

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3816		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34979.1.1	STP-0831 (2)	PE	
34979.2.2	STP-0831 (2)	RW & UTIL	
34979.3.1	STP-0831 (2)	CONST	

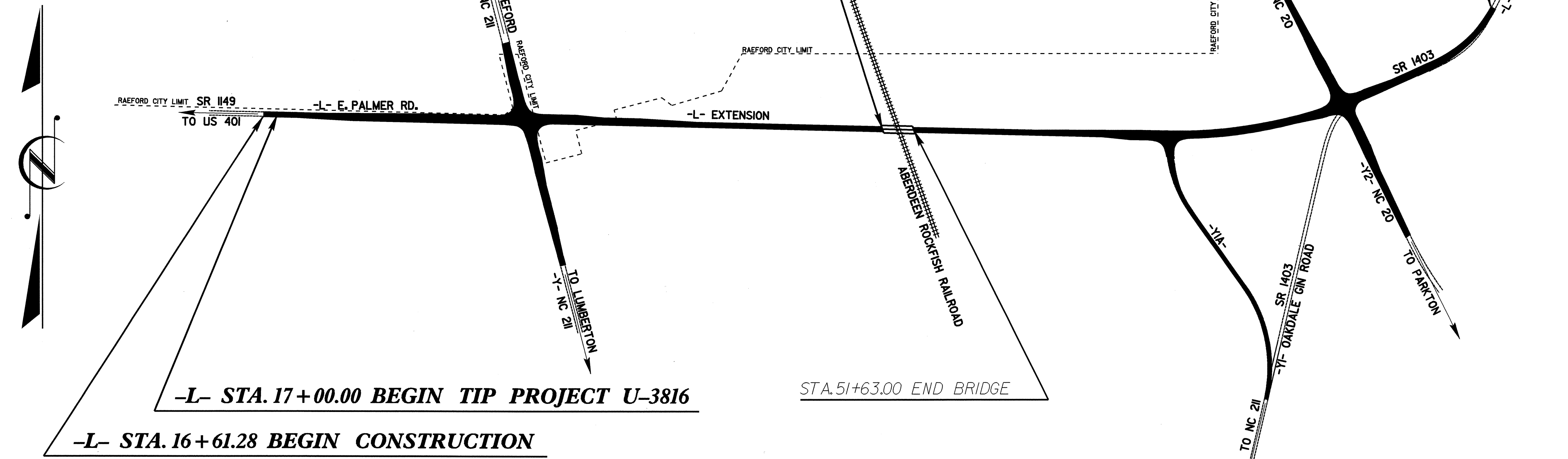
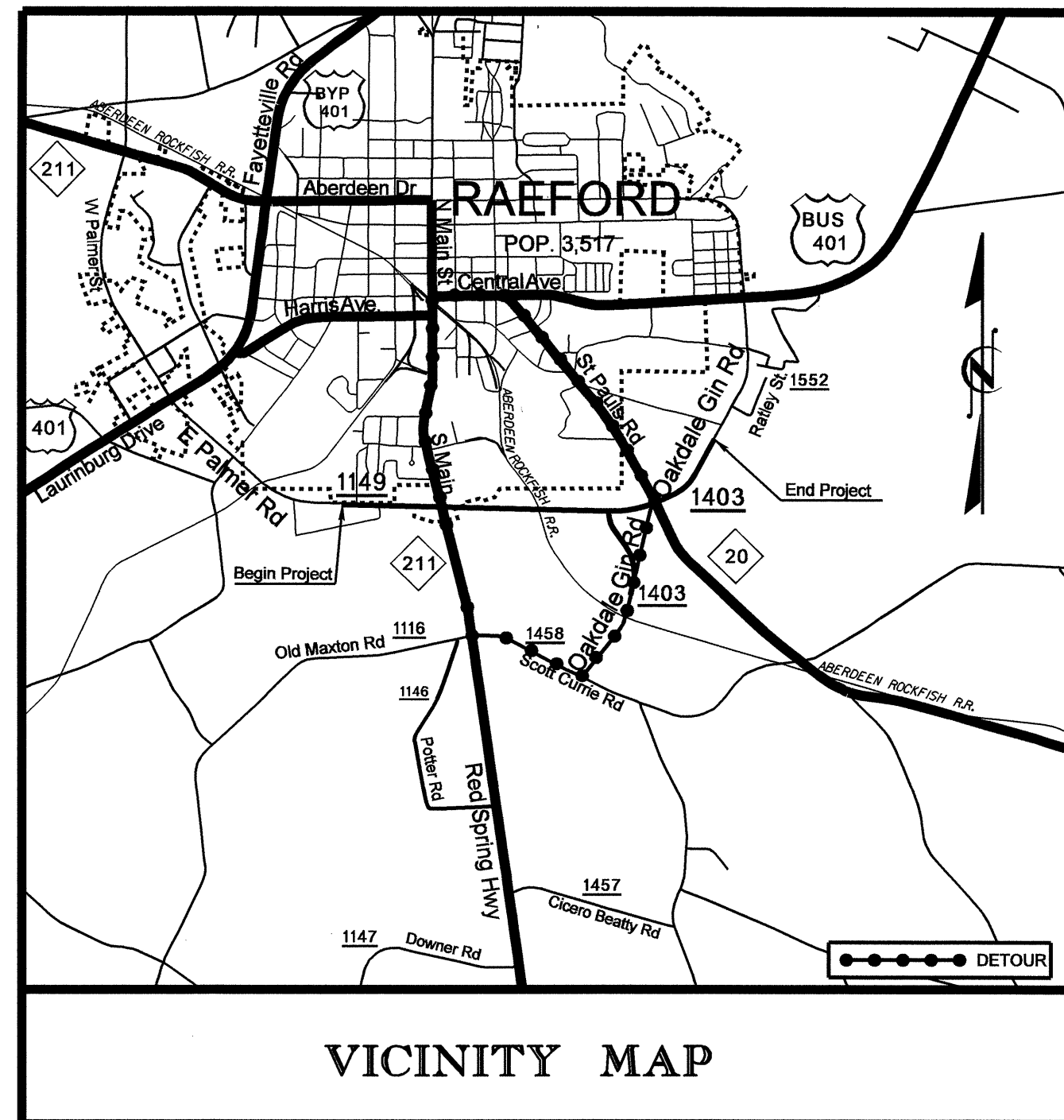
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HOKE COUNTY

LOCATION: PALMER ROAD EXTENSION FROM NC 211
AT SR 1149 TO NC 20 AT SR 1403

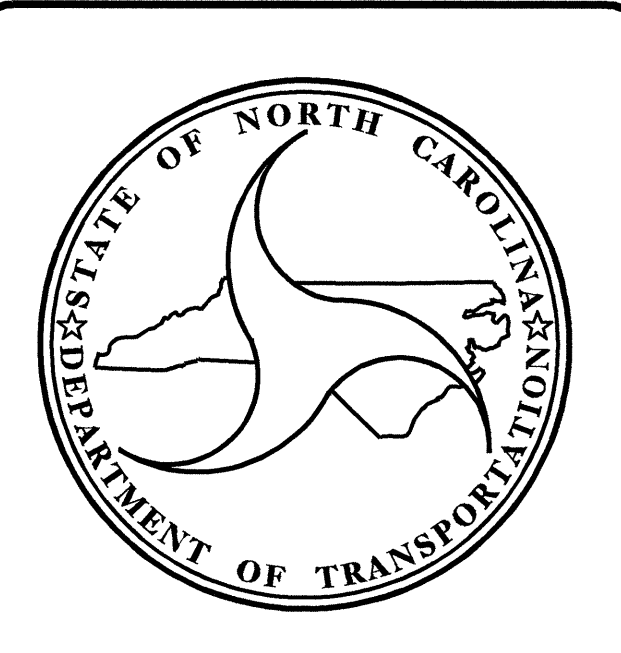
TYPE OF WORK: GRADING, PAVING, DRAINAGE, STRUCTURE AND SIGNALS

-L- STA. 84+50.00 END TIP PROJECT U-3816



STRUCTURE

CONTRACT: C201738 TIP PROJECT: U-3816



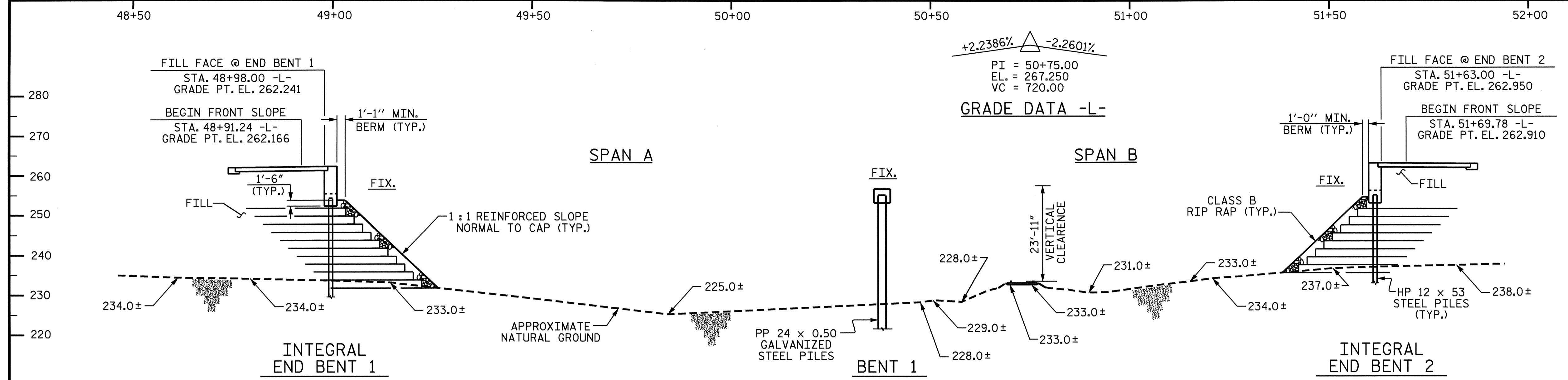
DESIGN DATA	
ADT 2005	= 7900
ADT 2025	= 13000
DHV	= 14%
D	= 60%
T	= 6%
V	= 50 MPH
TTST	2% DUAL 4%
FUNC CLASS	=
	RURAL MAJOR COLLECTOR

PROJECT LENGTH	
LENGTH OF ROADWAY TIP PROJECT U-3816	= 1.285 MI
LENGTH OF STRUCTURE TIP PROJECT U-3816	= 0.050 MI
TOTAL LENGTH OF TIP PROJECT U-3816	= 1.335 MI

Prepared In the Office of: DIVISION OF HIGHWAYS	
2006 STANDARD SPECIFICATIONS	
LETTING DATE: DECEMBER 18, 2007	R.M. GIROLAMI, PE PROJECT ENGINEER
	L.E. SUTTON, PE PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT	
1000 BIRCH RIDGE DR. RALEIGH, NC 27610	
	P.E.
	STATE DESIGN ENGINEER
	DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION
APPROVED DIVISION ADMINISTRATOR	DATE

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA	
	P.E.
	STATE DESIGN ENGINEER
	DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION
APPROVED DIVISION ADMINISTRATOR	DATE

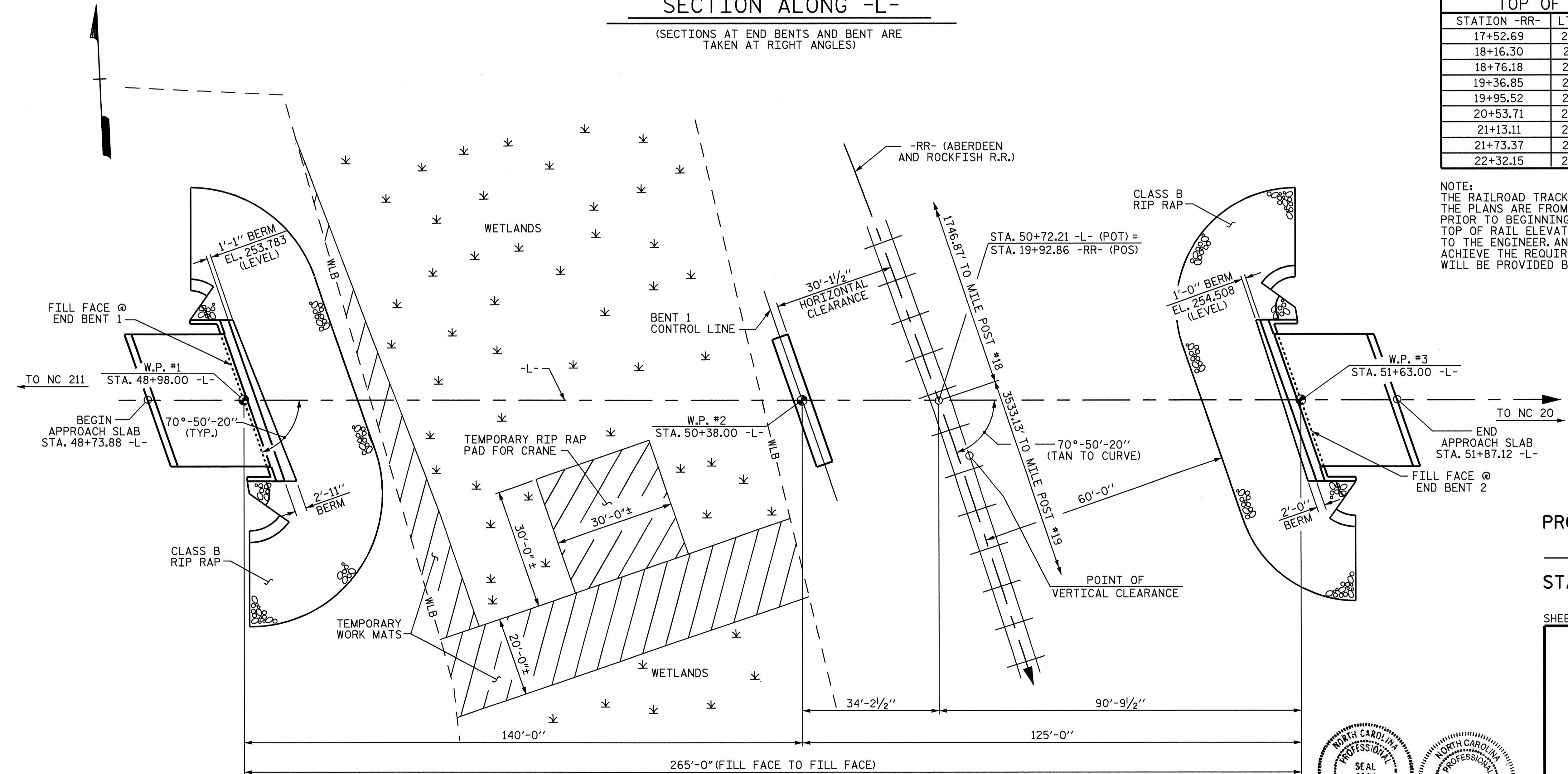


SECTION ALONG -L-

(SECTIONS AT END BENTS AND BENT ARE TAKEN AT RIGHT ANGLES)

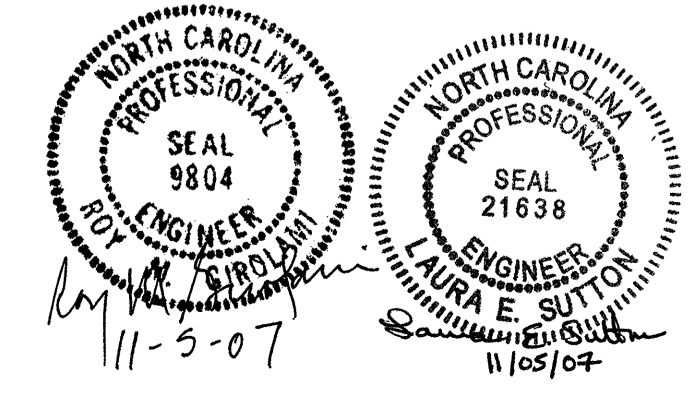
TOP OF RAIL ELEVATIONS			
STATION -RR-	LT RAIL	STATION -RR-	RT RAIL
17+52.69	232.407	17+52.70	232.317
18+16.30	231.710	18+16.11	231.670
18+76.18	231.676	18+76.33	231.624
19+36.85	232.031	19+36.76	231.959
19+95.52	232.610	19+95.16	232.547
20+53.71	233.386	20+53.78	233.361
21+13.11	234.435	21+12.72	234.414
21+73.37	235.615	21+73.26	235.637
22+32.15	236.887	22+32.31	236.918

NOTE:
 THE RAILROAD TRACK TOP OF RAIL ELEVATIONS SHOWN ON THE PLANS ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE TOP OF RAIL ELEVATIONS AND REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.



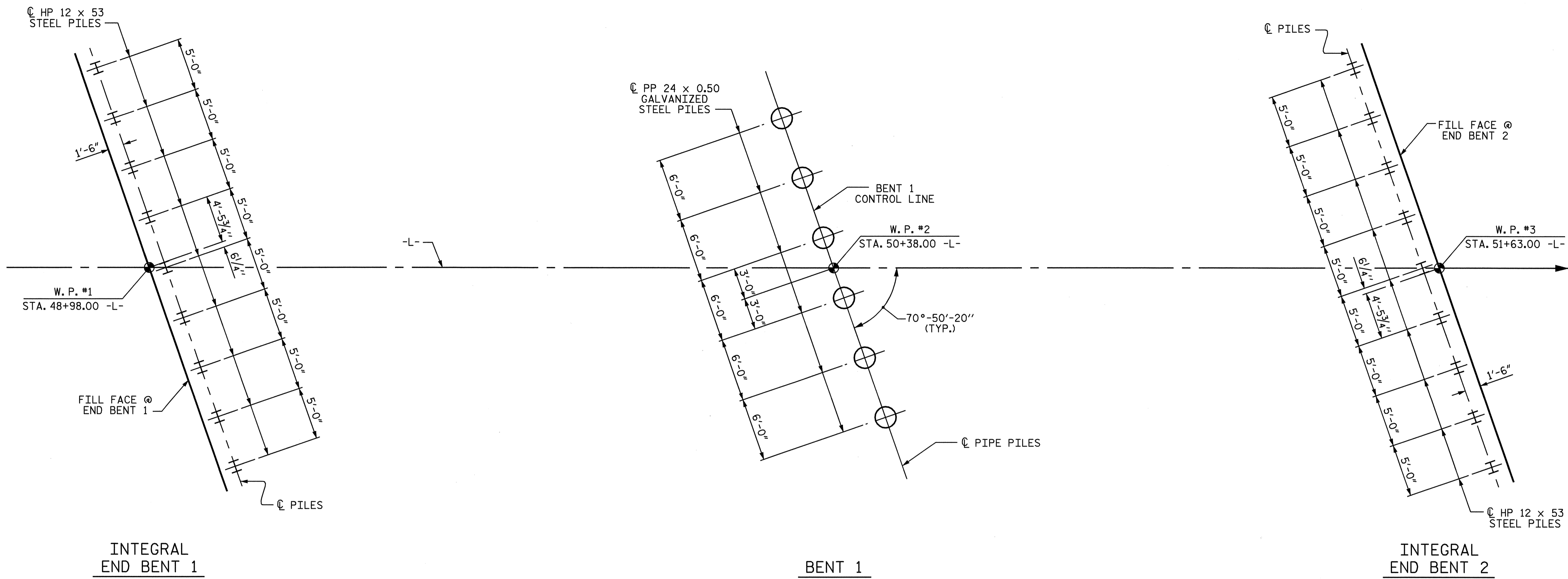
PLAN
 (PILES NOT SHOWN FOR CLARITY)

DRAWN BY: A.S. CALLAWAY DATE: 7/30/07
 CHECKED BY: P.C. BREWER DATE: 8/16/07



PROJECT NO. U-3816
 HOKE COUNTY
 STATION: 50+72.21 -L-
 19+92.86 -RR-
 SHEET 1 OF 3 BRIDGE NO. 107

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



FOUNDATION LAYOUT

(DIMENSIONS LOCATING PILES ARE TO PILE CENTERLINE AT THE BOTTOM OF THE CAP)

NOTES

THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENTS 1 AND 2 IS 60 TONS PER PILE.

DRIVE PILES AT END BENTS 1 AND 2 TO A REQUIRED BEARING CAPACITY OF 120 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT BENT 1 IS 220 TONS PER PILE.

DRIVE PILES AT BENT 1 TO A REQUIRED BEARING CAPACITY OF 440 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

DRIVE PILES AT BENT 1 TO A TIP ELEVATION NO HIGHER THAN 190 FT.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 80-100 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT 1. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM ARTICLE 450-4 OF THE STANDARD SPECIFICATIONS.

PIPE PILE PLATES MAY BE REQUIRED FOR THE PIPE PILES AT BENT 1. THE ENGINEER WILL DETERMINE THE NEED FOR PIPE PILE PLATES AFTER DRIVING TEST PILES OR A FEW INITIAL PRODUCTION PILES AS DIRECTED BY THE ENGINEER. USE PIPE PILE PLATES WITH A DIAMETER EQUAL TO THE PIPE PILE DIAMETER. SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

TESTING THE FIRST PRODUCTION PILE WITH THE PILE DRIVING ANALYZER (PDA) DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT BENT 1. SEE PILE DRIVING ANALYZER SPECIAL PROVISION.

THE CONTRACTOR MAY CHOOSE TO CONSTRUCT BENT 1 PRIOR TO PLACING END BENT FILL. PLACE FILL IN ACCORDANCE WITH ARTICLE 410-8 OF THE STANDARD SPECIFICATIONS.

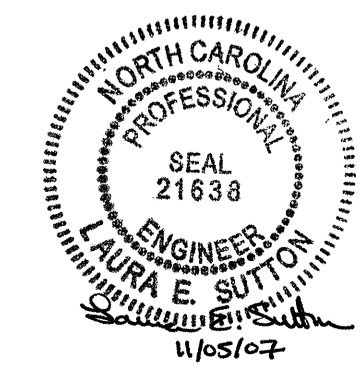
OBSERVE A ONE MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FT. OF FINISHED GRADE BEFORE BEGINNING END BENT OR REINFORCED BRIDGE APPROACH FILL CONSTRUCTION AT END BENTS 1 AND 2.

REINFORCED 1:1 (H:V) END SLOPES ARE PROPOSED AT EACH END BENT. SEE ROADWAY PLANS FOR "GEOGRID REINFORCED SOIL SLOPE".

PROJECT NO. U-3816
HOKE COUNTY
 STATION: 50+72.21 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER
 ABERDEEN & ROCKFISH R.R.
 ON SR 1244 BETWEEN
 NC 211 & NC 20

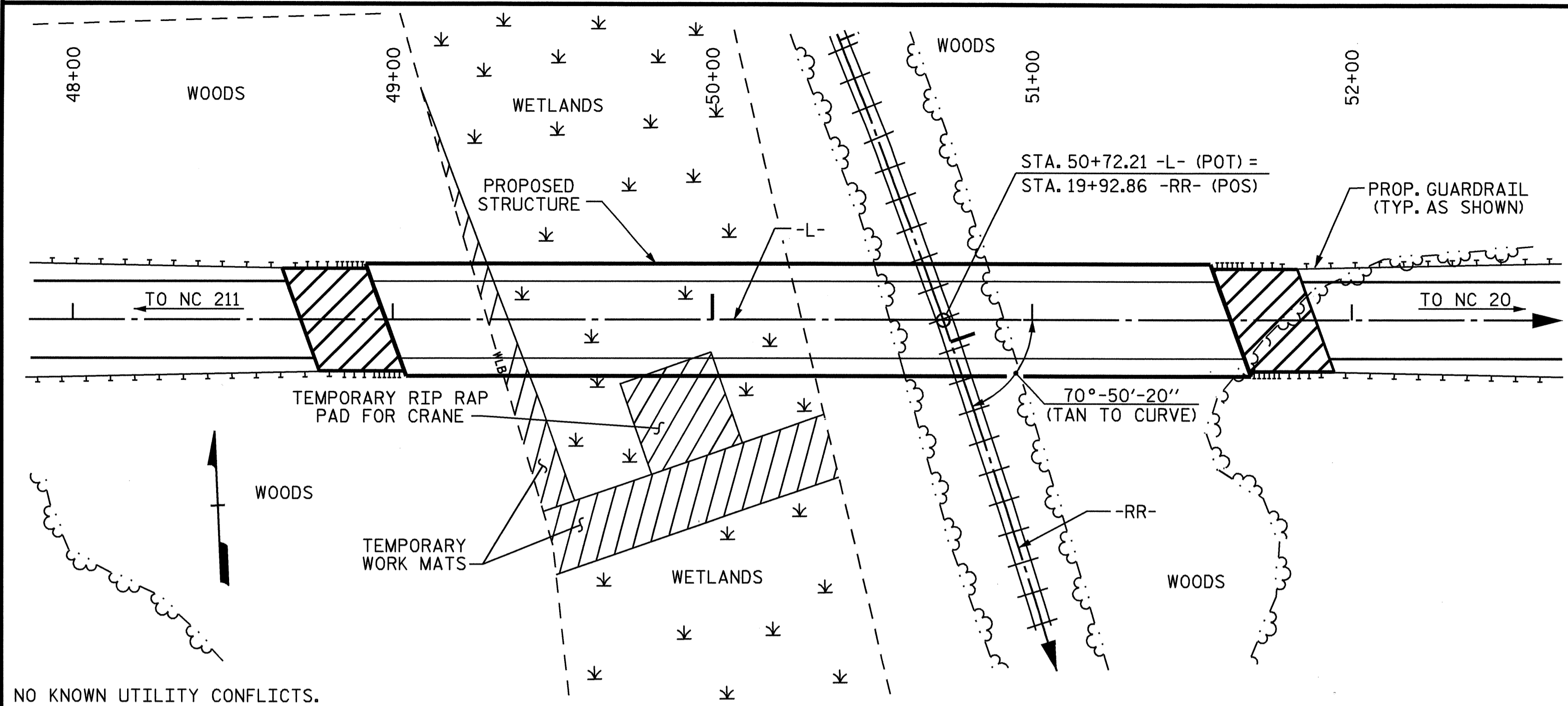


DRAWN BY : A.S. CALLAWAY DATE : 7/30/07
 CHECKED BY : P.C. BREWER DATE : 8/16/07

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

S-2	TOTAL SHEETS
32	

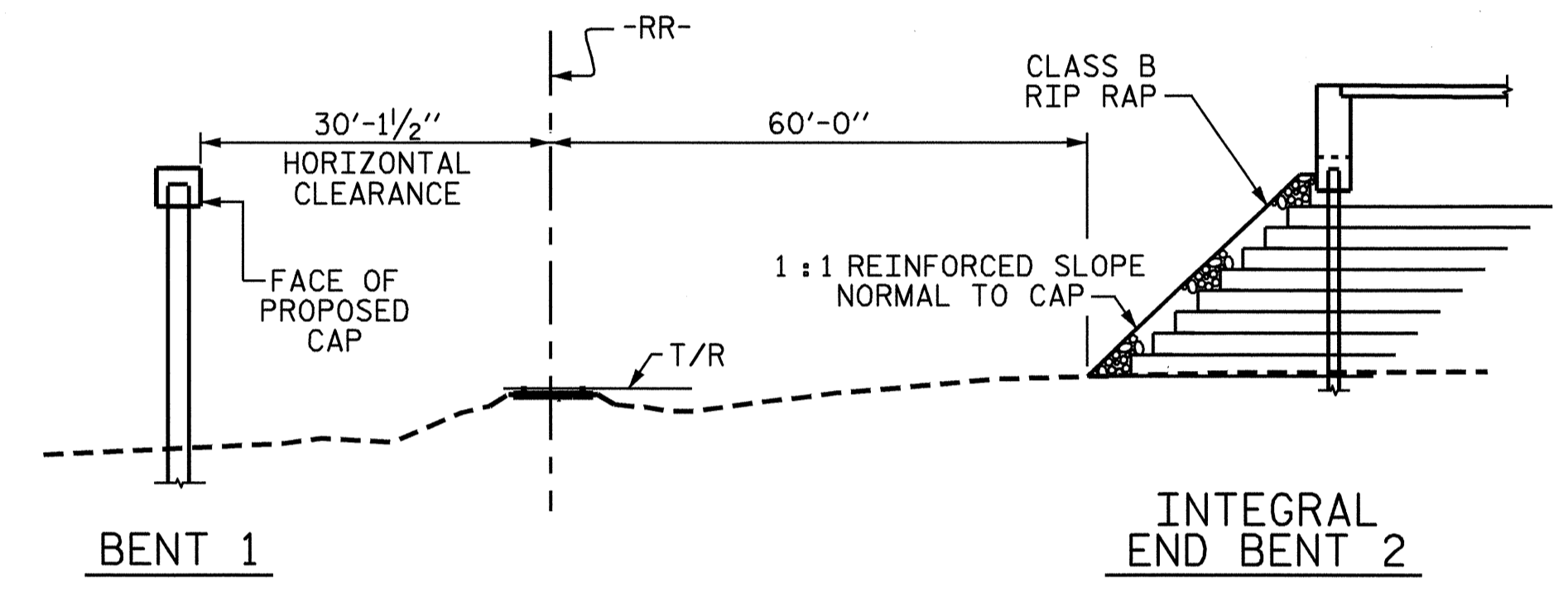
BM #2: RAILROAD SPIKE IN BASE OF 24" OAK TREE, 200.55' RIGHT OF STA. 50+92.68 -L-, ELEVATION 231.85'.



LOCATION SKETCH

NOTES

- ASSUMED LIVE LOAD = HS20 OR ALTERNATE LOADING EXCEPT THAT THE GIRDERS HAVE BEEN DESIGN FOR HS25.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- THIS BRIDGE HAS BEEN DESIGNED BY THE STRENGTH DESIGN METHOD AS SPECIFIED IN AASHTO STANDARD SPECIFICATIONS.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO STANDARD SPECIFICATIONS FOR SEISMIC DESIGN OF HIGHWAY BRIDGES FOR SEISMIC PERFORMANCE CATEGORY A.
- ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
- ALL PAVEMENT MARKING WILL BE IN ACCORDANCE WITH THE PAVEMENT MARKING PLANS AND SHALL PROVIDE FOR BICYCLES.
- THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS.
- THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE THE TEMPORARY ACCESS AT STATION 50+72.21 -L- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR SHIPPING STEEL STRUCTURAL MEMBERS, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.



HORIZONTAL CLEARANCE - RAILROAD

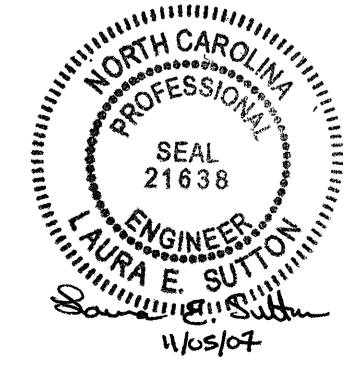
(LOOKING IN DIRECTION OF DECREASING STATIONS ON RAILROAD)
(SPAN LENGTHS BASED ON THIS SECTION)

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP. ACCESS	PDA TESTING	PDA ASSISTANCE	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	STRUCTURAL STEEL	HP 12 X 53 STEEL PILES	PP 24 x 0.50 GALVANIZED STEEL PILES	PIPE PILE PLATES	PILE REDRIVES	TWO BAR METAL RAIL	1'-2" x 2'-6" CONCRETE PARAPET	RIP RAP CLASS B	EVAZOTE JOINT SEALS		
	LUMP SUM	EACH	EACH	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	APPROX. LBS.	NO.	LIN. FT.	NO.	LIN. FT.	EACH	EACH	LIN. FT.	LIN. FT.	TONS	LUMP SUM
SUPERSTRUCTURE				9,108	8,916				357,200							514.19			
END BENT 1						21.4		2,876		9	720						463		
BENT 1		2	2			18.8		2,487			6	570	6	6					
END BENT 2						21.3		2,876		9	720						387		
TOTAL	LUMP SUM	2	2	9,108	8,916	61.5	LUMP SUM	8,239	357,200	18	1,440	6	570	6	6	514.19	530.00	850	LUMP SUM

PROJECT NO. U-3816
HOKE COUNTY
STATION: 50+72.21 -L-

SHEET 3 OF 3

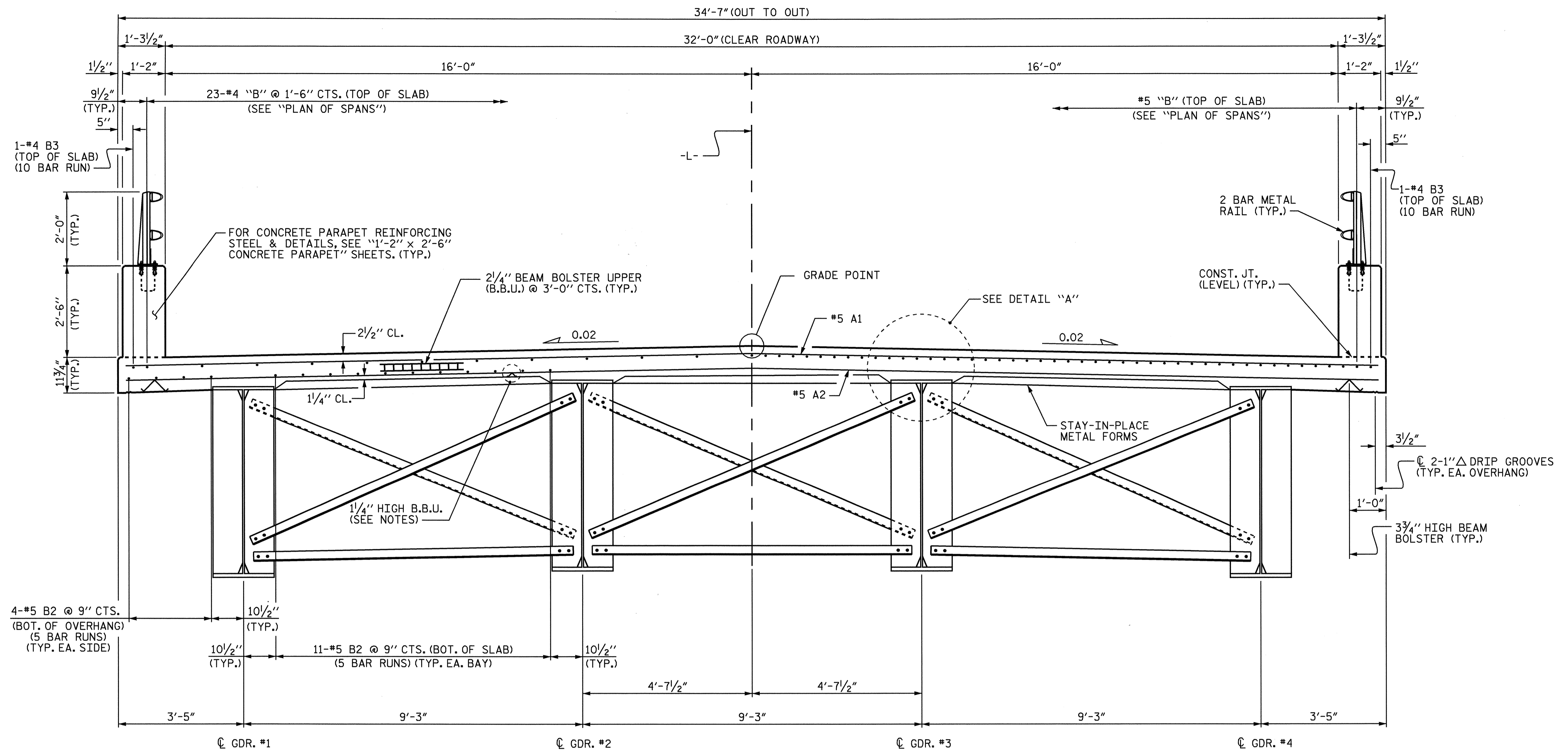


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
FOR BRIDGE OVER
ABERDEEN & ROCKFISH R.R.
ON SR 1244 BETWEEN
NC 211 AND NC 20

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

DRAWN BY: A.S. CALLAWAY DATE: 7/30/07
CHECKED BY: P.C. BREWER DATE: 8/16/07

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LSUTTON



AT MIDSPAN

AT END OF SPAN

TYPICAL SECTION

NOTES

PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.

THE CONTRACTOR MAY, WHEN NECESSARY, PROPOSE A SCHEME FOR AVOIDING INTERFERENCE BETWEEN METAL STAY-IN-PLACE FORM SUPPORTS OR FORMS AND BEAM/GIRDER STIFFENERS OR CONNECTOR PLATES. THE PROPOSAL SHALL BE INDICATED, AS APPROPRIATE, ON EITHER THE STEEL WORKING DRAWINGS OR THE METAL STAY-IN-PLACE FORM WORKING DRAWINGS.

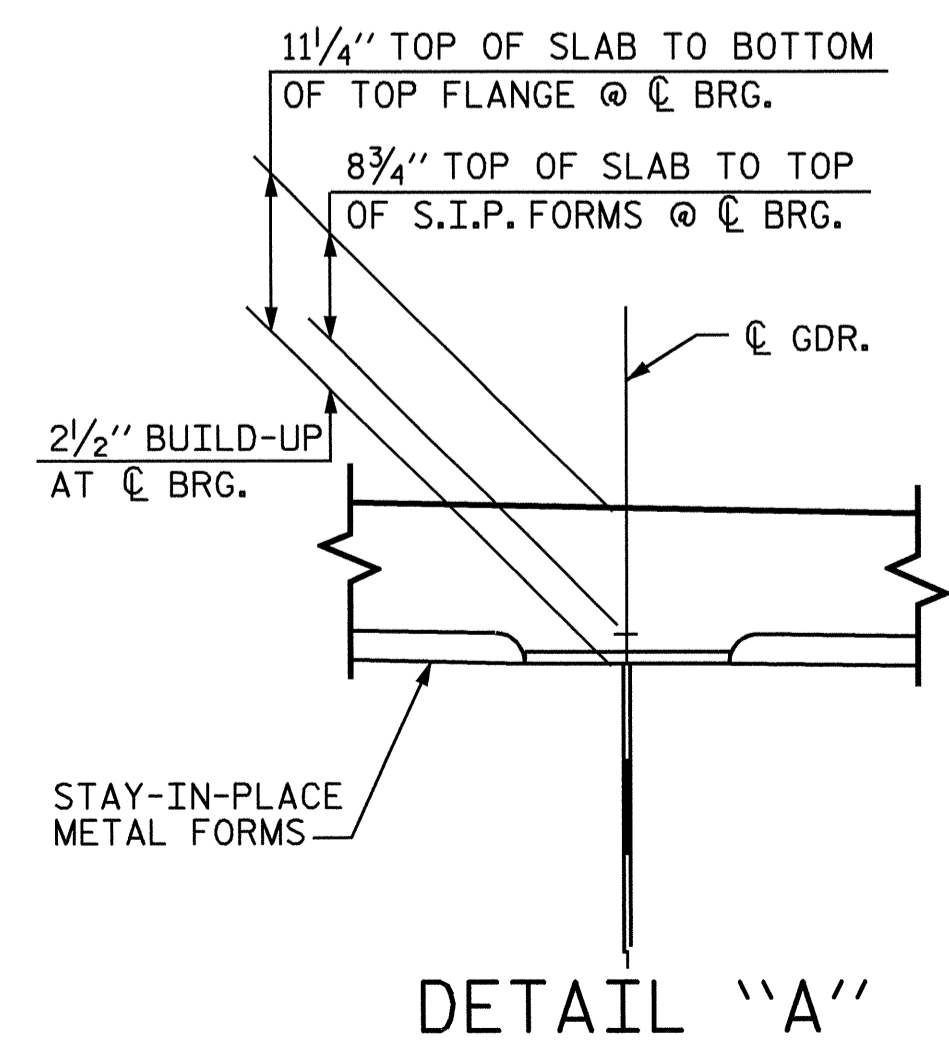
PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

CONCRETE PARAPET IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN CONCRETE PARAPET SHALL BE EPOXY COATED.

METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO GIRDER FLANGES IN THE ZONES REQUIRING CHARPY V-NOTCH TEST. SEE STRUCTURAL STEEL DETAIL SHEETS.

STRUCTURAL STEEL ERECTION IN A CONTINUOUS UNIT SHALL BE COMPLETE BEFORE FALSEWORK OR FORMS ARE PLACED ON THE UNIT.



DETAIL "A"

PROJECT NO. U-3816
 HOKE COUNTY
 STATION: 50+72.21 -L-

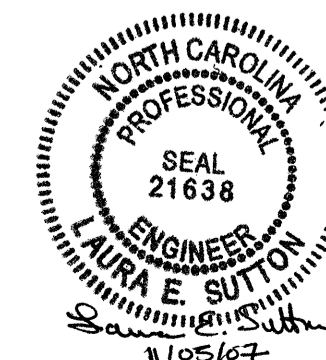
SHEET 1 OF 2

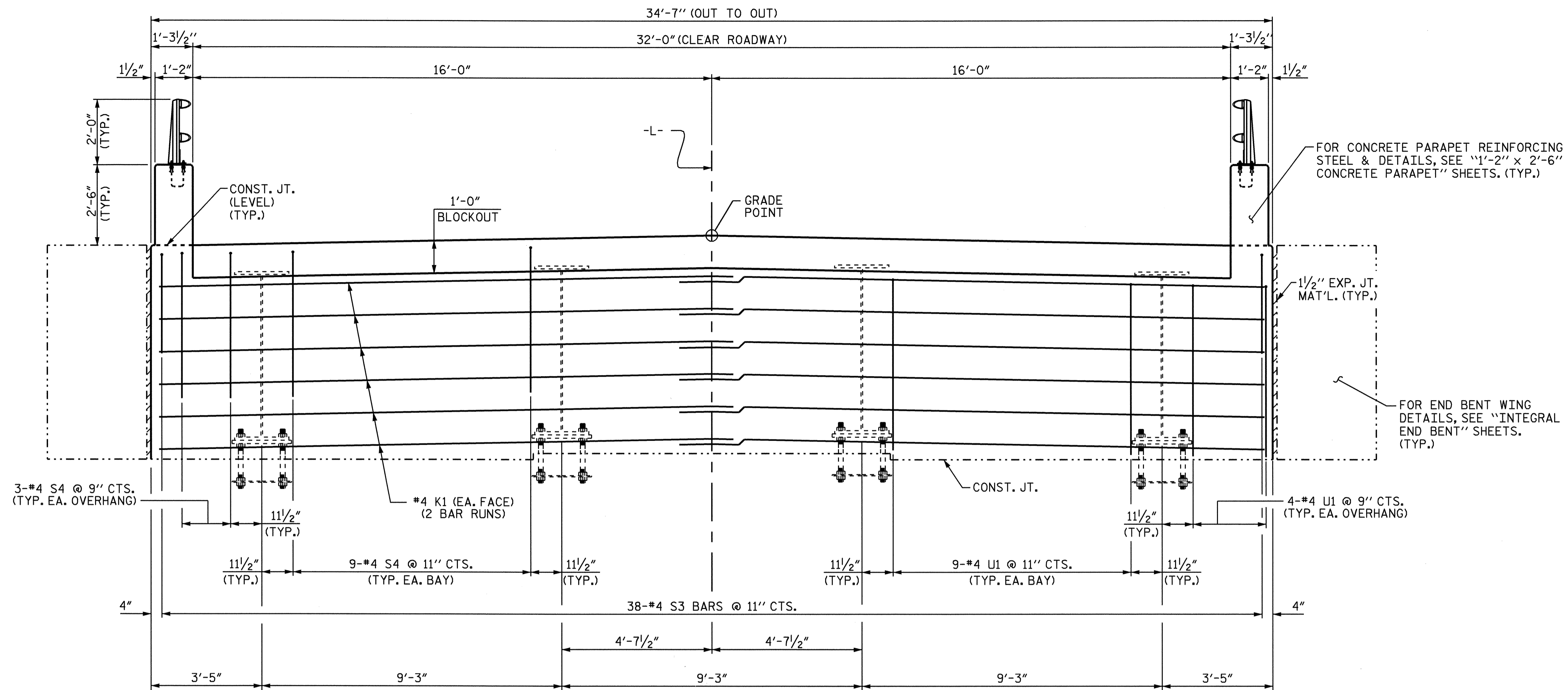
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 TYPICAL SECTIONS

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

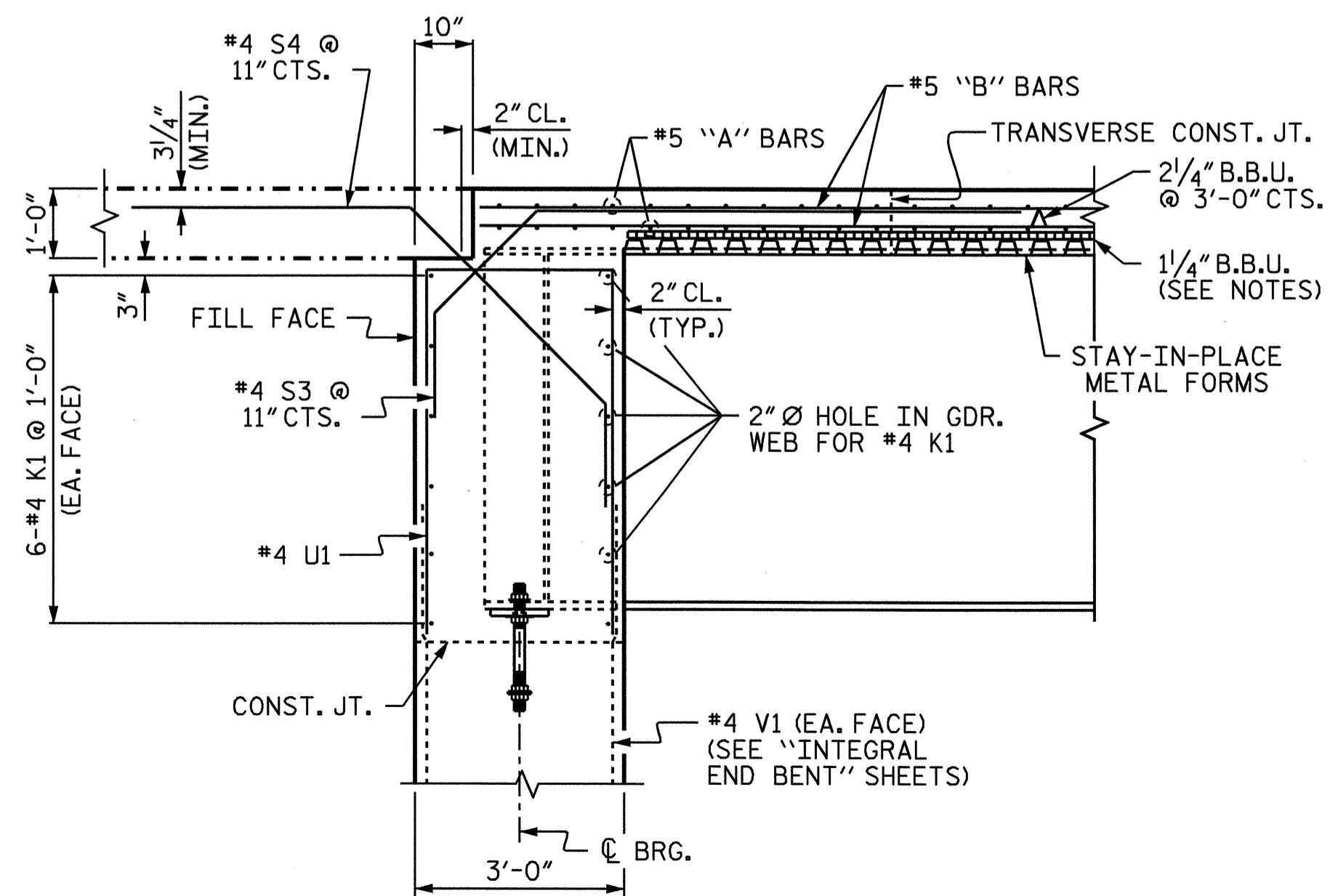
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 CHECKED BY: P.C. BREWER DATE: 3/12/07



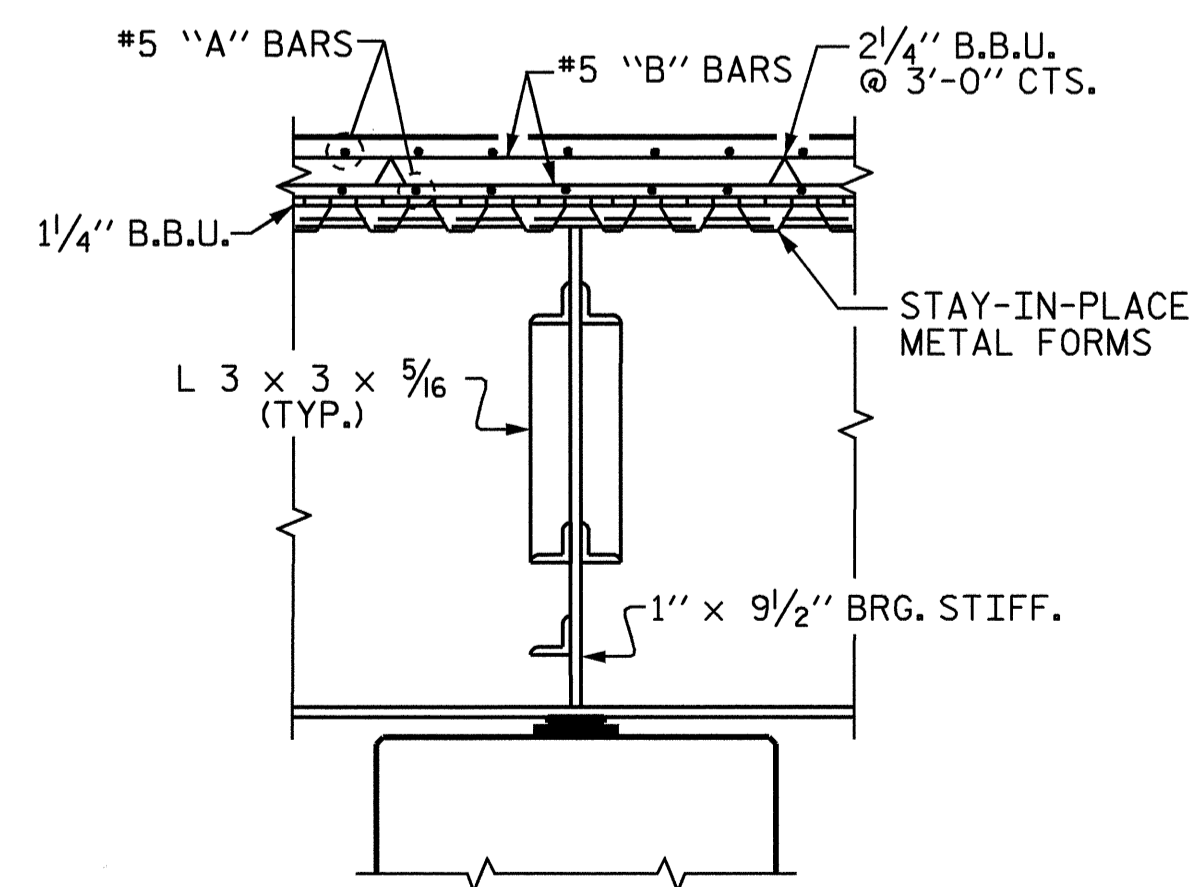


END ELEVATION

(END BENT 1 SHOWN, END BENT 2 SIMILAR)
 (FOR CLARITY, DECK REINFORCING STEEL NOT SHOWN)



SECTION A-A



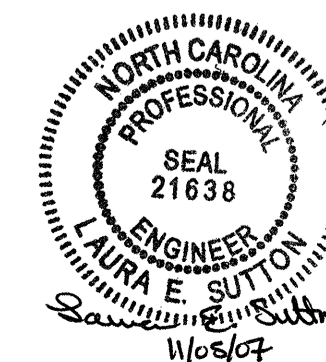
SECTION AT BENT

PROJECT NO. U-3816
HOKE COUNTY
 STATION: 50+72.21 -L-

SHEET 2 OF 2

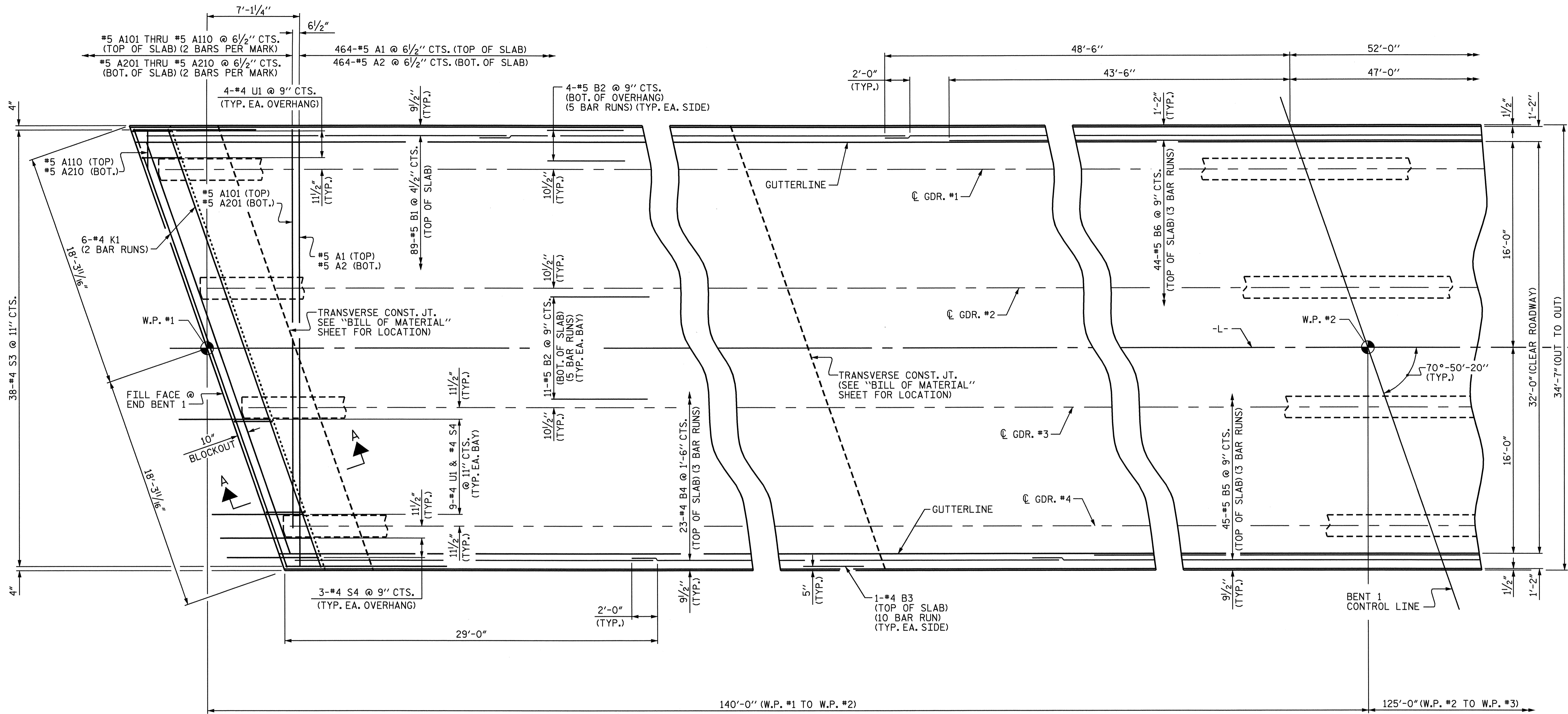
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 TYPICAL SECTIONS

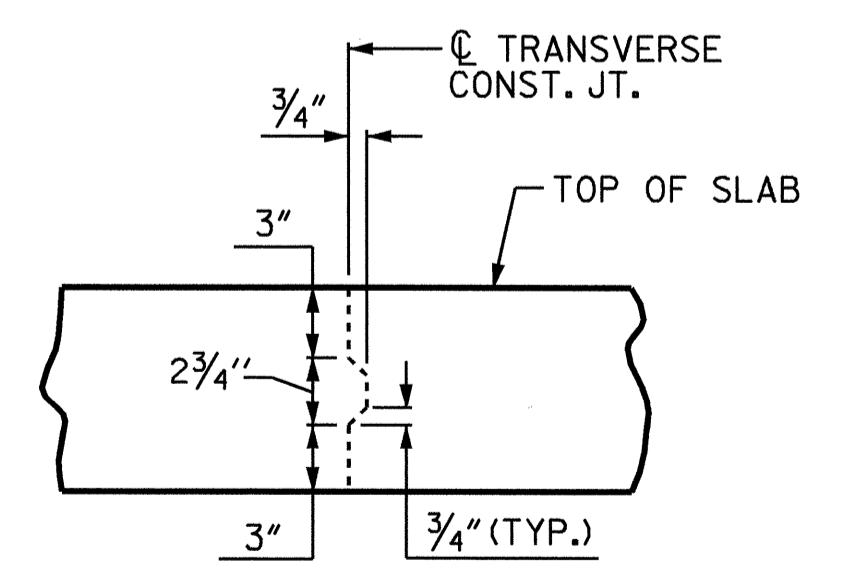


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			32

DRAWN BY : A.S. CALLAWAY DATE : 3/1/07
 CHECKED BY : P.C. BREWER DATE : 3/12/07



PLAN OF SPAN A



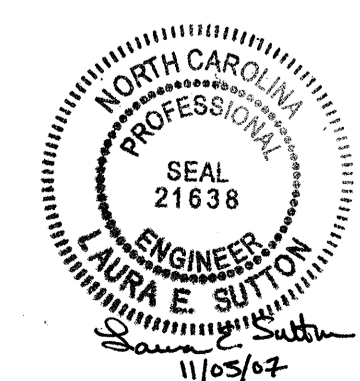
TRANSVERSE CONSTRUCTION JOINT DETAIL

NOTE:
REINFORCING STEEL IN SLAB NOT SHOWN.
LONGITUDINAL REINFORCING STEEL SHALL BE
CONTINUOUS THROUGH JOINT.

NOTES:
FOR CONCRETE PARAPET REINFORCING STEEL
AND DETAILS, SEE "1'-2" x 2'-6" CONCRETE
PARAPET", SHEETS.
FOR SECTION A-A, SEE "TYPICAL SECTIONS"
SHEET 2 OF 2.

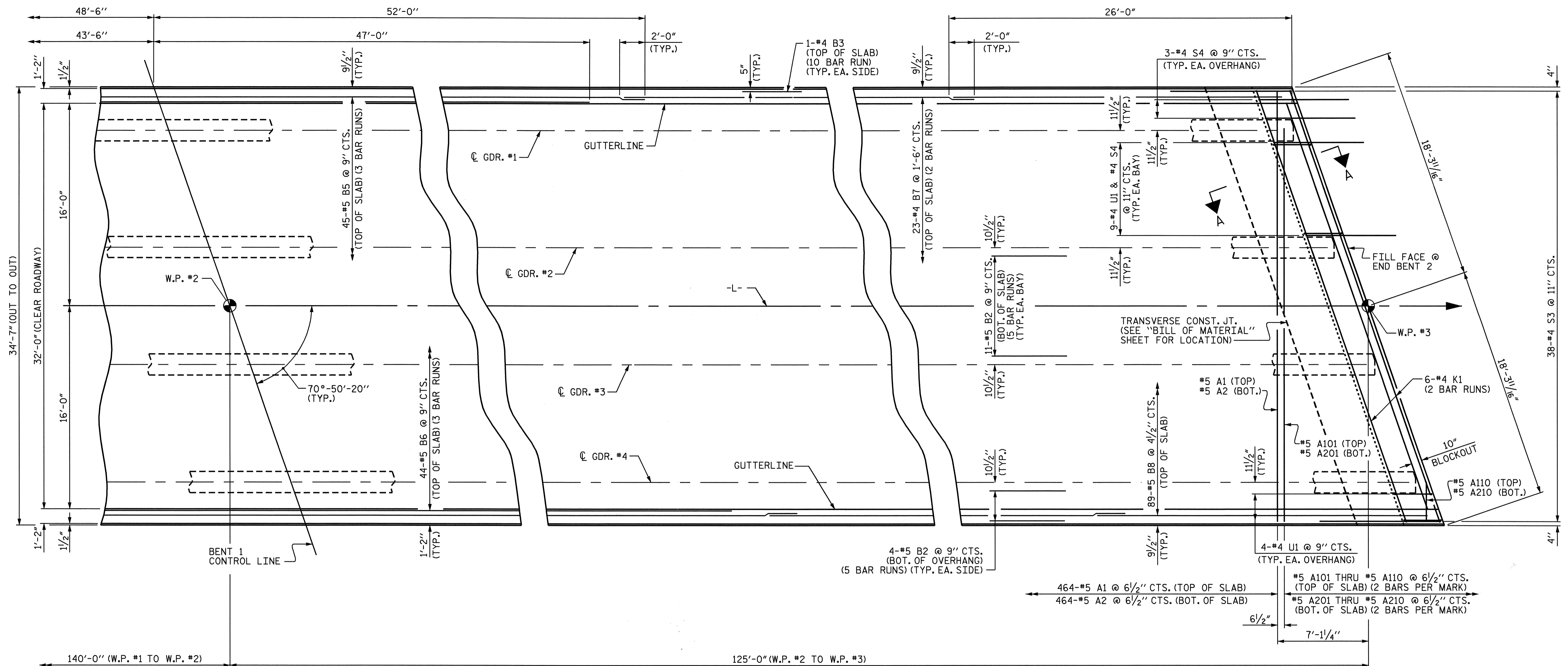
PROJECT NO. U-3816
HOKE COUNTY
STATION: 50+72.21 -L-

SHEET 1 OF 2
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
PLAN OF SPANS

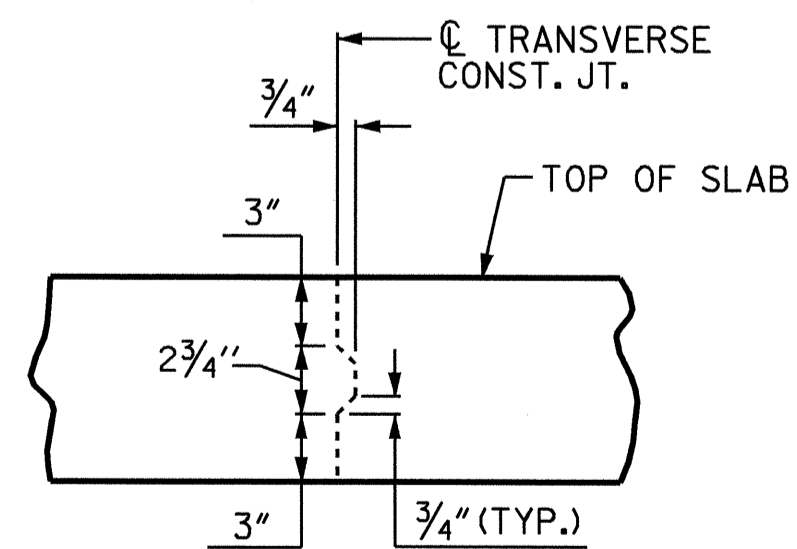


DRAWN BY: A.S. CALLAWAY DATE: 3/5/07
CHECKED BY: P.C. BREWER DATE: 3/12/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			32



PLAN OF SPAN B



TRANSVERSE CONSTRUCTION JOINT DETAIL

NOTE:
REINFORCING STEEL IN SLAB NOT SHOWN.
LONGITUDINAL REINFORCING STEEL SHALL BE
CONTINUOUS THROUGH JOINT.

NOTES:

FOR CONCRETE PARAPET REINFORCING STEEL
AND DETAILS, SEE "1'-2\"/>

FOR SECTION A-A, SEE "TYPICAL SECTIONS"
SHEET 2 OF 2.

PROJECT NO. U-3816
HOKE COUNTY
STATION: 50+72.21 -L-

SHEET 2 OF 2

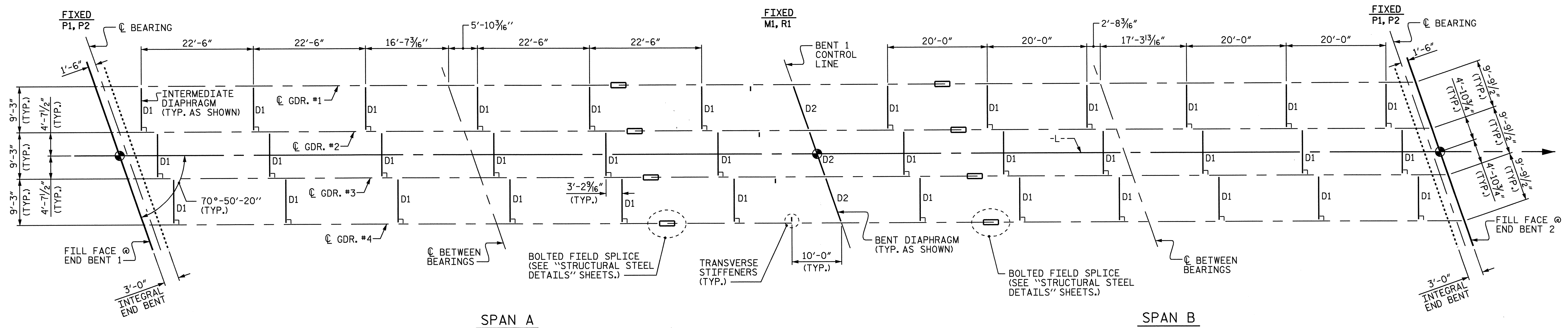
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPANS

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

DRAWN BY: A.S. CALLAWAY DATE: 3/5/07
CHECKED BY: P.C. BREWER DATE: 3/12/07



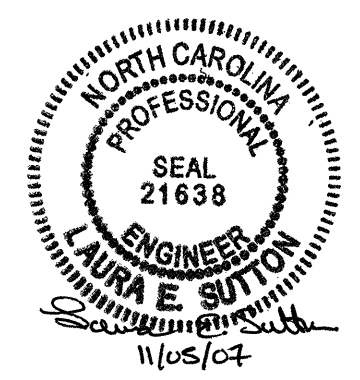


FRAMING PLAN

PROJECT NO. U-3816
HOKE COUNTY
 STATION: 50+72.21 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

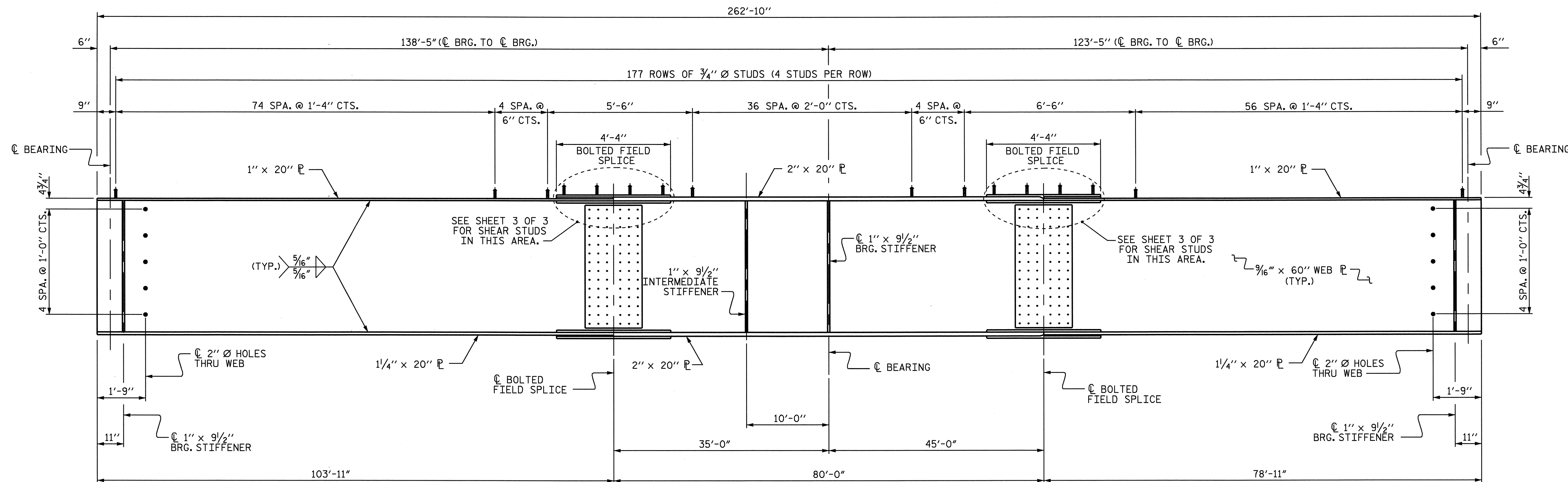
**SUPERSTRUCTURE
 FRAMING PLAN**



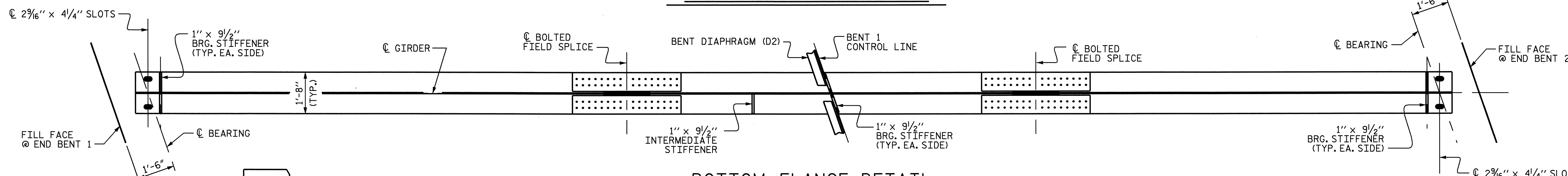
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			32

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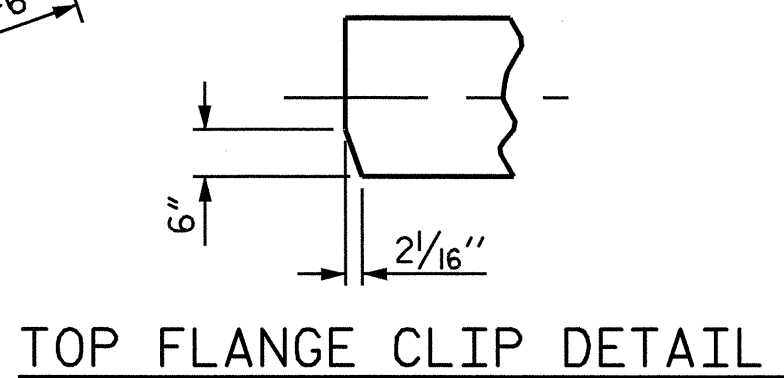


ELEVATION OF GIRDER

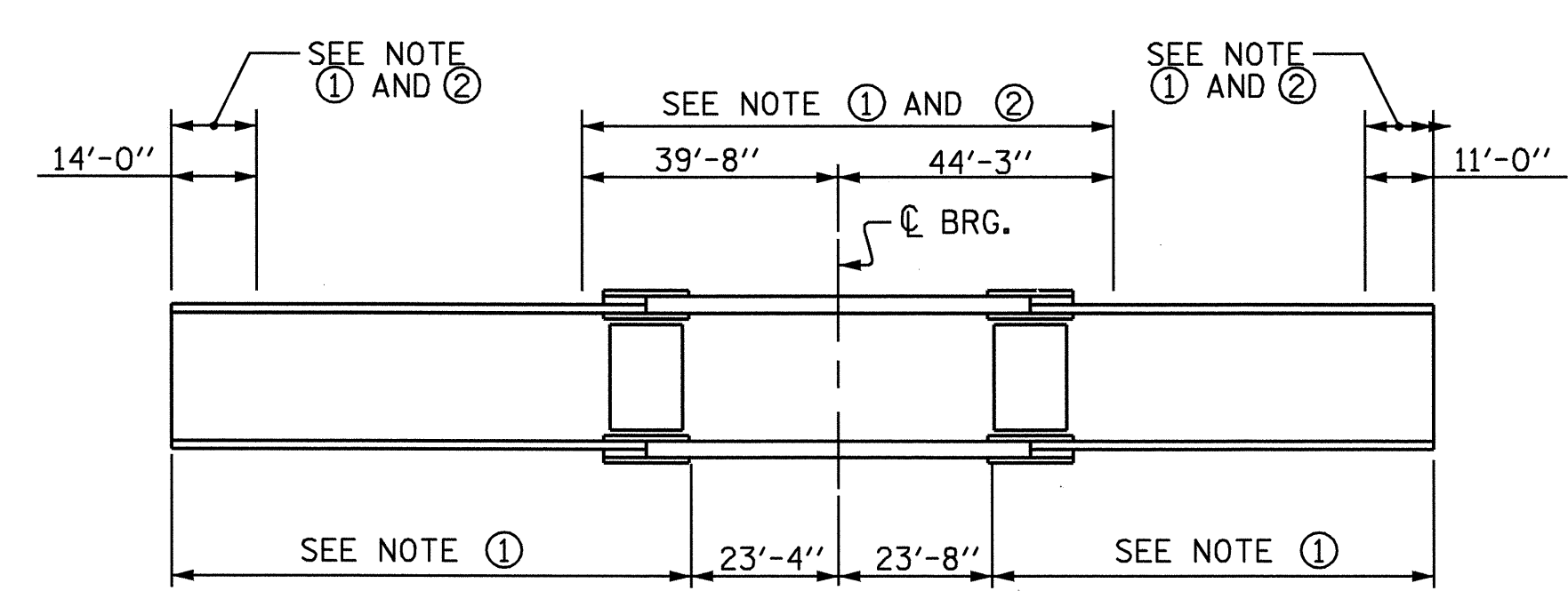


BOTTOM FLANGE DETAIL

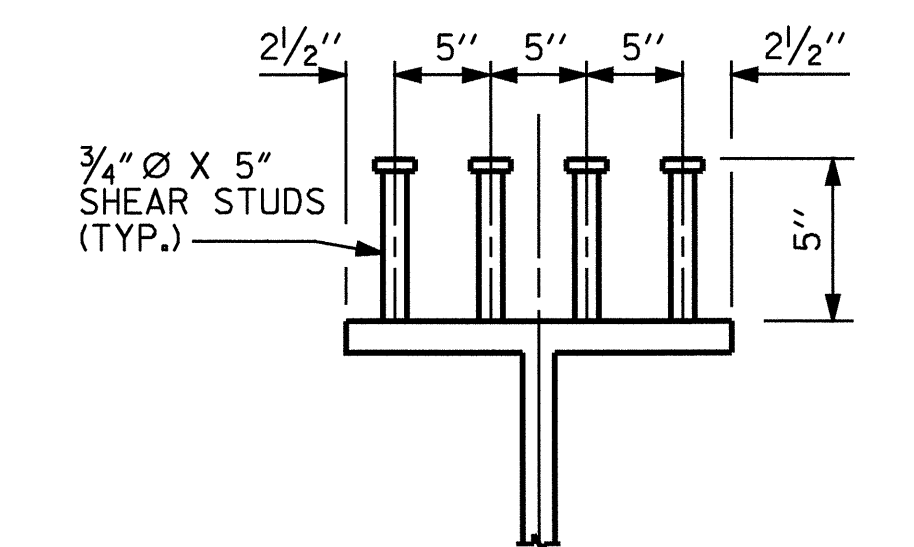
(FOR CLARITY, INTERMEDIATE DIAPHRAGMS NOT SHOWN)



TOP FLANGE CLIP DETAIL



GIRDER MAKE UP



SHEAR STUD DETAILS

NOTE ① : CHARPY V-NOTCH TESTS ARE REQUIRED FOR ALL TOP OR BOTTOM FLANGE PLATES WHICH FALL WITHIN THESE LIMITS, ALL WEB PLATES, AND ALL SPLICE PLATES. IF A PERMITTED SHOP FLANGE SPLICE IS NOT USED, CHARPY V-NOTCH TESTS WILL BE REQUIRED FOR THE ENTIRE FLANGE PLATE. FOR CHARPY V-NOTCH TESTS, SEE ARTICLE 1072-9 OF THE STANDARD SPECIFICATIONS.

NOTE ② : NO WELDING OF FORMS OR FALSEWORK TO THE TOP FLANGE WILL BE PERMITTED IN THIS REGION

CHARPY V-NOTCH TESTS FOR CONTINUOUS PLATE GIRDERS

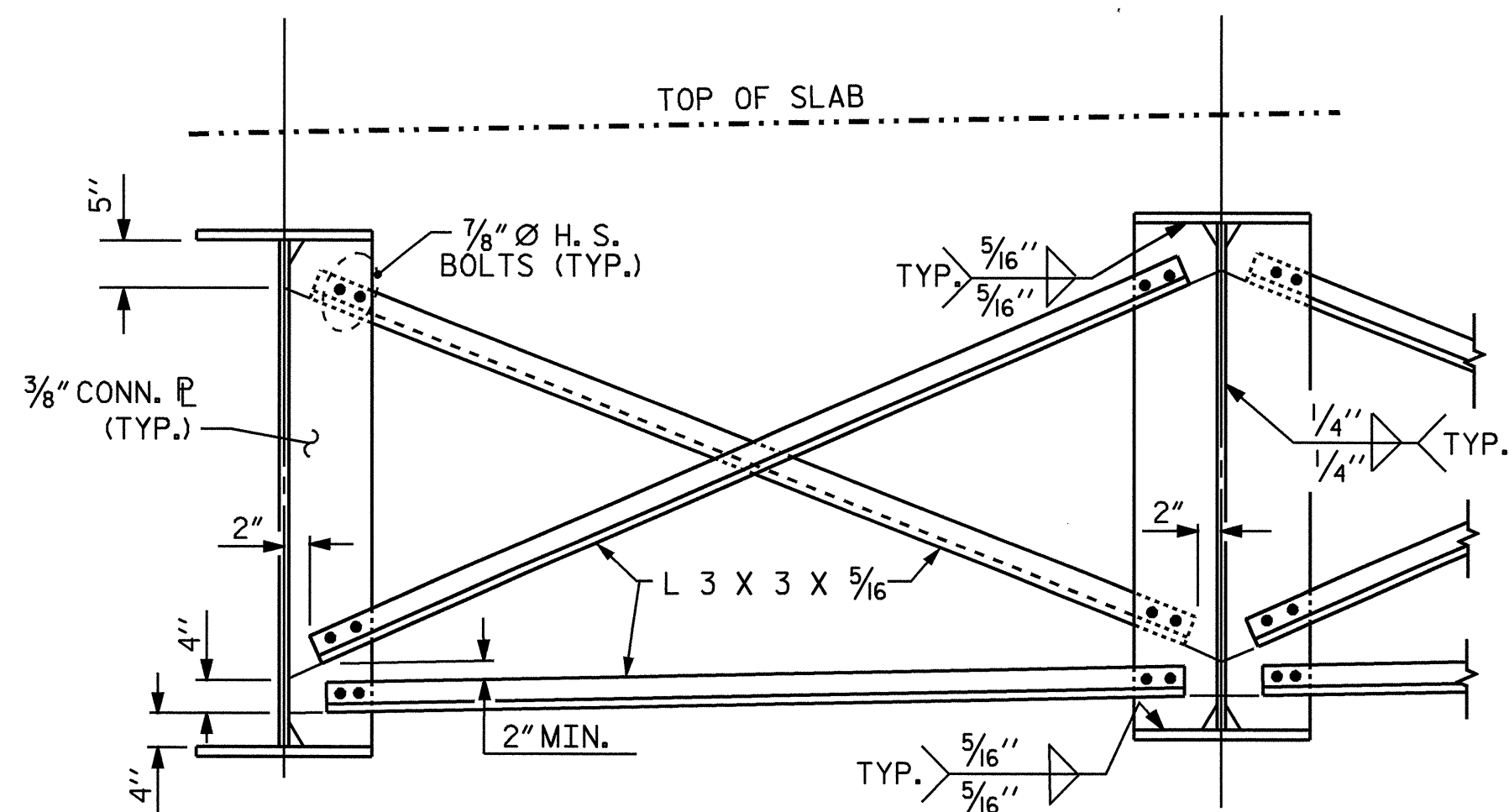
PROJECT NO. U-3816
HOKE COUNTY
 STATION: 50+72.21 -L-
 SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 STRUCTURAL STEEL
 DETAILS

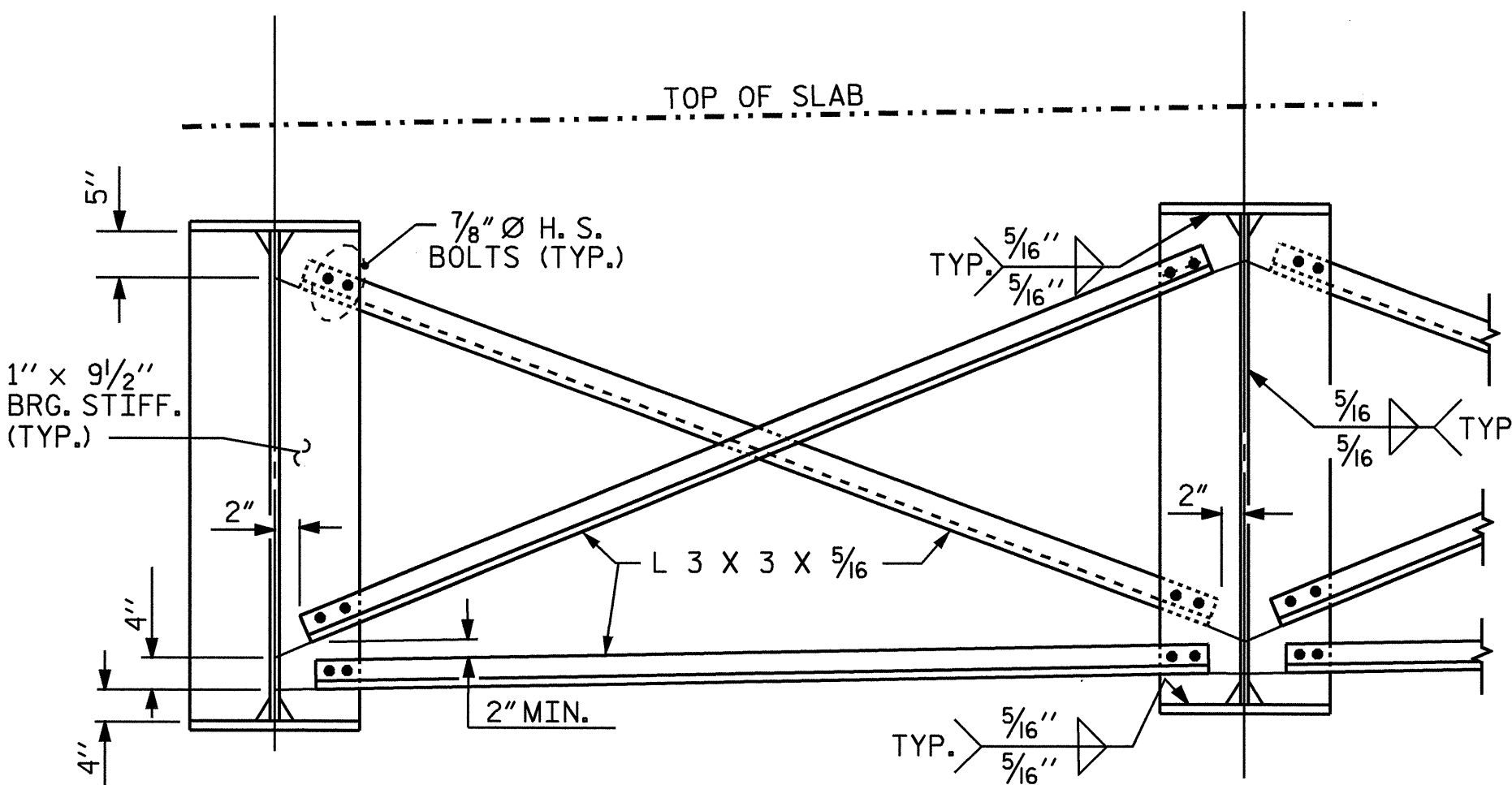


REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					32

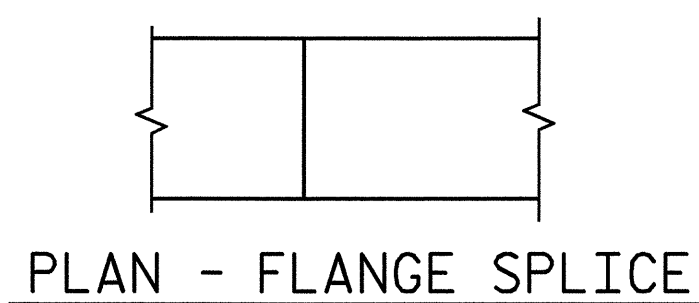
DRAWN BY : A.S. CALLAWAY DATE : 2/27/07
 CHECKED BY : P.C. BREWER DATE : 3/12/07



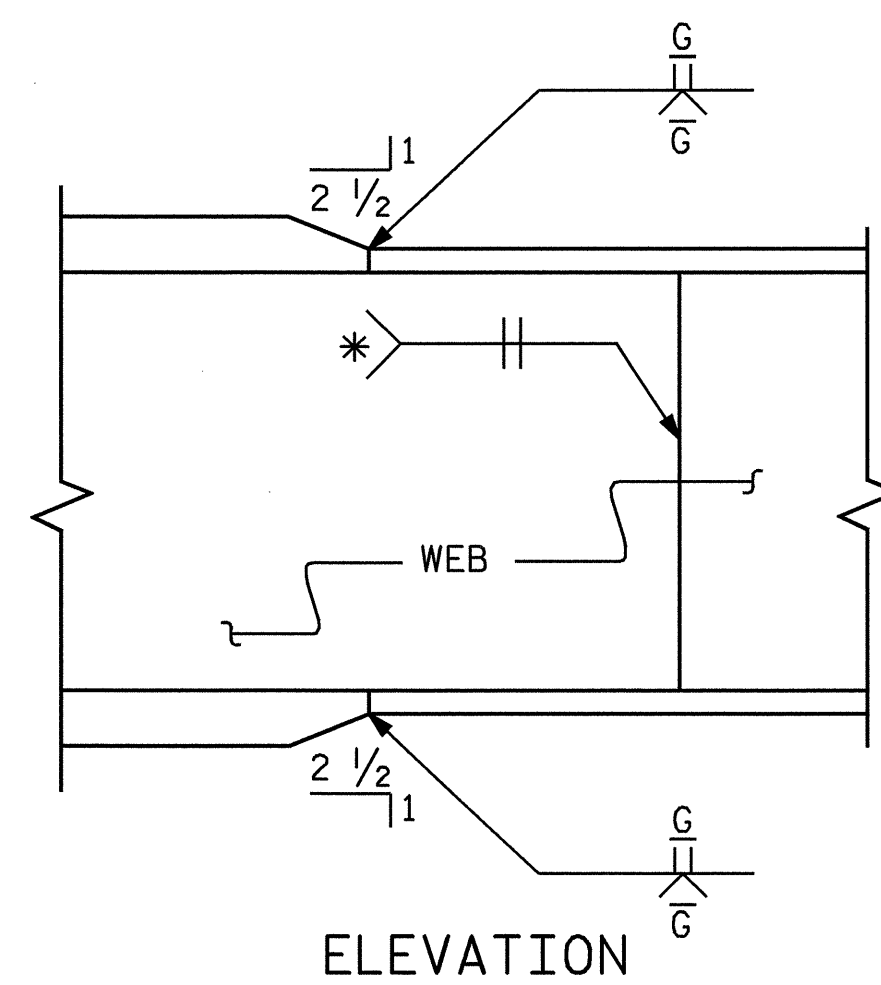
INTERMEDIATE DIAPHRAGM (D1)



BENT DIAPHRAGM (D2)



PLAN - FLANGE SPLICE



ELEVATION

TYPICAL FLANGE AND WEB BUTT JOINT

* GRIND SMOOTH AND FLUSH ON OUTER FACE OF EXTERIOR BEAMS /GIRDERS

NOTES:

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W.

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.

ALL FIELD CONNECTIONS TO BE 7/8" DIA. HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED. FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.

SHOP SPLICES ARE PERMITTED TO LIMIT THE MAXIMUM REQUIRED FLANGE PIECE LENGTHS TO 60 FEET AND WEB PIECE LENGTHS TO 45 FEET. PERMITTED FLANGE AND WEB SHOP SPLICES SHALL NOT BE LOCATED WITHIN 15 FEET OF MAXIMUM DEAD LOAD DEFLECTION (NOR WITHIN 15 FEET OF INTERMEDIATE BEARINGS OF CONTINUOUS UNITS). KEEP 2 FEET MINIMUM BETWEEN WEB AND FLANGE SHOP SPLICES. KEEP 6" MINIMUM BETWEEN CONNECTOR PLATE OR TRANSVERSE STIFFENER WELDS AND WEB OR FLANGE SHOP SPLICES.

STUDS ON GIRDERS MAY BE SHIFTED UP TO 1" IF NECESSARY TO CLEAR FLANGE SPLICE WELD.

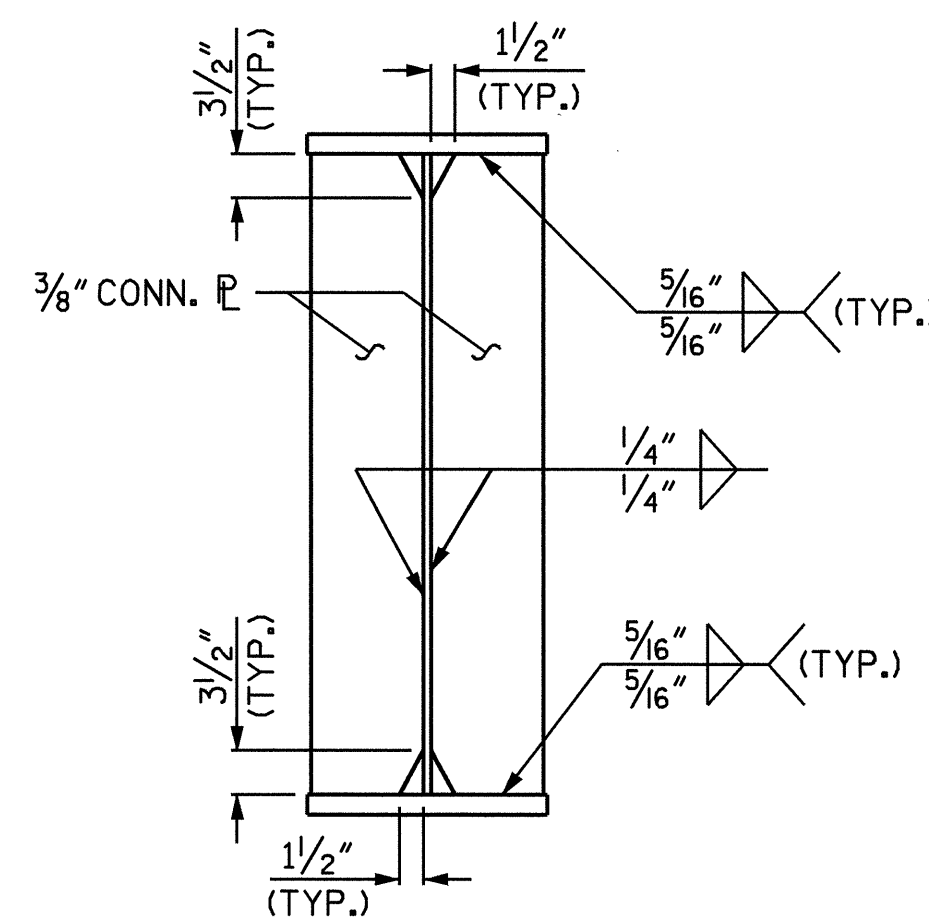
TENSION ON THE AASHTO M164 BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-10 OF THE STANDARD SPECIFICATIONS.

END OF GIRDERS SHALL BE PLUMB.

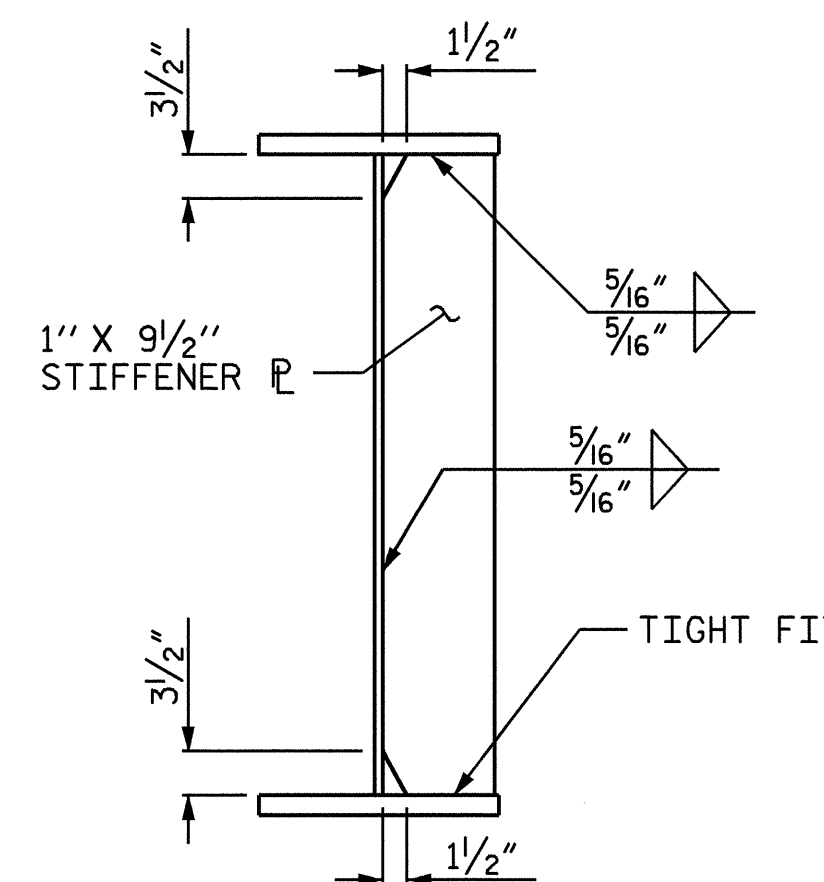
BEARING STIFFENERS AT END BENTS 1 & 2 ARE TO BE PLACED NORMAL TO THE WEB OF THE GIRDER AND SHALL BE PLUMB.

BEARING STIFFENERS AT BENT 1 SHALL BE PLACED ALONG THE SKEW AND SHALL BE PLUMB.

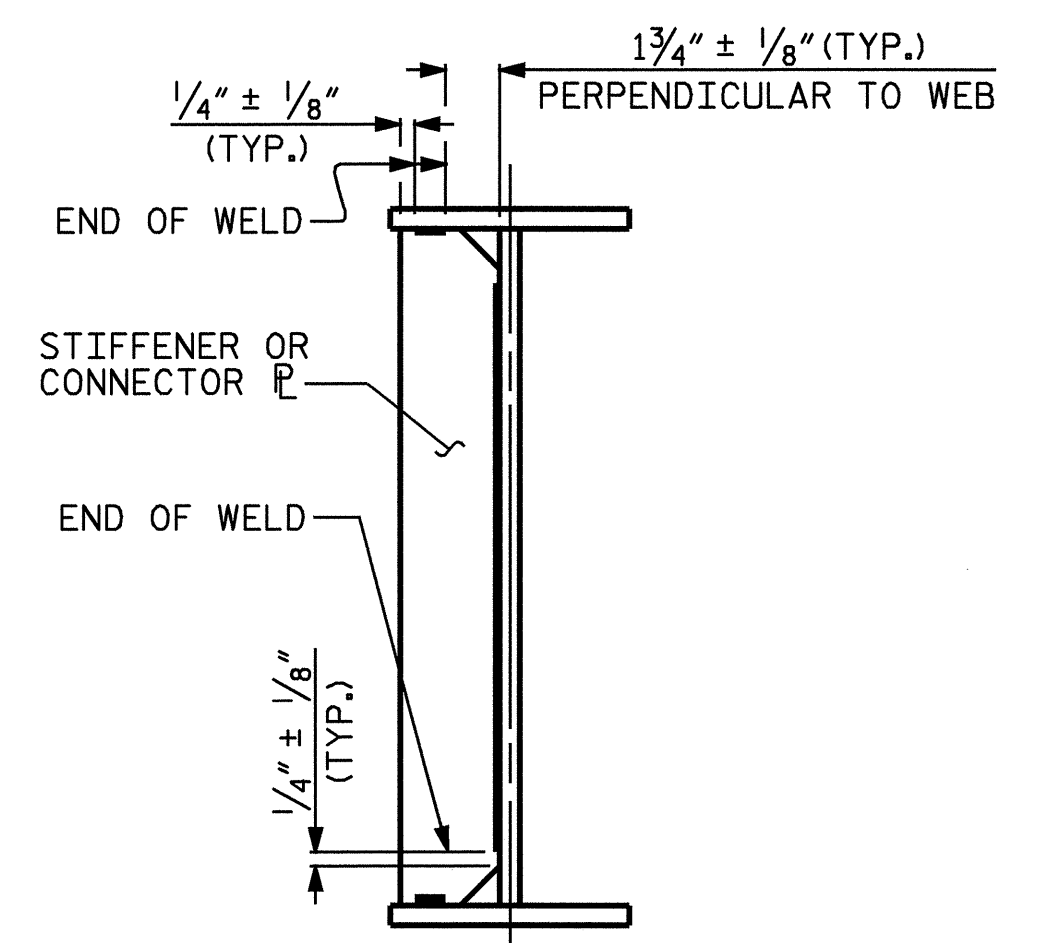
BEARING STIFFENER MAY REQUIRE COPING IF WIDER THAN BOTTOM FLANGE TO AVOID INTERFERENCE WITH THE ANCHOR BOLTS.



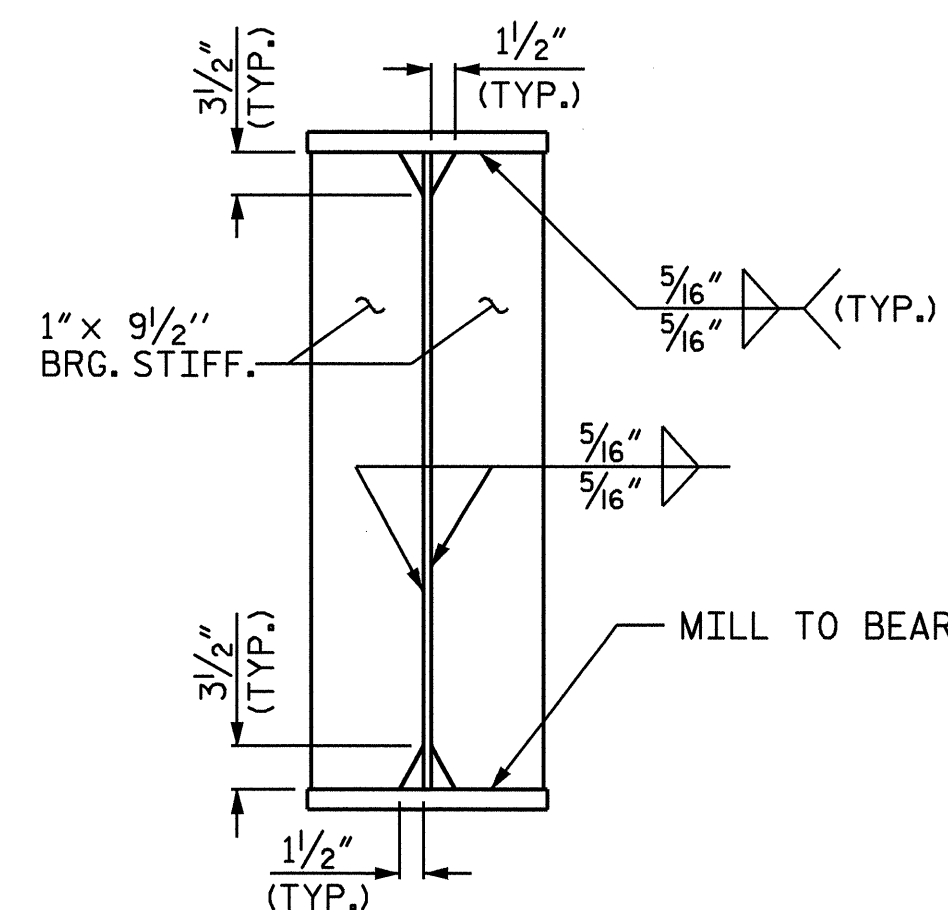
CONNECTOR PLATE



INTERMEDIATE STIFFENER

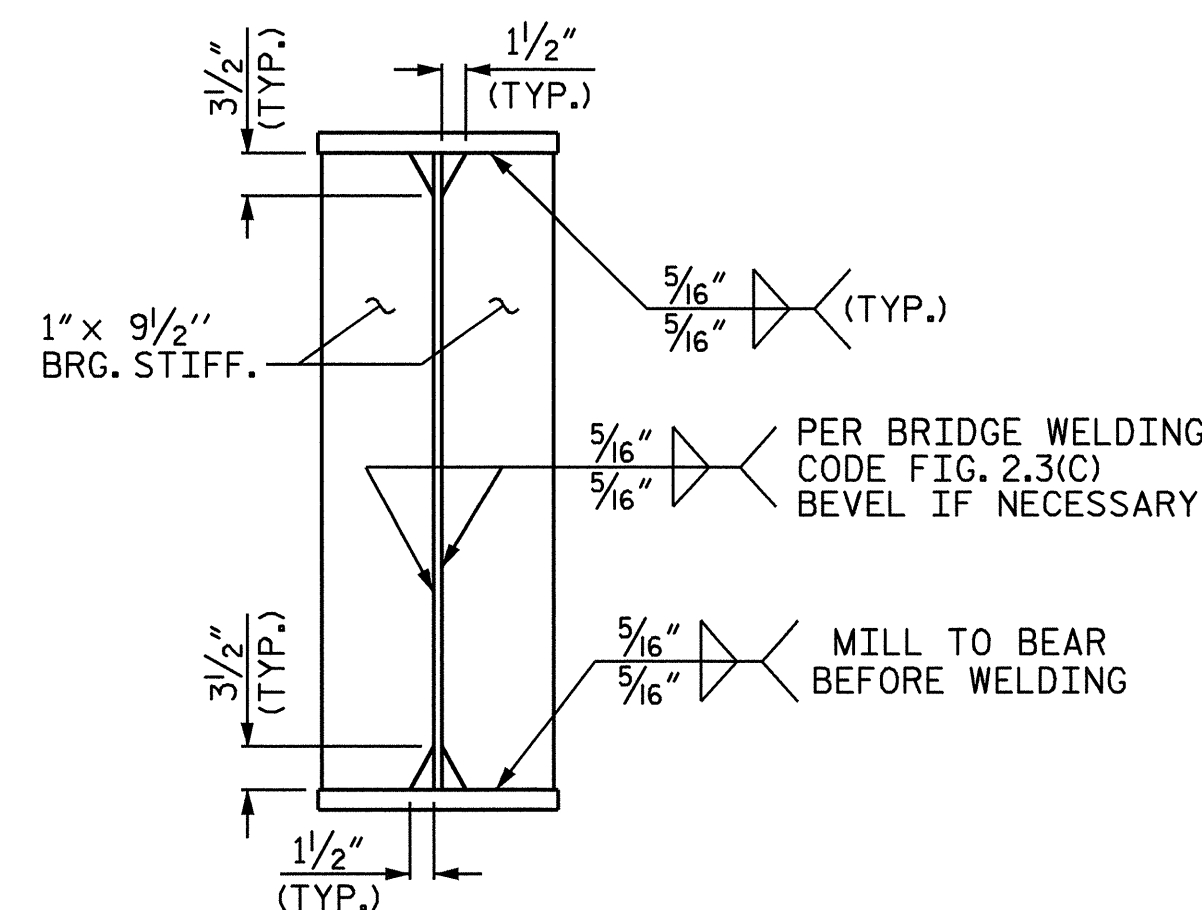


WELD TERMINATION DETAIL



BEARING STIFFENER

(AT END BENTS 1 & 2)



BEARING STIFFENER

(AT BENT 1)

DRAWN BY: A.S. CALLAWAY DATE: 2/27/07
 CHECKED BY: P.C. BREWER DATE: 3/12/07

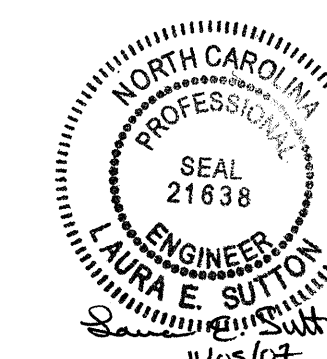
PROJECT NO. U-3816
HOKE COUNTY
 STATION: 50+72.21 -L-

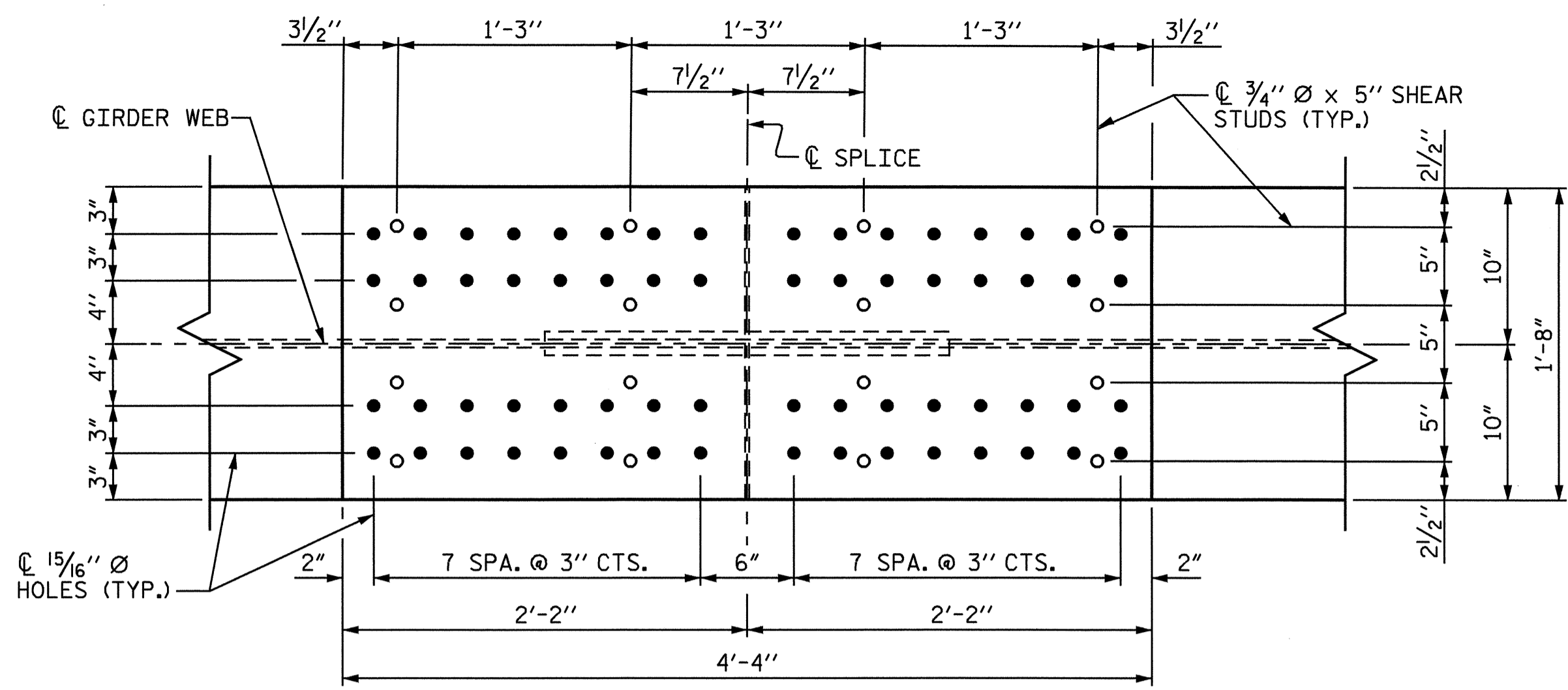
SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 STRUCTURAL STEEL
 DETAILS

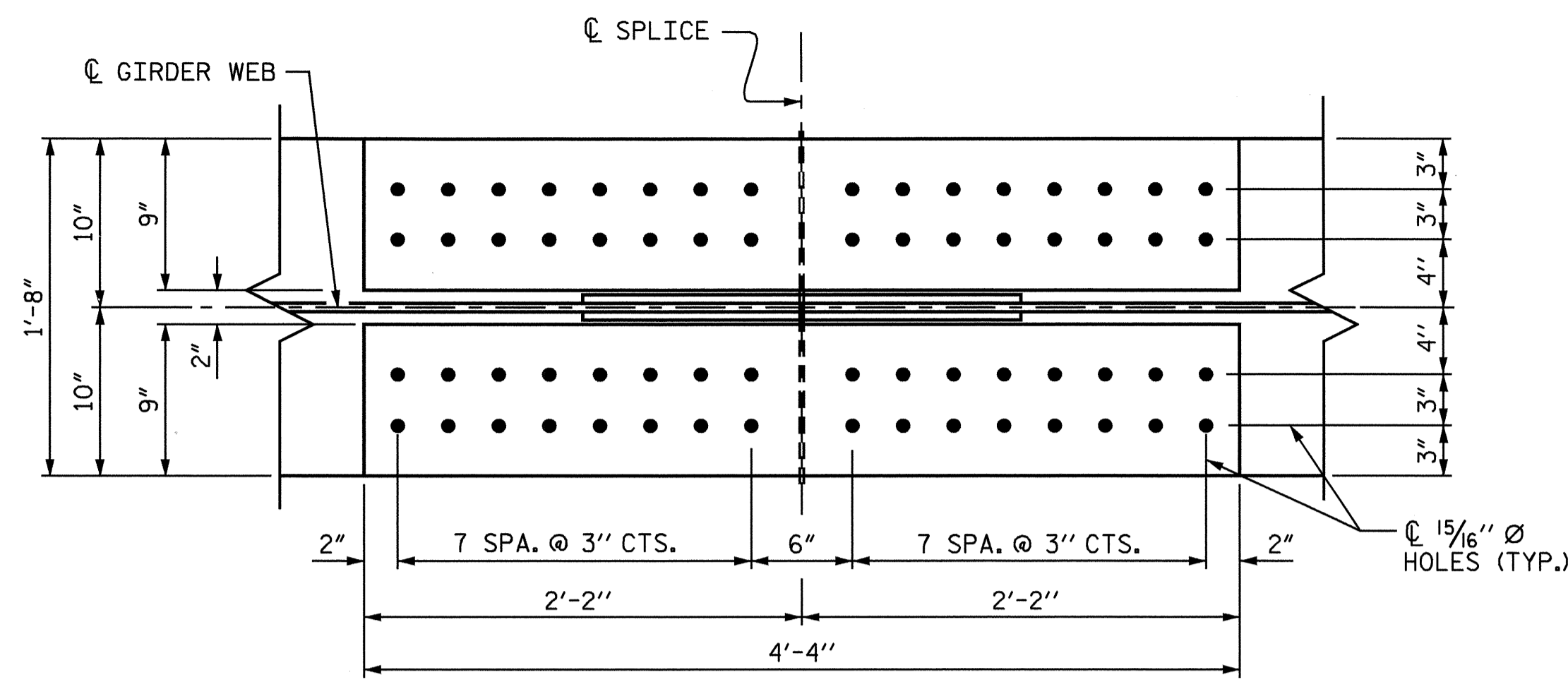
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 32

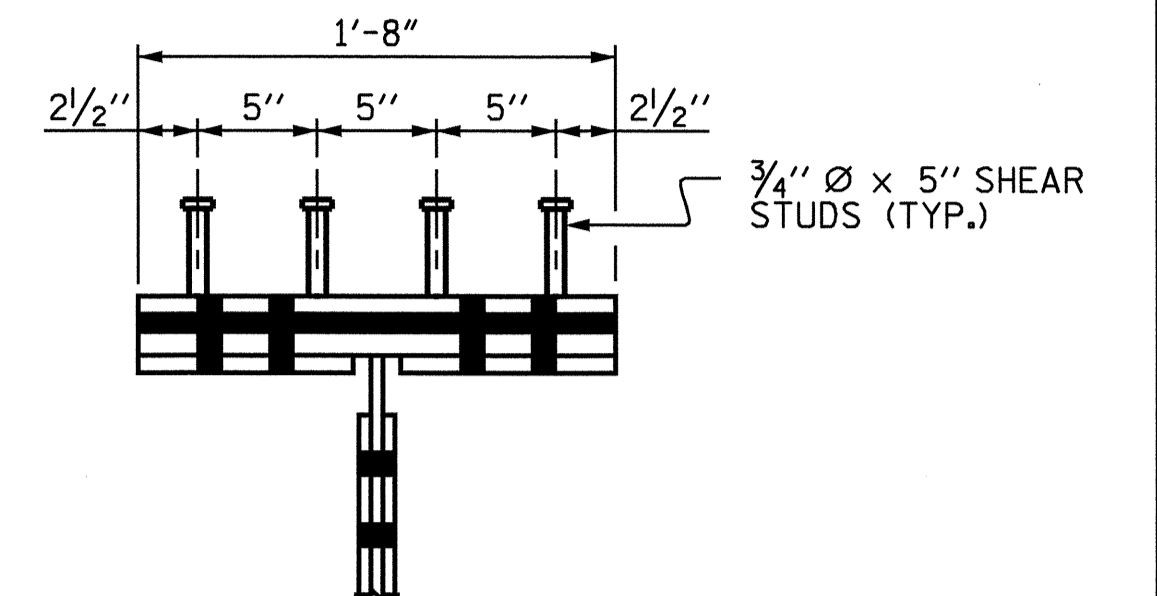




PLAN (TOP OF TOP FLANGE)

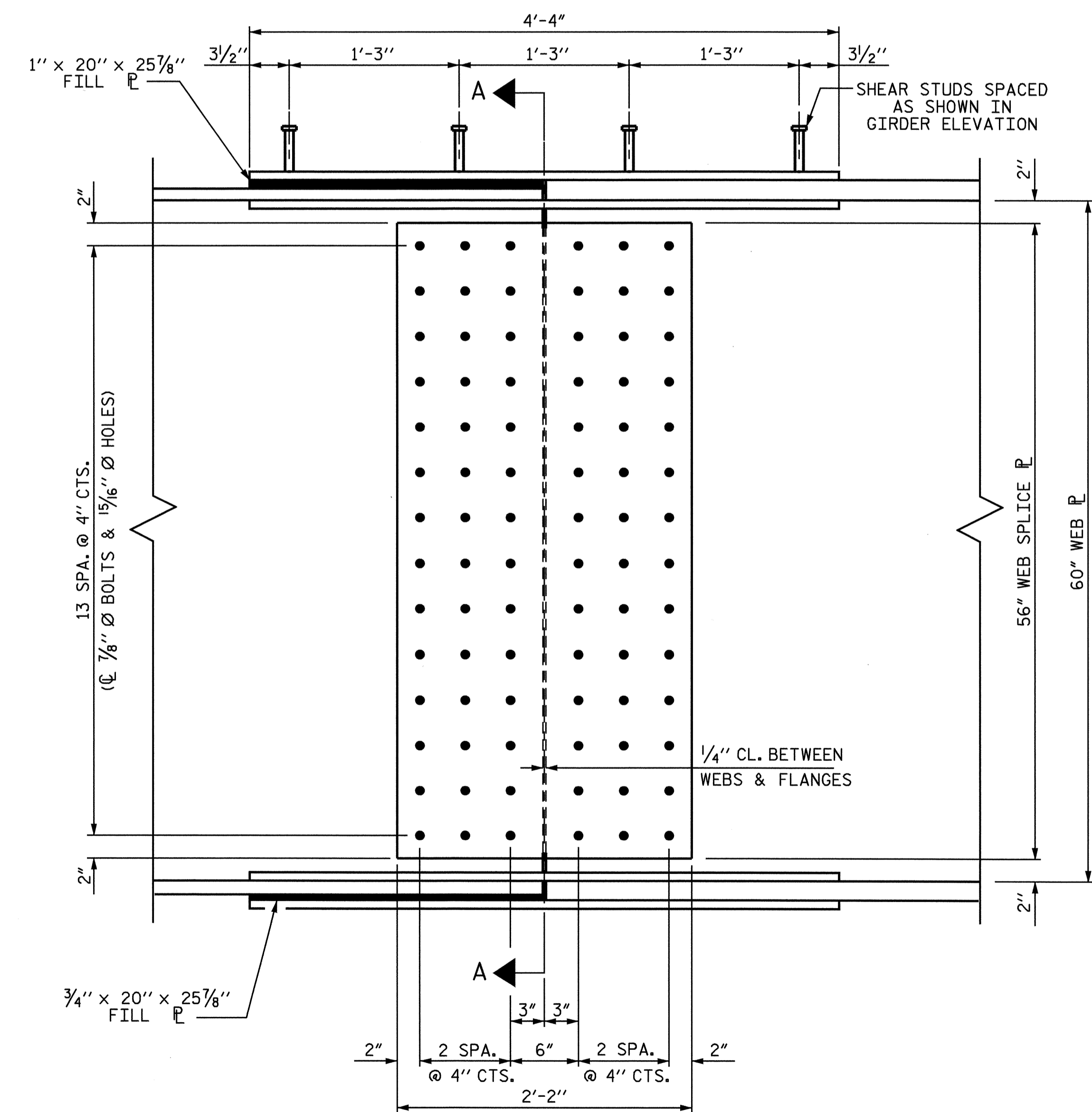


PLAN (TOP OF BOTTOM FLANGE)

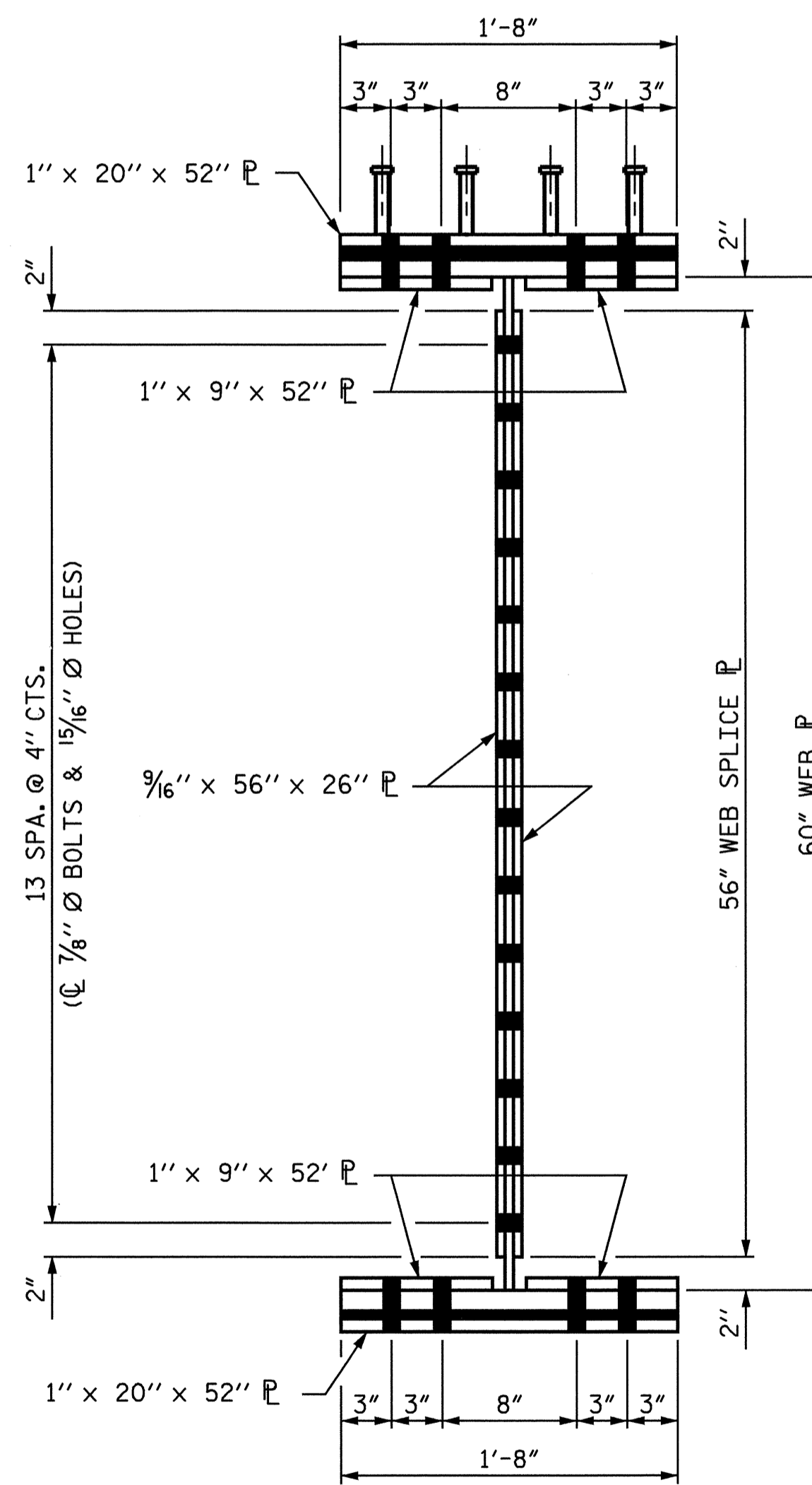


SHEAR STUD DETAIL FOR TOP FLANGE SPLICE PLATE

NOTE: SHEAR STUDS ARE TO BE SHOP WELDED ON TOP OF PLATE BEFORE FIELD ASSEMBLY.



ELEVATION



SECTION A-A

DESCRIPTION	SIZE	NO. REQ'D. FOR ONE FIELD SPLICE	TOTAL REQ'D.
WEB SPLICE PLATE	9/16" x 56" x 26"	2	16
OUTER SPLICE PLATE TOP FLANGE W/SHEAR STUDS	1" x 20" x 52"	1	8
INNER SPLICE PLATE TOP FLANGE	1" x 9" x 52"	2	16
FILL PLATE TOP FLANGE	1" x 20" x 25 7/8"	1	8
FILL PLATE BOTTOM FLANGE	3/4" x 20" x 25 7/8"	1	8
INNER SPLICE PLATE BOTTOM FLANGE	1" x 9" x 52"	2	16
OUTER SPLICE PLATE BOTTOM FLANGE	1" x 20" x 52"	1	8

NOTE: 1 5/16" Ø HOLES FOR 7/8" Ø H.S. BOLTS.

BOLTED FIELD SPLICE DETAILS

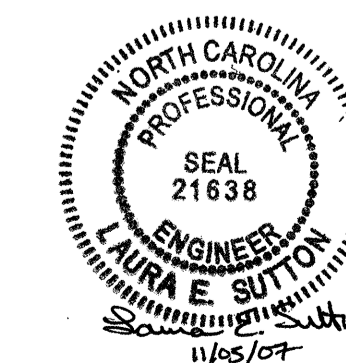
(TYPICAL EACH FIELD SPLICE)
(SPAN A SPLICE SHOWN, SPAN B SPLICE SYMMETRICAL)

DRAWN BY: A.S. CALLAWAY DATE: 2/26/07
CHECKED BY: P.C. BREWER DATE: 3/12/07

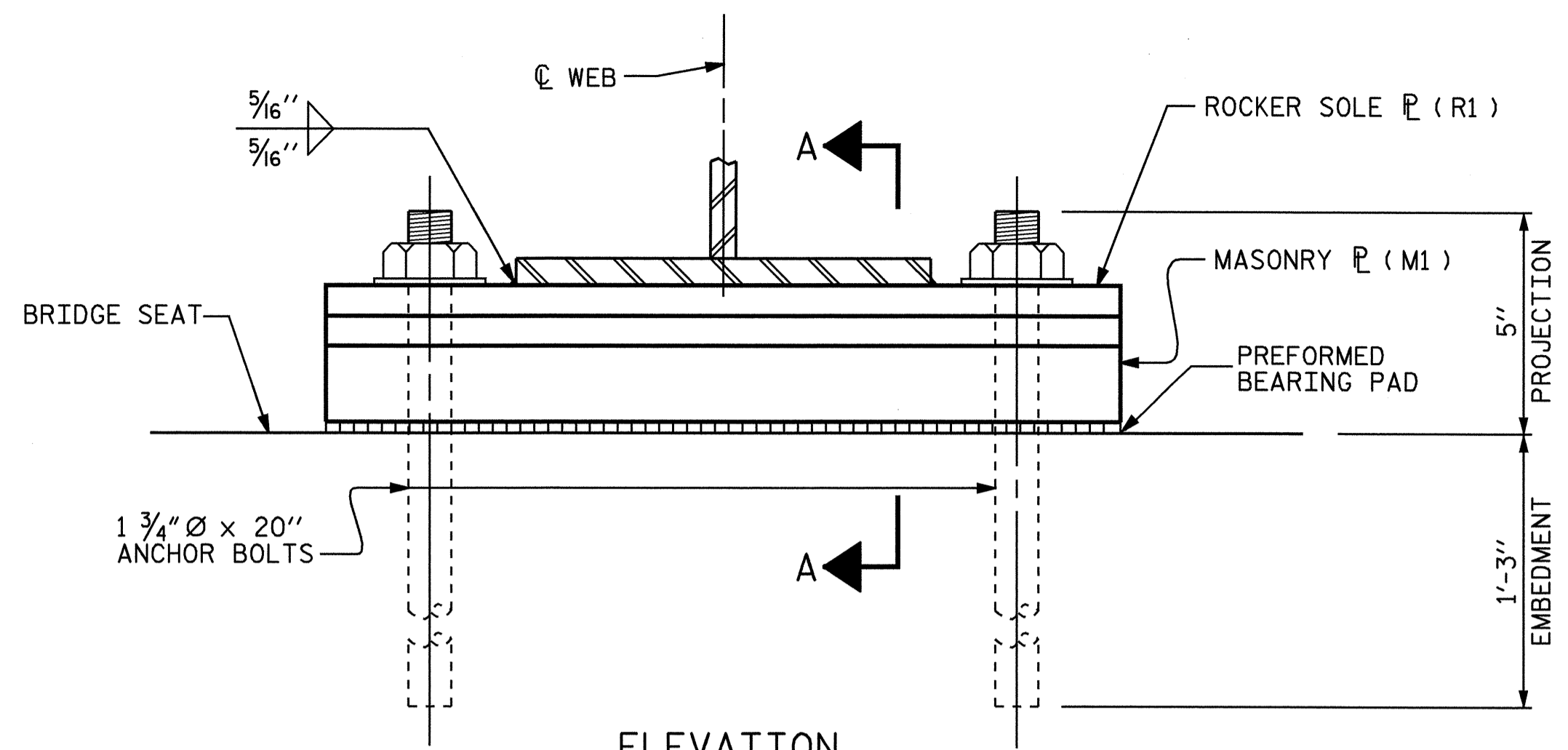
21-AUG-2007 12:19
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PROJECT NO. U-3816
HOKE COUNTY
STATION: 50+72.21 -L-

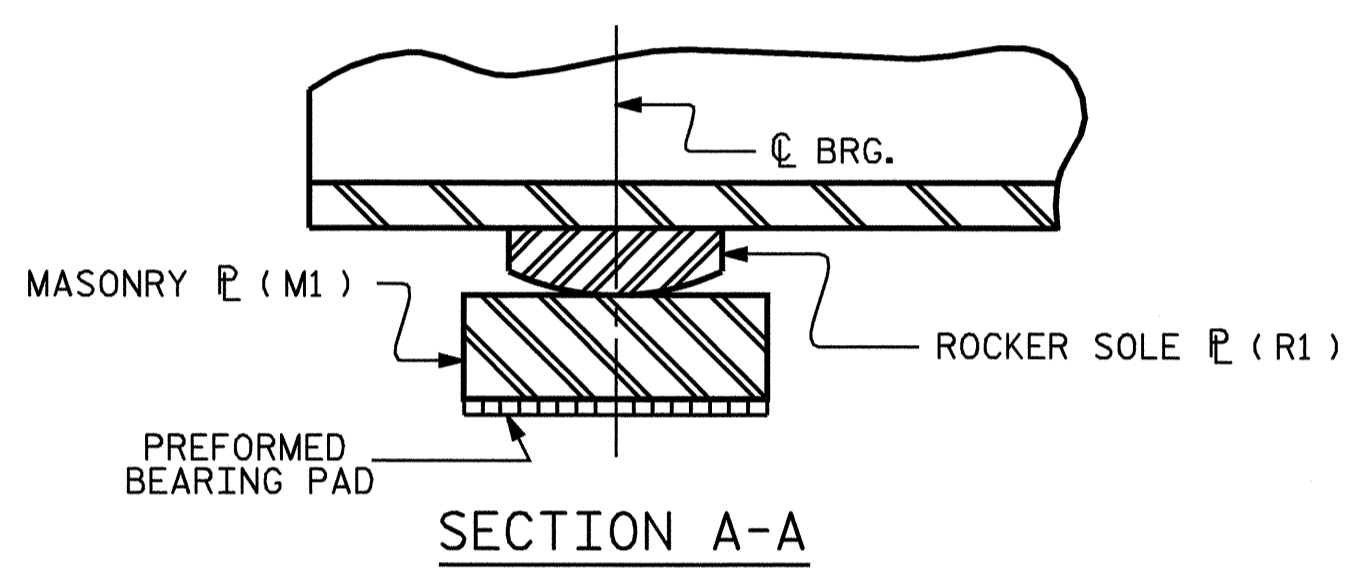
SHEET 3 OF 3



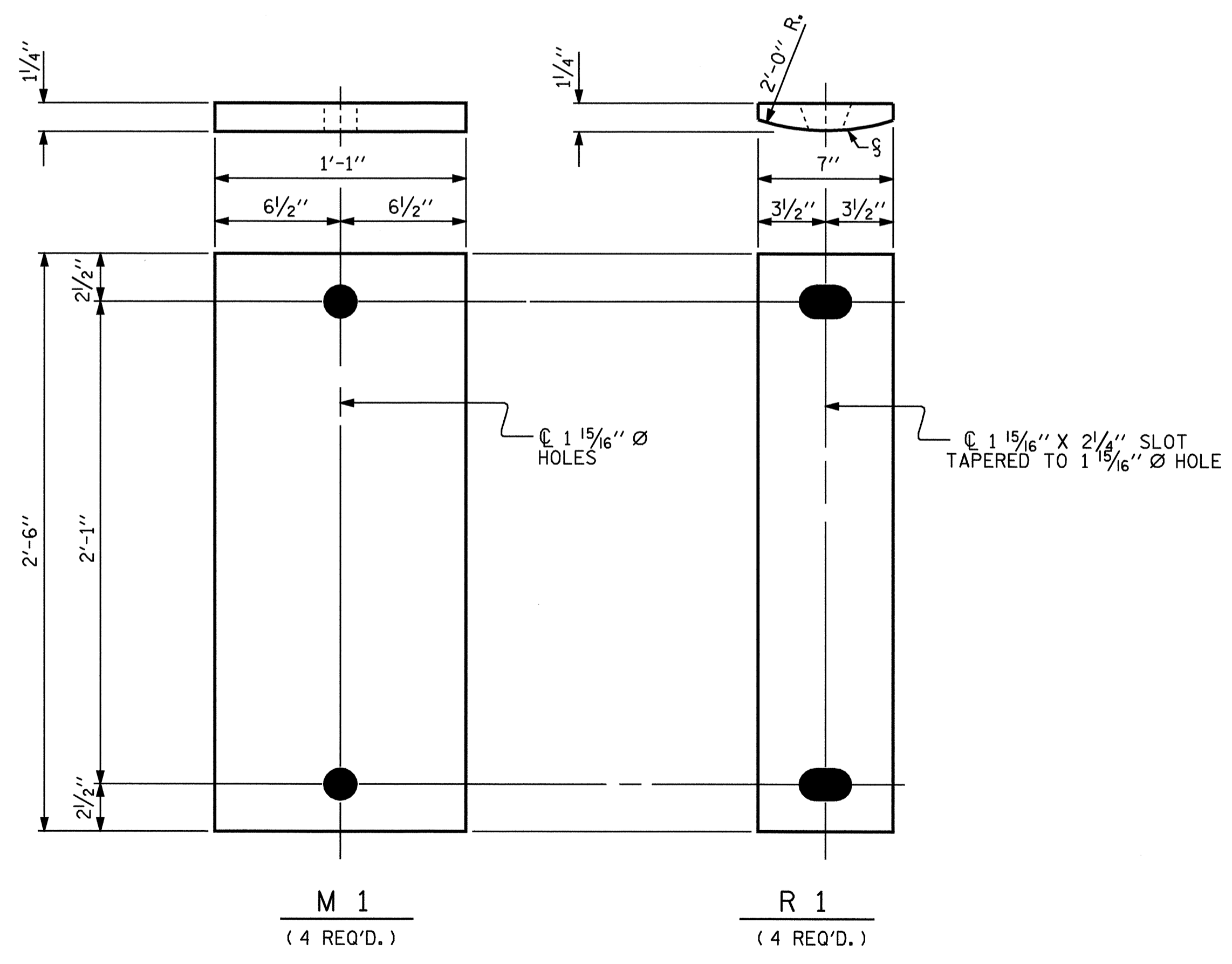
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE STRUCTURAL STEEL DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-11
					TOTAL SHEETS 32



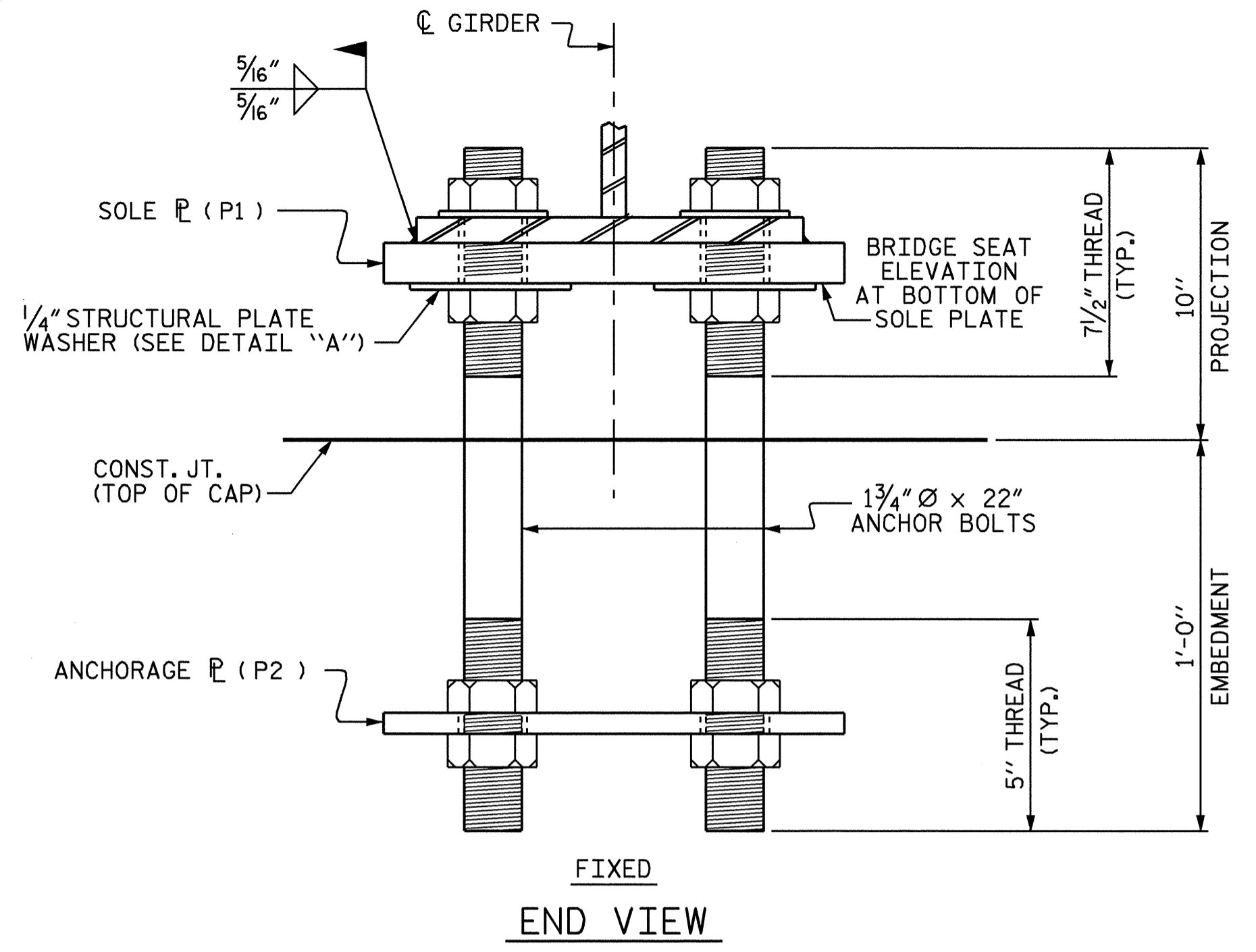
ELEVATION



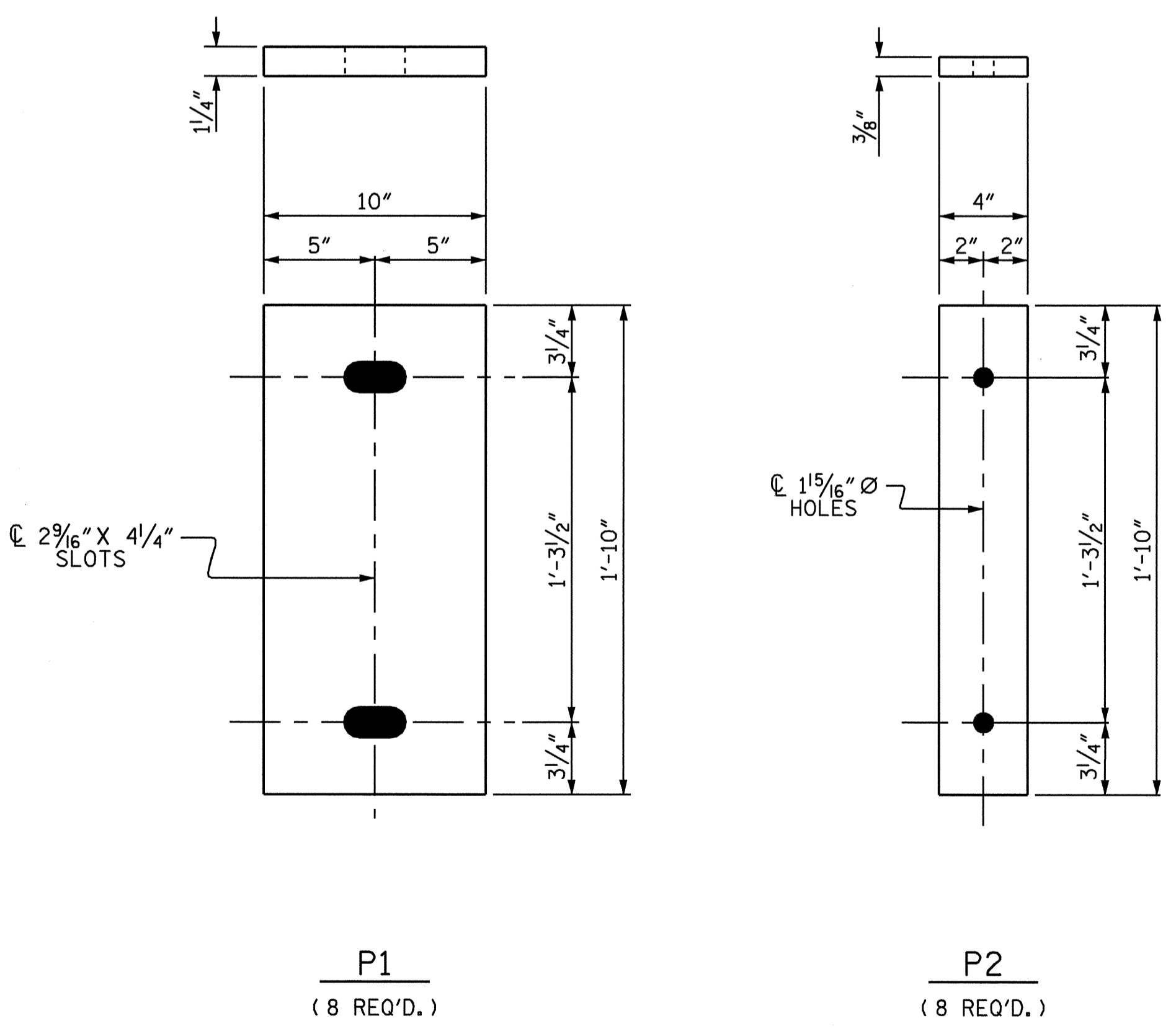
SECTION A-A



BEARING DETAILS AT BENT



FIXED END VIEW



BEARING DETAILS AT END BENTS

NOTES:

SOLE PLATES, MASONRY PLATES, ANCHORAGE PLATES AND STRUCTURAL PLATE WASHERS SHALL BE AASHTO M270 GRADE 50W AND SHALL NOT BE GALVANIZED. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

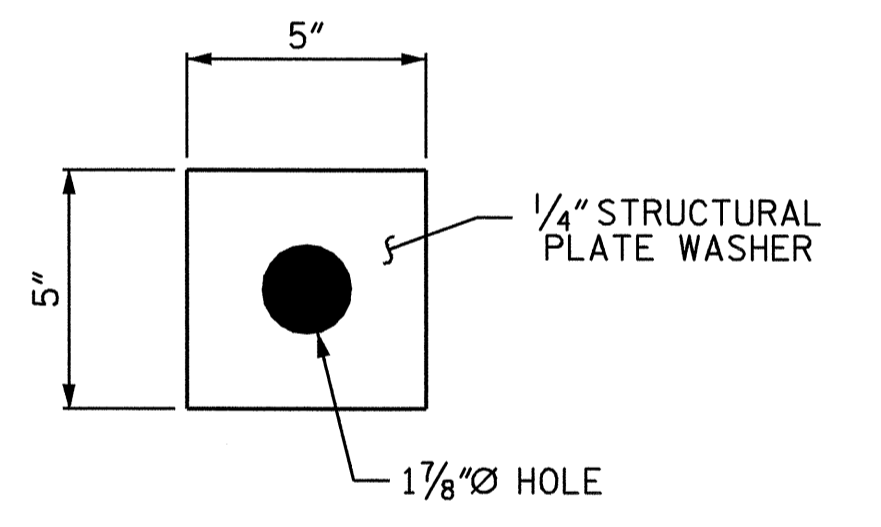
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. STANDARD WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

AT BOTH END BENTS, TOP NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AFTER SETTING THE GIRDERS, AND SUBSEQUENTLY FULLY TIGHTENED JUST PRIOR TO THE FINAL POUR.

AT BENT 1, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT & BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

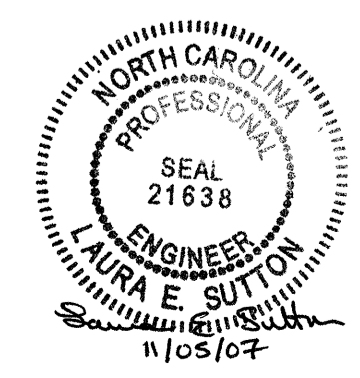
CAMBERED GIRDER LENGTHS SHALL BE ADJUSTED AND BEARINGS ARE TO BE PLACED ON THE CAMBERED GIRDER SO AS TO BE ALIGNED WITH THE ANCHORS AFTER THE DEAD LOAD DEFLECTION HAS OCCURRED. SHOP PLANS SHALL BE PREPARED ACCORDINGLY.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.



DETAIL "A"

PROJECT NO. U-3816
 HOKE COUNTY
 STATION: 50+72.21 -L-



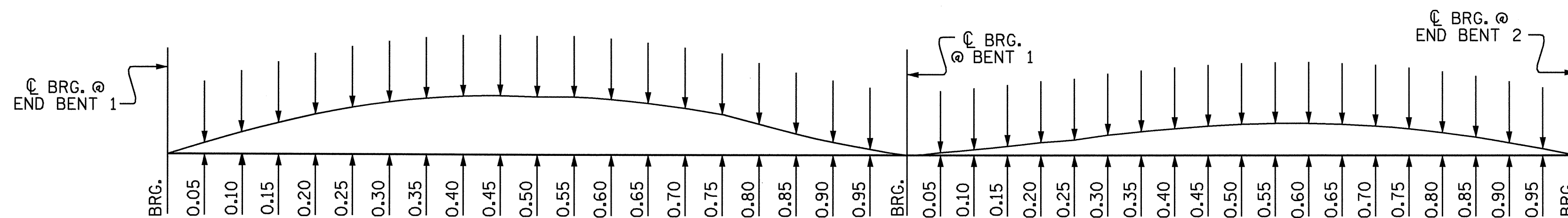
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE BEARING DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-12
					TOTAL SHEETS 32

DRAWN BY: A.S. CALLAWAY DATE: 11/17/06
 CHECKED BY: P.C. BREWER DATE: 3/12/07

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	SPAN A																				
	GIRDERS 1 & 4																				
	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
TWENTIETH POINTS	0.000	0.011	0.022	0.031	0.040	0.047	0.052	0.055	0.057	0.057	0.055	0.051	0.046	0.040	0.033	0.026	0.019	0.013	0.007	0.003	0.000
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.038	0.074	0.108	0.137	0.161	0.179	0.192	0.197	0.197	0.190	0.178	0.161	0.141	0.117	0.093	0.069	0.046	0.026	0.010	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.006	0.011	0.016	0.020	0.024	0.027	0.029	0.030	0.030	0.029	0.028	0.025	0.022	0.019	0.015	0.011	0.008	0.004	0.002	0.000
DEFLECTION DUE TO WEIGHT OF PARAPET	0.000	0.055	0.107	0.155	0.197	0.232	0.258	0.276	0.284	0.284	0.274	0.257	0.232	0.203	0.169	0.134	0.099	0.067	0.037	0.015	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.028	0.054	0.076	0.096	0.112	0.126	0.136	0.144	0.148	0.150	0.148	0.144	0.136	0.126	0.112	0.096	0.076	0.054	0.028	0.000
VERTICAL CURVE ORDINATE	0	1"	1 ⁵ / ₁₆ "	2 ³ / ₄ "	3 ¹ / ₂ "	4 ¹ / ₈ "	4 ⁵ / ₈ "	4 ¹⁵ / ₁₆ "	5 ¹ / ₈ "	5 ³ / ₁₆ "	5 ¹ / ₁₆ "	4 ⁷ / ₈ "	4 ¹ / ₂ "	4 ¹ / ₁₆ "	3 ⁹ / ₁₆ "	2 ¹⁵ / ₁₆ "	2 ⁵ / ₁₆ "	1 ¹¹ / ₁₆ "	1 ¹ / ₁₆ "	1 ¹ / ₂ "	0
REQUIRED CAMBER																					
	SPAN A																				
	GIRDERS 2 & 3																				
	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
TWENTIETH POINTS	0.000	0.011	0.022	0.032	0.041	0.048	0.053	0.057	0.059	0.058	0.056	0.053	0.048	0.041	0.034	0.027	0.020	0.013	0.007	0.003	0.000
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.038	0.074	0.108	0.137	0.161	0.179	0.192	0.197	0.197	0.190	0.178	0.161	0.141	0.117	0.093	0.069	0.046	0.026	0.010	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.005	0.011	0.016	0.020	0.023	0.026	0.028	0.029	0.029	0.029	0.027	0.025	0.022	0.019	0.015	0.011	0.008	0.004	0.002	0.000
DEFLECTION DUE TO WEIGHT OF PARAPET	0.000	0.054	0.107	0.156	0.198	0.232	0.258	0.277	0.285	0.284	0.275	0.258	0.234	0.204	0.170	0.135	0.100	0.067	0.037	0.015	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.028	0.054	0.076	0.096	0.112	0.126	0.136	0.144	0.148	0.150	0.148	0.144	0.136	0.126	0.112	0.096	0.076	0.054	0.028	0.000
VERTICAL CURVE ORDINATE	0	1"	1 ⁵ / ₁₆ "	2 ¹³ / ₁₆ "	3 ¹ / ₂ "	4 ¹ / ₈ "	4 ⁵ / ₈ "	4 ¹⁵ / ₁₆ "	5 ¹ / ₈ "	5 ³ / ₁₆ "	5 ¹ / ₁₆ "	4 ⁷ / ₈ "	4 ⁹ / ₁₆ "	4 ¹ / ₁₆ "	3 ⁹ / ₁₆ "	2 ¹⁵ / ₁₆ "	2 ³ / ₈ "	1 ¹¹ / ₁₆ "	1 ¹ / ₈ "	1 ¹ / ₂ "	0
REQUIRED CAMBER																					
	SPAN B																				
	GIRDERS 1 & 4																				
	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
TWENTIETH POINTS	0.000	-0.001	0.000	0.002	0.005	0.008	0.012	0.016	0.019	0.022	0.025	0.027	0.027	0.027	0.026	0.024	0.020	0.016	0.011	0.006	0.000
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	-0.003	-0.001	0.004	0.012	0.022	0.034	0.045	0.057	0.067	0.075	0.081	0.084	0.083	0.080	0.073	0.063	0.050	0.035	0.018	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.000	0.000	0.001	0.003	0.005	0.006	0.008	0.010	0.012	0.013	0.013	0.014	0.013	0.013	0.011	0.010	0.008	0.005	0.003	0.000
DEFLECTION DUE TO WEIGHT OF PARAPET	0.000	-0.004	-0.001	0.007	0.020	0.035	0.052	0.069	0.086	0.101	0.113	0.121	0.125	0.123	0.119	0.108	0.093	0.074	0.051	0.027	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.023	0.043	0.061	0.076	0.089	0.100	0.108	0.114	0.118	0.119	0.118	0.114	0.108	0.100	0.089	0.076	0.061	0.043	0.023	0.000
VERTICAL CURVE ORDINATE	0	1/4"	1/2"	13/16"	1/8"	1/2"	13/16"	2/8"	23/8"	25/8"	213/16"	27/8"	27/8"	23/4"	25/8"	23/8"	2"	15/8"	1/8"	5/8"	0
REQUIRED CAMBER																					
	SPAN B																				
	GIRDERS 2 & 3																				
	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
TWENTIETH POINTS	0.000	-0.001	0.000	0.002	0.005	0.008	0.012	0.016	0.020	0.023	0.026	0.027	0.028	0.028	0.027	0.024	0.021	0.017	0.012	0.006	0.000
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	-0.003	-0.001	0.004	0.012	0.022	0.034	0.045	0.057	0.067	0.075	0.081	0.084	0.083	0.080	0.073	0.063	0.050	0.035	0.018	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.000	0.000	0.001	0.003	0.005	0.006	0.008	0.010	0.011	0.012	0.013	0.013	0.013	0.012	0.011	0.010	0.008	0.005	0.003	0.000
DEFLECTION DUE TO WEIGHT OF PARAPET	0.000	-0.004	-0.001	0.007	0.020	0.035	0.052	0.069	0.087	0.101	0.113	0.121	0.125	0.124	0.119	0.108	0.094	0.075	0.052	0.027	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.023	0.043	0.061	0.076	0.089	0.100	0.108	0.114	0.118	0.119	0.118	0.114	0.108	0.100	0.089	0.076	0.061	0.043	0.023	0.000
VERTICAL CURVE ORDINATE	0	1/4"	1/2"	13/16"	1/8"	1/2"	13/16"	2/8"	27/16"	25/8"	213/16"	27/8"	27/8"	213/16"	25/8"	23/8"	21/16"	15/8"	1/8"	5/8"	0
REQUIRED CAMBER																					

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
 ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).



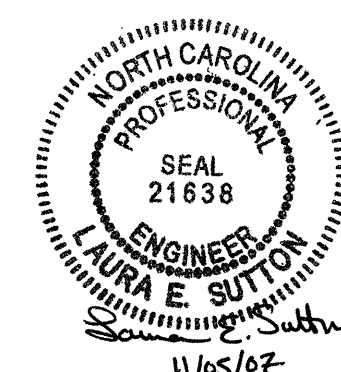
SCHMATIC CAMBER ORDINATES

SLOPE FOR ZERO CAMBER BASE LINE VARIES.

DRAWN BY : A.S. CALLAWAY DATE : 3/2/07
 CHECKED BY : P.C. BREWER DATE : 3/12/07

24-AUG-2007 14:58
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 isutton

PROJECT NO. U-3816
HOKE COUNTY
 STATION: 50+72.21 -L-



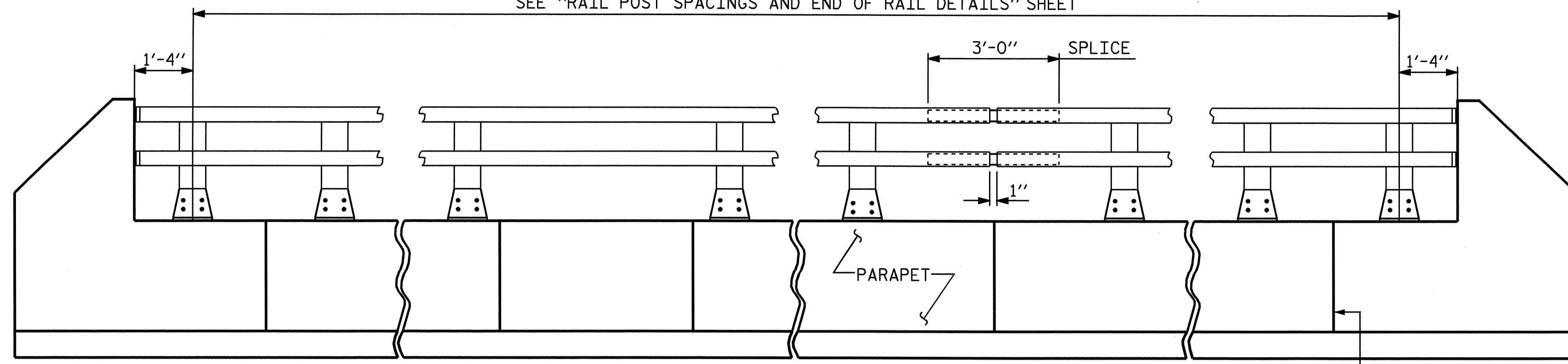
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
SUPERSTRUCTURE
DEAD LOAD DEFLECTIONS

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

S-13
TOTAL SHEETS

32

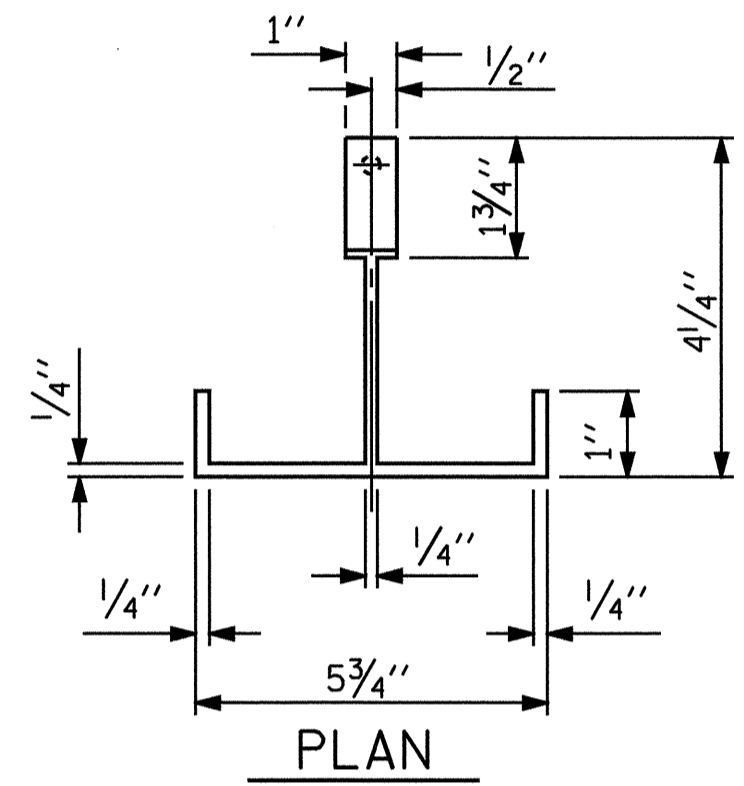
SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET



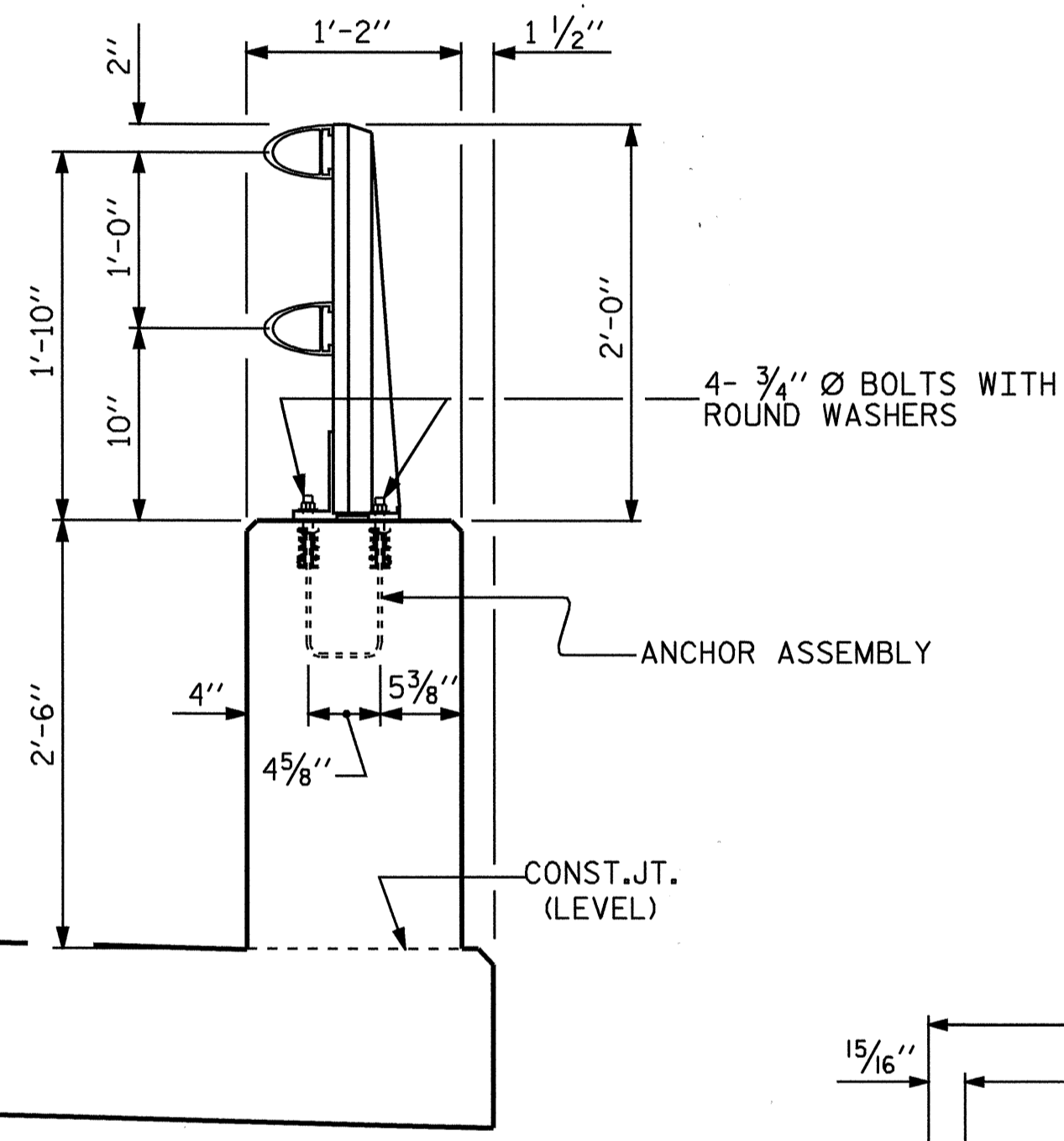
ELEVATION

TOOLED CONTRACTION JT.
(SEE "1'-2" X 2'-6" CONCRETE PARAPET" NOTES) (TYP.)

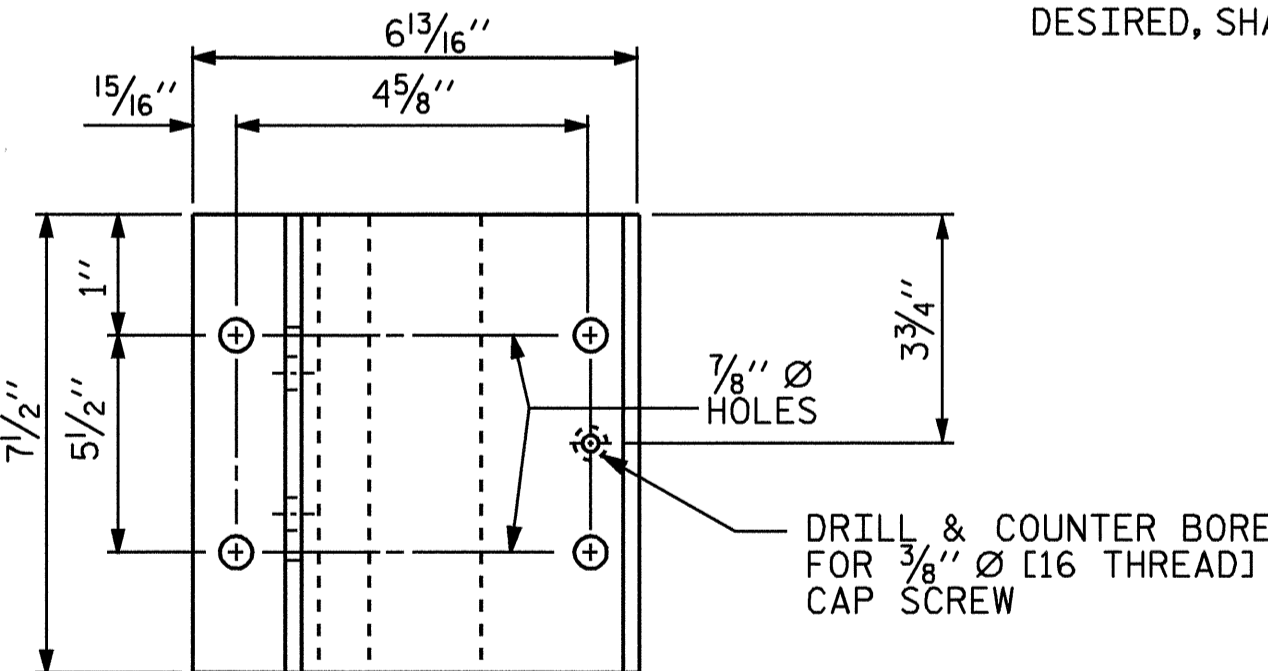
NOTE: FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2.



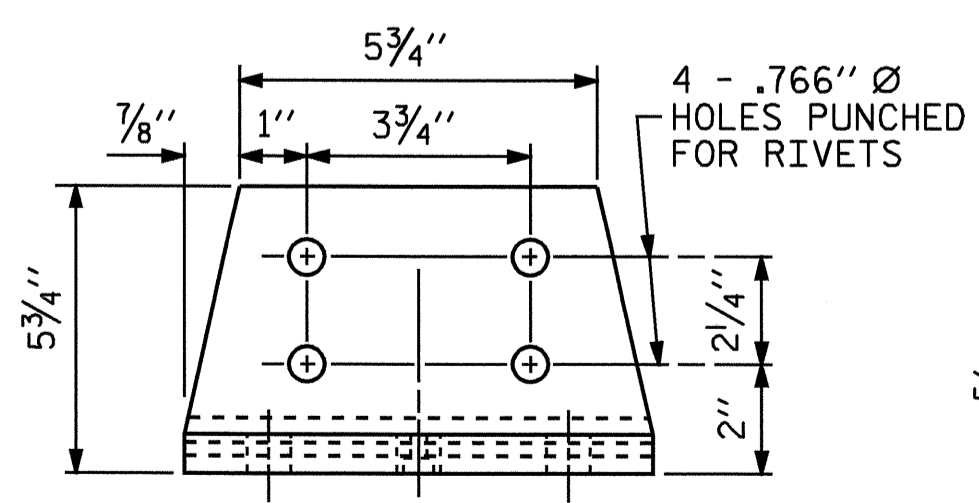
PLAN



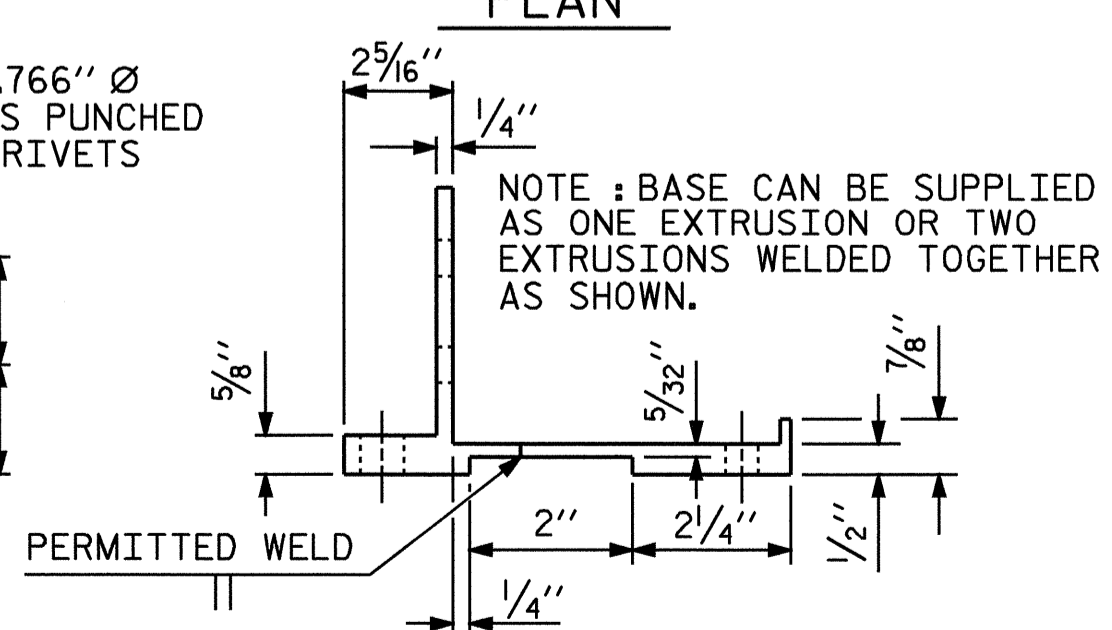
SECTION THRU PARAPET AND RAIL



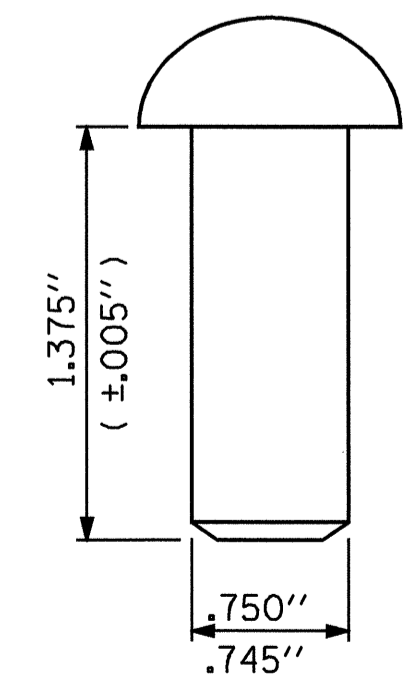
PLAN



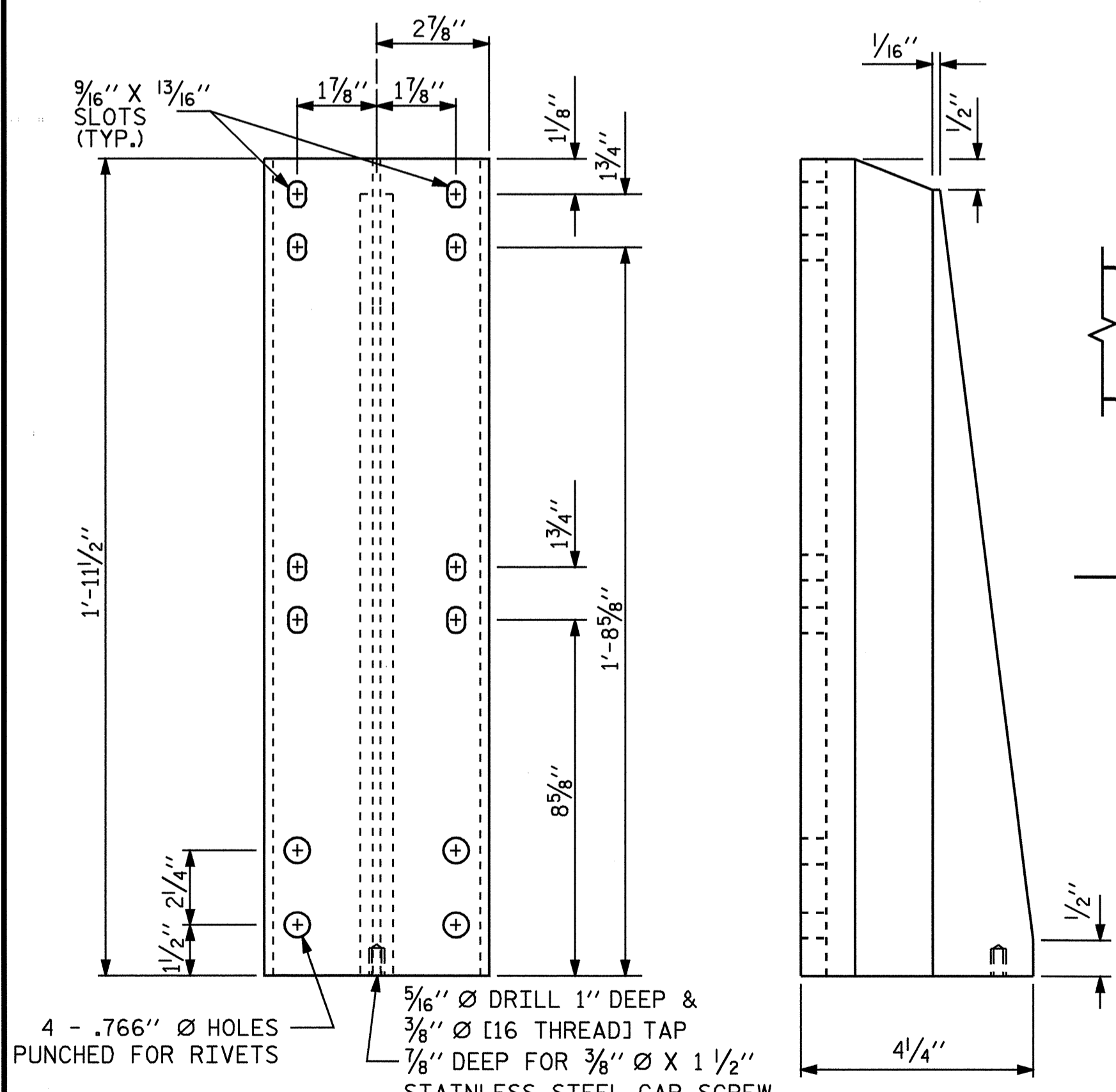
FRONT ELEVATION



SIDE ELEVATION



RIVET DETAIL



FRONT ELEVATION

SIDE ELEVATION

DETAILS OF POST

ASSEMBLED BY : A.S. CALLAWAY DATE : 2/24/07
 CHECKED BY : P.C. BREWER DATE : 3/12/07
 DRAWN BY : EEM 6/94
 CHECKED BY : RGW 6/94
 REV. 10/17/00 LES/RDR
 REV. 5/7/03R RWW/JTE
 REV. 5/1/06 TLA/GM

NOTES

AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER, THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

ALUMINUM RAILS

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

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

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

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.

RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

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

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

GENERAL NOTES

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

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

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

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

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

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

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

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

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

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

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

PAY LENGTH = 514.19 LIN. FT.

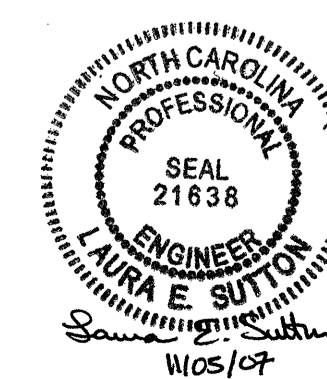
PROJECT NO. U-3816
 HOKE COUNTY
 STATION: 50+72.21 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD

2 BAR METAL RAIL



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			32

NOTES

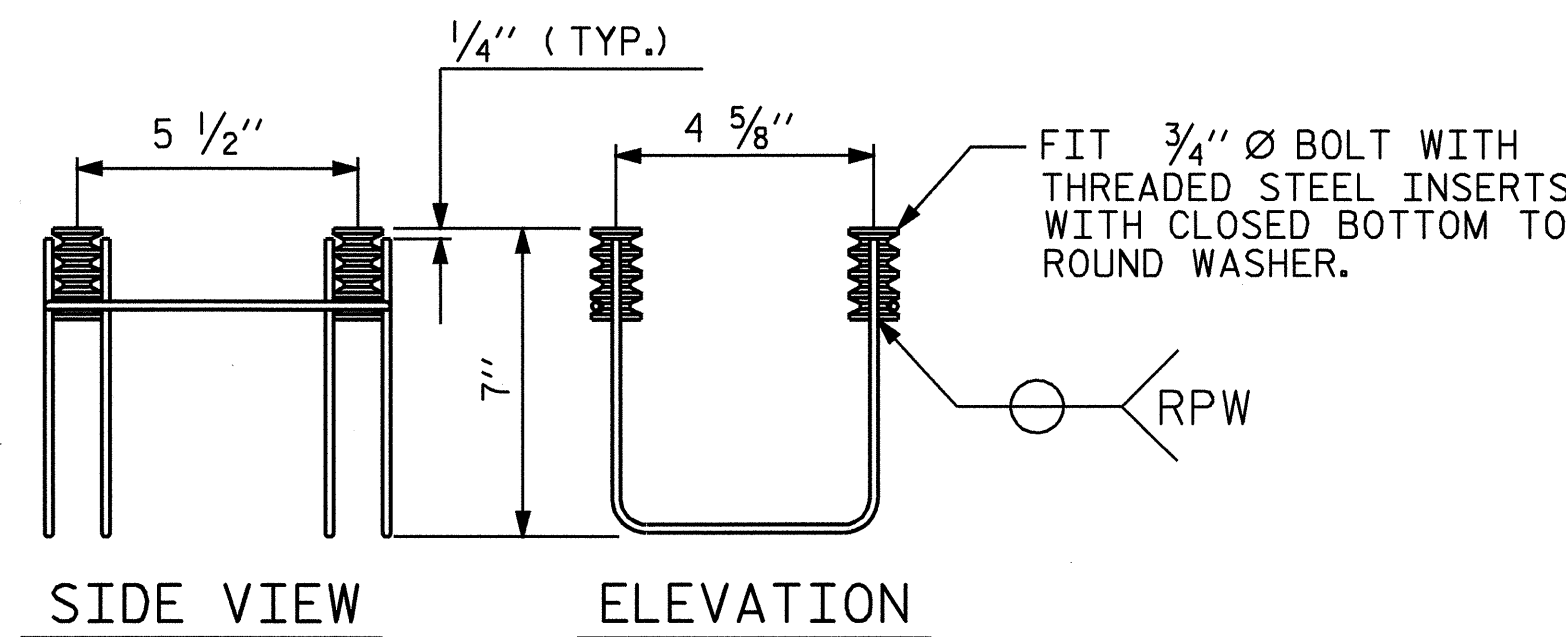
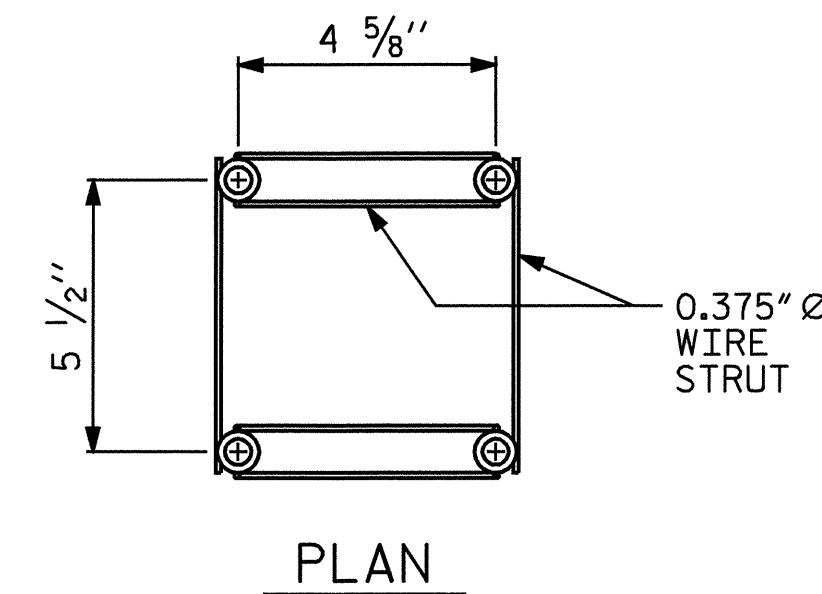
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 2 1/2" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
- E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
- F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE ANCHOR BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

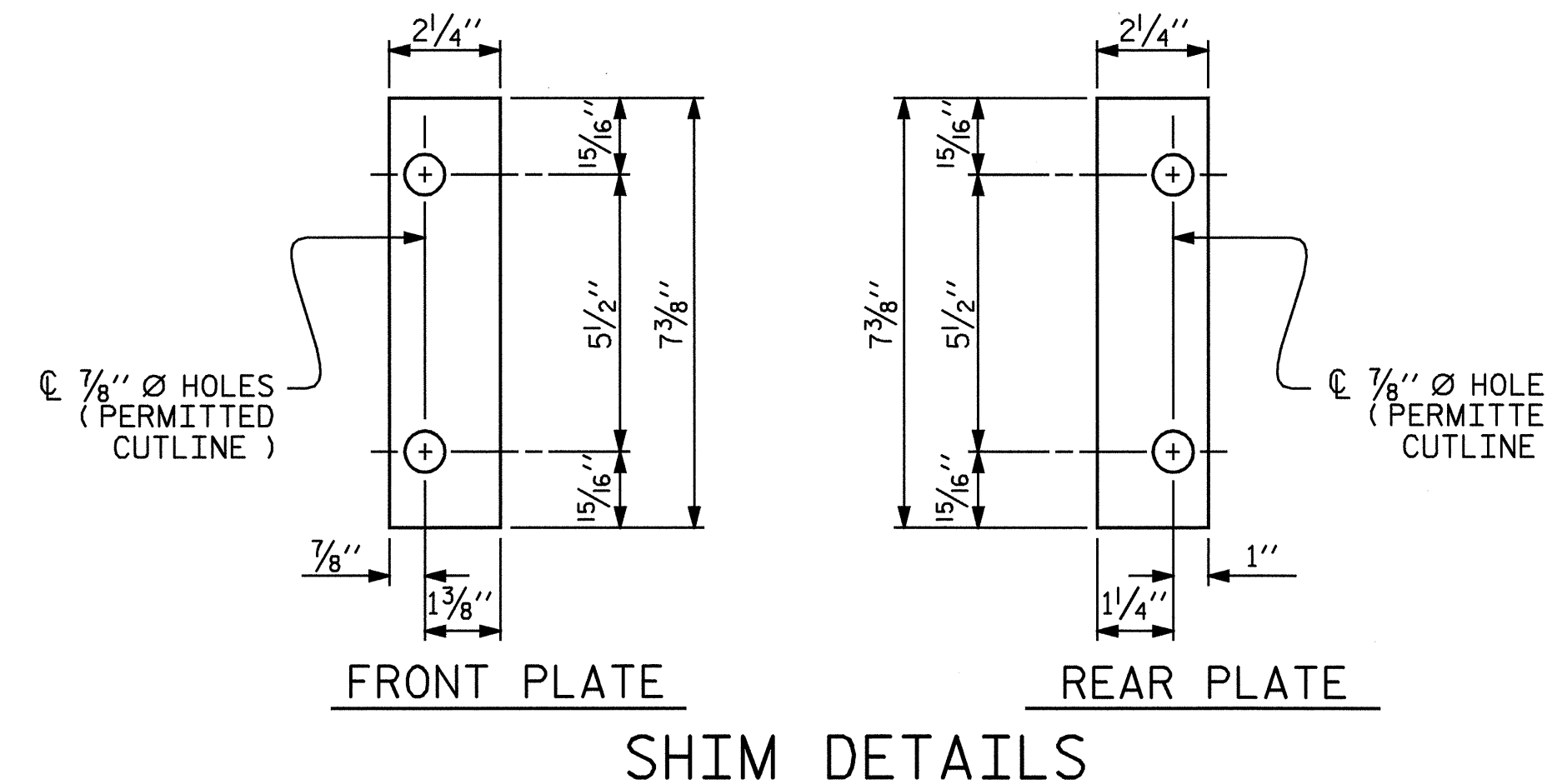
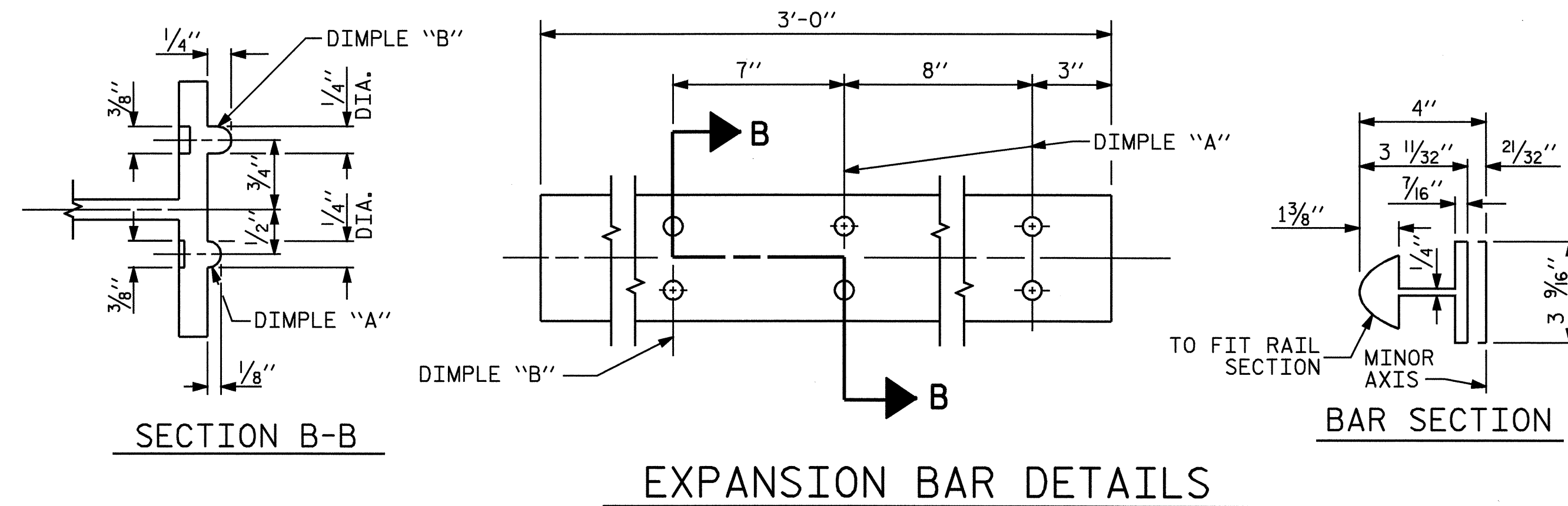
WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY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



MINIMUM LENGTH OF THREADS IN INSERT (FERRULE) : 1 3/4"

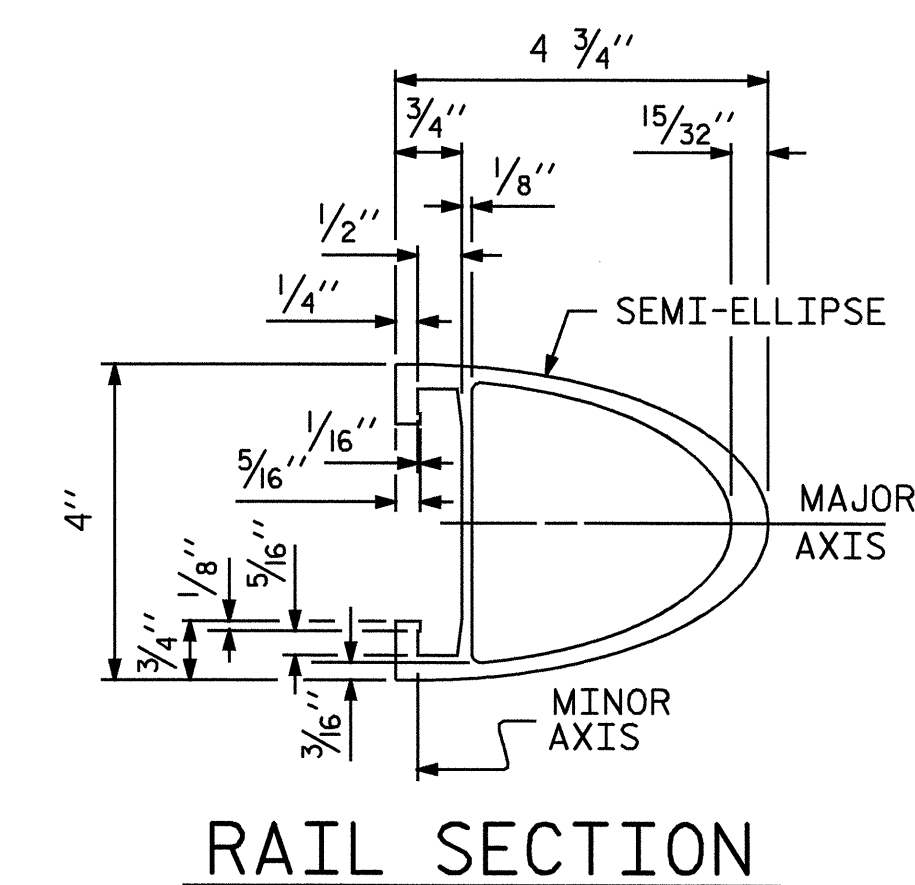
4-BOLT METAL RAIL ANCHOR ASSEMBLY

(86 ASSEMBLIES REQUIRED)

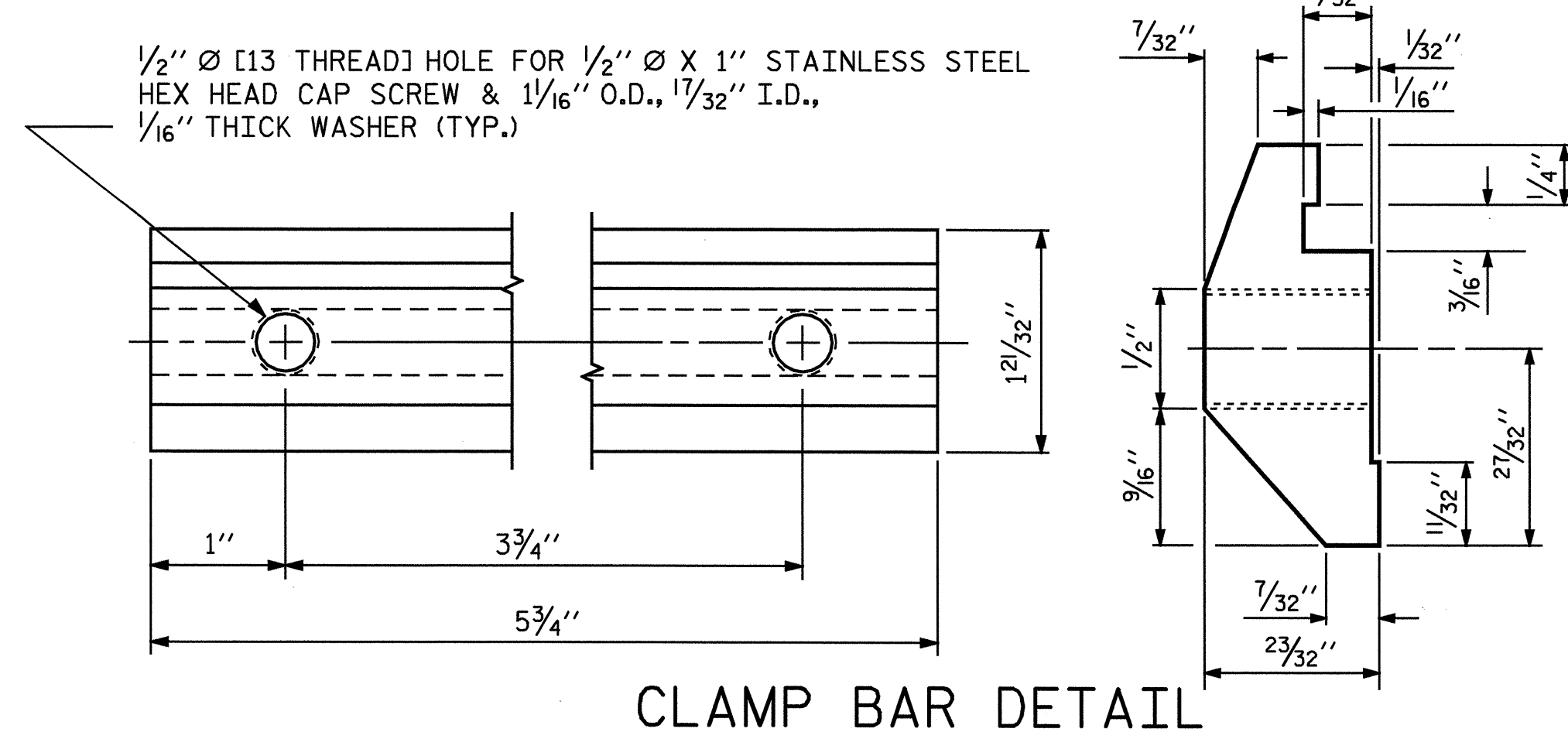


SHIM DETAILS

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

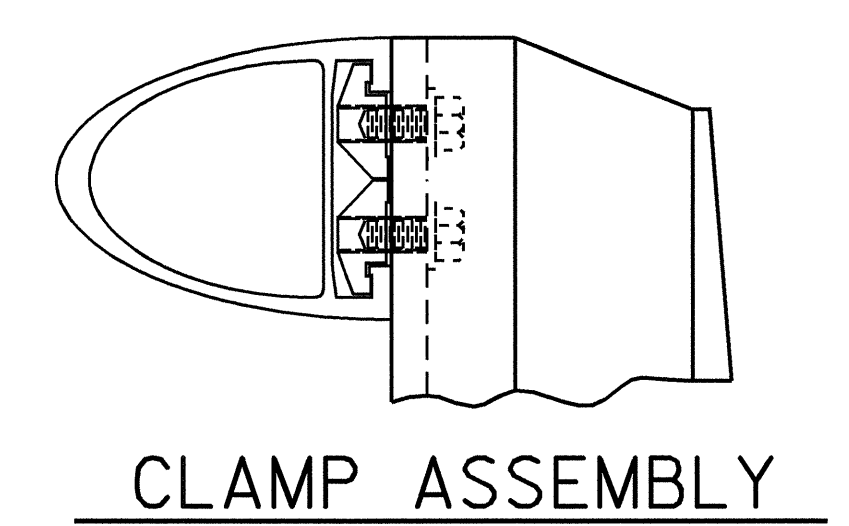


RAIL SECTION

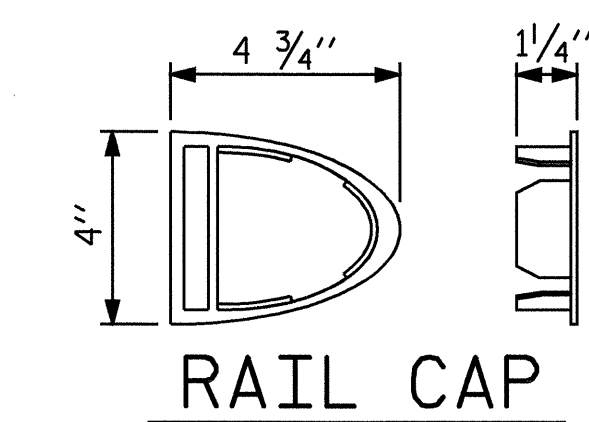


CLAMP BAR DETAIL

(4 REQUIRED PER POST)



CLAMP ASSEMBLY

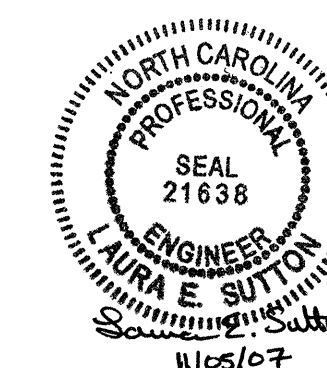


RAIL CAP

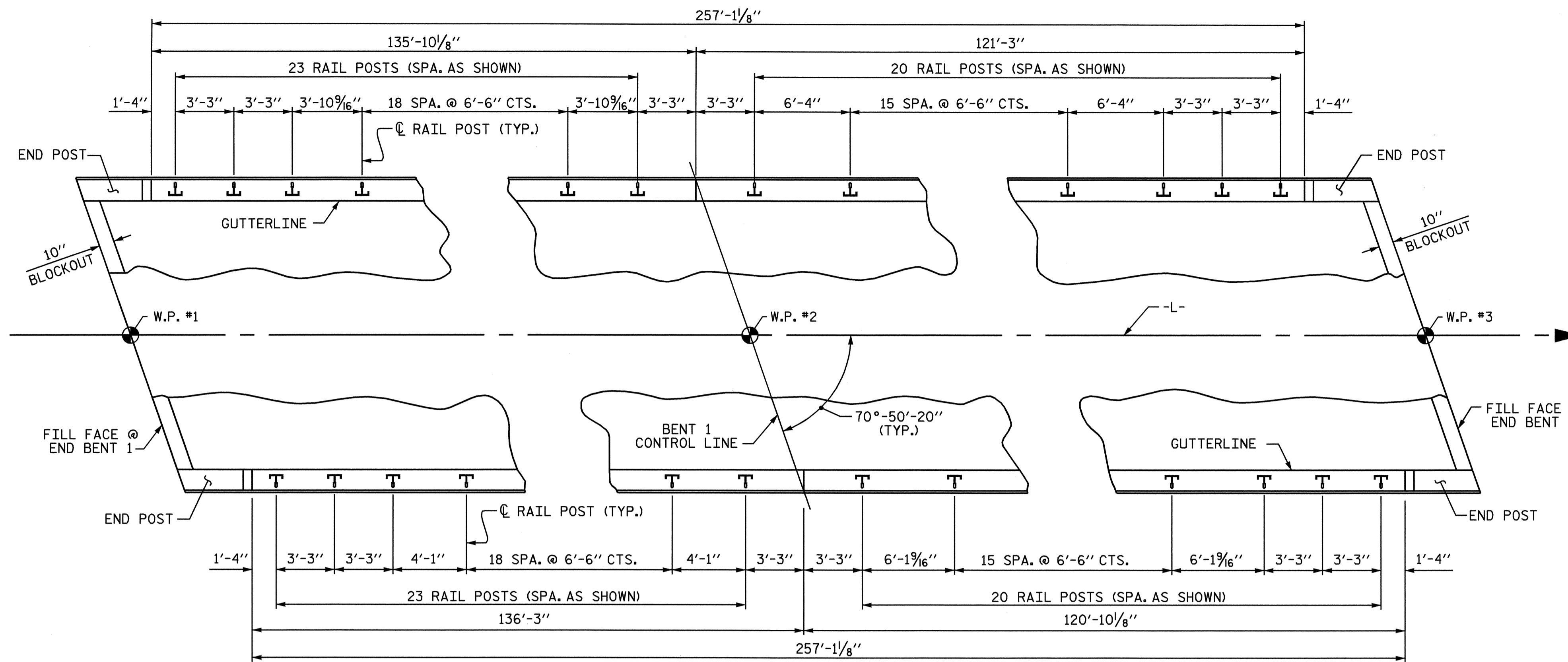
PROJECT NO. U-3816
HOKE COUNTY
STATION: 50+72.21 -L-

SHEET 2 OF 2

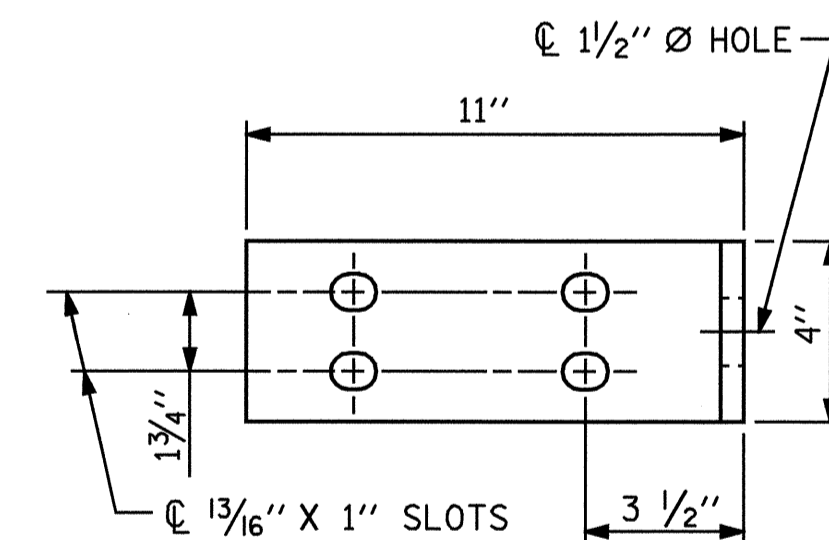
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD					
2 BAR METAL RAIL					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-15
TOTAL SHEETS					32



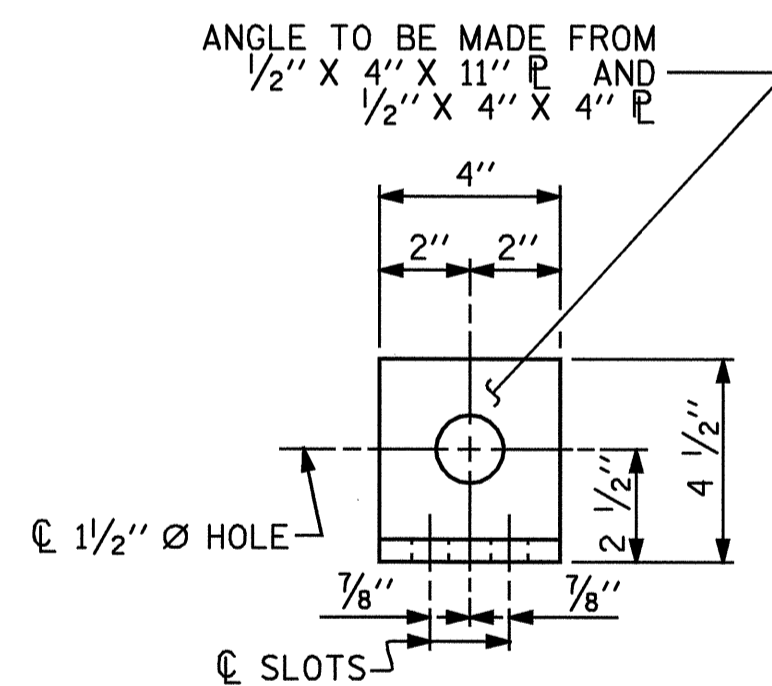
ASSEMBLED BY : A.S. CALLAWAY DATE : 2/24/07
CHECKED BY : P.C. BREWER DATE : 3/12/07
DRAWN BY : EEM 6/94 REV. 2/6/97 EEM/RGW
CHECKED BY : RGW 6/94 REV. 8/16/99 MAB/LES
REV. 5/7/03 RWW/JTE



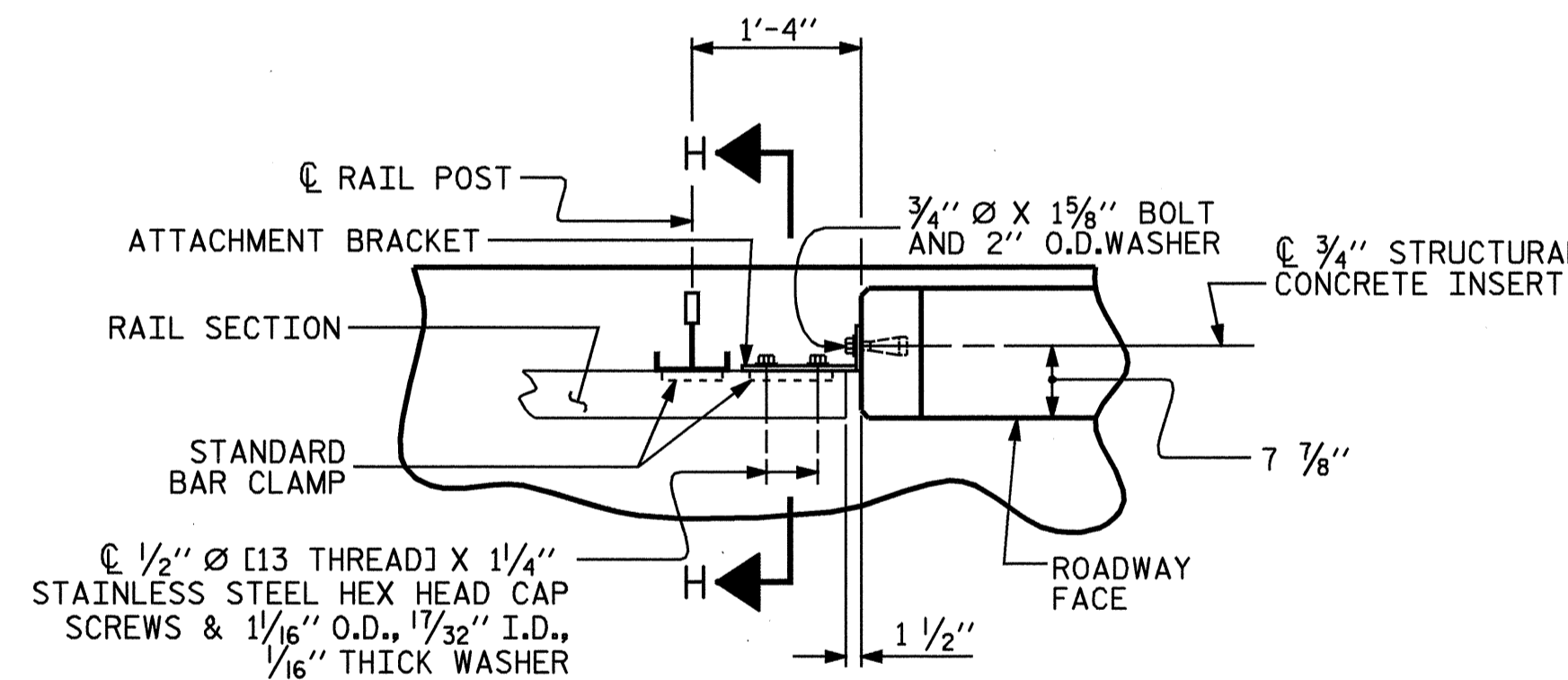
RAIL POST SPACINGS



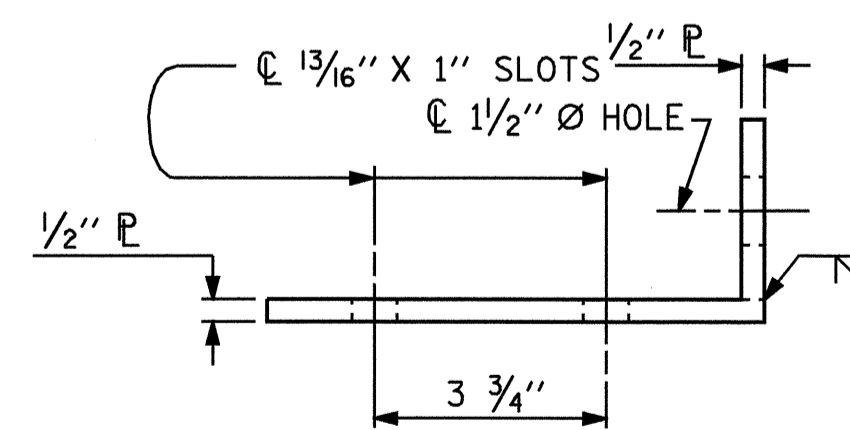
ELEVATION



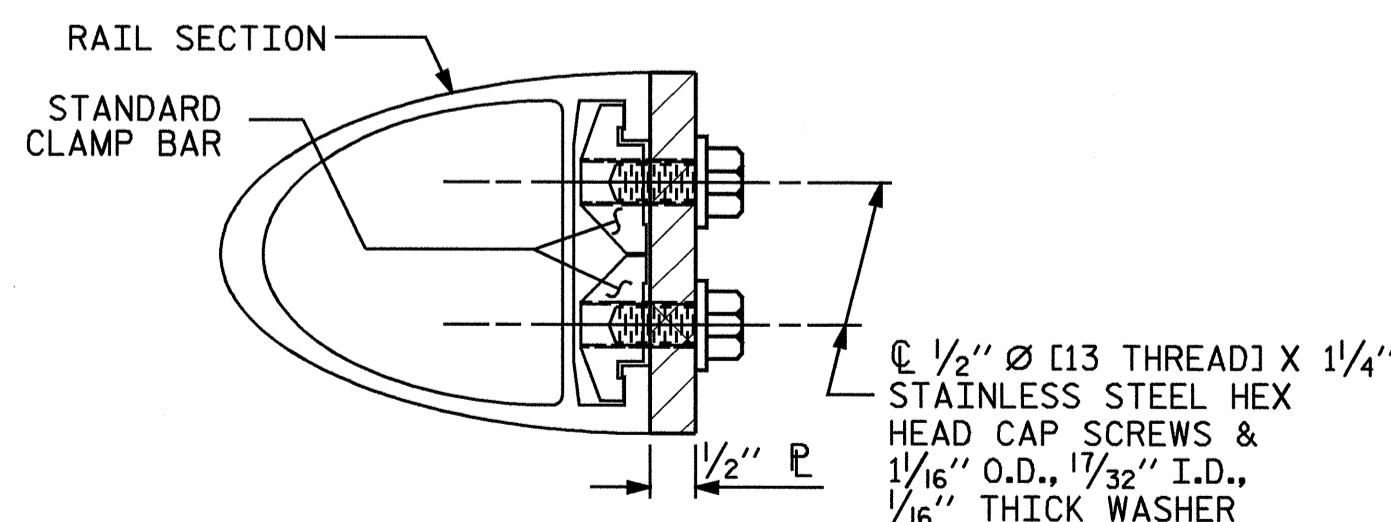
END VIEW



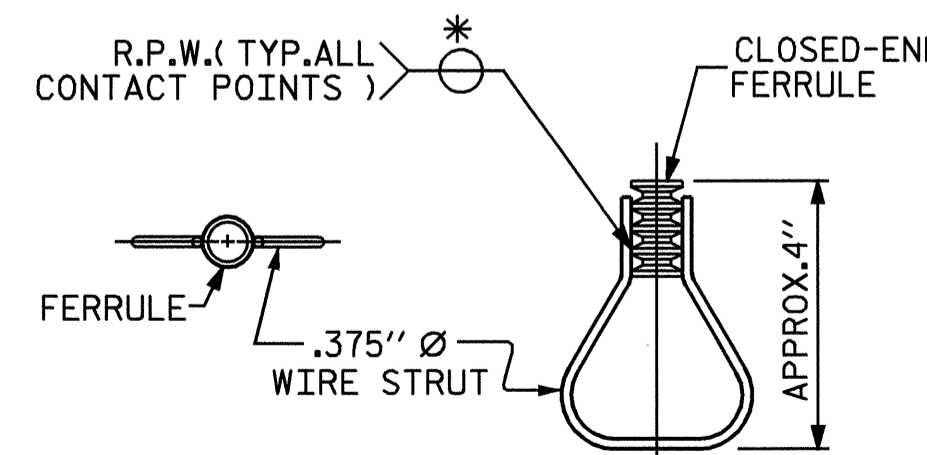
PLAN-RAIL AND END POST



TOP VIEW



SECTION H-H



PLAN ELEVATION
STRUCTURAL CONCRETE INSERT

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

NOTES

STRUCTURAL CONCRETE INSERT

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

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

NOTES

METAL RAIL TO END POST CONNECTION

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

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

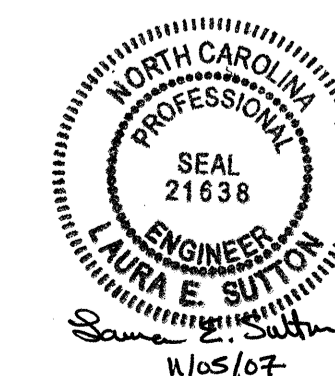
THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 2 BAR METAL RAILS.

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

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

THE CONTRACTOR MAY USE AN ADHESIVE BONDING SYSTEM IN PLACE OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 5/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. NO FIELD TESTING IS REQUIRED. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

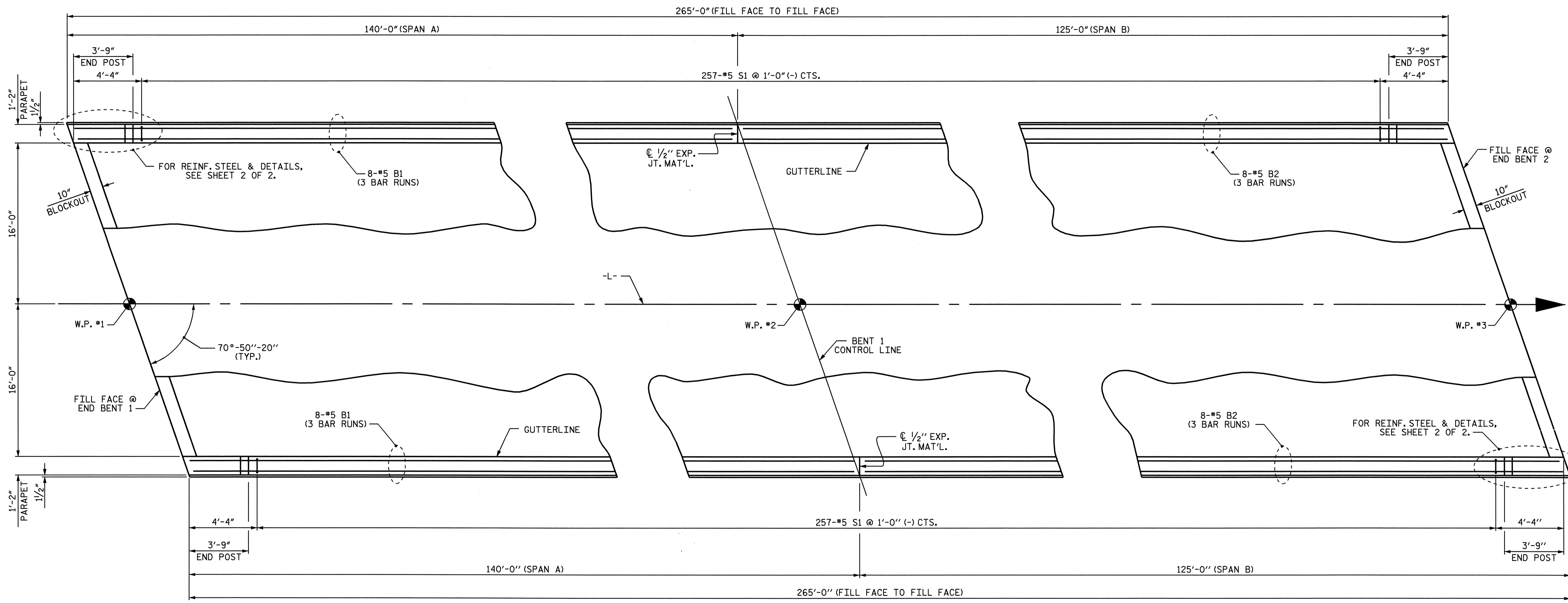
PROJECT NO. U-3816
HOKE COUNTY
 STATION: 50+72.21 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
RAIL POST SPACINGS
 AND
END OF RAIL DETAILS
 FOR TWO BAR METAL RAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			32

ASSEMBLED BY : A.S. CALLAWAY	DATE : 2/24/07
CHECKED BY : P.C. BREWER	DATE : 3/12/07
DRAWN BY : FCJ 1/88	REV. 10/17/00 LES/RDR
CHECKED BY : CRK 3/89	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM



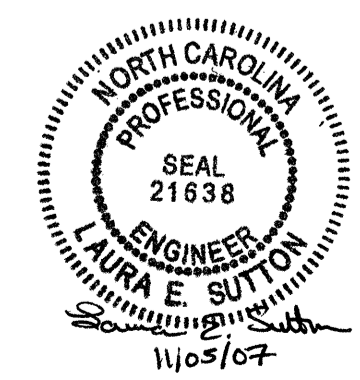
PLAN OF PARAPET

PROJECT NO. U-3816
HOKE COUNTY
 STATION: 50+72.21 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 1'-2" x 2'-6"
 CONCRETE PARAPET

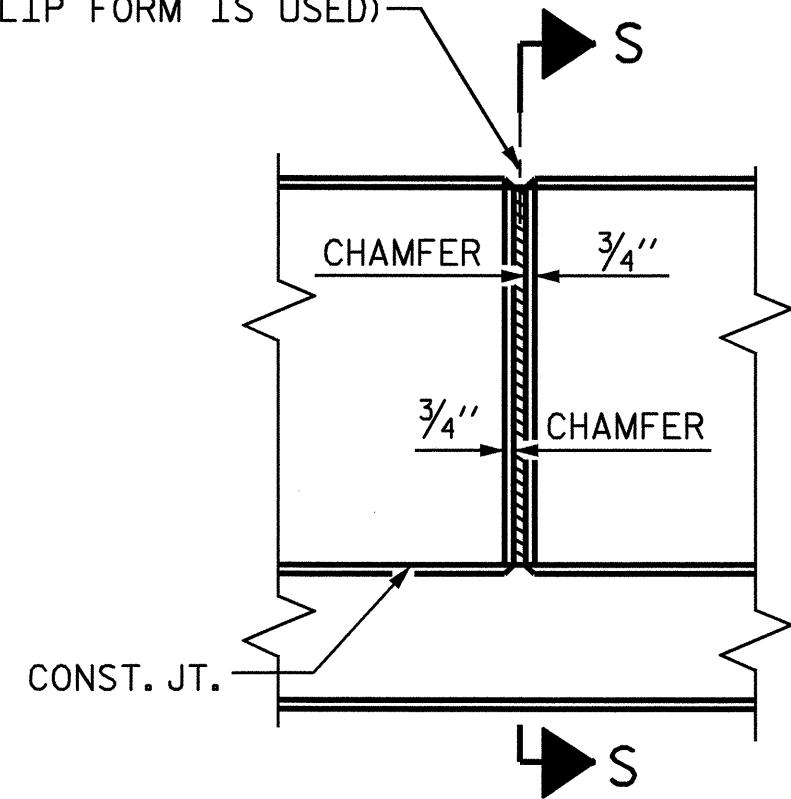


DRAWN BY: A.S. CALLAWAY DATE: 2/24/07
 CHECKED BY: P.C. BREWER DATE: 3/12/07

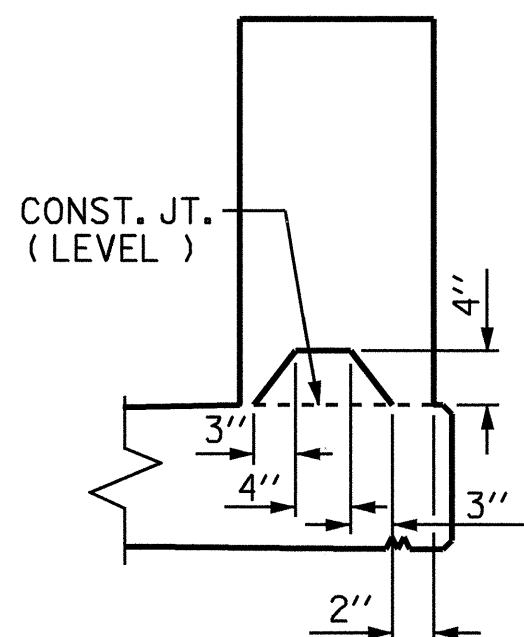
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			32

21-AUG-2007 12:19
 R:\Structures\scallaway\Microstation\U3816.ed.2MR.01.dgn
 lsutton

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



ELEVATION AT EXPANSION JOINTS



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

NOTES

THE CONCRETE PARAPET IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN CONCRETE PARAPET SHALL BE EPOXY COATED.

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

SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET FOR CONCRETE INSERT DETAILS.

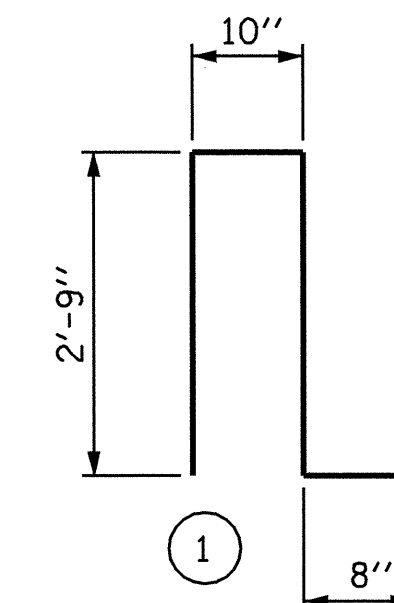
SEE "GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS" SHEET FOR GUARDRAIL ANCHOR ASSEMBLY.

THE #5 S1 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT IN THE PARAPET.

THE #5 S2 BARS SHALL BE INSTALLED USING AN ADHESIVE ANCHORING SYSTEM AFTER SAWING THE 3/8" JOINT. THE YIELD LOAD OF THE #5 S2 BARS IS 18.6 KIPS. NO FIELD TESTING IS REQUIRED. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.

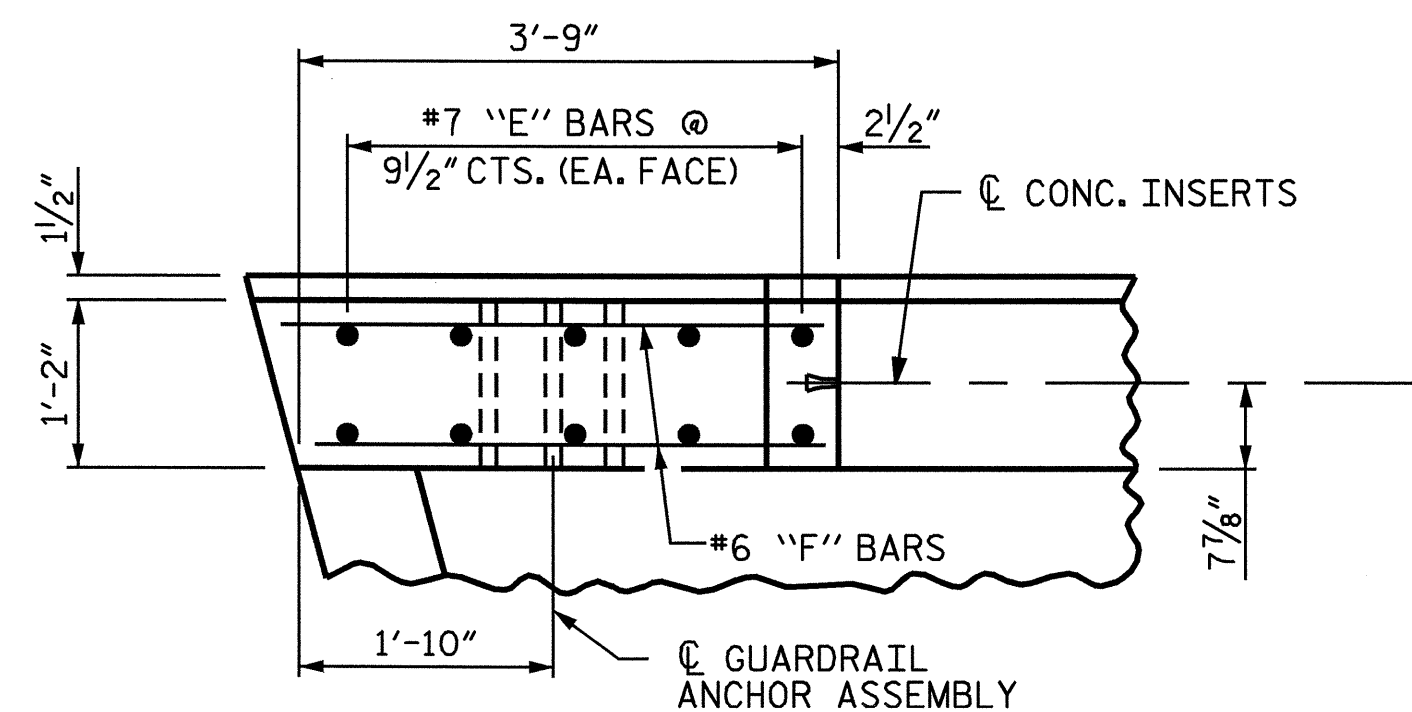


BILL OF MATERIAL

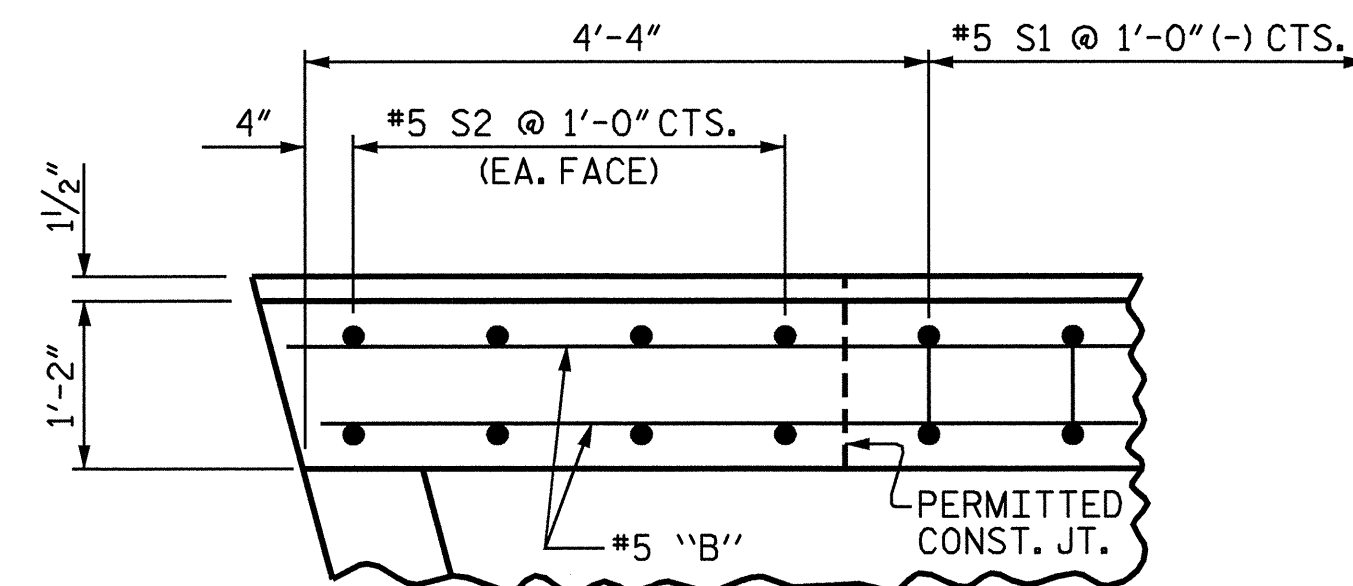
FOR CONCRETE END POST & PARAPET

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	48	#5	STR	49'-0"	2453
*B2	48	#5	STR	44'-0"	2203
*E1	8	#7	STR	2'-8"	44
*E2	8	#7	STR	3'-1"	50
*E3	8	#7	STR	3'-6"	57
*E4	8	#7	STR	4'-0"	65
*E5	8	#7	STR	4'-4"	71
*F1	8	#6	STR	2'-0"	24
*F2	8	#6	STR	3'-4"	40
*F3	4	#6	STR	3'-11"	24
*F4	4	#6	STR	3'-8"	22
*S1	514	#5	1	7'-0"	3753
*S2	32	#5	STR	3'-0"	100

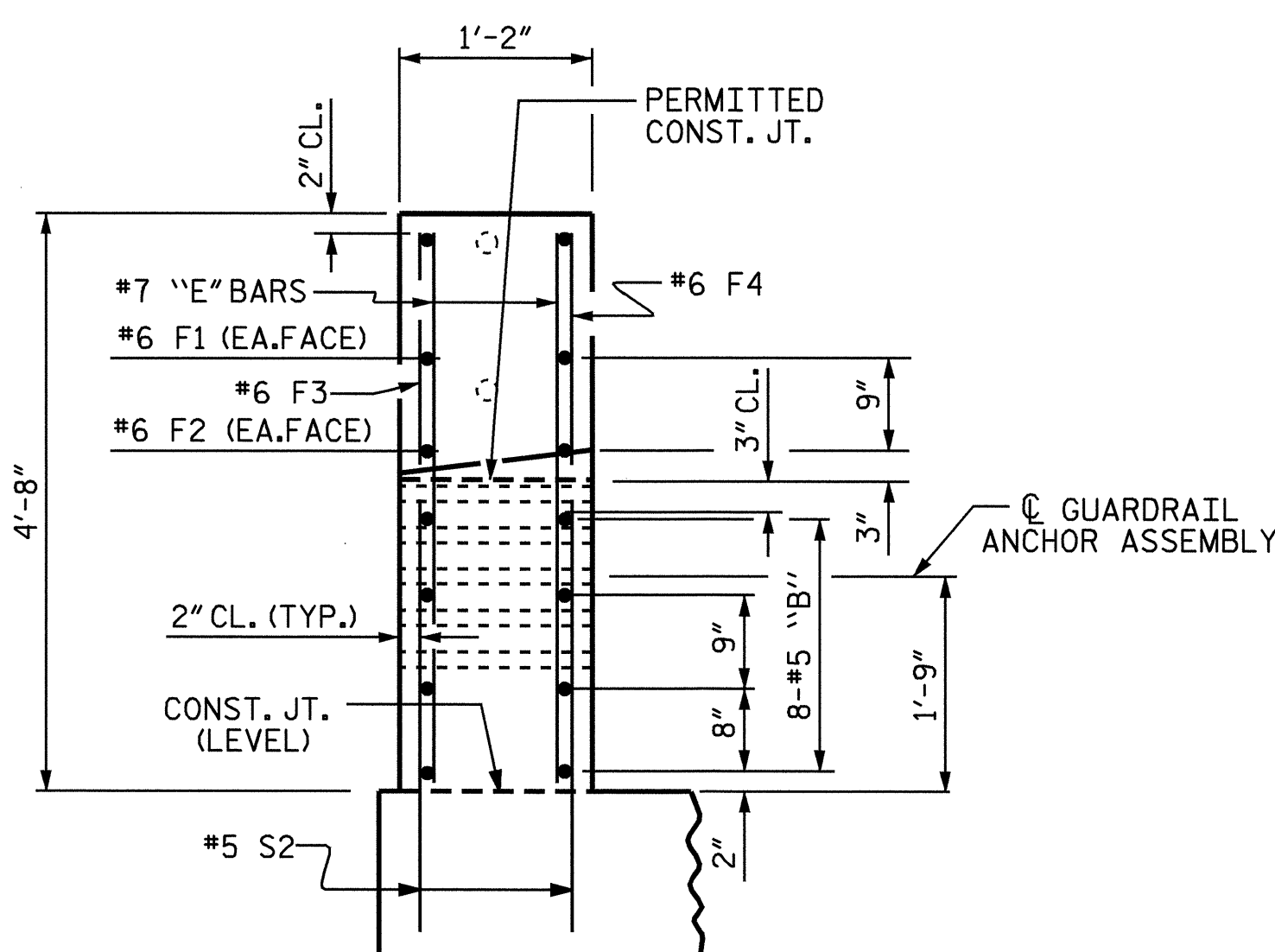
* EPOXY COATED REINFORCING STEEL	LBS.	8,906
CLASS AA CONCRETE	CU. YDS.	58.1
1'-2" x 2'-6" CONCRETE PARAPET	LIN. FT.	530.00



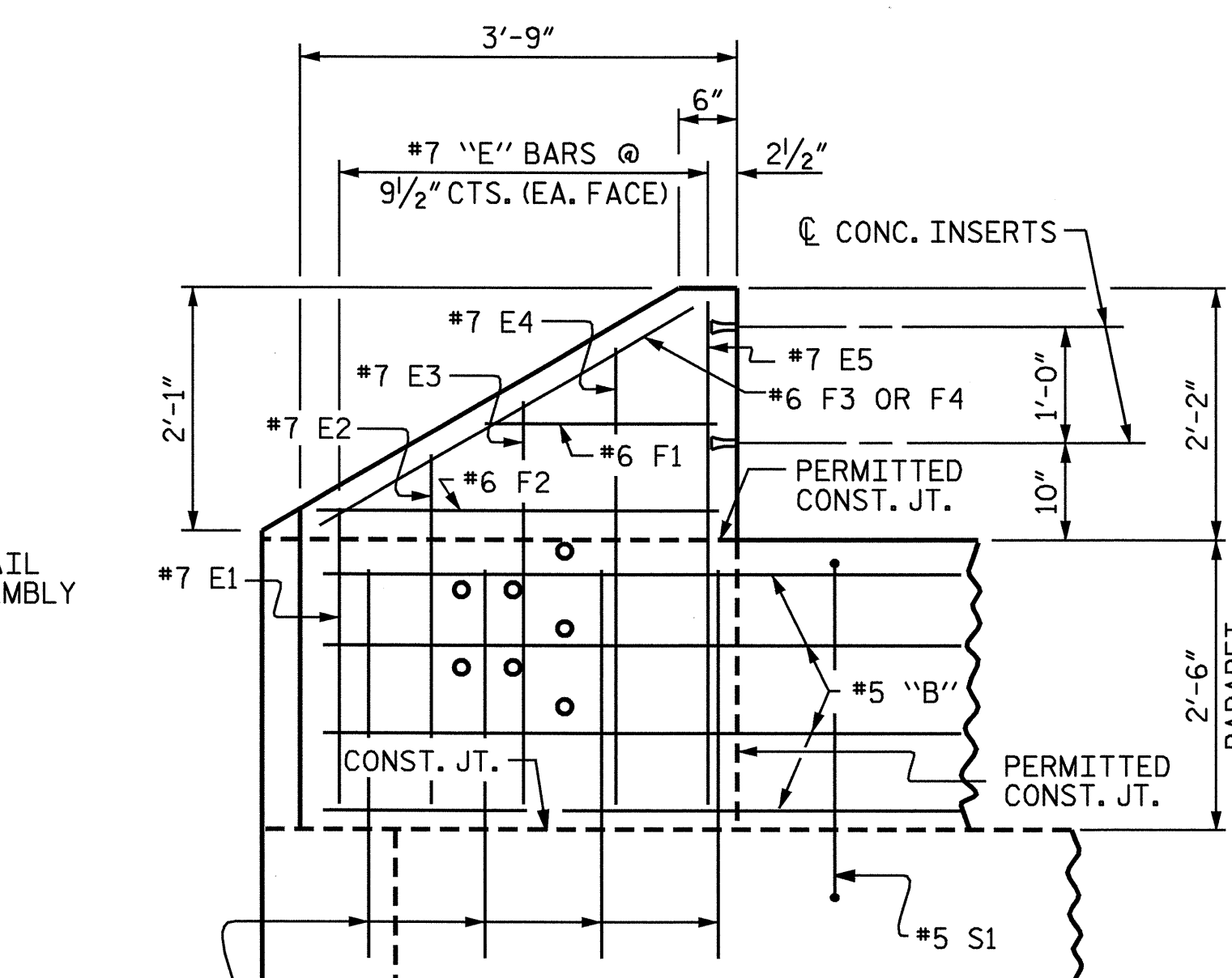
PLAN OF END POST



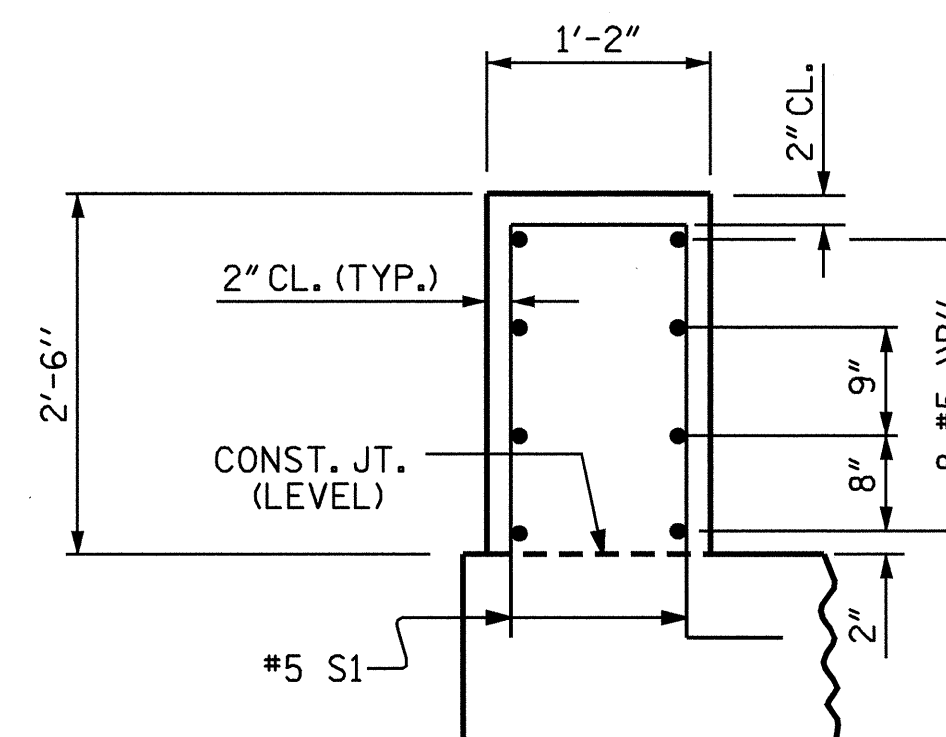
PLAN OF PARAPET



END VIEW



ELEVATION



SECTION THRU PARAPET

PARAPET AND END POST FOR TWO BAR RAIL

(END BENT 1 SHOWN, END BENT 2 SIMILAR)

DRAWN BY: A.S. CALLAWAY DATE: 2/24/07
CHECKED BY: P.C. BREWER DATE: 3/12/07

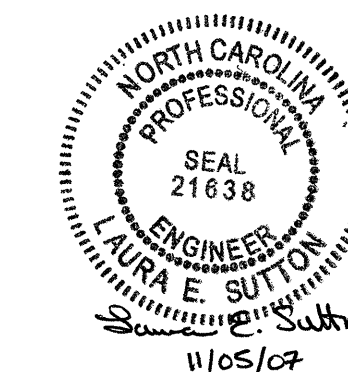
05-NOV-2007 12:41
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LSUTTON

PROJECT NO. U-3816
HOKE COUNTY
STATION: 50+72.21 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
1'-2" x 2'-6"
CONCRETE PARAPET



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

S-18
TOTAL SHEETS
32

NOTES

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

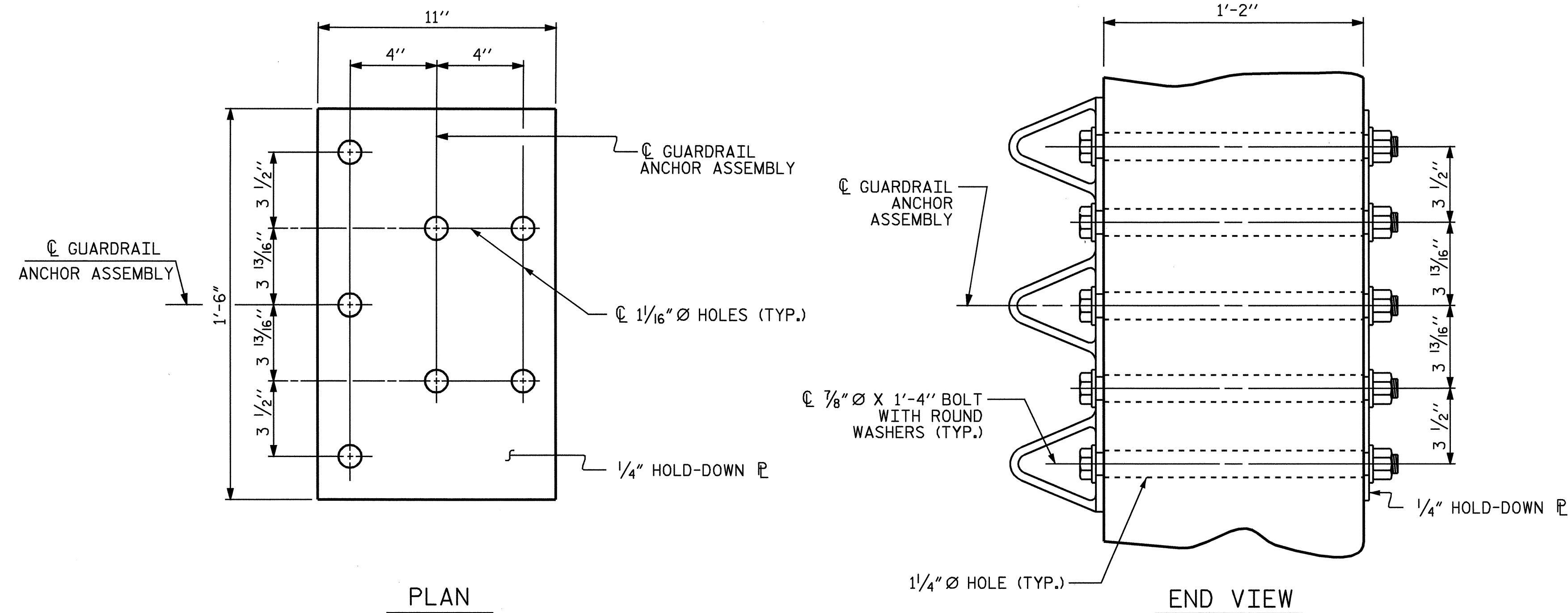
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

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

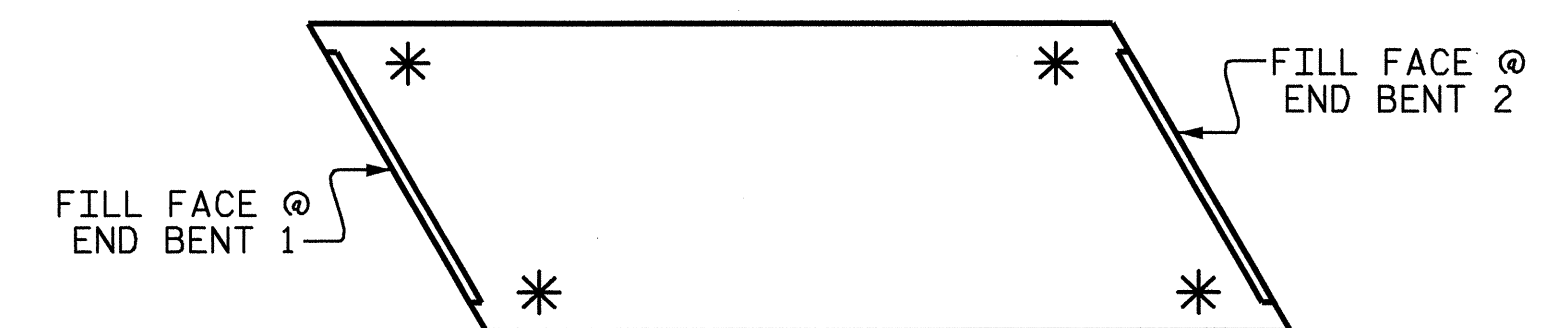
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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

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

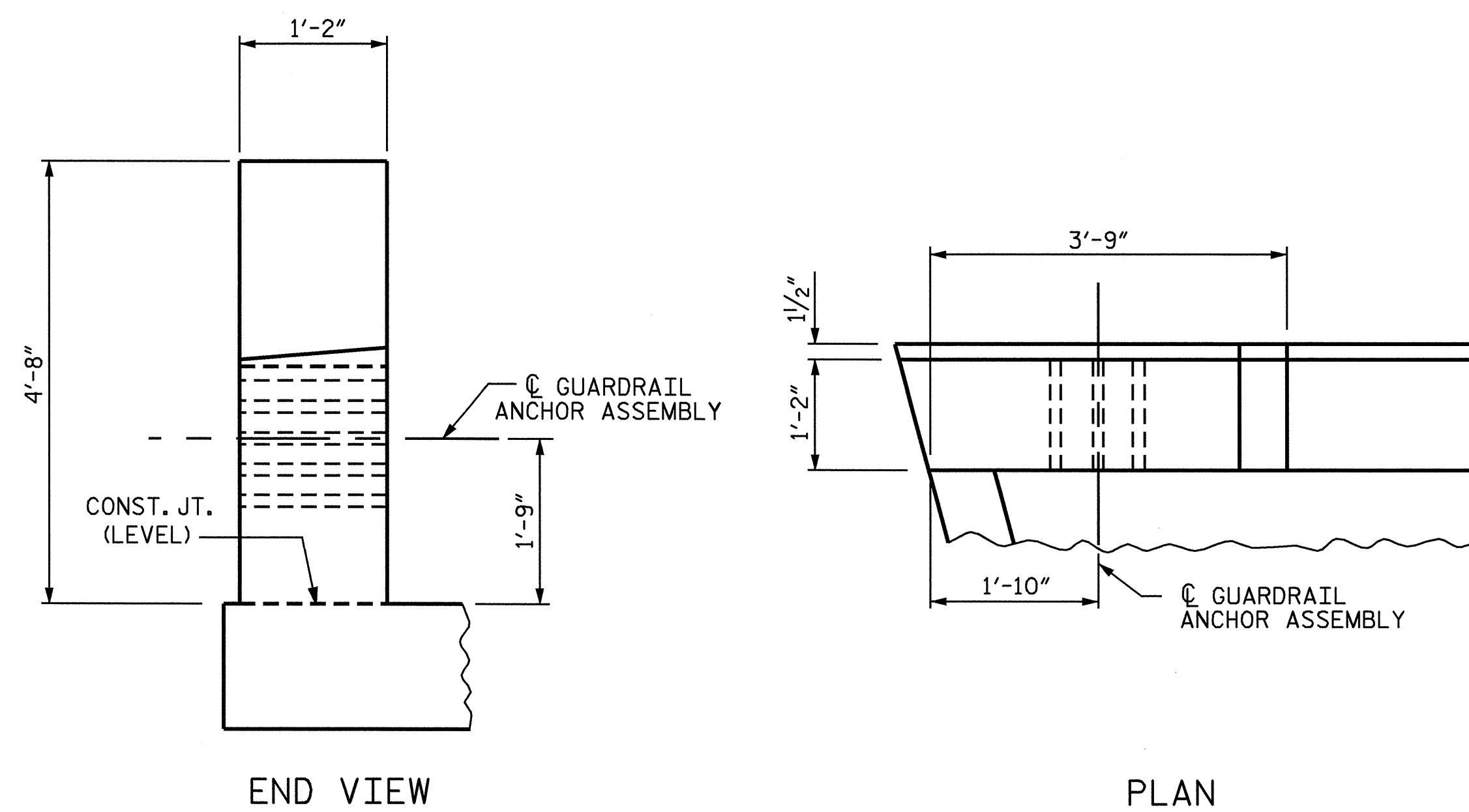


GUARDRAIL ANCHOR ASSEMBLY DETAILS



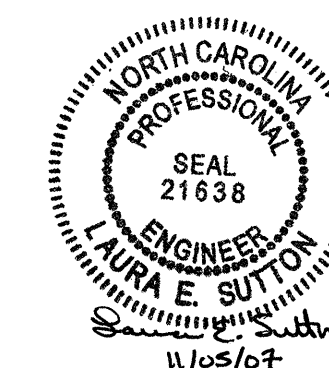
SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. U-3816
HOKE COUNTY
 STATION: 50+72.21 -L-



STATE OF NORTH CAROLINA					
DEPARTMENT OF TRANSPORTATION					
RALEIGH					
STANDARD					
GUARDRAIL ANCHORAGE					
DETAILS					
FOR METAL RAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO.
					S-19
					TOTAL SHEETS
					32

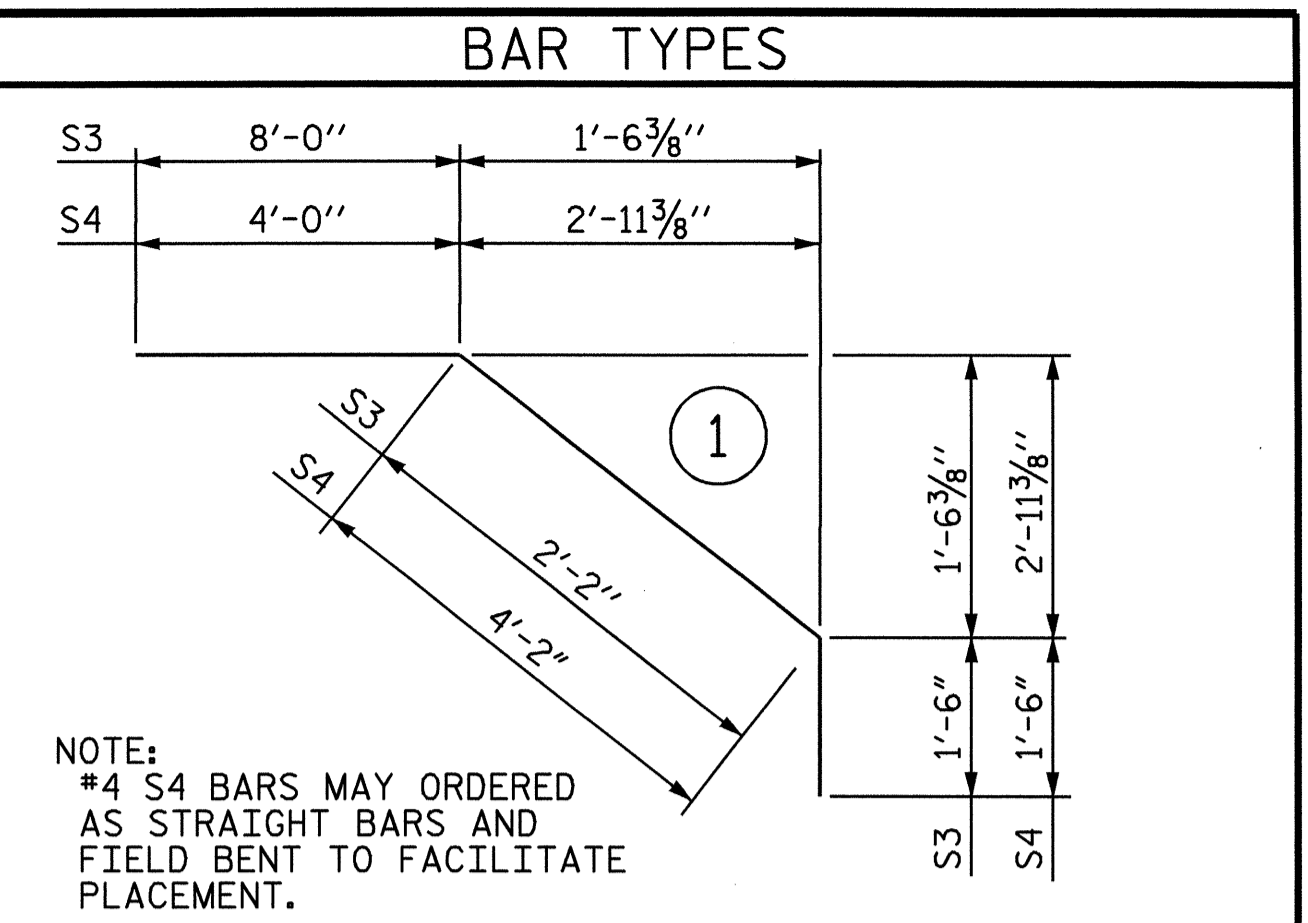
ASSEMBLED BY : A.S. CALLAWAY	DATE : 2/24/07
CHECKED BY : P.C. BREWER	DATE : 1/3/07
DRAWN BY : EEM 6/94	REV. 10/17/00 RWW/LES
CHECKED BY : RGW 6/94	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

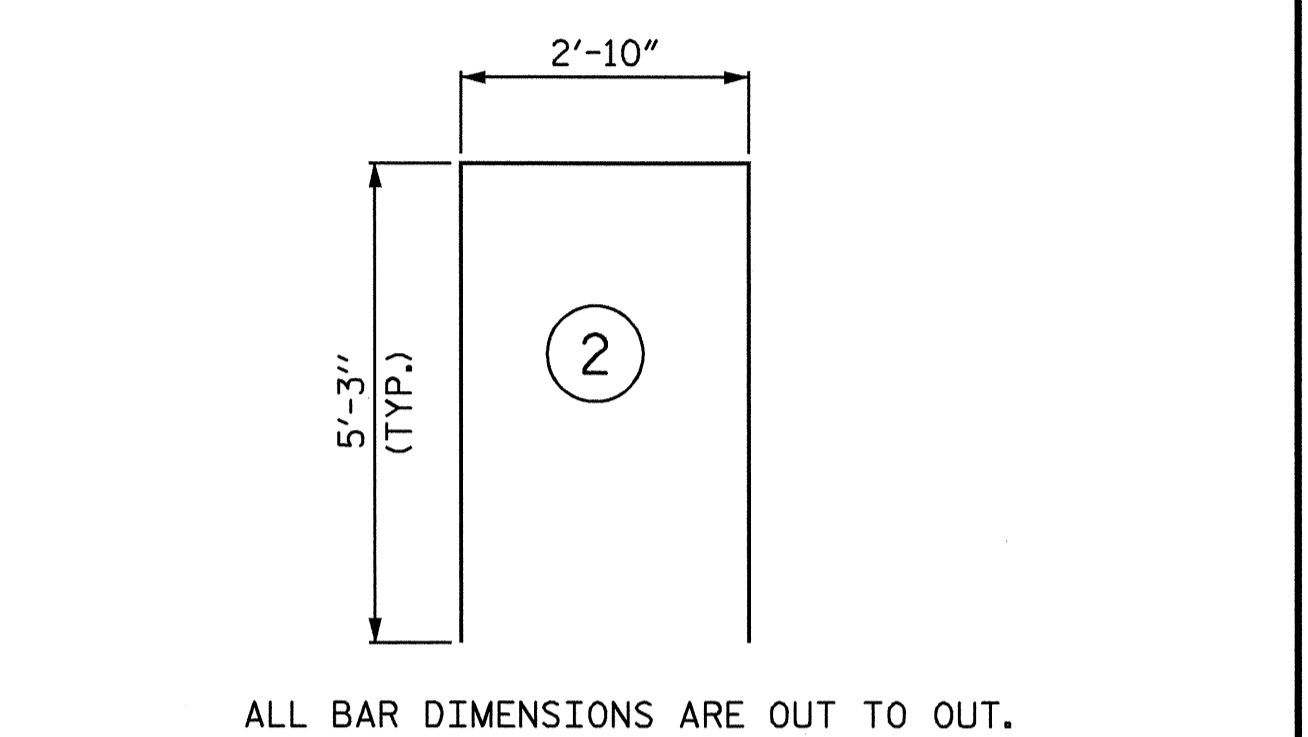
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	464	#5	STR	34'-3"	16575
A2	464	#5	STR	34'-3"	16575
*A101	4	#5	STR	31'-3"	130
*A102	4	#5	STR	28'-2"	118
*A103	4	#5	STR	25'-0"	104
*A104	4	#5	STR	21'-11"	91
*A105	4	#5	STR	18'-10"	79
*A106	4	#5	STR	15'-8"	65
*A107	4	#5	STR	12'-7"	52
*A108	4	#5	STR	9'-5"	39
*A109	4	#5	STR	6'-4"	26
*A110	4	#5	STR	3'-3"	14
A201	4	#5	STR	31'-3"	130
A202	4	#5	STR	28'-2"	118
A203	4	#5	STR	25'-0"	104
A204	4	#5	STR	21'-11"	91
A205	4	#5	STR	18'-10"	79
A206	4	#5	STR	15'-8"	65
A207	4	#5	STR	12'-7"	52
A208	4	#5	STR	9'-5"	39
A209	4	#5	STR	6'-4"	26
A210	4	#5	STR	3'-3"	14
*B1	89	#5	STR	28'-0"	2599
B2	205	#5	STR	54'-4"	11617
*B3	20	#4	STR	28'-4"	379
*B4	69	#4	STR	23'-6"	1083
*B5	135	#5	STR	35'-2"	4952
*B6	132	#5	STR	31'-10"	4383
*B7	46	#4	STR	26'-6"	814
*B8	89	#5	STR	25'-0"	2321



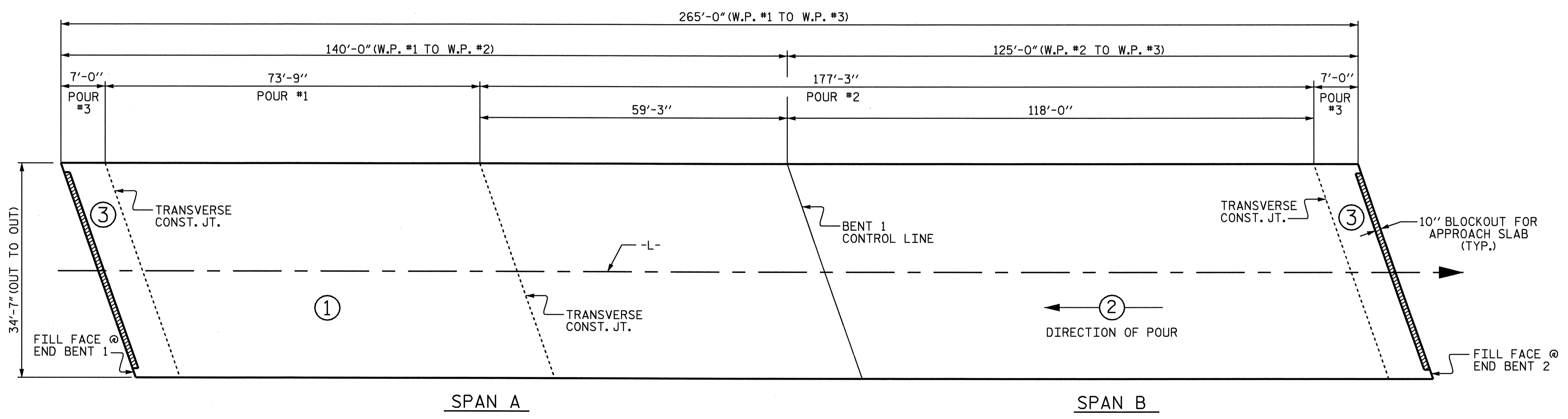
K1	48	#4	STR	19'-2"	615
*S3	76	#4	1	11'-8"	592
*S4	66	#4	1	9'-8"	426
U1	70	#4	2	13'-4"	623
REINFORCING STEEL				LBS.	30,148
*EPOXY COATED REINFORCING STEEL				LBS.	34,842



SUPERSTRUCTURE BILL OF MATERIAL

SPANS A & B	CLASS AA CONCRETE (CU.YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
POUR #1	76.3	---	---
POUR #2	183.3	---	---
POUR #3	58.9	---	---
TOTALS **	318.5	30,148	34,842

* QUANTITIES FOR PARAPET ARE NOT INCLUDED

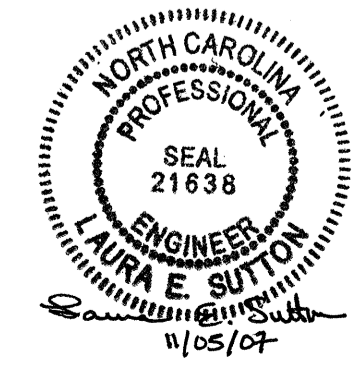


GROOVING BRIDGE FLOORS

APPROACH SLABS	1,293	SQ.FT.
BRIDGE DECK	7,623	SQ.FT.
TOTAL	8,916	SQ.FT.

PROJECT NO. U-3816
HOKE COUNTY
 STATION: 50+72.21 -L-

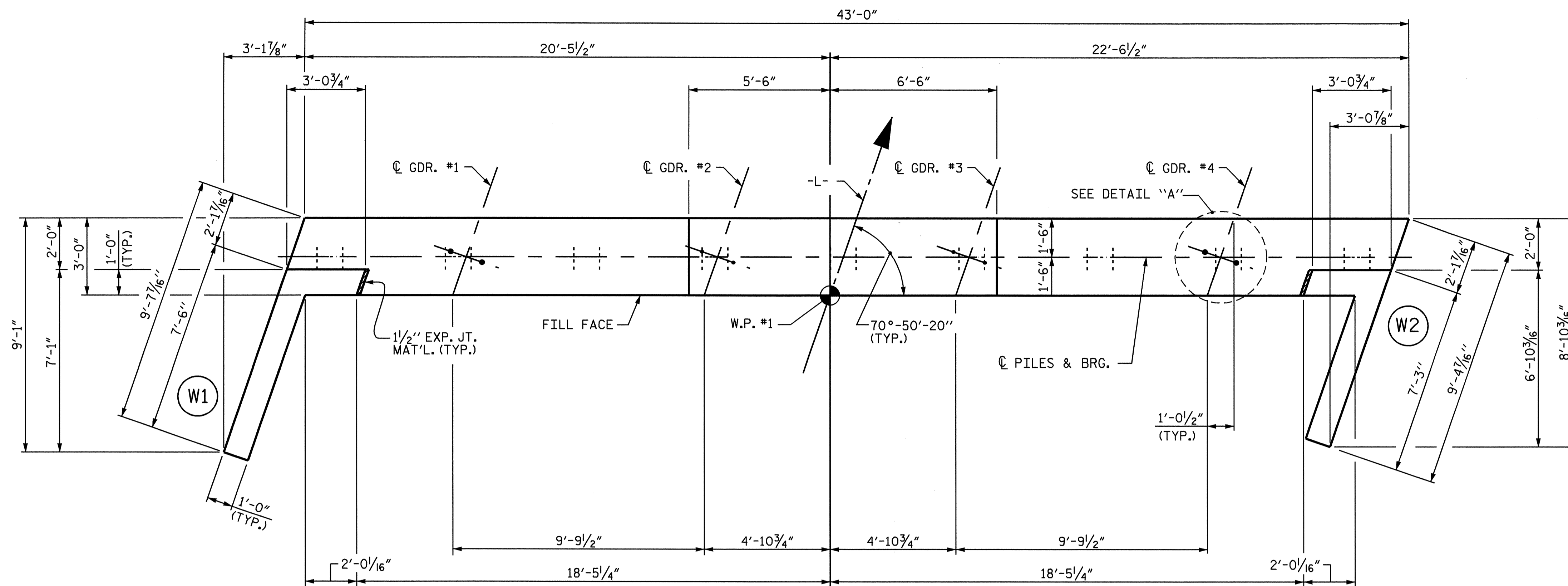
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 SUPERSTRUCTURE
 BILL OF MATERIAL



ASSEMBLED BY : A.S. CALLAWAY DATE : 2/5/07
 CHECKED BY : P.C. BREWER DATE : 3/12/07
 DRAWN BY : JMB 5/87 REV. 6/1/94 EEM/GRP
 CHECKED BY : SJD 9/87 REV. 8/16/99 RWW/LES
 REV. 5/1/06 TLA/GM

LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB & POURING SEQUENCE (SQ. FT. = 9,108)

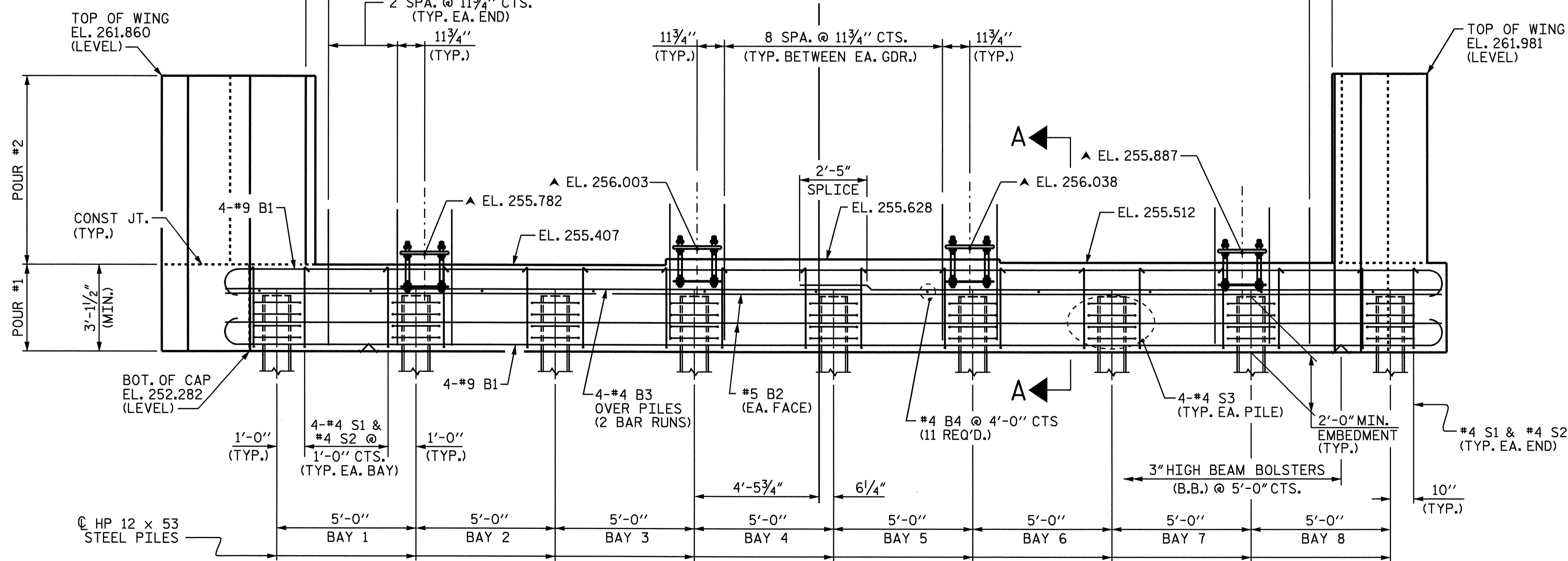
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			32



PLAN

WORKLINE

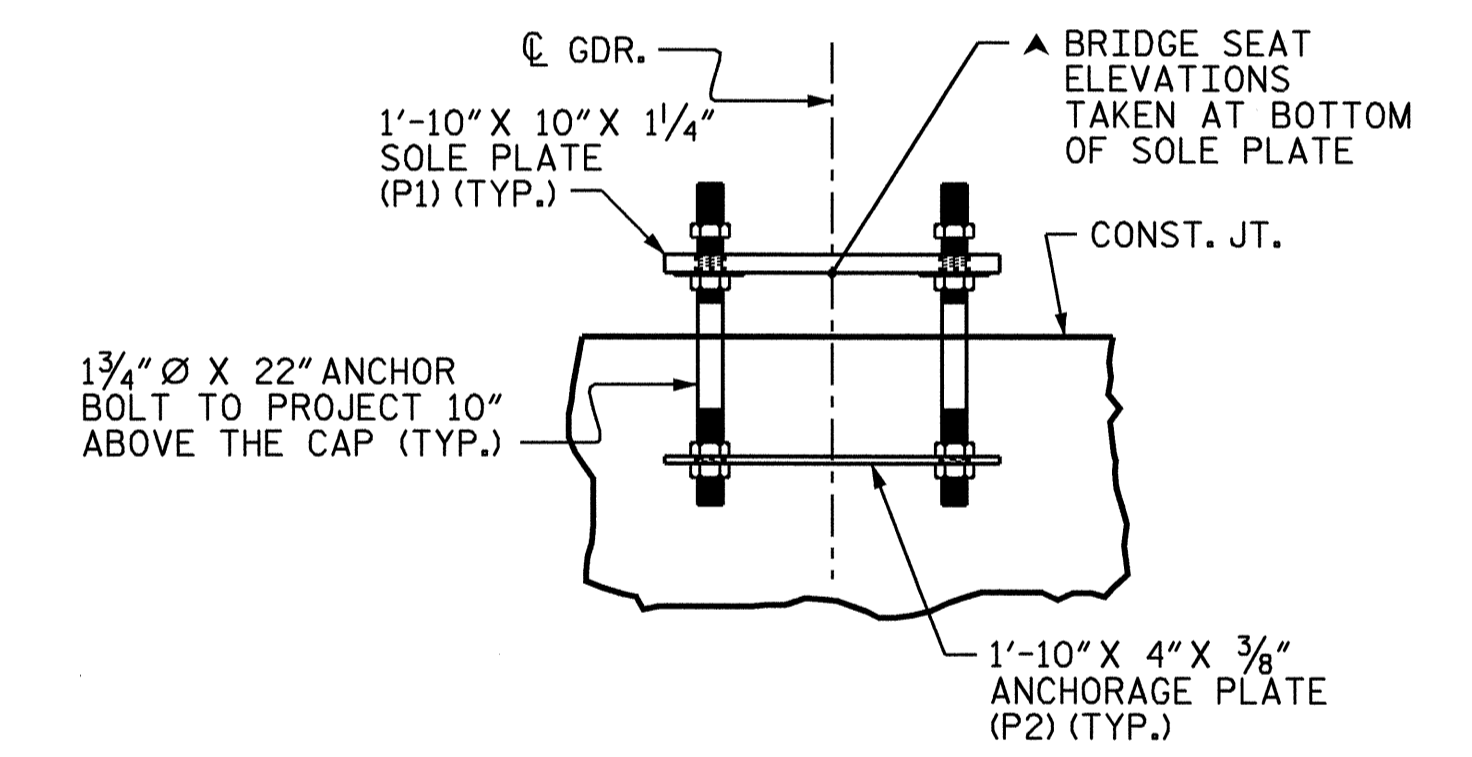
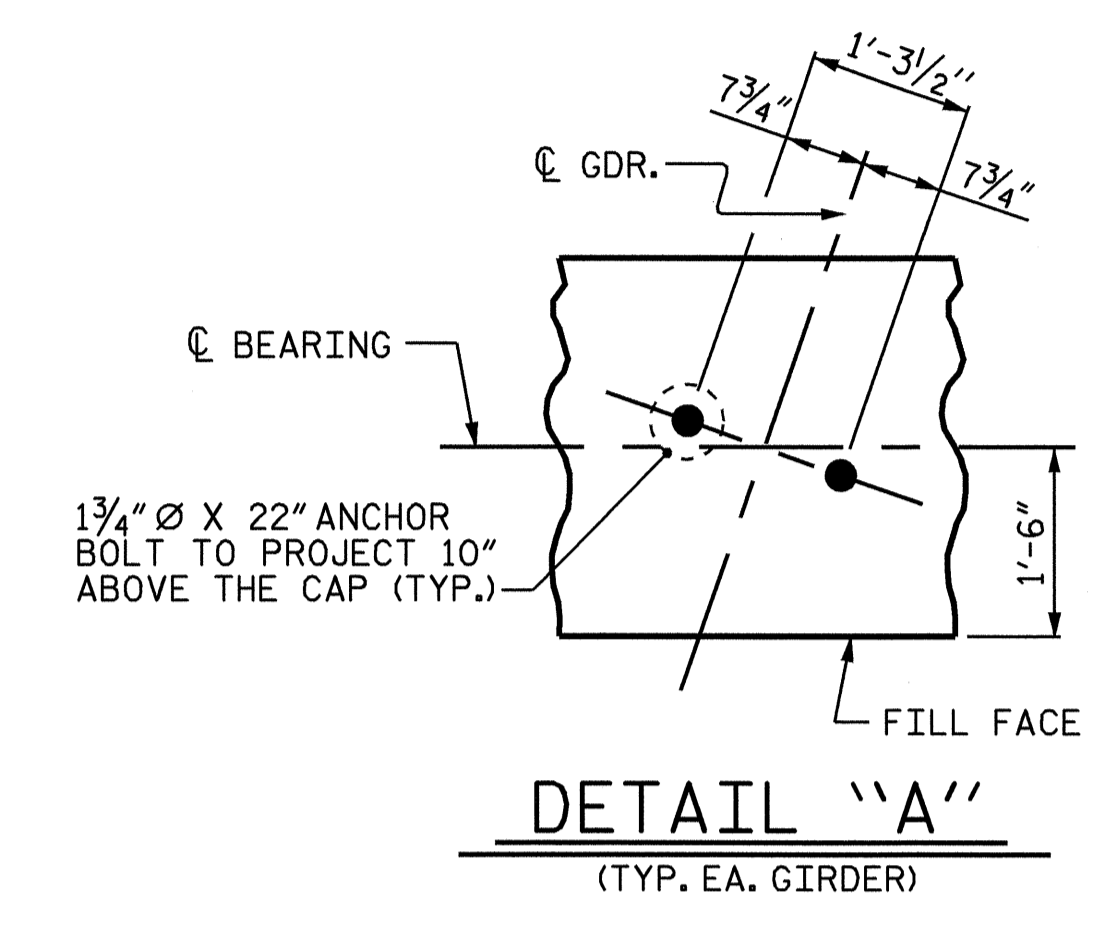
37-#4 V1 @ 11 3/4" CTS. (FILL FACE)
33-#4 V1 (SPA. AS SHOWN) (BACK FACE)



ELEVATION

BEARING ASSEMBLIES ARE SHOWN AT © BEARING.
V1 BARS ON BACK FACE ARE DIMENSIONED OFF © GIRDER.

NOTES:
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLT ASSEMBLIES.
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.

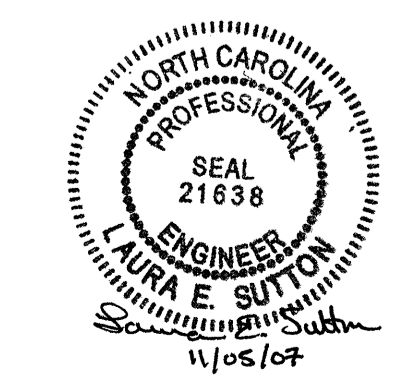


ANCHORAGE DETAILS

PROJECT NO. U-3816
HOKE COUNTY
STATION: 50+72.21 -L-

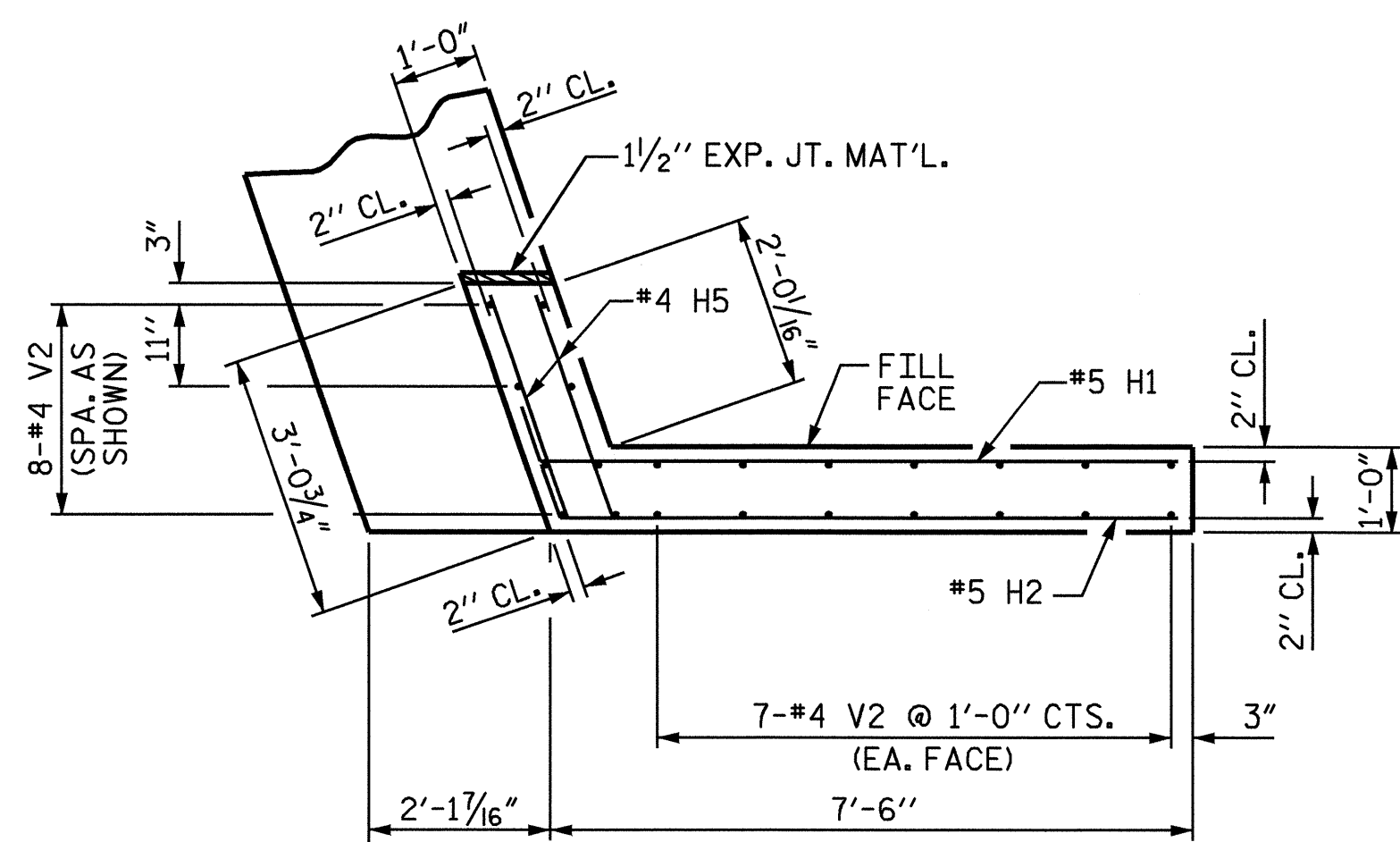
SHEET 1 OF 3

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

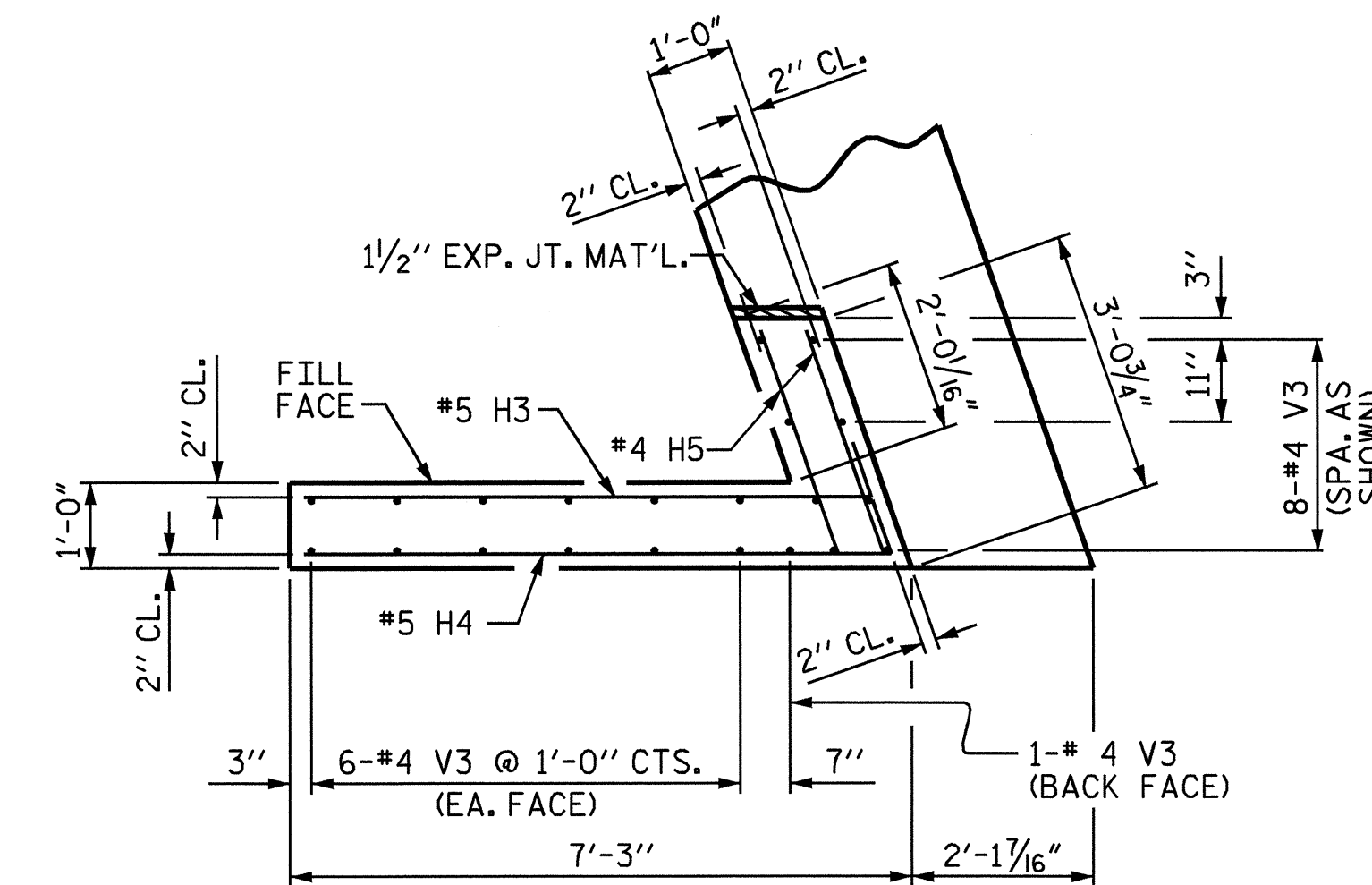


REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	S-21
2			4	32

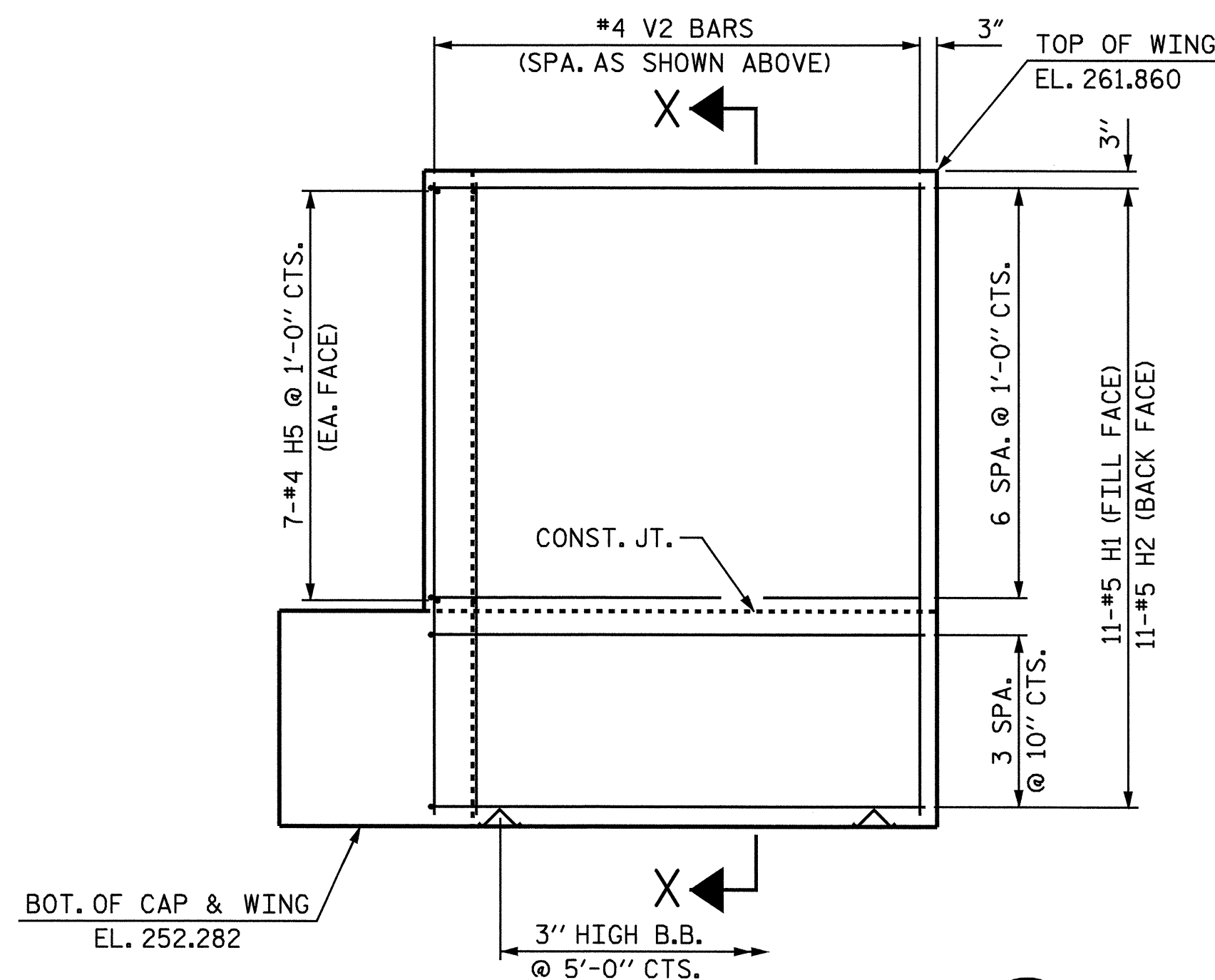
DRAWN BY: A.S. CALLAWAY DATE: 3/5/07
CHECKED BY: P.C. BREWER DATE: 5/14/07



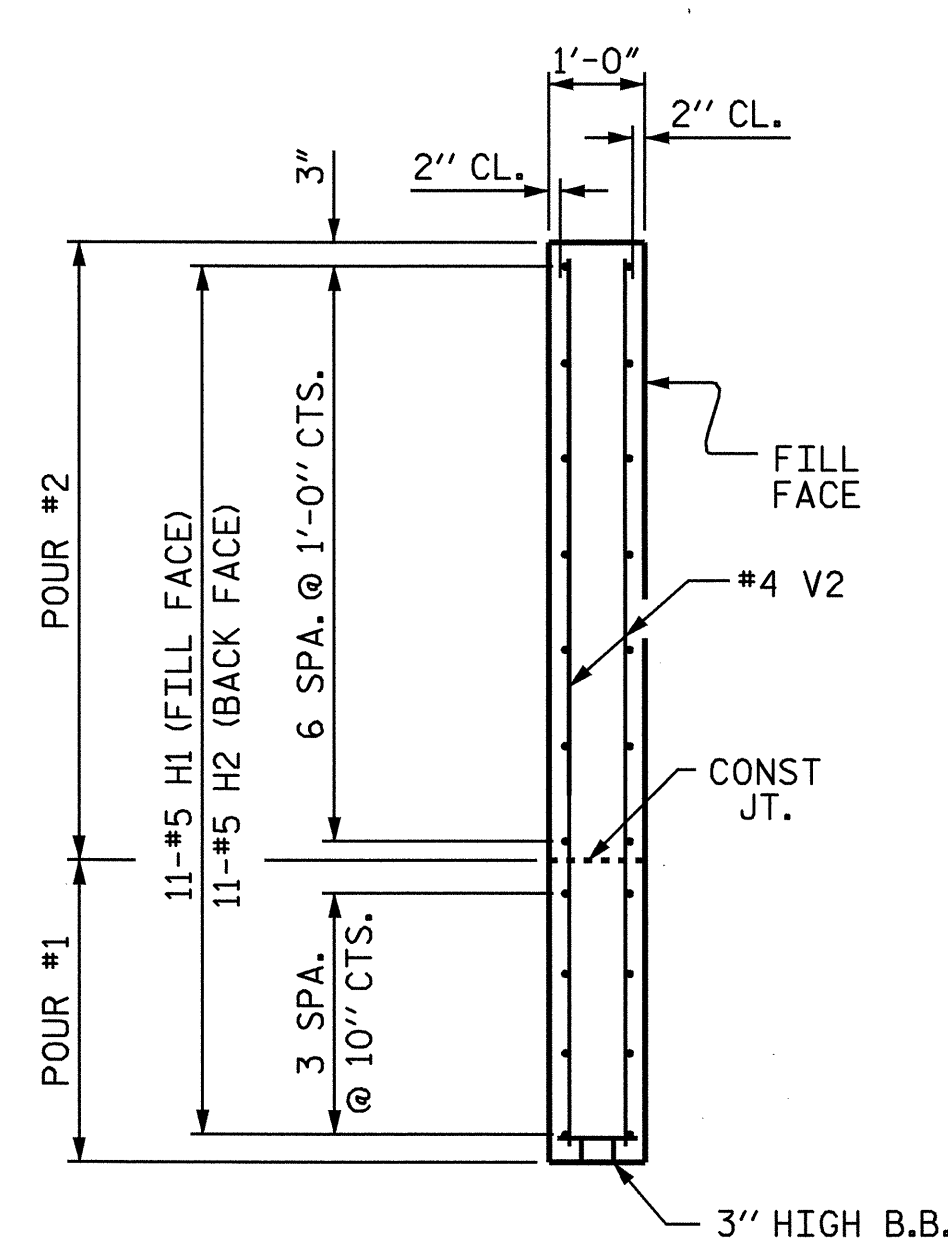
PLAN OF WING (W1)



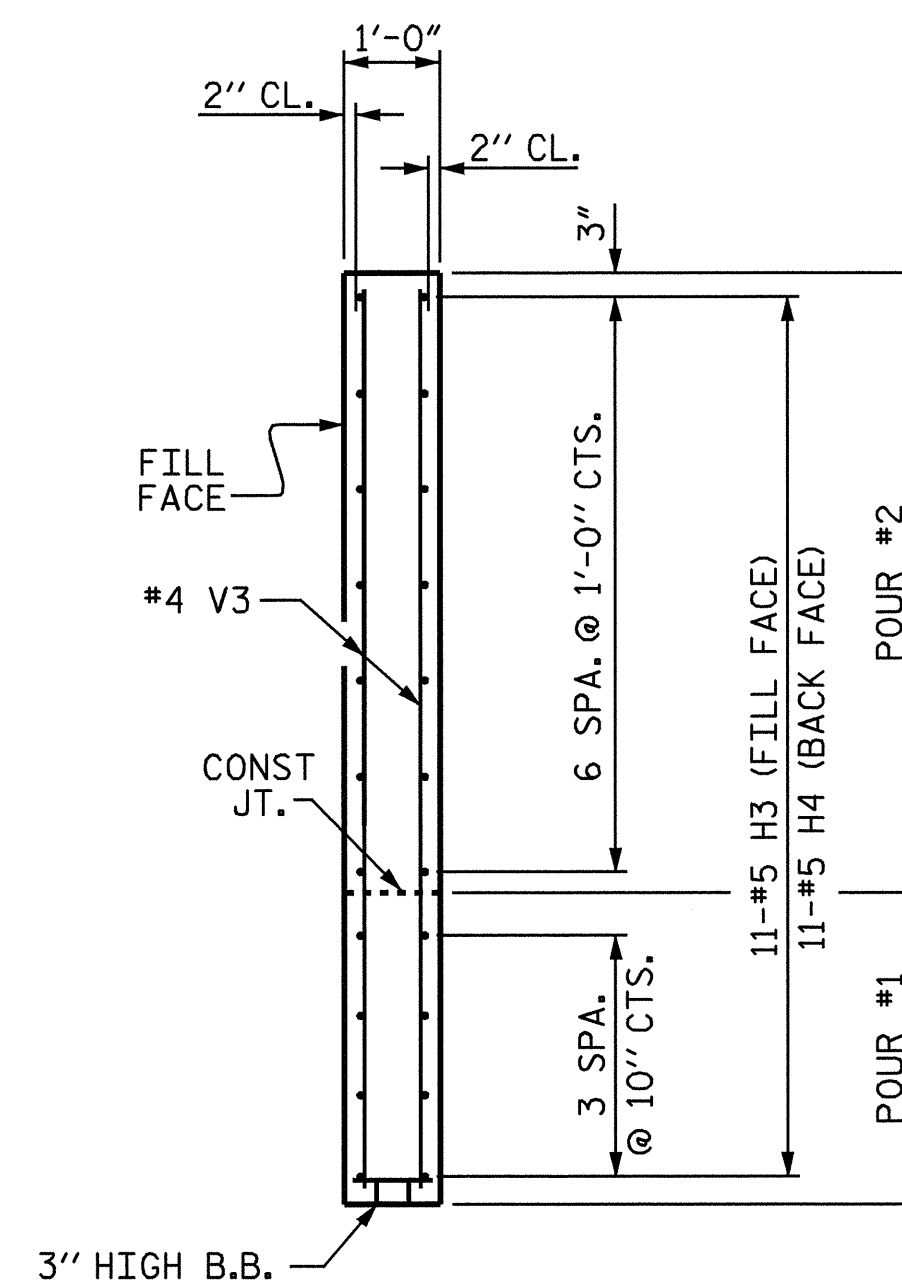
PLAN OF WING (W2)



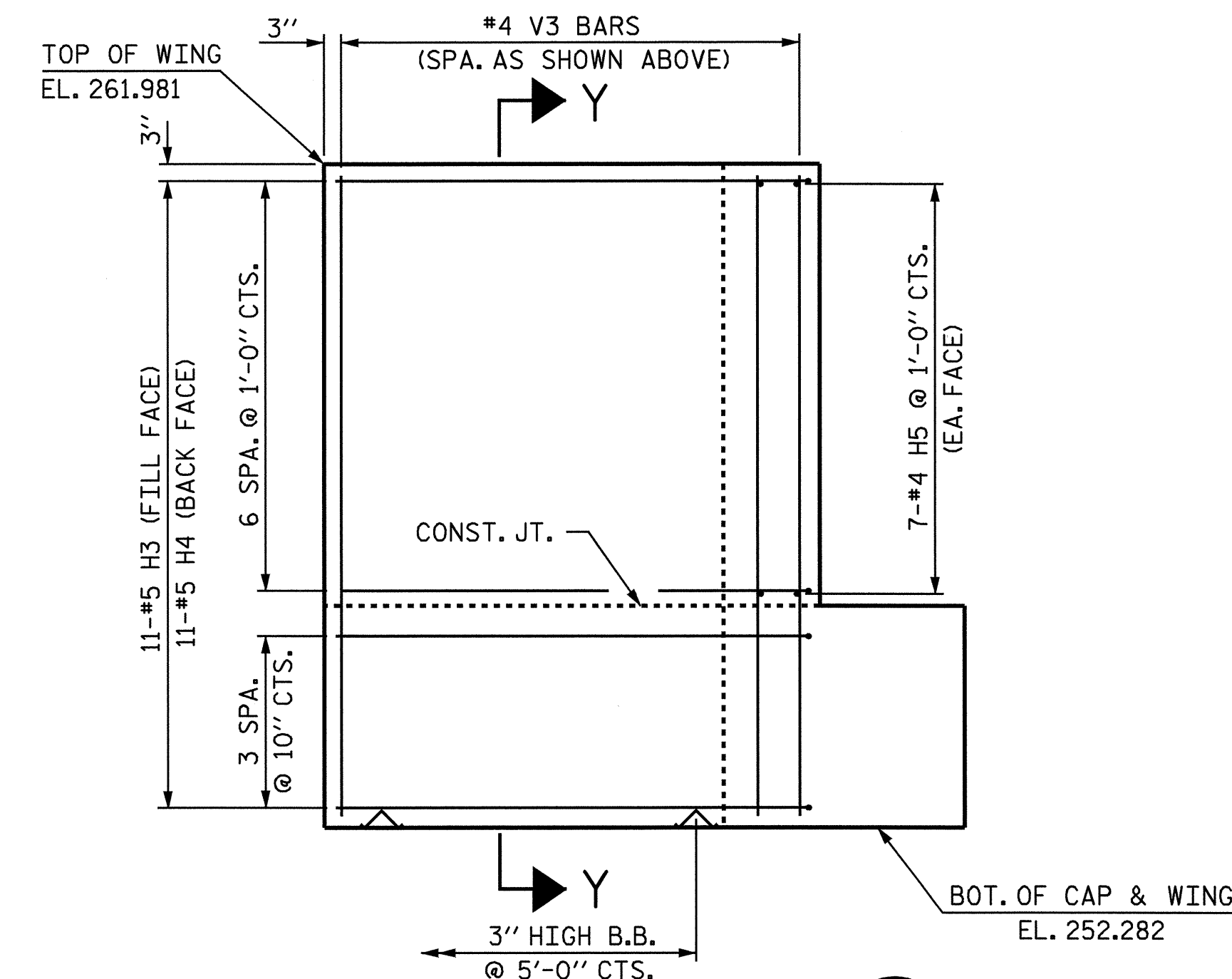
ELEVATION OF WING (W1)



SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W2)

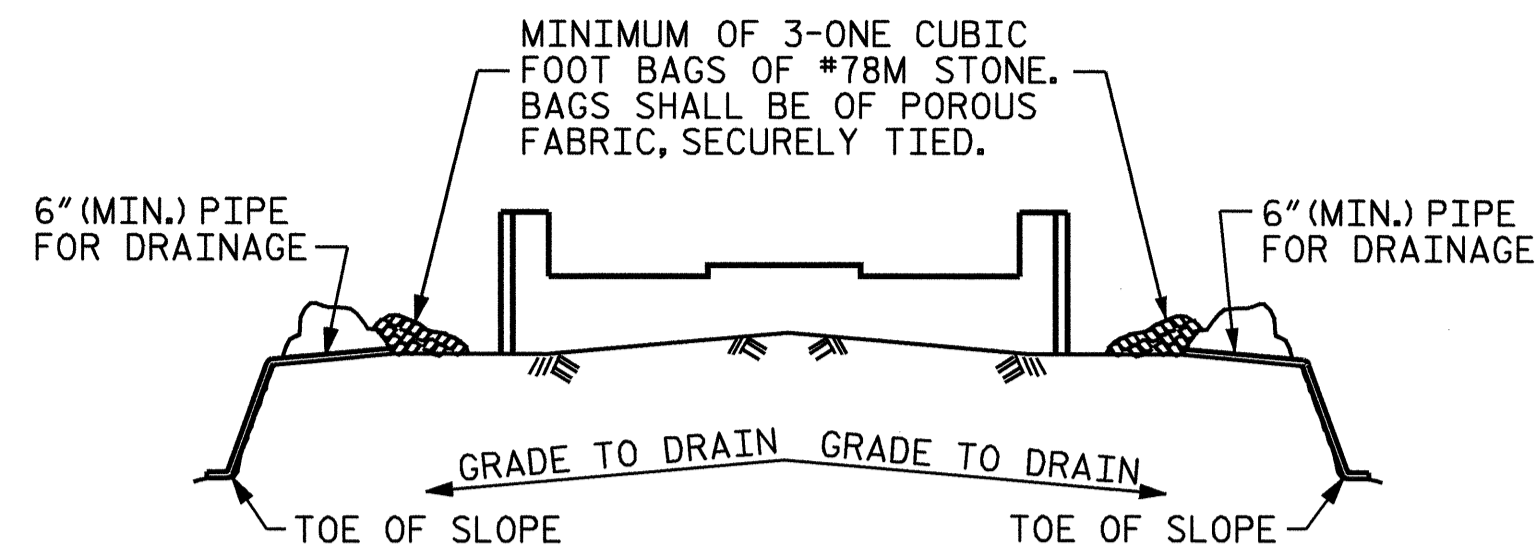
PROJECT NO. U-3816
 HOKE COUNTY
 STATION: 50+72.21 -L-

SHEET 2 OF 3



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE INTEGRAL END BENT 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-22
					TOTAL SHEETS 32

DRAWN BY: A.S. CALLAWAY DATE: 3/5/07
 CHECKED BY: P.C. BREWER DATE: 5/14/07



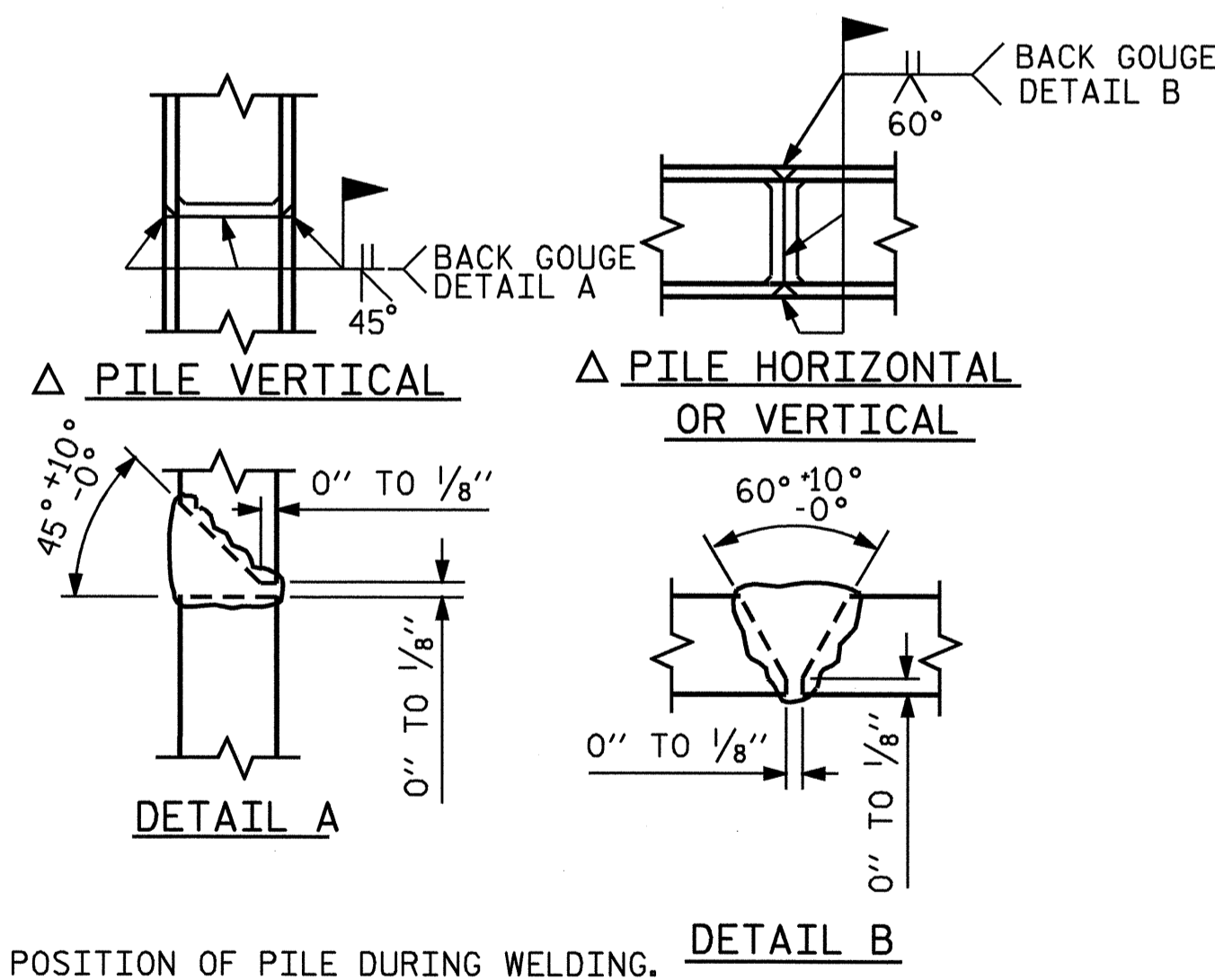
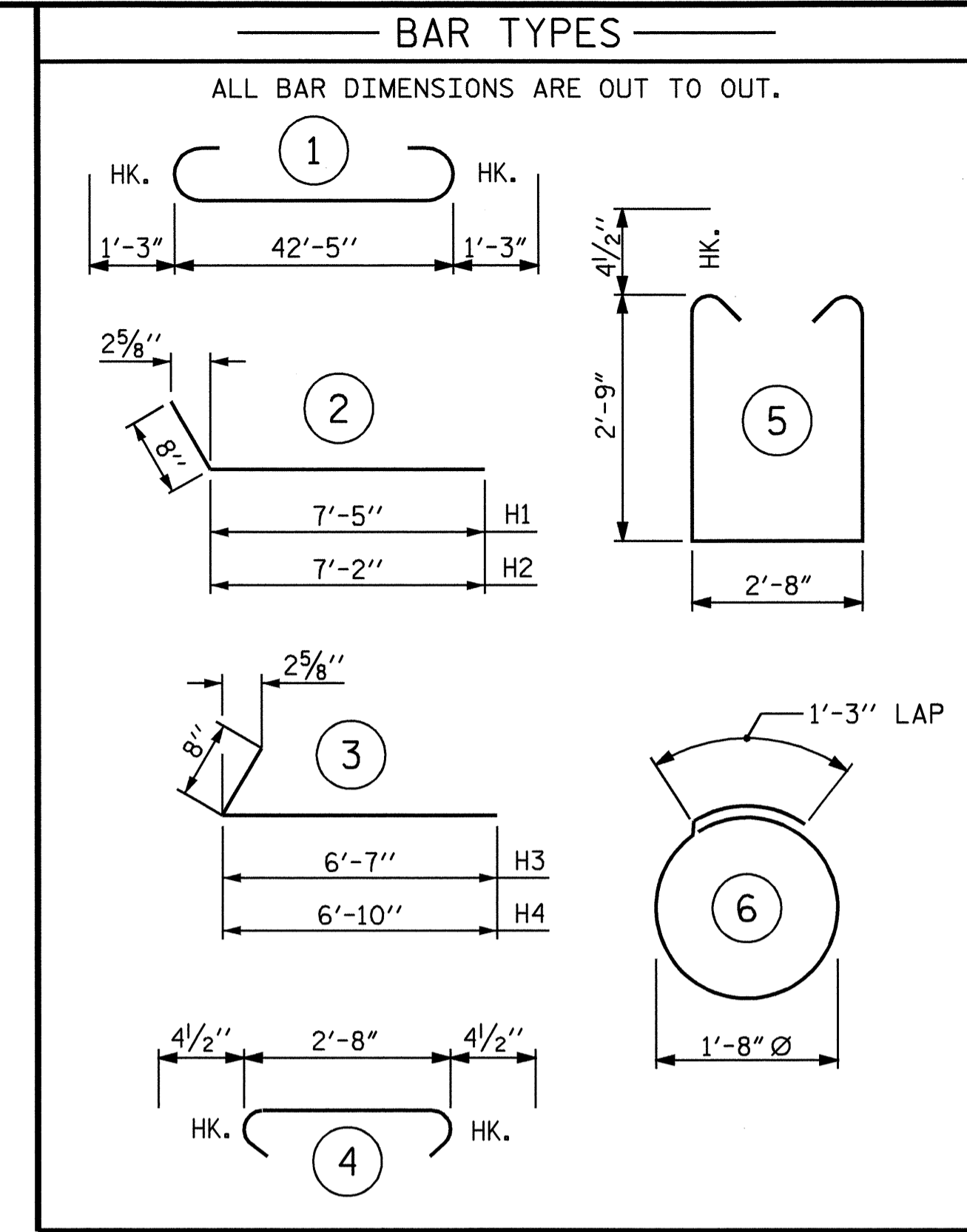
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

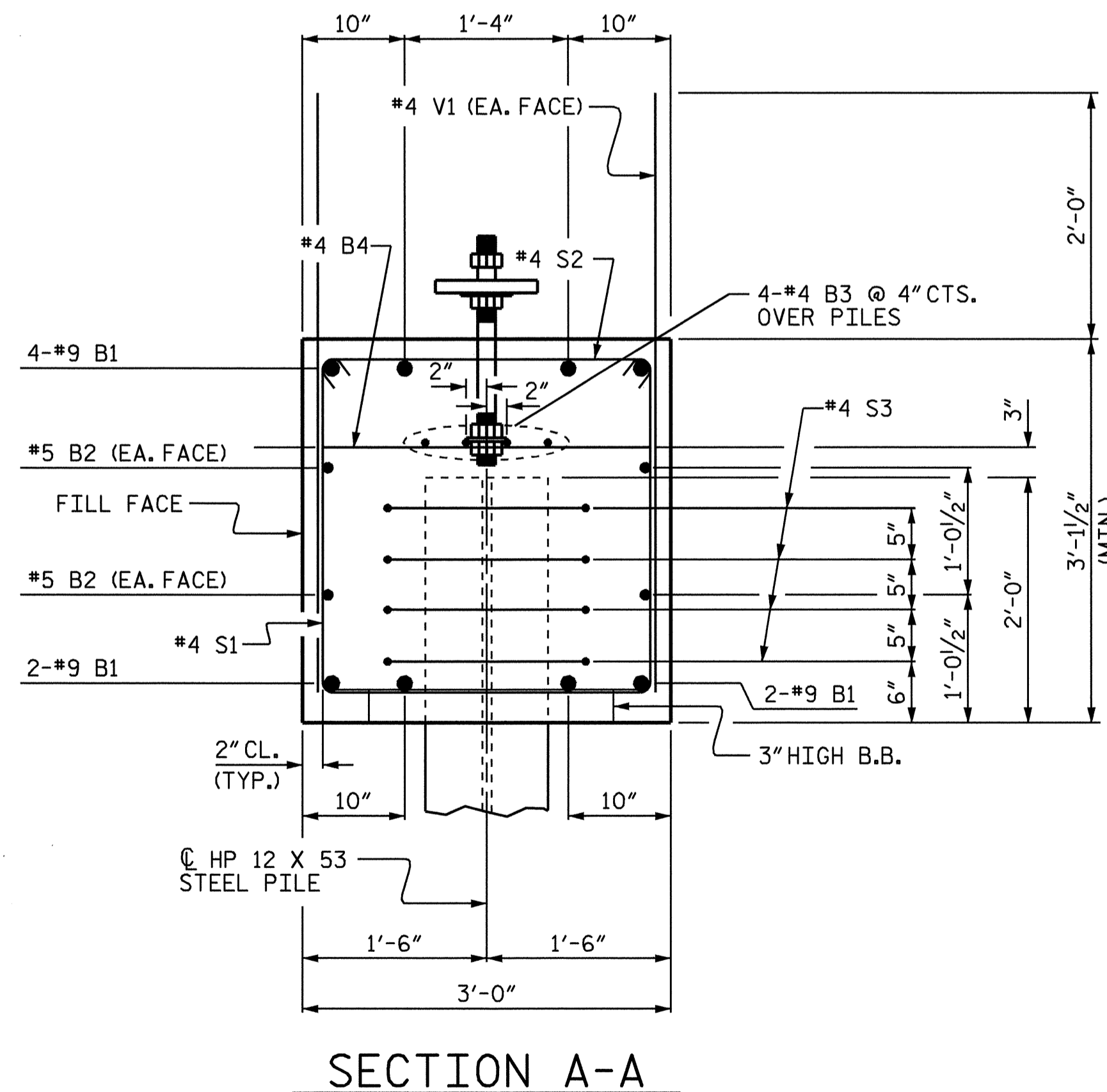
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	44'-11"	1222
B2	4	#5	STR	42'-7"	178
B3	8	#4	STR	22'-7"	121
B4	11	#4	STR	2'-8"	20
H1	11	#5	2	8'-1"	93
H2	11	#5	2	7'-10"	90
H3	11	#5	3	7'-3"	83
H4	11	#5	3	7'-6"	86
H5	28	#4	STR	2'-8"	50
S1	34	#4	5	8'-11"	203
S2	34	#4	4	3'-5"	78
S3	36	#4	6	6'-6"	156
V1	70	#4	STR	4'-11"	230
V2	22	#4	STR	9'-2"	135
V3	21	#4	STR	9'-4"	131
REINFORCING STEEL				LBS.	2,876
CLASS A CONCRETE BREAKDOWN :					
POUR #1 - CAP & LOWER WINGS				CU. YDS.	16.9
POUR #2 - UPPER WINGS				CU. YDS.	4.5
TOTAL				CU. YDS.	21.4
HP 12 x 53 STEEL PILES					
NO. = 9				LIN. FT.	720



PILE SPLICE DETAILS



PROJECT NO. U-3816
HOKE COUNTY
 STATION: 50+72.21 -L-

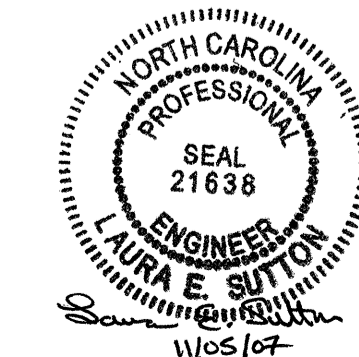
SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE INTEGRAL END BENT 1

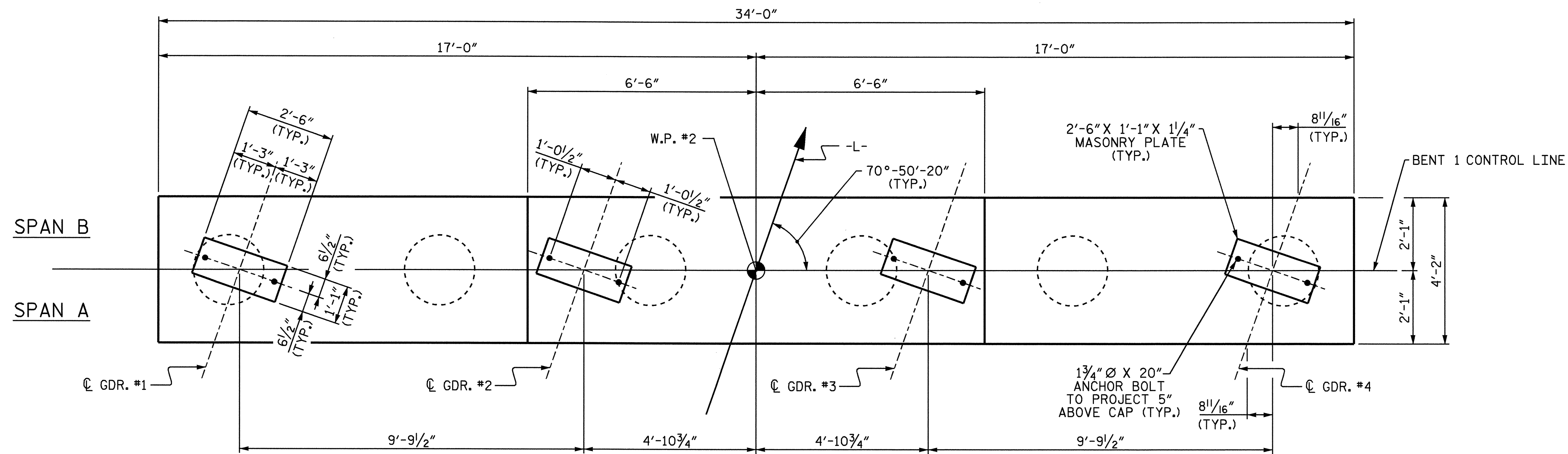
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

DRAWN BY : A.S. CALLAWAY DATE : 3/5/07
 CHECKED BY : P.C. BREWER DATE : 5/14/07

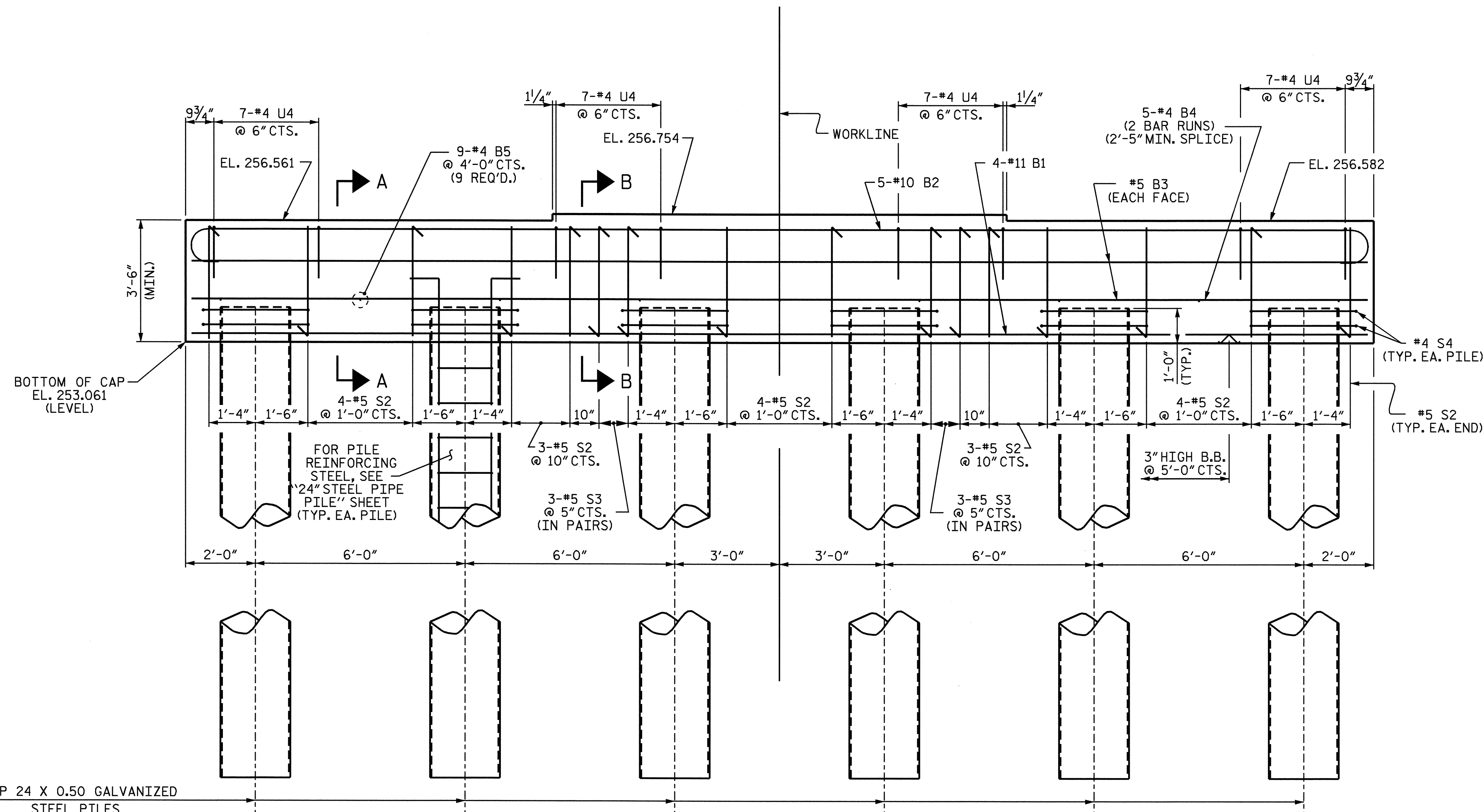


NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 INVERT ALTERNATE STIRRUPS.



PLAN

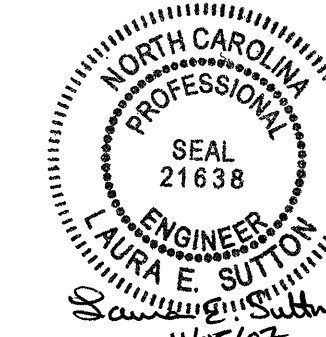


ELEVATION

PROJECT NO. U-3816
HOKE COUNTY
 STATION: 50+72.21 -L-

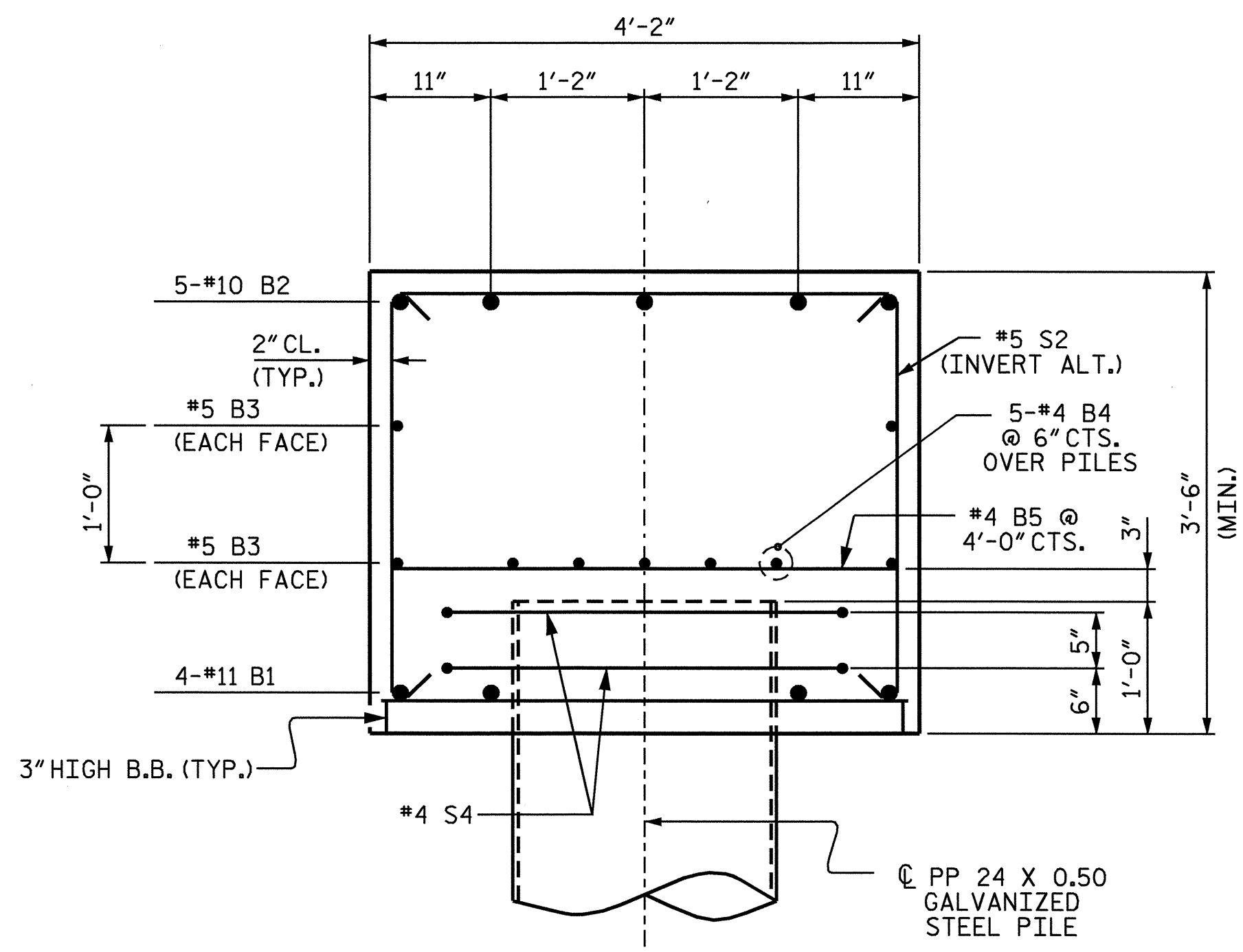
SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 1

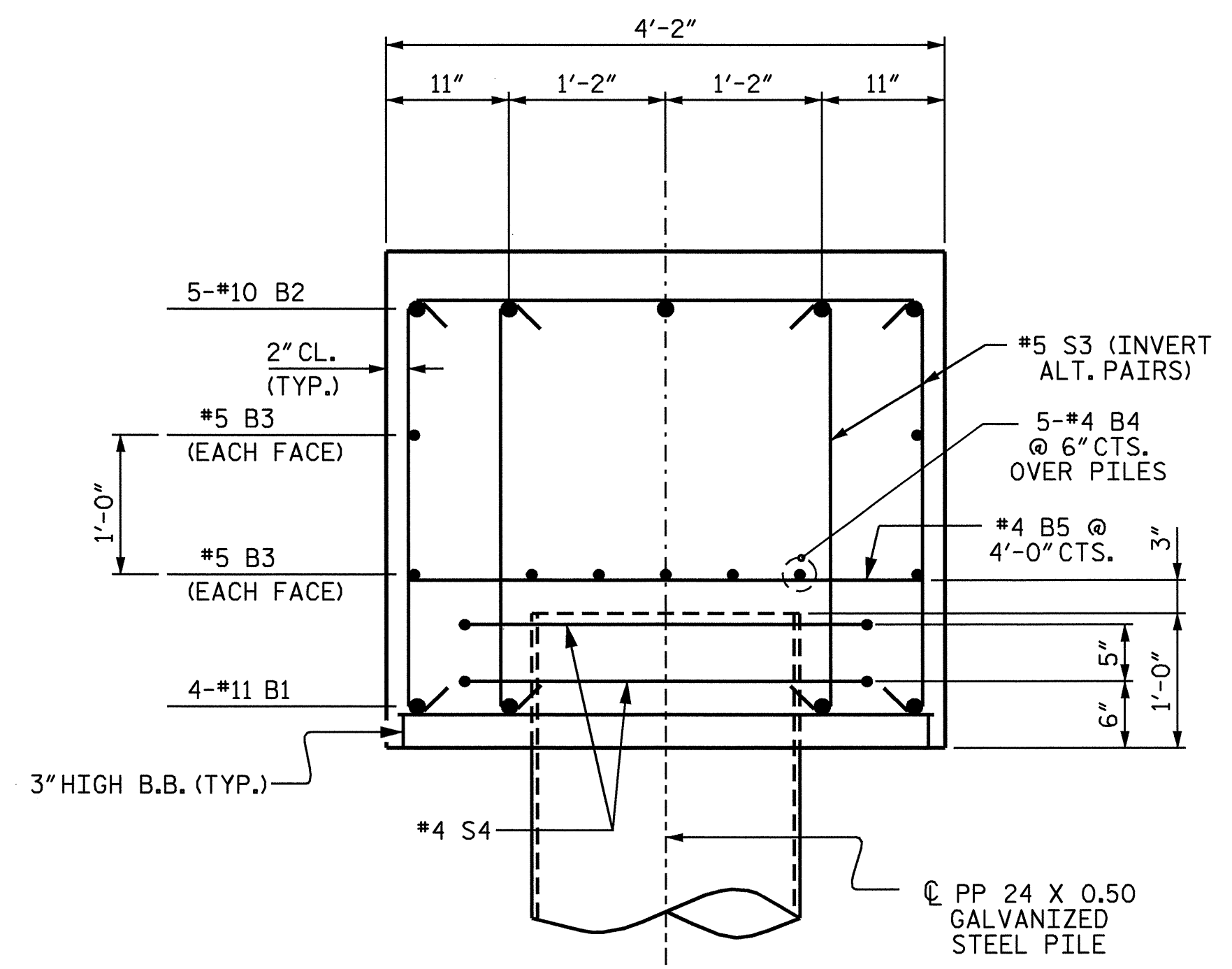


REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24	
1			3			TOTAL SHEETS	32
2			4				

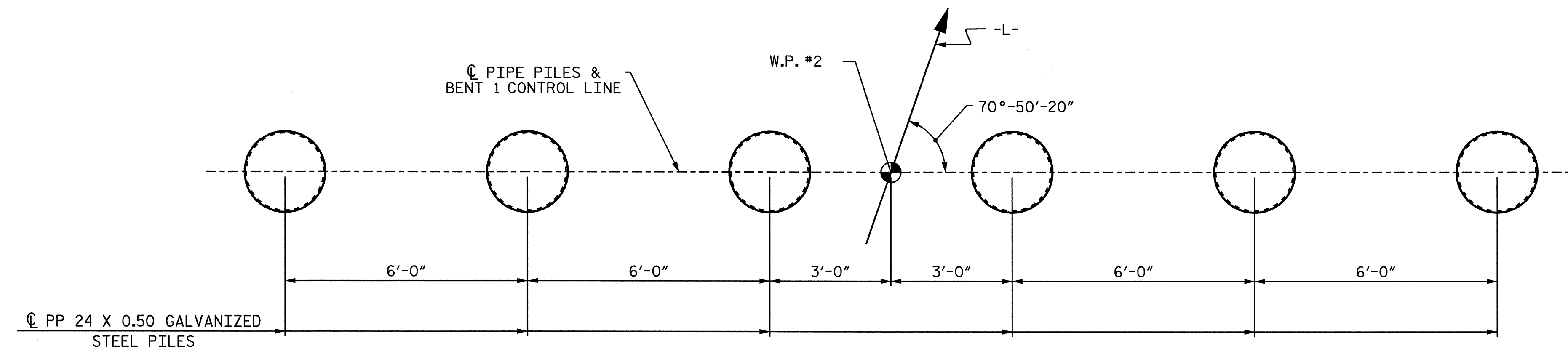
DRAWN BY: William J. Parker DATE: 05/07/07
 CHECKED BY: P.C. BREWER DATE: 5/14/07



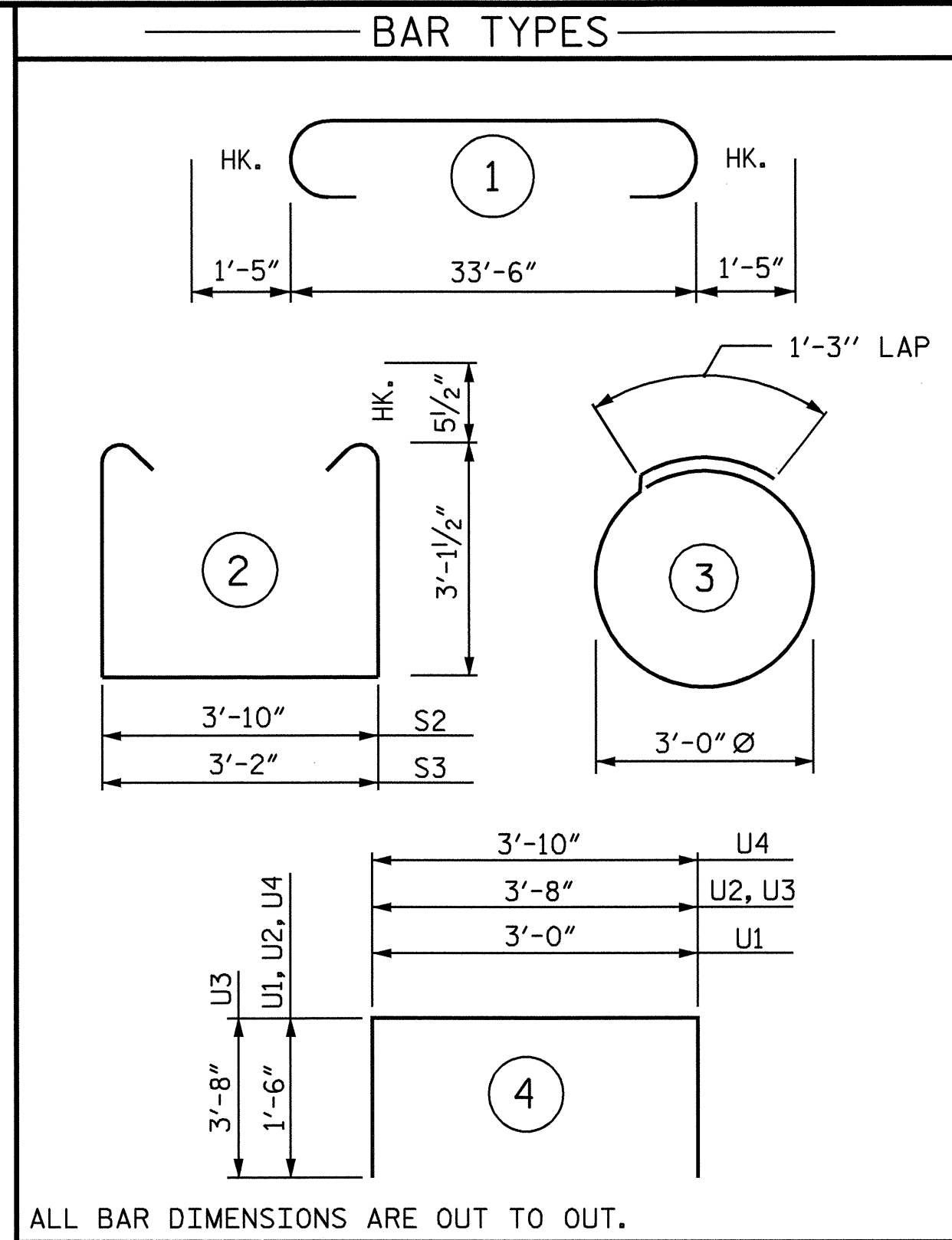
SECTION A-A



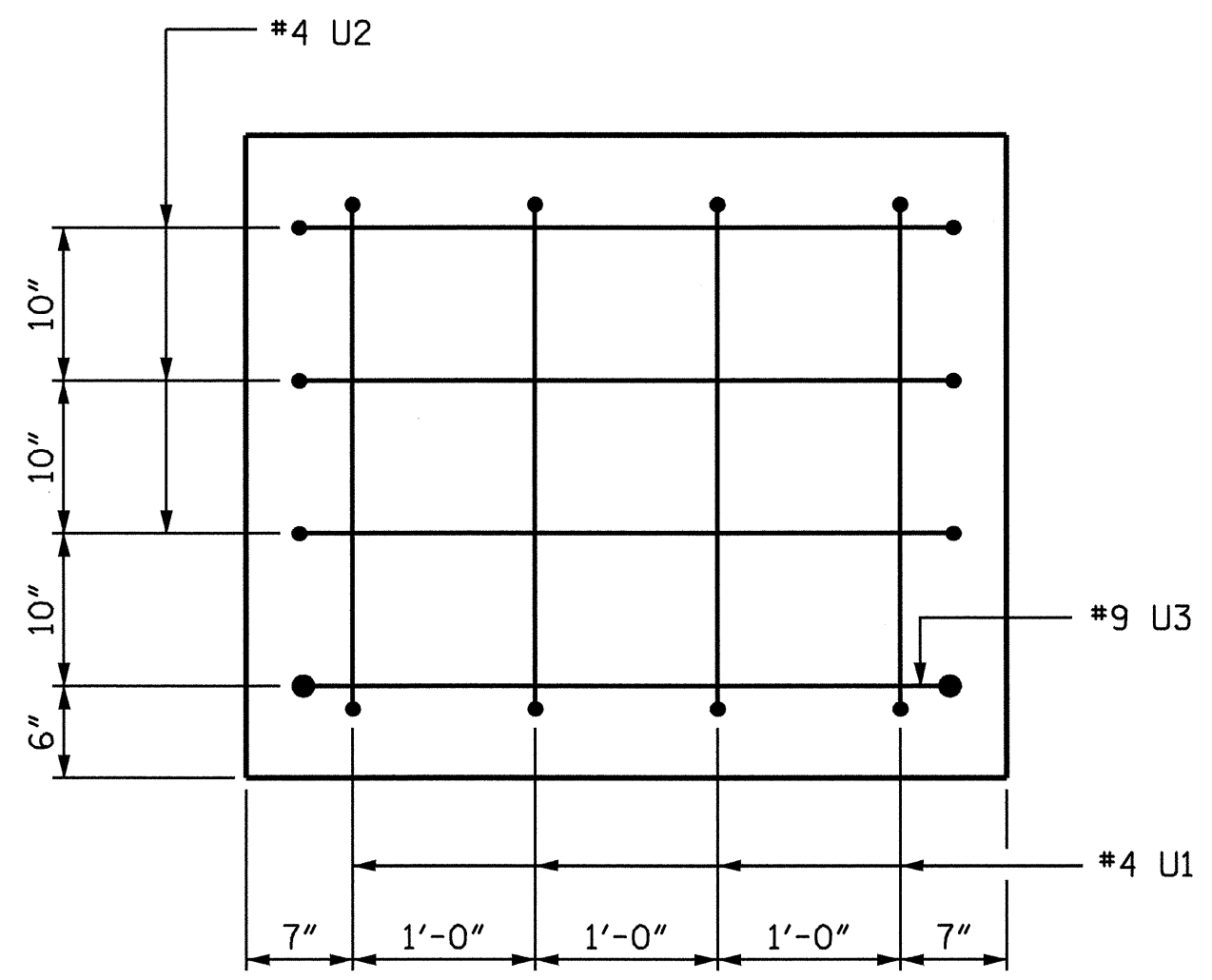
SECTION B-B



PLAN OF STEEL PIPE PILES



ALL BAR DIMENSIONS ARE OUT TO OUT.



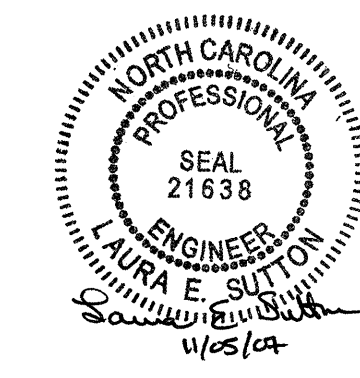
END VIEW

BILL OF MATERIAL					
BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#11	1	33'-8"	715
B2	5	#10	STR	36'-4"	782
B3	4	#5	STR	33'-8"	140
B4	10	#4	STR	18'-1"	121
B5	9	#4	STR	3'-10"	23
S2	20	#5	2	11'-0"	229
S3	12	#5	2	10'-4"	129
S4	12	#4	3	10'-8"	86
U1	8	#4	4	6'-0"	32
U2	6	#4	4	6'-8"	27
U3	2	#9	4	11'-0"	75
U4	28	#4	4	6'-10"	128
REINFORCING STEEL					LBS. 2,487
CLASS A CONCRETE					
POUR #1 - CAP					CU. YDS. 18.8
TOTAL					CU. YDS. 18.8
PP 24 X 0.50 GALVANIZED STEEL PILES					
NO. 6					LIN. FT. 570
PIPE PILE PLATES					EA. 6
PILE REDRIVES					EA. 6
PDA TESTING					EA. 2
PDA ASSISTANCE					EA. 2

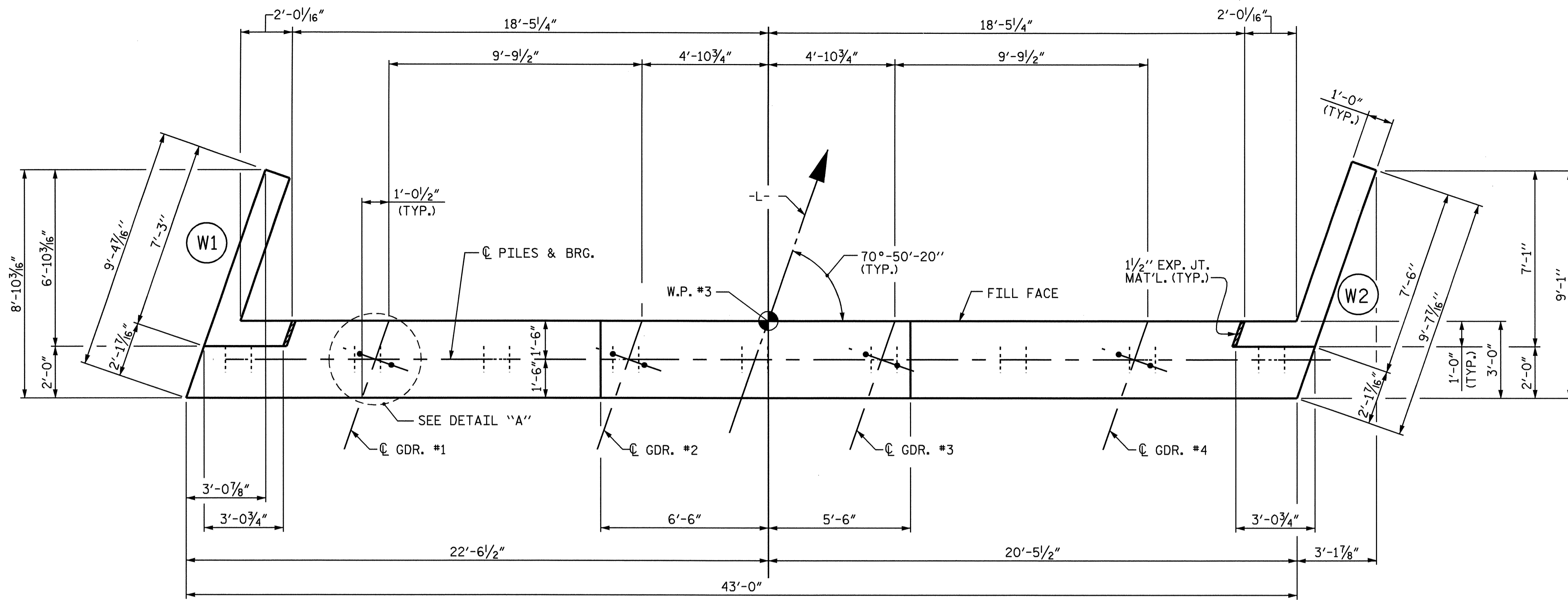
PROJECT NO. U-3816
 HOKE COUNTY
 STATION: 50+72.21 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT 1					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-25
					TOTAL SHEETS 32

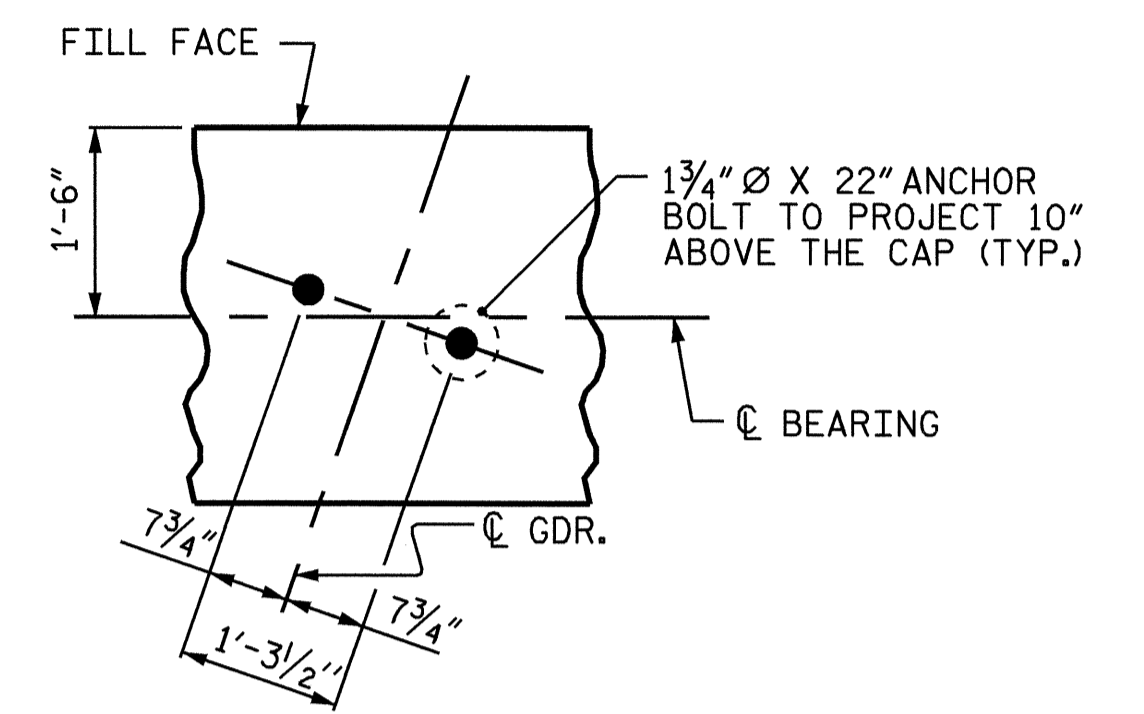


DRAWN BY: William J. Parker DATE: 05/07/07
 CHECKED BY: P.C. BREWER DATE: 5/14/07

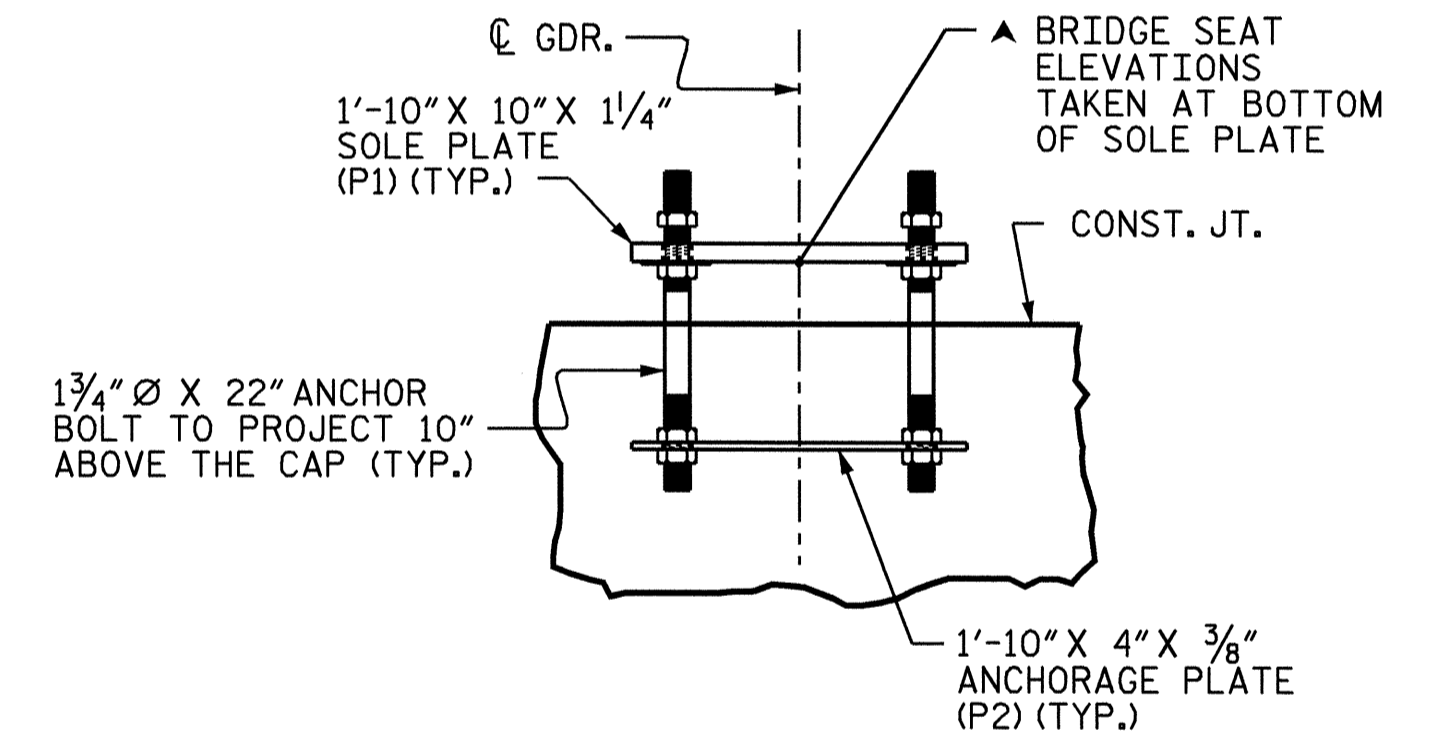


PLAN

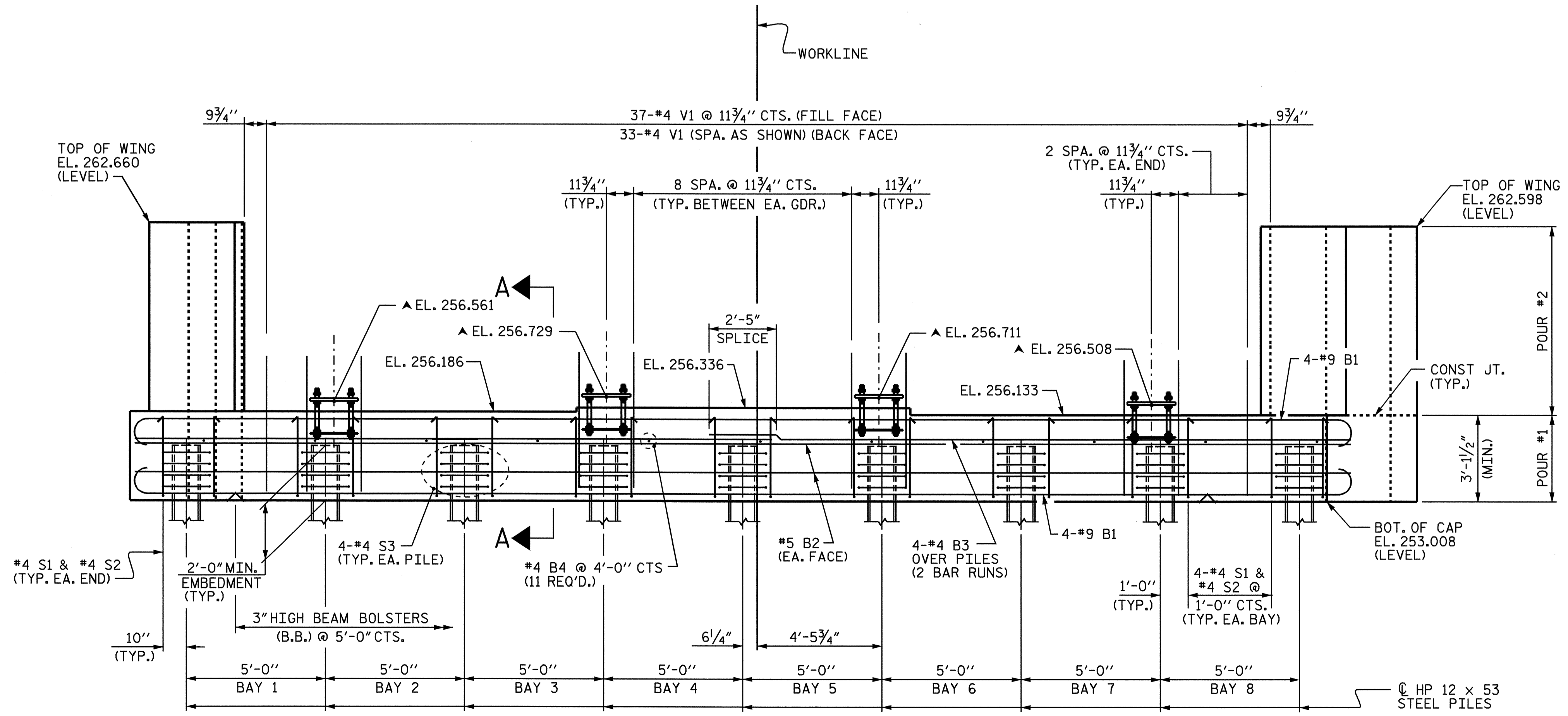
NOTES:
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLT ASSEMBLIES.
 THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED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



DETAIL "A"
(TYP. EA. GIRDER)



ANCHORAGE DETAILS
(TYP. EA. GIRDER)

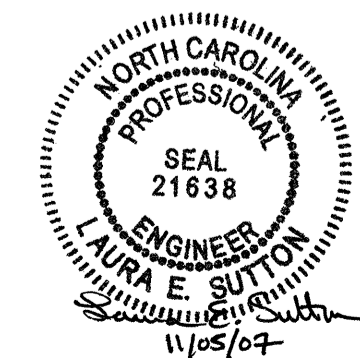


ELEVATION

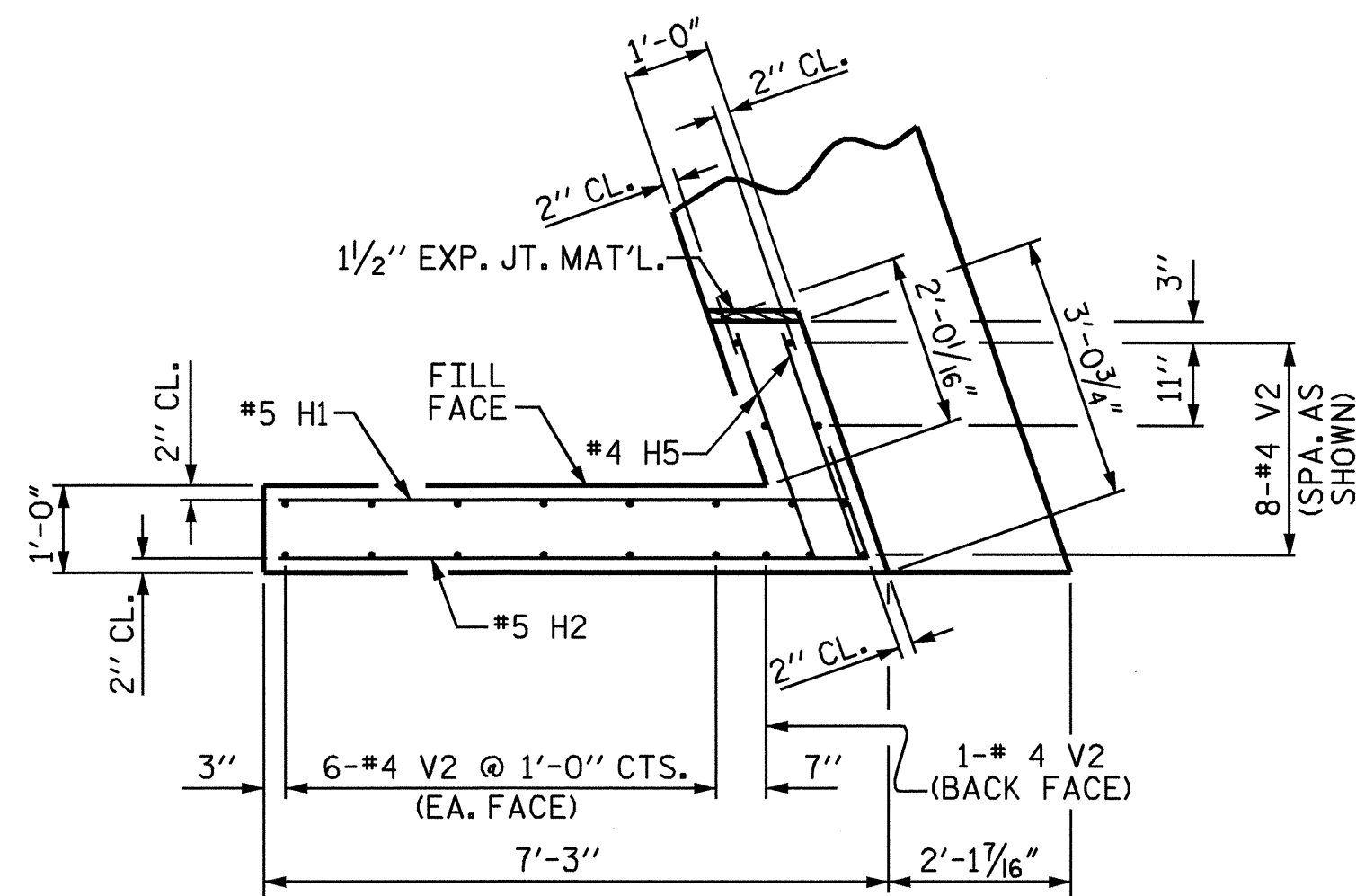
BEARING ASSEMBLIES ARE SHOWN AT \odot BEARING.
 V1 BARS ON BACK FACE ARE DIMENSIONED OFF \odot GIRDER.

PROJECT NO. U-3816
HOKE COUNTY
 STATION: 50+72.21 -L-
 SHEET 1 OF 3

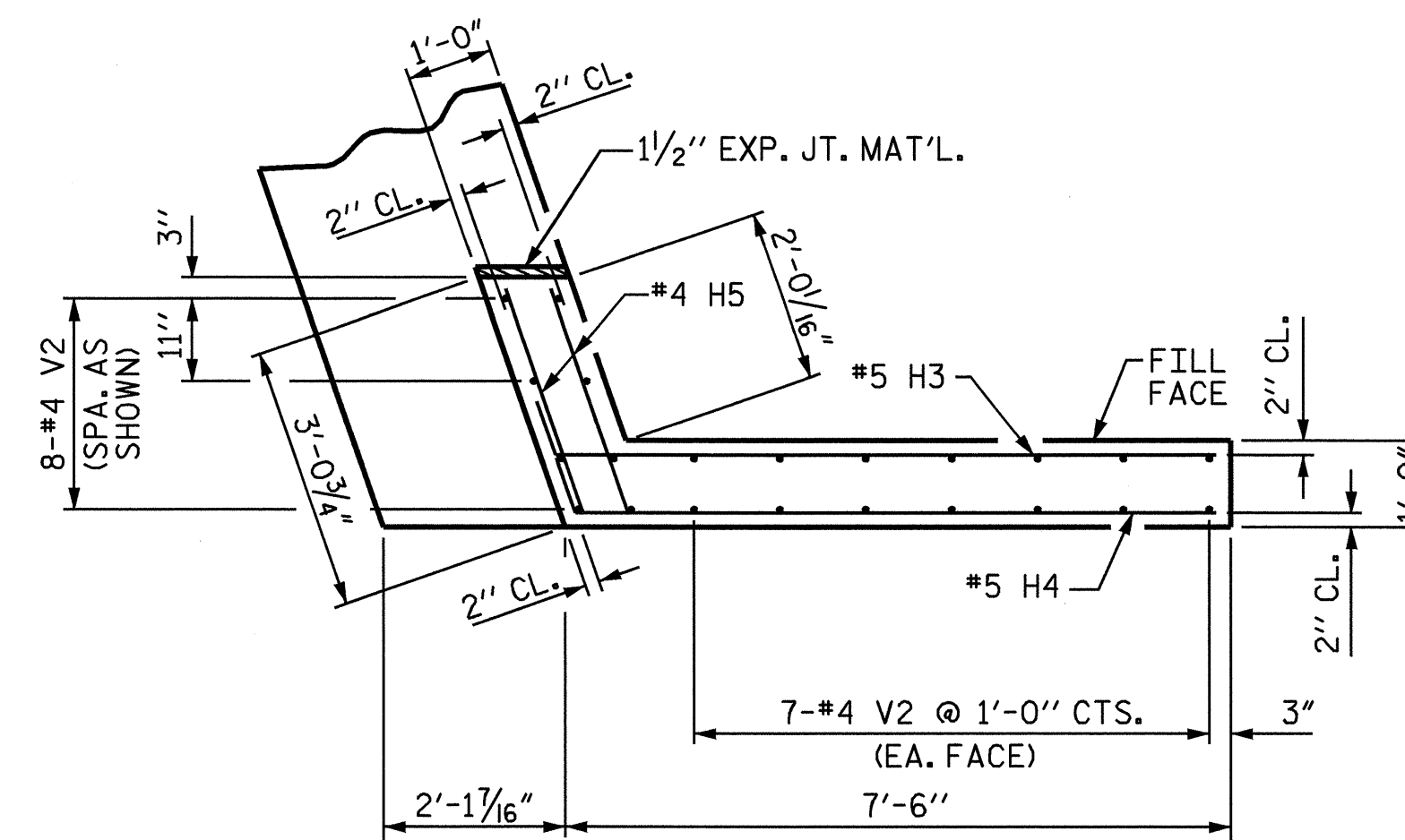
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE INTEGRAL END BENT 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-26
					TOTAL SHEETS 32



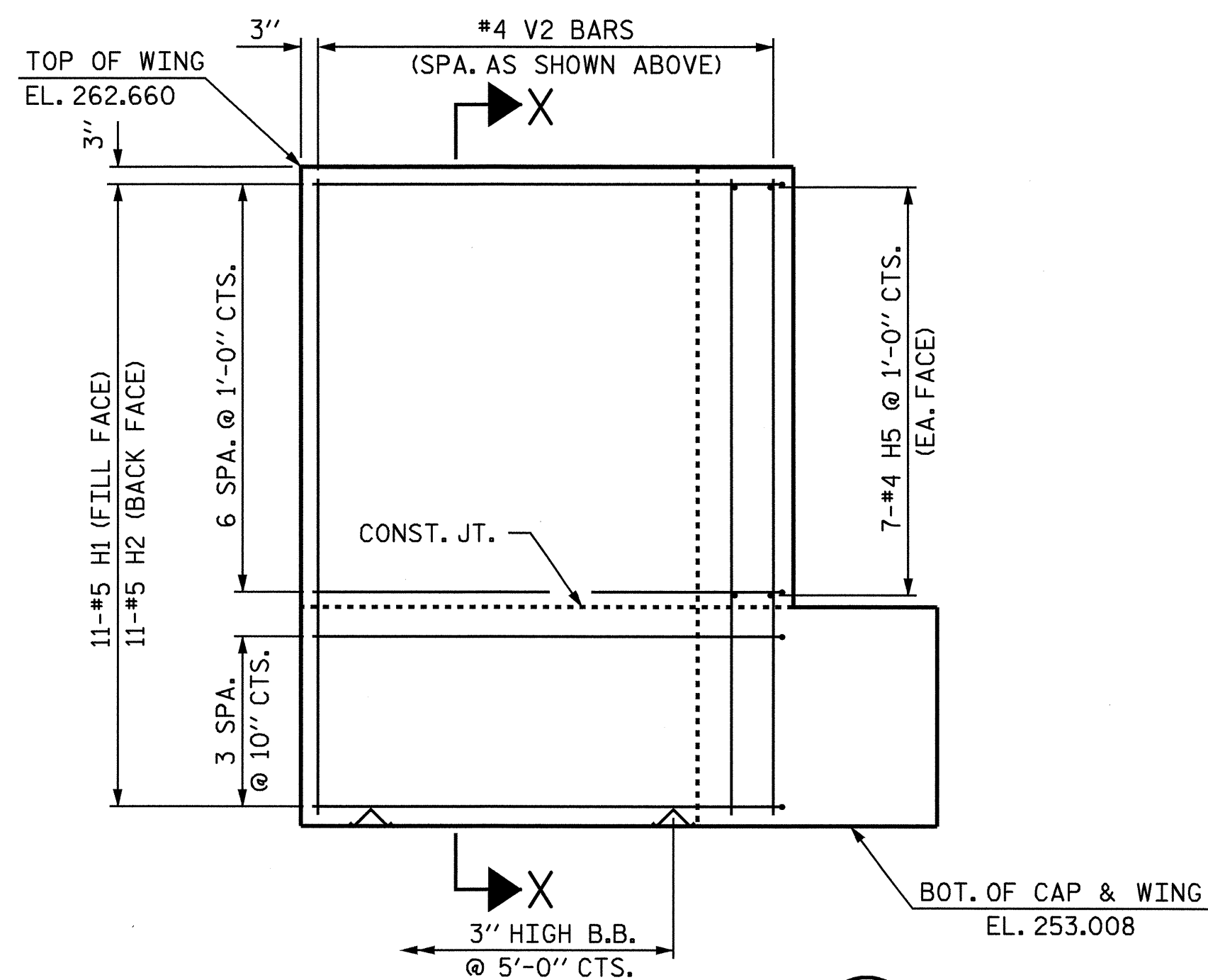
DRAWN BY: A.S. CALLAWAY DATE: 3/5/07
 CHECKED BY: P.C. BREWER DATE: 5/14/07



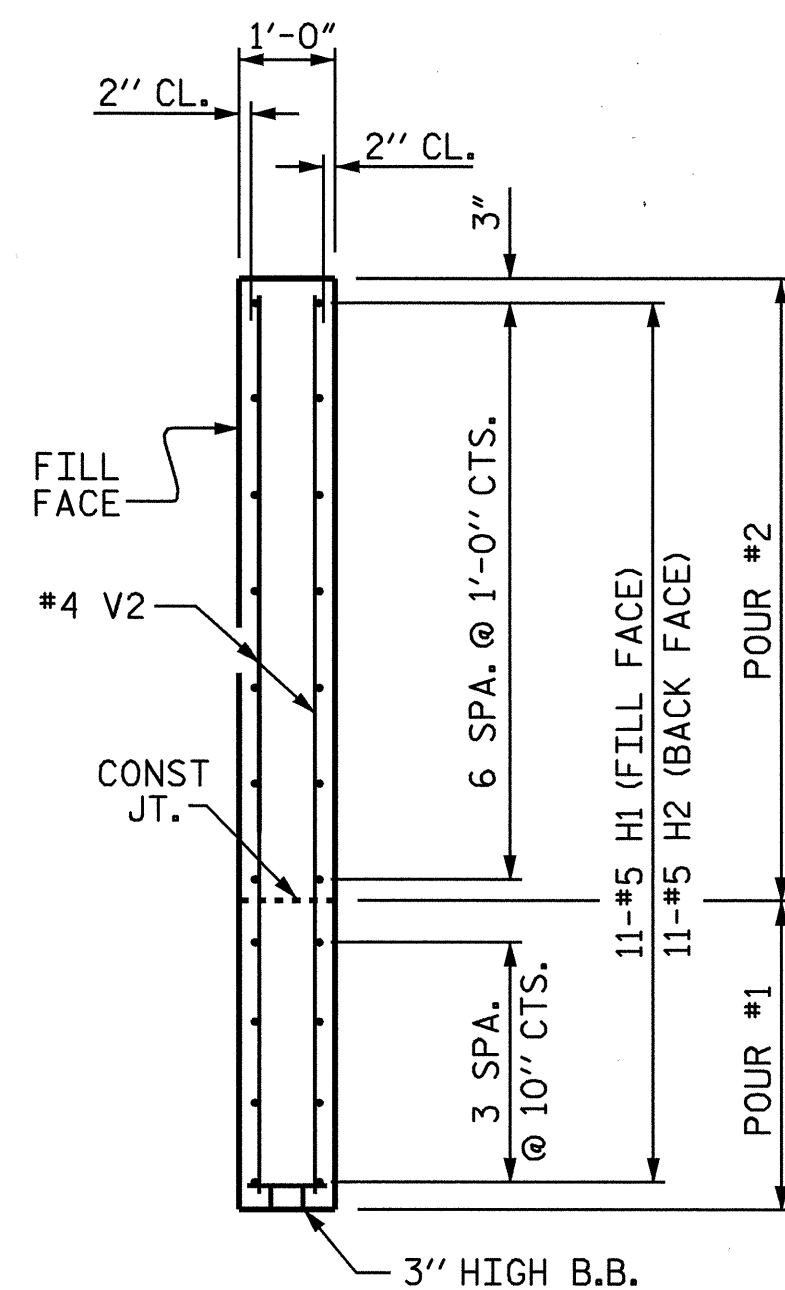
PLAN OF WING (W1)



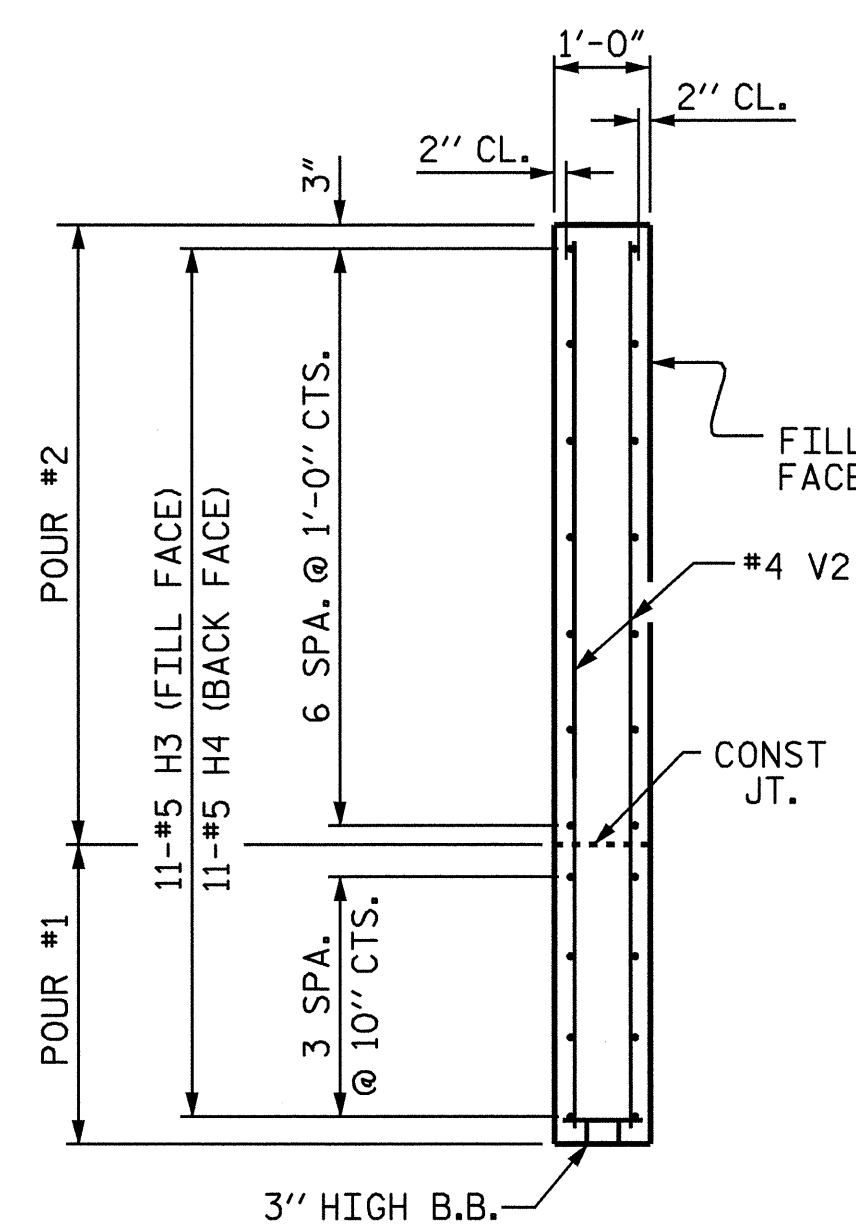
PLAN OF WING (W2)



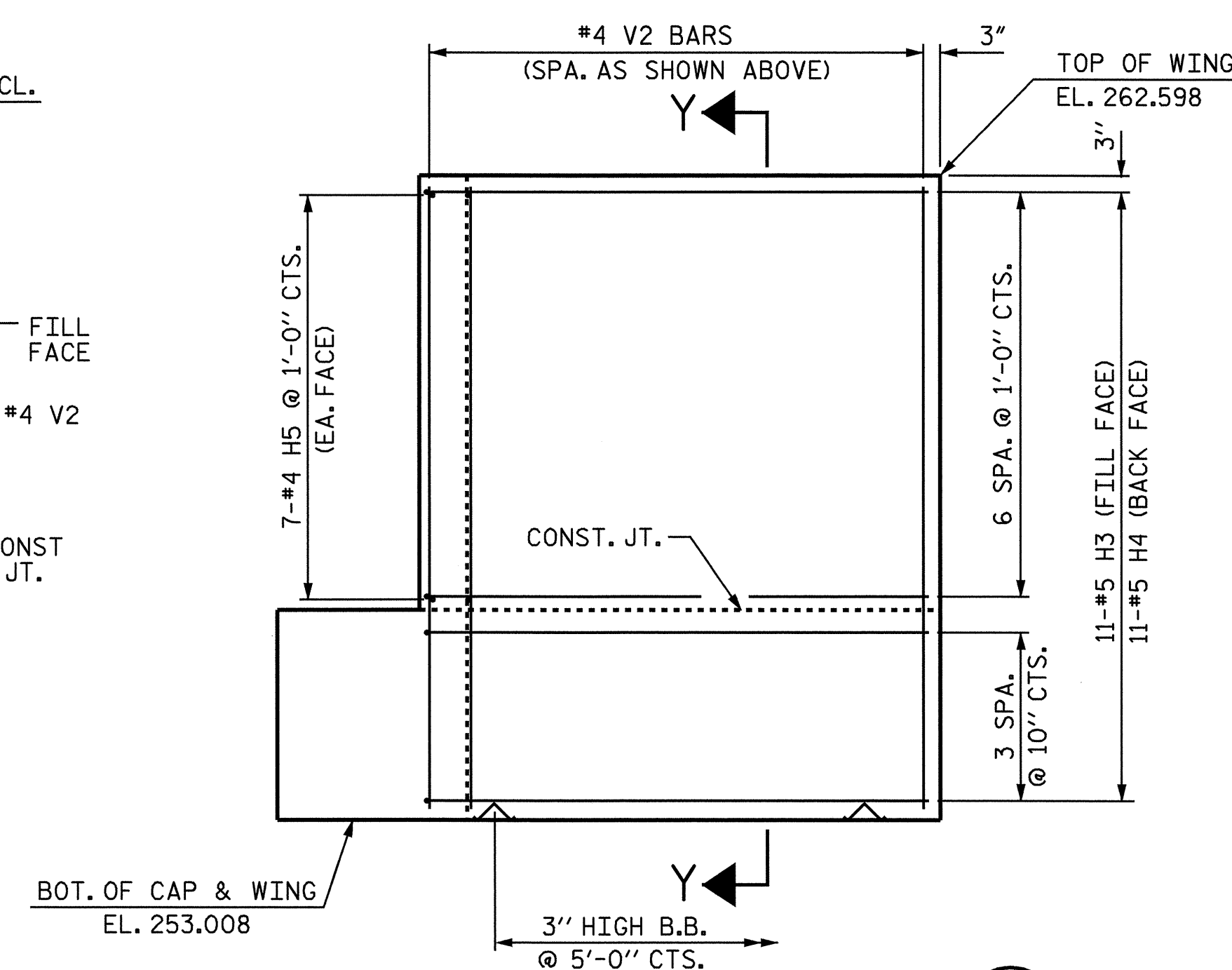
ELEVATION OF WING (W1)



SECTION X-X



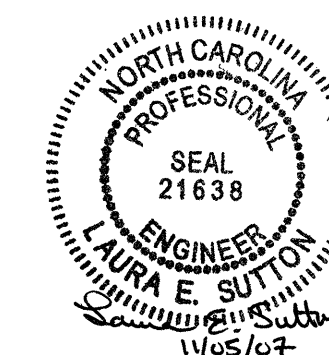
SECTION Y-Y



ELEVATION OF WING (W2)

PROJECT NO. U-3816
HOKE COUNTY
 STATION: 50+72.21 -L-

SHEET 2 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

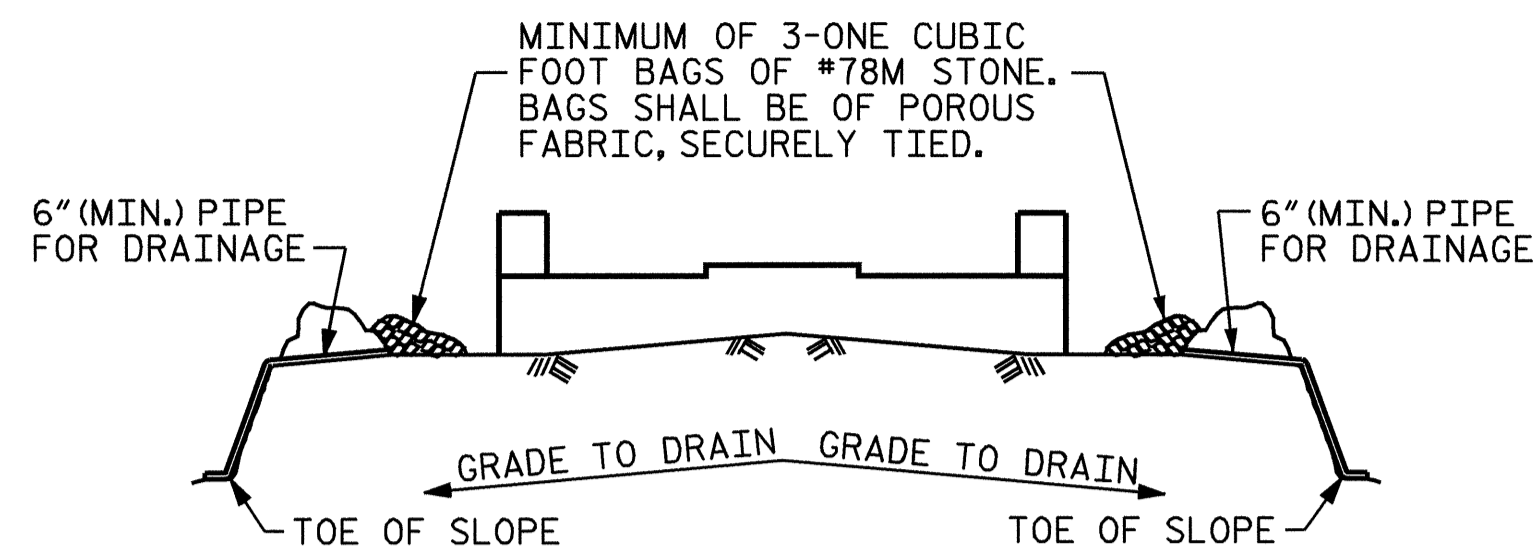
SUBSTRUCTURE
 INTEGRAL
 END BENT 2

REVISIONS

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

SHEET NO.	
S-27	TOTAL SHEETS
32	

DRAWN BY: A.S. CALLAWAY DATE: 3/5/07
 CHECKED BY: P.C. BREWER DATE: 5/14/07



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.

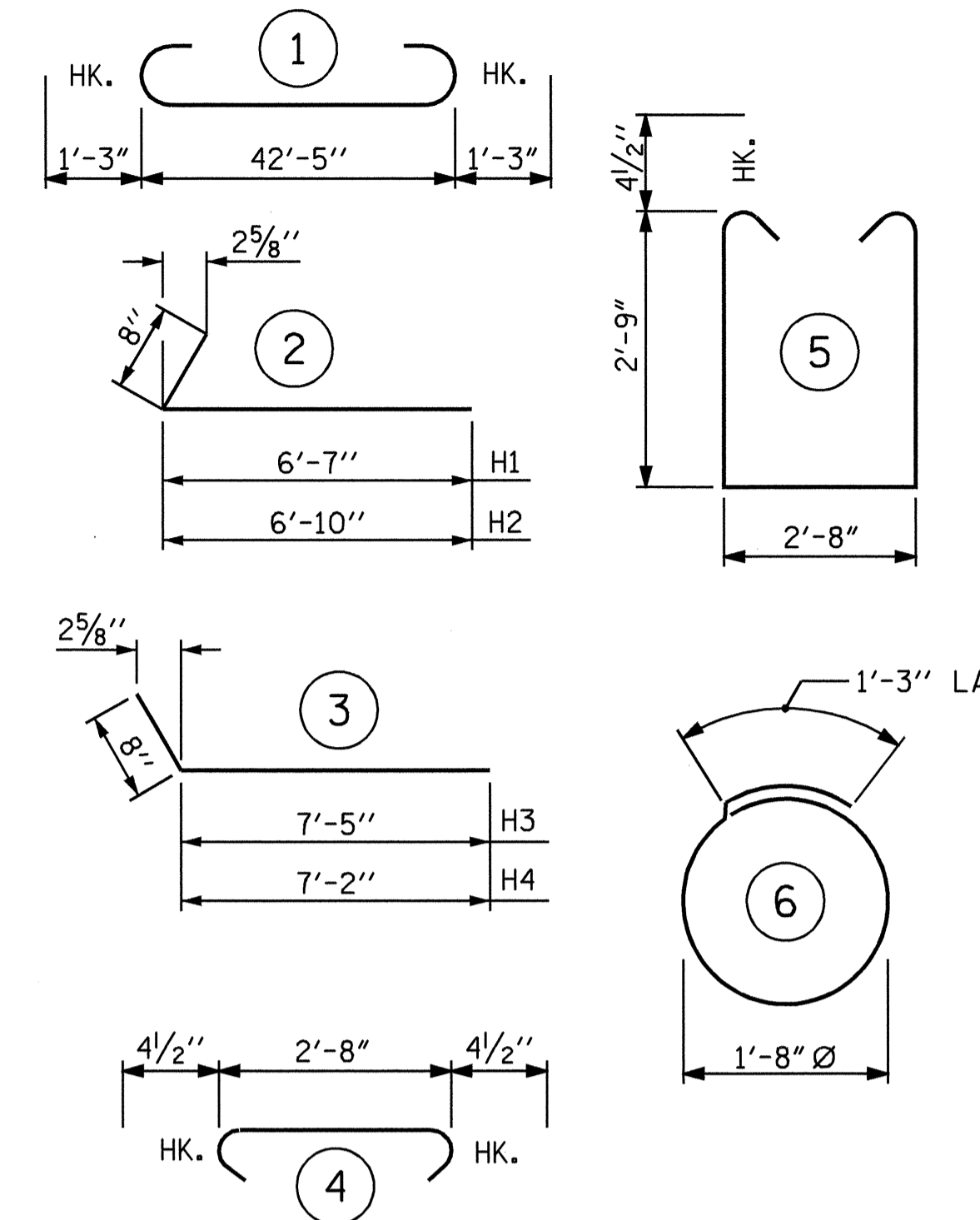
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.



BILL OF MATERIAL

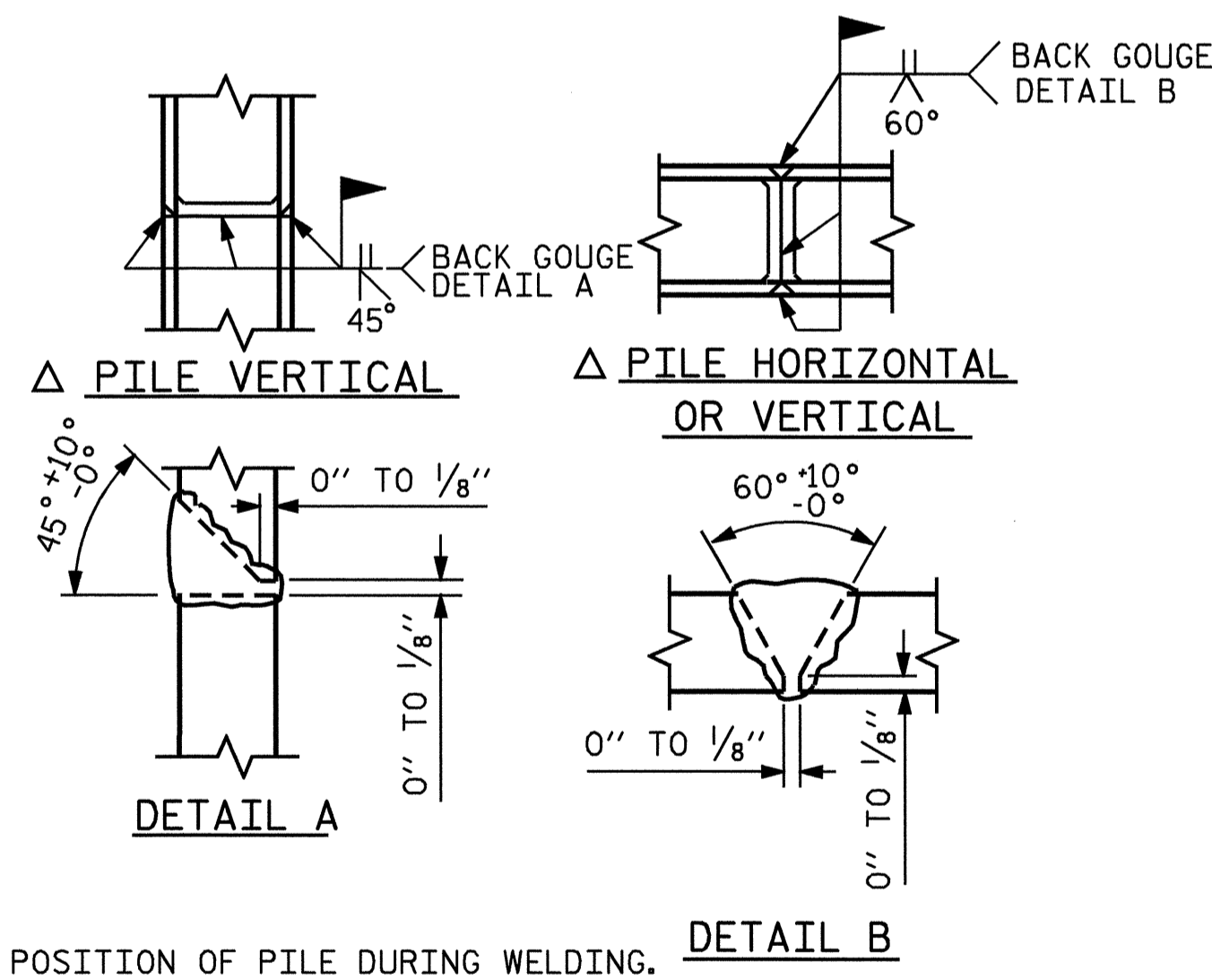
END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	44'-11"	1222
B2	4	#5	STR	42'-7"	178
B3	8	#4	STR	22'-7"	121
B4	11	#4	STR	2'-8"	20
H1	11	#5	2	7'-3"	83
H2	11	#5	2	7'-6"	86
H3	11	#5	3	8'-1"	93
H4	11	#5	3	7'-10"	90
H5	28	#4	STR	2'-8"	50
S1	34	#4	5	8'-11"	203
S2	34	#4	4	3'-5"	78
S3	36	#4	6	6'-6"	156
V1	70	#4	STR	4'-11"	230
V2	43	#4	STR	9'-3"	266

REINFORCING STEEL LBS. 2,876

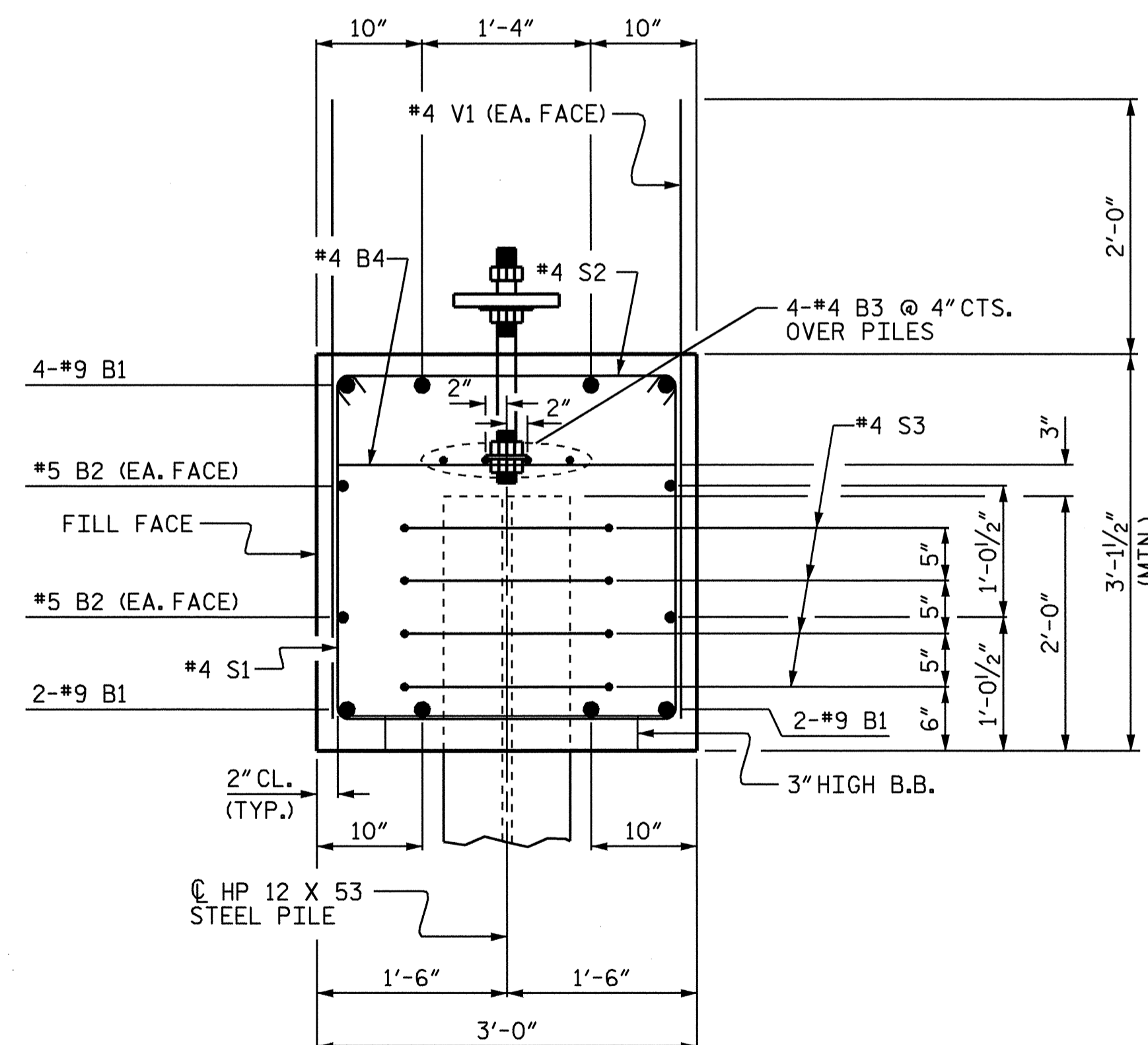
CLASS A CONCRETE BREAKDOWN :
 POUR #1 - CAP & LOWER WINGS CU. YDS. 16.8
 POUR #2 - UPPER WINGS CU. YDS. 4.5
 TOTAL CU. YDS. 21.3

HP 12 x 53 STEEL PILES
 NO. = 9 LIN. FT. 720



Δ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



SECTION A-A

PROJECT NO. U-3816
HOKE COUNTY
 STATION: 50+72.21 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

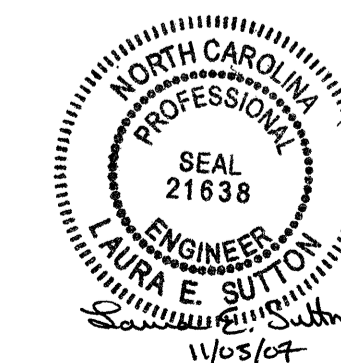
SUBSTRUCTURE
 INTEGRAL
 END BENT 2

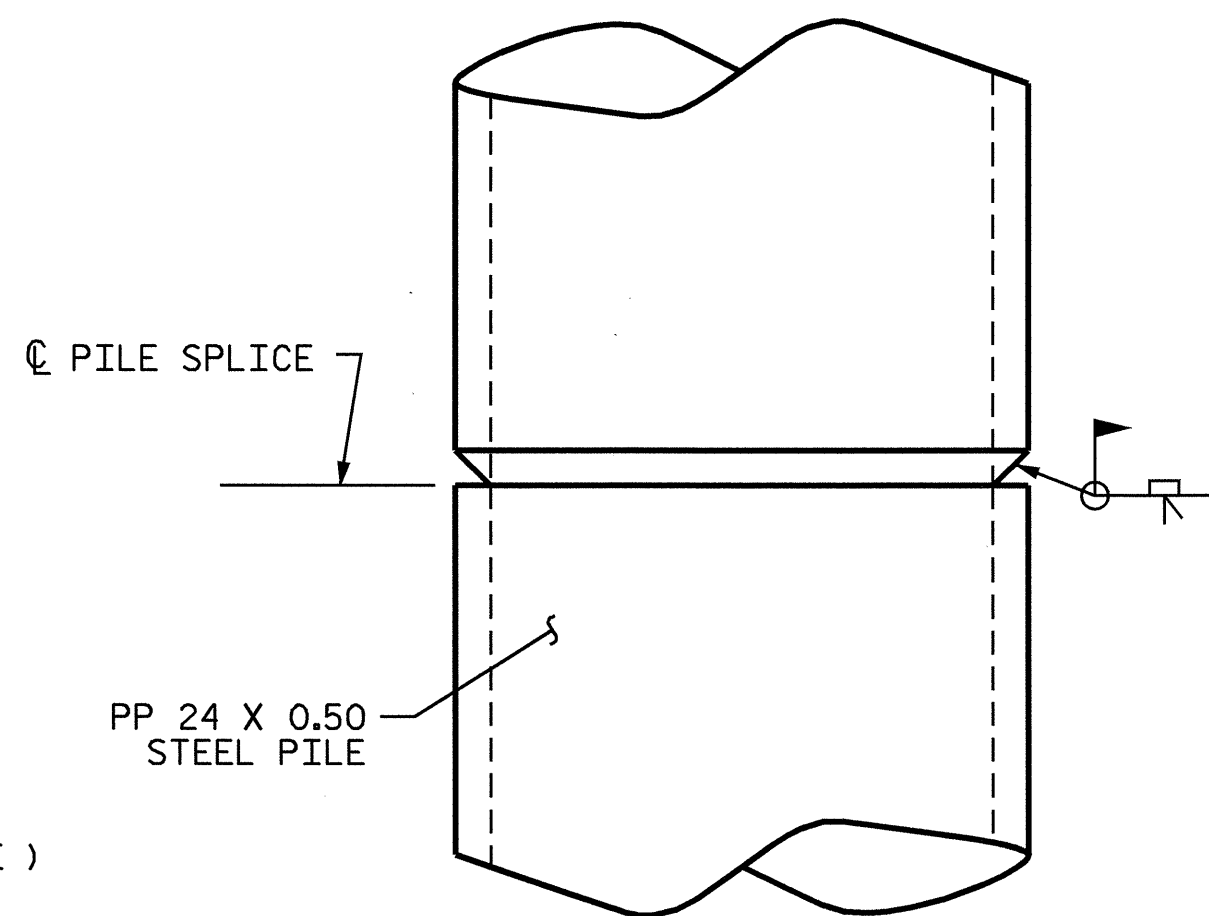
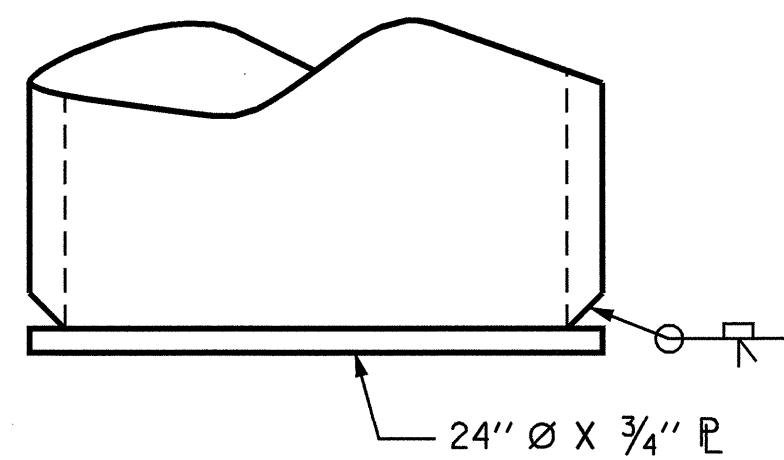
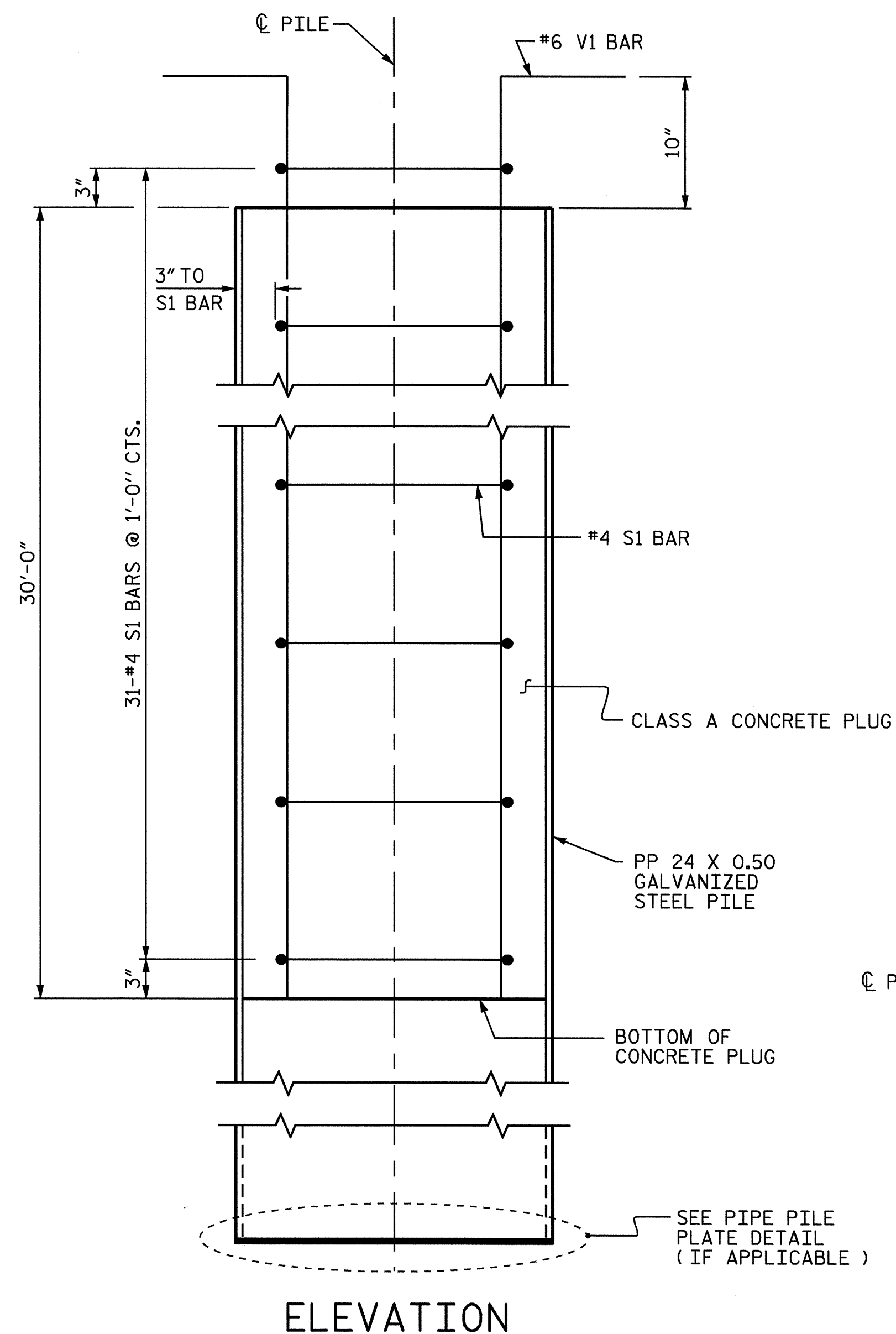
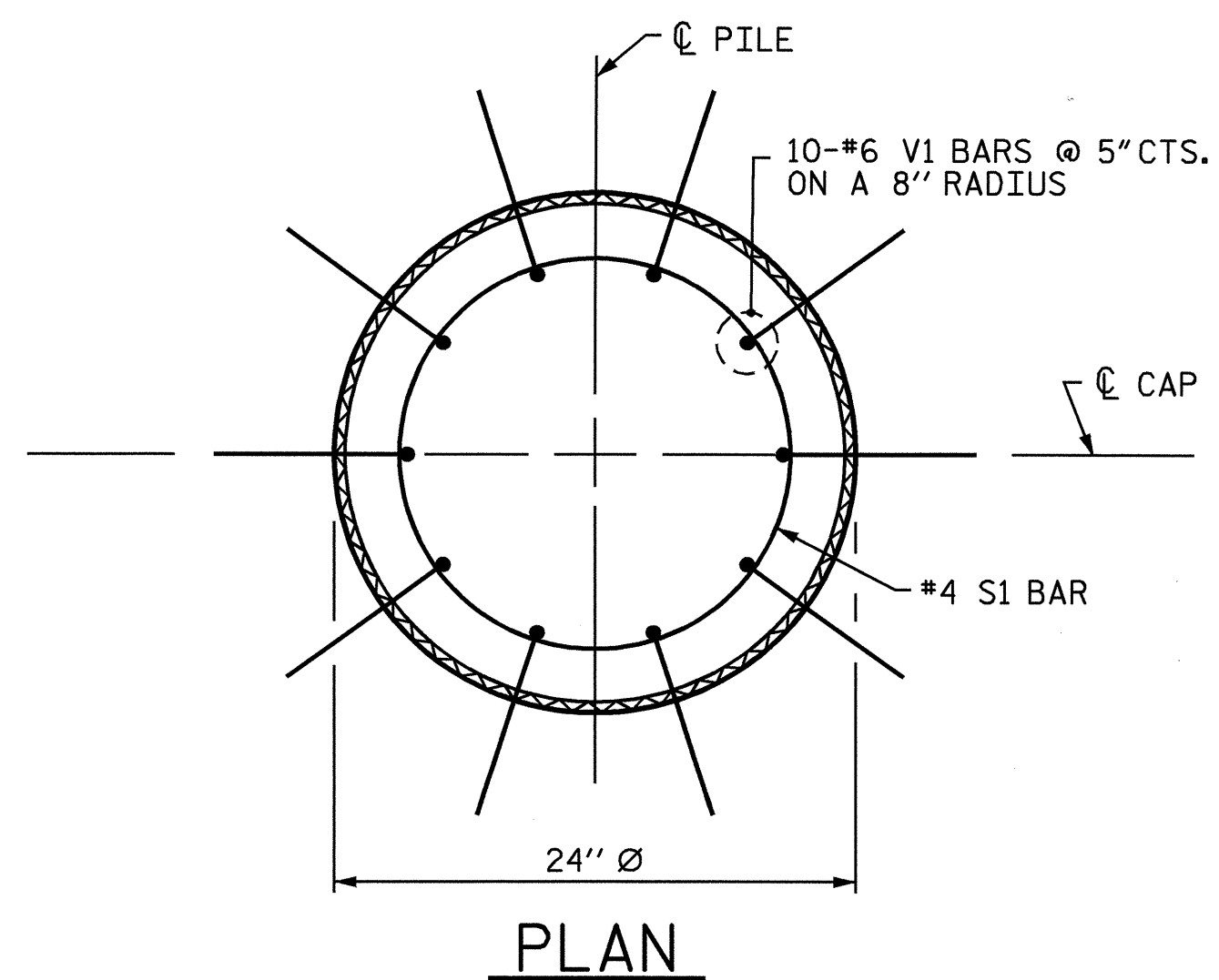
REVISIONS

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

SHEET NO.
 S-28
 TOTAL SHEETS
 32

DRAWN BY : A.S. CALLAWAY DATE : 3/5/07
 CHECKED BY : P.C. BREWER DATE : 5/14/07





PP 24 X 0.50 GALVANIZED STEEL PILE
(OPEN OR CLOSED END)

NOTES

STEEL PIPE PILES SHALL BE OF UNIFORM DIAMETER AND MEET THE REQUIREMENTS OF ASTM A252, GRADE 3 MODIFIED (50,000 PSI YIELD STRENGTH).

GALVANIZE STEEL PIPE PILES IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS UNLESS METALLIZING IS REQUIRED.

PIPE PILE PLATES MAY BE REQUIRED. SEE GENERAL DRAWING NOTES. GALVANIZING OR METALLIZING PIPE PILE PLATES IS NOT REQUIRED.

REMOVE AND REPLACE OR REPAIR TO THE SATISFACTION OF THE ENGINEER PILES THAT ARE DAMAGED, DEFORMED OR COLLAPSED DURING INSTALLATION OR DRIVING.

PILE SPLICES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND AWS D1.1.

FOR CLOSED END PIPE PILES, REMOVE ALL SOIL AND WATER FROM INSIDE THE PILES JUST PRIOR TO PLACING REINFORCING STEEL AND CONCRETE FOR THE CONCRETE PLUG.

FOR OPEN END PIPE PILES, REMOVE ENOUGH SOIL AND WATER FROM INSIDE THE PILES TO CONSTRUCT THE CONCRETE PLUG WITHOUT FOULING THE CONCRETE.

FORM THE CONCRETE PLUG SUCH THAT THE REINFORCING STEEL OR CONCRETE DOES NOT MOVE AND THE CLEARANCE FROM THE REINFORCING STEEL TO THE INSIDE OF THE PILE IS MAINTAINED AFTER CONCRETE PLACEMENT. DO NOT PLACE CONCRETE IN THE BENT CAP UNTIL THE CONCRETE PLUG HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI.

THE REINFORCING STEEL, CLASS A CONCRETE, AND GALVANIZING ARE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR PP 24 X 0.50 GALVANIZED STEEL PILES.

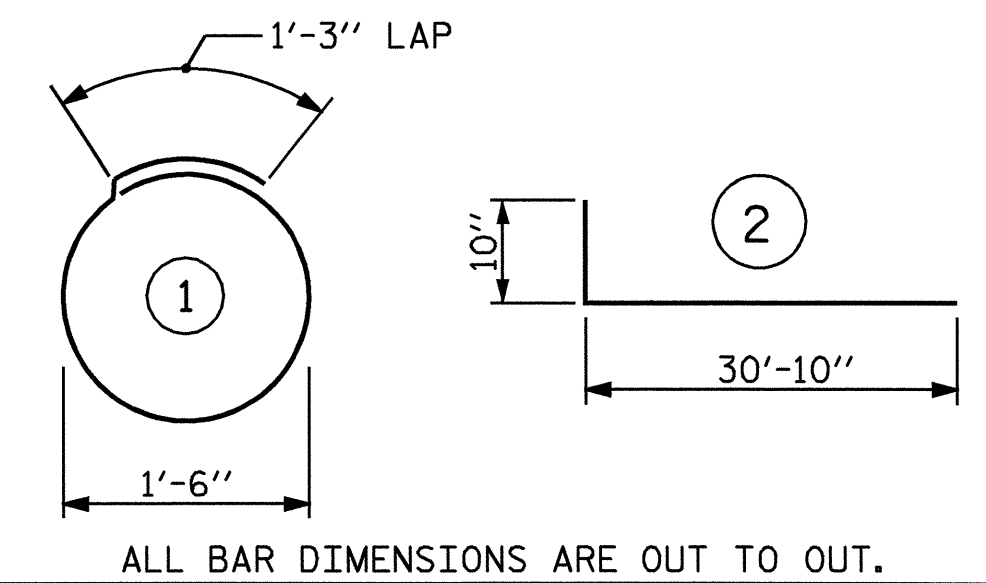
BILL OF MATERIAL FOR ONE
PP 24 X 0.50 STEEL PILE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	31	#4	1	6'-0"	124
V1	10	#6	2	31'-8"	476

REINFORCING STEEL LBS. 600

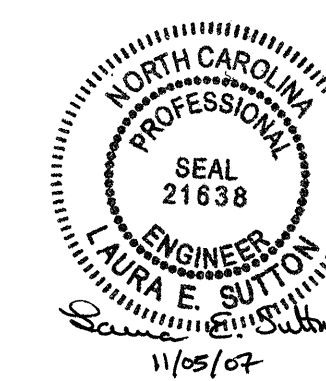
CLASS A CONCRETE
30'-0" MINIMUM PLUG CU. YDS. 3.2

BAR TYPES



PROJECT NO. U-3816
HOKE COUNTY
STATION: 50+72.21 -L-

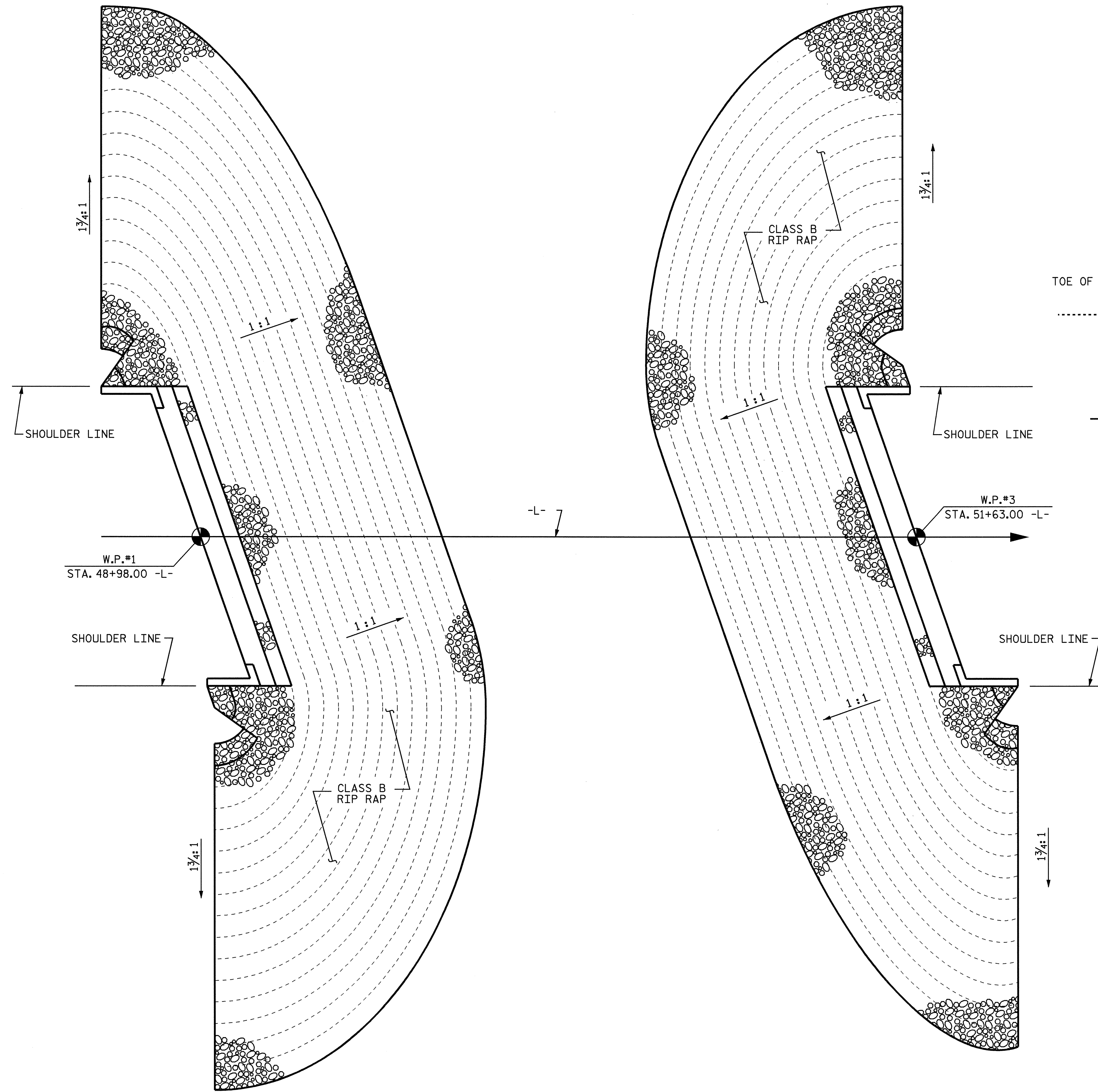
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
24" STEEL PIPE PILE



ASSEMBLED BY : William J. Parker DATE : 05/07/07
CHECKED BY : P.C. BREWER DATE : 5/14/07
DRAWN BY : TLA 8/05
CHECKED BY : GM 9/05

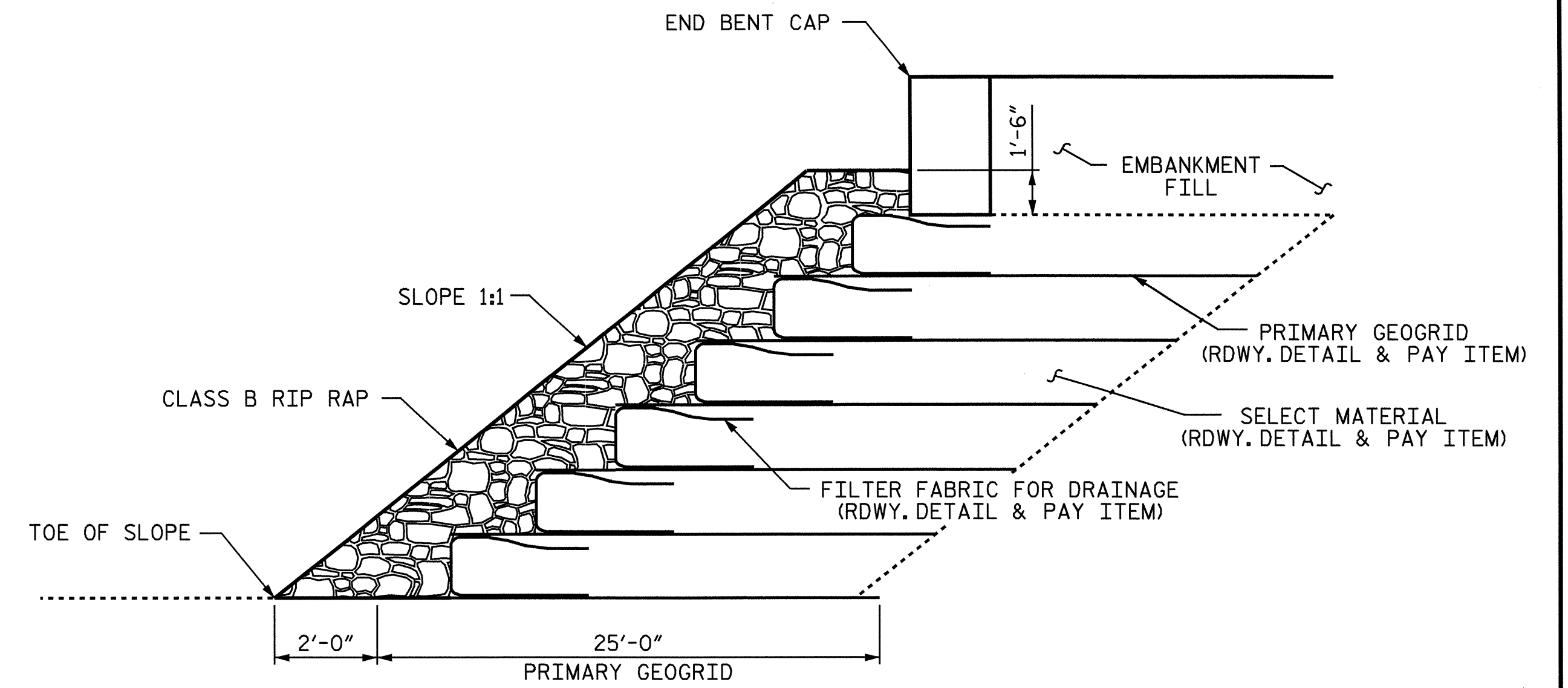
ADDED 10/1/05
REV. 5/1/06 TLA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			32



PLAN @ END BENT 1

PLAN @ END BENT 2



TYPICAL SECTION AT END SLOPE FOR PRIMARY GEOGRID REINFORCEMENT

ESTIMATED QUANTITIES	
	RIP RAP CLASS B
	TONS
END BENT 1	463
END BENT 2	387

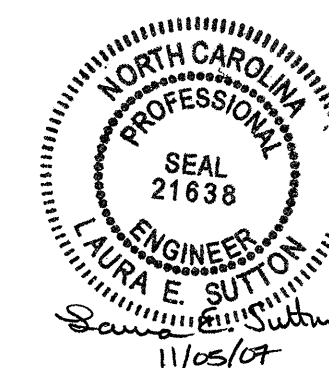
NOTES

END SLOPES SHALL BE REINFORCED USING GEOGRID REINFORCEMENT. FOR PAY ITEMS AND DETAILS, SEE ROADWAY PLANS FOR "GEOGRID REINFORCED SOIL SLOPE".

RIP RAP SHALL BE CLASS B STONE.

FOR BERM DIMENSIONS, SEE GENERAL DRAWING.

PROJECT NO. U-3816
HOKE COUNTY
 STATION: 50+72.21 -L-



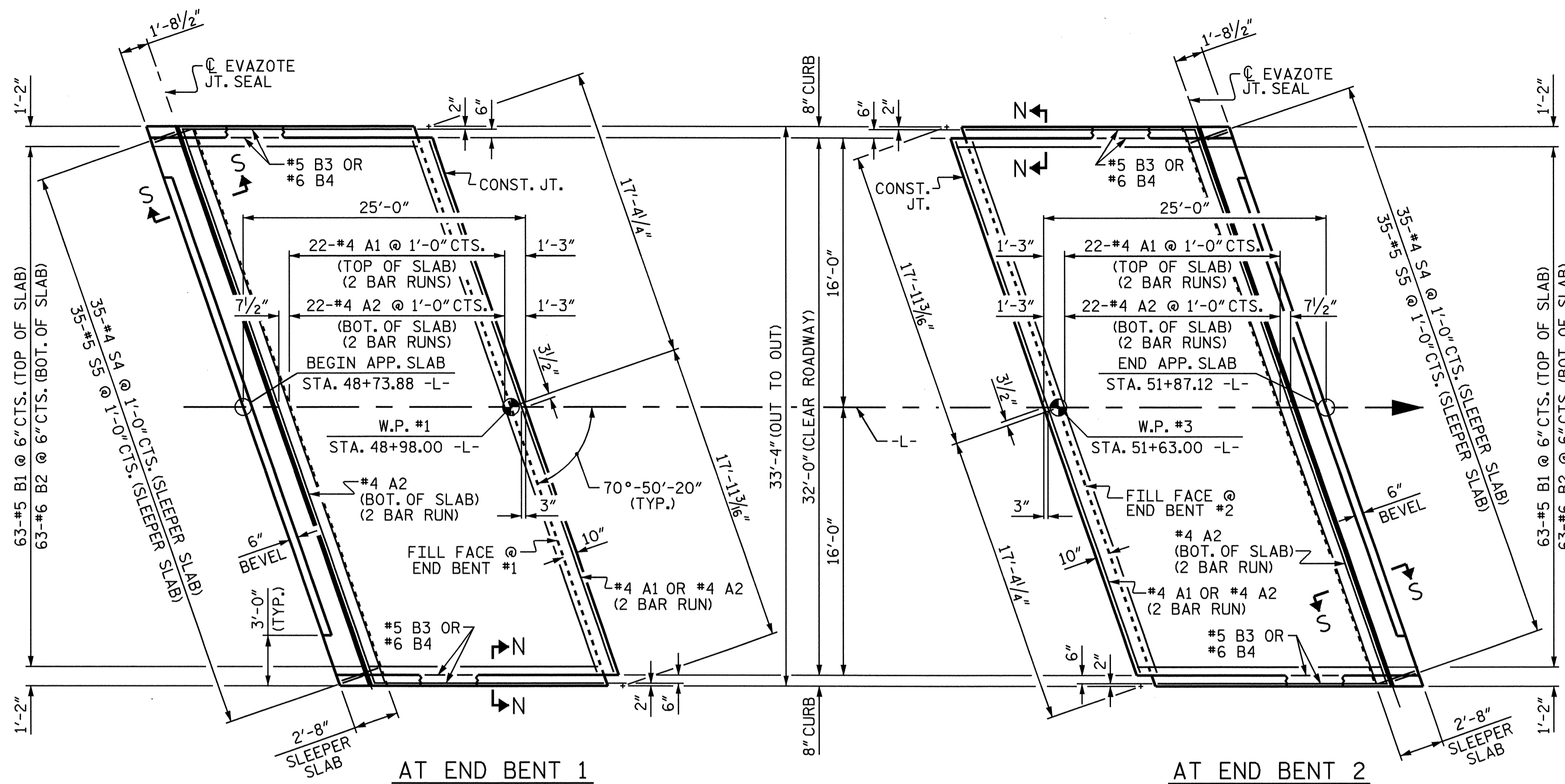
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

RIP RAP

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

S-30
 TOTAL SHEETS
 32

DRAWN BY: William J. Parker DATE: 07/23/07
 CHECKED BY: P.C. BREWER DATE: 7/26/07



PLAN OF APPROACH SLAB

*4 A1 IN SLEEPER SLAB NOT SHOWN FOR CLARITY.

NOTES

APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
 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.

THE VERTICAL JOINT ON THE RIGHT AND LEFT SIDE OF THE APPROACH SLAB AT THE ENDS OF THE EVAZOTE JOINT SHALL BE FILLED WITH SILICONE OR OTHER APPROVED MATERIAL IN ORDER TO PREVENT BACKFILL FROM ENTERING THE JOINT OPENING.

THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE SL LOW MODULUS SILICONE SEALANT.

GROOVING BRIDGE FLOORS IS NOT REQUIRED ON TOP SURFACE OF THE SLEEPER SLAB. INSTEAD, APPLY A BROOMED TEXTURE IN ACCORDANCE WITH ARTICLE 442-3 OF THE STANDARD SPECIFICATIONS.

WITH EVAZOTE JOINT SEAL

FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2 1/2".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D)

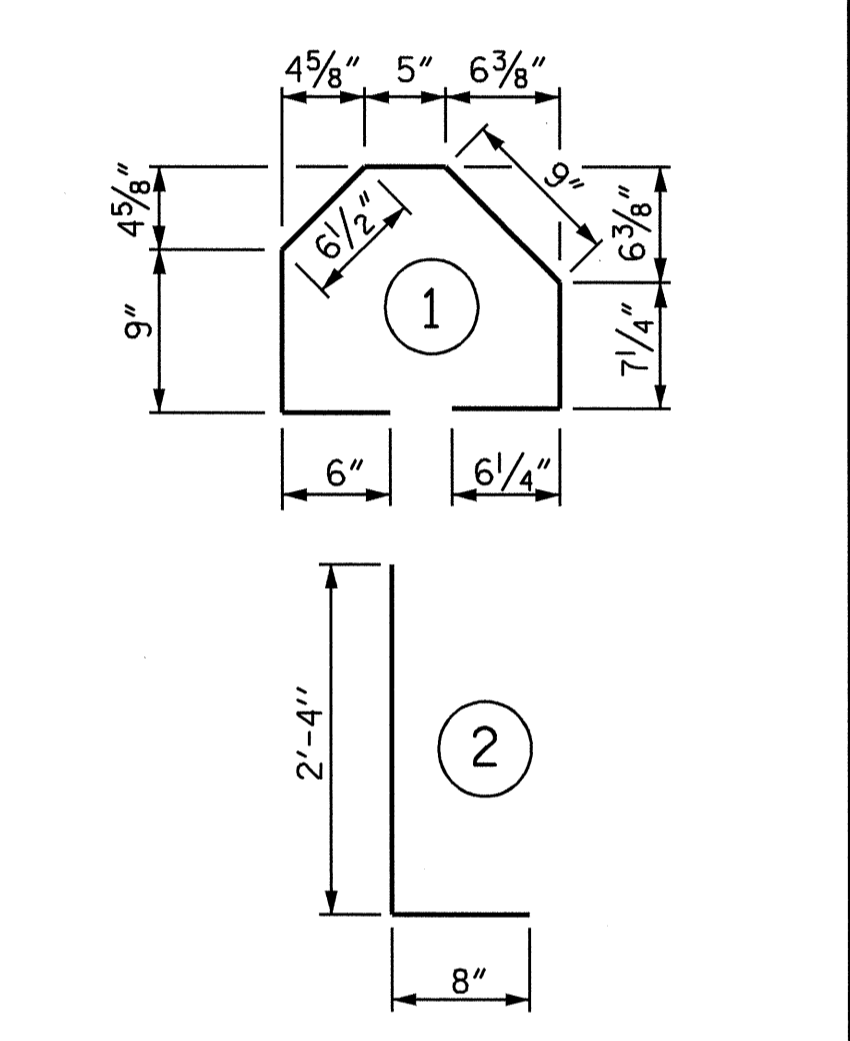
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	60	#4	STR	18'-6"	741
A2	48	#4	STR	18'-5"	591
* B1	63	#5	STR	22'-3"	1462
B2	63	#6	STR	22'-9"	2153
* B3	4	#5	STR	21'-5"	89
B4	4	#6	STR	21'-10"	131
* S4	35	#4	1	4'-1"	95
S5	35	#5	2	3'-0"	110

REINFORCING STEEL LBS. 2,985

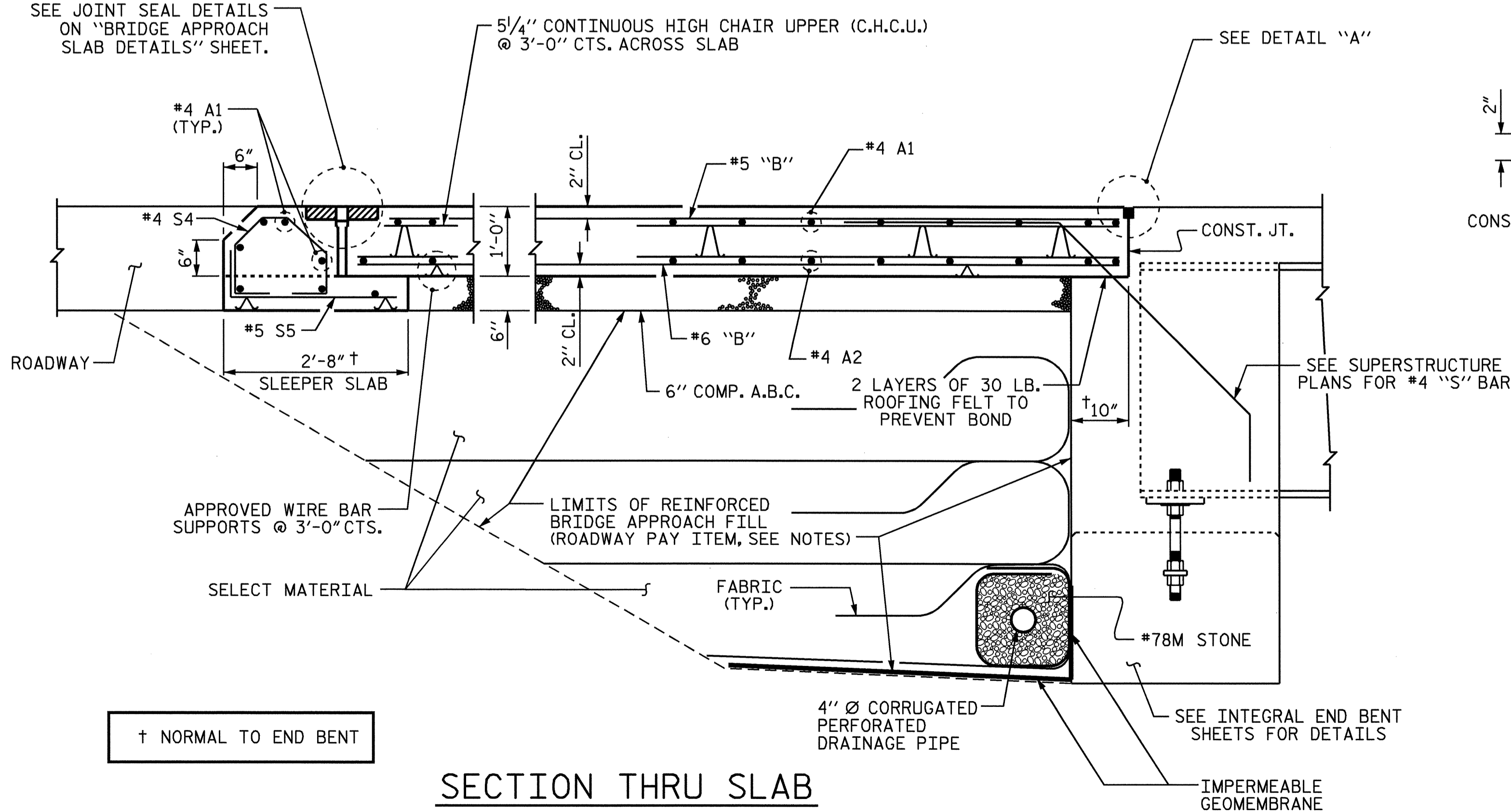
* EPOXY COATED REINFORCING STEEL LBS. 2,387

CLASS AA CONCRETE
 POUR #1 - SLEEPER SLAB CU. YDS. 3.7
 POUR #2 - SLAB & CURB CU. YDS. 28.6
 TOTAL CU. YDS. 32.3

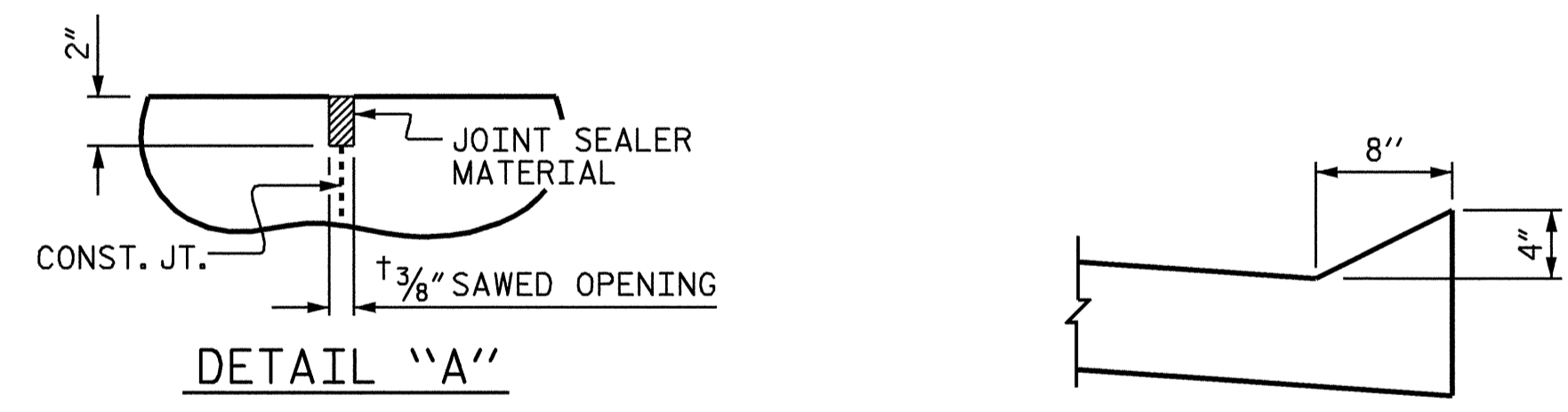
BAR TYPES



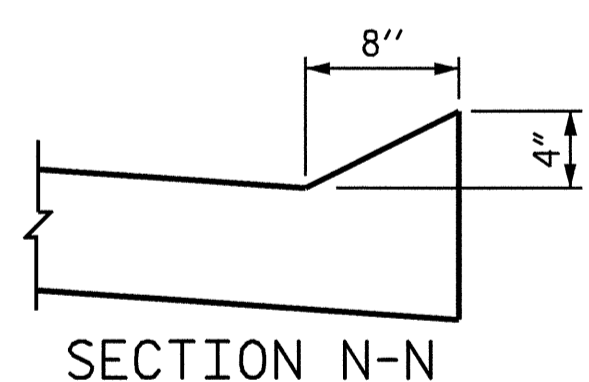
ALL BAR DIMENSIONS ARE OUT TO OUT.



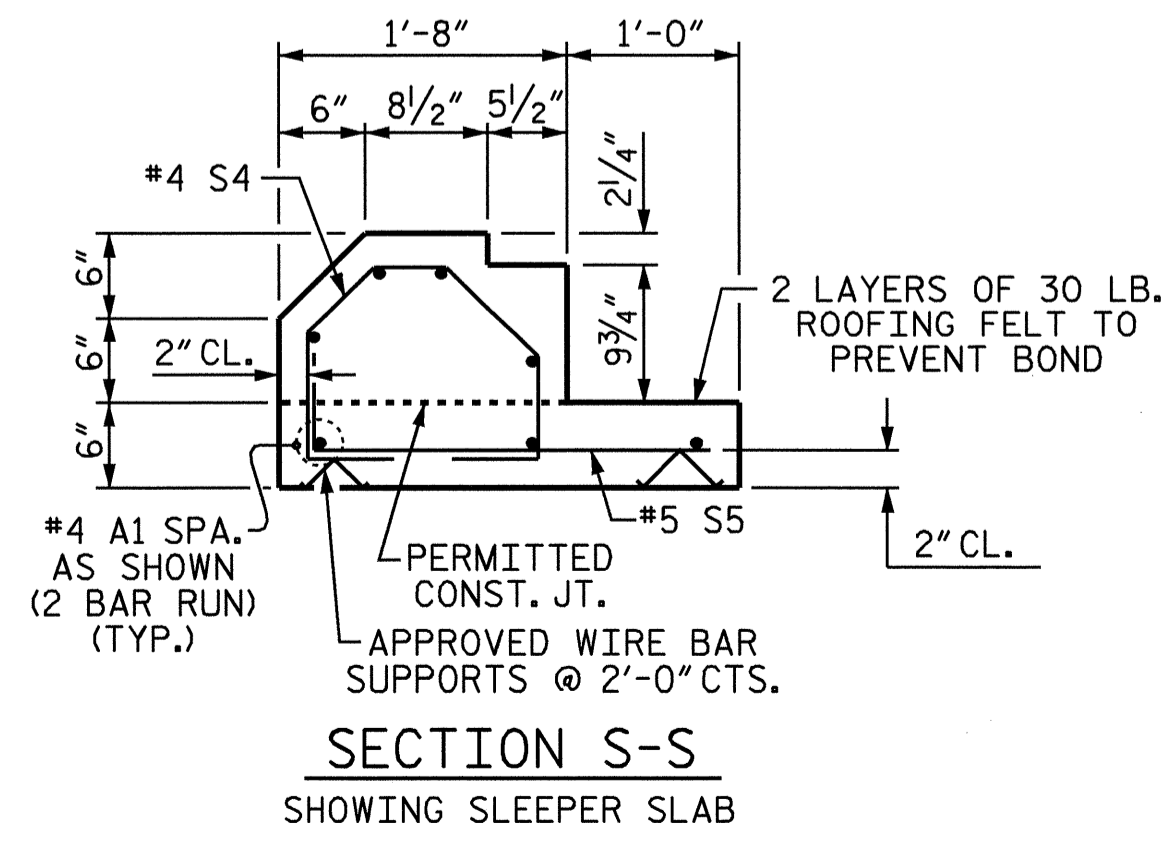
SECTION THRU SLAB



DETAIL "A"



SECTION N-N

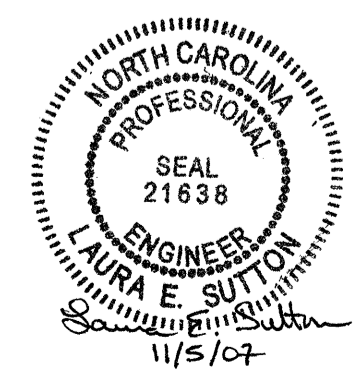


SECTION S-S
 SHOWING SLEEPER SLAB

PROJECT NO. U-3816
HOKE COUNTY
 STATION: 50+72.21 -L-

SHEET 1 OF 2

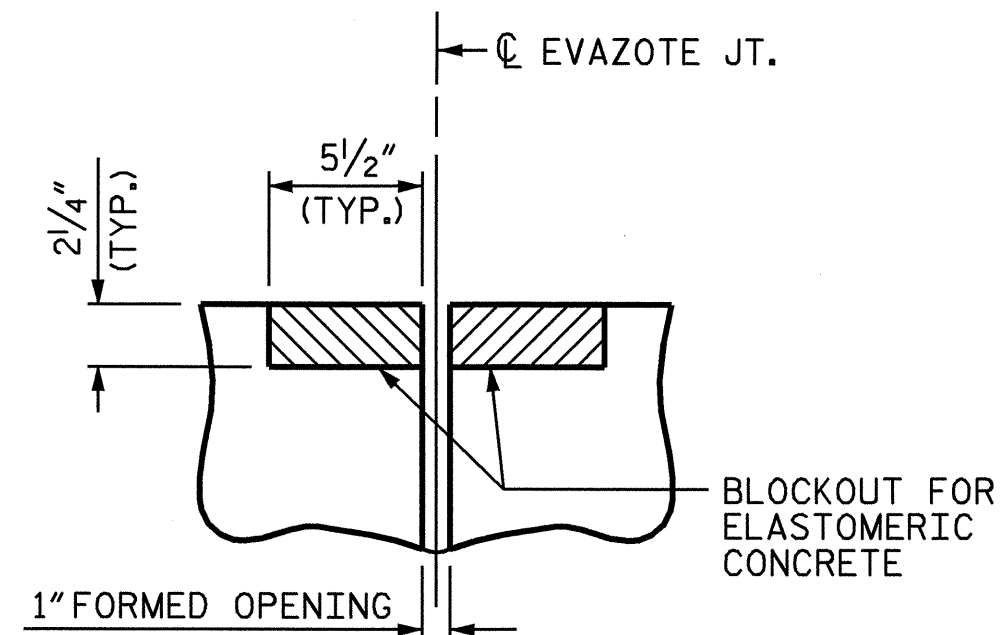
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR
 INTEGRAL ABUTMENT



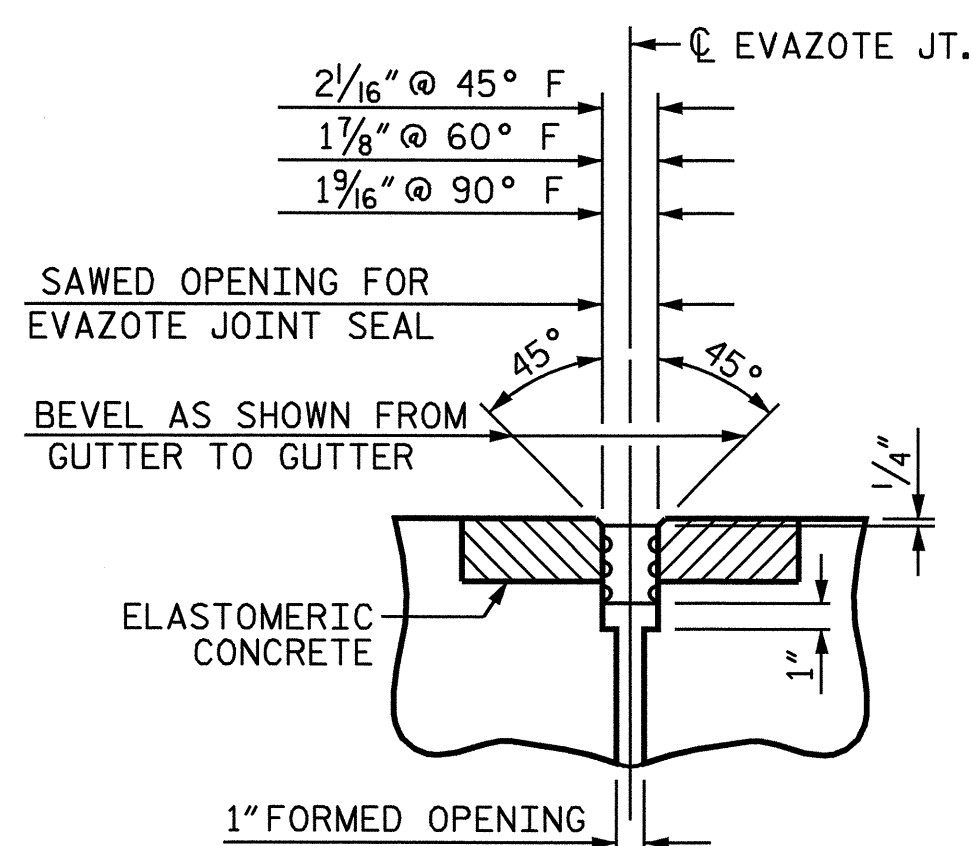
ASSEMBLED BY: E.C. LOCKLEAR DATE: 4-17-07
 CHECKED BY: L.E. SUTTON DATE: 8-13-07
 DRAWN BY: TLA 10/05
 CHECKED BY: GM 5/06

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

STD. NO. BAS11



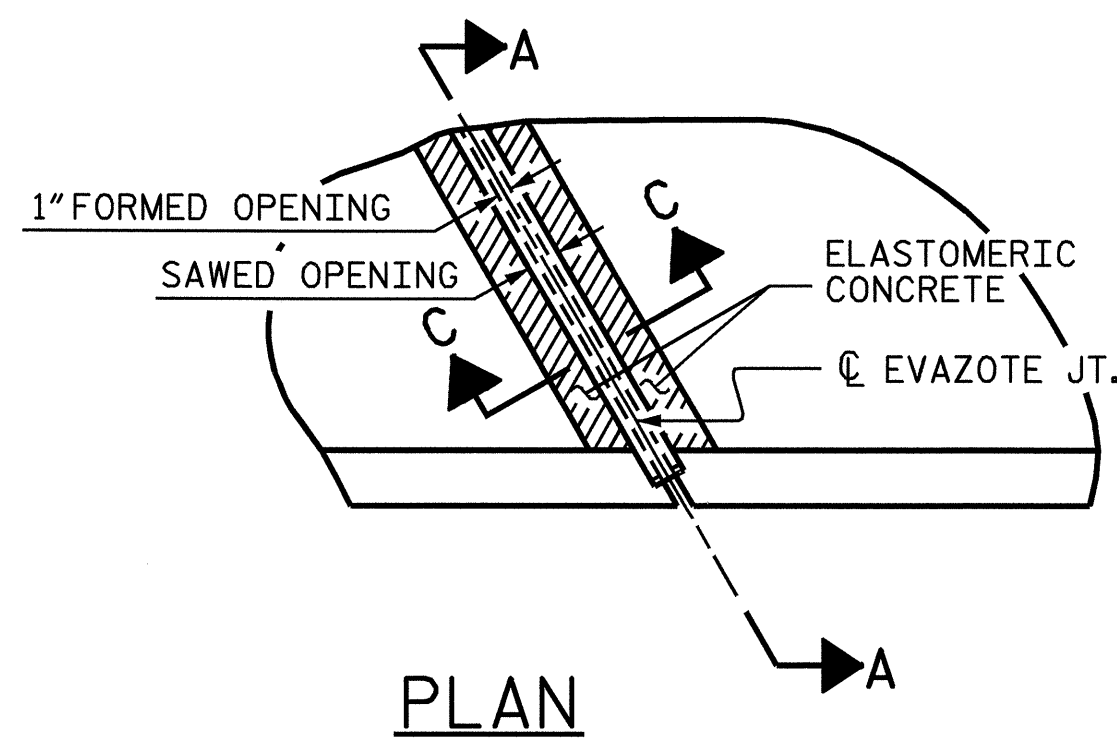
SECTION C-C
EVAZOTE JOINT SEAL
(PRE-SAWED ELASTOMERIC
CONCRETE DIMENSIONS)



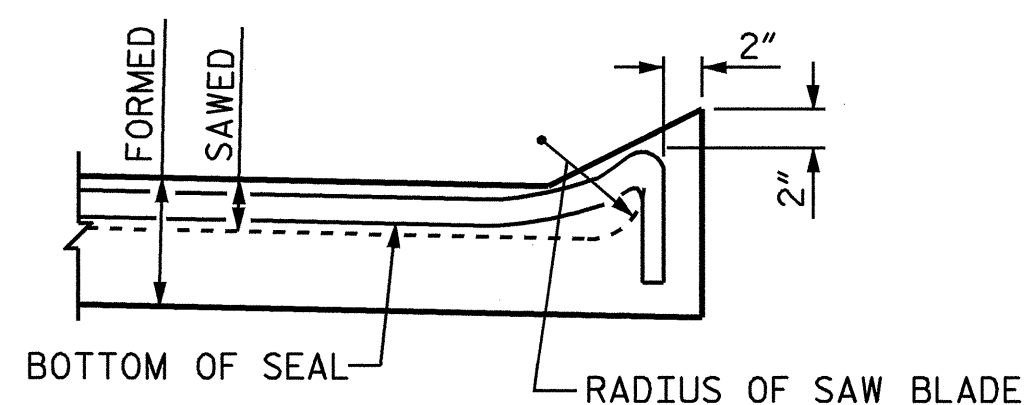
SECTION C-C
EVAZOTE JOINT SEAL

ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	5.8
2	5.8
TOTAL	11.6

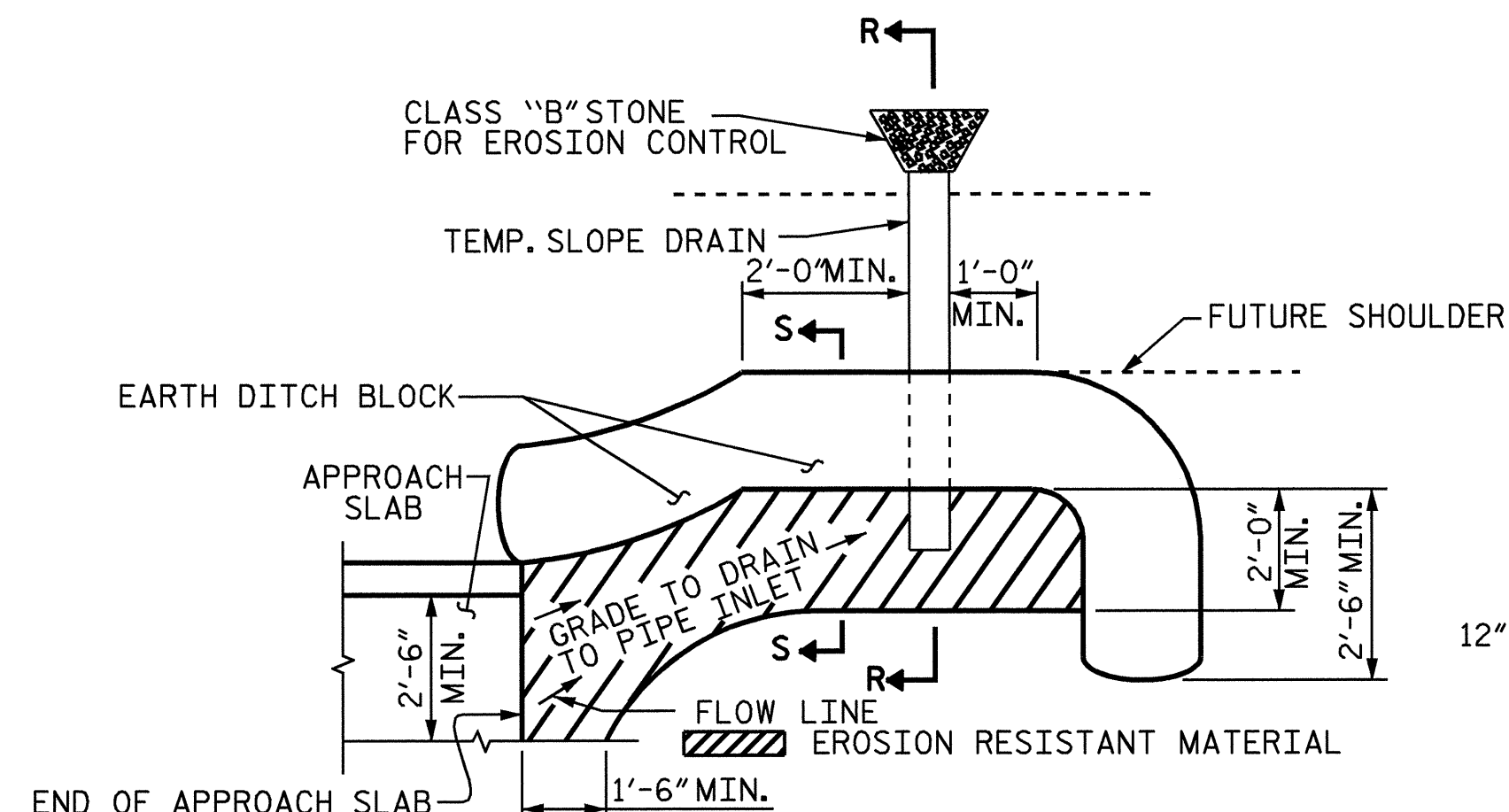
* BASED ON THE MINIMUM BLOCKOUT SHOWN.



PLAN

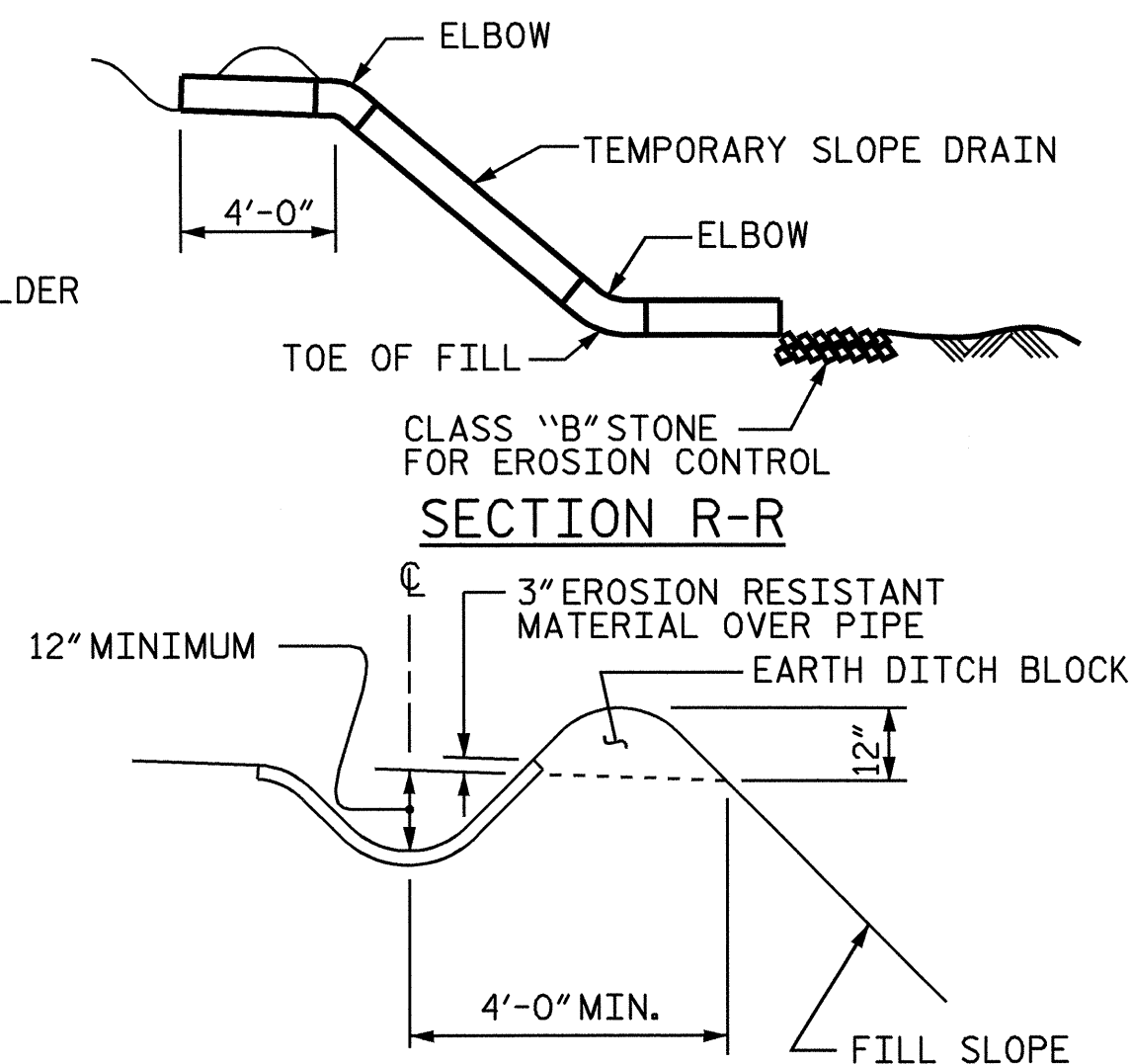


SECTION A-A



PLAN VIEW

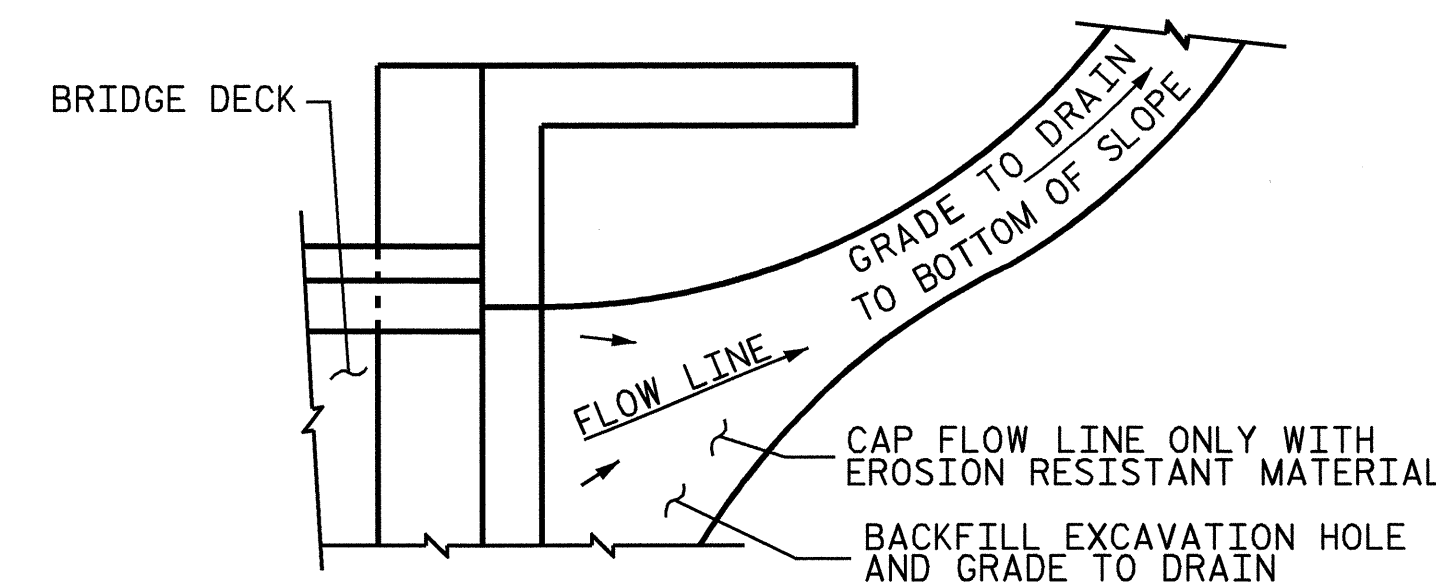
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAINAGE SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

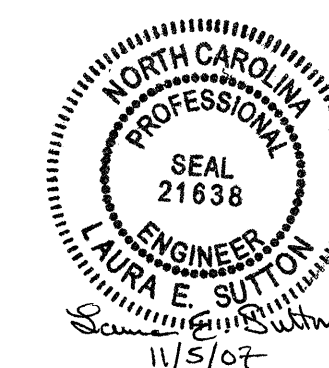
TEMPORARY DRAINAGE DETAIL

PROJECT NO. U-3816
HOKE COUNTY
STATION: 50+72.21 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH
SLAB DETAILS



REVISIONS						1988
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-32
2			4			TOTAL SHEETS
						32

ASSEMBLED BY: E.C. LOCKLEAR DATE: 4-17-07
CHECKED BY: L.E. SUTTON DATE: 8-13-07
DRAWN BY: FCJ 11/88 REV. 10/17/00 RWW/LES
CHECKED BY: ARB 11/88 REV. 5/7/03 RWW/JTE
REV. 5/1/06 TLA/GM

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2002 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; CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP; AND CLASS S SHALL BE USED FOR UNDERWATER FOOTING SEALS.

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 WITH THE EXCEPTION OF #2 BARS WHICH MAY BE FABRICATED FROM COLD DRAWN STEEL WIRE. 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.

PLACEMENT OF BEAM OR GIRDER MEMBERS ON TRUCKS FOR HAULING SHALL BE DONE IN COMPLIANCE WITH LIMITS SHOWN ON SKETCHES PROVIDED TO THE MATERIALS AND TEST UNIT APPROVED BY THE STRUCTURE DESIGN UNIT DATED MAY 8, 1991. THESE SKETCHES PRIMARILY LIMIT THE UNSUPPORTED CANTILEVER LENGTH OF MEMBERS. WHEN THE CONTRACTOR WISHES TO PLACE MEMBERS ON TRUCKS NOT IN ACCORDANCE WITH THESE LIMITS, TO SHIP BY RAIL, TO ATTACH SHIPPING RESTRAINTS TO THE MEMBERS OR TO INVERT MEMBERS, HE SHALL SUBMIT A SKETCH FOR APPROVAL PRIOR TO SHIPPING. SEE ALSO ARTICLE 1072-11.

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.

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