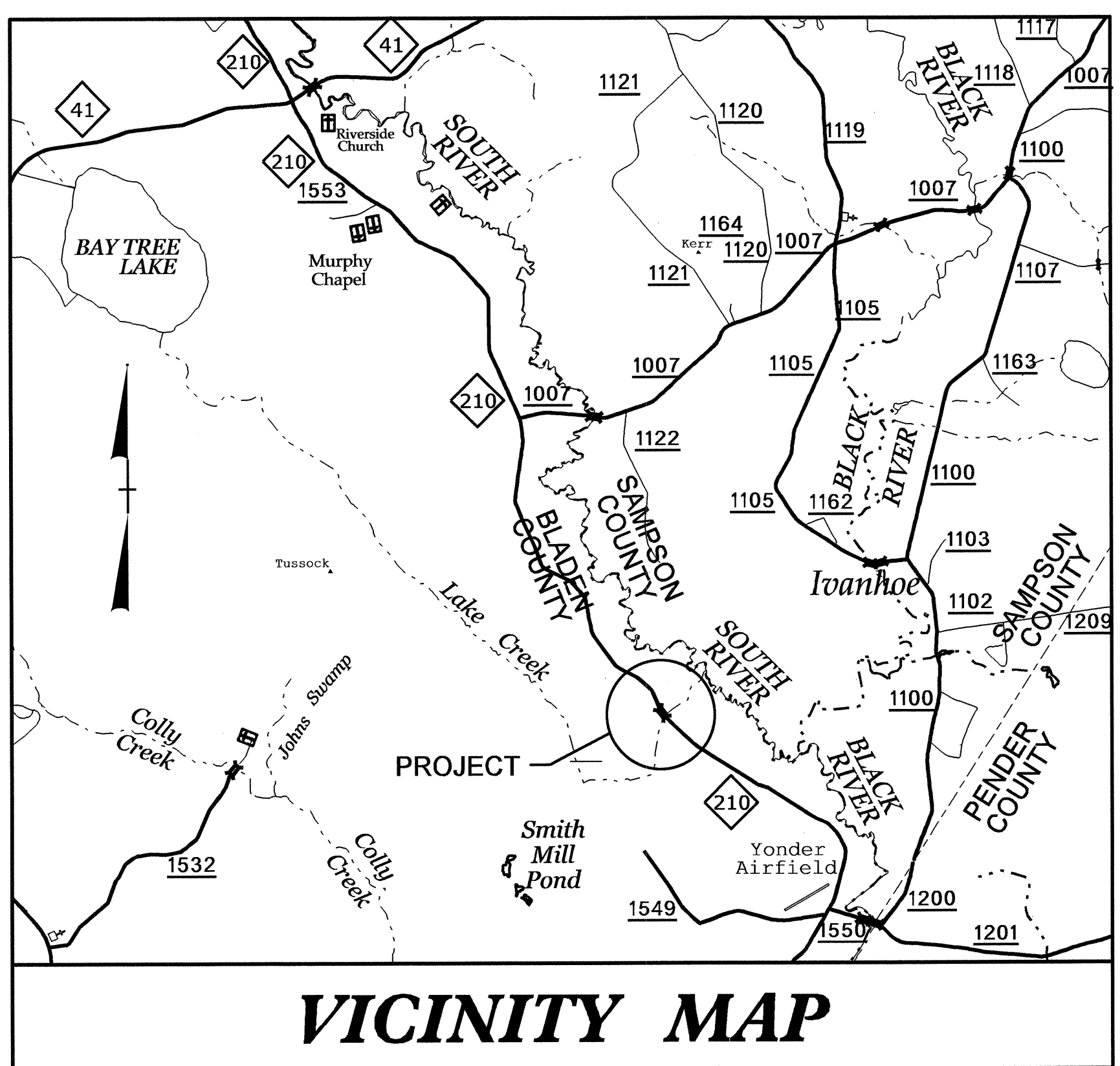
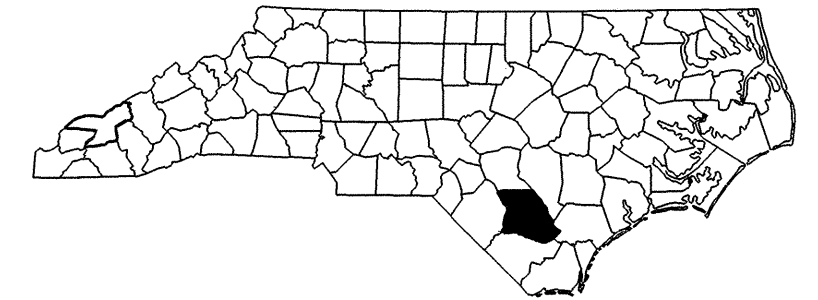


CONTRACT: C203459 TIP NO: B-5117

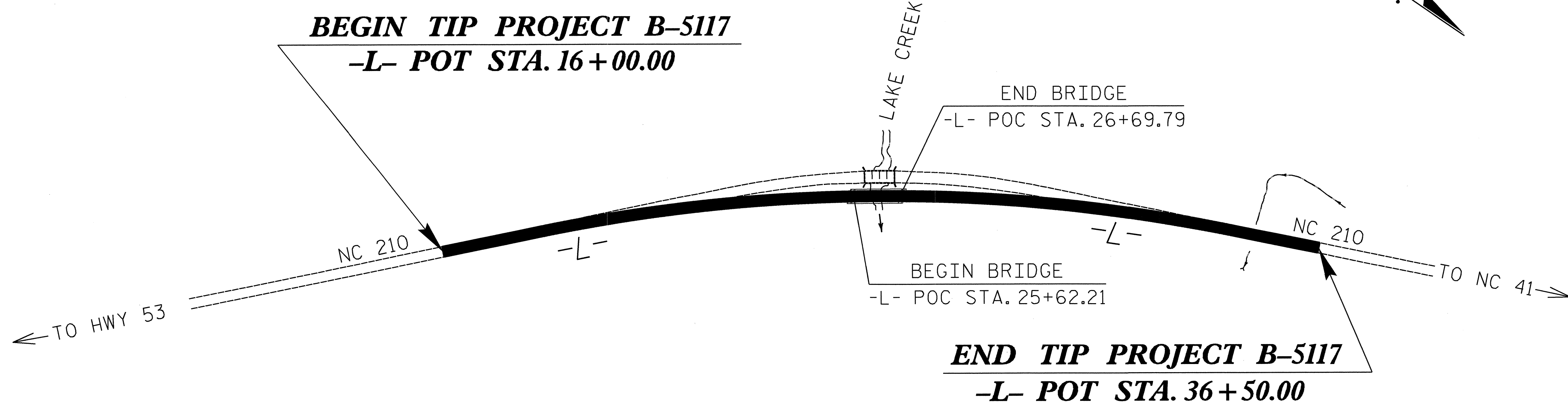
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5117		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
42258.1.1	BRSTP-0210(19)	PE	
42258.2.1	BRSTP-0210(19)	R/W & UTIL.	
42258.3.FR1	BRSTP-0210(19)	CONST.	



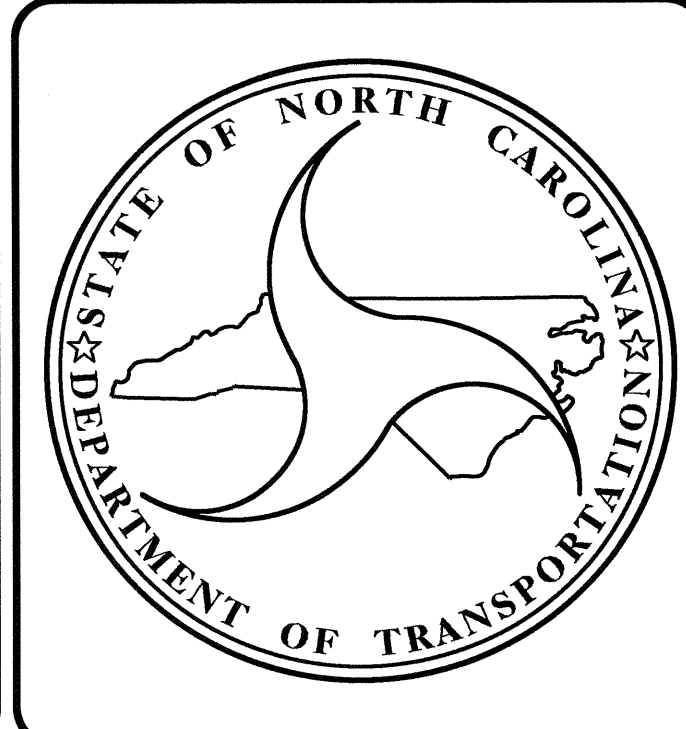
VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
BLADEN COUNTY

LOCATION: BRIDGE NO. 47 OVER LAKE CREEK ON NC 210
TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE



STRUCTURE



DESIGN DATA

ADT 2014	=	460
ADT 2034	=	690
K	=	11 %
D	=	60 %
T	=	32 % *
V	=	60 MPH
* TTST 22% DUAL 10%		
FUNC. CLASS. = COLLECTOR REGIONAL TIER		

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5117	=	0.368 MI.
LENGTH STRUCTURE TIP PROJECT B-5117	=	0.020 MI.
TOTAL LENGTH OF PROJECT B-5117	=	0.388 MI.

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

LETTING DATE : AUGUST 19, 2014

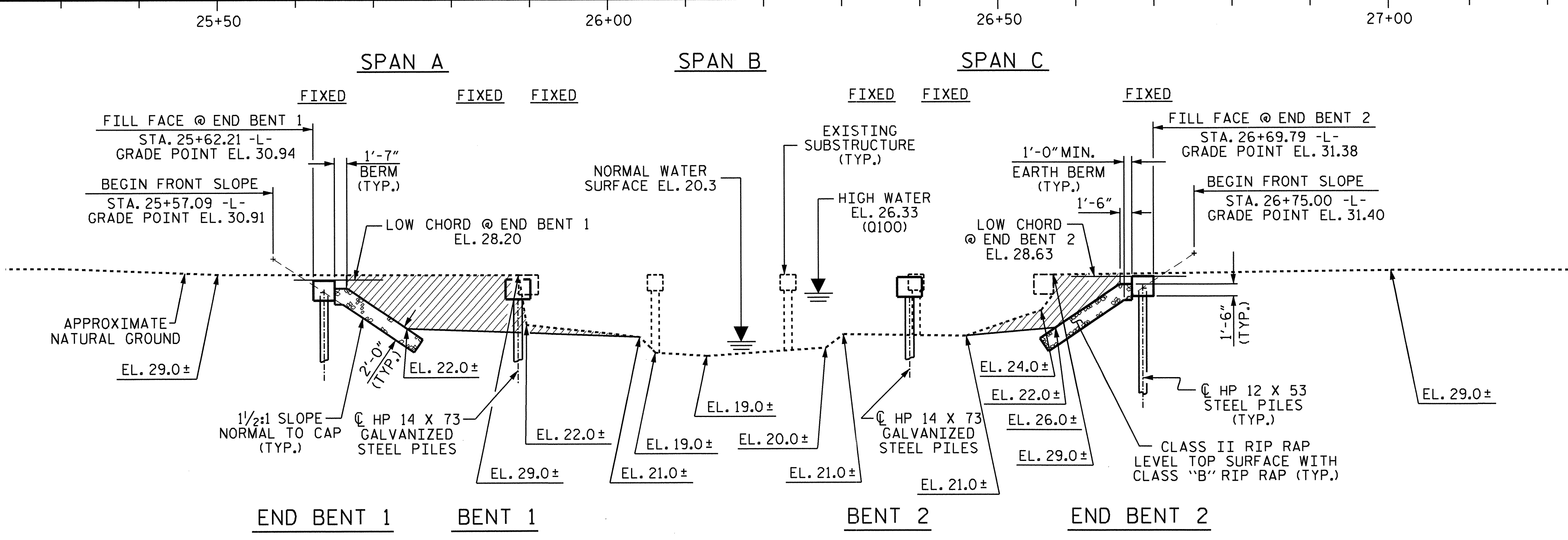
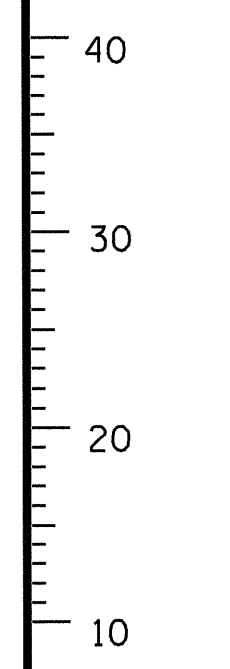
J. M. BAILEY, P.E.
PROJECT ENGINEER

DOUG CALHOUN, P.E.
PROJECT DESIGN ENGINEER

2012 STANDARD SPECIFICATIONS

(-)0.5000% (+)0.4100%
 PI = STA. 24+00.00
 EL. = 30.27'
 VC = 200'

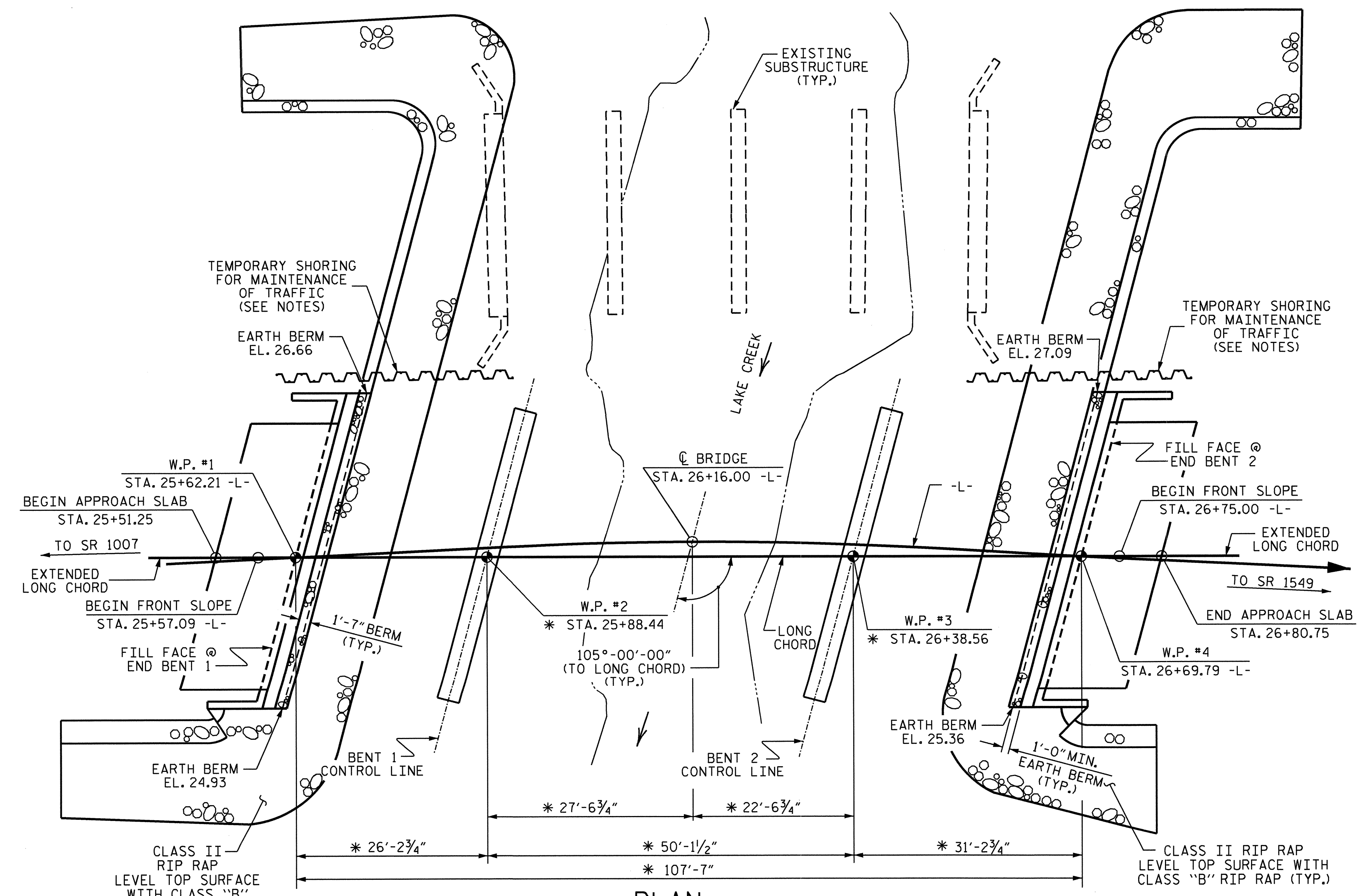
GRADE DATA -L-



UNCLASSIFIED STRUCTURE EXCAVATION (SEE NOTES)

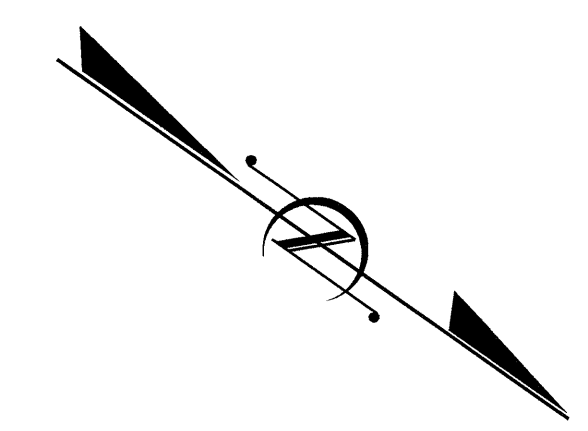
SECTION ALONG -L-

(SECTION THROUGH END BENTS AND BENT ARE TAKEN AT RIGHT ANGLES.)



-L- CURVE DATA

PI = STA. 26+49.09
 $\Delta = 23^\circ-06'-05.4"$ (RT.)
 D = 1°-25'-56.6"
 L = 1612.79
 T = 817.50'
 R = 4,000.00'

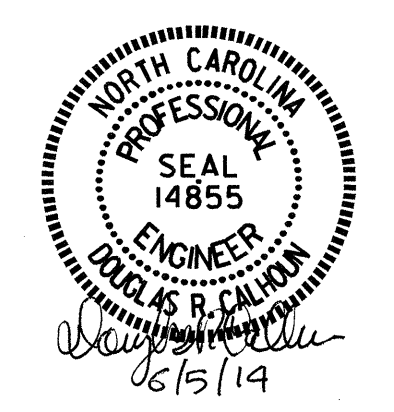
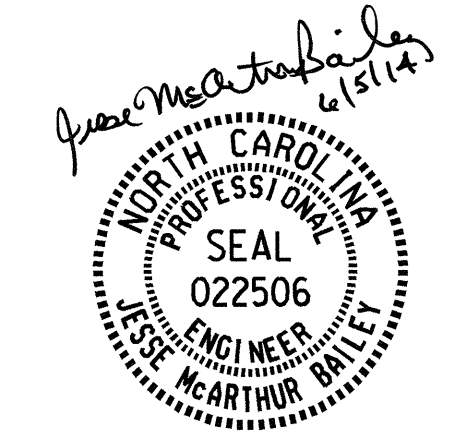


PLAN

PILES NOT SHOWN IN PLAN VIEW FOR CLARITY.

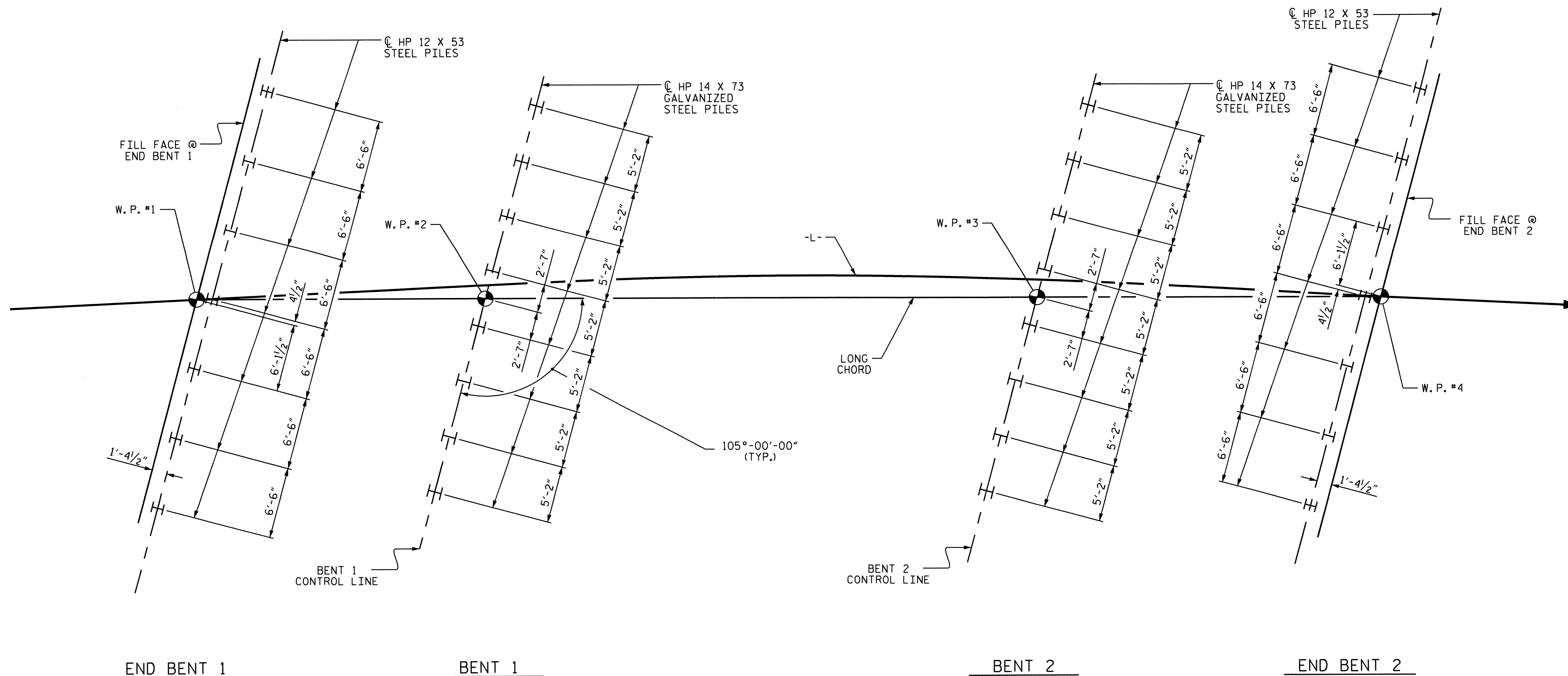
* STATIONING AND DISTANCES ALONG LONG CHORD

DRAWN BY: D. G. ELY DATE: 8/2012
 CHECKED BY: S. B. WILLIAMS DATE: 8/2012



PROJECT NO. B-5117
 BLADEN COUNTY
 STATION: 26+16.00 -L-
 SHEET 1 OF 3 REPLACES BRIDGE #47

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			23



FOUNDATION LAYOUT

NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 48 TONS PER PILE.
 DRIVE PILES AT END BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 80 TONS PER PILE.

PILES AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 54 TONS PER PILE.
 DRIVE PILES AT END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 90 TONS PER PILE.

PILES AT BENT NO.1 AND BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 88 TONS PER PILE.
 DRIVE PILES AT BENT NO.1 AND BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 165 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWDRAG OR SCOUR.

INSTALL PILES AT BENT NO.1 AND BENT NO.2 TO A TIP ELEVATION NO HIGHER THAN -5.0 FEET.

SCOUR CRITICAL ELEVATION FOR BENT NO.1 AND BENT NO.2 IS ELEVATION 14.0 FEET. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

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

PROJECT NO. B-5117
BLADEN COUNTY
 STATION: 26+16.00 -L-

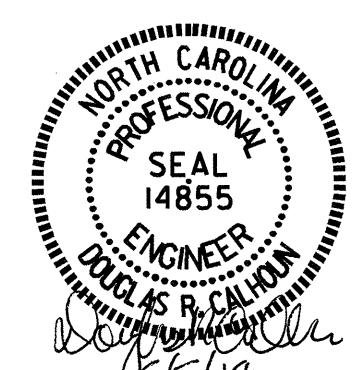
SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

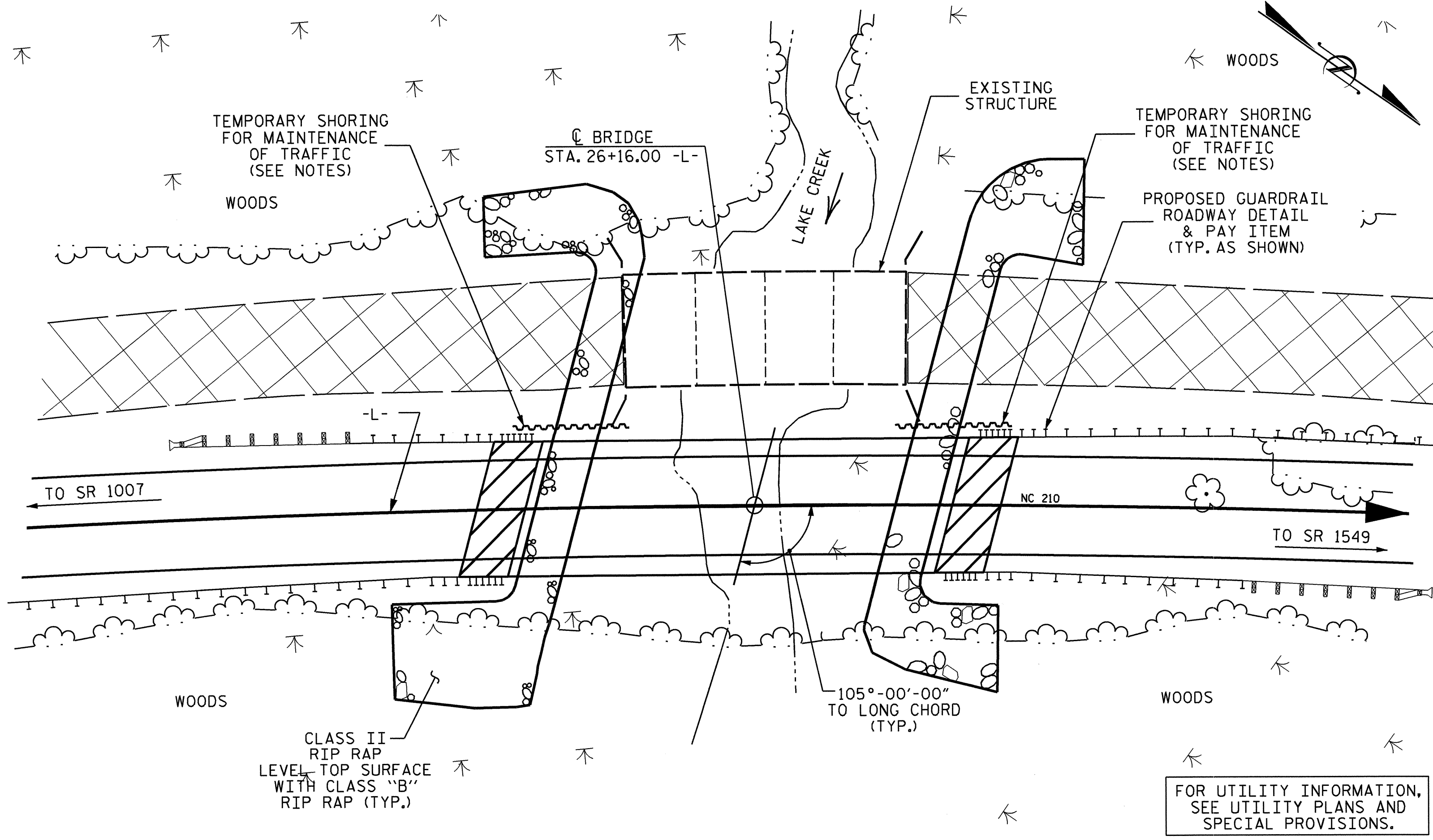
FOR BRIDGE OVER LAKE
 CREEK ON NC 210
 BETWEEN SR 1007 AND SR 1549

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-2
2			4			23



DRAWN BY : D. G. ELY DATE : 8/2012
 CHECKED BY : S. B. WILLIAMS DATE : 8/2012

BENCH MARK #1: RR SPIKE IN BASE OF 18" HICKORY TREE -L- STA. 24+49.96, 89.65' LT., EL. 29.48



LOCATION SKETCH

NOTES

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.

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF 4 SPANS (1 @ 17'-8", 1 @ 16'-11", 1 @ 16'-10", 1 @ 17'-8") WITH A 2" ASPHALT WEARING SURFACE OVER A REINFORCED CONCRETE FLOOR ON TIMBER JOISTS SUPERSTRUCTURE AND A CLEAR ROADWAY WIDTH OF 28'-0" ON A SUBSTRUCTURE CONSISTING OF TIMBER CAPS AND TIMBER PILES FOR END BENTS AND BENTS AND LOCATED APPROX. 45' UPSTREAM FROM THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 100' LEFT, 50' RIGHT 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.

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

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".

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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 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.

FOR INTERIOR BENT 1 & BENT 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.

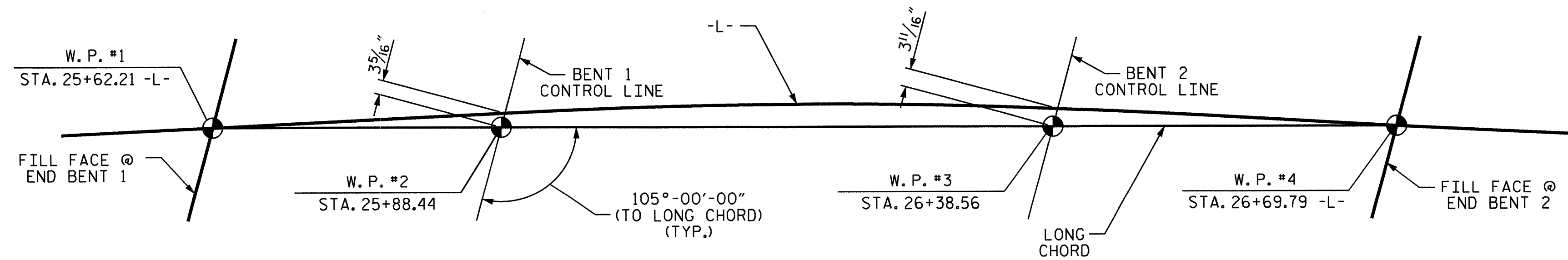
THIS BRIDGE SHALL BE CONSTRUCTED USING TOP-DOWN CONSTRUCTION METHODS. THE USE OF A TEMPORARY CAUSEWAY OR WORK BRIDGE IS NOT PERMITTED.

HYDRAULIC DATA

DESIGN DISCHARGE = 1,400 C.F.S
 FREQUENCY OF DESIGN FLOOD = 50 YRS.
 DESIGN HIGH WATER ELEVATION = 26.4'
 DRAINAGE AREA = 12.2 SQ. MI
 BASE DISCHARGE (Q100) = 1,700 C.F.S.
 BASE HIGH WATER ELEVATION = 26.9'

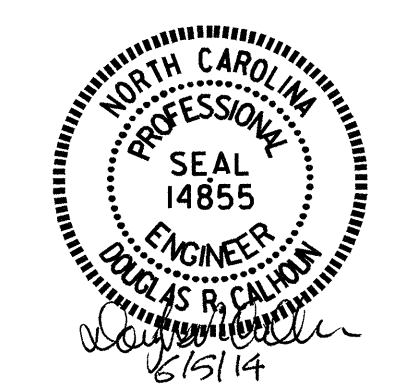
OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = >2,400 C.F.S.
 FREQUENCY OF OVERTOPPING FLOOD = 500 YRS.+
 OVERTOPPING FLOOD ELEVATION = 31.0'



LONG CHORD LAYOUT

NOTE: THE EFFECTS OF THE HORIZONTAL CURVE SHALL BE NEGLECTED IN THE CONSTRUCTION OF THIS BRIDGE. BRIDGE TO BE BUILT ALONG THE LONG CHORD BETWEEN THE WORK POINTS AT THE FILL FACE.



PROJECT NO. B-5117
 BLADEN COUNTY
 STATION: 26+16.00 -L-

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	PDA TESTING	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 B	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS	
	LUMP SUM	EA.	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	EA.	LIN. FT.	TONS	TONS	SO. YDS	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE					LUMP SUM					210.75				LUMP SUM	36	1260.0
END BENT NO. 1			LUMP SUM	15.3		2329	7	245	4		65	250	280			
BENT NO. 1				12.3		2427			4							
BENT NO. 2				12.3		2427			4							
END BENT NO. 2			LUMP SUM	15.3		2329	7	245	4		65	265	295			
TOTAL	LUMP SUM	1	LUMP SUM	55.2	LUMP SUM	9512	14	490	16	210.75	130	515	575	LUMP SUM	36	1260.0

DRAWN BY: D. G. ELY DATE: 8/2012
 CHECKED BY: S. B. WILLIAMS DATE: 8/2012

05-JUN-2014 09:46
 R:\Structures\Plans\B5117.SD.GD.01.dgn
 csorsengh

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER LAKE
 CREEK ON NC 210
 BETWEEN SR 1007 AND SR 1549

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-3
2			4			23

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(InV)	N/A	1	1.233	--	1.75	0.279	2.57	25'	EL	11.982	0.637	1.23	25'	EL	1.198	0.80	0.279	2.37	25'	EL	11.982		
	HL-93(0pr)	N/A	--	1.598	--	1.35	0.279	3.34	25'	EL	11.982	0.637	1.6	25'	EL	1.198	N/A	--	--	--	--	--		
	HS-20(InV)	36.000	2	1.428	51.406	1.75	0.279	3.82	25'	EL	11.982	0.637	1.43	25'	EL	1.198	0.80	0.279	3.52	25'	EL	11.982		
	HS-20(0pr)	36.000	--	1.851	66.637	1.35	0.279	4.95	25'	EL	11.982	0.637	1.85	25'	EL	1.198	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.307	44.639	1.4	0.279	6.95	25'	EL	11.982	0.637	3.31	25'	EL	1.198	0.80	0.279	5.11	25'	EL	11.982	
		SNGARBS2	20.000	--	2.65	53	1.4	0.279	6.5	25'	EL	11.982	0.637	2.65	25'	EL	1.198	0.80	0.279	4.79	25'	EL	11.982	
		SNAGRIS2	22.000	--	2.596	57.117	1.4	0.279	6.95	25'	EL	11.982	0.637	2.6	25'	EL	1.198	0.80	0.279	5.11	25'	EL	11.982	
		SNCOTTS3	27.250	--	1.678	45.729	1.4	0.279	3.64	25'	EL	11.982	0.637	1.68	25'	EL	1.198	0.80	0.279	2.68	25'	EL	11.982	
		SNAGGRS4	34.925	--	1.615	56.393	1.4	0.279	3.62	25'	EL	11.982	0.637	1.61	25'	EL	1.198	0.80	0.279	2.66	25'	EL	11.982	
		SNS5A	35.550	--	1.687	59.981	1.4	0.279	3.51	25'	EL	11.982	0.637	1.69	25'	EL	1.198	0.80	0.279	2.58	25'	EL	11.982	
		SNS6A	39.950	--	1.618	64.639	1.4	0.279	3.29	25'	EL	11.982	0.637	1.62	25'	EL	1.198	0.80	0.279	2.42	25'	EL	11.982	
	TTST	SNS7B	42.000	--	1.63	68.445	1.4	0.279	3.29	25'	EL	11.982	0.637	1.63	25'	EL	1.198	0.80	0.279	2.41	25'	EL	11.982	
		TNAGRIT3	33.000	--	1.982	65.415	1.4	0.279	4.64	25'	EL	11.982	0.637	1.98	25'	EL	1.198	0.80	0.279	3.41	25'	EL	11.982	
		TNT4A	33.075	--	1.798	59.466	1.4	0.279	4.02	25'	EL	11.982	0.637	1.8	25'	EL	1.198	0.80	0.279	2.96	25'	EL	11.982	
		TNT6A	41.600	--	1.694	70.481	1.4	0.279	3.78	25'	EL	11.982	0.637	1.69	25'	EL	1.198	0.80	0.279	2.78	25'	EL	11.982	
		TNT7A	42.000	--	1.687	70.851	1.4	0.279	3.9	25'	EL	11.982	0.637	1.69	25'	EL	1.198	0.80	0.279	2.87	25'	EL	11.982	
		TNT7B	42.000	--	1.628	68.365	1.4	0.279	3.52	25'	EL	11.982	0.637	1.63	25'	EL	1.198	0.80	0.279	2.59	25'	EL	11.982	
		TNAGRIT4	43.000	--	1.625	69.855	1.4	0.279	3.78	25'	EL	11.982	0.637	1.62	25'	EL	1.198	0.80	0.279	2.77	25'	EL	11.982	
TNAGT5A	45.000	--	1.657	74.558	1.4	0.279	3.78	25'	EL	11.982	0.637	1.66	25'	EL	1.198	0.80	0.279	2.77	25'	EL	11.982			
TNAGT5B	45.000	3	1.503	67.632	1.4	0.279	3.72	25'	EL	9.586	0.637	1.5	25'	EL	1.198	0.80	0.279	2.75	25'	EL	9.586			

LOAD FACTORS:

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

NOTES:

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

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

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

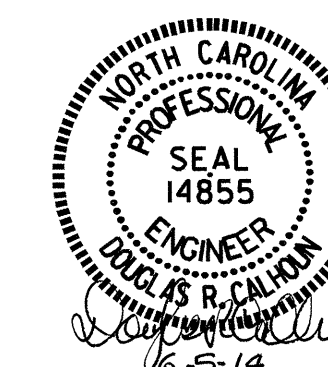
I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY
FOR SPAN 'A'

PROJECT NO. B-5117
BLADEN COUNTY
STATION: 26+16.00 -L-

SHEET 1 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
LRFR SUMMARY FOR
25' CORED SLAB UNIT
105° SKEW
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-4
1			3			TOTAL SHEETS
2			4			23

ASSEMBLED BY : A.C. OUTLAW DATE : 3/30/12
CHECKED BY : A. SORSENGINH DATE : 6/2012
DRAWN BY : CVC 6/10
CHECKED BY : DNS 6/10

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.205	--	1.75	0.271	1.59	50'	EL	24.482	0.616	1.2	50'	EL	4.896	0.80	0.271	1.46	50'	EL	24.482		
	HL-93(0pr)	N/A	--	1.562	--	1.35	0.271	2.06	50'	EL	24.482	0.616	1.56	50'	EL	4.896	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.434	51.614	1.75	0.271	1.97	50'	EL	24.482	0.616	1.43	50'	EL	4.896	0.80	0.271	1.81	50'	EL	24.482		
	HS-20(0pr)	36.000	--	1.859	66.906	1.35	0.271	2.56	50'	EL	24.482	0.616	1.86	50'	EL	4.896	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.678	49.655	1.4	0.271	5.02	50'	EL	24.482	0.616	4	50'	EL	4.896	0.80	0.271	3.68	50'	EL	24.482	
		SNGARBS2	20.000	--	2.905	58.101	1.4	0.271	3.97	50'	EL	24.482	0.616	2.93	50'	EL	4.896	0.80	0.271	2.91	50'	EL	24.482	
		SNAGRIS2	22.000	--	2.748	60.456	1.4	0.271	3.83	50'	EL	19.586	0.616	2.75	50'	EL	4.896	0.80	0.271	2.81	50'	EL	24.482	
		SNCOTTS3	27.250	--	1.835	49.998	1.4	0.271	2.5	50'	EL	24.482	0.616	2.01	50'	EL	4.896	0.80	0.271	1.83	50'	EL	24.482	
		SNAGGRS4	34.925	--	1.595	55.714	1.4	0.271	2.18	50'	EL	24.482	0.616	1.72	50'	EL	4.896	0.80	0.271	1.60	50'	EL	24.482	
		SNS5A	35.550	--	1.556	55.303	1.4	0.271	2.12	50'	EL	24.482	0.616	1.77	50'	EL	4.896	0.80	0.271	1.56	50'	EL	24.482	
		SNS6A	39.950	--	1.455	58.112	1.4	0.271	1.99	50'	EL	24.482	0.616	1.64	50'	EL	4.896	0.80	0.271	1.45	50'	EL	24.482	
	TTST	SNS7B	42.000	--	1.386	58.224	1.4	0.271	1.89	50'	EL	24.482	0.616	1.65	50'	EL	4.896	0.80	0.271	1.39	50'	EL	24.482	
		TNAGRIT3	33.000	--	1.782	58.809	1.4	0.271	2.43	50'	EL	24.482	0.616	1.94	50'	EL	4.896	0.80	0.271	1.78	50'	EL	24.482	
		TNT4A	33.075	--	1.798	59.458	1.4	0.271	2.45	50'	EL	24.482	0.616	1.86	50'	EL	4.896	0.80	0.271	1.80	50'	EL	24.482	
		TNT6A	41.600	--	1.497	62.293	1.4	0.271	2.04	50'	EL	24.482	0.616	1.8	50'	EL	4.896	0.80	0.271	1.50	50'	EL	24.482	
		TNT7A	42.000	--	1.52	63.842	1.4	0.271	2.08	50'	EL	24.482	0.616	1.67	50'	EL	4.896	0.80	0.271	1.52	50'	EL	24.482	
		TNT7B	42.000	--	1.585	66.559	1.4	0.271	2.16	50'	EL	24.482	0.616	1.59	50'	EL	4.896	0.80	0.271	1.58	50'	EL	24.482	
		TNAGRIT4	43.000	--	1.504	64.667	1.4	0.271	2.05	50'	EL	24.482	0.616	1.53	50'	EL	4.896	0.80	0.271	1.50	50'	EL	24.482	
TNAGT5A	45.000	--	1.405	63.217	1.4	0.271	1.92	50'	EL	24.482	0.616	1.56	50'	EL	4.896	0.80	0.271	1.40	50'	EL	24.482			
TNAGT5B	45.000	3	1.376	61.936	1.4	0.271	1.88	50'	EL	24.482	0.616	1.45	50'	EL	4.896	0.80	0.271	1.38	50'	EL	24.482			

LOAD FACTORS:

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

NOTES:

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

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

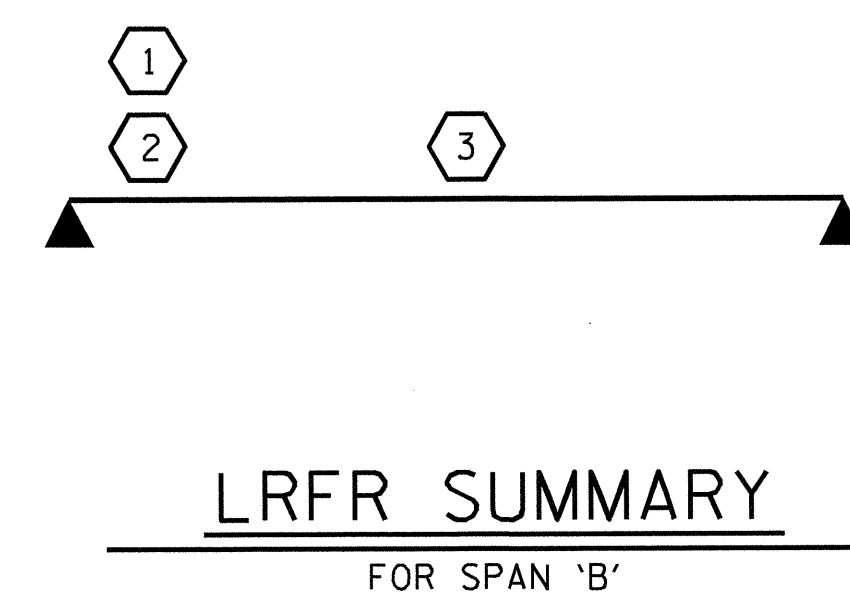
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

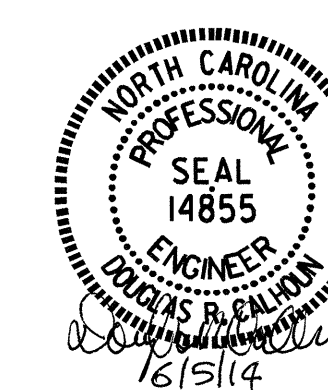
GIRDER LOCATION

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



PROJECT NO. B-5117
BLADEN COUNTY
STATION: 26+16.00 -L-

SHEET 2 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
LRFR SUMMARY FOR
50' CORED SLAB UNIT
105° SKEW
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-5
2			4			23

ASSEMBLED BY : A.C. OUTLAW DATE : 3/30/12
CHECKED BY : A. SORSENGINH DATE : 6/20/12
DRAWN BY : CVC 6/10
CHECKED BY : DNS 6/10

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.223	--	1.75	0.278	1.87	30'	EL	14.482	0.629	1.22	30'	EL	1.448	0.80	0.278	1.60	30'	EL	14.482		
	HL-93(0pr)	N/A	--	1.586	--	1.35	0.278	2.42	30'	EL	14.482	0.629	1.59	30'	EL	1.448	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.396	50.263	1.75	0.278	2.57	30'	EL	11.586	0.629	1.4	30'	EL	1.448	0.80	0.278	2.23	30'	EL	11.586		
	HS-20(0pr)	36.000	--	1.81	65.156	1.35	0.278	3.34	30'	EL	11.586	0.629	1.81	30'	EL	1.448	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.415	46.108	1.4	0.278	5.27	30'	EL	14.482	0.629	3.42	30'	EL	1.448	0.80	0.278	3.61	30'	EL	14.482	
		SNGARBS2	20.000	--	2.643	52.856	1.4	0.278	4.6	30'	EL	11.586	0.629	2.64	30'	EL	1.448	0.80	0.278	3.19	30'	EL	11.586	
		SNAGRIS2	22.000	--	2.546	56.012	1.4	0.278	4.68	30'	EL	11.586	0.629	2.55	30'	EL	1.448	0.80	0.278	3.25	30'	EL	11.586	
		SNCOTTS3	27.250	--	1.725	47.014	1.4	0.278	2.64	30'	EL	14.482	0.629	1.73	30'	EL	1.448	0.80	0.278	1.81	30'	EL	14.482	
		SNAGGRS4	34.925	--	1.588	55.465	1.4	0.278	2.55	30'	EL	14.482	0.629	1.59	30'	EL	1.448	0.80	0.278	1.74	30'	EL	14.482	
		SNS5A	35.550	--	1.684	59.866	1.4	0.278	2.46	30'	EL	14.482	0.629	1.68	30'	EL	1.448	0.80	0.278	1.69	30'	EL	14.482	
		SNS6A	39.950	--	1.583	63.244	1.4	0.278	2.33	30'	EL	14.482	0.629	1.58	30'	EL	1.448	0.80	0.278	1.60	30'	EL	14.482	
	TTST	SNS7B	42.000	--	1.552	65.191	1.4	0.278	2.26	30'	EL	14.482	0.629	1.62	30'	EL	1.448	0.80	0.278	1.55	30'	EL	14.482	
		TNAGRIT3	33.000	--	1.881	62.062	1.4	0.278	3.02	30'	EL	14.482	0.629	1.88	30'	EL	1.448	0.80	0.278	2.07	30'	EL	14.482	
		TNT4A	33.075	--	1.75	57.88	1.4	0.278	2.86	30'	EL	14.482	0.629	1.75	30'	EL	1.448	0.80	0.278	1.97	30'	EL	14.482	
		TNT6A	41.600	--	1.691	70.356	1.4	0.278	2.6	30'	EL	14.482	0.629	1.69	30'	EL	1.448	0.80	0.278	1.78	30'	EL	14.482	
		TNT7A	42.000	--	1.609	67.589	1.4	0.278	2.69	30'	EL	14.482	0.629	1.61	30'	EL	1.448	0.80	0.278	1.84	30'	EL	14.482	
		TNT7B	42.000	--	1.571	66.001	1.4	0.278	2.53	30'	EL	14.482	0.629	1.57	30'	EL	1.448	0.80	0.278	1.74	30'	EL	14.482	
		TNAGRIT4	43.000	--	1.52	65.345	1.4	0.278	2.62	30'	EL	14.482	0.629	1.52	30'	EL	1.448	0.80	0.278	1.80	30'	EL	14.482	
TNAGT5A	45.000	--	1.63	73.366	1.4	0.278	2.55	30'	EL	14.482	0.629	1.63	30'	EL	1.448	0.80	0.278	1.75	30'	EL	14.482			
TNAGT5B	45.000	3	1.431	64.38	1.4	0.278	2.45	30'	EL	11.586	0.629	1.43	30'	EL	1.448	0.80	0.278	1.69	30'	EL	11.586			

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ _{DC}	γ _W
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

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

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

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

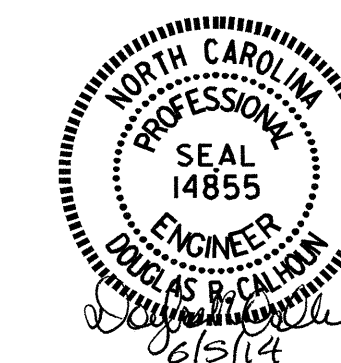
I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY
FOR SPAN 'C'

PROJECT NO. B-5117
BLADEN COUNTY
 STATION: 26+16.00 -L-

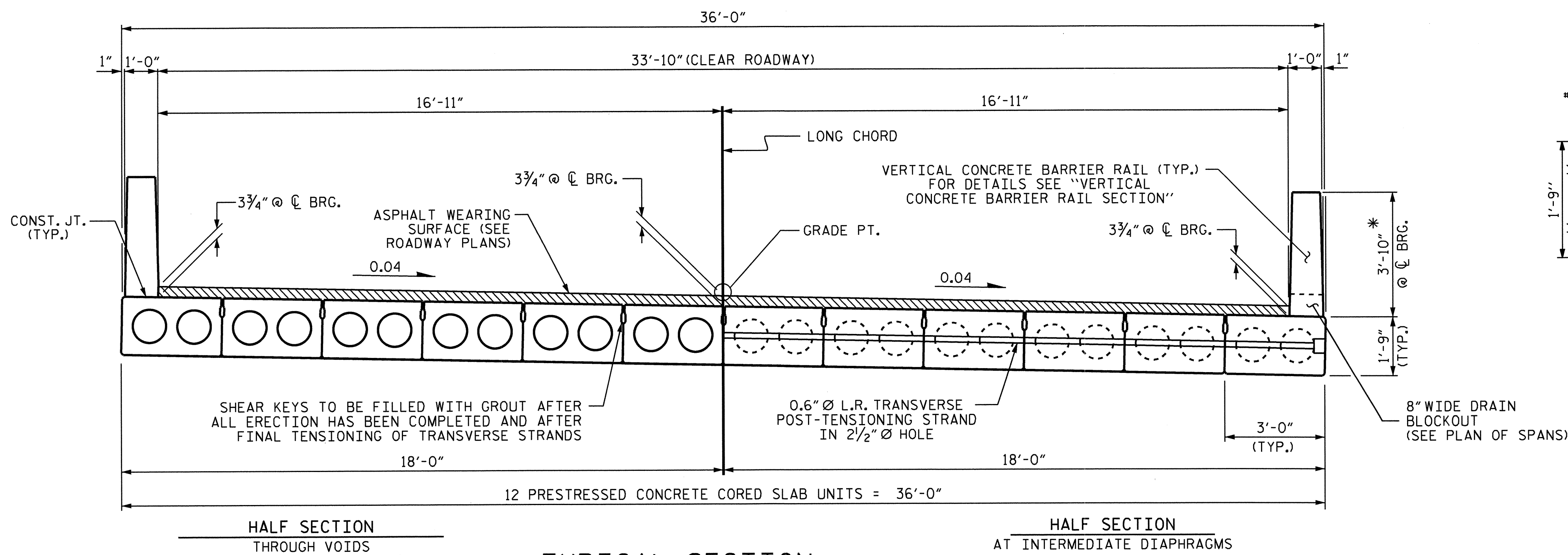
SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 LRFR SUMMARY FOR
 30' CORED SLAB UNIT
 105° SKEW
 (NON-INTERSTATE TRAFFIC)

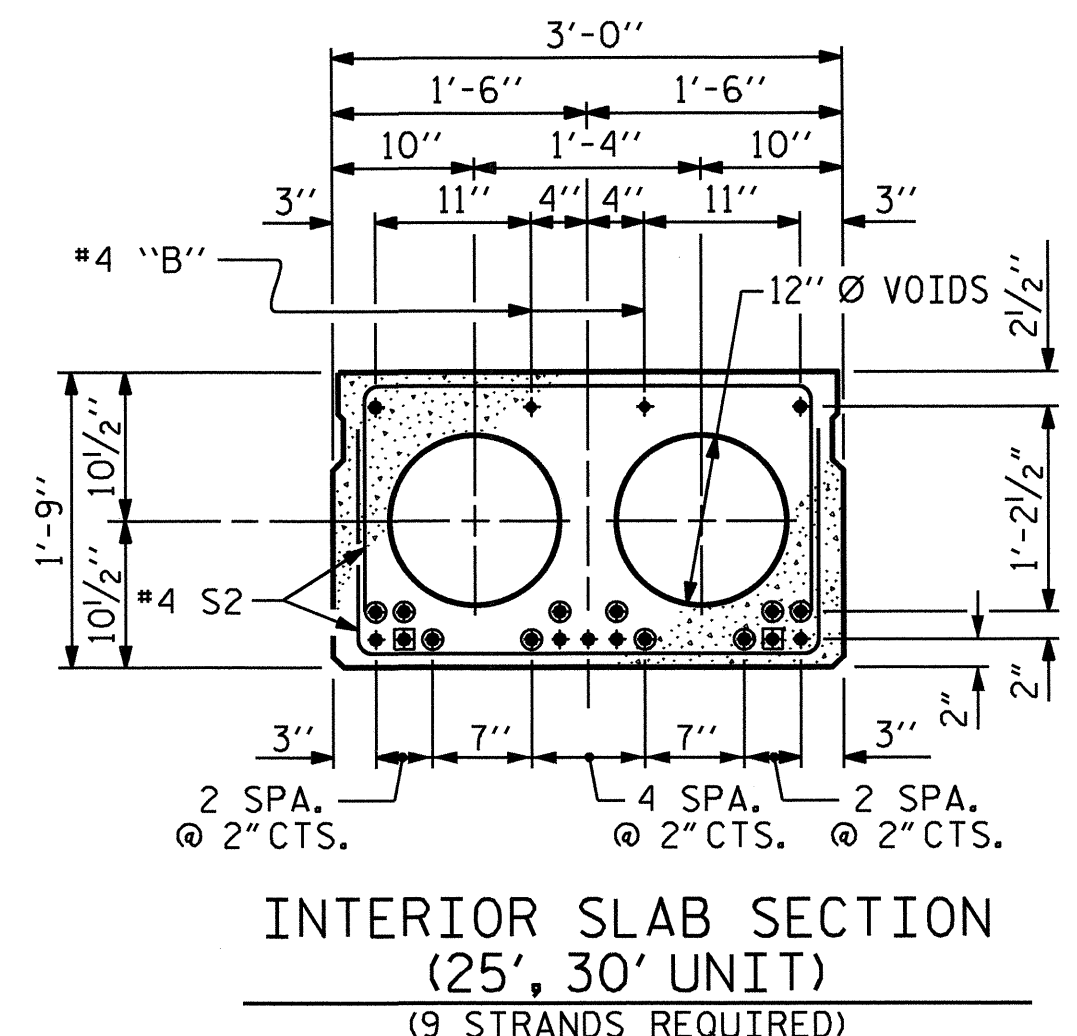
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-6
2			4			23

ASSEMBLED BY : A.C. OUTLAW DATE : 3/30/12
 CHECKED BY : A. SORSENGINH DATE : 6/2012
 DRAWN BY : CVC 6/10
 CHECKED BY : DNS 6/10

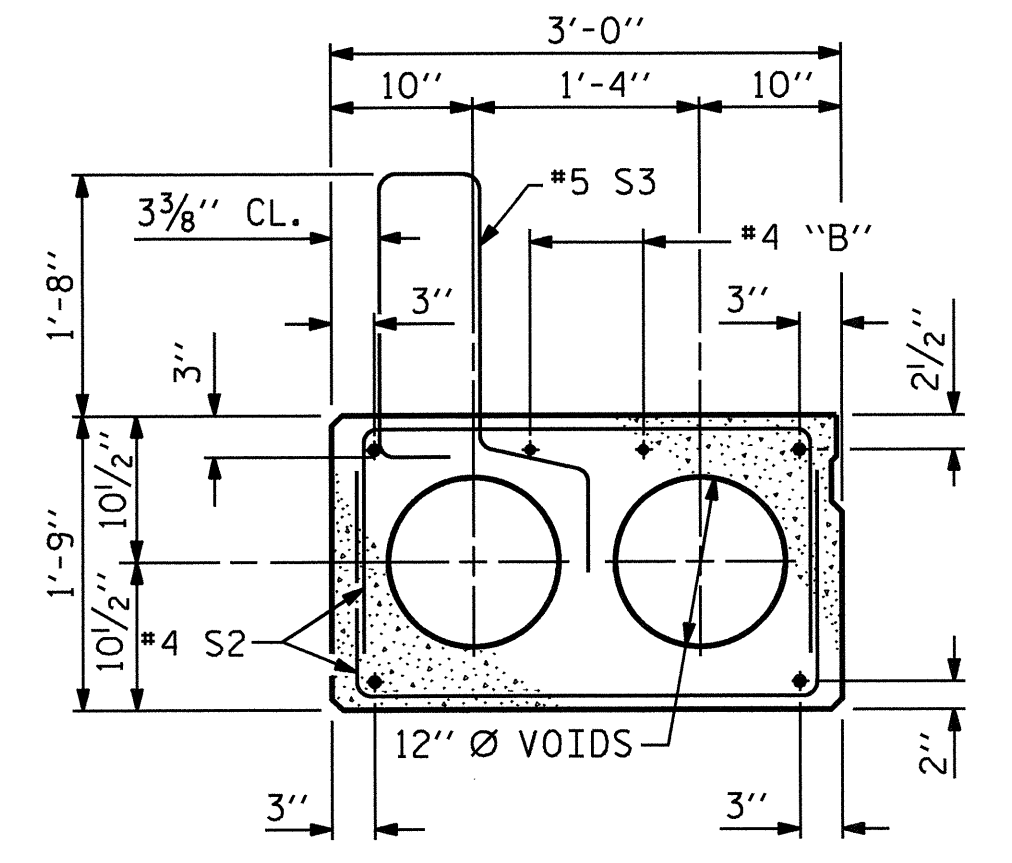


TYPICAL SECTION

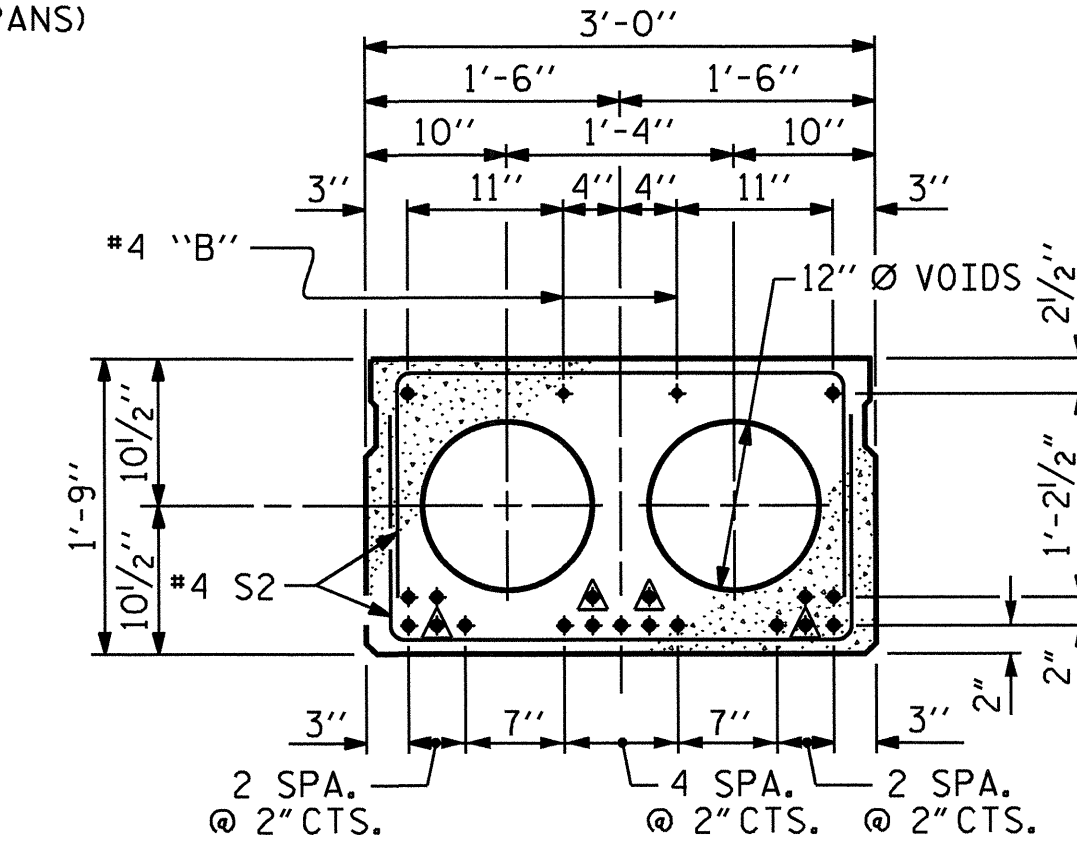
* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



INTERIOR SLAB SECTION (25', 30' UNIT)
(9 STRANDS REQUIRED)



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

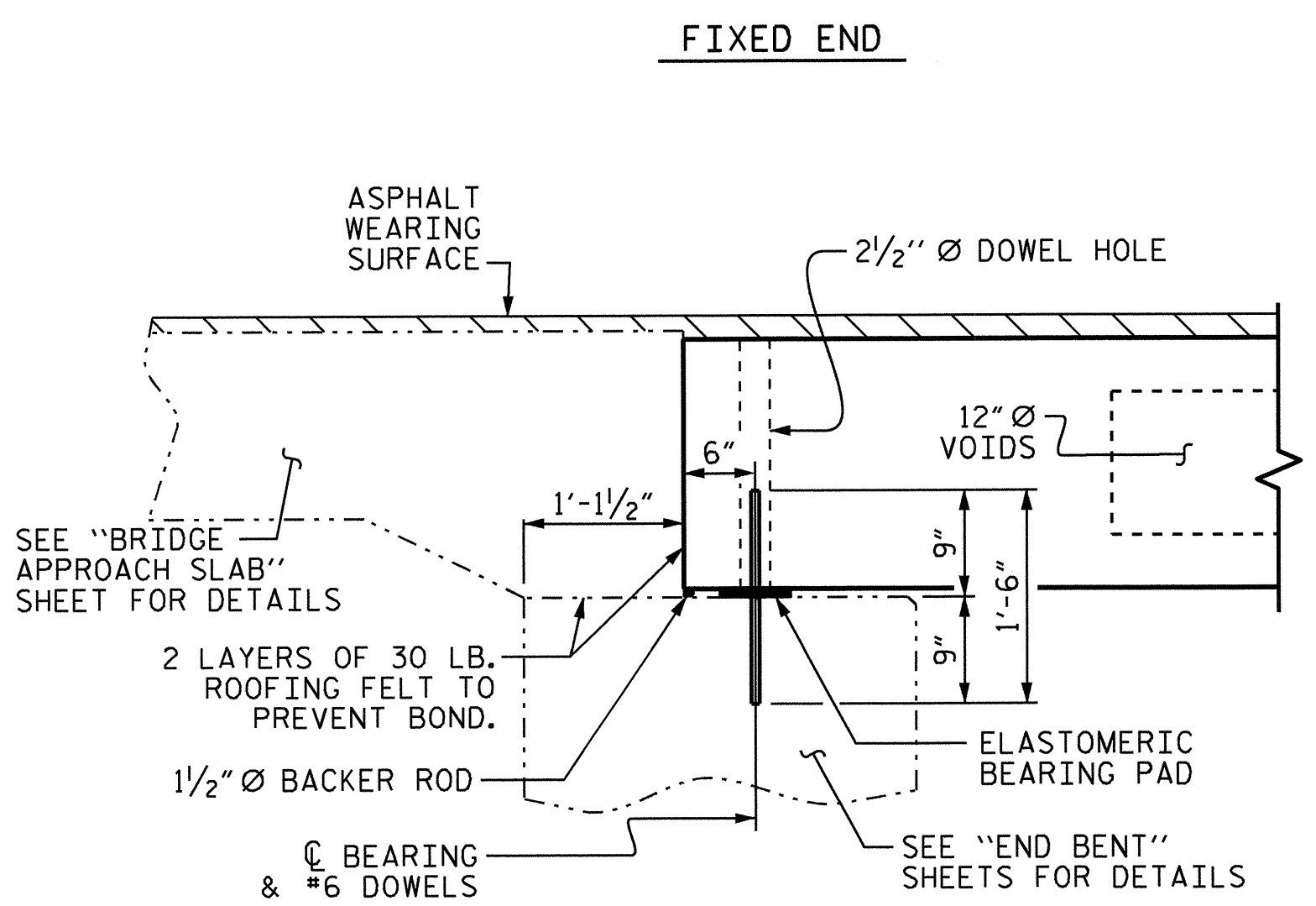


INTERIOR SLAB SECTION (50' UNIT)
(19 STRANDS REQUIRED)

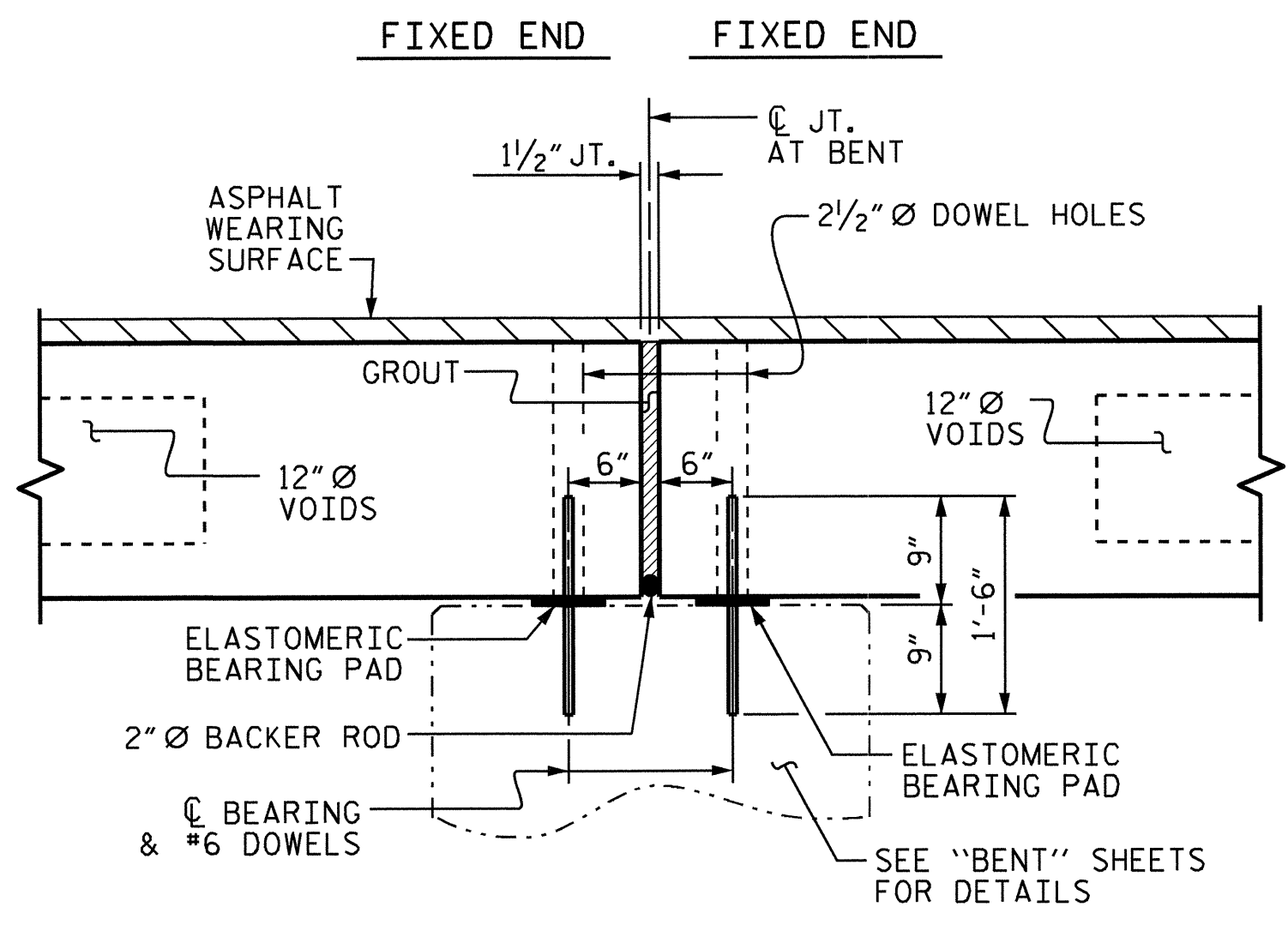
0.6" Ø LOW RELAXATION STRAND LAYOUT

- DEBONDING LEGEND**
- ▲ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
 - 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.
 - OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

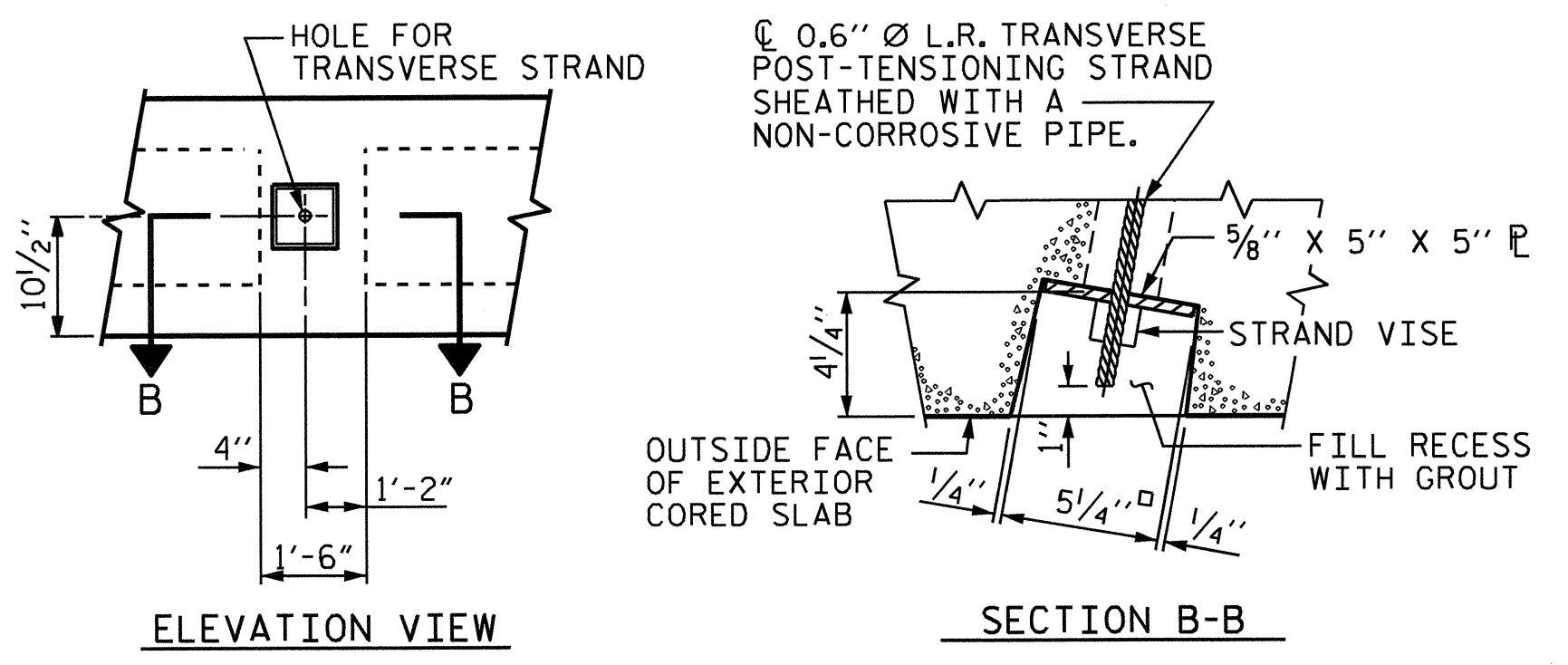
DEBONDING LEGEND



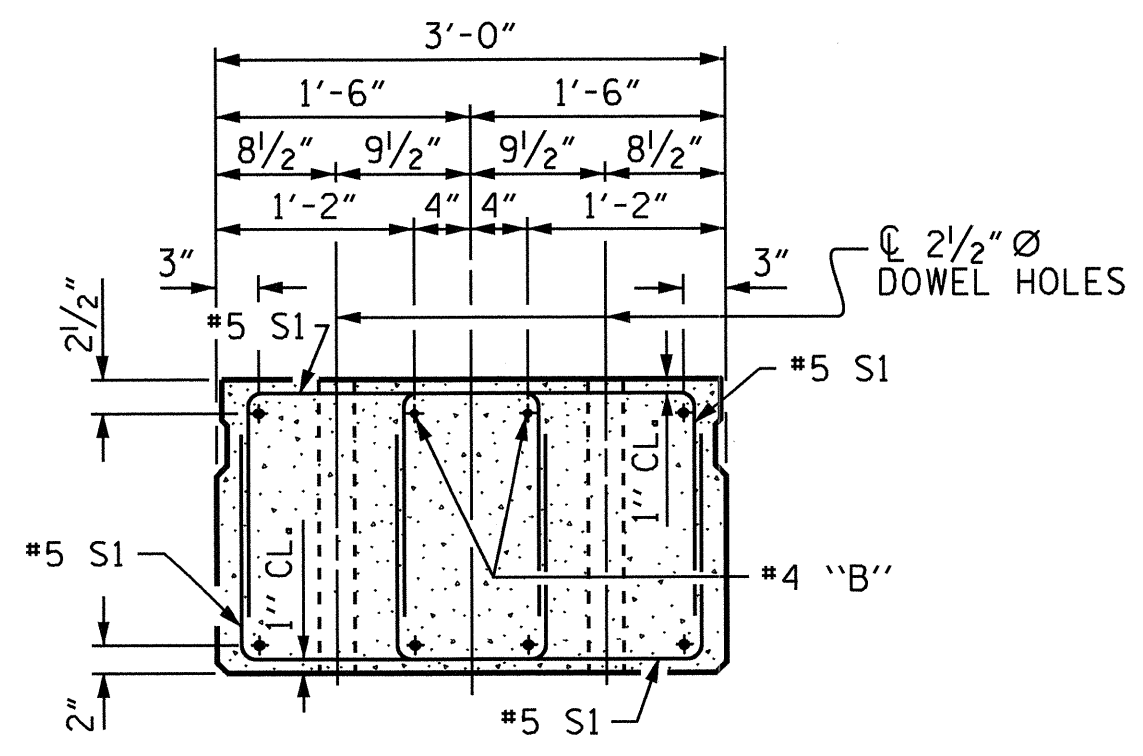
SECTION AT END BENT



SECTION AT BENT

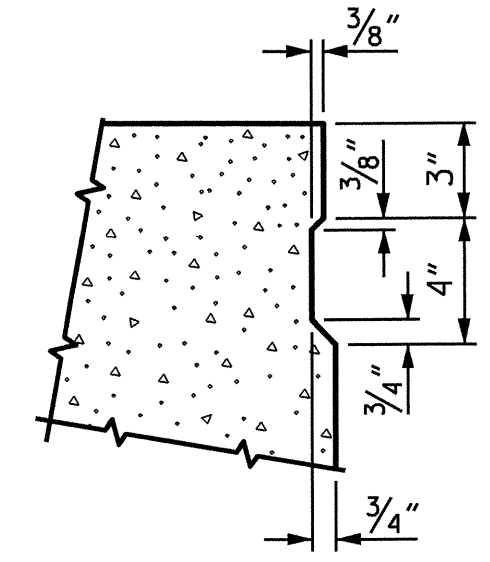


GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS



END ELEVATION

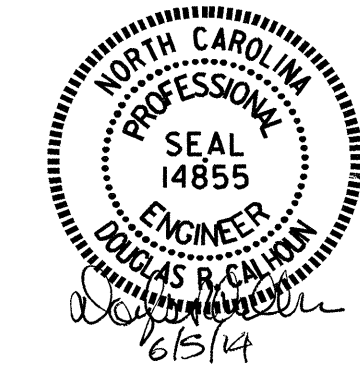
SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN). INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



SHEAR KEY DETAIL

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

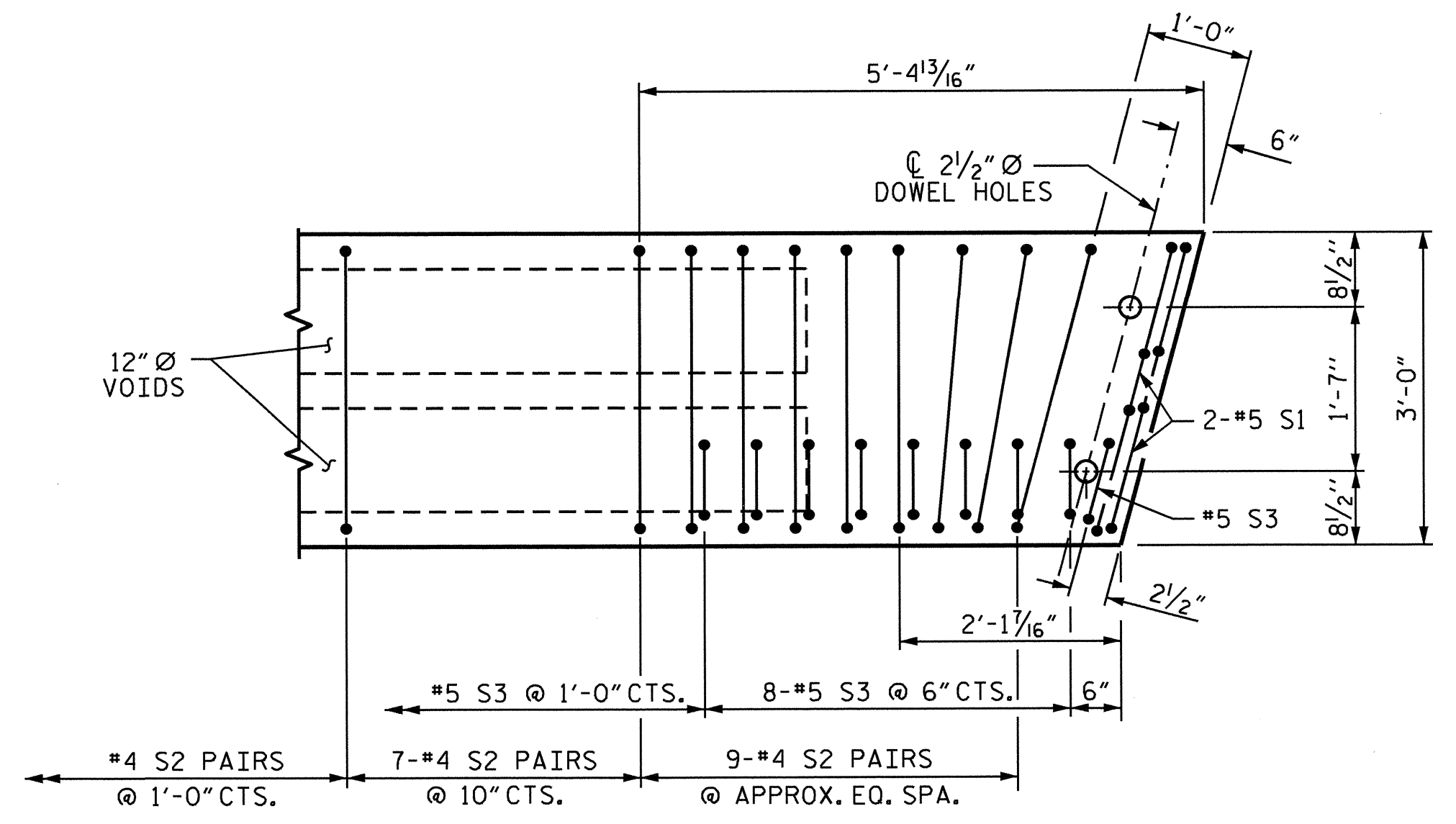
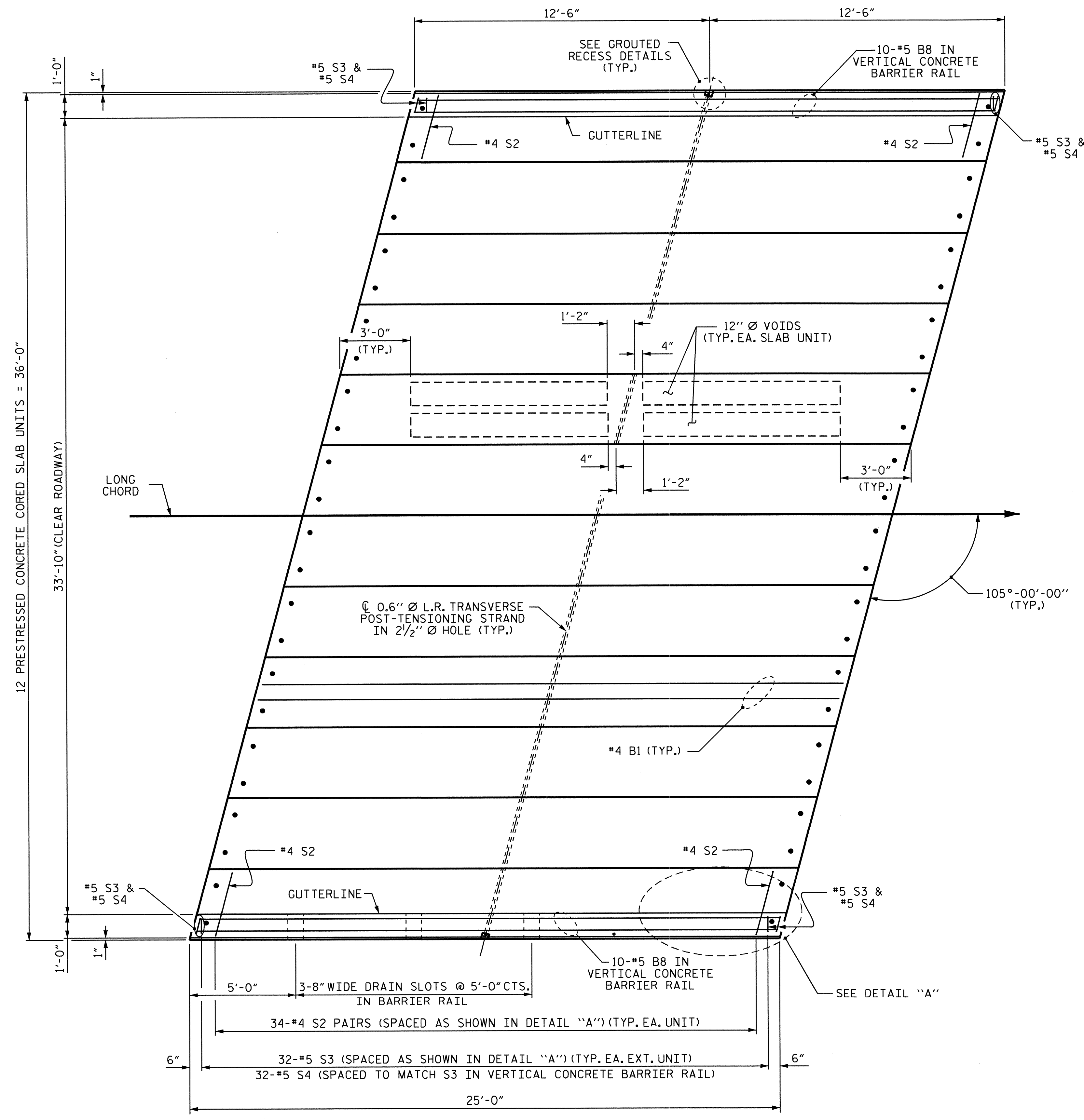
ASSEMBLED BY : A.C. OUTLAW	DATE : 3/30/12
CHECKED BY : D.G. ELY	DATE : 6/5/12
DRAWN BY : DCE 5/09	REV. 12/11
CHECKED BY : BCH 6/09	MAA/AAC



PROJECT NO. B-5117
BLADEN COUNTY
 STATION: 26+16.00 -L-

SHEET 1 OF 6

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-7
1			3			TOTAL SHEETS
2			4			23

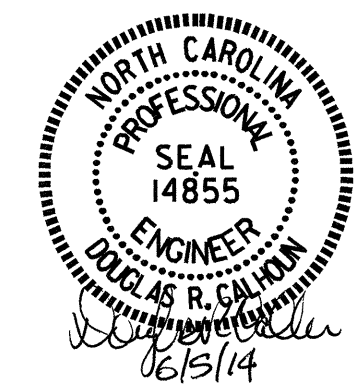


DETAIL "A"
 NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PLAN OF SPAN A

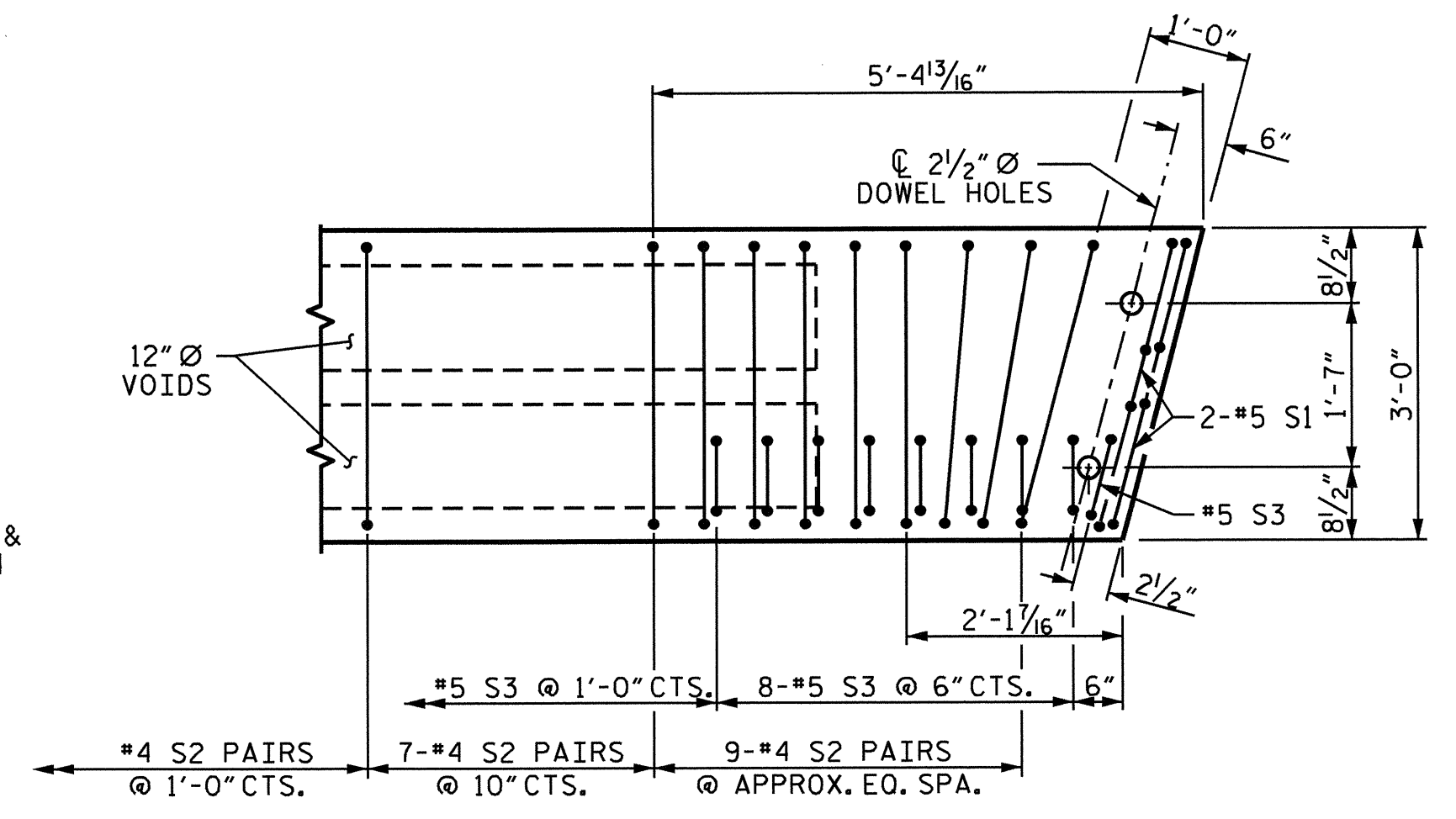
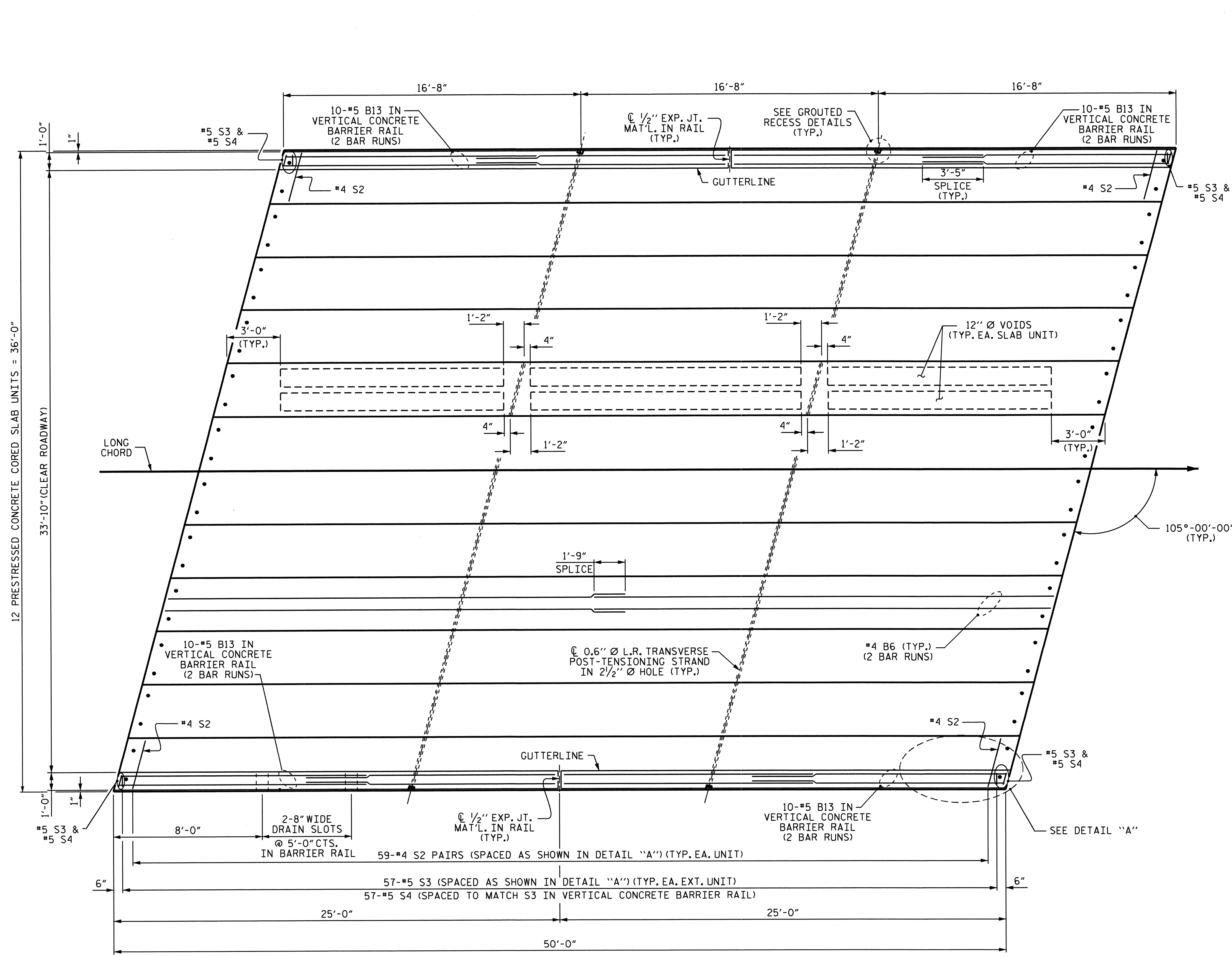
PROJECT NO. B-5117
BLADEN COUNTY
 STATION: 26+16.00 -L-

SHEET 2 OF 6
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 PLAN OF 25' UNIT
 33'-10" CLEAR ROADWAY
 105° SKEW



ASSEMBLED BY : A.C. OUTLAW	DATE : 3/30/12
CHECKED BY : D. G. ELY	DATE : 6/5/12
DRAWN BY : DGE 5/09	REV. 12/5/11 MAA/AAC
CHECKED BY: BCH 6/09	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			5-8
2			4			TOTAL SHEETS 2-3



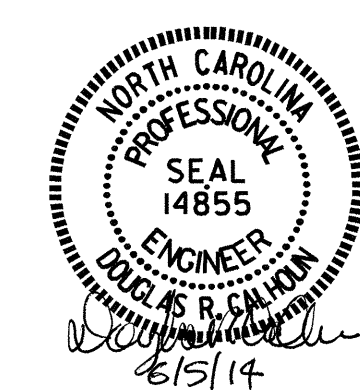
DETAIL "A"
 NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PLAN OF SPAN B

PROJECT NO. B-5117
BLADEN COUNTY
 STATION: 26+16.00 -L-
 SHEET 3 OF 6

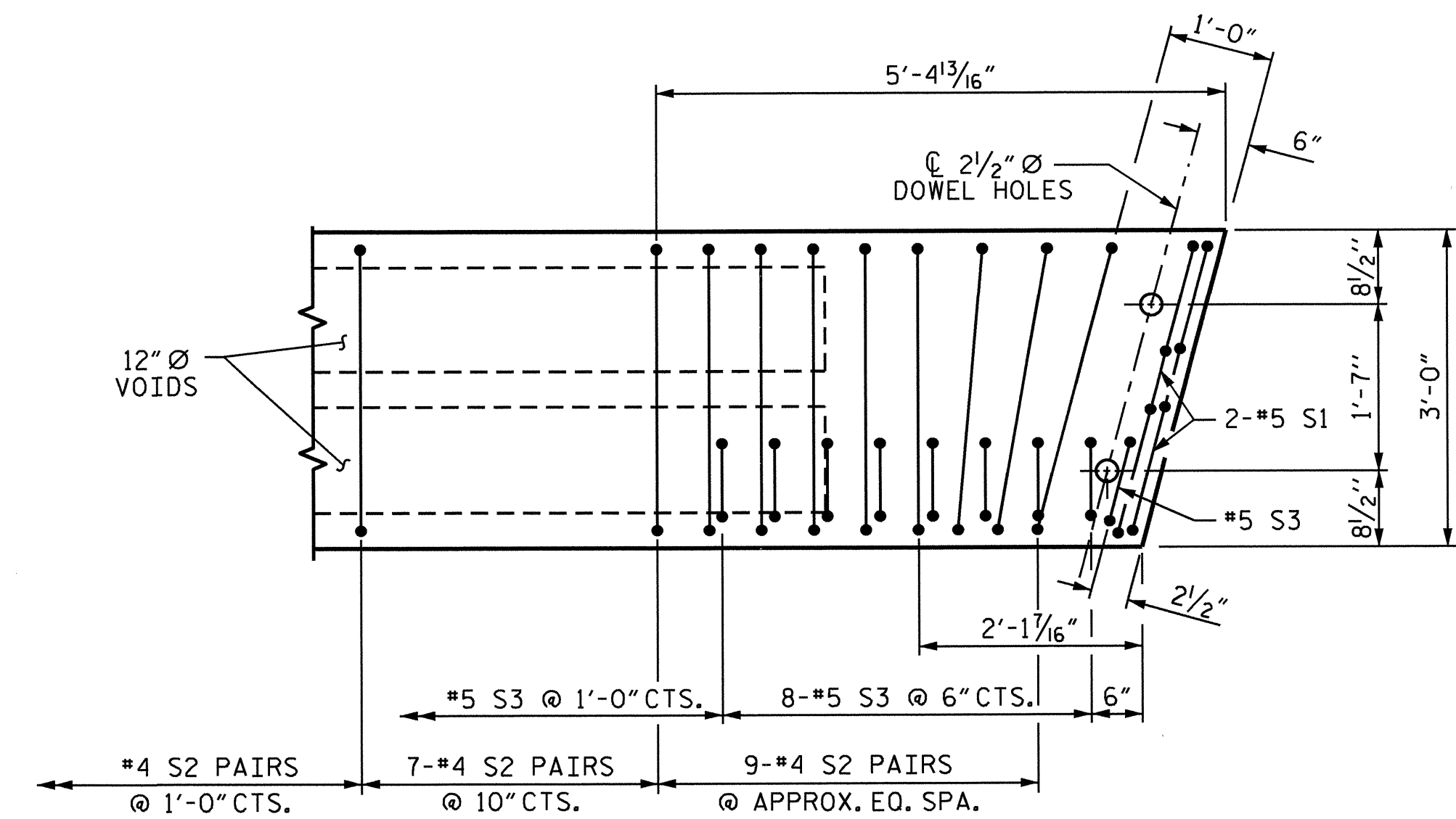
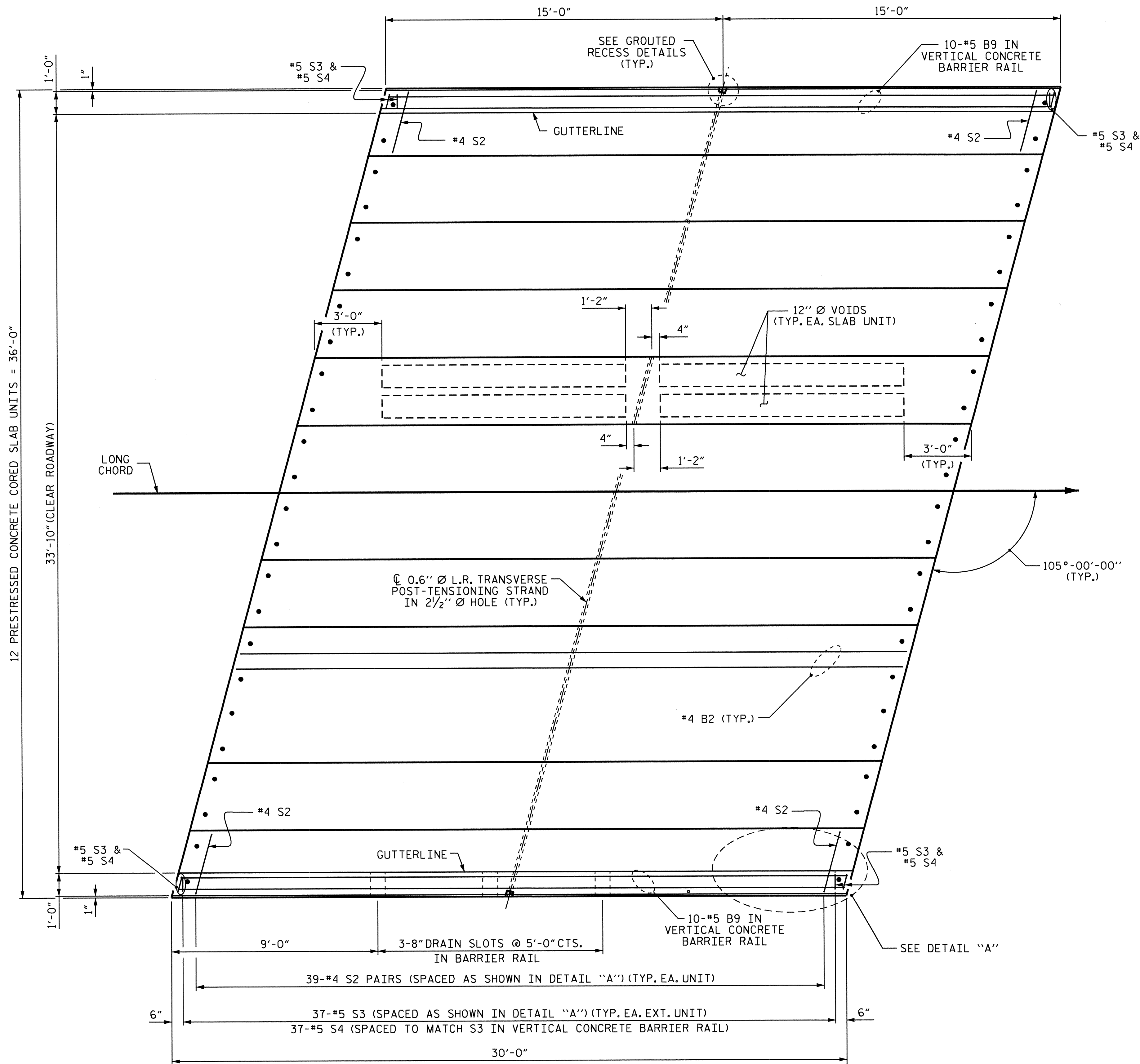
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF 50' UNIT
 33'-10" CLEAR ROADWAY
 105° SKEW



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-9
2			4			23

ASSEMBLED BY :	A.C. OUTLAW	DATE :	3/30/12
CHECKED BY :	D.G. ELY	DATE :	6/5/12
DRAWN BY :	DGE 5/09	REV.	12/5/11 MAA/AAC
CHECKED BY :	BCH 6/09		



DETAIL "A"

NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

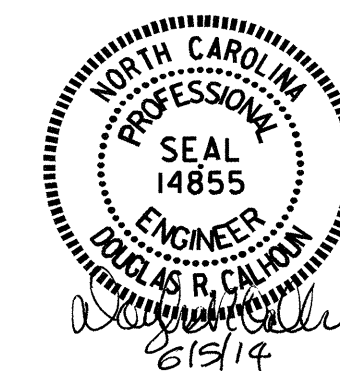
PLAN OF SPAN C

PROJECT NO. B-5117
 BLADEN COUNTY
 STATION: 26+16.00 -L-

SHEET 4 OF 6

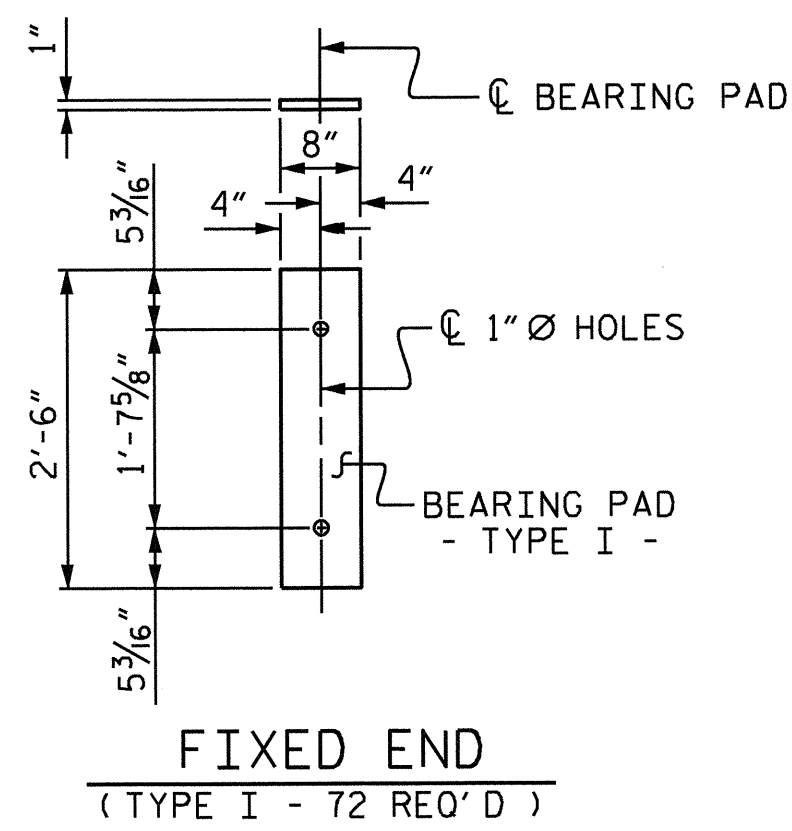
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF 30' UNIT
 33'-10" CLEAR ROADWAY
 105° SKEW



ASSEMBLED BY : A.C. OUTLAW DATE : 3/30/12
 CHECKED BY : D.G. ELY DATE : 6/5/12
 DRAWN BY : DCE 5/09 REV. 12/5/11 MAA/AAC
 CHECKED BY : BCH 6/09

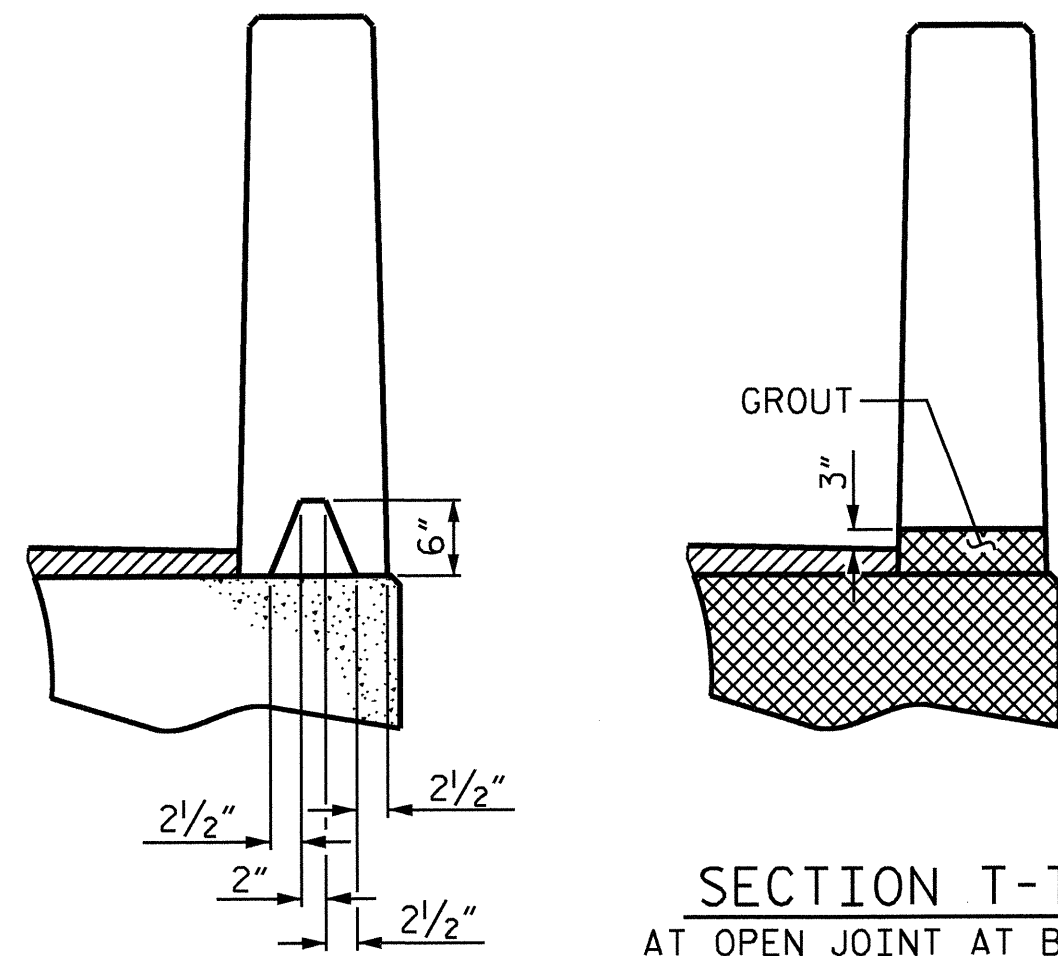
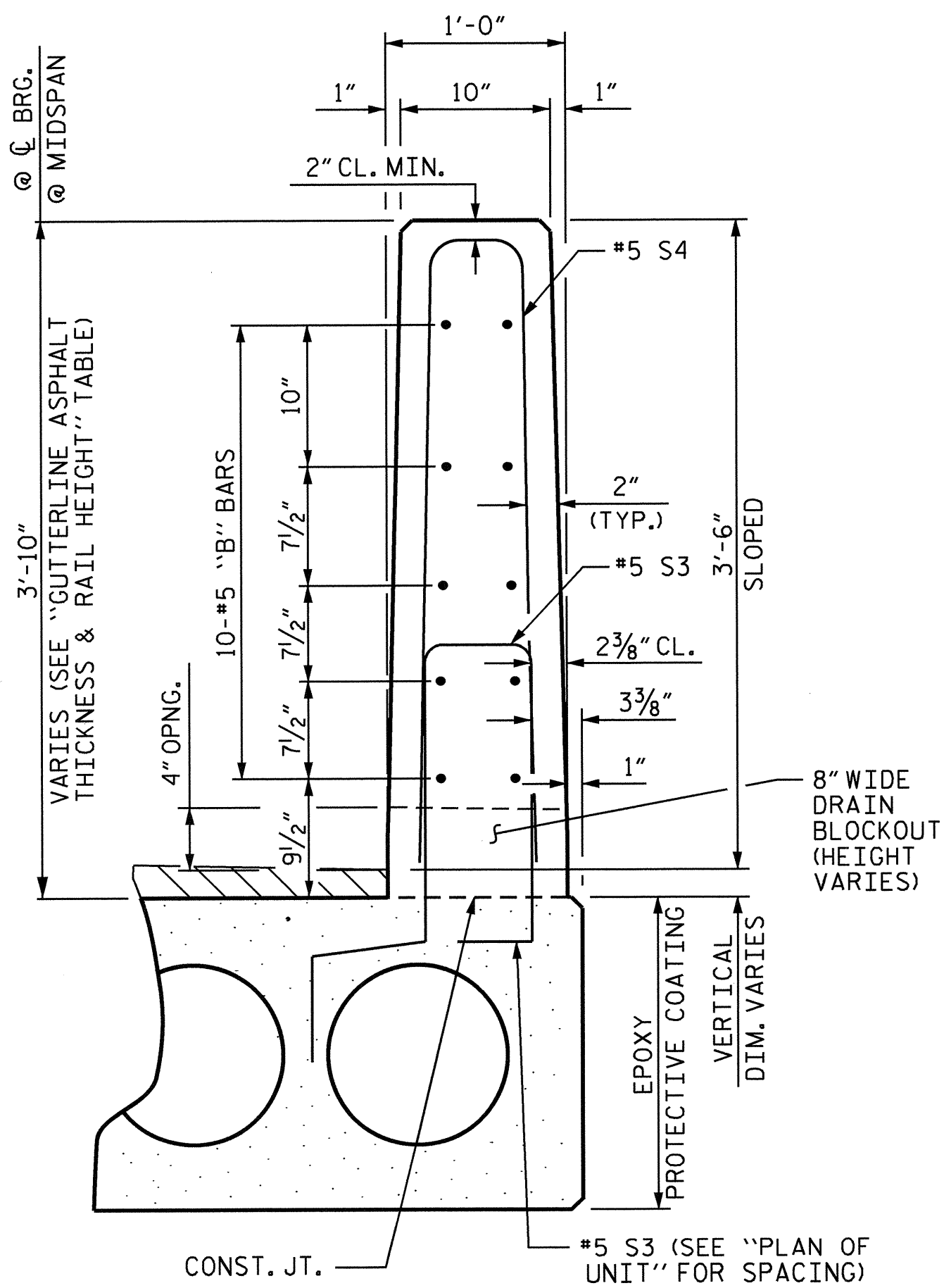
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-10
2			4			73



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

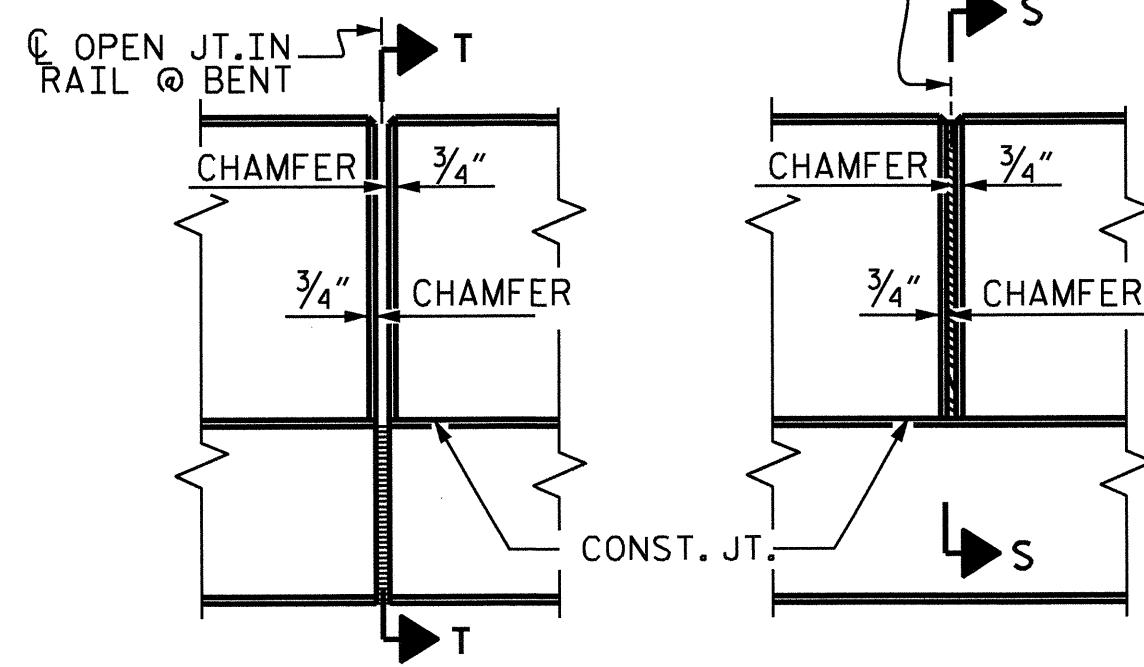
ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.



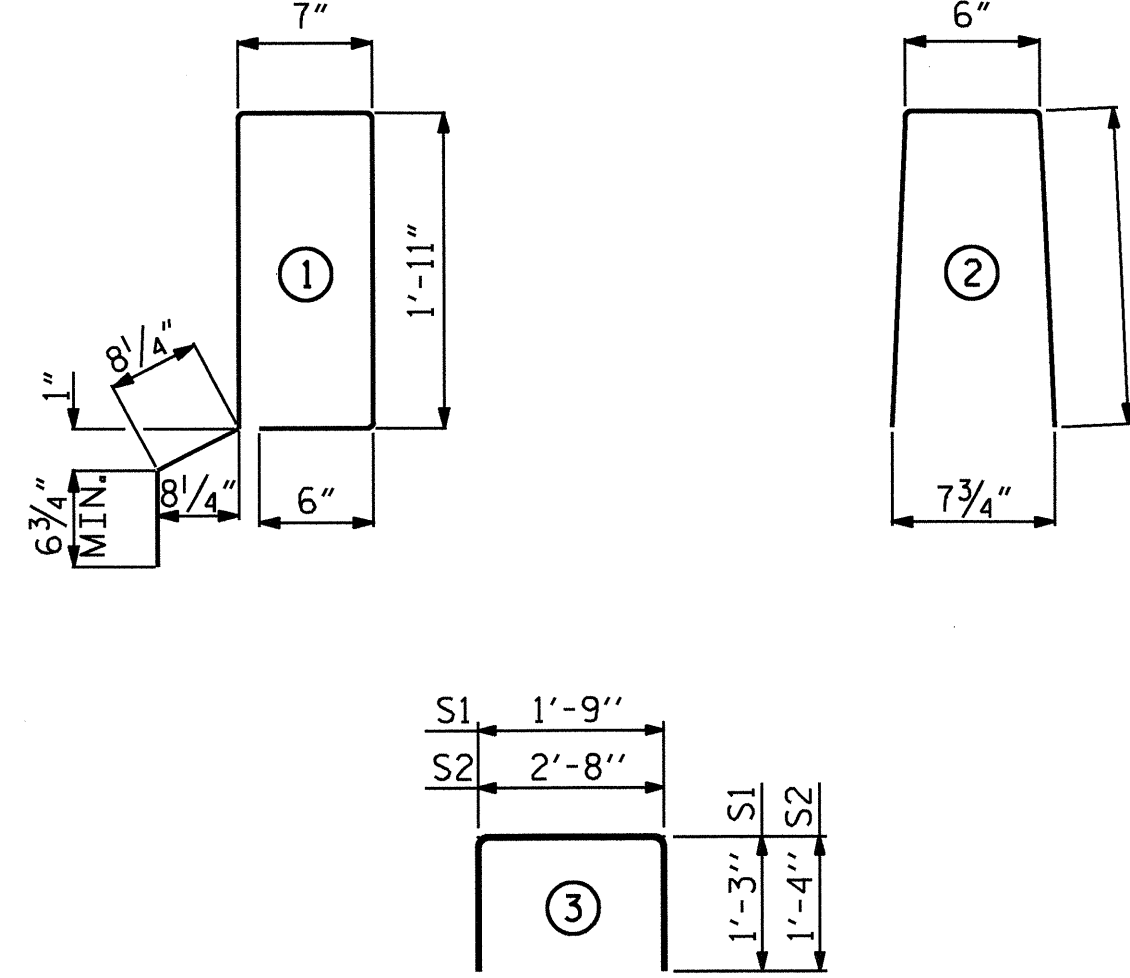
SECTION S-S
 AT DAM IN OPEN JOINT
 (THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

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



VERTICAL CONCRETE BARRIER RAIL SECTION

BAR TYPES

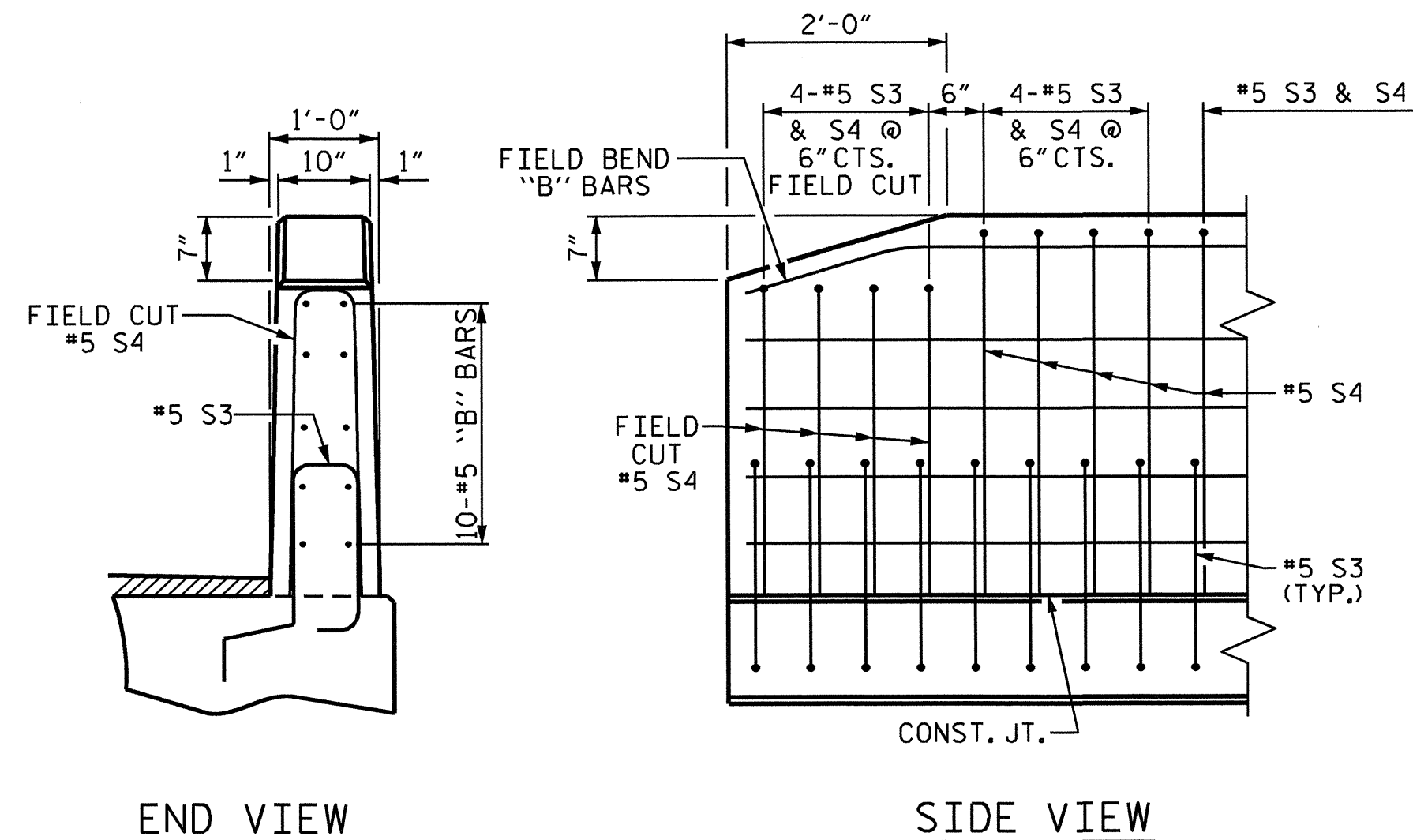


CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
25' UNIT			
EXTERIOR C.S.	2	25'-0"	50'-0"
INTERIOR C.S.	10	25'-0"	250'-0"
TOTAL	12	25'-0"	300'-0"

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
30' UNIT			
EXTERIOR C.S.	2	30'-0"	60'-0"
INTERIOR C.S.	10	30'-0"	300'-0"
TOTAL	12	30'-0"	360'-0"

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
50' UNIT			
EXTERIOR C.S.	2	50'-0"	100'-0"
INTERIOR C.S.	10	50'-0"	500'-0"
TOTAL	12	50'-0"	600'-0"

CONCRETE RELEASE STRENGTH	
UNIT	PSI
25', 30' UNITS	4000
50' UNITS	4900



END OF RAIL DETAILS

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.

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

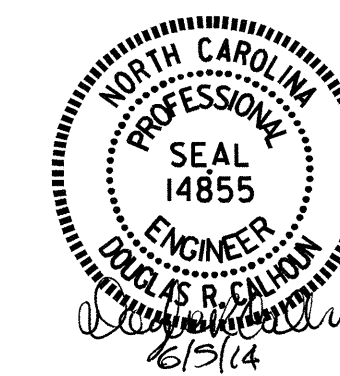
THE DRAIN OPENING AT THE GUTTERLINE SHALL BE 4" X 8". THE HEIGHT OF THE BLOCKOUT IN THE VERTICAL CONCRETE BARRIER RAIL SHALL EXTEND FROM THE TOP OF THE CORED SLAB UNIT TO THE TOP OF THE DRAIN OPENING.

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

PROJECT NO. B-5117
BLADEN COUNTY
 STATION: 26+16.00 -L-

SHEET 5 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 1'-9"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT
 105° SKEW



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-11
1			3			TOTAL SHEETS
2			4			23

ASSEMBLED BY : A.C. OUTLAW	DATE : 3/30/12
CHECKED BY : D. G. ELY	DATE : 6/5/12
DRAWN BY : DGE 5/09	REV. 12/11
CHECKED BY : BCH 6/09	MAA/AAC

BILL OF MATERIAL FOR ONE 25' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B1	2	#4	STR	24'-7"	33	24'-7"	33
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	68	#4	3	5'-4"	242	5'-4"	242
* S3	34	#5	1	6'-2"	219		
REINFORCING STEEL				LBS.	310		310
* EPOXY COATED REINFORCING STEEL				LBS.	219		
5000 P.S.I. CONCRETE				CU. YDS.	3.8		3.8
0.6" Ø L.R. STRANDS				No.	9		9

BILL OF MATERIAL FOR ONE 30' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B2	2	#4	STR	29'-7"	40	29'-7"	40
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	78	#4	3	5'-4"	278	5'-4"	278
* S3	39	#5	1	6'-2"	251		
REINFORCING STEEL				LBS.	353		353
* EPOXY COATED REINFORCING STEEL				LBS.	251		
5000 P.S.I. CONCRETE				CU. YDS.	4.5		4.5
0.6" Ø L.R. STRANDS				No.	9		9

BILL OF MATERIAL FOR ONE 50' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B6	4	#4	STR	25'-9"	69	25'-9"	69
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	118	#4	3	5'-4"	420	5'-4"	420
* S3	59	#5	1	6'-2"	379		
REINFORCING STEEL				LBS.	524		524
* EPOXY COATED REINFORCING STEEL				LBS.	379		
6500 P.S.I. CONCRETE				CU. YDS.	7.3		7.3
0.6" Ø L.R. STRANDS				No.	19		19

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
25' UNIT						
* B8	20	20	#5	STR	24'-6"	511
* S4	68	68	#5	2	7'-2"	508
* EPOXY COATED REINFORCING STEEL						LBS. 1019
CLASS AA CONCRETE						CU. YDS. 6.6
TOTAL VERTICAL CONCRETE BARRIER RAIL						LN. FT. 50.25

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
30' UNIT						
* B9	20	20	#5	STR	29'-6"	615
* S4	78	78	#5	2	7'-2"	583
* EPOXY COATED REINFORCING STEEL						LBS. 1198
CLASS AA CONCRETE						CU. YDS. 7.9
TOTAL VERTICAL CONCRETE BARRIER RAIL						LN. FT. 60.25

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
50' UNIT						
* B13	80	80	#5	STR	14'-2"	1182
* S4	118	118	#5	2	7'-2"	882
* EPOXY COATED REINFORCING STEEL						LBS. 2064
CLASS AA CONCRETE						CU. YDS. 13.1
TOTAL VERTICAL CONCRETE BARRIER RAIL						LN. FT. 100.25

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
33'-10" CLEAR ROADWAY	ASPHALT OVERLAY THICKNESS	RAIL HEIGHT
	@ MID-SPAN	@ MID-SPAN
	SUPERED SECTION	
25' & 30' UNITS	3 3/8"	3'-9 3/8"
50' UNITS	1 1/2"	3'-7 3/4"

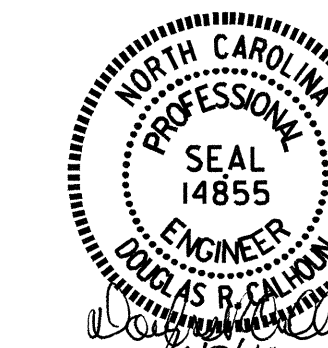
DEAD LOAD DEFLECTION AND CAMBER	
25' & 30' CORED SLAB UNIT	3'-0" x 1'-9" 0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1/2" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/8" ↓
FINAL CAMBER	3/8" ↑

** INCLUDES FUTURE WEARING SURFACE

DEAD LOAD DEFLECTION AND CAMBER	
50' CORED SLAB UNIT	3'-0" x 1'-9" 0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2 1/2" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/4" ↓
FINAL CAMBER	2 1/4" ↑

** INCLUDES FUTURE WEARING SURFACE

ASSEMBLED BY : A.C. OUTLAW DATE : 3/30/12
 CHECKED BY : D. G. ELY DATE : 6/5/12
 DRAWN BY : DGE 5/09 REV. 12/11 MAA/AAC
 CHECKED BY : BCH 6/09



PROJECT NO. B-5117
BLADEN COUNTY
 STATION: 26+16.00 -L-

SHEET 6 OF 6

REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	23
1			3			23
2			4			23

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 1'-9"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT
 105° SKEW

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.)

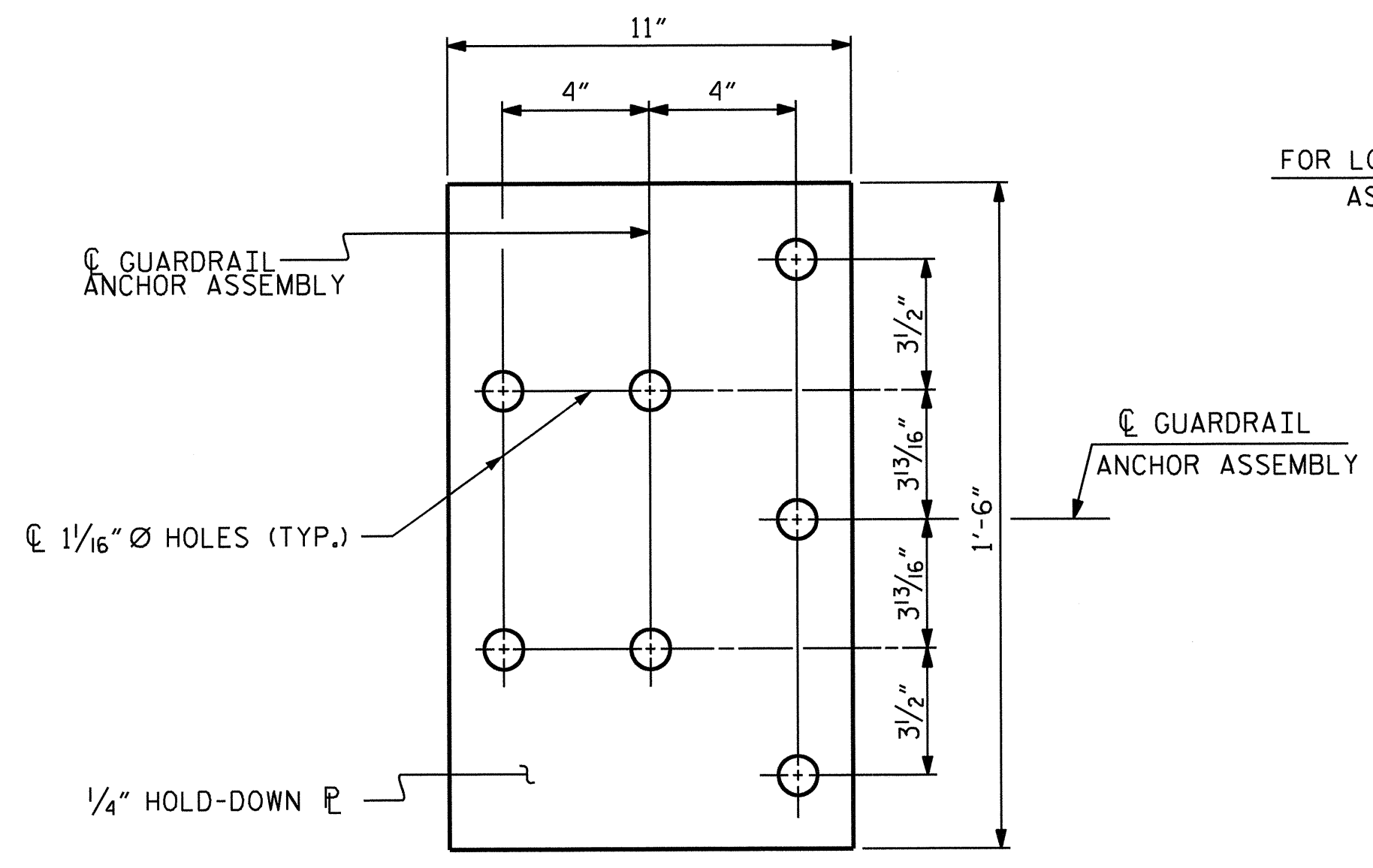
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

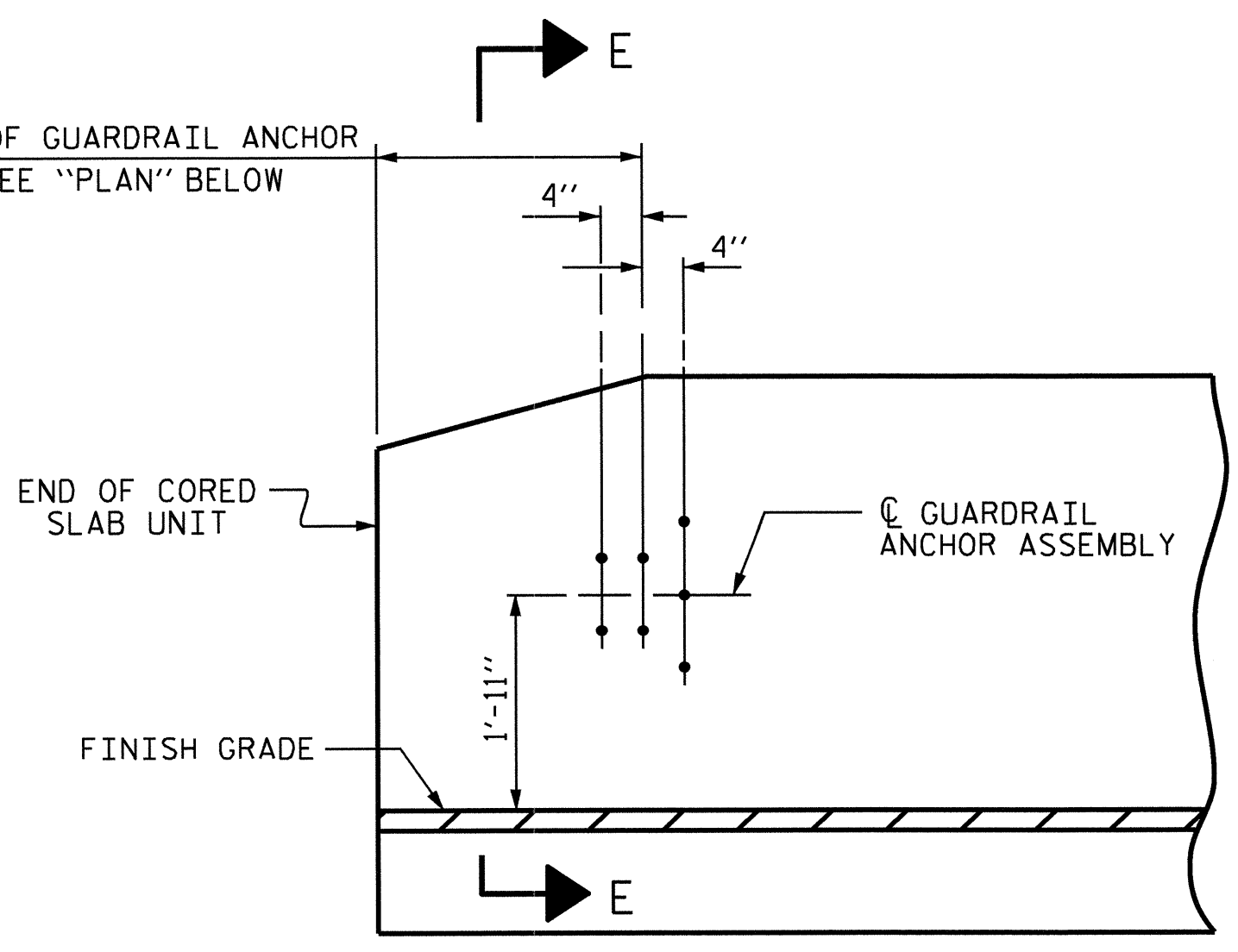
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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.

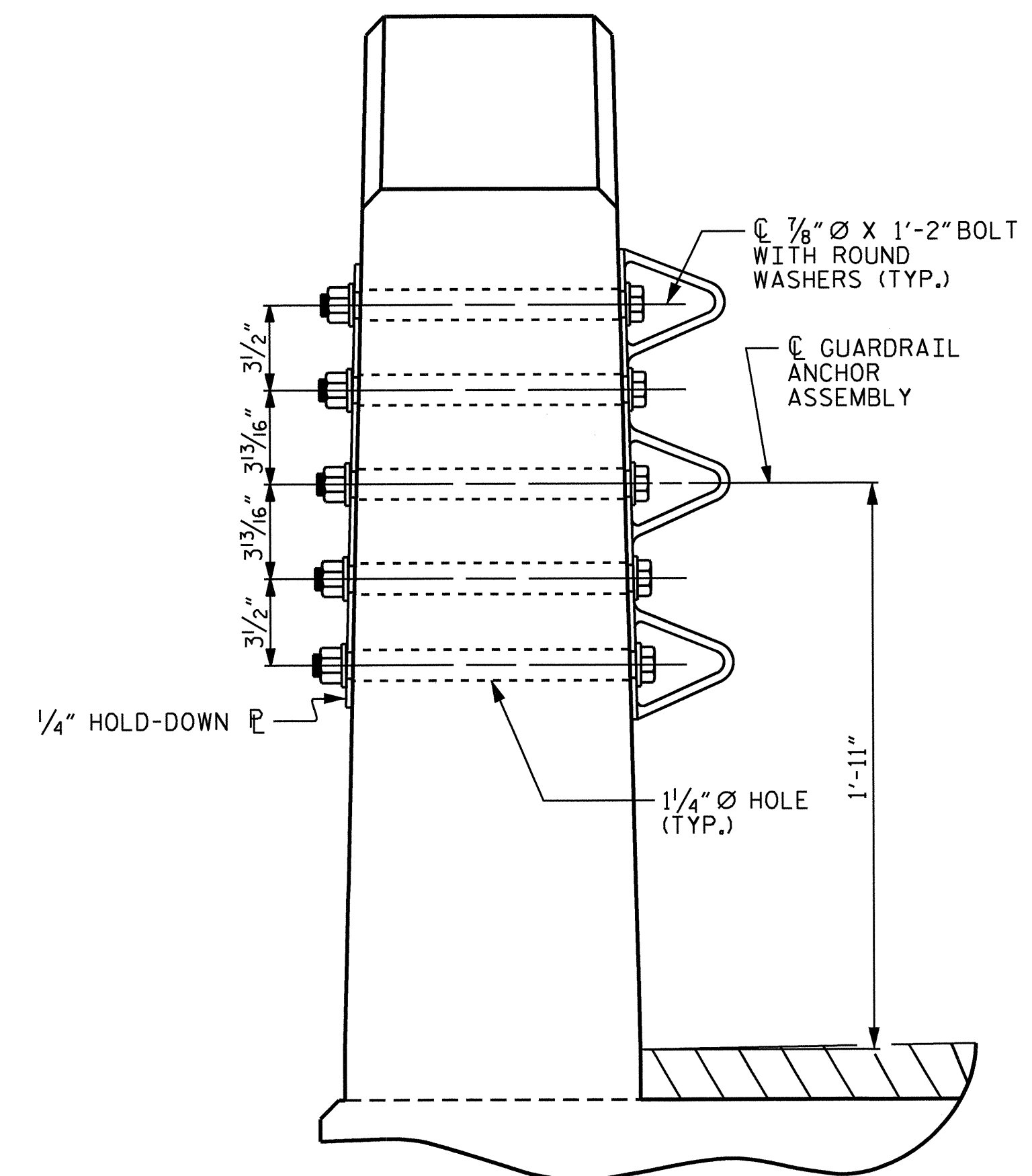


PLAN

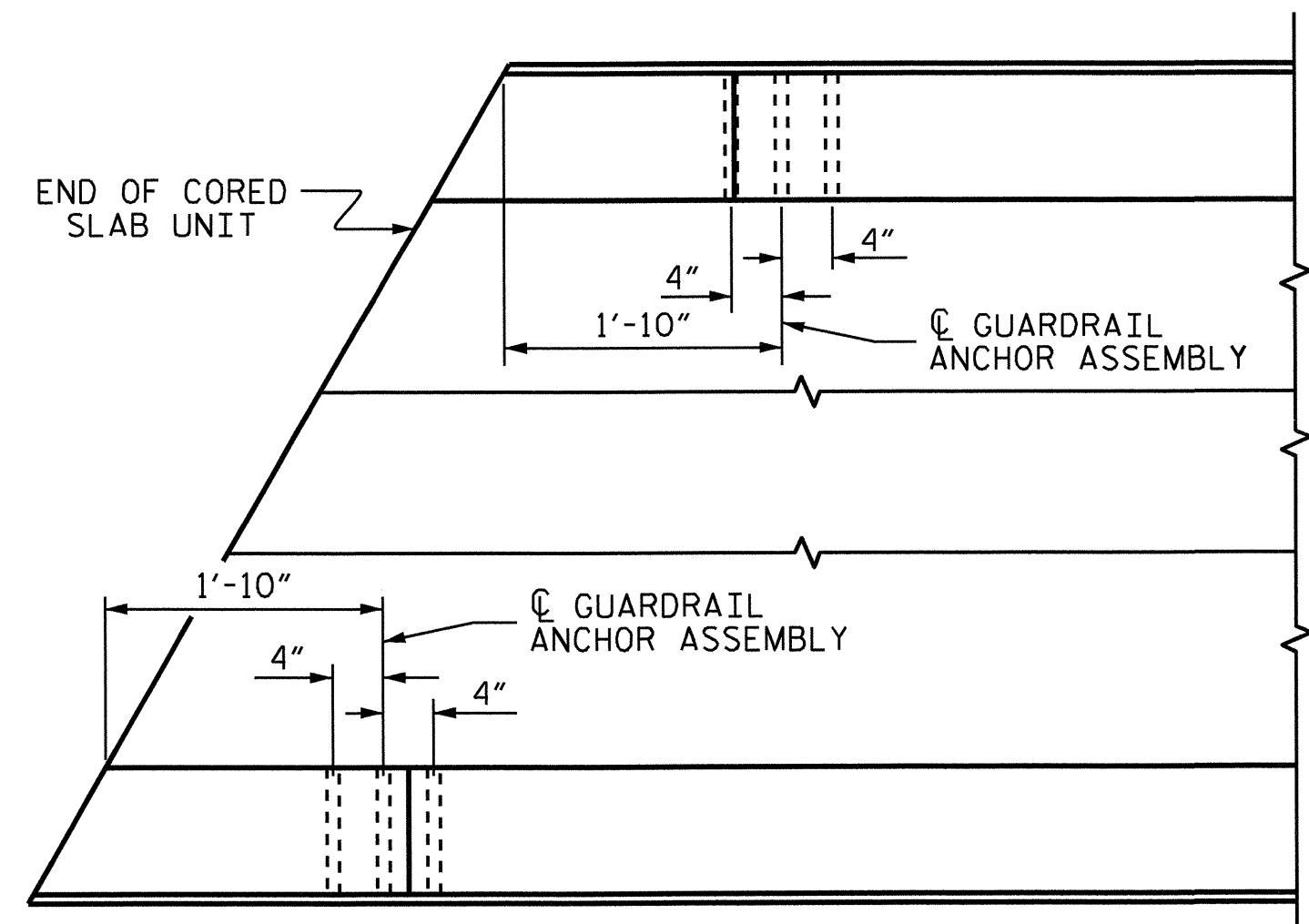
FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



ELEVATION



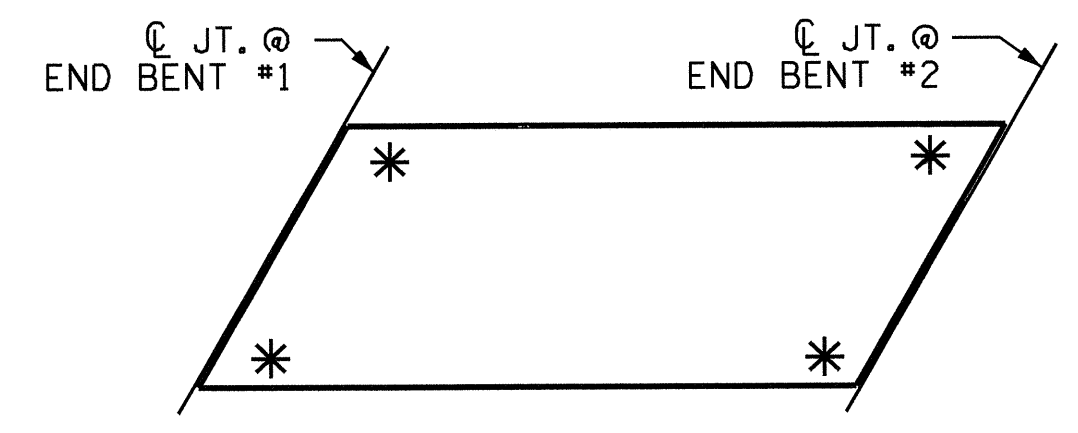
SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



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-5117
BLADEN COUNTY
STATION: 26+16.00 -L-



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

ASSEMBLED BY : A.C. OUTLAW	DATE : 4/02/12
CHECKED BY : D. G. ELY	DATE : 6/05/12
DRAWN BY : MAA 5/10	REV. 10/1/11 MAA/GM
CHECKED BY : GM 5/10	REV. 12/5/11 MAA/GM
	REV. 6/13 MAA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-13
2			4			23

NOTES

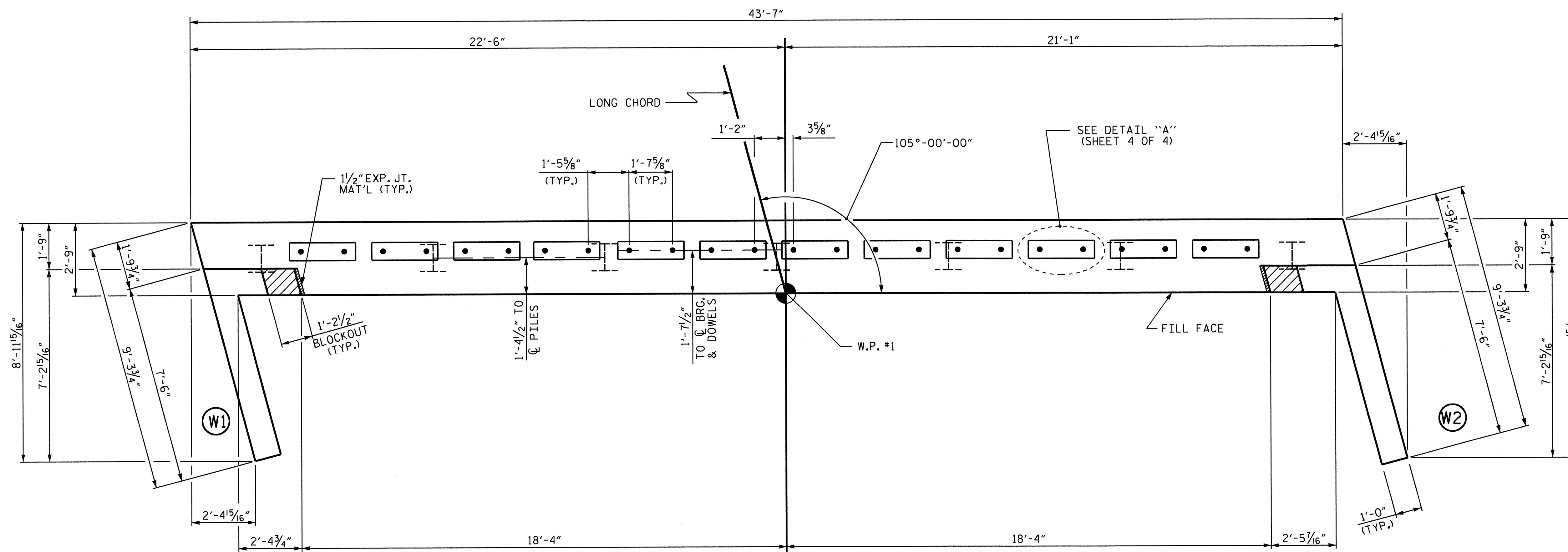
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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

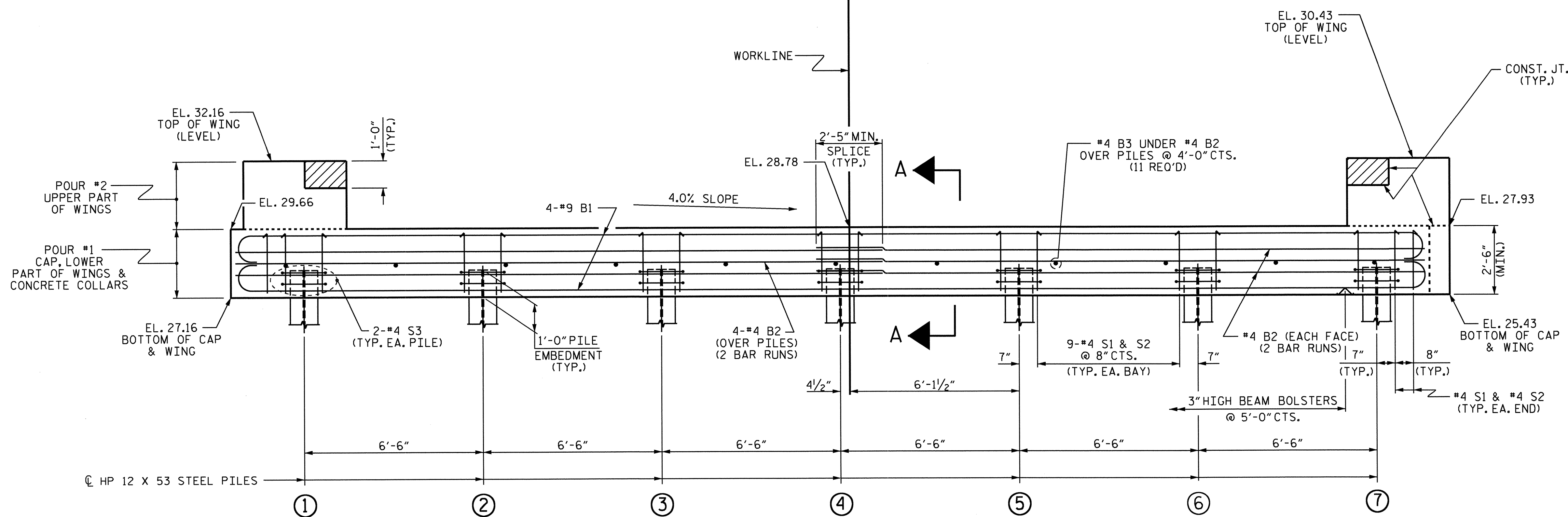
FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

INSTALL THE 4" DIA. 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

TOP OF PILE ELEVATIONS

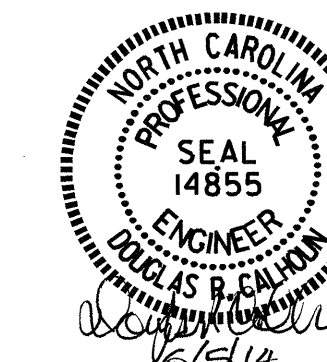
①	28.09
②	27.83
③	27.57
④	27.32
⑤	27.06
⑥	26.80
⑦	26.54

PROJECT NO. B-5117
 BLADEN COUNTY
 STATION: 26+16.00 -L

SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1



ASSEMBLED BY: A.C. OUTLAW DATE: 4/02/12
 CHECKED BY: D. G. ELY DATE: 6/06/12
 DRAWN BY: DGE 02/10
 CHECKED BY: MKT 02/10

WINGS NOT SHOWN FOR CLARITY.
 FOR SECTION A-A, SEE SHEET 4 OF 4.
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-14
2			4			23

NOTES

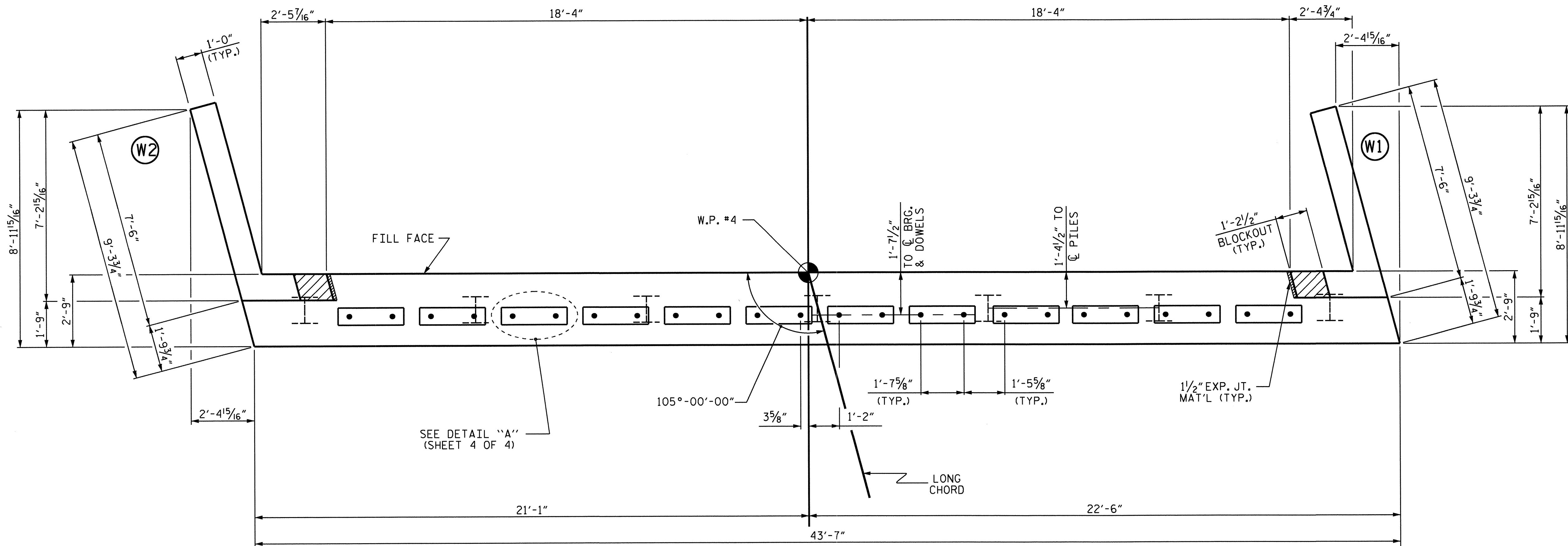
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

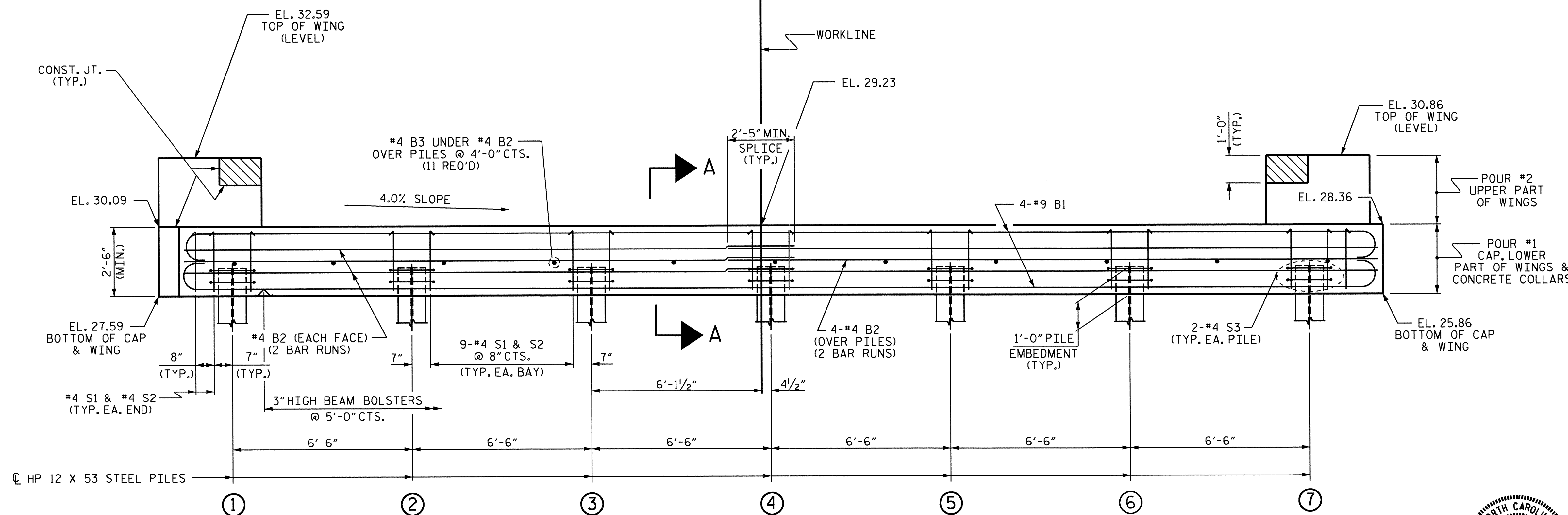
FOR WING DETAILS, SEE SHEET 3 OF 4.

INSTALL THE 4" DIA. 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

TOP OF PILE ELEVATIONS	
①	28.52
②	28.26
③	28.00
④	27.75
⑤	27.49
⑥	27.23
⑦	26.97



ELEVATION

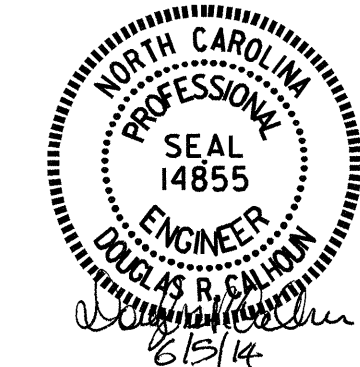
PROJECT NO. B-5117
 BLADEN COUNTY
 STATION: 26+16.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

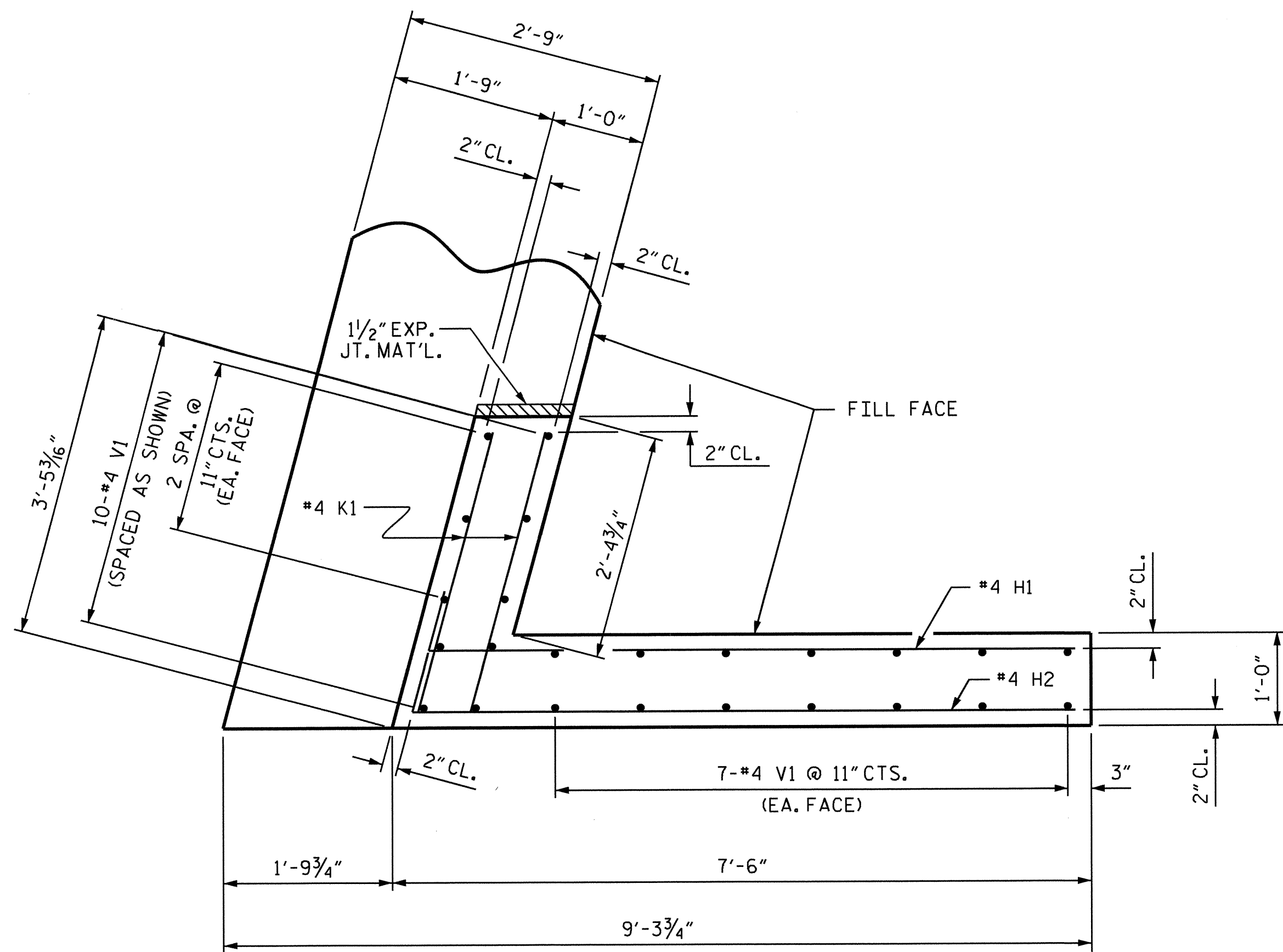
SUBSTRUCTURE
 END BENT No. 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-15
2			4			23

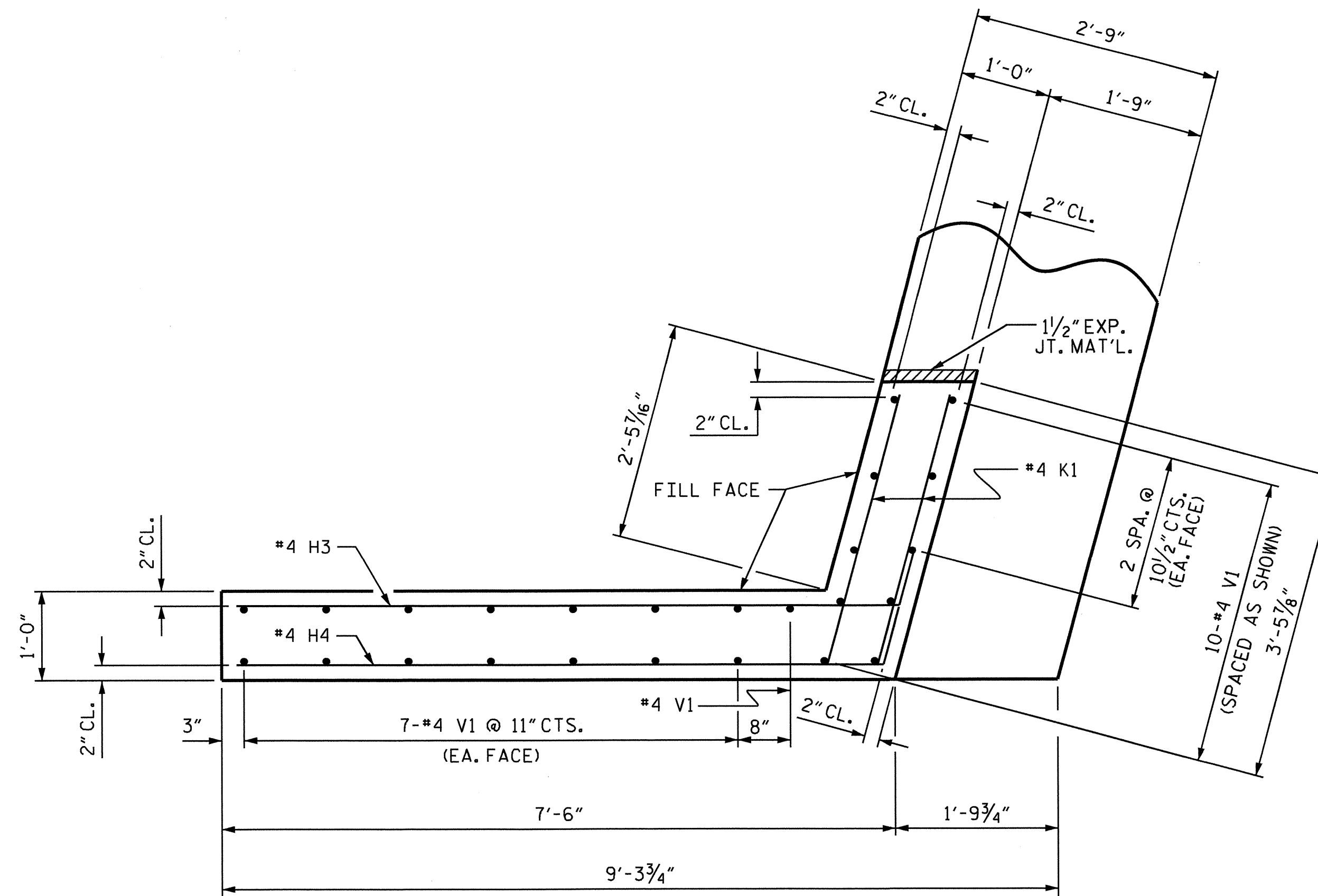


ASSEMBLED BY : A.C. OUTLAW DATE : 4/02/12
 CHECKED BY : D. G. ELY DATE : 6/06/12
 DRAWN BY : DGE 02/10
 CHECKED BY : MKT 02/10

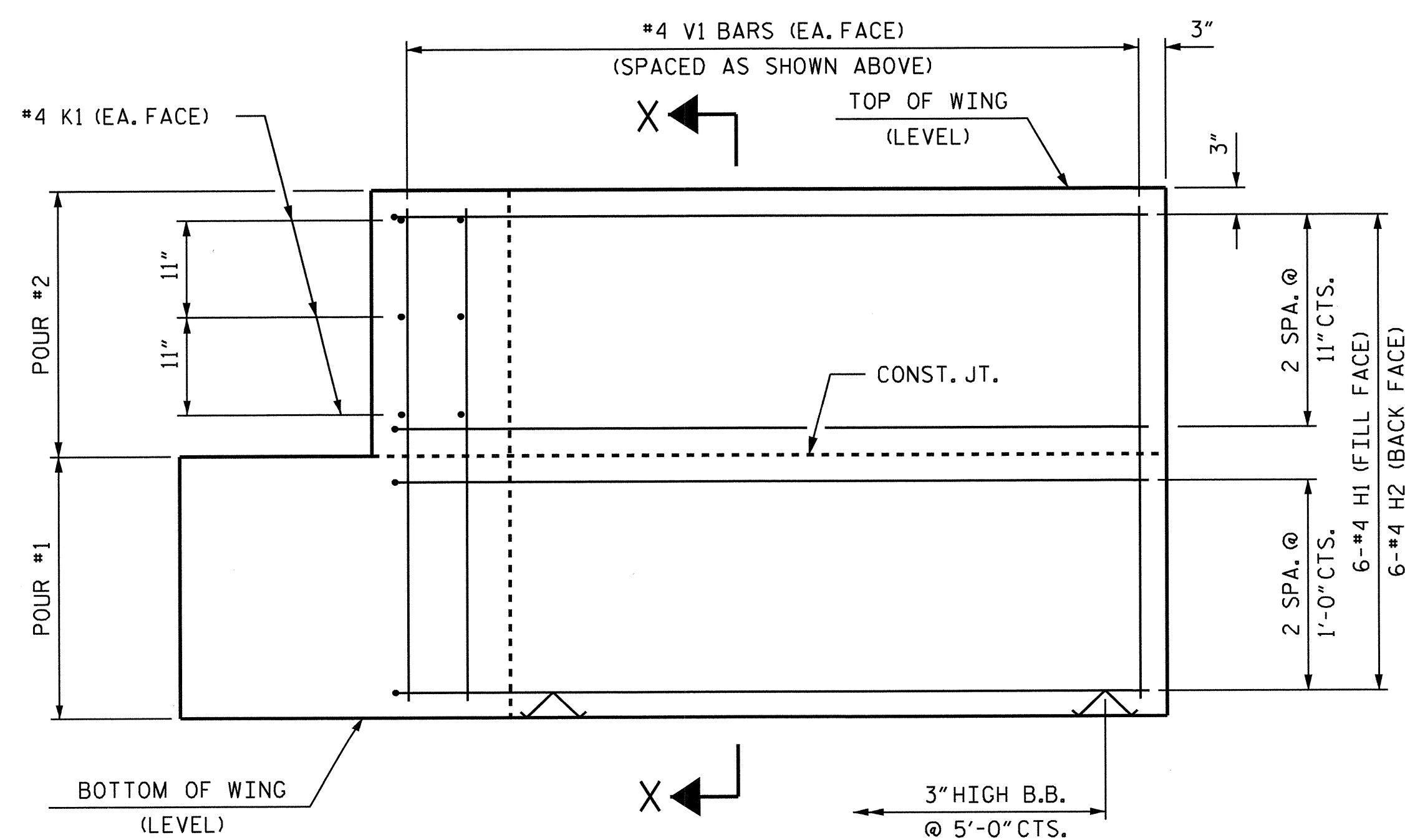
WINGS NOT SHOWN FOR CLARITY.
 FOR SECTION A-A, SEE SHEET 4 OF 4.
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.



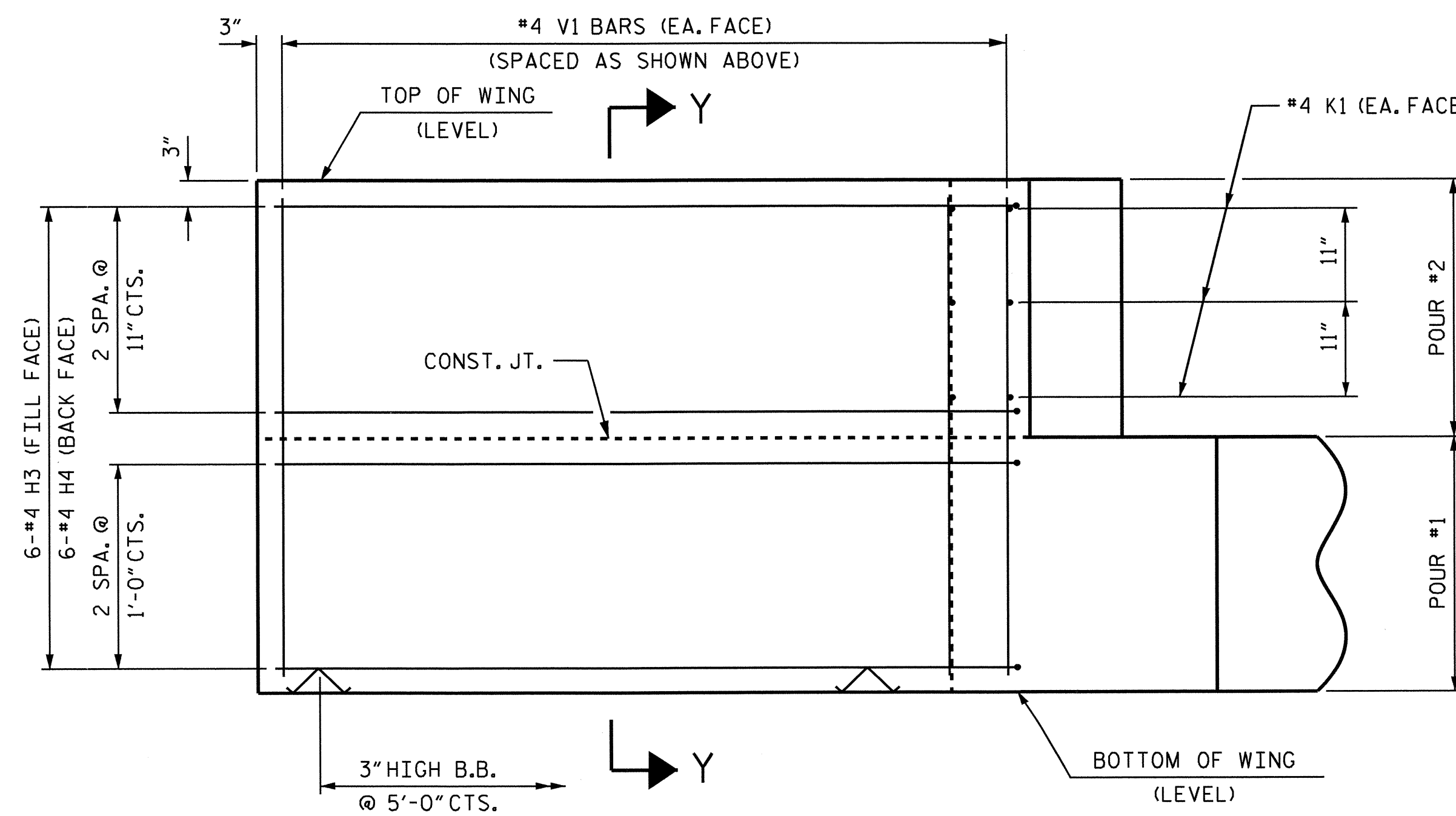
PLAN OF WING (W1)



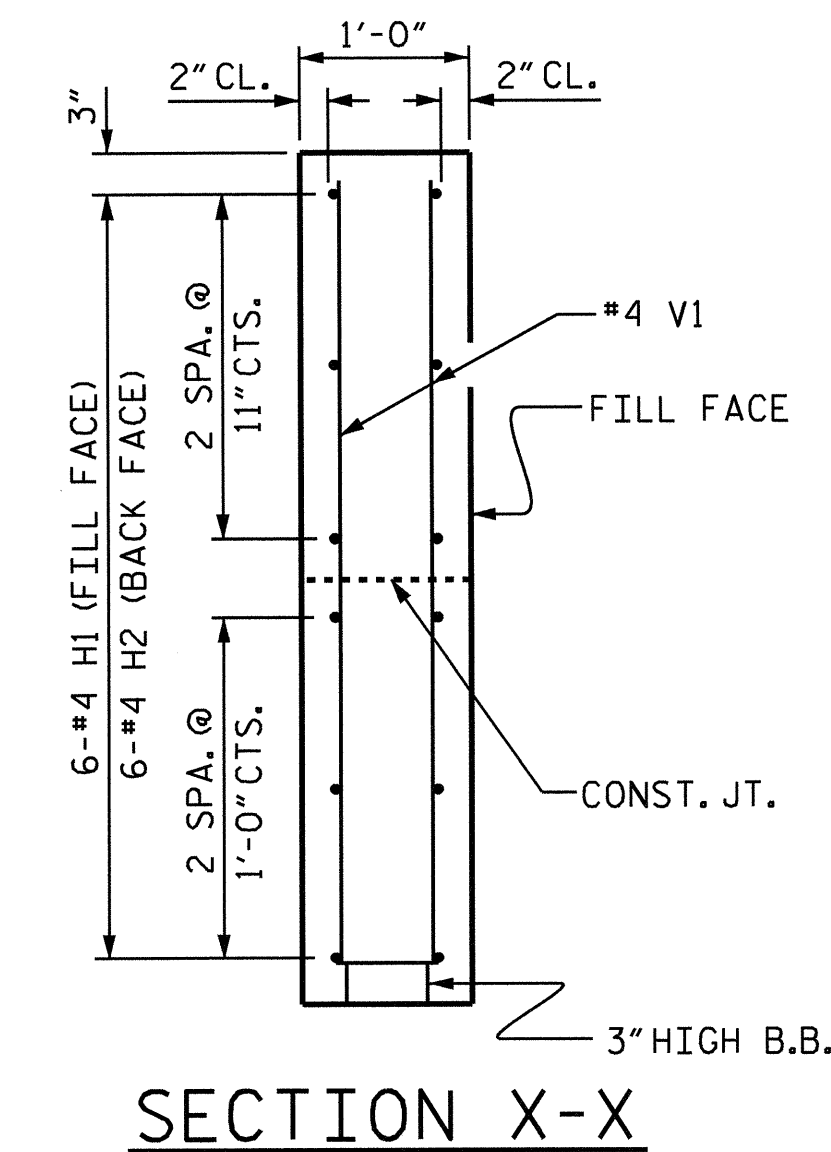
PLAN OF WING (W2)



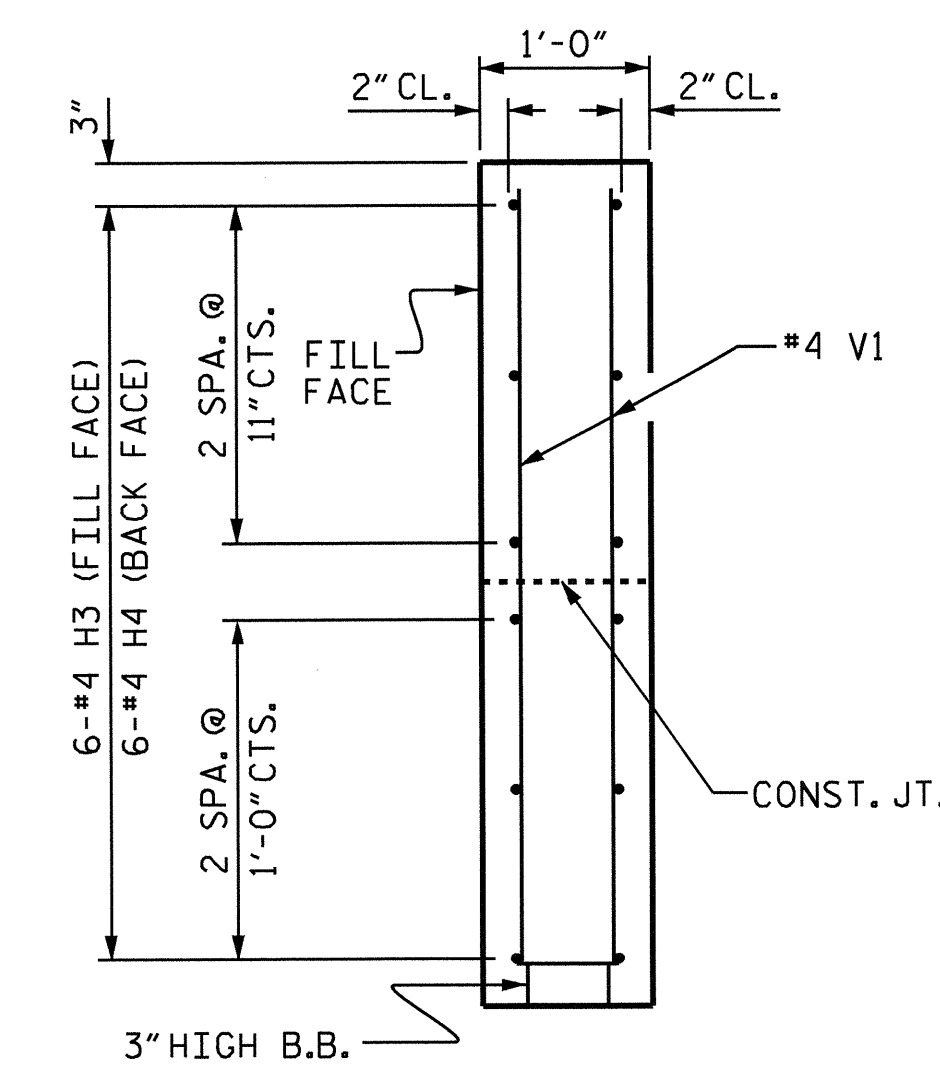
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION X-X

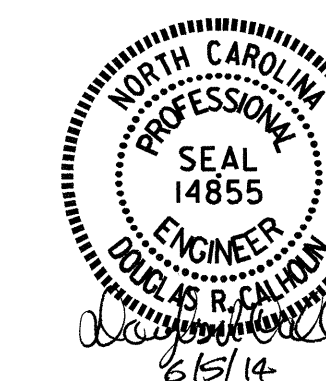


SECTION Y-Y

WING DETAILS

ASSEMBLED BY : A.C. OUTLAW DATE : 4/02/12
 CHECKED BY : D. G. ELY DATE : 6/05/12
 DRAWN BY : DGE 03/10
 CHECKED BY : MKT 03/10

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PROJECT NO. B-5117
 BLADEN COUNTY
 STATION: 26+16.00 -L-

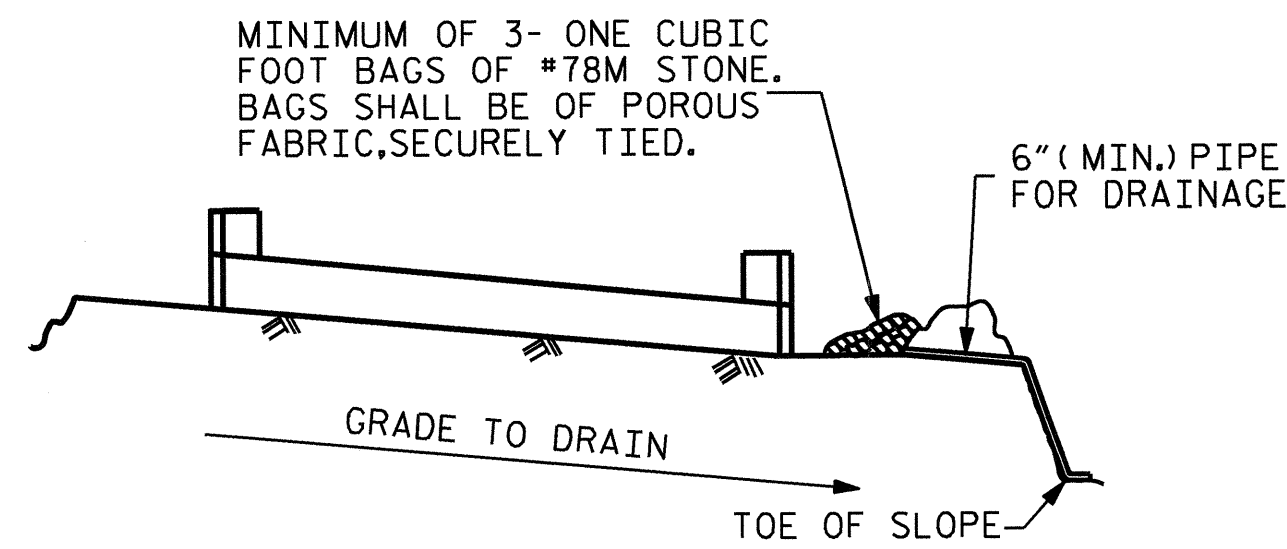
SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT
 WING DETAILS

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
1			3			5	16
2			4			2	3

STD. NO. EB_36_105S

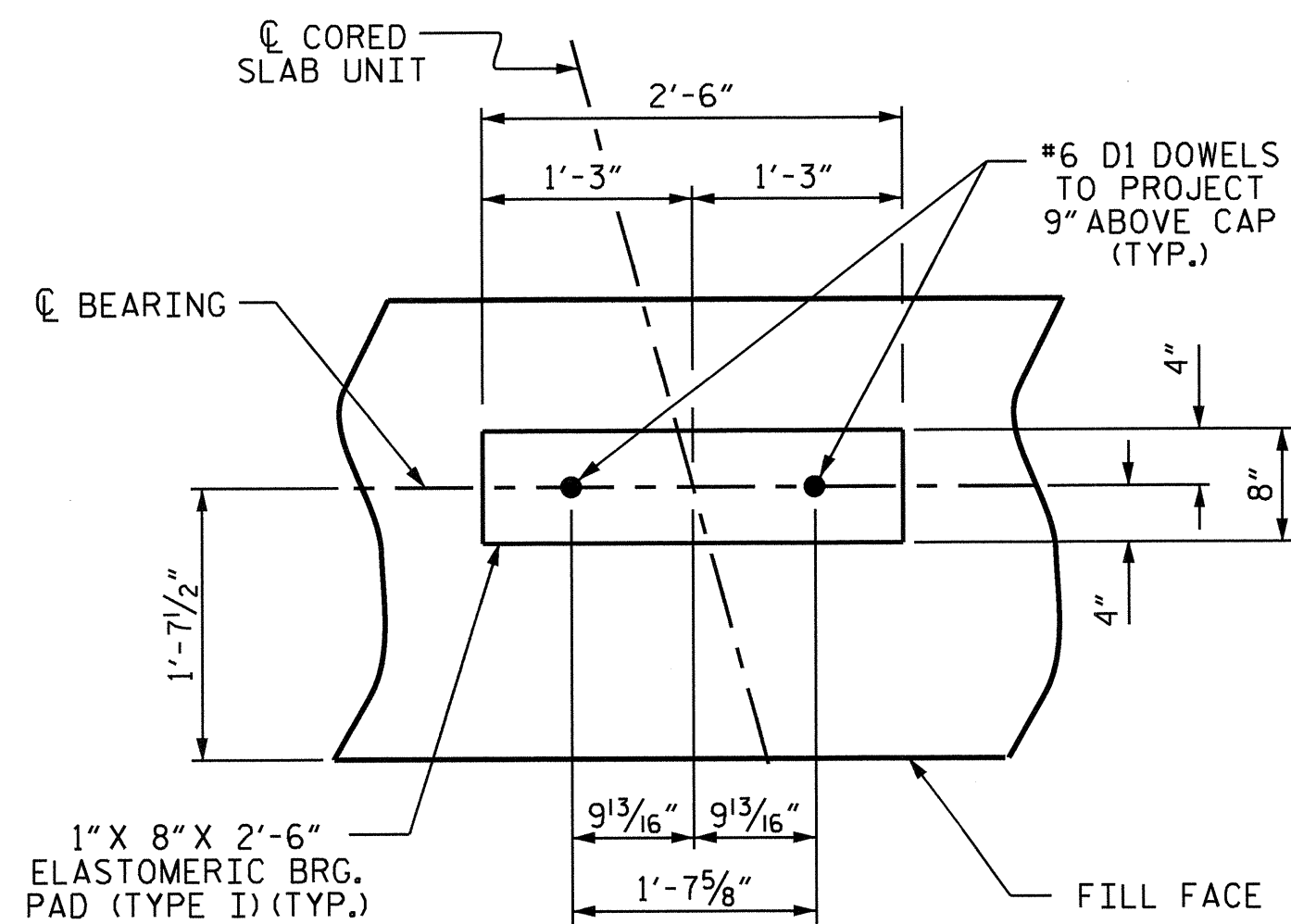


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

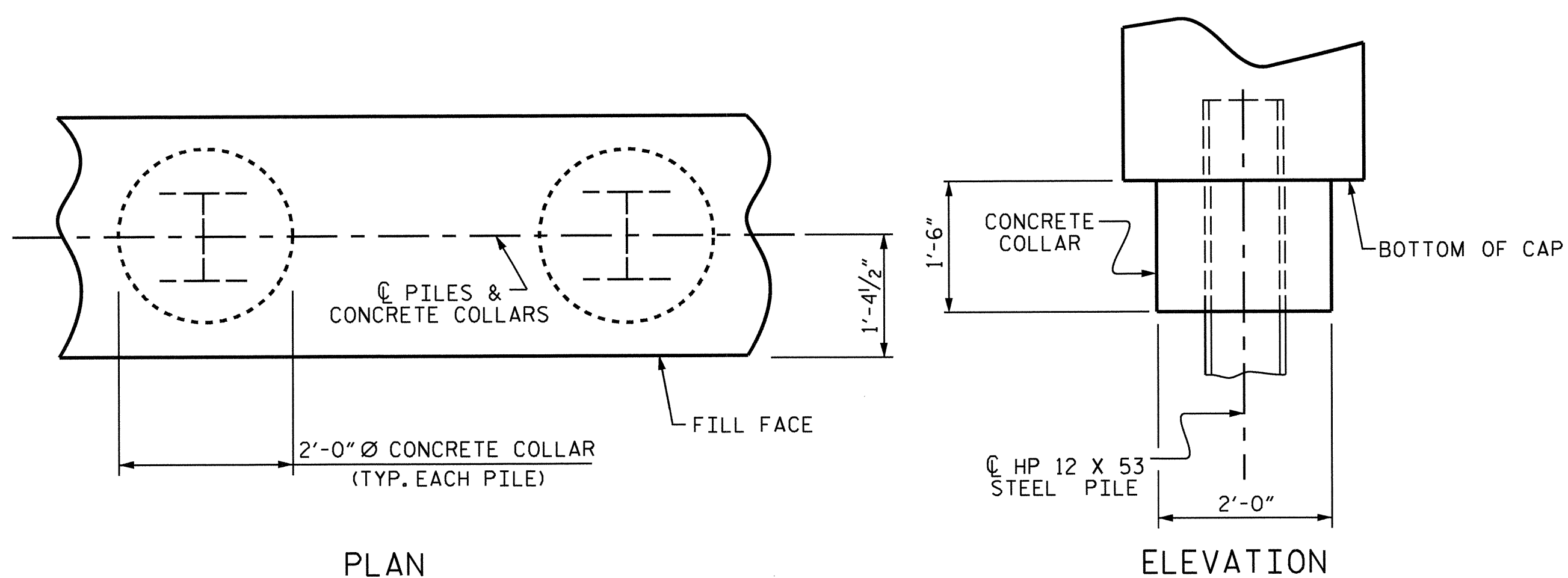
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



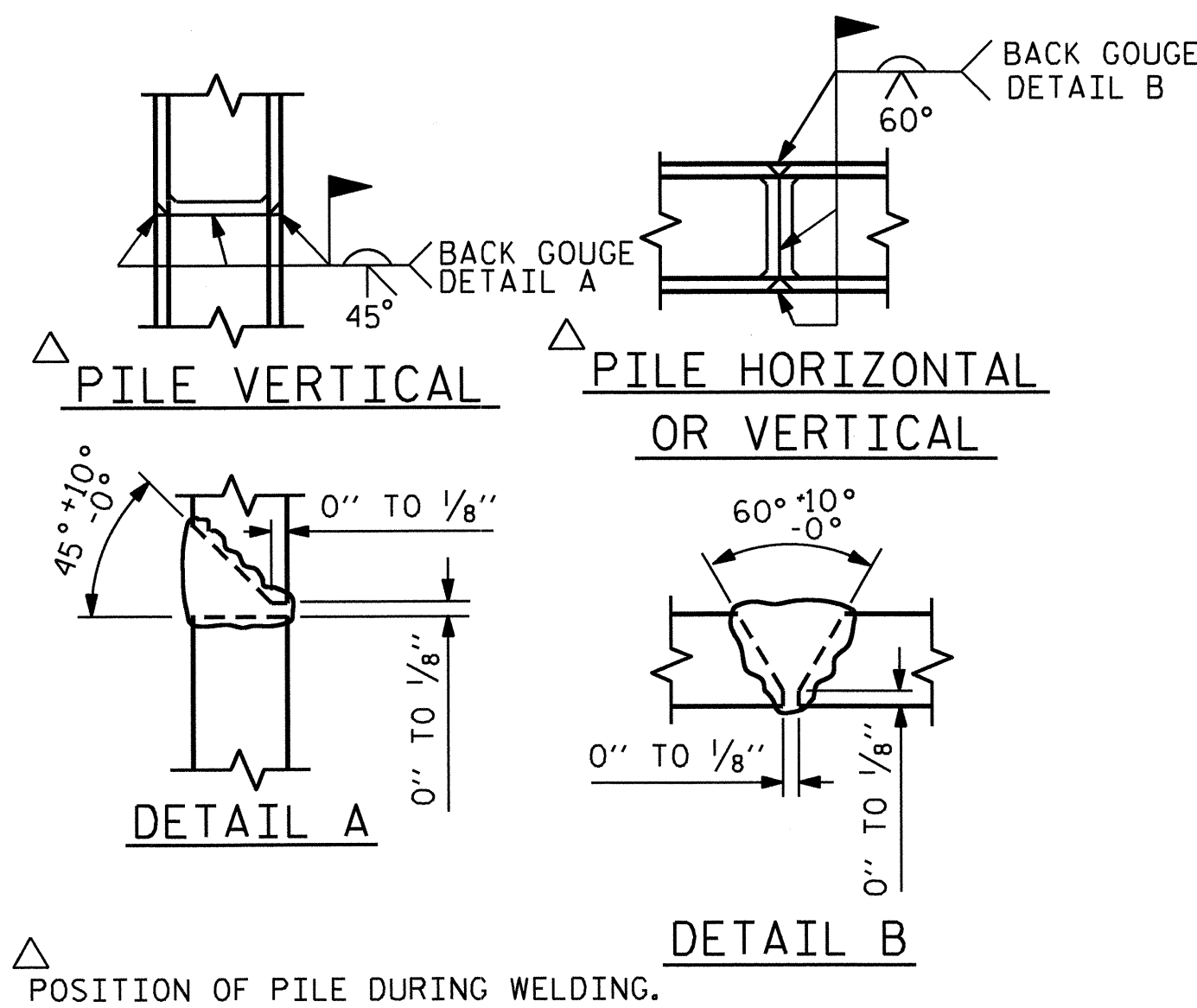
DETAIL "A"

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



CORROSION PROTECTION FOR STEEL PILES DETAIL

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)

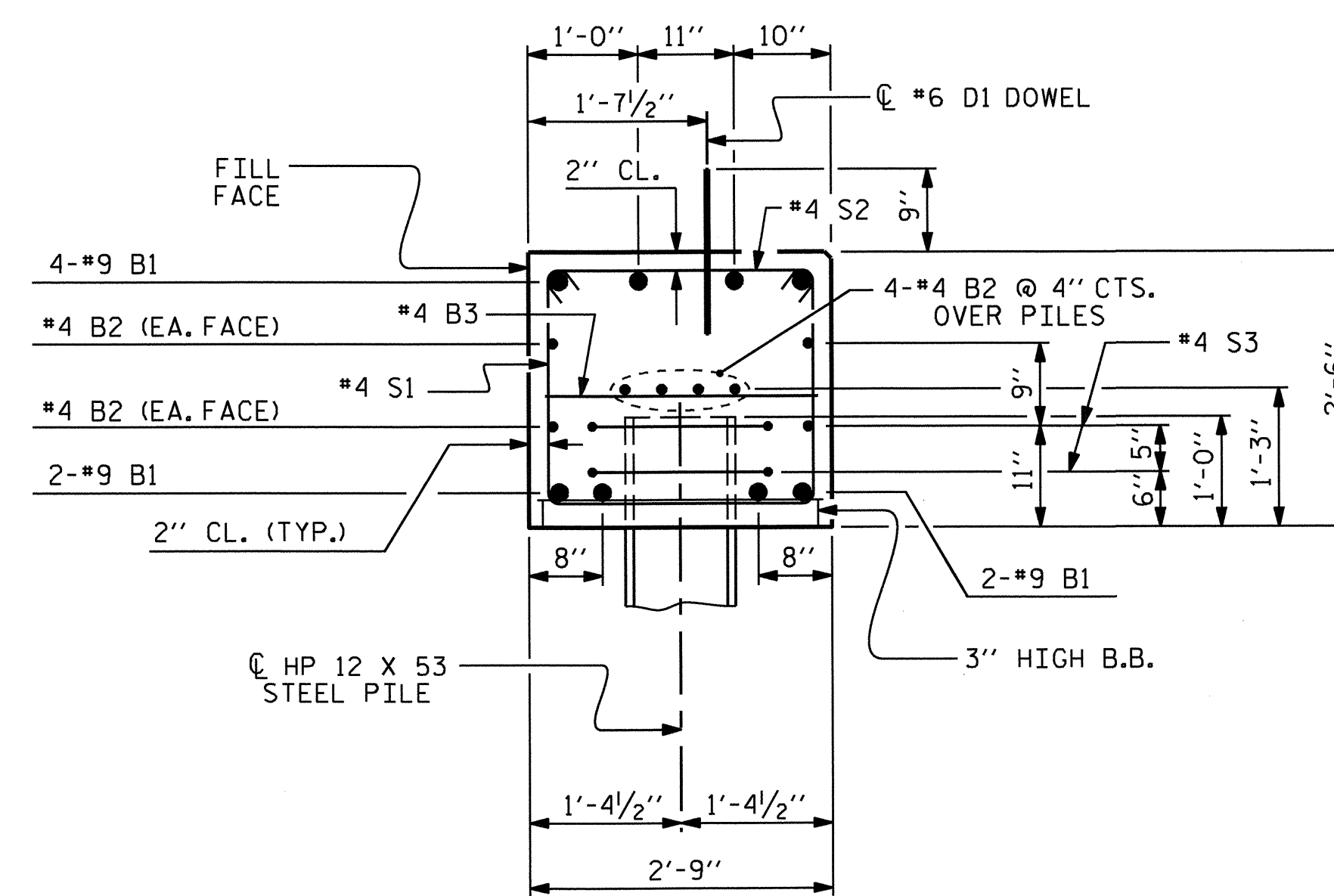


PILE SPLICE DETAILS

BILL OF MATERIAL FOR ONE END BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	45'-7"	1240
B2	16	#4	STR	22'-10"	244
B3	11	#4	STR	2'-5"	18
D1	24	#6	STR	1'-6"	54
H1	6	#4	2	7'-7"	30
H2	6	#4	2	7'-9"	31
H3	6	#4	3	8'-0"	32
H4	6	#4	3	7'-10"	31
K1	12	#4	STR	3'-1"	25
S1	58	#4	4	7'-5"	287
S2	58	#4	5	3'-2"	123
S3	14	#4	6	6'-6"	61
V1	49	#4	STR	4'-8"	153
REINFORCING STEEL (FOR ONE END BENT)					2329 LBS.
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
POUR #1 CAP, LOWER PART OF WINGS & COLLARS					13.5 C.Y.
POUR #2 UPPER PART OF WINGS					1.8 C.Y.
TOTAL CLASS A CONCRETE					15.3 C.Y.

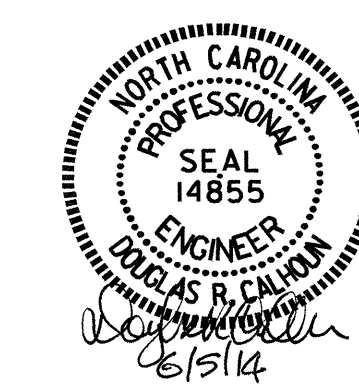
END BENT No. 1		END BENT No. 2	
HP 12 X 53 STEEL PILES	NO: 7	HP 12 X 53 STEEL PILES	NO: 7
PILE REDRIVES	EA. = 4	PILE REDRIVES	EA. = 4
LIN. FT. = 245		LIN. FT. = 245	

ALL BAR DIMENSIONS ARE OUT TO OUT.



SECTION A-A

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



PROJECT NO. B-5117
 BLADEN COUNTY
 STATION: 26+16.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1 & 2
 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-17
1			3			TOTAL SHEETS
2			4			23

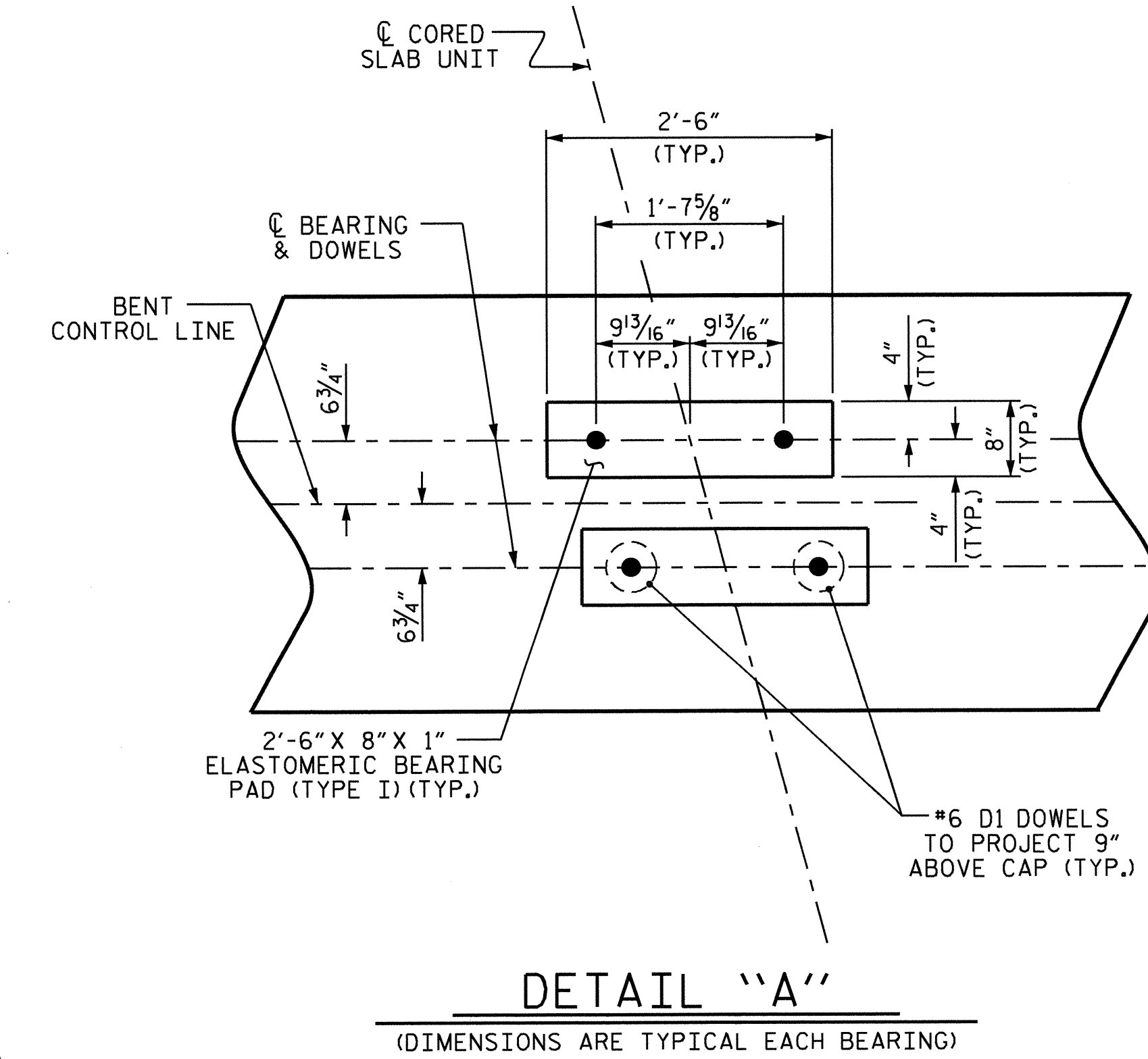
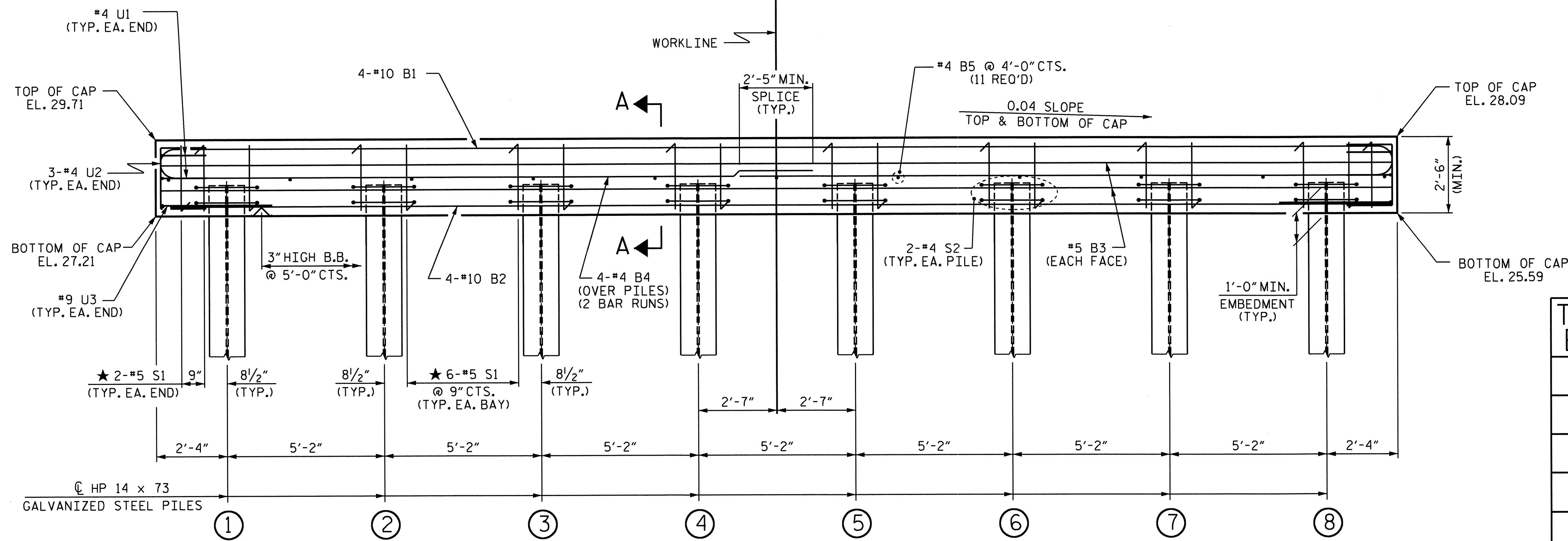
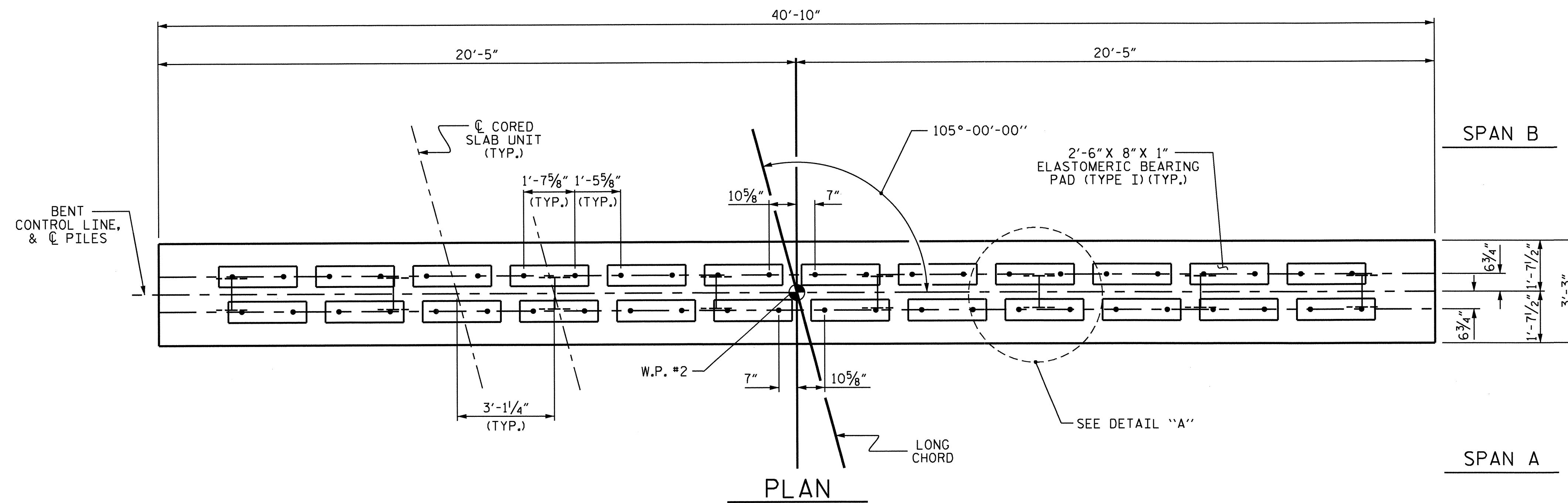
ASSEMBLED BY: A.C. OUTLAW DATE: 4/02/12
 CHECKED BY: D.G. ELY DATE: 6/06/12
 DRAWN BY: DGE 03/10
 CHECKED BY: MKT 03/10

NOTES

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

★ INVERT ALTERNATE STIRRUPS.

GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 27 FEET. GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



TOP OF PILE ELEVATIONS	
①	28.13
②	27.93
③	27.72
④	27.52
⑤	27.31
⑥	27.11
⑦	26.90
⑧	26.70

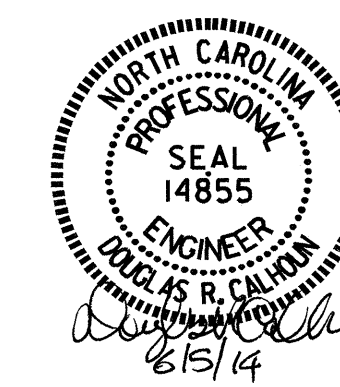
PROJECT NO. B-5117
BLADEN COUNTY
 STATION: 26+16.00 -L

SHEET 1 OF 2

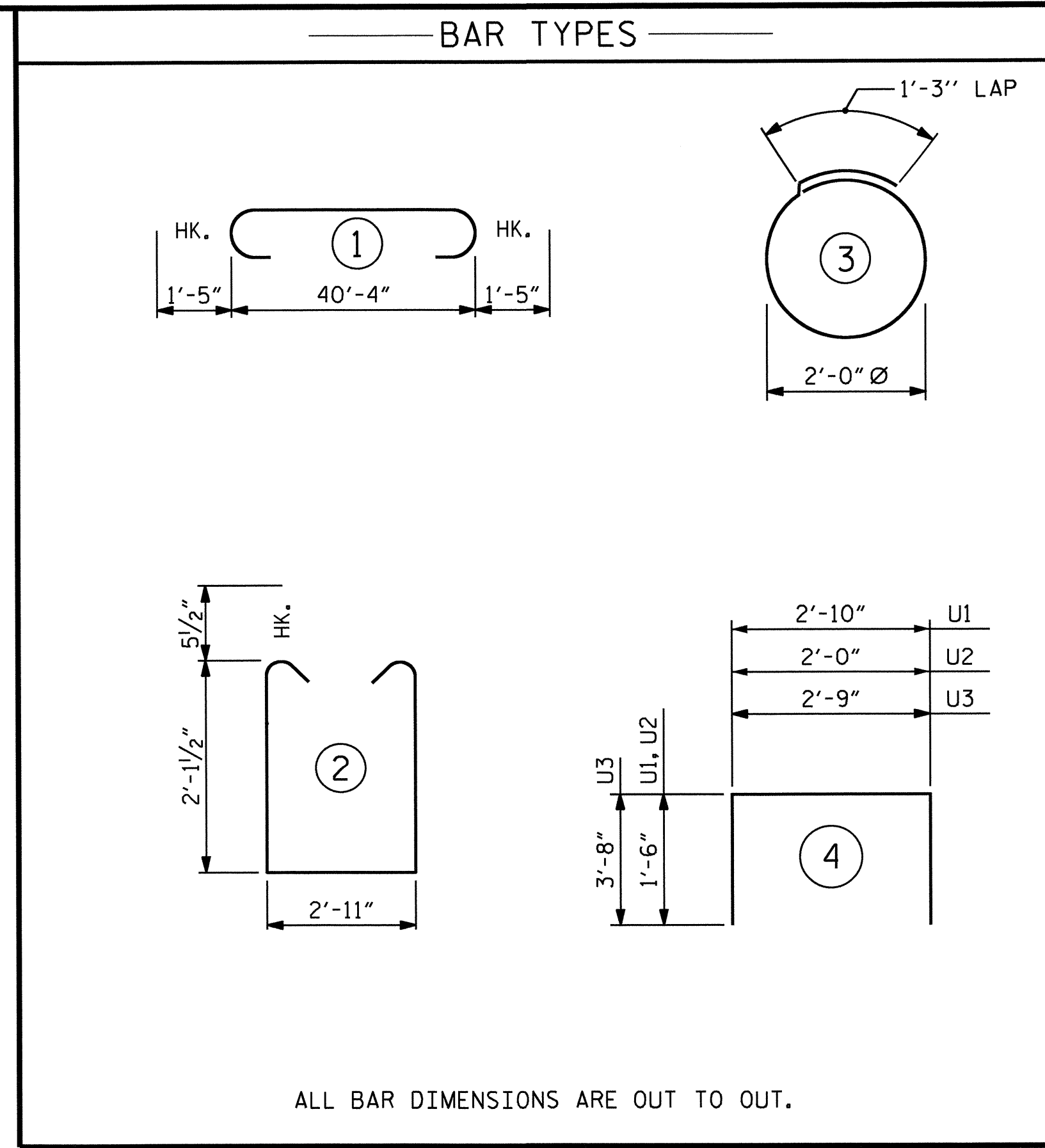
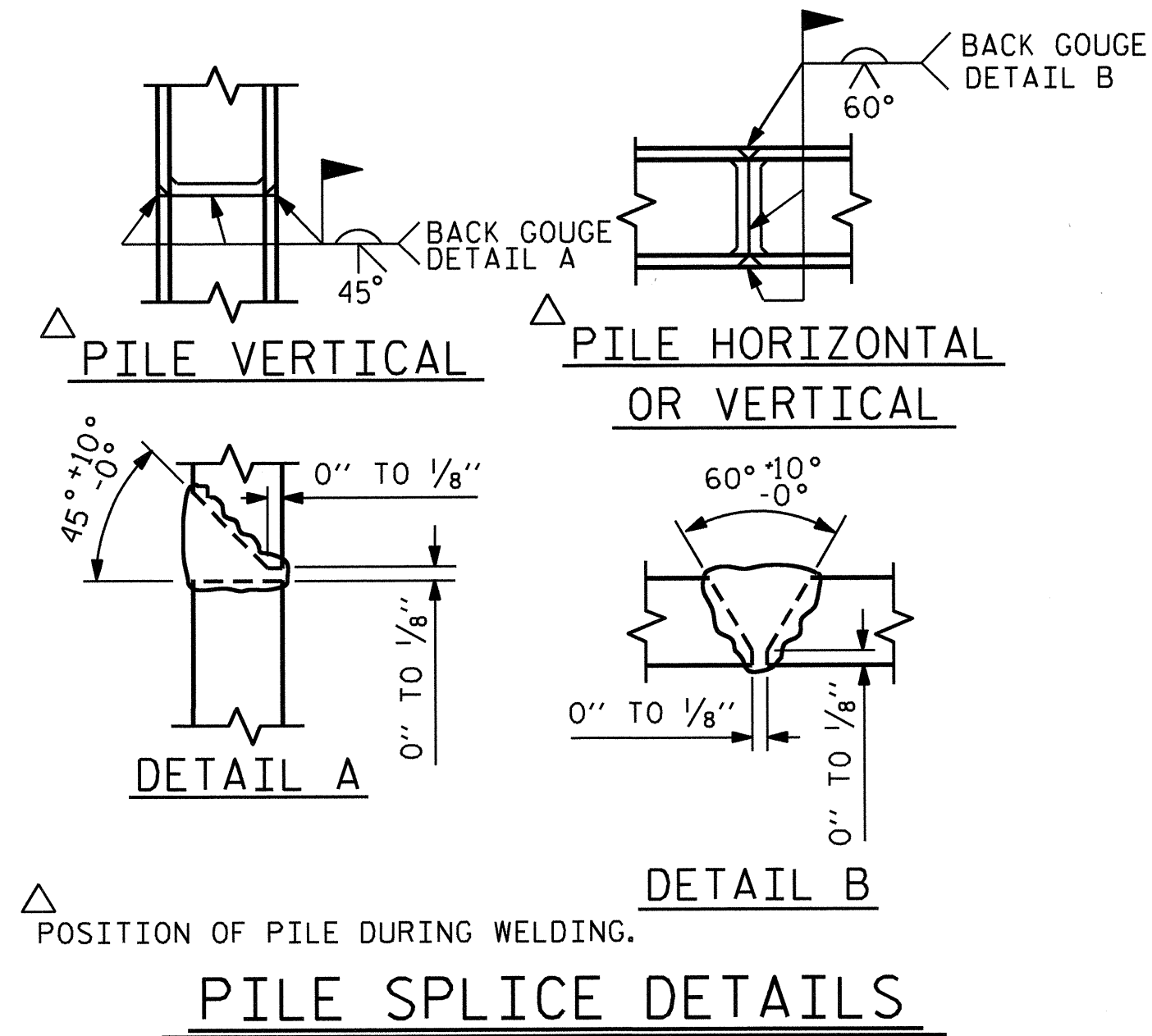
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-13
2			4			23

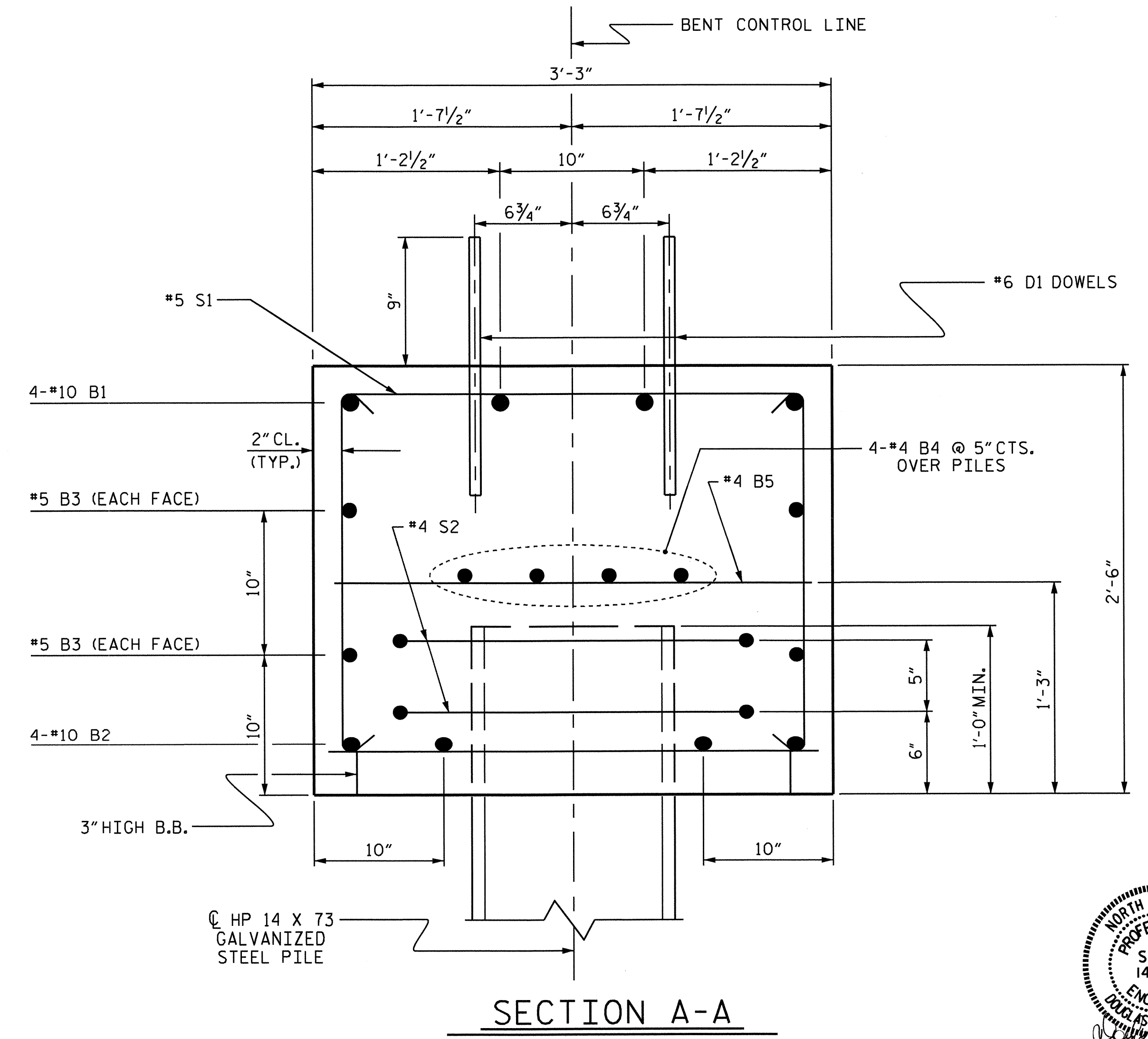
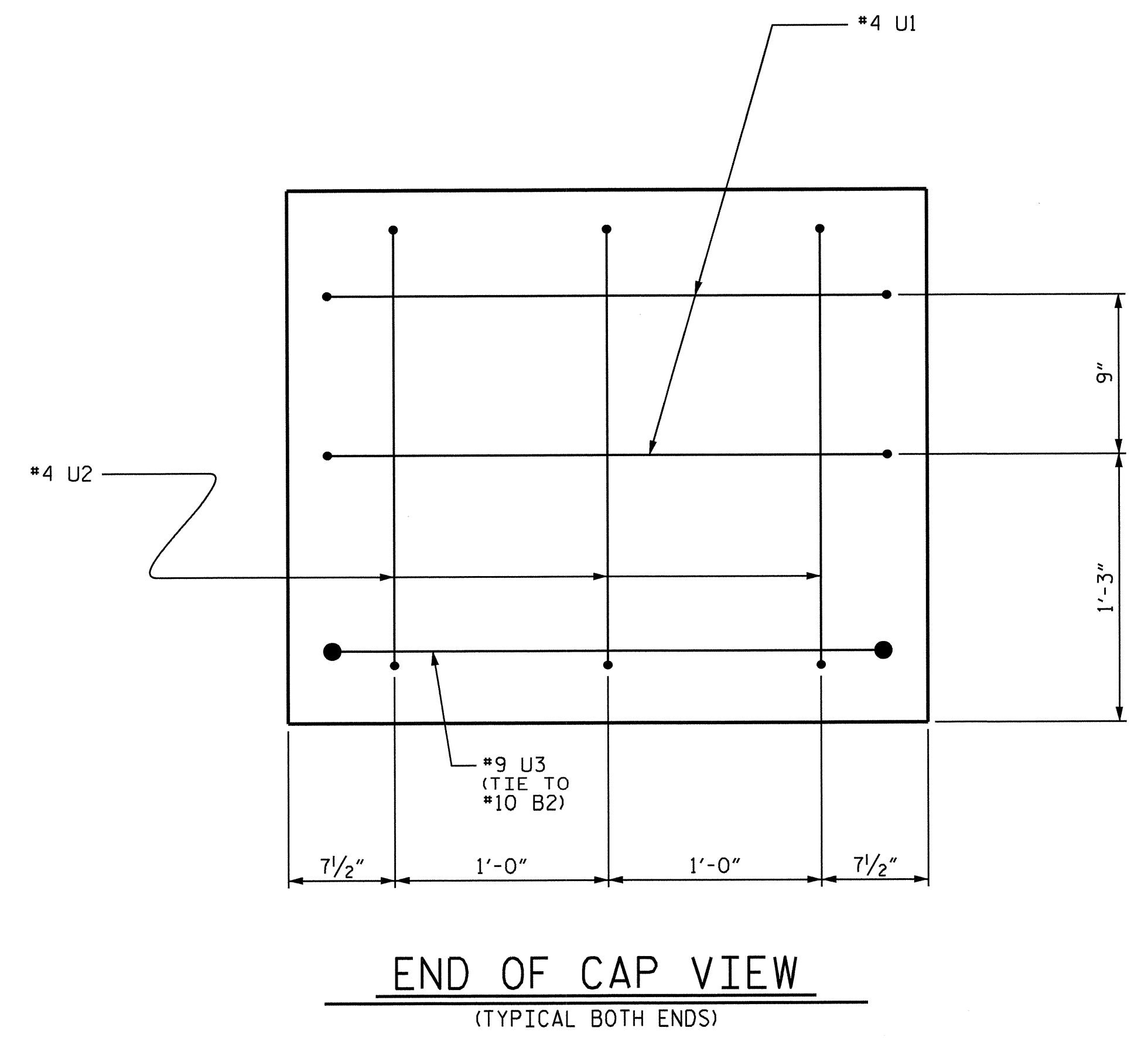


ASSEMBLED BY : A.C. OUTLAW DATE : 4/02/12
 CHECKED BY : D. G. ELY/SBW DATE : 8/20/12
 DRAWN BY : DGE 5/10
 CHECKED BY : MKT 5/10



BILL OF MATERIAL FOR ONE BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	43'-2"	743
B2	4	#10	STR	40'-6"	697
B3	4	#5	STR	40'-6"	169
B4	8	#4	STR	21'-6"	115
B5	11	#4	STR	2'-11"	21
D1	48	#6	STR	1'-6"	108
S1	46	#5	2	8'-1"	388
S2	16	#4	3	7'-7"	81
U1	4	#4	4	5'-10"	16
U2	6	#4	4	5'-0"	20
U3	2	#9	4	10'-1"	69
REINFORCING STEEL (FOR ONE BENT)				2427 LBS	
CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)					
POUR #1 (CAP)				12.3 C.Y.	
TOTAL CLASS A CONCRETE				12.3 C.Y.	
HP 14 X 73 GALVANIZED STEEL PILES (FOR ONE BENT)					
No. 8				LIN. FT. 400	
PILE REDRIVES				EA. 4	



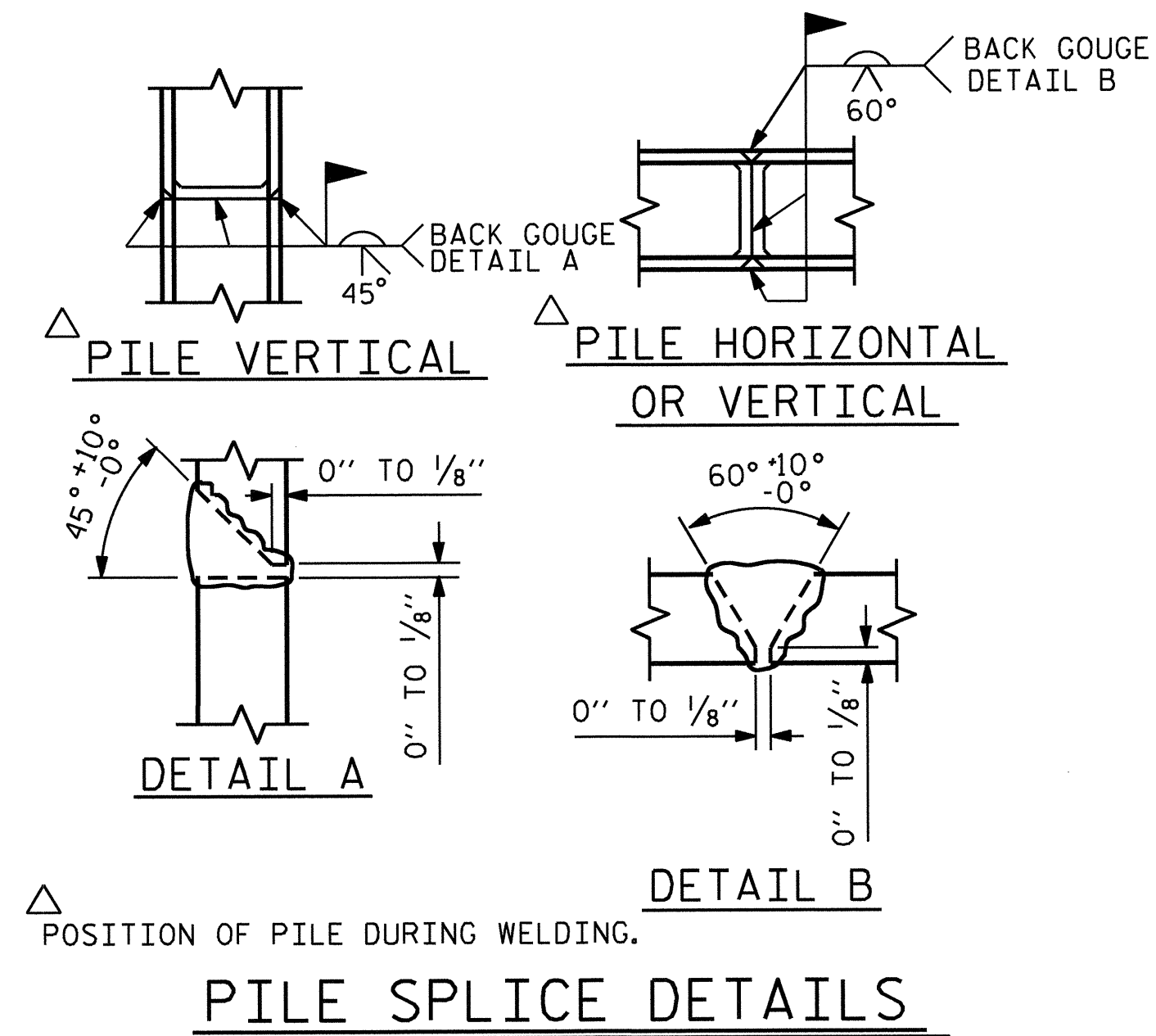
PROJECT NO. B-5117
BLADEN COUNTY
STATION: 26+16.00 -L-
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

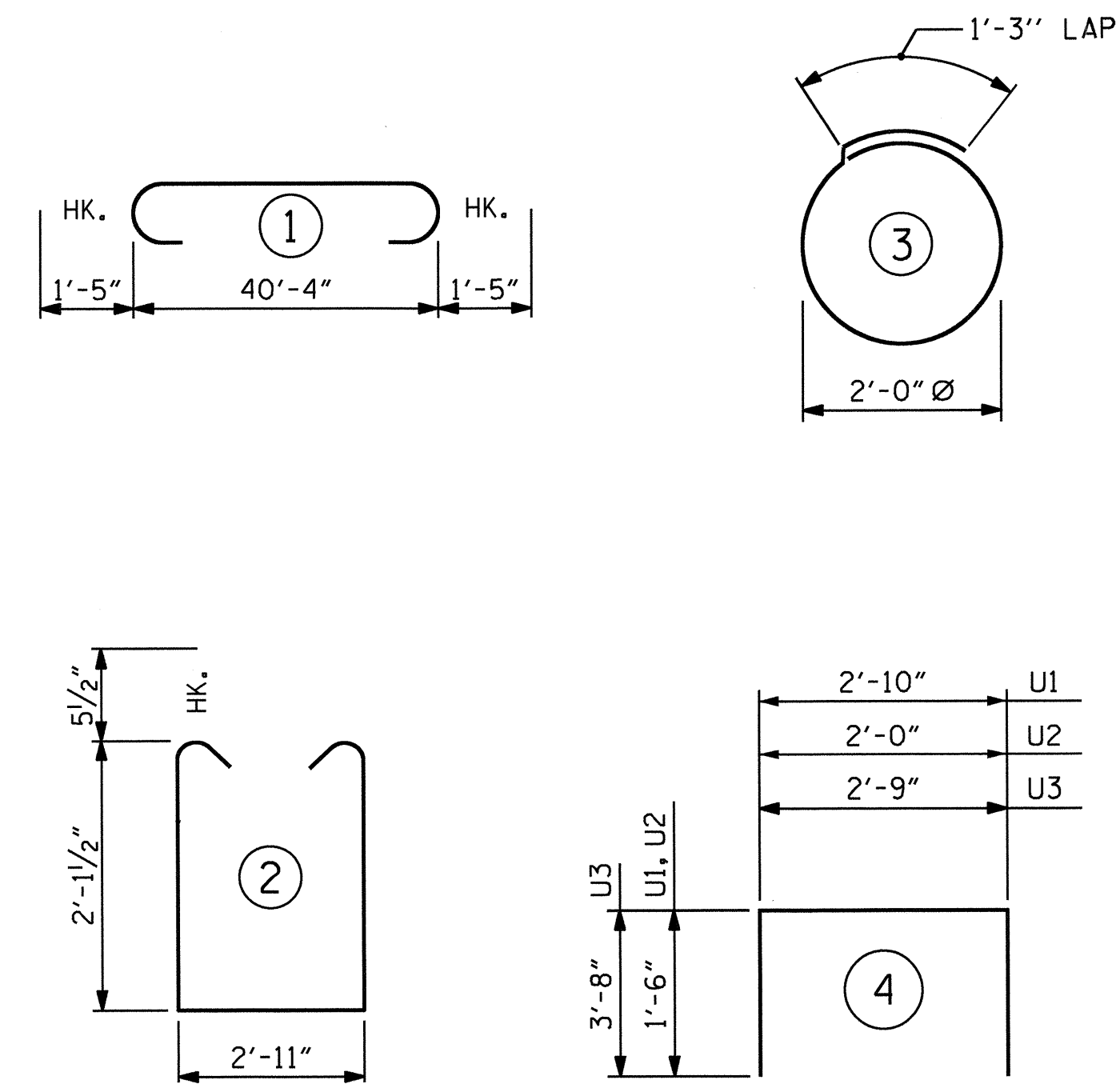
SUBSTRUCTURE
BENT No. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-19
1			3			TOTAL SHEETS
2			4			23

DRAWN BY : A.C. OUTLAW DATE : 4/02/12
CHECKED BY : D. G. ELY/SBW DATE : 8/20/12
DRAWN BY : DCE 05/10
CHECKED BY : MKT 05/10



BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

FOR ONE BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	43'-2"	743
B2	4	#10	STR	40'-6"	697
B3	4	#5	STR	40'-6"	169
B4	8	#4	STR	21'-6"	115
B5	11	#4	STR	2'-11"	21
D1	48	#6	STR	1'-6"	108
S1	46	#5	2	8'-1"	388
S2	16	#4	3	7'-7"	81
U1	4	#4	4	5'-10"	16
U2	6	#4	4	5'-0"	20
U3	2	#9	4	10'-1"	69

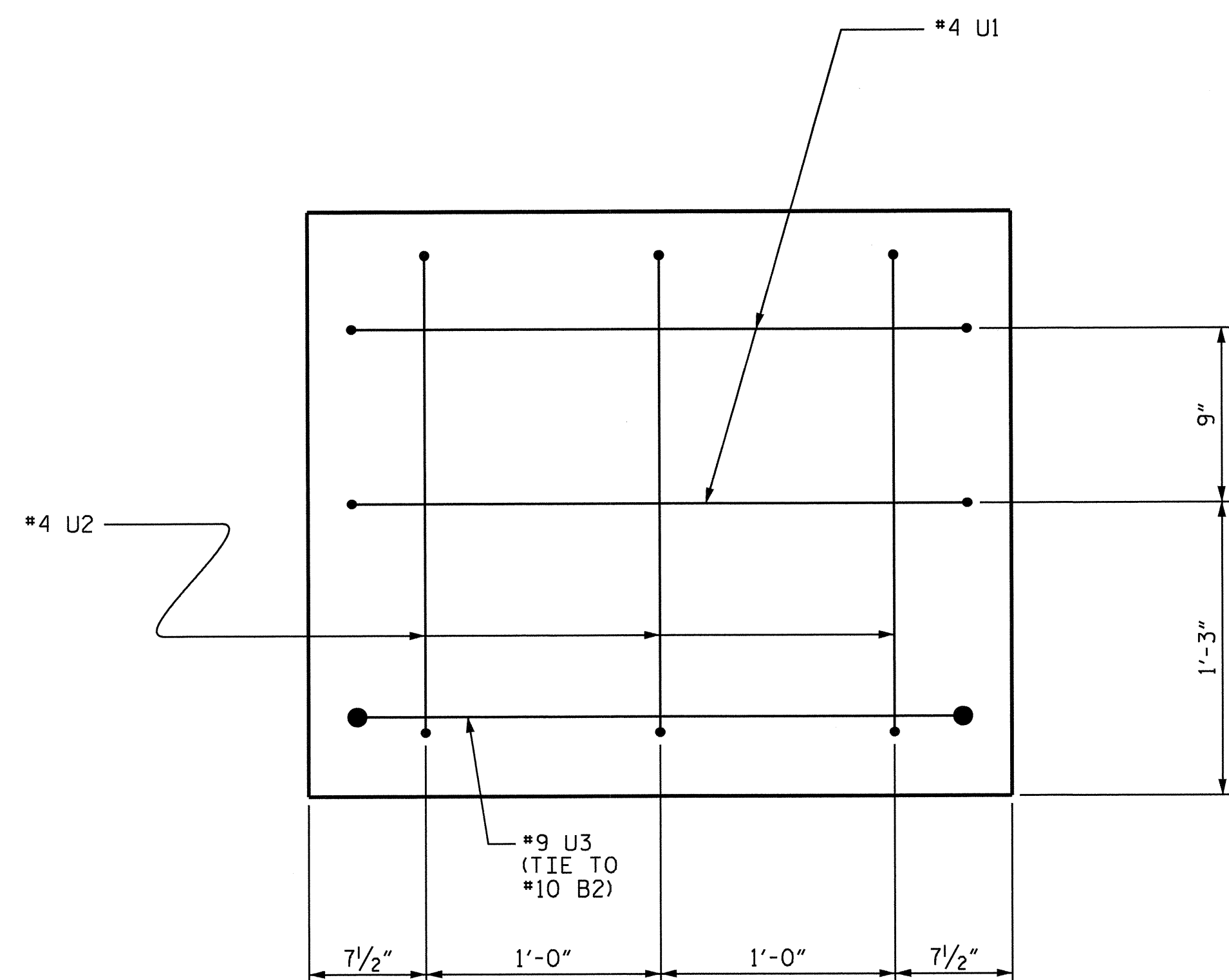
REINFORCING STEEL (FOR ONE BENT) 2427 LBS

CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)

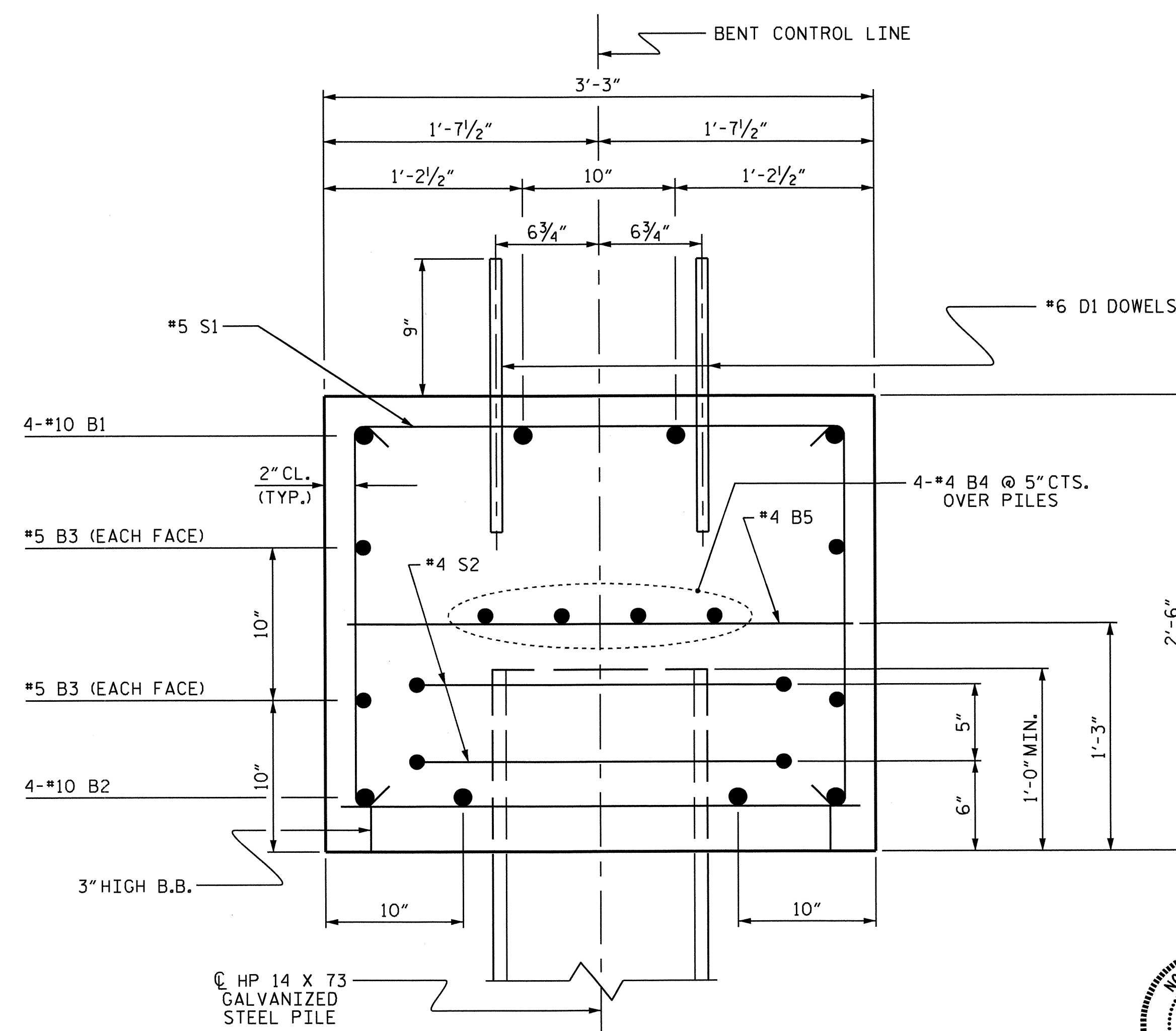
POUR #1 (CAP) 12.3 C.Y.
TOTAL CLASS A CONCRETE 12.3 C.Y.

HP 14 X 73 GALVANIZED STEEL PILES (FOR ONE BENT)

No. 8 PILE REDRIVES LIN. FT. 400 EA. 4



END OF CAP VIEW
(TYPICAL BOTH ENDS)



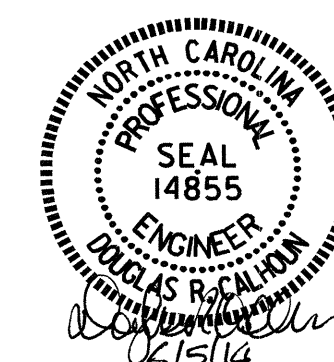
SECTION A-A

PROJECT NO. B-5117
BLADEN COUNTY
STATION: 26+16.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 2

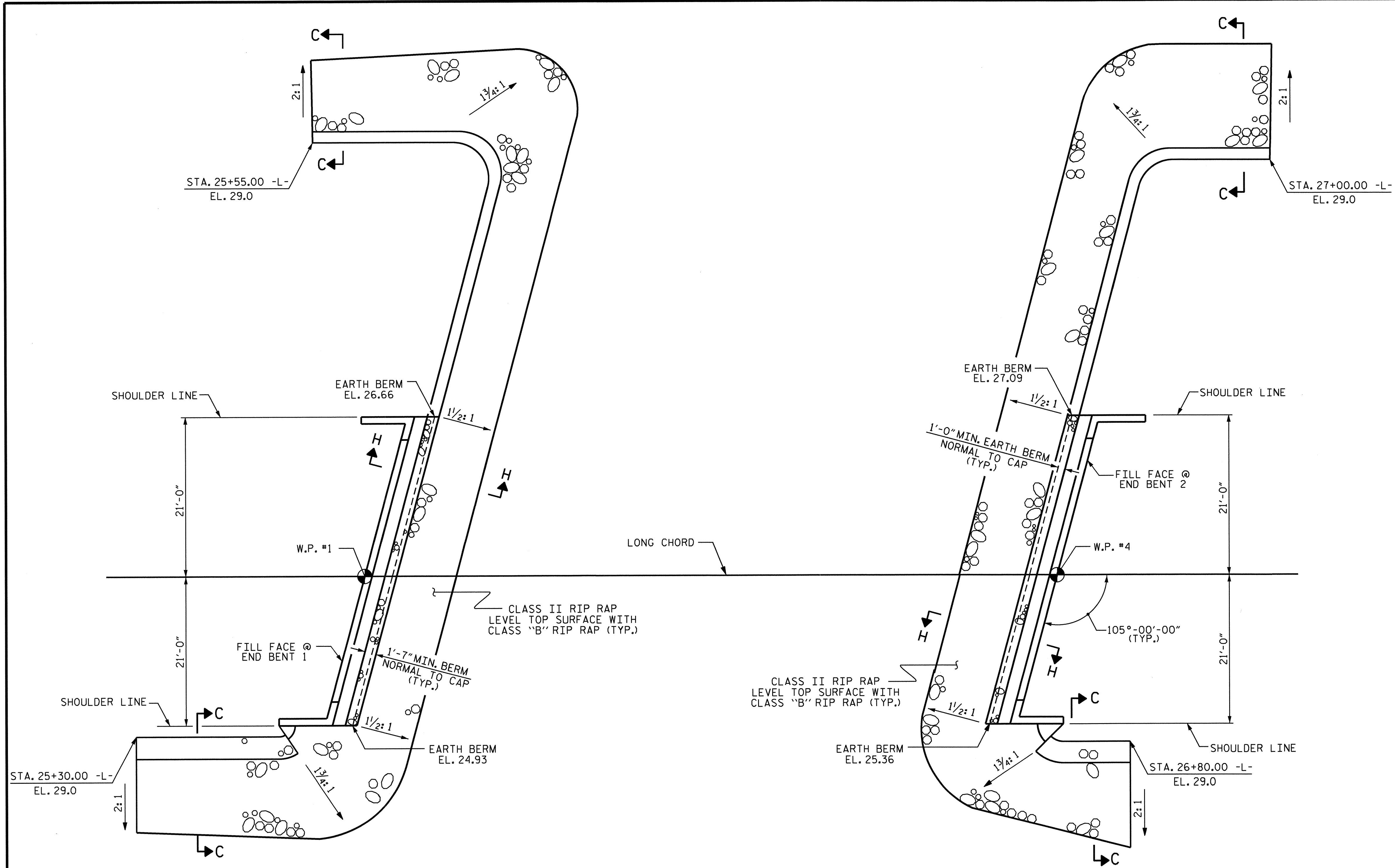


DRAWN BY : A.C. OUTLAW DATE : 4/02/12
CHECKED BY : D. G. ELY/SBW DATE : 8/20/12
DRAWN BY : DCE 05/10
CHECKED BY : MKT 05/10

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-21
1			3			TOTAL SHEETS
2			4			23

STD. NO. 14" HP_BT_36_105S_<60'

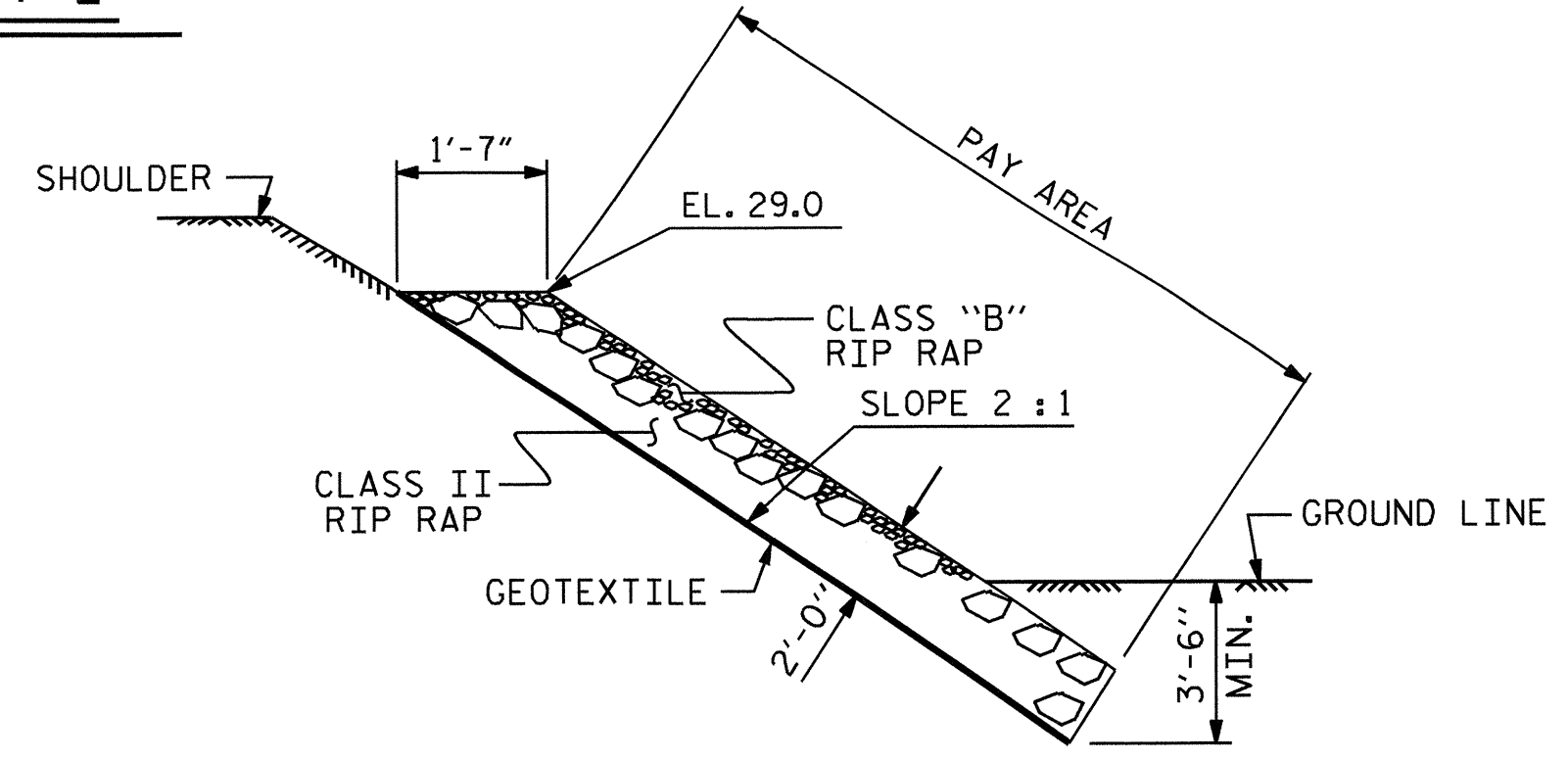
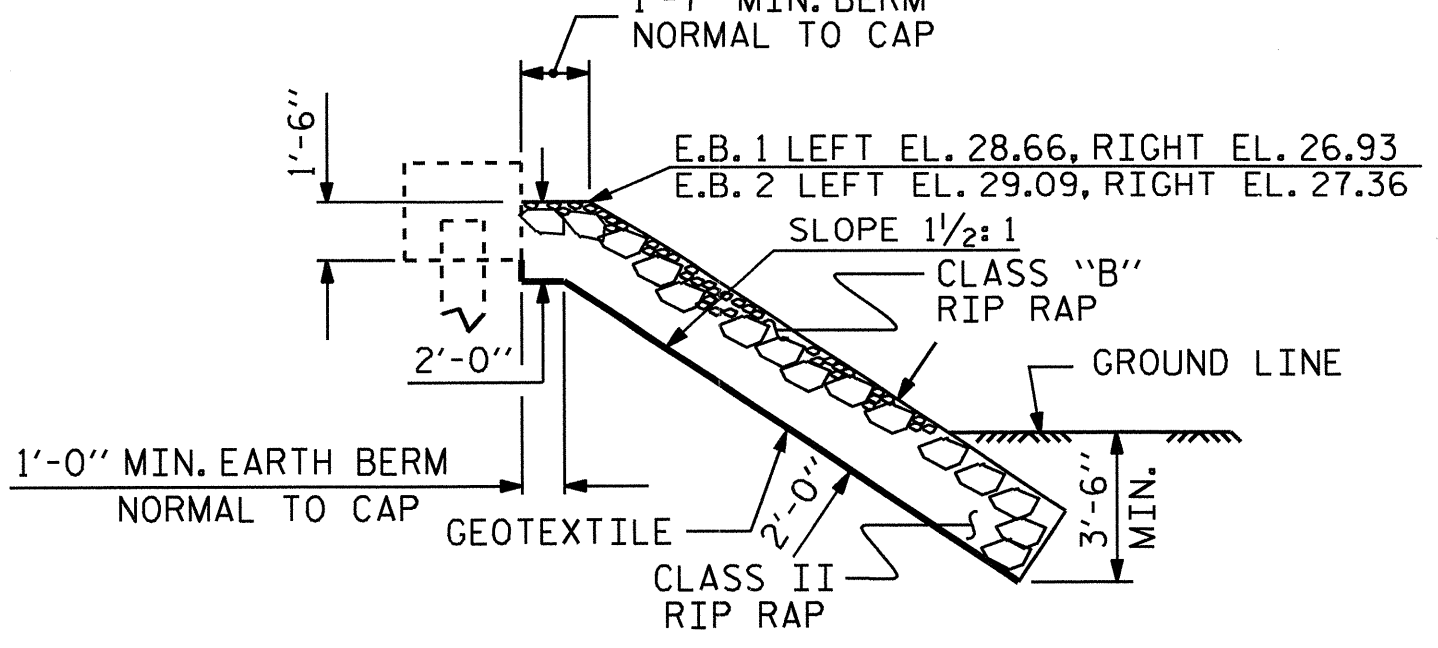
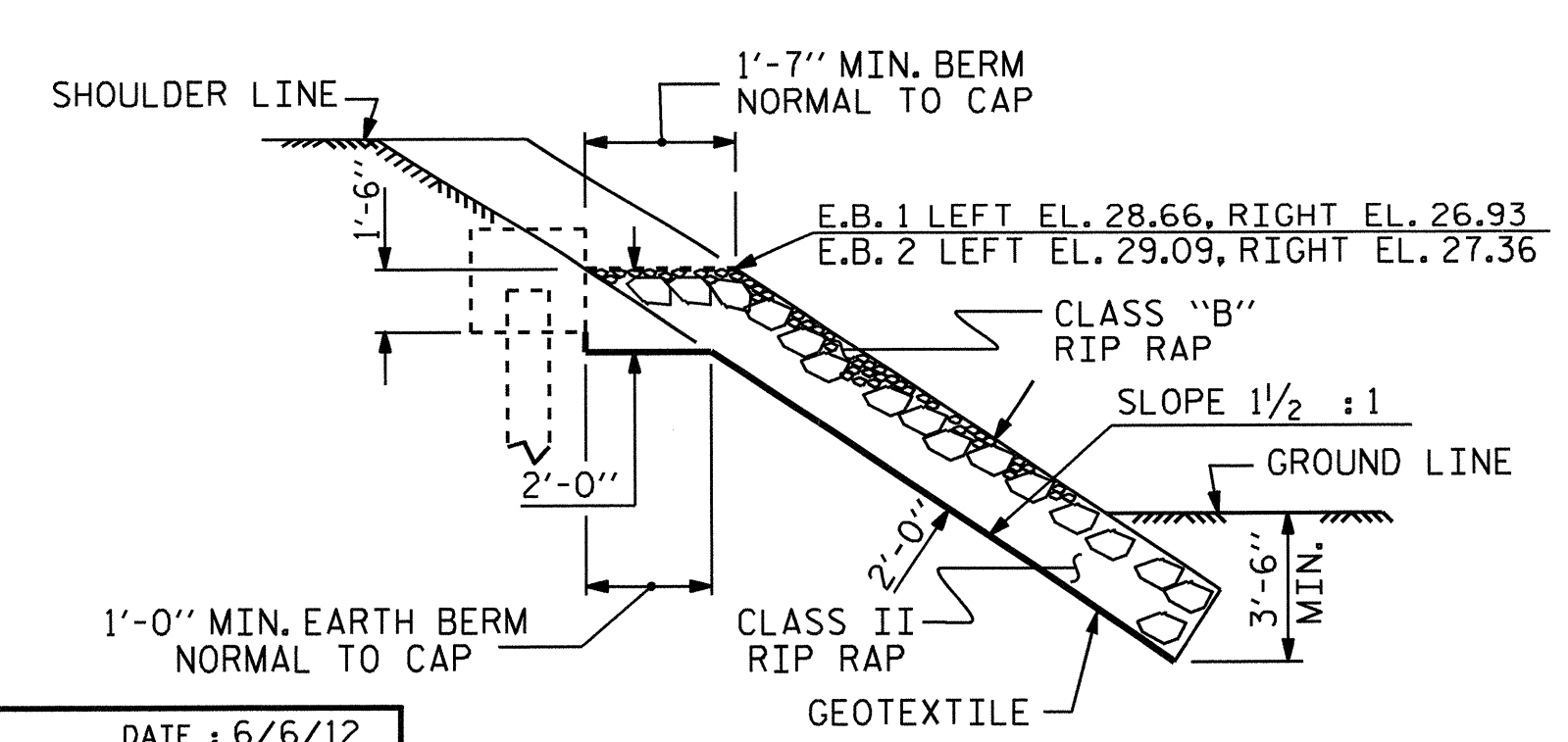


ESTIMATED QUANTITIES			
BRIDGE @ STA. 26+16.00 -L-	RIP RAP CLASS B	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	TONS	SQUARE YARDS
END BENT 1	65	250	280
END BENT 2	65	265	295

PLAN OF RIP RAP

END BENT 1

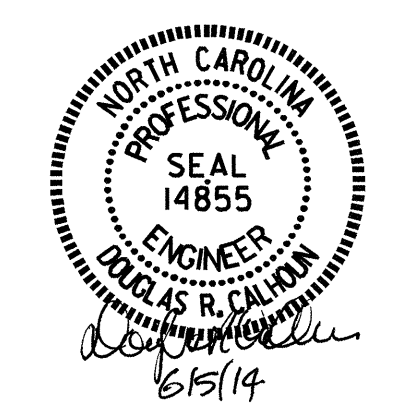
END BENT 2



SECTION H-H

**SECTION C-C
BERM RIP RAPPED**

SECTION C-C

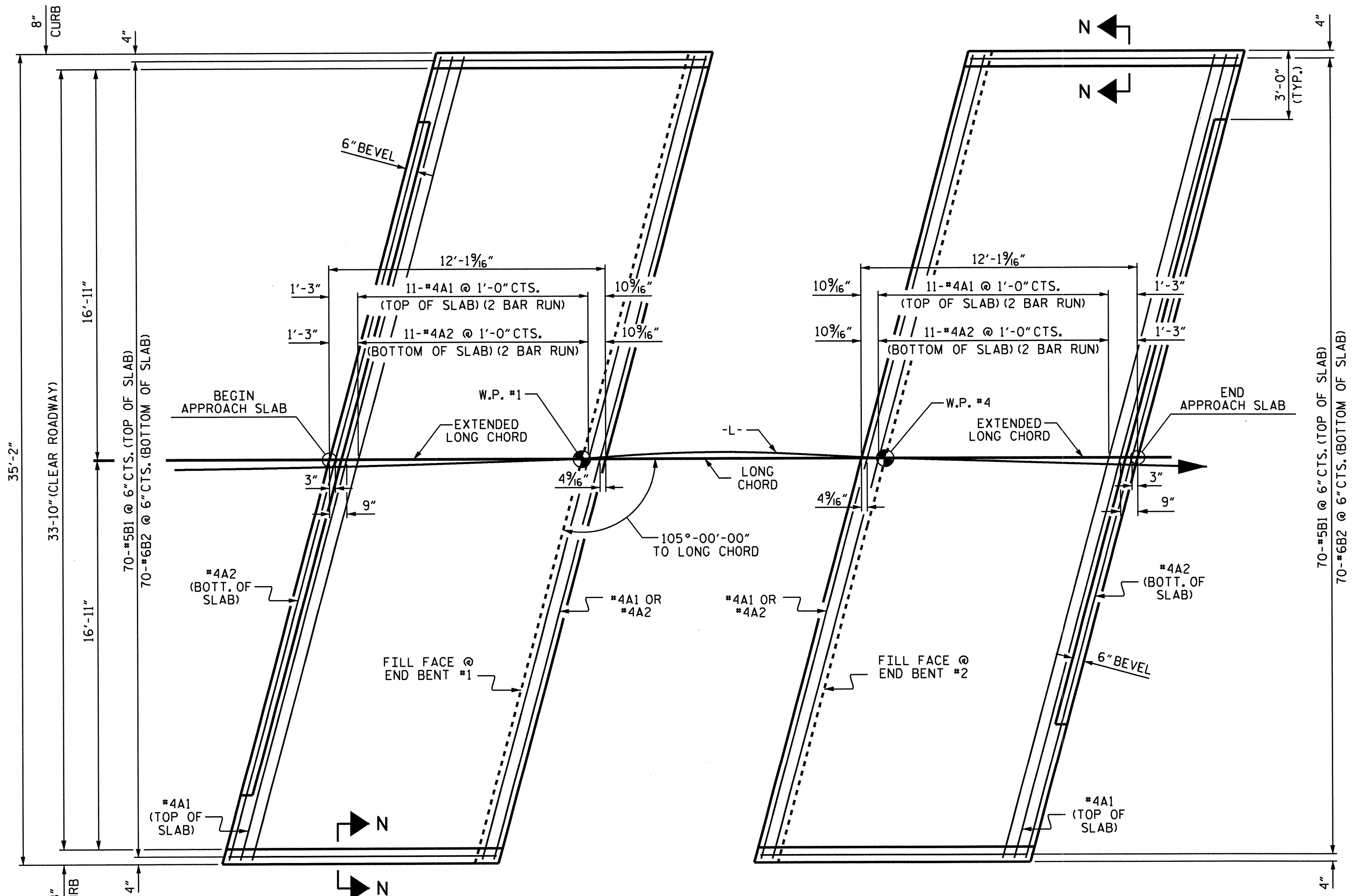


PROJECT NO. B-5117
BLADEN COUNTY
 STATION: 26+16.00 -L-

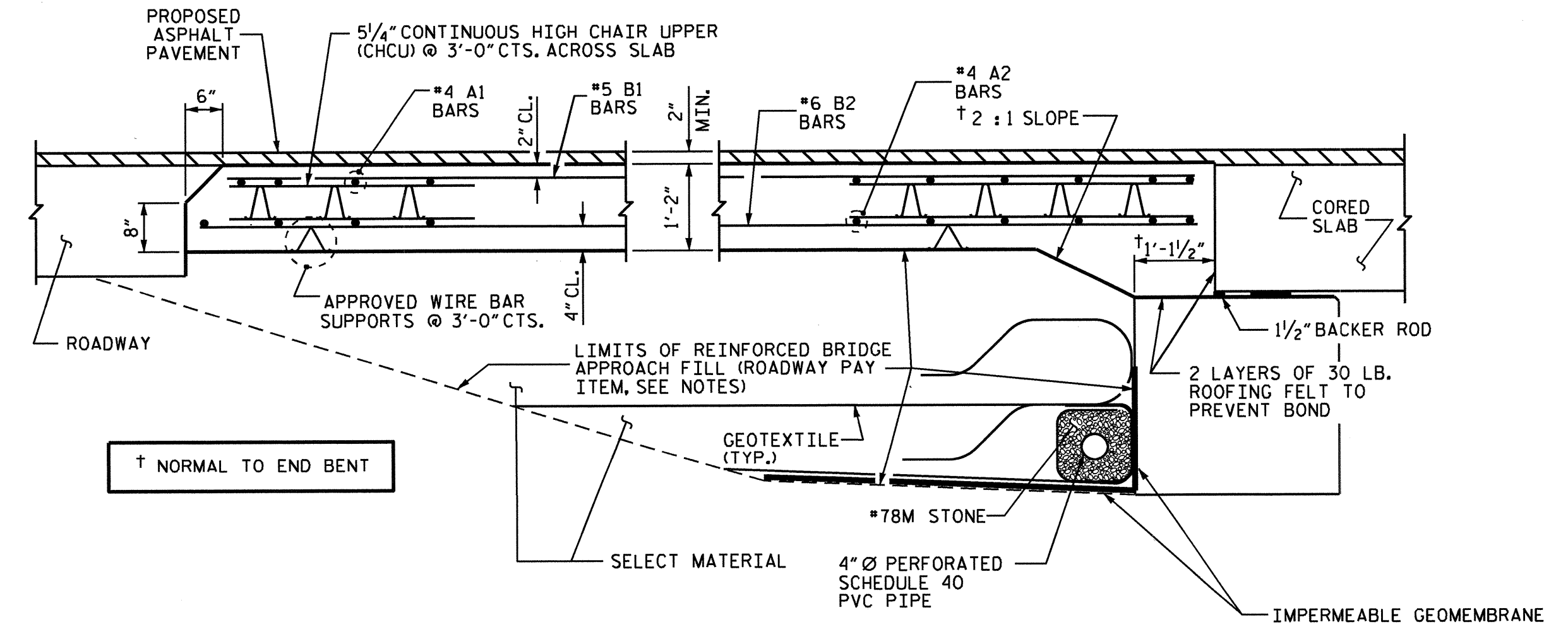
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD = RIP RAP DETAILS =					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.	5-22
TOTAL SHEETS	23

ASSEMBLED BY : D. G. ELY DATE : 6/6/12
 CHECKED BY : S. B. WILLIAMS DATE : 8/12
 DRAWN BY : REK 1/84 REV. 5/1/06R TLA/GM
 CHECKED BY : RDU 1/84 REV. 10/1/11 MAA/GM
 REV. 12/21/11 MAA/GM



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



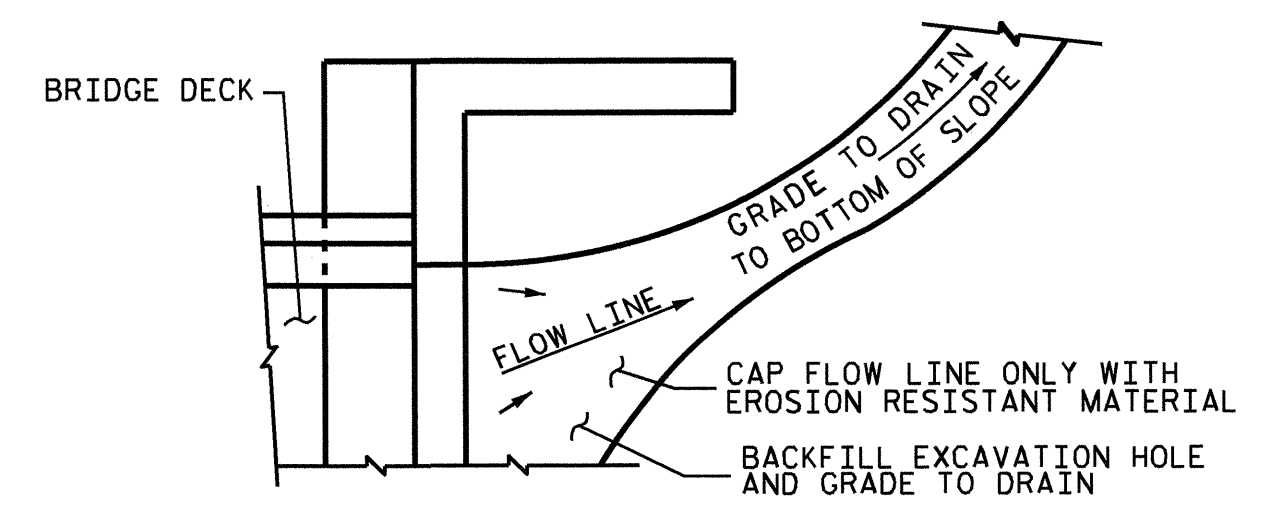
SECTION THRU SLAB

ASSEMBLED BY : A.C. OUTLAW DATE : 4/02/12
 CHECKED BY : D. G. ELY DATE : 6/05/12
 DRAWN BY : SHS/MAA 5-09 REV. 12-11 MAA/AAC
 CHECKED BY : BCH 5-09

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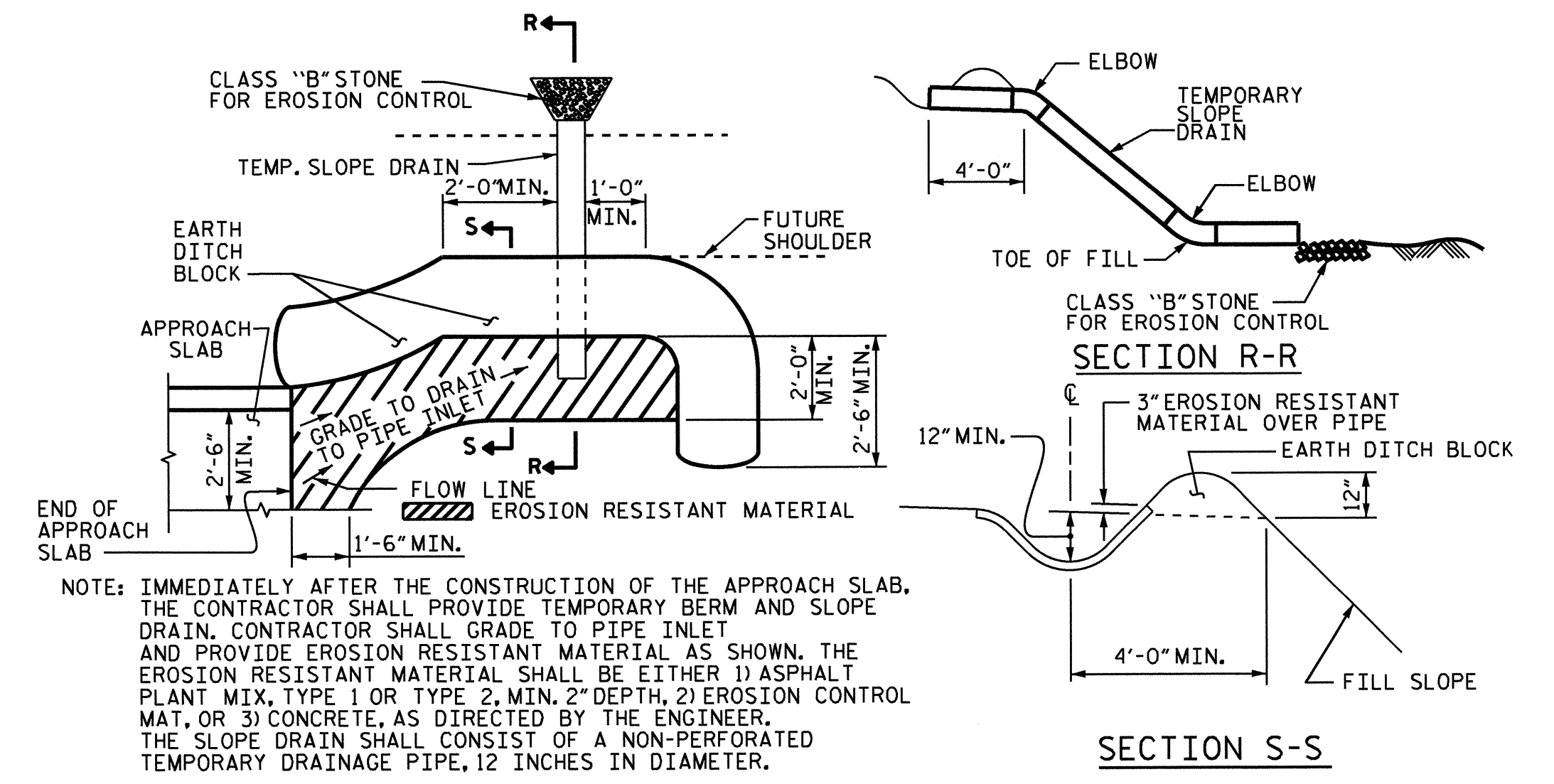
NOTES

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.

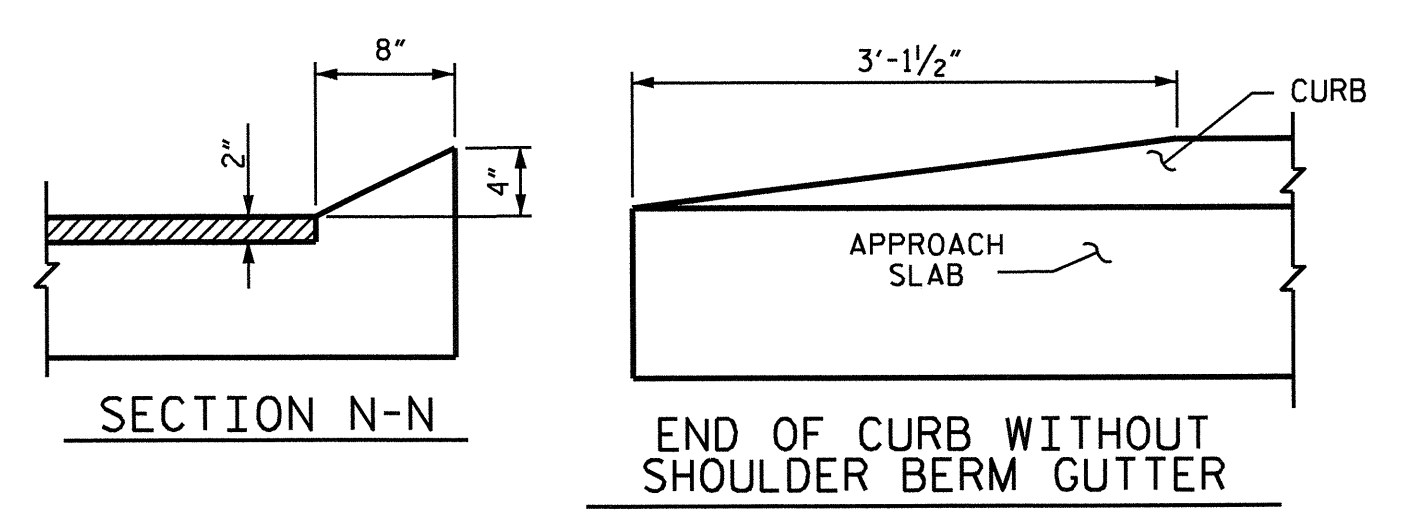


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

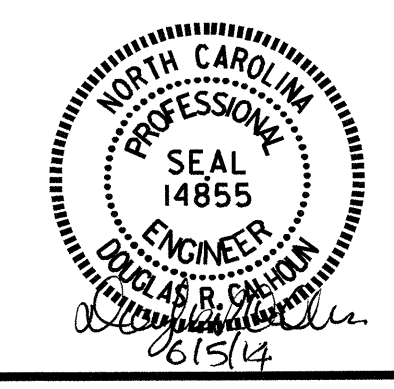


TEMPORARY BERM AND SLOPE DRAIN DETAILS
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



CURB DETAILS

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



BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	19'-1"	331
A2	26	#4	STR	18'-11"	329
*B1	70	#5	STR	11'-1"	809
B2	70	#6	STR	11'-7"	1218
REINFORCING STEEL					LBS. 1547
*EPOXY COATED REINFORCING STEEL					LBS. 1140
CLASS AA CONCRETE					C. Y. 20.4
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	19'-1"	331
A2	26	#4	STR	18'-11"	329
*B1	70	#5	STR	11'-1"	809
B2	70	#6	STR	11'-7"	1218
REINFORCING STEEL					LBS. 1547
*EPOXY COATED REINFORCING STEEL					LBS. 1140
CLASS AA CONCRETE					C. Y. 20.4

PROJECT NO. B-5117
 BLADEN COUNTY
 STATION: 26+16.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR PRESTRESSED CONCRETE
 CORED SLAB UNIT
 (SUB-REGIONAL TIER)
 105° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-23
2			4			23

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2012 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N.C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER. DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS. WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0". EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED. WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB. METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990