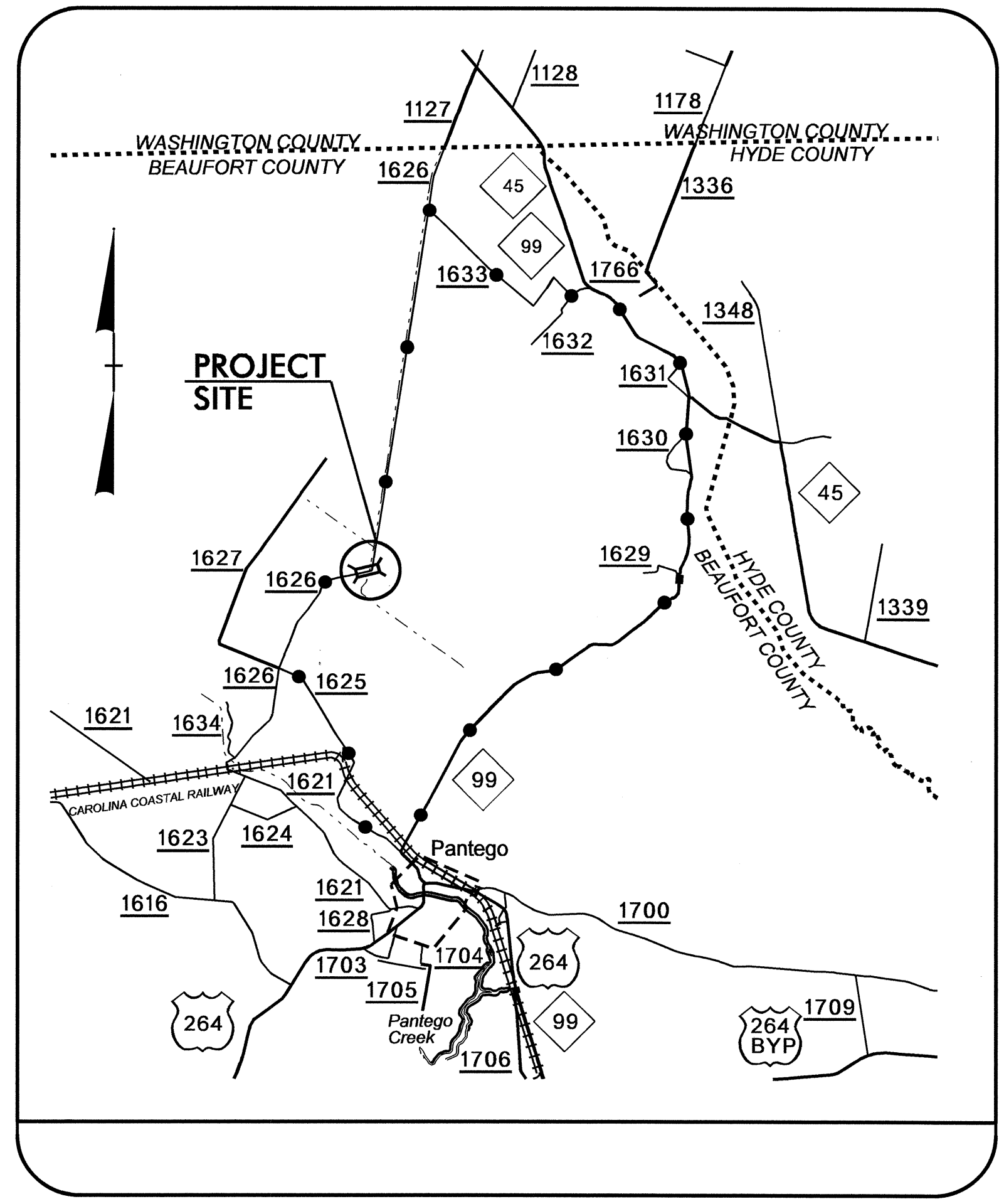


**CONTRACT: C202377 TIP PROJECT: B-4428**

**STRUCTURE**



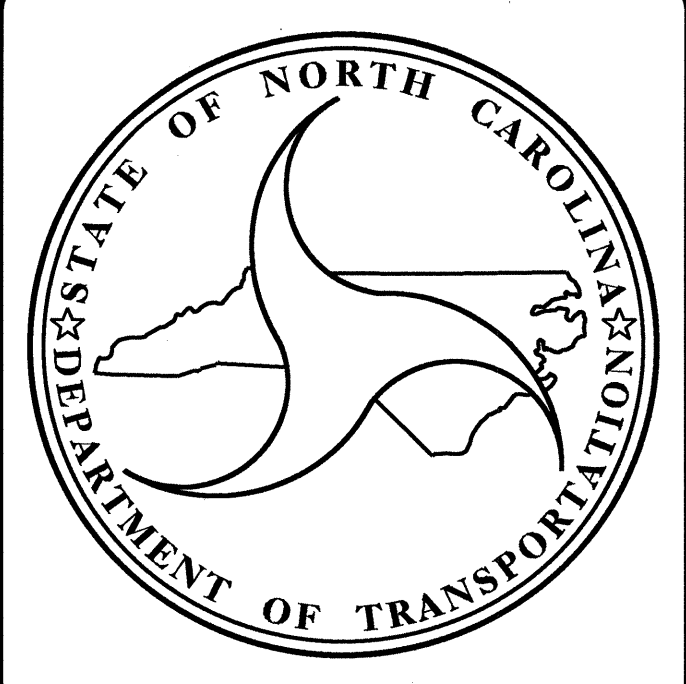
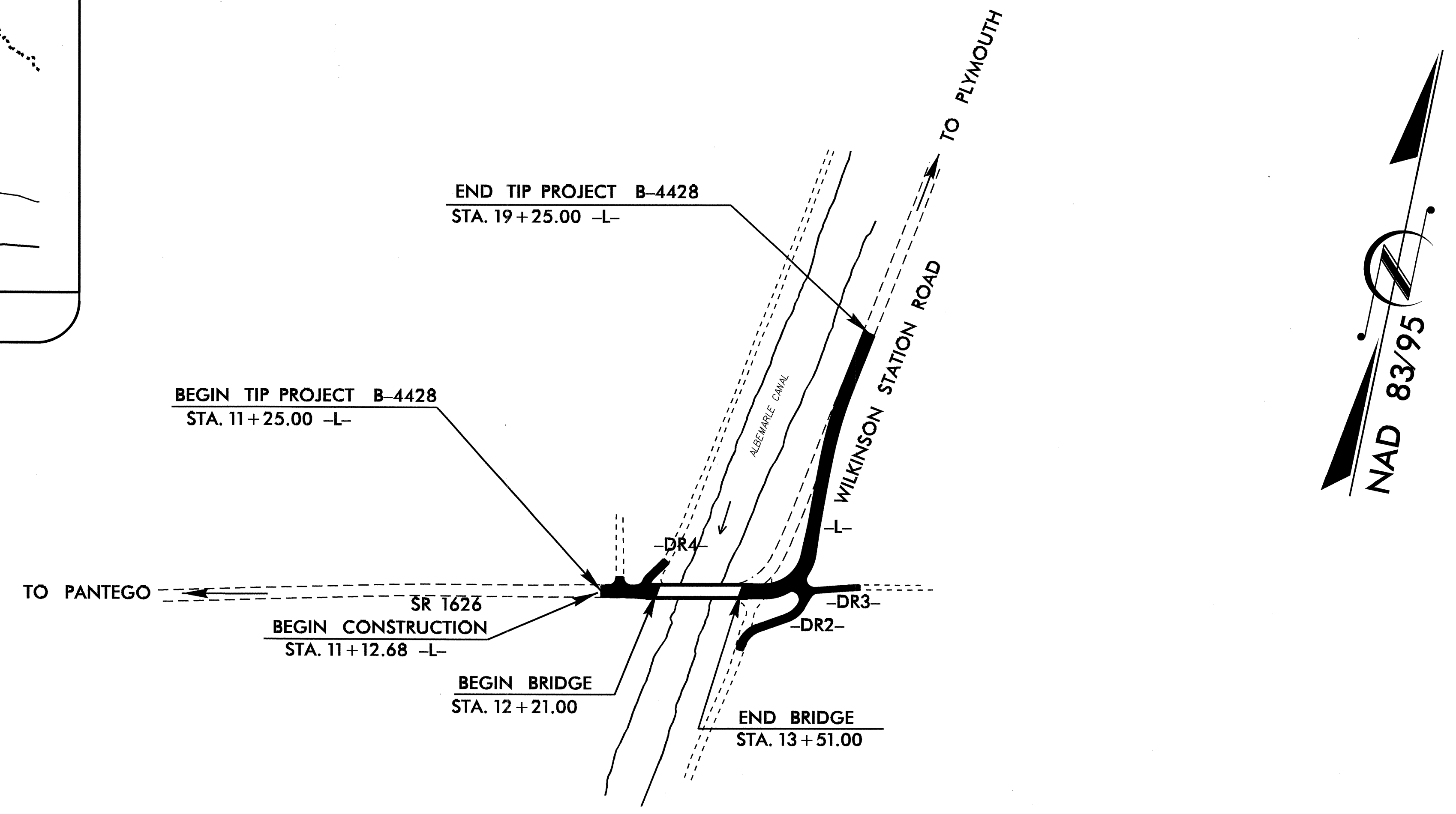
STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

**BEAUFORT COUNTY**

**LOCATION: BRIDGE NO. 140 OVER ALBEMARLE CANAL ON SR 1626 (WILKINSON STATION ROAD)**

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4428		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33698.1.1	BRZ-1616(6)	P.E.	
33698.2.1	BRZ-1616(3)	ROW, UTIL	
33698.3.1	BRZ-1616(3)	CONS.	



**DESIGN DATA**

ADT 2010 =	505
ADT 2030 =	800
DHV =	10 %
D =	60 %
T =	3 % *
V =	60 MPH**

FUNC CLASS=RURAL LOCAL  
 \* (TTST 1% + DUAL 2%)  
 \*\* DESIGN EXCEPTION REQUIRED FOR THE DESIGN SPEED FROM 60 MPH TO 30 MPH

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT B-4428 =	0.127 MI
LENGTH STRUCTURE TIP PROJECT B-4428 =	0.025 MI
TOTAL LENGTH TIP PROJECT B-4428 =	0.152 MI

Prepared in the Office of:

**DIVISION OF HIGHWAYS**

2006 STANDARD SPECIFICATIONS

LETTING DATE :	J. C. FRYE, P.E. PROJECT ENGINEER
MAY 18, 2010	W.A. DAVIS, P.E. PROJECT DESIGN ENGINEER

**STRUCTURE DESIGN UNIT**  
 1000 BIRCH RIDGE DR.  
 RALEIGH, N.C. 27610

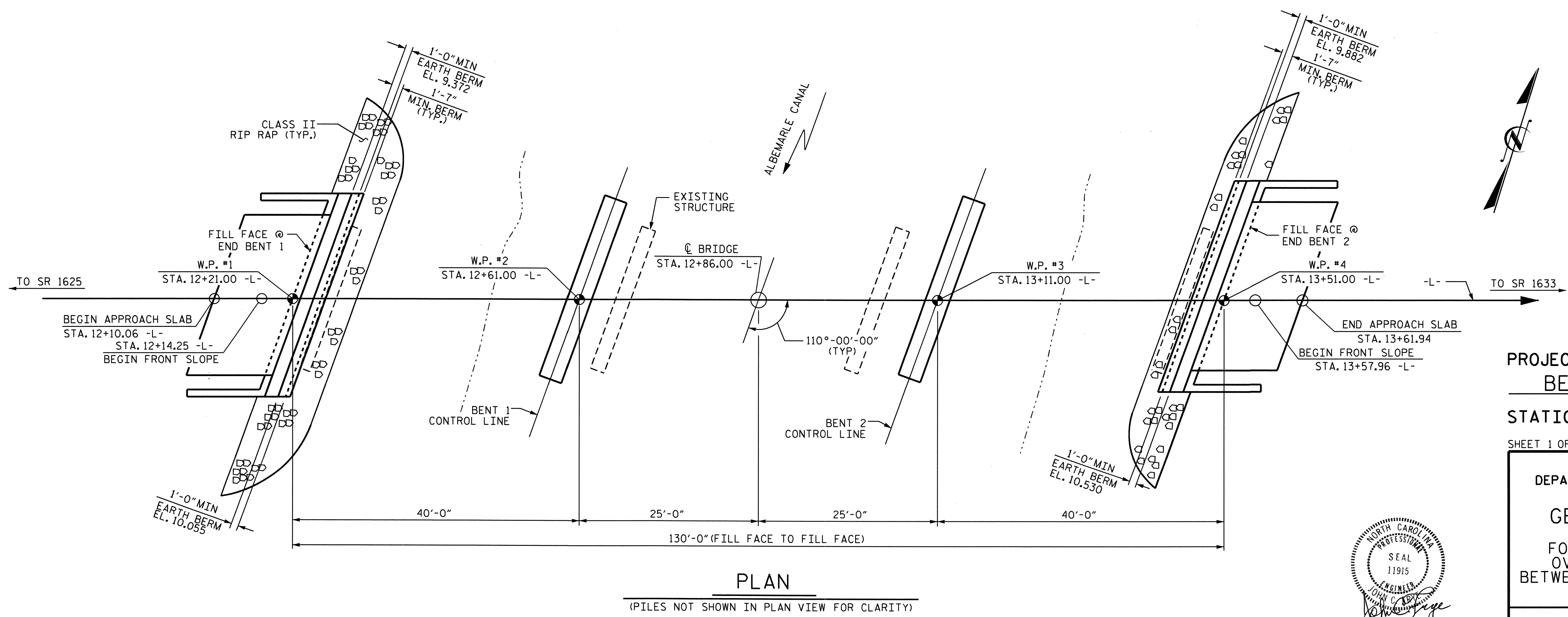
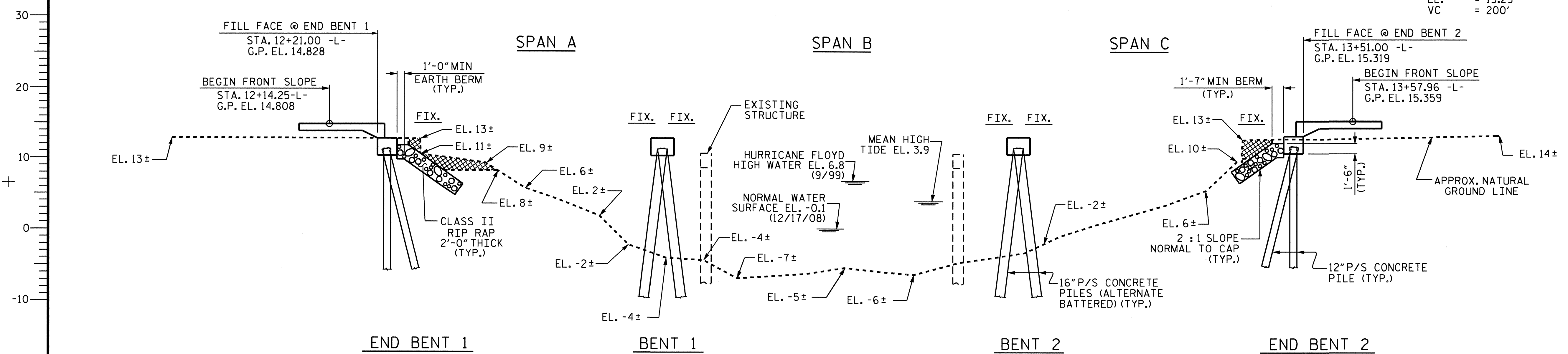
**DIVISION OF HIGHWAYS**  
 STATE OF NORTH CAROLINA

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

APPROVED  
 DIVISION ADMINISTRATOR DATE

GRADE DATA

+0.3000% +0.9973%  
 PI STA. = 13+75.00  
 EL. = 15.29'  
 VC = 200'



PROJECT NO. B-4428

BEAUFORT COUNTY

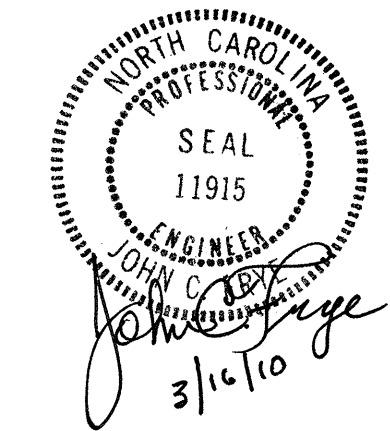
STATION: 12+86.00 -L-

SHEET 1 OF 4 REPLACES BRIDGE NO. 140

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

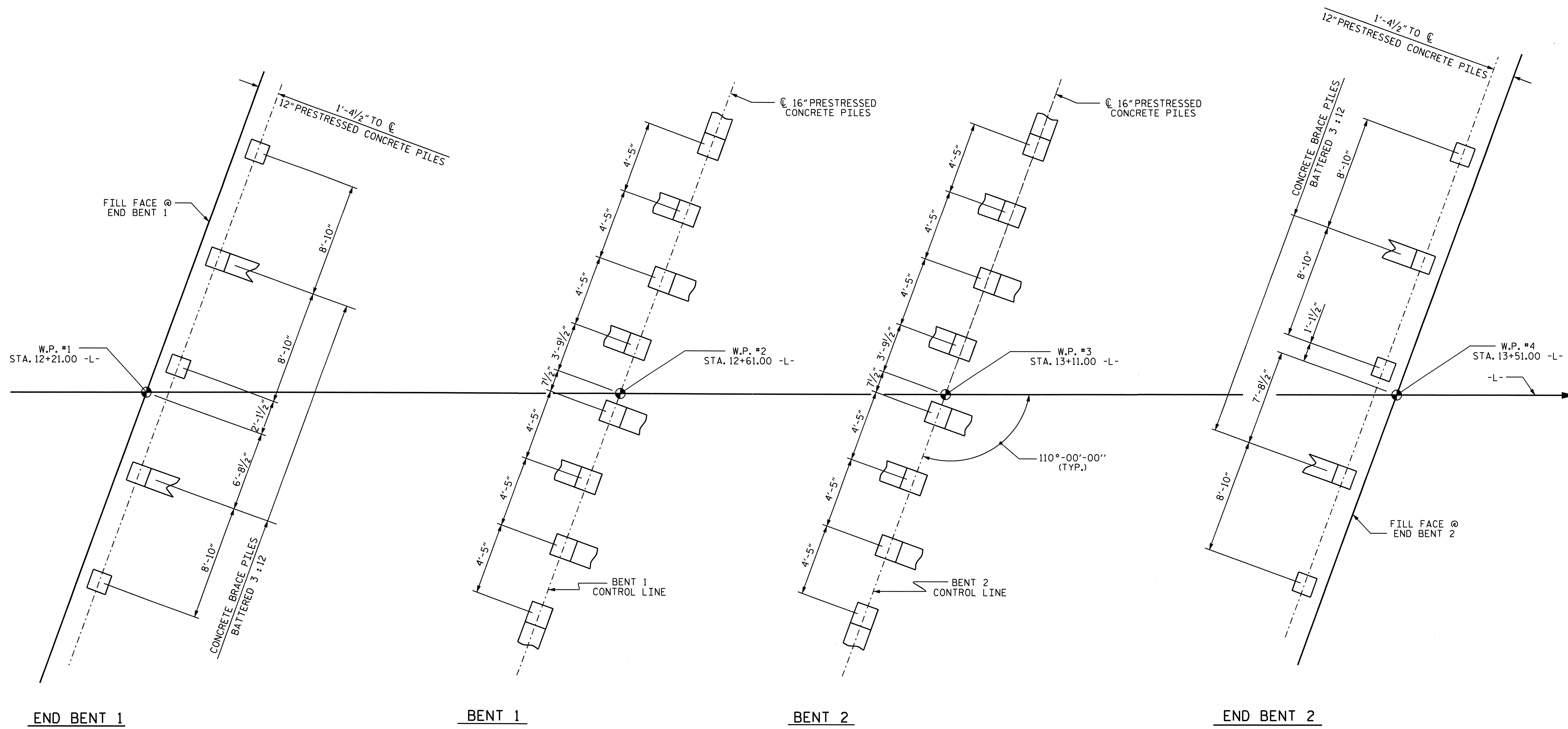
**GENERAL DRAWING**

FOR BRIDGE ON SR 1626  
 OVER ALBEMARLE CANAL  
 BETWEEN SR 1625 AND SR 1633



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

DRAWN BY : QT NGUYEN DATE : 9-09-09  
 CHECKED BY : W.A. DAVIS DATE : 11-09-09



**FOUNDATION LAYOUT**

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE. ALL PILES AT BENTS ARE BATTERED 1/2:12 IN THE DIRECTION SHOWN ON THE PLANS.

**NOTES**

FOR PILES, SEE SPECIAL PROVISIONS.

PILES AT END BENT NO.1 AND END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 65 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 110 TONS PER PILE.

PILES AT BENT NO.1 AND BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 85 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 140 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAW OR SCOUR.

INSTALL PILES AT BENT NO.1 TO A TIP ELEVATION NO HIGHER THAN -20.0 FT.

INSTALL PILES AT BENT NO.2 TO A TIP ELEVATION NO HIGHER THAN -20.0 FT.

SCOUR CRITICAL ELEVATION FOR BENT NO.1 IS ELEVATION -11.0 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

SCOUR CRITICAL ELEVATION FOR BENT NO.2 IS ELEVATION -11.0 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

TESTING THE FIRST PRODUCTION PILE WITH THE PILE DRIVING ANALYZER (PDA) DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT BENT NO.1, OR BENT NO.2. FOR PILE DRIVING ANALYZER, SEE PILES SPECIAL PROVISION.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 25-45 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO.1 AND END BENT NO.2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH THE PILES PROVISIONS.

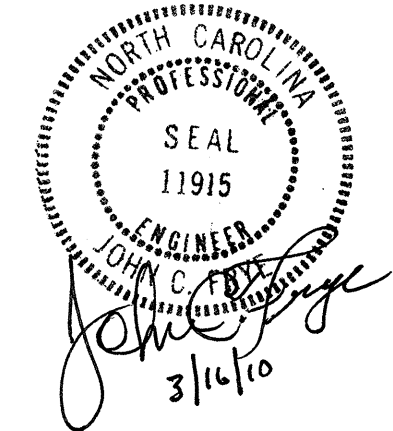
IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 30-70 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT NO.1 AND BENT NO.2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH THE PILES PROVISIONS.

PROJECT NO. B-4428  
BEAUFORT COUNTY  
 STATION: 12+86.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

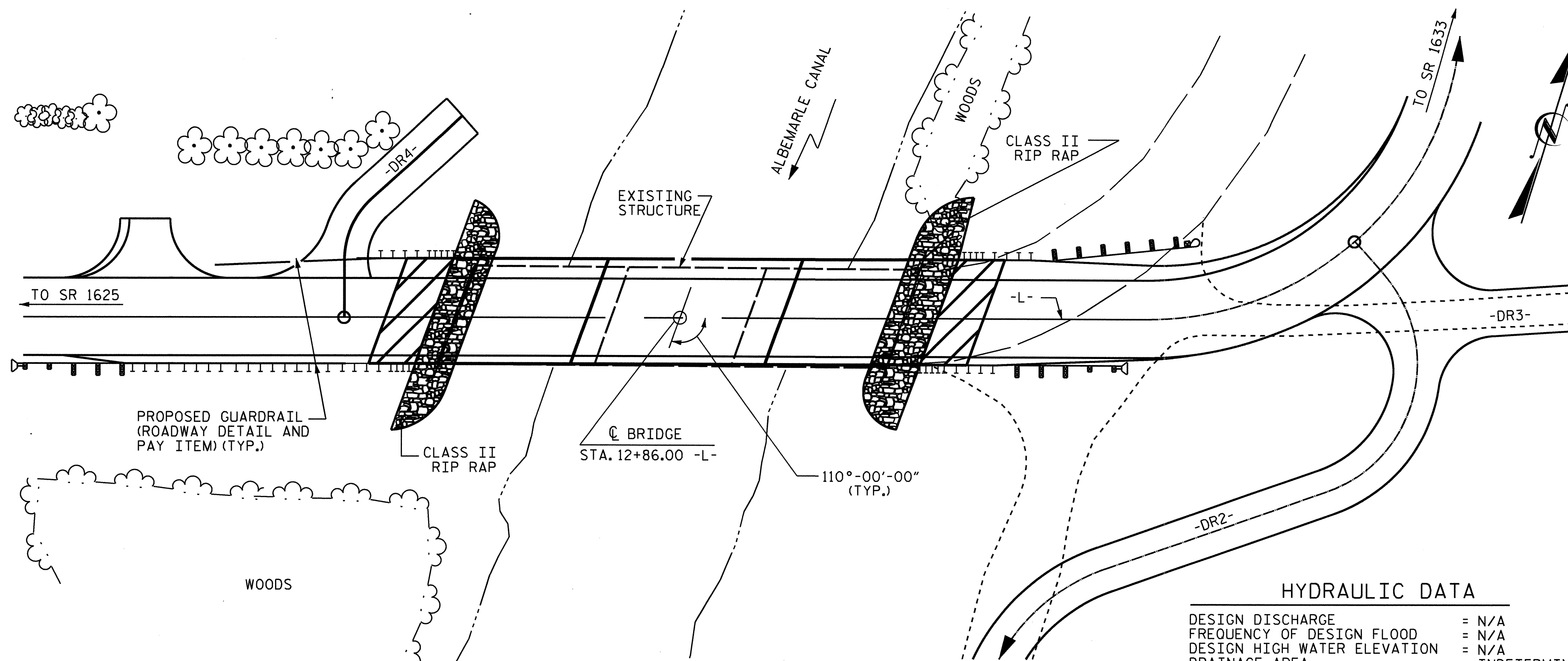
**GENERAL DRAWING**  
 FOR BRIDGE ON SR 1626  
 OVER ALBEMARLE CANAL  
 BETWEEN SR 1625 AND SR 1633



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-2
1			3			TOTAL SHEETS
2			4			27

DRAWN BY : QT NGUYEN DATE : 9-09  
 CHECKED BY : W.A. DAVIS DATE : 11-9-09

NOTES



LOCATION SKETCH

NOTE: FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

HYDRAULIC DATA

DESIGN DISCHARGE	= N/A
FREQUENCY OF DESIGN FLOOD	= N/A
DESIGN HIGH WATER ELEVATION	= N/A
DRAINAGE AREA	= INDETERMINATE
BASIC DISCHARGE (Q100)	= 1800 C.F.S.
BASIC HIGH WATER ELEVATION	= 6.8'

OVERTOPPING DATA

OVERTOPPING DISCHARGE	= N/A
FREQUENCY OF OVERTOPPING FLOOD	= N/A
OVERTOPPING FLOOD ELEVATION	= N/A

PILES FOR BENTS 1 AND 2 SHALL BE DRIVEN FROM THE ROADWAY APPROACHES. THE REMAINING ELEMENTS OF THE BRIDGE SHALL BE CONSTRUCTED USING TOP-DOWN CONSTRUCTION METHODS. THE USE OF A TEMPORARY CAUSEWAY OR WORK BRIDGE IS NOT PERMITTED.

- ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THE EXISTING STRUCTURE CONSISTING OF 1 @ 40'-6", 1 @ 35'-0", AND 1 @ 40'-6" AND A CLEAR ROADWAY WIDTH OF 25.2 FT. WITH A TIMBER FLOOR ON I BEAMS WITH TIMBER CAPS ON TIMBER PILES SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
- REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
- FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.
- THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 24.0 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 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.
- ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES", MAY, 2001.
- THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS.
- INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 12+86.00 -L-."
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR CURING CONCRETE, SEE SPECIAL PROVISIONS.
- FOR VERTICAL CONCRETE BARRIER RAIL, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	PDA TESTING	PDA ASSISTANCE	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	12" PRESTRESSED CONCRETE PILES	16" PRESTRESSED CONCRETE PILES	PILE REDRIVES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS			
	LUMP SUM	EA.	EA.	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	NO.	LIN. FT.	EA.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE						LUMP SUM					255.20			LUMP SUM	30	1273.33		
END BENT 1					12.7		1960	5	125	5		77	85					
BENT 1					10.4		2161			8	360							
BENT 2					10.4		2161			8	320							
END BENT 2					12.7		1962	5	125	5		58	65					
TOTAL	LUMP SUM	1	1	LUMP SUM	46.2	LUMP SUM	8244	10	250	16	680	26	255.20	135	150	LUMP SUM	30	1273.33

PROJECT NO. B-4428  
BEAUFORT COUNTY  
 STATION: 12+86.00 -L-

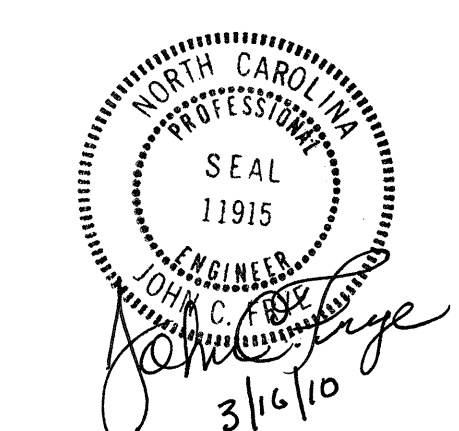
SHEET 3 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**

FOR BRIDGE ON SR 1626  
 OVER ALBEMARLE CANAL  
 BETWEEN SR 1625 AND SR 1633

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



DRAWN BY : QT NGUYEN DATE : 9-09-09  
 CHECKED BY : W.A. DAVIS DATE : 11-09-09

LOAD FACTORS:

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

	YEAR	ADTT
CURRENT	2010	9
FUTURE	2030	14

NOTES:

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

COMMENTS:

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

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	1.04	--	1.75	0.269	1.38	A	EL	18.836	0.632	1.04	A	EL	3.767	0.80	0.266	1.08	B	EL	24.401		
	HL-93(Opr)	N/A	--	1.35	--	1.35	0.269	1.79	A	EL	18.836	0.632	1.35	A	EL	3.767	N/A	--	--	--	--	--	--	
	HS-20(Inv)	36.000	②	1.21	43.402	1.75	0.269	1.76	A	EL	18.836	0.632	1.21	A	EL	3.767	0.80	0.266	1.33	B	EL	24.401		
	HS-20(Opr)	36.000	--	1.56	56.262	1.35	0.269	2.28	A	EL	18.836	0.632	1.56	A	EL	3.767	N/A	--	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.55	34.412	1.4	0.269	4.00	A	EL	18.836	0.632	3.15	A	EL	3.767	0.80	0.269	2.55	A	EL	18.836	
		SNGARBS2	20.000	--	2.13	42.615	1.4	0.269	3.31	A	EL	15.069	0.632	2.37	A	EL	3.767	0.80	0.269	2.13	A	EL	18.836	
		SNAGRIS2	22.000	--	2.09	45.910	1.4	0.269	3.25	A	EL	15.069	0.632	2.25	A	EL	3.767	0.80	0.266	2.09	B	EL	24.401	
		SNCOTTS3	27.250	--	1.27	34.734	1.4	0.269	2.00	A	EL	18.836	0.632	1.59	A	EL	3.767	0.80	0.269	1.27	A	EL	18.836	
		SNAGGRS4	34.925	--	1.15	40.323	1.4	0.269	1.81	A	EL	18.836	0.632	1.41	A	EL	3.767	0.80	0.269	1.15	A	EL	18.836	
		SNS5A	35.550	--	1.12	39.905	1.4	0.269	1.76	A	EL	18.836	0.632	1.48	A	EL	3.767	0.80	0.269	1.12	A	EL	18.836	
		SNS6A	39.950	--	1.07	42.809	1.4	0.269	1.68	A	EL	18.836	0.632	1.39	A	EL	3.767	0.80	0.269	1.07	A	EL	18.836	
	SNS7B	42.000	③	1.02	42.926	1.4	0.269	1.60	A	EL	18.836	0.632	1.42	A	EL	3.767	0.80	0.269	1.02	A	EL	18.836		
	TTST	TNAGRIT3	33.000	--	1.32	43.415	1.4	0.269	2.07	A	EL	18.836	0.632	1.62	A	EL	3.767	0.80	0.266	1.32	B	EL	24.401	
		TNT4A	33.075	--	1.33	43.896	1.4	0.269	2.10	A	EL	18.836	0.632	1.54	A	EL	3.767	0.80	0.266	1.33	B	EL	24.401	
		TNT6A	41.600	--	1.11	45.999	1.4	0.269	1.79	A	EL	18.836	0.632	1.51	A	EL	3.767	0.80	0.266	1.11	B	EL	24.401	
		TNT7A	42.000	--	1.12	47.148	1.4	0.269	1.84	A	EL	18.836	0.632	1.39	A	EL	3.767	0.80	0.266	1.12	B	EL	24.401	
		TNT7B	42.000	--	1.17	49.153	1.4	0.269	1.86	A	EL	18.836	0.632	1.35	A	EL	3.767	0.80	0.266	1.17	B	EL	24.401	
		TNAGRIT4	43.000	--	1.11	47.761	1.4	0.269	1.82	A	EL	15.069	0.632	1.29	A	EL	3.767	0.80	0.266	1.11	B	EL	24.401	
		TNAGT5A	45.000	--	1.04	46.685	1.4	0.269	1.69	A	EL	18.836	0.632	1.36	A	EL	3.767	0.80	0.266	1.04	B	EL	24.401	
TNAGT5B		45.000	③	1.02	45.735	1.4	0.269	1.64	A	EL	18.836	0.632	1.22	A	EL	3.767	0.80	0.266	1.02	B	EL	24.401		

③ CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

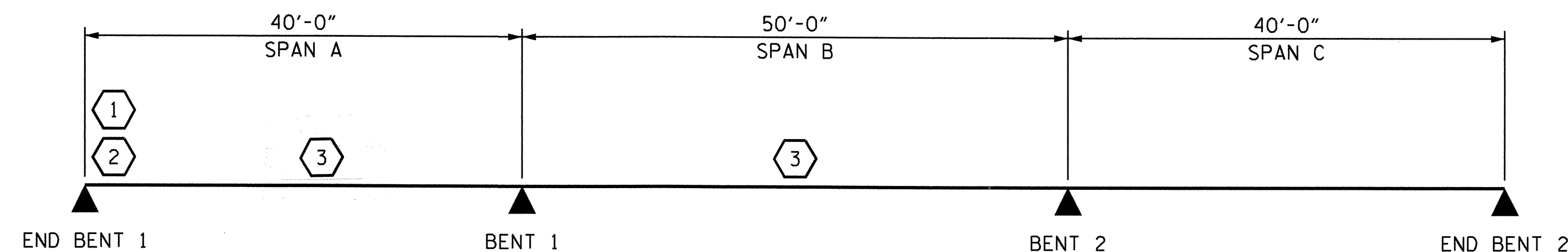
② DESIGN LOAD RATING (HS-20)

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-4428  
BEAUFORT COUNTY  
STATION: 12+86.00 -L-

SHEET 4 OF 4

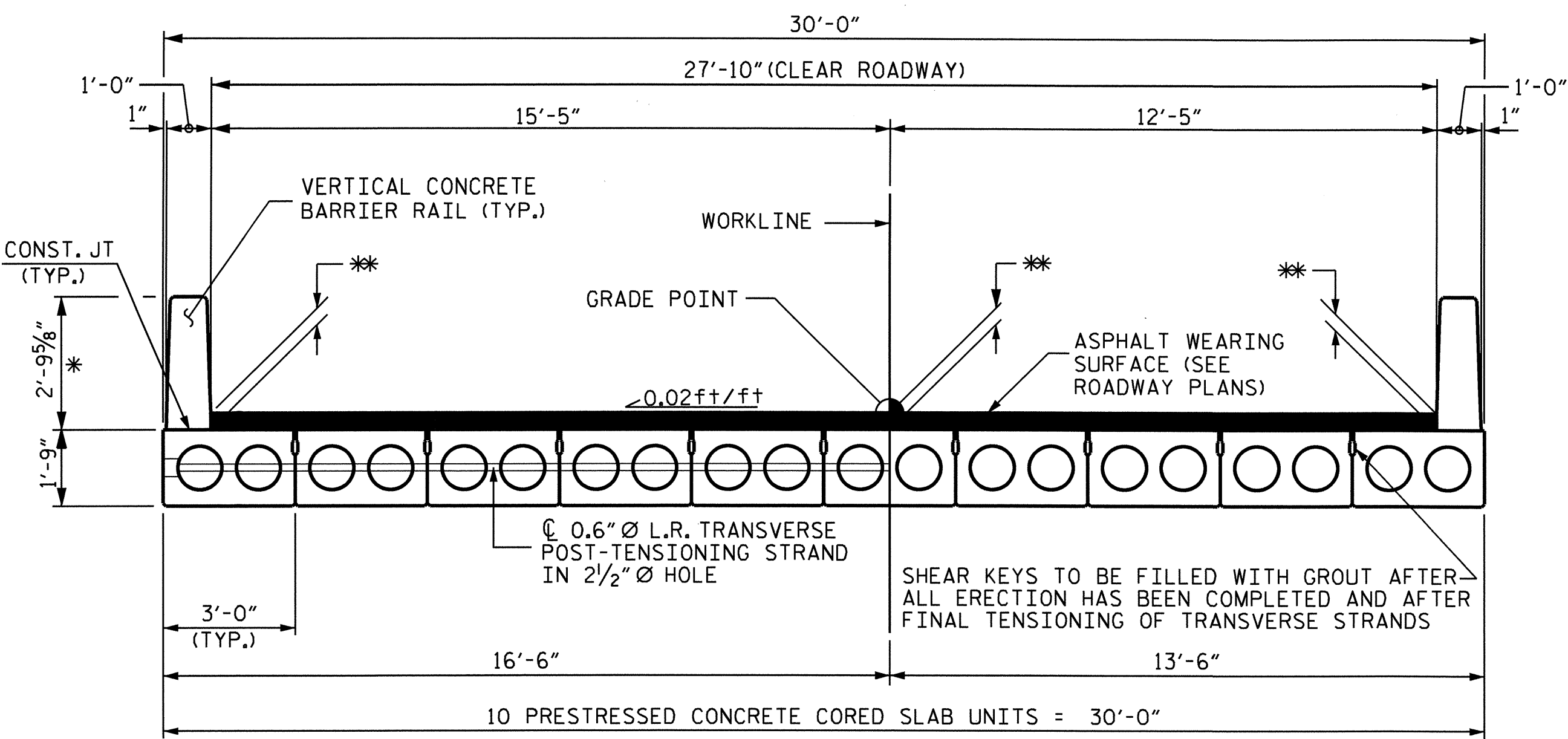
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

STANDARD  
LRFR SUMMARY FOR  
PRESTRESSED CONCRETE  
CORED SLAB UNITS  
(NON-INTERSTATE TRAFFIC)

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



ASSEMBLED BY : E. L. OMLE DATE : 3/3/10  
CHECKED BY : R. P. PATEL DATE : 3/3/10  
DRAWN BY : MAA 1/08 REV. 11/12/08RR MAA/GM  
CHECKED BY : GM/DI 2/08

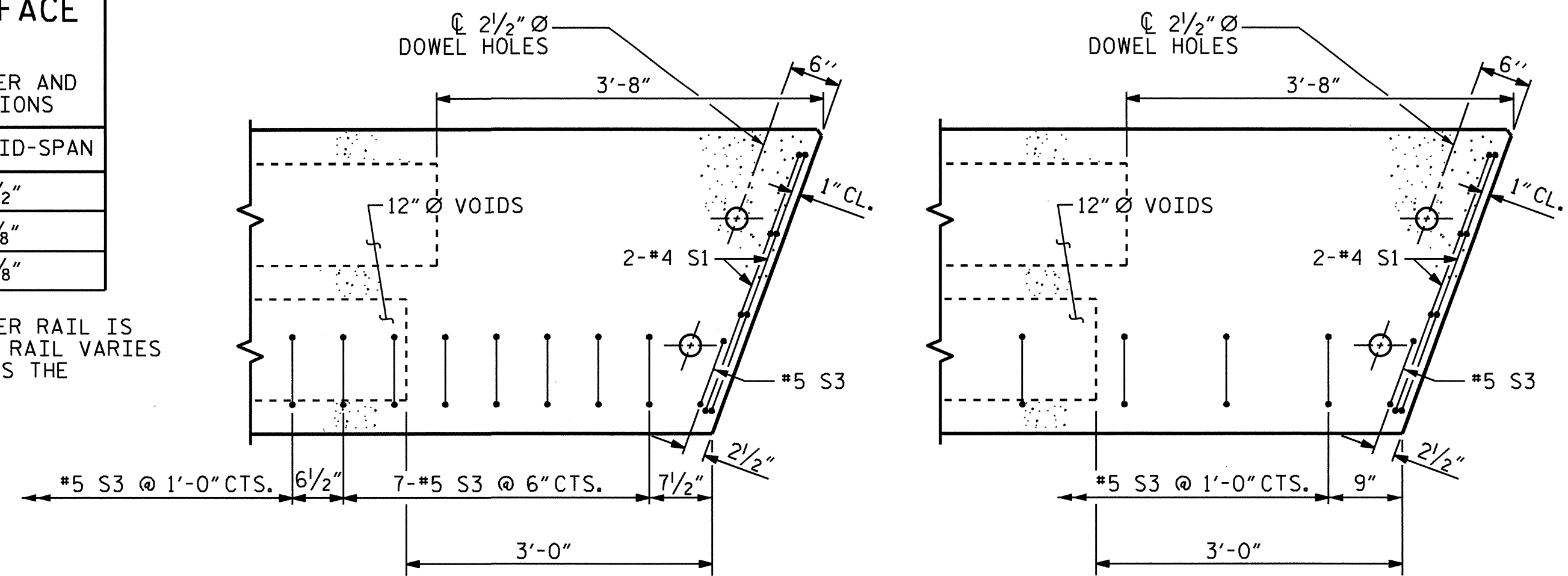


**TYPICAL SECTION**

**ASPHALT WEARING SURFACE THICKNESS TABLE**  
 BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS

SPAN	** AT CL BEARINGS	** AT MID-SPAN
A	3"	2 1/2"
B	3"	1 5/8"
C	3"	2 3/8"

\* THE MINIMUM HEIGHT OF THE BARRIER RAIL IS SHOWN. THE HEIGHT OF THE BARRIER RAIL VARIES WHILE THE TOP OF THE RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE.

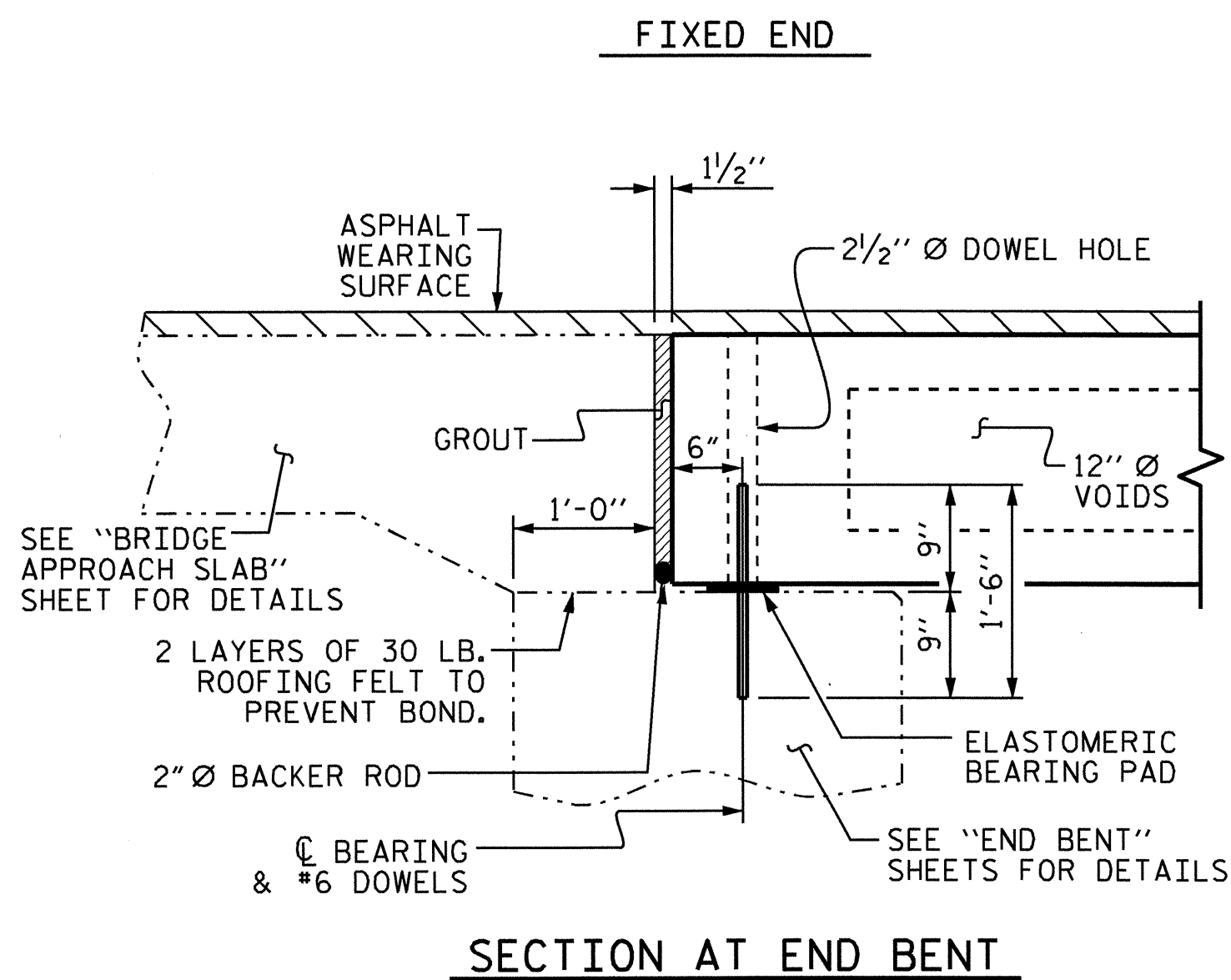


**SPANS A & C**  
 (RIGHT EXTERIOR CORED SLAB UNIT SHOWN  
 LEFT UNIT SIMILAR, SEE SHEET 2 OF 7)

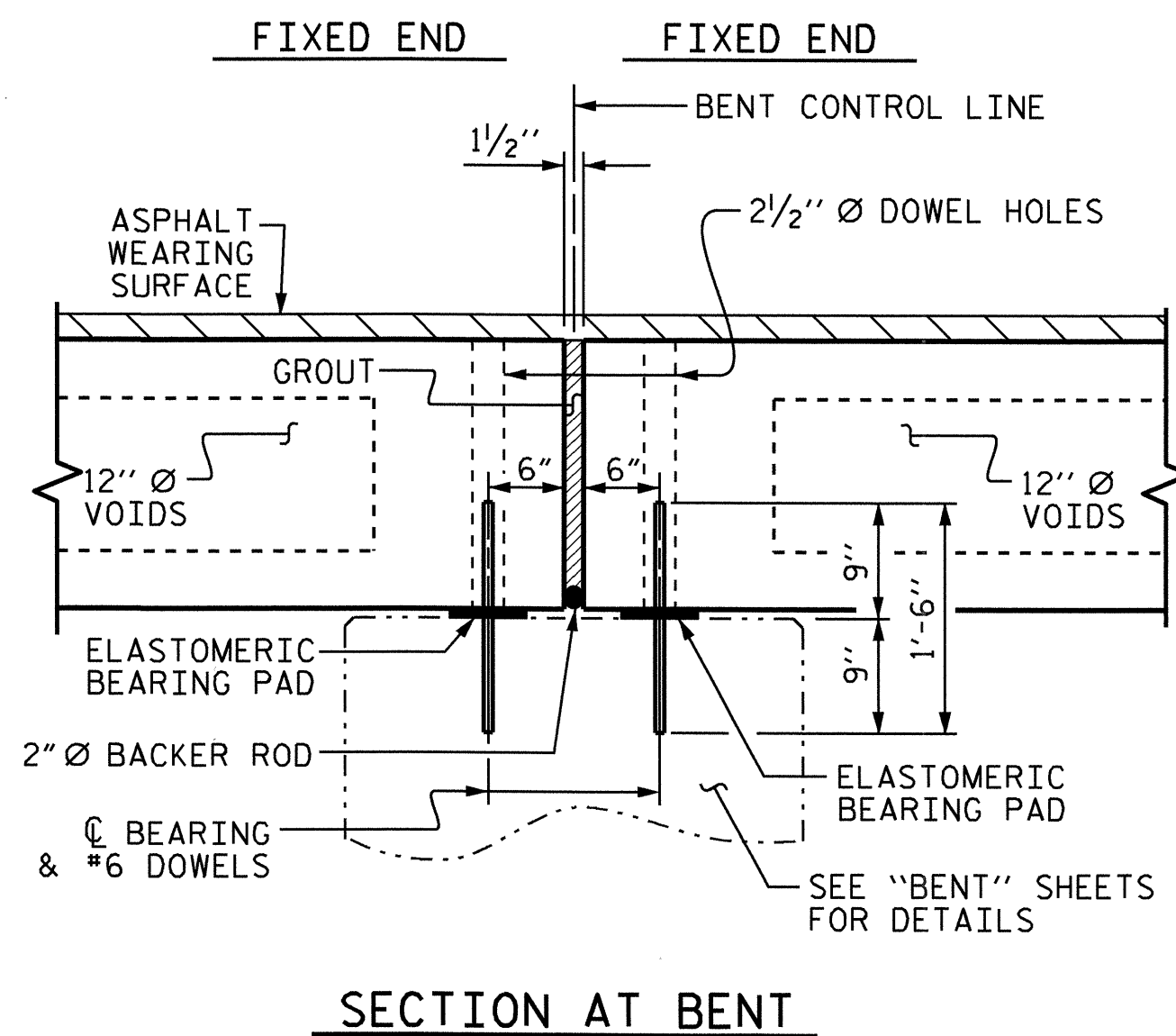
**SPAN B**  
 (RIGHT EXTERIOR CORED SLAB UNIT SHOWN  
 LEFT UNIT SIMILAR, SEE SHEET 3 OF 7)

**PART PLAN-EXTERIOR SECTION**

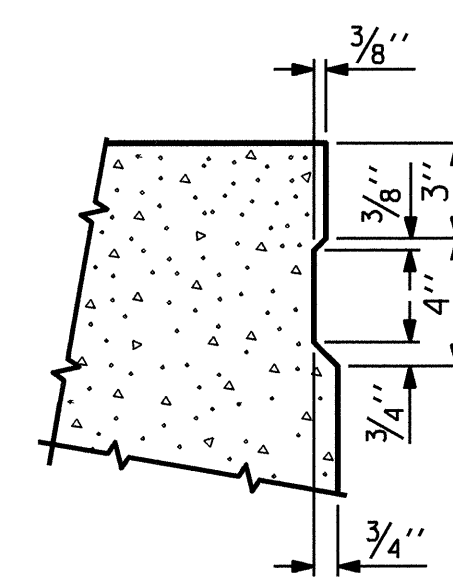
NOTE: EXTERIOR SECTION SHOWN-INTERIOR SECTION SIMILAR EXCEPT OMIT S3 BARS



**SECTION AT END BENT**

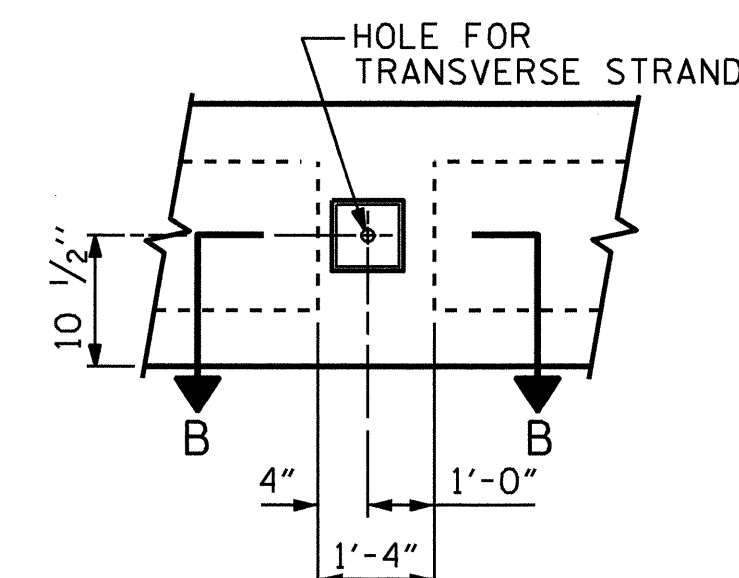


**SECTION AT BENT**

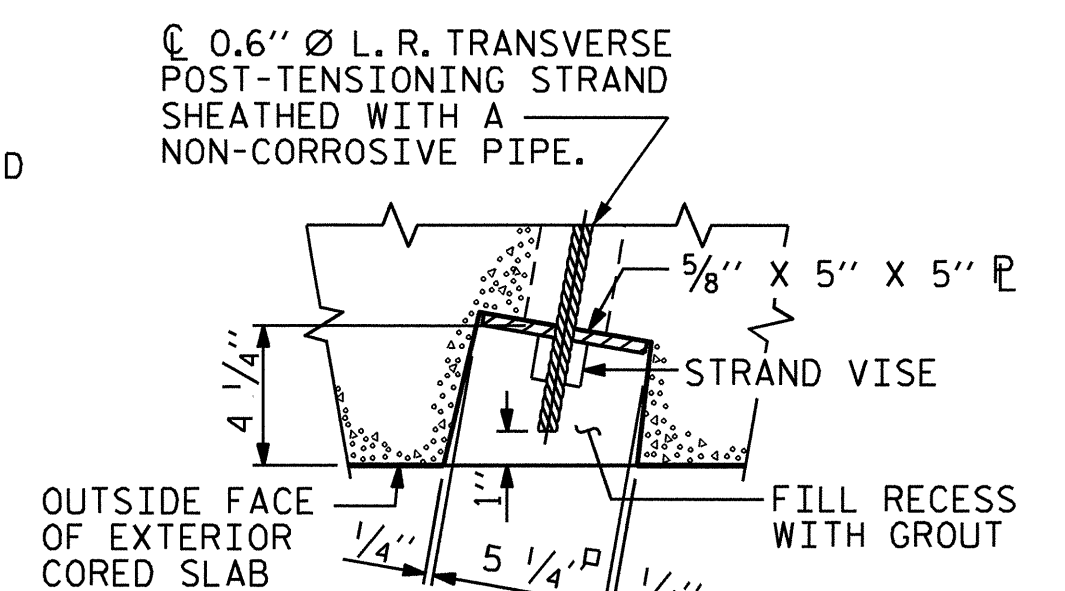


**SHEAR KEY DETAIL**

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

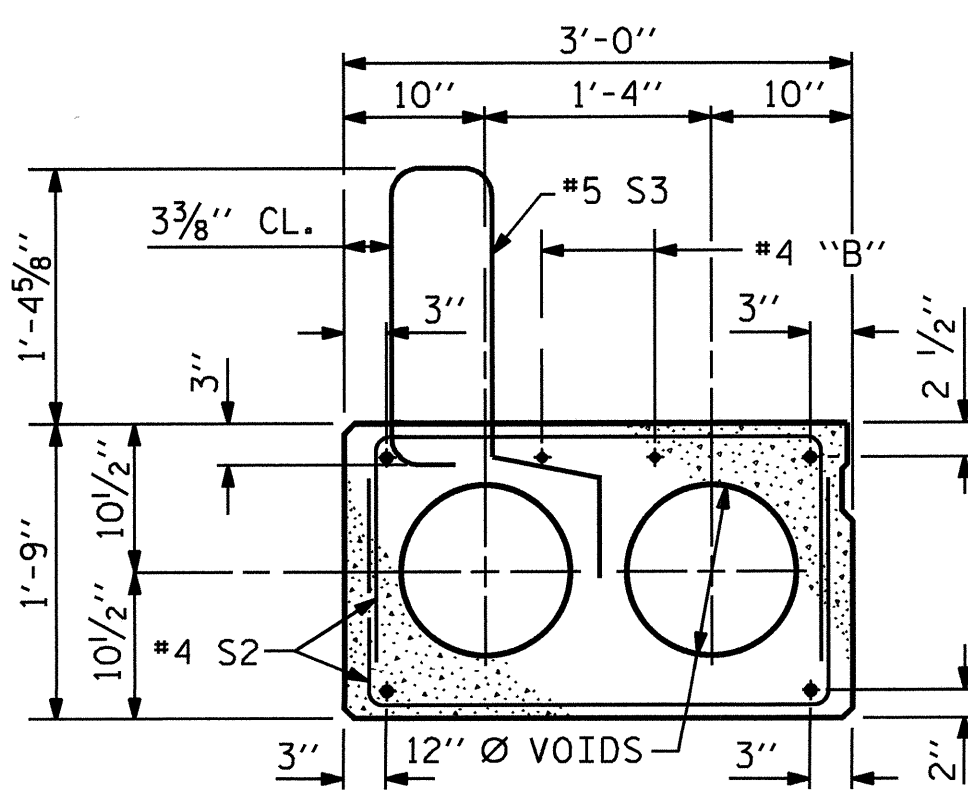


**ELEVATION VIEW**



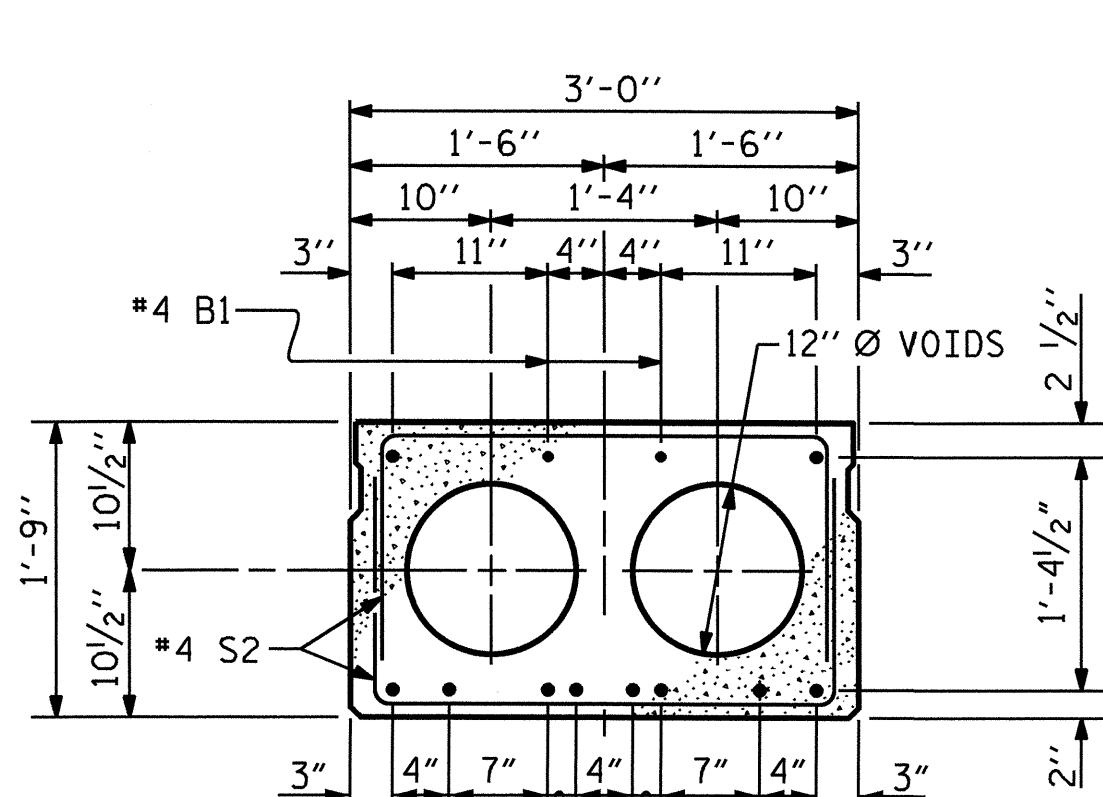
**SECTION B-B**

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



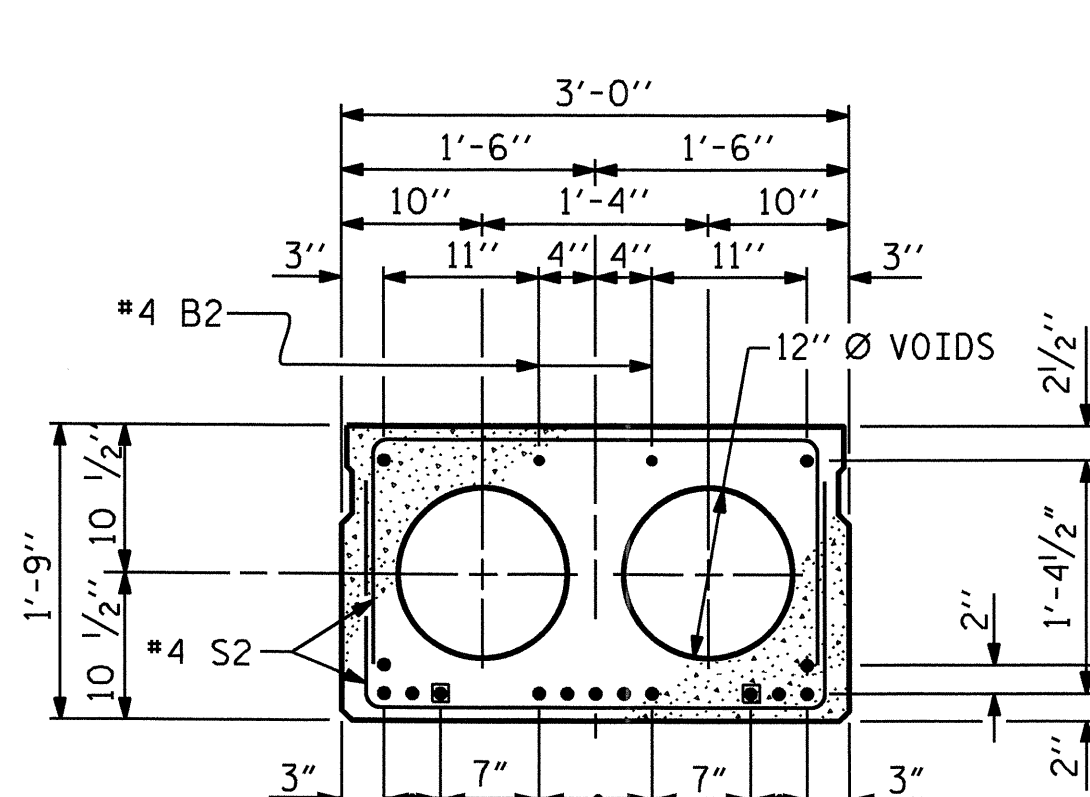
**EXTERIOR SLAB SECTION**

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



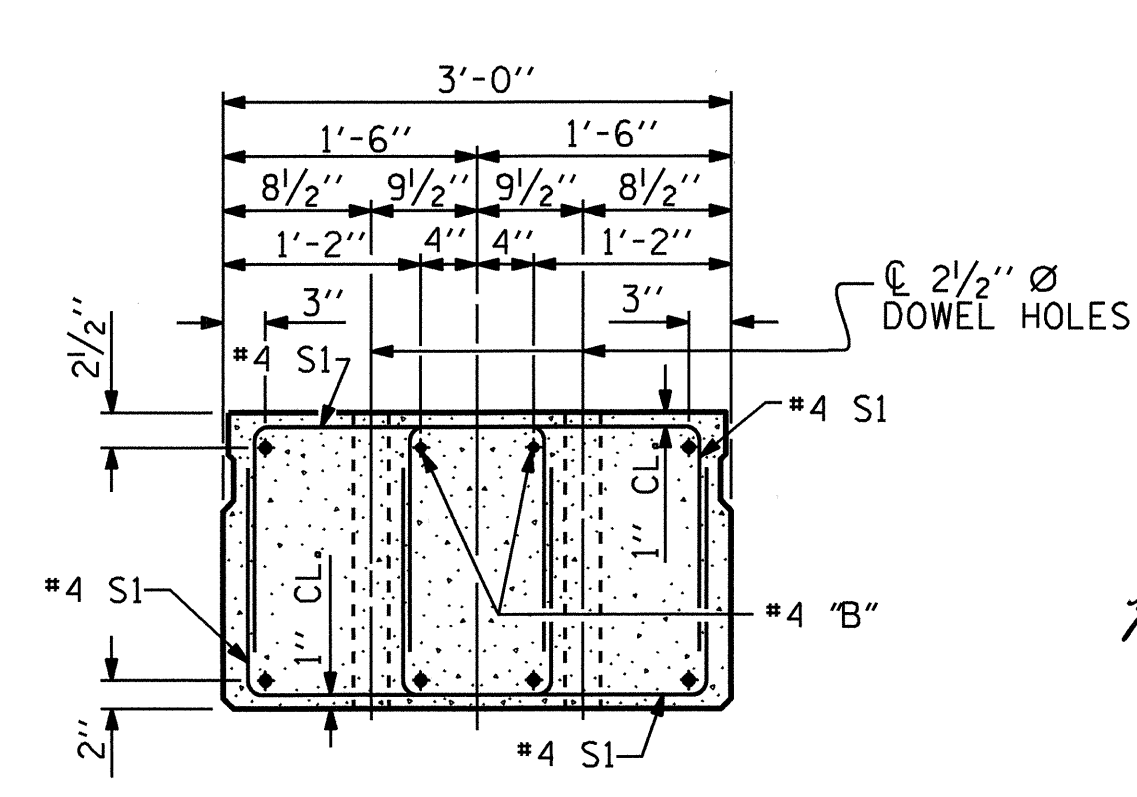
**INTERIOR SLAB SECTION  
 0.6" Ø LOW RELAXATION  
 STRAND LAYOUT**

SPANS A & C  
 (10 STRANDS)



**INTERIOR SLAB SECTION  
 0.6" Ø LOW RELAXATION  
 STRAND LAYOUT**

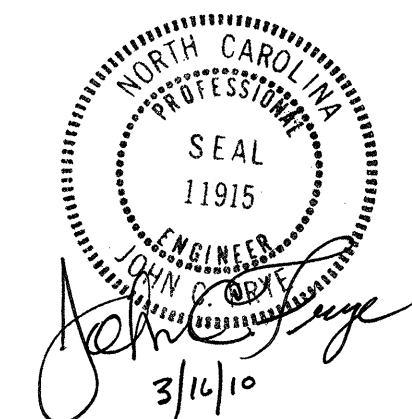
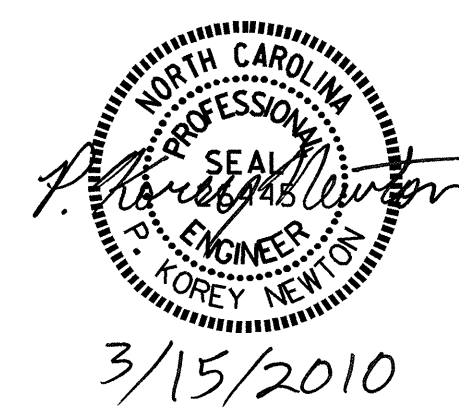
SPAN B  
 (15 STRANDS, 2 SHEATHED)



**END ELEVATION**

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

■ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORED SLAB UNIT, SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.

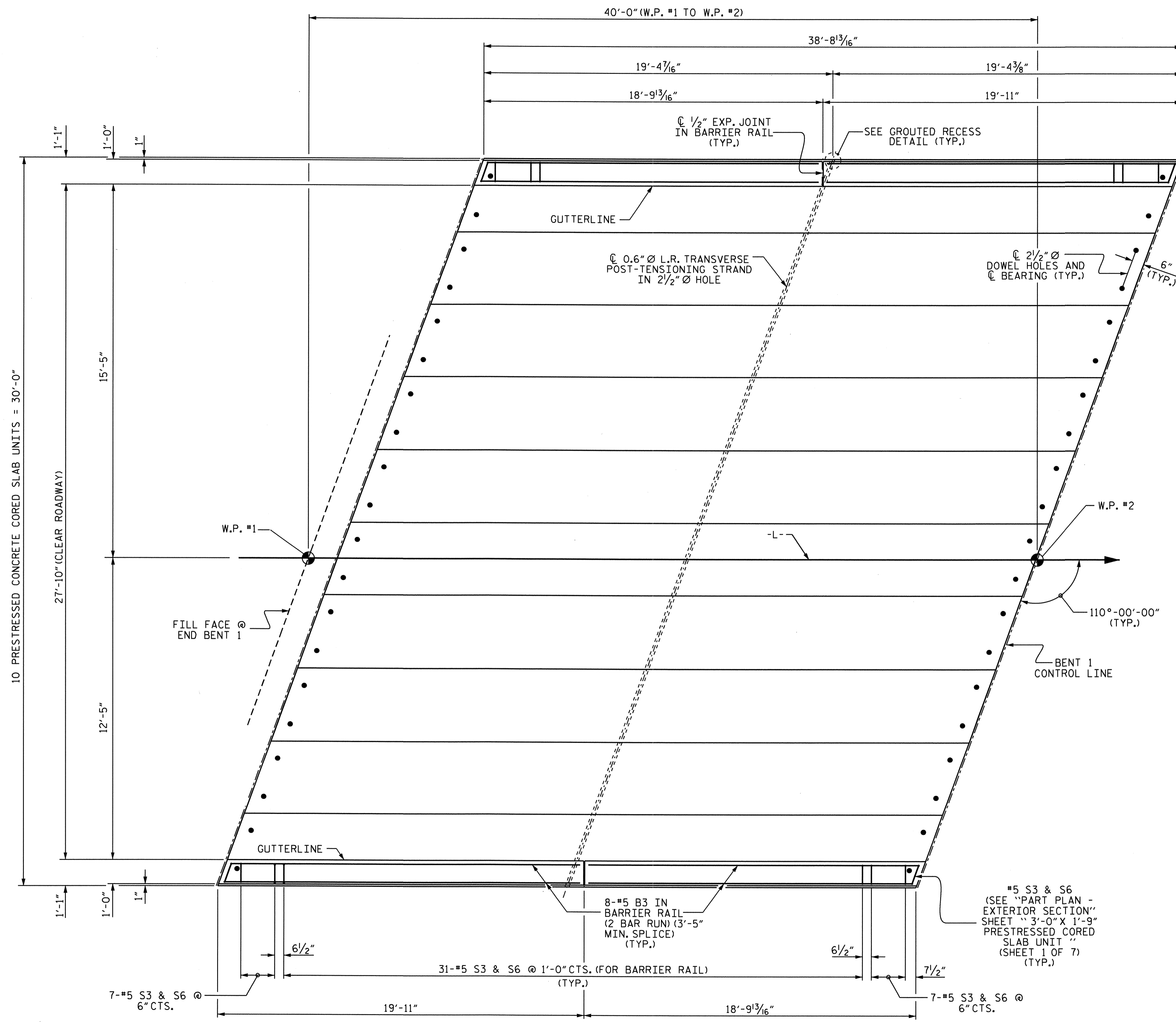


PROJECT NO. B-4428  
BEAUFORT COUNTY  
 STATION: 12+86.00-L-

SHEET 1 OF 7

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 27

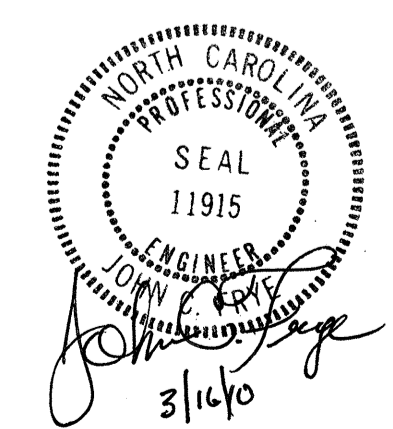
DRAWN BY : RAMAN PATEL DATE : 04/10/09  
 CHECKED BY : HARISH SHAH DATE : 09/17/09



PROJECT NO. B-4428  
BEAUFORT COUNTY  
 STATION: 12+86.00 -L-

SHEET 2 OF 7

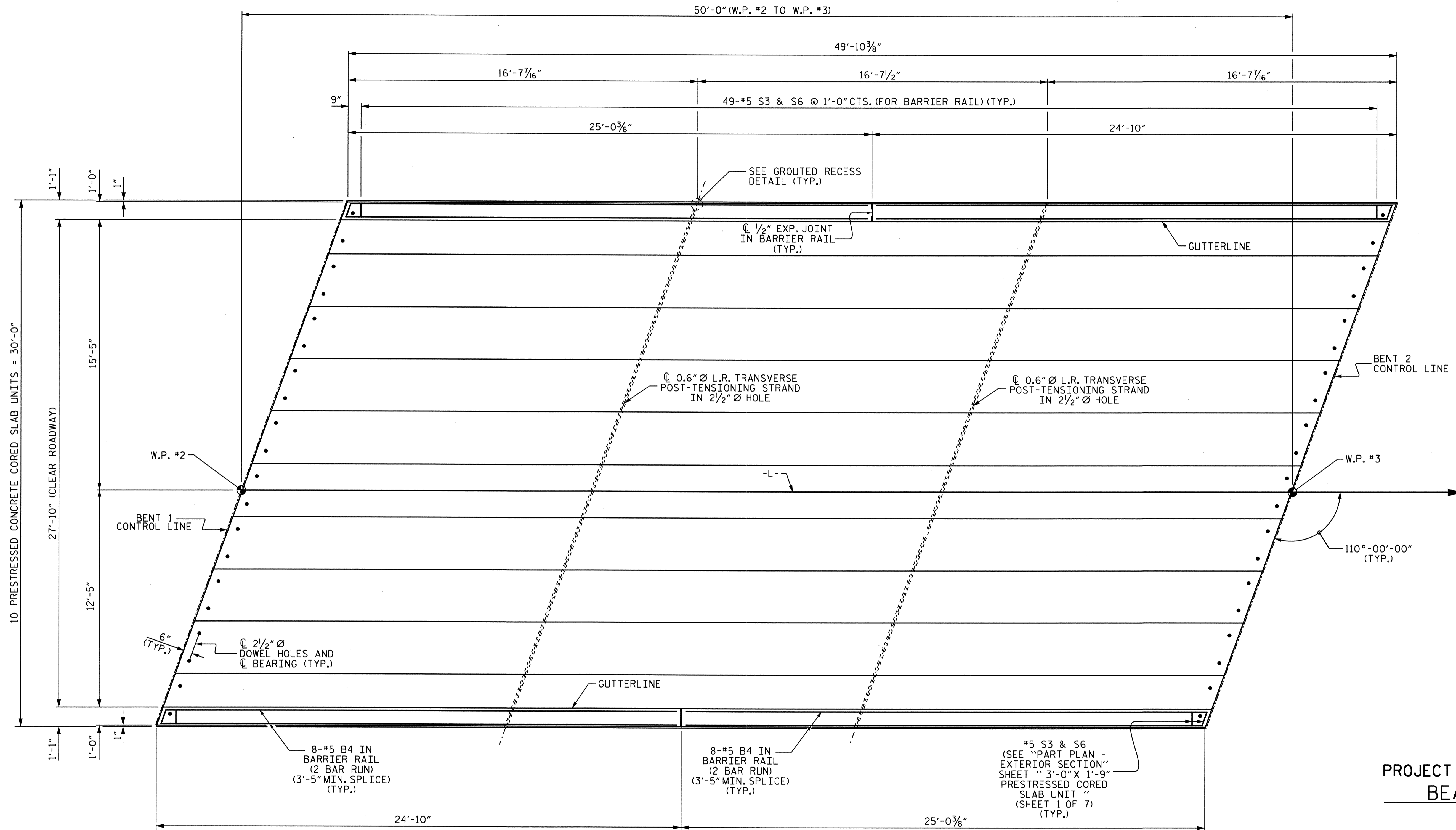
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPAN SPAN A					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					27



DRAWN BY : RAMAN PATEL DATE : 04/10/09  
 CHECKED BY : HARISH SHAH DATE : 09/17/09

**SPAN A**  
 FOR ADDITIONAL CORED SLAB UNIT DETAILS, SEE SHEET 5 OF 7

15-MAR-2010 12:32  
 Z:\Structures\Final plan\b4428.sd.tsl.dgn  
 kpnewton



**SPAN B**

FOR ADDITIONAL CORED SLAB UNIT DETAILS, SEE SHEET 6 OF 7

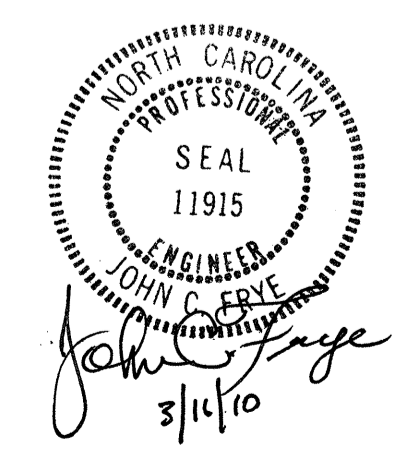
PROJECT NO. B-4428  
BEAUFORT COUNTY  
12+86.00 -L-

SHEET 3 OF 7

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

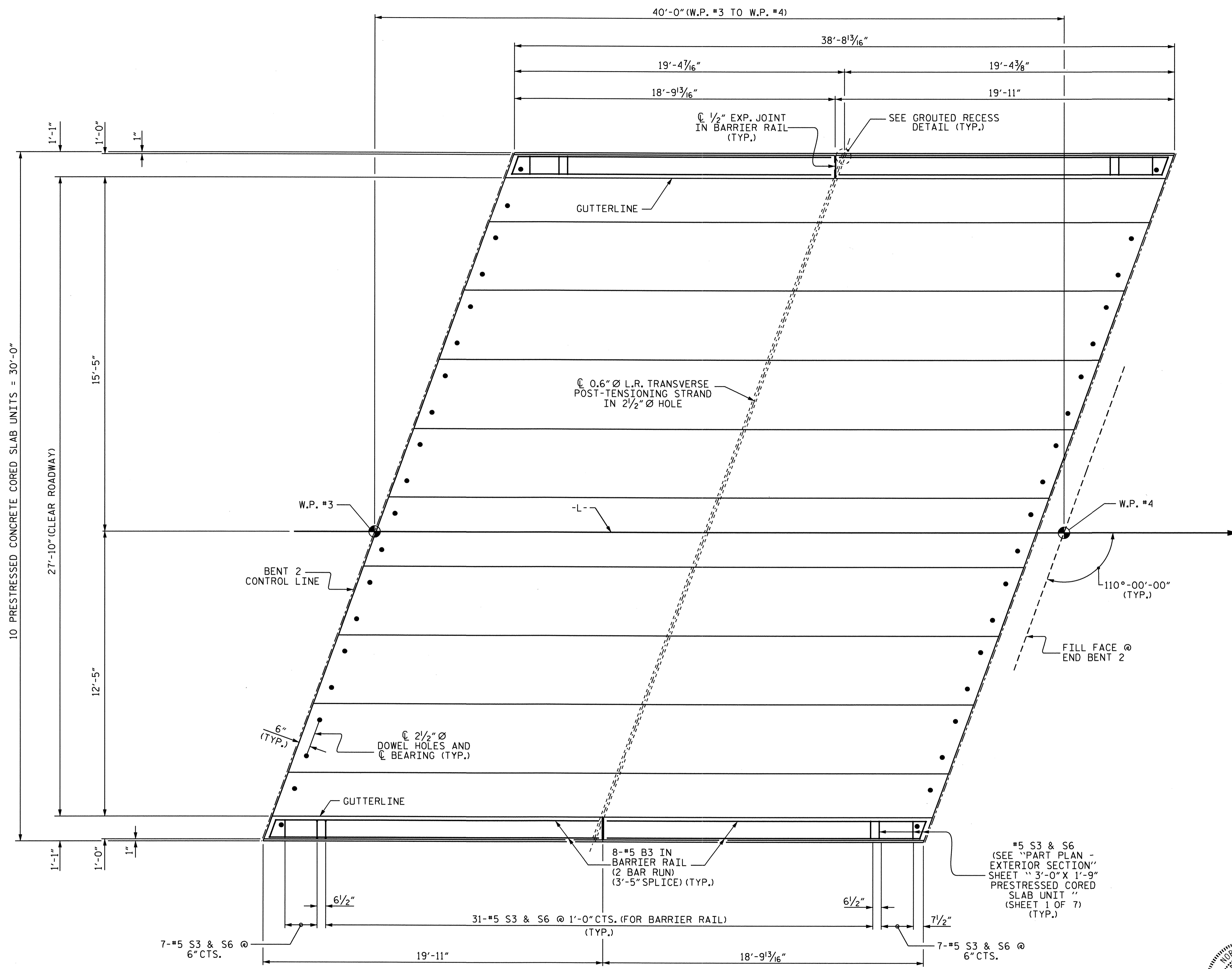
**SUPERSTRUCTURE  
 PLAN OF SPAN  
 SPAN B**

REVISIONS						SHEET NO. S-7
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 27
2			4			



DRAWN BY : RAMAN PATEL DATE : 04/10/09  
 CHECKED BY : HARISH SHAH DATE : 09/17/09





DRAWN BY : RAMAN PATEL DATE : 04/10/09  
 CHECKED BY : HARISH SHAH DATE : 09/17/09

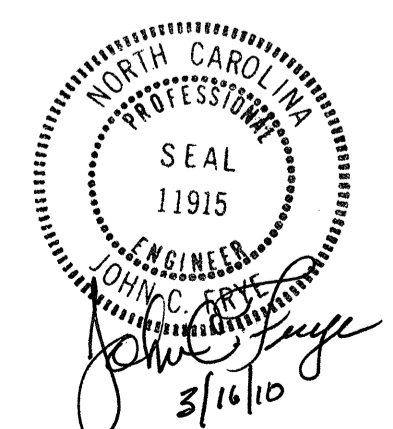
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 kpnewton

**SPAN C**  
 FOR ADDITIONAL CORED SLAB UNIT DETAILS, SEE SHEET 5 OF 7

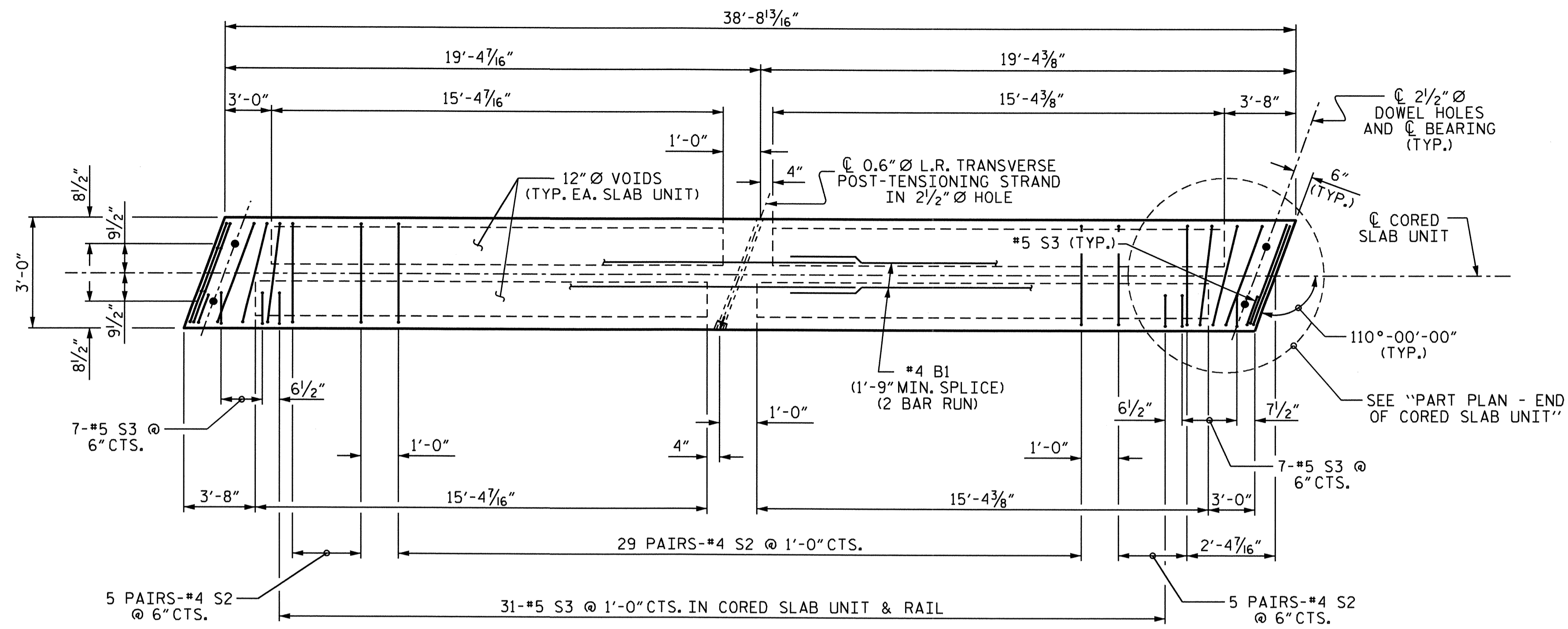
PROJECT NO. B-4428  
BEAUFORT COUNTY  
 STATION: 12+86.00 -L-  
 SHEET 4 OF 7

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

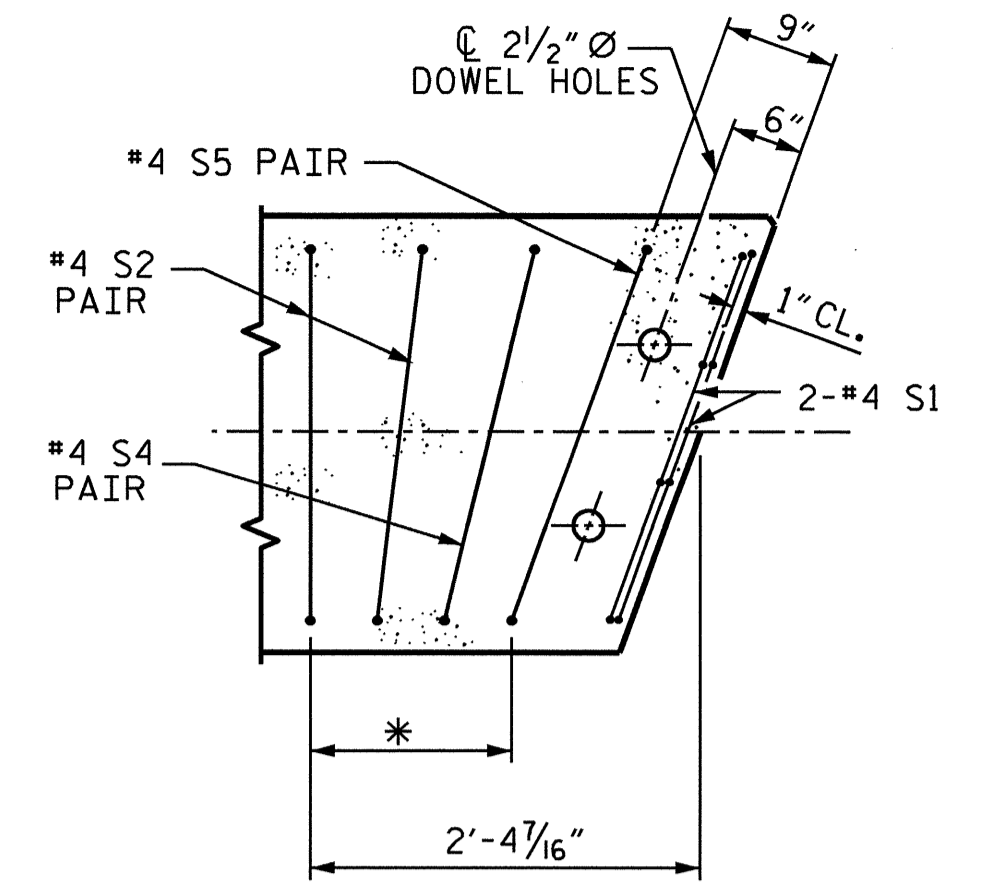
**SUPERSTRUCTURE  
 PLAN OF SPAN  
 SPAN C**



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			27

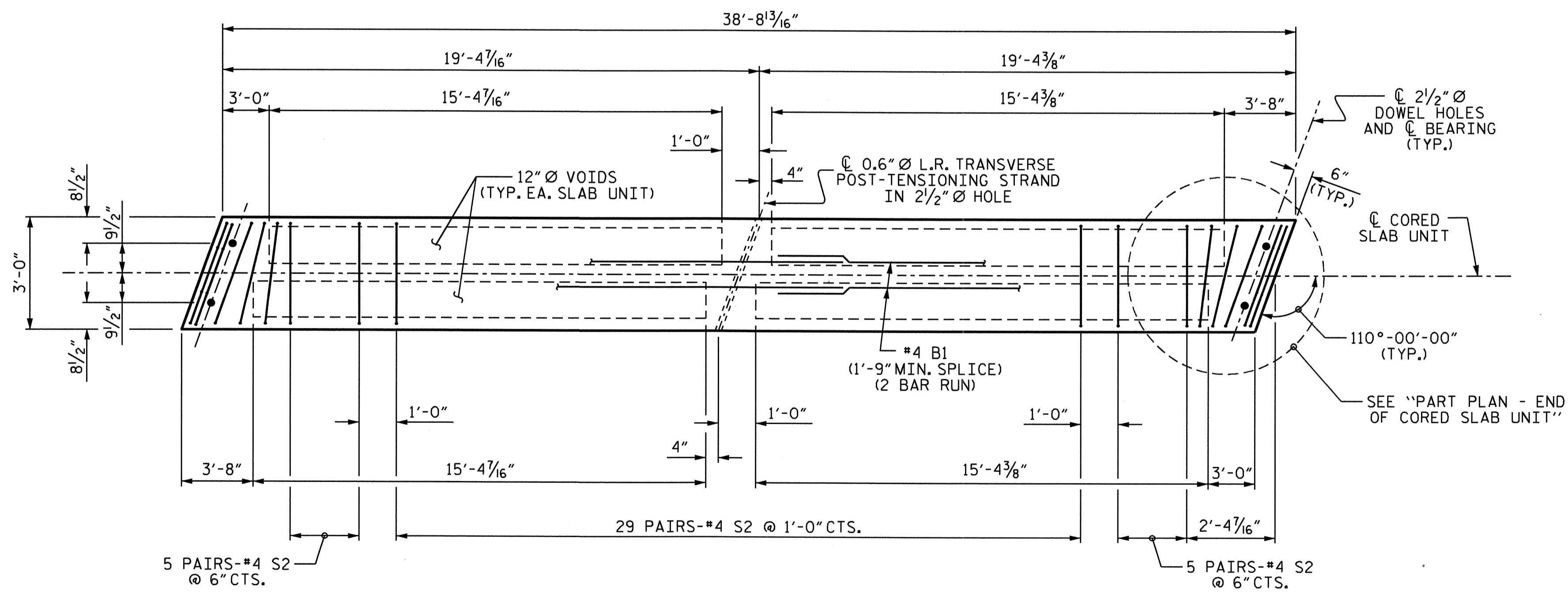


PLAN OF EXTERIOR CORED SLAB UNIT



PART PLAN - END OF CORED SLAB UNIT

\* #4 'S' BARS @ APPROX. EQ. SPA.

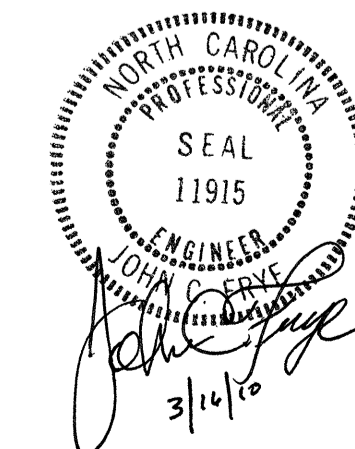


PLAN OF INTERIOR CORED SLAB UNIT

PROJECT NO. B-4428  
 BEAUFORT COUNTY  
 STATION: 12+86.00-L-

SHEET 5 OF 7

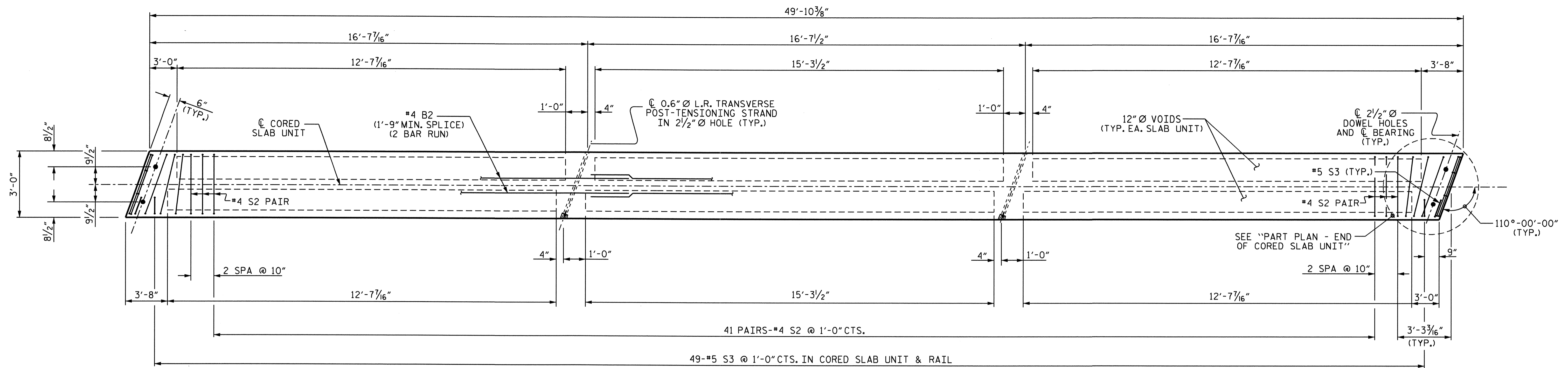
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 PLAN OF SPAN  
 CORED SLAB UNIT  
 DETAILS  
 SPAN A & C



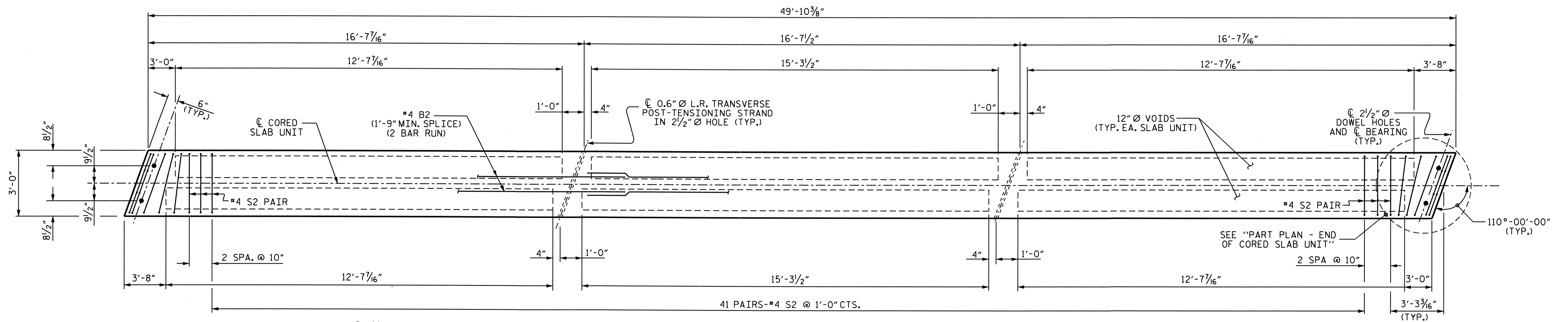
DRAWN BY : RAMAN PATEL DATE : 04/10/09  
 CHECKED BY : HARISH SHAH DATE : 09/17/09

16-MAR-2010 10:34  
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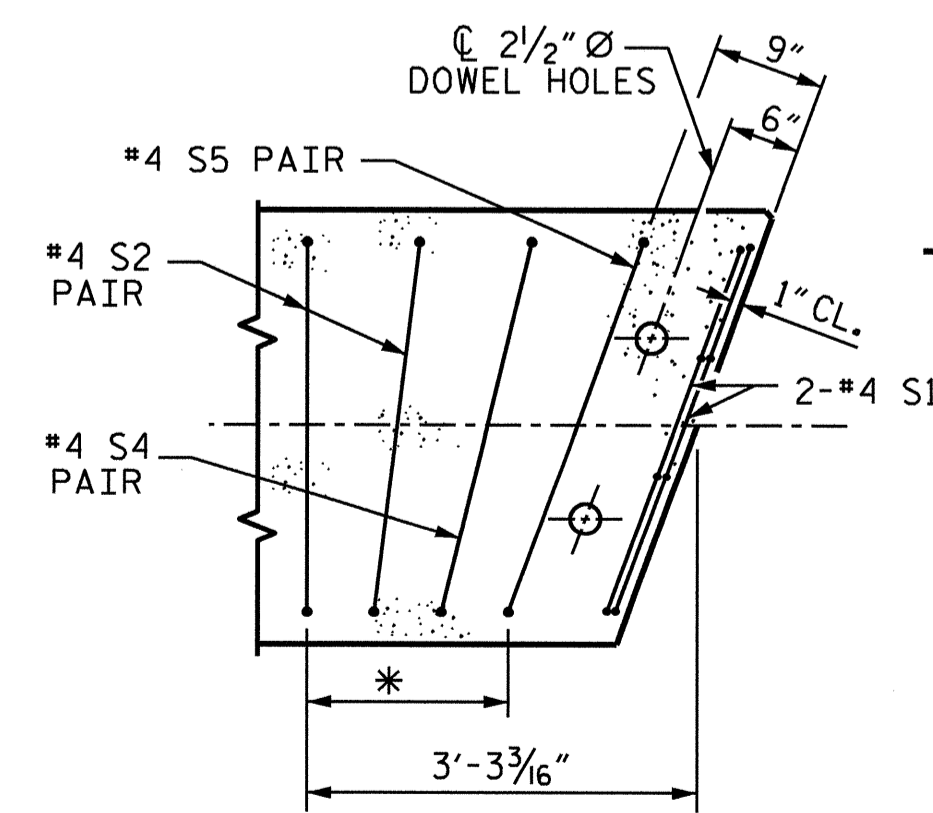
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			27



PLAN OF EXTERIOR CORED SLAB UNIT



PLAN OF INTERIOR CORED SLAB UNIT



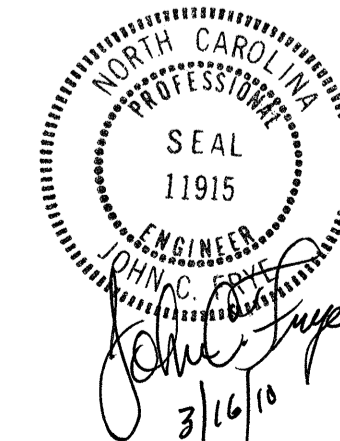
PART PLAN - END OF CORED SLAB UNIT

\* #4 'S' BARS @ APPROX. EQ. SPA.

PROJECT NO. B-4428  
 BEAUFORT COUNTY  
 STATION: 12+86.00-L-

SHEET 6 OF 7

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 PLAN OF SPAN  
 CORED SLAB UNIT  
 DETAILS  
 SPAN B



DRAWN BY: RAMAN PATEL DATE: 04/10/09  
 CHECKED BY: HARISH SHAH DATE: 09/17/09

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			27

**NOTES**

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

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

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

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

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

WHEN CORED SLABS ARE CAST, A POSITIVE HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. THIS SYSTEM SHALL BE DESIGNED TO BE LEFT IN PLACE UNTIL THE CONCRETE HAS REACHED RELEASE STRENGTH. AT LEAST THREE WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

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

TRANSVERSE POST TENSIONING OF THE CORED SLAB SECTIONS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, EXCEPT THAT THE 0.6" Ø STRANDS SHALL BE TENSIONED TO 43,950 POUNDS.

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

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

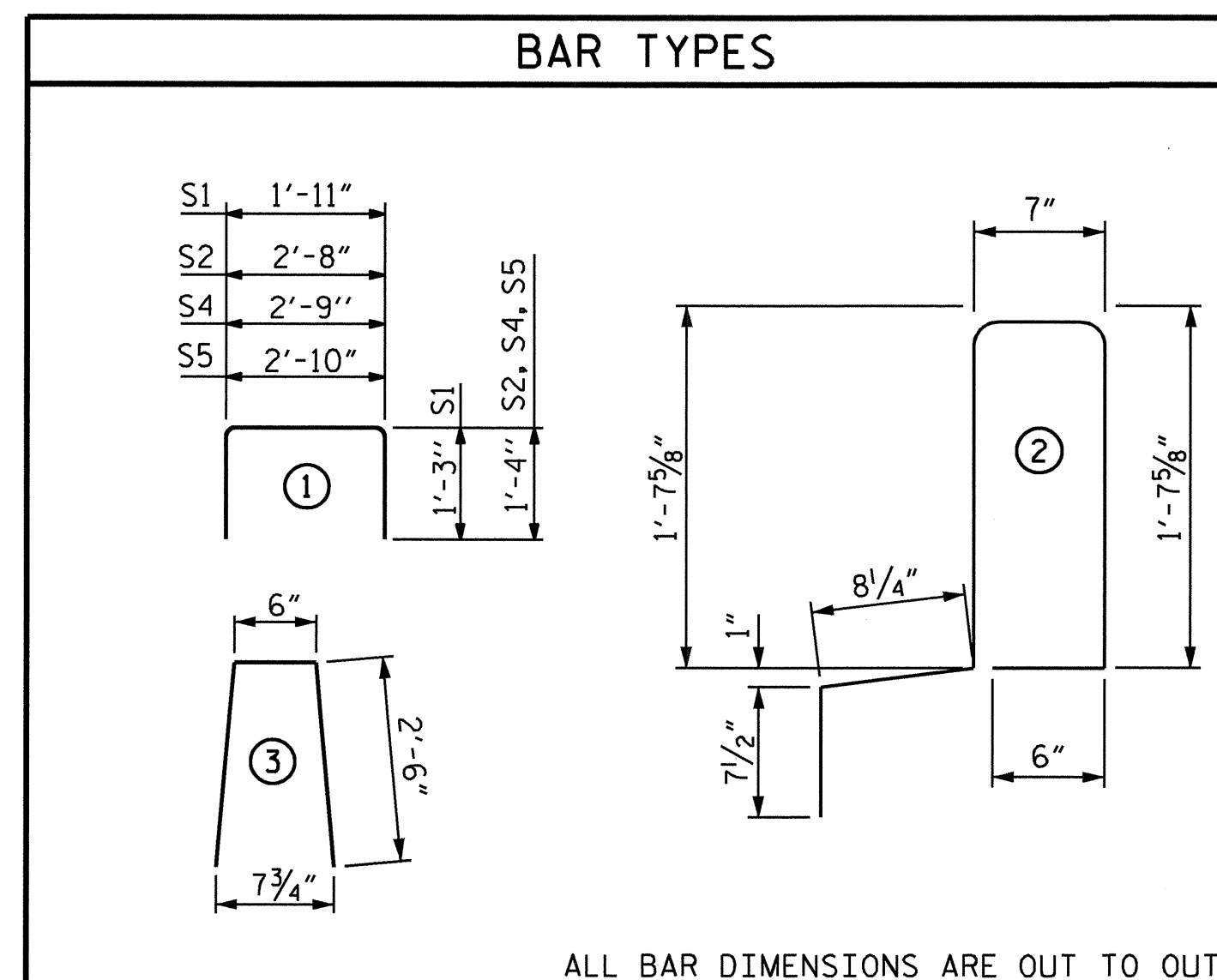
FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

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

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL								
BAR	NUMBER PER SPAN			SIZE	TYPE	LENGTH	WEIGHT	
	SPAN A	SPAN B	SPAN C					
*B3	64		64	#5	STR	11'-5"	1524	
*B4		64		#5	STR	14'-2"	946	
*S6	94	102	94	#5	3	5'-6"	1664	
* EPOXY COATED REINFORCING STEEL							4134	LBS.
CLASS AA CONCRETE							24.7	CU. YDS.
TOTAL LN. FT. OF VERTICAL CONCRETE BARRIER RAIL							255.2	LIN. FT.

SPLICE LENGTH CHART	
BAR SIZE	SPLICE LENGTH
#4	1'-9"
#5	3'-5"

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



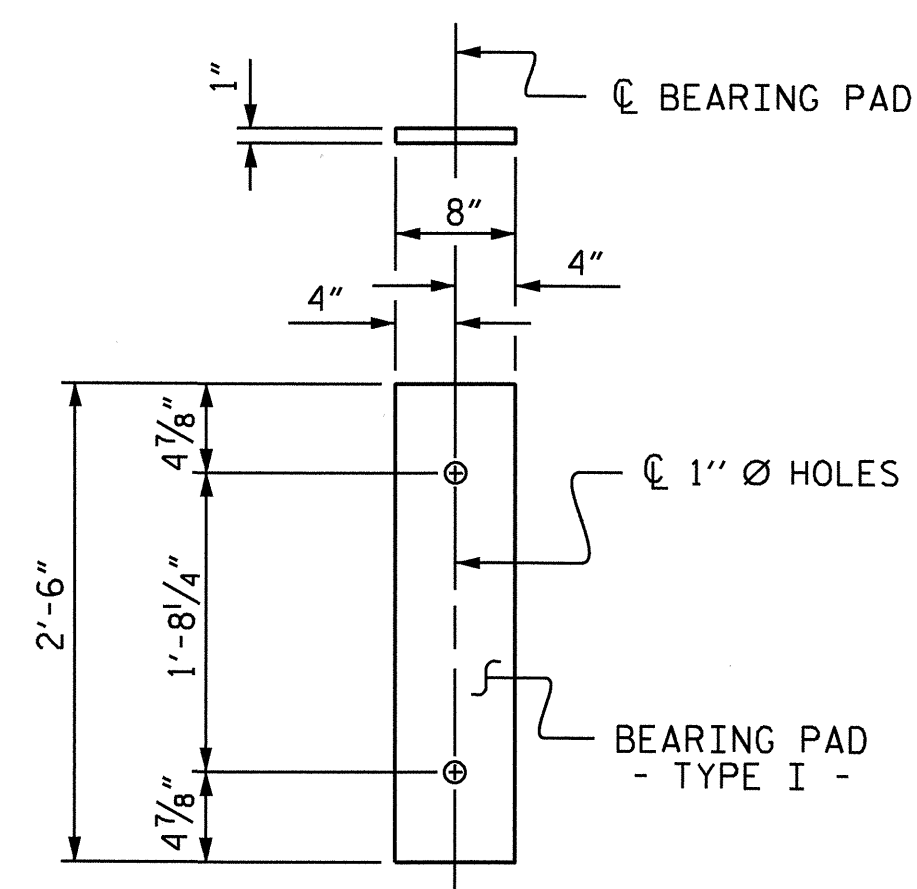
ALL BAR DIMENSIONS ARE OUT TO OUT

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

\*\* INCLUDES FUTURE WEARING SURFACE

BILL OF MATERIAL FOR ONE CORED SLAB UNIT							
SPAN A							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B1	4	#4	STR	20'-1"	54	20'-1"	54
S1	8	#4	1	4'-5"	24	4'-5"	24
S2	82	#4	1	5'-4"	292	5'-4"	292
* S3	47	#5	2	5'-8"	278		
S4	4	#4	1	5'-5"	14	5'-5"	14
S5	4	#4	1	5'-6"	15	5'-6"	15
REINFORCING STEEL				399 LBS.		399 LBS.	
* EPOXY COATED REINFORCING STEEL				278 LBS.			
5000 P.S.I. CONCRETE				5.7 CU. YDS.		5.7 CU. YDS.	
0.6" Ø L.R. STRANDS				No. 10			
SPAN B							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B2	4	#4	STR	25'-8"	69	25'-8"	69
S1	8	#4	1	4'-5"	24	4'-5"	24
S2	94	#4	1	5'-4"	335	5'-4"	335
* S3	51	#5	2	5'-8"	301		
S4	4	#4	1	5'-5"	14	5'-5"	14
S5	4	#4	1	5'-6"	15	5'-6"	15
REINFORCING STEEL				457 LBS.		457 LBS.	
* EPOXY COATED REINFORCING STEEL				301 LBS.			
7000 P.S.I. CONCRETE				7.2 CU. YDS.		7.2 CU. YDS.	
0.6" Ø L.R. STRANDS				No. 15			
SPAN C							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B1	4	#4	STR	20'-1"	54	20'-1"	54
S1	8	#4	1	4'-5"	24	4'-5"	24
S2	82	#4	1	5'-4"	292	5'-4"	292
* S3	47	#5	2	5'-8"	278		
S4	4	#4	1	5'-5"	14	5'-5"	14
S5	4	#4	1	5'-6"	15	5'-6"	15
REINFORCING STEEL				399 LBS.		399 LBS.	
* EPOXY COATED REINFORCING STEEL				278 LBS.			
5000 P.S.I. CONCRETE				5.7 CU. YDS.		5.7 CU. YDS.	
0.6" Ø L.R. STRANDS				No. 10			

CORED SLABS REQUIRED			
SPAN A			
UNIT TYPE	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR	2	38'-8 13/16"	77'-5 5/8"
INTERIOR	8	38'-8 13/16"	309'-10 1/2"
TOTAL	10		387'-4 1/8"
SPAN B			
UNIT TYPE	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR	2	49'-10 3/8"	99'-8 3/4"
INTERIOR	8	49'-10 3/8"	398'- 11"
TOTAL	10		498'- 7 3/4"
SPAN C			
UNIT TYPE	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR	2	38'-8 13/16"	77'-5 5/8"
INTERIOR	8	38'-8 13/16"	309'-10 1/2"
TOTAL	10		387'-4 1/8"
TOTAL CORED SLAB UNITS NO. 30 1273'-4" LIN. FT.			



FIXED END  
(TYPE I - 60 REO'D)

**ELASTOMERIC BEARING DETAILS**

PROJECT NO. B-4428  
BEAUFORT COUNTY  
 STATION: 12+86.00 -L-

SHEET 7 OF 7

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE			
BILL OF MATERIAL			
REVISIONS			SHEET NO.
NO.	BY:	DATE:	S-11
1			TOTAL SHEETS
2			27



ASSEMBLED BY : RAMAN PATEL	DATE : 9/15/09
CHECKED BY : HARISH SHAH	DATE : 9/22/09
DRAWN BY : WJH 4/89	REV. 7/10/01 RWW/LES
CHECKED BY : FCJ 5/89	REV. 5/7/03RRR RWW/JTE
	REV. 5/1/06 TLA/GM

NOTES

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

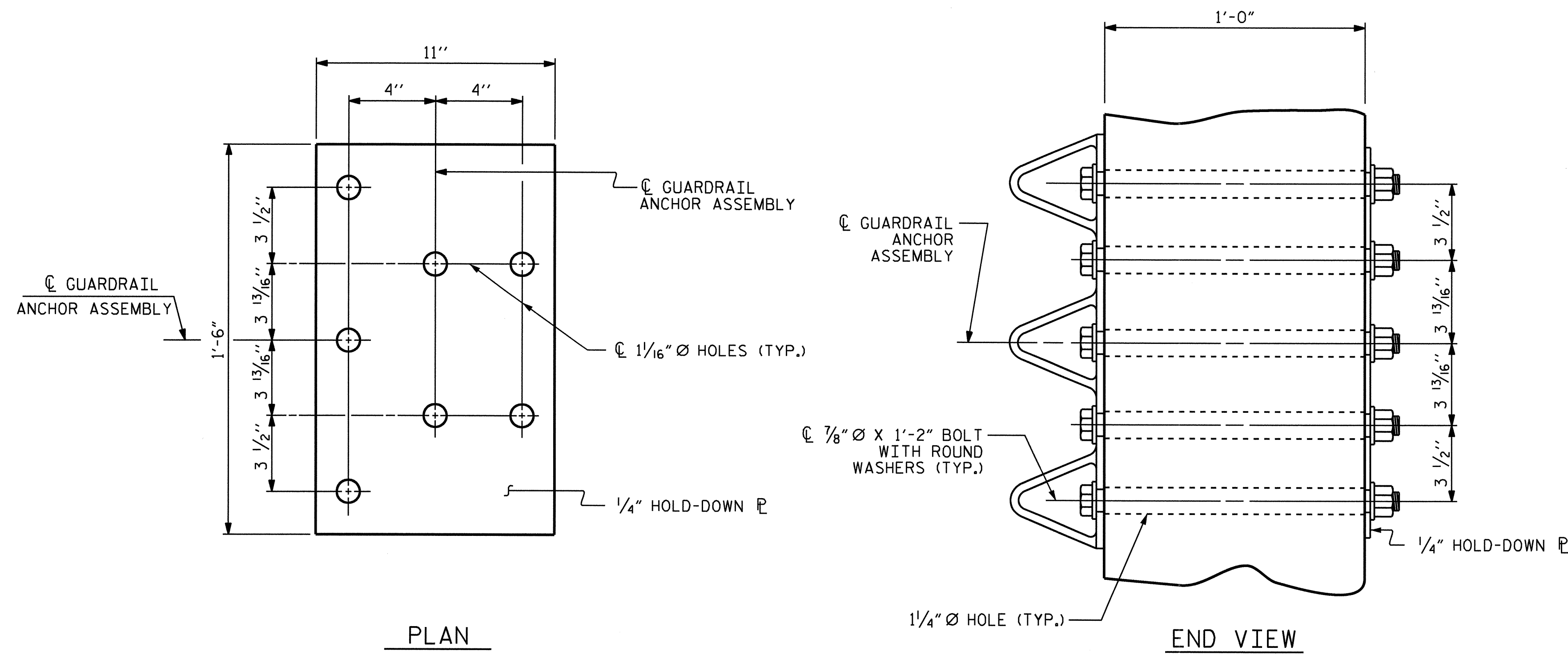
THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M11.

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

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

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

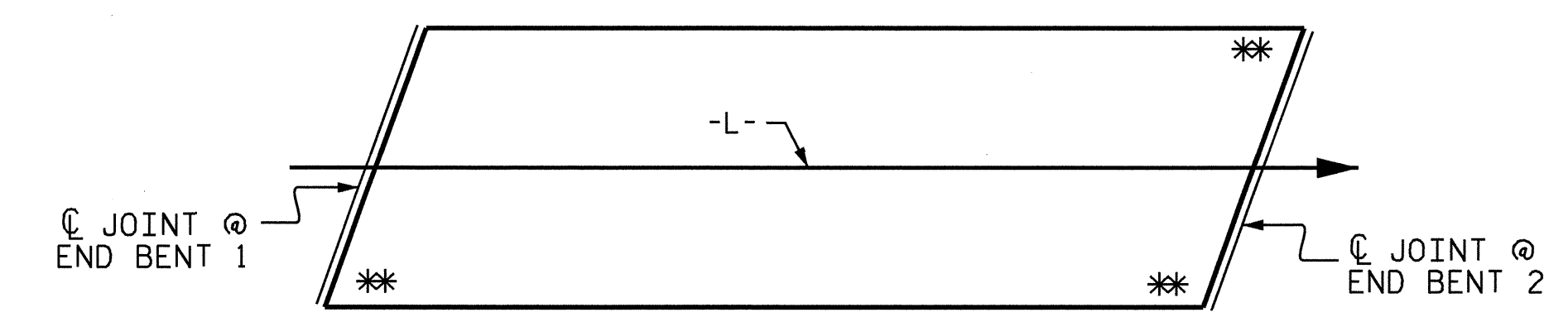
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



PLAN

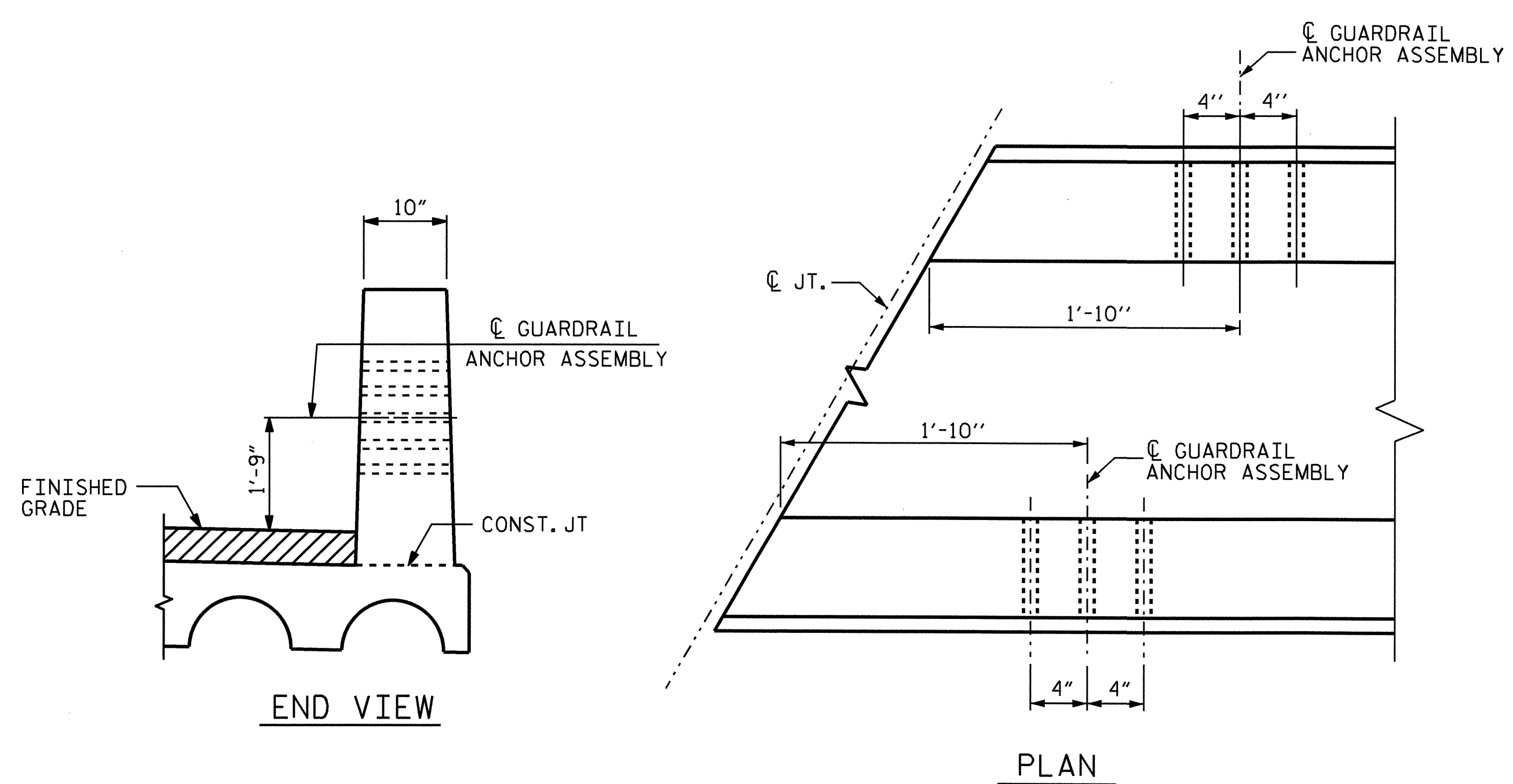
END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT

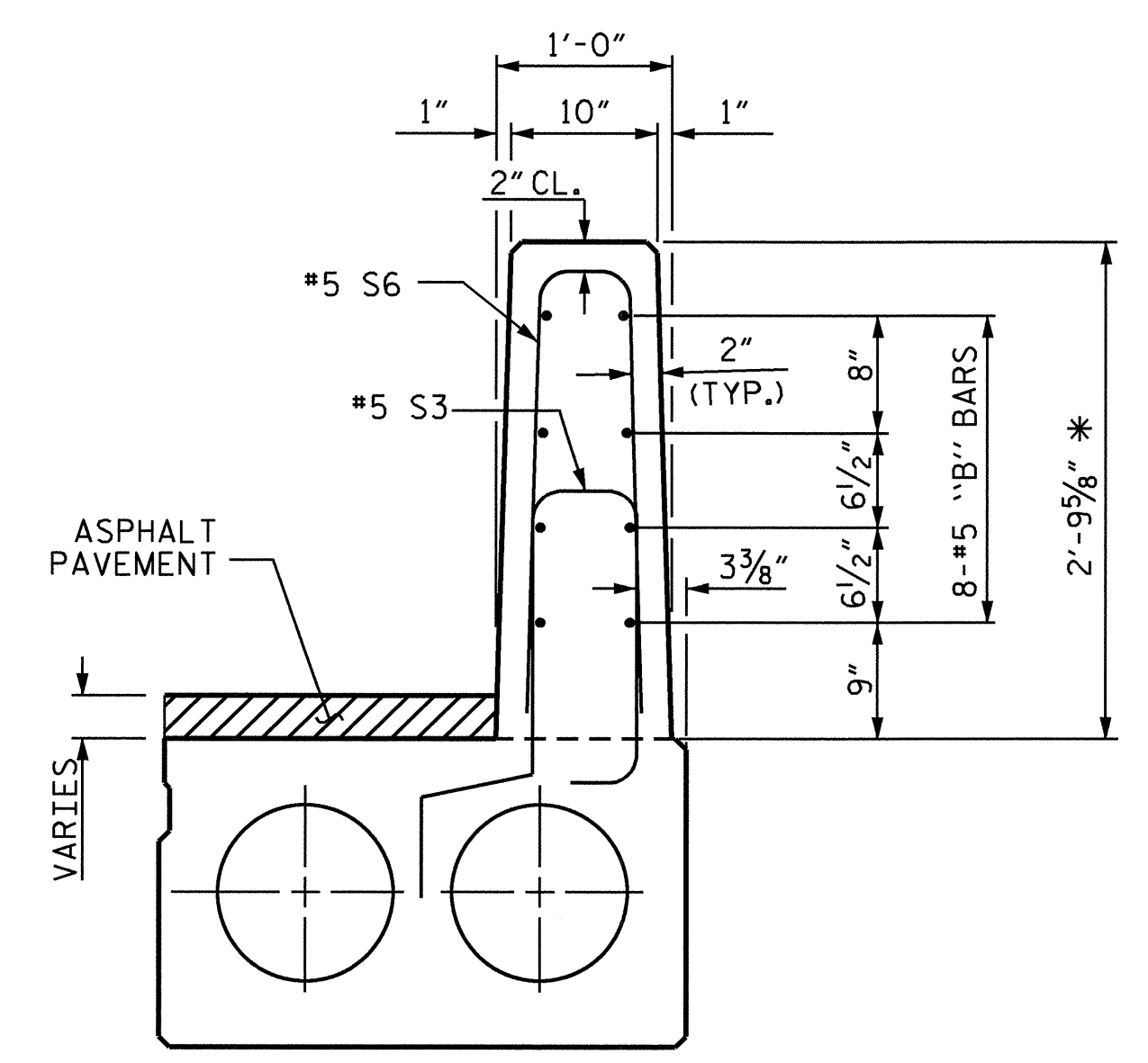
\* LOCATION OF GUARDRAIL ATTACHMENT



END VIEW

PLAN

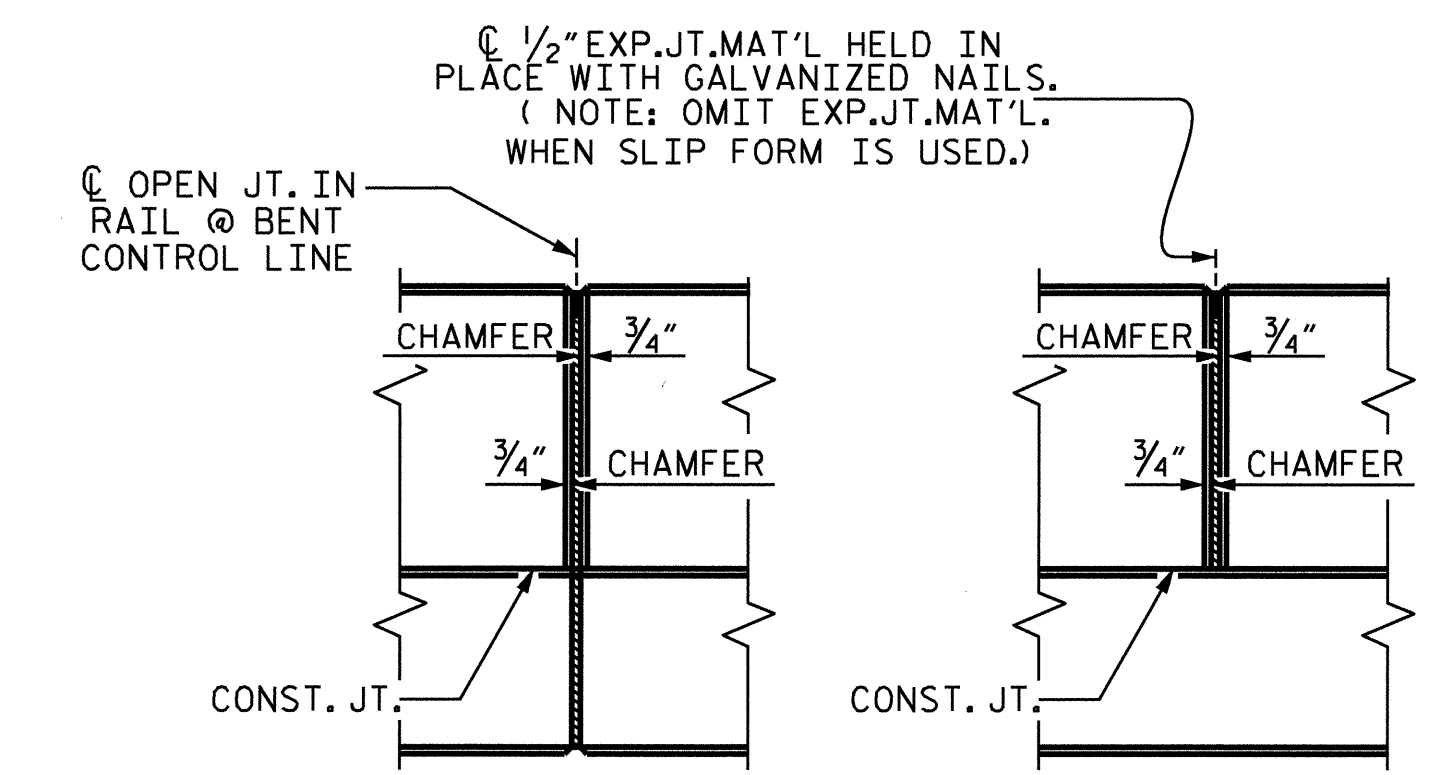
LOCATION OF GUARDRAIL ANCHOR



SECTION THRU RAIL

VERTICAL CONCRETE BARRIER RAIL DETAILS

FOR PLAN VIEW OF VERTICAL CONCRETE BARRIER RAIL, SEE "PLAN OF SPAN" SHEETS.



ELEVATION AT EXPANSION JOINTS

PROJECT NO. B-4428  
BEAUFORT COUNTY  
 STATION: 12+86.00 -L-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
VERTICAL CONCRETE BARRIER RAIL AND GUARDRAIL ANCHORAGE DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-12
					TOTAL SHEETS 27

ASSEMBLED BY : RAMAN PATEL	DATE : 09/15/09
CHECKED BY : HARISH SHAH	DATE : 09/17/09
DRAWN BY : EEM	6/94
CHECKED BY : RCW	6/94
REV. 10/17/00	RWW/LES
REV. 5/7/03	RWW/JTE
REV. 5/1/06	TLA/GM

\* THE MINIMUM HEIGHT OF THE BARRIER RAIL IS SHOWN. THE HEIGHT OF THE BARRIER RAIL VARIES WHILE THE TOP OF THE RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE.

**NOTES**

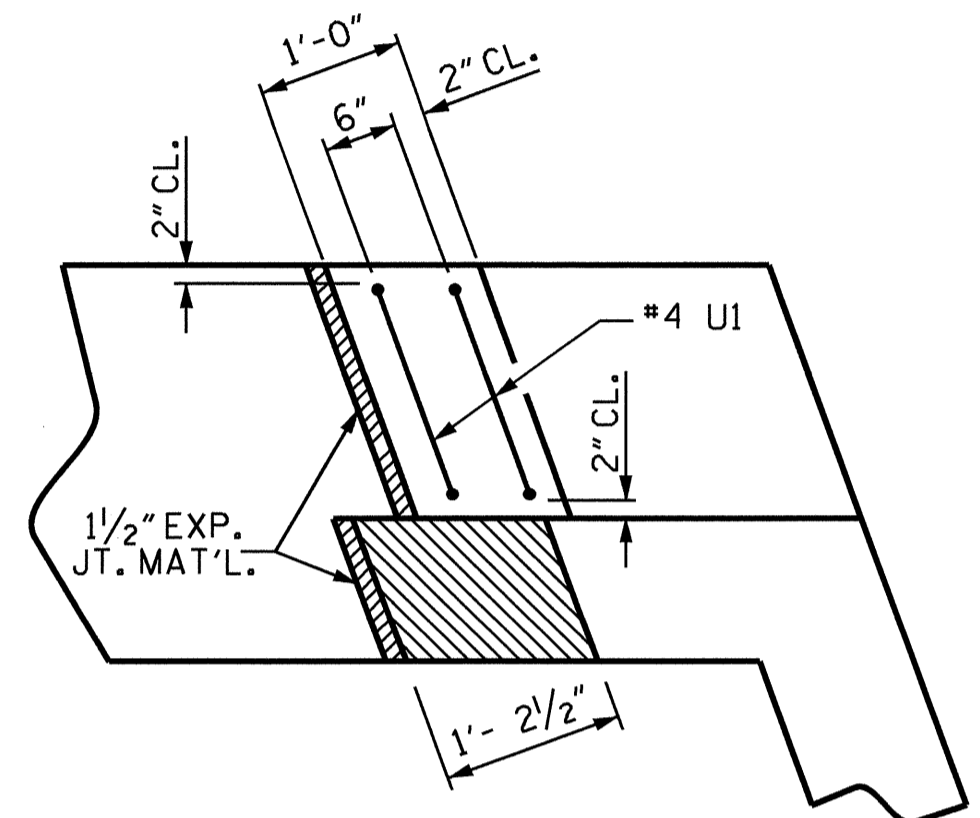
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6 DI DOWELS.

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

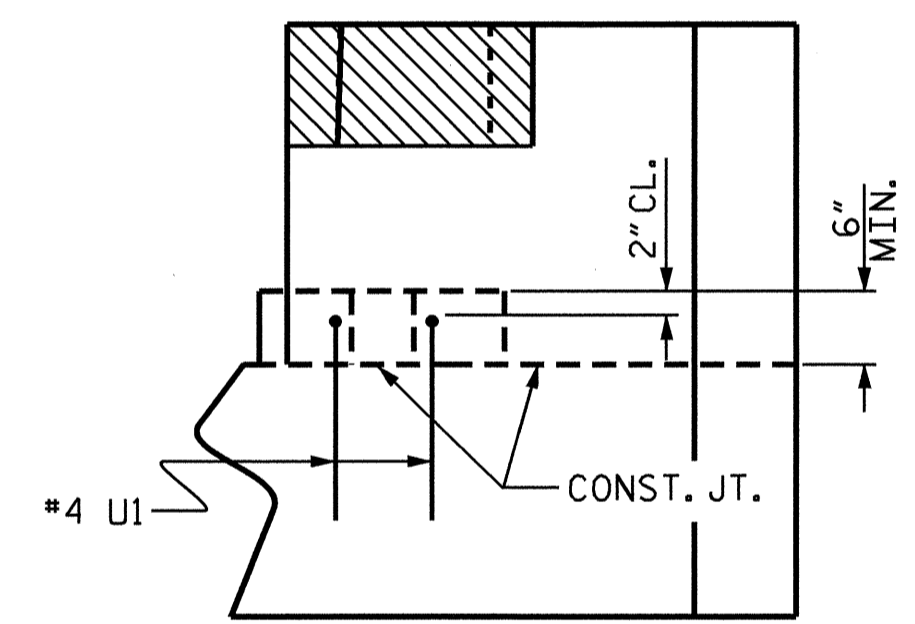
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR TEMPORARY DRAINAGE DETAILS, SEE SHEET 3 OF 3.

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



PLAN



ELEVATION

**LATERAL GUIDE DETAILS**

(EACH END SIMILAR)

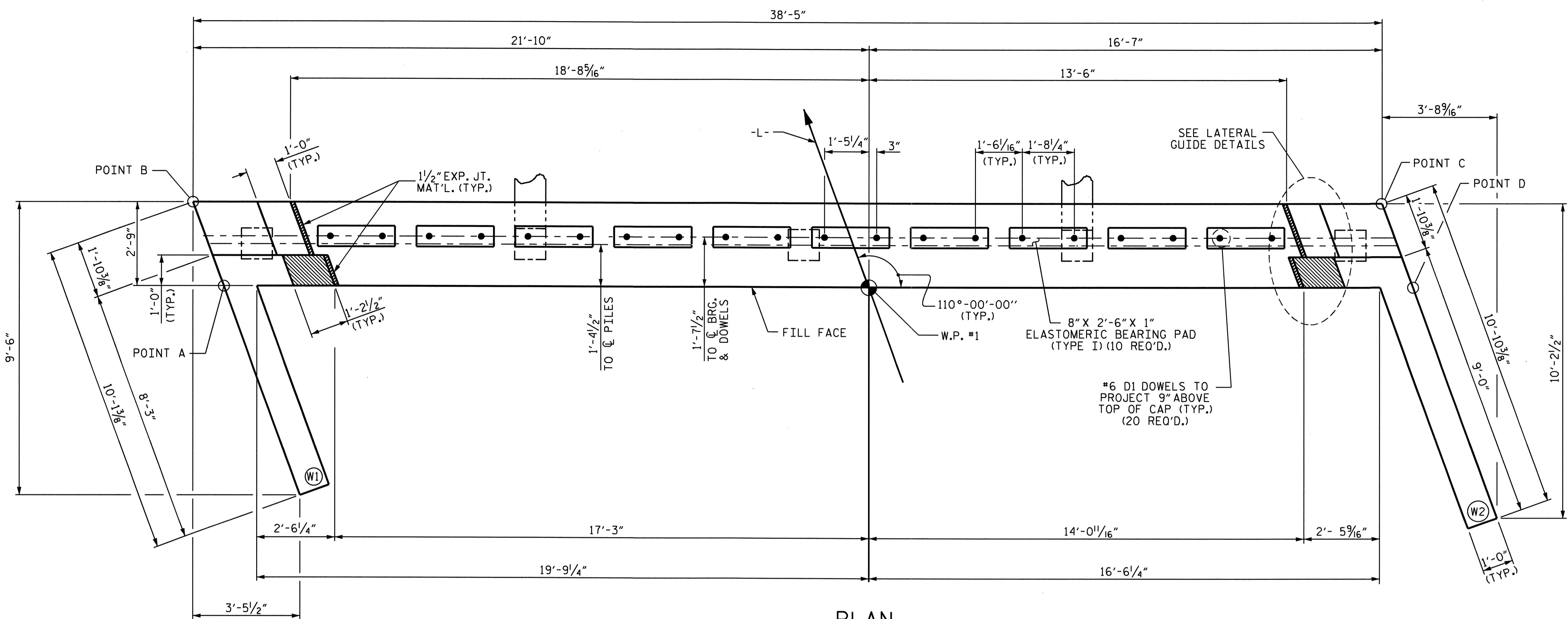
PROJECT NO. B-4428  
BEAUFORT COUNTY  
 STATION: 12+86.00 -L-

SHEET 1 OF 3

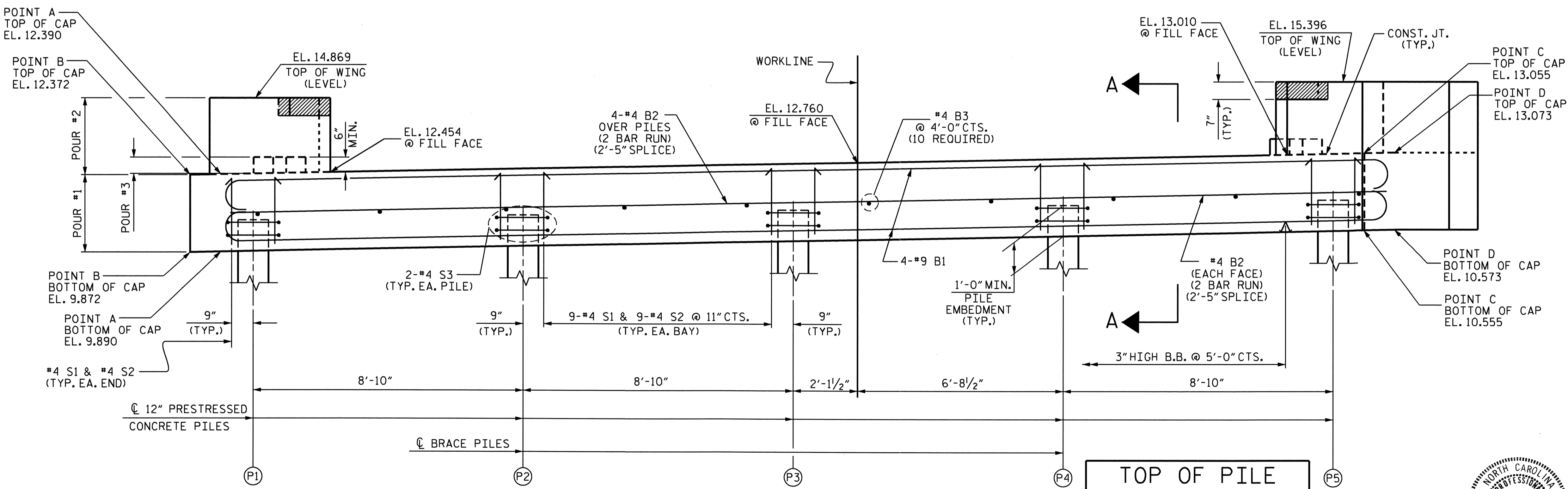
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			27



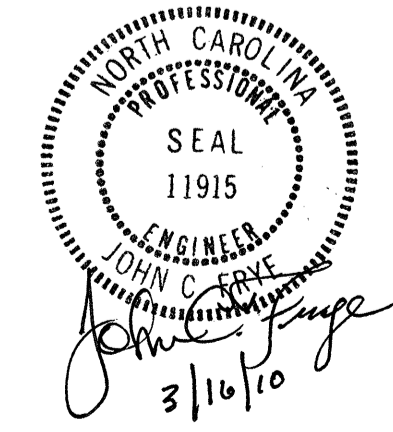
PLAN



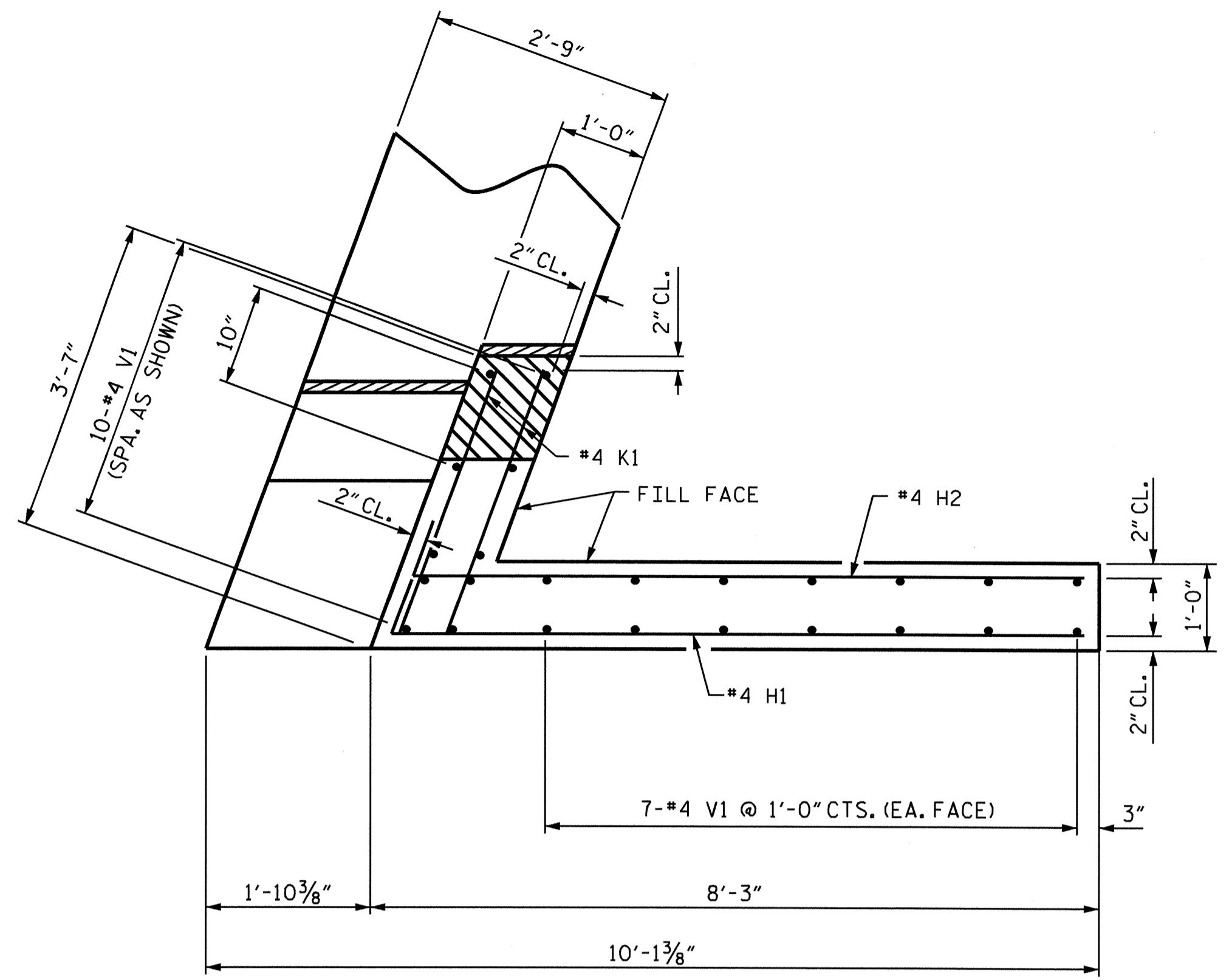
ELEVATION

(FOR WING REINFORCING STEEL & DETAILS, SEE SHEET 2 OF 3.)  
 (LEFT WING NOT SHOWN FOR CLARITY)

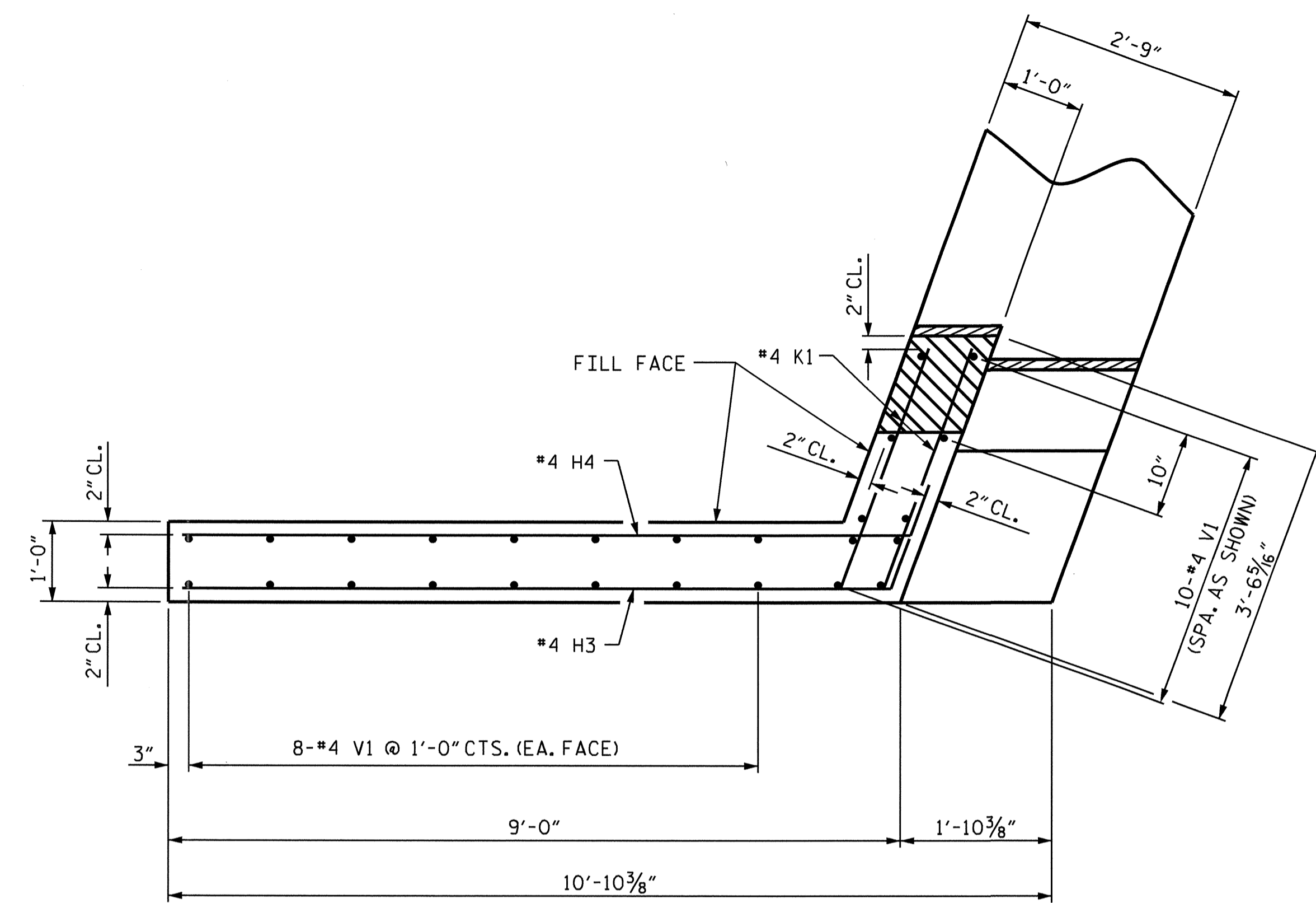
TOP OF PILE ELEVATIONS	
PILE NO.	ELEVATION
1	10.909
2	11.066
3	11.223
4	11.380
5	11.537



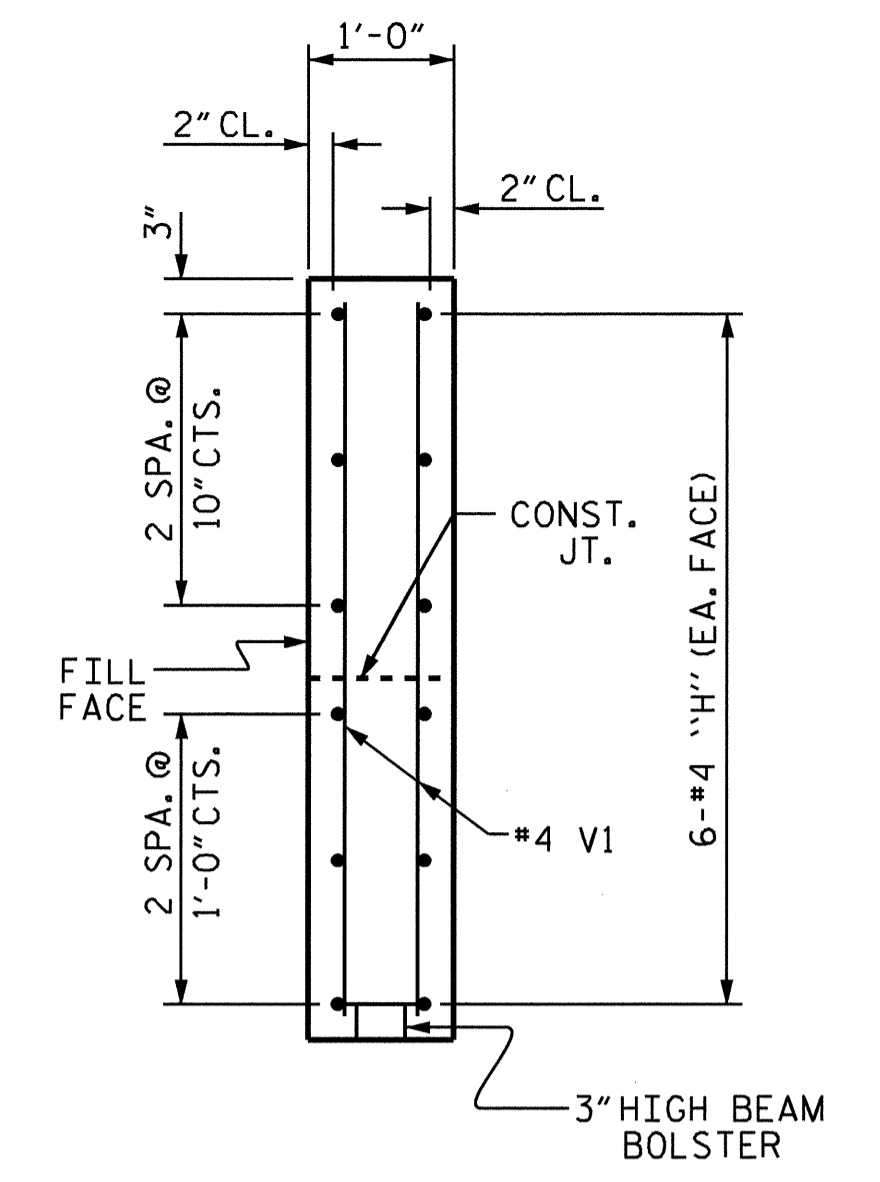
DRAWN BY : RAMAN PATEL DATE : 09/09/09  
 CHECKED BY : HARISH SHAH DATE : 09/16/09



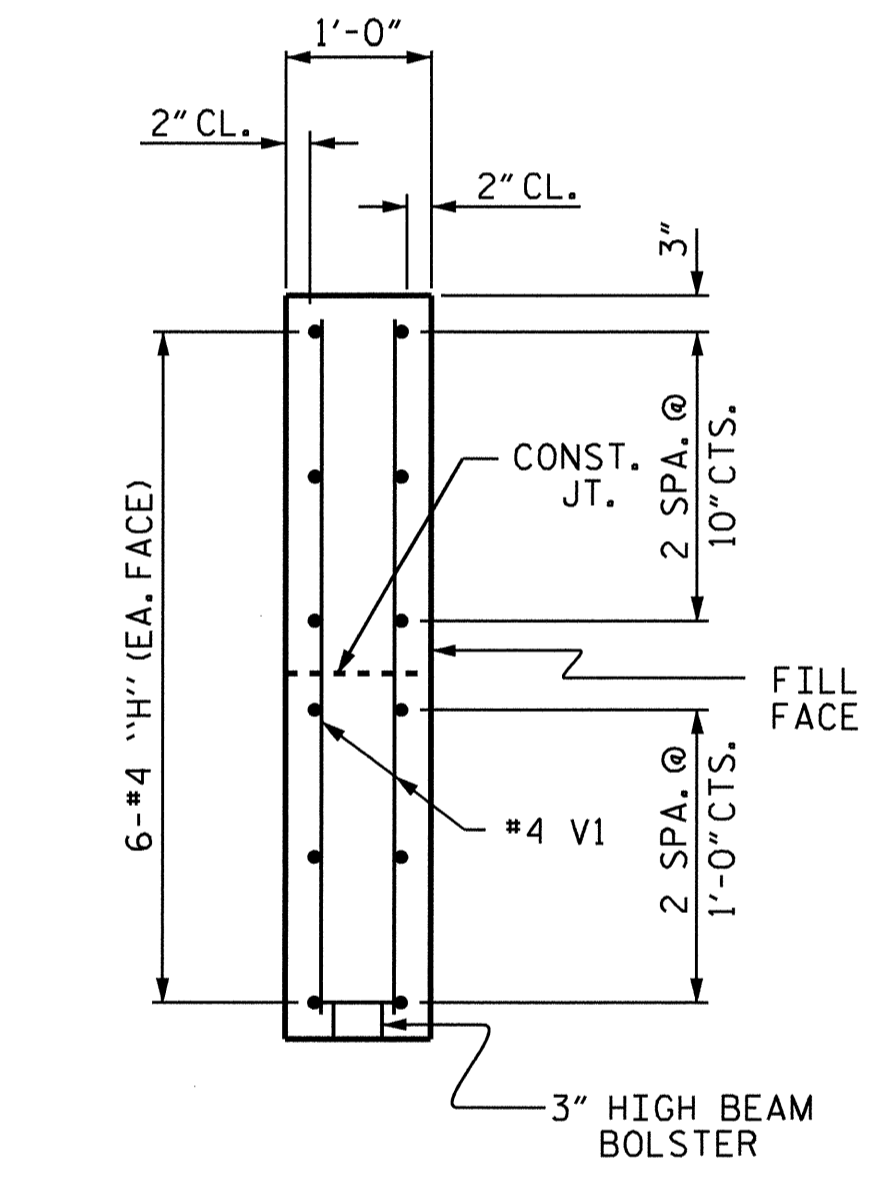
PLAN OF WING (W1)



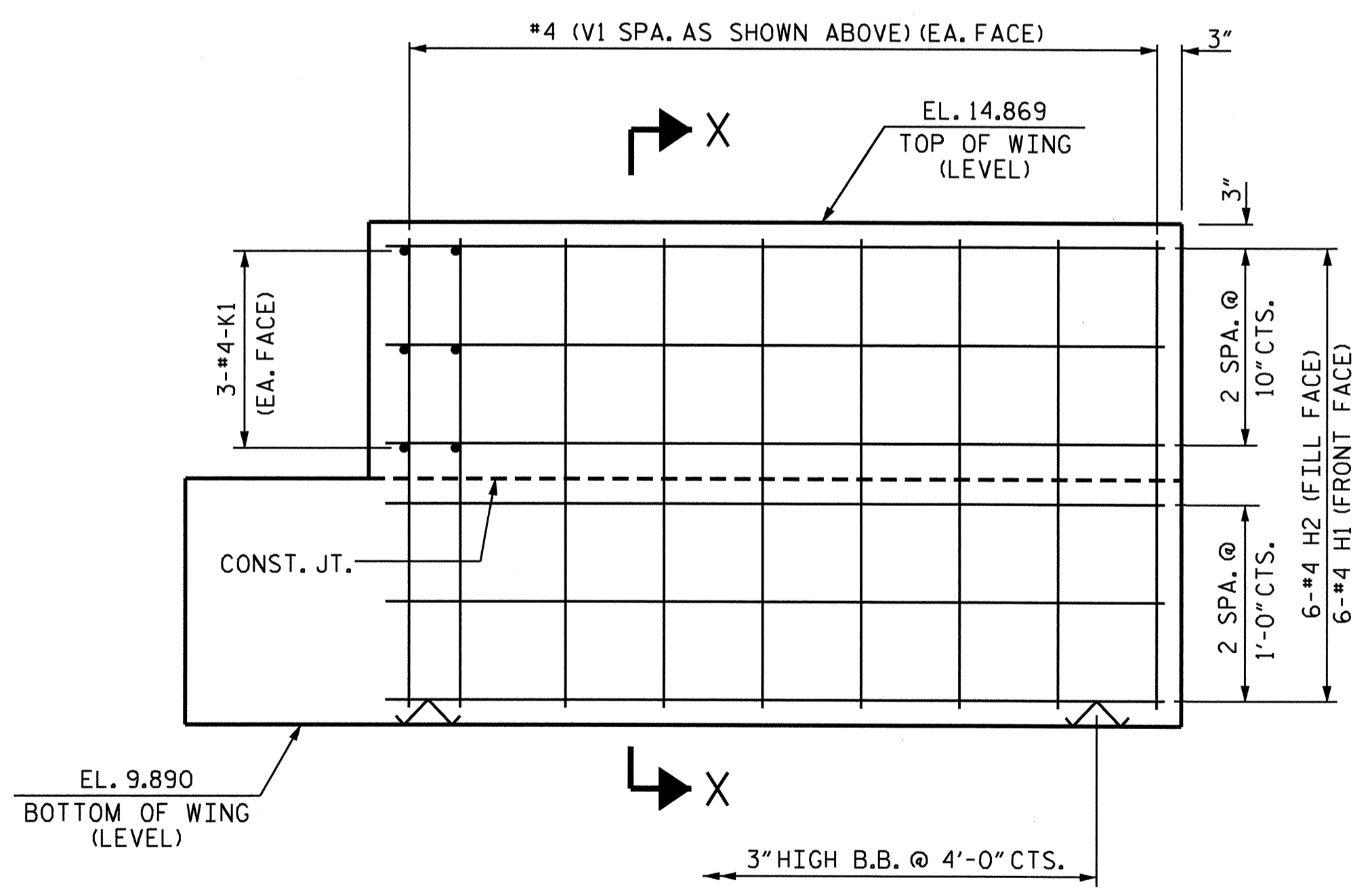
PLAN OF WING (W2)



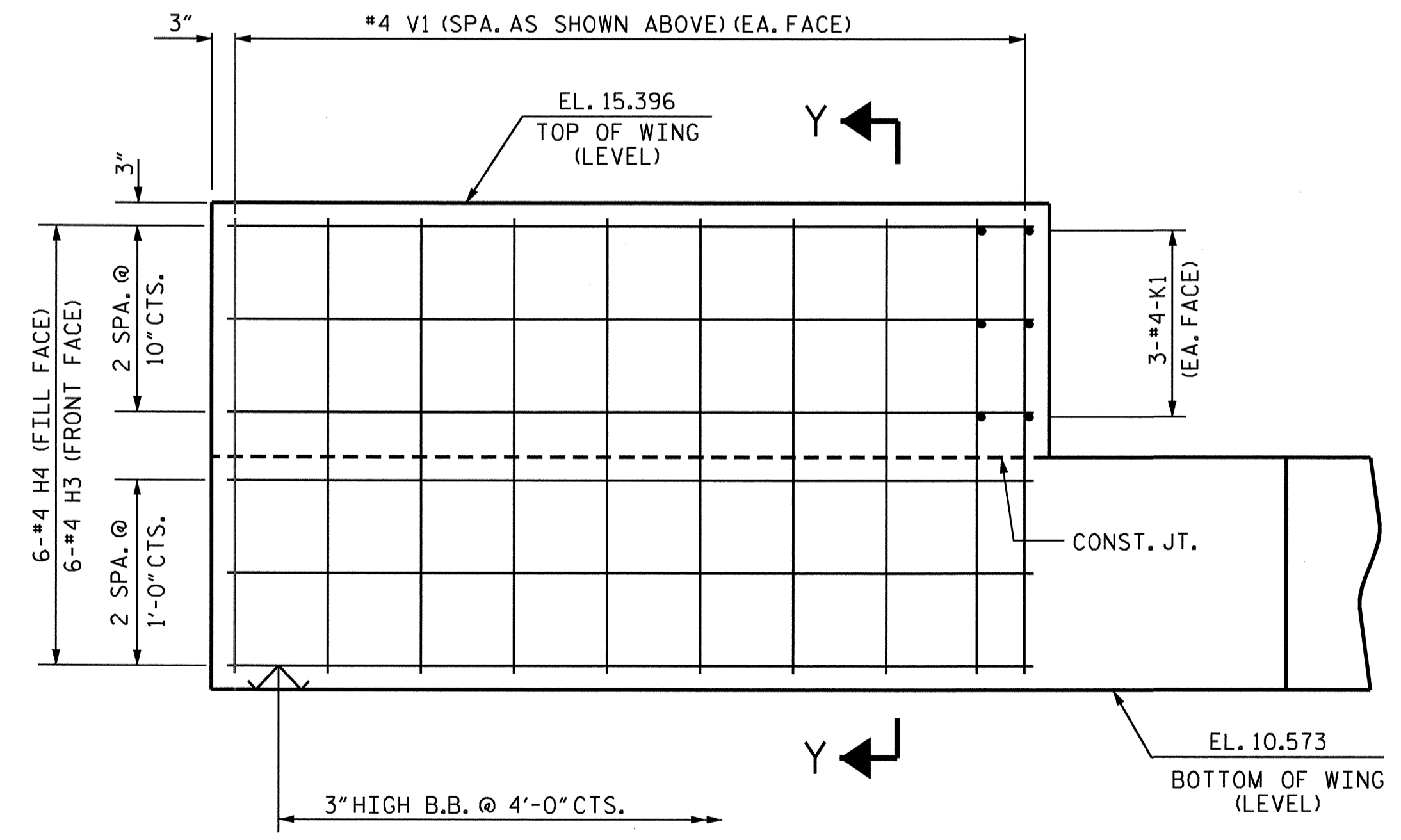
SECTION X-X



SECTION Y-Y



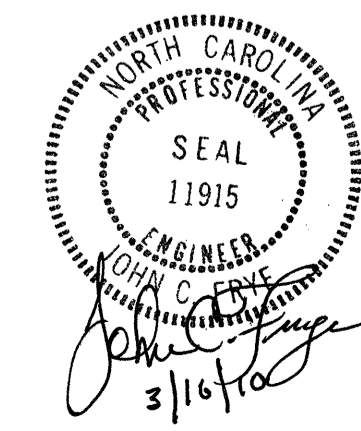
ELEVATION OF WING (W1)



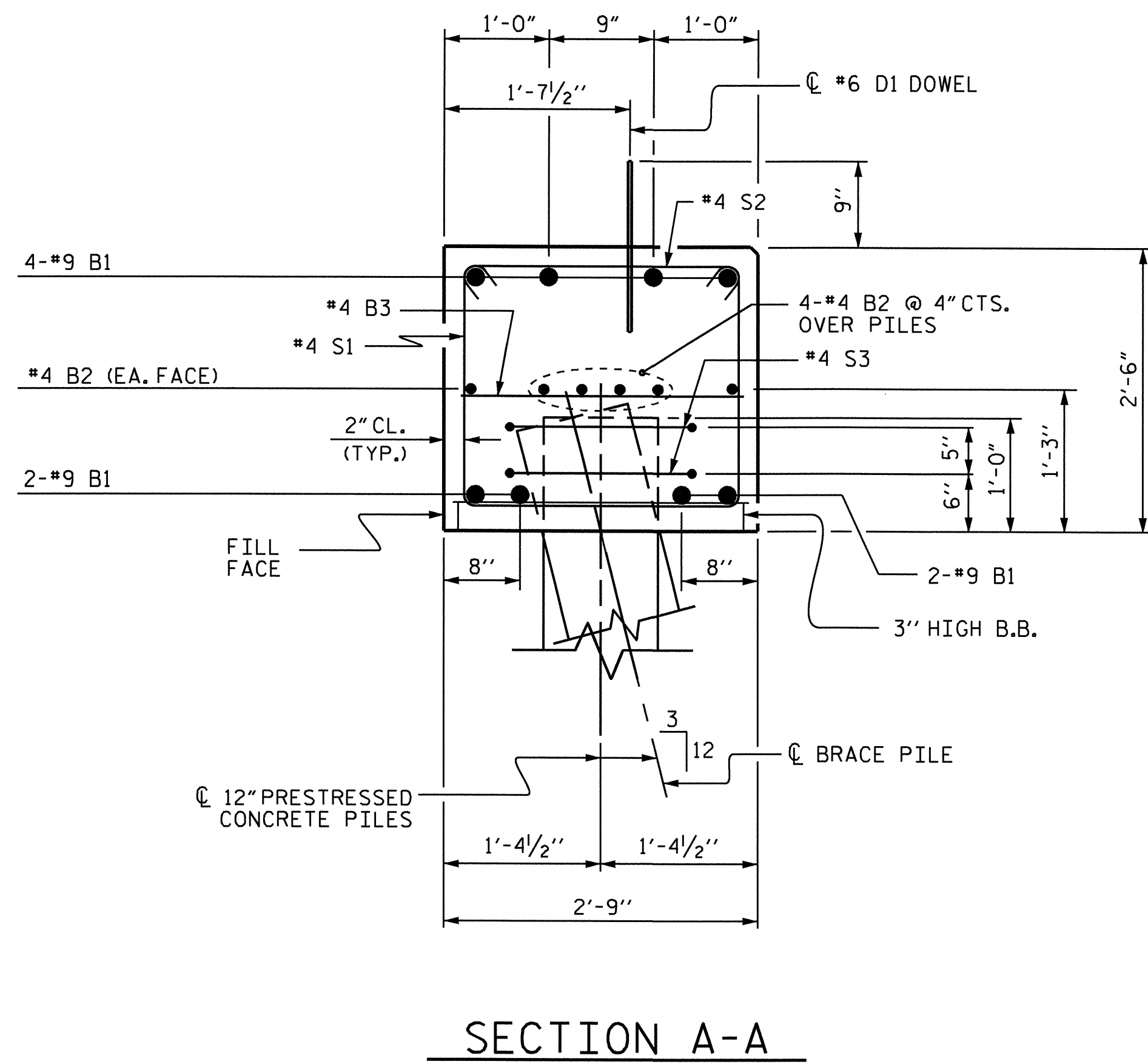
ELEVATION OF WING (W2)

PROJECT NO. B-4428  
BEAUFORT COUNTY  
 STATION: 12+86.00 -L-  
 SHEET 2 OF 3

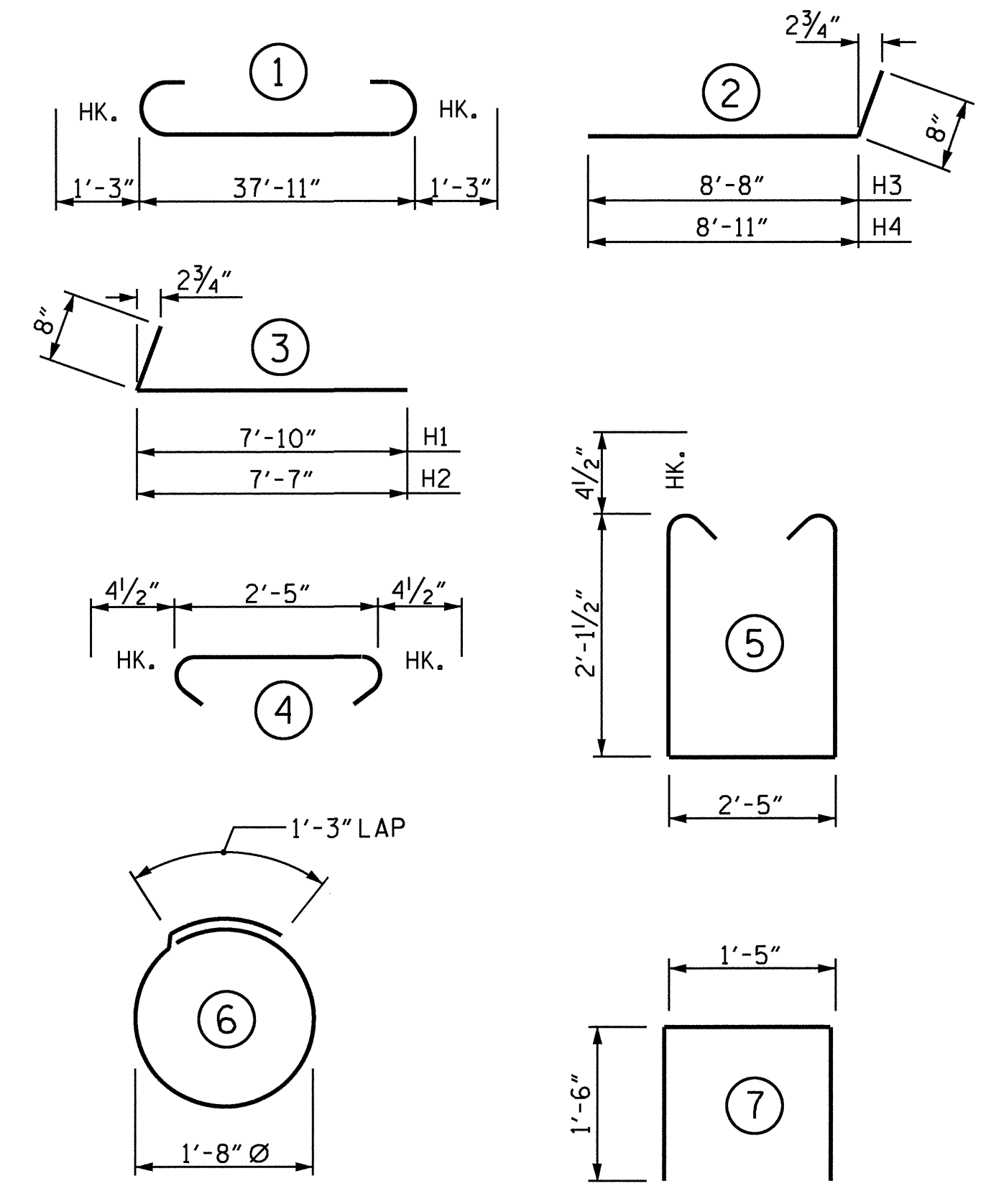
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
END BENT 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-14
TOTAL SHEETS					27



DRAWN BY: RAMAN PATEL DATE: 9/9/09  
 CHECKED BY: HARISH SHAH DATE: 9/15/09

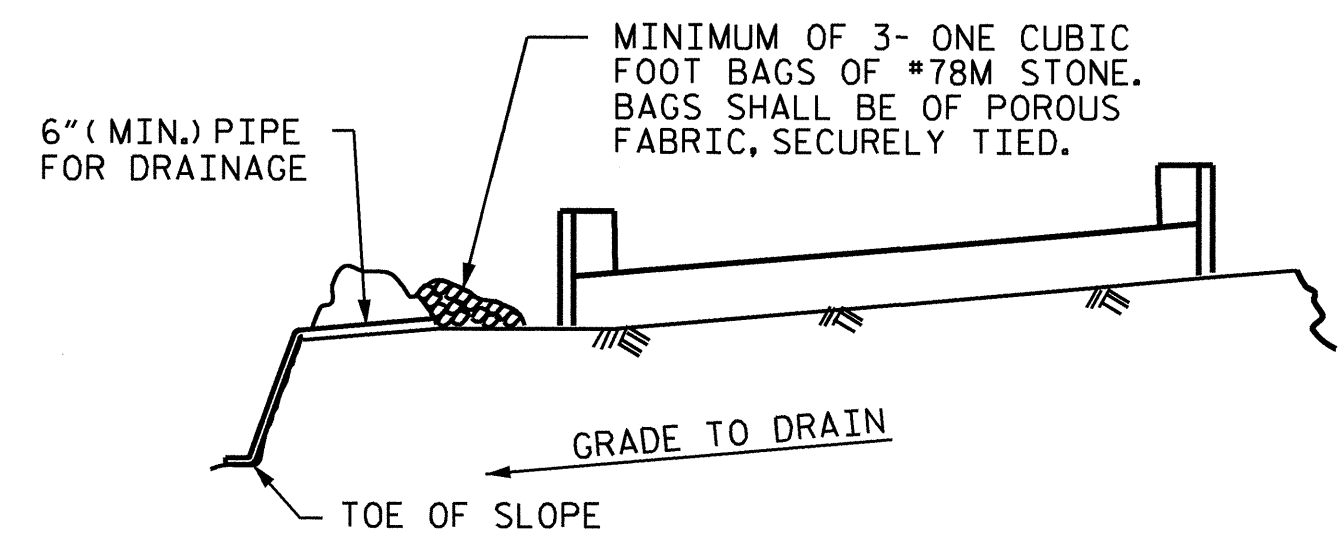


BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		40'-5"	1099
B2	12	#4	STR	20'-3"	162
B3	10	#4	STR	2'-5"	16
D1	20	#6	STR	1'-6"	45
H1	6	#4		8'-6"	34
H2	6	#4		8'-3"	33
H3	6	#4		9'-4"	37
H4	6	#4		9'-7"	38
K1	12	#4	STR	3'-2"	25
S1	38	#4		7'-5"	188
S2	38	#4		3'-2"	80
S3	10	#4		6'-6"	43
U1	4	#4		4'-5"	12
V1	50	#4	STR	4'-5"	148
REINFORCING STEEL				LBS.	1960
CLASS 'A' CONCRETE					
POUR 1: CAP & LOWER WINGS				* C.Y.	11.0
POUR 2: UPPER WINGS				C.Y.	1.6
POUR 3: (LATERAL GUIDES)				C.Y.	0.1
TOTAL:				C.Y.	12.7
12" PRESTRESSED CONCRETE PILES					
NO. 5				125	LIN. FT.
PILE REDRIVES				EACH	5



ALL BAR DIMENSIONS ARE OUT TO OUT

\* CONCRETE DISPLACED BY THE 12" PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED.



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**

PROJECT NO. B-4428  
BEAUFORT COUNTY  
 STATION: 12+86.00 -L-  
 SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT 1

Professional Engineer Seal  
 JOHN C. BYRNE  
 1/22/10

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			27

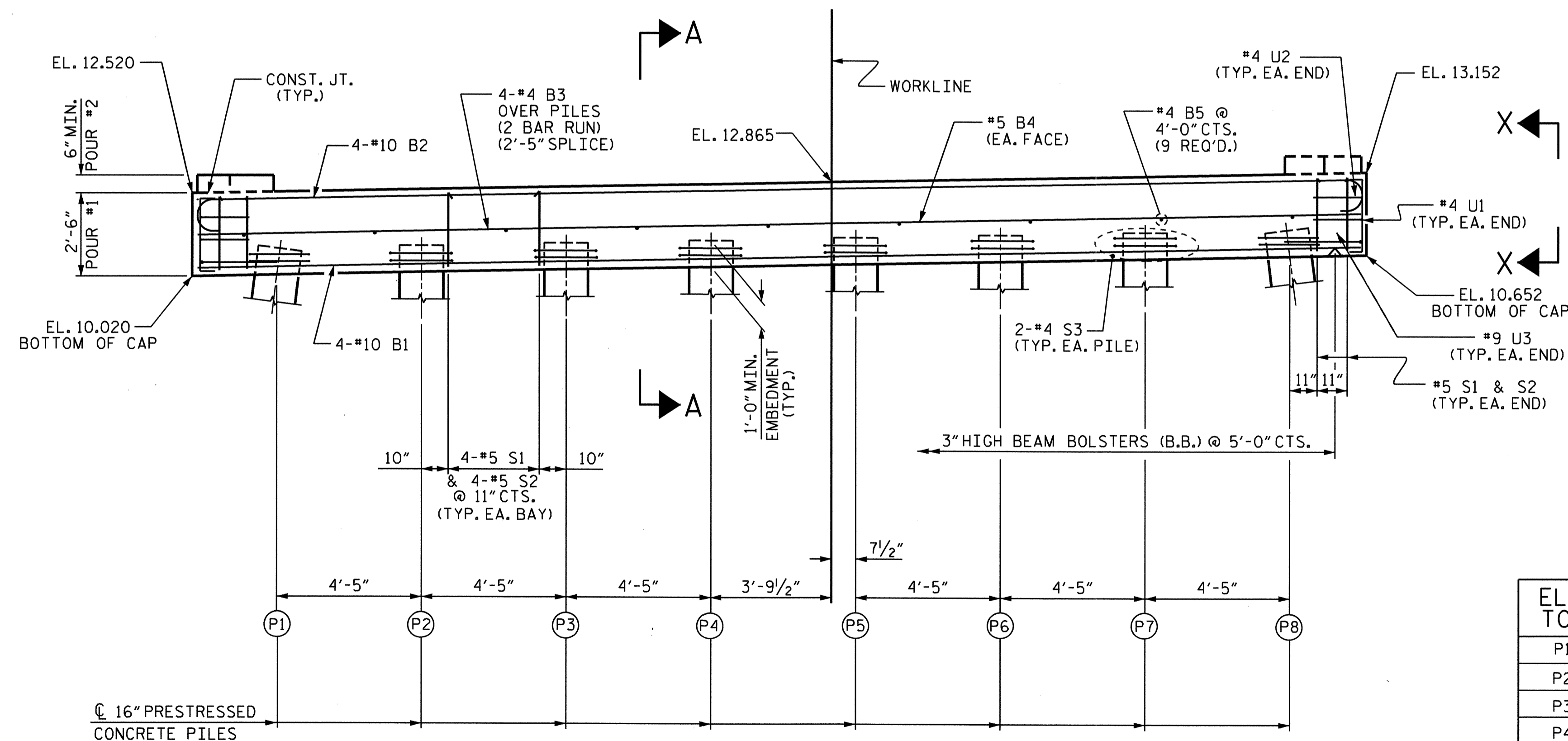
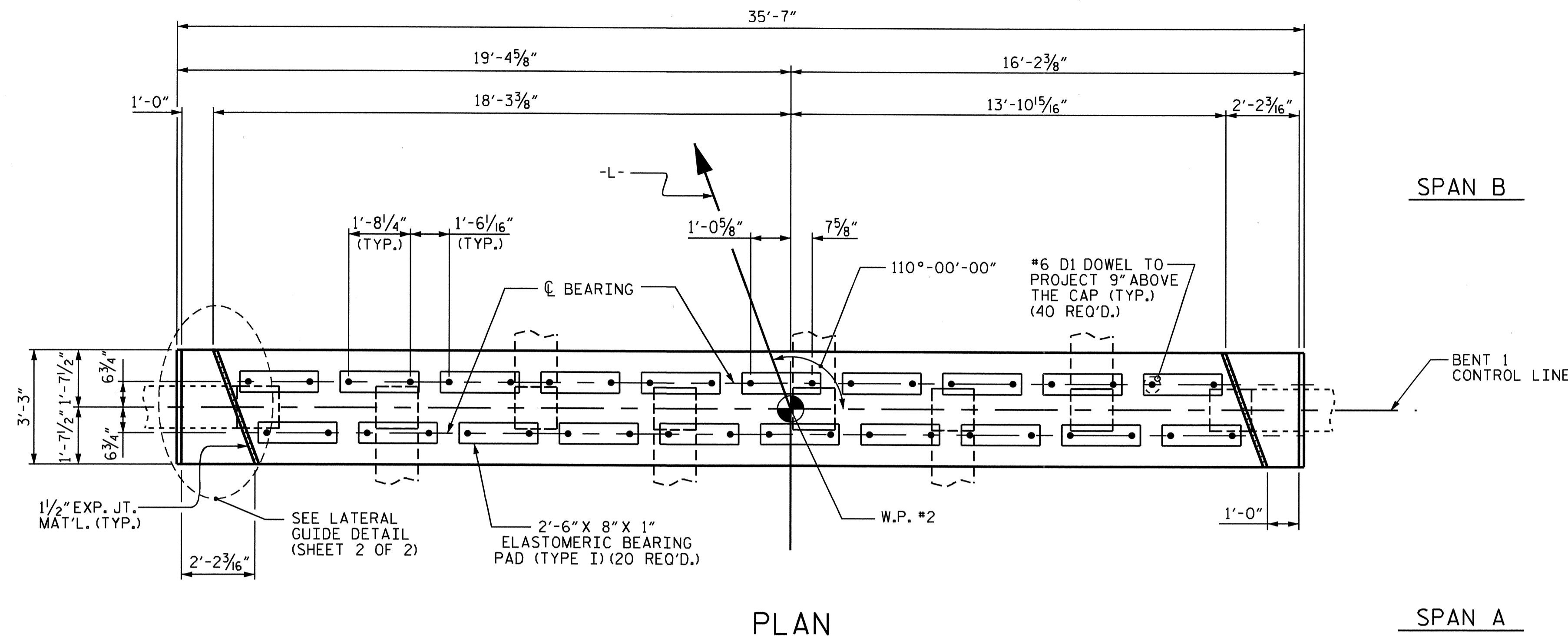
DRAWN BY: RAMAN PATEL DATE: 9/9/09  
 CHECKED BY: HARISH SHAH DATE: 9/15/09



NOTES

STIRRUPS MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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



ELEVATIONS @ TOP OF PILES	
P1	11.062
P2	11.140
P3	11.219
P4	11.297
P5	11.376
P6	11.454
P7	11.533
P8	11.611

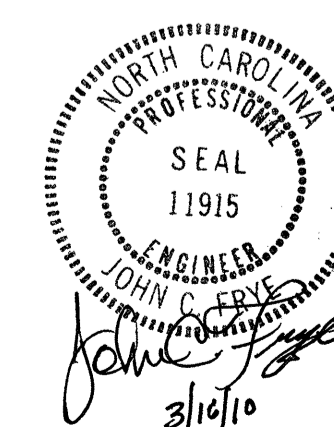
PROJECT NO. B-4428  
BEAUFORT COUNTY  
 STATION: 12+86.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE

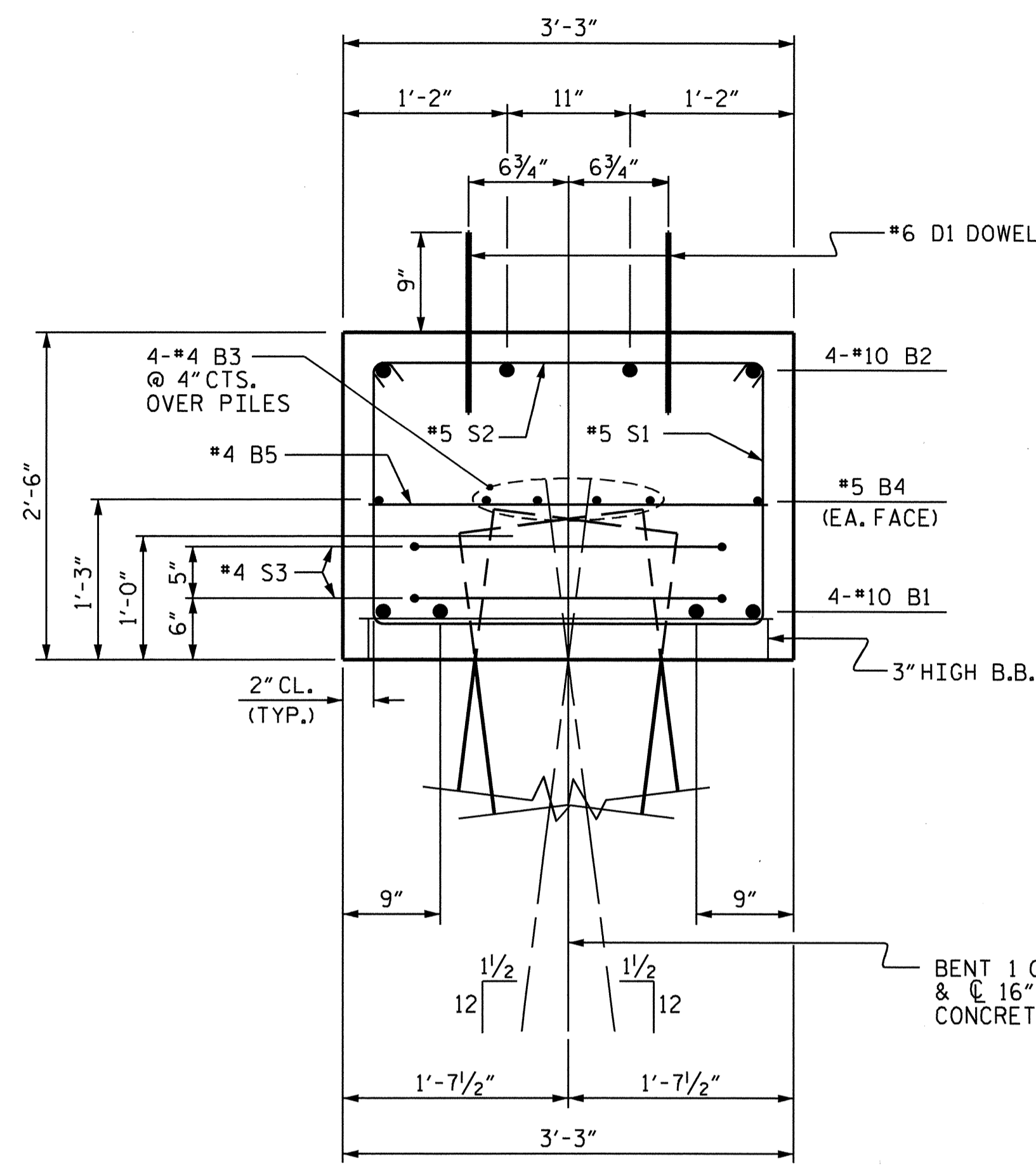
BENT 1



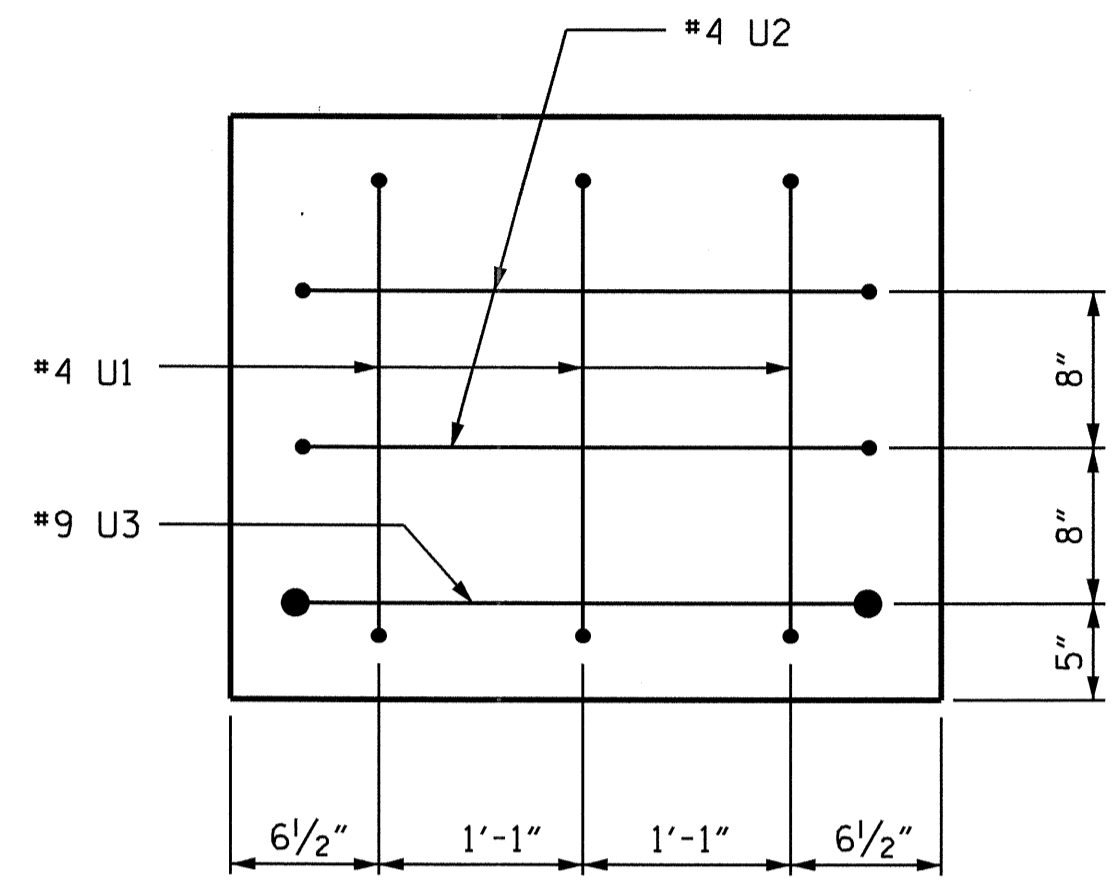
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 27

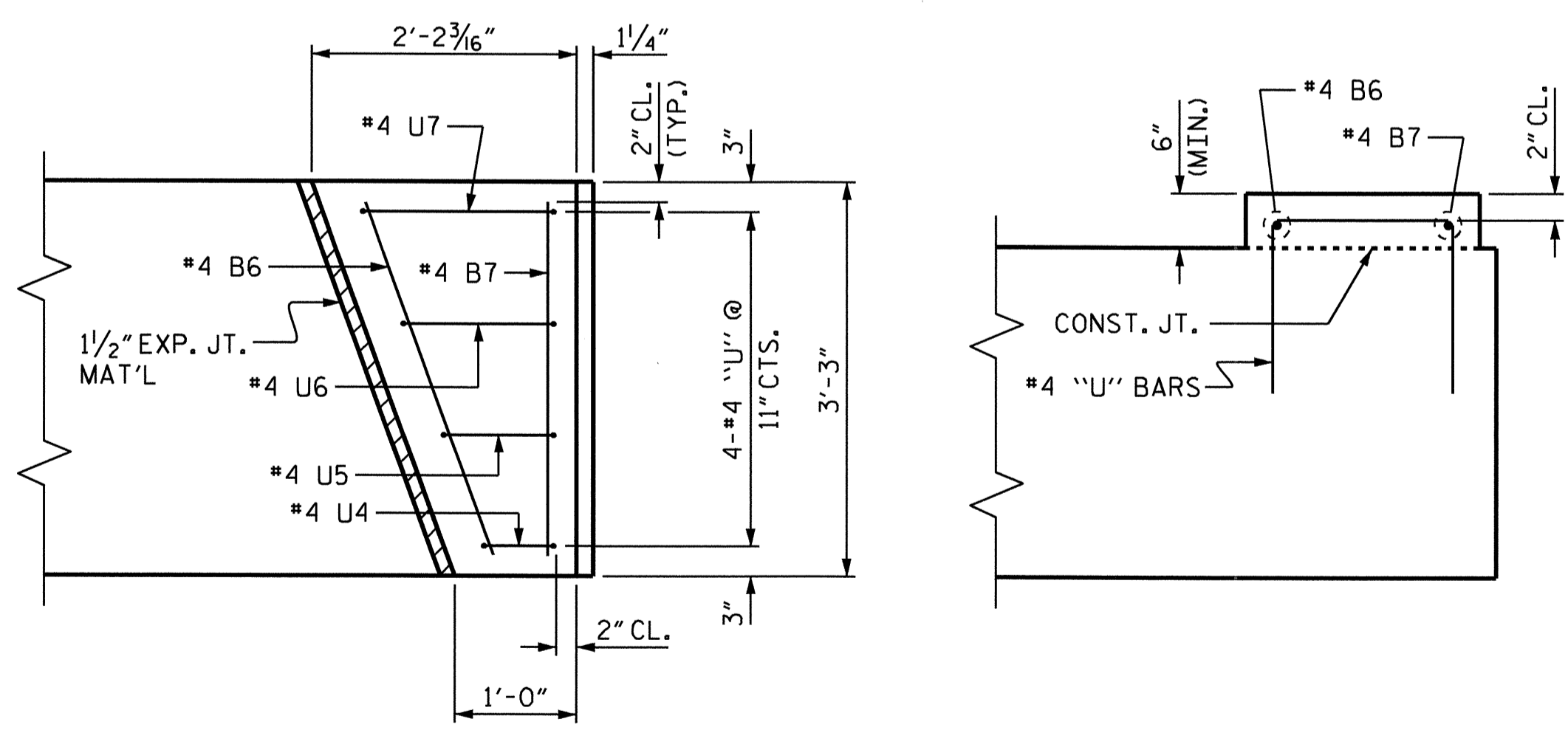
DRAWN BY : QT NGUYEN DATE : 9-09  
 CHECKED BY : RAMAN PATEL DATE : 9-17-09



SECTION A-A

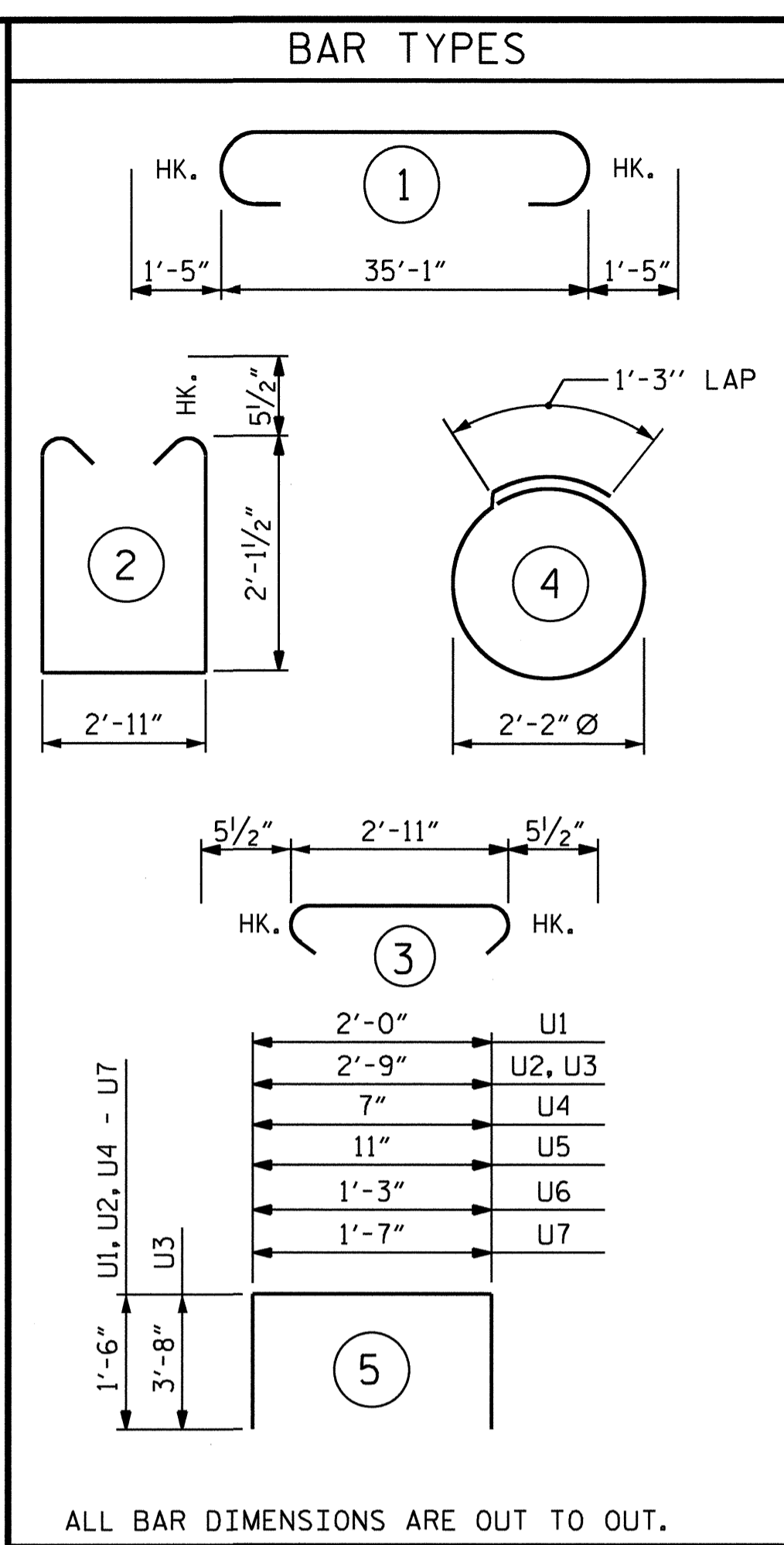


VIEW X-X



PLAN ELEVATION

LATERAL GUIDE DETAIL  
(EA. END SIMILAR)



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	STR	35'-3"	607
B2	4	#10	1	37'-11"	653
B3	8	#4	STR	18'-10"	101
B4	2	#5	STR	35'-3"	74
B5	9	#4	STR	2'-11"	18
B6	2	#4	STR	3'-1"	4
B7	2	#4	STR	2'-11"	4
D1	40	#6	STR	1'-6"	90
S1	32	#5	2	8'-1"	270
S2	32	#5	3	3'-10"	128
S3	16	#4	4	8'-1"	86
U1	6	#4	5	5'-0"	20
U2	4	#4	5	5'-9"	15
U3	2	#9	5	10'-1"	69
U4	2	#4	5	3'-7"	5
U5	2	#4	5	3'-11"	5
U6	2	#4	5	4'-3"	6
U7	2	#4	5	4'-7"	6
REINFORCING STEEL				LBS.	2161
CLASS A CONCRETE BREAKDOWN :					
POUR #1 CAP ▲				CU. YDS.	10.2
POUR #2 LATERAL GUIDES				CU. YDS.	0.2
TOTAL				CU. YDS.	10.4
PILE REDRIVES				EA.	8
16" PRESTRESSED CONCRETE PILES				LIN. FT.	360
NO. = 8					

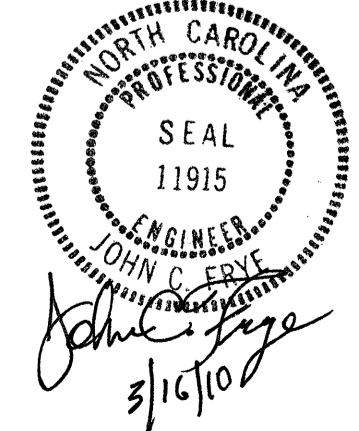
▲ CONCRETE DISPLACED BY THE 16" PRESTRESSED CONCRETE PILE HAS BEEN DEDUCTED.

PROJECT NO. B-4428  
BEAUFORT COUNTY  
 STATION: 12+86.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT 1



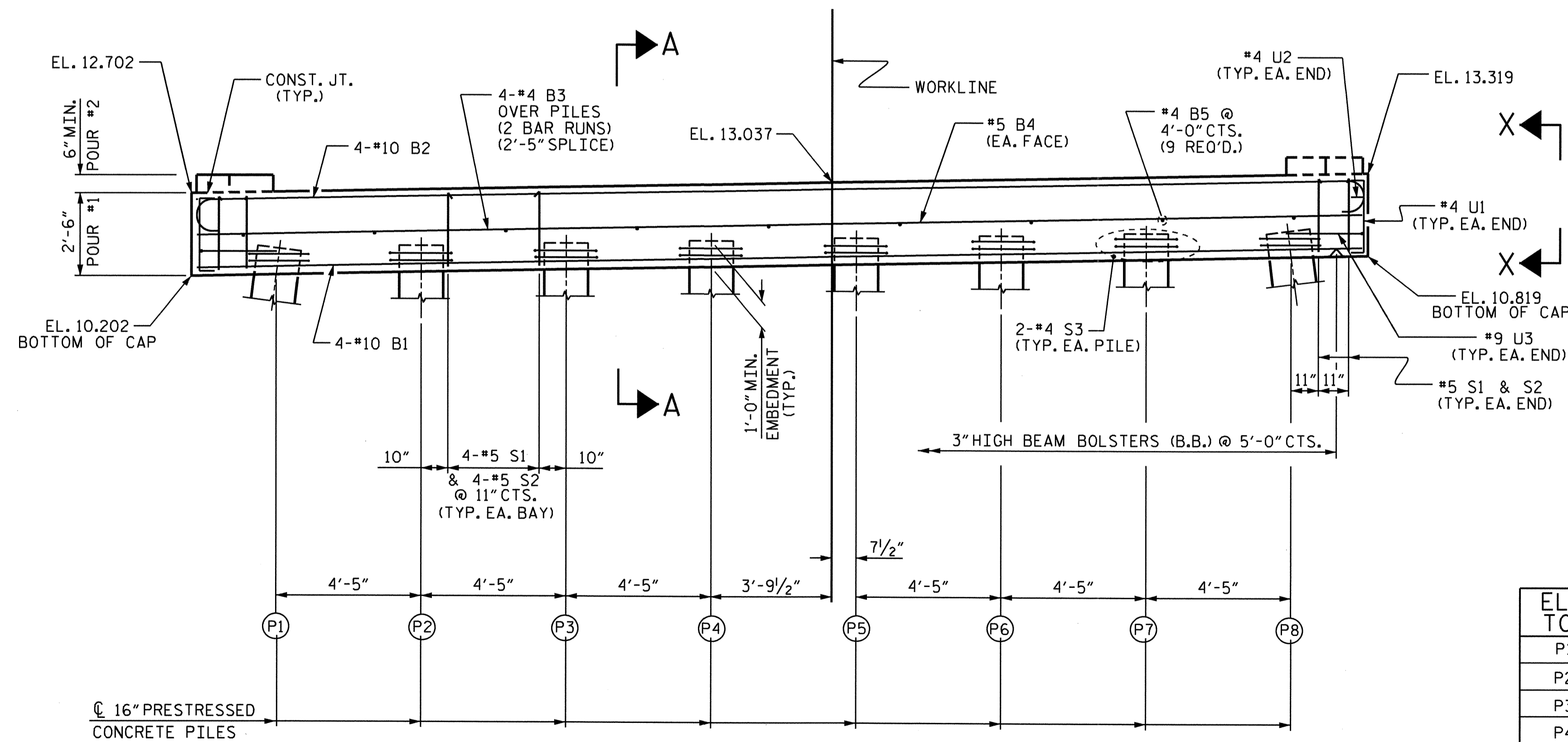
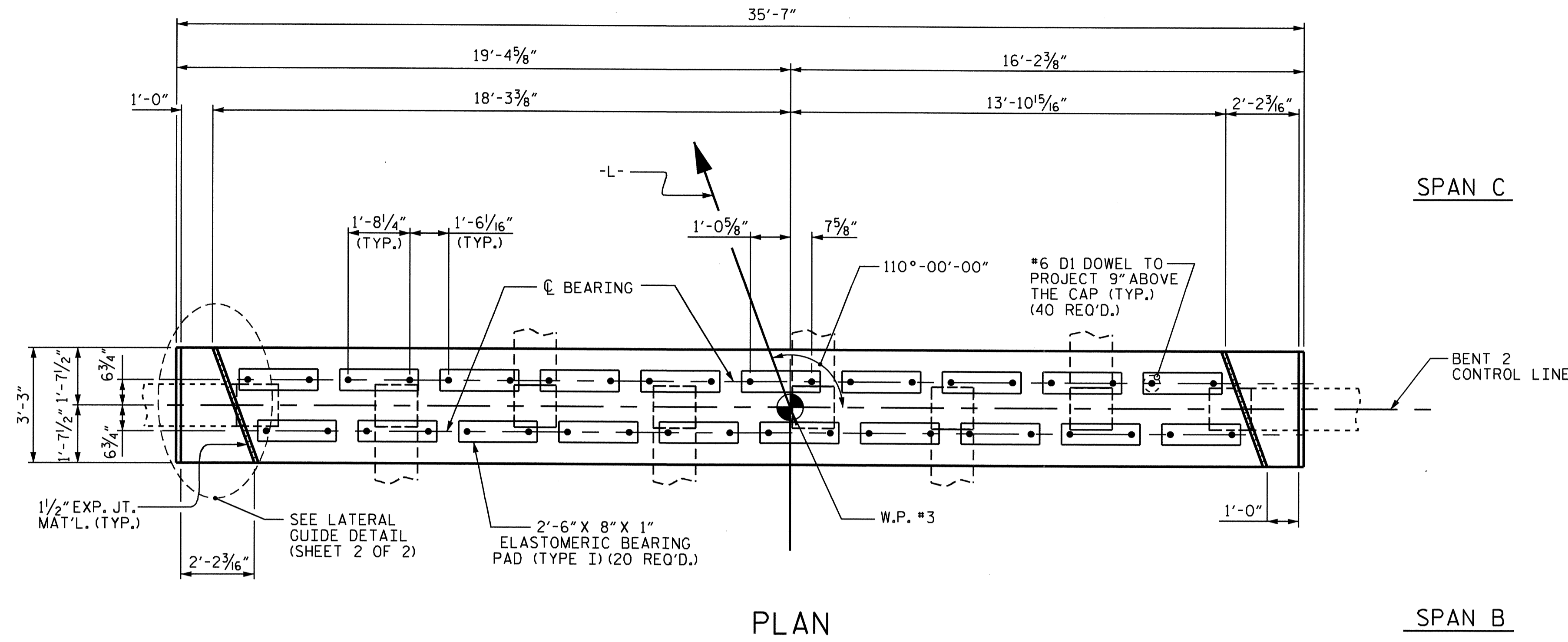
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			27

DRAWN BY : OT NGUYEN DATE : 9-09  
 CHECKED BY : RAMAN PATEL DATE : 9-17-09

NOTES

STIRRUPS MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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



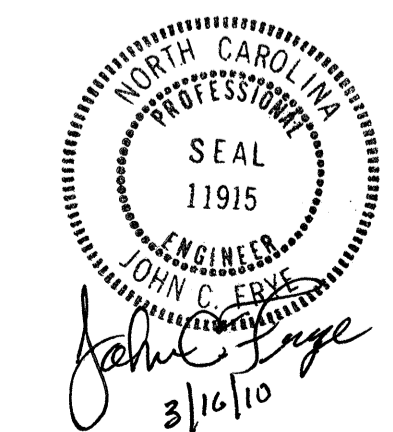
ELEVATIONS @ TOP OF PILES	
P1	11.242
P2	11.318
P3	11.395
P4	11.471
P5	11.548
P6	11.625
P7	11.701
P8	11.778

**ELEVATION**  
ALL PILES ARE BATTERED 1/2 : 12 IN THE DIRECTION SHOWN ON THE PLANS

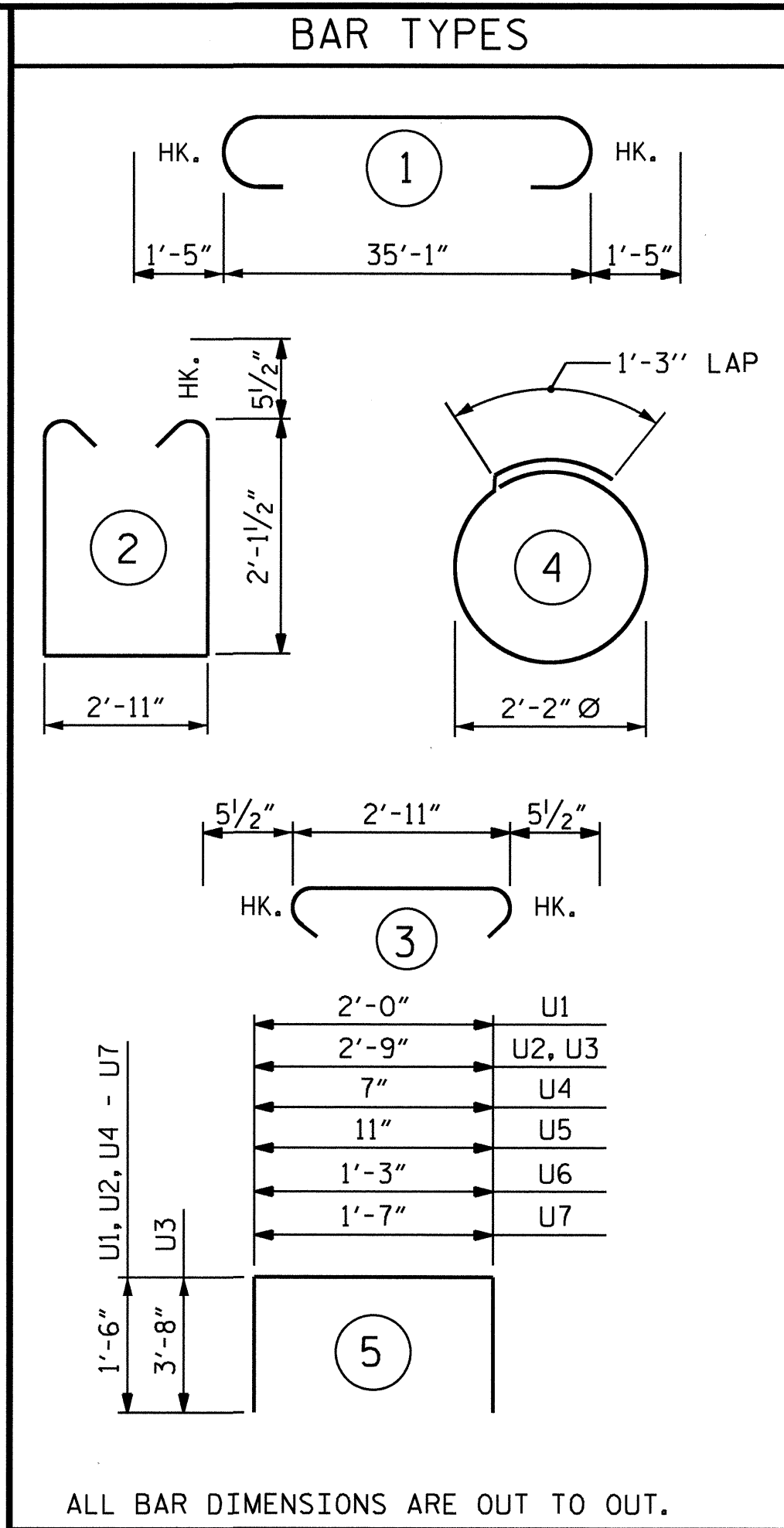
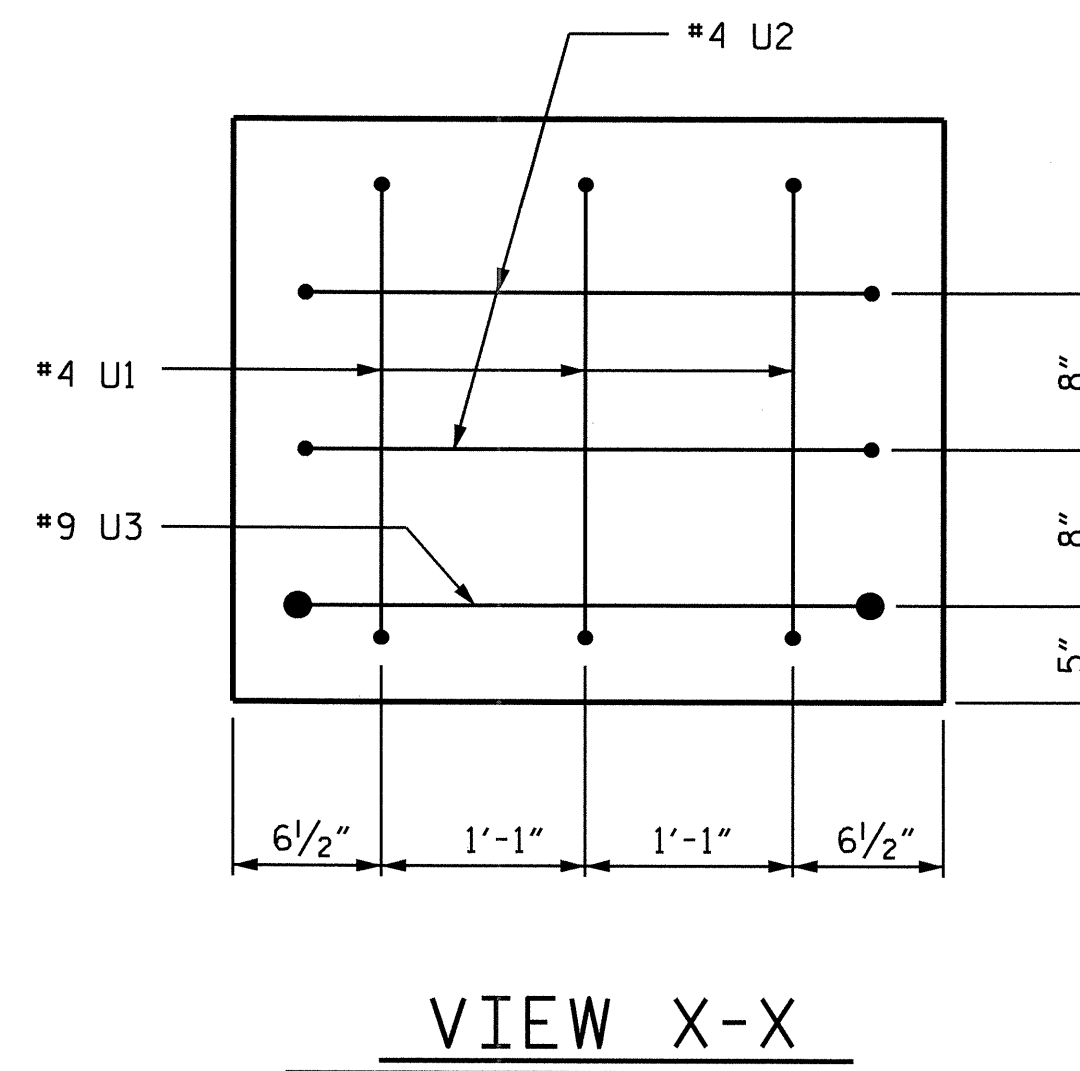
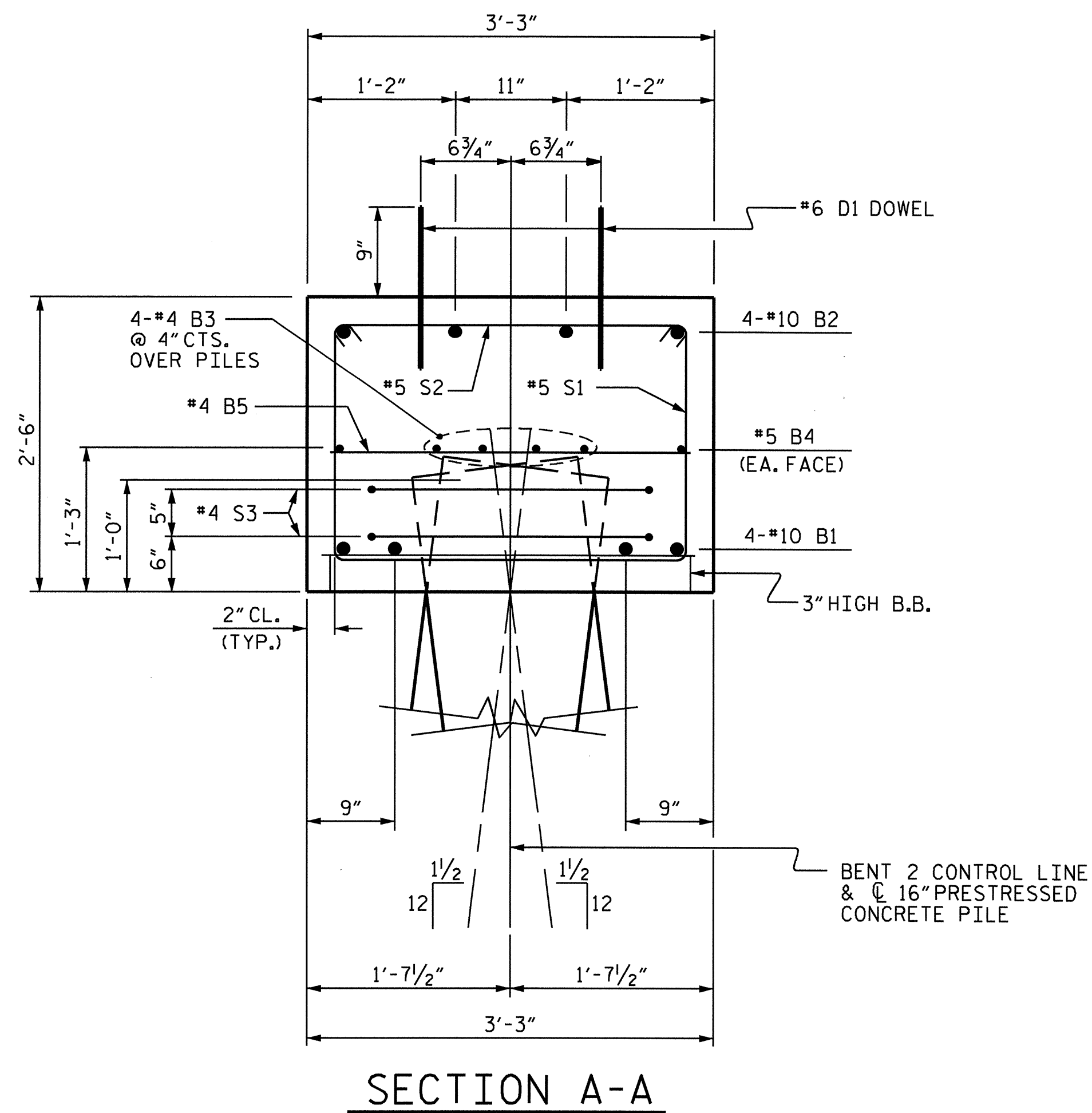
PROJECT NO. B-4428  
BEAUFORT COUNTY  
STATION: 12+86.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT 2					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 27
					S-18

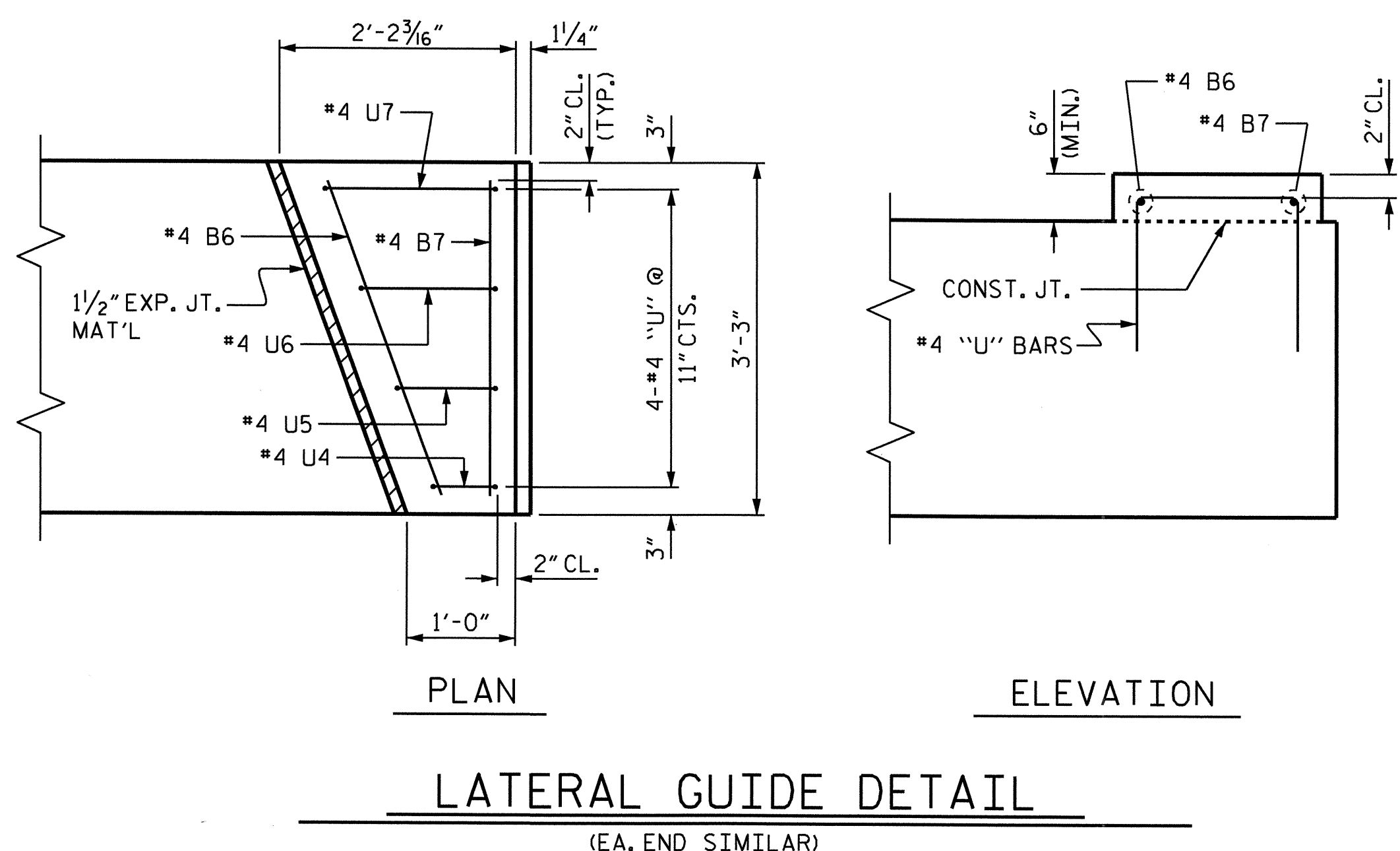


DRAWN BY : QT NGUYEN DATE : 9-09  
CHECKED BY : RAMAN PATEL DATE : 9-17-09



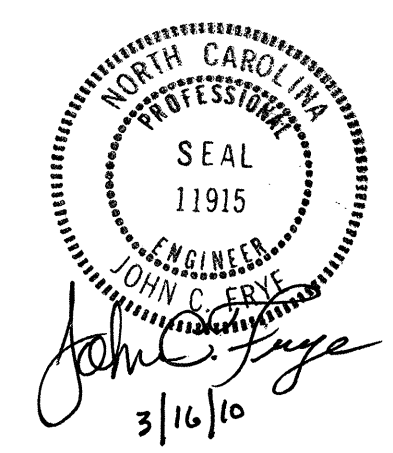
BILL OF MATERIAL					
BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	STR	35'-3"	607
B2	4	#10	1	37'-11"	653
B3	8	#4	STR	18'-10"	101
B4	2	#5	STR	35'-3"	74
B5	9	#4	STR	2'-11"	18
B6	2	#4	STR	3'-1"	4
B7	2	#4	STR	2'-11"	4
D1	40	#6	STR	1'-6"	90
S1	32	#5	2	8'-1"	270
S2	32	#5	3	3'-10"	128
S3	16	#4	4	8'-1"	86
U1	6	#4	5	5'-0"	20
U2	4	#4	5	5'-9"	15
U3	2	#9	5	10'-1"	69
U4	2	#4	5	3'-7"	5
U5	2	#4	5	3'-11"	5
U6	2	#4	5	4'-3"	6
U7	2	#4	5	4'-7"	6
REINFORCING STEEL				LBS.	2161
CLASS A CONCRETE BREAKDOWN :					
POUR #1 CAP ▲				CU. YDS.	10.2
POUR #2 LATERAL GUIDES				CU. YDS.	0.2
TOTAL				CU. YDS.	10.4
PILE REDRIVES				EA.	8
16" PRESTRESSED CONCRETE PILES				LIN. FT.	320
NO. = 8					

▲ CONCRETE DISPLACED BY THE 16" PRESTRESSED CONCRETE PILE HAS BEEN DEDUCTED.



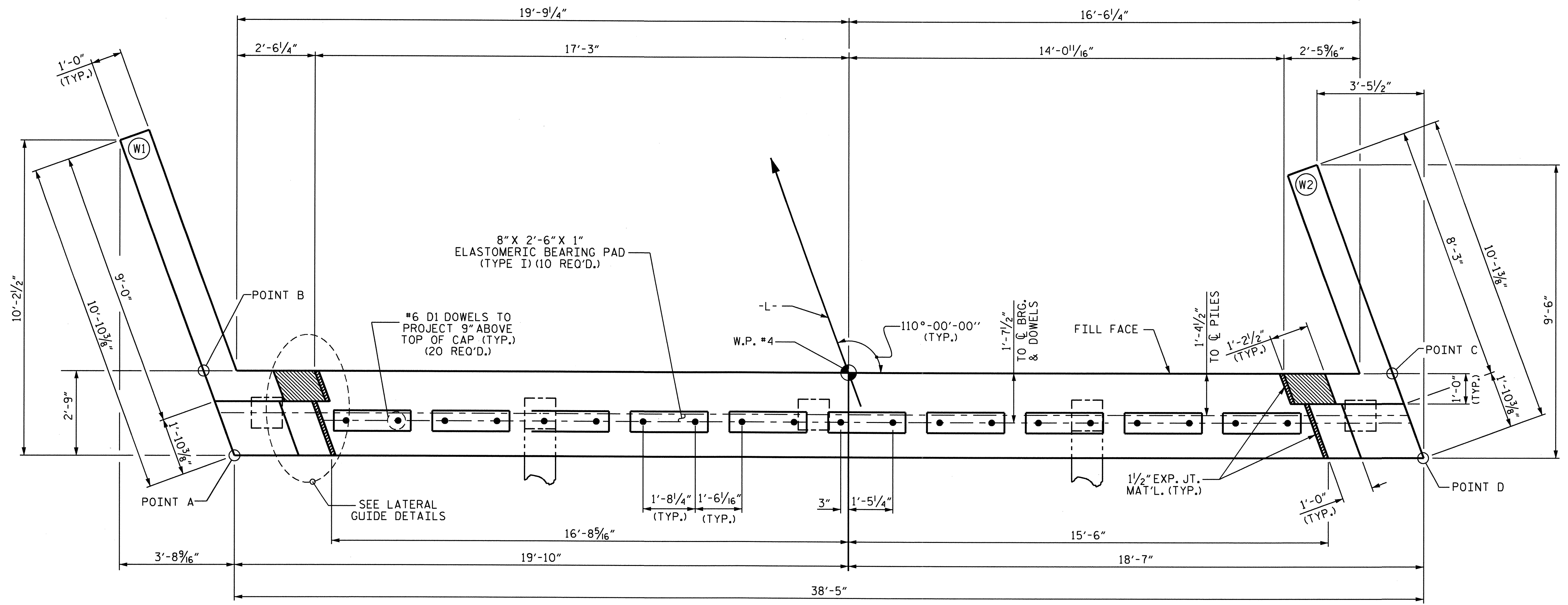
DRAWN BY : QT NGUYEN DATE : 9-09  
 CHECKED BY : RAMAN PATEL DATE : 9-17-09

15-MAR-2010 12:32  
 Z:\Structures\Final plan\B4428.SD.B\*.dgn  
 kpnewton

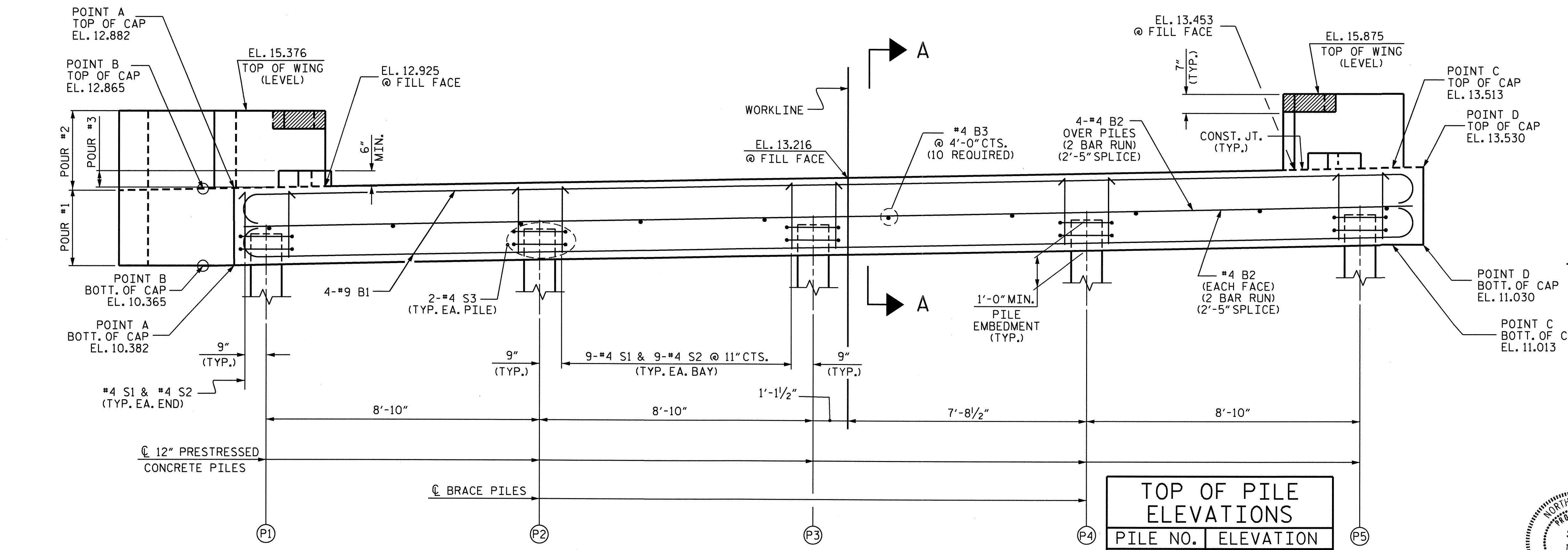


PROJECT NO. B-4428  
BEAUFORT COUNTY  
 STATION: 12+86.00 -L-  
 SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT 2					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					27
					S-19



**PLAN**



**ELEVATION**

TOP OF PILE ELEVATIONS	
PILE NO.	ELEVATION
1	11.399
2	11.548
3	11.697
4	11.846
5	11.995

(FOR WING REINFORCING STEEL & DETAILS, SEE SHEET 2 OF 3.)  
(RIGHT WING NOT SHOWN FOR CLARITY)

**NOTES**

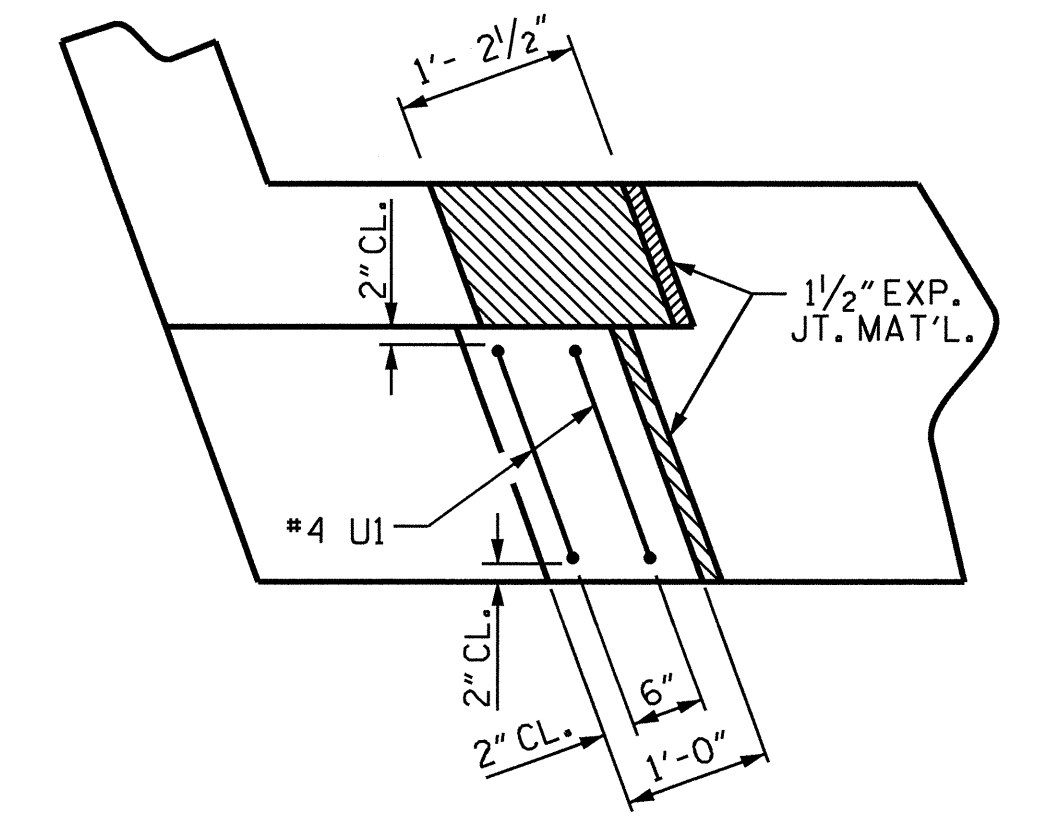
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6 DI DOWELS.

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

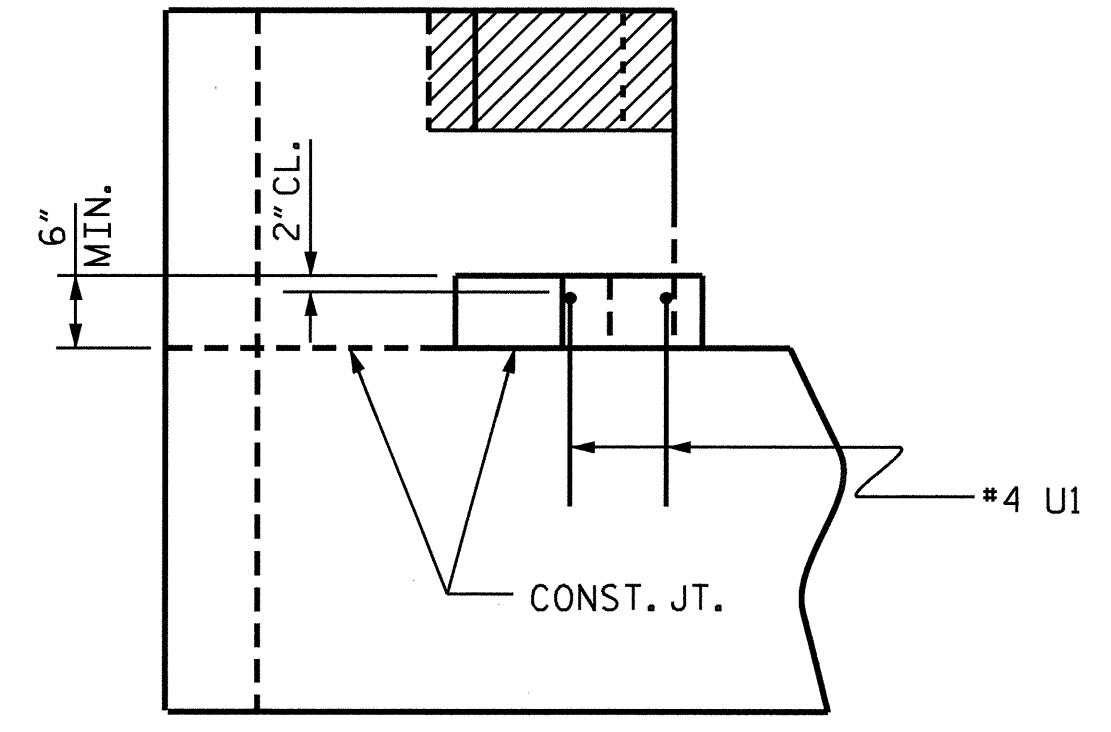
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR TEMPORARY DRAINAGE DETAILS, SEE SHEET 3 OF 3.

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



**PLAN**



**ELEVATION**

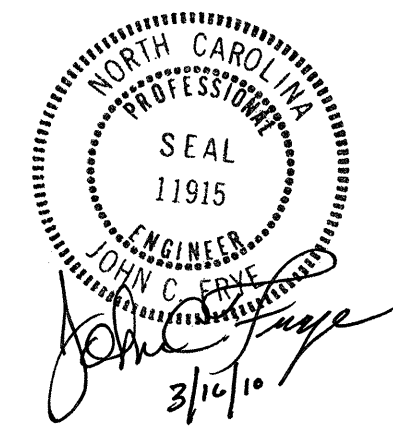
**LATERAL GUIDE DETAILS**

(EACH END SIMILAR)

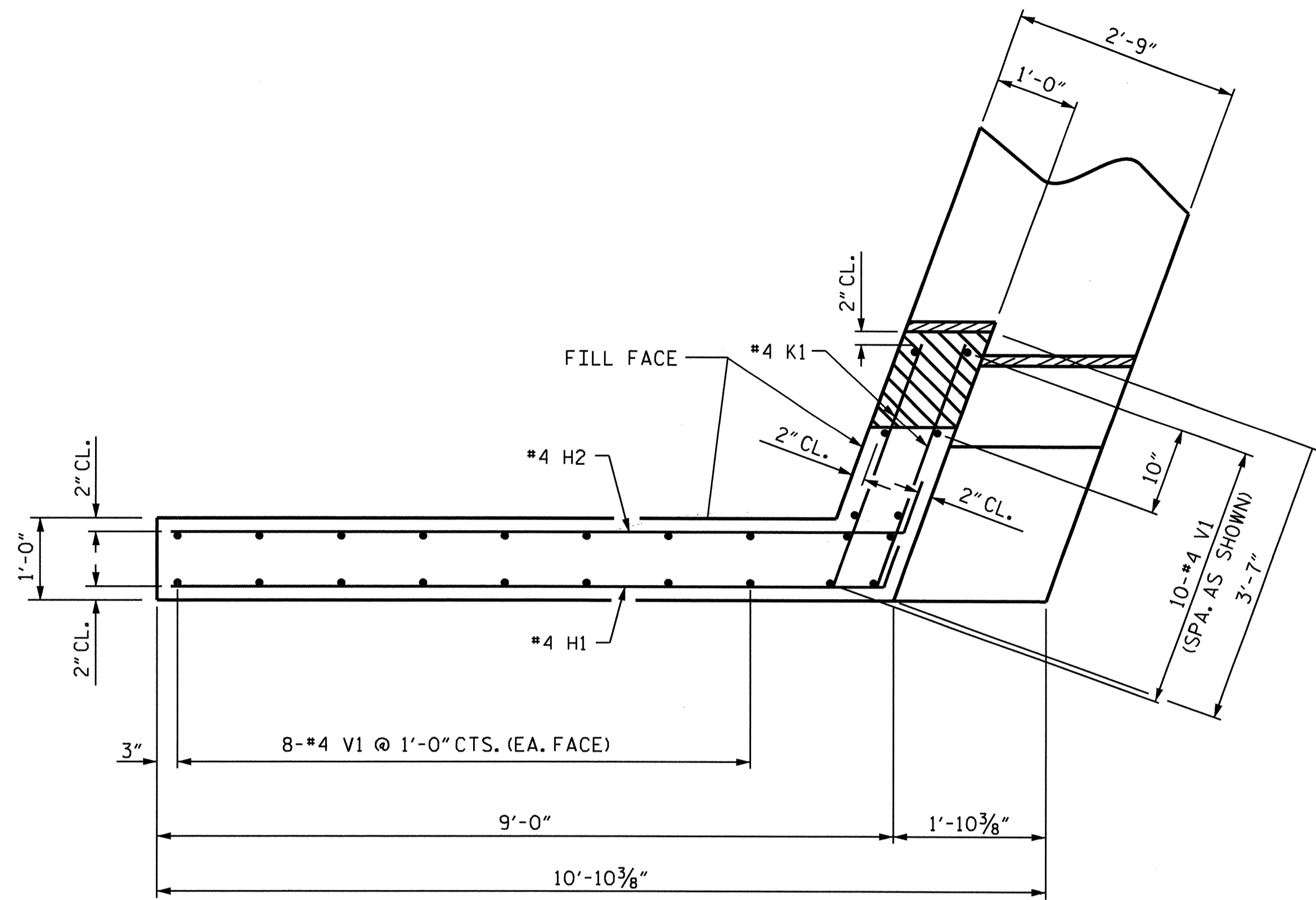
PROJECT NO. B-4428  
BEAUFORT COUNTY  
 STATION: 12+86.00 -L-

SHEET 1 OF 3

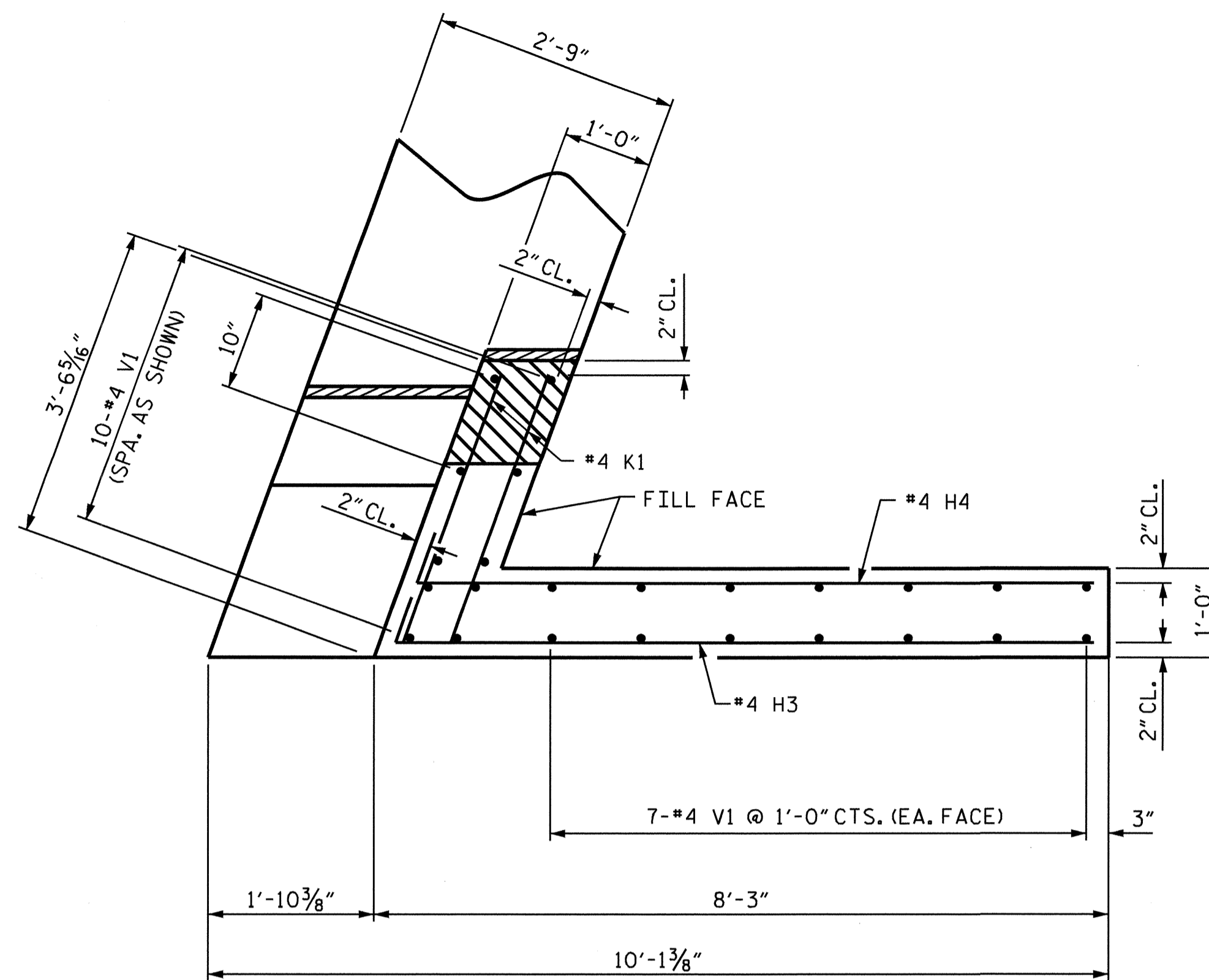
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
END BENT 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		



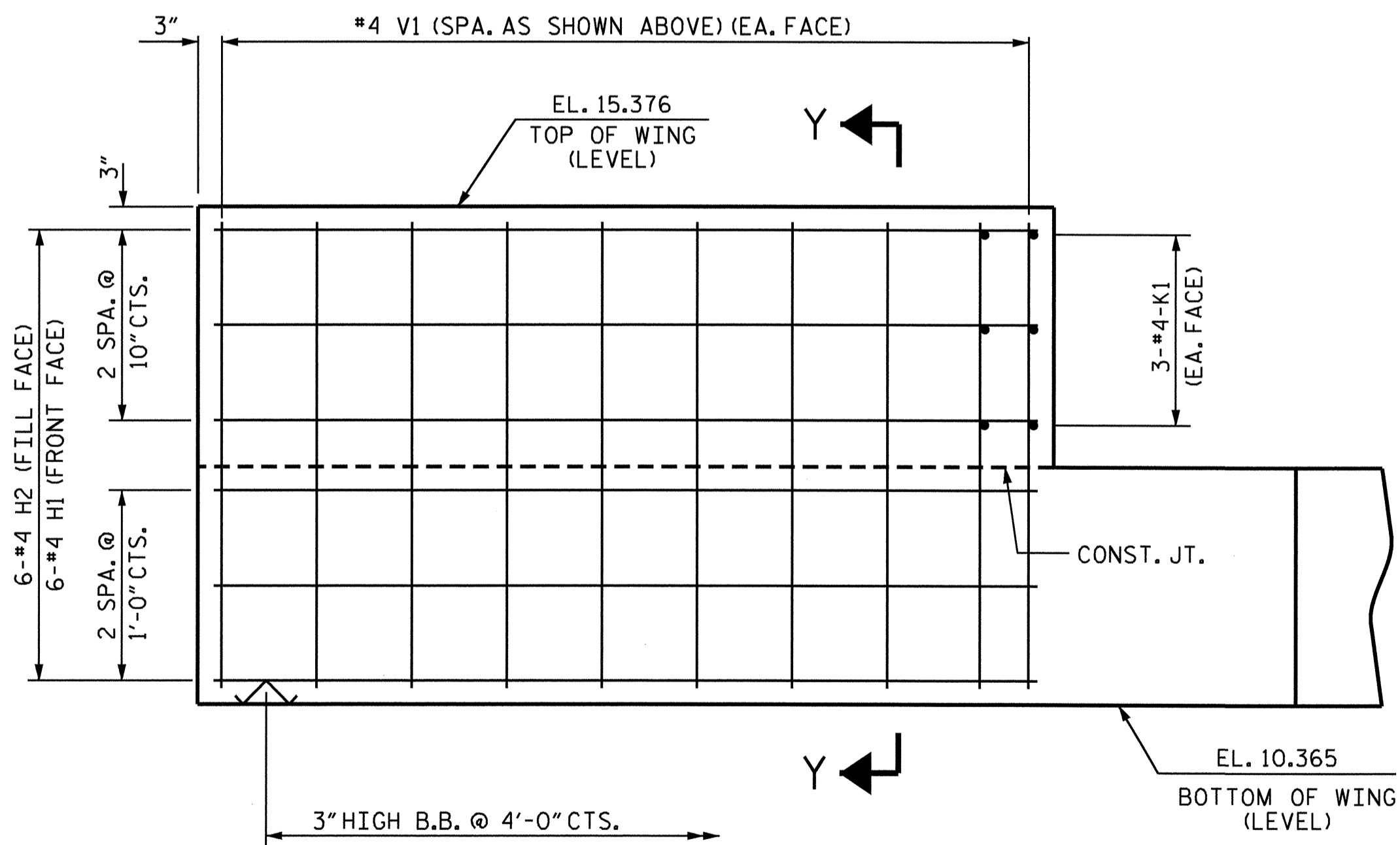
DRAWN BY: RAMAN PATEL DATE: 09/09/09  
 CHECKED BY: HARISH SHAH DATE: 09/16/09



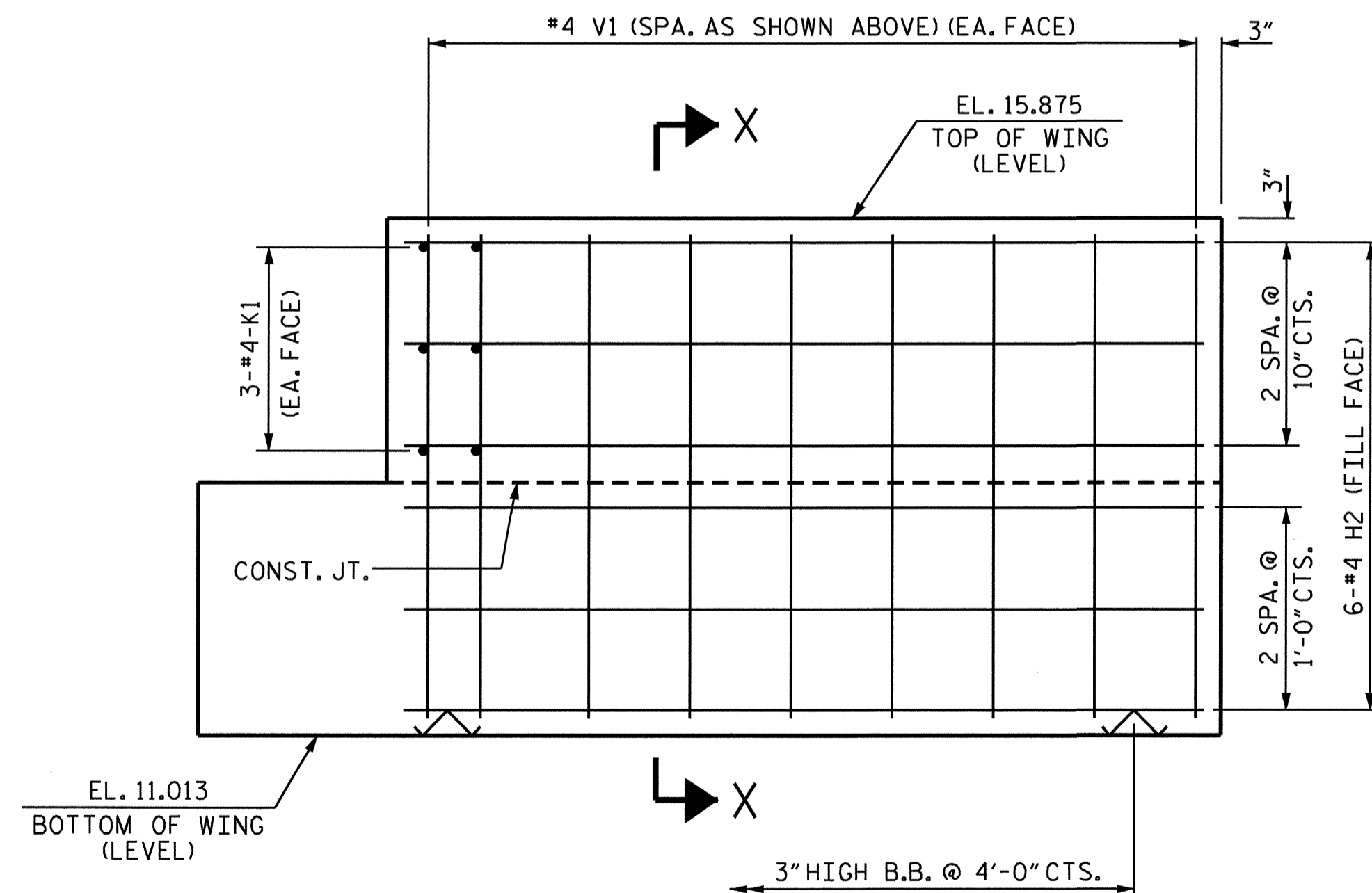
PLAN OF WING (W1)



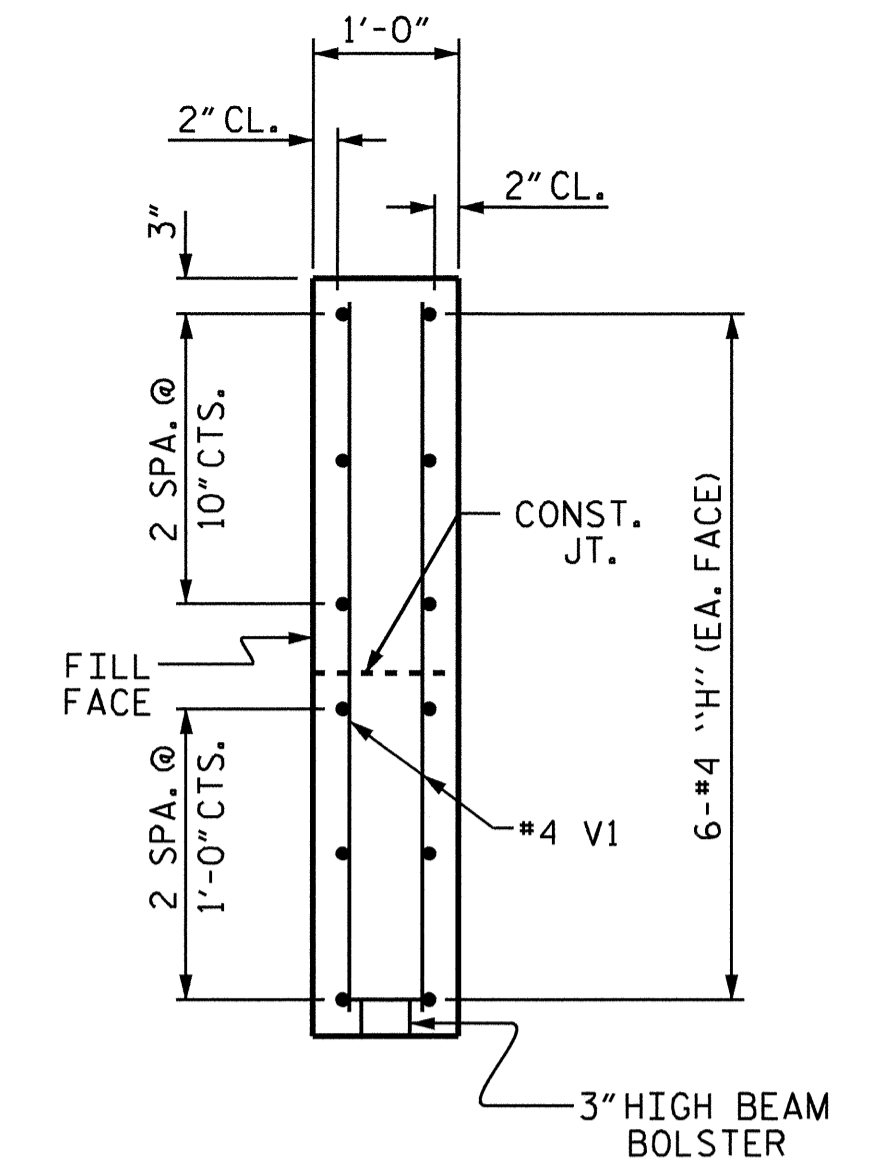
PLAN OF WING (W2)



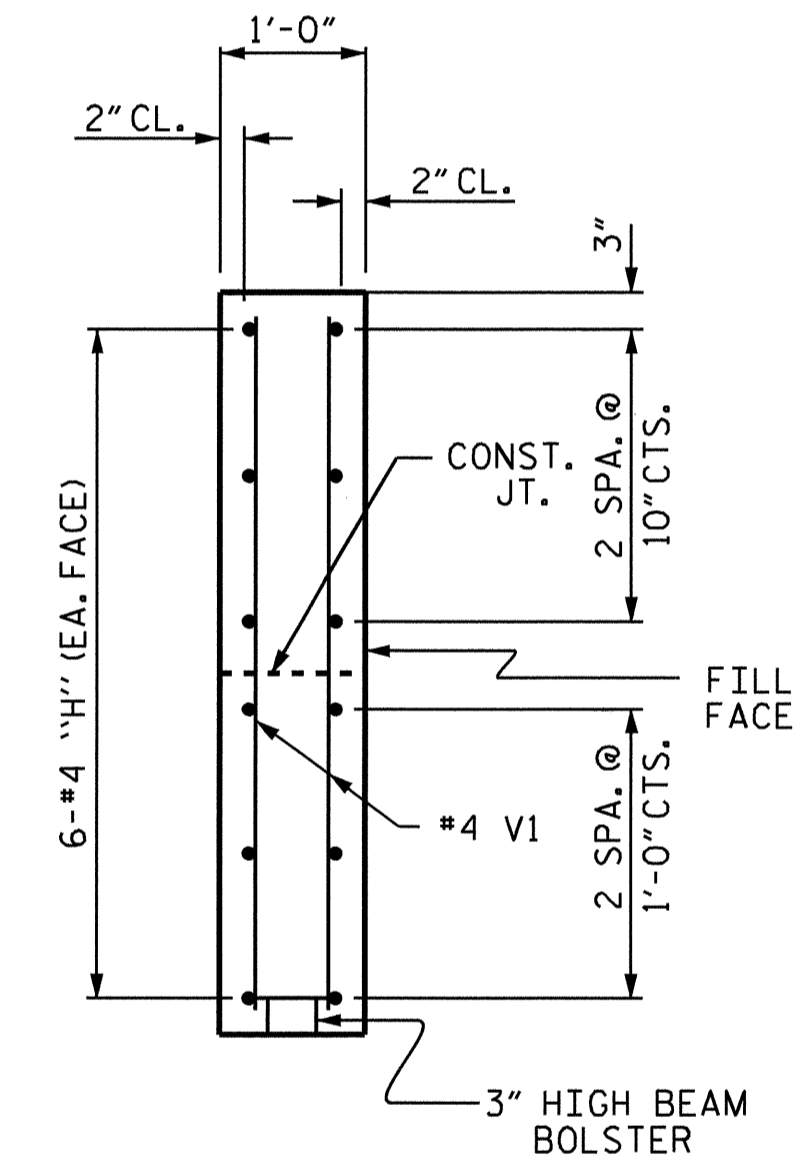
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION X-X



SECTION Y-Y

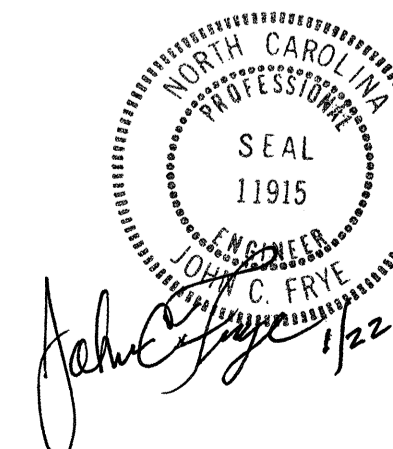
PROJECT NO. B-4428  
 BEAUFORT COUNTY  
 STATION: 12+86.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE

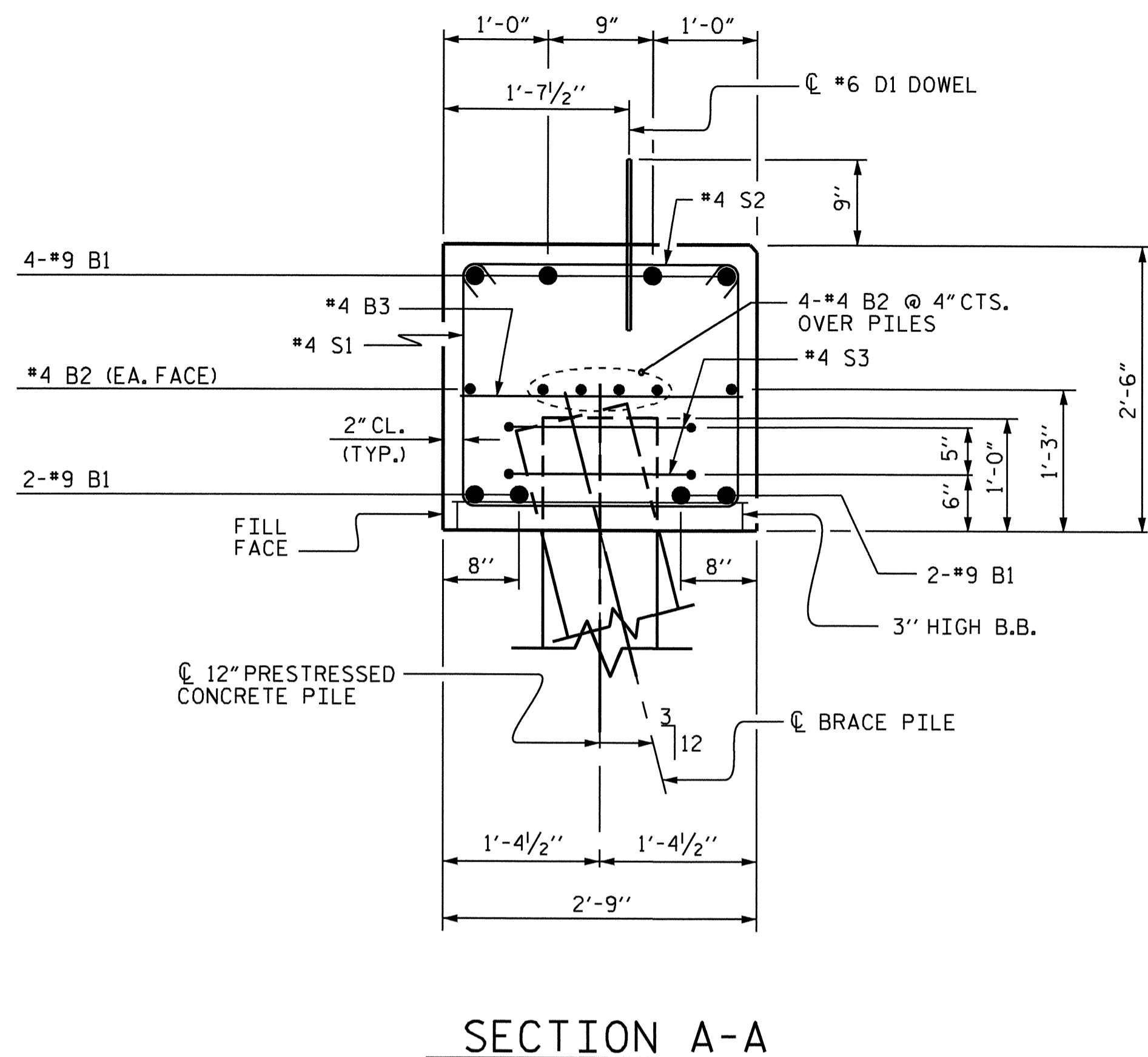
END BENT 2



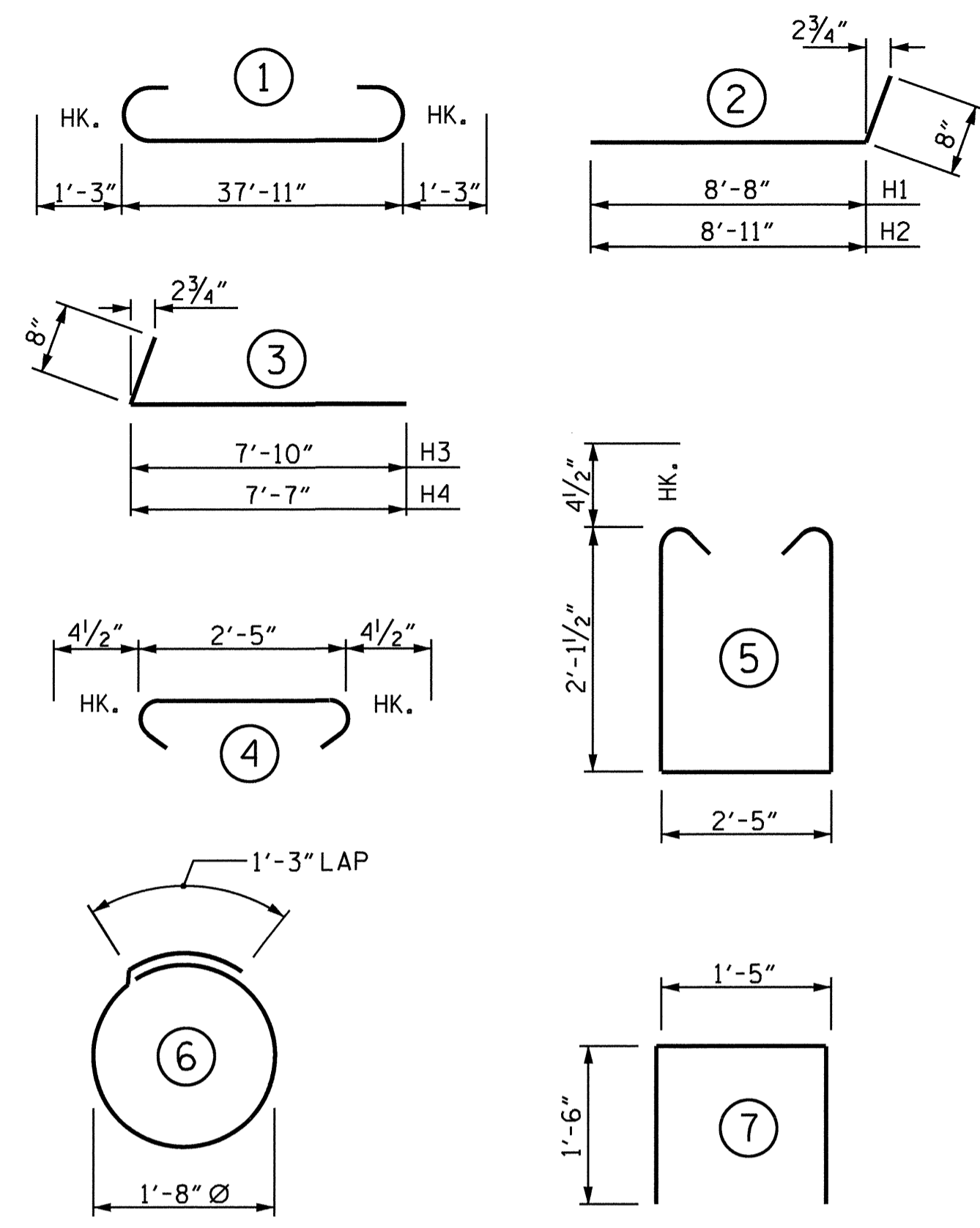
DRAWN BY: RAMAN PATEL DATE: 9/9/09  
 CHECKED BY: HARISH SHAH DATE: 9/15/09

19-JAN-2010 09:28  
 G:\Structures\Final plan\B4428\_SD.E\*.dgn  
 eomile

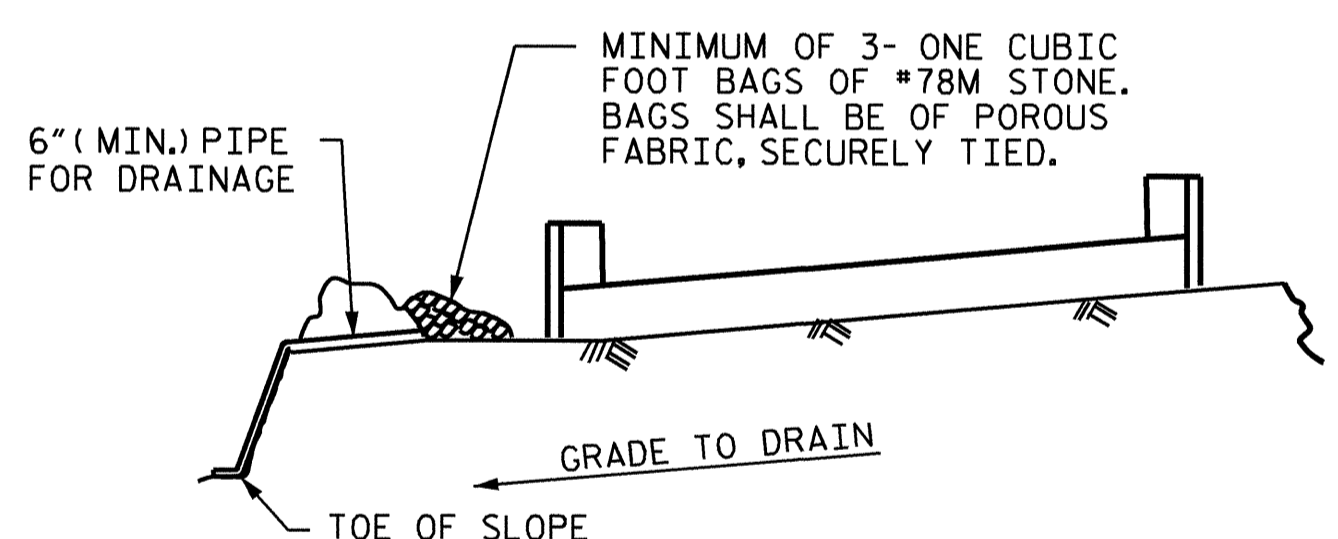
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21	
1			3			TOTAL SHEETS	
2			4			27	



BILL OF MATERIAL					
END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		40'-5"	1099
B2	12	#4	STR	20'-3"	162
B3	10	#4	STR	2'-5"	16
D1	20	#6	STR	1'-6"	45
H1	6	#4		9'-4"	37
H2	6	#4		9'-7"	38
H3	6	#4		8'-6"	34
H4	6	#4		8'-3"	33
K1	12	#4	STR	3'-2"	25
S1	38	#4		7'-5"	188
S2	38	#4		3'-2"	80
S3	10	#4		6'-6"	43
U1	4	#4		4'-5"	12
V1	50	#4	STR	4'-6"	150
REINFORCING STEEL				LBS.	1962
CLASS 'A' CONCRETE					
POUR 1: CAP & LOWER WINGS				* C.Y.	11.0
POUR 2: UPPER WINGS				C.Y.	1.6
POUR 3: (LATERAL GUIDES)				C.Y.	0.1
TOTAL:				C.Y.	12.7
12" PRESTRESSED CONCRETE PILES					
NO. 5				125	LIN. FT.
PILE REDRIVES				EACH	5



ALL BAR DIMENSIONS ARE OUT TO OUT



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

\* CONCRETE DISPLACED BY THE 12" PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED.

PROJECT NO. B-4428  
BEAUFORT COUNTY  
 STATION: 12+86.00 -L-  
 SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT 2



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			27

DRAWN BY : RAMAN PATEL DATE : 9/9/09  
 CHECKED BY : HARISH SHAH DATE : 9/15/09

**NOTES**

CONCRETE DESIGN DATA :  $f'_c = 5,000$  PSI ;  $f'_t = 2,000$  PSI

IMPACT IN HANDLING = 50%

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE PILE SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 3,500 PSI.

IN DRIVING PILES, A METHOD APPROVED BY THE ENGINEER SHALL BE USED, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS TO BE INDICATED WITH A BLACK MARK 2" WIDE.

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 STANDARD SPECIFICATIONS.

THE CONTRACTOR MAY USE EITHER OF THE FOLLOWING STRAND CONFIGURATIONS:

SIZE	GRADE	NUMBER OF STRANDS	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
1/2"	270 L.R.	4	0.153	41,300* PER STRAND	30,980* PER STRAND
1/2"	270 L.R.	5	0.153	41,300* PER STRAND	30,980* PER STRAND

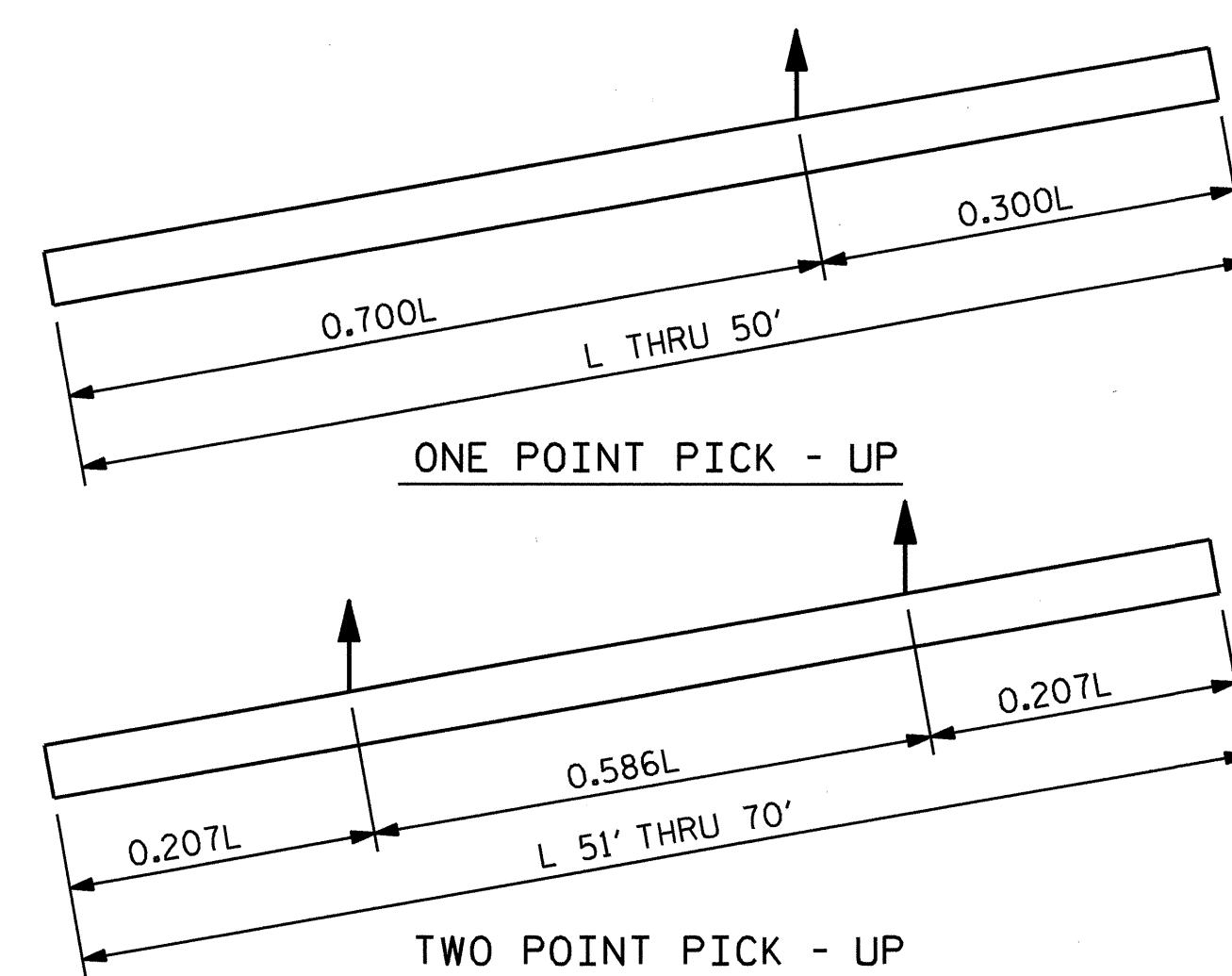
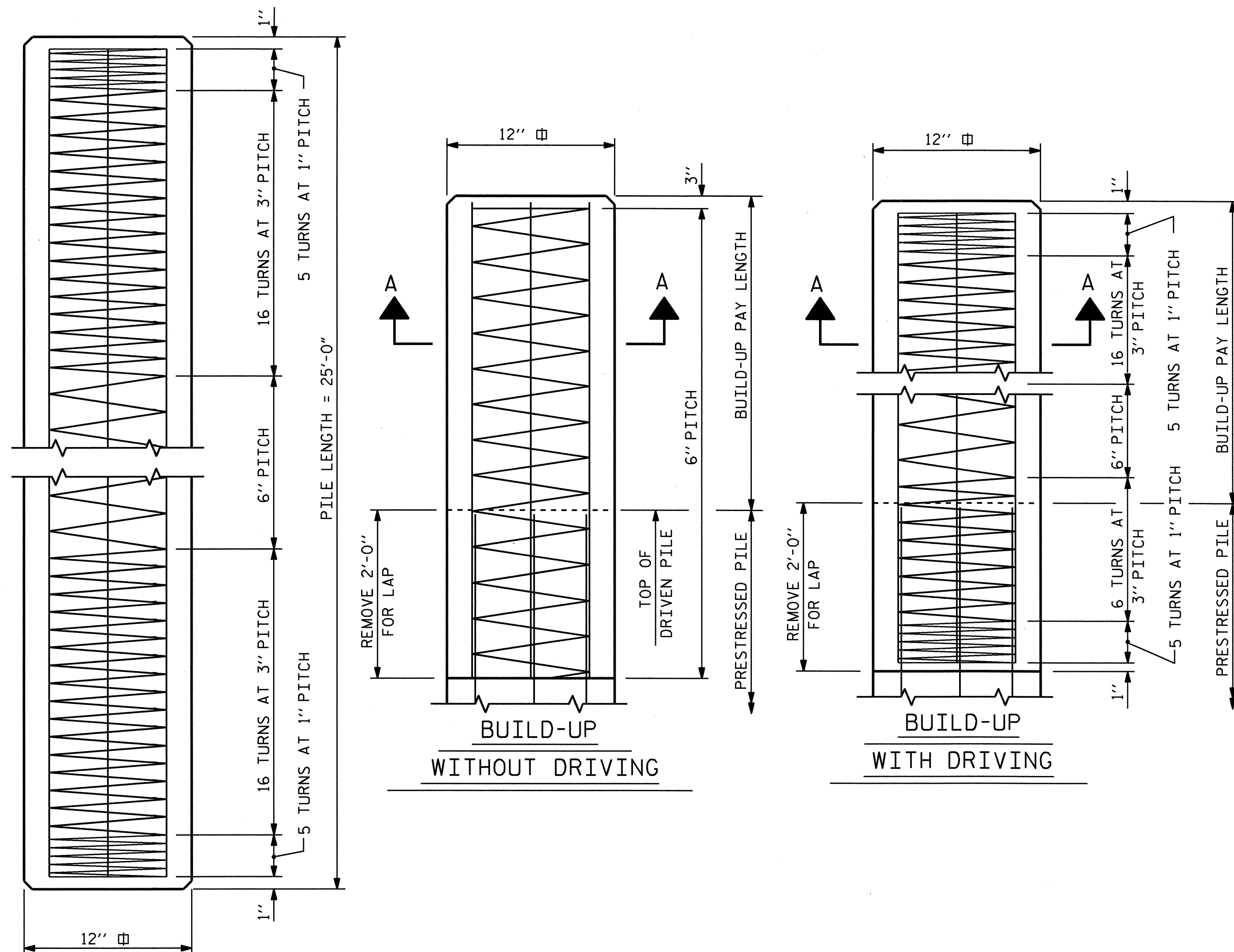
THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN PAIRS, EXCEPT WHERE 5 STRANDS ARE USED THE LAST STRAND MAY BE BURNED SINGLY, ACCORDING TO BURNING PATTERNS SHOWN. NOT MORE THAN 4 STRANDS MAY BE BURNED AT ANY ONE SECTION BEFORE THE SAME STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

BUILD-UPS SHALL BE 'CLASS A' CONCRETE WITH 20% ADDITIONAL CEMENT. NO DRIVING OF THE BUILT-UP PILE WILL BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 3,000 PSI AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

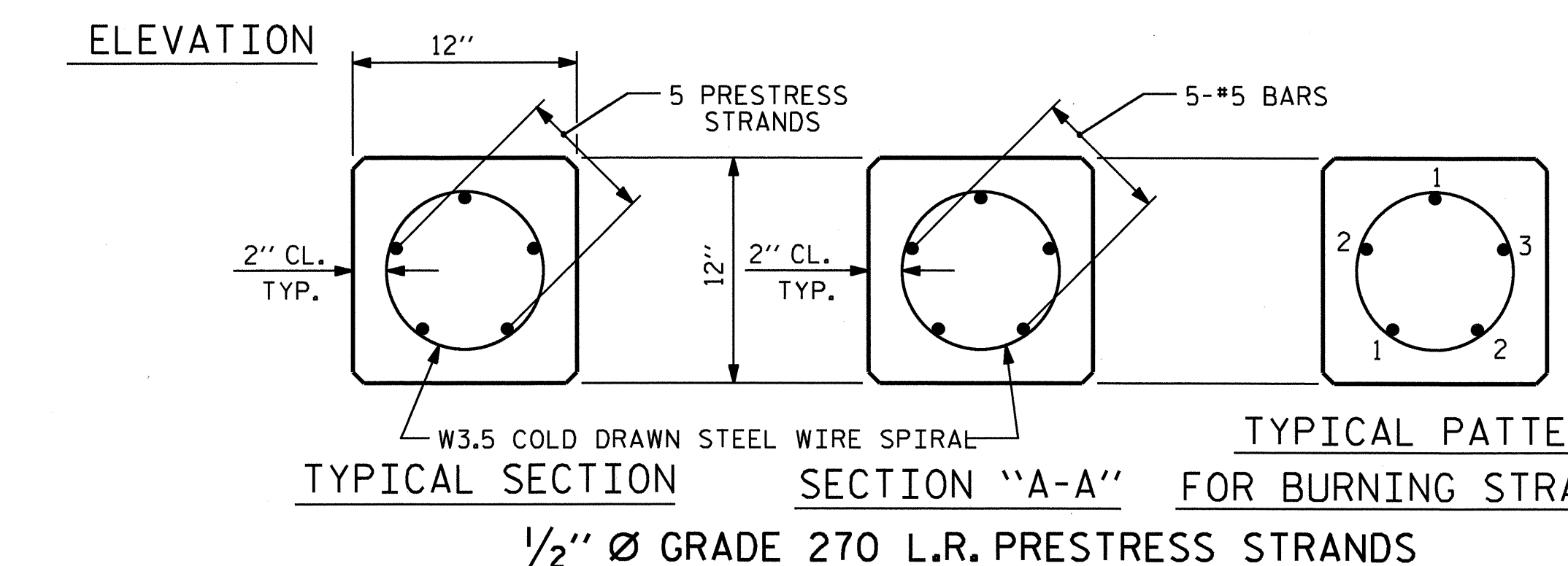
ALL CORNERS TO BE CHAMFERED 3/4".

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

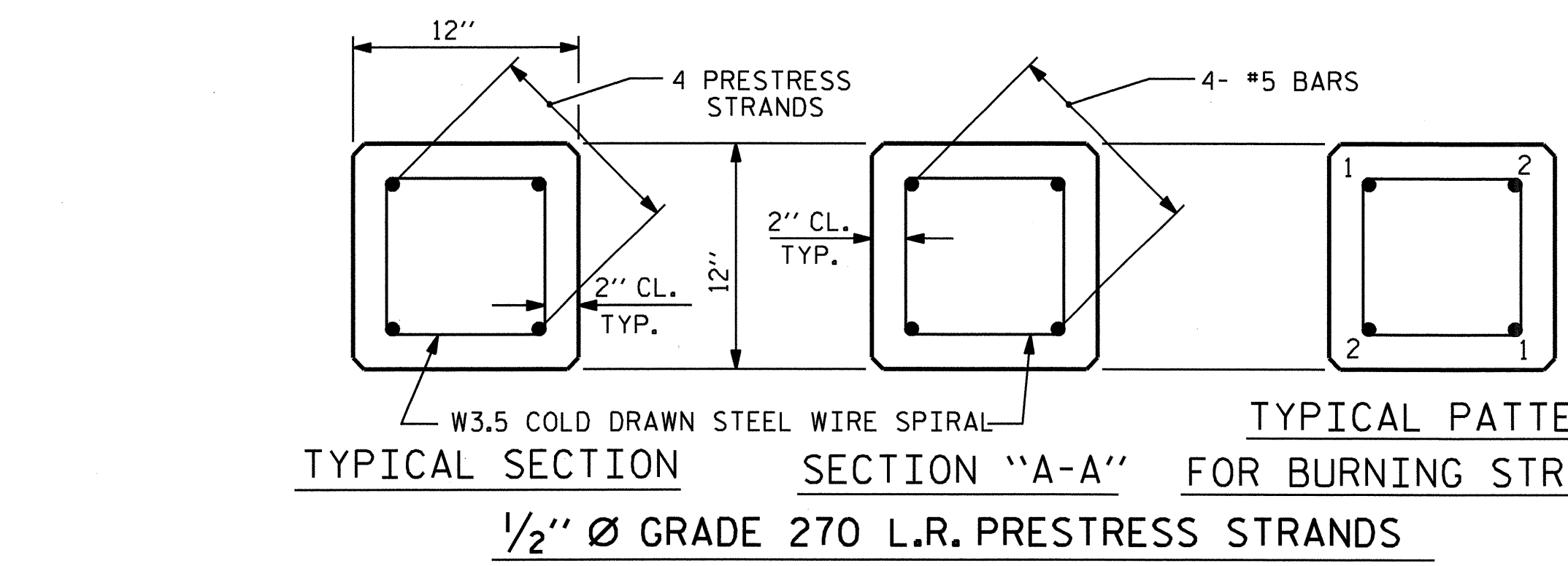


PICK - UP POINTS

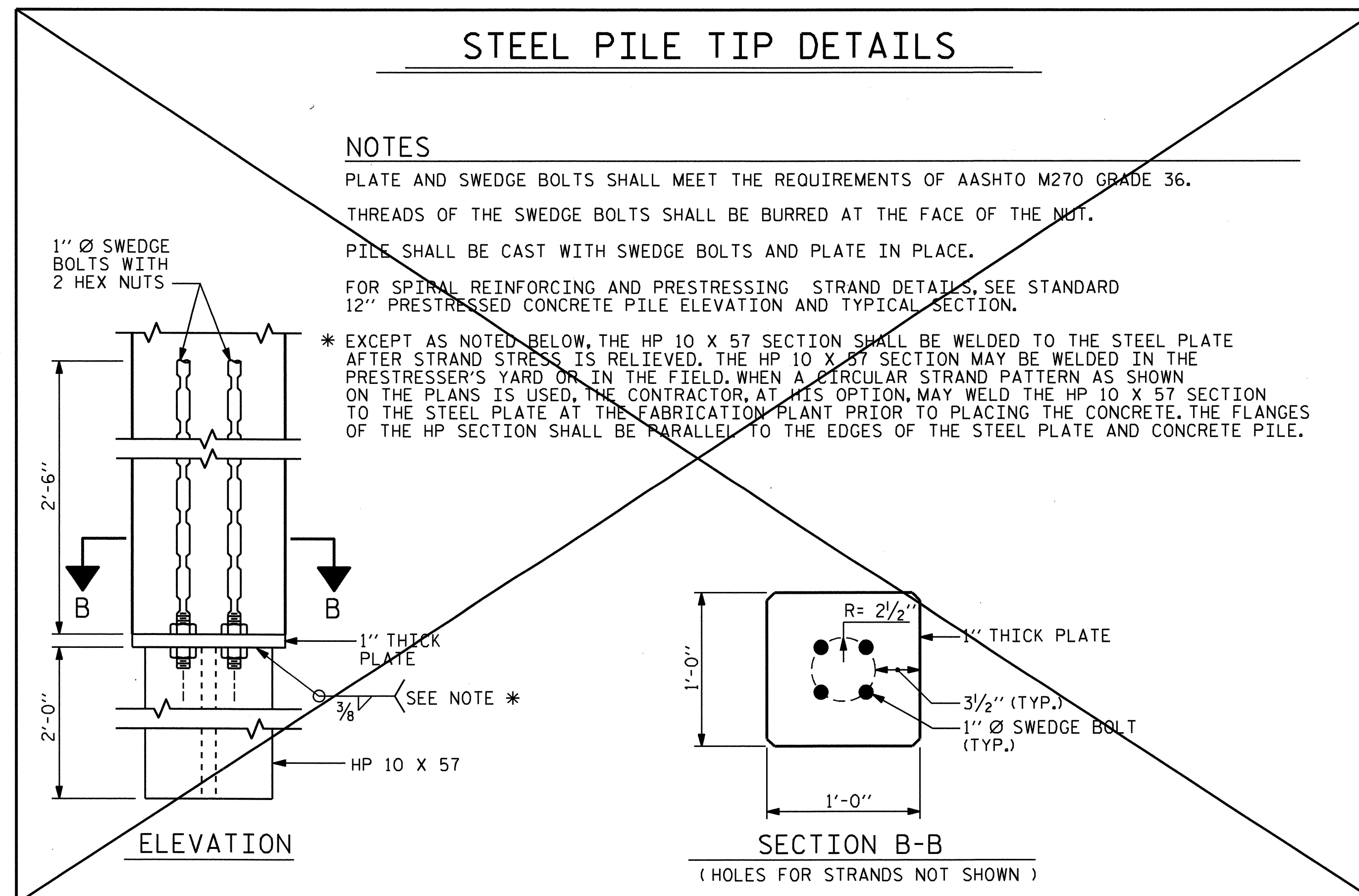
QUANTITIES FOR ONE 12" PRESTRESSED PILE						
LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE PICK-UP POINT		TWO PICK-UP POINT	
			0.300L	0.700L	0.207L	0.586L
25'-0"	0.91	1.85	7'-6"	17'-6"		
30'-0"	1.10	2.22	9'-0"	21'-0"		
35'-0"	1.28	2.59	10'-6"	24'-6"		
40'-0"	1.46	2.96	12'-0"	28'-0"		
45'-0"	1.64	3.33	13'-6"	31'-6"		
50'-0"	1.83	3.70	15'-0"	35'-0"		
55'-0"	2.01	4.07			11'-4 1/2"	32'-3"
60'-0"	2.19	4.44			12'-5"	35'-2"
65'-0"	2.37	4.81			13'-5 1/2"	38'-1"
70'-0"	2.56	5.18			14'-6"	41'-0"



TYPICAL SECTION SECTION "A-A" FOR BURNING STRANDS  
1/2" Ø GRADE 270 L.R. PRESTRESS STRANDS



TYPICAL SECTION SECTION "A-A" FOR BURNING STRANDS  
1/2" Ø GRADE 270 L.R. PRESTRESS STRANDS



**NOTES**

PLATE AND SWEDGE BOLTS SHALL MEET THE REQUIREMENTS OF AASHTO M270 GRADE 36. THREADS OF THE SWEDGE BOLTS SHALL BE BURRED AT THE FACE OF THE NUT. PILE SHALL BE CAST WITH SWEDGE BOLTS AND PLATE IN PLACE. FOR SPIRAL REINFORCING AND PRESTRESSING STRAND DETAILS, SEE STANDARD 12" PRESTRESSED CONCRETE PILE ELEVATION AND TYPICAL SECTION. \* EXCEPT AS NOTED BELOW, THE HP 10 X 57 SECTION SHALL BE WELDED TO THE STEEL PLATE AFTER STRAND STRESS IS RELIEVED. THE HP 10 X 57 SECTION MAY BE WELDED IN THE PRESTRESSER'S YARD OR IN THE FIELD, WHEN A CIRCULAR STRAND PATTERN AS SHOWN ON THE PLANS IS USED, THE CONTRACTOR, AT HIS OPTION, MAY WELD THE HP 10 X 57 SECTION TO THE STEEL PLATE AT THE FABRICATION PLANT PRIOR TO PLACING THE CONCRETE. THE FLANGES OF THE HP SECTION SHALL BE PARALLEL TO THE EDGES OF THE STEEL PLATE AND CONCRETE PILE.



PROJECT NO. B-4428  
BEAUFORT COUNTY  
 STATION: 12+86.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD 12" PRESTRESSED CONCRETE PILE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

ASSEMBLED BY : RAMAN PATEL	DATE : 09/14/09
CHECKED BY : HARISH SHAH	DATE : 09/18/09
DRAWN BY : FCJ 7/88	REV. 7/17/98 RWW/LES
CHECKED BY : CRK 3/89	REV. 8/16/99R RWW/LES
	REV. 5/1/06 TLA/GM



**NOTES**

CONCRETE DESIGN DATA :  $f'_c = 5,000$  PSI ;  $f_c = 2,000$  PSI  
 IMPACT IN HANDLING = 50%  
 THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE PILE SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 3,500 PSI.  
 IN DRIVING PILES, A METHOD APPROVED BY THE ENGINEER SHALL BE USED, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.  
 PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.  
 WHERE CAST - IN - PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS TO BE INDICATED WITH A BLACK MARK 2" WIDE.  
 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 STANDARD SPECIFICATIONS.

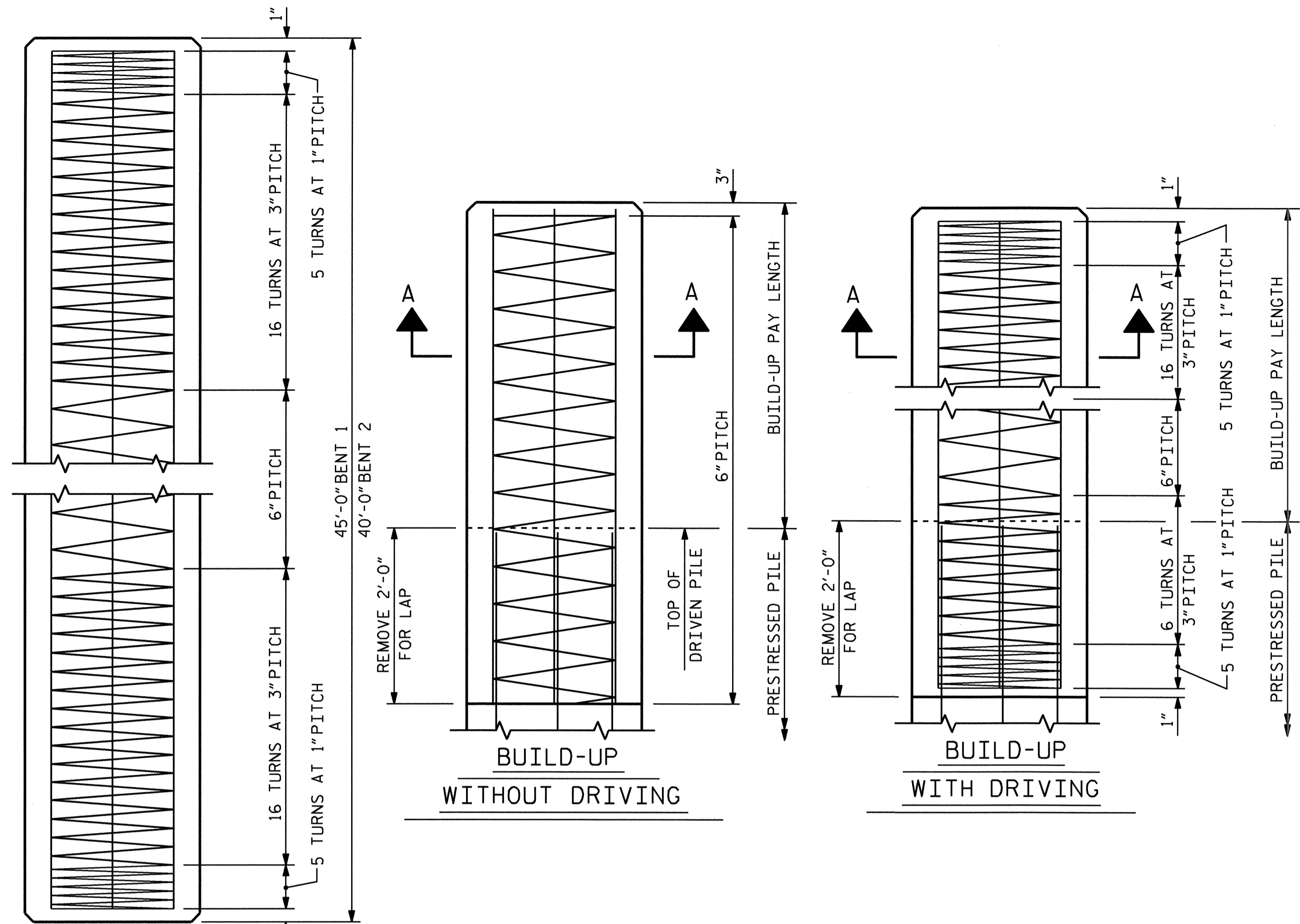
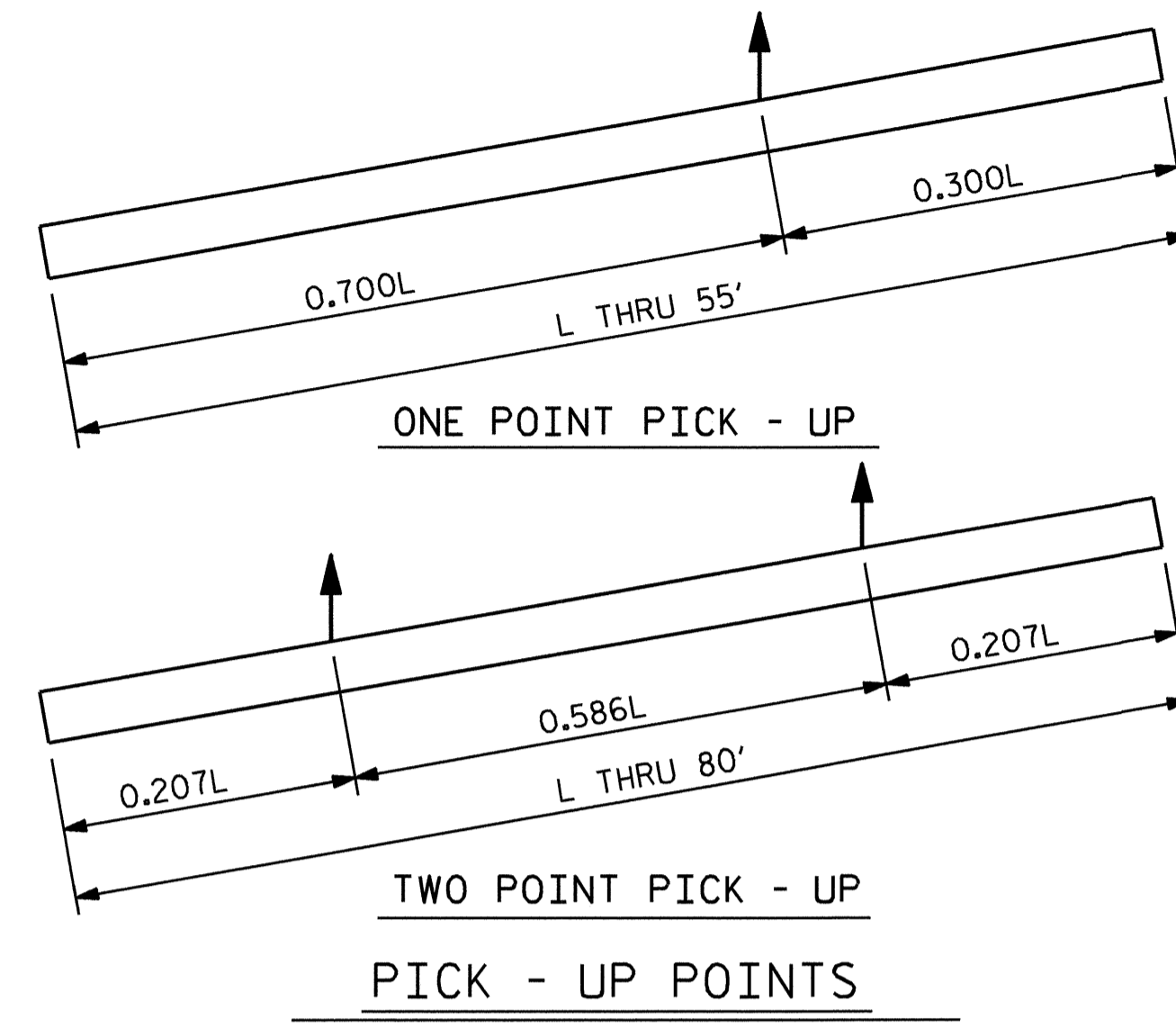
THE CONTRACTOR SHALL USE THE FOLLOWING STRAND TYPE:

SIZE	GRADE	NUMBER OF STRANDS	AREA SQ. IN.	ULTIMATE STRENGTH LBS.	APPLIED PRESTRESS FORCE LBS.
1/2"	270 L.R.	8	0.153	41,300 PER STRAND	30,980 PER STRAND

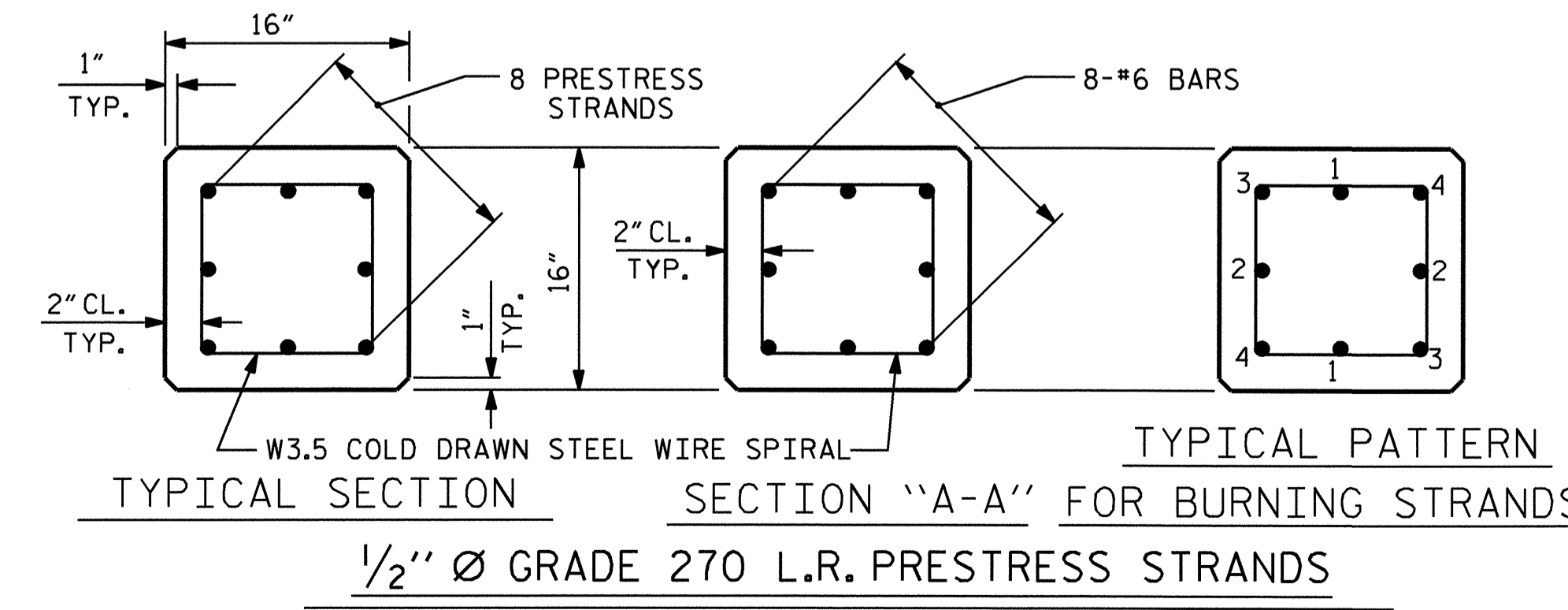
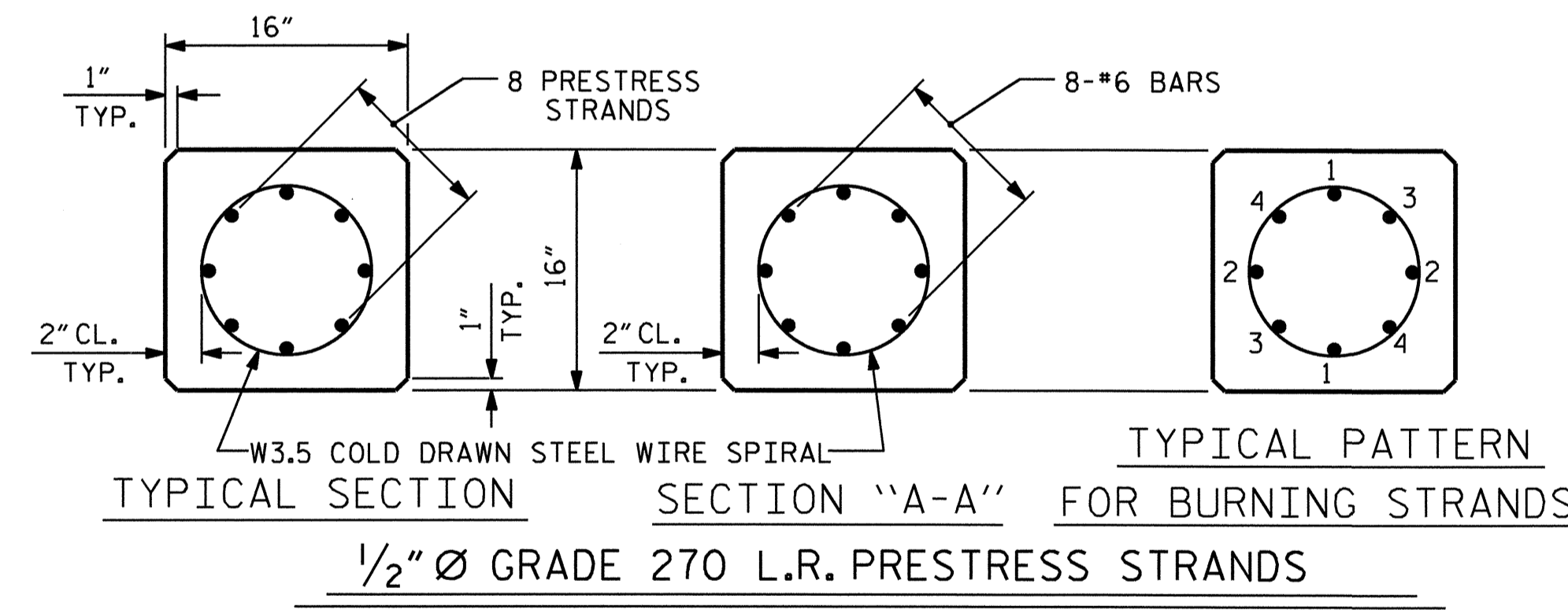
THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.  
 IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN OPPOSITE PAIRS AS INDICATED IN THE TYPICAL PATTERN SHOWN. FOR ANY NUMBER OF STRANDS BURN IN OPPOSITE PAIRS AND SYMMETRICAL ABOUT BOTH VERTICAL AND HORIZONTAL AXES. STRANDS 1-1 SHALL BE BURNED BEFORE 2-2, ETC. NOT MORE THAN 4 STRANDS, SAY 3-3 AND 4-4, MAY BE BURNED AT ANY ONE SECTION BEFORE THESE SAME PAIRS OF STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

BUILD-UPS SHALL BE 'CLASS A' CONCRETE WITH 20% ADDITIONAL CEMENT. NO DRIVING OF THE BUILT-UP PILE WILL BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 3,000 PSI AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.



ELEVATION



LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE POINT PICK-UP		TWO POINT PICK-UP	
			0.300L	0.700L	0.207L	0.586L
25'-0"	1.63	3.31	7'-6"	17'-6"	5'-2"	14'-8"
30'-0"	1.96	3.97	9'-0"	21'-0"	6'-2 1/2"	17'-7"
35'-0"	2.29	4.63	10'-6"	24'-6"	7'-3"	20'-6"
40'-0"	2.61	5.29	12'-0"	28'-0"	8'-3 1/2"	23'-5"
45'-0"	2.94	5.95	13'-6"	31'-6"	9'-4"	26'-4"
50'-0"	3.27	6.61	15'-0"	35'-0"	10'-4"	29'-4"
55'-0"	3.59	7.28	16'-6"	38'-6"	11'-4 1/2"	32'-3"
60'-0"	3.92	7.94			12'-5"	35'-2"
65'-0"	4.25	8.60			13'-5 1/2"	38'-1"
70'-0"	4.57	9.26			14'-6"	41'-0"
75'-0"	4.90	9.92			15'-6 1/2"	43'-11"
80'-0"	5.23	10.58			16'-7"	46'-10"

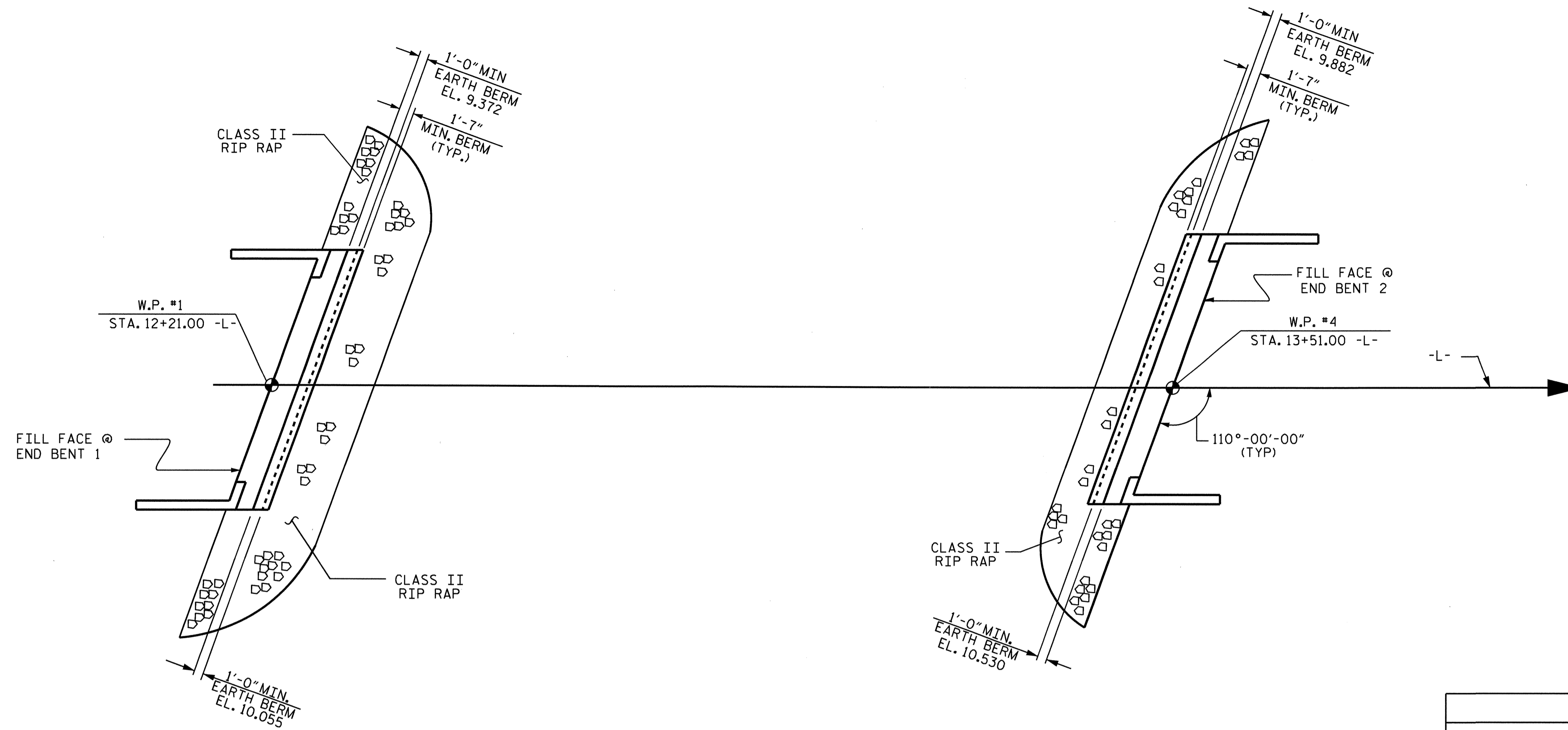
PROJECT NO. B-4428  
BEAUFORT COUNTY  
 STATION: 12+86.00 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 16" PRESTRESSED  
 CONCRETE PILE

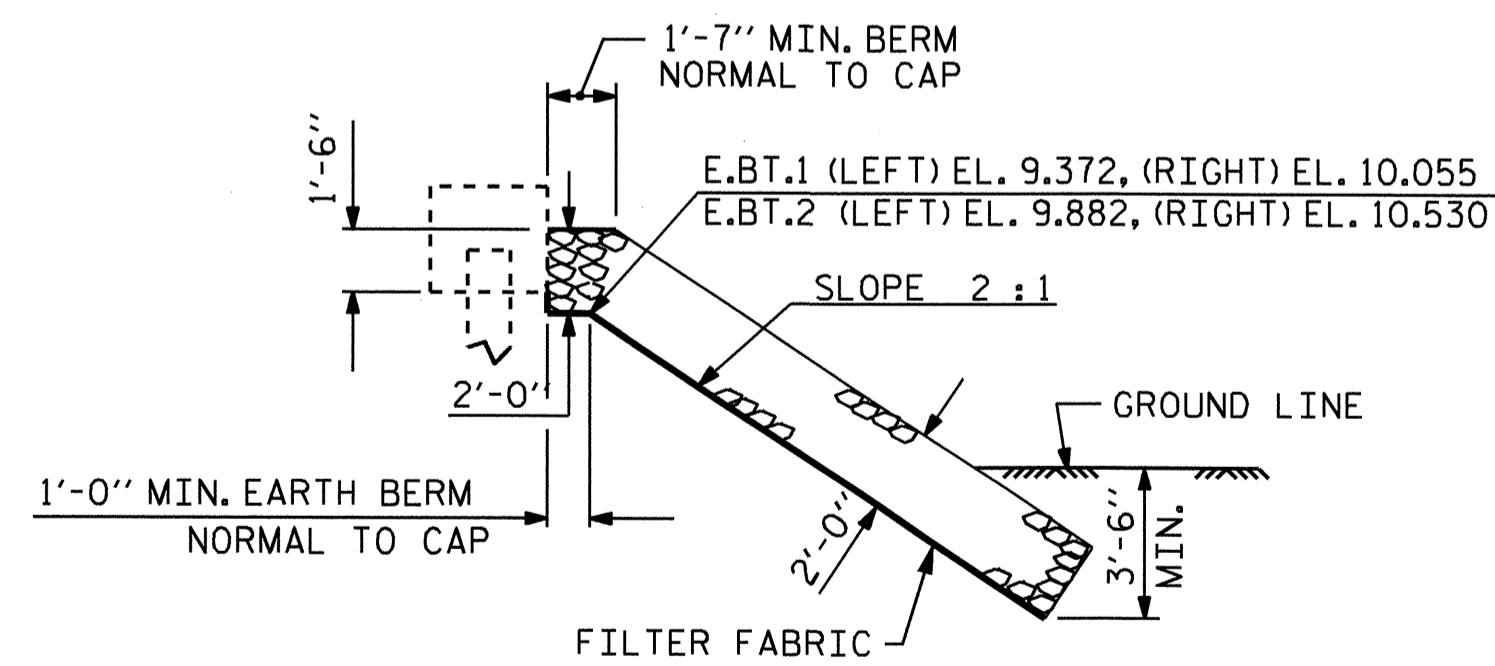
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			27



ASSEMBLED BY : OT NGUYEN DATE : 9-09  
 CHECKED BY : RAMAN PATEL DATE : 9-17-09  
 DRAWN BY : RH 9/98 ADDED 12/2/98  
 CHECKED BY : LES 10/98 REV. 8/16/99RR RWW/LES  
 REV. 5/1/06 TLA/GM



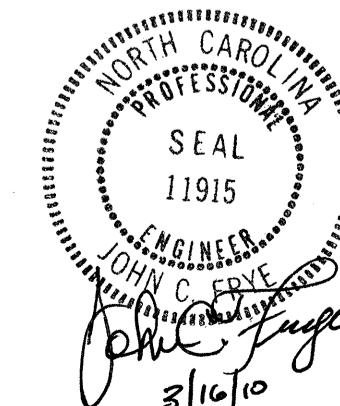
ESTIMATED QUANTITIES		
BRIDGE @ STA. 12+86.00 -L-	CLASS II RIP RAP	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	77	85
END BENT 2	58	65



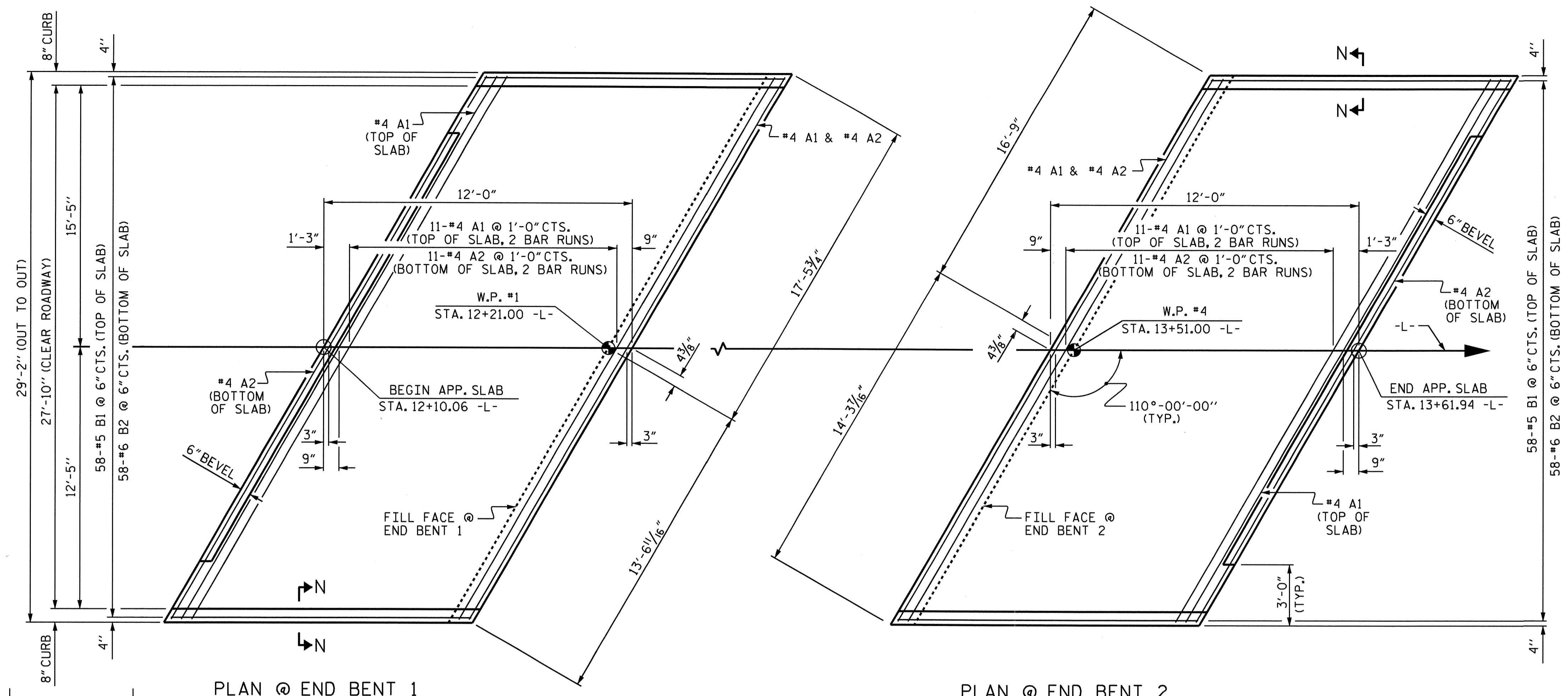
SECTION  
BERM RIP RAPPED

PROJECT NO. B-4428  
BEAUFORT COUNTY  
 STATION: 12+86.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
—RIP RAP DETAILS—					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-25
TOTAL SHEETS					27



DRAWN BY : Z. H. BROWN DATE : 6/19/09  
 CHECKED BY : HARISH SHAH DATE : 7/23/09



PLAN @ END BENT 1

PLAN @ END BENT 2

\*\* DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

SPLICE CHART		
#4 A1	2'-0"	
#4 A2	1'-9"	

BILL OF MATERIAL						
APPROACH SLAB AT EB 1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	26	#4	STR	16'-4"	284	
A2	26	#4	STR	16'-4"	284	
*B1	58	#5	STR	11'-2"	676	
B2	58	#6	STR	11'-8"	1016	
REINFORCING STEEL					LBS.	1300
* EPOXY COATED REINFORCING STEEL					LBS.	960
CLASS AA CONCRETE					C. Y.	16.1
APPROACH SLAB AT EB 2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	26	#4	STR	16'-4"	284	
A2	26	#4	STR	16'-4"	284	
*B1	58	#5	STR	11'-2"	676	
B2	58	#6	STR	11'-8"	1016	
REINFORCING STEEL					LBS.	1300
* EPOXY COATED REINFORCING STEEL					LBS.	960
CLASS AA CONCRETE					C. Y.	16.1

NOTES

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

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

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

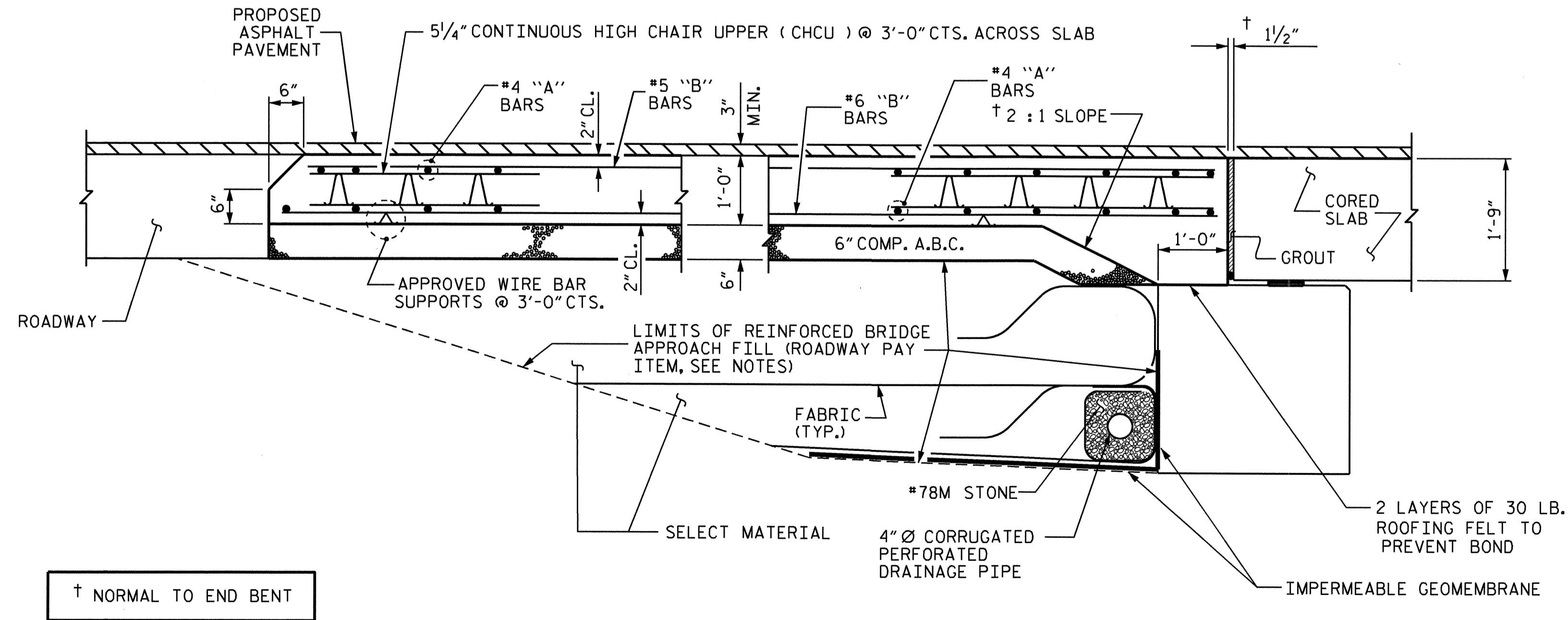
THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

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

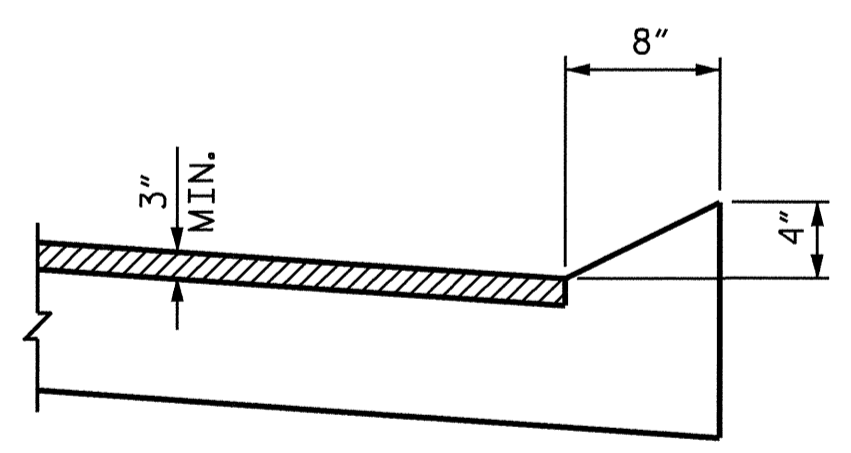
FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE CORED SLAB UNIT" SHEETS.

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

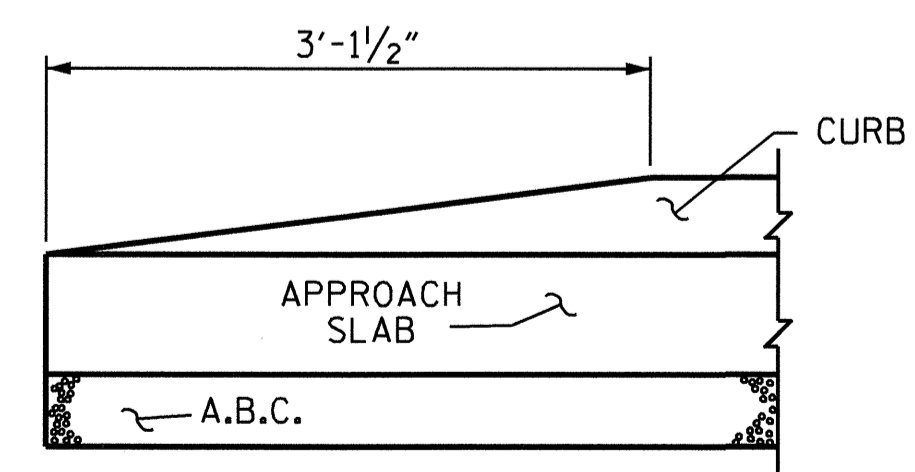
APPROACH SLAB GROOVING IS NOT REQUIRED.



SECTION THRU SLAB



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

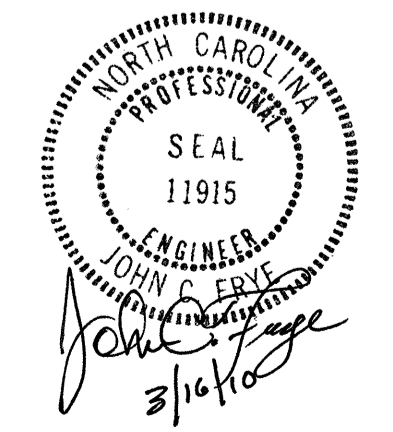
PROJECT NO. B-4428  
 BEAUFORT COUNTY  
 STATION: 12+86.00 -L-

SHEET 1 OF 2

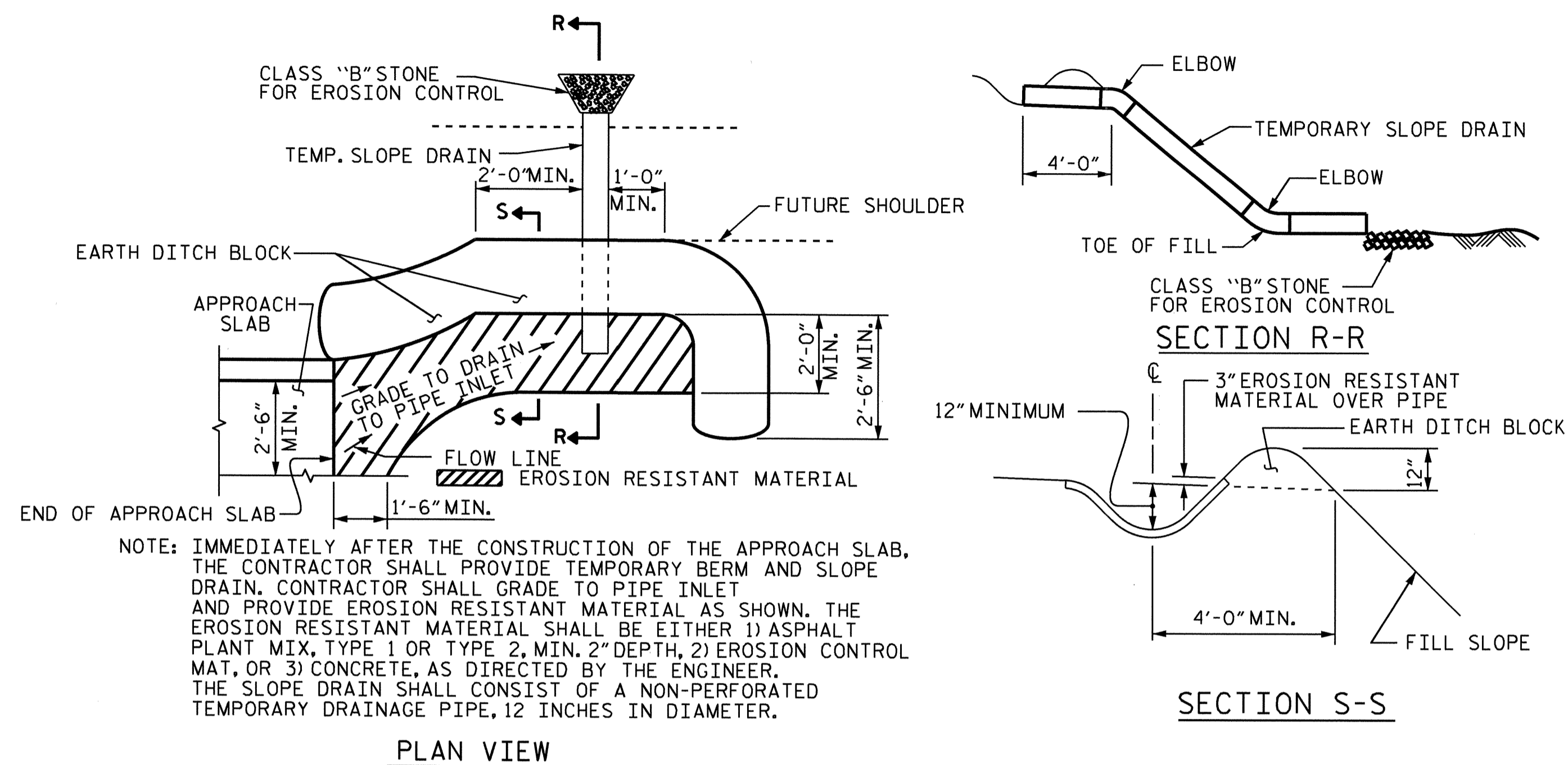
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 BRIDGE APPROACH SLAB  
 FOR PRESTRESSED CONCRETE  
 CORED SLAB

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

TOTAL SHEETS 27

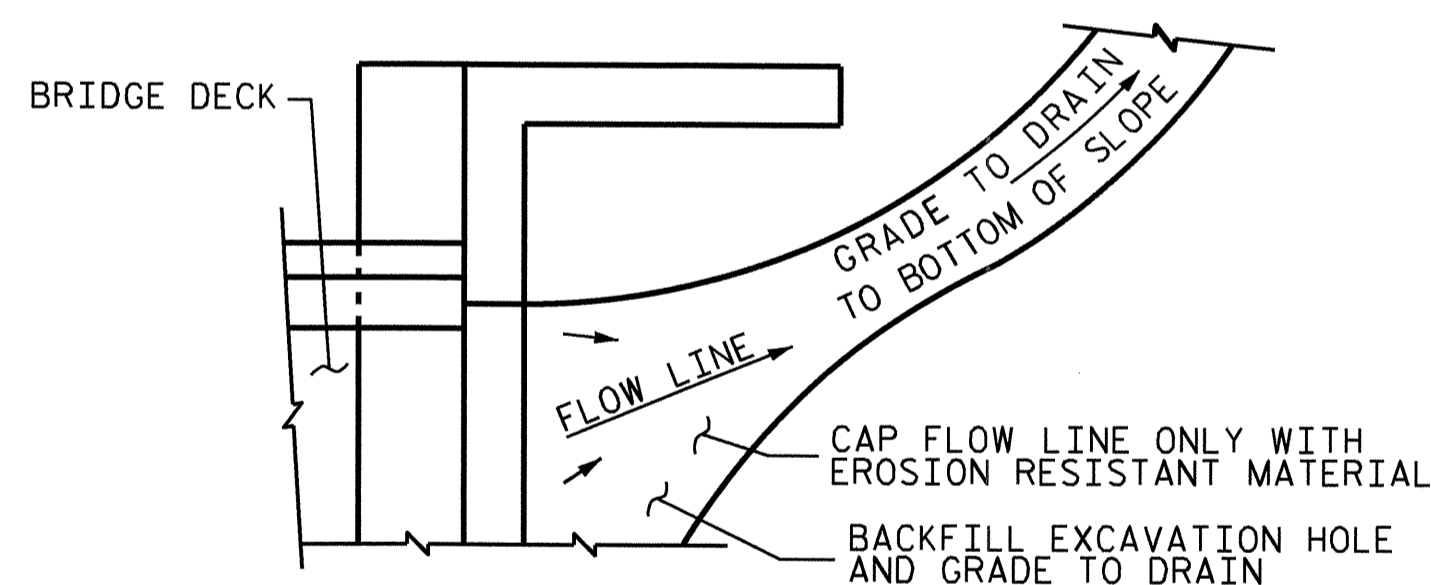


ASSEMBLED BY : Z.H. BROWN DATE : 6/18/09  
 CHECKED BY : HARISH SHAH DATE : 7/23/09  
 DRAWN BY : FCJ 6/87 REV. 7/10/01 LES/RDR  
 CHECKED BY : EGA 6/87 REV. 5/7/03R RWW/JTE  
 REV. 5/1/06R KMM/GM



**TEMPORARY BERM AND SLOPE DRAIN DETAILS**

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



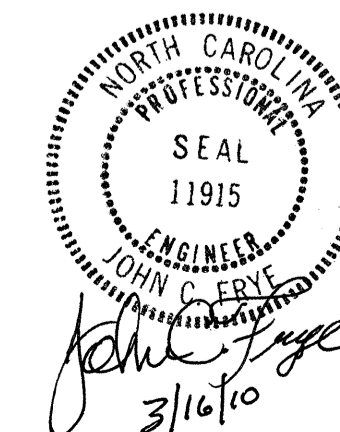
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

**TEMPORARY DRAINAGE DETAIL**

PROJECT NO. B-4428  
BEAUFORT COUNTY  
 STATION: 12+86.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-27
STANDARD BRIDGE APPROACH SLAB DETAILS						TOTAL SHEETS 27
REVISIONS						NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 27
2			4			



ASSEMBLED BY : Z. H. BROWN	DATE : 6/18/09
CHECKED BY : HARISH SHAH	DATE : 7/23/09
DRAWN BY : FCJ	11/88
CHECKED BY : ARB	11/88
REV. 10/17/00	RWW/LES
REV. 5/7/03	RWW/JTE
REV. 5/1/06R	MAA/KMM

## STANDARD NOTES

### DESIGN DATA:

SPECIFICATIONS	-----	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	-----	SEE PLANS
IMPACT ALLOWANCE	-----	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF		
STRUCTURAL STEEL - AASHTO M270 GRADE 36	-	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	-	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	-	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION		
GRADE 60	--	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	-----	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	-----	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR		
UNTREATED - EXTREME FIBER STRESS	-----	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	-----	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	-----	30 LBS. PER CU. FT. (MINIMUM)

### MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2006 STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

### CONCRETE:

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

### CONCRETE CHAMFERS:

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

### DOWELS:

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

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

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

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

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

### REINFORCING STEEL:

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

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

### STRUCTURAL STEEL:

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

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16" INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

### HANDRAILS AND POSTS:

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

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

### SPECIAL NOTES:

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

# ENGLISH

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