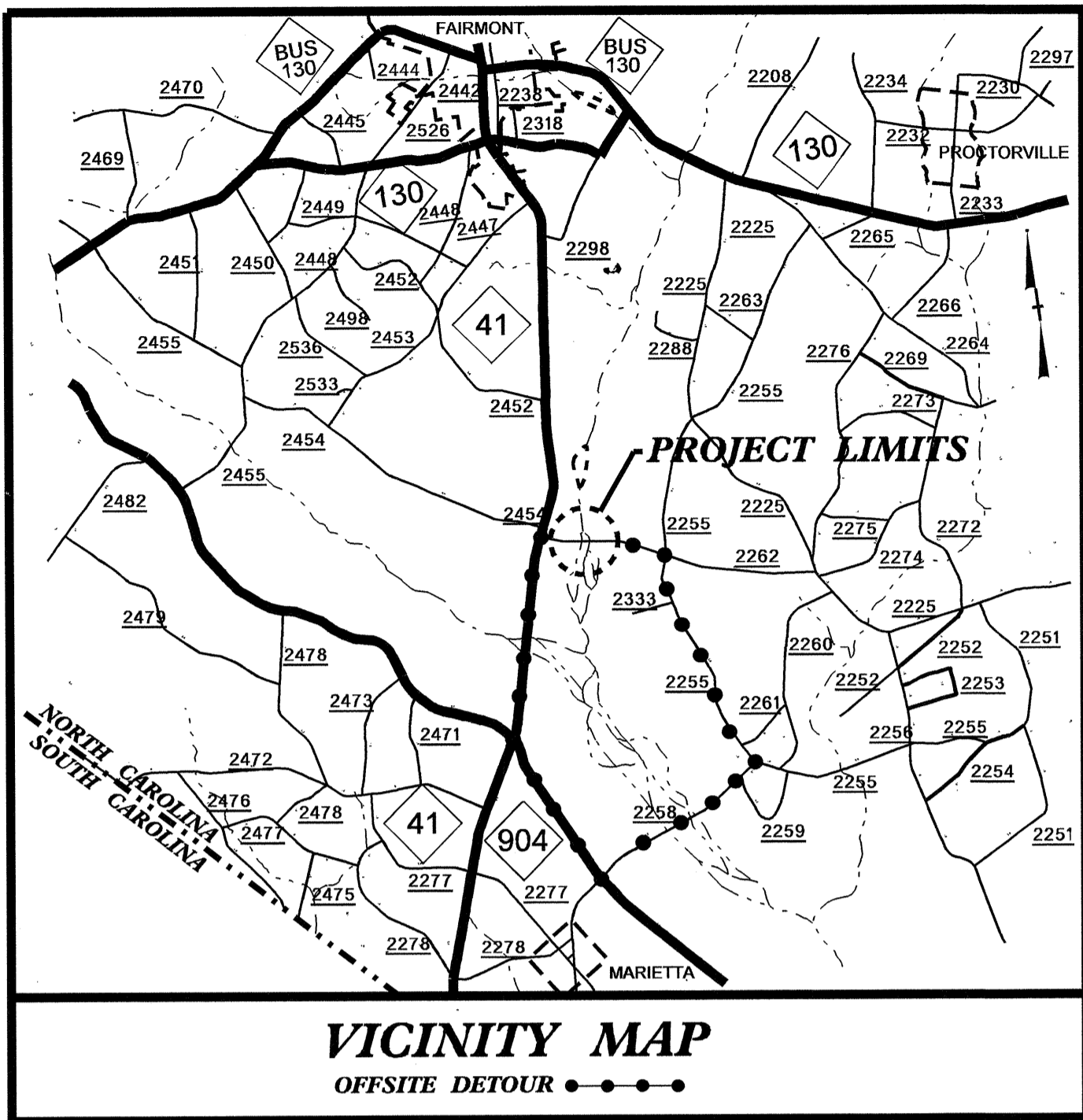


**TIP PROJECT: B-4619**

**CONTRACT: C203208**



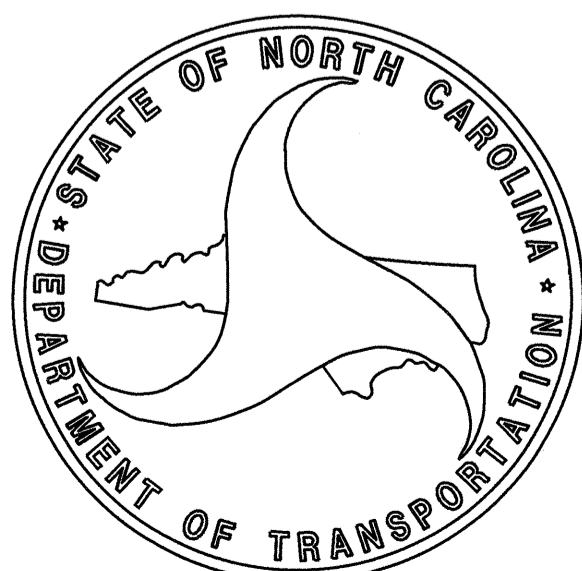
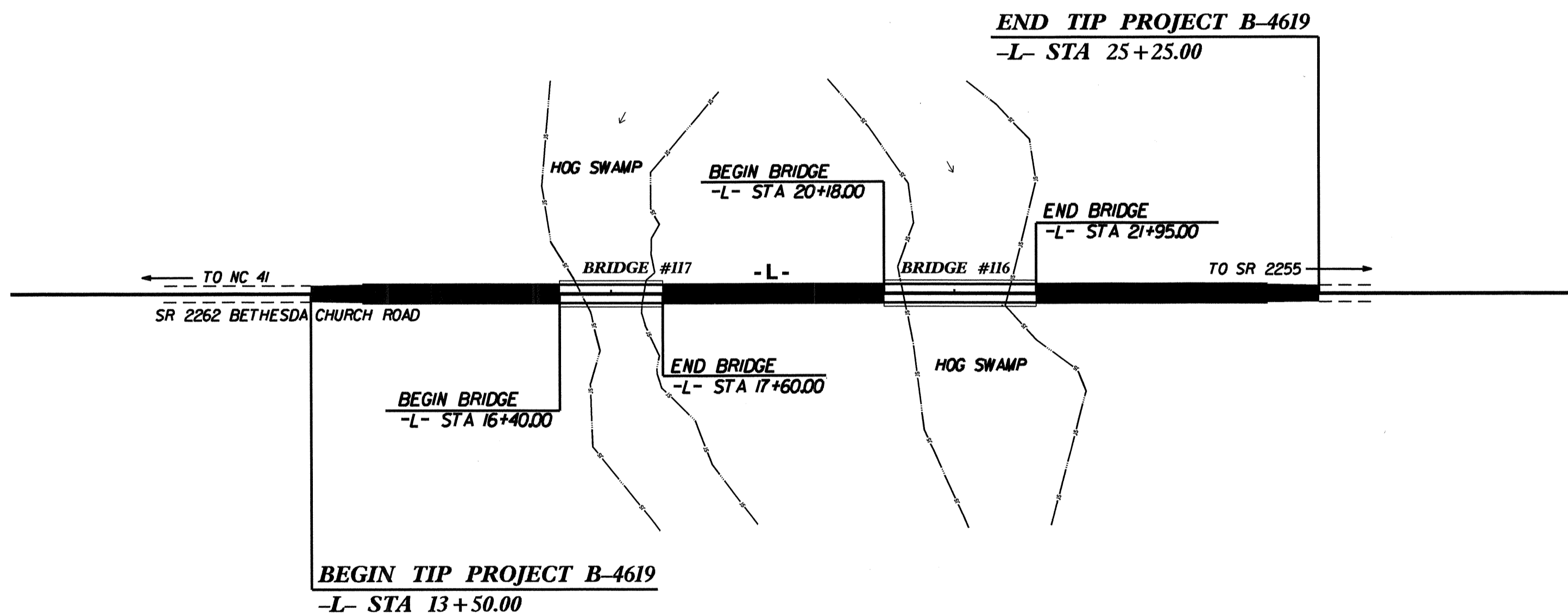
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# ROBESON COUNTY

**LOCATION: BRIDGES NO. 116 AND 117 ON SR 2262  
(BETHESDA CHURCH ROAD) OVER HOG SWAMP**

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4619		
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
33800.1.1	BRZ-2262(1)	P.E.	
33800.2.1	BRZ-2262(1)	R/W & UTIL.	
33800.3.1	BRZ-2262(1)	CONST.	

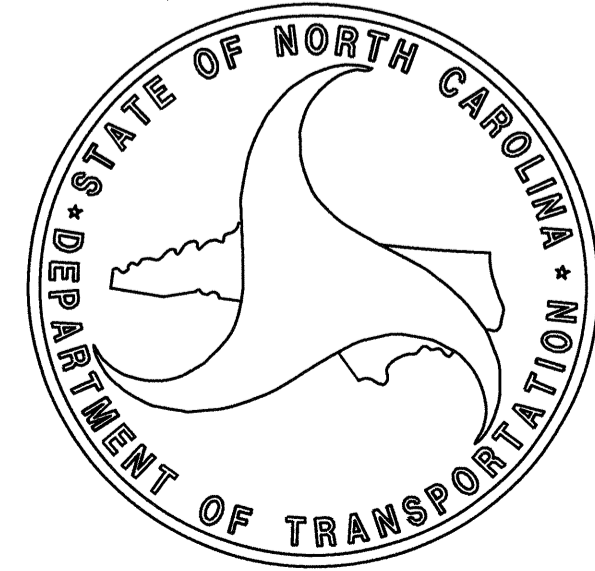


DESIGN DATA	
ADT 2013	= 1259
ADT 2033	= 1778
DHV	= 10 %
D	= 60 %
T	= 3 % *
V	= 60 MPH
FUNC. CLASS. :	RURAL LOCAL
* TTST 1%	DUAL 2%

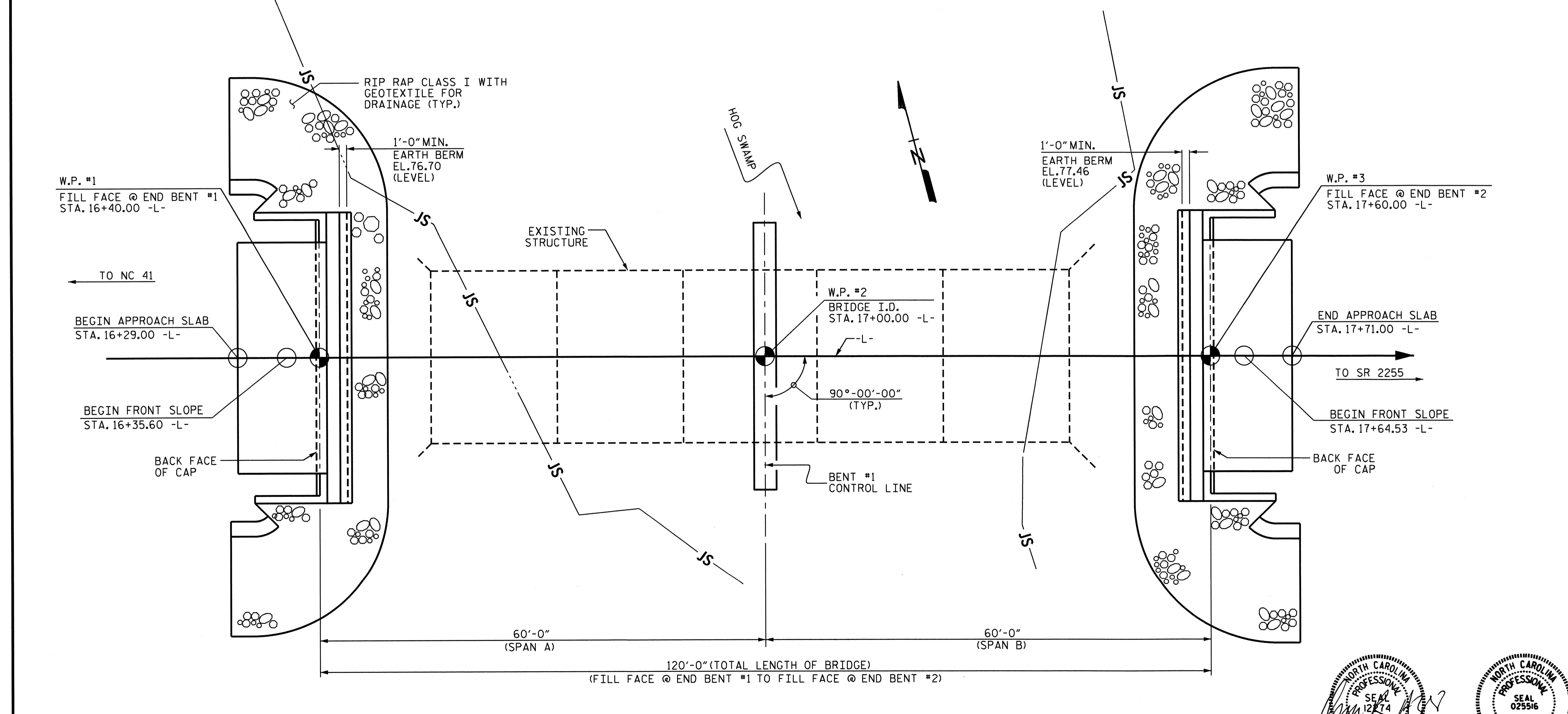
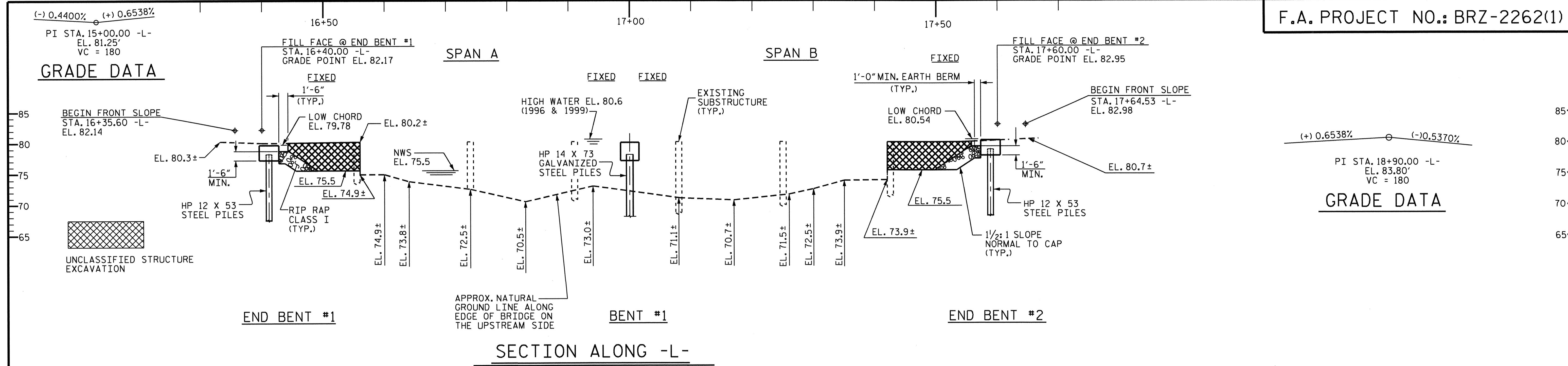
PROJECT LENGTH	
LENGTH OF ROADWAY PROJECT B-4619	= 0.167 MI
LENGTH OF STRUCTURE PROJECT B-4619	= 0.056 MI
LENGTH OF TOTAL PROJECT B-4619	= 0.223 MI

Prepared In the Office of: <b>DIVISION OF HIGHWAYS</b> 1000 Birch Ridge Dr., Raleigh NC, 27610	
2012 STANDARD SPECIFICATIONS	
LETTING DATE: JULY 16, 2013	<u>OMAR R. AZIZI, PE</u> PROJECT ENGINEER
	<u>EMILY E. MURRAY, PE</u> PROJECT DESIGN ENGINEER

STRUCTURES MANAGEMENT UNIT



17-MAY-2013 07:55  
\$\$\$\$\$\$\$\$\$DCN\$\$\$\$\$\$\$\$\$  
pcklms



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

PROJECT NO. B-4619  
ROBESON COUNTY  
 STATION: 17+00.00 -L-  
 SHEET 1 OF 3 REPLACE BRIDGE #117

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**  
 FOR BRIDGE OVER HOG SWAMP  
 ON SR 2262 BETWEEN NC 41  
 AND SR 2255

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			48

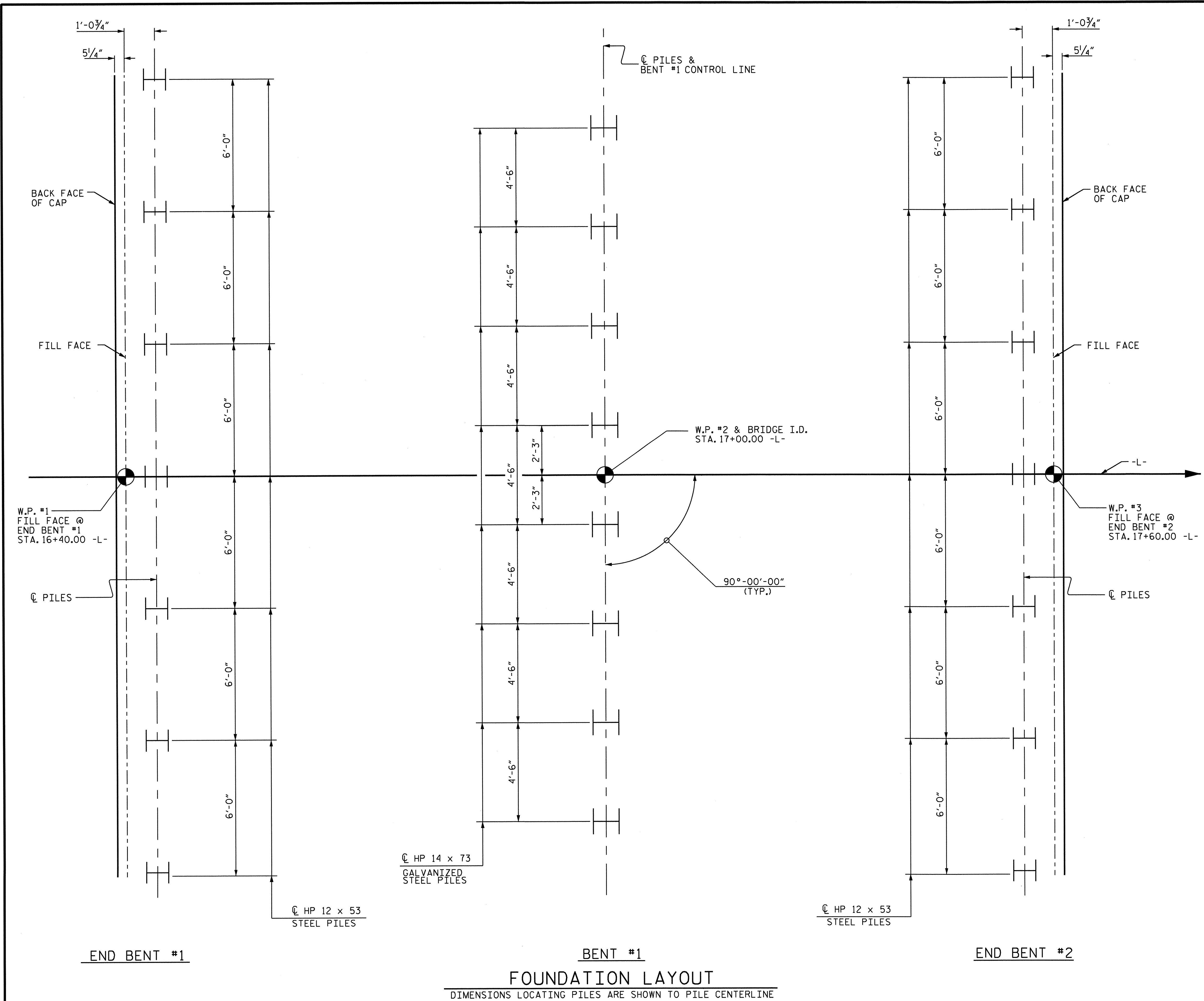
DESIGN ENGINEER OF RECORD:  
A.M. LEE DATE: 5-7-13

DRAWN BY: PEGGY ADKINS DATE: 2-19-13

CHECKED BY: E.E. MURRAY DATE: 3-21-13

Professional Engineer Seal: 5/21/13

Professional Engineer Seal: 5/21/13



**NOTES:**

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

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

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

PILES AT BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 120 TONS PER PILE.

DRIVE PILES AT BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 205 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAW OR SCOUR.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.1 IS ELEVATION 60.5 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

PILES AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 75 TONS PER PILE.

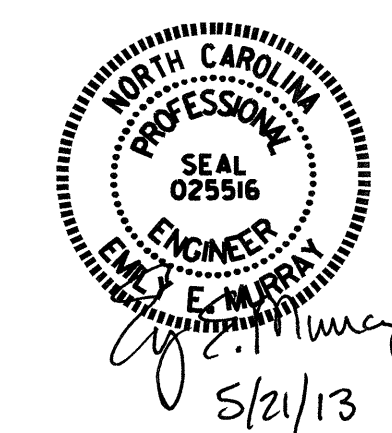
DRIVE PILES AT END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 125 TONS PER PILE.

PROJECT NO. B-4619  
ROBESON COUNTY  
 STATION: 17+00.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**  
 FOR BRIDGE OVER HOG SWAMP  
 ON SR 2262 BETWEEN NC 41  
 AND SR 2255



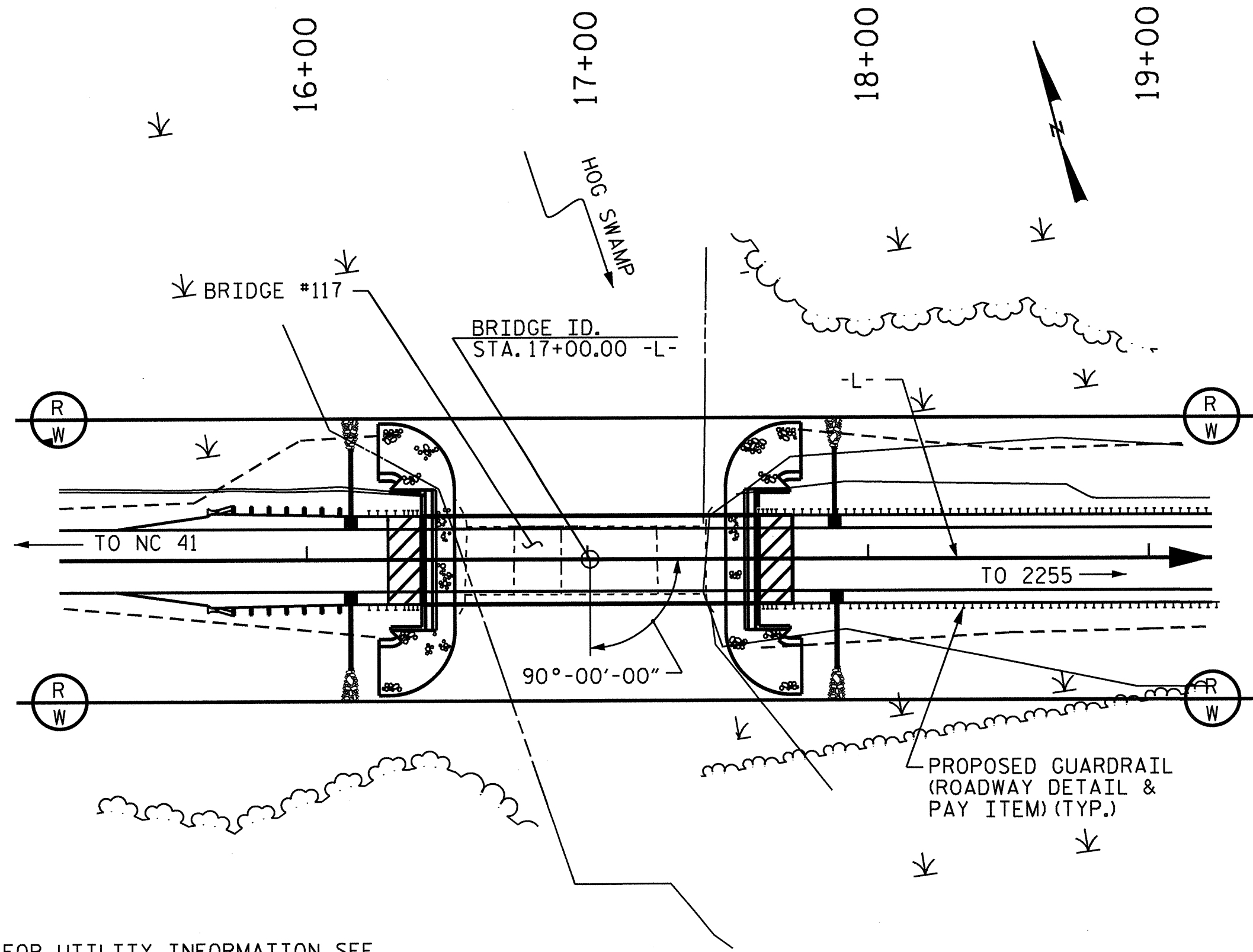
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			48
2			4			

DESIGN ENGINEER OF RECORD:  
A.M. LEE DATE: 5-7-13

DRAWN BY: PEGGY ADKINS DATE: 2-19-13

CHECKED BY: E.E. MURRAY DATE: 3-21-13

**FOUNDATION LAYOUT**  
 DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE



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 2.

THIS BRIDGE SHALL BE CONSTRUCTED USING TOP-DOWN CONSTRUCTION METHODS. THE USE OF A TEMPORARY CAUSEWAY OR WORK BRIDGE IS NOT PERMITTED. CRANES AND DRIVING EQUIPMENT WILL NOT BE PERMITTED ON CORED SLAB UNITS.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 35 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.

THE EXISTING STRUCTURE CONSISTING OF 5 SPANS, 1 @ 17'-7", 2 @ 17'-1", 1 @ 17'-2" AND 1 @ 17'-6" WITH REINFORCED CONCRETE DECK ON TIMBER JOISTS WITH A CLEAR ROADWAY WIDTH OF 24.0 FT. ON TIMBER CAPS ON TIMBER PILES AND STL. CRUTCH BTS. AND LOCATED AT PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED 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.

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

FOR INTERIOR BENT NO. 1 ONLY PARTIAL GALVANIZING OF THE PILES IS REQUIRED. SEE INTERIOR BENT SHEETS FOR REQUIRED GALVANIZED LENGTHS. PAYMENT FOR PARTIALLY GALVANIZED PILES WILL BE MADE UNDER THE CONTRACT UNIT PRICE FOR GALVANIZED STEEL PILES.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE 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. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

CAST-IN-PLACE END BENTS AND INTERIOR BENT WILL NOT BE ALLOWED.

FOR 3'-0" X 2'-6" PRESTRESSED CONCRETE BENT CAPS, SEE SPECIAL PROVISIONS.

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

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 12 X 53 STEEL PILES		HP 14 X 73 GALVANIZED STEEL PILES		PILE REDRIVES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS I (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS		3'-0" X 2'-6" PRESTRESSED CONCRETE BENT CAPS
	LUMP SUM	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	NO.	LIN.FT.	NO.	LIN.FT.	EA.	LIN.FT.	TONS	SO.YDS.	LUMP SUM	NO.	LIN.FT.	LIN.FT.
SUPERSTRUCTURE				LUMP SUM							235.50			LUMP SUM	22	1293.88	
END BENT NO. 1			2.9		205	7	385			4		57	64				38.83
BENT NO. 1								8	520	4							35.33
END BENT NO. 2			2.9		205	7	350			4		66	74				38.83
TOTAL	LUMP SUM	LUMP SUM	5.8	LUMP SUM	410	14	735	8	520	12	235.50	123	138	LUMP SUM	22	1293.88	112.99

HYDRAULIC DATA

DESIGN DISCHARGE	=	1700 C.F./S.
FREQUENCY OF DESIGN FLOOD	=	25 YEARS
DESIGN HIGH WATER ELEVATION	=	78.5 FT.
DRAINAGE AREA	=	62.0 SQ. MI.
BASE DISCHARGE (Q100)	=	2544 C.F./S.
BASE HIGH WATER ELEVATION	=	79.2 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	=	6700 C.F./S.
FREQUENCY OF OVERTOPPING FLOOD	=	500 YEARS +
OVERTOPPING FLOOD ELEVATION	=	81.1 FT.

DESIGN ENGINEER OF RECORD:  
A.M. LEE DATE: 5-7-13  
DRAWN BY: PEGGY ADKINS DATE: 2-19-13  
CHECKED BY: E.E. MURRAY DATE: 3-21-13

PROJECT NO. B-4619  
ROBESON COUNTY  
STATION: 17+00.00 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

GENERAL DRAWING  
FOR BRIDGE OVER HOG SWAMP  
ON SR 2262 BETWEEN NC 41  
AND SR 2255

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS 48
2			4			

LOAD FACTORS:

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

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	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS ( $\gamma_{LL}$ )	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.05	--	1.75	0.272	1.27	A	ER	28.906	0.518	1.51	A	ER	2.891	0.80	0.272	1.05	A	ER	28.906		
	HL-93 (OPERATING)	N/A		1.65	--	1.35	0.272	1.65	A	ER	28.906	0.518	1.96	A	ER	2.891	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.33	47.880	1.75	0.272	1.61	A	ER	28.906	0.518	1.83	A	ER	5.781	0.80	0.272	1.33	A	ER	28.906		
	HS-20 (OPERATING)	36.000		2.08	74.880	1.35	0.272	2.08	A	ER	28.906	0.518	2.38	A	ER	5.781	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		2.85	38.475	1.40	0.272	4.30	A	ER	28.906	0.518	5.28	A	ER	5.781	0.80	0.272	2.85	A	ER	28.906	
		SNGARBS2	20.000		2.19	43.800	1.40	0.272	3.30	A	ER	28.906	0.518	3.81	A	ER	5.781	0.80	0.272	2.19	A	ER	28.906	
		SNAGRIS2	22.000		2.10	46.200	1.40	0.272	3.17	A	ER	28.906	0.518	3.56	A	ER	5.781	0.80	0.272	2.10	A	ER	28.906	
		SNCOTTS3	27.250		1.42	38.695	1.40	0.272	2.14	A	ER	28.906	0.518	2.64	A	ER	5.781	0.80	0.272	1.42	A	ER	28.906	
		SNAGGRS4	34.925		1.21	42.259	1.40	0.272	1.83	A	ER	28.906	0.518	2.23	A	ER	5.781	0.80	0.272	1.21	A	ER	28.906	
		SNS5A	35.550		1.18	41.949	1.40	0.272	1.78	A	ER	28.906	0.518	2.28	A	ER	5.781	0.80	0.272	1.18	A	ER	28.906	
		SNS6A	39.950		1.10	43.945	1.40	0.272	1.65	A	ER	28.906	0.518	2.10	A	ER	5.781	0.80	0.272	1.10	A	ER	28.906	
		SNS7B	42.000		1.05	44.100	1.40	0.272	1.57	A	ER	28.906	0.518	2.08	A	ER	5.781	0.80	0.272	1.05	A	ER	28.906	
	TRUCK TRACTOR SEMI-TRAILER (T/S)	TNAGRIT3	33.000		1.34	44.220	1.40	0.272	2.02	A	ER	28.906	0.518	2.48	A	ER	5.781	0.80	0.272	1.34	A	ER	28.906	
		TNT4A	33.075		1.35	44.651	1.40	0.272	2.03	A	ER	28.906	0.518	2.40	A	ER	5.781	0.80	0.272	1.35	A	ER	28.906	
		TNT6A	41.600		1.11	46.176	1.40	0.272	1.68	A	ER	28.906	0.518	2.26	A	ER	2.891	0.80	0.272	1.11	A	ER	28.906	
		TNT7A	42.000		1.13	47.460	1.40	0.272	1.69	A	ER	28.906	0.518	2.15	A	ER	5.781	0.80	0.272	1.13	A	ER	28.906	
		TNT7B	42.000		1.18	49.560	1.40	0.272	1.77	A	ER	28.906	0.518	2.02	A	ER	5.781	0.80	0.272	1.18	A	ER	28.906	
		TNAGRIT4	43.000		1.11	47.730	1.40	0.272	1.67	A	ER	28.906	0.518	1.95	A	ER	5.781	0.80	0.272	1.11	A	ER	28.906	
		TNAGT5A	45.000		1.04	46.800	1.40	0.272	1.57	A	ER	28.906	0.518	1.96	A	ER	5.781	0.80	0.272	1.04	A	ER	28.906	
TNAGT5B	45.000	③	1.03	46.350	1.40	0.272	1.54	A	ER	28.906	0.518	1.85	A	ER	5.781	0.80	0.272	1.03	A	ER	28.906			

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:

- 
- 
- 
- 

# CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

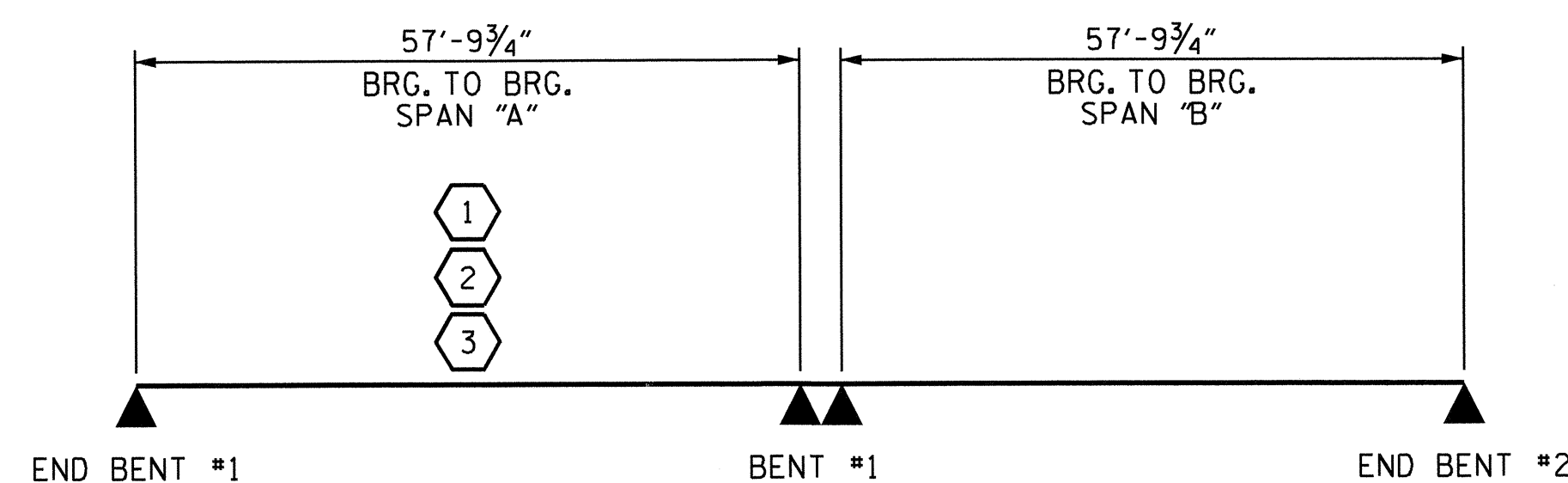
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

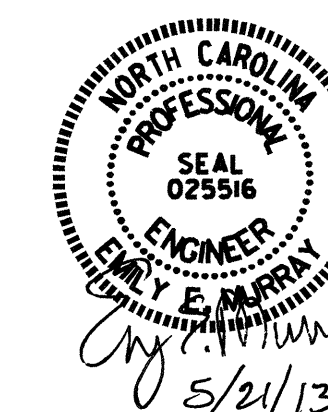
I - INTERIOR GIRDER  
EL - EXTERIOR LEFT GIRDER  
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

PROJECT NO. B-4619  
ROBESON COUNTY  
STATION: 17+00.00 -L-

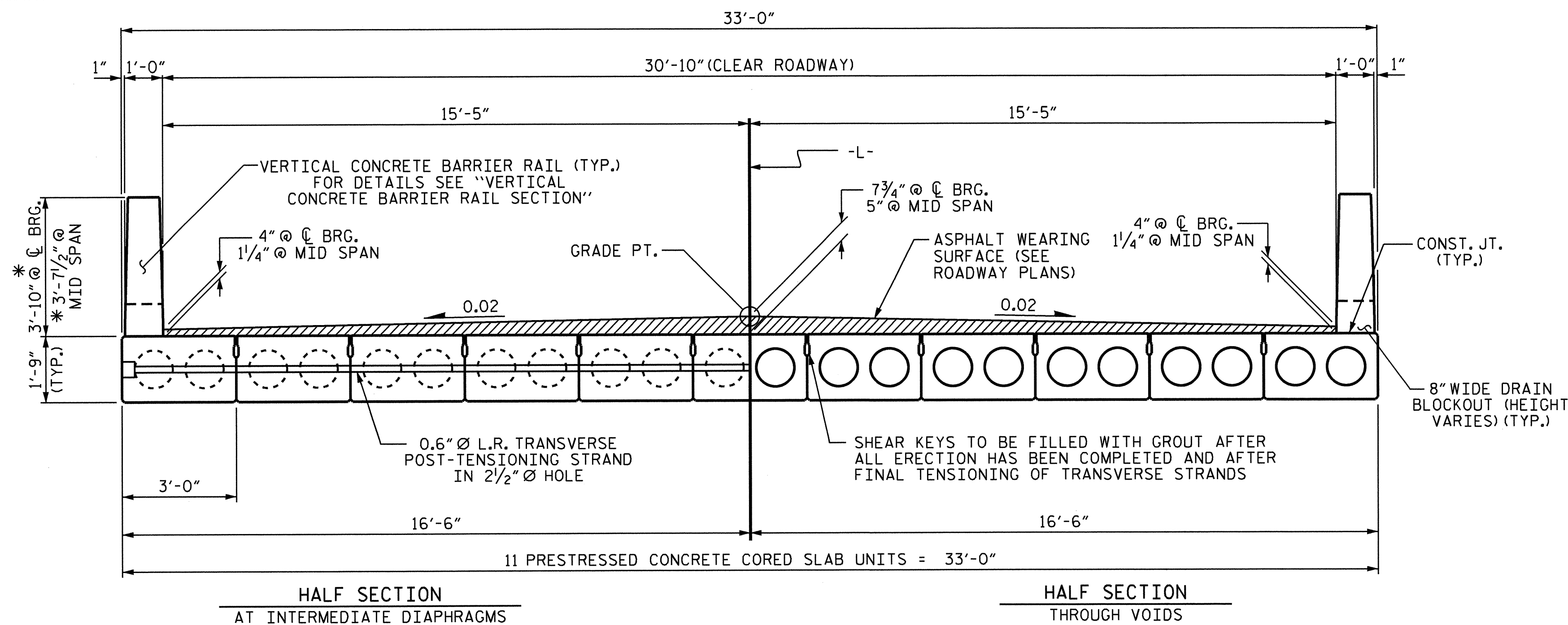
DESIGN ENGINEER OF RECORD: A.M. LEE	DATE: 5-7-13
ASSEMBLED BY: PEGGY ADKINS	DATE: 2-20-13
CHECKED BY: E.E. MURRAY	DATE: 3-21-13
DRAWN BY: MAA	REV. 11/2/08RR
CHECKED BY: GM/DI 2/08	MAA/GM



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

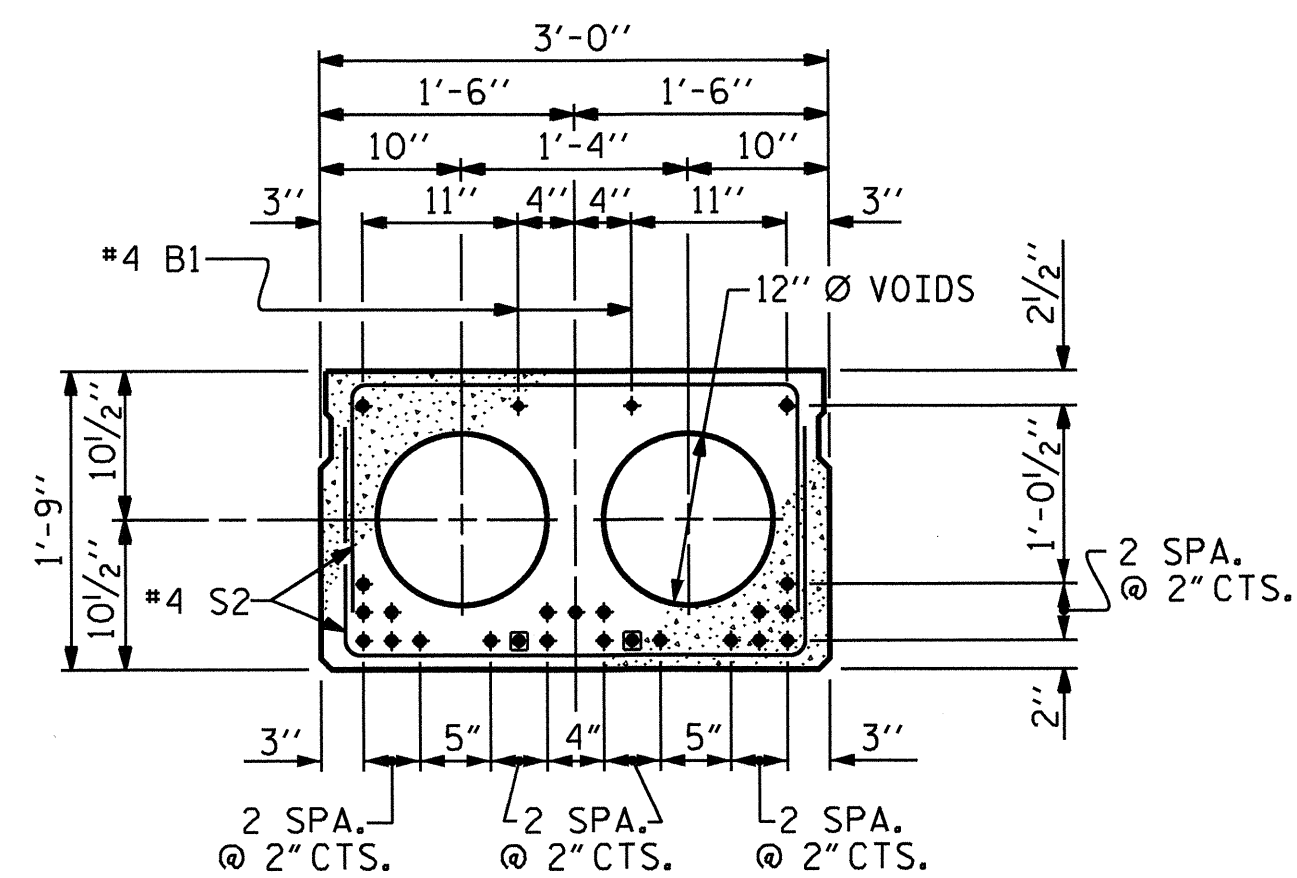
STANDARD  
LRFR SUMMARY FOR  
PRESTRESSED  
CONCRETE GIRDERS  
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO. S-4
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 48
2			4			



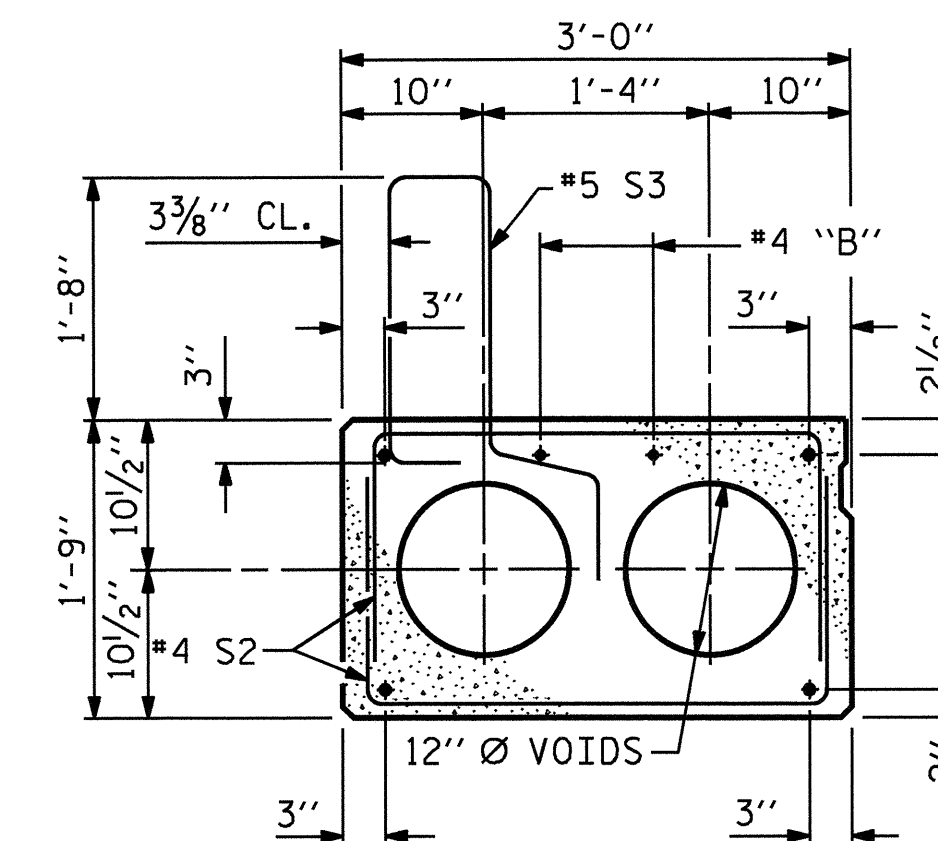
TYPICAL SECTION

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



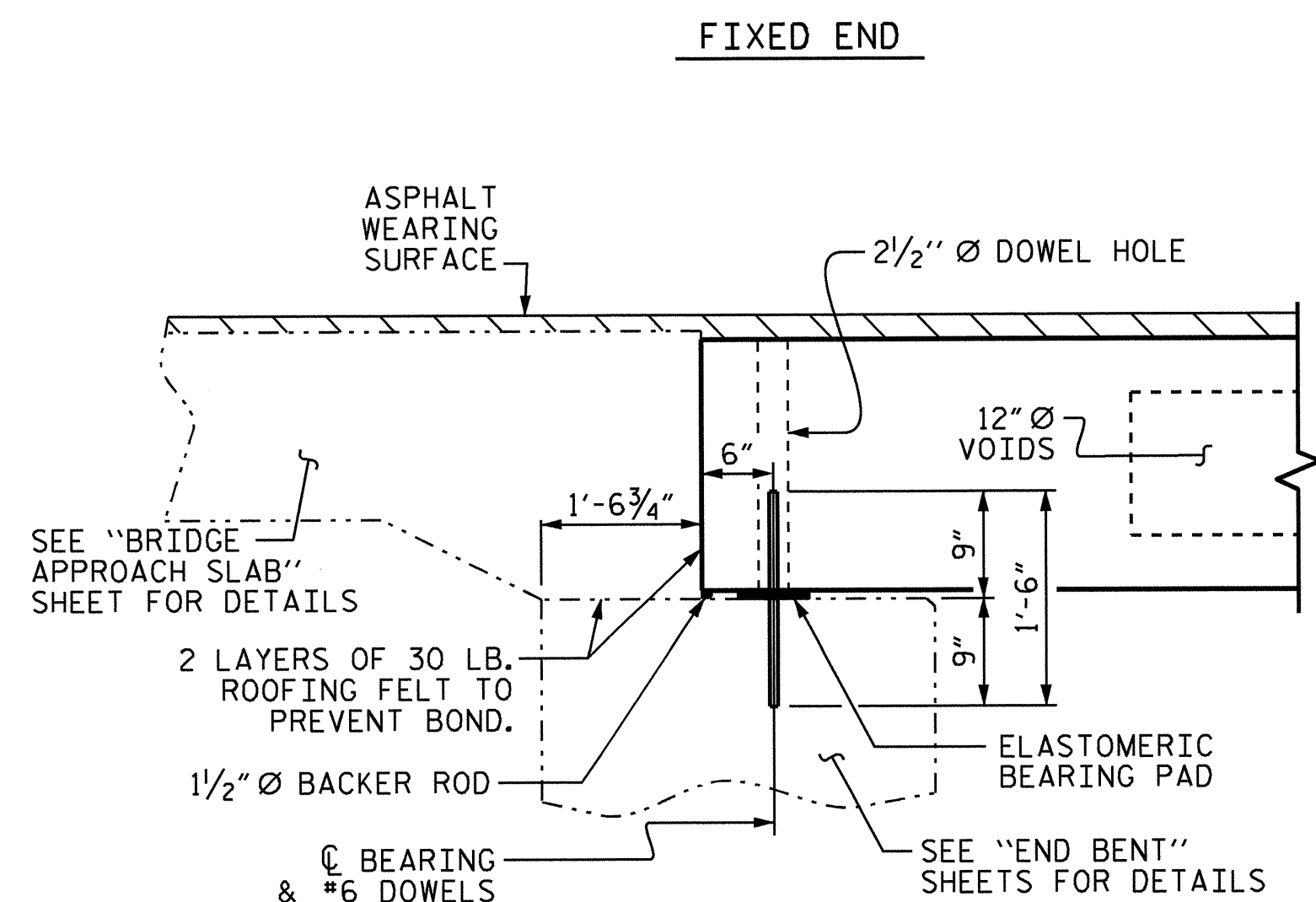
INTERIOR SLAB SECTION  
(23 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT  
SPANS A & B

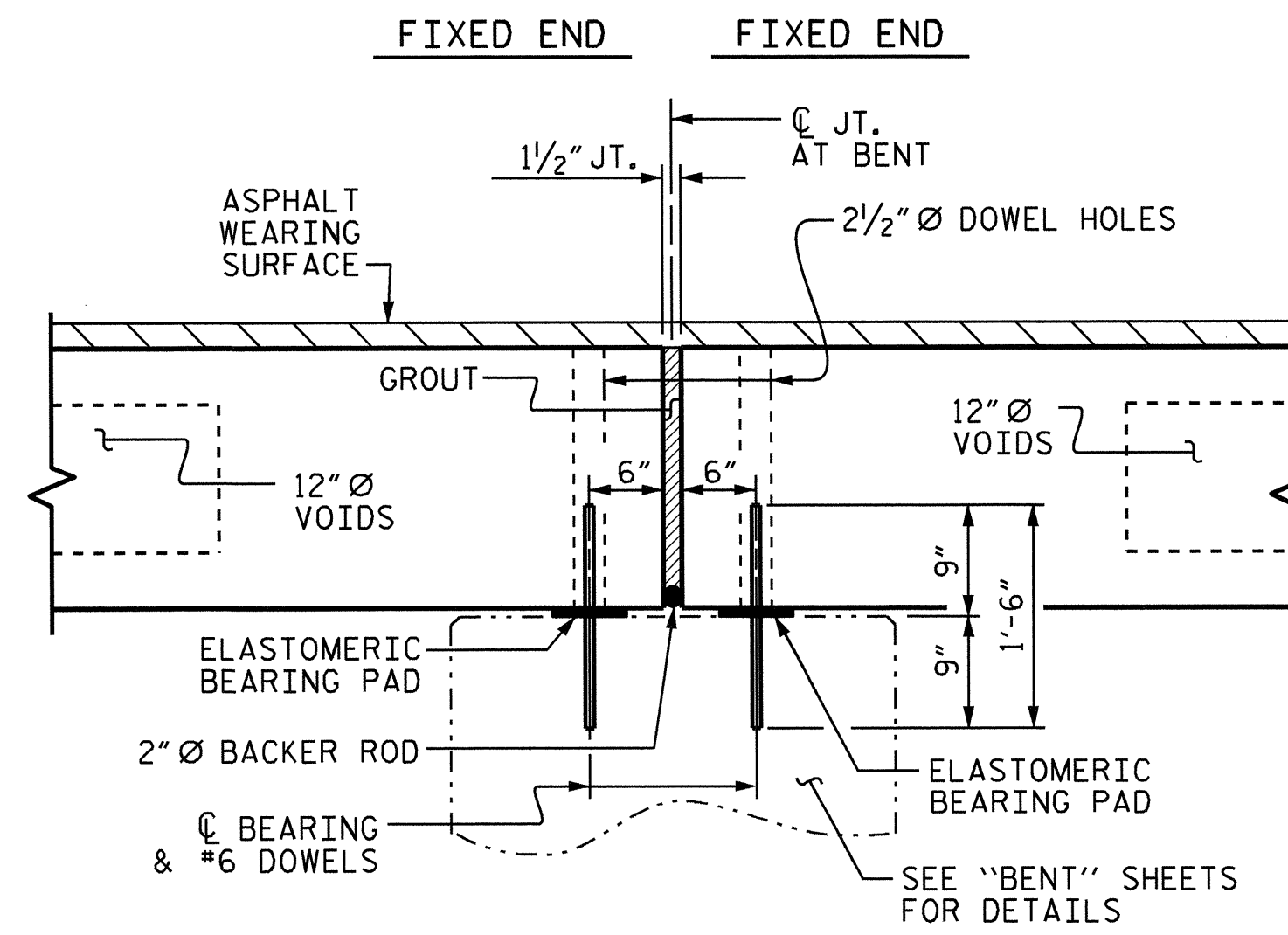


EXT. SLAB SECTION

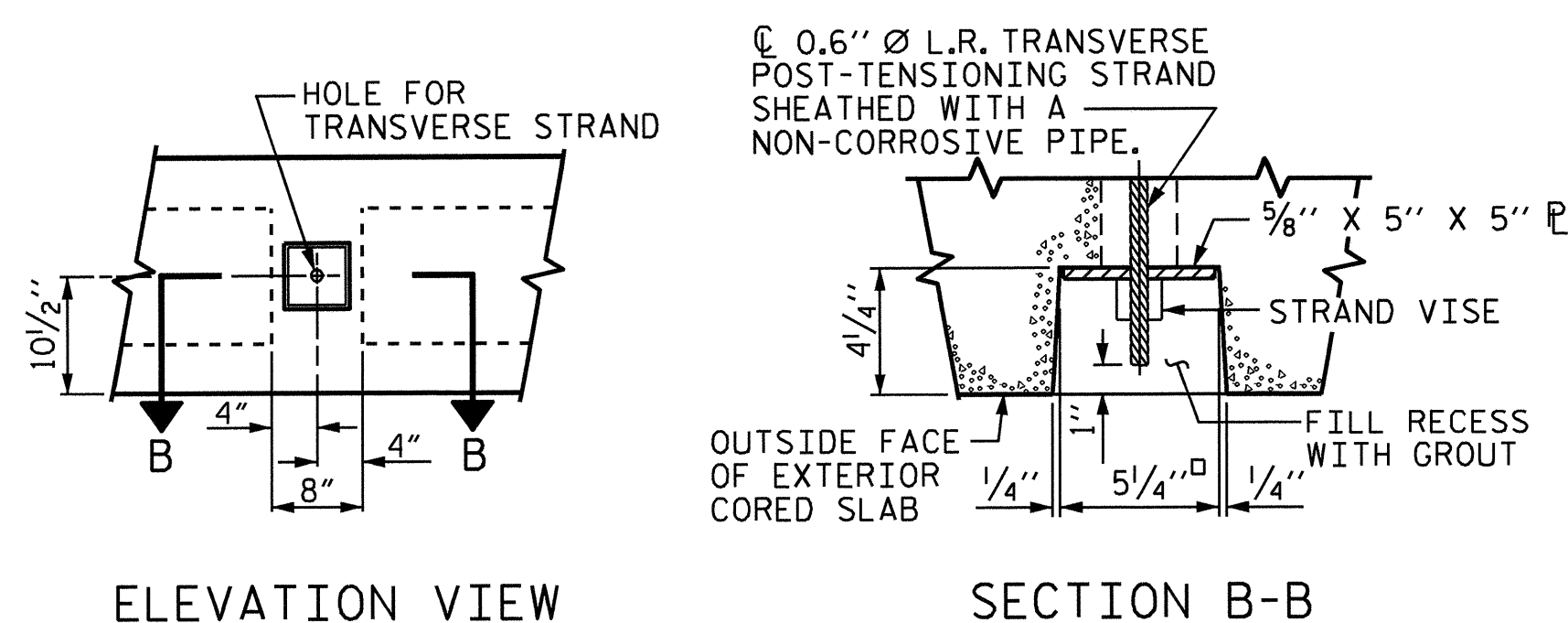
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



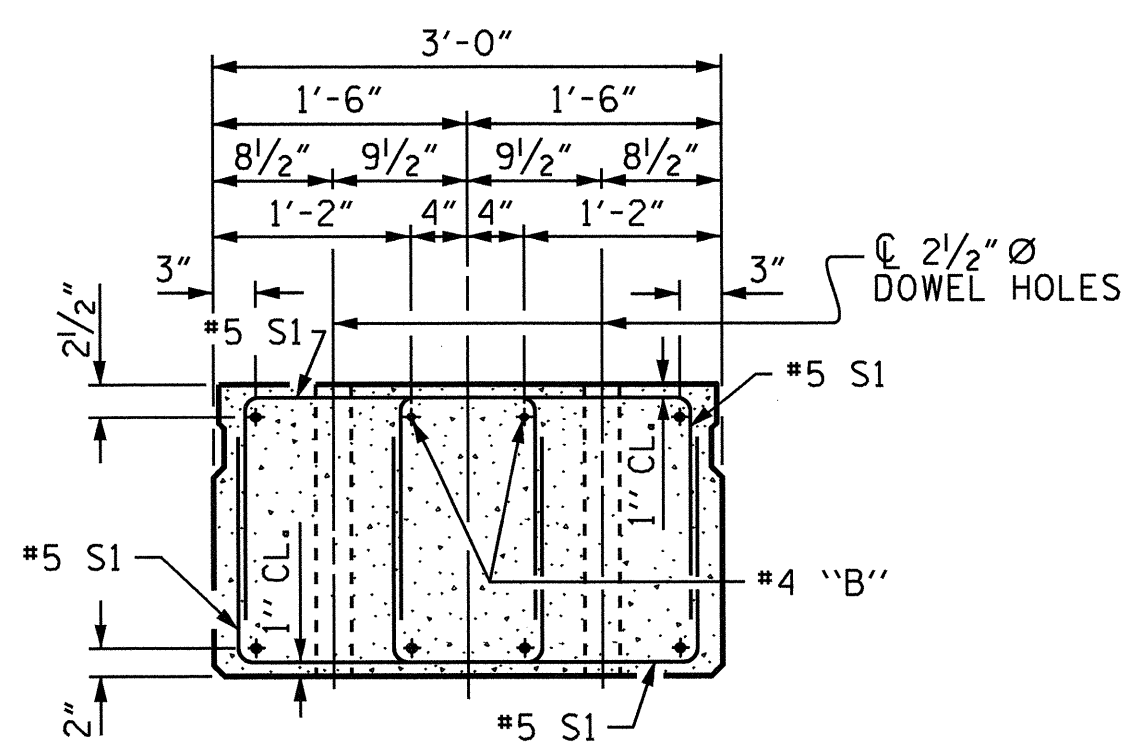
SECTION AT END BENT



SECTION AT BENT

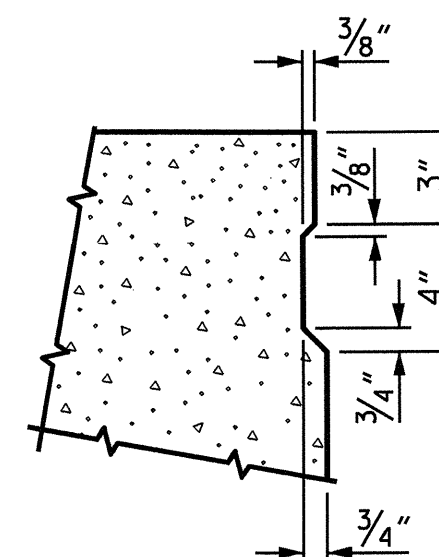


GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS

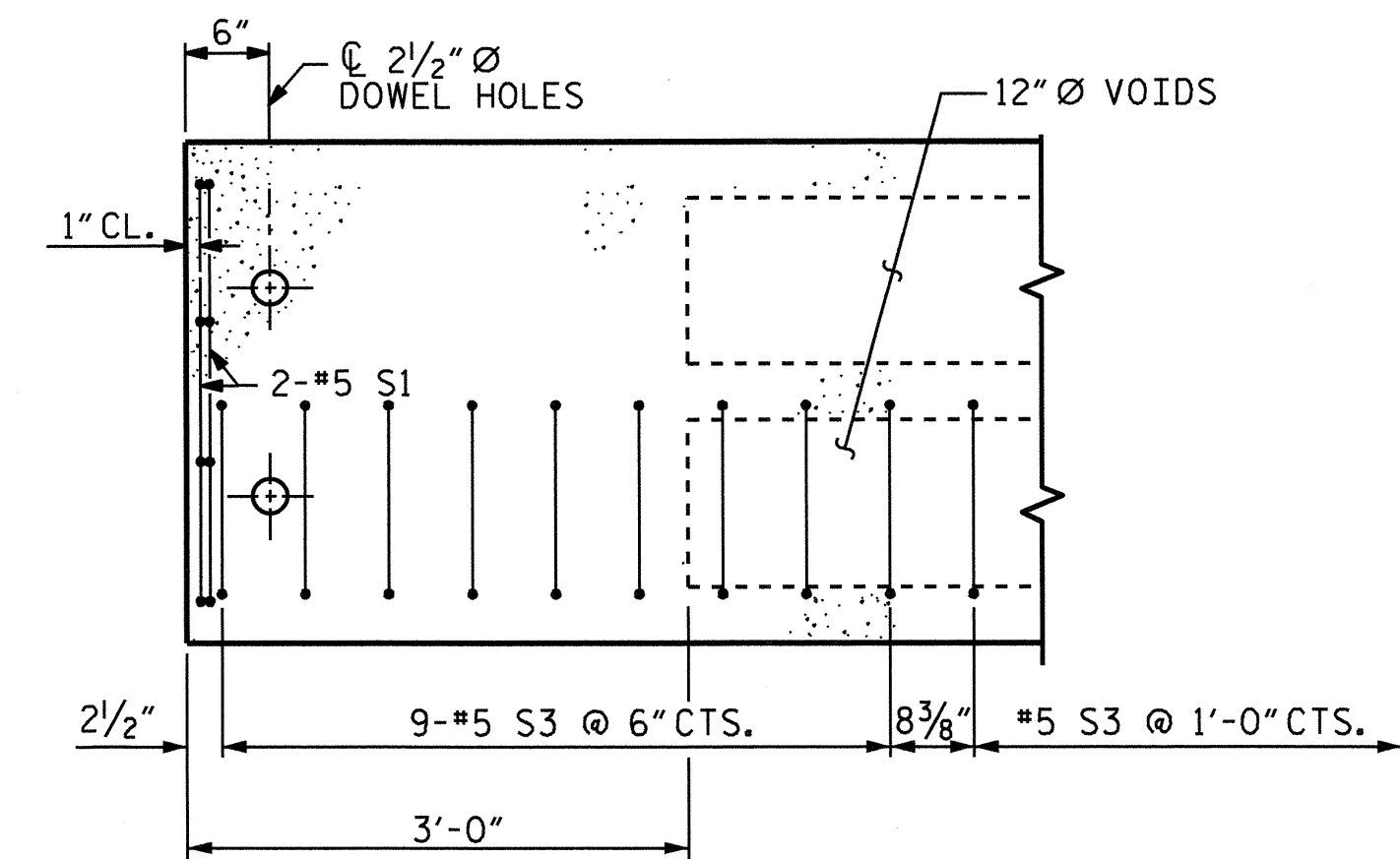


END ELEVATION

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



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



PART PLAN-EXTERIOR SECTION

NOTE: EXTERIOR SECTION SHOWN-INTERIOR SECTION SIMILAR EXCEPT OMIT S3 BARS.

ASSEMBLED BY: PEGGY ADKINS DATE: 2-21-13  
CHECKED BY: T. AVERETTE DATE: 3-20-13  
DRAWN BY: WJH 4/89 REV. 7/10/OIRR RWV/LES  
CHECKED BY: FCJ 5/89 REV. 5/1/06R TLA/GM  
REV. 10/1/11 MAA/GM

DESIGN ENGINEER OF RECORD:  
A.M. LEE DATE: 5-07-13

17-MAY-2013 08:06  
Z:\TIP\Projects-B\B4619\Structures\Plans\Final Plans\5Str.\*\1b4619\_sd.cs.str.1.dgn  
padkins

PROJECT NO. B-4619  
ROBESON COUNTY  
STATION: 17+00.00 -L-

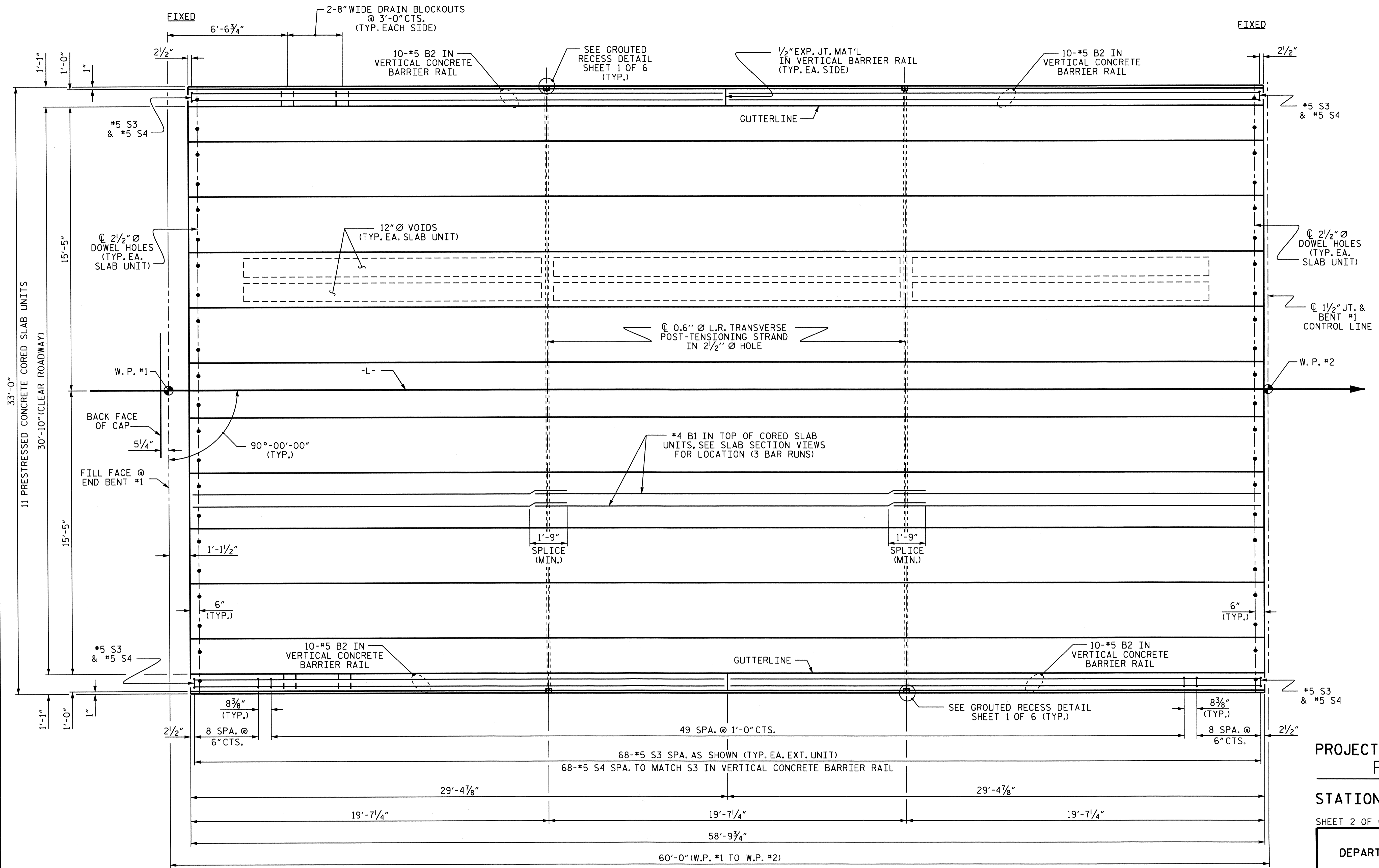
SHEET 1 OF 6

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS 48
2			4			

STR. #1

STD. NO. PCS2 (SHT 4)



**SPAN A**

SEE SHEET 4 OF 6 FOR ADDITIONAL REINFORCING STEEL IN CORED SLAB UNITS.

PROJECT NO. B-4619  
ROBESON COUNTY  
 STATION: 17+00.00 -L-  
 SHEET 2 OF 6

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 PLAN OF SPAN A

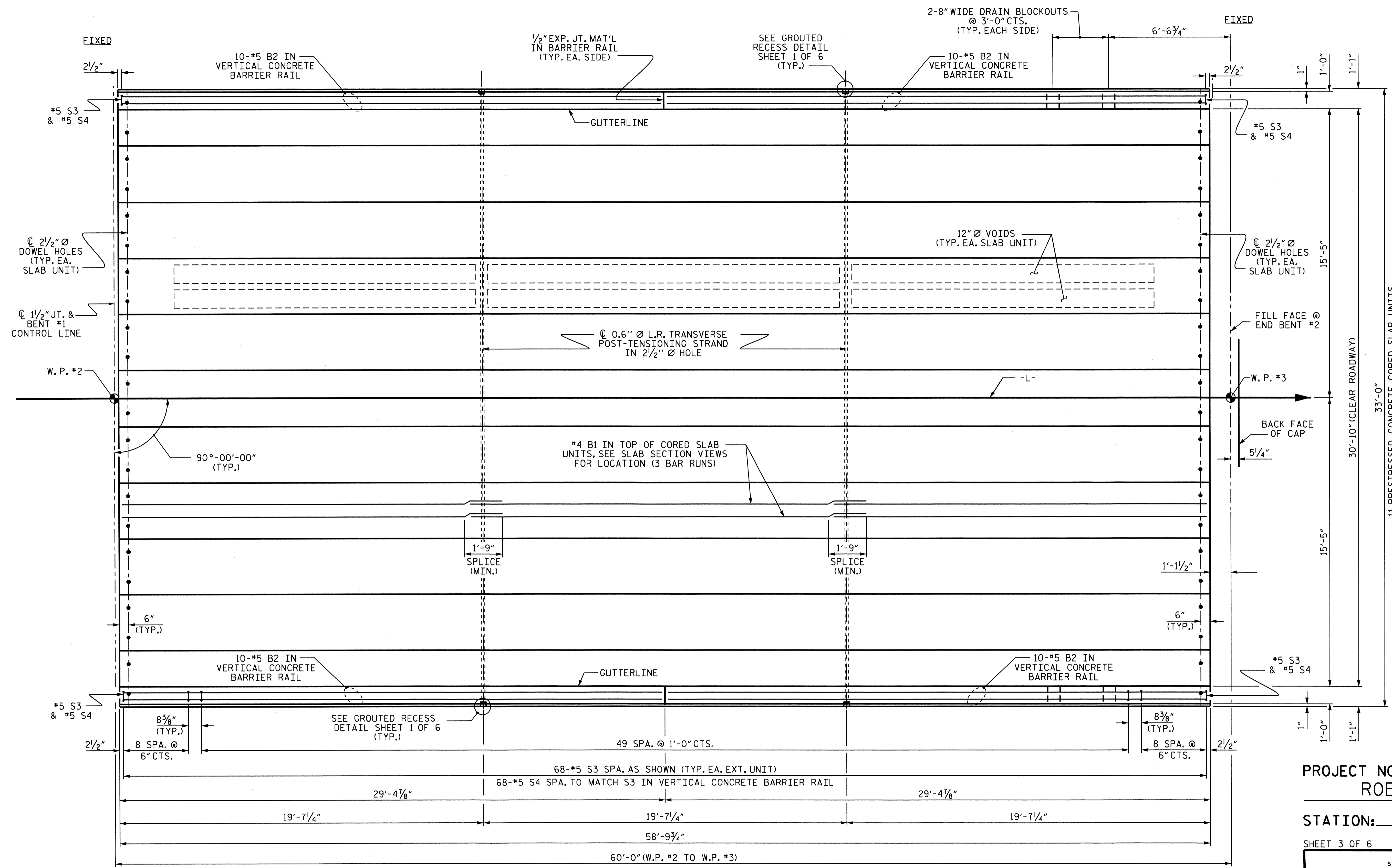


DESIGN ENGINEER OF RECORD:  
A.M. LEE DATE: 5-07-13  
 DRAWN BY: PEGGY ADKINS DATE: 2-21-13  
 CHECKED BY: T. AVERETTE DATE: 3-20-13

21-MAY-2013 09:09  
 R:\TIPProjects-B\B4619\Structures\Plans\Final Plans\Str.\*1\B4619.sd.cs.str\_1.dgn  
 taverette

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			48

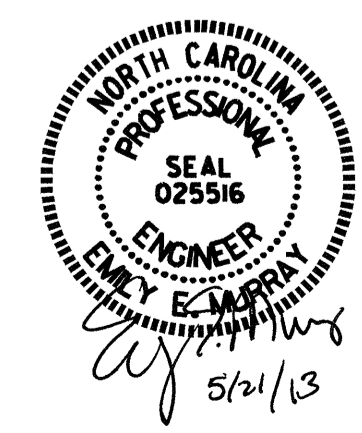
STR. #1



**SPAN B**  
SEE SHEET 4 OF 6 FOR ADDITIONAL REINFORCING STEEL IN CORED SLAB UNITS.

PROJECT NO. B-4619  
ROBESON COUNTY  
 STATION: 17+00.00 -L-  
 SHEET 3 OF 6

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

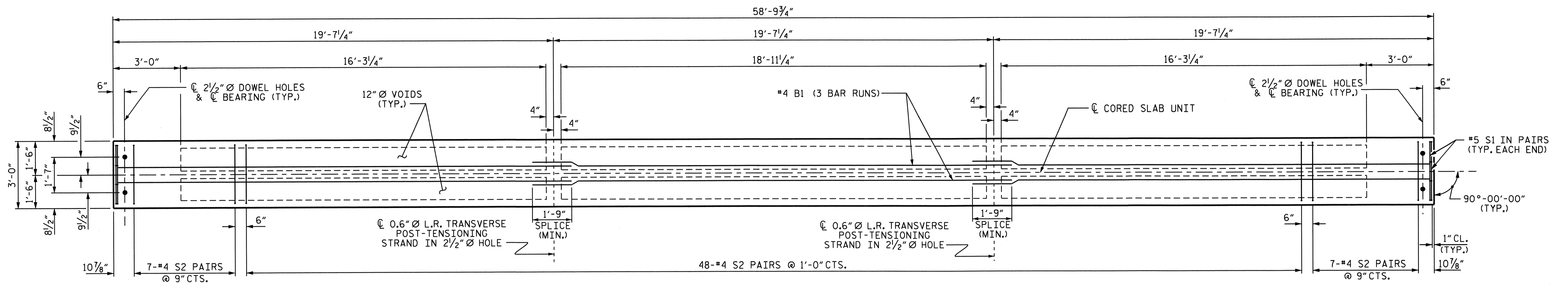


DESIGN ENGINEER OF RECORD:	A.M. LEE	DATE:	5-07-13
DRAWN BY:	PEGGY ADKINS	DATE:	2-21-13
CHECKED BY:	T. AVERETTE	DATE:	3-20-13

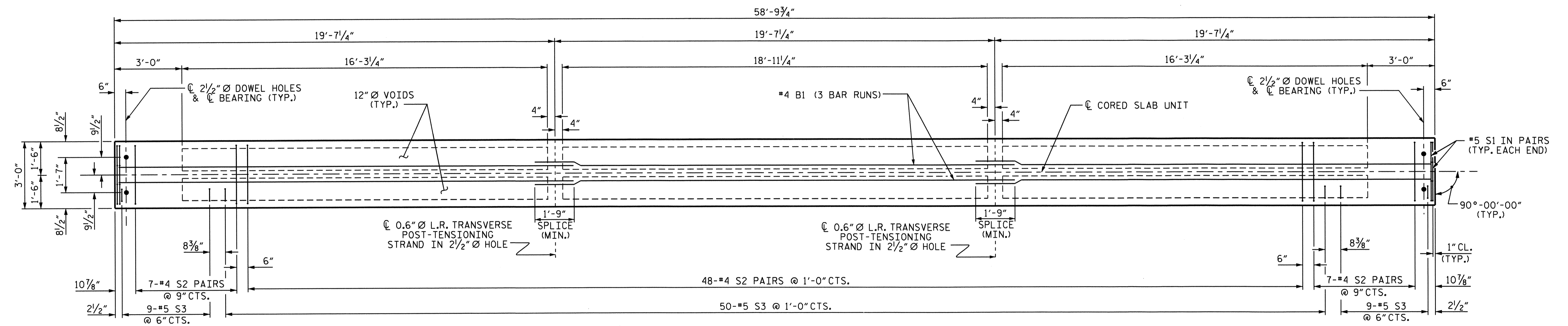
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			48

21-MAY-2013 09:09  
R:\TIP\Projects-B\B4619\Structures\Plans\Final Plans\Str.\*\B4619.sd.cs.str\_1.dgn  
toverette





PLAN OF INTERIOR CORED SLAB UNIT

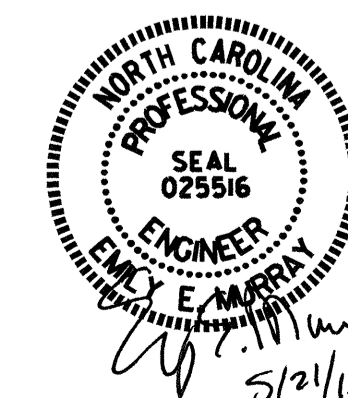


PLAN OF EXTERIOR CORED SLAB UNIT

(RIGHT EXTERIOR CORED SLAB UNIT SHOWN)

PROJECT NO. B-4619  
ROBESON COUNTY  
 STATION: 17+00.00 -L-

SHEET 4 OF 6



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 3'-0" X 1'-9"  
 PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 DETAILS  
 SPANS A & B

REVISIONS						SHEET NO. S-8
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 48
2			4			

DESIGN ENGINEER OF RECORD:  
A.M. LEE DATE: 5-07-13  
 DRAWN BY: PEGGY ADKINS DATE: 3-20-13  
 CHECKED BY: T. AVERETTE DATE: 2-21-13

NOTES

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

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

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

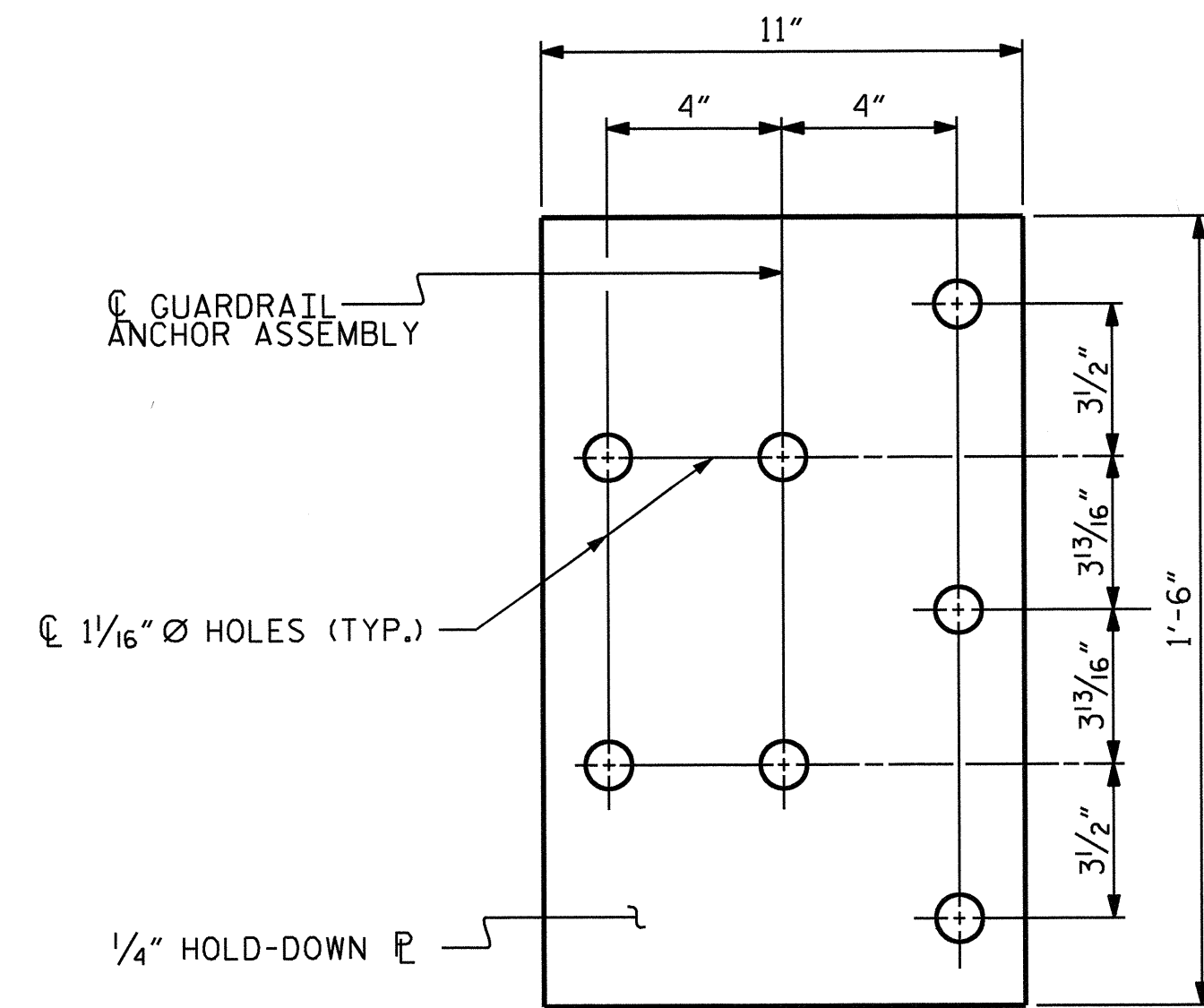
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

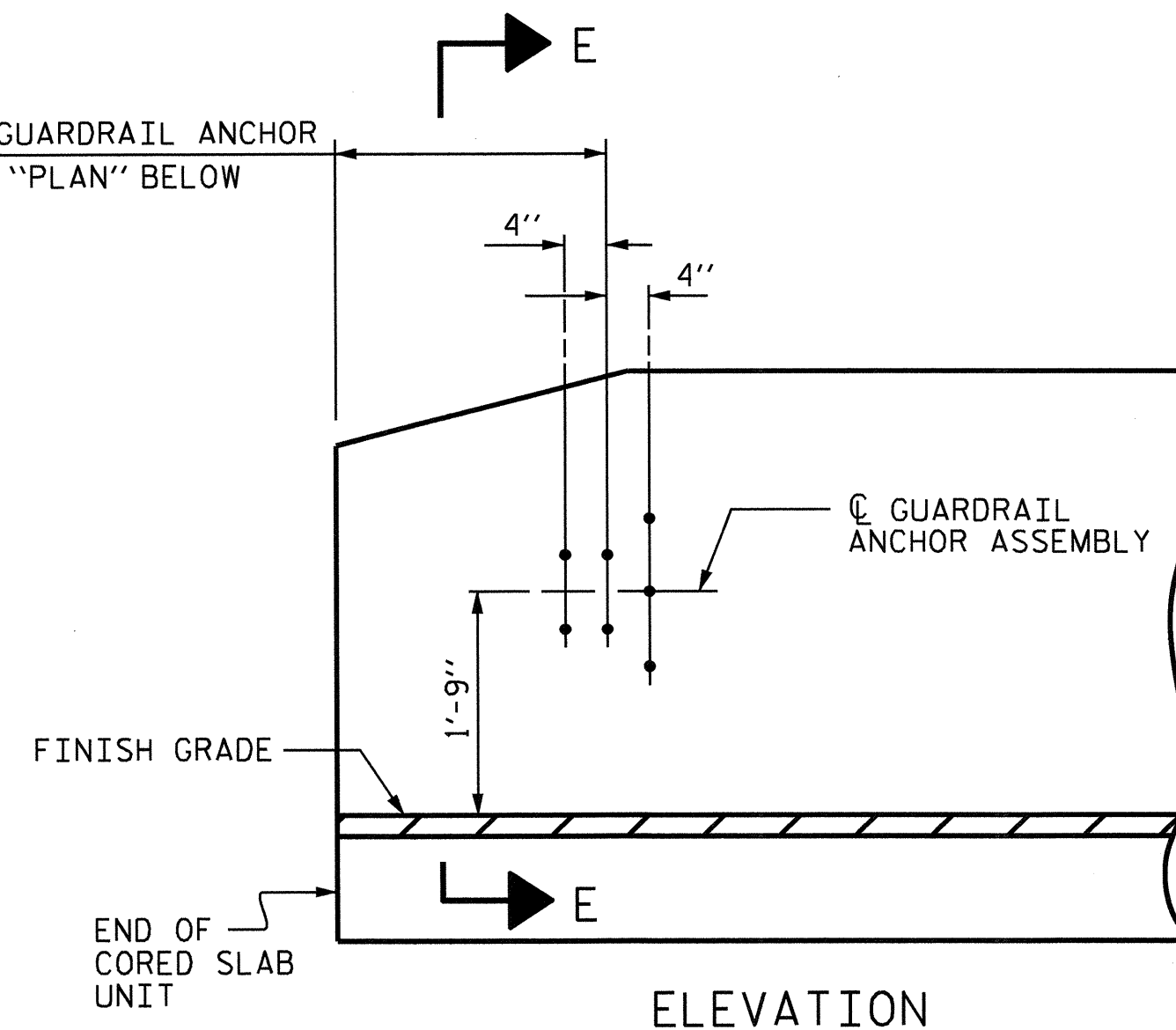
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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

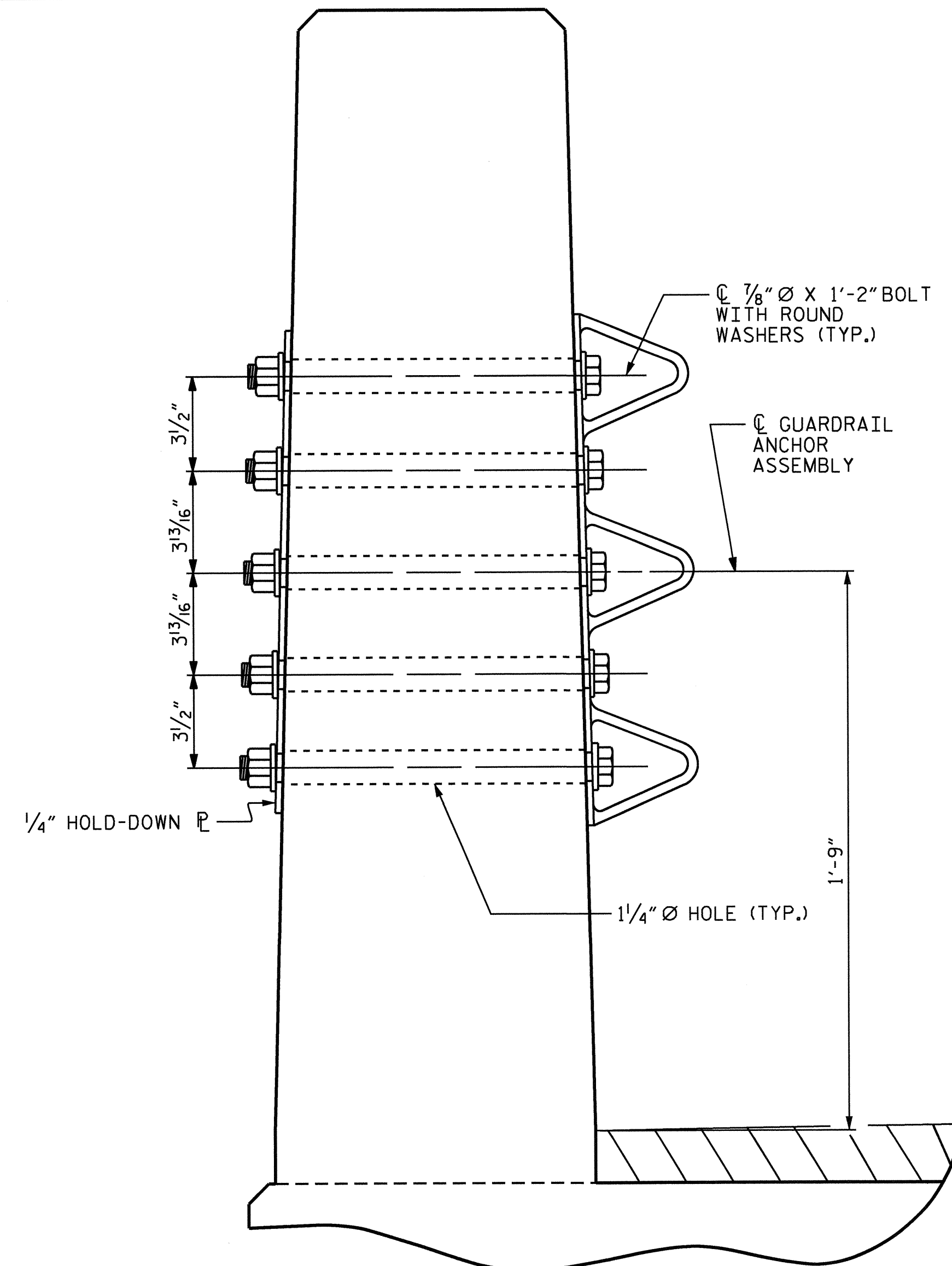


PLAN

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

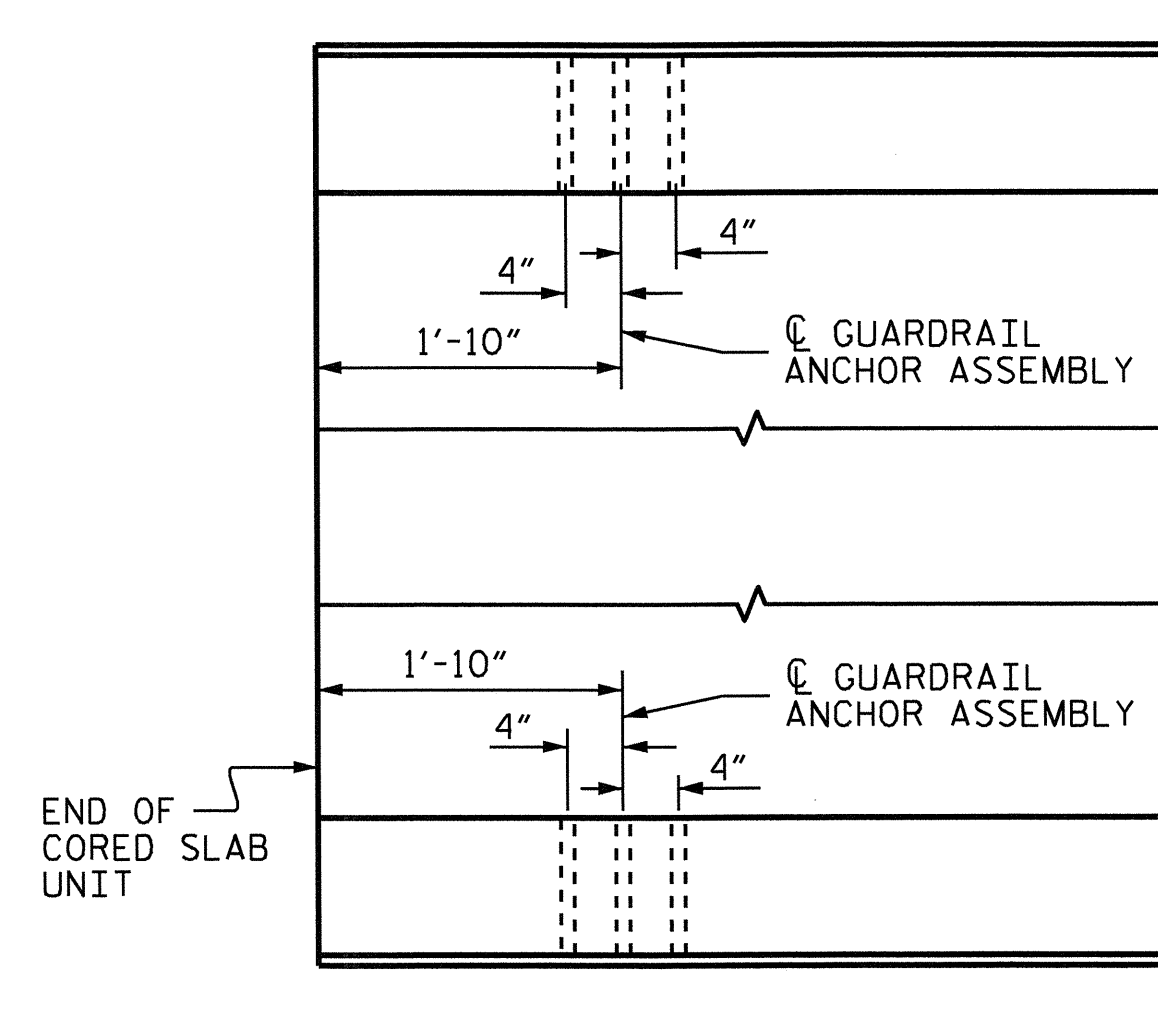


ELEVATION



SECTION E-E

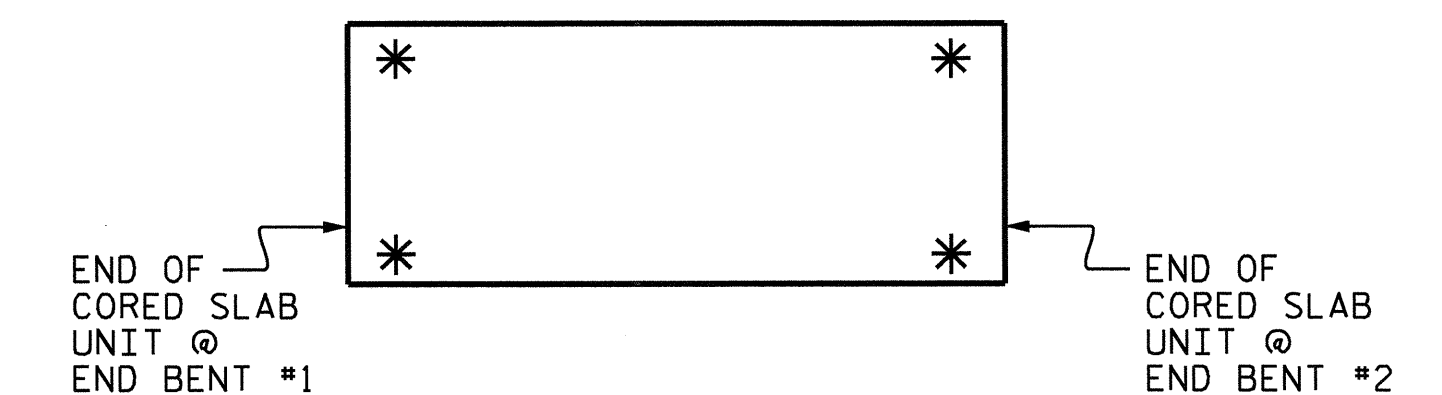
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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



SKETCH SHOWING POINTS OF ATTACHMENT

\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4619  
ROBESON COUNTY  
 STATION: 17+00.00 -L-

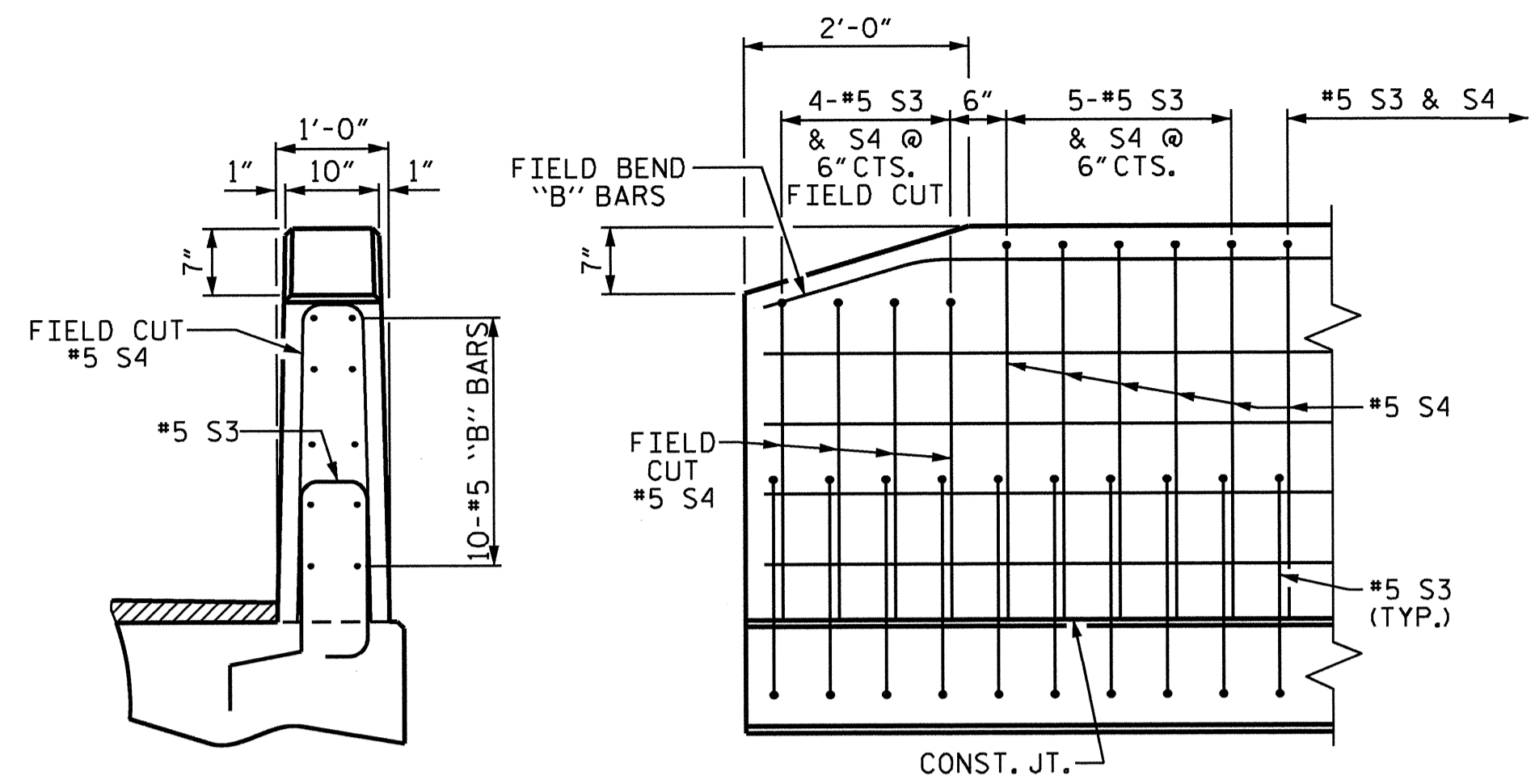
SHEET 5 OF 6



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

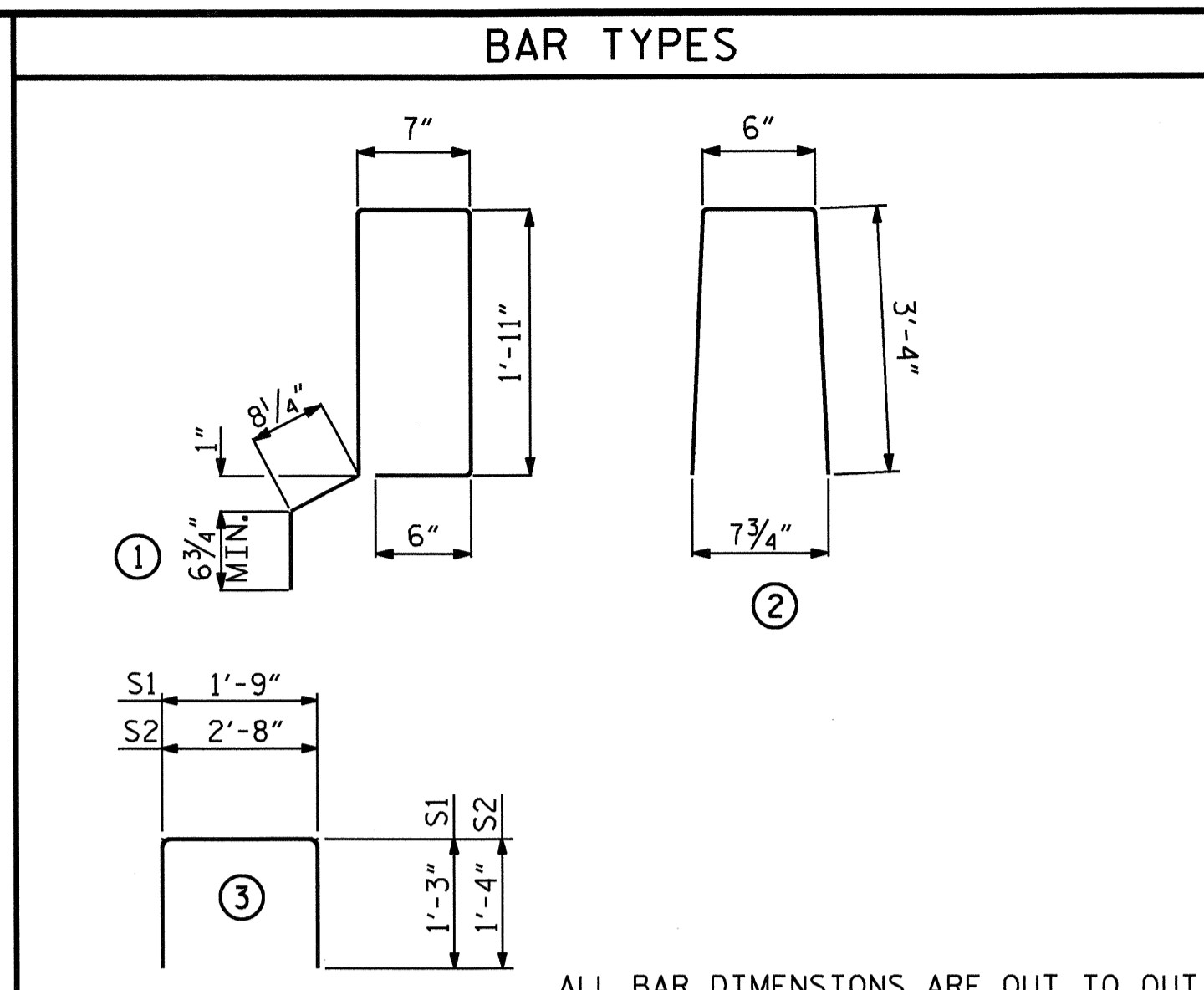
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS 48
2			4			

DESIGN ENGINEER OF RECORD: A.M. LEE DATE: 10-26-12.	
ASSEMBLED BY: PEGGY ADKINS DATE: 2-21-13	
CHECKED BY: T. AVERETTE DATE: 3-20-13	
DRAWN BY: MAA 5/10	ADDED 5/6/10
CHECKED BY: GM 5/10	REV. 10/1/11 MAA/GM
	REV. 12/5/11 MAA/GM



END VIEW SIDE VIEW  
END OF RAIL DETAILS

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

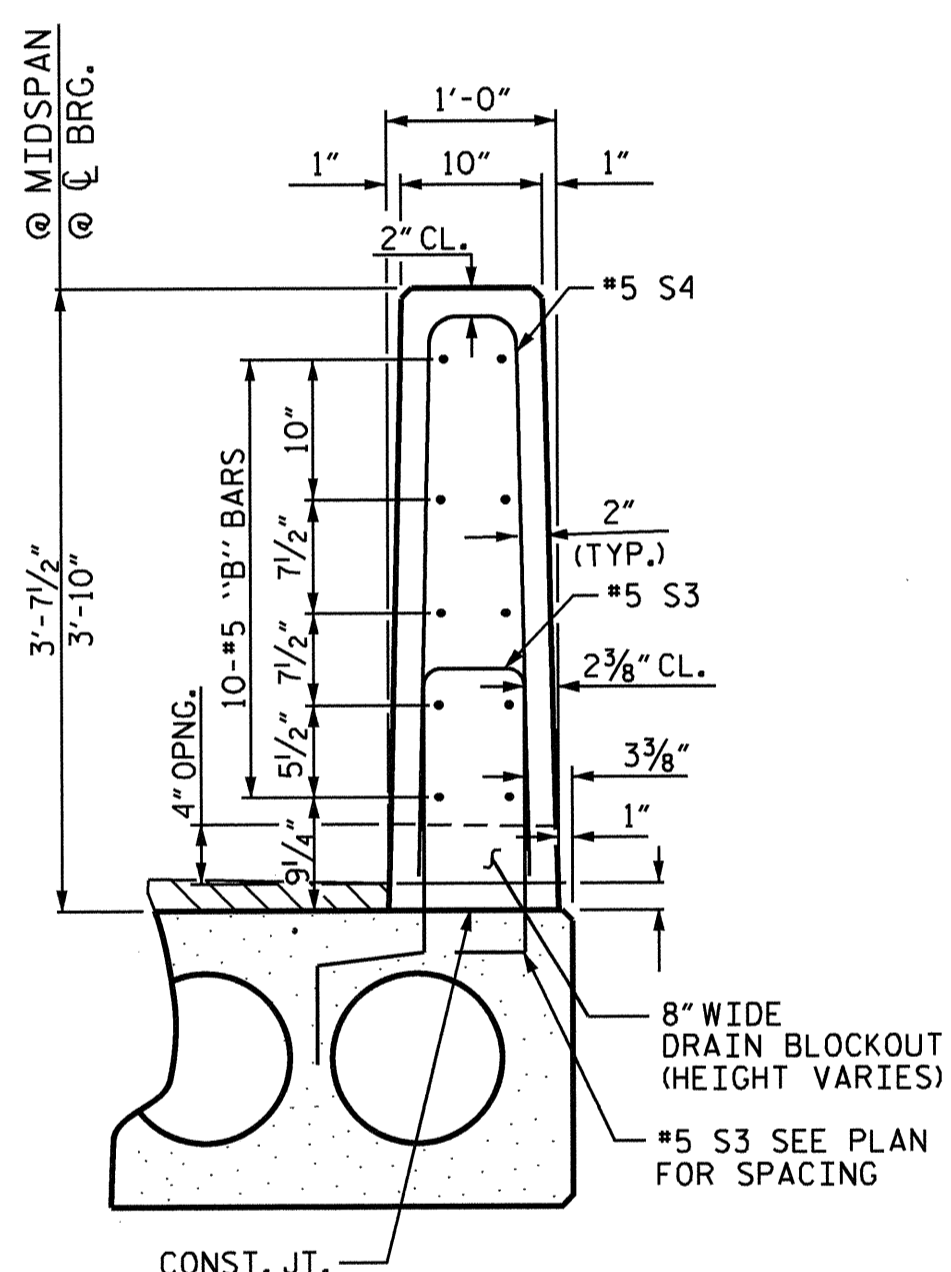


BILL OF MATERIAL FOR ONE CORED SLAB SECTION							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B1	6	#4	STR	20'-8"	83	20'-8"	83
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	124	#4	3	5'-4"	442	5'-4"	442
* S3	68	#5	1	6'-2"	437		
REINFORCING STEEL				560 LBS.		560 LBS.	
* EPOXY COATED REINFORCING STEEL				437		LBS.	
8000 P.S.I. CONCRETE				8.4 CU. YDS.		8.4 CU. YDS.	
0.6" Ø L.R. STRANDS				No. 23		No. 23	

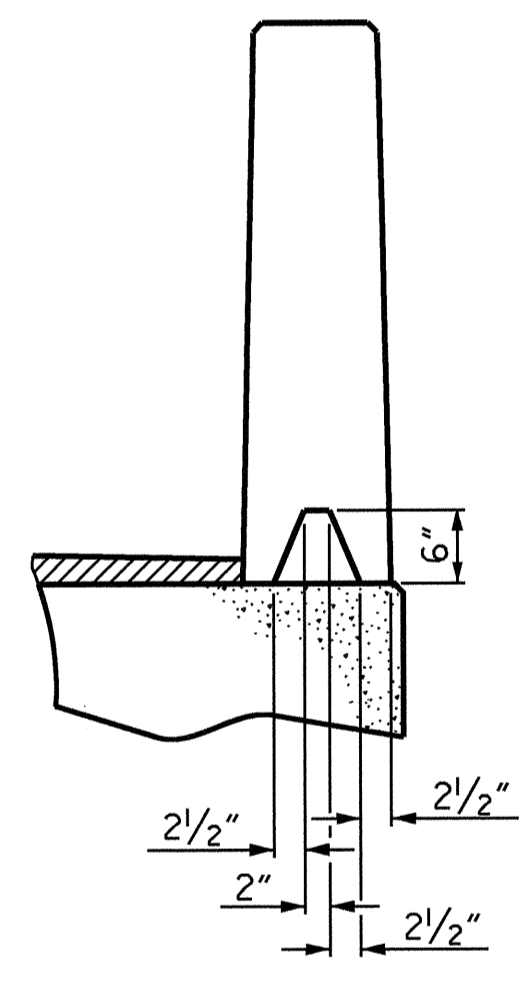
DEAD LOAD DEFLECTION AND CAMBER		
	3'-0" x 1'-9" 0.6" Ø L.R. STRAND	
	SPAN "A"	SPAN "B"
CAMBER ( SLAB ALONE IN PLACE )	↑ 3 3/8"	↑ 3 3/8"
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD **	↓ 1 1/16"	↓ 1 1/16"
FINAL CAMBER	↑ 2 11/16"	↑ 2 11/16"

\*\* INCLUDES FUTURE WEARING SURFACE

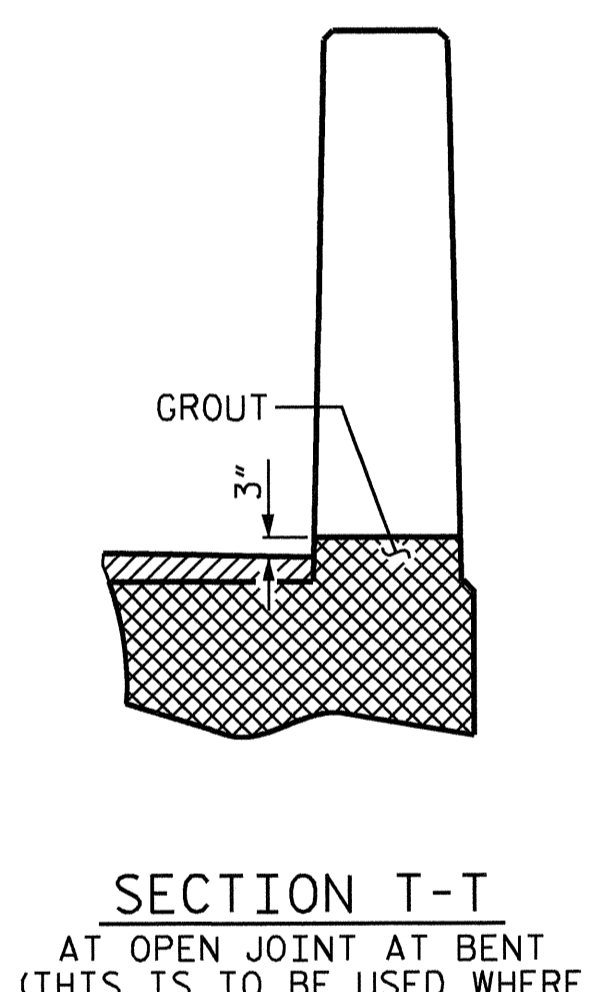
CORED SLABS REQUIRED				
		NUMBER	LENGTH	TOTAL LENGTH
SPAN "A"	EXTERIOR C.S.	2	58'-9 3/4"	117'-7 1/2"
	INTERIOR C.S.	9	58'-9 3/4"	529'-3 3/4"
SPAN "B"	EXTERIOR C.S.	2	58'-9 3/4"	117'-7 1/2"
	INTERIOR C.S.	9	58'-9 3/4"	529'-3 3/4"
TOTAL		22		1293'-10 1/2"



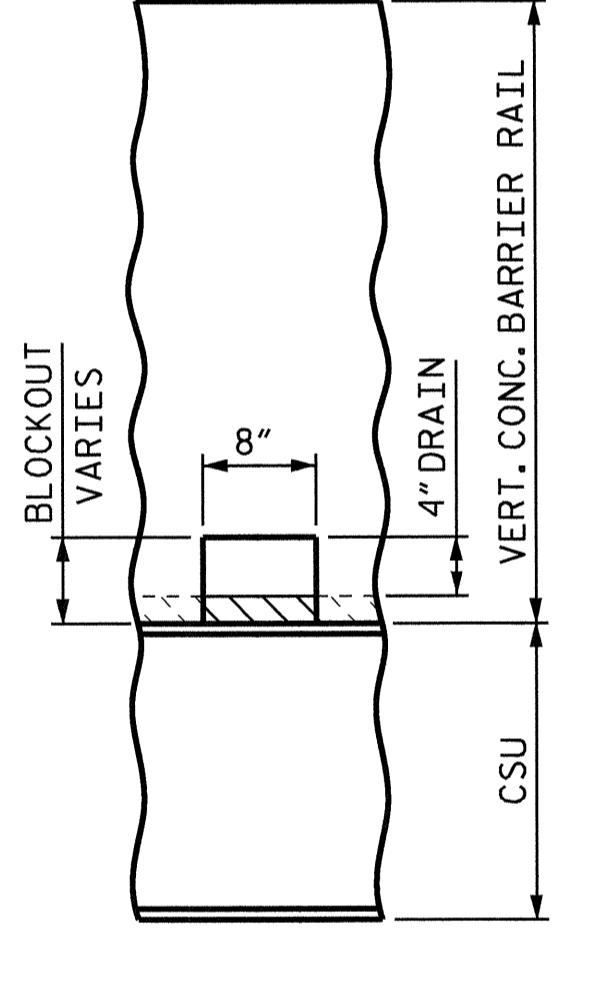
SECTION THRU RAIL  
@ 1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS. (NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED)



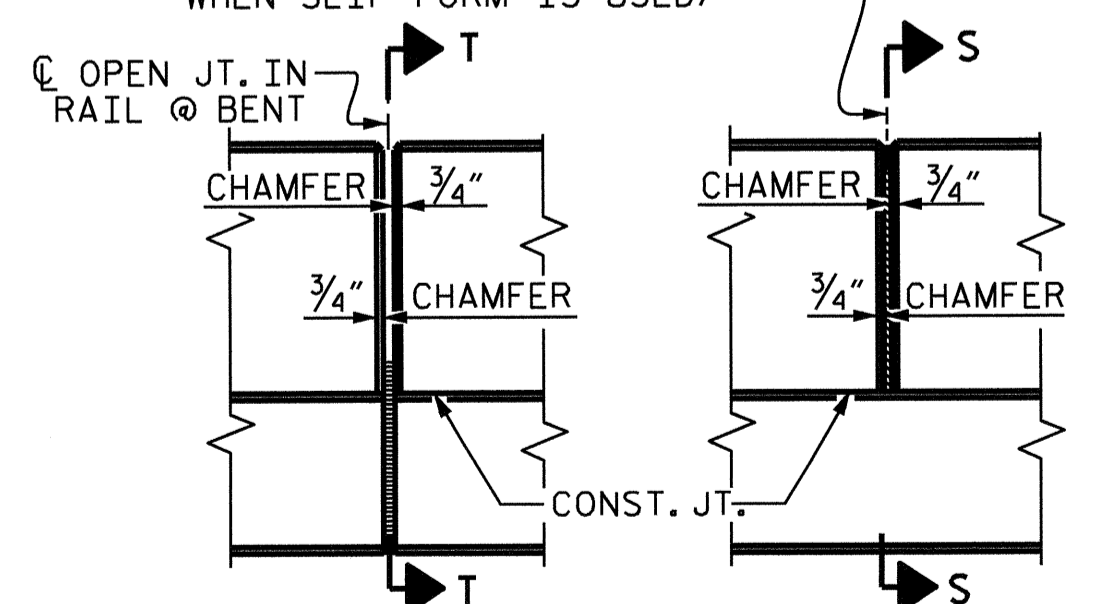
SECTION S-S  
AT DAM IN OPEN JOINT (THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



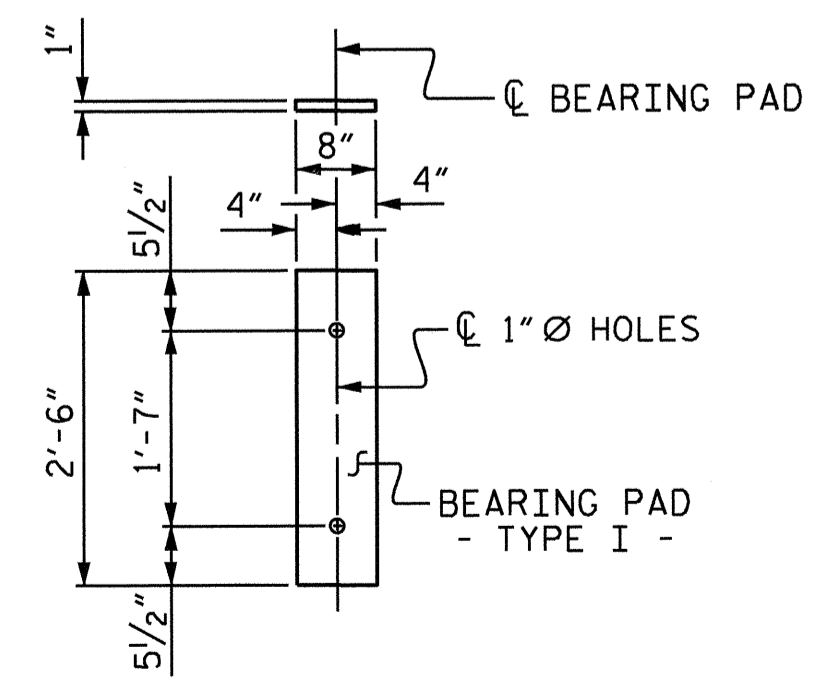
SECTION T-T  
AT OPEN JOINT AT BENT (THIS IS TO BE USED WHERE FOAM JOINT IS NOT USED)



ELEVATION AT DRAIN



ELEVATION AT EXPANSION JOINTS



FIXED END (TYPE I - 44 REQ'D)

ELASTOMERIC BEARING DETAILS  
ELASTOMER IN BEARINGS SHALL BE 50 DUROMETER HARDNESS.

DESIGN ENGINEER OF RECORD:	A.M. LEE	DATE:	5-07-13
ASSEMBLED BY:	PEGGY ADKINS	DATE:	2-21-13
CHECKED BY:	T. AVERETTE	DATE:	3-20-13
DRAWN BY:	WJH 4/89	REV. 5/1/06RR	TLA/GM
CHECKED BY:	FCJ 5/89	REV. 10/1/11	MAA/GM
		REV. 10/12	MAA/GM

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.

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 6400 PSI.

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

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

TRANSVERSE POST TENSIONING OF THE CORED SLAB UNITS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

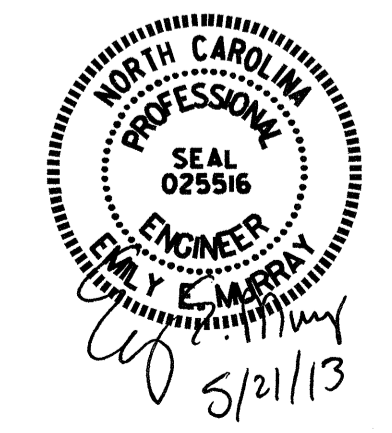
THE DRAIN OPENING AT THE GUTTERLINE SHALL BE 4" X 8". THE HEIGHT OF THE BLOCKOUT IN THE VERTICAL CONCRETE BARRIER RAIL SHALL EXTEND FROM THE TOP OF THE CORED SLAB UNIT TO THE TOP OF THE DRAIN OPENING.

APPLY EPOXY PROTECTIVE COATING TO EXTERIOR FACE OF THE EXTERIOR CORED SLAB UNITS THAT REQUIRE DRAINS IN THE BARRIER RAIL.

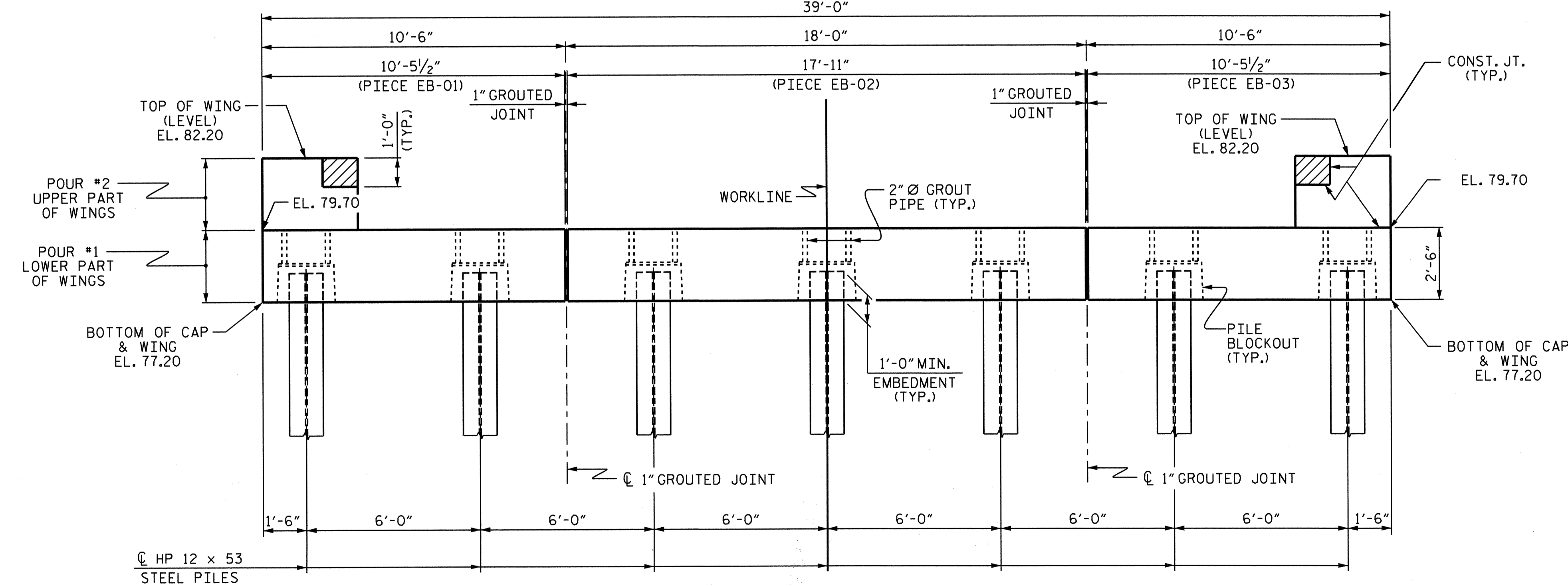
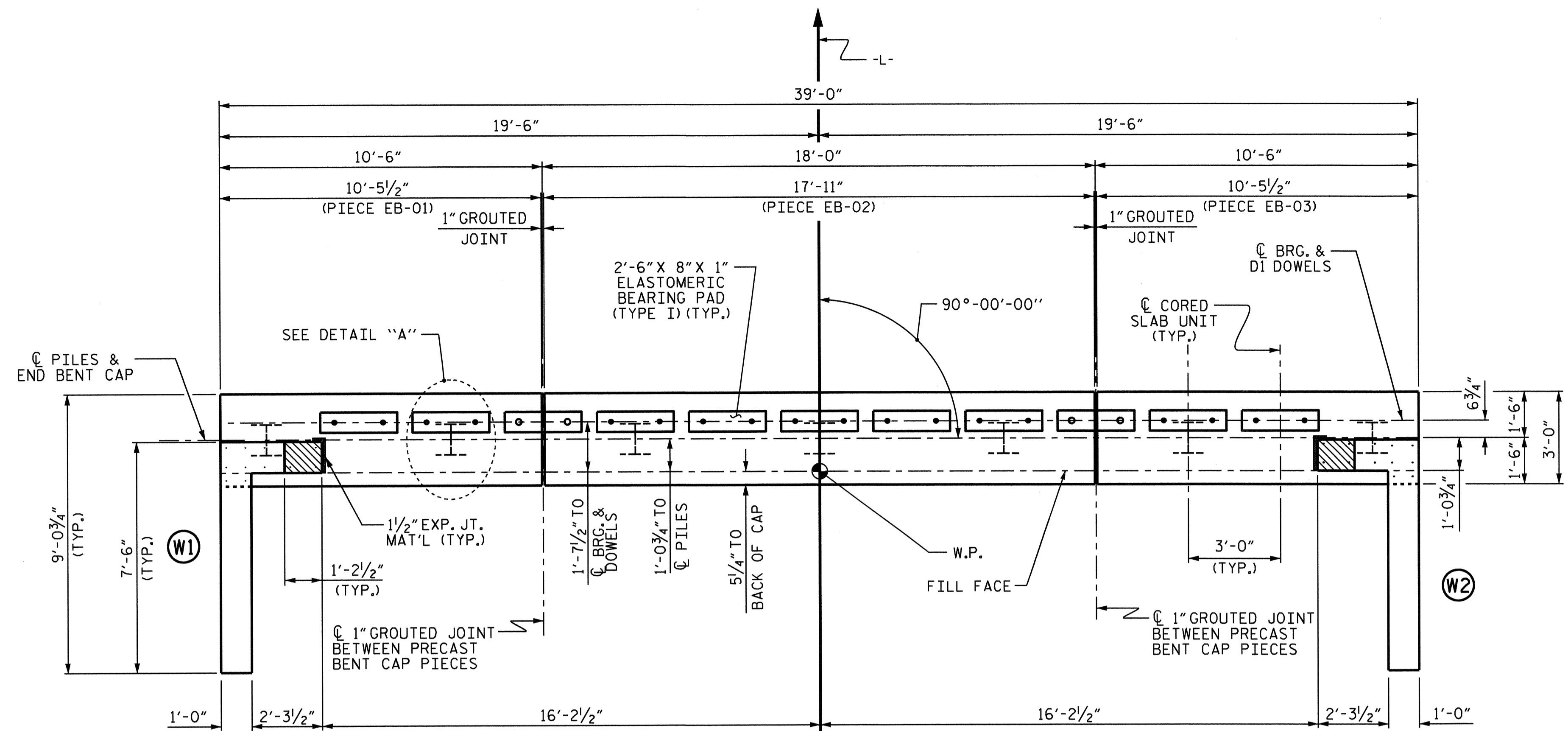
PROJECT NO. B-4619  
ROBESON COUNTY  
STATION: 17+00.00 -L-

SHEET 6 OF 6

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



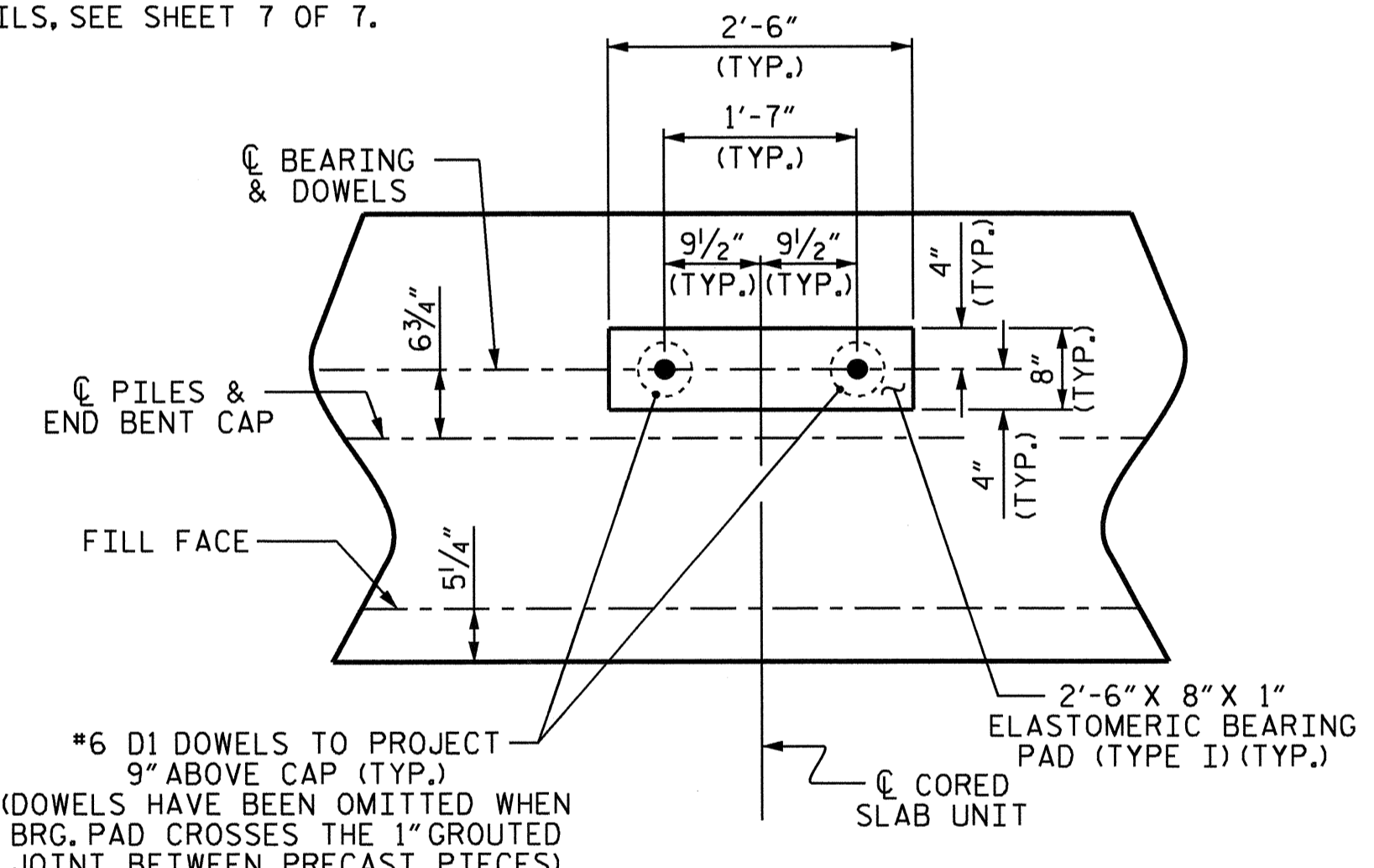
REVISIONS						SHEET NO. S-10
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 48
2			4			



PRESTRESSED CONCRETE BENT CAPS (FOR ONE END BENT)			
PIECE	LENGTH	NUMBER	TOTAL LENGTH
EB-01	10'-5 1/2"	1	10'-5 1/2"
EB-02	17'-11"	1	17'-11"
EB-03	10'-5 1/2"	1	10'-5 1/2"
TOTAL		3	38.83'

BAR TYPES		BILL OF MATERIAL				
		<b>WINGS FOR ONE END BENT</b>				
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
H1	12	#4	STR	5'-8"	45	
H2	12	#4	1	7'-9"	62	
K1	12	#4	STR	2'-11"	23	
V1	24	#4	STR	4'-8"	75	
ALL BAR DIMENSIONS ARE OUT TO OUT.						
END BENT 1		HP 12 X 53 STEEL PILES			NO: 7	LIN. FT. = 385
PILE REDRIVES		EA. 4	REINFORCING STEEL (FOR ONE END BENT)			205 LBS.
END BENT 2		HP 12 X 53 STEEL PILES			NO: 7	LIN. FT. = 350
PILE REDRIVES		EA. 4	CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)			
			POUR #1 LOWER PART OF WINGS	1.1 C.Y.		
			POUR #2 UPPER PART OF WINGS	1.8 C.Y.		
			TOTAL CLASS A CONCRETE	2.9 C.Y.		

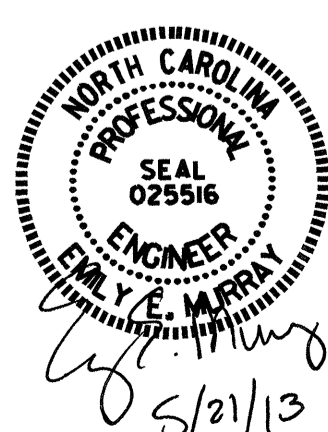
**NOTES**  
 FOR PRECAST CAP DETAILS, SEE "PIECE EB-01", "PIECE EB-02" & "PIECE EB-03" SHEETS.  
 FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.  
 FOR 3'-0" x 2'-6" PRESTRESSED CONCRETE BENT CAPS, SEE SPECIAL PROVISIONS.  
 THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.  
 FOR PILE SPLICE DETAILS, SEE SHEET 2 OF 7.  
 FOR WING DETAILS, SEE SHEET 7 OF 7.



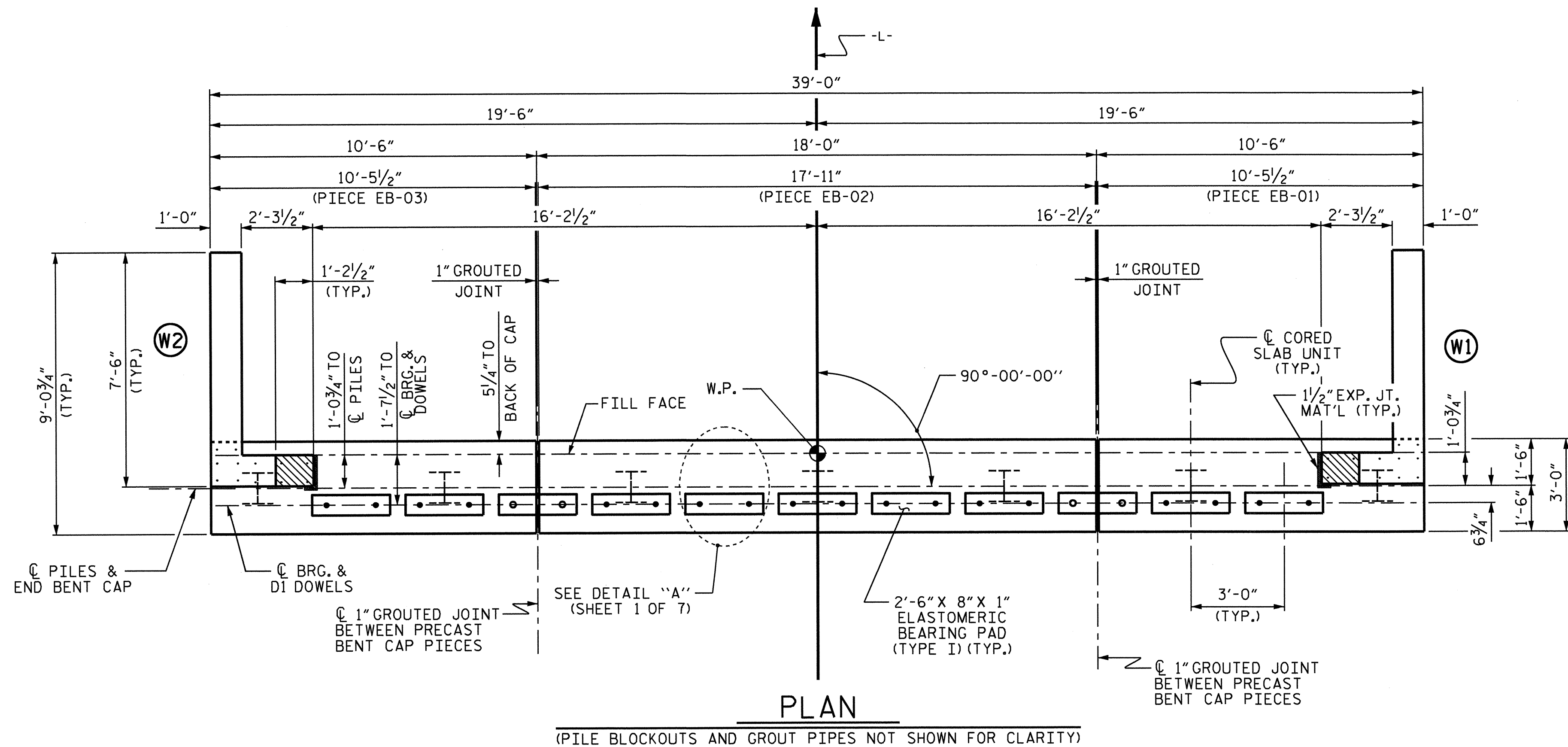
PROJECT NO. B-4619  
 ROBESON COUNTY  
 STATION: 17+00.00 -L-

SHEET 1 OF 7

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 1					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 48

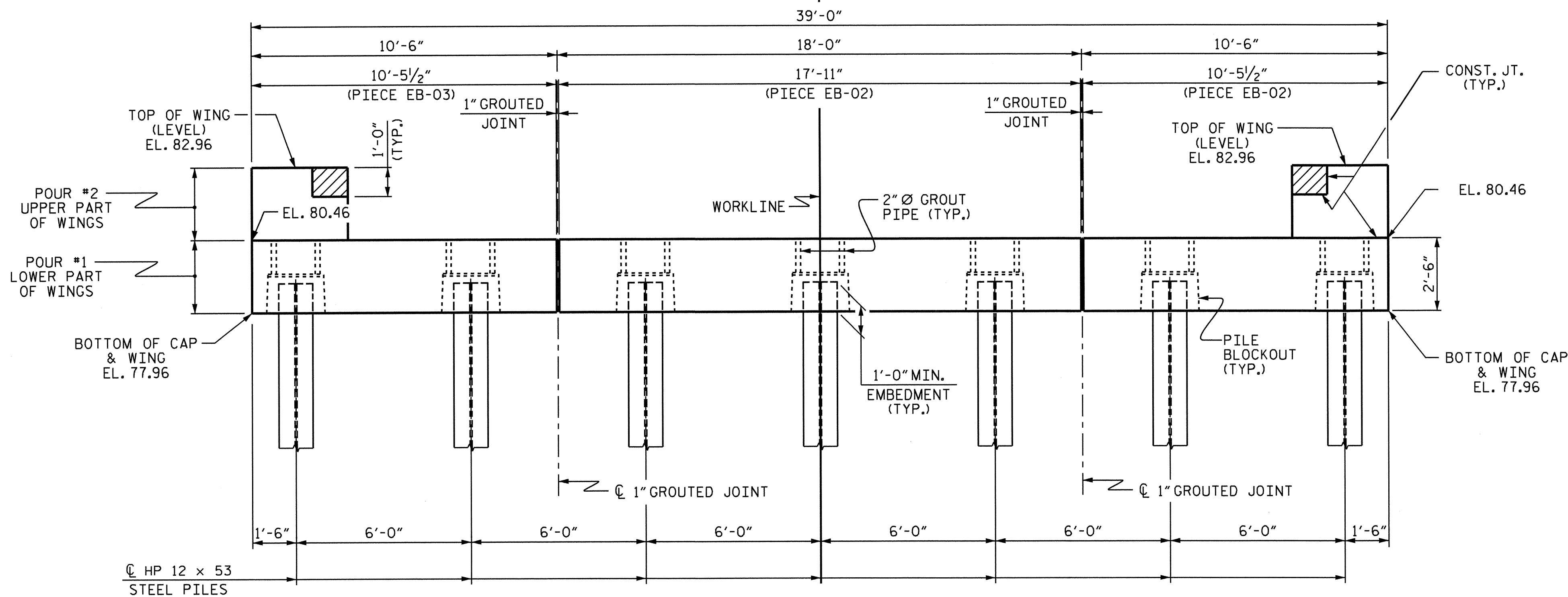


ASSEMBLED BY : PEGGY ADKINS DATE : 5-7-13  
 CHECKED BY : T.L. AVERETTE DATE : 5-9-13  
 DRAWN BY : MAA 4/13  
 CHECKED BY : BCH 4/13



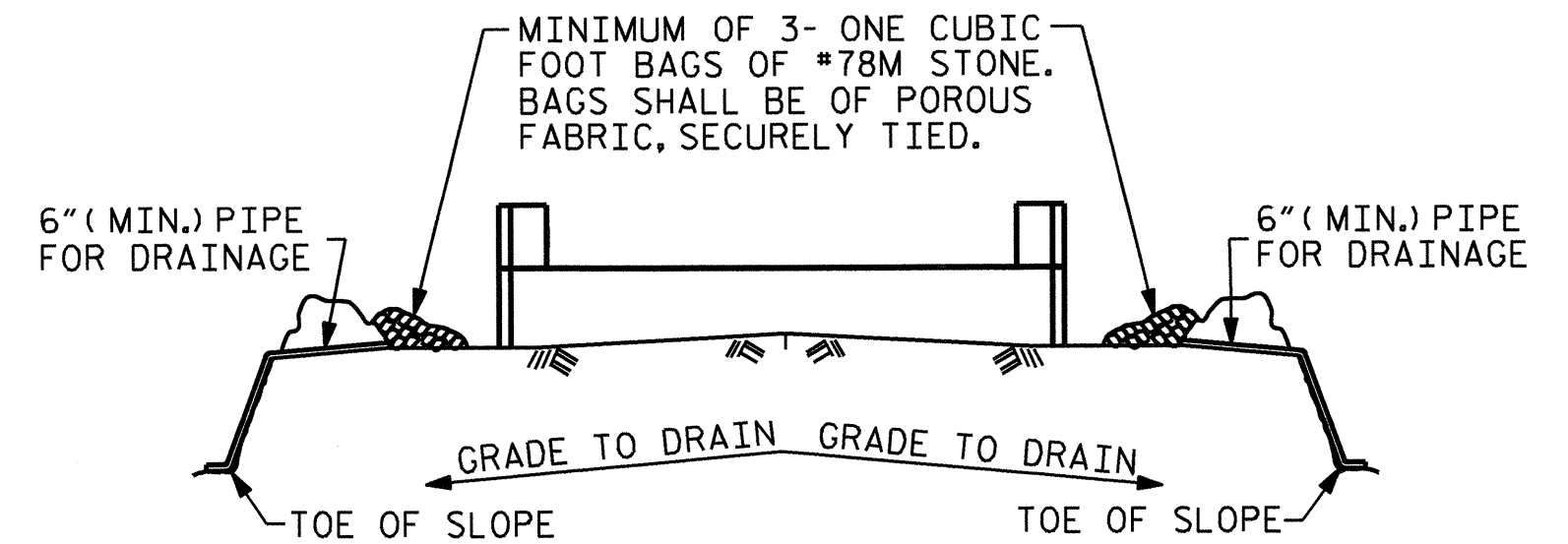
**PLAN**

(PILE BLOCKOUTS AND GROUT PIPES NOT SHOWN FOR CLARITY)



**ELEVATION**

FOR 2" Ø GROUT PIPE AND PILE BLOCKOUT DETAILS, SEE SHEET 6 OF 7. WINGS NOT SHOWN FOR CLARITY.

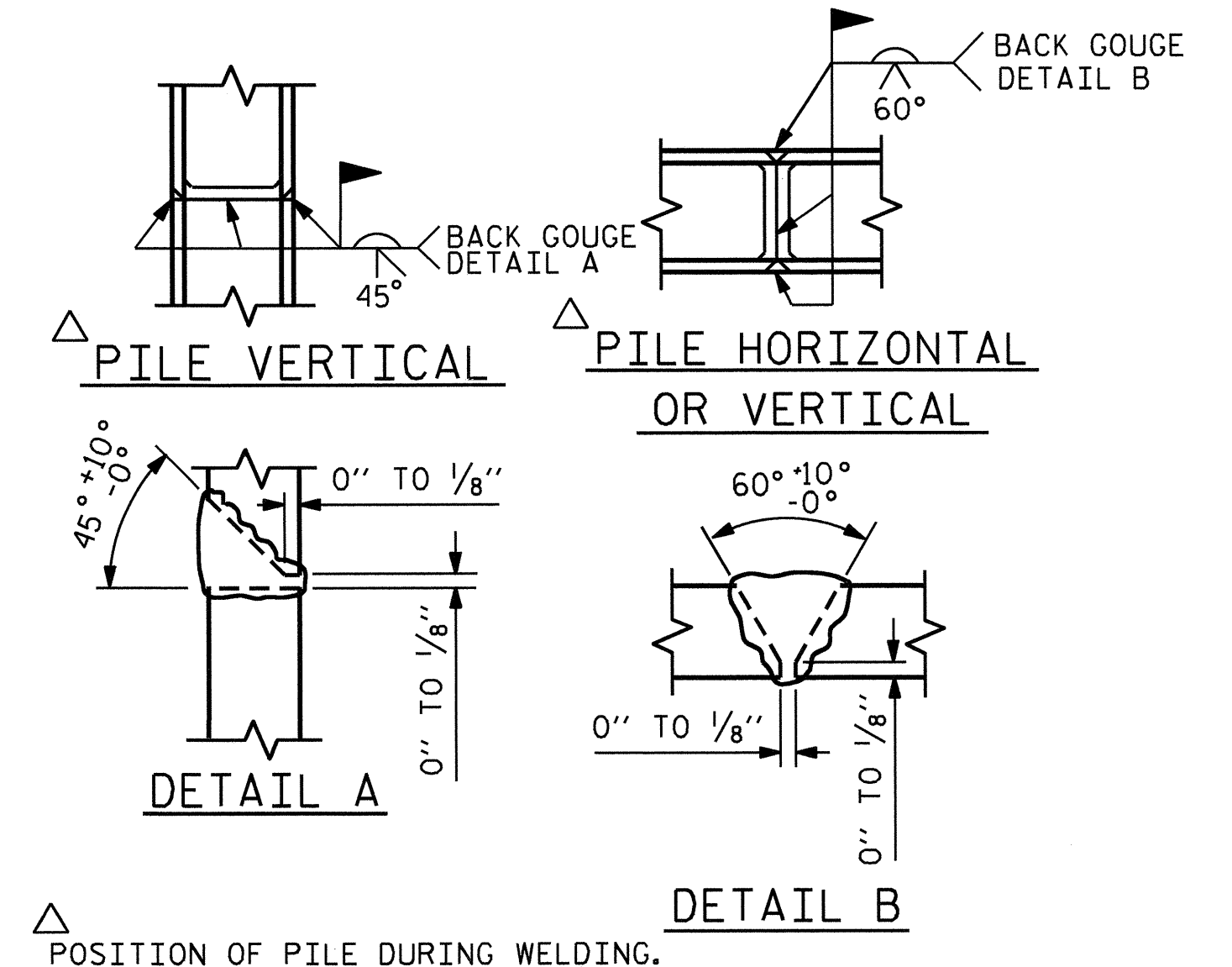


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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**



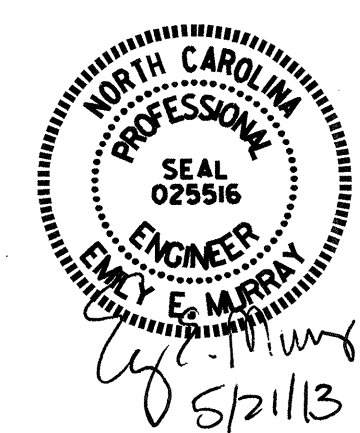
**PILE SPLICE DETAILS**

PROJECT NO. B-4619  
ROBESON COUNTY  
 STATION: 17+00.00 -L-

SHEET 2 OF 7

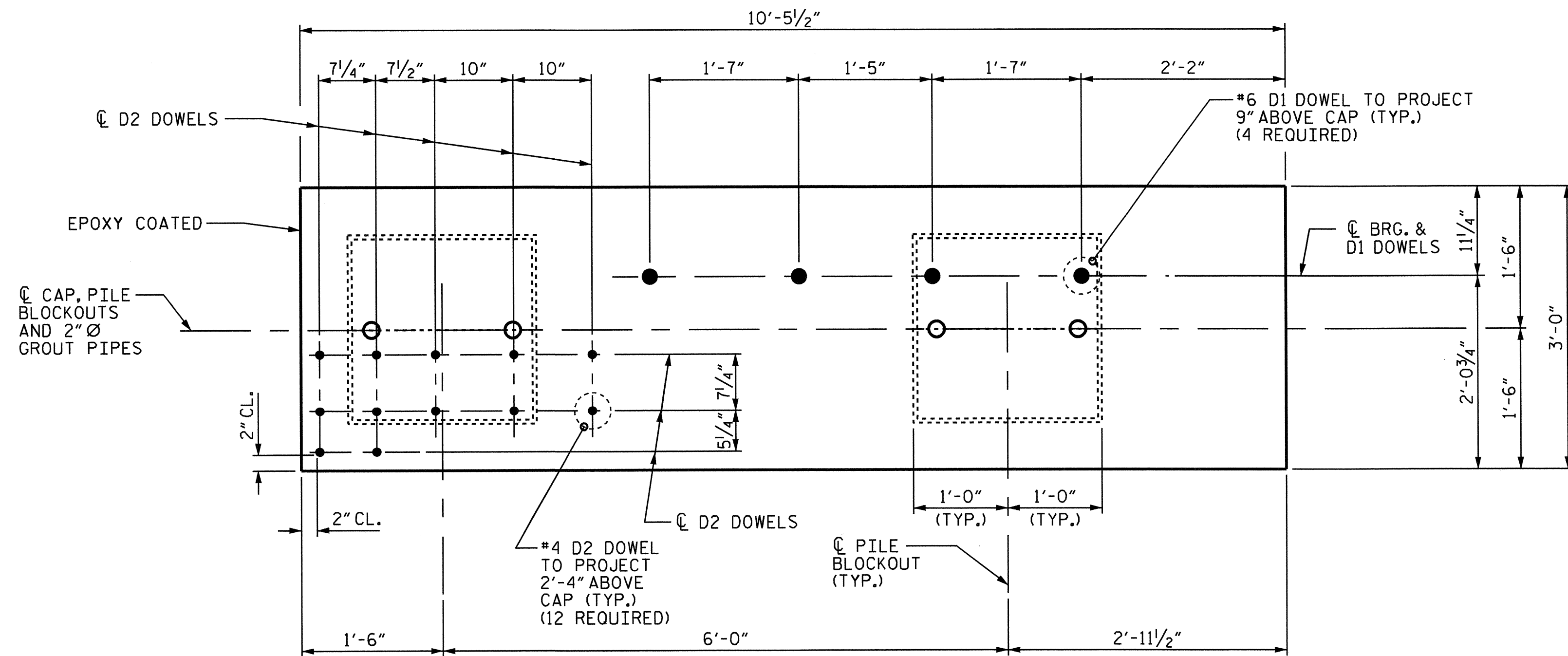
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE  
 END BENT 2**



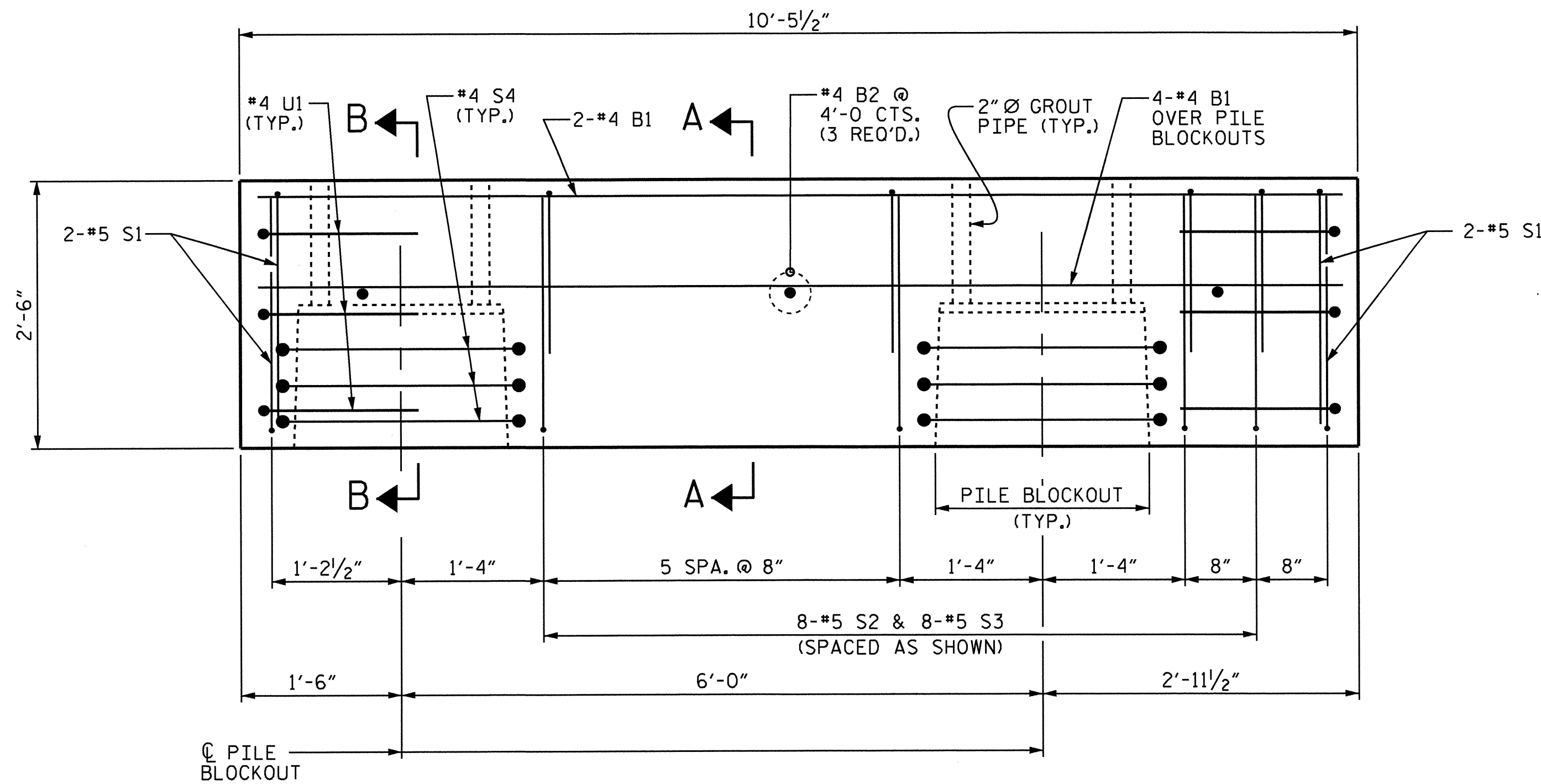
REVISIONS						SHEET NO. S-12
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 48
2			4			

ASSEMBLED BY : PEGGY ADKINS DATE : 5-7-13  
 CHECKED BY : T.L. AVERETTE DATE : 5-9-13  
 DRAWN BY : MAA 4/13  
 CHECKED BY : BCH 4/13



**PLAN**

(FOR PILE BLOCKOUT DETAILS, SEE SHEET 6 OF 7)



**ELEVATION**

(\*6 D1 DOWELS & \*4 D2 DOWELS NOT SHOWN FOR CLARITY)  
FOR SECTION A-A & SECTION B-B, SEE SHEET 6 OF 7.

**BILL OF MATERIAL**  
FOR ONE PIECE EB-01

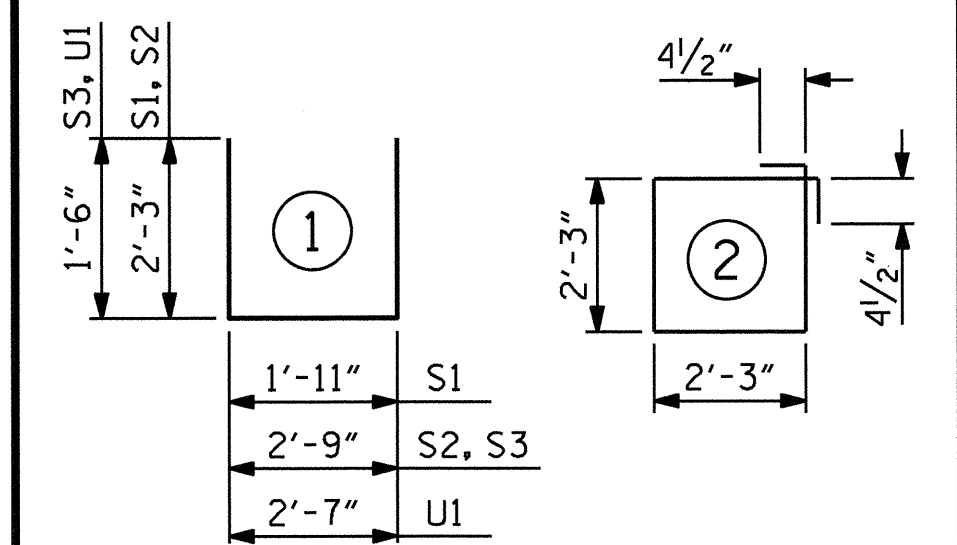
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#4	STR	10'-1"	40
B2	3	#4	STR	2'-8"	5
D1	4	#6	STR	1'-6"	9
D2	12	#4	STR	3'-4"	27
S1	8	#5	1	6'-5"	54
S2	8	#5	1	7'-3"	60
S3	8	#5	1	5'-9"	48
S4	6	#4	2	9'-9"	39
U1	6	#4	1	5'-7"	22

REINFORCING STEEL 304 LBS

4000 PSI PRESTRESS CONCRETE 2.6 C.Y.  
PILE BLOCKOUT & JOINT GROUT 0.4 C.Y.

0.6" Ø L.R. STRANDS No. 12

**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

PROJECT NO. B-4619  
ROBESON COUNTY  
STATION: 17+00.00 -L-

SHEET 3 OF 7

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE

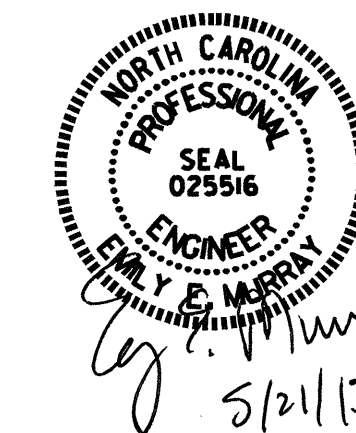
PRECAST  
PIECE EB-01

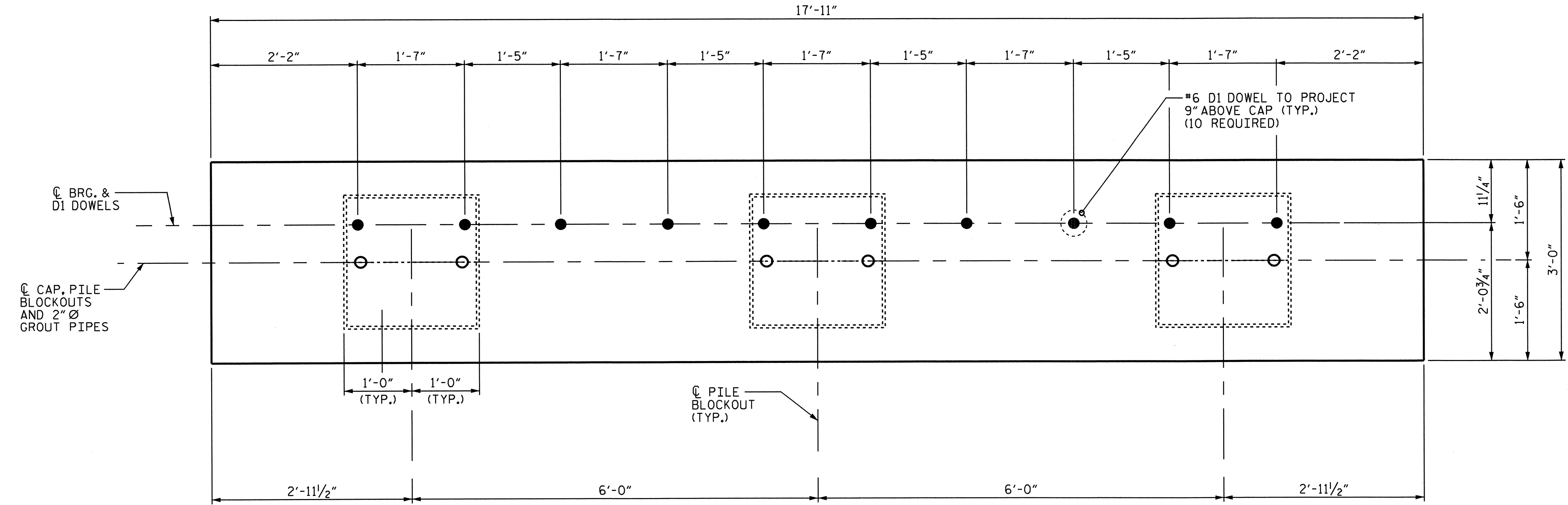
**REVISIONS**

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

SHEET NO.  
S-13  
TOTAL SHEETS  
48

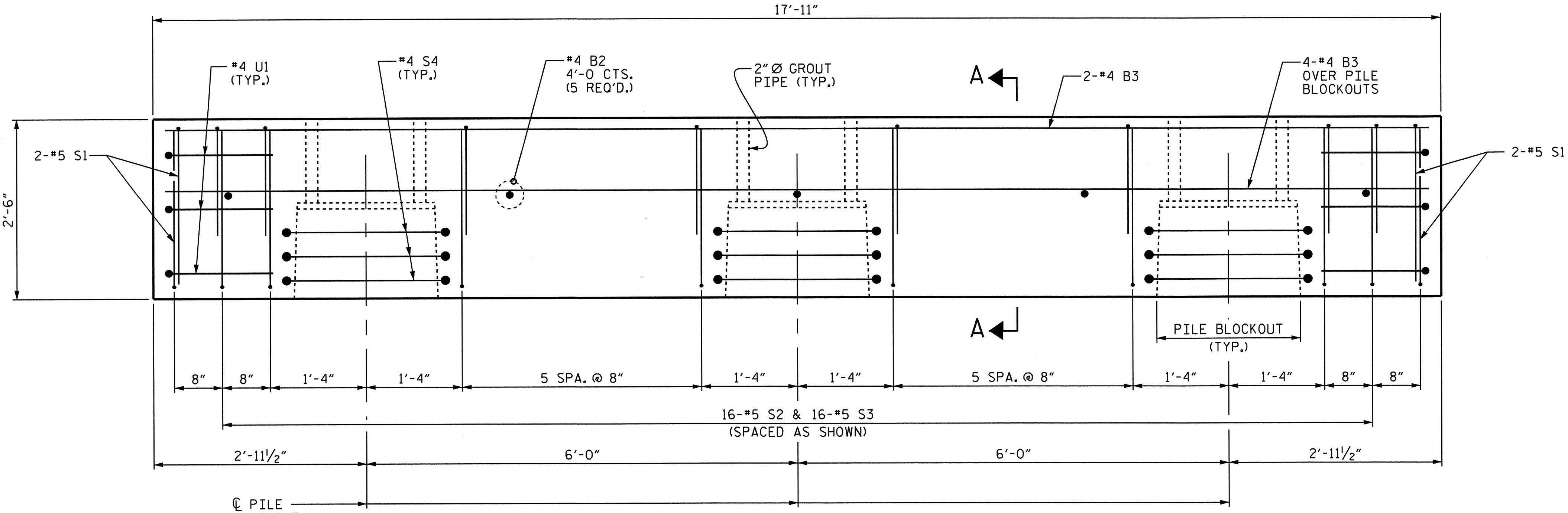
ASSEMBLED BY : PEGGY ADKINS DATE : 5-7-13  
CHECKED BY : T.L. AVERETTE DATE : 5-9-13  
DRAWN BY : MAA 4/13  
CHECKED BY : BCH 4/13





**PLAN**

(FOR PILE BLOCKOUT DETAILS, SEE SHEET 6 OF 7)



**ELEVATION**

(\*6 D1 DOWELS NOT SHOWN FOR CLARITY)  
FOR SECTION A-A, SEE SHEET 6 OF 7.

**BILL OF MATERIAL**

**FOR ONE PIECE EB-02**

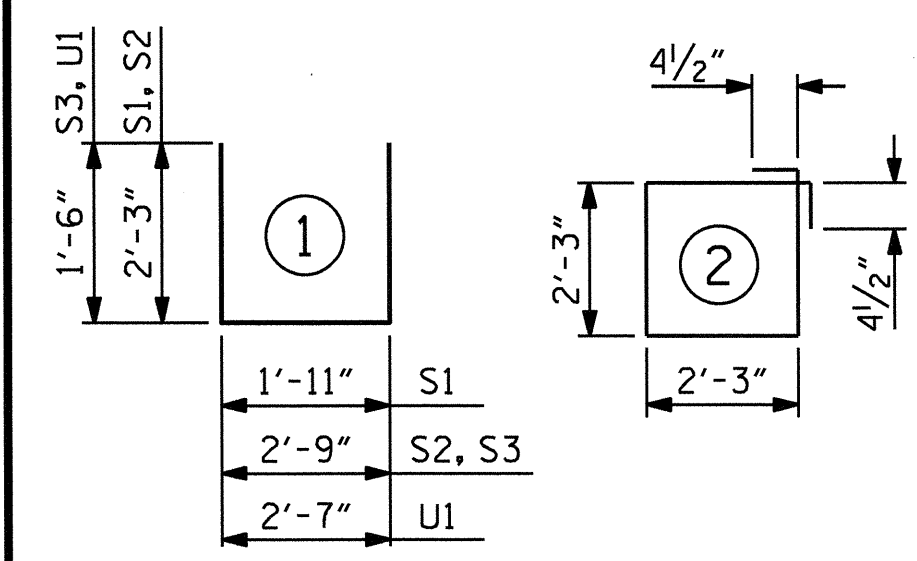
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B2	5	#4	STR	2'-8"	9
B3	6	#4	STR	17'-7"	70
D1	10	#6	STR	1'-6"	23
S1	8	#5	1	6'-5"	54
S2	16	#5	1	7'-3"	121
S3	16	#5	1	5'-9"	96
S4	9	#4	2	9'-9"	59
U1	6	#4	1	5'-7"	22

REINFORCING STEEL 454 LBS

4000 PSI PRESTRESS CONCRETE 4.4 C.Y.  
PILE BLOCKOUT & JOINT GROUT 0.6 C.Y.

0.6" Ø L.R. STRANDS No. 12

**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

PROJECT NO. B-4619

ROBESON COUNTY

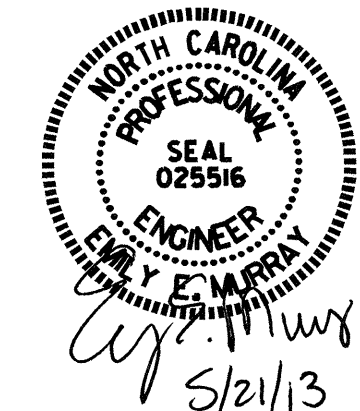
STATION: 17+00.00 -L-

SHEET 4 OF 7

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE

PRECAST  
PIECE EB-02



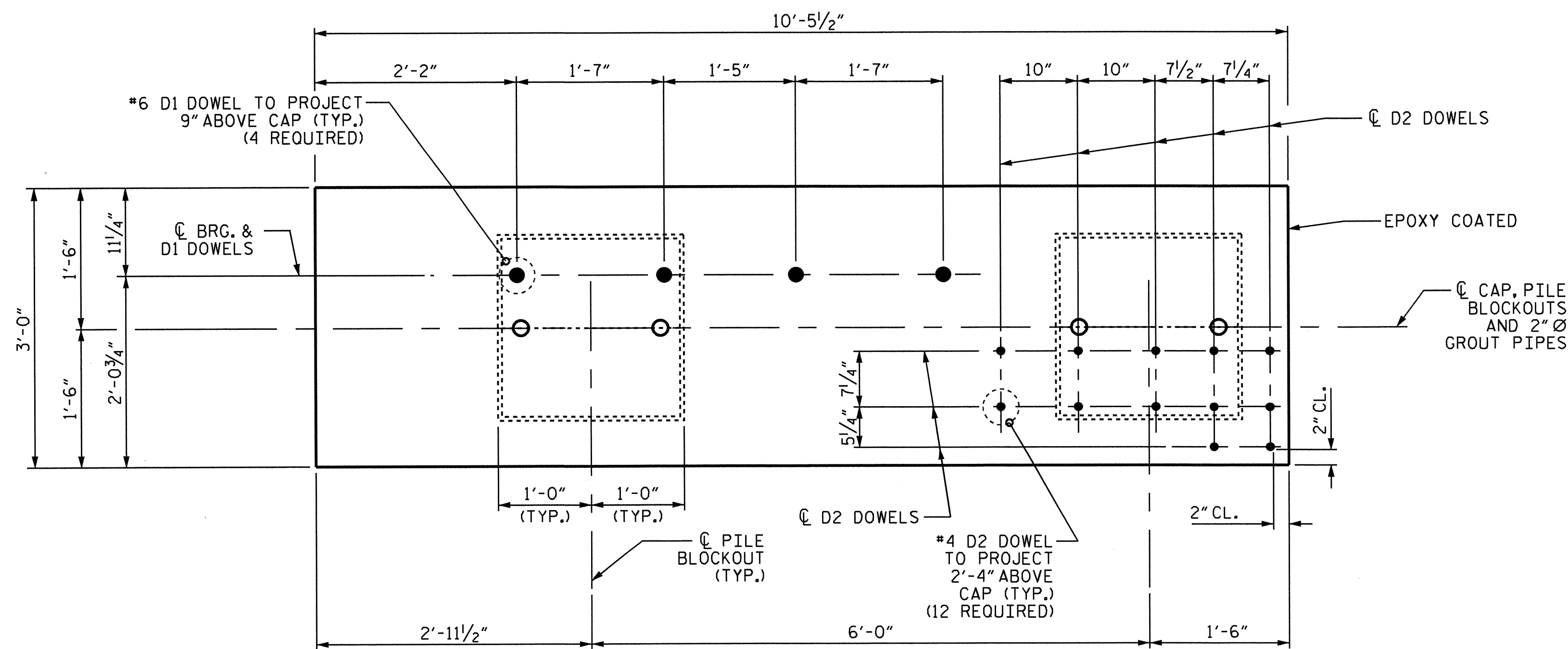
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			48

ASSEMBLED BY : PEGGY ADKINS DATE : 5-7-13  
CHECKED BY : T.L. AVERETTE DATE : 5-9-13  
DRAWN BY : MAA 4/13  
CHECKED BY : BCH 4/13

17-MAY-2013 08:09  
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padkins

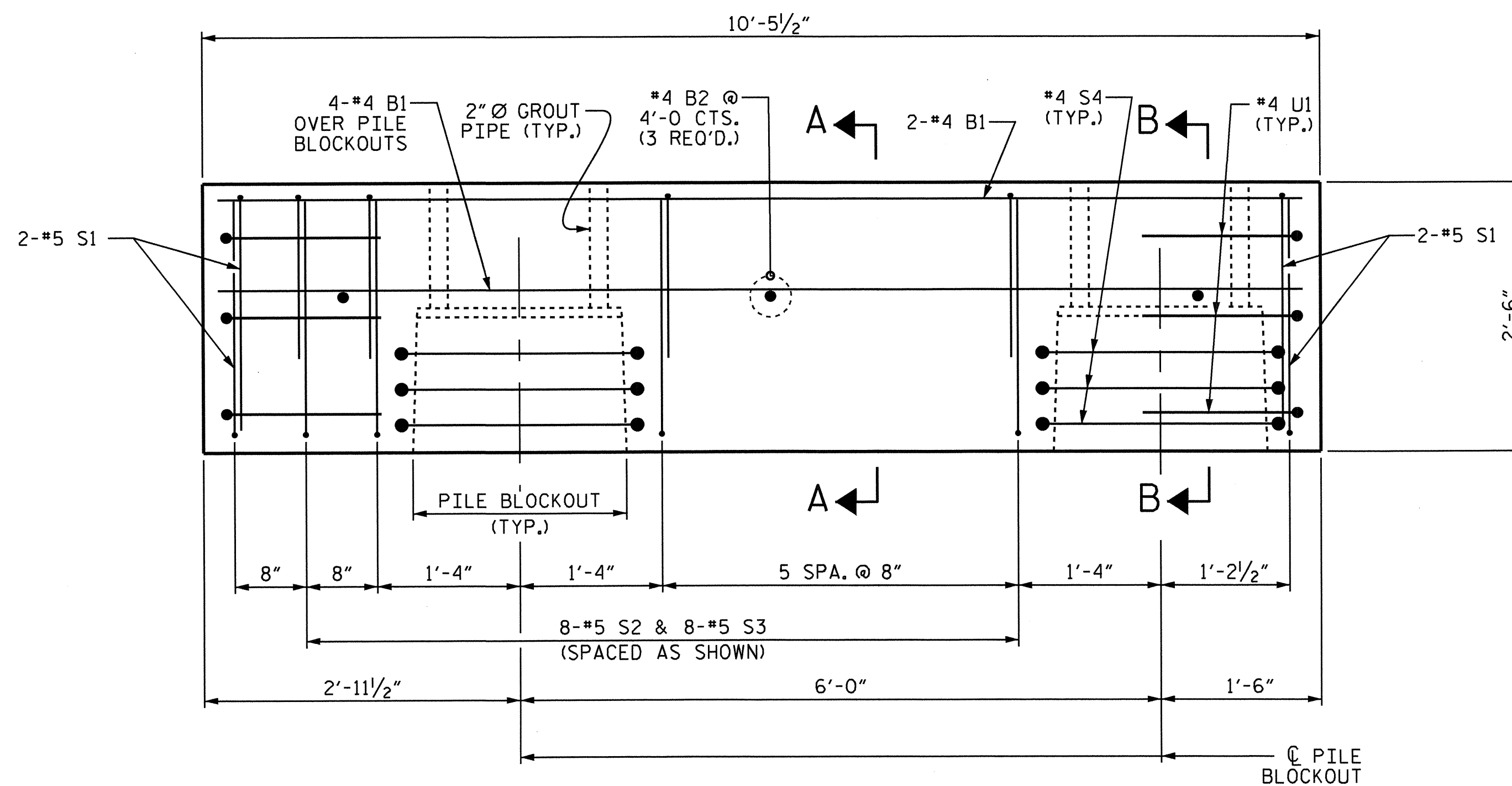
STR. #1

STD. NO. 12" HP\_PSEBT\_33\_90S\_<60'



**PLAN**

(FOR PILE BLOCKOUT DETAILS, SEE SHEET 6 OF 7)



**ELEVATION**

(\*6 D1 DOWELS & \*4 D2 DOWELS NOT SHOWN FOR CLARITY)  
FOR SECTION A-A & SECTION B-B, SEE SHEET 6 OF 7.

**BILL OF MATERIAL  
FOR ONE PIECE EB-03**

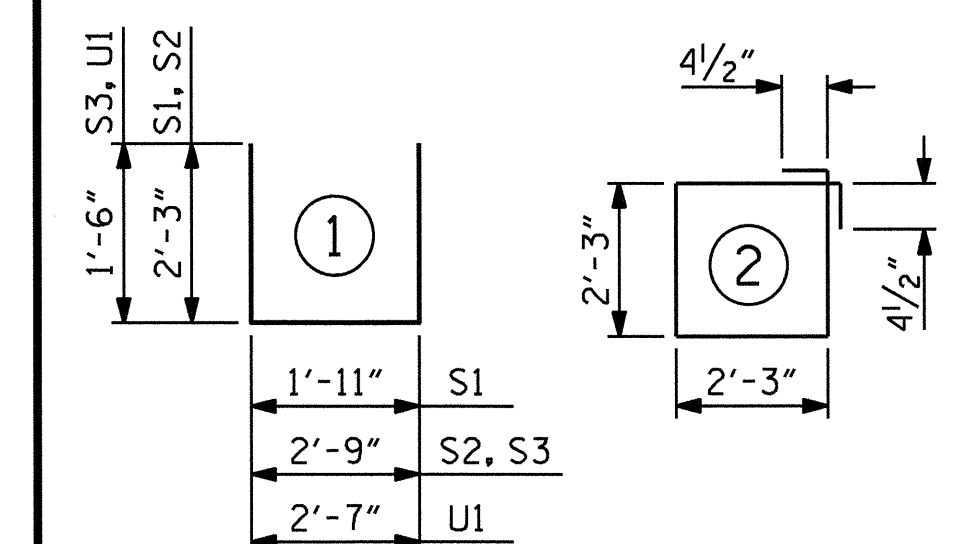
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#4	STR	10'-1"	40
B2	3	#4	STR	2'-8"	5
D1	4	#6	STR	1'-6"	9
D2	12	#4	STR	3'-4"	27
S1	8	#5	1	6'-5"	54
S2	8	#5	1	7'-3"	60
S3	8	#5	1	5'-9"	48
S4	6	#4	2	9'-9"	39
U1	6	#4	1	5'-7"	22

REINFORCING STEEL 304 LBS

4000 PSI PRESTRESS CONCRETE 2.6 C.Y.  
PILE BLOCKOUT & JOINT GROUT 0.4 C.Y.

0.6" Ø L.R. STRANDS No. 12

**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

PROJECT NO. B-4619  
ROBESON COUNTY  
STATION: 17+00.00 -L-

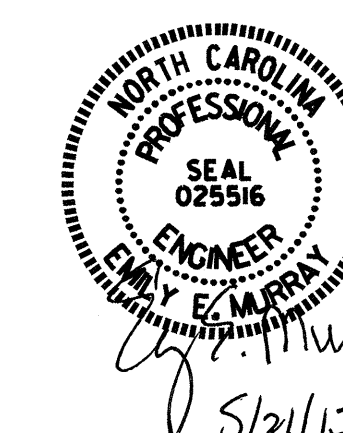
SHEET 5 OF 7

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
PRECAST  
PIECE EB-03

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			48

ASSEMBLED BY : PEGGY ADKINS DATE : 4-7-13  
CHECKED BY : T.L. AVERETTE DATE : 5-9-13  
DRAWN BY : MAA 4/13  
CHECKED BY : BCH 4/13





**NOTES**

STIRRUPS IN PRECAST PIECES MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS AND GROUT PIPES.

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 END BENT CAP SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRECAST "3'-0" X 2'-6" PRESTRESSED CONCRETE BENT CAPS".

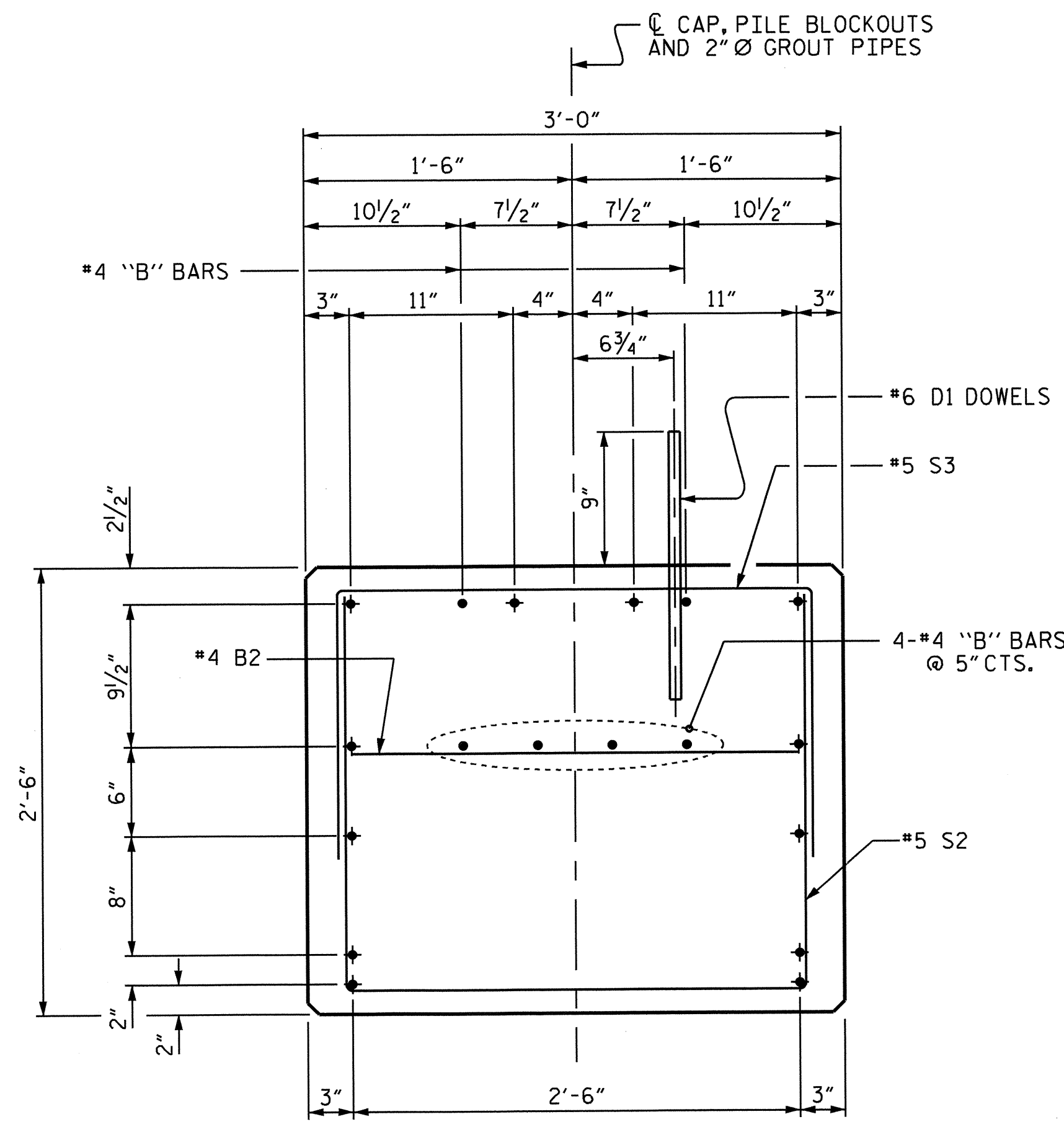
WHEN END BENT CAPS ARE CAST, A HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING BENT CAPS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL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

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE ENDS OF THE END BENT CAP SEGMENTS.

APPLY EPOXY PROTECTIVE COATING TO THE EXPOSED END FACE OF THE END BENT CAP SEGMENTS.

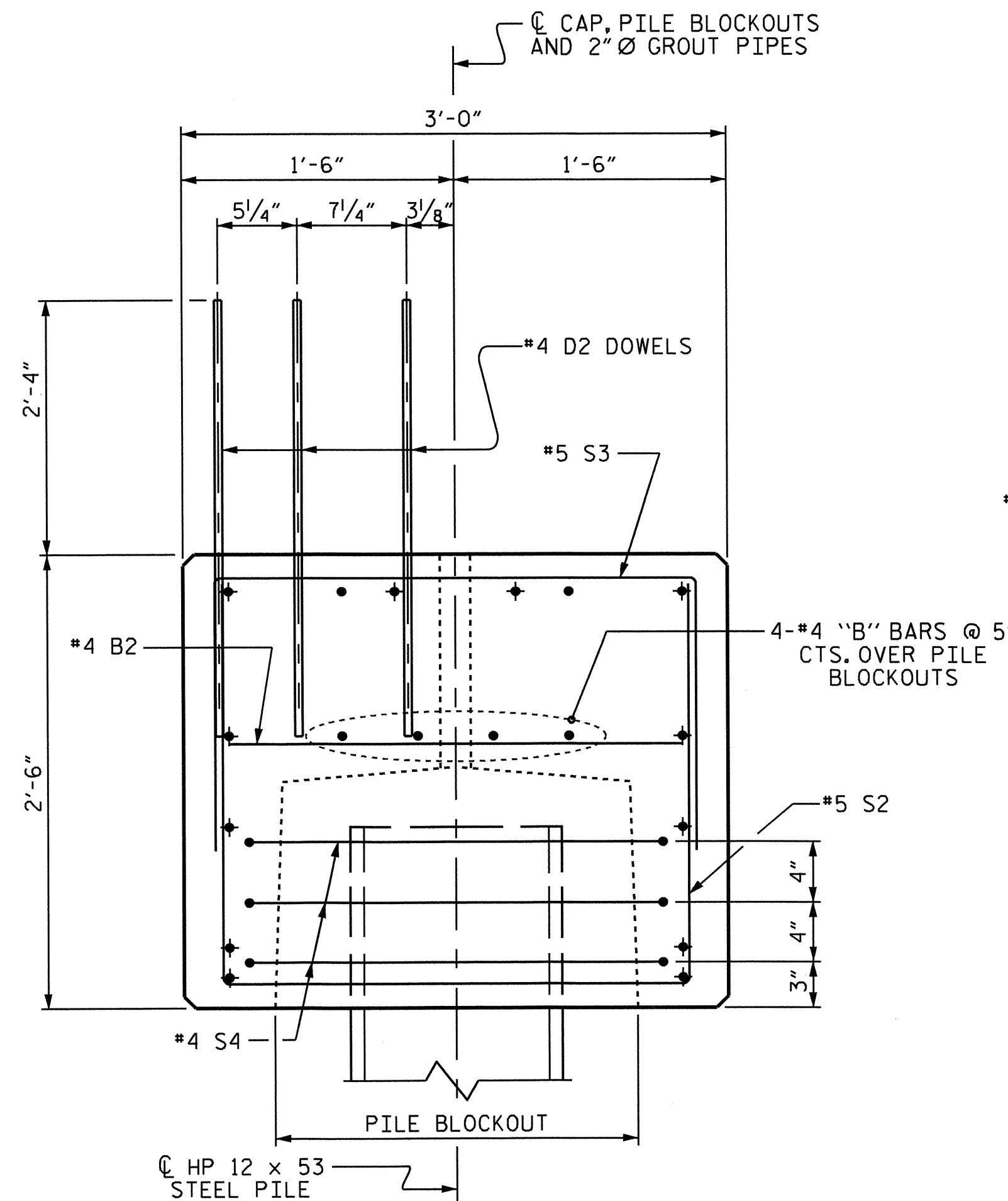
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE END BENT CAPS SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI.

THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL A METHOD TO LIFT AND SUPPORT THE PRECAST CAP PIECES IN THE PROPER LOCATION AND ELEVATION AS SHOWN ON THE PLANS PRIOR TO PLACEMENT AND CURING OF THE GROUT IN THE PILE BLOCKOUTS. THE METHOD CHOSEN SHALL PROVIDE FOR A WATERTIGHT SEAL AT THE BOTTOM OF THE CAP UNTIL THE GROUT HAS HARDENED SO NO GROUT COMES IN CONTACT WITH THE STREAM.

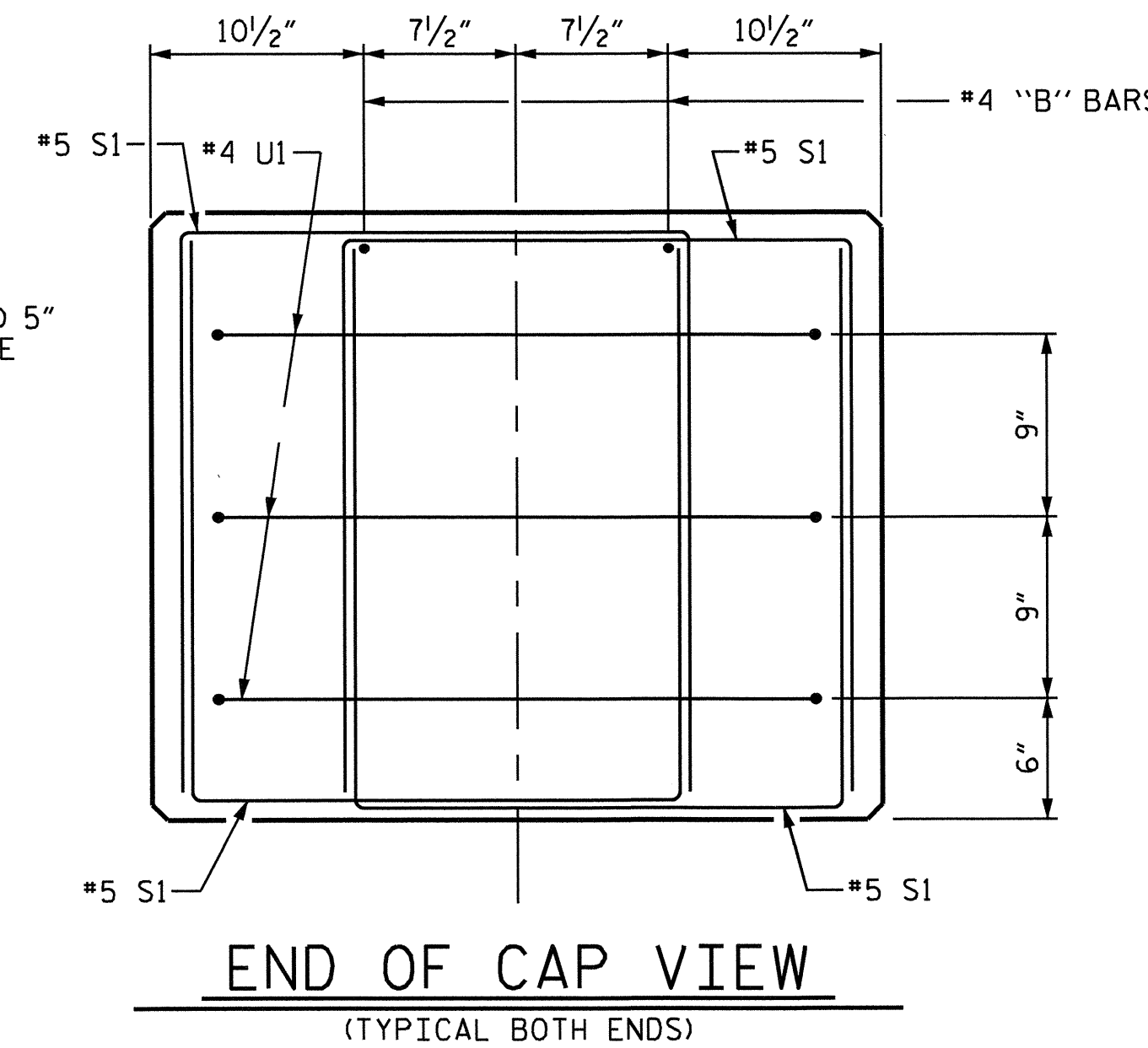


**SECTION A-A**

(SHOWING 0.6" Ø LOW RELAXATION STRAND LAYOUT (12 STRANDS))

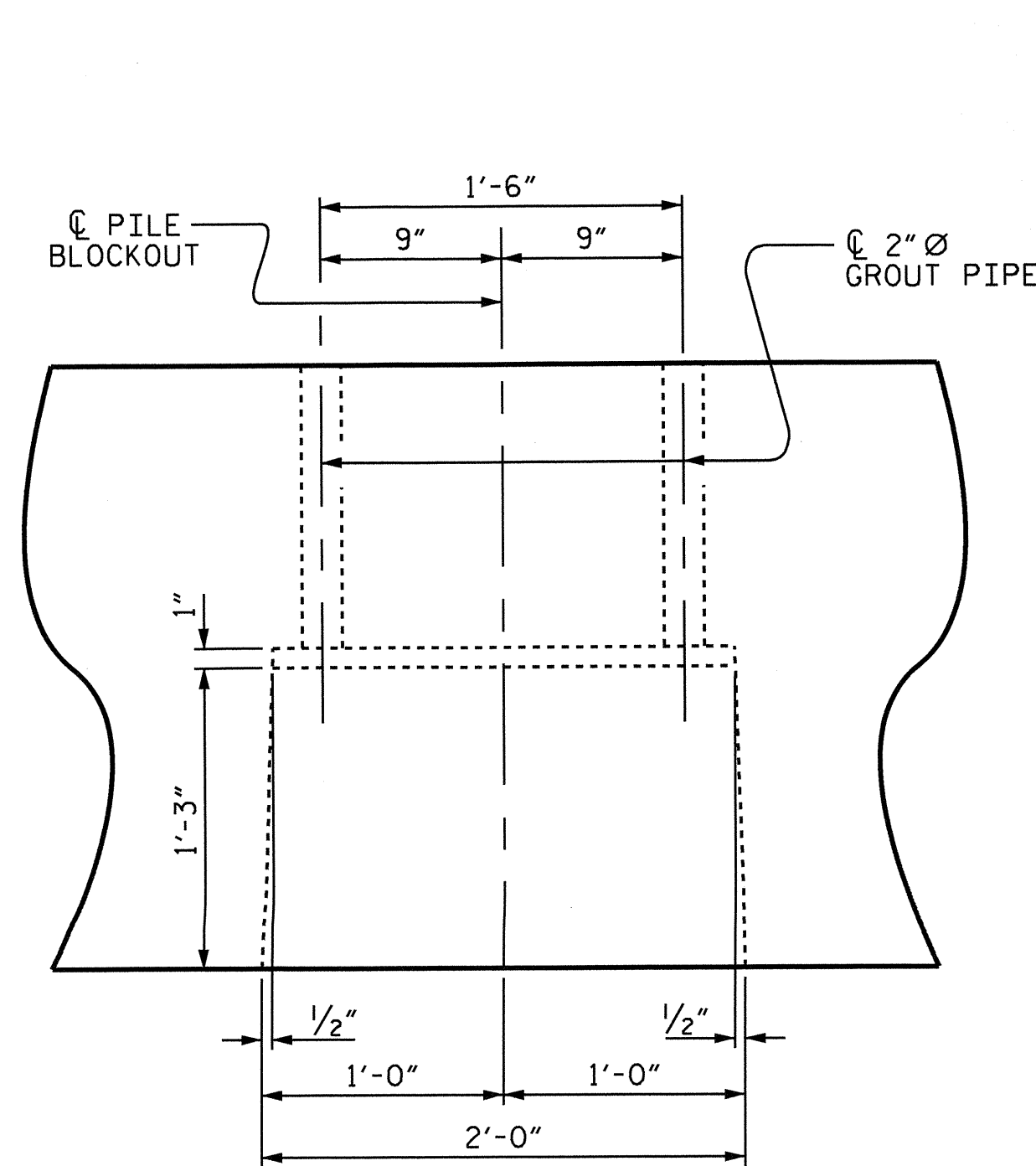


**SECTION B-B**

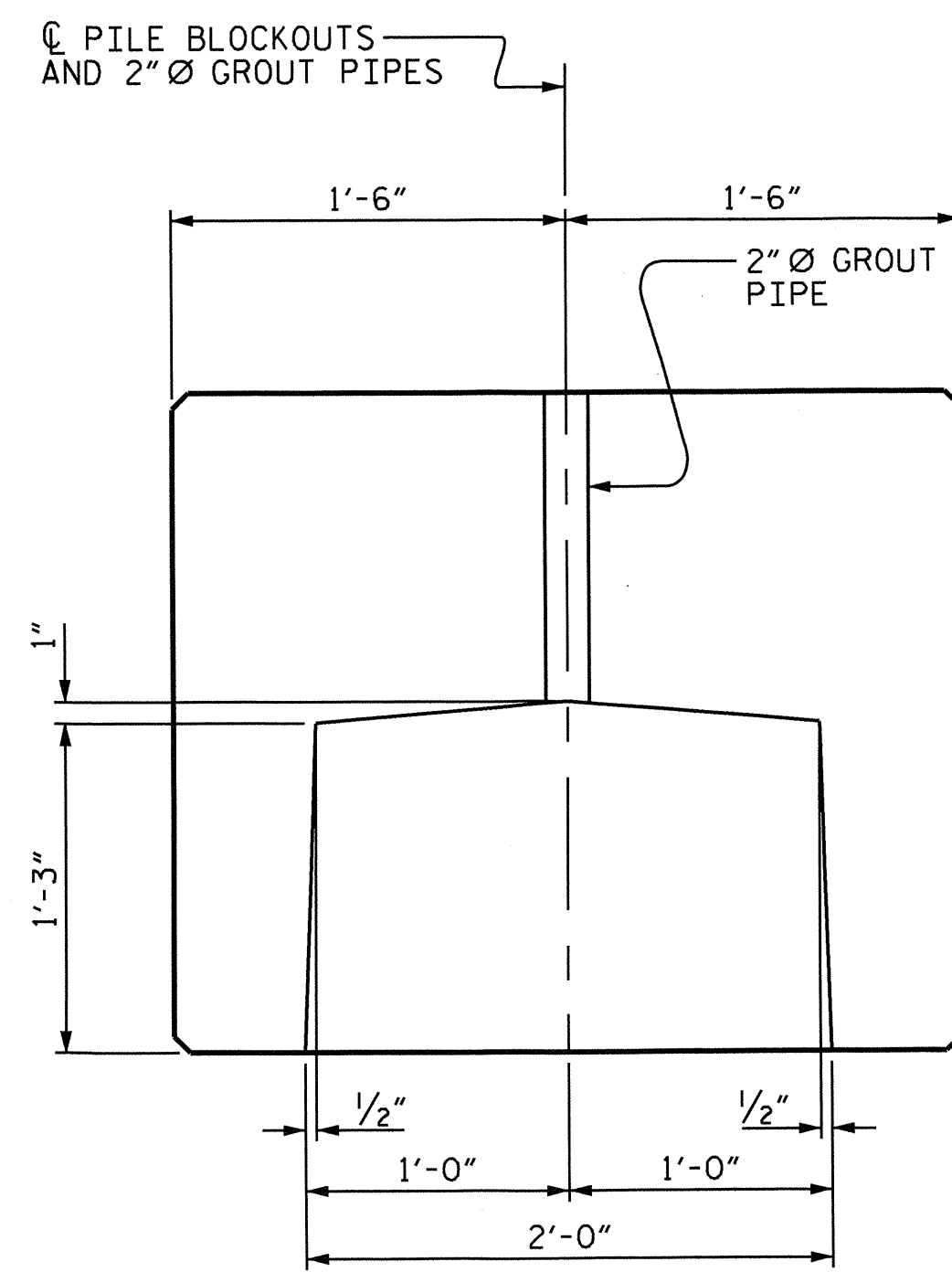


**END OF CAP VIEW**

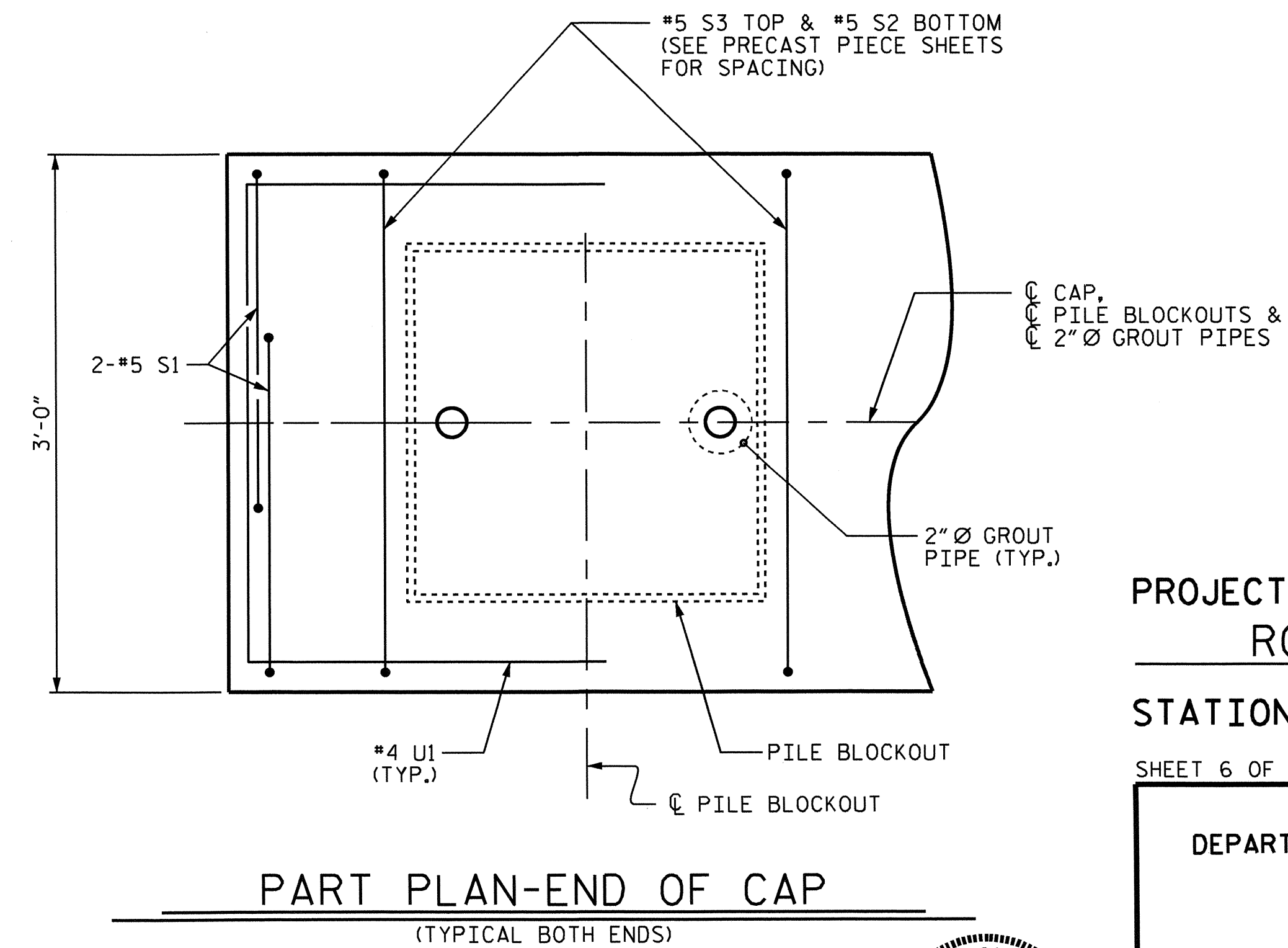
(TYPICAL BOTH ENDS)



**ELEVATION**



**SECTION**



**PART PLAN-END OF CAP**

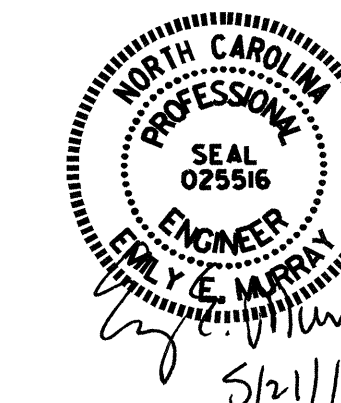
(TYPICAL BOTH ENDS)

**PILE BLOCKOUT DETAILS**

(DIMENSIONS ARE TYPICAL EACH BLOCKOUT)

ASSEMBLED BY :	PEGGY ADKINS	DATE :	5-7-13
CHECKED BY :	T.L. AVERETTE	DATE :	5-9-13
DRAWN BY :	MAA	4/13	
CHECKED BY :	BCH	4/13	

17-MAY-2013 08:08  
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padkins



PROJECT NO. B-4619  
ROBESON COUNTY  
 STATION: 17+00.00 -L-

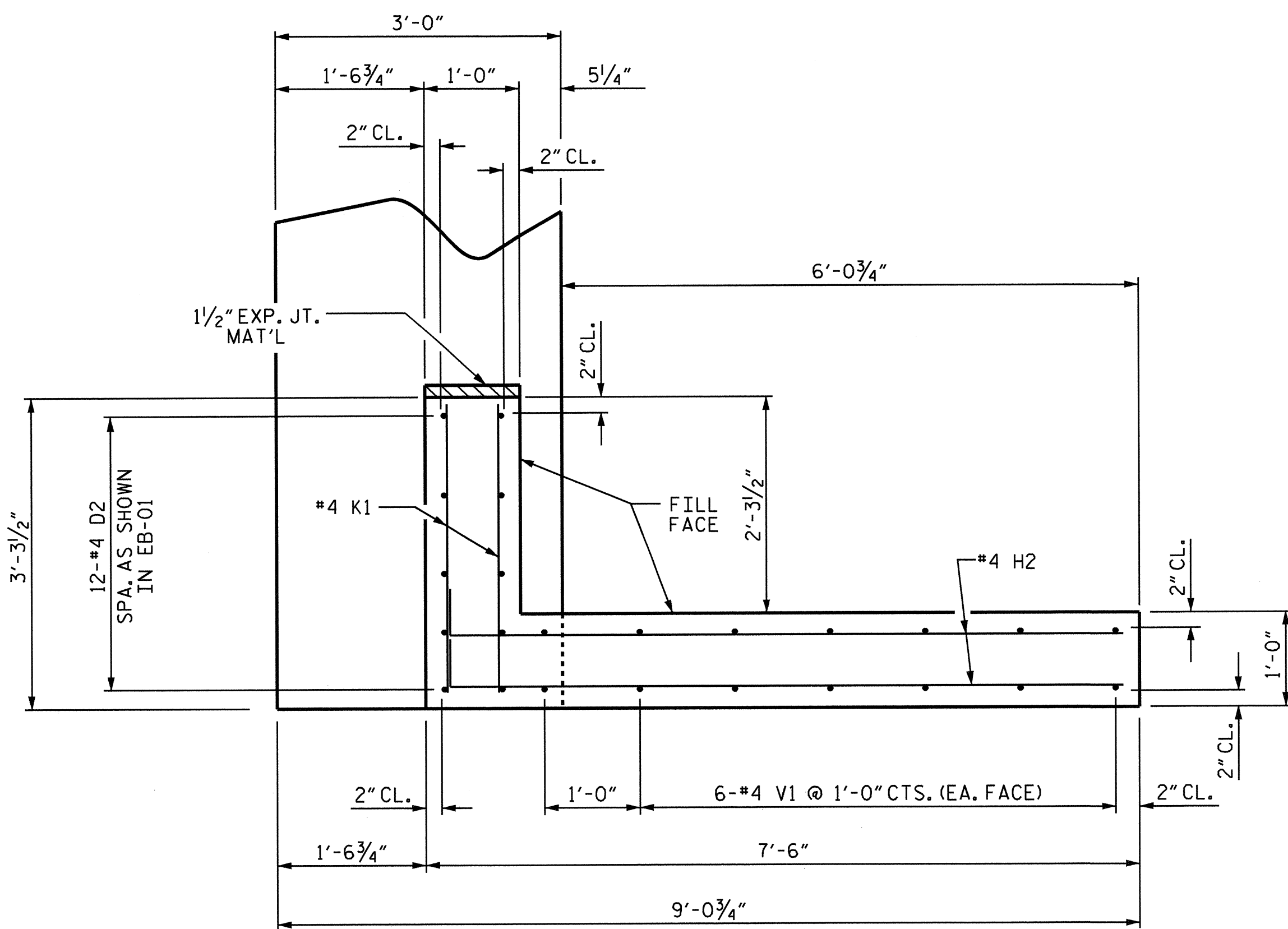
SHEET 6 OF 7

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT DETAILS

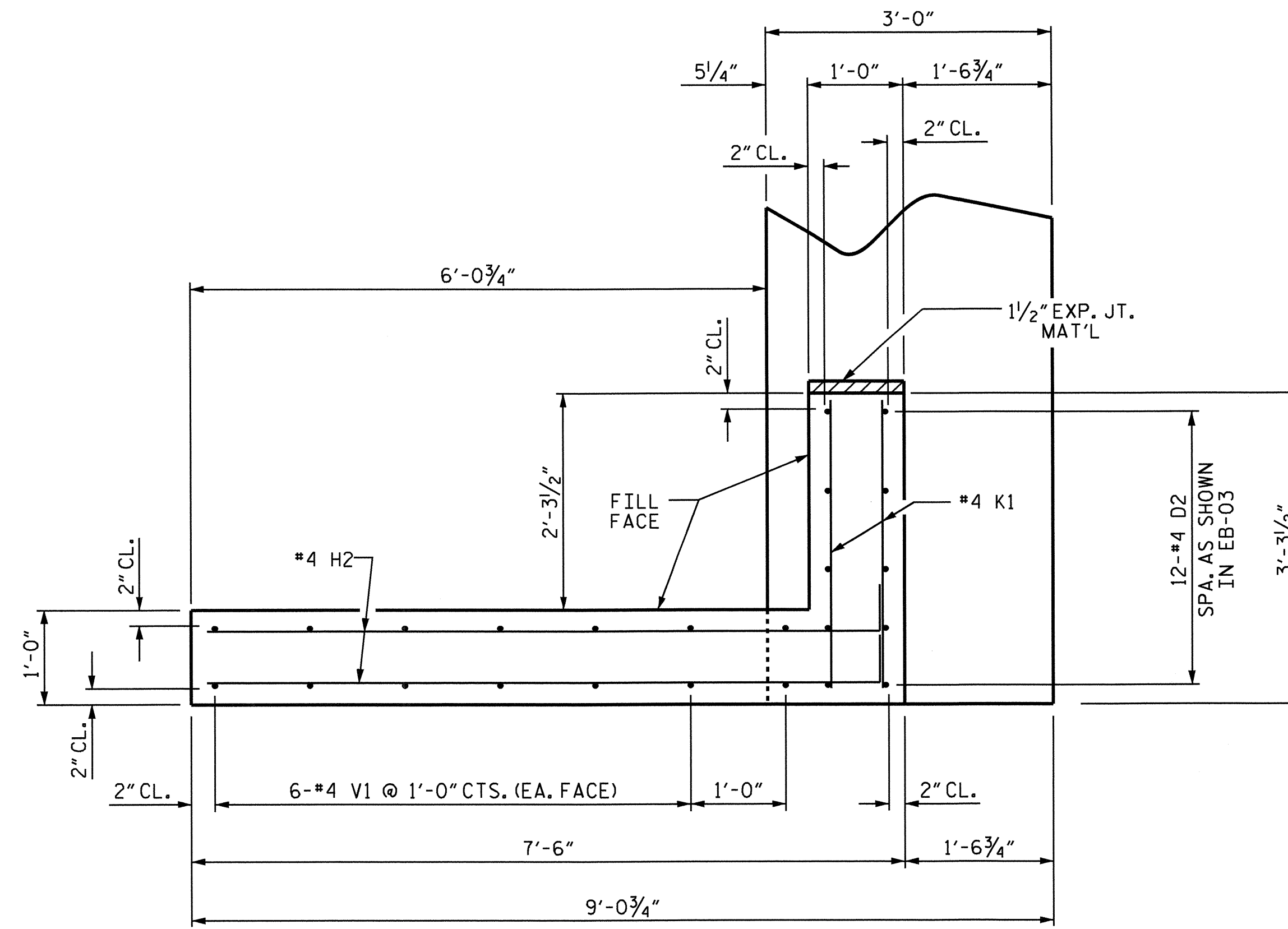
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			48

STR. #1

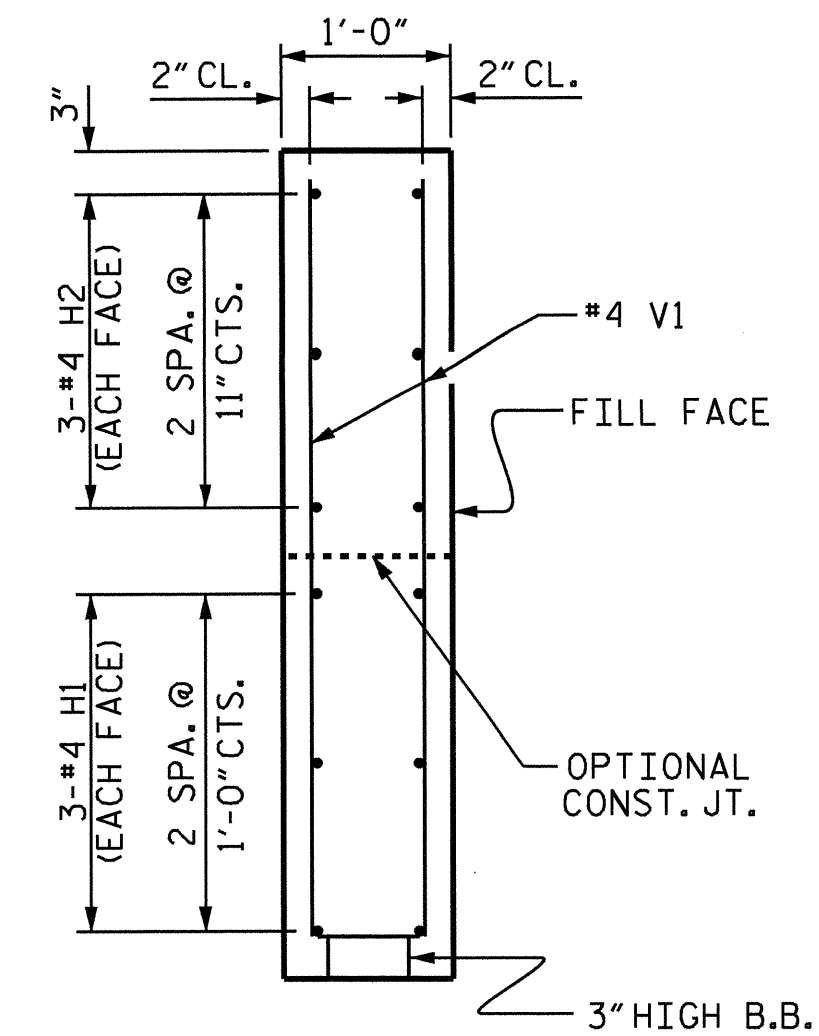
STD. NO. 12" HP\_PSEBT\_33\_90S\_<60'



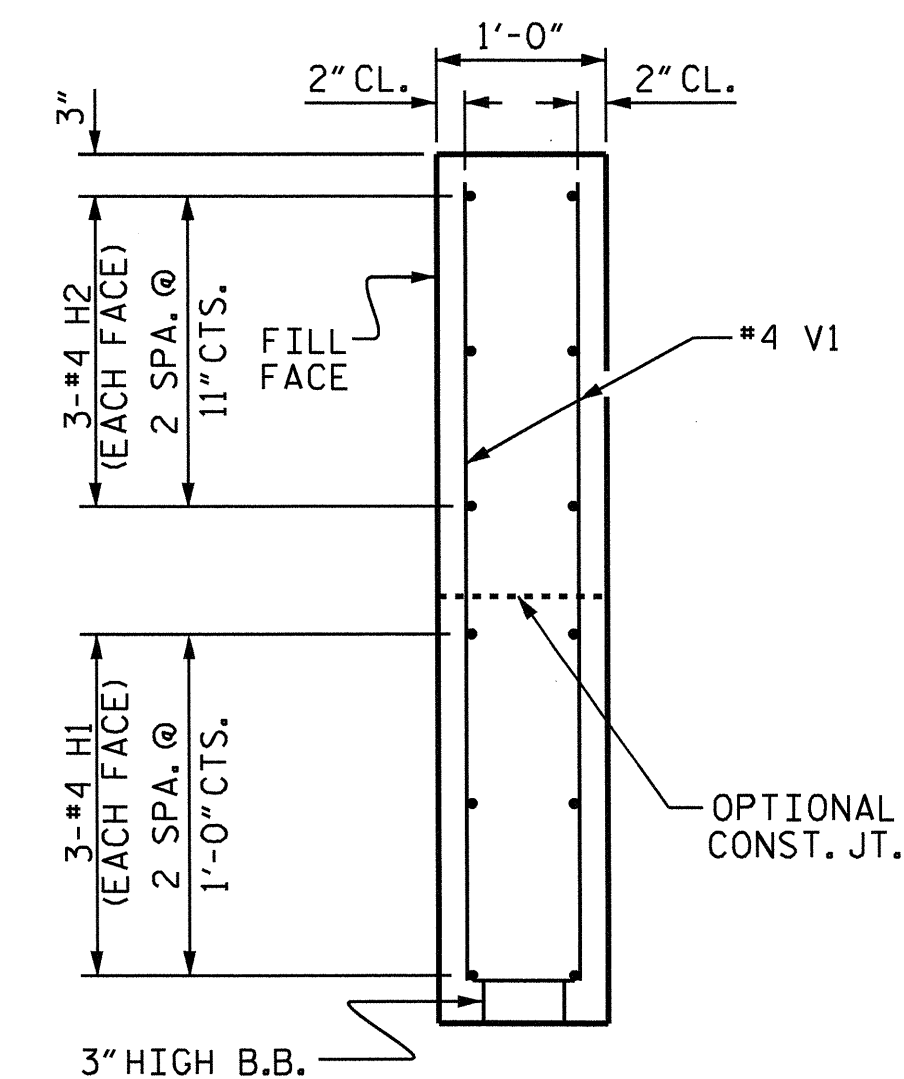
PLAN OF WING (W1)



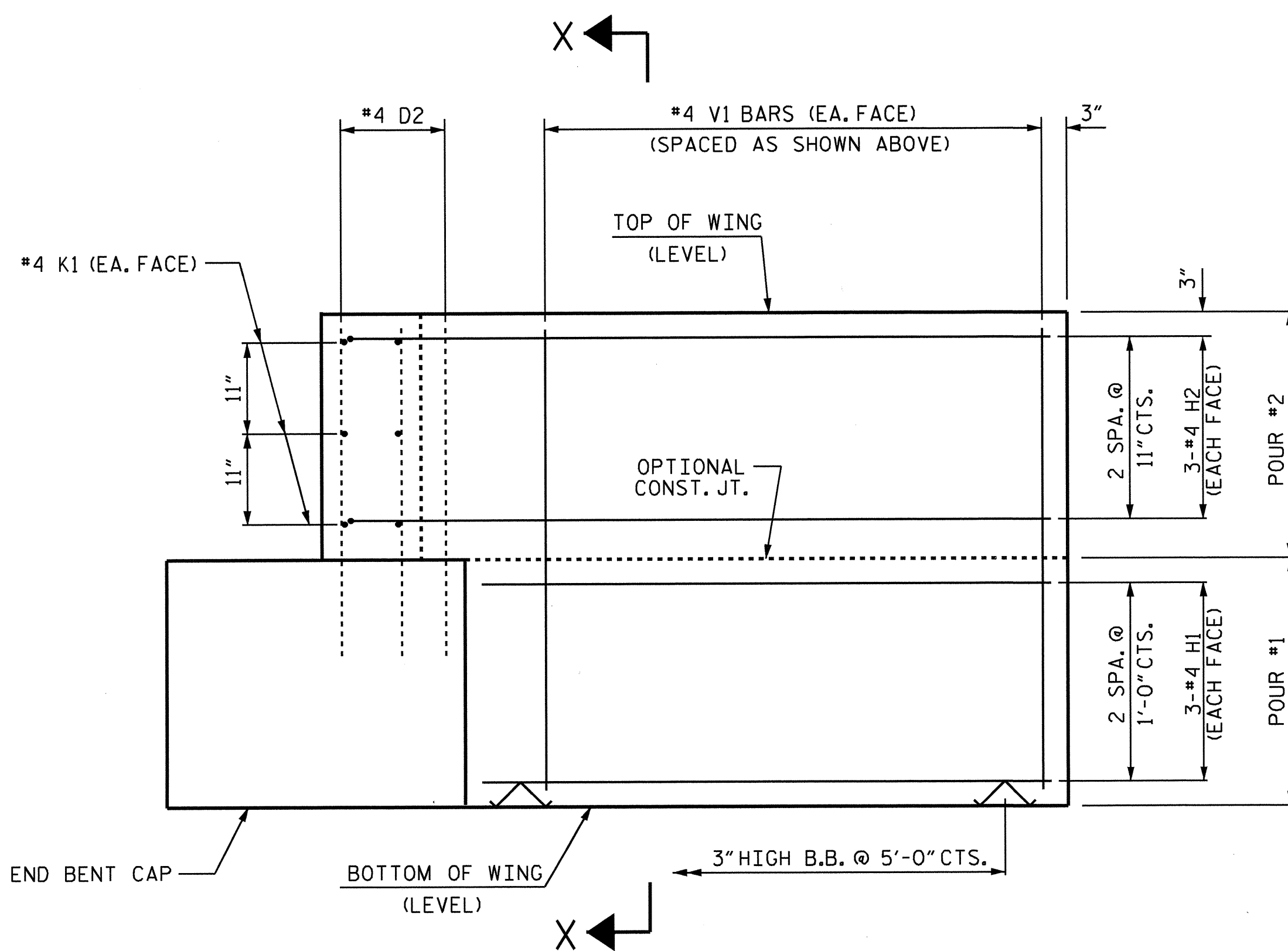
PLAN OF WING (W2)



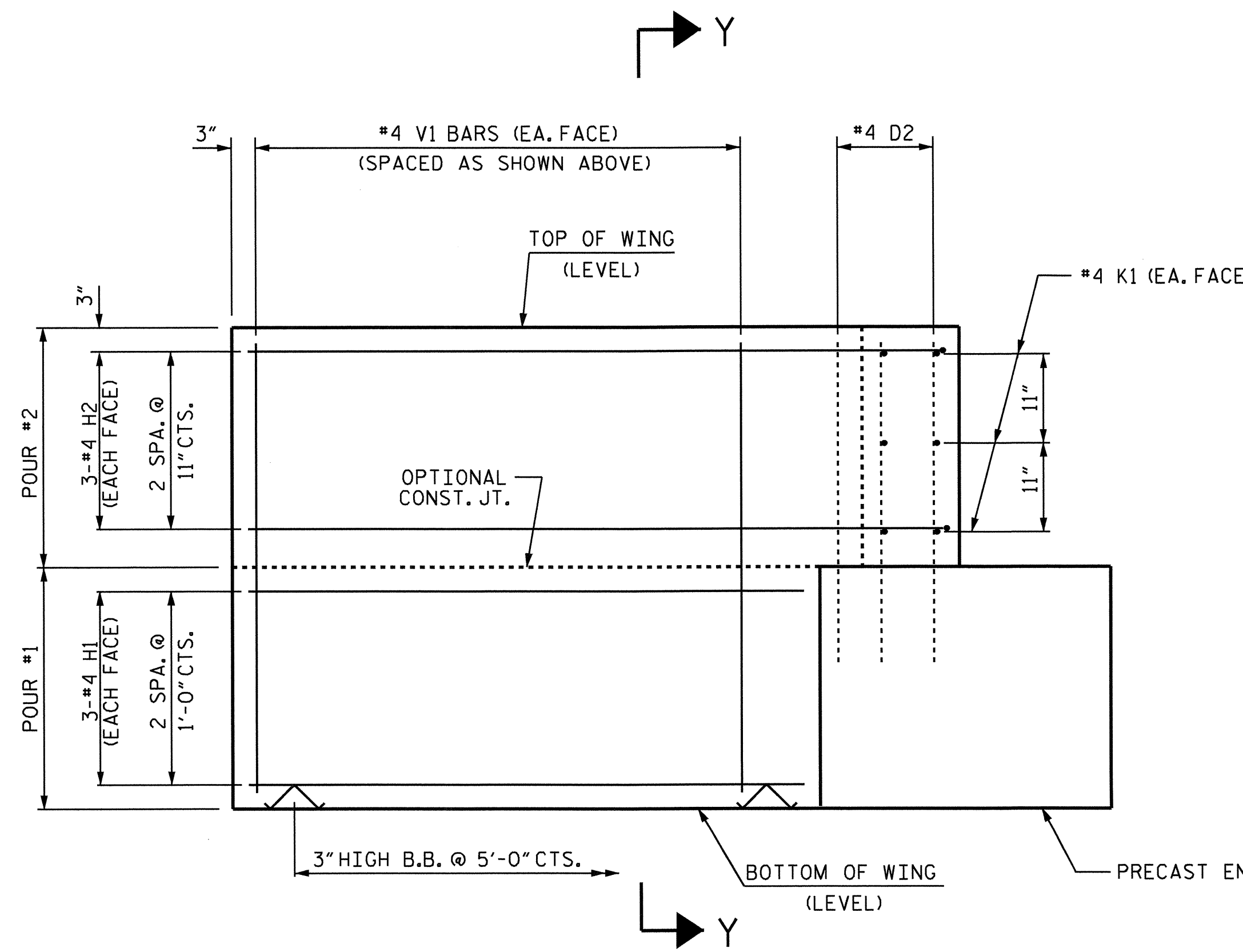
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



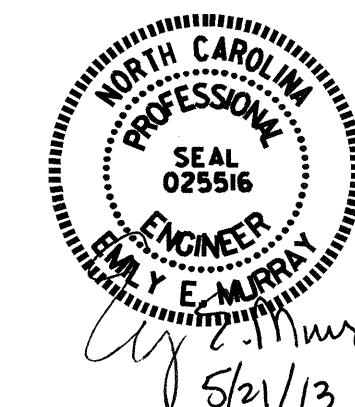
ELEVATION OF WING (W2)

WING DETAILS

PROJECT NO. B-4619  
 ROBESON COUNTY  
 STATION: 17+00.00 -L-

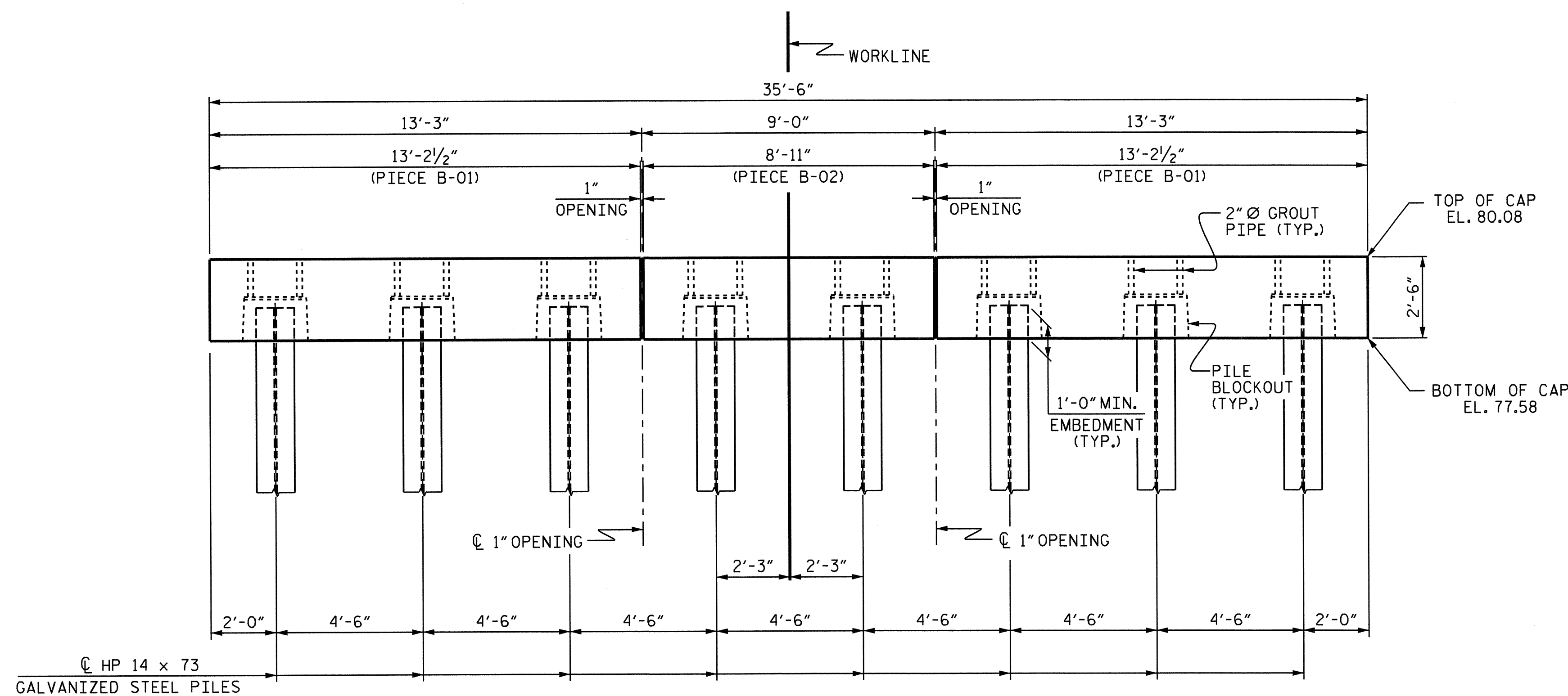
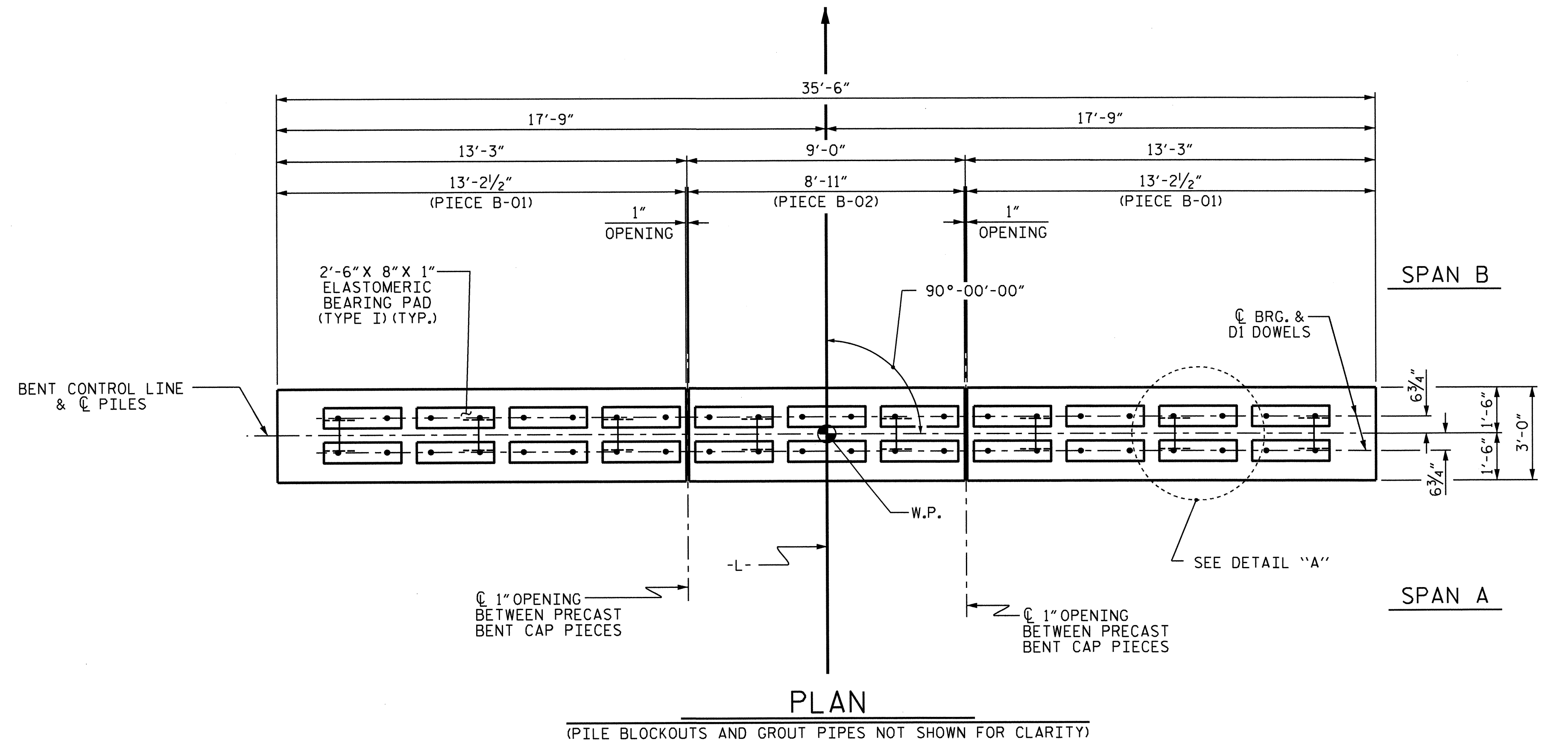
SHEET 7 OF 7

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT  
 WING DETAILS



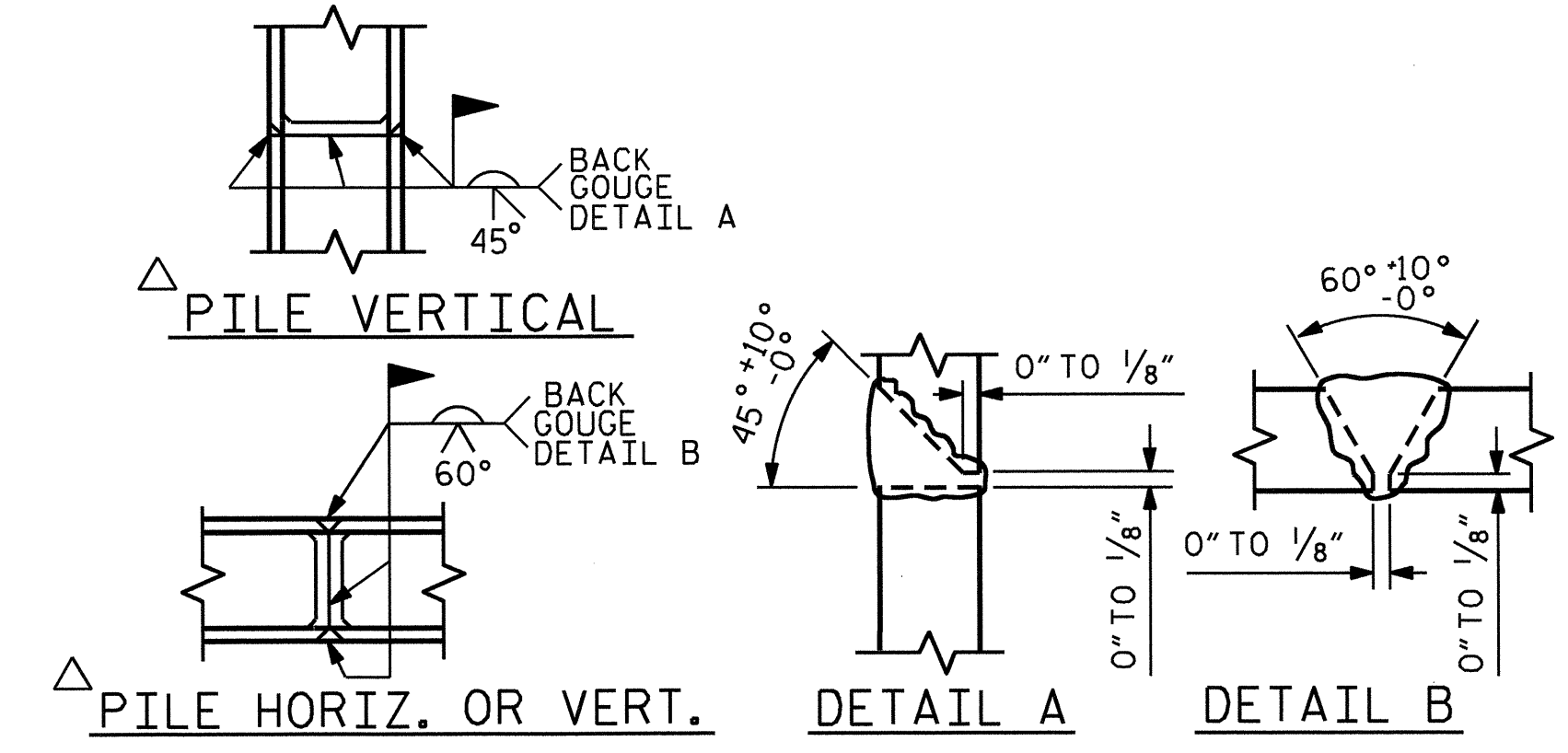
ASSEMBLED BY : PEGGY ADKINS DATE : 5-7-13  
 CHECKED BY : T.L. AVERETTE DATE : 5-9-13  
 DRAWN BY : MAA 4/13  
 CHECKED BY : BCH 4/13

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17	
1			3			TOTAL SHEETS	
2			4			48	

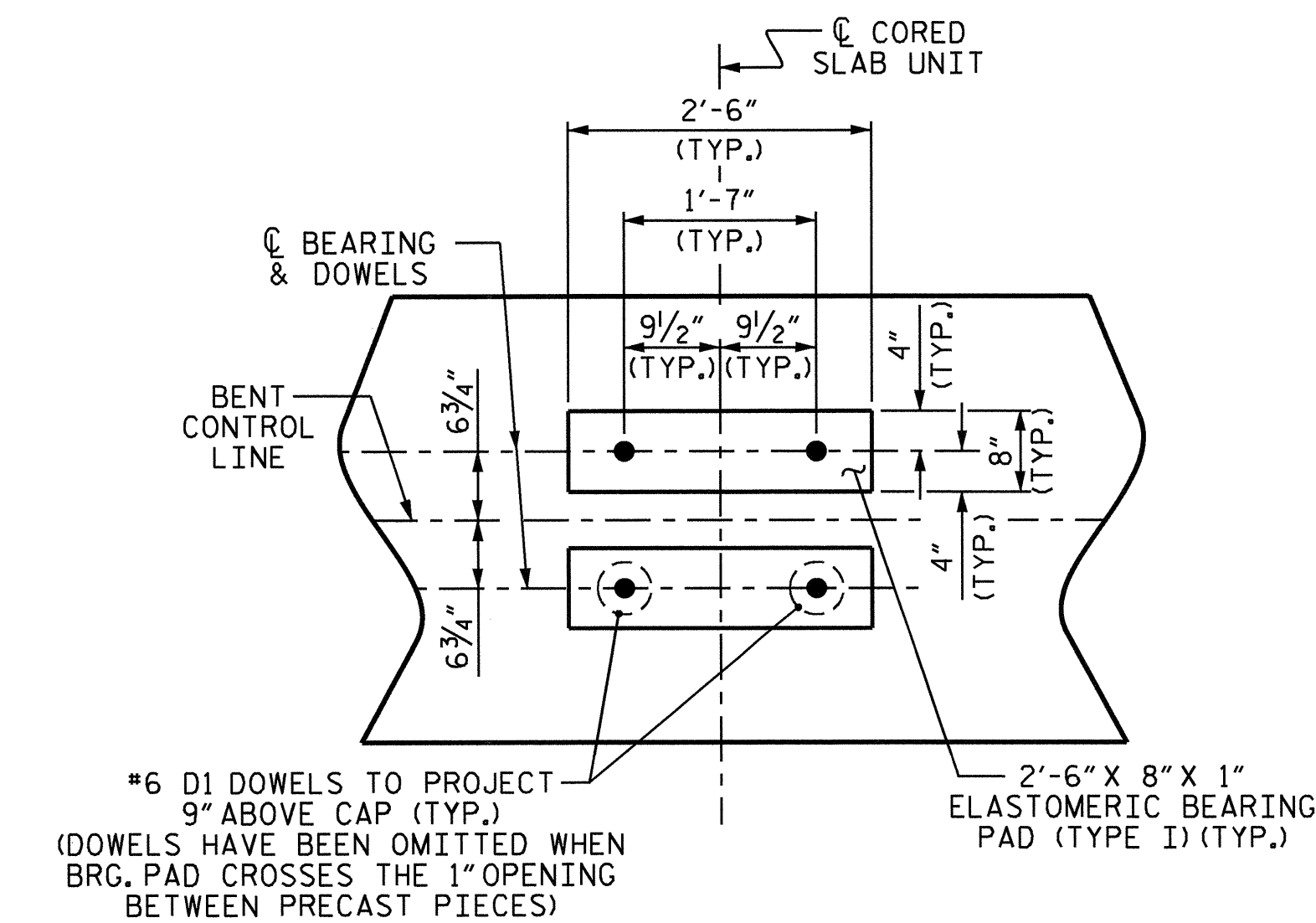


**ELEVATION**  
FOR 2" Ø GROUT PIPE AND PILE BLOCKOUT DETAILS, SEE SHEET 4 OF 4

**NOTES**  
FOR PRECAST CAP DETAILS AND BILL OF MATERIAL, SEE "PIECE B-01" & "PIECE B-02" SHEETS.  
GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 27.0 FEET. GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.  
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.  
FOR 3'-0" x 2'-6" PRESTRESSED CONCRETE BENT CAPS, SEE SPECIAL PROVISIONS.



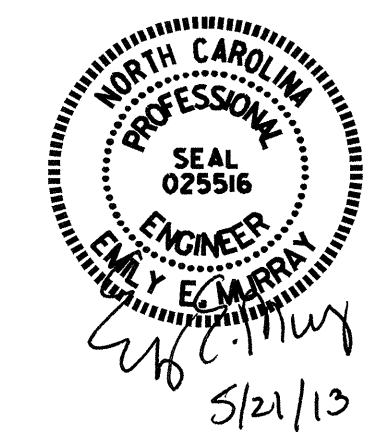
**PILE SPLICE DETAILS**  
△ POSITION OF PILE DURING WELDING.



**DETAIL "A"**  
(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. B-4619  
ROBESON COUNTY  
STATION: 17+00.00 -L-

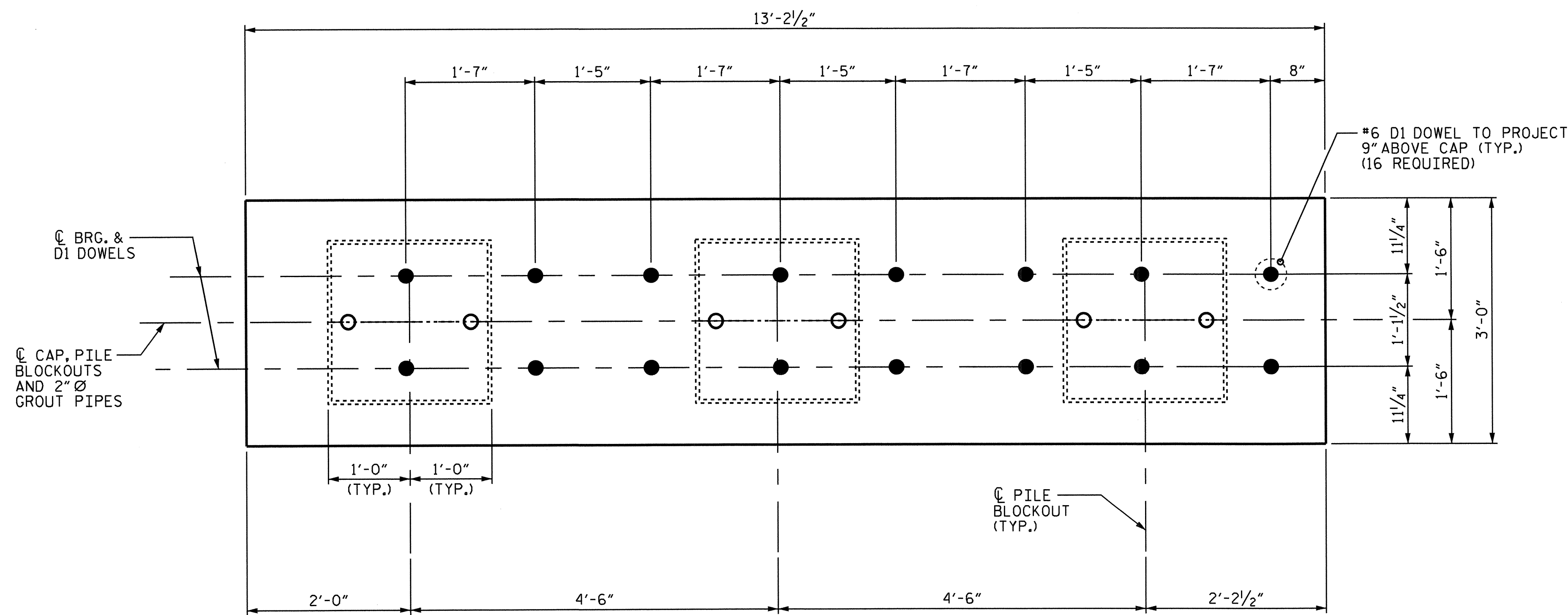
SHEET 1 OF 4



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

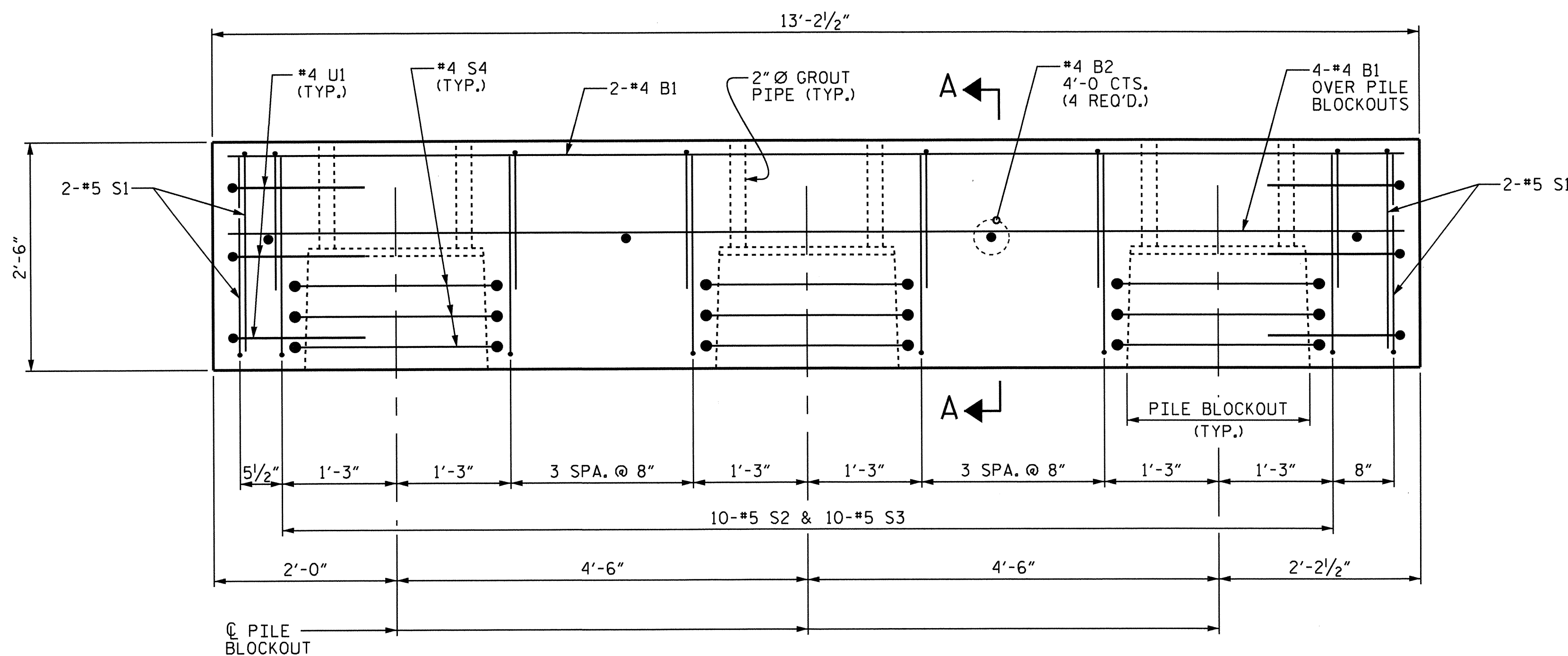
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18	
1			3			TOTAL SHEETS 48	
2			4				

ASSEMBLED BY : PEGGY ADKINS DATE : 2-21-13  
CHECKED BY : E.E. MURRAY DATE : 3-21-13  
DRAWN BY : MAA 3/12  
CHECKED BY : SHS 6/12



**PLAN**

(FOR PILE BLOCKOUT DETAILS, SEE SHEET 4 OF 4)



**ELEVATION**

(\*#6 D1 DOWELS NOT SHOWN FOR CLARITY)  
FOR SECTION A-A, SEE SHEET 4 OF 4.

**BILL OF MATERIAL  
FOR ONE PIECE B-01**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#4	STR	12'-10"	51
B2	4	#4	STR	2'-8"	7
D1	16	#6	STR	1'-6"	36
S1	8	#5	1	6'-5"	54
S2	10	#5	1	7'-3"	76
S3	10	#5	1	5'-9"	60
S4	9	#4	2	9'-9"	59
U1	6	#4	1	5'-7"	22

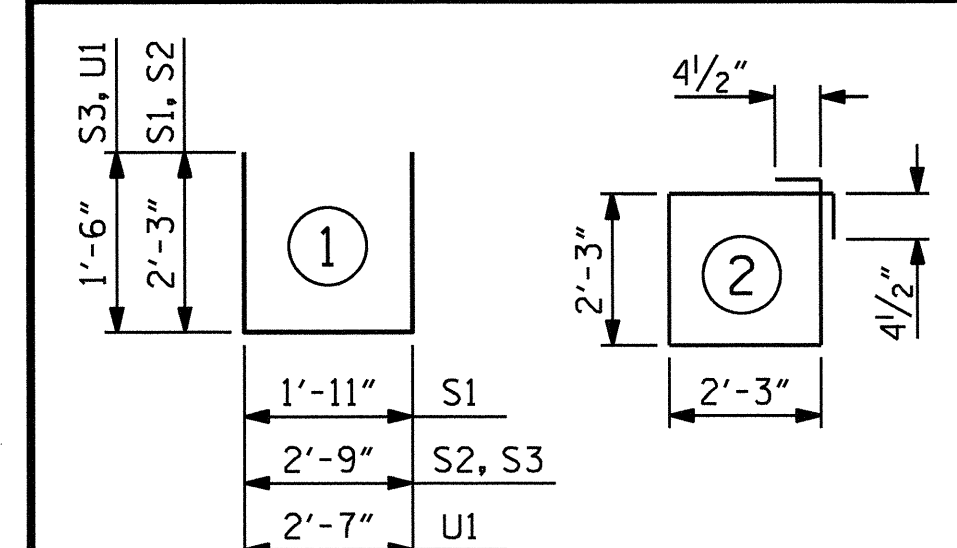
REINFORCING STEEL 365 LBS

4000 PSI PRESTRESS CONCRETE 3.1 C.Y.

PILE BLOCKOUT GROUT 0.6 C.Y.

0.6" Ø L.R. STRANDS No. 12

**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

PROJECT NO. B-4619  
ROBESON COUNTY  
STATION: 17+00.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
PRECAST  
PIECE B-01



5/21/13

ASSEMBLED BY : PEGGY ADKINS DATE : 2-21-13  
CHECKED BY : E.E. MURRAY DATE : 3-21-13  
DRAWN BY : MAA 3/12  
CHECKED BY : SHS 6/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS 48
2			4			

**BILL OF MATERIAL**

**FOR ONE PIECE B-02**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B2	3	#4	STR	2'-8"	5
B3	6	#4	STR	8'-7"	34
D1	12	#6	STR	1'-6"	27
S1	8	#5	1	6'-5"	54
S2	6	#5	1	7'-3"	45
S3	6	#5	1	5'-9"	36
S4	6	#4	2	9'-9"	39
U1	6	#4	1	5'-7"	22

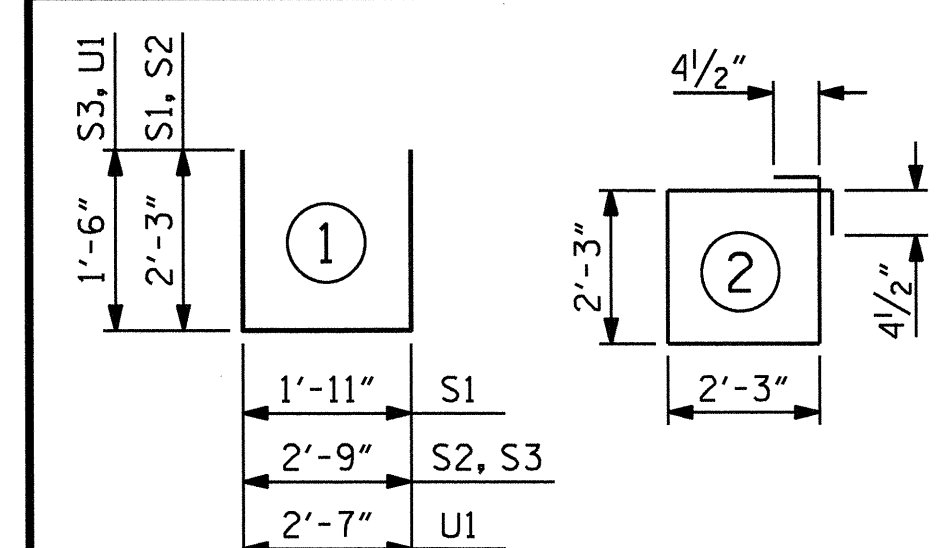
REINFORCING STEEL 262 LBS

4000 PSI PRESTRESS CONCRETE 2.1 C.Y.

PILE BLOCKOUT GROUT 0.4 C.Y.

0.6" Ø L.R. STRANDS No. 12

**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

PROJECT NO. B-4619  
ROBESON COUNTY  
 STATION: 17+00.00 -L-

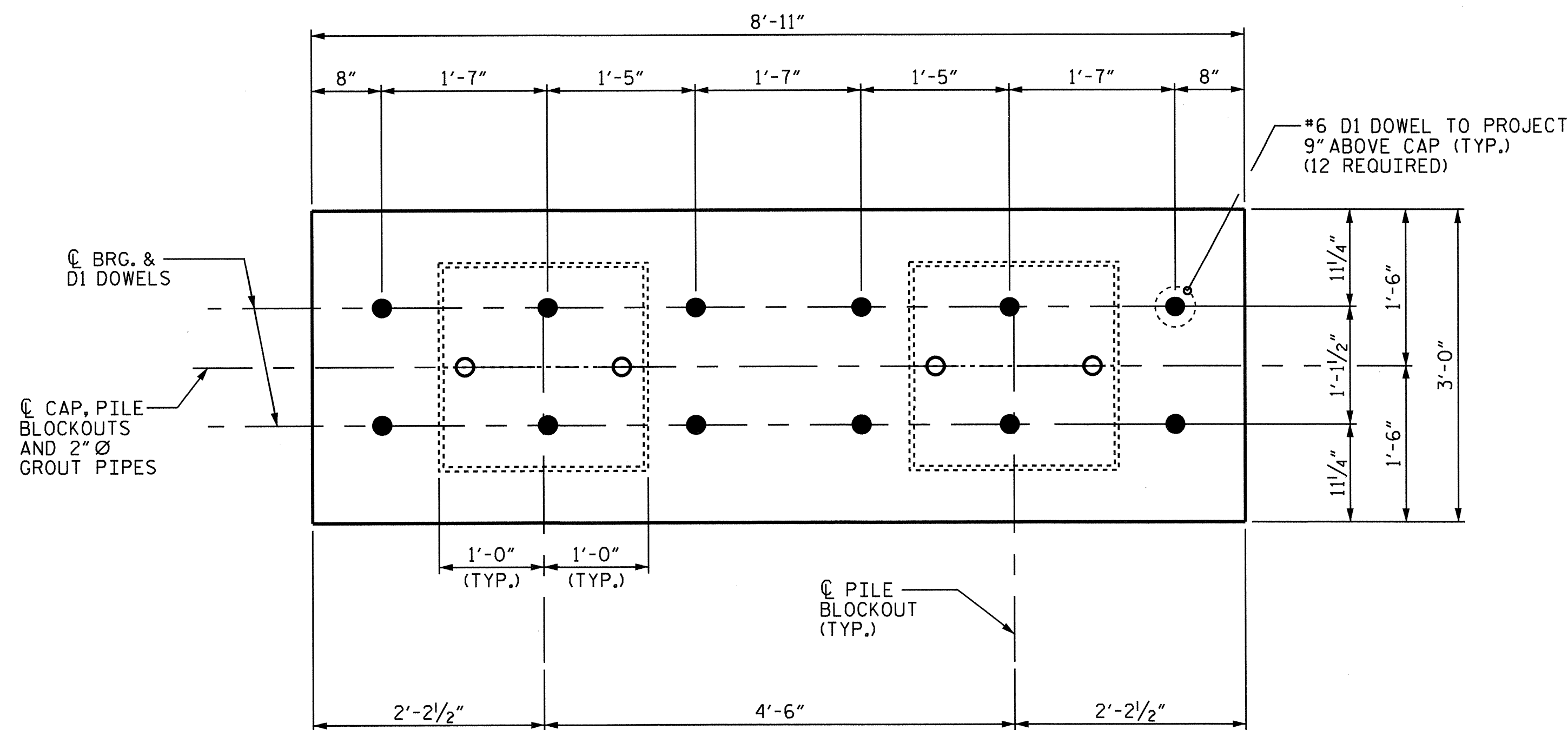
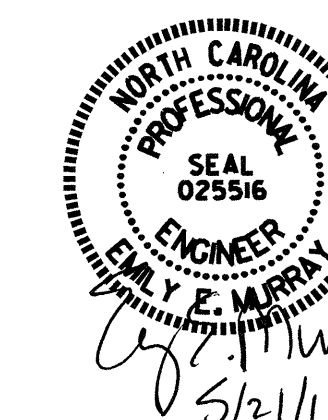
SHEET 3 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE

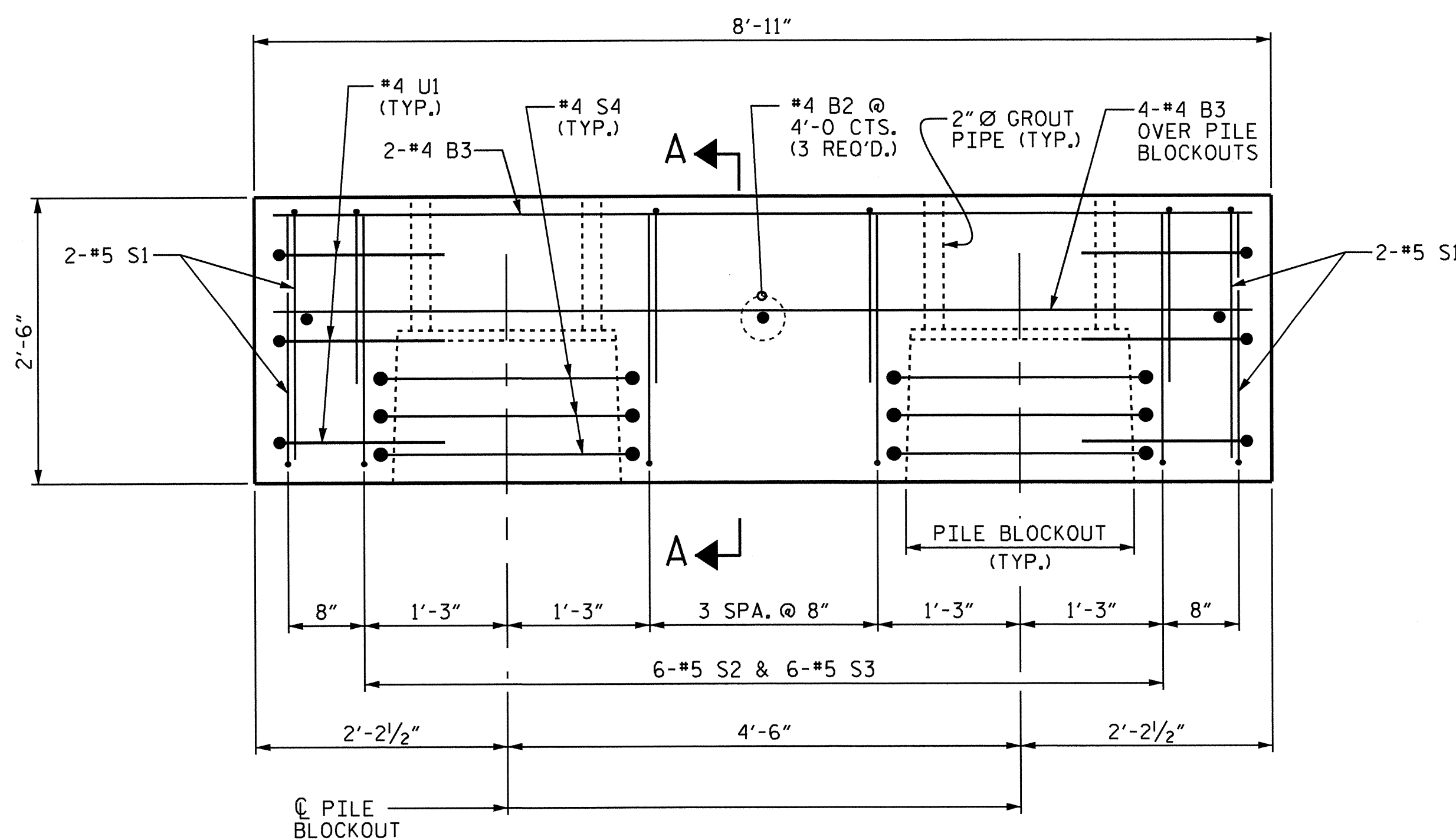
PRECAST  
 PIECE B-02

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			48



**PLAN**

(FOR PILE BLOCKOUT DETAILS, SEE SHEET 4 OF 4)



**ELEVATION**

(\*#6 D1 DOWELS NOT SHOWN FOR CLARITY)  
 FOR SECTION A-A, SEE SHEET 4 OF 4.

ASSEMBLED BY : PEGGY ADKINS DATE : 2-21-13  
 CHECKED BY : E.E. MURRAY DATE : 3-21-13  
 DRAWN BY : MAA 3/12  
 CHECKED BY : SHS 6/12

**NOTES**

STIRRUPS IN PRECAST PIECES MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS AND GROUT PIPES.

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 BENT CAP SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRECAST BENT CAPS.

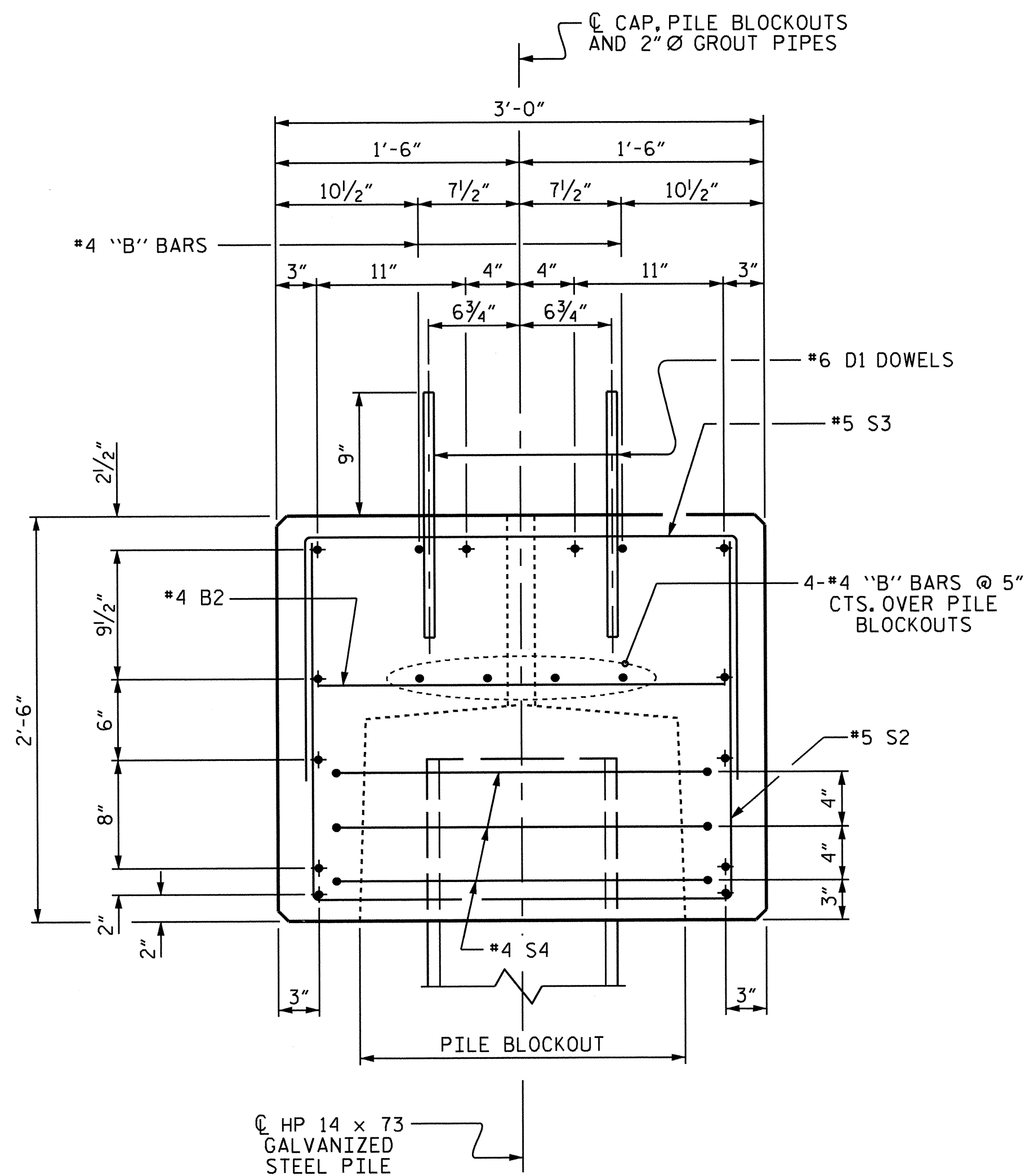
WHEN BENT CAPS ARE CAST, A HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING BENT CAPS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL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

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE ENDS OF THE BENT CAP SEGMENTS.

APPLY EPOXY PROTECTIVE COATING TO THE ENDS OF THE BENT CAP SEGMENTS.

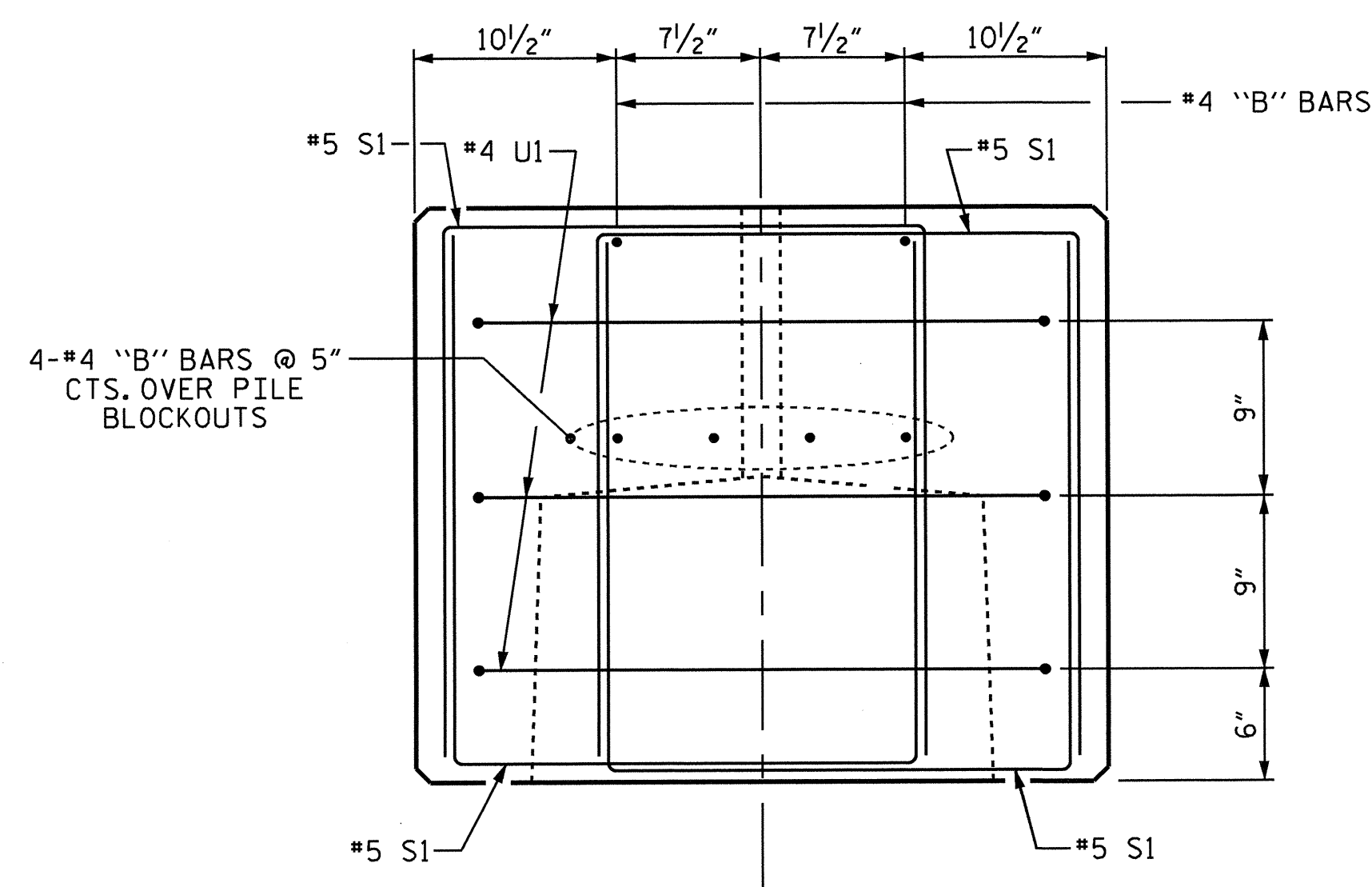
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BENT CAPS SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI.

THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL A METHOD TO LIFT AND SUPPORT THE PRECAST CAP PIECES IN THE PROPER LOCATION AND ELEVATION AS SHOWN ON THE PLANS PRIOR TO PLACEMENT AND CURING OF THE GROUT IN THE PILE BLOCKOUTS. THE METHOD CHOSEN SHALL PROVIDE FOR A WATERTIGHT SEAL AT THE BOTTOM OF THE CAP UNTIL THE GROUT HAS HARDENED SO NO GROUT COMES IN CONTACT WITH THE STREAM.



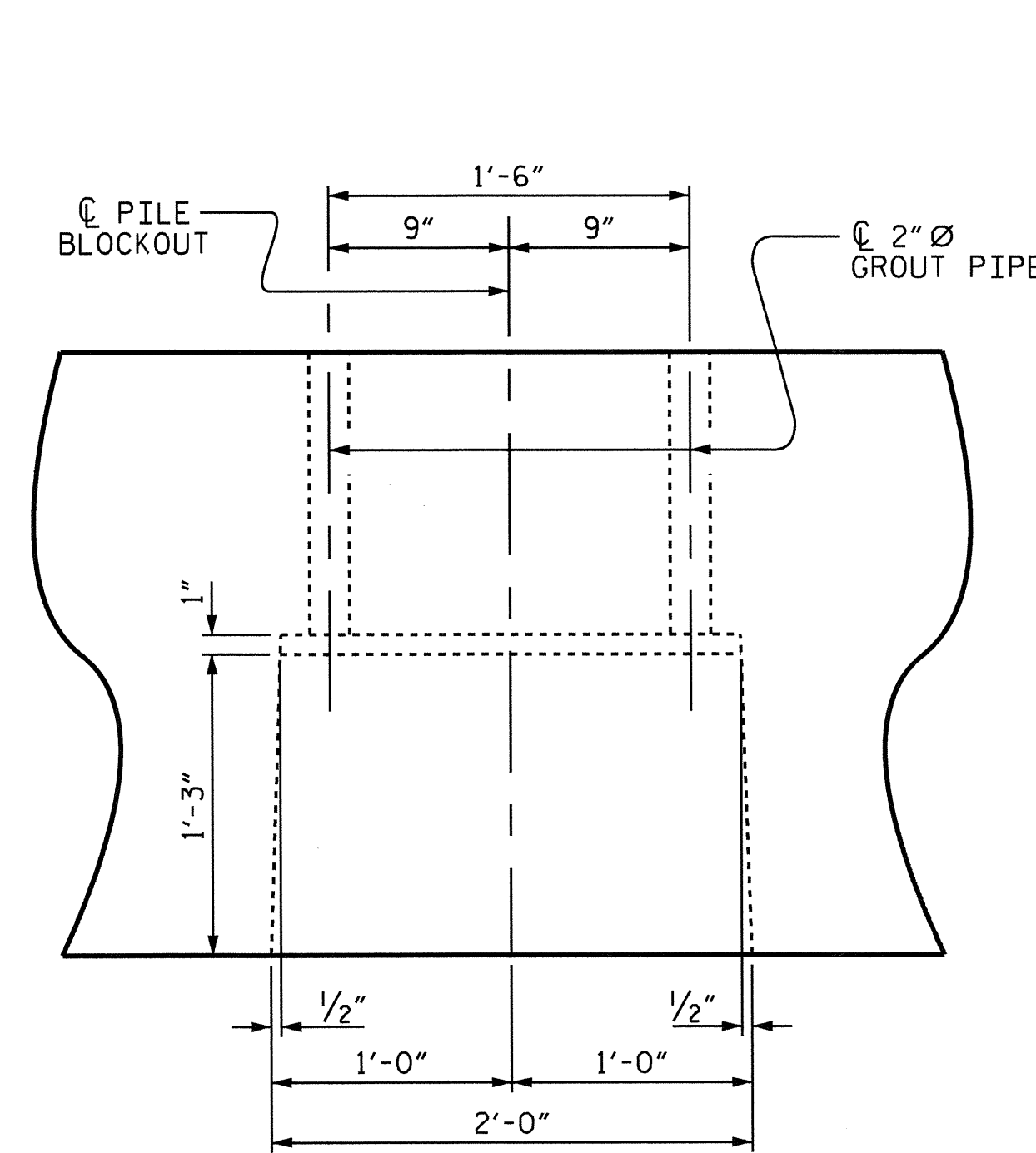
**SECTION A-A**

(SHOWING 0.6" Ø LOW RELAXATION STRAND LAYOUT) (12 STRANDS)

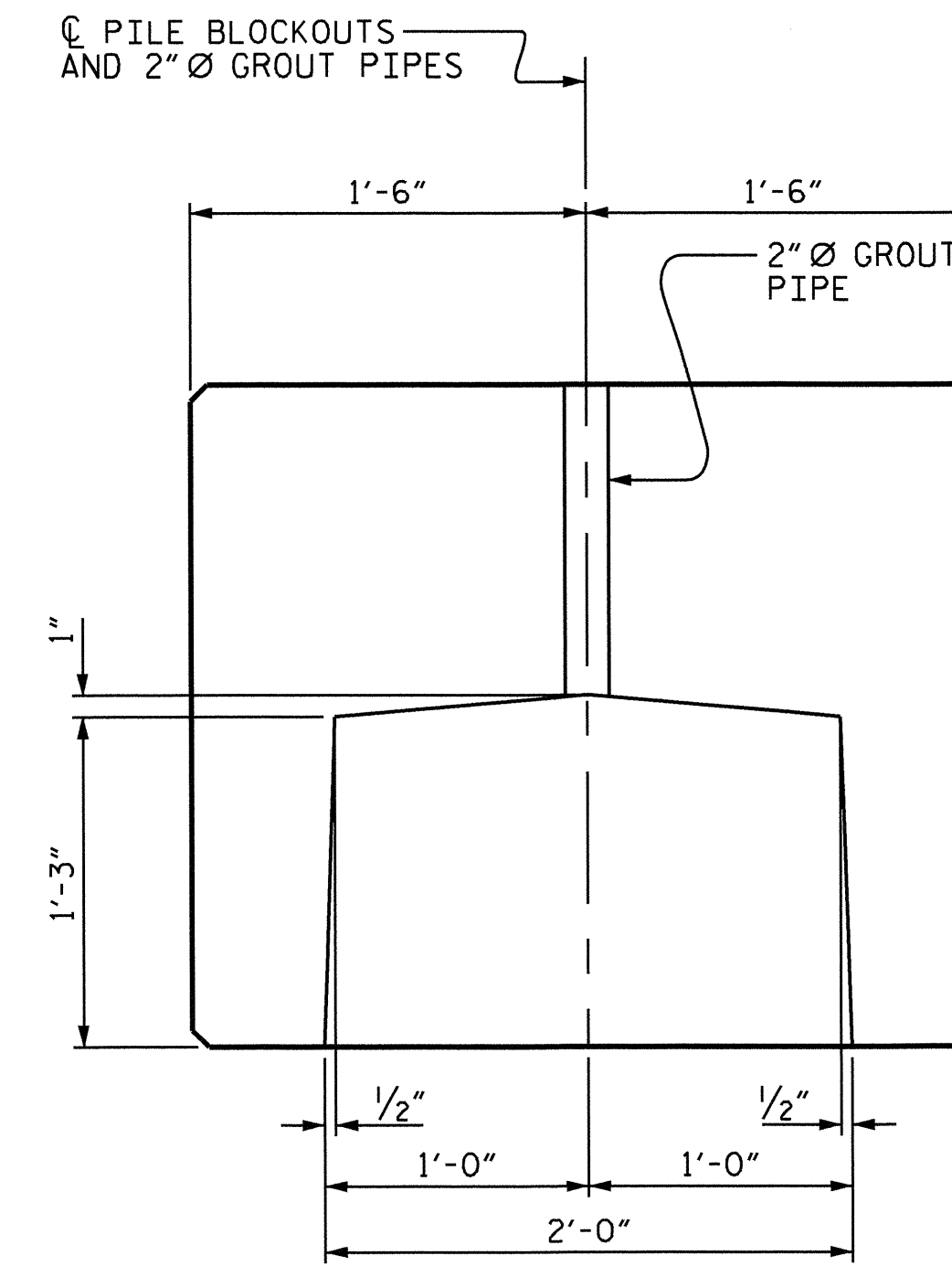


**END OF CAP VIEW**

(TYPICAL BOTH ENDS)



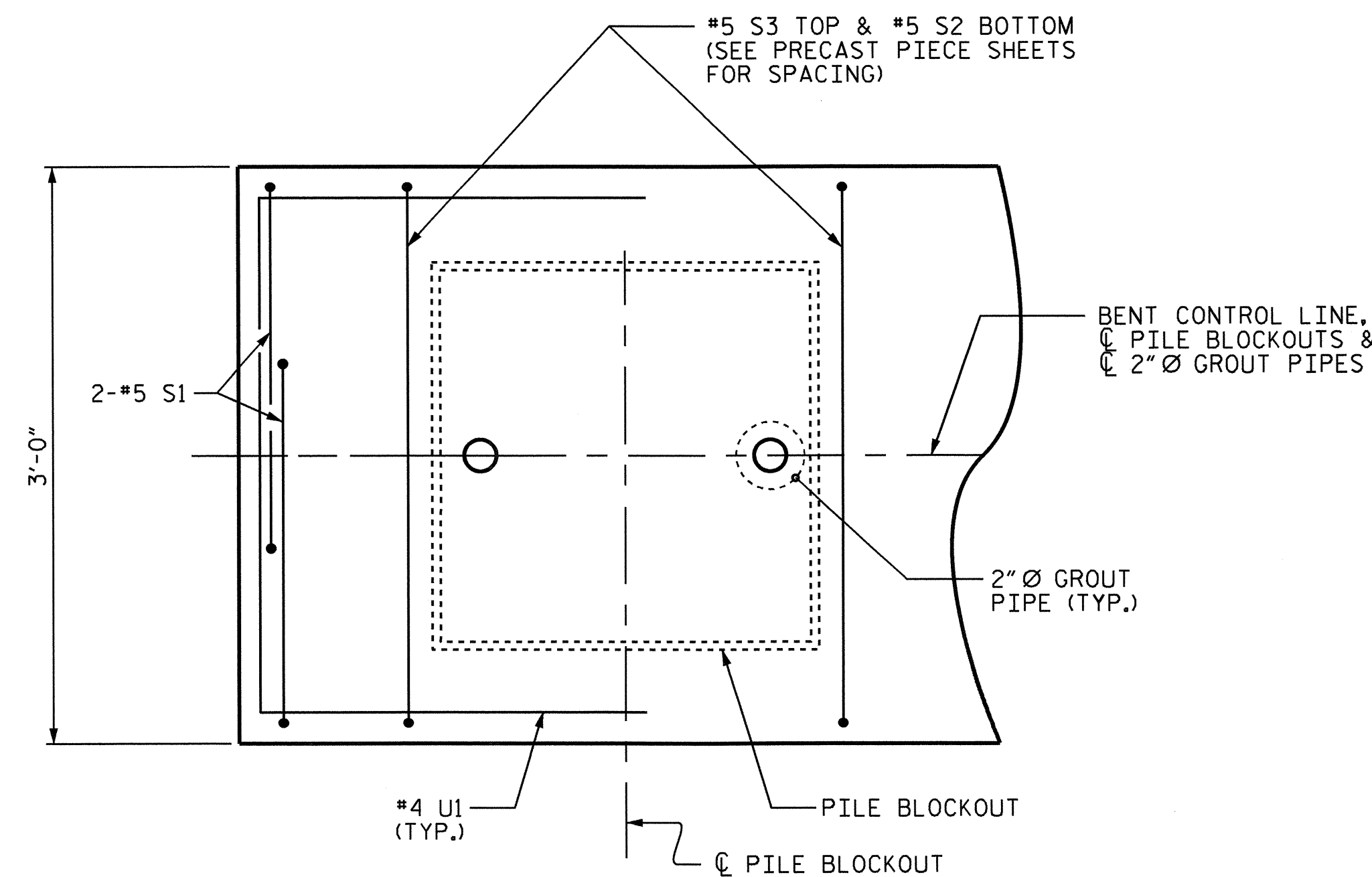
**ELEVATION**



**SECTION**

**PILE BLOCKOUT DETAILS**

(DIMENSIONS ARE TYPICAL EACH BLOCKOUT)



**PART PLAN-END OF CAP**

(TYPICAL BOTH ENDS)

PRESTRESSED CONCRETE BENT CAPS (FOR ONE BENT)			
PIECE	LENGTH	NUMBER	TOTAL LENGTH
B-01	13'-2 1/2"	2	26'-5"
B-02	8'-11"	1	8'-11"
TOTAL		3	35.33'

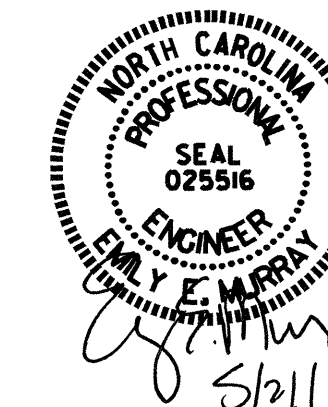
HP 14 X 73 GALVANIZED STEEL PILES (FOR ONE BENT)	
No. 8	LIN. FT. 520
PILE REDRIVES	EACH 4

PROJECT NO. B-4619  
ROBESON COUNTY  
 STATION: 17+00.00 -L-

SHEET 4 OF 4

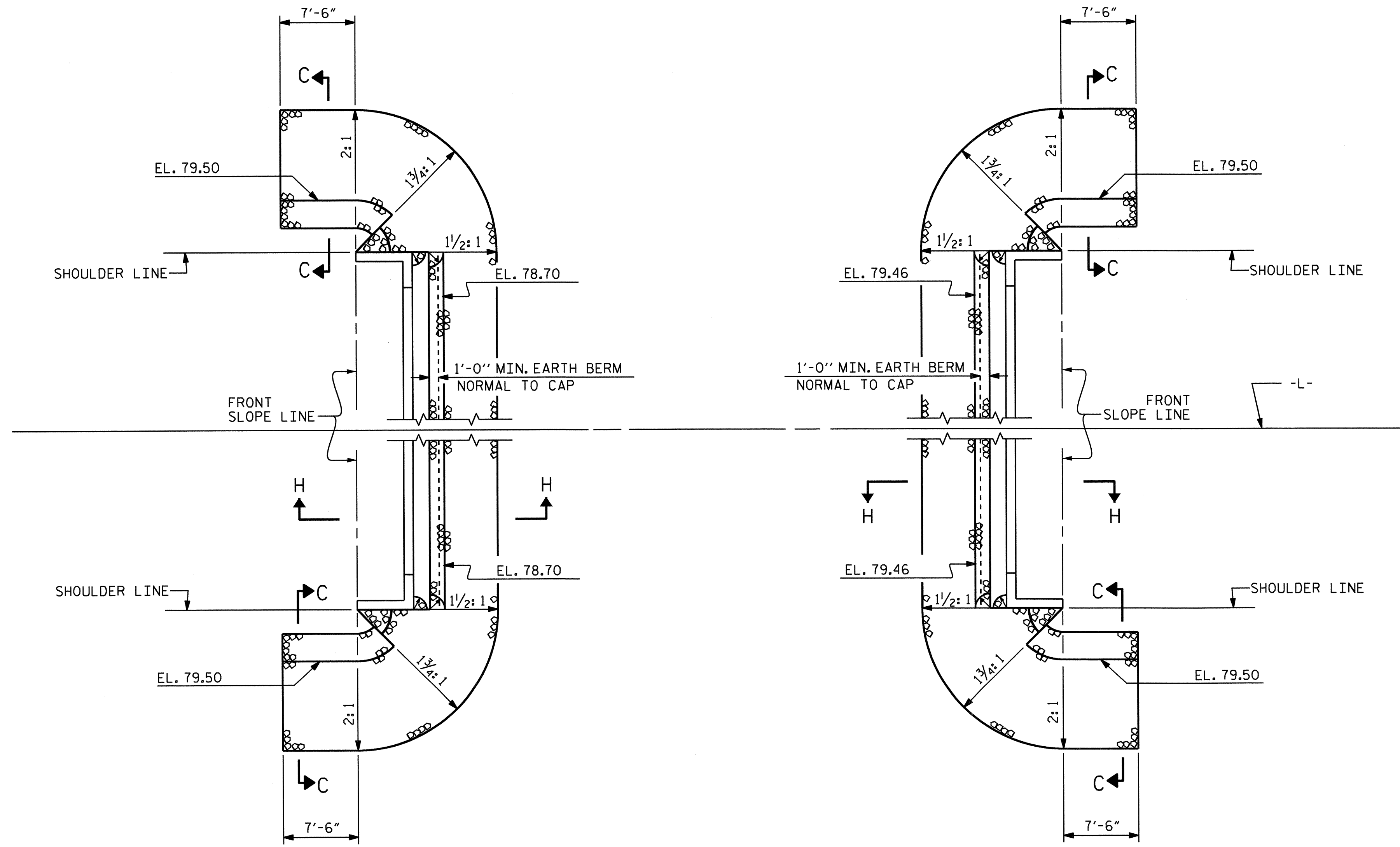
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT No. 1



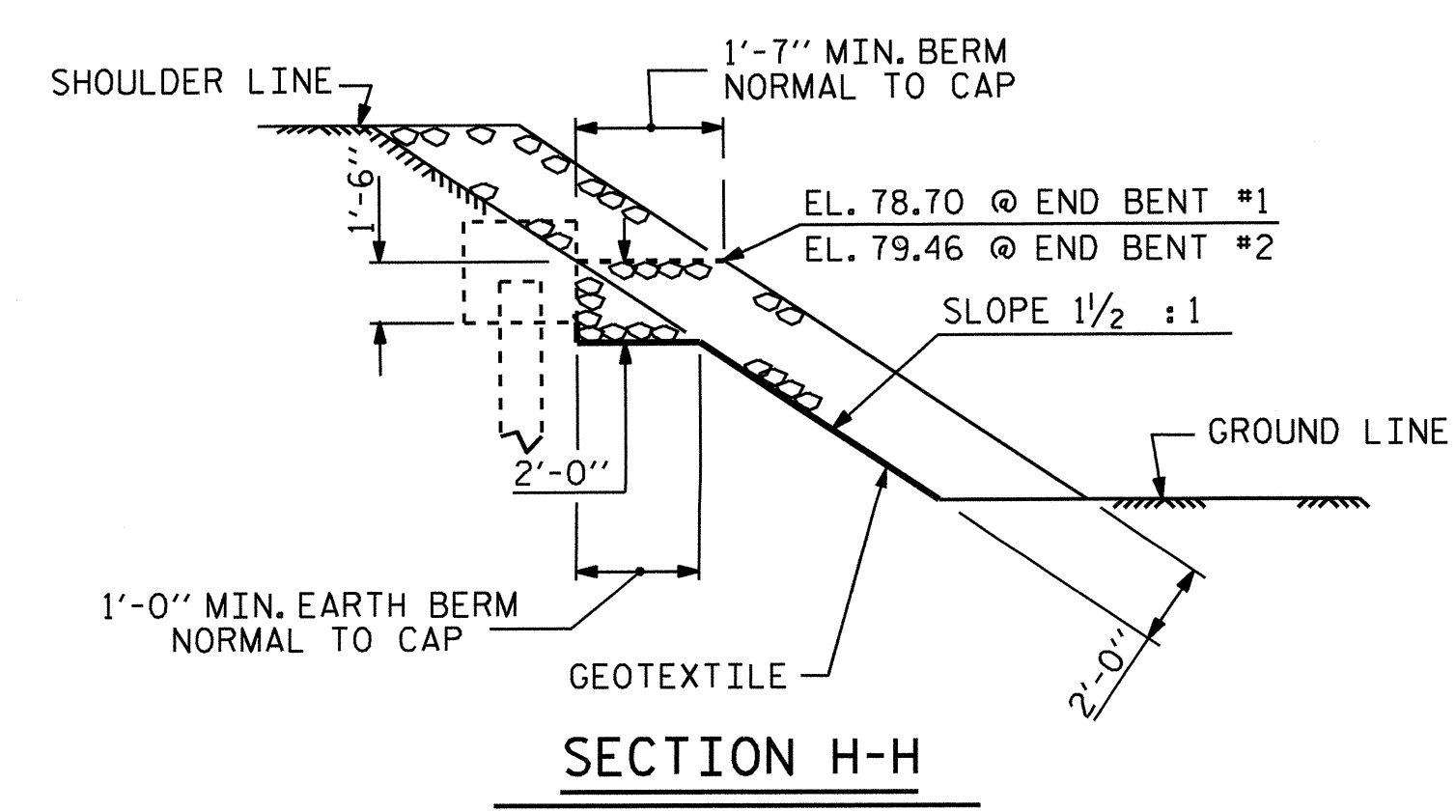
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			48

ASSEMBLED BY : PEGGY ADKINS DATE : 2-21-13  
 CHECKED BY : E.E. MURRAY DATE : 3-21-13  
 DRAWN BY : MAA 3/12  
 CHECKED BY : SHS 6/12

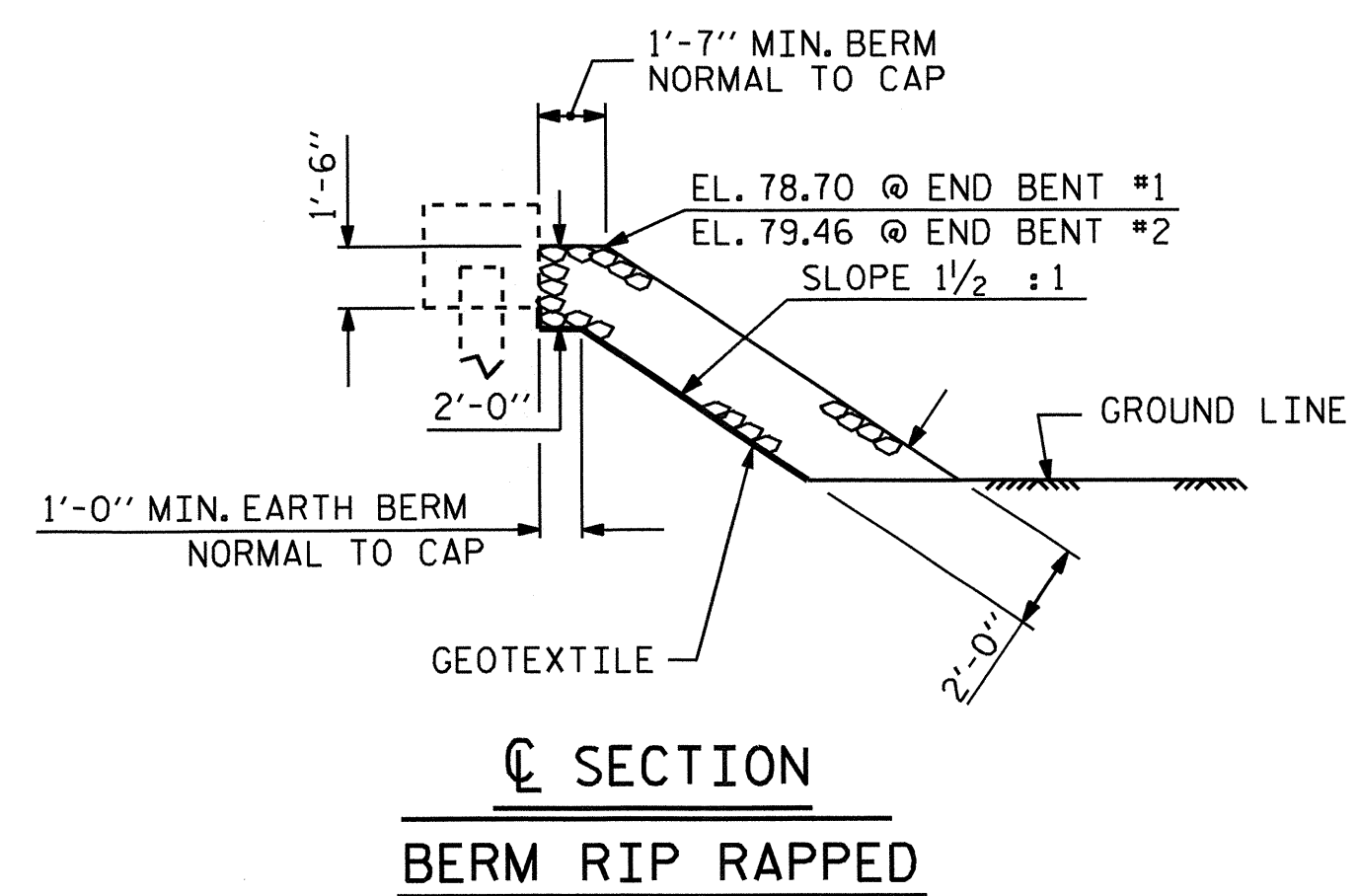


PLAN

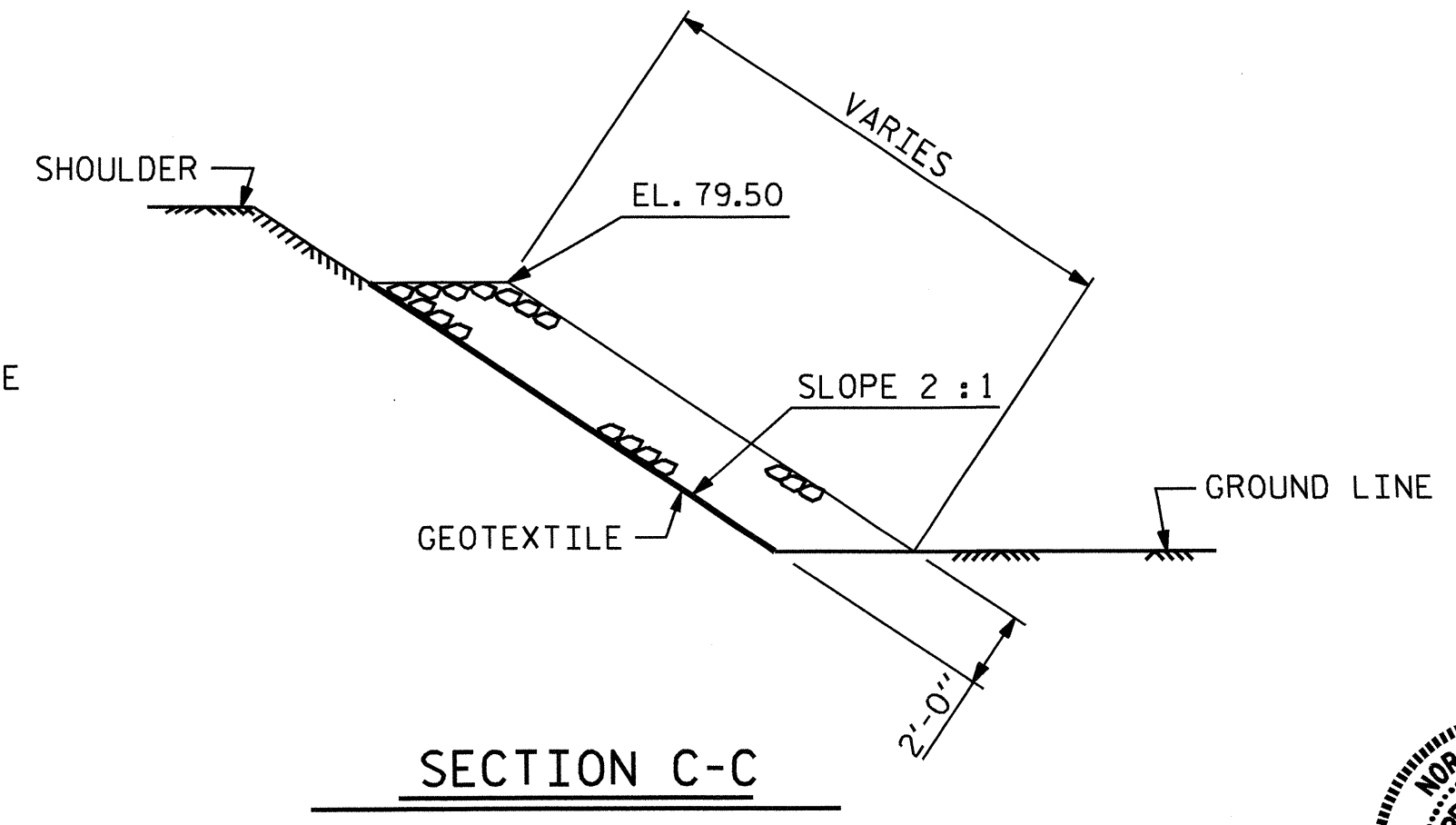
ESTIMATED QUANTITIES		
BRIDGE @ STA. 17+00.00 -L-	RIP RAP CLASS I (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	57	64
END BENT 2	66	74



SECTION H-H



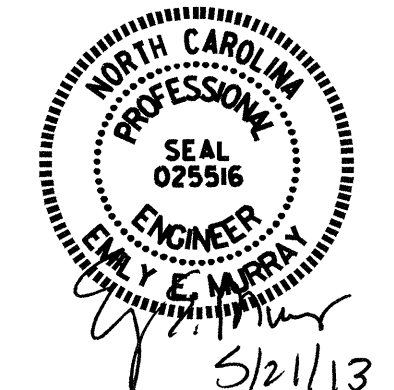
SECTION C-C  
BERM RIP RAPPED



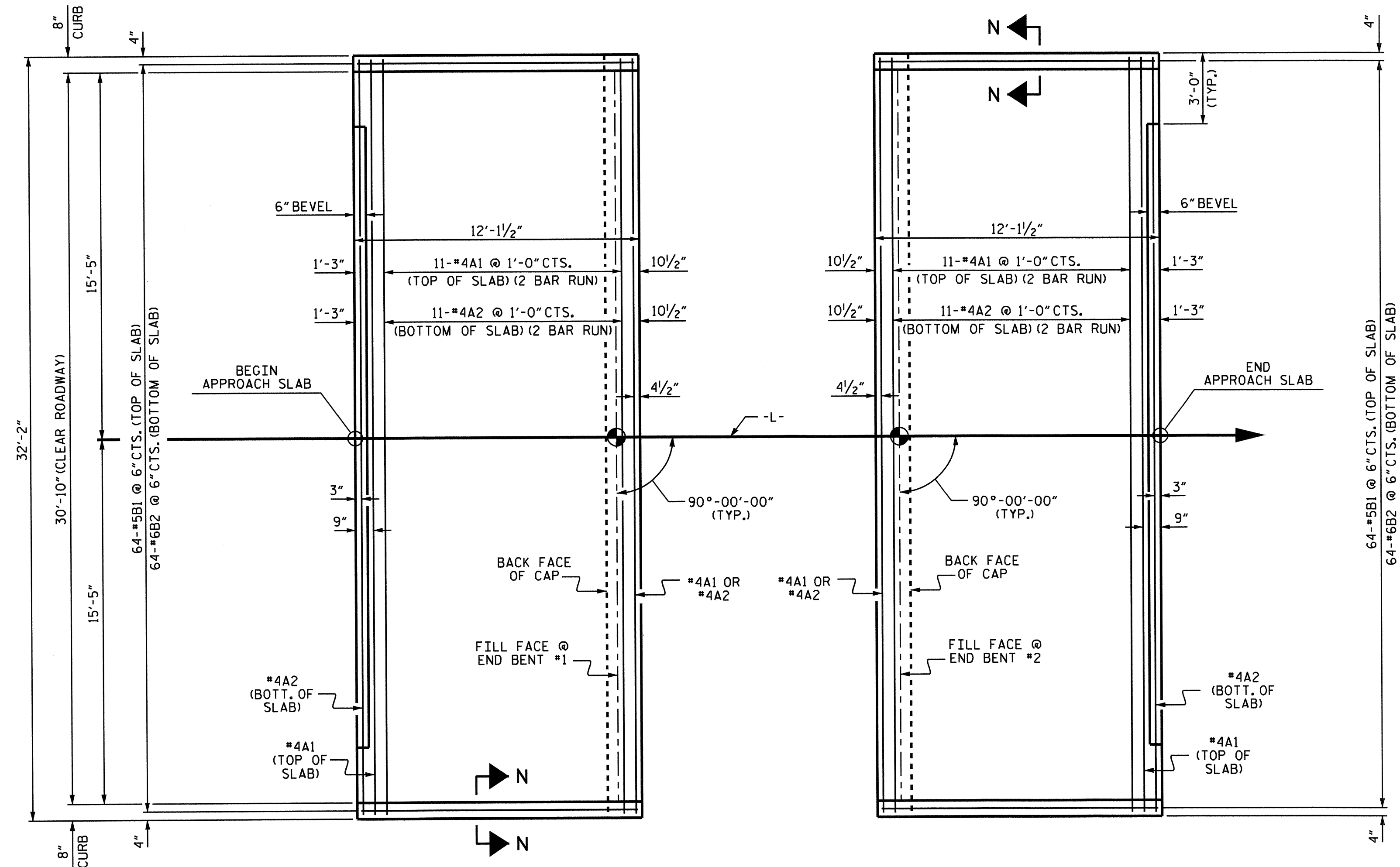
SECTION C-C

PROJECT NO. B-4619  
ROBESON COUNTY  
 STATION: 17+00.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD RIP RAP DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		



DESIGN ENGINEER OF RECORD: <u>A.M. LEE</u> DATE: <u>5-7-13</u>
ASSEMBLED BY: <u>PEGGY ADKINS</u> DATE: <u>2-21-13</u>
CHECKED BY: <u>E.E. MURRAY</u> DATE: <u>3-21-13</u>
DRAWN BY: <u>REK 1/84</u> REV. 5/1/06R TLA/GM
CHECKED BY: <u>RDU 1/84</u> REV. 10/1/11 MAA/GM
REV. 12/21/11 MAA/GM



**NOTES**

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.

APPROACH SLAB GROOVING IS NOT REQUIRED.

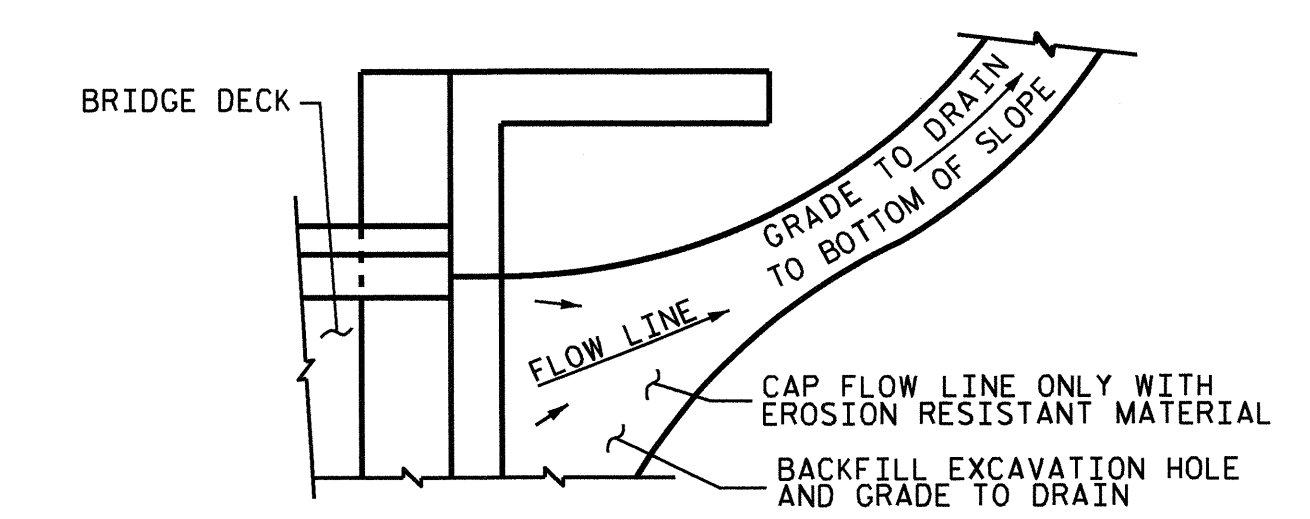
**BILL OF MATERIAL**

**APPROACH SLAB AT EB #1**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	16'-11"	294
A2	26	#4	STR	16'-9"	291
*B1	64	#5	STR	11'-2"	745
B2	64	#6	STR	11'-8"	1121
REINFORCING STEEL				LBS.	1412
* EPOXY COATED REINFORCING STEEL				LBS.	1039
CLASS AA CONCRETE				C. Y.	18.6

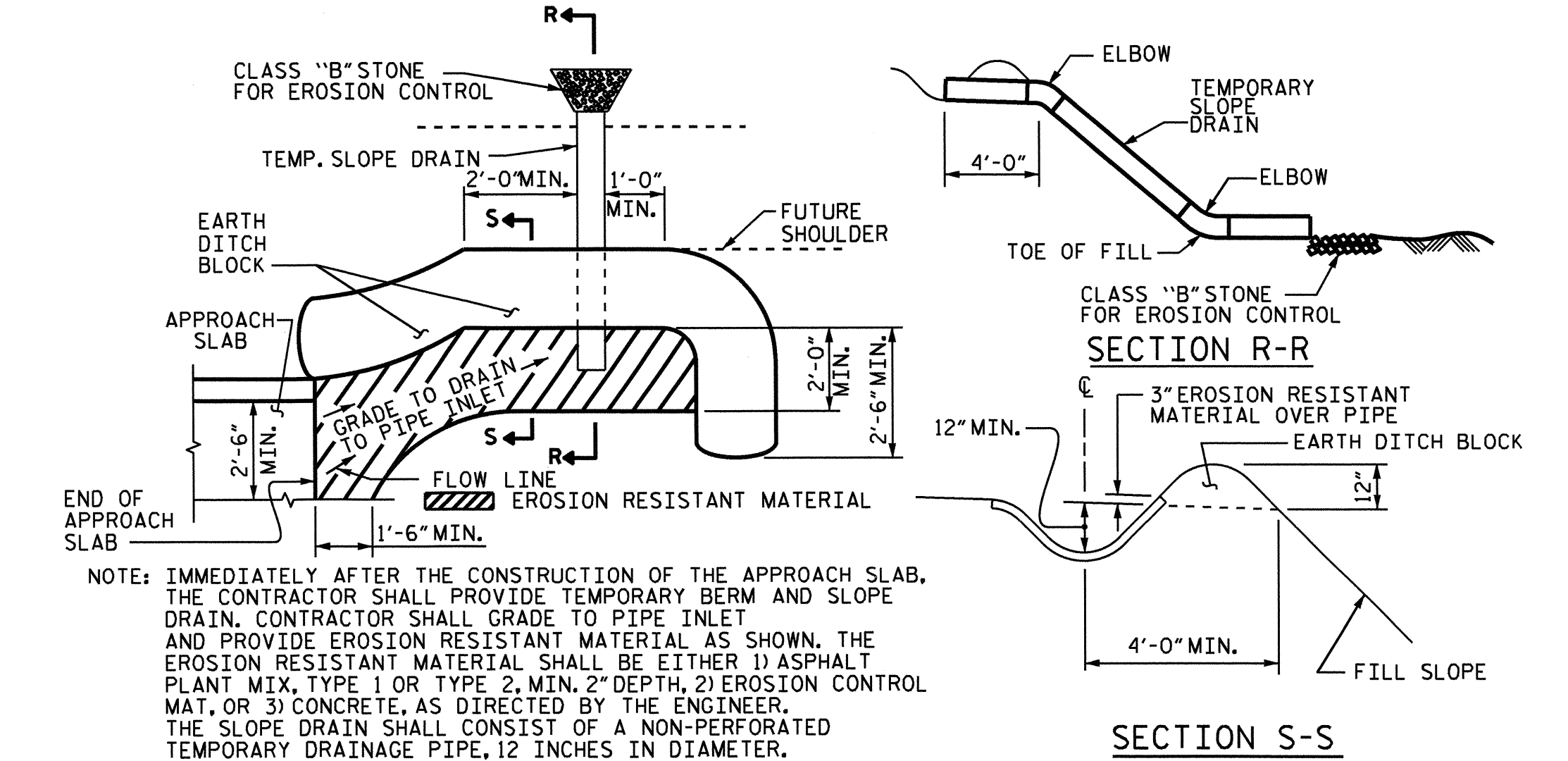
**APPROACH SLAB AT EB #2**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	16'-11"	294
A2	26	#4	STR	16'-9"	291
*B1	64	#5	STR	11'-2"	745
B2	64	#6	STR	11'-8"	1121
REINFORCING STEEL				LBS.	1412
* EPOXY COATED REINFORCING STEEL				LBS.	1039
CLASS AA CONCRETE				C. Y.	18.6



**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.

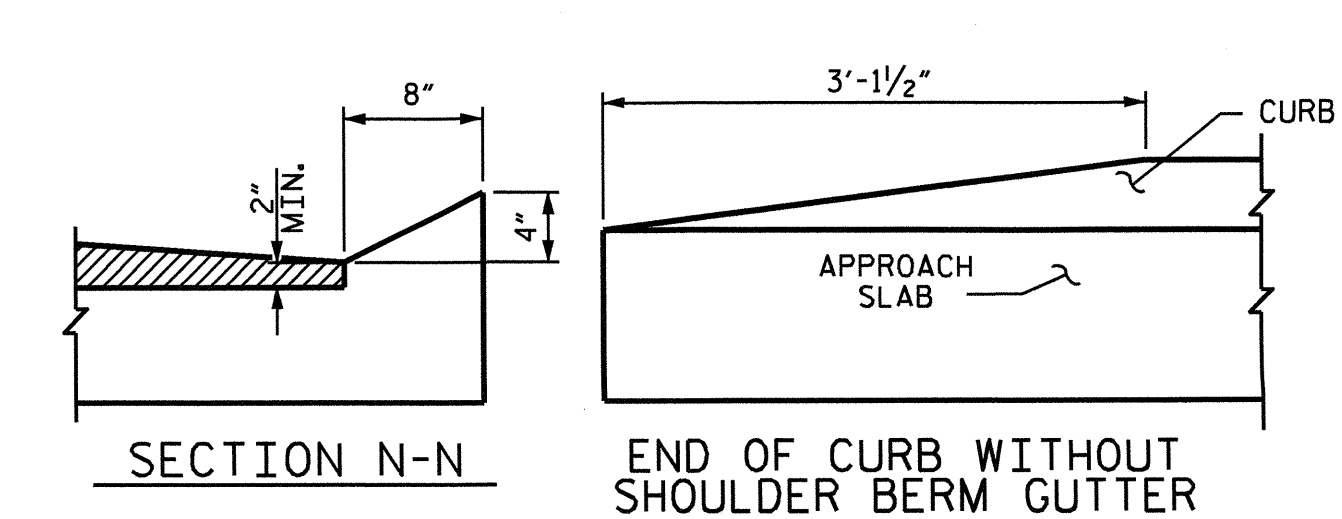
**TEMPORARY DRAINAGE DETAIL**



**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.

**TEMPORARY BERM AND SLOPE DRAIN DETAILS**

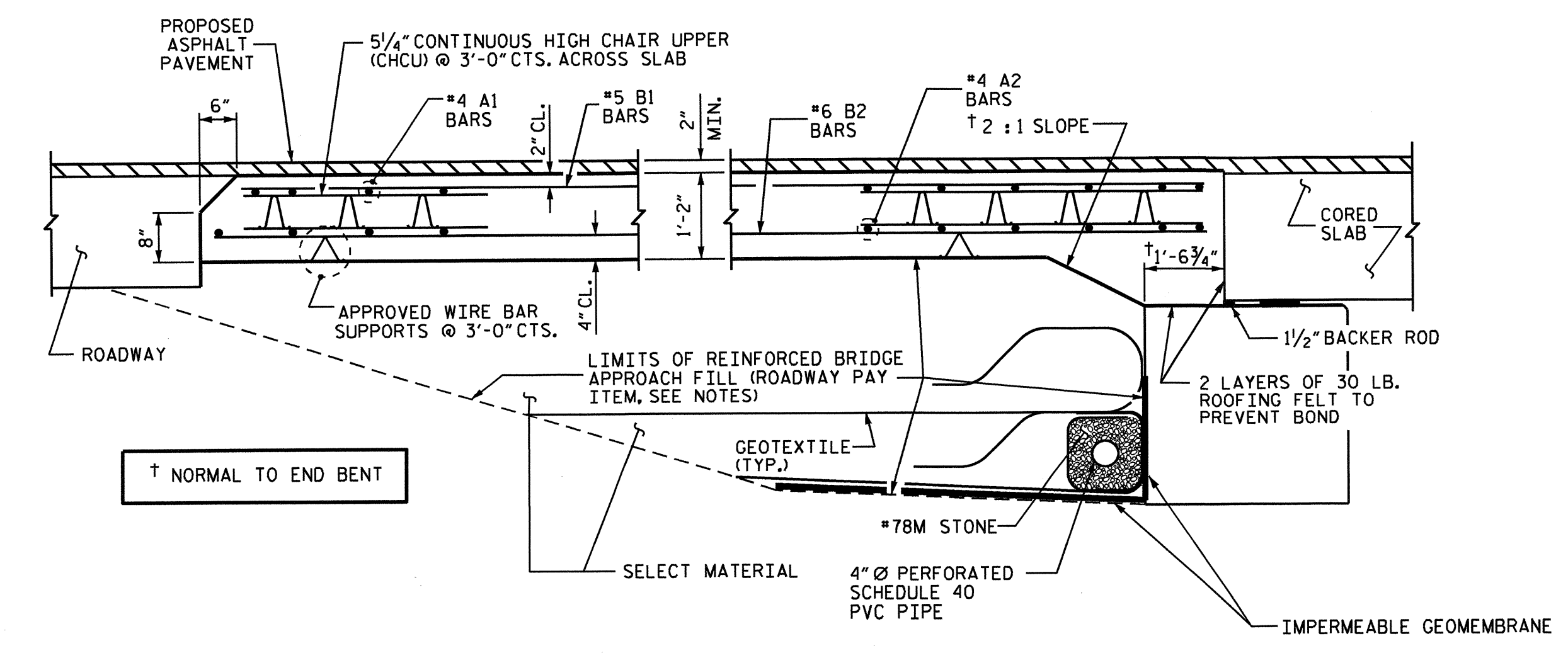
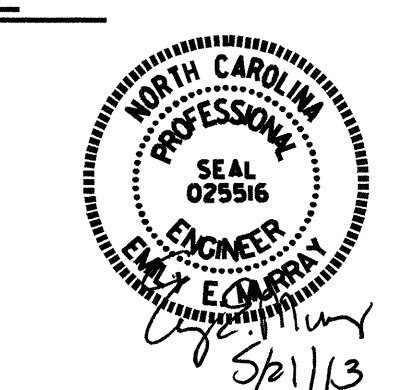
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



**CURB DETAILS**

**SPLICE LENGTHS**

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



**SECTION THRU SLAB**

DESIGN ENGINEER OF RECORD: A.M. LEE DATE: 5-7-13

ASSEMBLED BY: PEGGY ADKINS DATE: 2-21-13

CHECKED BY: E.E. MURRAY DATE: 3-21-13

DRAWN BY: SHS/MAA 5-09 REV. 12-11 MAA/AAC

CHECKED BY: BCH 5-09

PROJECT NO. B-4619

ROBESON COUNTY

STATION: 17+00.00 -L-

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

STANDARD BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT

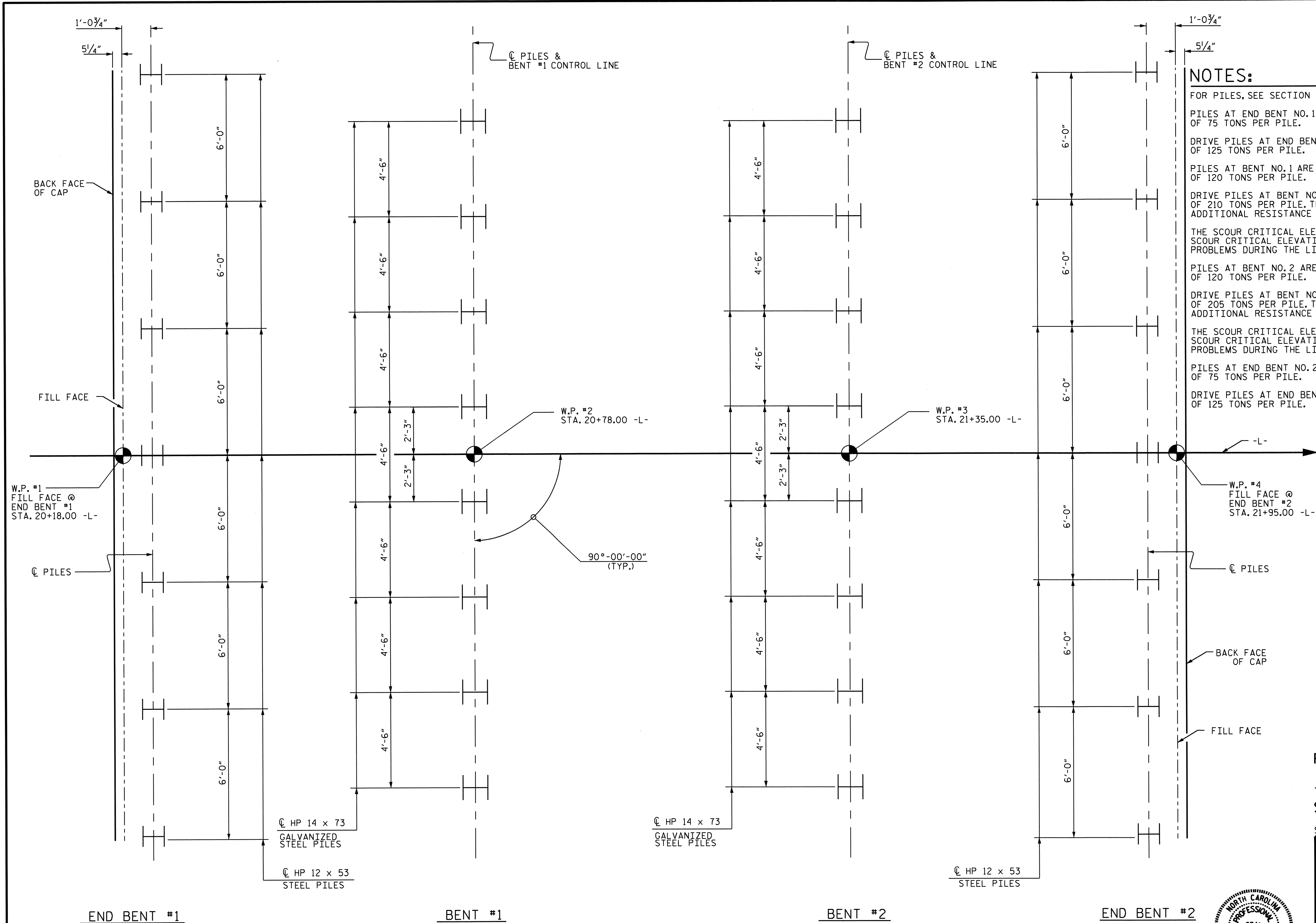
90° SKEW

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

TOTAL SHEETS: 48







**NOTES:**

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

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

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

PILES AT BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 120 TONS PER PILE.

DRIVE PILES AT BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 210 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWDRAG FOR SCOUR.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.1 IS ELEVATION 63 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

PILES AT BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 120 TONS PER PILE.

DRIVE PILES AT BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 205 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWDRAG OR SCOUR.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.2 IS ELEVATION 62.5 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

PILES AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 75 TONS PER PILE.

DRIVE PILES AT END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 125 TONS PER PILE.

DESIGN ENGINEER OF RECORD: A.M. LEE DATE: 5-7-13

DRAWN BY: PEGGY ADKINS DATE: 2-19-13

CHECKED BY: E.E. MURRAY DATE: 3-25-13

**FOUNDATION LAYOUT**  
DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE

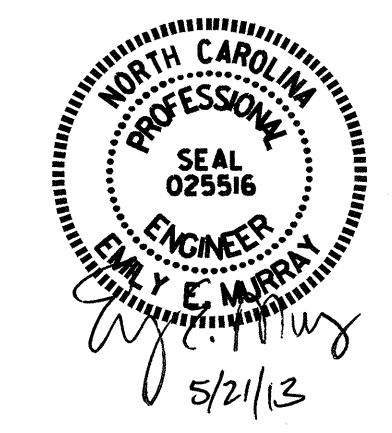
PROJECT NO. B-4619  
ROBESON COUNTY  
STATION: 21+06.50 -L-

SHEET 2 OF 3

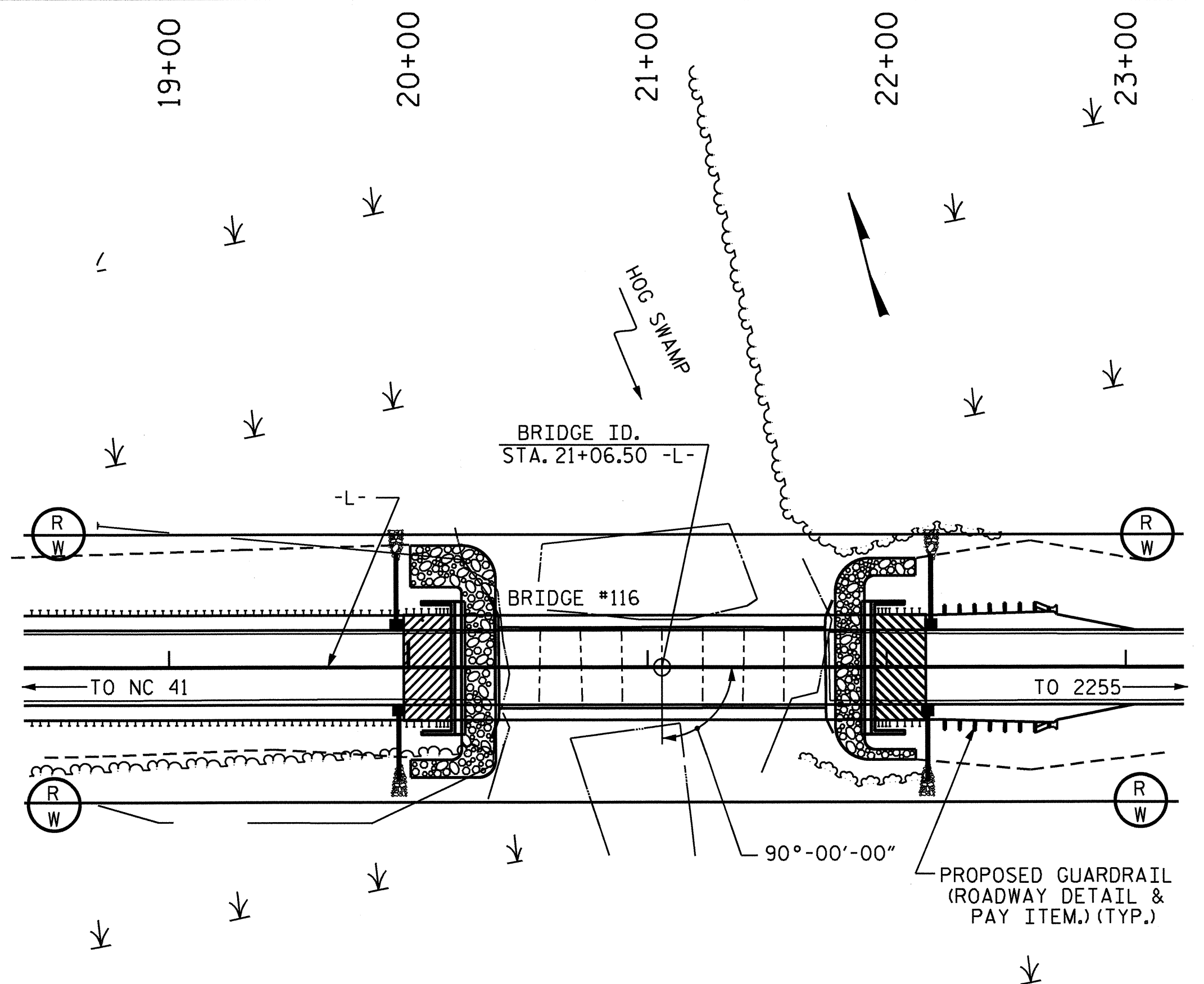
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**GENERAL DRAWING**  
FOR BRIDGE OVER HOG SWAMP  
ON SR 2262 BETWEEN NC 41  
AND SR 2255

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			48



B.M. #1 - RAILROAD SPIKE IN BASE OF 18" GUM TREE,  
STA. 19+69.55 -L- 42.91' RIGHT, ELEV. = 81.72



FOR UTILITY INFORMATION, SEE  
UTILITY PLANS AND 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 2.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 35 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.
- THE EXISTING STRUCTURE CONSISTING OF 8 SPANS, 1 @ 17'-0", 1 @ 17'-2", 1 @ 16'-11" 1 @ 16'-8", 1 @ 17'-1" AND 2 @ 17'-4" WITH REINFORCED CONCRETE DECK ON TIMBER JOISTS WITH A CLEAR ROADWAY WIDTH OF 24.0 FT. ON TIMBER CAPS ON TIMBER PILES AND STL. CRUTCH BTS. AND LOCATED AT PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
- CRANES AND DRIVING EQUIPMENT WILL NOT BE PERMITTED ON CORED SLAB UNITS.
- CAST-IN-PLACE END BENTS AND INTERIOR BENTS WILL NOT BE ALLOWED.
- FOR 3'-0" X 2'-6" PRESTRESSED CONCRETE BENT CAPS, SEE SPECIAL PROVISIONS.
- ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

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 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.

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

FOR INTERIOR BENTS NO. 1 & NO. 2 ONLY PARTIAL GALVANIZING OF THE PILES IS REQUIRED. SEE INTERIOR BENT SHEETS FOR REQUIRED GALVANIZED LENGTHS. PAYMENT FOR PARTIALLY GALVANIZED PILES WILL BE MADE UNDER THE CONTRACT UNIT PRICE FOR GALVANIZED STEEL PILES.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE 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. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 12 X 53 STEEL PILES		HP 14 X 73 GALVANIZED STEEL PILES		PILE REDRIVES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS I (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS		3'-0" X 2'-6" PRESTRESSED CONCRETE BENT CAPS	
							NO.	LIN.FT.	NO.	LIN.FT.						EA.	LIN.FT.		TONS
	LUMP SUM	LUMP SUM	LUMP SUM	CU. YDS.	LUMP SUM	LBS.													
SUPERSTRUCTURE					LUMP SUM							349.75			LUMP SUM	33	1919.50		
END BENT NO. 1				2.9		205	7	315			4		70	78					38.83
BENT NO. 1									8	520	4								35.33
BENT NO. 2									8	360	4								35.33
END BENT NO. 2				2.9		205	7	350			4		59	65					38.83
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	5.8	LUMP SUM	410	14	665	16	880	16	349.75	129	143	LUMP SUM	33	1919.50		148.32

HYDRAULIC DATA

DESIGN DISCHARGE = 1700 C.F./S.  
 FREQUENCY OF DESIGN FLOOD = 25 YEARS  
 DESIGN HIGH WATER ELEVATION = 78.5 FT.  
 DRAINAGE AREA = 62.0 SQ. MI.  
 BASE DISCHARGE (0100) = 2544 C.F./S.  
 BASE HIGH WATER ELEVATION = 79.2 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 6700 C.F./S.  
 FREQUENCY OF OVERTOPPING FLOOD = 500 YEARS +  
 OVERTOPPING FLOOD ELEVATION = 81.1 FT.

DESIGN ENGINEER OF RECORD:  
A.M. LEE DATE: 5-7-13  
 DRAWN BY: PEGGY ADKINS DATE: 2-26-13  
 CHECKED BY: E.E. MURRAY DATE: 3-25-13

21-MAY-2013 09:12  
 R:\TIP\Projects-B\B4619\Structures\Plans\Final Plans\Str.#2\B-4619.sd.gdgn  
 taverette

PROJECT NO. B-4619  
ROBESON COUNTY  
 STATION: 21+06.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

GENERAL DRAWING  
 FOR BRIDGE OVER HOG SWAMP  
 ON SR 2262 BETWEEN NC 41  
 AND SR 2255



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			48

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	Y <sub>DC</sub>	Y <sub>OW</sub>
	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		
						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	1.06	--	1.75	0.272	1.27	A	ER	28.906	0.518	1.51	A	ER	2.891	0.80	0.272	1.06	A	ER	28.906		
	HL-93(0pr)	N/A	--	1.65	--	1.35	0.272	1.65	A	ER	28.906	0.518	1.96	A	ER	2.891	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.33	48.035	1.75	0.272	1.61	A	ER	28.906	0.518	1.84	A	ER	5.781	0.80	0.272	1.33	A	ER	28.906		
	HS-20(0pr)	36.000	--	2.08	74.985	1.35	0.272	2.08	A	ER	28.906	0.518	2.38	A	ER	5.781	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.86	38.570	1.4	0.272	4.30	A	ER	28.906	0.518	5.28	A	ER	5.781	0.80	0.272	2.86	A	ER	28.906	
		SNGARBS2	20.000	--	2.19	43.876	1.4	0.272	3.30	A	ER	28.906	0.518	3.81	A	ER	5.781	0.80	0.272	2.19	A	ER	28.906	
		SNAGRIS2	22.000	--	2.11	46.330	1.4	0.272	3.17	A	ER	28.906	0.518	3.56	A	ER	5.781	0.80	0.272	2.11	A	ER	28.906	
		SNCOTTS3	27.250	--	1.42	38.792	1.4	0.272	2.14	A	ER	28.906	0.518	2.64	A	ER	5.781	0.80	0.272	1.42	A	ER	28.906	
		SNAGGRS4	34.925	--	1.21	42.407	1.4	0.272	1.83	A	ER	28.906	0.518	2.23	A	ER	5.781	0.80	0.272	1.21	A	ER	28.906	
		SNS5A	35.550	--	1.19	42.151	1.4	0.272	1.78	A	ER	28.906	0.518	2.28	A	ER	5.781	0.80	0.272	1.19	A	ER	28.906	
		SNS6A	39.950	--	1.10	43.883	1.4	0.272	1.65	A	ER	28.906	0.518	2.10	A	ER	5.781	0.80	0.272	1.10	A	ER	28.906	
	TTST	SNS7B	42.000	--	1.05	43.951	1.4	0.272	1.58	A	ER	28.906	0.518	2.08	A	ER	5.781	0.80	0.272	1.05	A	ER	28.906	
		TNAGRIT3	33.000	--	1.34	44.307	1.4	0.272	2.02	A	ER	28.906	0.518	2.48	A	ER	5.781	0.80	0.272	1.34	A	ER	28.906	
		TNT4A	33.075	--	1.35	44.701	1.4	0.272	2.03	A	ER	28.906	0.518	2.40	A	ER	5.781	0.80	0.272	1.35	A	ER	28.906	
		TNT6A	41.600	--	1.12	46.401	1.4	0.272	1.68	A	ER	28.906	0.518	2.26	A	ER	2.891	0.80	0.272	1.12	A	ER	28.906	
		TNT7A	42.000	--	1.13	47.317	1.4	0.272	1.70	A	ER	28.906	0.518	2.15	A	ER	5.781	0.80	0.272	1.13	A	ER	28.906	
		TNT7B	42.000	--	1.18	49.416	1.4	0.272	1.77	A	ER	28.906	0.518	2.02	A	ER	5.781	0.80	0.272	1.18	A	ER	28.906	
		TNAGRIT4	43.000	--	1.11	47.801	1.4	0.272	1.67	A	ER	28.906	0.518	1.95	A	ER	5.781	0.80	0.272	1.11	A	ER	28.906	
TNAGT5A	45.000	--	1.04	46.949	1.4	0.272	1.57	A	ER	28.906	0.518	1.96	A	ER	5.781	0.80	0.272	1.04	A	ER	28.906			
TNAGT5B	45.000	3	1.03	46.189	1.4	0.272	1.55	A	ER	28.906	0.518	1.85	A	ER	5.781	0.80	0.272	1.03	A	ER	28.906			

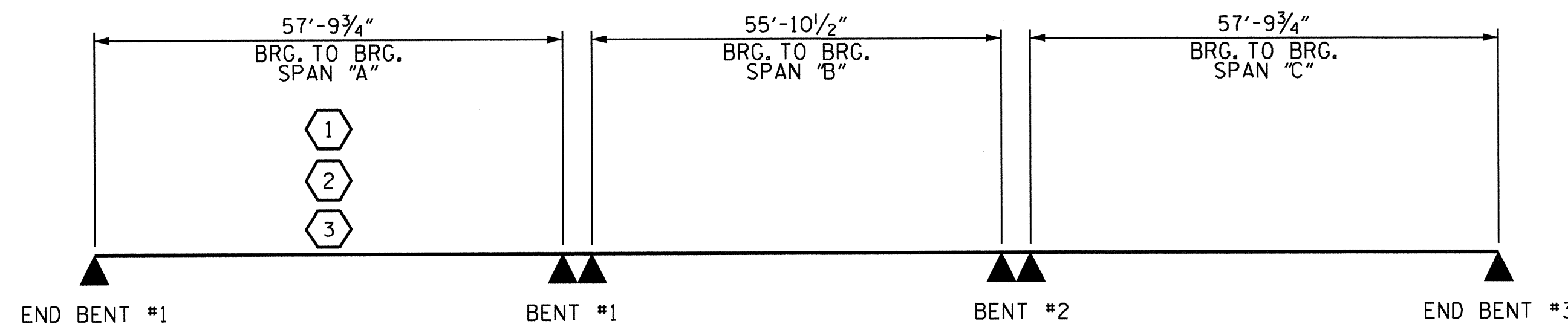
NOTES:

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:

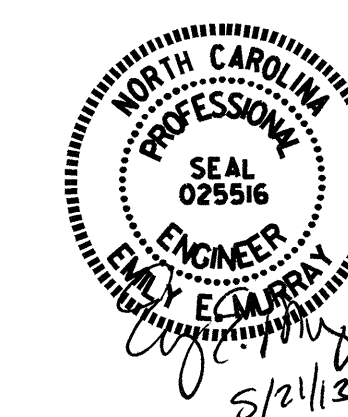
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- 

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



LRFR SUMMARY

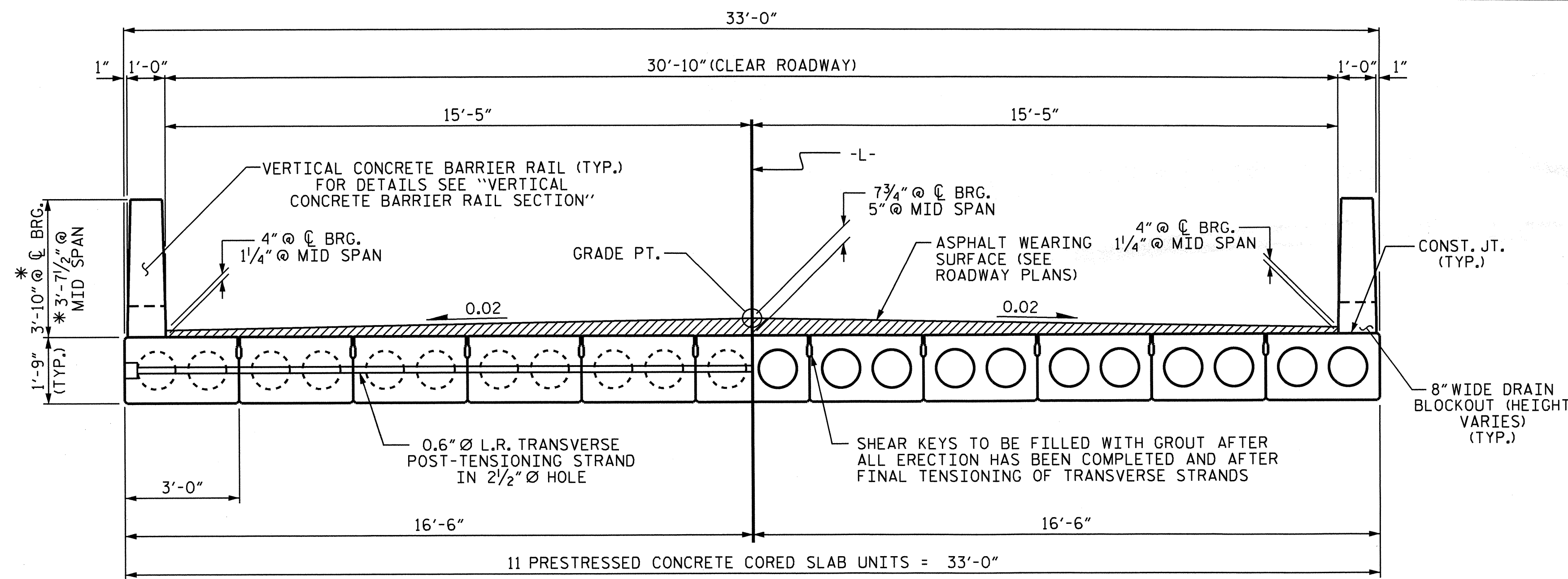
PROJECT NO. B-4619  
ROBESON COUNTY  
 STATION: 21+06.50 -L-



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-27
1			3			TOTAL SHEETS 48
2			4			

DESIGN ENGINEER OF RECORD:  
A.M. LEE DATE: 5-7-13  
 ASSEMBLED BY: PEGGY ADKINS DATE: 2-26-13  
 CHECKED BY: E.E. MURRAY DATE: 3-25-13  
 DRAWN BY: MAA 1/08  
 CHECKED BY: GM/DI 2/08  
 REV. 11/12/08RR MAA/GM  
 REV. 10/1/11 MAA/GM

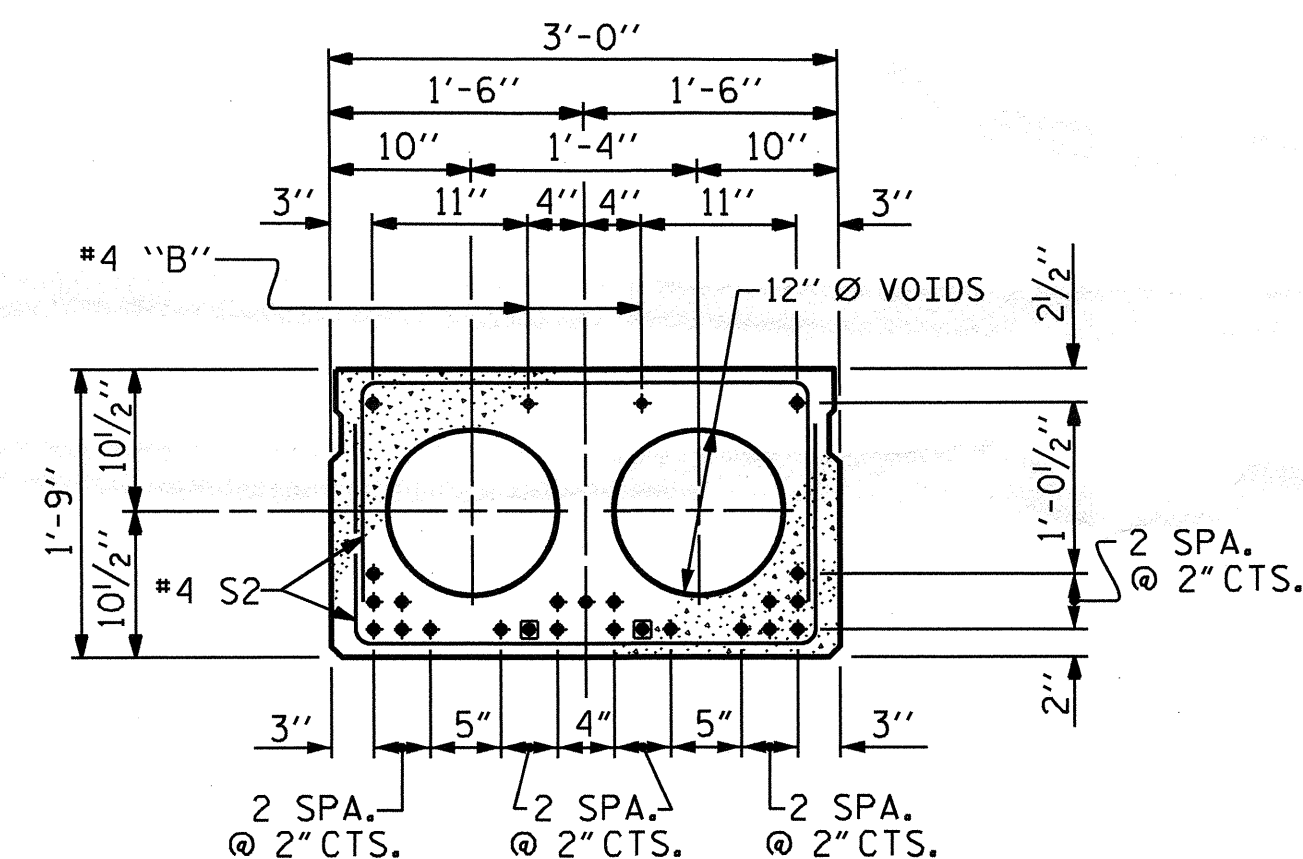


HALF SECTION  
AT INTERMEDIATE DIAPHRAGMS

HALF SECTION  
THROUGH VOIDS

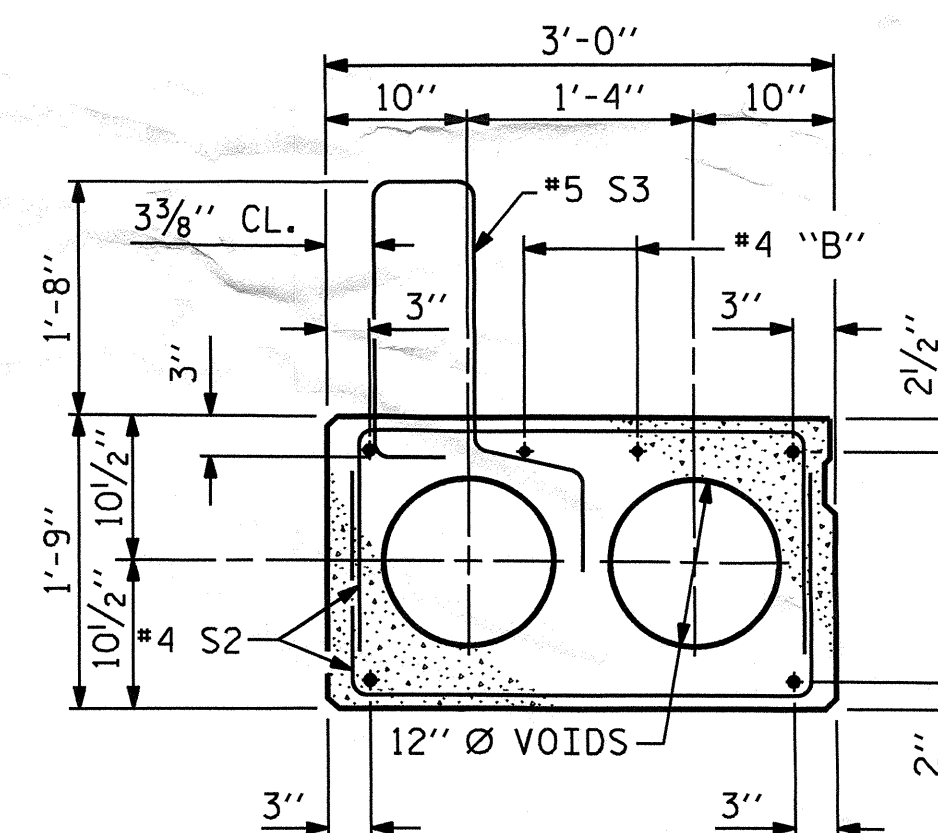
TYPICAL SECTION

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



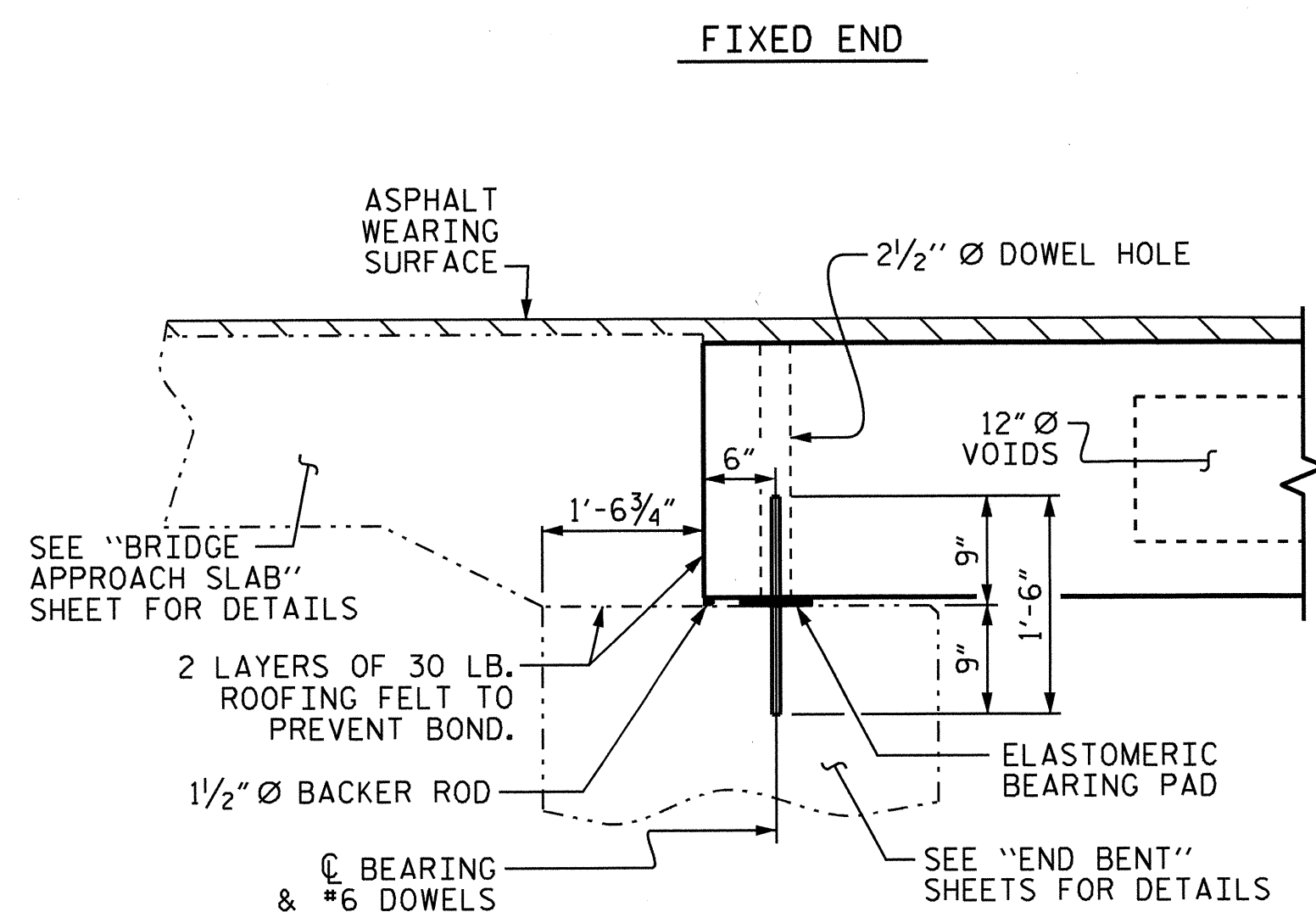
☐ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 4'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

INTERIOR SLAB SECTION  
(23 STRANDS REQUIRED)

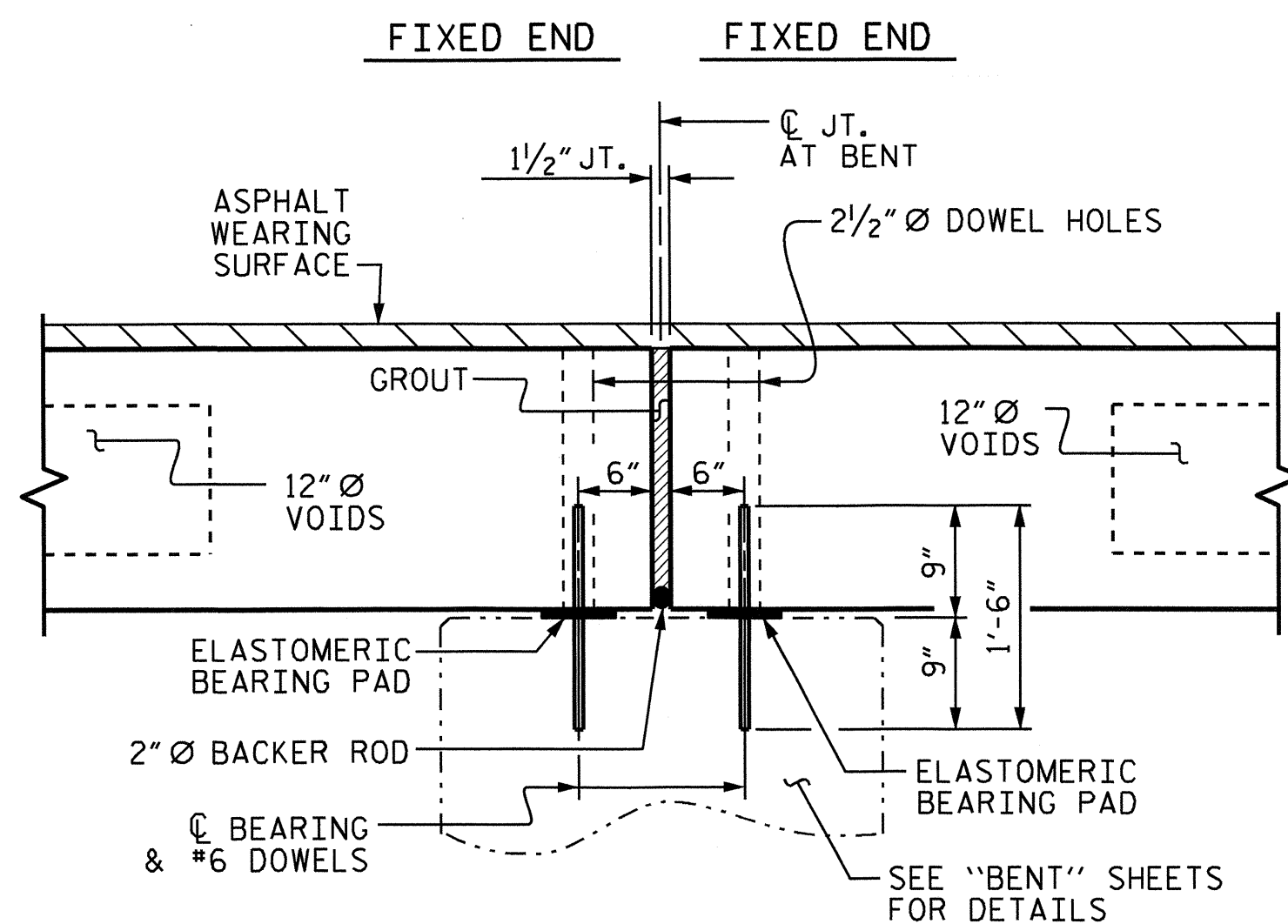


EXT. SLAB SECTION  
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)

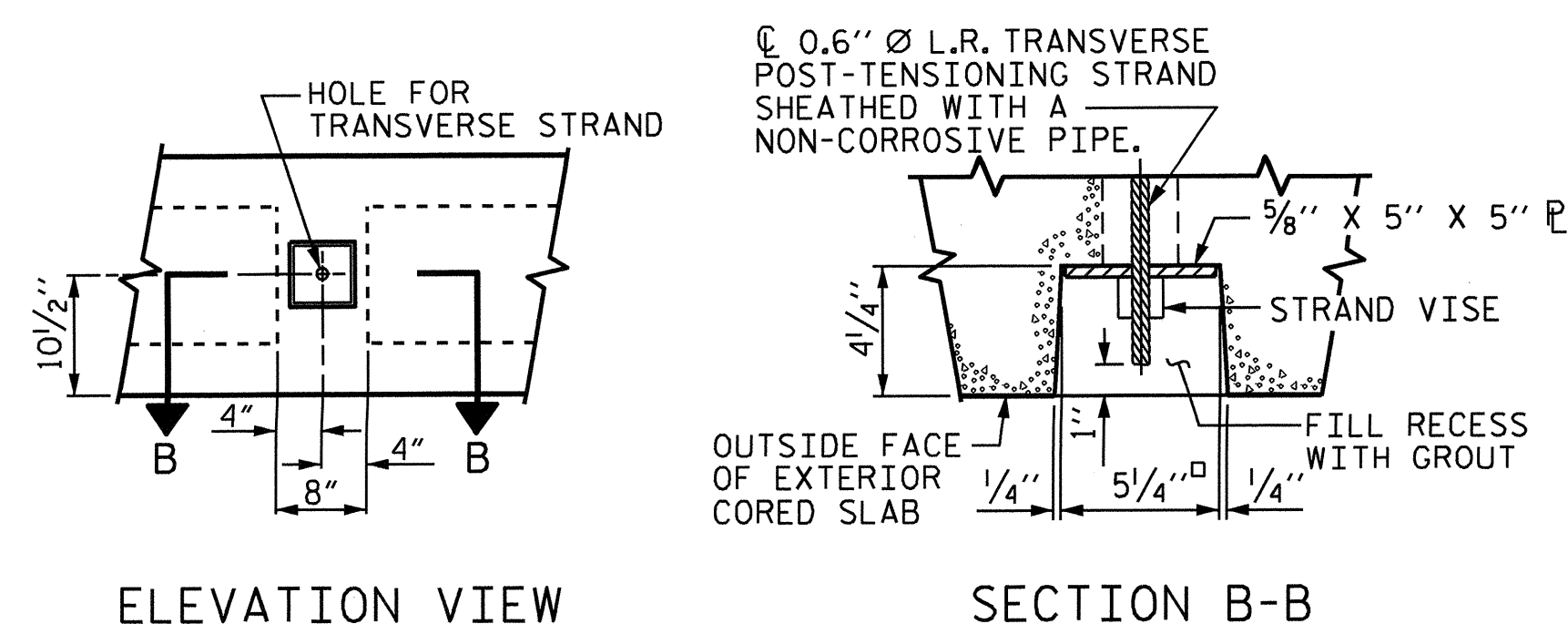
0.6" Ø LOW  
RELAXATION STRAND LAYOUT



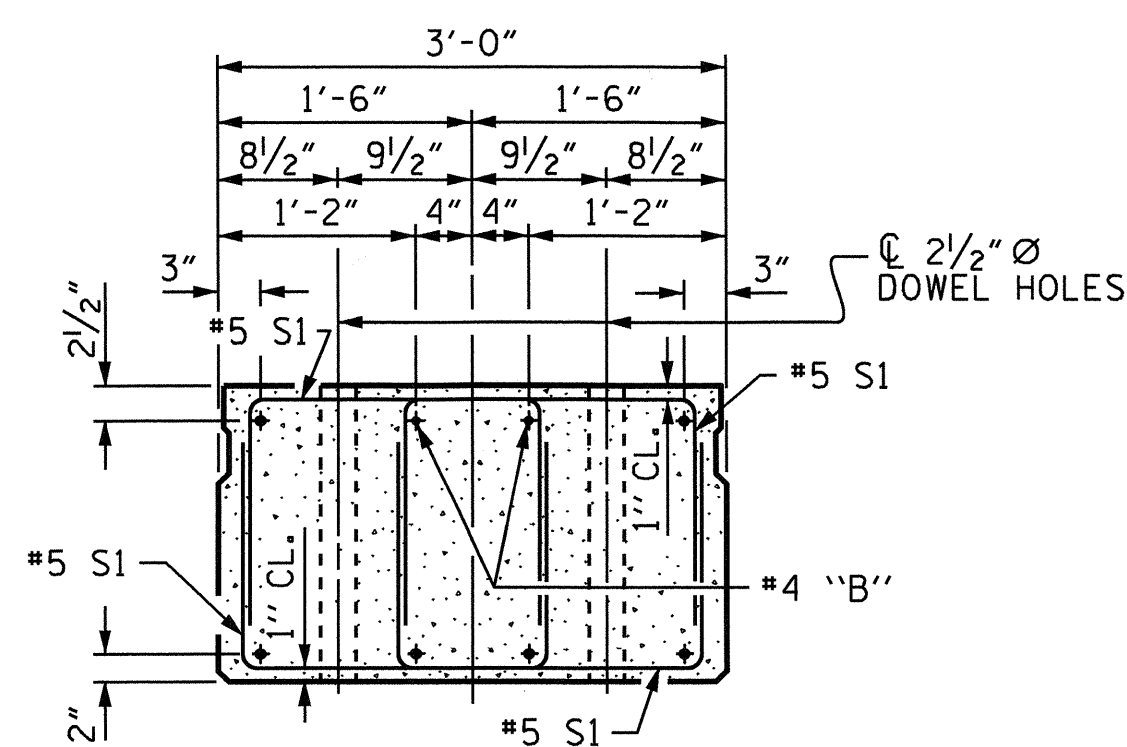
SECTION AT END BENT



SECTION AT BENT

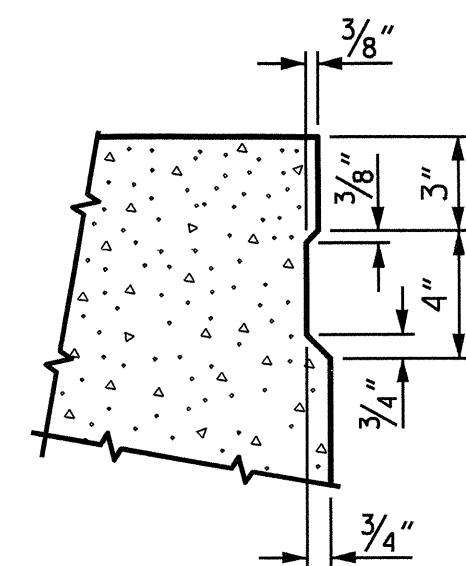


GROUTED RECESS AT END OF  
POST-TENSIONED STRAND OF CORED SLABS



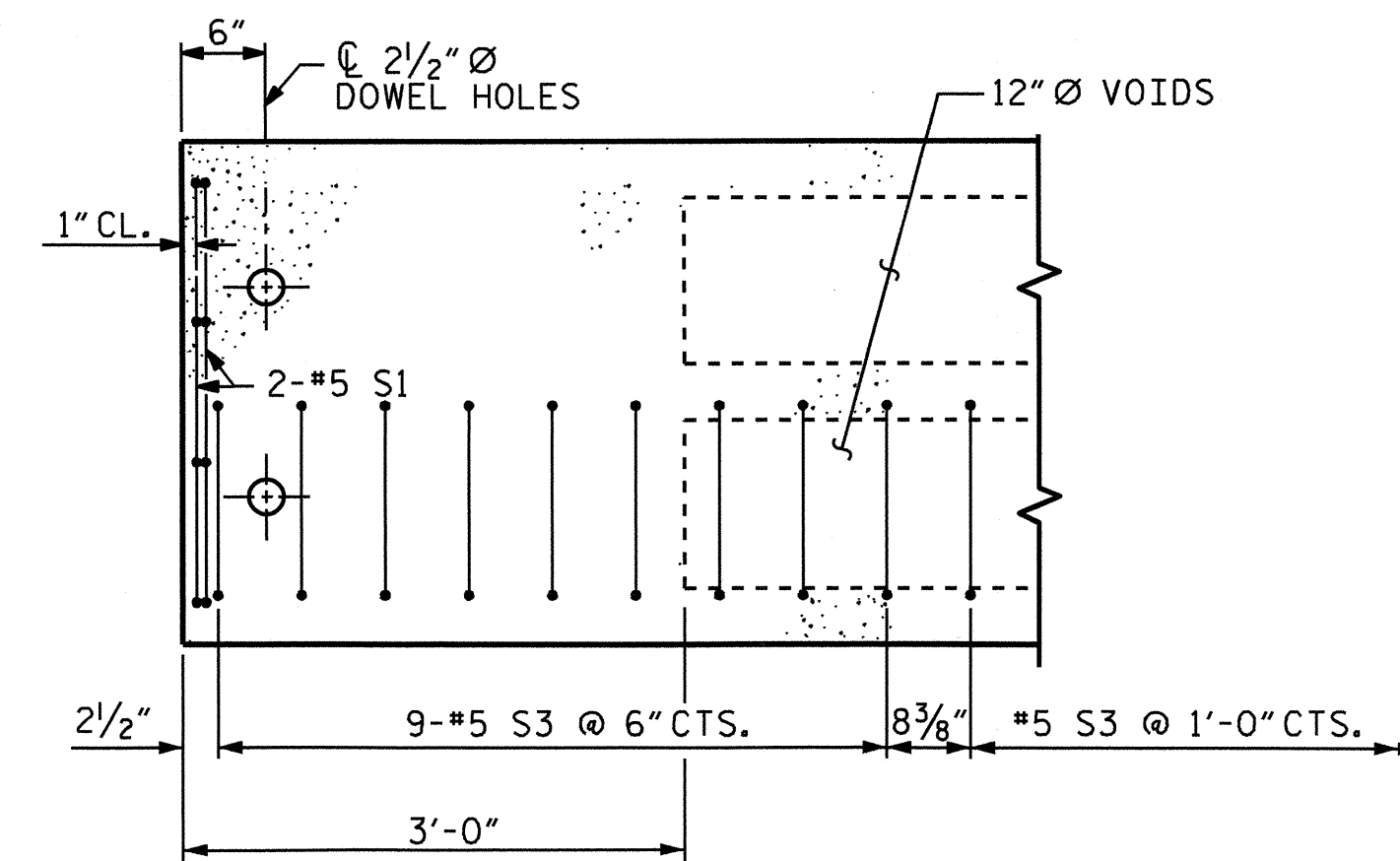
END ELEVATION

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



SHEAR KEY DETAIL

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

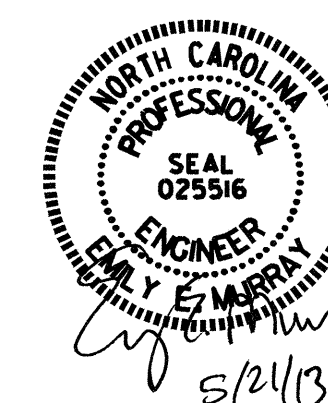


PART PLAN-EXTERIOR SECTION

NOTE: EXTERIOR SECTION SHOWN-INTERIOR SECTION SIMILAR EXCEPT OMIT S3 BARS.

PROJECT NO. B-4619  
ROBESON COUNTY  
STATION: 21+06.50 -L-

SHEET 1 OF 8



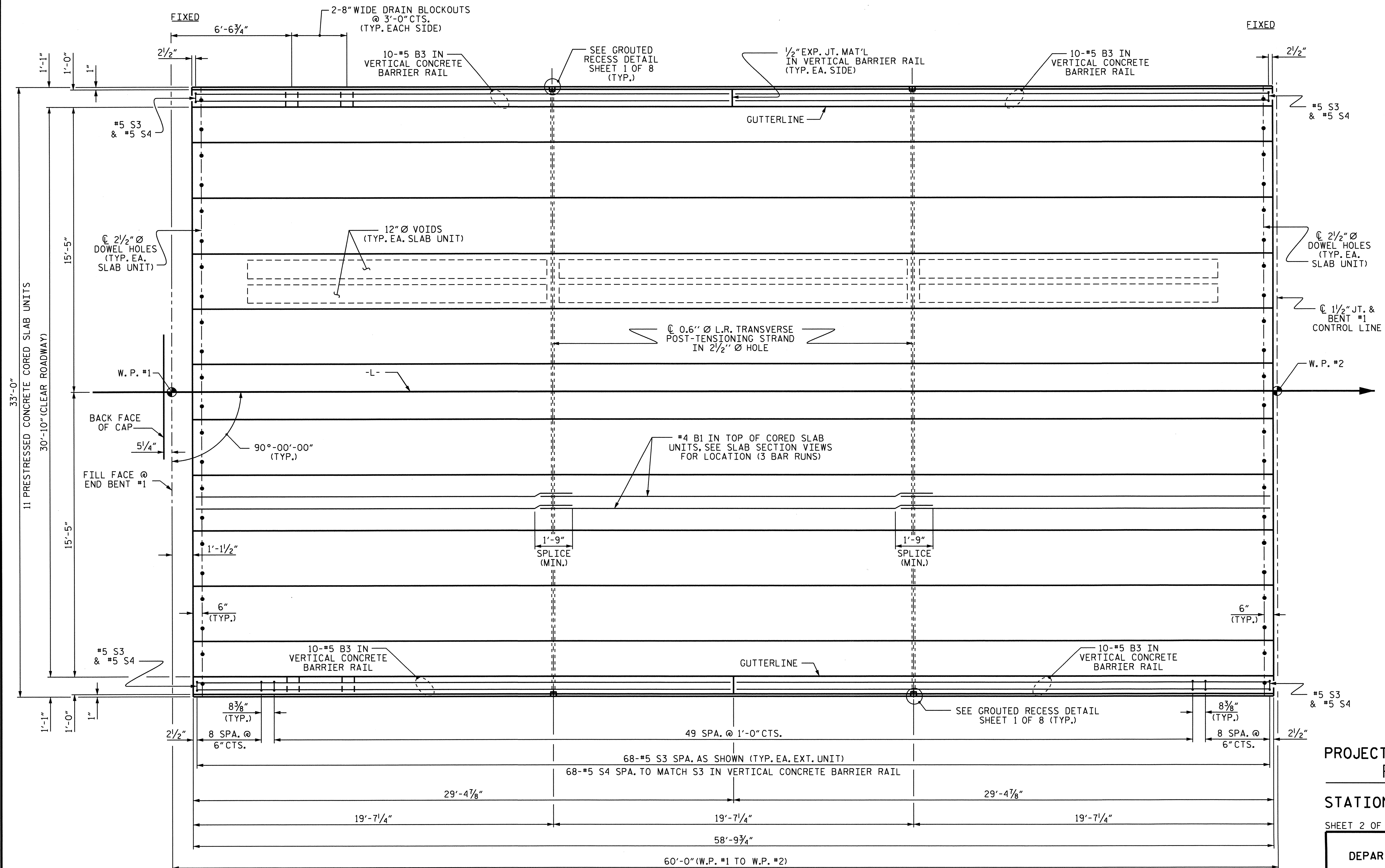
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
3'-0" X 1'-9"  
PRESTRESSED CONCRETE  
CORED SLAB UNIT  
90° SKEW

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28	
1			3			TOTAL SHEETS	
2			4			48	

ASSEMBLED BY: PEGGY ADKINS DATE: 2-26-13  
CHECKED BY: T. AVERETTE DATE: 3-20-13

DRAWN BY: WJH 4/89 REV. 7/10/OIRR RWW/LES  
CHECKED BY: FCJ 5/89 REV. 5/1/06R TLA/GM  
REV. 10/1/11 MAA/GM

DESIGN ENGINEER OF RECORD:  
A.M. LEE DATE: 5-07-13



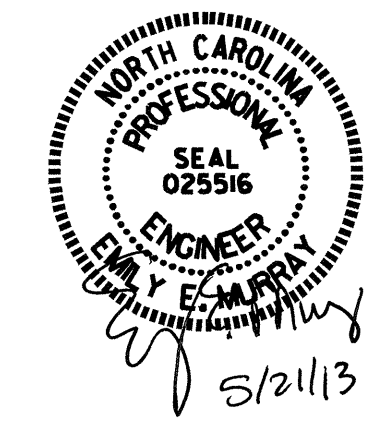
**SPAN A**

SEE SHEET 5 OF 8 FOR ADDITIONAL REINFORCING STEEL IN CORED SLAB UNITS.

PROJECT NO. B-4619  
ROBESON COUNTY  
 STATION: 21+06.50 -L-  
 SHEET 2 OF 8

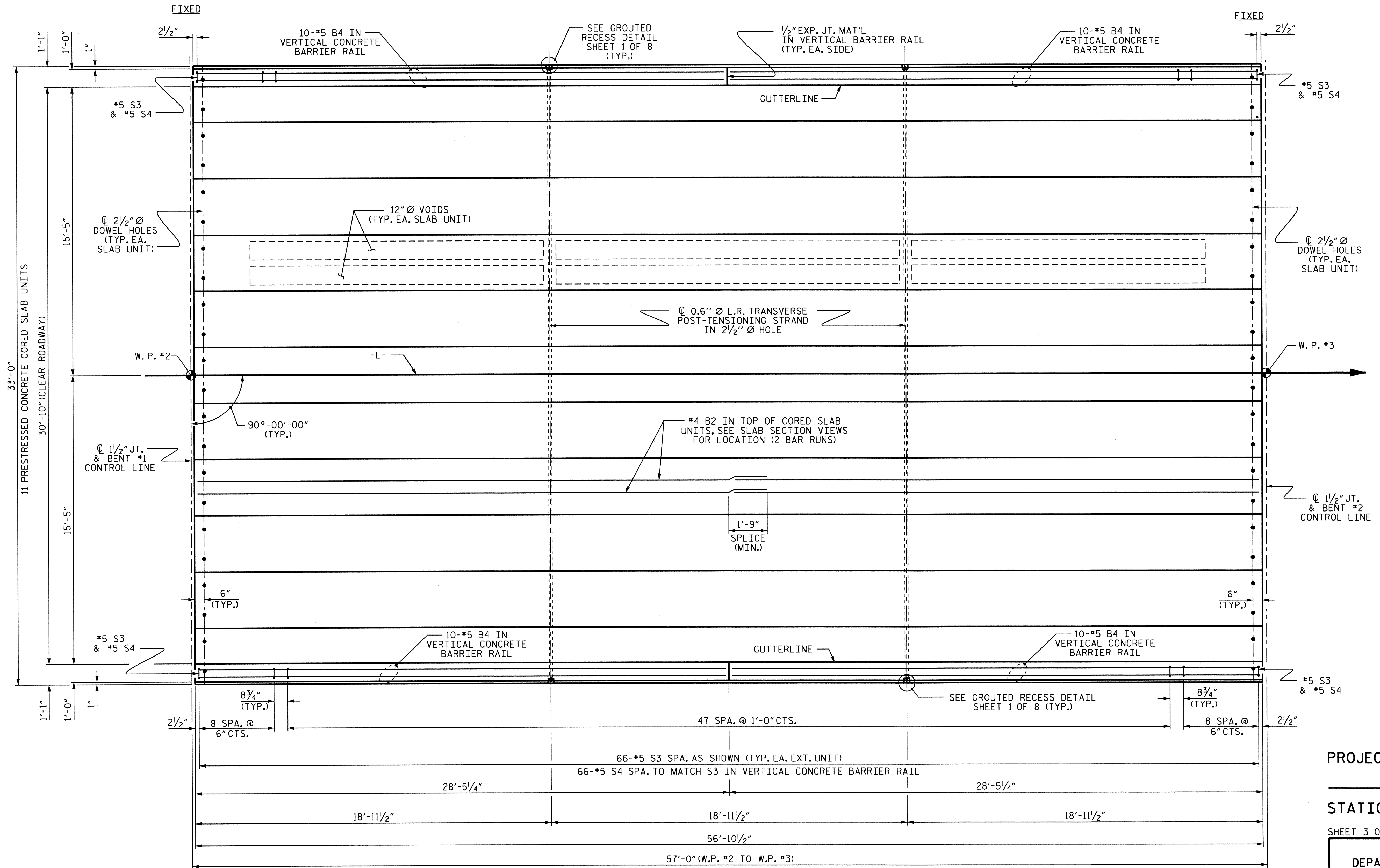
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 PLAN OF SPAN A



DESIGN ENGINEER OF RECORD:	
A.M. LEE	DATE: 5-07-13
DRAWN BY: PEGGY ADKINS DATE: 2-26-13	
CHECKED BY: T. AVERETTE DATE: 3-20-13	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			48



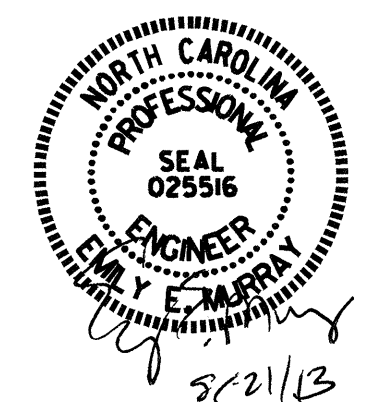
**SPAN B**

SEE SHEET 6 OF 8 FOR ADDITIONAL REINFORCING STEEL IN CORED SLAB UNITS.

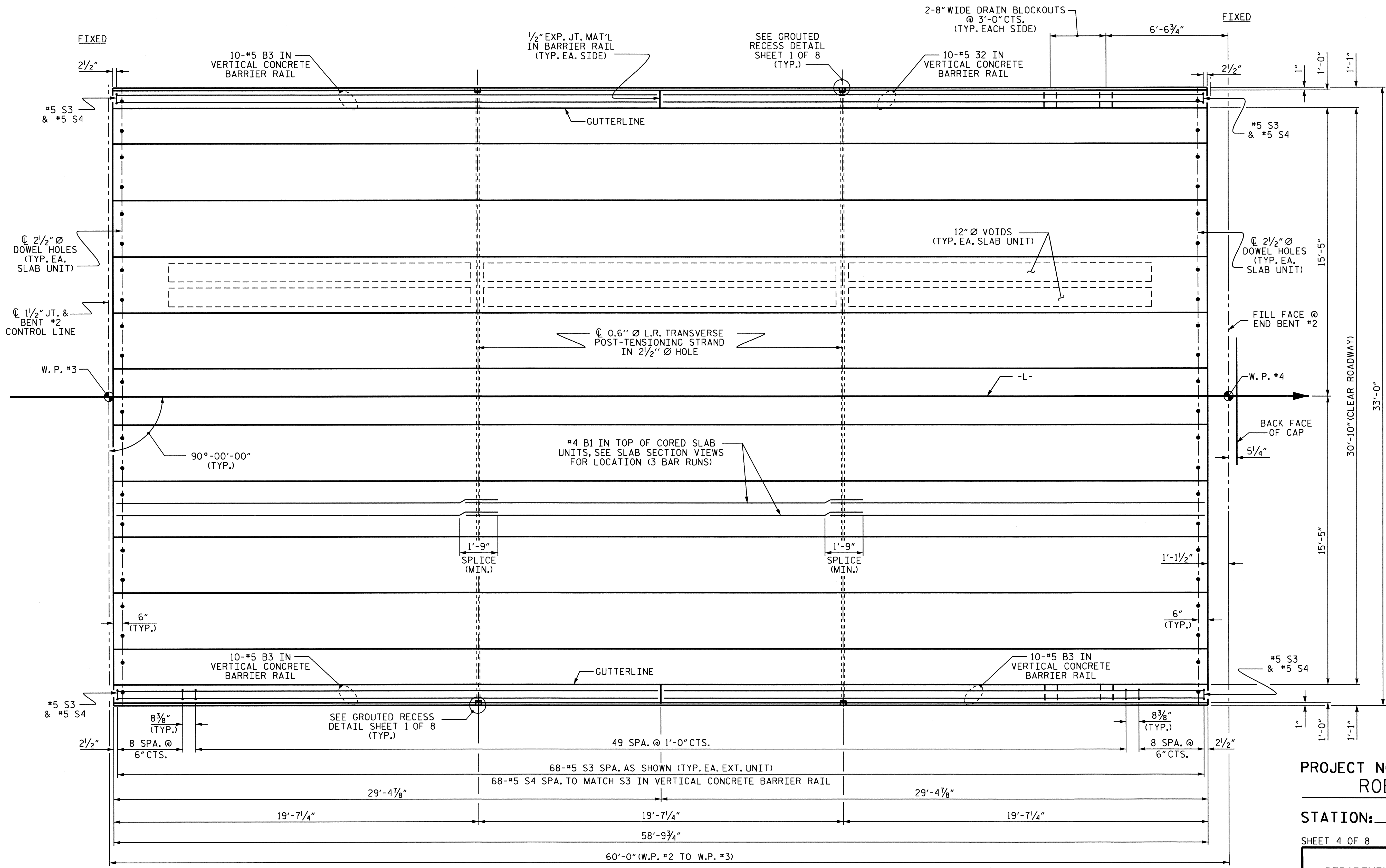
PROJECT NO. B-4619  
ROBESON COUNTY  
 STATION: 21+06.50 -L-

SHEET 3 OF 8

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPAN B					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-30
					TOTAL SHEETS 48

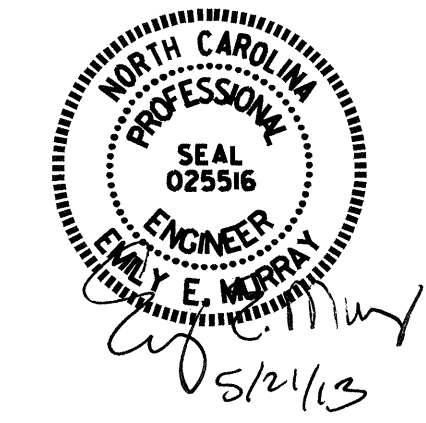


DESIGN ENGINEER OF RECORD:  
A.M. LEE DATE: 5-07-13  
 DRAWN BY: PEGGY ADKINS DATE: 2-26-13  
 CHECKED BY: T. AVERETTE DATE: 3-20-13



PROJECT NO. B-4619  
ROBESON COUNTY  
 STATION: 21+06.50 -L-  
 SHEET 4 OF 8

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

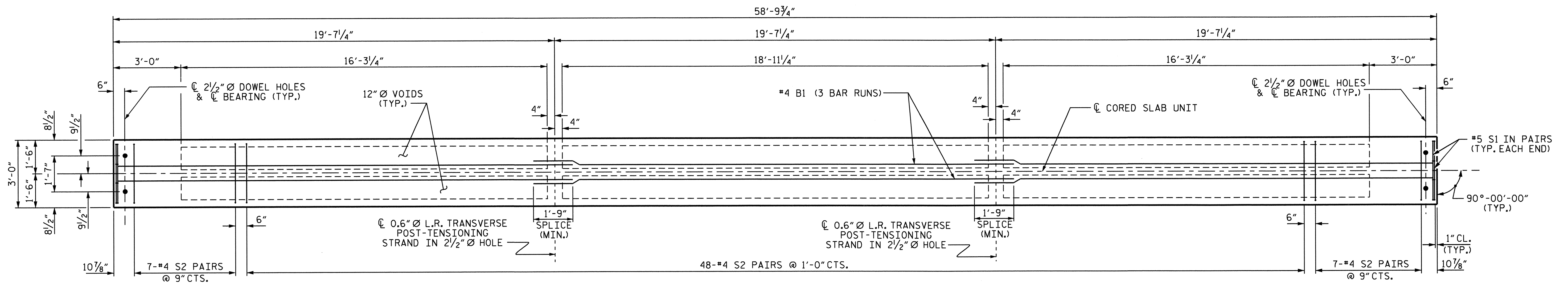


REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-31	
1			3			TOTAL SHEETS	
2			4			48	

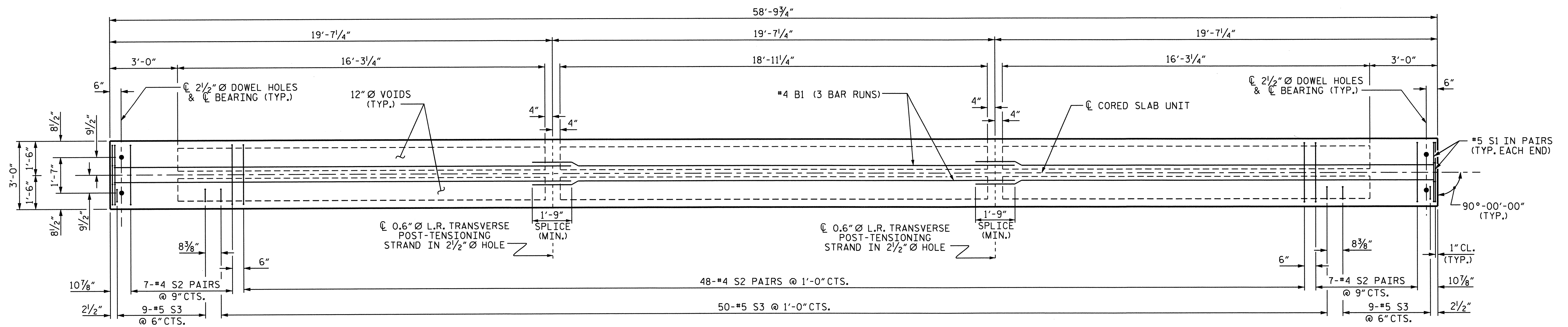
**SPAN C**  
 SEE SHEET 5 OF 8 FOR ADDITIONAL REINFORCING STEEL IN CORED SLAB UNITS.

DESIGN ENGINEER OF RECORD:  
A.M. LEE DATE: 5-07-13  
 DRAWN BY: PEGGY ADKINS DATE: 2-26-13  
 CHECKED BY: T. AVERETTE DATE: 3-20-13





PLAN OF INTERIOR CORED SLAB UNIT

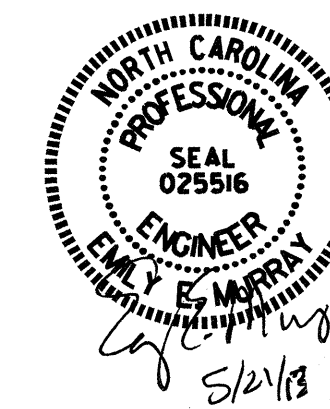


PLAN OF EXTERIOR CORED SLAB UNIT

(RIGHT EXTERIOR CORED SLAB UNIT SHOWN)

PROJECT NO. B-4619  
ROBESON COUNTY  
 STATION: 21+06.50 -L-

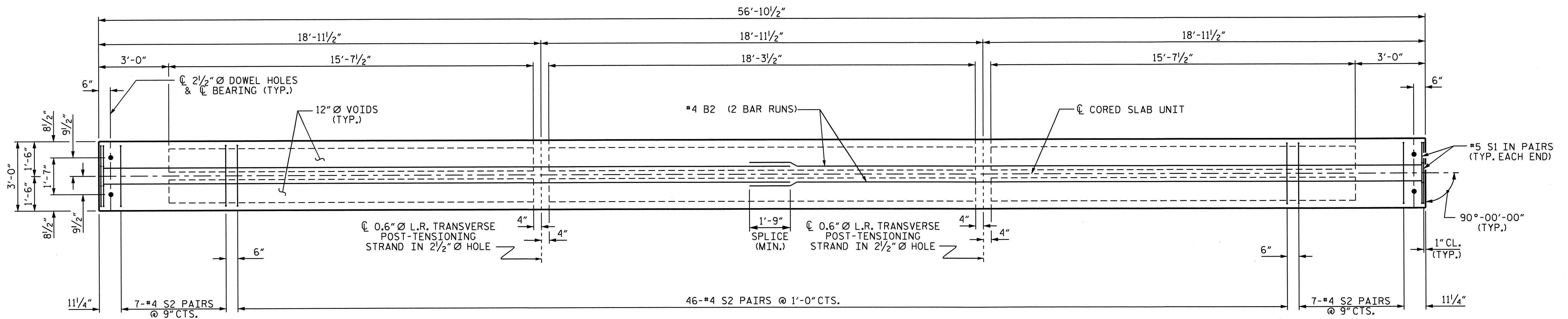
SHEET 5 OF 8



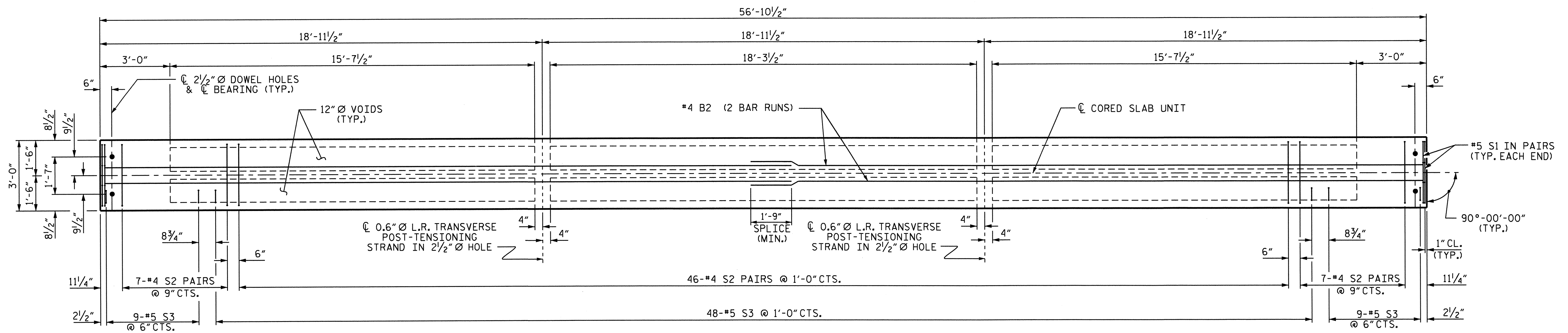
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 3'-0" X 1'-9"  
 PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 DETAILS  
 SPANS A & C

DESIGN ENGINEER OF RECORD:  
A.M. LEE DATE: 5-07-13  
 DRAWN BY: PEGGY ADKINS DATE: 2-26-13  
 CHECKED BY: T. AVERETTE DATE: 3-20-13

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			48



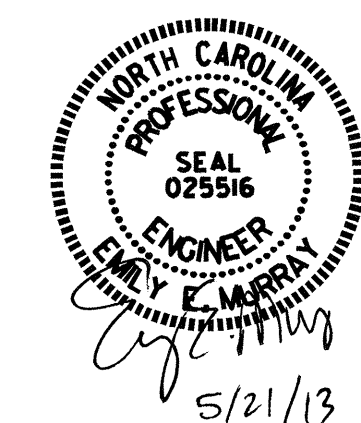
PLAN OF INTERIOR CORED SLAB UNIT - SPAN B



PLAN OF EXTERIOR CORED SLAB UNIT - SPAN B

PROJECT NO. B-4619  
ROBESON COUNTY  
 STATION: 21+06.50 -L-  
 SHEET 6 OF 8

DESIGN ENGINEER OF RECORD:  
A.M. LEE DATE: 5-07-13  
 DRAWN BY: PEGGY ADKINS DATE: 2-26-13  
 CHECKED BY: T. AVERETTE DATE: 3-20-13



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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33
1			3			TOTAL SHEETS 48
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.)

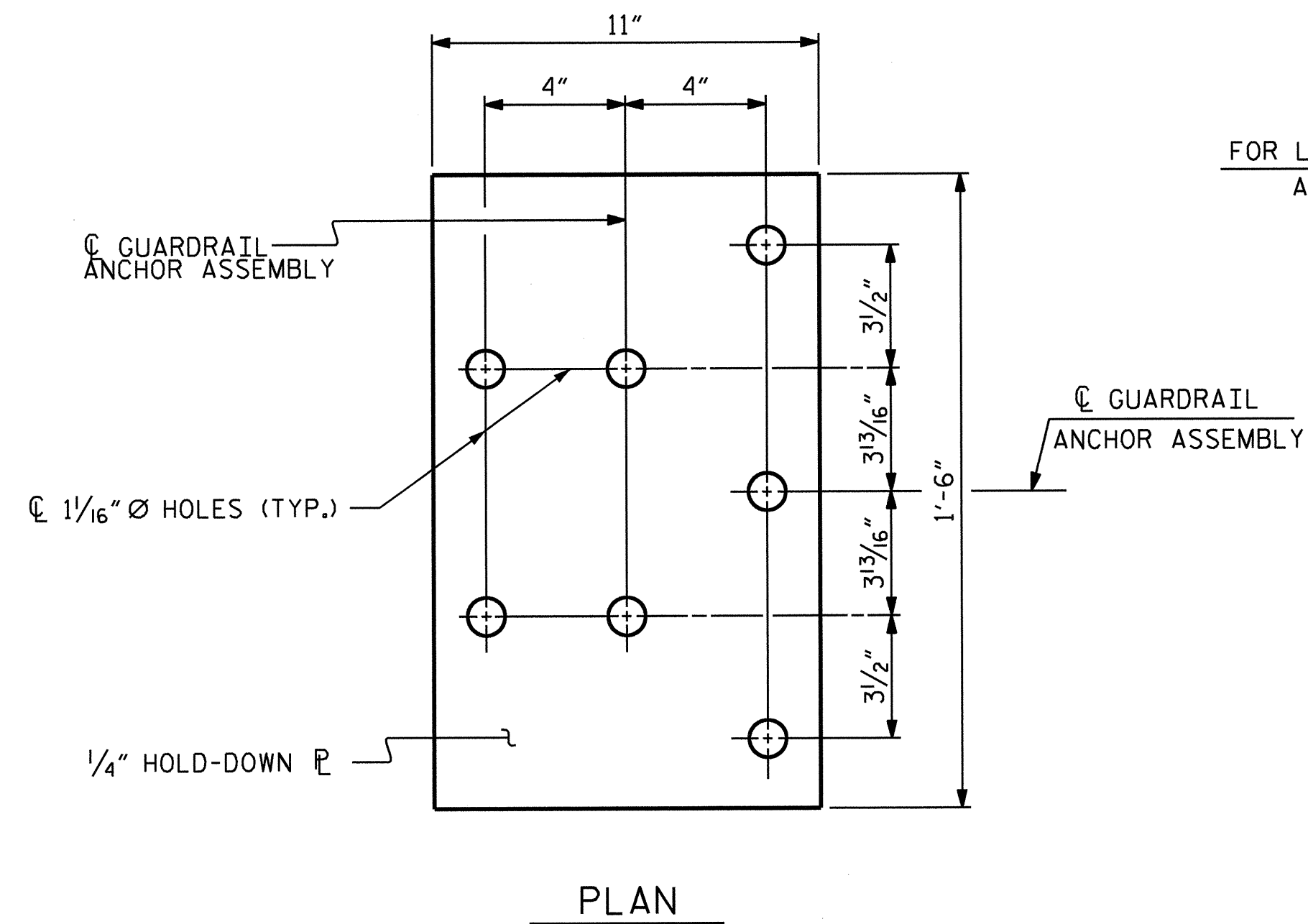
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

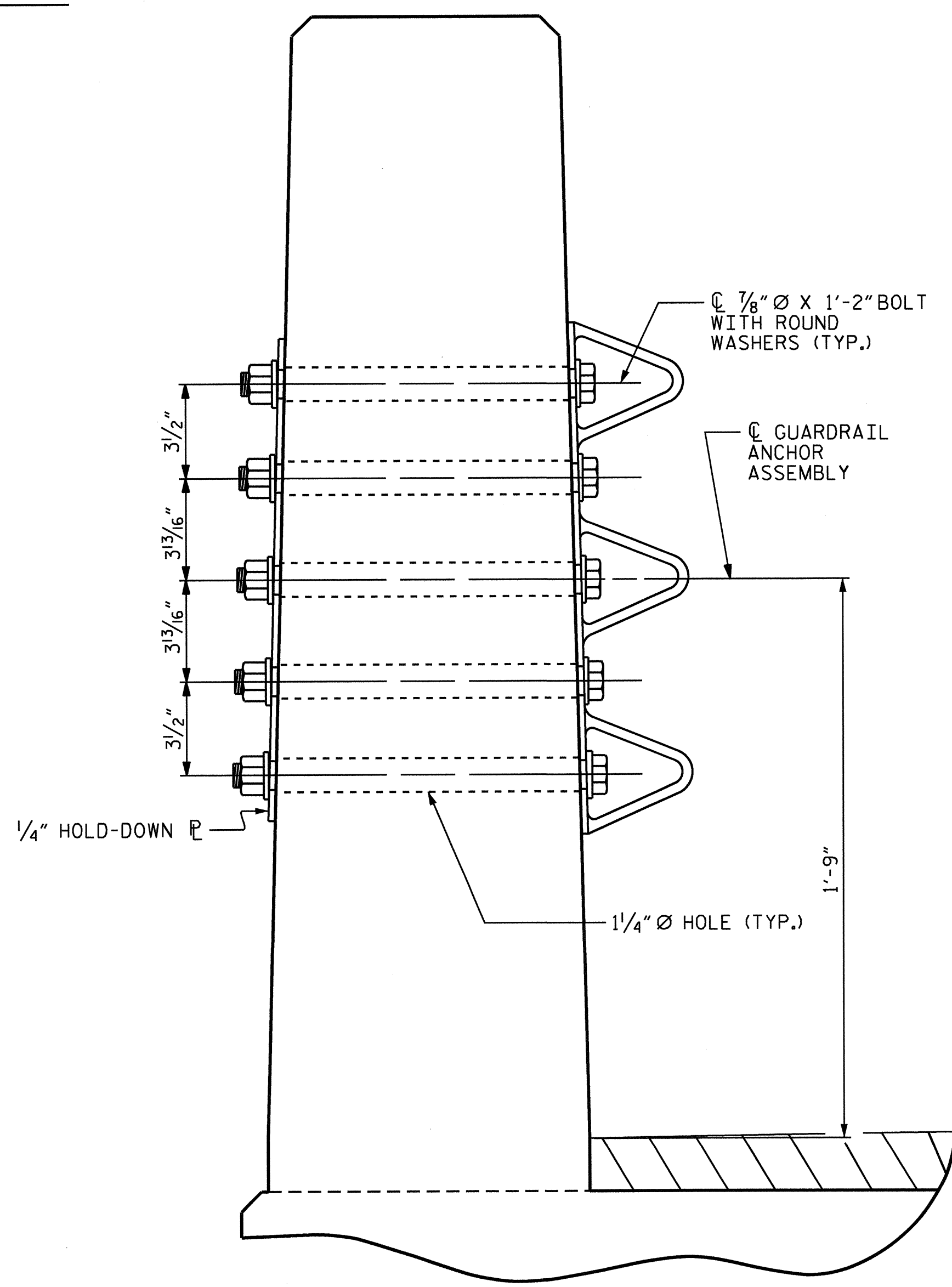
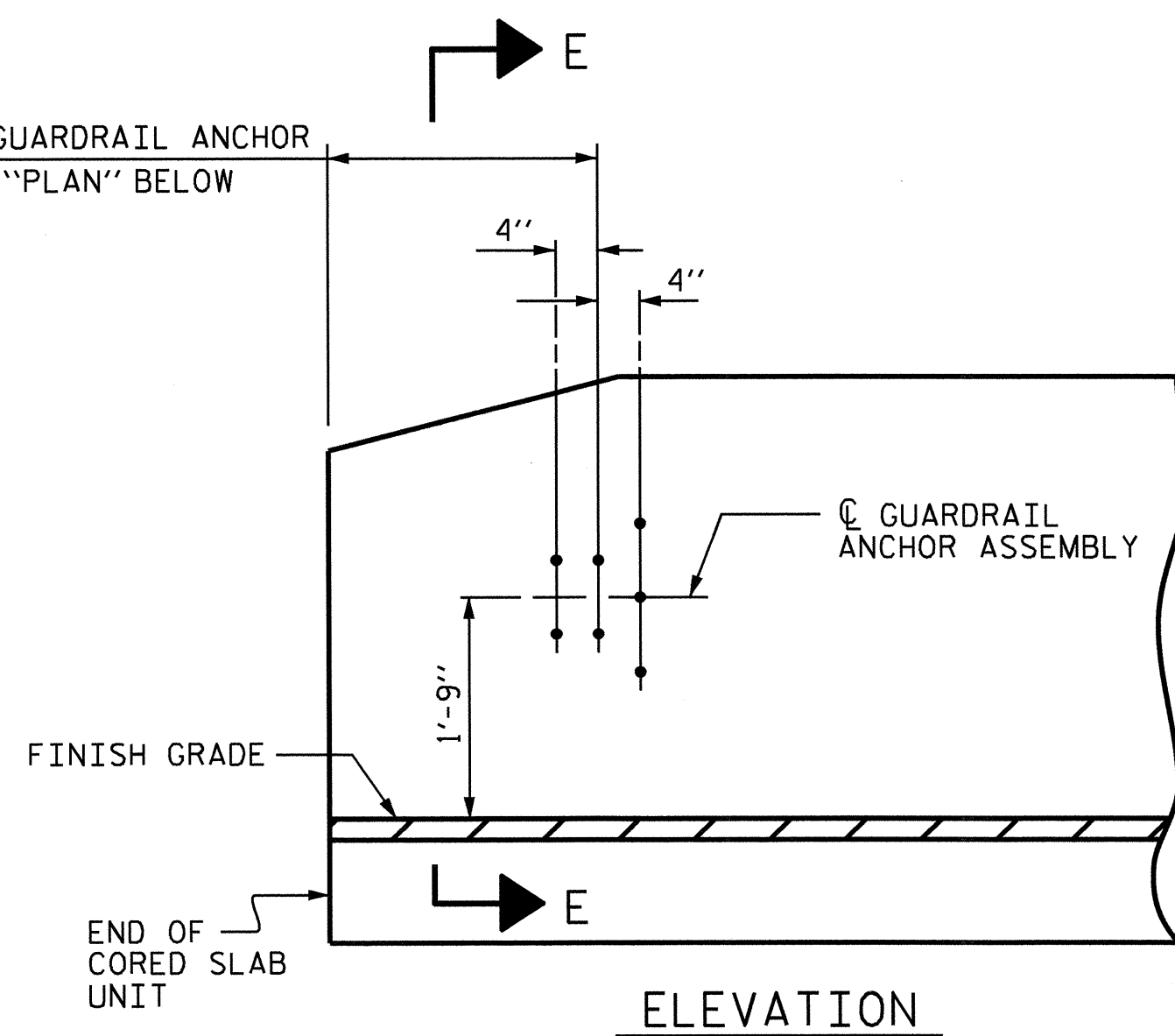
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

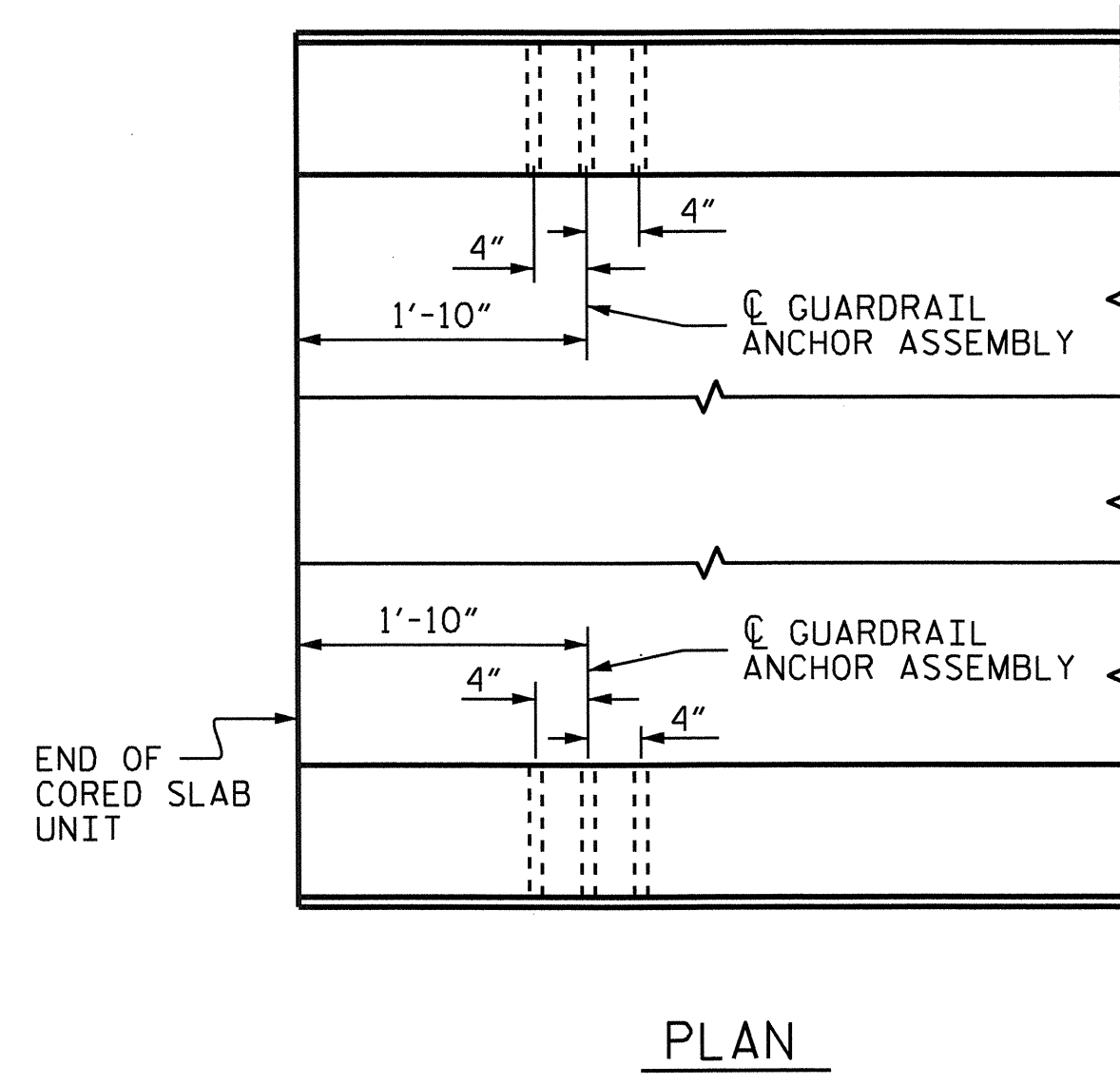
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



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

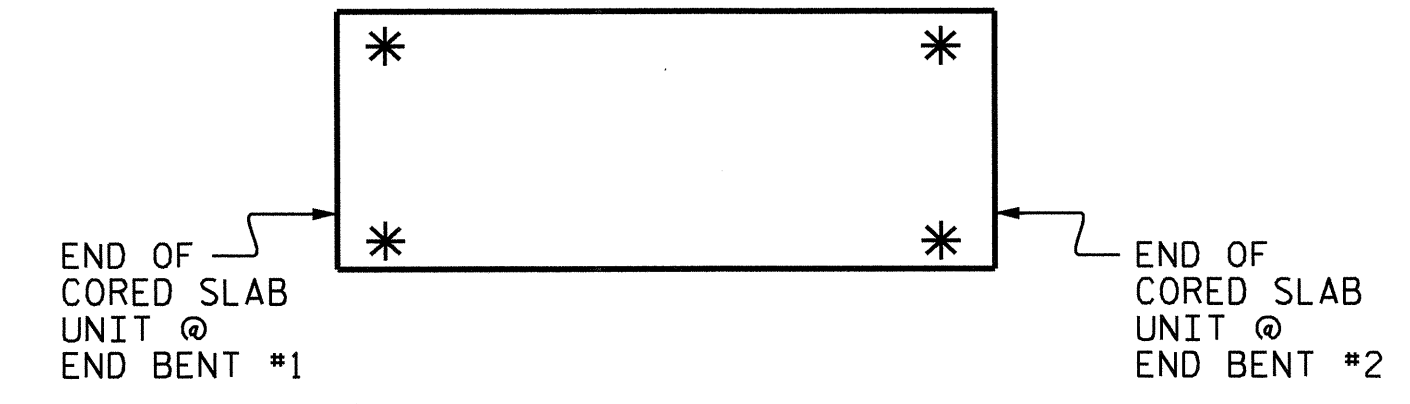


SECTION E-E  
GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL

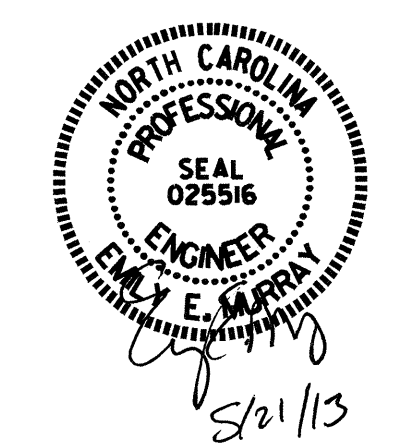
END BENT #1 SHOWN, END BENT #2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENT

\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

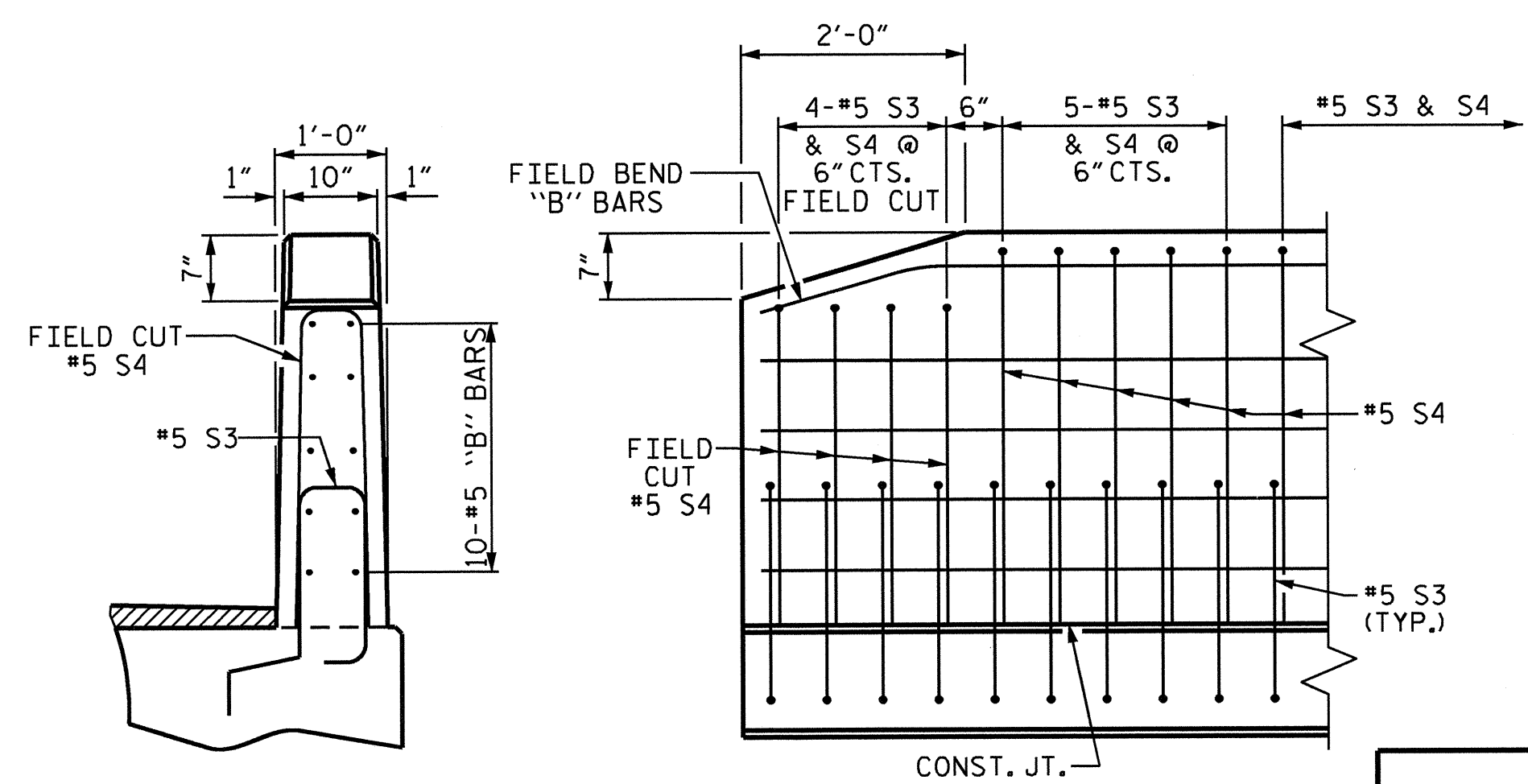
DESIGN ENGINEER OF RECORD: A.M. LEE DATE: 5-07-13	
ASSEMBLED BY: PEGGY ADKINS DATE: 2-26-13	CHECKED BY: T. AVERETTE DATE: 3-20-13
DRAWN BY: MAA 5/10	ADDED 5/6/10
CHECKED BY: CM 5/10	REV. 10/1/11 MAA/GM
	REV. 12/5/11 MAA/GM



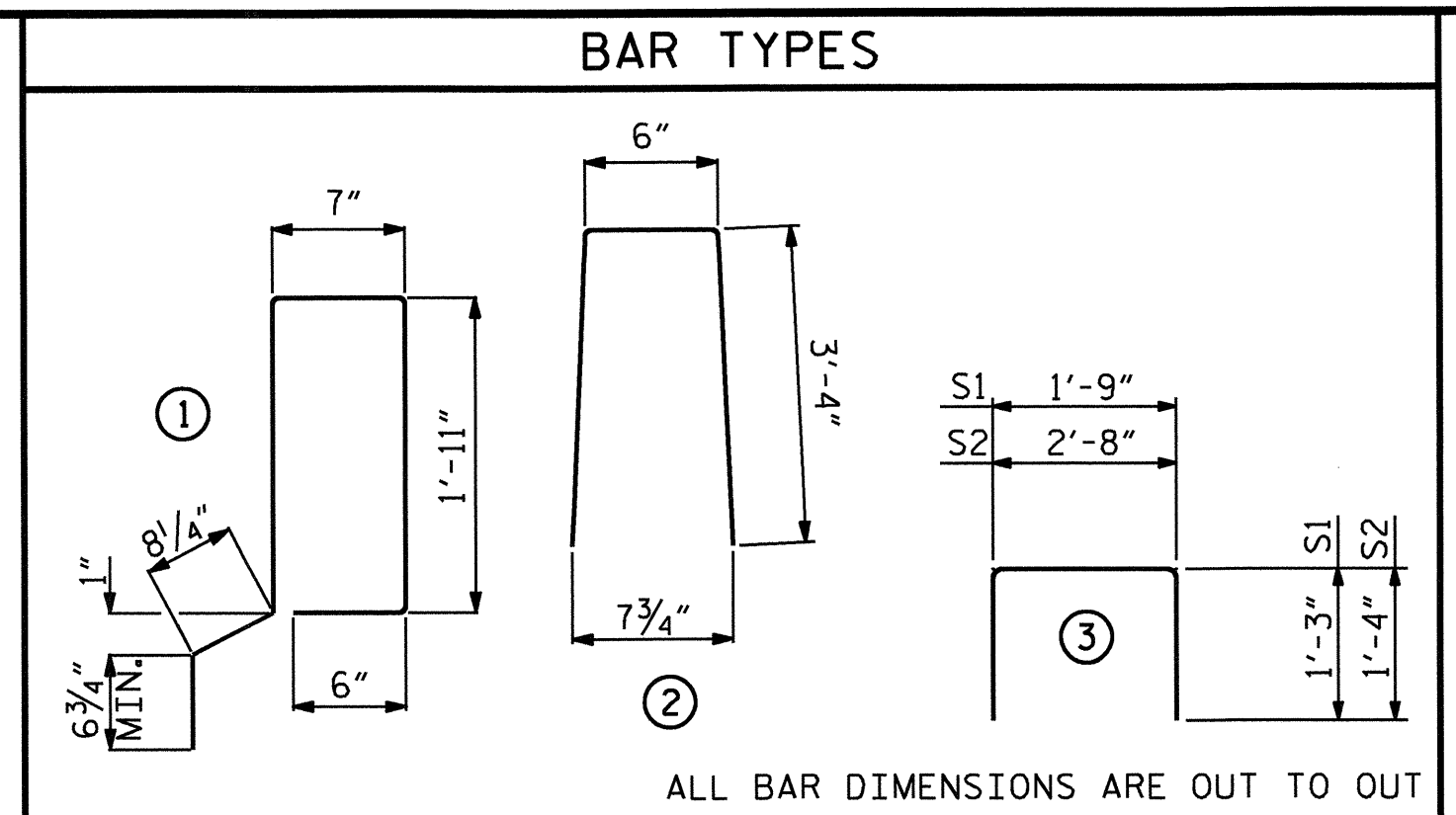
PROJECT NO. B-4619  
ROBESON COUNTY  
STATION: 21+06.50 -L-

SHEET 7 OF 8

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD GUARDRAIL ANCHORAGE FOR VERTICAL CONCRETE BARRIER RAIL					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-34
					TOTAL SHEETS 48



GRADE 270 STRANDS	
AREA ( SQUARE INCHES )	0.6" Ø L.R.
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 BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER, SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

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

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 6400 PSI.

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

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

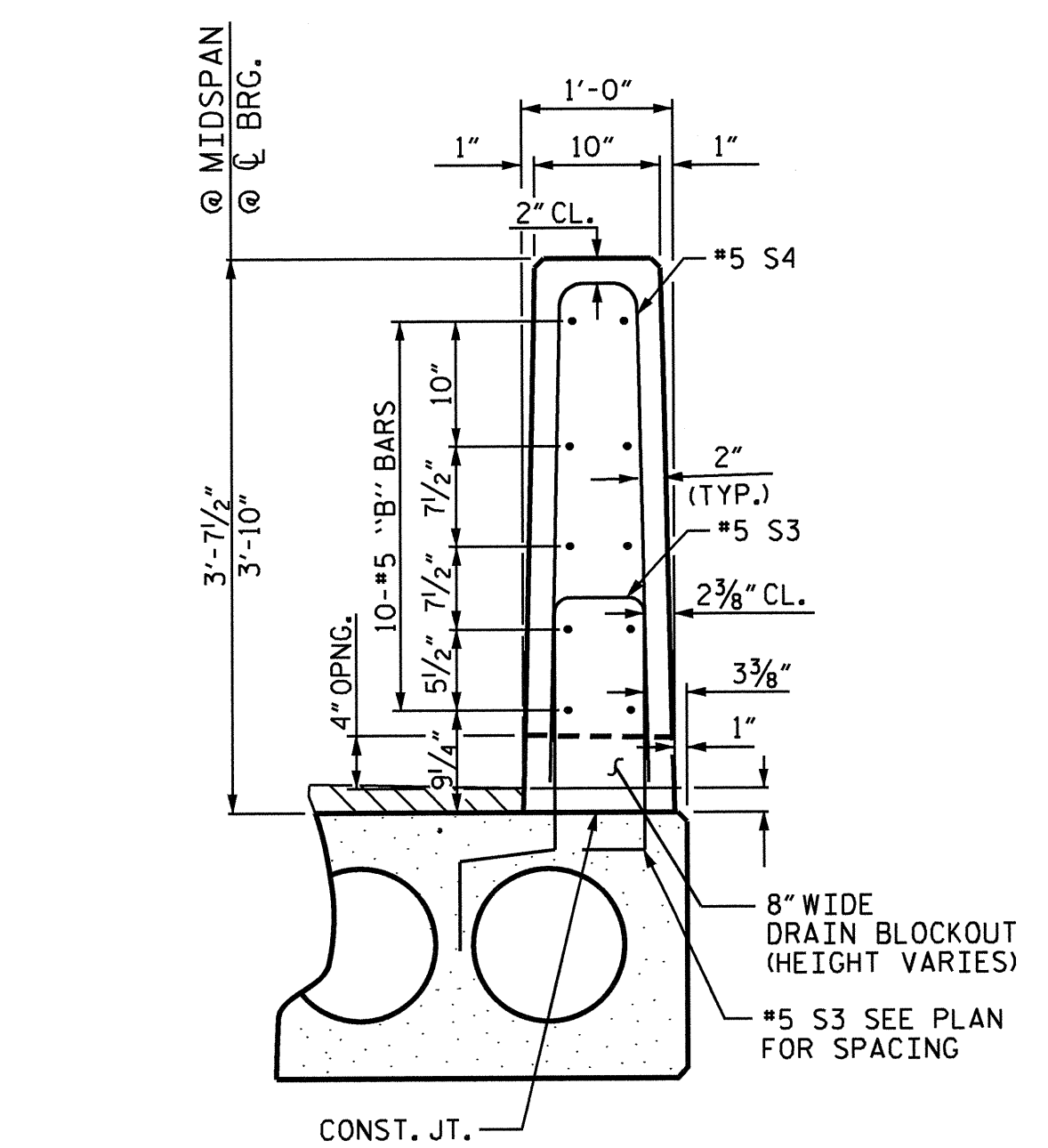
TRANSVERSE POST TENSIONING OF THE CORED SLAB UNITS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE DRAIN OPENING AT THE GUTTERLINE SHALL BE 4" X 8" THE HEIGHT OF THE BLOCKOUT IN THE VERTICAL CONCRETE BARRIER RAIL SHALL EXTEND FROM THE TOP OF THE CORED SLAB UNIT TO THE TOP OF THE DRAIN OPENING.

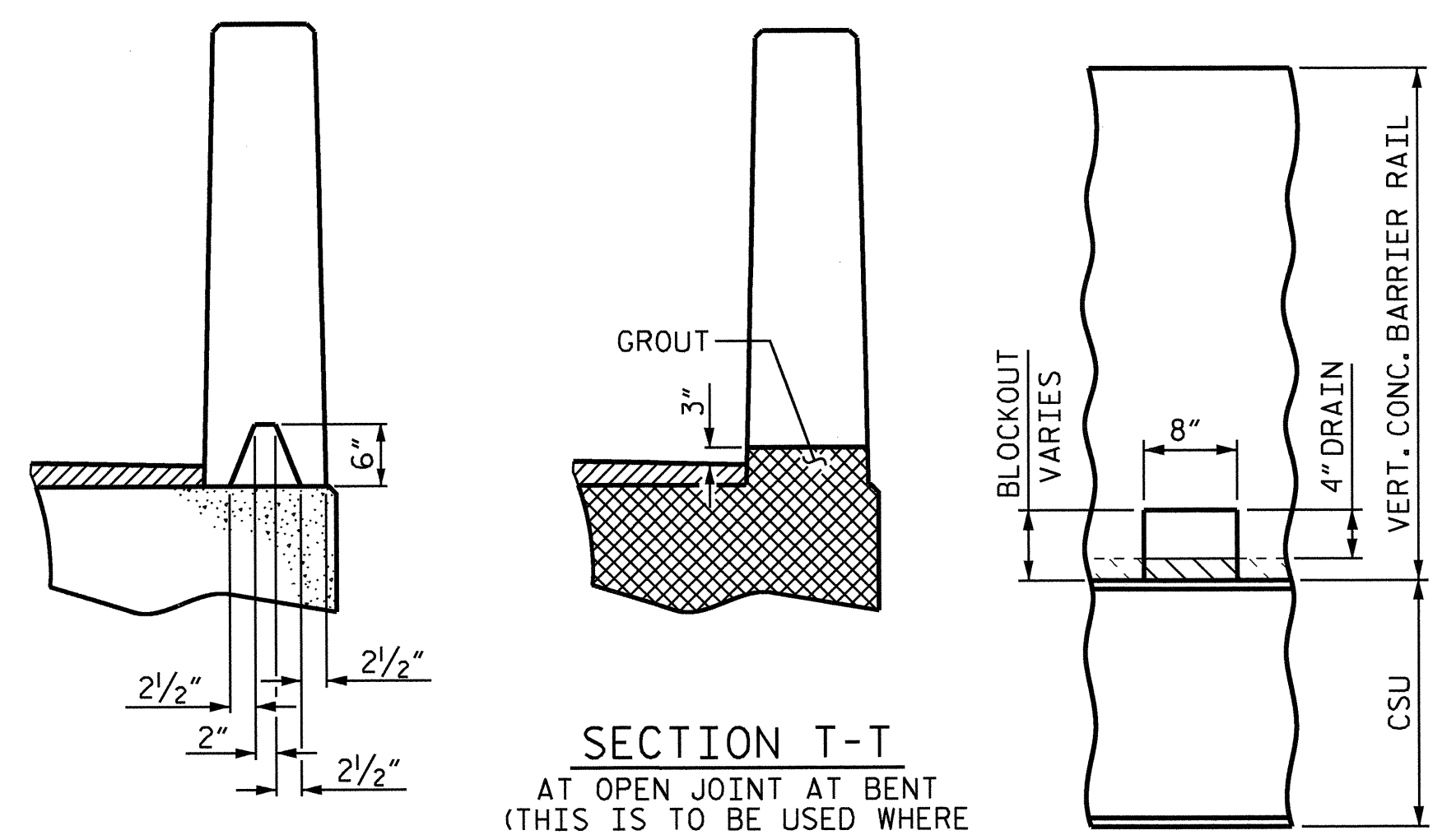
APPLY EPOXY PROTECTIVE COATING TO EXTERIOR FACE OF THE EXTERIOR CORED SLAB UNITS THAT REQUIRE DRAINS IN THE BARRIER RAIL.

END VIEW SIDE VIEW

**END OF RAIL DETAILS**



SECTION THRU RAIL ELEVATION AT EXPANSION JOINTS



SECTION T-T AT OPEN JOINT AT BENT (THIS IS TO BE USED WHERE FOAM JOINT IS NOT USED) ELEVATION AT DRAIN

**BILL OF MATERIAL FOR ONE CORED SLAB SECTION - SPAN A & C**

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B1	6	#4	STR	20'-8"	83	20'-8"	83
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	124	#4	3	5'-4"	442	5'-4"	442
*S3	68	#5	1	6'-2"	437		
REINFORCING STEEL				560 LBS.		560 LBS.	
* EPOXY COATED REINFORCING STEEL				437 LBS.		LBS.	
8,000 P.S.I. CONCRETE				8.4 CU. YDS.		4.2 CU. YDS.	
0.6" Ø L.R. STRANDS				No. 23		No. 23	

**BILL OF MATERIAL FOR ONE CORED SLAB SECTION - SPAN B**

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B2	4	#4	STR	29'-2"	78	29'-2"	78
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	120	#4	3	5'-4"	428	5'-4"	428
*S3	66	#5	1	5'-8"	390		
REINFORCING STEEL				541 LBS.		541 LBS.	
* EPOXY COATED REINFORCING STEEL				390 LBS.		LBS.	
8,000 P.S.I. CONCRETE				8.2 CU. YDS.		8.2 CU. YDS.	
0.6" Ø L.R. STRANDS				No. 23		No. 23	

**DEAD LOAD DEFLECTION AND CAMBER**

	3'-0" x 1'-9" 0.6" Ø L.R. STRAND		
	SPAN "A"	SPAN "B"	SPAN "C"
CAMBER (SLAB ALONE IN PLACE)	↑ 3 3/8"	↑ 3/4"	↑ 3 3/8"
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD **	↓ 1/16"	↓ 9/16"	↓ 1/16"
FINAL CAMBER	↑ 2 11/16"	↑ 2 11/16"	↑ 2 11/16"

\*\* INCLUDES FUTURE WEARING SURFACE

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

BAR	BARS PER SPAN			TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	SPAN A	SPAN B	SPAN C					
* B3	40		40	80	#5	STR	29'-0"	2420
* B4		40		40	#5	STR	28'-1"	1172
* S4	136	132	136	404	#5	2	7'-2"	3020
* EPOXY COATED REINFORCING STEEL					LBS. 6612			
CLASS AA CONCRETE					CU. YDS. 44.2			
TOTAL LIN. FT. OF VERTICAL CONCRETE BARRIER RAIL					LIN. FT. 349.75			

**FIXED END (TYPE I - 66 REQ'D)**

**ELASTOMERIC BEARING DETAILS**

ELASTOMER IN BEARINGS SHALL BE 50 DUROMETER HARDNESS.

DESIGN ENGINEER OF RECORD: A.M. LEE DATE: 5-07-13  
 ASSEMBLED BY: PEGGY ADKINS DATE: 2-21-13  
 CHECKED BY: T. AVERETTE DATE: 3-20-13  
 DRAWN BY: WJH 4/89 REV. 5/1/06RR TLA/GM  
 CHECKED BY: FCJ 5/89 REV. 10/1/11 MAA/GM  
 REV. 10/12 MAA/GM

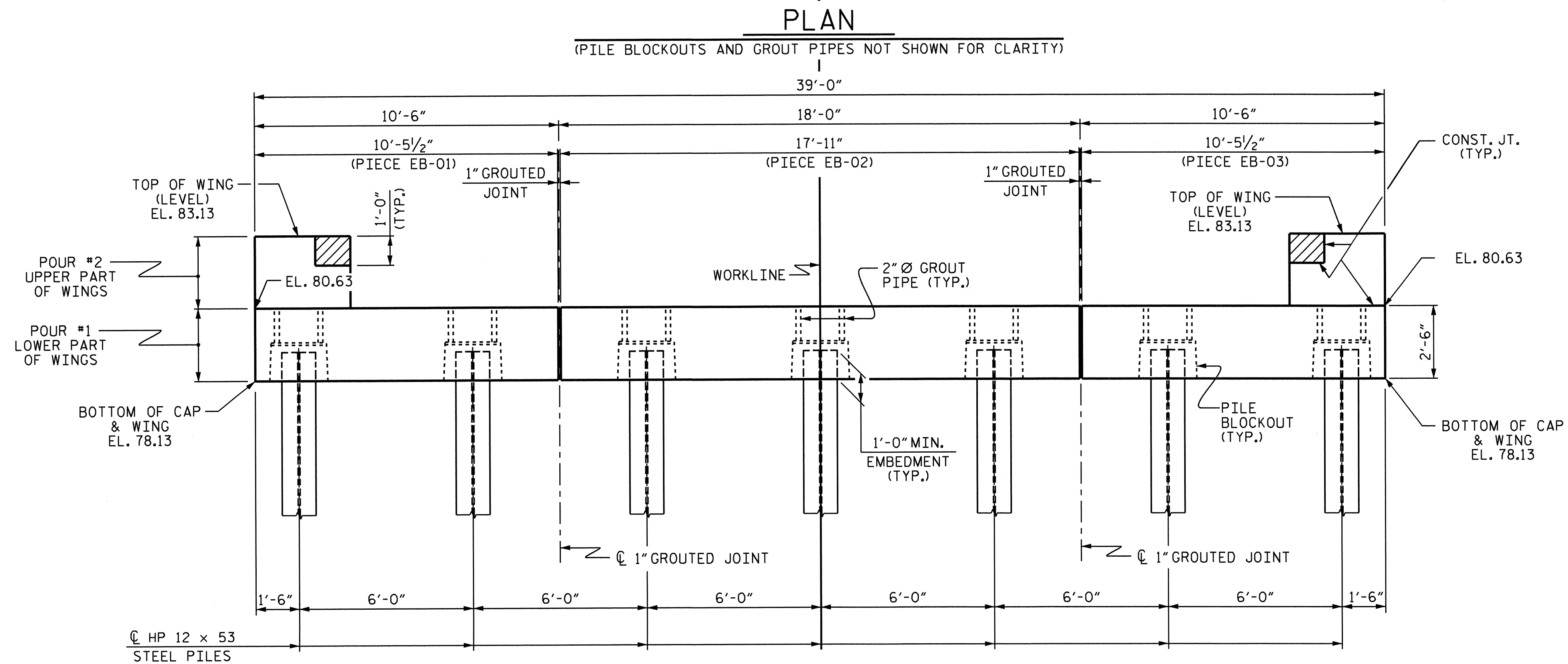
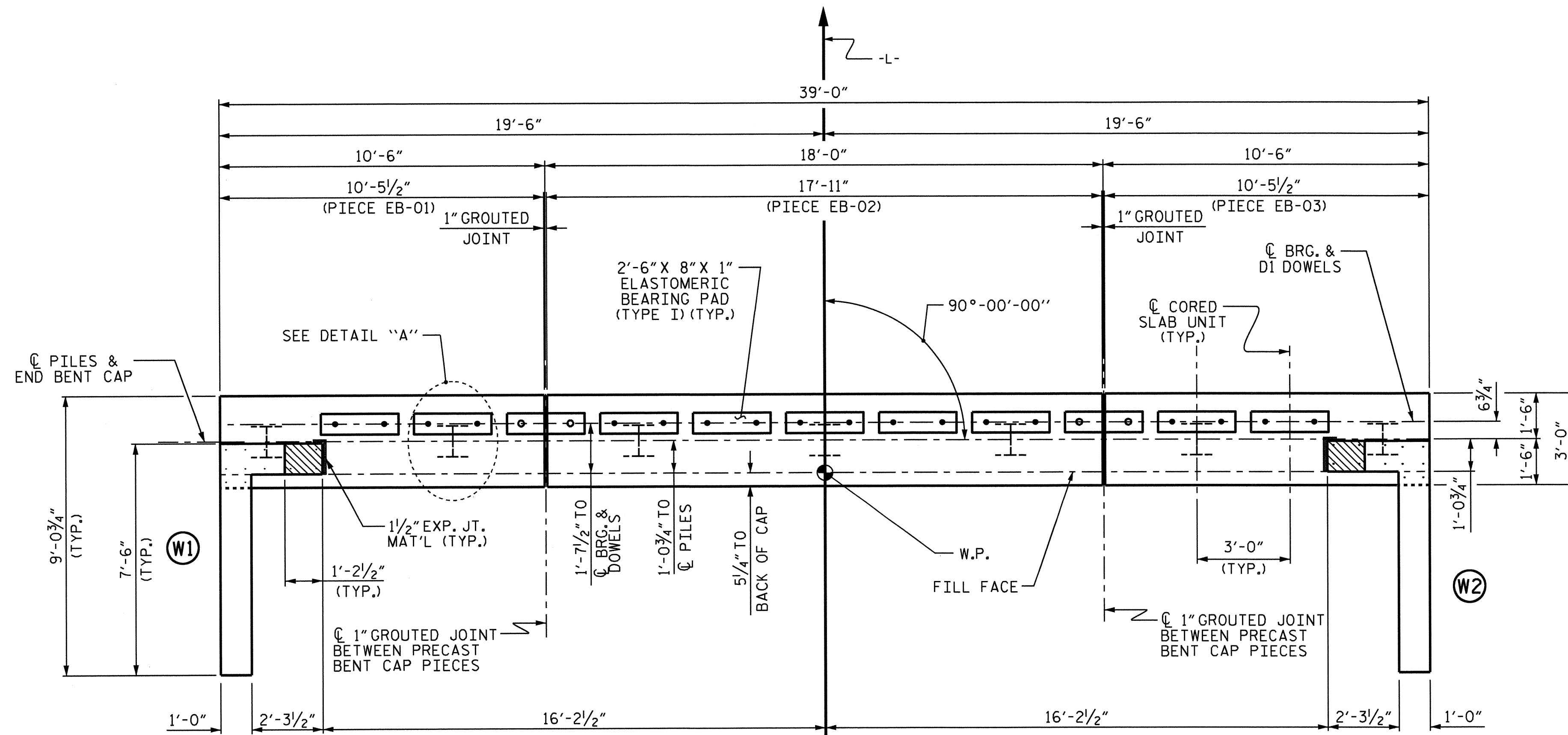
PROJECT NO. B-4619  
 ROBESON COUNTY  
 STATION: 21+06.50 -L-

SHEET 8 OF 8

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

REVISIONS						SHEET NO. S-35
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 48
2			4			

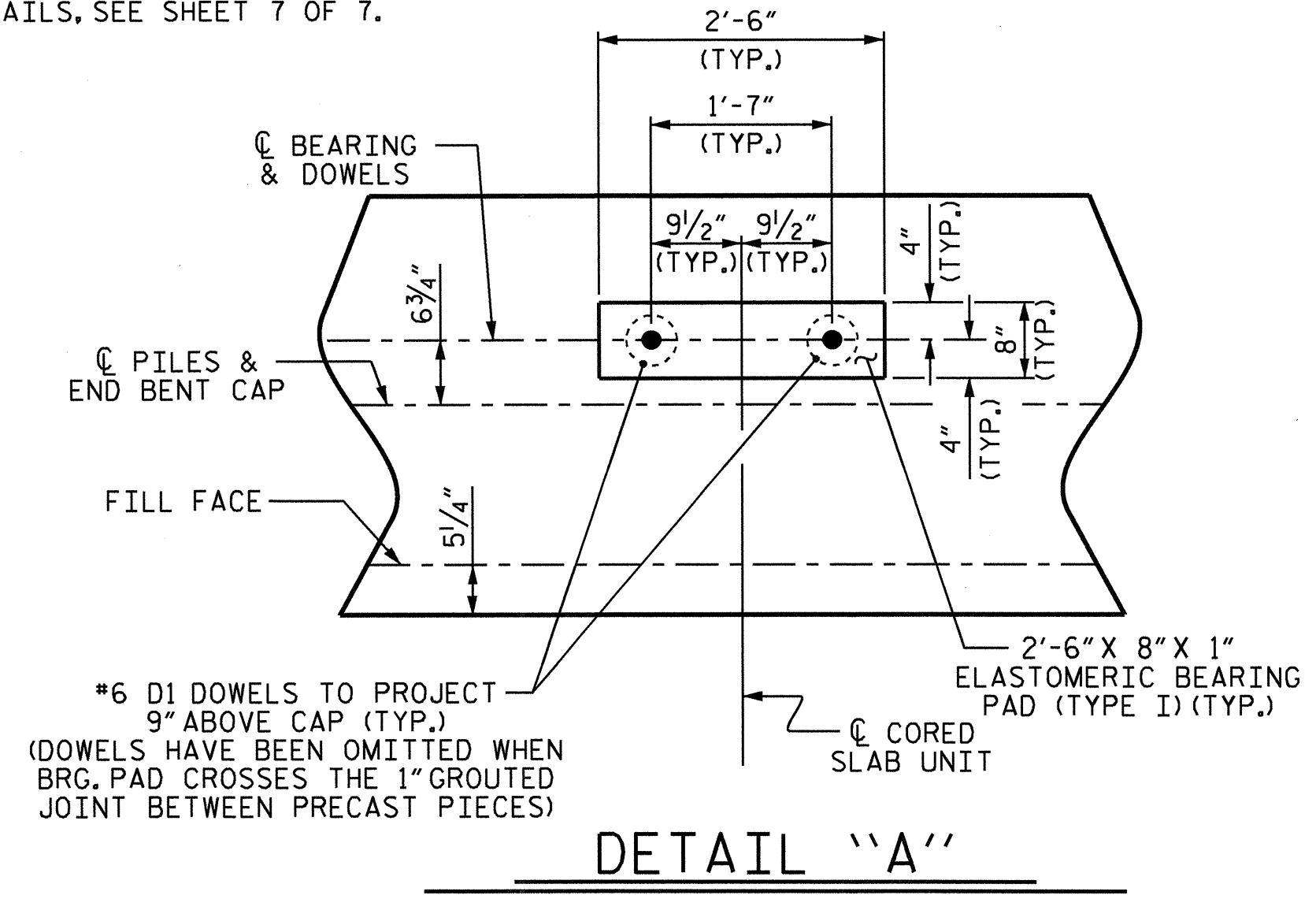




PRESTRESSED CONCRETE BENT CAPS (FOR ONE END BENT)			
PIECE	LENGTH	NUMBER	TOTAL LENGTH
EB-01	10'-5 1/2"	1	10'-5 1/2"
EB-02	17'-11"	1	17'-11"
EB-03	10'-5 1/2"	1	10'-5 1/2"
TOTAL		3	38.83'

BAR TYPES		BILL OF MATERIAL				
		<b>WINGS FOR ONE END BENT</b>				
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		
H1	#4	STR	5'-8"	45		
H2	#4	1	7'-9"	62		
K1	#4	STR	2'-11"	23		
V1	#4	STR	4'-8"	75		
END BENT 1 HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 315		REINFORCING STEEL (FOR ONE END BENT) 205 LBS.				
PILE REDRIVES EA. 4		CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)				
END BENT 2 HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 350		POUR #1 LOWER PART OF WINGS 1.1 C.Y.				
		POUR #2 UPPER PART OF WINGS 1.8 C.Y.				
PILE REDRIVES EA. 4		TOTAL CLASS A CONCRETE 2.9 C.Y.				

**NOTES**  
 FOR PRECAST CAP DETAILS, SEE "PIECE EB-01", "PIECE EB-02" & "PIECE EB-03" SHEETS.  
 FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.  
 FOR 3'-0" x 2'-6" PRESTRESSED CONCRETE BENT CAPS, SEE SPECIAL PROVISIONS.  
 THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.  
 FOR PILE SPLICE DETAILS, SEE SHEET 2 OF 7.  
 FOR WING DETAILS, SEE SHEET 7 OF 7.

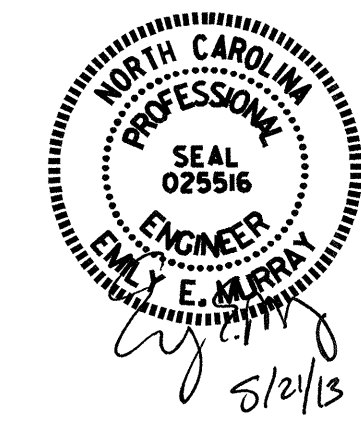


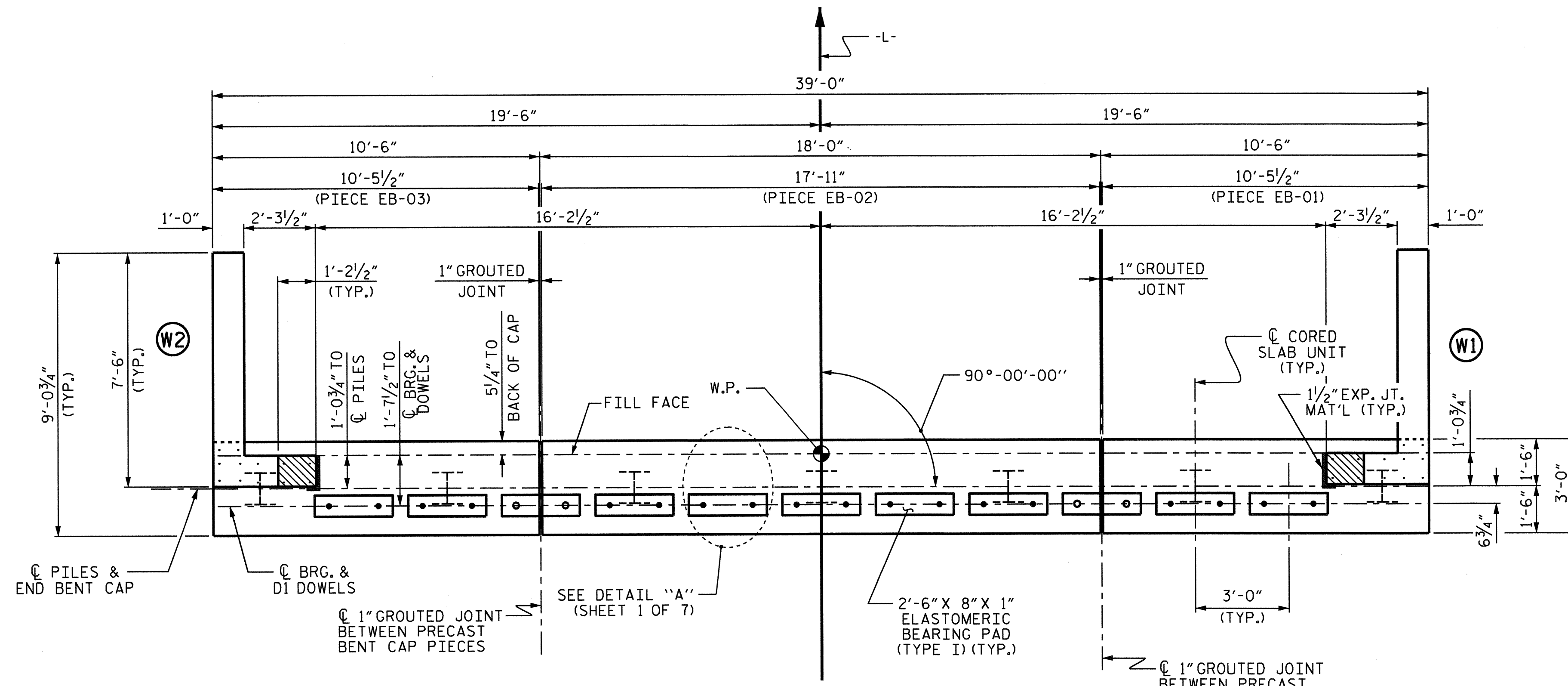
PROJECT NO. B-4619  
ROBESON COUNTY  
 STATION: 21+06.50 -L-

SHEET 1 OF 7

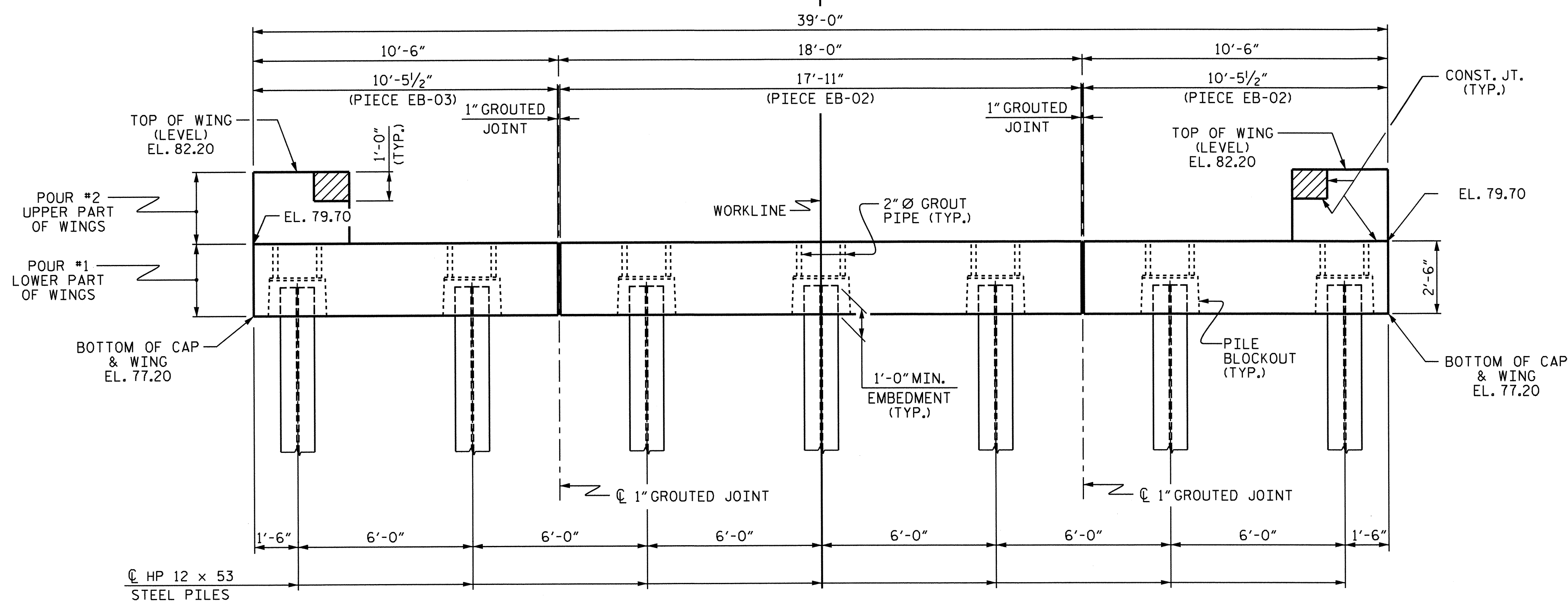
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 1					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 48

ASSEMBLED BY : PEGGY ADKINS DATE : 5-7-13  
 CHECKED BY : T.L. AVERETTE DATE : 5-9-13  
 DRAWN BY : MAA 4/13  
 CHECKED BY : BCH 4/13



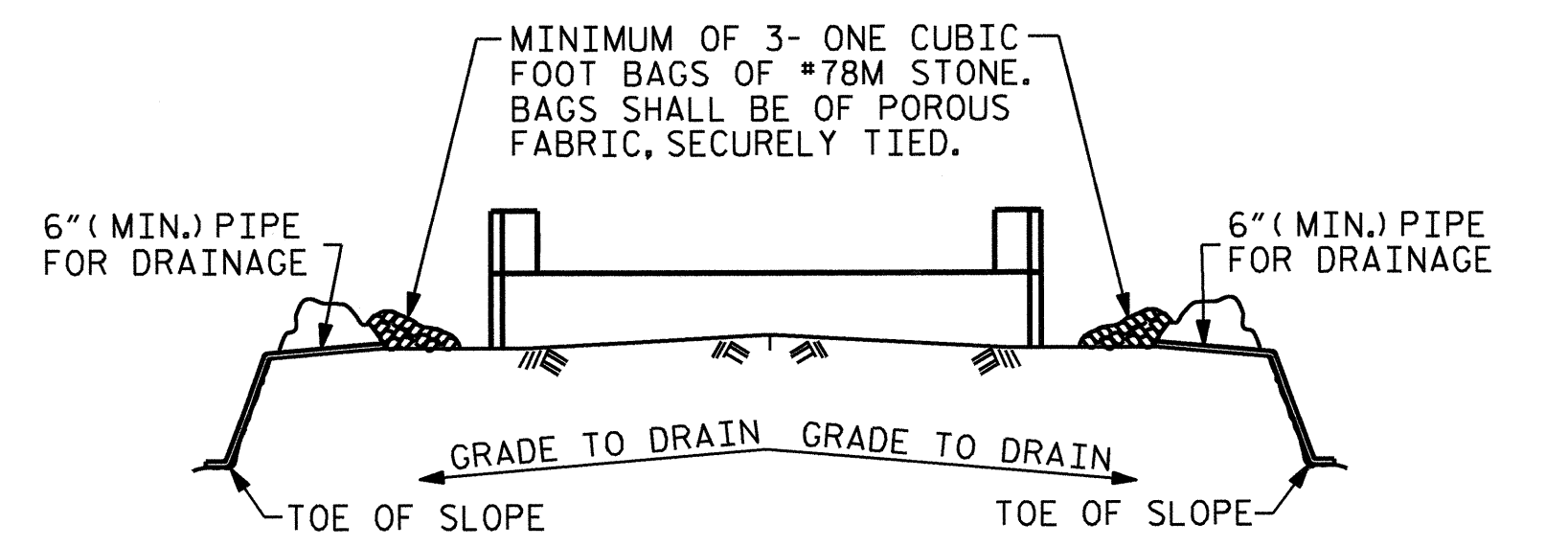


**PLAN**  
(PILE BLOCKOUTS AND GROUT PIPES NOT SHOWN FOR CLARITY)



**ELEVATION**

FOR 2" Ø GROUT PIPE AND PILE BLOCKOUT DETAILS, SEE SHEET 6 OF 7.  
WINGS NOT SHOWN FOR CLARITY.

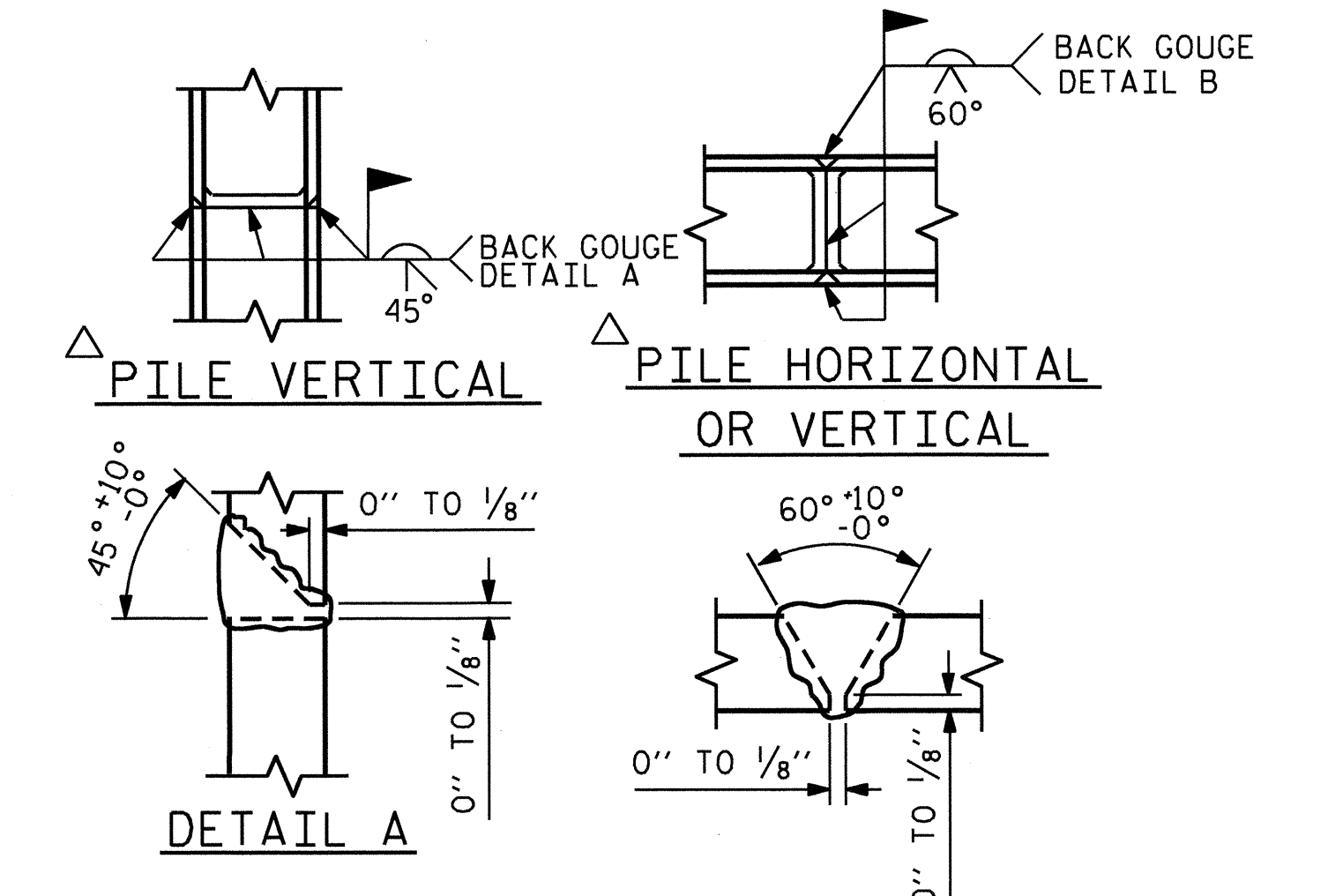


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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**



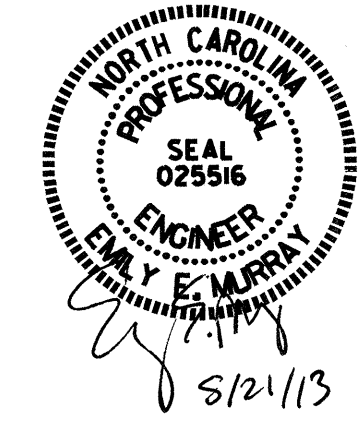
**PILE SPLICE DETAILS**

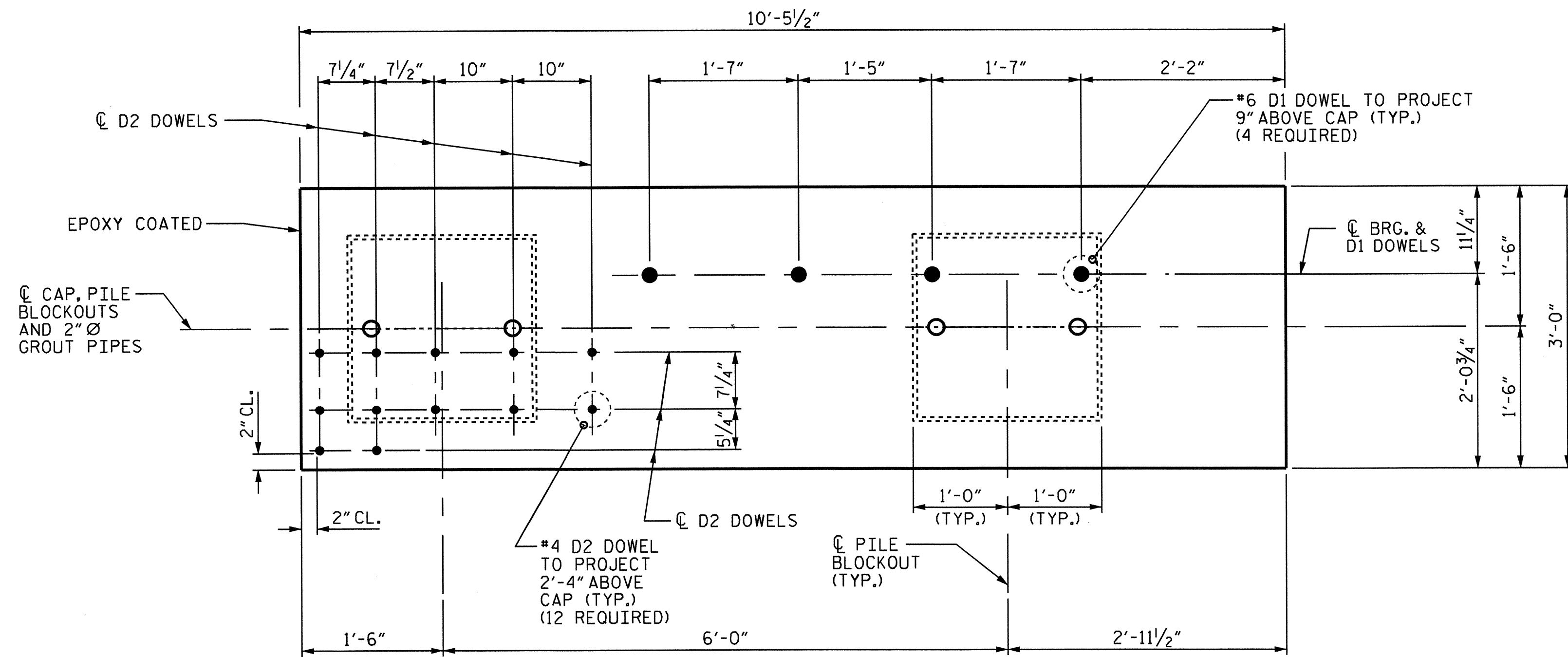
PROJECT NO. B-4619  
ROBESON COUNTY  
 STATION: 21+06.50 -L-

SHEET 2 OF 7

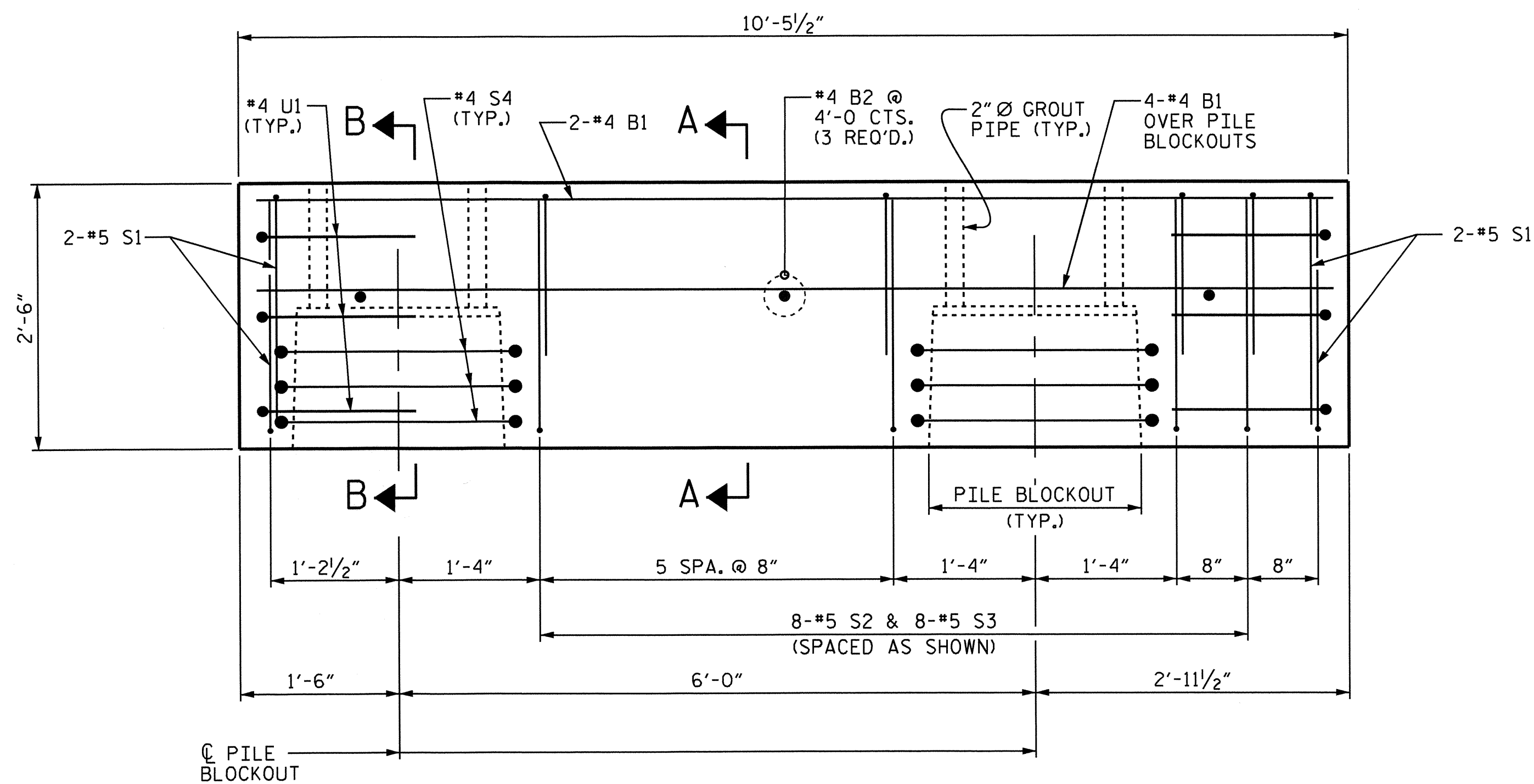
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-37
					TOTAL SHEETS 48

ASSEMBLED BY : PEGGY ADKINS DATE : 5-7-13  
 CHECKED BY : T.L. AVERETTE DATE : 5-9-13  
 DRAWN BY : MAA 4/13  
 CHECKED BY : BCH 4/13





**PLAN**  
(FOR PILE BLOCKOUT DETAILS, SEE SHEET 6 OF 7)



**ELEVATION**  
(\*6 D1 DOWELS & \*4 D2 DOWELS NOT SHOWN FOR CLARITY)  
FOR SECTION A-A & SECTION B-B, SEE SHEET 6 OF 7.

**BILL OF MATERIAL**  
**FOR ONE PIECE EB-01**

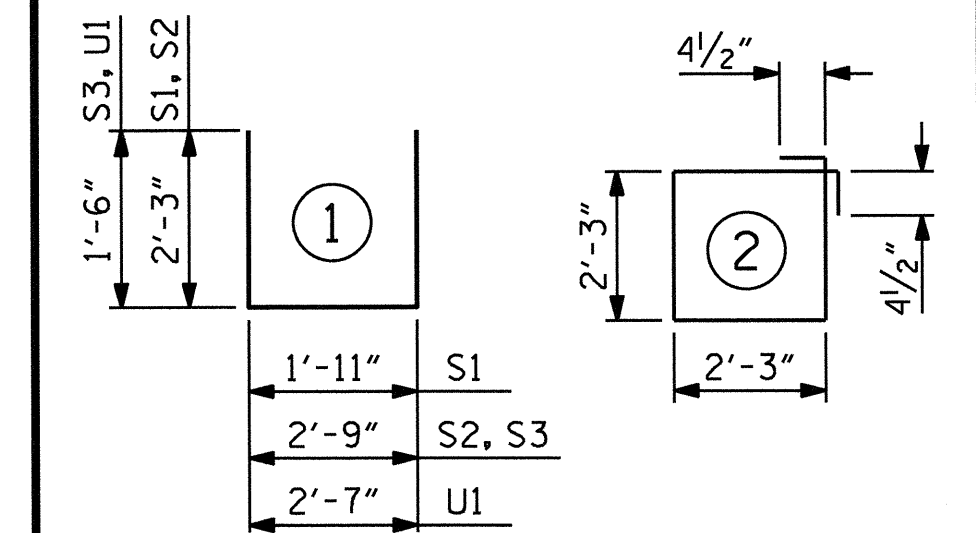
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#4	STR	10'-1"	40
B2	3	#4	STR	2'-8"	5
D1	4	#6	STR	1'-6"	9
D2	12	#4	STR	3'-4"	27
S1	8	#5	1	6'-5"	54
S2	8	#5	1	7'-3"	60
S3	8	#5	1	5'-9"	48
S4	6	#4	2	9'-9"	39
U1	6	#4	1	5'-7"	22

REINFORCING STEEL 304 LBS

4000 PSI PRESTRESS CONCRETE 2.6 C.Y.  
PILE BLOCKOUT & JOINT GROUT 0.4 C.Y.

0.6" Ø L.R. STRANDS No. 12

**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

PROJECT NO. B-4619  
ROBESON COUNTY  
STATION: 21+06.50 -L-

SHEET 3 OF 7

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
**PRECAST**  
**PIECE EB-01**

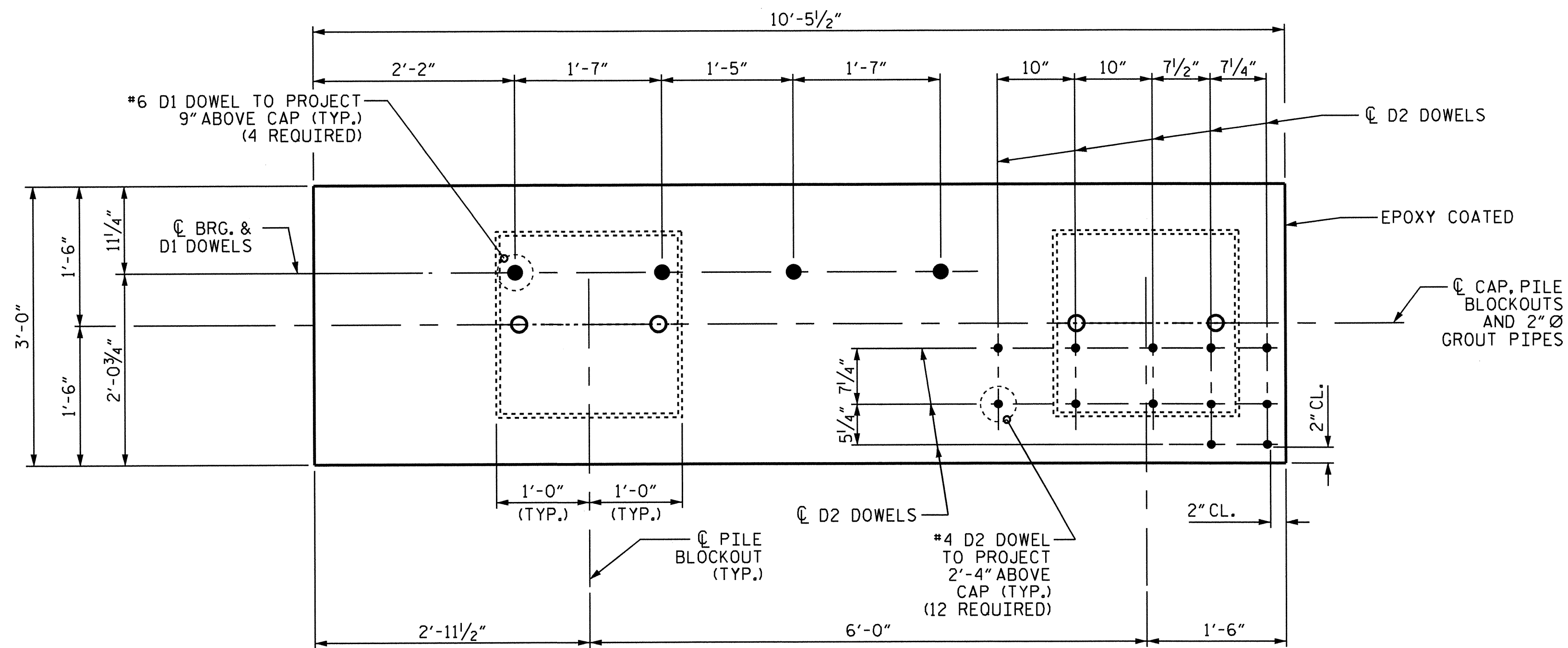


REVISIONS						SHEET NO. S-38
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 48
2			4			

ASSEMBLED BY : PEGGY ADKINS DATE : 5-7-13  
CHECKED BY : T.L. AVERETTE DATE : 5-9-13  
DRAWN BY : MAA 4/13  
CHECKED BY : BCH 4/13

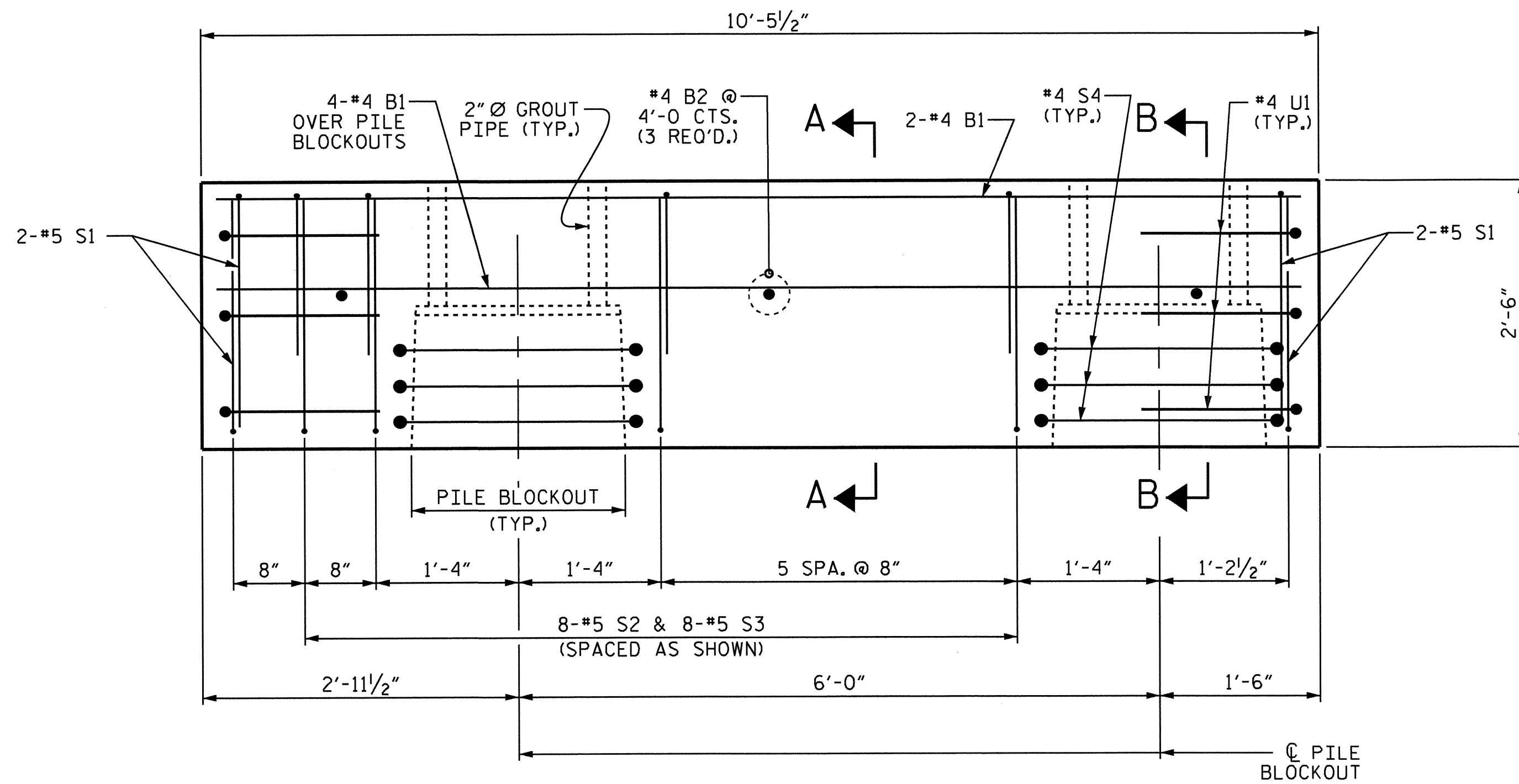






**PLAN**

(FOR PILE BLOCKOUT DETAILS, SEE SHEET 6 OF 7)



**ELEVATION**

(\*6 D1 DOWELS & \*4 D2 DOWELS NOT SHOWN FOR CLARITY)  
FOR SECTION A-A & SECTION B-B, SEE SHEET 6 OF 7.

**BILL OF MATERIAL  
FOR ONE PIECE EB-03**

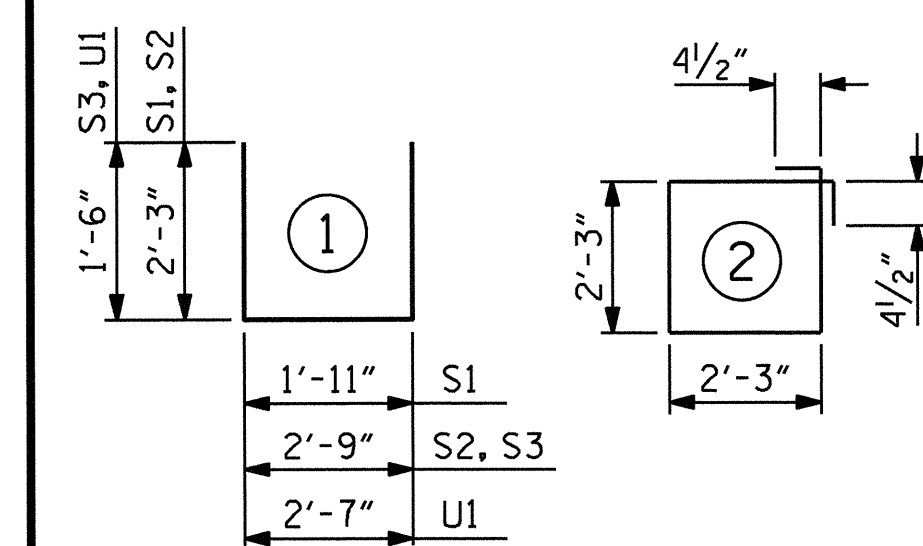
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#4	STR	10'-1"	40
B2	3	#4	STR	2'-8"	5
D1	4	#6	STR	1'-6"	9
D2	12	#4	STR	3'-4"	27
S1	8	#5	1	6'-5"	54
S2	8	#5	1	7'-3"	60
S3	8	#5	1	5'-9"	48
S4	6	#4	2	9'-9"	39
U1	6	#4	1	5'-7"	22

REINFORCING STEEL 304 LBS

4000 PSI PRESTRESS CONCRETE 2.6 C.Y.  
PILE BLOCKOUT & JOINT GROUT 0.4 C.Y.

0.6" Ø L.R. STRANDS No. 12

**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

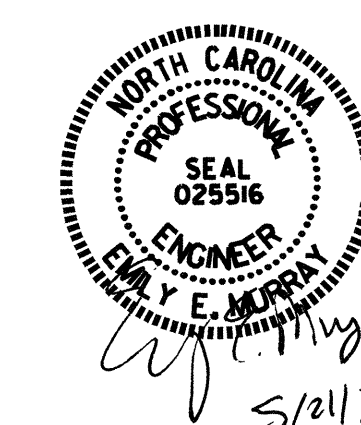
PROJECT NO. B-4619  
ROBESON COUNTY  
STATION: 21+06.50 -L-

SHEET 5 OF 7

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE

PRECAST  
PIECE EB-03



**REVISIONS**

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

SHEET NO.

S-40

TOTAL SHEETS

48

ASSEMBLED BY : PEGGY ADKINS DATE : 4-7-13  
CHECKED BY : T.L. AVERETTE DATE : 5-9-13  
DRAWN BY : MAA 4/13  
CHECKED BY : BCH 4/13

17 MAY 2013 09:11

STR #2

**NOTES**

STIRRUPS IN PRECAST PIECES MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS AND GROUT PIPES.

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 END BENT CAP SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRECAST "3'-0" X 2'-6" PRESTRESSED CONCRETE BENT CAPS".

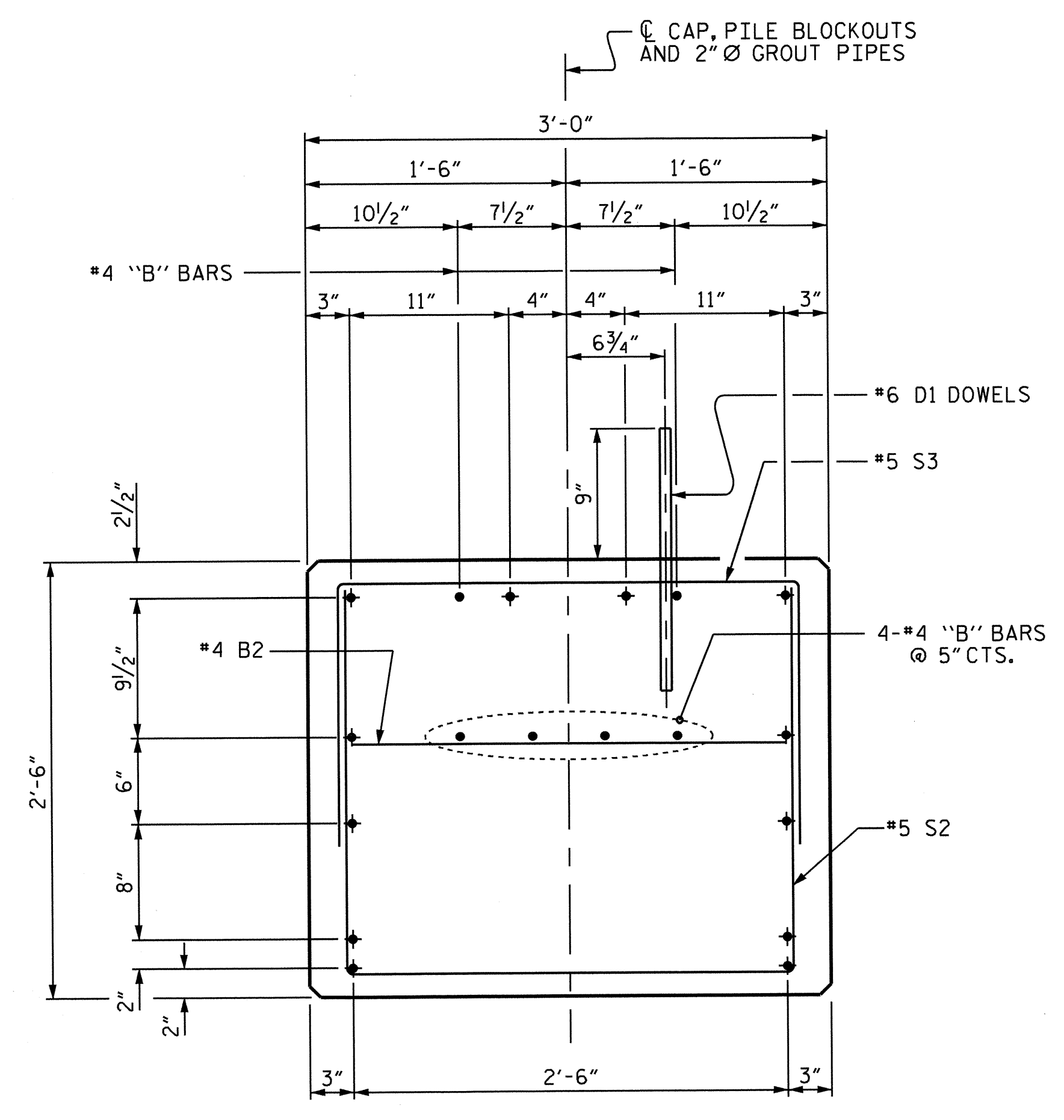
WHEN END BENT CAPS ARE CAST, A HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING BENT CAPS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL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

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE ENDS OF THE END BENT CAP SEGMENTS.

APPLY EPOXY PROTECTIVE COATING TO THE EXPOSED END FACE OF THE END BENT CAP SEGMENTS.

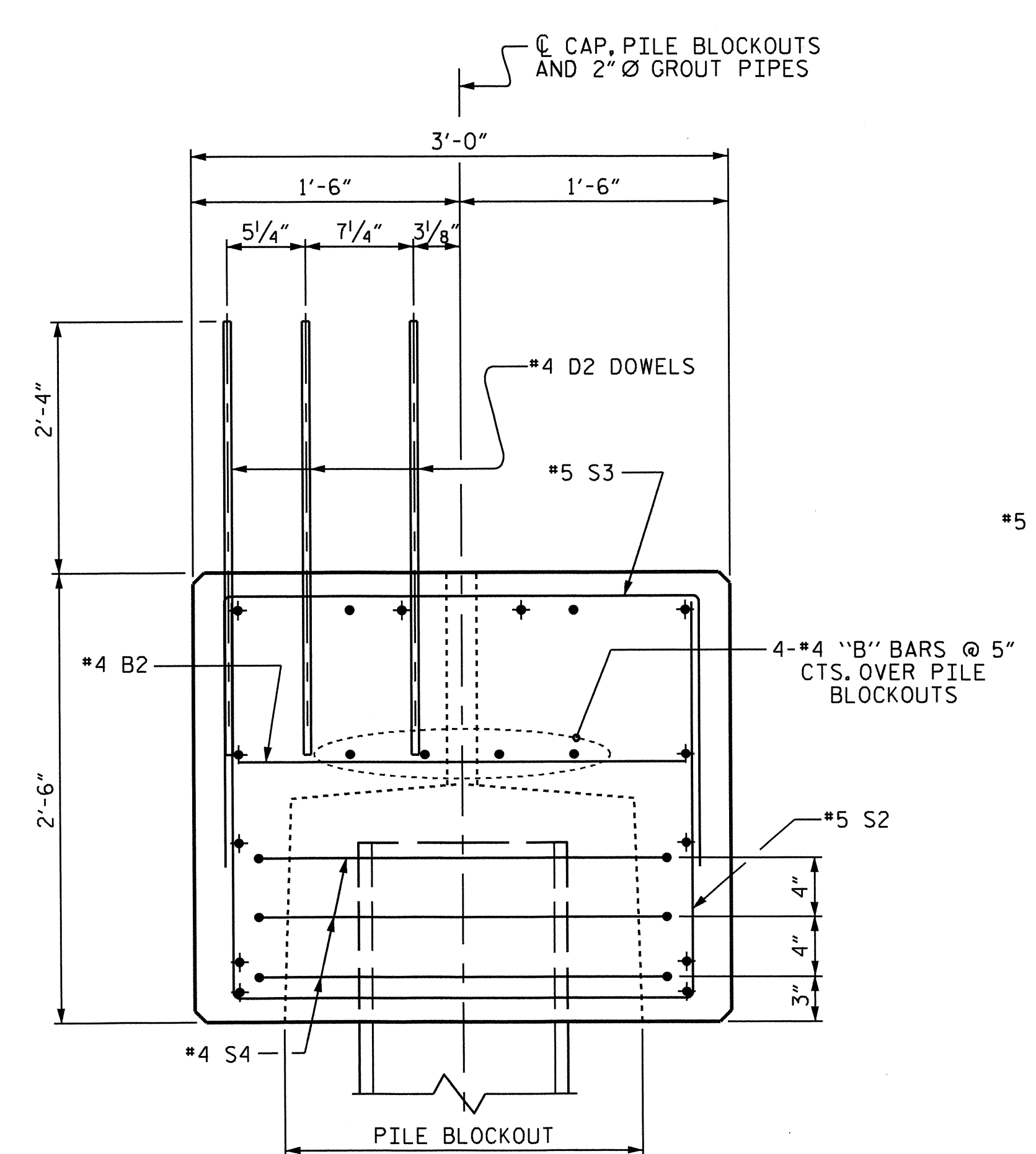
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE END BENT CAPS SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI.

THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL A METHOD TO LIFT AND SUPPORT THE PRECAST CAP PIECES IN THE PROPER LOCATION AND ELEVATION AS SHOWN ON THE PLANS PRIOR TO PLACEMENT AND CURING OF THE GROUT IN THE PILE BLOCKOUTS. THE METHOD CHOSEN SHALL PROVIDE FOR A WATERTIGHT SEAL AT THE BOTTOM OF THE CAP UNTIL THE GROUT HAS HARDENED SO NO GROUT COMES IN CONTACT WITH THE STREAM.

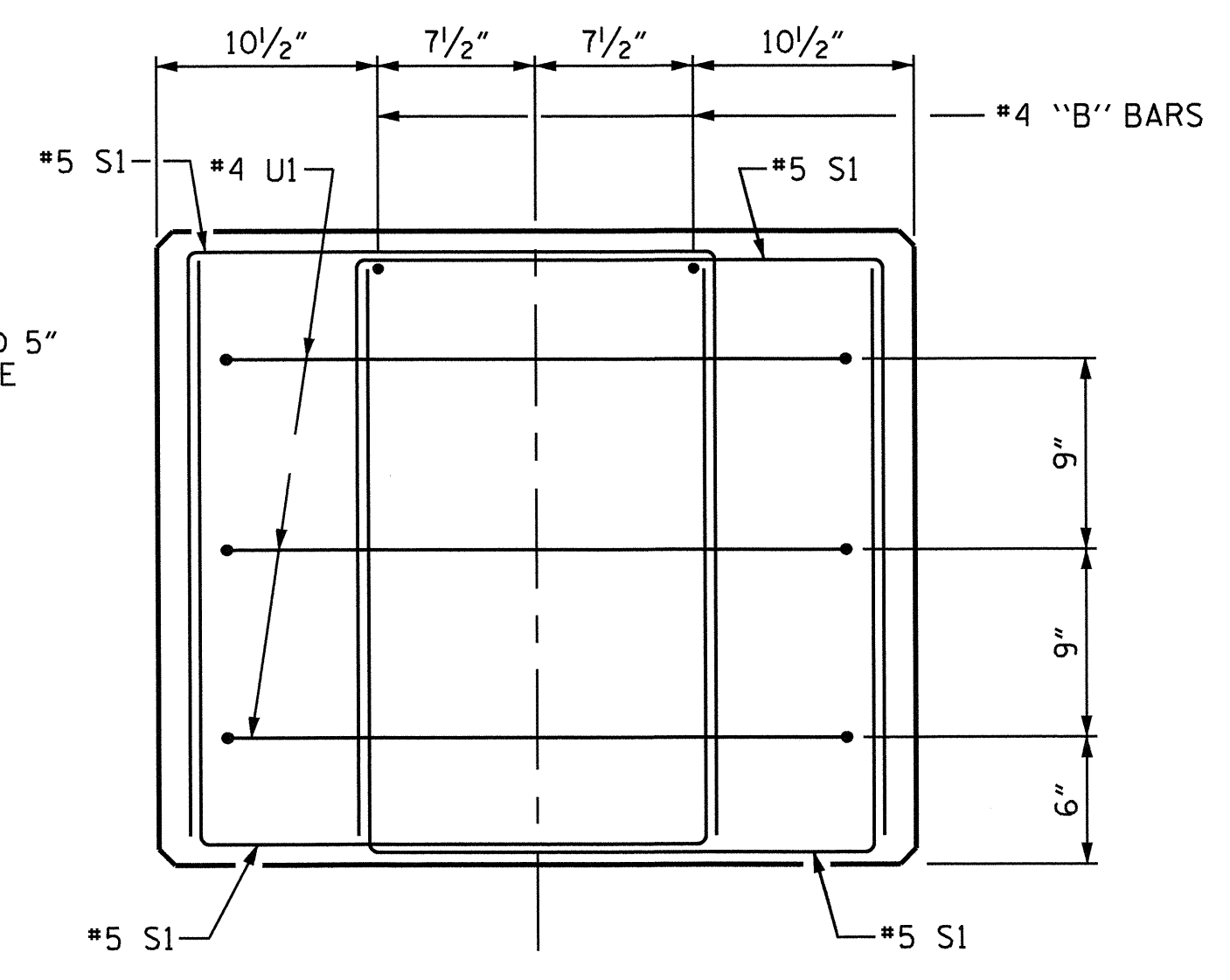


**SECTION A-A**

(SHOWING 0.6" Ø LOW RELAXATION STRAND LAYOUT) (12 STRANDS)

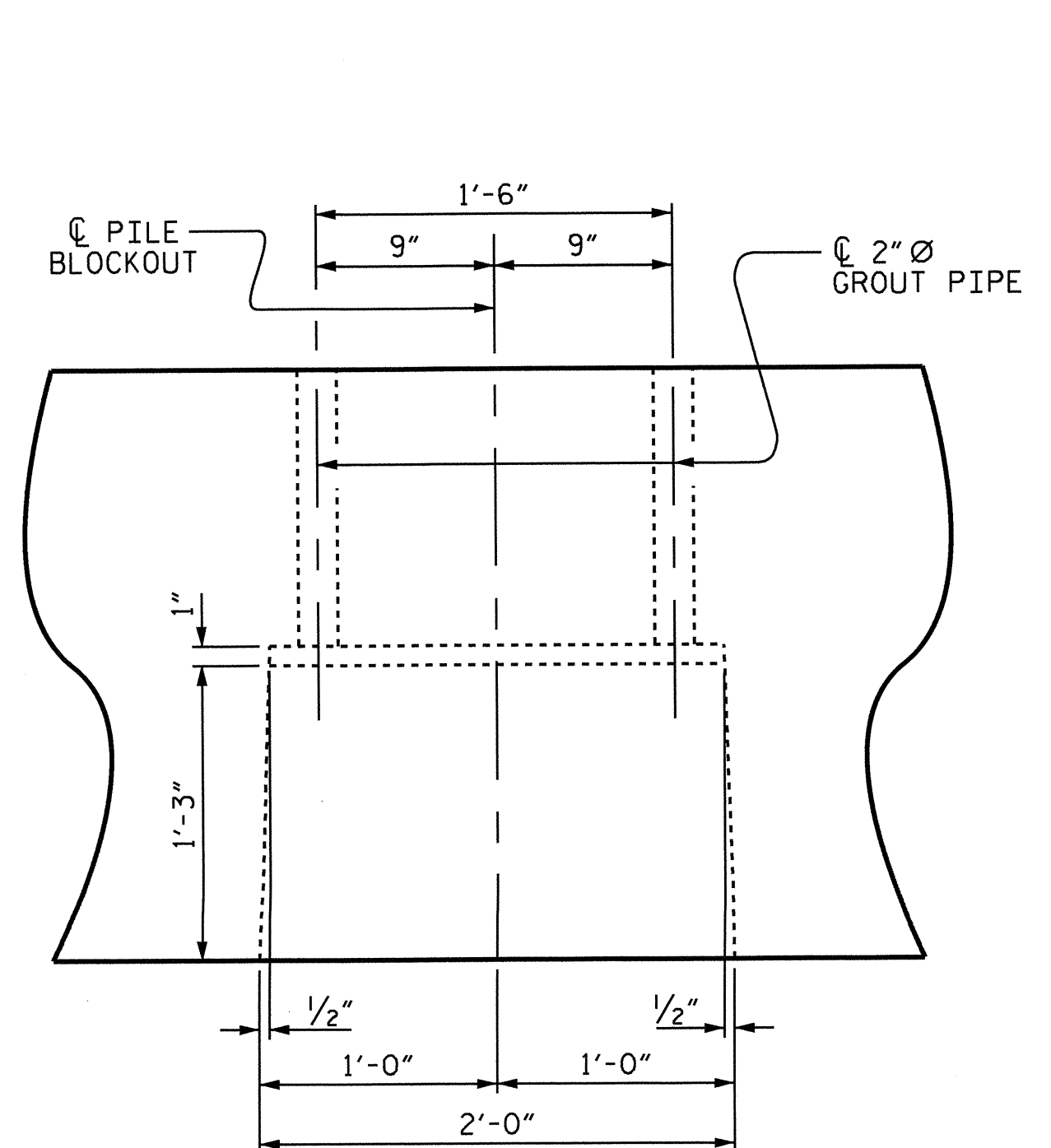


**SECTION B-B**

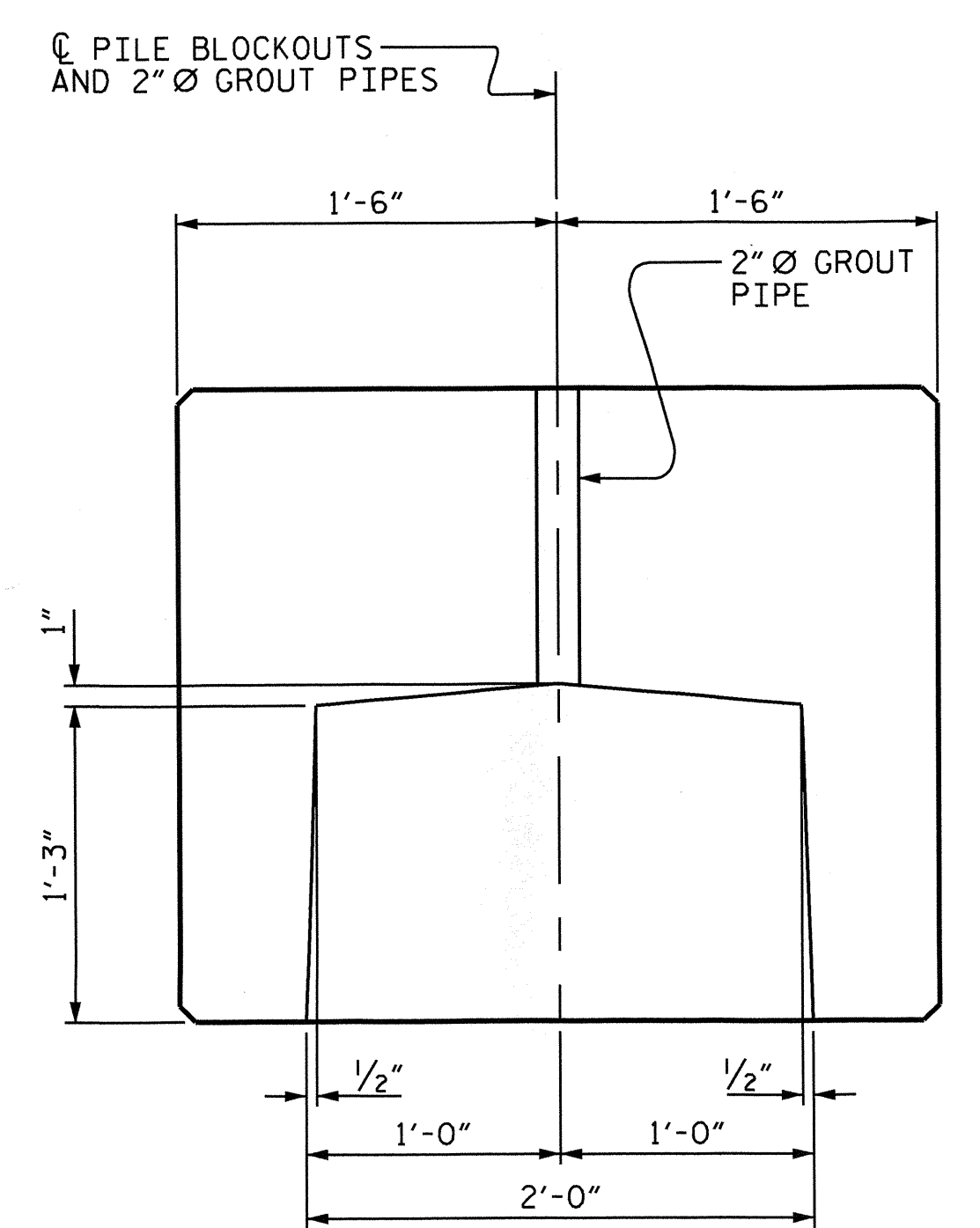


**END OF CAP VIEW**

(TYPICAL BOTH ENDS)



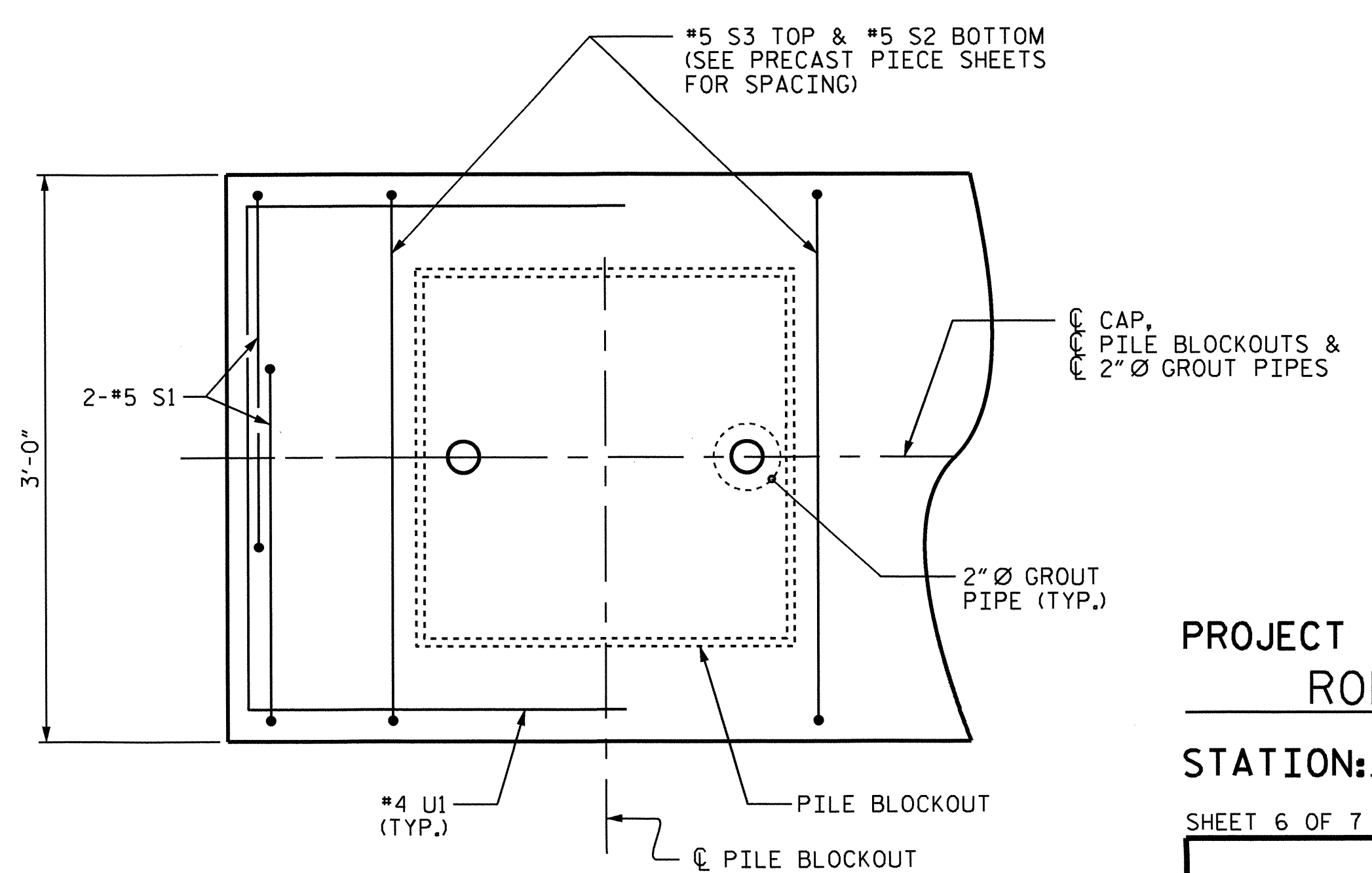
**ELEVATION**



**SECTION**

**PILE BLOCKOUT DETAILS**

(DIMENSIONS ARE TYPICAL EACH BLOCKOUT)



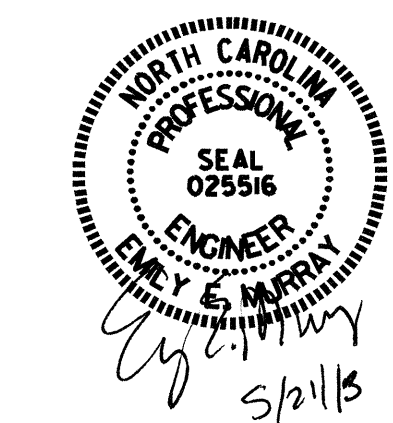
**PART PLAN-END OF CAP**

(TYPICAL BOTH ENDS)

PROJECT NO. B-4619  
ROBESON COUNTY  
 STATION: 21+06.50 -L-

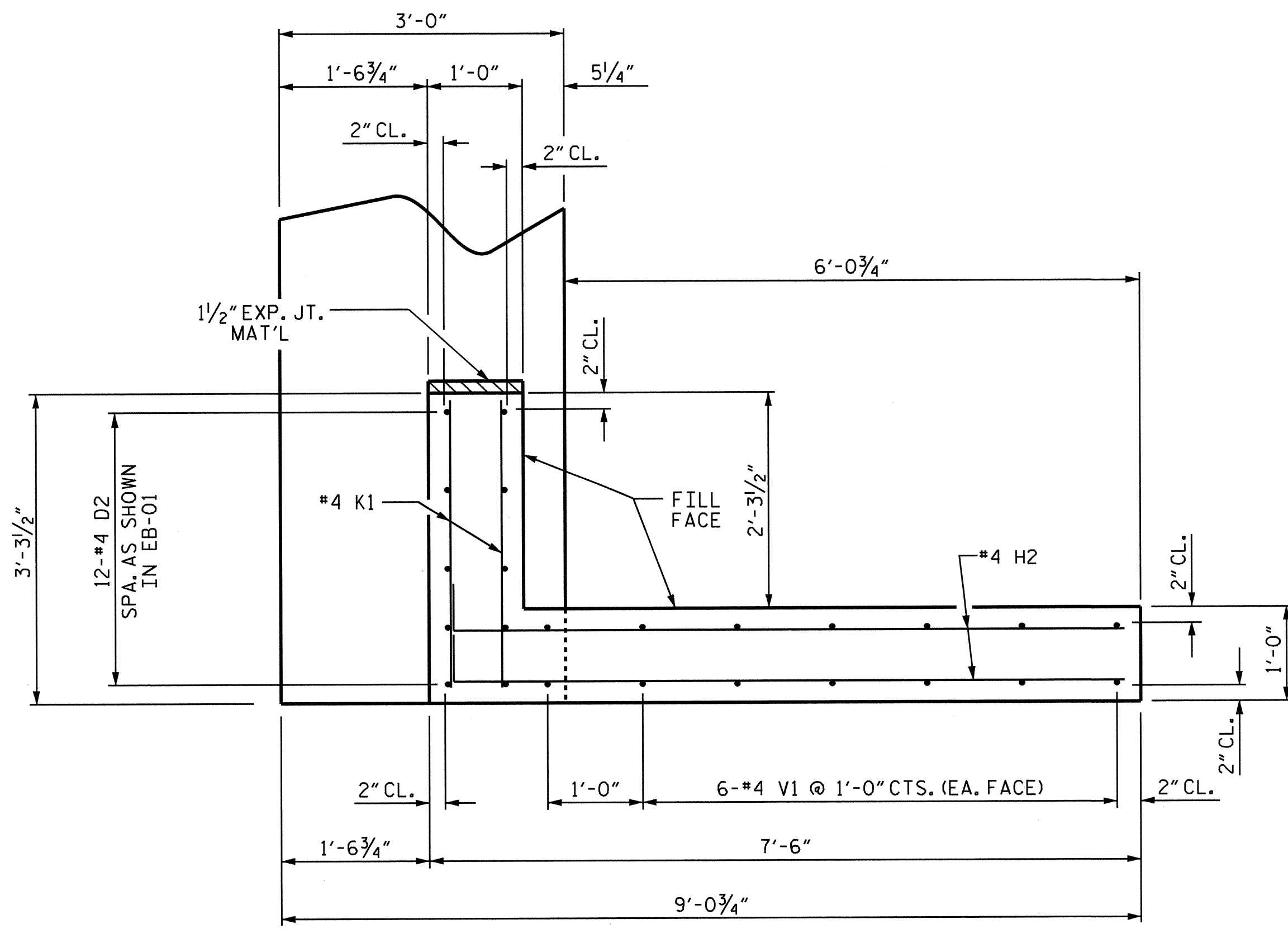
SHEET 6 OF 7

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT DETAILS

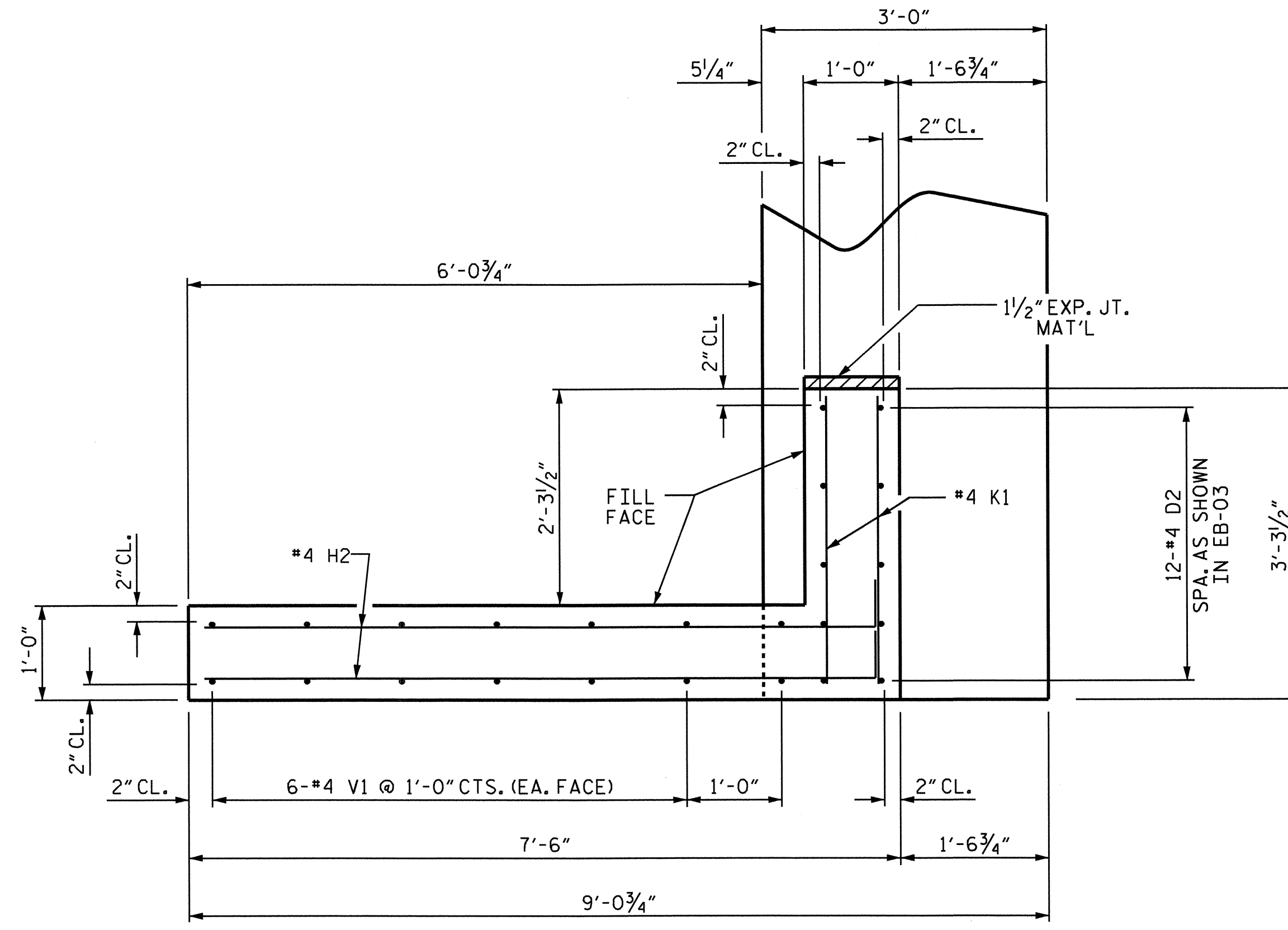


REVISIONS						SHEET NO. S-41
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 48
2			4			

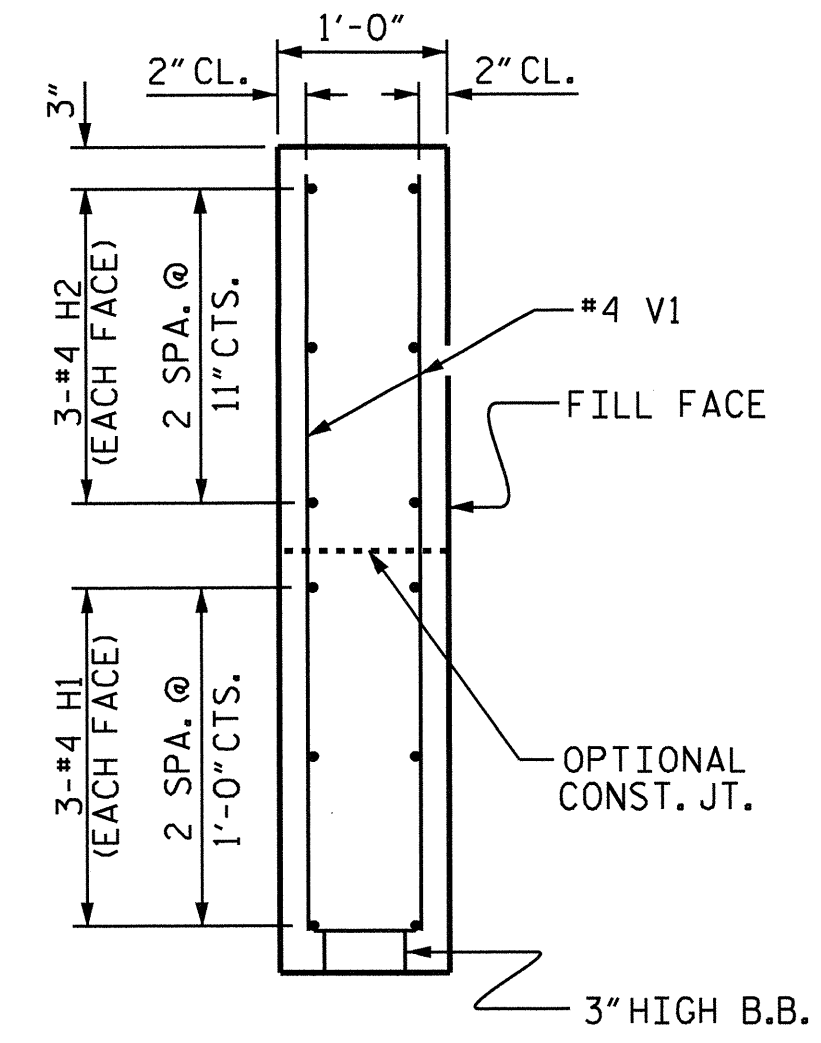
ASSEMBLED BY : PEGGY ADKINS DATE : 5-7-13  
 CHECKED BY : T.L. AVERETTE DATE : 5-9-13  
 DRAWN BY : MAA 4/13  
 CHECKED BY : BCH 4/13



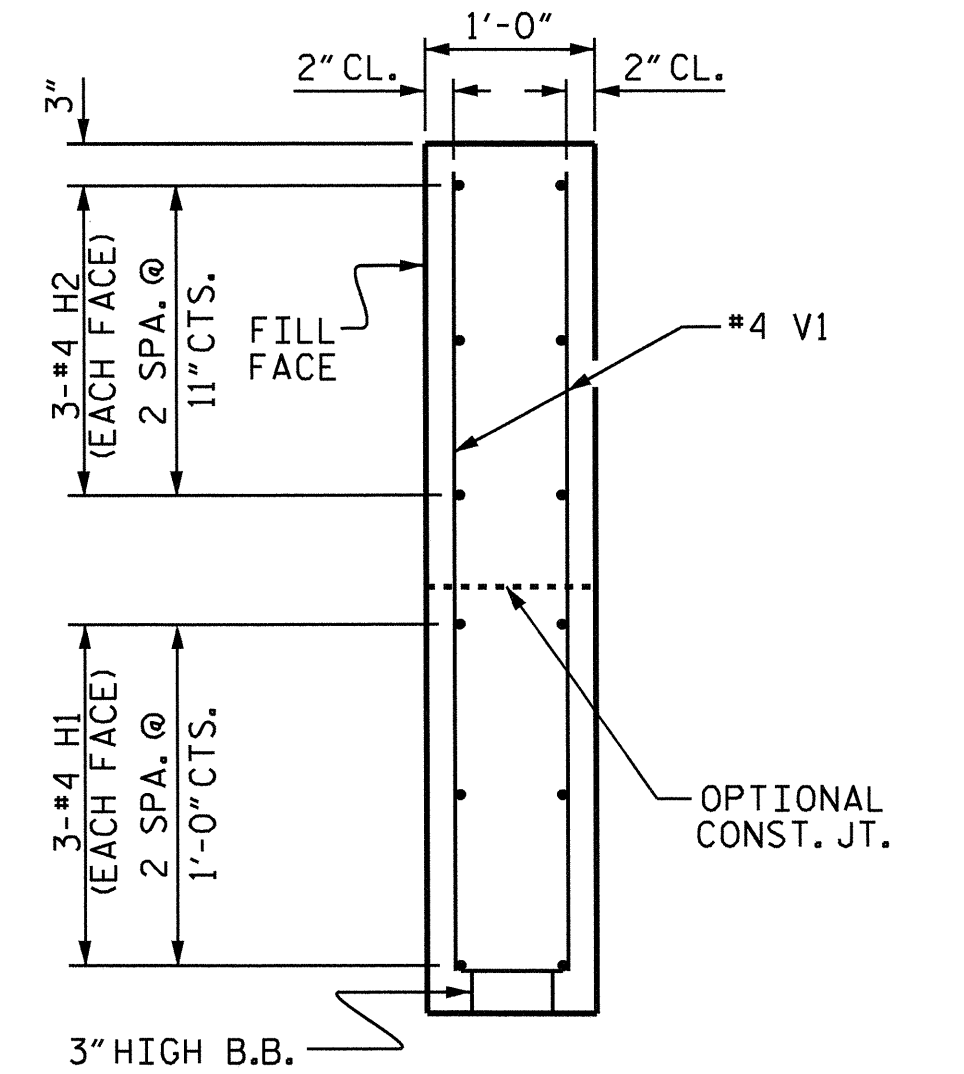
PLAN OF WING (W1)



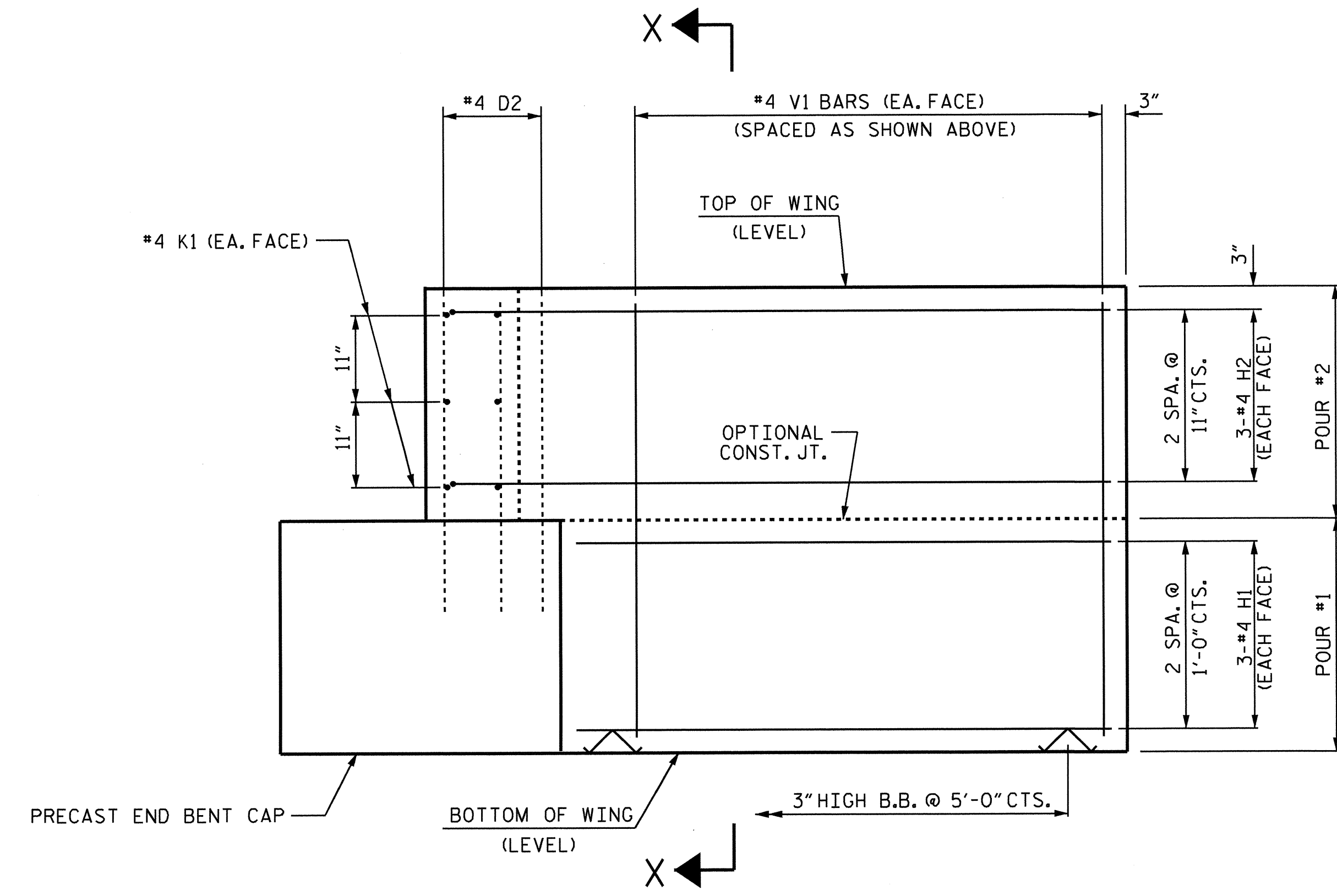
PLAN OF WING (W2)



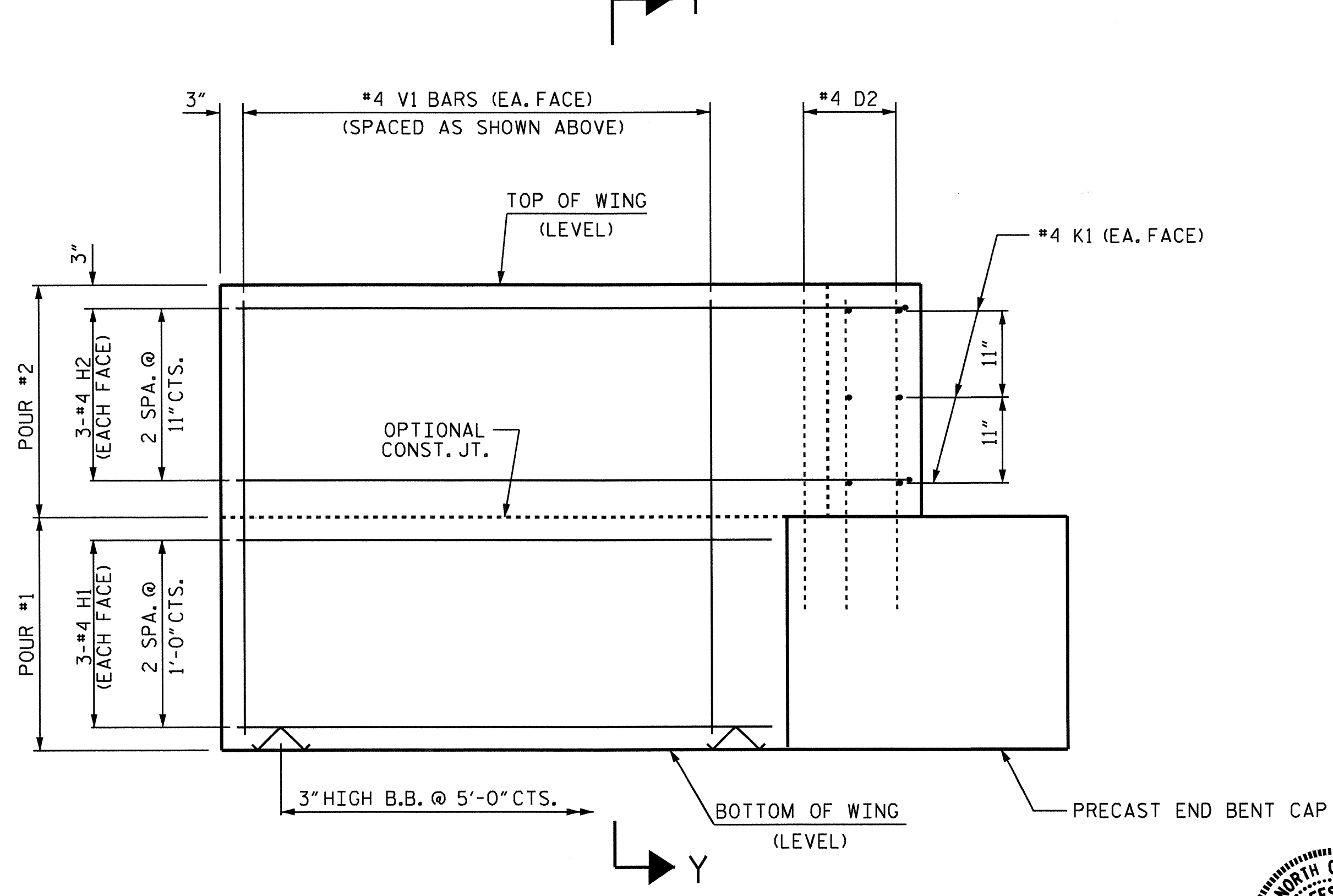
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



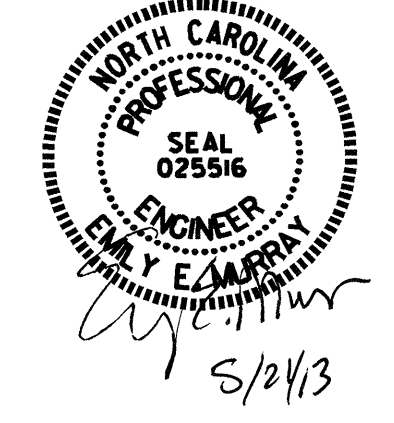
ELEVATION OF WING (W2)

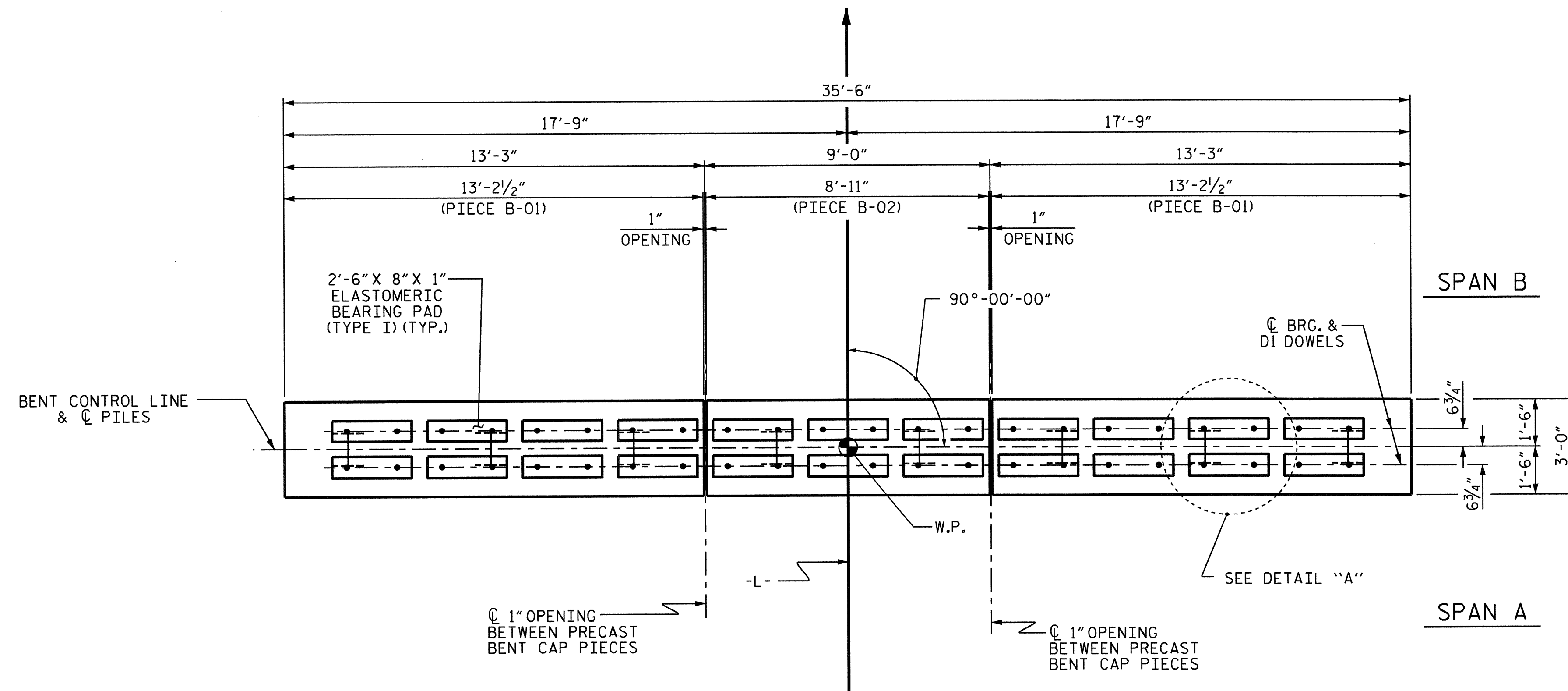
WING DETAILS

PROJECT NO. B-4619  
 ROBESON COUNTY  
 STATION: 21+06.50 -L-  
 SHEET 7 OF 7

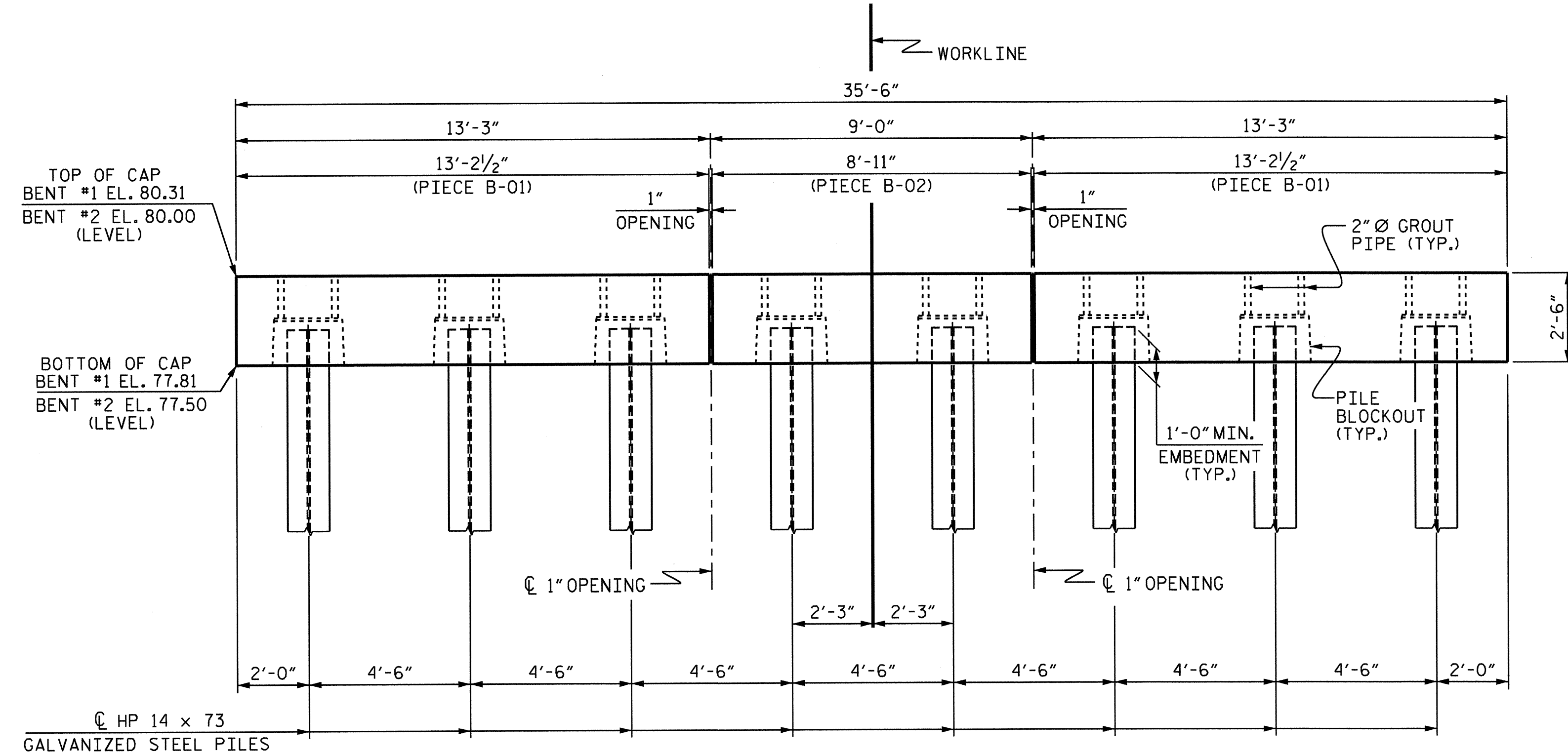
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT WING DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-42
					TOTAL SHEETS 48

ASSEMBLED BY : PEGGY ADKINS DATE : 5-7-13  
 CHECKED BY : T.L. AVERETTE DATE : 5-9-13  
 DRAWN BY : MAA 4/13  
 CHECKED BY : BCH 4/13





**PLAN**  
(PILE BLOCKOUTS AND GROUT PIPES NOT SHOWN FOR CLARITY)

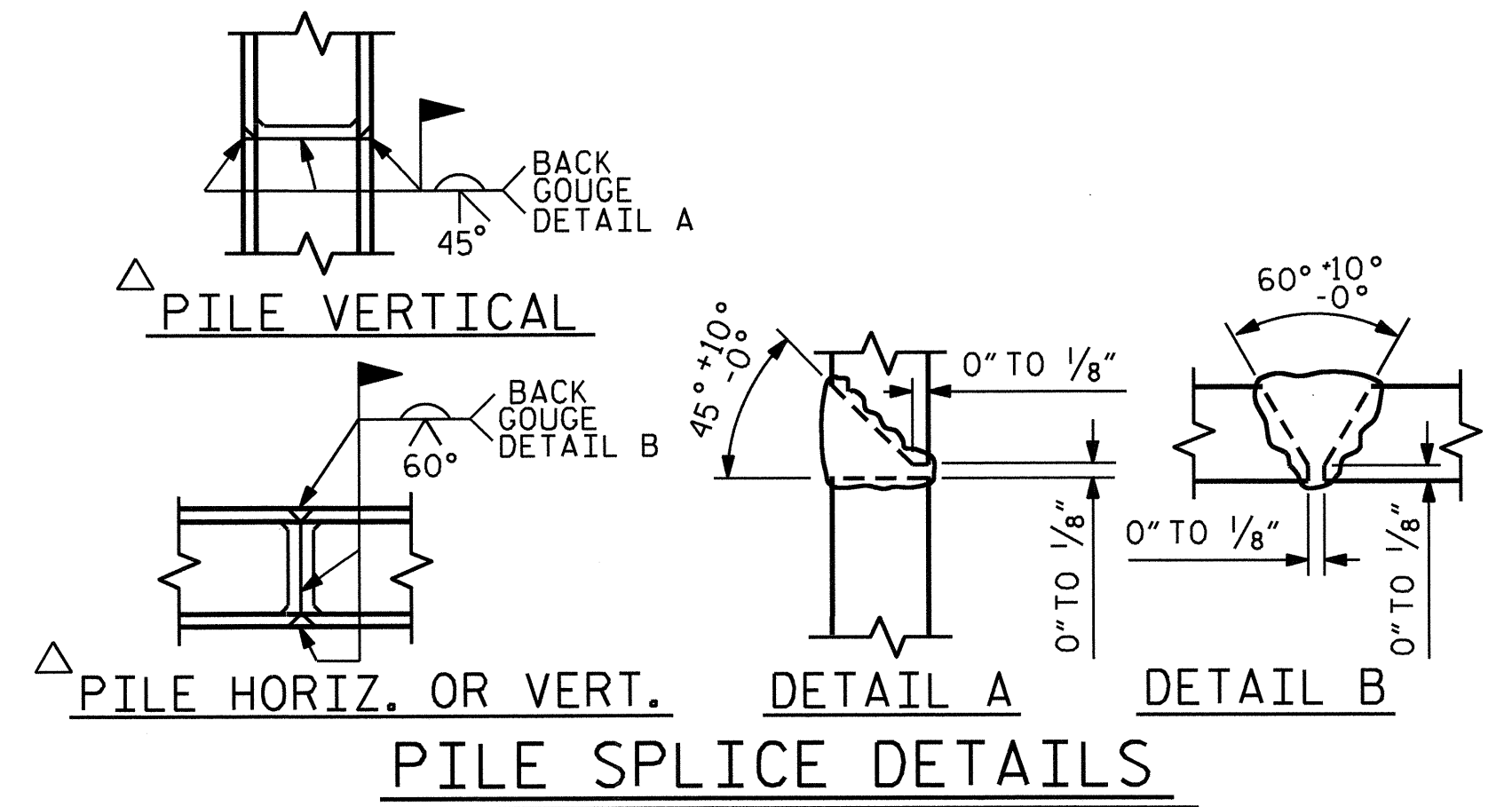


**ELEVATION**

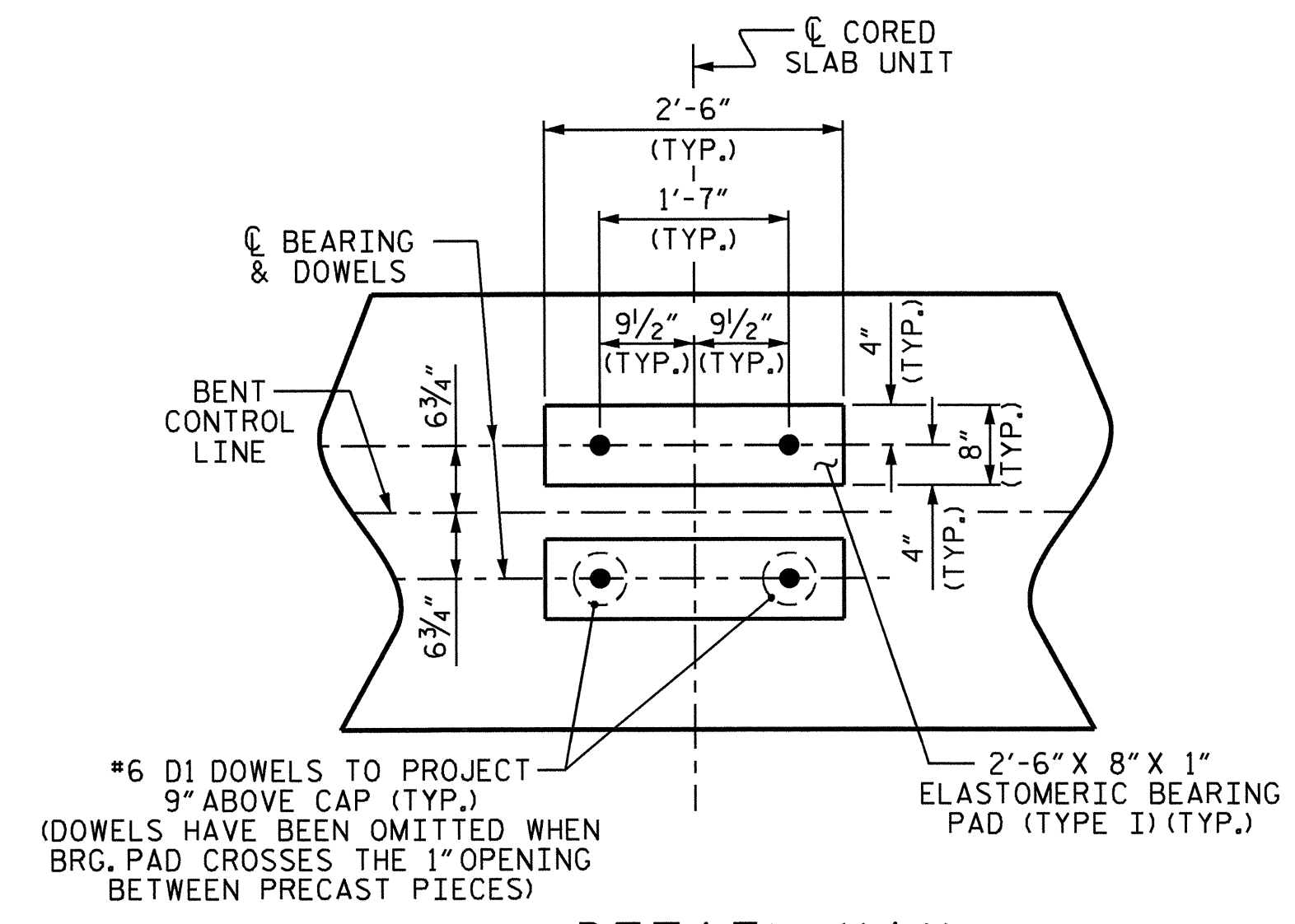
FOR 2" Ø GROUT PIPE AND PILE BLOCKOUT DETAILS, SEE SHEET 4 OF 4

**NOTES**

FOR PRECAST CAP DETAILS AND BILL OF MATERIAL, SEE "PIECE B-01" & "PIECE B-02" SHEETS.  
 GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 27.0 FEET. GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.  
 FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.  
 FOR 3'-0" x 2'-6" PRESTRESSED CONCRETE BENT CAPS, SEE SPECIAL PROVISIONS.



**PILE SPLICE DETAILS**  
△ POSITION OF PILE DURING WELDING.



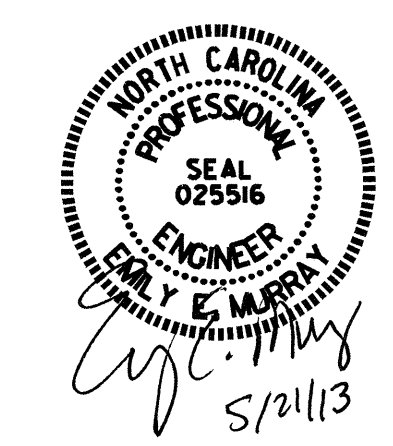
**DETAIL "A"**

(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. B-4619  
ROBESON COUNTY  
 STATION: 21+06.50 -L-

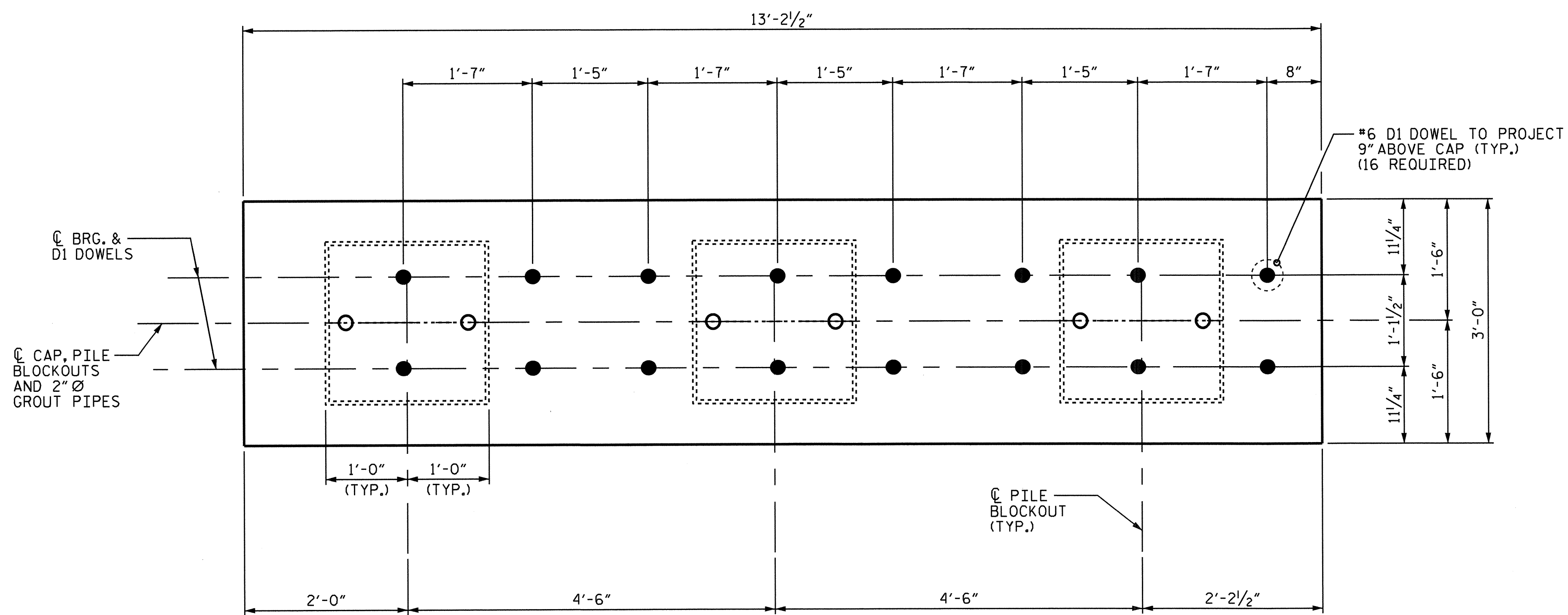
SHEET 1 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 BENTS No. 1 & No. 2



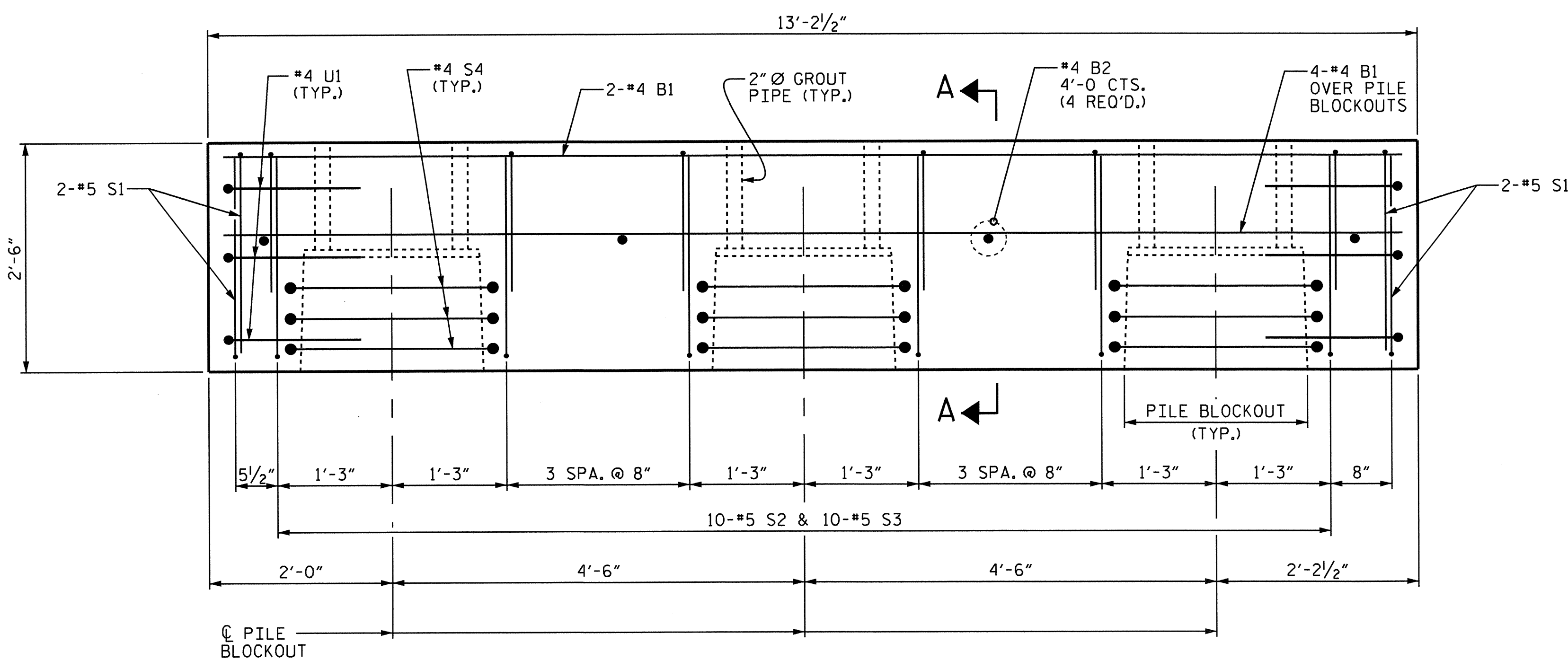
ASSEMBLED BY : PEGGY ADKINS DATE : 2-26-13  
 CHECKED BY : E.E. MURRAY DATE : 3-25-13  
 DRAWN BY : MAA 3/12  
 CHECKED BY : SHS 6/12

REVISIONS						SHEET NO. S-43
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 48
2			4			



**PLAN**

(FOR PILE BLOCKOUT DETAILS, SEE SHEET 4 OF 4)



**ELEVATION**

(\*6 D1 DOWELS NOT SHOWN FOR CLARITY)  
FOR SECTION A-A, SEE SHEET 4 OF 4.

**BILL OF MATERIAL  
FOR ONE PIECE B-01**

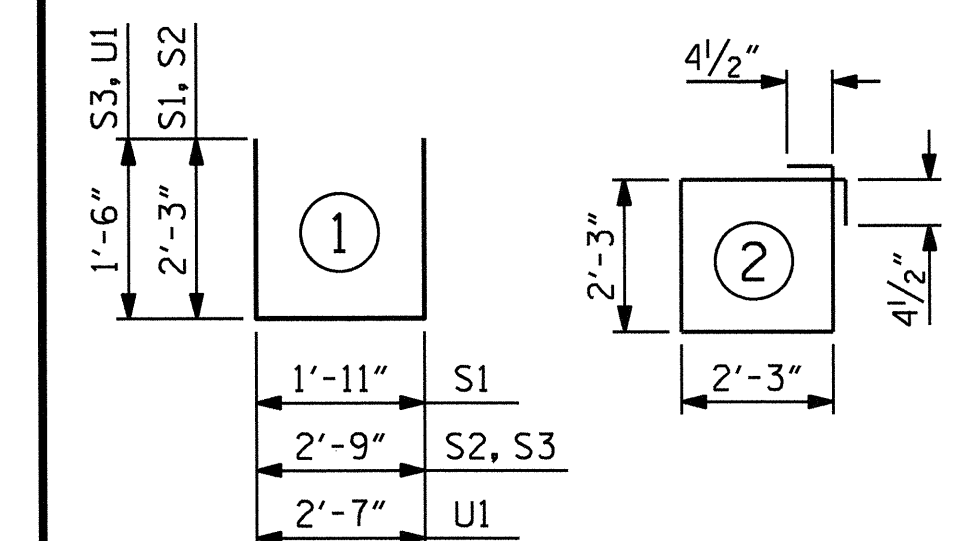
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#4	STR	12'-10"	51
B2	4	#4	STR	2'-8"	7
D1	16	#6	STR	1'-6"	36
S1	8	#5	1	6'-5"	54
S2	10	#5	1	7'-3"	76
S3	10	#5	1	5'-9"	60
S4	9	#4	2	9'-9"	59
U1	6	#4	1	5'-7"	22

REINFORCING STEEL 365 LBS

4000 PSI PRESTRESS CONCRETE 3.1 C.Y.  
PILE BLOCKOUT GROUT 0.6 C.Y.

0.6" Ø L.R. STRANDS No. 12

**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

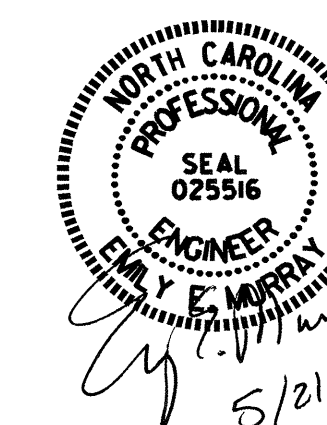
PROJECT NO. B-4619  
ROBESON COUNTY  
STATION: 21+06.50 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

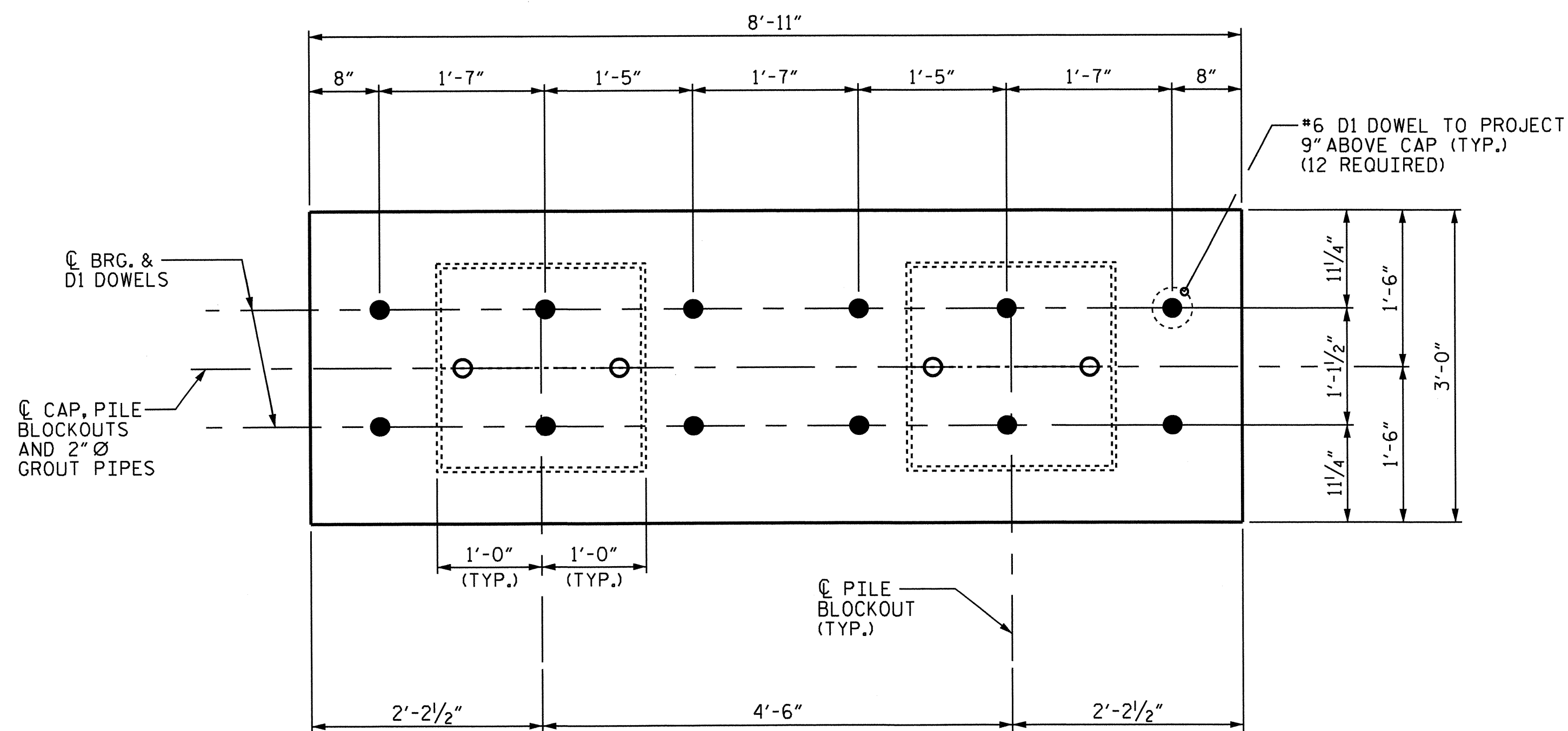
SUBSTRUCTURE

PRECAST  
PIECE B-01



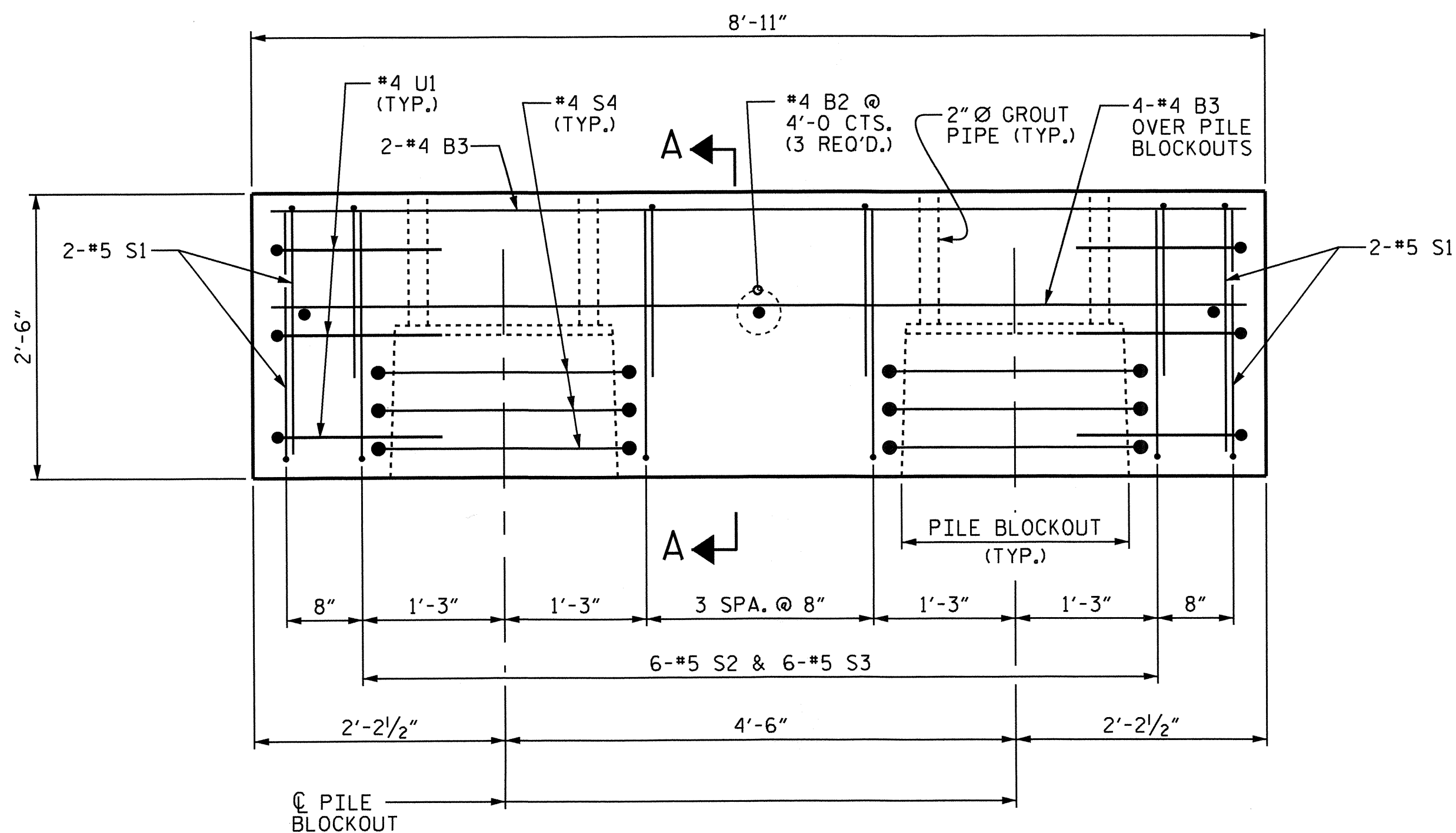
ASSEMBLED BY : PEGGY ADKINS DATE : 2-26-13  
CHECKED BY : E.E. MURRAY DATE : 3-25-13  
DRAWN BY : MAA 3/12  
CHECKED BY : SHS 6/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-44
1			3			TOTAL SHEETS 48
2			4			



**PLAN**

(FOR PILE BLOCKOUT DETAILS, SEE SHEET 4 OF 4)



**ELEVATION**

(\*6 D1 DOWELS NOT SHOWN FOR CLARITY)  
FOR SECTION A-A, SEE SHEET 4 OF 4.

**BILL OF MATERIAL  
FOR ONE PIECE B-02**

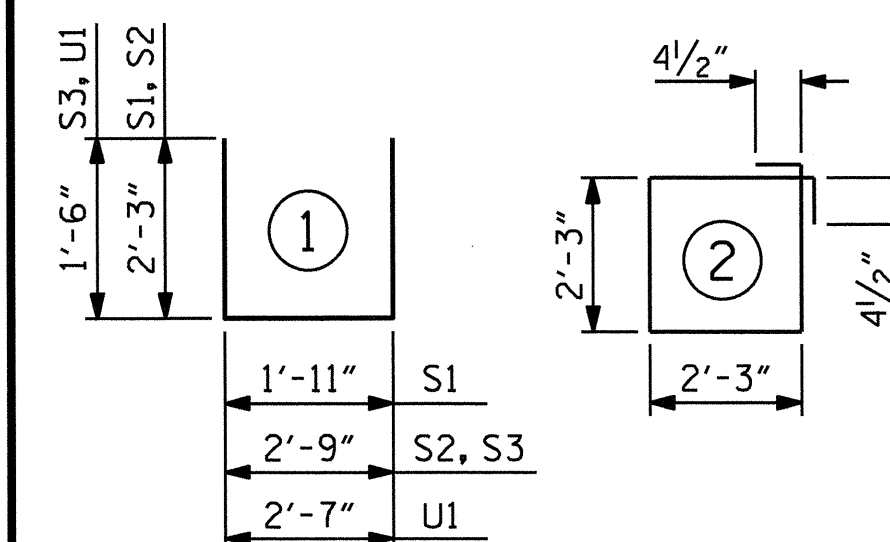
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B2	3	#4	STR	2'-8"	5
B3	6	#4	STR	8'-7"	34
D1	12	#6	STR	1'-6"	27
S1	8	#5	1	6'-5"	54
S2	6	#5	1	7'-3"	45
S3	6	#5	1	5'-9"	36
S4	6	#4	2	9'-9"	39
U1	6	#4	1	5'-7"	22

REINFORCING STEEL 262 LBS

4000 PSI PRESTRESS CONCRETE 2.1 C.Y.  
PILE BLOCKOUT GROUT 0.4 C.Y.

0.6" Ø L.R. STRANDS No. 12

**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

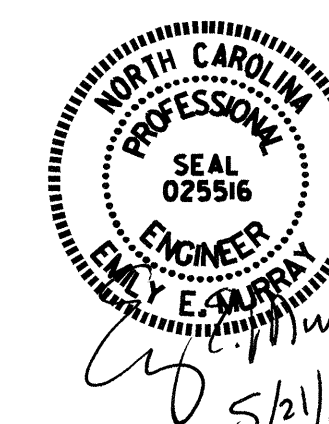
PROJECT NO. B-4619  
ROBESON COUNTY  
STATION: 21+06.50 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE

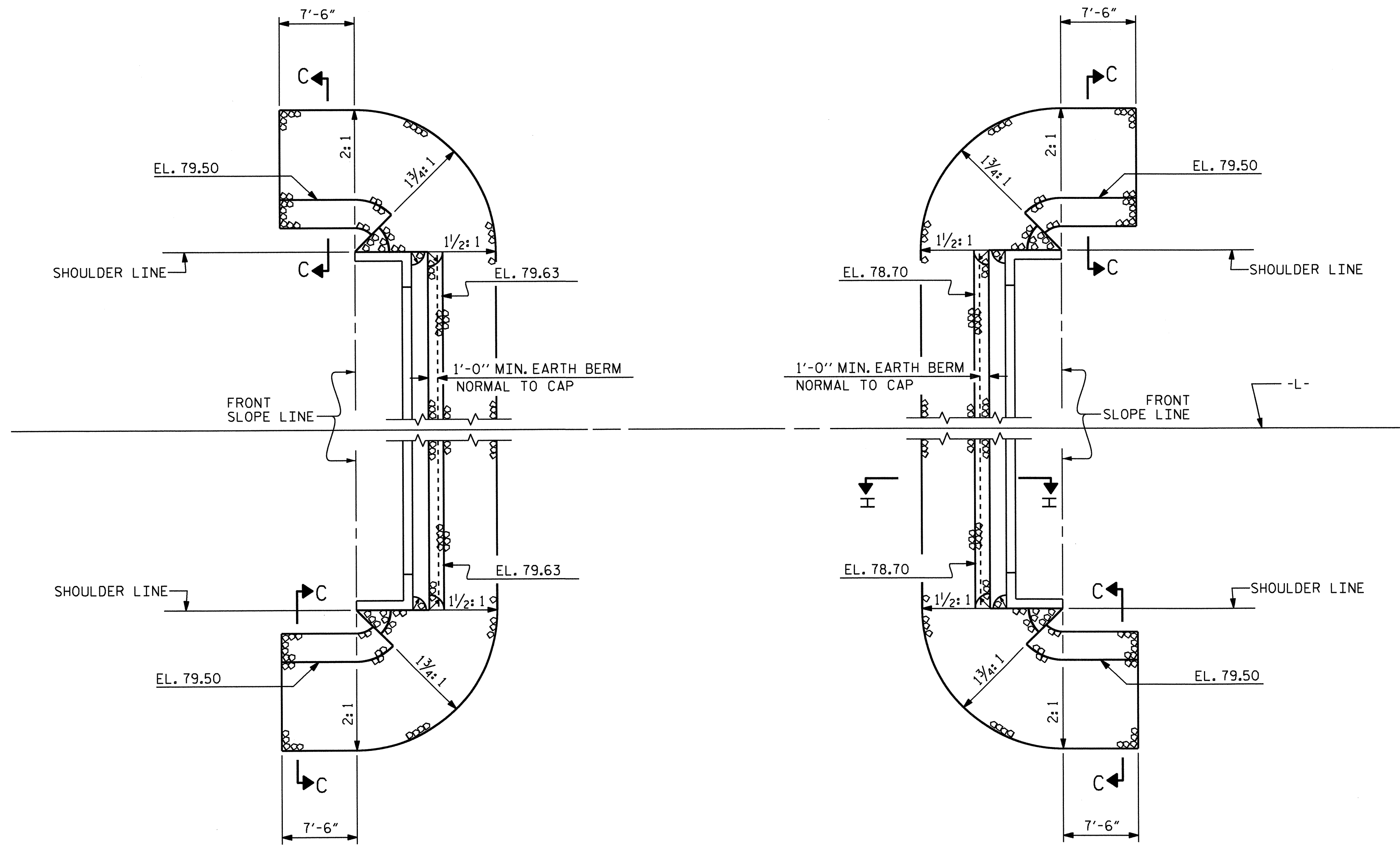
PRECAST  
PIECE B-02



REVISIONS						SHEET NO. S-45
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 48
2			4			

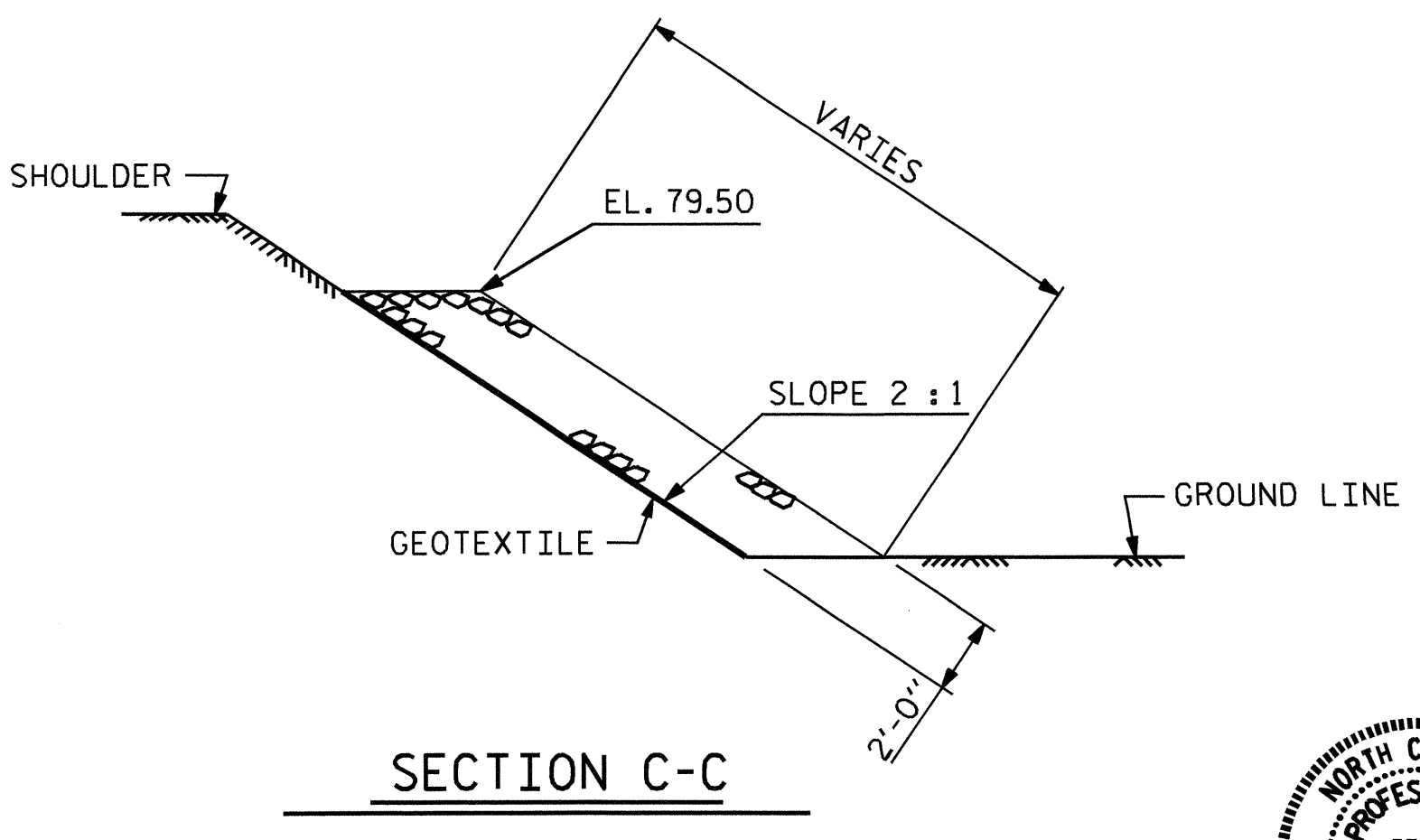
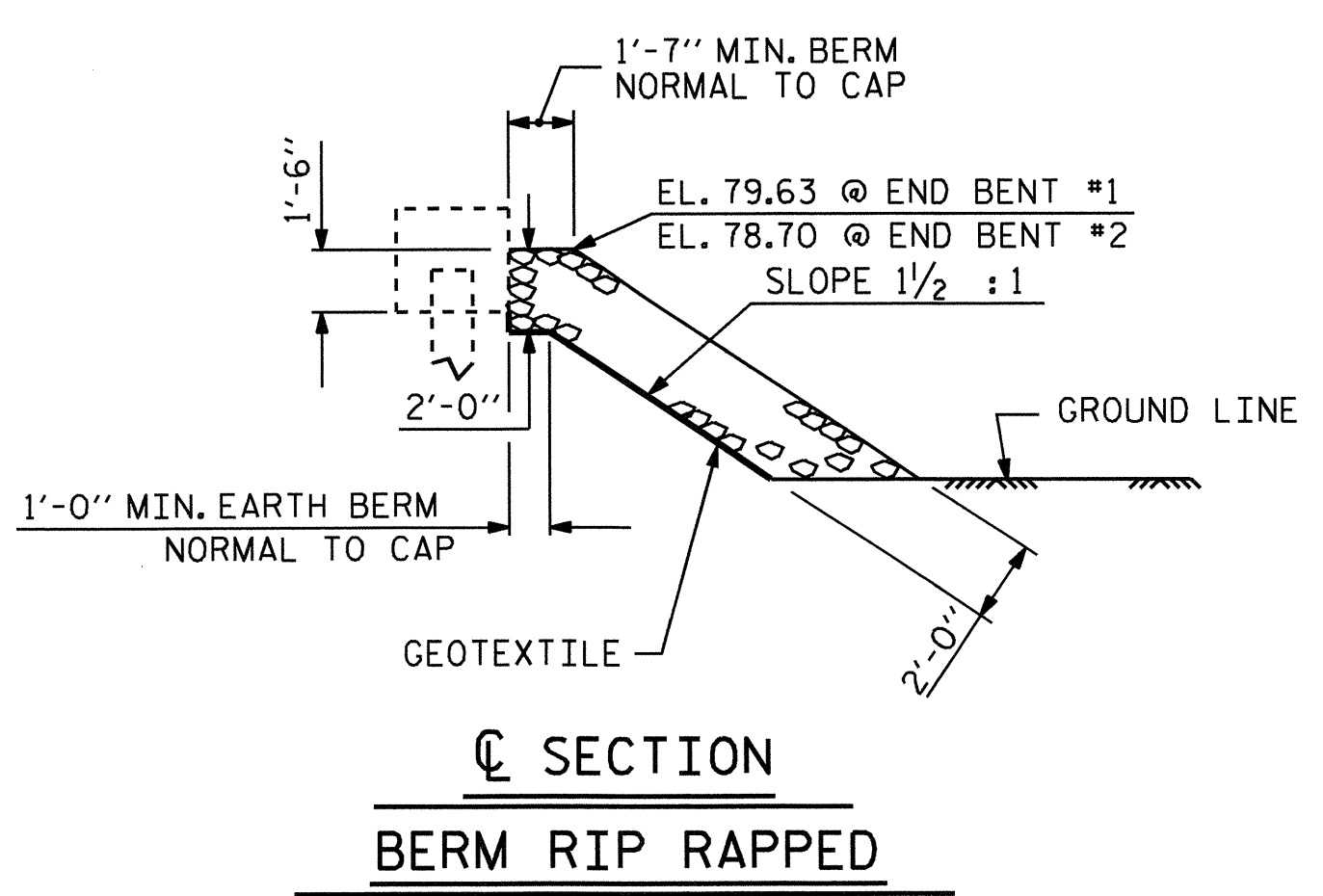
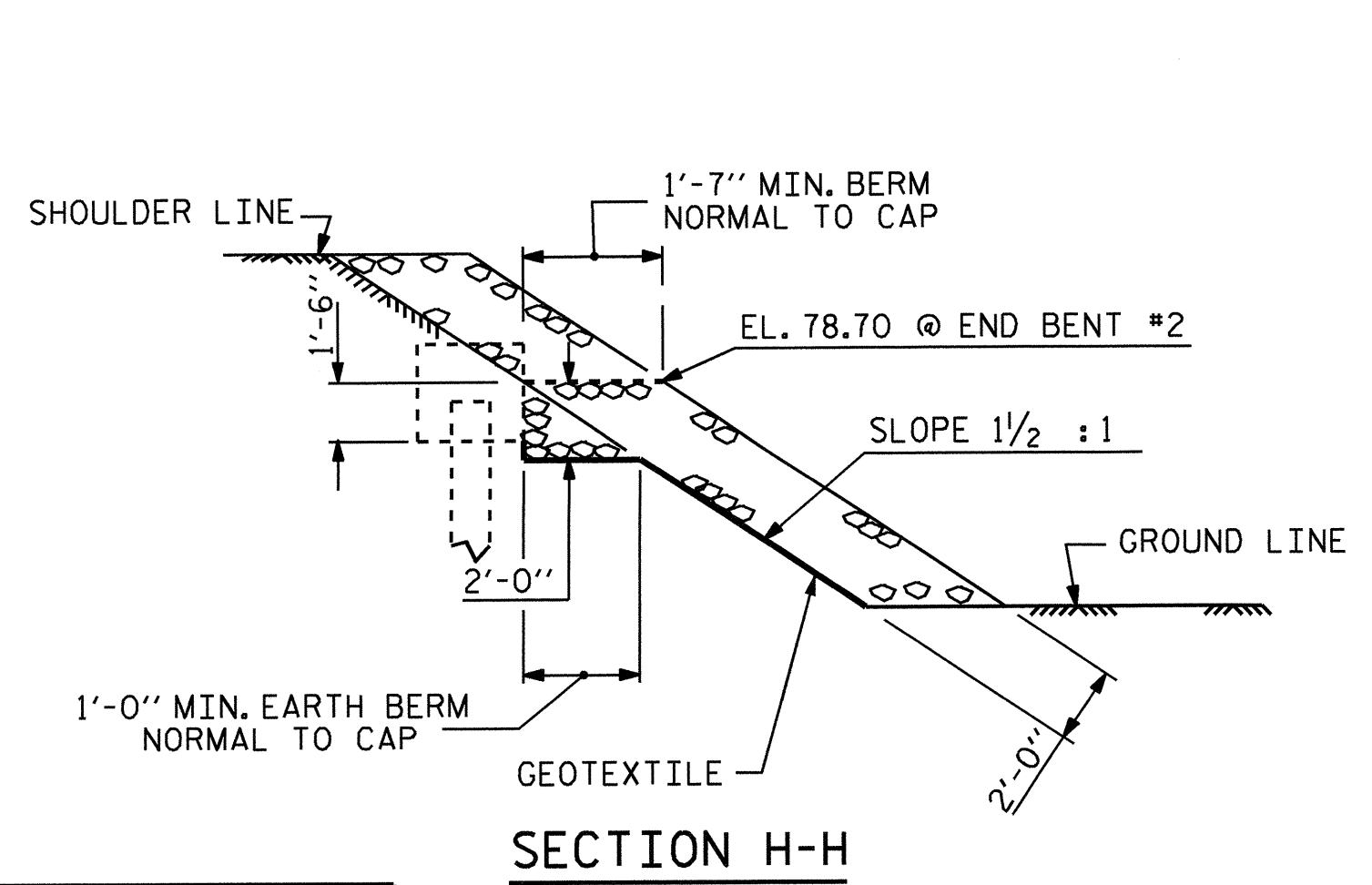
ASSEMBLED BY : PEGGY ADKINS DATE : 2-26-13  
CHECKED BY : E.E. MURRAY DATE : 3-25-13  
DRAWN BY : MAA 3/12  
CHECKED BY : SHS 6/12





ESTIMATED QUANTITIES		
BRIDGE @ STA. 21+06.50 -L-	RIP RAP CLASS I (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	70	78
END BENT 2	59	65

PLAN



SECTION H-H

SECTION C-C  
BERM RIP RAPPED

SECTION C-C

PROJECT NO. B-4619  
ROBESON COUNTY  
 STATION: 21+06.50 -L-

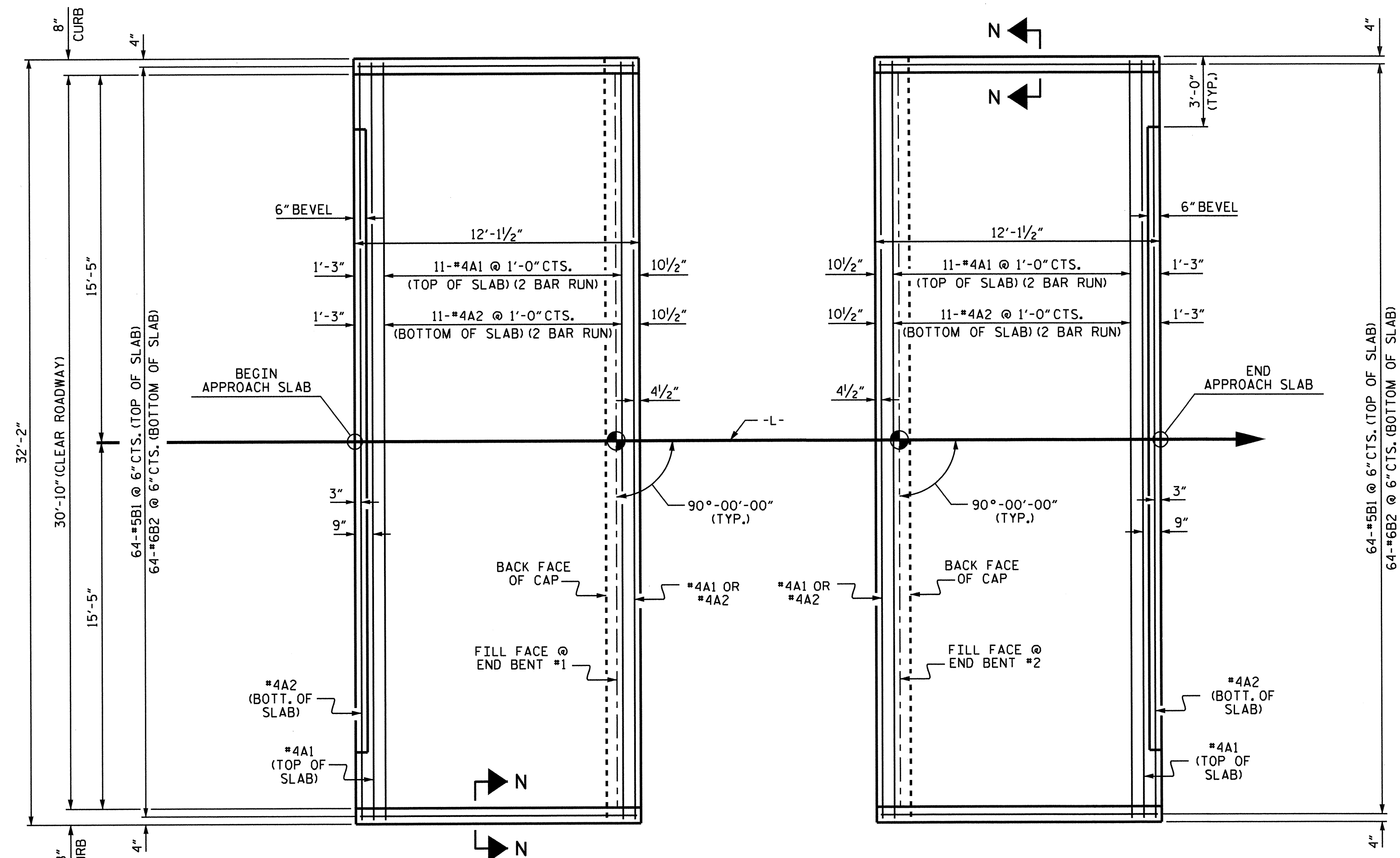
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 =RIP RAP DETAILS=



DESIGN ENGINEER OF RECORD: A.M. LEE DATE: 5-7-13
ASSEMBLED BY: PEGGY ADKINS DATE: 2-26-13
CHECKED BY: E.E. MURRAY DATE: 3-25-13
DRAWN BY: REK 1/84
CHECKED BY: RDU 1/84
REV. 5/1/06R TLA/GM
REV. 10/1/11 MAA/GM
REV. 12/21/11 MAA/GM

REVISIONS						SHEET NO. S-47
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 48
2			4			





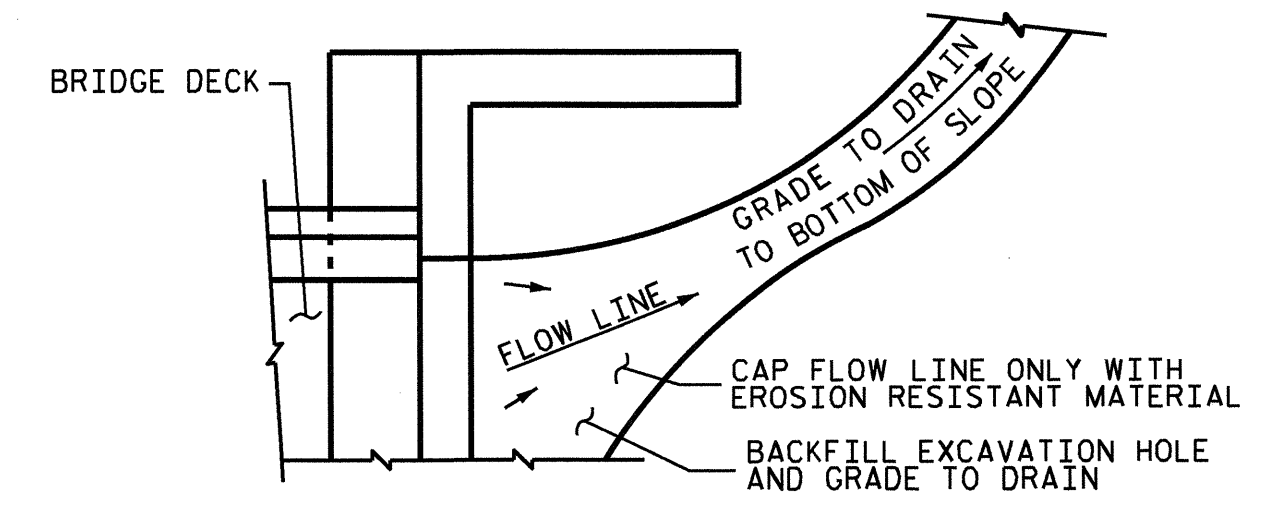
**NOTES**

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

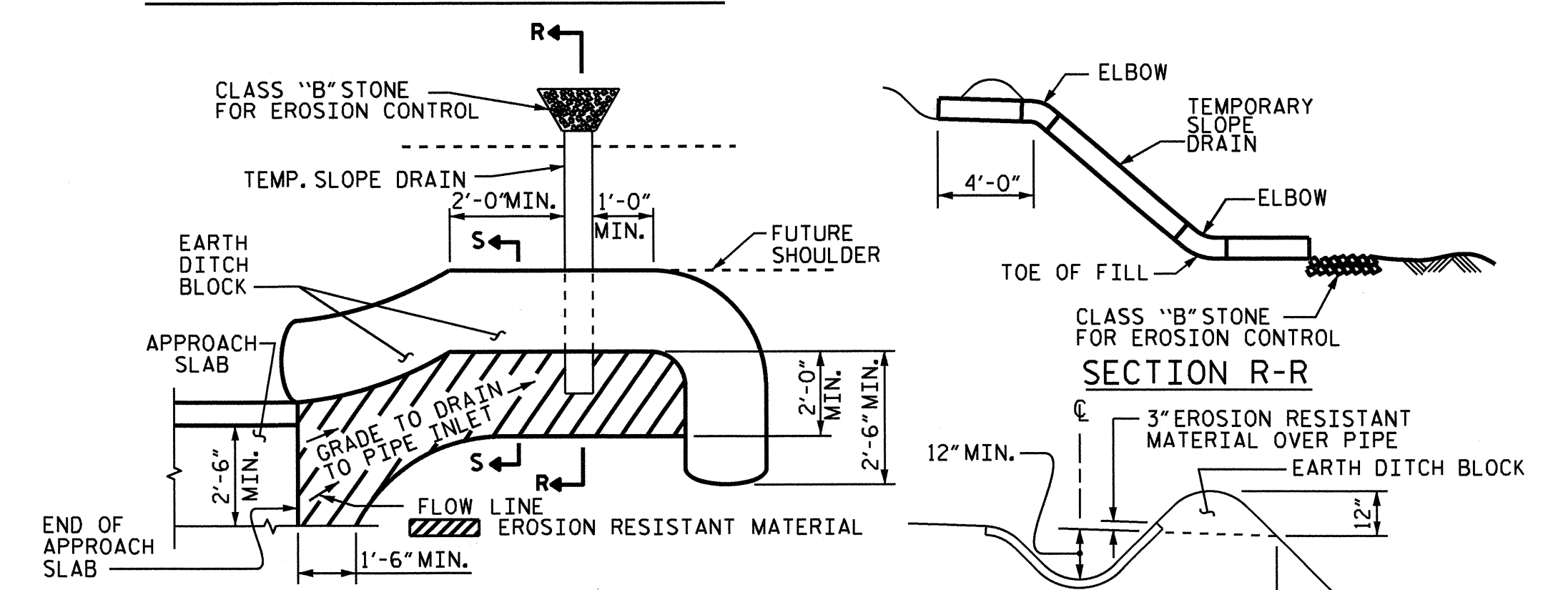
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

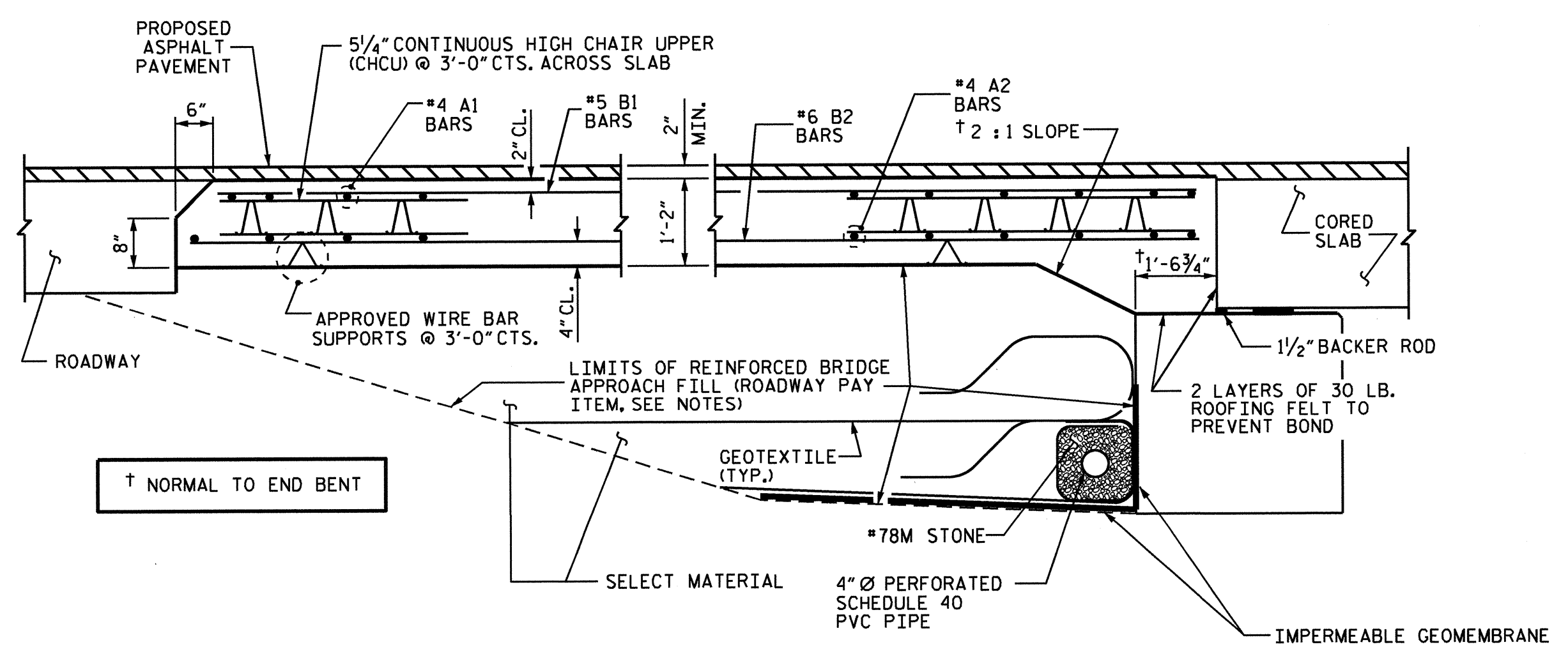
BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	16'-11"	294
A2	26	#4	STR	16'-9"	291
*B1	64	#5	STR	11'-2"	745
B2	64	#6	STR	11'-8"	1121
REINFORCING STEEL				LBS.	1412
* EPOXY COATED REINFORCING STEEL				LBS.	1039
CLASS AA CONCRETE				C. Y.	18.6
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	16'-11"	294
A2	26	#4	STR	16'-9"	291
*B1	64	#5	STR	11'-2"	745
B2	64	#6	STR	11'-8"	1121
REINFORCING STEEL				LBS.	1412
* EPOXY COATED REINFORCING STEEL				LBS.	1039
CLASS AA CONCRETE				C. Y.	18.6



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.



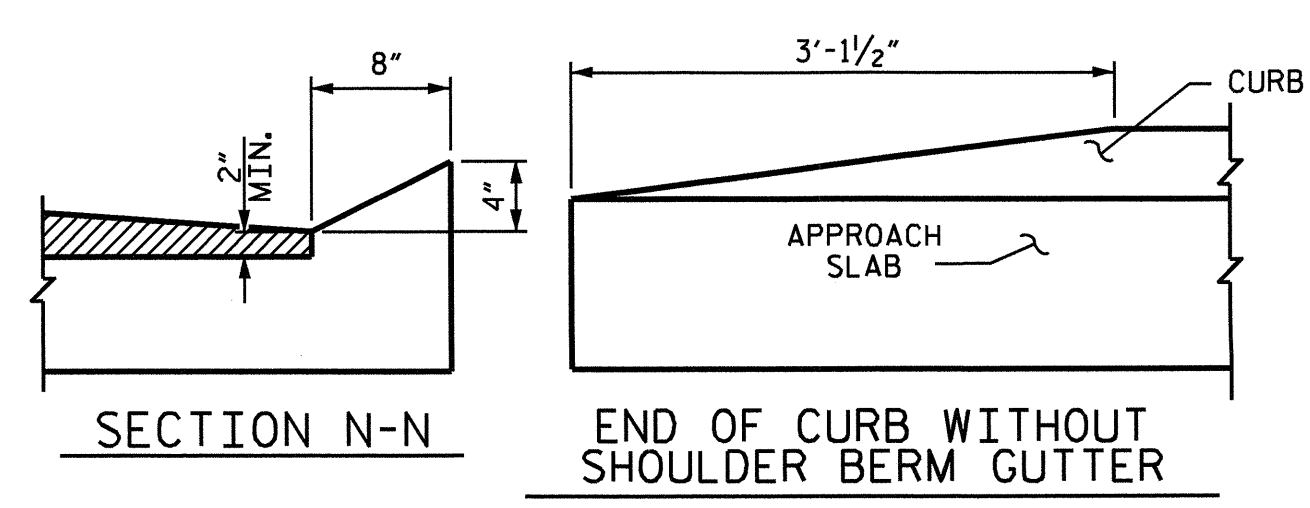
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

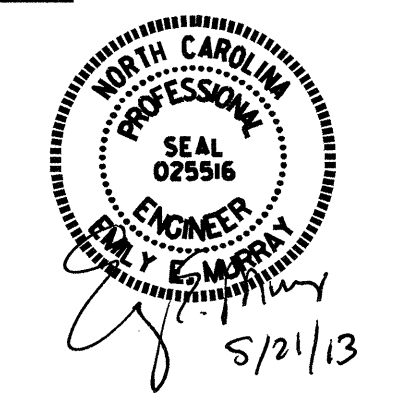
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



CURB DETAILS

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



PROJECT NO. B-4619

ROBESON COUNTY

STATION: 21+06.50 -L-

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

STANDARD BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT

90° SKEW

DESIGN ENGINEER OF RECORD: A.M. LEE DATE: 5-7-13

ASSEMBLED BY: PEGGY ADKINS DATE: 2-26-13

CHECKED BY: E.E. MURRAY DATE: 3-25-13

DRAWN BY: SHS/MAA 5-09 REV. 12-11 MAA/AAC

CHECKED BY: BCH 5-09

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

TOTAL SHEETS 48

## 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