

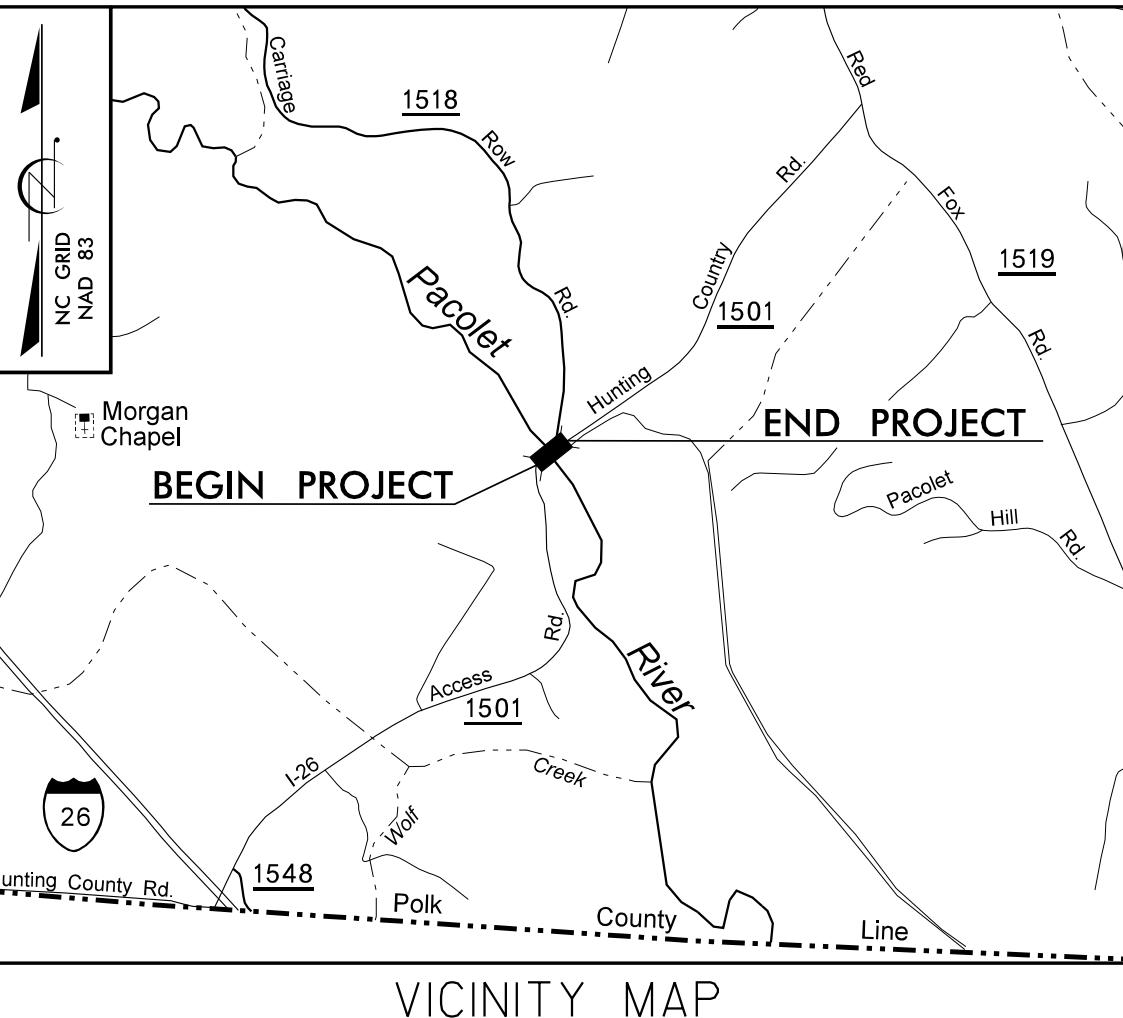
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TIP NO: 17BP.14.R.141

CONTRACT: DN00121

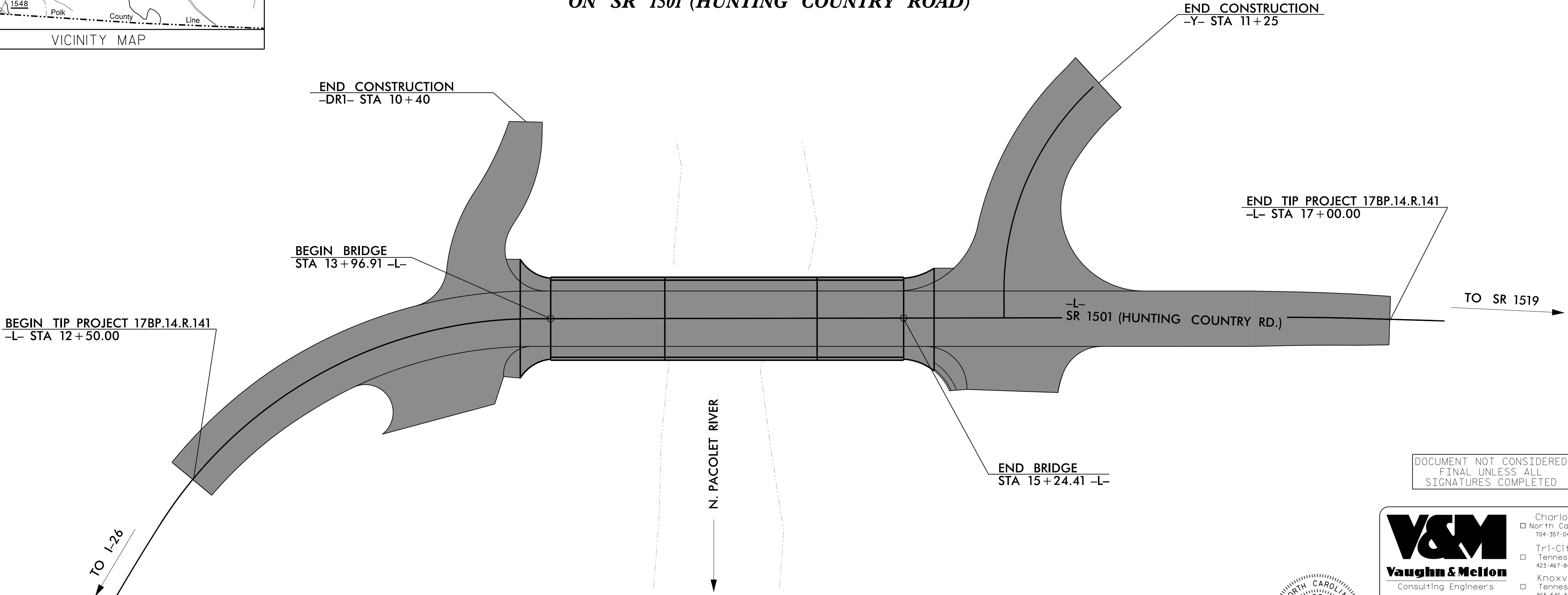


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

POLK COUNTY

**BRIDGE NO. 21 OVER NORTH PACOLET RIVER
ON SR 1501 (HUNTING COUNTRY ROAD)**

STATE	STATE PROJECT REFERENCE NO.	SHET NO.	TOTAL SHEETS
N.C. 17BP.14.R.141			
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
45360.1.27	BRZ-1105(23)	P.E.	
45360.2.27	BRZ-1105(23)	R/W & UTIL.	
17BP.14.R.141		CONST.	



DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



Charlotte, North Carolina 704-357-0468
Tri-Cities, Tennessee 423-467-8401
Knoxville, Tennessee 865-546-5800
Middlesboro, Kentucky 606-248-6600
Spartanburg, South Carolina 864-574-4775

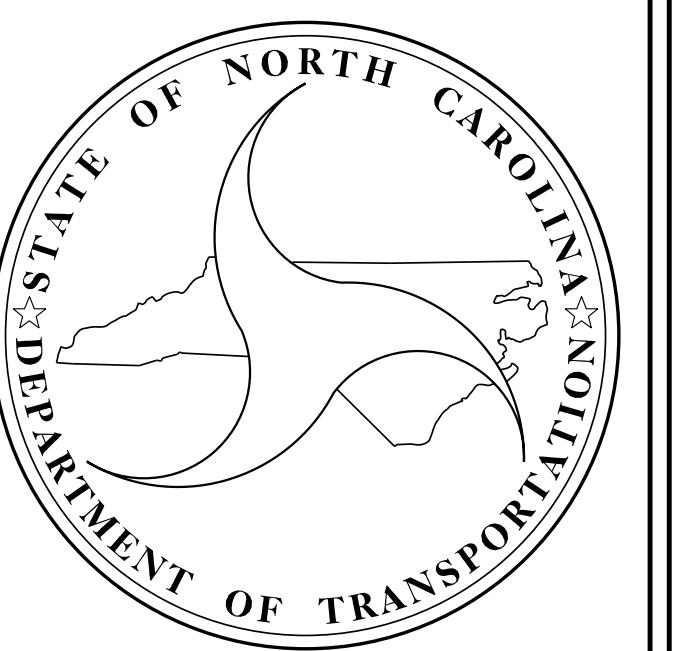


DocuSigned by:
Hardy Willis
HARDY WILLIS, PE
11/17/2016

L.

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STRUCTURE



DESIGN DATA

ADT 2011 = 120
ADT 2025 = 240
T = 6%
V = 20 MPH

FUNCT. CLASS=LOCAL
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT 17BP.14.R.141 = 0.061 MI
LENGTH STRUCTURE TIP PROJECT 17BP.14.R.141 = 0.024 MI
TOTAL LENGTH OF TIP PROJECT 17BP.14.R.141 = 0.085 MI

Prepared in the Office of:
VAUGHN & MELTON
1318 F PATTON AVE
ASHEVILLE NC 28806

FOR THE NORTH CAROLINA DIVISION OF HIGHWAYS

2012 STANDARD SPECIFICATIONS

LETTING DATE :

HARDY WILLIS, PE
PROJECT ENGINEER

RYAN SHIPMAN, EI
PROJECT DESIGN ENGINEER

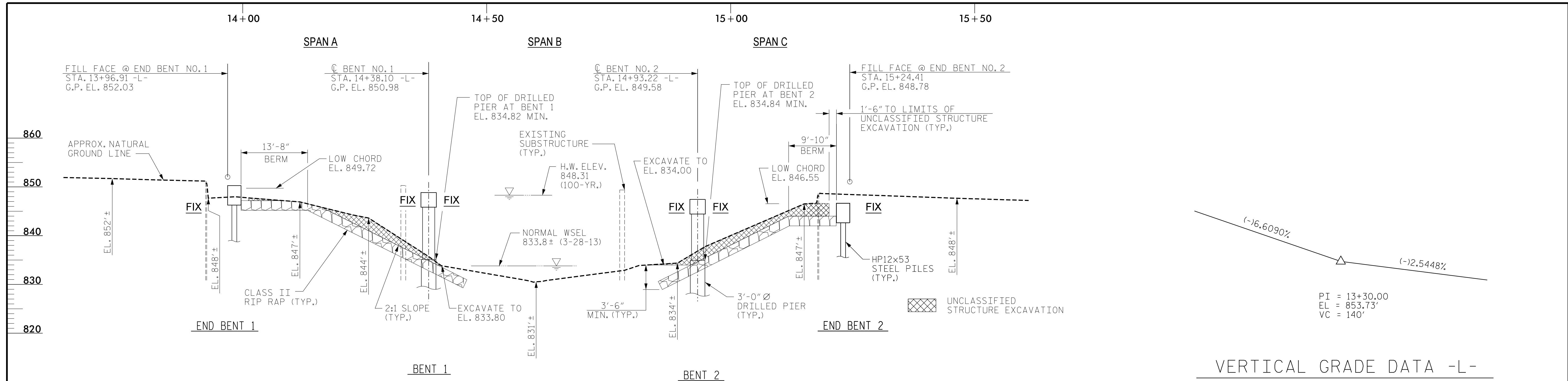
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

JOSH DEYTON P.E.
STATE DESIGN ENGINEER
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

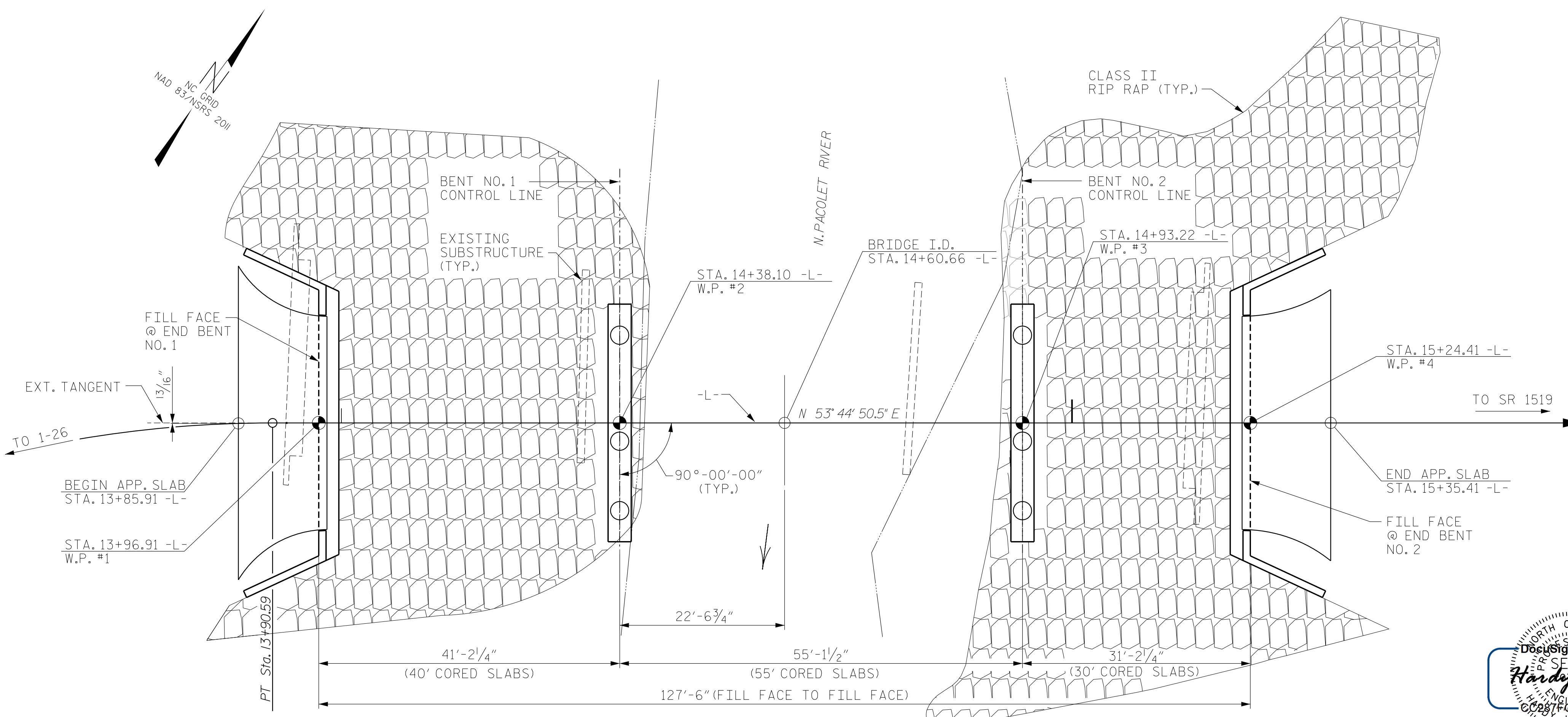
APPROVED
DIVISION ADMINISTRATOR

DATE



SECTION ALONG C/L SURVEY -L-

SECTIONS AT BENTS AND END BENTS ARE AT RIGHT ANGLES.

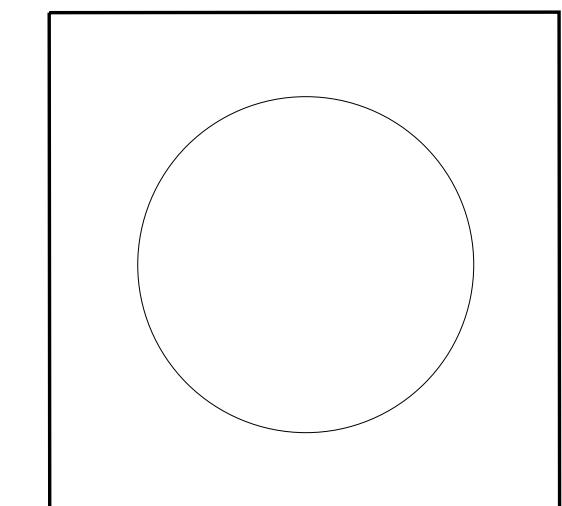


NOTES:
END BENTS AND INTERIOR BENTS ARE PARALLEL.
PILE NOT SHOWN IN PLAN VIEW FOR CLARITY.
CORED SLABS ARE PARALLEL TO C SURVEY -L-.

PI Sta 13+17.80
 $\Delta = 57^\circ 29' 54.6''$ (RT)
 $D = 35^\circ 48' 35.5''$
 $L = 160.57'$
 $T = 87.78'$
 $R = 160.00'$

HORIZONTAL CURVE DATA -L-

I HEREBY CERTIFY
THAT THESE PLANS
ARE THE
AS-BUILT PLANS.

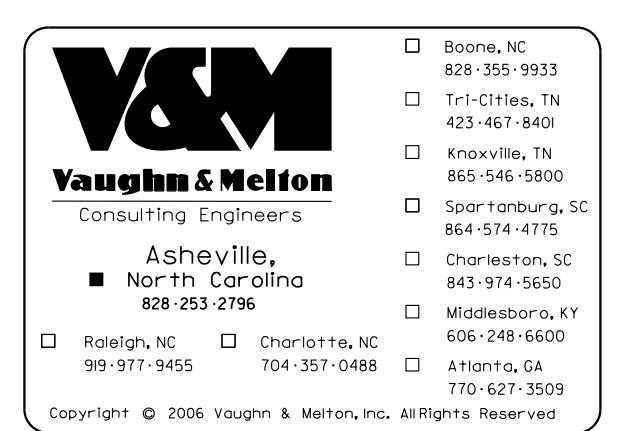


PROJECT NO. 17BP.14.R.141
POLK COUNTY
STATION: 14+60.66 -L-

SHEET 1 OF 2 REPLACES BRIDGE NO. 21

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE NO. 21 ON SR 1501
(HUNTING COUNTRY ROAD)
OVER NORTH PACOLET RIVER
BETWEEN (SR 1519) RED FOX ROAD
& (SR 1548) I-26 ACCESS ROAD

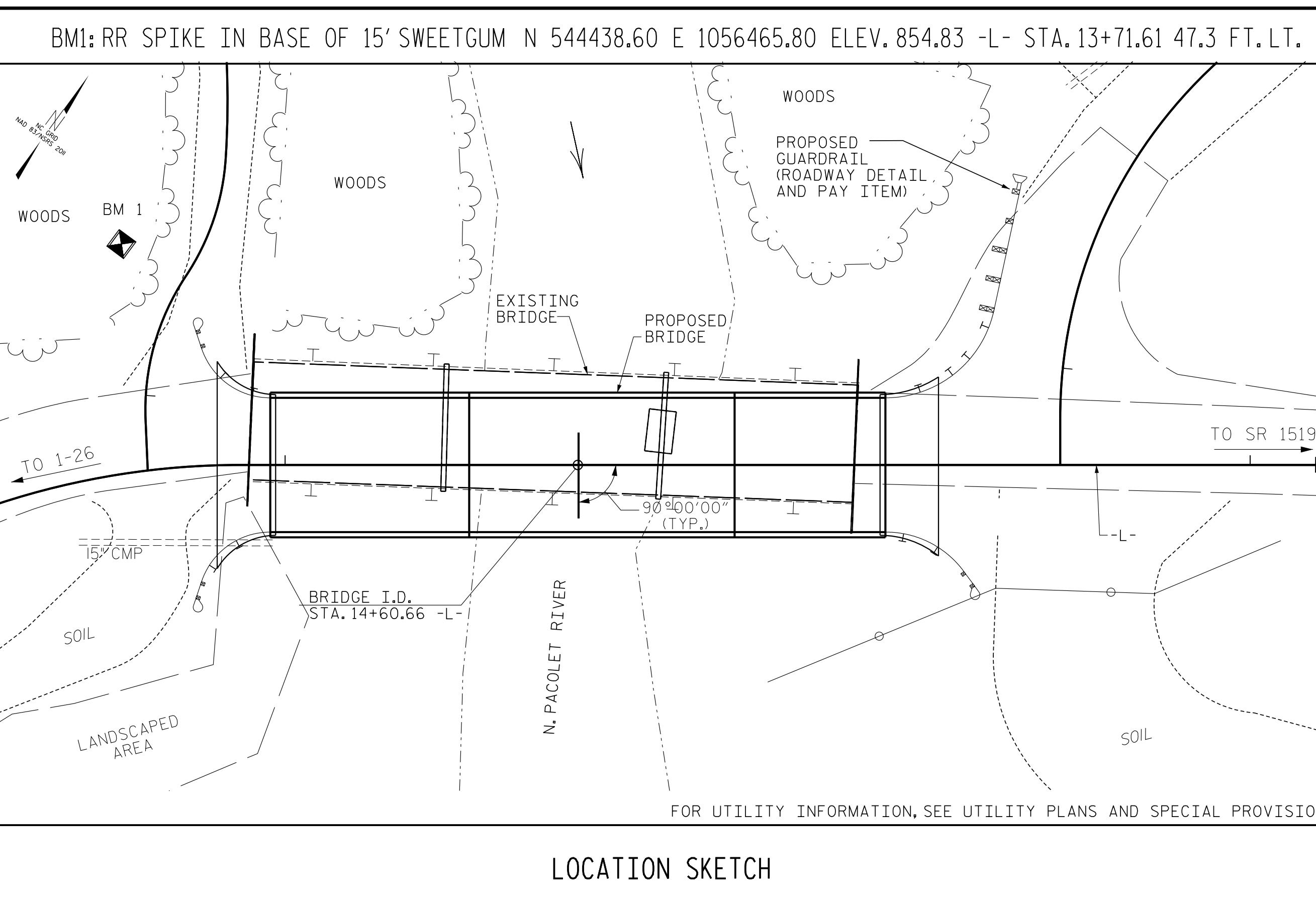


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FINAL UNLESS ALL
SIGNATURES COMPLETED

OWN. BY: MAF
CHKD. BY: HLW
DES. EGR. OF RECORD: RTS

REVISIONS
SHEET NO.
S-1
TOTAL SHEETS
35

DATE: 5/15
DATE: 5/15
DATE: 5/15
DATE: 5/15

**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 PERFORMANCE ZONE 1.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THE EXISTING STRUCTURE, CONSISTING OF THREE SPANS, TWO 40'-3" FOOT LONG END SPANS, AND ONE 45'-0" FOOT LONG CENTER SPAN WITH TIMBER FLOOR ON STEEL I-BEAMS ON TIMBER CAPS AND TIMBER PILE END BENTS AND BENTS, AND LOCATED AT THE PROPOSED STRUCTURE, SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 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.

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.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 25 FT. EACH SIDE OF CENTERLINE ROADWAY 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.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY 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 14+60.66"

AT THE CONTRACTOR'S OPTION, PRESTRESSED CONCRETE END BENT AND BENT CAPS MAY BE SUBSTITUTED IN PLACE OF THE CAST-IN-PLACE CAPS. THE CONTRACTOR SHALL COORDINATE WITH THE RESIDENT ENGINEER TO RECEIVE REVISED PLANS AND DETAILS FROM THE STRUCTURES MANAGEMENT UNIT. THE REDESIGN AND ANY ADDITIONAL MATERIALS NEEDED WILL BE AT NO ADDITIONAL COST TO THE CONTRACTOR.

FOUNDATION NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILE AT END BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 70 TONS PER PILE.

DRIVE PILES AT END BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 120 TONS PER PILE.

PILE AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 65 TONS PER PILE.

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

FOUNDATION NOTES (CONTINUED):

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

TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS (AND FOR PILE DRIVING CRITERIA, SEE PILE DRIVING CRITERIA PROVISION).

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 20,000 TO 30,000 FT.-LBS. PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO.2, THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

PREDRILLING FOR PILES 1, 2, & 3 IS REQUIRED AT END BENT NO.1. PREDRILL PILE LOCATIONS TO ELEVATION 835 FT. WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 12". FOR PREDRILLING FOR PILES, 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 355 TONS PER PIER.

PERMANENT STEEL CASINGS MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO.1. DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 816.9 FT (LT) AND 821.7 FT (RT) WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

INSTALL PERMANENT STEEL CASINGS AT BENT NO.1 BY VIBRATING, SCREWING OR DRIVING PERMANENT CASINGS BEFORE EXCAVATING OR DISTURBING ANY MATERIAL BELOW ELEVATION 816.9 FT (LT) AND 821.7 FT (RT).

INSTALL DRILLED PIERS AT BENT NO.1 (LT) THAT EXTEND TO AN ELEVATION NO HIGHER THAN 803.0 FT AND WITH THE REQUIRED TIP RESISTANCE AND PENETRATION OF AT LEAST 8 FT. INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

INSTALL DRILLED PIERS AT BENT NO.1 (RT) THAT EXTEND TO AN ELEVATION NO HIGHER THAN 805.0 FT AND WITH THE REQUIRED TIP RESISTANCE AND PENETRATION OF AT LEAST 8 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 355 TONS PER PIER.

PERMANENT STEEL CASINGS MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO.2. DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 820.8 FT (LT) AND 815.0 FT (RT) WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

INSTALL PERMANENT STEEL CASINGS AT BENT NO.2 BY VIBRATING, SCREWING OR DRIVING PERMANENT CASINGS BEFORE EXCAVATING OR DISTURBING ANY MATERIAL BELOW ELEVATION 820.8 FT (LT) AND 815.0 FT (RT).

INSTALL DRILLED PIERS AT BENT NO.2 (LT) THAT EXTEND TO AN ELEVATION NO HIGHER THAN 785.0 FT AND WITH THE REQUIRED TIP RESISTANCE AND PENETRATION OF AT LEAST 8 FT. INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

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

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

THE SCOUR CRITICAL ELEVATION FOR END BENT NO.1 IS 822.0 FT. AND END BENT NO.2 IS 822.0 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

PROJECT NO. 17BP.14.R.141

POLK COUNTY

STATION: 14+60.66 -L-

SHEET 2 OF 2

**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH**

GENERAL DRAWING

BRIDGE NO. 21 ON SR 1501
(HUNTING COUNTRY ROAD)
OVER NORTH PACOLET RIVER
BETWEEN (SR 1519) RED FOX ROAD
& (SR 1548) I-26 ACCESS ROAD

REVISIONS				SHEET NO.
				S-2
DWN. BY: MAF	DATE: 5/15	NO.	BY:	
CHKD. BY: HLW	DATE: 5/15	1	3	
DES. ECR. OF RECORD: RTS	DATE: 5/15	2	4	35

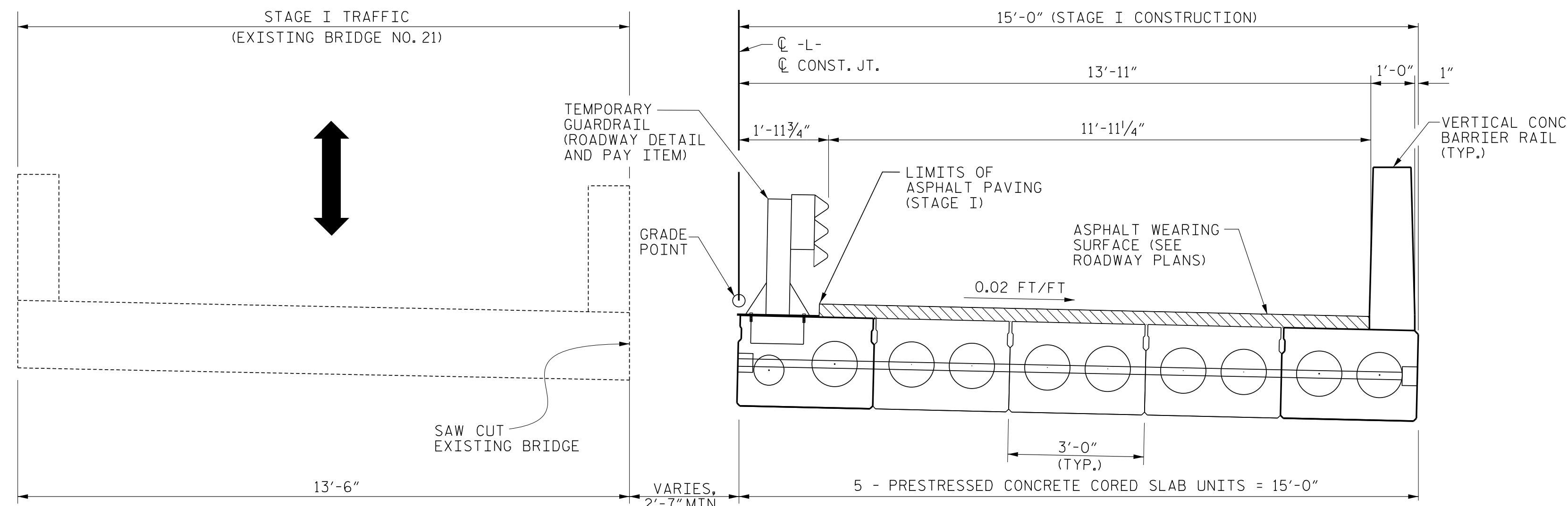
HYDRAULIC DATA

DESIGN DISCHARGE = 4800 CFS
DESIGN FREQUENCY = 10 YRS
DESIGN HW ELEVATION = 845.6 FT
BASE DISCHARGE = 8700 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 848.31 FT

OVERTOPPING FLOOD DATA

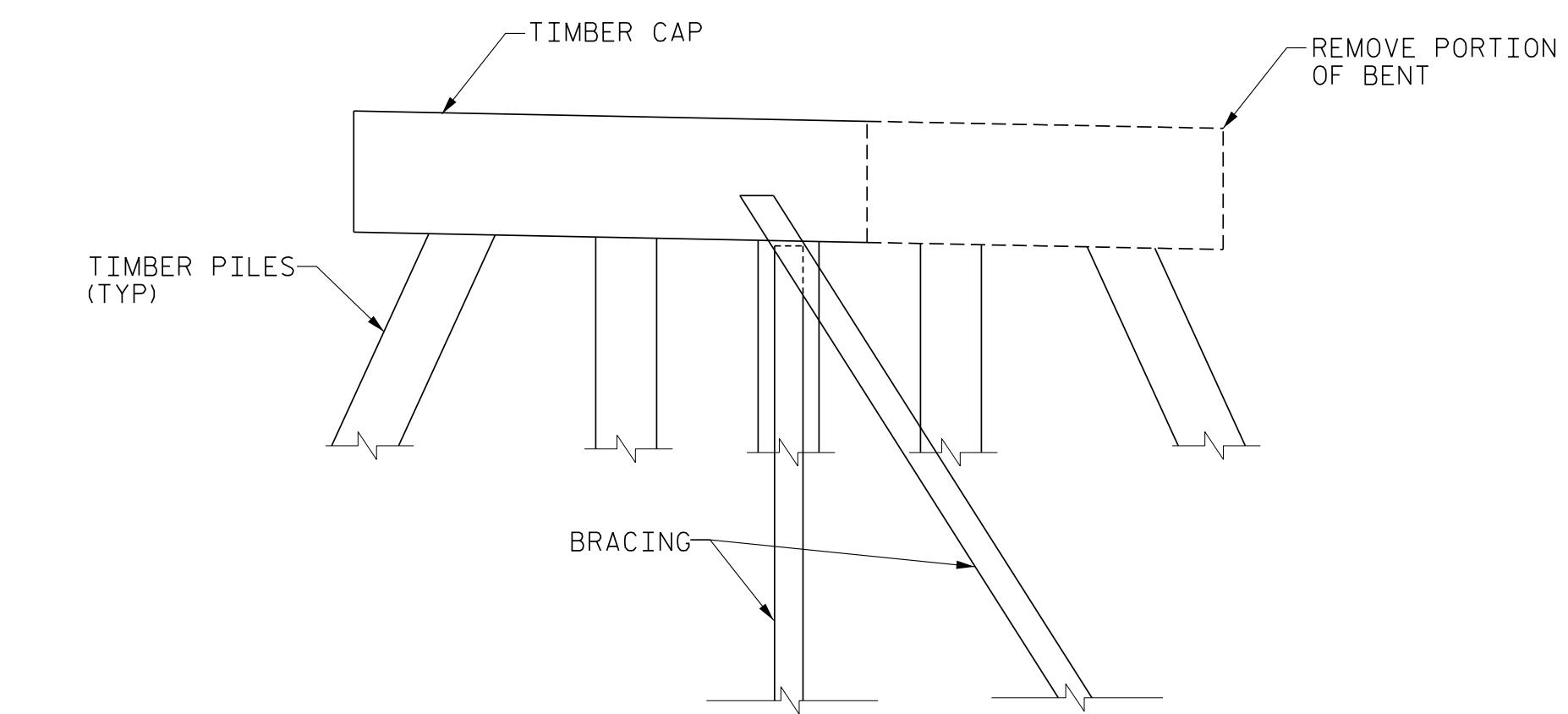
OVERTOPPING DISCHARGE = 5440 CFS
OVERTOPPING FREQUENCY = 10 (+) YRS
OVERTOPPING ELEVATION = 846.0 FT
DRAINAGE AREA = 49.5 SQ. MI.



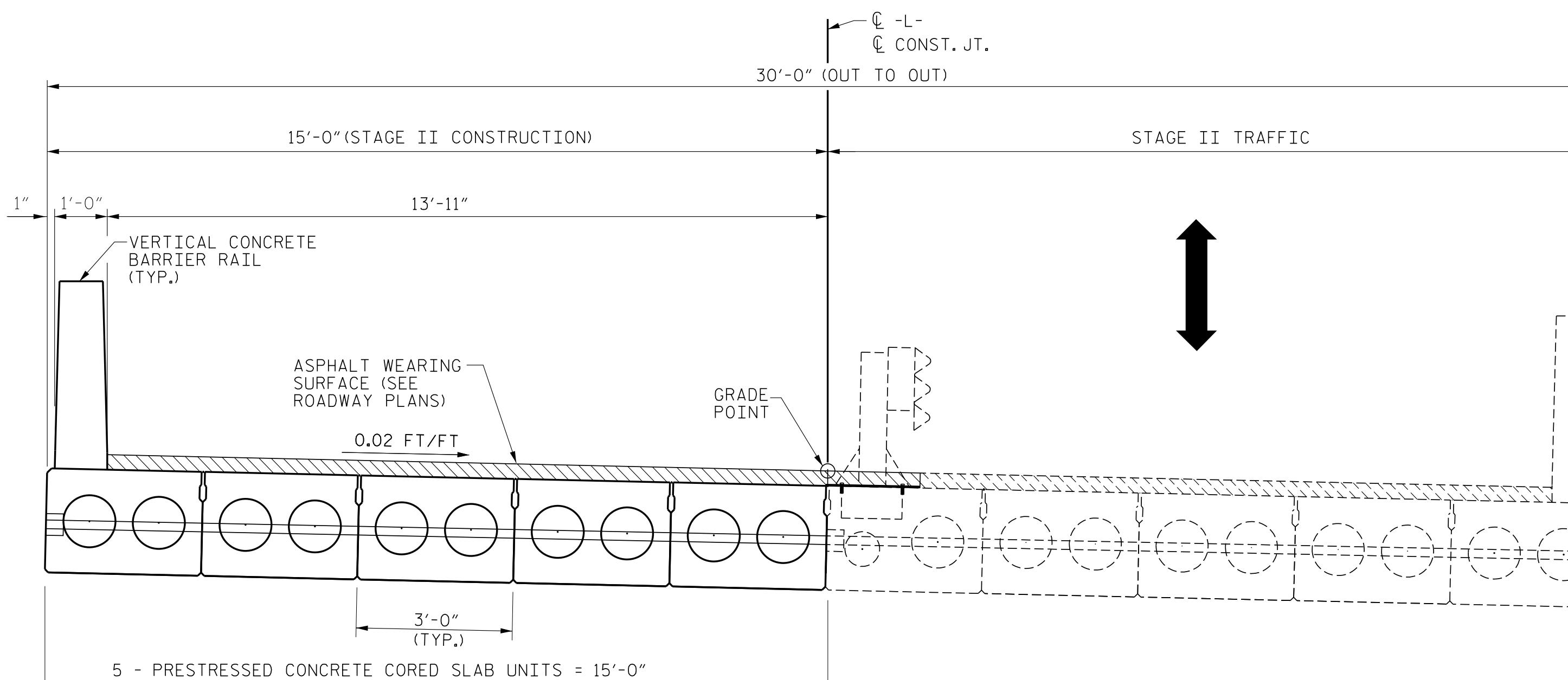
**NOTES**

FOR TEMPORARY GUARDRAIL DETAILS, SEE "ANCHORAGE DETAILS FOR TEMPORARY GUARDRAIL ANCHOR ASSEMBLY FOR TYPE III CORED SLAB UNIT" SHEET.

FOR PHASING OF TRAFFIC AND OTHER DETAILS, SEE TRAFFIC MANAGEMENT PLANS.

**EXISTING INTERIOR BENT DETAIL**

AFTER CUTTING AND REMOVING THE RIGHT HAND PORTION OF EACH EXISTING INTERIOR BENT FOR STAGE I CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE ADEQUATE SHORING TO STABILIZE THE REMAINING BENT. PROVIDE BRACING PLANS AND LOAD STUDIES TO THE ENGINEER FOR APPROVAL BEFORE CUTTING.

**STAGE II****STAGING SEQUENCE**

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Document signed by
Hardy Willis
C-287100P0223461
11/17/2016

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Vaughn & Melton
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REVISIONS

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONSTRUCTION STAGING

DWN. BY: RWB DATE: 3/2015
CHKD. BY: HLW DATE: 3/2015
DES. ECR. OF RECORD: RTS DATE: 3/2015

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										
							LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	MOMENT	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	SHEAR	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)				
DESIGN LOAD RATING	SV	HL-93(Inv)	N/A	1	1.319	--	1.75	0.278	1.76	40'	EL	19.5	0.549	1.32	40'	EL	1.95	0.80	0.278	1.55	40'	EL	19.5
		HL-93(Op)	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	1.54	40'	EL	1.95	0.80	0.278	1.94	40'	EL	19.5
		HS-20(Op)	36,000	--	1.997	71,878	1.35	0.278	2.86	40'	EL	19.5	0.549	2	40'	EL	1.95	N/A	--	--	--	--	--
LEGAL LOAD RATING	TTST	SNSH	13,500	--	3,606	48,687	1.4	0.278	5.1	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	1.9	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	1.43	40'	EL	19.5
	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	2.3	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	69,61	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_{DC}	γ_{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.
- 4.

① CONTROLLING LOAD RATING
② DESIGN LOAD RATING (HL-93)
③ DESIGN LOAD RATING (HS-20)
④ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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

PROJECT NO. 17BP.14.R.141

POLK COUNTY

STATION: 14+60.66 -L-

SHEET 1 OF 3

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

Documented by
Hardy Willis
Engineering
OCB/PCP/2016
L. Willis

11/17/2016

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

TOTAL SHEETS 35

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										
							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)	COMMENT NUMBER					
DESIGN LOAD RATING	SV	HL-93(Inv)	N/A	1	1.001	--	1.75	0.277	1.101	55'	E	27.5'	0.515	1.001	55'	E	2.09'	0.80	0.277	1.711	55'	E	27.5'
		HL-93(Op)	N/A	--	1.297	--	1.35	0.277	1.428	55'	E	27.5'	0.515	1.297	55'	E	2.09'	N/A	0.277	--	--	--	--
		HS-20(Inv)	36,000	2	1.382	49.753	1.75	0.277	1.382	55'	E	27.5'	0.515	1.395	55'	E	2.09'	0.80	0.277	2.143	55'	E	27.5'
		HS-20(Op)	36,000	--	1.792	64.494	1.35	0.277	1.792	55'	E	27.5'	0.515	1.809	55'	E	2.09'	N/A	0.277	--	--	--	--
LEGAL LOAD RATING	TTST	SNSH	13,500	--	3.611	48.746	1.4	0.277	3.611	55'	E	27.5'	0.515	4.009	55'	E	2.09'	0.80	0.277	4.504	55'	E	27.5'
		SNGARBS2	20,000	--	2.806	56.117	1.4	0.277	2.806	55'	E	27.5'	0.515	2.893	55'	E	2.09'	0.80	0.277	3.493	55'	E	27.5'
		SNAGRIS2	22,000	--	2.710	59.612	1.4	0.277	2.719	55'	E	27.5'	0.515	2.710	55'	E	2.09'	0.80	0.277	3.369	55'	E	27.5'
		SNCOTTS3	27,250	--	1.805	49.197	1.4	0.277	1.805	55'	E	27.5'	0.515	2.010	55'	E	2.09'	0.80	0.277	2.244	55'	E	27.5'
		SNAGGRS4	34,925	--	1.551	54.173	1.4	0.277	1.551	55'	E	27.5'	0.515	1.731	55'	E	2.09'	0.80	0.277	1.929	55'	E	27.5'
		SNS5A	35,550	--	1.514	53.823	1.4	0.277	1.514	55'	E	27.5'	0.515	1.731	55'	E	2.09'	0.80	0.277	1.882	55'	E	27.5'
		SNS6A	39,950	--	1.416	56.569	1.4	0.277	1.416	55'	E	27.5'	0.515	1.609	55'	E	2.09'	0.80	0.277	1.762	55'	E	27.5'
	TTST	SNS7B	42,000	--	1.343	56.406	1.4	0.277	1.343	55'	E	27.5'	0.515	1.580	55'	E	2.09'	0.80	0.277	1.667	55'	E	27.5'
		TNAGRIT3	33,000	--	1.721	56.786	1.4	0.277	1.721	55'	E	27.5'	0.515	1.889	55'	E	2.09'	0.80	0.277	2.141	55'	E	27.5'
		TNT4A	33,075	--	1.734	57.363	1.4	0.277	1.734	55'	E	27.5'	0.515	1.828	55'	E	2.09'	0.80	0.277	2.156	55'	E	27.5'
		TNT6A	41,600	--	1.440	59.887	1.4	0.277	1.440	55'	E	27.5'	0.515	1.714	55'	E	2.09'	0.80	0.277	1.785	55'	E	27.5'
		TNT7A	42,000	--	1.454	61.062	1.4	0.277	1.454	55'	E	27.5'	0.515	1.628	55'	E	2.09'	0.80	0.277	1.807	55'	E	27.5'
		TNT7B	42,000	--	1.519	63.799	1.4	0.277	1.519	55'	E	27.5'	0.515	1.534	55'	E	2.09'	0.80	0.277	1.886	55'	E	27.5'
		TNAGRIT4	43,000	--	1.435	61.701	1.4	0.277	1.435	55'	E	27.5'	0.515	1.481	55'	E	2.09'	0.80	0.277	1.785	55'	E	27.5'
		TNAGT5A	45,000	--	1.347	60.622	1.4	0.277	1.347	55'	E	27.5'	0.515	1.487	55'	E	2.09'	0.80	0.277	1.673	55'	E	27.5'
		TNAGT5B	45,000	3	1.323	59.529	1.4	0.277	1.323	55'	E	27.5'	0.515	1.405	55'	E	2.09'	0.80	0.277	1.643	55'	E	27.5'

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{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.
- 4.

CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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

PROJECT NO. 17BP.14.R.141
POLK COUNTY
STATION: 14+60.66 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

11/17/2016

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

REVISIONS

NO. S-5
TOTAL SHEETS 35

LRFR SUMMARY

FOR SPAN 'B'

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										
							LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	MOMENT	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	MOMENT	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	COMMENT NUMBER			
DESIGN LOAD RATING	SV	HL-93(Inv)	N/A	1	1.037	--	1.75	0.283	1.83	30'	EL	14.5	0.574	1.04	30'	EL	1.45	0.80	0.283	1.58	30'	EL	14.5
		HL-93(Op)	N/A	--	1.344	--	1.35	0.283	2.38	30'	EL	14.5	0.574	1.34	30'	EL	1.45	N/A	--	--	--	--	--
		HS-20(Inv)	36,000	2	1.183	42.587	1.75	0.283	2.53	30'	EL	11.6	0.574	1.18	30'	EL	1.45	0.80	0.283	2.20	30'	EL	11.6
		HS-20(Op)	36,000	--	1.533	55.205	1.35	0.283	3.28	30'	EL	11.6	0.574	1.53	30'	EL	1.45	N/A	--	--	--	--	--
LEGAL LOAD RATING	SV	SNSH	13,500	--	2.895	39.081	1.4	0.283	5.18	30'	EL	14.5	0.574	2.89	30'	EL	1.45	0.80	0.283	3.56	30'	EL	14.5
		SNGARBS2	20,000	--	2.240	44.792	1.4	0.283	4.53	30'	EL	11.6	0.574	2.24	30'	EL	1.45	0.80	0.283	3.15	30'	EL	11.6
		SNAGRIS2	22,000	--	2.157	47.463	1.4	0.283	4.6	30'	EL	11.6	0.574	2.16	30'	EL	1.45	0.80	0.283	3.20	30'	EL	11.6
		SNCOTTS3	27,250	--	1.462	39.849	1.4	0.283	2.6	30'	EL	14.5	0.574	1.46	30'	EL	1.45	0.80	0.283	1.79	30'	EL	14.5
		SNAGGRS4	34,925	--	1.346	46.999	1.4	0.283	2.5	30'	EL	14.5	0.574	1.35	30'	EL	1.45	0.80	0.283	1.72	30'	EL	14.5
		SNS5A	35,550	--	1.427	50.733	1.4	0.283	2.42	30'	EL	14.5	0.574	1.43	30'	EL	1.45	0.80	0.283	1.67	30'	EL	14.5
		SNS6A	39,950	--	1.341	53.59	1.4	0.283	2.29	30'	EL	14.5	0.574	1.34	30'	EL	1.45	0.80	0.283	1.58	30'	EL	14.5
	TTST	SNS7B	42,000	--	1.369	57.505	1.4	0.283	2.23	30'	EL	14.5	0.574	1.37	30'	EL	1.45	0.80	0.283	1.53	30'	EL	14.5
		TNAGRIT3	33,000	--	1.593	52.58	1.4	0.283	2.97	30'	EL	14.5	0.574	1.59	30'	EL	1.45	0.80	0.283	2.04	30'	EL	14.5
		TNT4A	33,075	--	1.483	49.043	1.4	0.283	2.82	30'	EL	14.5	0.574	1.48	30'	EL	1.45	0.80	0.283	1.94	30'	EL	14.5
		TNT6A	41,600	--	1.433	59.622	1.4	0.283	2.56	30'	EL	14.5	0.574	1.43	30'	EL	1.45	0.80	0.283	1.76	30'	EL	14.5
		TNT7A	42,000	--	1.363	57.264	1.4	0.283	2.64	30'	EL	14.5	0.574	1.36	30'	EL	1.45	0.80	0.283	1.82	30'	EL	14.5
		TNT7B	42,000	--	1.331	55.915	1.4	0.283	2.49	30'	EL	14.5	0.574	1.33	30'	EL	1.45	0.80	0.283	1.72	30'	EL	14.5
		TNAGRIT4	43,000	--	1.287	55.356	1.4	0.283	2.58	30'	EL	14.5	0.574	1.29	30'	EL	1.45	0.80	0.283	1.78	30'	EL	14.5
		TNAGT5A	45,000	--	1.381	62.151	1.4	0.283	2.5	30'	EL	14.5	0.574	1.38	30'	EL	1.45	0.80	0.283	1.72	30'	EL	14.5
		TNAGT5B	45,000	3	1.212	54.54	1.4	0.283	2.41	30'	EL	11.6	0.574	1.21	30'	EL	1.45	0.80	0.283	1.66	30'	EL	11.6

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{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.
- 4.

- 1 CONTROLLING LOAD RATING
2 DESIGN LOAD RATING (HL-93)
3 DESIGN LOAD RATING (HS-20)
3 LEGAL LOAD RATING **
 ** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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

PROJECT NO. 17BP.14.R.141

POLK COUNTY

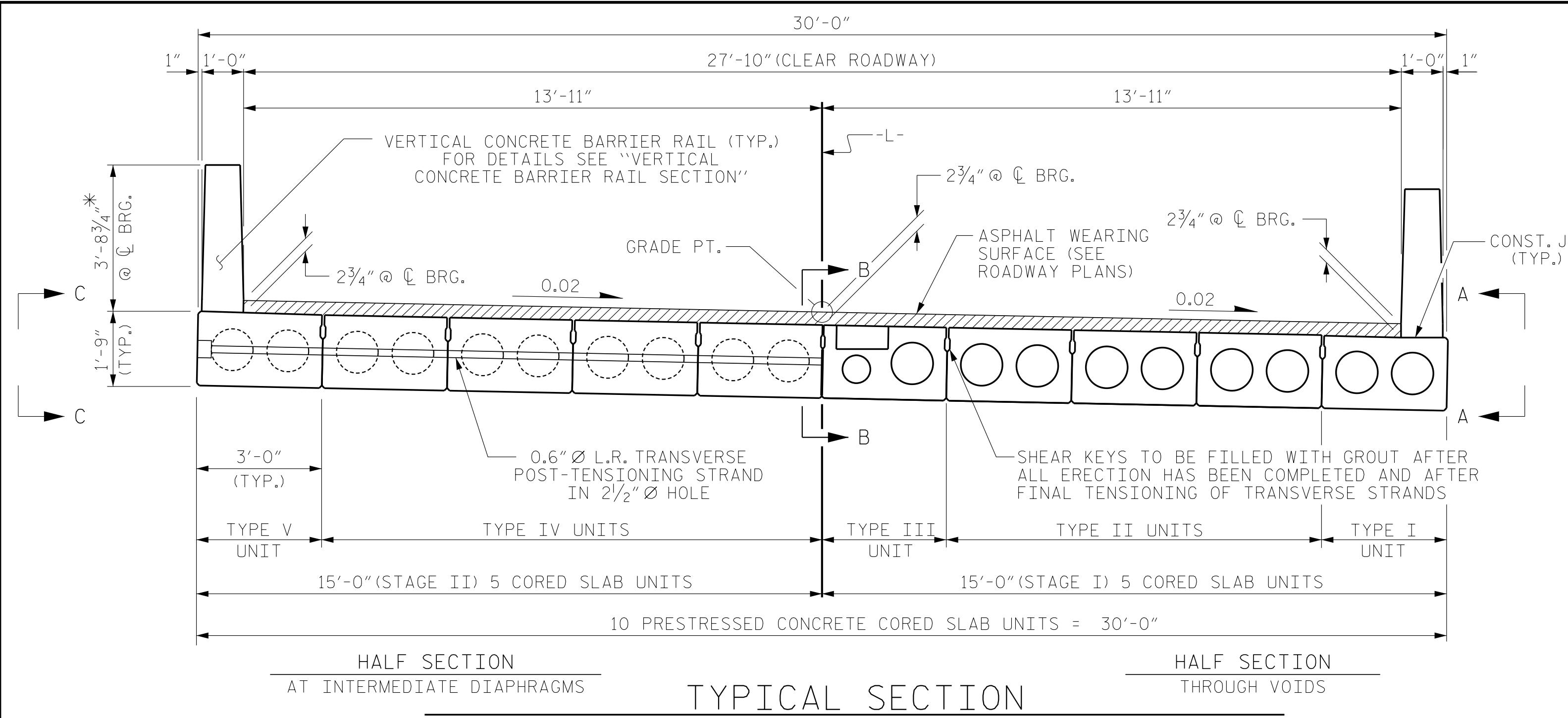
STATION: 14+60.66 -L-

SHEET 3 OF 3

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

Designed by 
 HARDY WILKES
 ENGINEER
 11/17/2016

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
REVISIONS	
NO. BY DATE NO. BY DATE	
1	3
2	4



* - 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.

* - THE MAXIMUM BARRETER RATIO, HEIGHT AND ASPHALT THICKNESS

HALF SECTION

THROUGH VOIDS

FIXED END

ASPHALT WEARING SURFACE

SEE "BRIDGE APPROACH SLAB" SHEET FOR DETAILS

2 LAYERS OF 30 LB. ROOFING FELT TO PREVENT BOND.

1½" Ø BACKER ROD

& C BEARING & #6 DOWELS

2½" Ø DOWEL HOLE

12" Ø VOIDS

ELASTOMERIC BEARING PAD

SEE "END BENT" SHEETS FOR DETAILS

Detailed description: This technical diagram shows a cross-section of a bridge pier's fixed end. The pier is a rectangular concrete structure. At the top, there is an asphalt wearing surface. A vertical column on the left indicates the height of the pier. On the right side, there is a vertical column with dimensions: 6" at the top, followed by 1'-1½" (18.5"), then a horizontal line, then 6" (6"), then another 6" (6"). Below this, there is a horizontal line with a vertical dimension of 1'-1" (19"). To the right of the pier, there are two dashed rectangular voids labeled "12"Ø VOIDS". An "ELASTOMERIC BEARING PAD" is shown at the base of the pier. A "BACKER ROD" is indicated as a horizontal bar within the pier's base. Labels include "SEE 'BRIDGE APPROACH SLAB' SHEET FOR DETAILS" pointing to the left, "2 LAYERS OF 30 LB. ROOFING FELT TO PREVENT BOND." pointing to the center, "1½"Ø BACKER ROD" pointing to the bottom left, and "& C BEARING & #6 DOWELS" pointing to the bottom right. A "2½"Ø DOWEL HOLE" is shown near the top right. The label "SEE 'END BENT' SHEETS FOR DETAILS" is located at the bottom right.

This technical diagram illustrates a bridge pier foundation system. At the top, two vertical columns labeled "FIXED END" represent the pier's connection to the superstructure. A horizontal distance of $1\frac{1}{2}$ " JT. is indicated between these columns. Below the piers, a thick horizontal layer represents the "ASPHALT WEARING SURFACE". The foundation itself consists of a central vertical column surrounded by "GROUT". The base of the pier is supported by two "ELASTOMERIC BEARING PAD"s. Between these pads, there are two vertical columns labeled "12" Ø VOIDS". A "2" Ø BACKER ROD" is positioned horizontally between the bearing pads. At the bottom, a label indicates "& C BEARING & #6 DOWELS". To the right, a vertical dimension shows a height of 9" above the bearing pads, followed by a gap of 1'-6", and then another 9" height. On the far right, a note points to "SEE 'BENT' SHEETS".

SECTION AT END BENT

SECTION AT BENT

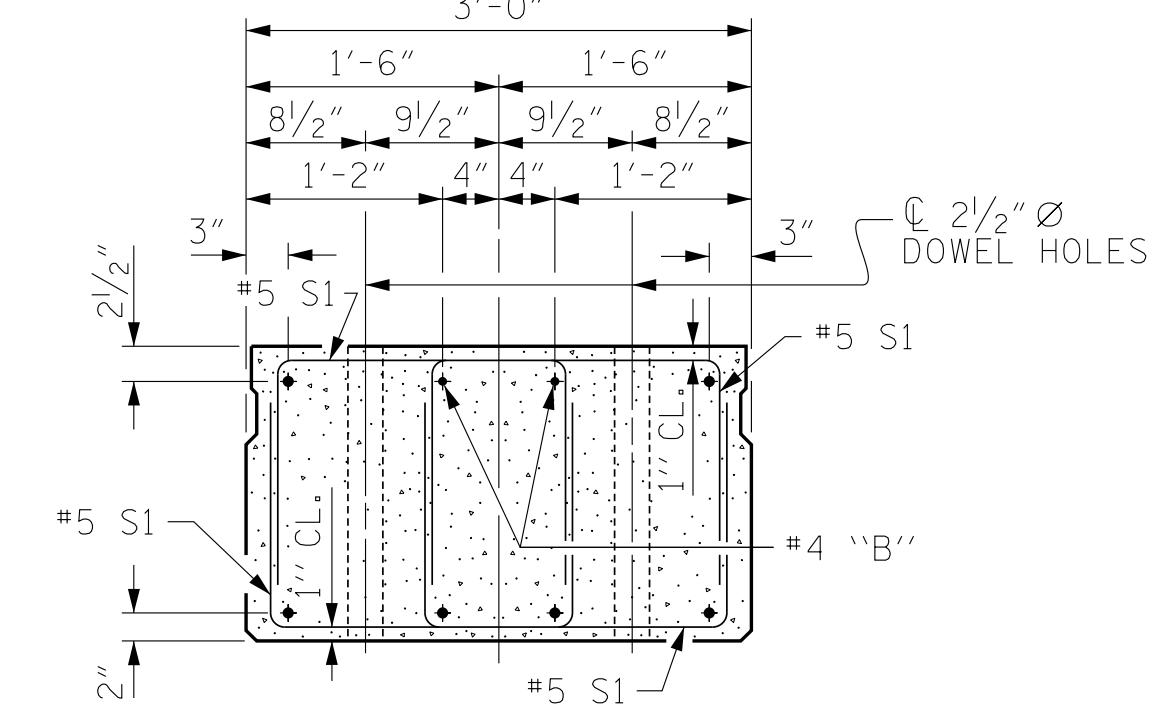
**INTERIOR SLAB SECTION
FOR 40' UNIT (SPAN A)
(TYPE II & IV)**

(13 STRANDS REQUIRED)

The figure is a technical drawing of an interior slab section for a 55' unit (Span B). The slab has a total width of 3'-0" and a thickness of 10 1/2". It features two large circular holes with a diameter of 12". Reinforcement is shown as #4 bars labeled "#4 S2". Spacing for stirrups is indicated as 2 SPA. @ 2" CTS. The slab is supported by columns at 1'-6" intervals. Vertical voids are located at 3" from the top and bottom edges, and horizontal voids are located at 10", 1'-4", and 11" from the left edge. The right edge is labeled "3" Ø VOIDS". The drawing also shows a 2" gap at the bottom right corner.

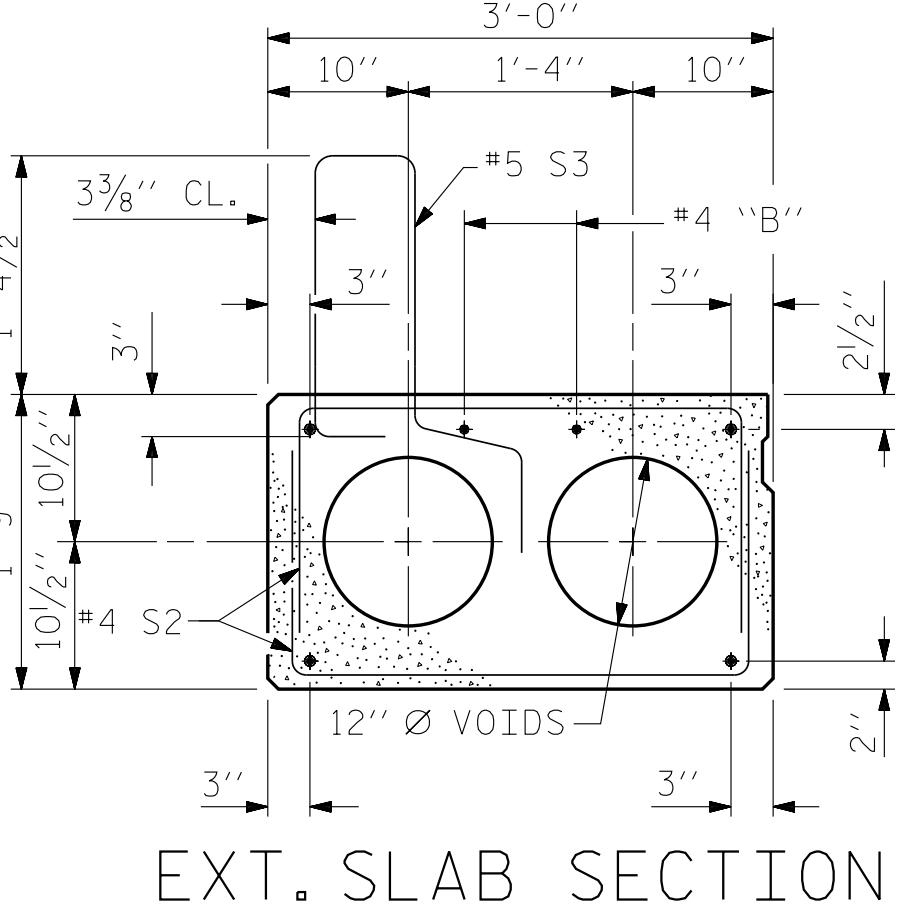
INTERIOR SLAB SECTION
FOR 30' UNIT (SPAN C)
(TYPE II & IV)
(9 STRANDS REQUIRED)

0.6'' Ø LOW RELAXATION STRAND LAYOUT



END ELEVATION

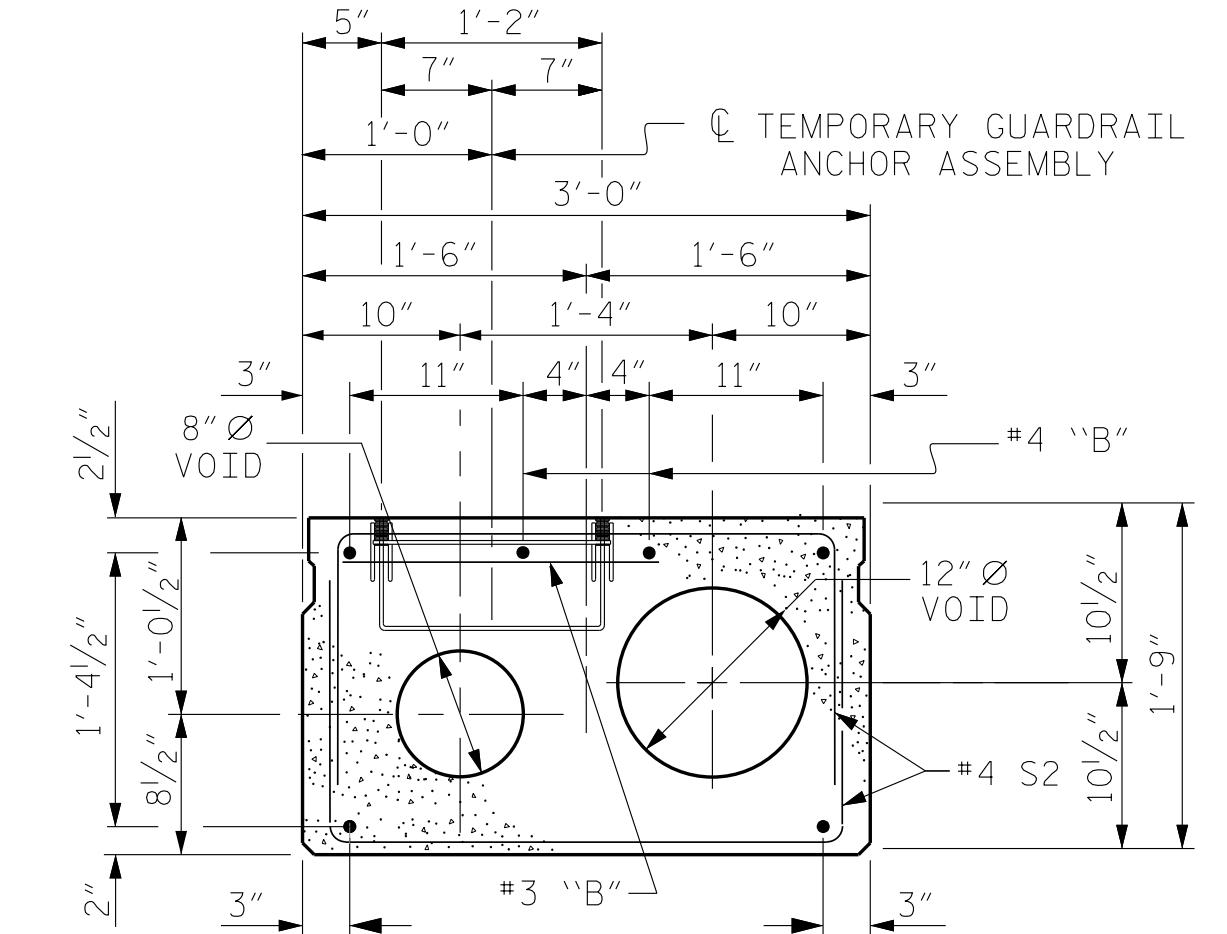
SHOWING PLACEMENT OF DOUBLE STIRRUPS
AND LOCATION OF DOWEL HOLES.
(STRAND LAYOUT NOT SHOWN.)
INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB
UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



EXT. SLAB SECTION

(TYPE I & V)

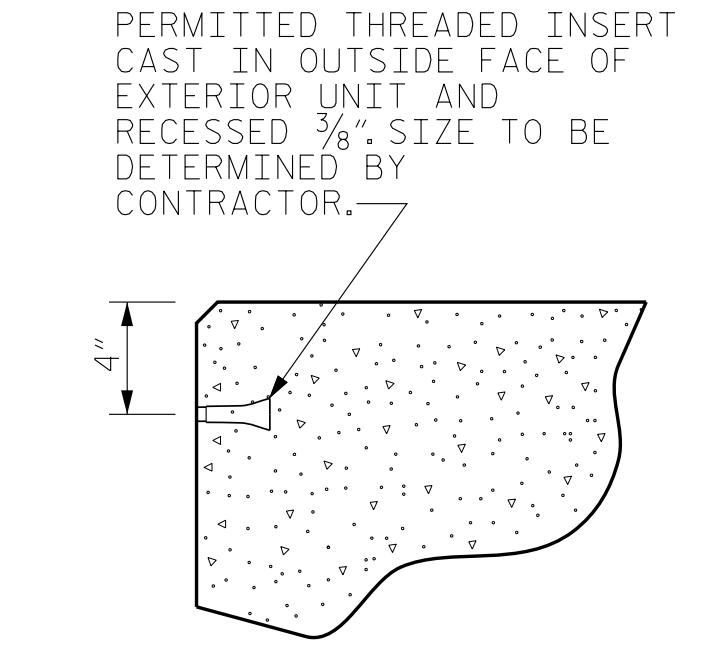
(FOR PRESTRESSED STRAND LAYOUT, SEE
INTERIOR SLAB SECTION.)



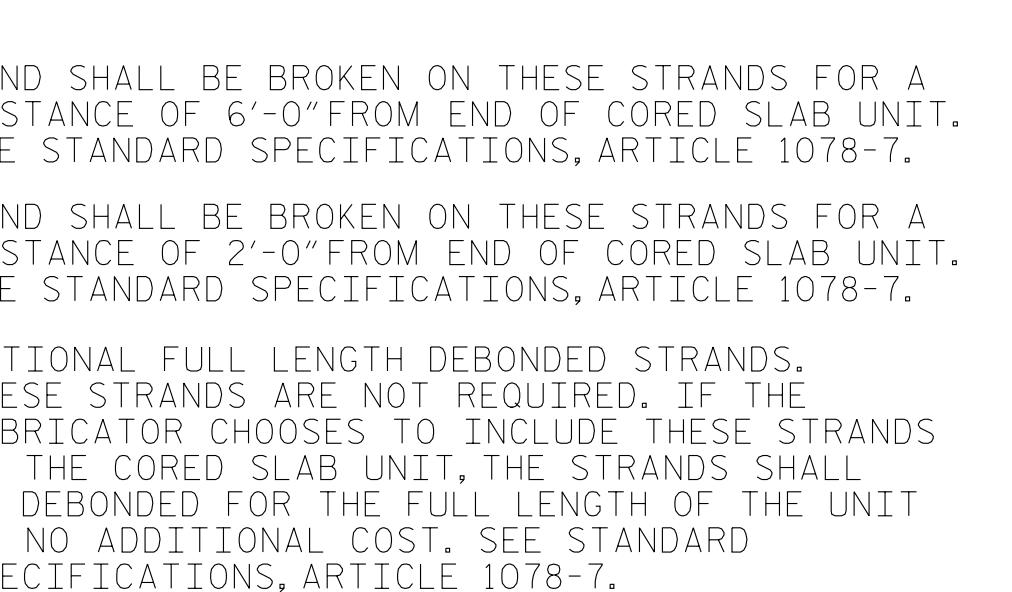
INTERIOR SLAB SECTION (TYPE TTT)

FOR PRESTRESSED STRAND LAYOUT, SEE
"INTERIOR SLAB SECTION - TYPE II & IV

FOR TEMPORARY GUARDRAIL ANCHOR ASSEMBLY LOCATION,
SEE SECTION OF ANCHOR ASSEMBLY LOCATION
ON "ANCHORAGE DETAILS FOR TEMPORARY
GUARDRAIL ANCHOR ASSEMBLY FOR
TYPE TTT CORED SLAB UNIT" SHEET



THREADED INSERT DETAIL

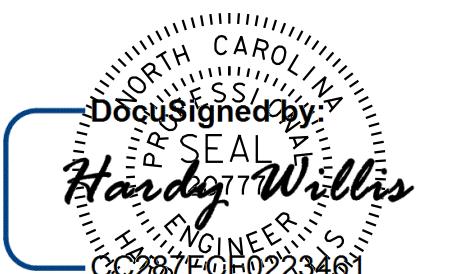


DEBONDING LEGEND

PROJECT NO. 17BP.14.R.141

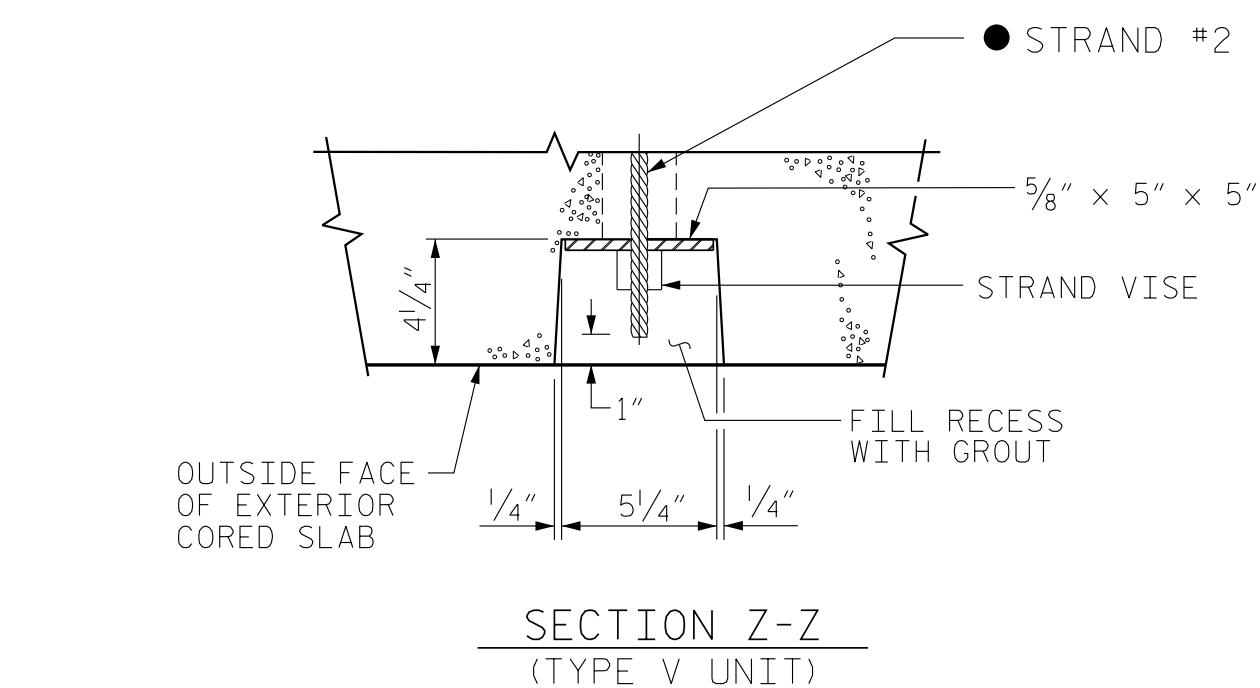
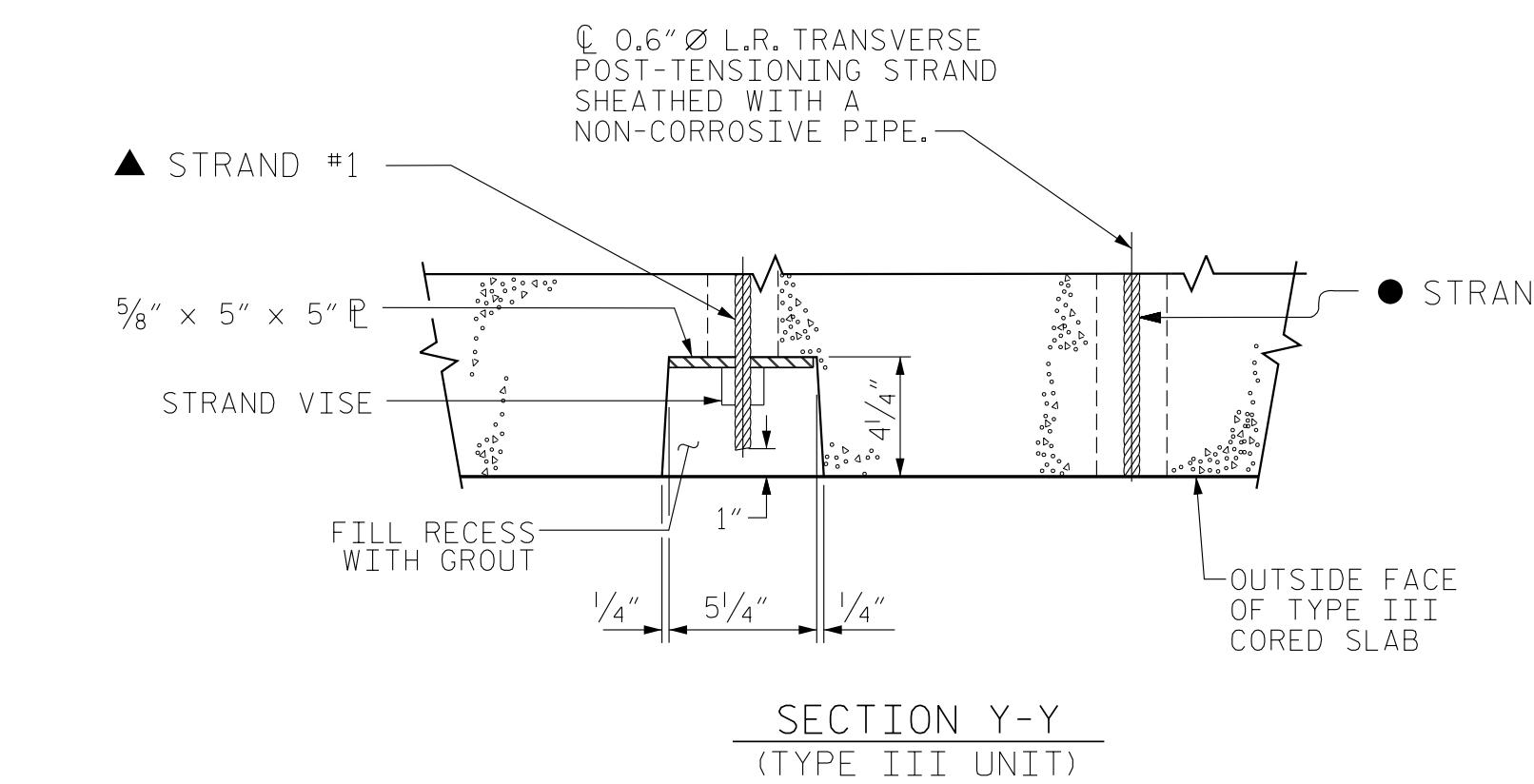
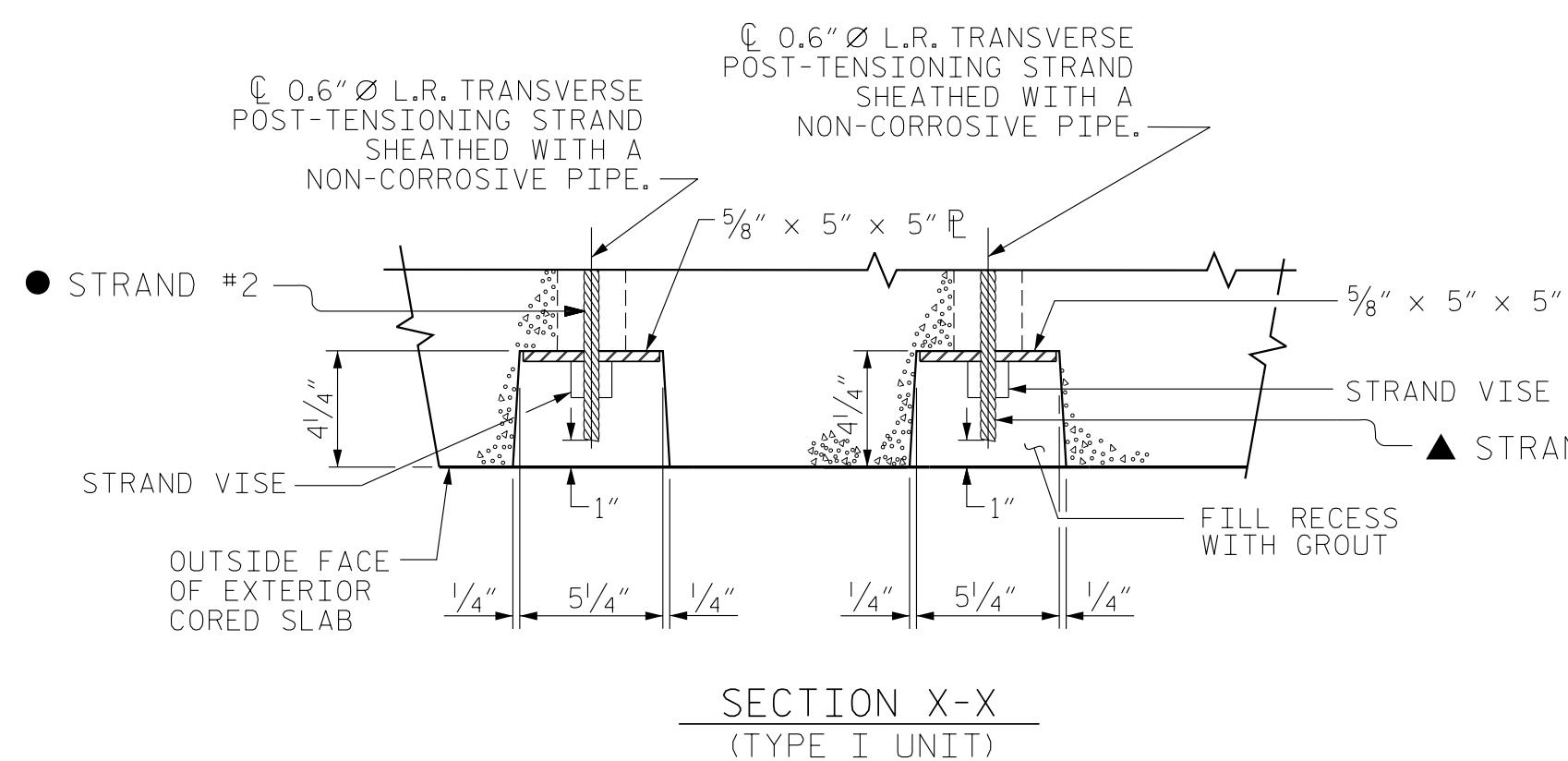
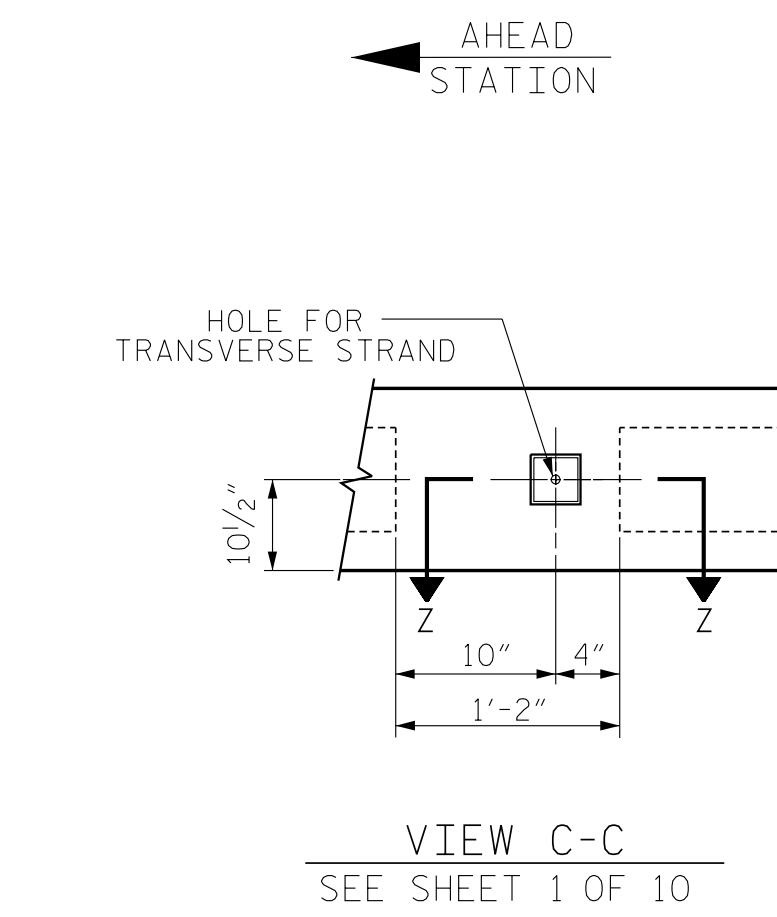
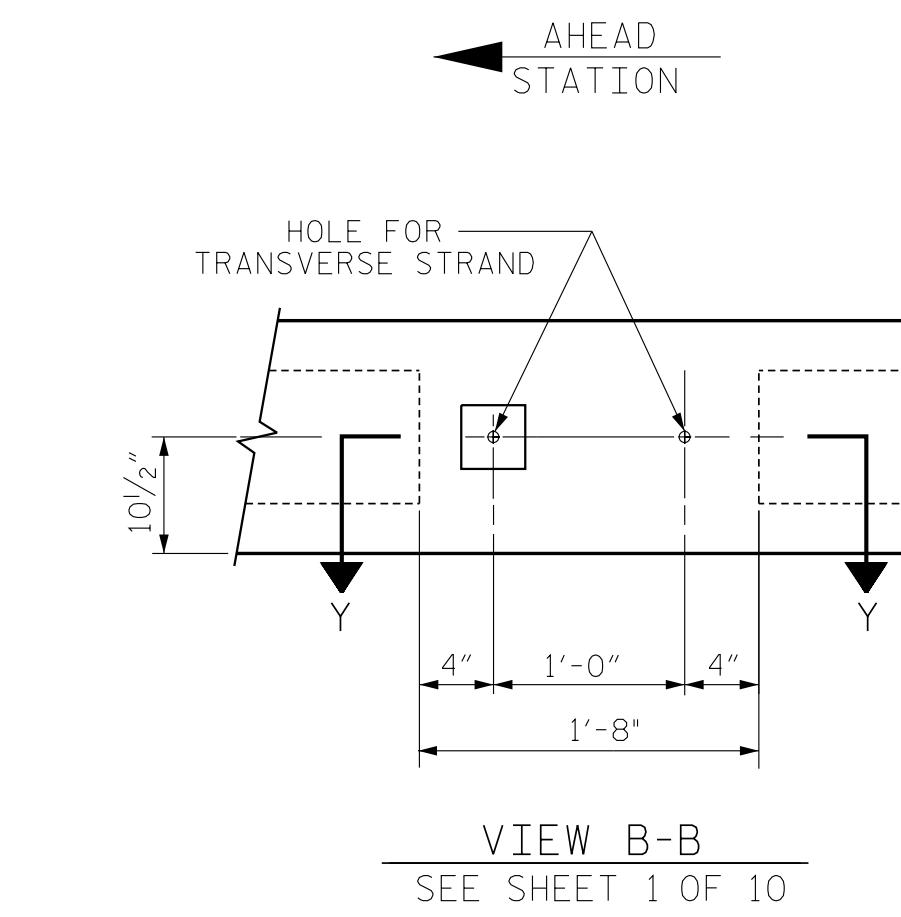
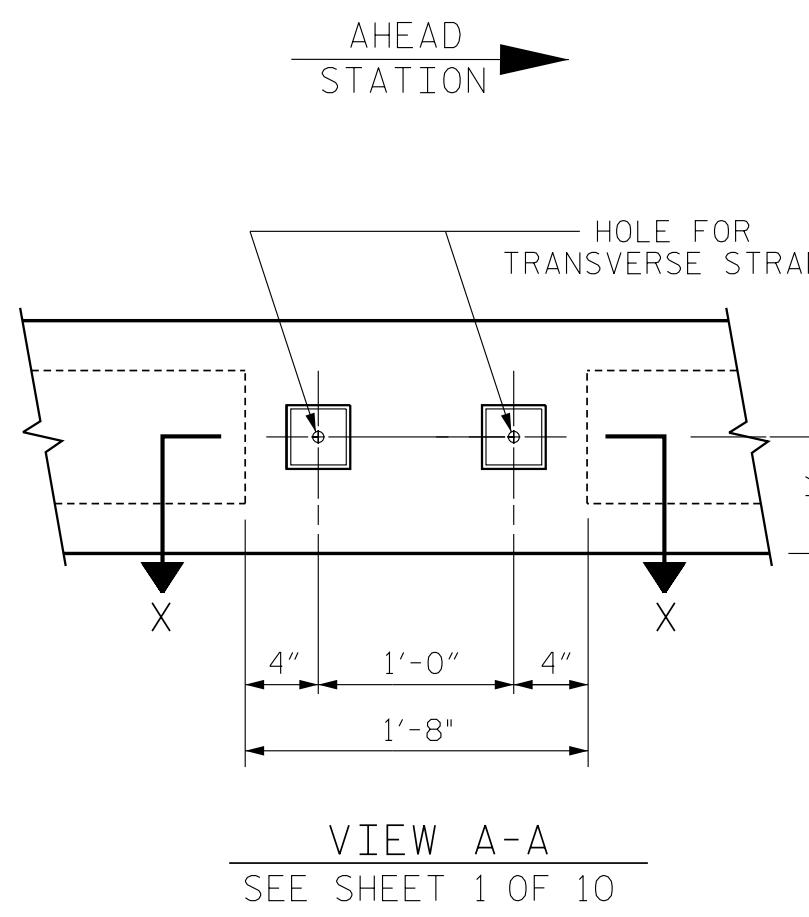
POLK COUNTY
STATION- 14+60 66 -I -

SHEET 1 OF 10



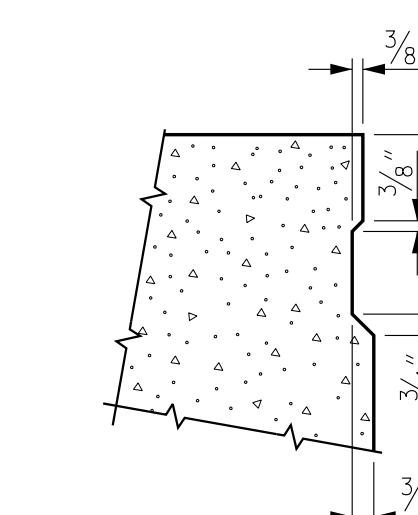
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SIGNATURES COMPLETED

REVISIONS					SHEET NO.	
	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
			③			35
			4			



▲ STRAND #1 GOES THROUGH 5 CORED SLAB UNITS (TO BE TENSIONED DURING STAGE I CONSTRUCTION).
● STRAND #2 GOES THROUGH ALL 10 CORED SLAB UNITS (TO BE TENSIONED DURING STAGE II CONSTRUCTION).

GROUTED RECESS AT END OF POST-TENSIONED STRAND



SHEAR KEY DETAIL

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Designed by
Hardy Willis
PE, NC
FEBRUARY 2017
L. W. WILLIS
11/17/2016

V&M
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Consulting Engineers
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North Carolina
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Charlotte, NC
704.357.0488
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DWN. BY: RWW
CHKD. BY: HLW
DES. ECR. OF RECORD: RTS

DATE: 5/15
DATE: 5/15
DATE: 5/15

PROJECT NO. 17BP.14.R.141
POLK COUNTY
STATION: 14+60.66 -L-

SHEET 2 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

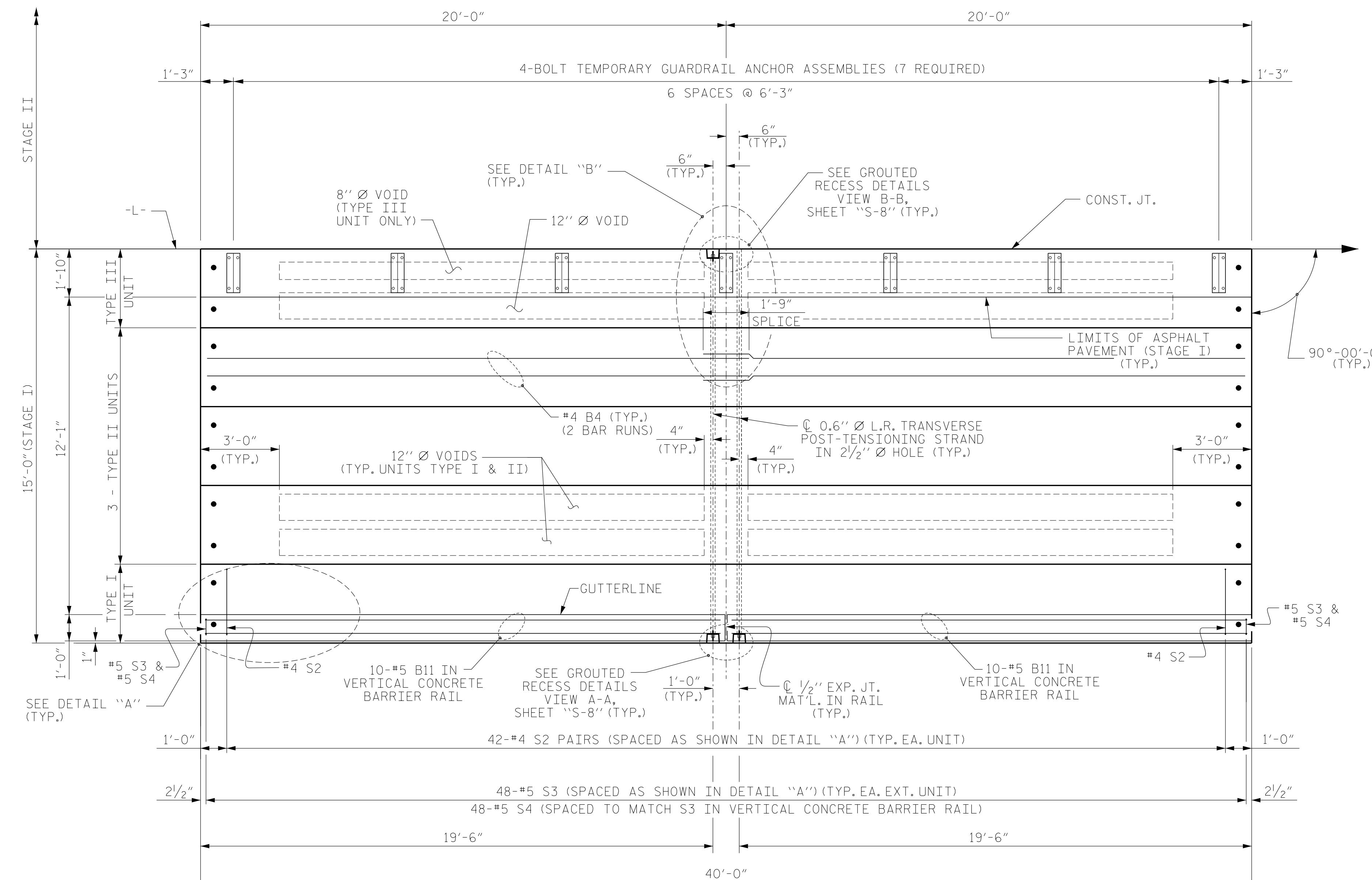
3'-0" X 1'-9"
PRESTRESSED CONCRETE
CORED SLAB UNIT
90° SKEW
SPANS 'A', 'B' & 'C'

REVISIONS

SHEET NO.
S-8

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

TOTAL SHEETS
35



PLAN OF UNIT - SPAN "A"

(STAGE I)

This technical drawing shows a cross-section of a concrete wall. The wall has a thickness of 1'-0". At the top, there are seven pairs of S2 bars spaced at 9" CTS. On the left side, there are two pairs of #5 bars labeled S1, with a center-to-center distance of 1" CL. On the right side, there are five pairs of #5 bars labeled S3, with a center-to-center distance of 1'-0" CTS. A dimension of 2 1/2" is shown at the bottom left. At the top left, a dimension of 6" is shown from the vertical axis to the center of the dowel holes. The drawing also indicates 2 1/2" Ø DOWEL HOLES. On the right side, there are two large 12" Ø VOIDS indicated by dashed lines. The bottom of the wall has a thickness of 3' 0", with a 9 1/2" dimension shown.

DETAIL "A"

Technical diagram illustrating the foundation and pier structure of a bridge. The top horizontal line represents the pier, with a total width of $20'-0''$ indicated by arrows at both ends. A vertical line extends downwards from the center of the pier. At the base, there are two rectangular voids: one on the left labeled "8\"/> VOIDS" and one on the right labeled "12\"/> VOIDS". A central vertical column supports the pier, featuring a U-shaped reinforcement detail at its base. To the right of this detail, a label indicates " $\frac{1}{2}''$ EXP. JT. MAT'L. IN RAIL". On the far right, another label specifies " $0.6''$ Ø L.R. TRANS POST-TENSIONING S IN $2\frac{1}{2}''$ Ø HOLE". Vertical dimensions of $6''$ are shown on either side of the central support column.

PROJECT NO. 17BP.14.R.141

POLK COUNTY

STATION: 14+60.66 -L-

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SIGNATURES COMPLETED



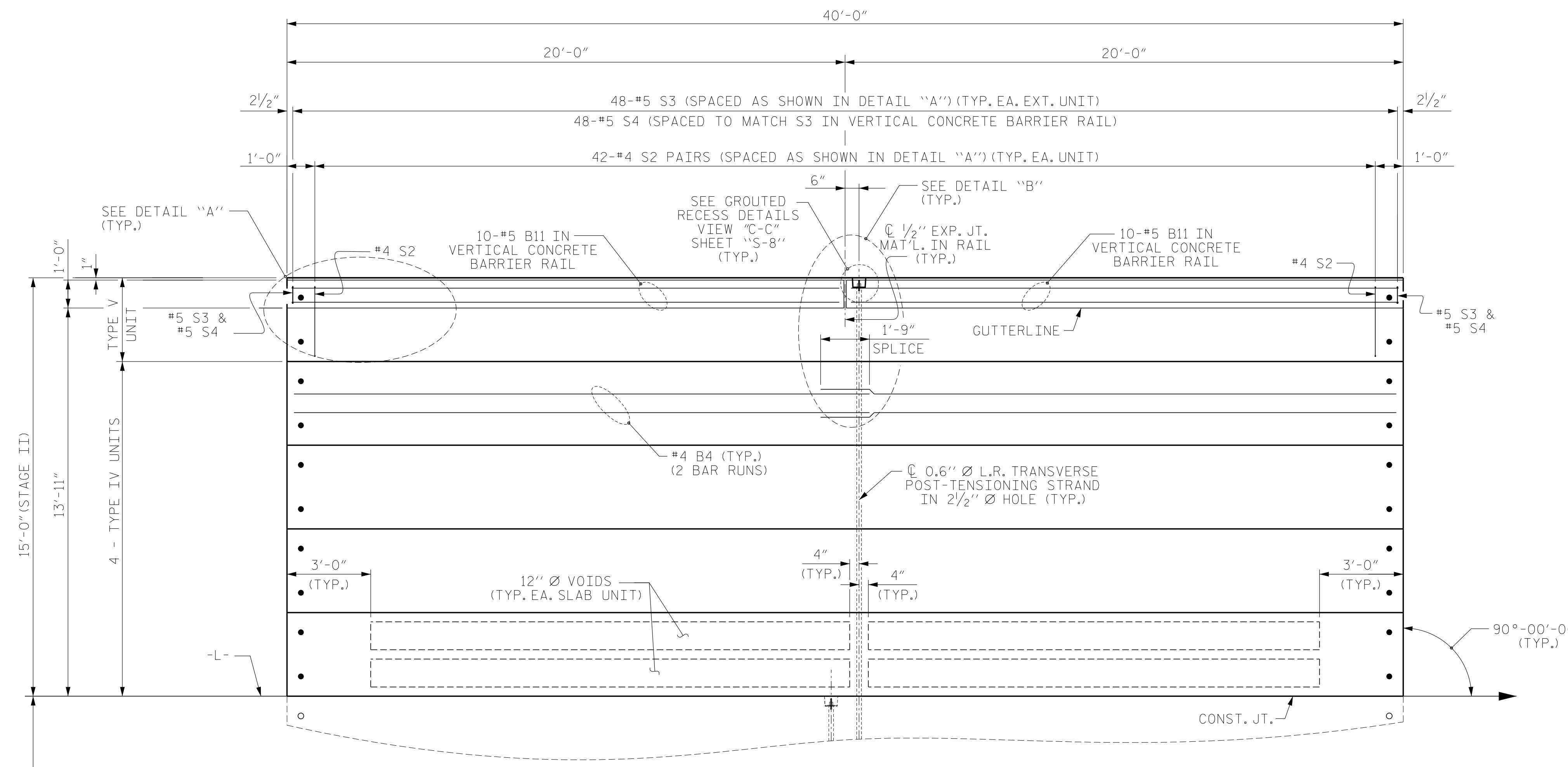
SHEET 3 OF 10

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION
RALEIGH

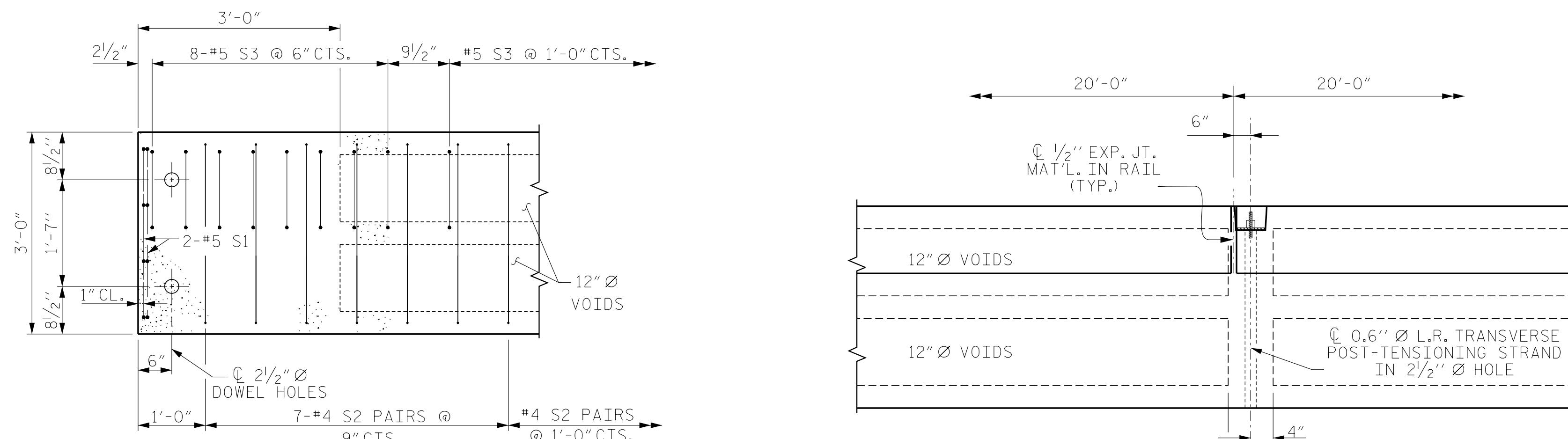
PLAN OF 40' UNIT
27'-10" CLEAR ROADWAY
90° SKEW
SPAN 'A'
(STAGE I)

REVISIONS						SHEET NO. S-9
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			TOTAL SHEETS 35



PLAN OF UNIT - SPAN "A"

(STAGE



DETAIL

(TYPICAL EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR
UNIT SIMILAR EXCEPT OMIT #5 S3 BAR

DETAIL `E

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PROJECT NO. 17BP.14.R.141

POLK COUNTY

STATION: 14+60.66 -L-

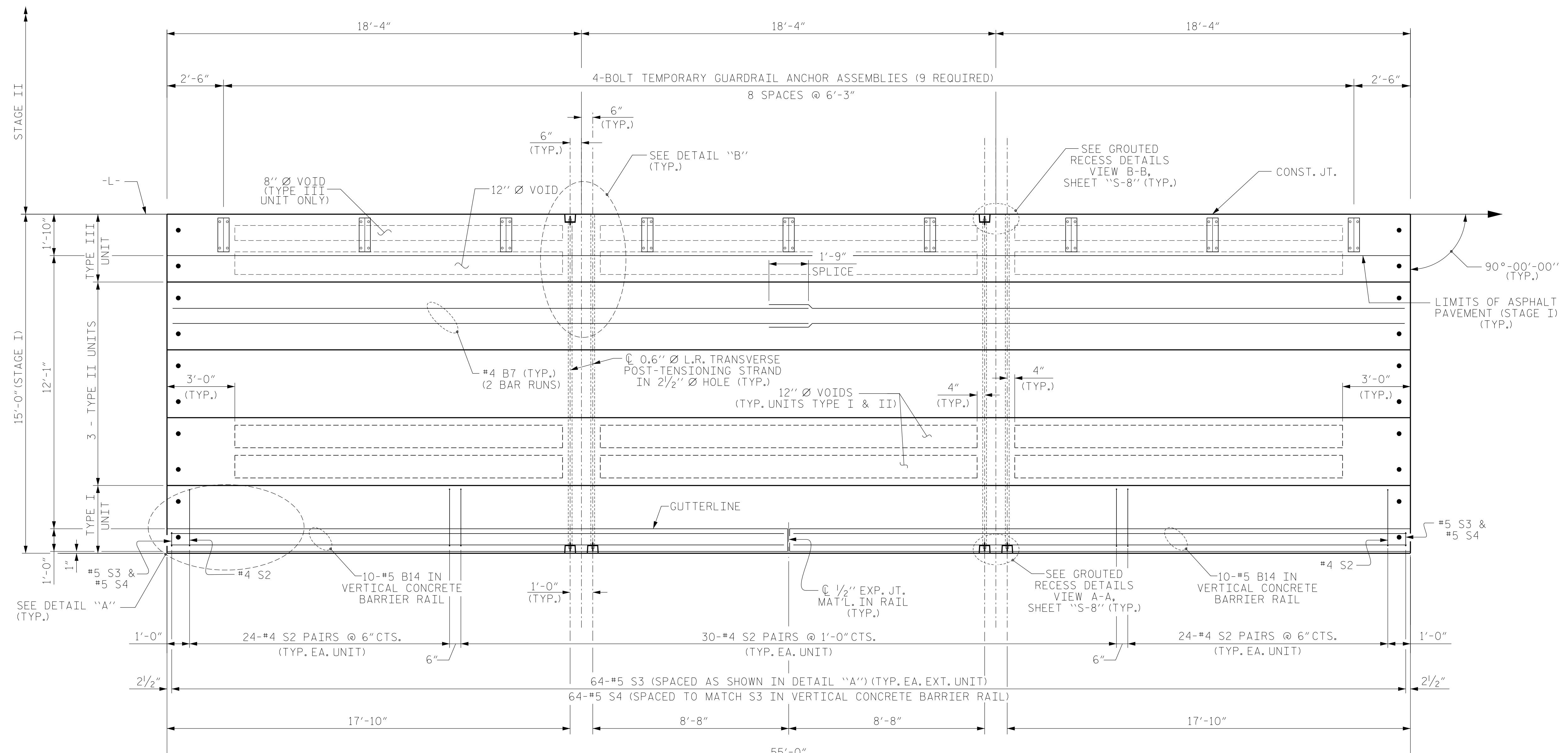
SHEET 4 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
**PLAN OF 40' UNIT
27'-10" CLEAR ROADWAY
90° SKEW
SPAN 'A'
(STAGE II)**



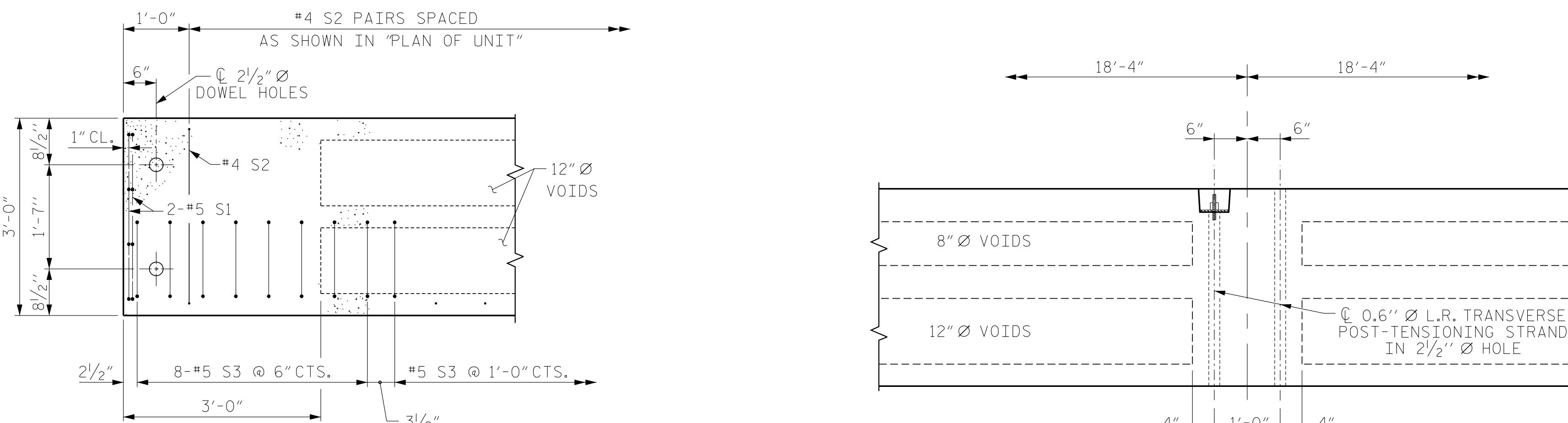
11/17/2016

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



PLAN OF UNIT - SPAN "B"

(STAGE I)



PROJECT NO. 17BP.14.R.141

POLK COUNTY

STATION: 14+60.66 -L-

SHEET 5 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
PLAN OF 55' UNIT
27'-10" CLEAR ROADWAY
90° SKEW
SPAN 'B'
(STAGE I)

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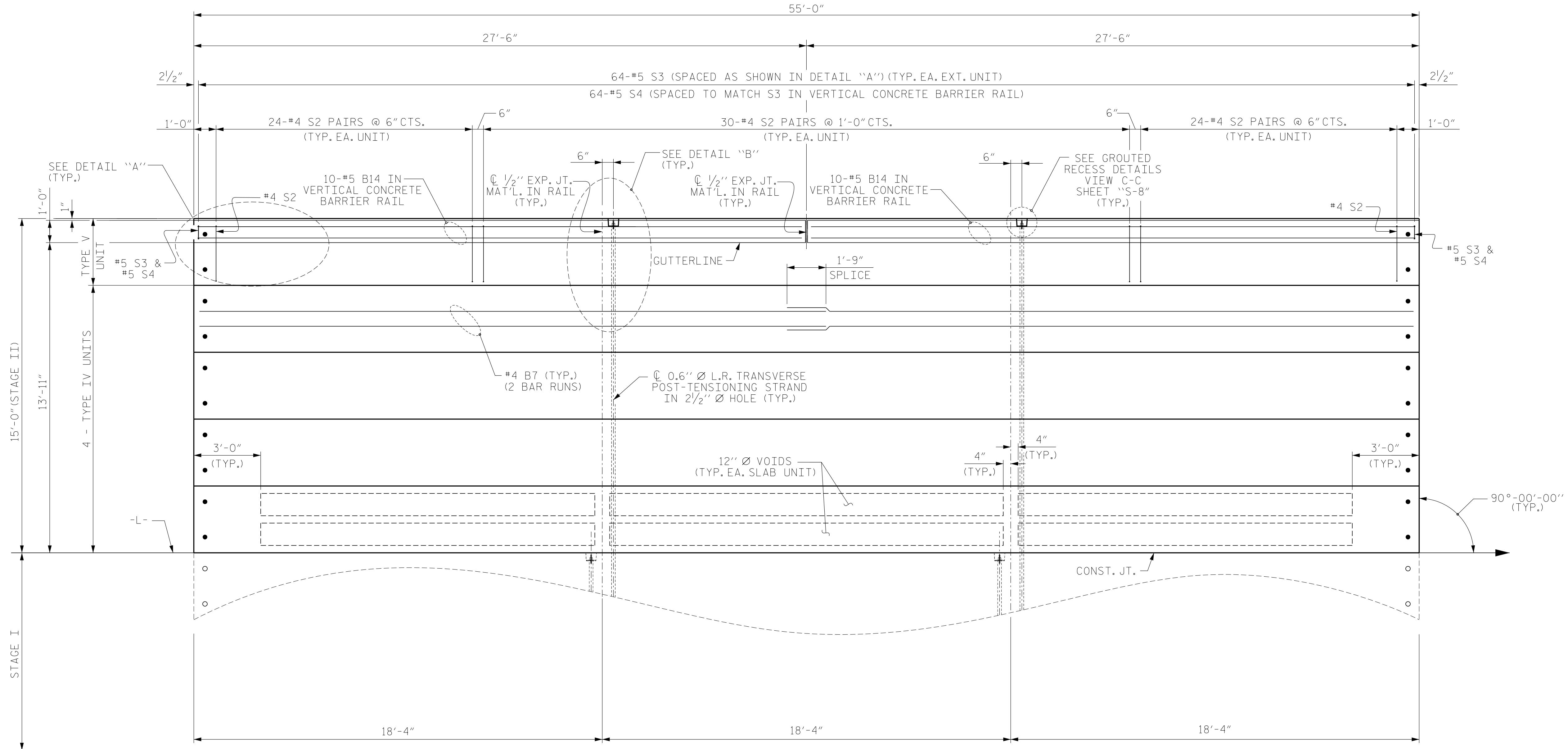


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2			4			TOTAL SHEETS 35

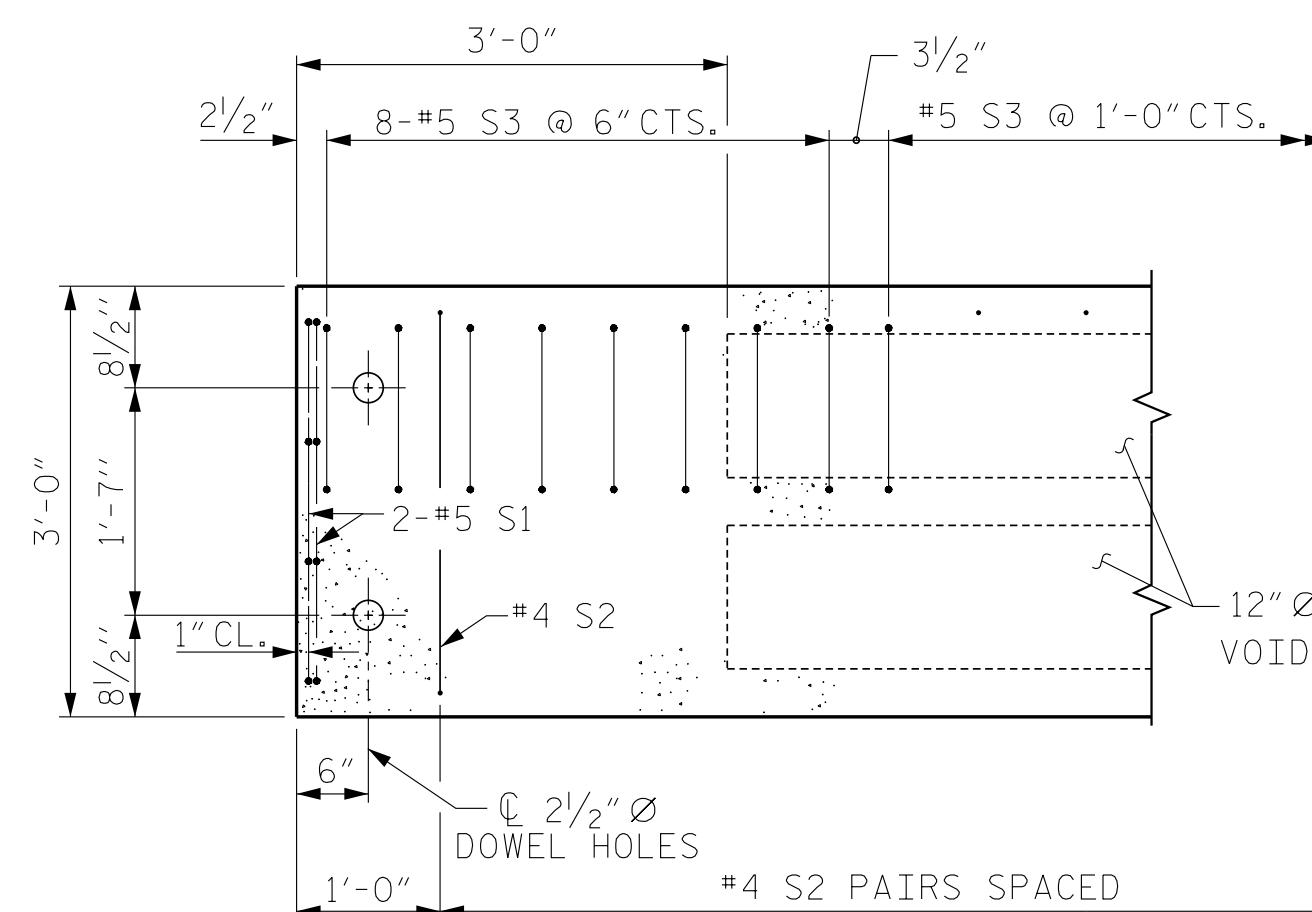
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CHECKED BY: HLW DATE: 5/15
DESIGN ENG. OF RECORD: RTS DATE: 5/15

11/17/2016



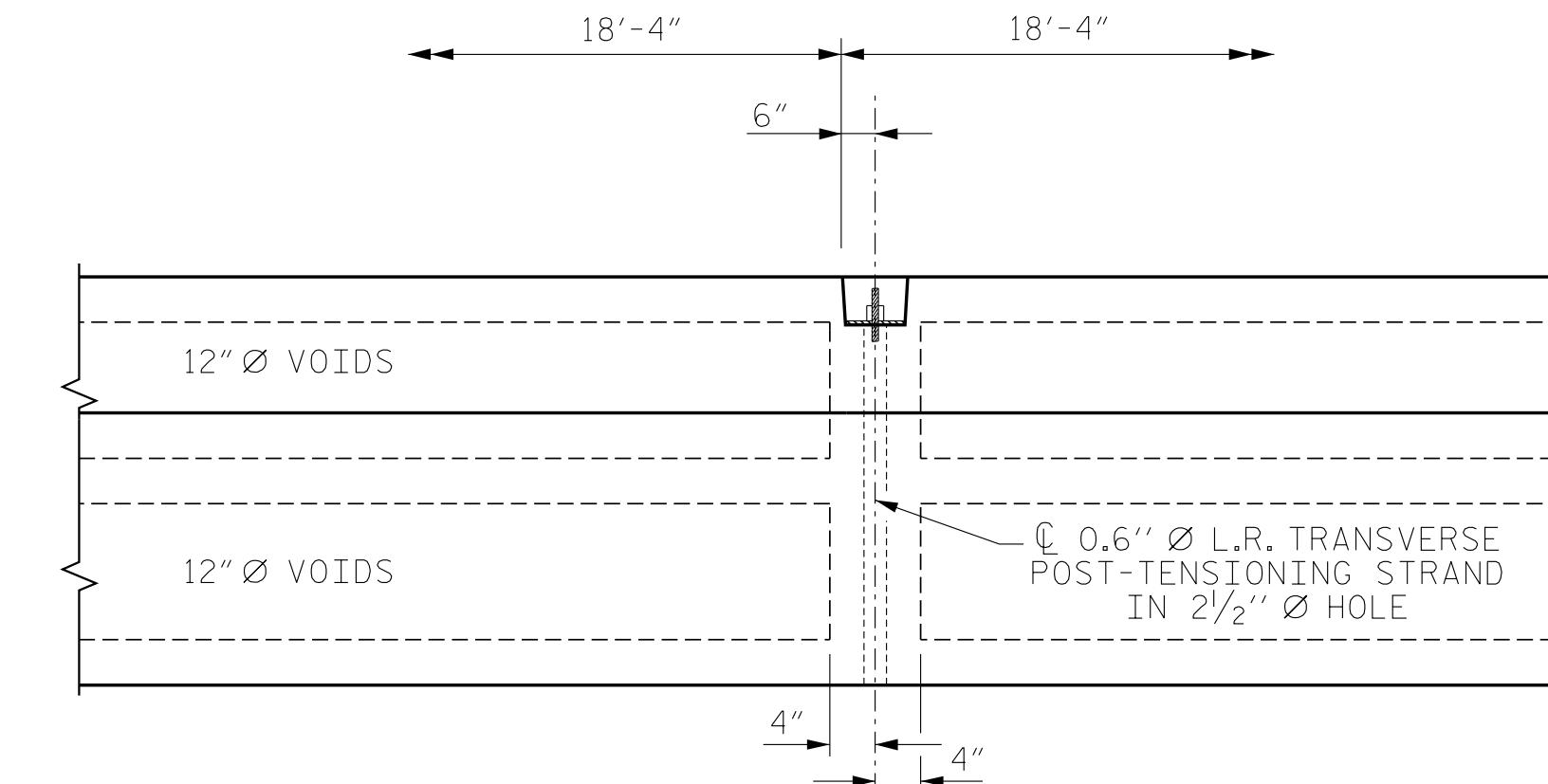
PLAN OF UNIT - SPAN "B"

(STAGE



DETAIL "A

(TYPICAL EACH END OF UNIT
NOTE: EXTERIOR UNIT SHOWN - IN
UNIT SIMILAR EXCEPT OMIT #5 S



DETAIL

PROJECT NO. 17BP.14.R.141

POLK COUNTY

STATION: 14+60.66 -L-

SHEET 6 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

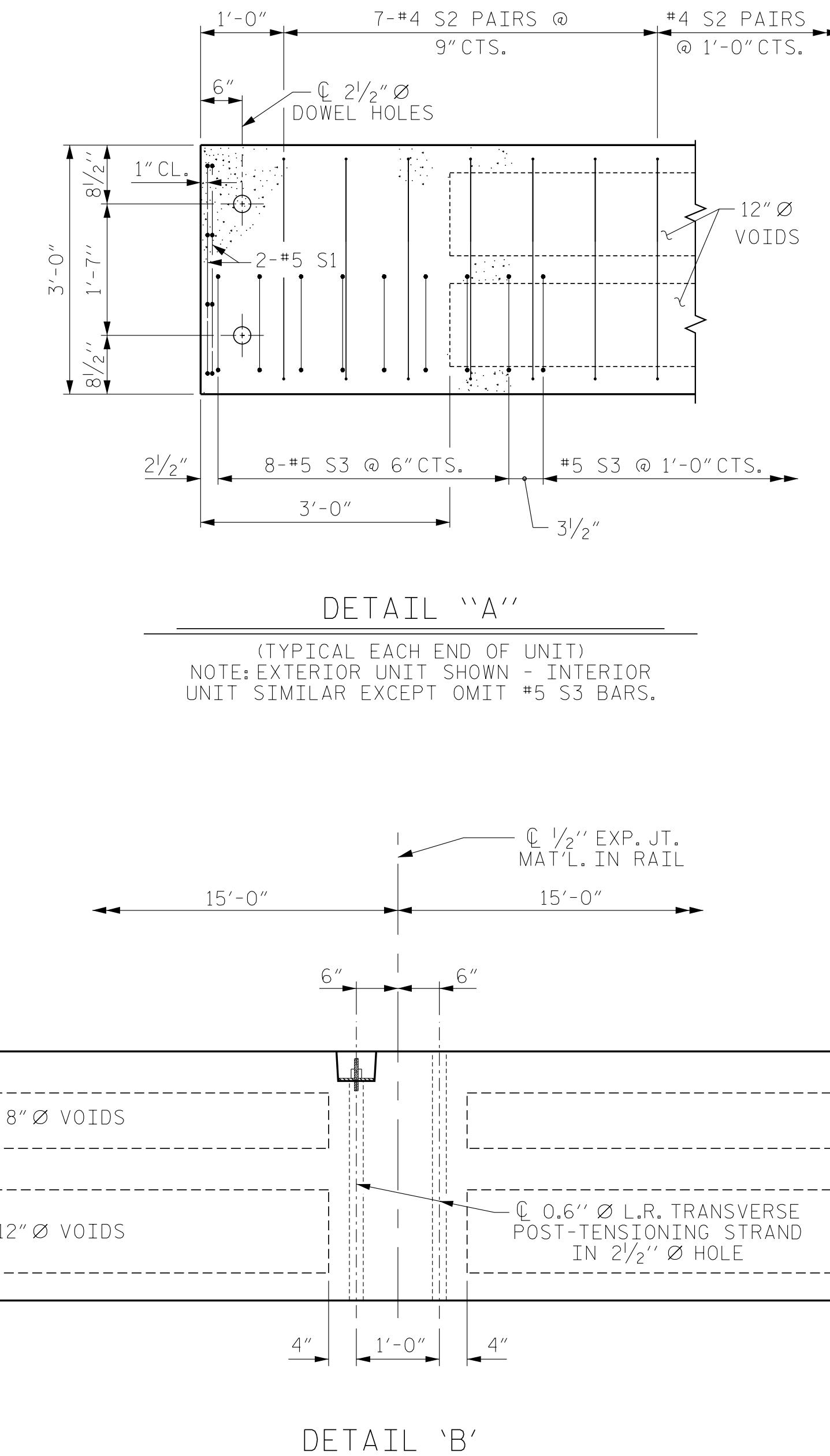
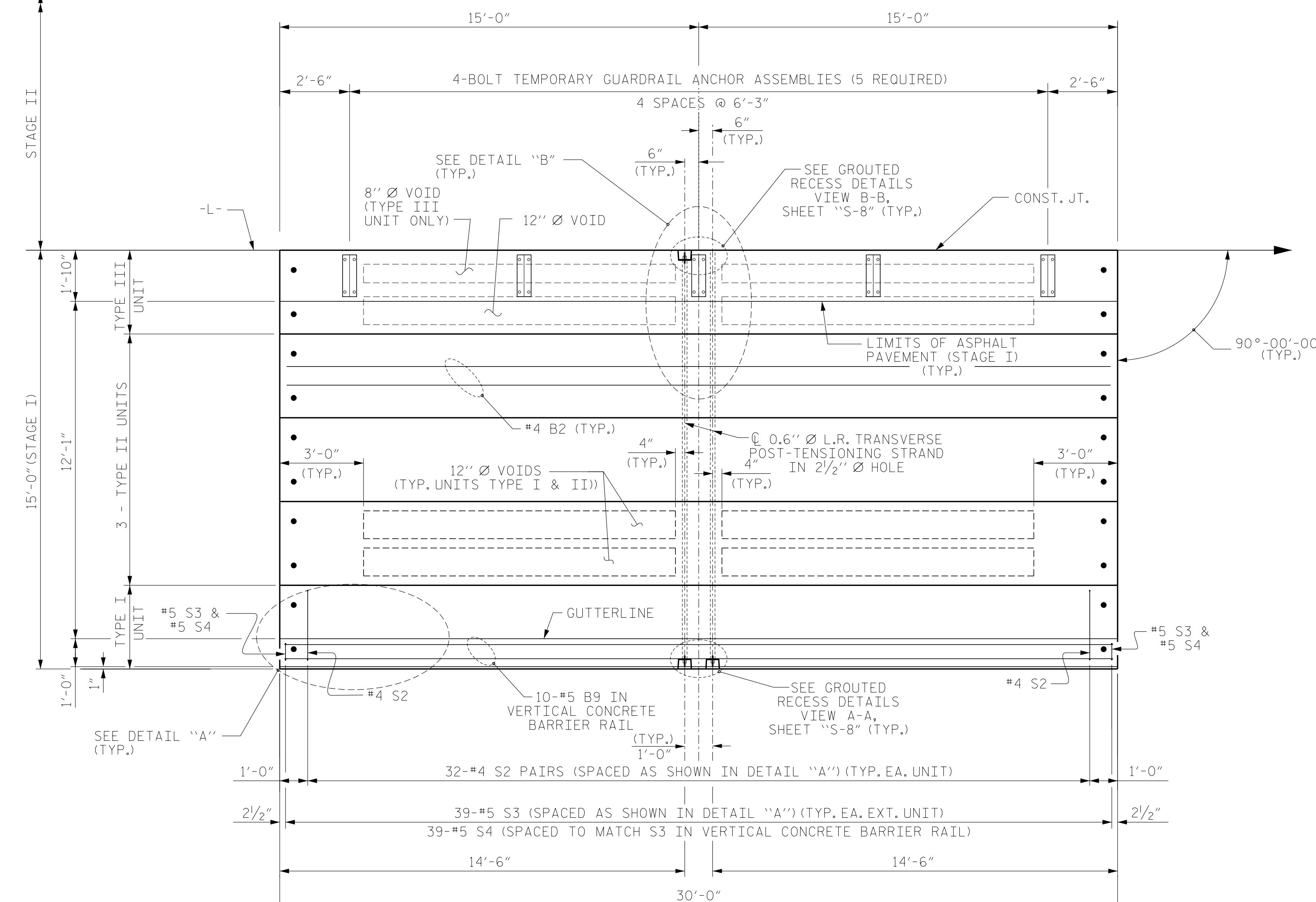
RALEIGH

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SIGNATURES COMPLETED

Docusigned by:
PR SEAL AP
Hardy Willis 2017
HARDY WILLIS
ENGINEER
CC2875 CF0223461
L. W. Willis

11/17/2016

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			35



PLAN OF UNIT - SPAN "C"
(STAGE I)

PROJECT NO. 17BP.14.R.141
POLK COUNTY
STATION: 14+60.66 -L-

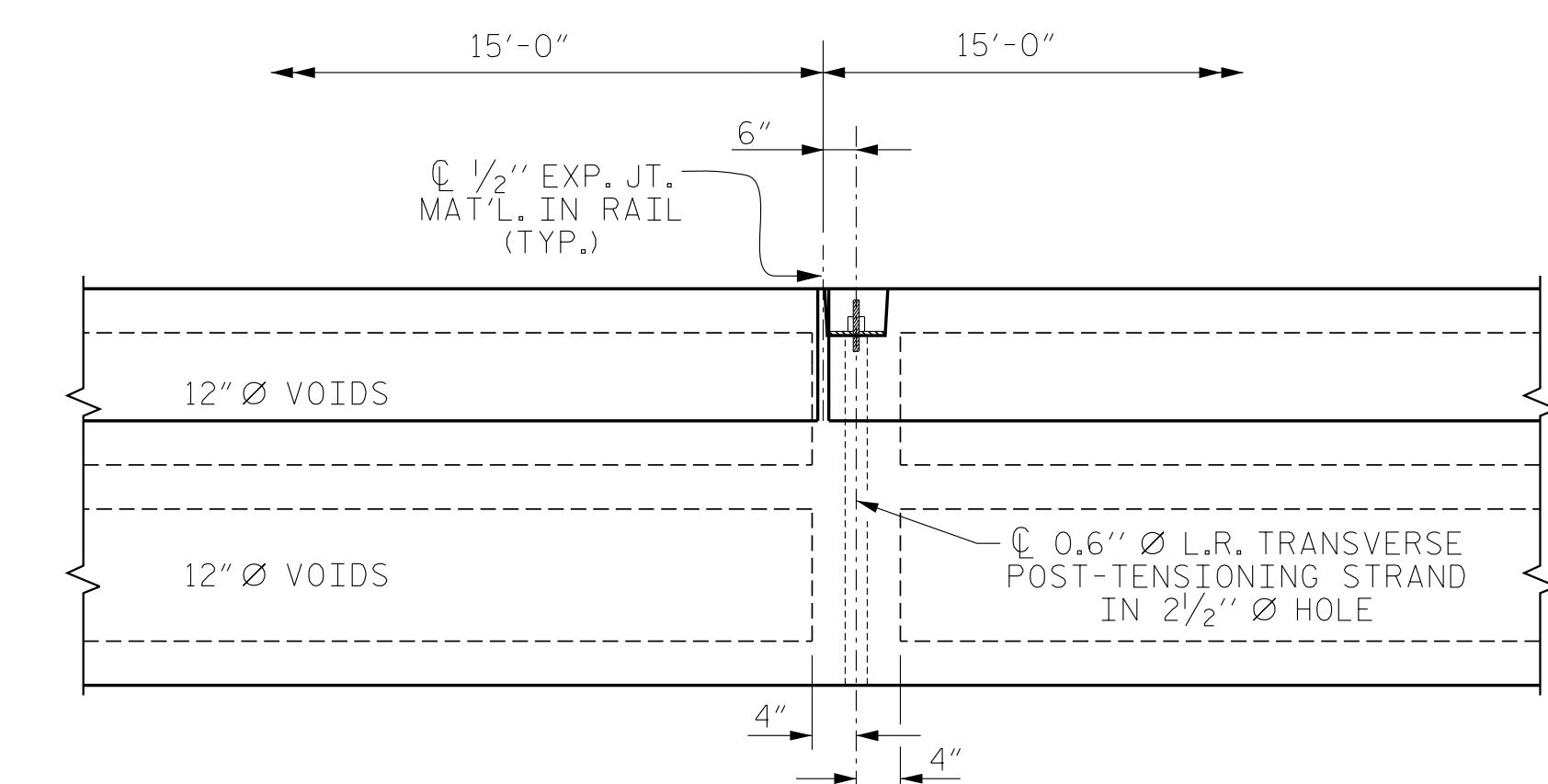
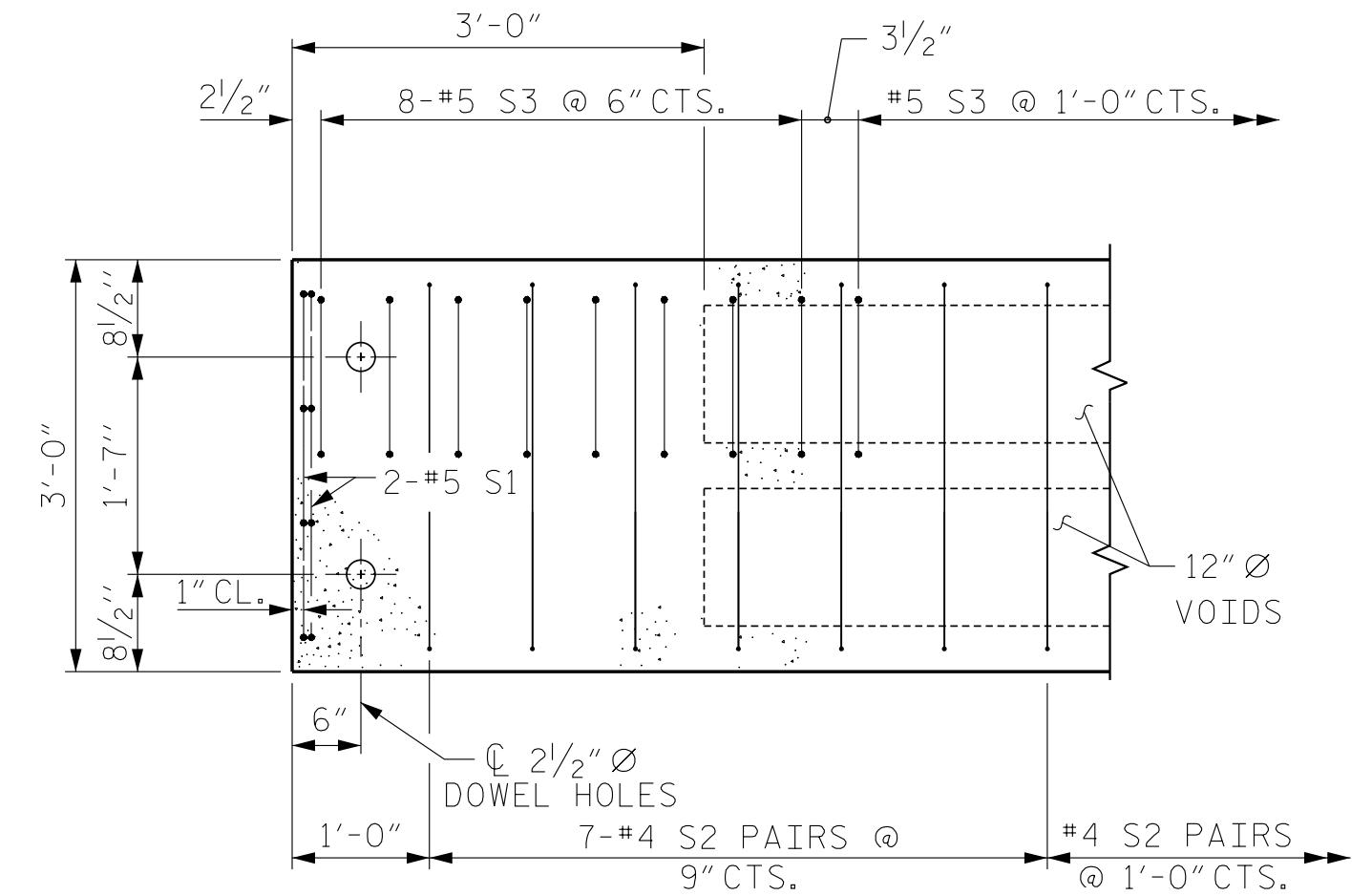
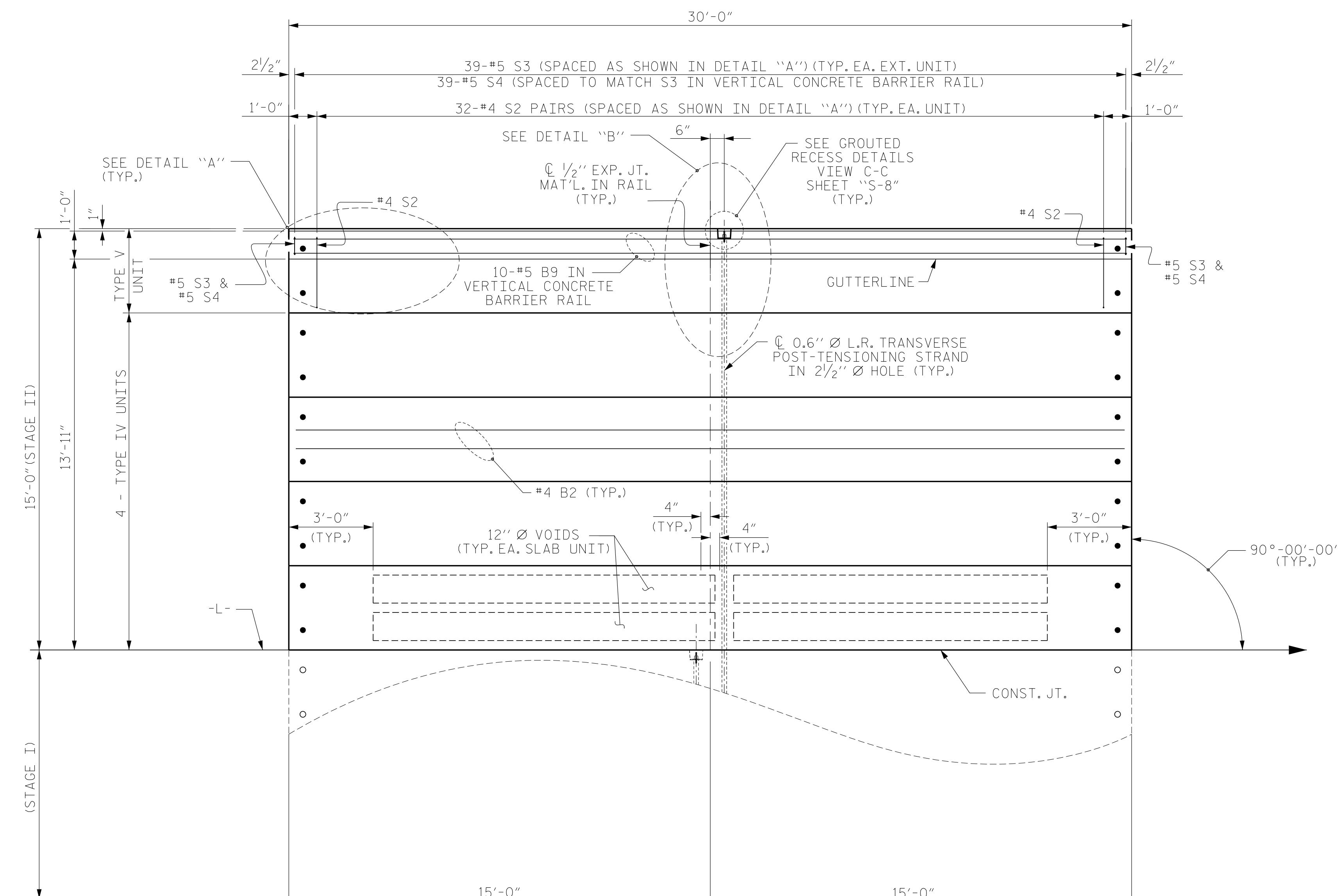
SHEET 7 OF 10

DOCUMENT NOT CONSIDERED
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Documented by:
Hardy Willis
CIVIL ENGINEER
LIC #002961
11/17/2016

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
PLAN OF 30' UNIT
27'-10" CLEAR ROADWAY
90° SKEW
SPAN 'C'
(STAGE I)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS 35



PROJECT NO. 17BP.14.R.141

POLK COUNTY

STATION: 14+60.66 -L-

SHEET 8 OF 10

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

PLAN OF 30' UNIT

27'-10" CLEAR ROADWAY

90° SKEW

SPAN 'C'

(STAGE II)

DOCUMENT NOT CONSIDERED
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SIGNATURES COMPLETED

REVISIONS

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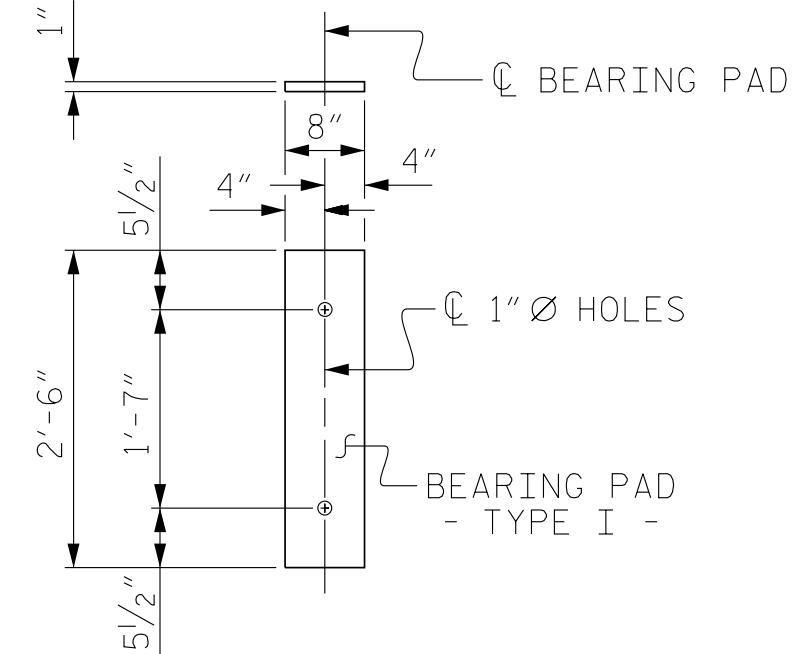
SHEET NO.

S-14

TOTAL SHEETS

35

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DESIGN ENG. OF RECORD:	RTS	DATE:	5/15



FIXED END
(TYPE I - 60 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

DEAD LOAD DEFLECTION AND CAMBER

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

** INCLUDES FUTURE WEARING SURFACE

DEAD LOAD DEFLECTION AND CAMBER

	3'-0" x 1'-9"
55' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1 5/8" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	3/8" ↓
FINAL CAMBER	1 1/4" ↑

** INCLUDES FUTURE WEARING SURFACE

DEAD LOAD DEFLECTION AND CAMBER

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

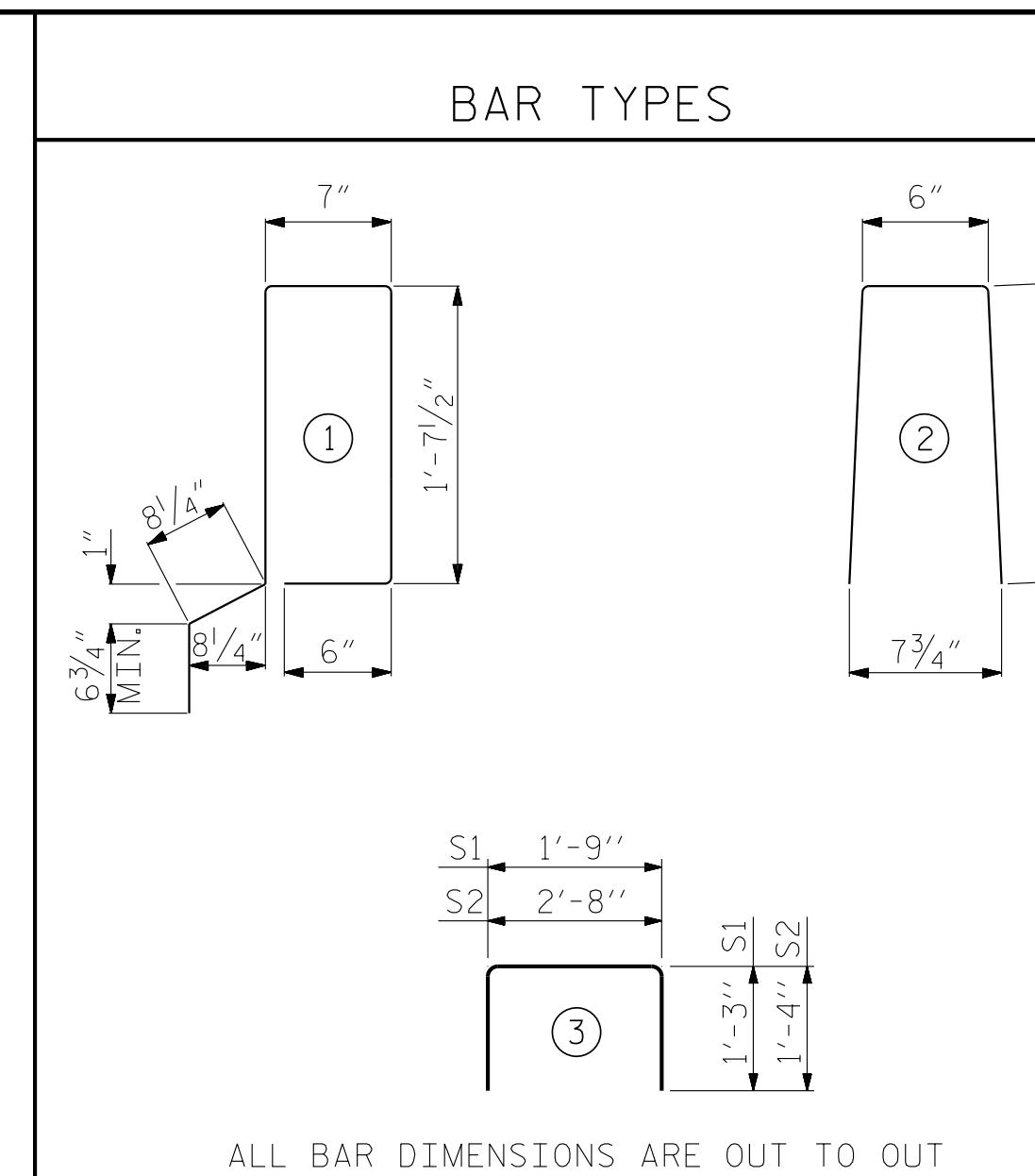
** INCLUDES FUTURE WEARING SURFACE

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL (SPAN A)						
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.		80.25	

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL (SPAN B)						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
			55' UNIT			
*B14	40	40	#5	STR	27'-1"	1130
*S4	128	128	#5	2	7'-2"	957
*EPOXY COATED REINFORCING STEEL			LBS.		2087	
CLASS AA CONCRETE			CU.YDS.		14.1	
TOTAL VERTICAL CONCRETE BARRIER RAIL			LN.FT.		110.50	

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL (SPAN C)						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
			30' UNIT			
*B9	20	20	#5	STR	29'-7"	617
*S4	78	78	#5	2	7'-2"	583
*EPOXY COATED REINFORCING STEEL			LBS.		1200	
CLASS AA CONCRETE			CU.YDS.		7.7	
TOTAL VERTICAL CONCRETE BARRIER RAIL			LN.FT.		60.25	

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS	RAIL HEIGHT
	@ MID-SPAN	@ MID-SPAN
40' UNITS (SPAN A)	2"	3'-8"
55' UNITS (SPAN B)	1 1/2"	3'-7 1/2"
30' UNITS (SPAN C)	2 5/8"	3'-8 5/8"



BILL OF MATERIAL FOR ONE 40' CORED SLAB UNIT (SPAN A)

BILL OF MATERIAL FOR ONE 40' CORED SLAB UNIT (SPAN A)							
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B4	4	#4	STR	20'-9"	55	20'-9"	55
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	84	#4	3	5'-4"	299	5'-4"	299
*S3	48	#5	1	5'-7"	280		
REINFORCING STEEL		LBS.		389		389	
*EPOXY COATED REINFORCING STEEL		LBS.		280			
6500 P.S.I. CONCRETE		CU.YDS.		5.8		5.8	
0.6" Ø L.R. STRANDS	No.			13		13	

BILL OF MATERIAL FOR ONE 55' CORED SLAB UNIT (SPAN B)

BILL OF MATERIAL FOR ONE 55' CORED SLAB UNIT (SPAN B)							
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B7	4	#4	STR	28'-3"	75	28'-3"	75
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	156	#4	3	5'-4"	556	5'-4"	556
*S3	64	#5	1	5'-7"	227		
REINFORCING STEEL		LBS.		666		666	
*EPOXY COATED REINFORCING STEEL		LBS.		373			
7000 P.S.I. CONCRETE		CU.YDS.		7.8		7.8	
0.6" Ø L.R. STRANDS	No.			19		19	

BILL OF MATERIAL FOR ONE 30' CORED SLAB UNIT (SPAN C)

BILL OF MATERIAL FOR ONE 30' CORED SLAB UNIT (SPAN C)							
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B2	2	#4	STR	29'-8"	40	29'-8"	40
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	64	#4	3	5'-4"	228	5'-4"	228
*S3	39	#5	1	5'-7"	227		
REINFORCING STEEL		LBS.		303		303	
*EPOXY COATED REINFORCING STEEL		LBS.		227			
5000 P.S.I. CONCRETE		CU.YDS.		4.4		4.4	
0.6" Ø L.R. STRANDS	No.			9		9	

CONCRETE RELEASE STRENGTH

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 70 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 RESTRESSED CONCRETE CORED SLABS.

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

HE 2½" 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
OND 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 IX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT O THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE ROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, OCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

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

RESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT NDS.

PPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

ROOVED CONTRACTION JOINTS, $\frac{1}{2}$ " IN DEPTH, SHALL BE TOOLED IN ALL XPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 25-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL E LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION OINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF ARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO ONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 EET IN LENGTH.

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT
HALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE
STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE
CONCRETE RELEASE STRENGTH" TABLE.

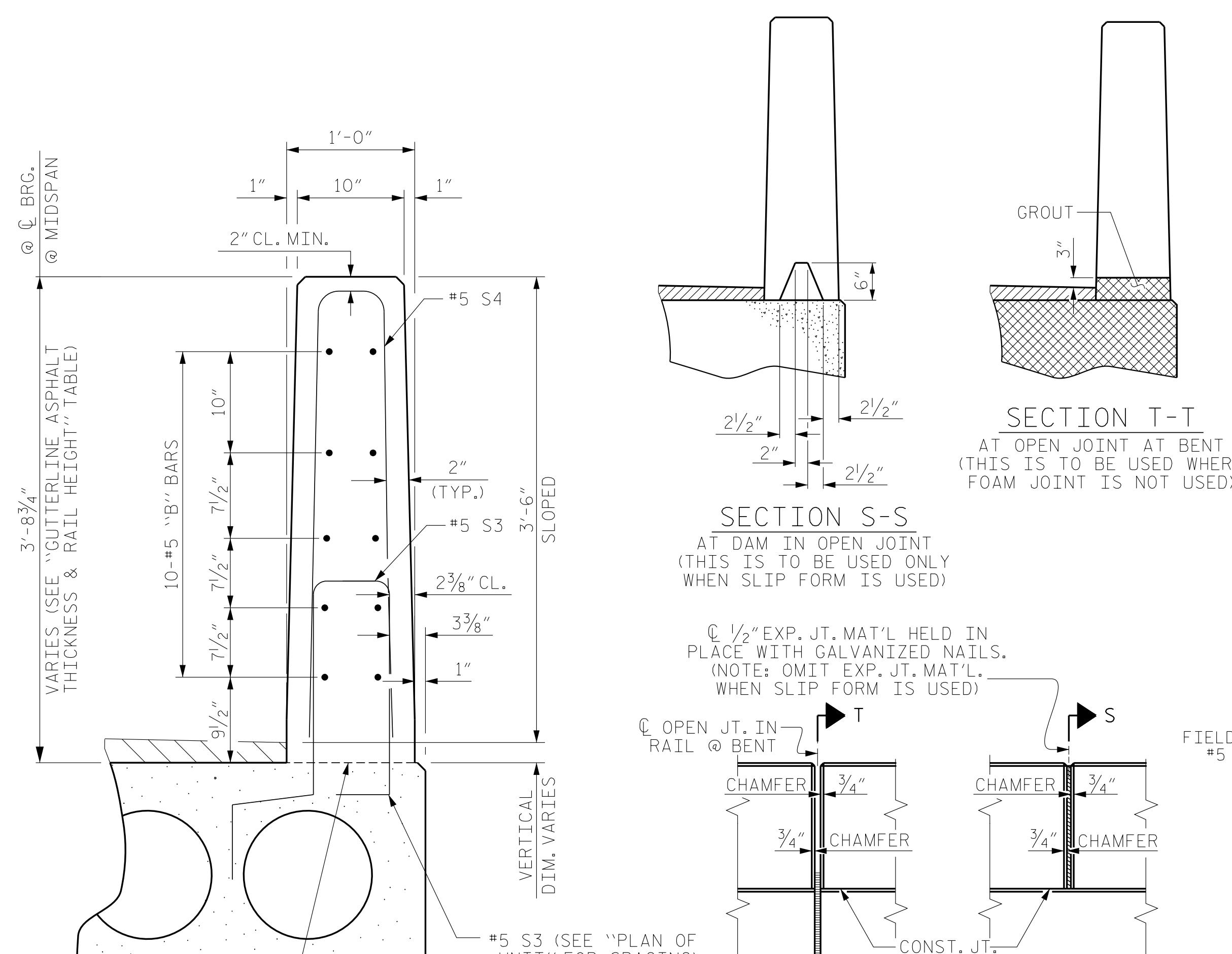
OR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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

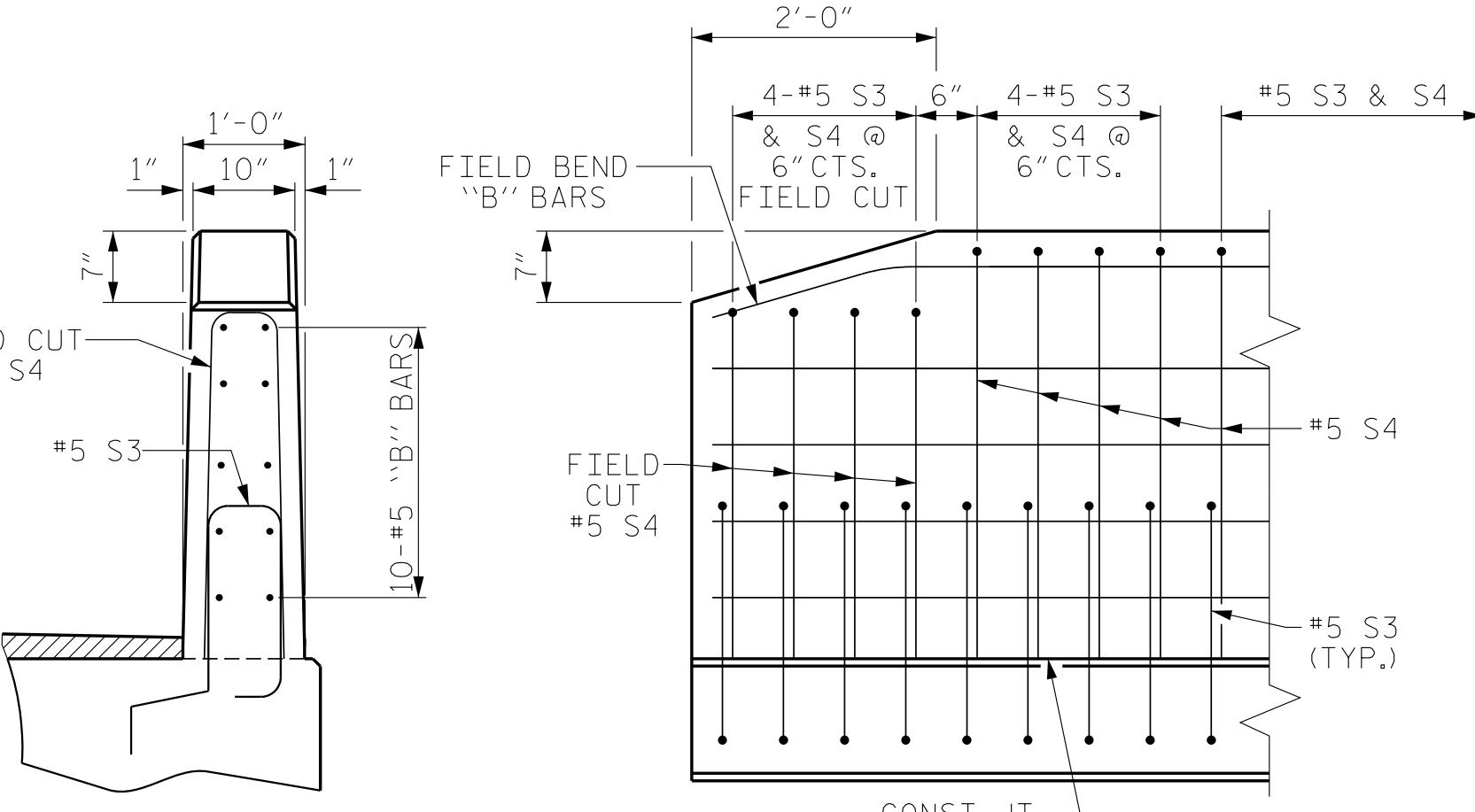
THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

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



VERTICAL CONCRETE BARRIER RAIL SECTION

ASSEMBLED BY :	RWW	DATE :	5/15
CHECKED BY :	HLW	DATE :	5/15
DESIGN ENG. OF RECORD:	RTS	DATE :	5/15



END OF RAIL DETAILS



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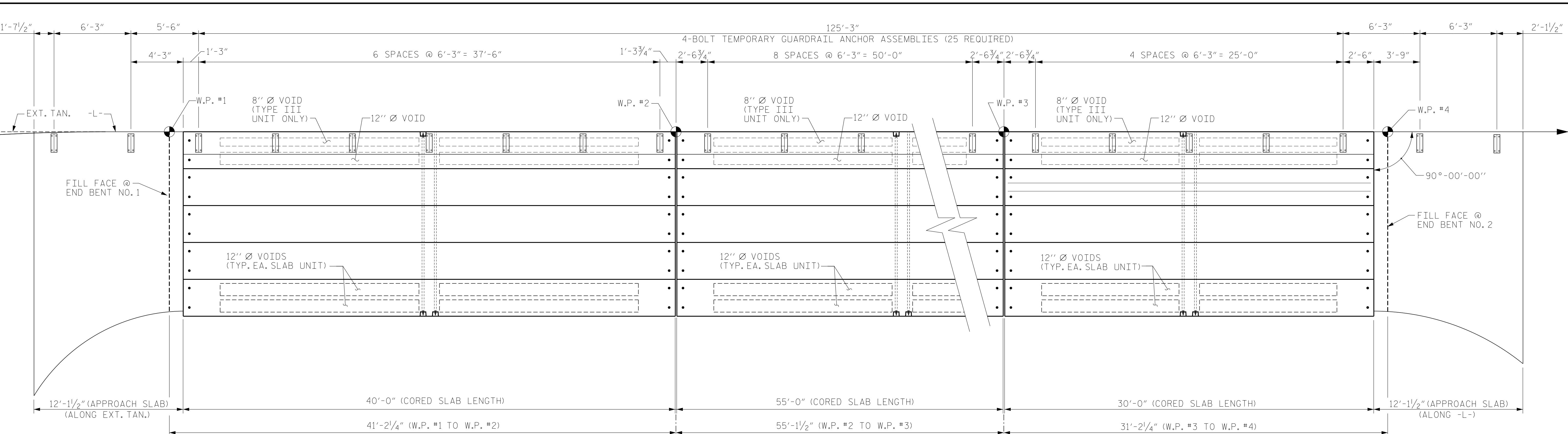
PROJECT NO. 17BP.14.R.141

POLK COUNTY
STATION- 14+60 66 -I -

HEET 10 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 1'-9"
PRESTRESSED CONCRETE
CORED SLAB UNIT
90° SKEW
SPAN 'A', 'B' & 'C'

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



NOTES

THE TEMPORARY GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

- 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".
- 4 - 1" Ø X 2 1/4" 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 1" Ø X 2 1/4" 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.)
- WIRE STRUTS SHOWN IN THE TEMPORARY GUARDRAIL ANCHOR ASSEMBLY DETAIL ARE THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI.

TEMPORARY GUARDRAIL ANCHOR ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUS AS NECESSARY TO ENSURE FIT.

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

FERRULES SHALL BE PLUGGED DURING CASTING OF THE CORED SLAB UNITS OR POURING OF APPROACH SLAB AS RECOMMENDED BY THE MANUFACTURER.

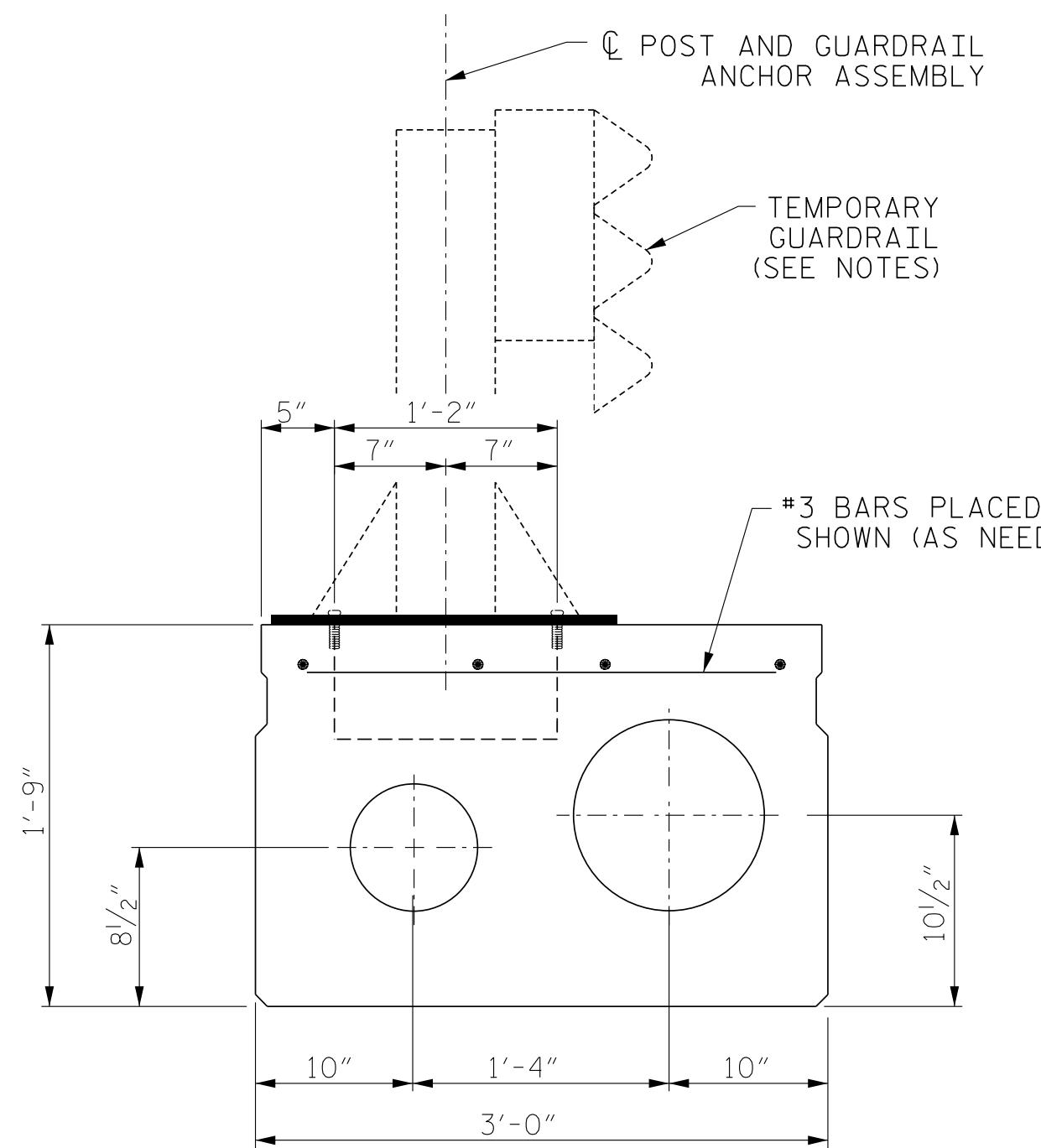
AT THE CONTRACTOR'S OPTION, FERRULES WITH OPEN OR CLOSED ENDS MAY BE USED.

PAYMENT FOR TEMPORARY GUARDRAIL, POST, AND POST BASE PLATES IS INCLUDED IN ROADWAY PAY ITEMS.

PROJECT NO. 17BP.14.R.141

POLK COUNTY

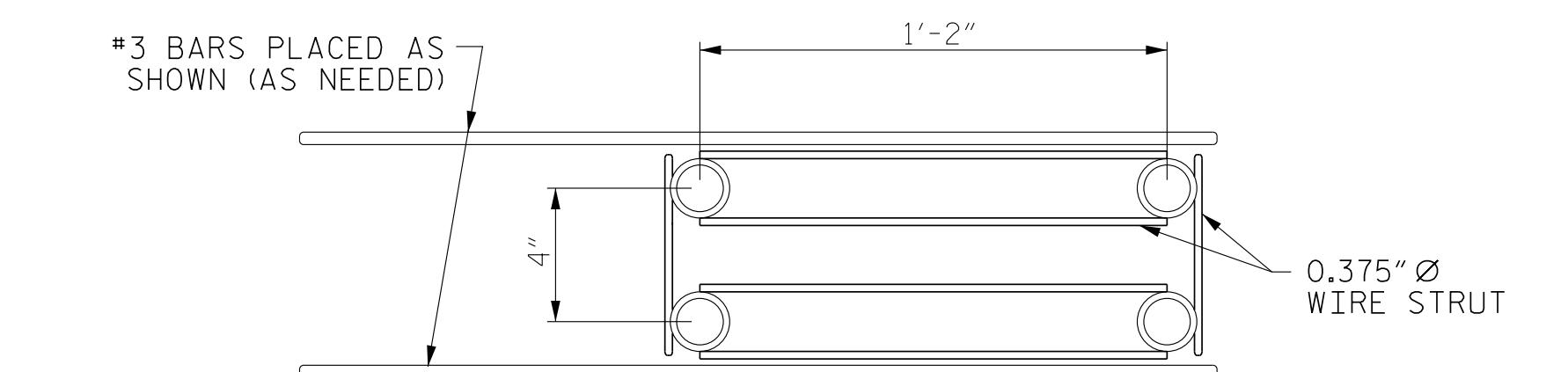
STATION: 14+60.66 -L-



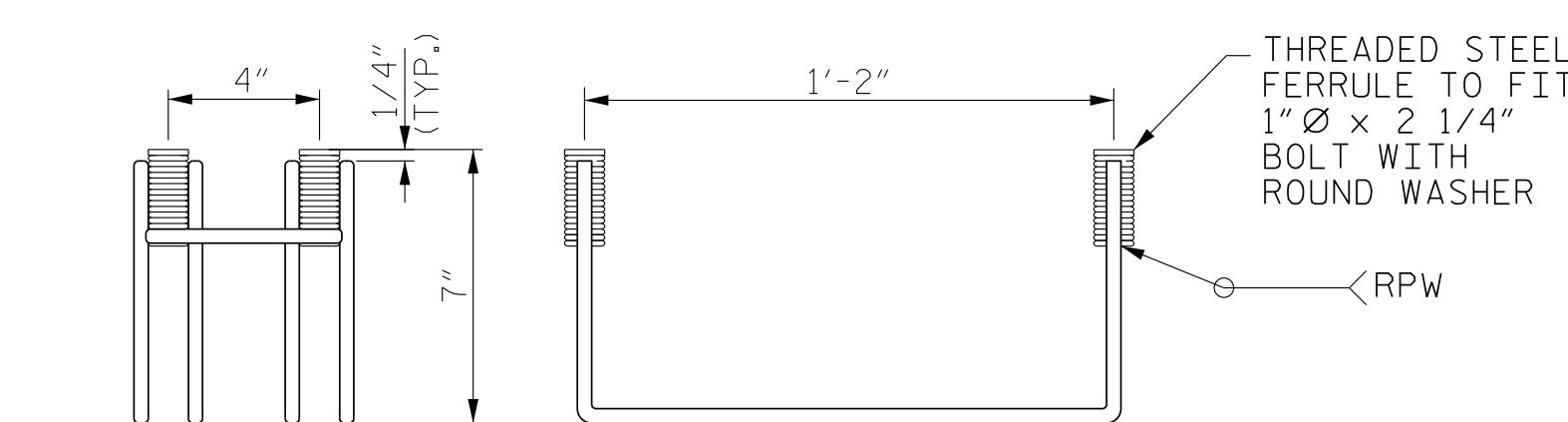
SECTION OF ANCHOR ASSEMBLY LOCATION

(TYPE III UNIT - STAGE I)
THE #3 BARS ARE INCIDENTAL AND THEIR COST SHALL
BE INCLUDED IN THE PRICE BID FOR THE PRESTRESSED
CONCRETE CORED SLABS.

ASSEMBLED BY :	RWW	DATE : 5/15
CHECKED BY :	HLW	DATE : 5/15
DESIGN ENG. OF RECORD:	RTS	DATE : 5/15



PLAN



SIDE VIEW

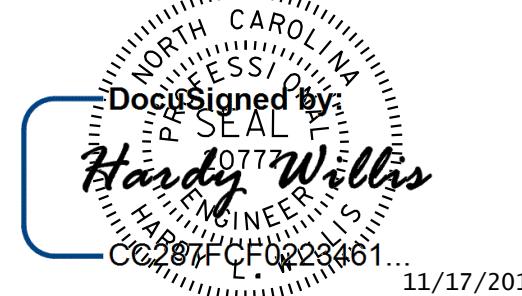
ELEVATION

MINIMUM LENGTH OF THREADS IN INSERT (FERRULE): 2 1/2"

TEMPORARY GUARDRAIL ANCHOR ASSEMBLY

(21 ASSEMBLIES REQUIRED IN THE TYPE III CORED SLAB UNITS)
(4 ASSEMBLIES REQUIRED IN THE APPROACH SLABS)

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FINAL UNLESS ALL
SIGNATURES COMPLETED

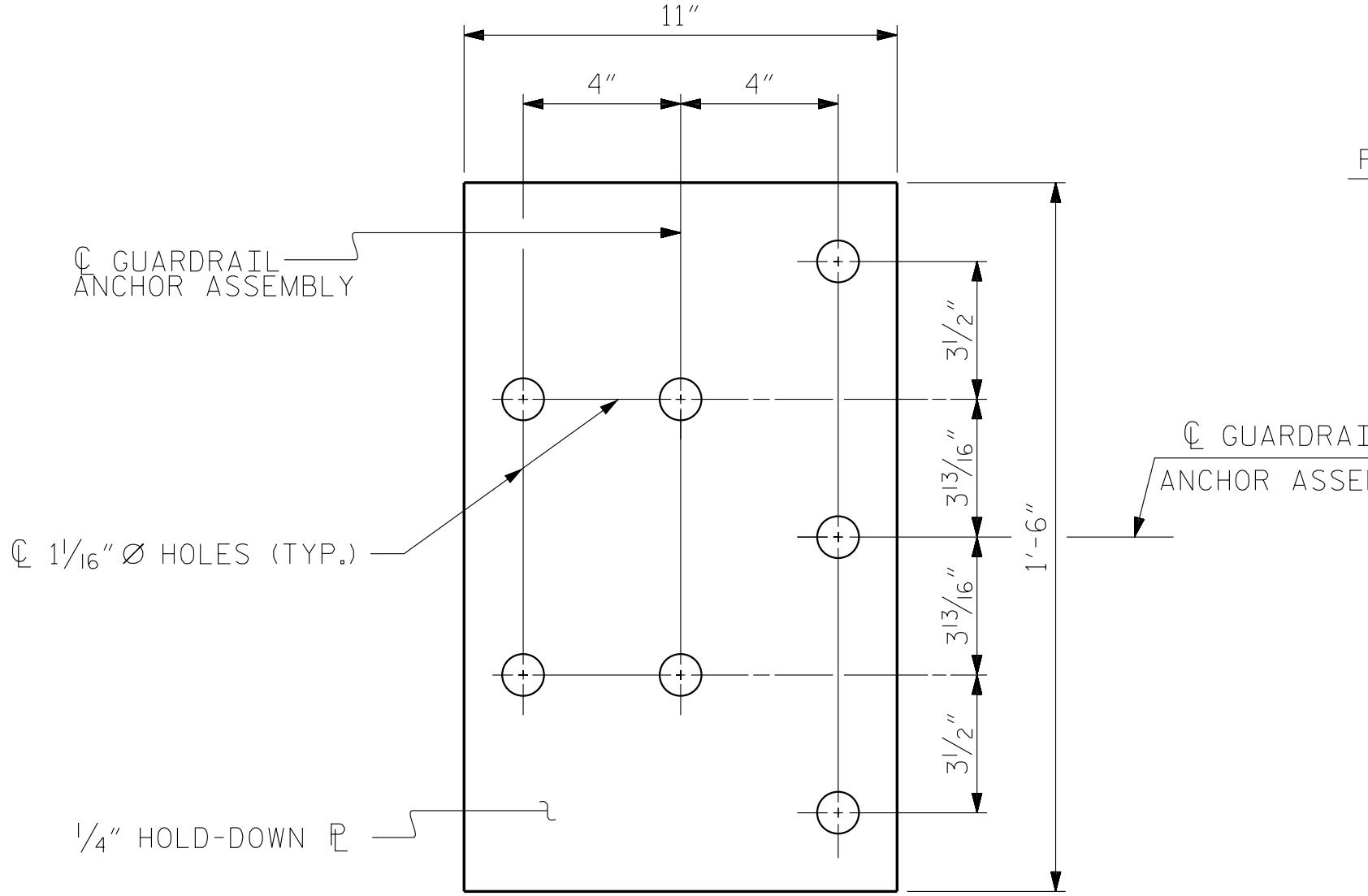


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
ANCHORAGE DETAILS FOR
TEMPORARY GUARDRAIL
ANCHOR ASSEMBLY FOR
TYPE III CORED SLAB
UNIT - STAGE I

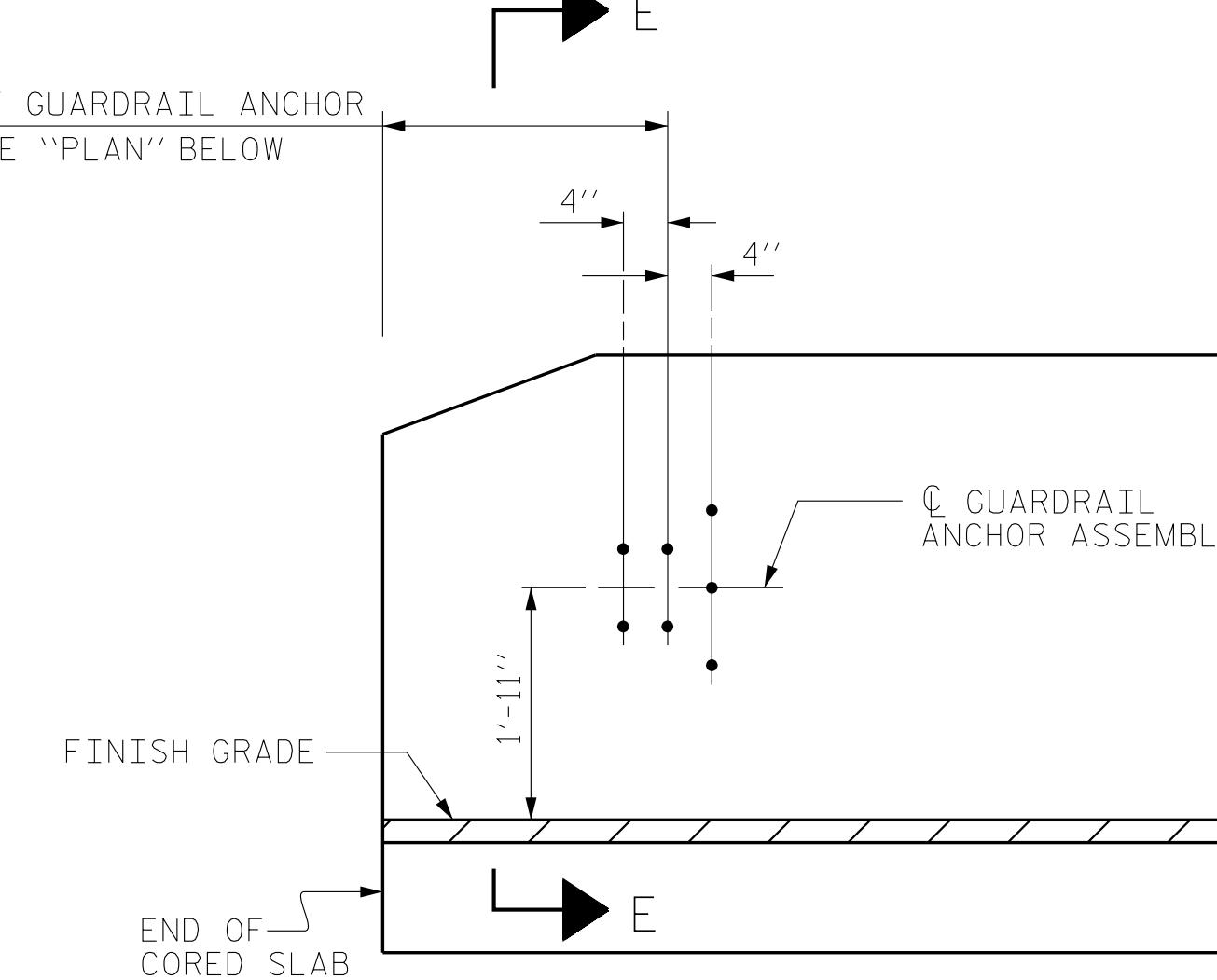
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			
2			4			

TOTAL SHEETS 35

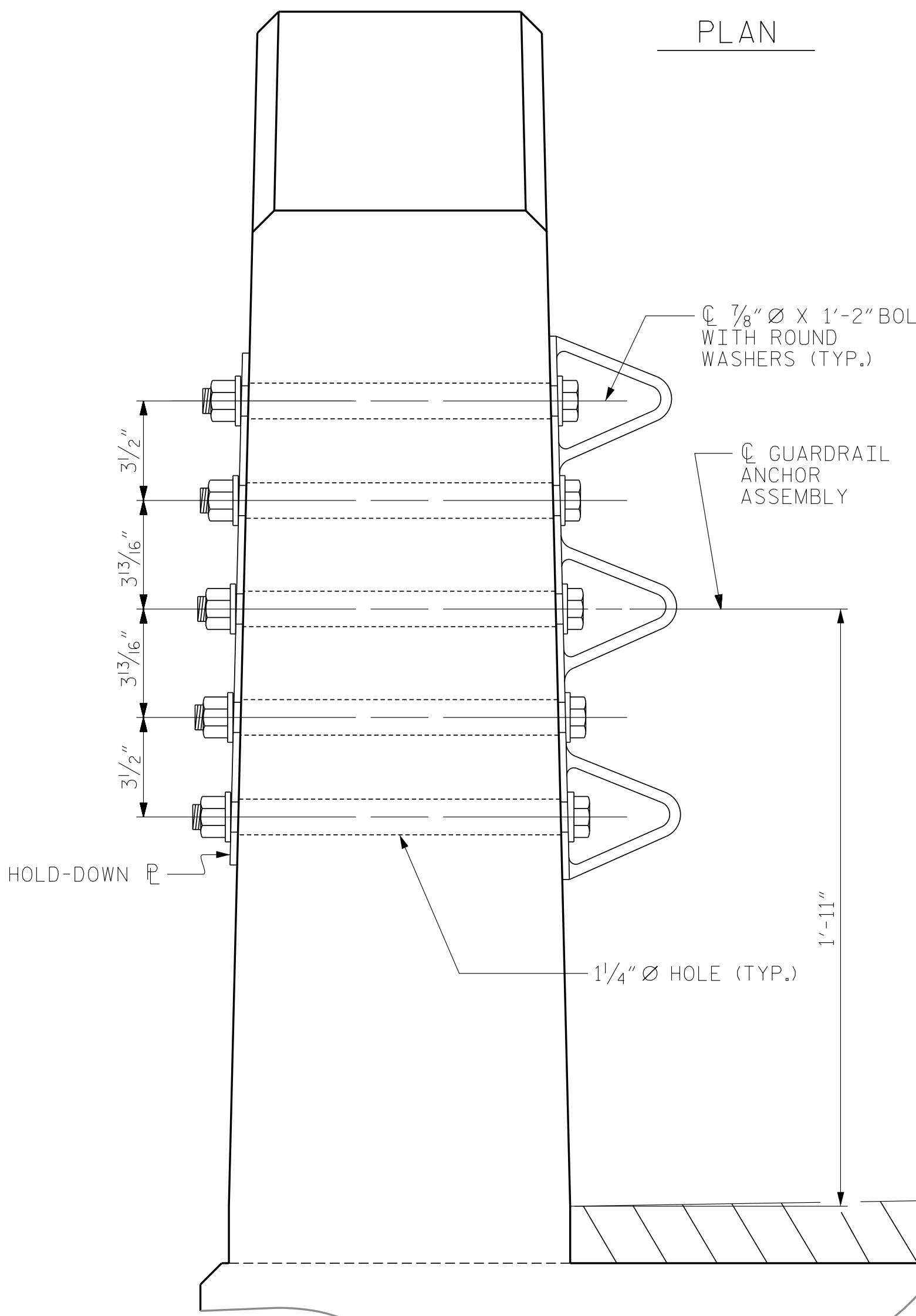
11/17/2016



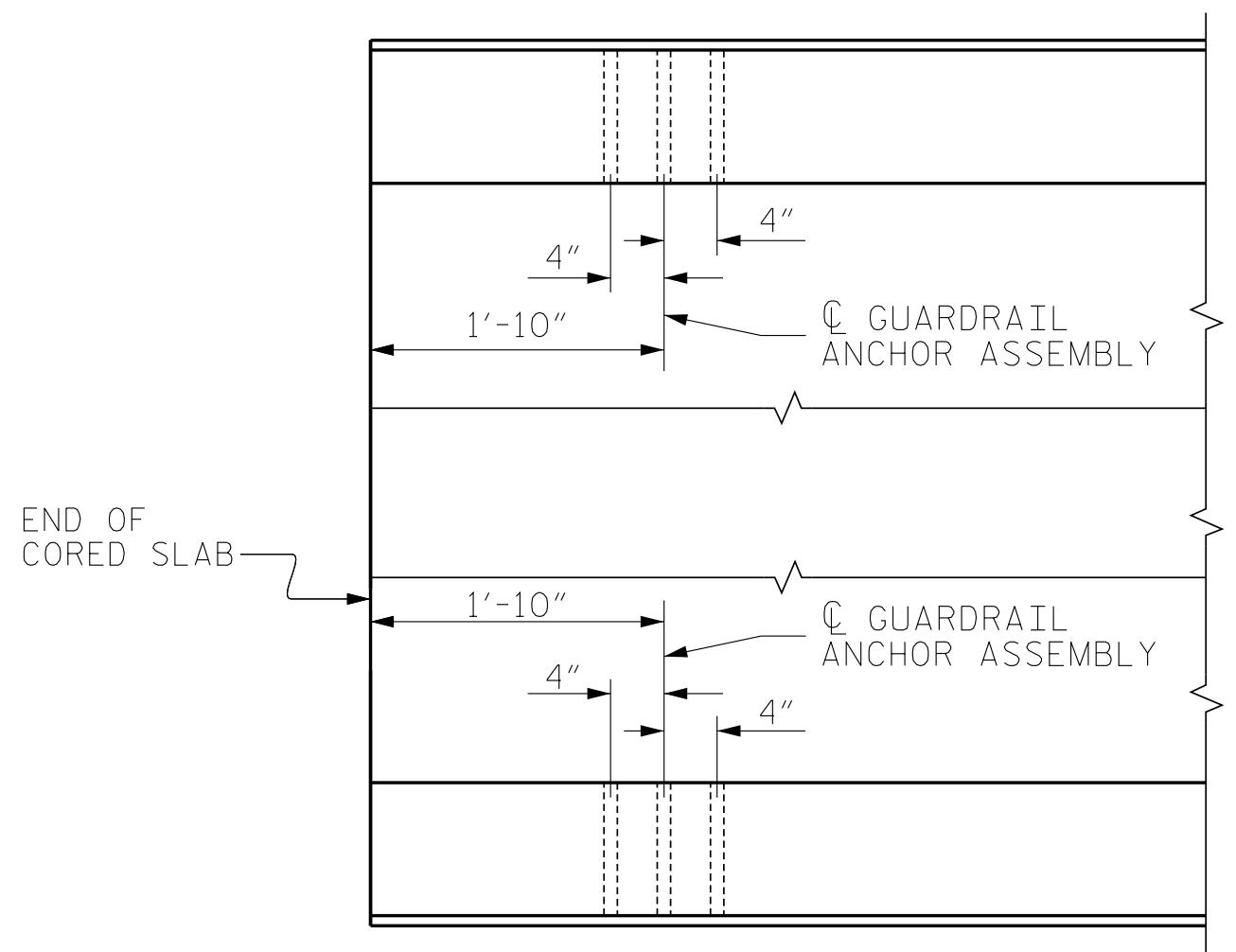
FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



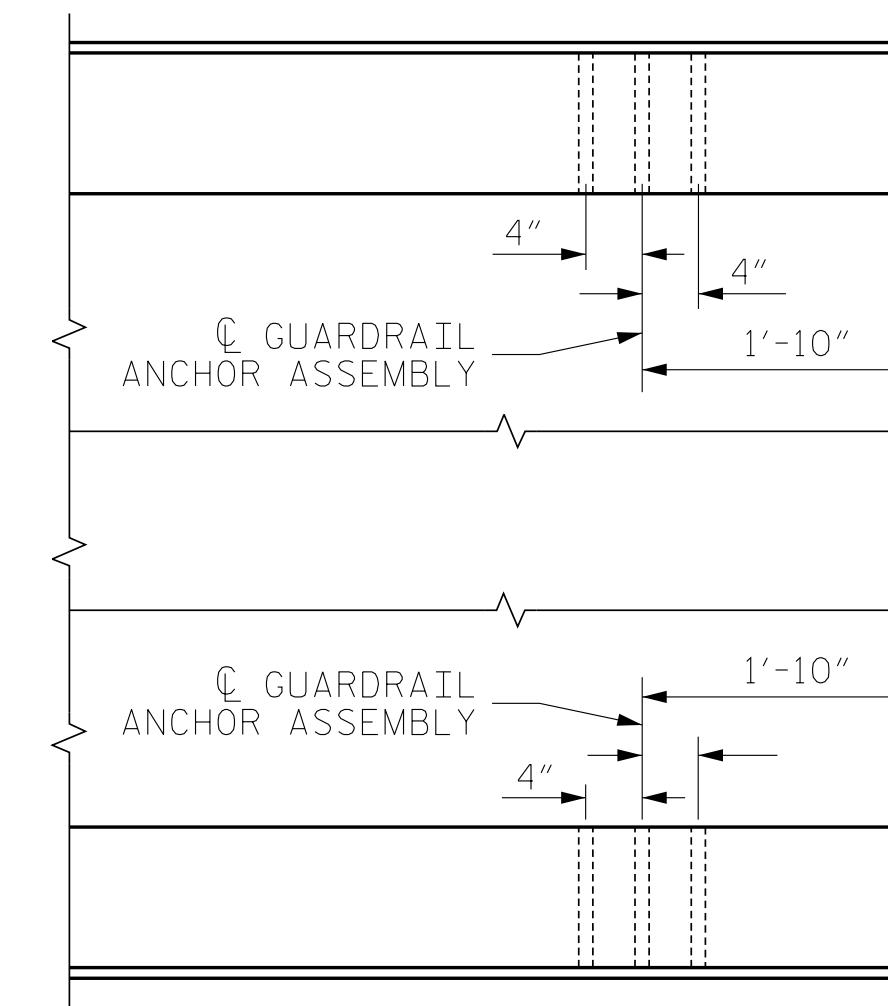
ELEVATION



GUARDRAIL ANCHOR ASSEMBLY DETAILS



END BENT #1



END BENT #2

PLAN

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.)

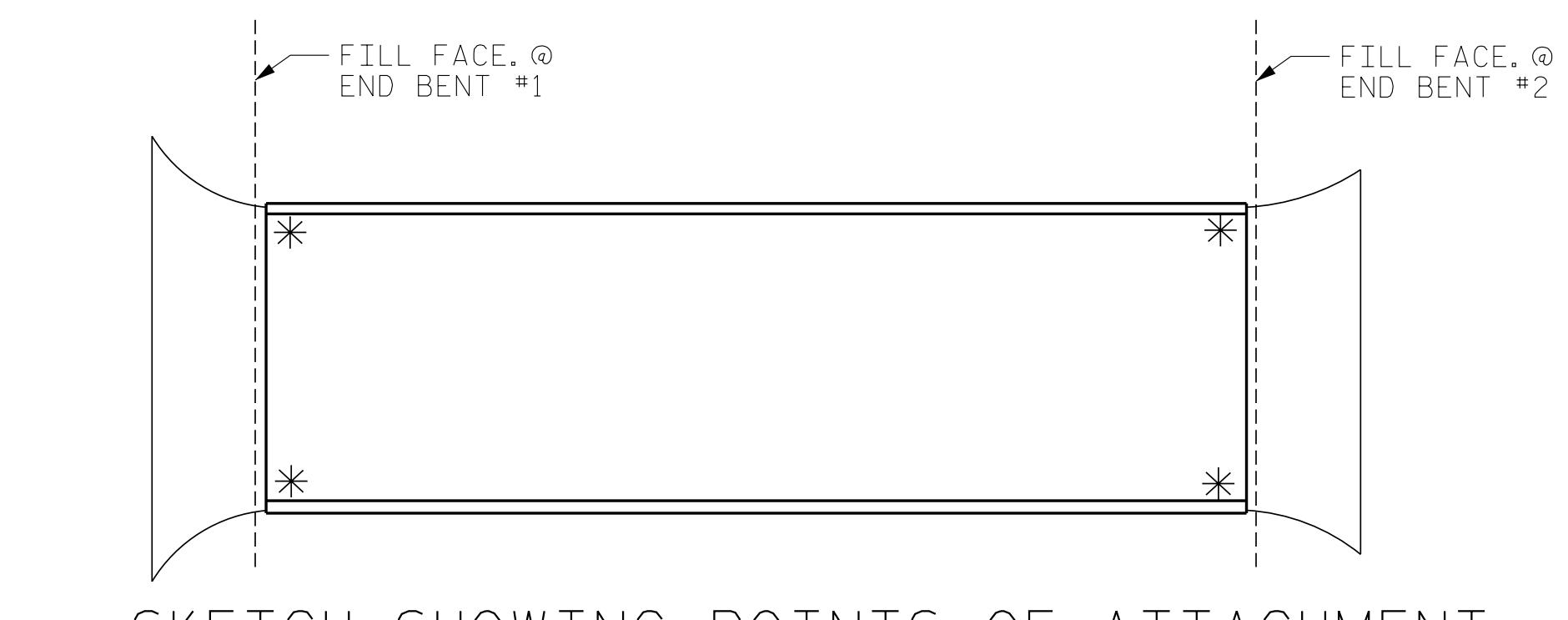
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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 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.



SKETCH SHOWING POINTS OF ATTACHMENT

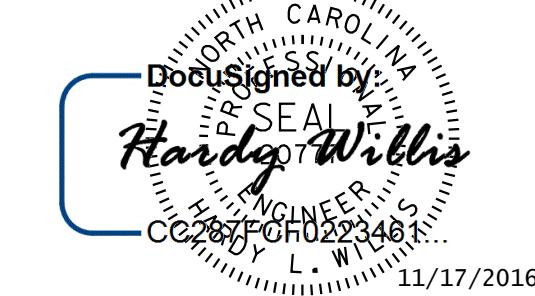
*LOCATION OF GUARDRAIL ATTACHMENT

PROJECT NO. 17BP.14.R.141

POLK COUNTY

STATION: 14+60.66 -L-

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



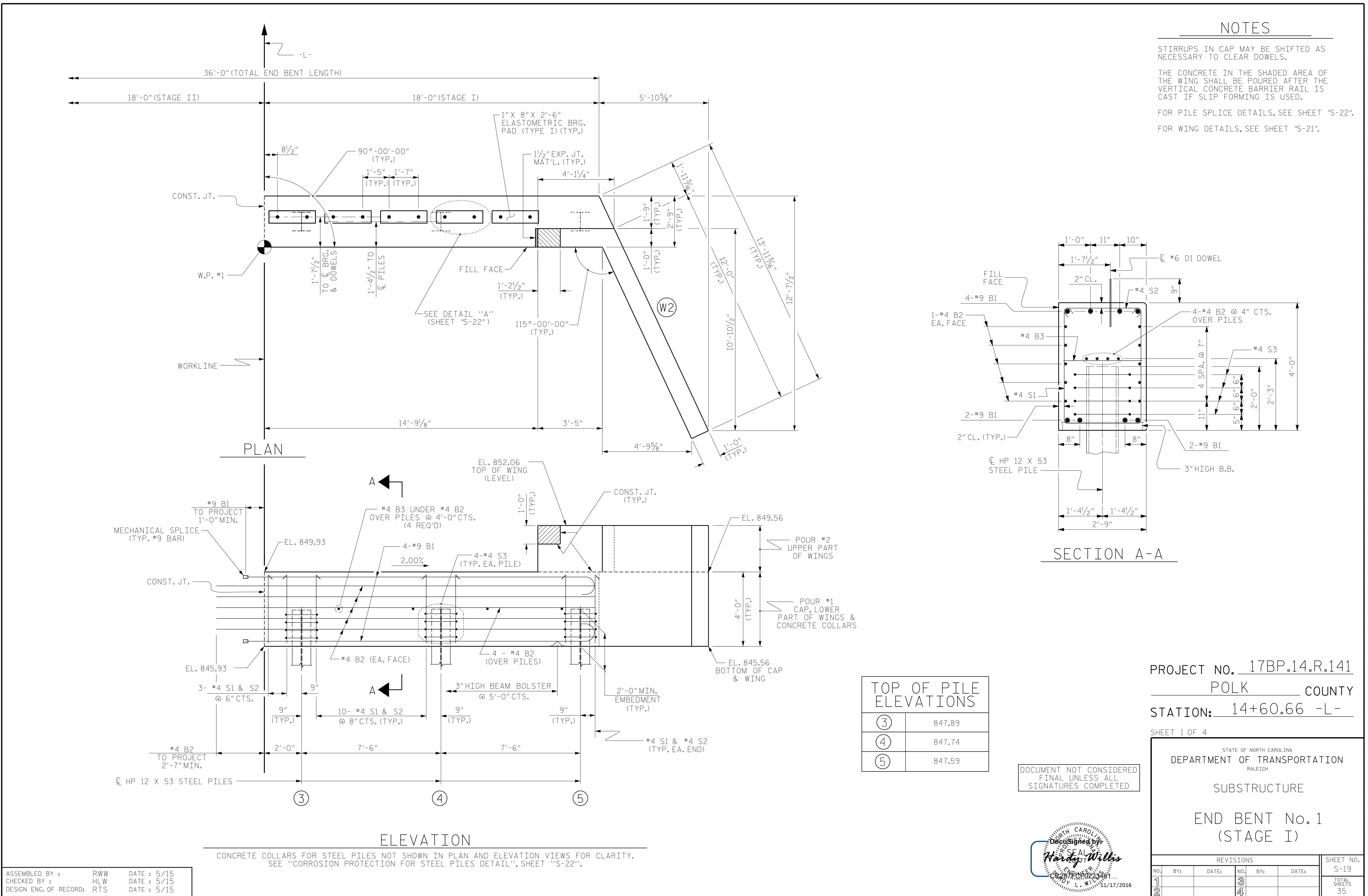
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
GUARDRAIL ANCHORAGE
DETAILS FOR METAL
RAILS & VERTICAL
CONCRETE BARRIER RAIL

REVISIONS

NO. BY: DATE:

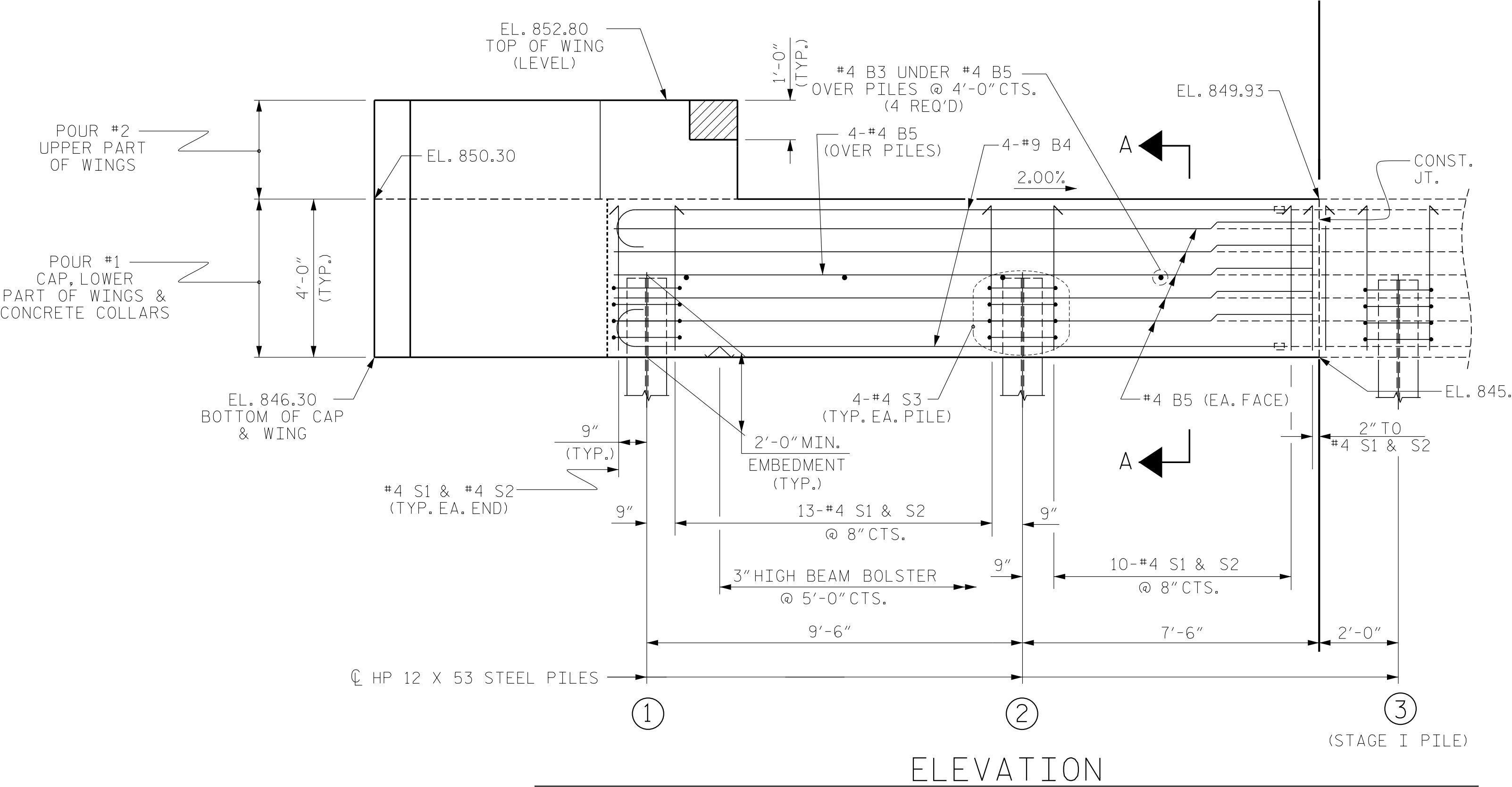
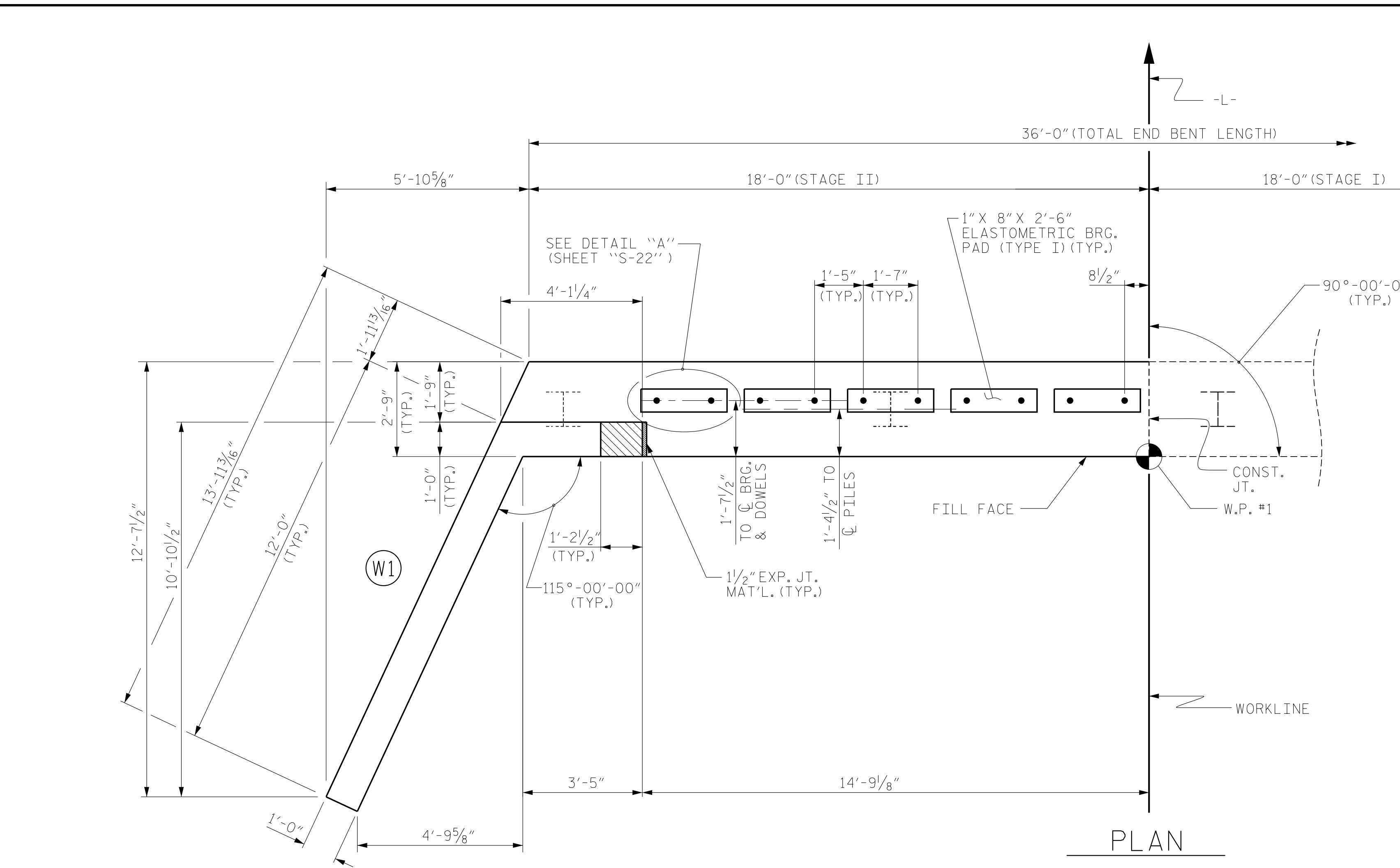
NO. BY: DATE:

SHEET NO.
S-18TOTAL SHEETS
35

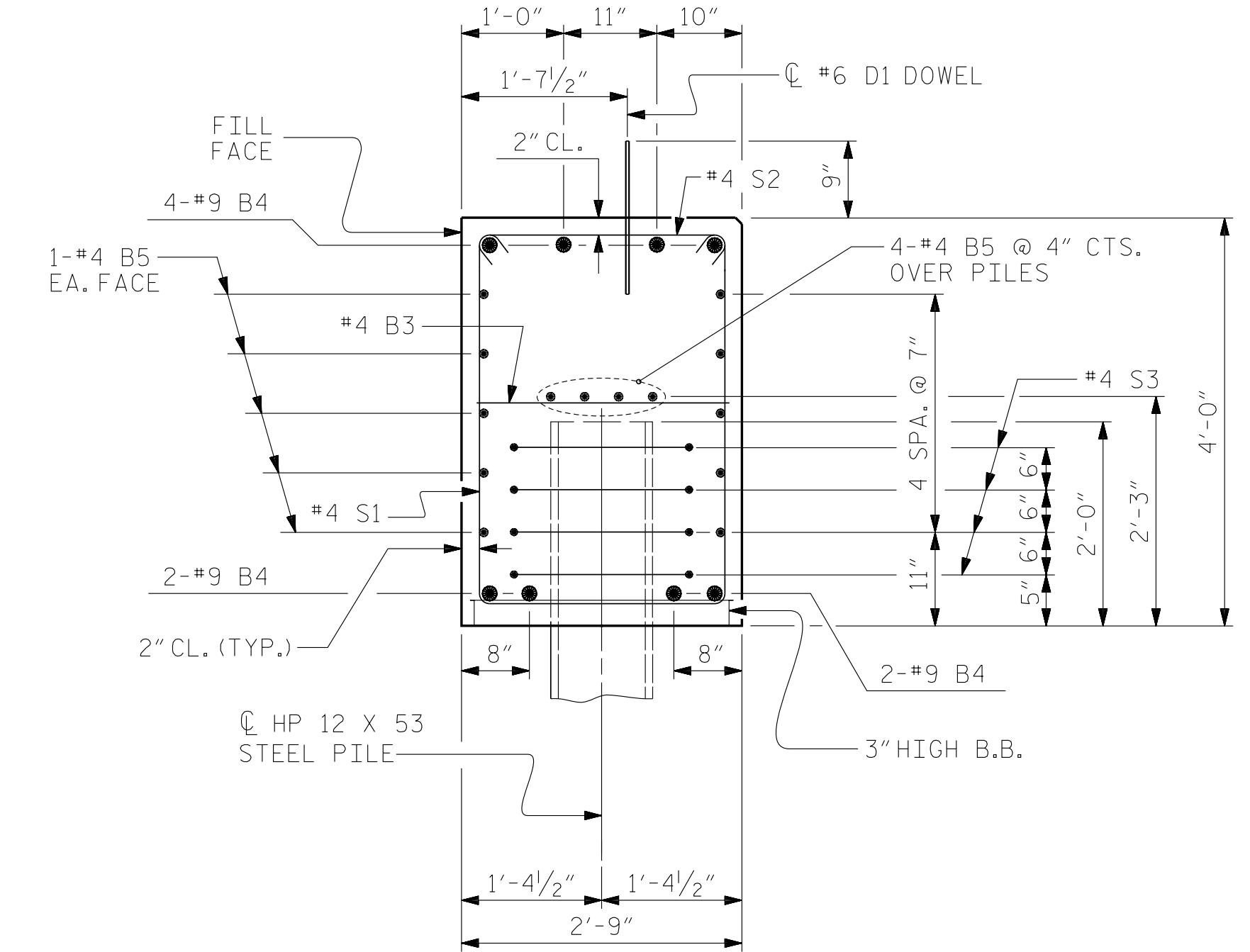


NOTES

SEE SHEET "S-19" FOR NOTES.



ASSEMBLED BY : RWW DATE : 5/15
CHECKED BY : HLW DATE : 5/15
RESIGN ENG. OF RECORD: RTS DATE : 5/15



TOP OF PILE ELEVATIONS	
(1)	848.27
(2)	848.08

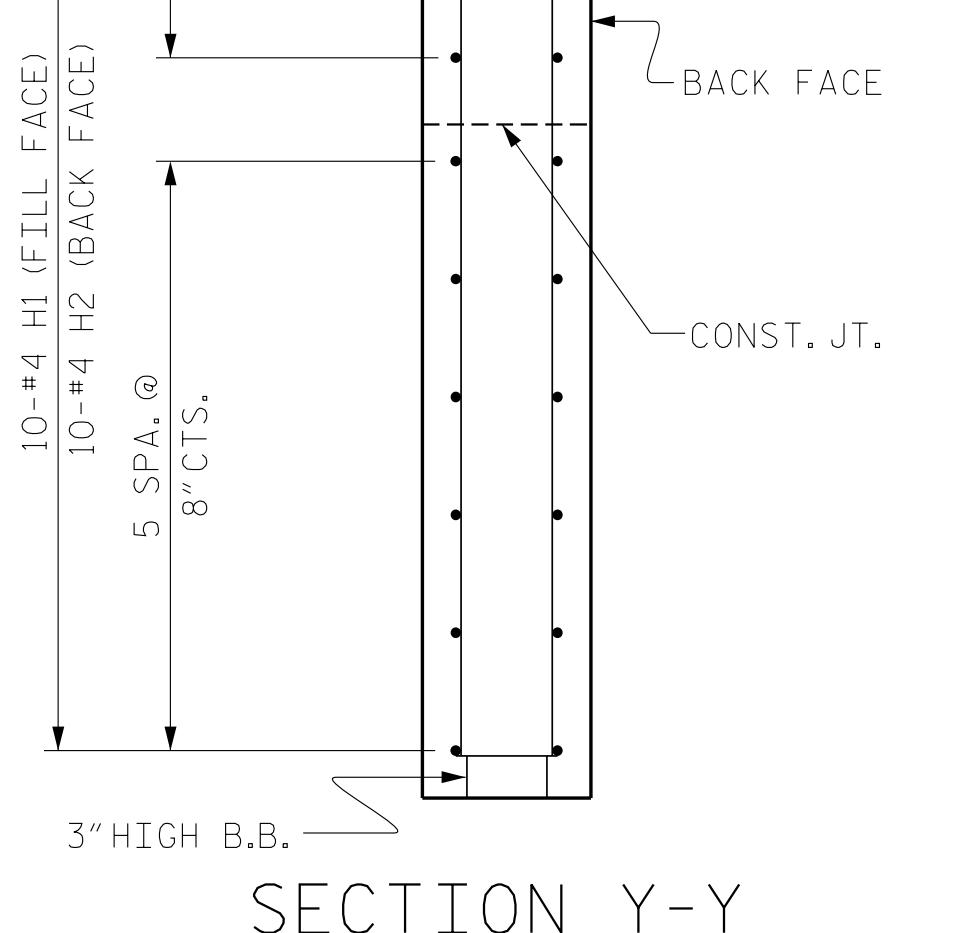
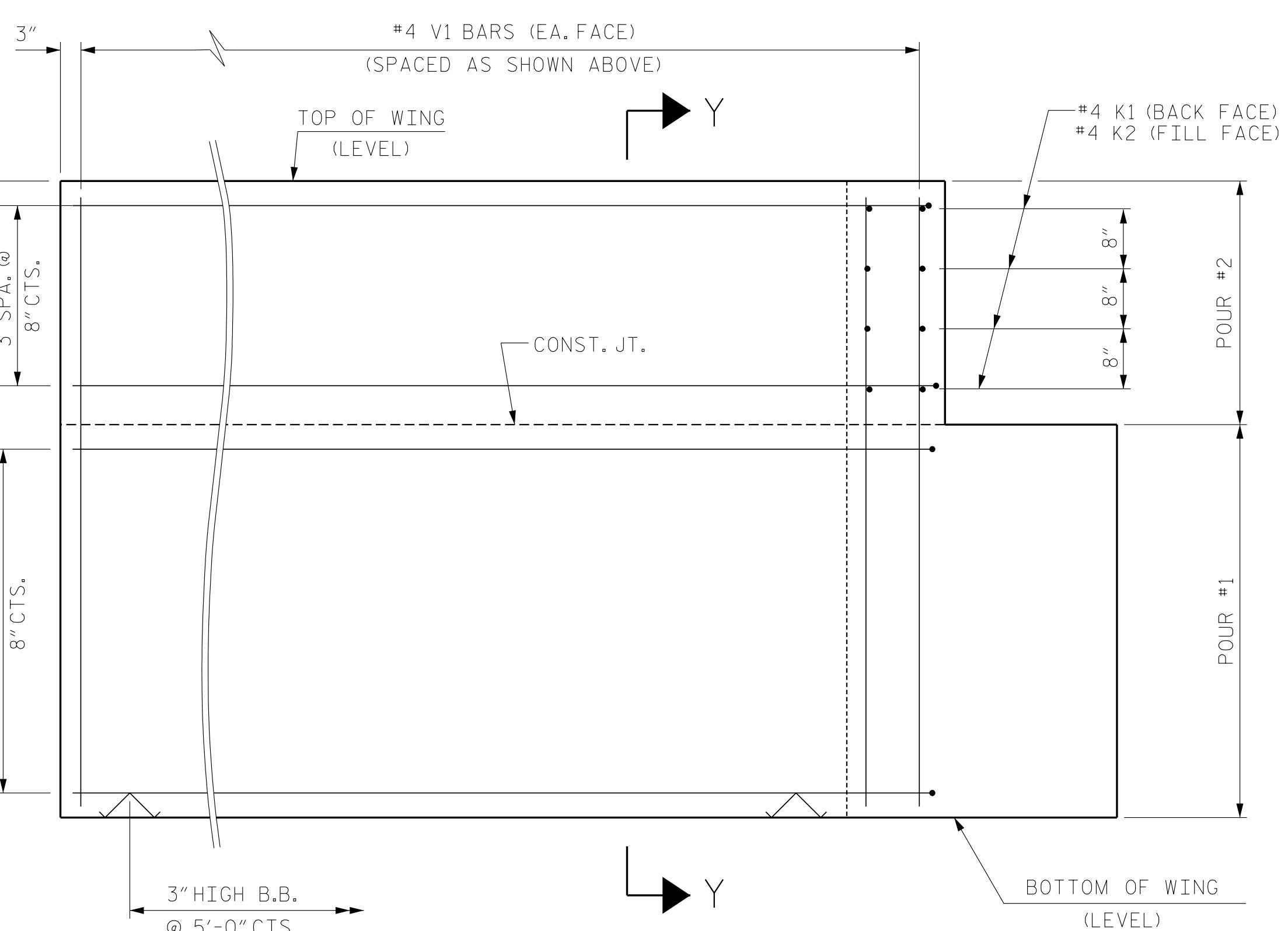
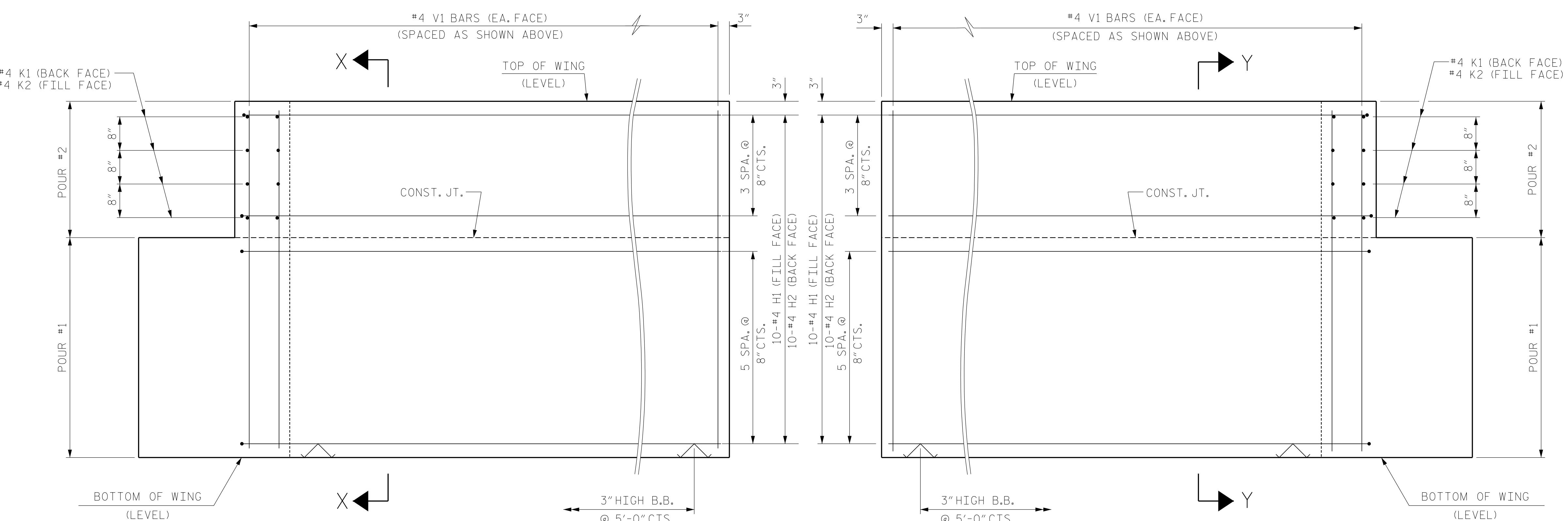
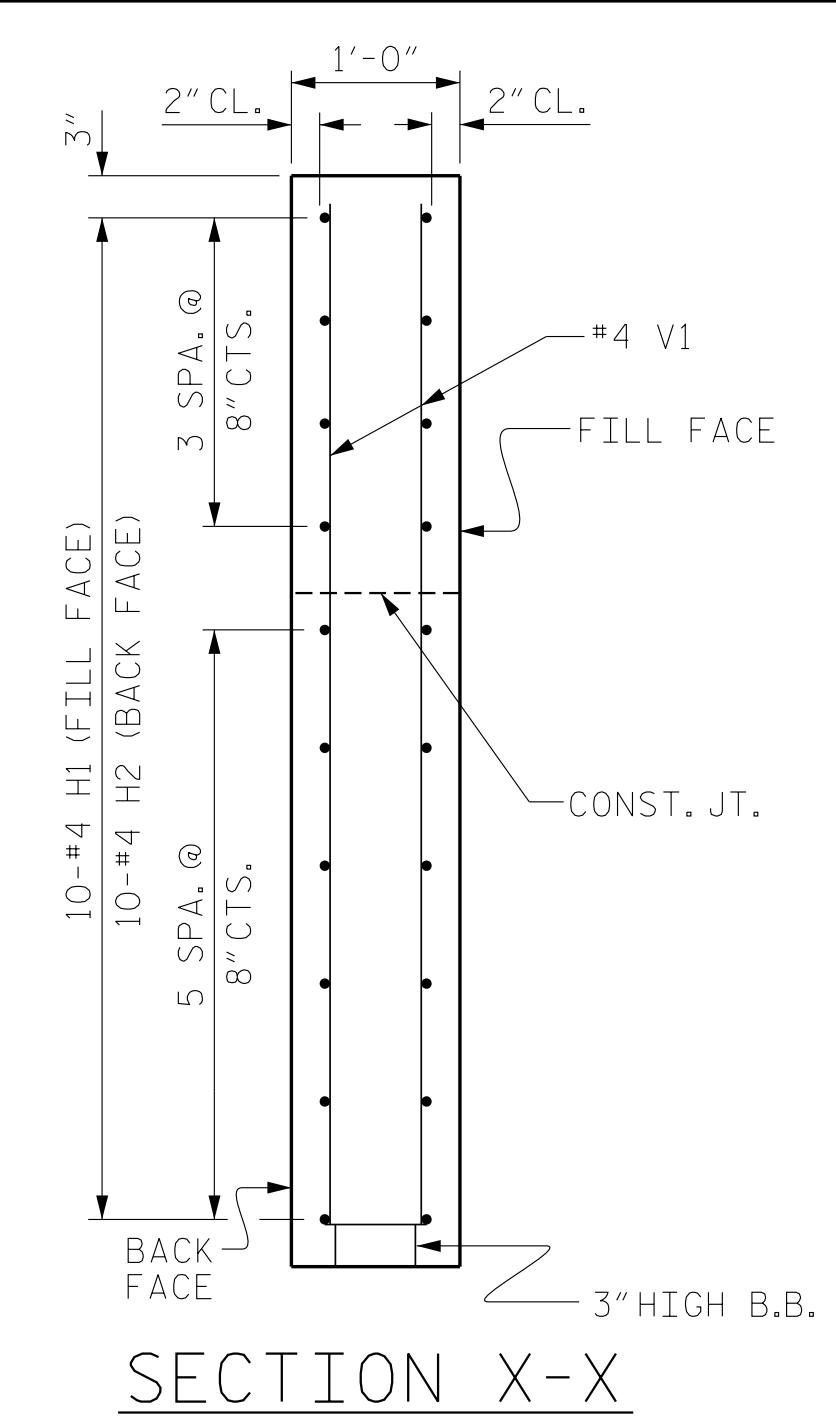
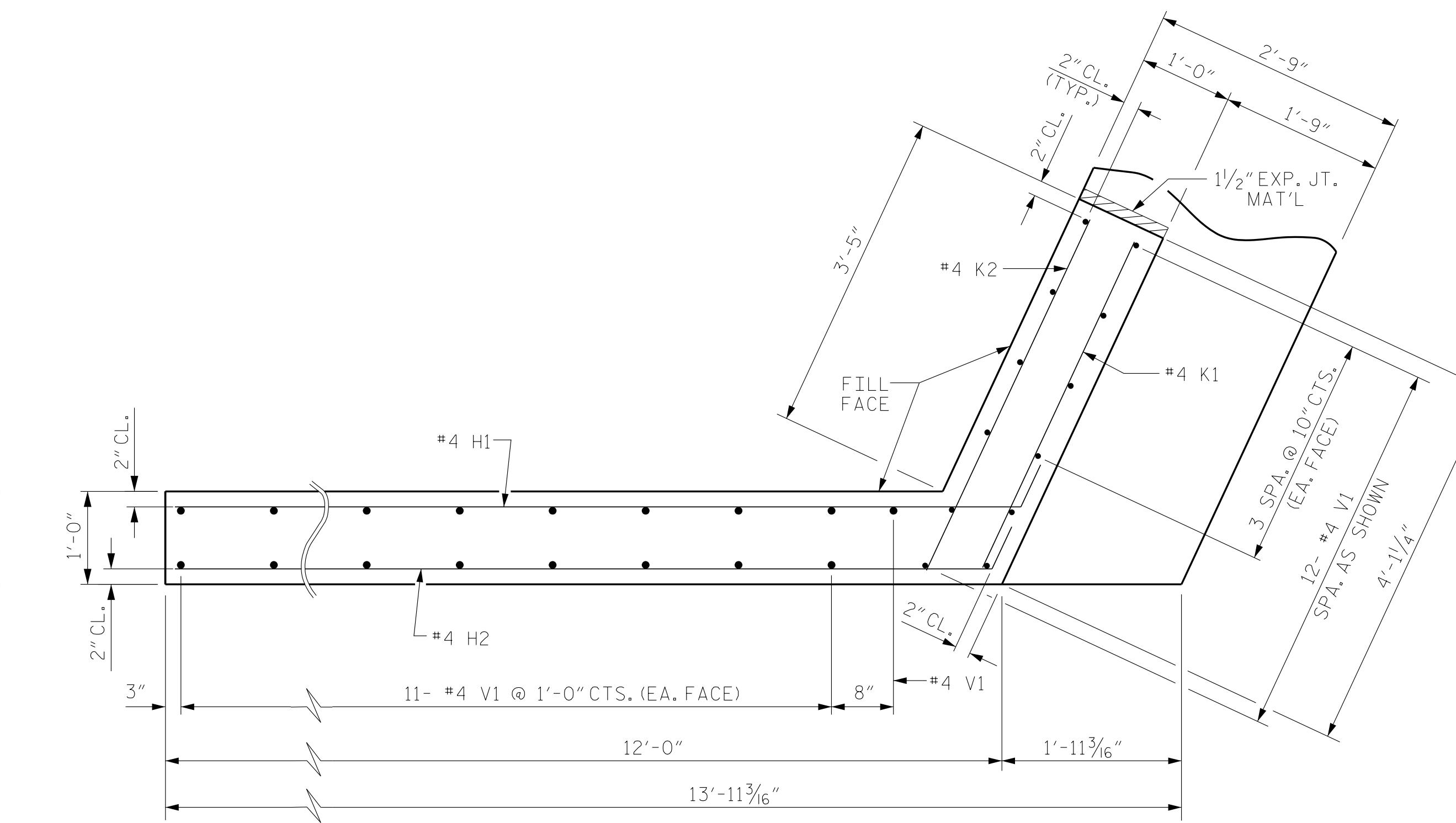
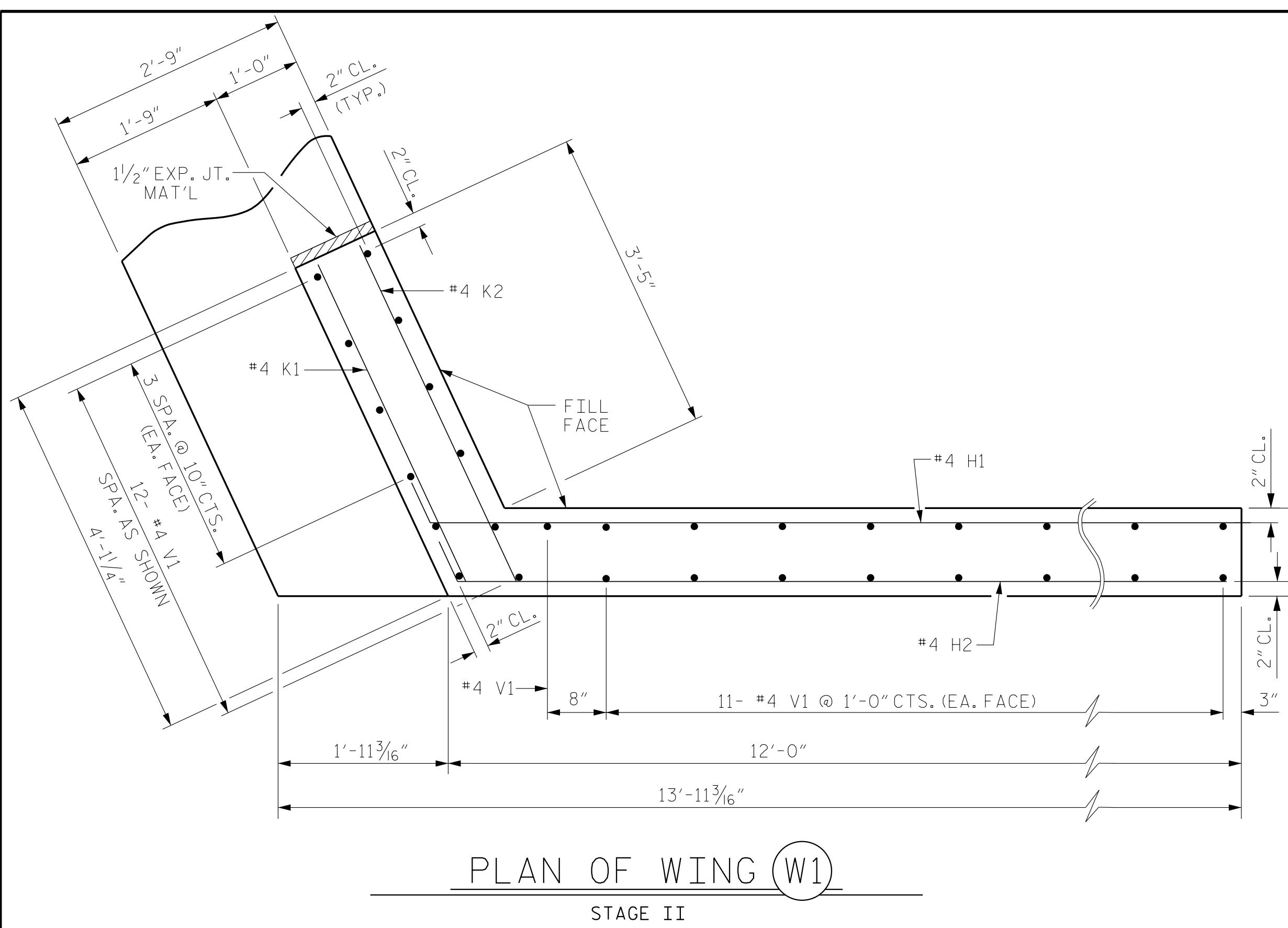
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



PROJECT NO. 17BP.14.R.141
POLK COUNTY
STATION: 14+60.66 -L-

SUBSTRUCTURE					
END BENT No. 1 (STAGE II)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-20
TOTAL SHEETS 35



PROJECT NO. 17BP.14.R.141
POLK COUNTY
STATION: 14+60.66 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

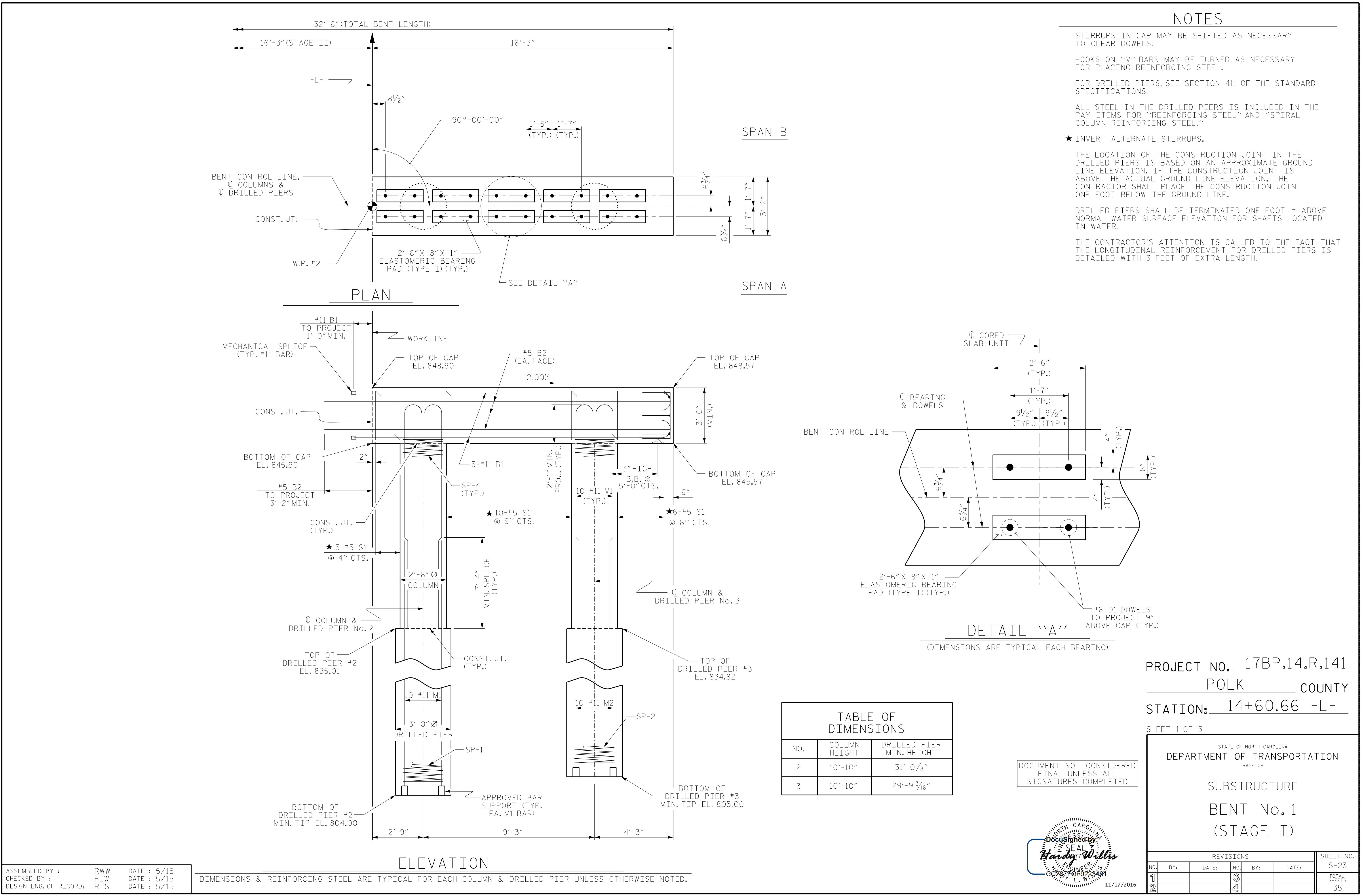
END BENT NO. 1
WING DETAILS



DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

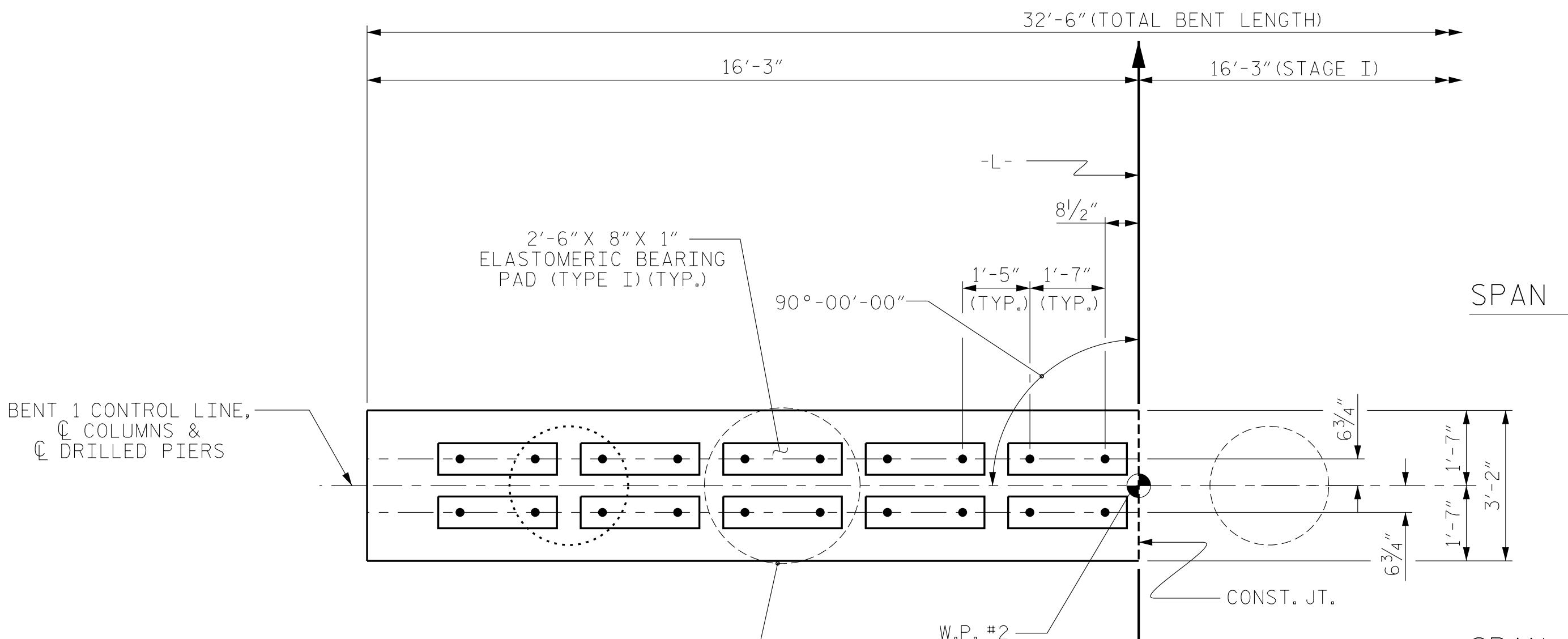
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			2			
3			4			

TOTAL SHEETS
35

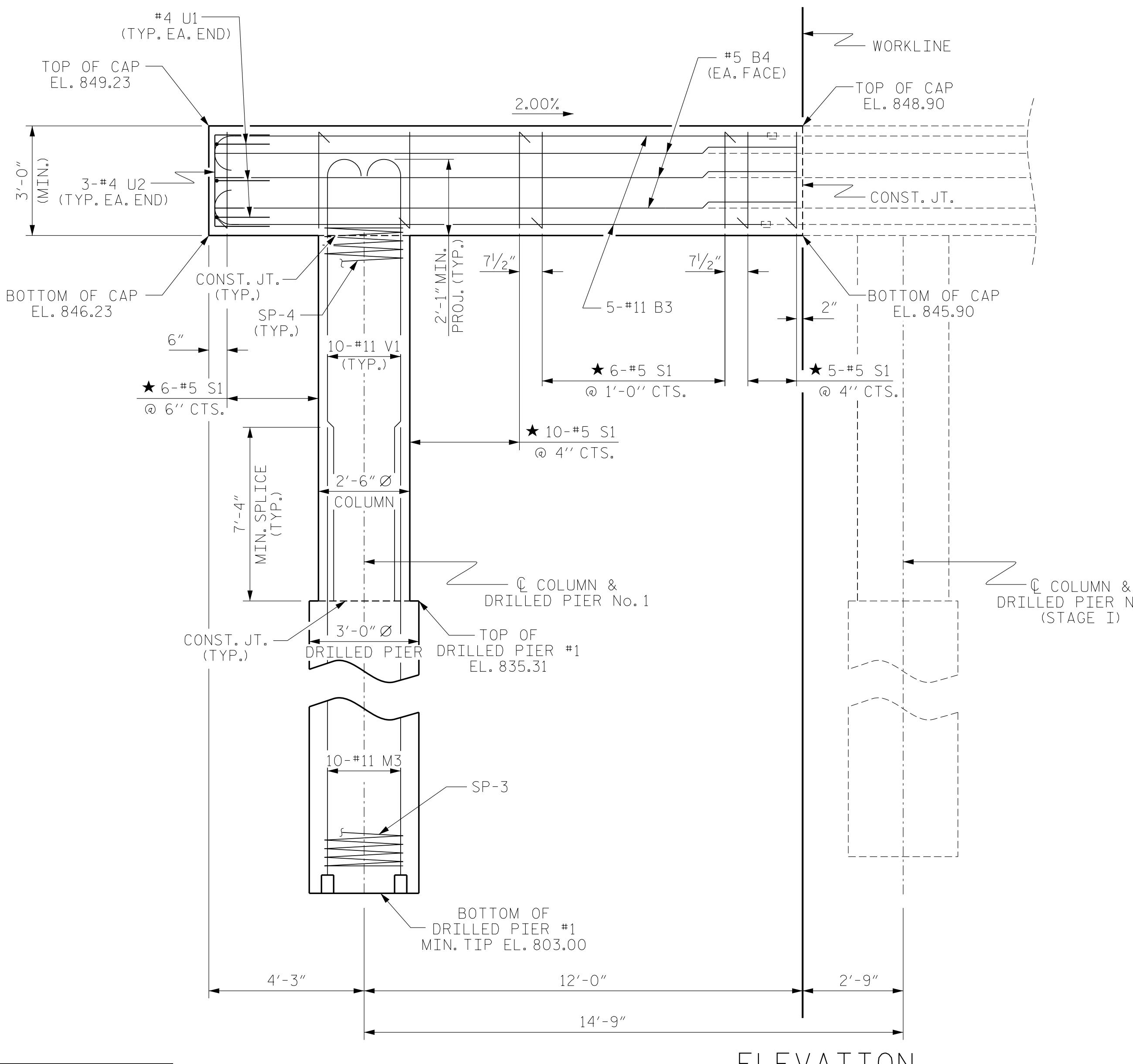


NOTES

SEE SHEET "S-23" FOR NOTES.



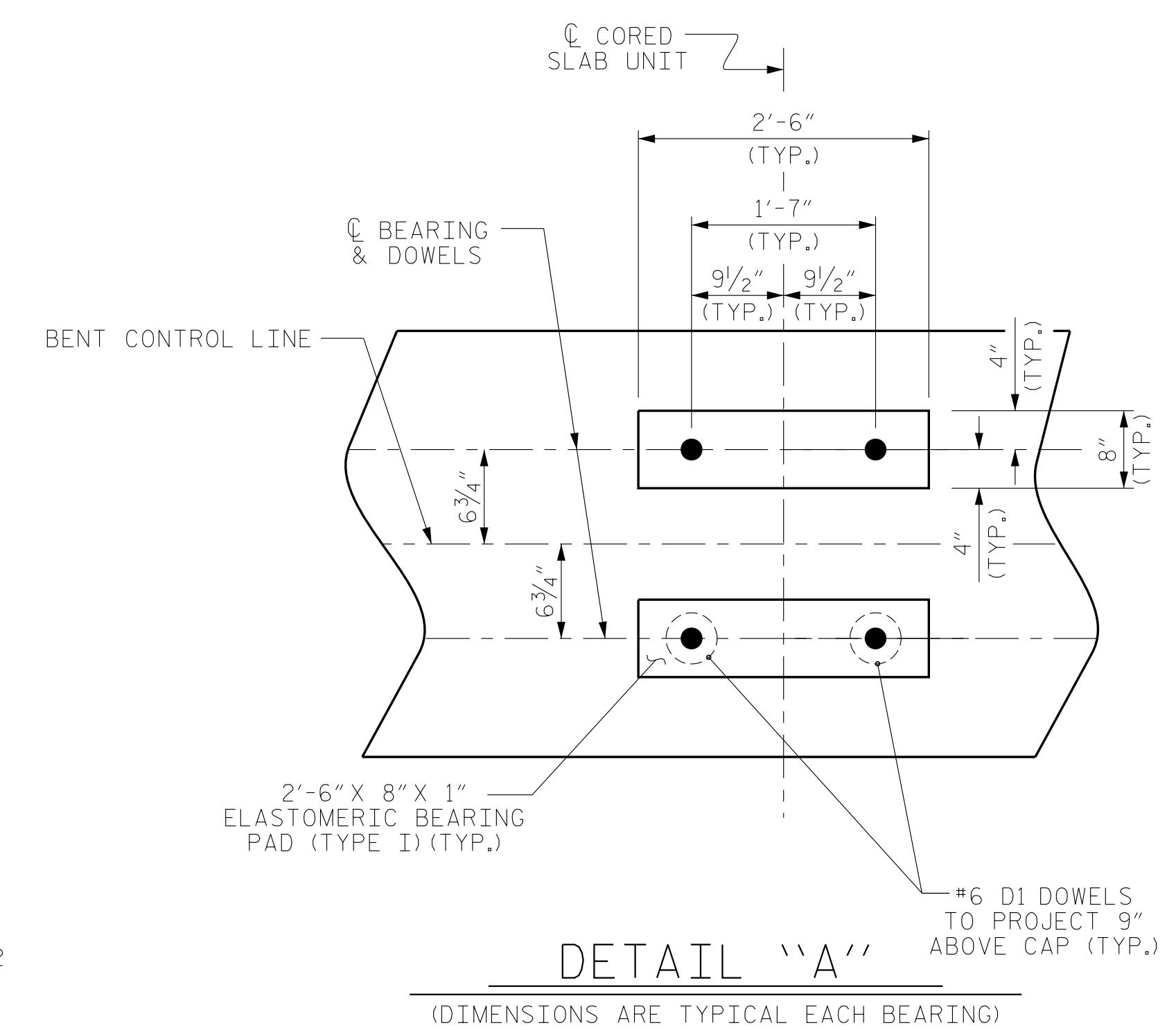
PLAN



ELEVATION

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

ASSEMBLED BY : RWW DATE : 5/15
CHECKED BY : HLW DATE : 5/15
DESIGN ENG. OF RECORD: RTS DATE : 5/15



DETAIL 'A'

(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. 17BP.14.R.141

POLK COUNTY

STATION: 14+60.66 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

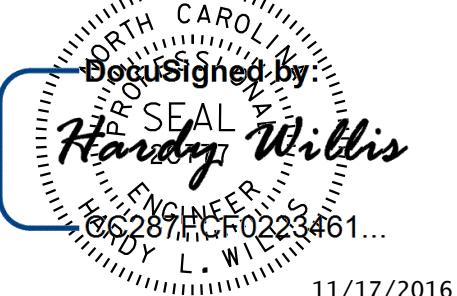
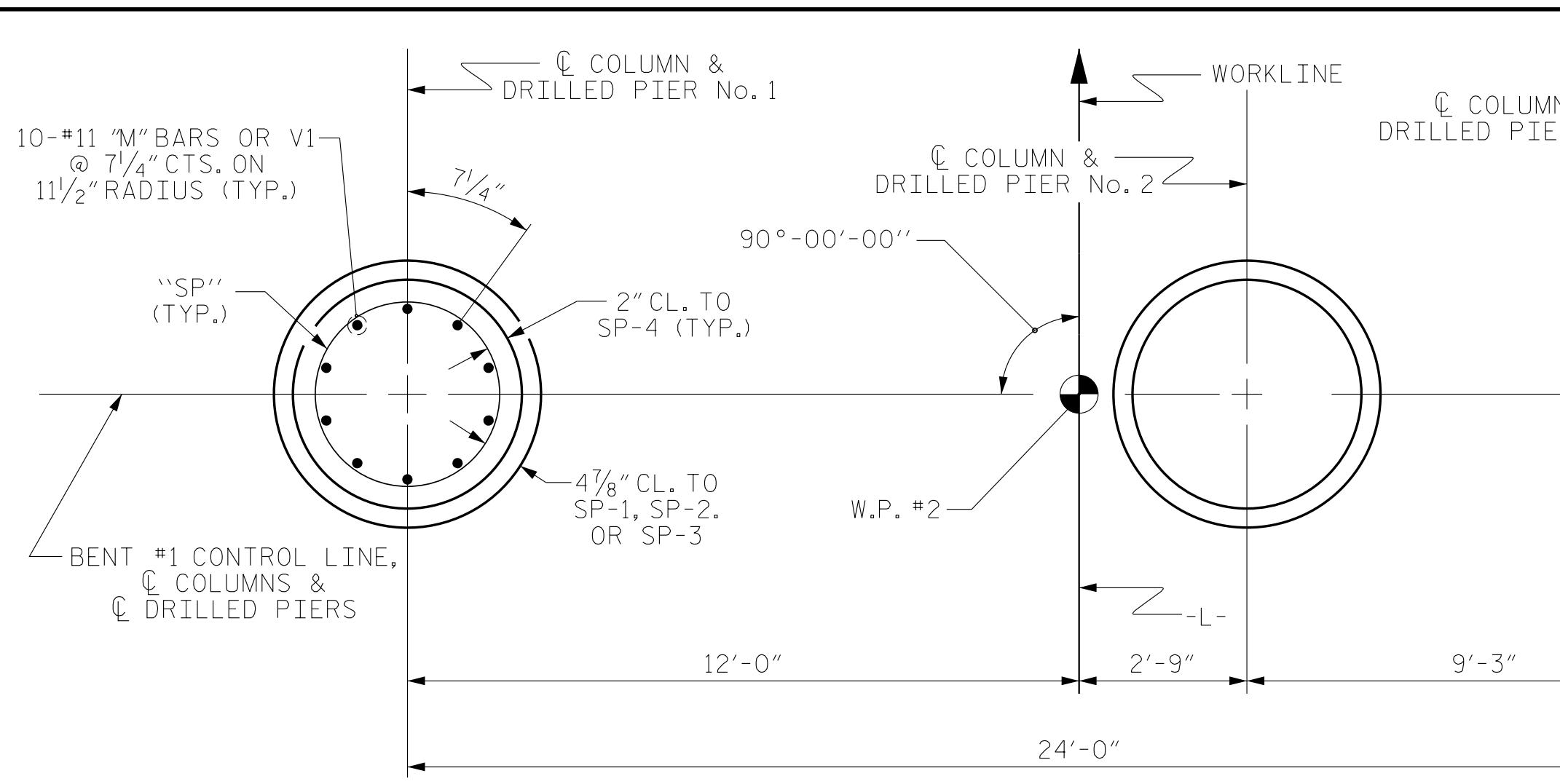
BENT No. 1
(STAGE II)DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

TABLE OF DIMENSIONS		
NO.	COLUMN HEIGHT	DRILLED PIER MIN. HEIGHT
1	10'-10"	32'-3 3/4"

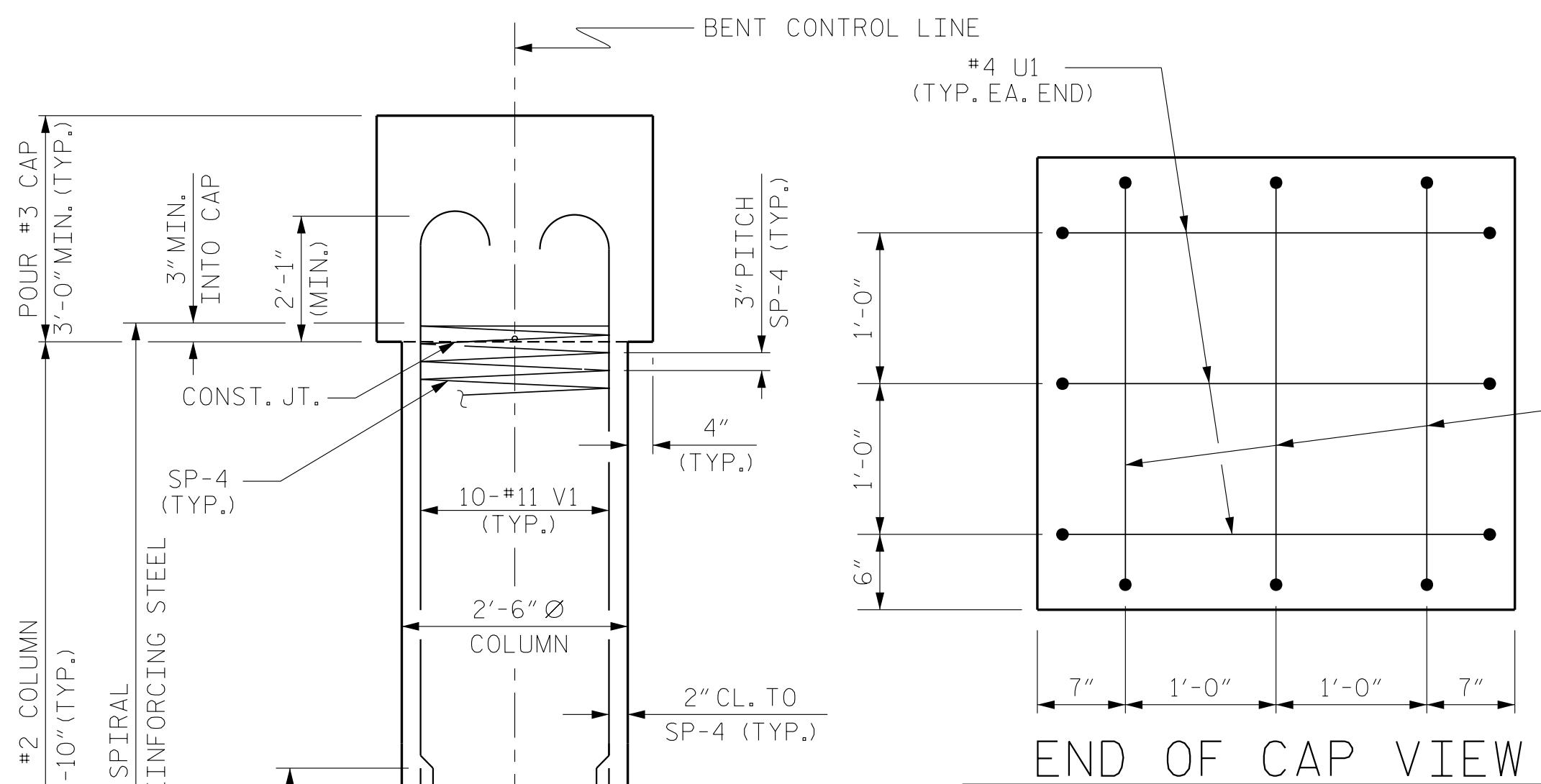
REVISIONS

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

SHEET NO.
S-24TOTAL SHEETS
35

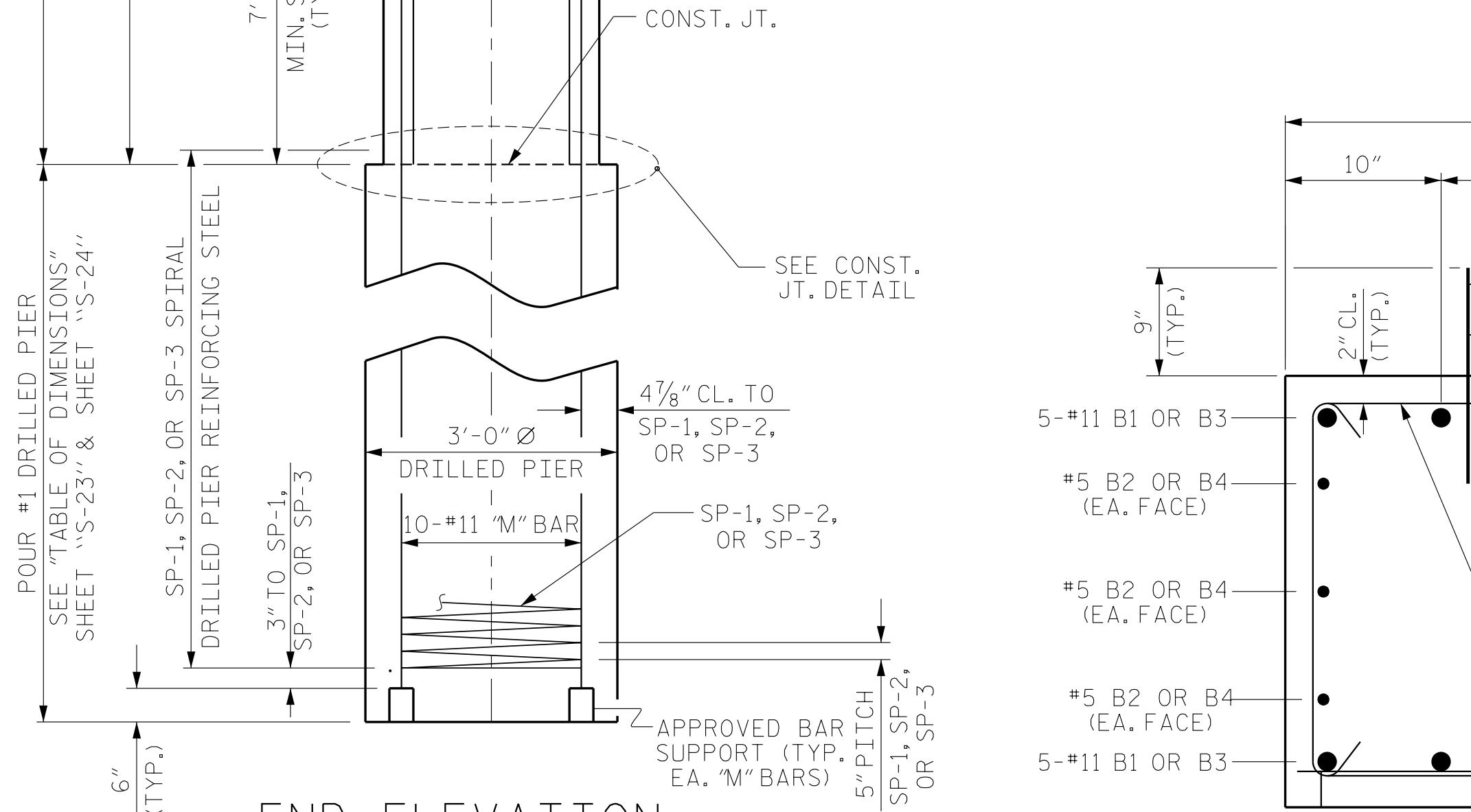


PLAN OF DRILLED PIERS & COLUMNS



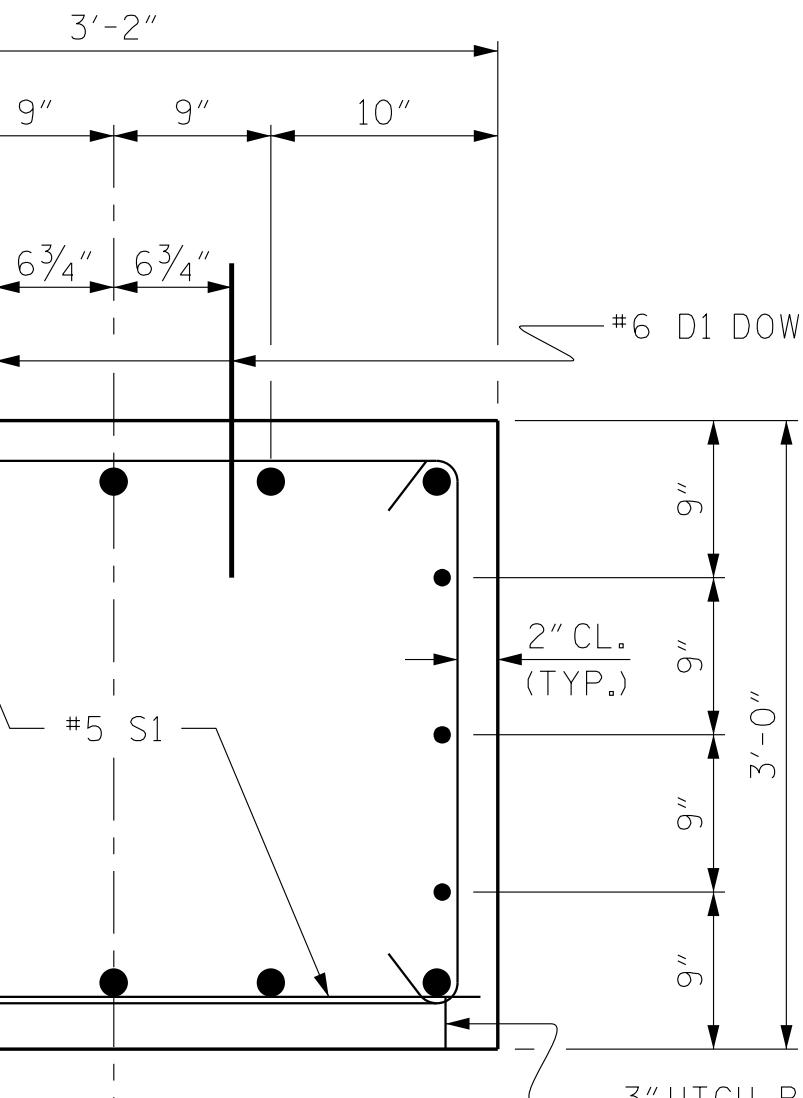
END OF CAP VIE

CONSTRUCTION JOINT DETAIL



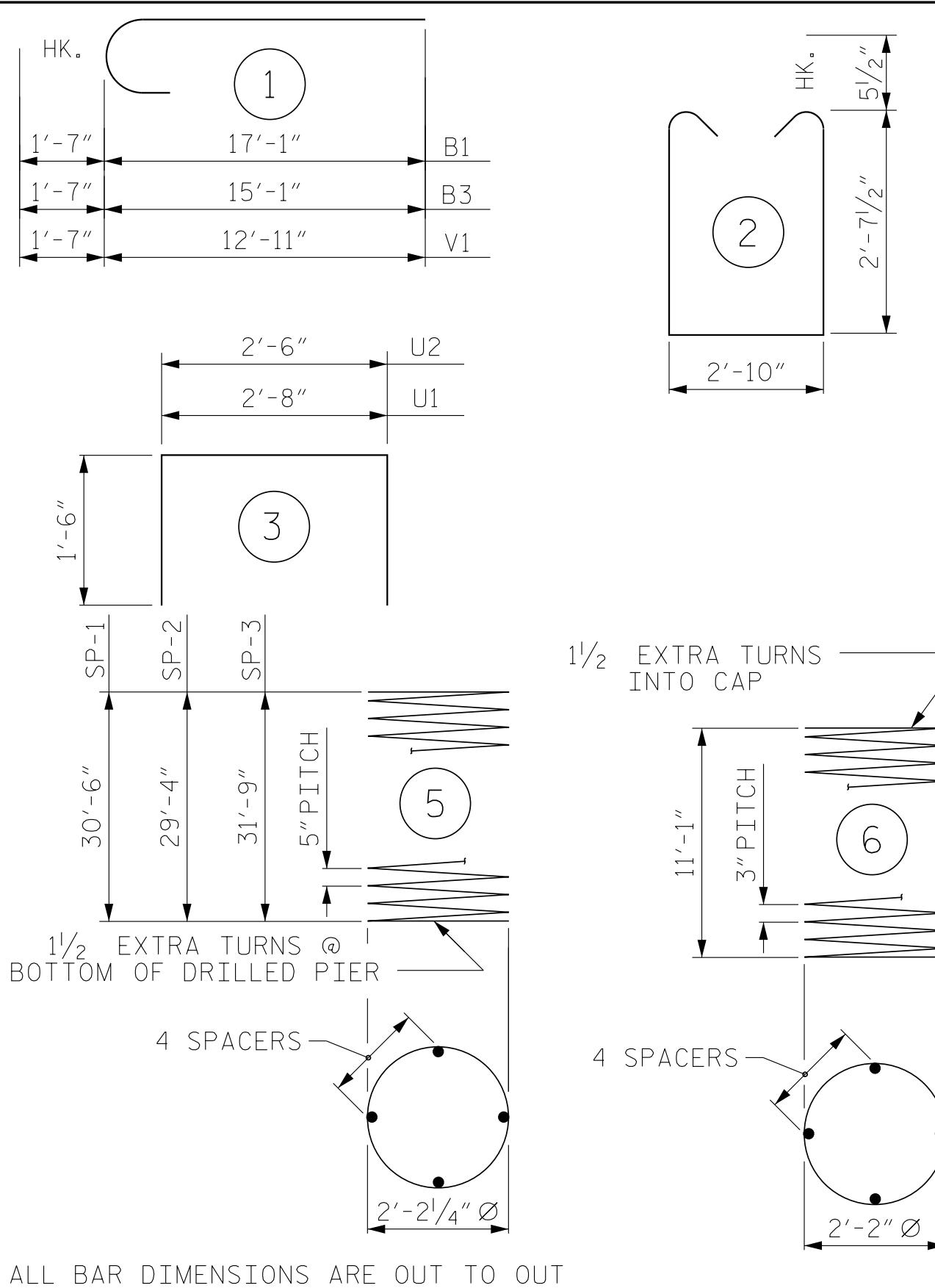
END ELEVATION

SECTION THRU CAP



BENT CONTROL LINE

BAR TYPES



1½ EXTRA TURNS _____ /

4 SPACERS

ALL BAR DIMENSIONS ARE OUT TO OUT

FOR BENT NO.1 (STAGE I)					FOR BENT NO.1 (STAGE II)				
SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
#11	1	18'-8"	992	B3	10	#11	1	16'-8"	886
#5	STR	19'-3"	120	B4	6	#5	STR	15'-11"	100
#6	STR	1'-6"	45	D1	20	#6	STR	1'-6"	45
#11	STR	40'-11"	2174	M3	10	#11	STR	42'-2"	2240
#11	STR	39'-8"	2107						
#5	2	9'-0"	197	S1	27	#5	2	9'-0"	253
#4	3	5'-8"	11	U1	3	#4	3	5'-8"	11
#4	3	5'-6"	11	U2	3	#4	3	5'-6"	11
#11	1	14'-6"	1541	V1	10	#11	1	14'-6"	770
REINFORCING STEEL (STAGE I)					REINFORCING STEEL (STAGE II)				
7198 LBS.					4316 LBS.				
*	5	514'-4"	536	SP-3	1	*	5	535'-0"	558
*	5	495'-1"	516	SP-4	1	**	6	316'-9"	212
**	6	316'-9"	423						
COLUMN REINFORCING STEEL (STAGE I)					SPIRAL COLUMN REINFORCING STEEL (STAGE II)				
1475 LBS.					770 LBS.				
P-1 OR SP-2 SPIRAL REINFORCING SHALL BE W31 OR D-31 COLD DRAWN OR #5 PLAIN OR DEFORMED BAR					* THE SP-3 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR				
P-4 SPIRAL REINFORCING STEEL BE W20 OR D-20 COLD DRAWN OR #4 PLAIN OR DEFORMED BAR					** THE SP-4 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR				
CLASS A CONCRETE BREAKDOWN (STAGE I)					CLASS A CONCRETE BREAKDOWN (STAGE II)				
(COLUMNS) 3.9 C.Y.					POUR #2 (COLUMNS) 2.0 C.Y.				
(CAP) 5.7 C.Y.					POUR #3 (CAP) 5.7 C.Y.				
CLASS A CONCRETE 9.6 C.Y.					TOTAL CLASS A CONCRETE 7.7 C.Y.				
DRILLED PIERS: (STAGE I)					DRILLED PIERS: (STAGE II)				
PIER CONCRETE (DRILLED PIERS) 15.9 C.Y.					DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS) 8.5 C.Y.				

TOTAL BILL OF MATERIAL FOR BENT NO. 1

3'-0" Ø DRILLED PIER IN SOIL	3'-0" Ø DRILLED PIER NOT IN SOIL	PERMANENT STEEL CASINGS FOR 3'-0" Ø DRILLED PIER	CLASS A CONC.	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	CSL TUBES
LIN. FT.	LIN. FT.	LIN. FT.	C.Y.	LBS.	LBS.	LIN. FT.
48.1	45.0	44.8	17.3	11,514	2245	390.6

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

PROJECT NO. 17BP.14.R.141

POLK COUNTY

STATION: 14+60.66 -L-

SHEET 3 OF 3

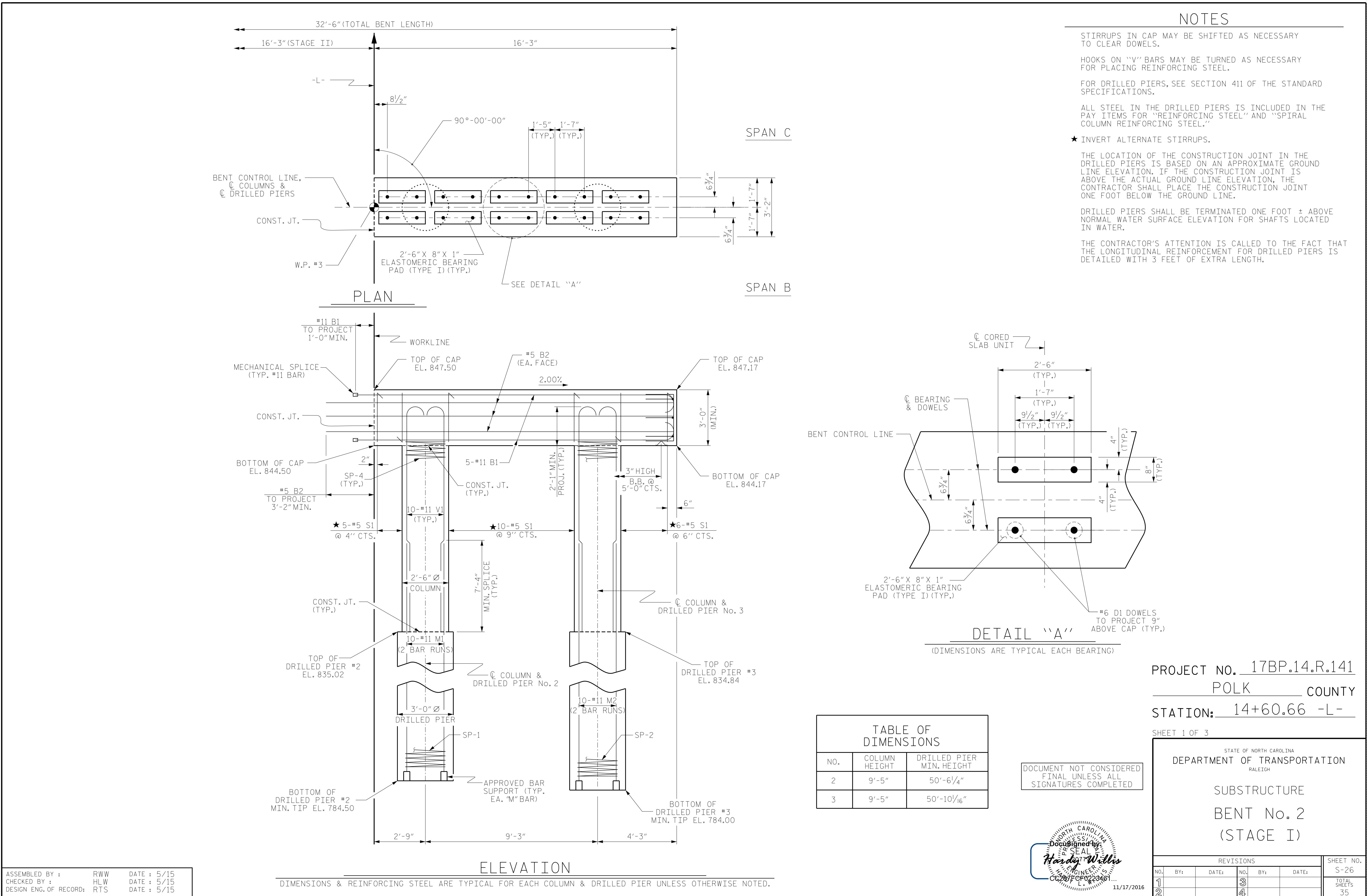
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT No. 1 DETAILS

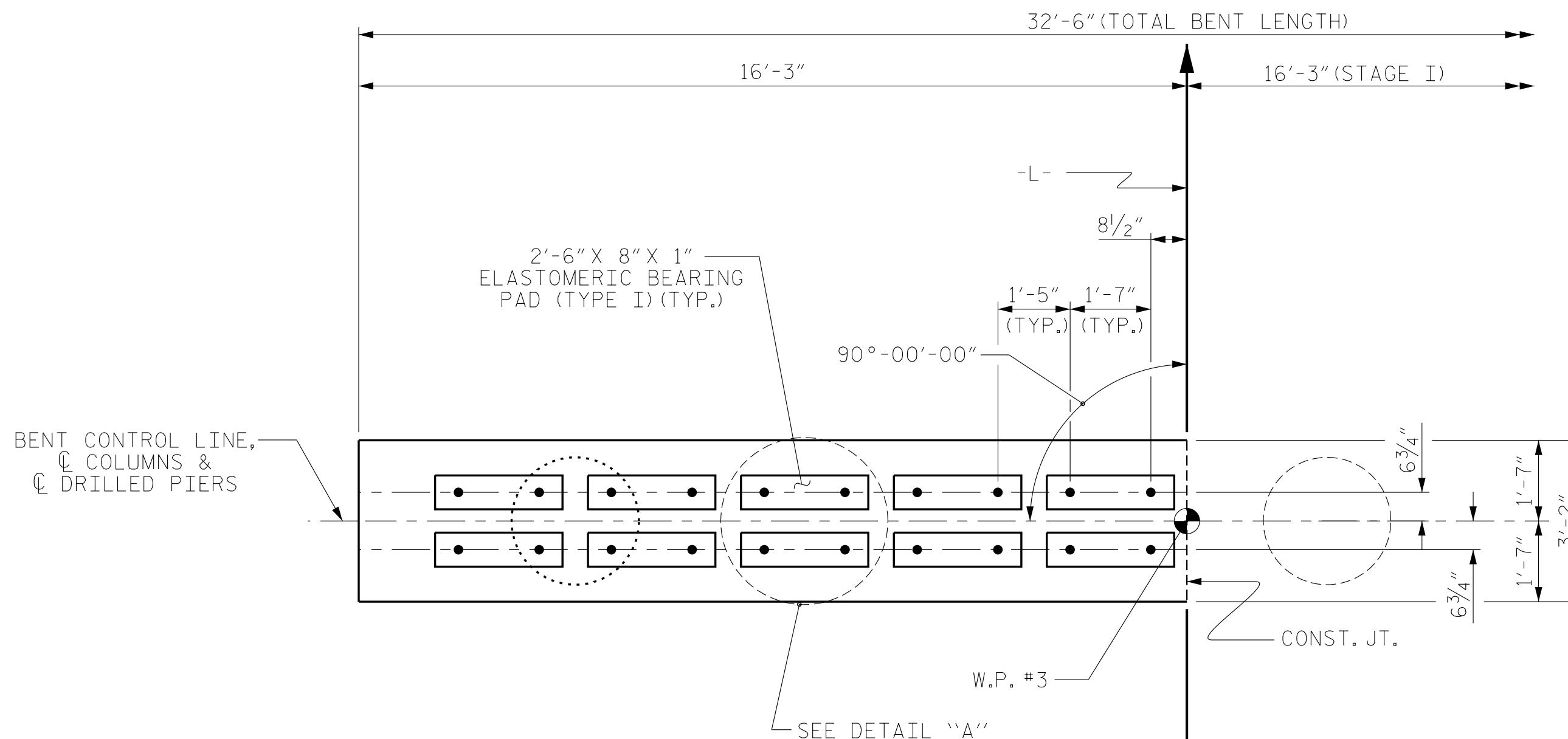


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			35



NOTES

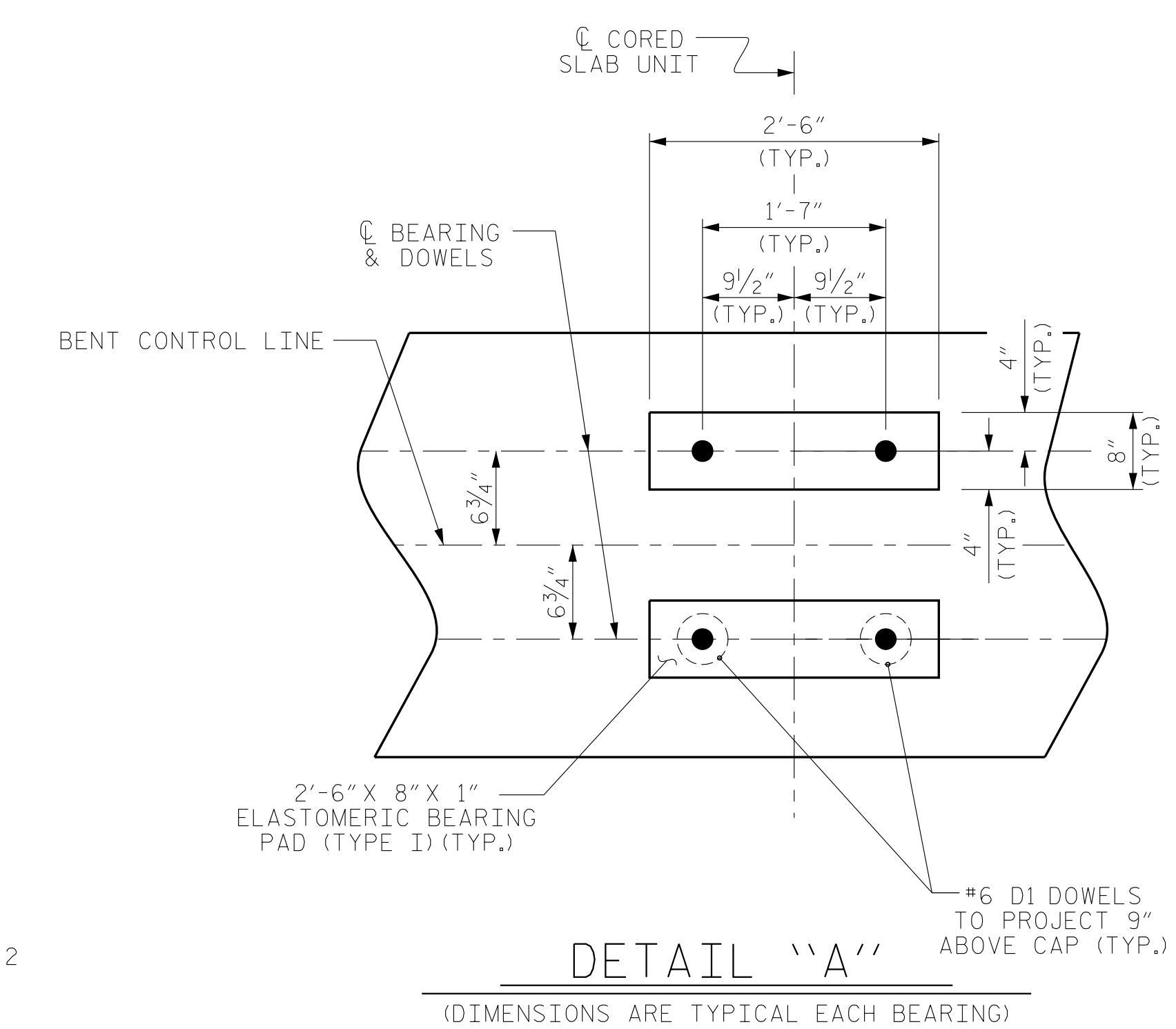
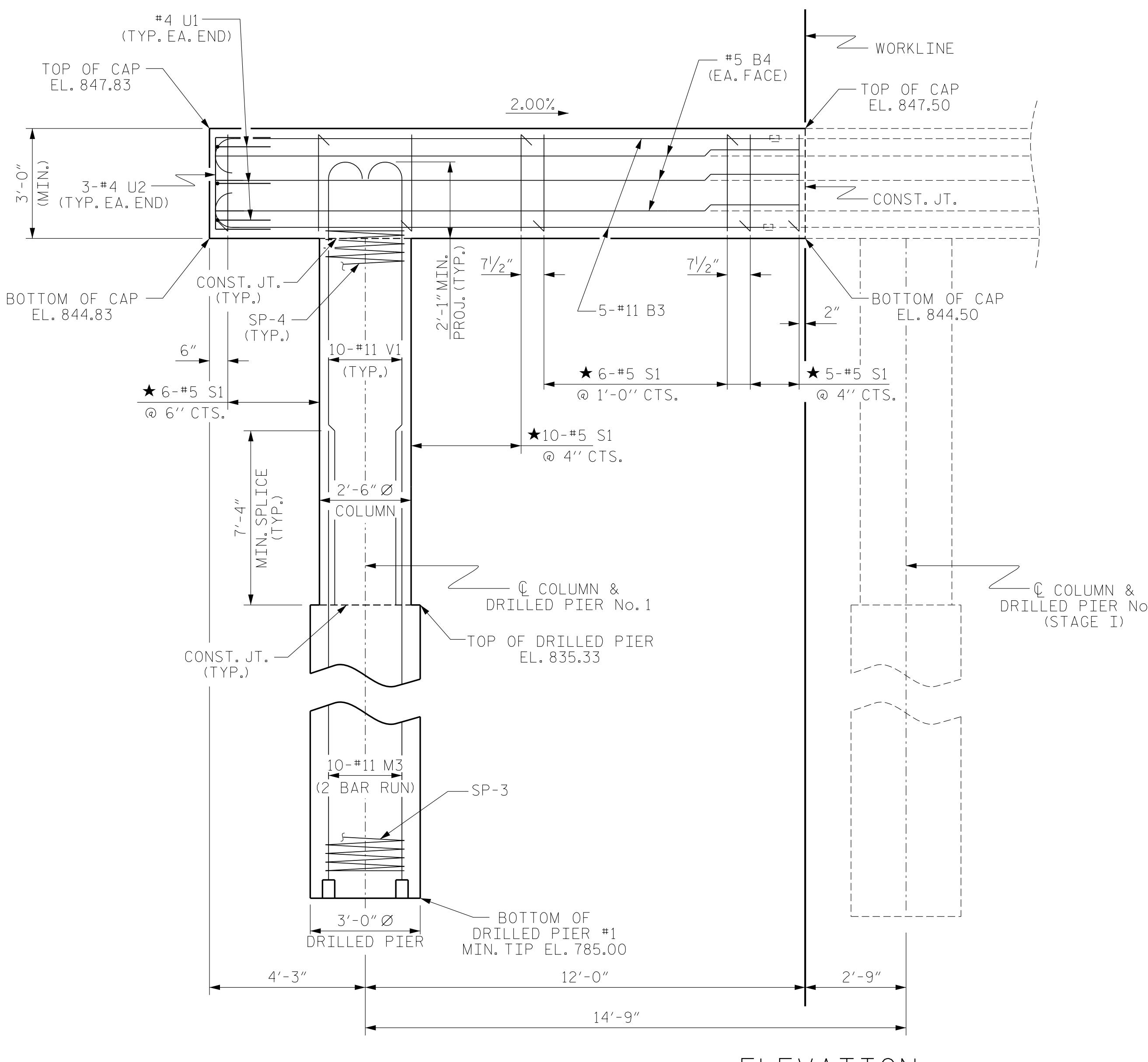
SEE SHEET "S-26" FOR NOTES.



SPAN C

SPAN B

PLAN



PROJECT NO. 17BP.14.R.141

POLK COUNTY

STATION: 14+60.66 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

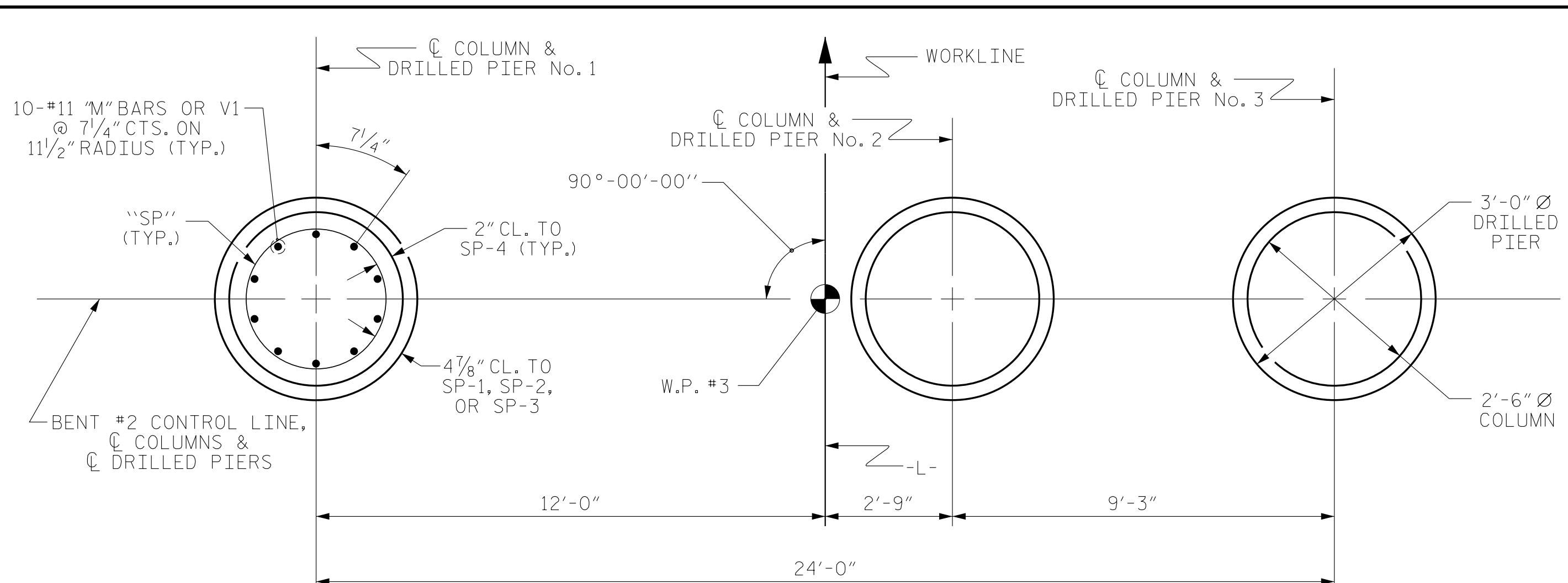
BENT No. 2
(STAGE II)DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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

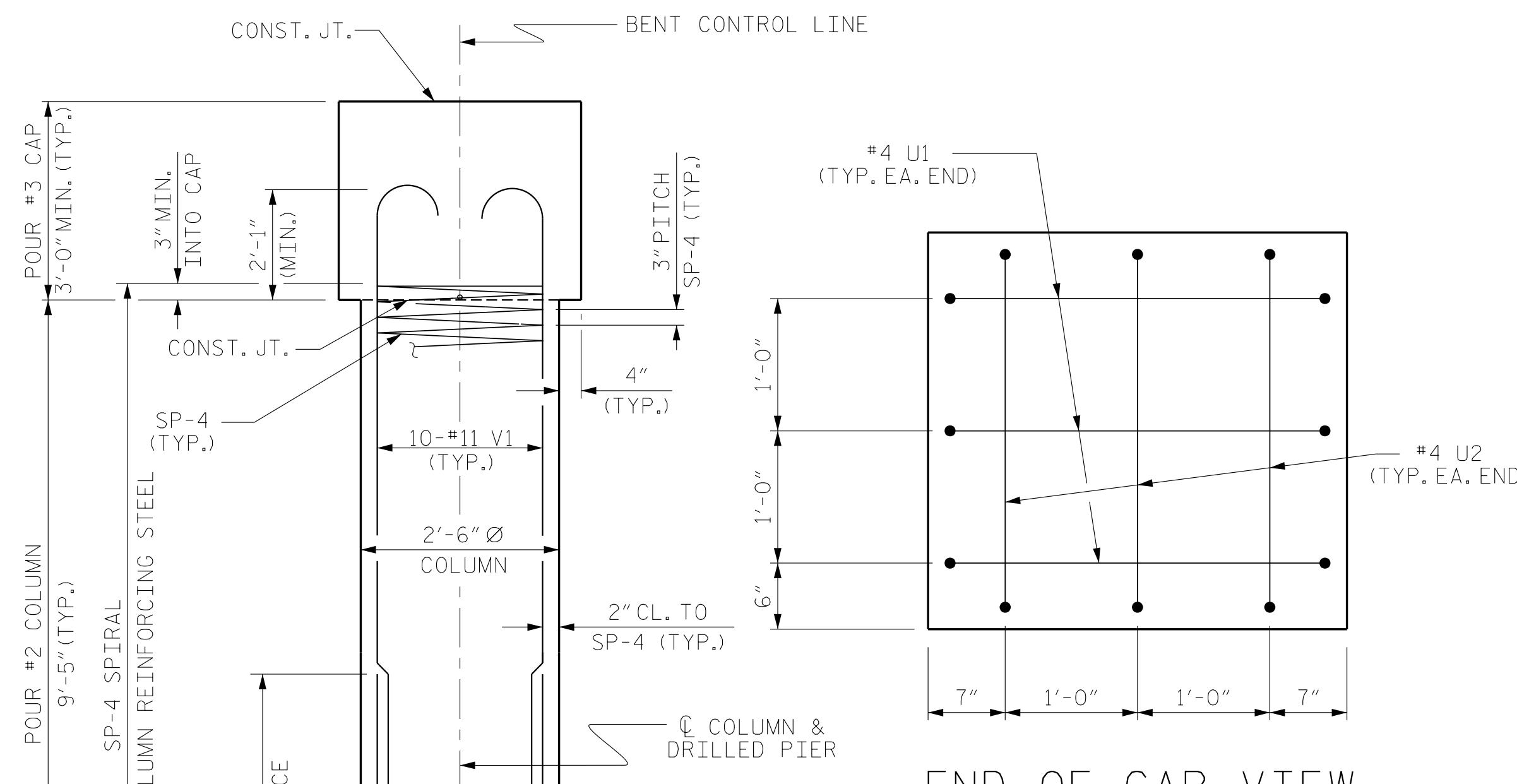
ASSEMBLED BY : RWW	DATE : 5/15
CHECKED BY : HLW	DATE : 5/15
DESIGN ENG. OF RECORD: RTS	DATE : 5/15

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

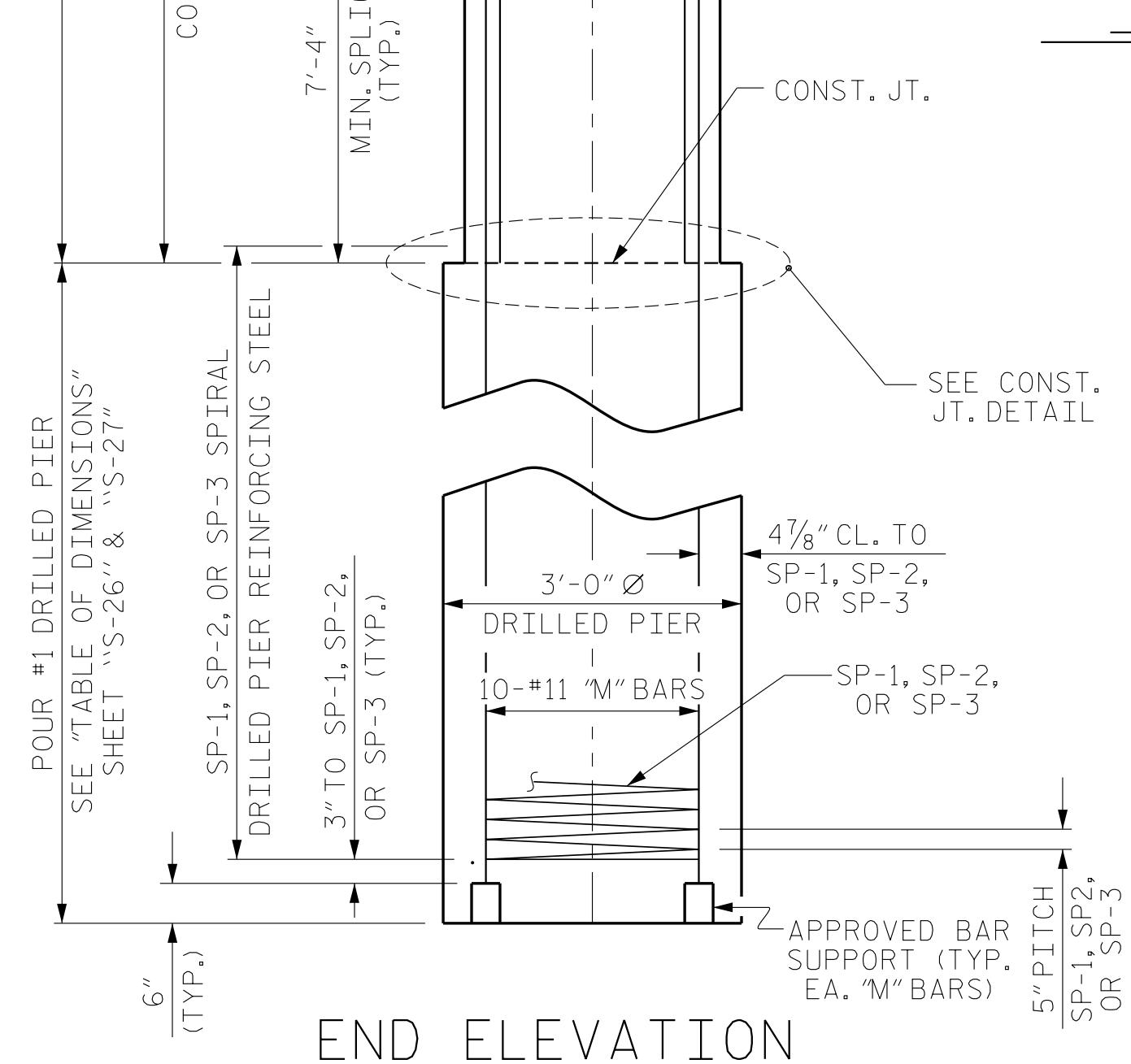
TOTAL SHEETS	35
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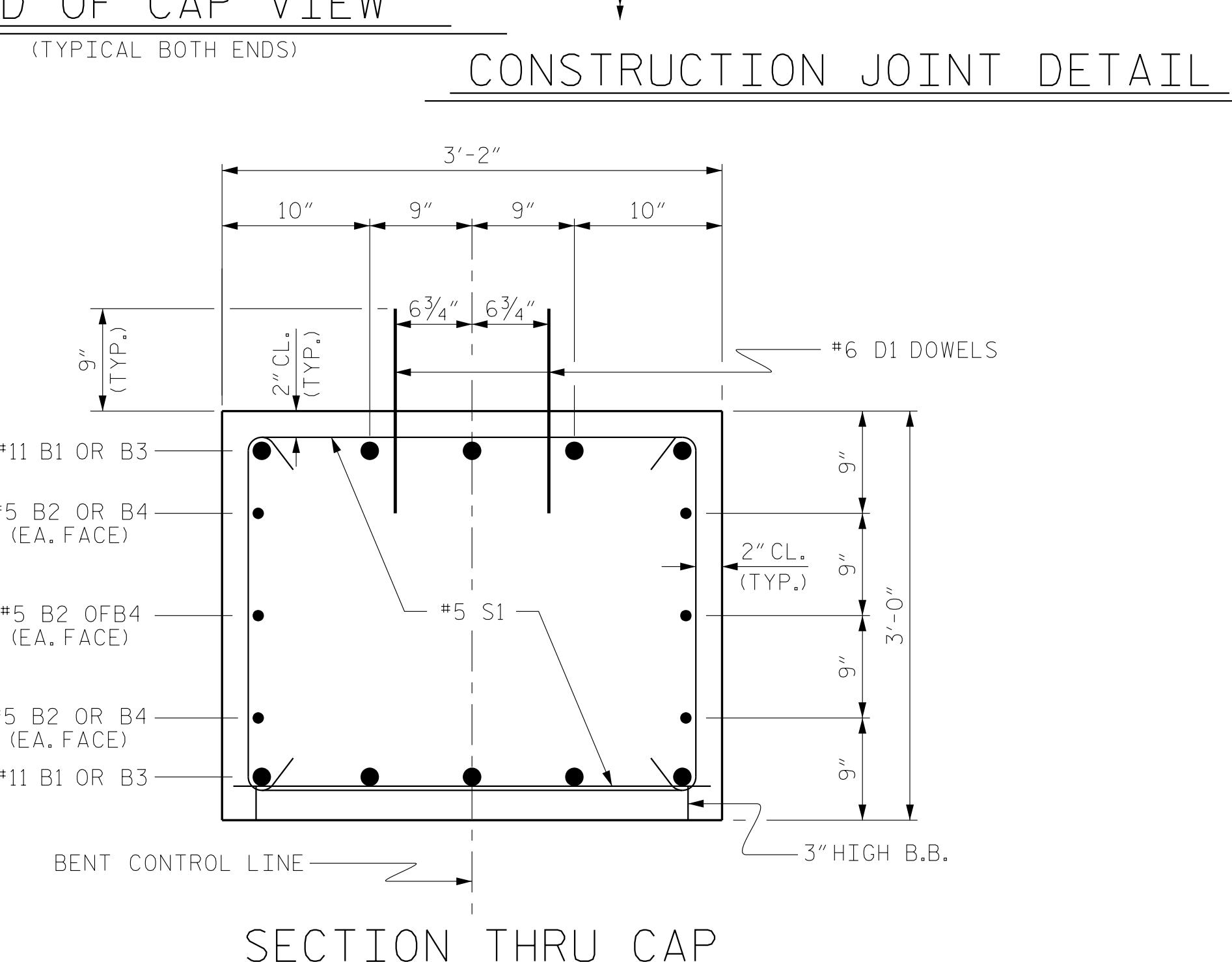
PLAN OF DRILLED PIERS & COLUMNS



END OF CAP VIEW

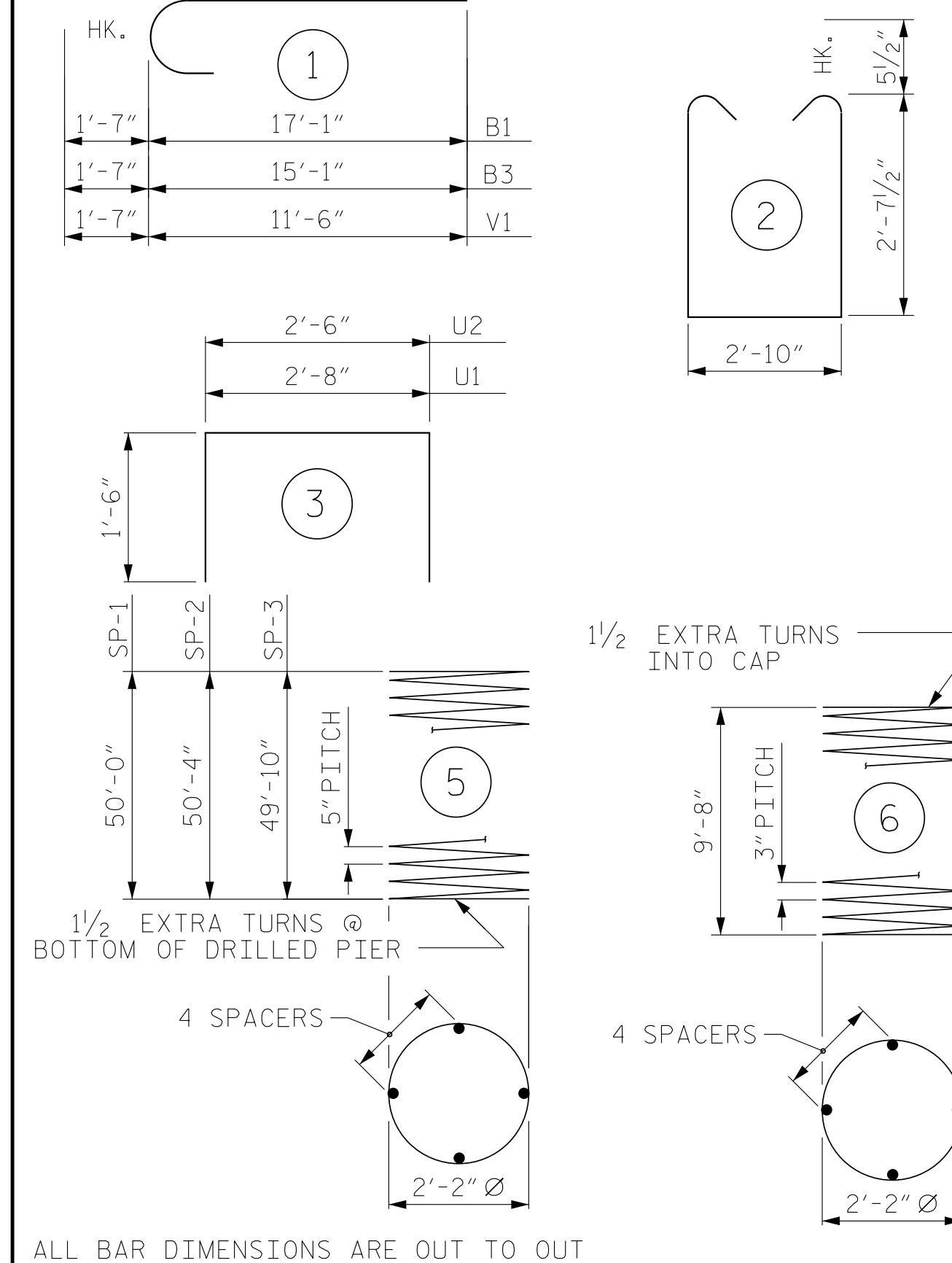


END ELEVATION



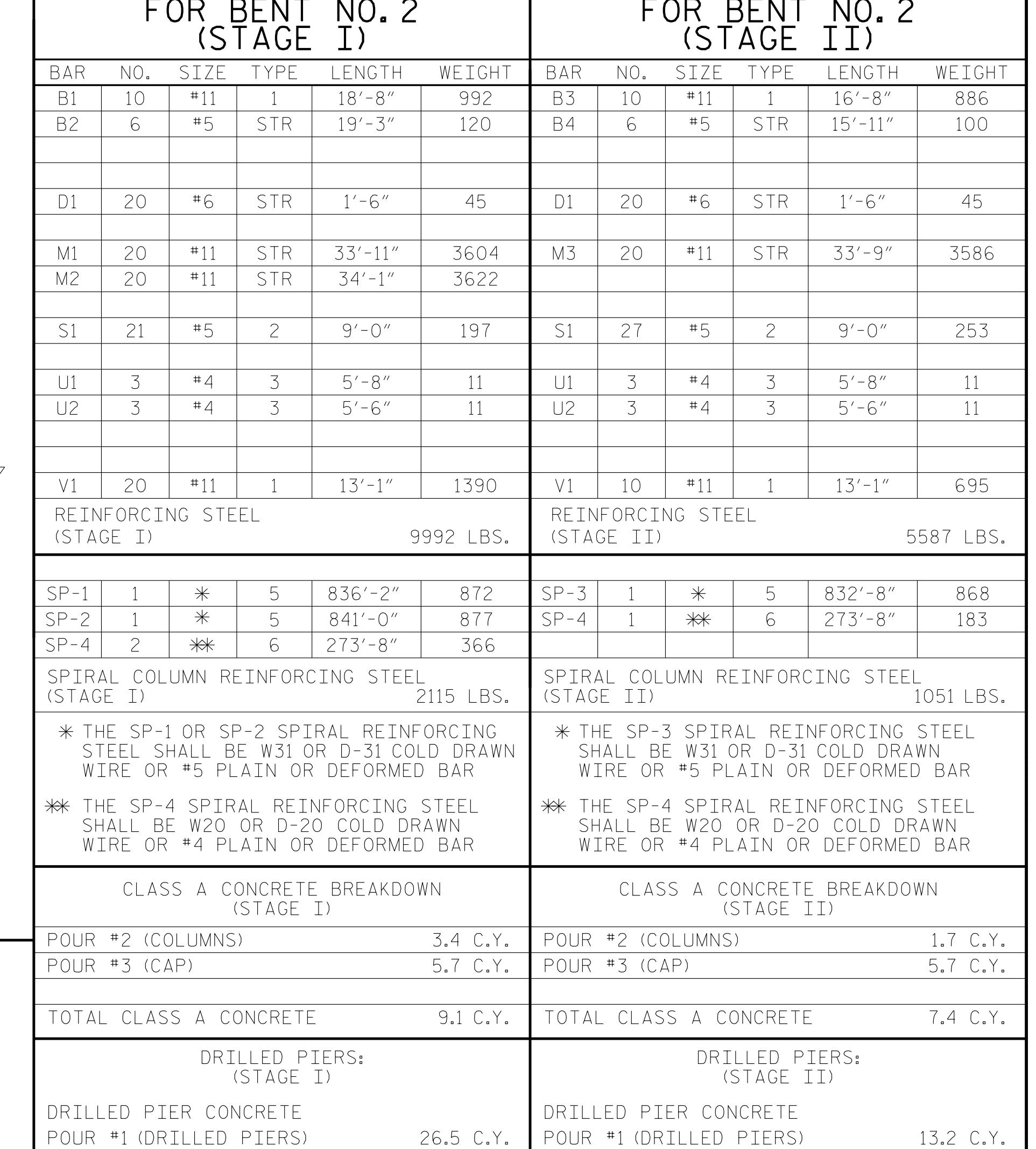
SECTION THRU CAP

BAR TYPES



$1\frac{1}{2}$ EXTRA TURNS ————— /

ALL BAR DIMENSIONS ARE OUT TO OUT



TOTAL BILL OF MATERIAL FOR BENT NO. 2

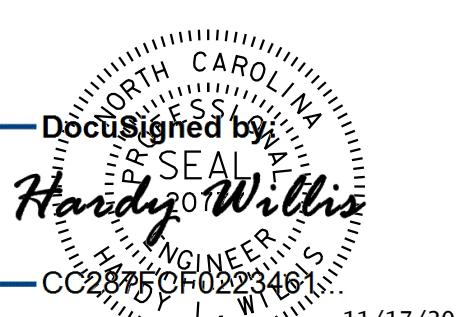
TYPICAL BILLET OR MASTERSHAFT FOR BENT NO. 2						
3'-0" Ø DRILLED PIER IN SOIL	3'-0" Ø DRILLED PIER NOT IN SOIL	PERMANENT STEEL CASINGS FOR 3'-0" Ø DRILLED PIER	CLASS A CONC.	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	CSL TUBES
LIN. FT.	LIN. FT.	LIN. FT.	C.Y.	LBS.	LBS.	LIN. FT.
101.7	50.0	54.4	16.5	15,579	3,166	624.8

PROJECT NO 17BP.14.R.141

POLK COUNTY

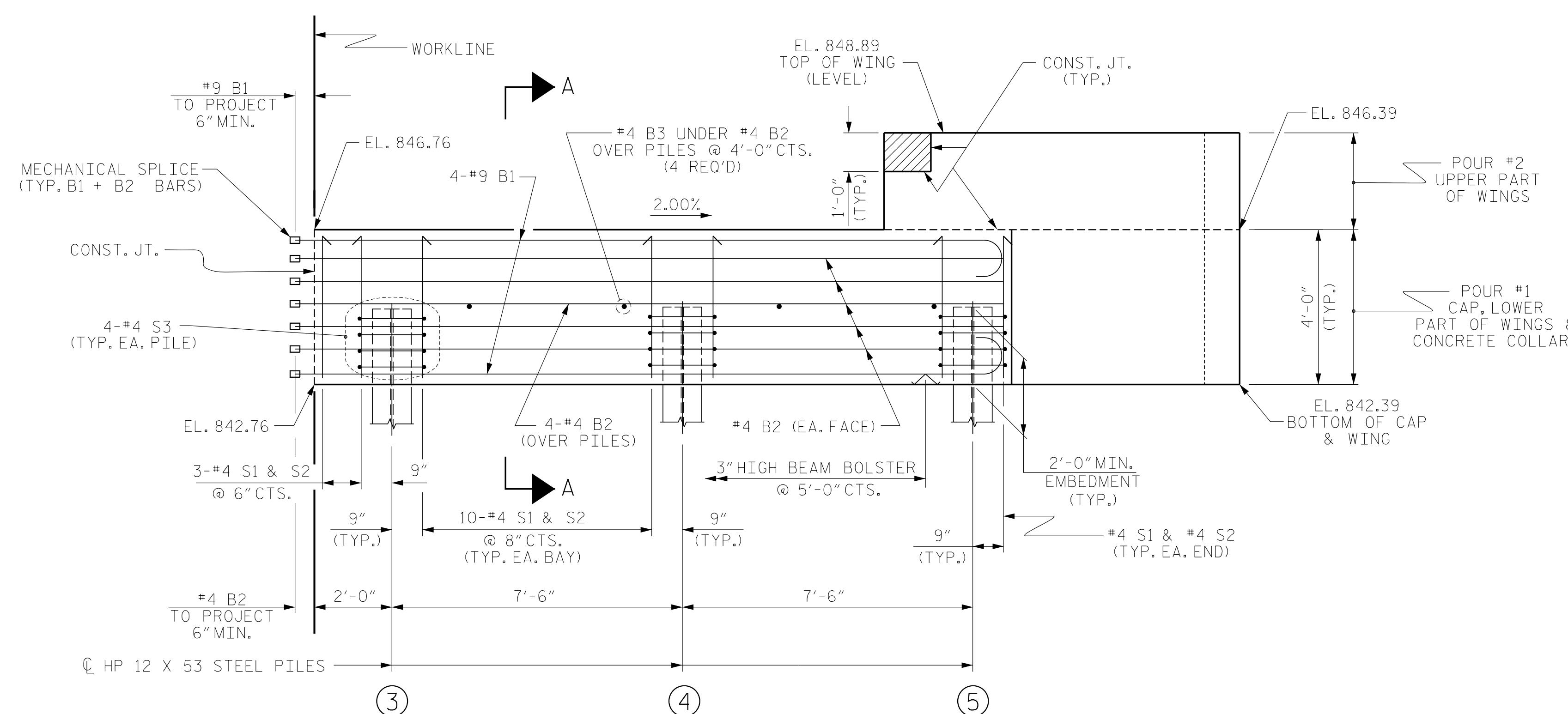
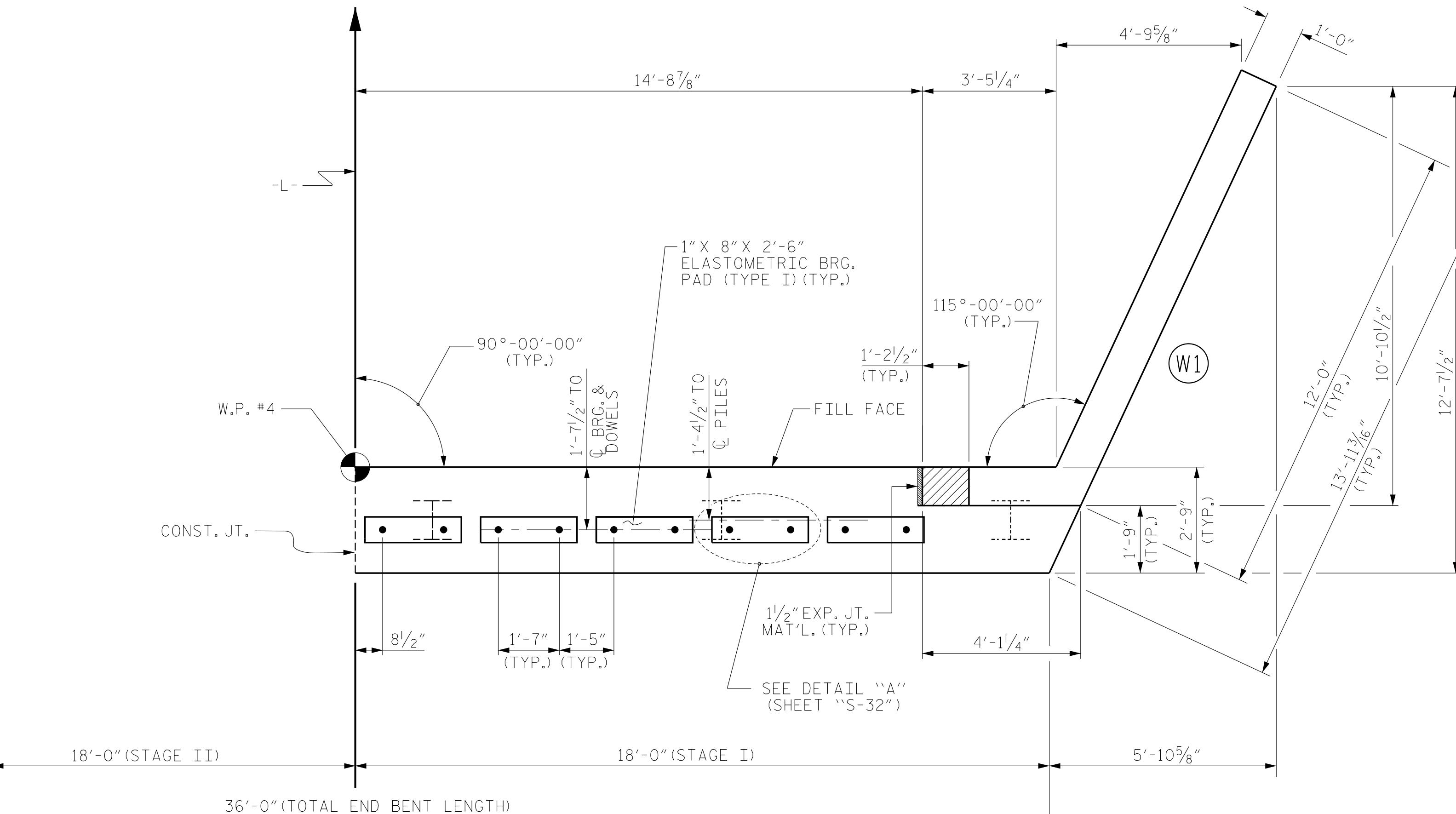
STATION: 14+60.66 -L-

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



BENT No. 2 DETAILS

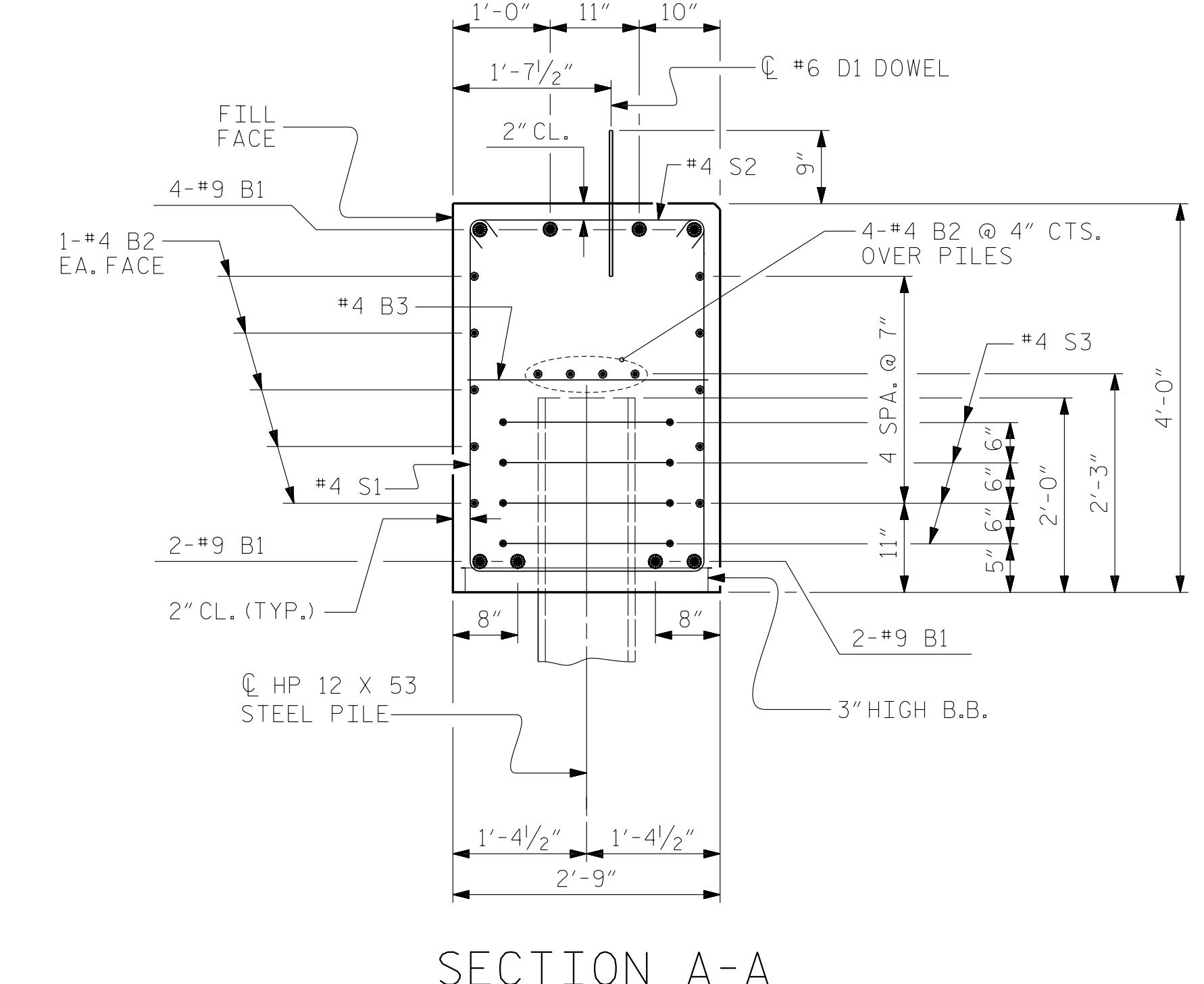
REVISIONS					SHEET NO.
BY:	DATE:	NO.	BY:	DATE:	S-28
		3			TOTAL SHEETS
		4			35



ASSEMBLED BY : RWW DATE : 5/15
CHECKED BY : HLW DATE : 5/15
DESIGN ENG. OF RECORD: RTS DATE : 5/15

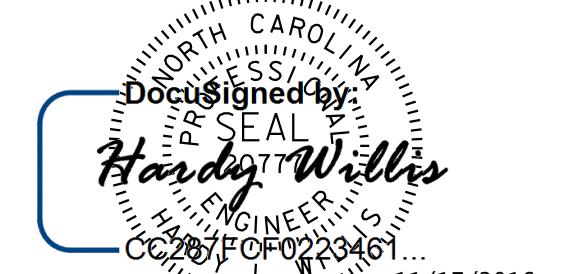
NOTES

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 "S-32".
FOR WING DETAILS, SEE SHEET "S-31".



TOP OF PILE ELEVATIONS	
(3)	844.72
(4)	844.57
(5)	844.42

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

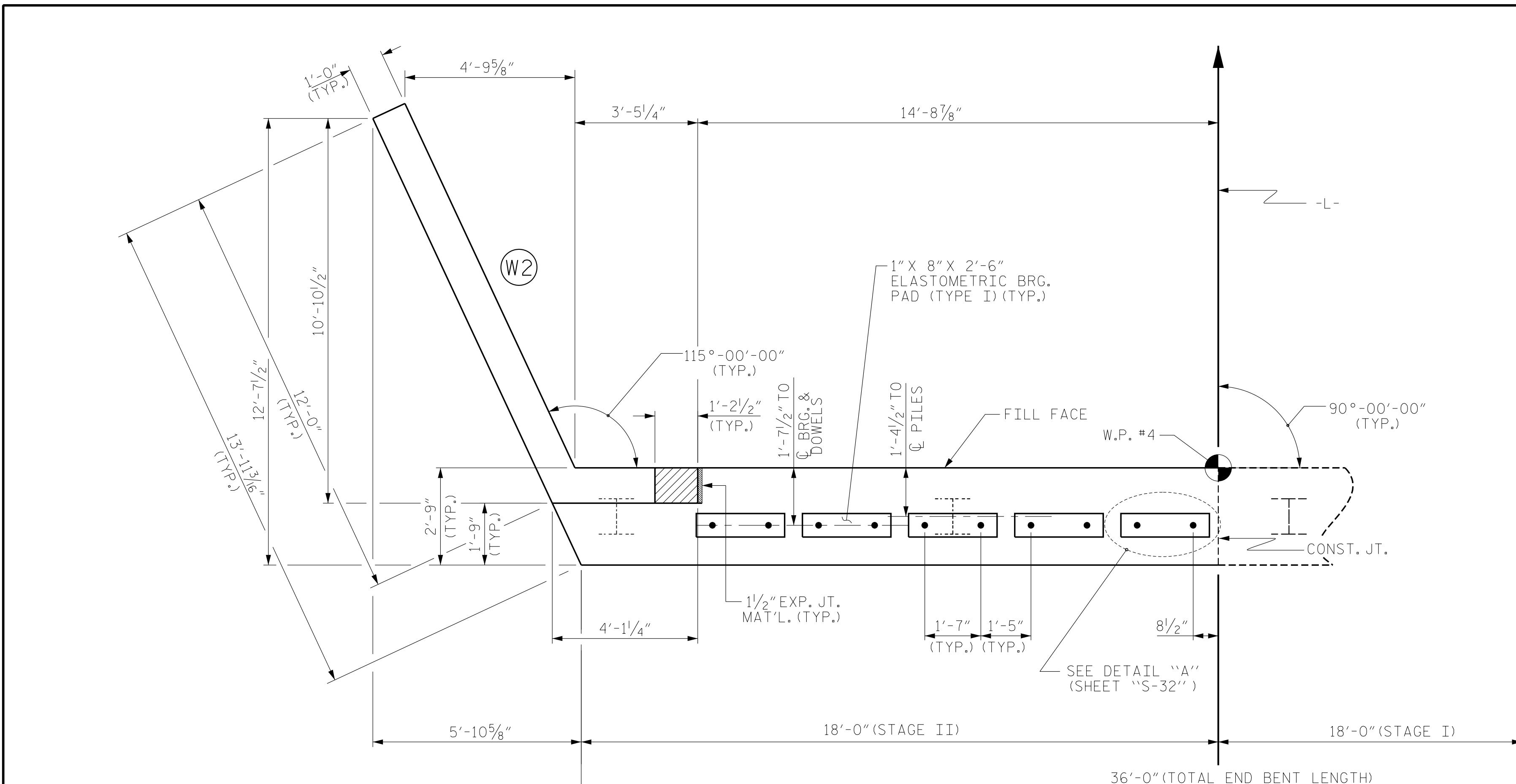


PROJECT NO. 17BP.14.R.141
POLK COUNTY
STATION: 14+60.66 -L-

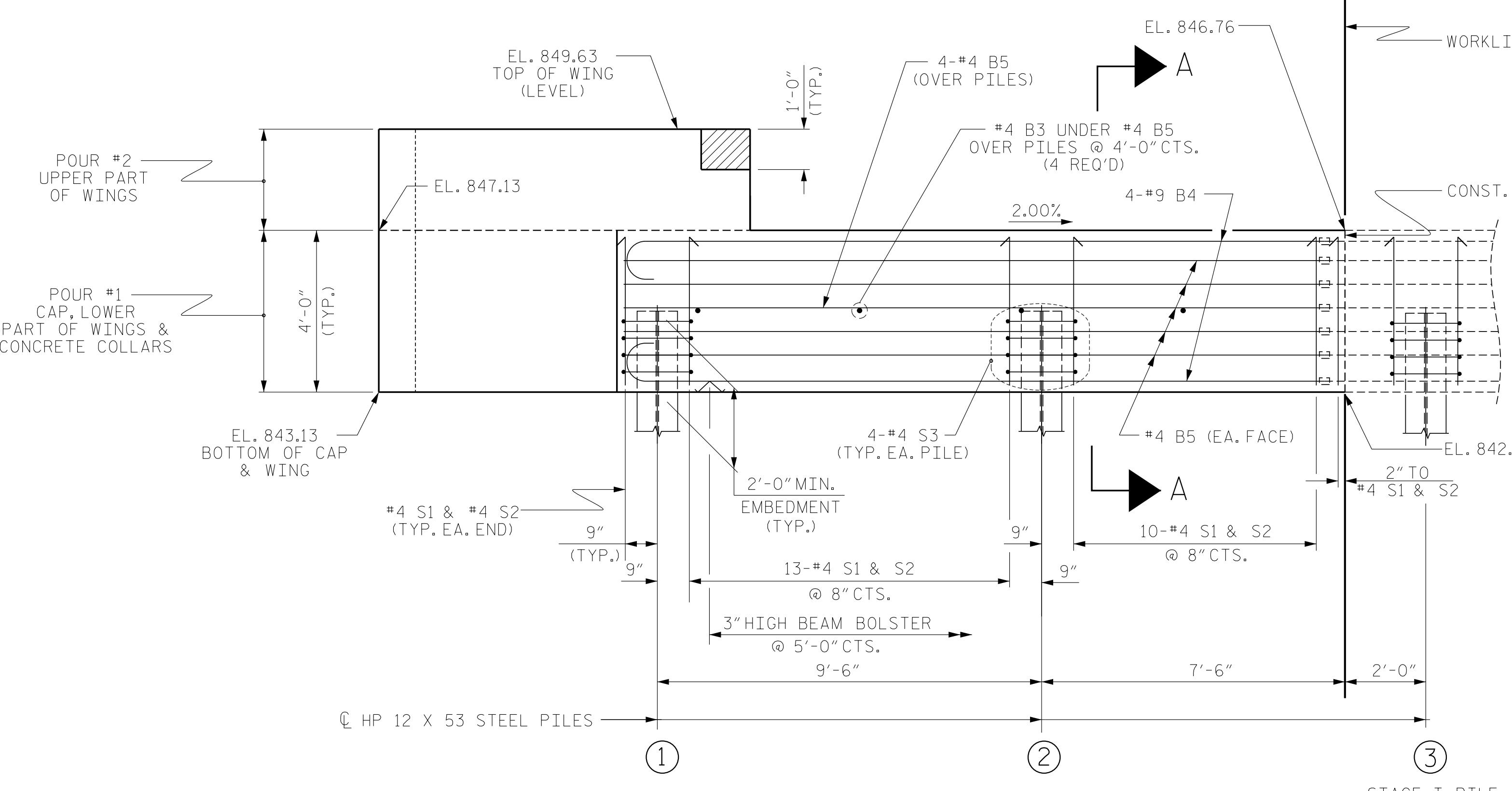
SHEET 1 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
END BENT No. 2 (STAGE I)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-29
TOTAL SHEETS 35



PLAN



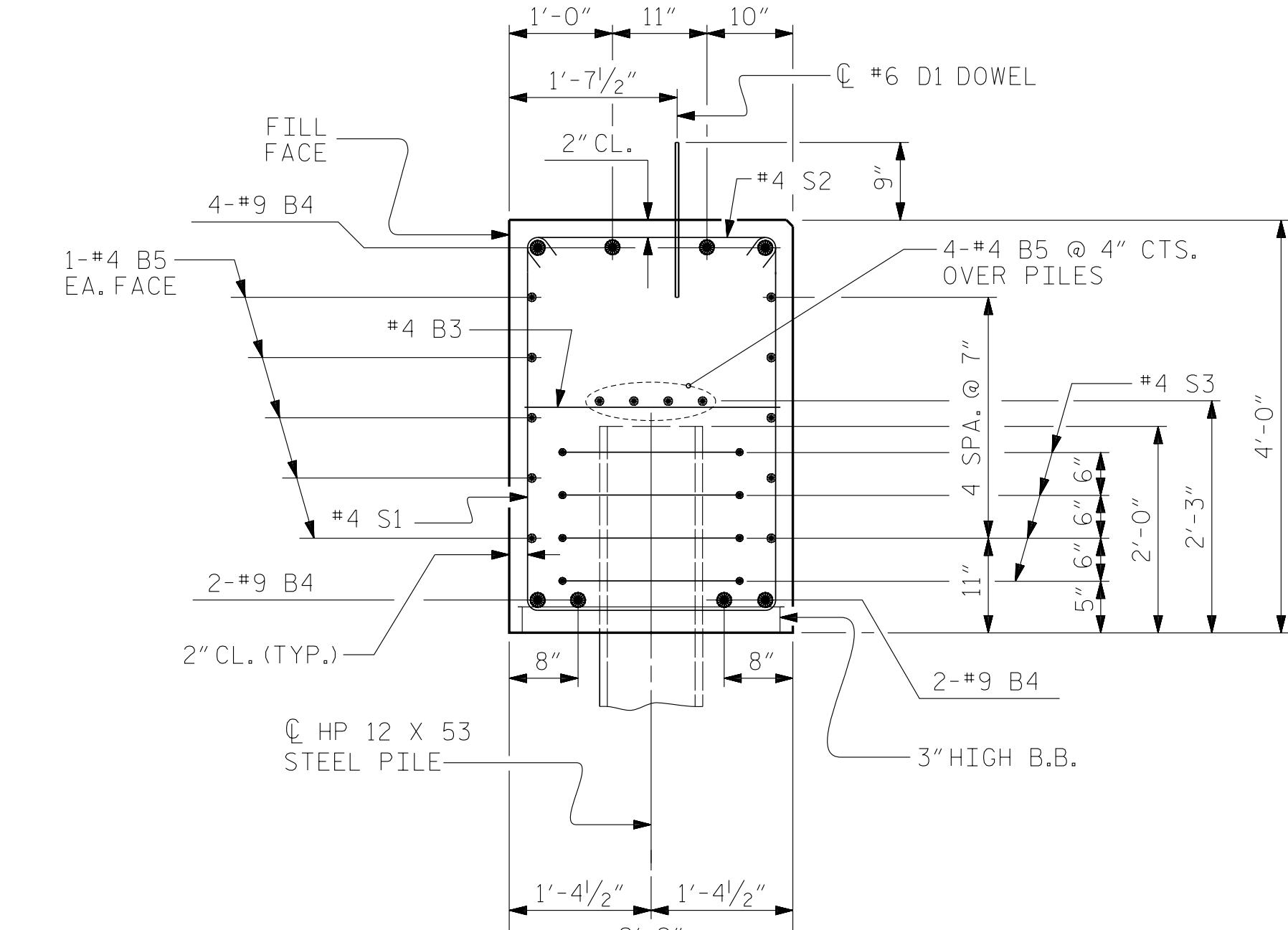
ELEVATION

CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET "S-32".

ASSEMBLED BY : RWW DATE : 5/15
CHECKED BY : HLW DATE : 5/15
DESIGN ENG. OF RECORD: RTS DATE : 5/15

NOTES

SEE SHEET "S-29" FOR NOTES.



SECTION A-A

TOP OF PILE ELEVATIONS	
(1)	845.10
(2)	844.91

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

PROJECT NO. 17BP.14.R.141
POLK COUNTY
STATION: 14+60.66 -L-

SHEET 2 OF 4

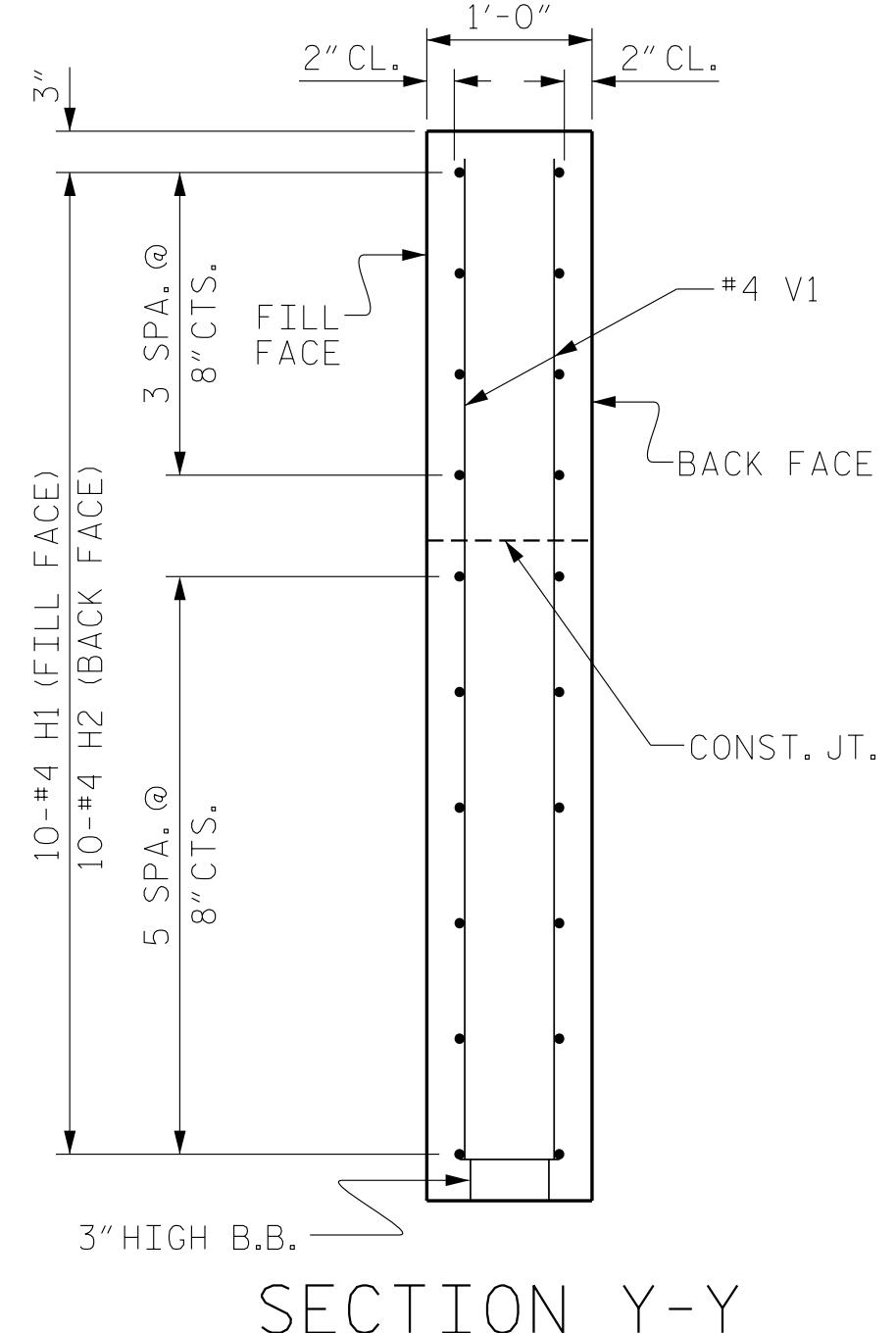
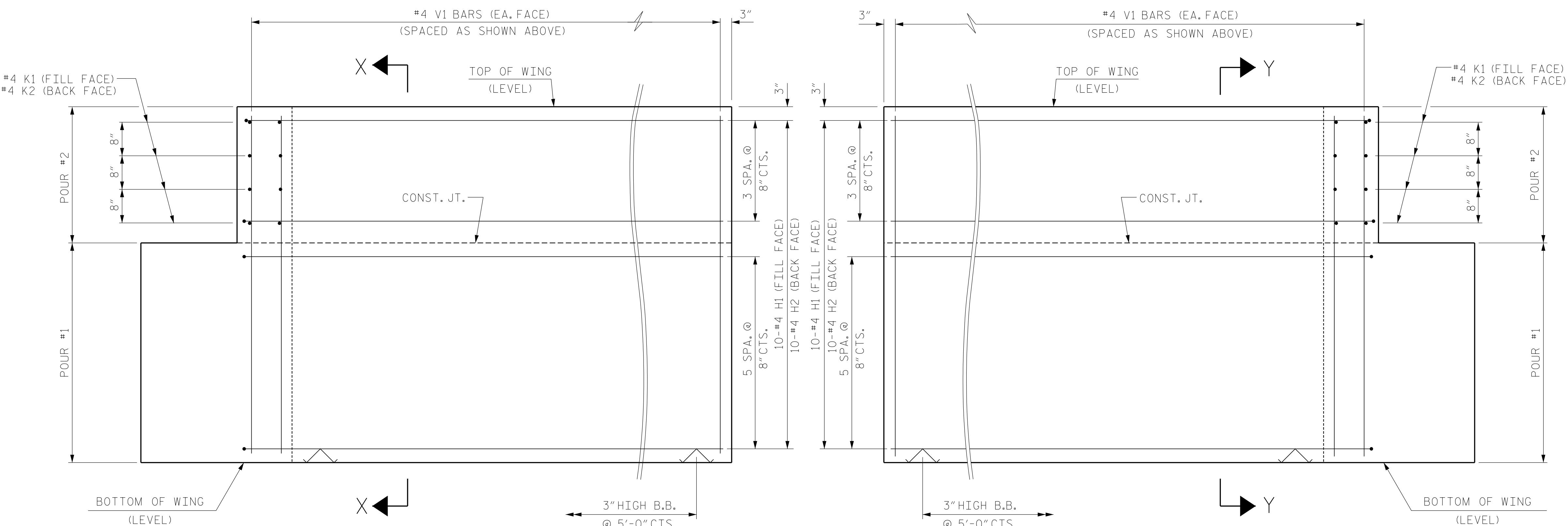
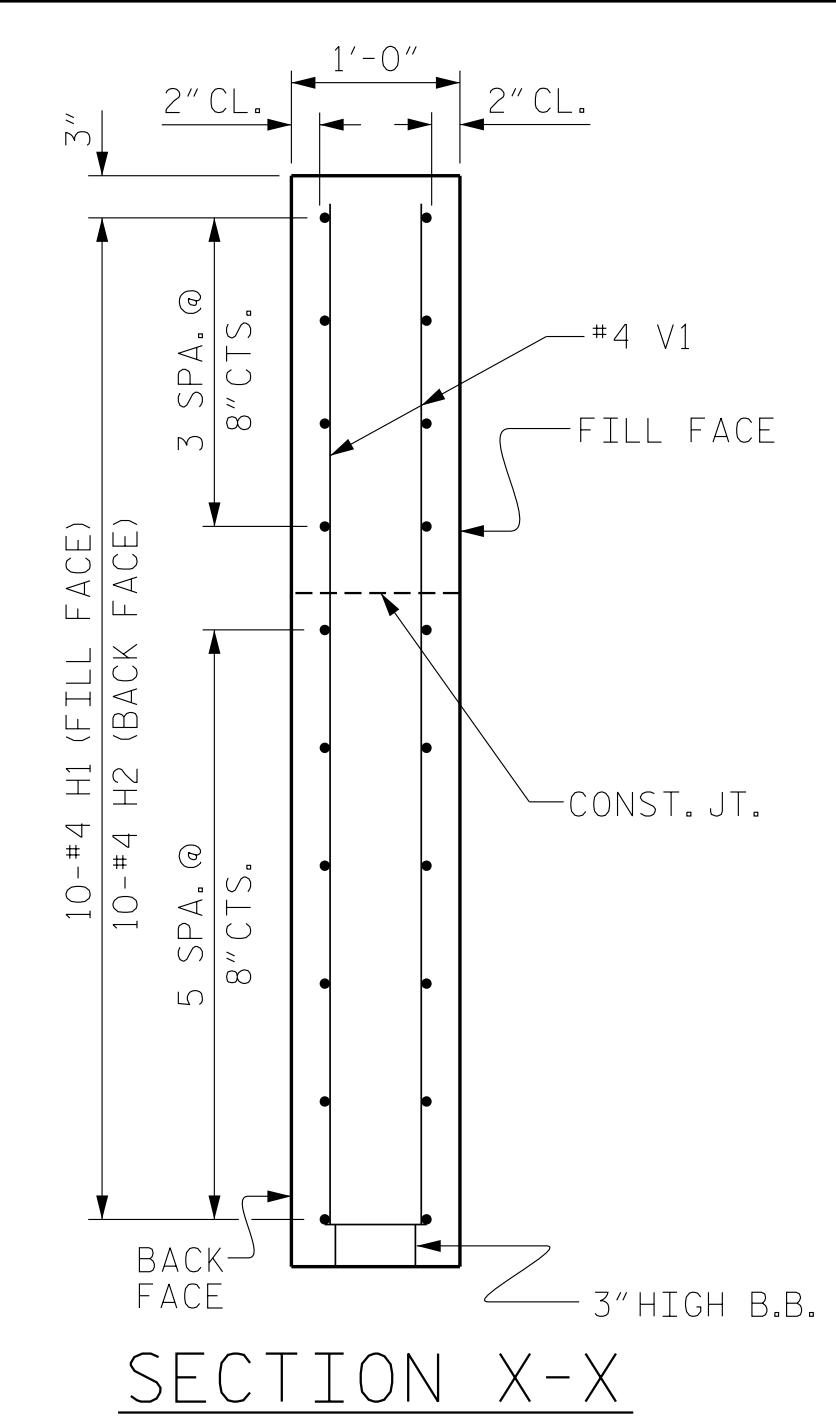
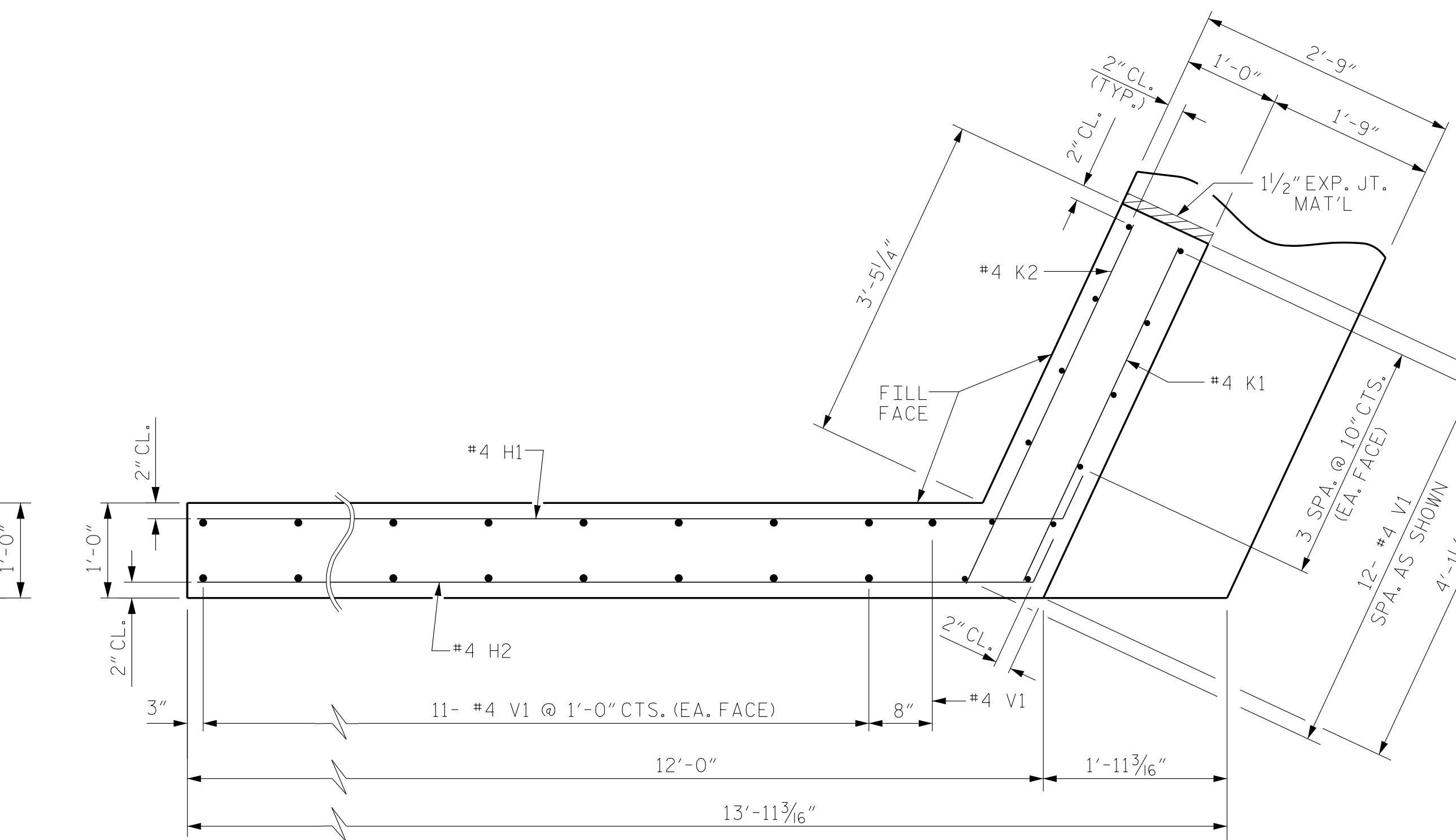
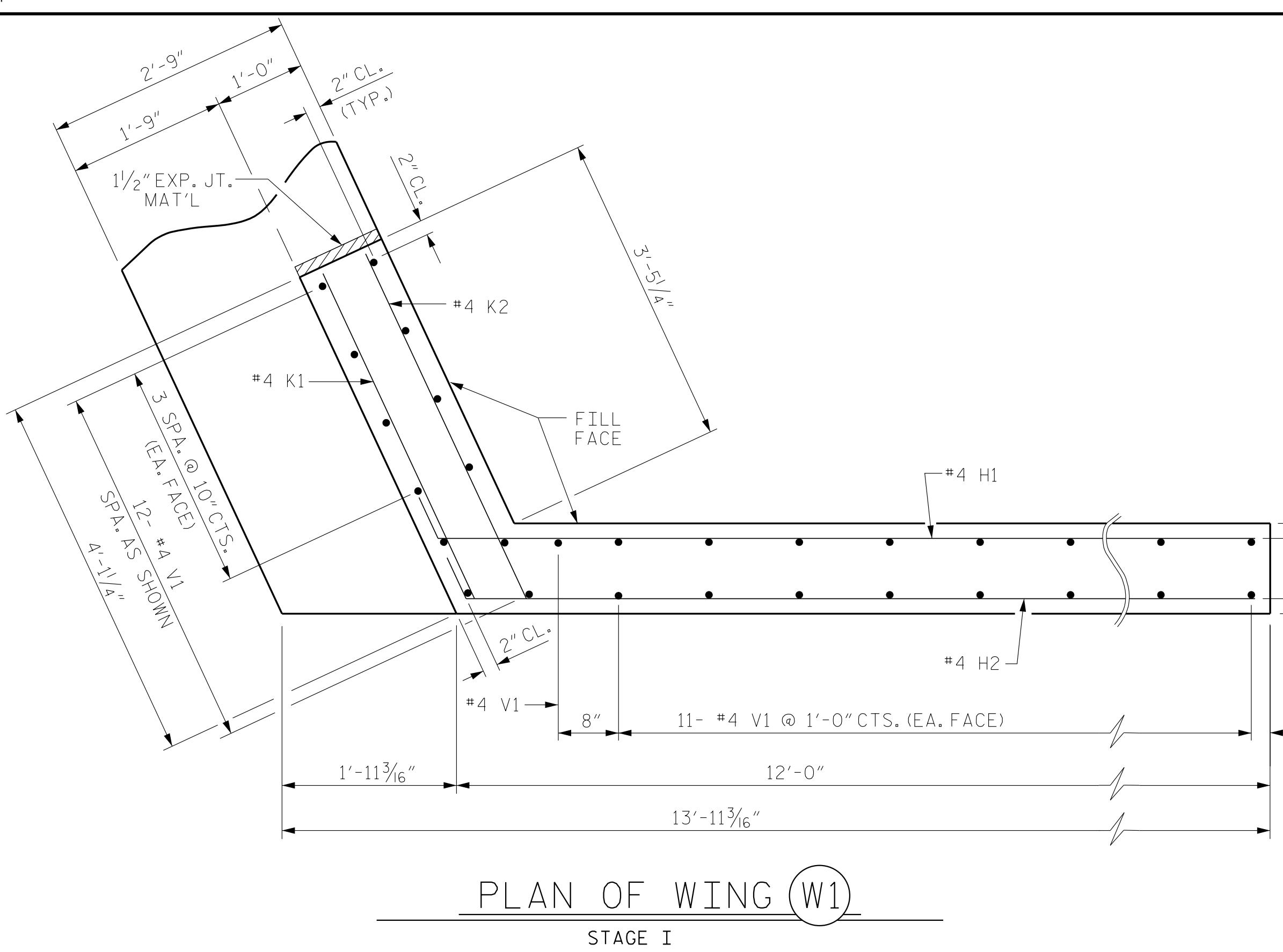
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 2
(STAGE II)

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

SHEET NO.
S-30
TOTAL SHEETS
35



PROJECT NO. 17BP.14.R.141
POLK COUNTY
STATION: 14+60.66 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT NO. 2
WING DETAILS



DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

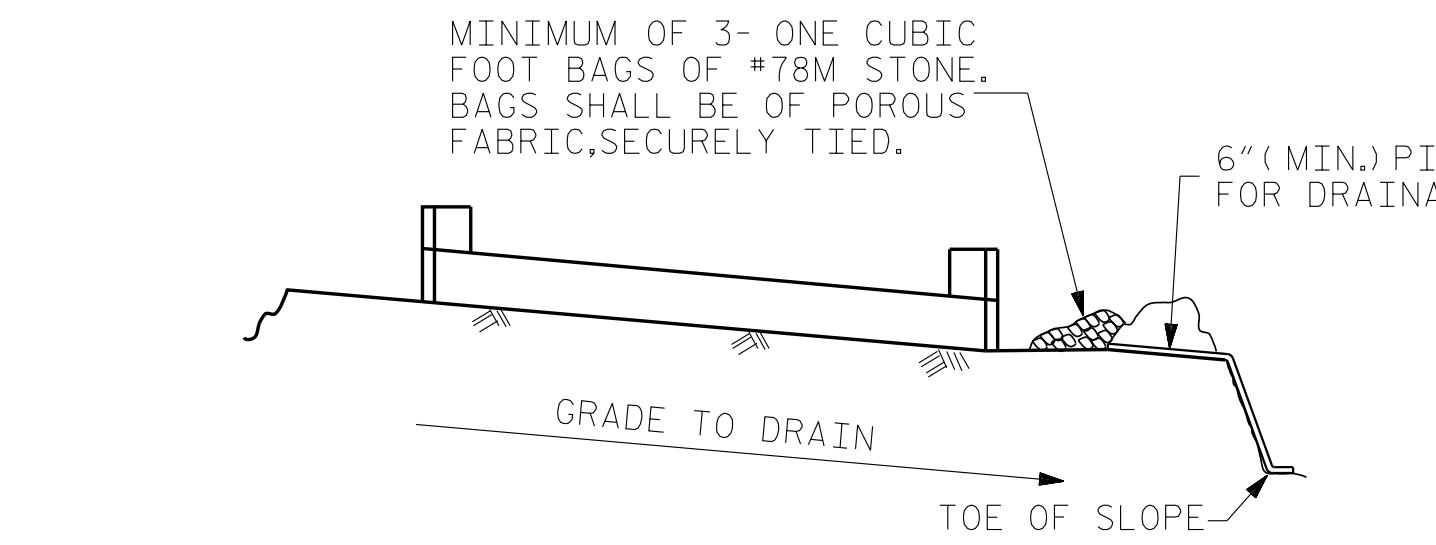
ASSEMBLED BY : RWW DATE : 5/15
CHECKED BY : HLW DATE : 5/15
DESIGN ENG. OF RECORD: RTS DATE : 5/15

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

TOTAL SHEETS
35

WING DETAILS

11/17/2016

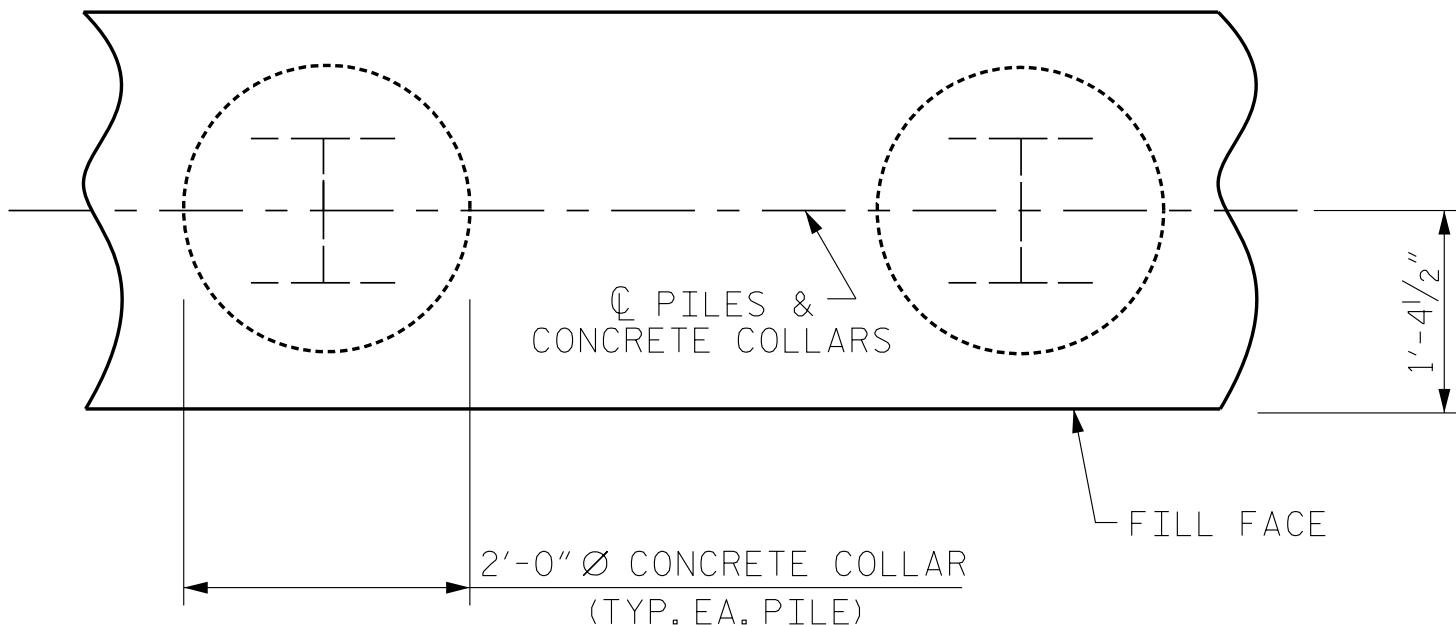
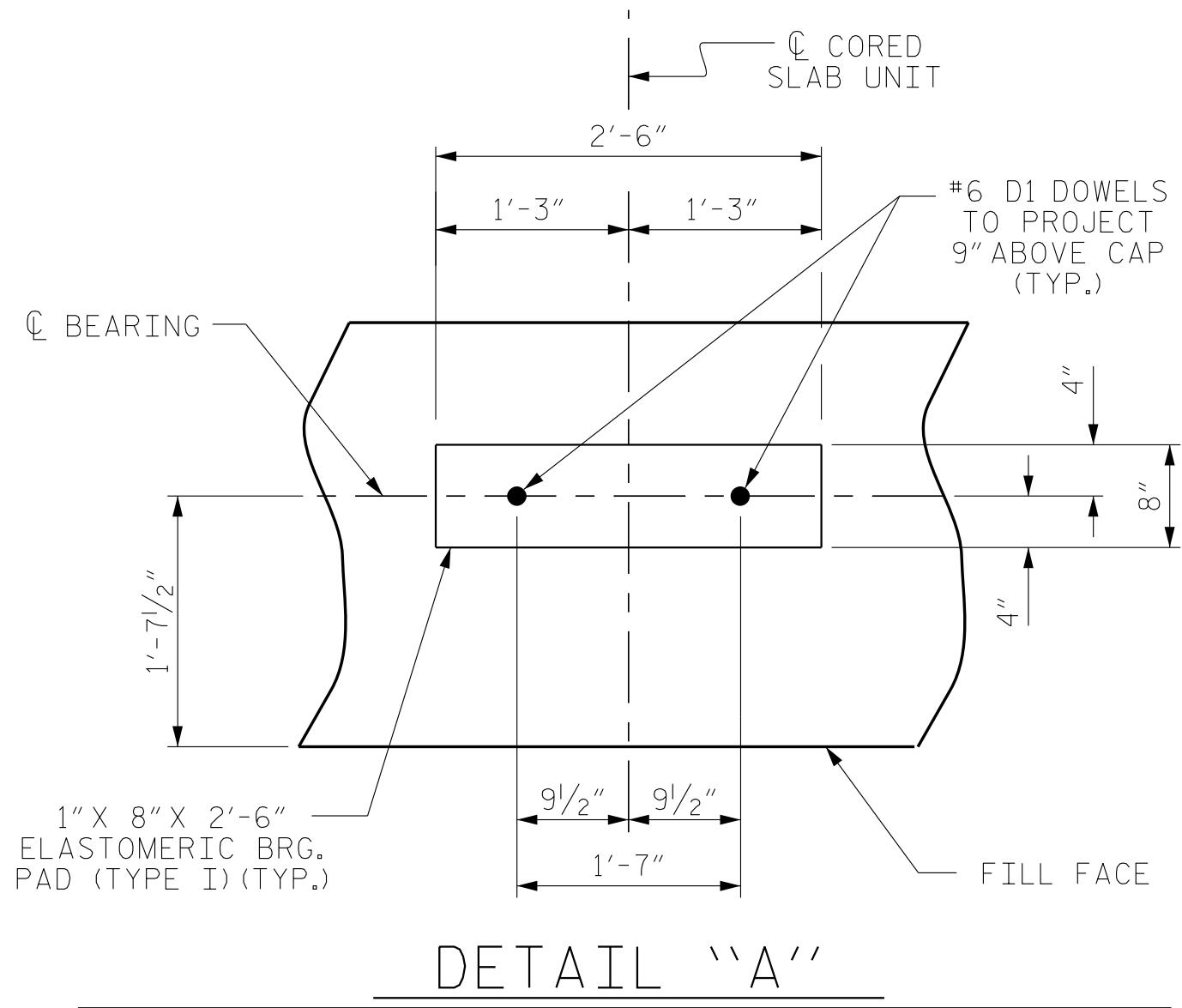


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

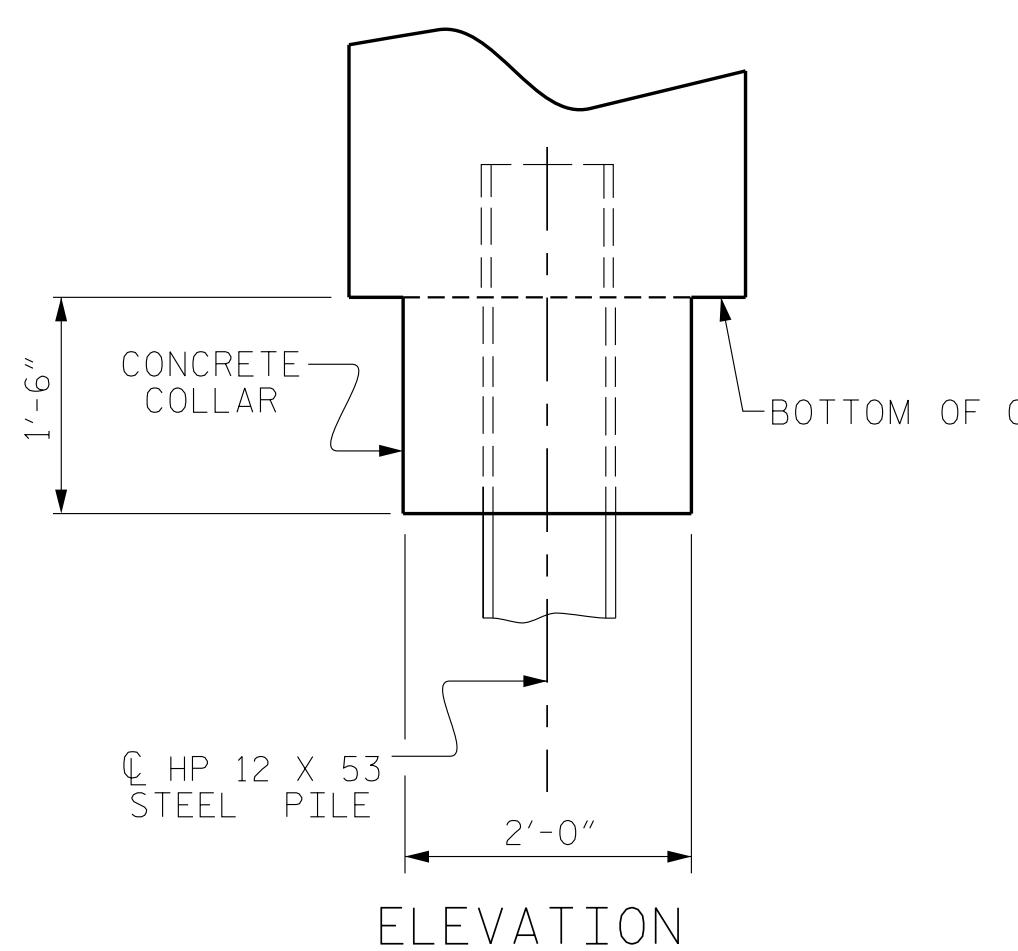
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

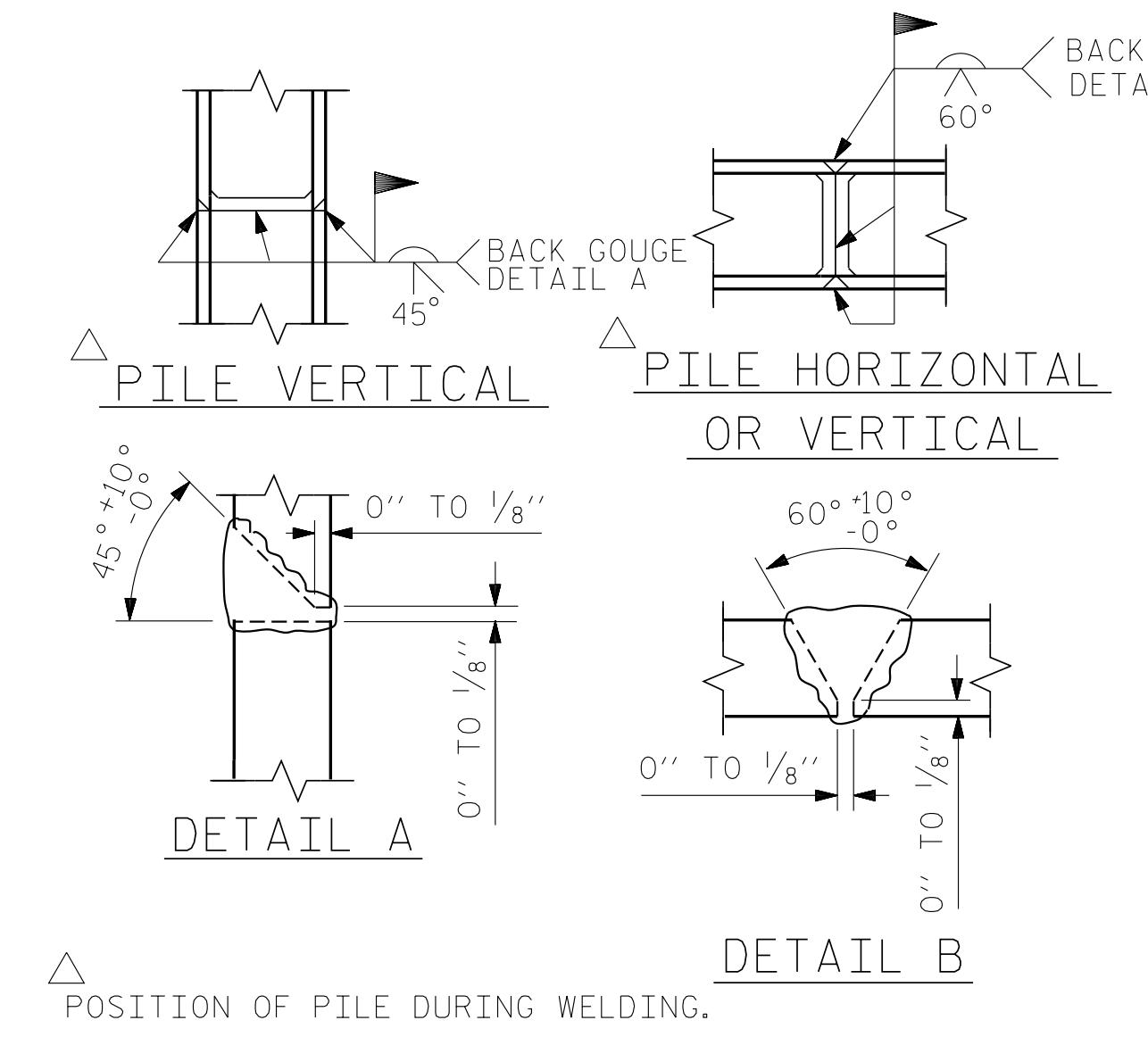
TEMPORARY DRAINAGE AT END BENT



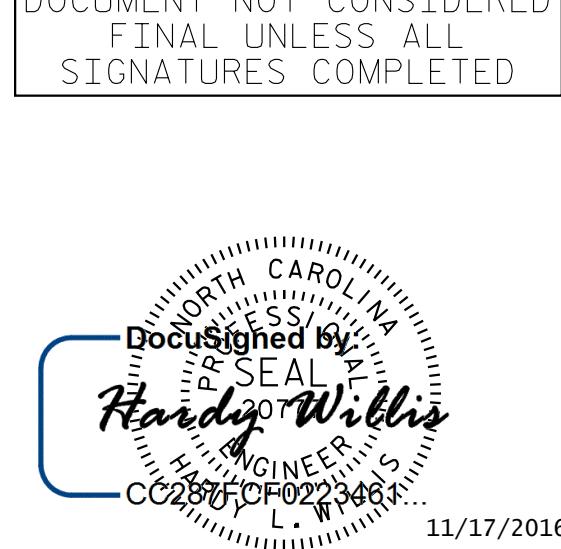
CORROSION PROTECTION FOR STEEL PILES DETAIL



BAR TYPES						BILL OF MATERIAL											
FOR END BENT No. 2 (STAGE I)						FOR END BENT No. 2 (STAGE II)											
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT			
B1	8	#9	1	19'-8"	535	B3	4	STR	2'-5"	6	B4	8	#9	1	18'-7"	505	
B2	14	#4	STR	18'-4"	171	B5	14	#4	STR	17'-4"	162	D1	10	#6	STR	1'-6"	23
B3	4	#4	STR	2'-5"	6	D1	10	#6	STR	1'-6"	23	H1	10	#4	2	12'-8"	85
D1	10	#6	STR	1'-6"	23	H1	10	#4	2	12'-4"	82	H2	10	#4	2	12'-4"	82
H1	10	#4	2	12'-8"	85	K1	4	#4	STR	3'-9"	10	K1	4	#4	STR	3'-9"	10
H1	10	#4	2	12'-4"	82	K2	4	#4	STR	4'-1"	11	K2	4	#4	STR	4'-1"	11
S1	24	#4	3	10'-5"	167	S1	25	#4	3	10'-5"	174	S2	24	#4	4	3'-2"	51
S2	24	#4	4	3'-2"	51	S2	25	#4	4	3'-2"	53	S3	12	#4	5	6'-6"	52
S3	12	#4	5	6'-6"	52	S3	8	#4	5	6'-6"	35	V1	35	#4	STR	6'-2"	144
V1	35	#4	STR	6'-2"	144	V1	35	#4	STR	6'-2"	144	REINFORCING STEEL (FOR ONE END BENT)	1337 LBS.	REINFORCING STEEL (FOR ONE END BENT)	1290 LBS.		
ALL BAR DIMENSIONS ARE OUT TO OUT.						CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)						CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
END BENT No. 2 HP 12 X 53 STEEL PILES NO: 5 LIN. FT.= 263.0						POUR #1 CAP, LOWER PART OF WINGS & COLLARS 9.8 C.Y.						POUR #1 CAP, LOWER PART OF WINGS & COLLARS 9.6 C.Y.					
POUR #2 UPPER PART OF WINGS 1.5 C.Y.						POUR #2 UPPER PART OF WINGS 1.5 C.Y.						TOTAL STAGE I CLASS A CONCRETE 11.3 C.Y.					
TOTAL STAGE II CLASS A CONCRETE 11.1 C.Y.						TOTAL BILL OF MATERIAL FOR END BENT NO. 2						CLASS A CONCRETE					
CLASS A CONCRETE CU. YDS.						REINFORCING STEEL LBS.						REINFORCING STEEL LBS.					
22.4						2,627											

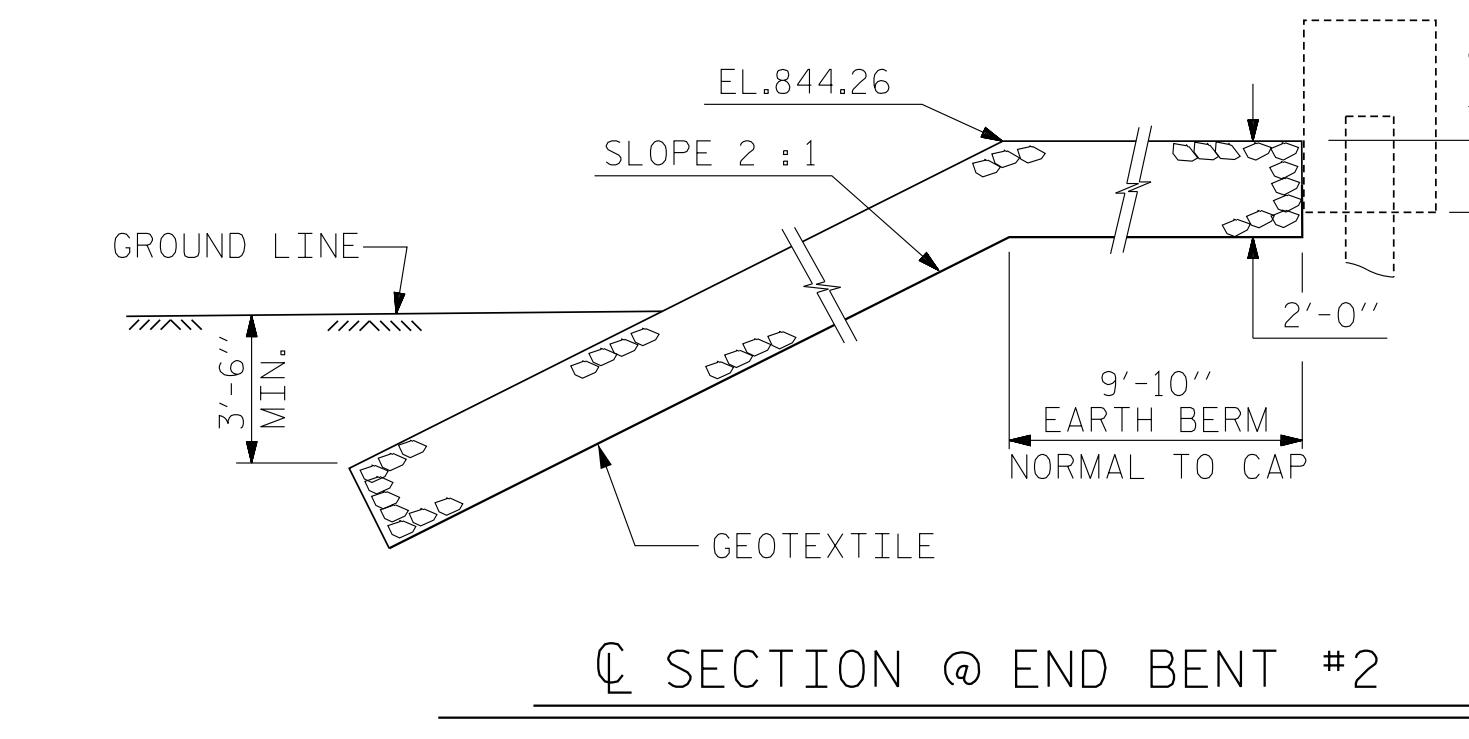
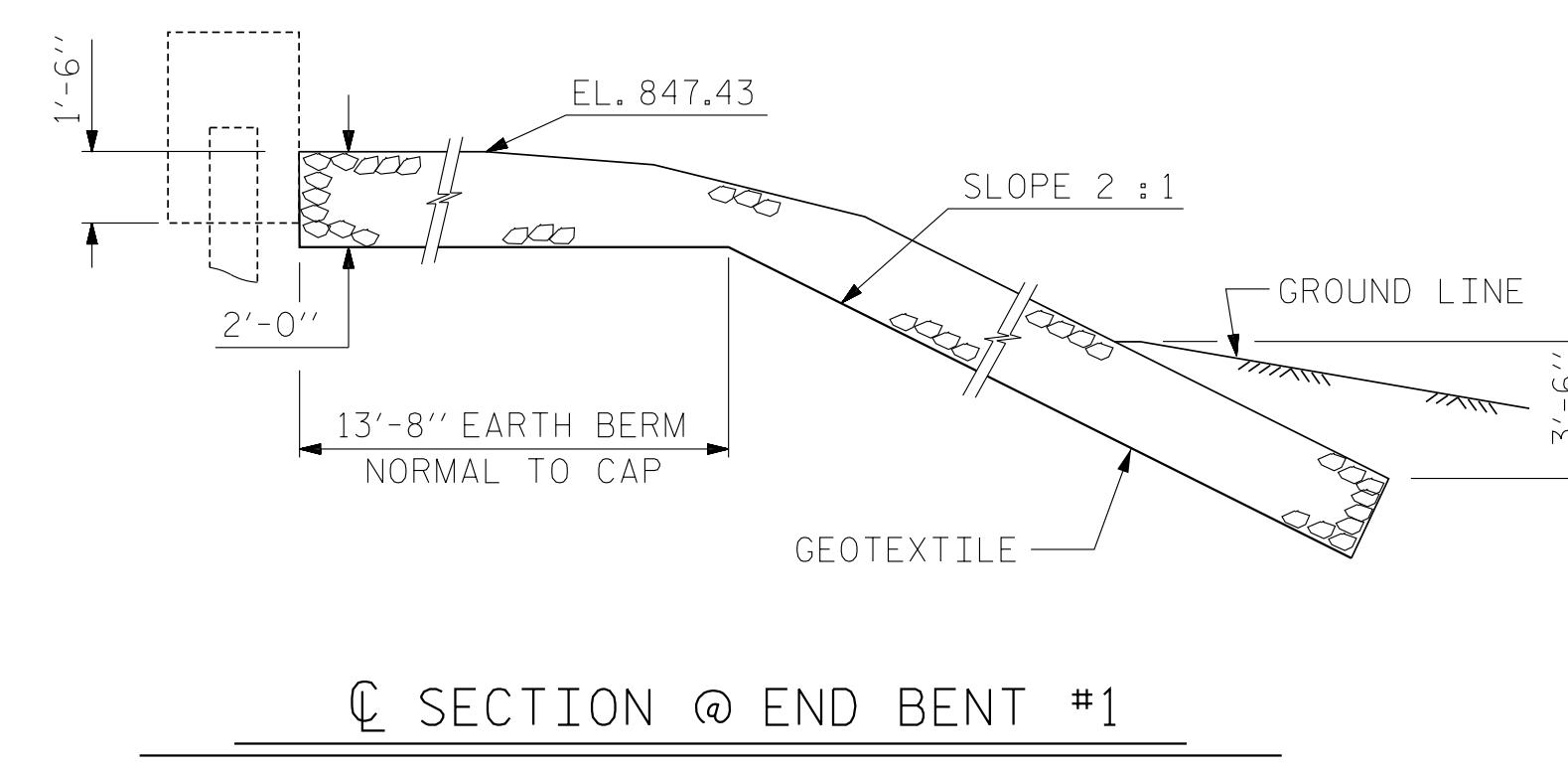
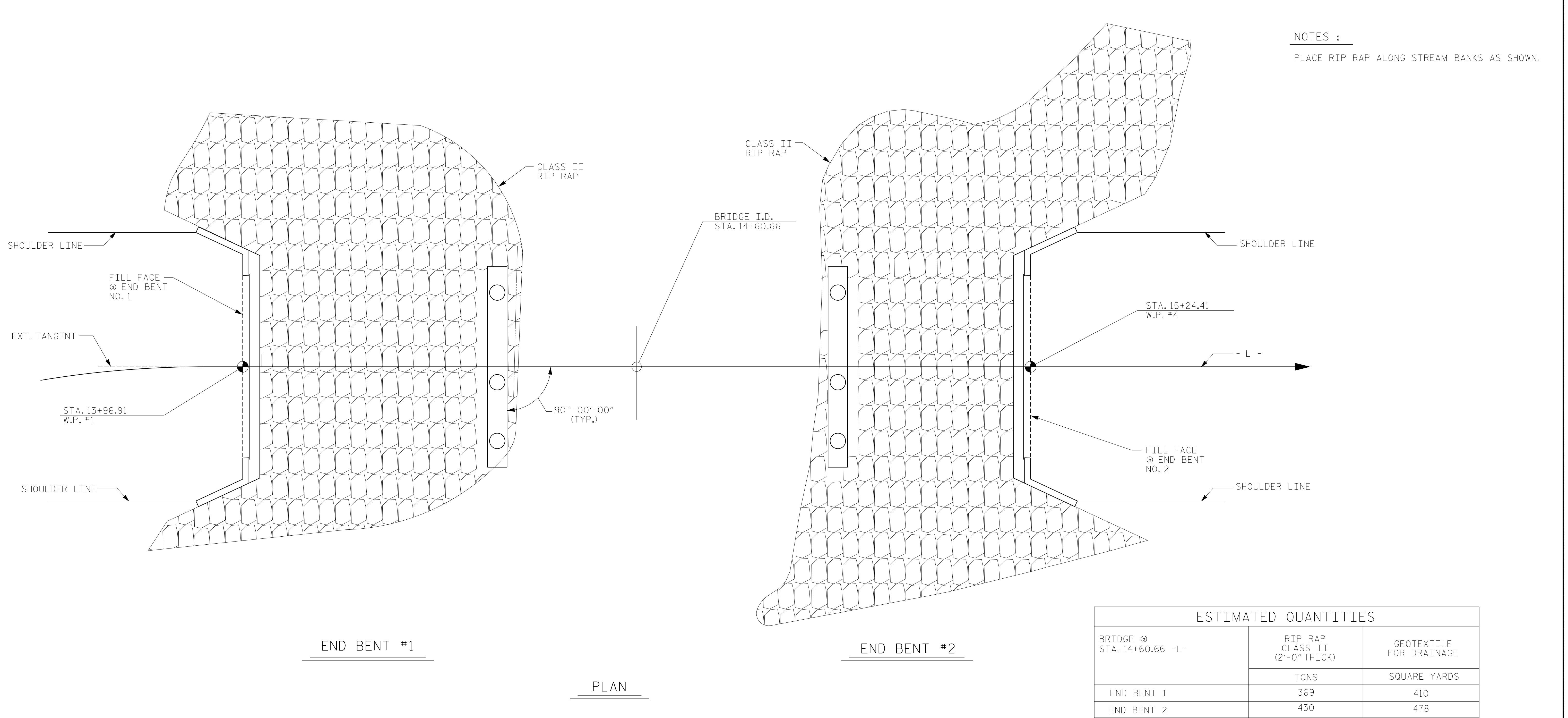


PILE SPLICE DETAILS

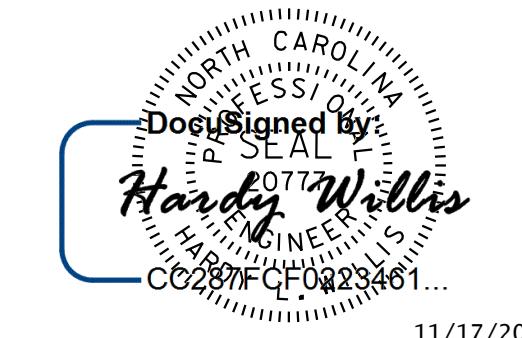


PROJECT NO. 17BP.14.R.141
POLK COUNTY
STATION: 14+60.66 -L-

SUBSTRUCTURE					
END BENT No. 2 DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-32					
TOTAL SHEETS 35					

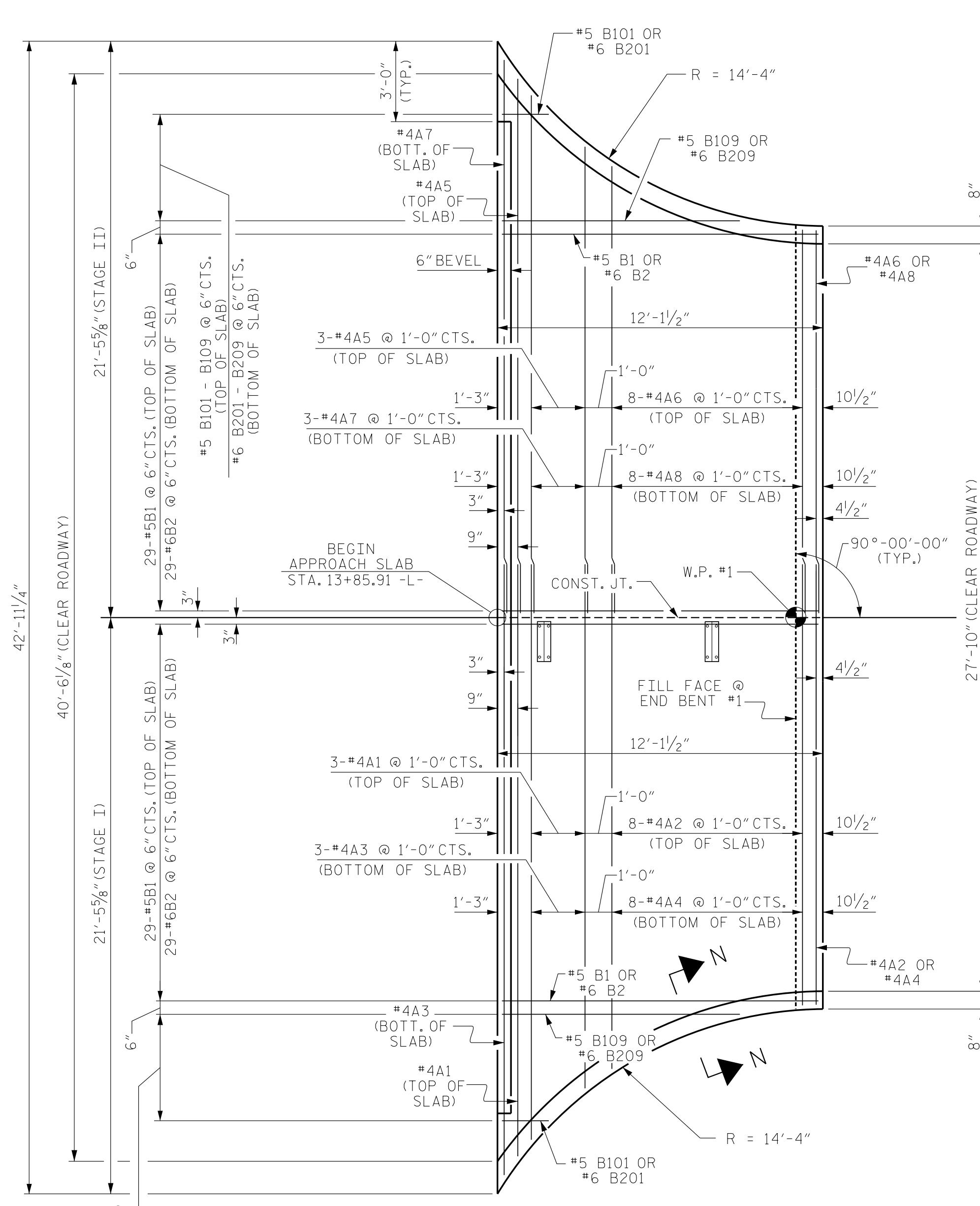


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

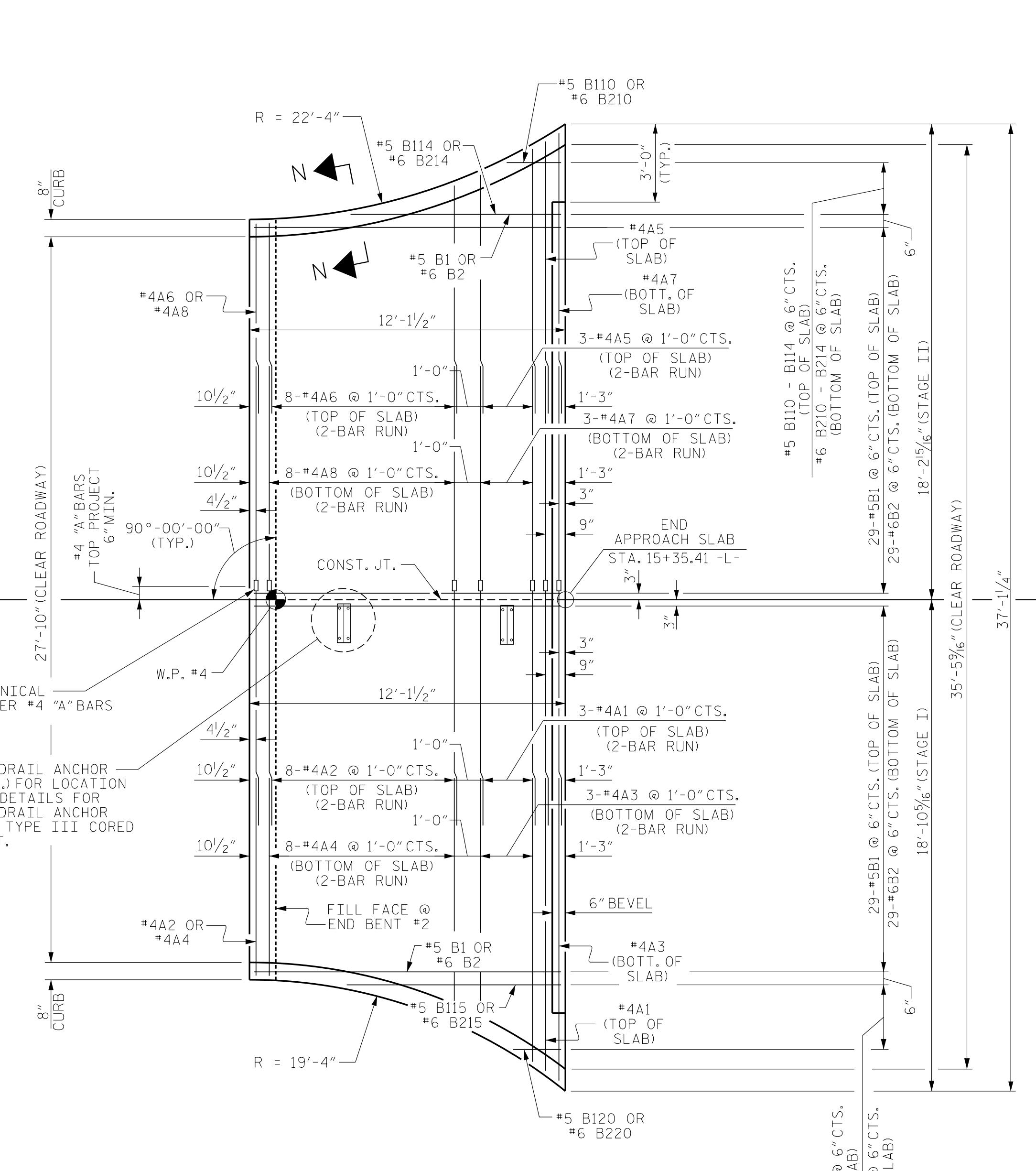


PROJECT NO. 17BP.14.R.141
POLK COUNTY
STATION: 14+60.66 -L-

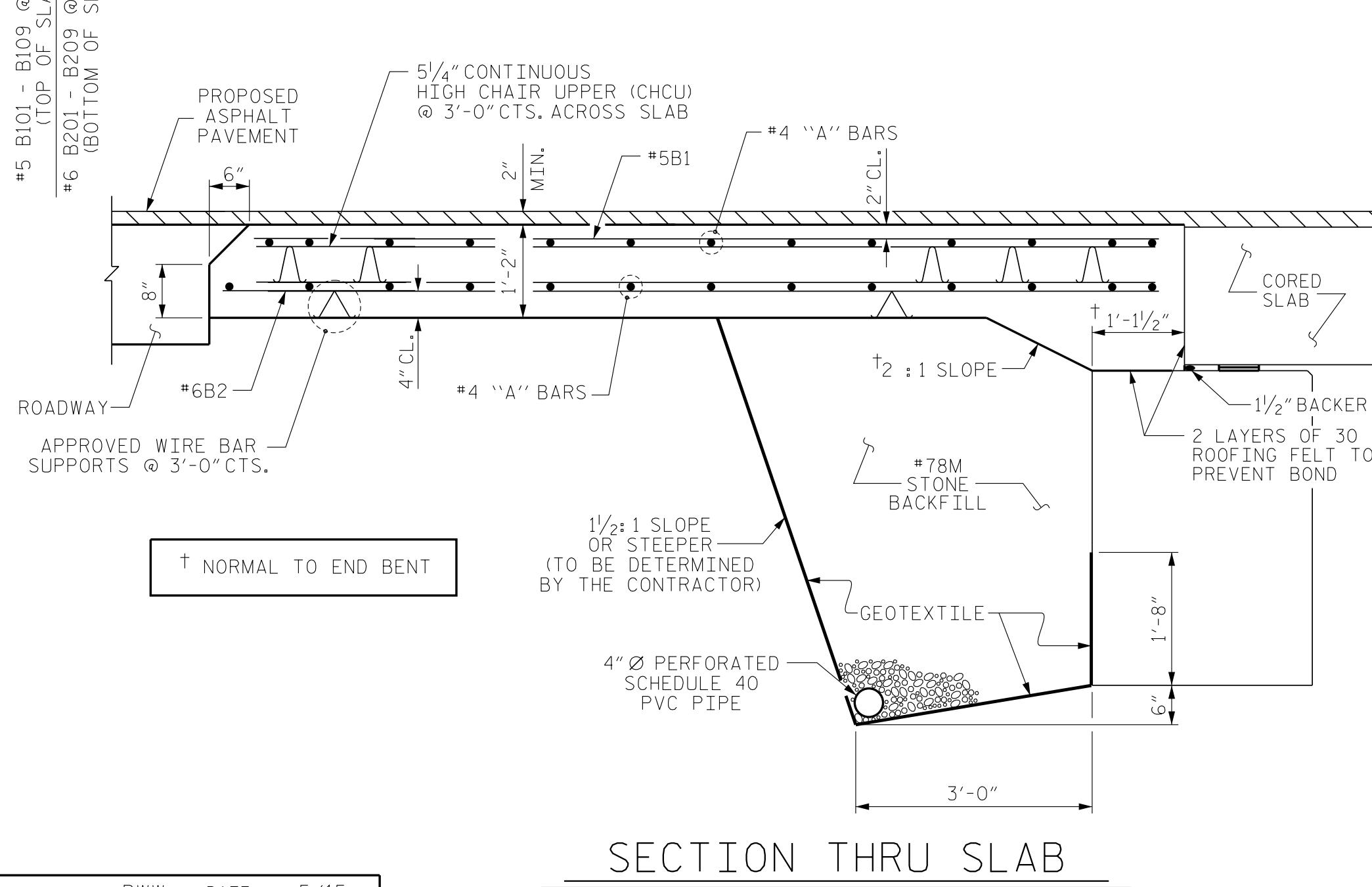
DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD					
RIP RAP DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-33					
TOTAL SHEETS 35					



PLAN @ END BENT



PLAN @ END BENT #2



SECTION THRU SLA

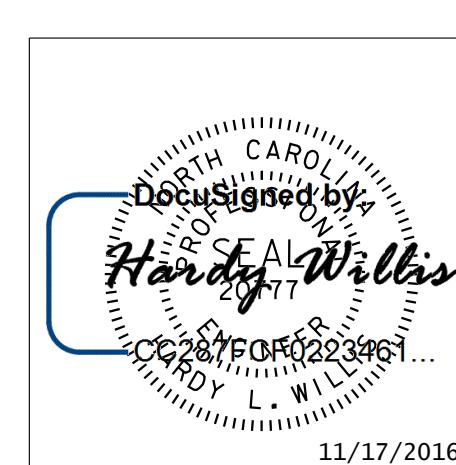
CURB DETAILS

END OF CURB WITHOUT SHOULDER BERM GUTTER

SECTION N

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

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



PROJECT NO. 17BP.14.R.141

POLK COUNTY

STATION- 14+60 66 -| -

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			TOTAL SHEETS
2			4			35

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4"Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

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

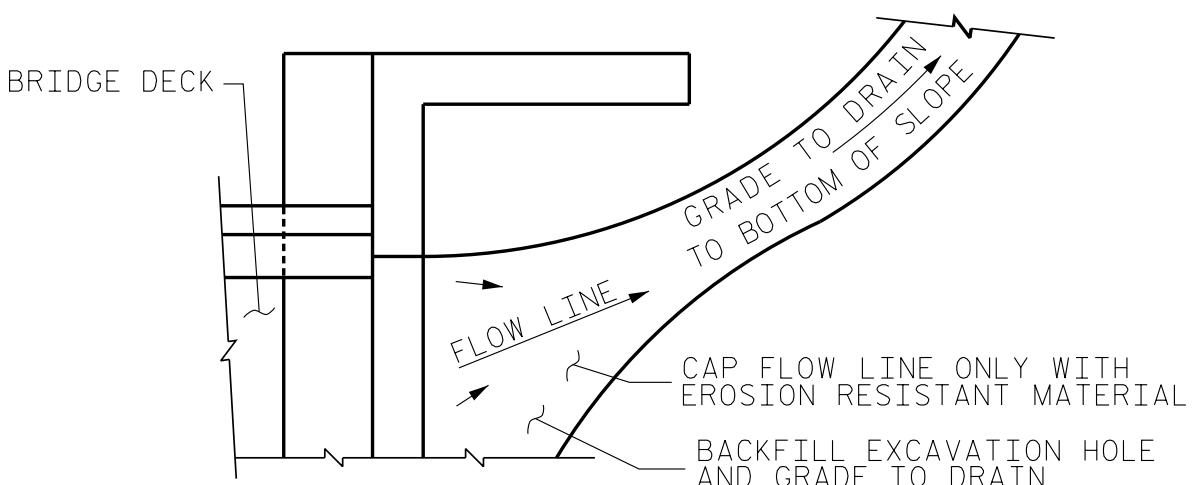
#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

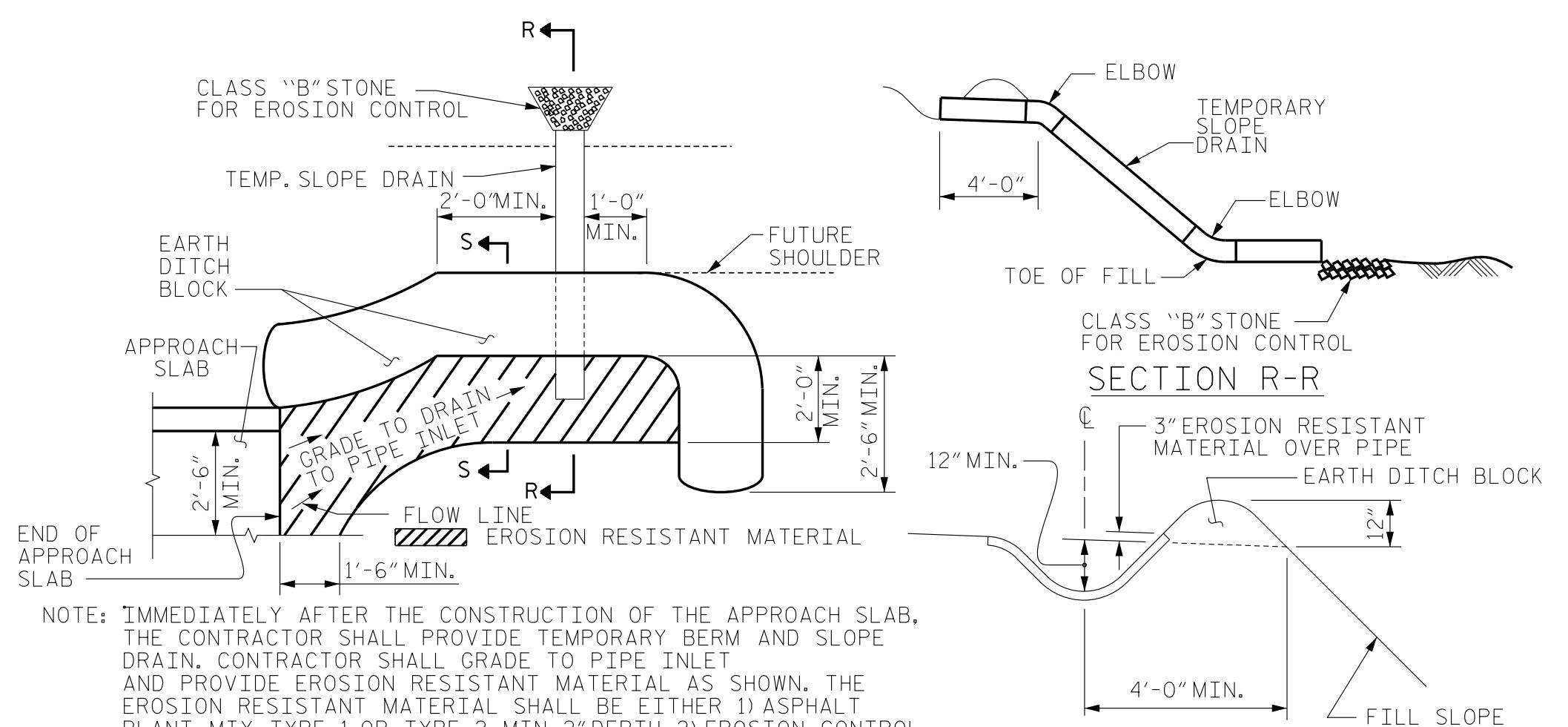
FOR THE 4"Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

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.



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

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

PLAN VIEWTEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

PROJECT NO. 17BP.14.R.141

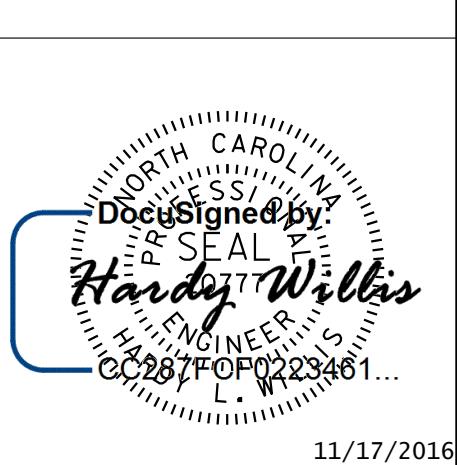
POLK COUNTY

STATION: 14+60.66 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB
FOR PRESTRESSED CONCRETE
CORED SLAB UNIT
(SUB-REGIONAL TIER)
90° SKEW



DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS

SHEET NO.
S-35

NO. BY: DATE: NO. BY: DATE:

1 3
2 4

TOTAL SHEETS
35

ASSEMBLED BY : RWW	DATE : 5/15
CHECKED BY : HLW	DATE : 5/15
DESIGN ENG. OF RECORD: RTS	DATE : 5/15

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 2012 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N.C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 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 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

ENGLISH
JANUARY, 1990

STD. NO. SN