

**This electronic collection of documents is provided
for the convenience of the user
and is Not a Certified Document –**

**The documents contained herein were originally issued
and sealed by the individuals whose names and license
numbers appear on each page, on the dates appearing
with their signature on that page.**

**This file or an individual page
shall not be considered a certified document.**

TIP PROJECT: B-5125

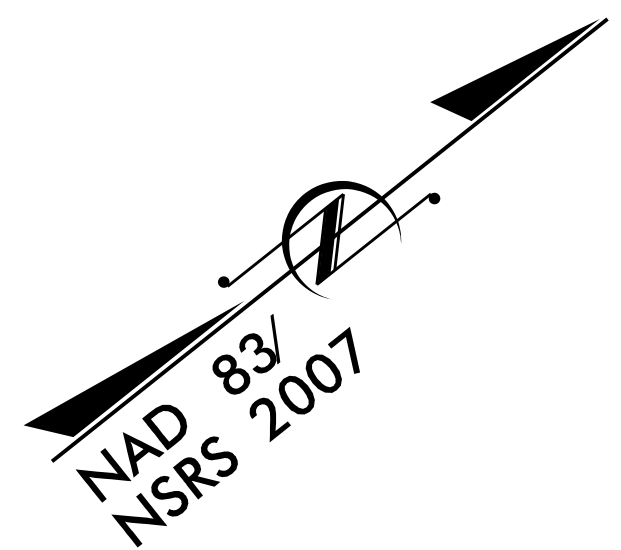
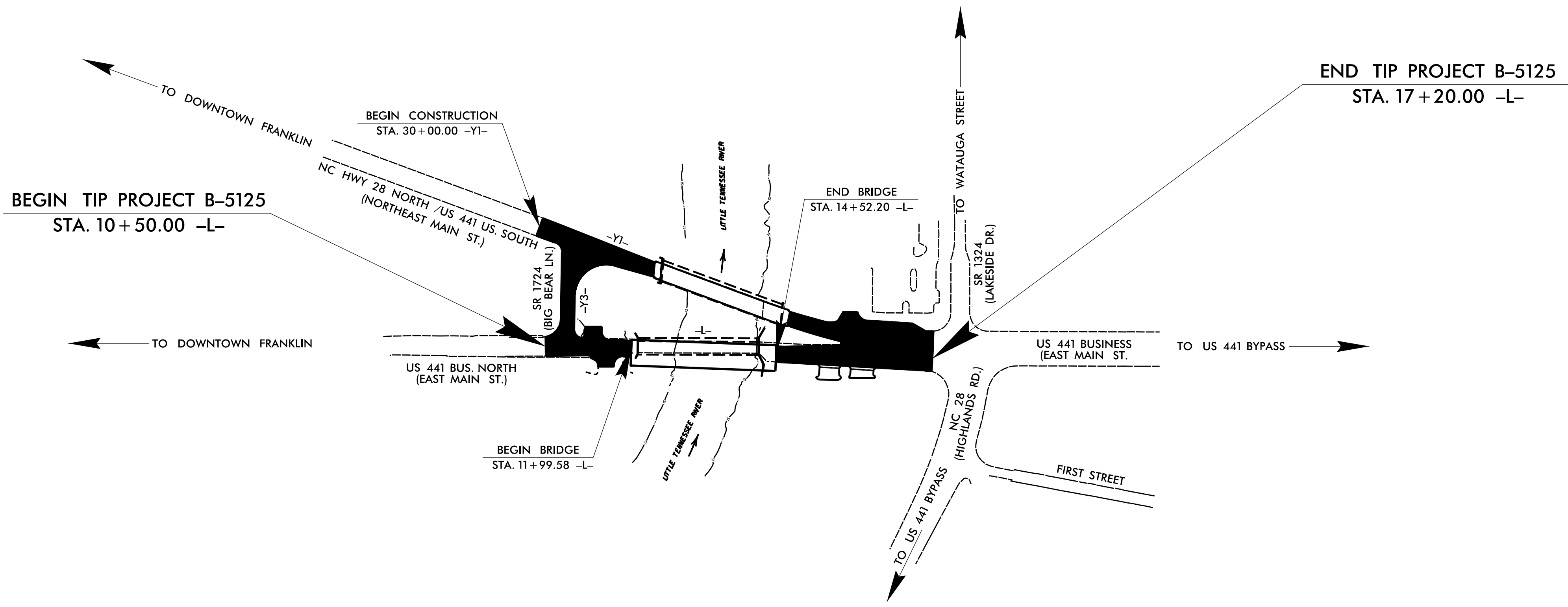
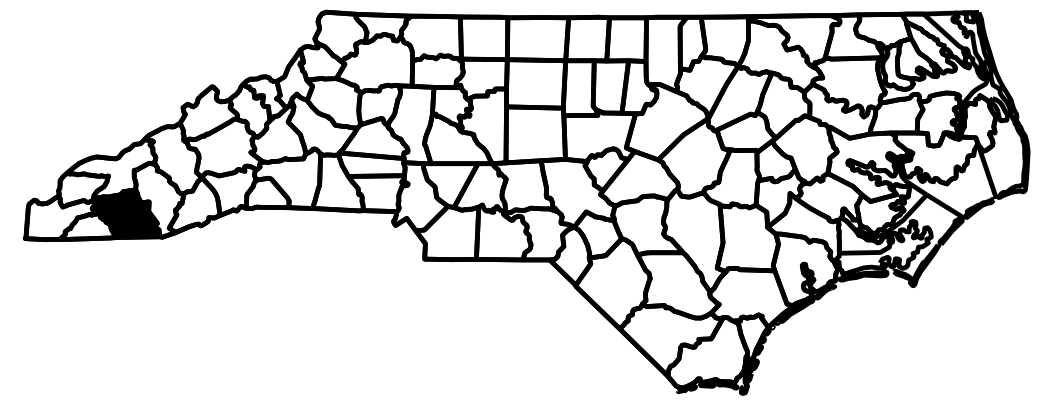
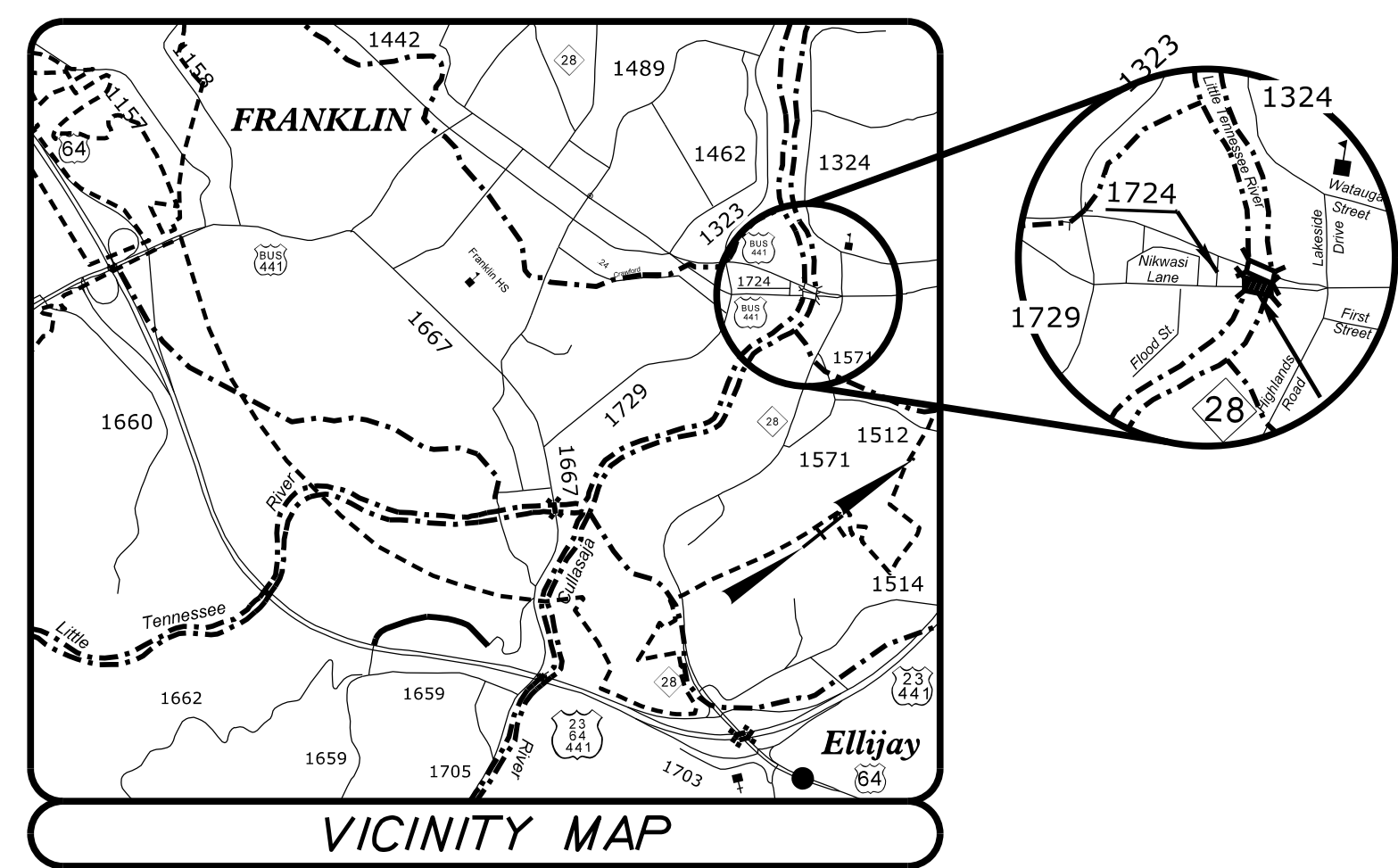
CONTRACT: C203667

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
MACON COUNTY

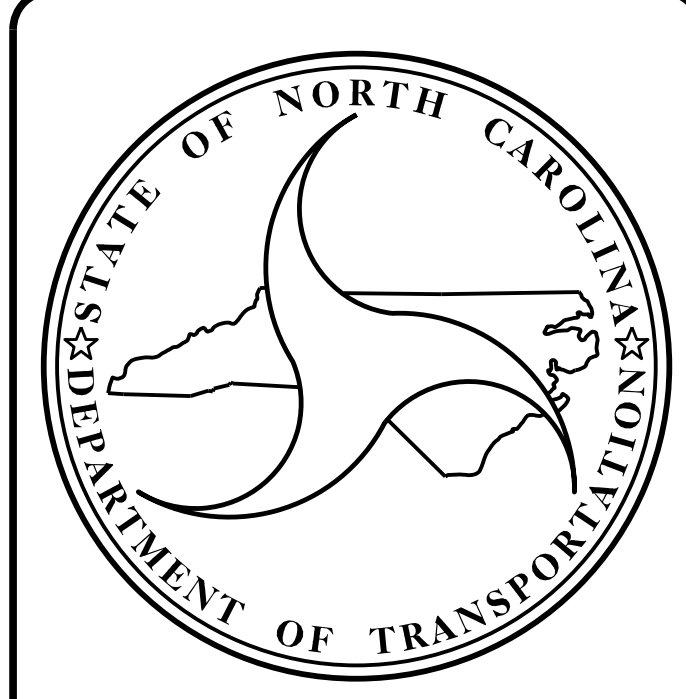
**LOCATION: BRIDGE No. 22 OVER LITTLE TENNESSEE RIVER
ON US 441 BUSINESS**

TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIGNAL & STRUCTURES.

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5125		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
42271.1.1	BRNHS-0441(8)	P.E.	
42271.2.FR1	BRNHS-0441(8)	RW & UTILITIES	
42271.3.2		CONSTRUCTION	



STRUCTURES



DESIGN DATA

ADT 2013	=	13,200
ADT 2035	=	17,000
K	=	11 %
D	=	100 %
T	=	6 % *
V	=	45 MPH
* (TTST 1 %, DUAL 5 %)		
FUNC. CLASS. = COLLECTOR (REGIONAL TIER)		

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT No. B-5125	=	0.079 MILES
LENGTH STRUCTURE TIP PROJECT No. B-5125	=	0.048 MILES
<hr/>		
TOTAL LENGTH TIP PROJECT No. B-5125	=	0.127 MILES

Prepared in the Office of:
DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

2012 STANDARD SPECIFICATIONS

<p>LETTING DATE : OCTOBER 18, 2016</p>	<p><u>DOUGLAS R. CALHOUN, PE</u> PROJECT ENGINEER</p> <p><u>MARC G. CHEEK, PE</u> PROJECT DESIGN ENGINEER</p>
--	--

11+50 12+00 12+50 13+00 13+50 14+00 14+50 15+00

(+).14400% Δ (+).3003%
 PI = 11+50.00 -L-
 EL = 2,013.50
 L = 100'

(+).3003% Δ (-).6496%
 PI = 15+03.00 -L-
 EL = 2,014.56
 L = 124'

GRADE DATA

GRADE DATA

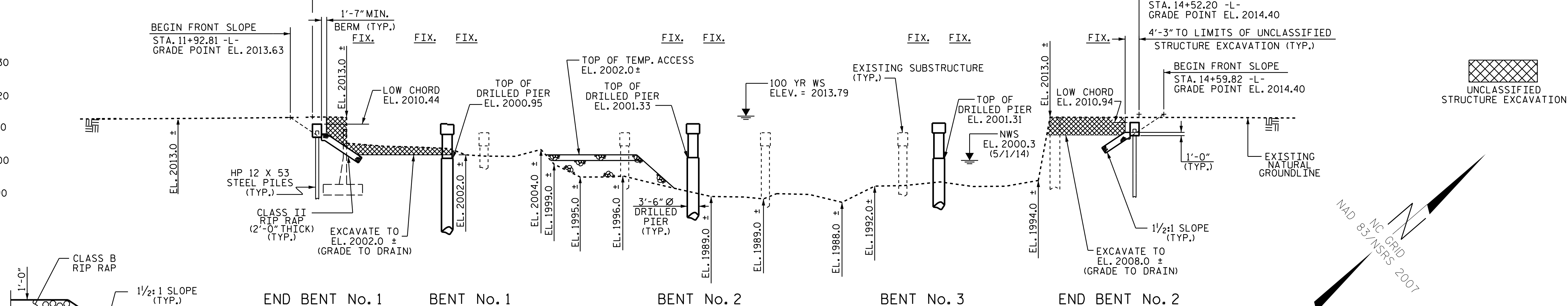
FILL FACE @ END BENT No. 1
 STA. 11+99.58 -L-
 GRADE POINT EL. 2013.65

BEGIN FRONT SLOPE
 STA. 11+92.81 -L-
 GRADE POINT EL. 2013.63

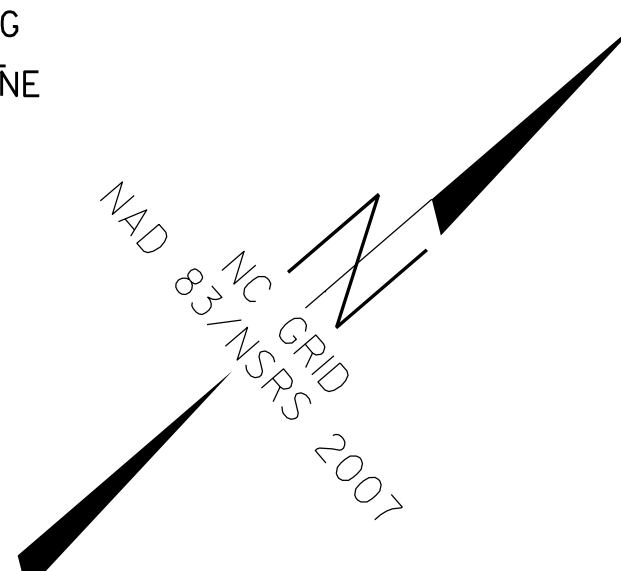
FILL FACE @ END BENT No. 2
 STA. 14+52.20 -L-
 GRADE POINT EL. 2014.40
 4'-3" TO LIMITS OF UNCLASSIFIED
 STRUCTURE EXCAVATION (TYP.)

BEGIN FRONT SLOPE
 STA. 14+59.82 -L-
 GRADE POINT EL. 2014.40

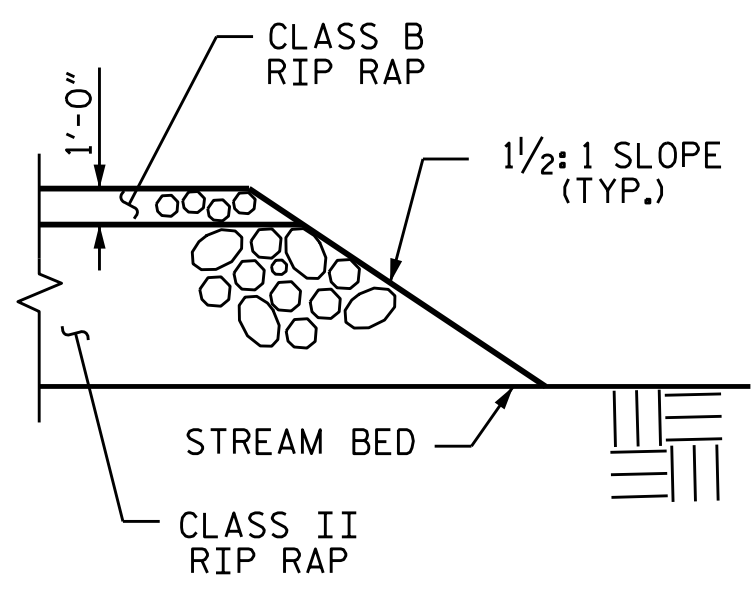
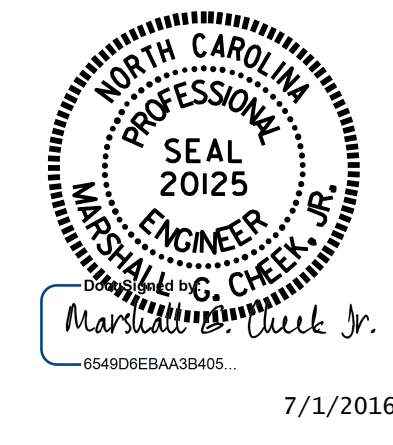
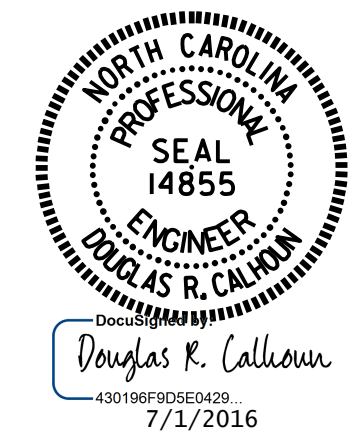
2,030
2,020
2,010
2,000
1,990



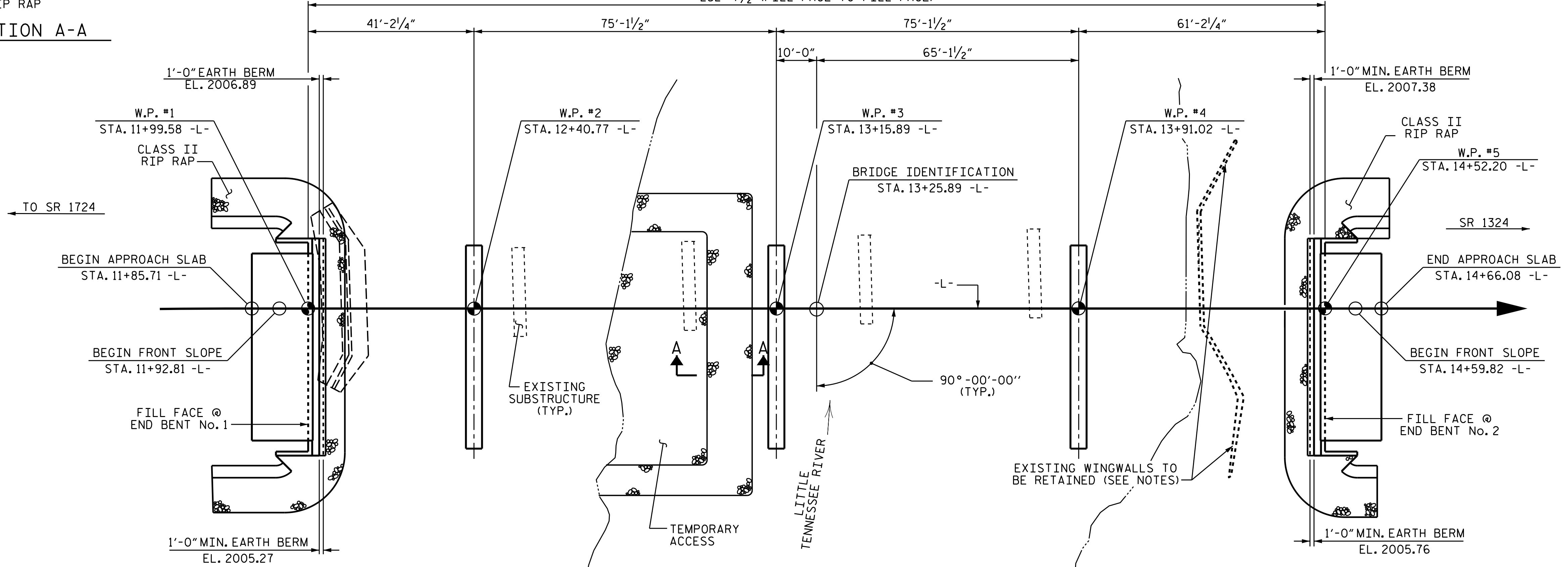
UNCLASSIFIED
 STRUCTURE EXCAVATION



I HEREBY CERTIFY THESE PLANS
 ARE THE AS-BUILT PLANS



252'-7 1/2" (FILL FACE TO FILL FACE)



PLAN
 (PILES & COLUMNS NOT SHOWN FOR CLARITY)

PROJECT NO. B-5125
 MACON COUNTY
 STATION: 13+25.89 -L-

SHEET 1 OF 3 REPLACES BRIDGE No. 22

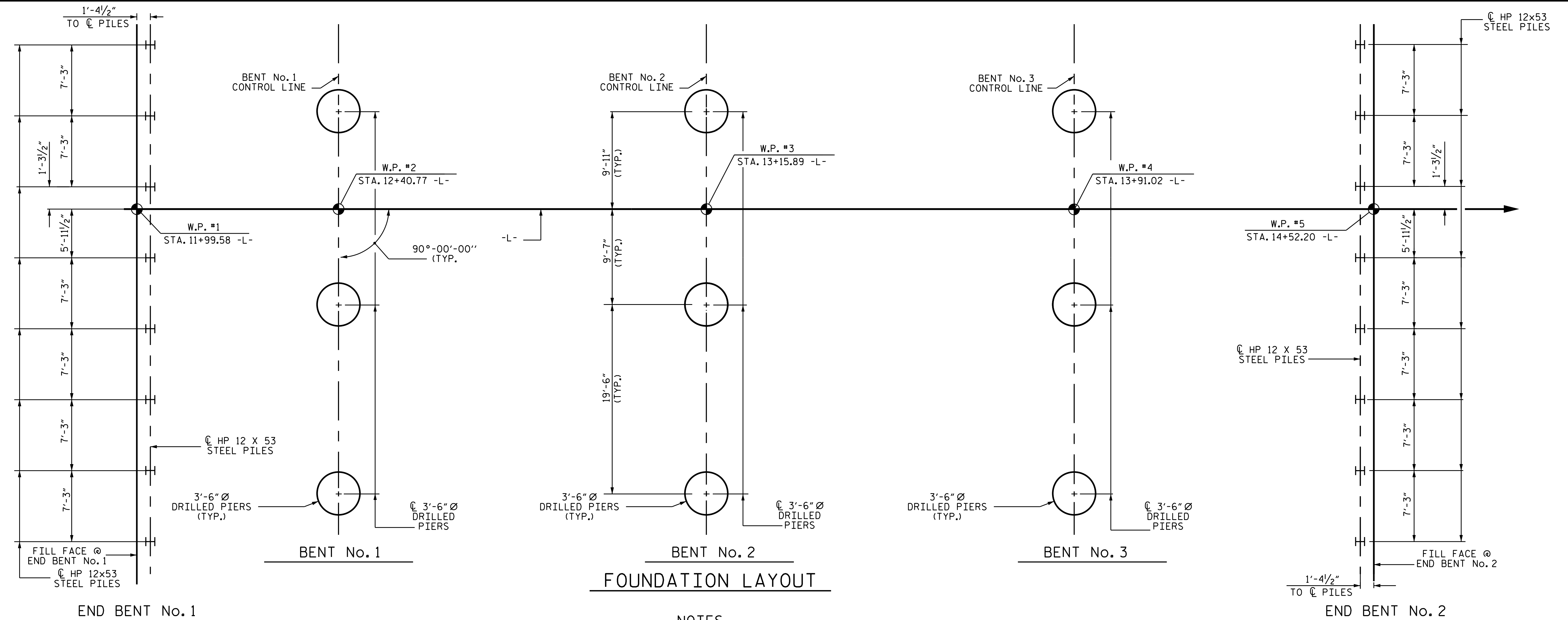
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON US 441 BUS.
 OVER LITTLE TENNESSEE
 RIVER BETWEEN
 SR 1724 AND SR 1324

DRAWN BY: M. POOLE DATE: 01-16
 CHECKED BY: M.G. CHEEK DATE: 5-9-16

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			43



FOUNDATION LAYOUT

NOTES

FOR DRILLED PIERS, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 411 OF THE STANDARD SPECIFICATIONS.

DRILLED PIERS AT BENT No. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 550 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 65 TSF.

DRILLED PIERS AT BENT No. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 650 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 80 TSF.

DRILLED PIERS AT BENT No. 3 ARE DESIGNED FOR A FACTORED RESISTANCE OF 615 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 75 TSF.

PERMANENT STEEL CASINGS MAY BE REQUIRED FOR DRILLED PIERS AT BENT No. 1 (LEFT & CENTER). IF REQUIRED, DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 1973.6 WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASINGS.

PERMANENT STEEL CASINGS MAY BE REQUIRED FOR DRILLED PIER AT BENT No. 1 (RIGHT). IF REQUIRED, DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 1989.5 WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASINGS.

PERMANENT STEEL CASINGS ARE REQUIRED FOR DRILLED PIERS AT BENT No. 2 (LEFT & CENTER). DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 1978.0 WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

PERMANENT STEEL CASINGS ARE REQUIRED FOR DRILLED PIER AT BENT No. 2 (RIGHT). DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 1981.6 WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

PERMANENT STEEL CASINGS ARE REQUIRED FOR DRILLED PIERS AT BENT No. 3 (LEFT & CENTER). DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 1965.0 WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

PERMANENT STEEL CASINGS ARE REQUIRED FOR DRILLED PIER AT BENT No. 3 (RIGHT). DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 1962.8 WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

INSTALL DRILLED PIERS AT BENT No. 1 (LEFT & CENTER) TO A TIP ELEVATION NO HIGHER THAN 1964.6 WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 10 FT. INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

INSTALL DRILLED PIER AT BENT No. 1 (RIGHT) TO A TIP ELEVATION NO HIGHER THAN 1981.0 WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 10 FT. INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

INSTALL DRILLED PIERS AT BENT No. 2 (LEFT & CENTER) TO A TIP ELEVATION NO HIGHER THAN 1958.0 WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 10 FT. INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

INSTALL DRILLED PIER AT BENT No. 2 (RIGHT) TO A TIP ELEVATION NO HIGHER THAN 1971.0 WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 10 FT. INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

INSTALL DRILLED PIERS AT BENT No. 3 (LEFT & CENTER) TO A TIP ELEVATION NO HIGHER THAN 1933.0 WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 10 FT. INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

INSTALL DRILLED PIER AT BENT No. 3 (RIGHT) TO A TIP ELEVATION NO HIGHER THAN 1953.0 WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 10 FT. INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATION FOR BENT No. 1, 2 & 3 IS ELEVATION 1980.4. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

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

DO NOT DEWATER DRILLED PIER EXCAVATIONS AT BENTS No. 1, 2 & 3. CLEAN THE BOTTOM OF EXCAVATIONS WITH A SUBMERSIBLE PUMP OR AN AIRLIFT. WET PLACEMENT OF CONCRETE IS REQUIRED.

DO NOT USE SLURRY CONSTRUCTION FOR DRILLED PIERS AT BENTS No. 1, 2 & 3.

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.

FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

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

PILES AT END BENT No. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 75 TONS PER PILE.

PILES AT END BENT No. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 100 TONS PER PILE.

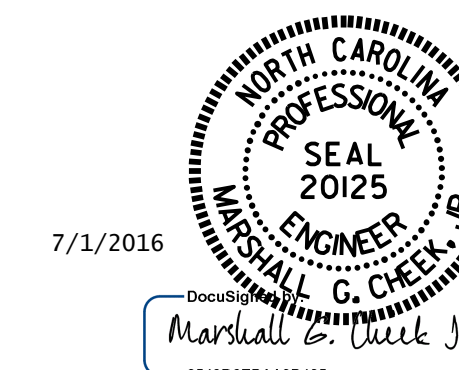
DRIVE PILES AT END BENT No. 1 TO A REQUIRED DRIVING RESISTANCE OF 125 TONS PER PILE.

DRIVE PILES AT END BENT No. 2 TO A REQUIRED DRIVING RESISTANCE OF 170 TONS PER PILE.

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.

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.

DRAWN BY : M. POOLE DATE : 01-16
 CHECKED BY : H. I. BARBOUR DATE : 4-20-16



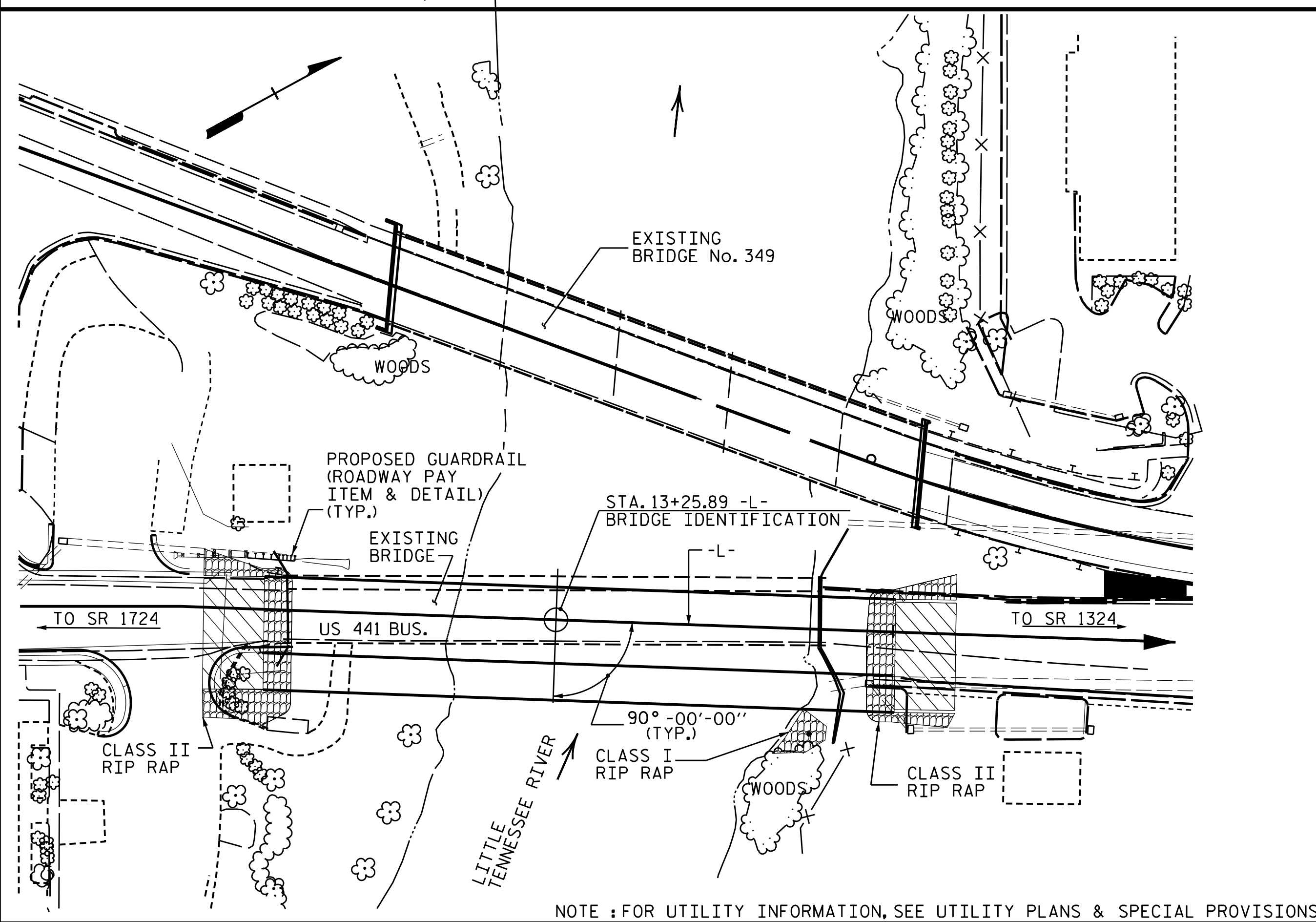
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. B-5125
MACON COUNTY
 STATION: 13+25.89 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
GENERAL DRAWING FOR BRIDGE ON US 441 BUS. OVER LITTLE TENNESSEE RIVER BETWEEN SR 1724 AND SR 1324					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-2
					TOTAL SHEETS 43

B.M. #3 : 15' LT. OF STA. 17+52.00 -BL- NCGS MONUMENT "G47" ON SE CORNER OF BRIDGE No. 22, EL. 2013.82



NOTE : FOR UTILITY INFORMATION, SEE UTILITY PLANS & SPECIAL PROVISIONS

LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 45 FT LEFT OF -L- AND 45 FT RIGHT OF -L- 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.

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

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR SECURING OF VESSELS, SEE SPECIAL PROVISIONS.

THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING A SAFE WORKING DISTANCE FROM THE HIGH VOLTAGE TRANSMISSION LINES AND COORDINATING WITH DUKE ENERGY TRANSMISSION THE TIME FRAME NEEDED TO DE-ENERGIZE THE LINES. SEE UTILITY SPECIAL PROVISIONS.

THE EXISTING 5 SPAN STRUCTURE (1 @ 41'-9", 3 @ 42'-6", 1 @ 41'-9") WITH A SUPERSTRUCTURE CONSISTING OF REINFORCED CONCRETE DECK GIRDERS AND WITH A 5" ASPHALT OVERLAY ON A SUBSTRUCTURE CONSISTING OF MASS CONCRETE ABUTMENTS AND REINFORCED CONCRETE POST AND WEB BENTS / PILE FOOTINGS AND LOCATED AT THE SITE OF THE PROPOSED BRIDGE SHALL BE REMOVED. THE EXISTING BRIDGE IS NOT CURRENTLY POSTED FOR LOAD LIMIT.

THE EXISTING ABUTMENT AND WINGWALLS AT ABUTMENT No. 2 SHALL BE REMOVED TO ELEVATION 2008.3 OR AS DIRECTED BY THE ENGINEER.

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

ARCHITECTURAL CONCRETE SURFACE TREATMENT SHALL BE APPLIED TO BOTH FACES OF THE VERTICAL CONCRETE BARRIER RAIL, THE 1'-4" X 2'-11 1/2" CONCRETE PARAPET AND THE 1'-4" X 3'-3 1/2" CONCRETE PARAPET INCLUDING THE END POSTS AND LAMP PEDESTALS. FOR ARCHITECTURAL CONCRETE SURFACE TREATMENT, SEE SPECIAL PROVISIONS.

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

THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY ACCESS FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE, FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

CONCRETE STAIN SHALL BE APPLIED TO THE TOP OF THE VERTICAL CONCRETE BARRIER RAIL, CONCRETE PARAPETS, END POST AND LAMP PEDESTALS. FOR APPLICATION OF BRIDGE COATING, SEE SPECIAL PROVISIONS.

FOR ELECTRICAL CONDUIT SYSTEM, SEE SPECIAL PROVISIONS.

FOR DUCT BANK - TYPE 6 WAY, 4", SEE SPECIAL PROVISIONS.

HYDRAULIC DATA

DESIGN DISCHARGE.....	17800 CFS
FREQUENCY OF DESIGN FLOOD.....	50 YEARS
DESIGN HIGH WATER ELEVATION.....	2012.4
DRAINAGE AREA.....	295 SQ. MI.
BASE DISCHARGE (Q100).....	20800 CFS
BASE HIGH WATER ELEVATION.....	2013.79

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE.....	19050 CFS
FREQUENCY OF OVERTOPPING FLOOD.....	50+ YRS.
OVERTOPPING FLOOD ELEVATION.....	2013.0

TOTAL BILL OF MATERIAL

	CONSTRUCTION MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS	REMOVAL OF EXISTING STRUCTURE	3'-6" Ø DRILLED PIERS IN SOIL	3'-6" Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIERS	PDA TESTING	SID INSPECTIONS	SPT TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CONCRETE WEARING SURFACE	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	EACH	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.
SUPERSTRUCTURE											11017	10515				
END BENT NO. 1										LUMP SUM			28.7		3364	
BENT NO. 1			65.83	27.00	66.15								29.9		12363	2397
BENT NO. 2			85.00	32.00	66.39								29.0		13368	2887
BENT NO. 3			152.00	33.00	111.13								29.2		17021	4302
END BENT NO. 2										LUMP SUM			29.1		3514	
TOTAL	LUMP SUM	LUMP SUM	302.83	92.00	243.67	1	1	1	1	LUMP SUM	11017	10515	145.9	LUMP SUM	49630	9586

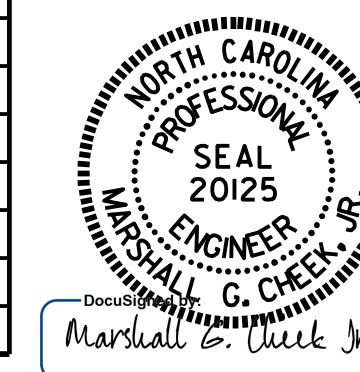
	HP 12 X 53 STEEL PILES	STEEL PILE POINTS	ANODIZED TWO BAR METAL RAIL	VERTICAL CONCRETE BARRIER RAIL	1'-4" X 2'-11 1/2" CONCRETE PARAPET	1'-4" X 3'-3 1/2" CONCRETE PARAPET	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS	APPLICATION OF BRIDGE COATING	ASBESTOS ASSESSMENT	ELECTRICAL CONDUIT SYSTEM	DUCT BANK - TYPE 6-WAY, 4"	ARCHITECTURAL CONCRETE SURFACE TREATMENT		
	NO.	LIN. FT.	EACH	LIN. FT.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.	NO.	LIN. FT.	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	SQ. FT.
SUPERSTRUCTURE				472.75	265.38	250.38			LUMP SUM	16	640.00	48	3360.00	LUMP SUM	LUMP SUM	LUMP SUM	280.37	4870
END BENT NO. 1	8	200	8															
BENT NO. 1																		
BENT NO. 2																		
BENT NO. 3																		
END BENT NO. 2	8	440					150	165										
TOTAL	16	640	8	472.75	265.38	250.38	365	405	LUMP SUM	16	640.00	48	3360.00	LUMP SUM	LUMP SUM	LUMP SUM	280.37	4870

PROJECT NO. B-5125

MACON COUNTY

STATION: 13+25.89 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
FOR BRIDGE ON US 441 BUS.
OVER LITTLE TENNESSEE
RIVER BETWEEN
SR 1724 AND SR 1324

7/1/2016

DRAWN BY : M. POOLE DATE : 01-16
CHECKED BY : M.G. CHEEK DATE : 5-10-16

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			43

LOAD FACTORS:

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

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	1.32	--	1.75	0.281	1.67	A	EL	19.501	0.542	1.32	A	EL	1.95	0.80	0.281	1.42	A	EL	19.501		
	HL-93(0pr)	N/A	--	1.71	--	1.35	0.281	2.16	A	EL	19.501	0.542	1.71	A	EL	1.95	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.55	55.627	1.75	0.281	2.09	A	EL	19.501	0.542	1.55	A	EL	1.95	0.80	0.281	1.77	A	EL	19.501		
	HS-20(0pr)	36.000	--	2.00	72.108	1.35	0.281	2.71	A	EL	19.501	0.542	2.00	A	EL	1.95	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.29	44.375	1.40	0.281	4.83	A	EL	19.501	0.542	4.14	A	EL	1.95	0.80	0.281	3.29	A	EL	19.501	
		SNGARBS2	20.000	--	2.71	54.257	1.40	0.281	3.98	A	EL	15.601	0.542	3.08	A	EL	1.95	0.80	0.281	2.71	A	EL	19.501	
		SNAGRIS2	22.000	--	2.68	58.867	1.40	0.281	3.89	A	EL	15.601	0.542	2.92	A	EL	1.95	0.80	0.281	2.68	A	EL	23.402	
		SNCOTTS3	27.250	--	1.64	44.774	1.40	0.281	2.42	A	EL	19.501	0.542	2.08	A	EL	1.95	0.80	0.281	1.64	A	EL	19.501	
		SNAGGRS4	34.925	--	1.48	51.647	1.40	0.281	2.17	A	EL	19.501	0.542	1.82	A	EL	1.95	0.80	0.281	1.48	A	EL	19.501	
		SNS5A	35.550	--	1.44	51.137	1.40	0.281	2.12	A	EL	19.501	0.542	1.9	A	EL	1.95	0.80	0.281	1.44	A	EL	19.501	
		SNS6A	39.950	--	1.37	54.677	1.40	0.281	2.01	A	EL	19.501	0.542	1.78	A	EL	1.95	0.80	0.281	1.37	A	EL	19.501	
	SNS7B	42.000	3	1.31	54.820	1.40	0.281	1.92	A	EL	19.501	0.542	1.81	A	EL	1.95	0.80	0.281	1.31	A	EL	19.501		
	TTST	TNAGRIT3	33.000	--	1.68	55.574	1.40	0.281	2.48	A	EL	19.501	0.542	2.08	A	EL	1.95	0.80	0.281	1.68	A	EL	19.501	
		TNT4A	33.075	--	1.71	56.417	1.40	0.281	2.51	A	EL	19.501	0.542	1.98	A	EL	1.95	0.80	0.281	1.71	A	EL	19.501	
		TNT6A	41.600	--	1.45	60.182	1.40	0.281	2.13	A	EL	19.501	0.542	1.94	A	EL	1.95	0.80	0.281	1.45	A	EL	19.501	
		TNT7A	42.000	--	1.48	62.297	1.40	0.281	2.18	A	EL	19.501	0.542	1.79	A	EL	1.95	0.80	0.281	1.48	A	EL	19.501	
		TNT7B	42.000	--	1.52	63.697	1.40	0.281	2.23	A	EL	19.501	0.542	1.72	A	EL	1.95	0.80	0.281	1.52	A	EL	19.501	
		TNAGRIT4	43.000	--	1.48	63.442	1.40	0.281	2.17	A	EL	15.601	0.542	1.65	A	EL	1.95	0.80	0.281	1.48	A	EL	19.501	
TNAGT5A		45.000	--	1.37	61.439	1.40	0.281	2.01	A	EL	19.501	0.542	1.71	A	EL	1.95	0.80	0.281	1.37	A	EL	19.501		
TNAGT5B	45.000	--	1.33	59.701	1.40	0.281	1.95	A	EL	19.501	0.542	1.56	A	EL	1.95	0.80	0.281	1.33	A	EL	19.501			

NOTES:

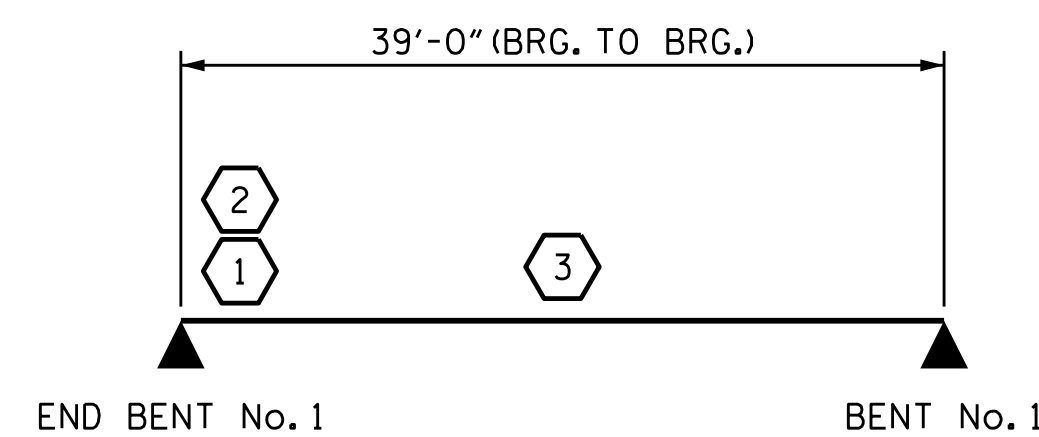
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

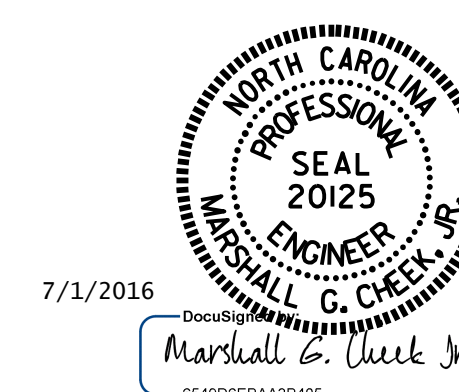
- 1.
- 2.
- 3.
- 4.

#	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	



LRFR SUMMARY
SPAN A

PROJECT NO. B-5125
MACON COUNTY
 STATION: 13+25.89 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

LRFR SUMMARY FOR
 PRESTRESSED
 CONCRETE GIRDERS
 SPAN A

ASSEMBLED BY : W.J. HARRIS	DATE : 5/10/16
CHECKED BY : M.G. CHEEK	DATE : 5/10/16
DRAWN BY : MAA 1/08	REV. 11/12/OBRR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			43

LOAD FACTORS:

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

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	1.00	--	1.75	0.27	1.16	B	EL	37.002	0.495	1.79	B	EL	7.401	0.80	0.27	1.00	B	EL	37.002		
	HL-93(0pr)	N/A	--	1.50	--	1.35	0.27	1.50	B	EL	37.002	0.495	2.33	B	EL	7.401	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.32	47.401	1.75	0.27	1.52	B	EL	37.002	0.495	2.26	B	EL	7.401	0.80	0.27	1.32	B	EL	37.002		
	HS-20(0pr)	36.000	--	1.97	70.977	1.35	0.27	1.97	B	EL	37.002	0.495	2.93	B	EL	7.401	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13,500	--	2.98	40.258	1.40	0.27	4.31	B	EL	37.002	0.495	6.75	B	EL	7.401	0.80	0.27	2.98	B	EL	37.002	
		SNGARBS2	20,000	--	2.22	44.361	1.40	0.27	3.2	B	EL	37.002	0.495	4.80	B	EL	7.401	0.80	0.27	2.22	B	EL	37.002	
		SNAGRIS2	22,000	--	2.10	46.172	1.40	0.27	3.03	B	EL	37.002	0.495	4.45	B	EL	7.401	0.80	0.27	2.10	B	EL	37.002	
		SNCOTTS3	27,250	--	1.48	40.435	1.40	0.27	2.14	B	EL	37.002	0.495	3.37	B	EL	7.401	0.80	0.27	1.48	B	EL	37.002	
		SNAGGRS4	34,925	--	1.24	43.251	1.40	0.27	1.79	B	EL	37.002	0.495	2.79	B	EL	7.401	0.80	0.27	1.24	B	EL	37.002	
		SNS5A	35,550	--	1.21	43.056	1.40	0.27	1.75	B	EL	37.002	0.495	2.83	B	EL	7.401	0.80	0.27	1.21	B	EL	37.002	
		SNS6A	39,950	--	1.11	44.366	1.40	0.27	1.6	B	EL	37.002	0.495	2.58	B	EL	7.401	0.80	0.27	1.11	B	EL	37.002	
	SNS7B	42,000	--	1.06	44.417	1.40	0.27	1.53	B	EL	37.002	0.495	2.53	B	EL	7.401	0.80	0.27	1.06	B	EL	37.002		
	TTST	TNAGRIT3	33,000	--	1.35	44.683	1.40	0.27	1.96	B	EL	37.002	0.495	3.07	B	EL	7.401	0.80	0.27	1.35	B	EL	37.002	
		TNT4A	33,075	--	1.36	44.976	1.40	0.27	1.96	B	EL	37.002	0.495	2.99	B	EL	7.401	0.80	0.27	1.36	B	EL	37.002	
		TNT6A	41,600	--	1.11	46.224	1.40	0.27	1.6	B	EL	37.002	0.495	2.69	B	EL	7.401	0.80	0.27	1.11	B	EL	37.002	
		TNT7A	42,000	--	1.12	46.887	1.40	0.27	1.61	B	EL	37.002	0.495	2.64	B	EL	7.401	0.80	0.27	1.12	B	EL	37.002	
		TNT7B	42,000	--	1.15	48.469	1.40	0.27	1.67	B	EL	37.002	0.495	2.47	B	EL	7.401	0.80	0.27	1.15	B	EL	37.002	
		TNAGRIT4	43,000	--	1.10	47.234	1.40	0.27	1.59	B	EL	37.002	0.495	2.39	B	EL	7.401	0.80	0.27	1.10	B	EL	37.002	
TNAGT5A		45,000	--	1.04	46.621	1.40	0.27	1.5	B	EL	37.002	0.495	2.38	B	EL	7.401	0.80	0.27	1.04	B	EL	37.002		
TNAGT5B	45,000	3	1.02	46.070	1.40	0.27	1.48	B	EL	37.002	0.495	2.28	B	EL	7.401	0.80	0.27	1.02	B	EL	37.002			

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)

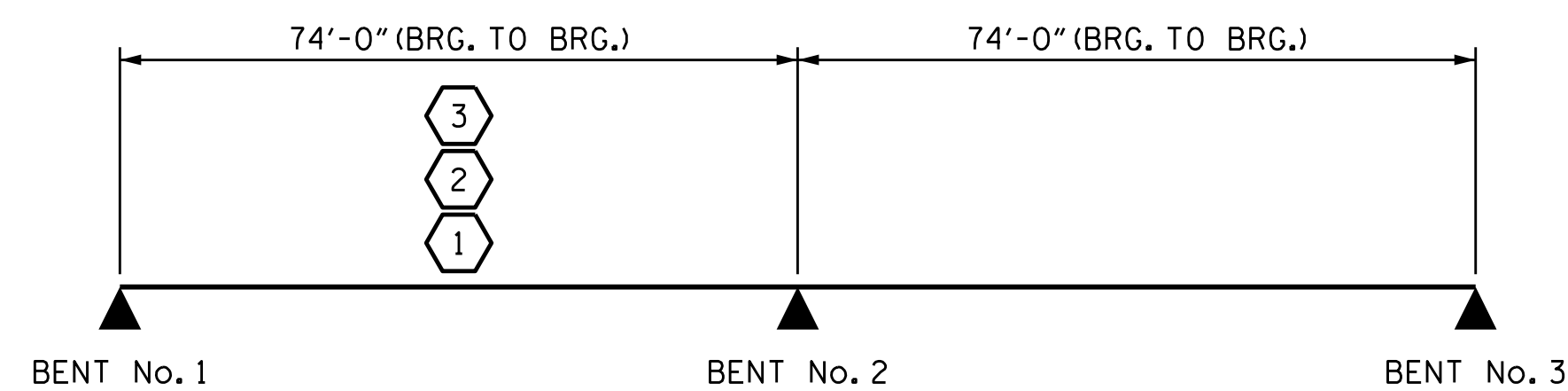
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

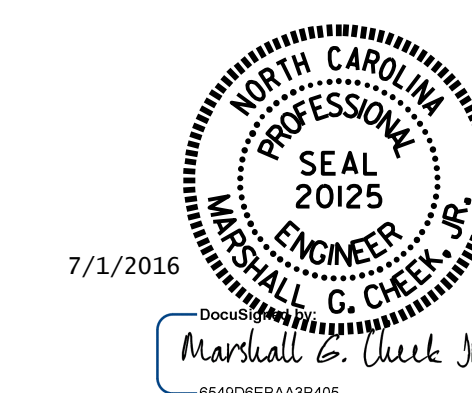
GIRDER LOCATION

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



LRFR SUMMARY
SPAN B & C

PROJECT NO. B-5125
MACON COUNTY
 STATION: 13+25.89 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

LRFR SUMMARY FOR
 PRESTRESSED
 CONCRETE GIRDERS
 SPAN B & C

ASSEMBLED BY : W.J. HARRIS	DATE : 5/10/16
CHECKED BY : M.G. CHEEK	DATE : 5/10/16
DRAWN BY : MAA	REV. 11/2/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			43

LOAD FACTORS:

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

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	1.05	--	1.75	0.276	1.09	D	EL	29.501	0.512	1.23	D	EL	5.9	0.80	0.276	1.05	D	EL	29.501		
	HL-93(0pr)	N/A	--	1.42	--	1.35	0.276	1.42	D	EL	29.501	0.512	1.59	D	EL	5.9	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	②	1.33	48.048	1.75	0.276	1.39	D	EL	29.501	0.512	1.48	D	EL	5.9	0.80	0.276	1.33	D	EL	29.501		
	HS-20(0pr)	36.000	--	1.80	64.717	1.35	0.276	1.8	D	EL	29.501	0.512	1.92	D	EL	5.9	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.87	38.789	1.40	0.276	3.73	D	EL	29.501	0.512	4.27	D	EL	5.9	0.80	0.276	2.87	D	EL	29.501	
		SNGARBS2	20.000	--	2.20	43.992	1.40	0.276	2.86	D	EL	29.501	0.512	3.08	D	EL	5.9	0.80	0.276	2.20	D	EL	29.501	
		SNAGRIS2	22.000	--	2.11	46.387	1.40	0.276	2.74	D	EL	29.501	0.512	2.87	D	EL	5.9	0.80	0.276	2.11	D	EL	29.501	
		SNCOTTS3	27.250	--	1.43	39.008	1.40	0.276	1.86	D	EL	29.501	0.512	2.14	D	EL	5.9	0.80	0.276	1.43	D	EL	29.501	
		SNAGGRS4	34.925	--	1.22	42.555	1.40	0.276	1.58	D	EL	29.501	0.512	1.80	D	EL	5.9	0.80	0.276	1.22	D	EL	29.501	
		SNS5A	35.550	--	1.19	42.304	1.40	0.276	1.55	D	EL	29.501	0.512	1.84	D	EL	5.9	0.80	0.276	1.19	D	EL	29.501	
		SNS6A	39.950	--	1.10	43.998	1.40	0.276	1.43	D	EL	29.501	0.512	1.69	D	EL	5.9	0.80	0.276	1.10	D	EL	29.501	
	SNS7B	42.000	--	1.05	44.065	1.40	0.276	1.36	D	EL	29.501	0.512	1.68	D	EL	5.9	0.80	0.276	1.05	D	EL	29.501		
	TTST	TNAGRIT3	33.000	--	1.35	44.413	1.40	0.276	1.75	D	EL	29.501	0.512	2.00	D	EL	5.9	0.80	0.276	1.35	D	EL	29.501	
		TNT4A	33.075	--	1.35	44.798	1.40	0.276	1.76	D	EL	29.501	0.512	1.94	D	EL	5.9	0.80	0.276	1.35	D	EL	29.501	
		TNT6A	41.600	--	1.12	46.457	1.40	0.276	1.45	D	EL	29.501	0.512	1.81	D	EL	5.9	0.80	0.276	1.12	D	EL	29.501	
		TNT7A	42.000	--	1.13	47.349	1.40	0.276	1.46	D	EL	29.501	0.512	1.73	D	EL	5.9	0.80	0.276	1.13	D	EL	29.501	
		TNT7B	42.000	--	1.18	49.458	1.40	0.276	1.53	D	EL	29.501	0.512	1.62	D	EL	5.9	0.80	0.276	1.18	D	EL	29.501	
		TNAGRIT4	43.000	--	1.11	47.820	1.40	0.276	1.44	D	EL	29.501	0.512	1.57	D	EL	5.9	0.80	0.276	1.11	D	EL	29.501	
TNAGT5A		45.000	--	1.04	46.990	1.40	0.276	1.36	D	EL	29.501	0.512	1.58	D	EL	5.9	0.80	0.276	1.04	D	EL	29.501		
TNAGT5B	45.000	③	1.03	46.250	1.40	0.276	1.33	D	EL	29.501	0.512	1.49	D	EL	5.9	0.80	0.276	1.03	D	EL	29.501			

NOTES:

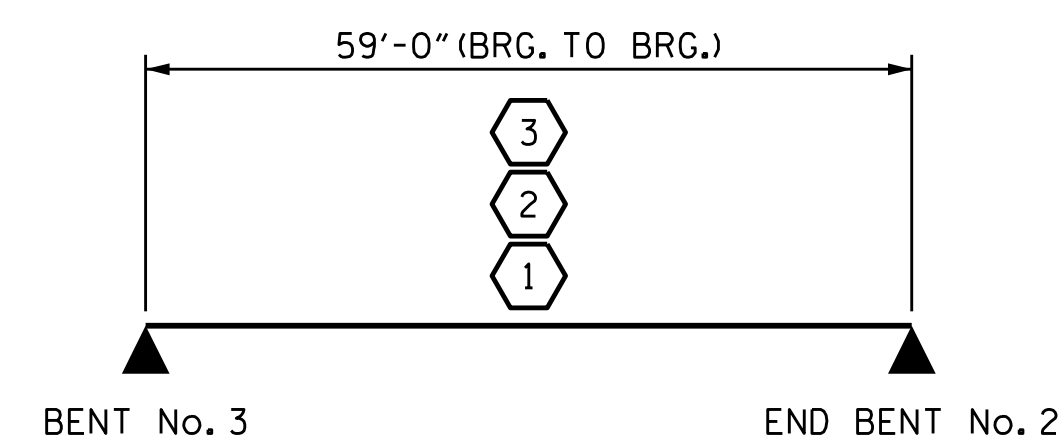
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

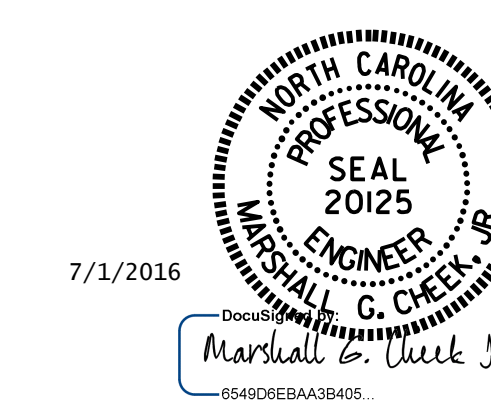
- 1.
- 2.
- 3.
- 4.

①	CONTROLLING LOAD RATING
①	DESIGN LOAD RATING (HL-93)
②	DESIGN LOAD RATING (HS-20)
③	LEGAL LOAD RATING **
** SEE CHART FOR VEHICLE TYPE	
GIRDER LOCATION	
I - INTERIOR GIRDER EL - EXTERIOR LEFT GIRDER ER - EXTERIOR RIGHT GIRDER	



LRFR SUMMARY
SPAN D

PROJECT NO. B-5125
MACON COUNTY
STATION: 13+25.89 -L-

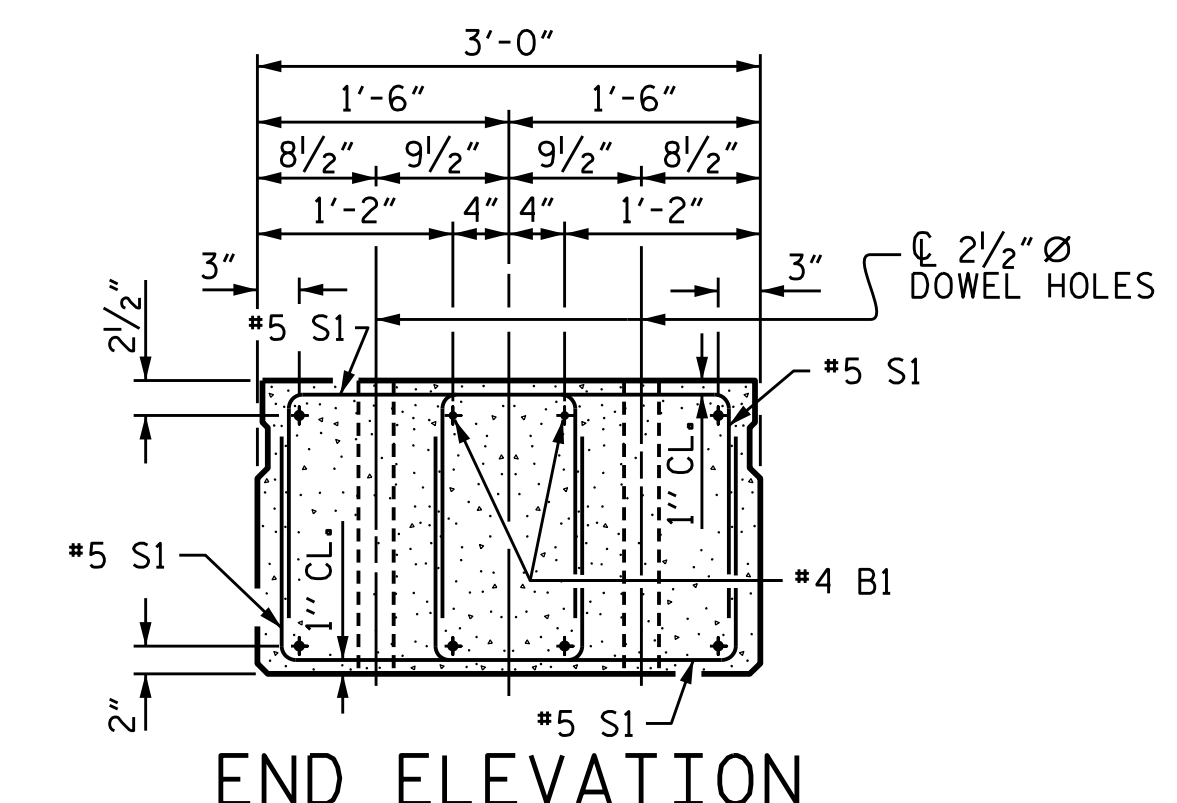
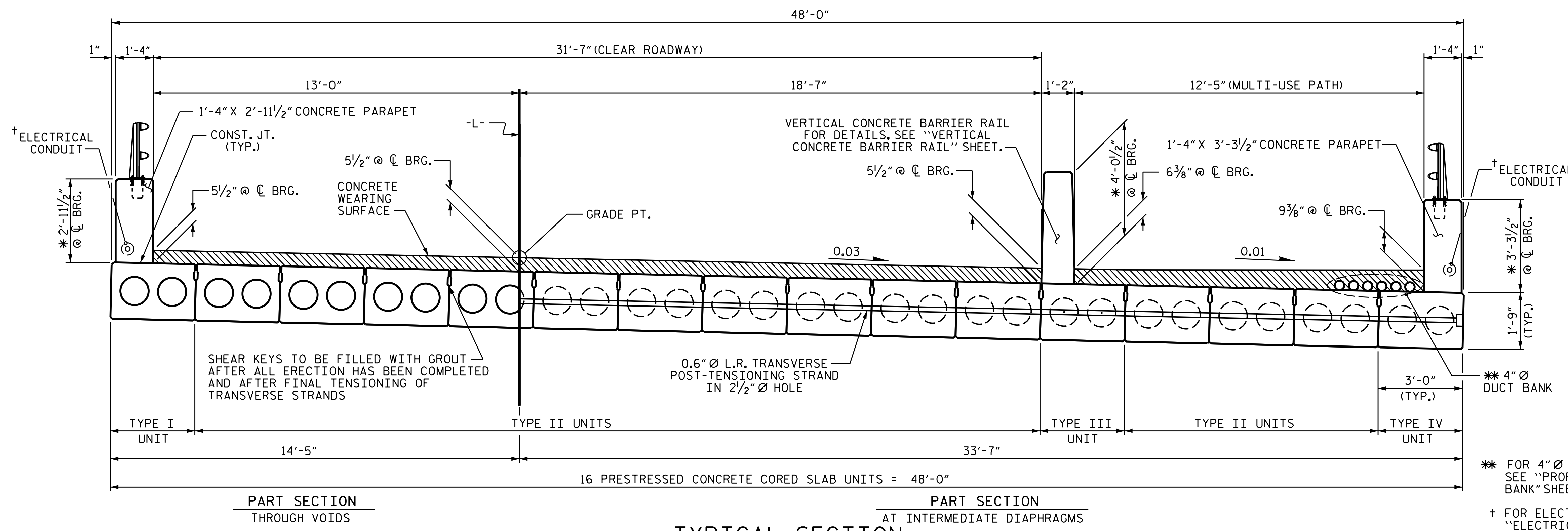


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR
PRESTRESSED
CONCRETE GIRDERS
SPAN D

ASSEMBLED BY : W.J. HARRIS	DATE : 5/10/16
CHECKED BY : M.G. CHEEK	DATE : 5/10/16
DRAWN BY : MAA 1/08	REV. 11/2/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM

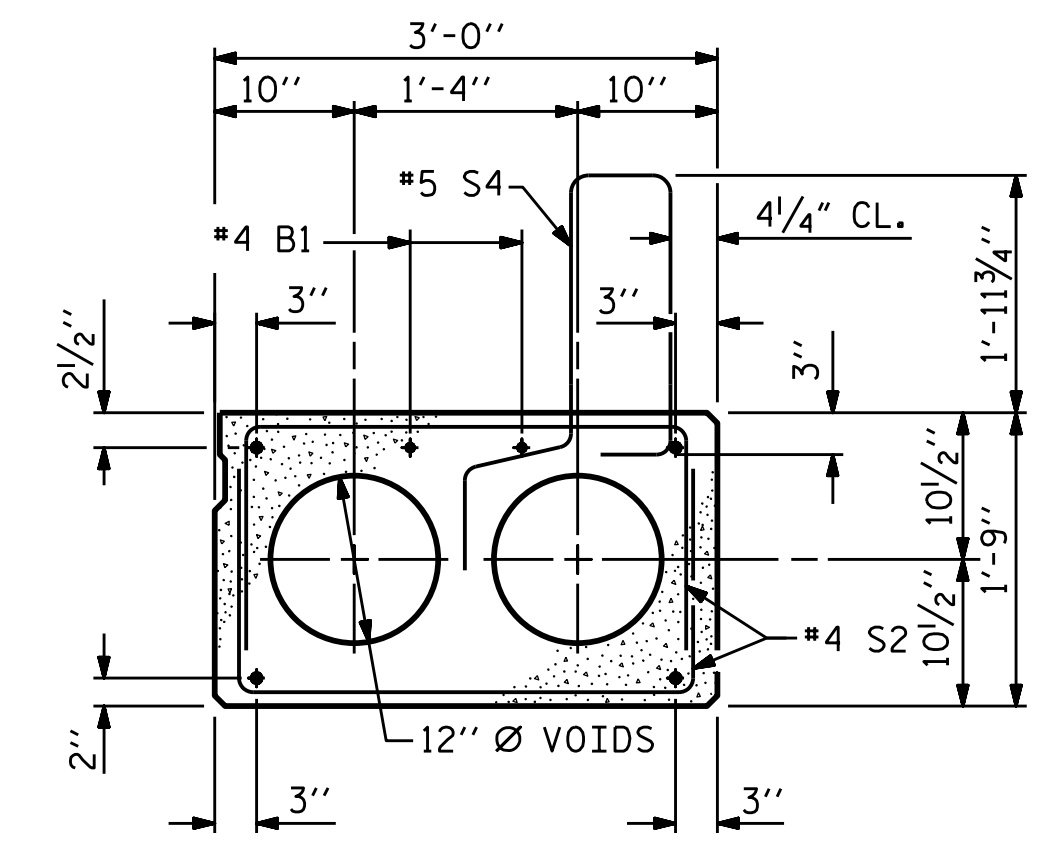
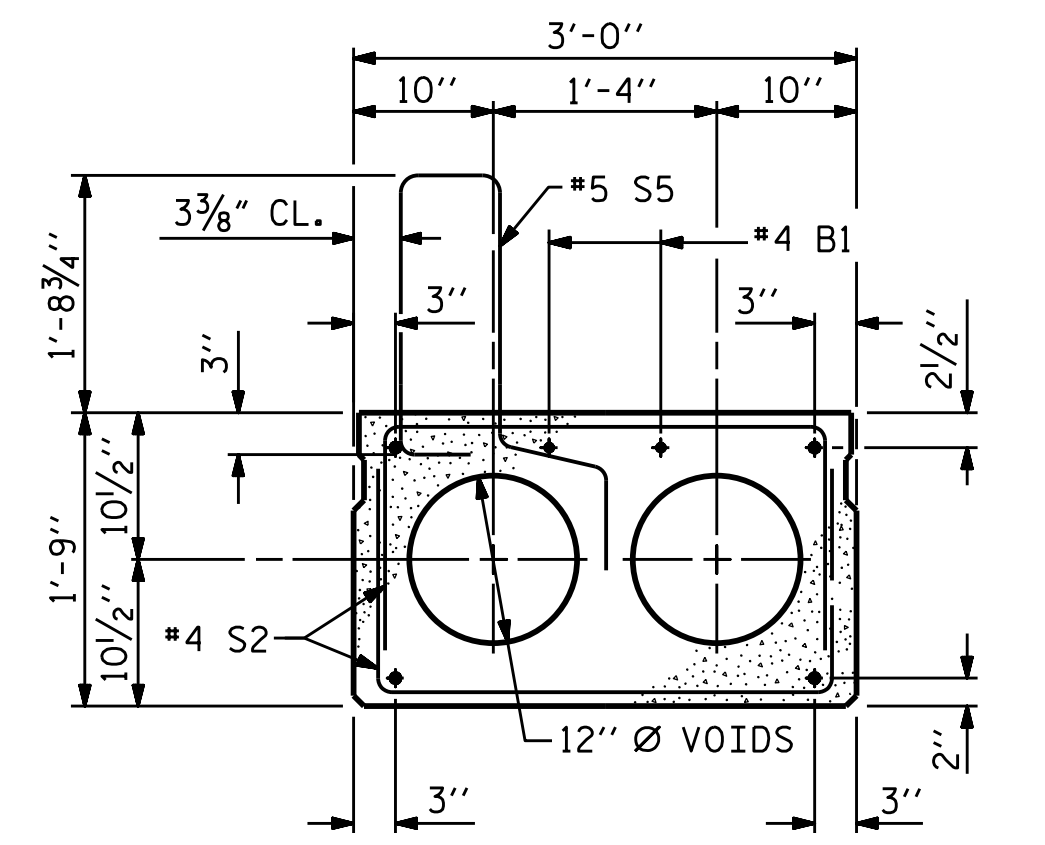
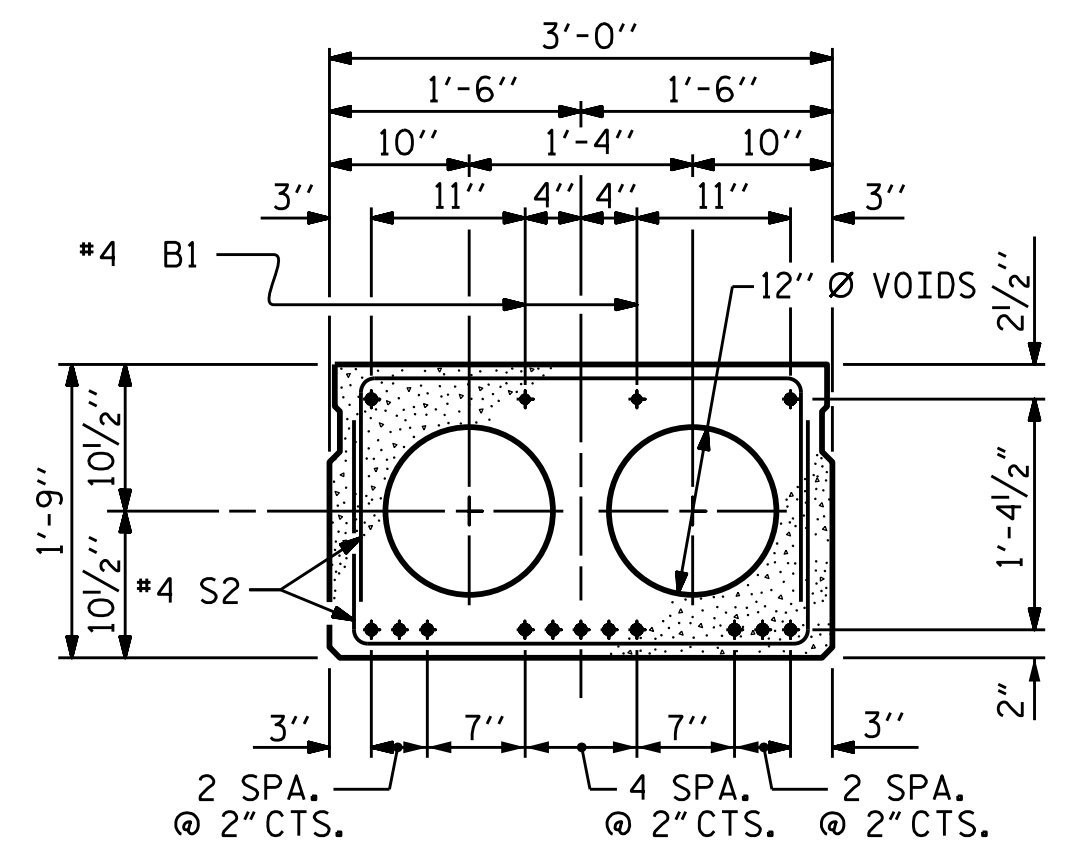
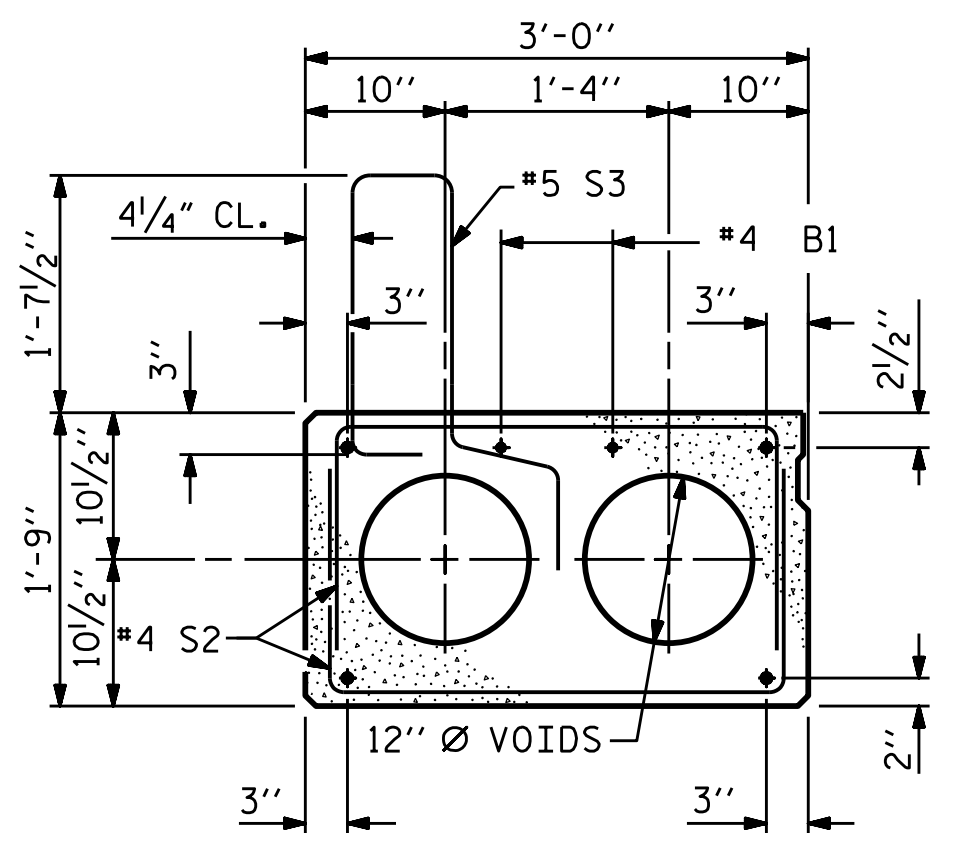
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	REVISIONS						SHEET NO. S-6 TOTAL SHEETS 43
	NO.	BY:	DATE:	NO.	BY:	DATE:	
	1			3			
	2			4			



* FOR 4" Ø DUCT BANK, SEE "PROPOSED DUCT BANK" SHEETS.
 † FOR ELECTRICAL CONDUIT, SEE "ELECTRICAL CONDUIT SYSTEM FOR LIGHTING" SHEET.

TYPICAL SECTION

* - THE MAXIMUM PARAPET HEIGHTS, BARRIER RAIL HEIGHT AND CONCRETE WEARING SURFACE THICKNESS IS SHOWN. THE HEIGHT OF THE PARAPETS, BARRIER RAIL HEIGHT AND CONCRETE WEARING SURFACE THICKNESS VARIES WHILE THE TOP OF THE PARAPETS AND BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR CONCRETE PARAPET HEIGHT DETAILS AND CONCRETE WEARING SURFACE THICKNESS, SEE SHEET 8 OF 8. LAMP PEDESTALS NOT SHOWN FOR CLARITY. FOR LAMP PEDESTALS, SEE PARAPET SHEETS.



0.6" Ø LOW RELAXATION STRAND LAYOUT

PROJECT NO. B-5125
MACON COUNTY
 STATION: 13+25.89 -L-

SHEET 1 OF 8

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

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

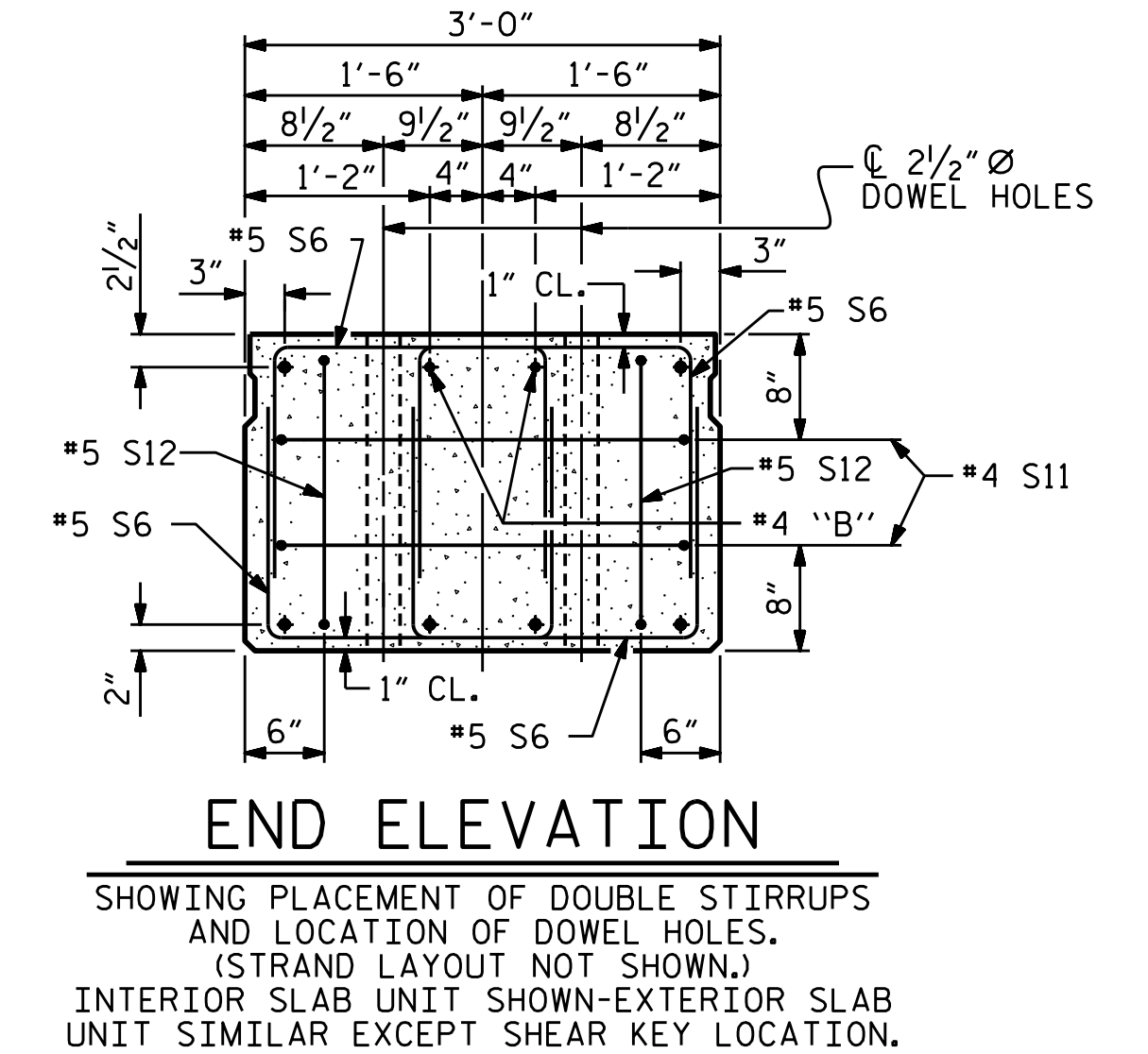
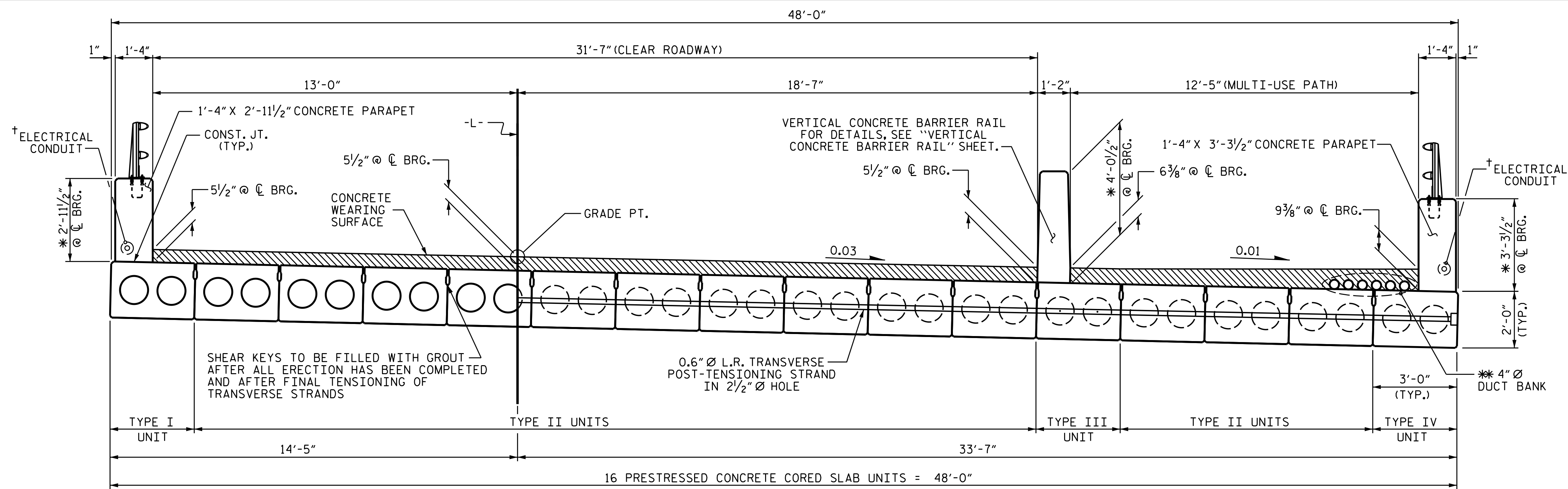


DRAWN BY : W.J. HARRIS DATE : 4/16
 CHECKED BY : M.G. CHEEK DATE : 4/29/16
 DESIGN ENGINEER OF RECORD: W.J. HARRIS DATE : 5/16

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7	
1			3			TOTAL SHEETS	
2			4			43	

*****SYSTEM*****
 *****DGN*****
 *****USER*****

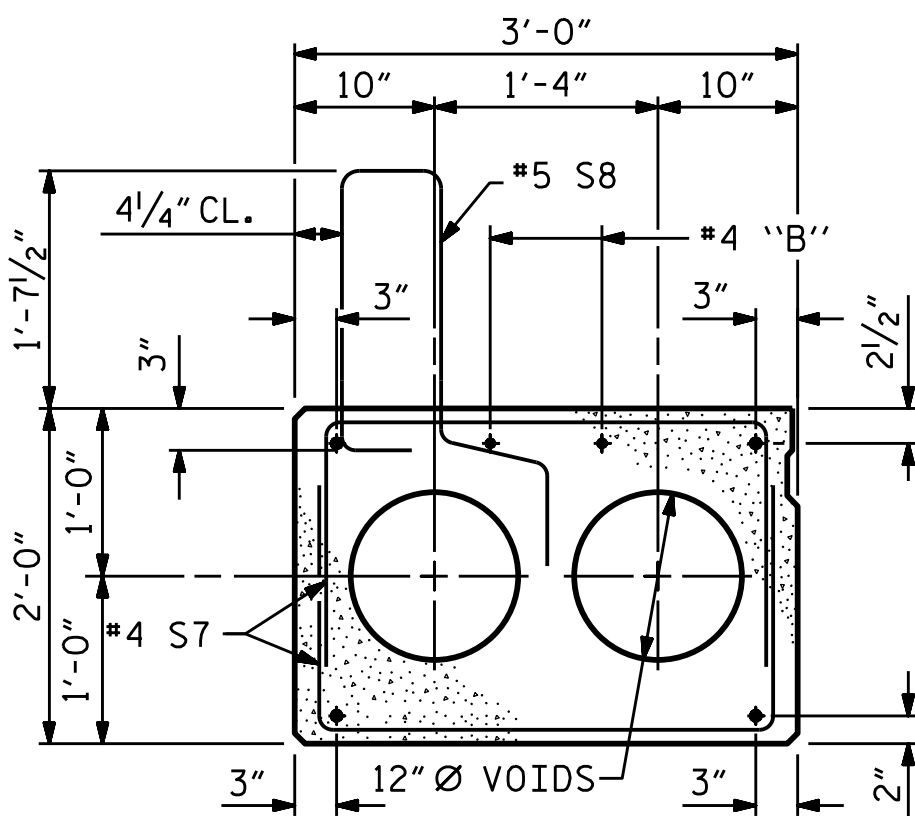


TYPICAL SECTION

* - THE MAXIMUM PARAPET HEIGHTS, BARRIER RAIL HEIGHT AND CONCRETE WEARING SURFACE THICKNESS IS SHOWN. THE HEIGHT OF THE PARAPETS, BARRIER RAIL HEIGHT AND CONCRETE WEARING SURFACE THICKNESS VARIES WHILE THE TOP OF THE PARAPETS AND BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR CONCRETE PARAPET HEIGHT DETAILS AND CONCRETE WEARING SURFACE THICKNESS, SEE SHEET 8 OF 8. LAMP PEDESTALS NOT SHOWN FOR CLARITY, FOR LAMP PEDESTALS, SEE PARAPET SHEETS.

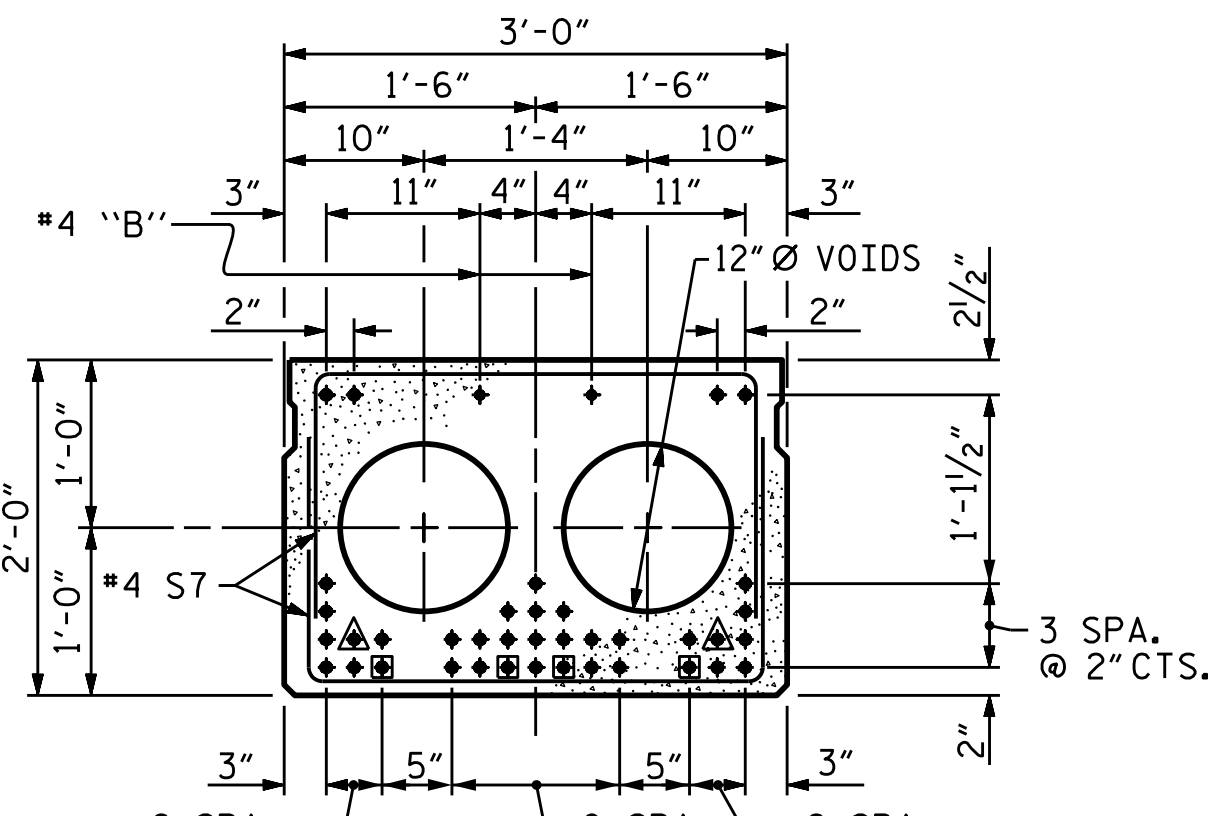
* FOR 4" Ø DUCT BANK, SEE "PROPOSED DUCT BANK" SHEETS.

† FOR ELECTRICAL CONDUIT, SEE "ELECTRICAL CONDUIT SYSTEM FOR LIGHTING" SHEET.



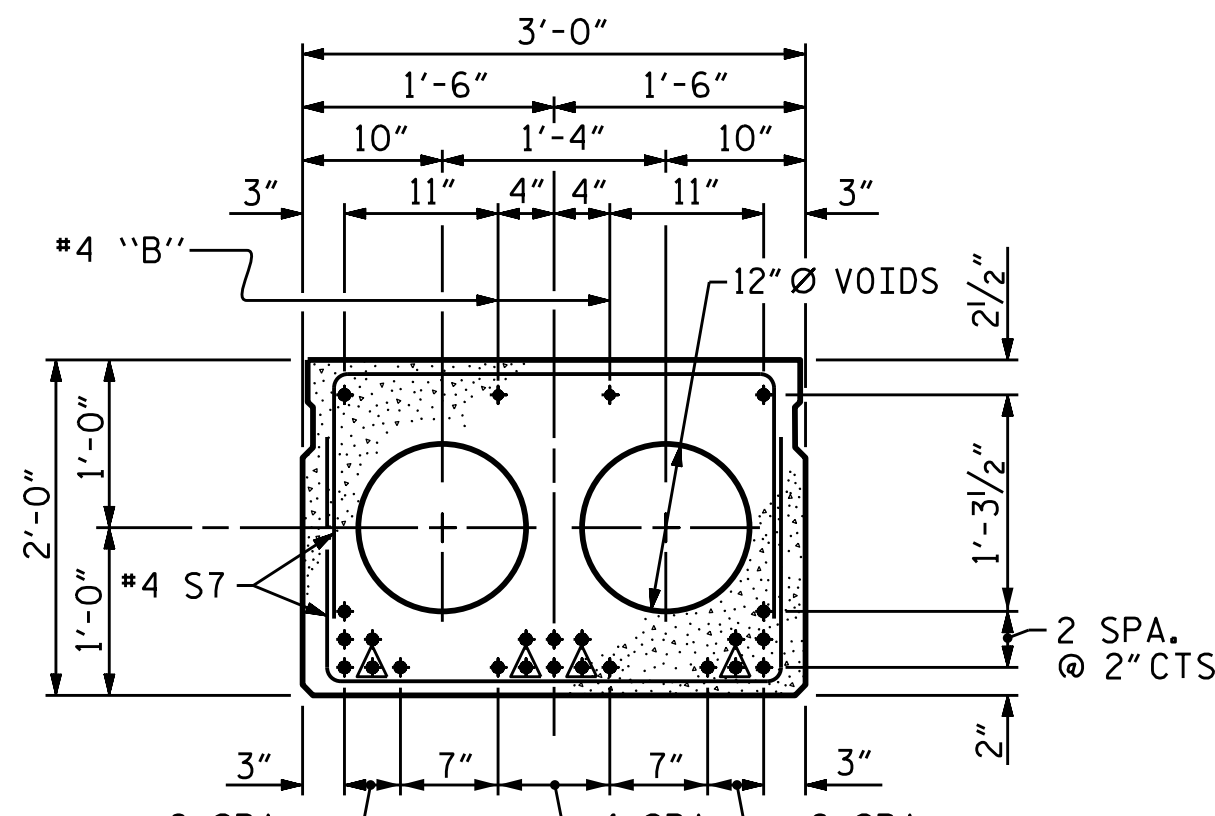
EXT. SLAB SECTION (TYPE I)

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION TYPE II)



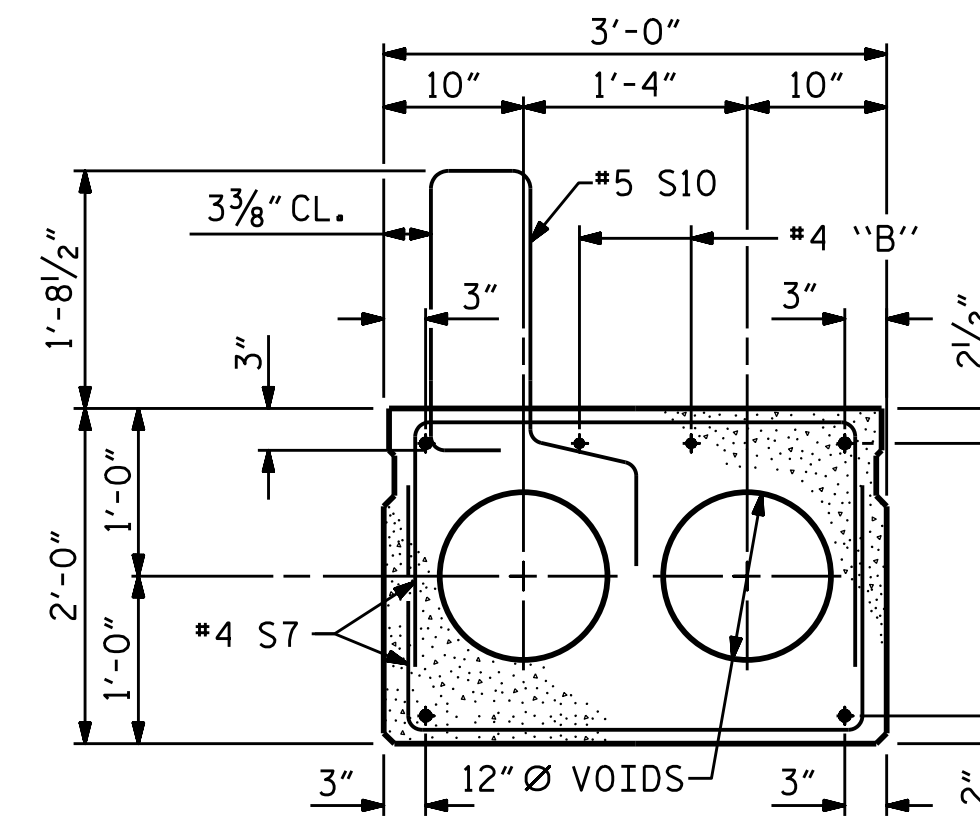
INTERIOR SLAB SECTION (TYPE II) (SPANS B & C)

(38 STRANDS REQUIRED)



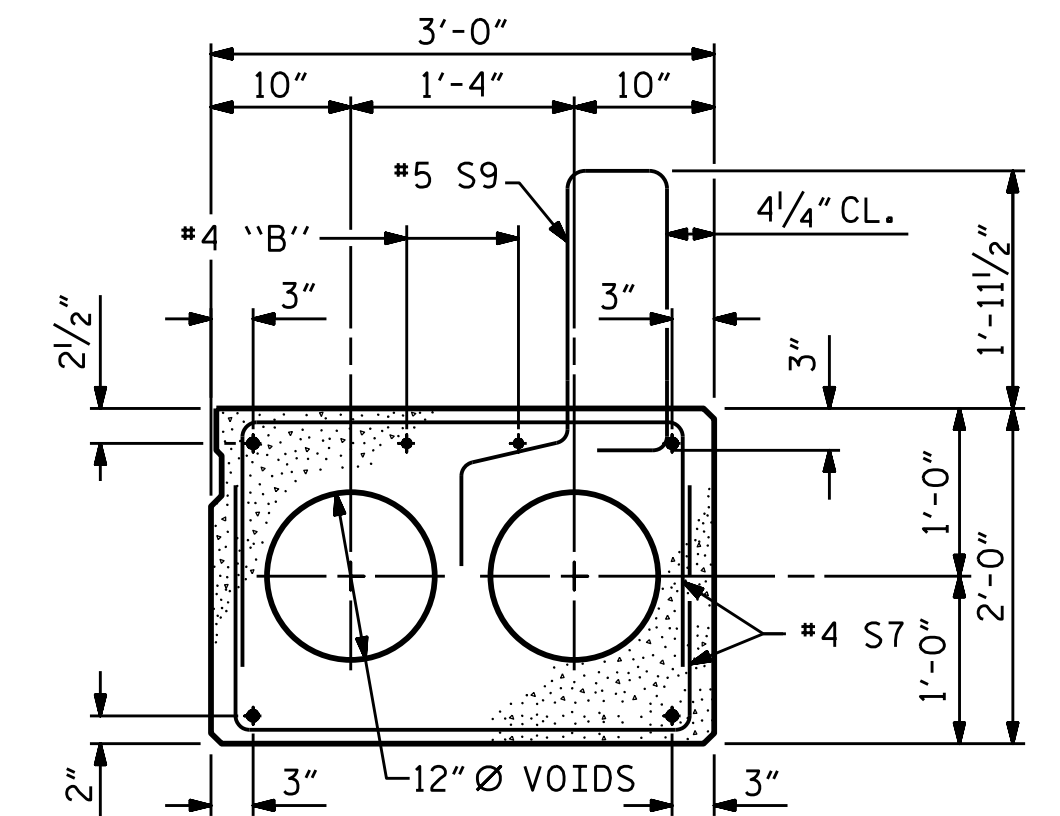
INTERIOR SLAB SECTION (TYPE II) (SPAN D)

(22 STRANDS REQUIRED)



INT. SLAB SECTION (TYPE III)

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION TYPE II)



EXT. SLAB SECTION (TYPE IV)

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION TYPE II)

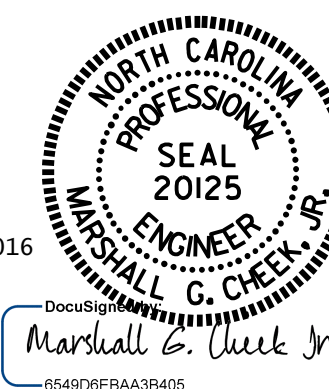
0.6" Ø LOW RELAXATION STRAND LAYOUT

- ▲ 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

PROJECT NO. B-5125
 MACON COUNTY
 STATION: 13+25.89 -L-

SHEET 2 OF 8



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

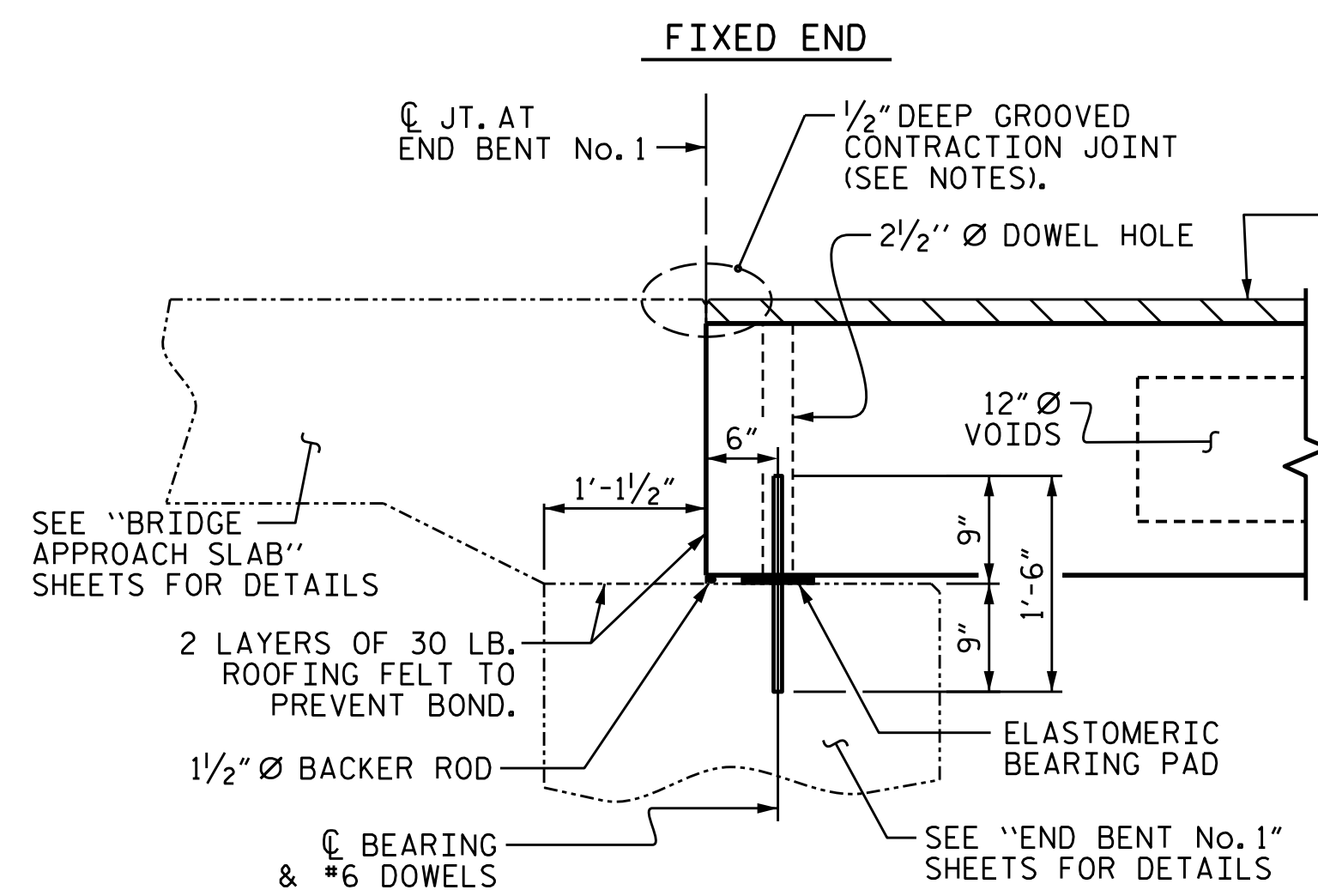
DRAWN BY: W.J. HARRIS DATE: 4/16
 CHECKED BY: M.G. CHEEK DATE: 4/29/16
 DESIGN ENGINEER OF RECORD: W.J. HARRIS DATE: 5/16

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

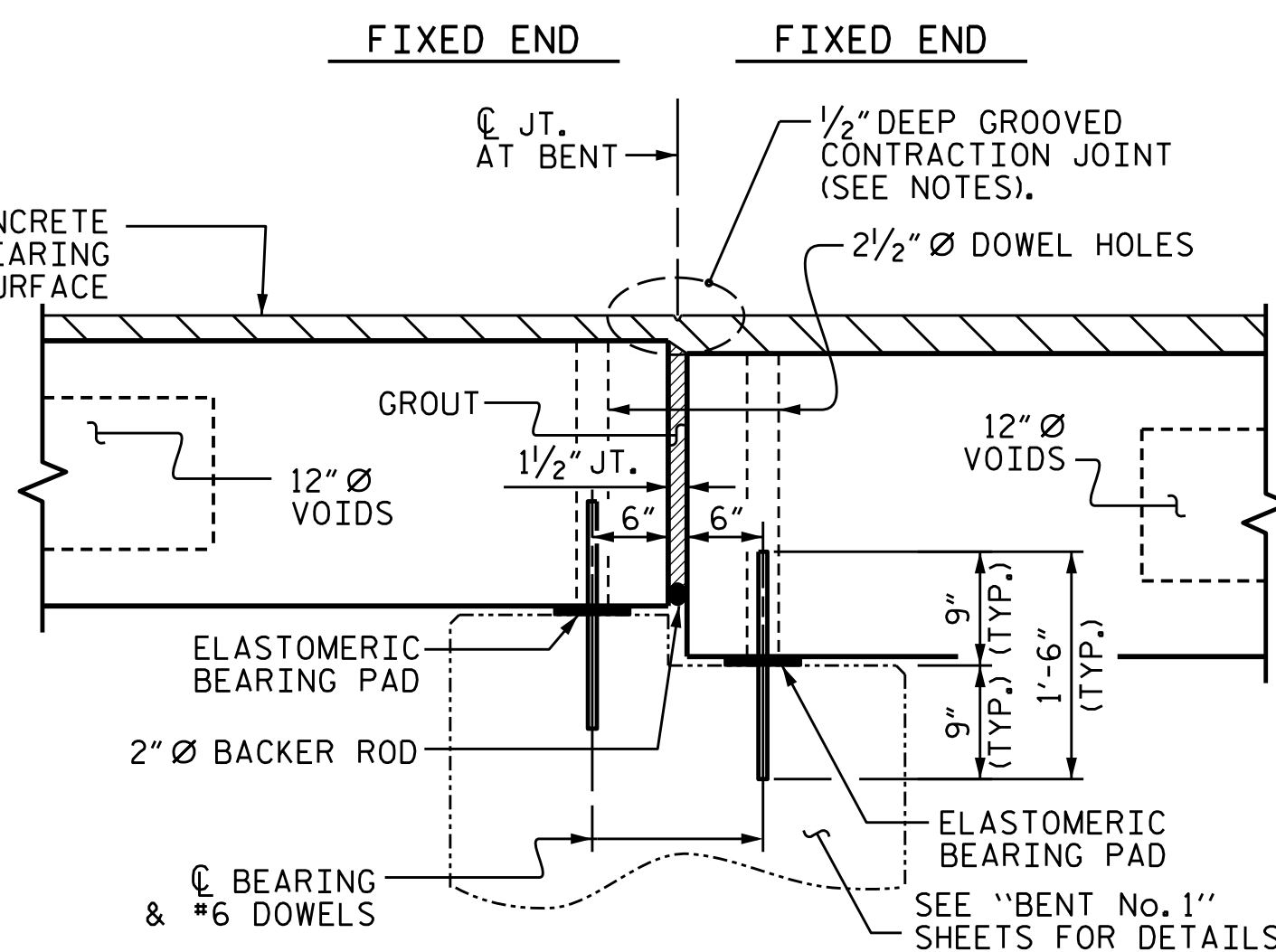
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 43

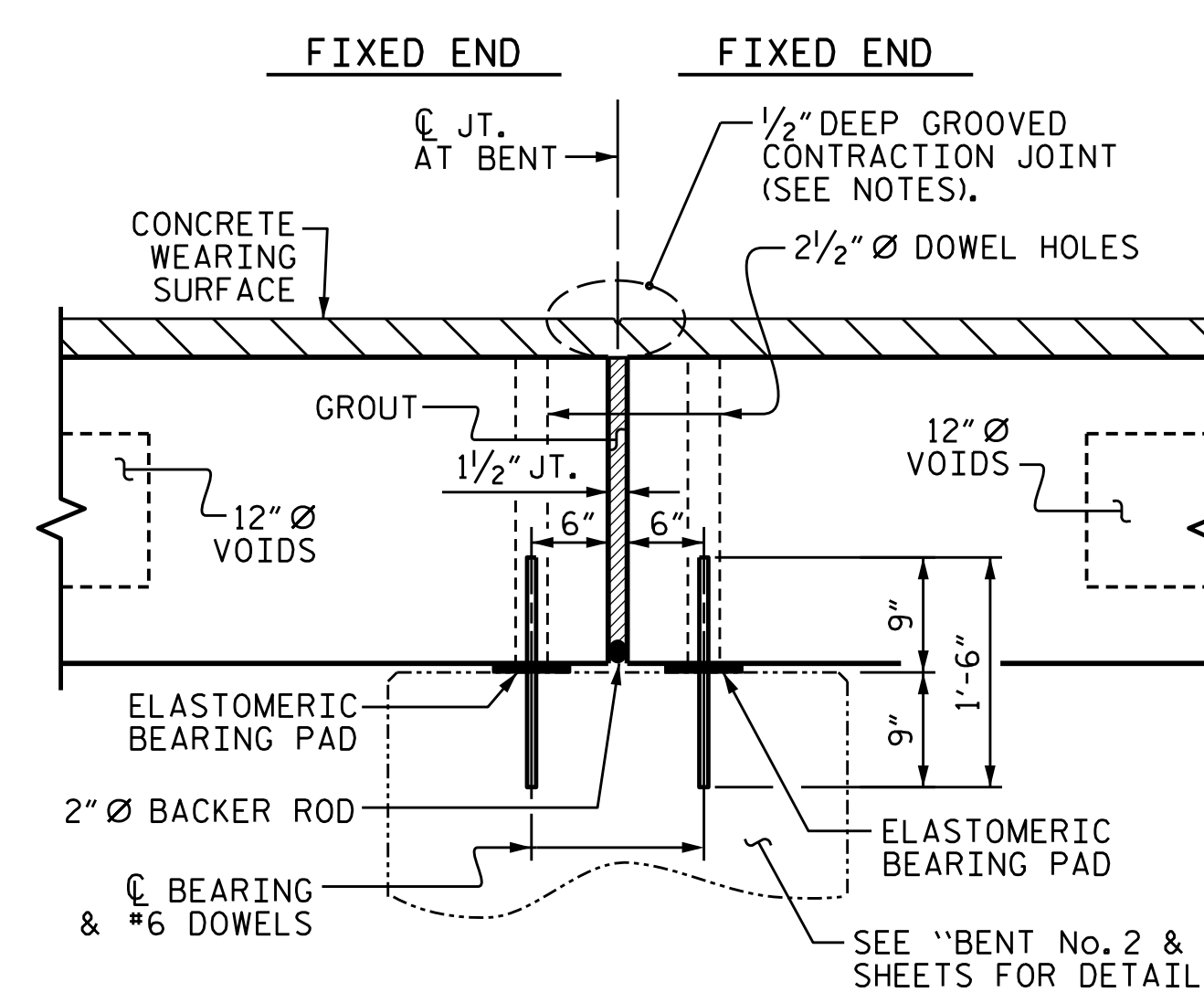
*****SYTIME*****
 *****DGN*****
 *****USER*****



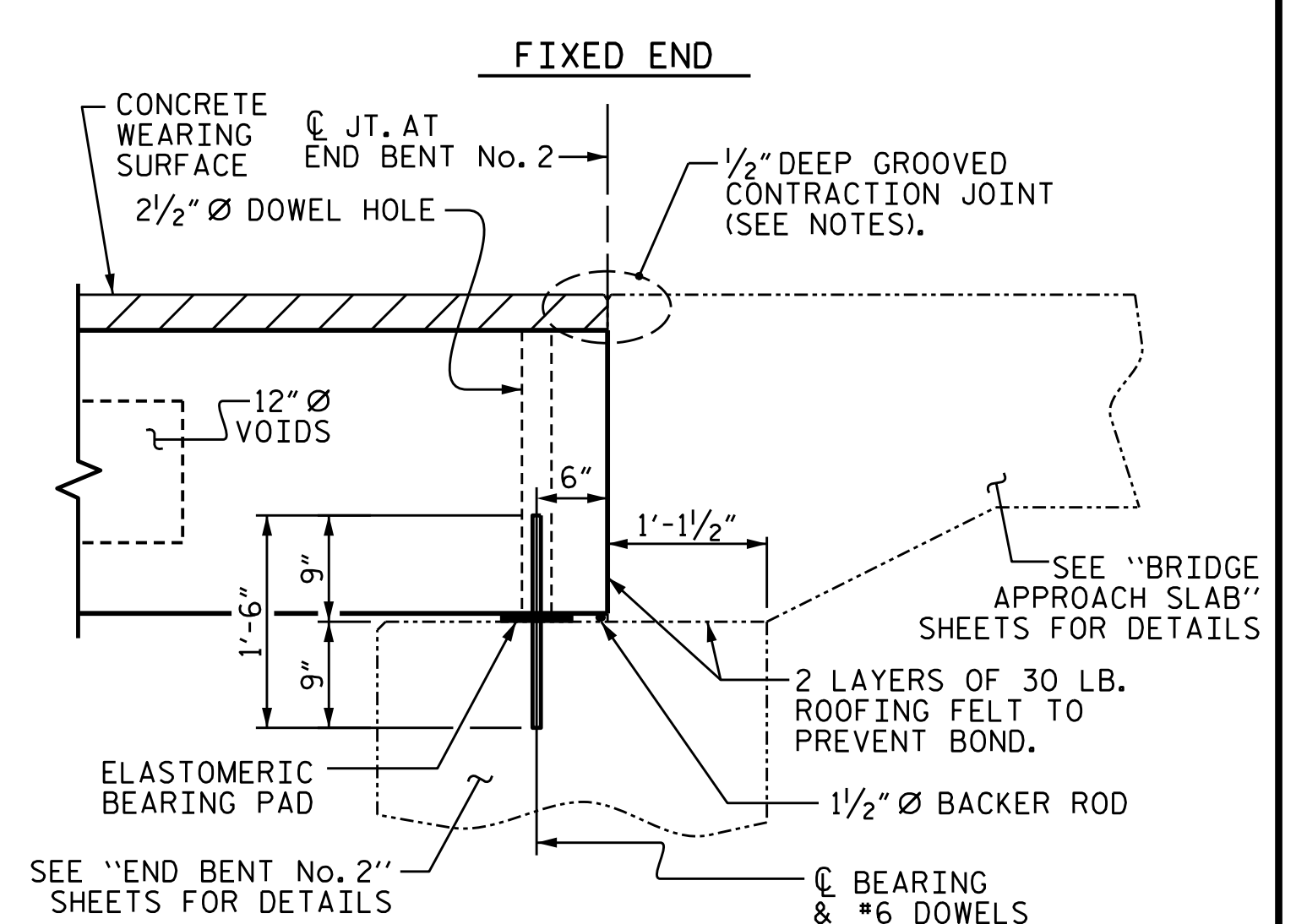
SECTION AT END BENT No. 1



SECTION AT BENT No. 1

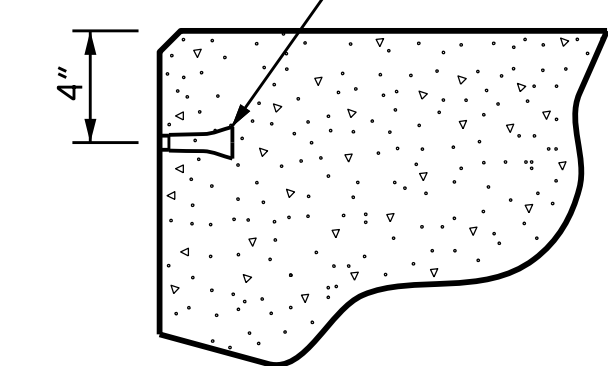


SECTION AT BENTS No. 2 & No. 3

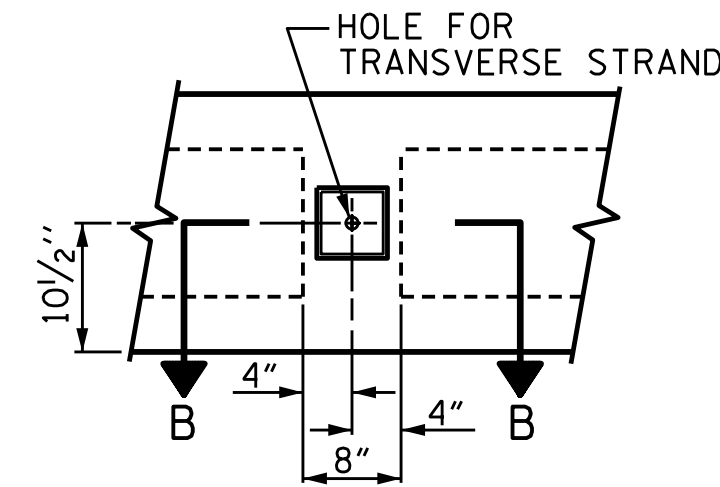


SECTION AT END BENT No. 2

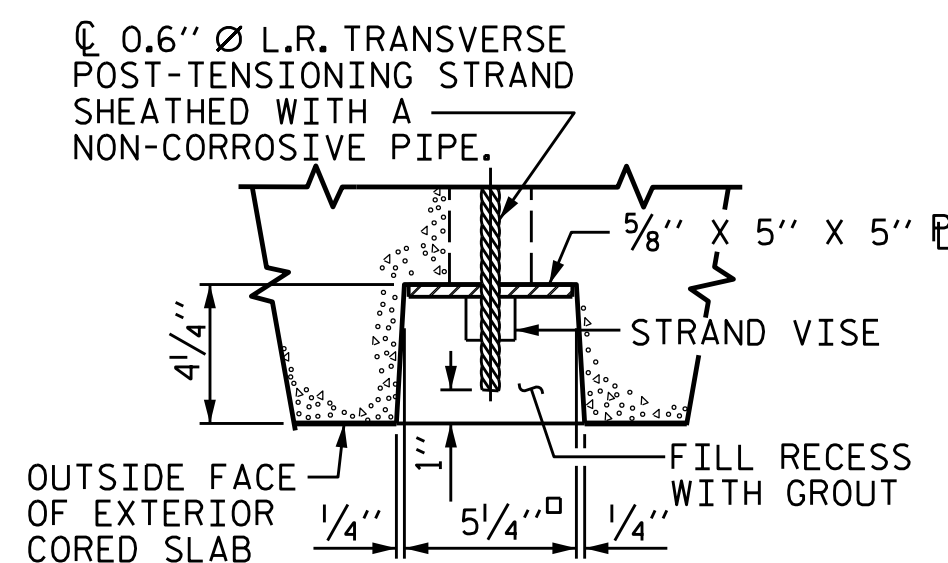
PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8" SIZE TO BE DETERMINED BY CONTRACTOR.



THREADED INSERT DETAIL



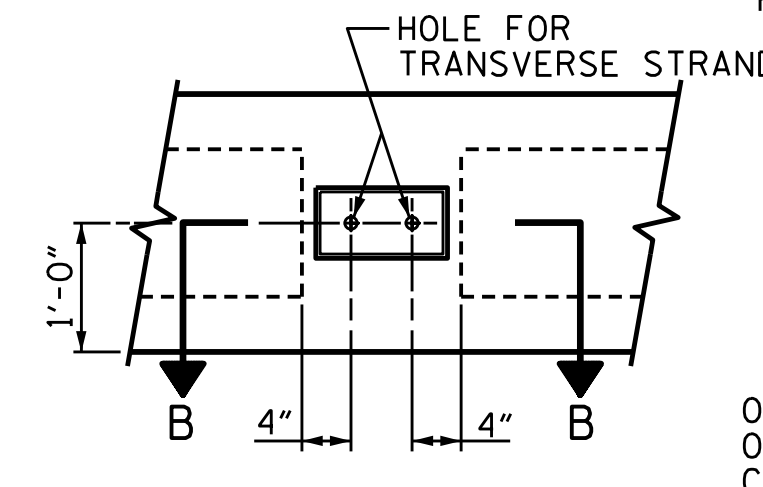
ELEVATION VIEW



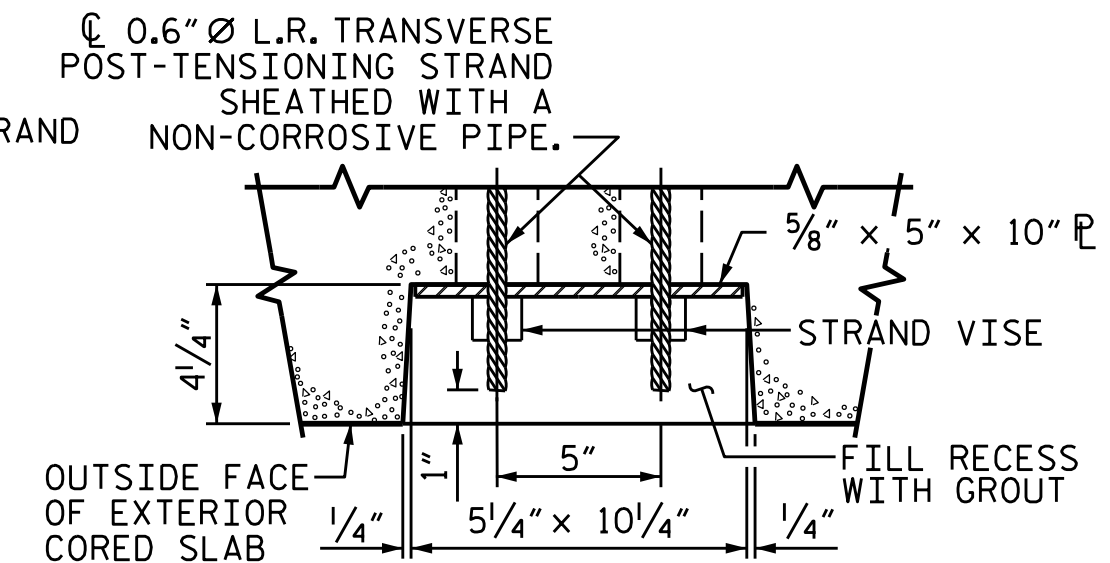
SECTION B-B

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

SPAN A



ELEVATION VIEW



SECTION B-B

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

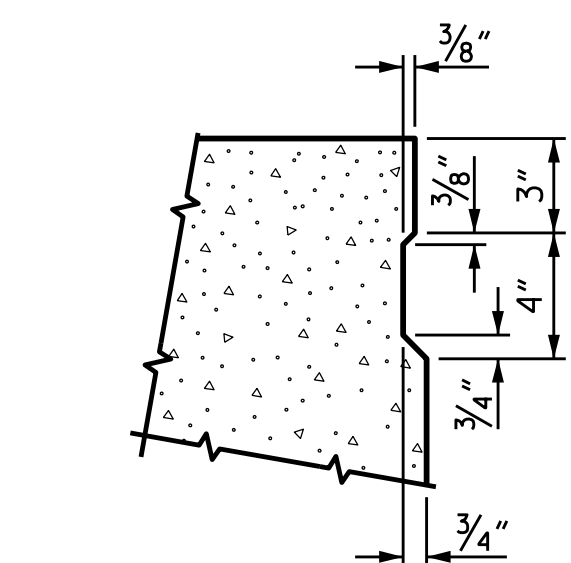
SPAN B, C & D

PROJECT NO. B-5125

MACON COUNTY

STATION: 13+25.89 -L-

SHEET 3 OF 8

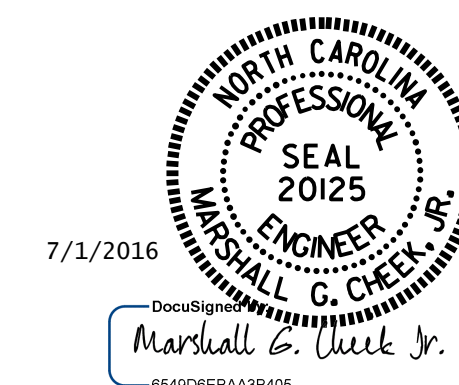


SHEAR KEY DETAIL

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

DRAWN BY: W.J. HARRIS DATE: 4/16
 CHECKED BY: M.G. CHEEK DATE: 4/29/16
 DESIGN ENGINEER OF RECORD: W.J. HARRIS DATE: 5/16

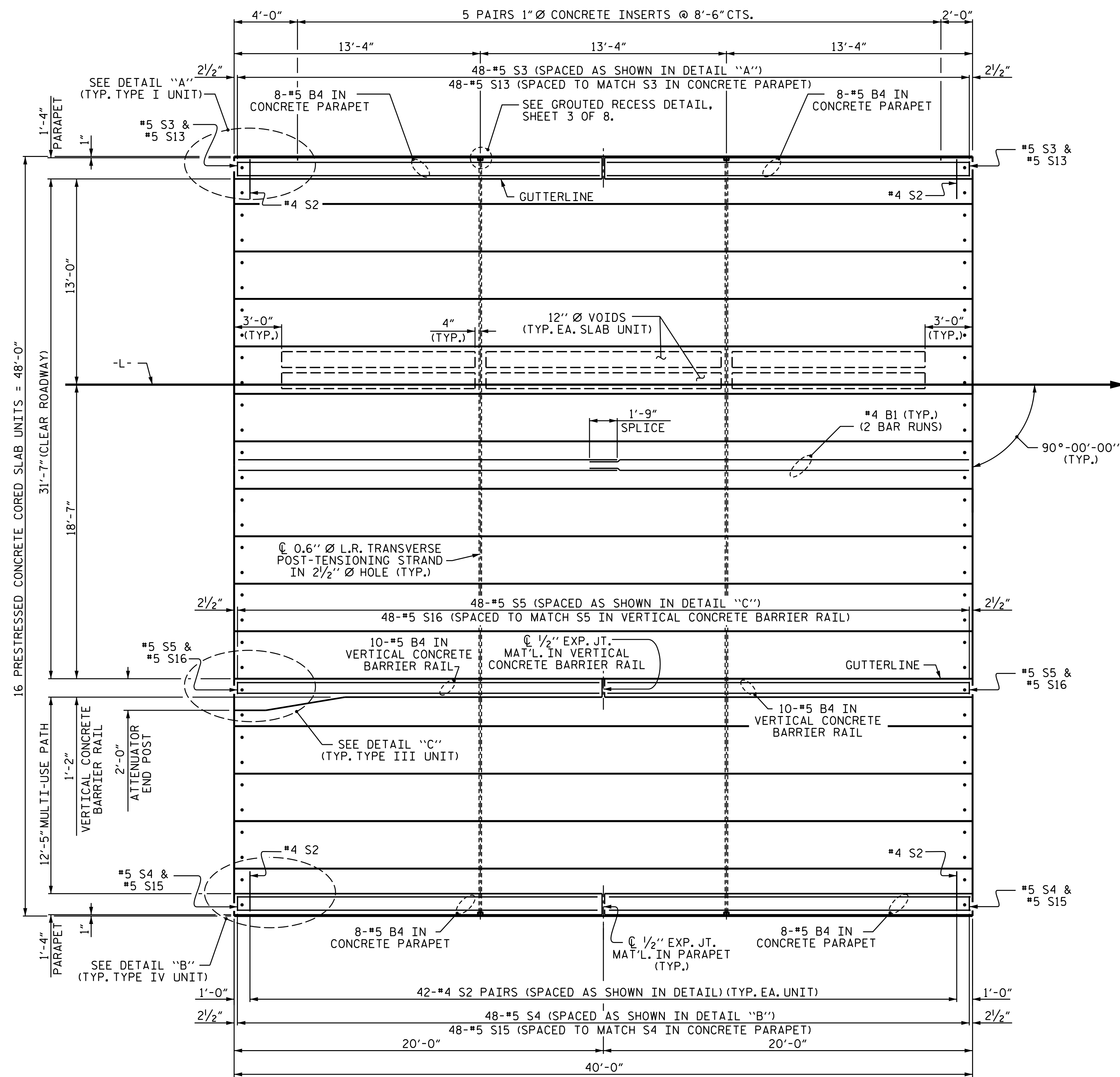
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

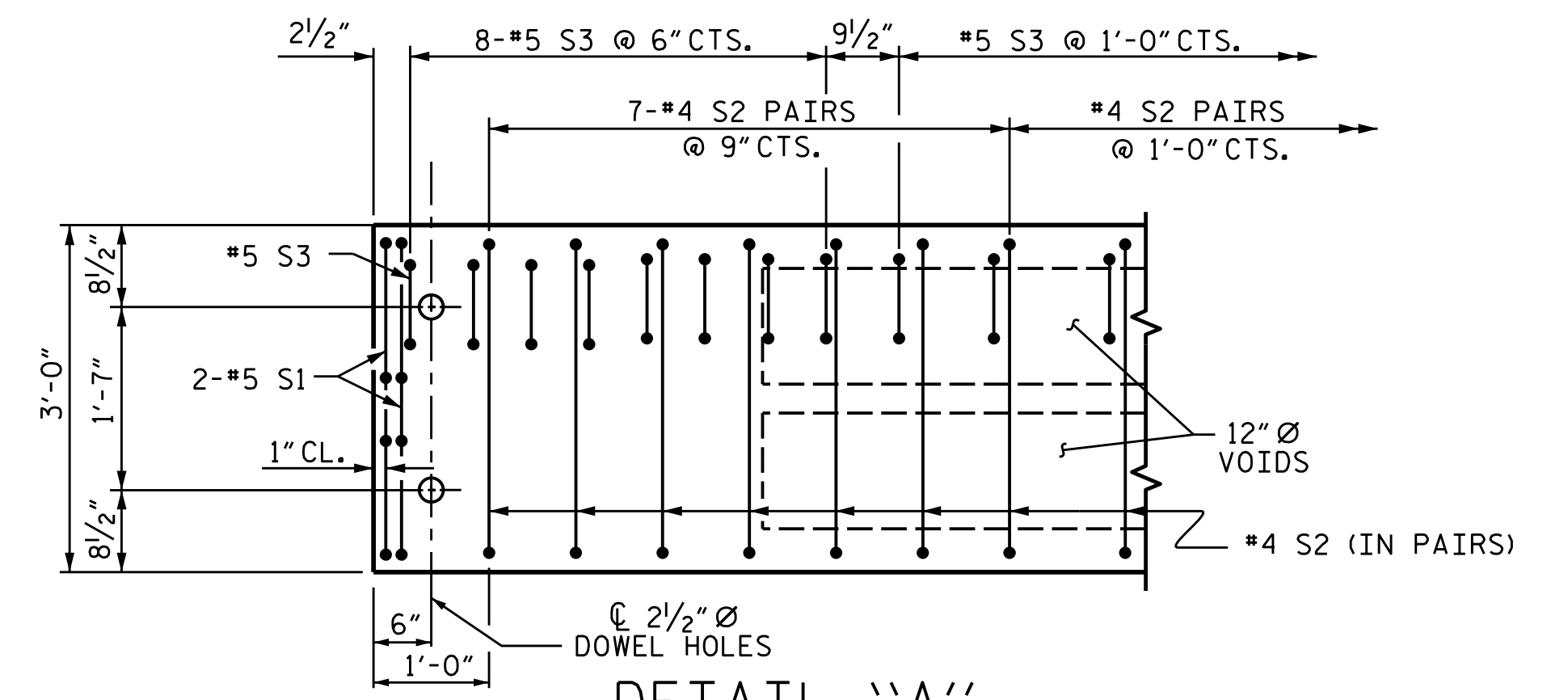
PRESTRESSED CONCRETE CORED SLAB UNIT DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-9
2			4			43



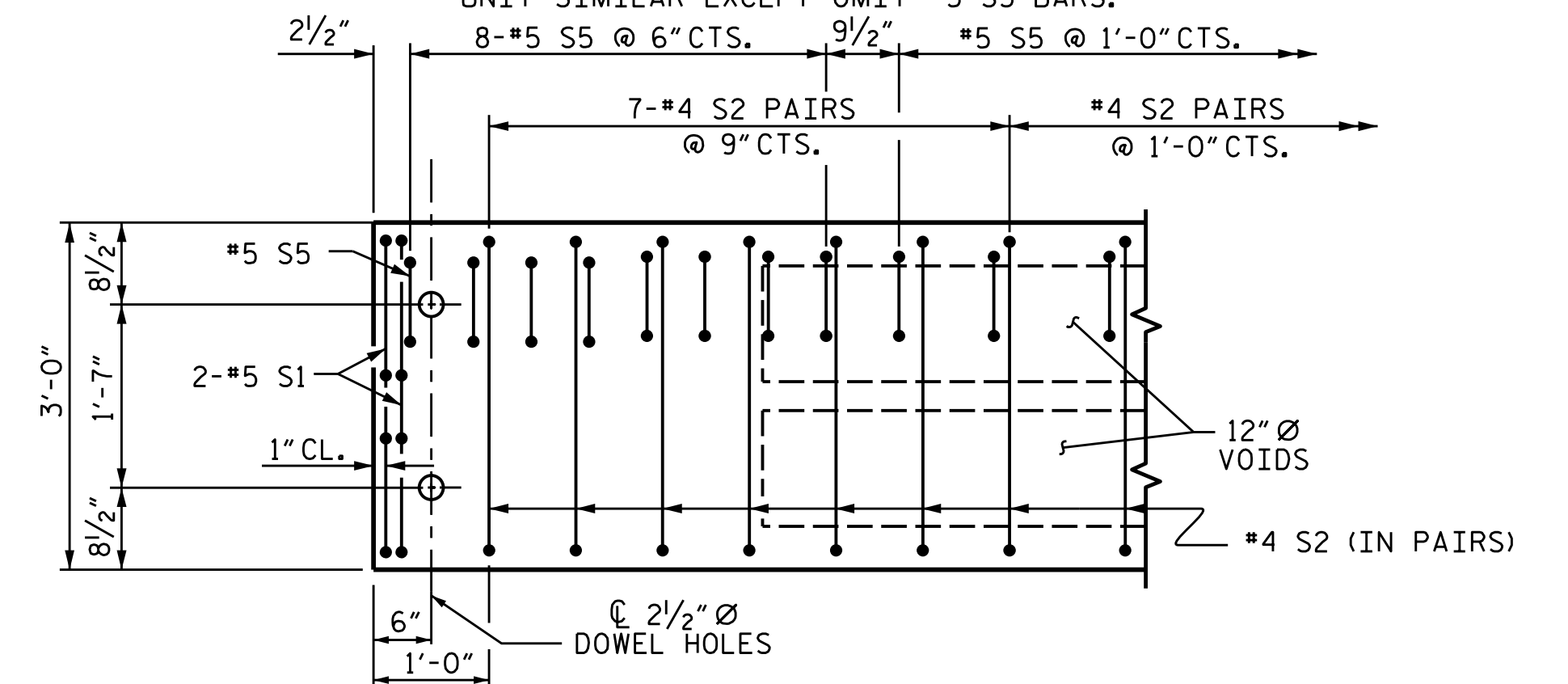
PLAN OF SPAN A

END POSTS & LAMP PEDESTALS NOT SHOWN FOR CLARITY.
 #4 S2 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUDED RECESS AND 2 1/2" Ø TRANSVERSE POST-TENSIONING STRAND HOLES
 FOR 1" Ø THREADED INSERTS IN 1'-4" x 2'-11 1/2" CONCRETE PARAPET, SEE "1'-4" x 2'-11 1/2" PARAPET" SHEET.



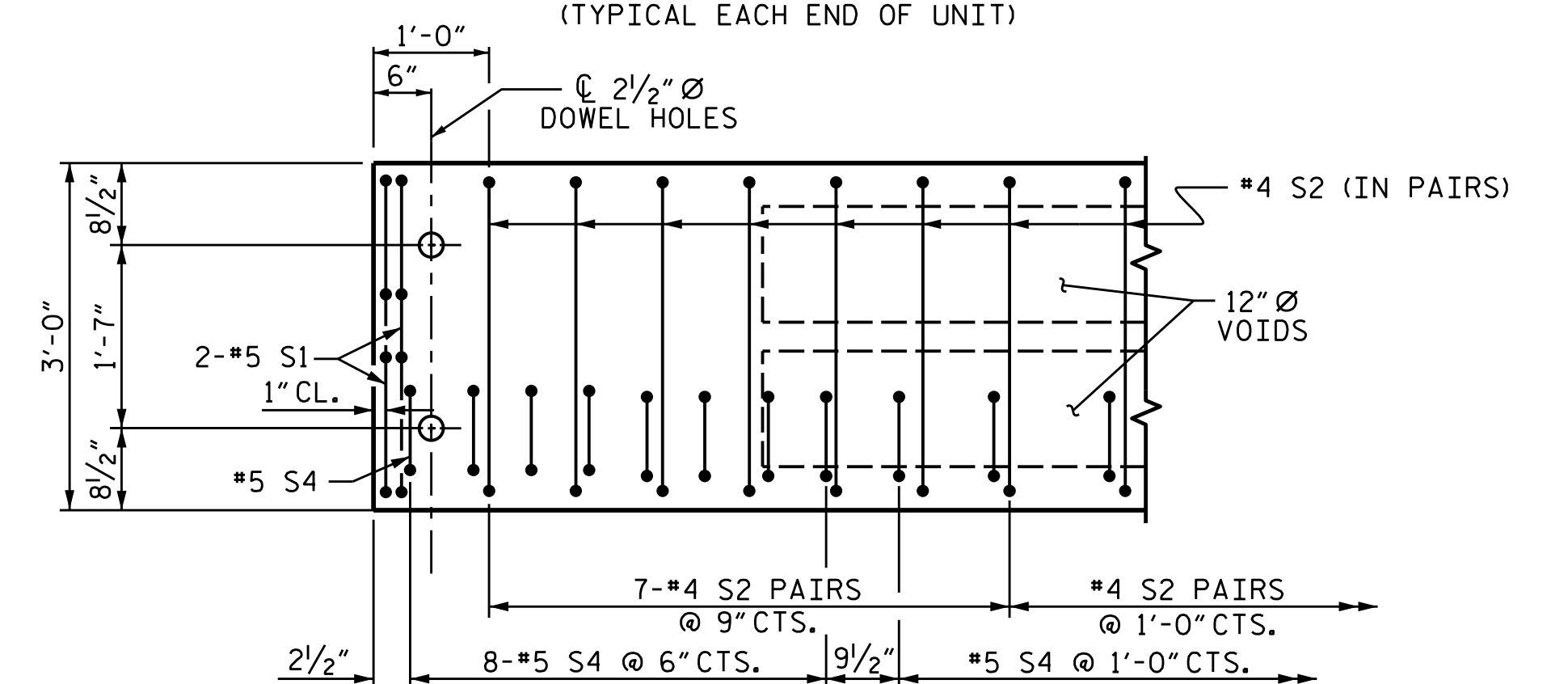
DETAIL "A"

(TYPICAL EACH END OF UNIT) TYPE II UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.



DETAIL "C"

(TYPICAL EACH END OF UNIT)

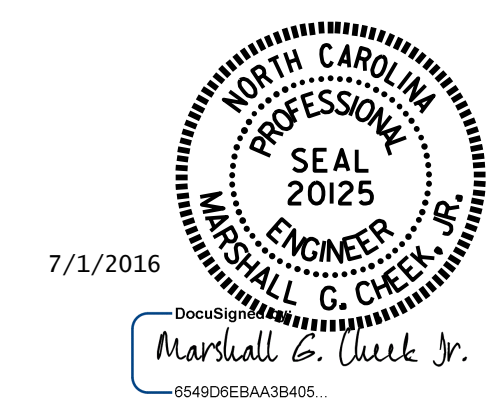


DETAIL "B"

(TYPICAL EACH END OF UNIT)

PROJECT NO. B-5125
MACON COUNTY
 STATION: 13+25.89 -L-

SHEET 4 OF 8



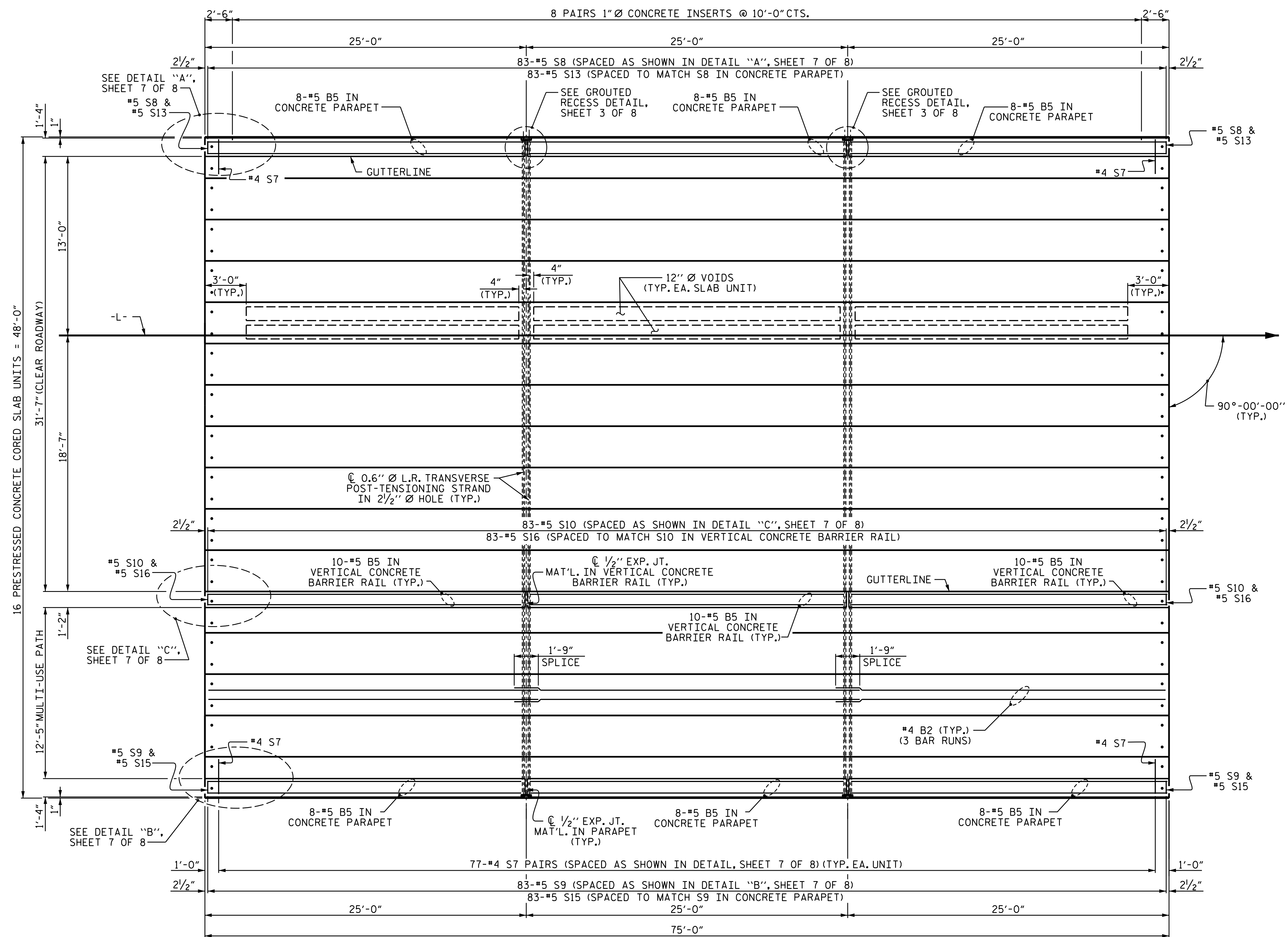
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**PLAN OF 40' UNIT
 90° SKEW
 (SPAN A)**

DRAWN BY :	W.J. HARRIS	DATE :	4/16
CHECKED BY :	M.G. CHEEK	DATE :	4/29/16
DESIGN ENGINEER OF RECORD:	W.J. HARRIS	DATE :	5/16

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			43



PLAN OF SPAN B OR C

LAMP PEDESTALS NOT SHOWN FOR CLARITY.

*4 S7 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUDED RECESS AND 2 1/2" Ø TRANSVERSE POST-TENSIONING STRAND HOLES

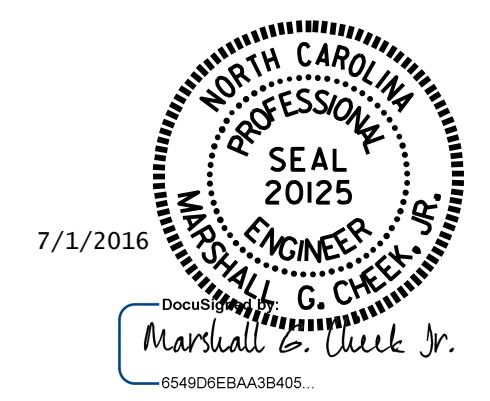
FOR 1" Ø THREADED INSERTS IN 1'-4" x 2'-11 1/2" CONCRETE PARAPET, SEE "1'-4" x 2'-11 1/2" PARAPET" SHEET.

PROJECT NO. B-5125
MACON COUNTY
 STATION: 13+25.89 -L-

SHEET 5 OF 8

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

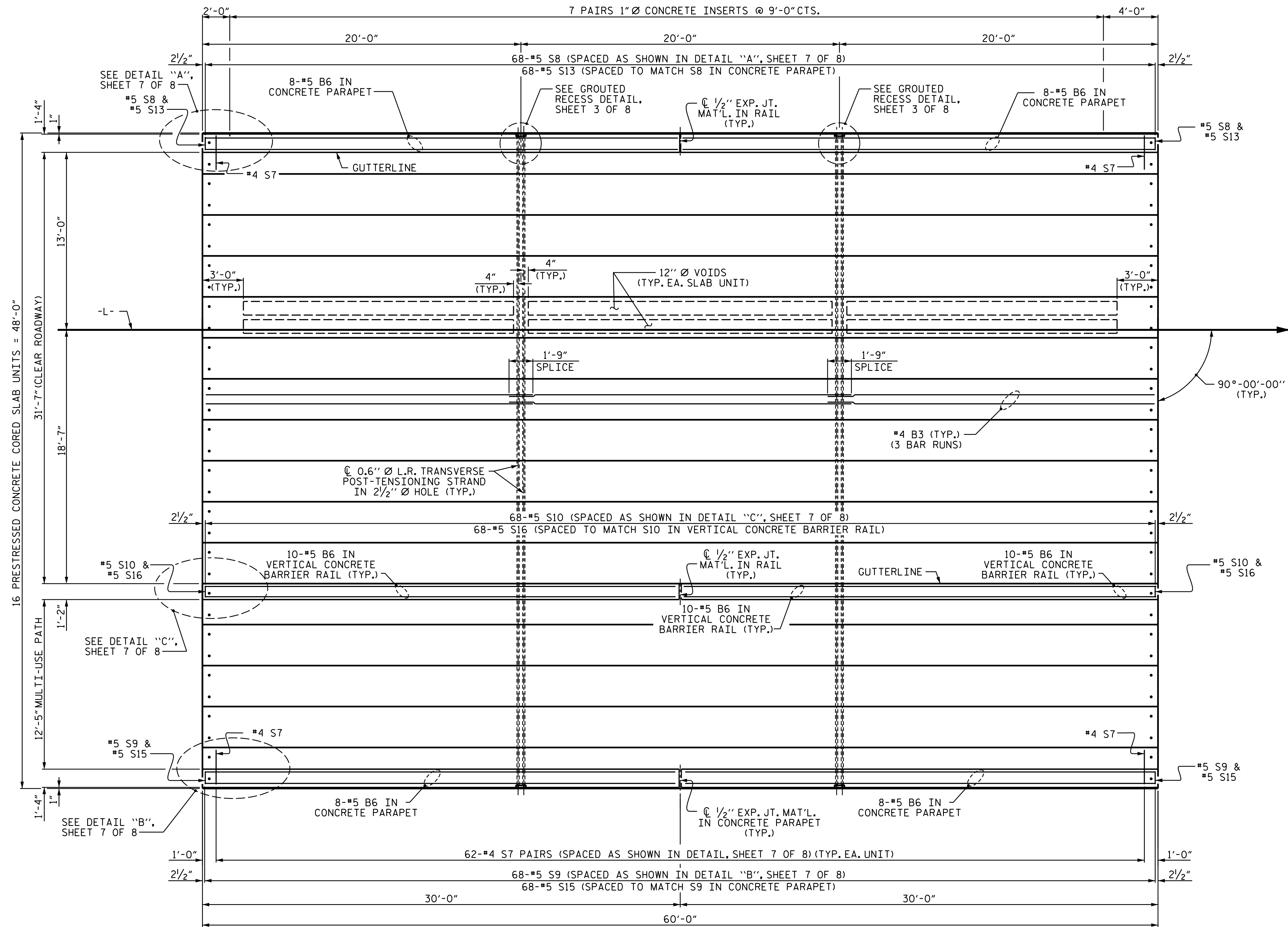
**PLAN OF 75' UNIT
 90° SKEW
 (SPAN B & C)**



DRAWN BY : W.J. HARRIS DATE : 4/16
 CHECKED BY : M.G. CHEEK DATE : 4/29/16
 DESIGN ENGINEER OF RECORD: W.J. HARRIS DATE : 5/16

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			43



PLAN OF SPAN D

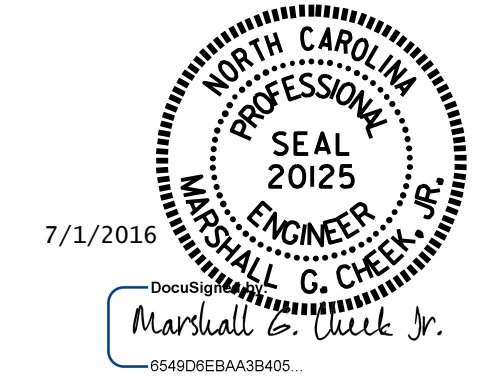
END POSTS & LAMP PEDESTALS NOT SHOWN FOR CLARITY.
 #4 S7 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUDED RECESS AND 2 1/2" Ø TRANSVERSE POST-TENSIONING STRAND HOLES
 FOR 1" Ø THREADED INSERTS IN 1'-4" x 2'-11 1/2" CONCRETE PARAPET, SEE "1'-4" x 2'-11 1/2" PARAPET" SHEET.

PROJECT NO. B-5125
MACON COUNTY
 STATION: 13+25.89 -L-

SHEET 6 OF 8

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

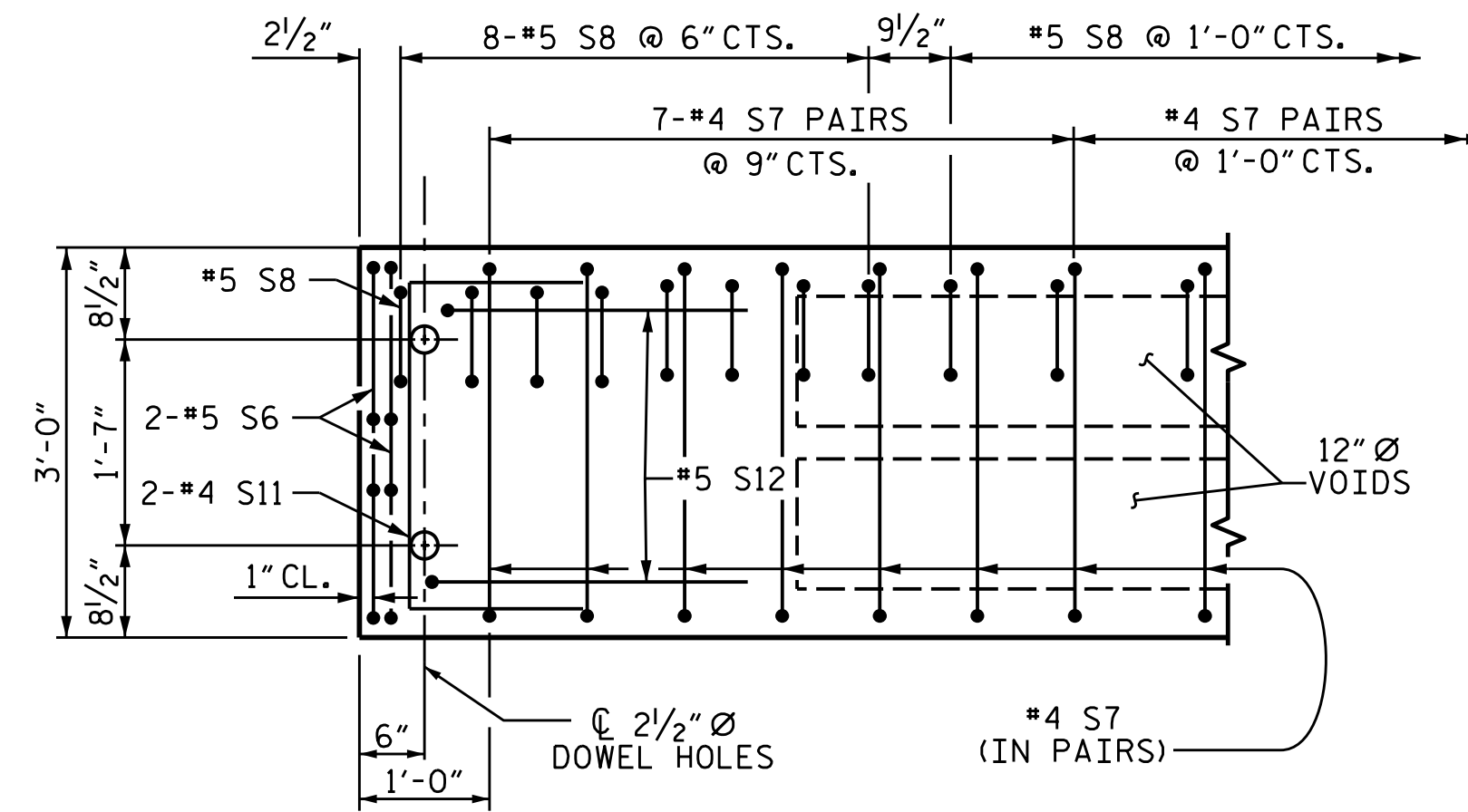
PLAN OF 60' UNIT
 90° SKEW
 (SPAN D)



DRAWN BY : W.J. HARRIS DATE : 4/16
 CHECKED BY : M.G. CHEEK DATE : 4/29/16
 DESIGN ENGINEER OF RECORD: W.J. HARRIS DATE : 5/16

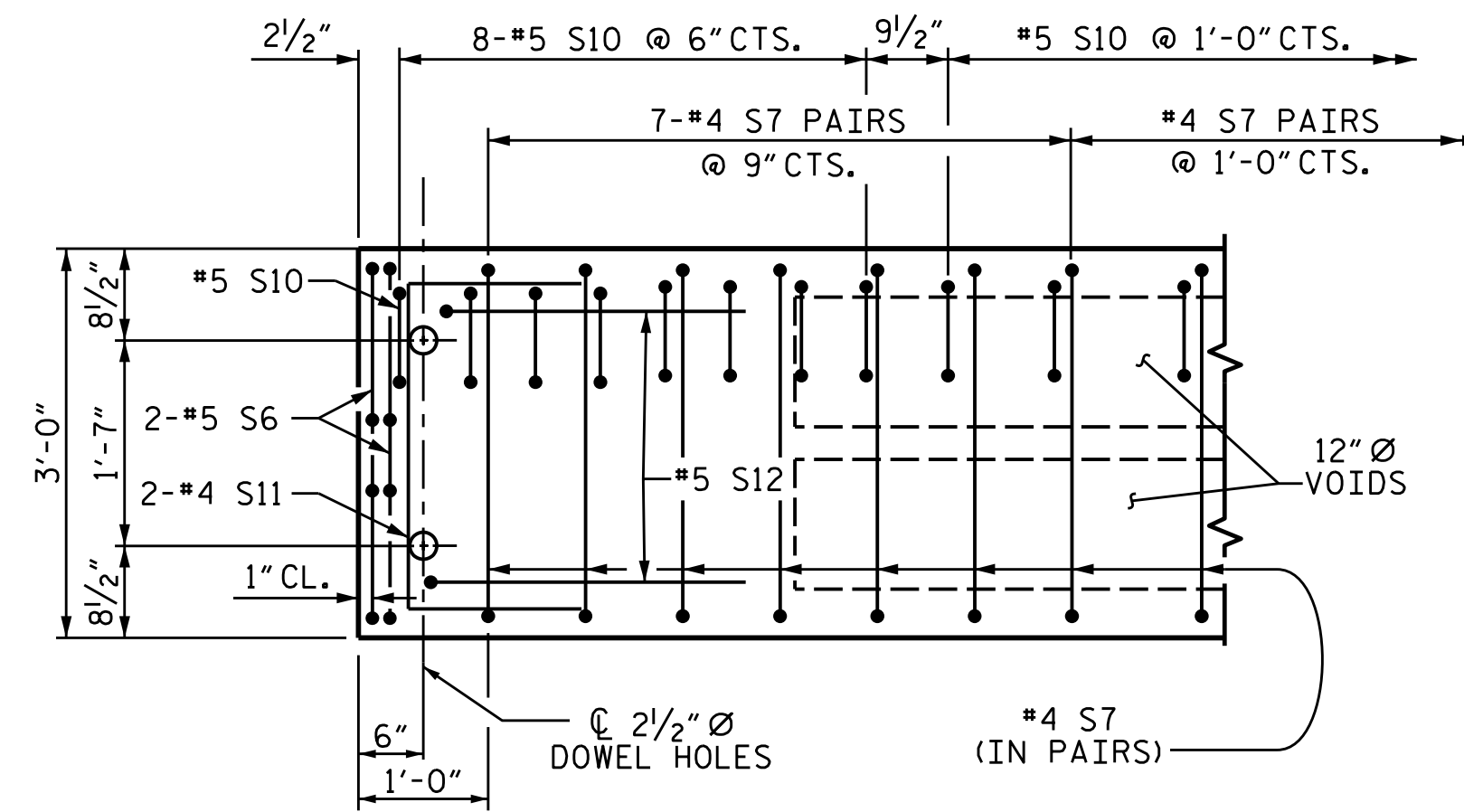
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			43



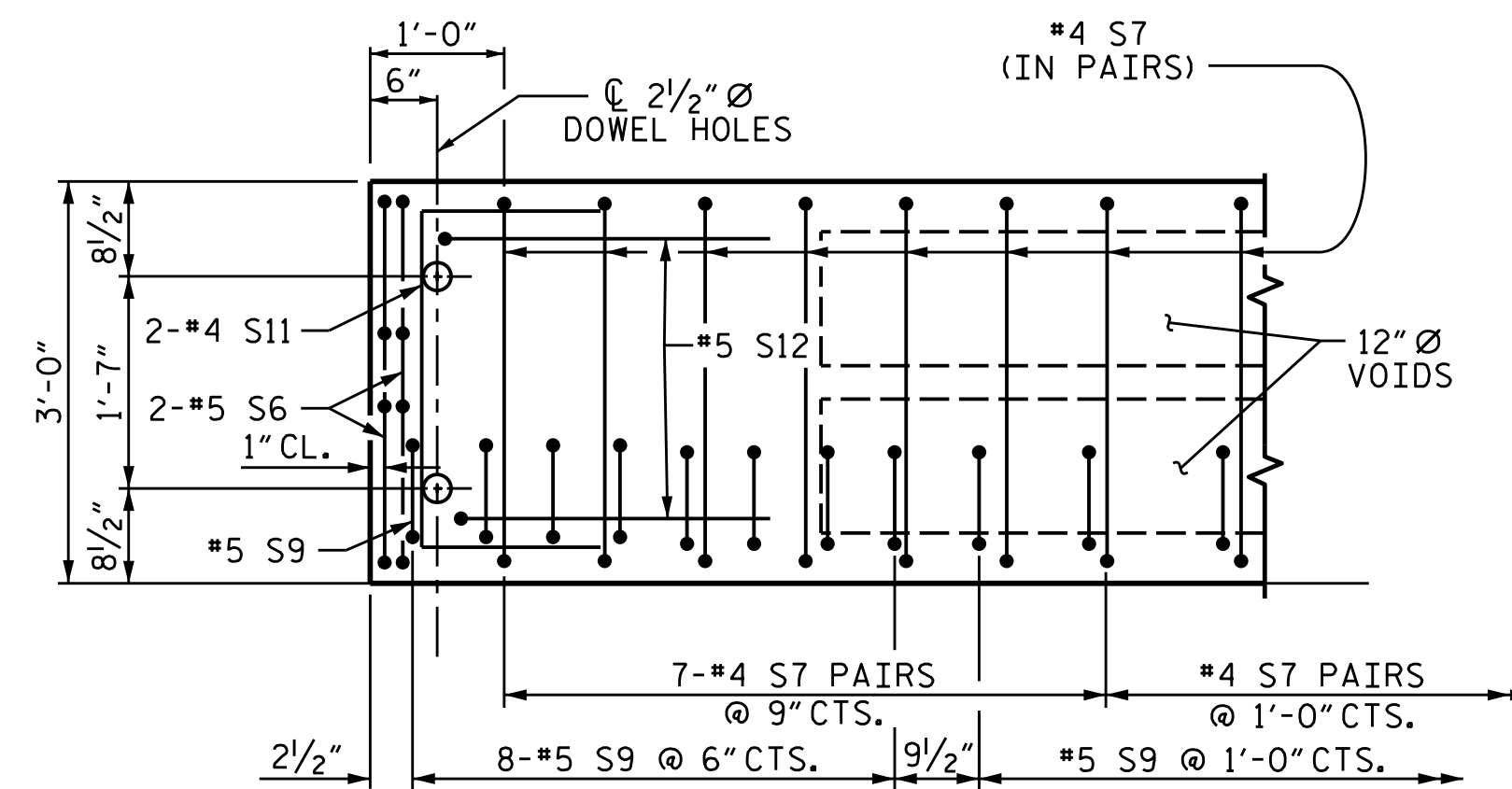
DETAIL "A"

(TYPICAL EACH END OF UNIT)
 (TYPICAL SPAN B, C & D)
 NOTE: TYPE I UNIT SHOWN - INTERIOR
 UNIT SIMILAR EXCEPT OMIT #5 S8 BARS.



DETAIL "C"

(TYPICAL EACH END OF UNIT)
 (TYPICAL SPAN B, C & D)

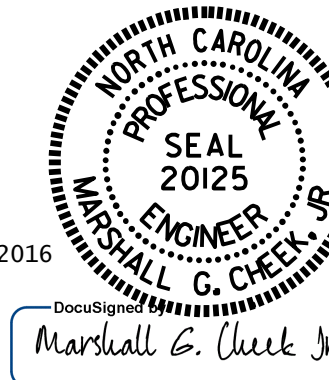


DETAIL "B"

(TYPICAL EACH END OF UNIT)
 (TYPICAL SPAN B, C & D)

PROJECT NO. B-5125
MACON COUNTY
 STATION: 13+25.89 -L-

SHEET 7 OF 8

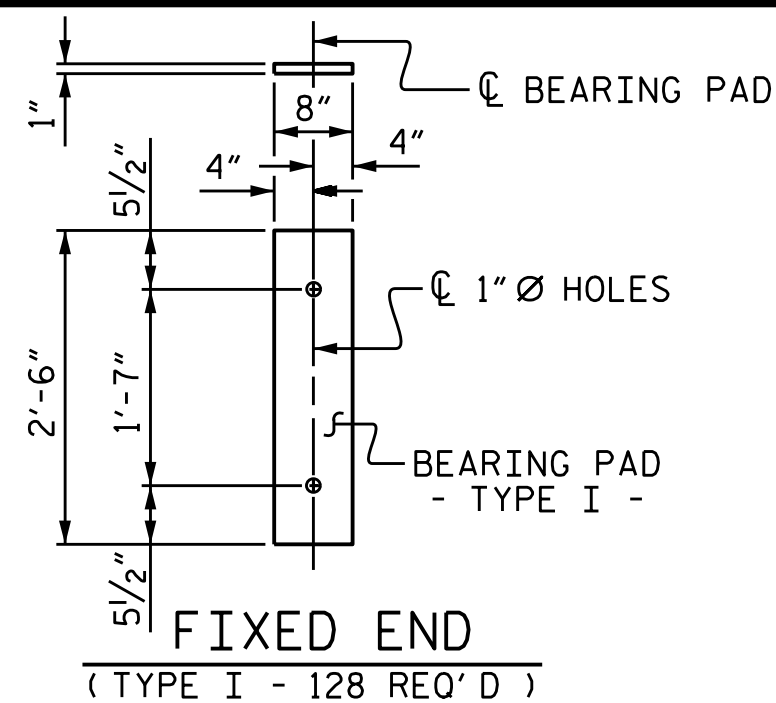


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 END OF
 CORED SLAB DETAILS
 SPAN B, C & D

DRAWN BY : W.J. HARRIS DATE : 4/16
 CHECKED BY : M.G. CHEEK DATE : 4/29/16
 DESIGN ENGINEER OF RECORD: W.J. HARRIS DATE : 5/16

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-13
2			4			43



ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

GUTTERLINE CONCRETE THICKNESS & RAIL HEIGHT				
SPAN A	1'-4" X 2'-11 1/2" CONC. PARAPET	VERT. CONC. BARRIER RAIL		1'-4" X 3'-3 1/2" CONC. PARAPET
		LEFT	RIGHT	
CONCRETE OVERLAY THICKNESS @ MID-SPAN	4 13/16"	4 13/16"	5 1/16"	8 11/16"
RAIL HEIGHT @ MID-SPAN	2'-10 13/16"	3'-11 13/16"		3'-2 13/16"

GUTTERLINE CONCRETE THICKNESS & RAIL HEIGHT				
SPAN B & C	1'-4" X 2'-11 1/2" CONC. PARAPET	VERT. CONC. BARRIER RAIL		1'-4" X 3'-3 1/2" CONC. PARAPET
		LEFT	RIGHT	
CONCRETE OVERLAY THICKNESS @ MID-SPAN	4 1/8"	4 1/8"	5"	8"
RAIL HEIGHT @ MID-SPAN	2'-10 1/8"	3'-11 1/8"		3'-2 1/8"

GUTTERLINE CONCRETE THICKNESS & RAIL HEIGHT				
SPAN D	1'-4" X 2'-11 1/2" CONC. PARAPET	VERT. CONC. BARRIER RAIL		1'-4" X 3'-3 1/2" CONC. PARAPET
		LEFT	RIGHT	
CONCRETE OVERLAY THICKNESS @ MID-SPAN	4 9/16"	4 9/16"	5 7/16"	8 7/16"
RAIL HEIGHT @ MID-SPAN	2'-10 9/16"	3'-11 9/16"		3'-2 9/16"

DEAD LOAD DEFLECTION AND CAMBER	
40' CORED SLAB UNIT	3'-0" x 1'-9" 0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	7/8" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD	3/16" ↓
FINAL CAMBER	1 1/16" ↑

DEAD LOAD DEFLECTION AND CAMBER	
75' CORED SLAB UNIT	3'-0" x 2'-0" 0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2 9/16" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD	1 3/16" ↓
FINAL CAMBER	1 3/8" ↑

DEAD LOAD DEFLECTION AND CAMBER	
60' CORED SLAB UNIT	3'-0" x 2'-0" 0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1 9/8" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD	1 1/16" ↓
FINAL CAMBER	1 5/16" ↑

ASSEMBLED BY : D. HODGE DATE : 12/15
 CHECKED BY : M.G. CHEEK DATE : 4/30/16
 DRAWN BY : DGE 5/09 REV. 11/14 MAA/TMG
 CHECKED BY : BCH 6/09

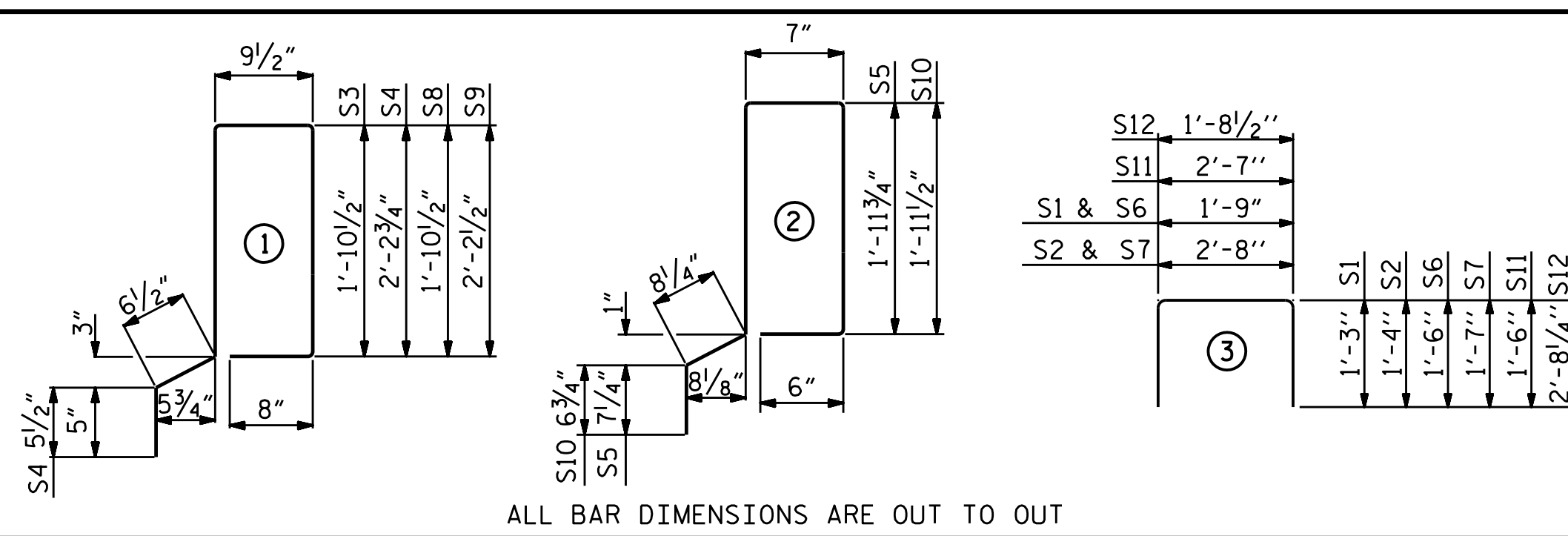
CONCRETE RELEASE STRENGTH	
UNIT	PSI
40'-0"	4000
75'-0"	7000
60'-0"	4400

CORED SLABS REQUIRED			
SPAN A	NUMBER	LENGTH	TOTAL LENGTH
40' UNIT			
TYPE I	1	40'-0"	40'-0"
TYPE II	13	40'-0"	520'-0"
TYPE III	1	40'-0"	40'-0"
TYPE IV	1	40'-0"	40'-0"
TOTAL	16		640'-0"

CORED SLABS REQUIRED			
SPAN B & C	NUMBER	LENGTH	TOTAL LENGTH
75' UNIT			
TYPE I	2	75'-0"	150'-0"
TYPE II	26	75'-0"	1950'-0"
TYPE III	2	75'-0"	150'-0"
TYPE IV	2	75'-0"	150'-0"
TOTAL	32		2400'-0"

CORED SLABS REQUIRED			
SPAN D	NUMBER	LENGTH	TOTAL LENGTH
60' UNIT			
TYPE I	1	60'-0"	60'-0"
TYPE II	13	60'-0"	780'-0"
TYPE III	1	60'-0"	60'-0"
TYPE IV	1	60'-0"	60'-0"
TOTAL	16		960'-0"

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE 3'-0" X 1'-9" 40' CORED SLAB UNIT - SPAN A

BAR	NUMBER	SIZE	TYPE	TYPE I		TYPE II		TYPE III		TYPE IV	
				LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT
B1	4	#4	STR	20'-9"	55	20'-9"	55	20'-9"	55	20'-9"	55
S1	8	#5	3	4'-3"	35	4'-3"	35	4'-3"	35	4'-3"	35
S2	84	#4	3	5'-4"	299	5'-4"	299	5'-4"	299	5'-4"	299
*S3	48	#5	1	6'-2"	309						
*S4	48	#5	1							6'-11"	346
*S5	48	#5	2					6'-4"	317		
REINFORCING STEEL	LBS.			389		389		389		389	
* EPOXY COATED REINFORCING STEEL	LBS.			309				317		346	
5000 P.S.I. CONCRETE	CU. YDS.			5.9		5.9		5.9		5.9	
0.6" Ø L.R. STRANDS	No.			13		13		13		13	

BILL OF MATERIAL FOR ONE 3'-0" X 2'-0" 75' CORED SLAB UNIT - SPAN B & C

BAR	NUMBER	SIZE	TYPE	TYPE I		TYPE II		TYPE III		TYPE IV	
				LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT
B2	6	#4	STR	26'-1"	105	26'-1"	105	26'-1"	105	26'-1"	105
S6	8	#5	3	4'-9"	40	4'-9"	40	4'-9"	40	4'-9"	40
S7	154	#4	3	5'-10"	600	5'-10"	600	5'-10"	600	5'-10"	600
*S8	83	#5	1	6'-2"	534						
*S9	83	#5	1							6'-10"	592
*S10	83	#5	2					6'-3"	541		
S11	4	#4	3	5'-7"	15	5'-7"	15	5'-7"	15	5'-7"	15
S12	4	#5	3	7'-1"	30	7'-1"	30	7'-1"	30	7'-1"	30
REINFORCING STEEL	LBS.			790		790		790		790	
* EPOXY COATED REINFORCING STEEL	LBS.			534				541		592	
9500 P.S.I. CONCRETE	CU. YDS.			12.7		12.7		12.7		12.7	
0.6" Ø L.R. STRANDS	No.			38		38		38		38	

BILL OF MATERIAL FOR ONE 3'-0" X 2'-0" 60' CORED SLAB UNIT - SPAN D

BAR	NUMBER	SIZE	TYPE	TYPE I		TYPE II		TYPE III		TYPE IV	
				LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT
B3	6	#4	STR	21'-1"	85	21'-1"	85	21'-1"	85	21'-1"	85
S6	8	#5	3	4'-9"	40	4'-9"	40	4'-9"	40	4'-9"	40
S7	124	#4	3	5'-10"	483	5'-10"	483	5'-10"	483	5'-10"	483
*S8	68	#5	1	6'-2"	437						
*S9	68	#5	1							6'-10"	485
*S10	68	#5	2					6'-3"	443		
S11	4	#4	3	5'-7"	15	5'-7"	15	5'-7"	15	5'-7"	15
S12	4	#5	3	7'-1"	30	7'-1"	30	7'-1"	30	7'-1"	30
REINFORCING STEEL	LBS.			653		653		653		653	
* EPOXY COATED REINFORCING STEEL	LBS.			437				443		485	
5500 P.S.I. CONCRETE	CU. YDS.			10.3		10.3		10.3		10.3	
0.6" Ø L.R. STRANDS	No.			22		22		22		22	

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 SIDWAYS. 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, CONCRETE PARAPETS & LAMP PEDESTALS 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.

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRANDS 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 THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

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.

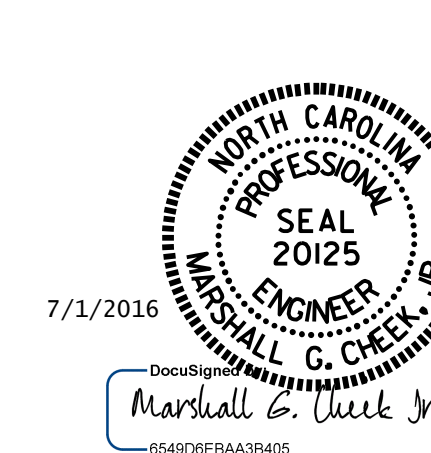
THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

GRADE 270 STRANDS

AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

PROJECT NO. B-5125
MACON COUNTY
 STATION: 13+25.89 -L-

SHEET 8 OF 8



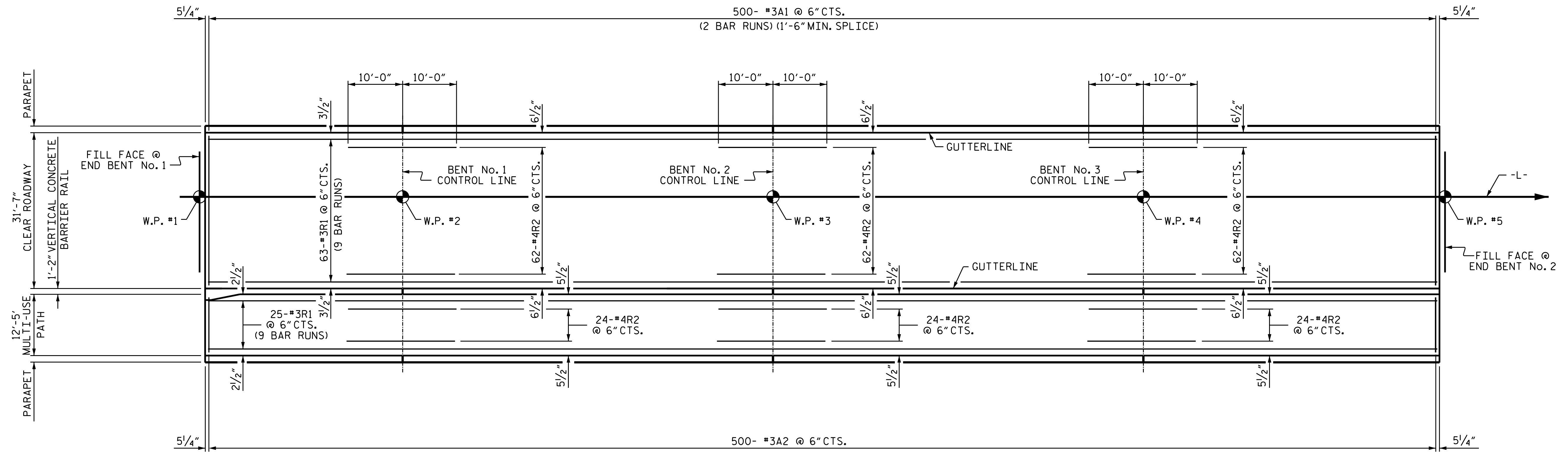
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PRESTRESSED CONCRETE
 CORED SLAB UNIT
 90° SKEW

NO.	REVISIONS			NO.	REVISIONS			SHEET NO.
	BY:	DATE:	DATE:		BY:	DATE:	DATE:	
1				3				5-14
2				4				TOTAL SHEETS 43

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

*****SYSTEM*****
 *****DCN*****
 *****USER*****



PLAN SHOWING CONCRETE WEARING SURFACE REINFORCING STEEL

NOTES

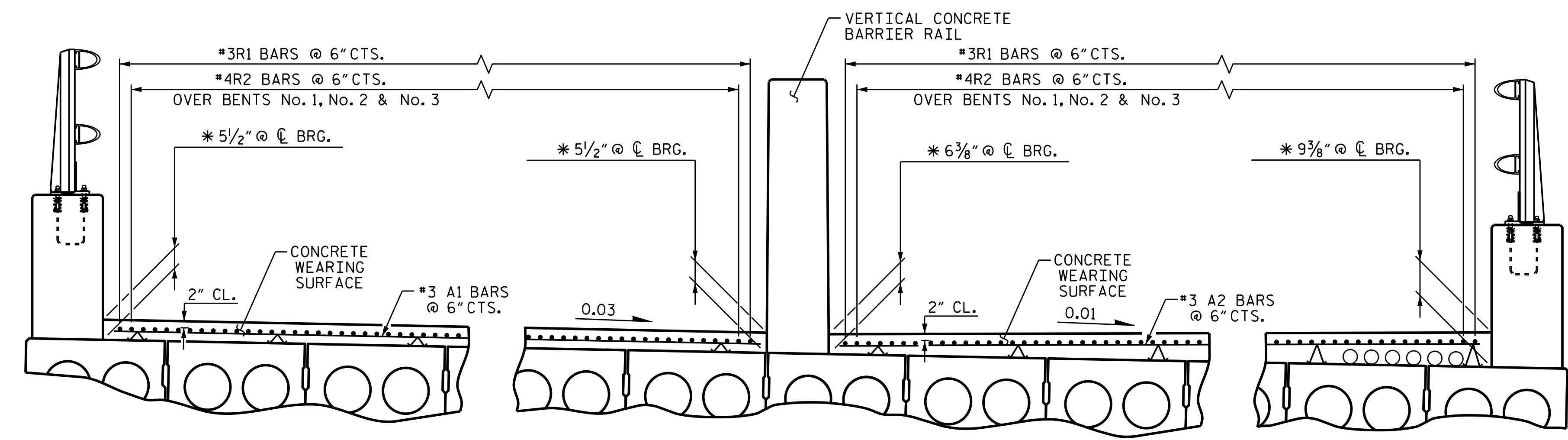
PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE CONCRETE RAIL AND PARAPETS.
 THE COST OF THE #3 & #4 BARS CAST WITH THE CONCRETE WEARING SURFACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE WEARING SURFACE.
 FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.
 A GROOVED CONTRACTION JOINT, 1/2" IN DEPTH, SHALL BE TOOLED IN THE TOP OF THE CONCRETE WEARING SURFACE AT THE END BENTS AND BENTS IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS.

GROOVING BRIDGE FLOORS	
CONCRETE WEARING SURFACE	9465 SQ. FT.
APPROACH SLABS	1050 SQ. FT.
TOTALS	10515 SQ. FT.

BILL OF MATERIAL FOR CONCRETE WEARING SURFACE						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	1,000	#3	STR	16'-5"	6,173	
*A2	500	#3	STR	12'-1"	2,272	
*R1	792	#3	STR	29'-2"	8,686	
*R2	258	#4	STR	20'-0"	3,447	
* EPOXY COATED REINFORCING STEEL					LBS.	20,578
CONCRETE WEARING SURFACE					SQ. FT.	11,017

SPLICE LENGTH CHART	
BAR SIZE	EPOXY COATED
#3	1'-6"

PROJECT NO. B-5125
MACON COUNTY
 STATION: 13+25.89 -L-



REINFORCING FOR CONCRETE WEARING SURFACE (PARTIAL TYPICAL SECTION)
 * THE MAXIMUM CONCRETE WEARING SURFACE IS SHOWN. FOR CONCRETE WEARING SURFACE THICKNESS, SEE "GUTTERLINE CONCRETE THICKNESS & RAIL HEIGHT" CHART.



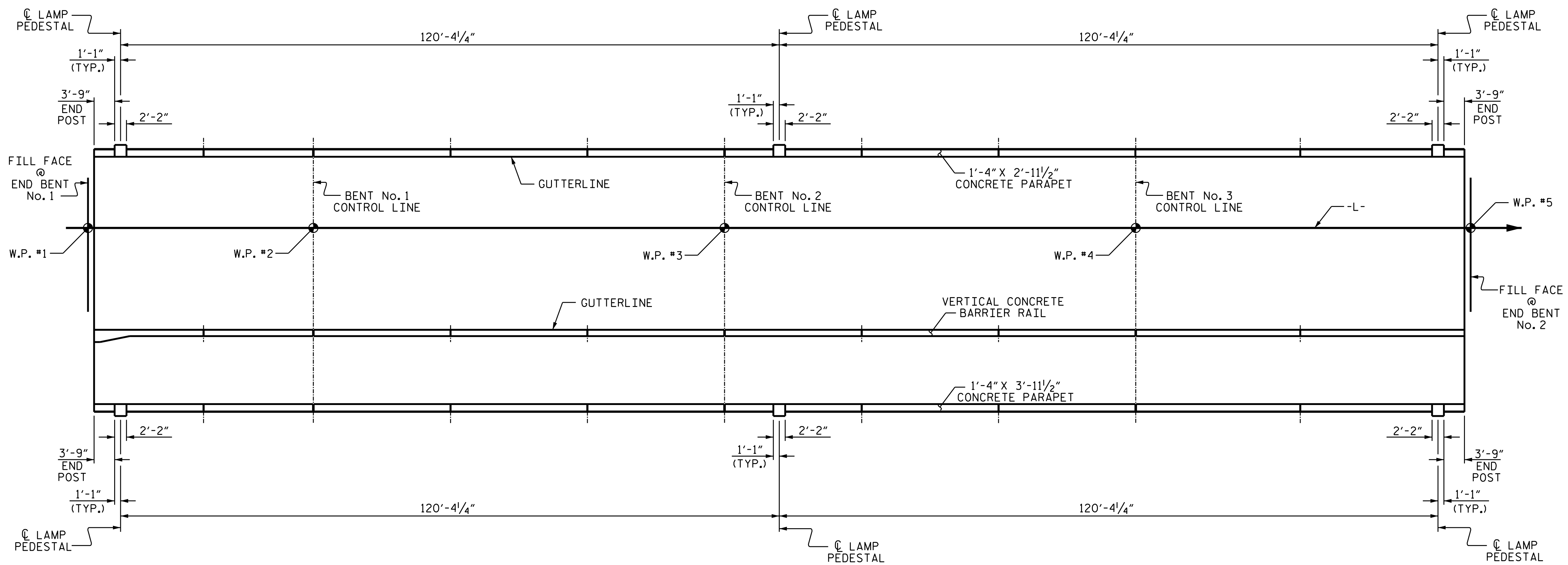
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

CONCRETE WEARING SURFACE

DRAWN BY : D. HODGE DATE : 12/15
 CHECKED BY : M.G. CHEEK DATE : 5/5/16
 DESIGN ENGINEER OF RECORD: W.J. HARRIS DATE : 5/16

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-15
2			4			43

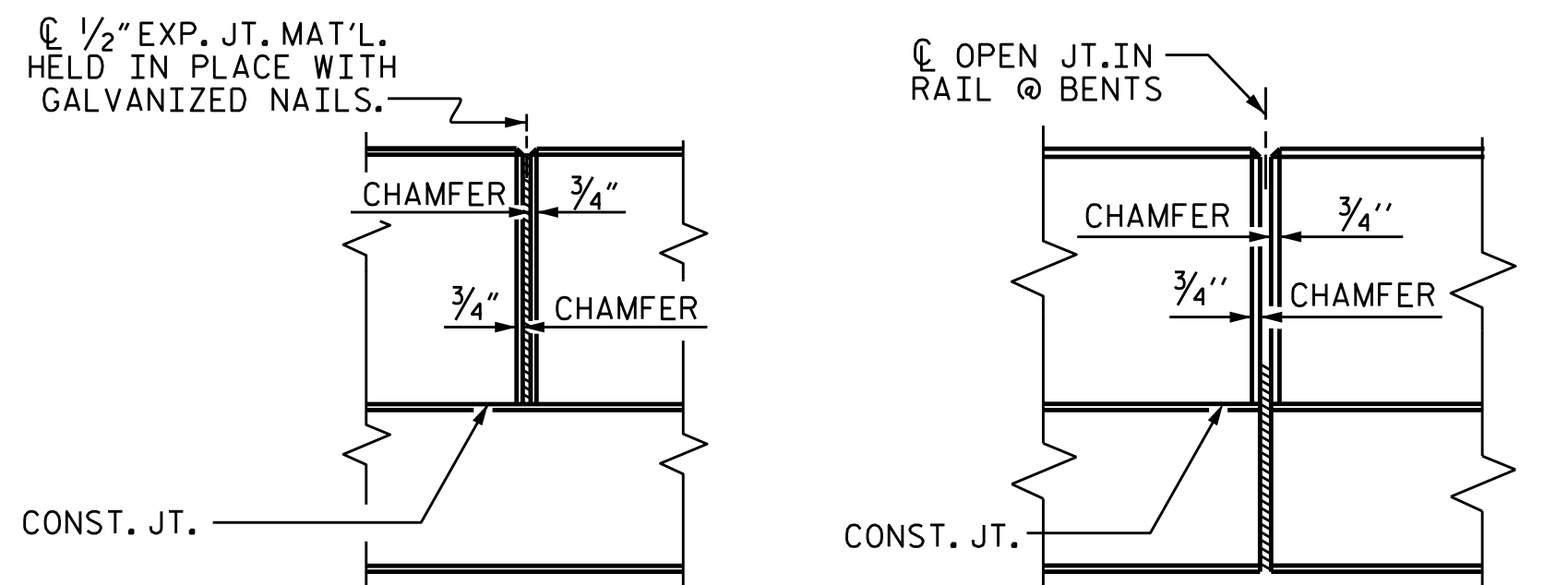
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



LAMP PEDESTAL LAYOUT
 FOR VERTICAL CONCRETE BARRIER RAIL DETAILS AND REINFORCING STEEL, SEE "VERTICAL CONCRETE BARRIER RAIL" SHEET.

NOTES

- ALL REINFORCING STEEL IN THE PARAPETS, END POSTS, AND LAMP PEDESTALS SHALL BE EPOXY COATED.
- THE #5 "S" BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN THE PARAPETS.
- FOR DETAILS OF CONCRETE INSERTS IN LAMP PEDESTALS, SEE "END OF RAIL DETAILS" SHEET.
- FOR DETAILS OF GUARDRAIL ANCHOR ASSEMBLIES, SEE "GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS" SHEET.
- GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPETS AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.
- ARCHITECTURAL CONCRETE SURFACE TREATMENT SHALL BE APPLIED TO BOTH FACES OF THE 1'-4" X 2'-11 1/2" CONCRETE PARAPET, THE 1'-4" X 3'-3 1/2" CONCRETE PARAPET, END POSTS AND LAMP PEDESTALS. FOR ARCHITECTURAL CONCRETE SURFACE TREATMENT, SEE SPECIAL PROVISIONS.
- CONCRETE STAIN SHALL BE APPLIED TO THE TOP SURFACE OF THE 1'-4" X 2'-11 1/2" CONCRETE PARAPET, THE 1'-4" X 3'-3 1/2" CONCRETE PARAPET, END POSTS AND LAMP PEDESTALS. FOR APPLICATION OF BRIDGE COATING, SEE SPECIAL PROVISIONS.

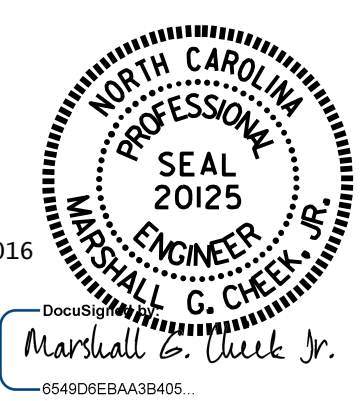


PARAPET DETAIL

PROJECT NO. B-5125
MACON COUNTY
 STATION: 13+25.89 -L-

SHEET 1 OF 3

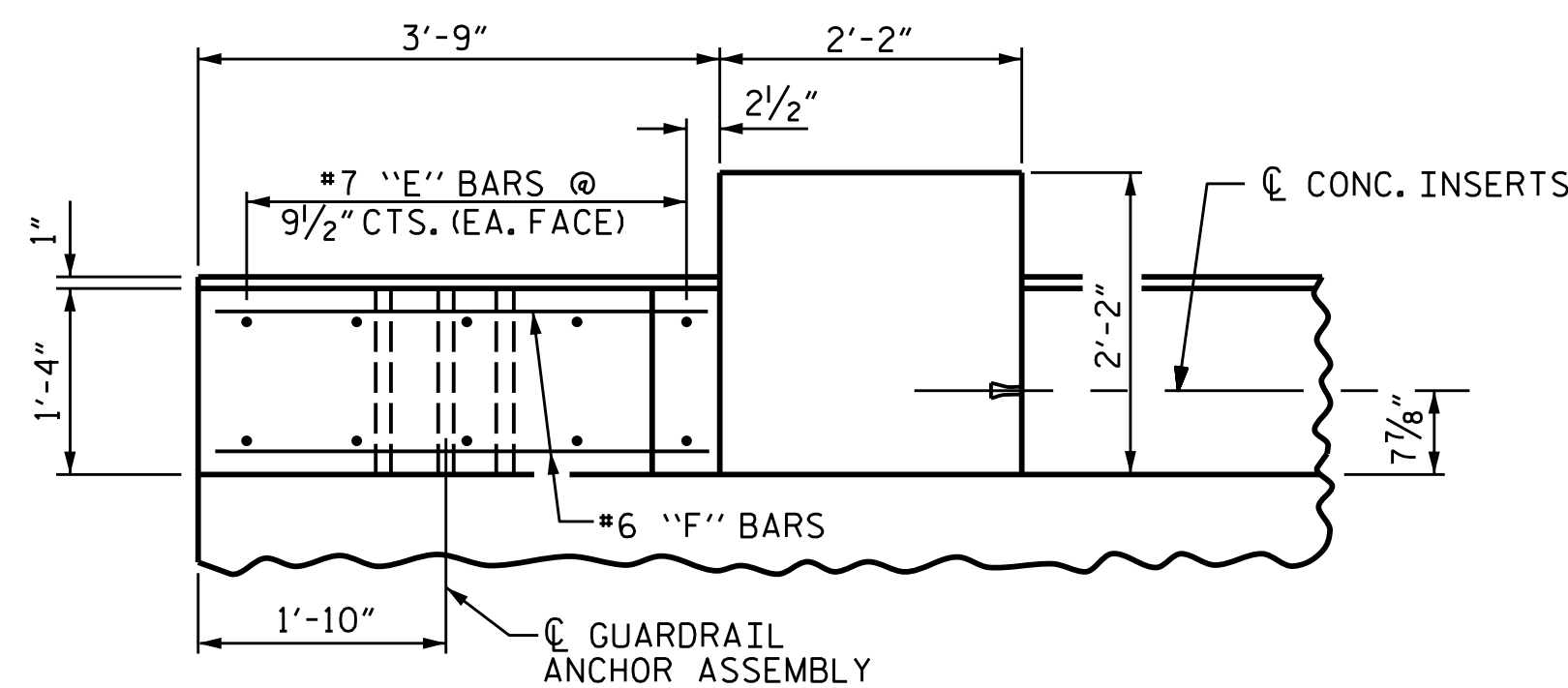
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 END POST,
 LAMP PEDESTALS
 AND
 PARAPET DETAILS



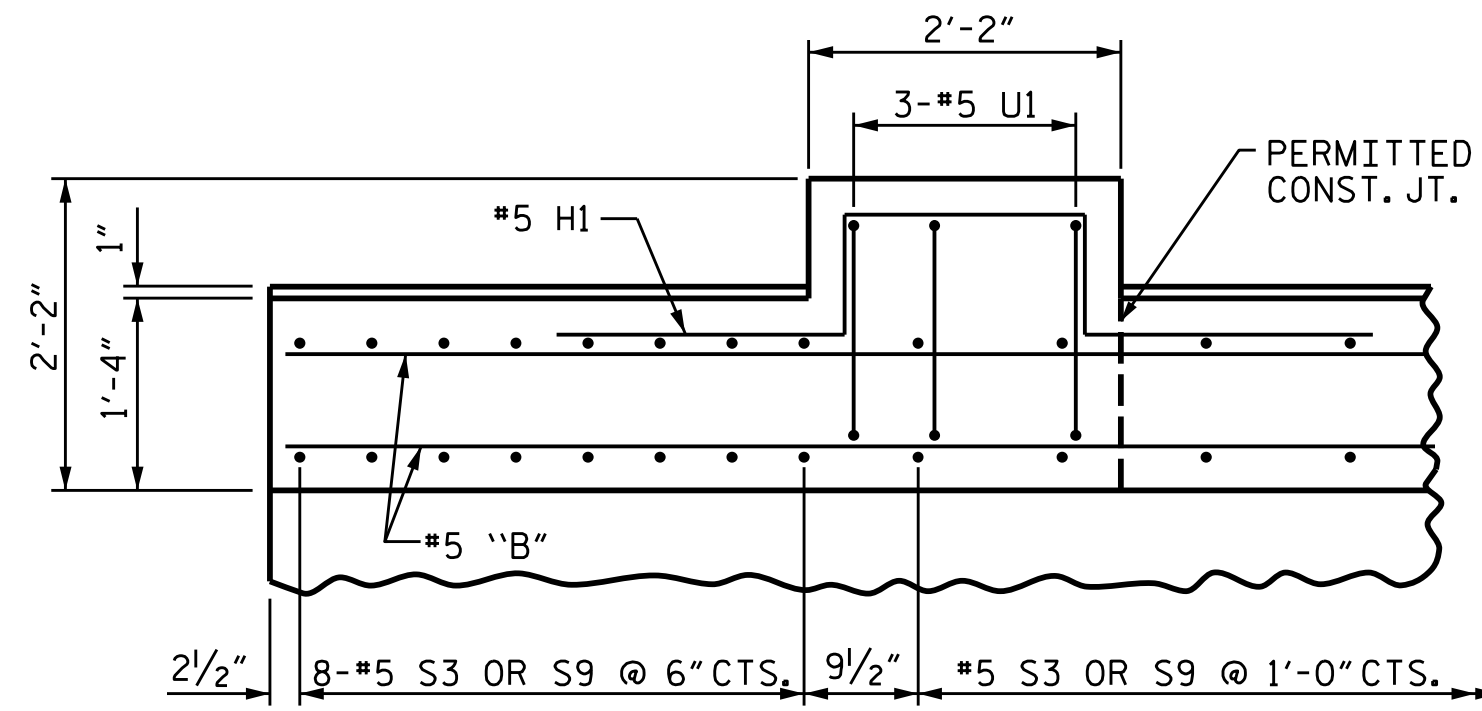
DRAWN BY : D. HODGE DATE : 12/15
 CHECKED BY : M.G. CHEEK DATE : 4/29/16
 DESIGN ENGINEER OF RECORD: W.J. HARRIS DATE : 5/16

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-16
2			4			43

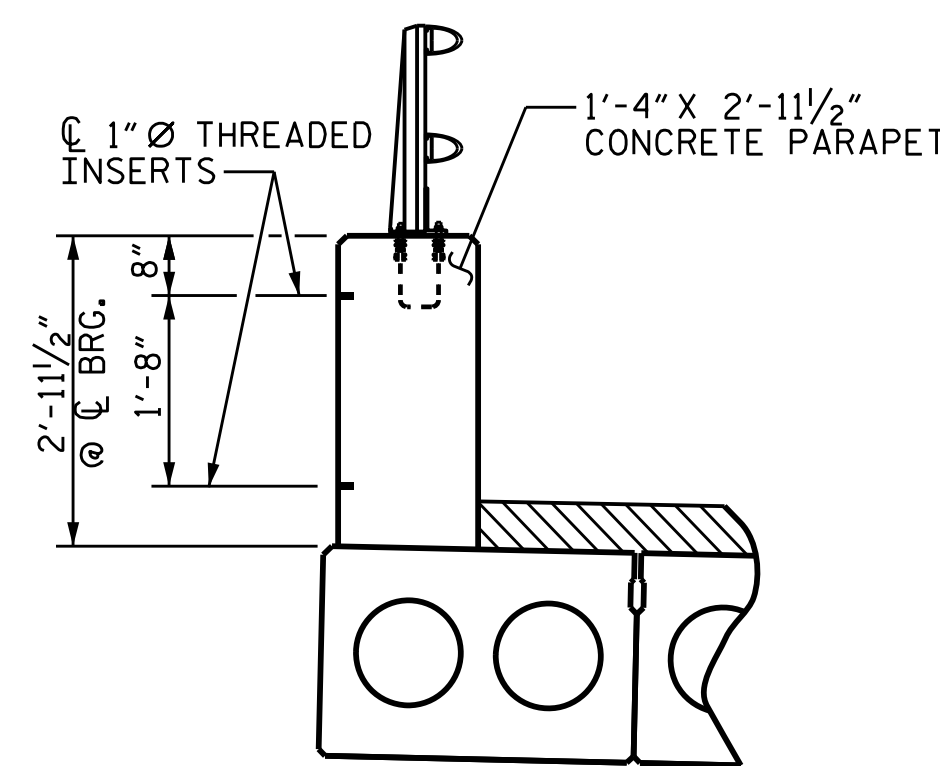


PLAN OF END POST



PLAN OF PARAPET & LAMP PEDESTAL

PARAPET AT END BENT No. 1 SHOWN.
PARAPET AT END BENT No. 2 SIMILAR

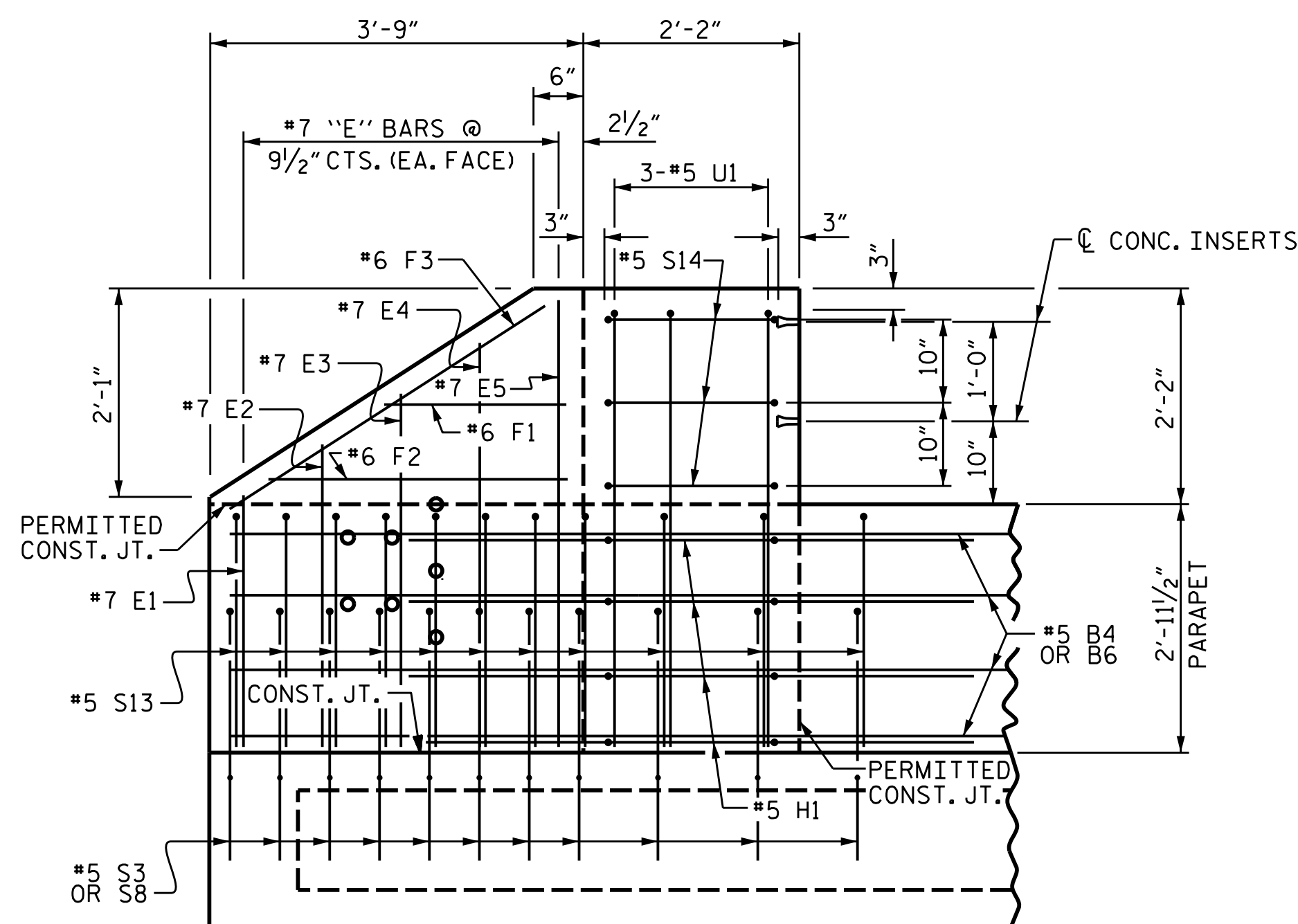


1" Ø CONCRETE INSERT DETAIL

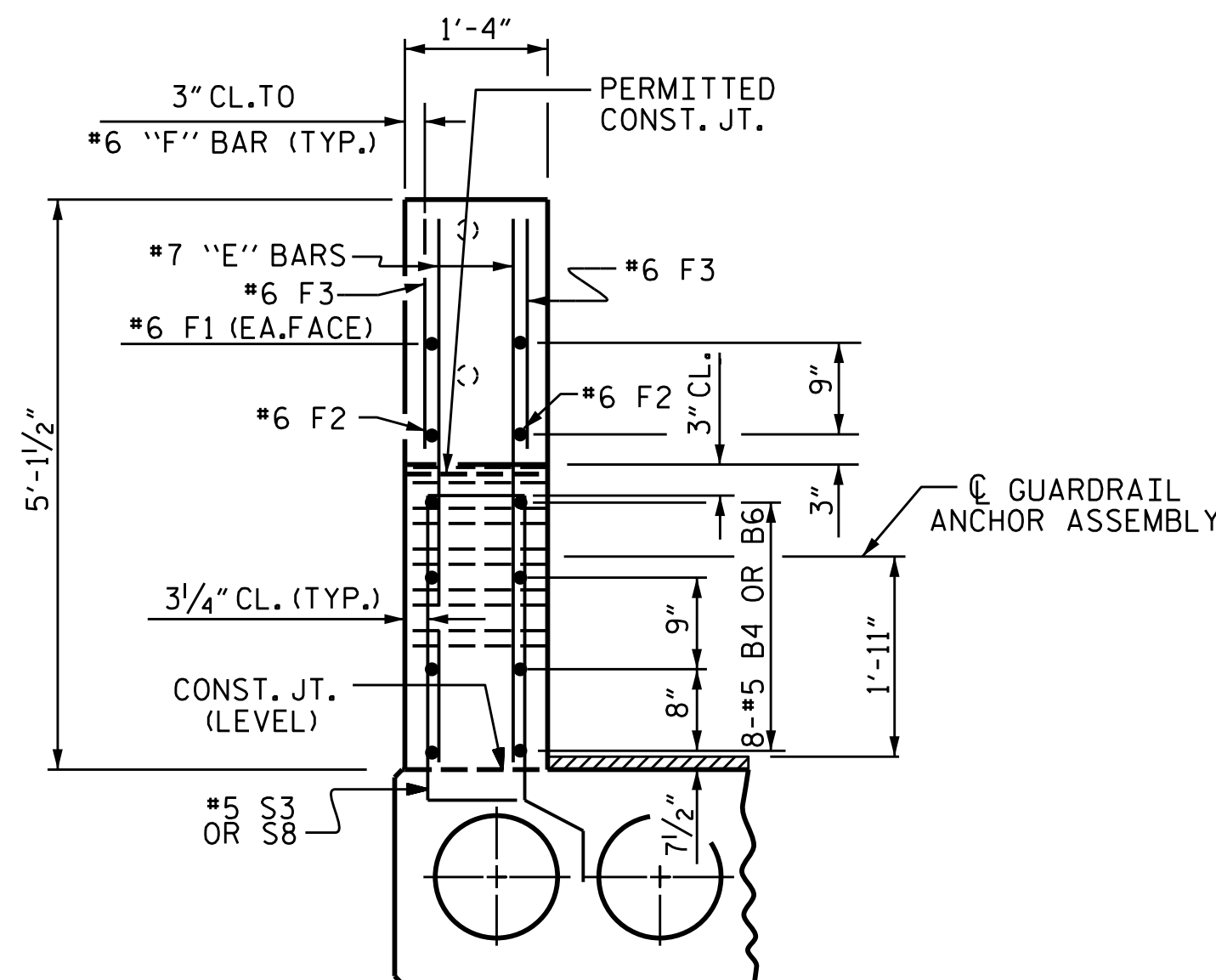
THE 1" Ø THREADED INSERTS IN THE 1'-4" X 2'-11 1/2" CONCRETE PARAPET ARE FOR FUTURE UTILITY ATTACHMENT. THE COST OF THE 1" Ø THREADED INSERTS & INSERT PLUGS SHALL BE INCLUDED IN THE PRICE BID FOR THE 1'-4" X 2'-11 1/2" CONCRETE PARAPET.

PROVIDE PLUGS FOR THE 1" Ø THREADED INSERTS THAT CLOSELY MATCH THE COLORATION OF THE SIMULATED STONE PATTERN AS DIRECTED BY THE ENGINEER.

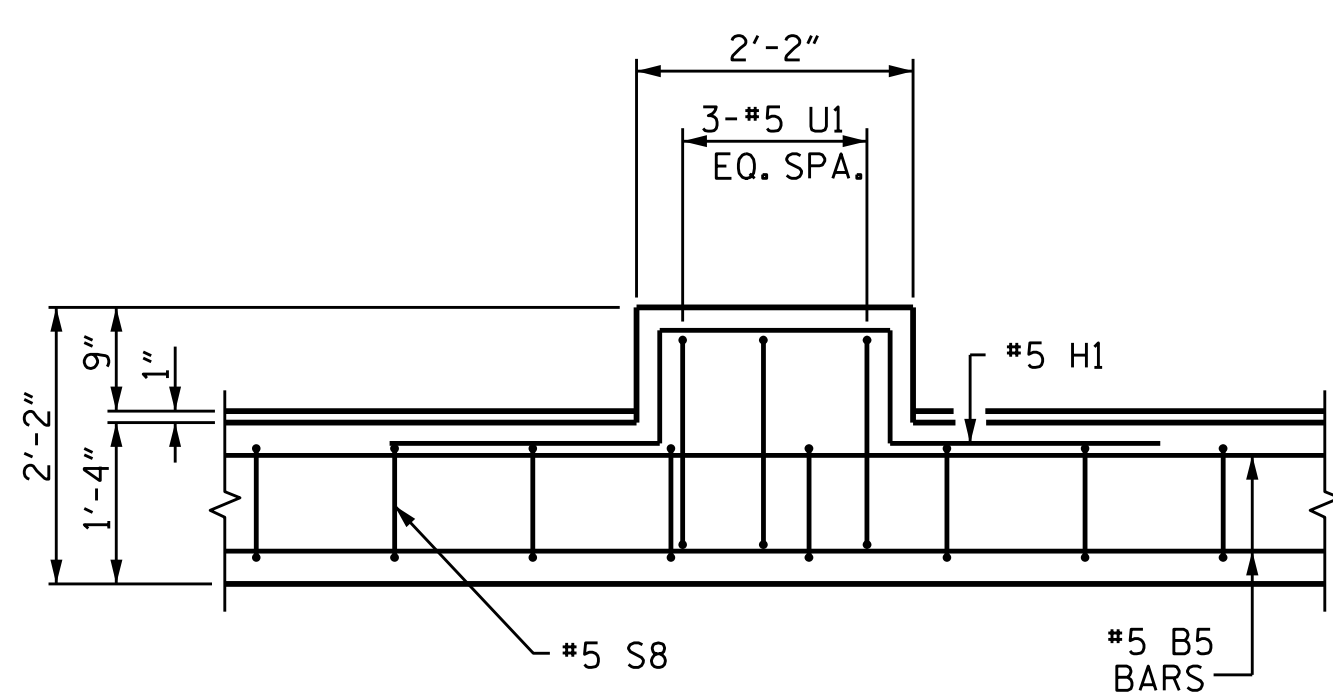
1" THREADED CONCRETE INSERTS (GALVANIZED) FERRULE-TYPE OR COIL-TYPE	
APPLIED TENSION:	3,000 LB (UNFACTORED)
APPLIED SHEAR:	1,200 LB (UNFACTORED)
APPLIED TENSION:	4,200 LB (ACI 318 FACTORED)
APPLIED SHEAR:	1,700 LB (ACI 318 FACTORED)



ELEVATION

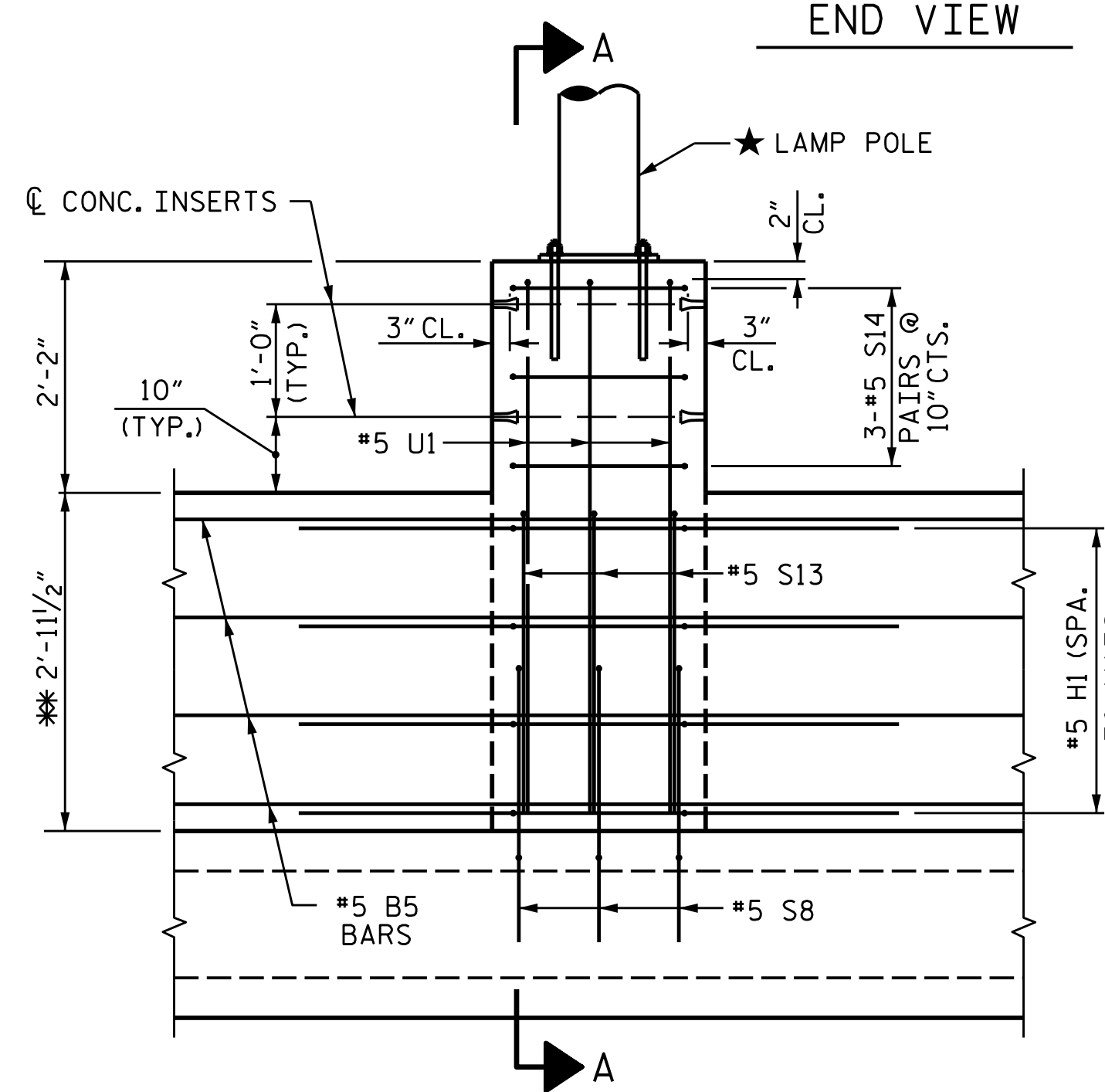


END VIEW



PLAN OF LAMP PEDESTAL

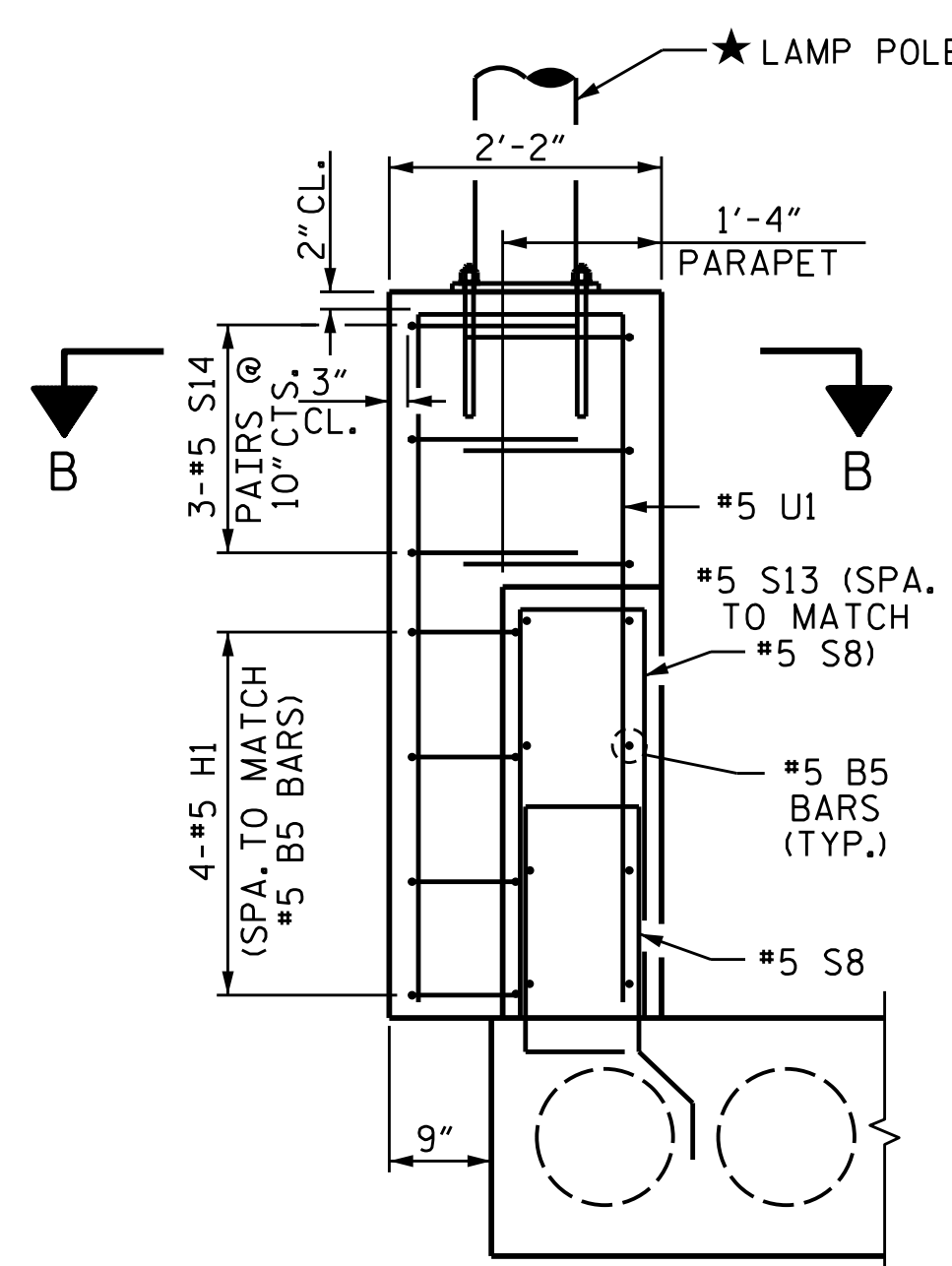
* THE MAXIMUM PARAPET HEIGHT IS SHOWN. THE HEIGHT OF THE PARAPET VARIES WHILE THE TOP OF THE PARAPET FOLLOWS THE PROFILE OF THE CONCRETE WEARING SURFACE.



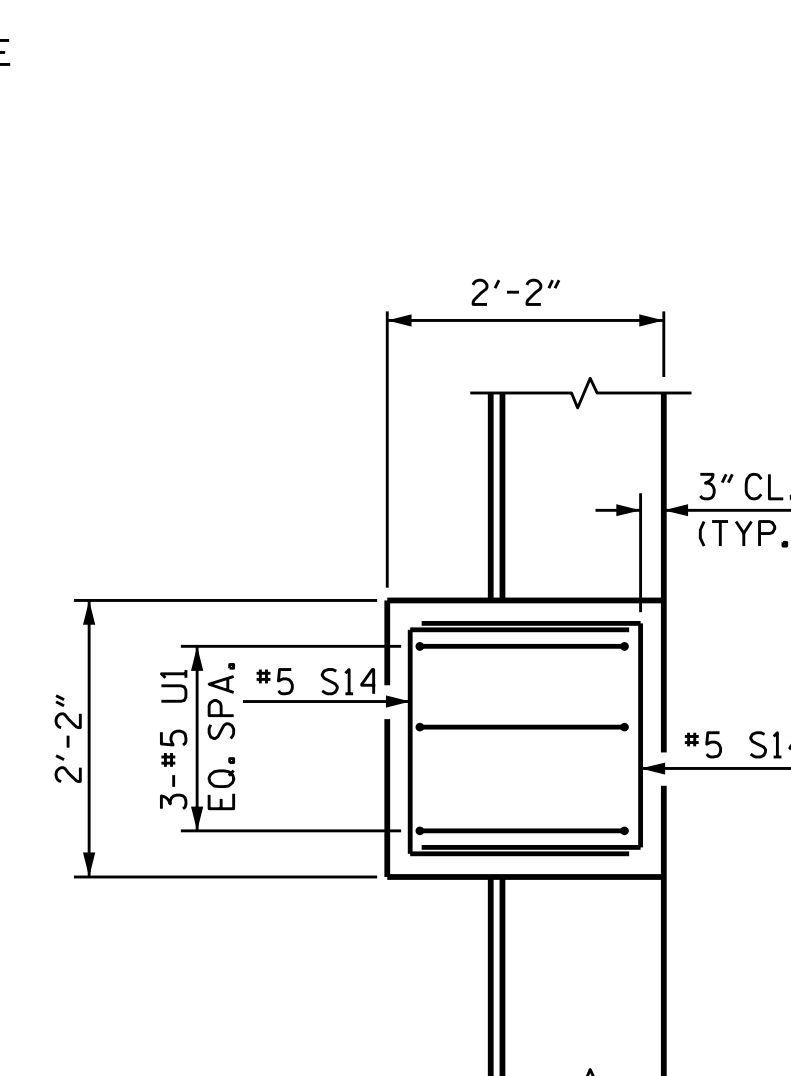
ELEVATION (FRONT VIEW)

LAMP PEDESTAL DETAILS

(★ LAMP POLE & ANCHORAGE TO BE PROVIDED BY OTHERS.)

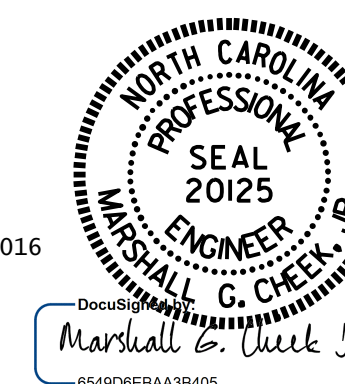


SECTION A-A



SECTION B-B

7/1/2016

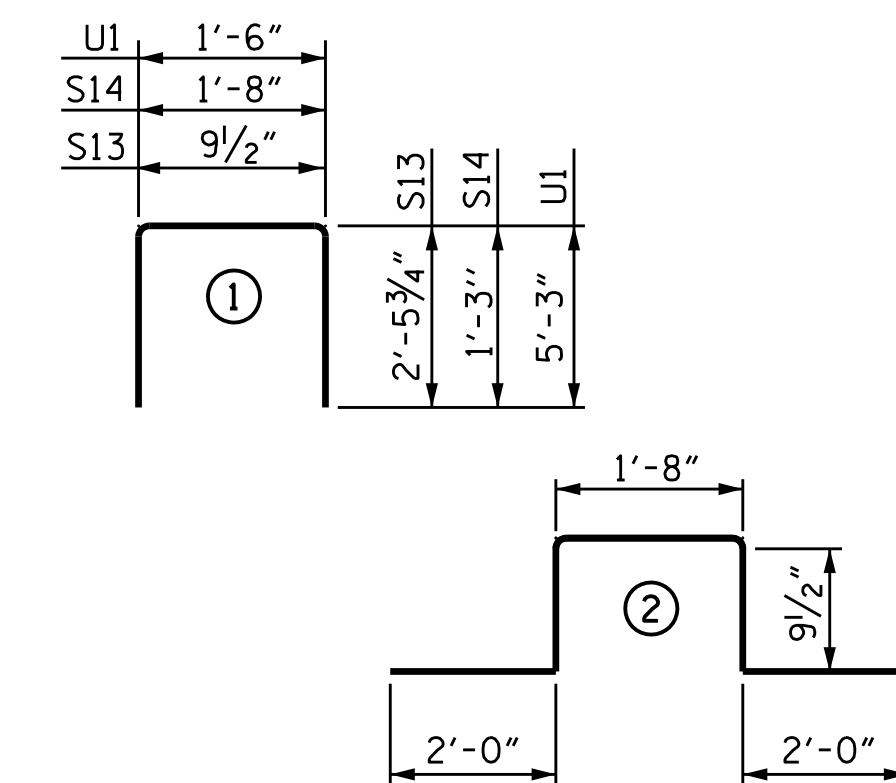


BILL OF MATERIAL FOR
1'-4" X 2'-11 1/2" PARAPET,
3 LAMP PEDESTALS, & 2 END POSTS

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B4	16	#5	STR	19'-7"	327
* B5	48	#5	STR	24'-7"	1231
* B6	16	#5	STR	29'-7"	494
* E1	4	#7	STR	2'-11"	24
* E2	4	#7	STR	3'-5"	28
* E3	4	#7	STR	3'-11"	32
* E4	4	#7	STR	4'-5"	36
* E5	4	#7	STR	4'-9"	39
* F1	4	#6	STR	2'-0"	12
* F2	4	#6	STR	3'-2"	19
* F3	4	#6	STR	3'-10"	23
* H1	12	#5	2	7'-3"	91
* S13	282	#5	1	5'-9"	1691
* S14	18	#5	1	4'-2"	78
* U1	9	#5	1	12'-0"	113

* EPOXY COATED REINFORCING STEEL	LBS.	4238
CLASS AA CONCRETE	CU.YDS.	38.8
1'-4" X 2'-11 1/2" CONCRETE PARAPET	250.38 LIN. FT.	
ARCHITECTURAL CONCRETE SURFACE TREATMENT	1450 SQ. FT.	

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. B-5125
MACON COUNTY
STATION: 13+25.89 -L-

SHEET 2 OF 3

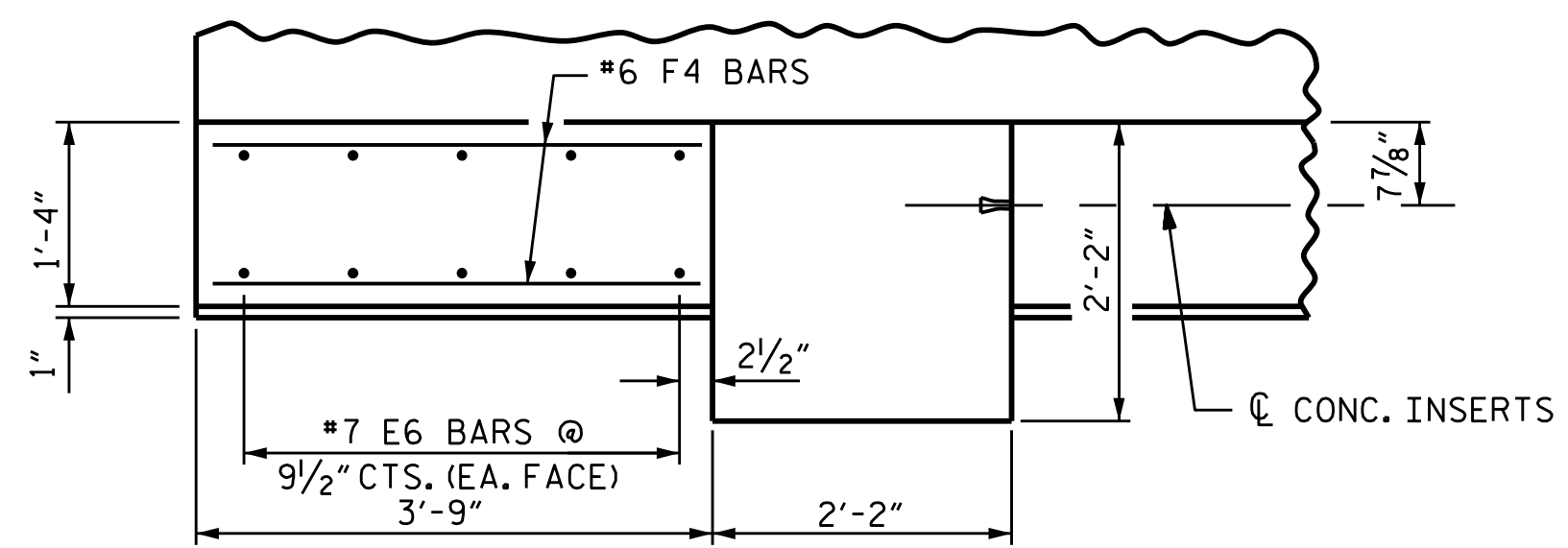
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

1'-4" X 2'-11 1/2"
PARAPET,
END POSTS
AND
LAMP PEDESTALS

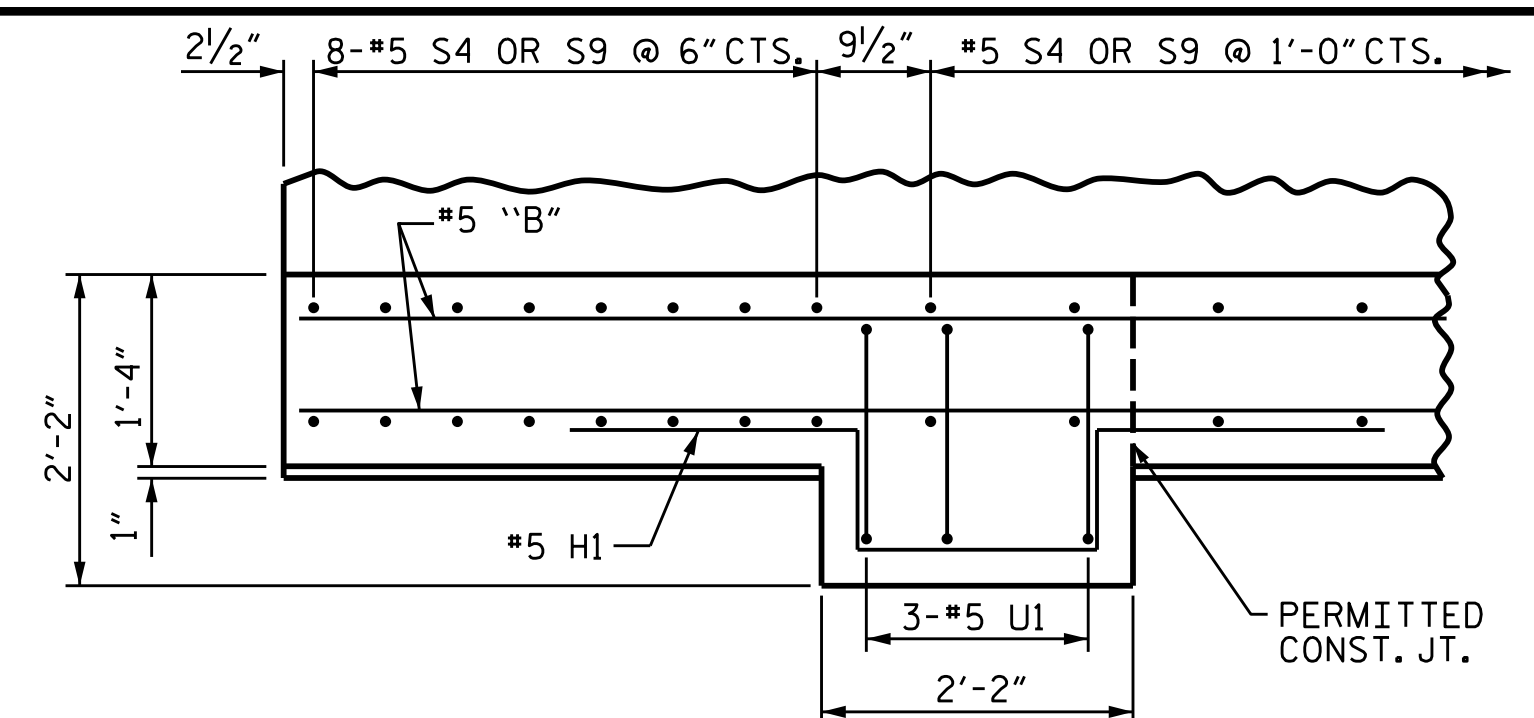
DRAWN BY: W.J. HARRIS DATE: 4/16
CHECKED BY: M.G. CHEEK DATE: 4/29/16
DESIGN ENGINEER OF RECORD: W.J. HARRIS DATE: 5/16

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			17
2			4			43

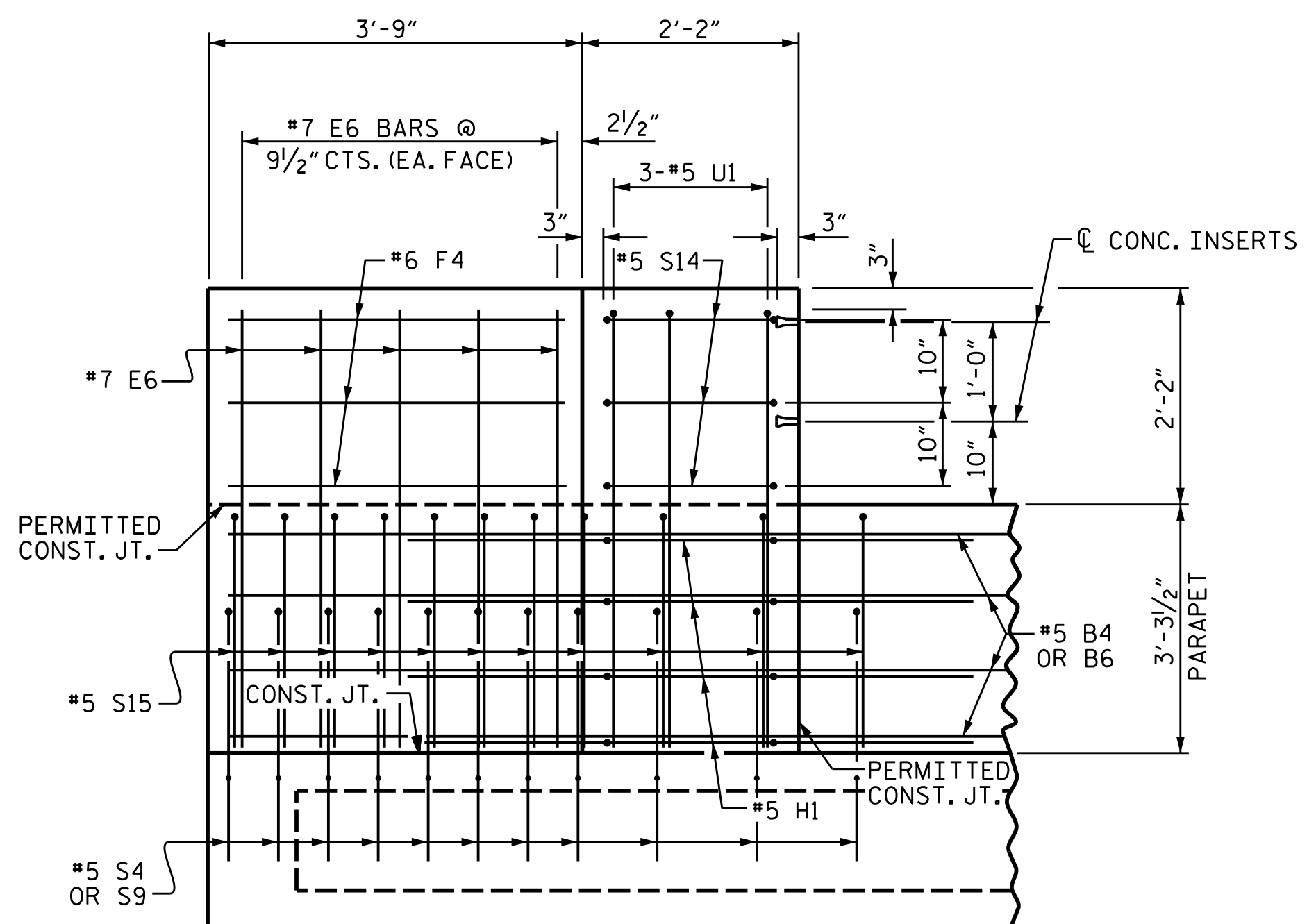


PLAN OF END POST

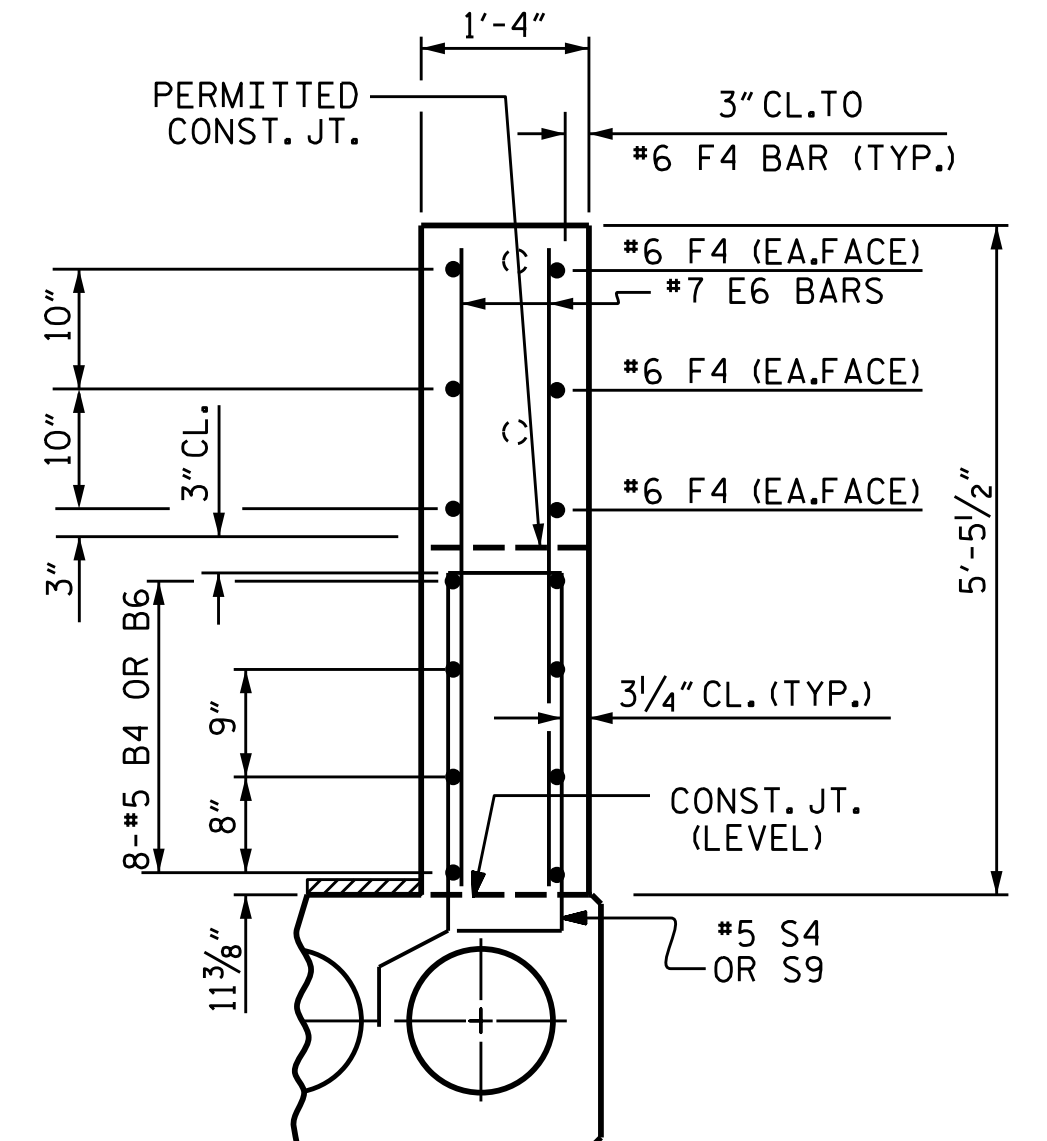


PLAN OF PARAPET & LAMP PEDESTAL

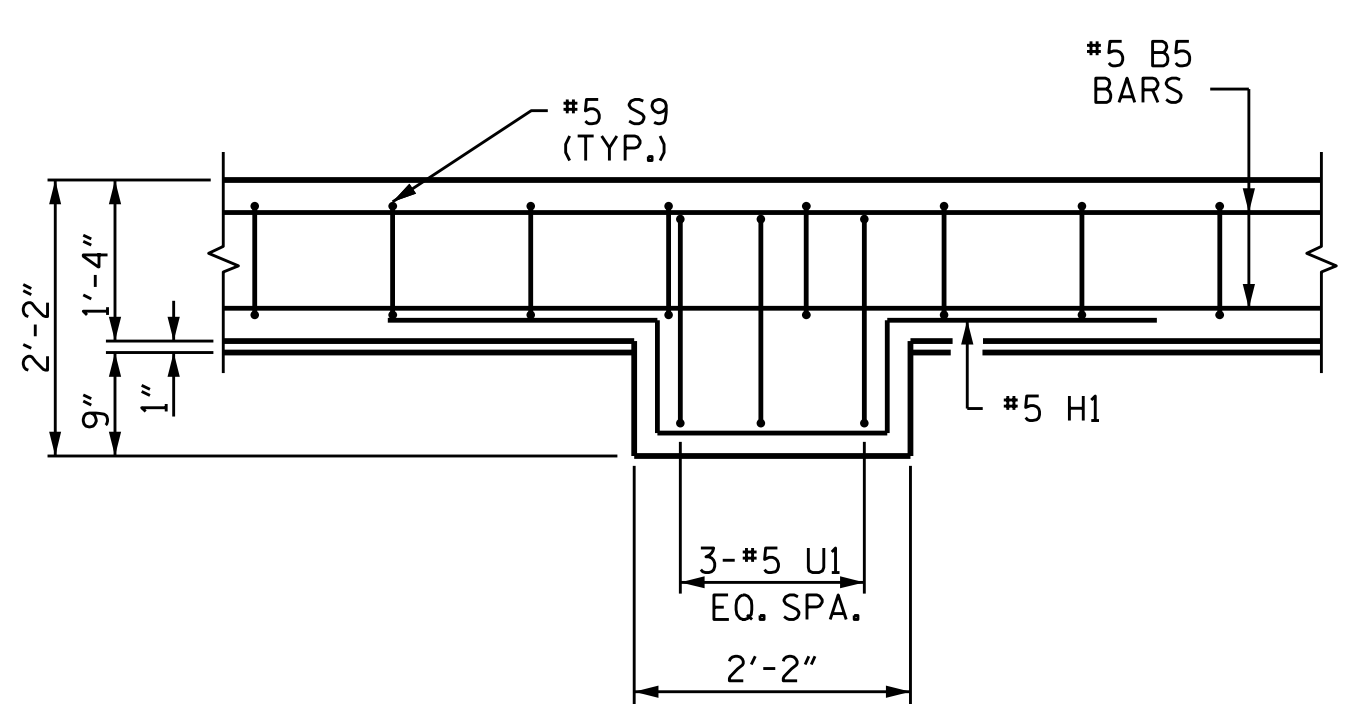
PARAPET AT END BENT No. 1 SHOWN.
PARAPET AT END BENT No. 2 SIMILAR



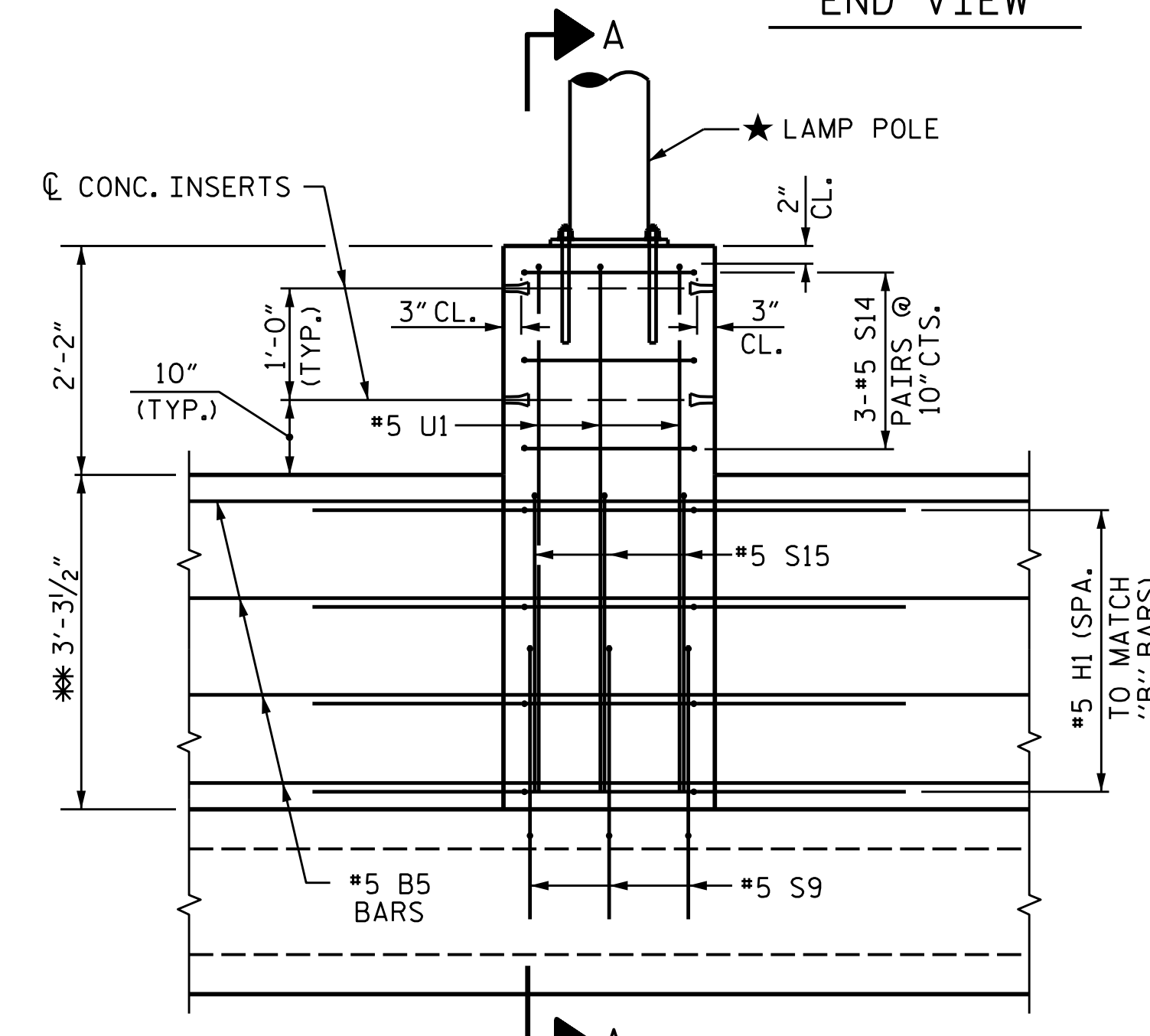
ELEVATION



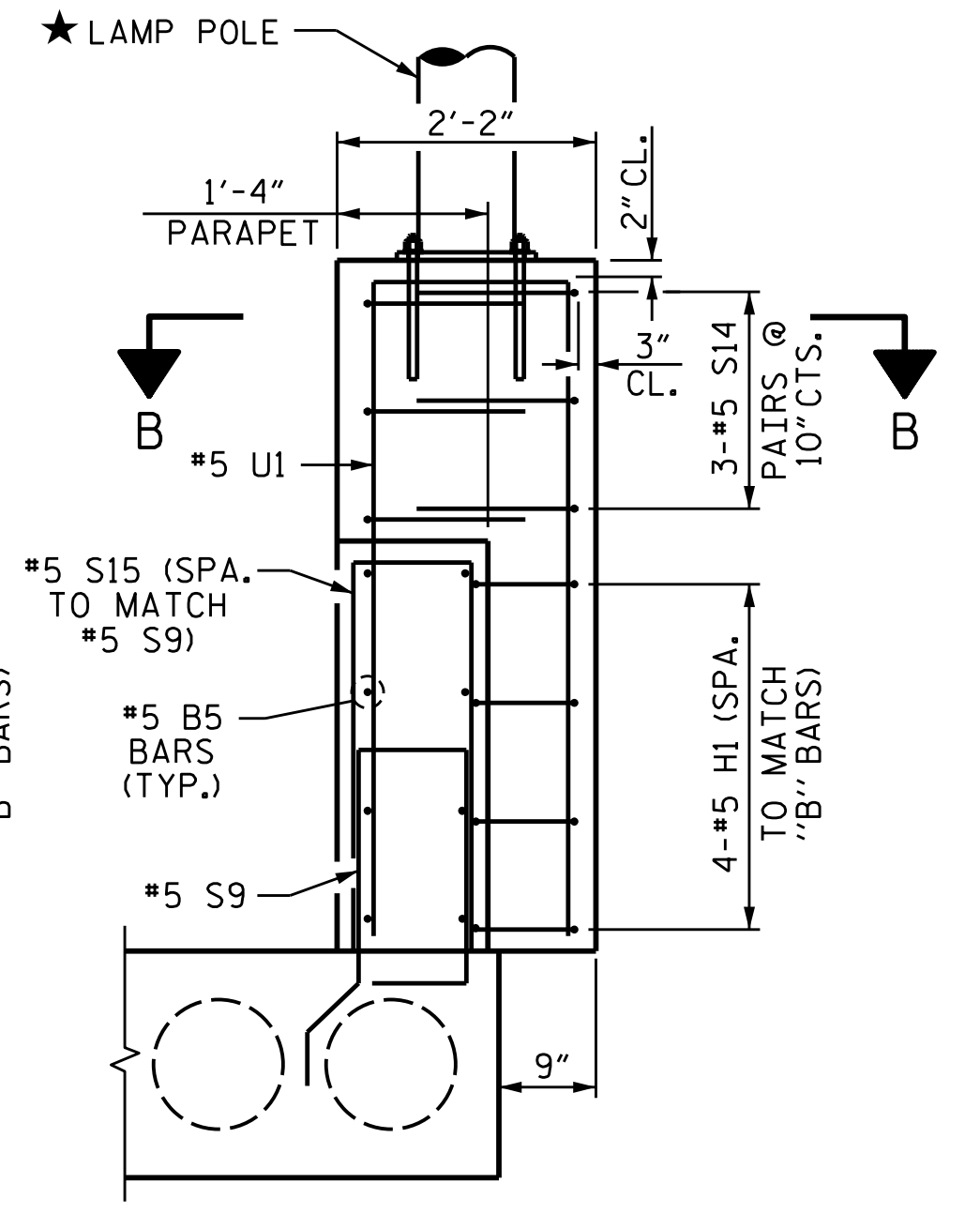
END VIEW



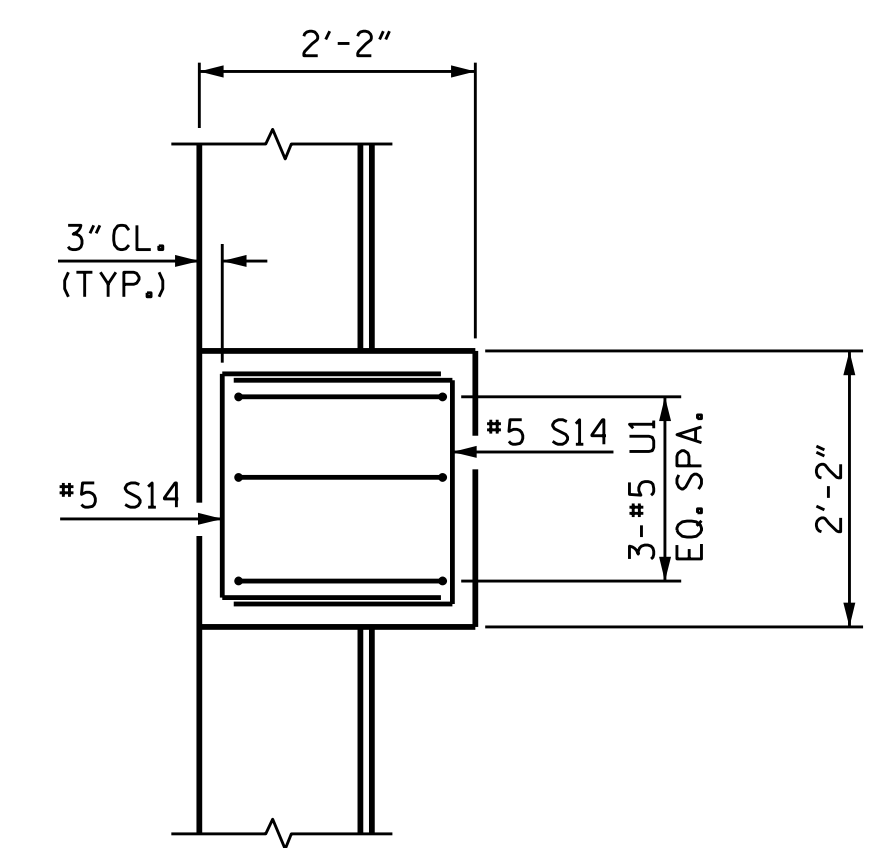
PLAN THRU PARAPET



ELEVATION
(FRONT VIEW)



SECTION A-A



SECTION B-B

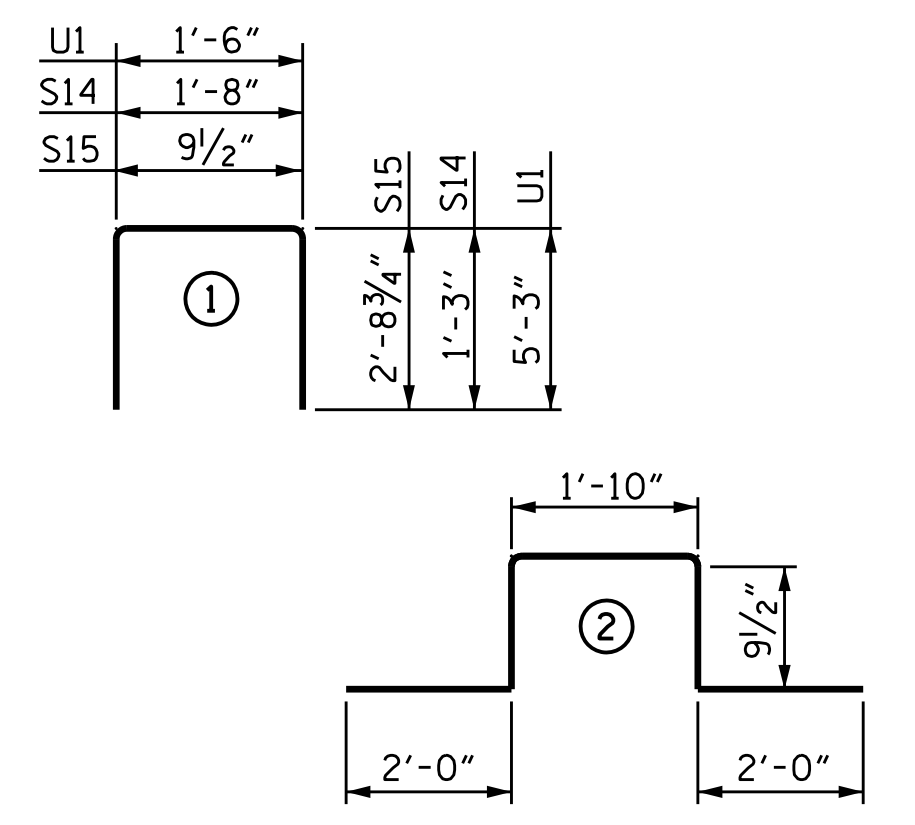
** THE MAXIMUM PARAPET HEIGHT IS SHOWN. THE HEIGHT OF THE PARAPET VARIES WHILE THE TOP OF THE PARAPET FOLLOWS THE PROFILE OF THE CONCRETE WEARING SURFACE.

**BILL OF MATERIAL FOR
1'-4" X 3'-3 1/2" PARAPET,
3 LAMP PEDESTALS, & 2 END POSTS**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B4	16	#5	STR	19'-7"	327
* B5	48	#5	STR	24'-7"	1231
* B6	16	#5	STR	29'-7"	494
* E6	20	#7	STR	5'-0"	204
* F4	12	#6	STR	3'-4"	60
* HI	12	#5	2	7'-3"	91
* S14	18	#5	1	4'-2"	78
* S15	282	#5	1	6'-3"	1838
* U1	9	#5	1	12'-0"	113

* EPOXY COATED REINFORCING STEEL	LBS.	4436
CLASS AA CONCRETE	CU.YDS.	42.9
1'-4" X 3'-3 1/2" CONCRETE PARAPET	250.38 LIN. FT.	
ARCHITECTURAL CONCRETE SURFACE TREATMENT	1535 SQ. FT.	

BAR TYPES

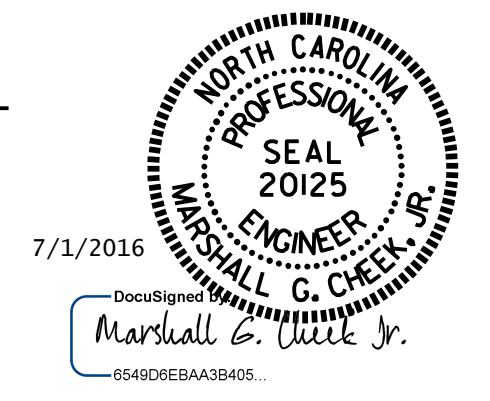


ALL BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. B-5125
MACON COUNTY
STATION: 13+25.89 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
**1'-4" X 3'-3 1/2"
PARAPET,
END POSTS
AND
LAMP PEDESTALS**

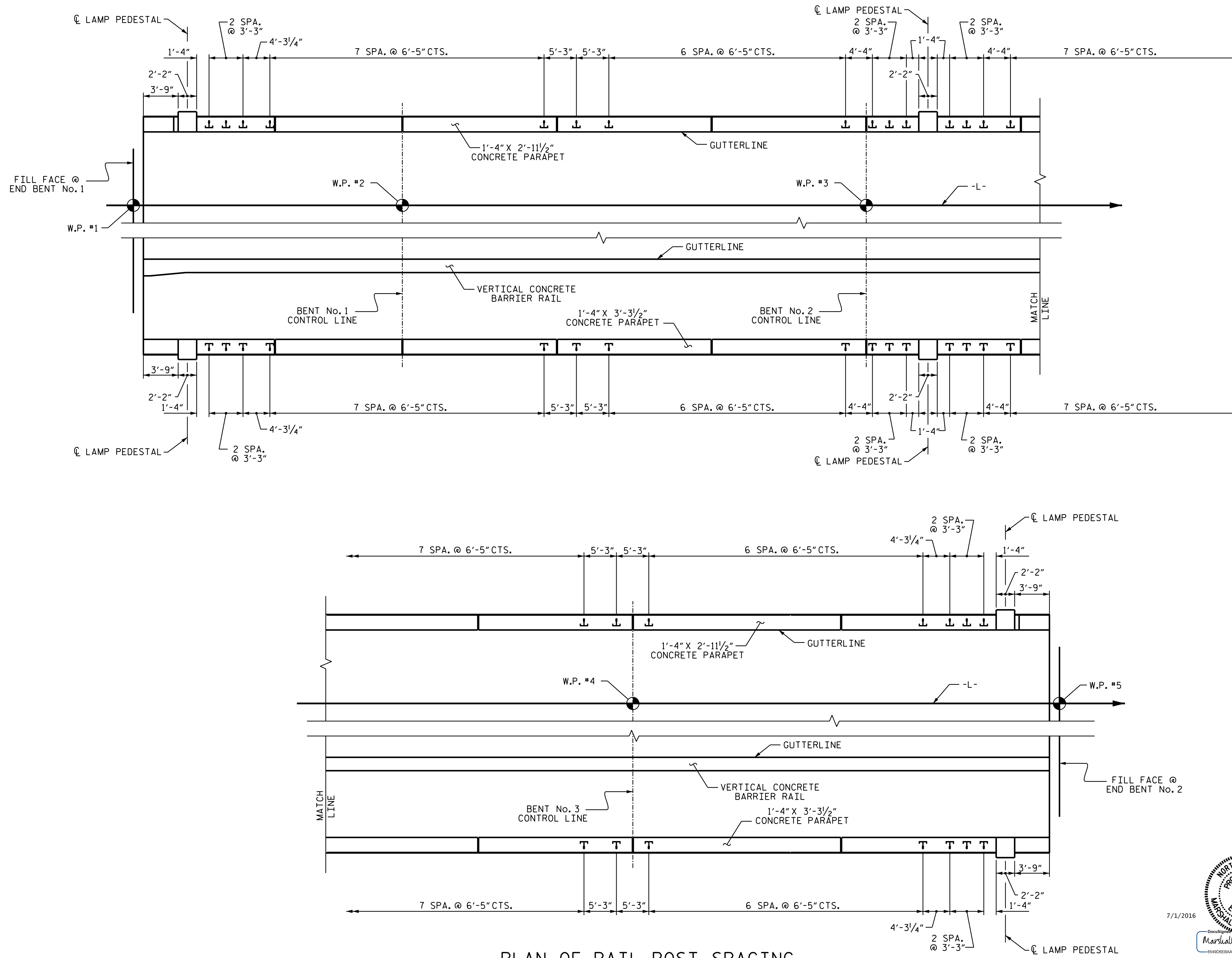


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-18
2			4			43

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY: W.J. HARRIS DATE: 4/16
CHECKED BY: M.G. CHEEK DATE: 4/29/16
DESIGN ENGINEER OF RECORD: W.J. HARRIS DATE: 5/16

LAMP PEDESTAL DETAILS
(★ LAMP POLE & ANCHORAGE TO BE PROVIDED BY OTHERS.)



PLAN OF RAIL POST SPACING

PROJECT NO. B-5125
MACON COUNTY
 STATION: 13+25.89 -L-
 SHEET 1 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
RAIL POST SPACINGS

DRAWN BY : D. HODGE DATE : 12/15
 CHECKED BY : M.G. CHEEK DATE : 4/16
 DESIGN ENGINEER OF RECORD: W.J. HARRIS DATE : 5/16

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			43

NOTES
STRUCTURAL CONCRETE INSERT

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

NOTES

METAL RAIL TO END POST CONNECTION

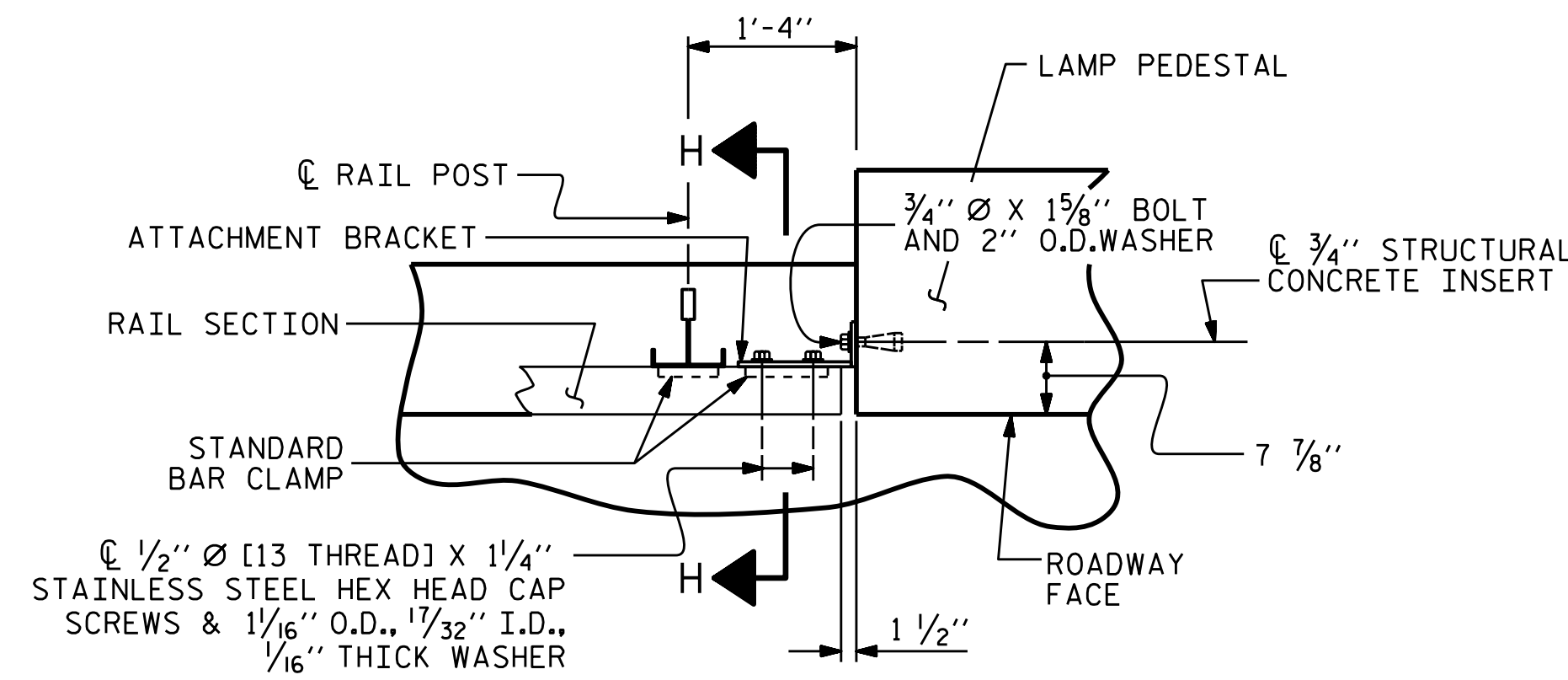
- THE METAL RAIL TO LAMP PEDESTAL CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
 - B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE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

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

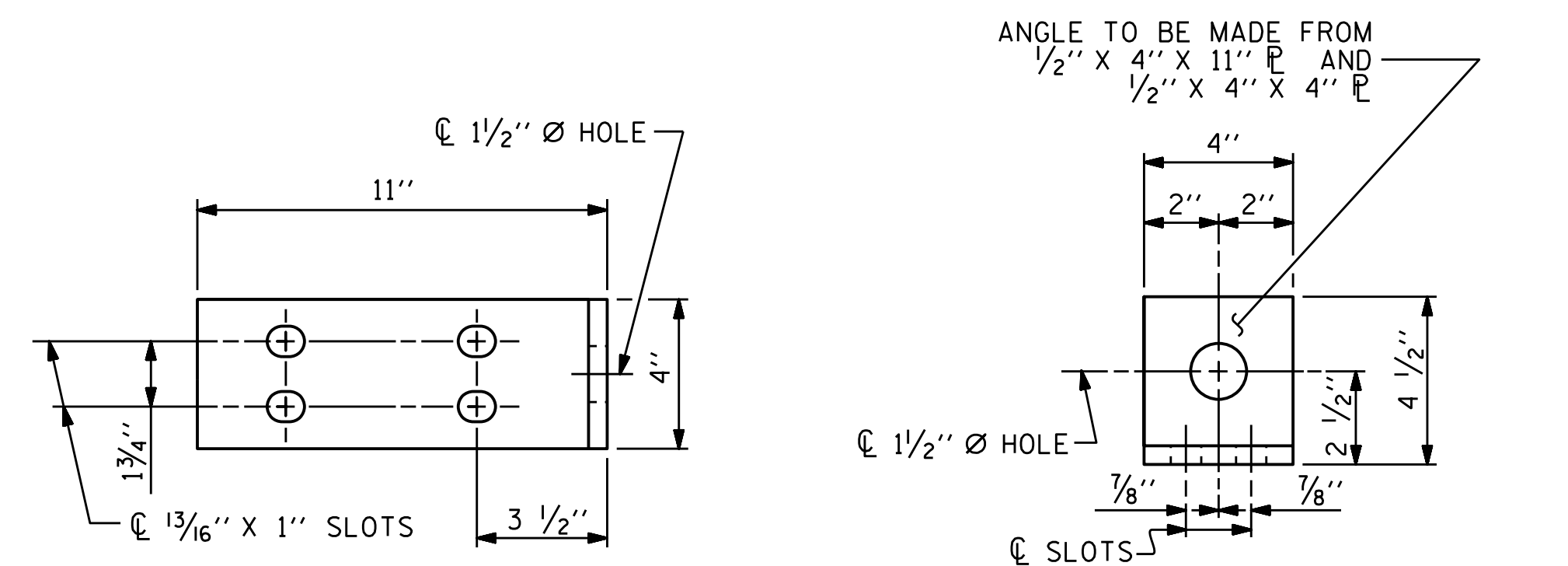
THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

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

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

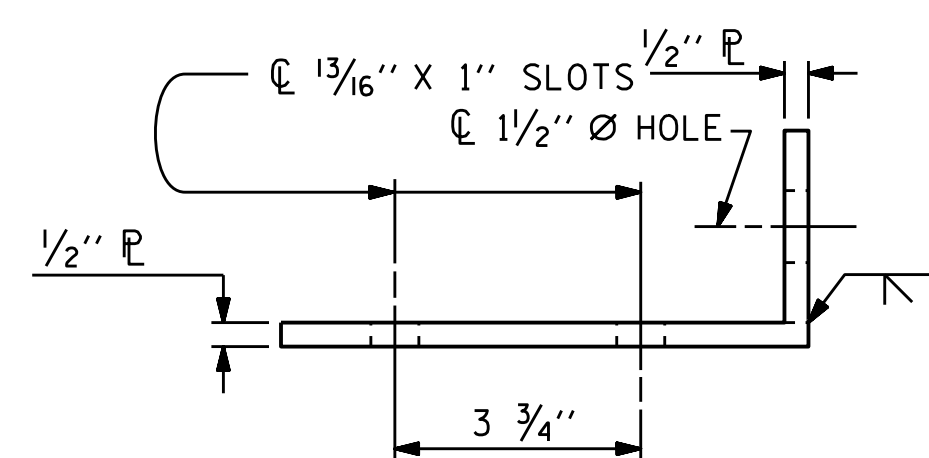


PLAN - RAIL AND LAMP PEDESTAL

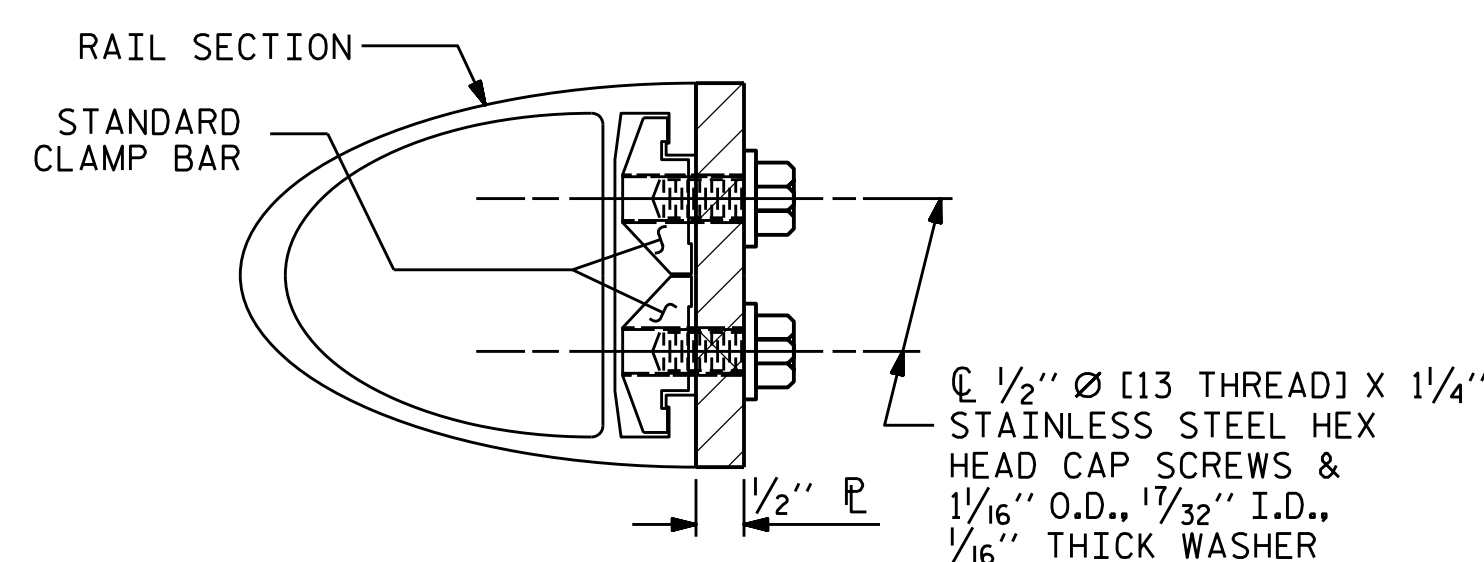


ELEVATION

END VIEW (FIX AND EXP.)

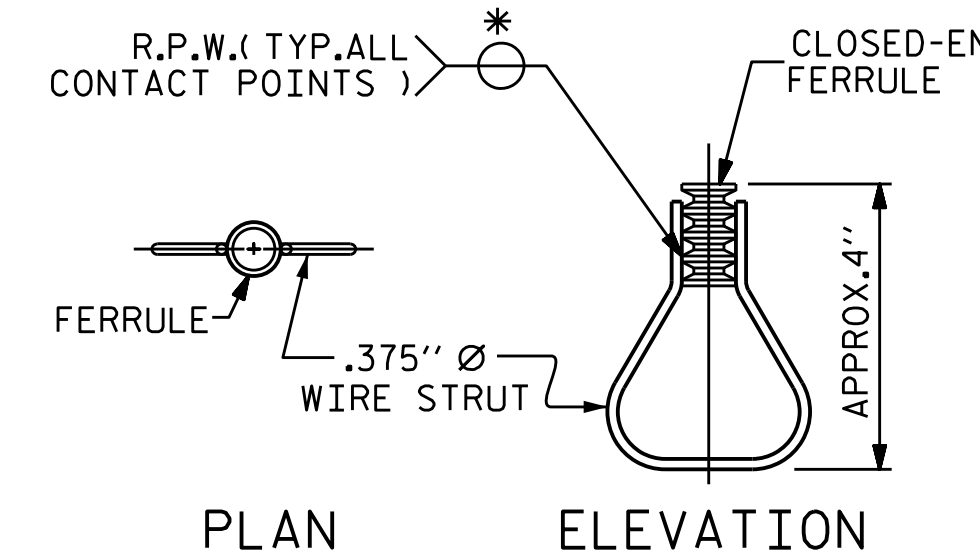


TOP VIEW



SECTION H-H (FIX)

FIXED



STRUCTURAL CONCRETE INSERT

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

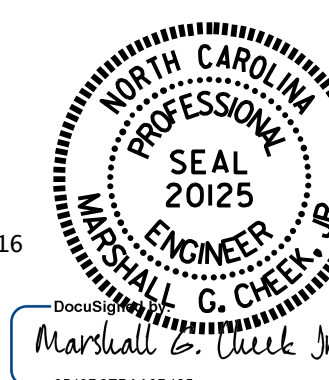
DETAILS FOR ATTACHING METAL RAIL TO LAMP PEDESTAL

PROJECT NO. B-5125
MACON COUNTY
STATION: 13+25.89 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END OF RAIL DETAILS



ASSEMBLED BY : D. HODGE	DATE : 12/15
CHECKED BY : M.G. CHEEK	DATE : 4/16
DRAWN BY : FCJ 1/88	REV. 5/7/03 RWN/JTE
CHECKED BY : CRK 3/89	REV. 5/1/06 TLA/GM
	REV. 10/1/11 MAA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-20
2			4			43

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTES

UNLESS OTHERWISE REQUIRED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR HAS THE OPTION TO USE AN ALTERNATE TO THE 2 BAR METAL RAIL. THE ALTERNATE RAIL SHALL MEET THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST (APL) UNDER "2 BAR METAL RAIL ALTERNATE". ADJUSTMENTS TO THE CONCRETE PARAPET WILL NOT BE ALLOWED.

THE METAL RAIL SHALL BE ALUMINUM AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6. MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

ANODIZING

ALUMINUM FOR POSTS, BASES, RAILS, EXPANSION BARS, CLAMP BARS, RIVETS, AND SHIMS SHALL BE ANODIZED DARK BROWN. FOR ANODIZED 2 BAR METAL RAIL, SEE SPECIAL PROVISIONS.

ANY DAMAGE TO THE ANODIZED SURFACE OF THE RAIL OR COMPONENTS DURING THE CONSTRUCTION SHALL BE REPAIRED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS AT THE DIRECTION OF THE ENGINEER AND AT THE CONTRACTOR'S EXPENSE.

AFTER A SHADE OF BROWN HAS BEEN SELECTED FOR THE RAILING, THE CONTRACTOR SHALL SUBMIT A SAMPLE OF COMPATIBLE EXTERIOR ACRYLIC HOUSE PAINT TO THE ENGINEER. THIS PAINT SHALL MATCH THE ANODIZED RAIL COLOR AS CLOSELY AS POSSIBLE. AFTER ERECTION OF THE ANODIZED ALUMINUM RAILING, ALL EXPOSED ANCHOR BOLTS, NUTS, WASHERS, MACHINE SCREWS, CAP SCREWS, BOLTS, ATTACHMENT BRACKETS, HOLD DOWN PLATES, RAIL CAPS AND BUILT UP ANGLES SHALL BE COATED WITH TWO COATS OF THIS PAINT.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM LAMP PEDESTAL TO LAMP PEDESTAL OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE LAMP PEDESTAL DIMENSION, SEE "END OF RAIL DETAILS" SHEET.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

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

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

PAY LENGTH = 472.75 LIN. FT. PROJECT NO. B-5125

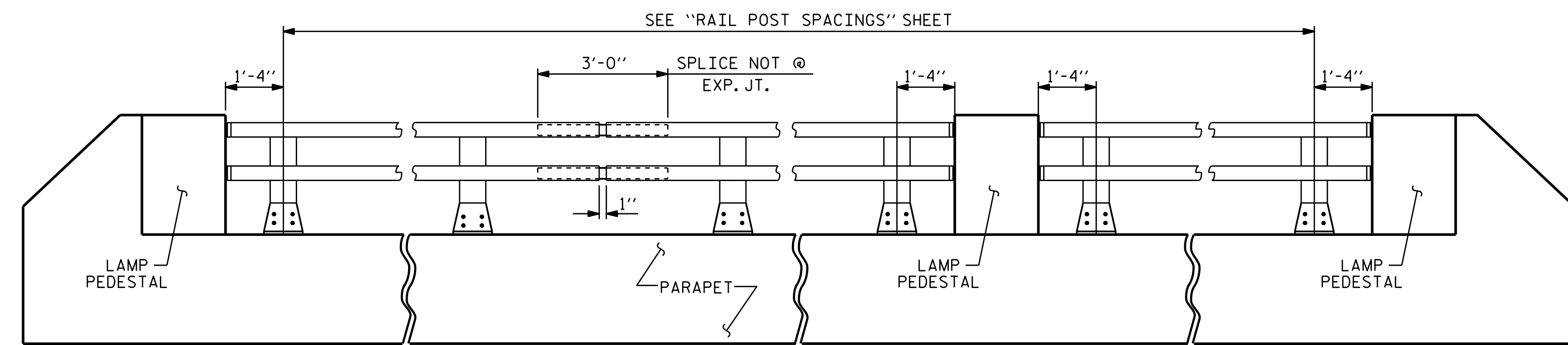
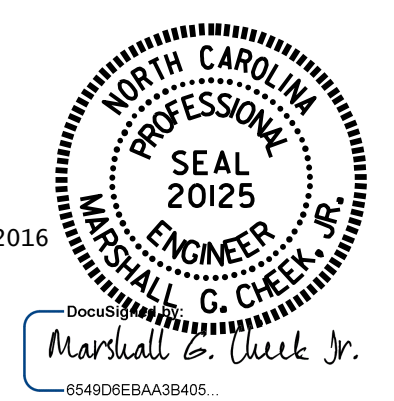
MACON COUNTY

STATION: 13+25.89 -L-

SHEET 1 OF 2

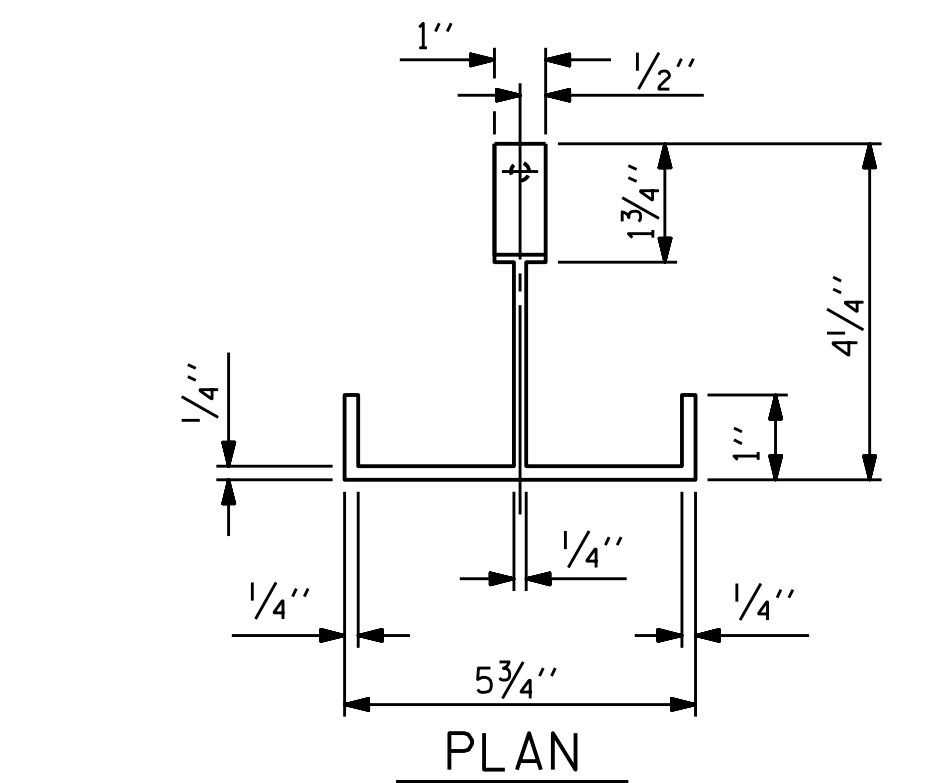
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**ANODIZED
2 BAR METAL RAIL**

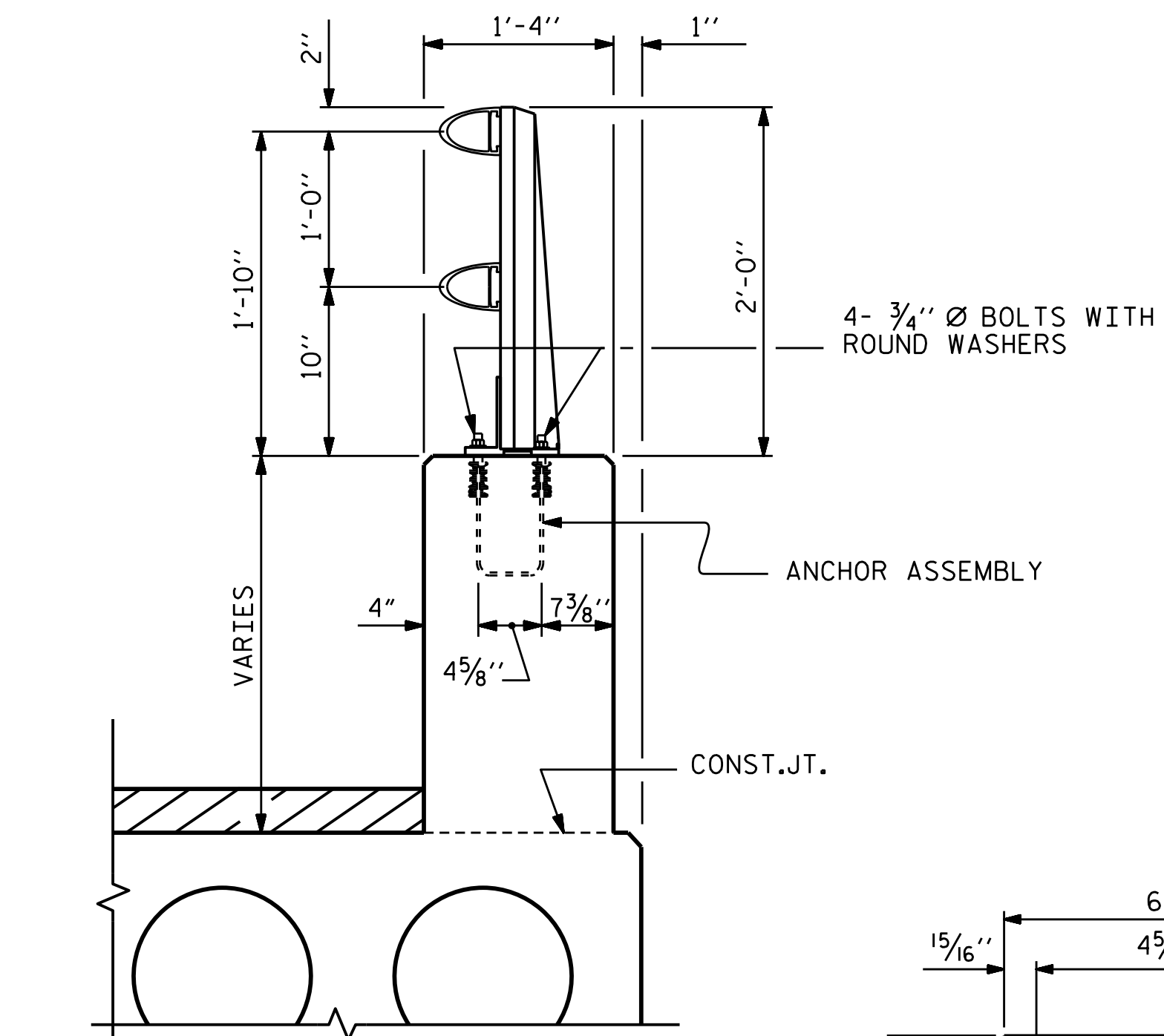


ELEVATION

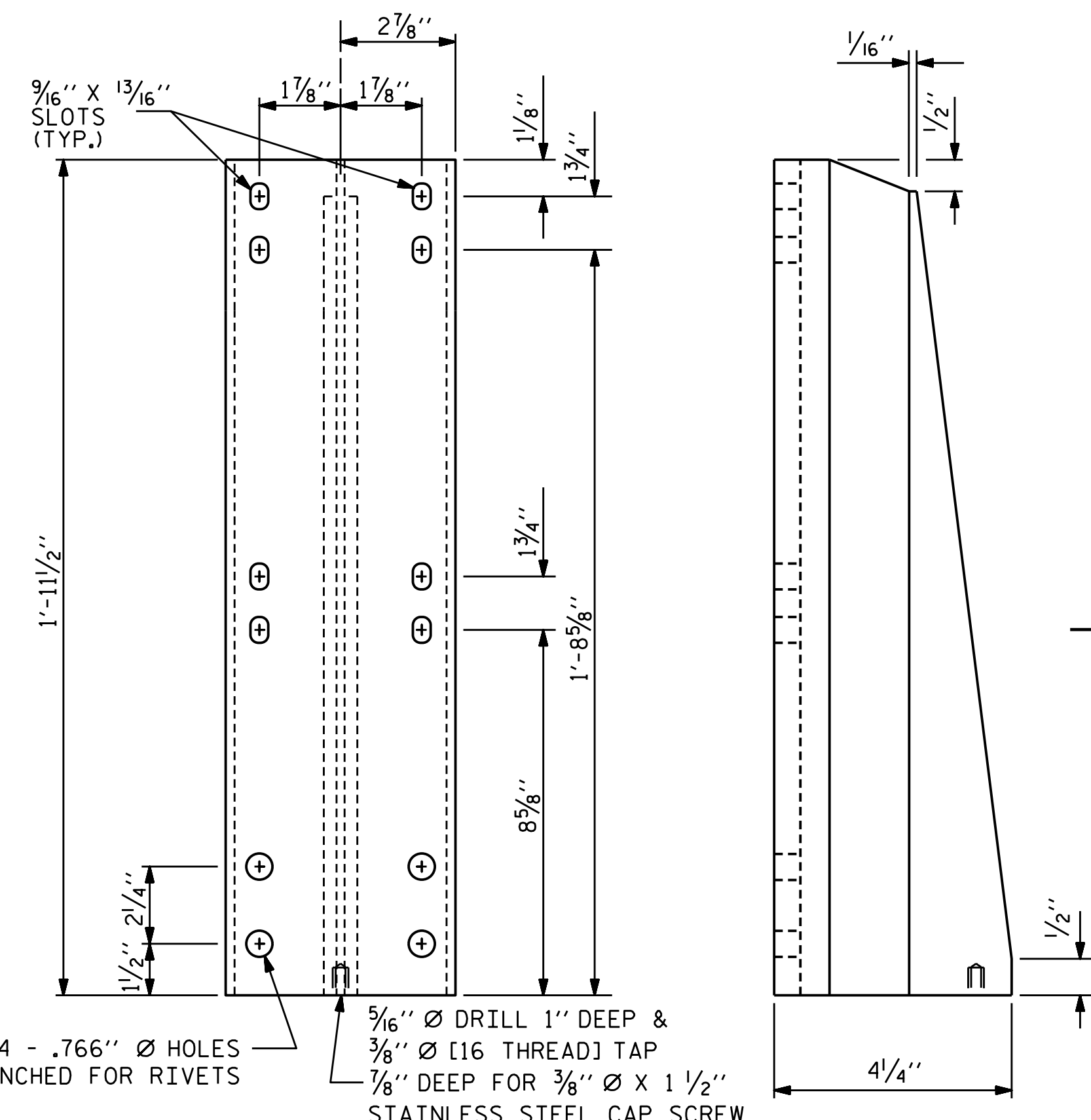
NOTE : FOR ATTACHMENT OF METAL RAIL TO LAMP PEDESTAL, SEE "END OF RAIL DETAILS" SHEET.



PLAN



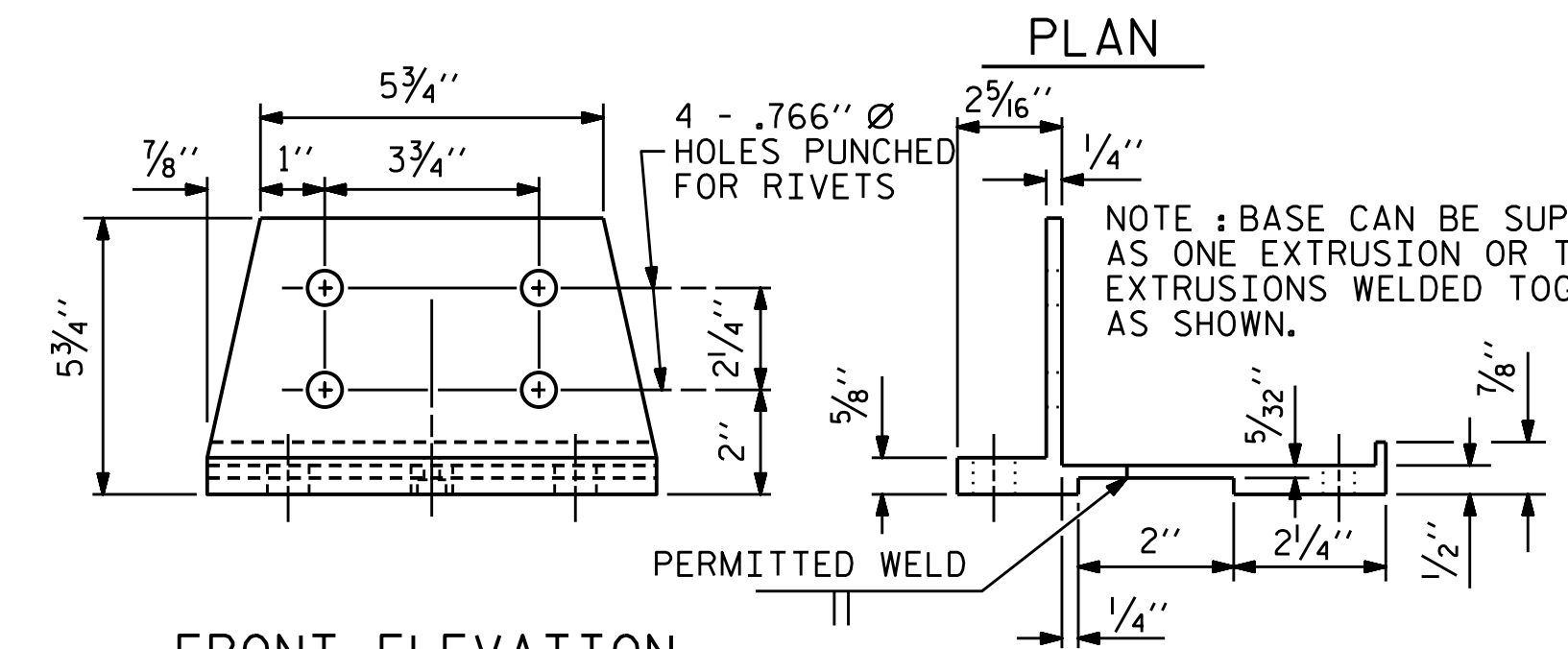
**SECTION THRU
PARAPET AND RAIL**



FRONT ELEVATION

SIDE ELEVATION

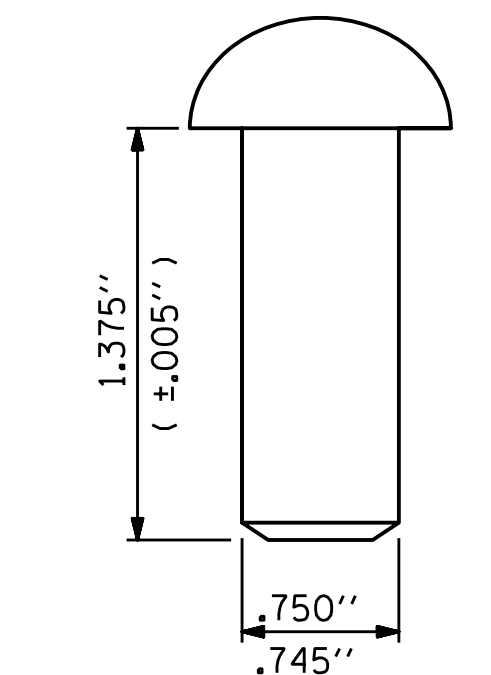
DETAILS OF POST



FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS



RIVET DETAIL

ASSEMBLED BY : D. HODGE	DATE : 12/15
CHECKED BY : M.G. CHEEK	DATE : 4/16
DRAWN BY : EEM 6/94	REV. 5/1/06 TLA/GM
CHECKED BY : RGW 6/94	REV. 10/1/11 MAA/GM
	REV. 6/13 MAA/GM

REVISIONS						SHEET NO. S-21
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 43
2			4			

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTES

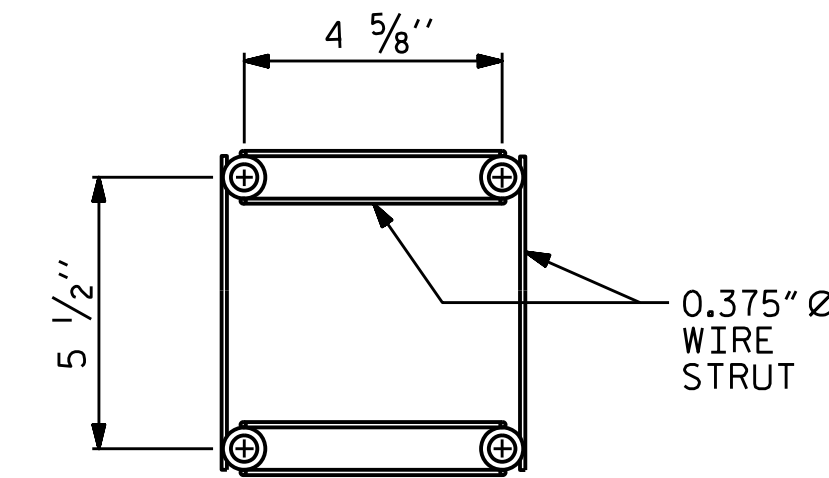
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

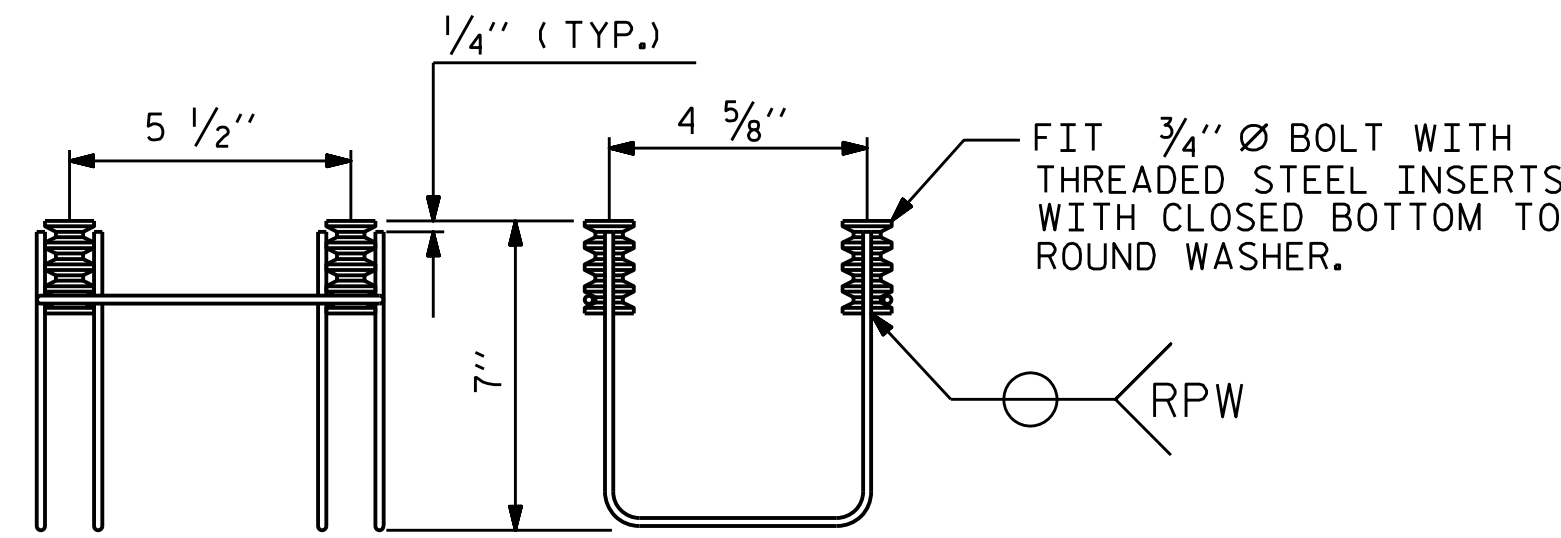
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 2 1/2" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/6" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
- E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
- F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

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

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



PLAN

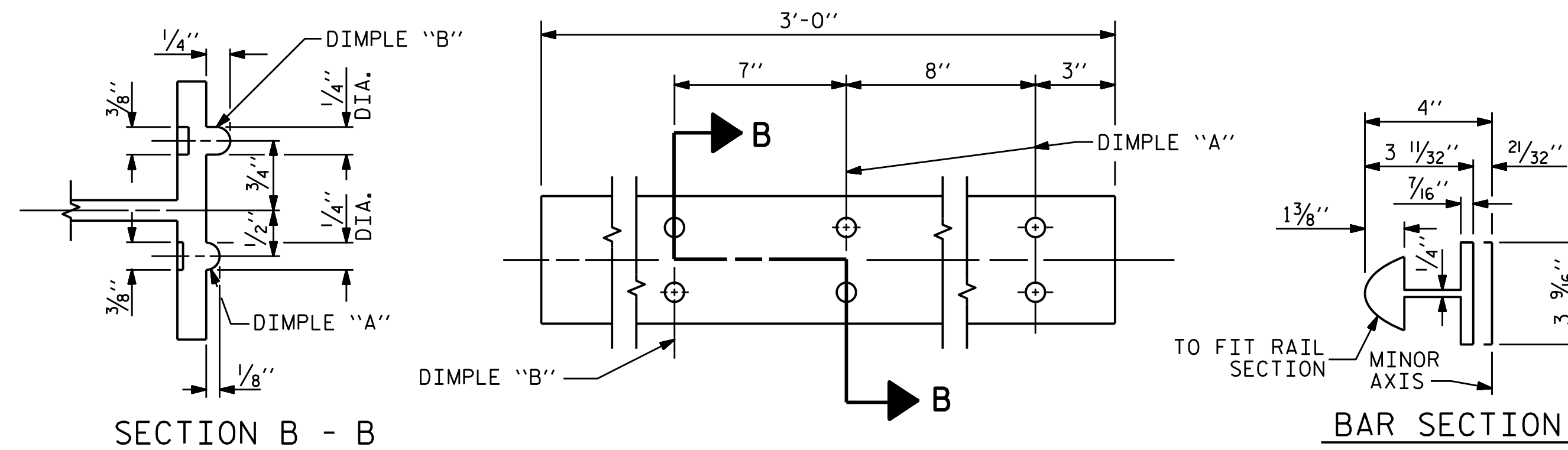


SIDE VIEW

ELEVATION

4-BOLT METAL RAIL ANCHOR ASSEMBLY

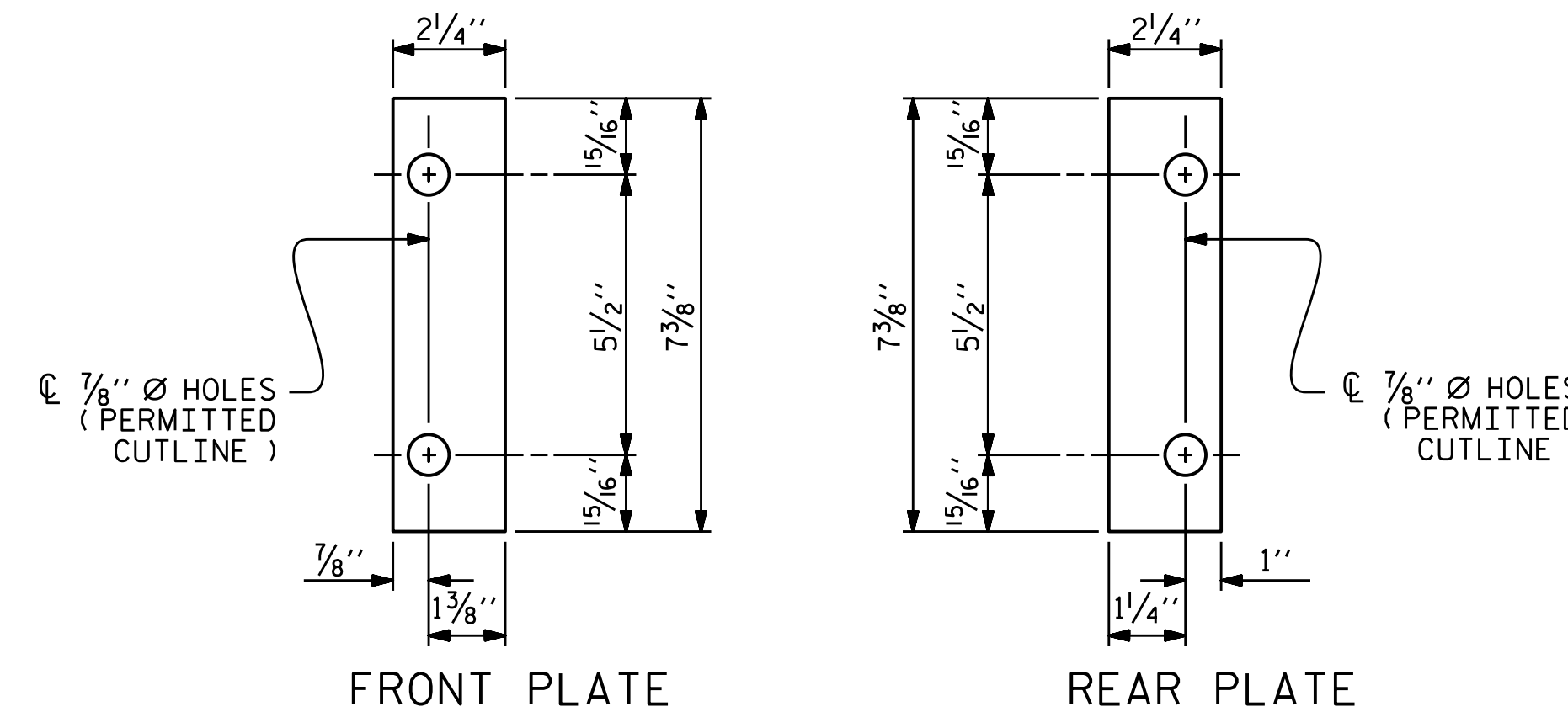
(88 ASSEMBLIES REQUIRED)



SECTION B - B

EXPANSION BAR DETAILS

BAR SECTION

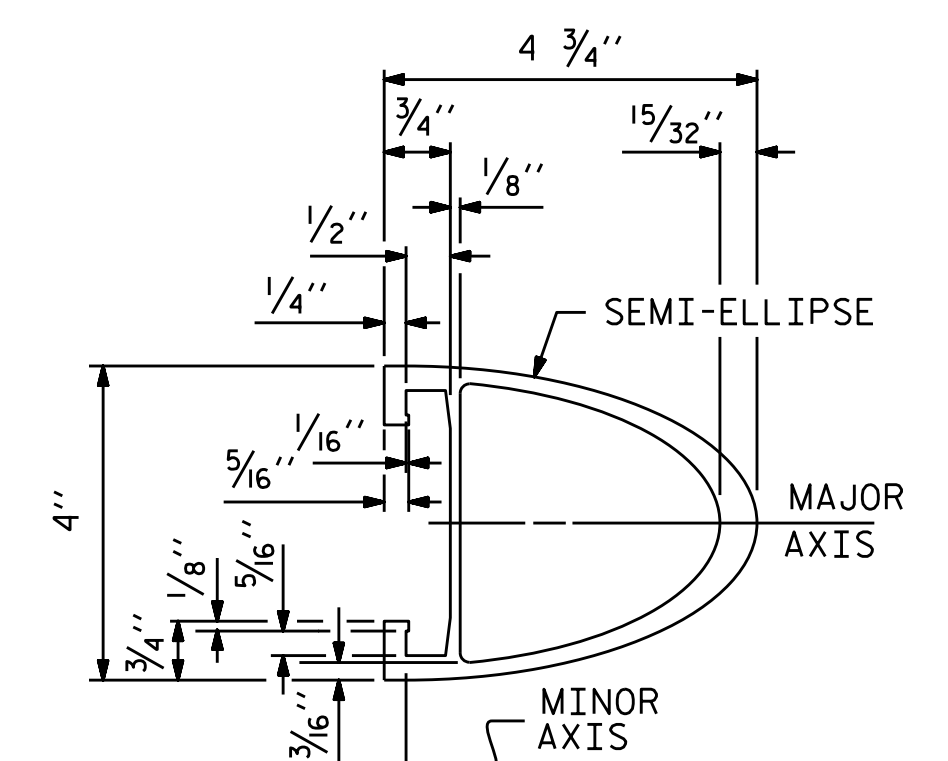


FRONT PLATE

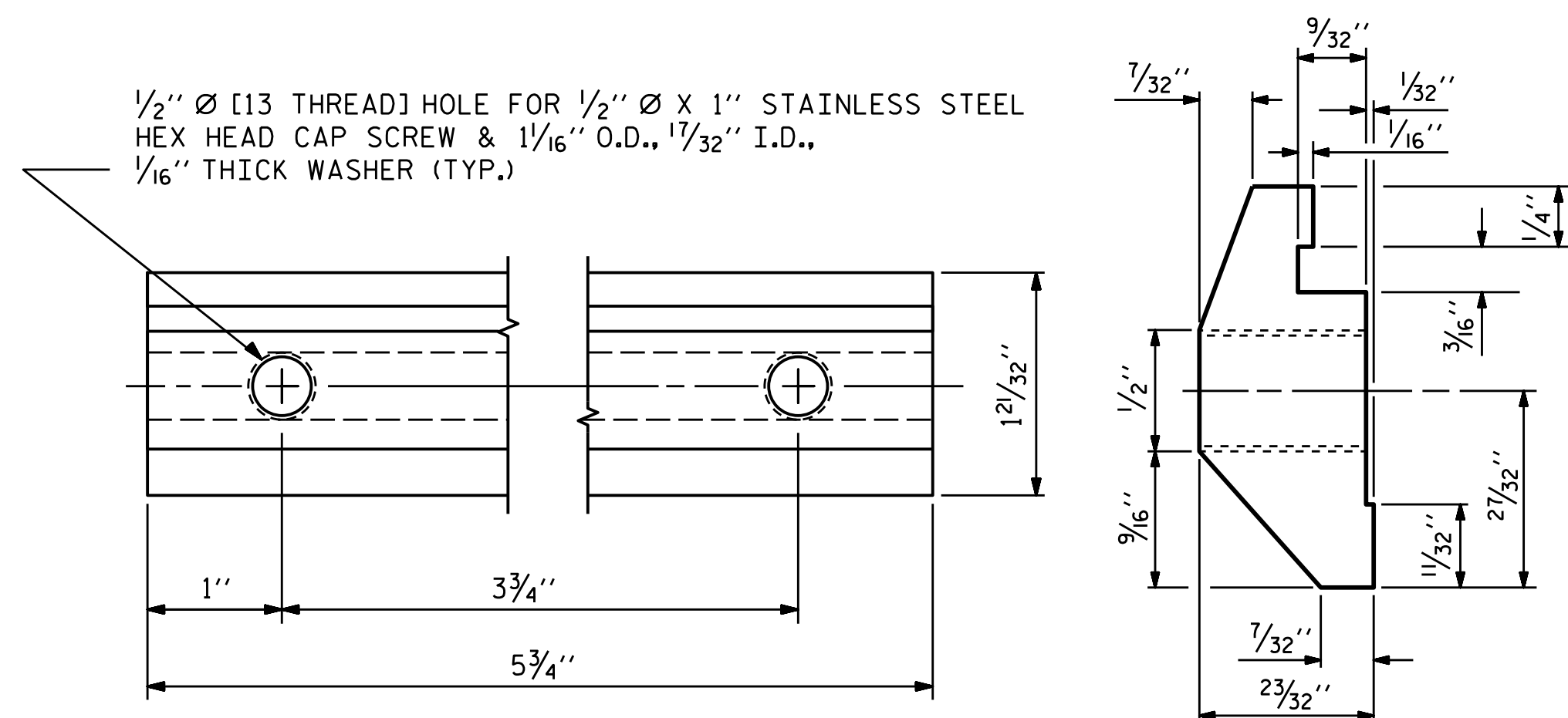
REAR PLATE

SHIM DETAILS

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

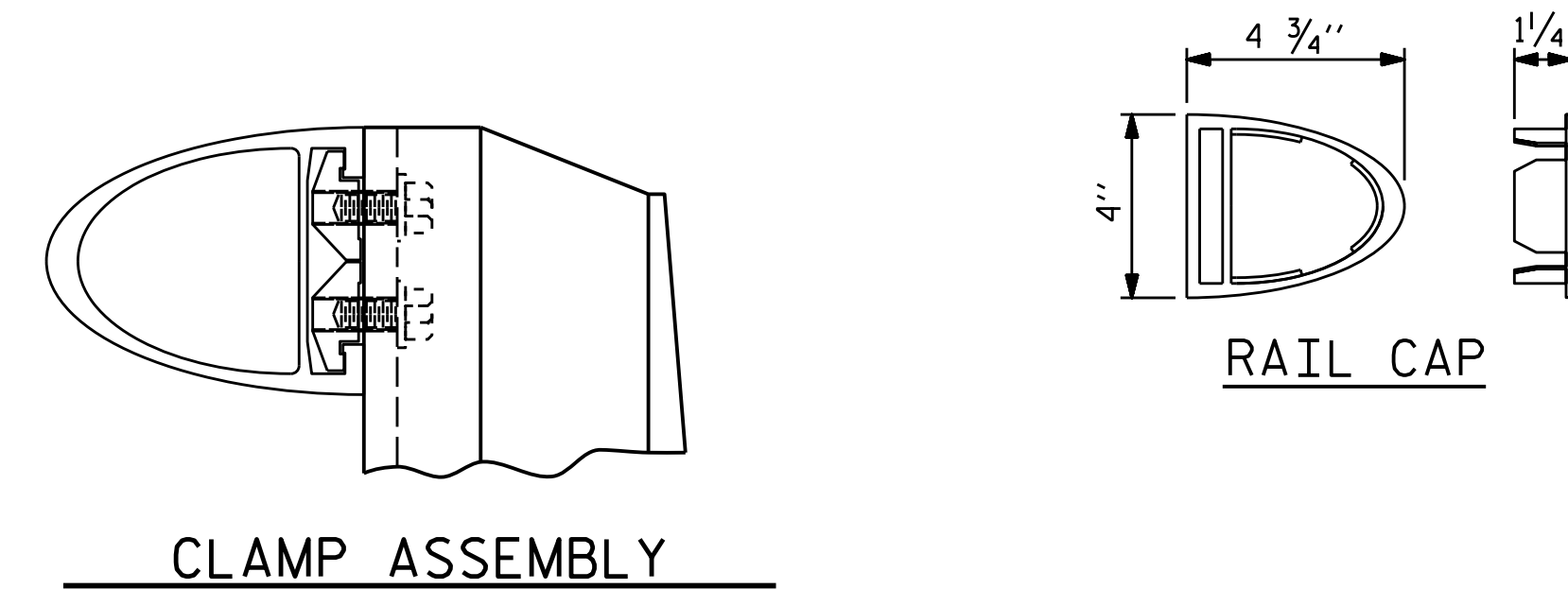


RAIL SECTION



CLAMP BAR DETAIL

(4 REQUIRED PER POST)



CLAMP ASSEMBLY

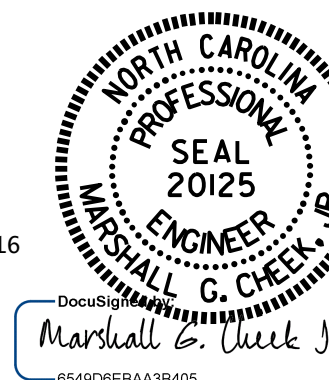
RAIL CAP

PROJECT NO. B-5125
 MACON COUNTY
 STATION: 13+25.89 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 2 BAR METAL RAIL



7/1/2016

ASSEMBLED BY : D. HODGE	DATE : 12/15
CHECKED BY : M.G. CHEEK	DATE : 4/16
DRAWN BY : EEM 6/94	REV. 8/16/99 MAB/LES
CHECKED BY : RGW 6/94	REV. 5/1/06R KMM/GM
	REV. 10/1/11 MAA/GM

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			43

STD. NO. BMR4

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 M11.

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

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

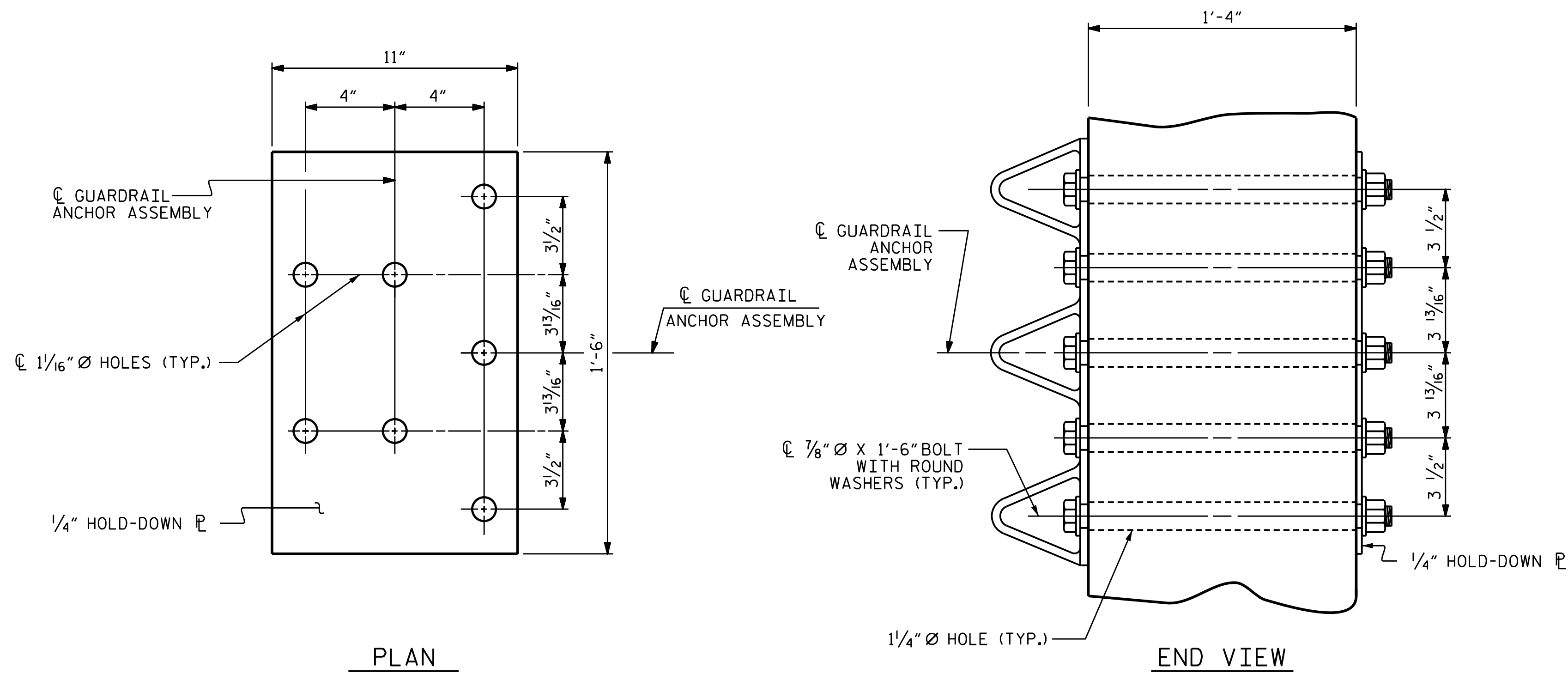
AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

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

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

THE 1 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.

ALL METAL SURFACES, INCLUDING PLATES, BOLTS, NUTS, AND WASHERS SHALL BE PAINTED DARK BROWN. SEE SPECIAL PROVISIONS FOR APPLICATION OF BRIDGE COATING.

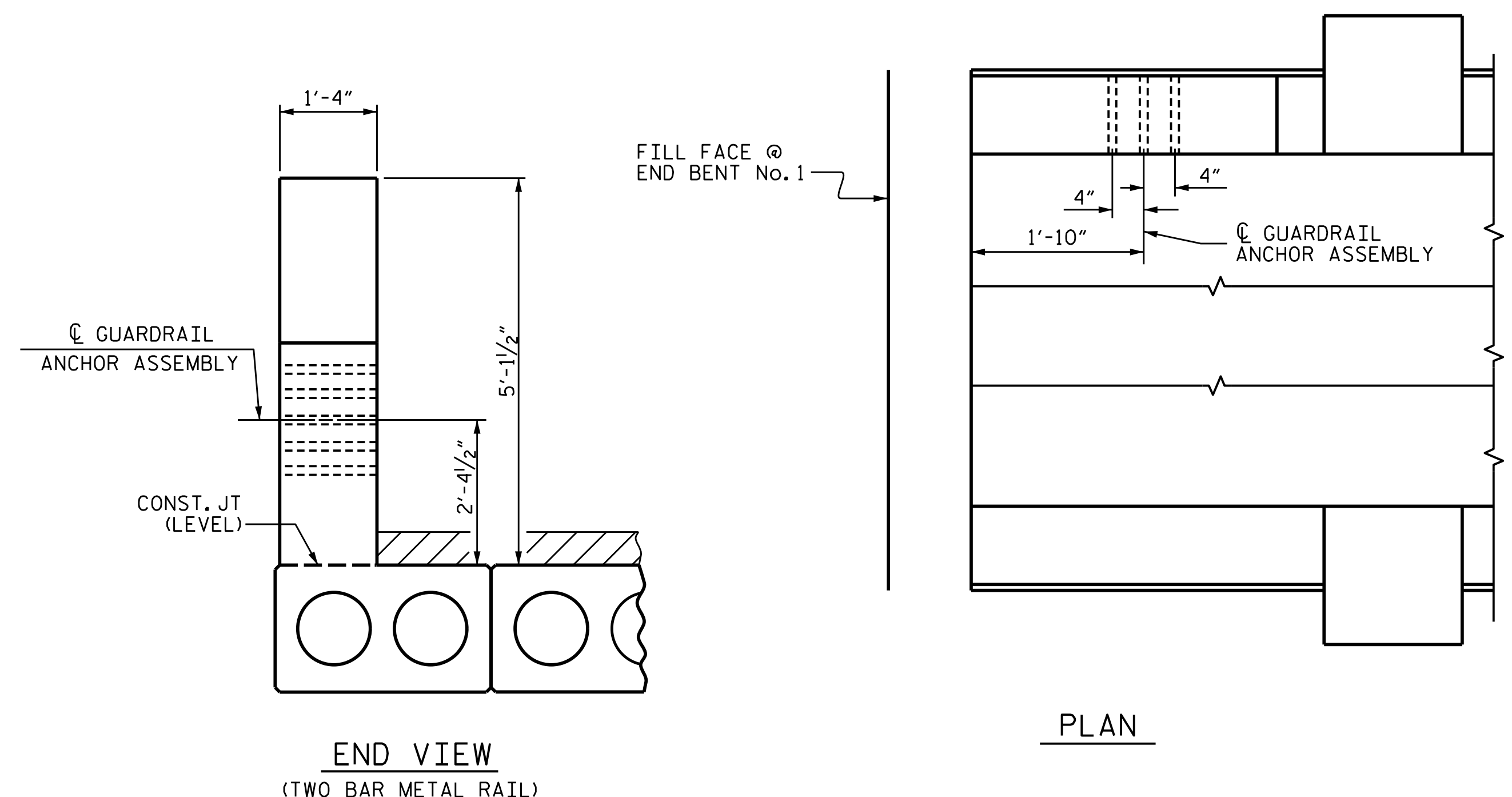


GUARDRAIL ANCHOR ASSEMBLY DETAILS



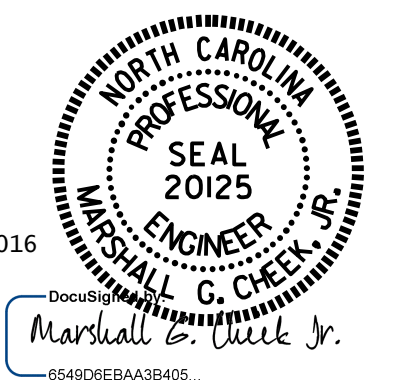
SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. B-5125
MACON COUNTY
 STATION: 13+25.89 -L-

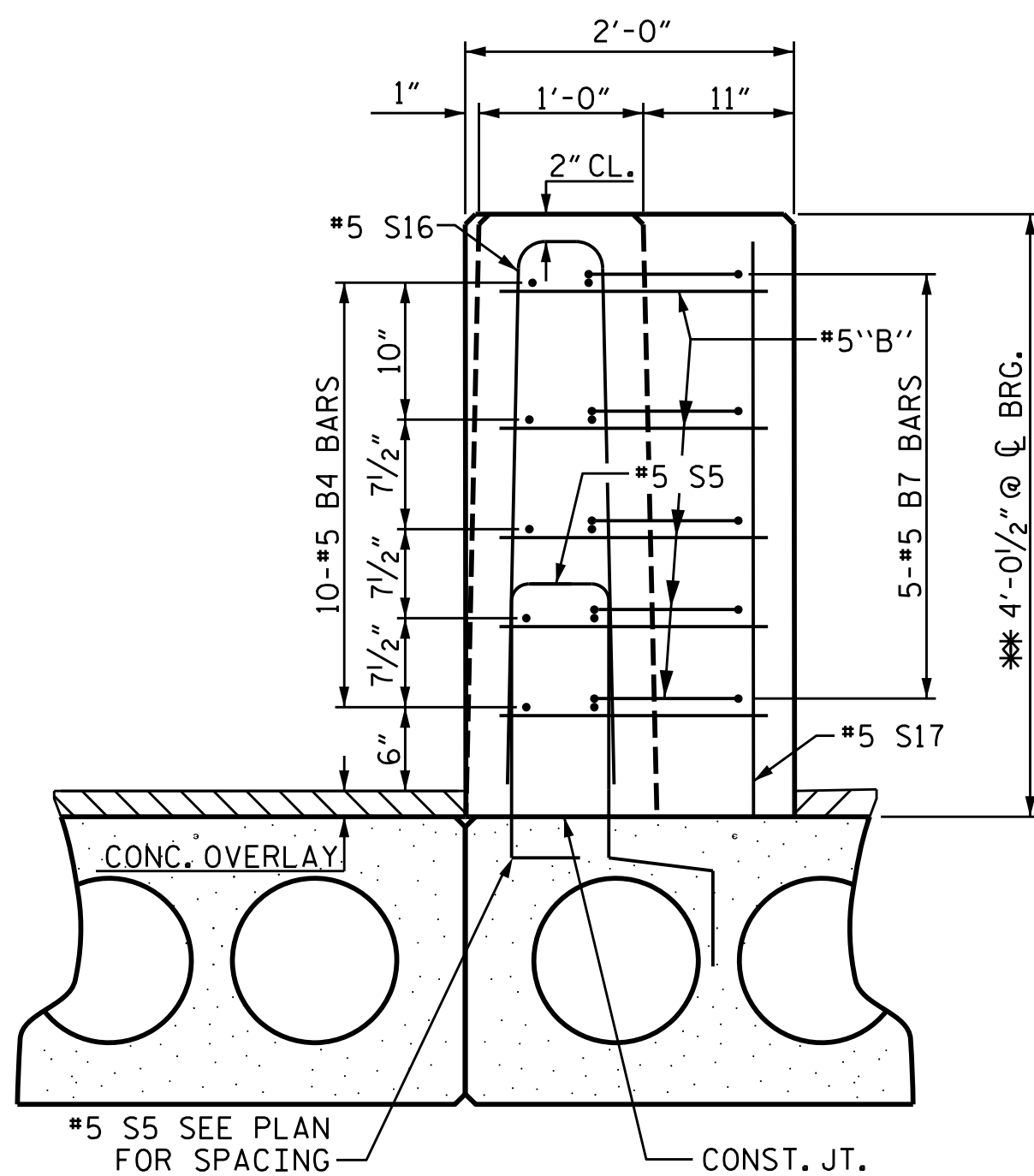


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 DETAILS
 FOR METAL RAILS

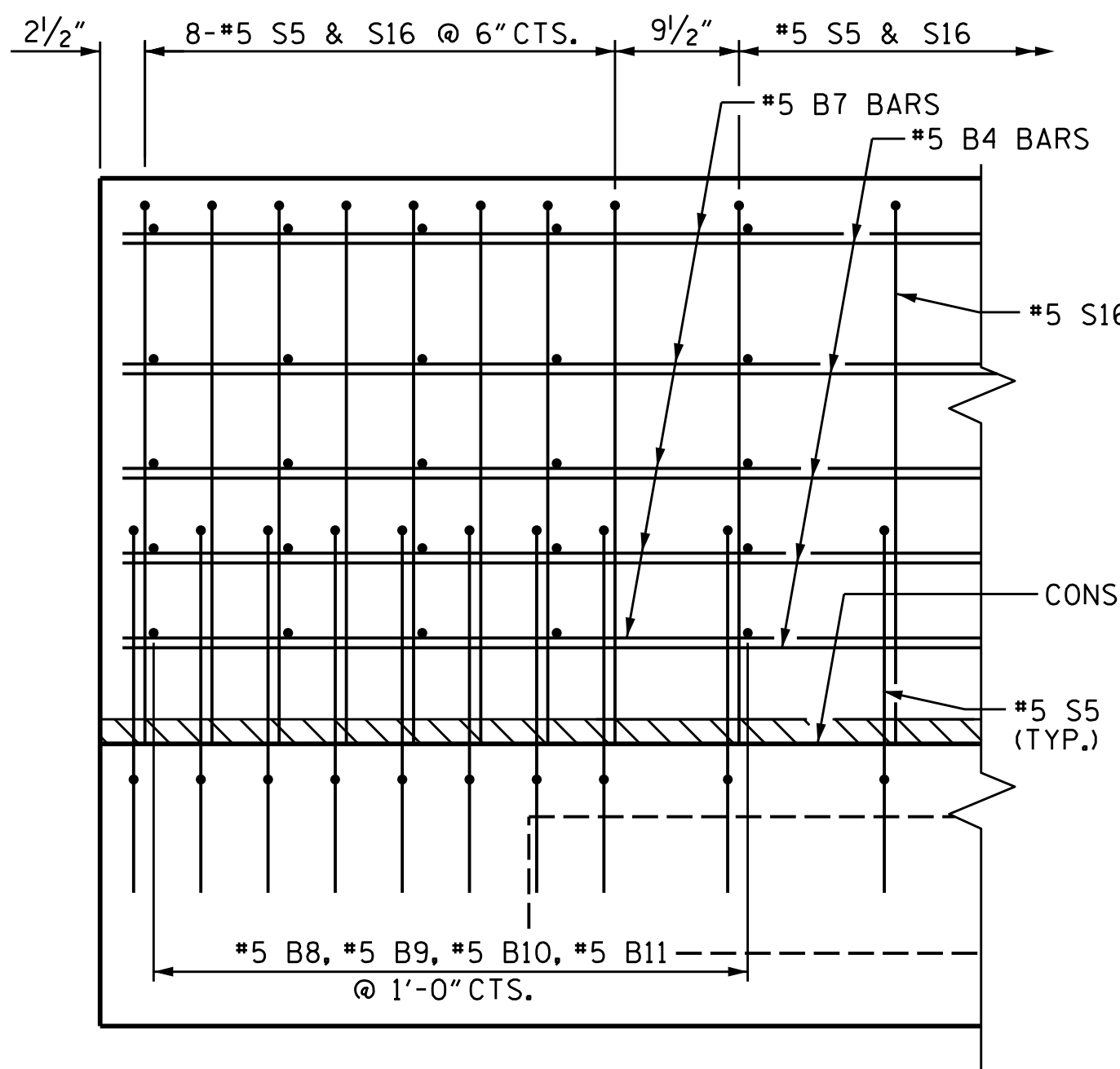
ASSEMBLED BY : W.J. HARRIS	DATE : 4/16
CHECKED BY : M.G. CHEEK	DATE : 4/16
DRAWN BY : MAA 5/10	REV. 12/5/11 MAA/GM
CHECKED BY : GM 5/10	REV. 6/13 MAA/GM
	REV. 1/15 MAA/TMG

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			43
2			4			

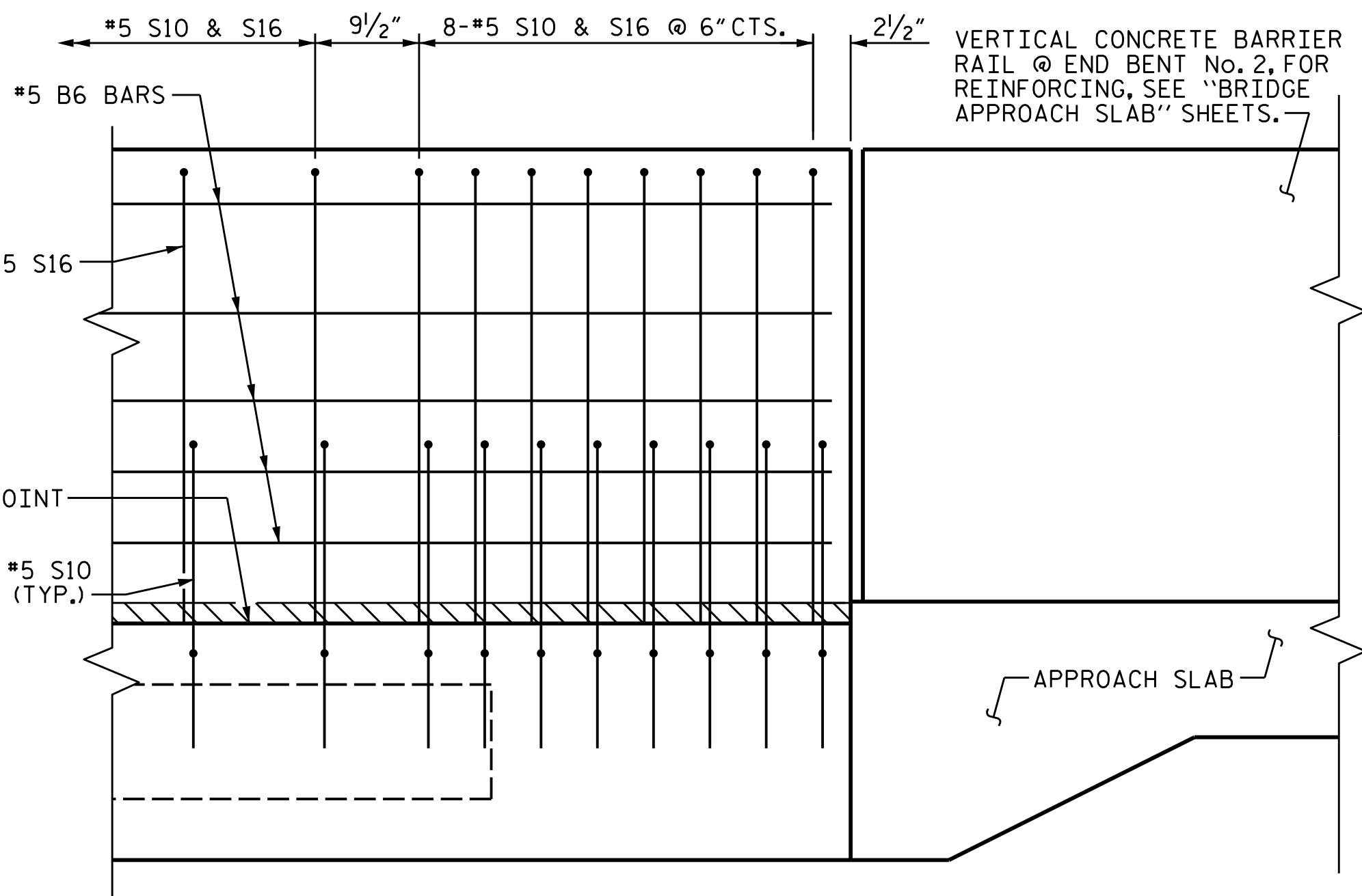
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



END VIEW AT END BENT No. 1



ELEVATION @ END BENT No. 1



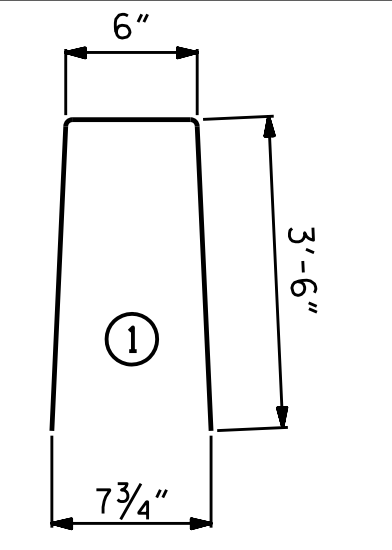
ELEVATION @ END BENT No. 2

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B4	20	#5	STR	19'-7"	409
* B5	60	#5	STR	24'-7"	1538
* B6	20	#5	STR	29'-7"	617
* B7	5	#5	STR	9'-2"	48
* B8	10	#5	STR	1'-6"	16
* B9	5	#5	STR	1'-4"	7
* B10	5	#5	STR	1'-2"	6
* B11	5	#5	STR	1'-0"	5
* S16	282	#5	1	7'-6"	2206
* S17	9	#5	STR	3'-6"	33

* EPOXY COATED REINFORCING STEEL	LBS.	4885
CLASS AA CONCRETE	CU.YDS.	41.1
VERTICAL CONC. BARRIER RAIL	265.38 LIN. FT.	
ARCHITECTURAL CONC. SURFACE TREATMENT	1885 SQ. FT.	

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

* THE MAXIMUM VERTICAL CONCRETE BARRIER RAIL HEIGHT IS SHOWN. THE HEIGHT OF THE BARRIER RAIL VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE CONCRETE WEARING SURFACE.

NOTES

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

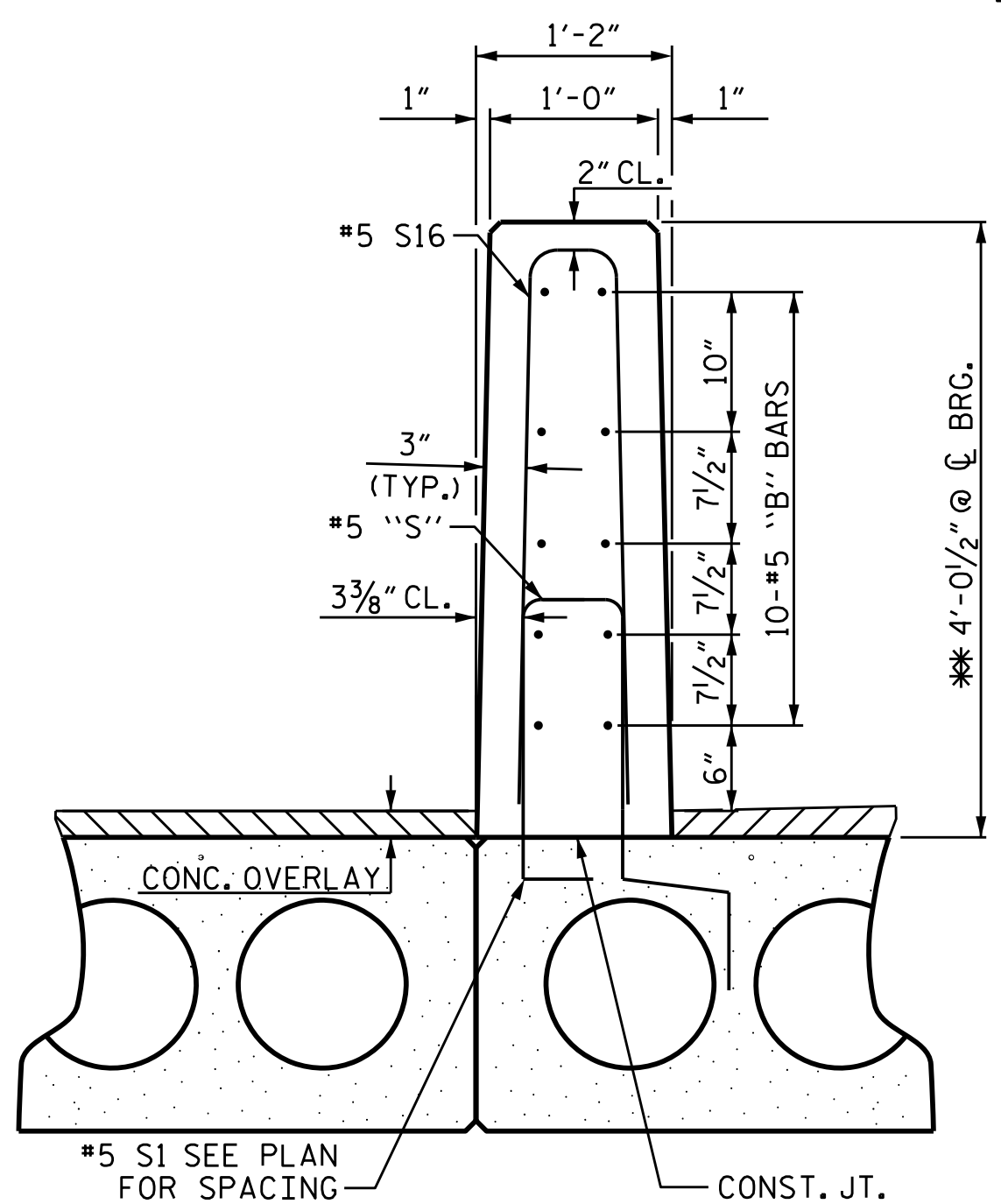
THE #5 "S" BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN PARAPET AND VERTICAL CONCRETE BARRIER RAIL.

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.

PAYMENT FOR THE VERTICAL CONCRETE BARRIER RAIL ON APPROACH SLAB No. 2 SHALL BE INCLUDED IN THE PRICE BID FOR "VERTICAL CONCRETE BARRIER RAIL".

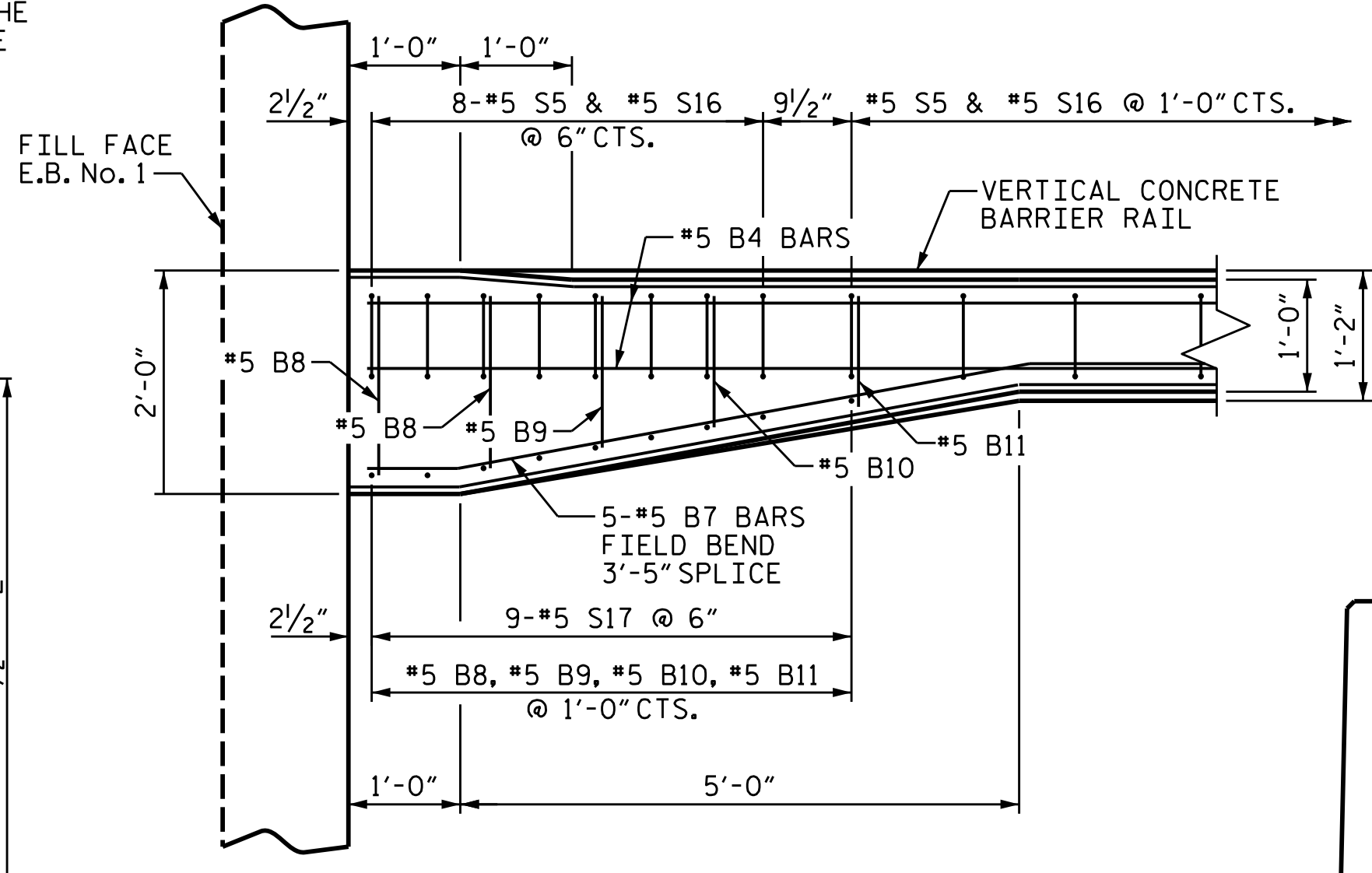
ARCHITECTURAL CONCRETE SURFACE TREATMENT SHALL BE APPLIED TO BOTH FACES OF THE VERTICAL CONCRETE BARRIER RAIL. FOR ARCHITECTURAL CONCRETE SURFACE TREATMENT, SEE SPECIAL PROVISIONS.

CONCRETE STAIN SHALL BE APPLIED TO THE TOP SURFACE OF THE VERTICAL CONCRETE BARRIER RAIL. FOR APPLICATION OF BRIDGE COATING, SEE SPECIAL PROVISIONS.

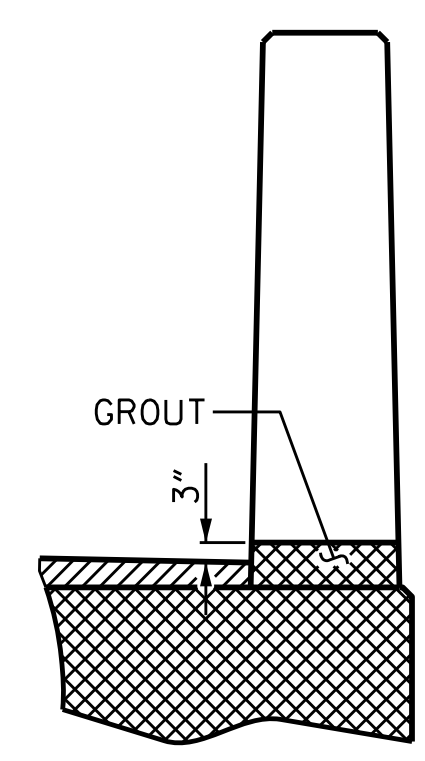


SECTION THRU RAIL

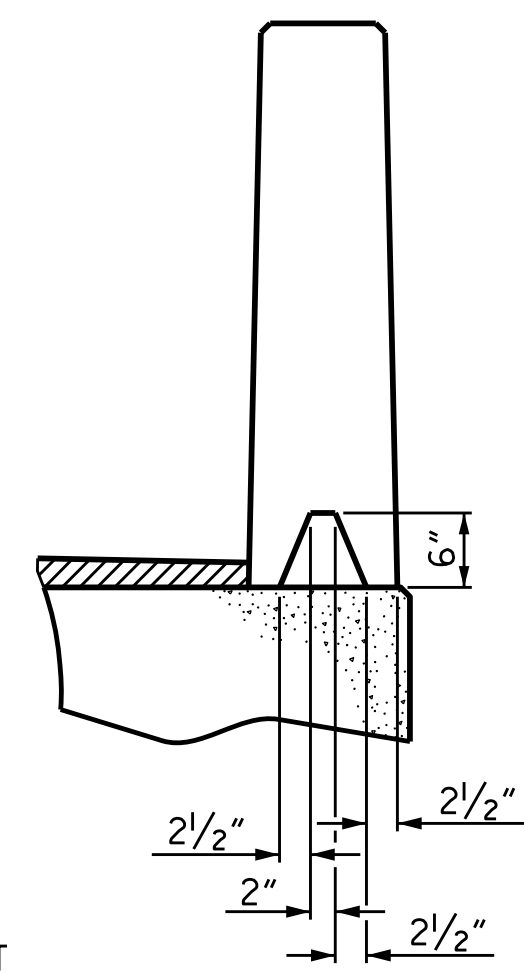
1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS. (NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED)



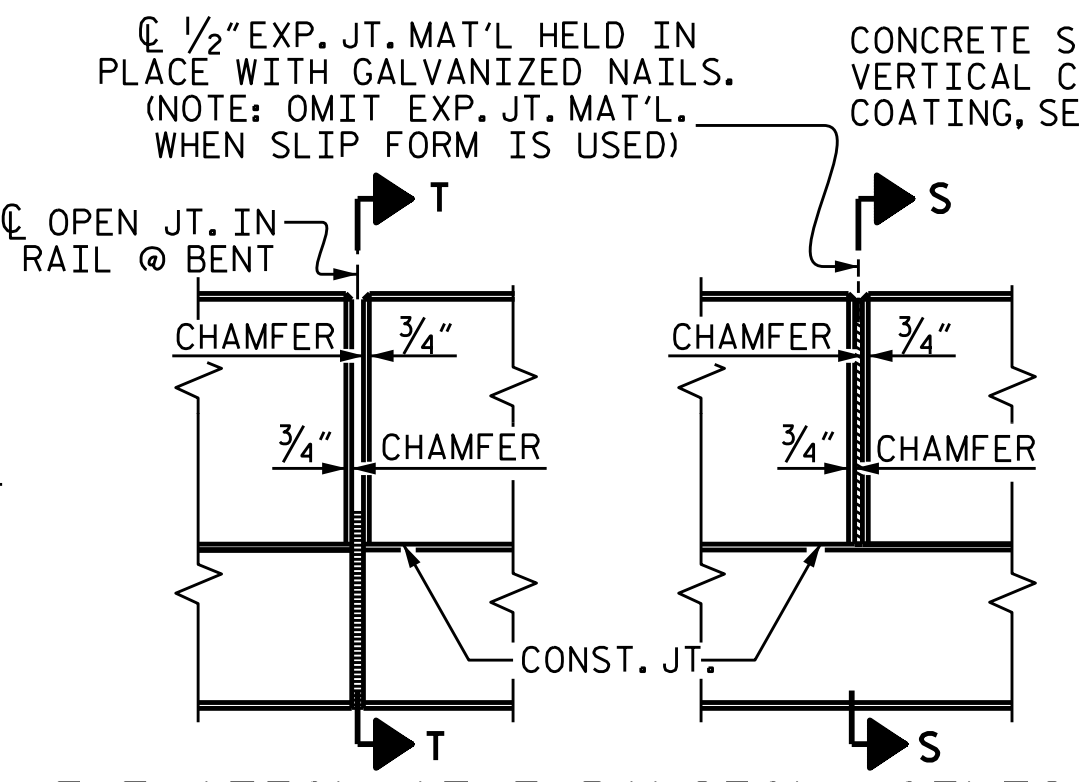
PLAN @ END BENT No. 1



SECTION T-T AT OPEN JOINT AT BENT



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



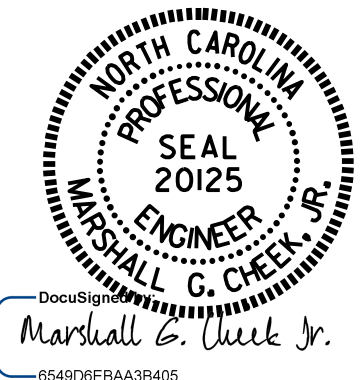
ELEVATION AT EXPANSION JOINTS

VERTICAL CONCRETE BARRIER RAIL DETAILS

PROJECT NO. B-5125
MACON COUNTY
 STATION: 13+25.89 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

VERTICAL CONCRETE BARRIER RAIL



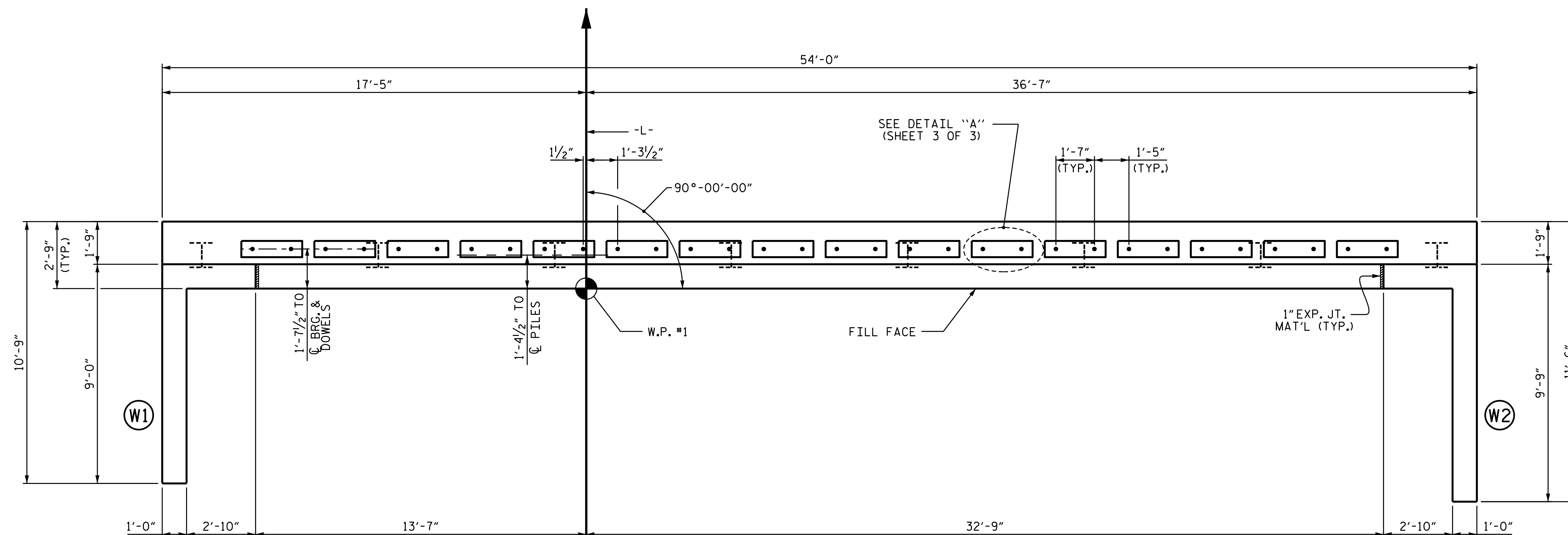
DRAWN BY :	W.J. HARRIS	DATE :	4/16
CHECKED BY :	M.G. CHEEK	DATE :	4/29/16
DESIGN ENGINEER OF RECORD:	W.J. HARRIS	DATE :	5/16

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

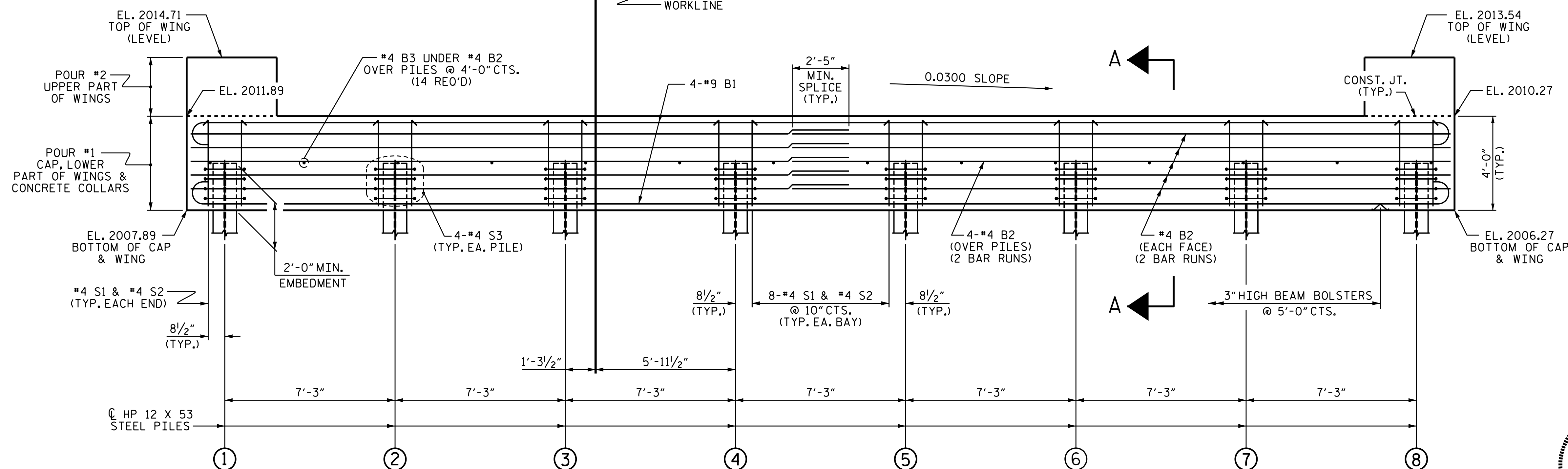
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-24
2			4			43

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
 FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.
 FOR WING DETAILS, SEE SHEET 2 OF 3.
 INSTALL THE 4" DIA. DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED APPROACH FILL, SEE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
 FOR SECTION A-A, SEE SHEET 3 OF 3.
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 3 OF 3.

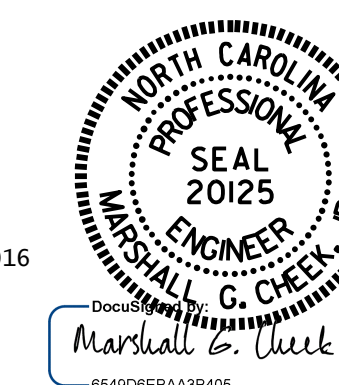
TOP OF PILE ELEVATIONS	
①	2009.83
②	2009.61
③	2009.39
④	2009.17
⑤	2008.96
⑥	2008.74
⑦	2008.52
⑧	2008.30

PROJECT NO. B-5125
MACON COUNTY
 STATION: 13+25.89 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1

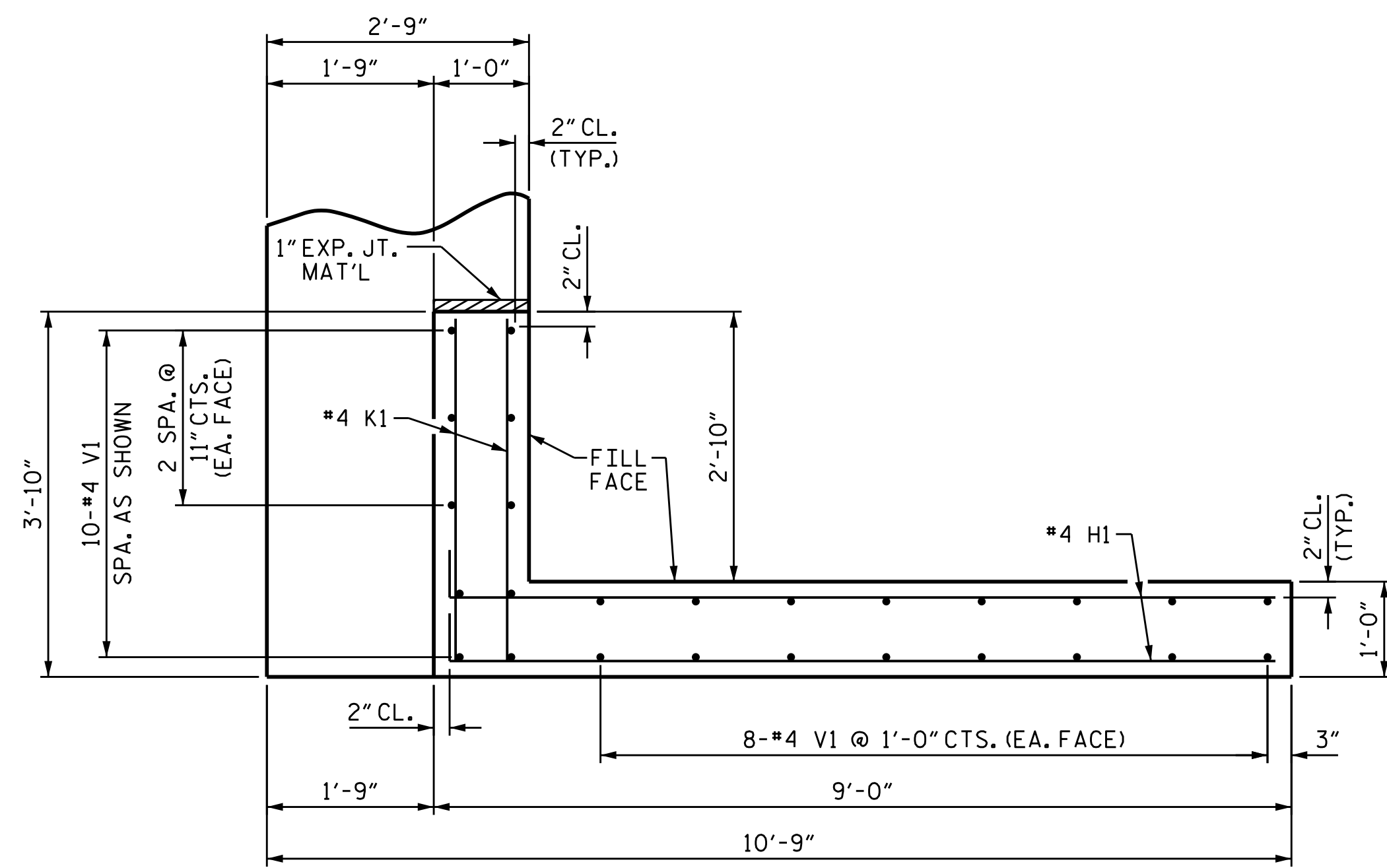


7/1/2016

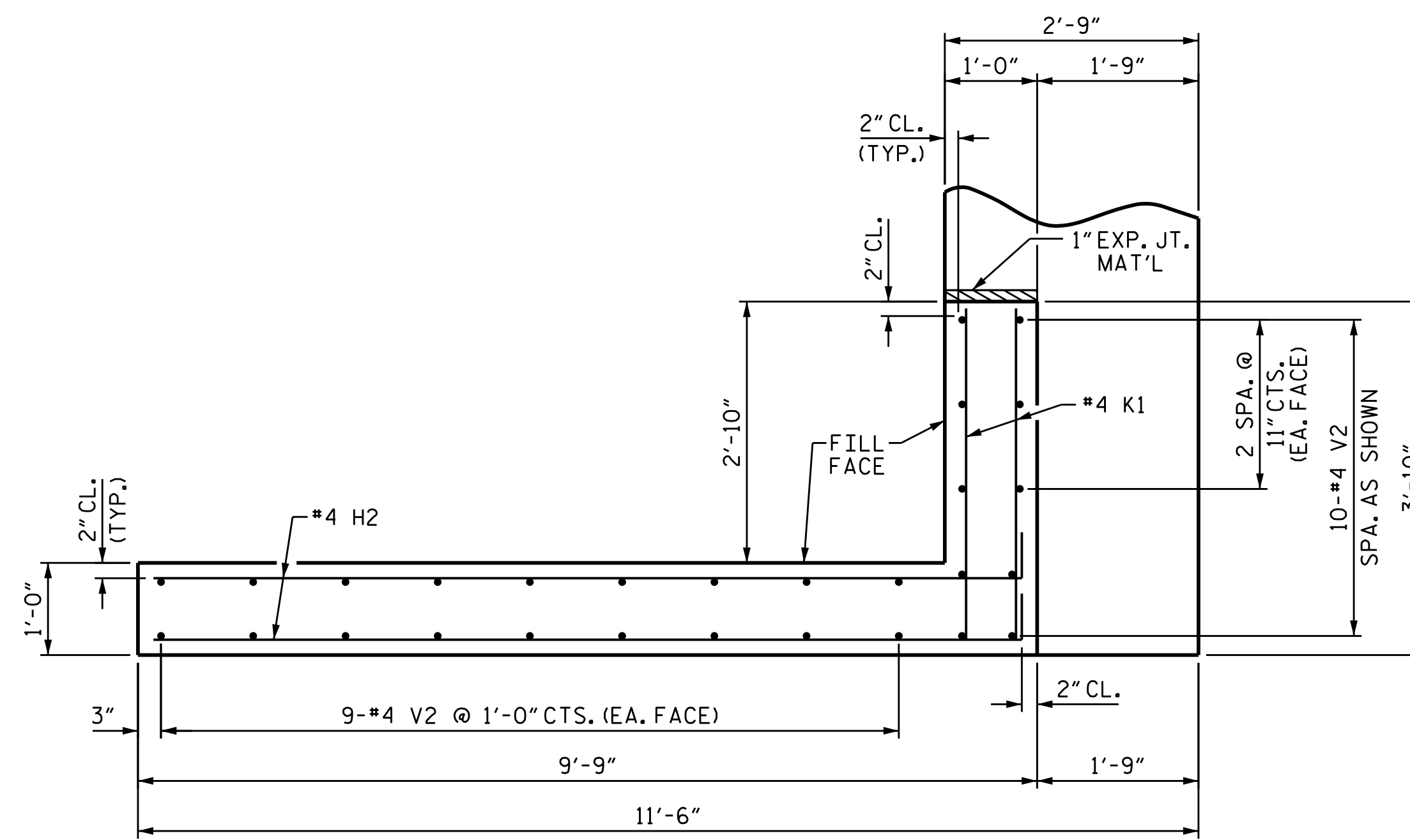
DRAWN BY : B.N. GRADY DATE : 4-16
 CHECKED BY : H. T. BARBOUR DATE : 4-18-16
 DESIGN ENGINEER OF RECORD: W.J. HARRIS DATE : 5-16

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

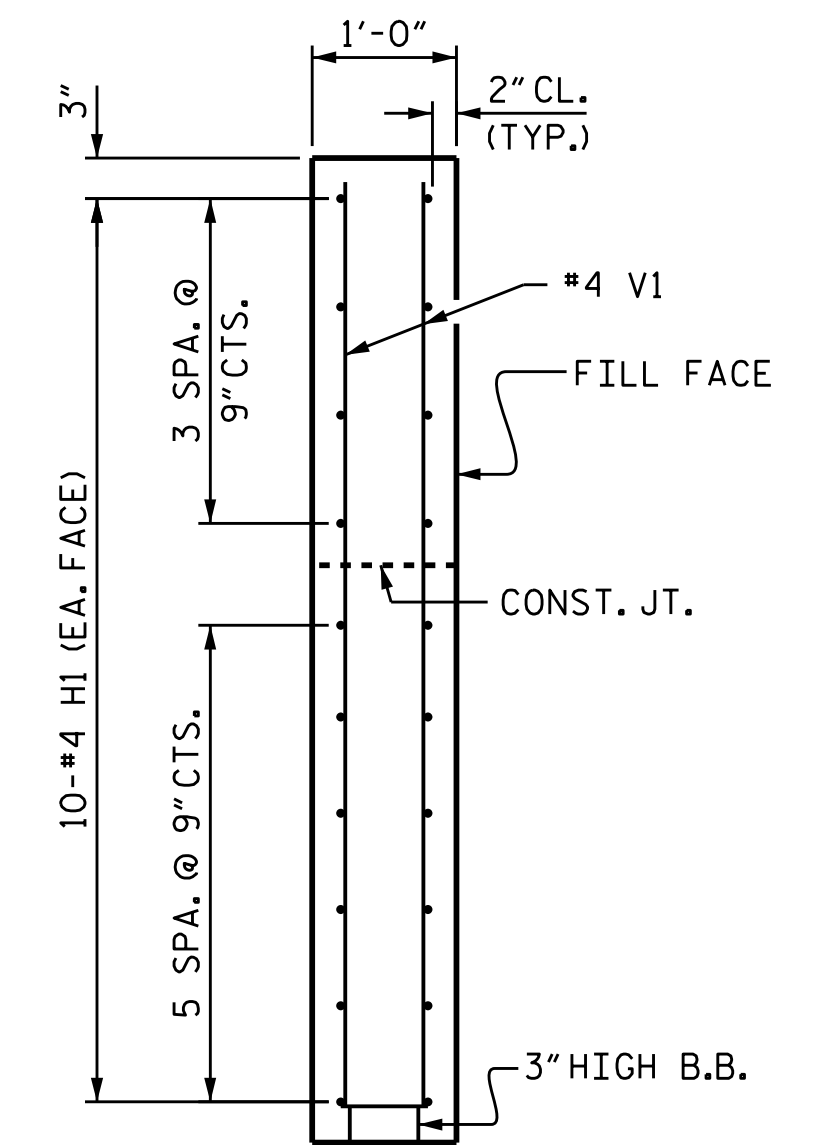
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-25
2			4			43



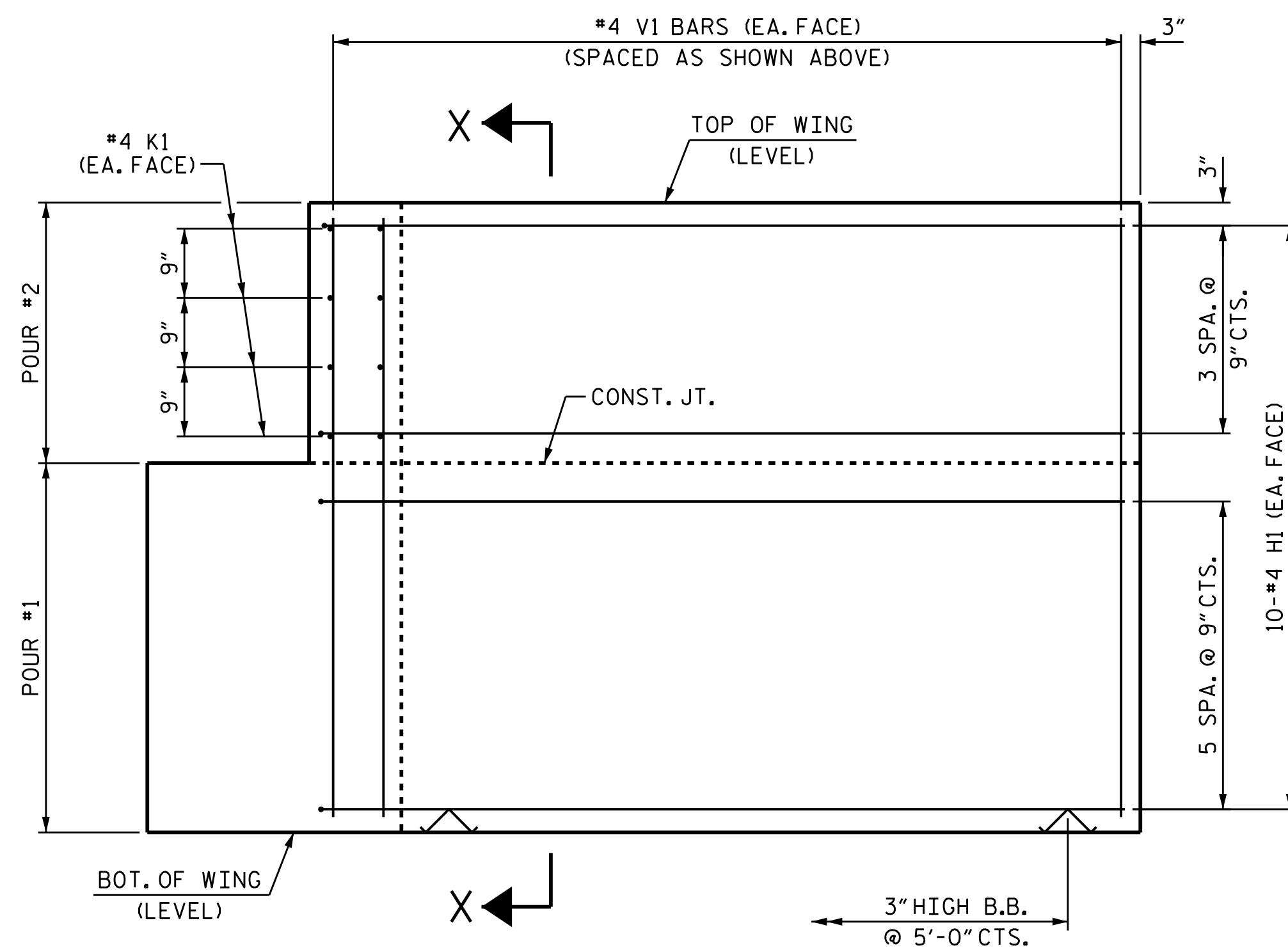
PLAN OF WING (W1)



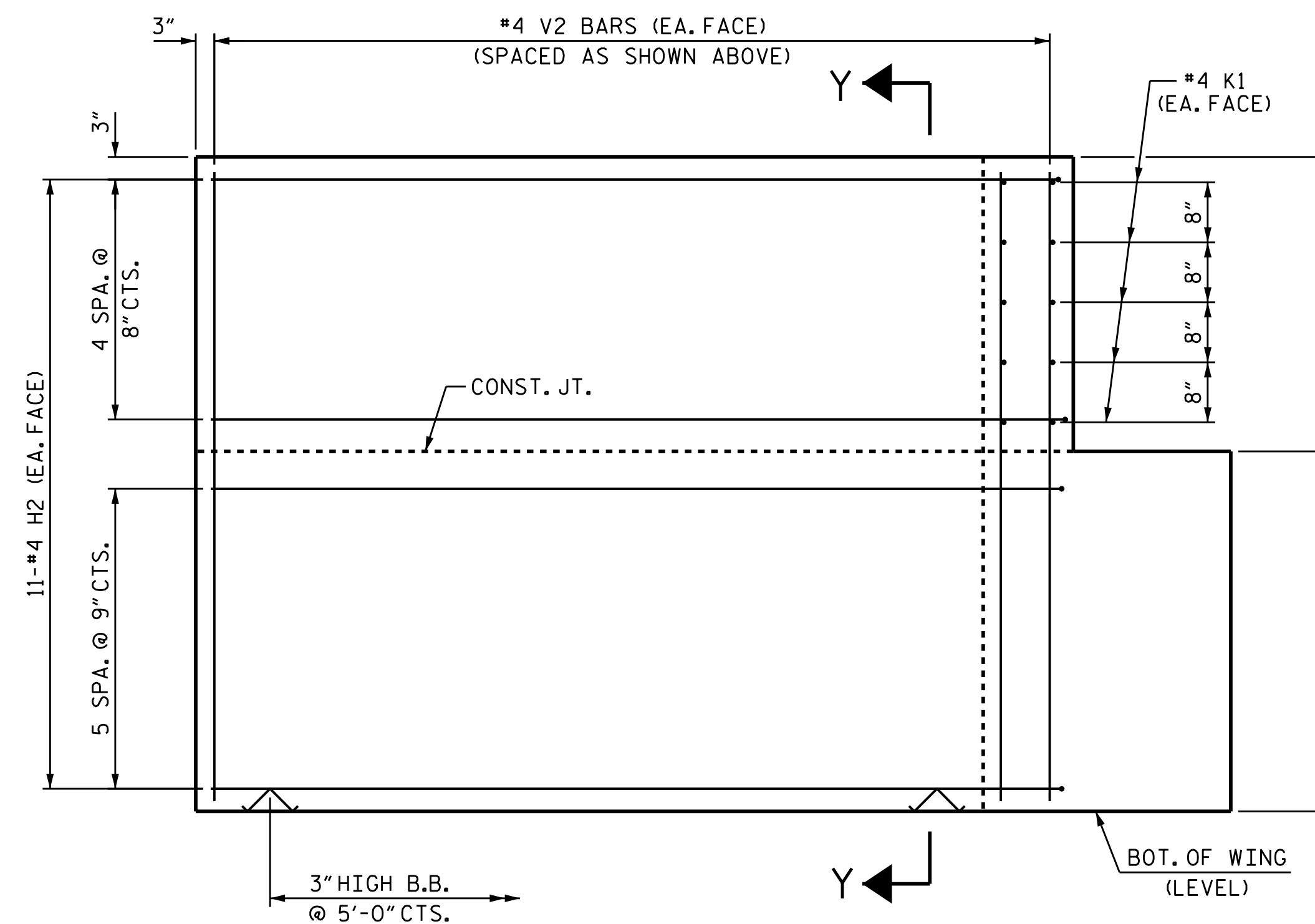
PLAN OF WING (W2)



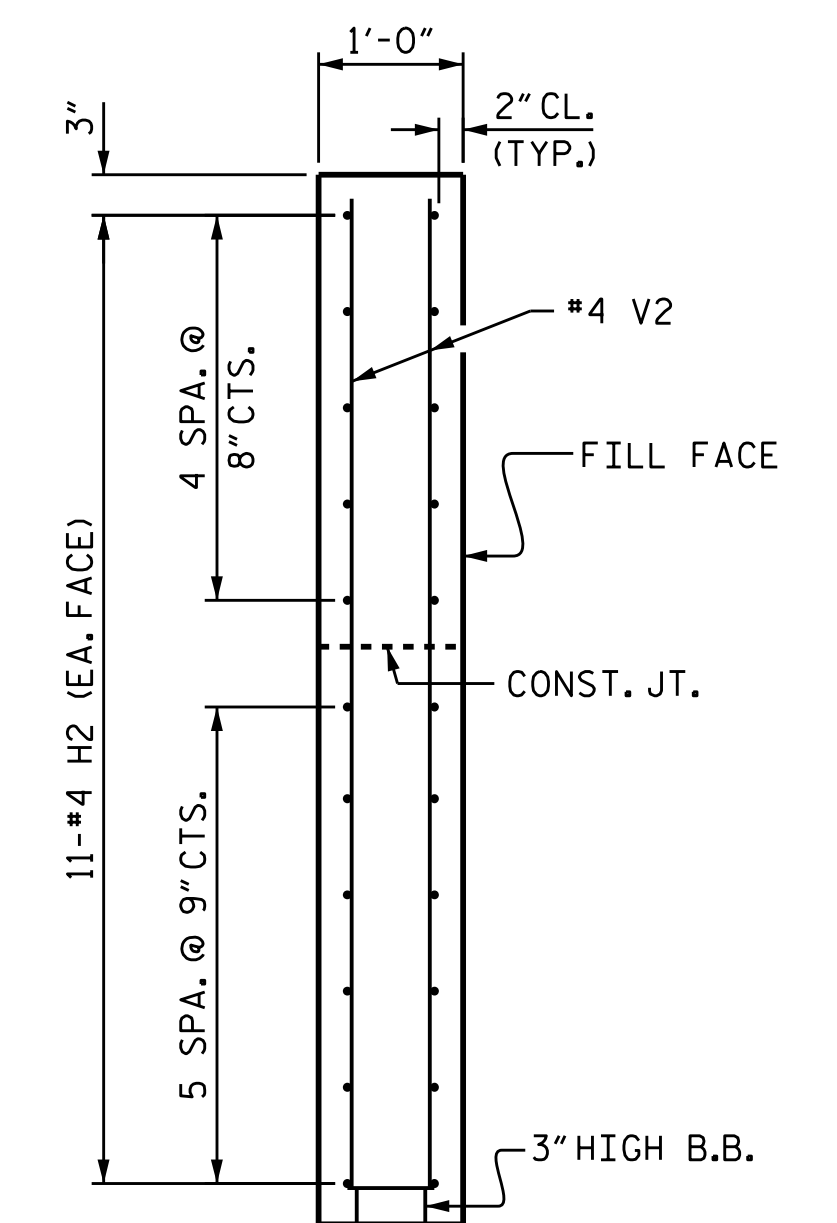
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

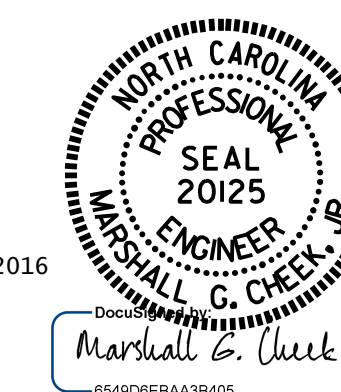


SECTION Y-Y

PROJECT NO. B-5125
 MACON COUNTY
 STATION: 13+25.89 -L-

SHEET 2 OF 3

7/1/2016



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

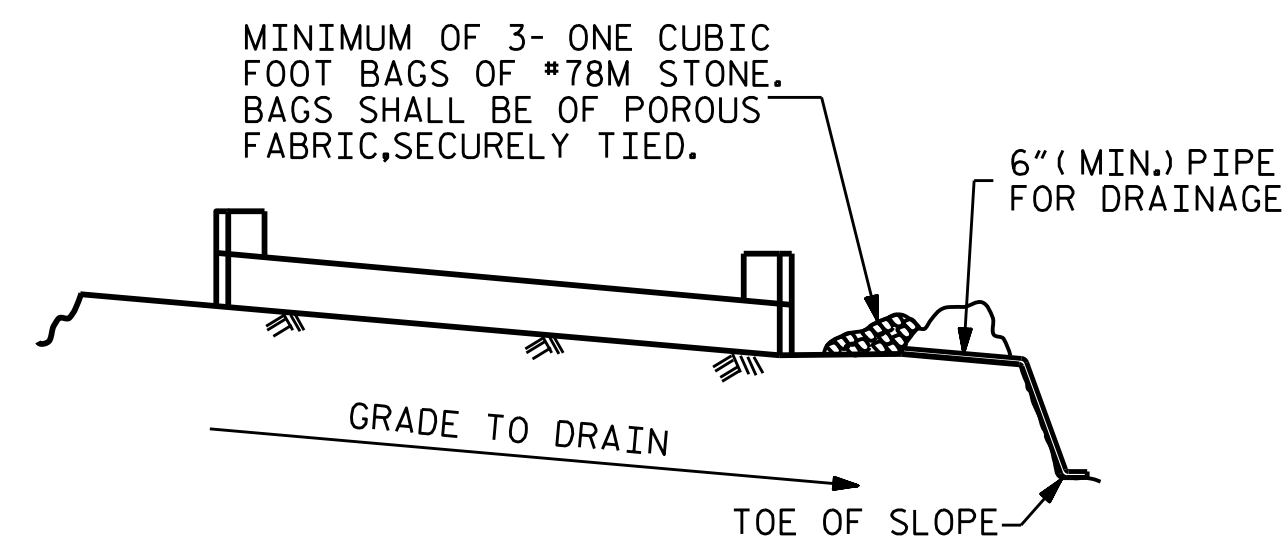
SUBSTRUCTURE
 END BENT No. 1
 WING DETAILS

DRAWN BY : B.N. GRADY DATE : 4-16
 CHECKED BY : H. T. BARBOUR DATE : 4-18-16
 DESIGN ENGINEER OF RECORD: W.J. HARRIS DATE : 5-16

WING DETAILS

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			43

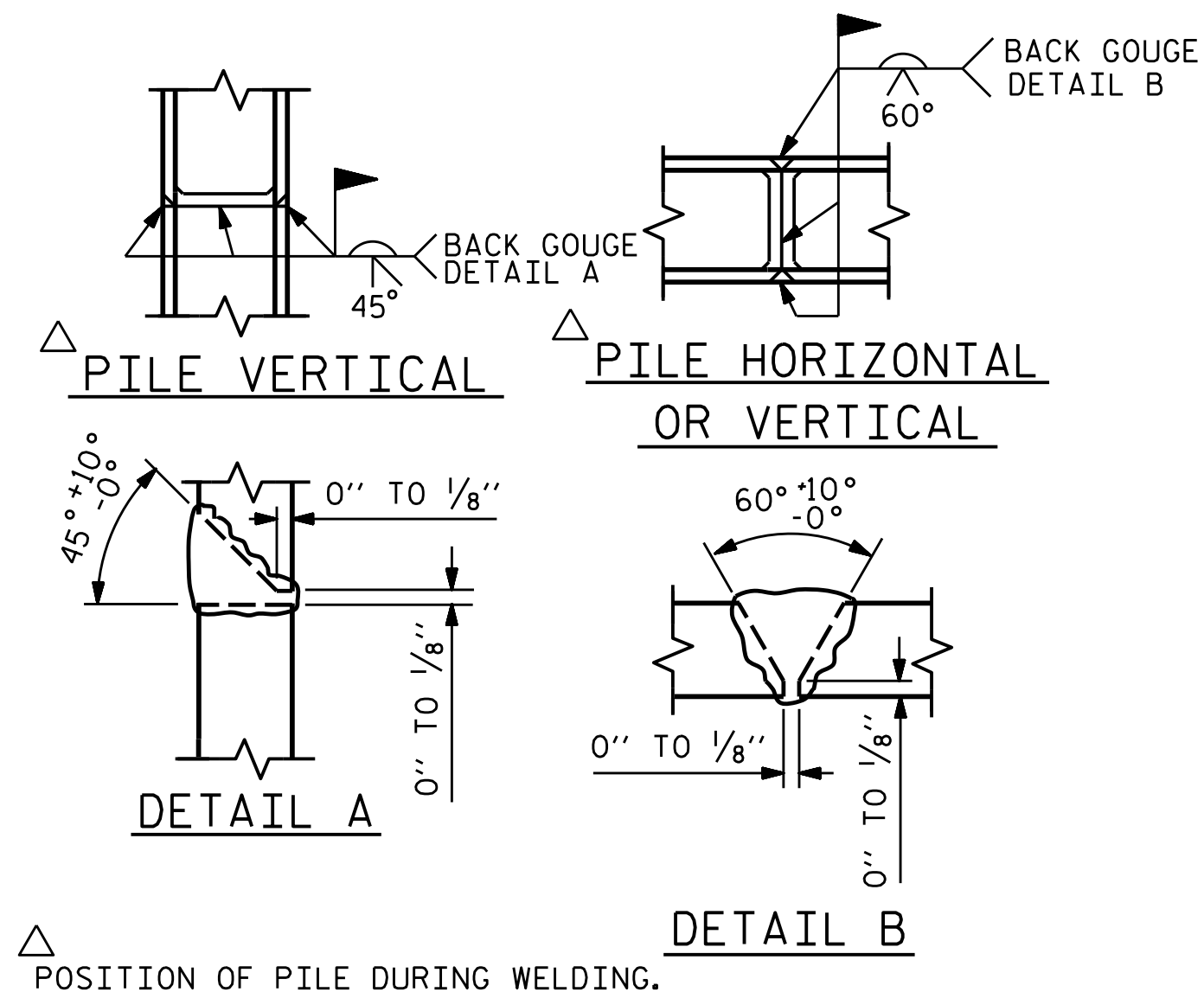


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

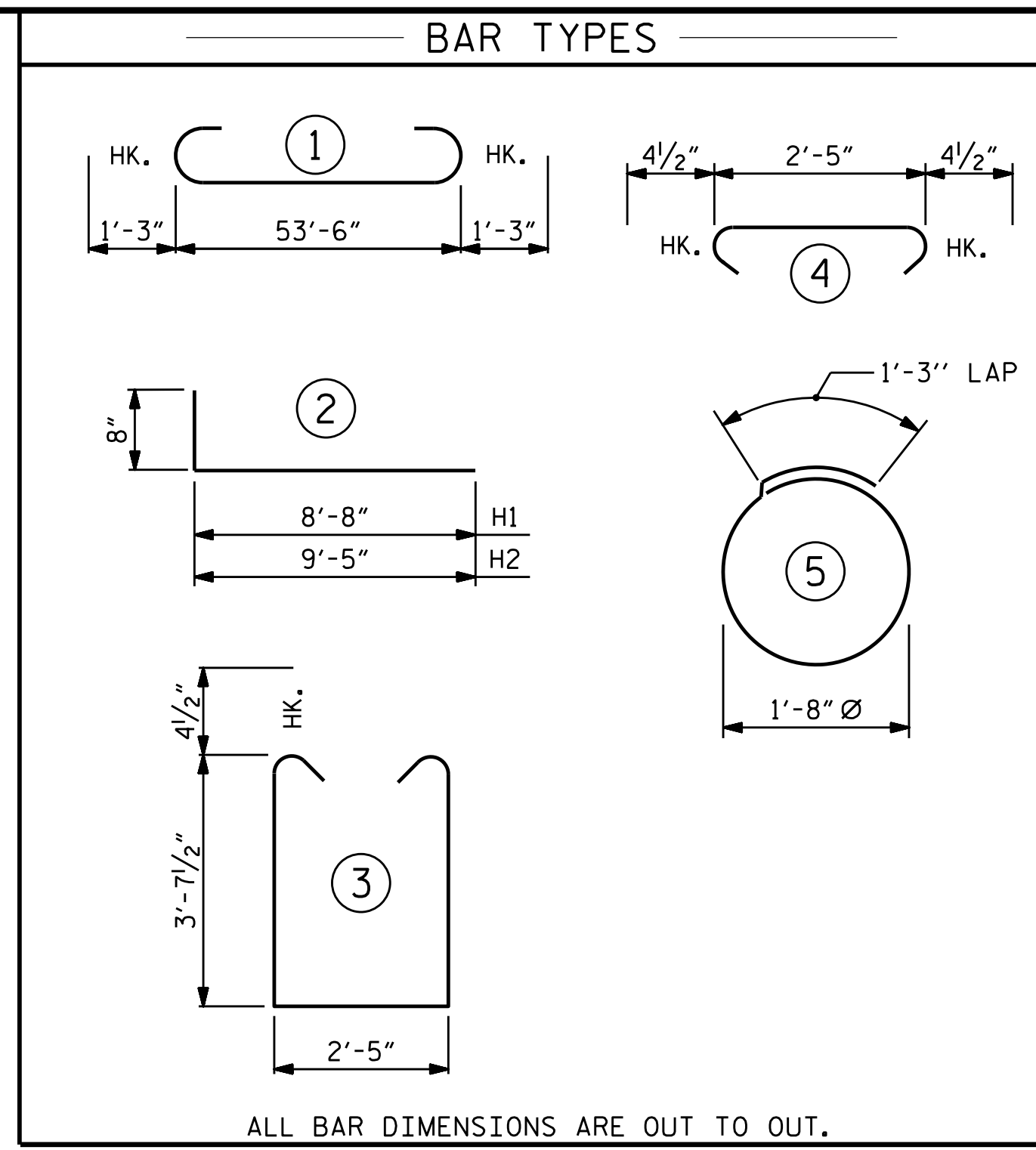
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

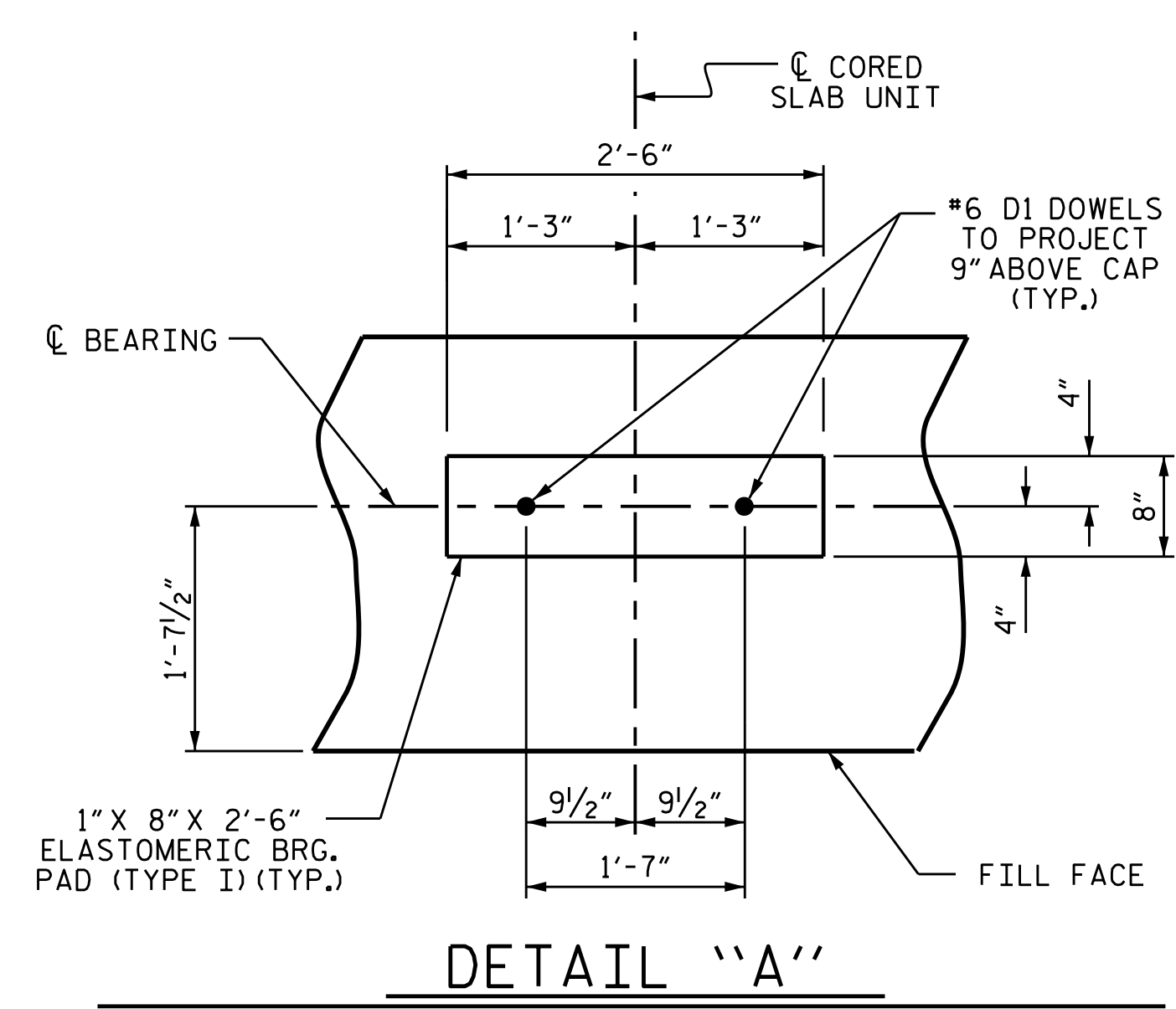


PILE SPLICE DETAILS

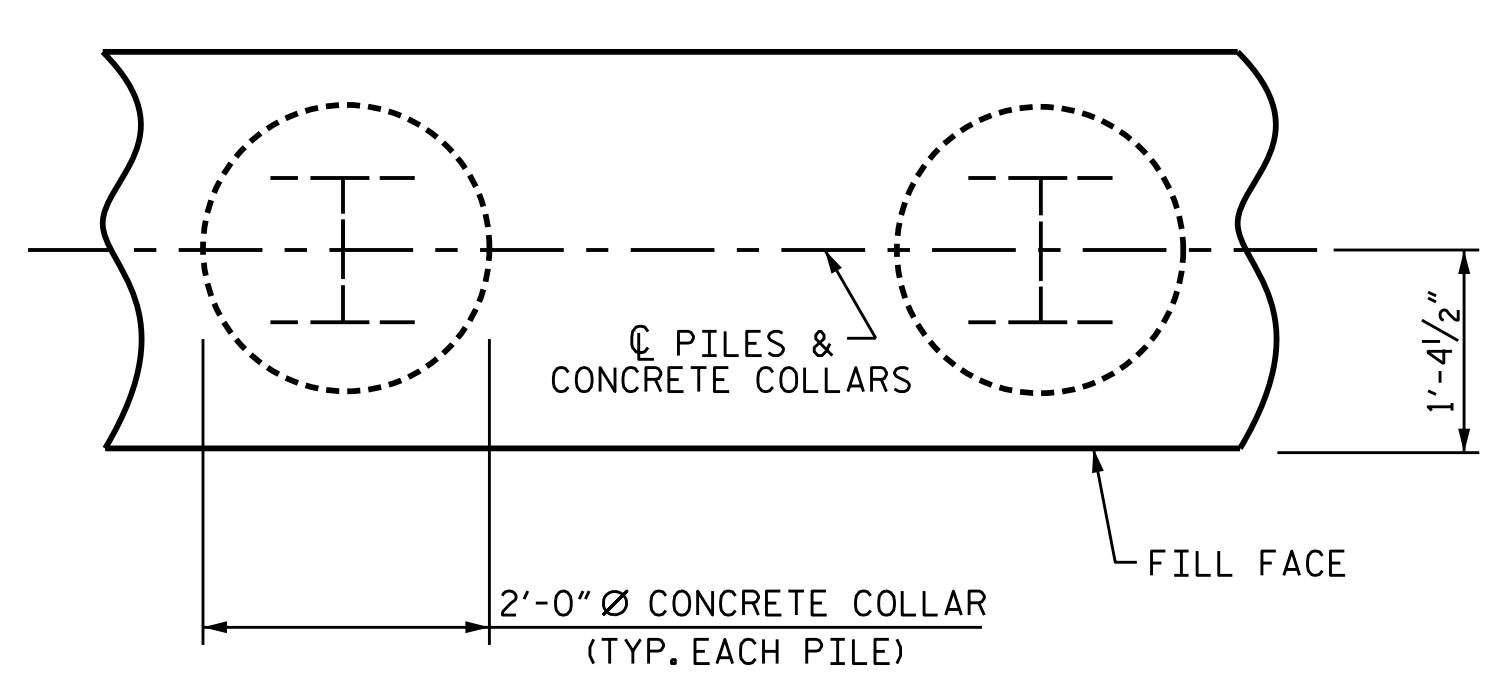


ALL BAR DIMENSIONS ARE OUT TO OUT.

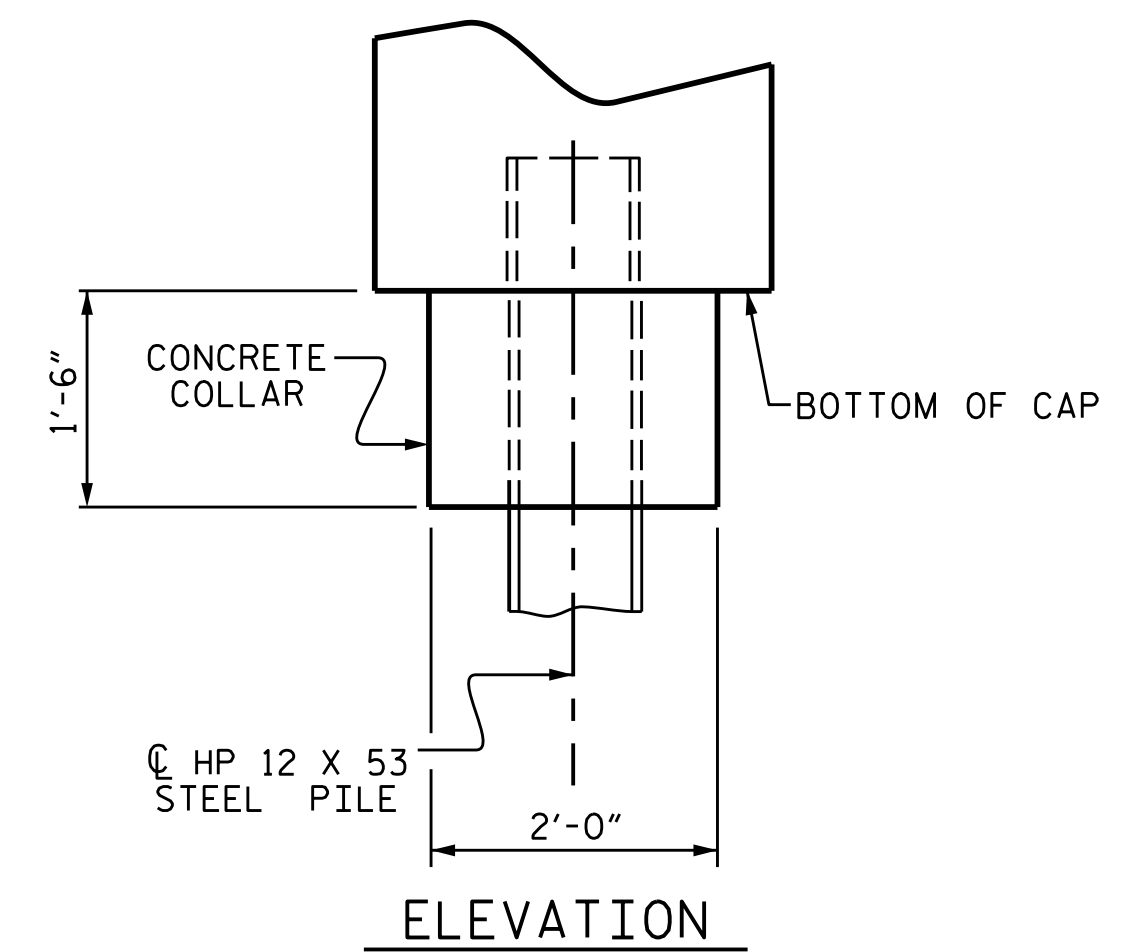
BILL OF MATERIAL					
END BENT No. 1					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	#9	1	56'-0"	1523	
B2	#4	STR	28'-1"	525	
B3	#4	STR	2'-5"	23	
D1	#6	STR	1'-6"	72	
H1	#4	2	9'-4"	125	
H2	#4	2	10'-1"	148	
K1	#4	STR	3'-6"	42	
S1	#4	3	10'-5"	404	
S2	#4	4	3'-2"	123	
S3	#4	5	6'-6"	139	
V1	#4	STR	6'-5"	111	
V2	#4	STR	6'-11"	129	
REINFORCING STEEL				3364 LBS.	
CLASS A CONCRETE BREAKDOWN					
POUR #1	CAP, LOWER PART OF WINGS & COLLARS			25.9 C.Y.	
POUR #2	UPPER PART OF WINGS			2.8 C.Y.	
TOTAL CLASS A CONCRETE				28.7 C.Y.	
HP 12 X 53 STEEL PILES					
NO: 8				LIN. FT. = 200	
STEEL PILE POINTS				8 EA.	



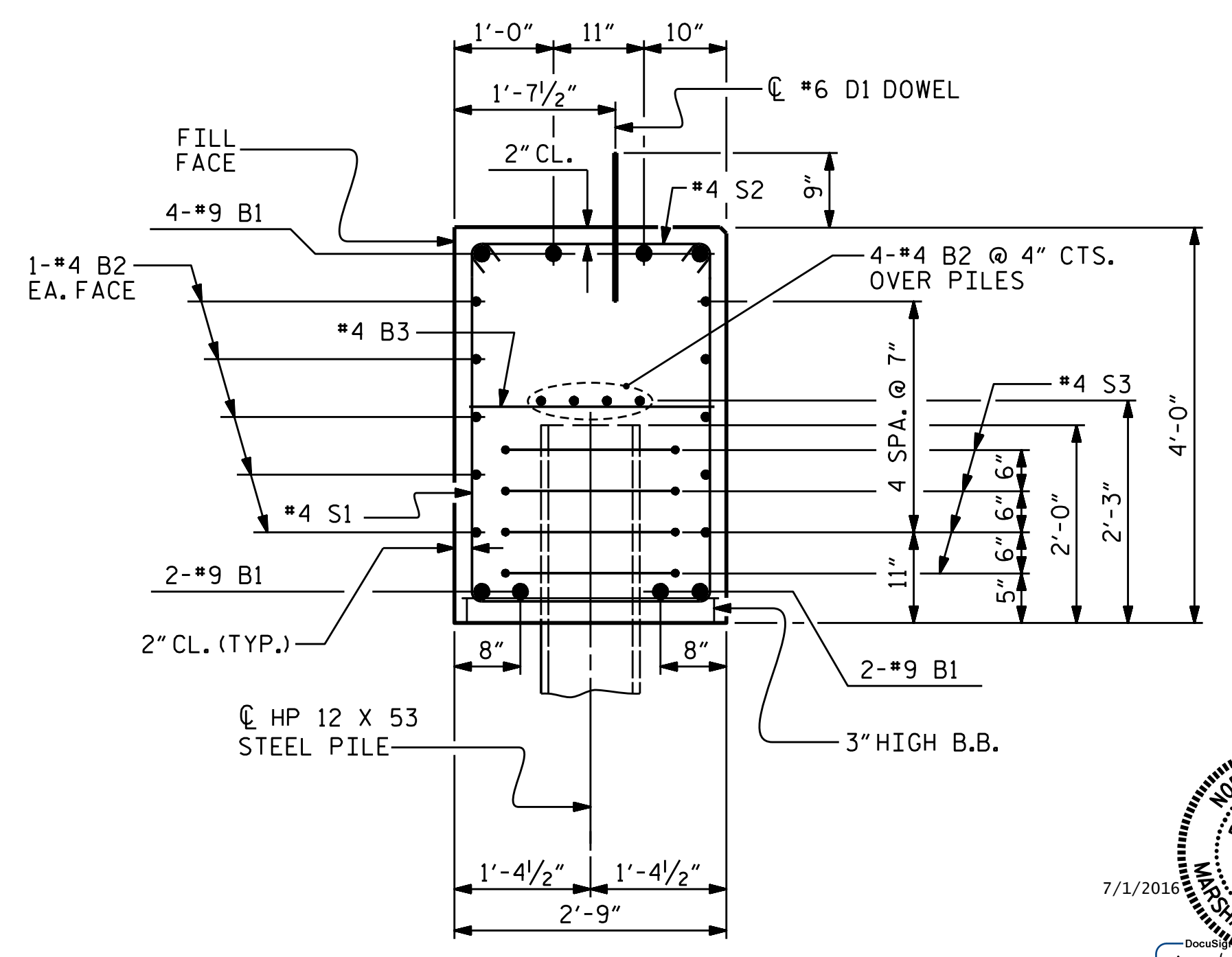
DETAIL "A"



PLAN CORROSION PROTECTION FOR STEEL PILES DETAIL

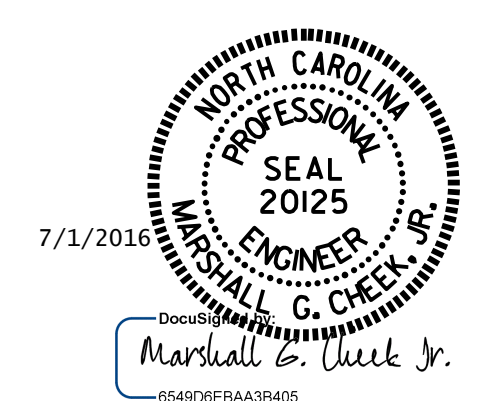


ELEVATION



SECTION A-A

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

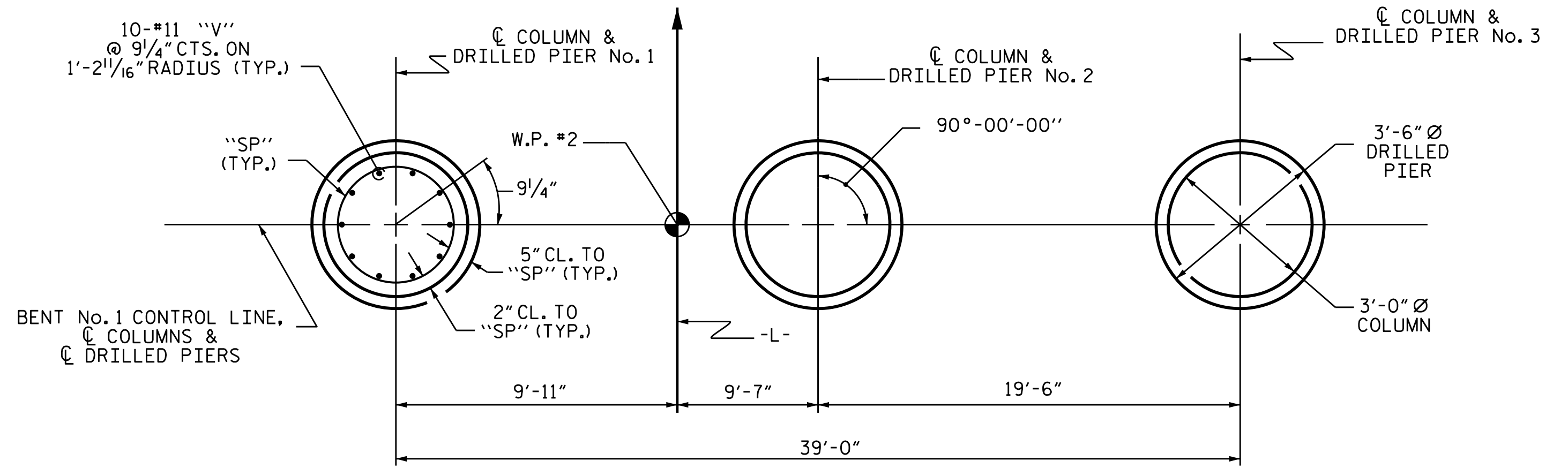


PROJECT NO. B-5125
 MACON COUNTY
 STATION: 13+25.89 -L-

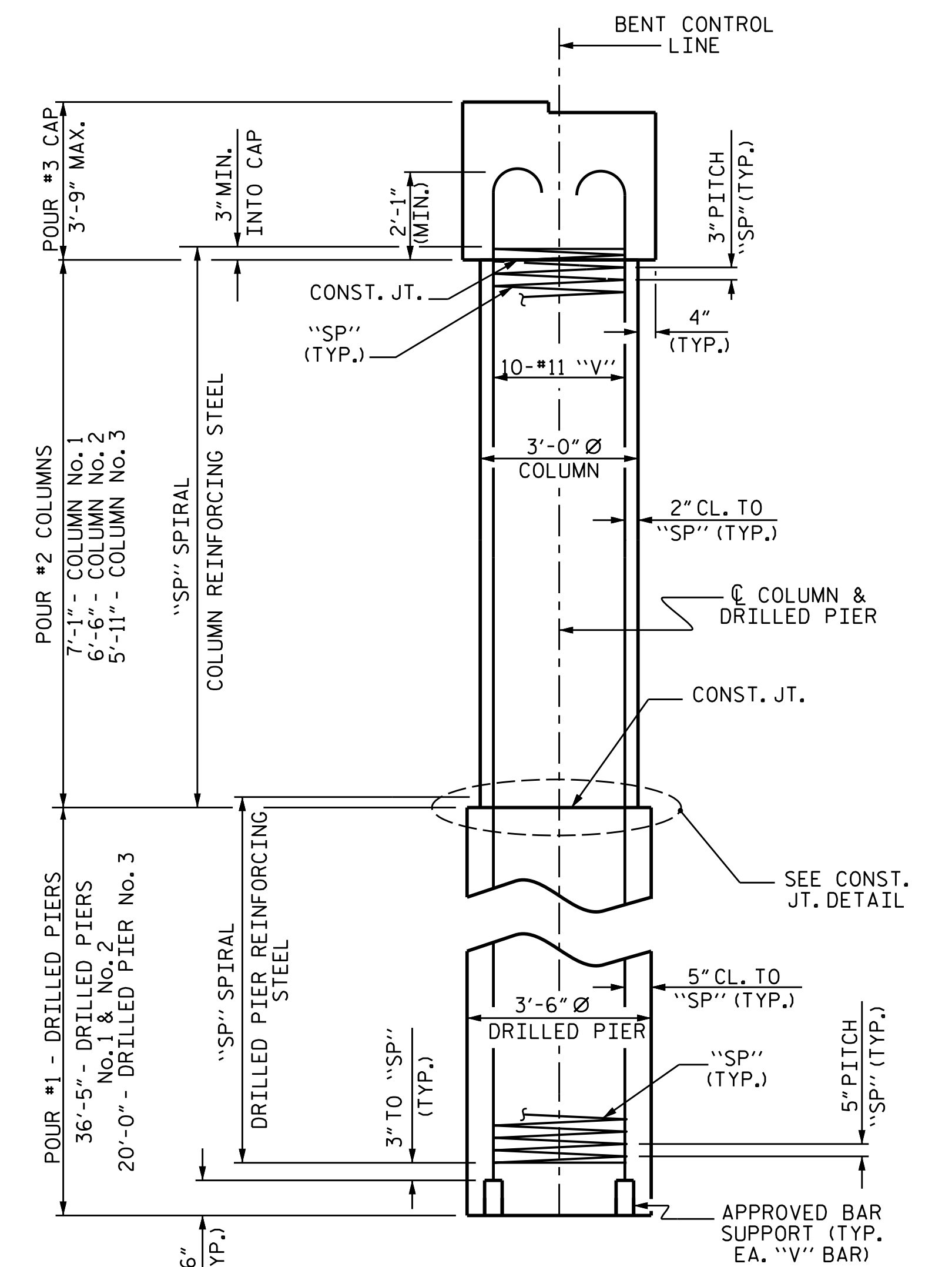
SHEET 3 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT No. 1
 DETAILS

DRAWN BY : B.N. GRADY DATE : 4/16
 CHECKED BY : H. T. BARBOUR DATE : 4-18-16
 DESIGN ENGINEER OF RECORD: W.J. HARRIS DATE : 5-16

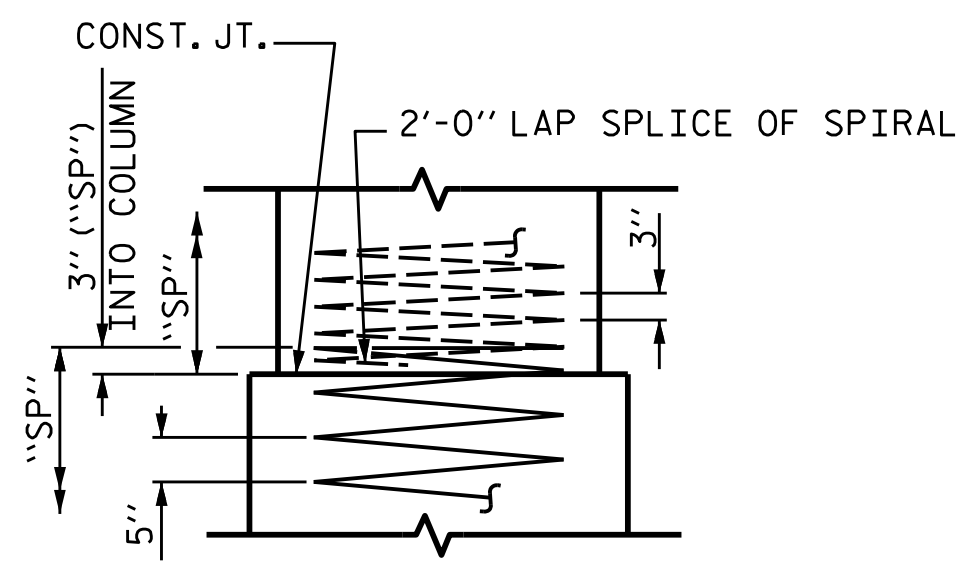
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-27
2			4			43



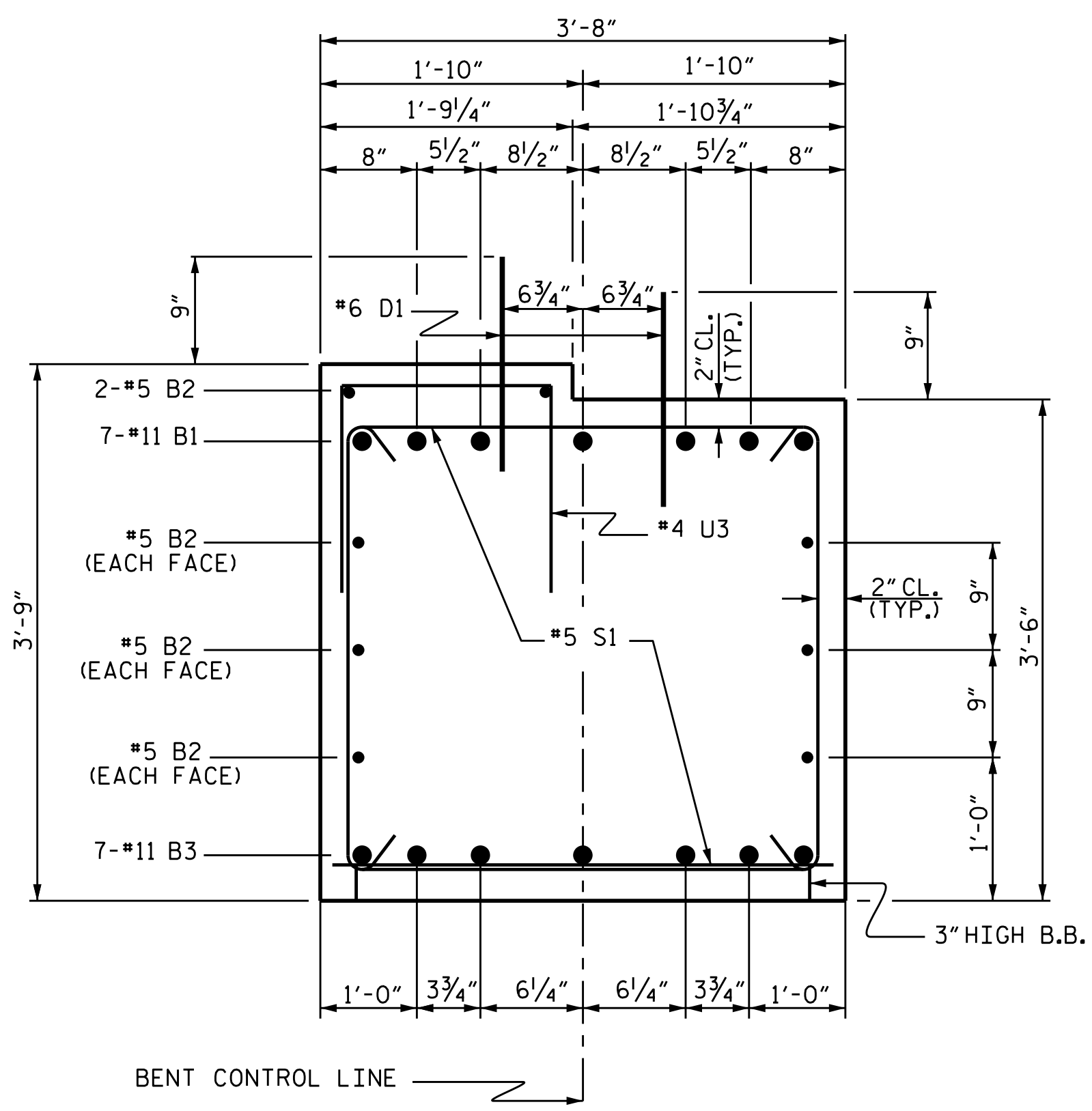
PLAN OF DRILLED PIERS & COLUMNS



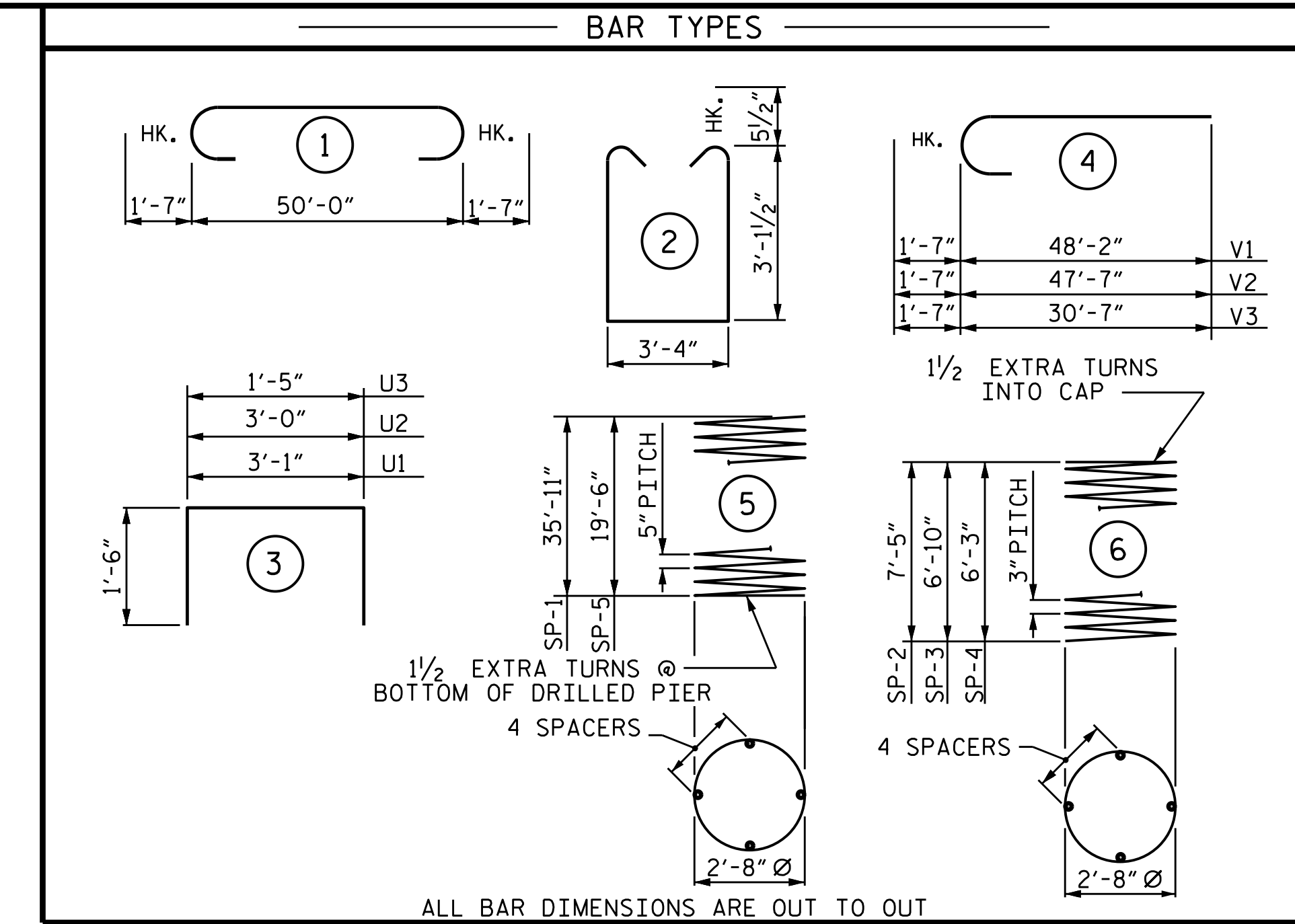
END ELEVATION



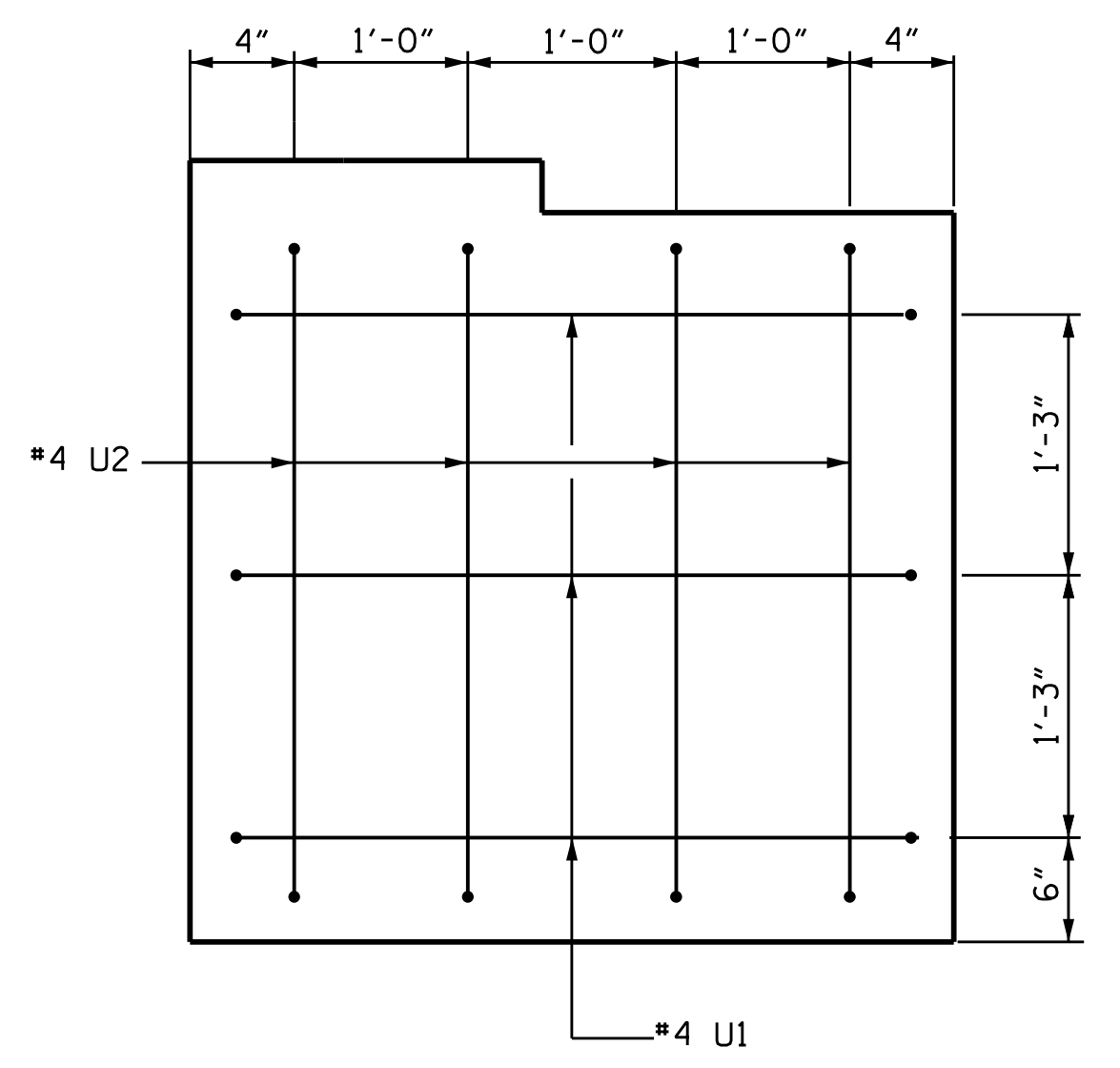
CONSTRUCTION JOINT DETAIL



SECTION A-A



ALL BAR DIMENSIONS ARE OUT TO OUT



END OF CAP VIEW
TYPICAL BOTH ENDS

BILL OF MATERIAL

BENT No. 1

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	#7	#11	1	53'-2"	1977
B2	#8	#5	STR	50'-2"	419
B3	#7	#11	STR	50'-2"	1866
D1	64	#6	STR	1'-6"	144
S1	72	#5	2	10'-6"	789
U1	6	#4	3	6'-1"	24
U2	8	#4	3	6'-0"	32
U3	50	#4	3	4'-5"	148
V1	10	#11	4	49'-9"	2643
V2	10	#11	4	49'-2"	2612
V3	10	#11	4	32'-2"	1709

REINFORCING STEEL 12363 LBS.

SP-1	2	*	5	721'-9"	1506
SP-2	1	**	6	255'-10"	171
SP-3	1	**	6	237'-3"	158
SP-4	1	**	6	218'-8"	146
SP-5	1	*	5	398'-11"	416

SPIRAL COLUMN REINFORCING STEEL 2397 LBS.

* THE SP-1 & SP-5 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR
 ** THE SP-2 THRU SP-4 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR

CLASS A CONCRETE BREAKDOWN

POUR #2 (COLUMNS)	5.1 C.Y.
POUR #3 (CAP)	24.8 C.Y.
TOTAL CLASS A CONCRETE	29.9 C.Y.

DRILLED PIERS:
 DRILLED PIER CONCRETE
 POUR #1 (DRILLED PIERS) 33.1 C.Y.
 3'-6" Ø DRILLED PIERS NOT IN SOIL 27.00 LIN. FT.
 3'-6" Ø DRILLED PIERS IN SOIL 65.83 LIN. FT.
 PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIERS 66.15 LIN. FT.
 CSL TUBES 389.33 LIN. FT.

PROJECT NO. B-5125
 MACON COUNTY
 STATION: 13+25.89 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 1



7/1/2016

DRAWN BY:	M. POOLE	DATE:	10-15
CHECKED BY:	B. N. GRADY	DATE:	3-16
DESIGN ENGINEER OF RECORD:	W. J. HARRIS	DATE:	5-16

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			43
2			4			

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.

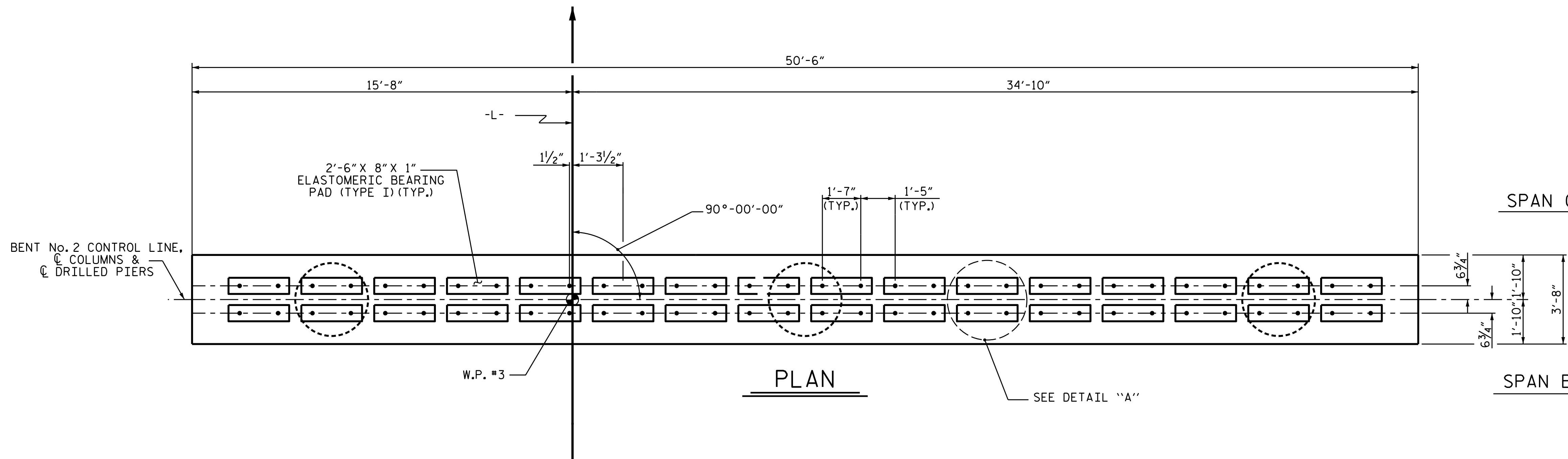
FOR DRILLED PIERS, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

★ INVERT ALTERNATE STIRRUPS.

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

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

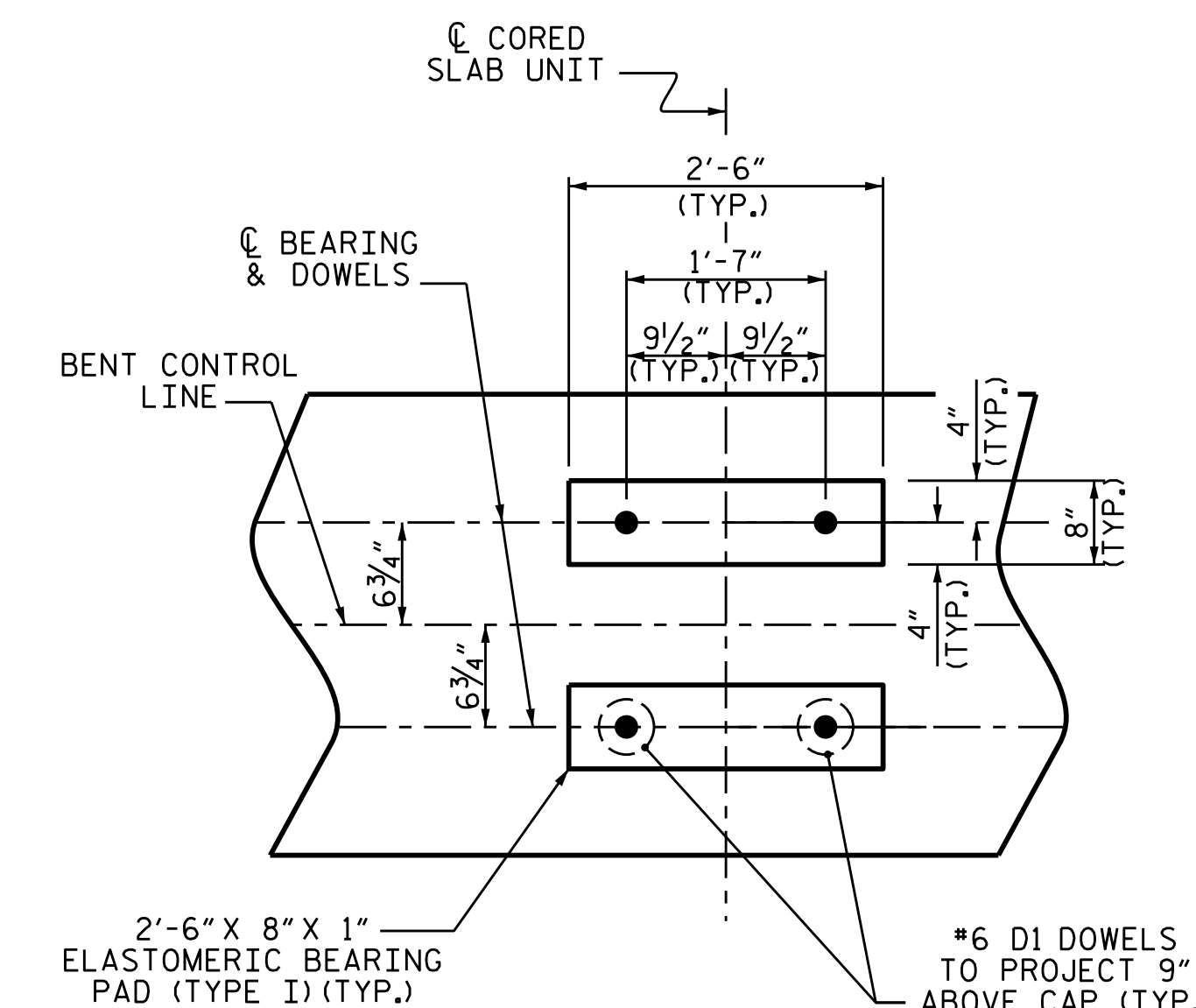


SPAN C

SPAN B

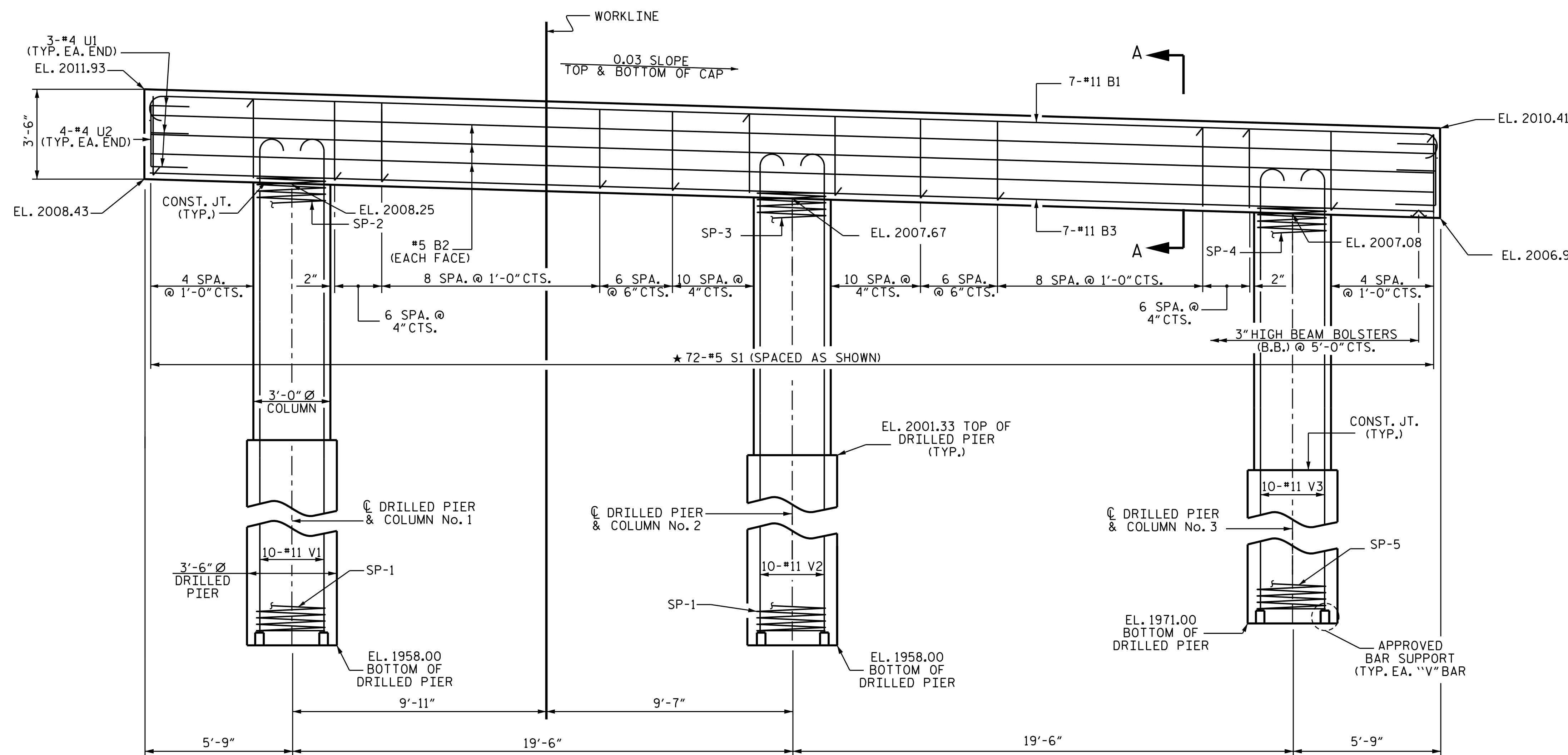
PLAN

SEE DETAIL "A"



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)



ELEVATION

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

PROJECT NO. B-5125

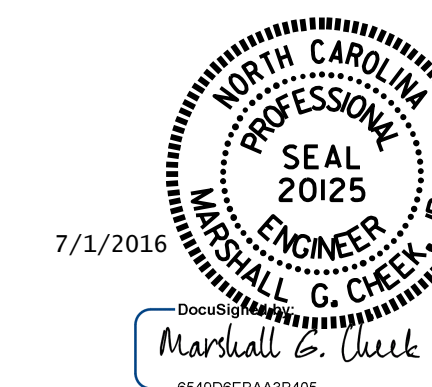
MACON COUNTY

STATION: 13+25.89 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

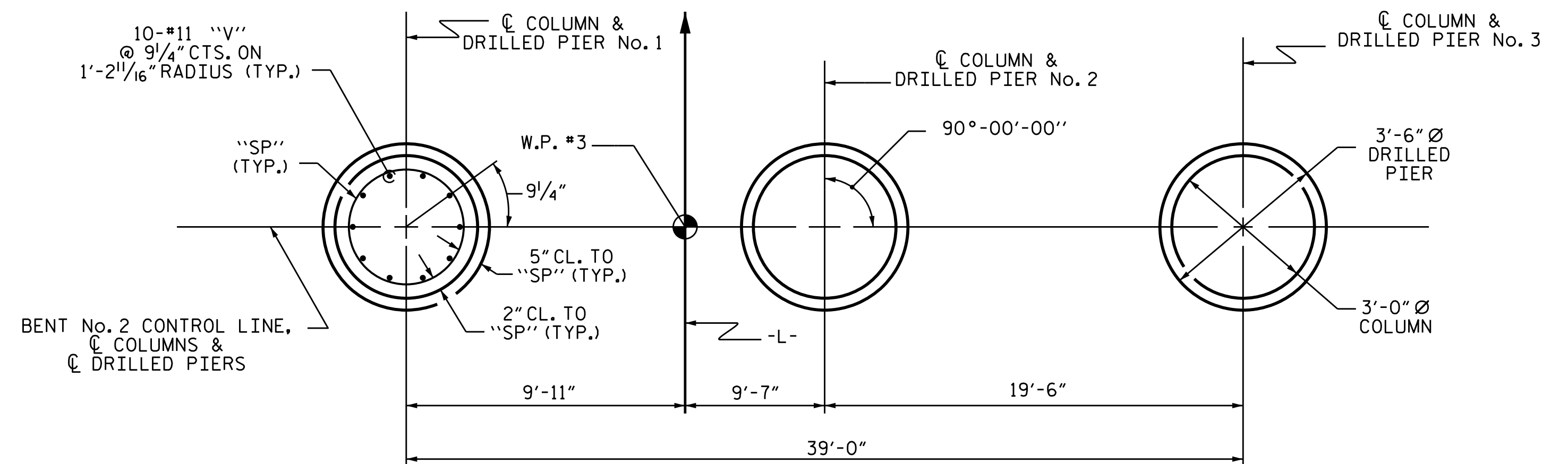
SUBSTRUCTURE
BENT No. 2



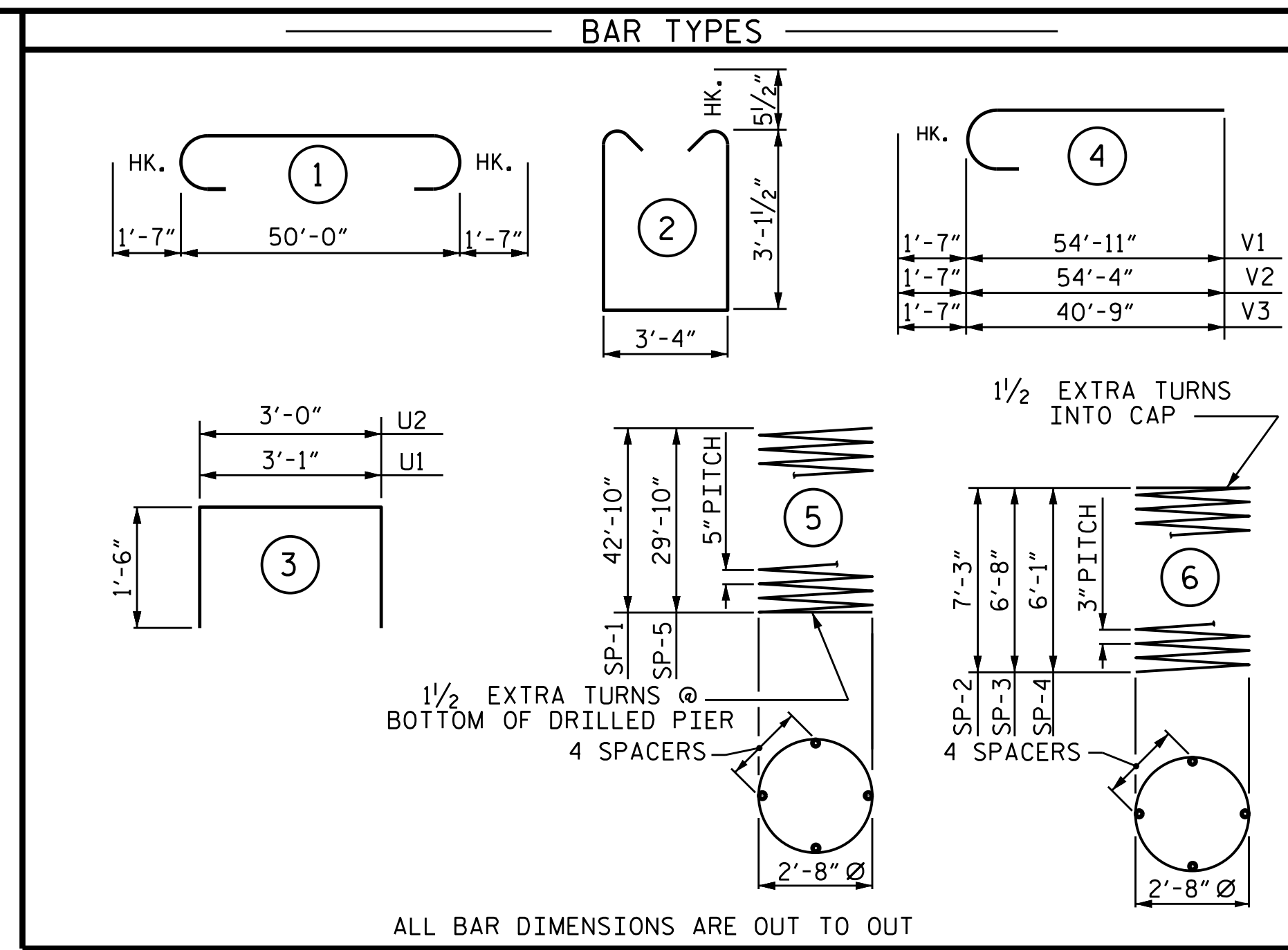
DRAWN BY: M. POOLE DATE: 10-15
CHECKED BY: B. N. GRADY DATE: 3-16
DESIGN ENGINEER OF RECORD: W. J. HARRIS DATE: 5-16

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS
2			4			43

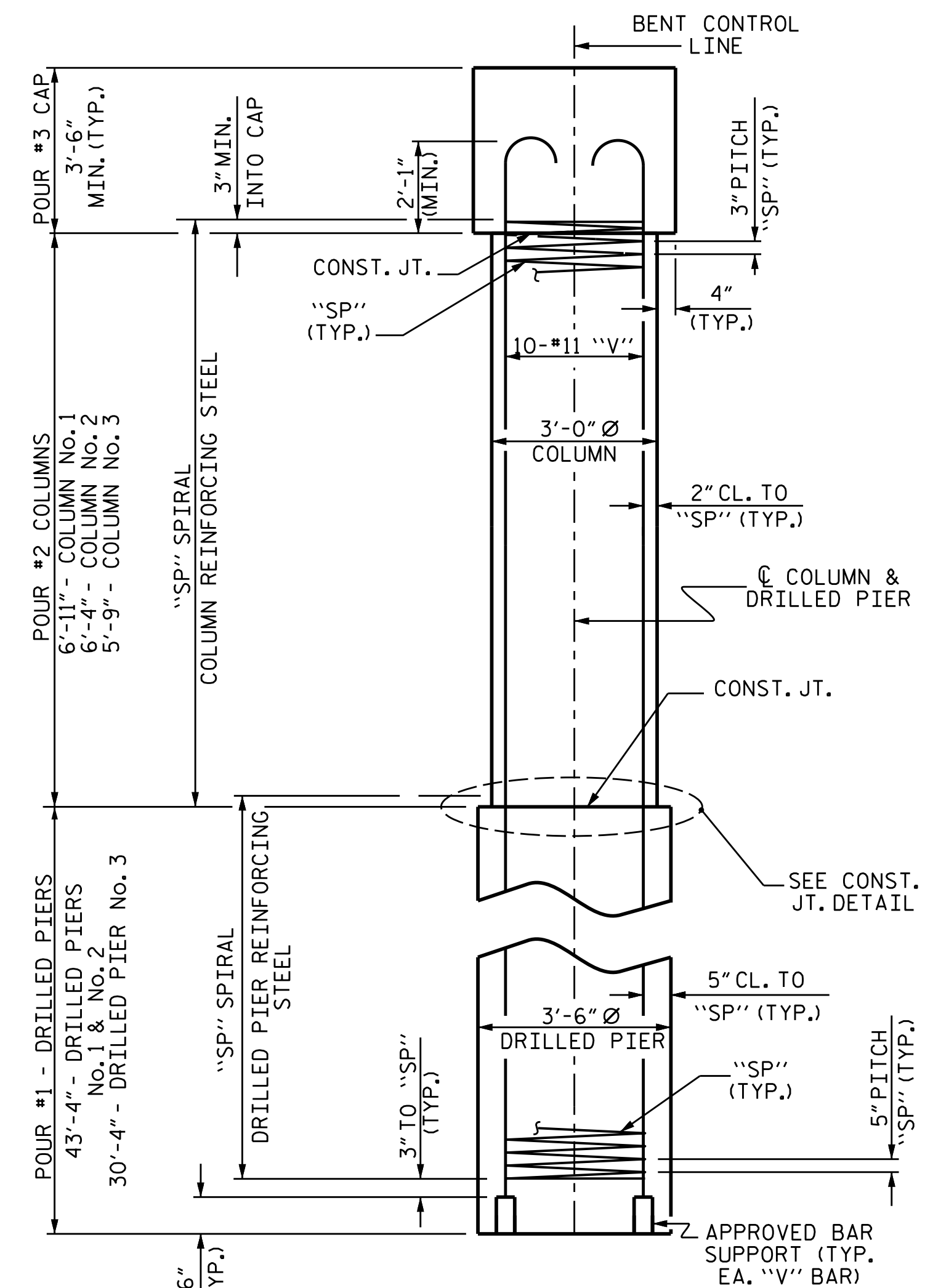


PLAN OF DRILLED PIERS & COLUMNS

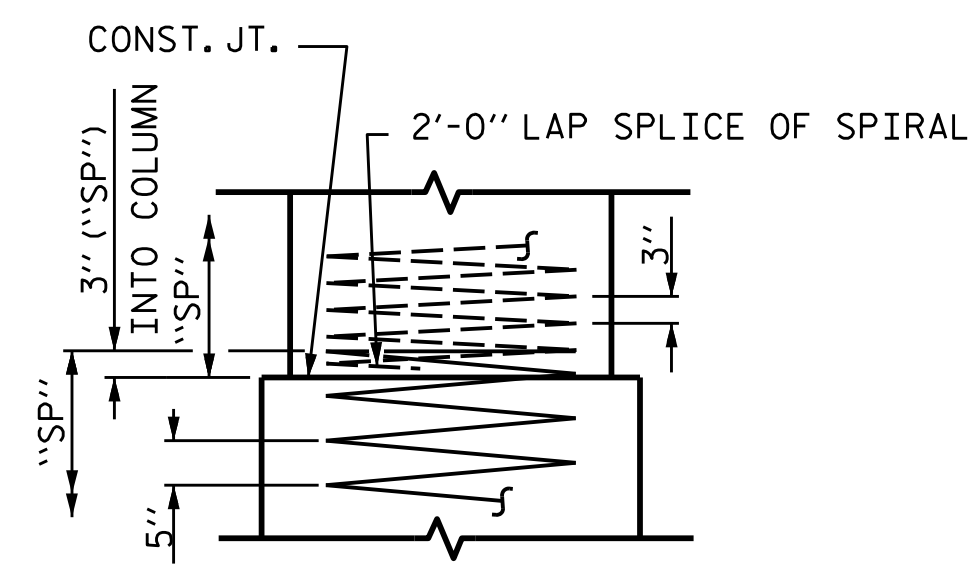


ALL BAR DIMENSIONS ARE OUT TO OUT

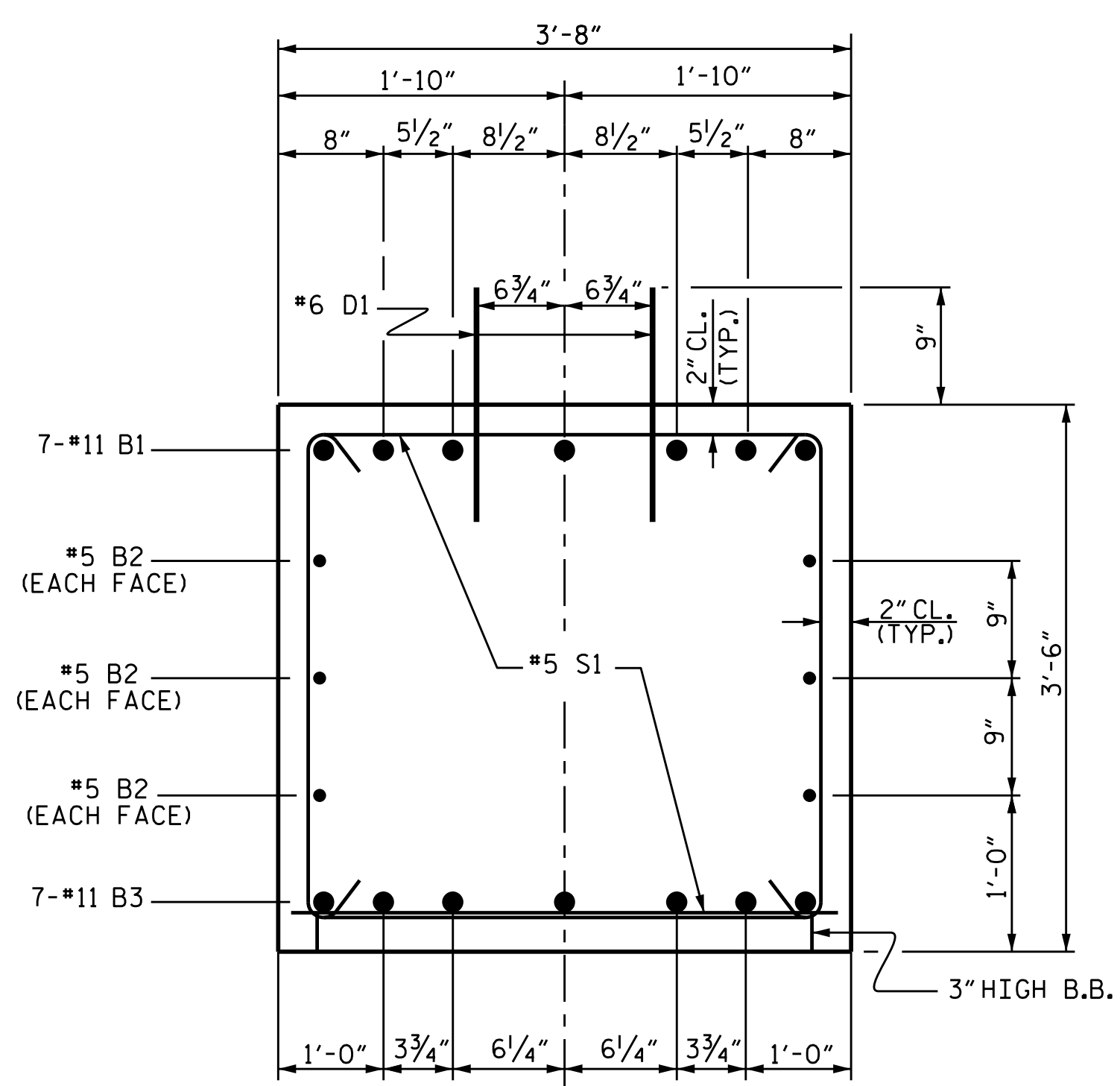
BILL OF MATERIAL					
BENT No. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	#11	1	53'-2"	1977
B2	6	#5	STR	50'-2"	314
B3	7	#11	STR	50'-2"	1866
D1	64	#6	STR	1'-6"	144
S1	72	#5	2	10'-6"	789
U1	6	#4	3	6'-1"	24
U2	8	#4	3	6'-0"	32
V1	10	#11	4	56'-6"	3002
V2	10	#11	4	55'-11"	2971
V3	10	#11	4	42'-4"	2249
REINFORCING STEEL					13368 LBS.
SP-1	2	*	5	859'-6"	1793
SP-2	1	**	6	251'-8"	168
SP-3	1	**	6	233'-1"	156
SP-4	1	**	6	212'-6"	142
SP-5	1	*	5	602'-6"	628
SPIRAL COLUMN REINFORCING STEEL					2887 LBS.
* THE SP-1 & SP-5 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR					
** THE SP-2 THRU SP-4 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR					



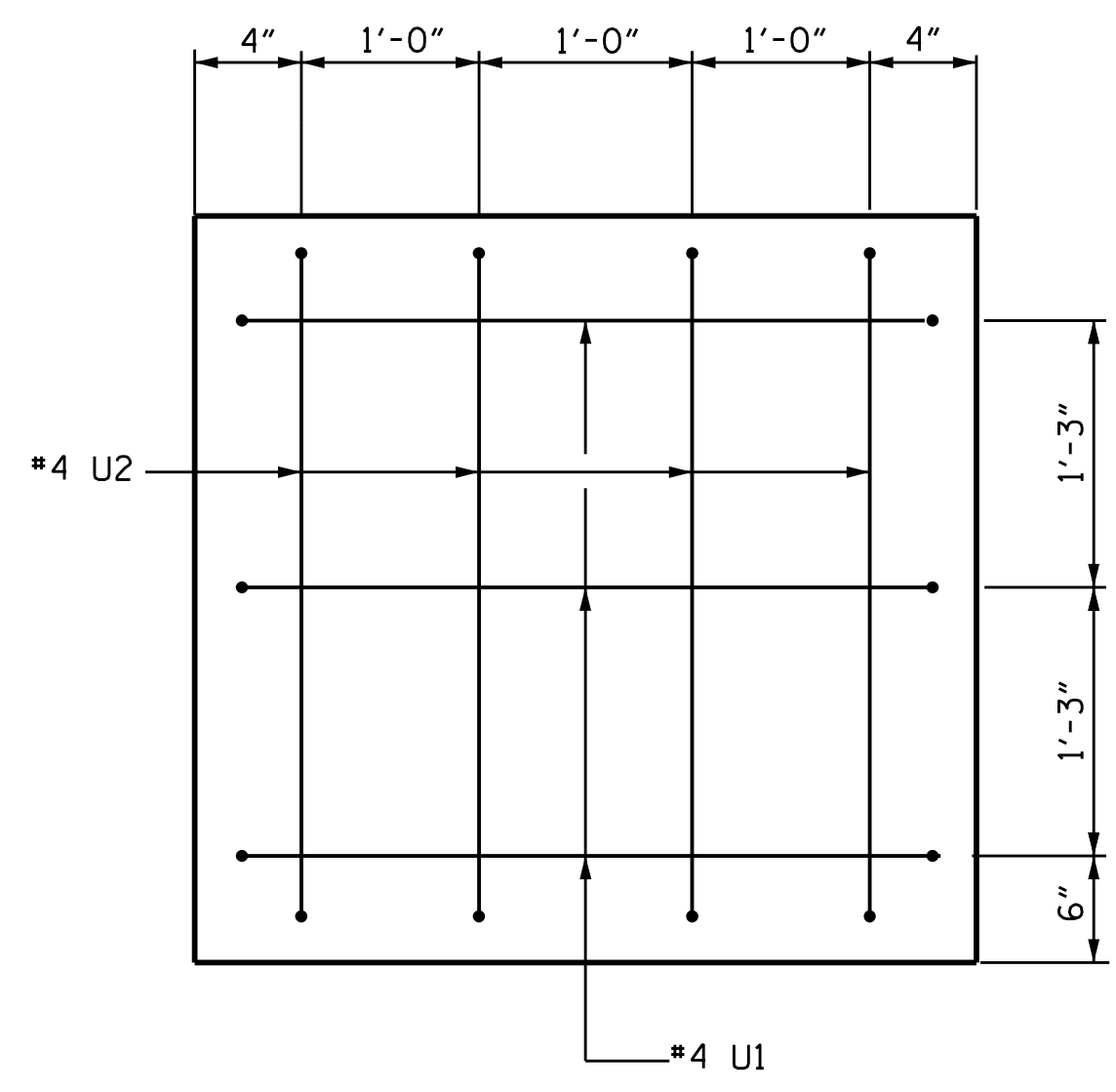
END ELEVATION



CONSTRUCTION JOINT DETAIL

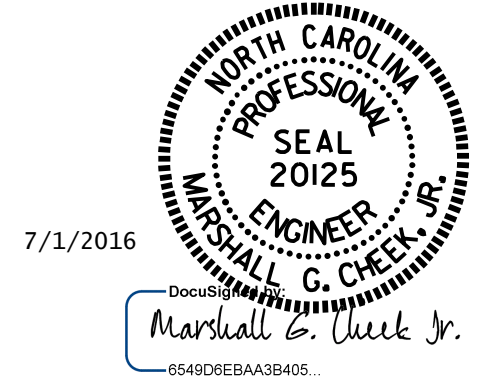


SECTION A-A



END OF CAP VIEW

TYPICAL BOTH ENDS



PROJECT NO. B-5125
 MACON COUNTY
 STATION: 13+25.89 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 2

DRAWN BY :	M. POOLE	DATE :	10-15
CHECKED BY :	B. N. GRADY	DATE :	3-16
DESIGN ENGINEER OF RECORD:	W. J. HARRIS	DATE :	5-16

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-31
2			4			43

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.

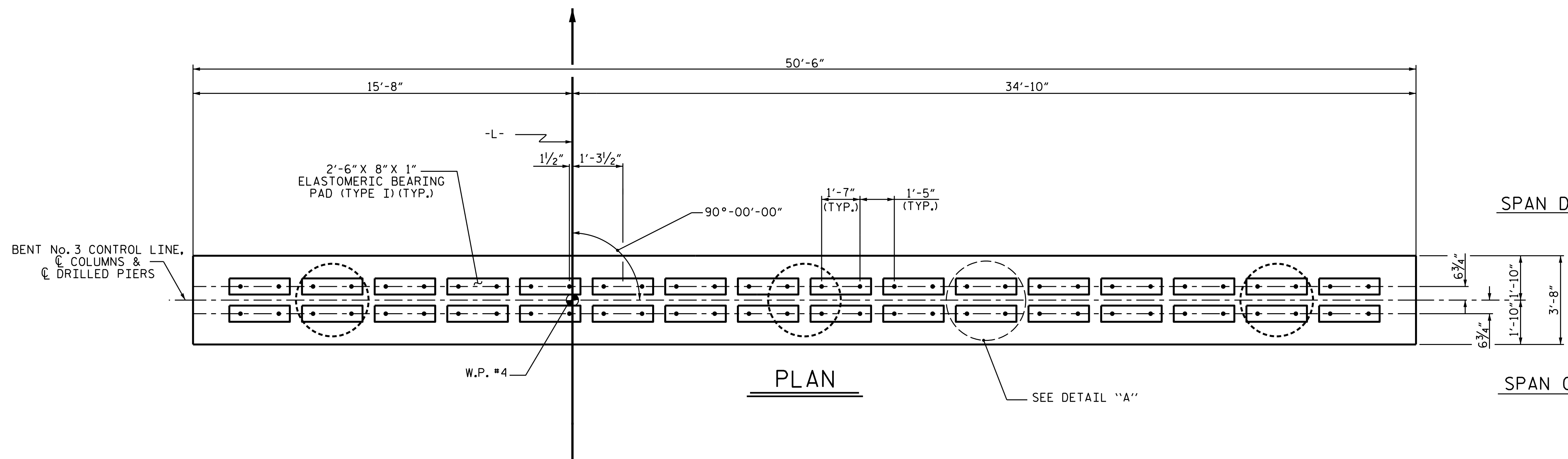
FOR DRILLED PIERS, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

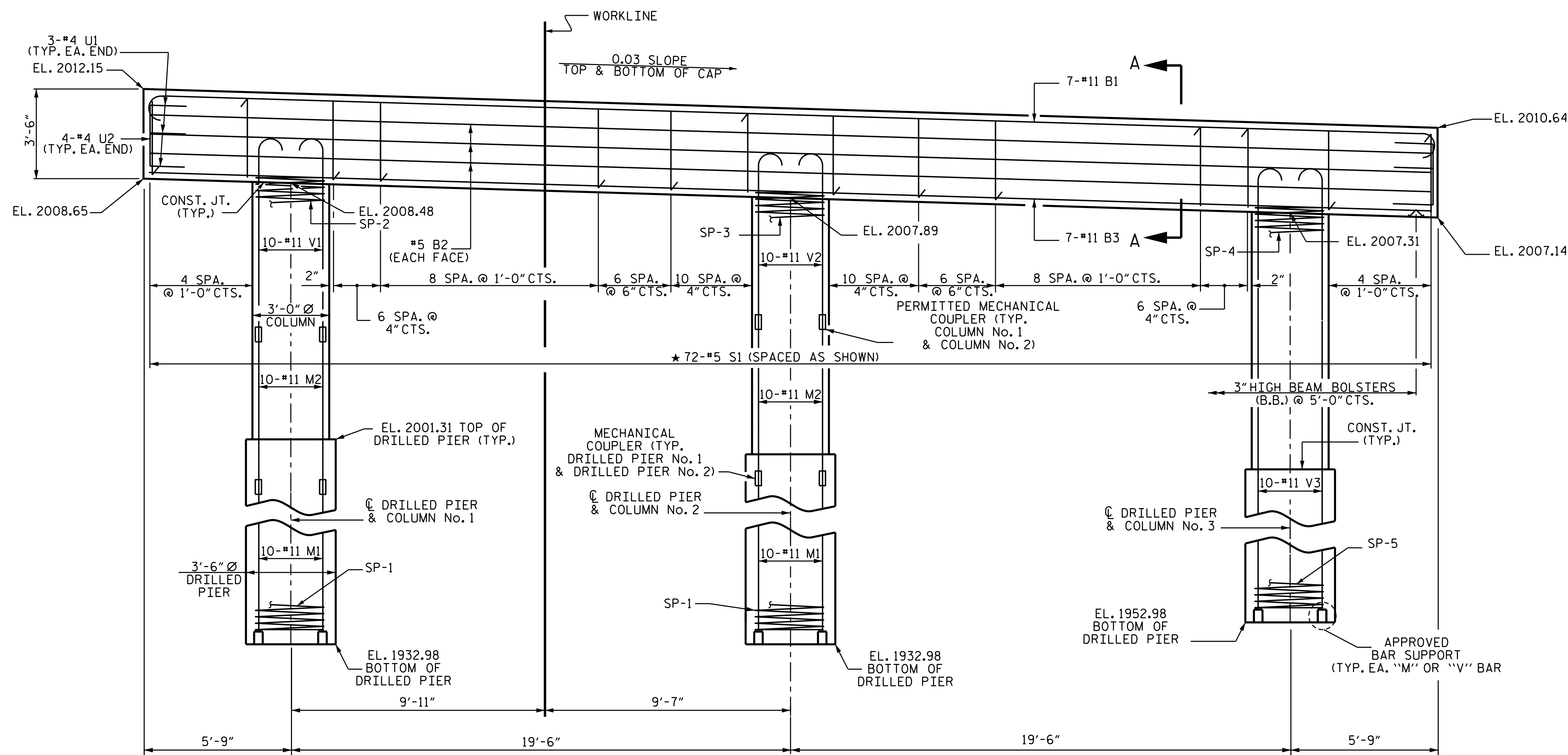
* INVERT ALTERNATE STIRRUPS.

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

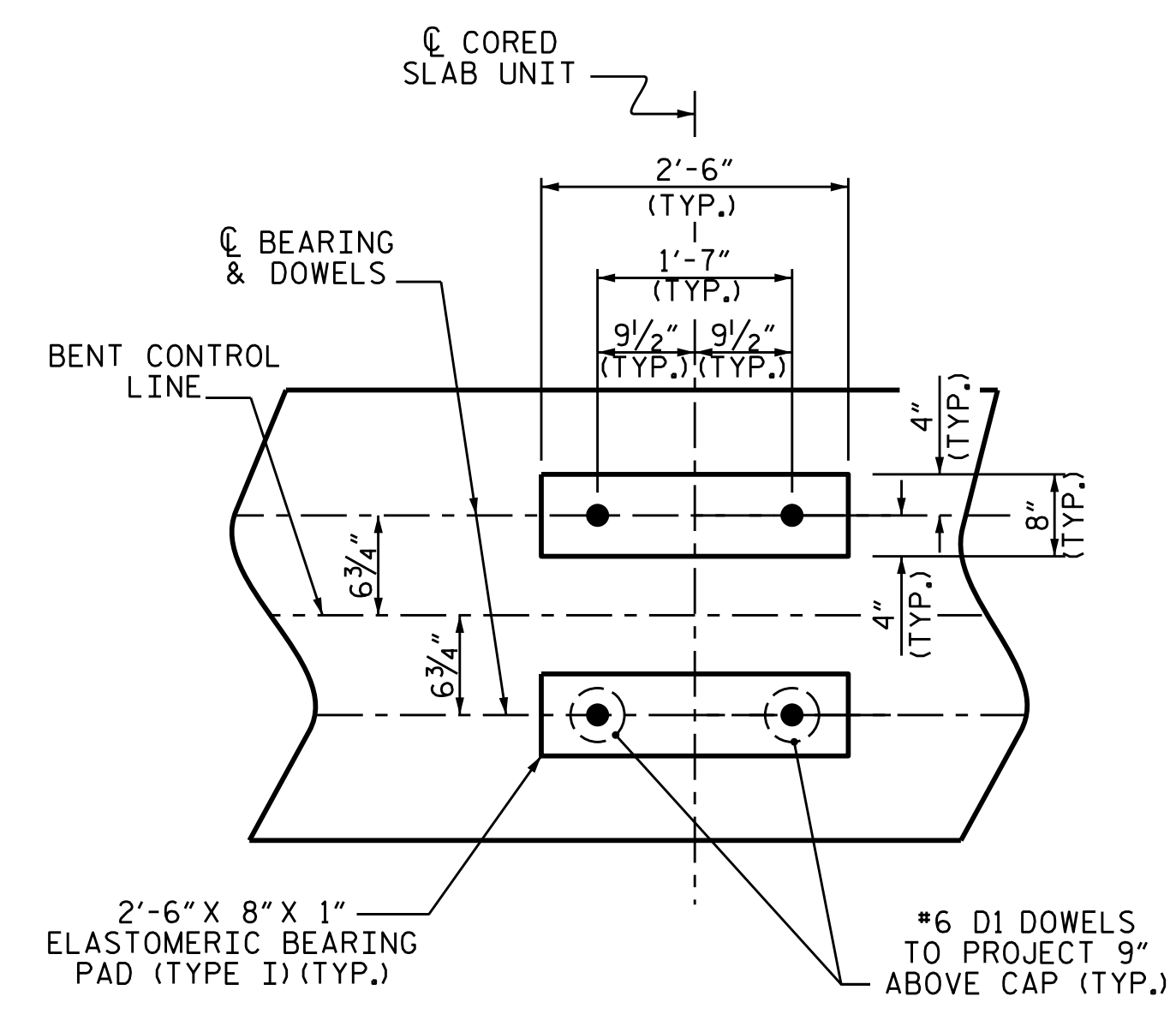
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.



PLAN



ELEVATION



DETAIL "A"
(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. B-5125
MACON COUNTY
 STATION: 13+25.89 -L-

SHEET 1 OF 2



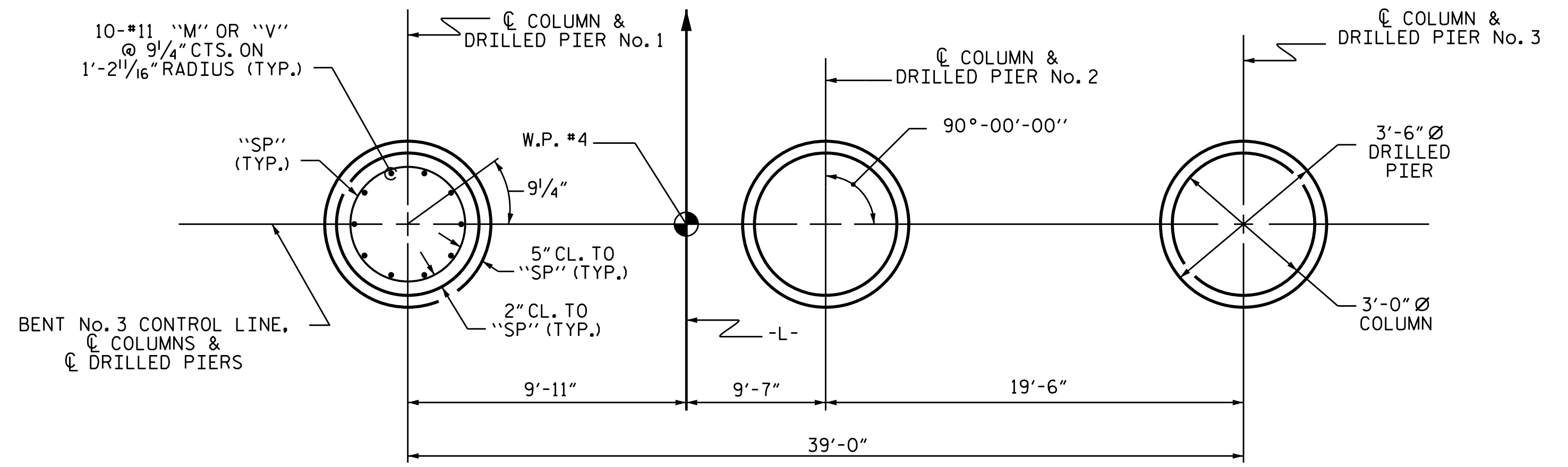
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**SUBSTRUCTURE
 BENT No. 3**

DRAWN BY : M. POOLE DATE : 10-15
 CHECKED BY : B. N. GRADY DATE : 3-16
 DESIGN ENGINEER OF RECORD : W. J. HARRIS DATE : 5-16

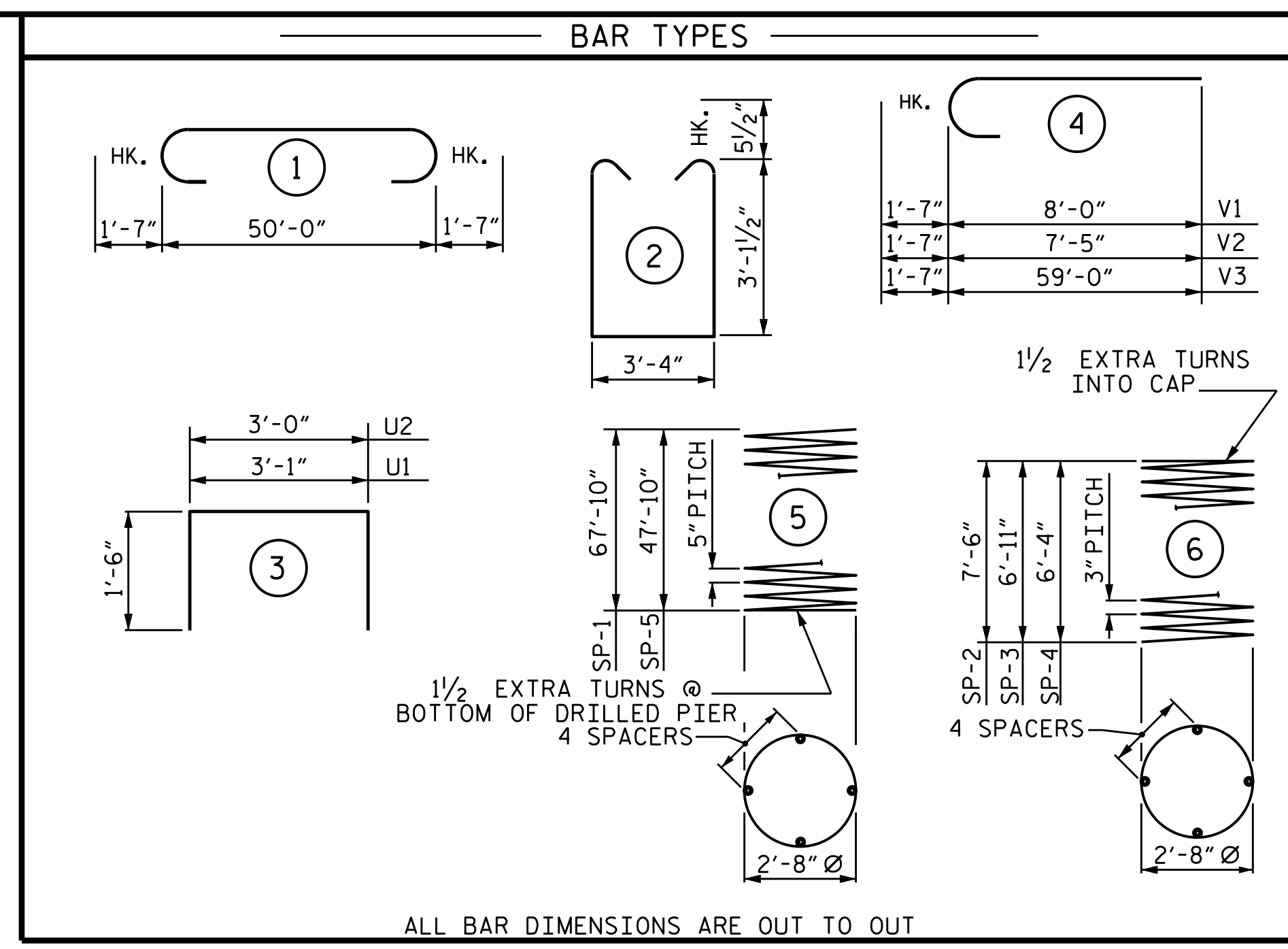
DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-32
2			4			43

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED



PLAN OF DRILLED PIERS & COLUMNS

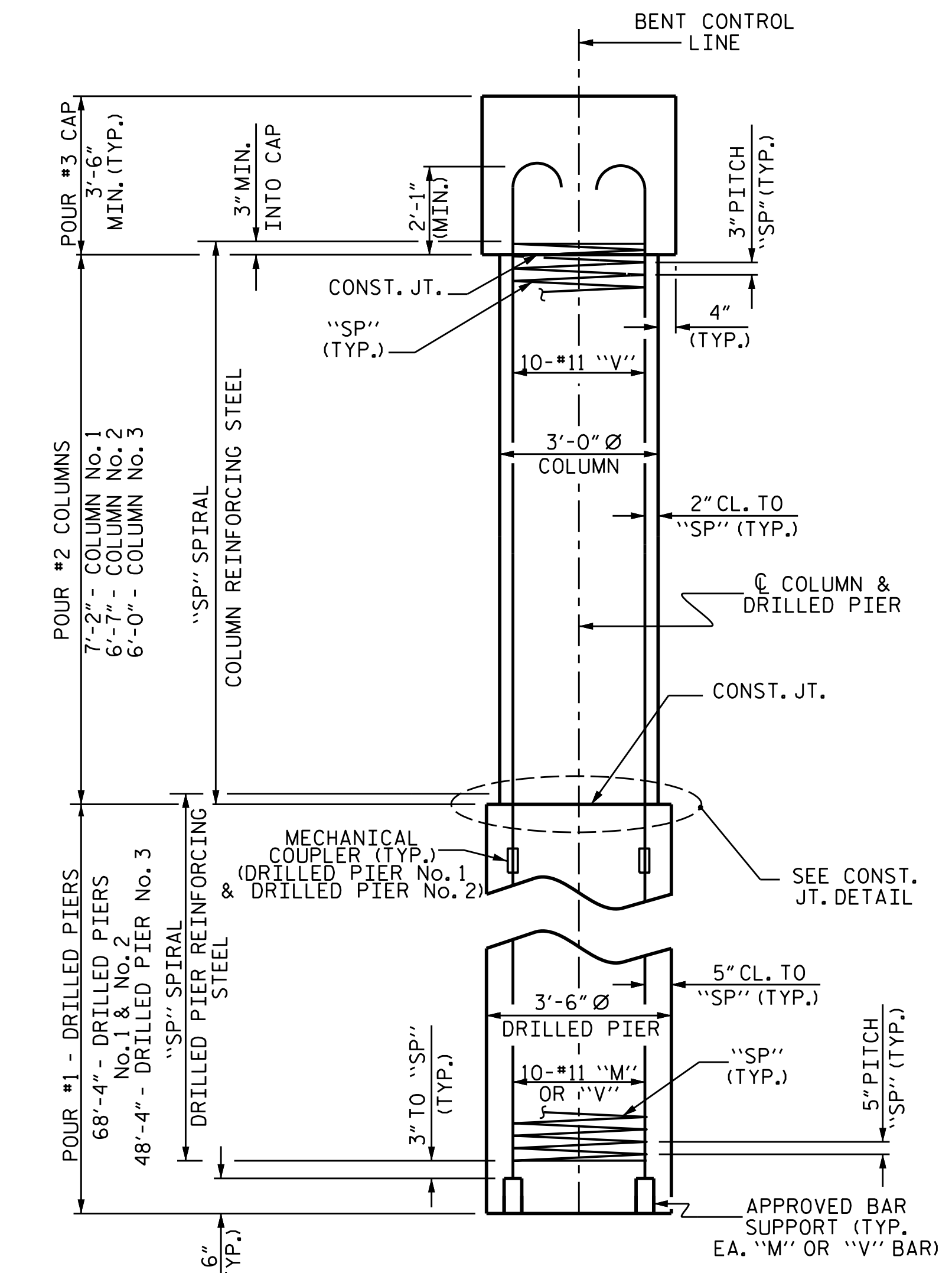


ALL BAR DIMENSIONS ARE OUT TO OUT

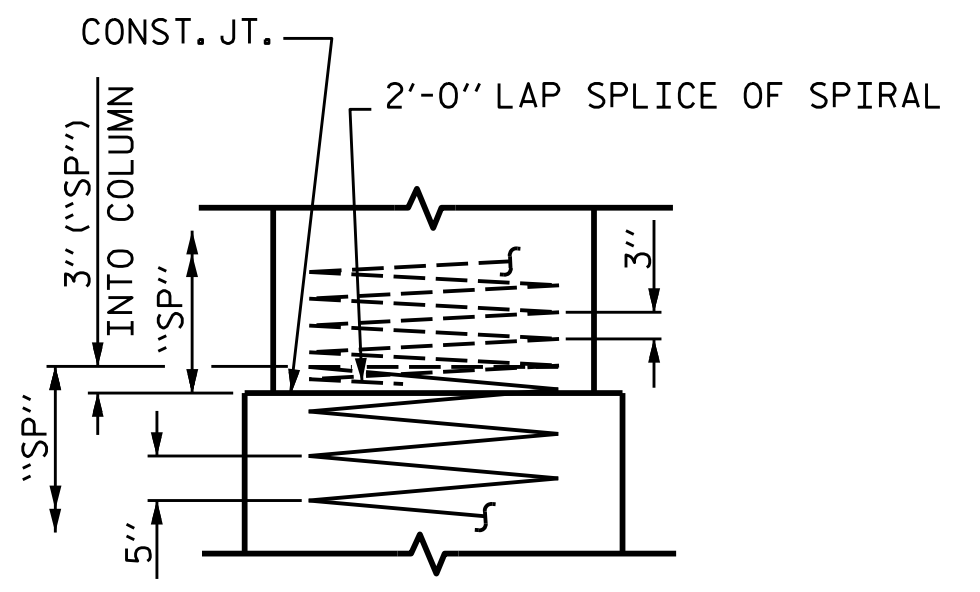
BILL OF MATERIAL					
BENT No. 3					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	#7	#11	1	53'-2"	1977
B2	#6	#5	STR	50'-2"	314
B3	#7	#11	STR	50'-2"	1866
D1	64	#6	STR	1'-6"	144
M1	20	#11	STR	25'-0"	2657
M2	20	#11	STR	47'-2"	5012
S1	72	#5	2	10'-6"	789
U1	6	#4	3	6'-1"	24
U2	8	#4	3	6'-0"	32
V1	10	#11	4	9'-7"	509
V2	10	#11	4	9'-0"	478
V3	10	#11	4	60'-7"	3219
REINFORCING STEEL				17021 LBS.	
SP-1	2	*	5	1353'-0"	2822
SP-2	1	**	6	259'-11"	174
SP-3	1	**	6	239'-4"	160
SP-4	1	**	6	220'-9"	147
SP-5	1	*	5	958'-2"	999
SPIRAL COLUMN REINFORCING STEEL				4302 LBS.	

* THE SP-1 & SP-5 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR

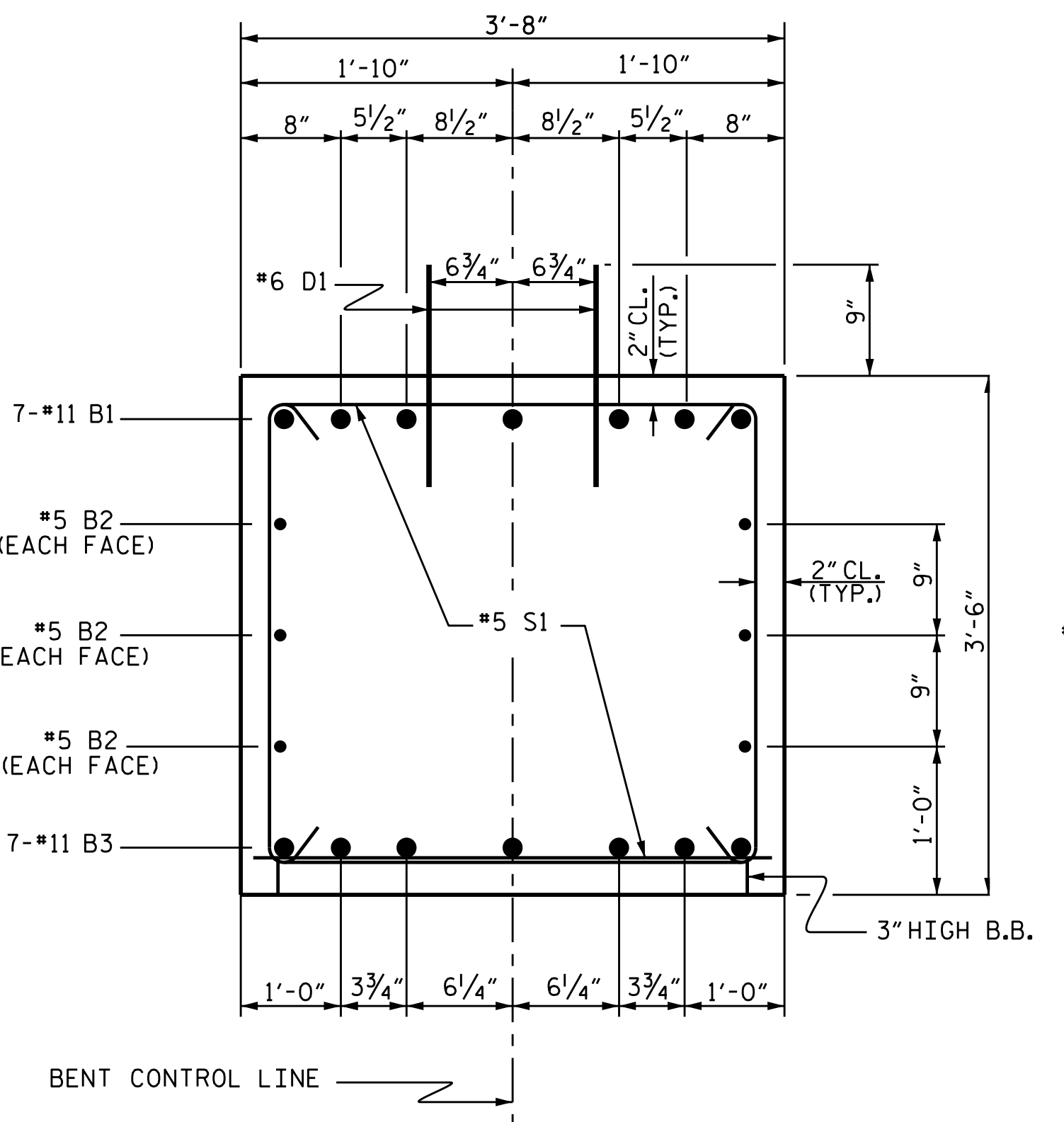
** THE SP-2 THRU SP-4 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR



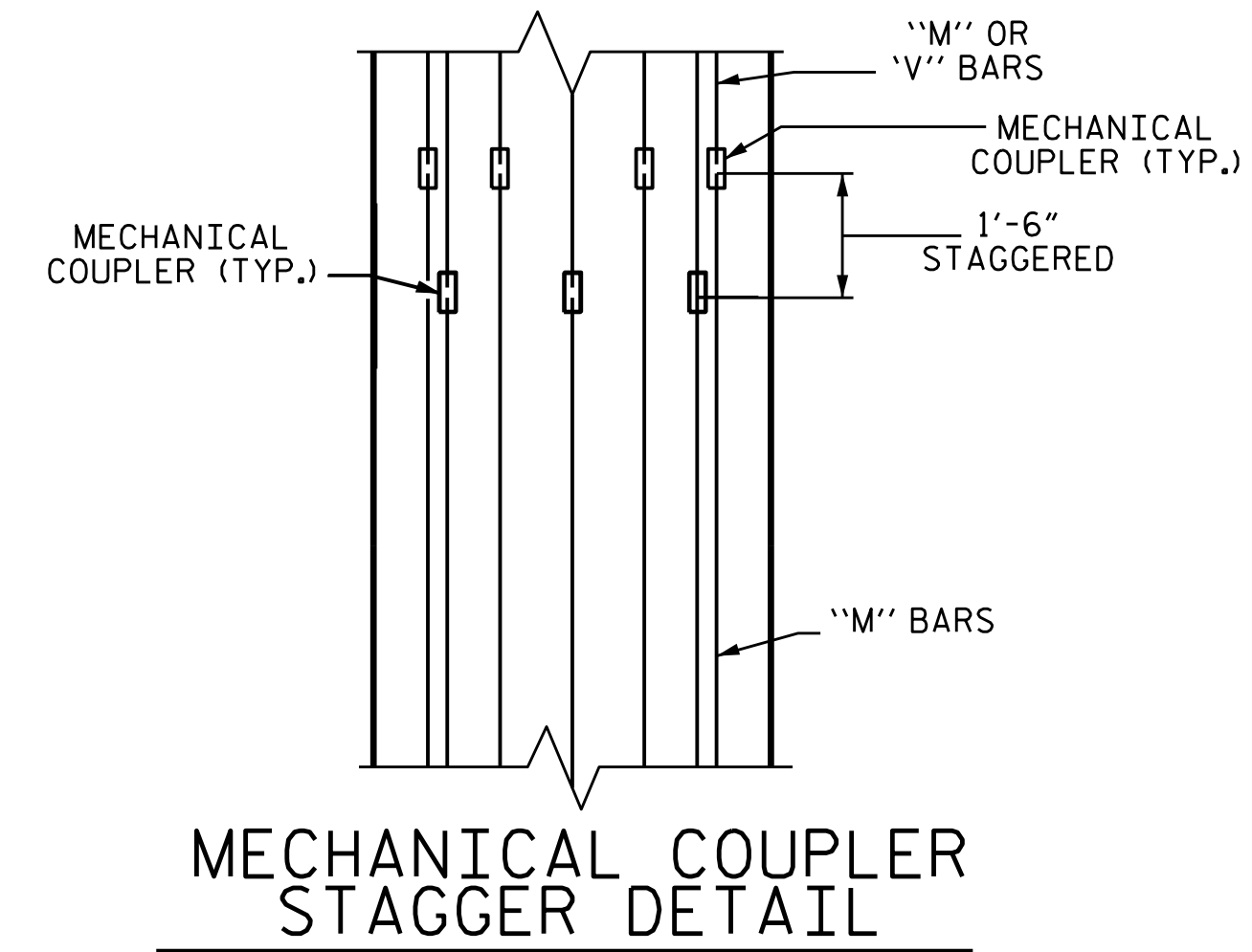
END ELEVATION



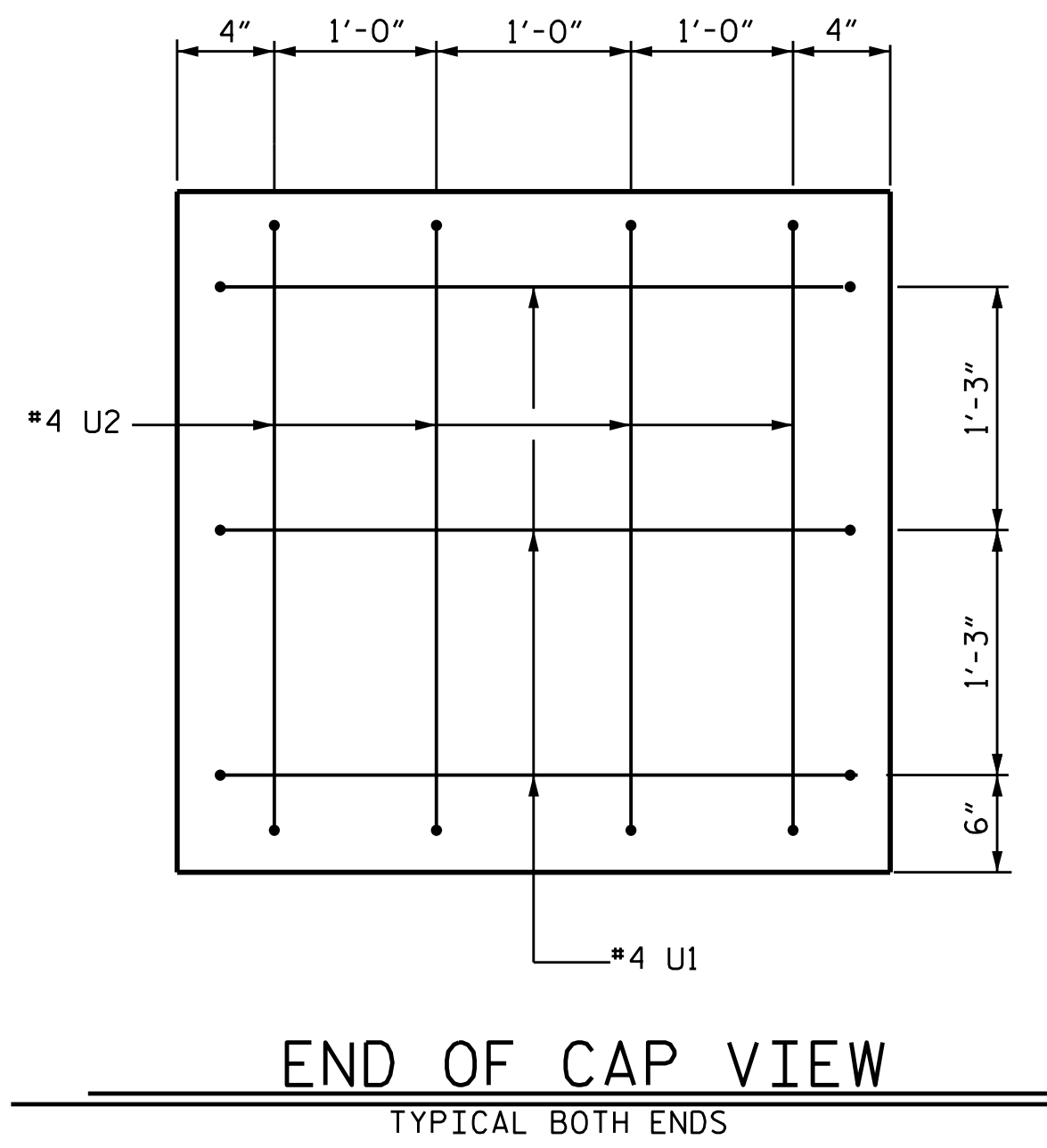
CONSTRUCTION JOINT DETAIL



SECTION A-A



MECHANICAL COUPLER STAGGER DETAIL

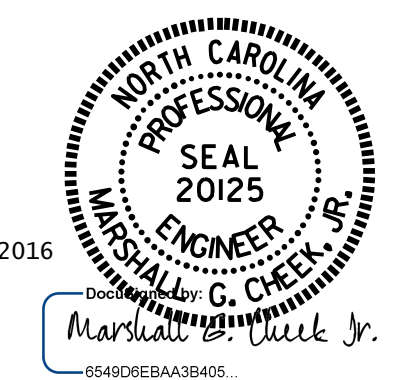


END OF CAP VIEW
TYPICAL BOTH ENDS

PROJECT NO. B-5125
MACON COUNTY
 STATION: 13+25.89 -L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 3



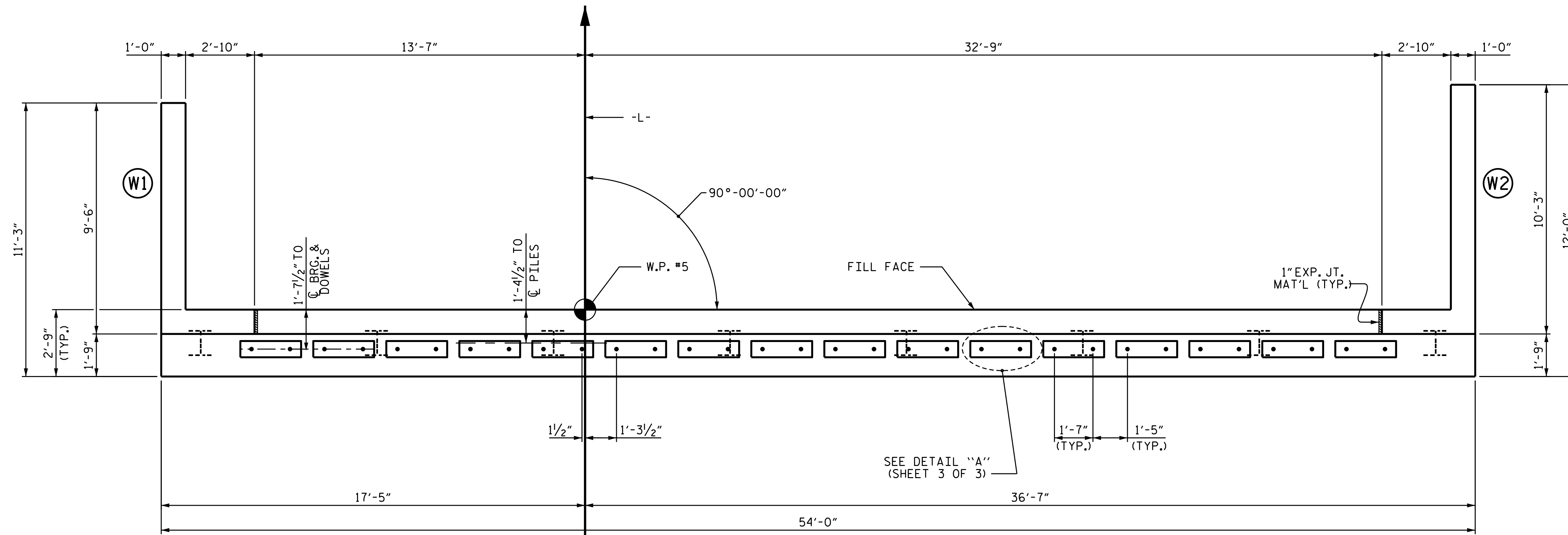
DRAWN BY : M. POOLE DATE : 10-15
 CHECKED BY : B. N. GRADY DATE : 3-16
 DESIGN ENGINEER OF RECORD: W. J. HARRIS DATE : 5-16

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

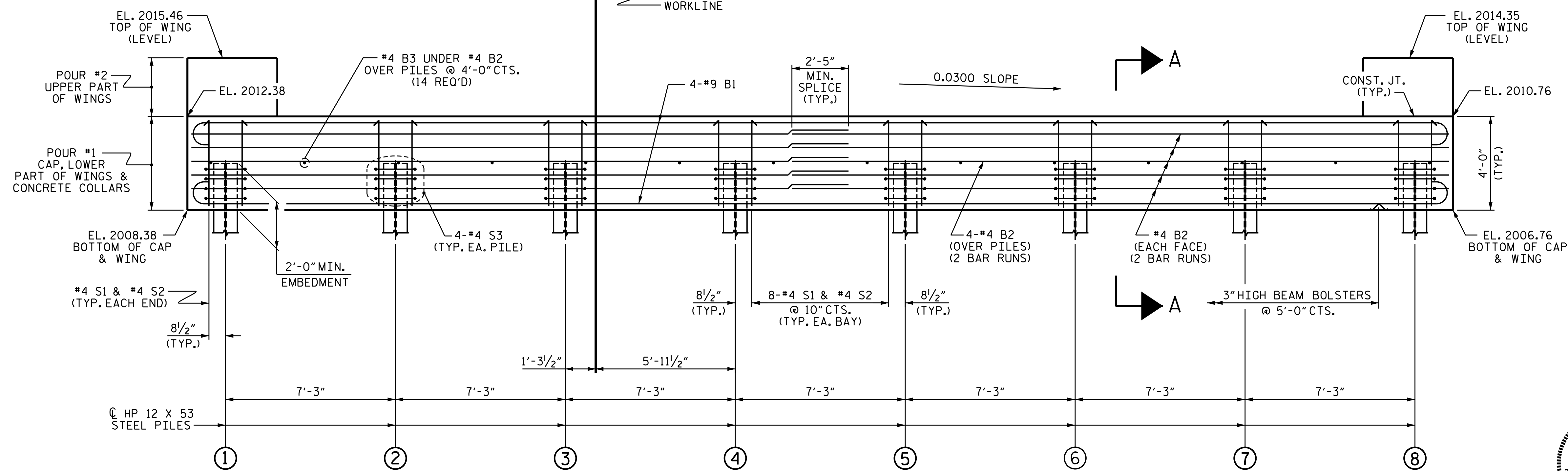
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-33
2			4			43

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
 FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.
 FOR WING DETAILS, SEE SHEET 2 OF 3.



PLAN



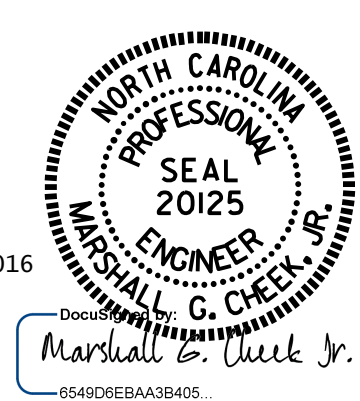
ELEVATION

WINGS NOT SHOWN FOR CLARITY.
 FOR SECTION A-A, SEE SHEET 3 OF 3.
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 3 OF 3.

TOP OF PILE ELEVATIONS	
①	2010.35
②	2010.13
③	2009.92
④	2009.70
⑤	2009.48
⑥	2009.26
⑦	2009.05
⑧	2008.83

PROJECT NO. B-5125
 MACON COUNTY
 STATION: 13+25.89 -L-

SHEET 1 OF 3



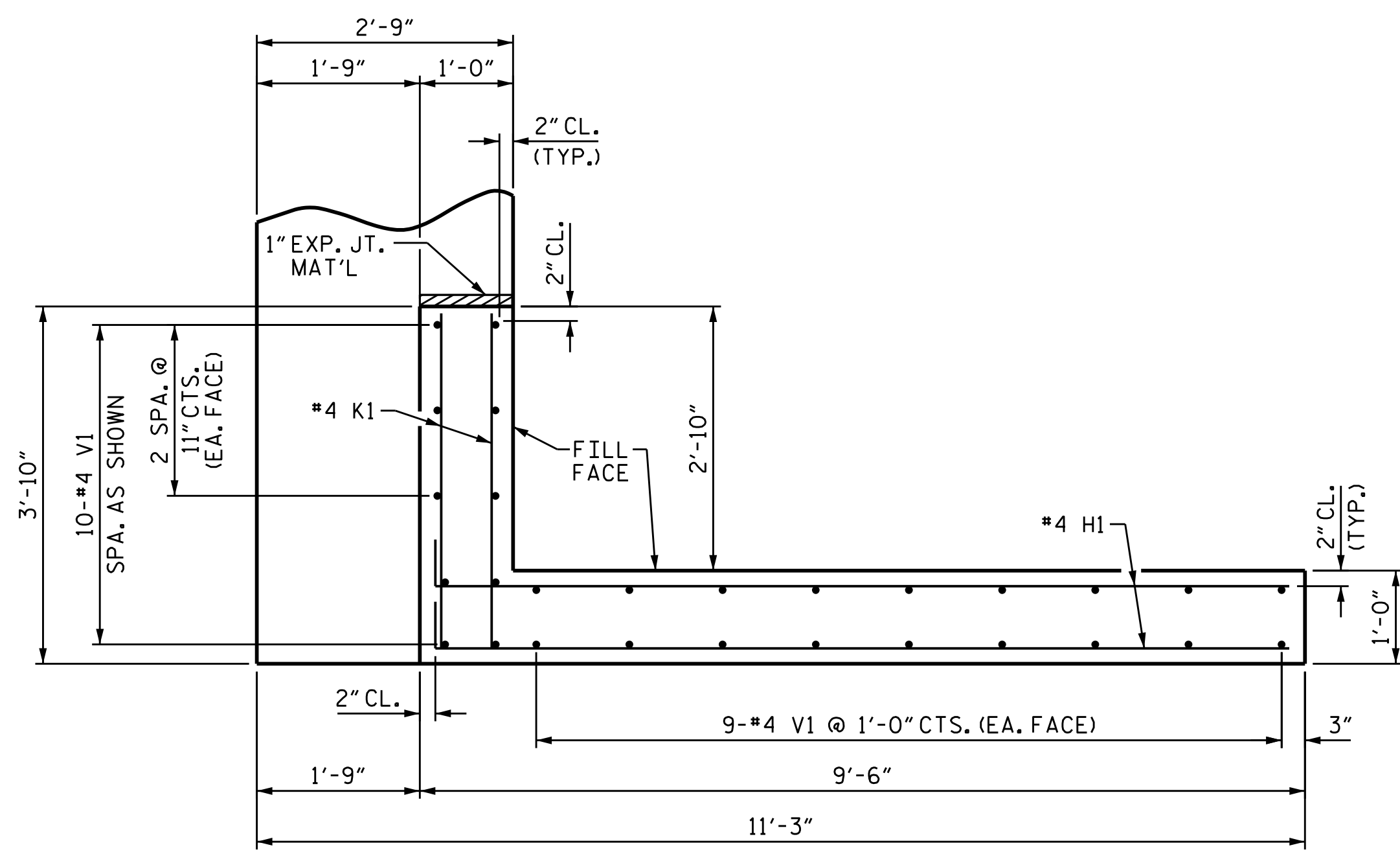
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT No. 2**

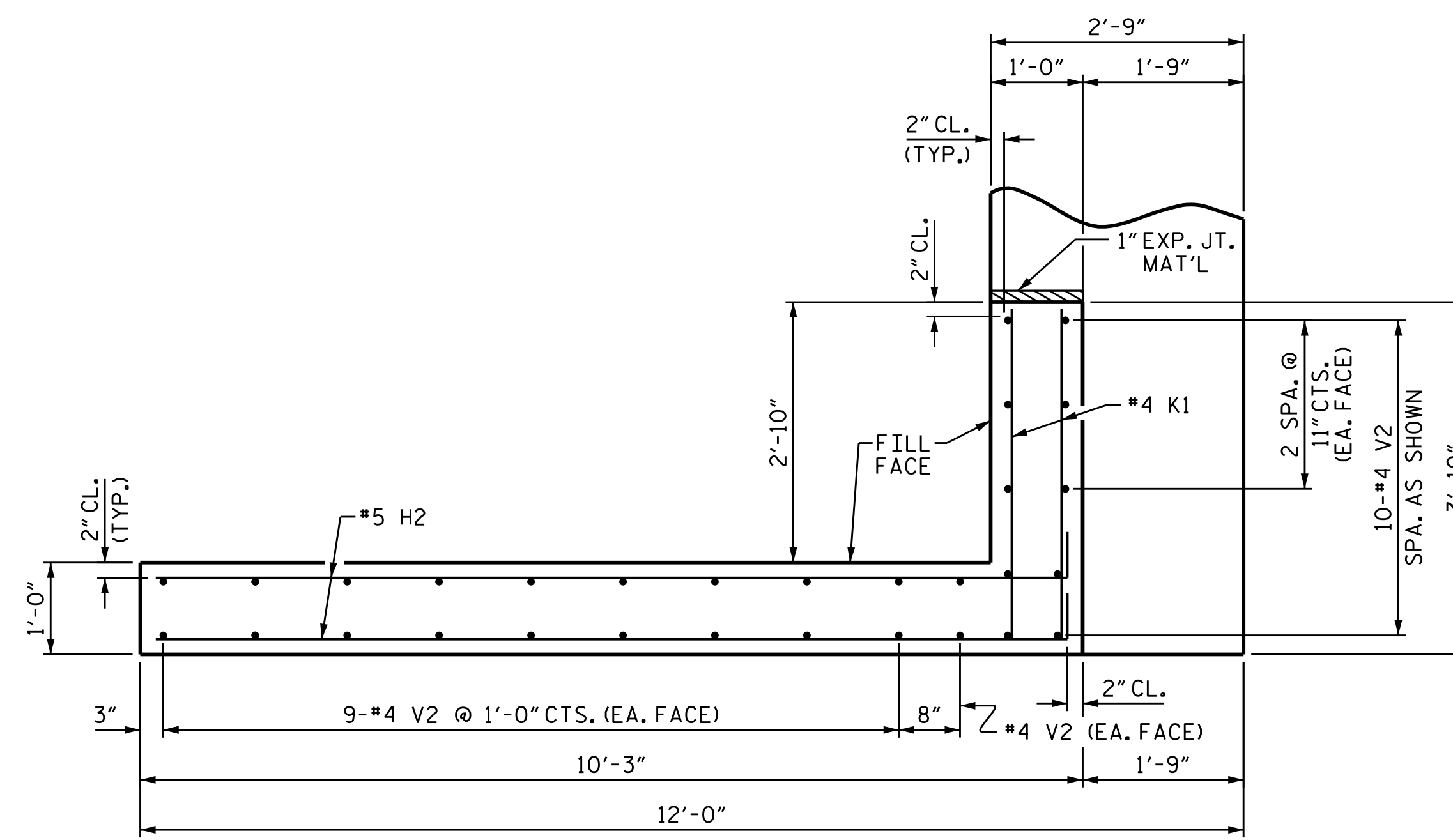
DRAWN BY : B.N. GRADY DATE : 4-16
 CHECKED BY : H. T. BARBOUR DATE : 4-18-16
 DESIGN ENGINEER OF RECORD: W.J. HARRIS DATE : 5-16

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

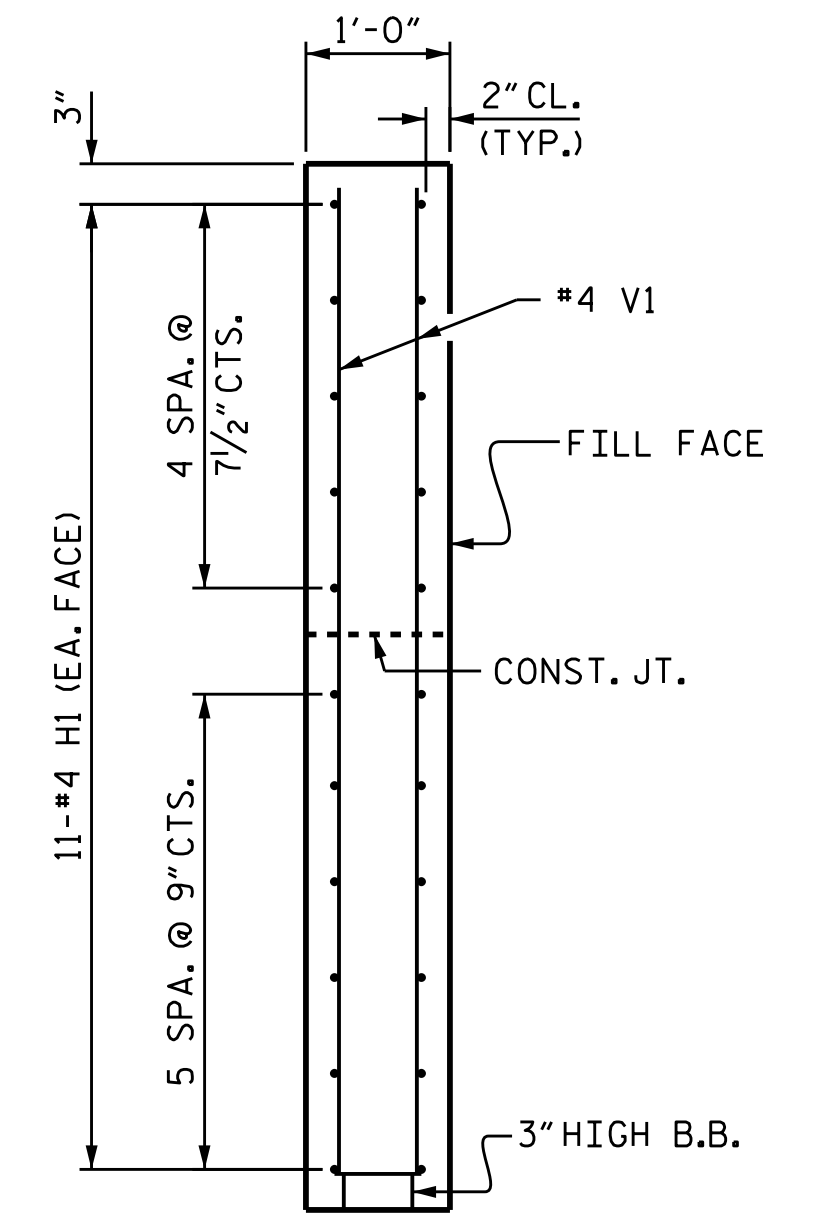
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-34
1			3			TOTAL SHEETS
2			4			43



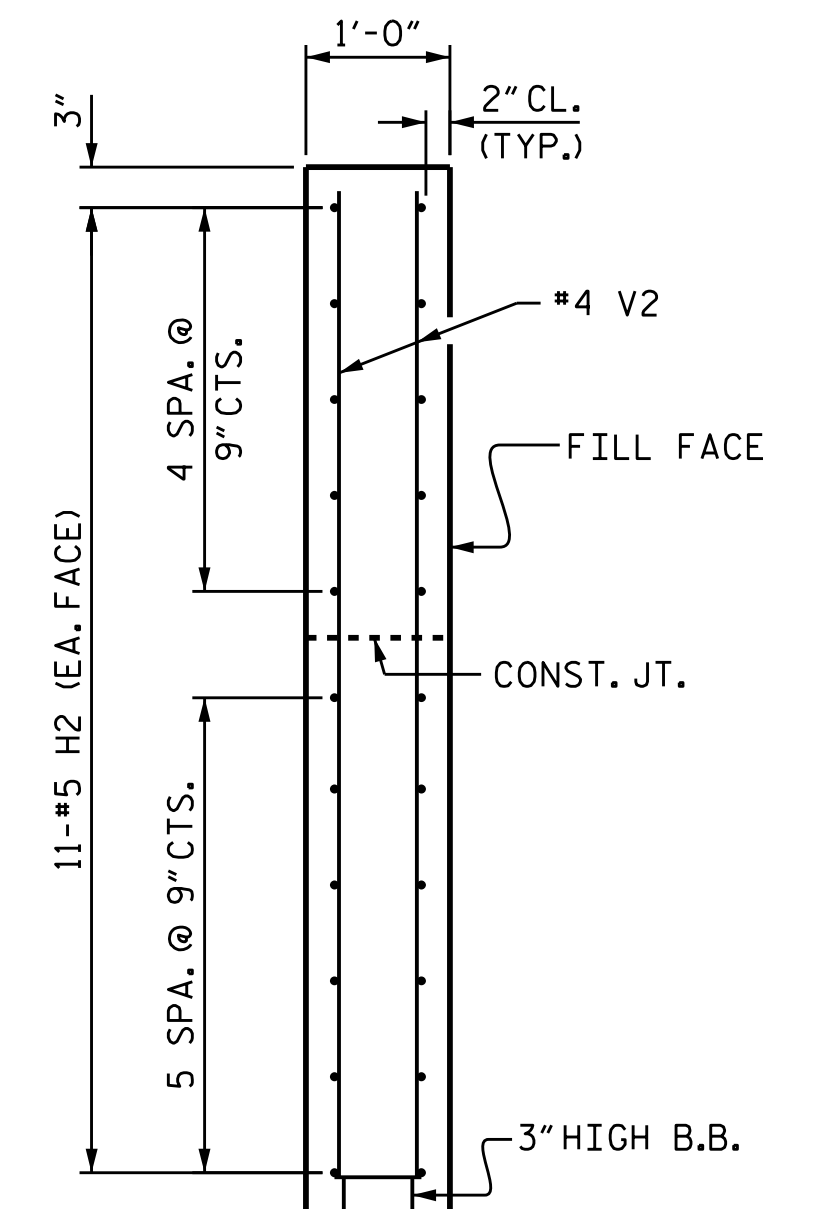
PLAN OF WING (W1)



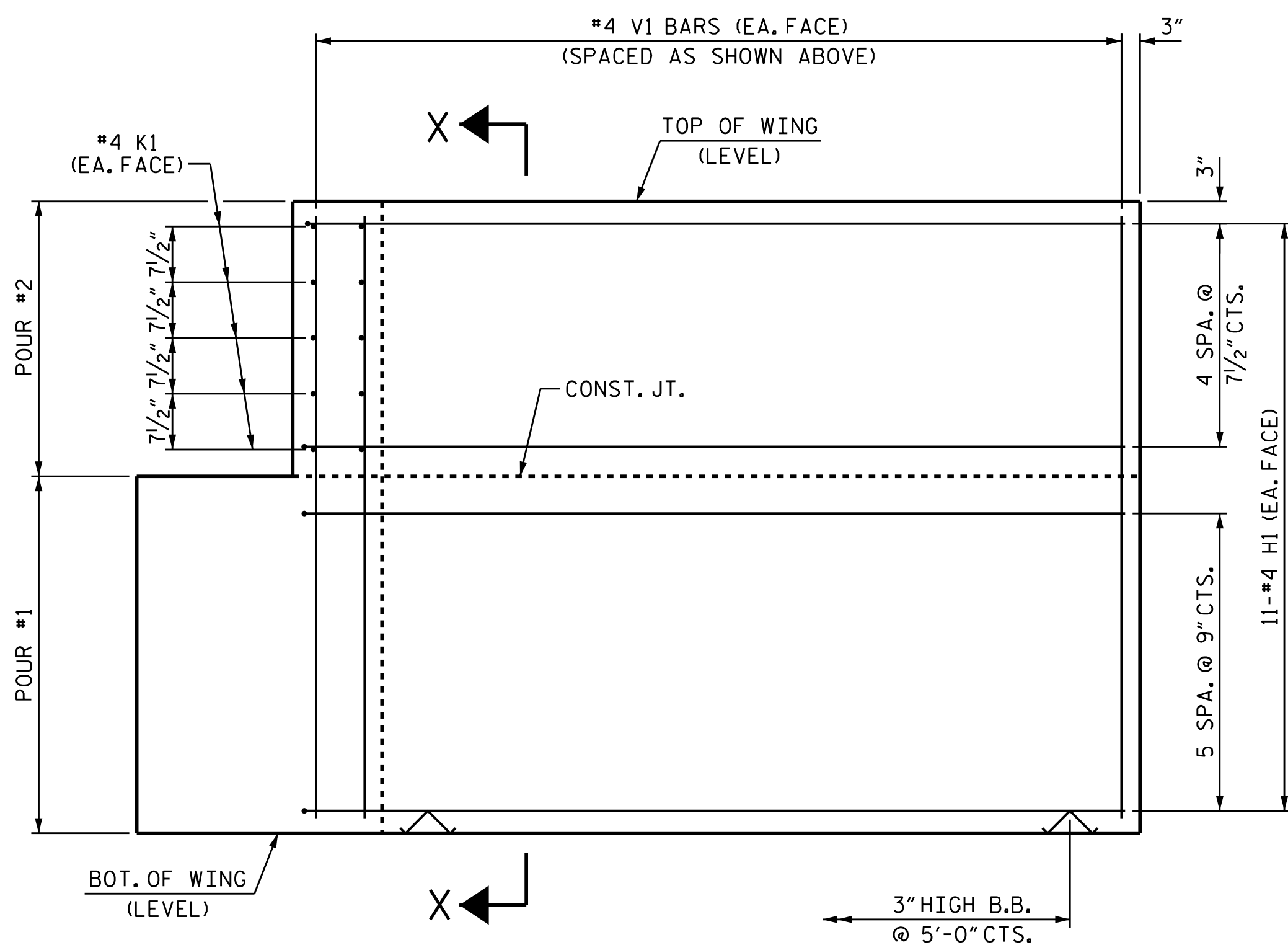
PLAN OF WING (W2)



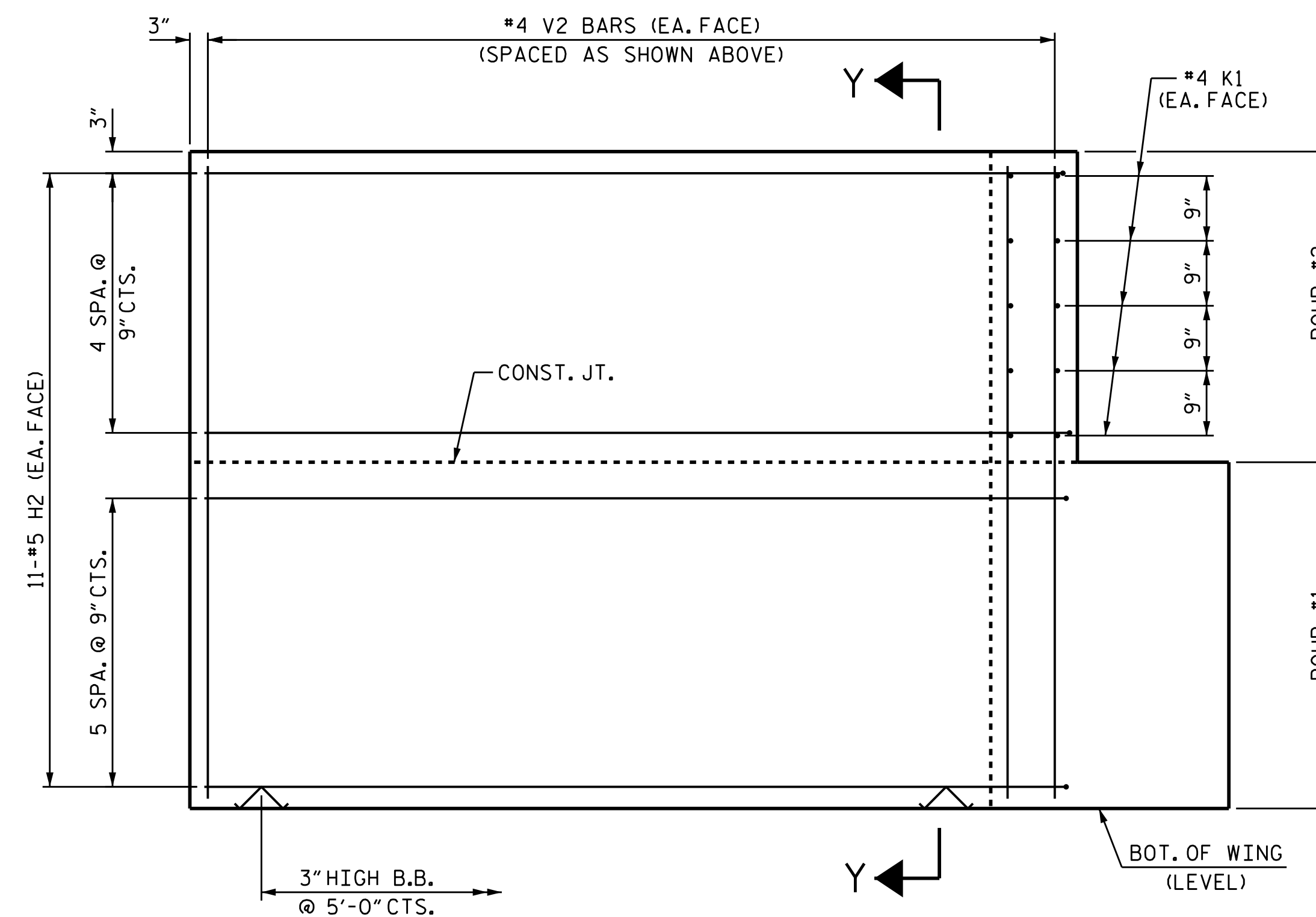
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)

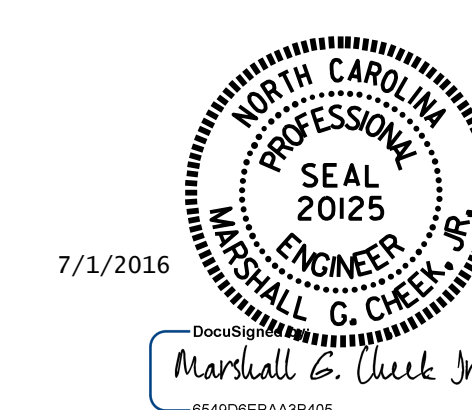


ELEVATION OF WING (W2)

WING DETAILS

PROJECT NO. B-5125
 MACON COUNTY
 STATION: 13+25.89 -L-

SHEET 2 OF 3



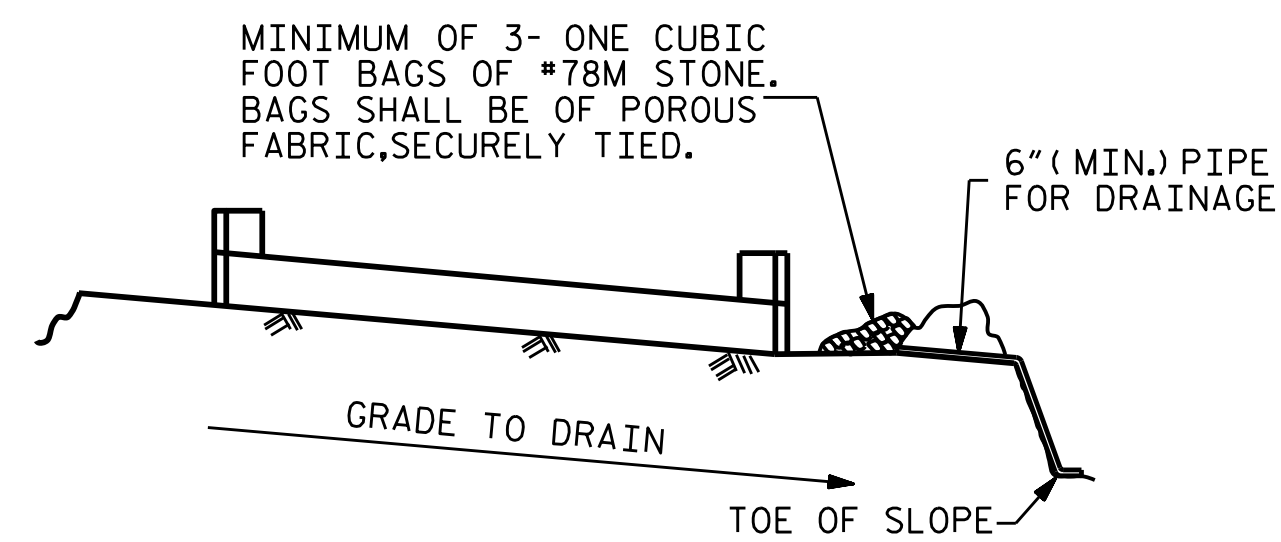
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 2
 WING DETAILS

DRAWN BY : B.N. GRADY DATE : 4/16
 CHECKED BY : H. T. BARBOUR DATE : 4-18-16
 DESIGN ENGINEER OF RECORD: W.J. HARRIS DATE : 5-16

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-35
2			4			43

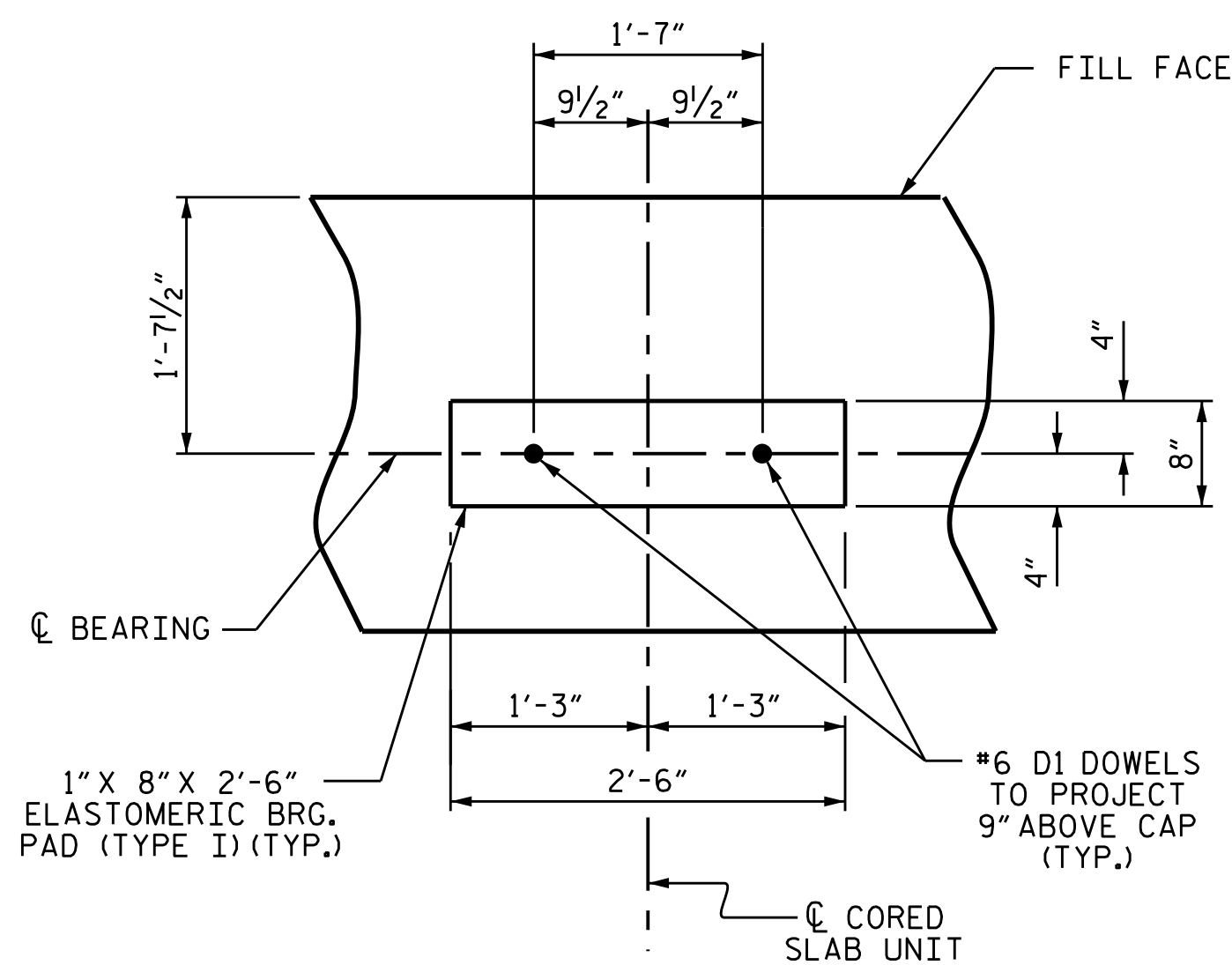


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

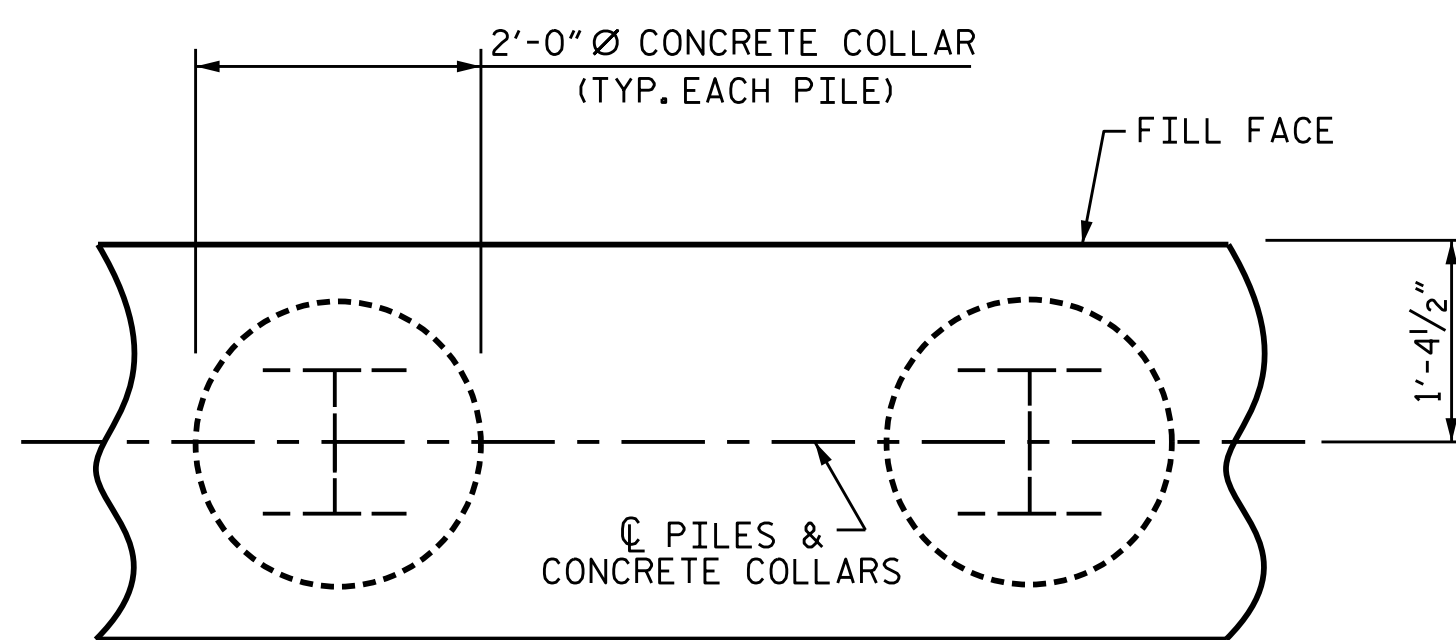
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

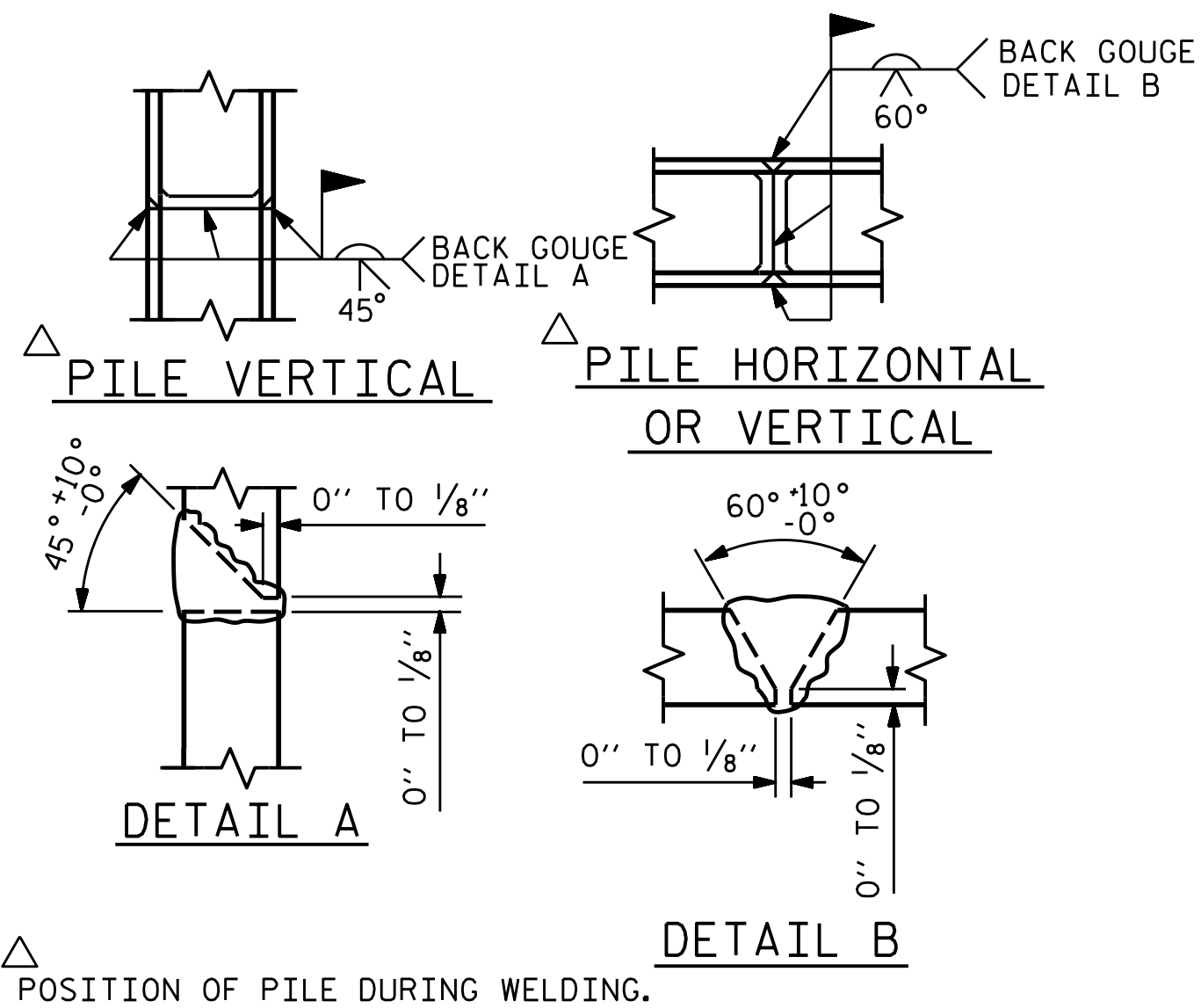


DETAIL "A"

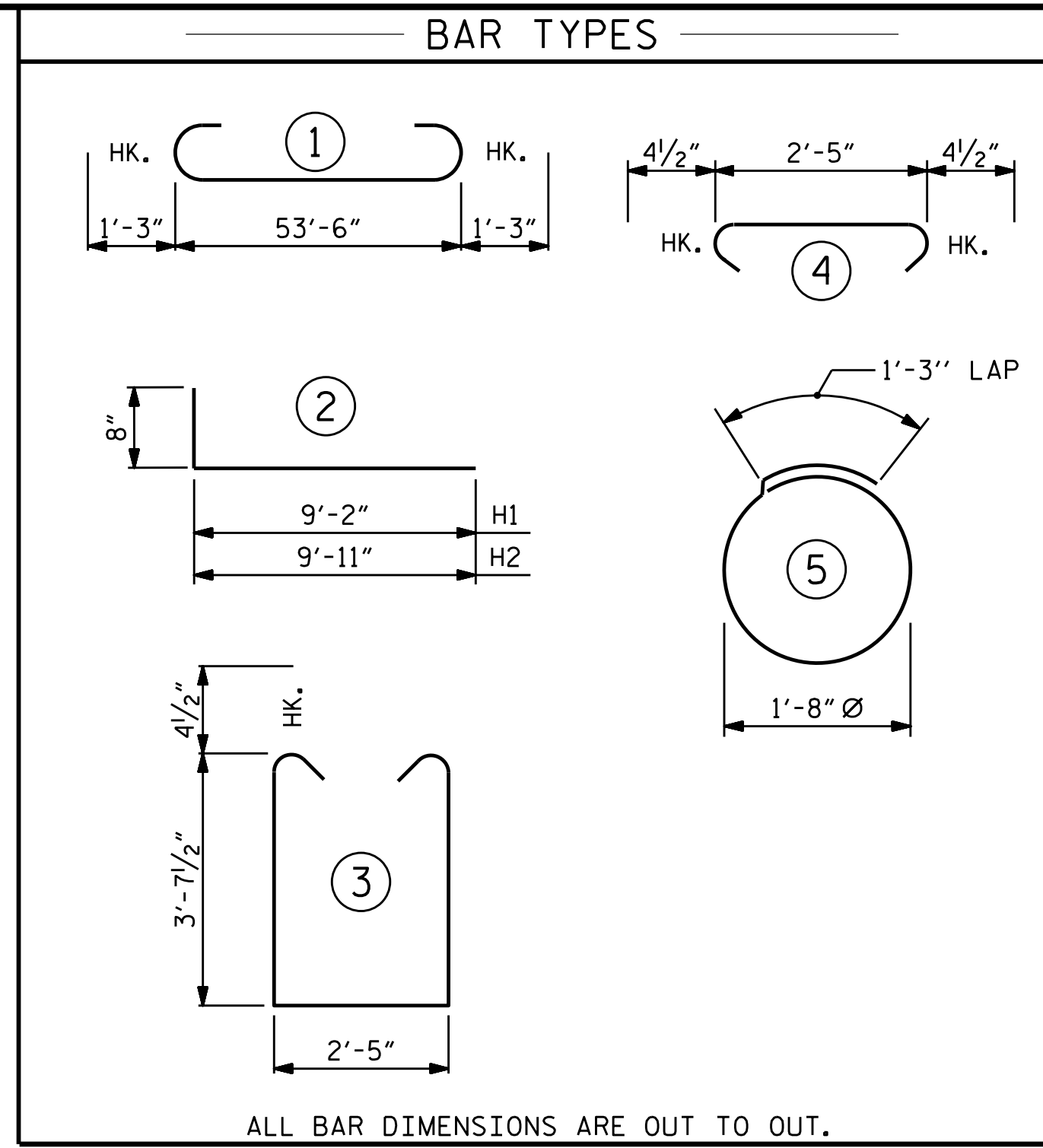


PLAN

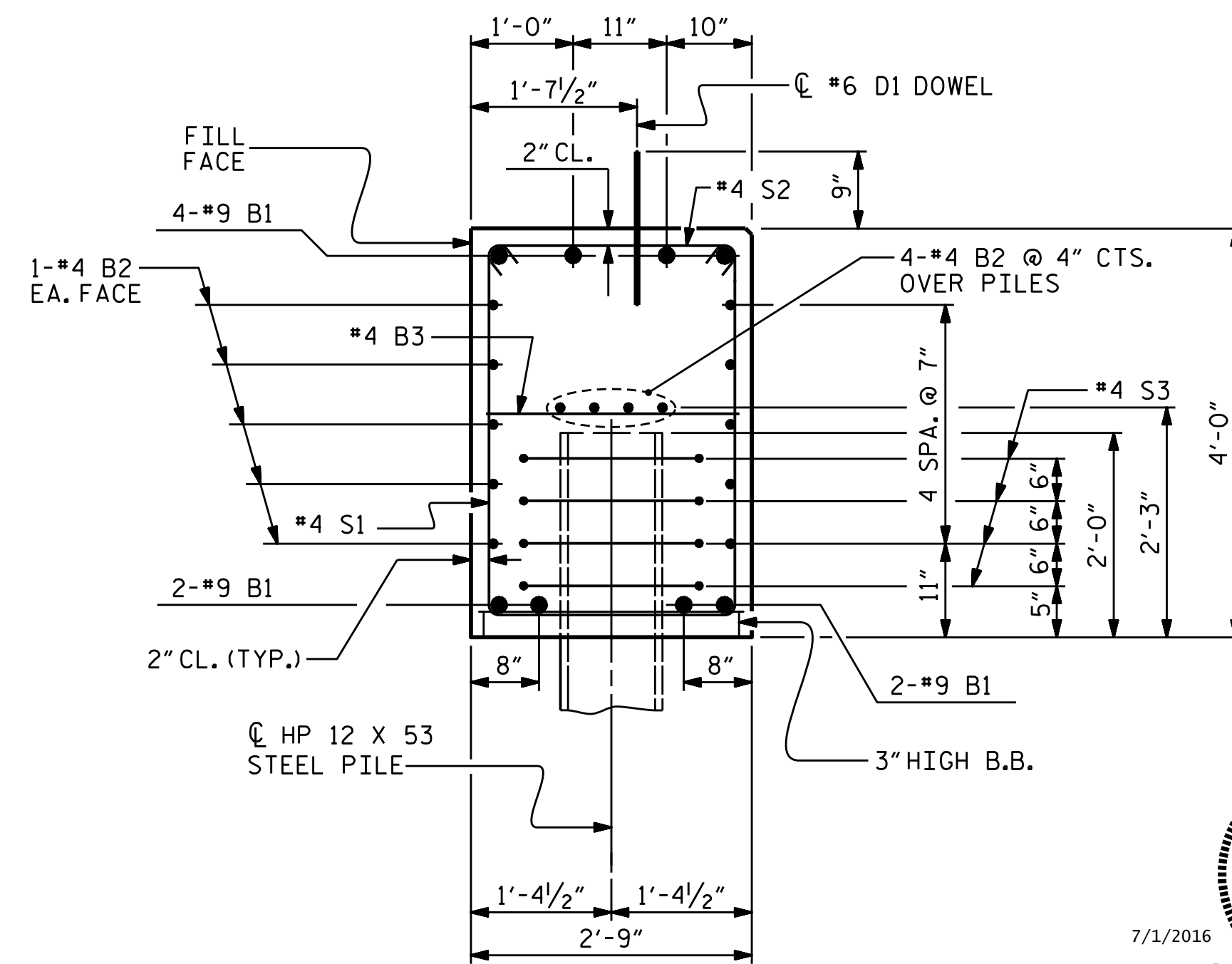
CORROSION PROTECTION FOR STEEL PILES DETAIL



PILE SPLICE DETAILS

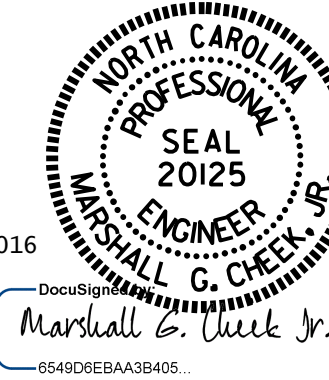


BILL OF MATERIAL					
END BENT No. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	56'-0"	1523
B2	28	#4	STR	28'-1"	525
B3	14	#4	STR	2'-5"	23
D1	32	#6	STR	1'-6"	72
H1	22	#4	2	9'-10"	145
H2	22	#5	2	10'-7"	243
K1	20	#4	STR	3'-6"	47
S1	58	#4	3	10'-5"	404
S2	58	#4	4	3'-2"	123
S3	32	#4	5	6'-6"	139
V1	28	#4	STR	6'-8"	125
V2	30	#4	STR	7'-3"	145
REINFORCING STEEL				3514 LBS.	
CLASS A CONCRETE BREAKDOWN					
POUR #1 CAP, LOWER PART OF WINGS & COLLARS				26.0 C.Y.	
POUR #2 UPPER PART OF WINGS				3.1 C.Y.	
TOTAL CLASS A CONCRETE				29.1 C.Y.	
HP 12 X 53 STEEL PILES				NO: 8 LIN. FT. = 440	



SECTION A-A

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



PROJECT NO. B-5125

MACON COUNTY

STATION: 13+25.89 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

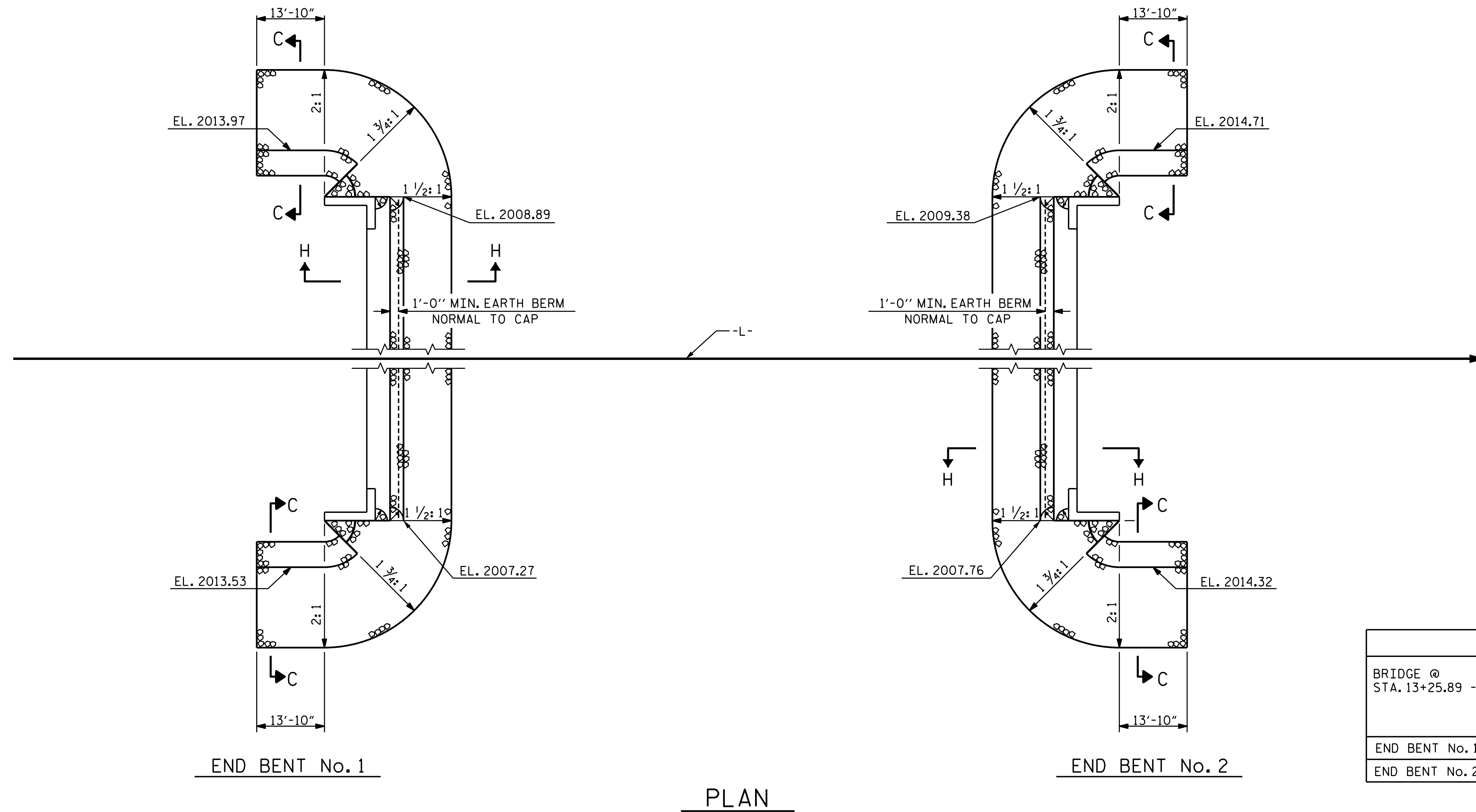
SUBSTRUCTURE END BENT No. 2 DETAILS

DRAWN BY : B.N. GRADY DATE : 4-16
CHECKED BY : H. T. BARBOUR DATE : 4-18-16
DESIGN ENGINEER OF RECORD: W.J. HARRIS DATE : 5-16

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

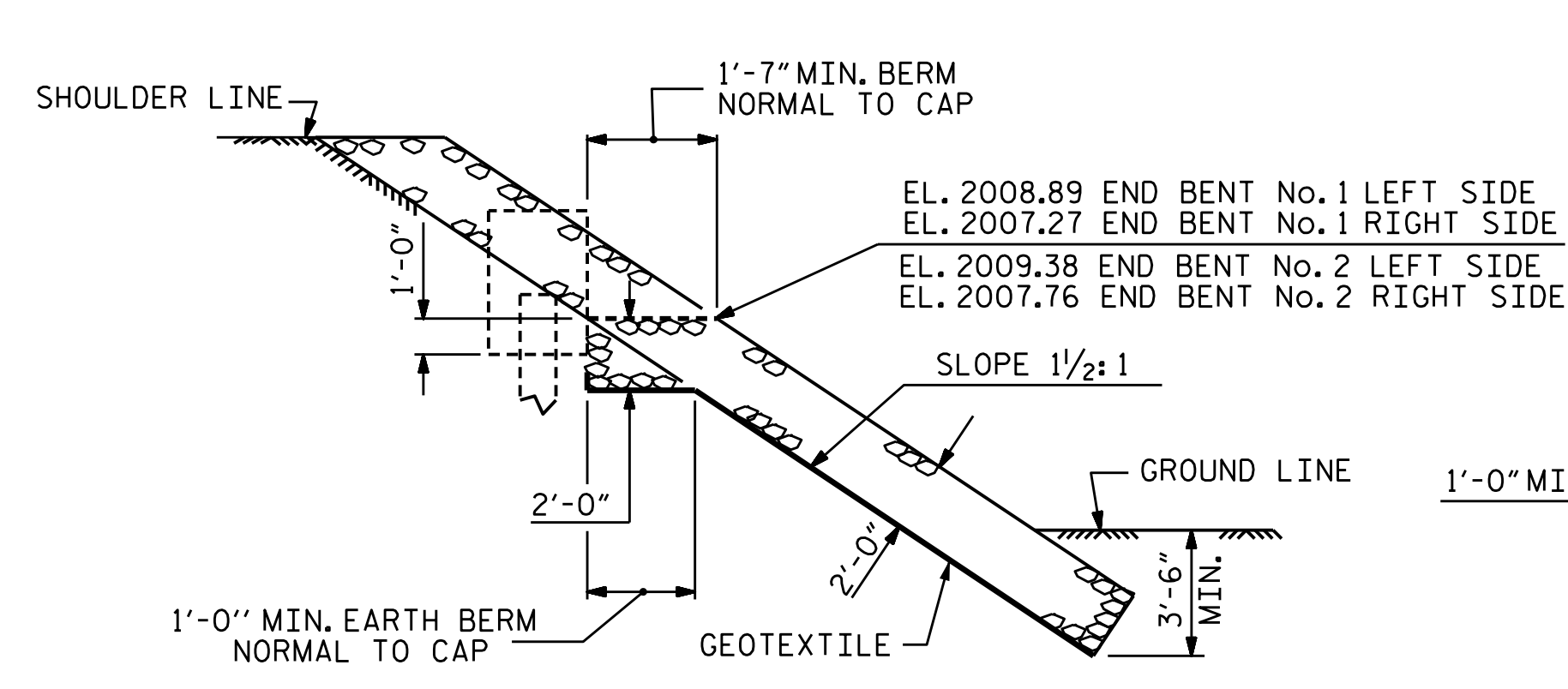
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-36
1			3			TOTAL SHEETS
2			4			43

NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

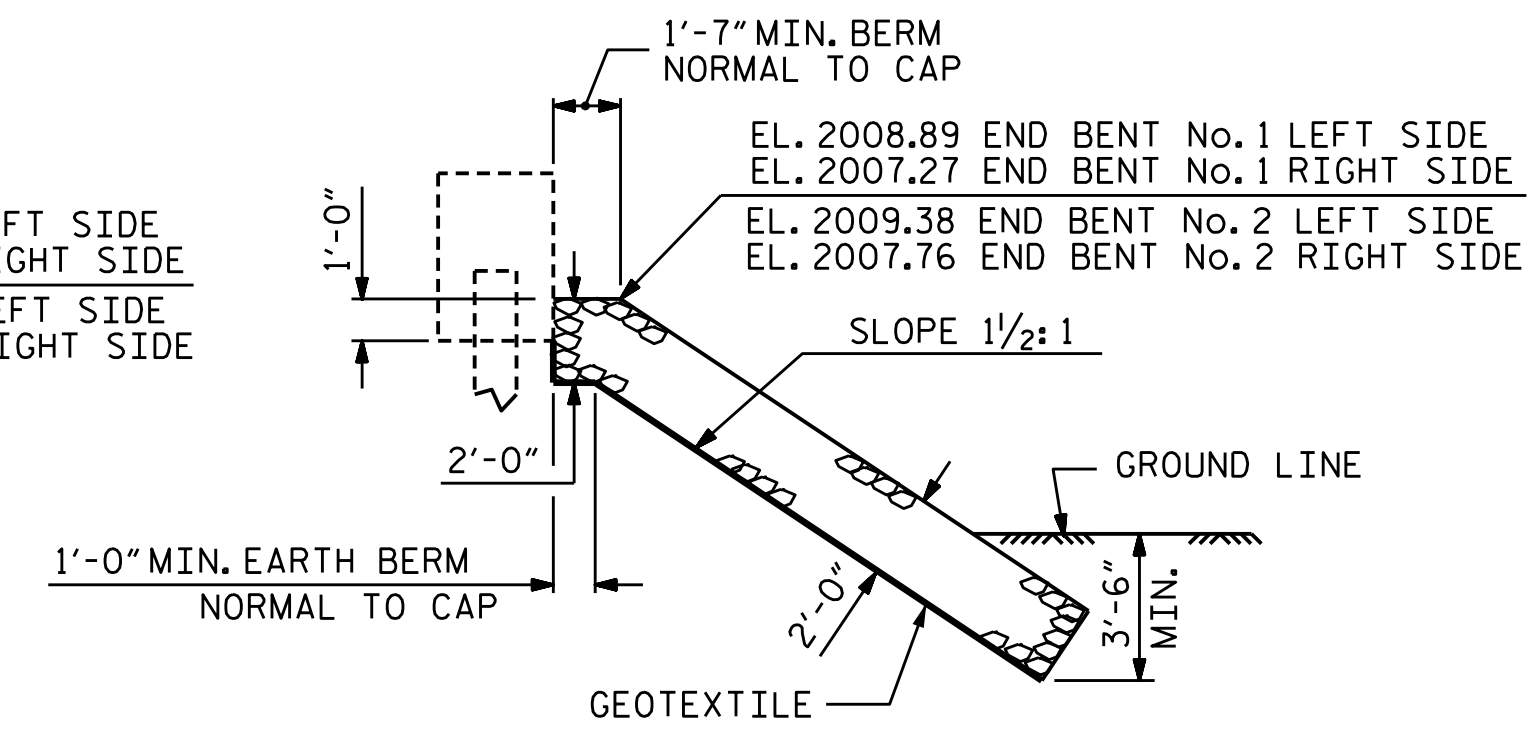


ESTIMATED QUANTITIES		
BRIDGE @ STA. 13+25.89 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT No. 1	215	240
END BENT No. 2	150	165

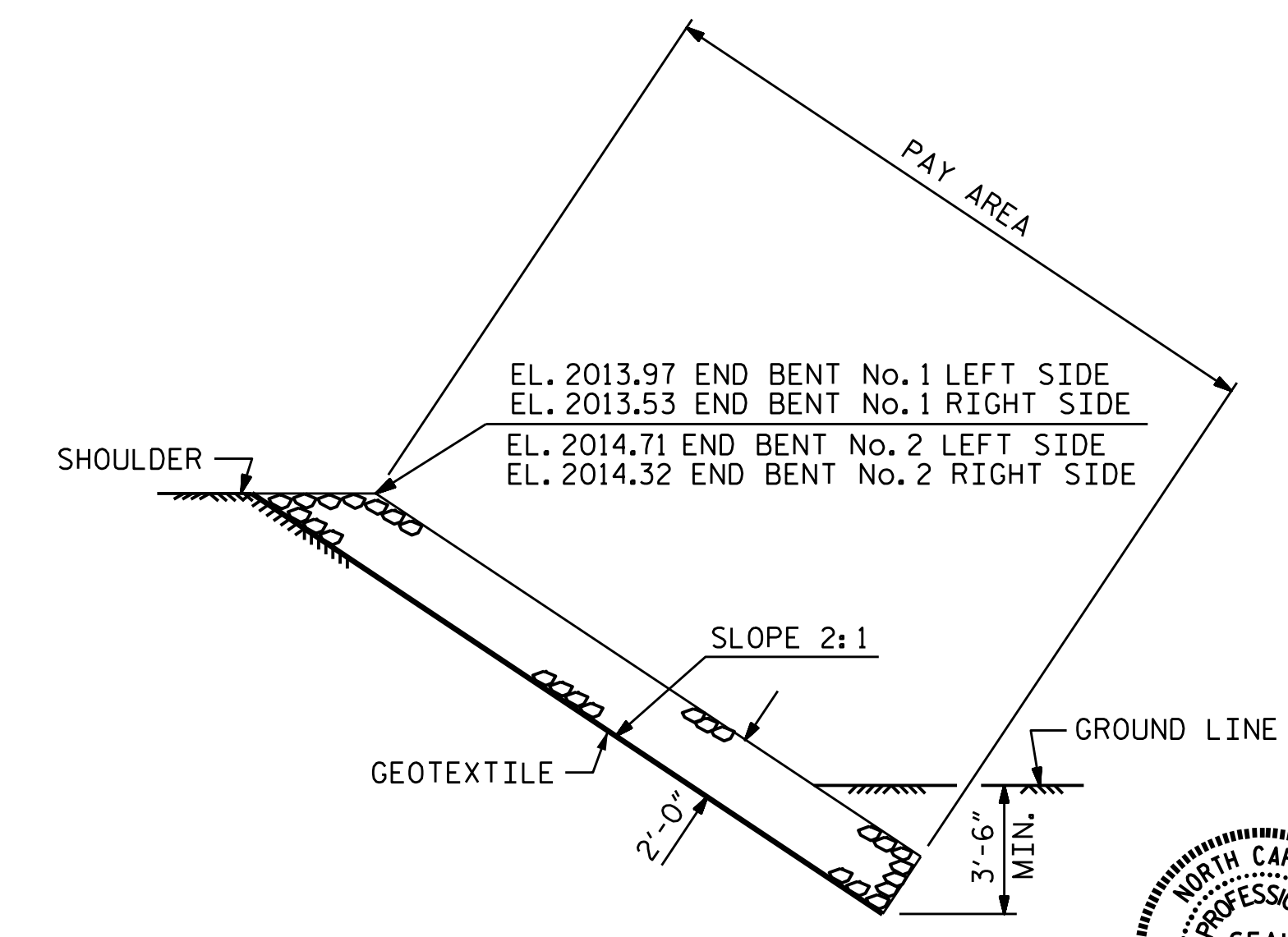
PLAN



SECTION H-H



SECTION C-C
BERM RIP RAPPED



SECTION C-C

PROJECT NO. B-5125
MACON COUNTY
STATION: 13+25.89 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
= RIP RAP DETAILS =

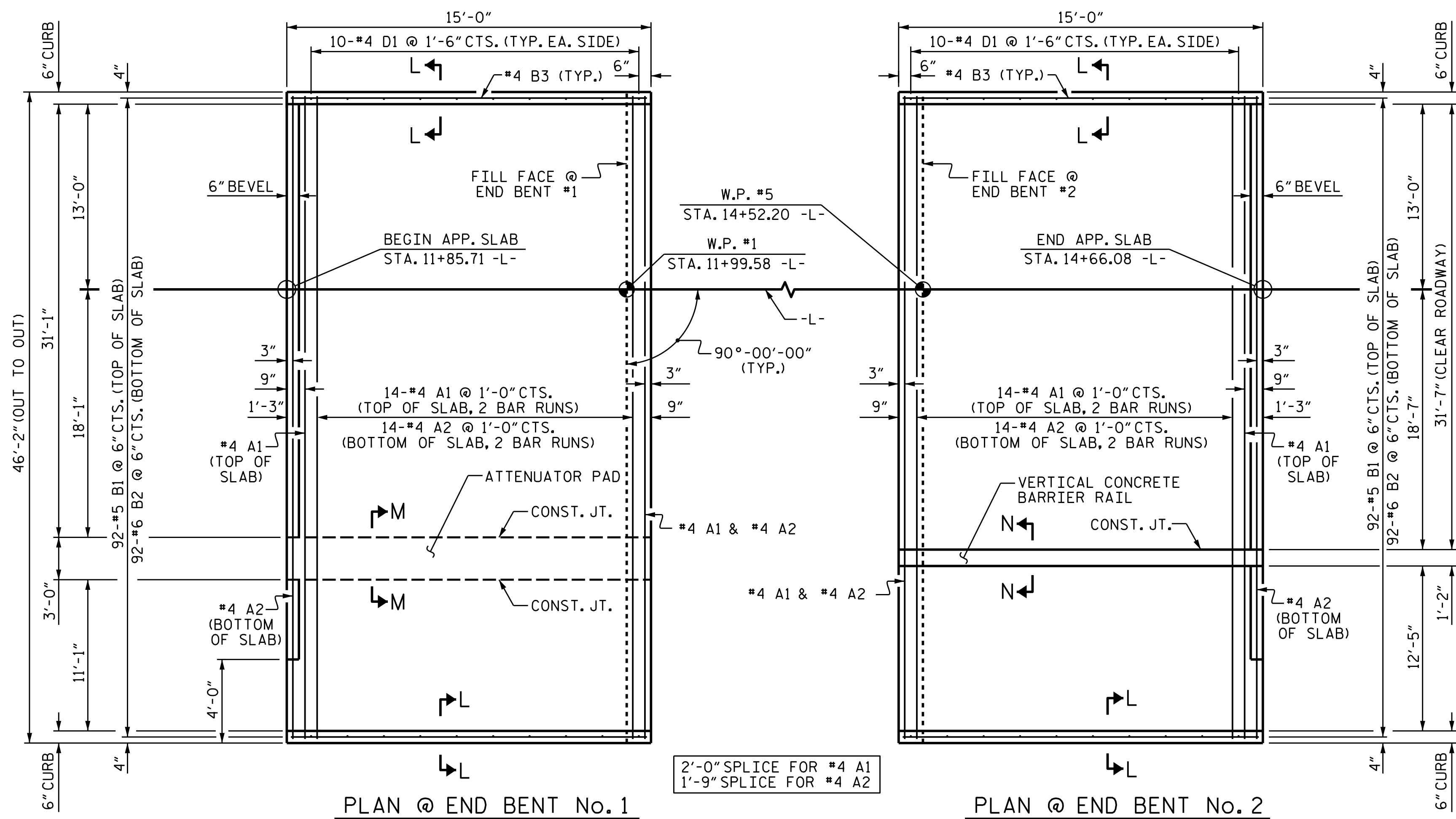


ASSEMBLED BY : D. HODGE	DATE : 9/15
CHECKED BY : B.N. GRADY	DATE : 4/16
DRAWN BY : REK 1/84	REV. 5/1/06R TLA/GM
CHECKED BY : RDU 1/84	REV. 10/1/11 MAA/GM
	REV. 12/21/11 MAA/GM

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-37
1			3			TOTAL SHEETS 43
2			4			

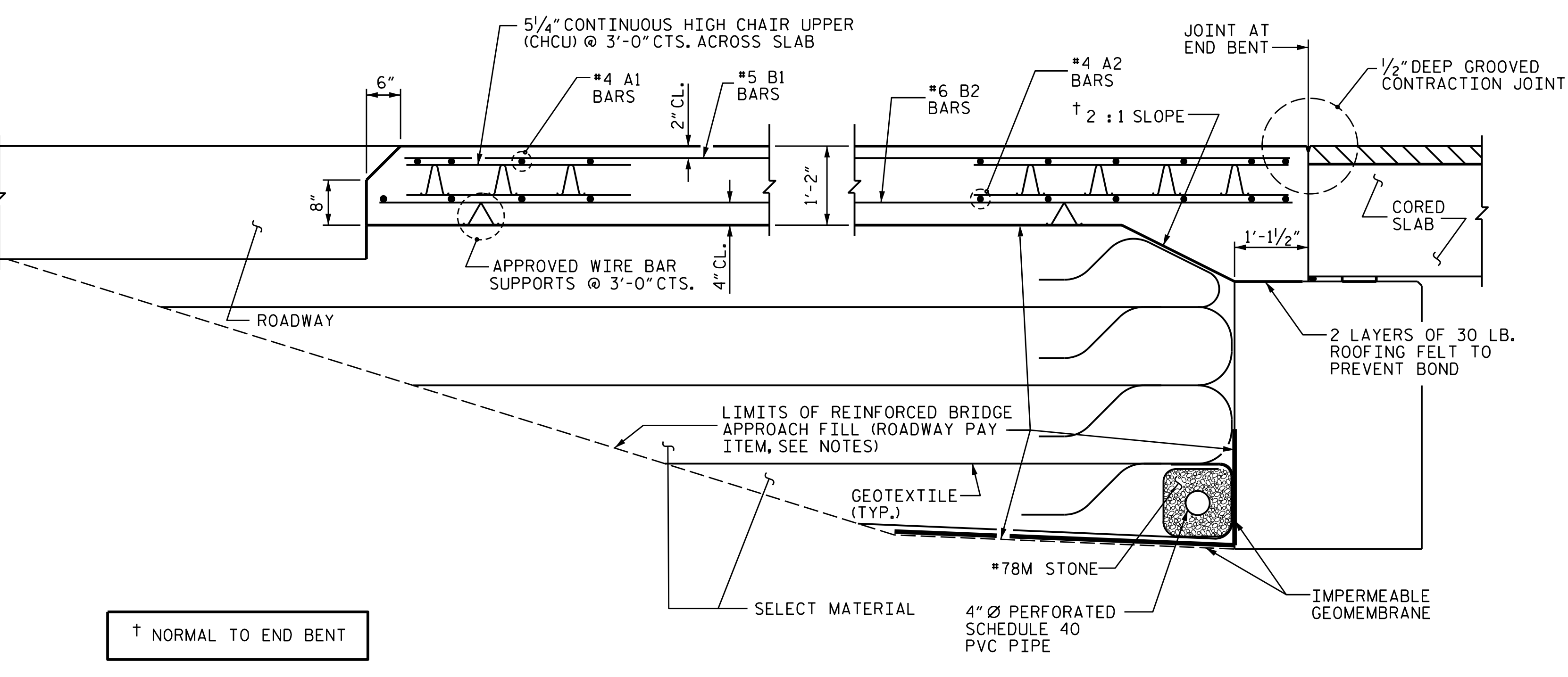
*****SYTIME*****
*****SDGN*****
*****USERNAME*****



PLAN @ END BENT No. 1

PLAN @ END BENT No. 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS EXCEPT AS NOTED.
FOR LOCATION OF 4" Ø DUCT BANK SEE "SECTION THRU SLAB LOCATING DUCT BANK", SHEET 2 OF 2.



SECTION THRU SLAB

NOTES

APPROACH SLABS SHALL BE POURED AFTER CONCRETE WEARING SURFACE IS POURED.

FOR REINFORCED BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, AND SELECT MATERIAL, SEE ROADWAY PLANS.

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

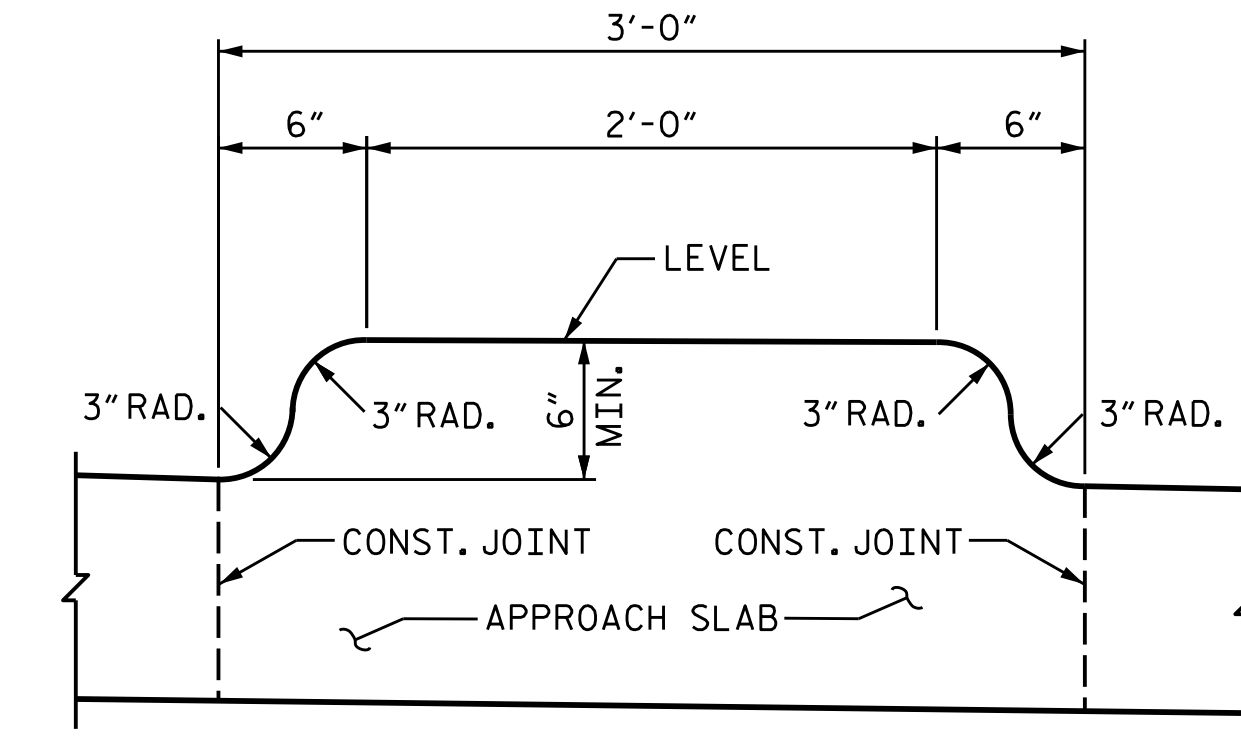
FOR APPROACH SLAB GROOVING, SEE "CONCRETE WEARING SURFACE" SHEET.

PAYMENT FOR THE VERTICAL CONCRETE BARRIER RAIL ON THE APPROACH SLAB SHALL BE INCLUDED IN THE PRICE BID FOR "VERTICAL CONCRETE BARRIER RAIL".

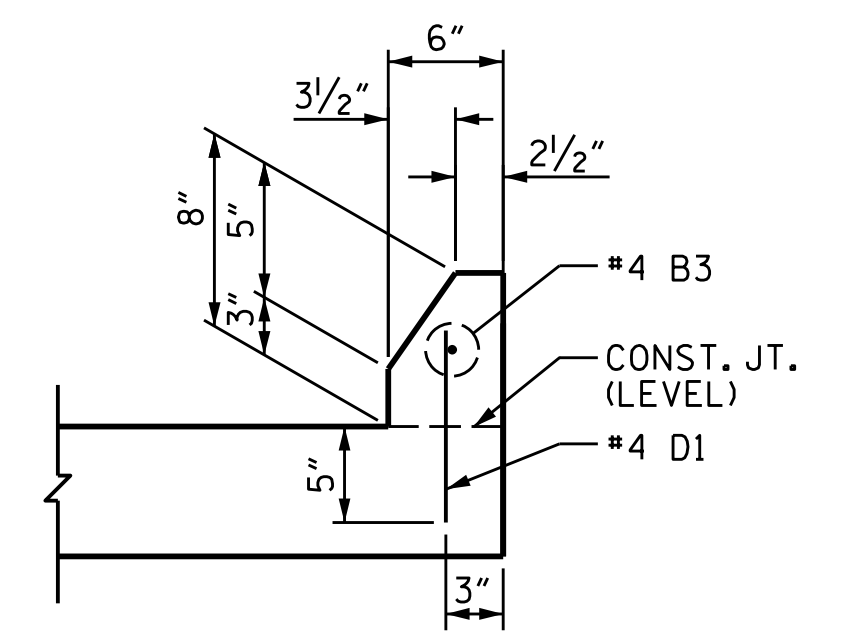
ATTENUATOR & ANCHORAGE FOR ATTENUATOR ARE ROADWAY PAY ITEMS AND DETAILS.

CONCRETE FOR ATTENUATOR PAD INCLUDED IN CLASS AA CONCRETE TOTAL C.Y. FOR APPROACH SLAB @ END BENT No. 1.

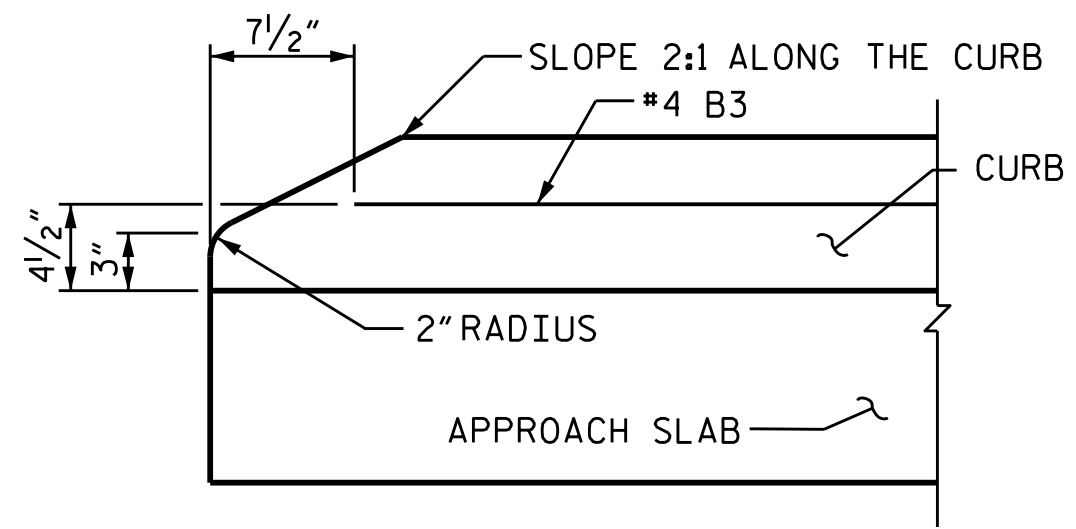
DOWELS MAY BE PUSHED INTO GREEN CONCRETE AFTER THE SLAB HAS BEEN SCREEDED AND FLOAT FINISHED.



SECTION M-M
ATTENUATOR PAD
APPROACH SLAB @ END BENT No. 1



SECTION L-L



END OF CURB WITHOUT
SHOULDER BERM GUTTER
CURB DETAILS

BILL OF MATERIAL						
APPROACH SLAB AT EB No. 1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	32	#4	STR	23'-11"	511	
A2	32	#4	STR	23'-10"	509	
*B1	92	#5	STR	14'-3"	1367	
B2	92	#6	STR	14'-8"	2027	
*B3	2	#4	STR	14'-2"	19	
*D1	20	#4	STR	11"	12	
REINFORCING STEEL					LBS.	2536
*EPOXY COATED REINFORCING STEEL					LBS.	1909
CLASS AA CONCRETE BREAKDOWN						
APPROACH SLAB					C.Y.	34.1
ATTENUATOR PAD					C.Y.	3.1
TOTAL CLASS AA CONCRETE					C.Y.	37.2
APPROACH SLAB AT EB No. 2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	32	#4	STR	23'-11"	511	
A2	32	#4	STR	23'-10"	509	
*B1	92	#5	STR	14'-3"	1367	
B2	92	#6	STR	14'-8"	2027	
*B3	2	#4	STR	14'-2"	19	
*B4	10	#5	STR	14'-8"	153	
*S1	15	#5	1	5'-1"	80	
*S2	9	#5	2	7'-2"	142	
*S3	4	#5	2	6'-0"	25	
*D1	20	#4	STR	11"	12	
REINFORCING STEEL					LBS.	2536
*EPOXY COATED REINFORCING STEEL					LBS.	2309
CLASS AA CONCRETE BREAKDOWN						
APPROACH SLAB					C.Y.	36.1
VERT. CONC. BARRIER RAIL					C.Y.	2.1
TOTAL CLASS AA CONCRETE					C.Y.	38.2

BAR TYPES					
ALL BAR DIMENSIONS ARE OUT TO OUT					

PROJECT NO. B-5125
MACON COUNTY
 STATION: 13+25.89 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE APPROACH SLAB
 FOR PRESTRESSED CONCRETE
 CORED SLAB



DRAWN BY: W.J. HARRIS DATE: 4/16
 CHECKED BY: H.T. BARBOUR DATE: 4/16
 DESIGN ENGINEER OF RECORD: W.J. HARRIS DATE: 5/16

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-38 TOTAL SHEETS 43
1			3			
2			4			

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

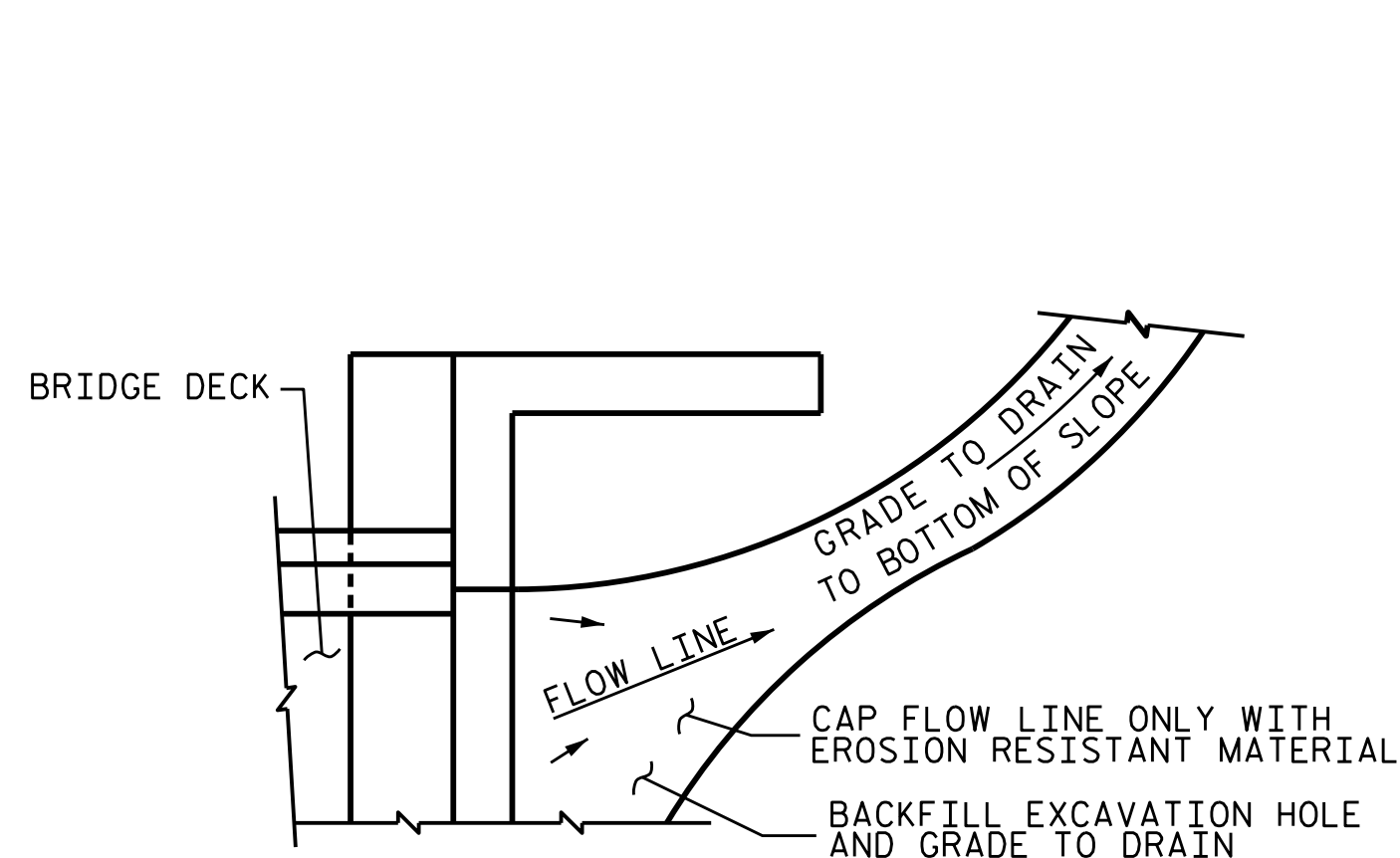
NOTES

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

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

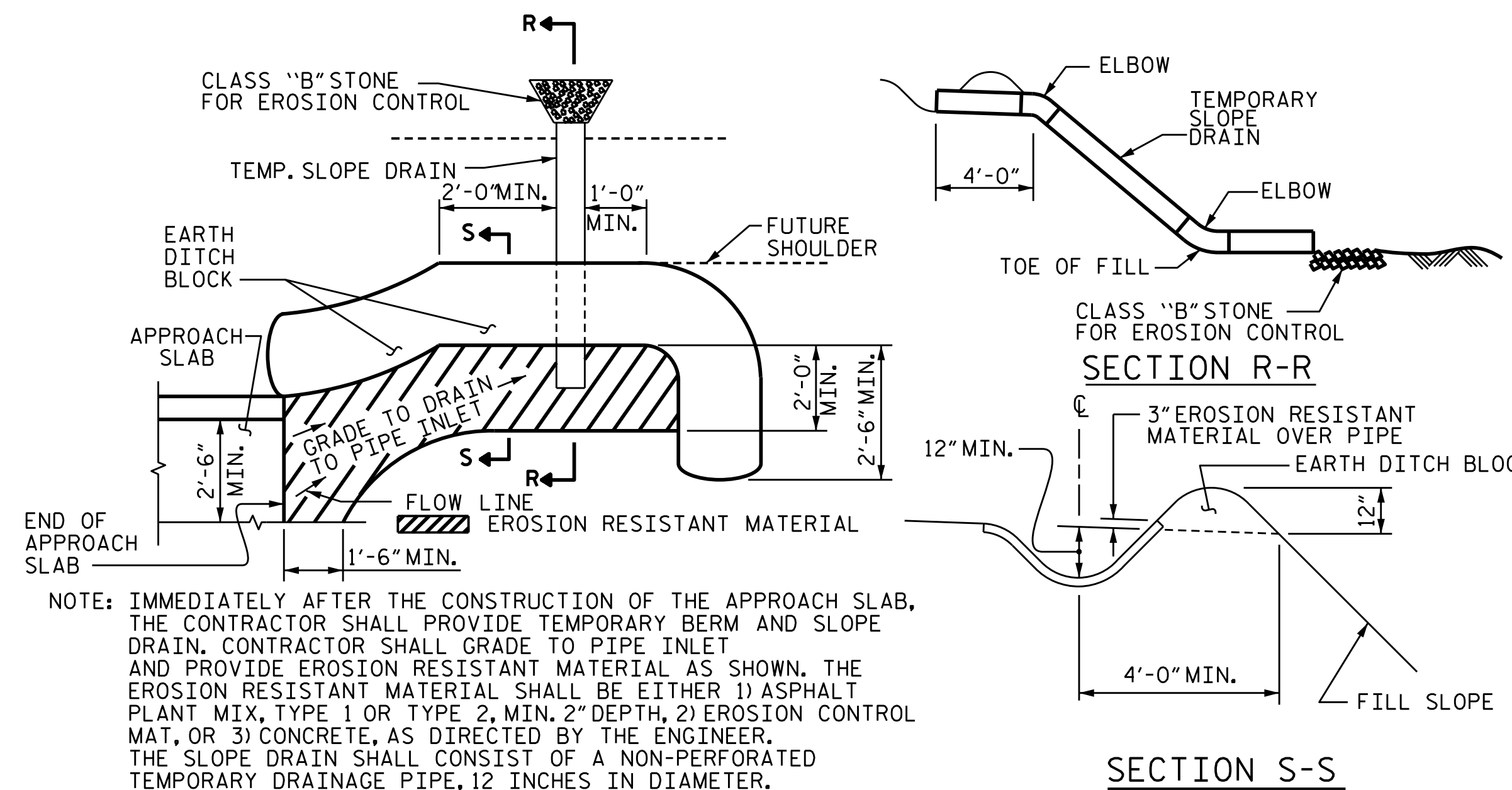
ARCHITECTURAL CONCRETE SURFACE TREATMENT SHALL BE APPLIED TO BOTH FACES OF THE VERTICAL CONCRETE BARRIER RAIL.

FOR ARCHITECTURAL CONCRETE SURFACE TREATMENT, SEE SPECIAL PROVISIONS.



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

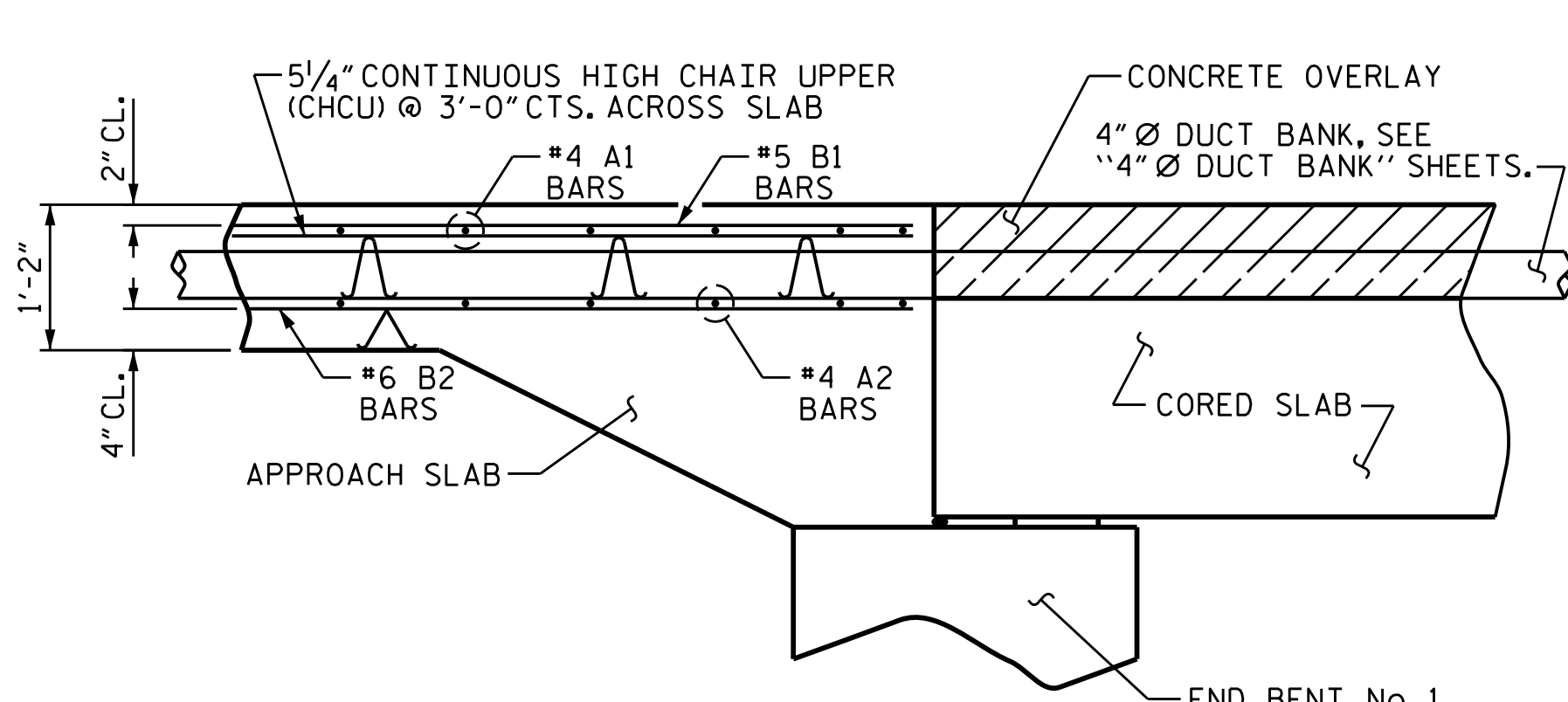


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

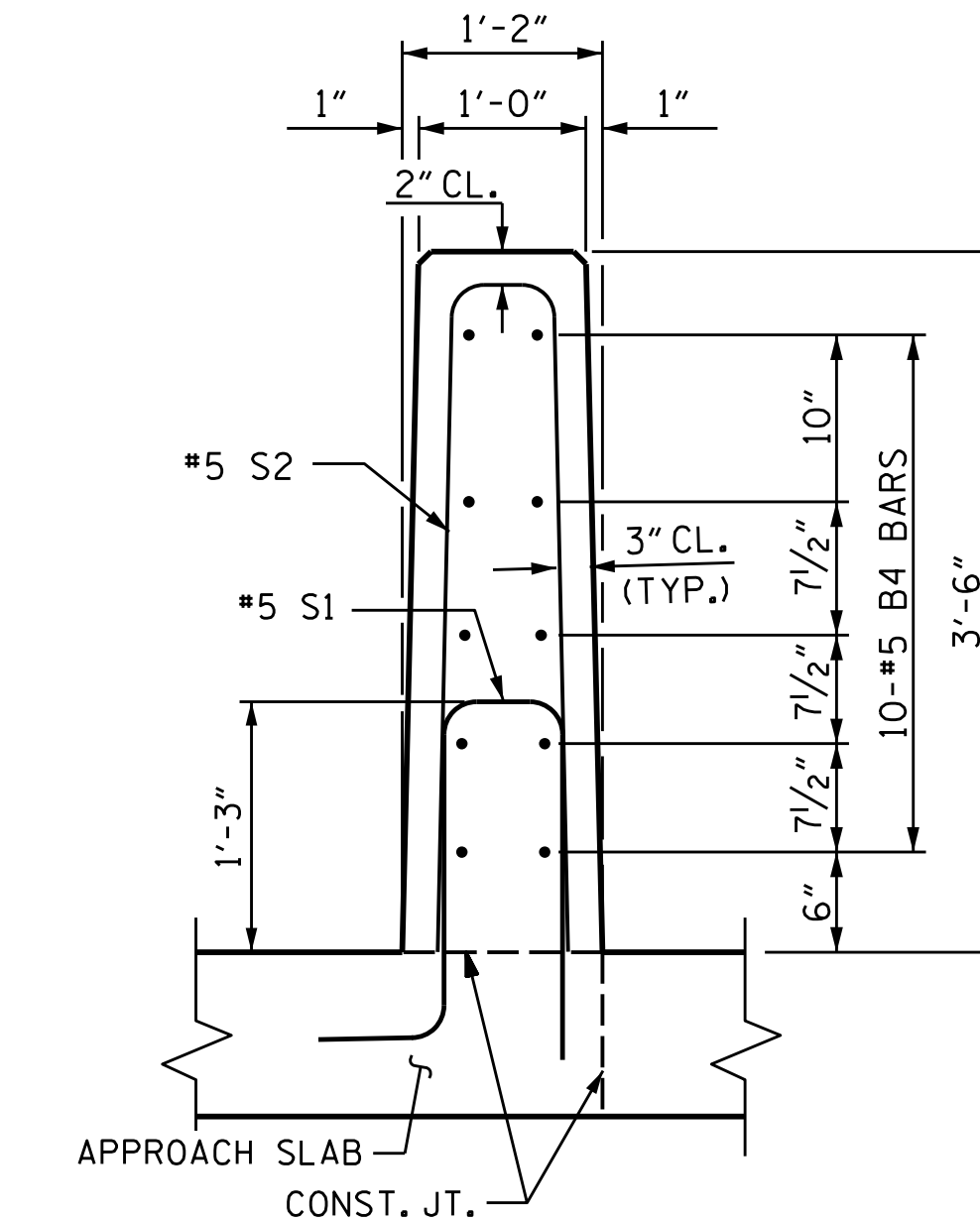
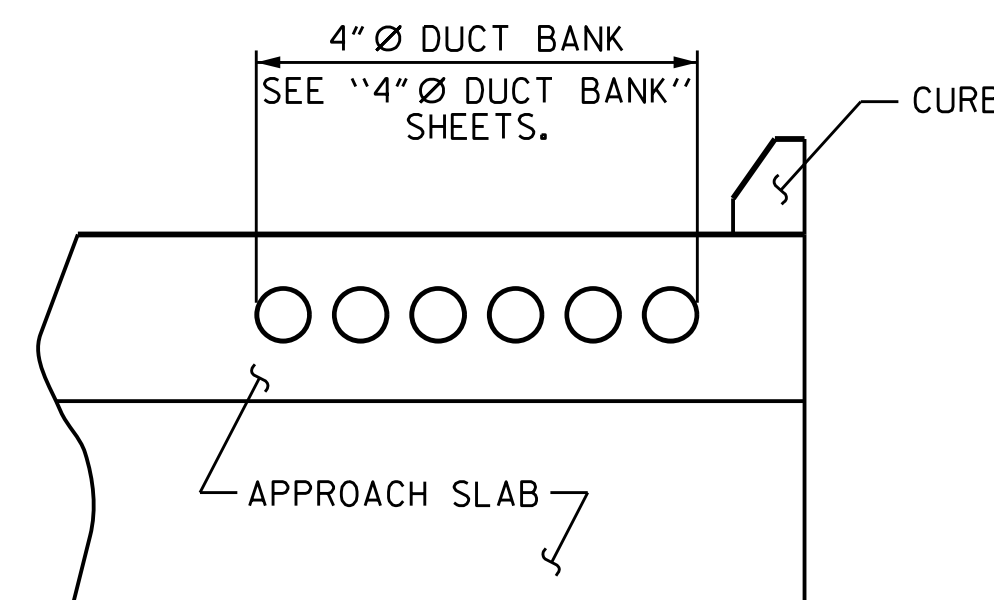
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

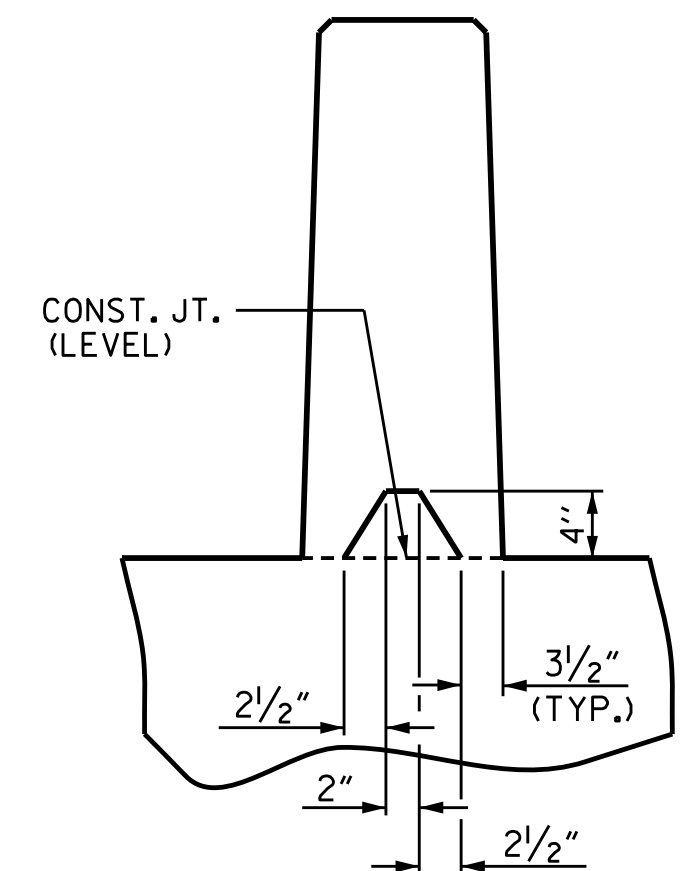


SECTION THRU APPROACH SLAB LOCATING DUCT BANK

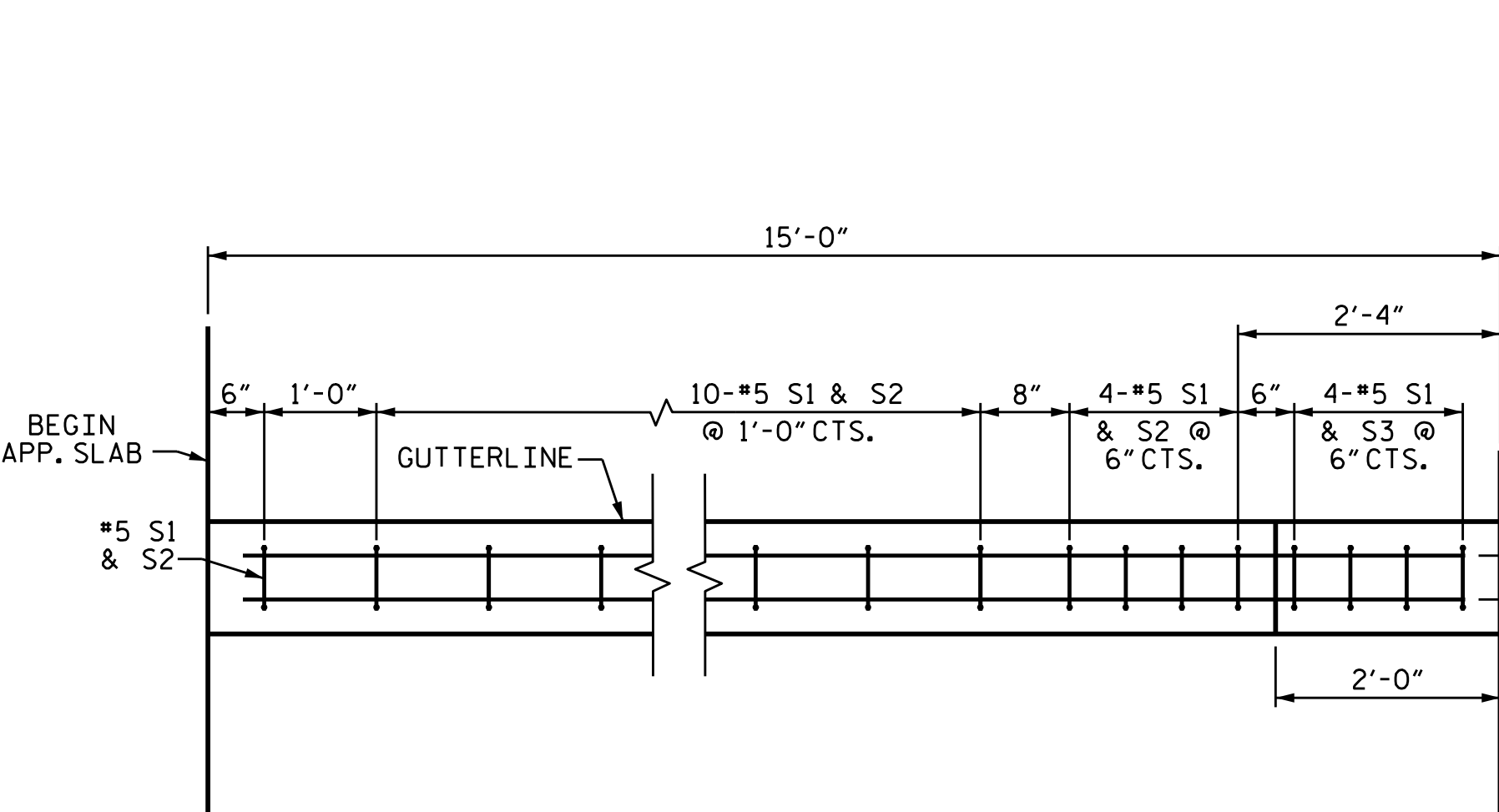
APPROACH SLAB @ END BENT No. 1 SHOWN. APPROACH SLAB @ END BENT No. 2 SIMILAR.



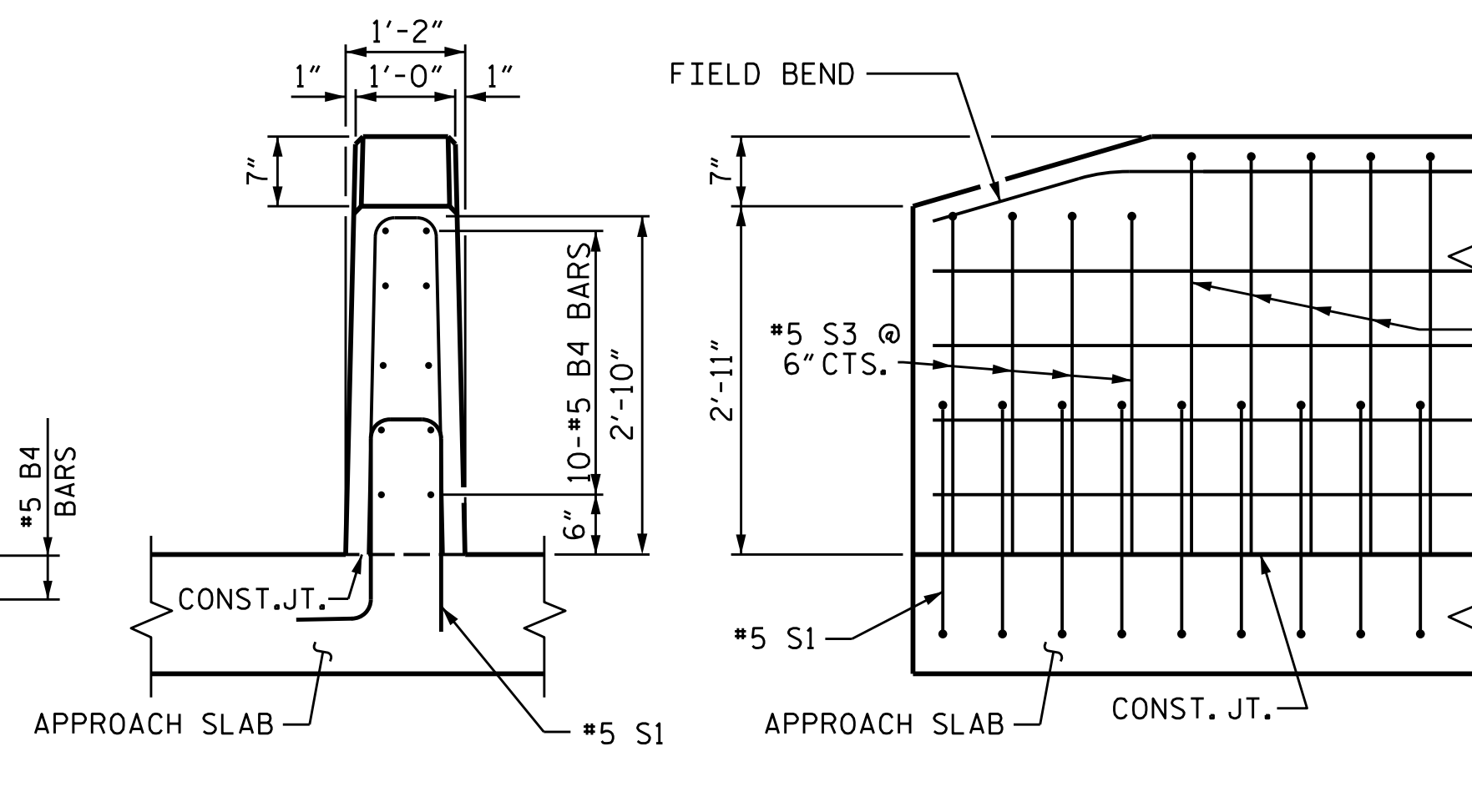
SECTION N-N
APPROACH SLAB END BENT No. 2



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



PLAN

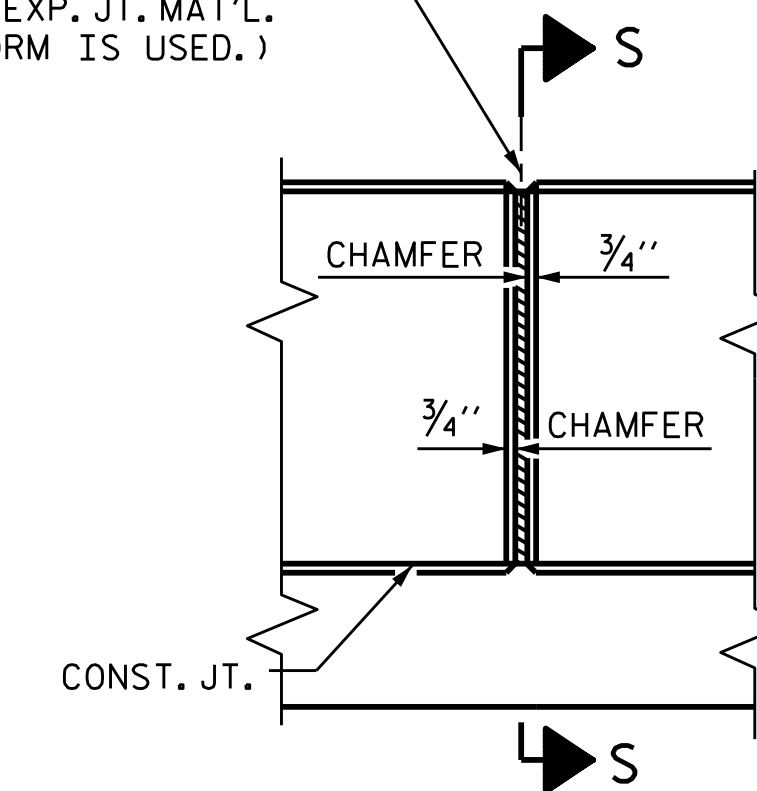


END VIEW

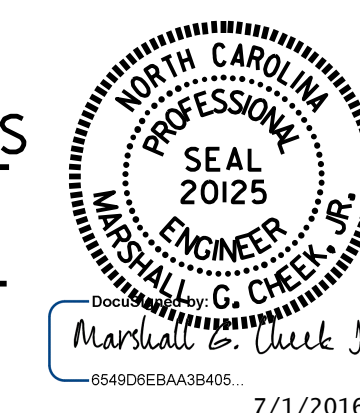
SIDE VIEW

END OF RAIL DETAILS

1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS.
(NOTE: OMIT EXP. JT. MAT'L WHEN SLIP FORM IS USED.)



ELEVATION AT EXPANSION JOINTS BARRIER RAIL DETAILS



PROJECT NO. B-5125
MACON COUNTY
STATION: 13+25.89 -L-
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB DETAILS

DRAWN BY : W.J. HARRIS DATE : 3/9/16
CHECKED BY : H.T. BARBOUR DATE : 4/16
DESIGN ENGINEER OF RECORD: W.J. HARRIS DATE : 5/16

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

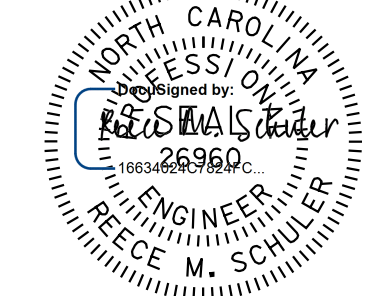
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-39	
1			3			TOTAL SHEETS	
2			4			43	

PROPOSED DUCT BANK CONSTRUCTION
FOR FRONTIER COMMUNICATIONS
IN ASSOC. WITH NCDOT PROJECT B-5125

SHEET NO.

S-41

ENGINEER



5/17/2016

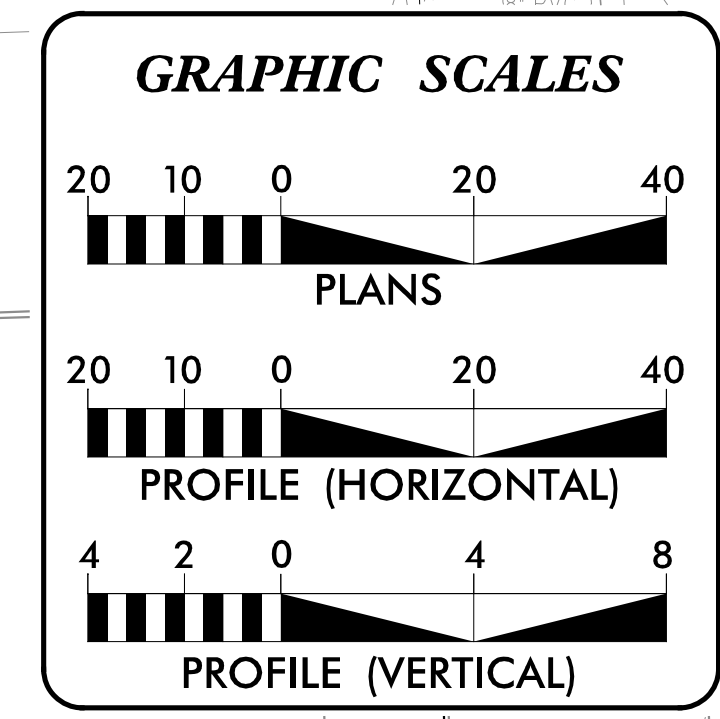
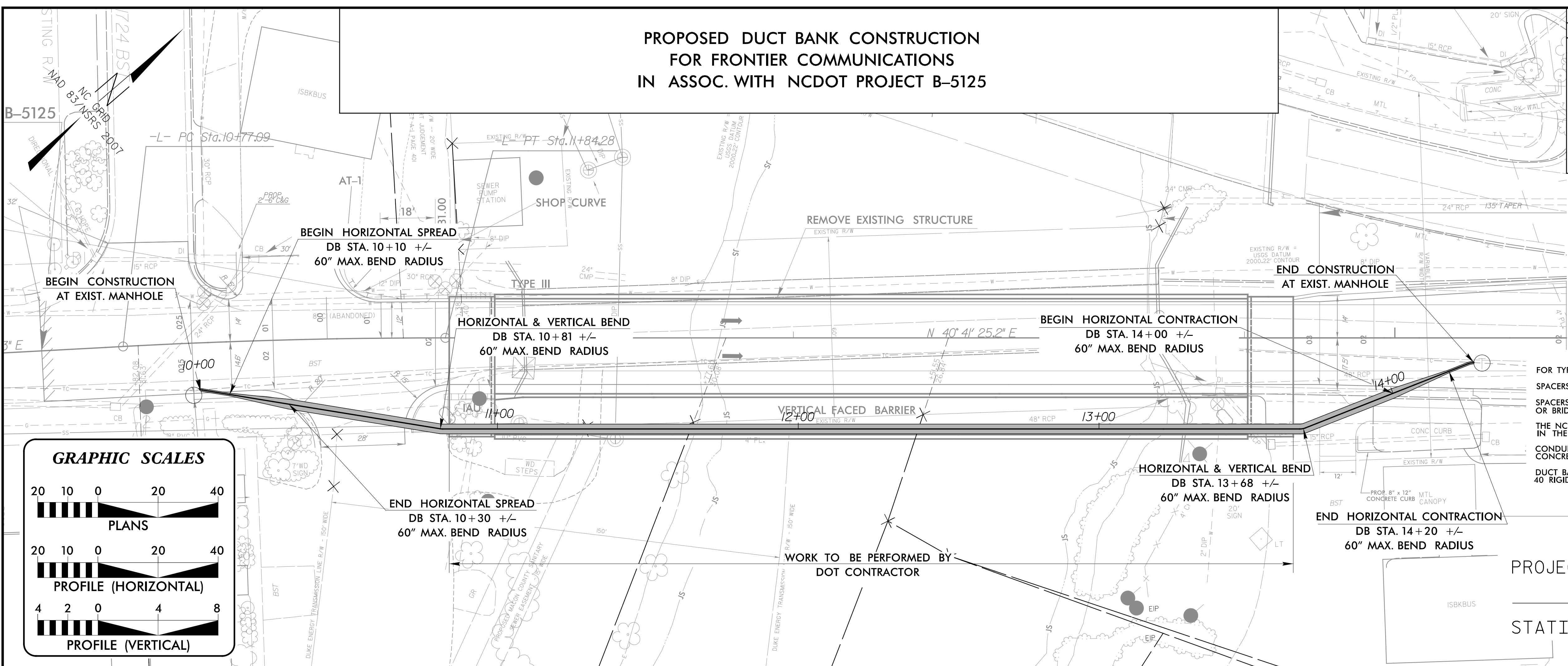
V&M
Vaughn & Melton
Consulting Engineers
Charlotte, North Carolina
704-357-0488

Copyright © 2006 Vaughn & Melton, Inc. All Rights Reserved.

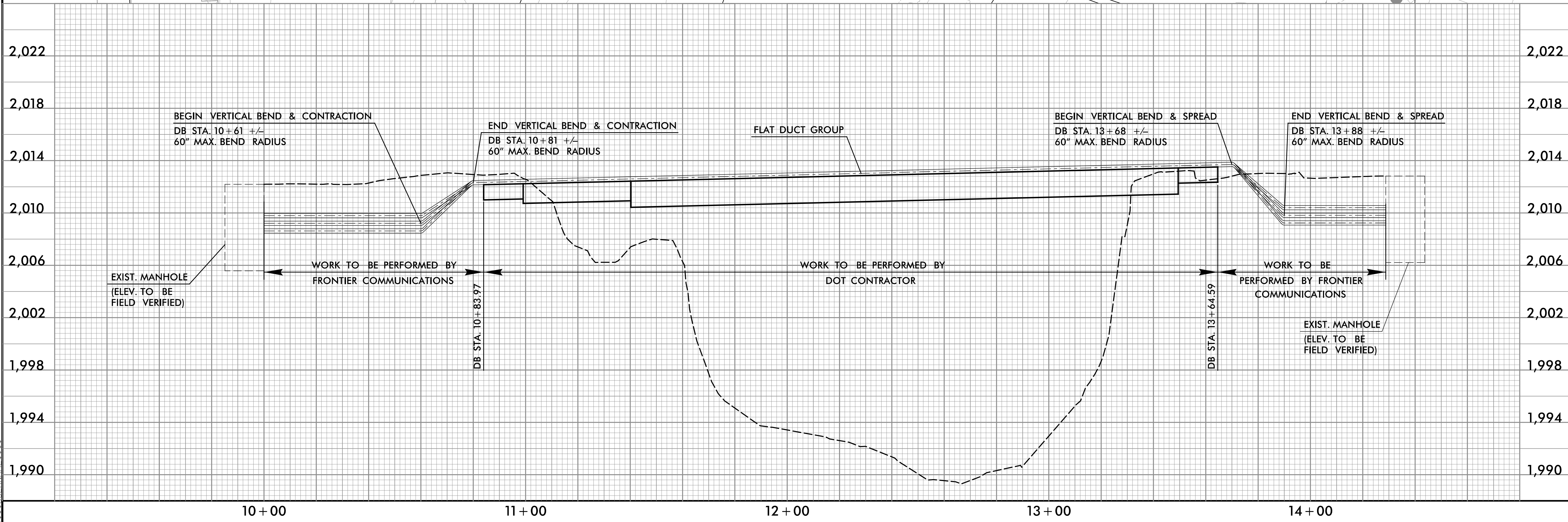
- Tri-Cities, TN 423-467-8401
- Knoxville, TN 865-546-5800
- Spartanburg, SC 864-574-4775
- Charleston, SC 843-974-5650
- Middlesboro, KY 606-248-6600
- Atlanta, GA 770-627-3509
- Asheville, NC 828-253-2796
- Boone, NC 828-355-9933

NOTES

- FOR TYPICAL DETAILS, SEE SHEET 2.
- SPACERS SHALL BE SPACED AT NO MORE THAN 7" O.C.
- SPACERS ARE NOT REQUIRED ON APPROACH SLAB OR BRIDGE DECK.
- THE NCDOT CONTRACTOR SHALL INSTALL FISH TAPE IN THE CONDUITS ON THE BRIDGE.
- CONDUITS OUTSIDE THE BRIDGE MAY BE ENCASED IN CONCRETE AT FRONTIER COMMUNICATIONS'S DISCRETION.
- DUCT BANK IS A 6-WAY CONDUIT SYSTEM OF 4" SCHEDULE 40 RIGID NONMETALLIC PVC PIPES.



PROJECT NO. B-5125
 MACON COUNTY
 STATION: 13+25.89 -L-



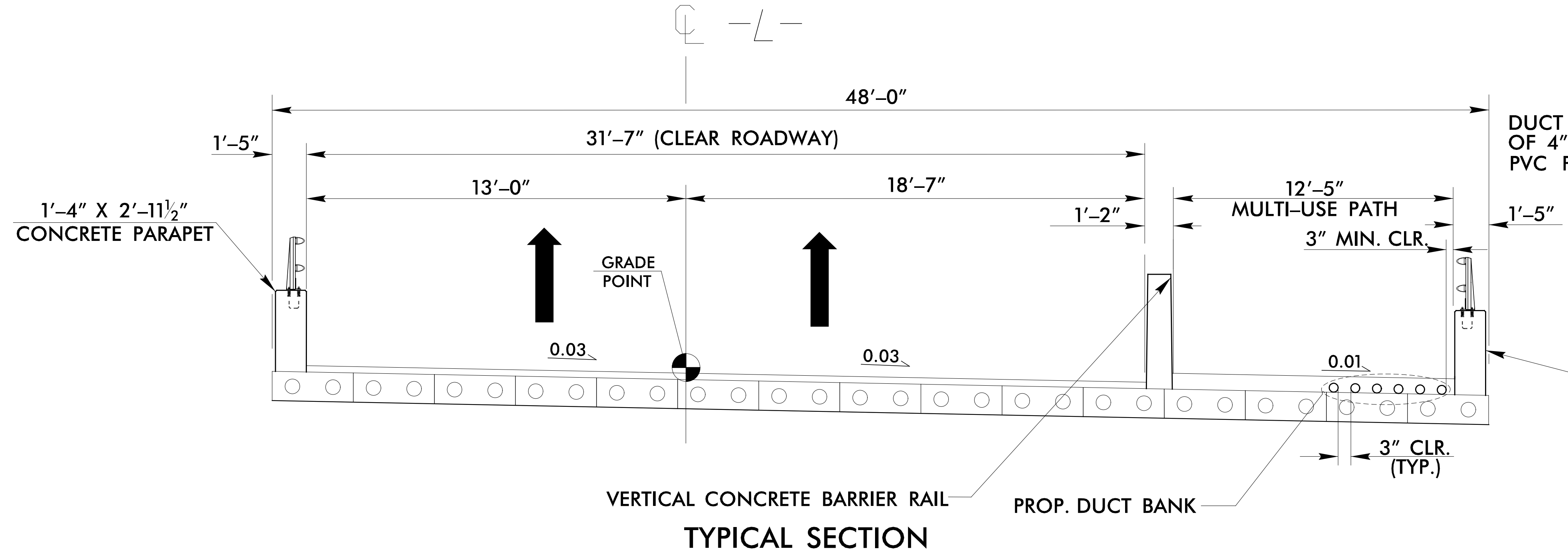
8/17/99 B-5125 NC GRID 2007

5/28/16

SHEET NO.
S-42
ENGINEER

5/17/2016

STRUCTURE TYPICAL SECTION (AS PROVIDED BY NCDOT)

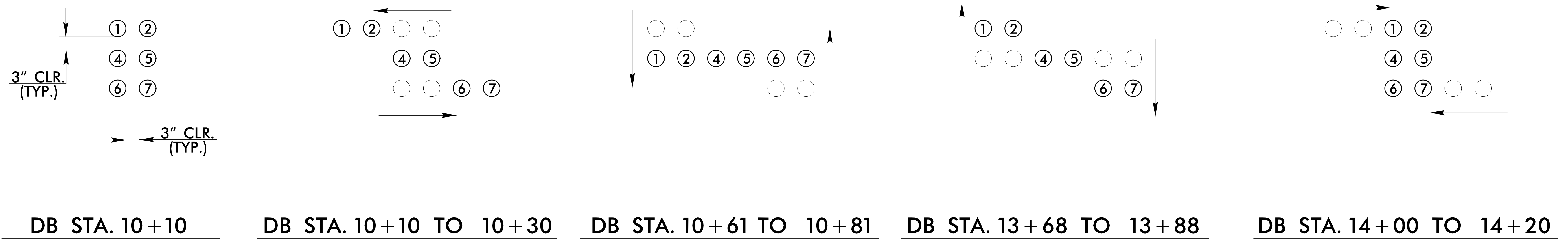


NOTES

DUCT BANK IS A 6-WAY CONDUIT SYSTEM OF 4" SCHEDULE 40 RIGID NONMETALLIC PVC PIPES.

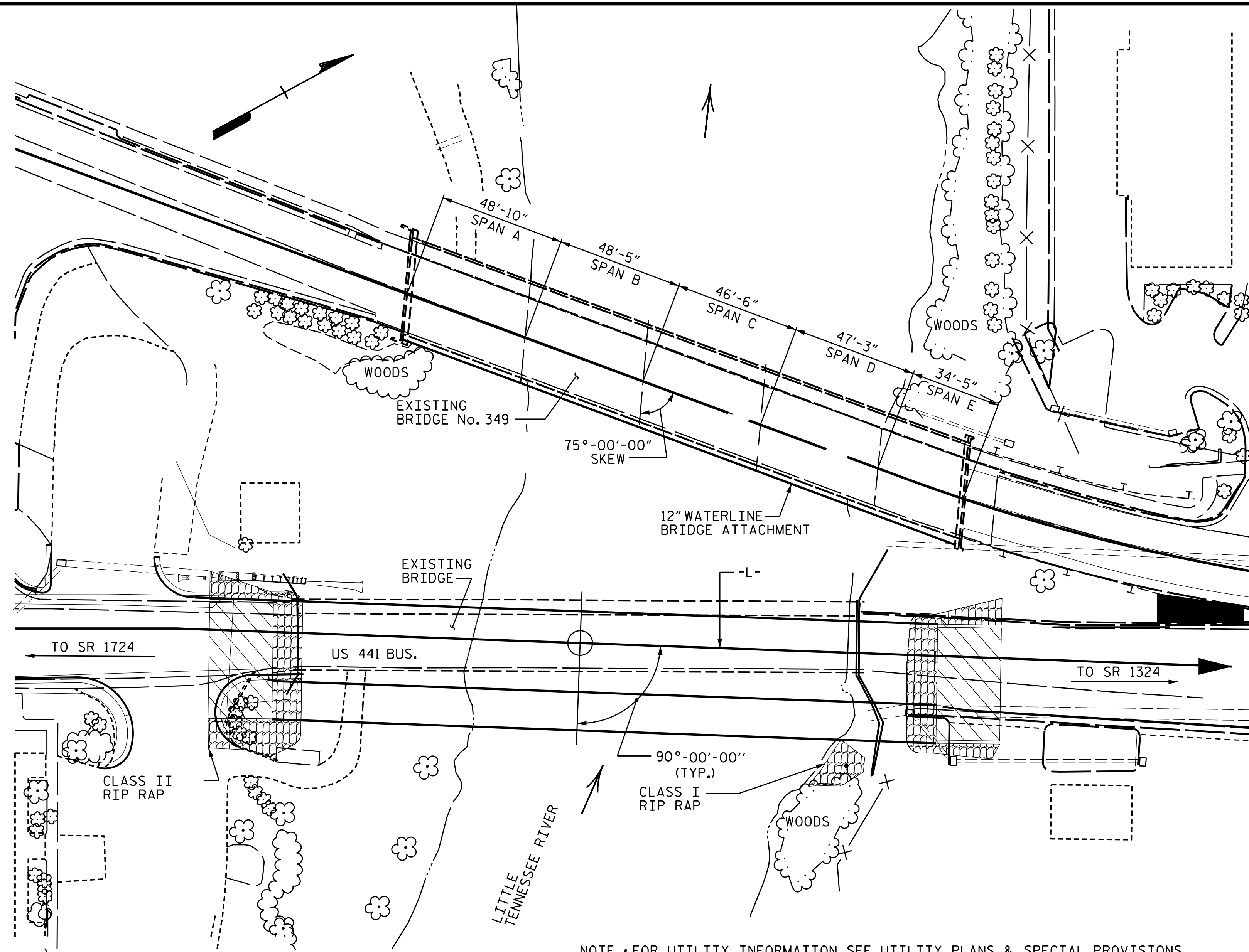
PROJECT NO. B-5125
MACON COUNTY
STATION: 13+25.89 -L-

SKETCH SHOWING DUCT BANK PLACEMENT PROGRESSION (THIS PORTION OF WORK TO BE PERFORMED BY FRONTIER COMMUNICATIONS)



5/28/16
 10
 11
 12
 13
 14
 15
 16
 17
 18
 19
 20
 21
 22
 23
 24
 25
 26
 27
 28
 29
 30
 31
 32
 33
 34
 35
 36
 37
 38
 39
 40
 41
 42
 43
 44
 45
 46
 47
 48
 49
 50
 51
 52
 53
 54
 55
 56
 57
 58
 59
 60
 61
 62
 63
 64
 65
 66
 67
 68
 69
 70
 71
 72
 73
 74
 75
 76
 77
 78
 79
 80
 81
 82
 83
 84
 85
 86
 87
 88
 89
 90
 91
 92
 93
 94
 95
 96
 97
 98
 99
 100

B.M. #3 : 15' LT. OF STA. 17+52.00 -BL- NCGS MONUMENT "G47" ON SE CORNER OF BRIDGE No. 22, EL. 2013.82



LOCATION SKETCH

BILL OF MATERIAL	
REPLACEMENT OF TRANSVERSE POST-TENSIONING TENDONS	
EACH	
8	

NOTES

CONSTRUCTION METHODS, PROCEDURES AND SEQUENCES ARE THE CONTRACTOR'S RESPONSIBILITY AND THE CONTRACTOR SHALL TAKE ALL THE NECESSARY MEANS TO MAINTAIN AND PROTECT THE STRUCTURAL INTEGRITY OF ALL CONSTRUCTION AND DEMOLITION AT ALL STAGES.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

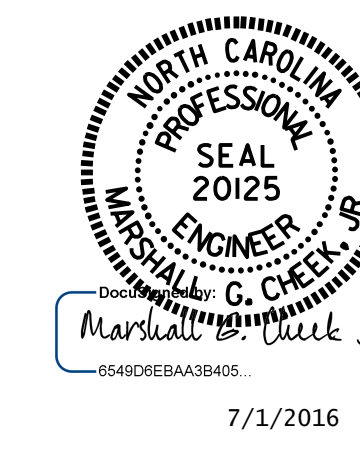
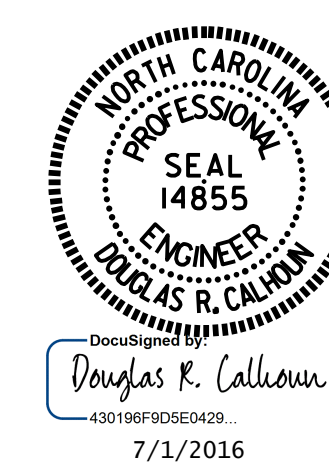
FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL REPLACE ALL POST-TENSIONING TENDONS IN THE CORED SLAB UNITS PRIOR TO ATTACHMENT OF THE WATERLINE TO THE BARRIER RAIL AS DIRECTED BY THE ENGINEER. FOR REPLACEMENT OF TRANSVERSE POST-TENSIONING TENDONS, SEE SPECIAL PROVISIONS.

ALL POST-TENSIONING TENDONS 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.

FOR 12" WATERLINE BRIDGE ATTACHMENT, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

PROJECT NO. B-5125
MACON COUNTY
 BRIDGE No. 349



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL NOTES AND BILL OF MATERIAL

DRAWN BY : H. T. BARBOUR DATE : 4-25-16
 CHECKED BY : M.G. CHEEK DATE : 5-16

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			43
2			4			43

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. 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