

**TIP PROJECT: BR-0126**

**CONTRACT: C204487**

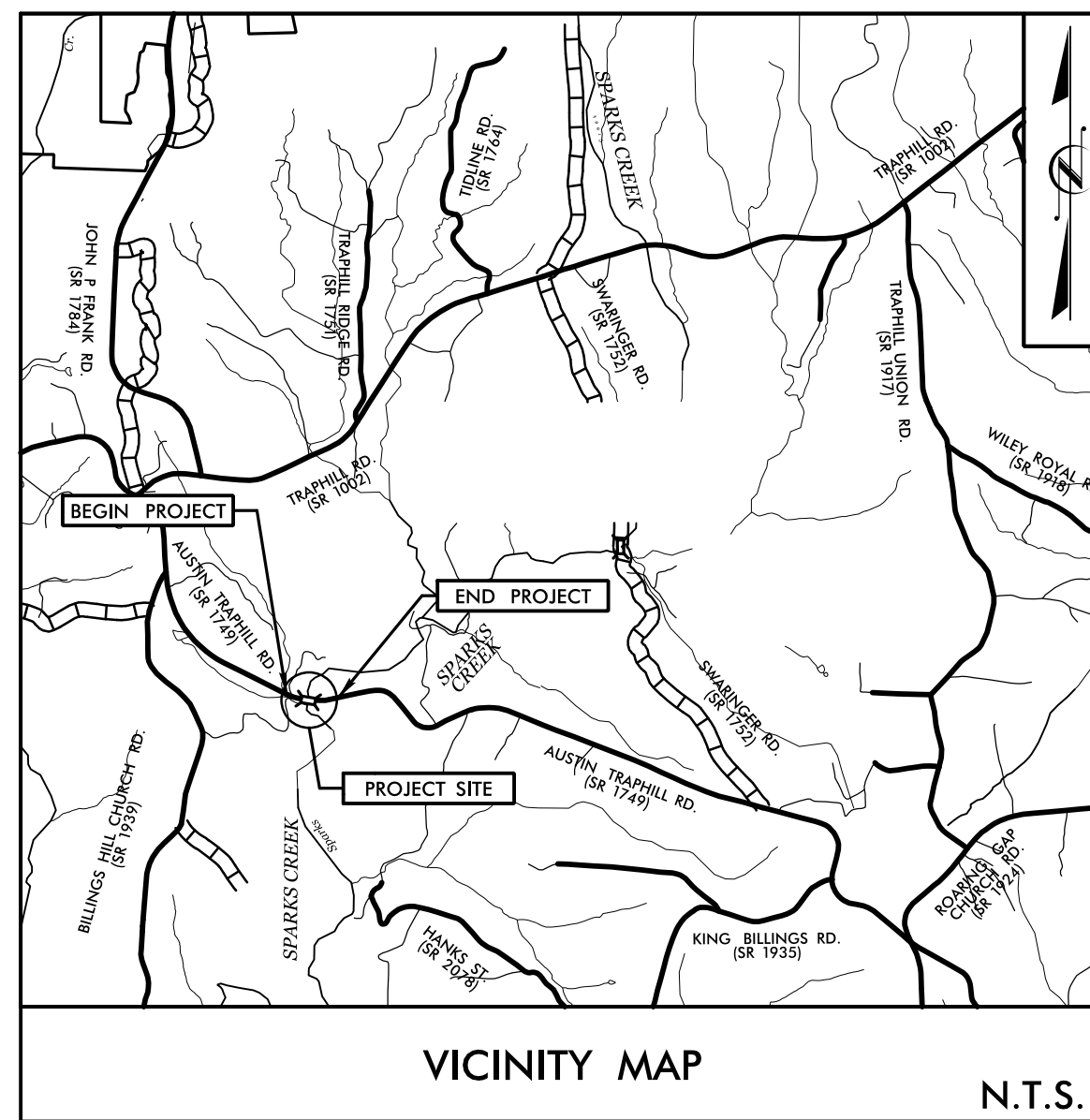
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**WILKES COUNTY**

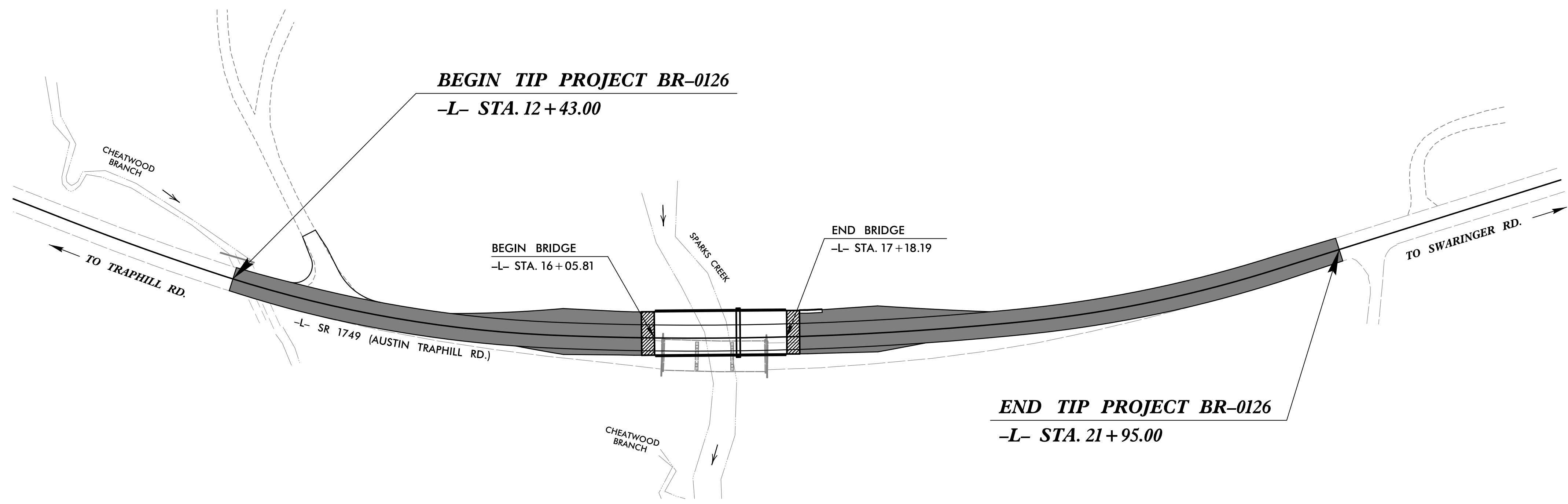
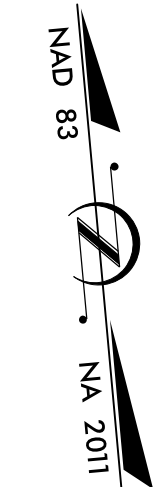
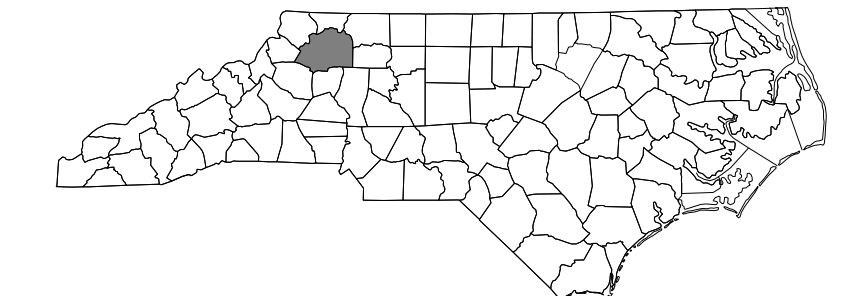
**LOCATION: BRIDGE NO. 960667 OVER SPARKS CREEK  
ON SR 1749 (AUSTIN TRAPHILL ROAD)**

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0126		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
48835.1.1		P.E.	
48835.2.1		ROW/UTIL	
48835.3.1	2020001	CONST.	



VICINITY MAP  
N.T.S.



**STRUCTURE**

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

**DESIGN DATA**

ADT 2020 =	775
ADT 2040 =	1100
DHV =	N/A
D =	N/A
T =	N/A
V =	55 MPH
FUNC. CLASSIFICATION: MINOR RURAL COLLECTOR SUB-REGIONAL TIER	

**PROJECT LENGTH**

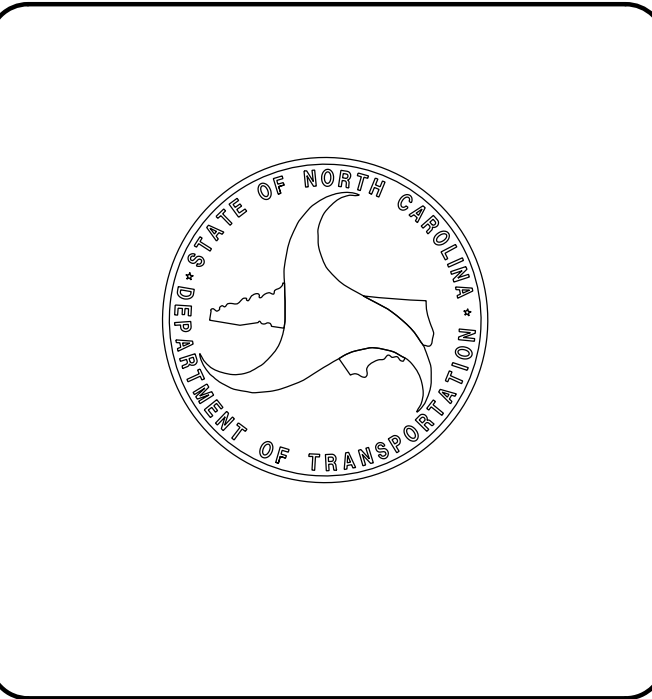
LENGTH OF ROADWAY TIP PROJECT BR-0126 =	0.159 MILES
LENGTH OF STRUCTURE TIP PROJECT BR-0126 =	0.021 MILES
TOTAL LENGTH OF TIP PROJECT BR-0126 =	0.180 MILES
NCDOT CONTACT: <u>DAVID STUTTS, PE</u> STRUCTURES MANAGEMENT UNIT	

PLANS PREPARED FOR THE NCDOT BY:  
**STV ENGINEERS, INC.**  
900 West Trade St., Ste. 715, Charlotte NC, 28202  
NC License Number F-0991

2018 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE: DECEMBER 20, 2020	<b>J. WESLEY JONES, PE</b> PROJECT ENGINEER
LETTING DATE: JANUARY 19, 2021	<b>LAURA E. MELVIN, PE</b> PROJECT DESIGNER

**STRUCTURAL ENGINEER**

SIGNATURE: \_\_\_\_\_ P.E.

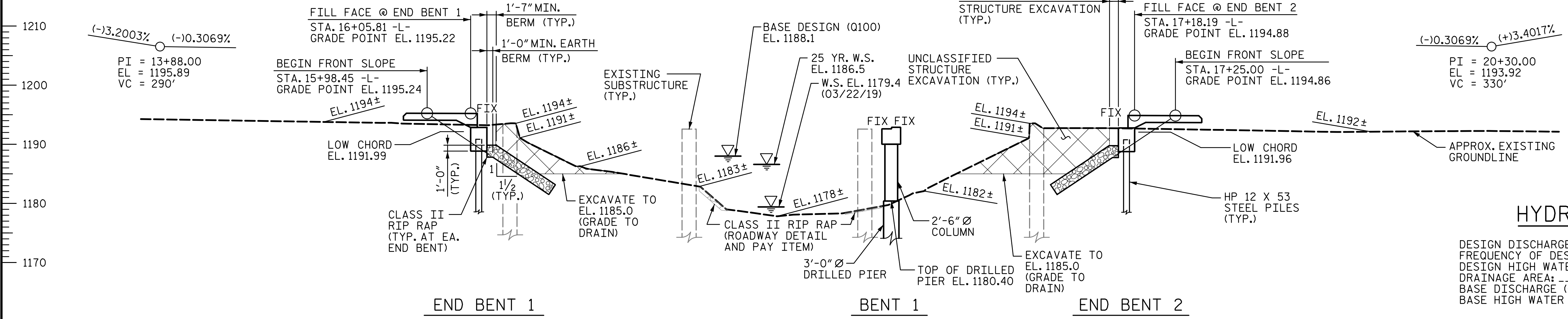


### VERTICAL CURVE DATA -L-

$(- )3.2003\%$   $(- )0.3069\%$   
 PI = 13+88.00  
 EL = 1195.89  
 VC = 290'

### VERTICAL CURVE DATA -L-

$(- )0.3069\%$   $(+ )3.4017\%$   
 PI = 20+30.00  
 EL = 1193.92  
 VC = 330'



### SECTION ALONG -L-

### HYDRAULIC DATA

DESIGN DISCHARGE: 1800 CFS  
 FREQUENCY OF DESIGN FLOOD: 25 YRS.  
 DESIGN HIGH WATER ELEVATION: 1186.5  
 DRAINAGE AREA: 7.7 SQ. MI.  
 BASE DISCHARGE (Q100): 2600 CFS  
 BASE HIGH WATER ELEVATION: 1188.1

### OVERTOPPING DATA

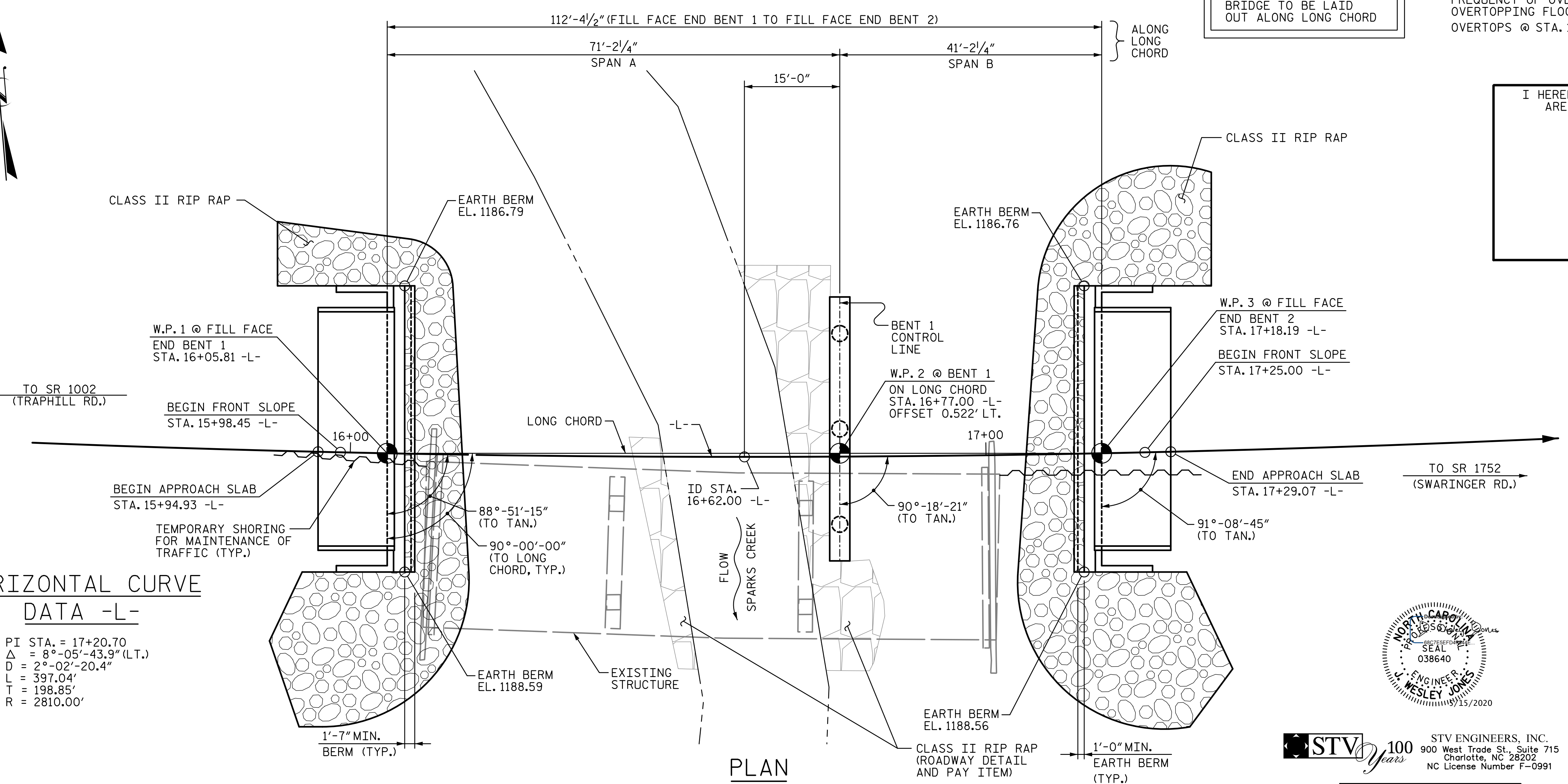
OVERTOPPING DISCHARGE: 10300 CFS  
 FREQUENCY OF OVERTOPPING: 500+ YRS.  
 OVERTOPPING FLOOD ELEVATION: 1194.8  
 OVERTOPS @ STA. 18+92.30 -L-

BRIDGE TO BE LAID OUT ALONG LONG CHORD

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

### HORIZONTAL CURVE DATA -L-

PI STA. = 17+20.70  
 $\Delta = 8^{\circ}-05'-43.9"$  (LT.)  
 $D = 2^{\circ}-02'-20.4"$   
 L = 397.04'  
 T = 198.85'  
 R = 2810.00'

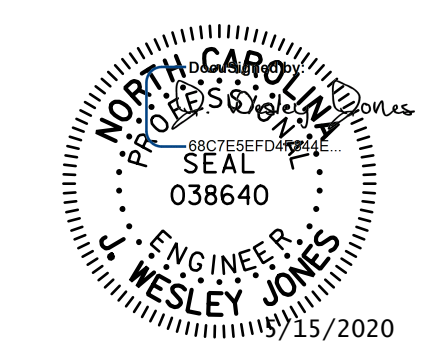


### PLAN

(STEEL PILES NOT SHOWN FOR CLARITY)

PROJECT NO. BR-0126  
WILKES COUNTY  
 STATION: 16+62.00 -L-  
 SHEET 1 OF 2 REPLACES BRIDGE NO. 667

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE ON SR 1749  
 (AUSTIN TRAPHILL RD.) OVER  
 SPARKS CREEK  
 BETWEEN SR 1002 AND SR 1752



**STV** 100 YEARS  
 STV ENGINEERS, INC.  
 900 West Trade St., Suite 715  
 Charlotte, NC 28202  
 NC License Number F-0991

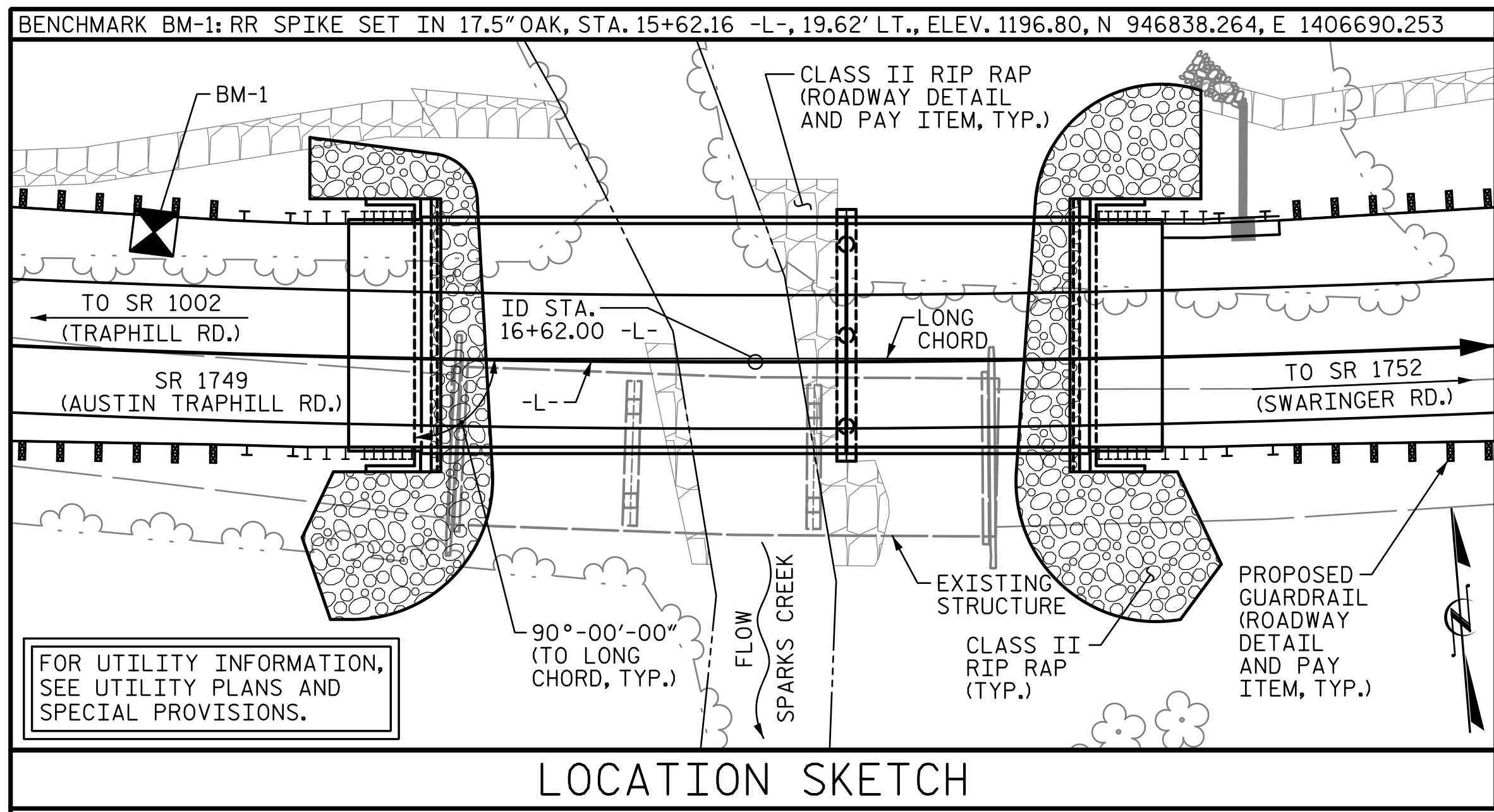
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

S-1  
TOTAL SHEETS  
23

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 Jones

DRAWN BY : LAH DATE : 10-19  
 CHECKED BY : JWJ DATE : 2-20  
 DESIGN ENGINEER OF RECORD : JWJ DATE : 5-20



LOCATION SKETCH

GENERAL NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THE EXISTING STRUCTURE CONSISTING OF (3) 30'-0" REINFORCED CONCRETE DECK GIRDERS SPANS WITH A CLEAR ROADWAY WIDTH OF 24'-1" ON REINFORCED CONCRETE CAPS WITH TIMBER PILES AND REINFORCED CONCRETE POST AND BEAM BENTS AND LOCATED AT THE 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.

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.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA (ON SHEET 1 OF 2) SHALL BE EXCAVATED FOR A DISTANCE FROM THE CENTERLINE OF ROADWAY OF 77'± (LEFT) AND 74'± (RIGHT) AT END BENT 1 AND 35'± (LEFT) AND 75'± (RIGHT) AT END BENT 2 TO EL. 1185.0, AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE 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.

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.

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

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.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

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

FOR FIBER OPTIC CONDUIT SYSTEM, SEE SPECIAL PROVISIONS.

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.

FOUNDATION NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 90 TONS PER PILE.

DRIVE PILES AT END BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 150 TONS PER PILE.

PREDRILLING FOR PILES MAY BE REQUIRED AT END BENT NO. 1. IF REQUIRED, PREDRILL PILE LOCATIONS TO AN ELEVATION NO LOWER THAN 1,173 FT WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 12". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT NO. 1. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

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

DRILLED PIERS AT BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 395 TONS/PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 40 TSF.

INSTALL DRILLED PIERS AT BENT NO. 1 TO A TIP ELEVATION NO HIGHER THAN 1150 FT (LT), 1150 FT (CT), AND 1158 FT (RT) SATISFY THE REQUIRED TIP RESISTANCE AND HAVE A PENETRATION OF AT LEAST 17 FT INTO ROCK.

PERMANENT STEEL CASINGS ARE REQUIRED FOR DRILLED PIERS AT BENT NO. 1. DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 1175 FT (LT) AND 1170 FT (RT) WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 IS 1166 FT (LT), 1166 FT (CT), AND 1172 FT (RT). THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

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.

PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 66 TONS PER PILE.

DRIVE PILES AT END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 110 TONS PER PILE.

PREDRILLING FOR PILES MAY BE REQUIRED AT END BENT NO. 2. IF REQUIRED, PREDRILL PILE LOCATIONS TO AN ELEVATION NO LOWER THAN 1,175 FT WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 12". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

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

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STA. 16+62.00 -L-	ASBESTOS ASSESSMENT	3'-0" Ø DRILLED PIERS IN SOIL	3'-0" Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EA.	LUMP SUM	CU. YD.	LUMP SUM	LBS.	LBS.	EA.	NO. LIN. FT.
SUPERSTRUCTURE													
END BENT 1								24.3		2,899		7	7 175
BENT 1			37.0	48.0	26.0			21.3		11,747	1,931		
END BENT 2								23.9		2,899		7	7 215
TOTAL	LUMP SUM	LUMP SUM	37.0	48.0	26.0	1	LUMP SUM	69.5	LUMP SUM	17,545	1,931	14	14 390

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"

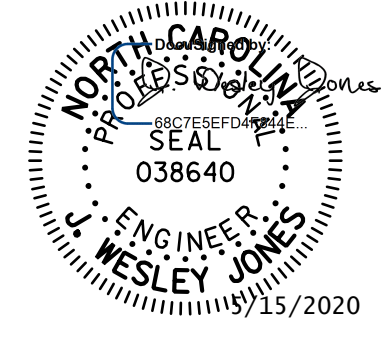
NOTE: SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30" (SAMPLE LENGTH) PLUS TWO SPLICE LENGTHS AND fy = 60ksi

TOTAL BILL OF MATERIAL (CONT'D.)

	STEEL PILE POINTS	PREDRILLING FOR PILES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS	FIBER OPTIC CONDUIT SYSTEM
	EA.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO. LIN. FT.	NO. LIN. FT.	LIN. FT.
SUPERSTRUCTURE			220.26				13 520.0	13 910.0	216.3
END BENT 1	7	138		185	205				
BENT 1									
END BENT 2	7	112		215	240				
TOTAL	14	250	220.26	400	445	LUMP SUM	13 520.0	13 910.0	216.3

PROJECT NO. BR-0126  
 WILKES COUNTY  
 STATION: 16+62.00 -L-

SHEET 2 OF 2



STV ENGINEERS, INC.  
 100 900 West Trade St., Suite 715  
 Charlotte, NC 28202  
 NC License Number F-0991

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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE ON SR 1749  
 (AUSTIN TRAPHILL RD.) OVER  
 SPARKS CREEK  
 BETWEEN SR 1002 AND SR 1752

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

S-2  
 TOTAL SHEETS 23

DRAWN BY : LAH DATE : 10-19  
 CHECKED BY : JWJ DATE : 3-20  
 DESIGN ENGINEER OF RECORD : JWJ DATE : 5-20

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	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)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.006	--	1.75	0.273	1.03	70'	EL	34.5	0.507	1.32	70'	EL	6.9	0.80	0.273	1.01	70'	EL	34.5		
	HL-93(Opr)	N/A	--	1.341	--	1.35	0.273	1.34	70'	EL	34.5	0.507	1.72	70'	EL	6.9	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.306	47.02	1.75	0.273	1.34	70'	EL	34.5	0.507	1.65	70'	EL	6.9	0.80	0.273	1.31	70'	EL	34.5		
	HS-20(Opr)	36.000	--	1.74	62.64	1.35	0.273	1.74	70'	EL	34.5	0.507	2.14	70'	EL	6.9	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.917	39.379	1.4	0.273	3.75	70'	EL	34.5	0.507	4.87	70'	EL	6.9	0.80	0.273	2.92	70'	EL	34.5	
		SNGARBS2	20.000	--	2.187	43.741	1.4	0.273	2.81	70'	EL	34.5	0.507	3.47	70'	EL	6.9	0.80	0.273	2.19	70'	EL	34.5	
		SNAGRIS2	22.000	--	2.077	45.69	1.4	0.273	2.67	70'	EL	34.5	0.507	3.23	70'	EL	6.9	0.80	0.273	2.08	70'	EL	34.5	
		SNCOTTS3	27.250	--	1.452	39.565	1.4	0.273	1.87	70'	EL	34.5	0.507	2.43	70'	EL	6.9	0.80	0.273	1.45	70'	EL	34.5	
		SNAGGRS4	34.925	--	1.218	42.554	1.4	0.273	1.57	70'	EL	34.5	0.507	2.03	70'	EL	6.9	0.80	0.273	1.22	70'	EL	34.5	
		SNS5A	35.550	--	1.191	42.346	1.4	0.273	1.53	70'	EL	34.5	0.507	2.06	70'	EL	6.9	0.80	0.273	1.19	70'	EL	34.5	
		SNS6A	39.950	--	1.095	43.747	1.4	0.273	1.41	70'	EL	34.5	0.507	1.88	70'	EL	6.9	0.80	0.273	1.10	70'	EL	34.5	
	SNS7B	42.000	--	1.043	43.801	1.4	0.273	1.34	70'	EL	34.5	0.507	1.85	70'	EL	6.9	0.80	0.273	1.04	70'	EL	34.5		
	TTST	TNAGRIT3	33.000	--	1.336	44.087	1.4	0.273	1.72	70'	EL	34.5	0.507	2.23	70'	EL	6.9	0.80	0.273	1.34	70'	EL	34.5	
		TNT4A	33.075	--	1.342	44.401	1.4	0.273	1.72	70'	EL	34.5	0.507	2.17	70'	EL	6.9	0.80	0.273	1.34	70'	EL	34.5	
		TNT6A	41.600	--	1.1	45.746	1.4	0.273	1.41	70'	EL	34.5	0.507	1.98	70'	EL	6.9	0.80	0.273	1.10	70'	EL	34.5	
		TNT7A	42.000	--	1.106	46.462	1.4	0.273	1.42	70'	EL	34.5	0.507	1.94	70'	EL	6.9	0.80	0.273	1.11	70'	EL	34.5	
		TNT7B	42.000	--	1.147	48.18	1.4	0.273	1.47	70'	EL	34.5	0.507	1.8	70'	EL	6.9	0.80	0.273	1.15	70'	EL	34.5	
		TNAGRIT4	43.000	--	1.089	46.838	1.4	0.273	1.4	70'	EL	34.5	0.507	1.74	70'	EL	6.9	0.80	0.273	1.09	70'	EL	34.5	
TNAGT5A		45.000	--	1.026	46.175	1.4	0.273	1.32	70'	EL	34.5	0.507	1.74	70'	EL	6.9	0.80	0.273	1.03	70'	EL	34.5		
TNAGT5B	45.000	3	1.013	45.579	1.4	0.273	1.3	70'	EL	34.5	0.507	1.66	70'	EL	6.9	0.80	0.273	1.01	70'	EL	34.5			

LOAD FACTORS:

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

NOTES:

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

COMMENTS:

- 1.
- 2.
- 3.
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# CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

2 DESIGN LOAD RATING (HS-20)

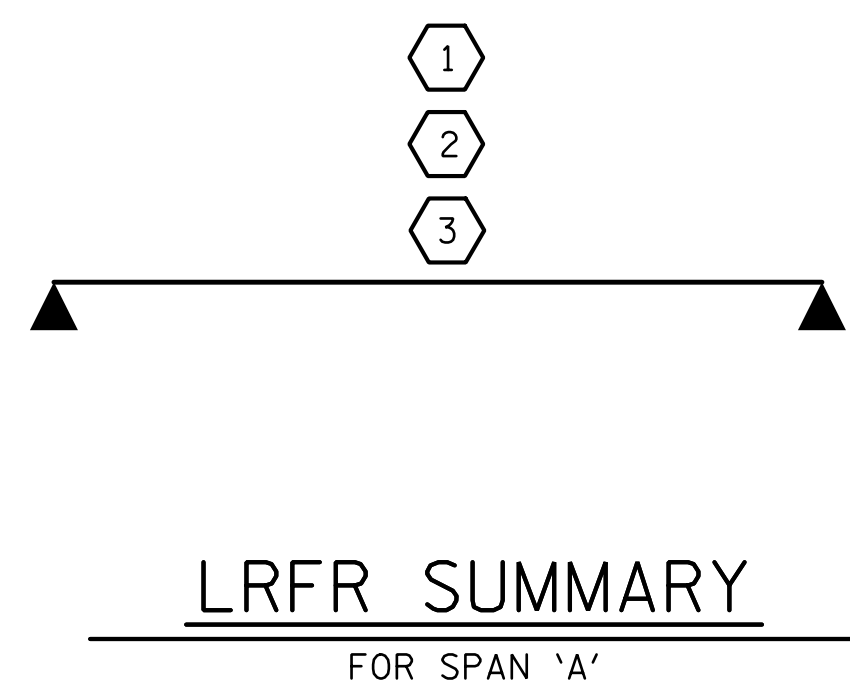
3 LEGAL LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

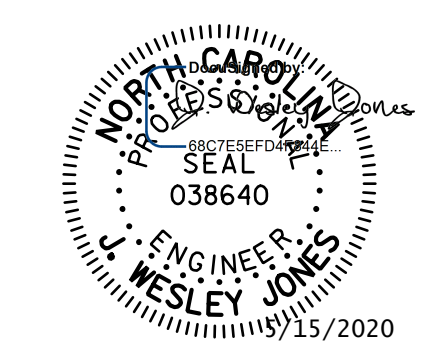
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GIRDER LOCATION

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



PROJECT NO. BR-0126  
WILKES COUNTY  
STATION: 16+62.00 -L-



**STV** 100 YEARS  
STV ENGINEERS, INC.  
900 West Trade St., Suite 715  
Charlotte, NC 28202  
NC License Number F-0991

DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
LRFR SUMMARY FOR  
70' CORED SLAB UNIT  
90° SKEW  
(NON-INTERSTATE TRAFFIC)

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

S-3  
TOTAL SHEETS  
23

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DRAWN BY : LEM DATE : 10-19  
CHECKED BY : JWJ DATE : 3-20  
DESIGN ENGINEER OF RECORD : JWJ DATE : 5-20  
DRAWN BY : CVC 6/10  
CHECKED BY : DNS 6/10

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						LIVELOAD FACTORS	MOMENT					SHEAR					LIVELOAD FACTORS	MOMENT						
							DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.319	--	1.75	0.278	1.76	40'	EL	19.5	0.549	<b>1.32</b>	40'	EL	<b>1.95</b>	0.80	0.278	1.55	40'	EL	19.5		
	HL-93(Opr)	N/A	--	1.709	--	1.35	0.278	2.28	40'	EL	19.5	0.549	1.71	40'	EL	1.95	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.540	55.449	1.75	0.278	2.21	40'	EL	19.5	0.549	<b>1.54</b>	40'	EL	<b>1.95</b>	0.80	0.278	1.94	40'	EL	19.5		
	HS-20(Opr)	36.000	--	1.997	71.878	1.35	0.278	2.86	40'	EL	19.5	0.549	2.00	40'	EL	1.95	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.606	48.687	1.4	0.278	5.10	40'	EL	19.5	0.549	4.13	40'	EL	1.95	0.80	0.278	3.61	40'	EL	19.5	
		SNGARBS2	20.000	--	2.964	59.289	1.4	0.278	4.19	40'	EL	15.6	0.549	3.07	40'	EL	1.95	0.80	0.278	2.96	40'	EL	19.5	
		SNAGRIS2	22.000	--	2.906	63.929	1.4	0.278	4.09	40'	EL	15.6	0.549	2.91	40'	EL	1.95	0.80	0.278	2.92	40'	EL	15.6	
		SNCOTTS3	27.250	--	1.803	49.125	1.4	0.278	2.55	40'	EL	19.5	0.549	2.07	40'	EL	1.95	0.80	0.278	1.80	40'	EL	19.5	
		SNAGGRS4	34.925	--	1.623	56.667	1.4	0.278	2.29	40'	EL	19.5	0.549	1.82	40'	EL	1.95	0.80	0.278	1.62	40'	EL	19.5	
		SNS5A	35.550	--	1.578	56.107	1.4	0.278	2.23	40'	EL	19.5	0.549	1.90	40'	EL	1.95	0.80	0.278	1.58	40'	EL	19.5	
		SNS6A	39.950	--	1.502	59.992	1.4	0.278	2.12	40'	EL	19.5	0.549	1.77	40'	EL	1.95	0.80	0.278	1.50	40'	EL	19.5	
	SNS7B	42.000	3	1.432	60.149	1.4	0.278	2.02	40'	EL	19.5	0.549	1.81	40'	EL	1.95	0.80	0.278	<b>1.43</b>	40'	EL	<b>19.5</b>		
	TTST	TNAGRIT3	33.000	--	1.848	60.976	1.4	0.278	2.61	40'	EL	19.5	0.549	2.08	40'	EL	1.95	0.80	0.278	1.85	40'	EL	19.5	
		TNT4A	33.075	--	1.872	61.901	1.4	0.278	2.65	40'	EL	19.5	0.549	1.98	40'	EL	1.95	0.80	0.278	1.87	40'	EL	19.5	
		TNT6A	41.600	--	1.587	66.032	1.4	0.278	2.24	40'	EL	19.5	0.549	1.94	40'	EL	1.95	0.80	0.278	1.59	40'	EL	19.5	
		TNT7A	42.000	--	1.627	68.354	1.4	0.278	2.30	40'	EL	19.5	0.549	1.79	40'	EL	1.95	0.80	0.278	1.63	40'	EL	19.5	
		TNT7B	42.000	--	1.664	69.888	1.4	0.278	2.35	40'	EL	19.5	0.549	1.72	40'	EL	1.95	0.80	0.278	1.66	40'	EL	19.5	
		TNAGRIT4	43.000	--	1.619	69.610	1.4	0.278	2.28	40'	EL	15.6	0.549	1.65	40'	EL	1.95	0.80	0.278	1.62	40'	EL	19.5	
TNAGT5A		45.000	--	1.498	67.412	1.4	0.278	2.12	40'	EL	19.5	0.549	1.71	40'	EL	1.95	0.80	0.278	1.50	40'	EL	19.5		
TNAGT5B	45.000	--	1.455	65.486	1.4	0.278	2.06	40'	EL	19.5	0.549	1.56	40'	EL	1.95	0.80	0.278	1.46	40'	EL	19.5			

**LOAD FACTORS:**

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

**NOTES:**

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

**COMMENTS:**

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

**# CONTROLLING LOAD RATING**

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

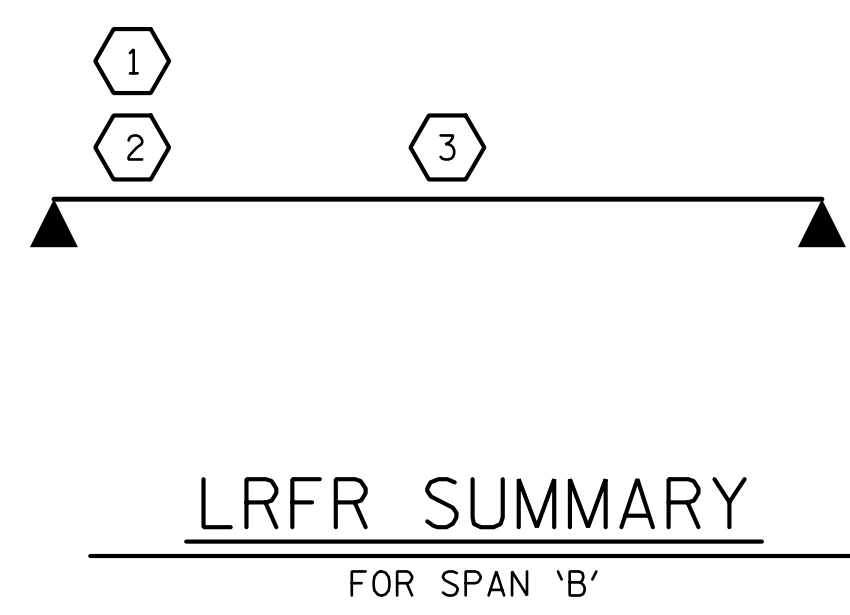
③ LEGAL LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

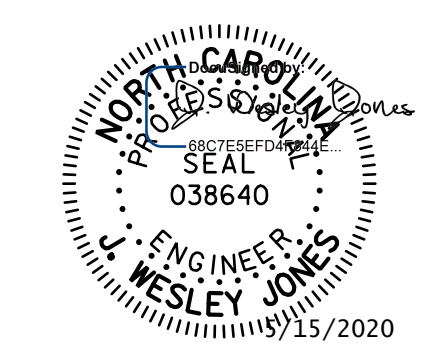
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**GIRDER LOCATION**

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



PROJECT NO. BR-0126  
WILKES COUNTY  
STATION: 16+62.00 -L-



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RALEIGH

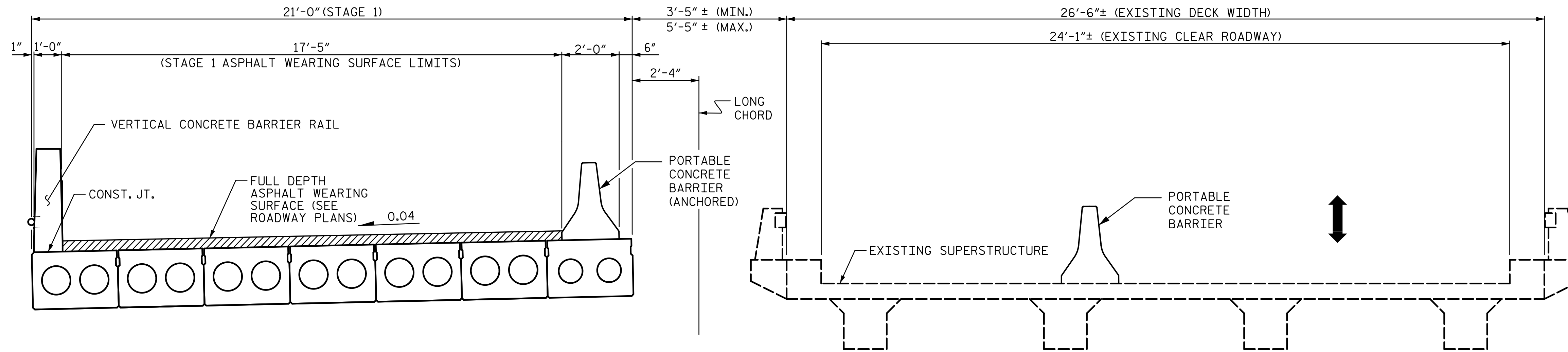
STANDARD  
LRFR SUMMARY FOR  
40' CORED SLAB UNIT  
90° SKEW  
(NON-INTERSTATE TRAFFIC)

REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	
				S-4
				TOTAL SHEETS 23

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CHECKED BY : JWJ DATE : 3-20  
DESIGN ENGINEER OF RECORD : JWJ DATE : 5-20

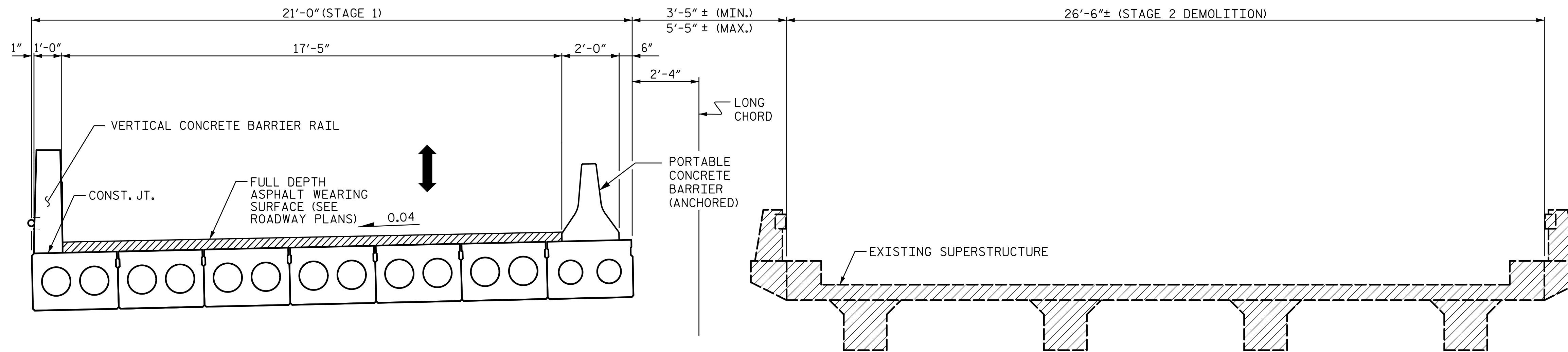
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CHECKED BY : DNS 6/10



**STAGE 1**

LOOKING UPSTATION

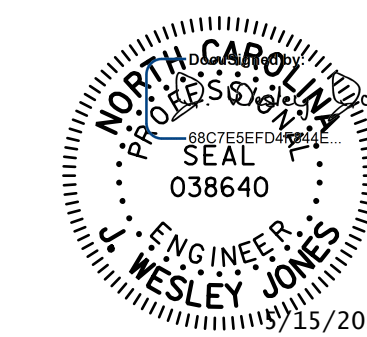
1. VERIFY EXISTING BRIDGE DIMENSIONS. CONTACT ENGINEER IF FIELD MEASUREMENTS VARY FROM PLAN DIMENSIONS.
2. REMOVE PORTION OF EXISTING END BENT WING WALLS.
3. CONSTRUCT LEFT PORTION OF PROPOSED BRIDGE. ANCHOR PORTABLE CONCRETE BARRIER TO PROPOSED BRIDGE.
4. PAVE FULL DEPTH ASPHALT WEARING SURFACE TO LIMITS SHOWN.



**STAGE 2A**

LOOKING UPSTATION

1. SHIFT TRAFFIC TO STAGE 1 PORTION OF PROPOSED BRIDGE.
2. REMOVE EXISTING BRIDGE.



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PROJECT NO. BR-0126

WILKES COUNTY

STATION: 16+62.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**BRIDGE STAGING  
PLAN**

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

S-5
TOTAL SHEETS 23

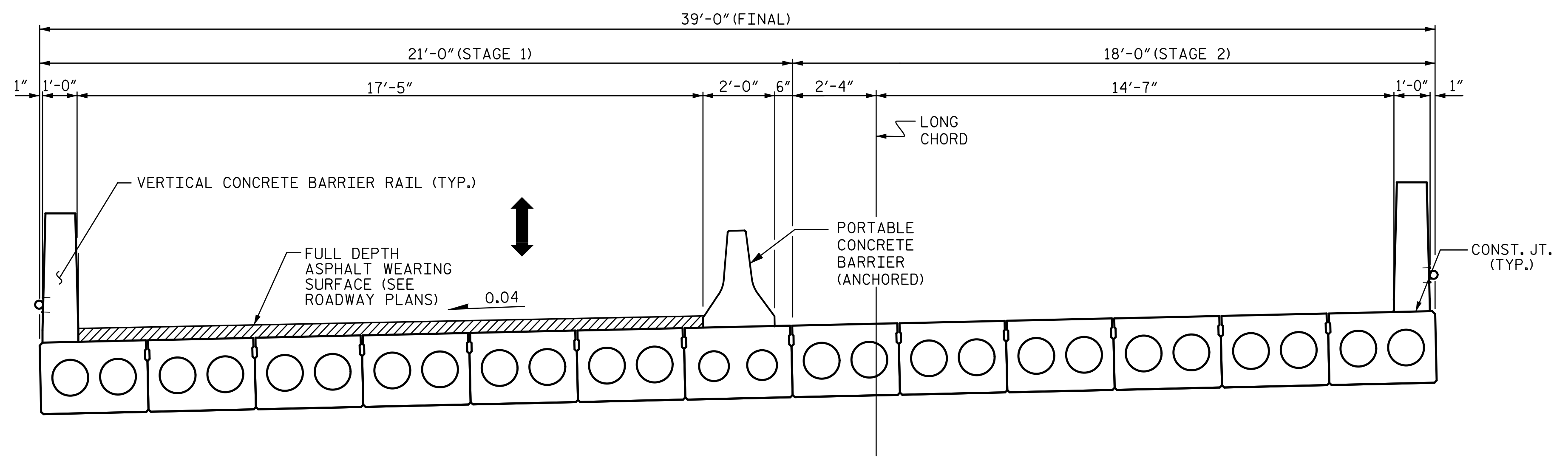
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DESIGN ENGINEER OF RECORD : JWJ	DATE : 5-20

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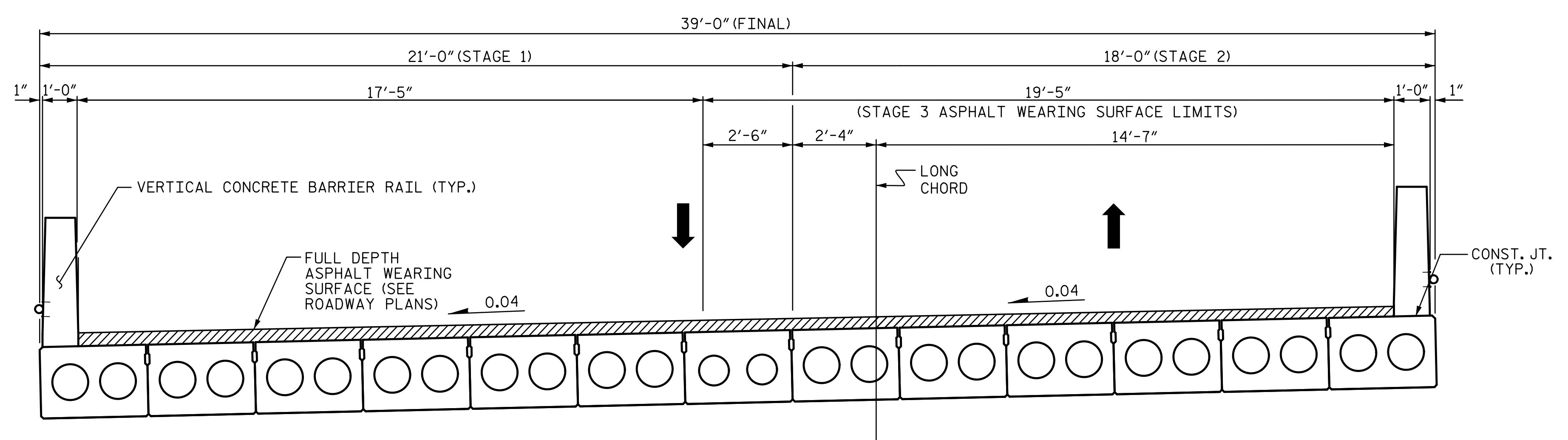
Jones



**STAGE 2B**

LOOKING UPSTATION

1. CONSTRUCT RIGHT PORTION OF PROPOSED BRIDGE.



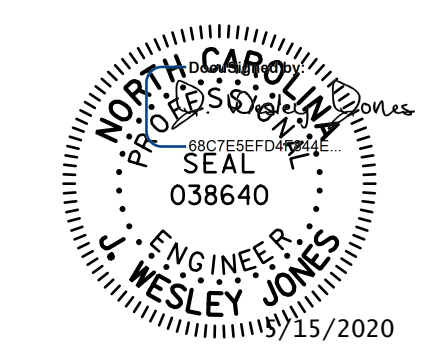
**STAGE 3**

LOOKING UPSTATION

1. REMOVE PORTABLE CONCRETE BARRIER.
2. PAVE FULL DEPTH ASPHALT WEARING SURFACE TO THE LIMITS SHOWN.

PROJECT NO. BR-0126  
WILKES COUNTY  
 STATION: 16+62.00 -L-  
 SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**BRIDGE STAGING  
 PLAN**



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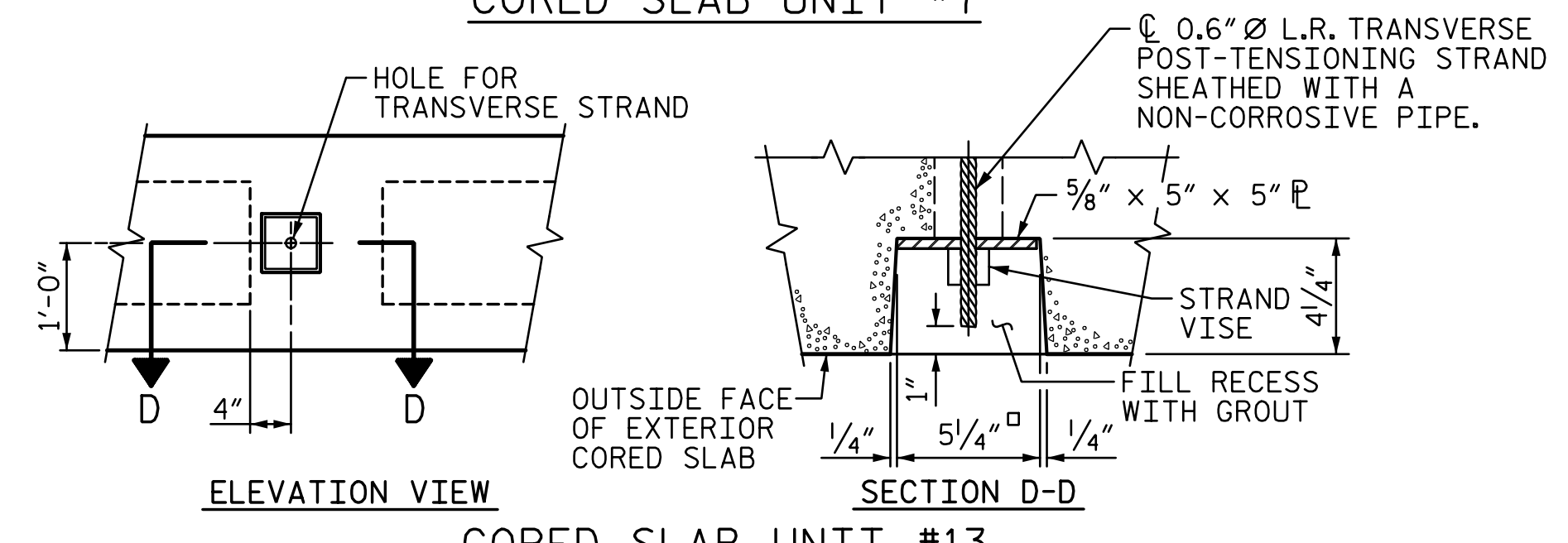
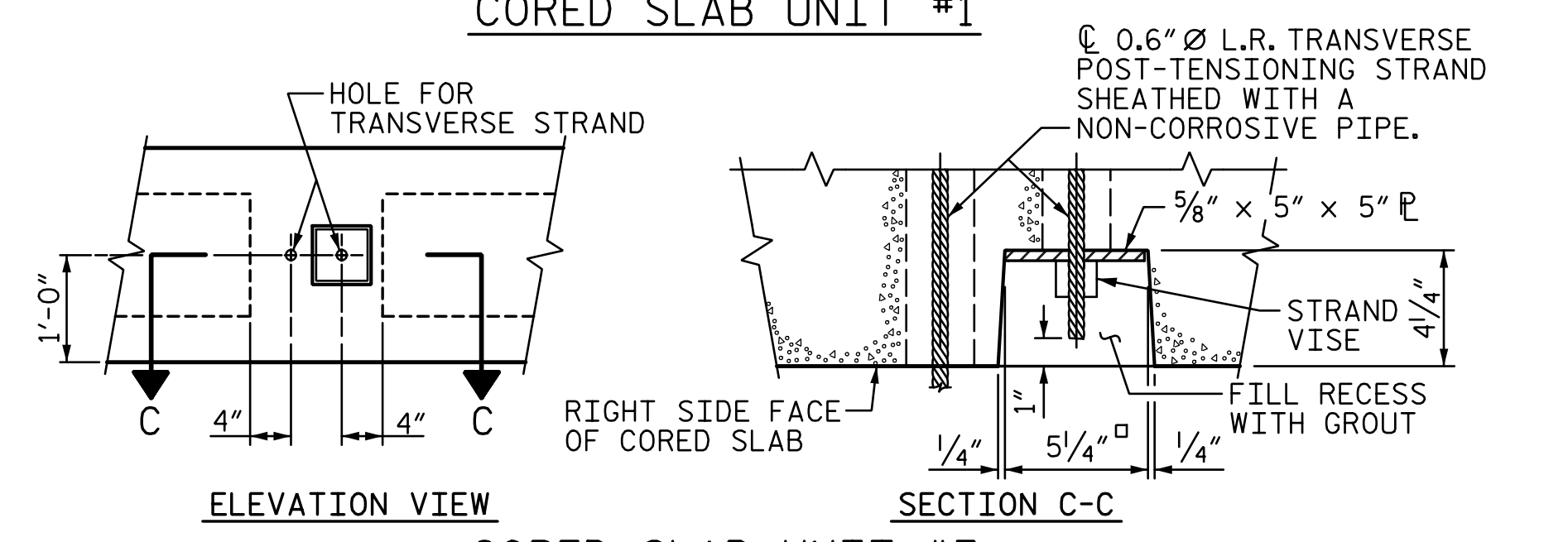
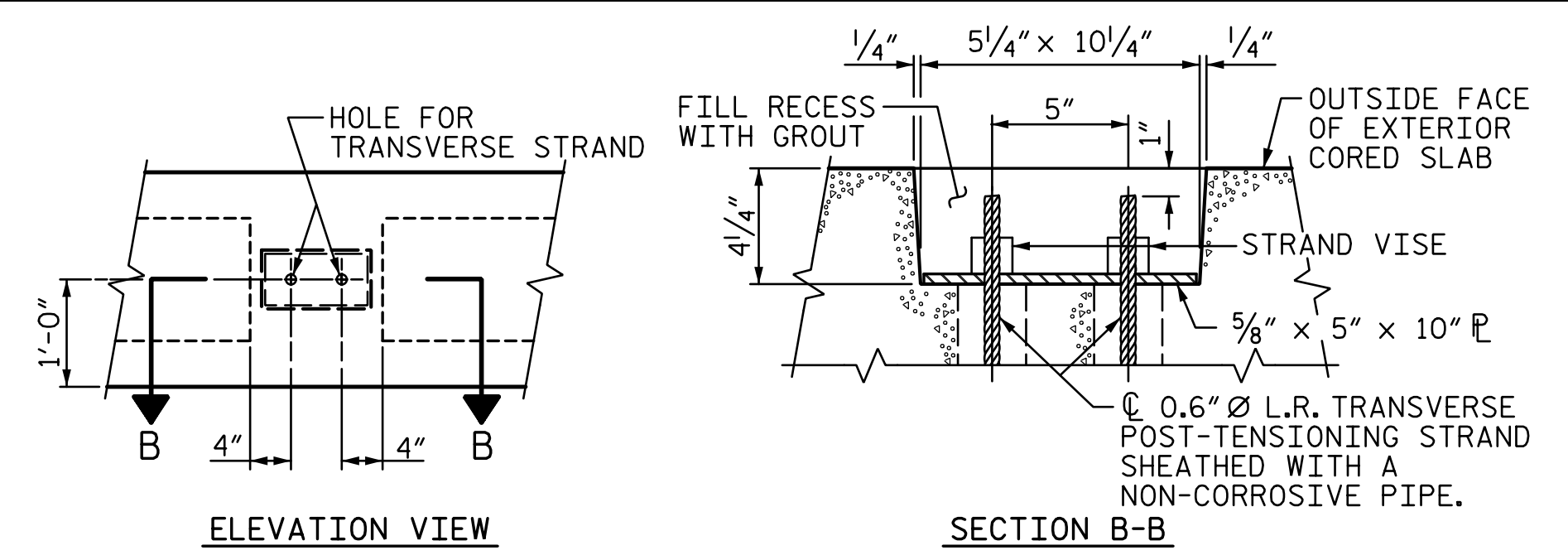
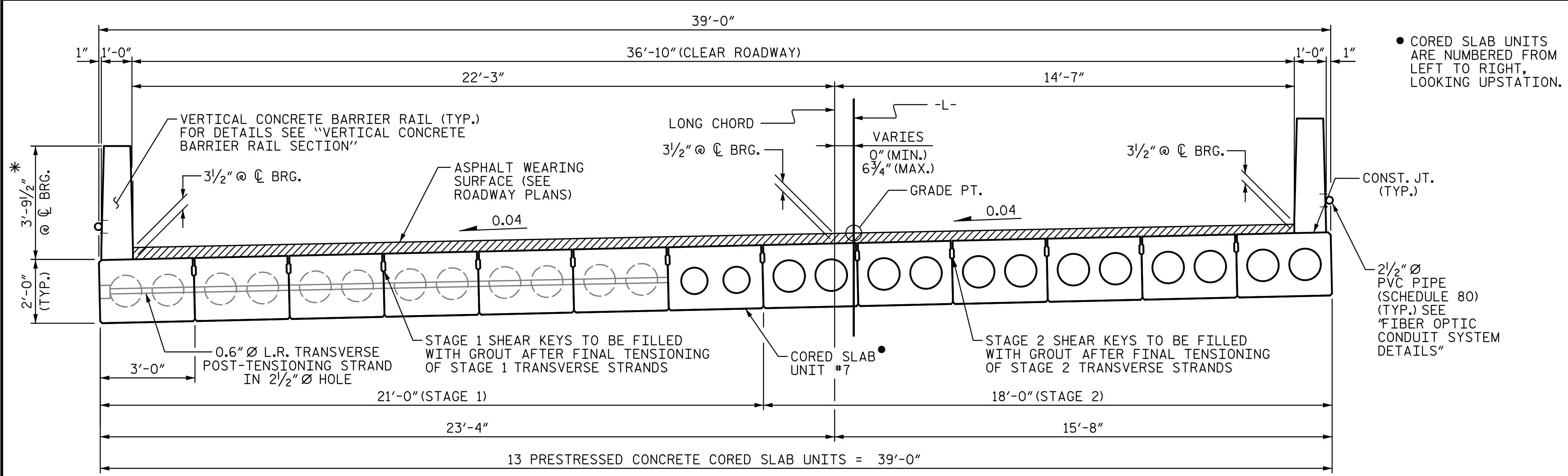
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REVISIONS				SHEET NO.
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2			4	

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TOTAL SHEETS 23

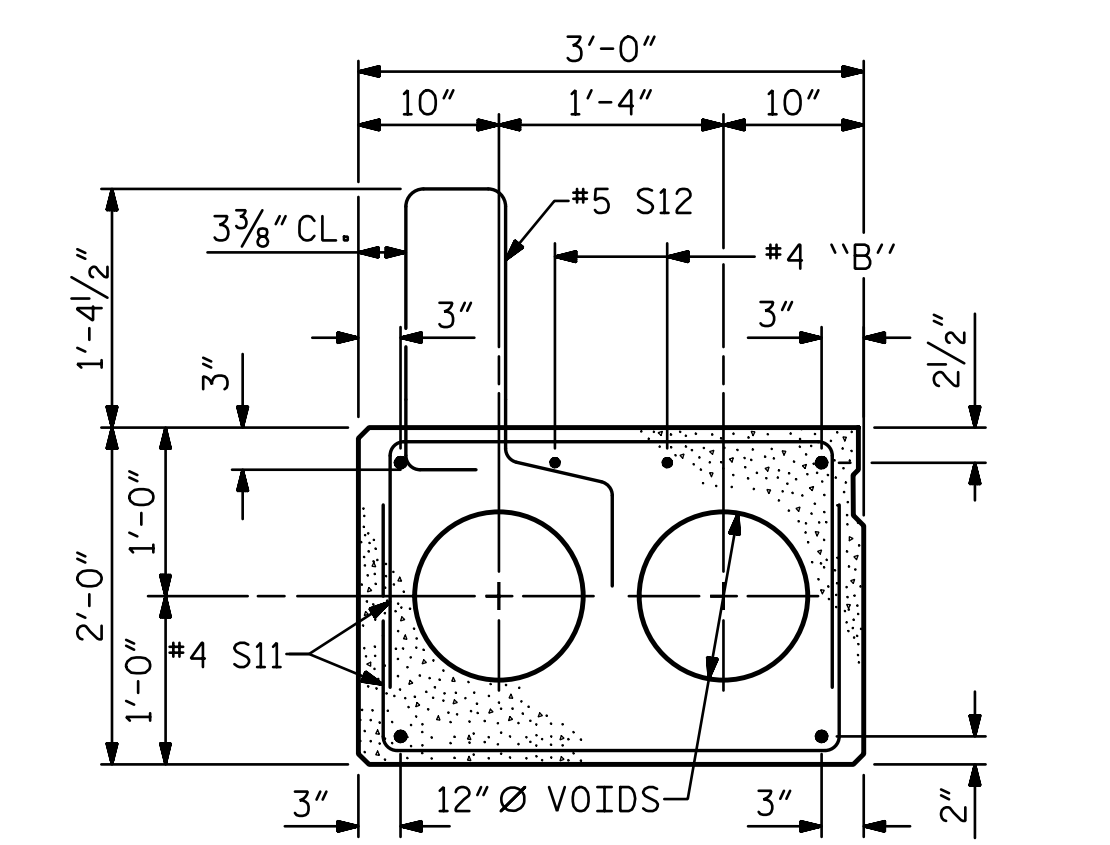
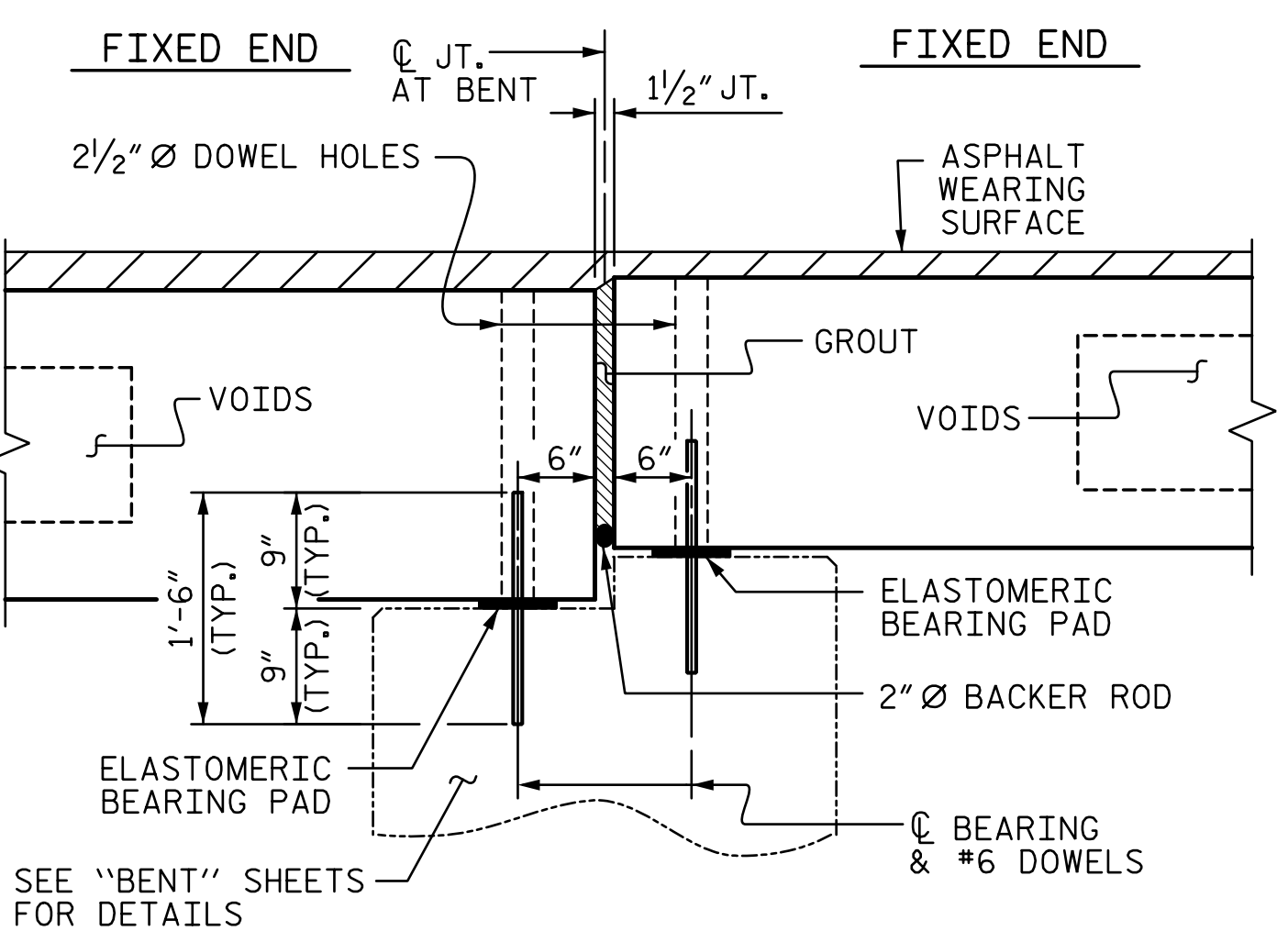
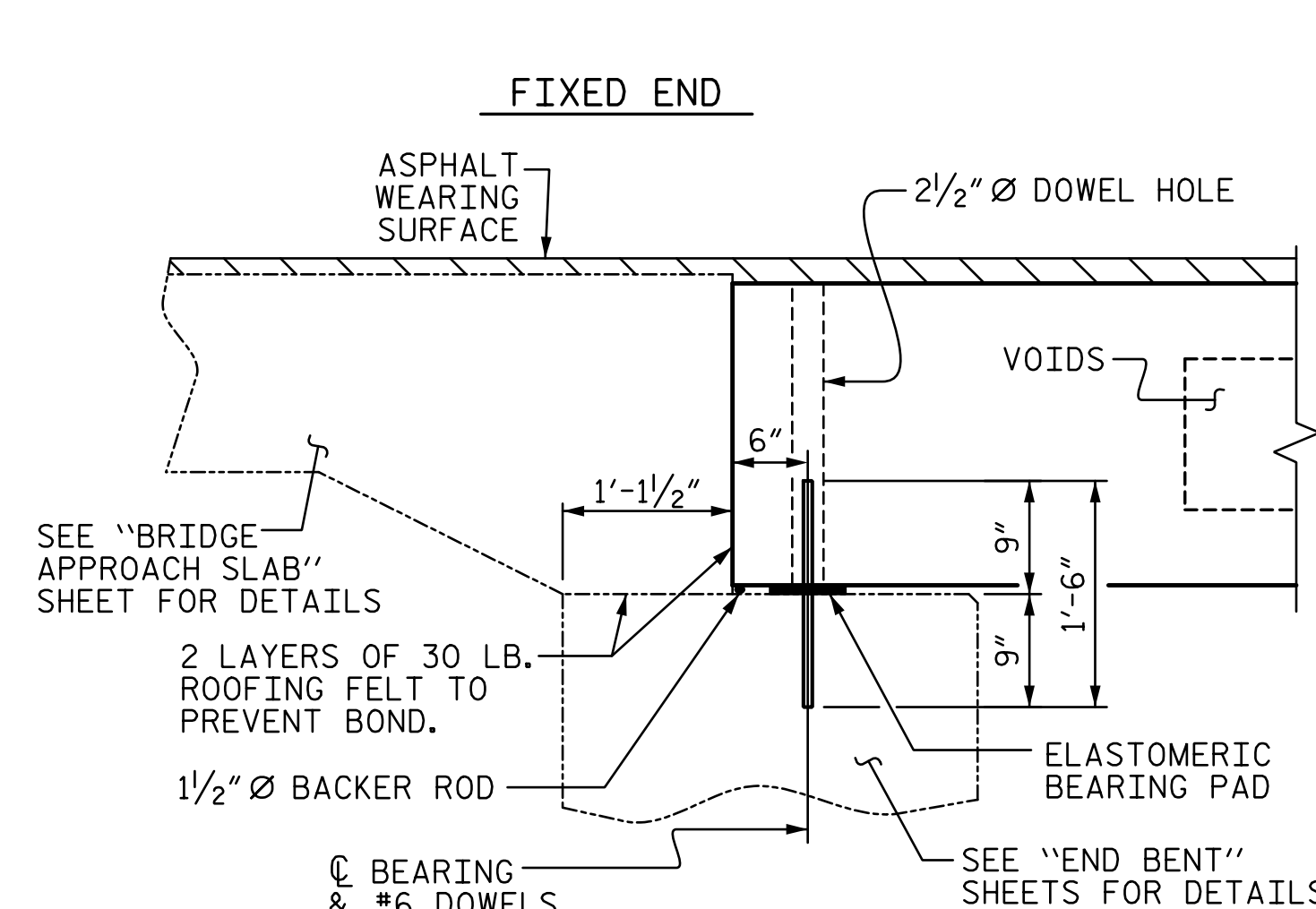
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 DESIGN ENGINEER OF RECORD : JWJ DATE : 5-20



HALF SECTION AT INTERMEDIATE DIAPHRAGMS  
 TYPICAL SECTION  
 HALF SECTION THROUGH VOIDS

\* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.

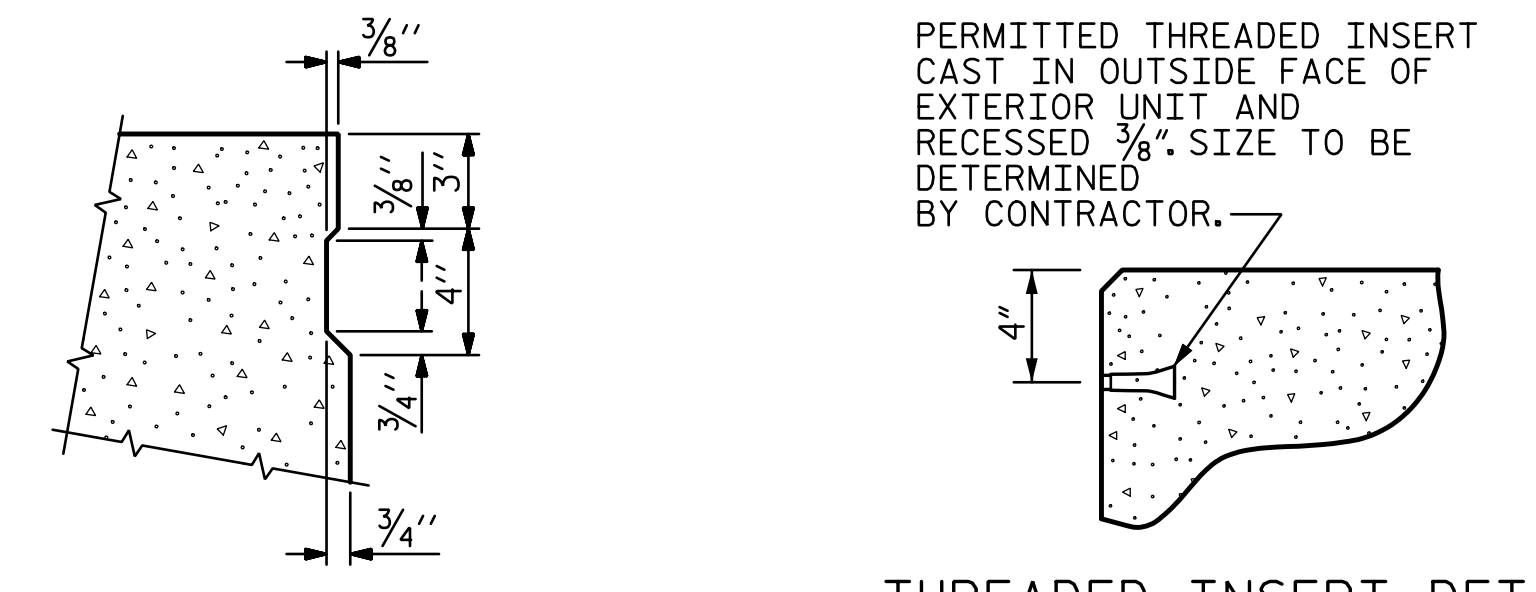


EXTERIOR SLAB SECTION  
 (FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)

- ◆ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 10'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- ▲ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND

GROUPED RECESS AT END OF POST-TENSIONED STRAND CORED SLABS



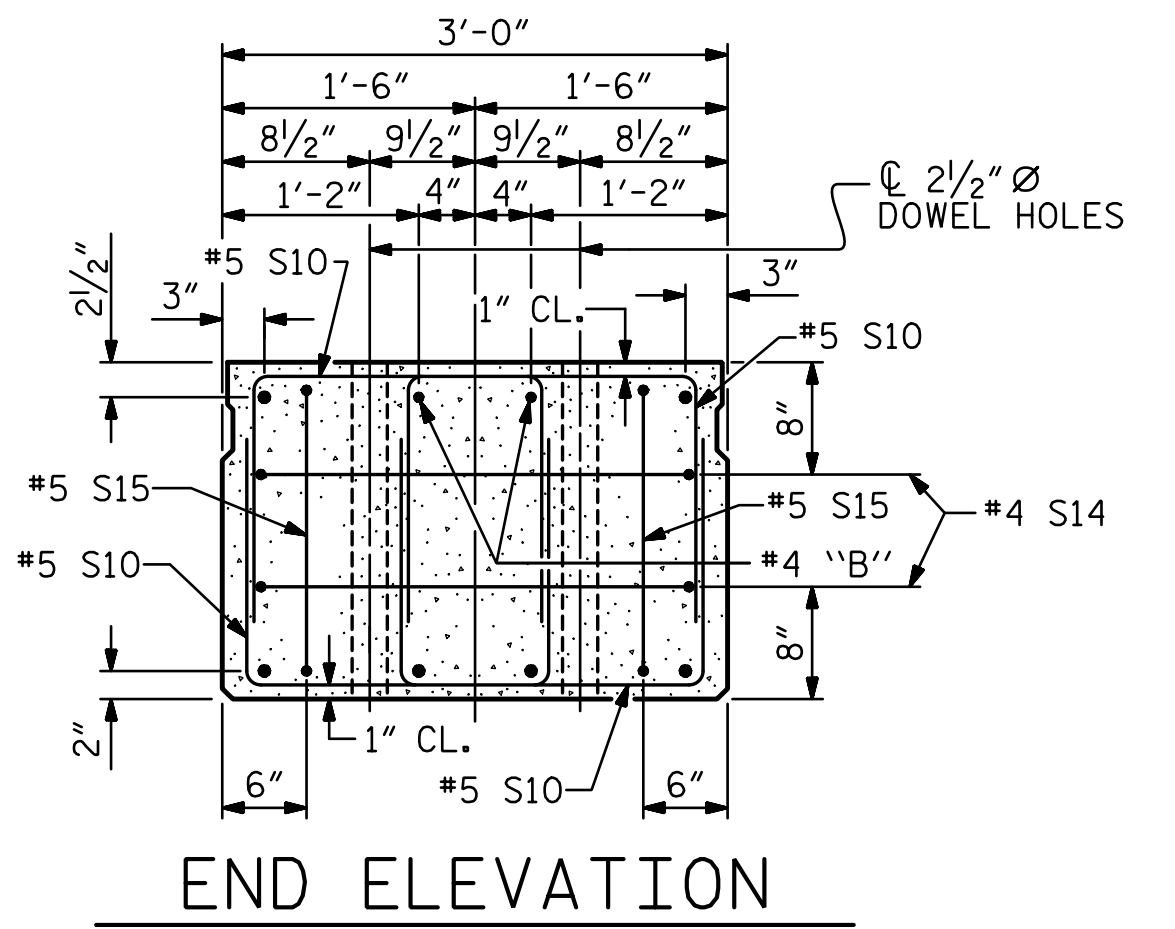
SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

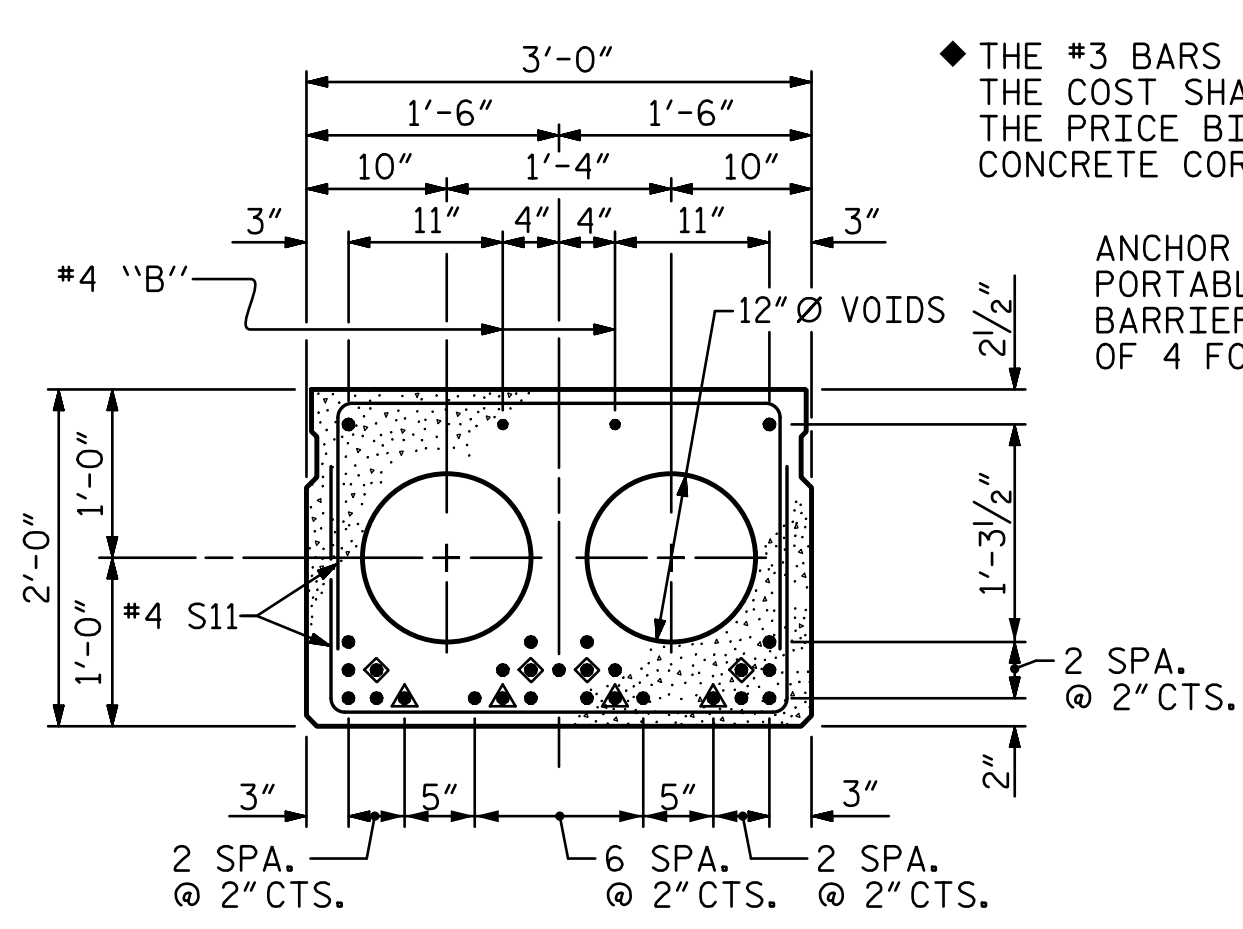
THREADED INSERT DETAIL

SECTION AT END BENT 1

SECTION AT BENT



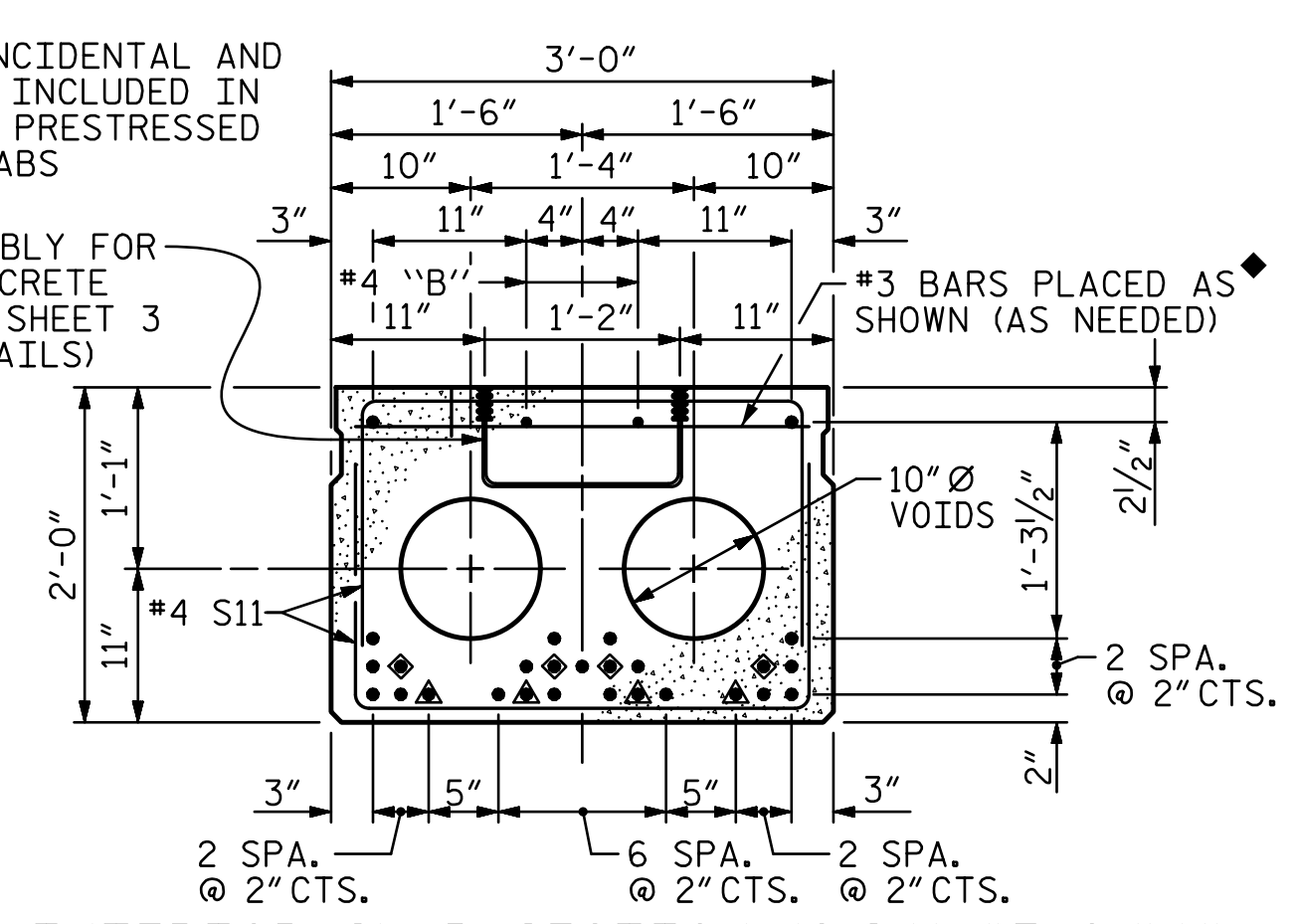
END ELEVATION



INTERIOR SLAB SECTION (EXCEPT C.S.U. #7)  
 (27 STRANDS REQUIRED)

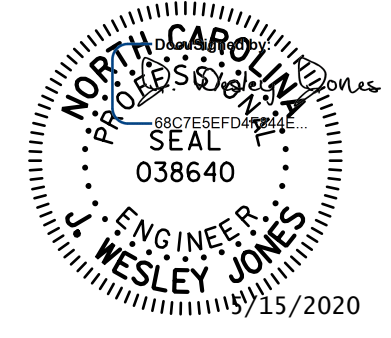
◆ THE #3 BARS ARE INCIDENTAL AND THE COST SHALL BE INCLUDED IN THE PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS

ANCHOR ASSEMBLY FOR PORTABLE CONCRETE BARRIER (SEE SHEET 3 OF 4 FOR DETAILS)



INTERIOR SLAB SECTION (C.S.U. #7 ONLY)  
 (27 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT



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PROJECT NO. BR-0126

WILKES COUNTY

STATION: 16+62.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLAB UNIT (SPAN A)

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

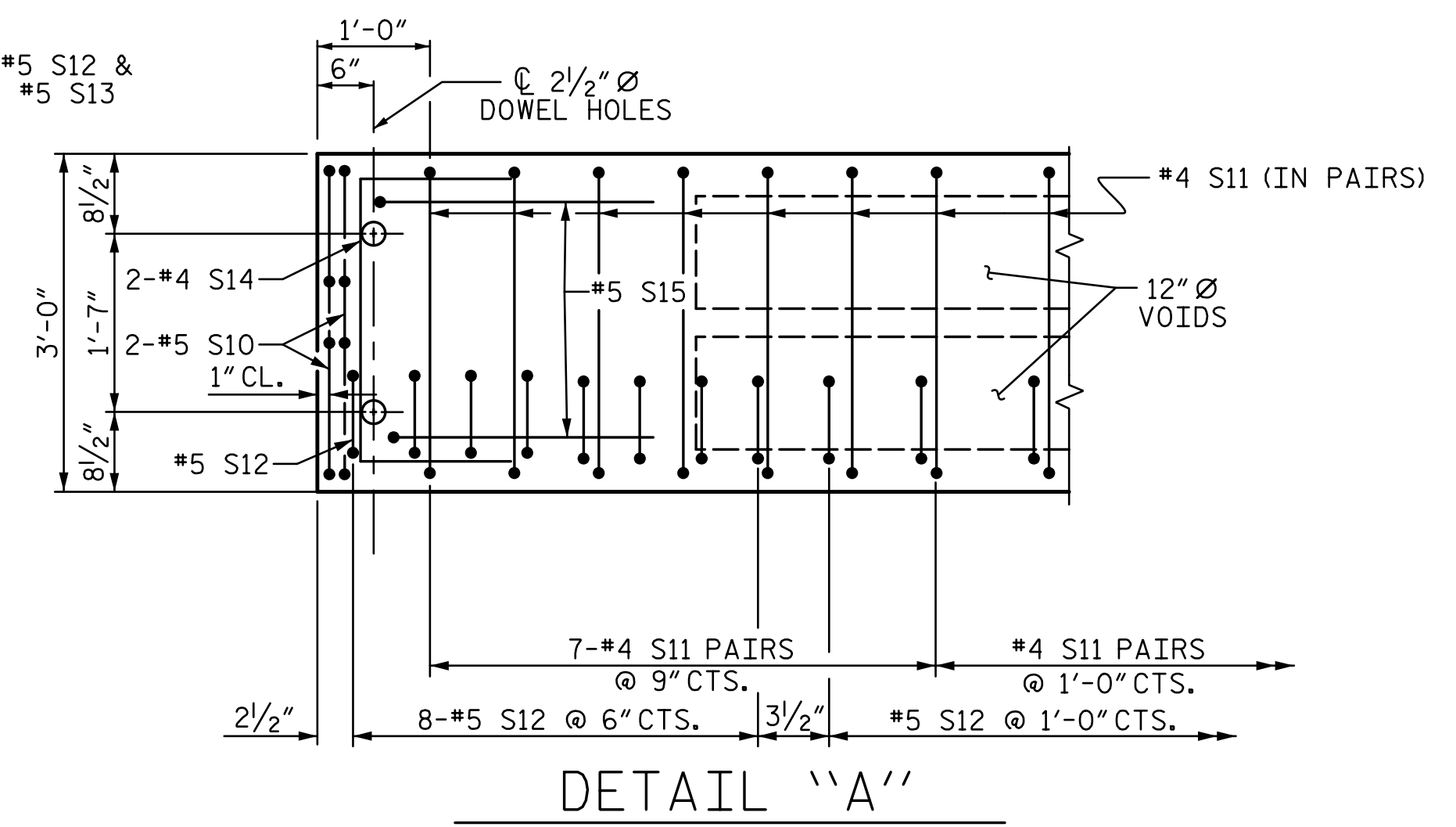
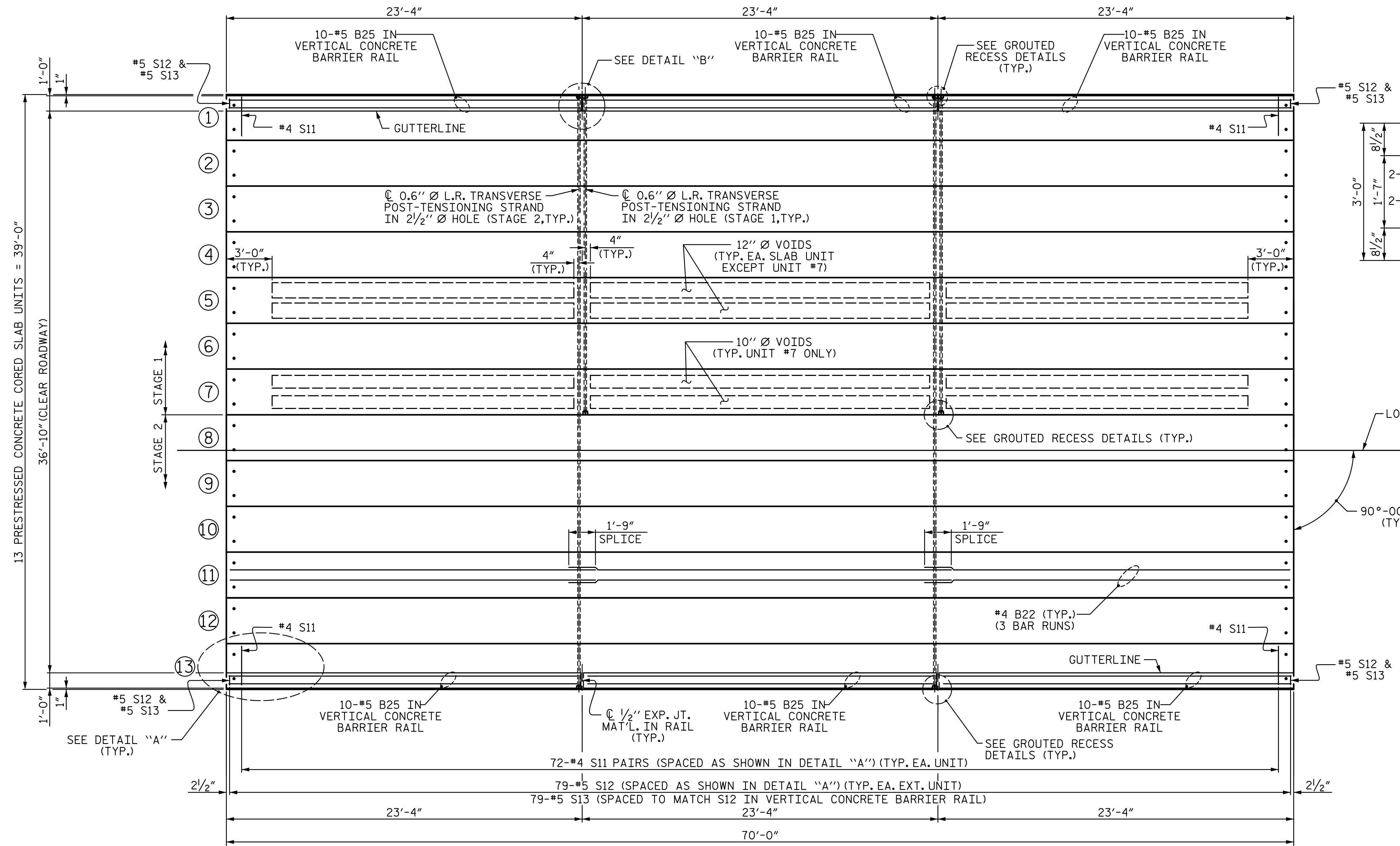
TOTAL SHEETS 23

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CHECKED BY: JWJ	DATE: 3-20
DESIGN ENGINEER OF RECORD: JWJ	DATE: 5-20

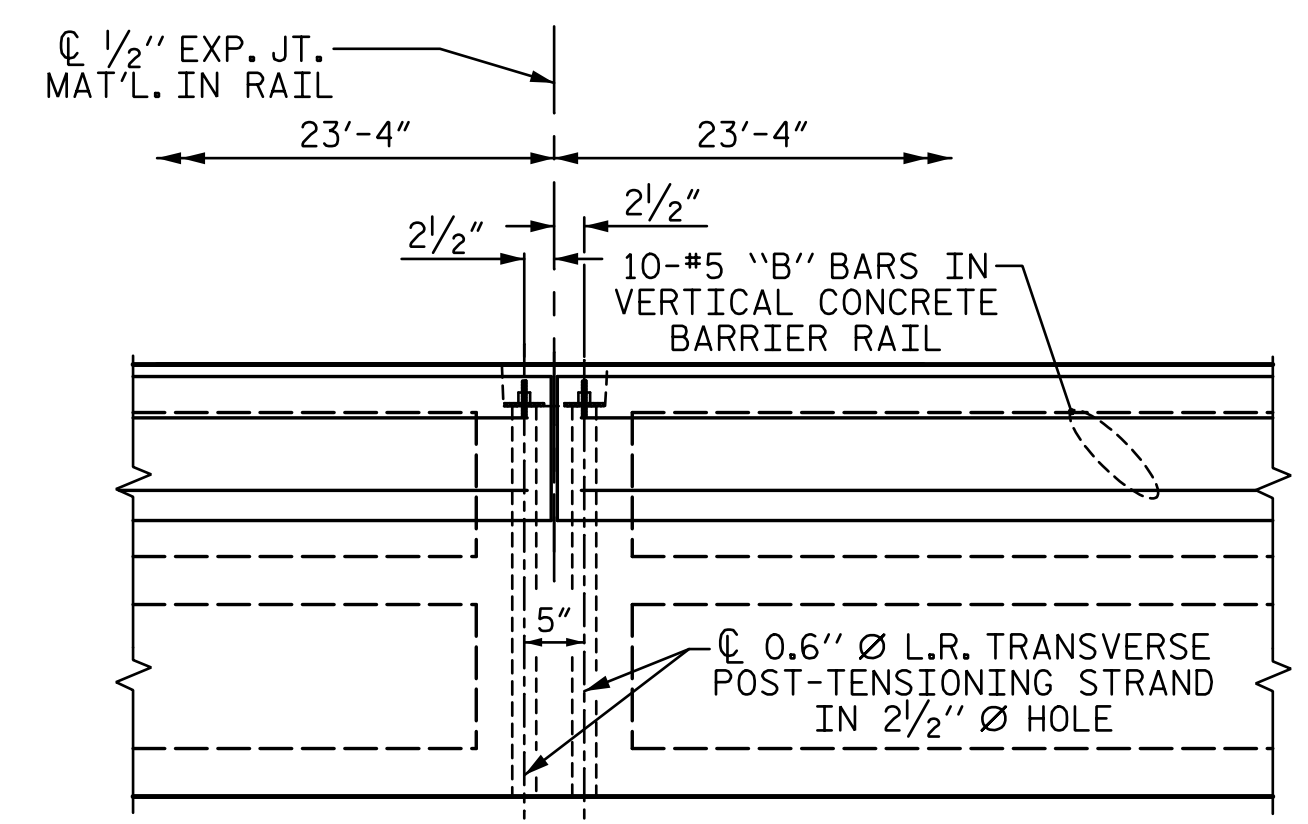
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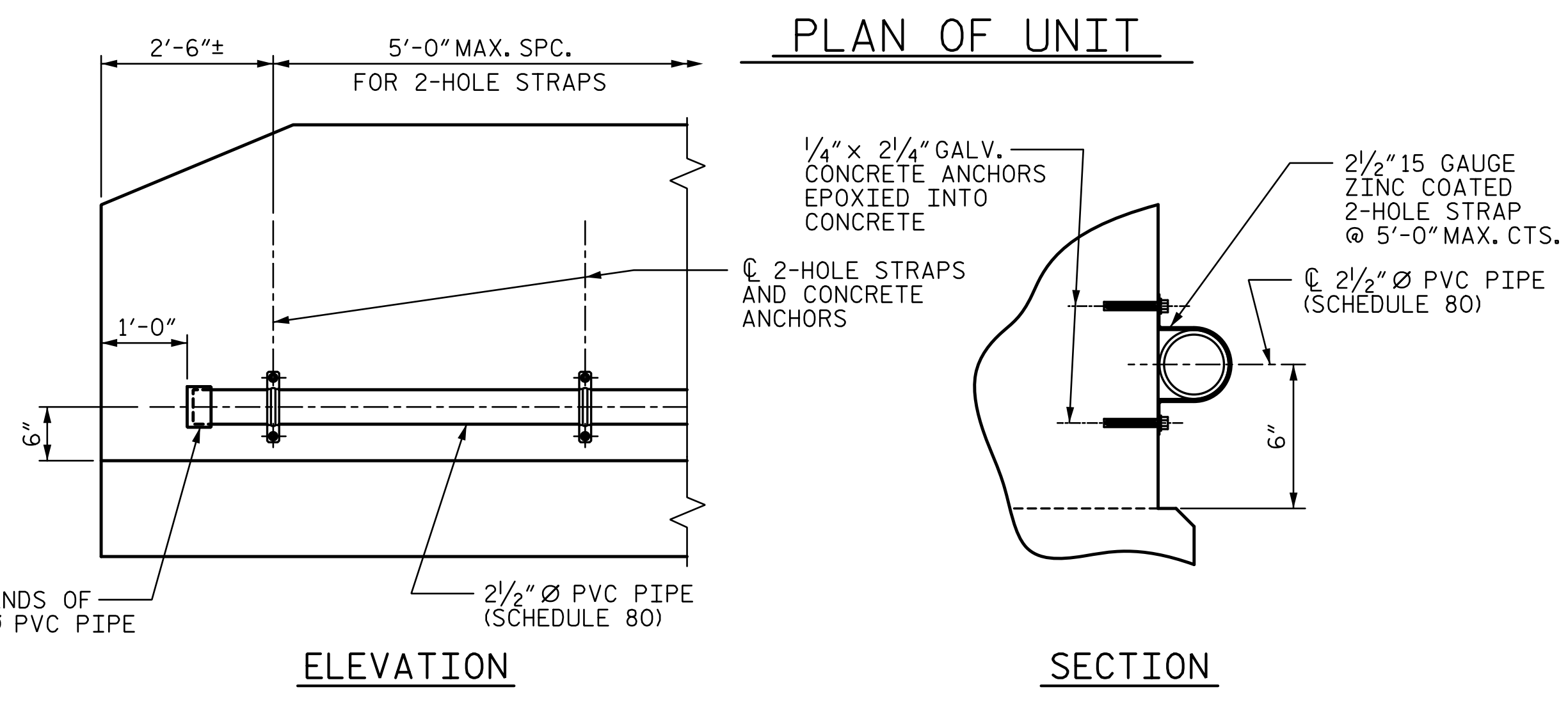
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DETAIL "A"  
(TYPICAL EACH END OF UNIT)  
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S12 BARS.



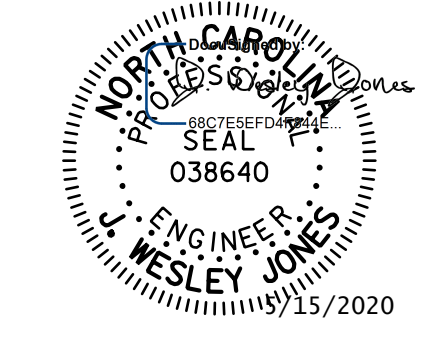
DETAIL "B"  
#4 S11 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUDED RECESS AND 2 1/2" Ø TRANSVERSE POST-TENSIONING STRAND HOLES



FIBER OPTIC CONDUIT SYSTEM DETAILS

2 1/2" Ø SCHEDULE 80 PVC PIPE ATTACHED TO THE BACK OF BOTH RAILS FOR FUTURE FIBER OPTIC CABLE.

PROJECT NO. BR-0126  
WILKES COUNTY  
 STATION: 16+62.00 -L-  
 SHEET 2 OF 4



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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
PLAN OF 70' UNIT 36'-10" CLEAR ROADWAY 90° SKEW (SPAN A)					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-8
					TOTAL SHEETS 23

DRAWN BY : LAH DATE : 11-19  
 CHECKED BY : JWJ DATE : 3-20  
 DESIGN ENGINEER OF RECORD : JWJ DATE : 5-20

### ANCHOR ASSEMBLY NOTES

THE ANCHOR ASSEMBLY FOR PORTABLE CONCRETE BARRIER 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 1/2".
- B. 2 - 7/8" Ø 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 7/8" Ø 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 STRUTS SHOWN IN THE ANCHOR ASSEMBLY DETAIL ARE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 P.S.I.

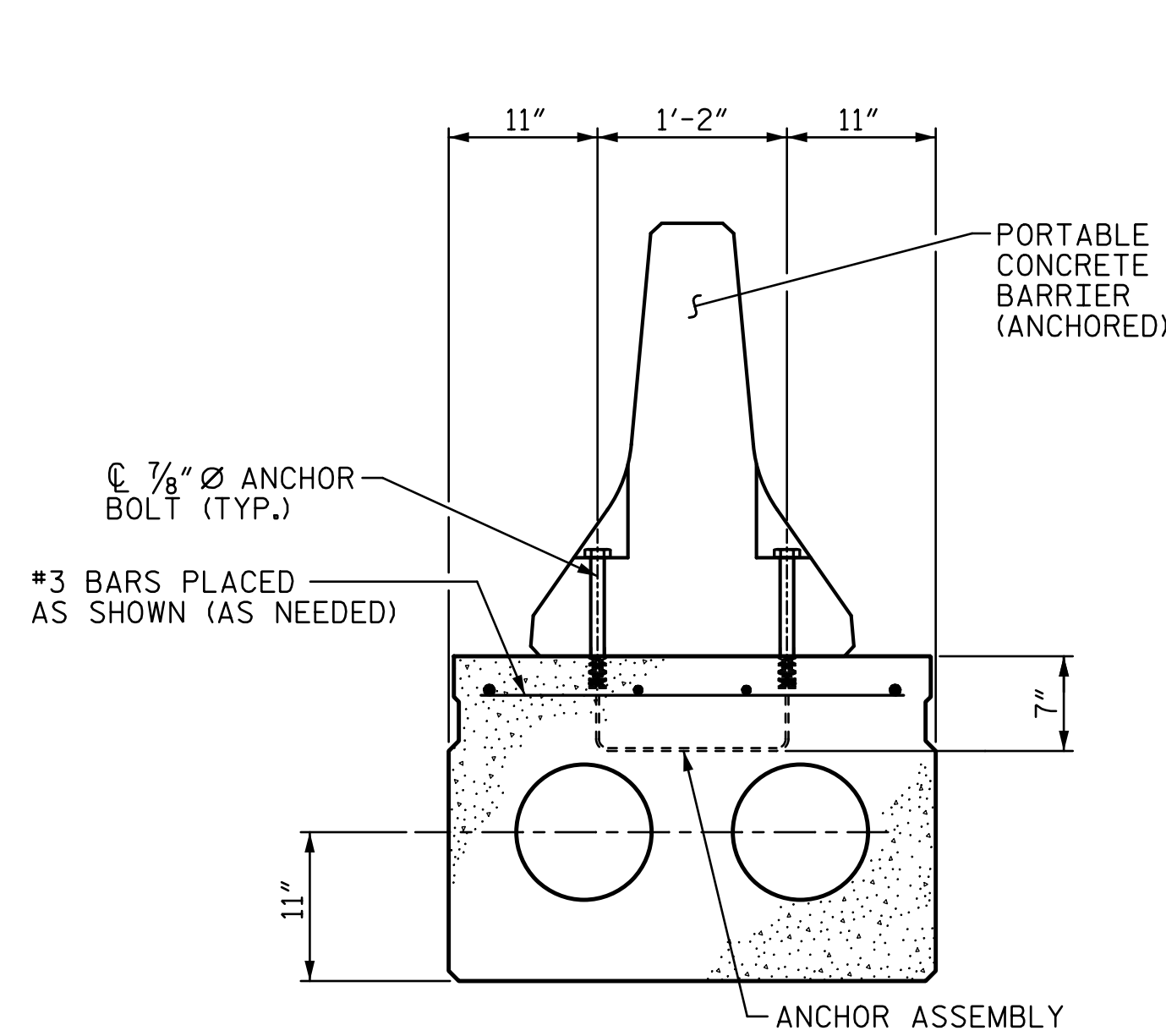
ANCHOR ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY TO INSURE FIT.

THE COST OF THE ANCHOR ASSEMBLY COMPLETE IN PLACE SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR 3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS OR LUMP SUM FOR BRIDGE APPROACH SLABS.

FERRULES TO BE PLUGGED DURING CASTING OF CORED SLAB UNIT OR POURING OF APPROACH SLABS AS RECOMMENDED BY THE MANUFACTURER.

AT THE CONTRACTOR'S OPTION, FERRULES WITH OPEN OR CLOSED ENDS MAY BE USED.

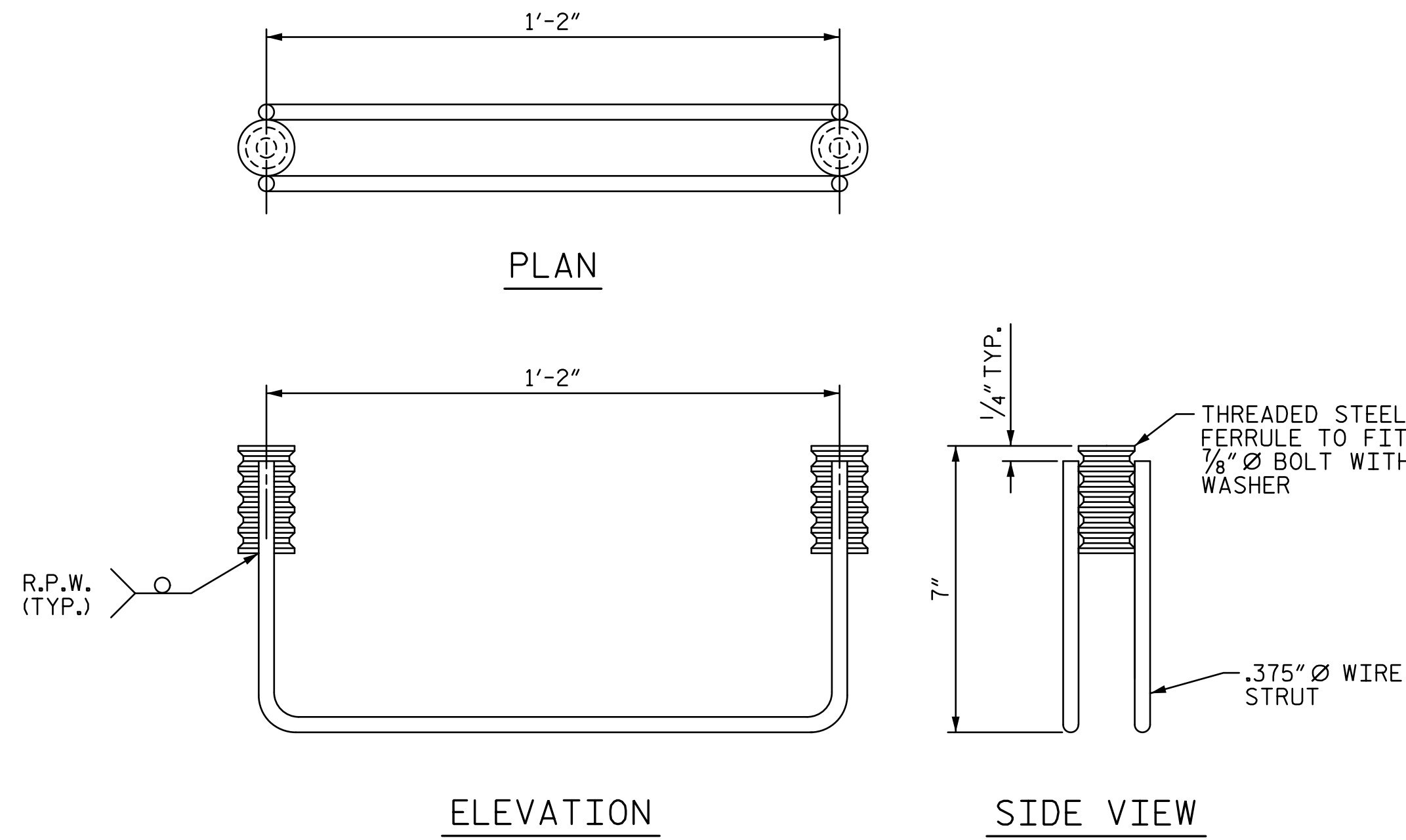
PAYMENT FOR PORTABLE CONCRETE BARRIER IS INCLUDED IN THE TRAFFIC CONTROL PLANS.



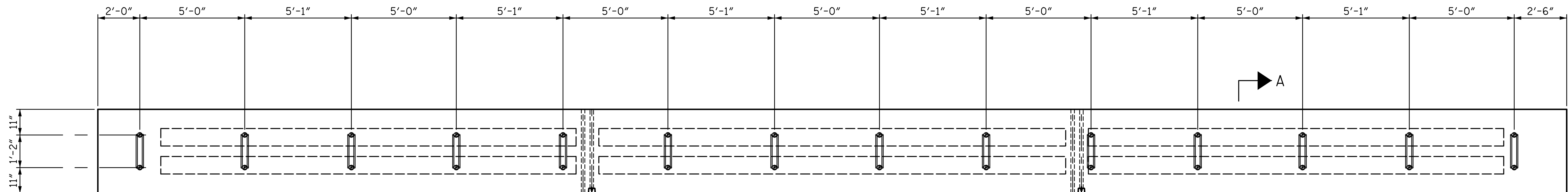
### SECTION A-A

(SHOWING PLACEMENT OF ANCHOR ASSEMBLIES)

NOTE: THE #3 BARS ARE INCIDENTAL AND THEIR COST SHALL BE INCLUDED IN THE PRICE BID FOR THE PRESTRESSED CONCRETE CORED SLAB.



### ANCHOR ASSEMBLY FOR PORTABLE CONCRETE BARRIER



### PLAN OF CORED SLAB UNIT #7

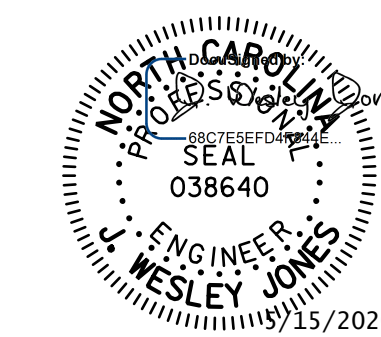
SHOWING ANCHOR ASSEMBLY SPACING  
(14 ASSEMBLIES REQUIRED IN CORED SLAB UNIT)  
(2 ASSEMBLIES REQUIRED IN APPROACH SLAB AT END BENT 1.  
FOR LOCATIONS, SEE BRIDGE APPROACH SLAB SHEET.)

PROJECT NO. BR-0126

WILKES COUNTY

STATION: 16+62.00 -L-

SHEET 3 OF 4



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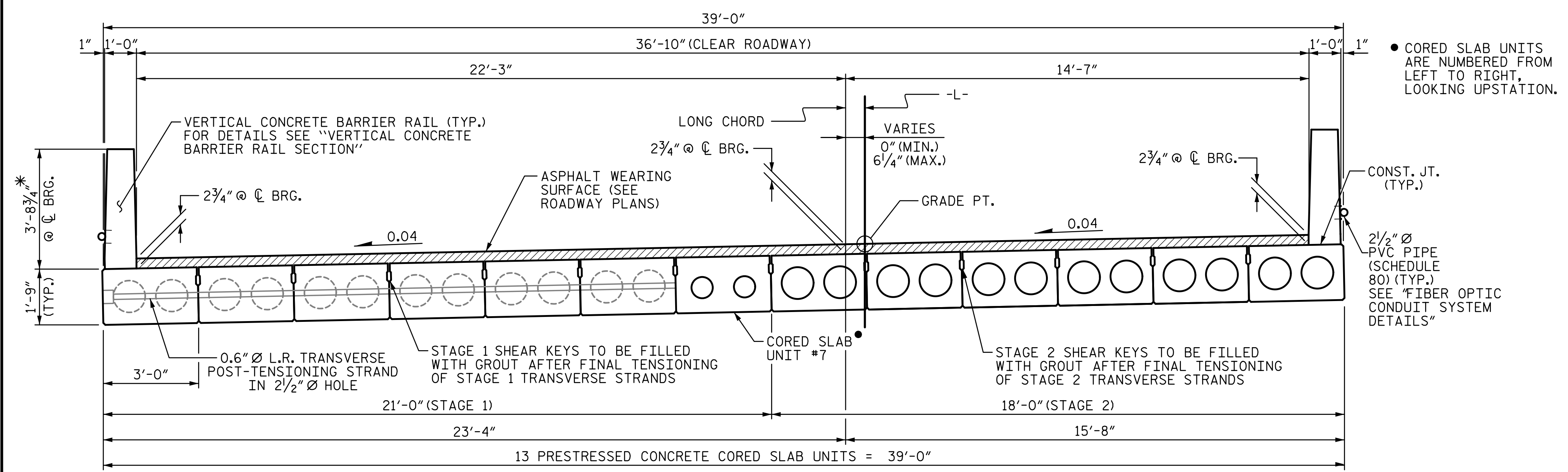
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
3'-0" X 2'-0"  
PRESTRESSED CONCRETE  
CORED SLAB UNIT  
90° SKEW  
(SPAN A)

REVISIONS				SHEET NO.		
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			23
2			4			

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CHECKED BY : JWJ DATE : 3-20  
DESIGN ENGINEER OF RECORD : JWJ DATE : 5-20

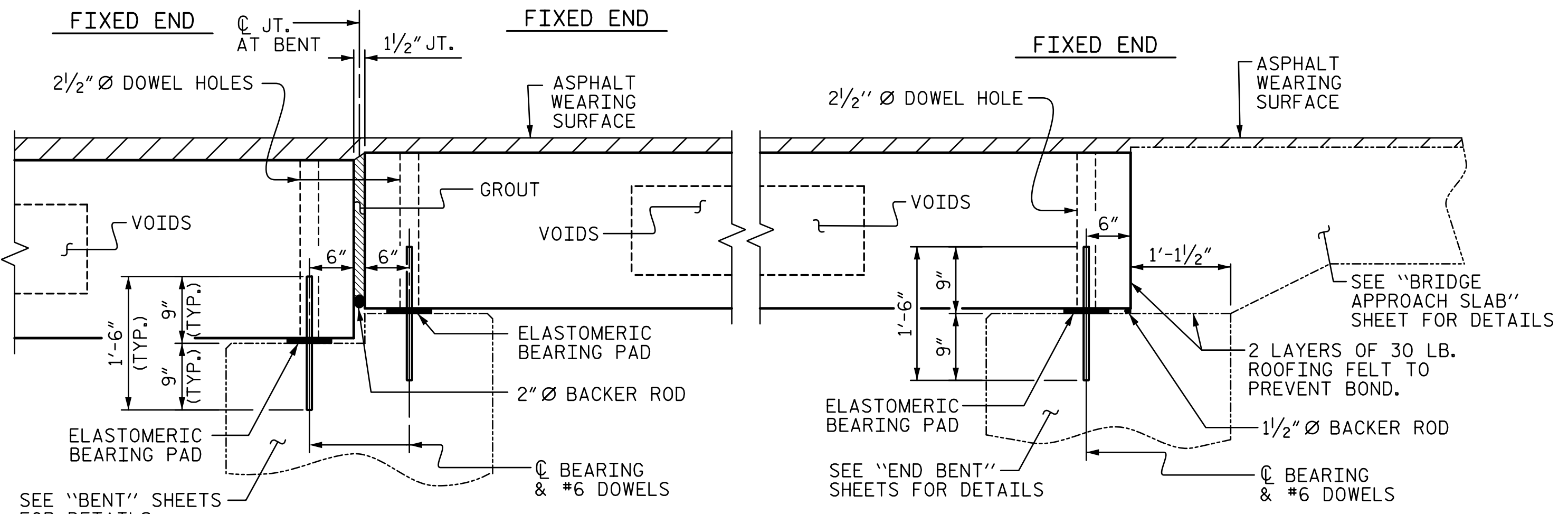
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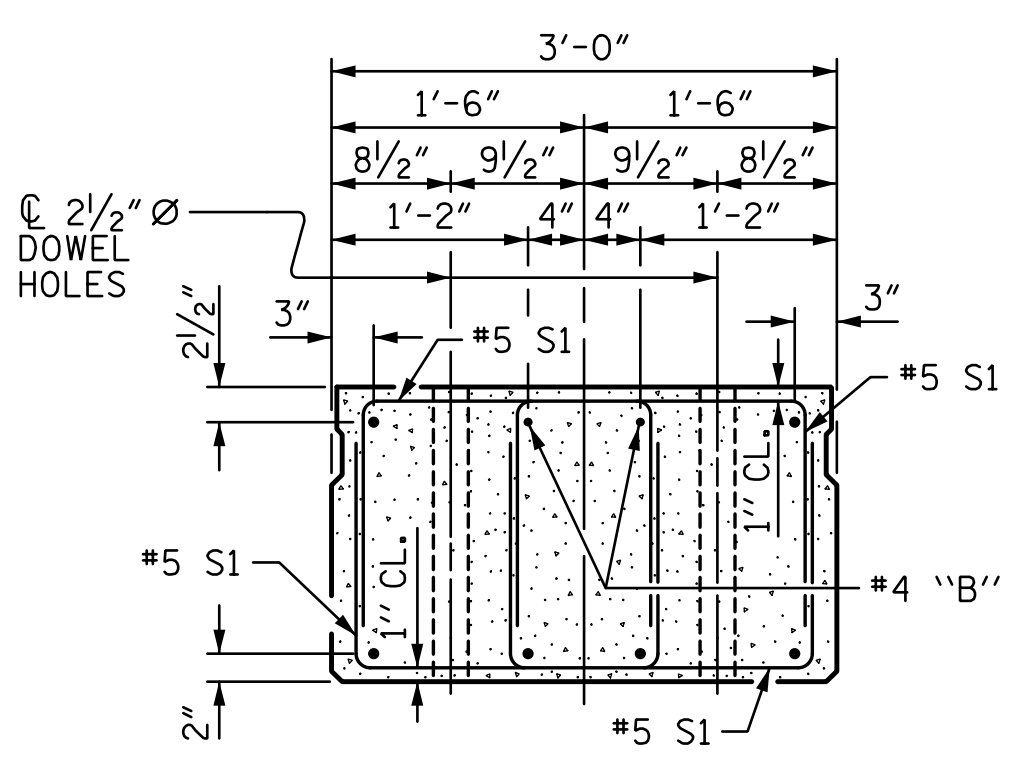


HALF SECTION AT INTERMEDIATE DIAPHRAGMS  
**TYPICAL SECTION**  
 HALF SECTION THROUGH VOIDS

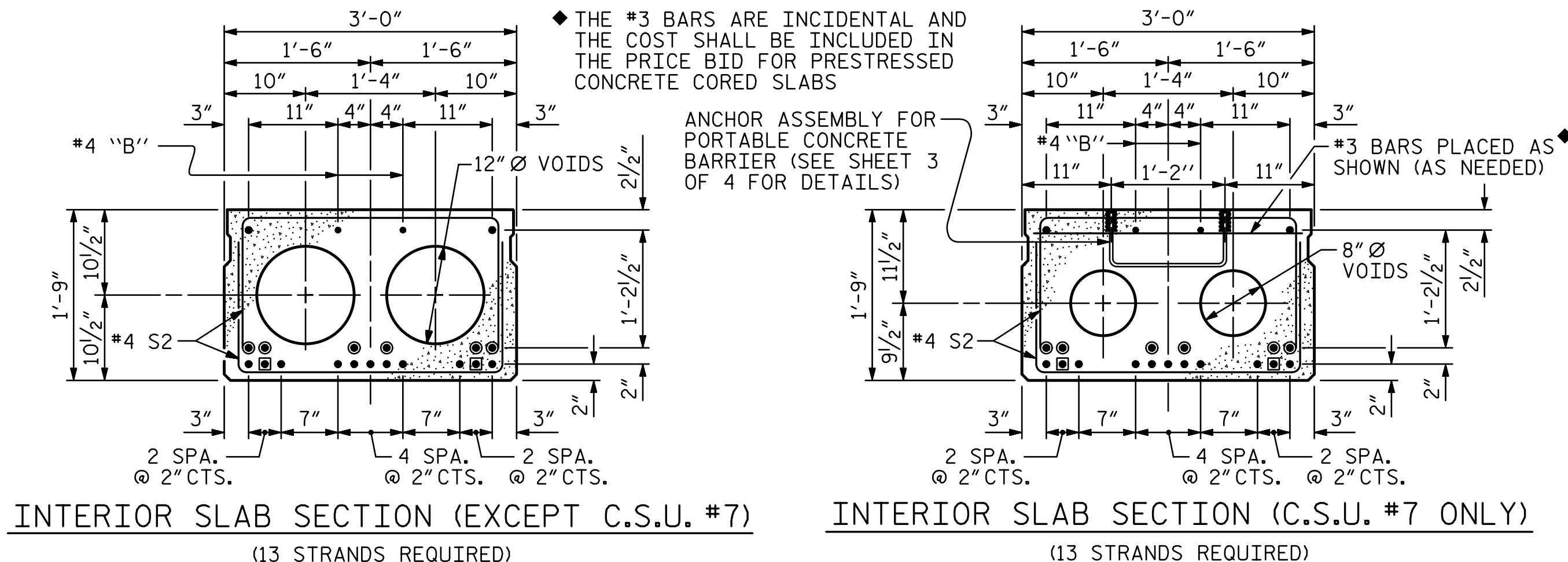
\* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



**SECTION AT BENT**  
**SECTION AT END BENT 2**



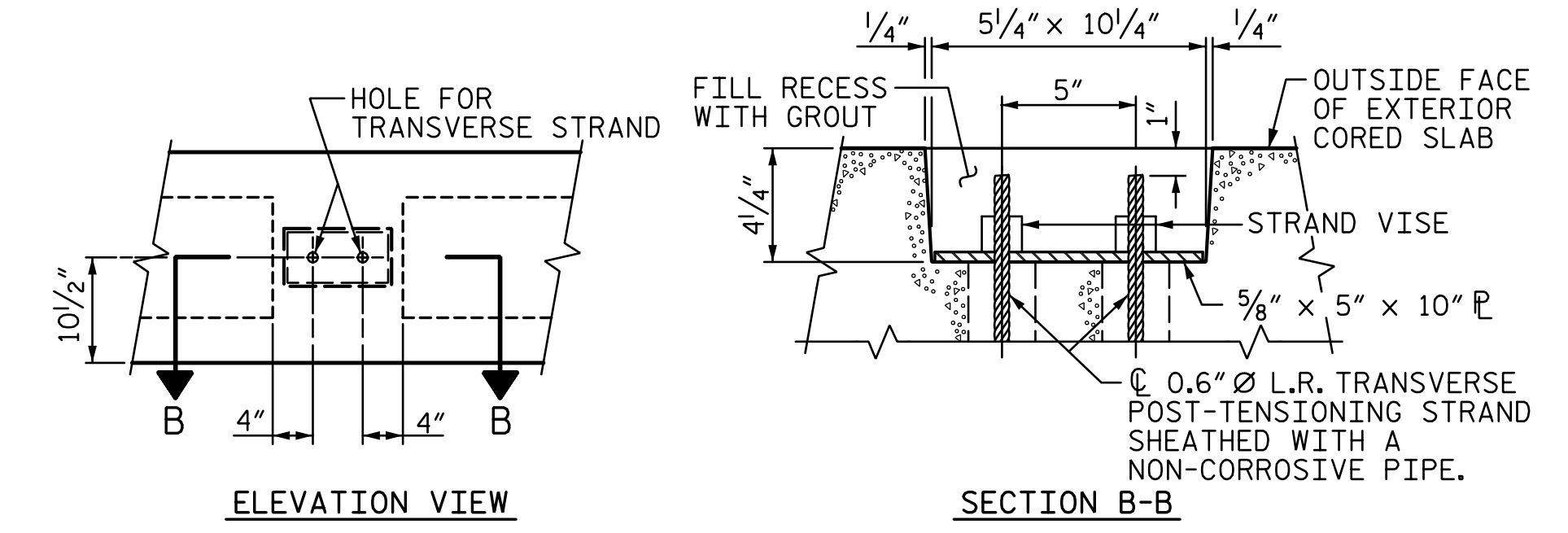
**END ELEVATION**  
 SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.)  
 INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



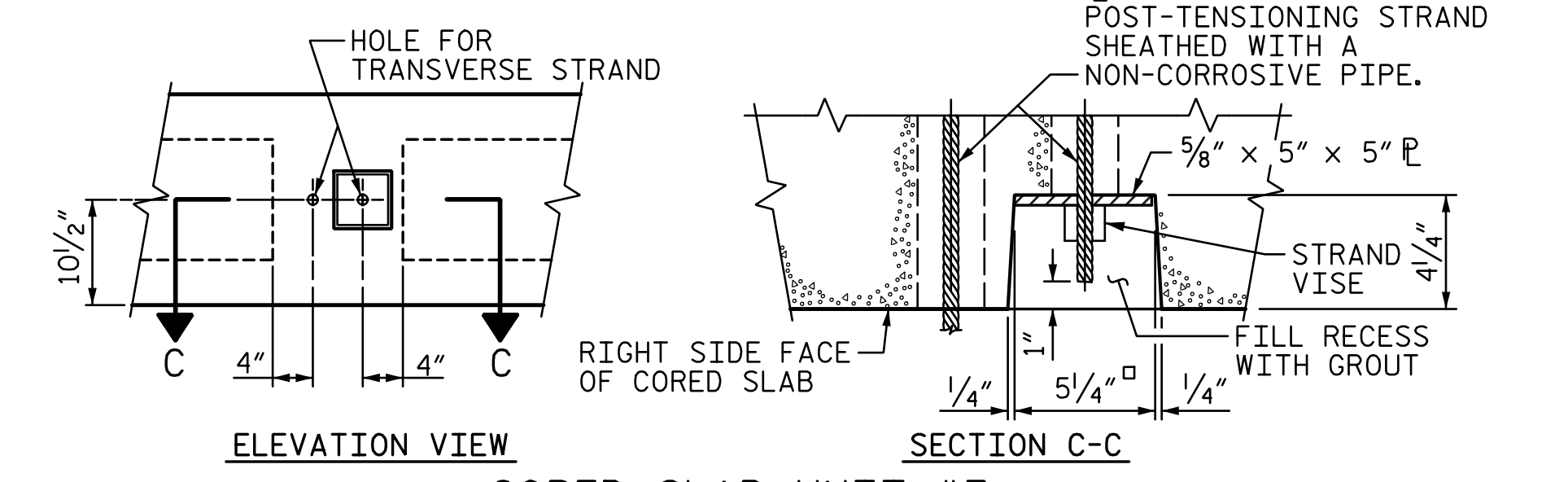
**INTERIOR SLAB SECTION (EXCEPT C.S.U. #7)**  
 (13 STRANDS REQUIRED)  
**INTERIOR SLAB SECTION (C.S.U. #7 ONLY)**  
 (13 STRANDS REQUIRED)

**0.6" Ø LOW RELAXATION STRAND LAYOUT**

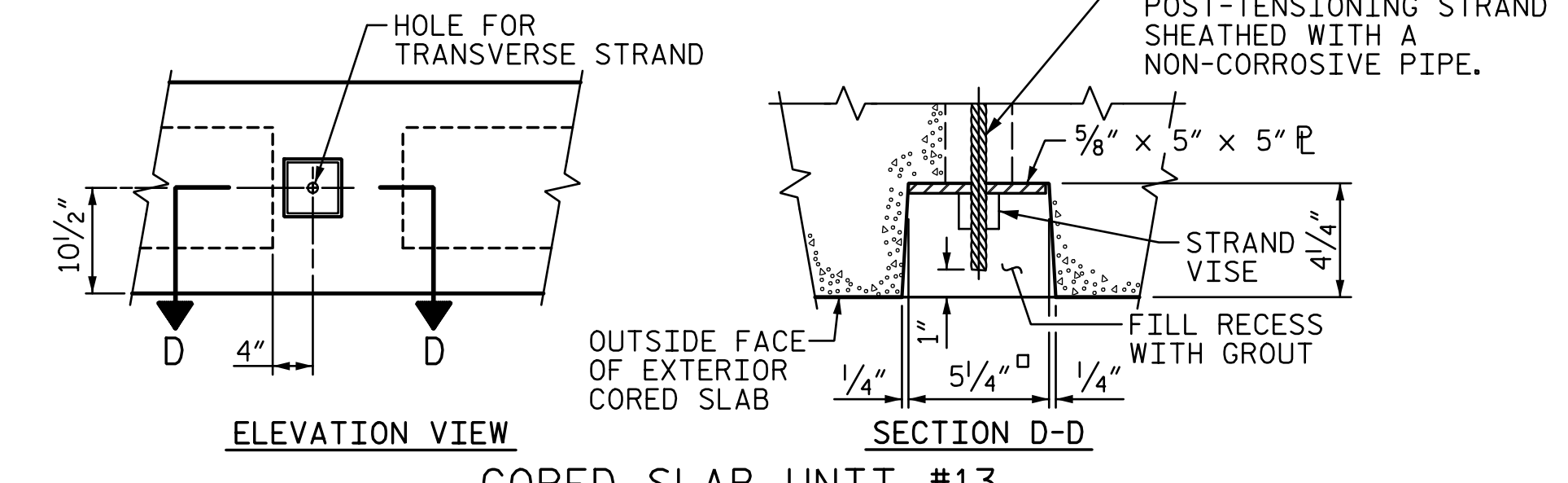
• CORED SLAB UNITS ARE NUMBERED FROM LEFT TO RIGHT, LOOKING UPSTATION.  
 CONST. JT. (TYP.)  
 2 1/2" Ø PVC PIPE (SCHEDULE 80) (TYP.) SEE "FIBER OPTIC CONDUIT SYSTEM DETAILS"



**CORED SLAB UNIT #1**

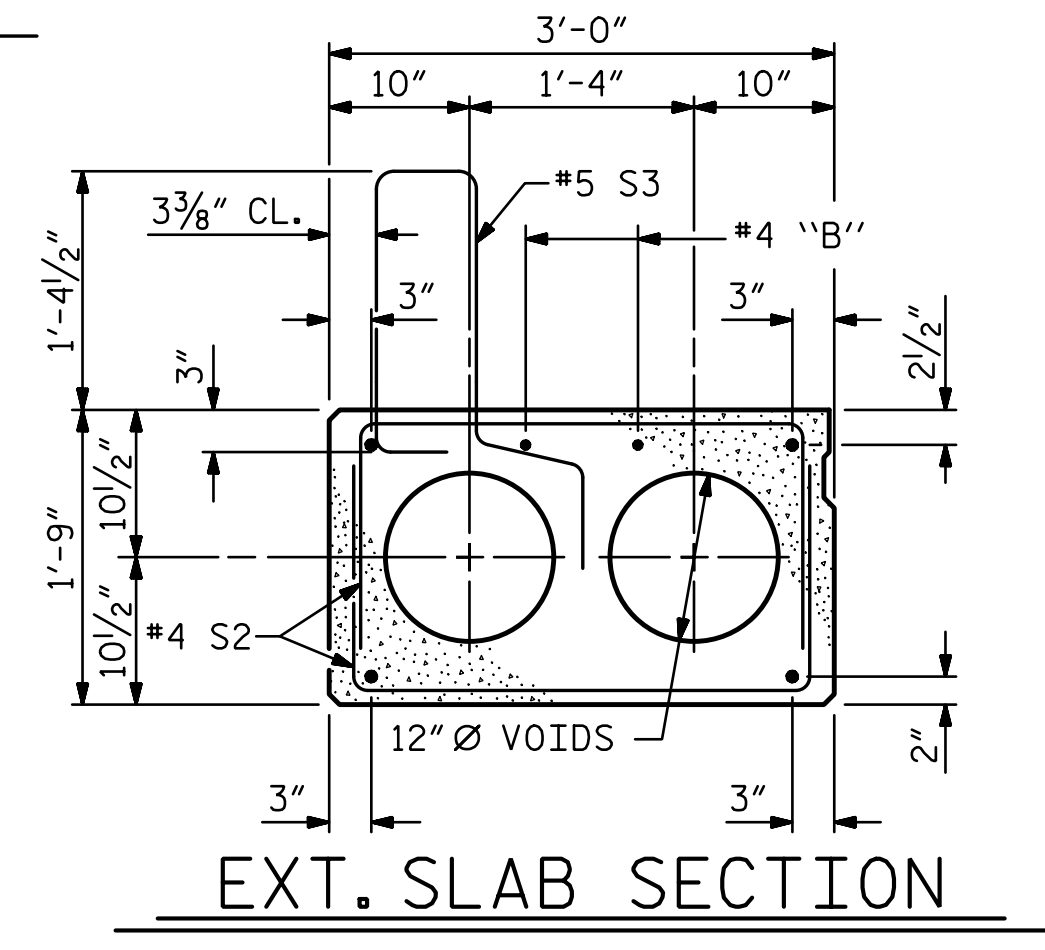


**CORED SLAB UNIT #7**



**CORED SLAB UNIT #13**

**GROUTED RECESS AT END OF POST-TENSIONED STRAND CORED SLABS**

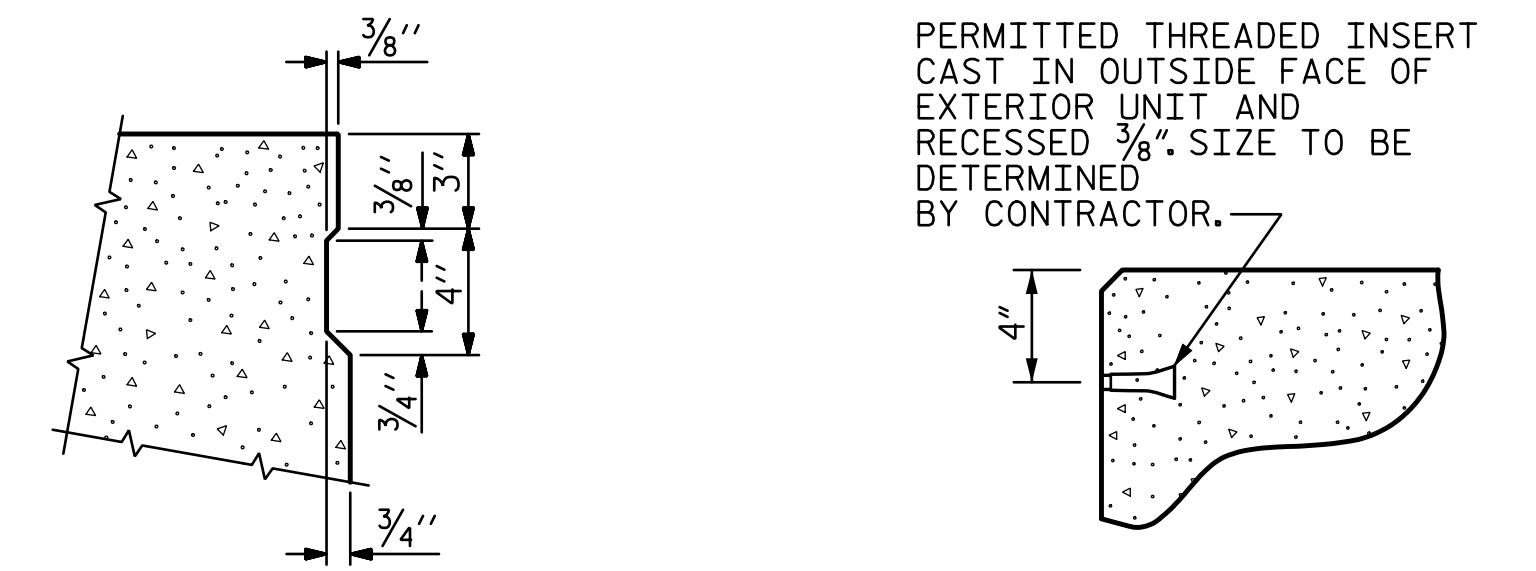


**EXT. SLAB SECTION**

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION)

- BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

**DEBONDING LEGEND**

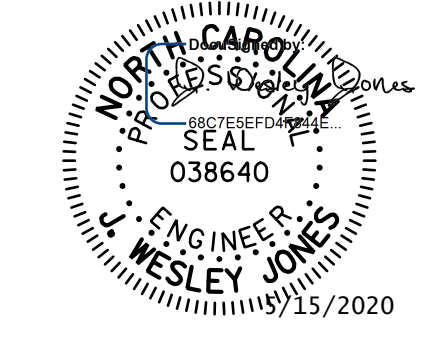


**SHEAR KEY DETAIL**

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

**THREADED INSERT DETAIL**

PROJECT NO. **BR-0126**  
**WILKES** COUNTY  
 STATION: **16+62.00 -L-**  
 SHEET 1 OF 4



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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**3'-0" X 1'-9"**  
**PRESTRESSED CONCRETE CORED SLAB UNIT**  
**90° SKEW (SPAN B)**

REVISIONS				SHEET NO.
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 TOTAL SHEETS 23

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 CHECKED BY: JWJ DATE: 3-20  
 DESIGN ENGINEER OF RECORD: JWJ DATE: 5-20



### ANCHOR ASSEMBLY NOTES

THE ANCHOR ASSEMBLY FOR PORTABLE CONCRETE BARRIER 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 1/2".
- B. 2 - 7/8" Ø 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 7/8" Ø 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 STRUTS SHOWN IN THE ANCHOR ASSEMBLY DETAIL ARE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 P.S.I.

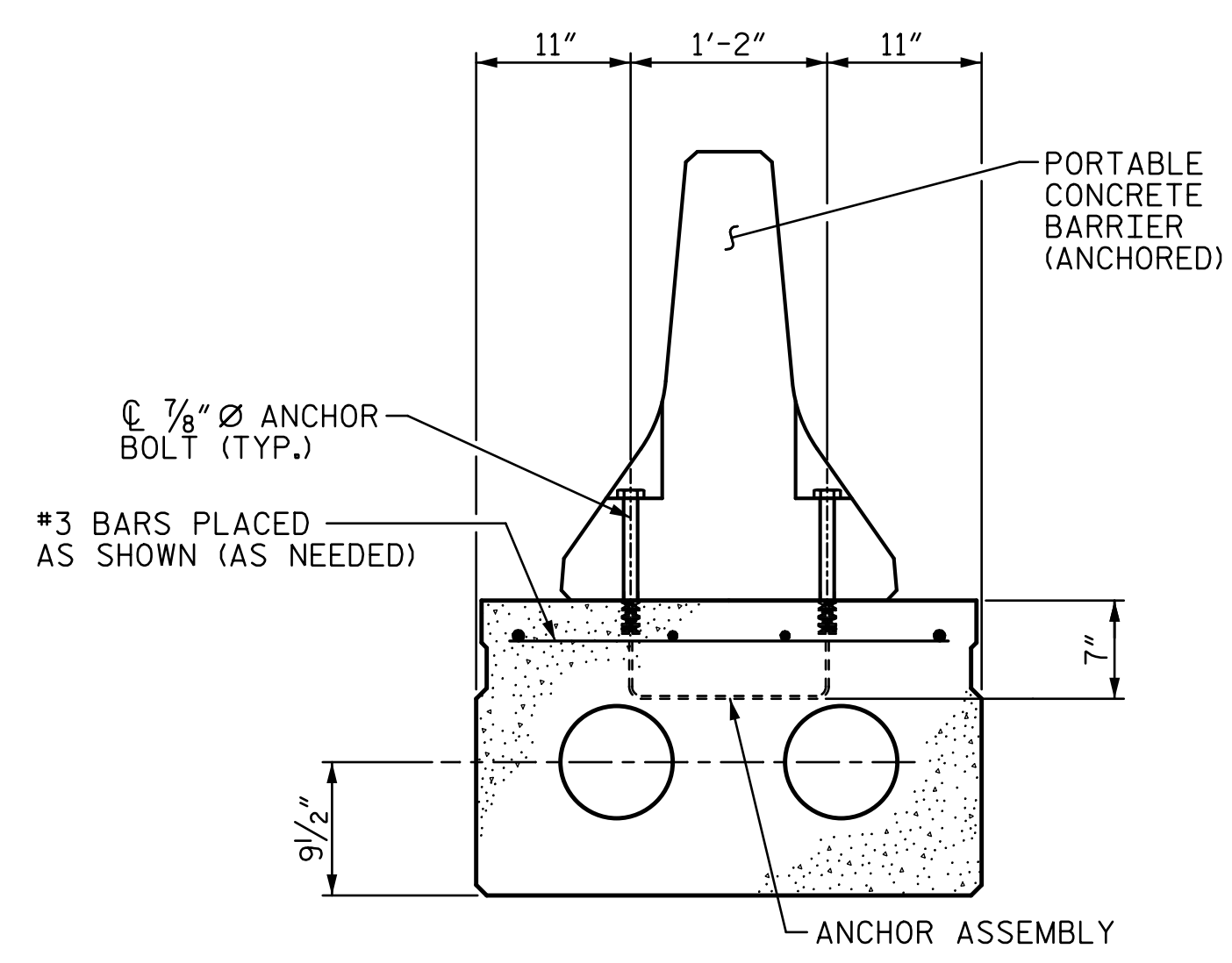
ANCHOR ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY TO INSURE FIT.

THE COST OF THE ANCHOR ASSEMBLY COMPLETE IN PLACE SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS OR LUMP SUM FOR BRIDGE APPROACH SLABS.

FERRULES TO BE PLUGGED DURING CASTING OF CORED SLAB UNIT OR POURING OF APPROACH SLABS AS RECOMMENDED BY THE MANUFACTURER.

AT THE CONTRACTOR'S OPTION, FERRULES WITH OPEN OR CLOSED ENDS MAY BE USED.

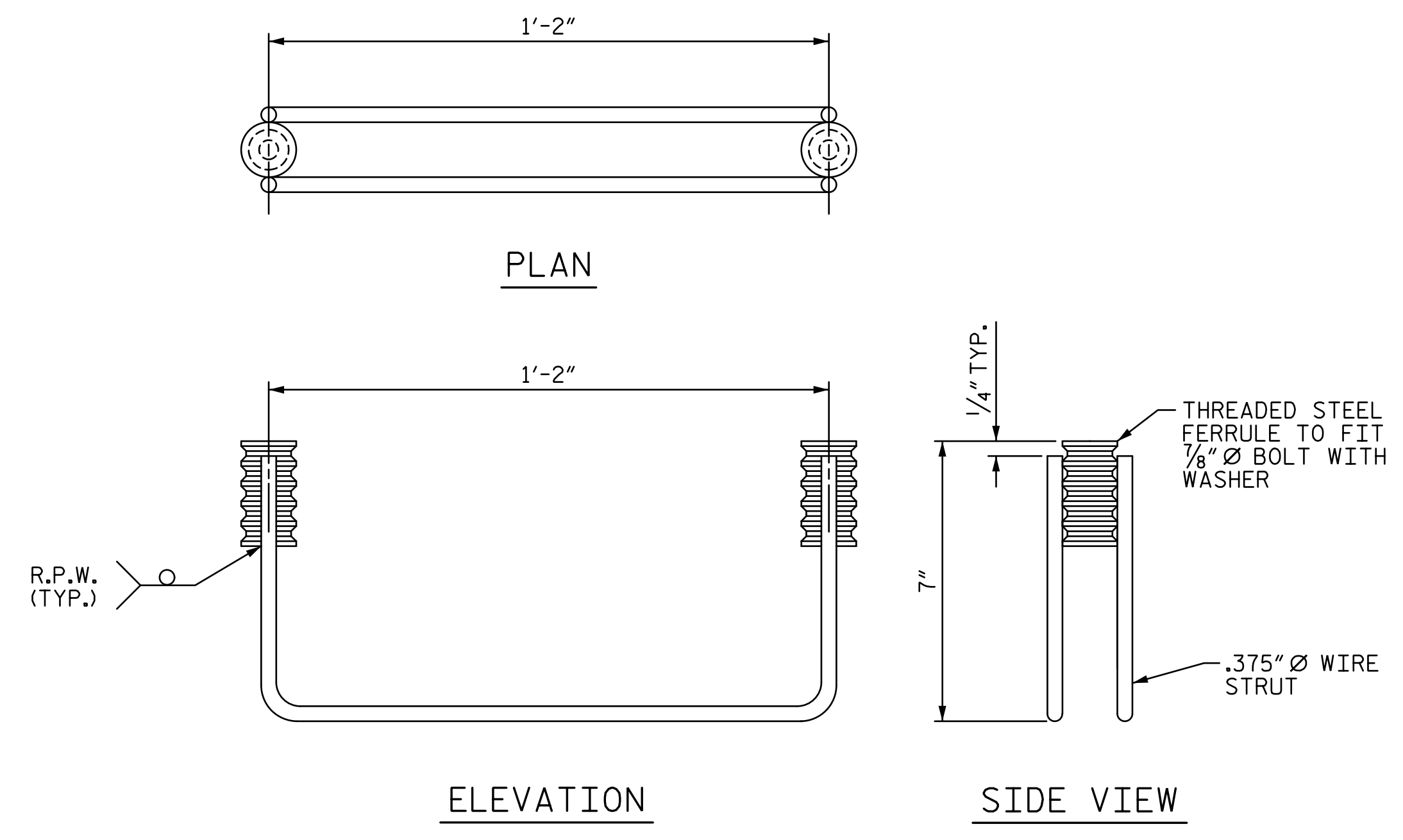
PAYMENT FOR PORTABLE CONCRETE BARRIER IS INCLUDED IN THE TRAFFIC CONTROL PLANS.



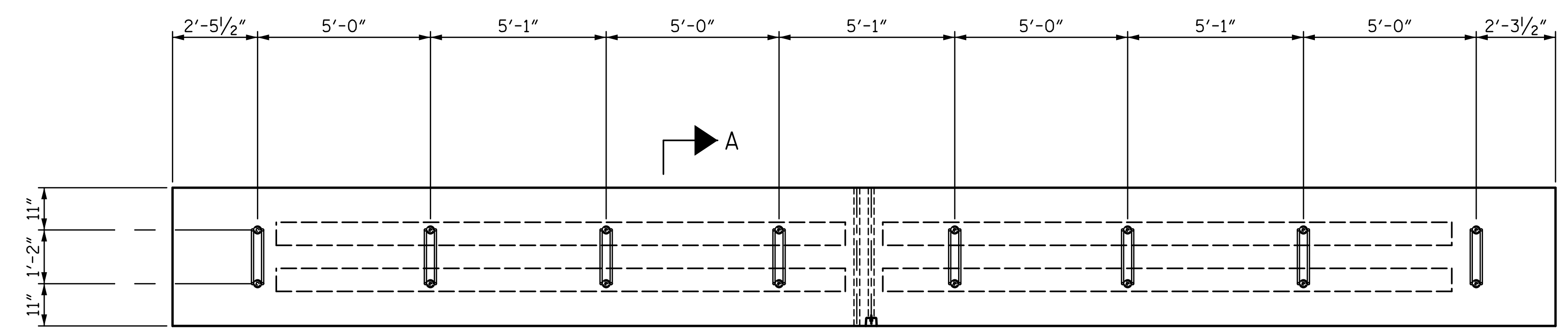
### SECTION A-A

(SHOWING PLACEMENT OF ANCHOR ASSEMBLIES)

NOTE: THE #3 BARS ARE INCIDENTAL AND THEIR COST SHALL BE INCLUDED IN THE PRICE BID FOR THE PRESTRESSED CONCRETE CORED SLAB.

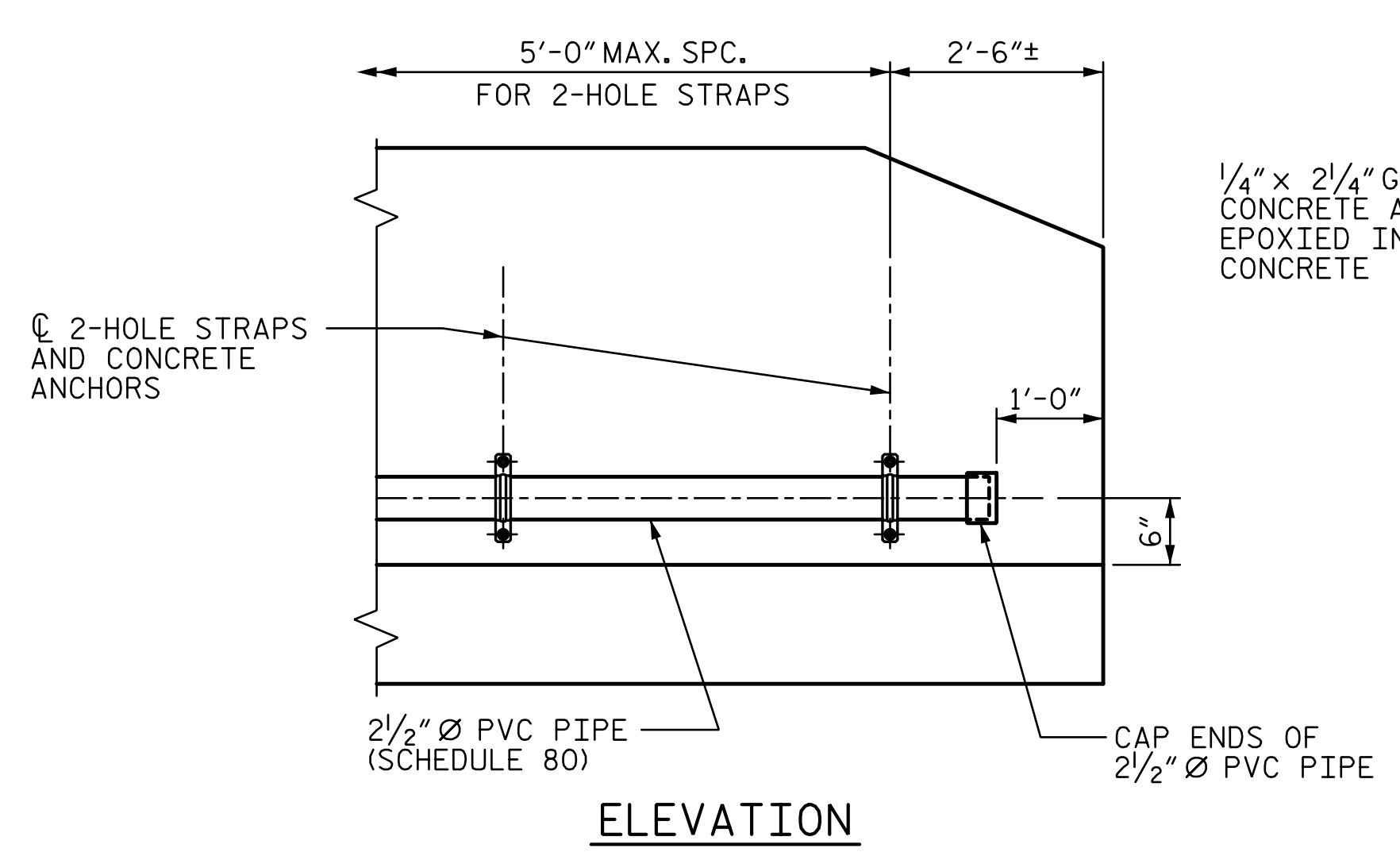


### ANCHOR ASSEMBLY FOR PORTABLE CONCRETE BARRIER



### PLAN OF CORED SLAB UNIT #7

SHOWING ANCHOR ASSEMBLY SPACING  
 (8 ASSEMBLIES REQUIRED IN CORED SLAB UNIT)  
 (2 ASSEMBLIES REQUIRED IN APPROACH SLAB AT END BENT 2.  
 FOR LOCATIONS, SEE BRIDGE APPROACH SLAB SHEET.)



### FIBER OPTIC CONDUIT SYSTEM DETAILS

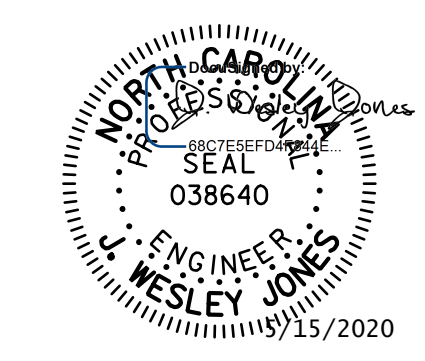
2 1/2" Ø SCHEDULE 80 PVC PIPE ATTACHED TO THE BACK OF BOTH RAILS FOR FUTURE FIBER OPTIC CABLE.

PROJECT NO. BR-0126

WILKES COUNTY

STATION: 16+62.00 -L-

SHEET 3 OF 4



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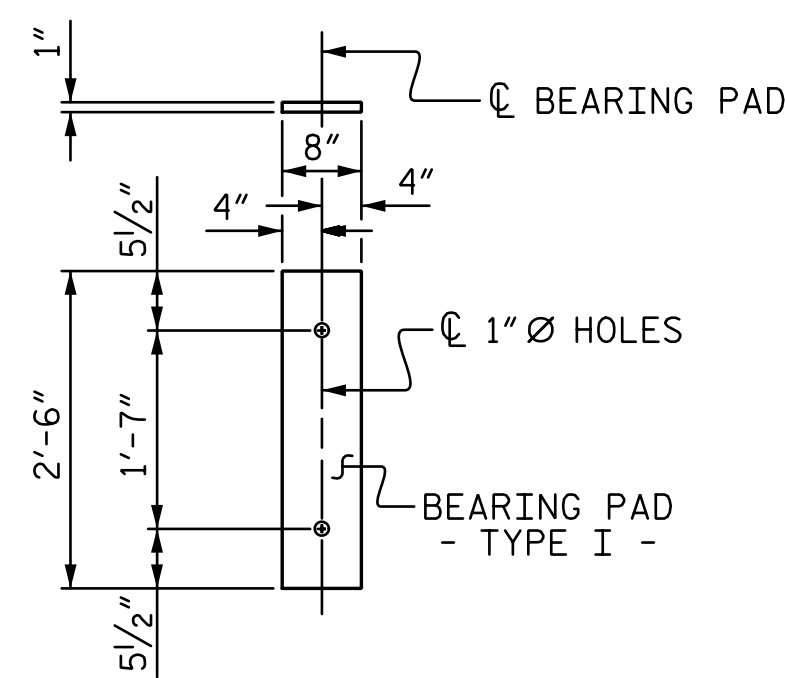
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 3'-0" X 1'-9"  
 PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 90° SKEW  
 (SPAN B)

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 TOTAL SHEETS 23

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### ELASTOMERIC BEARING DETAILS

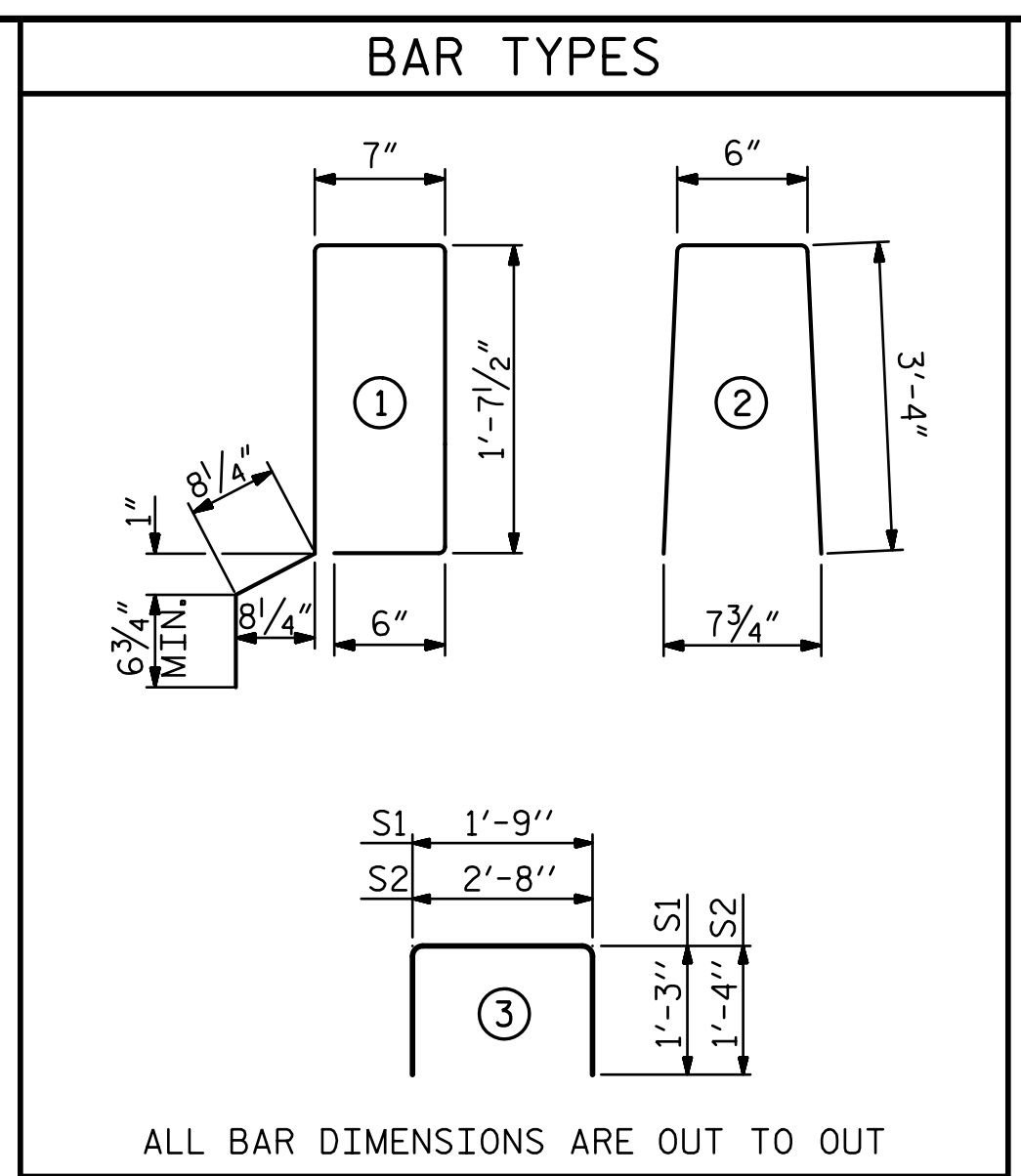
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS	RAIL HEIGHT
	@ MID-SPAN	@ MID-SPAN
40' UNITS	2"	3'-8"

BILL OF MATERIAL FOR ONE 40' CORED SLAB UNIT									
				EXTERIOR UNITS C.S.U. #1 & #13		INTERIOR UNITS C.S.U. #2-#6 & #8-#12		INTERIOR UNIT C.S.U. #7	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT
B4	4	#4	STR	20'-9"	55	20'-9"	55	20'-9"	55
S1	8	#5	3	4'-3"	35	4'-3"	35	4'-3"	35
S2	84	#4	3	5'-4"	299	5'-4"	299	5'-4"	299
* S3	48	#5	1	5'-7"	280				
REINFORCING STEEL				LBS.	389		389		389
* EPOXY COATED REINFORCING STEEL				LBS.	280				
5000 P.S.I. CONCRETE				CU. YDS.	5.8		5.8		6.8
0.6" Ø L.R. STRANDS				No.	13		13		13

CORED SLABS REQUIRED				
STAGE NUMBER		NUMBER	LENGTH	TOTAL LENGTH
1	EXTERIOR C.S.	1	40'-0"	40'-0"
	INTERIOR C.S.	5	40'-0"	200'-0"
	INTERIOR C.S. W/ 8" Ø VOIDS	1	40'-0"	40'-0"
	TOTAL	7	—	280'-0"
2	EXTERIOR C.S.	1	40'-0"	40'-0"
	INTERIOR C.S.	5	40'-0"	200'-0"
	TOTAL	6	—	240'-0"

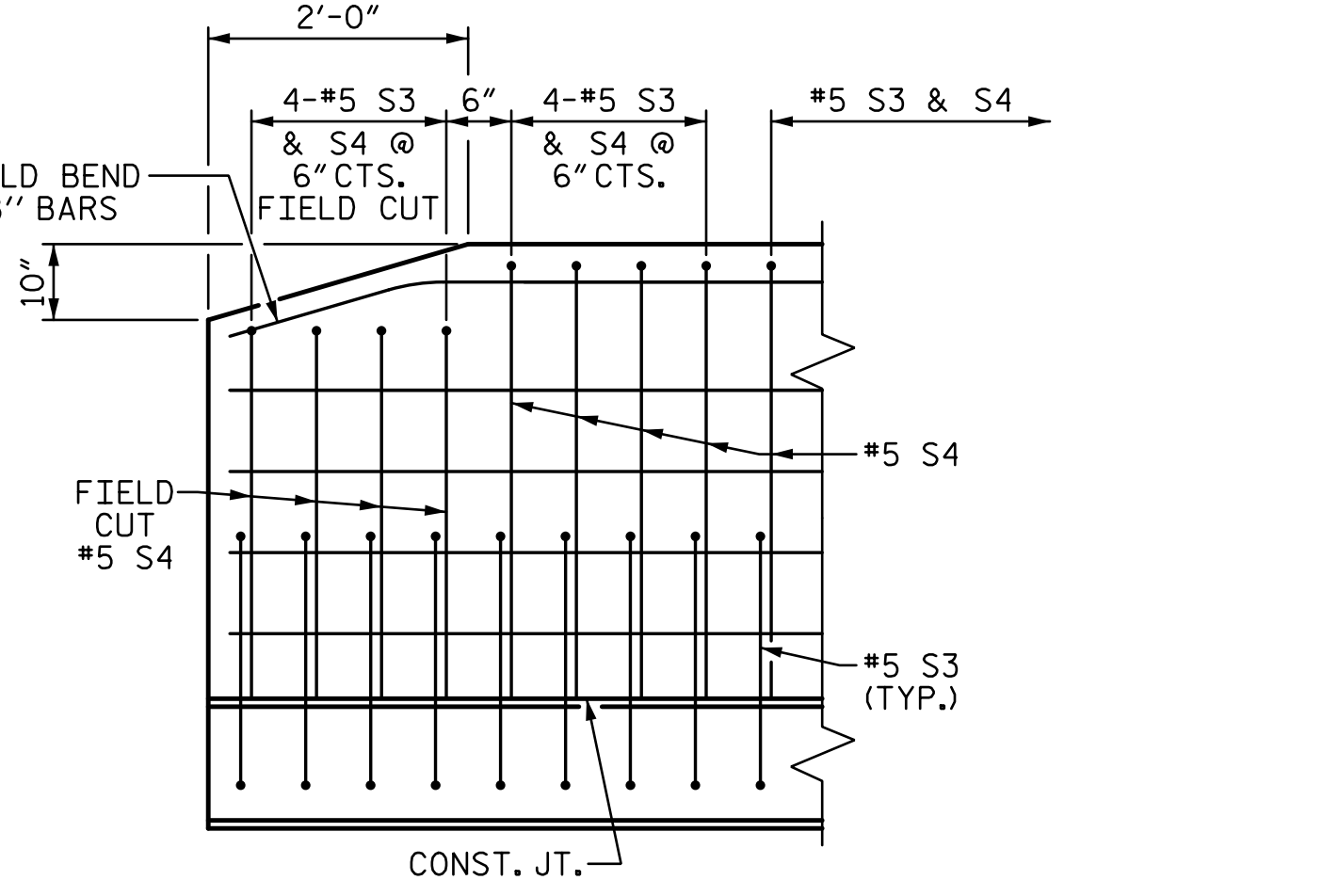
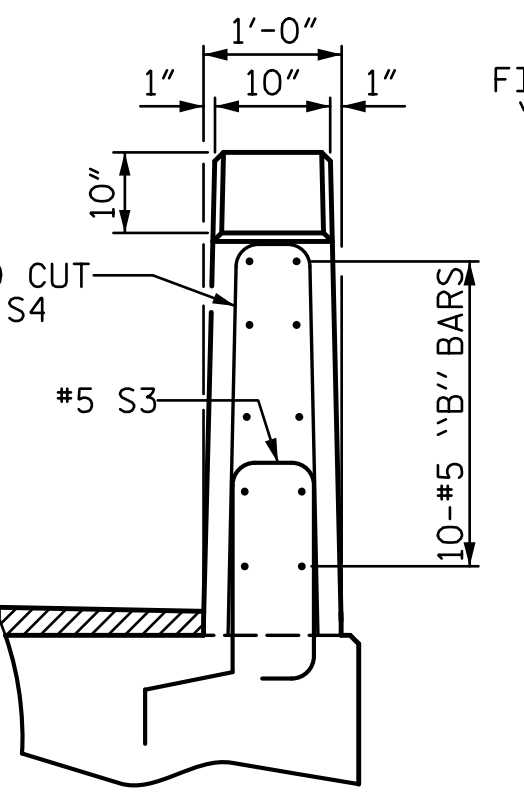
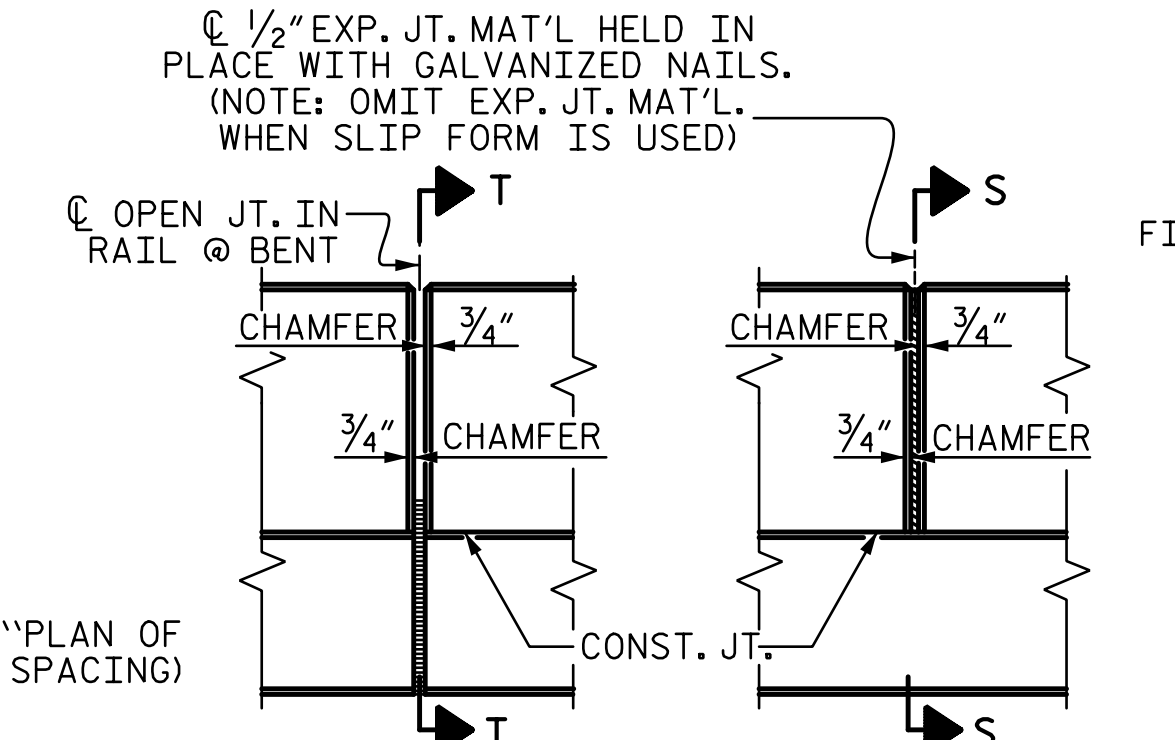
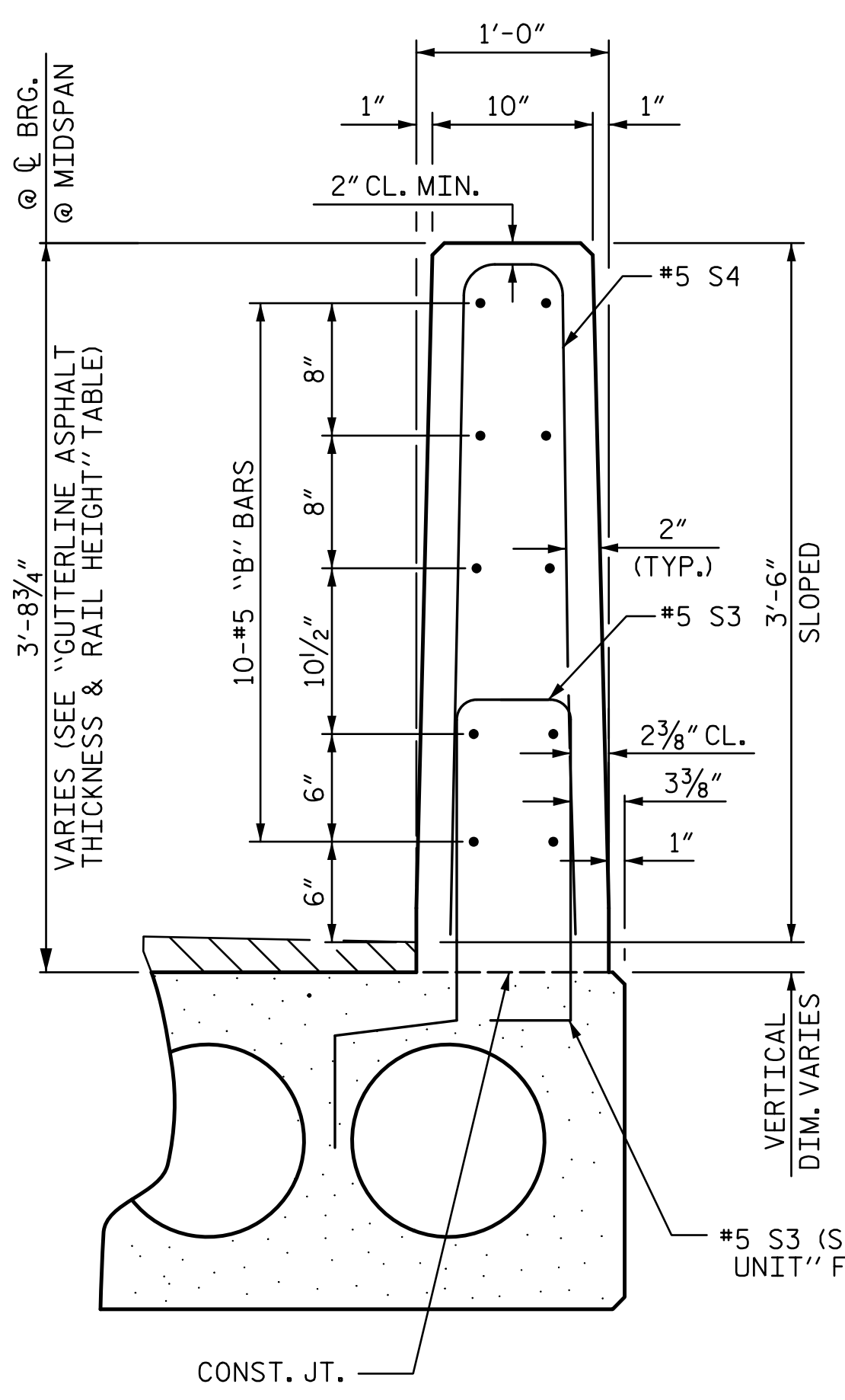
GRADE 270 STRANDS	
	0.6" Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950



DEAD LOAD DEFLECTION AND CAMBER	
40' CORED SLAB UNIT	3'-0" x 1'-9"
CAMBER (SLAB ALONE IN PLACE)	0.6" Ø L.R. STRAND
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	7/8" ↑
FINAL CAMBER	1/8" ↓
	3/4" ↑

\*\* INCLUDES FUTURE WEARING SURFACE

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
40' UNIT						
* B11	40	40	#5	STR	19'-7"	817
* S4	96	96	#5	2	7'-2"	718
* EPOXY COATED REINFORCING STEEL				LBS.		1535
CLASS AA CONCRETE				CU. YDS.		10.2
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		80.13



### END OF RAIL DETAILS

### NOTES

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

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

ALL REINFORCING STEEL IN THE VERTICAL CONCRETE BARRIER RAIL SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

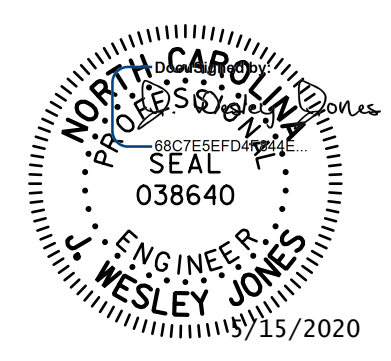
THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

PROJECT NO. BR-0126  
WILKES COUNTY  
 STATION: 16+62.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

3'-0" X 1'-9"  
 PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 90° SKEW  
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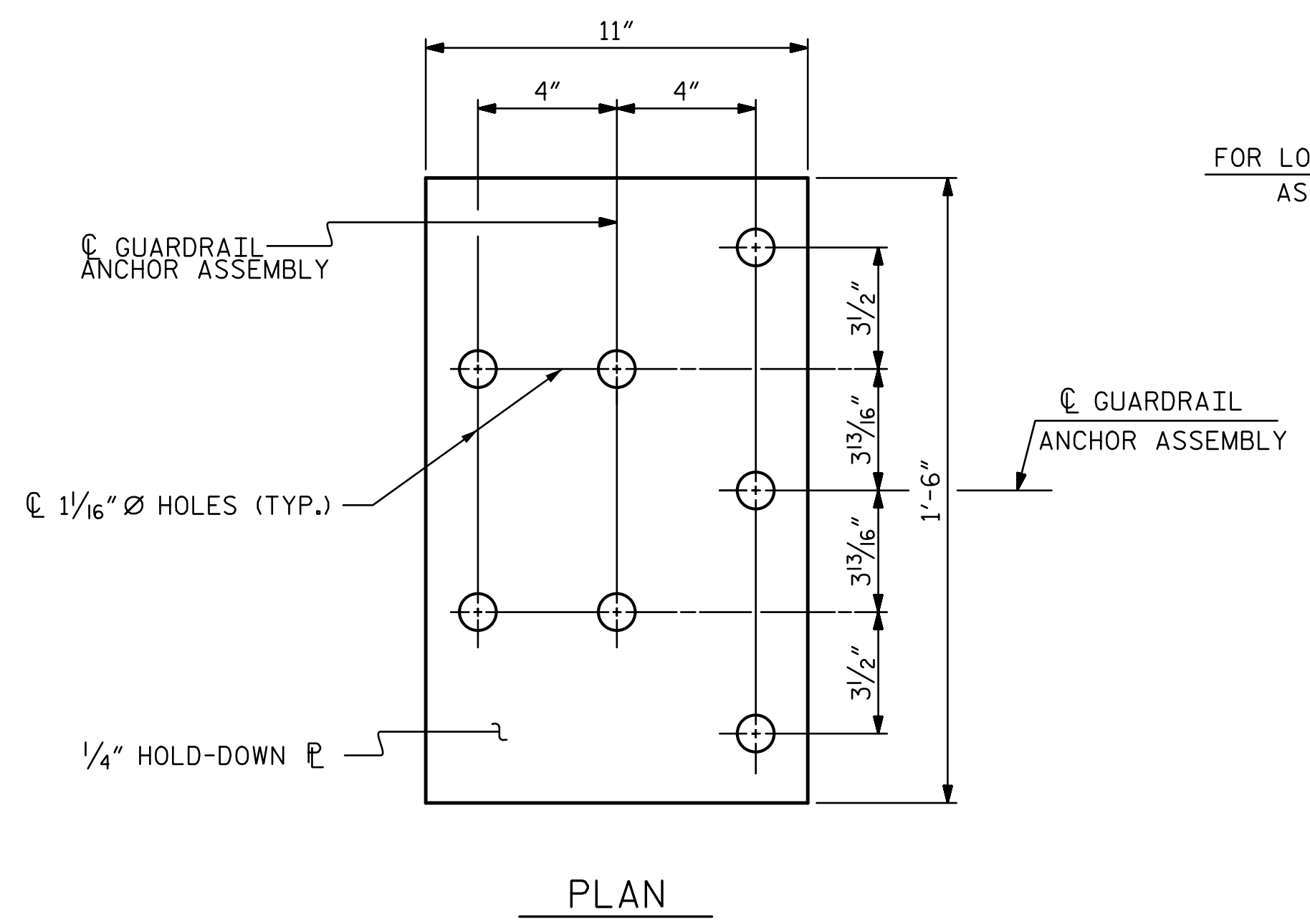
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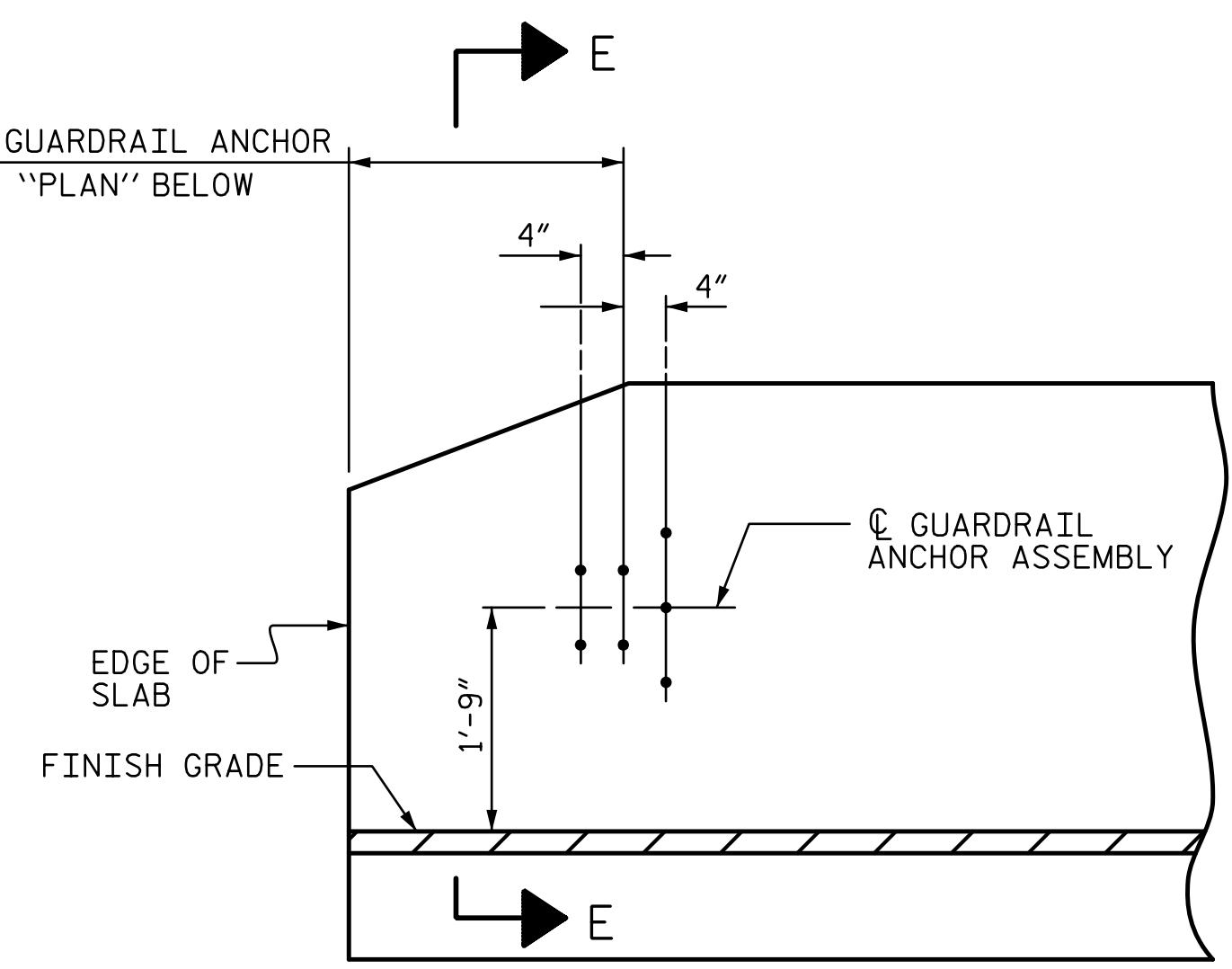
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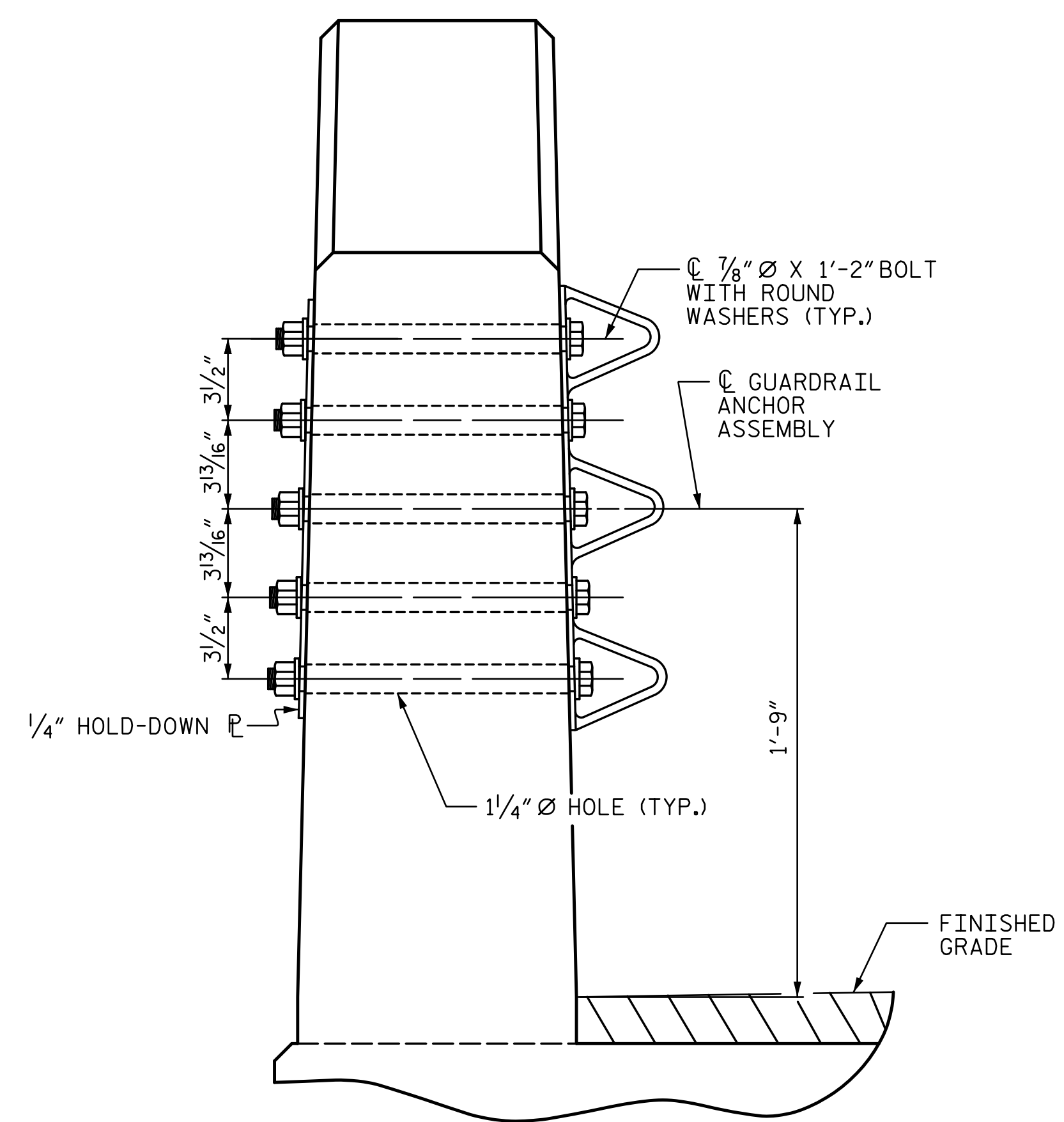


PLAN

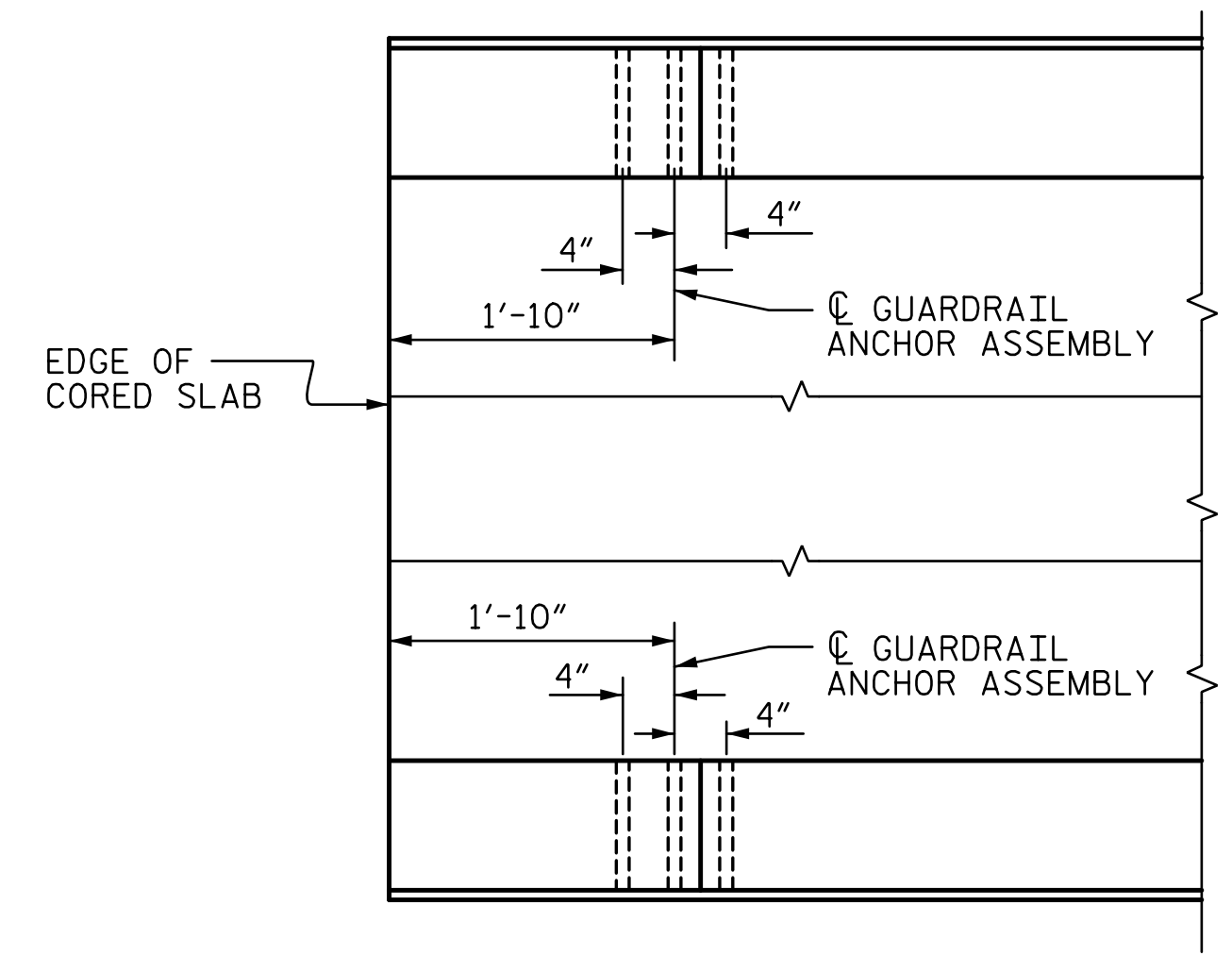
FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



ELEVATION



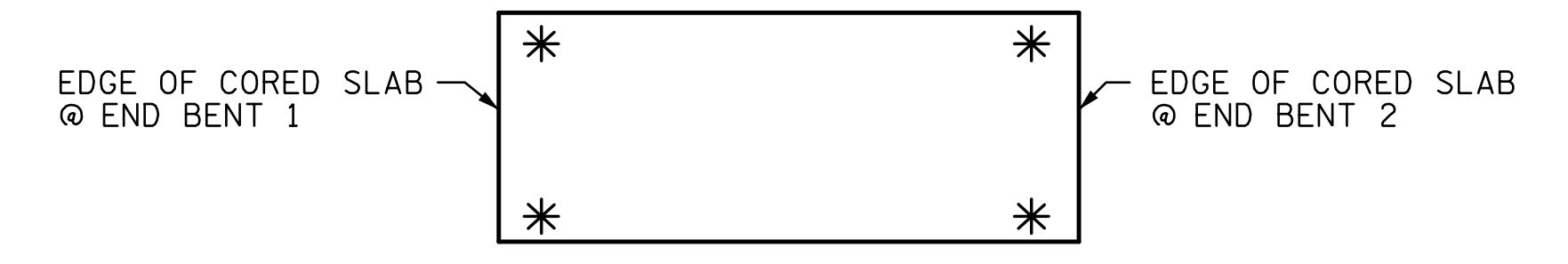
SECTION E-E  
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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



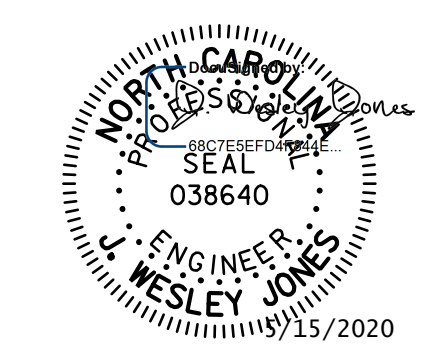
SKETCH SHOWING POINTS OF ATTACHMENT

\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

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 BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.
- AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.
- THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.
- THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.
- THE 1/4" 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.

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WILKES COUNTY  
 STATION: 16+62.00 -L-



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

ASSEMBLED BY : LEM	DATE : 1-20
CHECKED BY : JWJ	DATE : 3-20
DESIGN ENGINEER OF RECORD : JWJ	DATE : 5-20
DRAWN BY : MAA 5/10	REV. 1/15 MAA/TMG
CHECKED BY : GM 5/10	REV. 12/17 MAA/THC
	REV. 5/18 MAA/THC

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TOTAL SHEETS	S-15
23	



NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

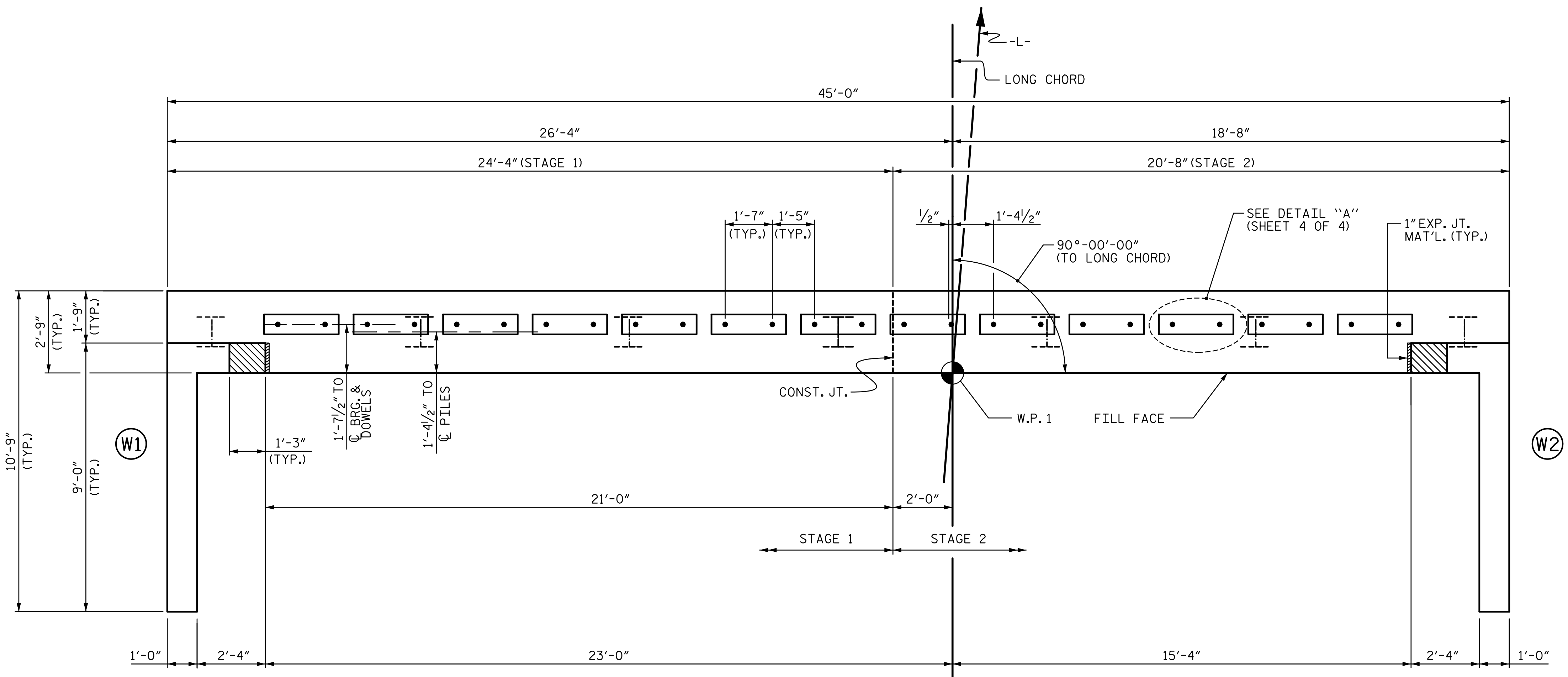
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

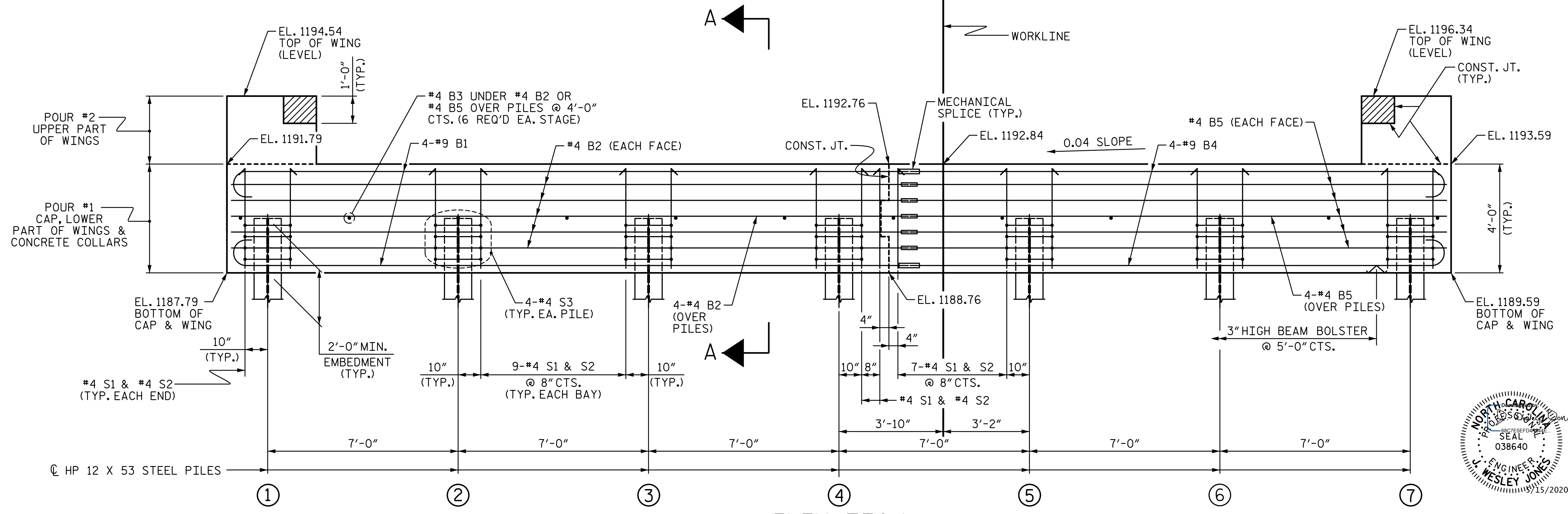
FOR CONSTRUCTION JOINT DETAILS, SEE SHEET 4 OF 4.

FOR MECHANICAL SPLICES, SEE SECTION 425-5(B) OF THE STANDARD SPECIFICATIONS.



PLAN

TOP OF PILE ELEVATIONS	
①	1189.87
②	1190.15
③	1190.43
④	1190.71
⑤	1190.99
⑥	1191.27
⑦	1191.55

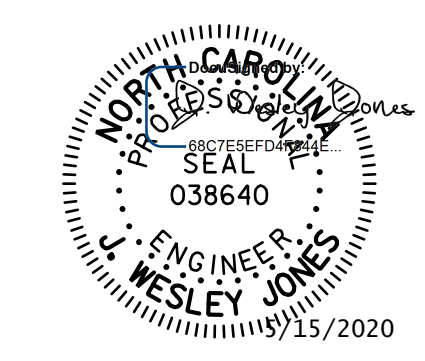


ELEVATION

WINGS NOT SHOWN FOR CLARITY.  
 FOR SECTION A-A, SEE SHEET 4 OF 4.  
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.  
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

PROJECT NO. BR-0126  
WILKES COUNTY  
 STATION: 16+62.00 -L-  
 SHEET 1 OF 4

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



STV ENGINEERS, INC.  
 100 900 West Trade St., Suite 715  
 Charlotte, NC 28202  
 NC License Number F-0991

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

S-16  
 TOTAL SHEETS 23

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 DESIGN ENGINEER OF RECORD : JWJ DATE : 5-20

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

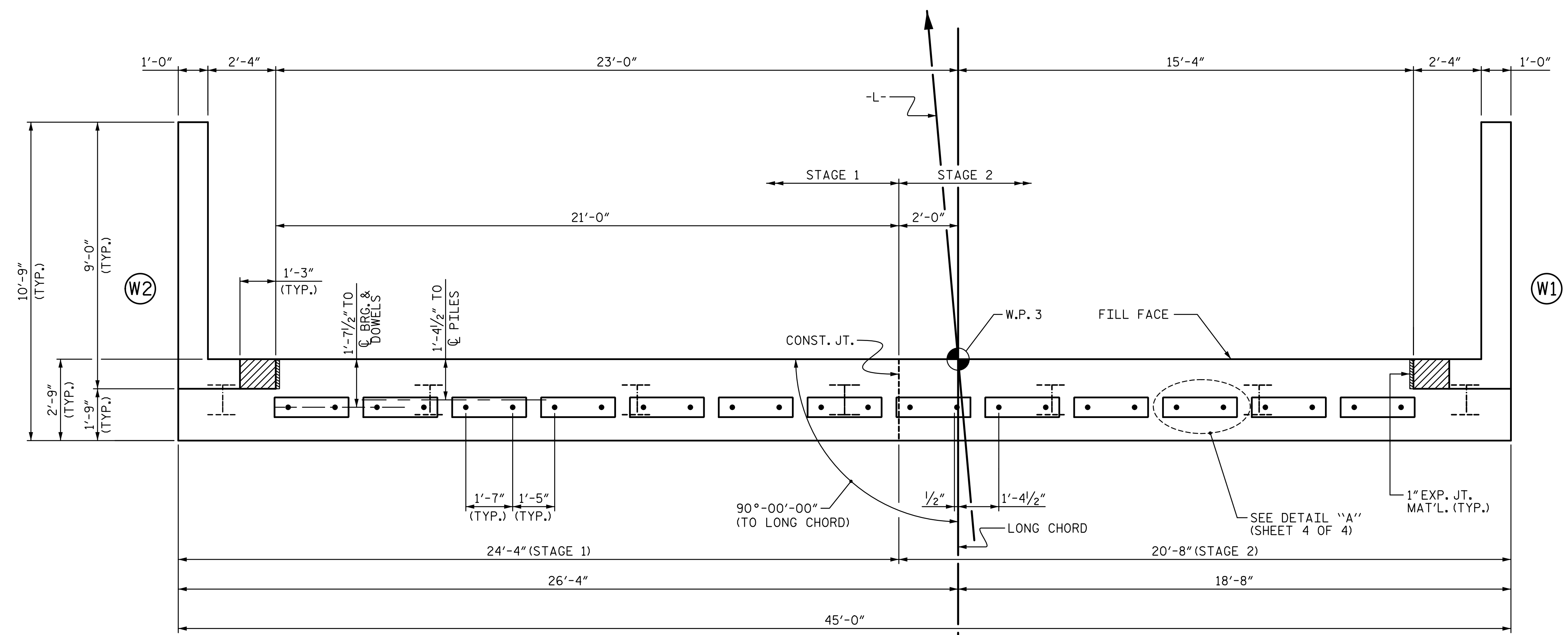
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

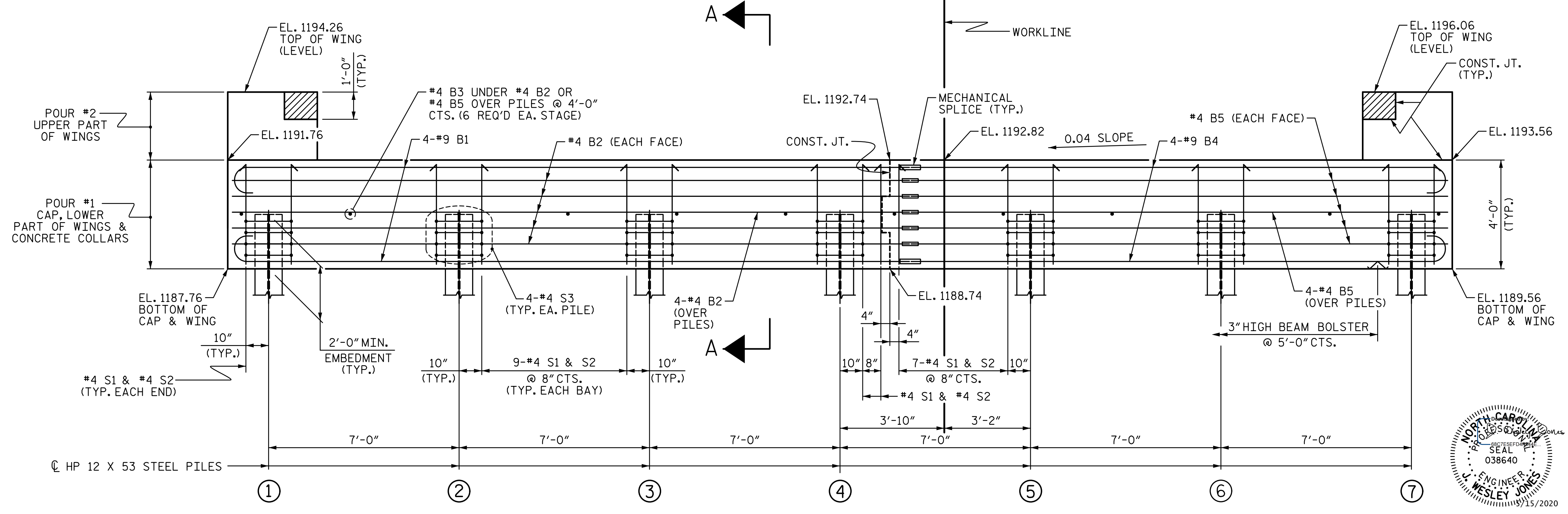
FOR CONSTRUCTION JOINT DETAILS, SEE SHEET 4 OF 4.

FOR MECHANICAL SPLICES, SEE SECTION 425-5(B) OF THE STANDARD SPECIFICATIONS.



PLAN

TOP OF PILE ELEVATIONS	
①	1189.84
②	1190.12
③	1190.40
④	1190.68
⑤	1190.96
⑥	1191.24
⑦	1191.52

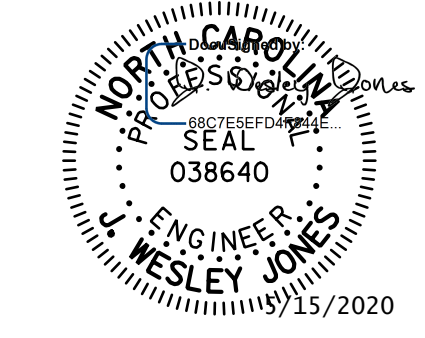


ELEVATION

WINGS NOT SHOWN FOR CLARITY.  
FOR SECTION A-A, SEE SHEET 4 OF 4.  
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.  
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

PROJECT NO. BR-0126  
WILKES COUNTY  
 STATION: 16+62.00 -L-  
 SHEET 2 OF 4

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



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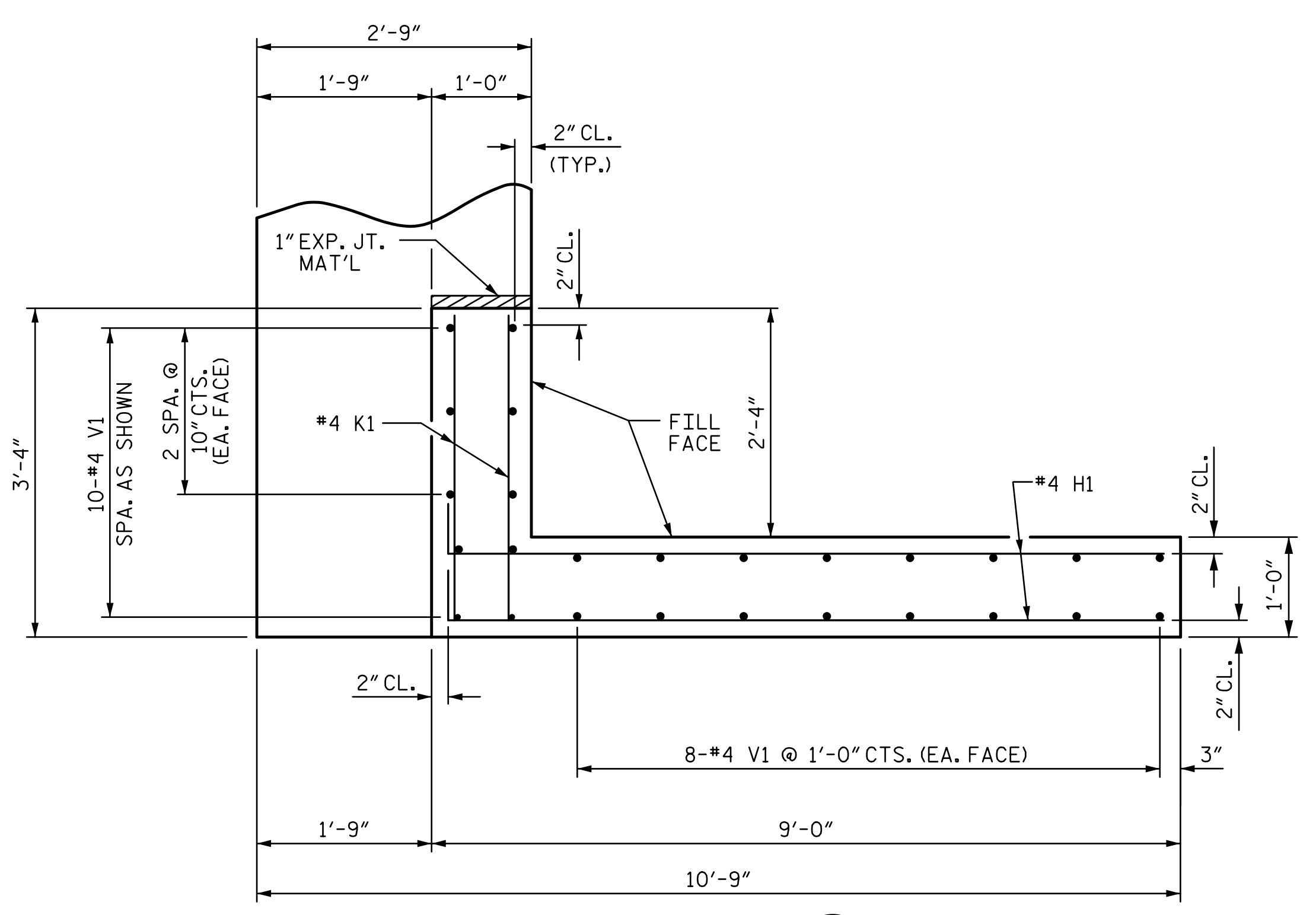
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NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

S-17  
TOTAL SHEETS 23

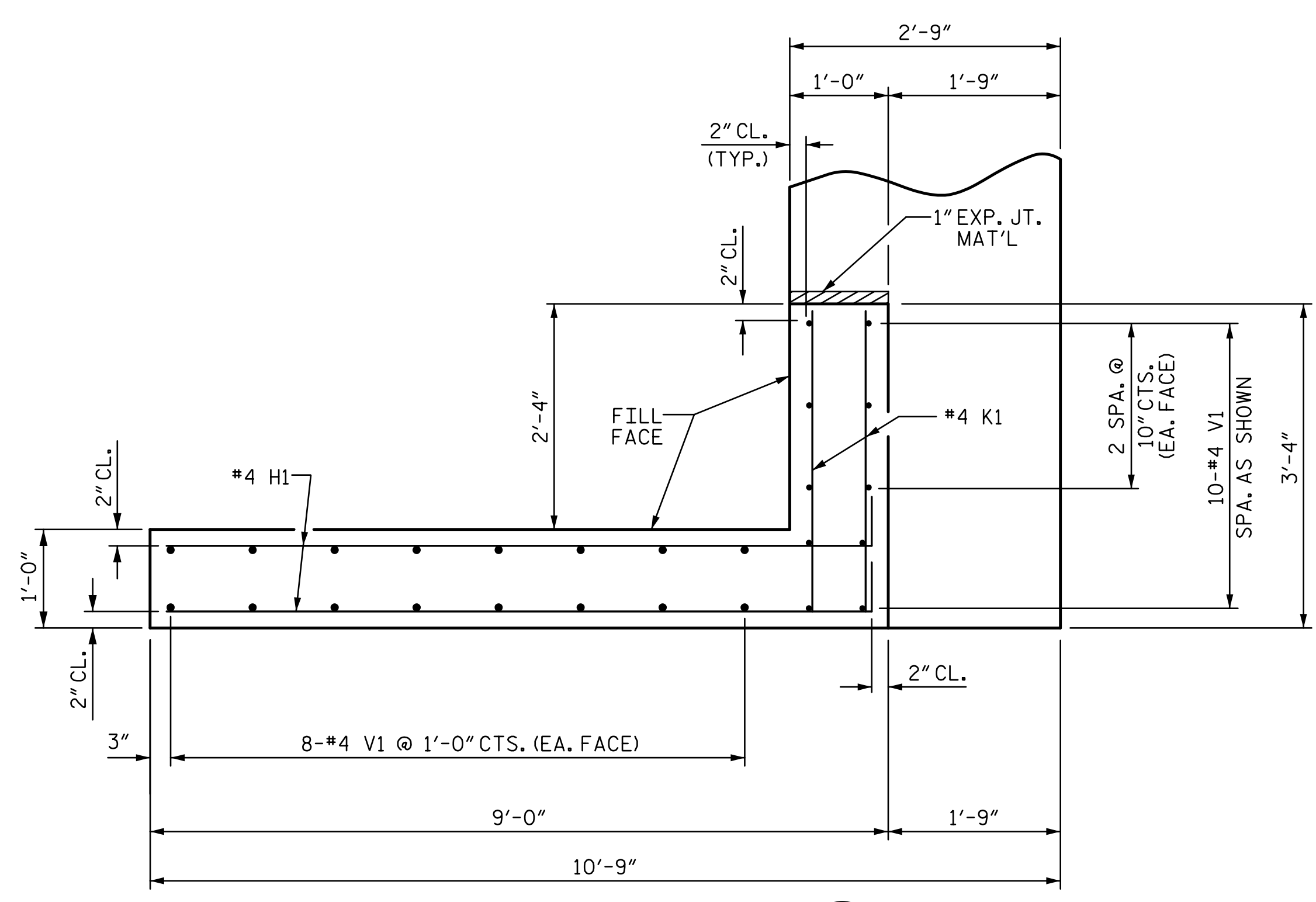
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 DESIGN ENGINEER OF RECORD : JWJ DATE : 5-20

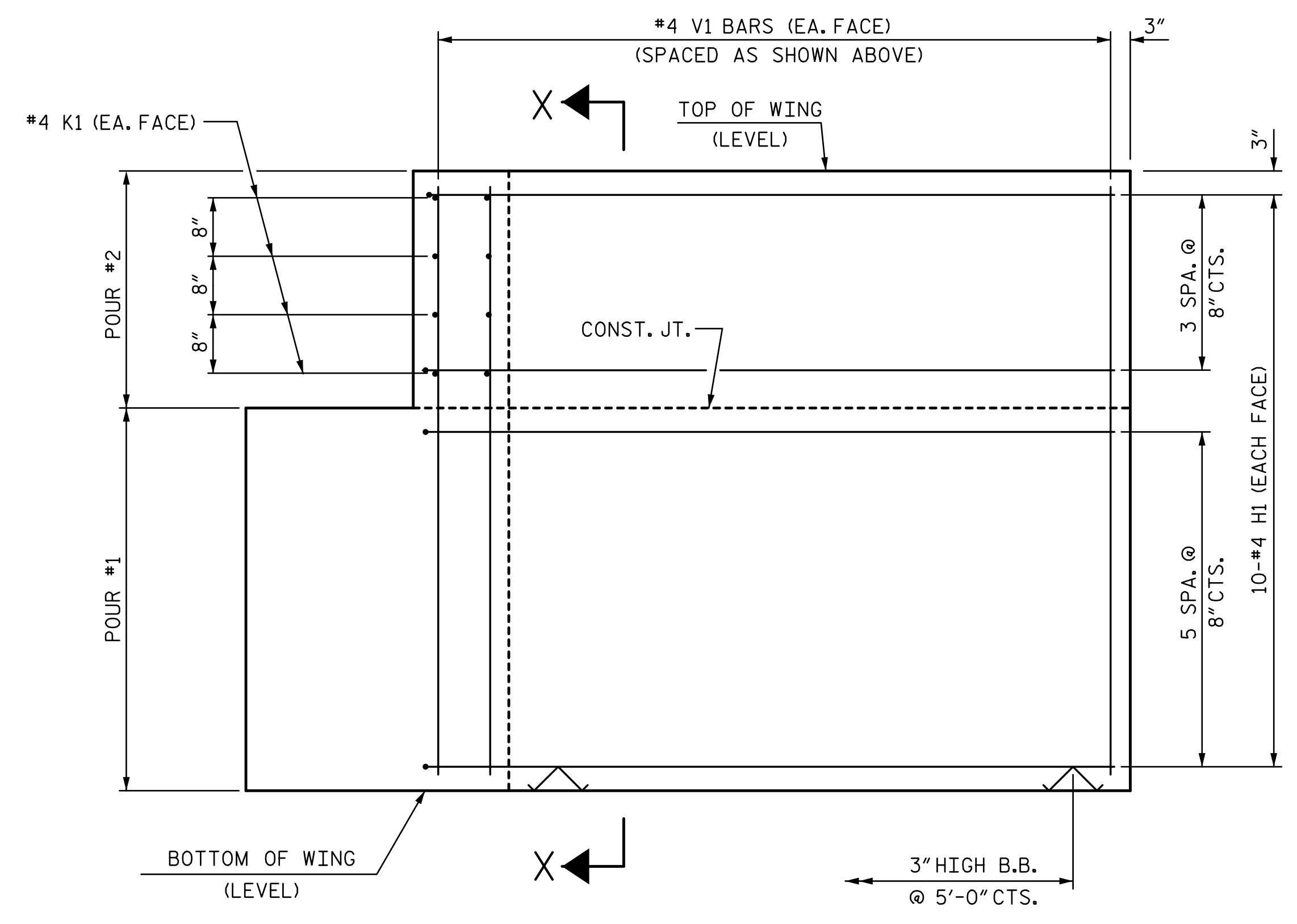
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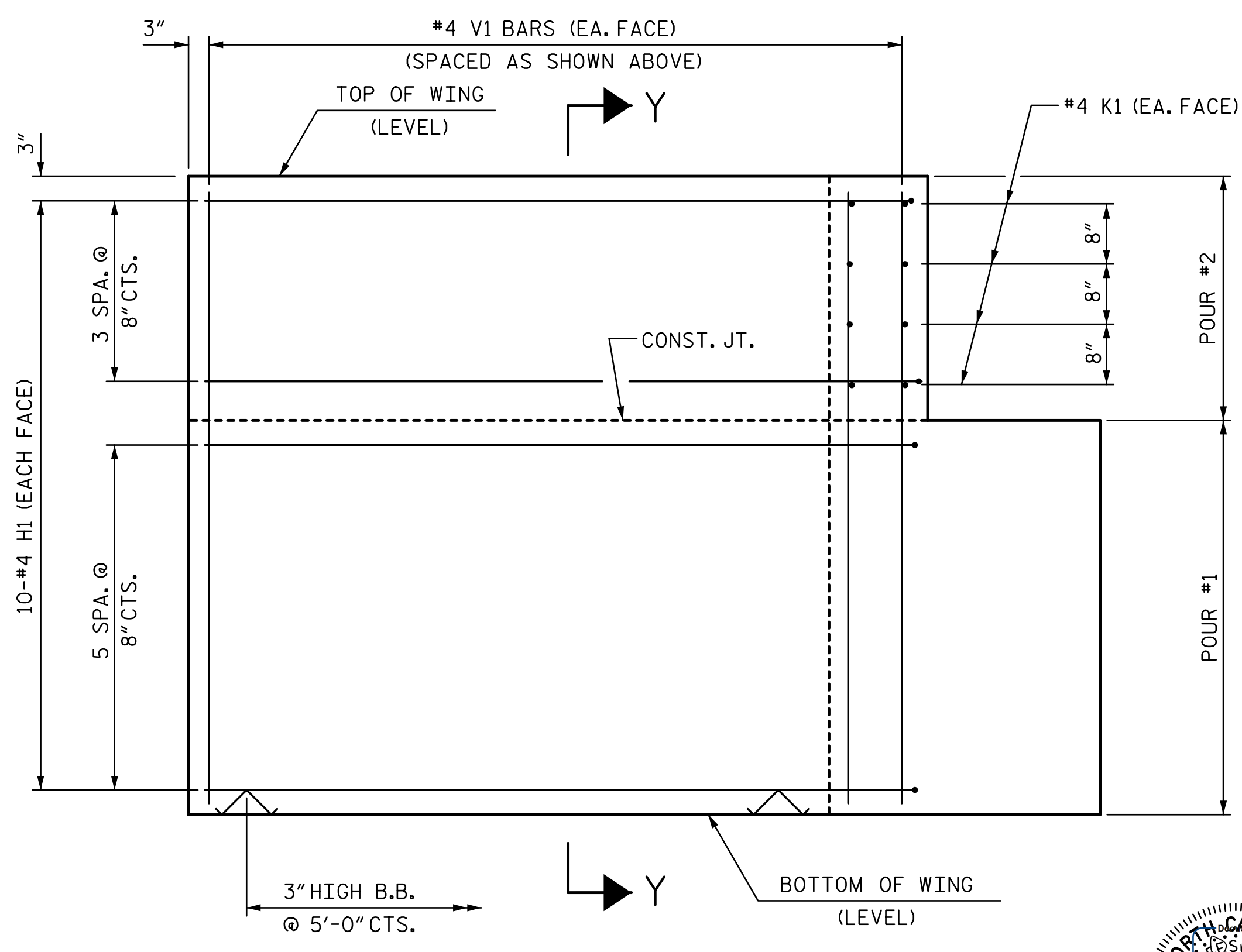
PLAN OF WING (W1)



PLAN OF WING (W2)

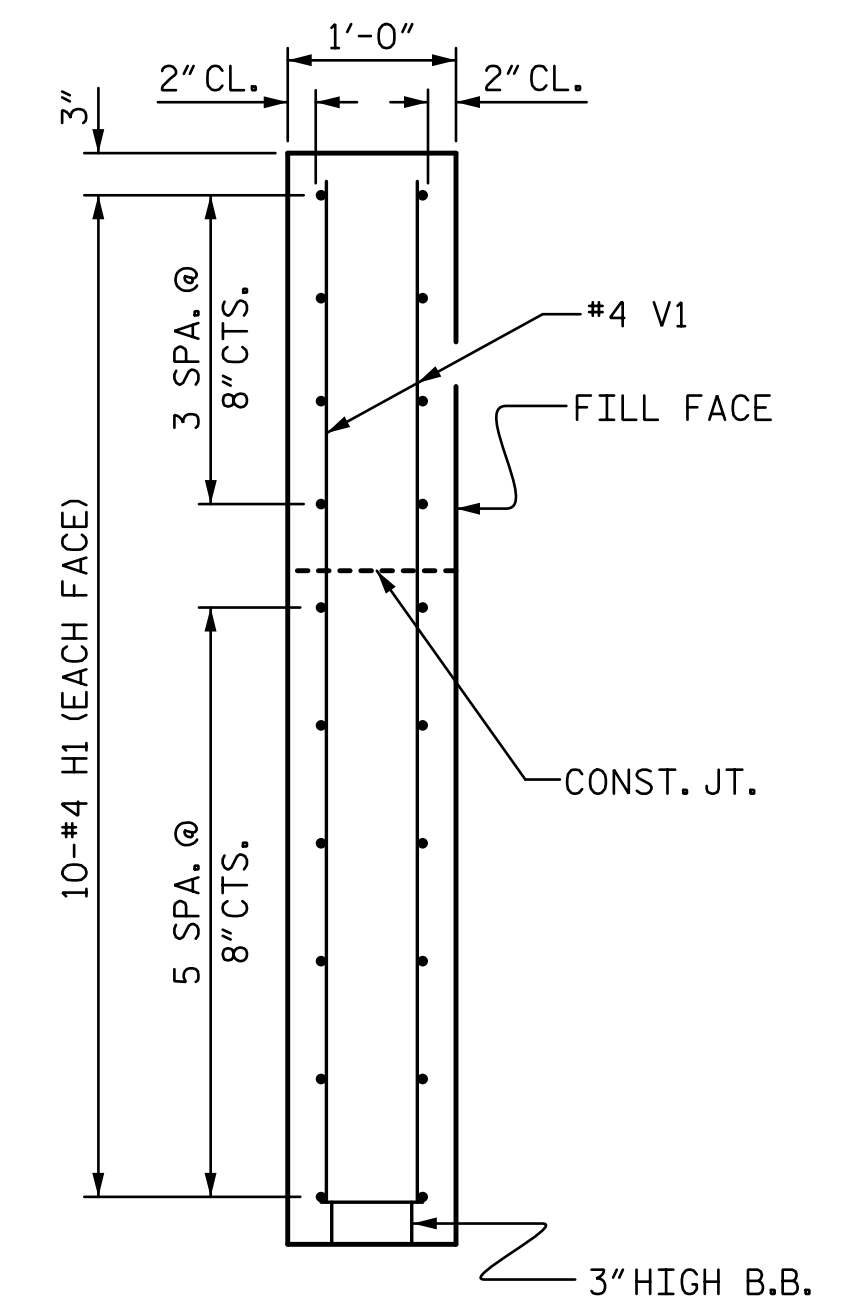


ELEVATION OF WING (W1)

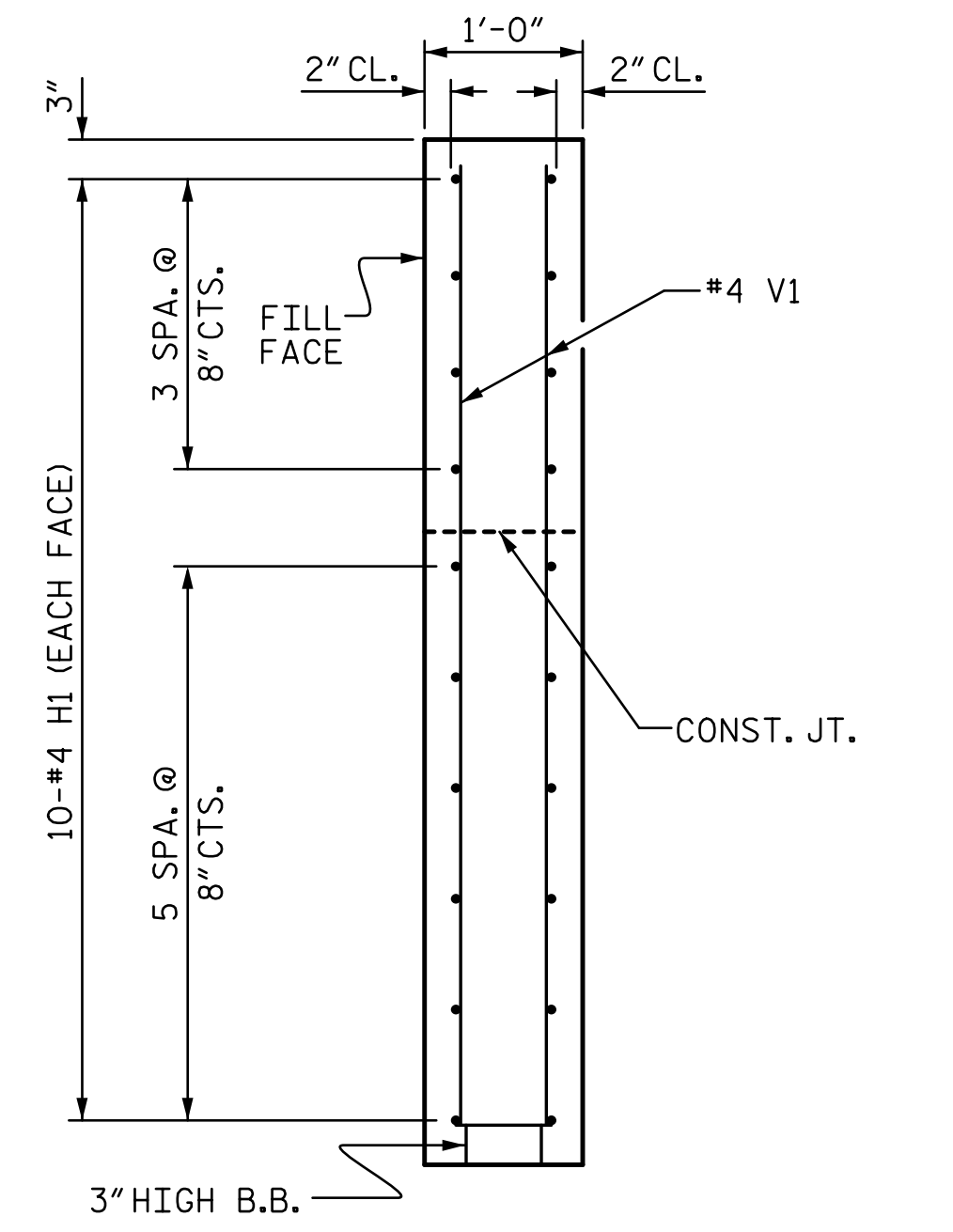


ELEVATION OF WING (W2)

WING DETAILS



SECTION X-X

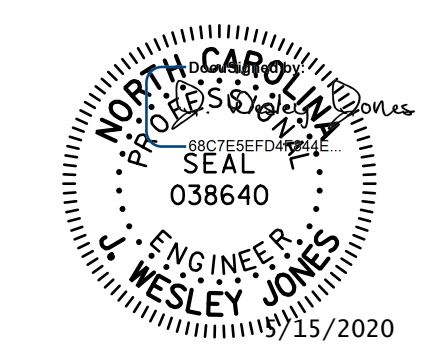


SECTION Y-Y

PROJECT NO. BR-0126  
 WILKES COUNTY  
 STATION: 16+62.00 -L-  
 SHEET 3 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT  
 WING DETAILS



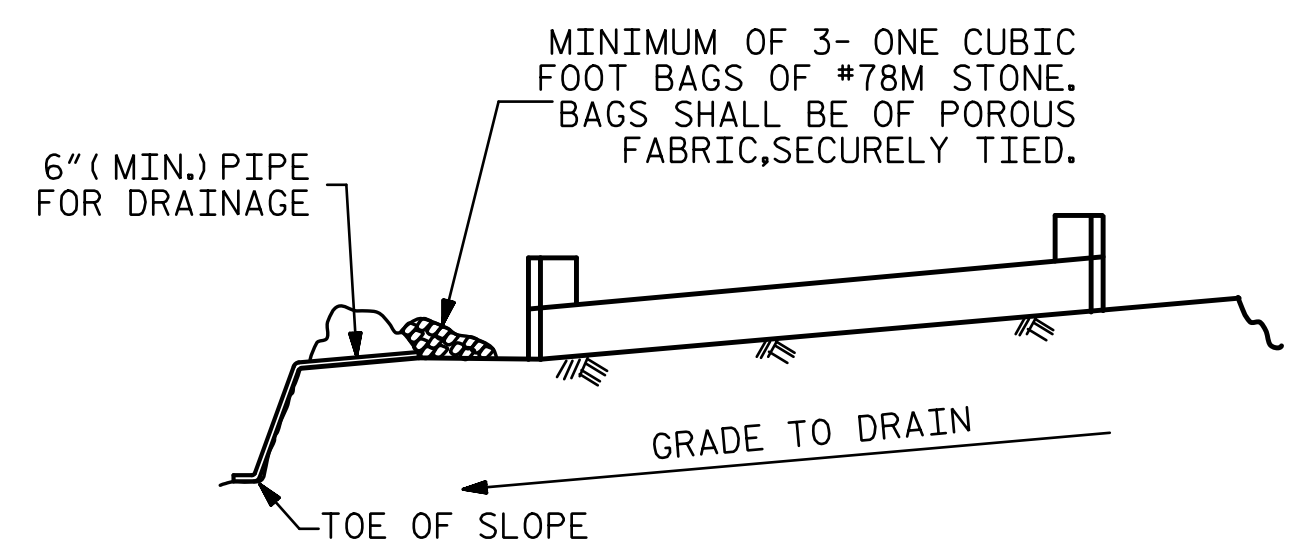
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DESIGN ENGINEER OF RECORD : JWJ	DATE : 5-20
DRAWN BY : WJH 12/11	REV. 4/15
CHECKED BY : AAC 12/11	MAA/TMG

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

TOTAL SHEETS 23

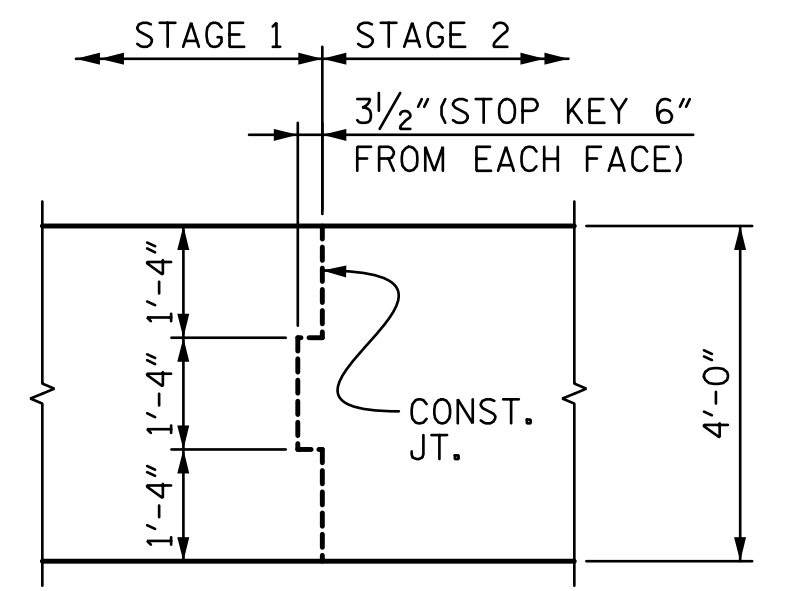


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

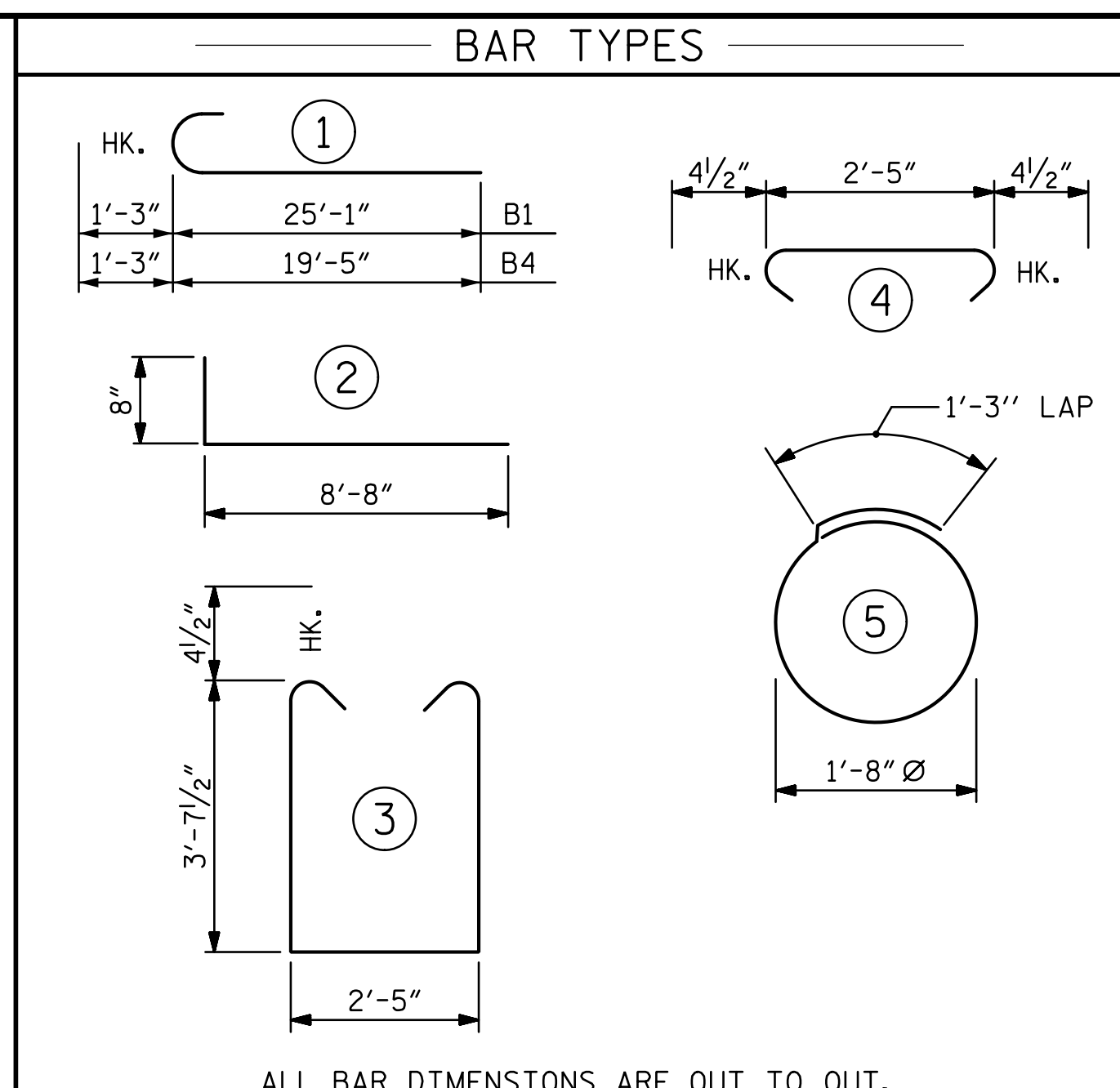
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

### TEMPORARY DRAINAGE AT END BENT



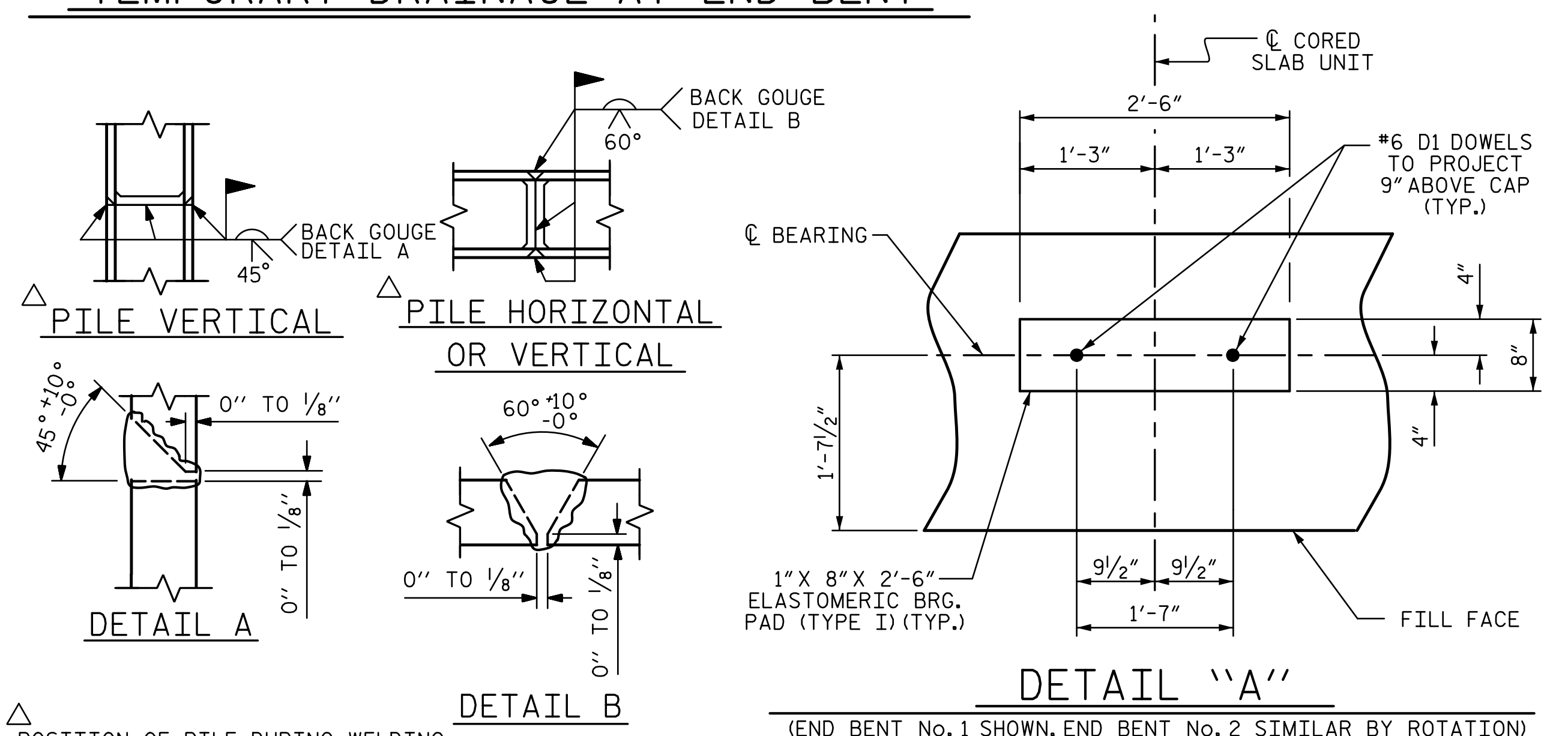
### CONST. JT. DETAIL



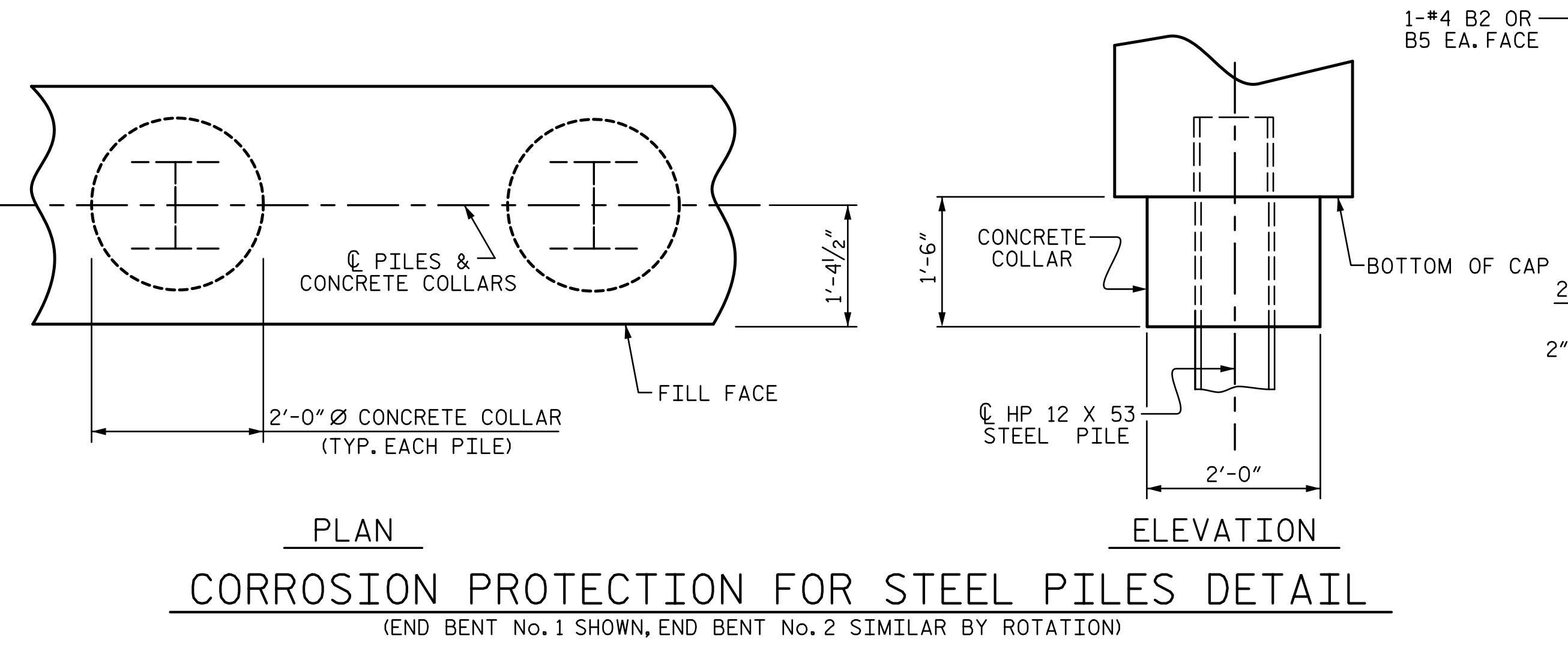
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT 1 (STAGE 1)					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	#8	#9	1	26'-4"	716
B2	14	#4	STR	25'-1"	235
B3	6	#4	STR	2'-5"	10
D1	14	#6	STR	1'-6"	32
H1	20	#4	2	9'-4"	125
K1	8	#4	STR	2'-11"	16
S1	30	#4	3	10'-5"	209
S2	30	#4	4	3'-2"	63
S3	16	#4	5	6'-6"	69
V1	26	#4	STR	6'-2"	107
REINFORCING STEEL				1582 LBS.	
CLASS A CONCRETE BREAKDOWN					
POUR #1 CAP, LOWER PART OF WINGS & COLLARS				11.8 C.Y.	
POUR #2 UPPER PART OF WINGS				1.2 C.Y.	
TOTAL CLASS A CONCRETE				13.0 C.Y.	

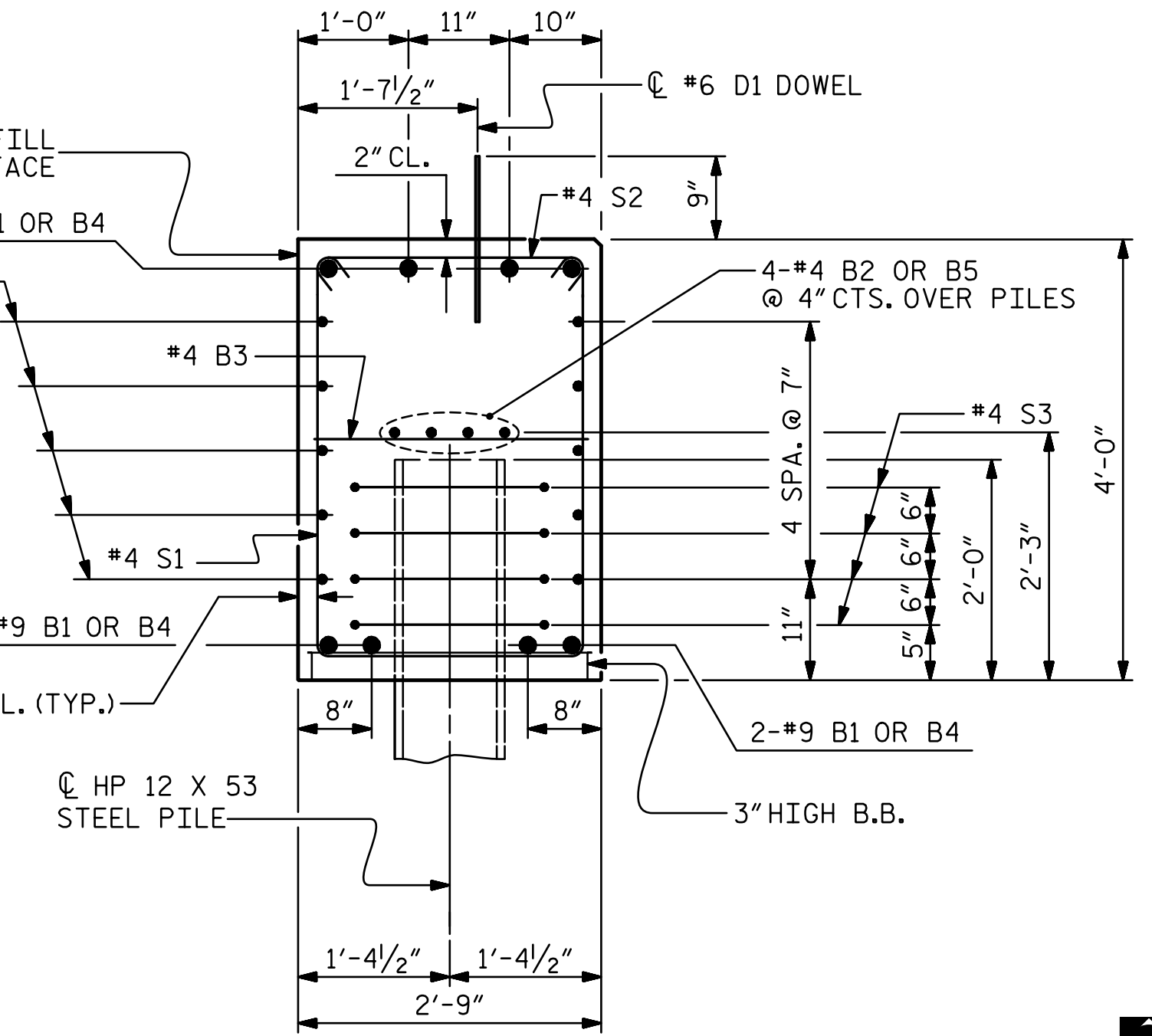
BILL OF MATERIAL					
END BENT 1 (STAGE 2)					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B3	6	#4	STR	2'-5"	10
B4	8	#9	1	20'-8"	562
B5	14	#4	STR	19'-5"	182
D1	12	#6	STR	1'-6"	27
H1	20	#4	2	9'-4"	125
K1	8	#4	STR	2'-11"	16
S1	26	#4	3	10'-5"	181
S2	26	#4	4	3'-2"	55
S3	12	#4	5	6'-6"	52
V1	26	#4	STR	6'-2"	107
REINFORCING STEEL				1317 LBS.	
CLASS A CONCRETE BREAKDOWN					
POUR #1 CAP, LOWER PART OF WINGS & COLLARS				10.1 C.Y.	
POUR #2 UPPER PART OF WINGS				1.2 C.Y.	
TOTAL CLASS A CONCRETE				11.3 C.Y.	



### PILE SPlice DETAILS



### CORROSION PROTECTION FOR STEEL PILES DETAIL



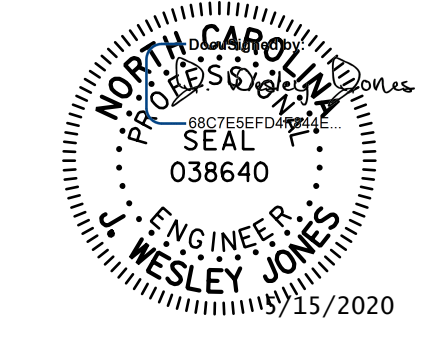
### SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")

BILL OF MATERIAL					
END BENT 2 (STAGE 1)					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	8	#9	1	26'-4"	716
B2	14	#4	STR	25'-1"	235
B3	6	#4	STR	2'-5"	10
D1	14	#6	STR	1'-6"	32
H1	20	#4	2	9'-4"	125
K1	8	#4	STR	2'-11"	16
S1	30	#4	3	10'-5"	209
S2	30	#4	4	3'-2"	63
S3	16	#4	5	6'-6"	69
V1	26	#4	STR	6'-2"	107
REINFORCING STEEL				1582 LBS.	
CLASS A CONCRETE BREAKDOWN					
POUR #1 CAP, LOWER PART OF WINGS & COLLARS				11.8 C.Y.	
POUR #2 UPPER PART OF WINGS				1.0 C.Y.	
TOTAL CLASS A CONCRETE				12.8 C.Y.	

BILL OF MATERIAL					
END BENT 2 (STAGE 2)					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B3	6	#4	STR	2'-5"	10
B4	8	#9	1	20'-8"	562
B5	14	#4	STR	19'-5"	182
D1	12	#6	STR	1'-6"	27
H1	20	#4	2	9'-4"	125
K1	8	#4	STR	2'-11"	16
S1	26	#4	3	10'-5"	181
S2	26	#4	4	3'-2"	55
S3	12	#4	5	6'-6"	52
V1	26	#4	STR	6'-2"	107
REINFORCING STEEL				1317 LBS.	
CLASS A CONCRETE BREAKDOWN					
POUR #1 CAP, LOWER PART OF WINGS & COLLARS				10.1 C.Y.	
POUR #2 UPPER PART OF WINGS				1.0 C.Y.	
TOTAL CLASS A CONCRETE				11.1 C.Y.	

PROJECT NO. BR-0126  
WILKES COUNTY  
STATION: 16+62.00 -L-  
SHEET 4 OF 4



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STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUBSTRUCTURE  
END BENT No. 1 & 2  
DETAILS

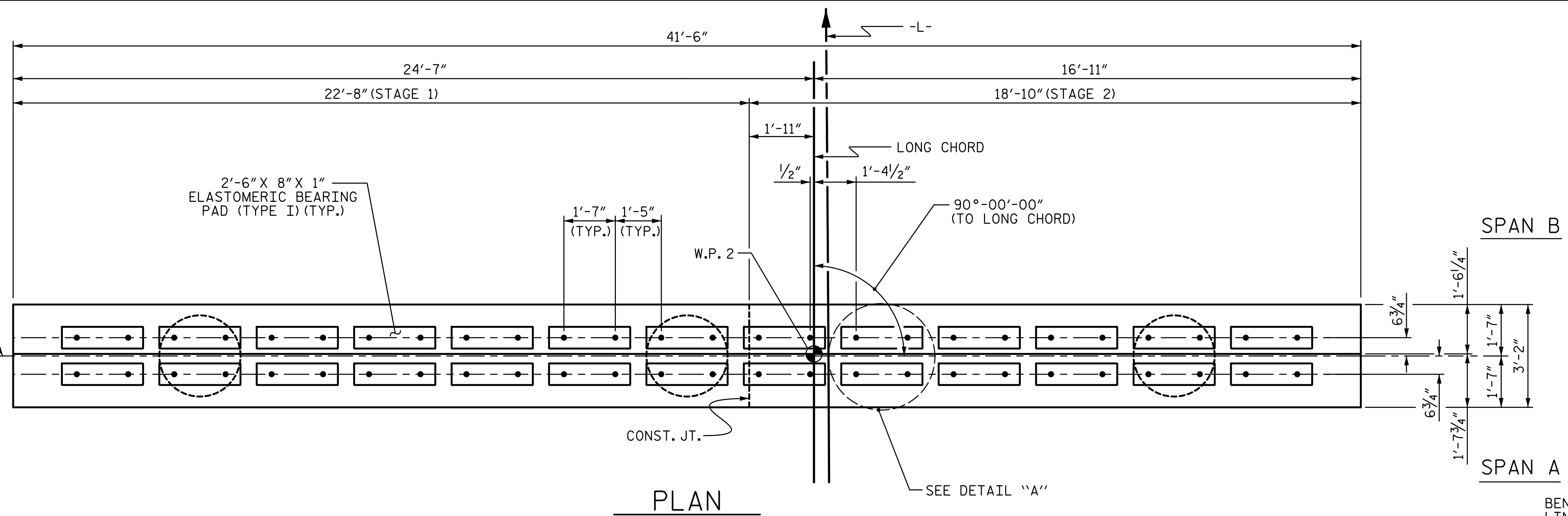
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NO.	BY:	DATE:	NO.	BY:	DATE:
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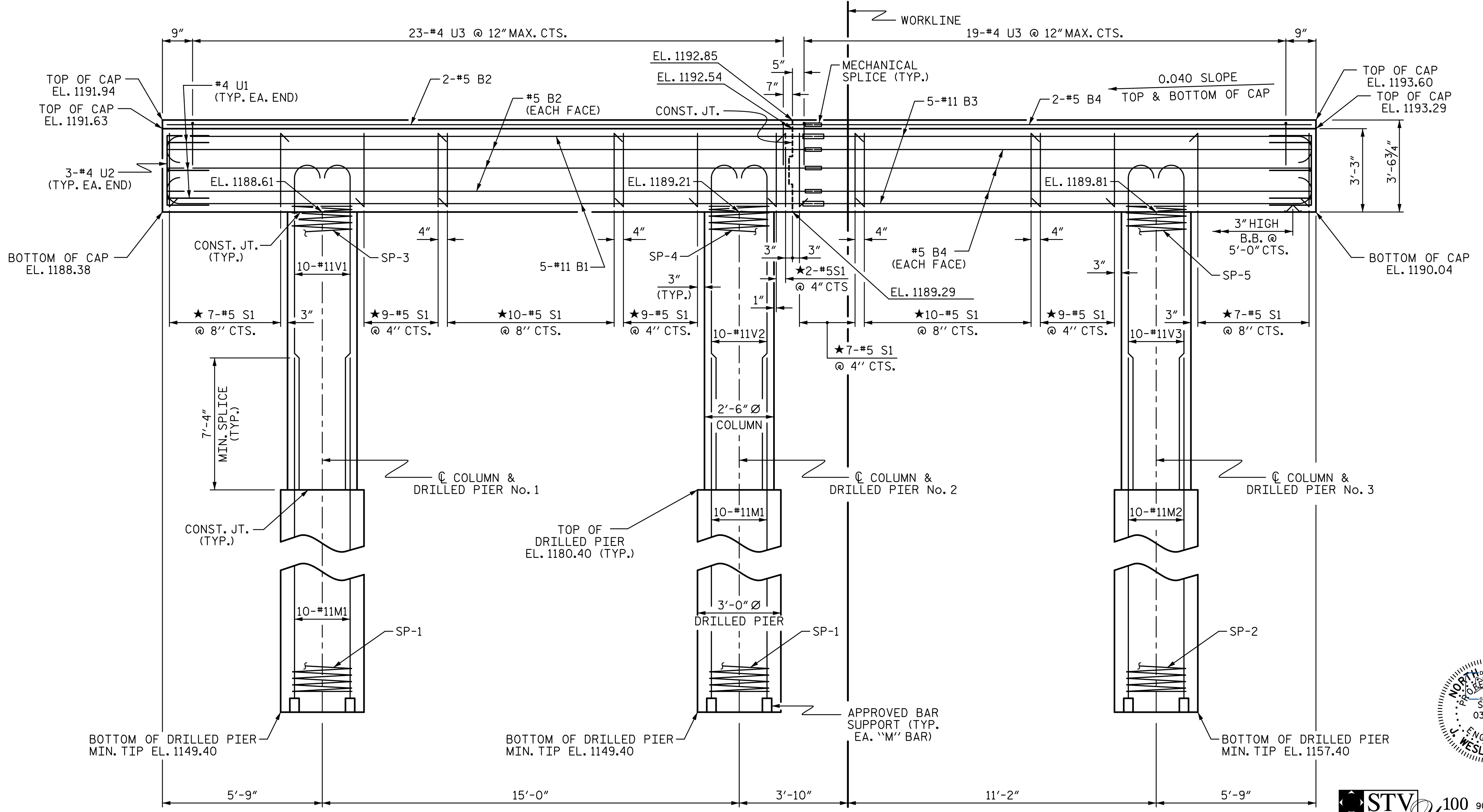
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CHECKED BY : JWJ DATE : 3-20  
DESIGN ENGINEER OF RECORD : JWJ DATE : 5-20

### NOTES

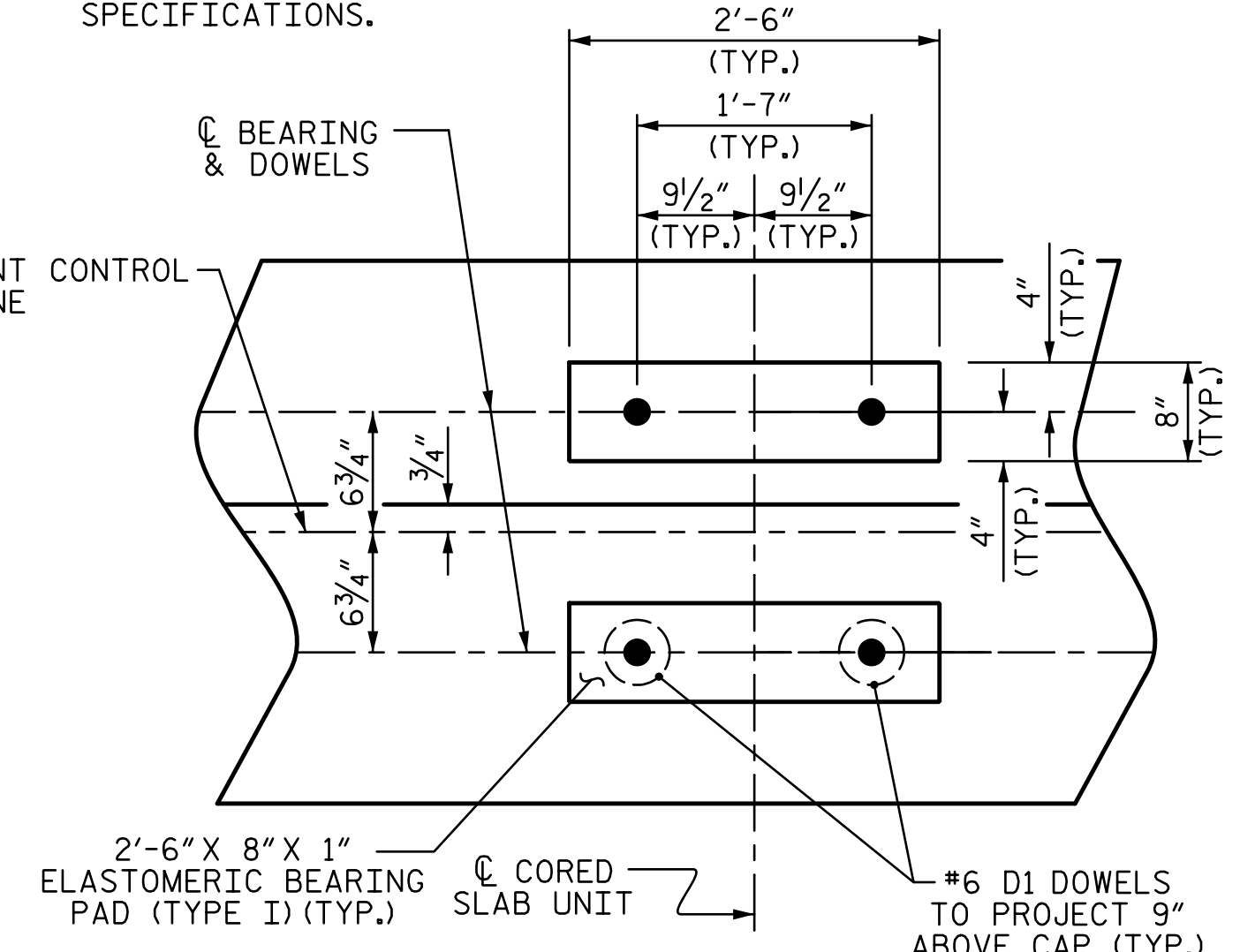
- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
- HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
- FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
- ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."
- ★ INVERT ALTERNATE STIRRUPS.
- DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.
- FOR MECHANICAL SPLICES, SEE SECTION 425-5(B) OF THE STANDARD SPECIFICATIONS.



PLAN

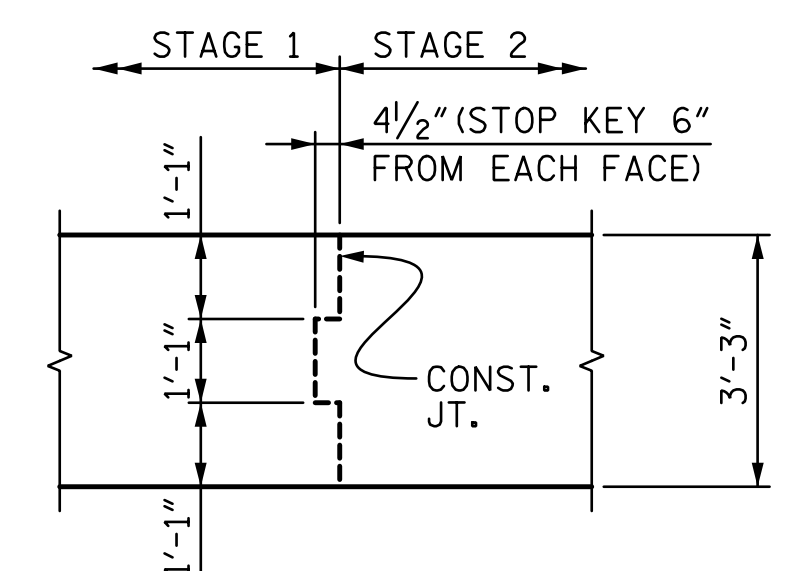


ELEVATION



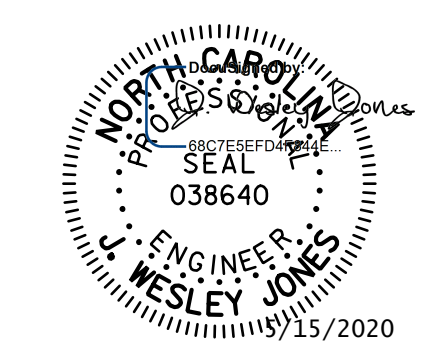
DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)



CONST. JT. DETAIL

PROJECT NO. **BR-0126**  
**WILKES** COUNTY  
 STATION: **16+62.00 -L-**



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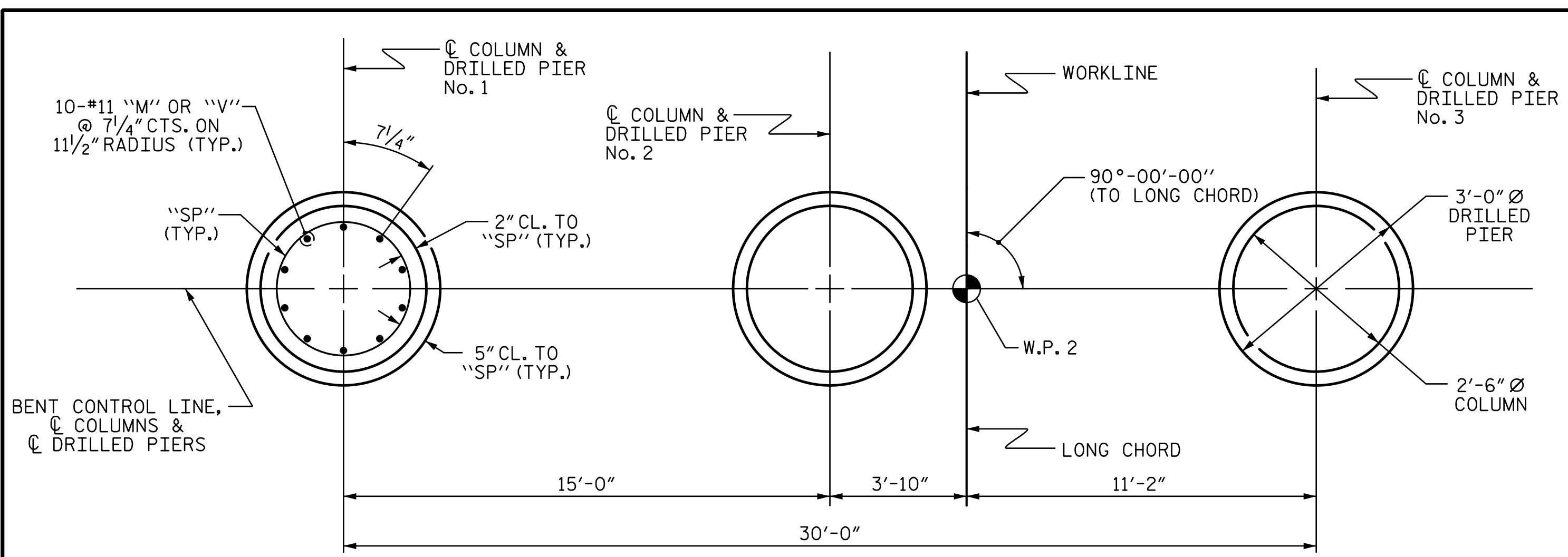
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH				
SUBSTRUCTURE BENT No. 1				
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	
				S-20
				TOTAL SHEETS 23

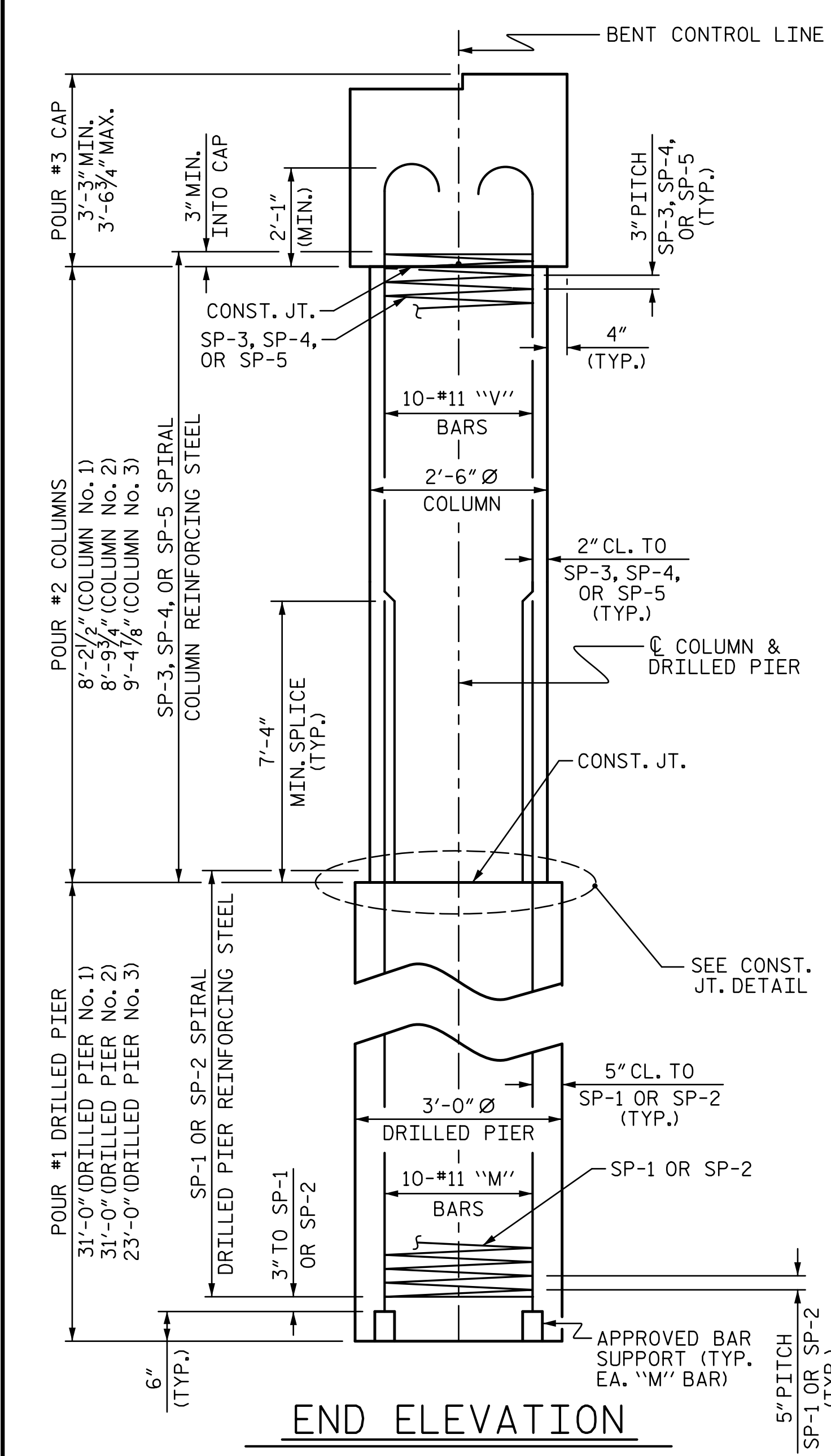
DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.

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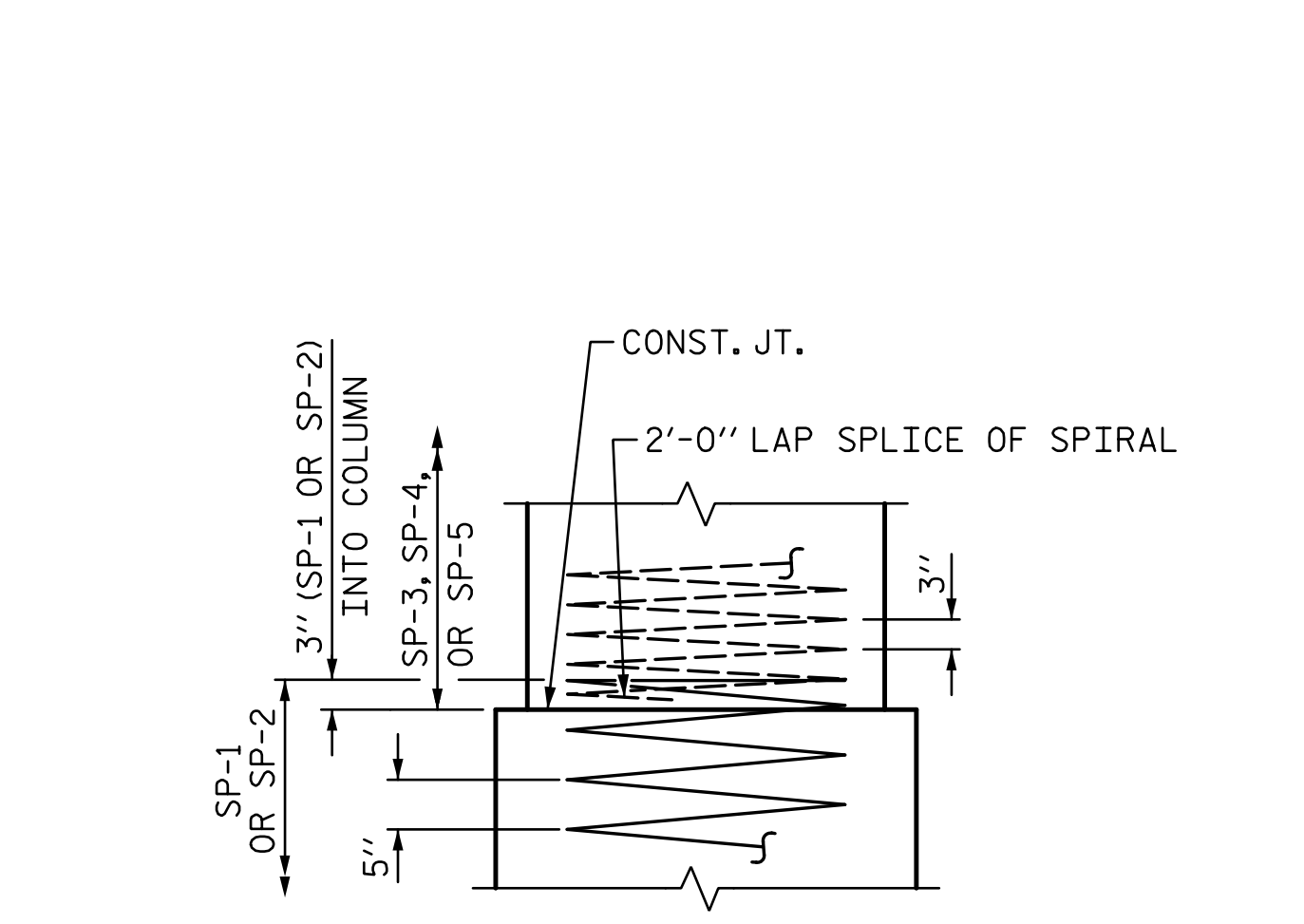
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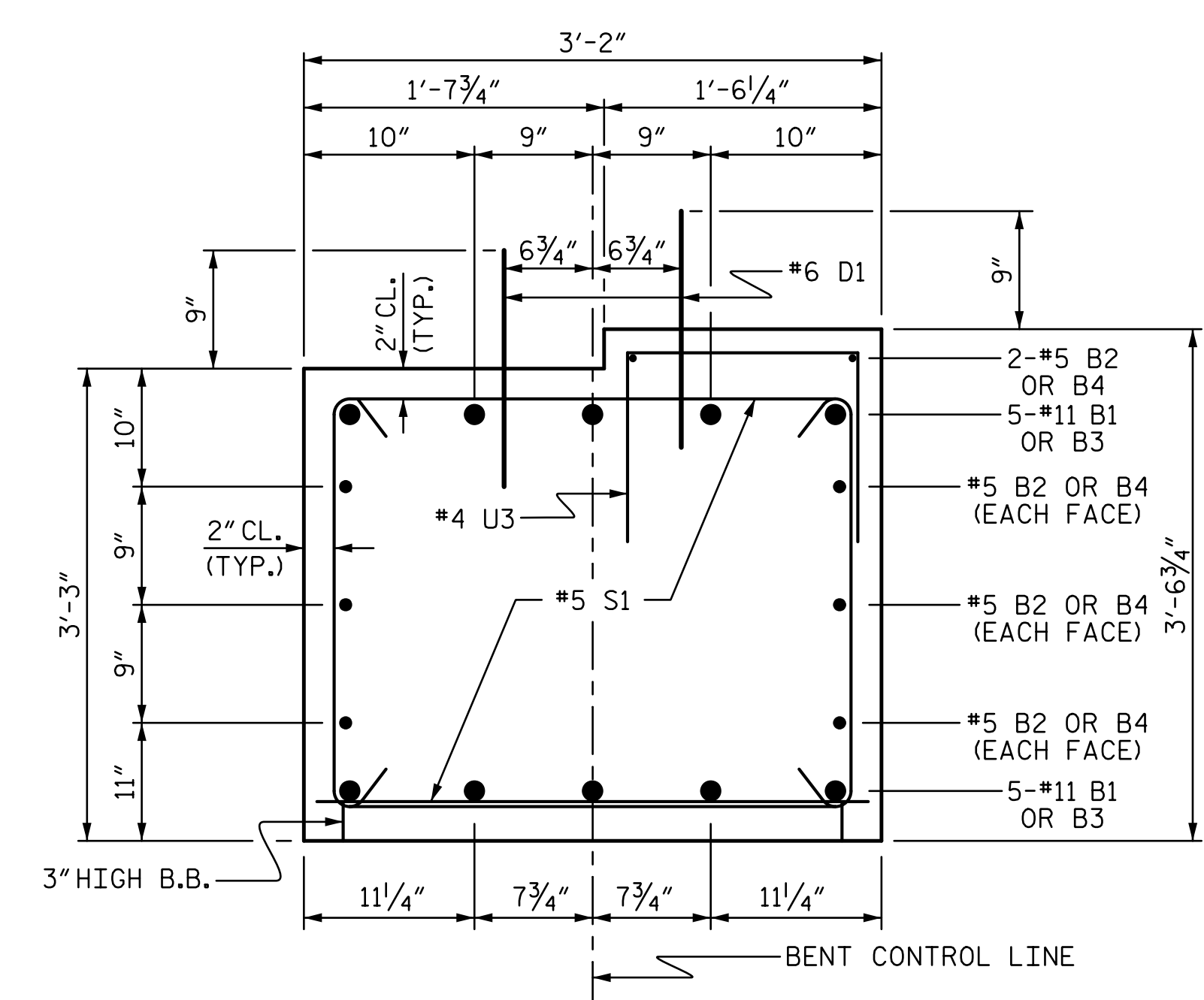
PLAN OF DRILLED PIERS & COLUMNS



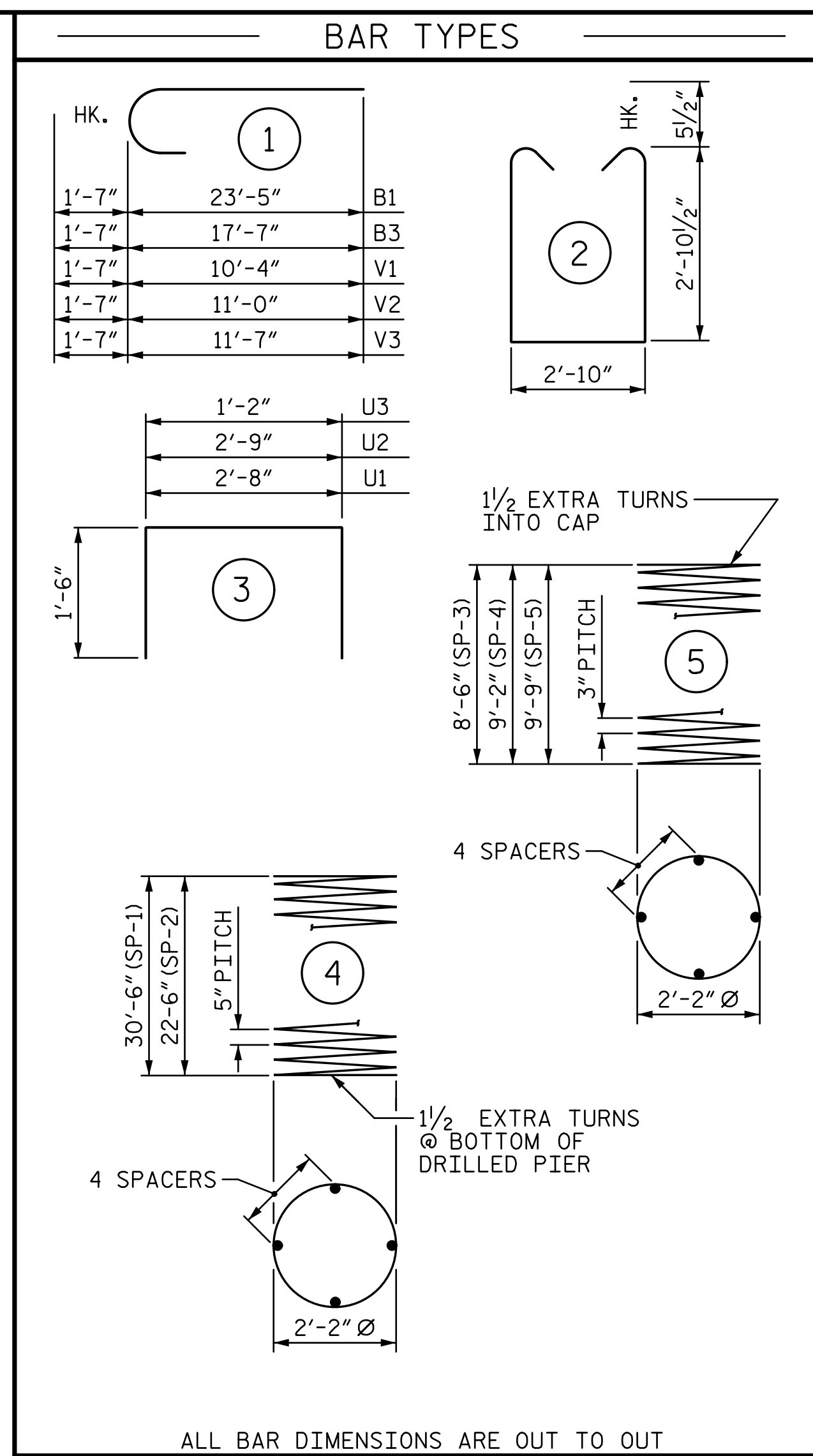
END ELEVATION



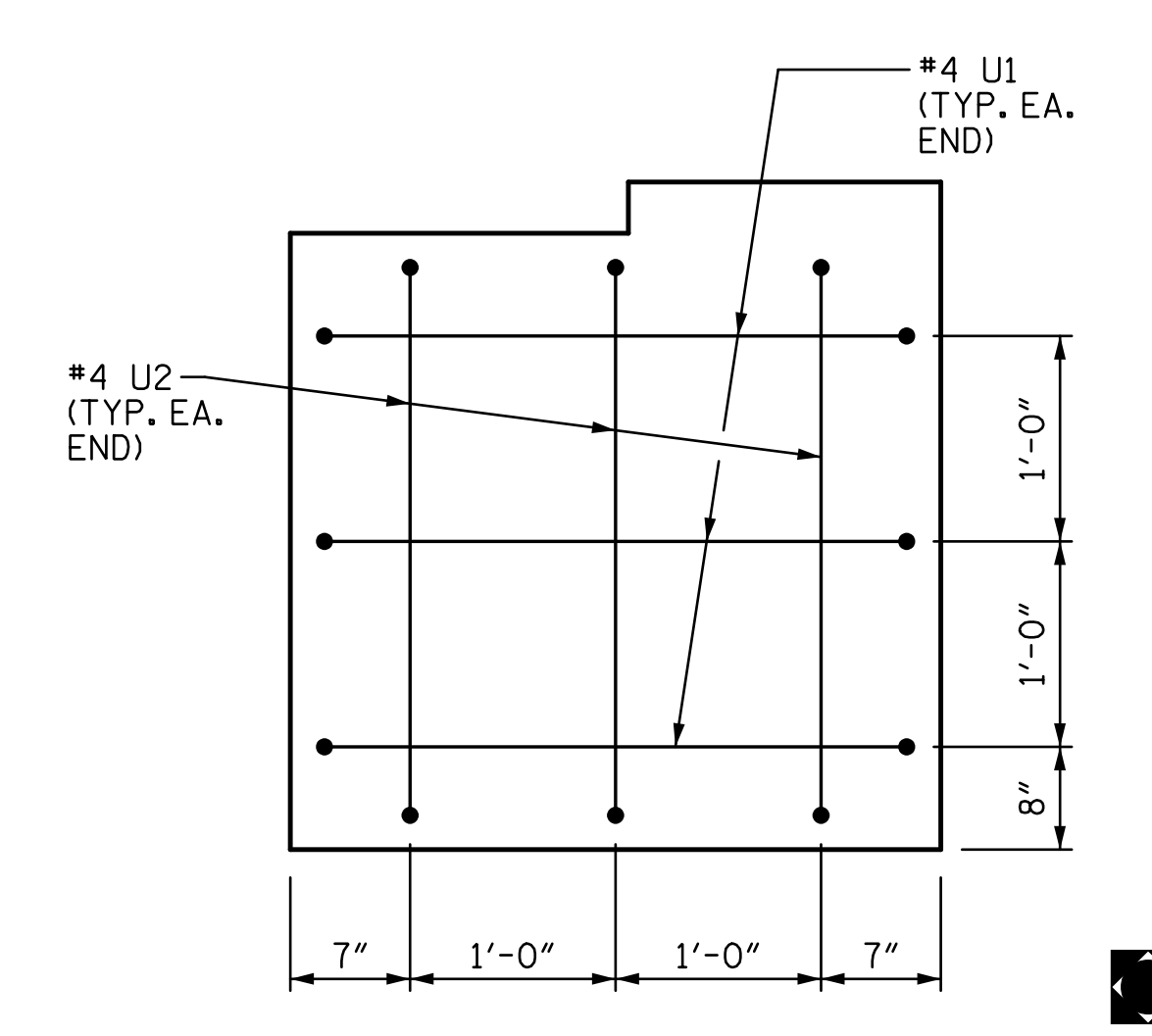
CONSTRUCTION JOINT DETAIL



SECTION THRU CAP



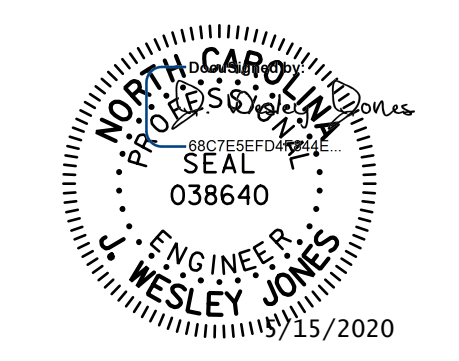
ALL BAR DIMENSIONS ARE OUT TO OUT



END OF CAP VIEW (TYPICAL BOTH ENDS)

BILL OF MATERIAL BENT 1 (STAGE 1)						BILL OF MATERIAL BENT 1 (STAGE 2)							
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT		
B1	10	#11	1	25'-0"	1328	B3	10	#11	1	19'-2"	1018		
B2	8	#5	STR	23'-5"	195	B4	8	#5	STR	17'-7"	147		
D1	28	#6	STR	1'-6"	63	D1	24	#6	STR	1'-6"	54		
M1	20	#11	STR	40'-10"	4339	M2	10	#11	STR	32'-10"	1744		
S1	37	#5	2	9'-6"	367	S1	33	#5	2	9'-6"	327		
U1	3	#4	3	5'-8"	11	U1	3	#4	3	5'-8"	11		
U2	3	#4	3	5'-9"	12	U2	3	#4	3	5'-9"	12		
U3	23	#4	3	4'-2"	64	U3	19	#4	3	4'-2"	53		
V1	10	#11	1	11'-11"	633	V3	10	#11	1	13'-2"	700		
V2	10	#11	1	12'-7"	669								
REINFORCING STEEL						7,681 LBS.	REINFORCING STEEL						4,066 LBS.
SP-1	2	*	4	497'-3"	1037	SP-2	1	*	4	369'-6"	385		
SP-3	1	**	5	237'-2"	158	SP-5	1	**	5	270'-7"	181		
SP-4	1	**	5	255'-0"	170	SPIRAL COLUMN REINFORCING STEEL						1,365 LBS.	
SPIRAL COLUMN REINFORCING STEEL						1,365 LBS.	SPIRAL COLUMN REINFORCING STEEL						566 LBS.
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR						* THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR							
** THE SP-3 OR SP-4 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR						** THE SP-5 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR							
CLASS A CONCRETE BREAKDOWN (STAGE 1)						CLASS A CONCRETE BREAKDOWN (STAGE 2)							
POUR #2 (COLUMNS)						3.1 C.Y.	POUR #2 (COLUMNS)						1.7 C.Y.
POUR #3 (CAP)						9.0 C.Y.	POUR #3 (CAP)						7.5 C.Y.
TOTAL CLASS A CONCRETE						12.1 C.Y.	TOTAL CLASS A CONCRETE						9.2 C.Y.
DRILLED PIERS: (STAGE 1)						DRILLED PIERS: (STAGE 2)							
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)						16.2 C.Y.	DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)						6.0 C.Y.
3'-0" Ø DRILLED PIER NOT IN SOIL						32.0 LIN. FT.	3'-0" Ø DRILLED PIER NOT IN SOIL						16.0 LIN. FT.
3'-0" Ø DRILLED PIER IN SOIL						30.0 LIN. FT.	3'-0" Ø DRILLED PIER IN SOIL						7.0 LIN. FT.
PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER						15.0 LIN. FT.	PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER						11.0 LIN. FT.
CSL TUBES						260.0 LIN. FT.	CSL TUBES						98.0 LIN. FT.

PROJECT NO. BR-0126  
 WILKES COUNTY  
 STATION: 16+62.00 -L-  
 SHEET 2 OF 2



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 NC License Number F-0991

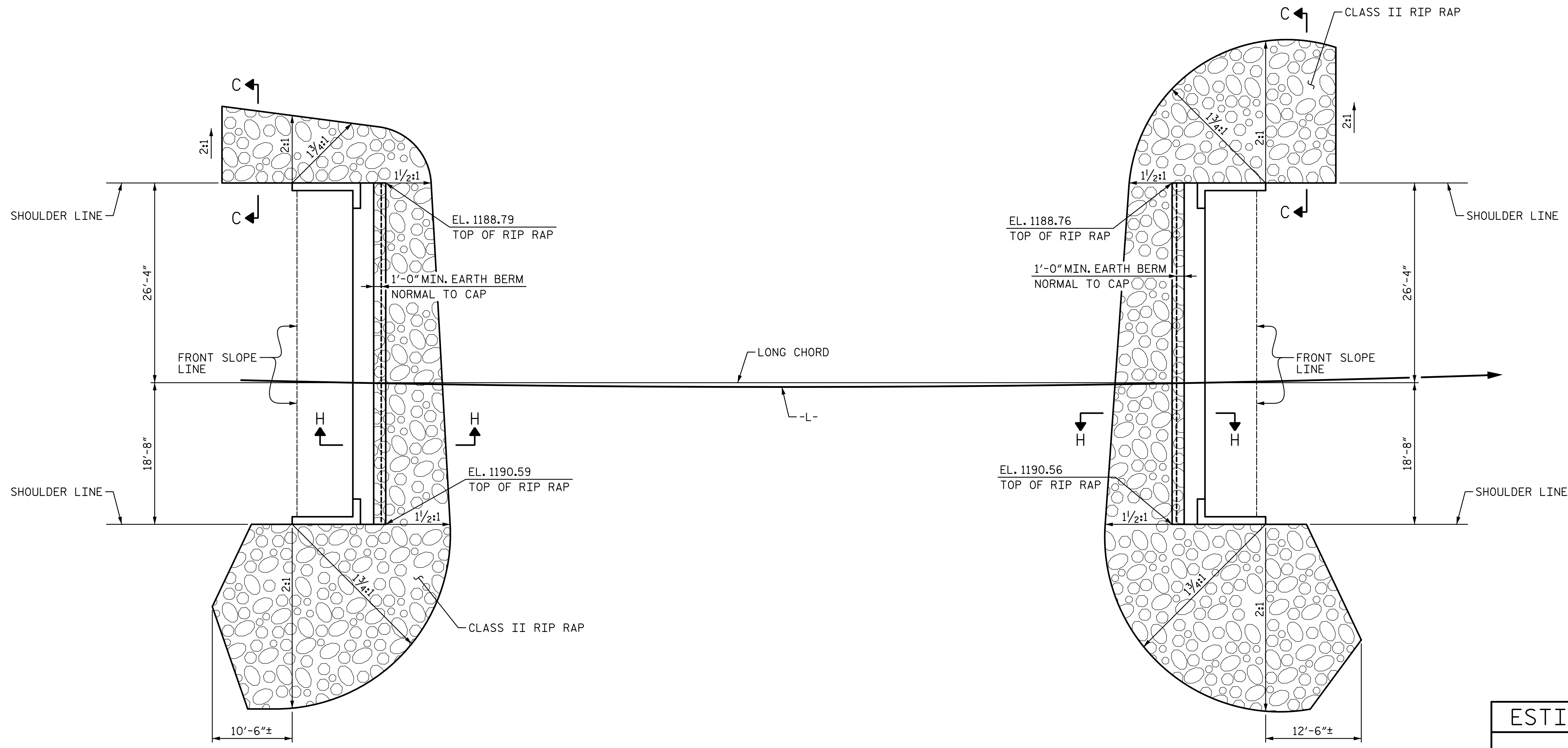
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS 23
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 CHECKED BY: JWJ DATE: 3-20  
 DESIGN ENGINEER OF RECORD: JWJ DATE: 5-20

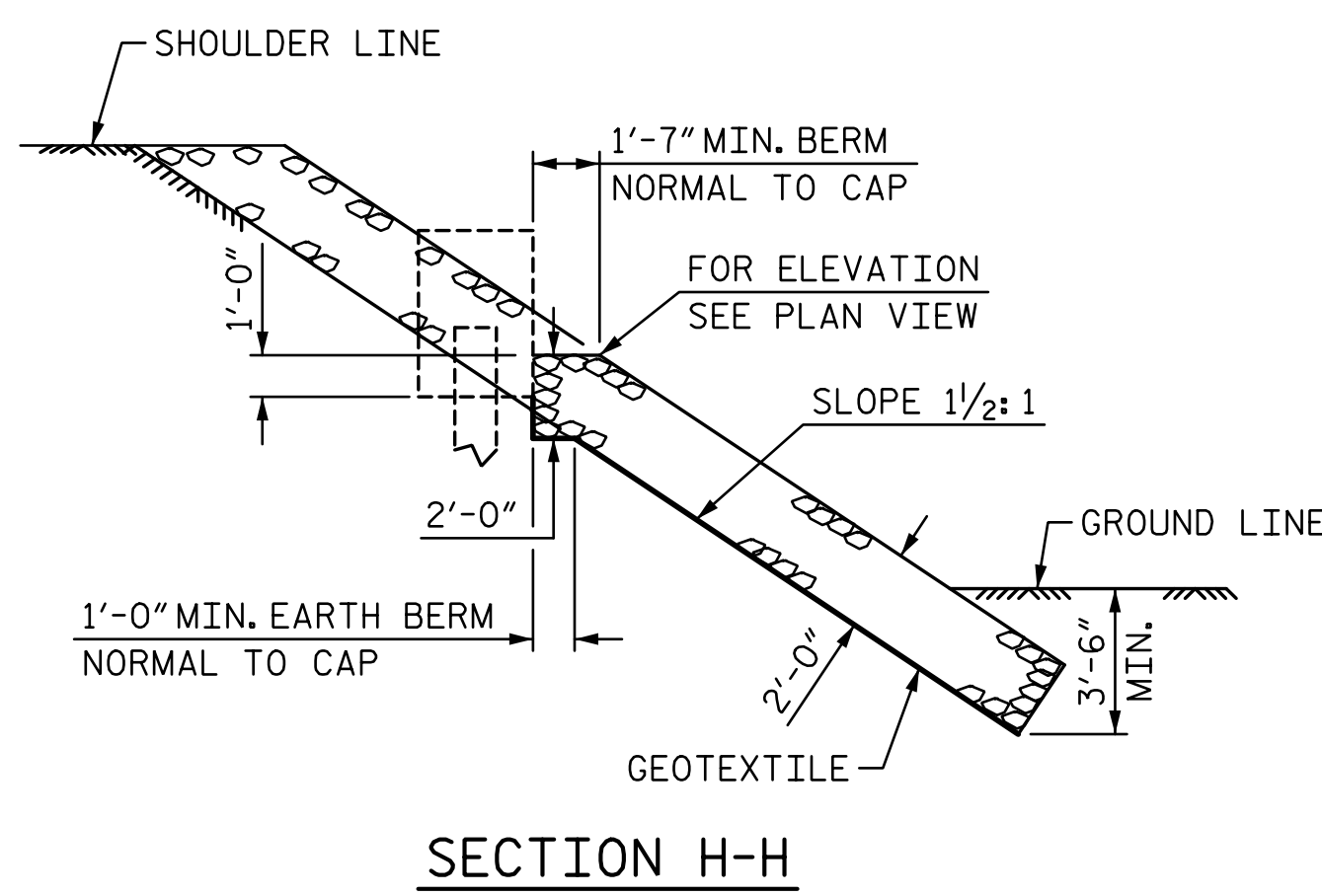
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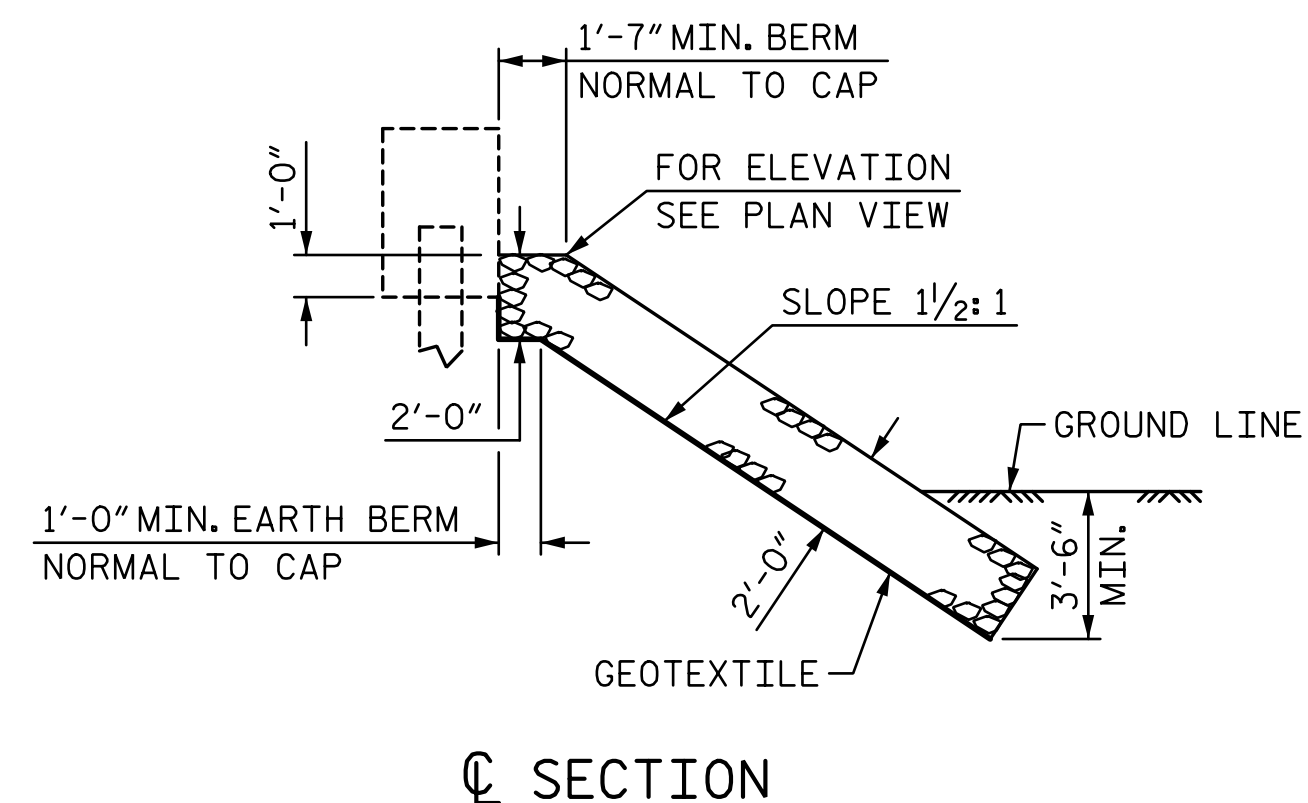
PLAN - END BENT 1

PLAN - END BENT 2

ESTIMATED QUANTITIES		
BRIDGE @ STA. 16+62.00 -L-	RIP RAP CLASS II (2'-0" THICK) TONS	GEOTEXTILE FOR DRAINAGE SQUARE YARDS
END BENT 1	185	205
END BENT 2	215	240

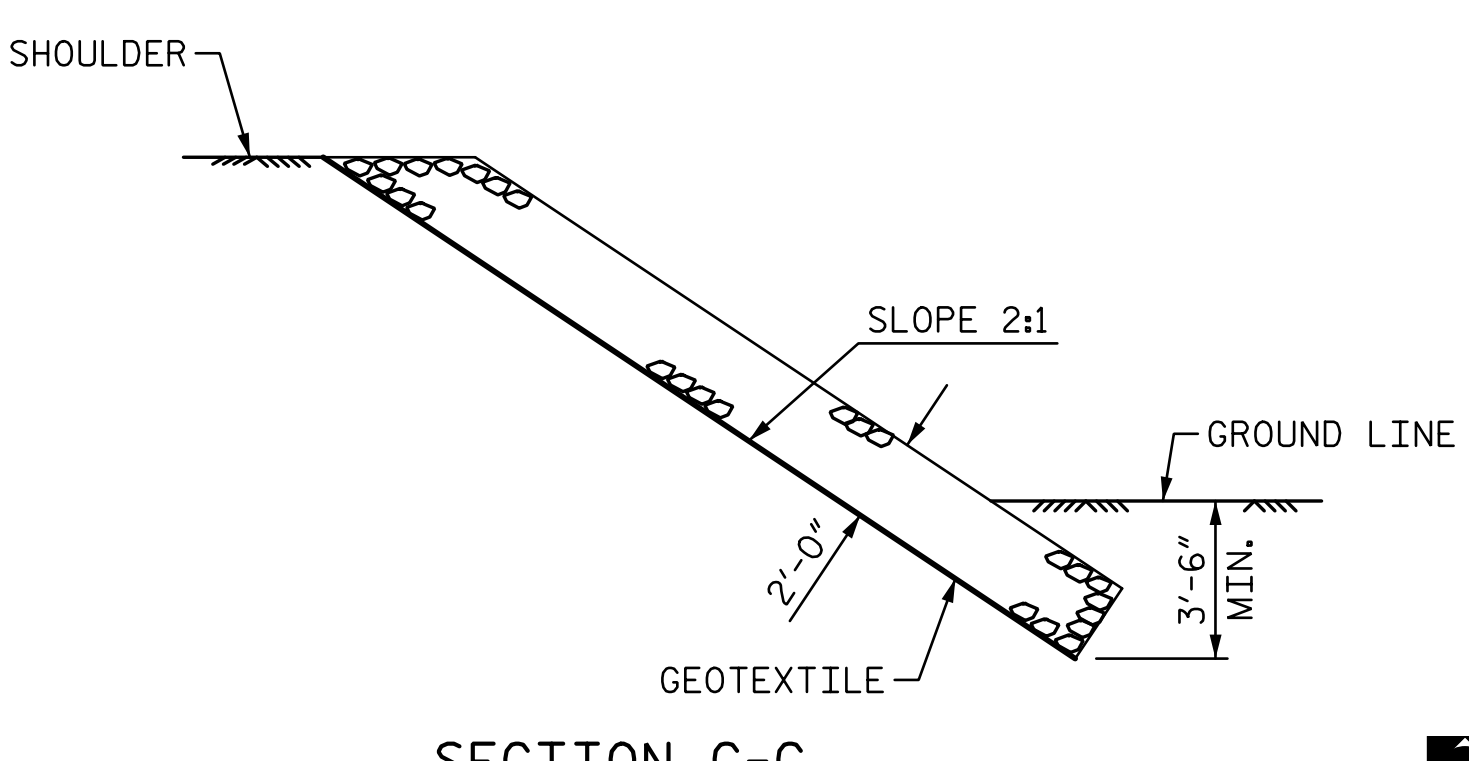


SECTION H-H



SECTION C-C  
BERM RIP RAPPED

END BENT 1 SHOWN, END BENT 2 SIMILAR

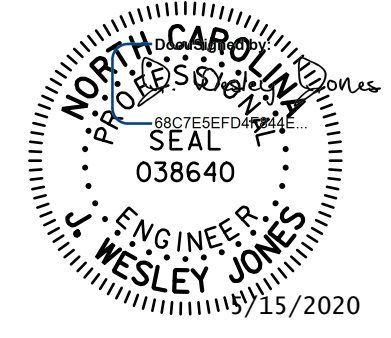


SECTION C-C

PROJECT NO. BR-0126  
WILKES COUNTY  
 STATION: 16+62.00 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**RIP RAP DETAILS**



**STV** 100 YEARS  
 STV ENGINEERS, INC.  
 900 West Trade St., Suite 715  
 Charlotte, NC 28202  
 NC License Number F-0991

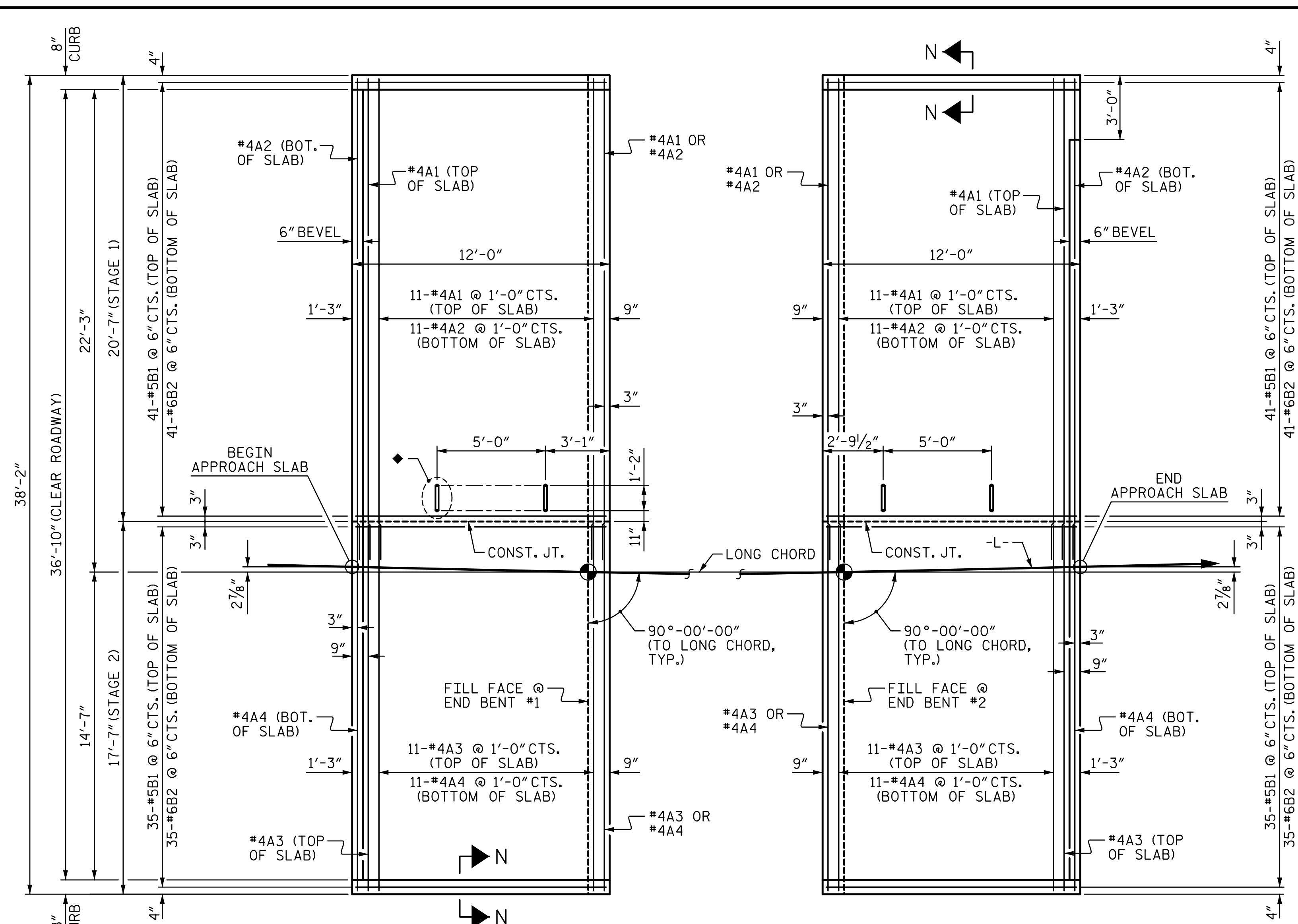
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 CHECKED BY : JWJ DATE : 3-20  
 DESIGN ENGINEER OF RECORD : JWJ DATE : 5-20

REVISIONS					SHEET NO.
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2			4		

TOTAL SHEETS: 23

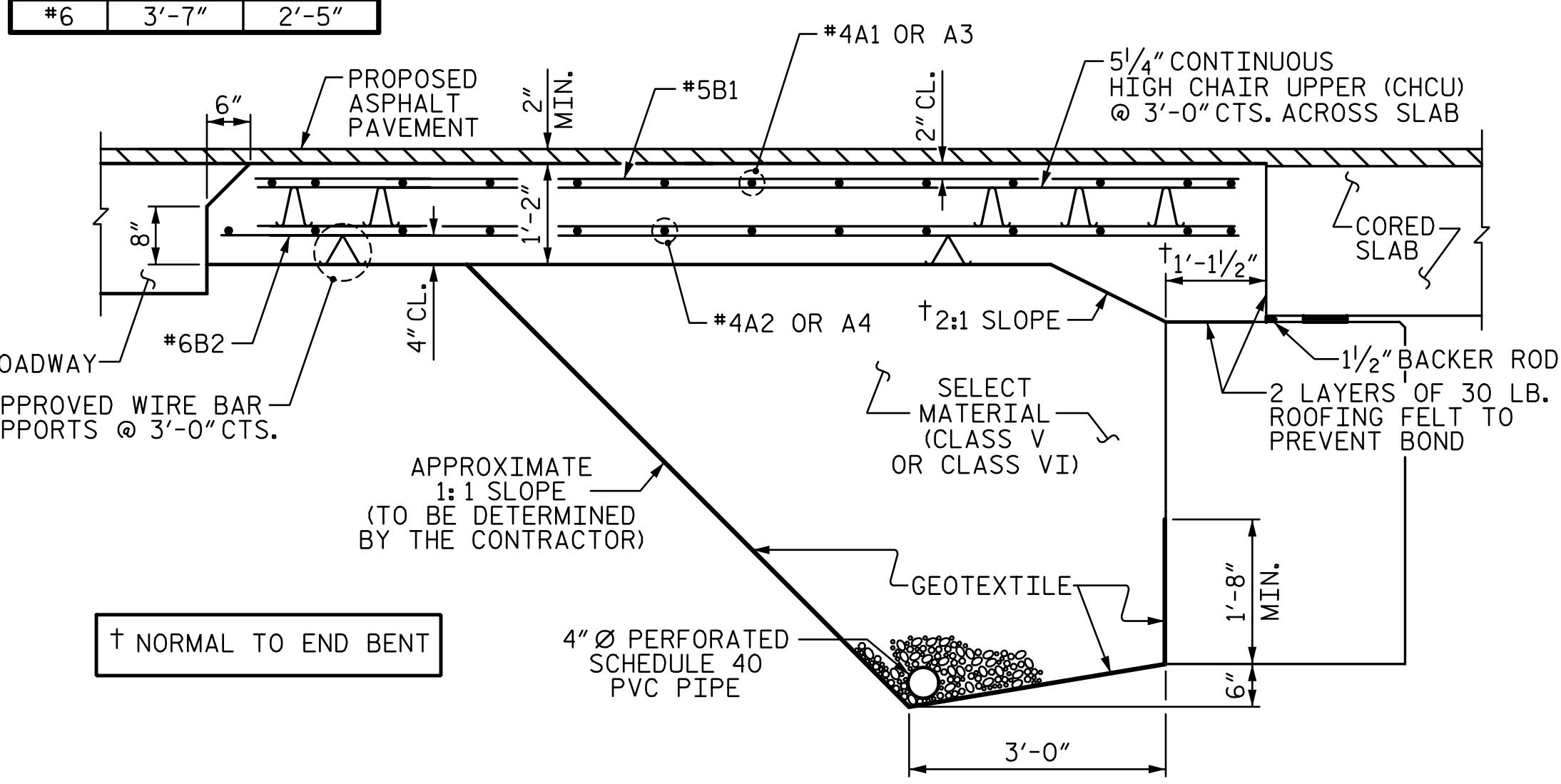
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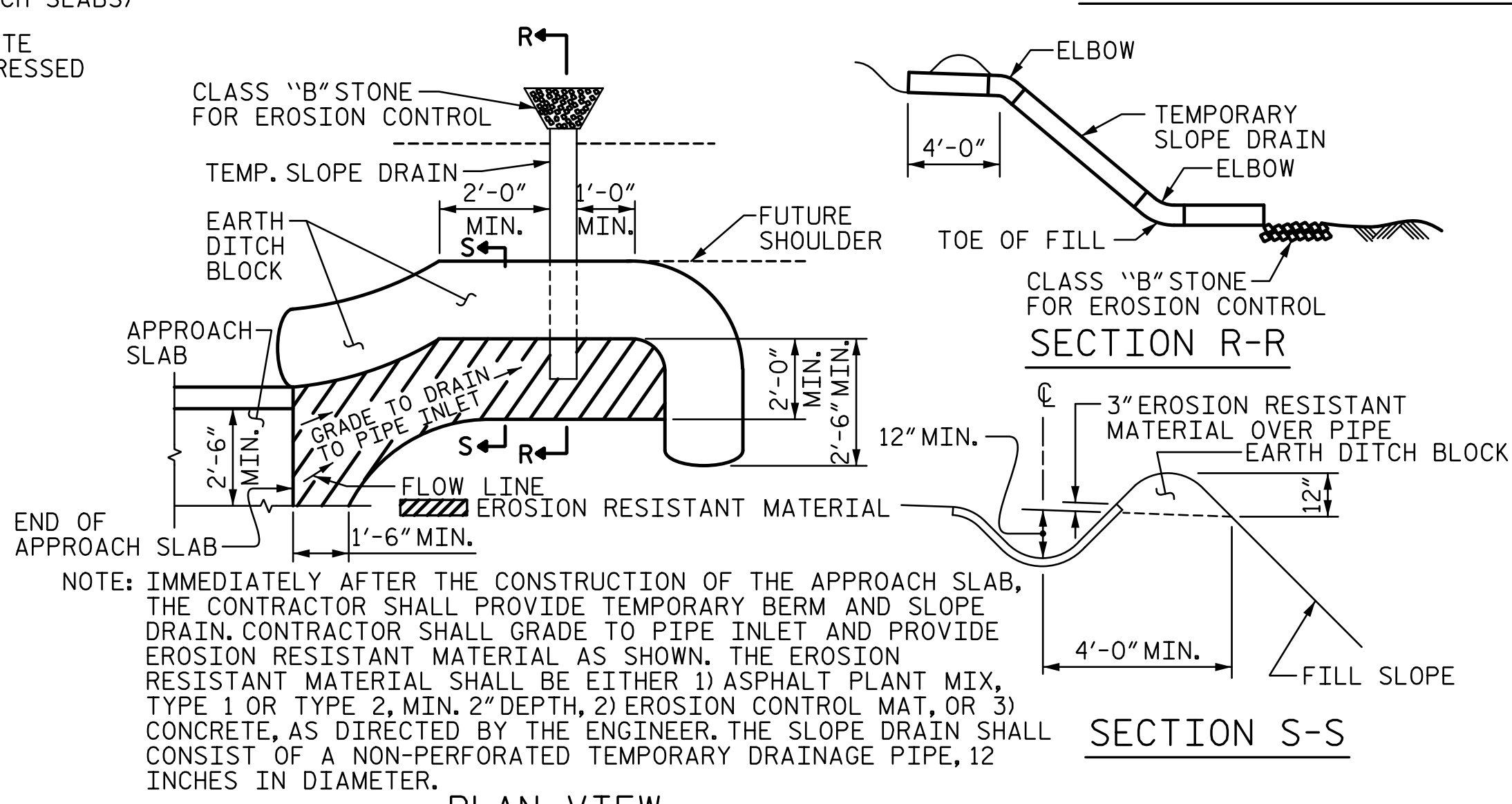
**PLAN @ END BENT 1**      **PLAN @ END BENT 2**  
 (DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS)

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

◆ ANCHOR ASSEMBLY FOR PORTABLE CONCRETE BARRIER (TYP.) (FOR DETAILS, SEE PRESTRESSED CONCRETE CORED SLAB UNIT SHEETS)



**SECTION THRU SLAB**  
 (TYPE II - MODIFIED APPROACH FILL)



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

**NOTES**

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

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

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

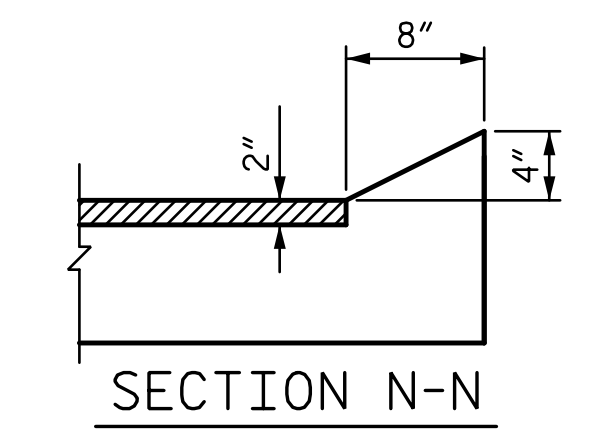
SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

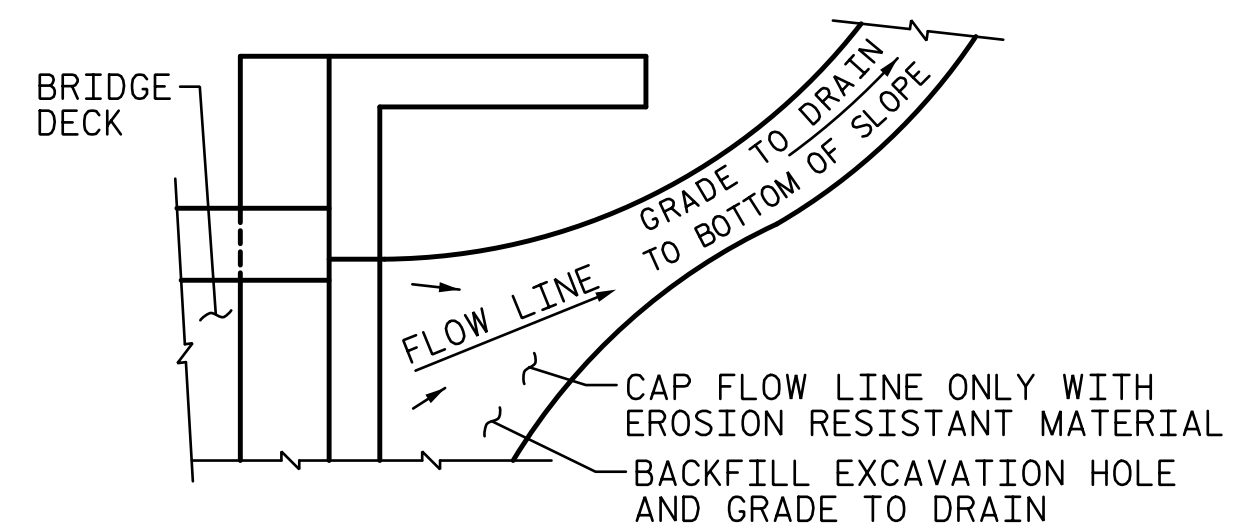
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED, SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

FOR ALL #4 "A" BARS IN STAGE 1, IF ADEQUATE SPLICE LENGTH IS NOT ACHIEVABLE, CUT REINFORCING BARS WITH ADEQUATE PROJECTION INTO STAGE 2 FOR MECHANICAL REBAR SPLICE. FOR MECHANICAL SPLICES, SEE SECTION 425-5(B) OF THE STANDARD SPECIFICATIONS.



**SECTION N-N**

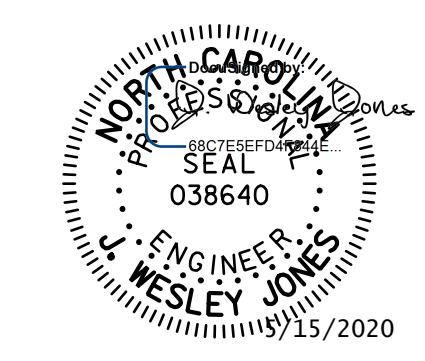


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

**TEMPORARY DRAINAGE DETAIL**

BILL OF MATERIAL					
<b>APPROACH SLAB AT EB 1 (STAGE 1)</b>					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	13	#4	STR	22'-5"	195
A2	13	#4	STR	22'-1"	192
*B1	41	#5	STR	11'-1"	474
B2	41	#6	STR	11'-7"	713
REINFORCING STEEL				LBS.	905
* EPOXY COATED REINFORCING STEEL				LBS.	669
CLASS AA CONCRETE				C. Y.	12.4
<b>APPROACH SLAB AT EB 1 (STAGE 2)</b>					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A3	13	#4	STR	17'-4"	151
A4	13	#4	STR	17'-4"	151
*B1	35	#5	STR	11'-1"	405
B2	35	#6	STR	11'-7"	609
REINFORCING STEEL				LBS.	760
* EPOXY COATED REINFORCING STEEL				LBS.	556
CLASS AA CONCRETE				C. Y.	10.6
<b>APPROACH SLAB AT EB 2 (STAGE 1)</b>					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	13	#4	STR	22'-5"	195
A2	13	#4	STR	22'-1"	192
*B1	41	#5	STR	11'-1"	474
B2	41	#6	STR	11'-7"	713
REINFORCING STEEL				LBS.	905
* EPOXY COATED REINFORCING STEEL				LBS.	669
CLASS AA CONCRETE				C. Y.	11.7
<b>APPROACH SLAB AT EB 2 (STAGE 2)</b>					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A3	13	#4	STR	17'-4"	151
A4	13	#4	STR	17'-4"	151
*B1	35	#5	STR	11'-1"	405
B2	35	#6	STR	11'-7"	609
REINFORCING STEEL				LBS.	760
* EPOXY COATED REINFORCING STEEL				LBS.	556
CLASS AA CONCRETE				C. Y.	10.0

PROJECT NO. **BR-0126**  
**WILKES** COUNTY  
 STATION: **16+62.00 -L-**



**STV** 100 YEARS  
 STV ENGINEERS, INC.  
 900 West Trade St., Suite 715  
 Charlotte, NC 28202  
 NC License Number F-0991

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER) 90° SKEW					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-23
					TOTAL SHEETS 23

DRAWN BY: LEM      DATE: 2-20  
 CHECKED BY: JWJ      DATE: 3-20  
 DESIGN ENGINEER OF RECORD: JWJ      DATE: 5-20



## 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.
	--	27,000 LBS. PER SQ. IN.
	--	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

JANUARY, 1990