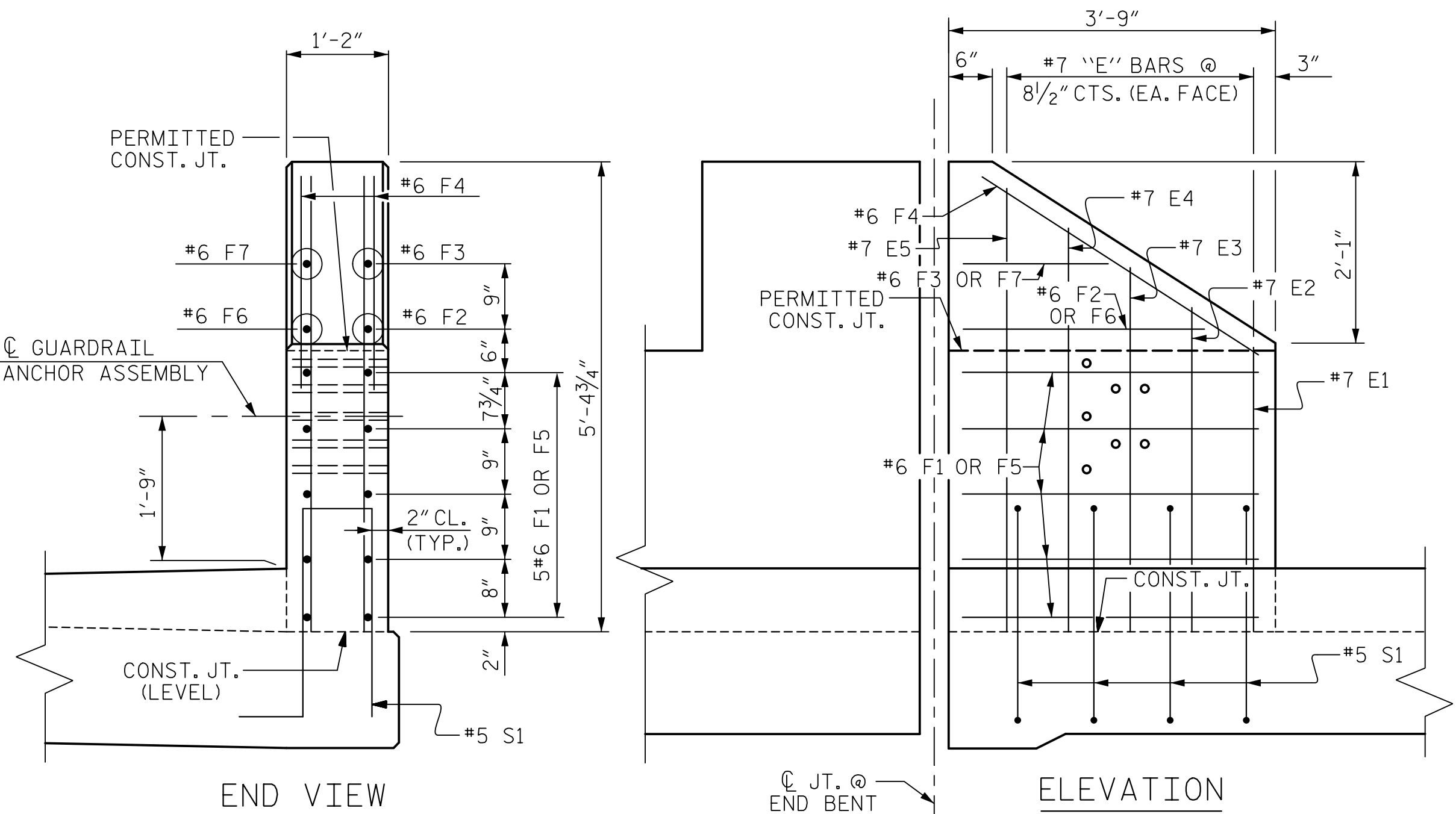


END VIEW

ELEVATION

END POST FOR TWO BAR RAIL (LEFT)

(EB1 LEFT SIDE SHOWN, EB2 LEFT SIDE SIMILAR)

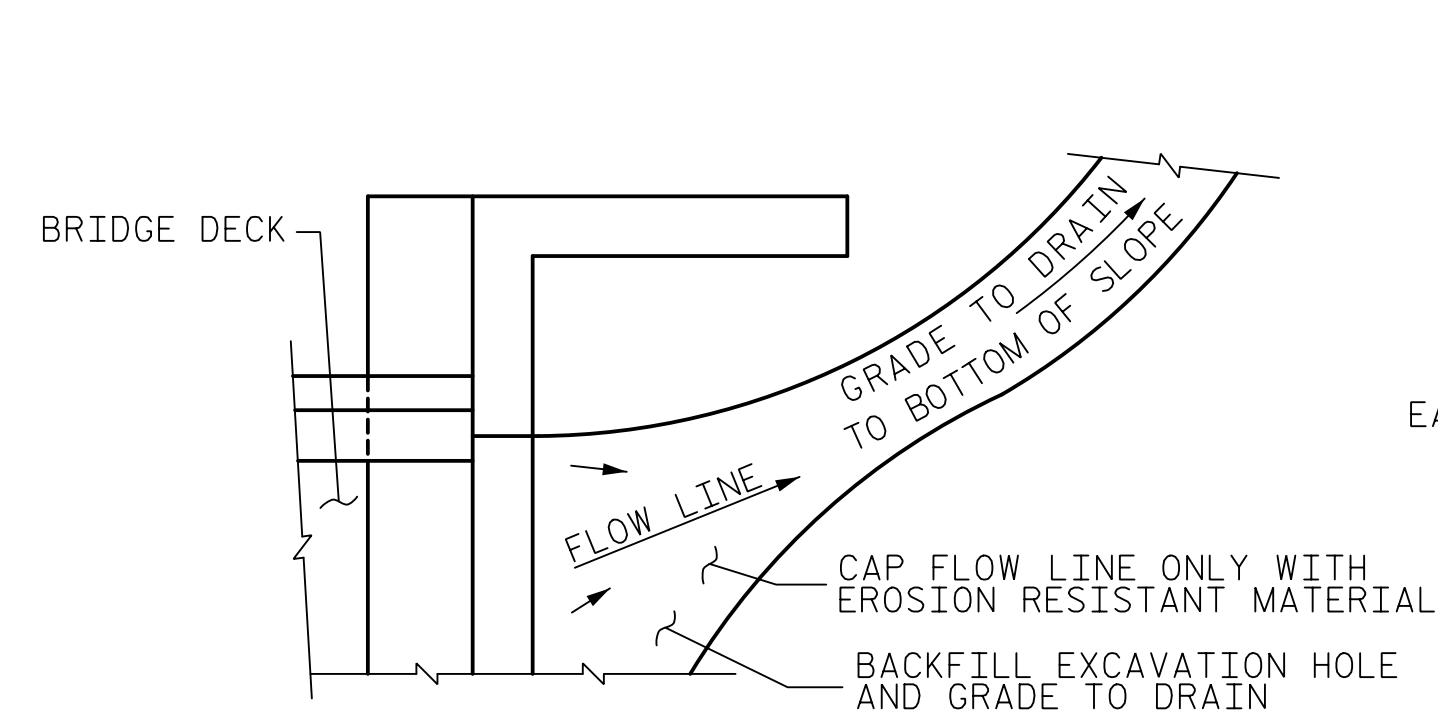


END VIEW

ELEVATION

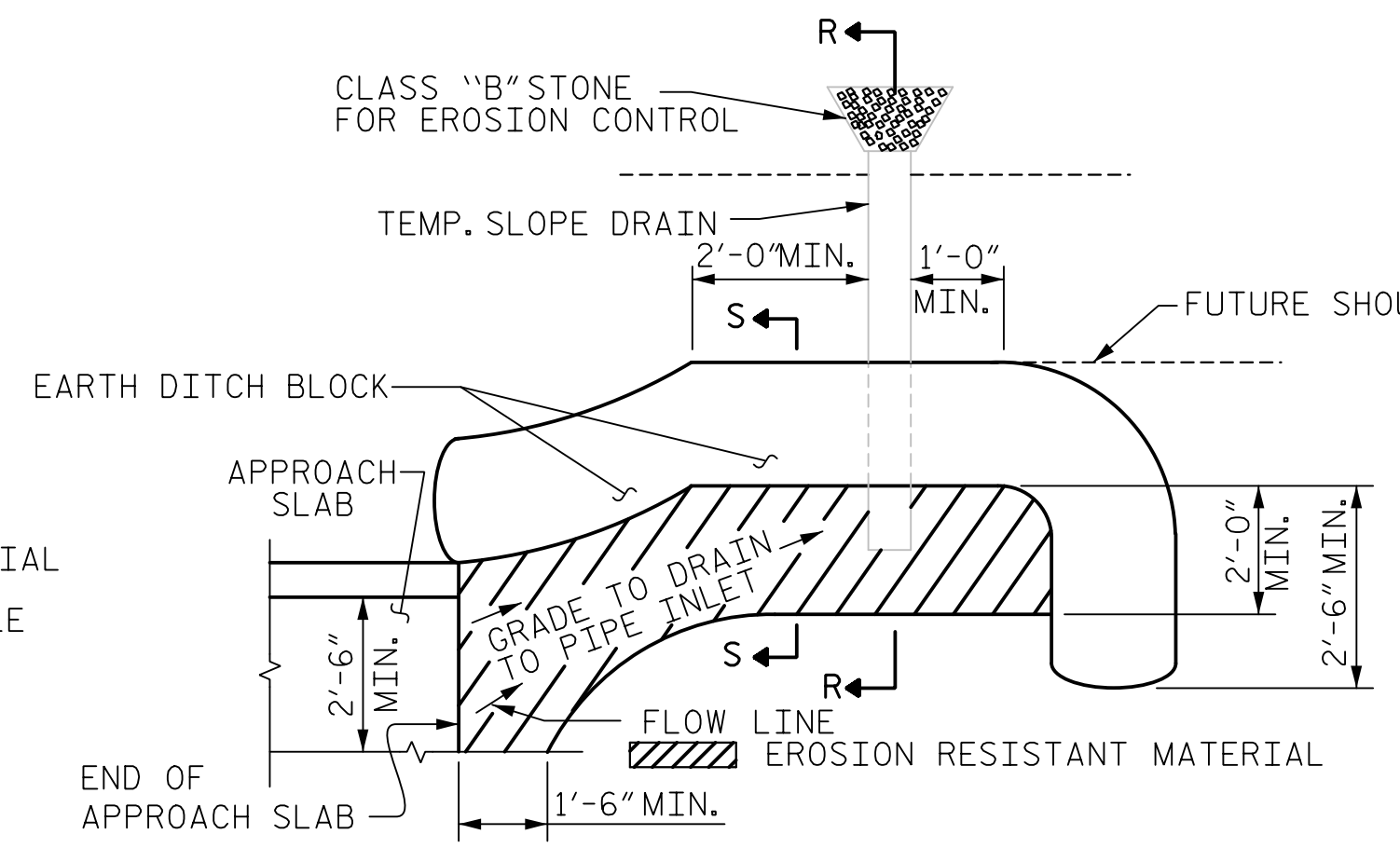
END POST FOR TWO BAR RAIL (RIGHT)

(EB2 RIGHT SIDE)



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

TEMPORARY DRAINAGE DETAIL

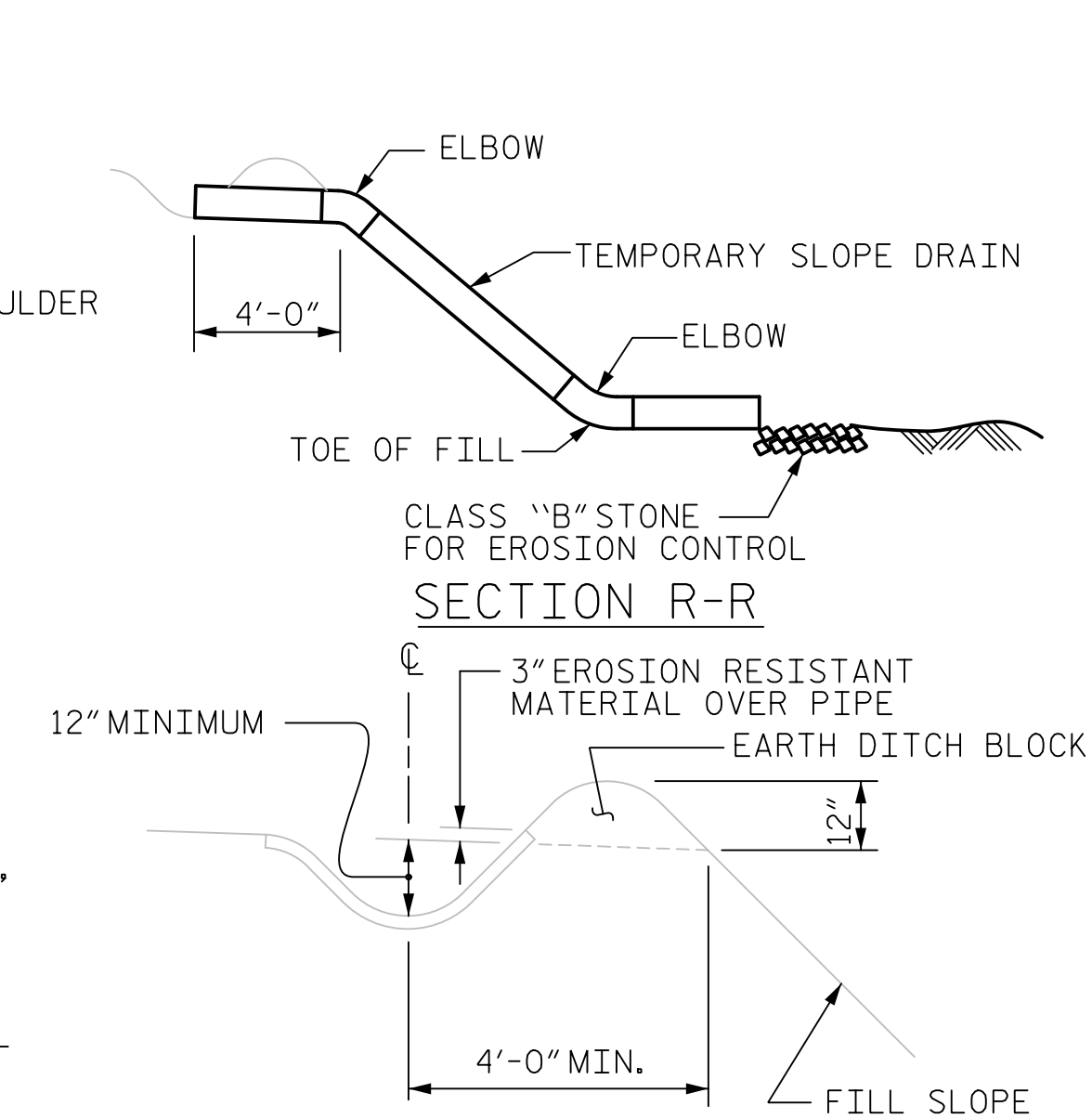


PLAN VIEW

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

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION S-S

SECTION R-R

ASSEMBLED BY : M. WRIGHT	DATE : 5/18
CHECKED BY : P. BARBER	DATE : 5/18
DRAWN BY : FCJ 11/88	REV. 6/13 MAA/GM
CHECKED BY : ARB 11/88	REV. 12/17 MAA/THC
	REV. 5/18 MAA/THC

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 NC License No. C-1554  
 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DESIGNED BY: David W. Hawkins  
 PROFESSIONAL ENGINEER  
 SEAL 27812  
 12/28/2019

DRAWN BY: M. WRIGHT DATE 2/18  
 CHECKED BY: J. WHEATLEY DATE 2/18  
 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE 11/18

DWG. NO. 49

PROJECT NO. B-5905  
 JACKSON COUNTY  
 STATION: 19+41.94 -L-

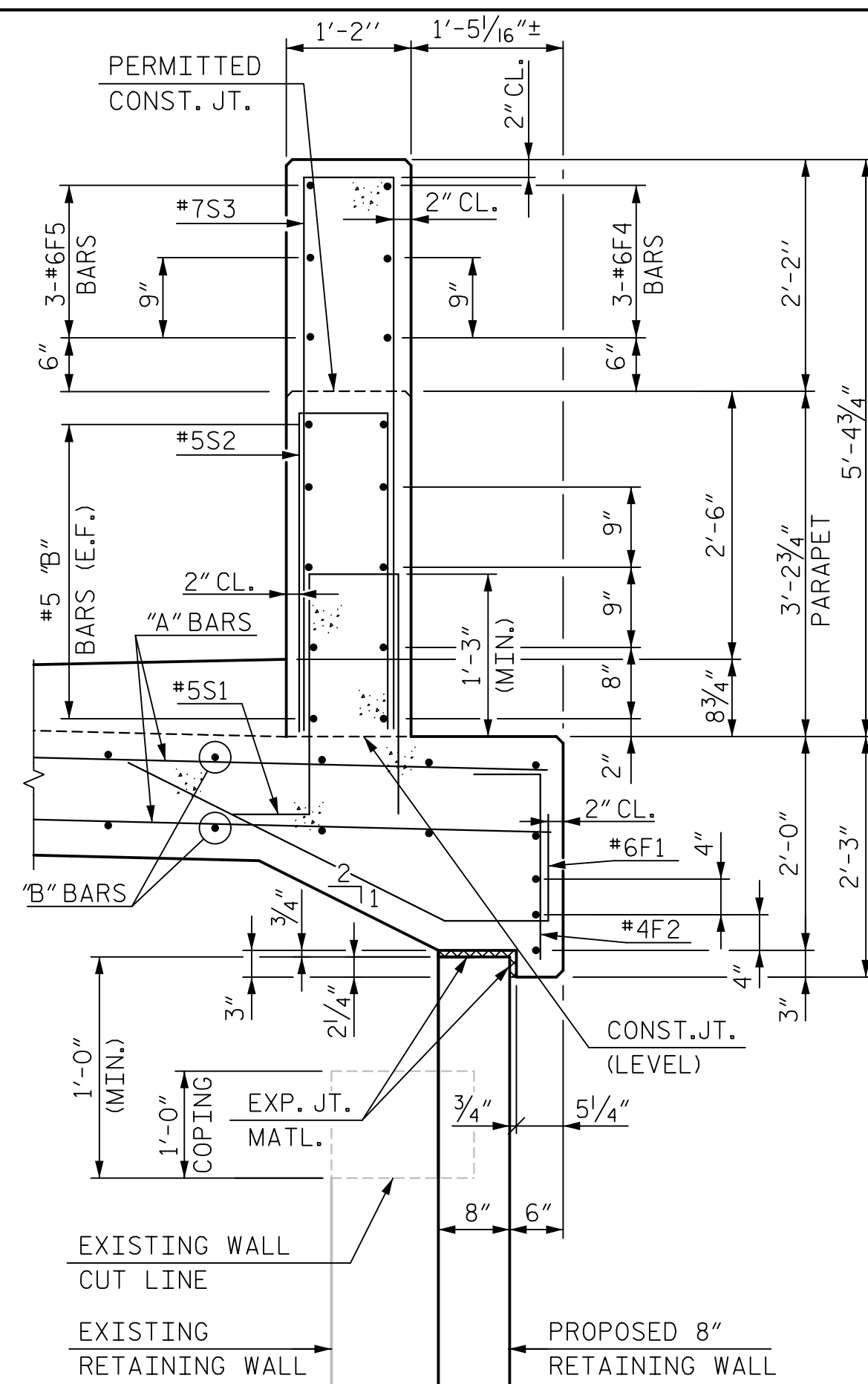
SHEET 3 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

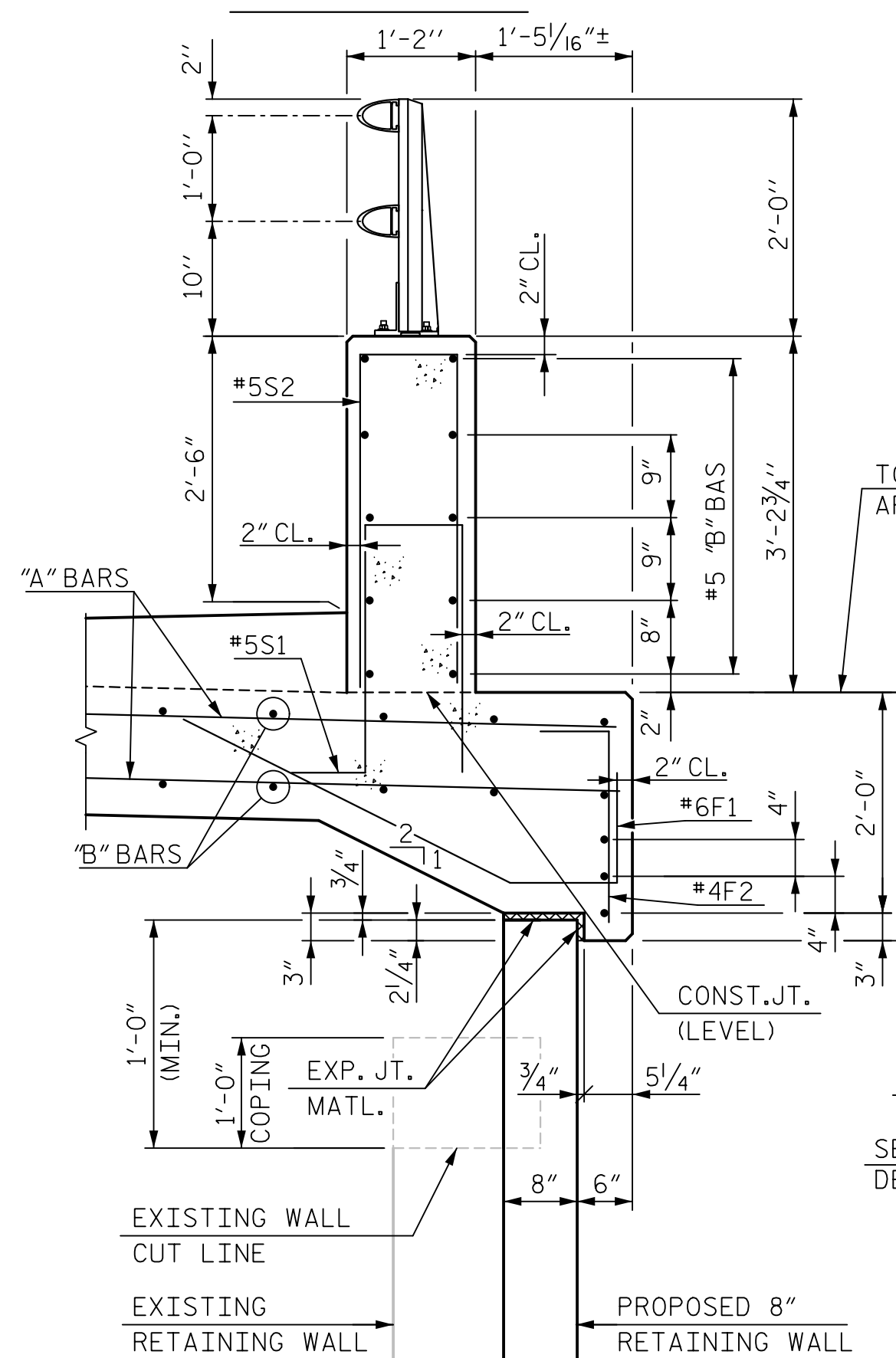
STANDARD  
 BRIDGE APPROACH  
 SLAB FOR FLEXIBLE  
 PAVEMENT

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

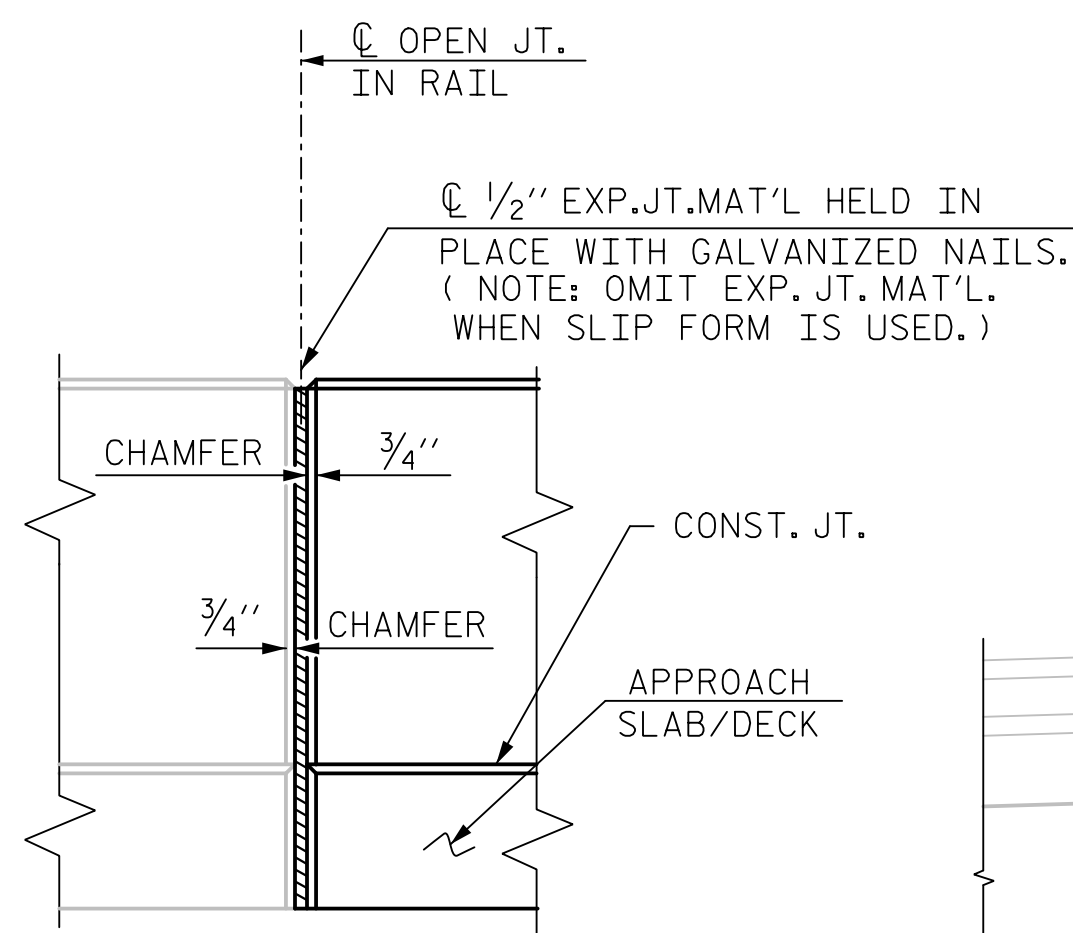
TOTAL SHEETS 54



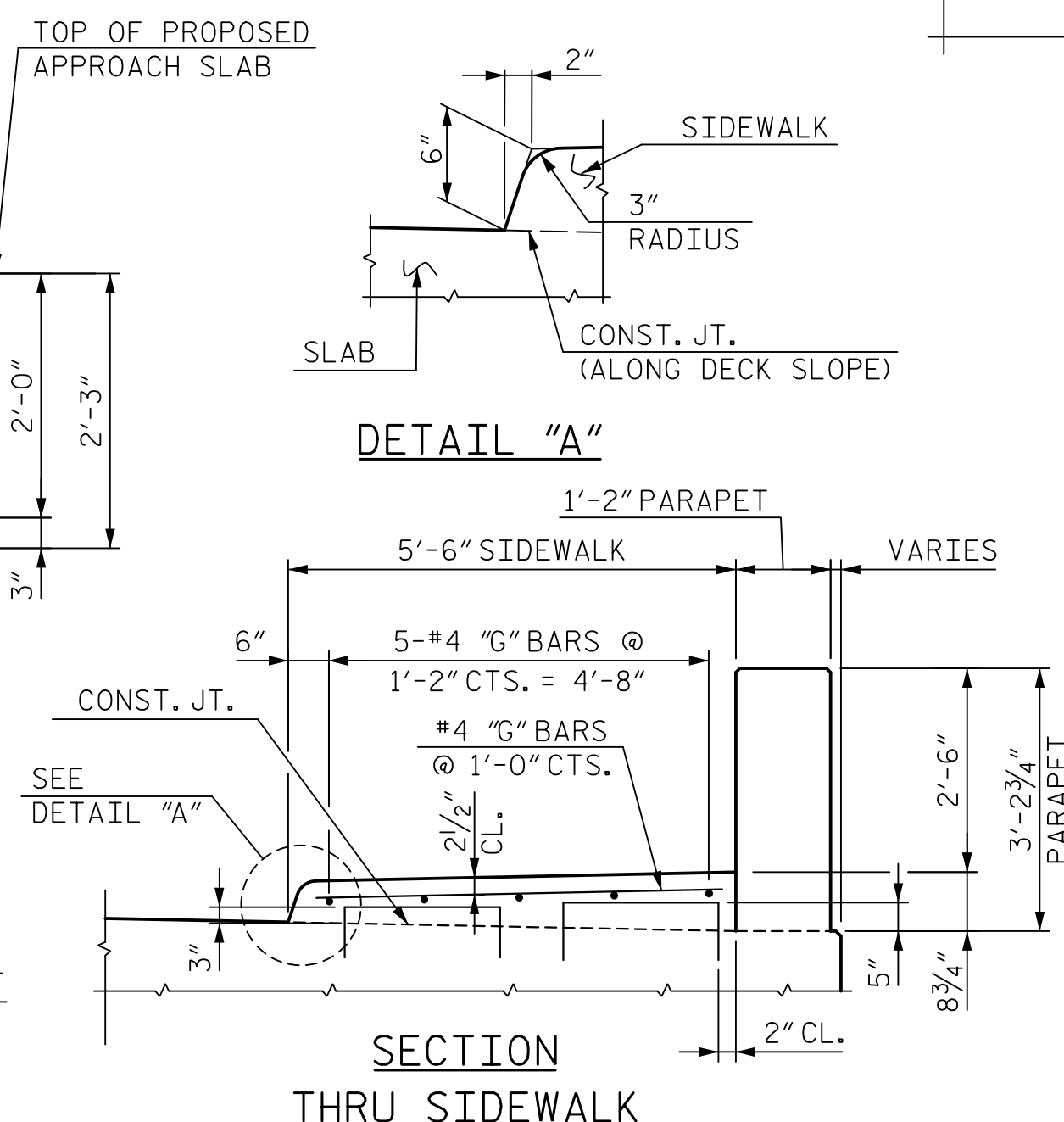
SECTION A-A



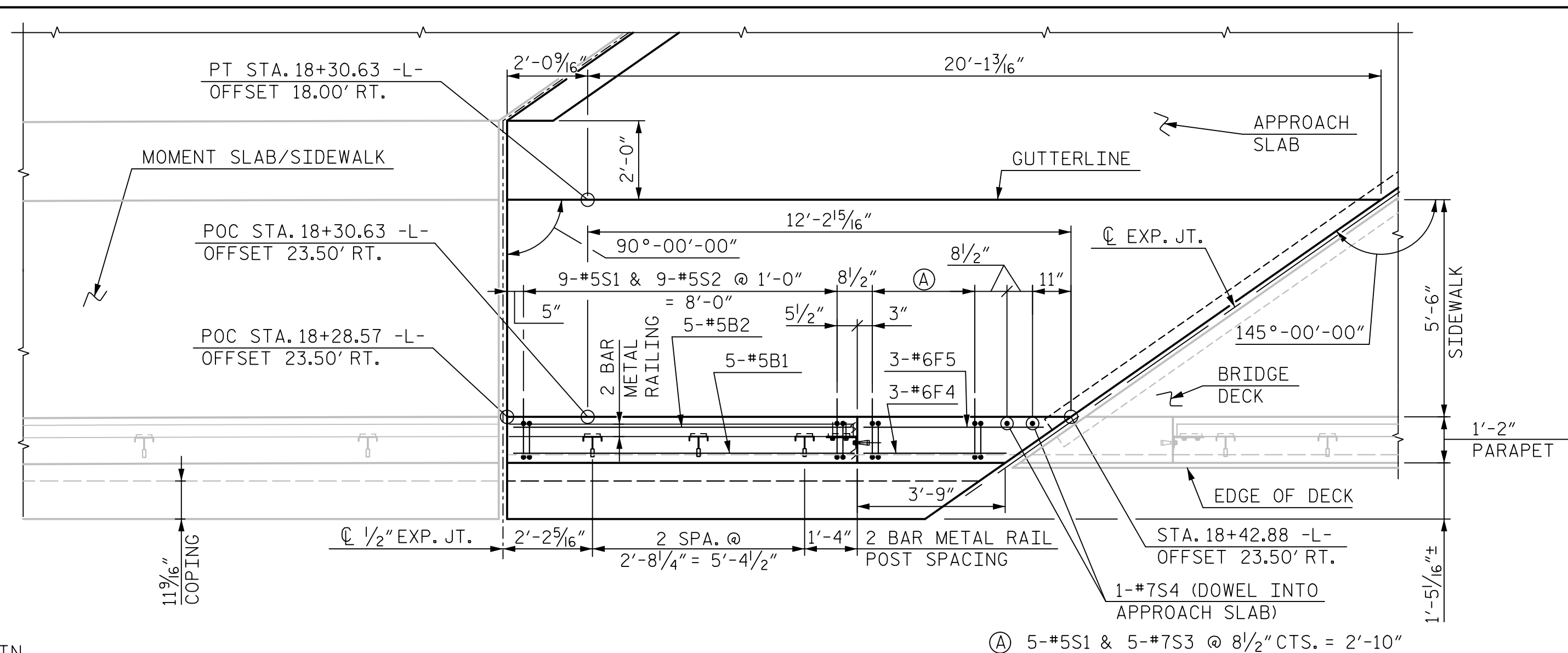
SECTION B-B



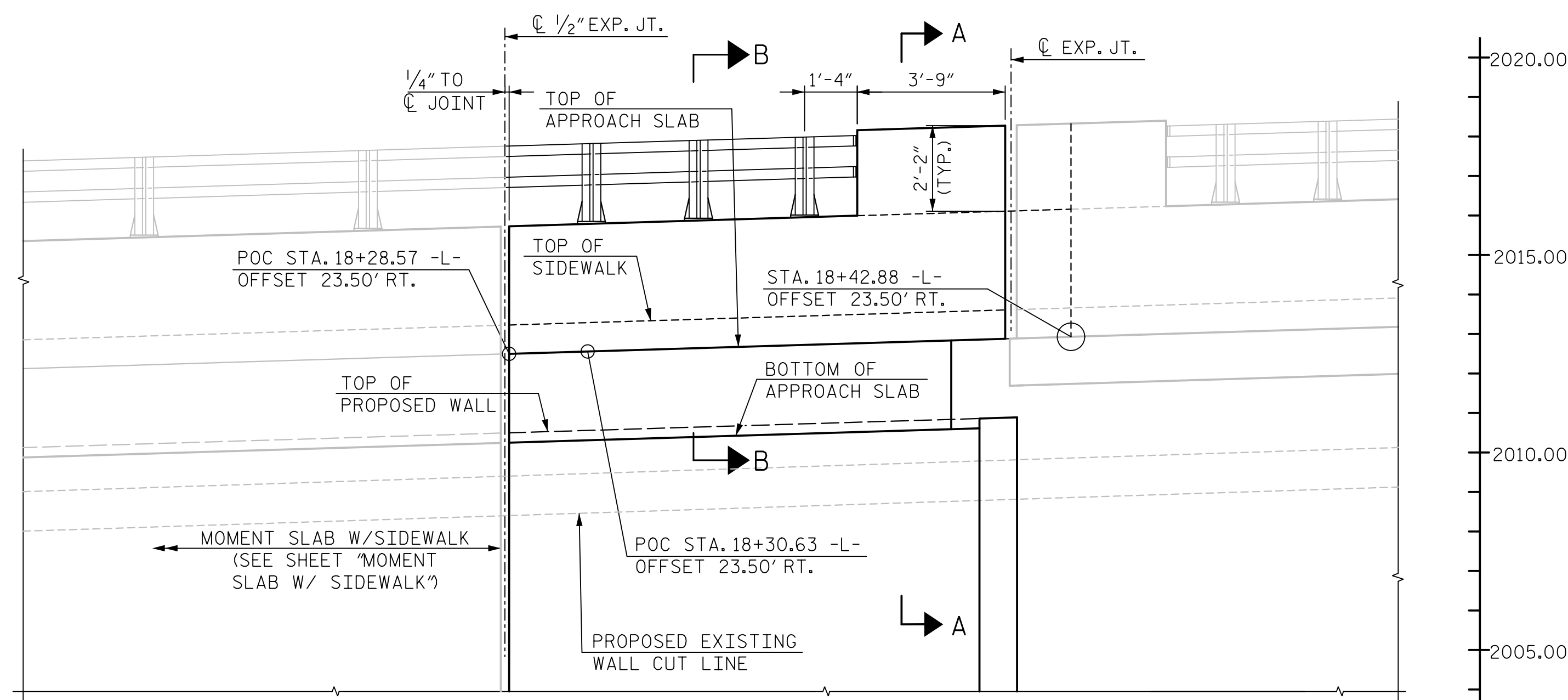
ELEVATION AT EXPANSION JOINTS  
PARAPET RAIL DETAILS



SECTION THRU SIDEWALK



PARAPET PLAN EXTENSION - AT APPROACH SLAB AT END BENT 1



PARAPET EXTENSION ELEVATION - AT APPROACH SLAB AT END BENT 1

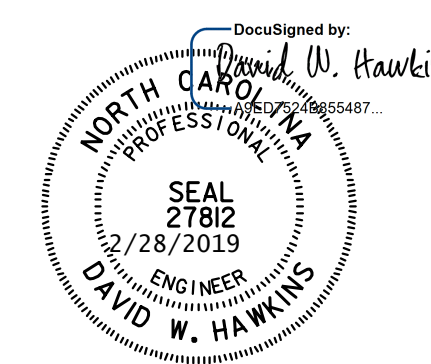
NOTES

THE COST OF THE SIDEWALK PARAPET AT END BENT 1 ON THE APPROACH SLAB SHALL BE INCLUDED IN THE LINEAR FOOT CONTRACT PRICE BID FOR "1'-2" X 2'-6" CONCRETE PARAPET" AND "1'-2" X 3'-2 3/4" CONCRETE PARAPET".

THE SIDEWALK PARAPET AT END BENT 1 ON APPROACH SLAB 1 SHALL NOT BE CAST UNTIL APPROACH SLAB CONCRETE AT END BENT 1 HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN PARAPET AND END POSTS SHALL BE EPOXY COATED.

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



BAR TYPES					
ALL BAR DIMENSIONS ARE OUT TO OUT					
BILL OF MATERIAL					
FOR PARAPET					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	5	#5	STR	12'-5"	65
* B2	5	#5	STR	13'-5"	70
* F4	3	#6	STR	3'-7"	16
* F5	3	#6	STR	4'-6"	20
* S1	14	#5	1	6'-0"	88
* S2	9	#5	2	6'-10"	64
* S3	5	#7	2	11'-2"	114
* S4	2	#7	STR	6'-2"	25
* EPOXY COATED REINFORCING STEEL					LBS. 462
CLASS AA CONCRETE					CU. YDS. 2.3
PARAPET					CU. YDS. 2.3
1'-2" X 3'-2 3/4" CONCRETE PARAPET					LN. FT. 13.51
TWO BAR METAL RAIL					LN. FT. 8.90

PROJECT NO. B-5905  
JACKSON COUNTY  
 STATION: 19+41.94 -L-

SHEET 4 OF 4

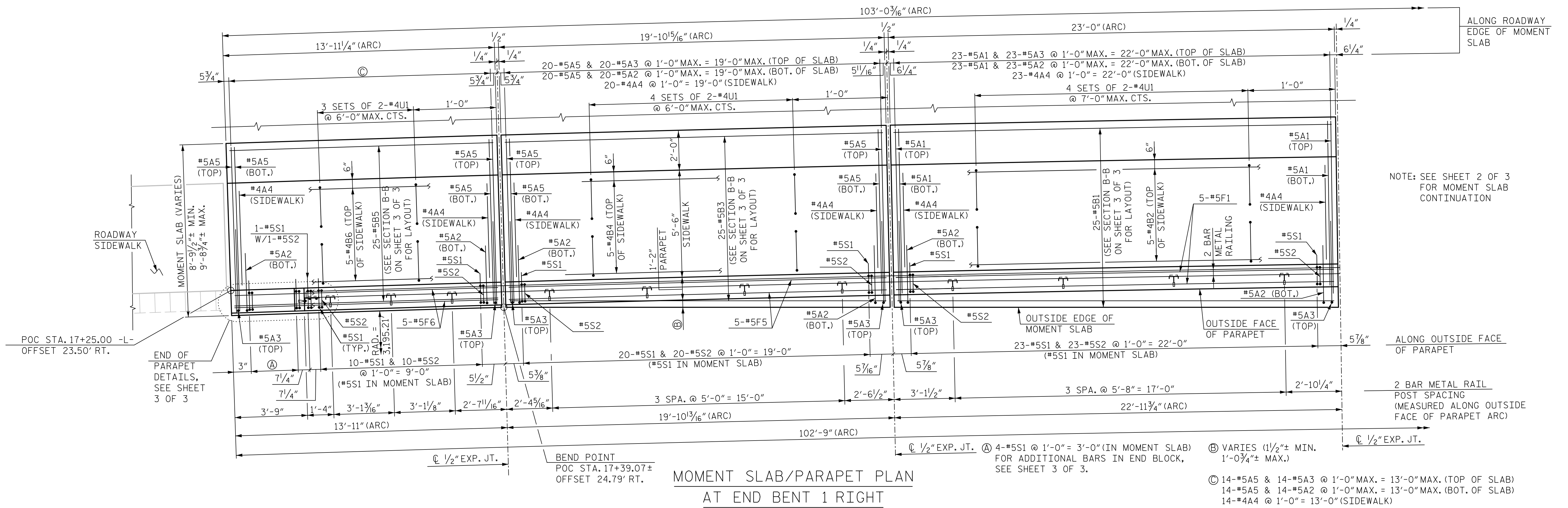
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT					
REVISIONS					SHEET NO.
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		
					TOTAL SHEETS 54

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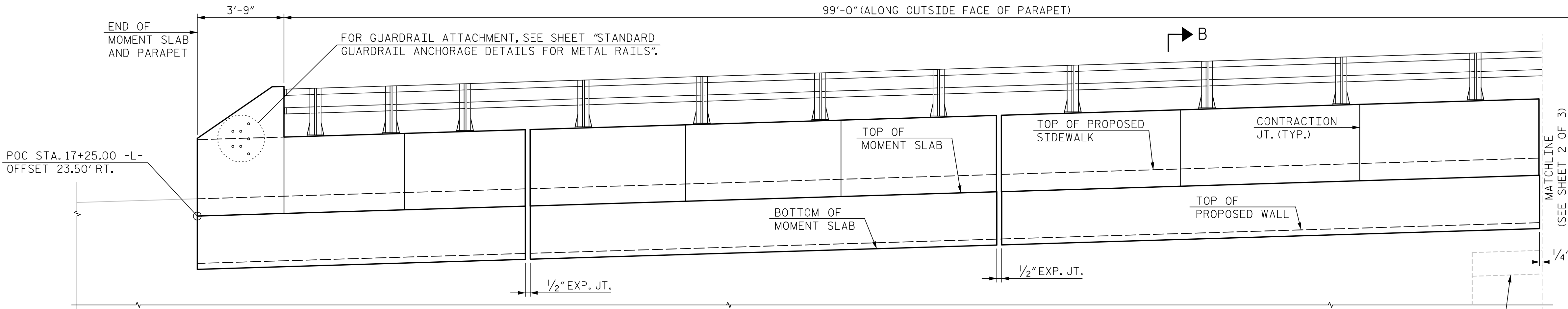
DRAWN BY: M. WRIGHT DATE: 7/18  
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 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 11/18

DWG. NO. 50

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MOMENT SLAB/PARAPET PLAN  
AT END BENT 1 RIGHT



MOMENT SLAB/PARAPET ELEVATION  
AT END BENT 1 RIGHT

NOTE: SEE SHEET 2 OF 3  
FOR MOMENT SLAB  
CONTINUATION

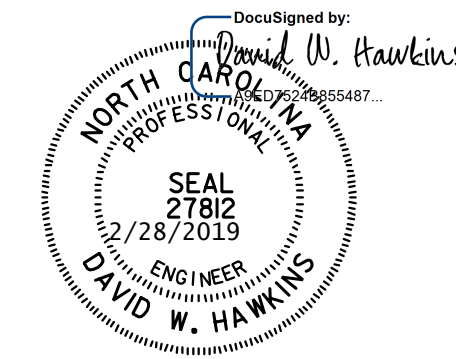
NOTE: SEE SHEET 3 OF 3  
FOR SECTION  
AND DETAILS

PROJECT NO. B-5905  
JACKSON COUNTY  
 STATION: 19+41.94 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

MOMENT SLAB  
 WITH SIDEWALK



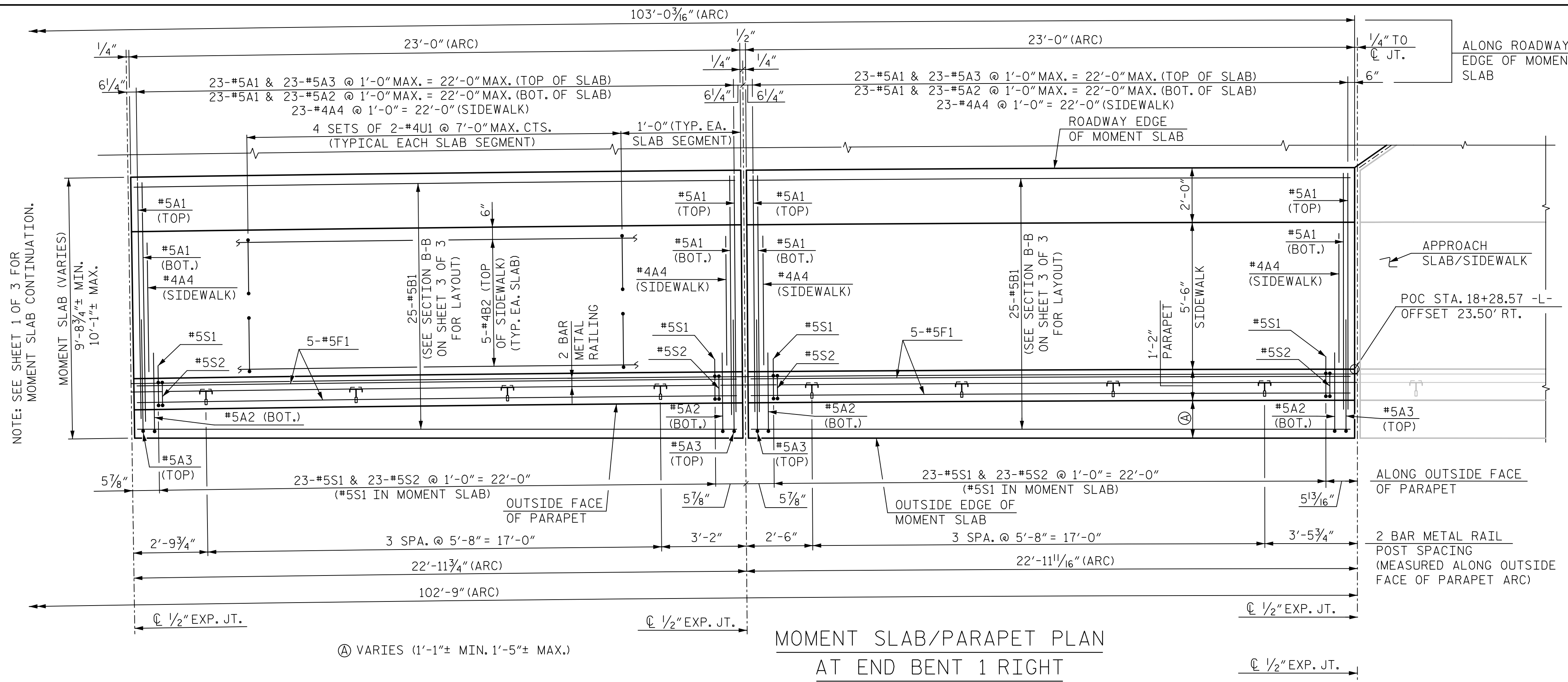
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 CHECKED BY: P. BARBER DATE: 11/18  
 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 11/18

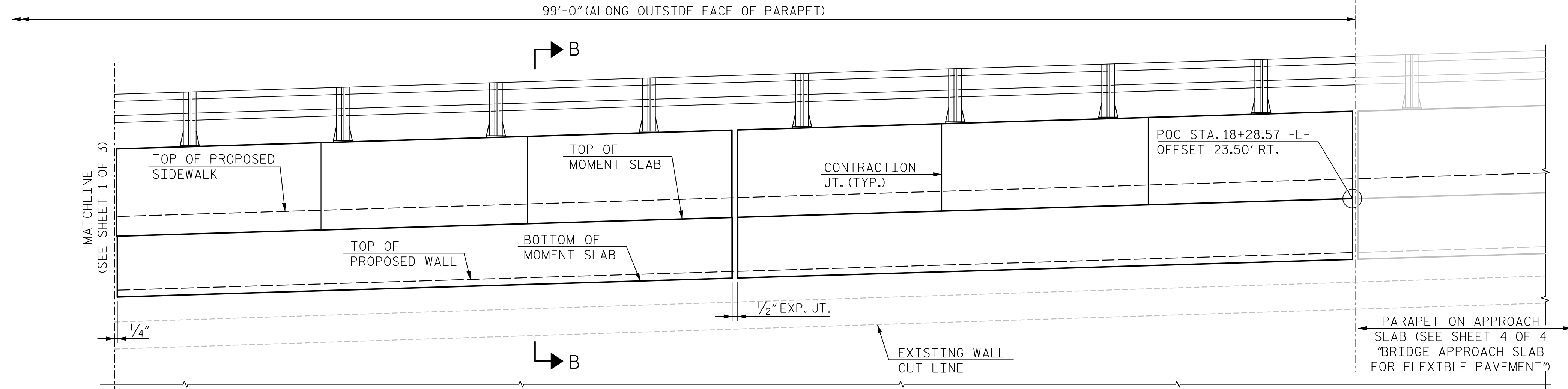
DWG. NO. 51

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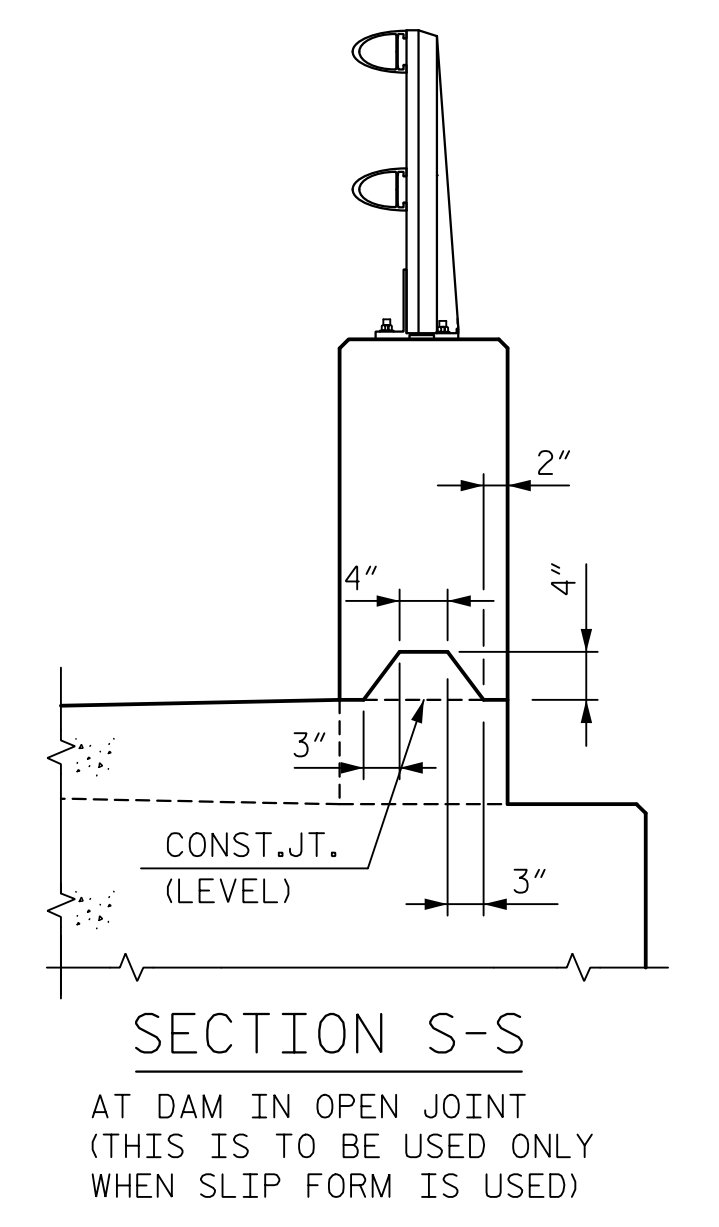
REVISIONS						SHEET NO. S1-51
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 54
2			4			



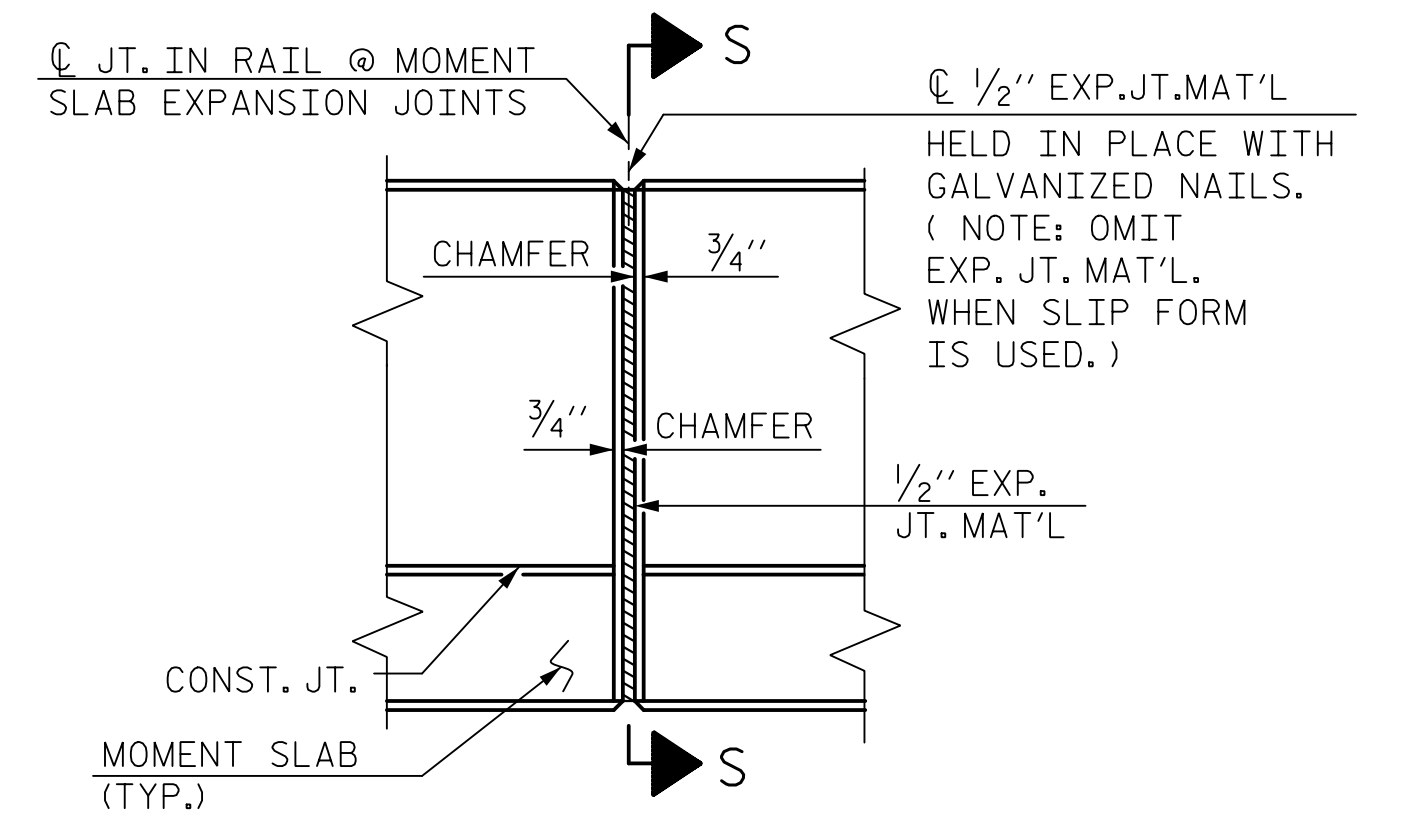
MOMENT SLAB/PARAPET PLAN AT END BENT 1 RIGHT



MOMENT SLAB/PARAPET ELEVATION AT END BENT 1 RIGHT



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



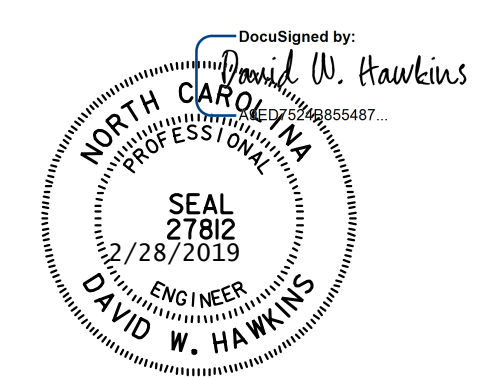
ELEVATION AT EXPANSION JOINTS PARAPET RAIL DETAILS

PROJECT NO. B-5905  
JACKSON COUNTY  
 STATION: 19+41.94 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

MOMENT SLAB WITH SIDEWALK



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DWG. NO. 52

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REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			54
2			4			

### NOTES

THE PARAPET ON MOMENT SLAB SHALL NOT BE CAST UNTIL MOMENT SLAB CONCRETE HAS ATTAINED AN AGE OF THREE CURING DAYS OR HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN THE PARAPET SHALL BE EPOXY COATED.

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

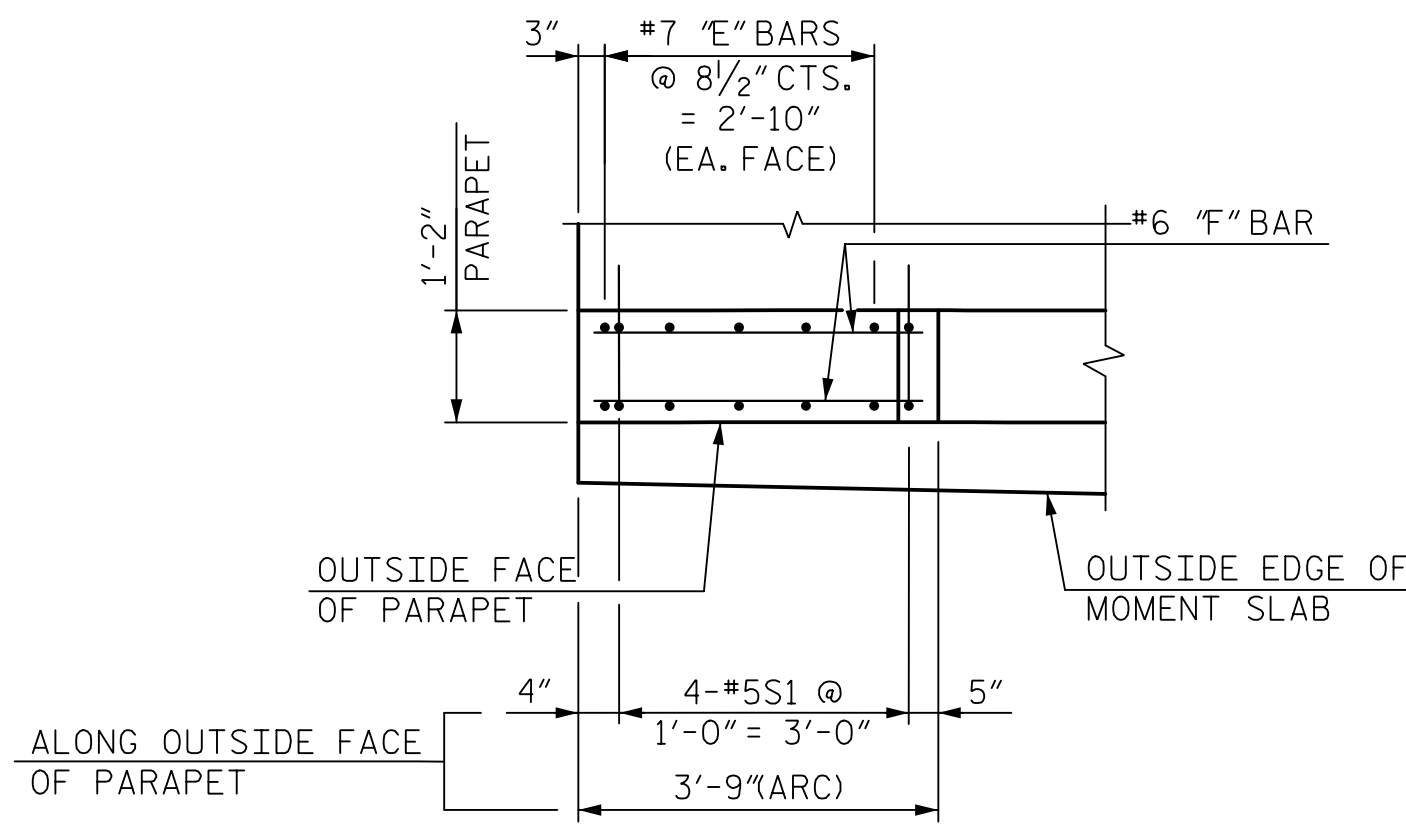
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT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

FOR MOMENT SLAB QUANTITIES, SEE BILL OF MATERIAL FOR MOMENT SLAB. THE PAYMENT FOR THE MOMENT SLAB SHALL BE INCLUDED IN THE UNIT PRICE BID FOR "MOMENT SLAB WITH SIDEWALK."

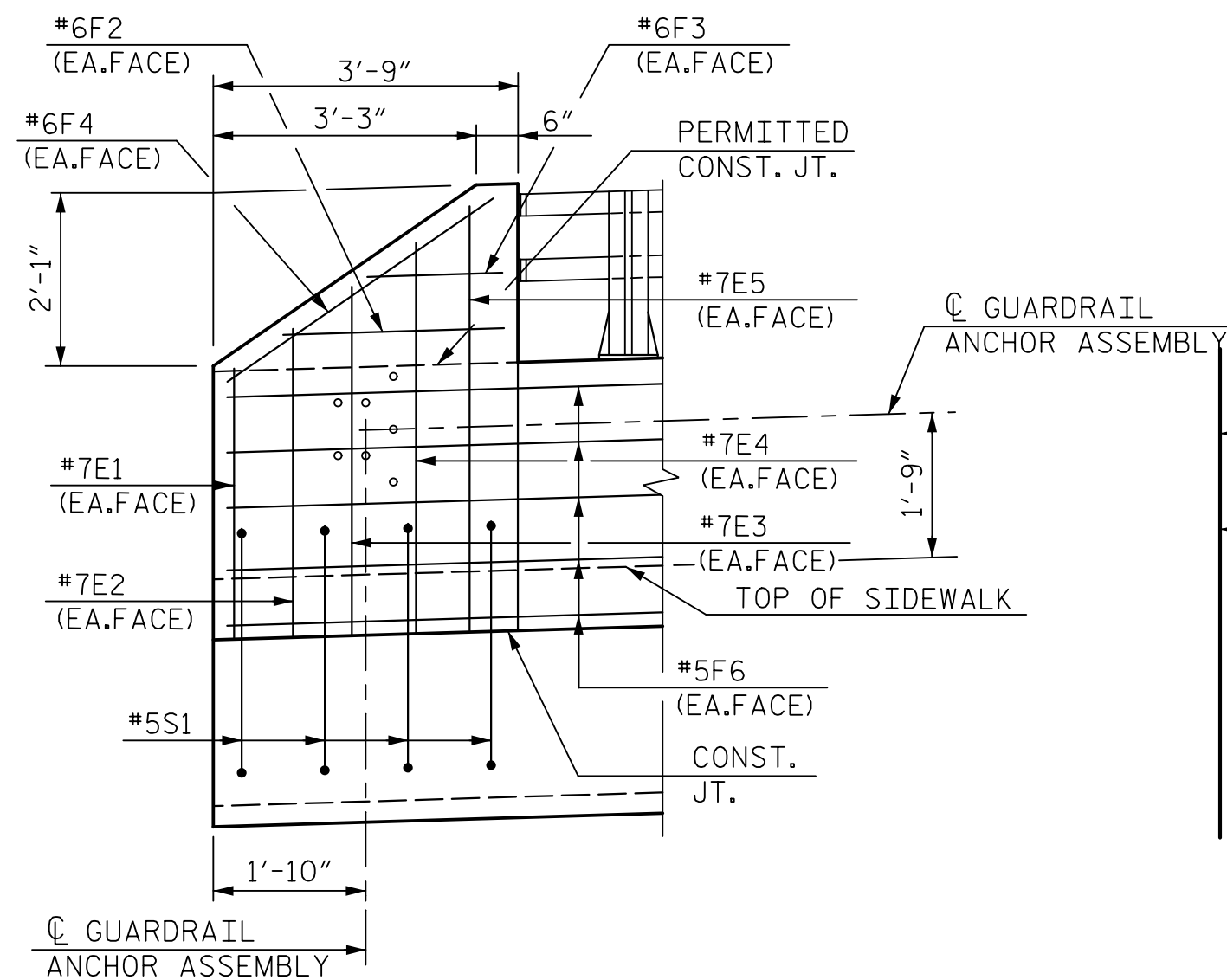
FOR PARAPET ON MOMENT SLAB QUANTITIES, SEE BILL OF MATERIAL FOR PARAPET. THE PAYMENT FOR PARAPET ON THE MOMENT SLAB SHALL BE INCLUDED IN THE UNIT PRICE BID FOR "1'-2" x 3'-2 3/4" CONCRETE PARAPET".

IF EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, BARRIERS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH CONCRETE PARAPET RAIL WITH MOMENT SLAB OR CONCRETE FACING FOR RETAINING WALL WILL BE THICKER THAN 1'-0", CONCRETE PARAPET RAIL WITH MOMENT SLAB DETAILS SHALL BE REVISED AND SUBMITTED FOR APPROVAL.

FOR MOMENT SLAB WITH SIDEWALK, SEE SPECIAL PROVISIONS.

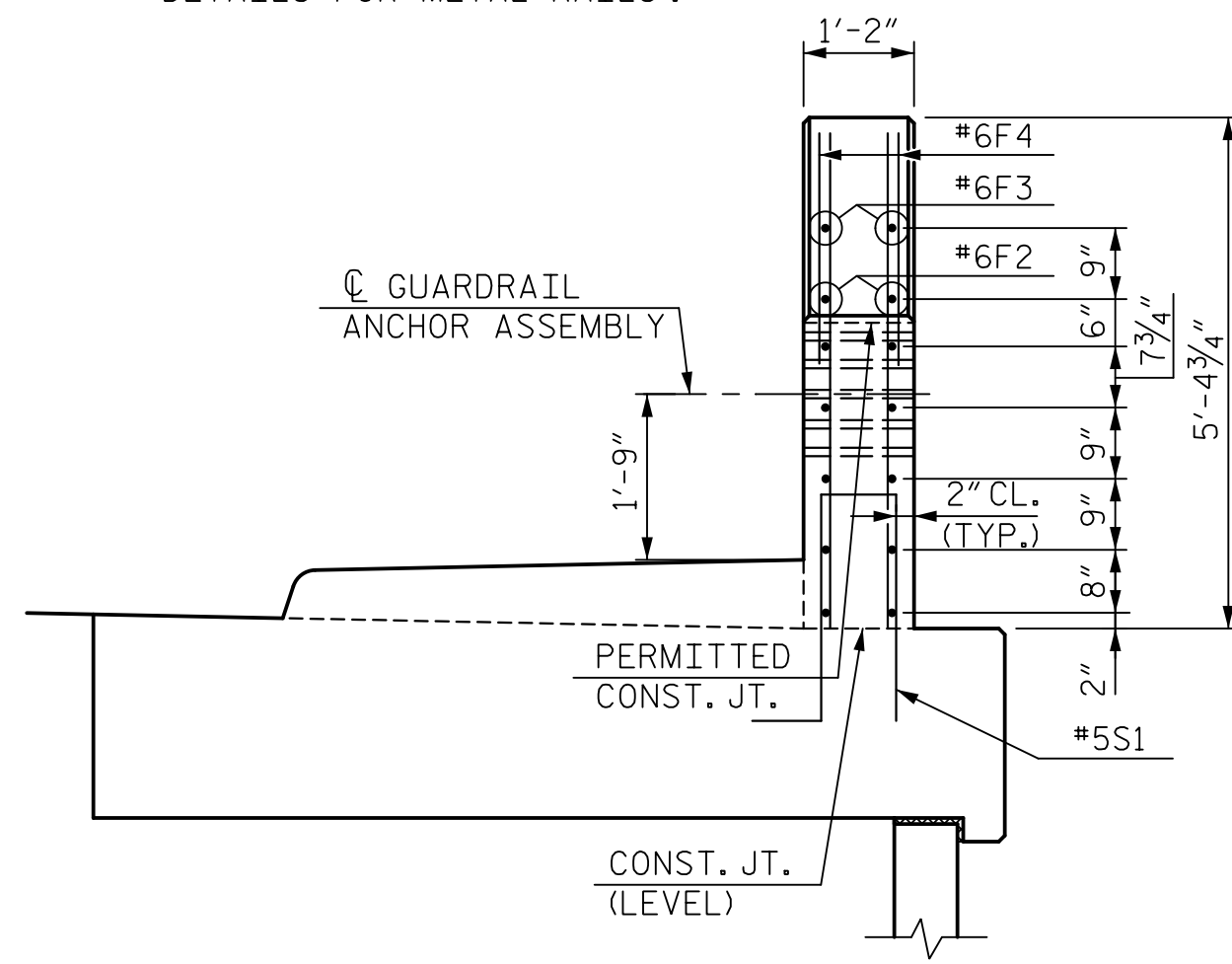


END OF PARAPET PLAN



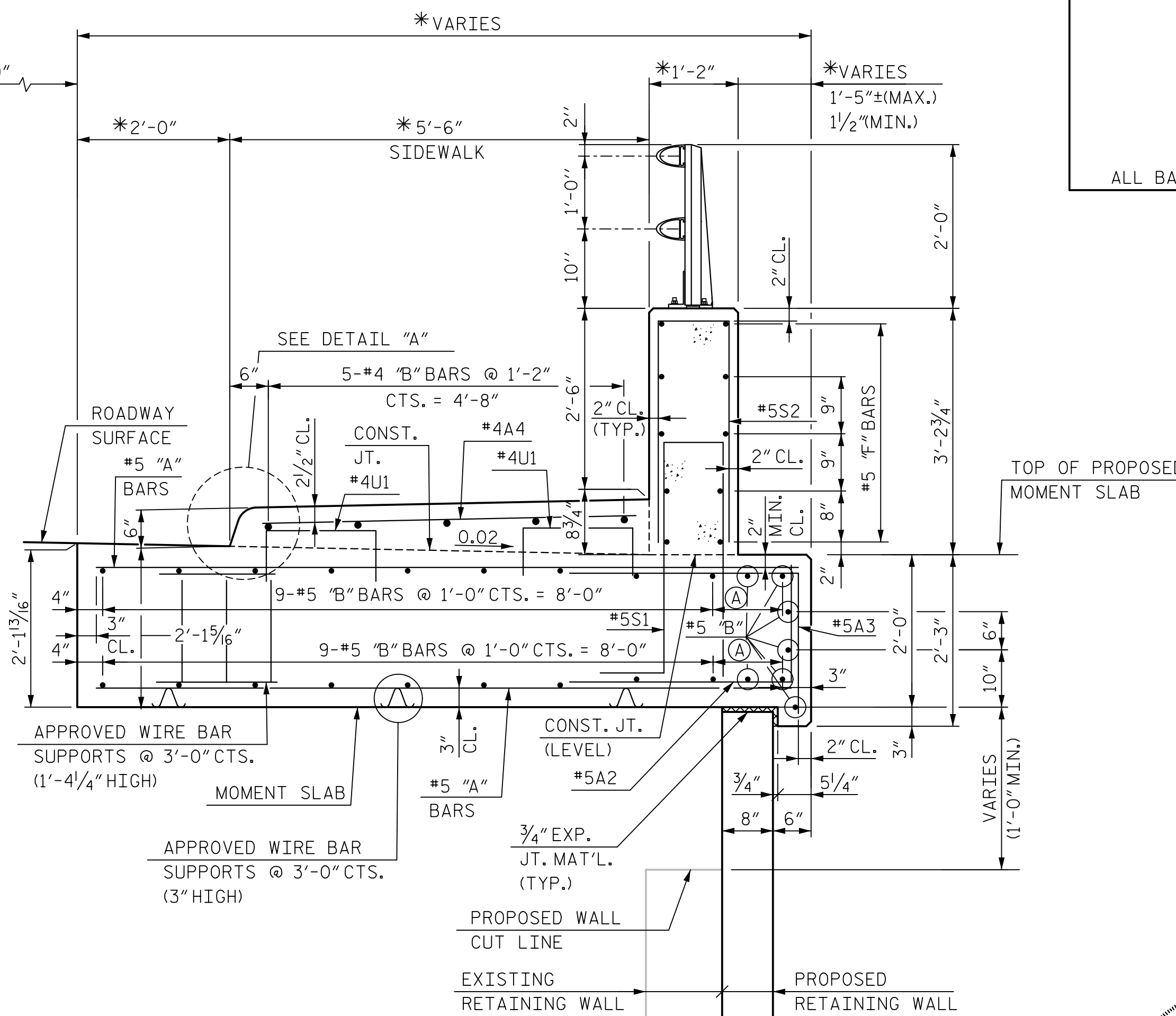
END OF RAIL ELEVATION AT END OF PARAPET

FOR GUARDRAIL ANCHOR ASSEMBLY PATTERN, SEE SHEET "STANDARD GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS".



END VIEW

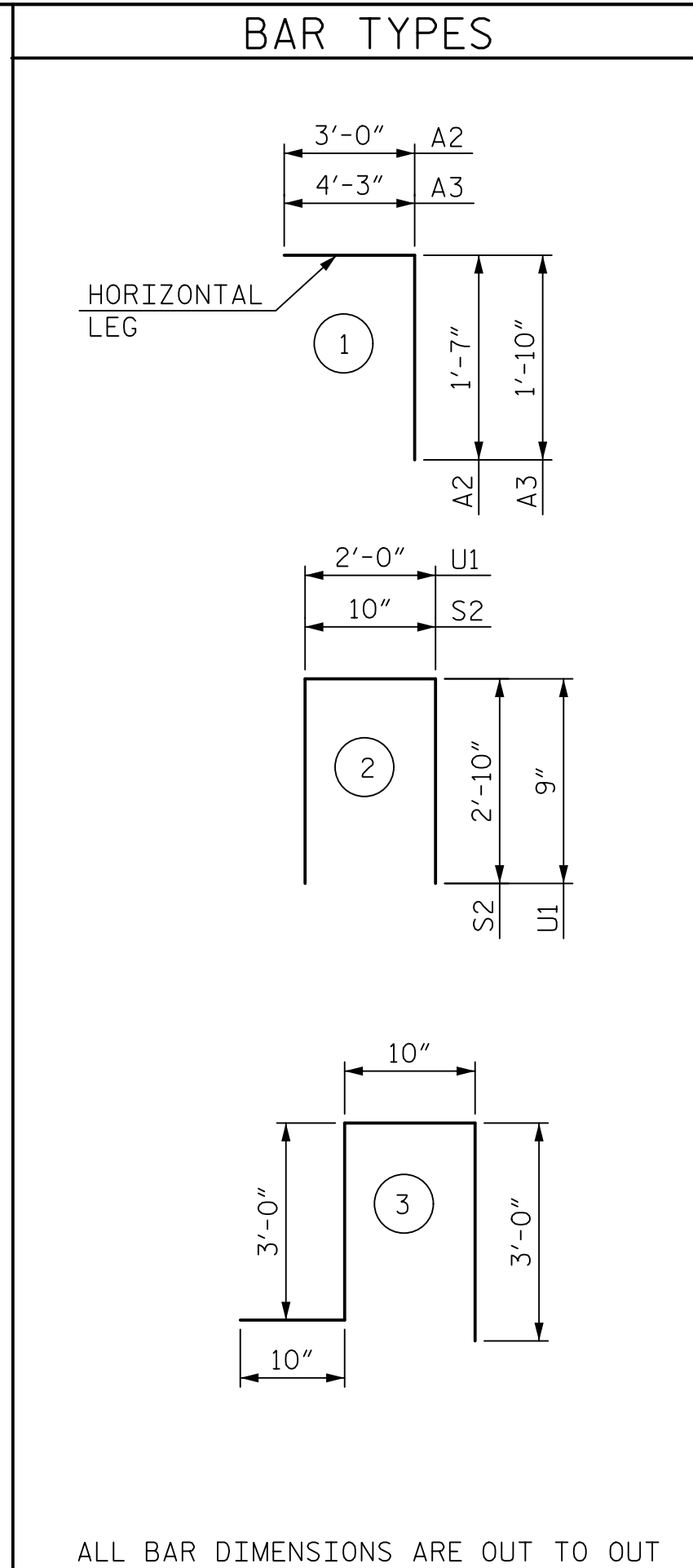
MOMENT SLAB END OF PARAPET DETAILS



SECTION B-B

\* RADIAL TO -L-

Ⓐ 2 EQ. SPACES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL					
PARAPET					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* E1	2	#7	STR	3'-2"	13
* E2	2	#7	STR	3'-8"	15
* E3	2	#7	STR	4'-1"	17
* E4	2	#7	STR	4'-6"	18
* E5	2	#7	STR	5'-0"	20
* F1	30	#5	STR	22'-7"	707
* F2	2	#6	STR	2'-7"	8
* F3	2	#6	STR	1'-7"	5
* F4	2	#6	STR	3'-8"	11
* F5	10	#5	STR	19'-6"	203
* F6	10	#5	STR	13'-6"	141
* S2	100	#5	2	6'-6"	678

* EPOXY COATED REINFORCING STEEL	LBS.	1,836
CLASS AA CONCRETE		
PARAPET	CU. YDS.	14.5
1'-2" x 3'-2 3/4" CONCRETE PARAPET LIN. FT.		102.75

BILL OF MATERIAL					
MOMENT SLAB WITH SIDEWALK					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	138	#5	STR	8'-10"	1,271
A2	103	#5	1	4'-7"	492
A3	103	#5	1	6'-1"	654
* A4	103	#4	STR	5'-0"	344
A5	68	#5	STR	8'-4"	591
B1	75	#5	STR	22'-8"	1,773
* B2	15	#4	STR	22'-8"	227
B3	25	#5	STR	19'-6"	508
* B4	5	#4	STR	19'-6"	65
B5	25	#5	STR	13'-7"	354
* B6	5	#4	STR	13'-7"	45
* S1	104	#5	3	7'-8"	832
* U1	38	#4	2	3'-6"	89

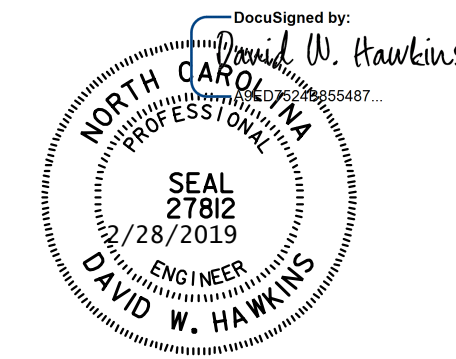
REINFORCING STEEL	LBS.	5,643
* EPOXY COATED REINFORCING STEEL	LBS.	1,602
CLASS AA CONCRETE		
MOMENT SLAB	CU. YDS.	75.0
SIDEWALK	CU. YDS.	12.9
TOTAL CLASS AA CONCRETE	CU. YDS.	87.9
TWO BAR METAL RAIL	LIN. FT.	99.00
CONCRETE MOMENT SLAB WITH SIDEWALK	LIN. FT.	102.75

PROJECT NO. B-5905  
JACKSON COUNTY  
 STATION: 19+41.94 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

MOMENT SLAB WITH SIDEWALK



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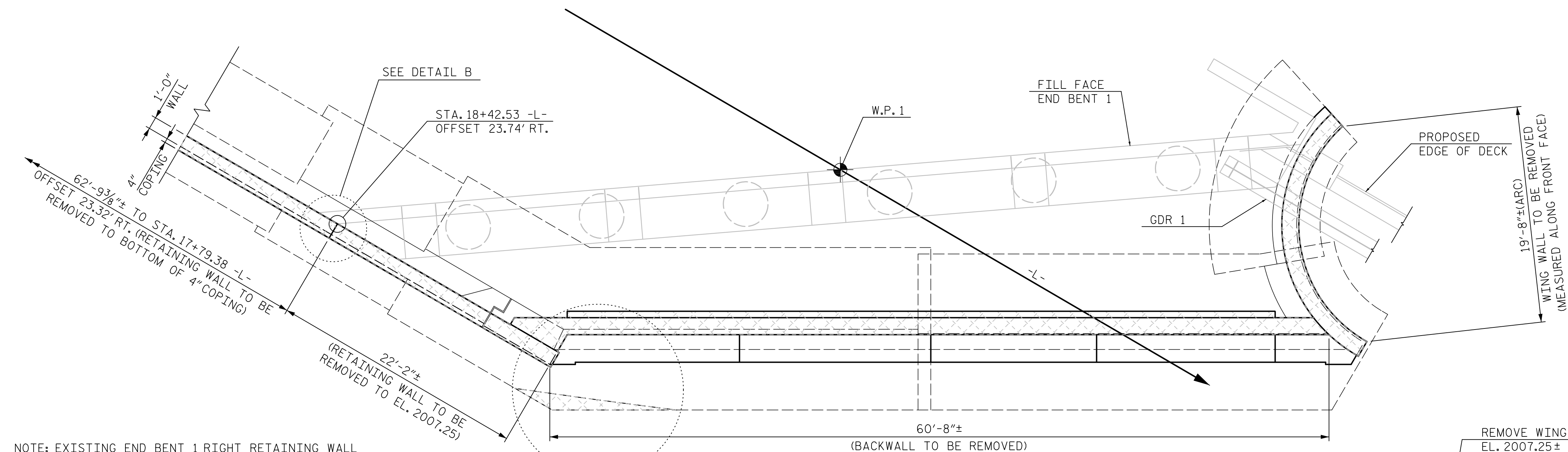
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 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 11/18

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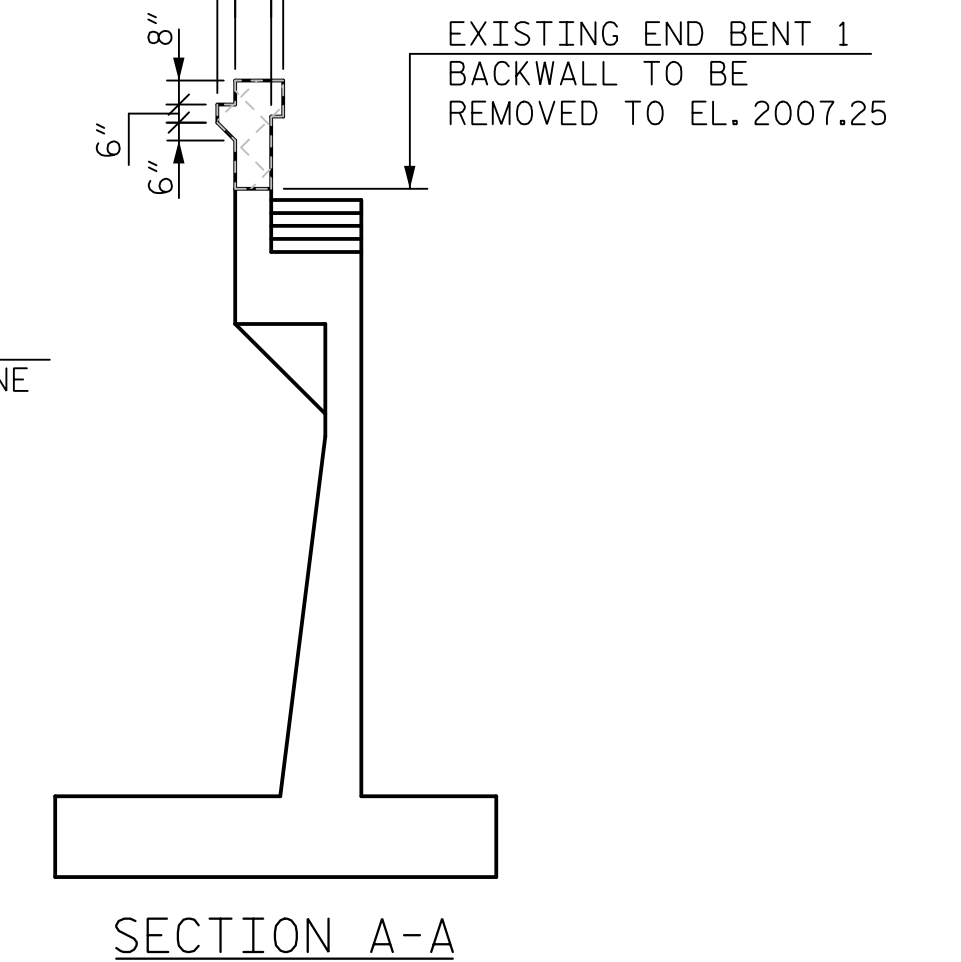
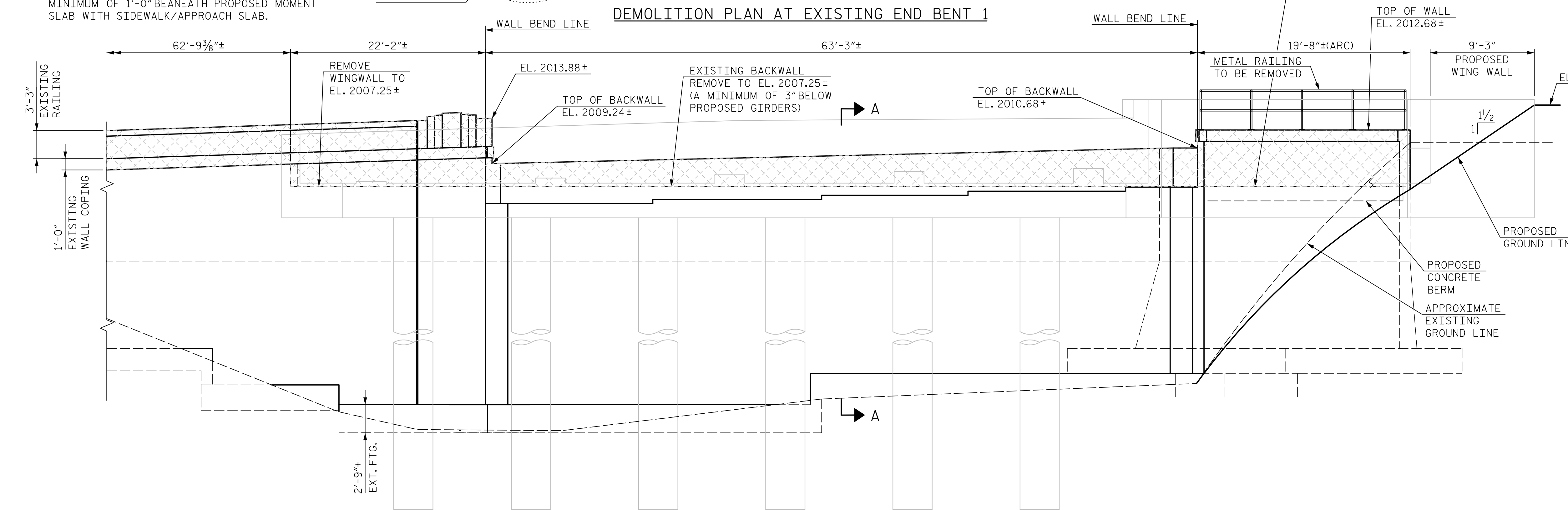
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-53
1			3			TOTAL SHEETS
2			4			54

**NOTES:**  
 REMOVAL ELEVATIONS SHOWN ARE OF THE COMPLETED PARTIAL DEMOLITION, UNLESS NOTED OTHERWISE. ALL CONCRETE AND REINFORCING STEEL SHALL BE CUT AN ADDITIONAL 2" FROM THE COMPLETED ELEVATIONS AND THEN REPAIRED TO THE PROPER COMPLETED ELEVATION TO PROTECT THE RETAINED REINFORCING STEEL.  
 THE COST OF THE PARTIAL REMOVAL OF END BENT 1 AND REQUIRED OVER POURS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 19+41.94 -L-".

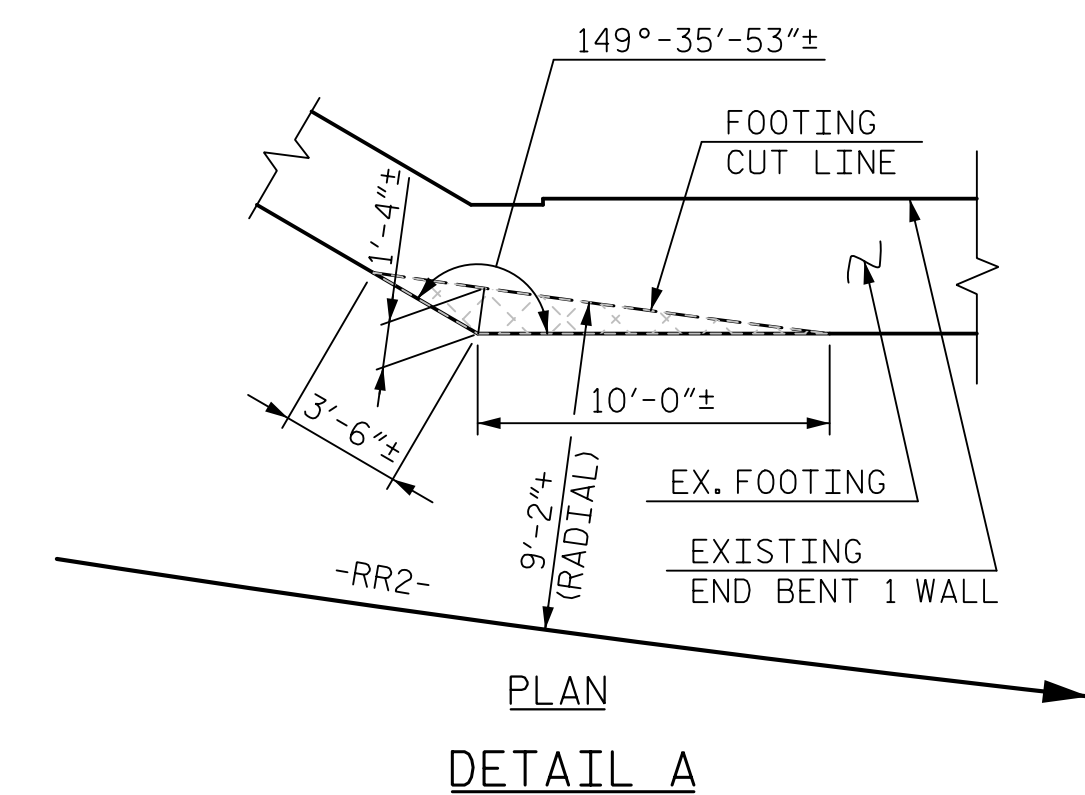


NOTE: EXISTING END BENT 1 RIGHT RETAINING WALL SHALL BE CUT AT BOTTOM OF COPING OR A MINIMUM OF 1'-0" BE NEATH PROPOSED MOMENT SLAB WITH SIDEWALK/APPROACH SLAB.

DENOTES AREA FOR REMOVAL

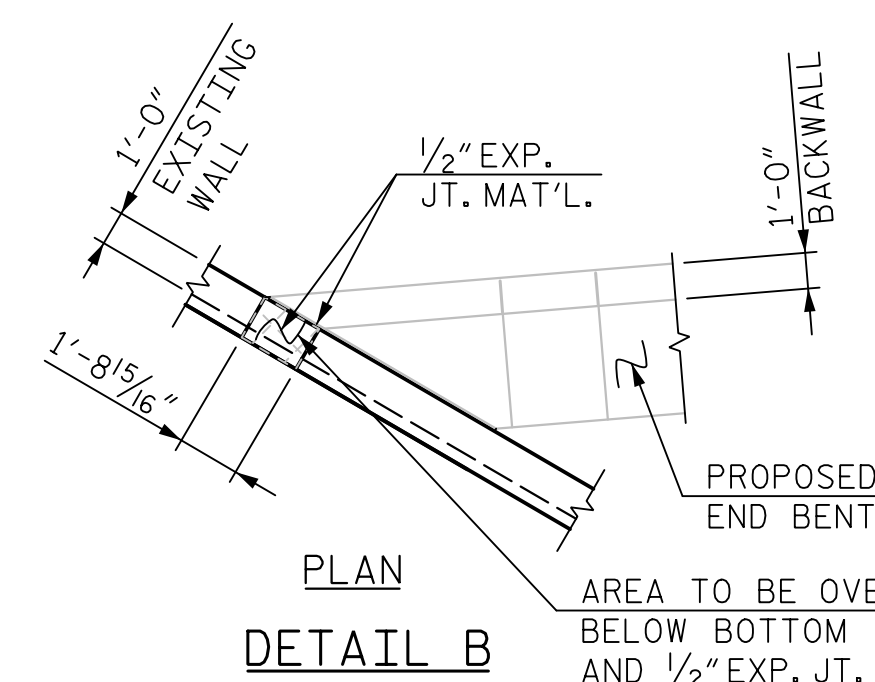


PROJECT NO. B-5905  
JACKSON COUNTY  
 STATION: 19+41.94 -L-

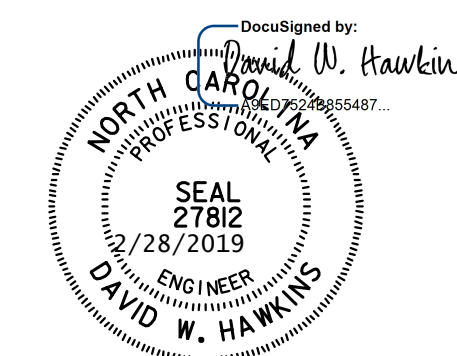


NOTE: THE FOOTING CUT EDGE SHALL BE REPAIRED WITH A 2" THICKNESS TO PROTECT EXPOSED STEEL IN FOOTING. FINAL HORIZONTAL CLEARANCE FROM CENTERLINE TRACK SHALL BE 9'-0" MIN.

NOTE: FOOTING REMOVAL SHALL BE A MINIMUM DEPTH OF TOP OF FOOTING TO TOP OF RAIL OR A MAXIMUM OF BOTTOM OF FOOTING.



AREA TO BE OVERPOURED TO 1/2" BELOW BOTTOM OF APPROACH SLAB AND 1/2" EXP. JT. MAT'L. PLACED ON TOP



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CHECKED BY: P. BARBER	DATE: 9/18		
DESIGN ENGINEER OF RECORD: D. HAWKINS	DATE: 11/18		

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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S1-54
EXISTING END BENT 1 DEMOLITION PLAN						
REVISIONS						TOTAL SHEETS 54
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			



## STANDARD NOTES

### DESIGN DATA:

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

### MATERIAL AND WORKMANSHIP:

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

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

### CONCRETE:

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

### CONCRETE CHAMFERS:

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

### DOWELS:

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

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

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

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

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

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

### REINFORCING STEEL:

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

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

### STRUCTURAL STEEL:

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

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST  $\frac{5}{16}$ " IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

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

### HANDRAILS AND POSTS:

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

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

### SPECIAL NOTES:

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

# ENGLISH

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