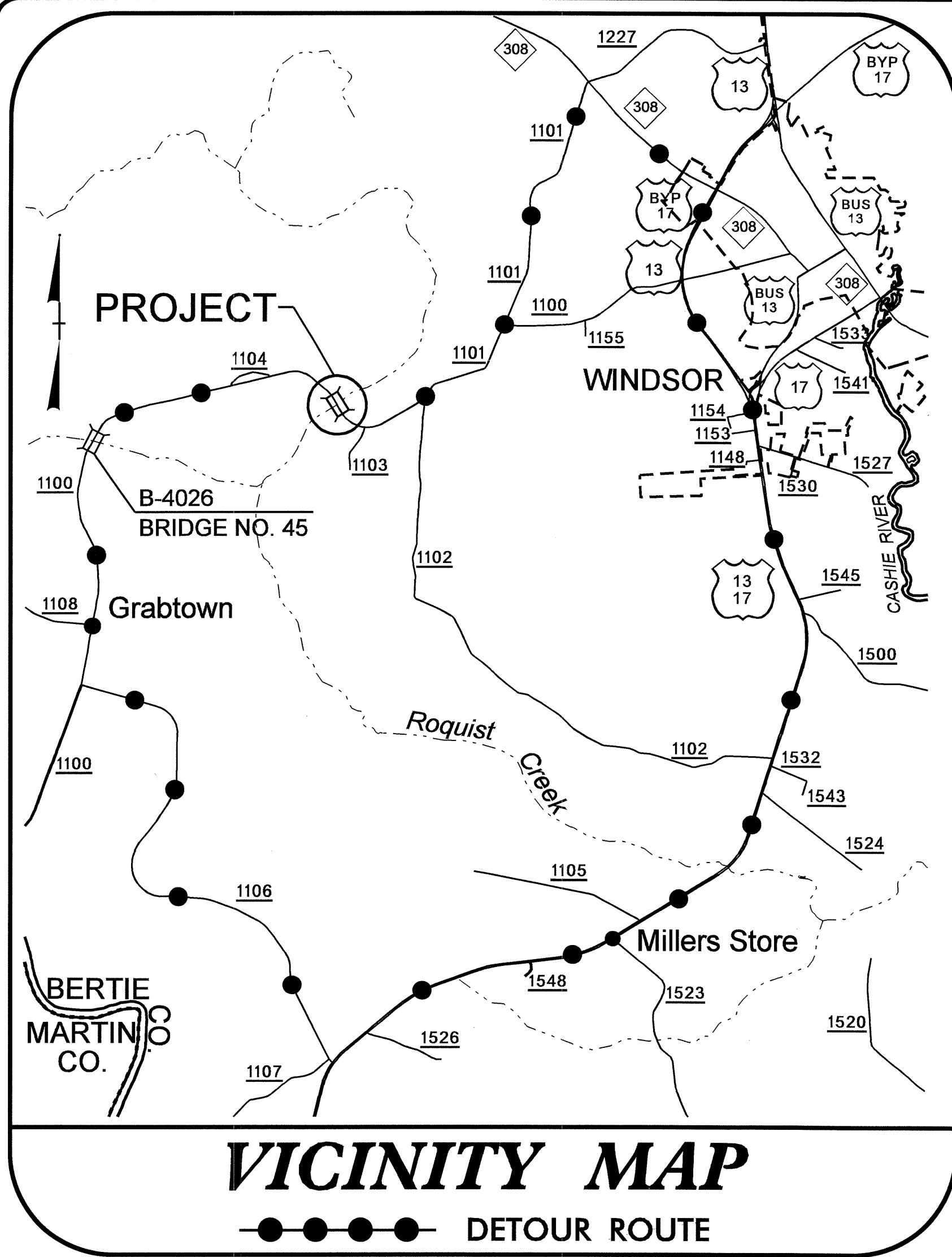


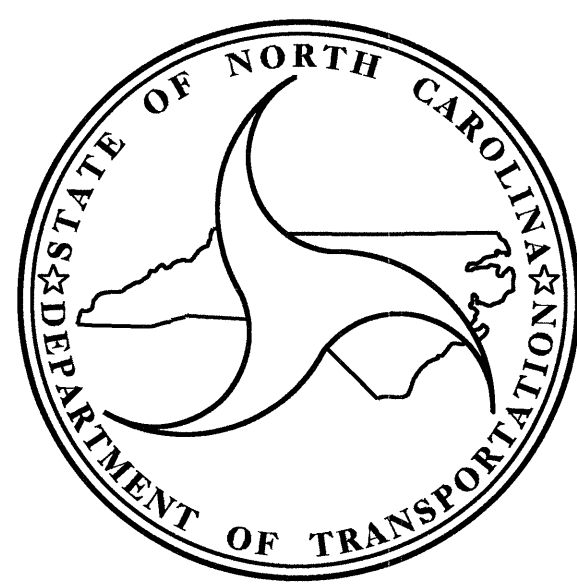
**CONTRACT: C202268 TIP PROJECT: B-4435**



NEAREST SHIPPING POINT: WILLIAMSTON ON SEABOARD COAST RR  
APPROX. 8.0 MILES FROM PROJECT

# STRUCTURE

THIS PROJECT WAS DESIGNED USING THE SUB REGIONAL TIER DESIGN GUIDELINES FOR BRIDGE PROJECTS.



DESIGN DATA	
ADT 2010 =	1,208
ADT 2030 =	1,900
DHV =	10 %
D =	60 %
T =	3 % *
V =	50 MPH
* TTST 1% DUAL 2%	
FUNC CLASS = RURAL COLLECTOR	

PROJECT LENGTH	
LENGTH OF ROADWAY TIP PROJECT B-4435 =	0.050 MI.
LENGTH OF STRUCTURE TIP PROJECT B-4435 =	0.027 MI.
TOTAL LENGTH OF TIP PROJECT B-4435 =	0.077 MI.

Prepared in the Office of: <b>DIVISION OF HIGHWAYS</b> 1000 BIRCH RIDGE DR. RALEIGH, NC 27610	
<small>2006 STANDARD SPECIFICATIONS</small>	
<b>LETTING DATE:</b> FEBRUARY 16, 2010	<b>N. N. BULLOCK, PE</b> PROJECT ENGINEER
	<b>D. R. CALHOUN, PE</b> PROJECT DESIGN ENGINEER

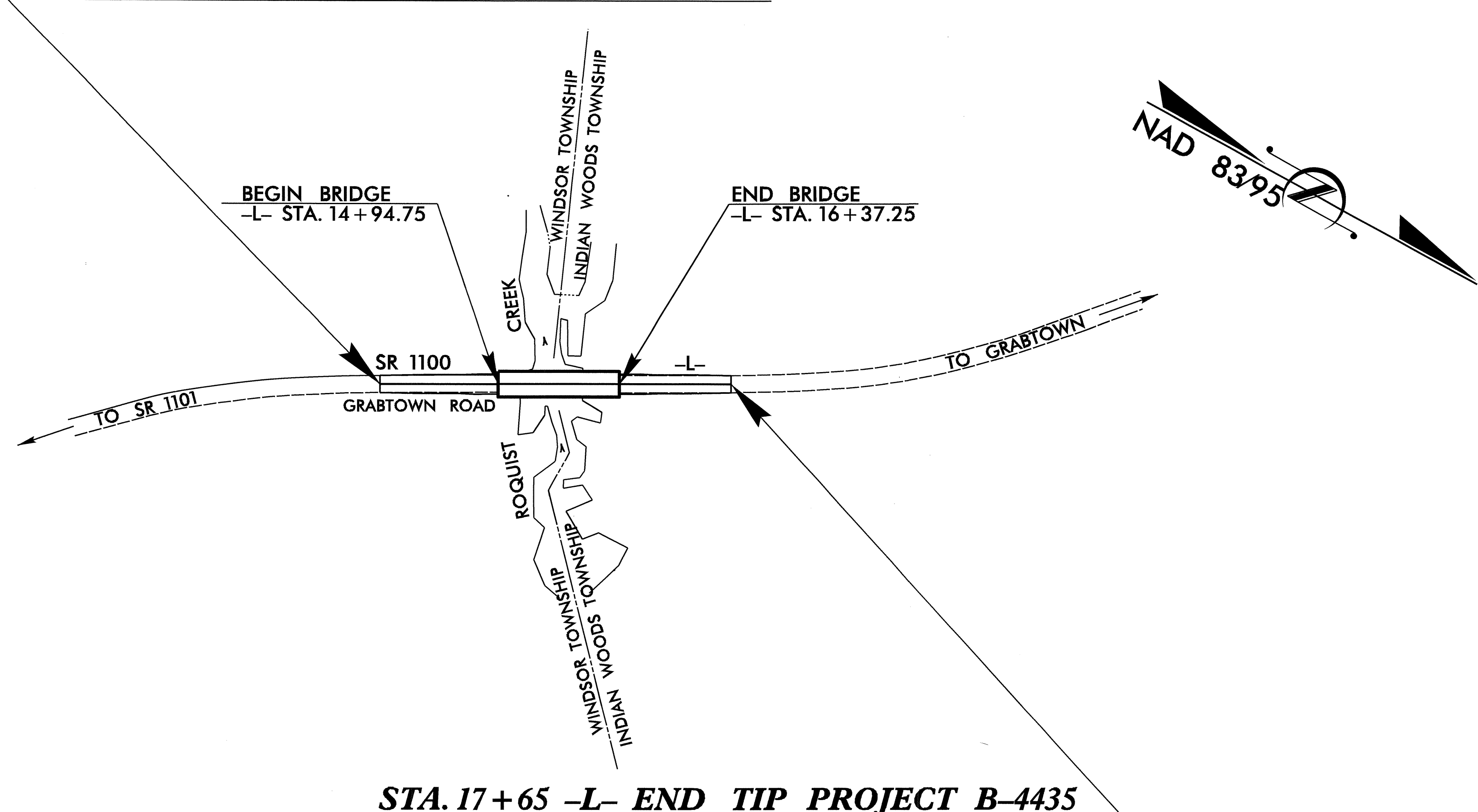
<b>STRUCTURE DESIGN UNIT</b>	
P.E.	
STATE DESIGN ENGINEER	
DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION	
APPROVED DIVISION ADMINISTRATOR	DATE

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

## BERTIE COUNTY

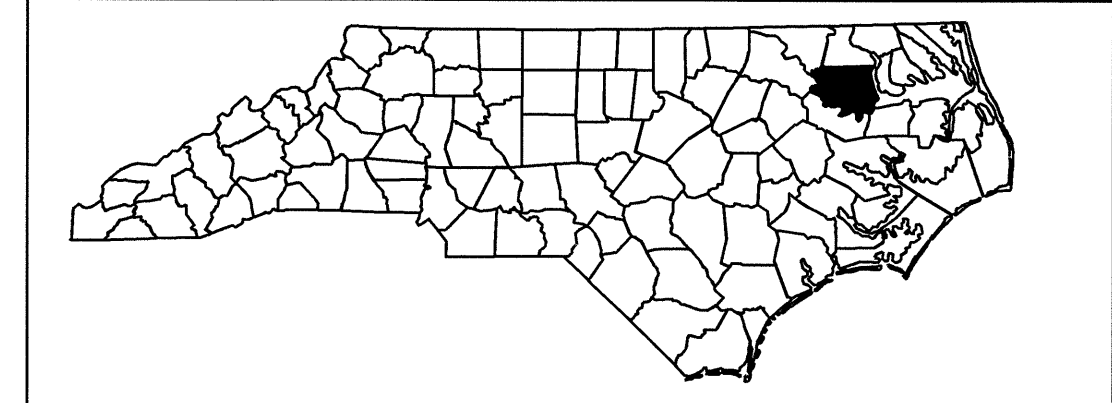
**LOCATION :** BRIDGE NO. 44 OVER ROQUIST CREEK ON SR 1100  
**TYPE OF WORK :** GRADING, PAVING, DRAINAGE, AND STRUCTURE

**STA. 13+60 -L- BEGIN TIP PROJECT B-4435**

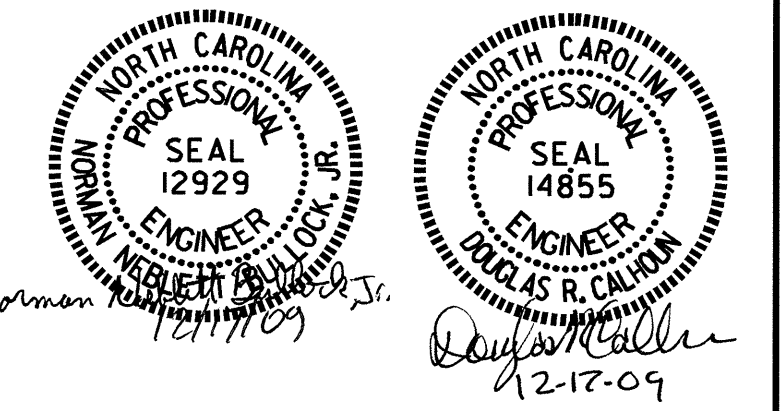
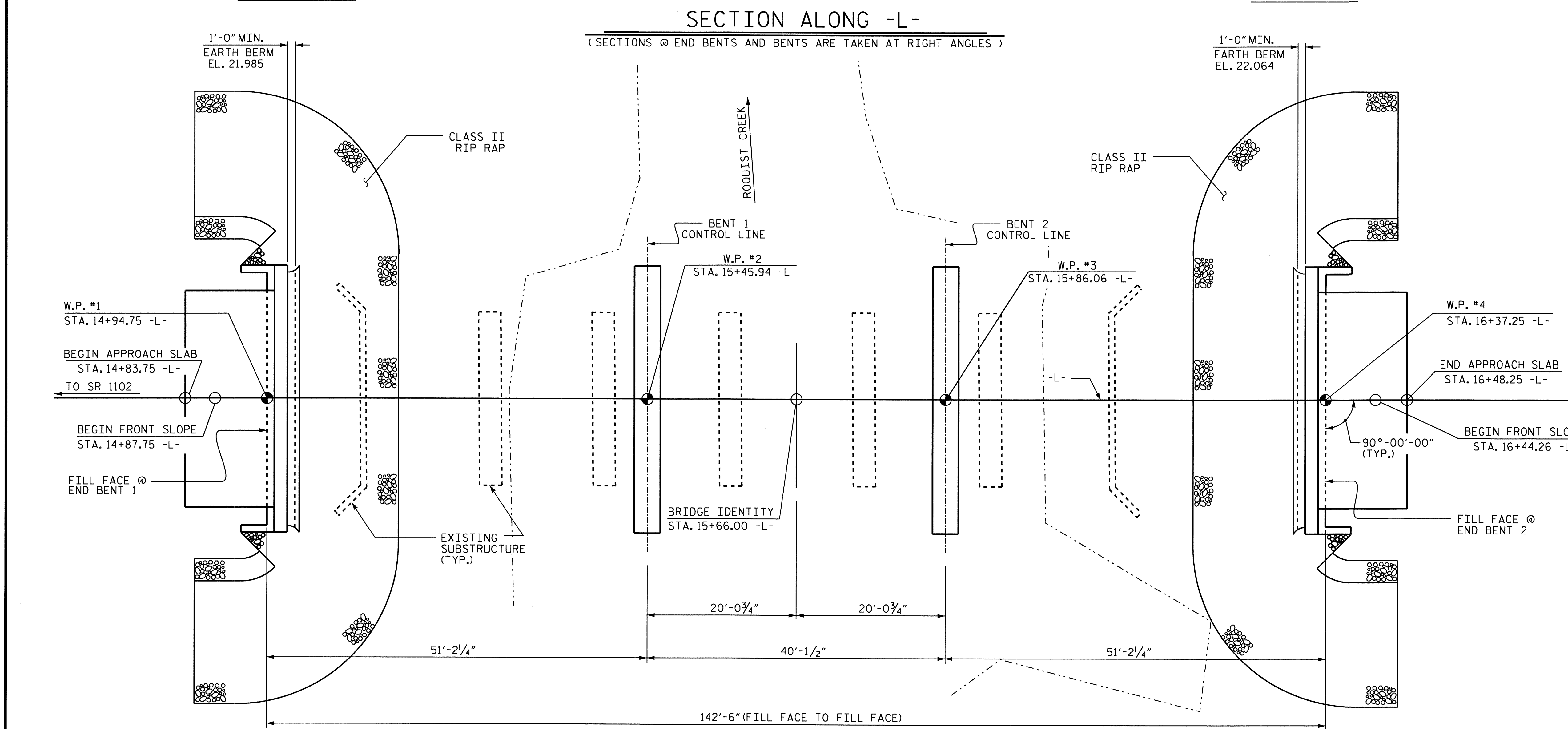
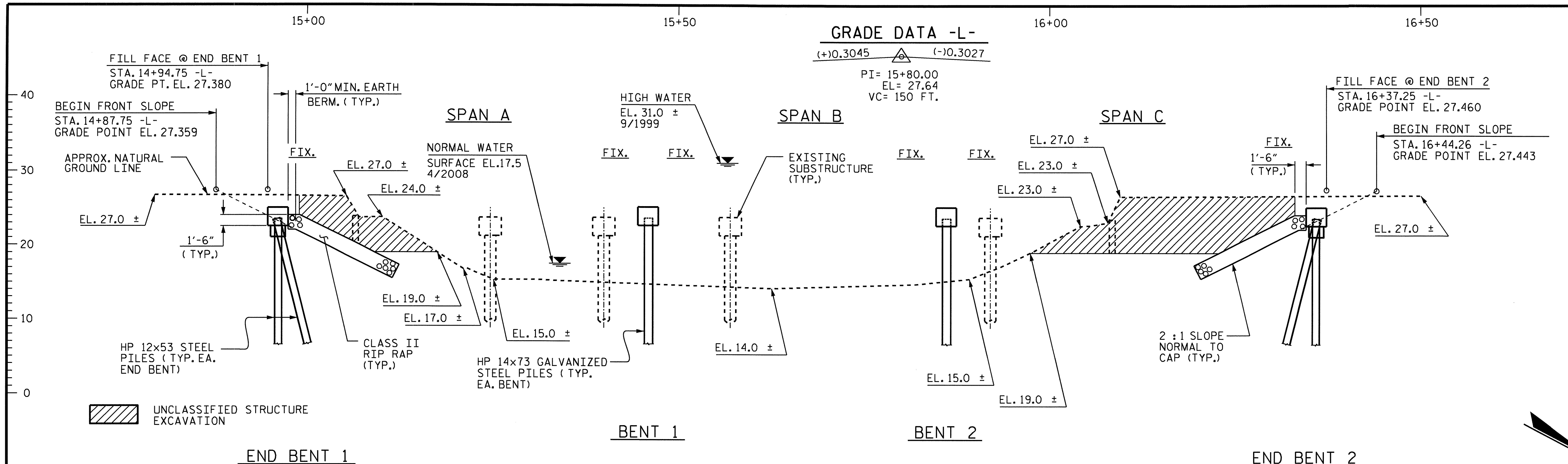


**STA. 17+65 -L- END TIP PROJECT B-4435**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4435		
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
33701.1.1	BRZ-1100 (17)	PE	
33701.2.1	BRZ-1100 (17)	RW & UTIL.	
33701.3.1	BRZ-1100 (17)	CONST.	



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gallen



PROJECT NO. B-4435  
BERTIE COUNTY  
 STATION: 15+66.00 -L-  
 SHEET 1 OF 3 REPLACES BRIDGE NO. 44

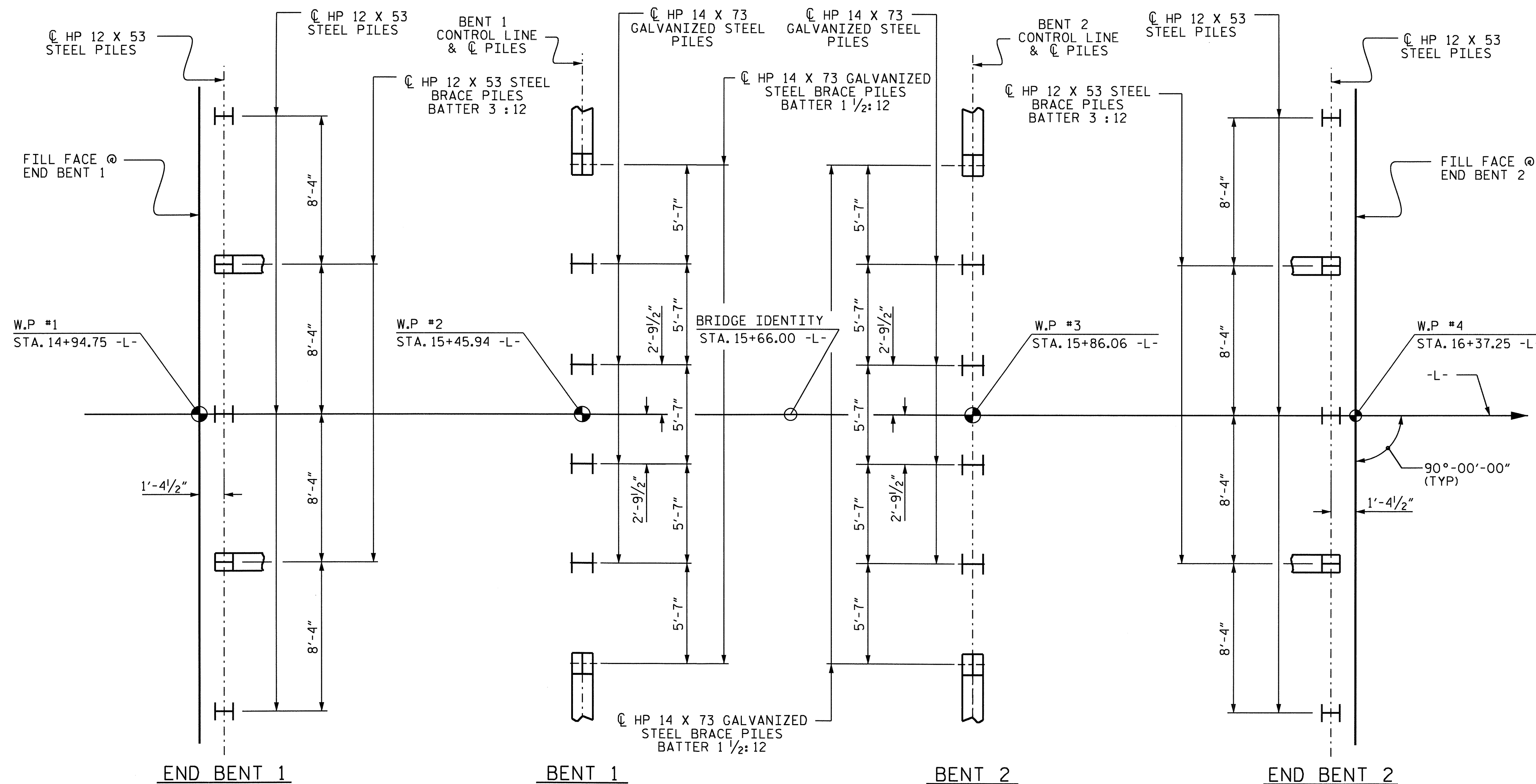
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**  
 FOR BRIDGE ON SR 1100  
 OVER ROQUIST CREEK  
 BETWEEN SR 1102 AND SR 1108

DRAWN BY : J. MYA DATE : 9-15-09  
 CHECKED BY : D. R. CALHOUN DATE : 11-3-09

17-DEC-2009 08:45  
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 gollen

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



**FOUNDATION LAYOUT**

(DIMENSIONS LOCATING PILES ARE SHOWN TO CENTERLINE OF PILES)

**NOTES :**

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.

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

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

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

THE EXISTING STRUCTURE CONSISTING OF 6 (2 @ 17'-6", 4 @ 17'-0") REINFORCED CONCRETE FLOORS ON TIMBER JOISTS SPANS WITH A CLEAR ROADWAY WIDTH OF 22'-2" SUPPORTED BY TIMBER CAP & PILE BENTS AND END BENTS AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED.

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

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

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES", MAY, 2001.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 25 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

THIS BRIDGE SHALL BE CONSTRUCTED USING TOP-DOWN CONSTRUCTION METHODS. THE USE OF A TEMPORARY CAUSEWAY OR WORK BRIDGE IS NOT PERMITTED.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

FOR CURING CONCRETE, SEE SPECIAL PROVISIONS.

**FOUNDATION NOTES :**

FOR PILES, SEE SPECIAL PROVISIONS.

PILES AT END BENT 1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 80 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 122 TONS PER PILE.

PILES AT BENT 1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 110 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 188 TONS PER PILE FOR BENT 1 AND 192 TONS PER PILE FOR BENT 2. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAG OR SCOUR.

INSTALL PILES AT BENT 1 AND 2 TO A TIP ELEVATION NO HIGHER THAN -15 FT.

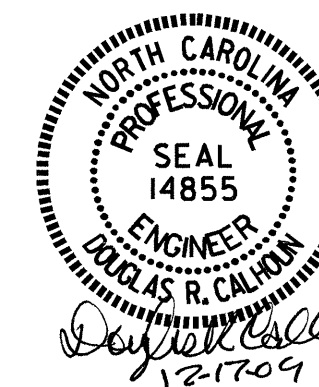
THE SCOUR CRITICAL ELEVATION FOR BOTH BENT 1 AND 2 IS ELEVATION 3.0 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 25 TO 60 FT-KIP PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT 1 AND 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH THE PILES PROVISION.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 40 TO 80 FT-KIP PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT NO. 1 AND 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH THE PILES PROVISION.

DRAWN BY : J. MYA DATE : 9-15-09  
 CHECKED BY : D. R. CALHOUN DATE : 11-3-09

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PROJECT NO. B-4435

BERTIE COUNTY

STATION: 15+66.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

GENERAL DRAWING  
 FOR BRIDGE ON SR 1100  
 OVER ROQUIST CREEK  
 BETWEEN SR 1102 AND SR 1108

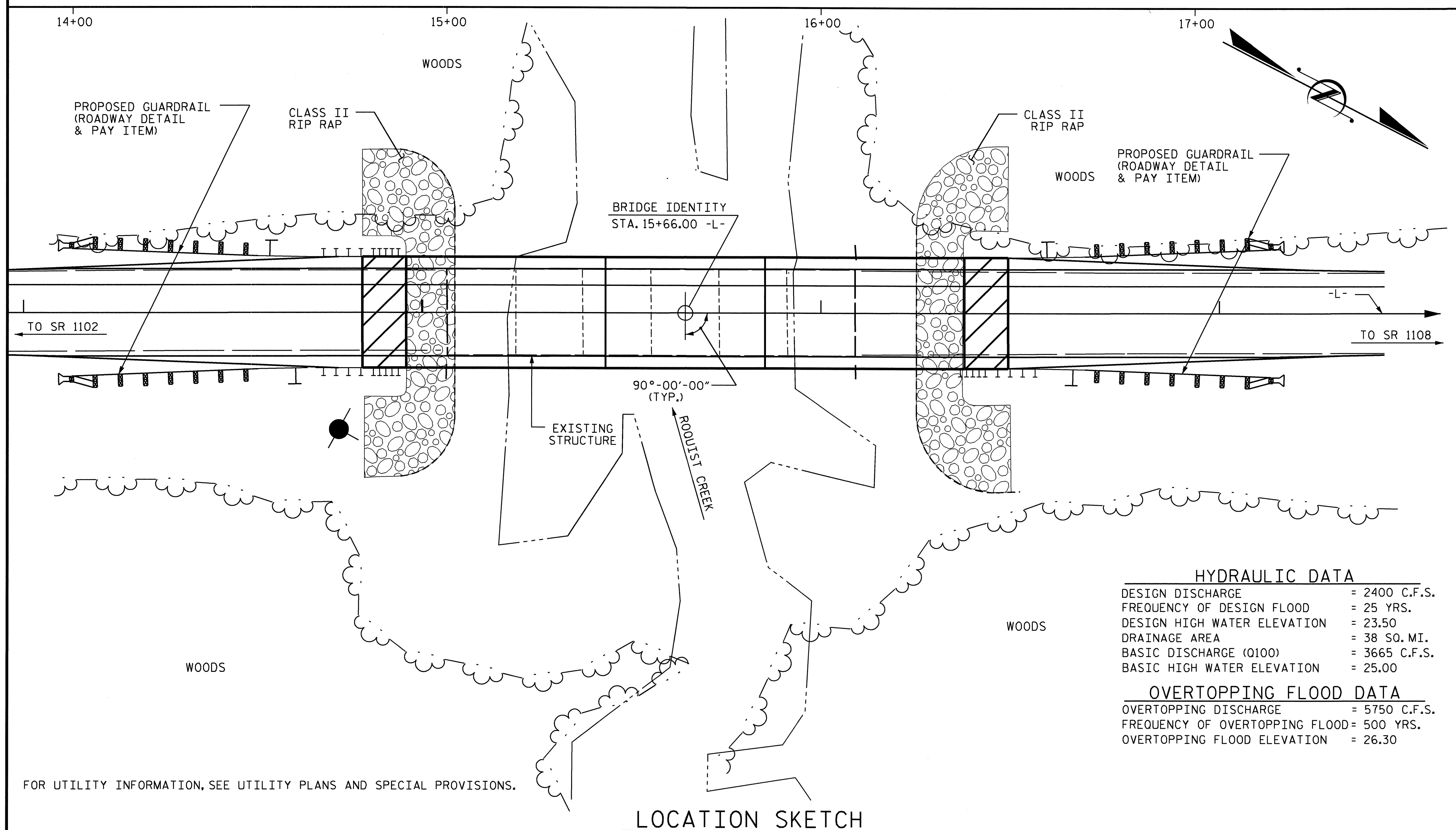
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			18

**TOTAL BILL OF MATERIAL**

	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	12 X 53 STEEL PILES		▲ 14 X 73 GALVANIZED STEEL PILES		PILE REDRIVES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS	
	LUMP SUM	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	NO.	LIN. FT.	EACH	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE				LUMP SUM							280.50			LUMP SUM	30	1400.00
END BENT 1		LUMP SUM	12.3		1807	5	300			5		175	195			
BENT 1			9.2		1847			6	450	6						
BENT 2			9.2		1847			6	450	6						
END BENT 2		LUMP SUM	12.3		1807	5	325			5		177	197			
TOTAL	LUMP SUM	LUMP SUM	43.0	LUMP SUM	7308	10	625	12	900	22	280.50	352	392	LUMP SUM	30	1400.00

▲ FOR INTERIOR BENTS 1 AND 2, ONLY PARTIAL GALVANIZING OF THE PILES IS REQUIRED. SEE INTERIOR BENTS FOR DETAILS.

**B.M. #5 : R.R. SPIKE SET IN BASE OF 12" GUM 25' LEFT OF STA. 21+75.00 -L- ELEV. 25.22**



**HYDRAULIC DATA**

DESIGN DISCHARGE	= 2400 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 25 YRS.
DESIGN HIGH WATER ELEVATION	= 23.50
DRAINAGE AREA	= 38 SQ. MI.
BASIC DISCHARGE (Q100)	= 3665 C.F.S.
BASIC HIGH WATER ELEVATION	= 25.00

**OVERTOPPING FLOOD DATA**

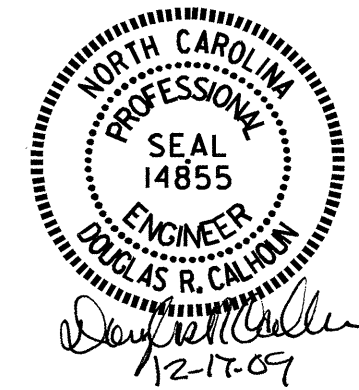
OVERTOPPING DISCHARGE	= 5750 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	= 500 YRS.
OVERTOPPING FLOOD ELEVATION	= 26.30

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

**LOCATION SKETCH**

DRAWN BY : J.MYA      DATE : 9-15-09  
 CHECKED BY : D. R. CALHOUN      DATE : 11-3-09

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PROJECT NO. B-4435  
BERTIE COUNTY  
 STATION: 15+66.00 -L-  
 SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**  
 FOR BRIDGE ON SR 1100  
 OVER ROQUIST CREEK  
 BETWEEN SR 1102 AND SR 1108

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

LOAD FACTORS:

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

	YEAR	ADTT
CURRENT	2010	22
FUTURE	2030	34

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. THIS BRIDGE HAS BEEN DESIGNED USING SIMPLE SPAN ANALYSIS.

- 2.
- 3.
- 4.

LOAD AND RESISTANCE FACTOR RATING (LRFR) 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							
						LIVE-LOAD FACTORS ( $\gamma_{LL}$ )	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPANS A & C	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPANS A & C	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	LIVE-LOAD FACTORS ( $\gamma_{LL}$ )	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPANS A & C		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.13	--	1.75	0.277	1.55	C	ER	24.500	0.531	1.13	C	ER	2.450	0.80	0.277	1.25	C	ER	24.500	
	HL-93 (OPERATING)	N/A		1.46	--	1.35	0.277	2.01	C	ER	24.500	0.531	1.46	C	ER	2.450	N/A	--	--	--	--	--	
	HS-20 (INVENTORY)	36.000	②	1.31	47.160	1.75	0.277	1.86	C	ER	24.500	0.531	1.31	C	ER	2.450	0.80	0.277	1.55	C	ER	24.500	
	HS-20 (OPERATING)	36.000		1.75	63.000	1.35	0.277	2.49	C	ER	24.500	0.531	1.75	C	ER	2.450	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH		3.15	42.525	1.40	0.277	4.88	C	ER	24.500	0.531	3.80	C	ER	2.450	0.80	0.277	3.15	C	ER	24.500	
		SNGARBS2	20.000		2.49	49.800	1.40	0.277	3.85	C	ER	24.500	0.531	2.77	C	ER	2.450	0.80	0.277	2.49	C	ER	24.500
		SNAGRIS2	22.000		2.41	53.020	1.40	0.277	3.72	C	ER	19.600	0.531	2.60	C	ER	2.450	0.80	0.277	2.41	C	ER	24.500
		SNCOTTS3	27.250		1.58	43.055	1.40	0.277	2.43	C	ER	24.500	0.531	1.91	C	ER	2.450	0.80	0.277	1.58	C	ER	24.500
		SNAGGRS4	34.925		1.36	47.498	1.40	0.277	2.12	C	ER	24.500	0.531	1.63	C	ER	2.450	0.80	0.277	1.36	C	ER	24.500
		SNS5A	35.550		1.34	59.424	1.40	0.277	2.06	C	ER	24.500	0.531	1.67	C	ER	2.450	0.80	0.277	1.34	C	ER	24.500
		SNS6A	39.950		1.25	61.699	1.40	0.277	1.93	C	ER	24.500	0.531	1.54	C	ER	2.450	0.80	0.277	1.25	C	ER	24.500
	SNS7B	42.000		1.19	49.980	1.40	0.277	1.84	C	ER	24.500	0.531	1.54	C	ER	2.450	0.80	0.277	1.19	C	ER	24.500	
	TRUCK TRACTOR SEMI-TRAILER (TTS)	TNAGRIT3	33.000		1.53	50.490	1.40	0.277	2.36	C	ER	24.500	0.531	1.82	C	ER	2.450	0.80	0.277	1.53	C	ER	24.500
		TNT4A	33.075		1.54	50.936	1.40	0.277	2.38	C	ER	24.500	0.531	1.76	C	ER	2.450	0.80	0.277	1.54	C	ER	24.500
		TNT6A	41.600		1.29	53.664	1.40	0.277	1.99	C	ER	24.500	0.531	1.69	C	ER	2.450	0.80	0.277	1.29	C	ER	24.500
		TNT7A	42.000		1.30	54.600	1.40	0.277	2.02	C	ER	24.500	0.531	1.57	C	ER	2.450	0.80	0.277	1.30	C	ER	24.500
		TNT7B	42.000		1.36	57.120	1.40	0.277	2.10	C	ER	24.500	0.531	1.49	C	ER	2.450	0.80	0.277	1.36	C	ER	24.500
		TNAGRIT4	43.000		1.29	55.470	1.40	0.277	1.99	C	ER	24.500	0.531	1.43	C	ER	2.450	0.80	0.277	1.29	C	ER	24.500
TNAGT5A		45.000		1.20	54.000	1.40	0.277	1.86	C	ER	24.500	0.531	1.46	C	ER	2.450	0.80	0.277	1.20	C	ER	24.500	
TNAGT5B	45.000		③	1.18	53.100	1.40	0.277	1.83	C	ER	24.500	0.531	1.36	C	ER	2.450	0.80	0.277	1.18	C	ER	24.500	

# CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

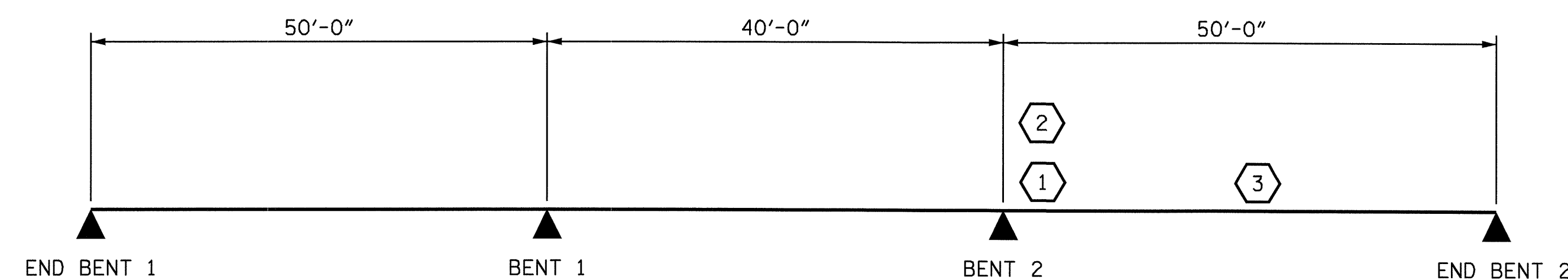
③ LEGAL LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

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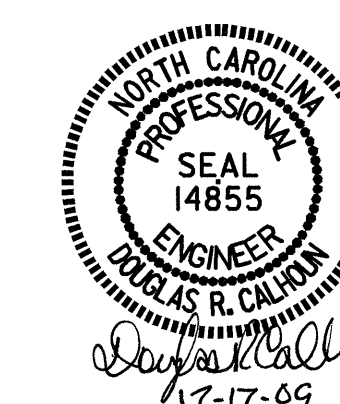
GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. B-4435  
BERTIE COUNTY  
 STATION: 15+66.00 -L-



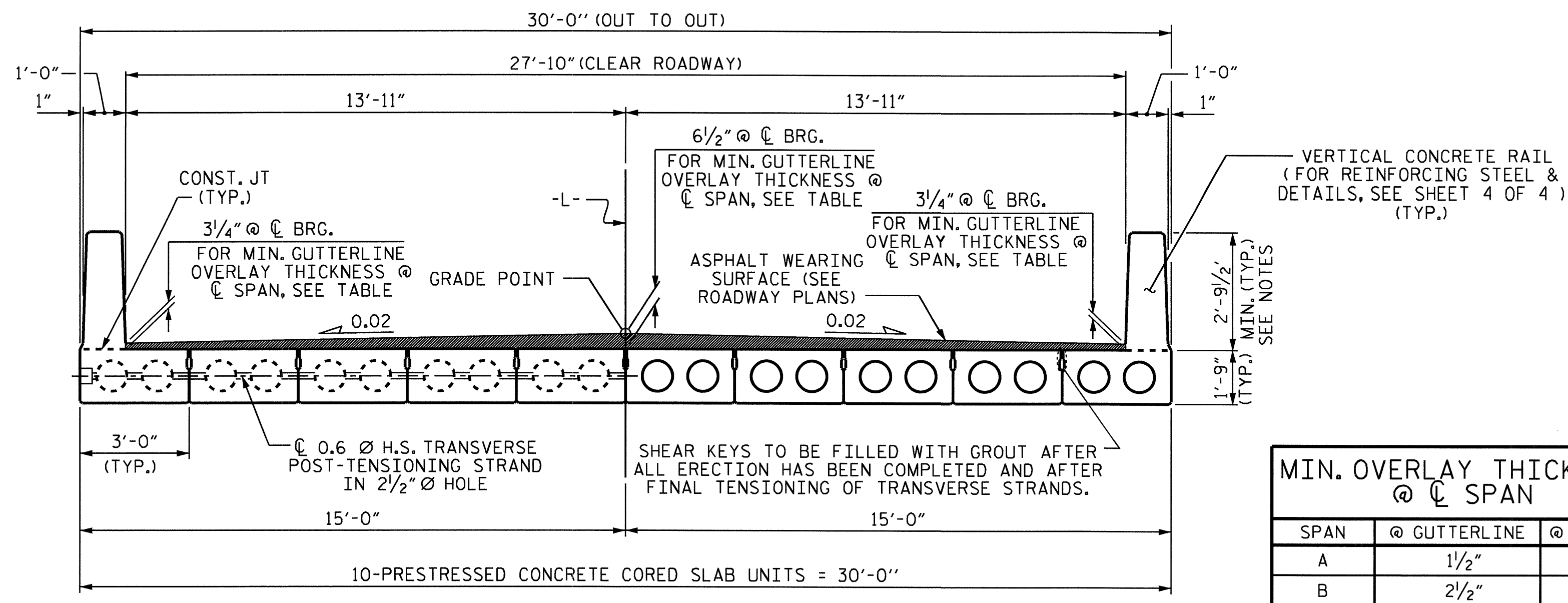
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD

LRFR SUMMARY FOR  
 PRESTRESSED  
 CONCRETE GIRDERS  
 (NON-INTERSTATE TRAFFIC)

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

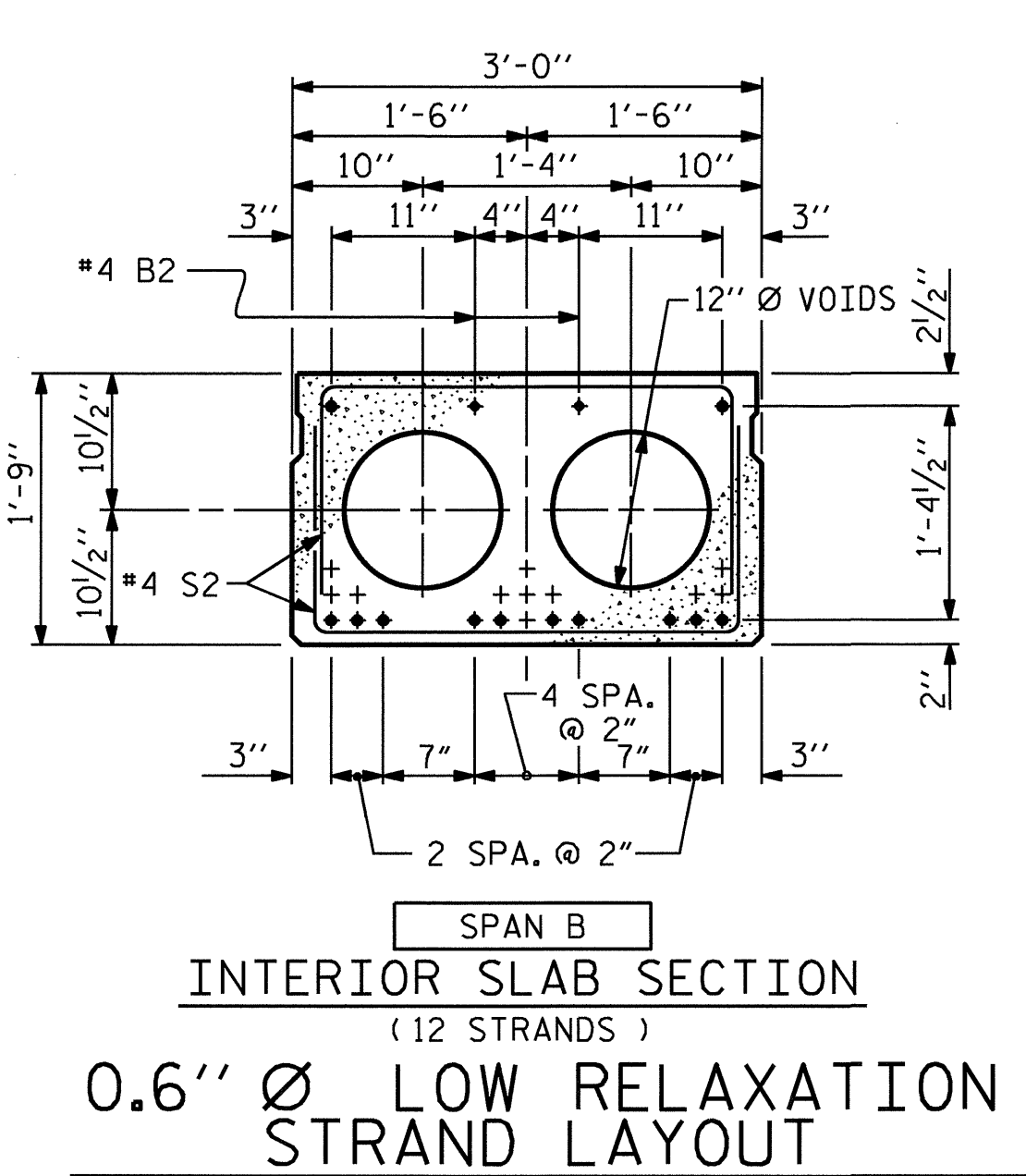
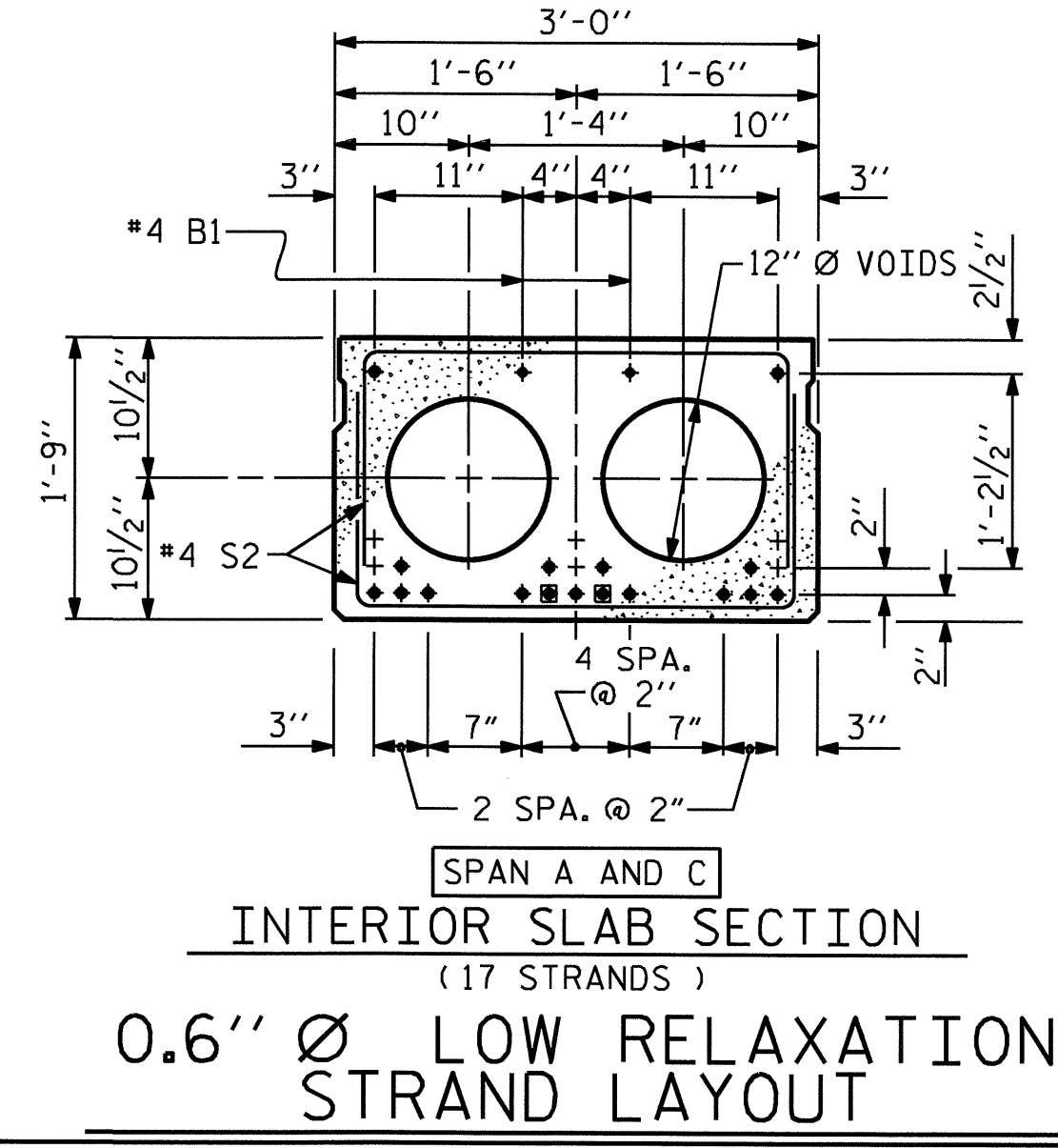
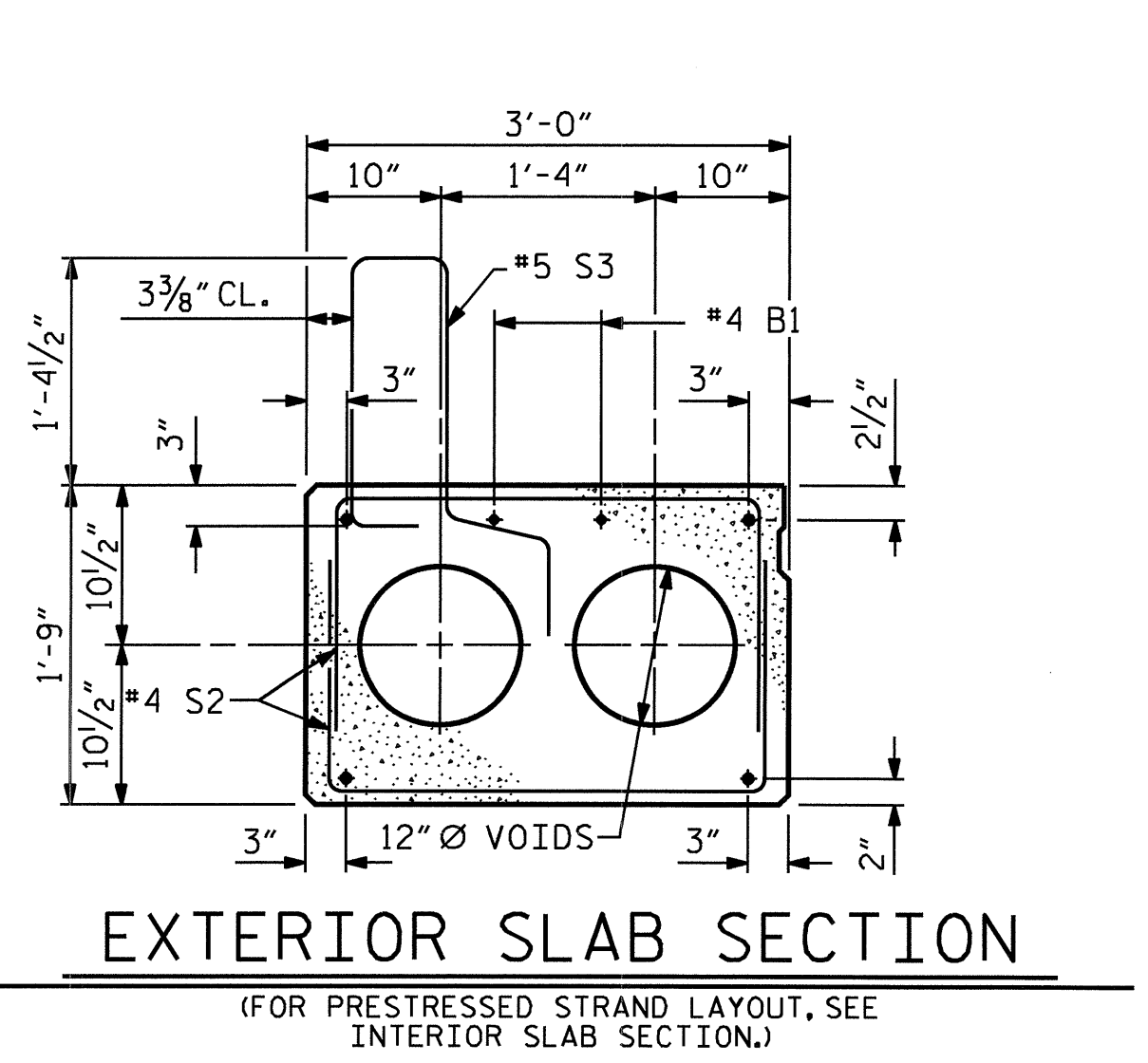
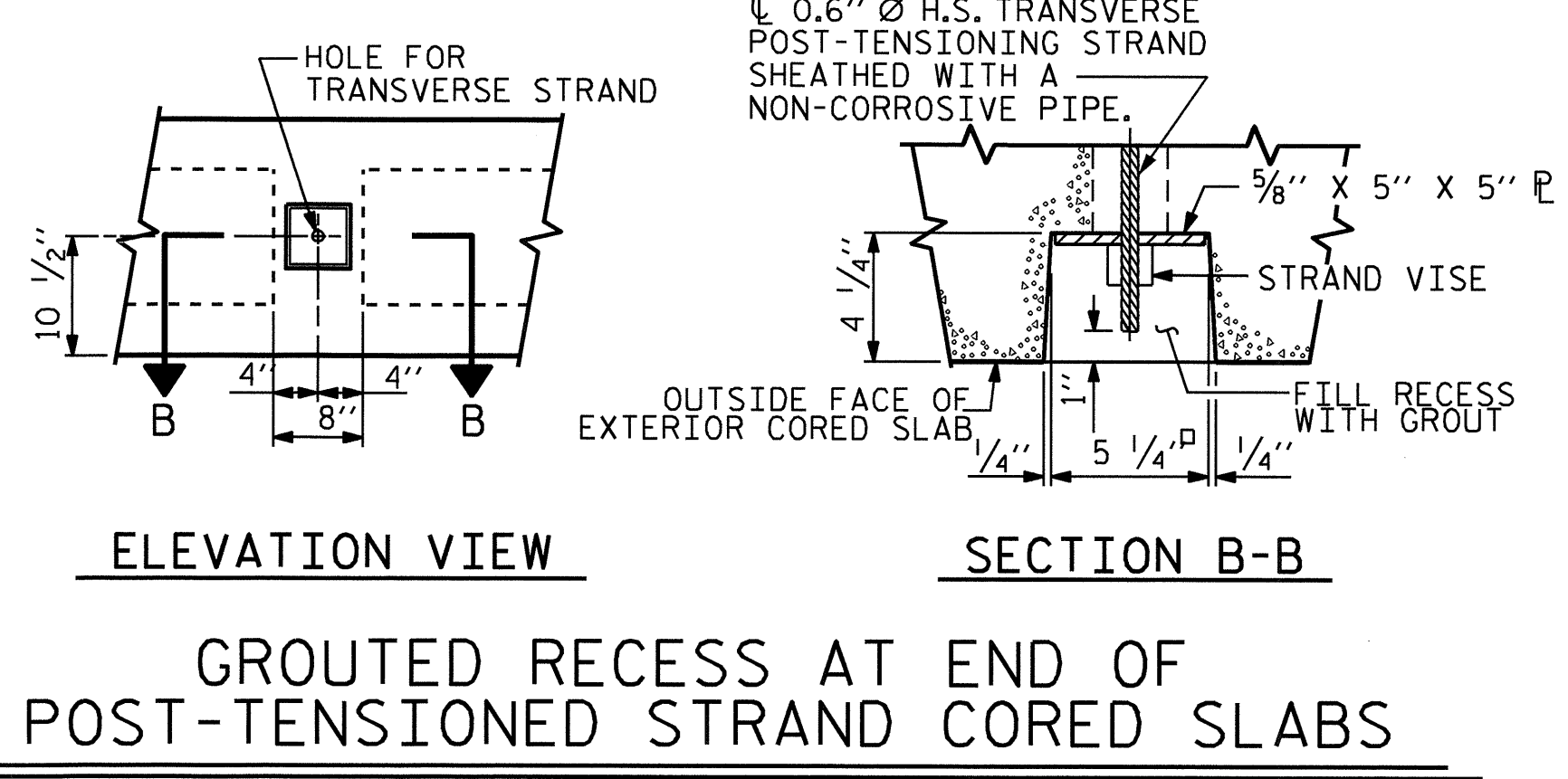
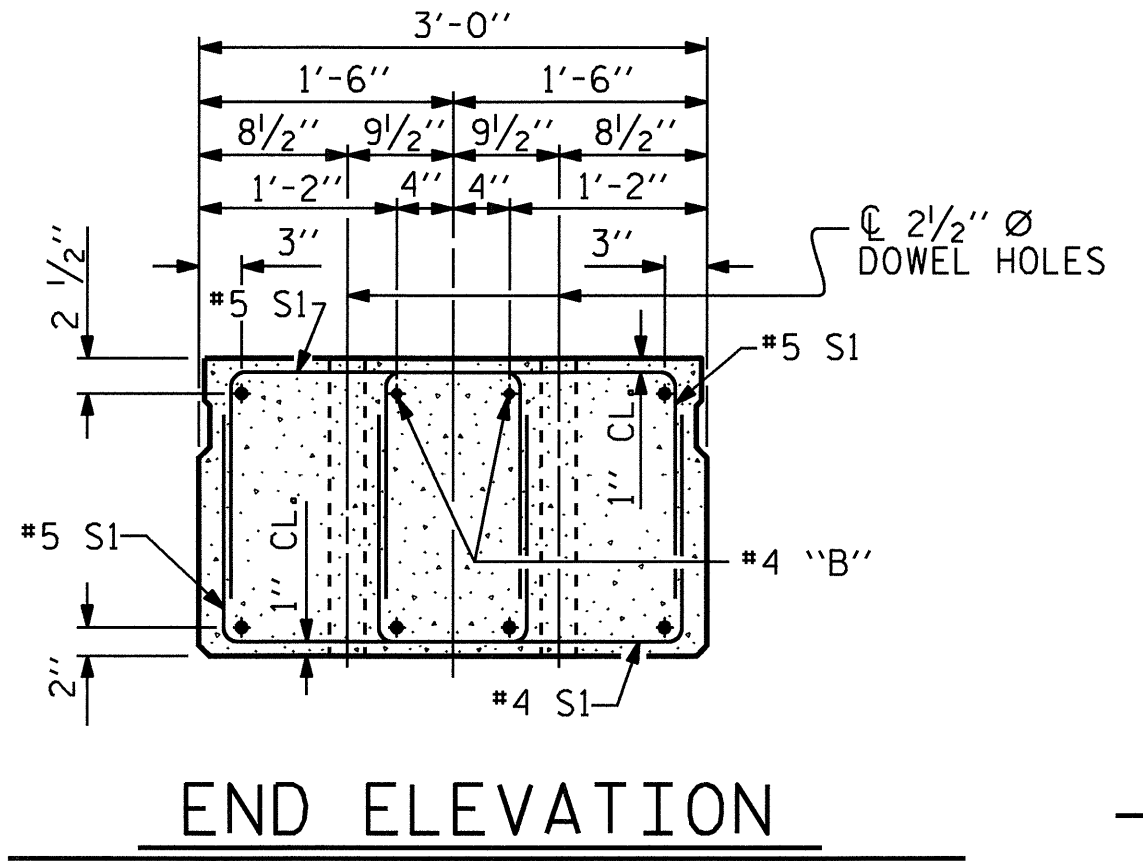
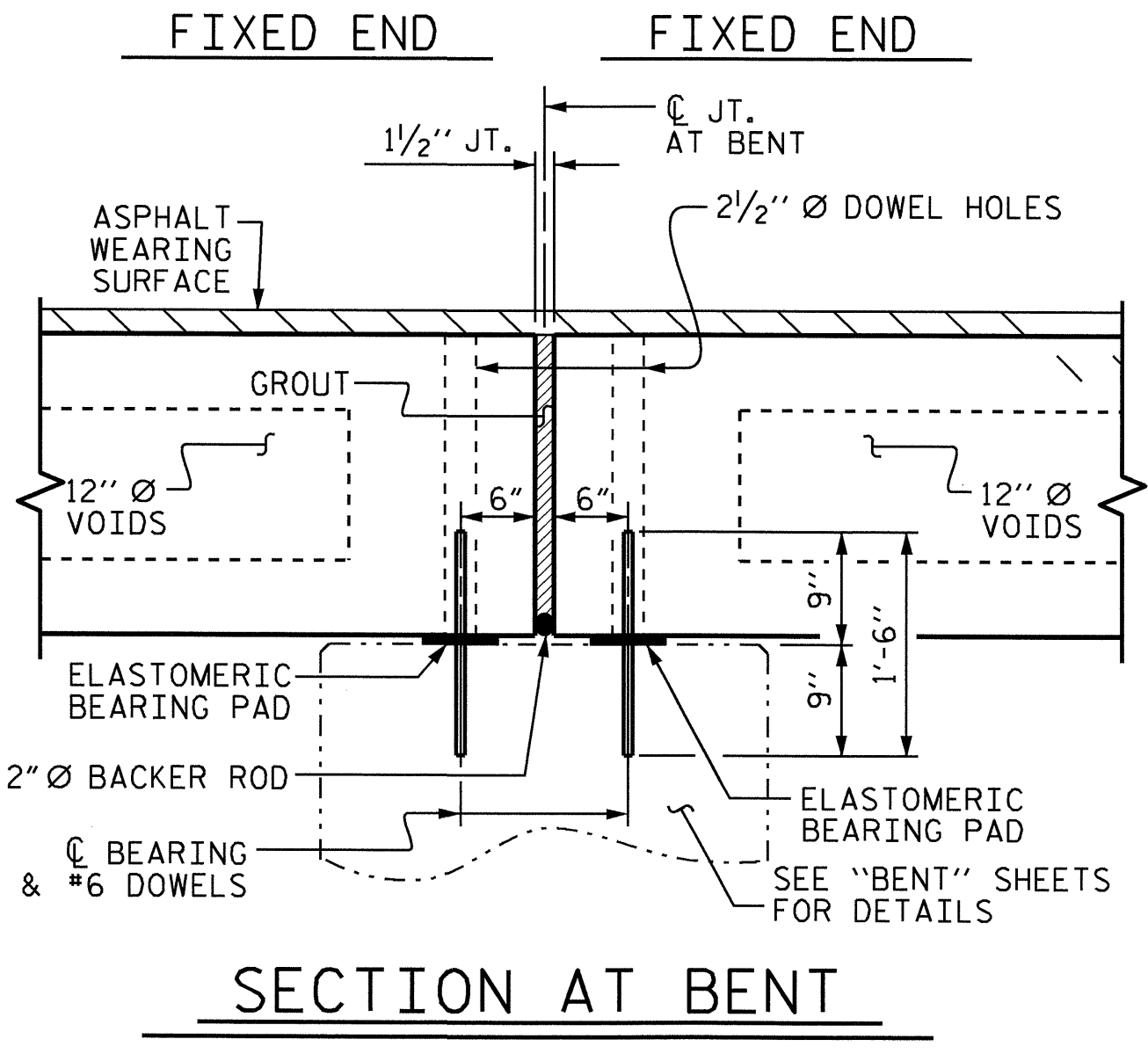
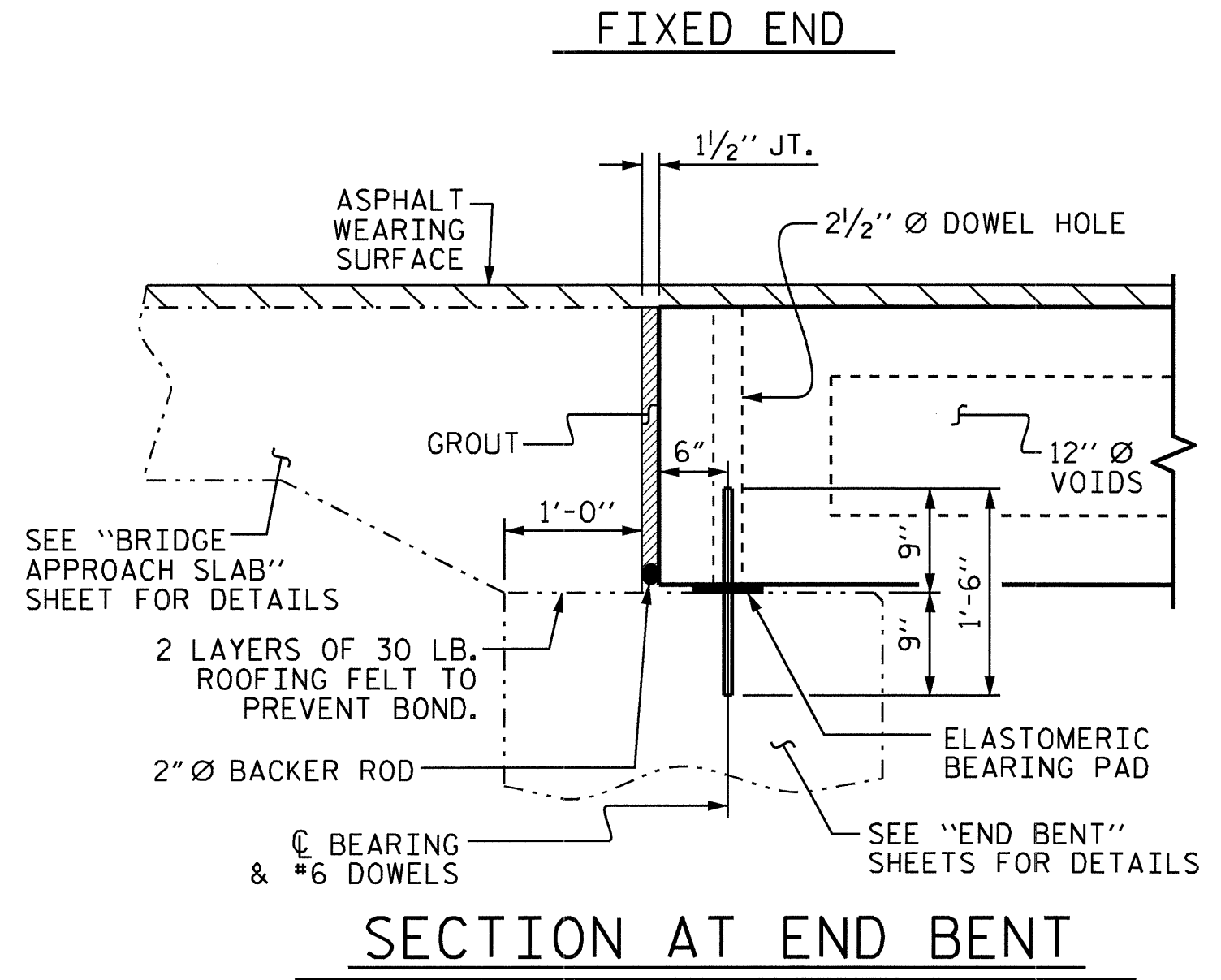
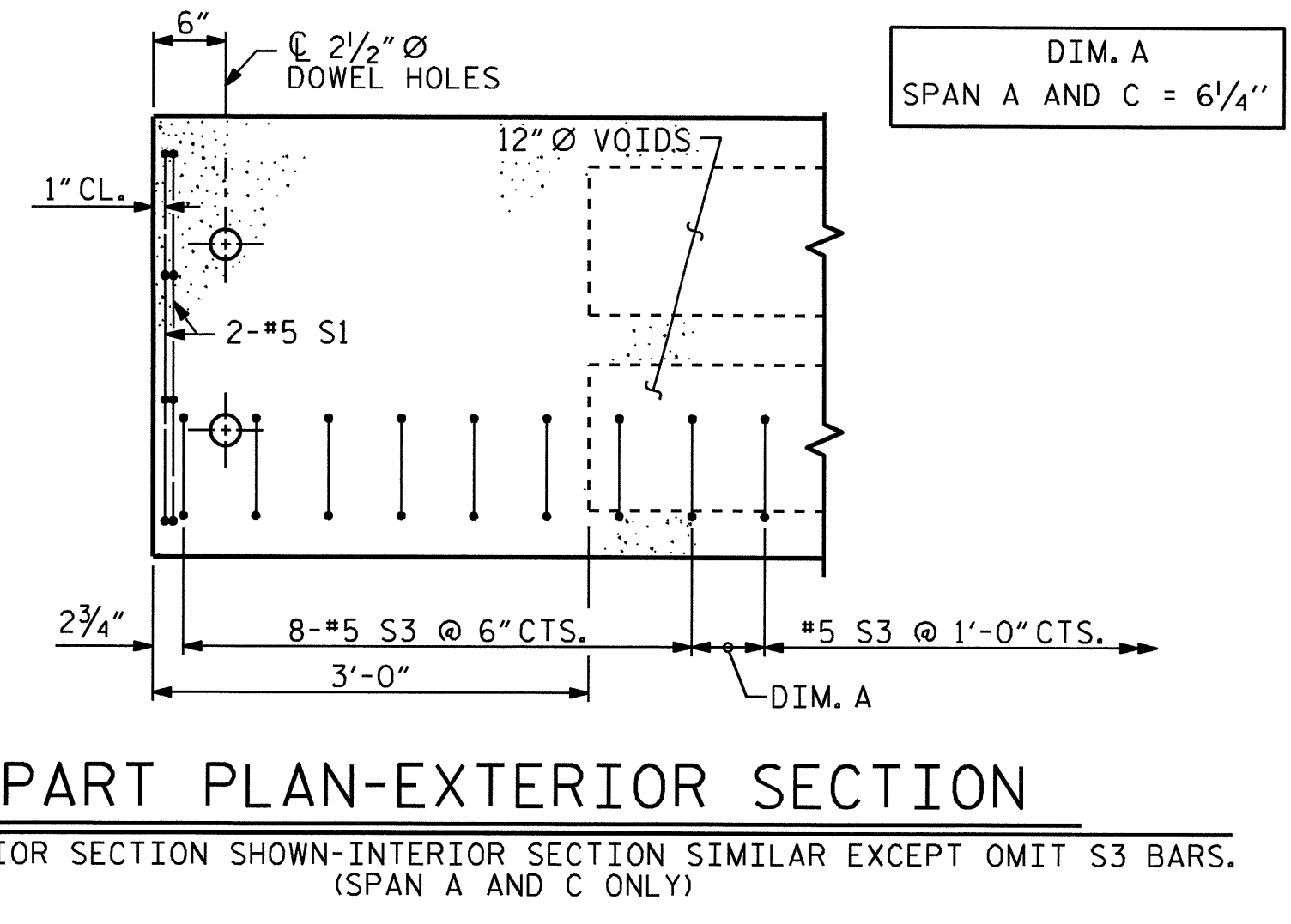
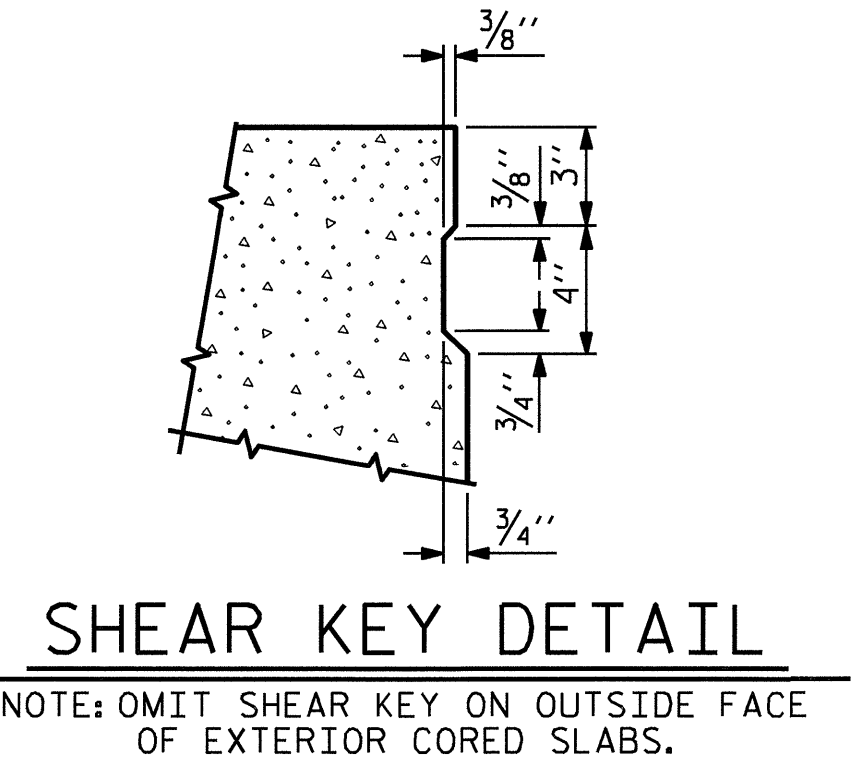
ASSEMBLED BY : J.L. WALTON DATE : 11/4/09  
 CHECKED BY : W.A. ARAFAT DATE : 11/6/09  
 DRAWN BY : MAA I/08 REV. 11/12/08RR MAA/GM  
 CHECKED BY : GM/DI 2/08



HALF SECTION @ DIAPHRAGMS      HALF SECTION @ 12" Ø VOIDS  
**TYPICAL SECTION**

**MIN. OVERLAY THICKNESS @ C SPAN**

SPAN	@ GUTTERLINE	@ CROWN
A	1 1/2"	4 7/8"
B	2 1/2"	5 7/8"
C	1 1/2"	5"



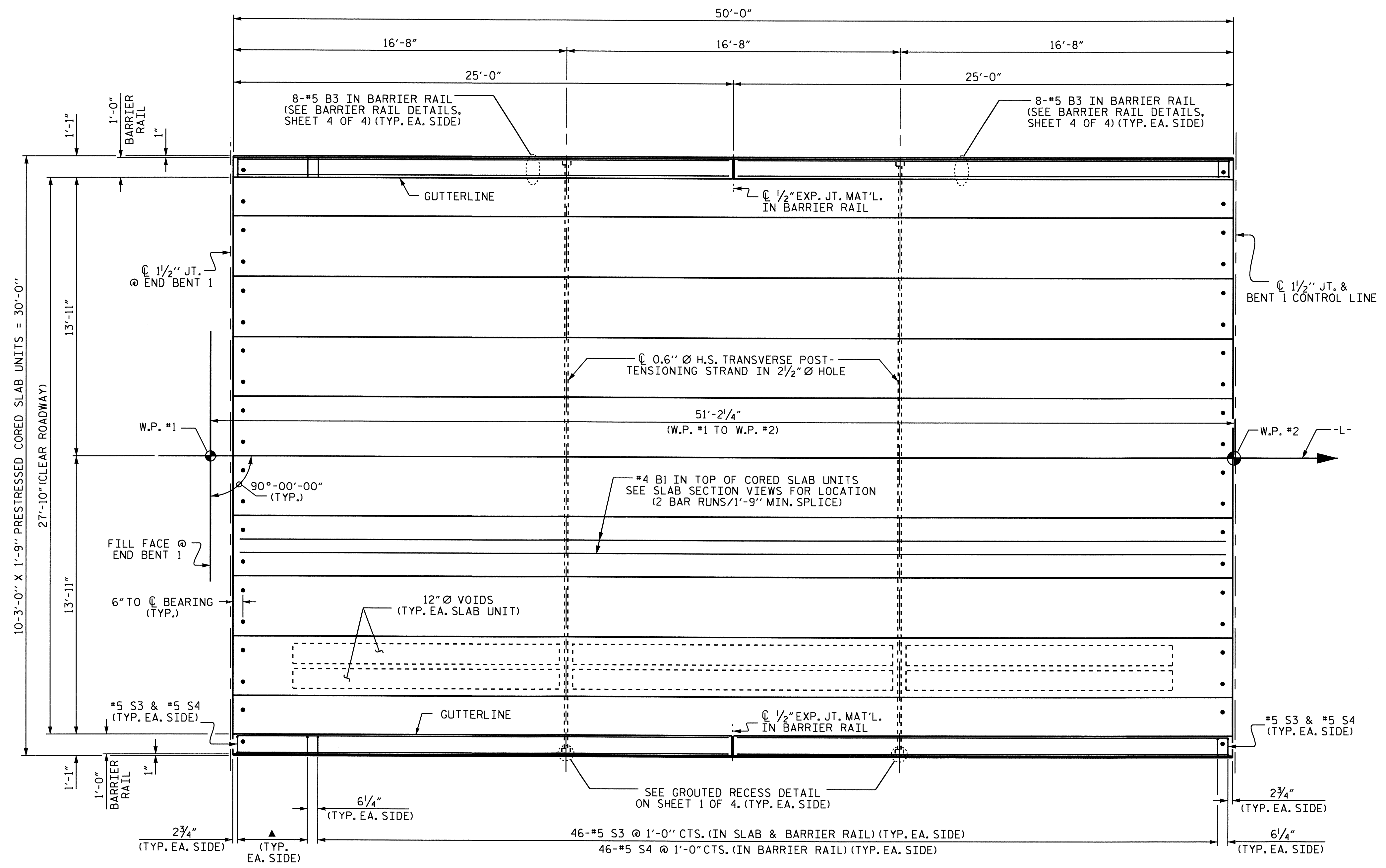
PROJECT NO. B-4435  
BERTIE COUNTY  
STATION: 15+66.00 -L-  
SHEET 1 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
3'-0" X 1'-9"  
PRESTRESSED CONCRETE  
CORED SLAB UNIT

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5	
1			3			TOTAL SHEETS	
2			4			18	

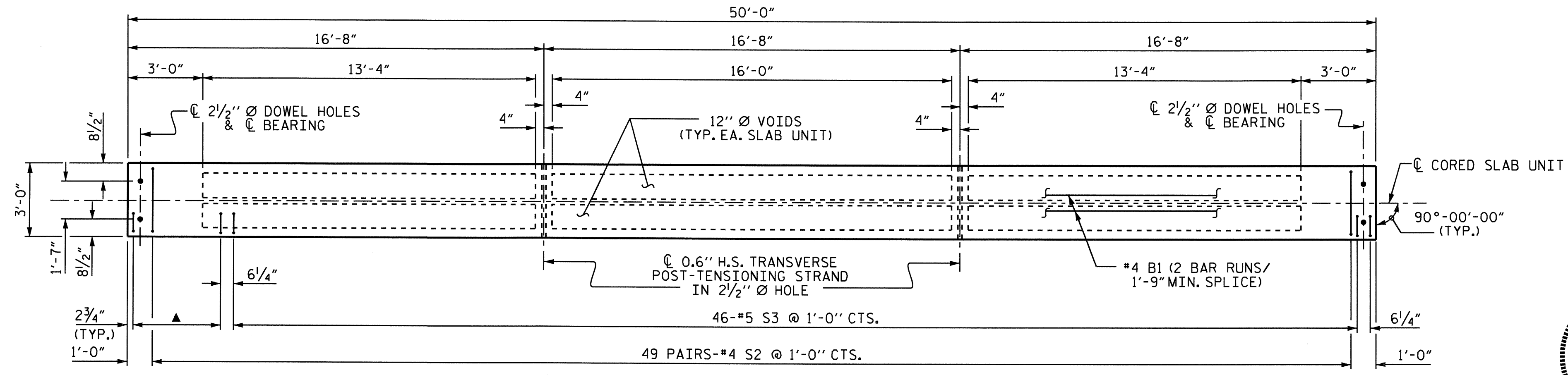
ASSEMBLED BY : J. MYA      DATE : 6-II-09  
CHECKED BY : J. WALTON      DATE : 8-6-09  
DRAWN BY : WJH 4/89      REV. 10/17/00      RWW/LES  
CHECKED BY : FCJ 5/89      REV. 7/10/01RR      RWW/LES  
REV. 5/1/06R      TLA/GM





▲ SEE PART PLAN-EXTERIOR SECTION SHEET 1 OF 4 FOR ADDITIONAL #5 S3 BARS

**SPAN A**  
(SPAN C SIMILAR)



▲ SEE PART PLAN-EXTERIOR SECTION SHEET 1 OF 4 FOR ADDITIONAL #5 S3 BARS (SPAN A SHOWN, SPAN C SIMILAR)

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS. FOR LOCATION OF ADDITIONAL REINFORCING STEEL AT END OF SLAB UNIT, SEE "PART-PLAN EXTERIOR SECTION" SHEET 1 OF 4.

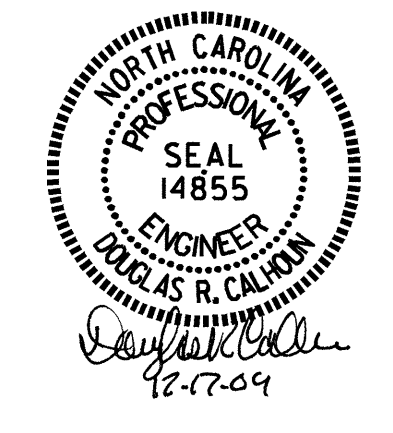
**PLAN OF CORED SLAB UNIT**

PROJECT NO. B-4435  
BERTIE COUNTY  
 STATION: 15+66.00 -L-

SHEET 2 OF 4

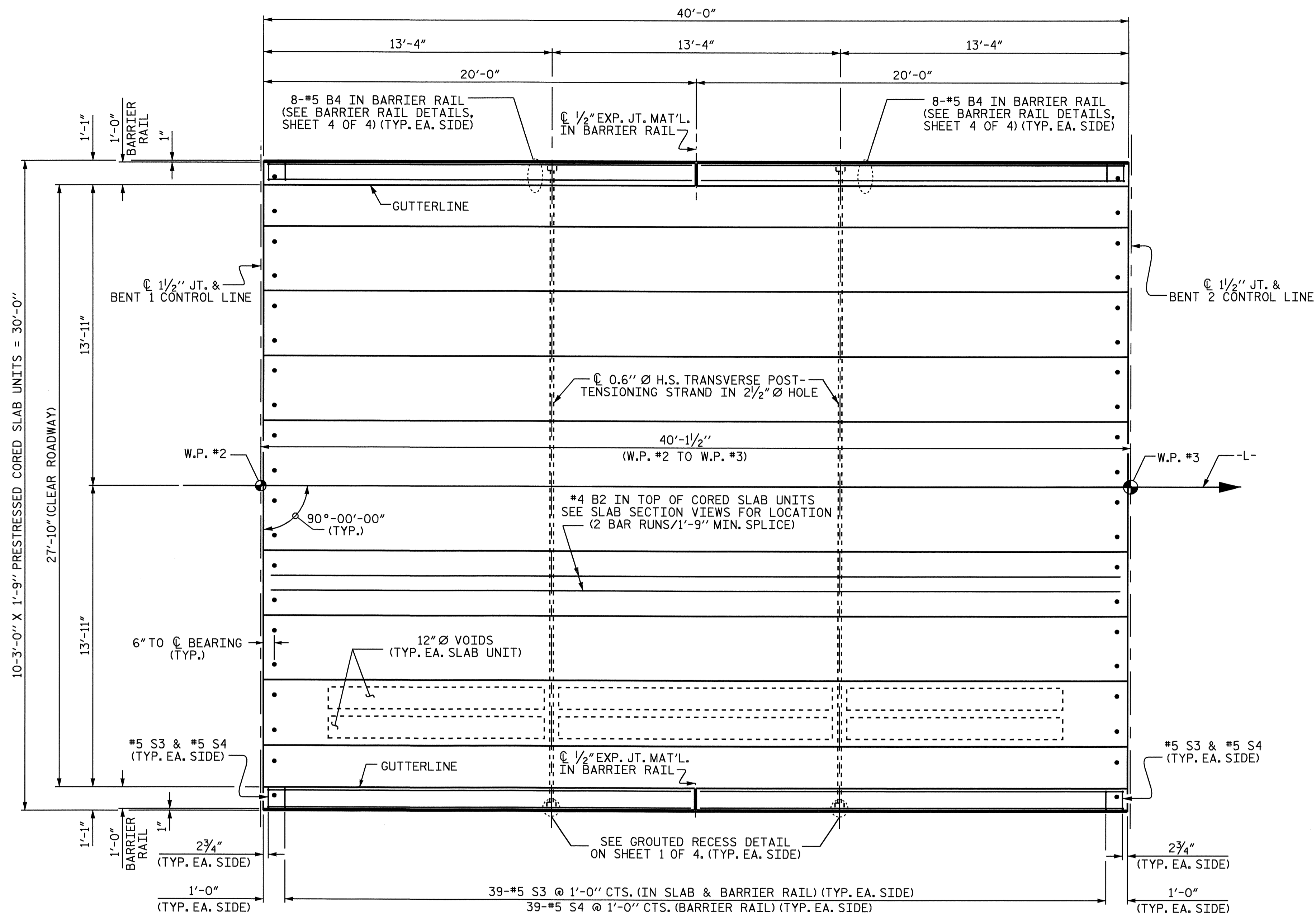
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUPERSTRUCTURE  
 PLAN OF SPAN A AND C**

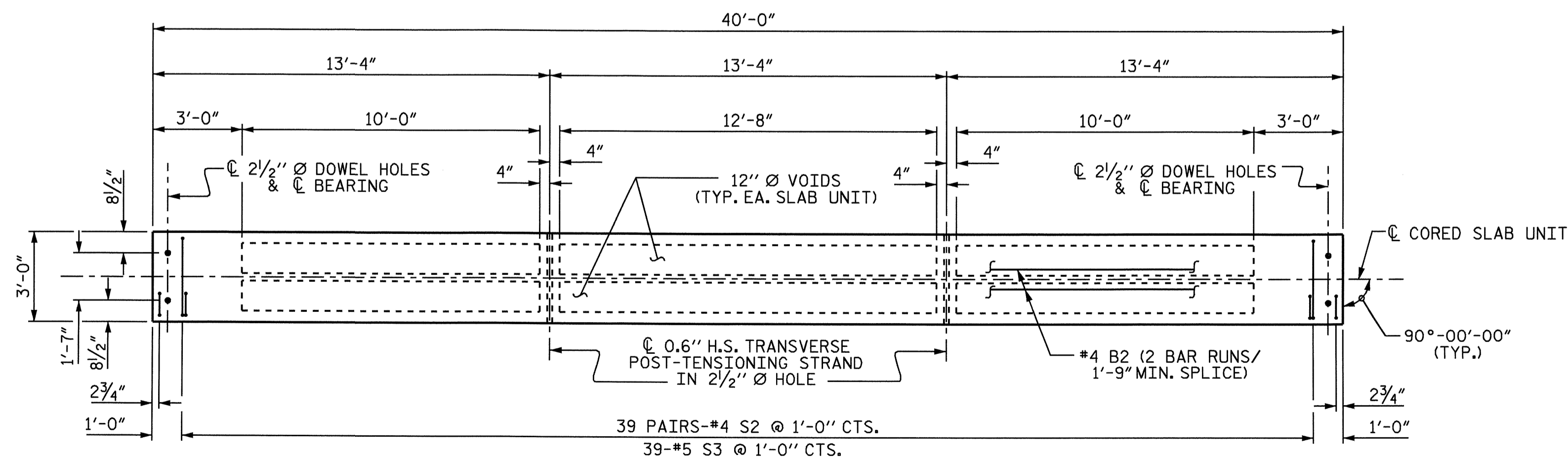


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			18

DRAWN BY: J. MYA DATE: 6-11-09  
 CHECKED BY: J. L. WALTON DATE: 8-6-09



SPAN B



PLAN OF CORED SLAB UNIT

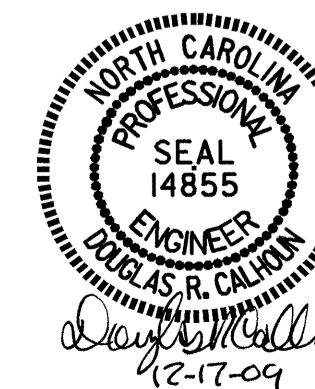
EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.  
FOR LOCATION OF ADDITIONAL REINFORCING STEEL AT END OF SLAB UNIT,  
SEE "PART-PLAN EXTERIOR SECTION" SHEET 1 OF 4.

PROJECT NO. B-4435  
BERTIE COUNTY  
STATION: 15+66.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
PLAN OF SPAN B



DRAWN BY : J. MYA DATE : 6-11-09  
CHECKED BY : J. L. WALTON DATE : 8-6-09

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jmya

REVISIONS						SHEET NO. S-7
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 18
2			4			



**BILL OF MATERIAL FOR ONE CORED SLAB SECTION**

SPAN A AND C								SPAN B											
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT				
B1	4	#4	STR	25'-9"	69	25'-9"	69	B2	4	#4	STR	20'-9"	55	20'-9"	55				
S1	8	#5	3	4'-3"	35	4'-3"	35	S1	8	#5	3	4'-3"	35	4'-3"	35				
S2	98	#4	3	5'-4"	349	5'-4"	349	S2	78	#4	3	5'-4"	278	5'-4"	278				
*S3	55	#5	1	5'-7"	320			*S3	41	#5	1	5'-7"	239						
REINFORCING STEEL				453 LBS.				453 LBS.				REINFORCING STEEL				368 LBS.			
*EPOXY COATED REINFORCING STEEL				320 LBS.								*EPOXY COATED REINFORCING STEEL				239 LBS.			
6500 P.S.I. CONCRETE				7.2 CU. YDS.				7.1 CU. YDS.				6500 P.S.I. CONCRETE				5.8 CU. YDS.			
0.6" Ø L.R. STRANDS				No. 17				17				0.6" Ø L.R. STRANDS				No. 12			

**DEAD LOAD DEFLECTION AND CAMBER**

	SPAN A	SPAN B	SPAN C
CAMBER (SLAB ALONE IN PLACE) ↑	2 1/16"	1 5/16"	2 1/16"
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD ** ↓	5/16"	1/8"	5/16"
FINAL CAMBER ↑	1 3/4"	1 3/16"	1 3/4"

\*\* INCLUDES FUTURE WEARING SURFACE

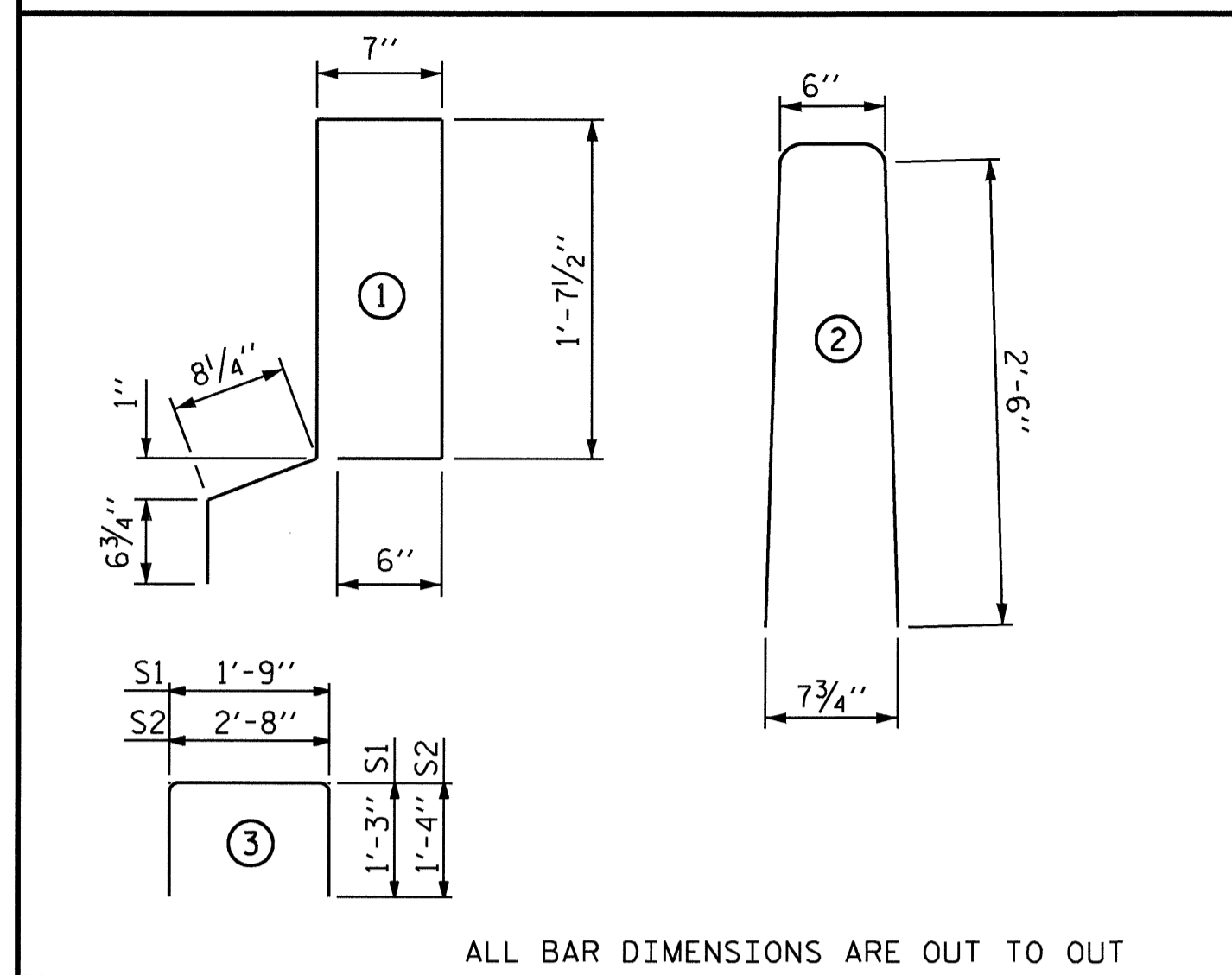
**CORED UNITS SLABS REQUIRED**

	NUMBER PER SPAN	LENGTH	TOTAL LENGTH
EXTERIOR C.S.-SPANS A & C	4	50'-0"	200'-0"
INTERIOR C.S.-SPANS A & C	16	50'-0"	800'-0"
EXTERIOR C.S.-SPAN B	2	40'-0"	80'-0"
INTERIOR C.S.-SPAN B	8	40'-0"	320'-0"
TOTAL	30		1400'-0"

**BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL**

BAR	BARS PER SPAN		TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	SPAN A AND C	SPAN B					
*B3	64		64	#5	STR	24'-8"	1647
*B4		32	32	#5	STR	19'-8"	656
*S4	220	82	302	#5	2	5'-6"	1732
*EPOXY COATED REINFORCING STEEL							LBS. 4035
CLASS AA CONCRETE							C. Y. 27.0
TOTAL LIN. FT. OF VERTICAL CONCRETE BARRIER RAIL							LIN. FT. 280'-6"

**BAR TYPES**



ALL BAR DIMENSIONS ARE OUT TO OUT

**GRADE 270 STRANDS**

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

**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 2" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, A POSITIVE HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. THIS SYSTEM SHALL BE DESIGNED TO BE LEFT IN PLACE UNTIL THE CONCRETE HAS REACHED RELEASE STRENGTH. AT LEAST THREE 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.

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 5000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

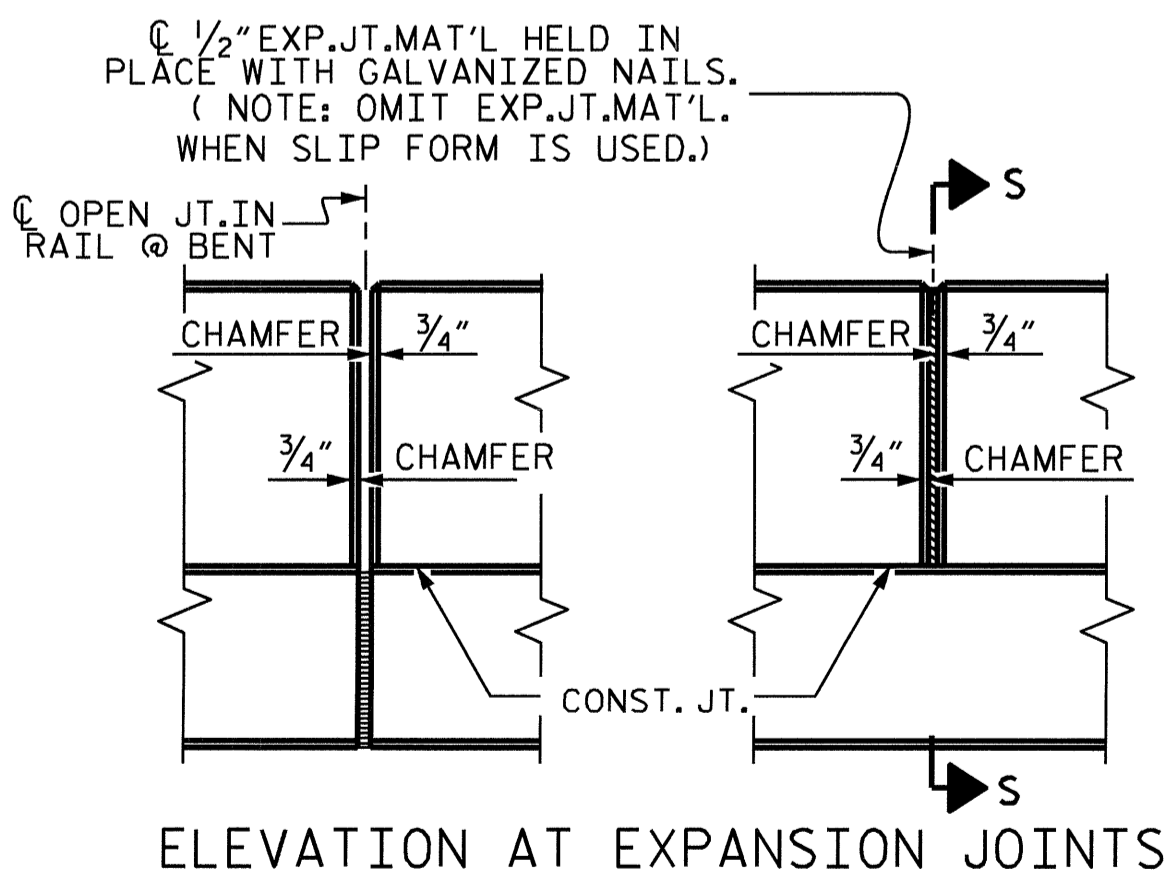
APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FT. TO 10 FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

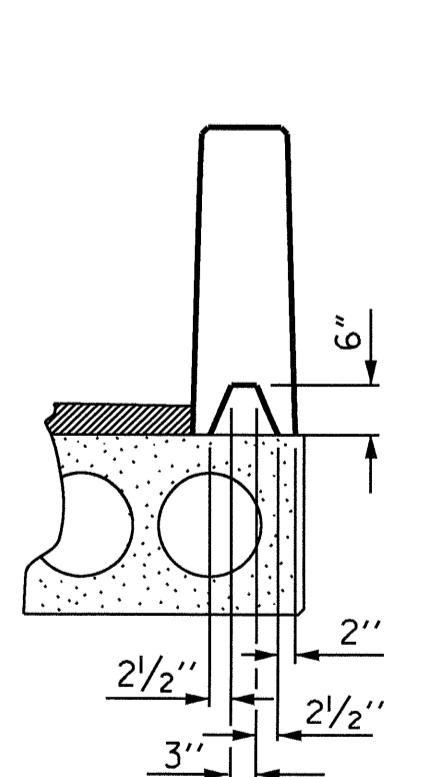
THE MINIMUM HEIGHT OF THE BARRIER RAIL IS SHOWN. THE HEIGHT OF THE BARRIER RAIL VARIES WHILE THE TOP OF THE RAIL FOLLOWS THE PROFILE OF THE GUTTER LINE.

FOR VERTICAL CONCRETE BARRIER RAIL, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.



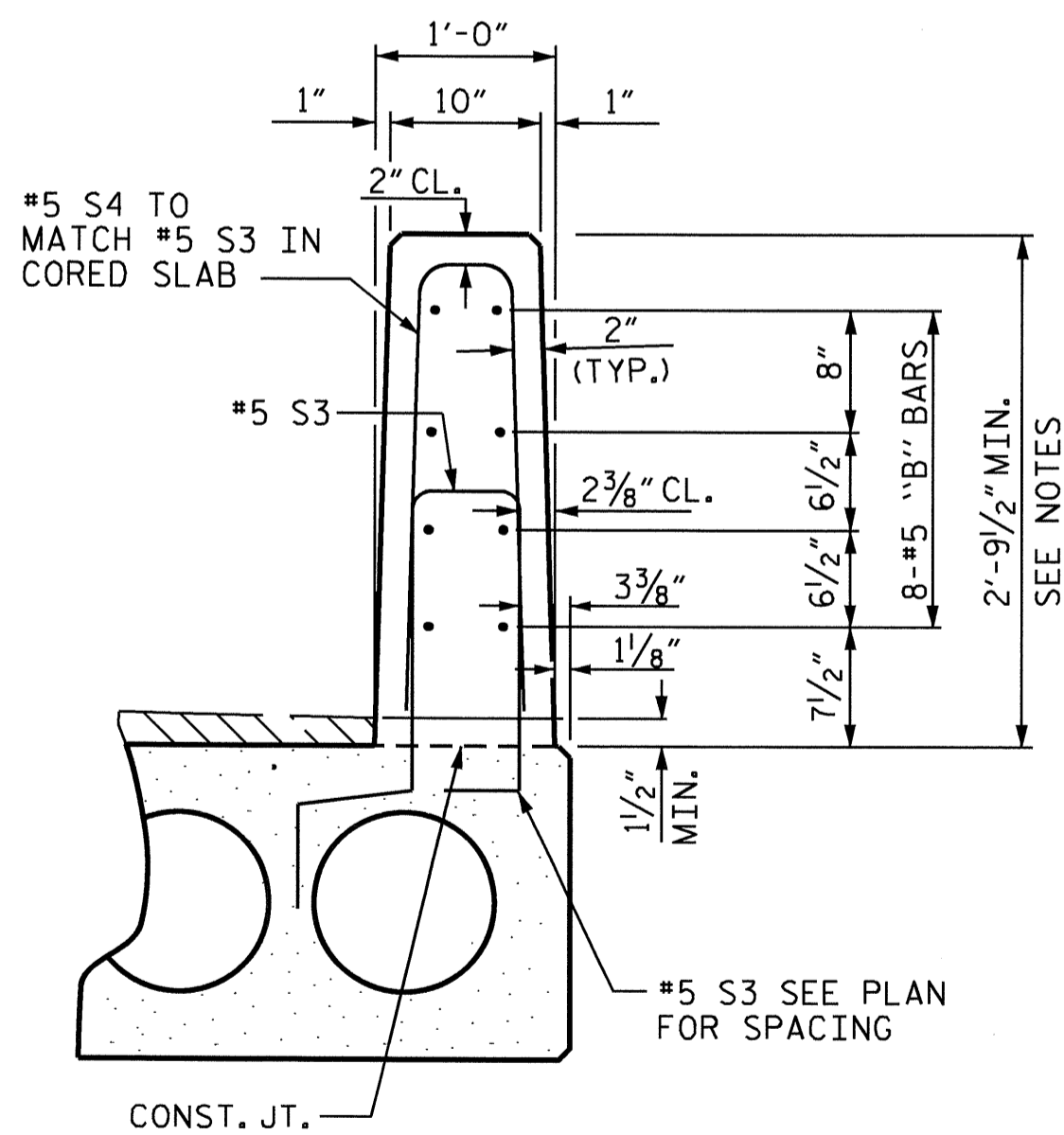
ELEVATION AT EXPANSION JOINTS



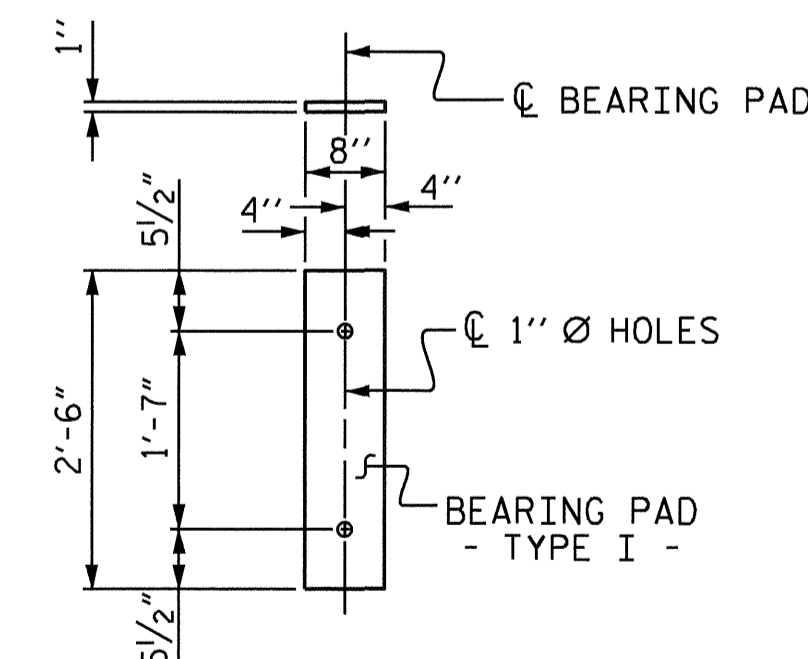
SECTION S-S

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

**BARRIER RAIL DETAILS**



VERTICAL CONCRETE BARRIER RAIL SECTION



FIXED END  
(TYPE I - 60 REO'D)  
**ELASTOMERIC BEARING DETAILS**  
(50 DUROMETER HARDNESS)



PROJECT NO. B-4435  
BERTIE COUNTY  
STATION: 15+66.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
3'-0" X 1'-9"  
PRESTRESSED CONCRETE  
CORED SLAB UNIT

ASSEMBLED BY : J. MYA	DATE : 6-11-09
CHECKED BY : J. L. WALTON	DATE : 8-6-09
DRAWN BY : WJH 4/89	REV. 7/10/01 RWW/LES
CHECKED BY : FCJ 5/89	REV. 5/7/03RRR RWW/JTE
	REV. 5/1/06 TLA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8 TOTAL SHEETS 18
1			3			
2			4			

NOTES

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

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

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

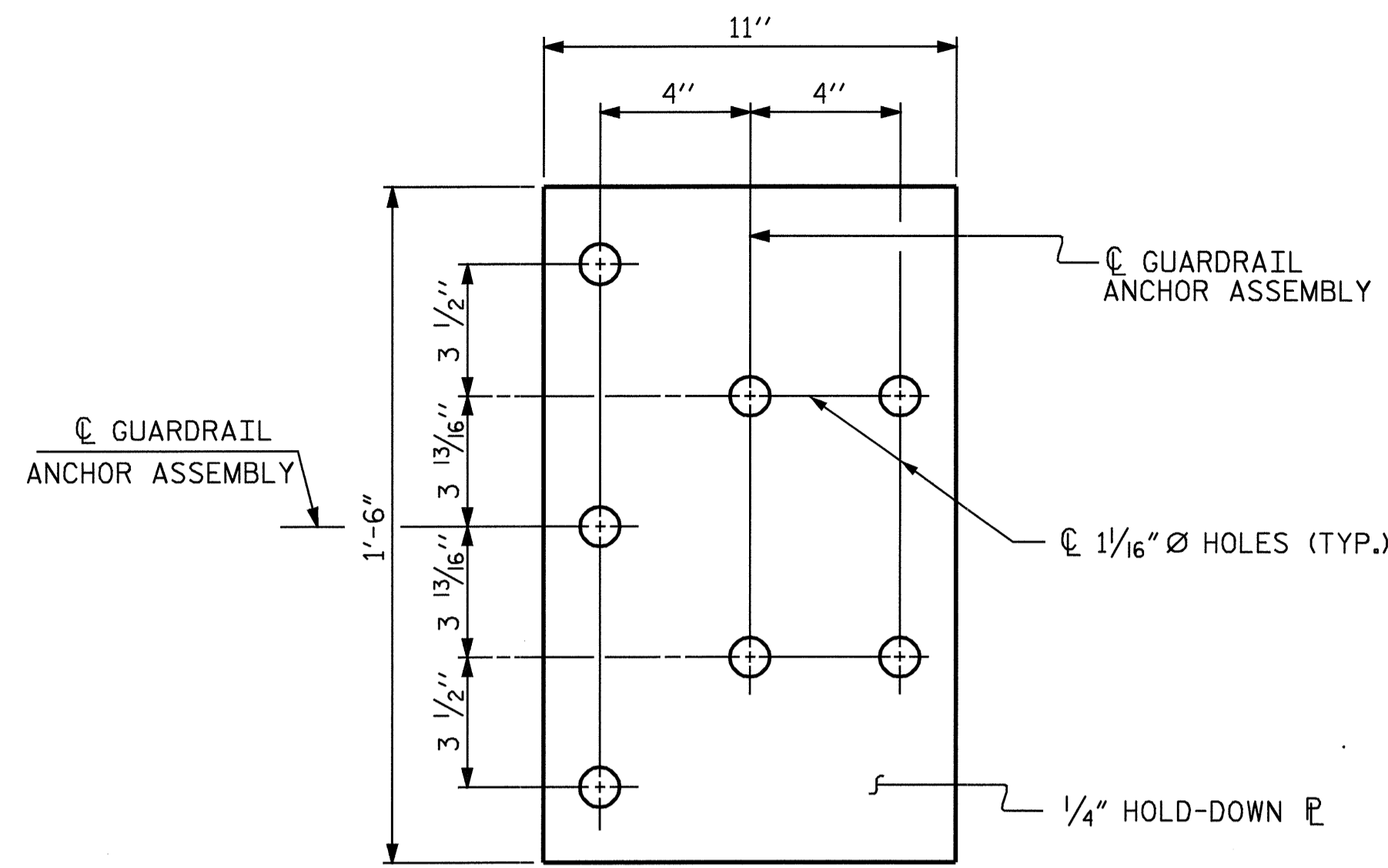
AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

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 VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

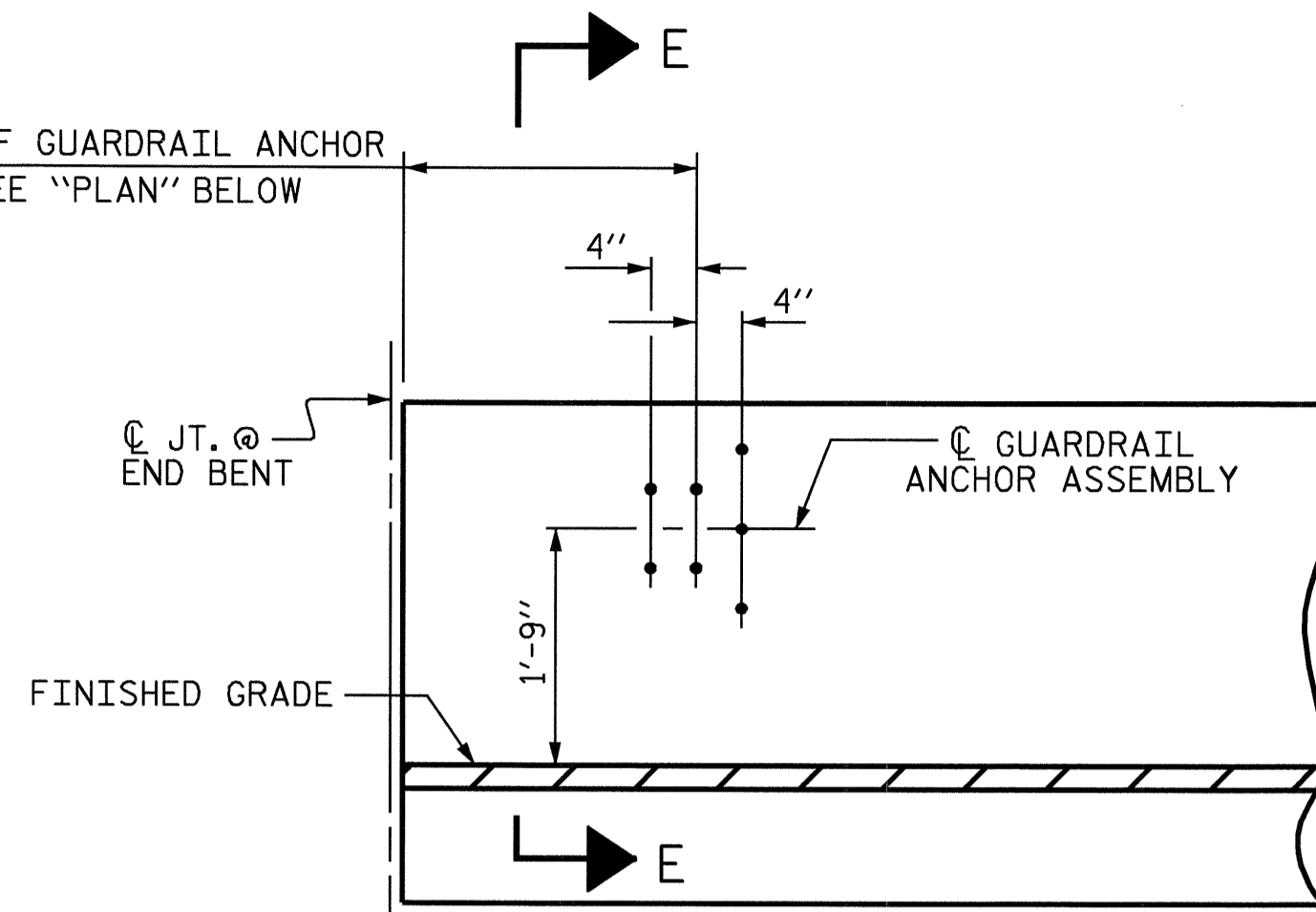
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

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

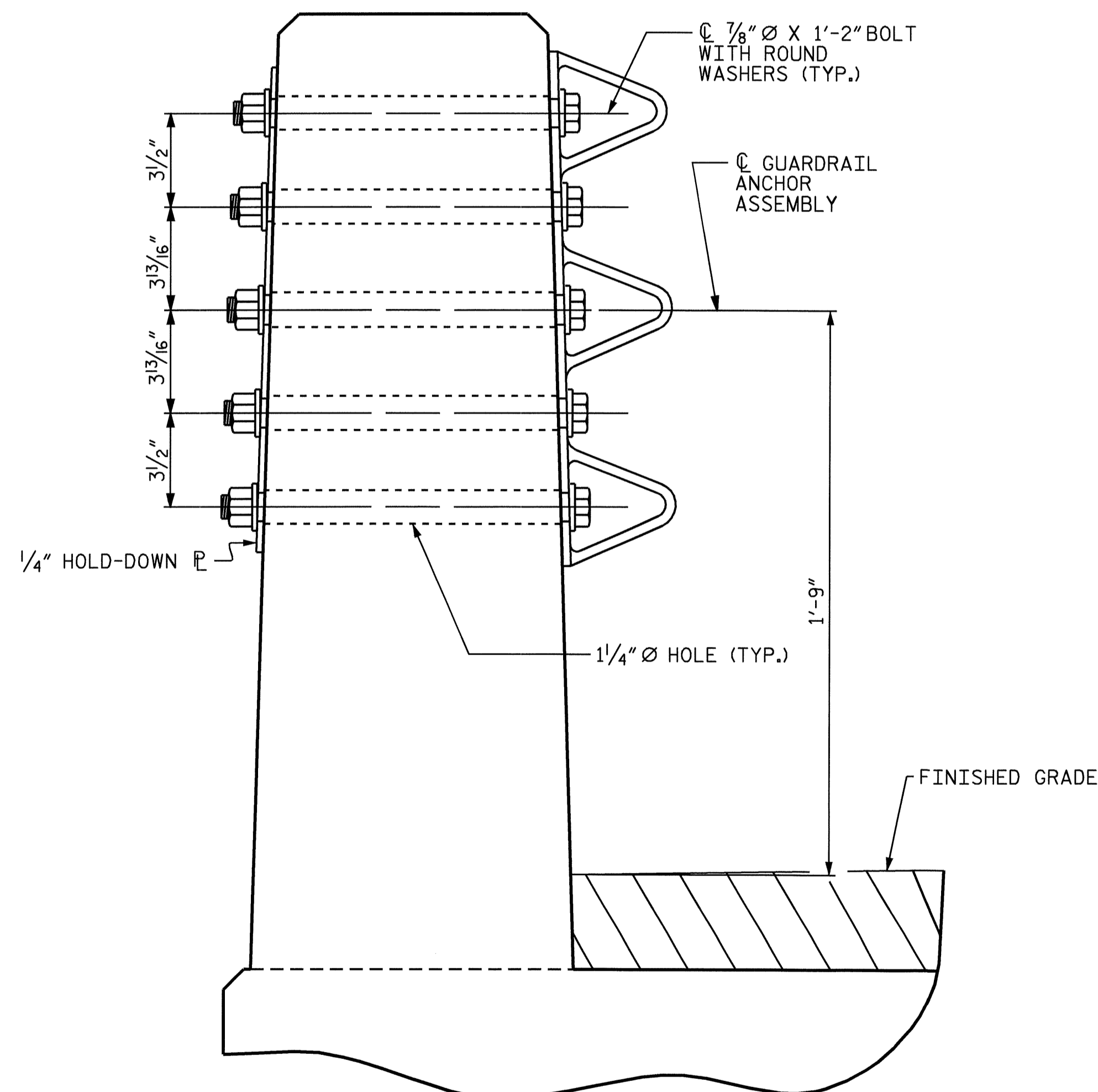


PLAN

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

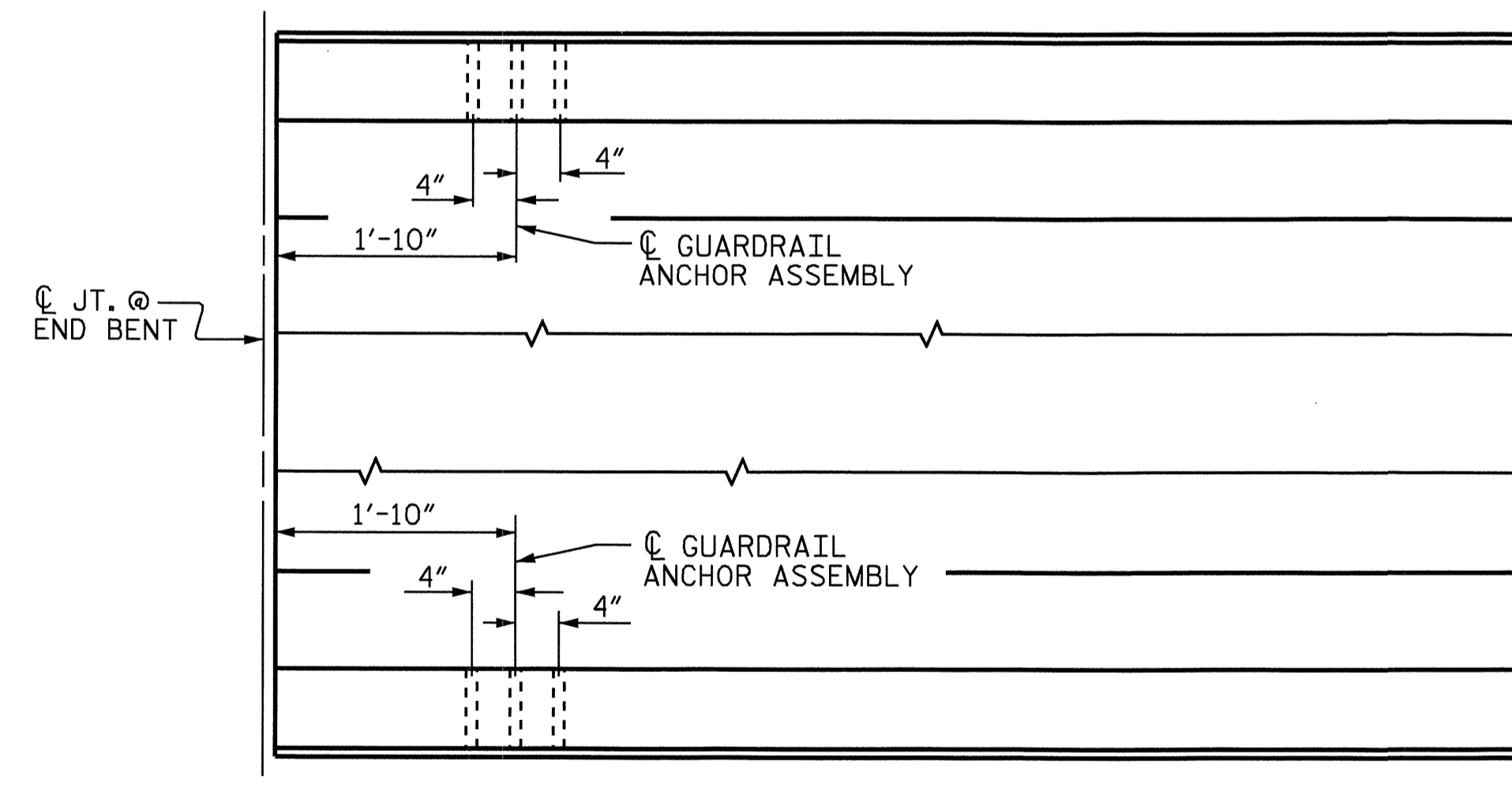


ELEVATION



SECTION E-E

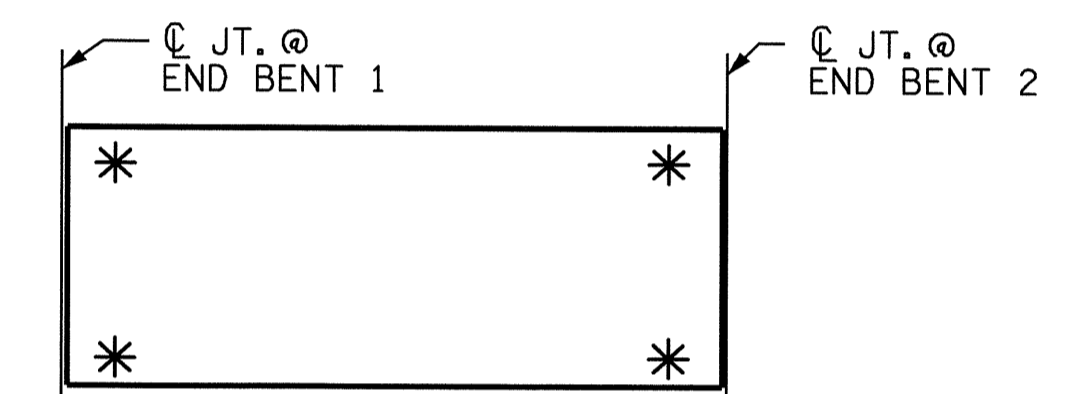
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

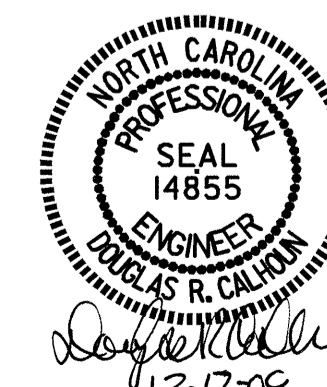
END BENT 1 SHOWN, END BENT 2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENTS

\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4435  
 BERTIE COUNTY  
 STATION: 15+66.00 -L-



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

ASSEMBLED BY : J. MYA	DATE : 6-11-09
CHECKED BY : J. L. WALTON	DATE : 8-6-09
DRAWN BY : EEM 6/94	REV. 10/17/00 RWW/LES
CHECKED BY : RGW 6/94	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			18

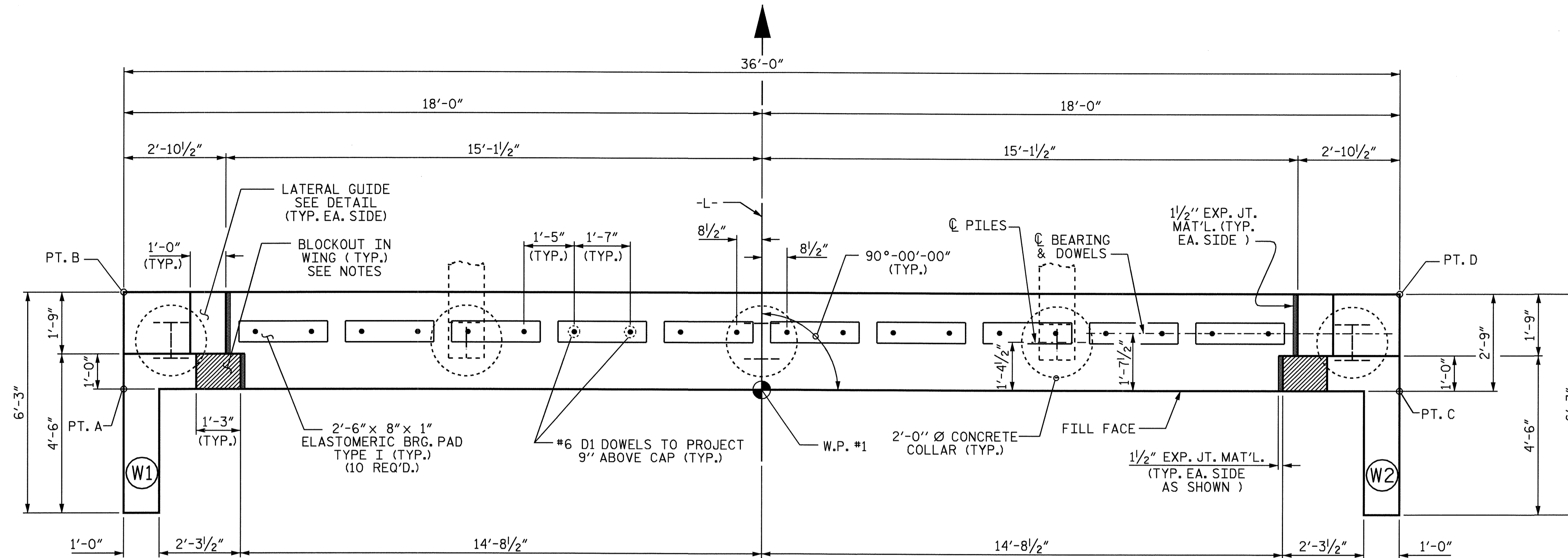
# NOTES

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

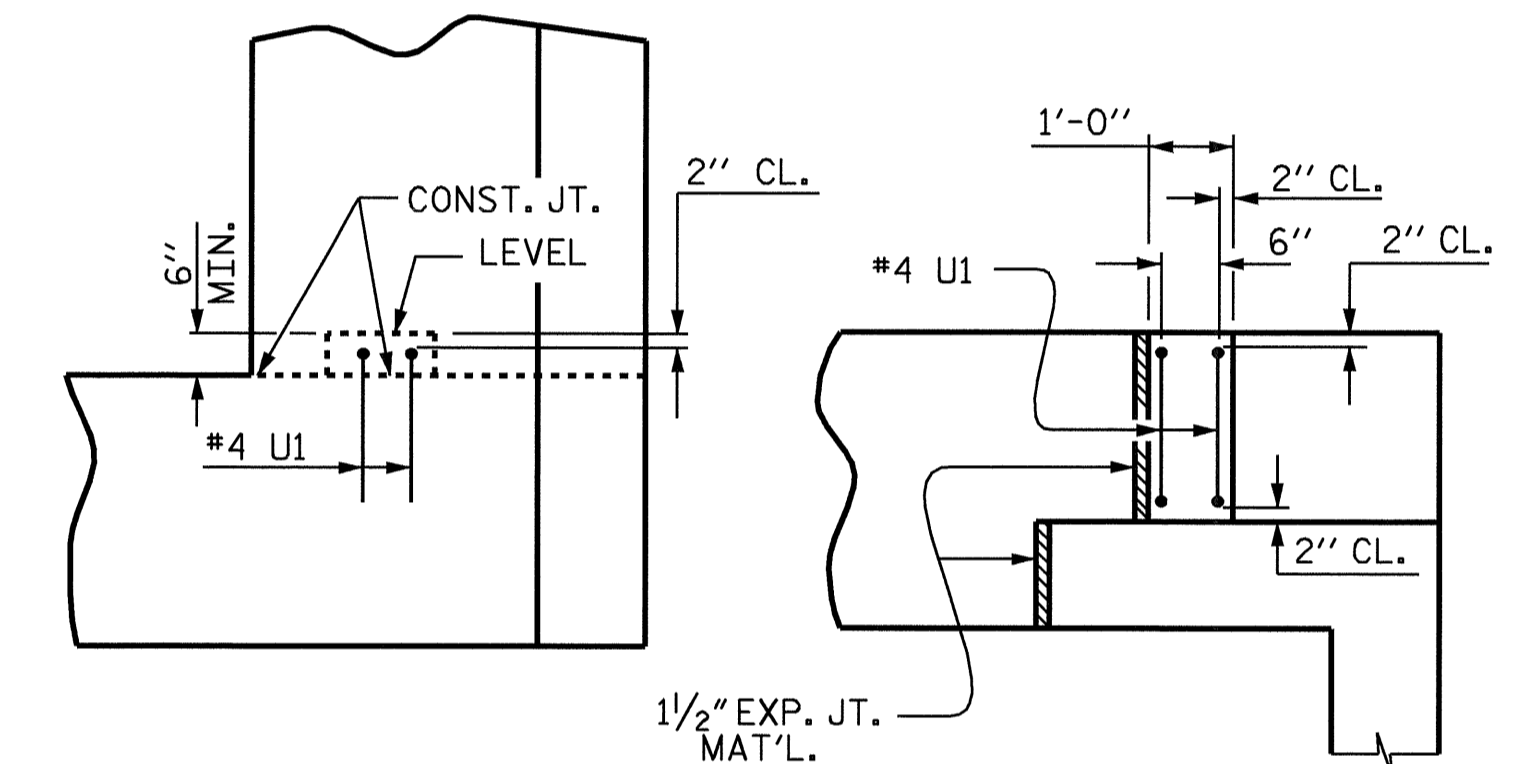
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

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

THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCING BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.



PLAN

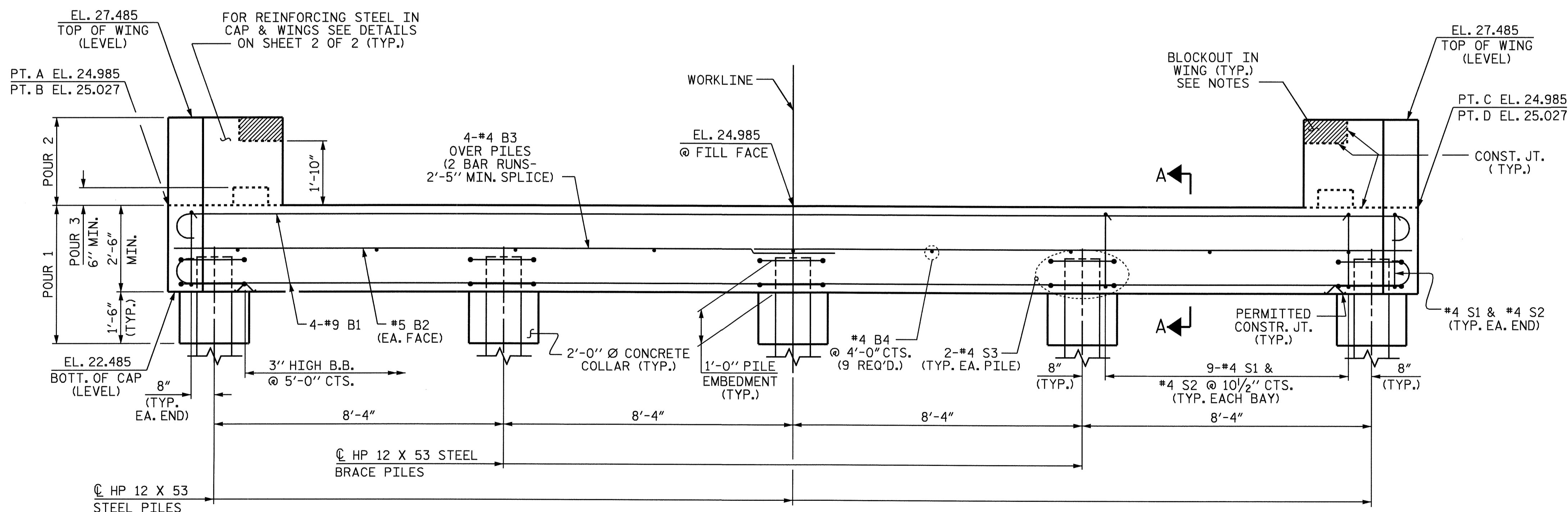


ELEVATION

PLAN

## LATERAL GUIDE

(RIGHT SIDE SHOWN, LEFT SIDE SIMILAR)



ELEVATION

PROJECT NO. B-4435  
BERTIE COUNTY  
 STATION: 15+66.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

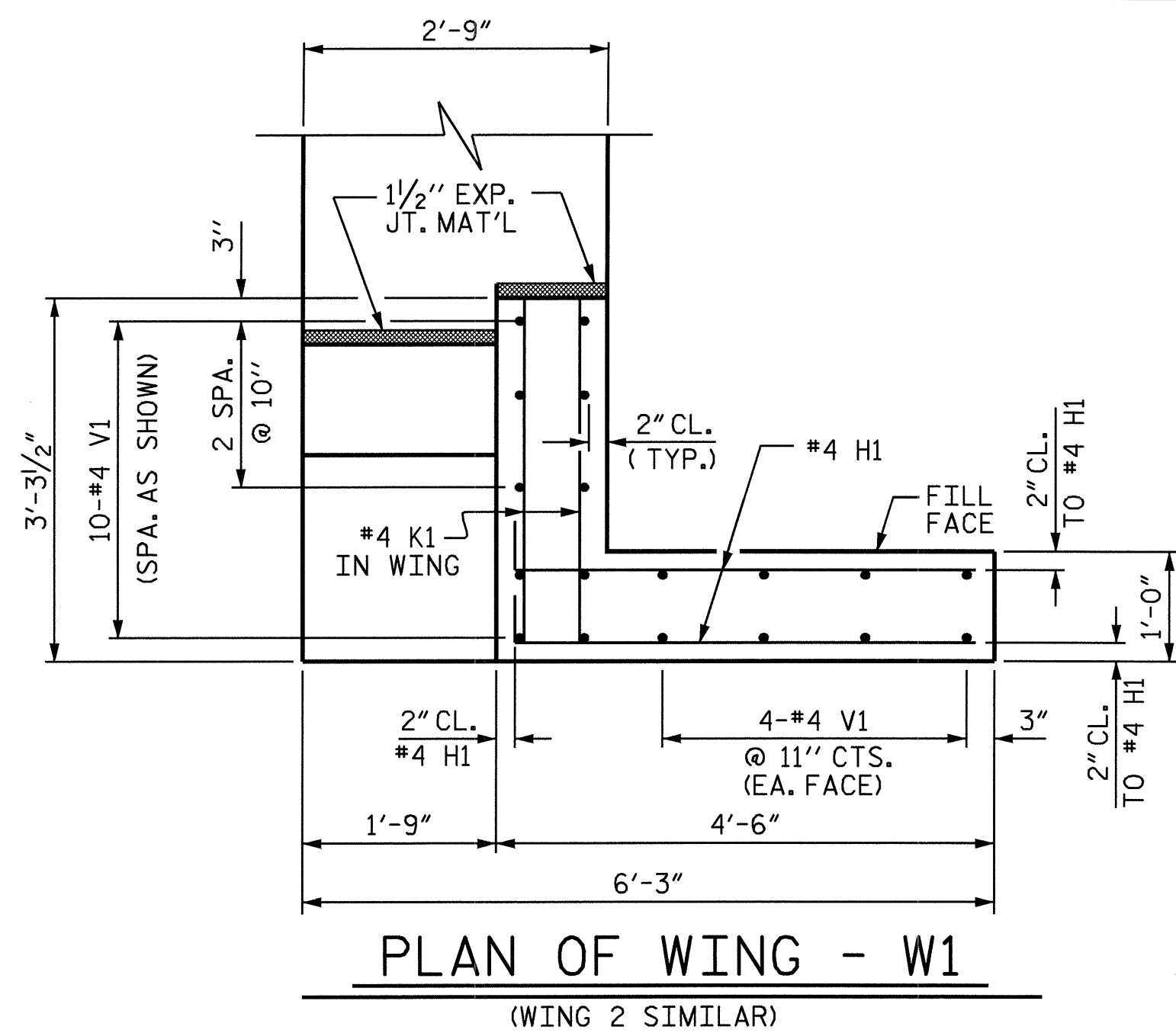
SUBSTRUCTURE  
 END BENT 1



DRAWN BY: J. MYA DATE: 6-18-09  
 CHECKED BY: J. L. WALTON DATE: 8-11-09

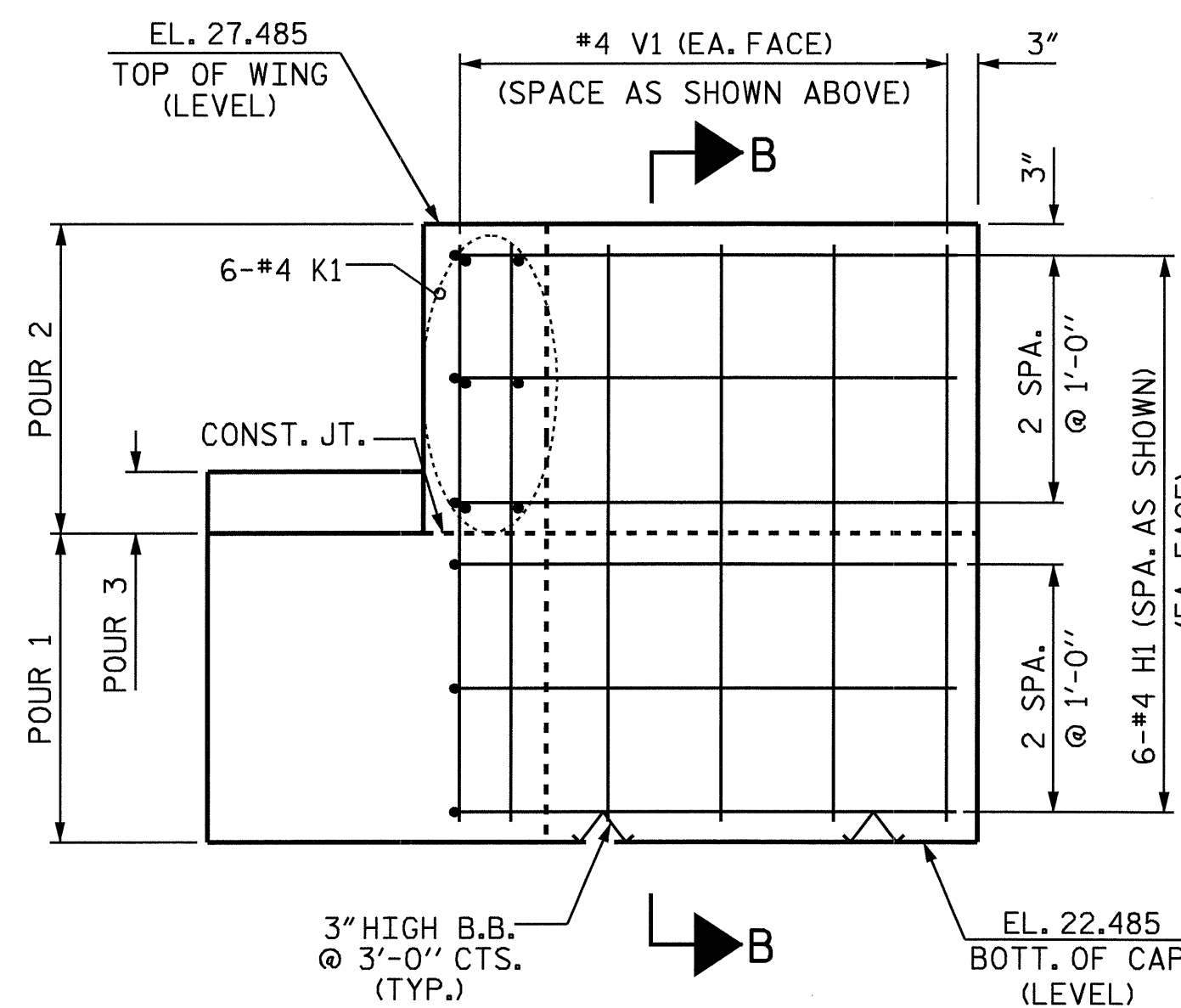
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REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			18



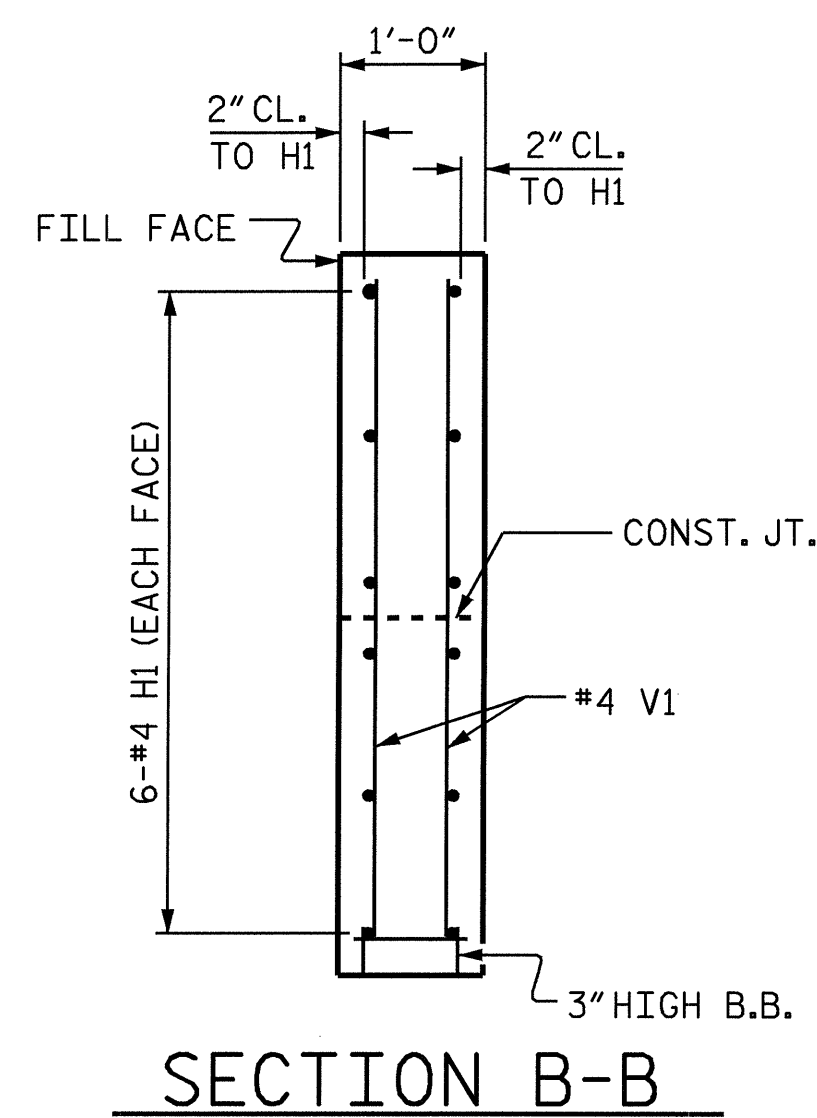
PLAN OF WING - W1

(WING 2 SIMILAR)

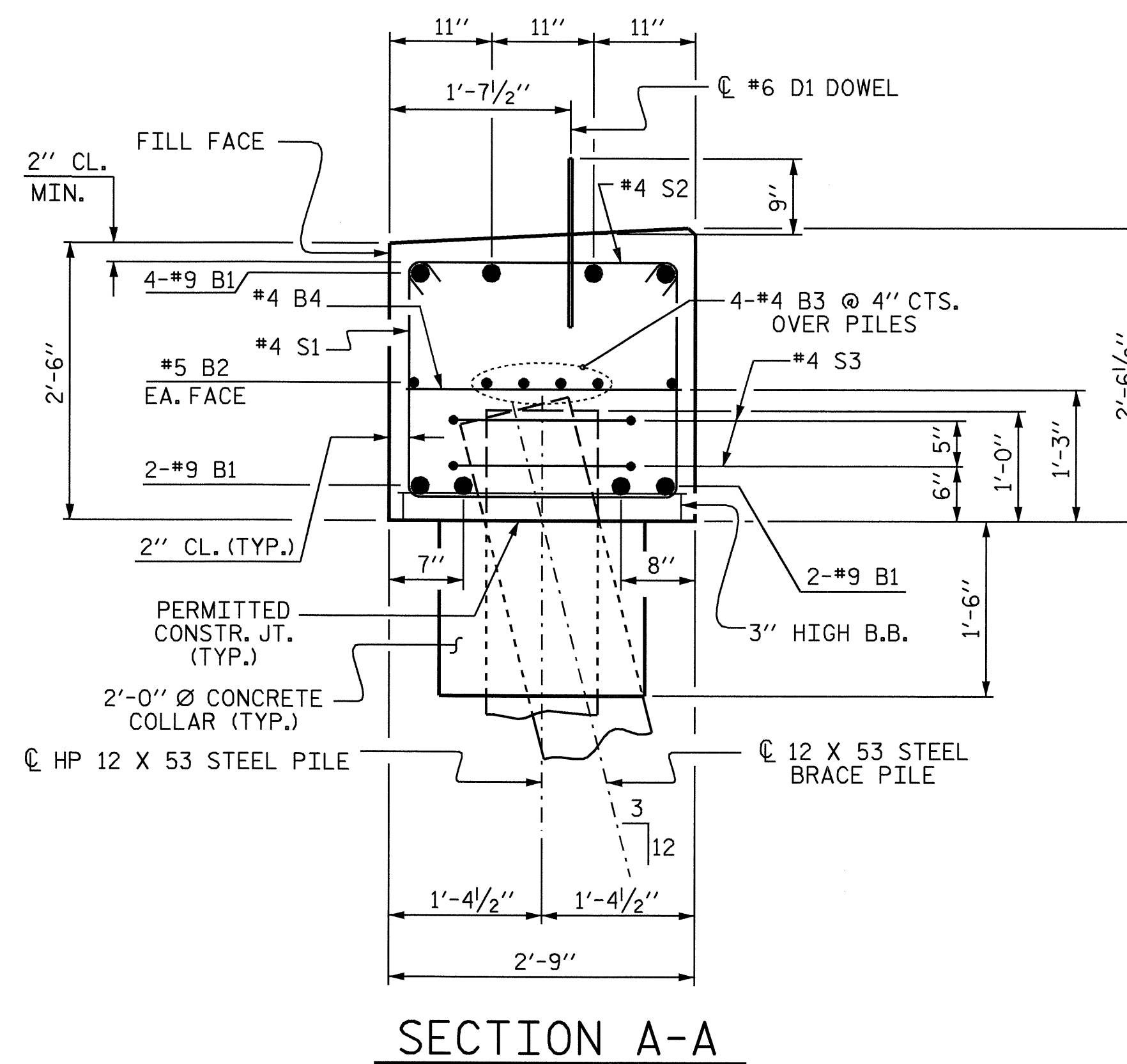


ELEVATION OF WING - W1

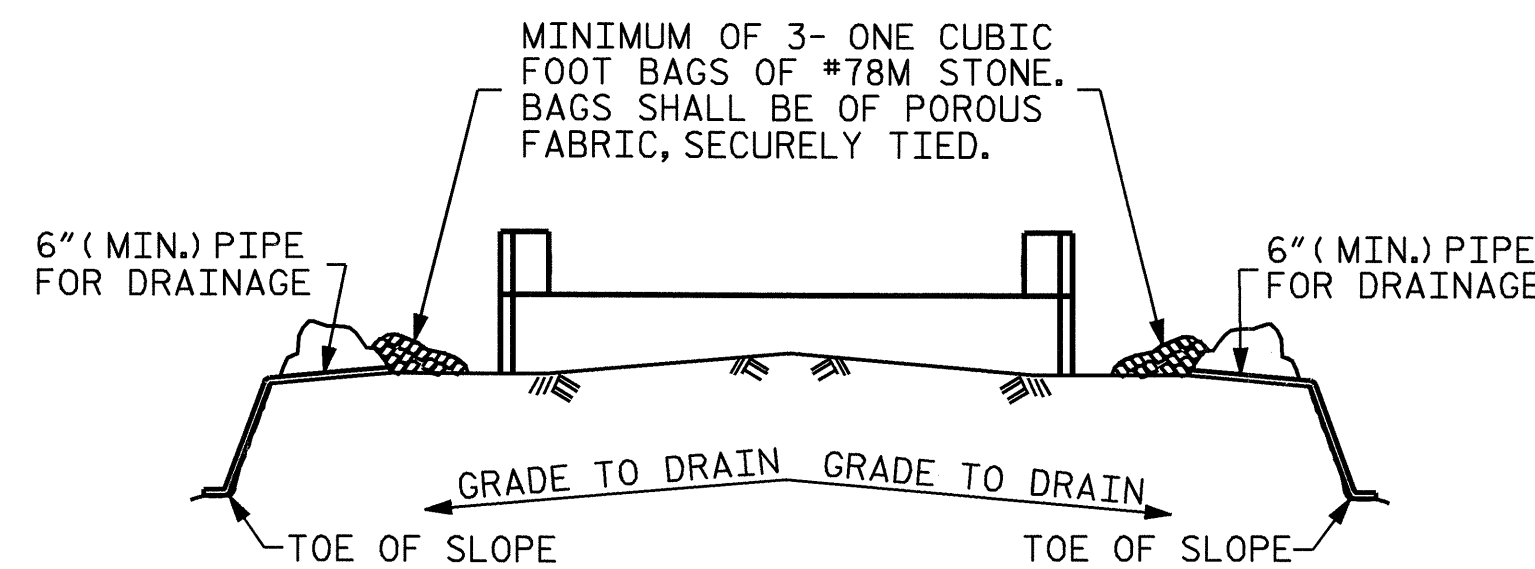
(WING 2 SIMILAR)



SECTION B-B



SECTION A-A

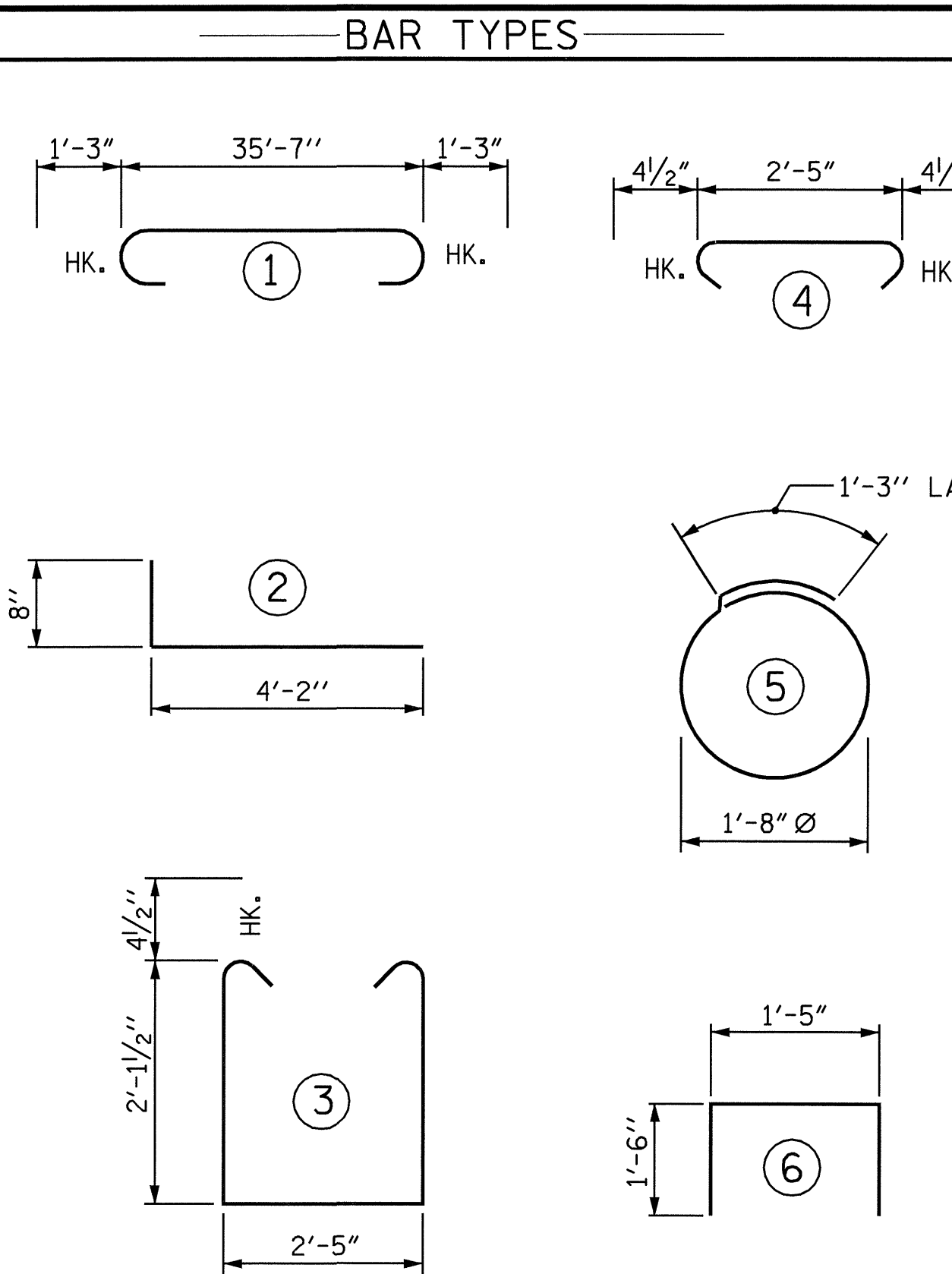


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

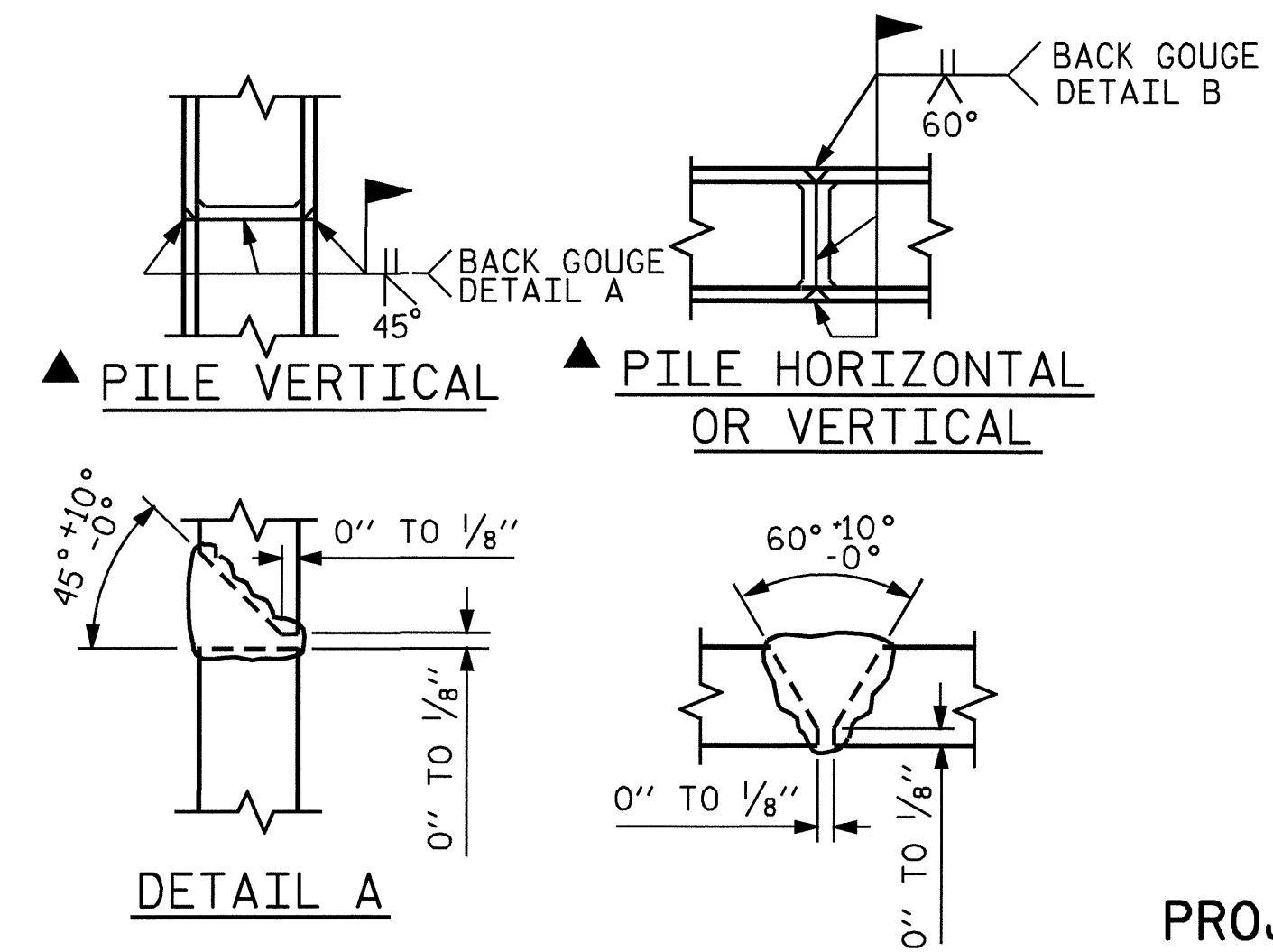
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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



ALL BAR DIMENSIONS ARE OUT TO OUT.



▲ POSITION OF PILE DURING WELDING. DETAIL B

PILE SPLICE DETAILS

BILL OF MATERIAL

END BENT 1

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	#9	1	38'-1"	1036
B2	#5	STR	35'-8"	74
B3	#4	STR	19'-1"	102
B4	#4	STR	2'-5"	15
D1	#6	STR	1'-6"	45
H1	#4	2	4'-10"	77
K1	#4	STR	2'-11"	23
S1	#4	3	7'-5"	188
S2	#4	4	3'-2"	80
S3	#4	5	6'-6"	43
U1	#4	6	4'-5"	12
V1	#4	STR	4'-8"	112

REINFORCING STEEL LBS 1807

CLASS A CONCRETE BREAKDOWN

POUR 1 (CAP, CONCRETE COLLARS & LOWER PART OF WINGS)	C.Y.	10.9
POUR 2 (UPPER PART OF WINGS)	C.Y.	1.3
POUR 3 (LATERAL GUIDES)	C.Y.	0.1
TOTAL	C.Y.	12.3

HP 12 X 53 STEEL PILES :  
NO. : 5 LIN. FT. : 300

PILE REDRIVES NO. 5

DRAWN BY : J. MYA DATE : 6-18-09  
CHECKED BY : J. L. WALTON DATE : 8-11-09

17-NOV-2009 13:45  
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jmya



PROJECT NO. B-4435  
BERTIE COUNTY  
STATION: 15+66.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

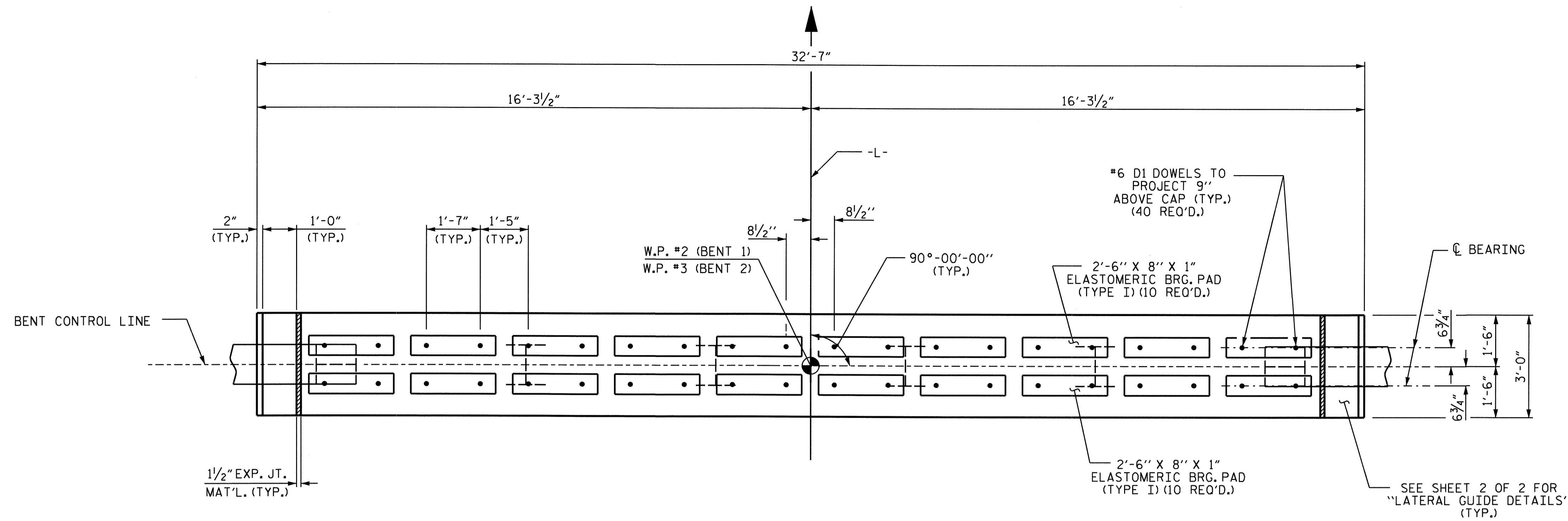
SUBSTRUCTURE  
END BENT 1

REVISIONS

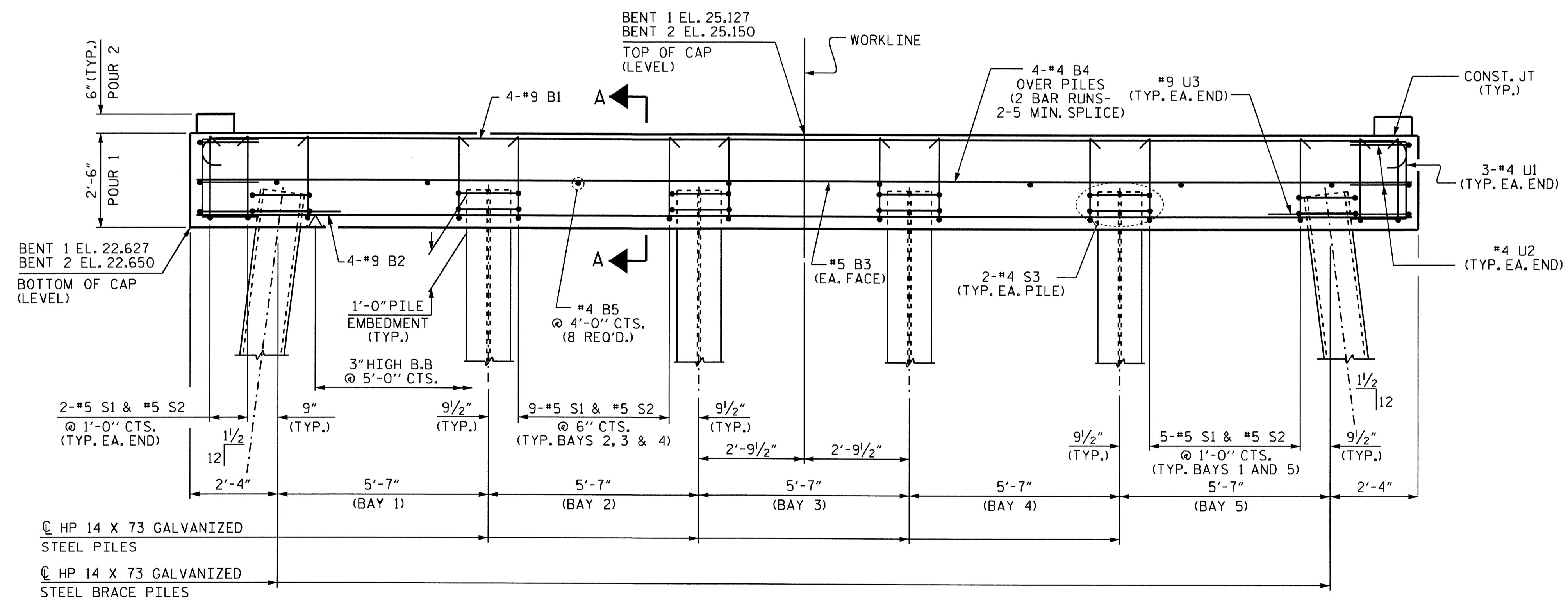
NO.	BY:	DATE:	NO.	BY:	DATE:
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2			4		

SHEET NO.  
S-11

TOTAL SHEETS  
18



PLAN



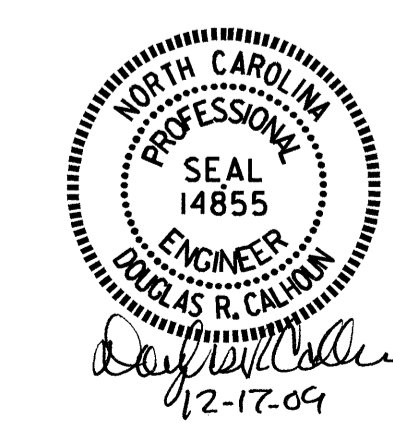
ELEVATION

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.  
 THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.  
 GALVANIZE THE TOP 32 FEET OF EACH INTERIOR BENT PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

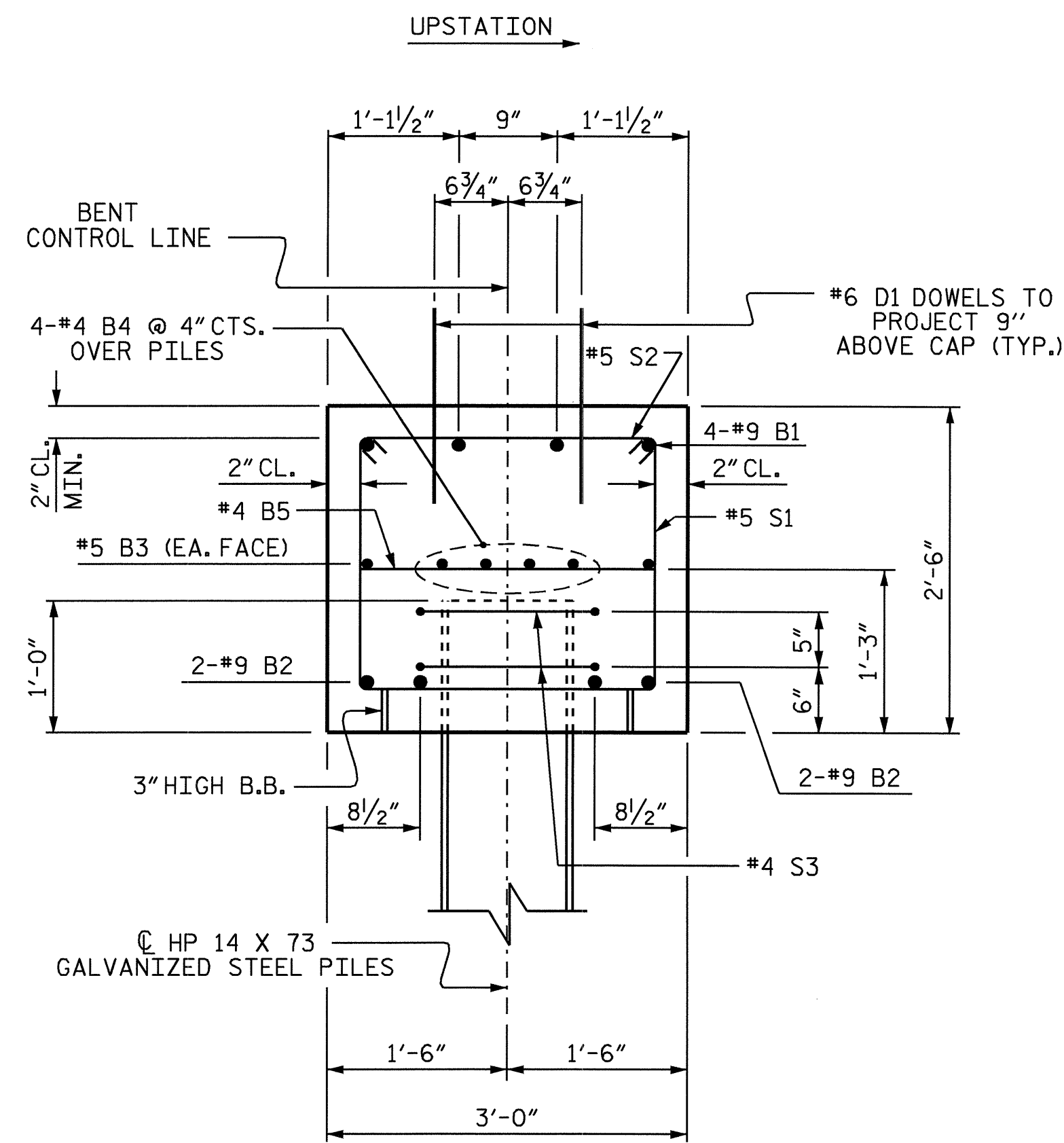
PROJECT NO. B-4435  
BERTIE COUNTY  
 STATION: 15+66.00 -L-

SHEET 1 OF 2

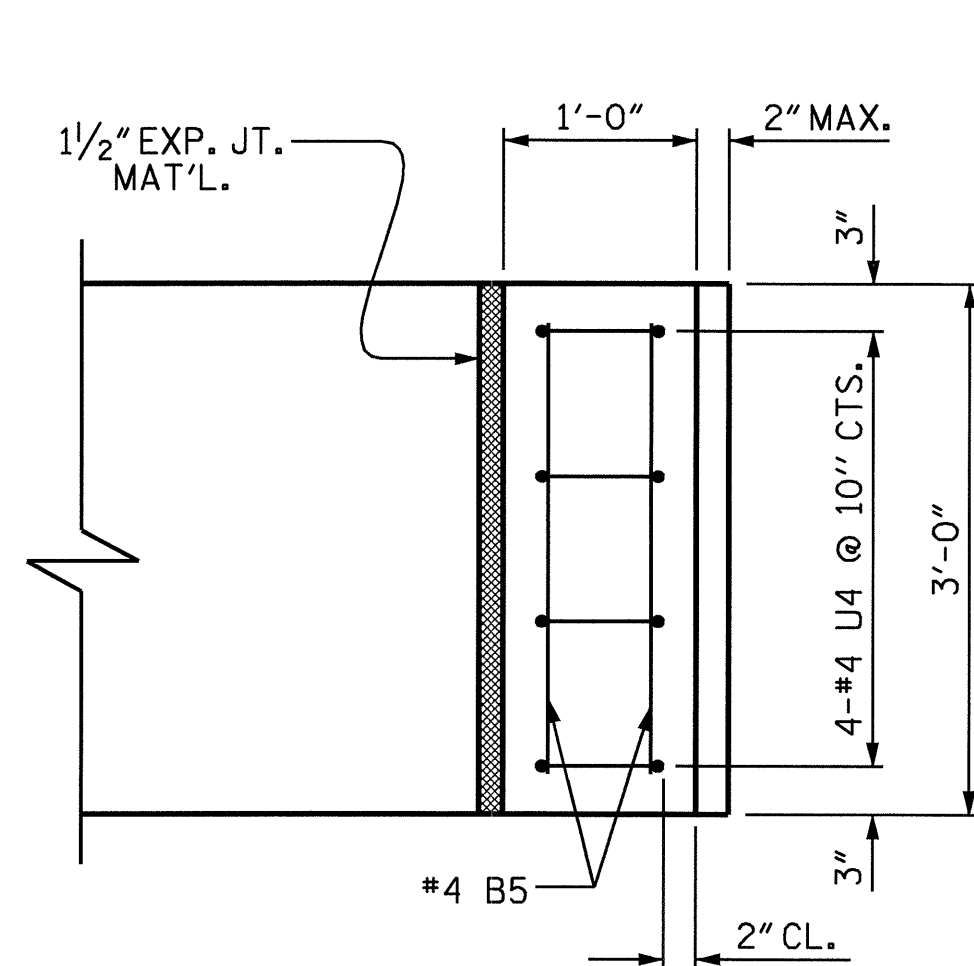


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENTS 1 AND 2					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 18

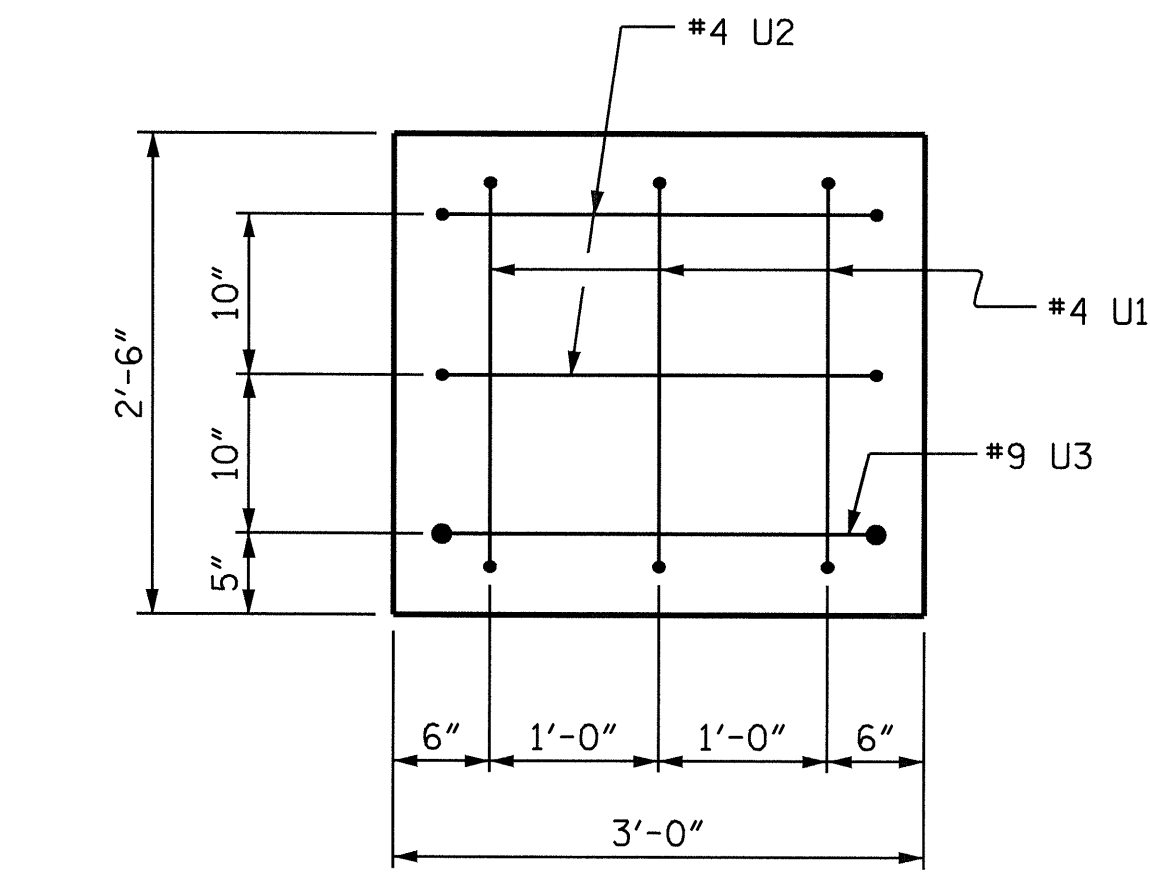
DRAWN BY : J. MYA DATE : 6-15-09  
 CHECKED BY : D. R. CALHOUN DATE : 11-9-09



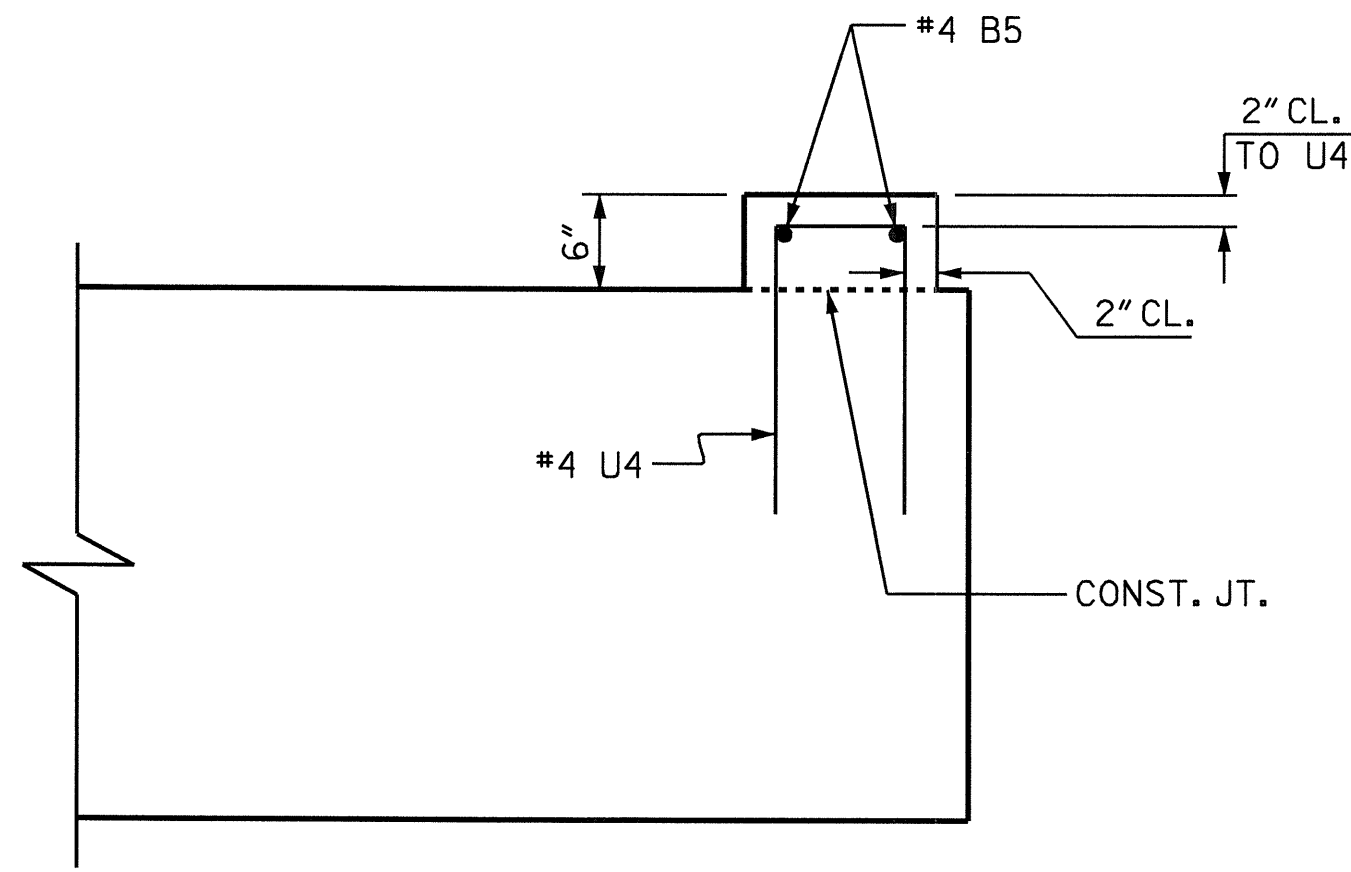
SECTION A-A



PLAN



END VIEW  
(BOTH ENDS TYPICAL)

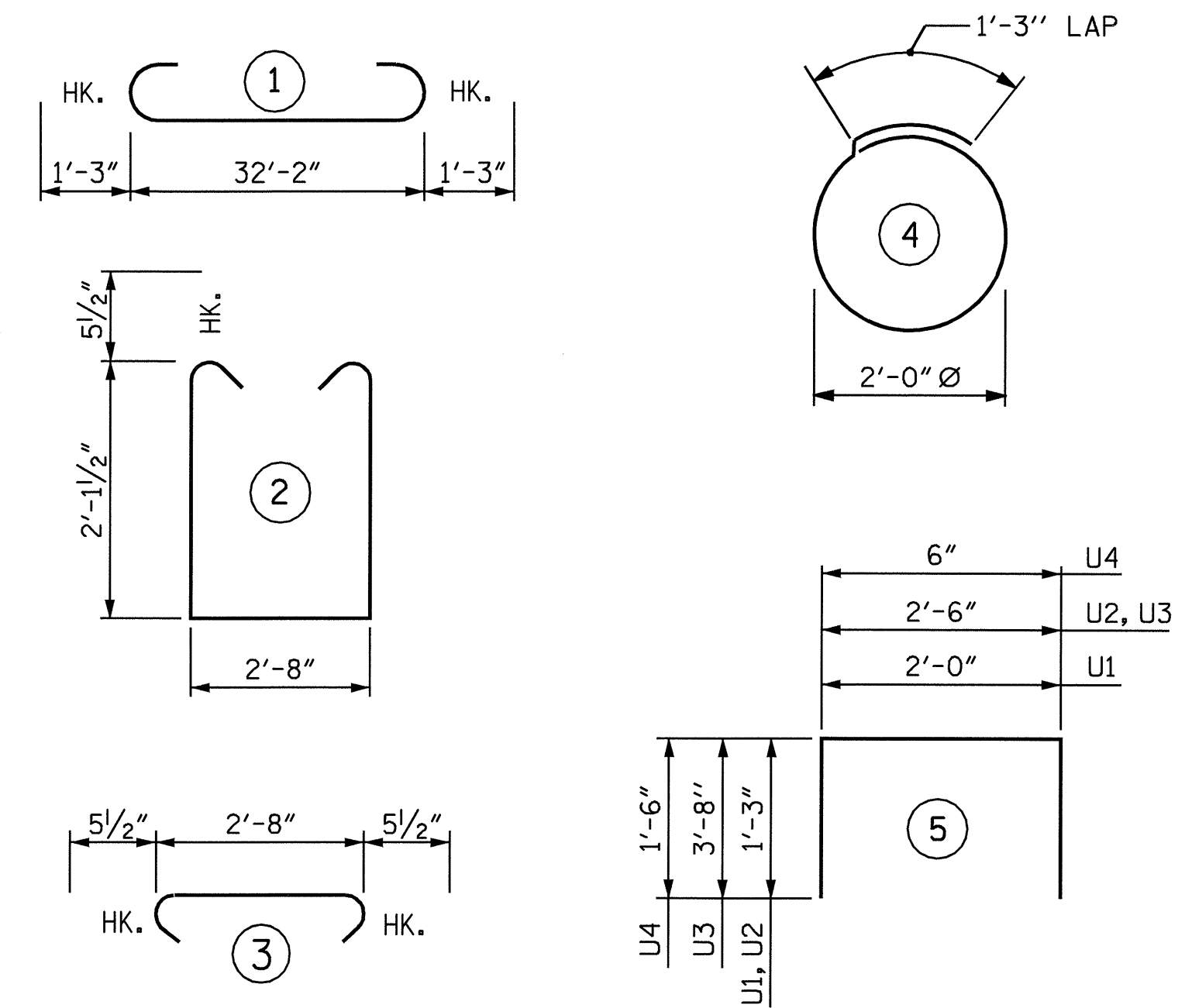


ELEVATION

LATERAL GUIDE REINFORCING DETAIL

(RIGHT END OF THE CAP SHOWN, LEFT END SIMILAR)

BAR TYPES



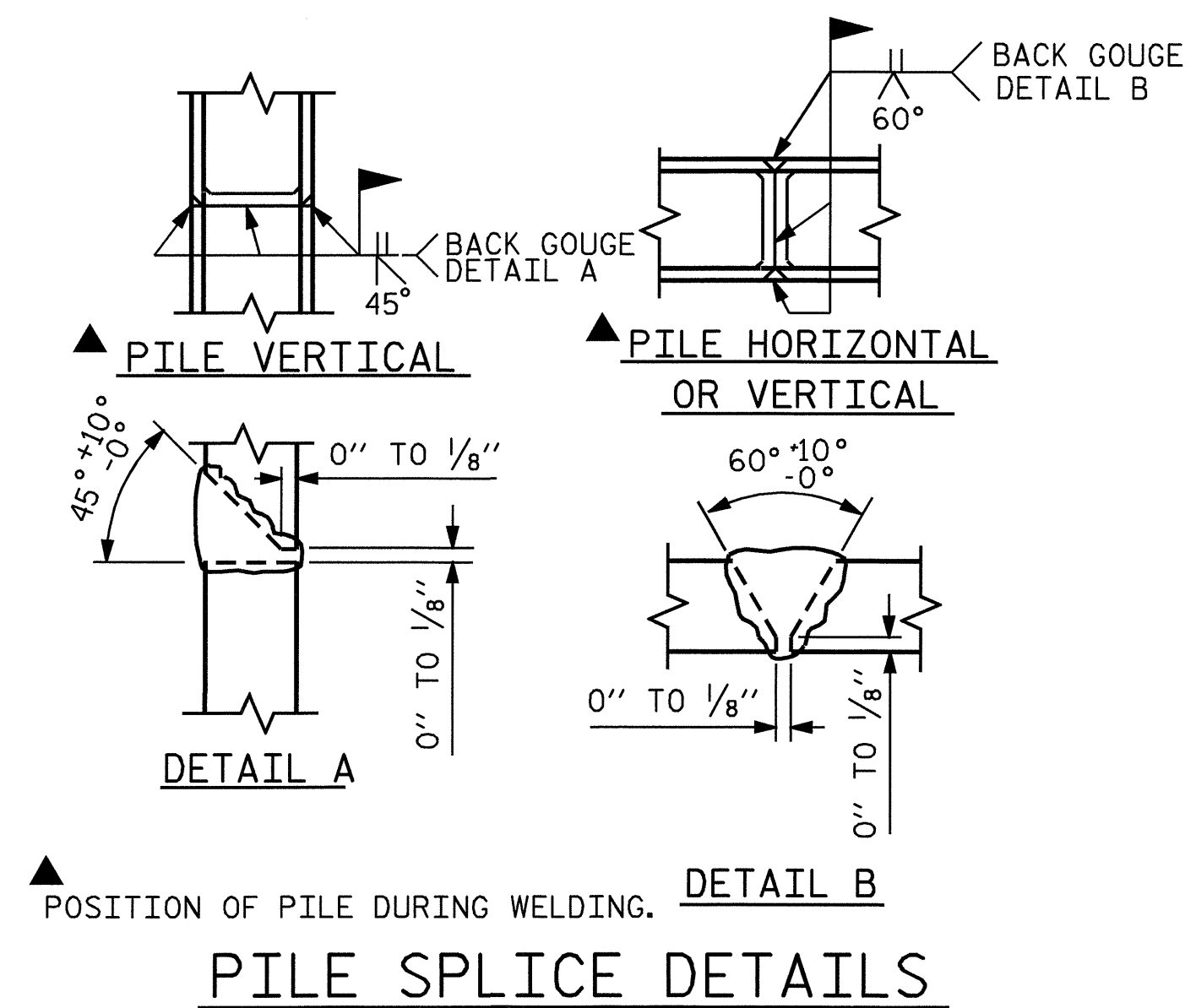
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT 1 OR BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#9		34'-8"	471
B2	4	#9	STR	32'-3"	439
B3	2	#5	STR	32'-3"	67
B4	8	#4	STR	17'-4"	93
B5	12	#4	STR	2'-8"	21
D1	40	#6	STR	1'-6"	90
S1	41	#5		7'-10"	335
S2	41	#5		3'-7"	153
S3	12	#4		7'-7"	61
U1	6	#4		4'-6"	18
U2	4	#4		5'-0"	13
U3	2	#9		9'-10"	67
U4	8	#4		3'-6"	19

REINFORCING STEEL	1847 LBS.
CLASS A CONCRETE	
POUR 1 (CAP)	C.Y. 9.1
POUR 2 (LATERAL GUIDE)	C.Y. 0.1
TOTAL	C.Y. 9.2
HP 14 X 73 GALVANIZED STEEL PILES	
NO. : 6	LIN. FT: 450
PILES REDRIVES	NO. 6

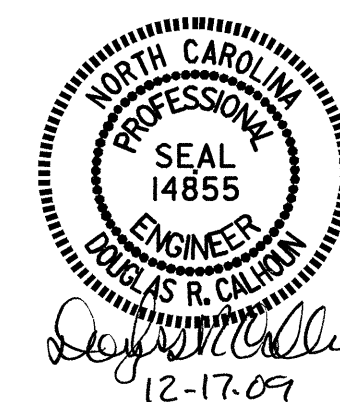


PROJECT NO. B-4435  
BERTIE COUNTY  
STATION: 15+66.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
BENTS 1 AND 2



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REVISIONS				SHEET NO.	
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1			3		
2			4		

S-13  
TOTAL SHEETS  
18

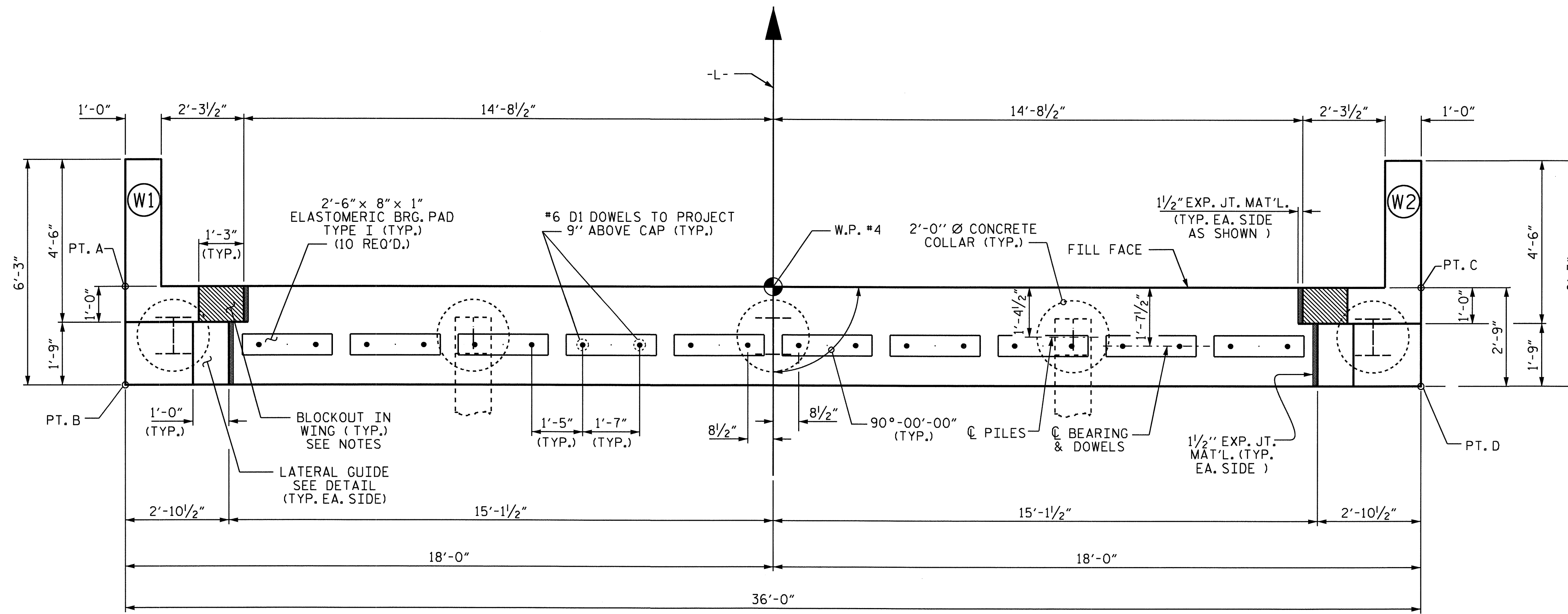
**NOTES**

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

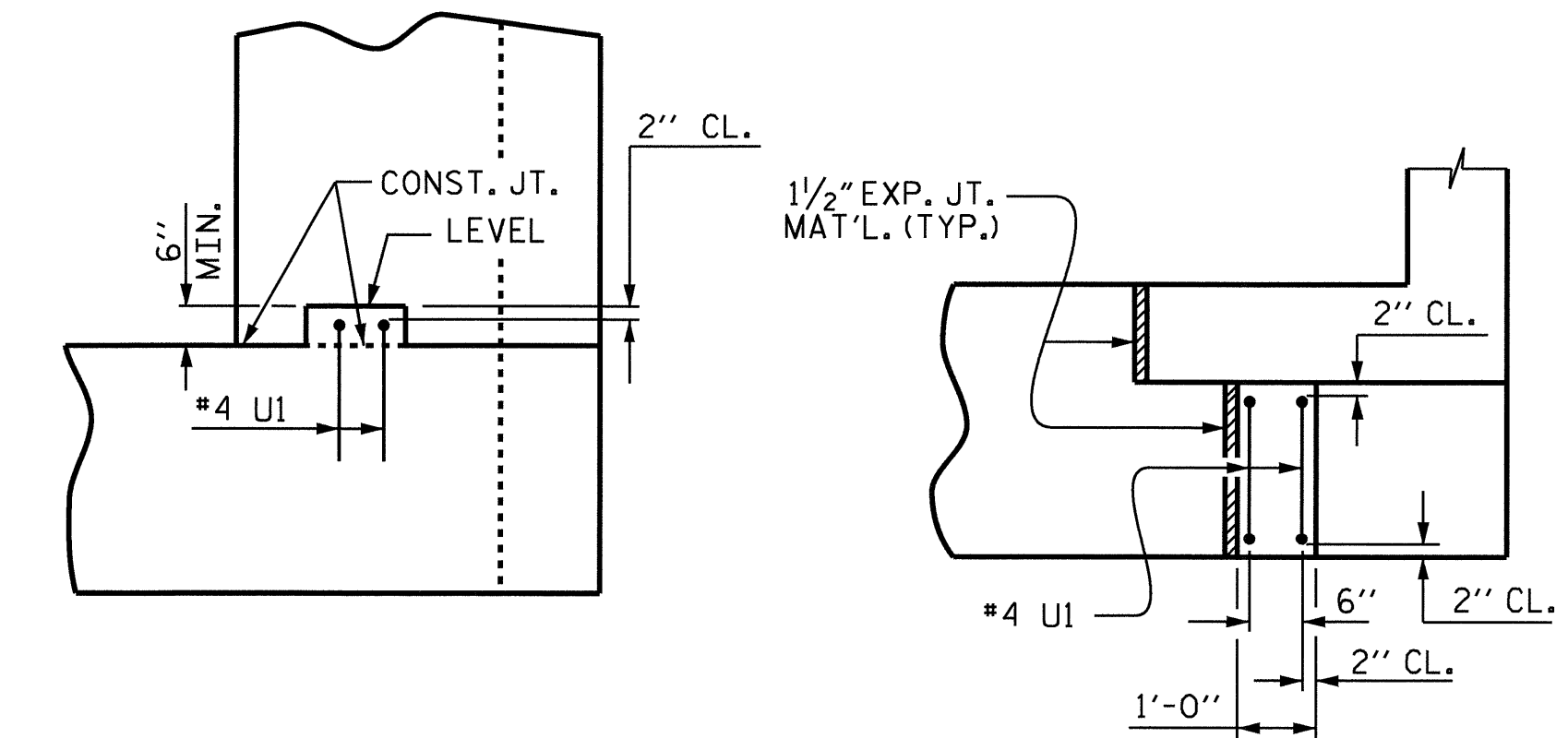
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

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

THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.



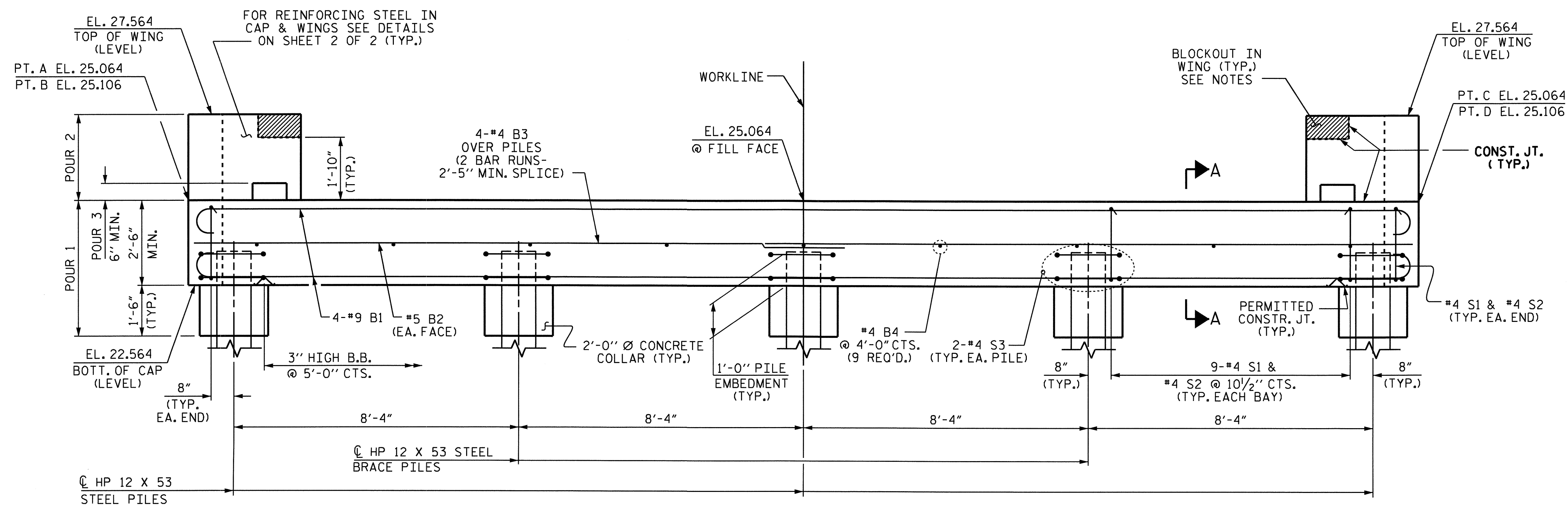
**PLAN**



**ELEVATION**

**PLAN**

**LATERAL GUIDE**  
(RIGHT SIDE SHOWN, LEFT SIDE SIMILAR)



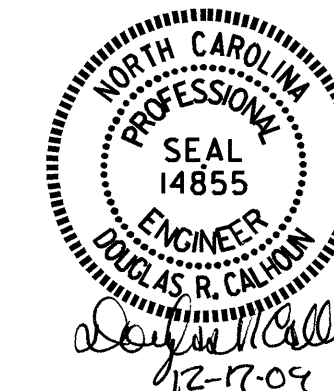
**ELEVATION**

PROJECT NO. B-4435  
BERTIE COUNTY  
 STATION: 15+66.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

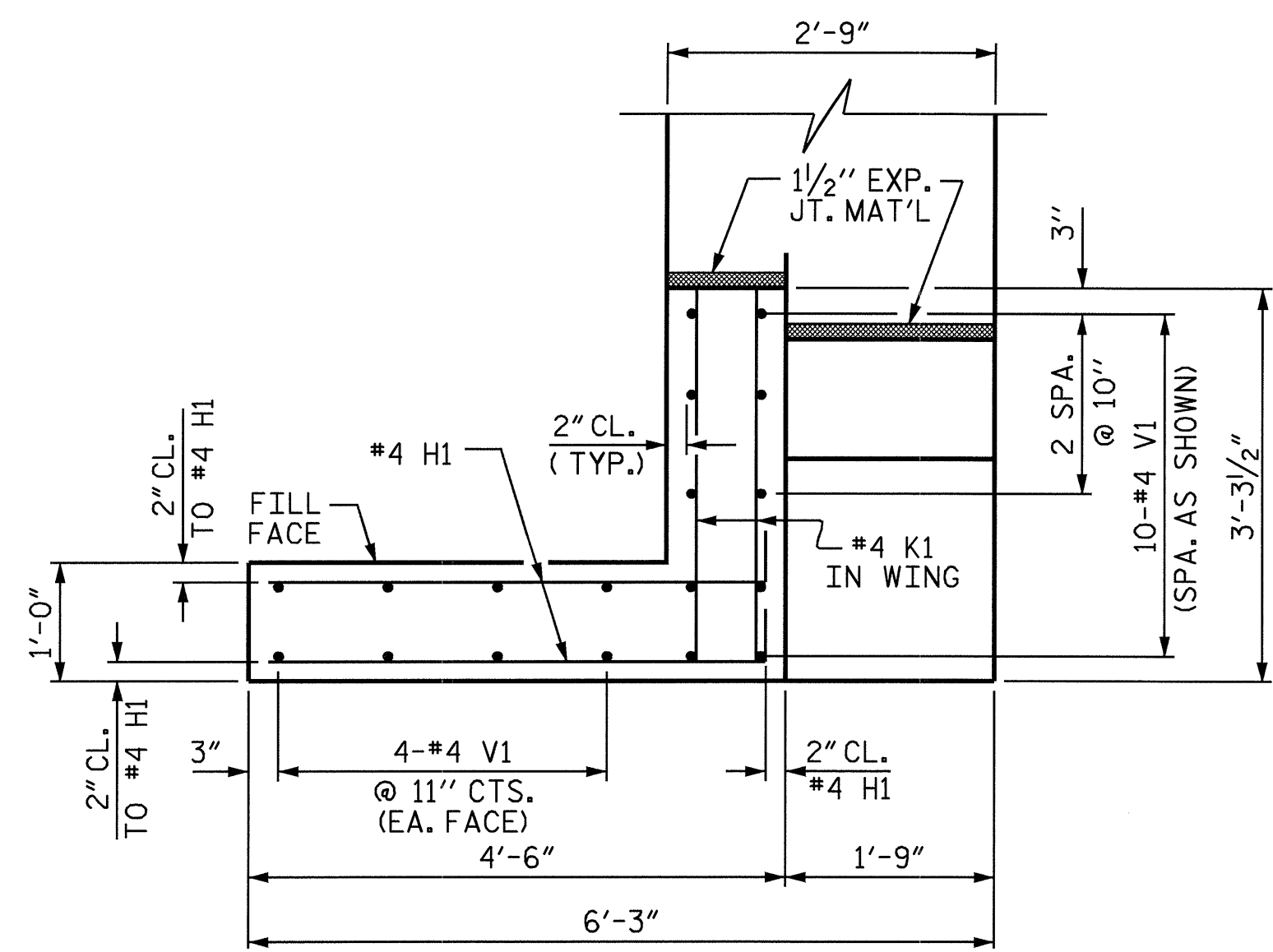
SUBSTRUCTURE  
 END BENT 2



DRAWN BY: J. MYA DATE: 6-18-09  
 CHECKED BY: J. L. WALTON DATE: 8-11-09

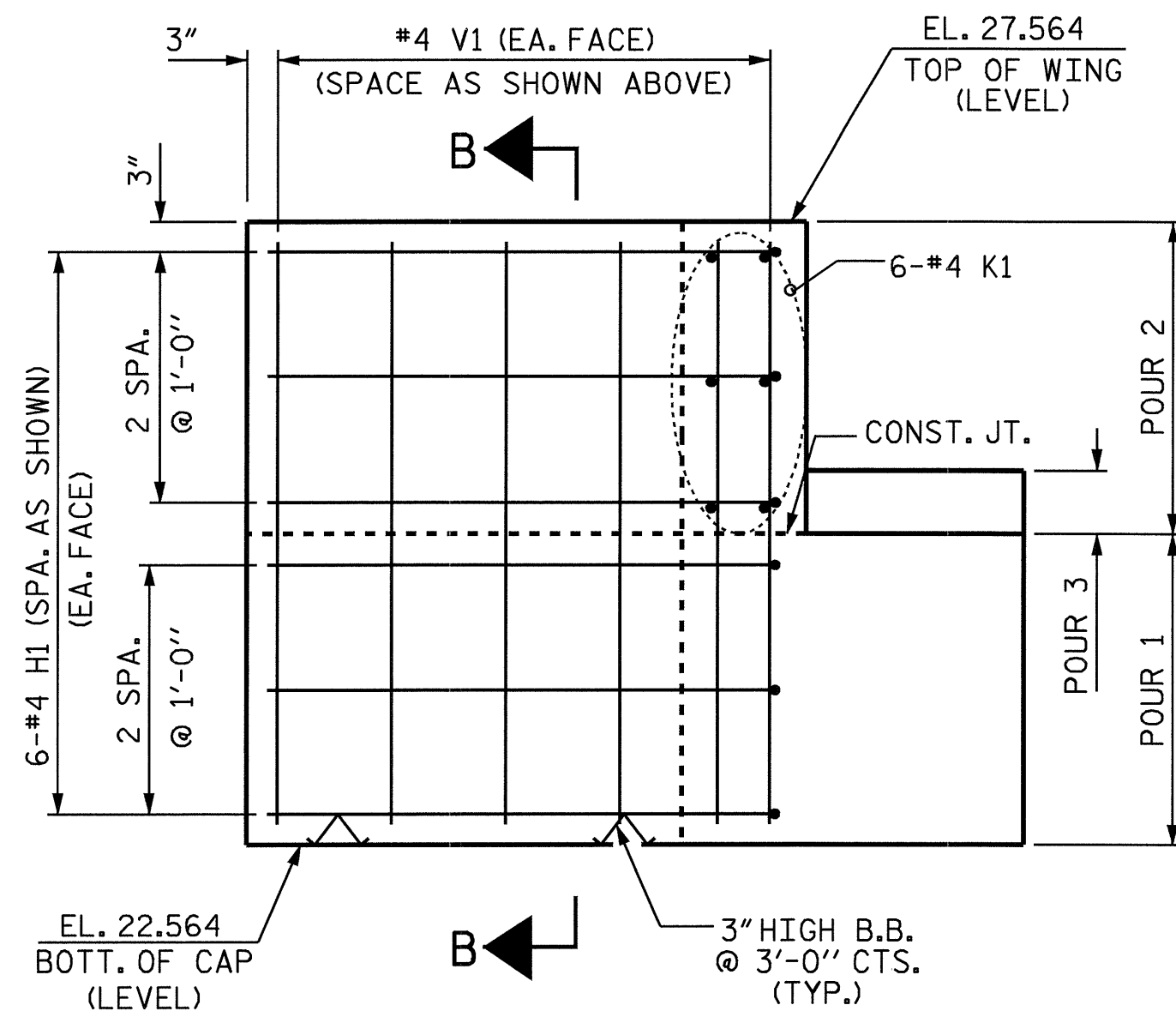
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REVISIONS						SHEET NO. <b>S-14</b>
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			



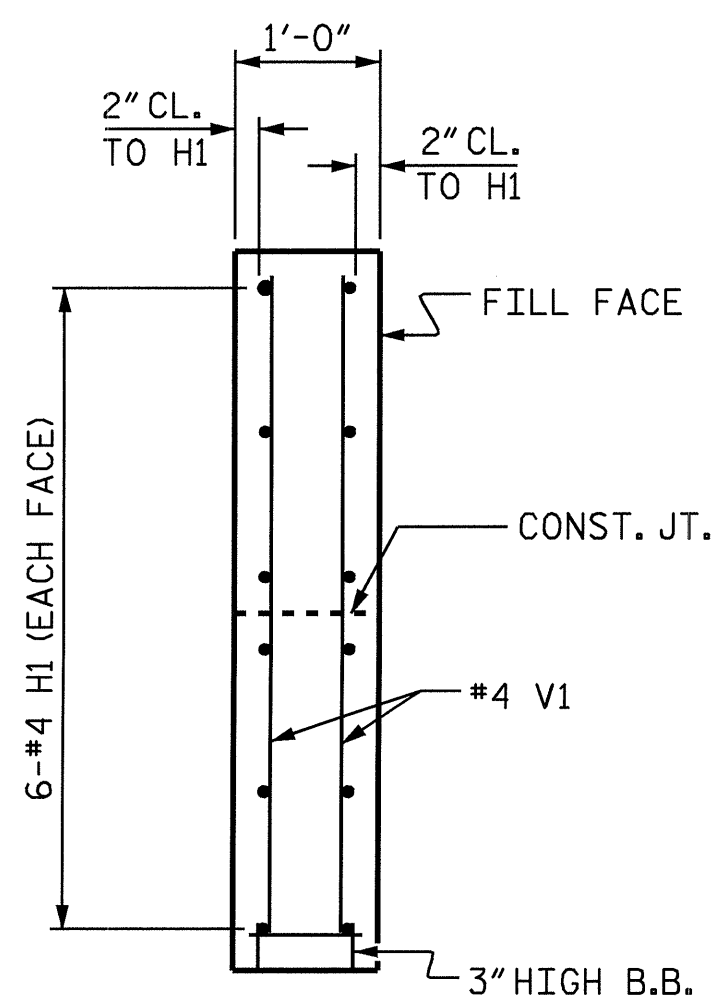
PLAN OF WING - W1

(WING 2 SIMILAR)

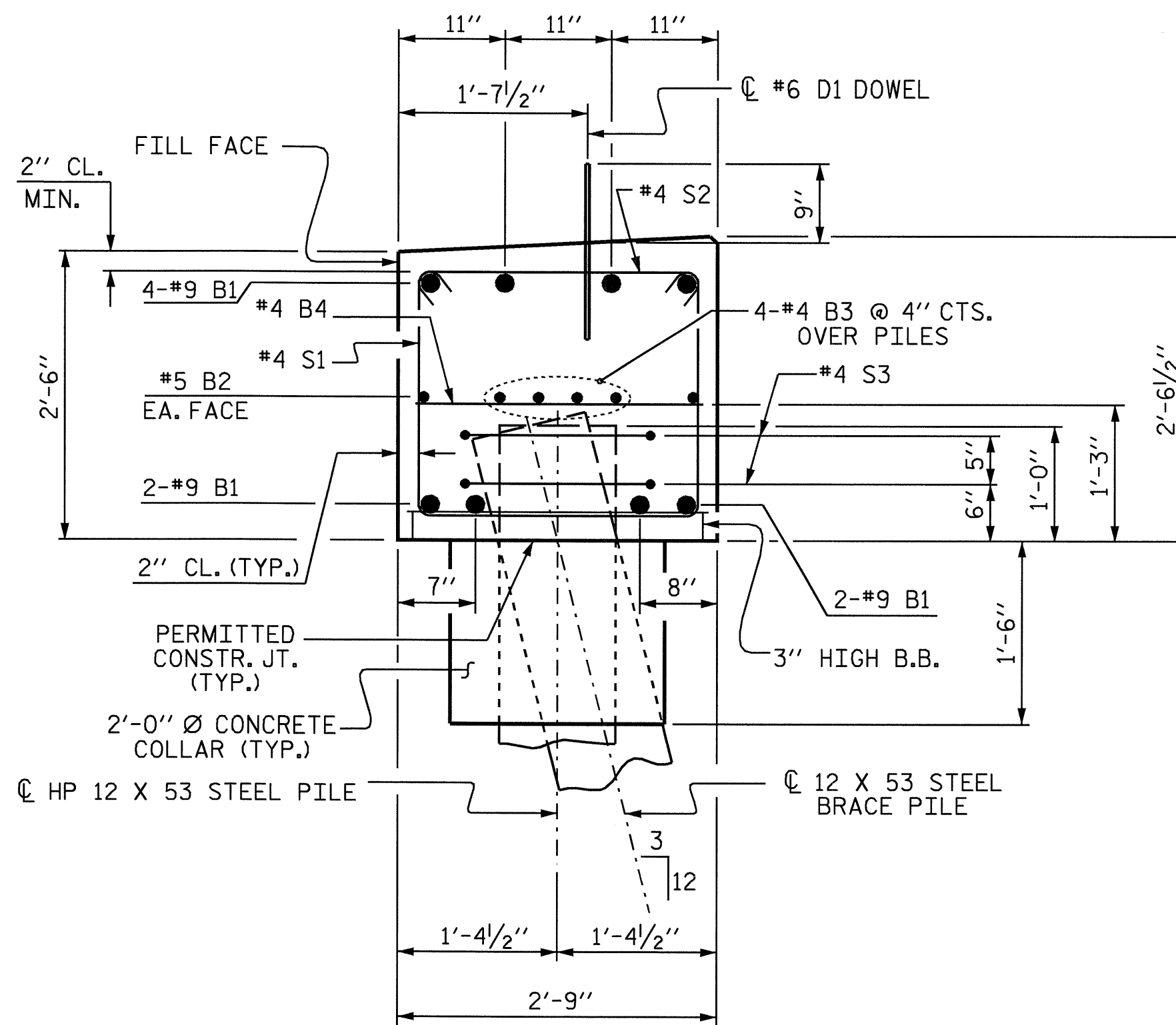


ELEVATION OF WING - W1

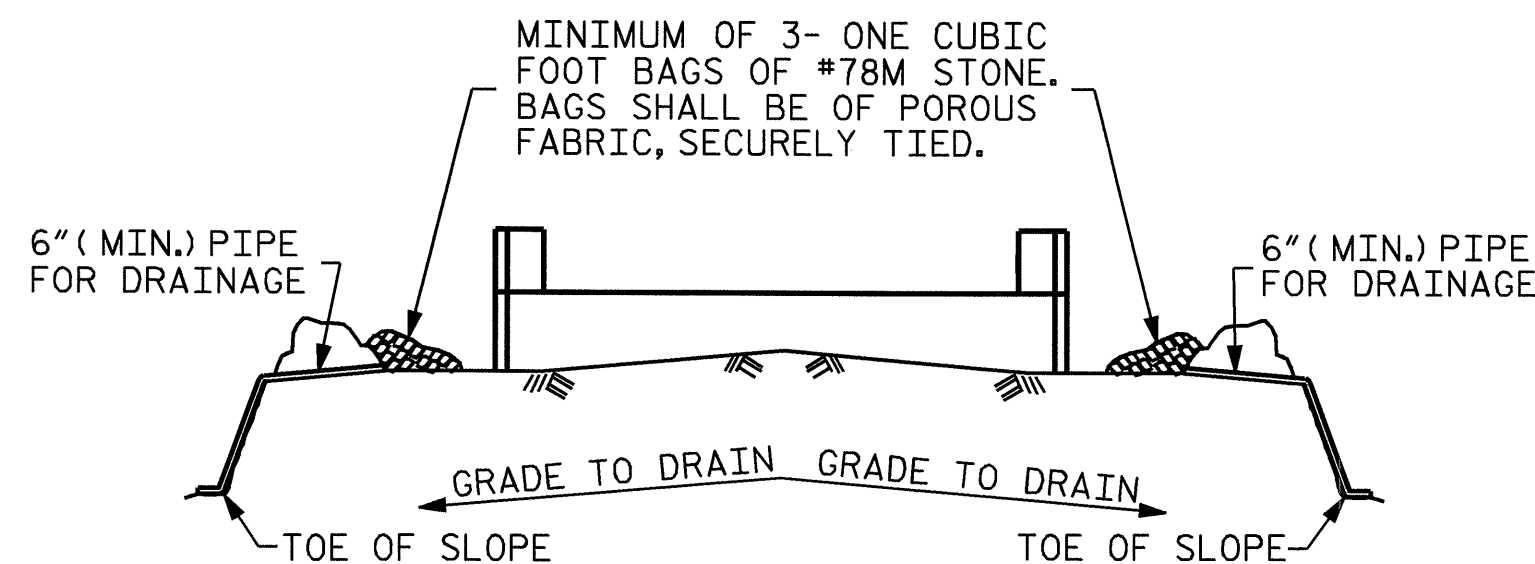
(WING 2 SIMILAR)



SECTION B-B



SECTION A-A

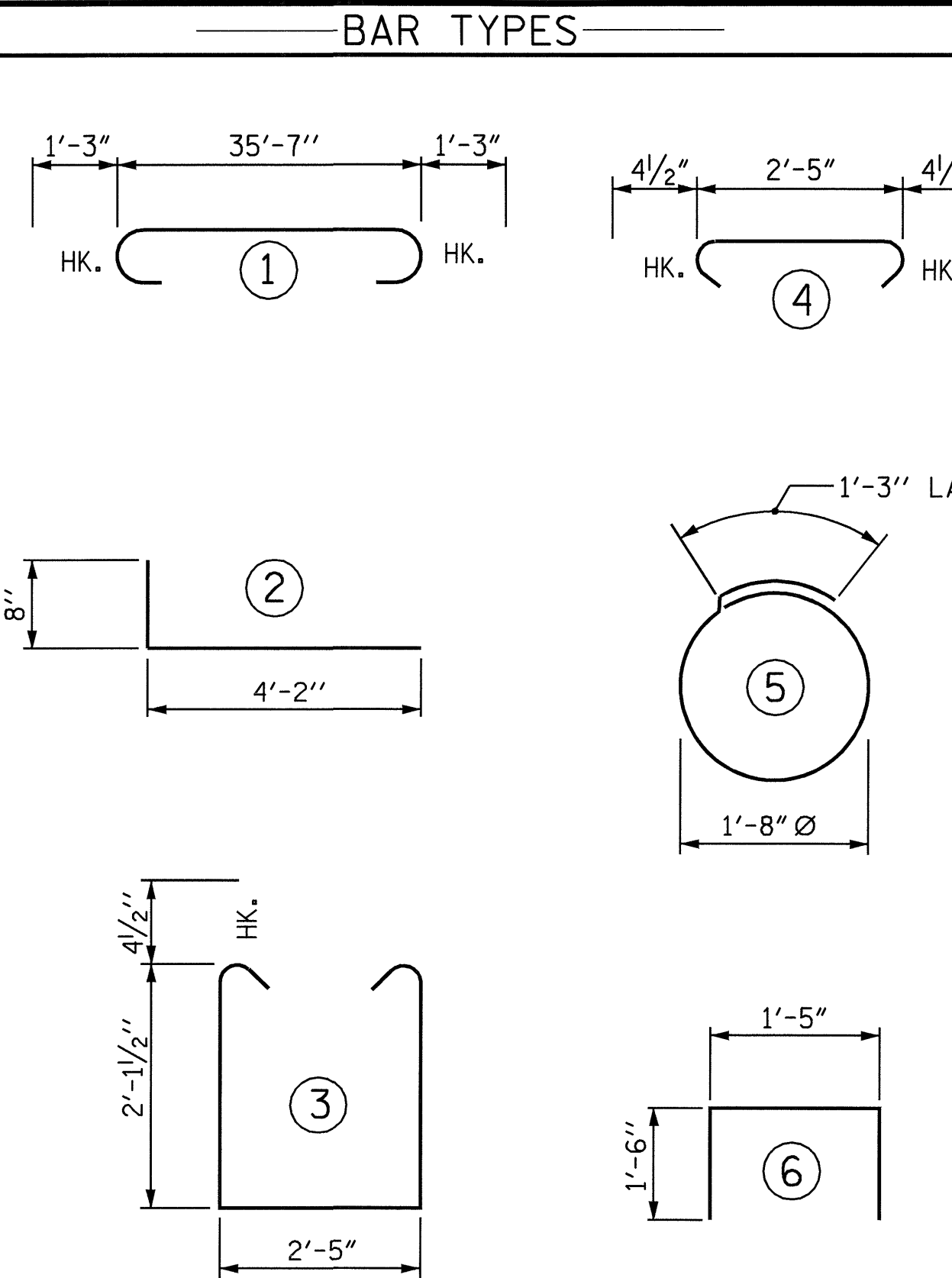


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

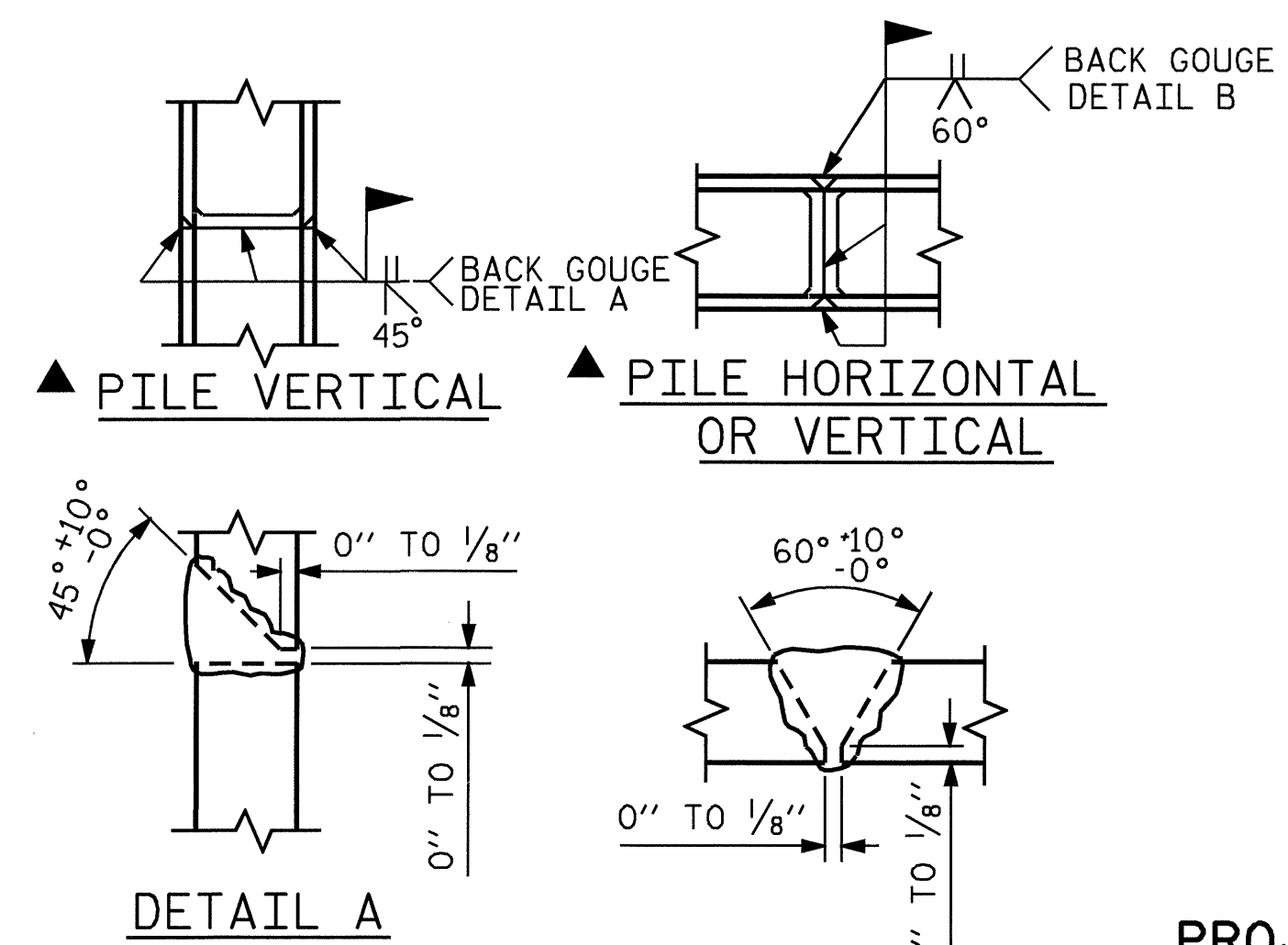
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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



ALL BAR DIMENSIONS ARE OUT TO OUT.



▲ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BILL OF MATERIAL

END BENT 2

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	#9	1	38'-1"	1036
B2	#5	STR	35'-8"	74
B3	#4	STR	19'-1"	102
B4	#4	STR	2'-5"	15
D1	#6	STR	1'-6"	45
H1	#4	2	4'-10"	77
K1	#4	STR	2'-11"	23
S1	#4	3	7'-5"	188
S2	#4	4	3'-2"	80
S3	#4	5	6'-6"	43
U1	#4	6	4'-5"	12
V1	#4	STR	4'-8"	112

REINFORCING STEEL LBS 1807

CLASS A CONCRETE BREAKDOWN

POUR 1 (CAP, CONCRETE COLLARS & LOWER PART OF WINGS)	C.Y.	10.9
POUR 2 (UPPER PART OF WINGS)	C.Y.	1.3
POUR 3 (LATERAL GUIDES)	C.Y.	0.1
TOTAL	C.Y.	12.3

HP 12 X 53 STEEL PILES :

NO. : 5 LIN. FT. : 325

PILE REDRIVES NO. 5

PROJECT NO. B-4435  
BERTIE COUNTY  
 STATION: 15+66.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT 2

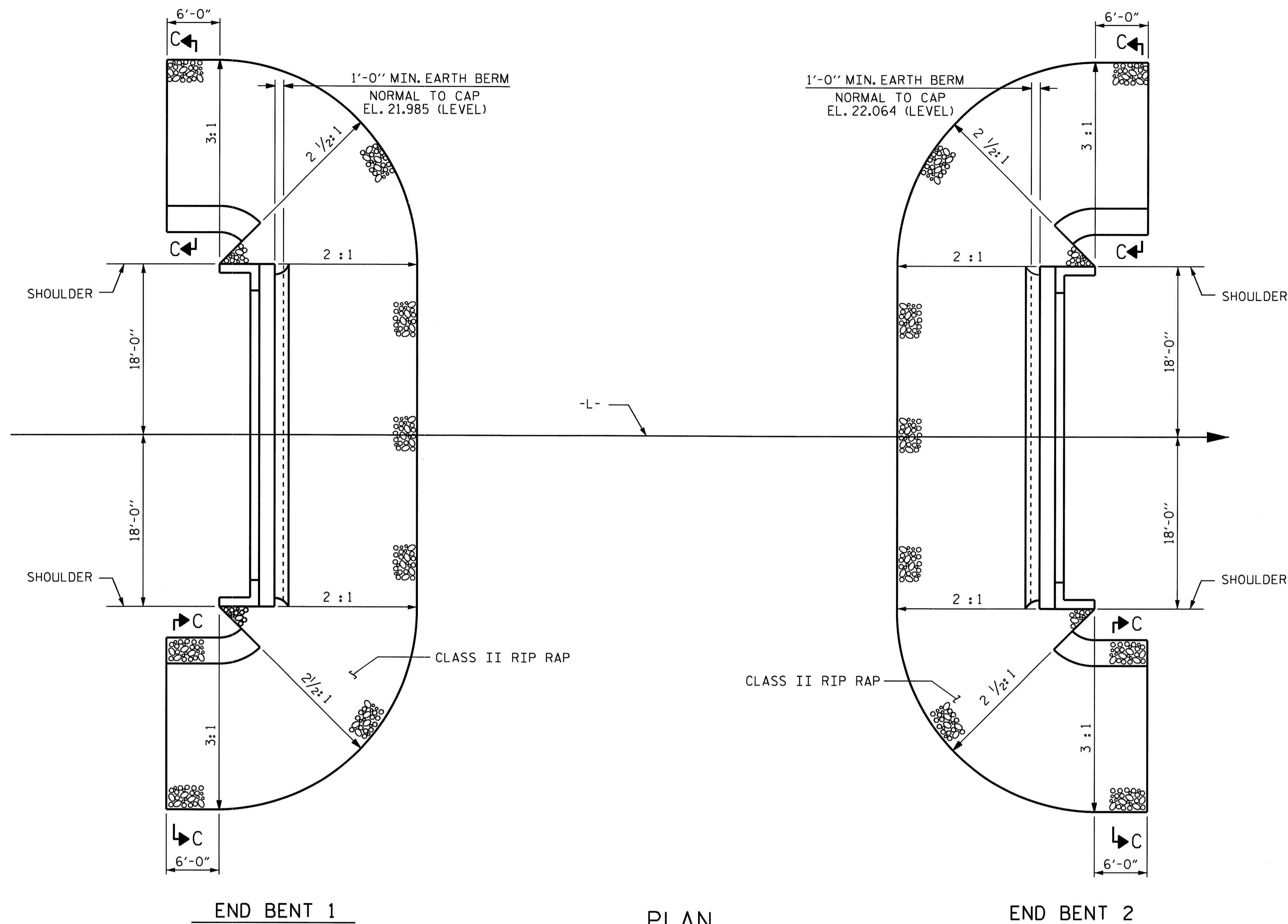


DRAWN BY : J. MYA DATE : 6-18-09  
 CHECKED BY : J. L. WALTON DATE : 8-11-09

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REVISIONS						SHEET NO.
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2			4			18



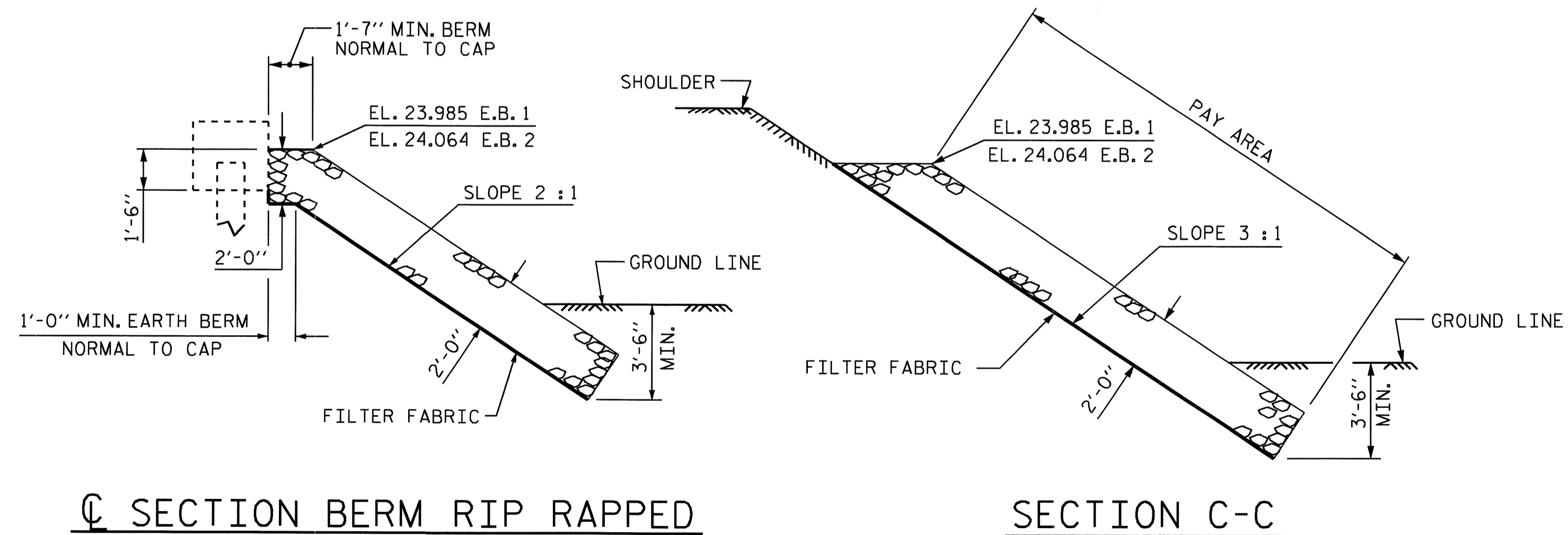


ESTIMATED QUANTITIES		
BRIDGE @ STA. 15+66.00 -L-	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	175	195
END BENT 2	177	197

END BENT 1

PLAN

END BENT 2



SECTION BERM RIP RAPPED

SECTION C-C

PROJECT NO. B-4435  
BERTIE COUNTY  
 STATION: 15+66.00 -L-

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



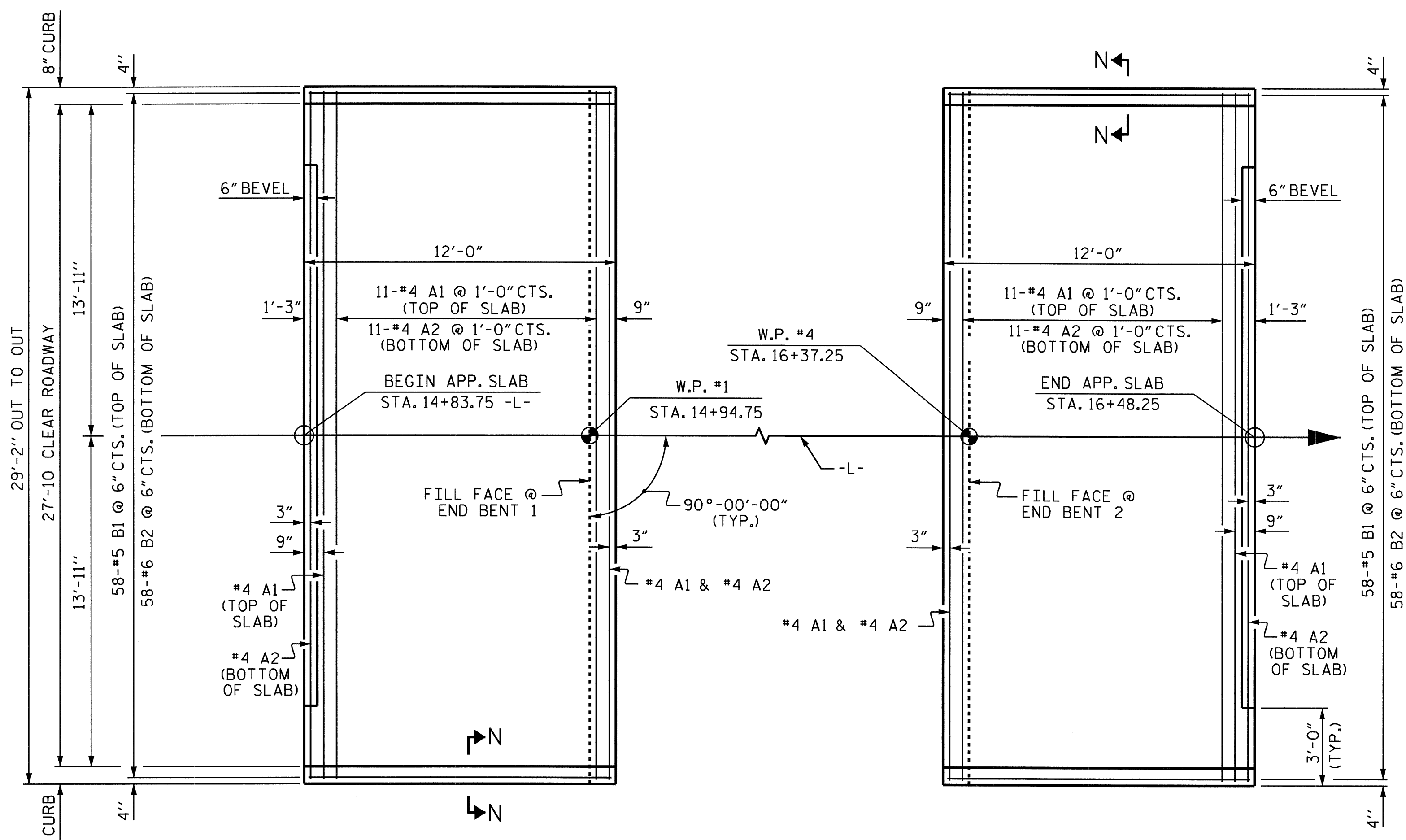
*Douglas R. Calhoun*  
 12-17-09

ASSEMBLED BY : J. MYA DATE : 9-15-09  
 CHECKED BY : D. R. CALHOUN DATE : 11-3-09  
 DRAWN BY : FCJ 2/88 REV. 8/16/99 RWW/LES  
 CHECKED BY : ARB 8/88 REV. 10/17/00 RWW/LES  
 REV. 5/1/06 TLV/GM

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REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			18

SKEW 90° STD. NO. RR2



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

NOTES

FOR REINFORCED BRIDGE APPROACH FILL INCLUDING FABRIC, 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.

THE 6" COMP. A.B.C. SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB AND SHALL EXTEND 1'-0" OUTSIDE OF EACH EDGE OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

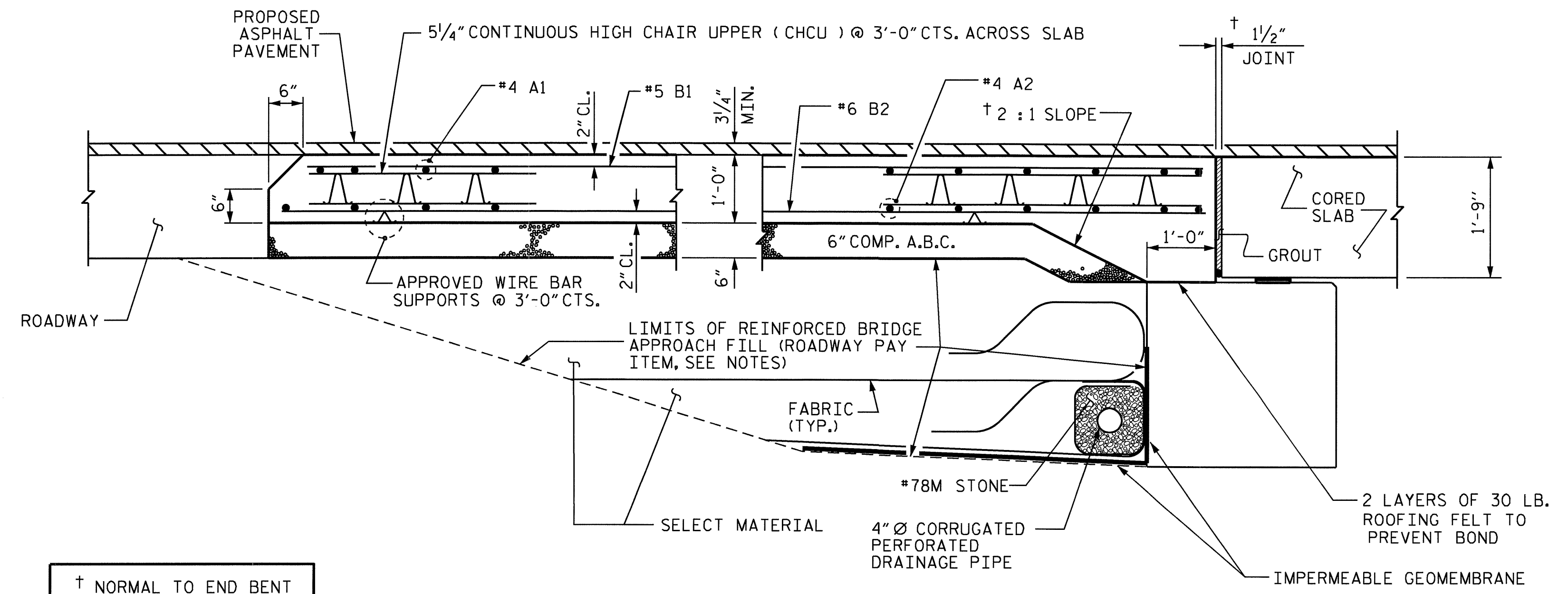
FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE CORED SLAB UNIT" SHEETS.

THE JOINT AT THE END BENT SHALL BE GROUTED AS SOON AS PRACTICAL AFTER THE CONSTRUCTION OF THE APPROACH SLABS.

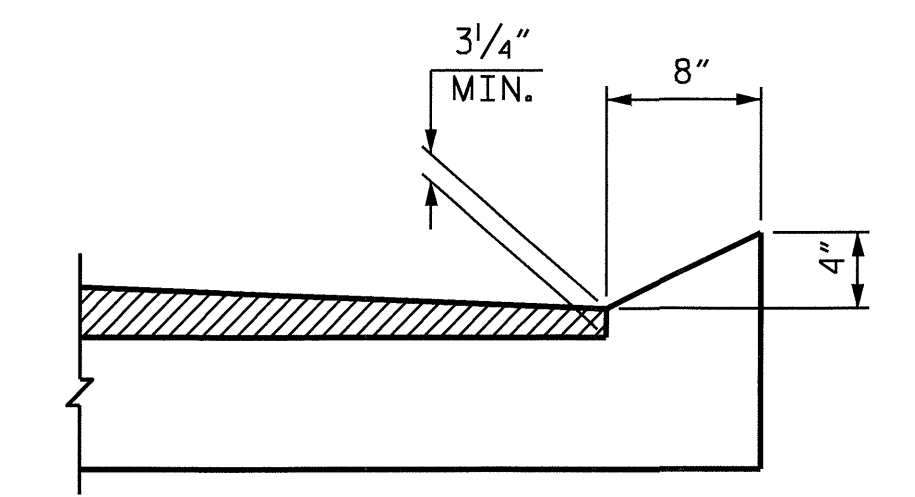
APPROACH SLAB GROOVING IS NOT REQUIRED.

BILL OF MATERIAL

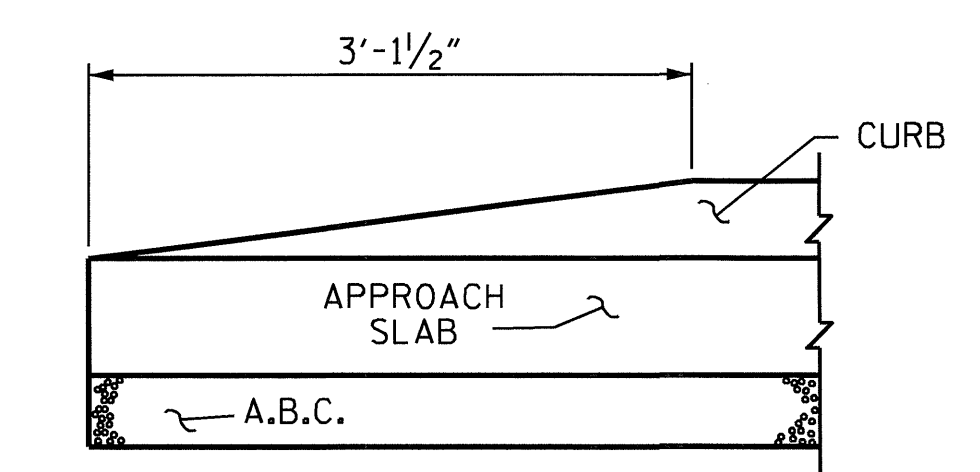
FOR ONE APPROACH SLAB (2 REQ'D)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	13	#4	STR	28'-10"	250
A2	13	#4	STR	28'-10"	250
*B1	58	#5	STR	11'-2"	676
B2	58	#6	STR	11'-8"	1016
REINFORCING STEEL				LBS.	1266
*EPOXY COATED REINFORCING STEEL				LBS.	926
CLASS AA CONCRETE				C. Y.	14.4



SECTION THRU SLAB



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER (OMIT TAPER WHEN SHOULDER BERM GUTTER IS USED)

CURB DETAILS

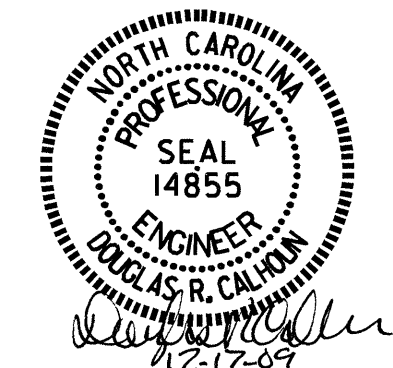
PROJECT NO. B-4435  
 BERTIE COUNTY  
 STATION: 15+66.00 -L-

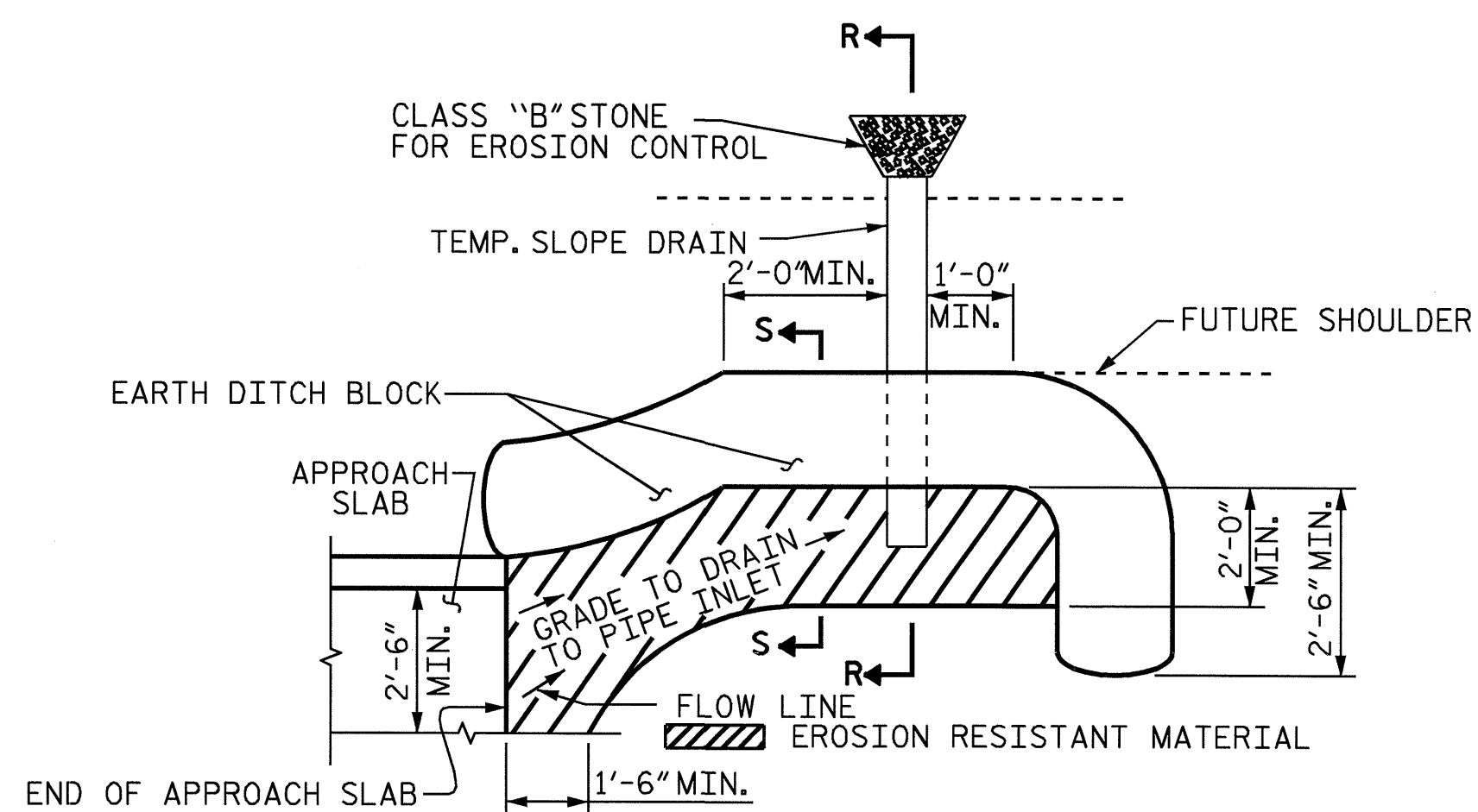
SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 BRIDGE APPROACH SLAB  
 FOR PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 (SUB-REGIONAL TIER)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS 18
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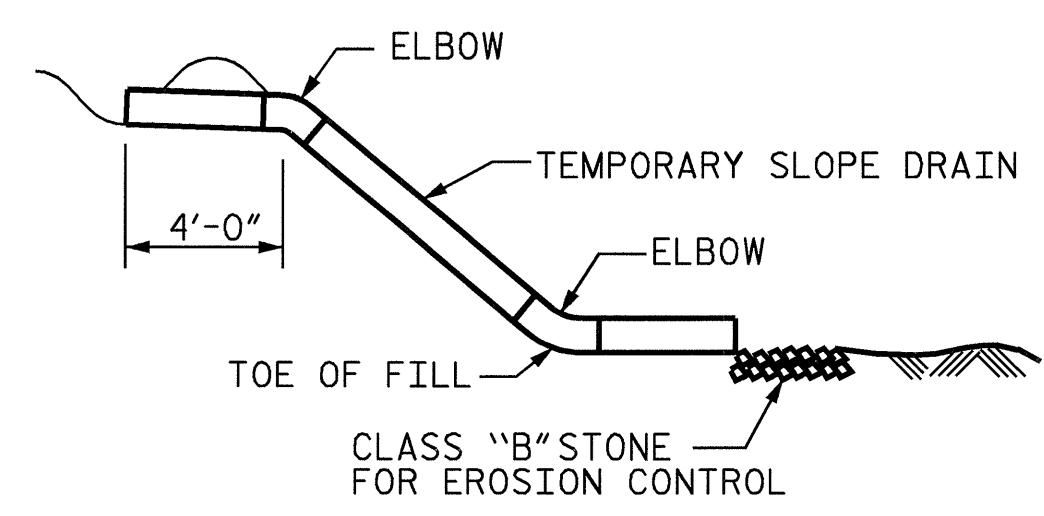
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 CHECKED BY : D. R. CALHOUN DATE : 11-3-09  
 DRAWN BY : KMM 3-08  
 CHECKED BY : CM 3-08



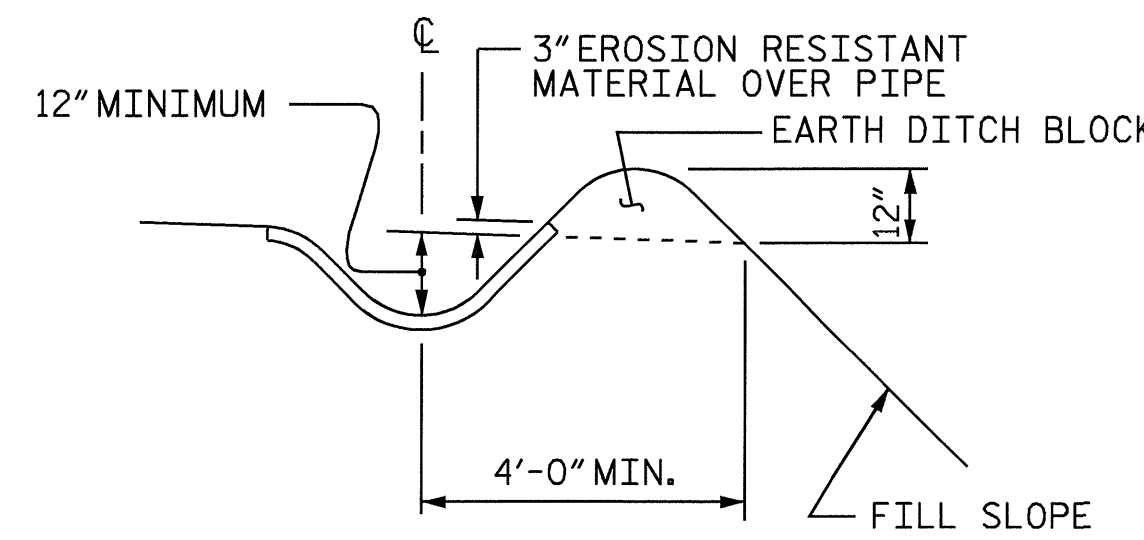


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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



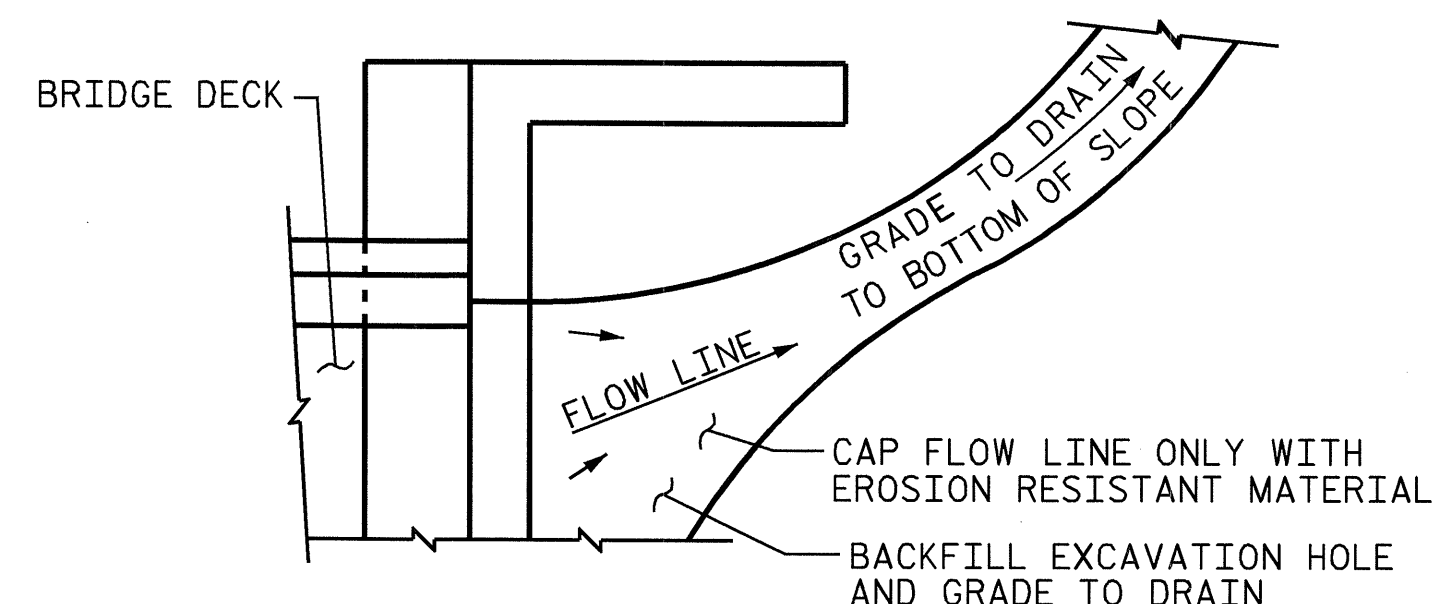
SECTION R-R



SECTION S-S

**TEMPORARY BERM AND SLOPE DRAIN DETAILS**

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

**TEMPORARY DRAINAGE DETAIL**

PROJECT NO. B-4435  
BERTIE COUNTY  
 STATION: 15+66.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD  
 BRIDGE APPROACH  
 SLAB DETAILS

1988

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS 18
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ASSEMBLED BY : J. MYA	DATE : 9-15-09
CHECKED BY : D. R. CALHOUN	DATE : 11-3-09
DRAWN BY : FCJ 11/88	REV. 10/17/00 RWW/LES
CHECKED BY : ARB 11/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

## 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 2006 "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

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