

CONTRACT: C202243 TIP PROJECT: U-2810B

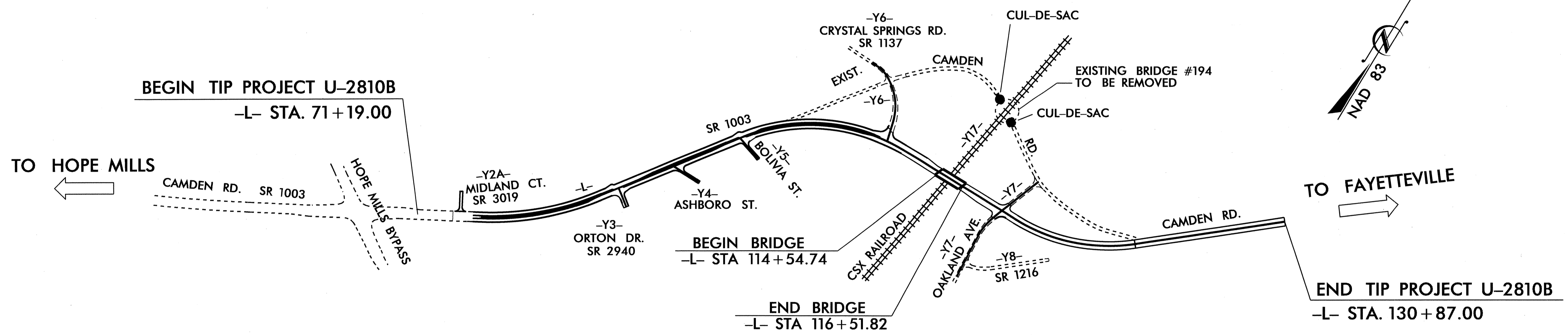
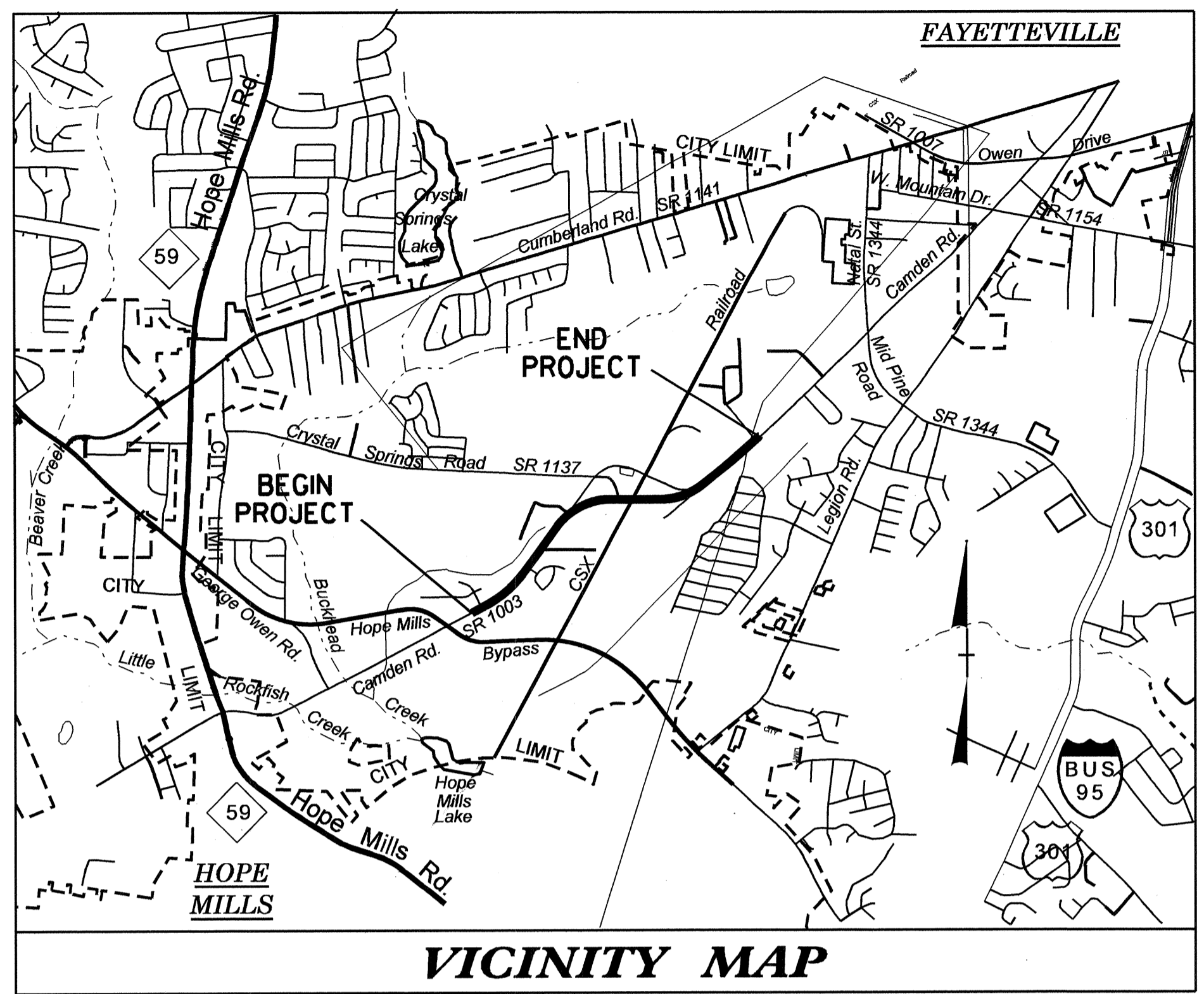
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2810B		
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
34866.1.1	STP-1003(22)	P.E.	
34866.2.2	STP-1003(22)	UTIL. & RW	
34866.3.2	STP-1003(69)	CONST.	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

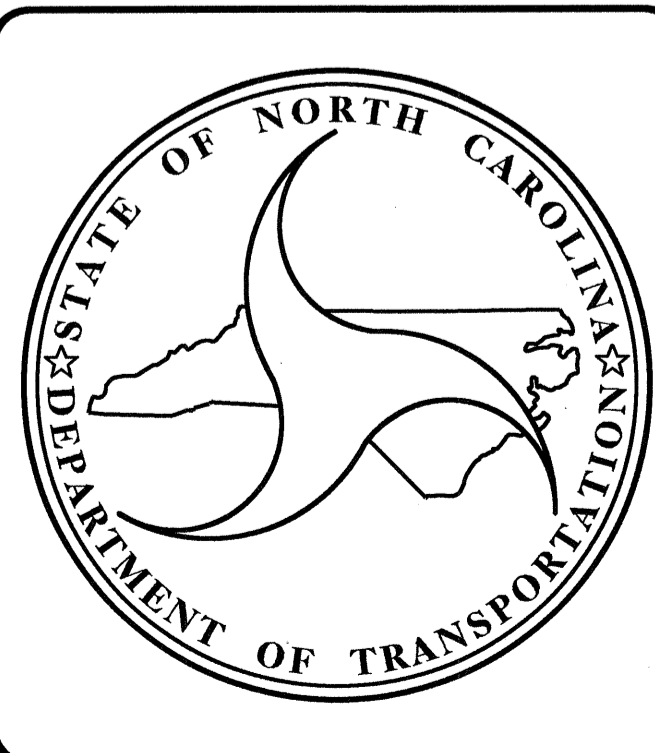
CUMBERLAND COUNTY

LOCATION: SR 1003 (CAMDEN RD.) FROM NC 162 (HOPE MILLS BYPASS) TO EAST OF OAKLAND AVENUE

TYPE OF WORK: GRADING, PAVING, DRAINAGE, WIDENING, RESURFACING, CURB & GUTTER, SIGNALS AND STRUCTURE



STRUCTURE



DESIGN DATA

ADT 2012	=	19,150
ADT 2032	=	27,650
DHV	=	60 %
D	=	10 %
T	=	5 % *
V	=	50 MPH

* TTST 1 % + DUAL 4 %

PROJECT LENGTH

LENGTH ROADWAY TIP PROJ. U-2810B	=	1.093 MILES
LENGTH STRUCTURES TIP PROJ. U-2810B	=	0.037 MILES
TOTAL LENGTH OF TIP PROJ. U-2810B	=	1.130 MILES

Prepared in the Office of:

DIVISION OF HIGHWAYS

2012 STANDARD SPECIFICATIONS

LETTING DATE :
DECEMBER 18, 2012

J. M. BAILEY, P.E. PROJECT ENGINEER
T. H. FANG, P.E. PROJECT DESIGN ENGINEER

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

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR

DATE

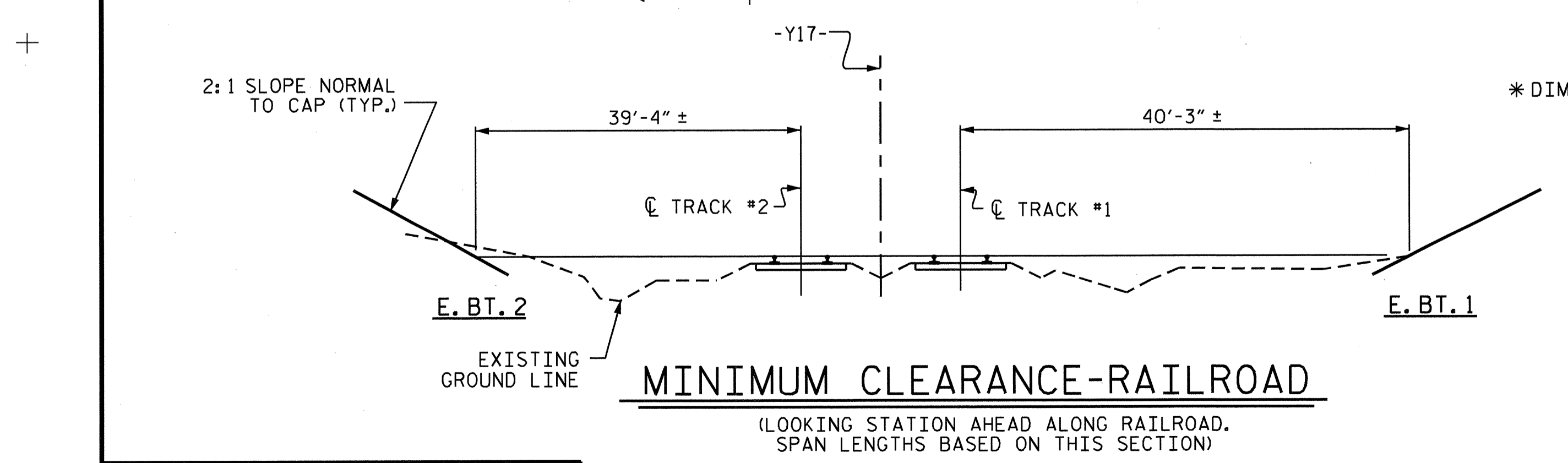
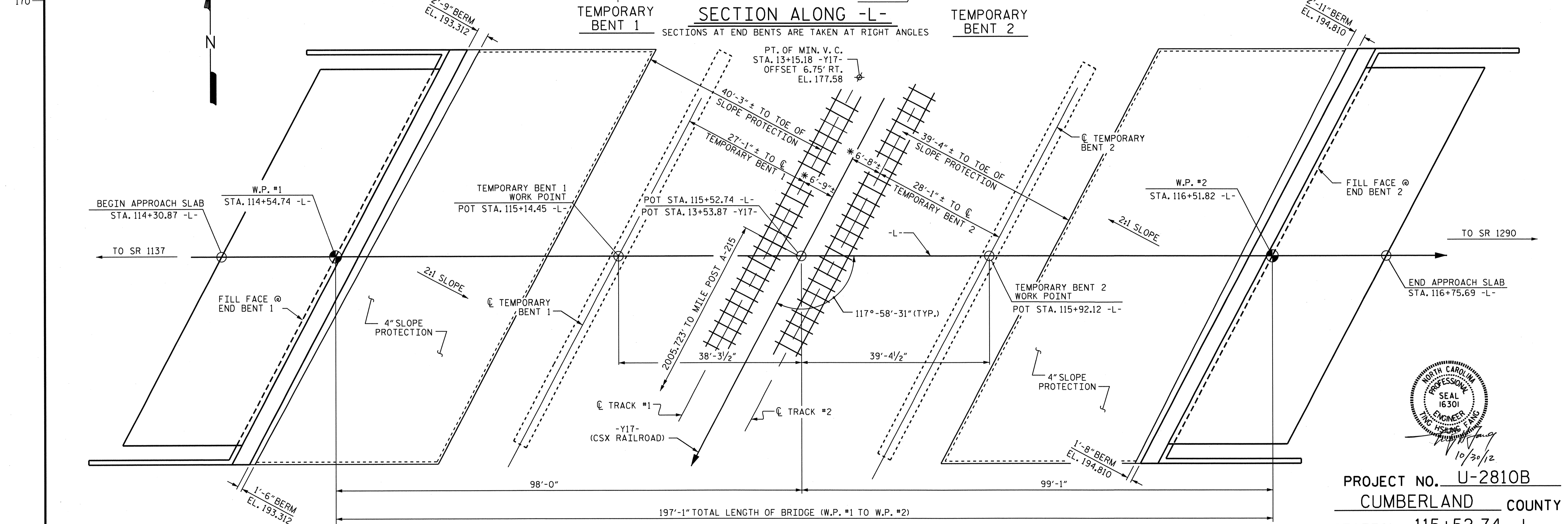
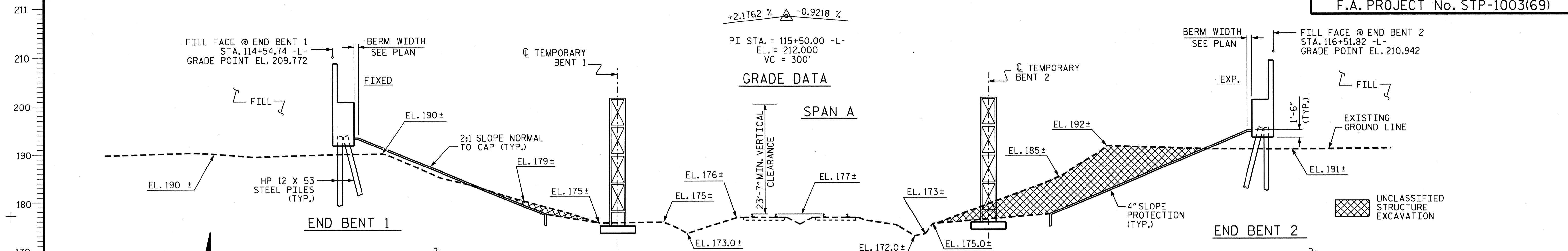
114+50

115+00

115+50

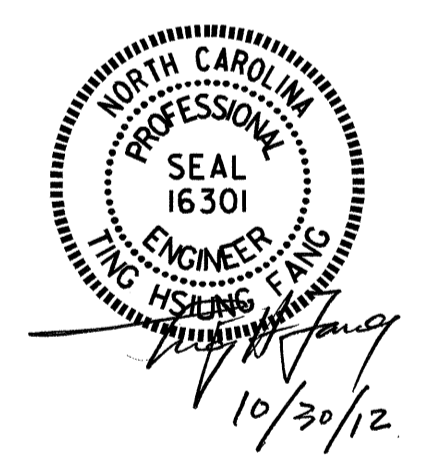
116+00

116+50



TOP OF RAIL ELEVATIONS-TRACK #1		
TRACK STATION	LEFT RAIL	RIGHT RAIL
12+13	178.156	178.161
12+68	177.857	177.862
13+22	177.543	177.538
13+79	177.179	177.173
14+34	176.824	176.815
14+91	176.477	176.451

TOP OF RAIL ELEVATIONS-TRACK #2		
TRACK STATION	LEFT RAIL	RIGHT RAIL
12+13	177.826	177.820
12+68	177.488	177.479
13+22	177.140	177.143
13+79	176.789	176.789
14+34	176.437	176.433
14+91	176.083	176.069



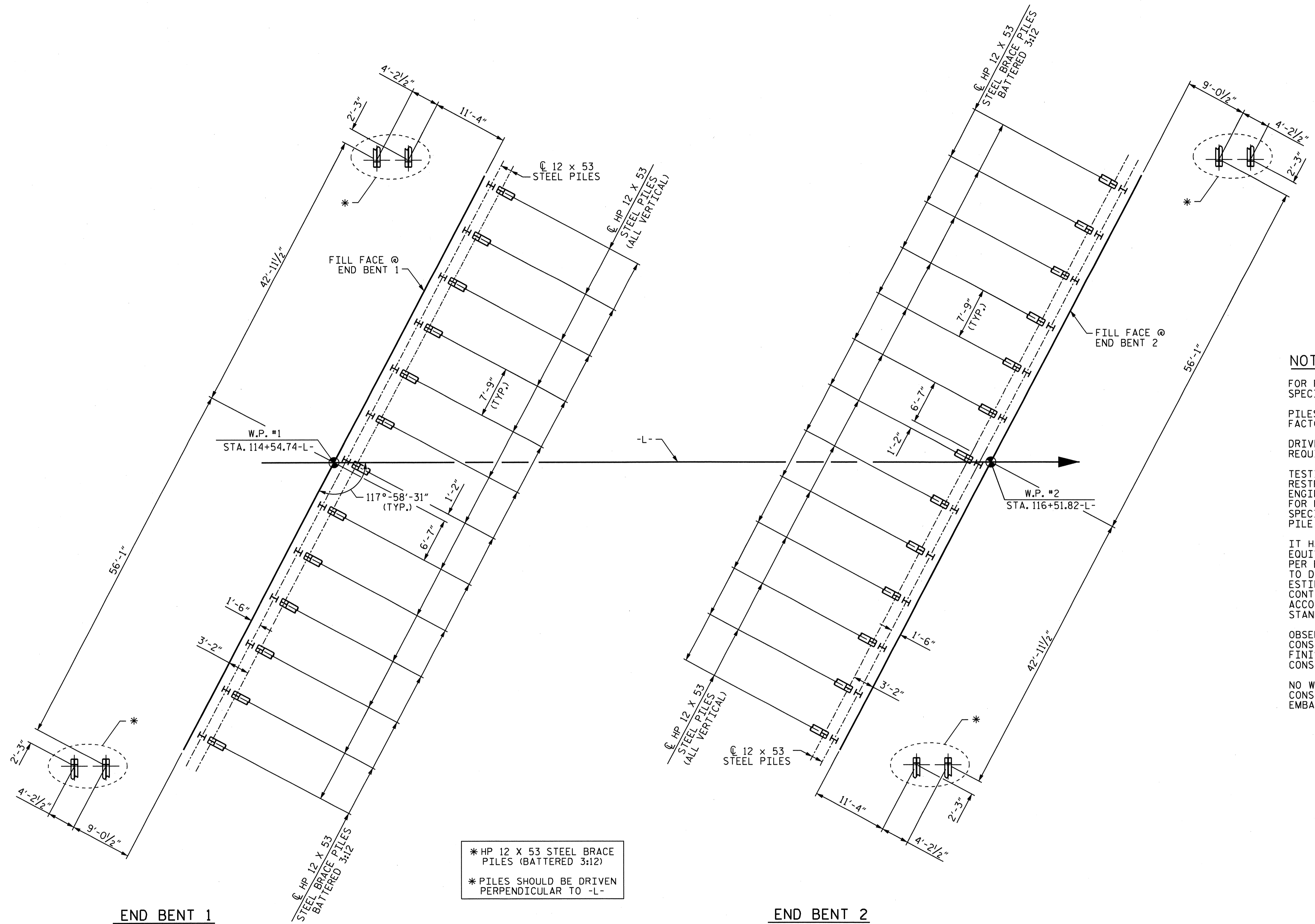
PROJECT NO. U-2810B
 CUMBERLAND COUNTY
 STATION: 115+52.74 -L-
 13+53.87 -Y17-

MILE POST A-214.60
 SHEET 1 OF 3 REPLACES BRIDGE #194

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON RELOCATED
 SR 1003 (CAMDEN RD.)
 OVER CSX RAILROAD
 BETWEEN SR 1137 AND SR 1290

REVISIONS						SHEET NO. S-1
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 39
2			4			

DRAWN BY: A.R.CHESSON DATE: 6-06
 CHECKED BY: T.H.FANG DATE: 10-21-08



NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENTS 1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 130 TONS PER PILE.

DRIVE PILES AT END BENTS 1 AND 2 TO A REQUIRED DRIVING RESISTANCE OF 217 TONS PER PILE.

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

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 65 FT-LBS PER BLOW TO 80 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENTS 1 AND 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

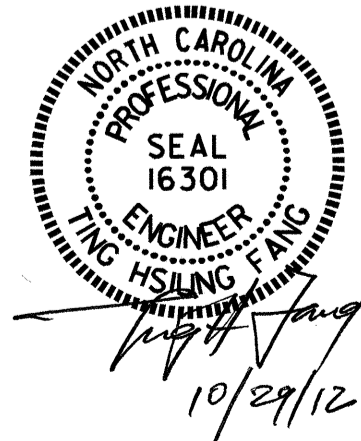
OBSERVE A ONE MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FT OF FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT 2.

NO WAITING PERIOD IS REQUIRED FOR END BENT CONSTRUCTION AT END BENT 1 AFTER COMPLETION OF EMBANKMENT.

- * HP 12 X 53 STEEL BRACE PILES (BATTERED 3:12)
- * PILES SHOULD BE DRIVEN PERPENDICULAR TO -L-

PROJECT NO. U-2810B
CUMBERLAND COUNTY
 STATION: 115+52.74 -L-

SHEET 2 OF 3



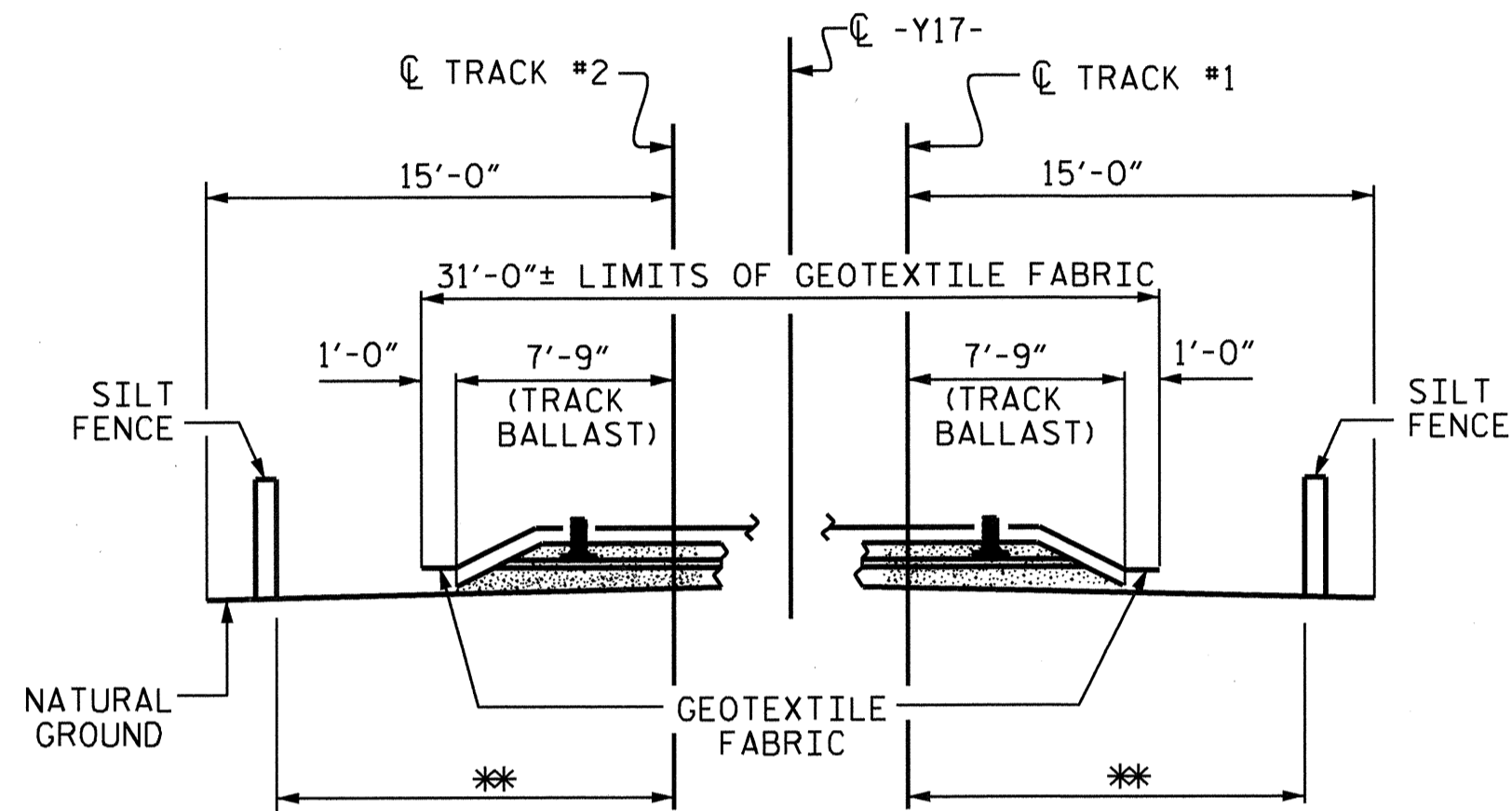
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON RELOCATED
 SR 1003 (CAMDEN RD.)
 OVER CSX RAILROAD
 BETWEEN SR 1137 AND SR 1290

REVISIONS						SHEET NO. S-2
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 39
2			4			

DRAWN BY : S.H. SOCKWELL DATE : 7/11/12
 CHECKED BY : TING FANG DATE : 8/21/12

TOTAL BILL OF MATERIAL

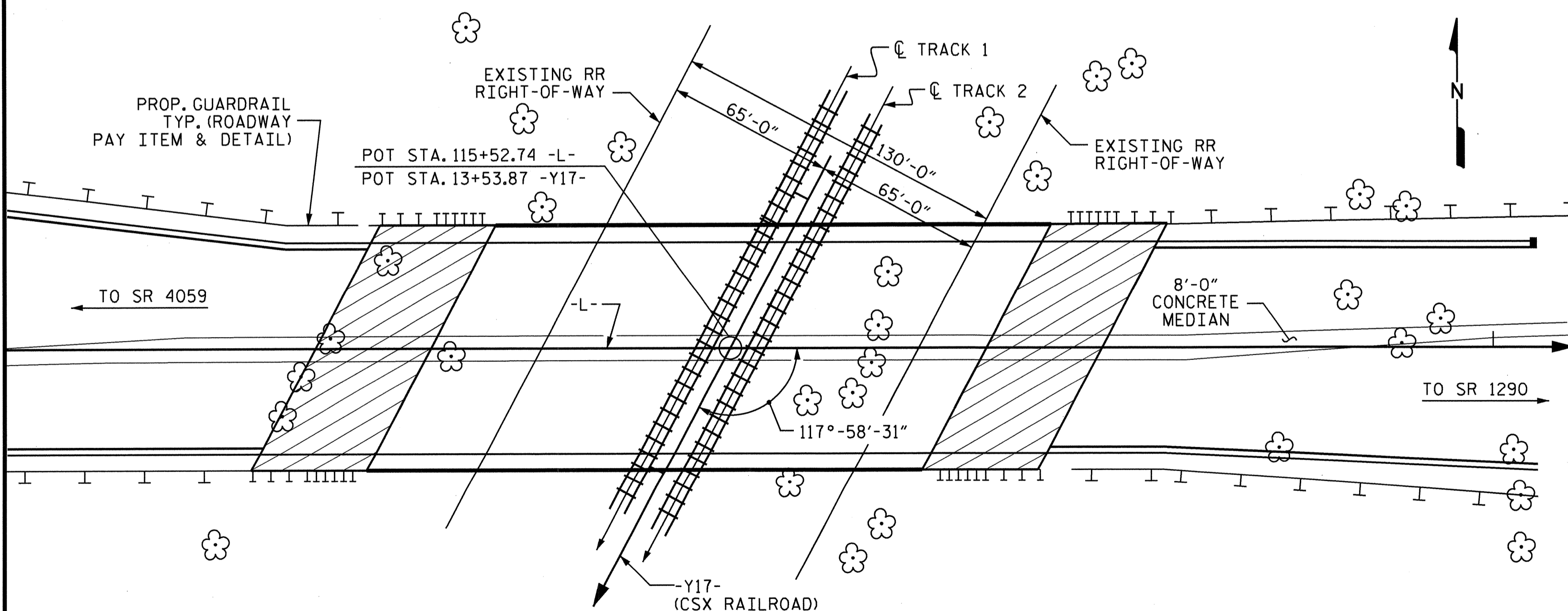
	REMOVAL OF EXISTING STRUCTURE	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	STRUCTURAL STEEL	HP 12 X 53 STEEL PILES	PILE REDRIVES	THREE BAR METAL RAIL	121" CHAIN LINK FENCE	4" SLOPE PROTECTION	POT BEARINGS	FOAM JOINT SEALS	
	LUMP SUM	EACH	LUMP SUM	SO. FT.	SO. FT.	CU. YDS	LUMP SUM	LBS.	APPROX. LBS.	NO.	LIN. FT.	EACH	LIN. FT.	LIN. FT.	SO. YDS	LUMP SUM	LUMP SUM
SUPERSTRUCTURE				15,882	12,971				882,500				372.88	377.0		LUMP SUM	LUMP SUM
END BENT 1			LUMP SUM			198.8		17,089		30	2,550	15		420			
END BENT 2			LUMP SUM			194.1		17,007		30	2,550	15		440			
TOTAL	LUMP SUM	1	LUMP SUM	15,882	12,971	392.9	LUMP SUM	34,096	882,500	60	5,100	30	372.88	377.0	860	LUMP SUM	LUMP SUM



RAILROAD EROSION CONTROL DETAIL

GEOTEXTILE FABRIC COVERS ALL BALLAST IN TRACK SECTION (LOOKING STATION AHEAD)
 ** DIMENSION TO BE DETERMINED IN THE FIELD BY THE ENGINEER AFTER CONSULTATION WITH THE RAILROAD.

BM #83: R/R SPIKE IN BASE OF 18" PINE, -L- STA. 100+62.00, 61' RT, EL. 176.54



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

DRAWN BY: E.C. LOCKLEAR DATE: 10/08
 CHECKED BY: T.H. FANG DATE: 8/15/12

31-OCT-2012 09:09
 R:\Structures\Plans\str4\Final Plans\2810b.sd.gdn
 tfang

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

ADDITIONAL EROSION CONTROL MEASURES FOR PROTECTION OF RAILROAD DITCHES MAY BE REQUIRED AS DIRECTED BY THE ENGINEER.

NO SEPARATE PAYMENT WILL BE MADE FOR RAILROAD EROSION CONTROL MEASURES. FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 20 FT. LEFT AND 50 FT. RIGHT OF CENTERLINE ROADWAY AT END BENT 2 AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATION.

RAILROAD EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO PERFORMING ANY WORK ON THE RAILROAD RIGHT-OF-WAY.

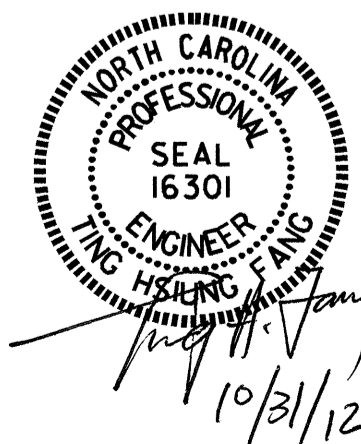
LIMITS OF SILT FENCE AND FILTER FABRIC PARALLEL TO RAILROAD SHALL EXTEND A MINIMUM OF 25'-0" OUTSIDE EDGE OF SUPERSTRUCTURE OR TOE OF SLOPE ON CONSTRUCTION. A GREATER LENGTH OF SILT FENCE OR FILTER FABRIC MAY BE REQUIRED IF SO DIRECTED BY THE ENGINEER.

FILTER FABRIC TO BE NAILED TO TIMBER RAIL TIES WITH PRIME SOURCE "GRIP CAP" OR EQUIVALENT. FILTER FABRIC ON SHOULDER TO BE SECURED AS DIRECTED BY THE ENGINEER AND RAILROAD.

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

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.

THE EXISTING BRIDGE CONSISTING OF 7 SPANS (17'-10", 17'-0", 16'-10", 41'-2", 17'-0", 17'-0" AND 17'-10"), 24.3 FT. CLEAR ROADWAY AND REINFORCED CONCRETE FLOOR ON I-BEAMS; SUBSTRUCTURE END BENTS 1 & 2 AND BENTS 1, 2, 5 & 6 CONSISTING OF RC CAP WITH TIMBER PILES, BENTS 3 & 4 CONSISTING OF RC CAP WITH PPC PILES LOCATED AT THE CSX RAILROAD "A" LINE MP A-214.5, 580 FT. NORTH OF THE PROPOSED BRIDGE SHOULD BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT.



INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 115+52.74 -L-".

THE CONTRACTOR SHALL USE A MINIMUM OF TWO TEMPORARY BENTS FOR THE ERECTION OF STEEL PLATE GIRDERS. SEE "GIRDER ERECTION DETAILS" SHEET.

FOR TEMPORARY BENTS, SEE SPECIAL PROVISIONS.

PAYMENT FOR THE TEMPORARY BENTS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR STRUCTURAL STEEL.

NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

POUR 1 OF END BENT 1 AND END BENT 2 IS CONSIDERED MASS CONCRETE. FOR MASS CONCRETE, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

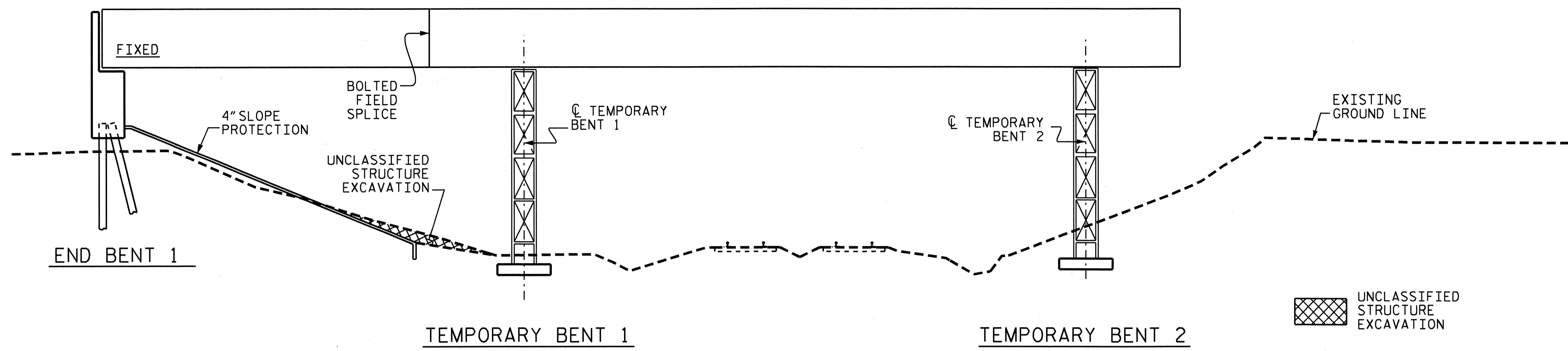
FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

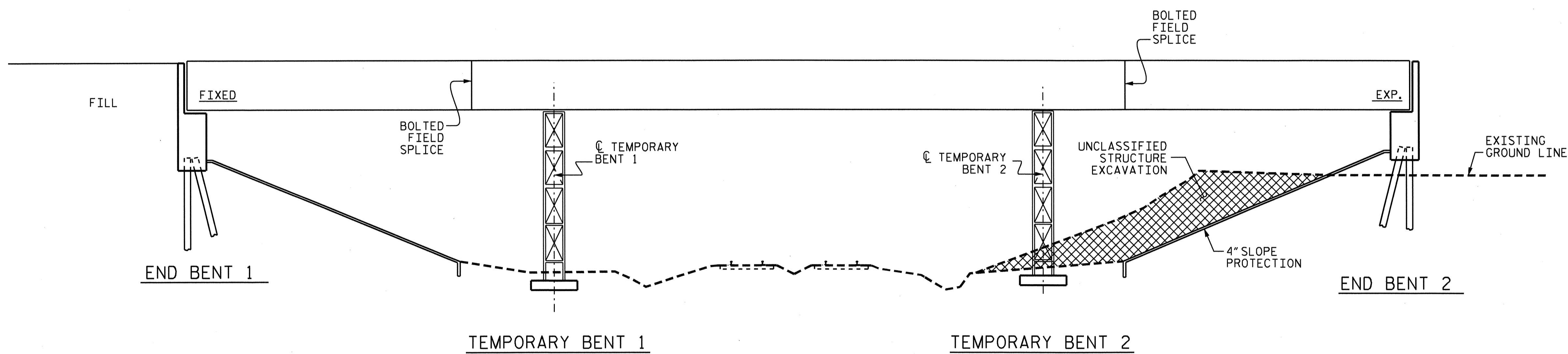
PROJECT NO. U-2810B
CUMBERLAND COUNTY
 STATION: 115+52.74 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-3
GENERAL DRAWING						
FOR BRIDGE ON RELOCATED SR 1003 (CAMDEN RD.) OVER CSX RAILROAD BETWEEN SR 1137 AND SR 1290						
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			
TOTAL SHEETS 39						



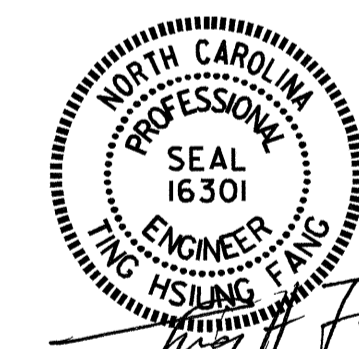
STAGE I GIRDER ERECTION



STAGE II GIRDER ERECTION

GIRDER ERECTION NOTES

- ERECT CENTER SECTIONS FOR A MINIMUM OF TWO GIRDERS WITH ALL DIAPHRAGMS AND LATERAL BRACING IN PLACE AND ALL BOLTS TIGHTENED PRIOR TO RELEASING THE GIRDERS. FOR ERECTING SUBSEQUENT CENTER SECTIONS, CONNECT ALL DIAPHRAGMS AND LATERAL BRACING TO THE ADJACENT PREVIOUSLY ERECTED SECTION AND TIGHTEN ALL BOLTS PRIOR TO RELEASING THE GIRDER.
- ERECT END SECTIONS AT END BENTS 1 AND 2. FOR EACH SECTION CONNECT ALL DIAPHRAGMS AND LATERAL BRACING AND TIGHTEN ALL BOLTS PRIOR TO RELEASING THE GIRDER.
- STRUCTURAL STEEL SHALL BE SUPPORTED DURING ERECTION IN ITS CAMBERED POSITION.
- TEMPORARY BENTS SHALL PROVIDE BEARING AT CONNECTOR PLATE OR TRANSVERSE STIFFENER LOCATIONS. WHEN CONNECTOR PLATES ARE USED AS TEMPORARY BEARING STIFFENERS, DIAPHRAGMS SHALL BE CONNECTED.
- PLACEMENT OF TEMPORARY BENTS SHALL BE COORDINATED WITH RAILROAD REQUIREMENTS. SEE RAILROAD SPECIAL PROVISIONS.
- TEMPORARY BENTS SHALL REMAIN IN PLACE UNTIL ALL DIAPHRAGMS AND LATERAL BRACING IS IN PLACE AND ALL BOLTS ARE TIGHTENED.
- TEMPORARY BENTS SHALL BE REMOVED PRIOR TO POURING THE DECK SLAB.
- PLANS FOR TEMPORARY BENT CONSTRUCTION AND REMOVAL SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.
- THE CONTRACTOR'S ERECTION PLANS SHALL INCLUDE A METHOD OF TEMPORARY BENT REMOVAL THAT WILL UNIFORMLY TRANSFER THE STRUCTURAL WEIGHT TO THE DIAPHRAGMS, WITH THE GIRDERS REMAINING IN THE CAMBERED POSITIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGNING THE TEMPORARY BENTS. THE DESIGNS SHALL BE COMPLETED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA. THE CONTRACTOR SHALL SUBMIT SIGNED AND SEALED WORKING DRAWINGS AND CALCULATIONS TO THE ENGINEER FOR REVIEW AND APPROVAL.
- DURING THE GIRDER ERECTION PROCEDURE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY LATERAL BRACING AND OTHER MEANS OF SUPPORT, AS REQUIRED, TO ENSURE STABILITY OF THE GIRDERS, AVOID UPLIFT OF THE GIRDERS AT THE TEMPORARY BENTS, AND ENSURE PLUMBNESS OF THE GIRDERS IN THE FINAL CONDITION.
- NO SEPARATE PAYMENT WILL BE MADE FOR PROVIDING THE TEMPORARY BENTS. THE COST FOR ALL MATERIALS, EQUIPMENT, TOOLS, LABOR, AND ANY INCIDENTALS NECESSARY TO PROVIDE THE TEMPORARY BENTS SHALL BE CONSIDERED INCIDENTAL TO THE LUMP SUM BID PRICE FOR STRUCTURAL STEEL.
- THE CONTRACTOR MAY SUBMIT AN ALTERNATE ERECTION METHOD TO THE ENGINEER FOR REVIEW AND APPROVAL.



Hsing Fang
10/31/12

PROJECT NO. U-2810B
CUMBERLAND COUNTY
 STATION: 115+52.74 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**GIRDER ERECTION
 DETAILS**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			39

DRAWN BY : P. K. NEWTON DATE : 9/4/12
 CHECKED BY : T. H. FANG DATE : 9/6/12

LOAD FACTORS:

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

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR STEEL GIRDERS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE II LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.03	--	1.75	0.657	1.78	A	EL	95.90	1.067	1.03	A	I	0.00	1.30	0.762	1.80	A	I	95.90	1	
	HL-93 (OPERATING)	N/A		1.33	--	1.35	0.657	2.21	A	EL	95.90	1.067	1.33	A	I	0.00	1.00	0.762	2.34	A	I	95.90	1	
	HS-20 (INVENTORY)	36.00	②	1.72	61.92	1.75	0.762	3.02	A	I	95.90	1.067	1.72	A	I	0.00	1.30	0.762	3.06	A	I	95.90	1	
	HS-20 (OPERATING)	36.00		2.23	80.28	1.35	0.762	3.92	A	I	95.90	1.067	2.23	A	I	0.00	1.00	0.762	3.98	A	I	95.90	1	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13,500		5.53	74.66	1.40	0.762	9.51	A	I	95.90	1.067	5.53	A	I	0.00	1.30	0.762	7.70	A	I	95.90	1
		SNGARBS2	20,000		3.80	76.00	1.40	0.762	6.65	A	I	95.90	1.067	3.80	A	I	0.00	1.30	0.762	5.38	A	I	95.90	1
		SNAGRIS2	22,000		3.48	76.56	1.40	0.762	6.13	A	I	95.90	1.067	3.48	A	I	0.00	1.30	0.762	4.96	A	I	95.90	1
		SNCOTTS3	27,250		2.75	74.94	1.40	0.762	4.72	A	I	95.90	1.067	2.75	A	I	0.00	1.30	0.762	3.82	A	I	95.90	1
		SNAGGRS4	34,925		2.19	76.49	1.40	0.657	3.78	A	EL	95.90	1.067	2.19	A	I	0.00	1.30	0.762	3.06	A	I	95.90	1
		SNS5A	35,550		2.17	77.14	1.40	0.762	3.70	A	I	95.90	1.067	2.17	A	I	0.00	1.30	0.762	3.00	A	I	95.90	1
		SNS6A	39,950		1.95	77.90	1.40	0.762	3.33	A	I	95.90	1.067	1.95	A	I	0.00	1.30	0.762	2.70	A	I	95.90	1
	SNS7B	42,000		1.87	78.54	1.40	0.762	3.16	A	I	95.90	1.067	1.87	A	I	0.00	1.30	0.762	2.56	A	I	95.90	1	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33,000		2.34	77.22	1.40	0.657	4.04	A	EL	95.90	1.067	2.34	A	I	0.00	1.30	0.762	3.27	A	I	95.90	1
		TNT4A	33,075		2.32	76.73	1.40	0.657	4.04	A	EL	95.90	1.067	2.32	A	I	0.00	1.30	0.762	3.27	A	I	95.90	1
		TNT6A	41,600		1.91	79.46	1.40	0.657	3.24	A	EL	95.90	1.067	1.91	A	I	0.00	1.30	0.762	2.63	A	I	95.90	1
		TNT7A	42,000		1.89	79.38	1.40	0.762	3.22	A	I	95.90	1.067	1.89	A	I	0.00	1.30	0.762	2.61	A	I	95.90	1
		TNT7B	42,000		1.85	77.70	1.40	0.762	3.26	A	I	95.90	1.067	1.85	A	I	0.00	1.30	0.762	2.64	A	I	95.90	1
		TNAGRIT4	43,000		1.81	77.83	1.40	0.657	3.16	A	EL	95.90	1.067	1.81	A	I	0.00	1.30	0.762	2.56	A	I	95.90	1
TNAGT5A		45,000		1.75	78.75	1.40	0.762	3.00	A	I	95.90	1.067	1.75	A	I	0.00	1.30	0.762	2.43	A	I	95.90	1	
TNAGT5B	45,000		③	1.73	77.85	1.40	0.762	2.99	A	I	95.90	1.067	1.73	A	I	0.00	1.30	0.762	2.42	A	I	95.90	1	
FATIGUE	HL-93 (INVENTORY)	$\gamma_{LL}=0.75$	--	--																				

NOTES:

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

COMMENTS:

- LOAD RATINGS CONTROLLED BY INTERIOR GIRDERS ARE FOR GIRDERS 2 AND 7. OTHER INTERIOR GIRDERS HAVE HIGHER LOAD RATINGS.
- EXTERIOR RIGHT GIRDER RATINGS ARE EQUAL TO EXTERIOR LEFT GIRDER RATINGS.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93) **

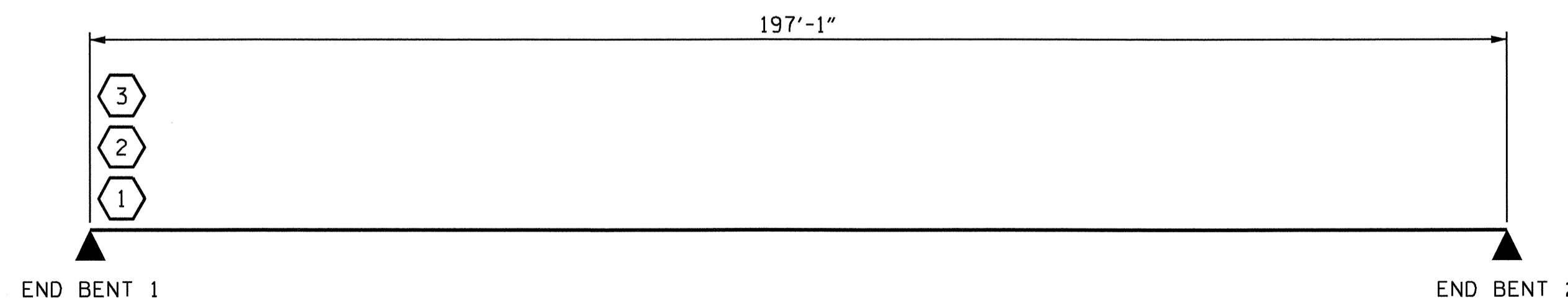
② DESIGN LOAD RATING (HS-20) **

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. U-2810B
CUMBERLAND COUNTY
STATION: 115+52.74 -L-

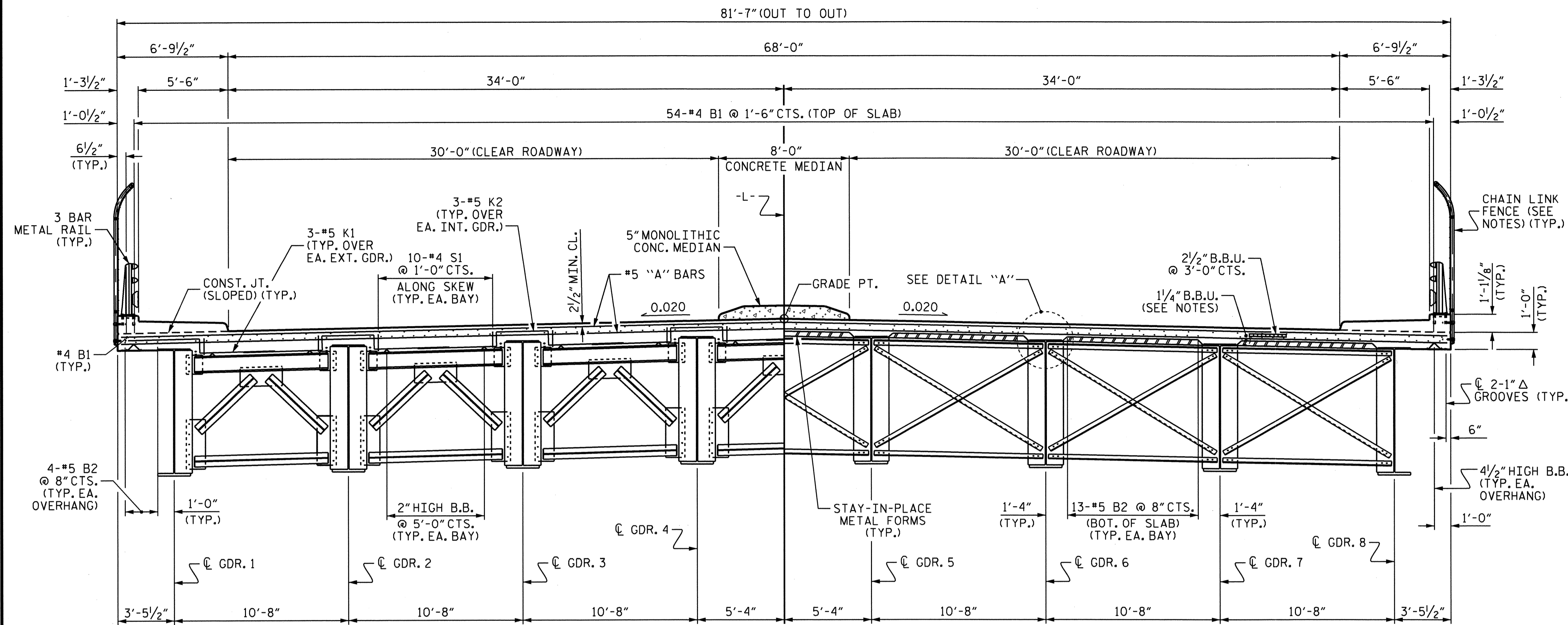


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR
STEEL GIRDERS
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			39

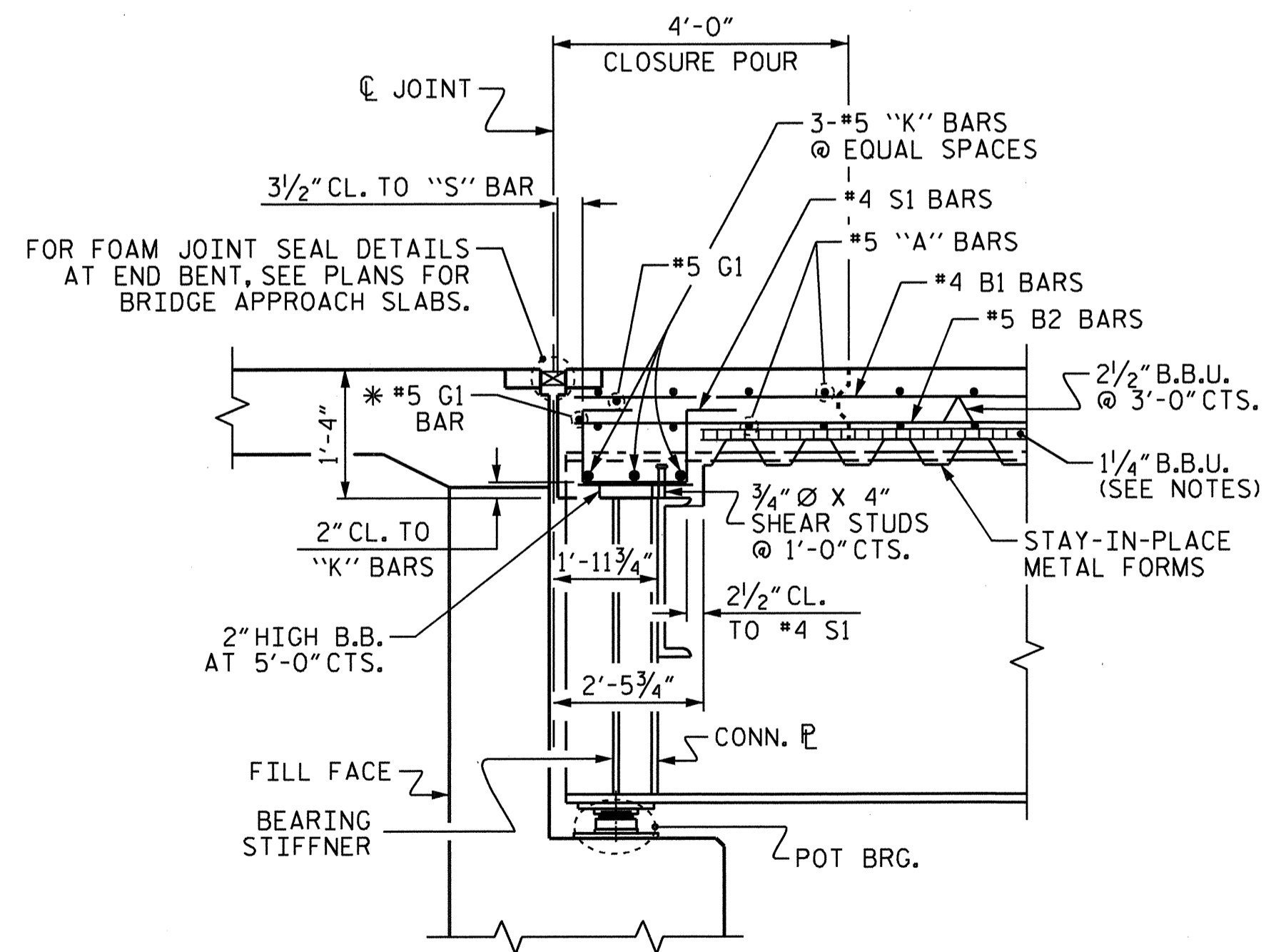
ASSEMBLED BY : P. K. NEWTON DATE : 5/23/12
CHECKED BY : S. WANCE PE DATE : 8/14/12
DRAWN BY : MAA 1/08 REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08 REV. 10/1/11 MAA/GM



PARTIAL TYPICAL SECTION
(SHOWING END BENT DIAPHRAGMS)

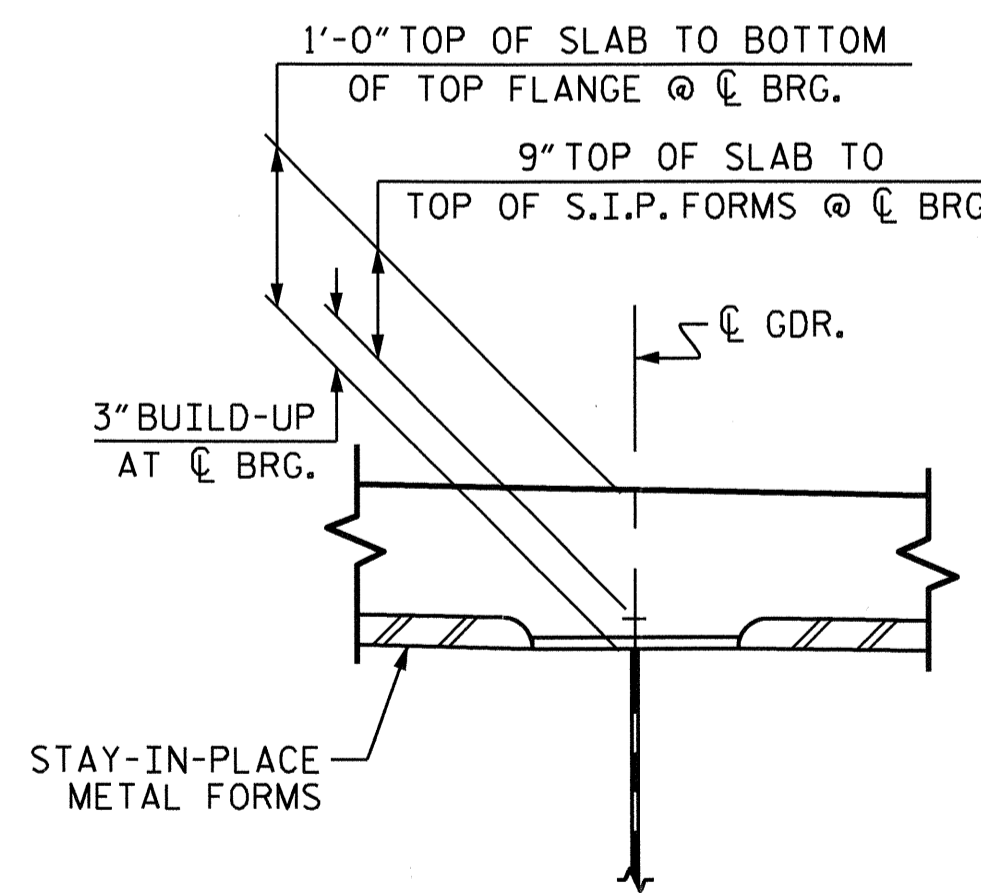
PARTIAL TYPICAL SECTION
(SHOWING INTERMEDIATE DIAPHRAGMS)

TYPICAL SECTION



SECTION @ END BENT

* #5 G1 BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY TO CLEAR DIAPHRAGM AND REINFORCING STEEL.



DETAIL "A"

NOTES

PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE STAY-IN-PLACE METAL 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 STAY-IN-PLACE METAL 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 STAY-IN-PLACE METAL FORM WORKING DRAWINGS.

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

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

THE CONTRACTOR SHALL ADJUST THE GIRDER BUILDUPS AS NECESSARY TO INCORPORATE A MAXIMUM PERMISSIBLE VARIATION IN POT BEARING DEPTH OF 1/2"; SEE SPECIAL PROVISION FOR POT BEARINGS.

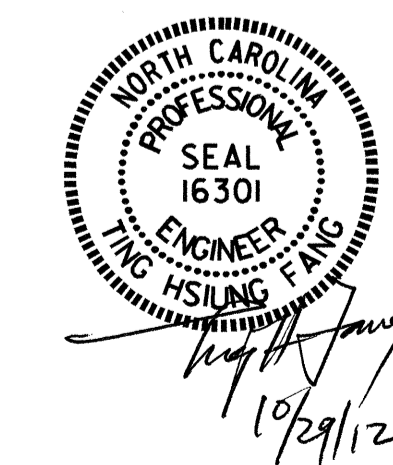
SIDEWALK AND CONCRETE MEDIAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

FOR 5" MONOLITHIC CONCRETE MEDIAN REINFORCING STEEL AND DETAILS, SEE "CONCRETE MEDIAN" SHEET.

FOR SECTION THRU SIDEWALK AND DETAILS, SEE "SIDEWALK DETAILS" SHEET.

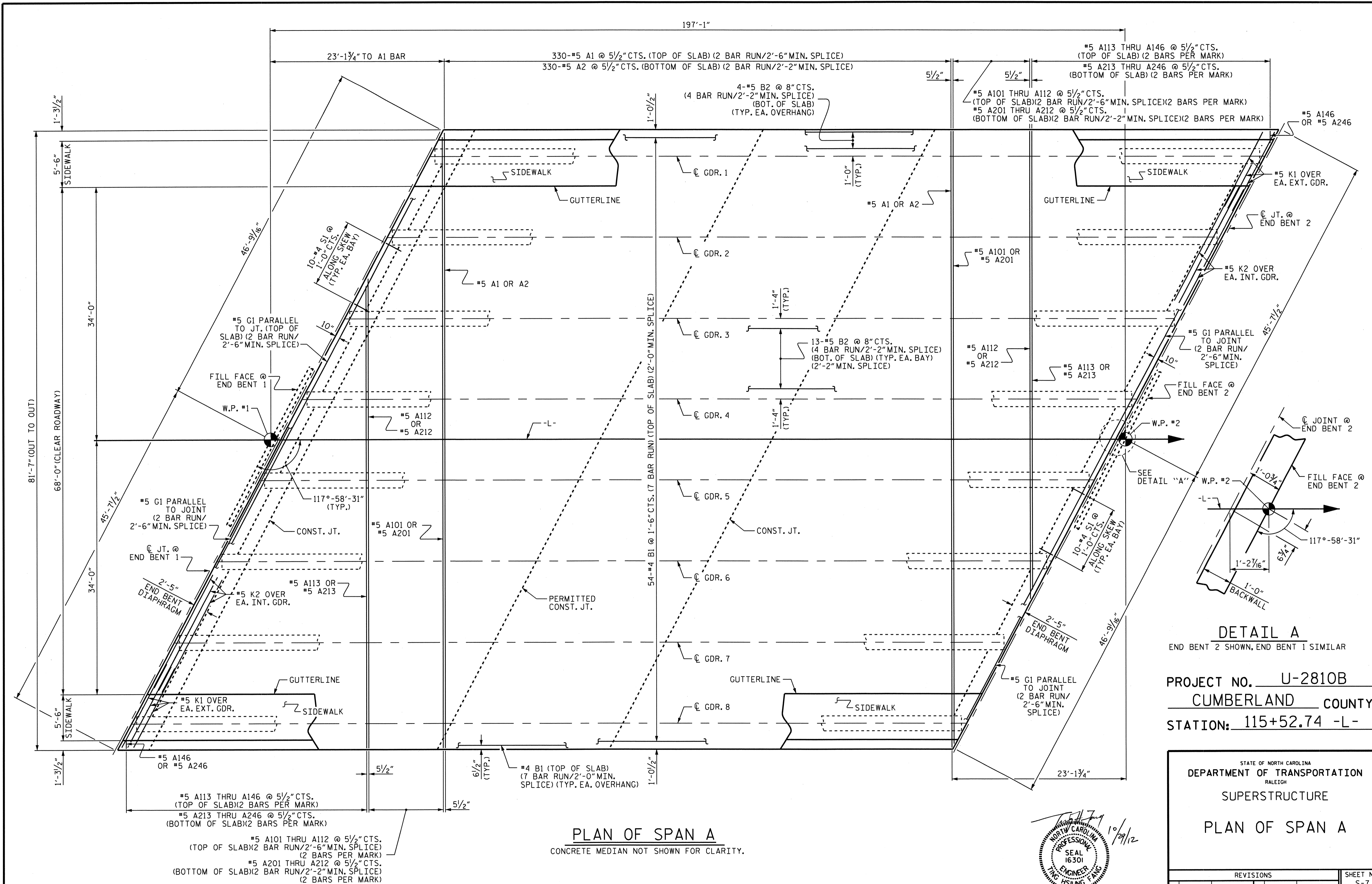
FOR CHAIN LINK FENCE DETAILS, SEE "BRIDGE MOUNTED CHAIN LINK FENCE" SHEET.

PROJECT NO. U-2810B
CUMBERLAND COUNTY
STATION: 115+52.74 -L-

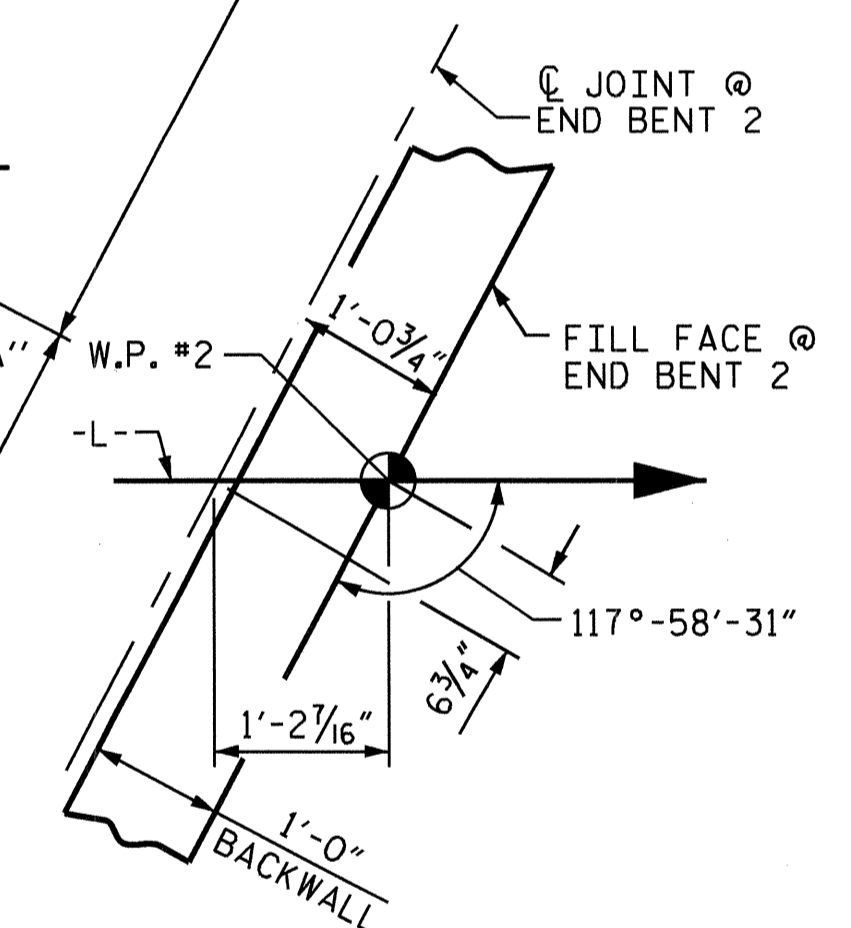


STATE OF NORTH CAROLINA					
DEPARTMENT OF TRANSPORTATION					
RALEIGH					
SUPERSTRUCTURE					
TYPICAL SECTION					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-6
					TOTAL SHEETS 39

DRAWN BY: E.C. LOCKLEAR DATE: 2-20-09
CHECKED BY: T.H. FANG DATE: 8-15-12



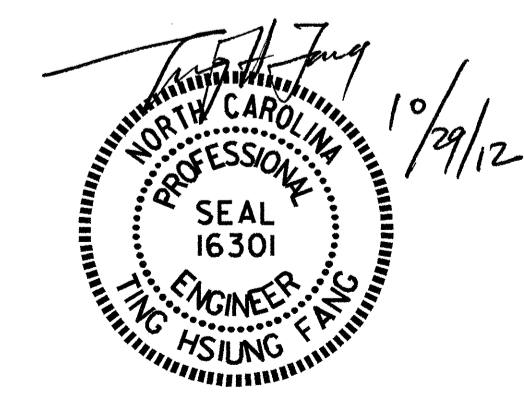
PLAN OF SPAN A
CONCRETE MEDIAN NOT SHOWN FOR CLARITY.



DETAIL A
END BENT 2 SHOWN, END BENT 1 SIMILAR

PROJECT NO. U-2810B
CUMBERLAND COUNTY
 STATION: 115+52.74 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE					
PLAN OF SPAN A					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-7
					TOTAL SHEETS 39



DRAWN BY: E.C. LOCKLEAR DATE: 1-29-09
 CHECKED BY: T. H. FANG DATE: 1-18-12

30-OCT-2012 12:40
 R:\Structures\Plans\str4\Final Plans\U2810b.sd.ps.dgn
 T.fang

NOTES:

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

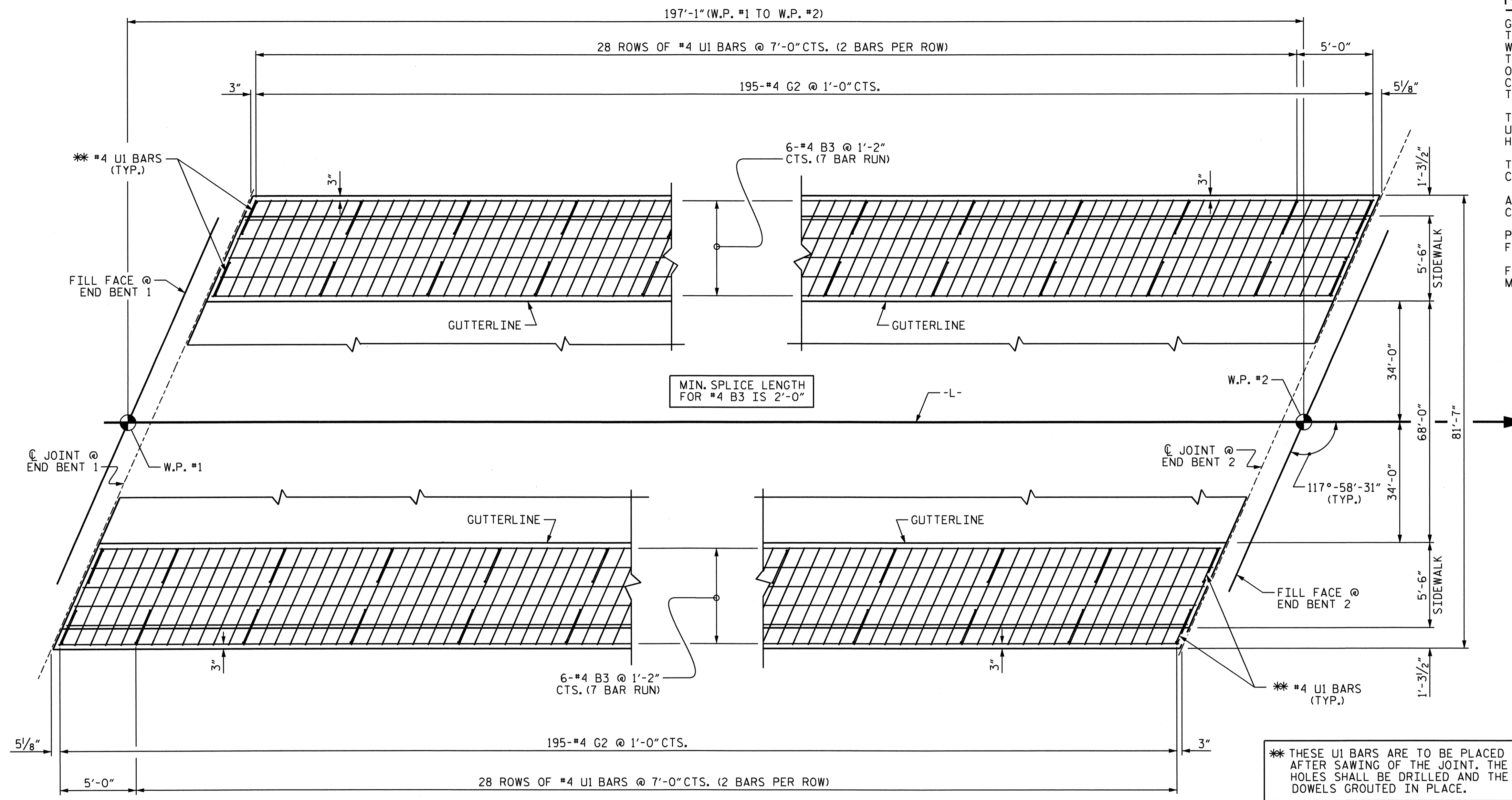
THE SIDEWALK IN THE CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI.

THE JOINT IN THE DECK SHALL BE SAWED PRIOR TO THE CASTING OF THE SIDEWALK.

ALL REINFORCING STEEL IN SIDEWALK SHALL BE EPOXY COATED.

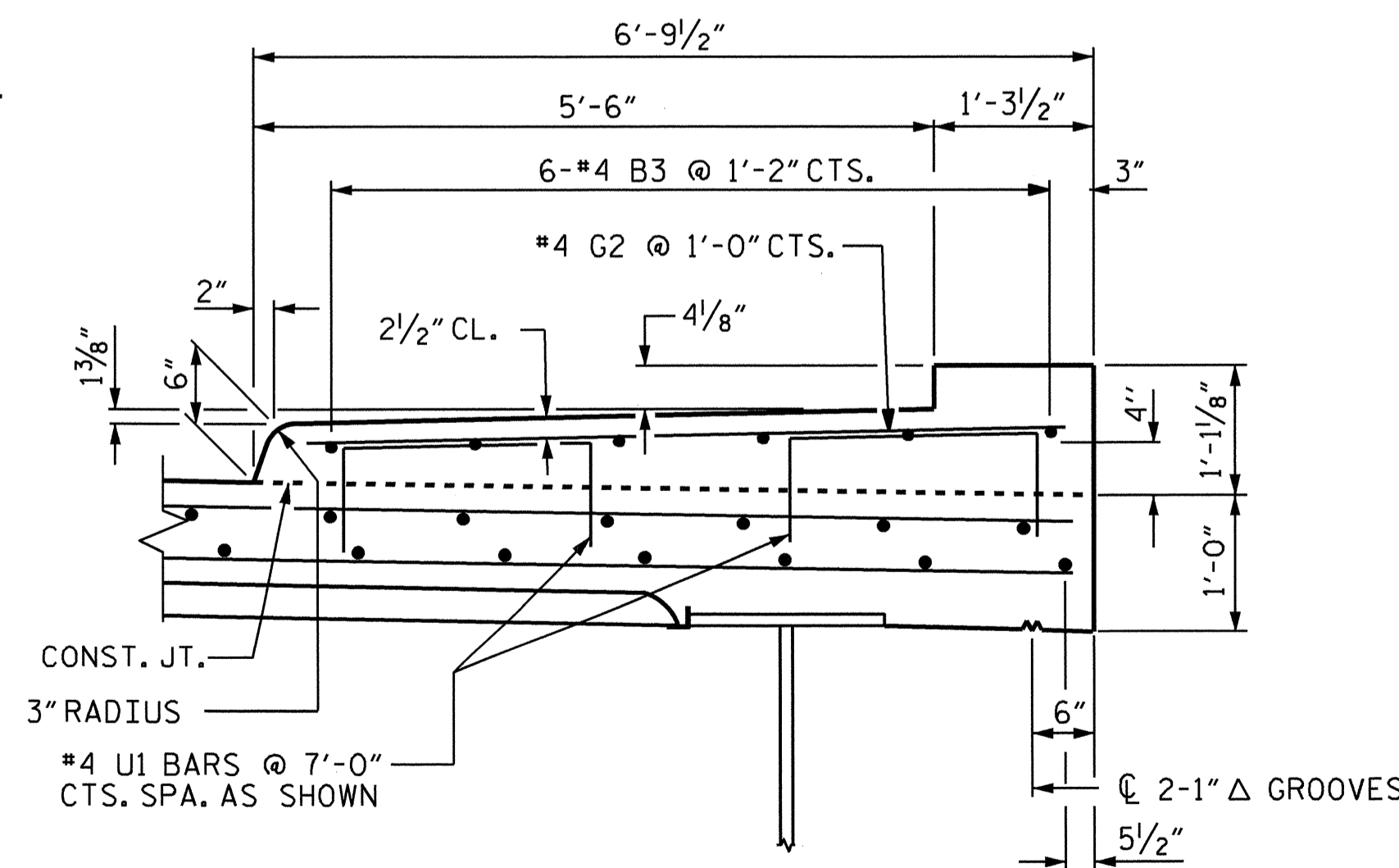
PAYMENT FOR SIDEWALK SHALL BE INCLUDED IN PAY ITEM FOR "REINFORCED CONCRETE DECK SLAB".

FOR SIDEWALK QUANTITIES, SEE SUPERSTRUCTURE BILL OF MATERIAL SHEET.



** THESE U1 BARS ARE TO BE PLACED AFTER SAWING OF THE JOINT. THE HOLES SHALL BE DRILLED AND THE DOWELS GROUTED IN PLACE.

PLAN OF SIDEWALK

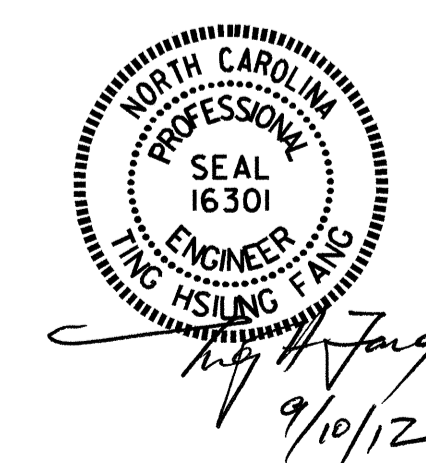


SECTION THRU SIDEWALK

THE #4 U1 BARS MAY BE PUSHED INTO GREEN CONCRETE, EXCEPT AS NOTED ABOVE, AFTER DECK SLAB HAS BEEN SCREEDDED OFF.

PROJECT NO. U-2810B
CUMBERLAND COUNTY
 STATION: 115+52.74 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE					
SIDEWALK DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-8
TOTAL SHEETS					39



DRAWN BY : S. WANCE PE DATE : 01/12
 CHECKED BY : T. H. FANG DATE : 8/20/12

10-SEP-2012 11:26
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 tfang

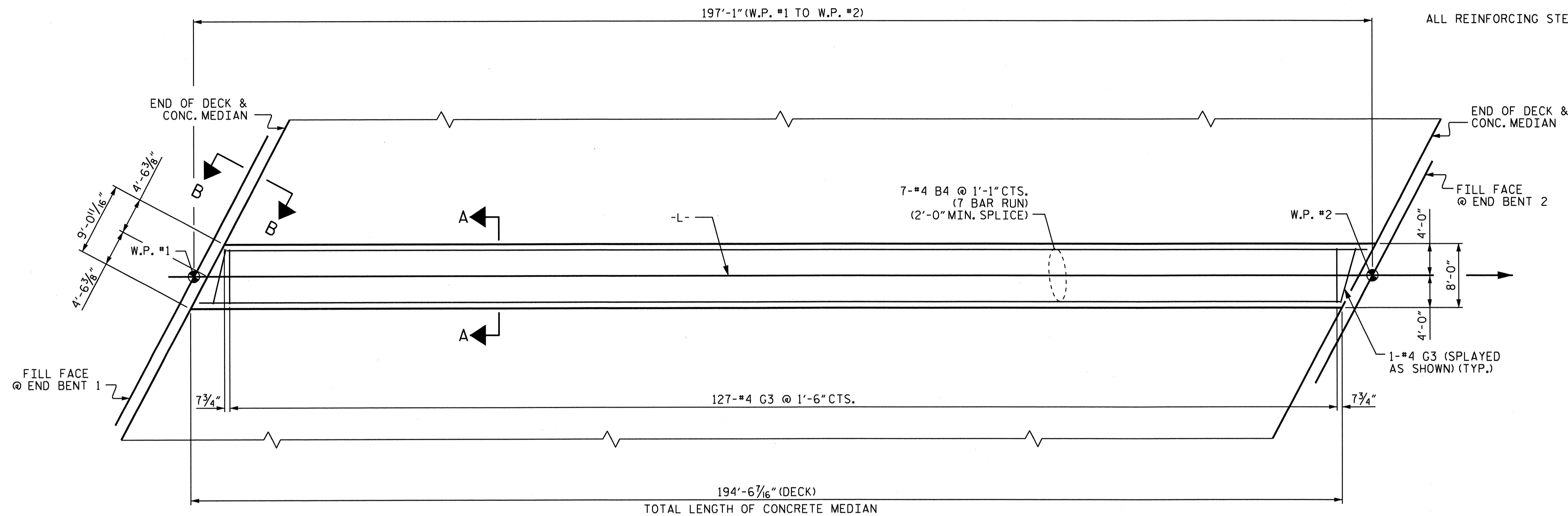
NOTES

NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE FOR MATERIALS OR LABOR REQUIRED TO CONSTRUCT THE CONCRETE MEDIAN. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE SUPERSTRUCTURE BILL OF MATERIAL AND PAID FOR AS PART OF THE REINFORCED CONCRETE DECK SLAB PAY ITEM.

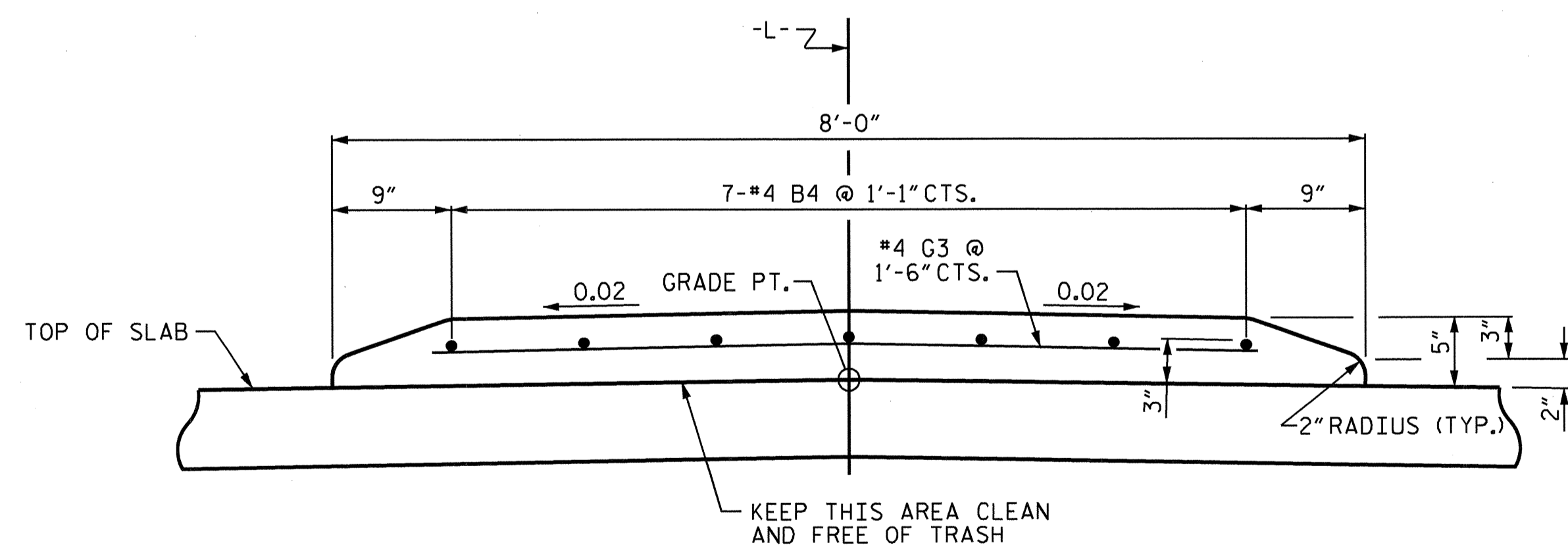
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE MEDIAN STRIP IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FT. TO 10 FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED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

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

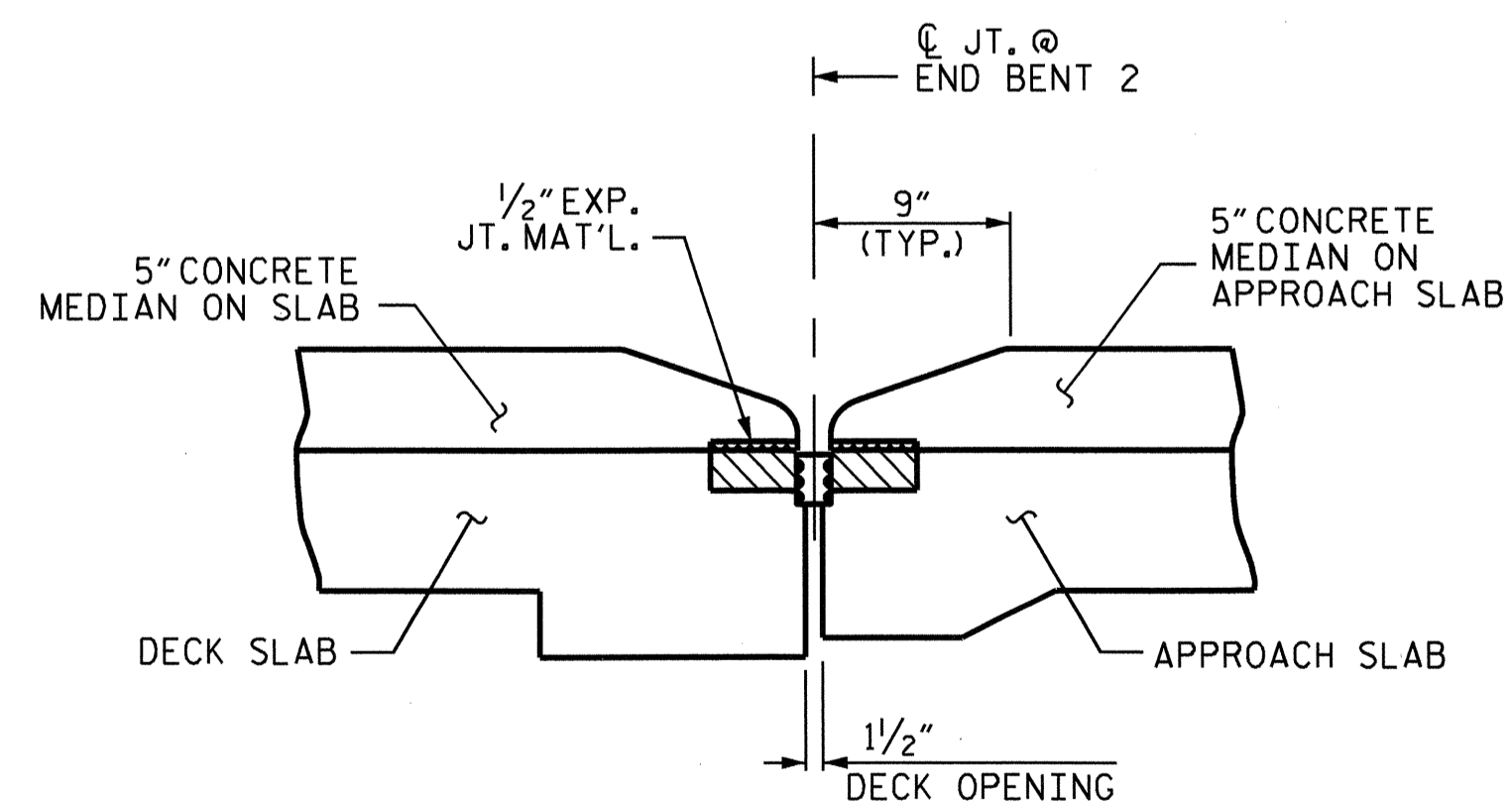
ALL REINFORCING STEEL IN CONCRETE MEDIANS SHALL BE EPOXY COATED.



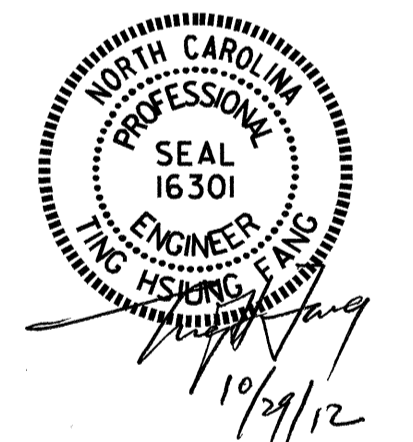
PLAN
CONCRETE MEDIAN ON APPROACH SLABS
NOT SHOWN FOR CLARITY.



SECTION A-A



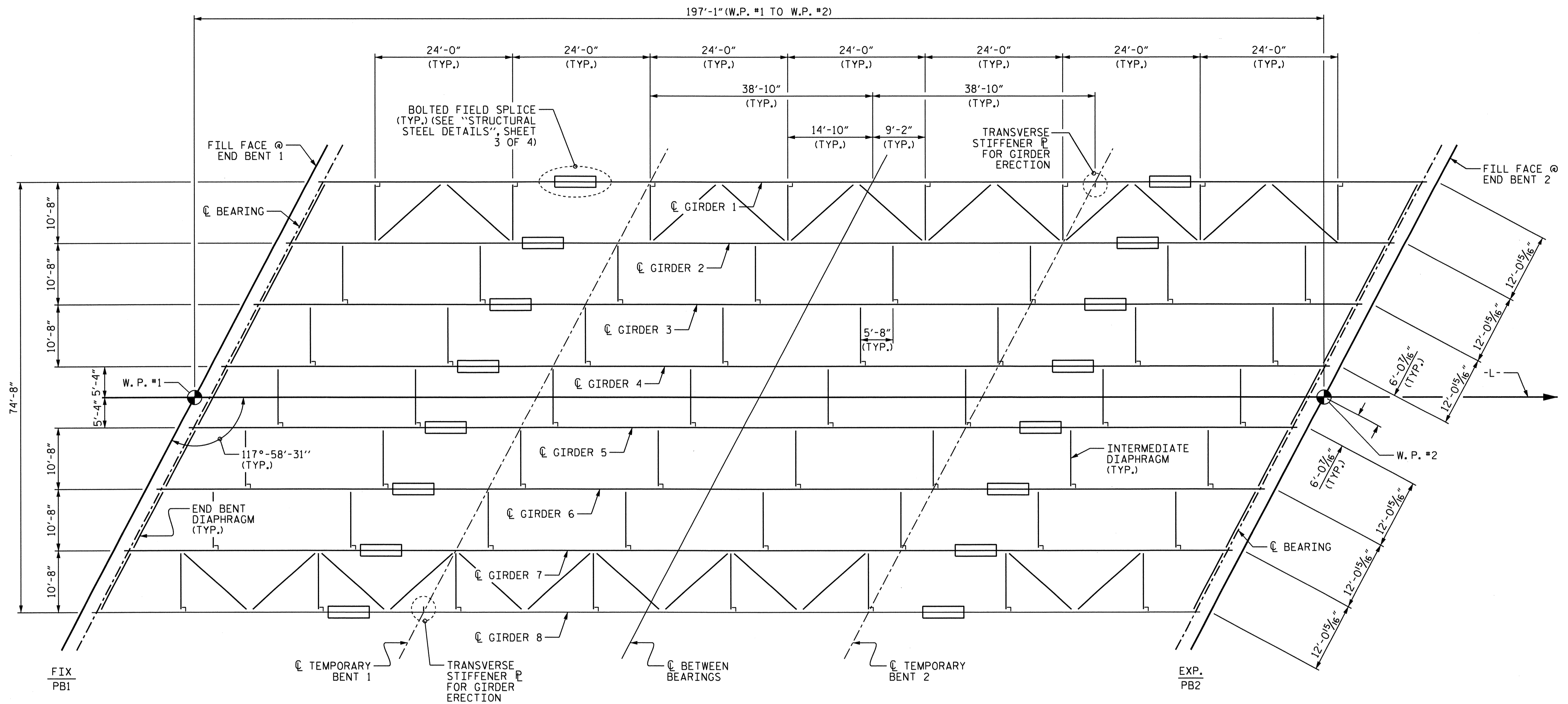
SECTION B-B
(END BENT 2 SHOWN, END BENT 1 SIMILAR)



PROJECT NO. U-2810B
CUMBERLAND COUNTY
STATION: 115+52.74-L-

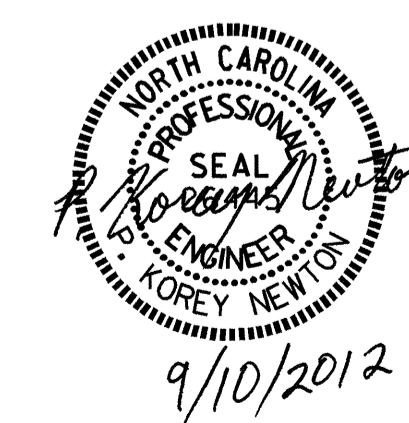
STATE OF NORTH CAROLINA						SHEET NO. S-9
DEPARTMENT OF TRANSPORTATION						
RALEIGH						TOTAL SHEETS 39
SUPERSTRUCTURE						
CONCRETE MEDIAN						
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DRAWN BY: S.H. SOCKWELL DATE: 07/06/12
CHECKED BY: T.H. FANG DATE: 8/16/12



FRAMING PLAN

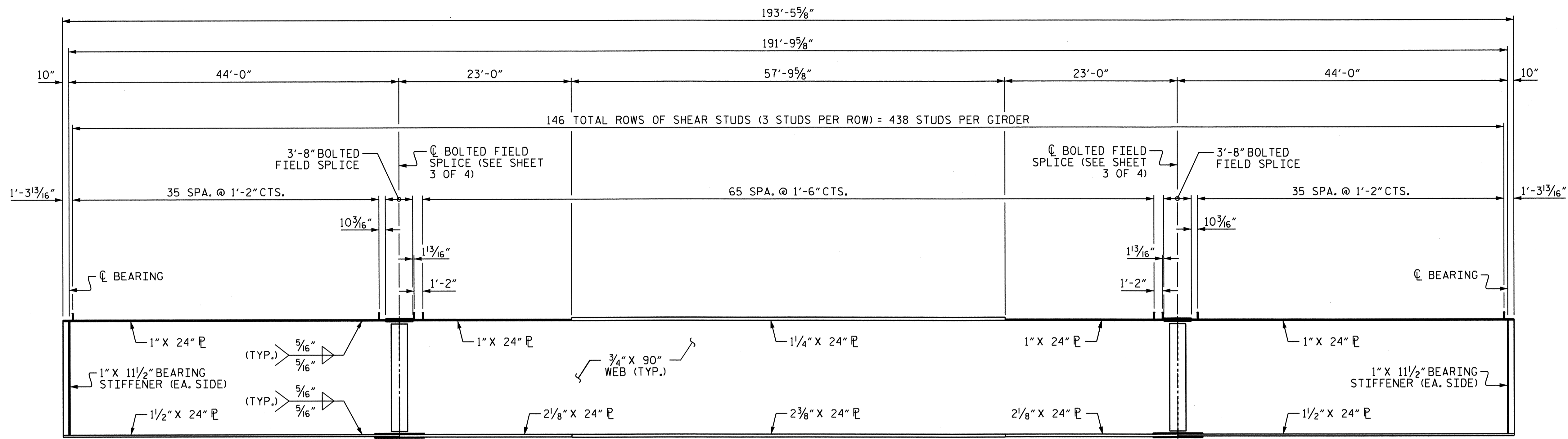
PROJECT NO. U-2810B
CUMBERLAND COUNTY
 STATION: 115+52.74 -L-



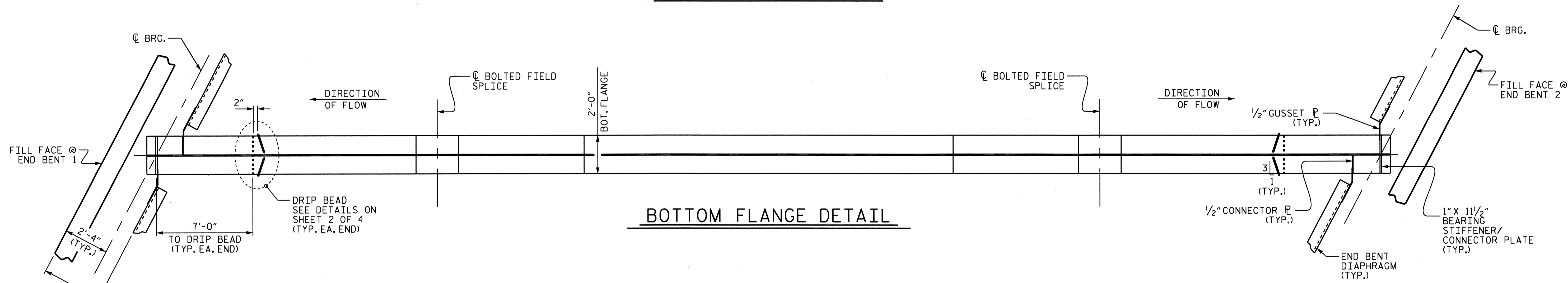
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-10
SUPERSTRUCTURE FRAMING PLAN						
REVISIONS						TOTAL SHEETS 39
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DRAWN BY : P. K. NEWTON DATE : 8/21/12
 CHECKED BY : T. H. FANG DATE : 8/24/12

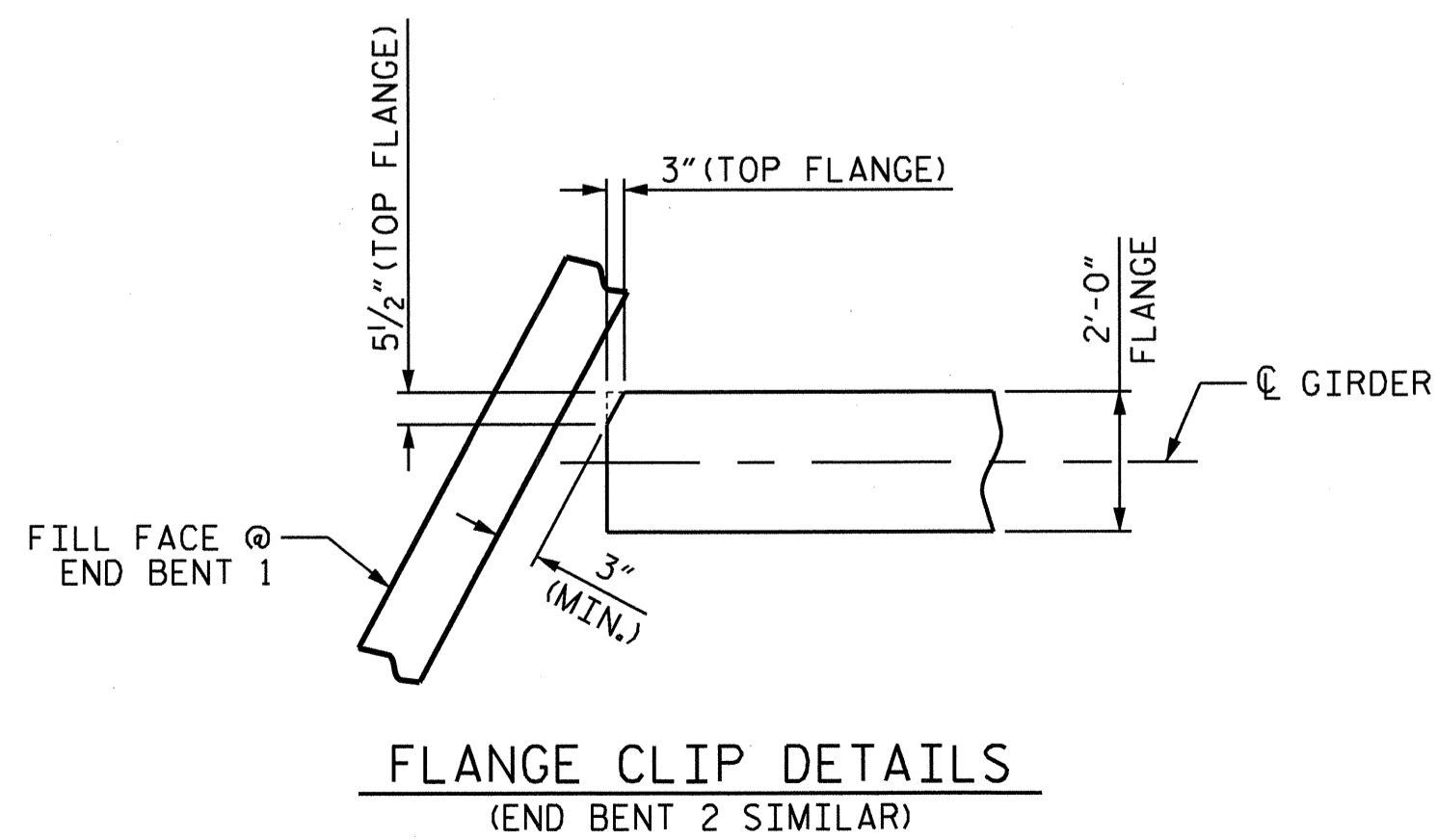
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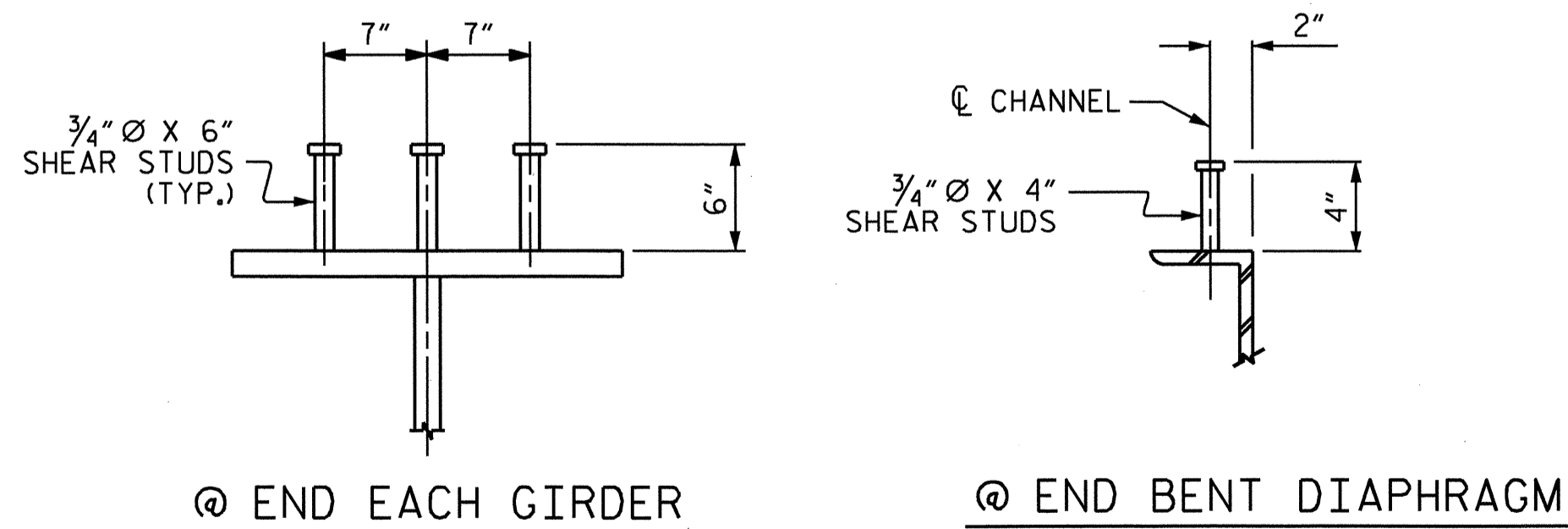
GIRDER ELEVATION



BOTTOM FLANGE DETAIL



FLANGE CLIP DETAILS
(END BENT 2 SIMILAR)



SHEAR STUD DETAILS



PROJECT NO. U-2810B
CUMBERLAND COUNTY
 STATION: 115+52.74 -L-
 SHEET 1 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE					
STRUCTURAL STEEL DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

DRAWN BY: P. K. NEWTON DATE: 5/15/12
 CHECKED BY: T. H. FANG DATE: 8/22/12

SHEET NO.
S-11
TOTAL
SHEETS
39

NOTES

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 4 OF ARTICLE 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

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

ALL FIELD CONNECTIONS TO BE 7/8" DIA. HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED.

BEARING STIFFENERS ARE TO BE PLACED NORMAL TO THE WEB OF THE GIRDER AND SHALL BE PLUMB.

A CHARPY V-NOTCH TEST IS REQUIRED FOR WEB PLATES, BOTTOM FLANGE PLATES, BOTTOM FLANGE SPLICE PLATES, AND WEB SPLICE PLATES FOR ALL GIRDERS AND IN ACCORDANCE WITH ARTICLE 1072-7 OF THE STANDARD SPECIFICATIONS.

PERMITTED FLANGE AND WEB SHOP SPLICES SHALL NOT BE LOCATED WITHIN 15 FEET OF MAXIMUM DEAD LOAD DEFLECTION. KEEP 2 FEET MINIMUM BETWEEN WEB AND FLANGE SHOP SPLICES. KEEP 6" MINIMUM BETWEEN CONNECTOR PLATE AND WEB OR FLANGE SHOP SPLICES.

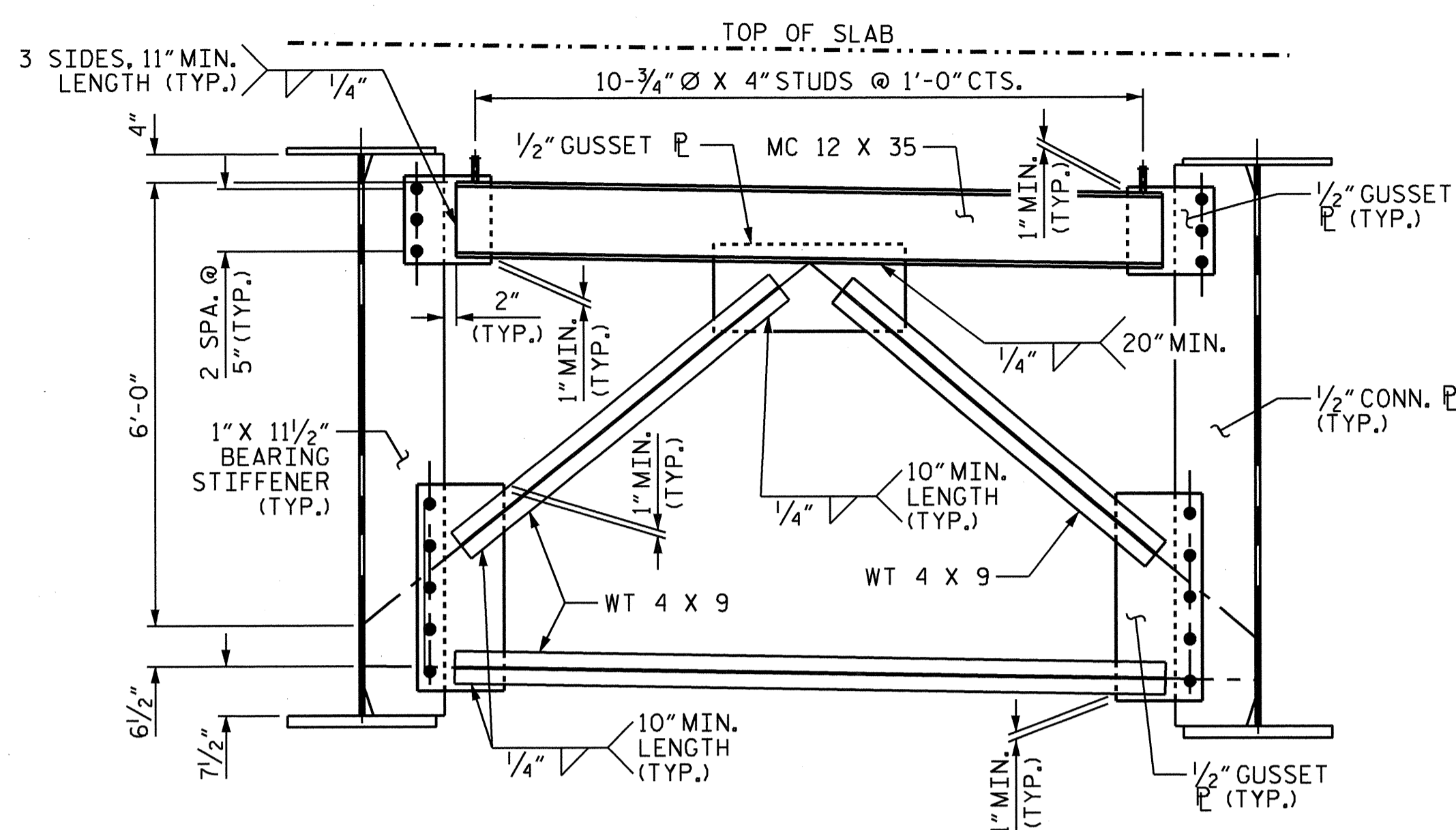
STUDS ON GIRDERS MAY BE SHIFTED UP TO 1" IF NECESSARY TO CLEAR FLANGE SPLICE WELD.

TENSION ON THE ASTM A325 BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-8 OF THE STANDARD SPECIFICATIONS.

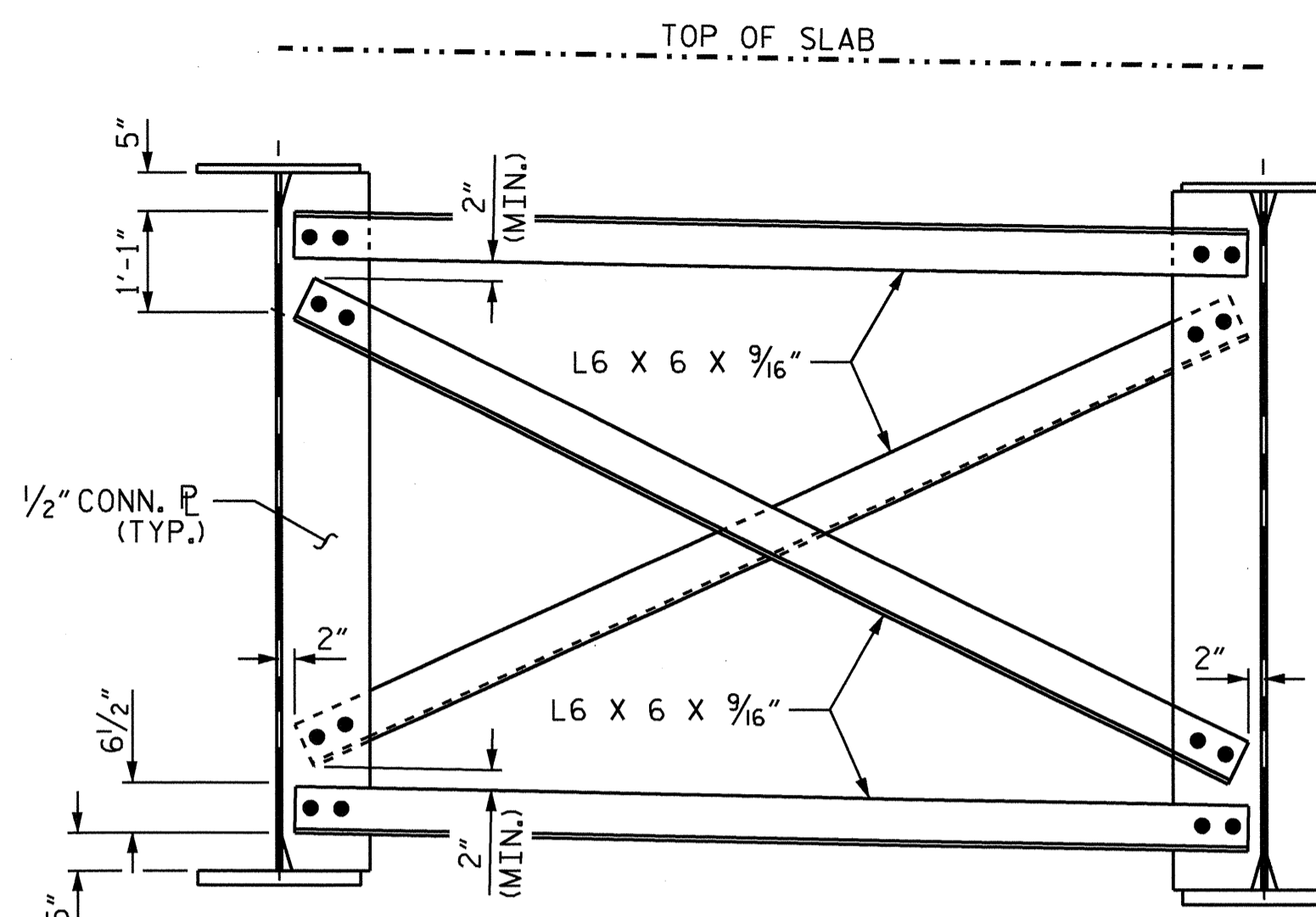
END OF GIRDERS SHALL BE PLUMB.

BEARING STIFFENER MAY REQUIRE COPING IF WIDER THAN BOTTOM FLANGE.

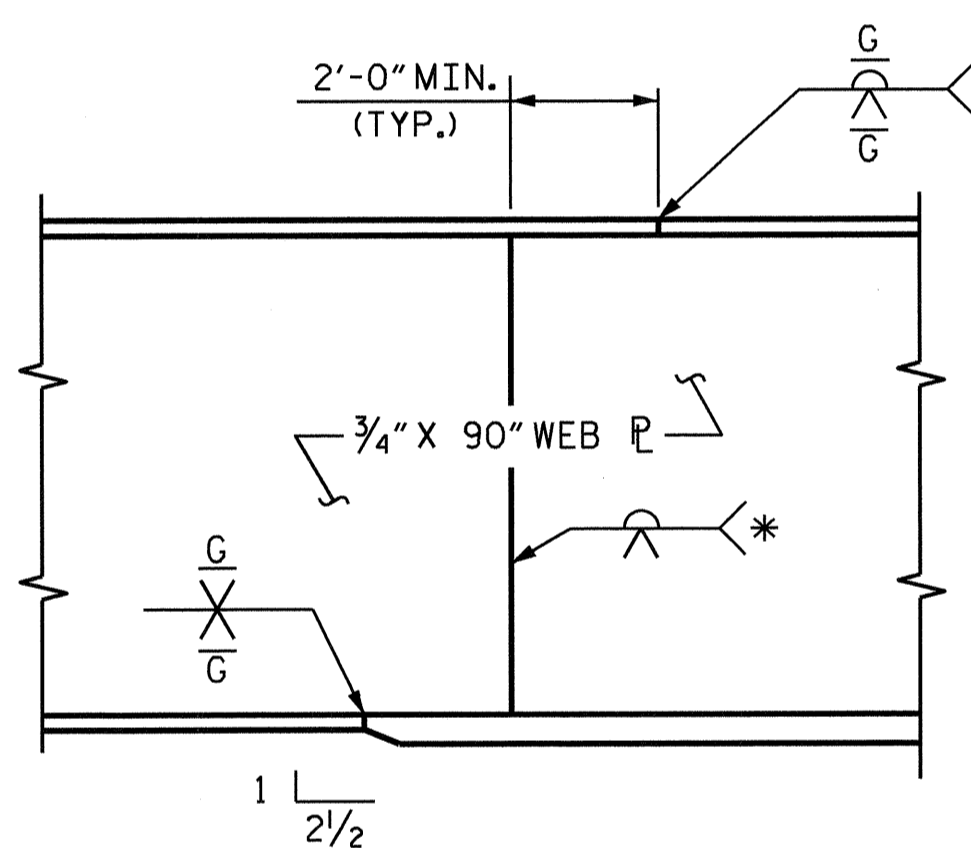
FABRICATORS SHALL DETAIL DIAPHRAGM MEMBERS AND CONNECTIONS FOR FULL DEAD LOAD FIT UP. GIRDERS SHALL BE PLUMB AFTER THE FULL AMOUNT OF DEAD LOAD IS APPLIED.



END BENT DIAPHRAGM

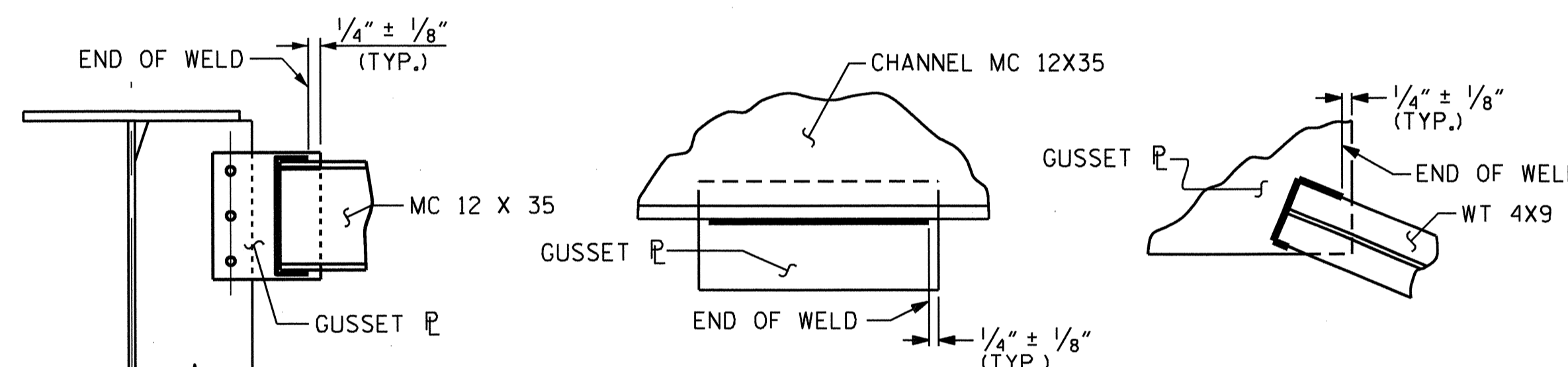


INTERMEDIATE DIAHPRAGM



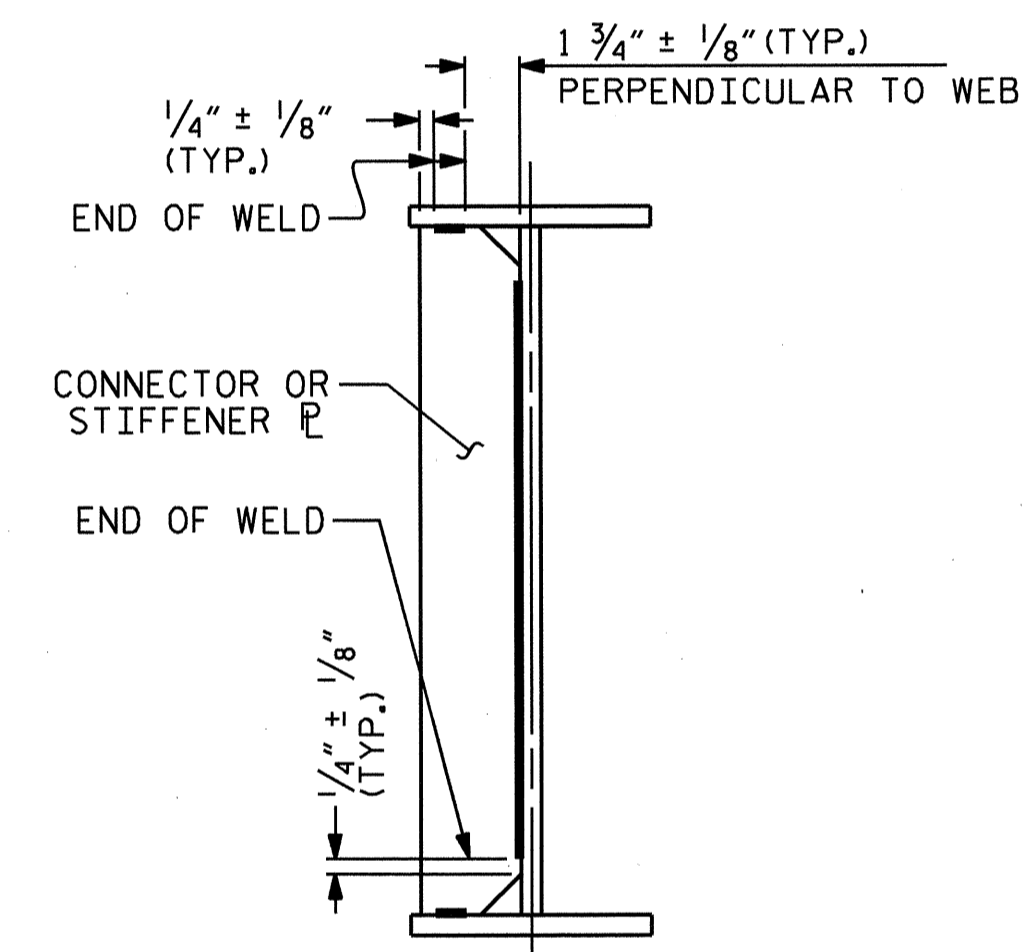
TYPICAL FLANGE AND WEB BUTT JOINT

* GRIND SMOOTH AND FLUSH ON OUTER FACE OF EXTERIOR GIRDERS



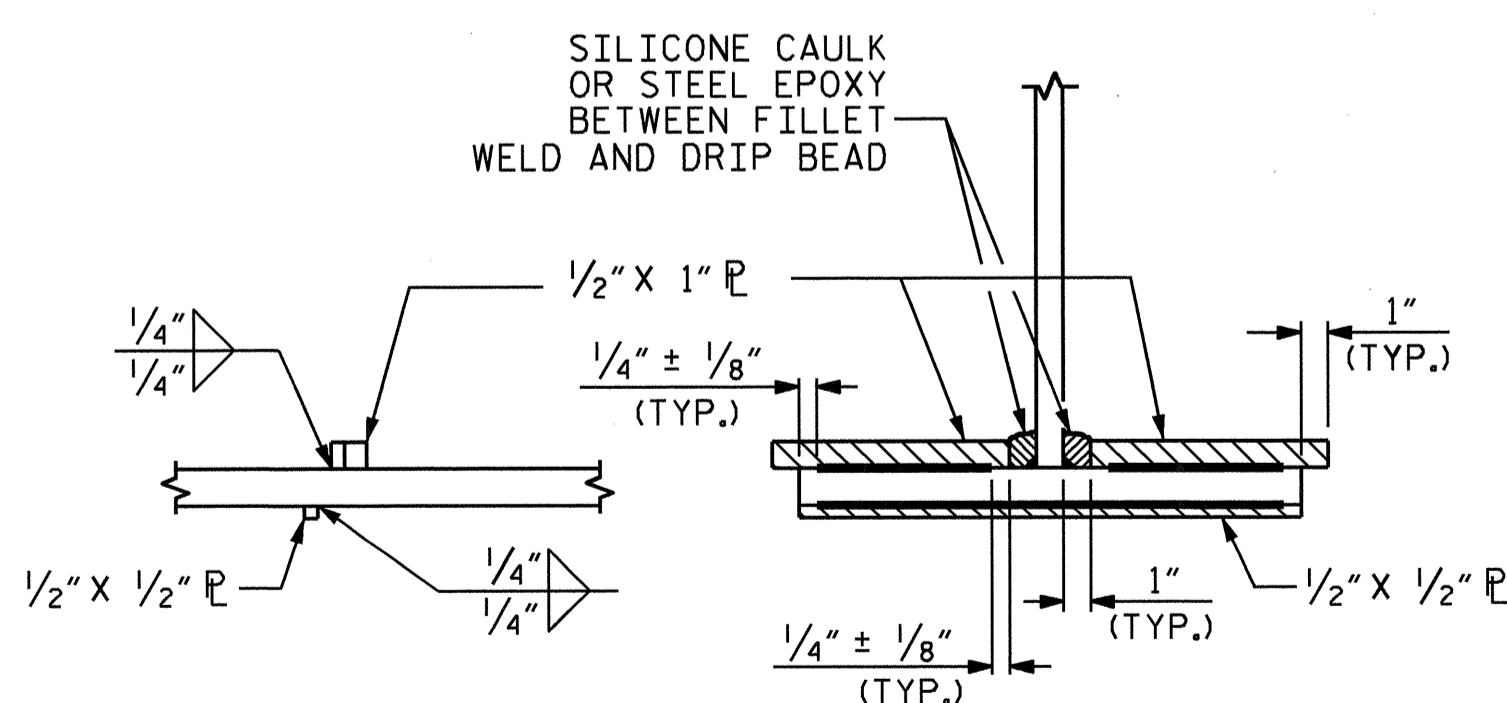
TYPICAL GUSSET PLATE CONNECTIONS

WELD TERMINATION DETAILS

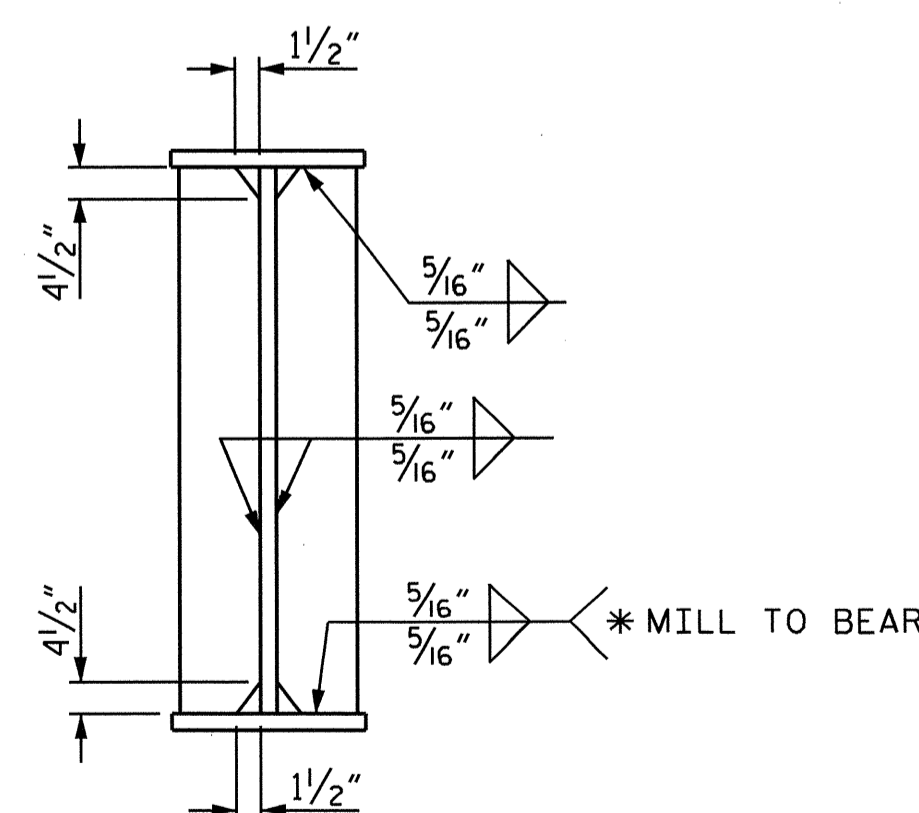


TYPICAL STIFFENER OR CONNECTOR PLATE CONNECTIONS

PROFESSIONAL SEAL
 NORTH CAROLINA
 ENGINEER
 KOREY NEWTON
 10/30/12

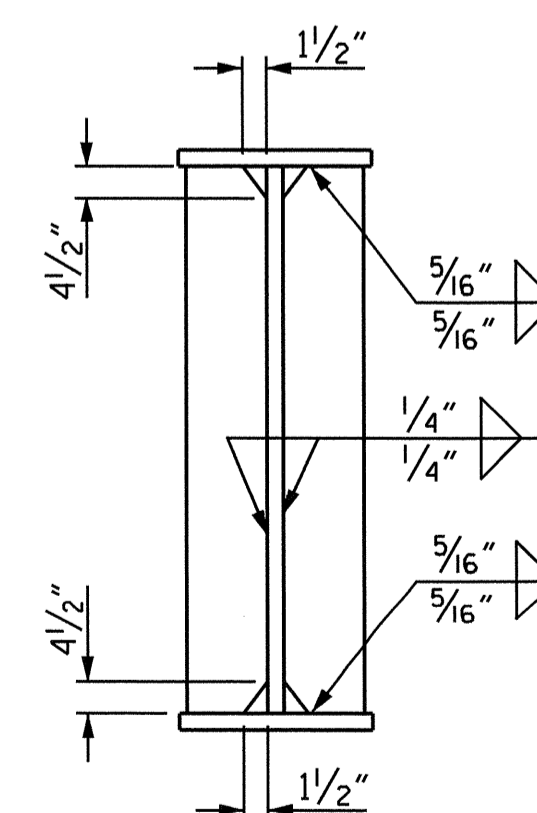


DRIP BEAD DETAILS

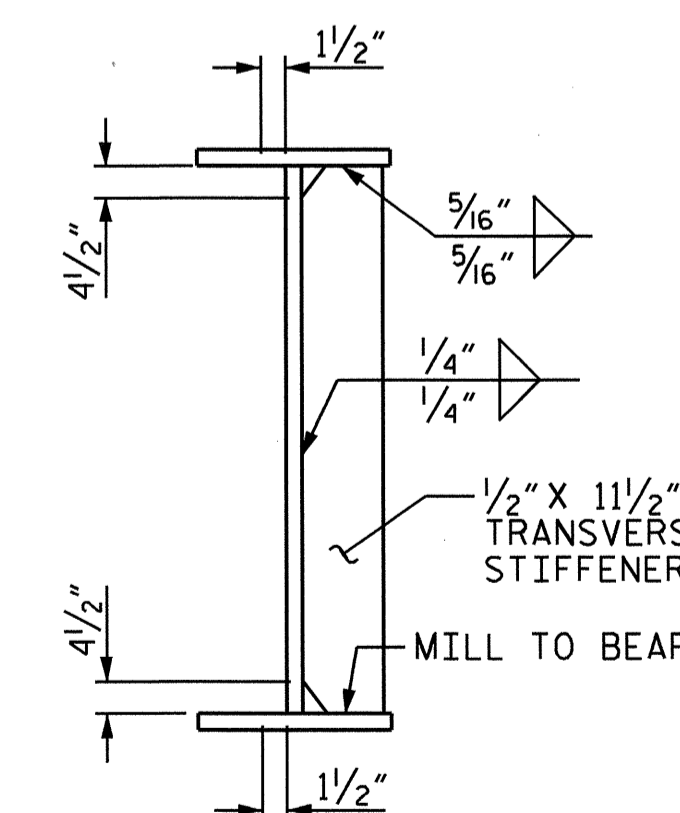


BEARING STIFFENER/CONNECTOR PLATE

NOTE: DO NOT CLIP PLATE AT TOP OUTSIDE CORNER OF STIFFENER PLATE.
 * WELD TO BOTTOM FLANGE IS ONLY REQUIRED WHEN BEARING STIFFENER IS ALSO CONNECTOR PLATE



CONNECTOR PLATE



TRANSVERSE STIFFENER

INSIDE OF EXTERIOR GIRDER FOR GIRDER ERECTION. SEE FRAMING PLAN FOR LOCATIONS.

PROJECT NO. U-2810B
CUMBERLAND COUNTY
 STATION: 115+52.74 -L-
 SHEET 2 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-12
SUPERSTRUCTURE						
STRUCTURAL STEEL DETAILS						
REVISIONS						TOTAL SHEETS 39
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DRAWN BY: P. K. NEWTON DATE: 5/15/12
 CHECKED BY: T. H. FANG DATE: 8/22/12

30-OCT-2012 12:10
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NC005

NOTES

LATERAL BRACING ASSEMBLY SHALL COMPLY WITH SECTION 1072 OF THE STANDARD SPECIFICATIONS.

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W OR APPROVED EQUAL.

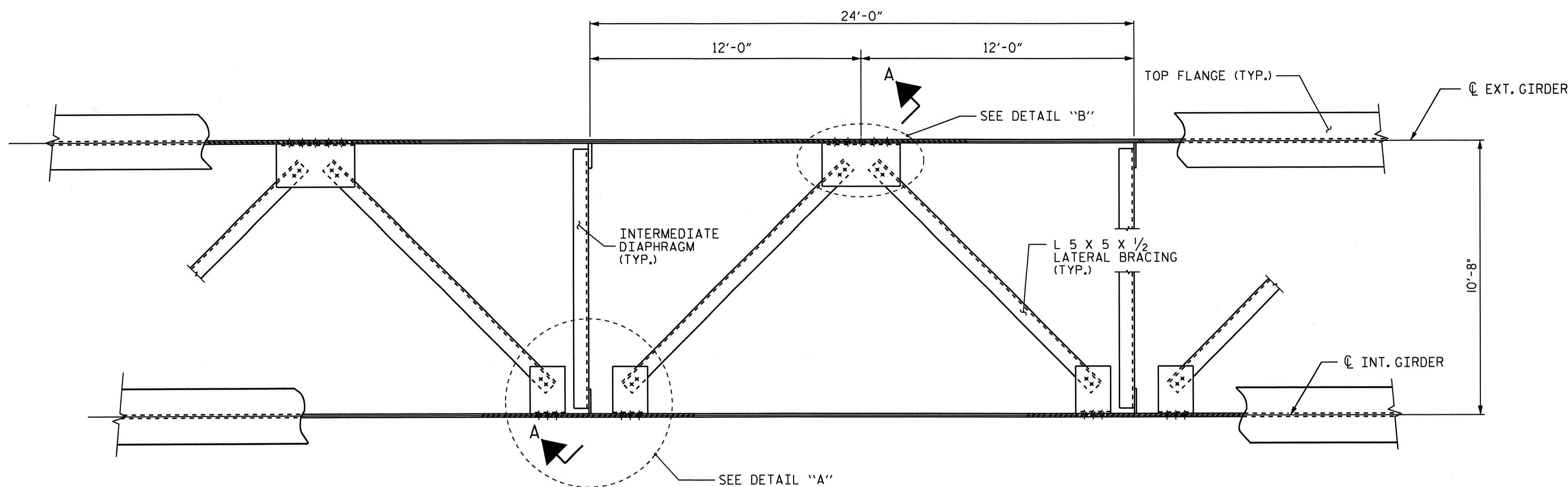
TENSION ON THE ASTM A325 BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL BOLTED CONNECTIONS SHALL BE 7/8" Ø HIGH STRENGTH BOLTS UNLESS OTHERWISE SPECIFIED.

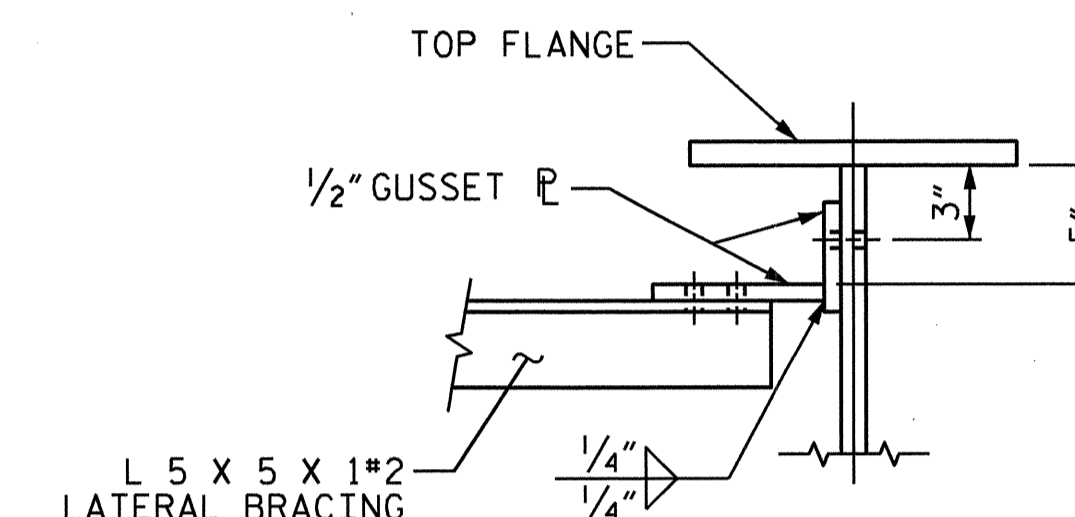
THE CONTRACTOR HAS THE OPTION TO CLIP THE PROTRUDING CORNERS OF THE GUSSET PLATES, AT NO ADDITIONAL COST TO THE DEPARTMENT.

BENT GUSSET PLATES OR ROLLED ANGLE SHAPES MAY BE SUBSTITUTED FOR THE WELDED GUSSET PLATES DETAILED IF APPROVED BY THE ENGINEER, AT NO ADDITIONAL COST TO THE DEPARTMENT.

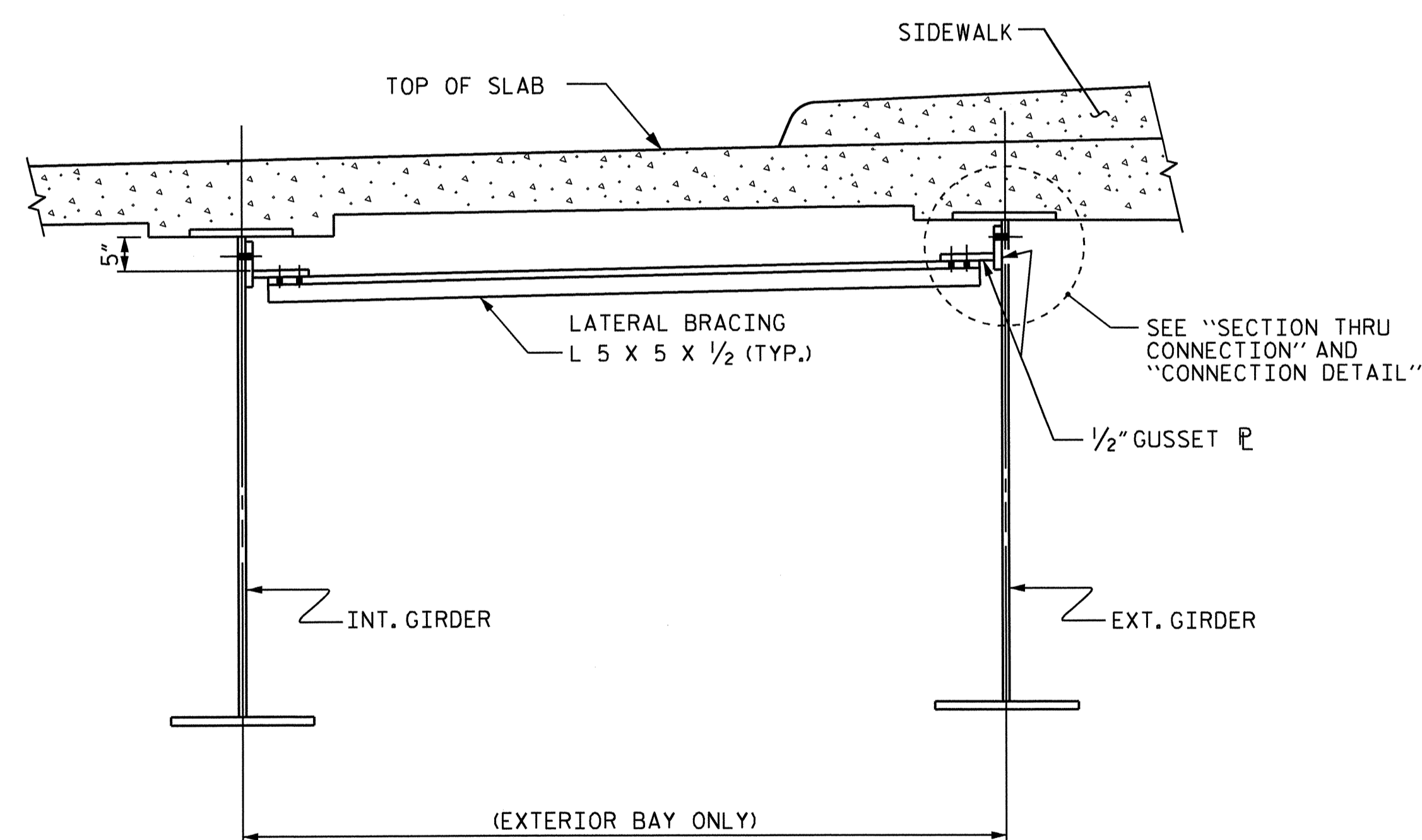
INSTALL THE LATERAL BRACING AFTER ERECTING THE EXTERIOR GIRDER AND THE ADJACENT INTERIOR GIRDER AND INSTALLING THE INTERMEDIATE DIAPHRAGMS.



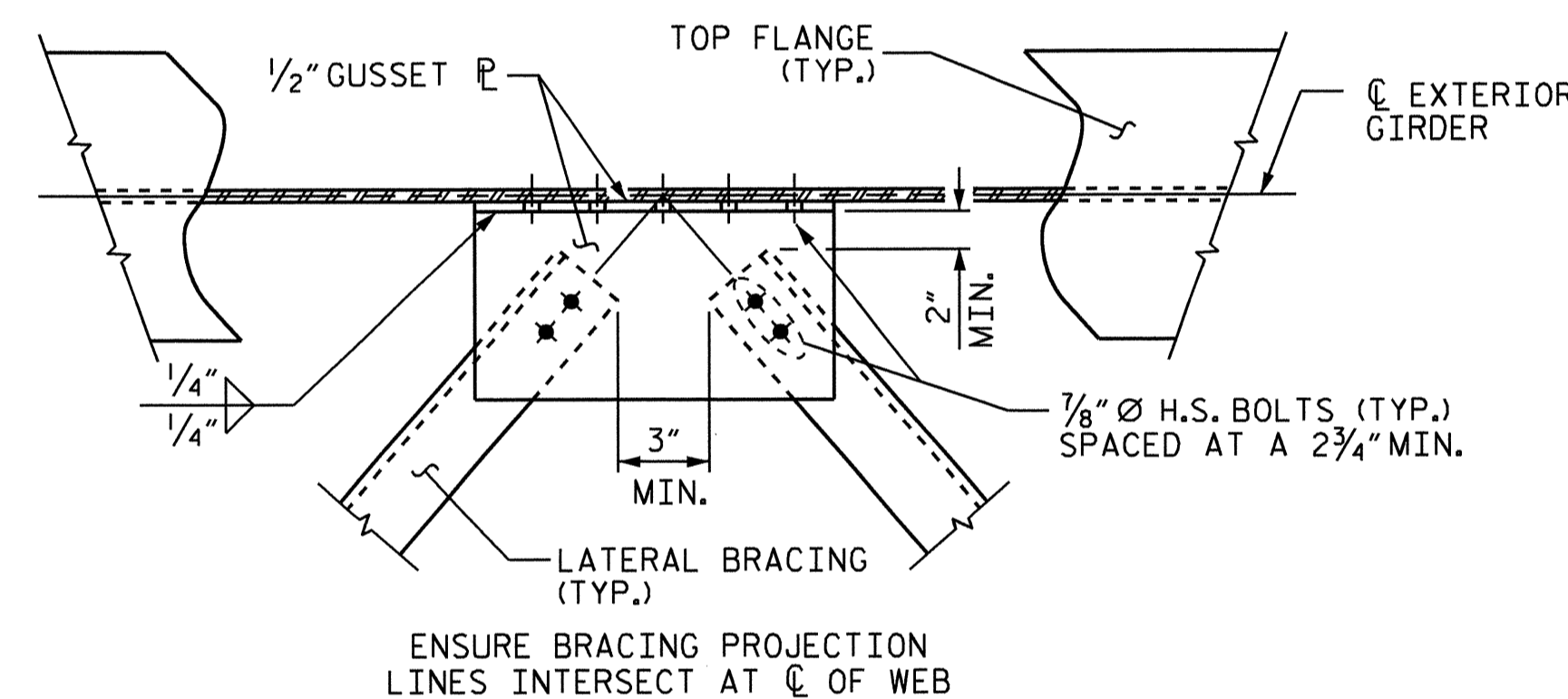
PART PLAN - TOP FLANGE LATERAL BRACING
(THROUGHOUT EXTERIOR BAYS ONLY)



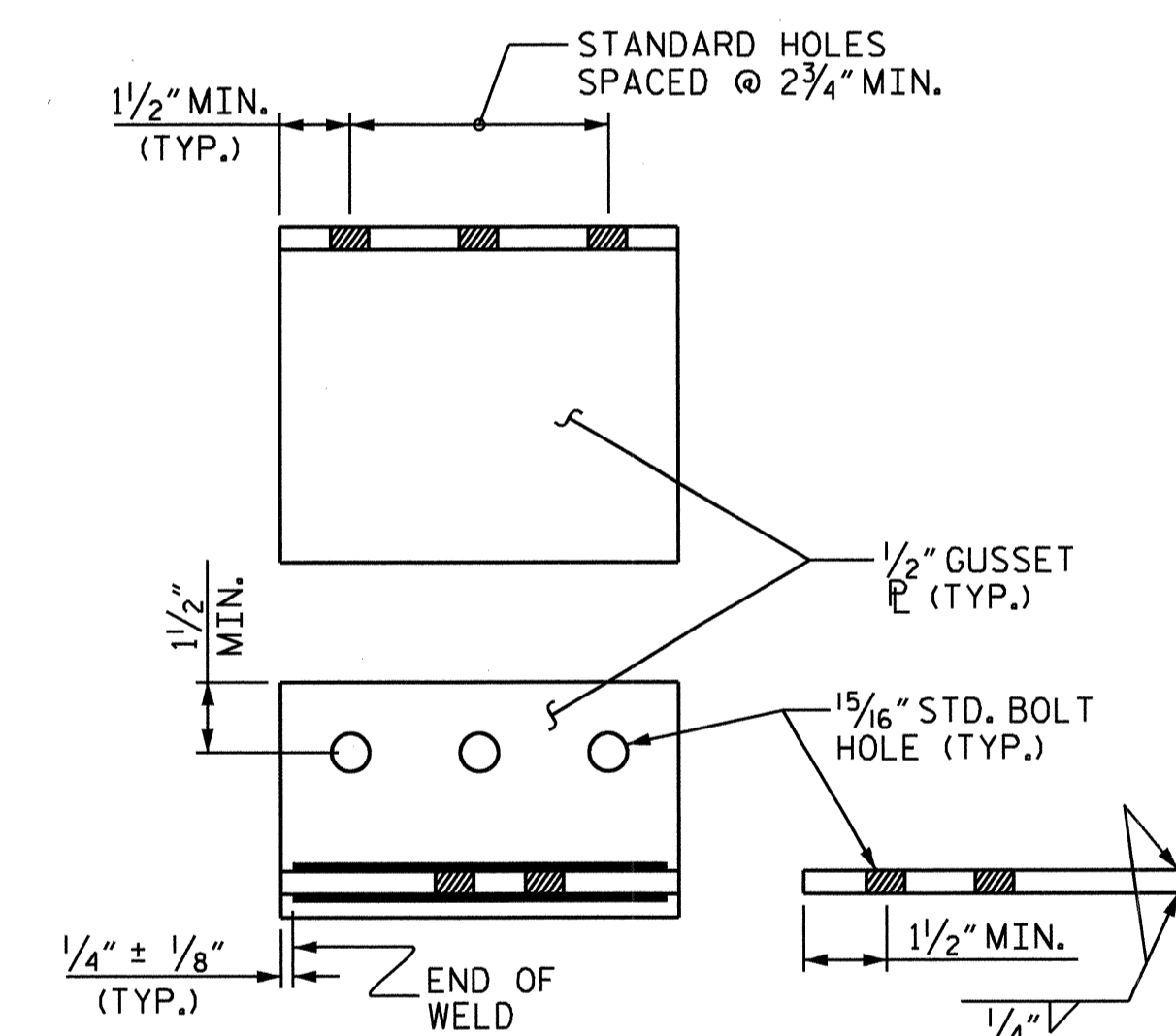
SECTION THRU CONNECTION



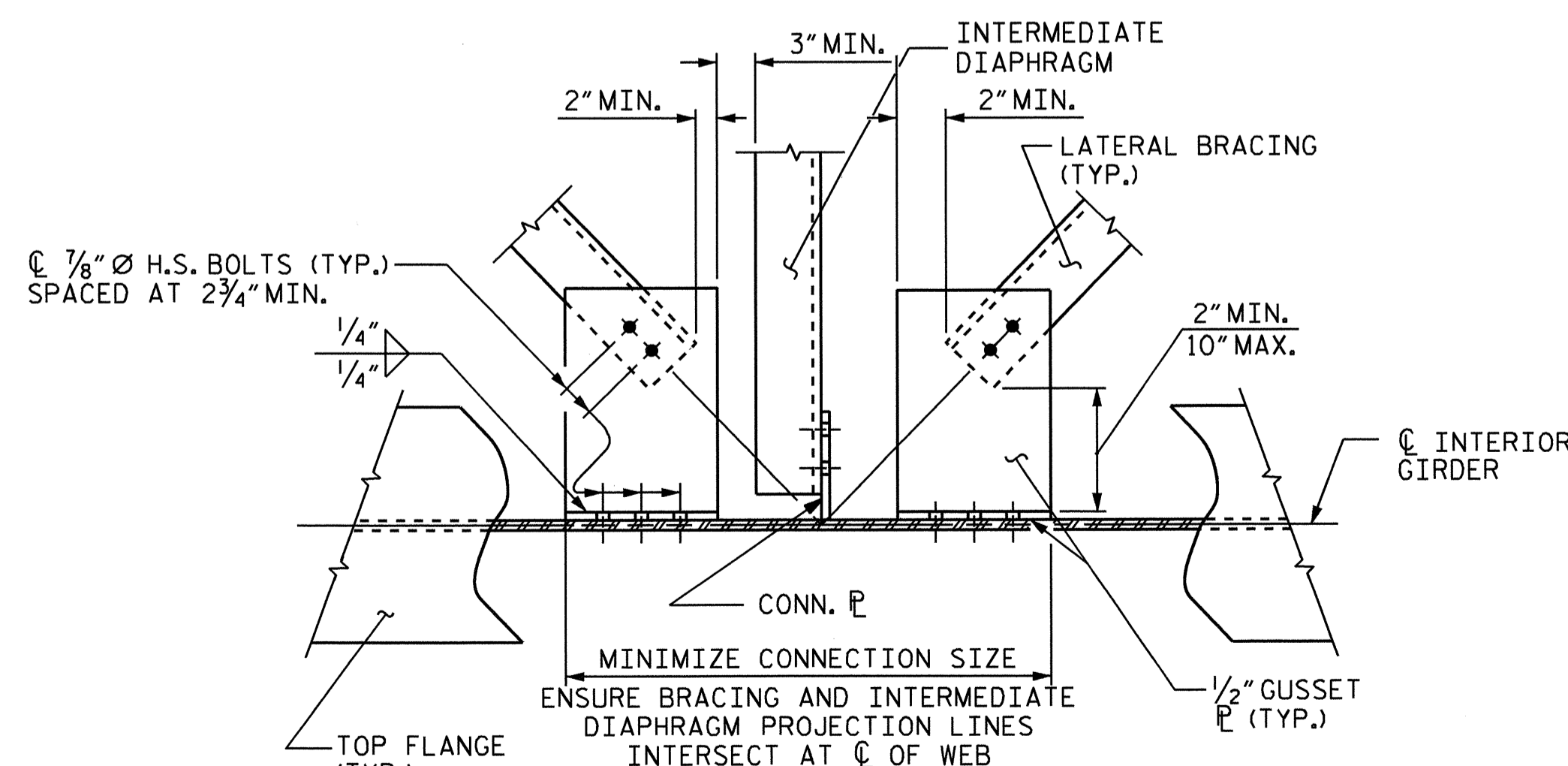
SECTION A-A



DETAIL "B"



CONNECTION DETAIL



DETAIL "A"

PROJECT NO. U-2810B
CUMBERLAND COUNTY
STATION: 115+52.74 -L-

SHEET 3 OF 4



9/11/2012

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
LATERAL BRACING

ASSEMBLED BY: P. K. NEWTON	DATE: 5/16/12
CHECKED BY: T. H. FANG	DATE: 8/22/12
DRAWN BY: WMC 6/11	ADDED: 10/31/11
CHECKED BY: CM 6/11	

11-SEP-2012 11:53
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kpnewton

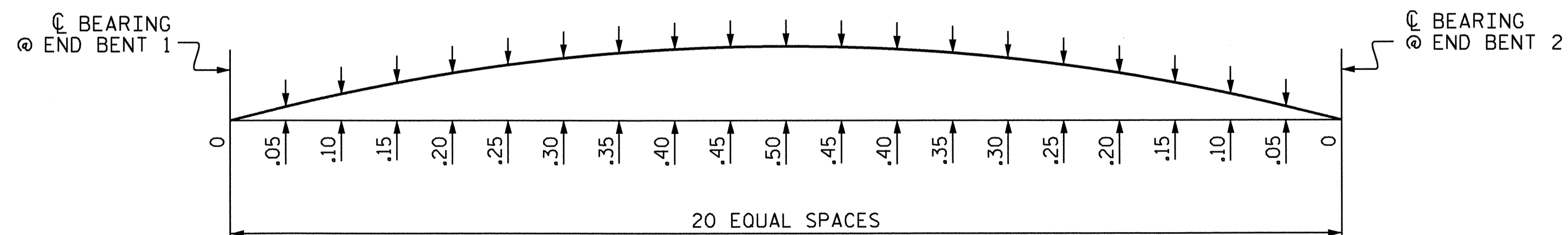
REVISIONS						SHEET NO. S-13
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 39
2			4			

STD. NO. LB1

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	SPAN A																				
	GIRDERS 1 & 8																				
	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	↓ 0.000	0.037	0.073	0.107	0.137	0.163	0.185	0.202	0.214	0.222	0.224	0.222	0.214	0.202	0.185	0.163	0.137	0.107	0.073	0.037	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	↓ 0.000	0.093	0.185	0.272	0.350	0.417	0.473	0.517	0.549	0.568	0.574	0.568	0.549	0.517	0.473	0.417	0.350	0.272	0.185	0.093	0.000
DEFLECTION DUE TO WEIGHT OF SUPERIMPOSED DEAD LOAD	↓ 0.000	0.025	0.049	0.072	0.092	0.110	0.125	0.136	0.145	0.150	0.152	0.150	0.145	0.136	0.125	0.110	0.092	0.072	0.049	0.025	0.000
TOTAL DEAD LOAD DEFLECTION	↓ 0.000	0.155	0.307	0.450	0.579	0.690	0.783	0.856	0.908	0.939	0.950	0.939	0.908	0.856	0.783	0.690	0.579	0.450	0.307	0.155	0.000
VERTICAL CURVE ORDINATE	↑ 0.000	0.090	0.171	0.242	0.304	0.356	0.399	0.432	0.456	0.470	0.475	0.470	0.456	0.432	0.399	0.356	0.304	0.242	0.171	0.090	0.000
REQUIRED CAMBER	↑ 0	2 ¹⁵ / ₁₆	5 ³ / ₄	8 ⁵ / ₁₆	10 ⁵ / ₈	12 ⁹ / ₁₆	14 ³ / ₁₆	15 ⁷ / ₁₆	16 ³ / ₈	16 ¹⁵ / ₁₆	17 ¹ / ₈	16 ¹⁵ / ₁₆	16 ³ / ₈	15 ⁷ / ₁₆	14 ³ / ₁₆	12 ⁹ / ₁₆	10 ⁵ / ₈	8 ⁵ / ₁₆	5 ³ / ₄	2 ¹⁵ / ₁₆	0
		GIRDERS 2 & 7																			
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	↓ 0.000	0.037	0.073	0.107	0.137	0.163	0.185	0.202	0.214	0.222	0.224	0.222	0.214	0.202	0.185	0.163	0.137	0.107	0.073	0.037	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	↓ 0.000	0.093	0.185	0.272	0.350	0.417	0.473	0.517	0.549	0.568	0.574	0.568	0.549	0.517	0.473	0.417	0.350	0.272	0.185	0.093	0.000
DEFLECTION DUE TO WEIGHT OF SUPERIMPOSED DEAD LOAD	↓ 0.000	0.014	0.028	0.041	0.052	0.063	0.071	0.078	0.082	0.085	0.086	0.085	0.082	0.078	0.071	0.063	0.052	0.041	0.028	0.014	0.000
TOTAL DEAD LOAD DEFLECTION	↓ 0.000	0.144	0.286	0.419	0.539	0.643	0.729	0.797	0.845	0.875	0.885	0.875	0.845	0.797	0.729	0.643	0.539	0.419	0.286	0.144	0.000
VERTICAL CURVE ORDINATE	↑ 0.000	0.090	0.171	0.242	0.304	0.356	0.399	0.432	0.456	0.470	0.475	0.470	0.456	0.432	0.399	0.356	0.304	0.242	0.171	0.090	0.000
REQUIRED CAMBER	↑ 0	2 ¹³ / ₁₆	5 ¹ / ₂	7 ¹⁵ / ₁₆	10 ¹ / ₈	12	13 ⁹ / ₁₆	14 ³ / ₄	15 ⁵ / ₈	16 ¹ / ₈	16 ¹⁵ / ₁₆	16 ¹ / ₈	15 ⁵ / ₈	14 ³ / ₄	13 ⁹ / ₁₆	12	10 ¹ / ₈	7 ¹⁵ / ₁₆	5 ¹ / ₂	2 ¹³ / ₁₆	0
		GIRDERS 3 & 6																			
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	↓ 0.000	0.037	0.073	0.107	0.137	0.163	0.185	0.202	0.214	0.222	0.224	0.222	0.214	0.202	0.185	0.163	0.137	0.107	0.073	0.037	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	↓ 0.000	0.093	0.185	0.272	0.350	0.417	0.473	0.517	0.549	0.568	0.574	0.568	0.549	0.517	0.473	0.417	0.350	0.272	0.185	0.093	0.000
DEFLECTION DUE TO WEIGHT OF SUPERIMPOSED DEAD LOAD	↓ 0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
TOTAL DEAD LOAD DEFLECTION	↓ 0.000	0.130	0.258	0.378	0.487	0.580	0.658	0.719	0.763	0.789	0.798	0.789	0.763	0.719	0.658	0.580	0.487	0.378	0.258	0.130	0.000
VERTICAL CURVE ORDINATE	↑ 0.000	0.090	0.171	0.242	0.304	0.356	0.399	0.432	0.456	0.470	0.475	0.470	0.456	0.432	0.399	0.356	0.304	0.242	0.171	0.090	0.000
REQUIRED CAMBER	↑ 0	2 ⁵ / ₈	5 ¹ / ₈	7 ¹ / ₁₆	9 ¹ / ₂	11 ¹ / ₄	12 ¹¹ / ₁₆	13 ³ / ₁₆	14 ⁵ / ₈	15 ¹ / ₈	15 ¹ / ₄	15 ¹ / ₈	14 ⁵ / ₈	13 ³ / ₁₆	12 ¹¹ / ₁₆	11 ¹ / ₄	9 ¹ / ₂	7 ¹ / ₁₆	5 ¹ / ₈	2 ⁵ / ₈	0
		GIRDERS 4 & 5																			
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	↓ 0.000	0.037	0.073	0.107	0.137	0.163	0.185	0.202	0.214	0.222	0.224	0.222	0.214	0.202	0.185	0.163	0.137	0.107	0.073	0.037	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	↓ 0.000	0.095	0.191	0.280	0.360	0.429	0.487	0.533	0.565	0.585	0.591	0.585	0.565	0.533	0.487	0.429	0.360	0.280	0.191	0.095	0.000
DEFLECTION DUE TO WEIGHT OF SUPERIMPOSED DEAD LOAD	↓ 0.000	0.011	0.022	0.033	0.042	0.050	0.057	0.062	0.066	0.068	0.069	0.068	0.066	0.062	0.057	0.050	0.042	0.033	0.022	0.011	0.000
TOTAL DEAD LOAD DEFLECTION	↓ 0.000	0.144	0.286	0.419	0.539	0.642	0.729	0.796	0.845	0.874	0.884	0.874	0.845	0.796	0.729	0.642	0.539	0.419	0.286	0.144	0.000
VERTICAL CURVE ORDINATE	↑ 0.000	0.090	0.171	0.242	0.304	0.356	0.399	0.432	0.456	0.470	0.475	0.470	0.456	0.432	0.399	0.356	0.304	0.242	0.171	0.090	0.000
REQUIRED CAMBER	↑ 0	2 ¹³ / ₁₆	5 ¹ / ₂	7 ¹⁵ / ₁₆	10 ¹ / ₈	12	13 ⁹ / ₁₆	14 ³ / ₄	15 ⁵ / ₈	16 ¹ / ₈	16 ¹⁵ / ₁₆	16 ¹ / ₈	15 ⁵ / ₈	14 ³ / ₄	13 ⁹ / ₁₆	12	10 ¹ / ₈	7 ¹⁵ / ₁₆	5 ¹ / ₂	2 ¹³ / ₁₆	0

* INCLUDES SLAB, BUILDUPS, AND STAY-IN-PLACE FORMS.
ALL VALUES ARE SHOWN IN FEET, EXCEPT "FINAL CAMBER", WHICH IS SHOWN IN INCHES.



SPAN A
SCHMATIC OF CAMBER ORDINATES
FOR CAMBER VALUES AT EACH GIRDER TWENTIETH POINTS, SEE TABLE ABOVE.
SLOPE FOR ZERO CAMBER BASE LINE VARIES.



PROJECT NO. U-2810B
CUMBERLAND COUNTY
STATION: 115+52.74 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH				SHEET NO. S-15		
SUPERSTRUCTURE						
DEAD LOAD DEFLECTION TABLE						
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			39
2			4			

DRAWN BY : P. K. NEWTON DATE : 5/22/12
CHECKED BY : T. H. FANG DATE : 8/22/12

NOTES

FOR POT BEARINGS, SEE SPECIAL PROVISIONS.

AT ALL POINTS OF SUPPORT IN SPANS --- NUTS FOR ANCHOR BOLTS SHALL BE TIGHTENED FINGER TIGHT AND GIVEN AN ADDITIONAL 1/4 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

WHEN WELDING THE SOLE PLATE TO THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE BEARING DOES NOT EXCEED 250°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE TFE OR ELASTOMER.

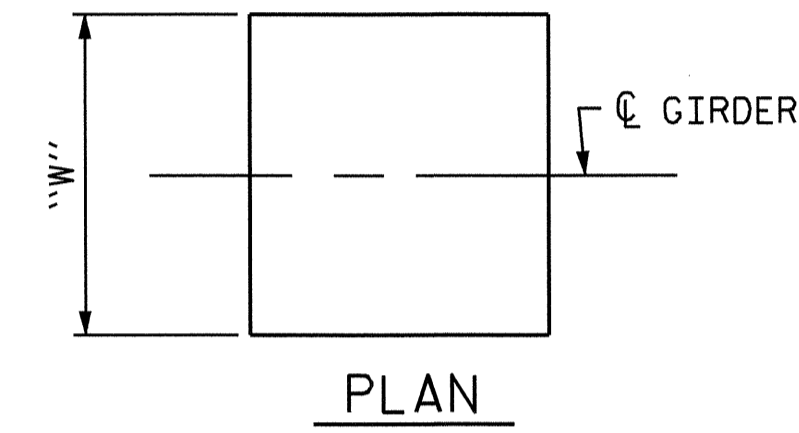
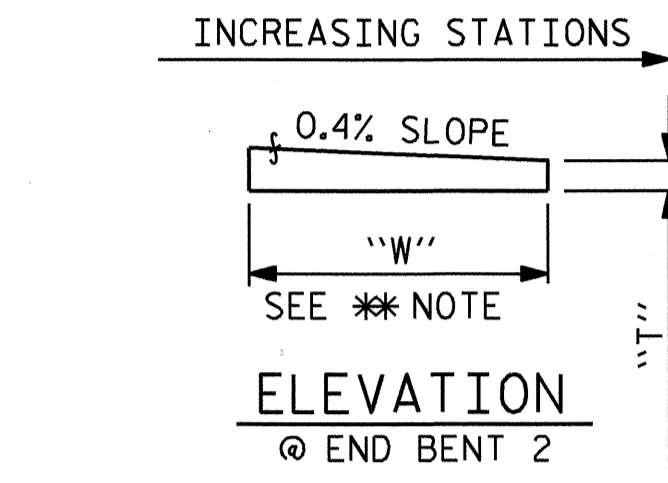
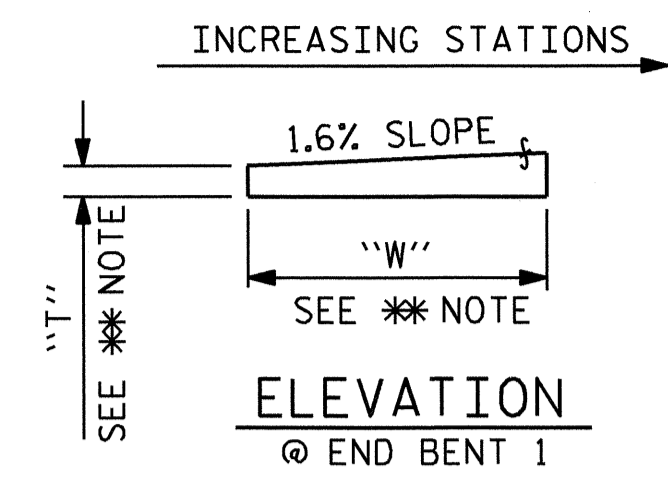
AFTER BEARING ASSEMBLY IS IN PLACE AND ANCHOR BOLTS HAVE BEEN FINALLY POSITIONED, THEY SHALL BE GROUTED IN PLACE AS SHOWN.

THE CLOSURE PLATE, GROUT PIPE AND STANDARD PIPE FOR THIS ASSEMBLY NEED NOT BE GALVANIZED.

SOLE PLATES SHOULD BE WELDED TO BEAM FLANGES AND ANCHOR BOLTS SHOULD BE GROUTED BEFORE FALSEWORK IS PLACED.

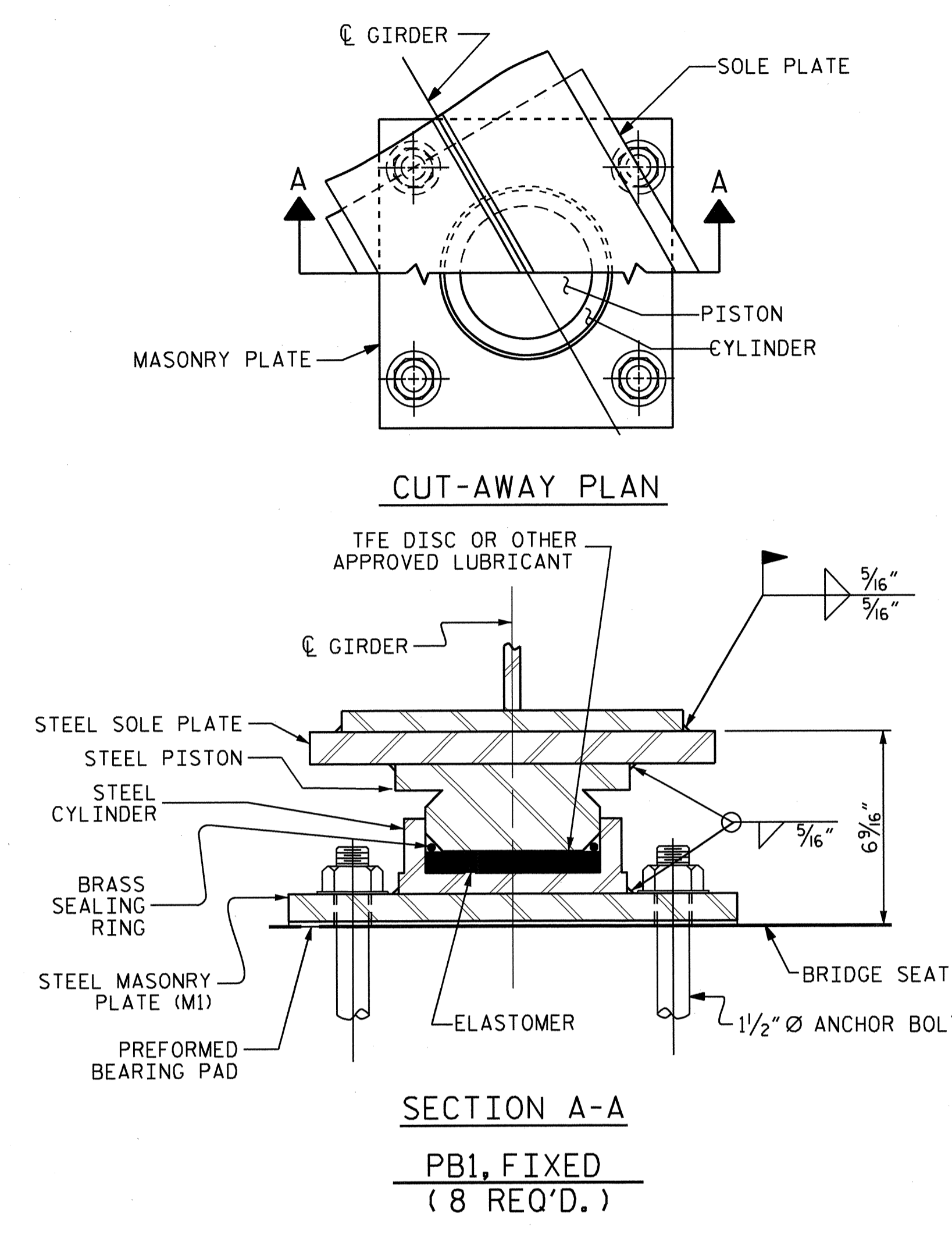
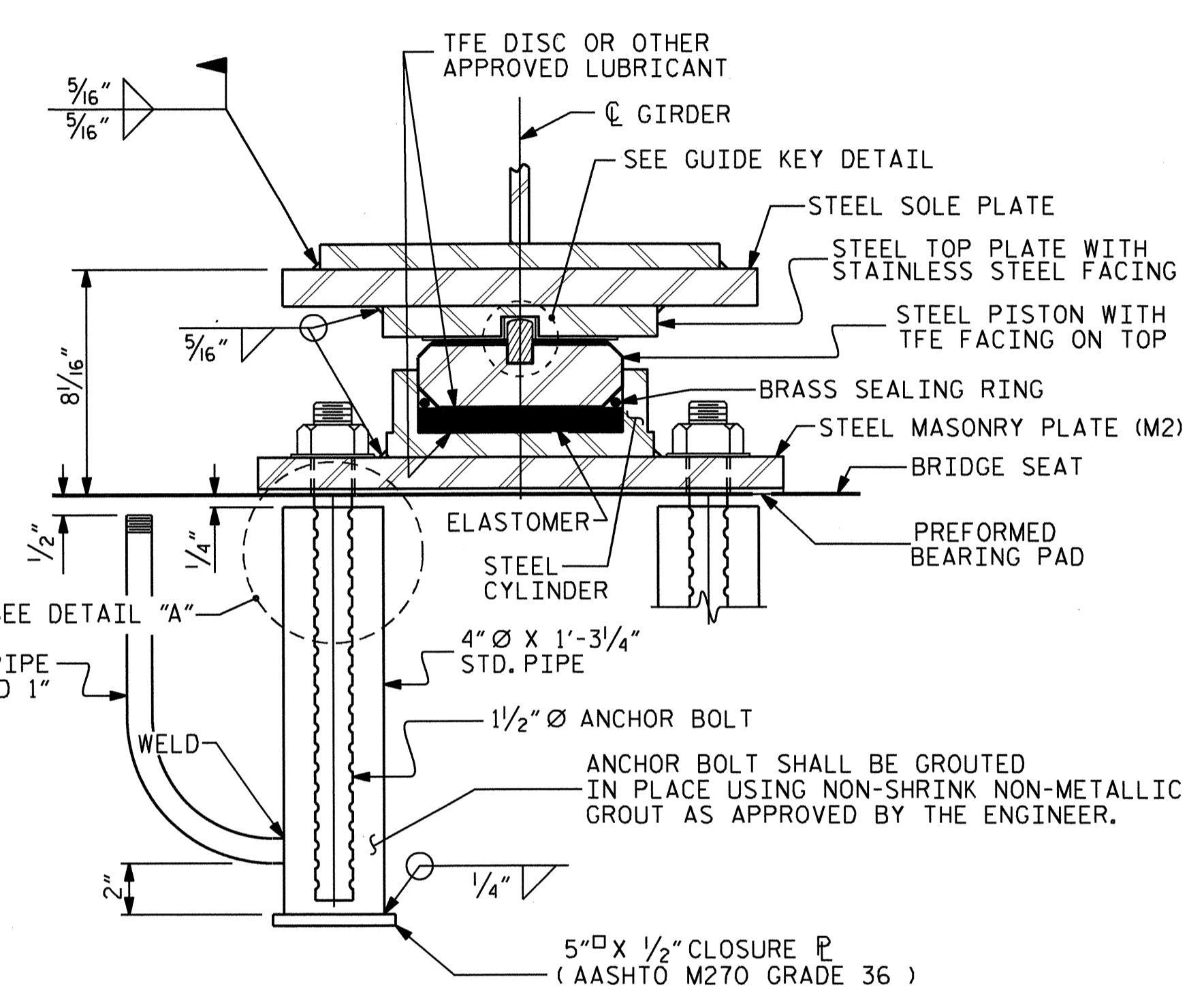
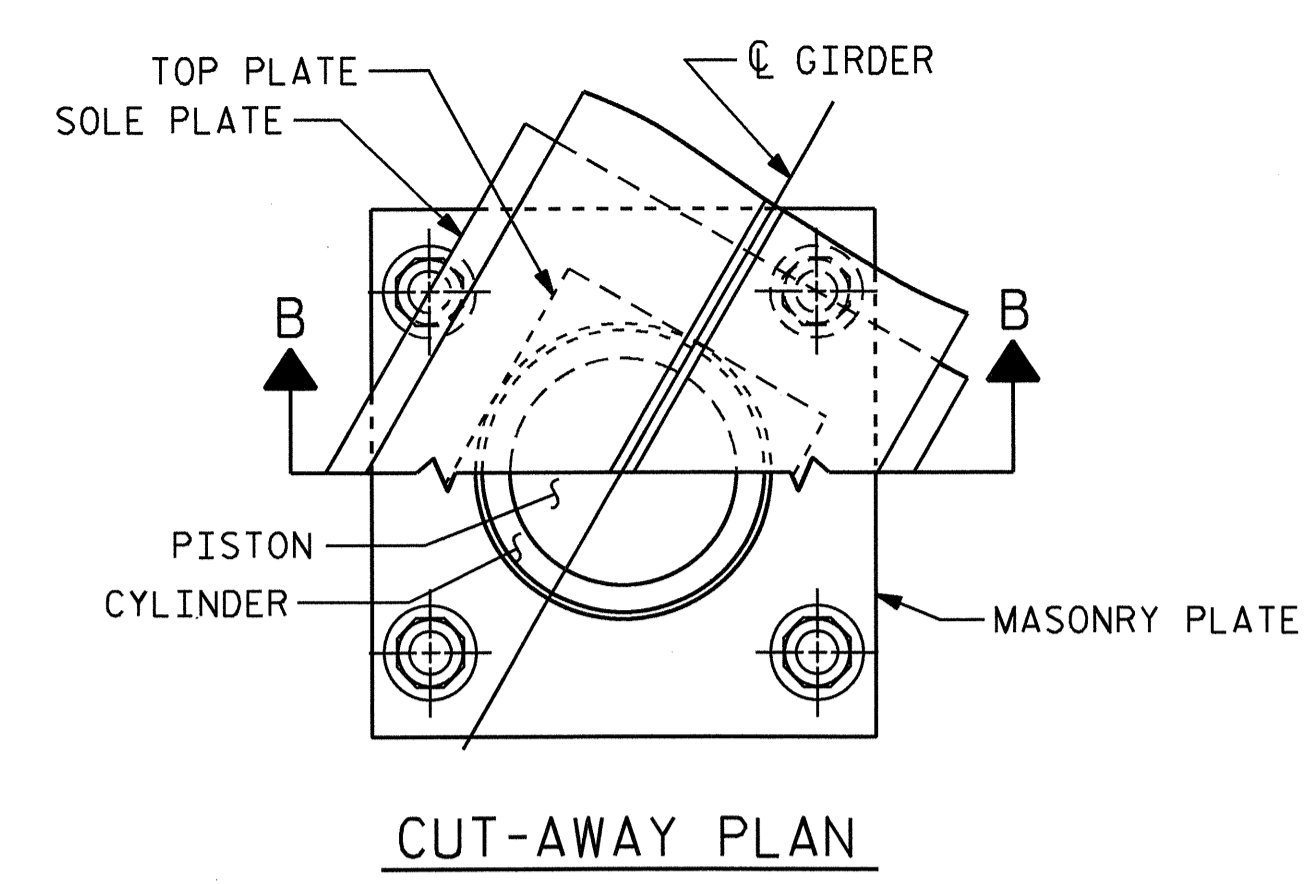
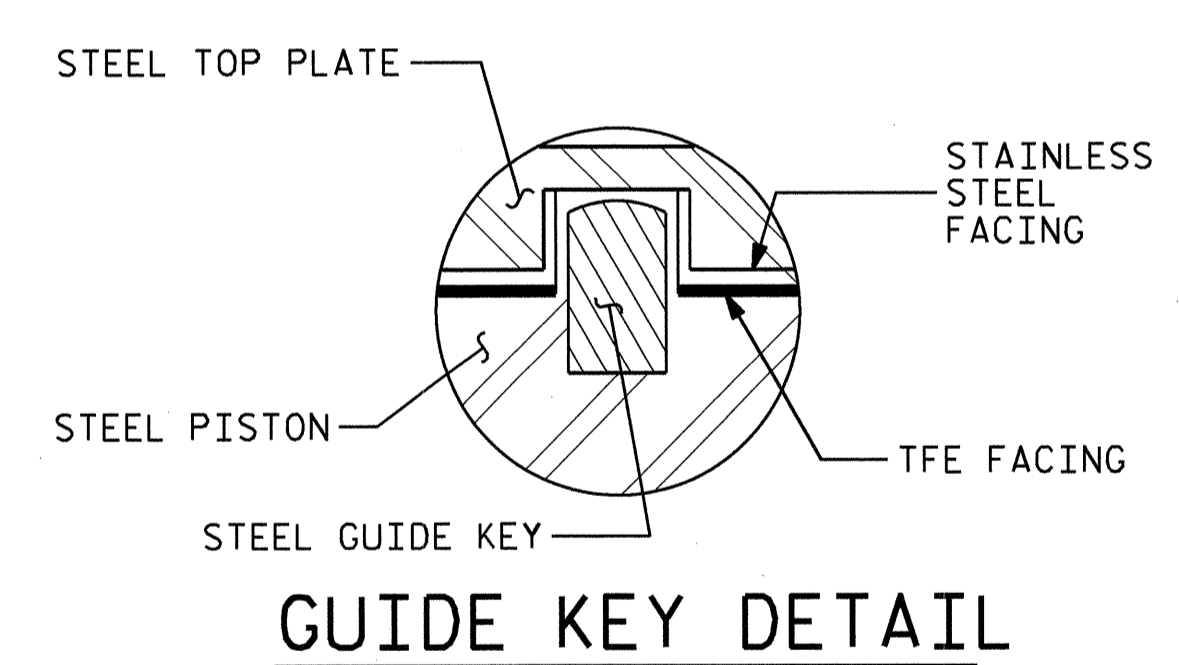
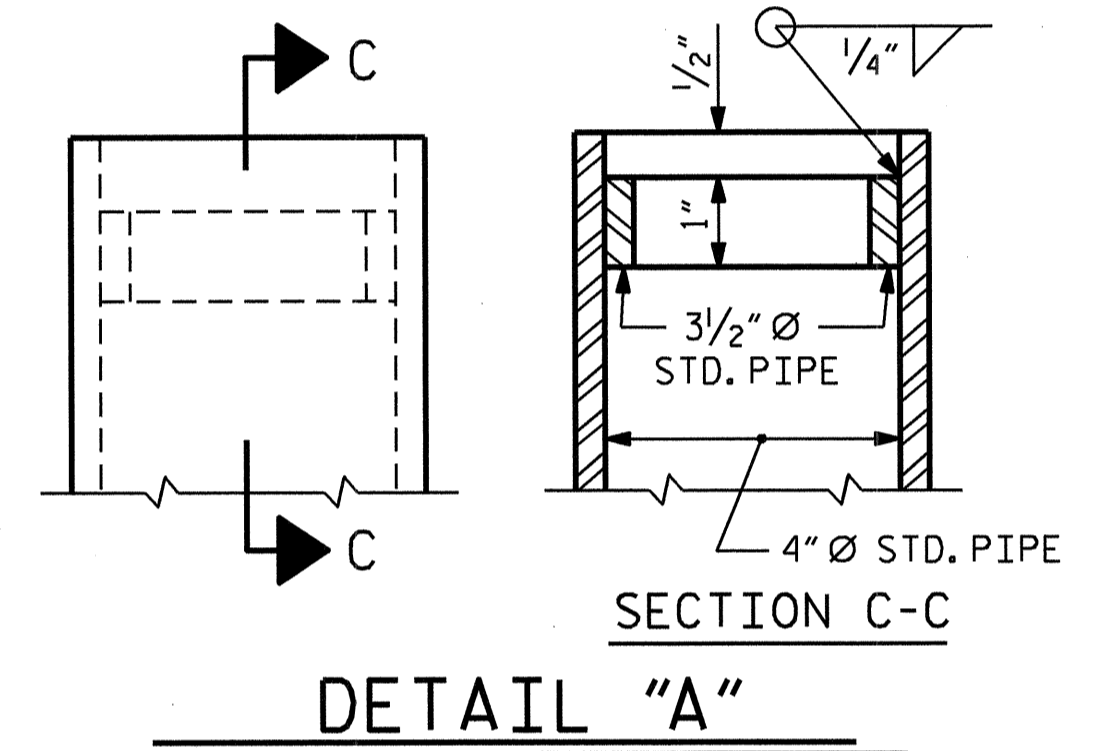
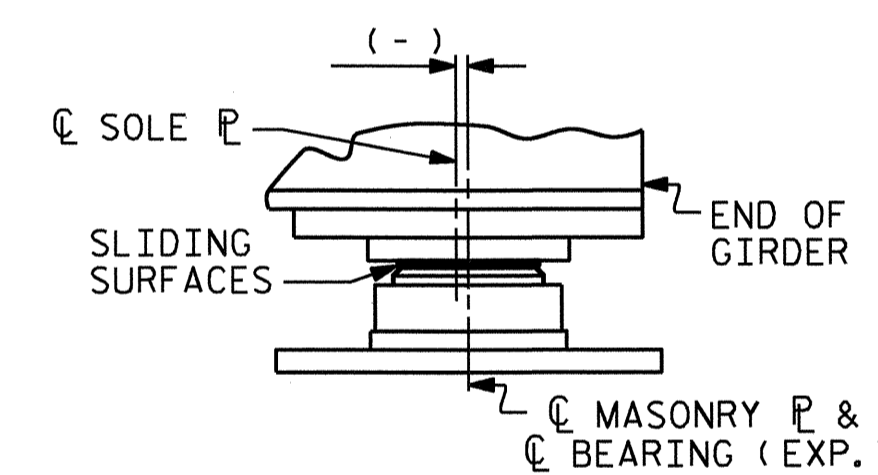
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

THE CONTRACTOR MAY SUBSTITUTE DISC BEARINGS FOR THE POT BEARINGS SHOWN. FOR OPTIONAL DISC BEARINGS, SEE SPECIAL PROVISIONS.

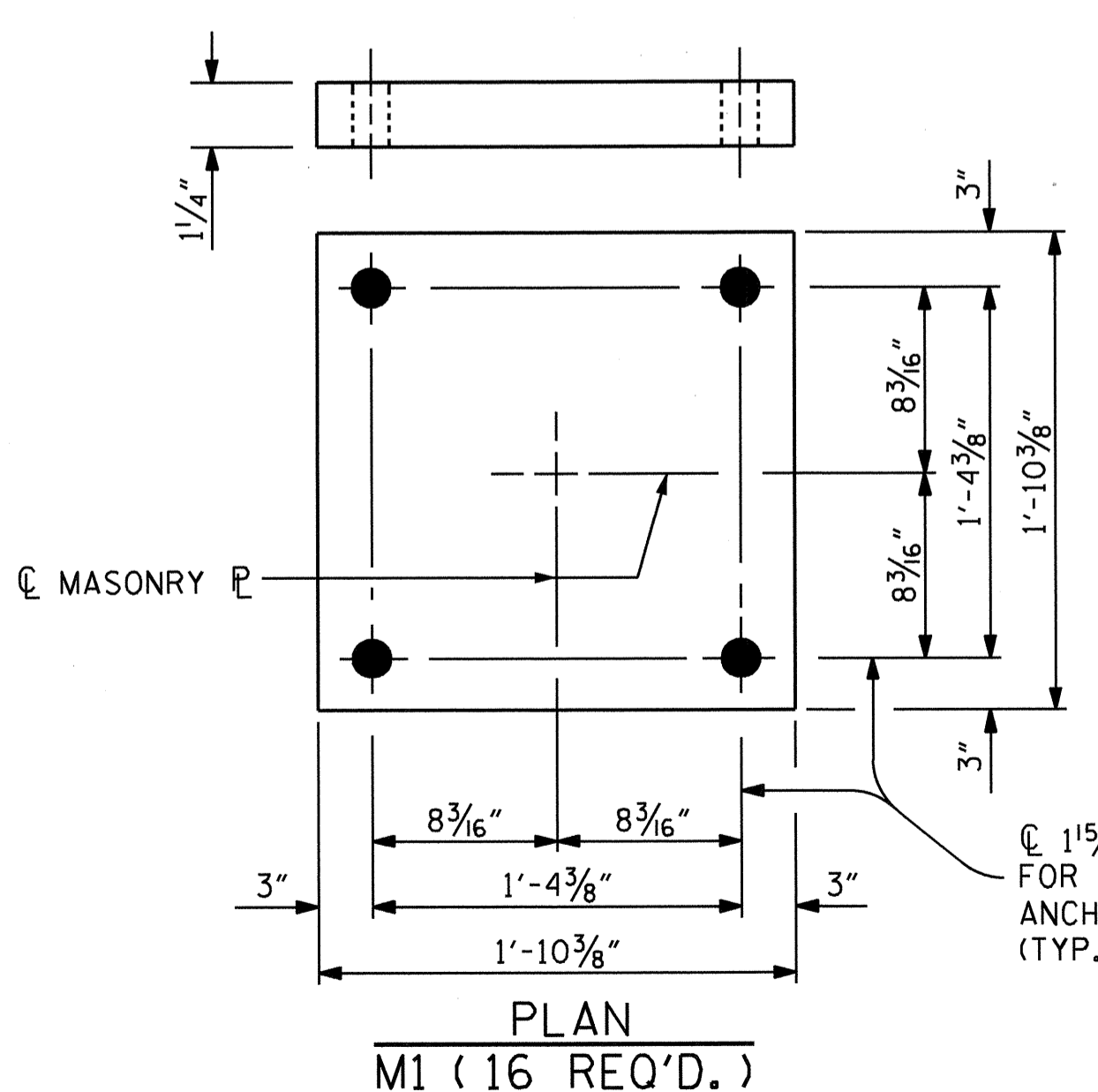


SOLE PLATE DETAILS

** NOTE: DIMENSIONS "W" AND "T" ARE TO BE DETERMINED BY THE MANUFACTURER.



POT BEARING DETAILS



MASONRY PLATE DETAILS

TABLE FOR LOADS AND MOVEMENT

BEARING	LOCATION	UNFACTORED VERTICAL LOAD (KIPS)			FACTORED LATERAL LOAD (KIPS)	TOTAL MOVEMENT (INCHES)	
		DEAD	LIVE	TOTAL			
		DC	DW	LL+IM			
PB1 (FIXED)	END BENT 1	236	25	163	424	86	N/A
PB2 (EXP.)	END BENT 2	236	25	163	424	86	1 5/16"

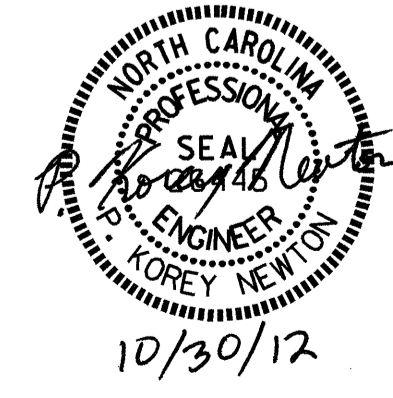
TABLE FOR PLATE SETTING DATA (EXPANSION POT BEARINGS)

TEMPERATURE AT TIME OF SETTING	45° F	60° F	90° F	*
@ END BENT 2	-5/16"	0	9/16"	5/8"

* CORRECTION FOR END ROTATION DUE TO WEIGHT OF SLAB AND COMPOSITE DEAD LOAD.

TEMPERATURE SETTING DETAIL

ASSEMBLED BY : P. K. NEWTON DATE : 8/21/12
 CHECKED BY : T. H. FANG DATE : 8/22/12
 DRAWN BY : RWW 8/99 REV. 5/7/03 RWW/JTE
 CHECKED BY : LES 8/99 REV. 5/1/06R TLA/GM
 REV. 10/1/11 MAA/GM



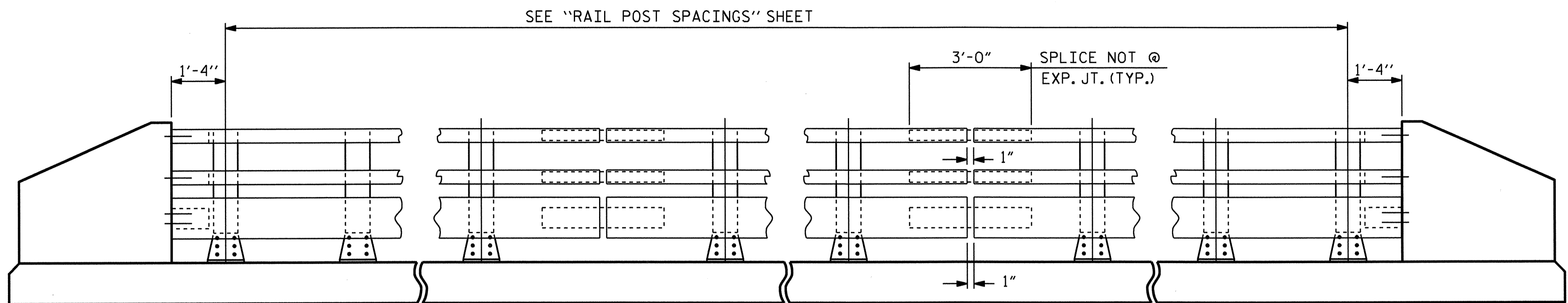
PROJECT NO. U-2810B
CUMBERLAND COUNTY
 STATION: 115+52.74 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
POT BEARING DETAILS

REVISIONS						SHEET NO. S-16
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 39
2			4			

STD. NO. PB1



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 B221 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

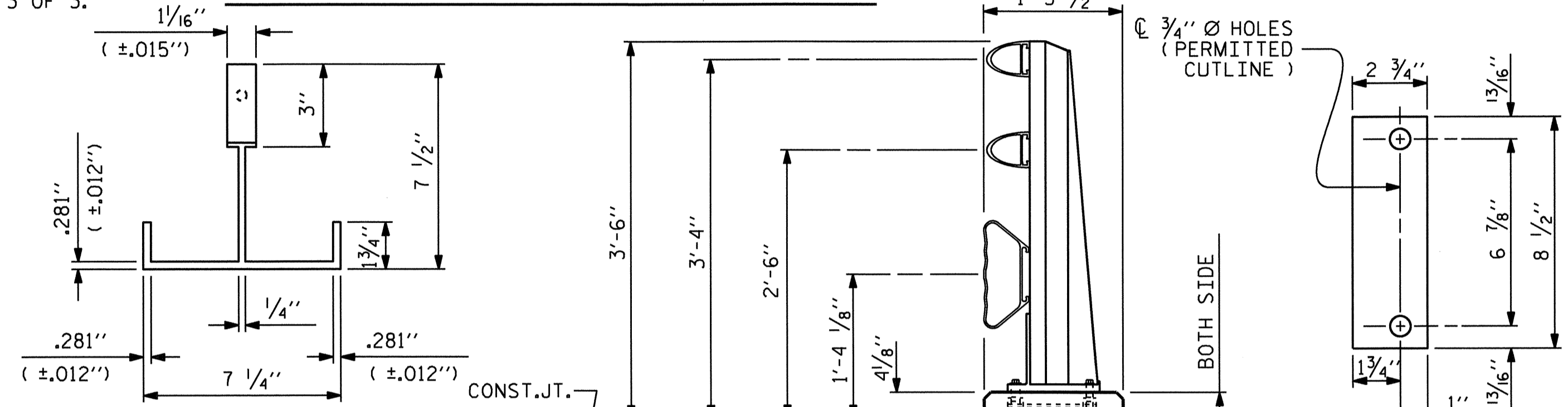
MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS: POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS : AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111. RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS. THE CUT ENDS OF GALVANIZED STEEL 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

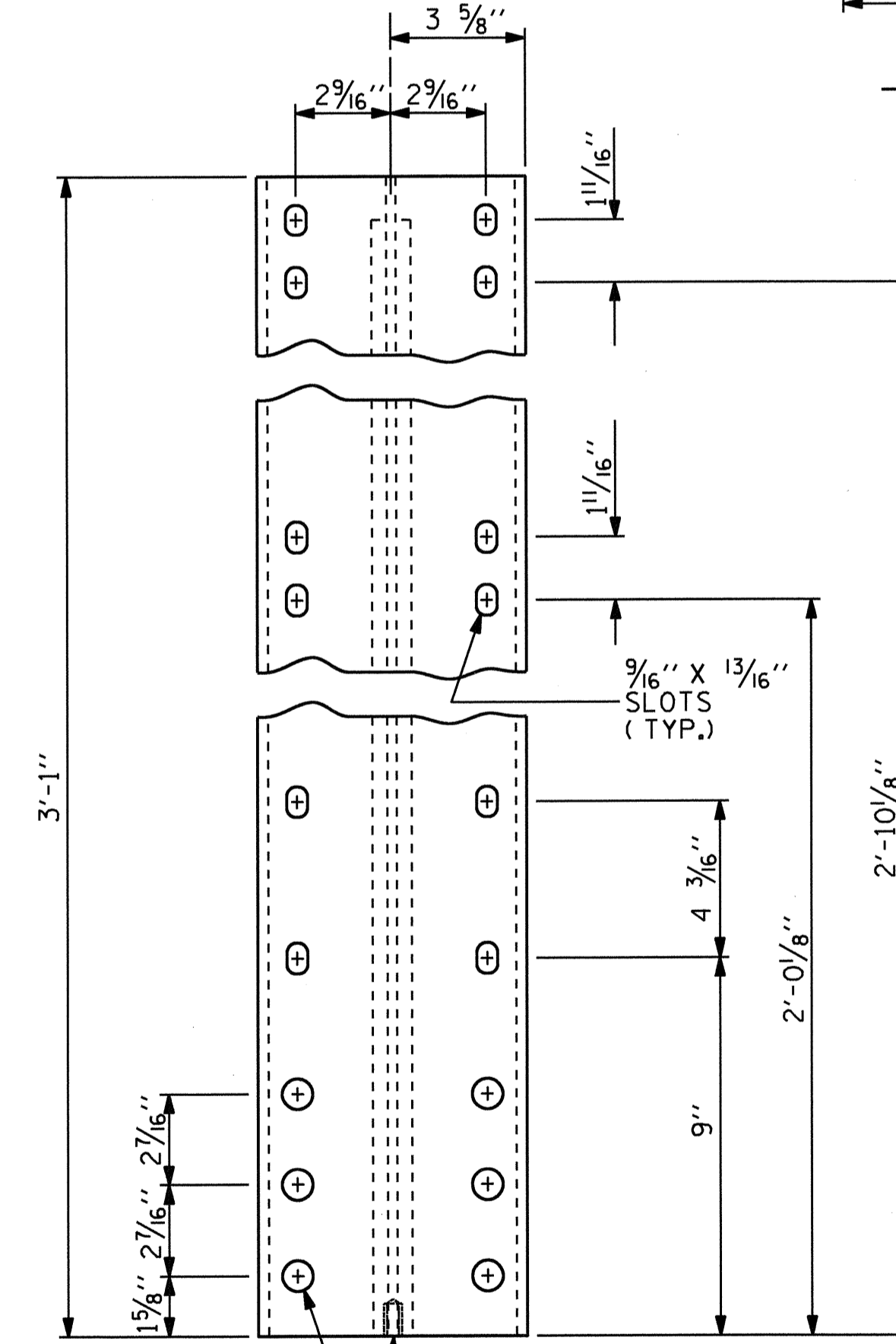
RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS. PLACE ONE JOINT SPLICE JUST BEYOND THE 3RD RAIL POST FROM EACH END, TYPICALLY 14' FROM THE END. PLACE OTHER JOINTS AS NEEDED. FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE "3 BAR METAL RAIL" SHEET 3 OF 3. CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS FOR RAIL ATTACHMENT 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 REMAIN 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.

NOTE: FOR ATTACHMENT OF METAL RAIL TO END POST, SEE "3 BAR METAL RAIL" ON SHEET 3 OF 3.

ELEVATION



PLAN

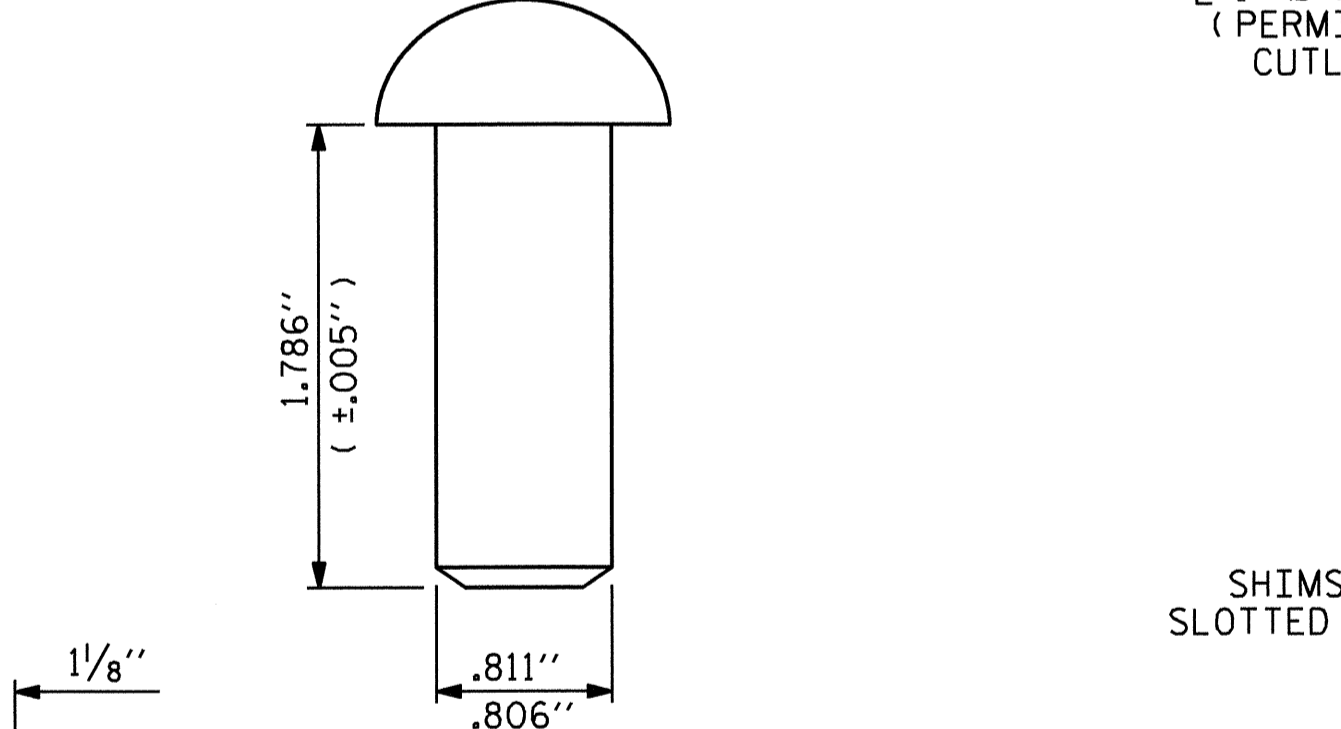


DETAILS OF POST

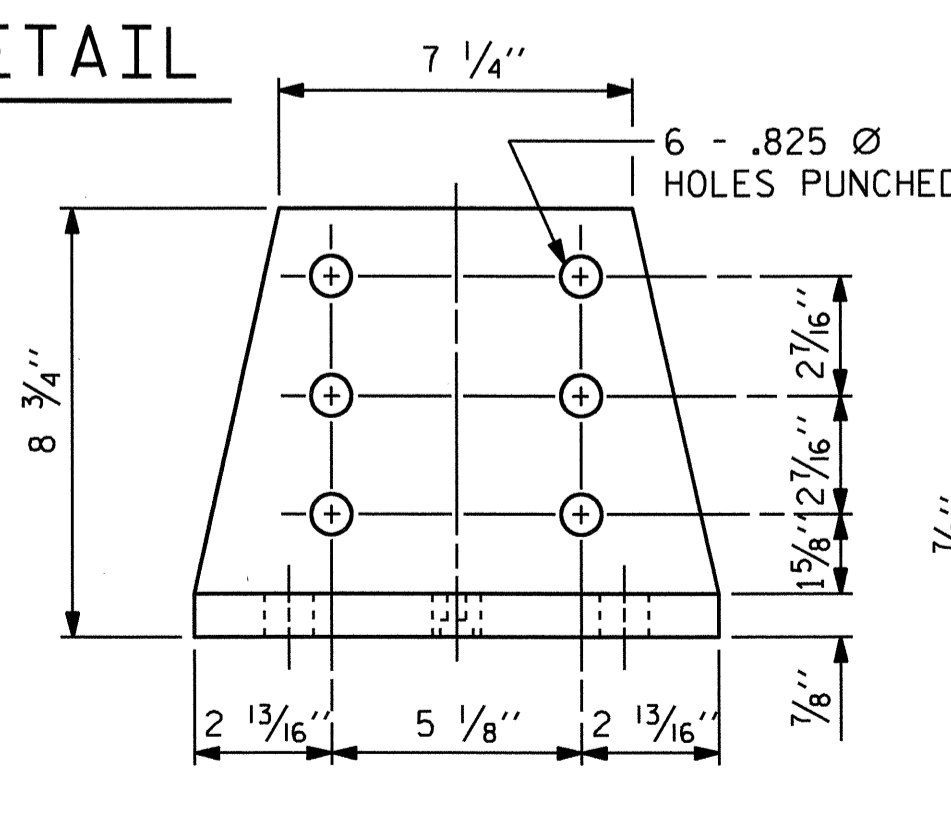
6 - .825" Ø HOLES PUNCHED FOR RIVETS
5/16" Ø DRILL 1" DEEP & 3/8" Ø [16 THREAD] TAP 7/8" DEEP FOR 3/8" Ø X 1 1/2" STAINLESS STEEL CAP SCREW

SECTION THRU RAIL

FOR ANCHOR ASSEMBLY, SEE "3 BAR METAL RAIL" SHEET 2 OF 3

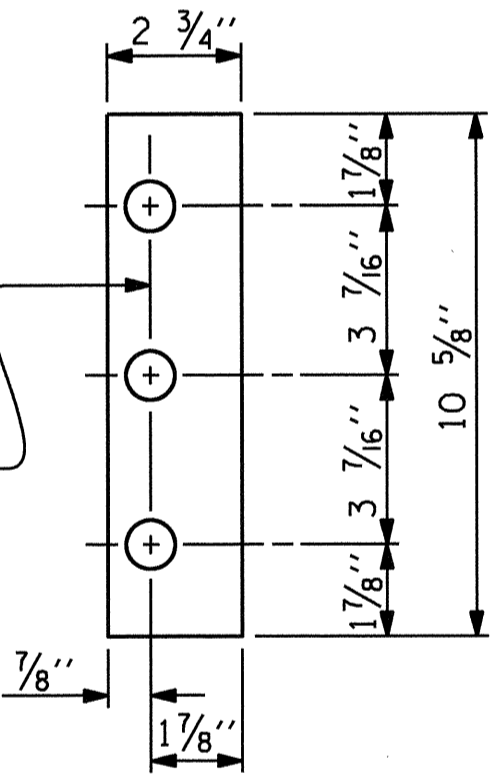


RIVET DETAIL



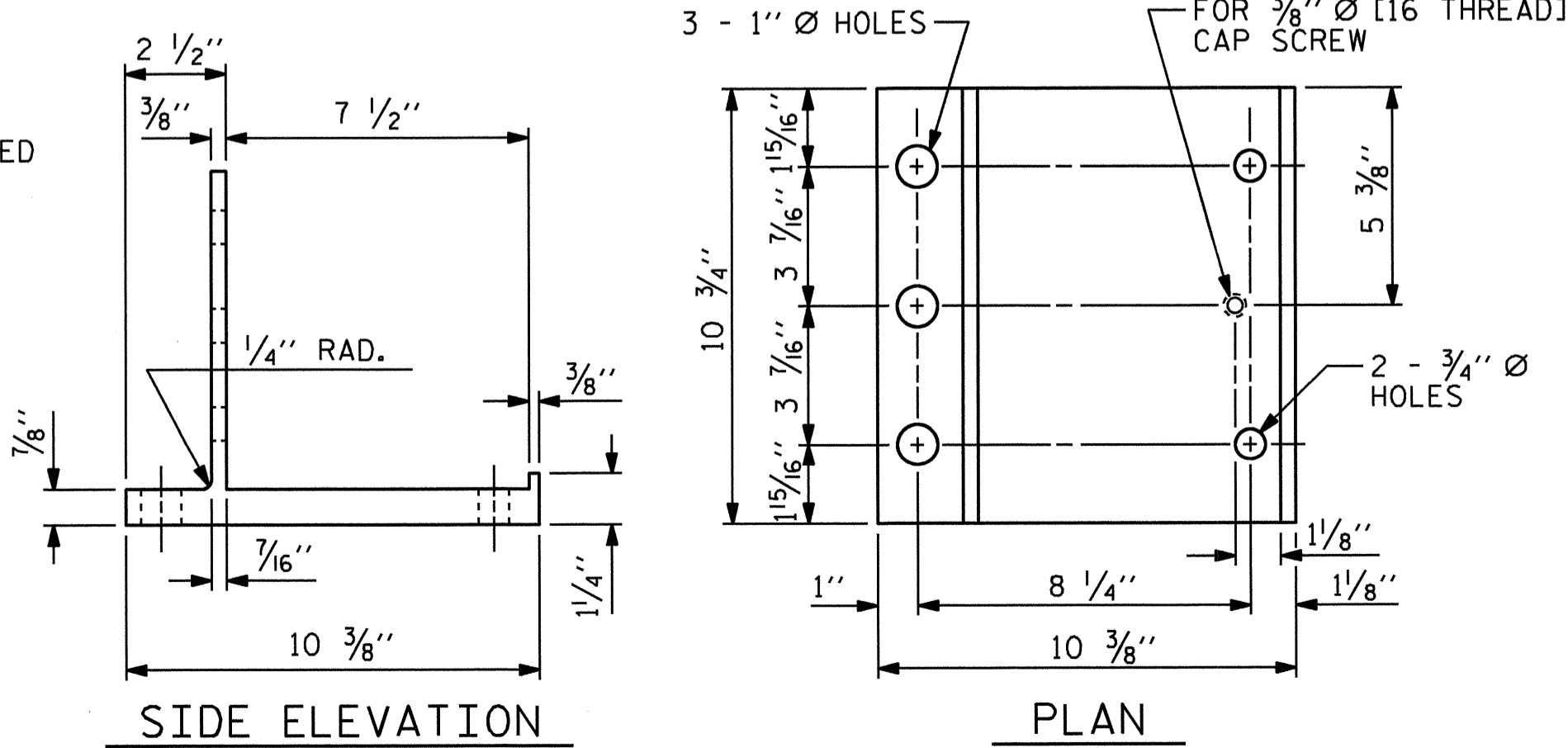
FRONT ELEVATION

SHIM DETAILS

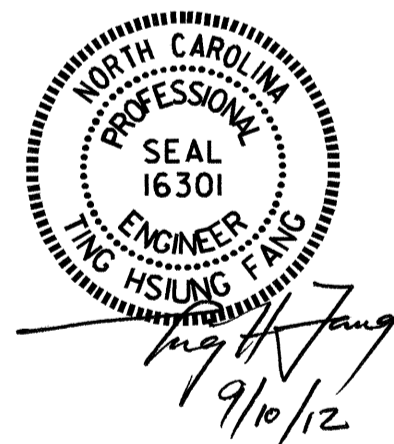


NOTE: SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.

POST BASE DETAILS



PAY LENGTH = 372.88 LIN.FT.



PROJECT NO. U-2810B
CUMBERLAND COUNTY
STATION: 115+52.74 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3 BAR METAL RAIL

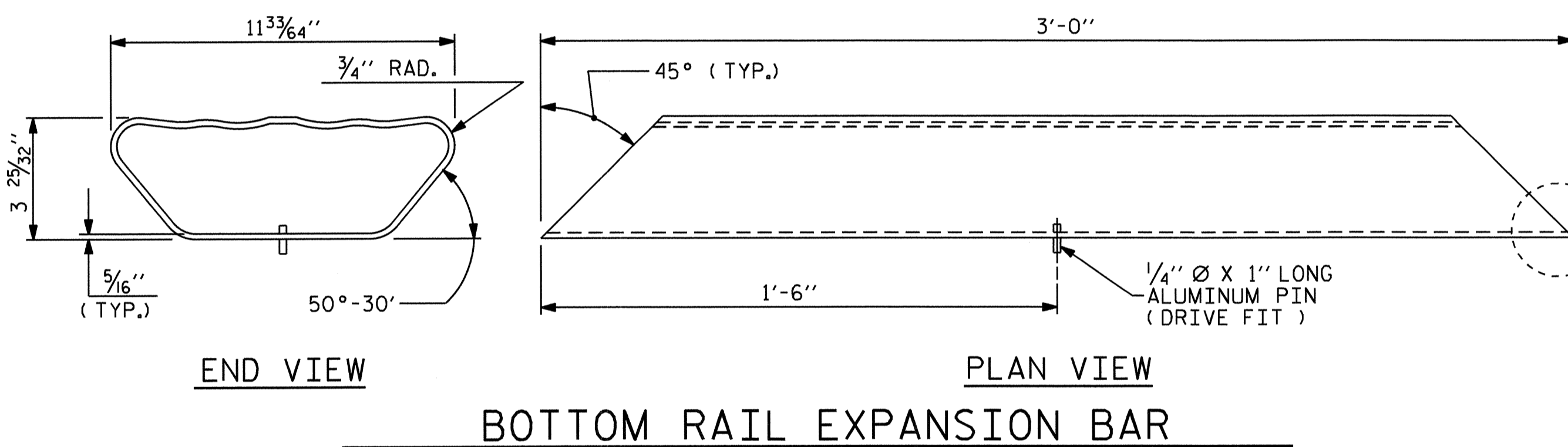
REVISIONS						SHEET NO. S-17
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 39
2			4			

ASSEMBLED BY : E. C. LOCKLEAR	DATE : 3/4/09
CHECKED BY : T. H. FANG	DATE : 8/14/12
DRAWN BY : JMB 1/88	REV. 5/7/03 RWW/JTE
CHECKED BY : GGH 1/88	REV. 5/1/06 TLA/GM
	REV. 10/1/11 MAA/GM

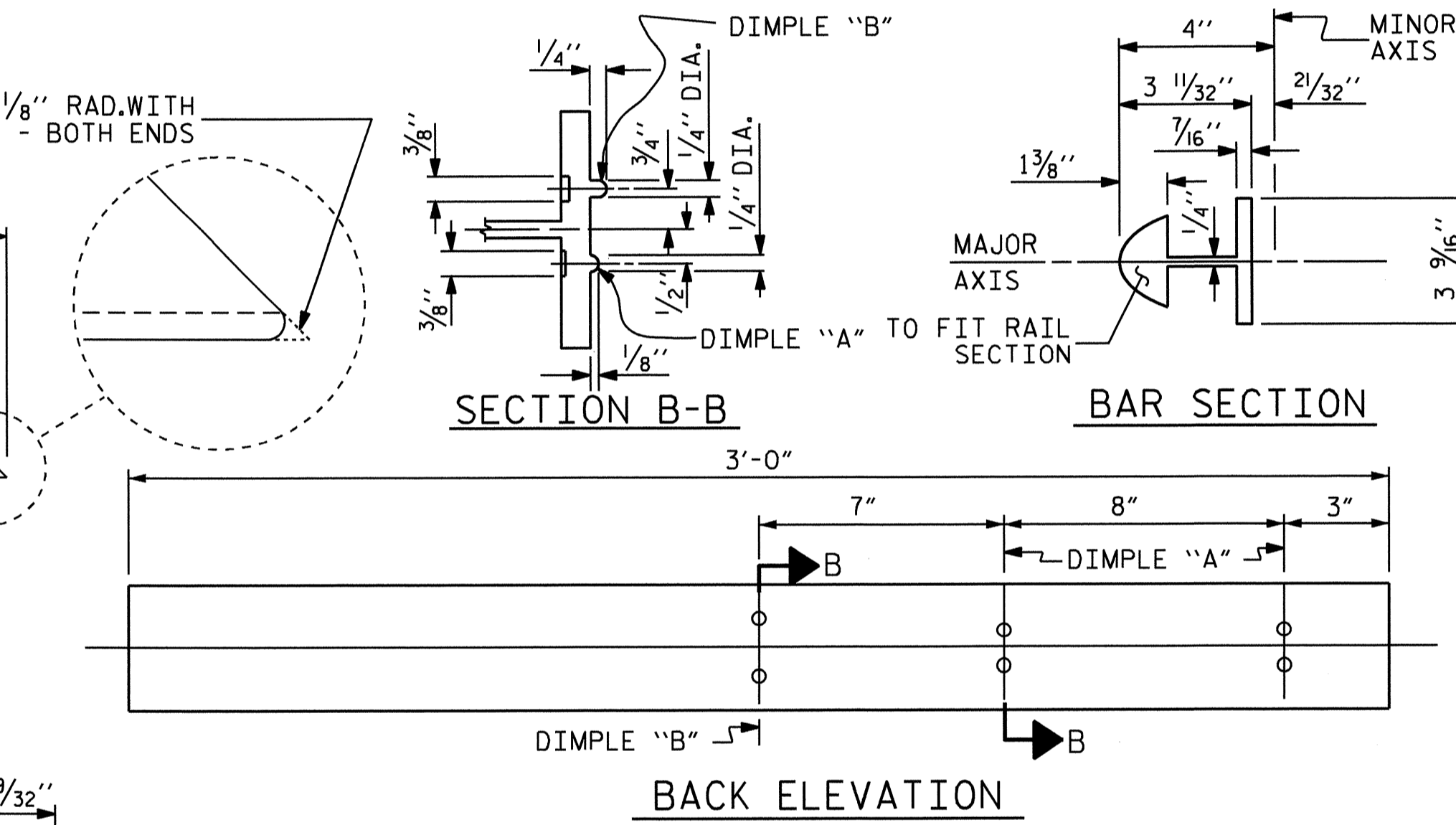
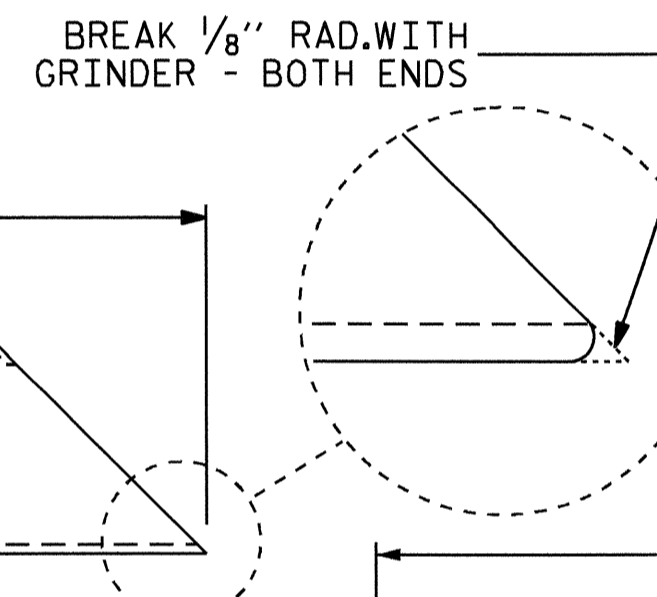


5-BOLT METAL RAIL ANCHOR ASSEMBLY

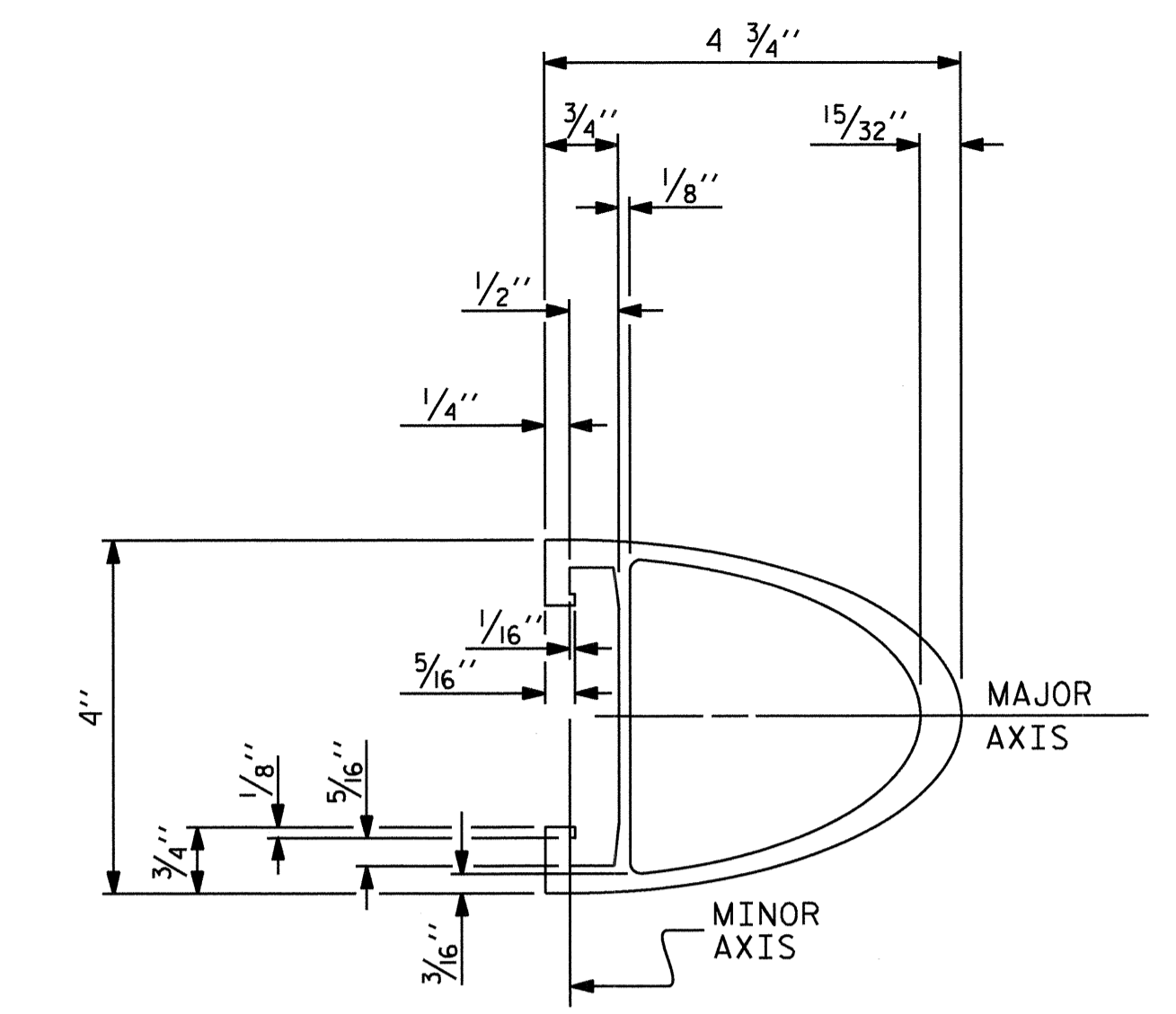
(64 ASSEMBLIES REQUIRED)



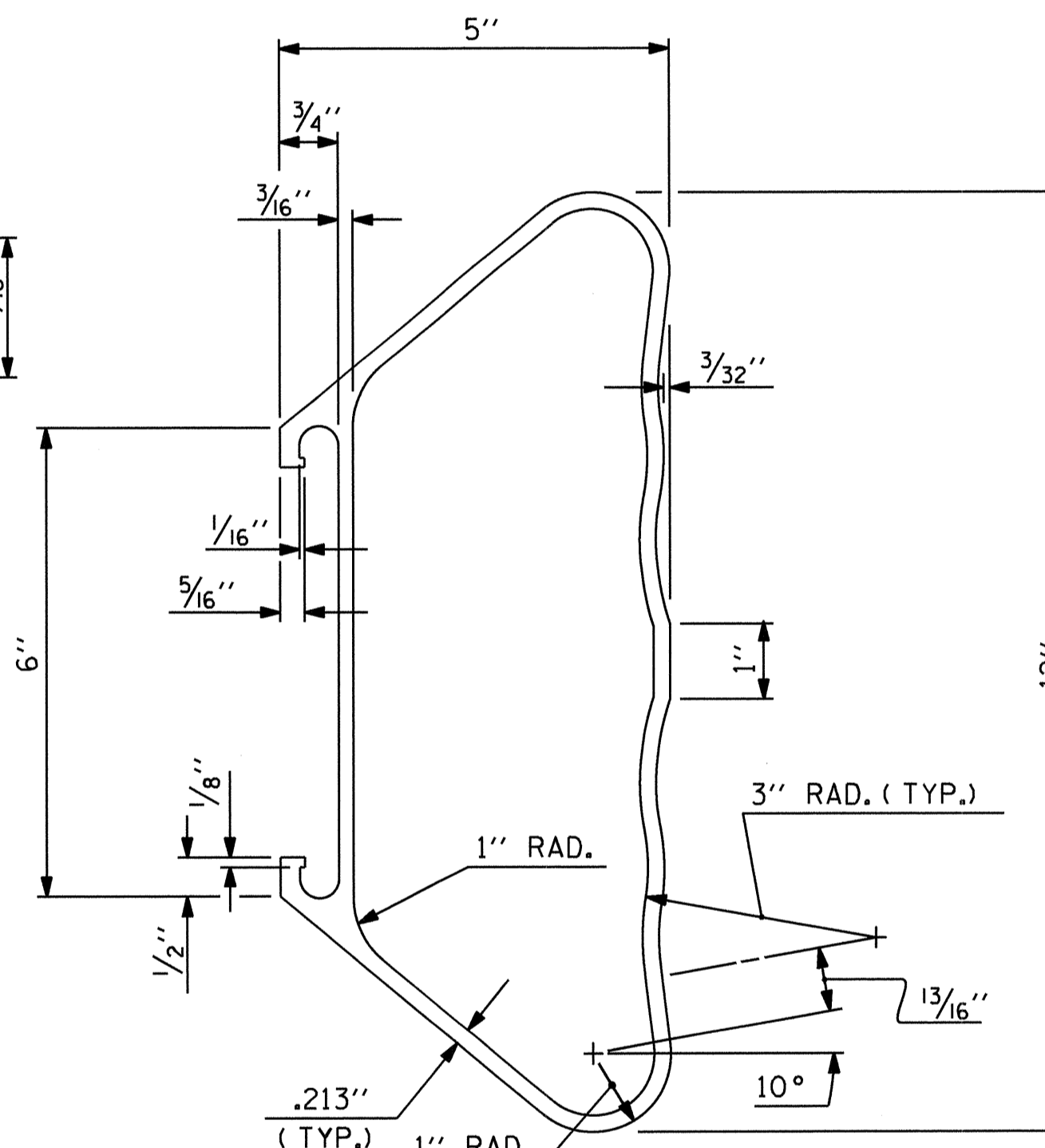
BOTTOM RAIL EXPANSION BAR



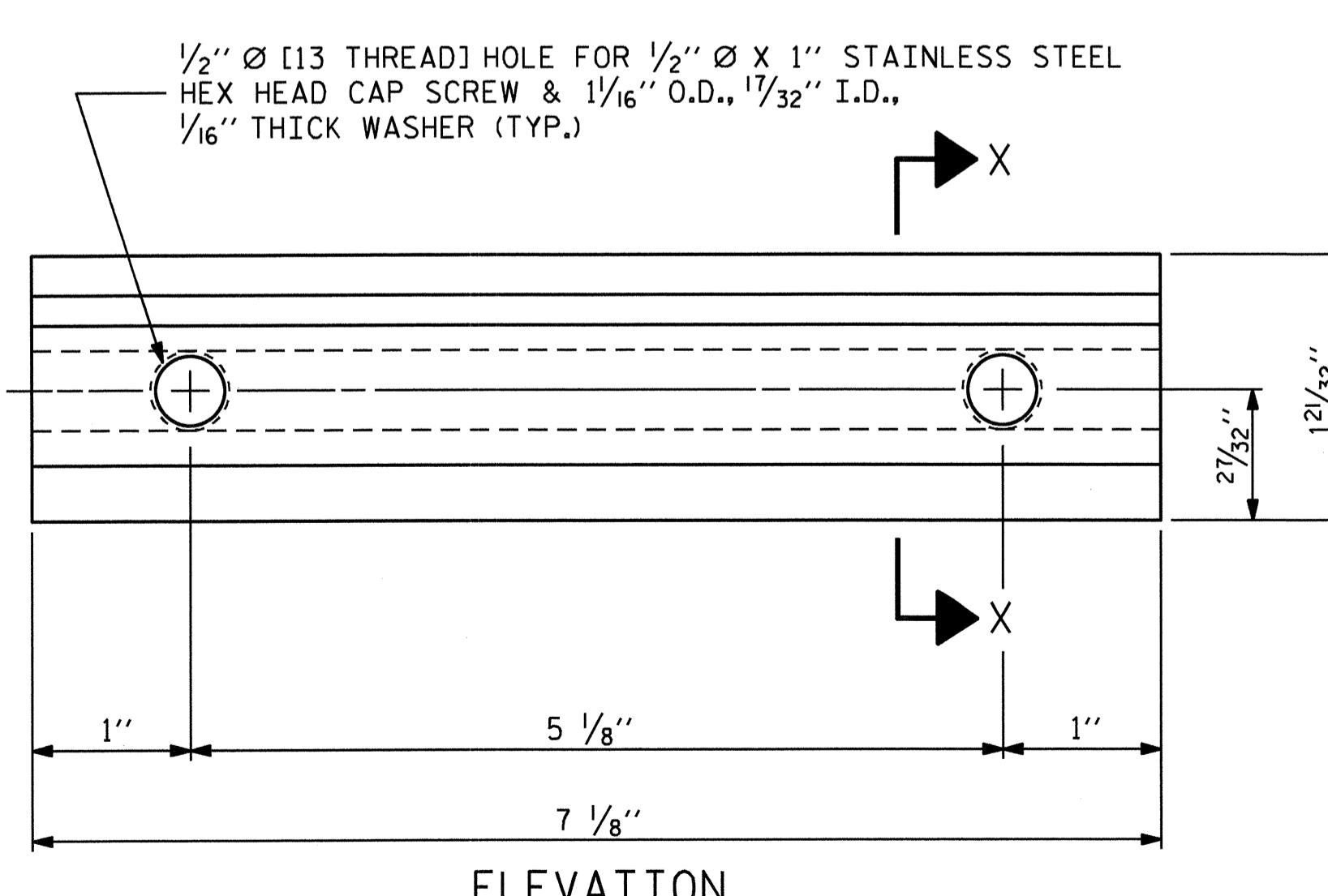
TOP & MIDDLE RAIL EXPANSION BAR



TOP & MIDDLE RAIL SECTION

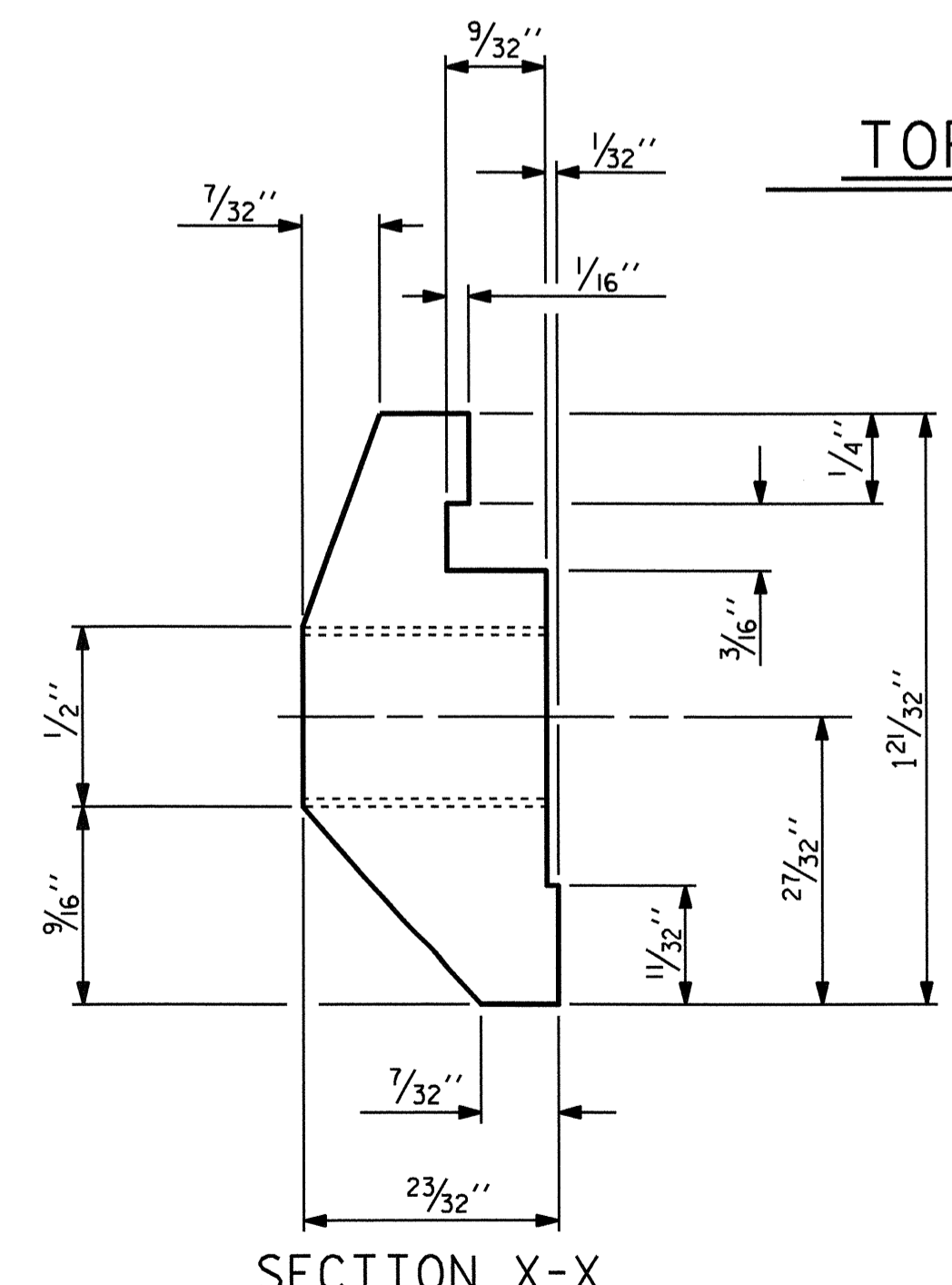


BOTTOM RAIL SECTION

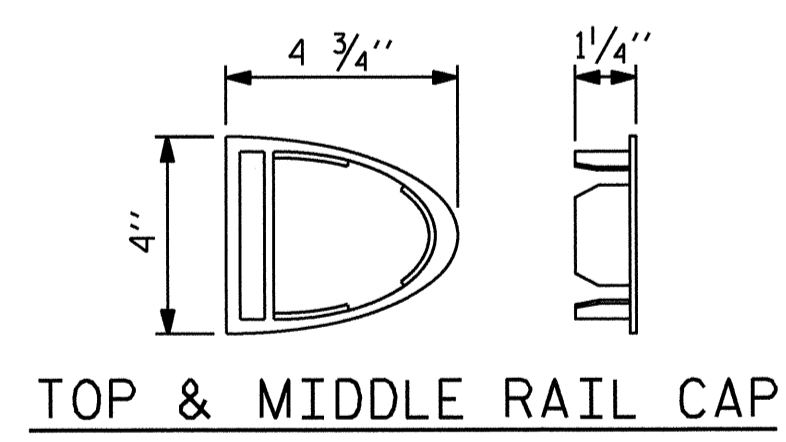


CLAMP BAR DETAIL

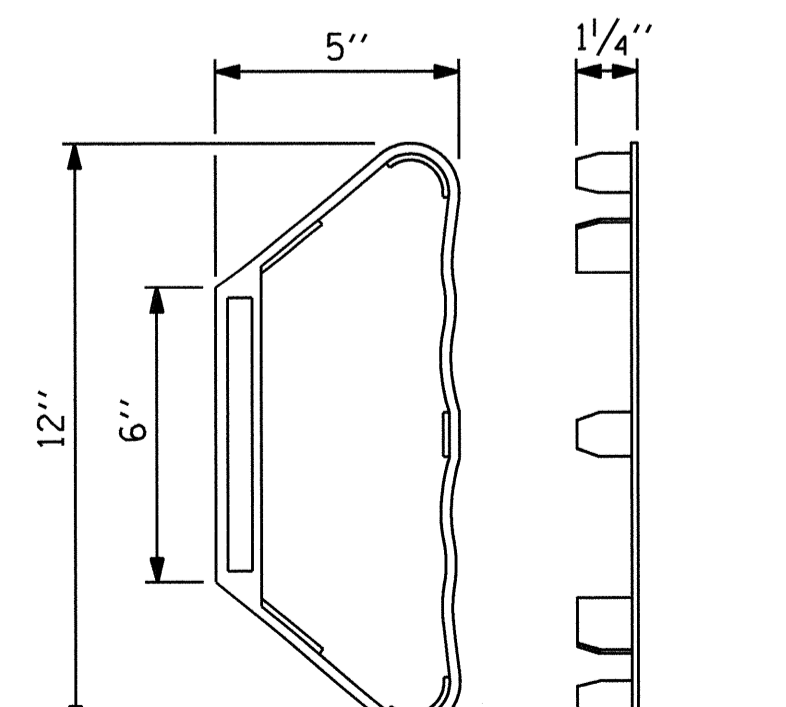
(6 REQUIRED PER POST)



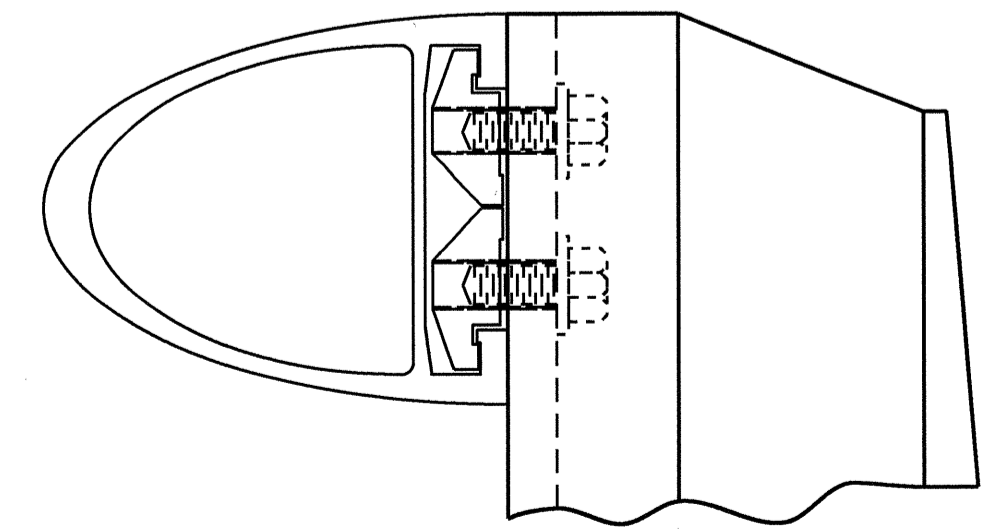
SECTION X-X



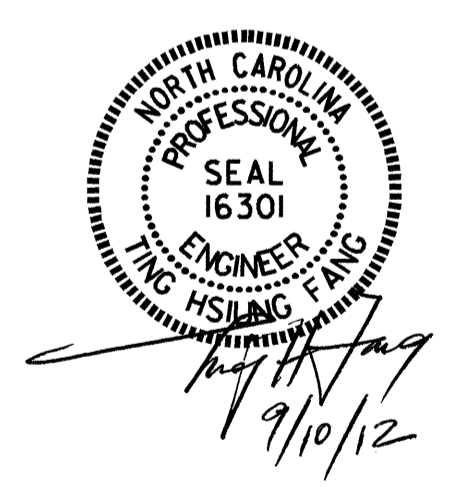
TOP & MIDDLE RAIL CAP



BOTTOM RAIL CAP



CLAMP ASSEMBLY



- NOTES**
STRUCTURAL CONCRETE ANCHOR ASSEMBLY
- THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- 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 AND 1 3/4" FOR 5/8" FERRULES.
 - 3 - 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.
 - 2 - 5/8" Ø X 2 1/4" 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 5/8" Ø X 2 1/4" 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.
 - 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.
 - THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
 - 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.
 - BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

ASSEMBLED BY :	E. C. LOCKLEAR	DATE :	3/4/09
CHECKED BY :	T. H. FANG	DATE :	8/14/12
DRAWN BY :	JMB	1/88	REV. 5/7/03 RWW/JTE
CHECKED BY :	GCH	1/88	REV. 5/1/06 TLA/GM
			REV. 10/1/11 MAA/GM

PROJECT NO. U-2810B
CUMBERLAND COUNTY
 STATION: 115+52.74 -L-

SHEET 2 OF 3

REVISIONS						SHEET NO. S-18
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 39
2			4			

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
3 BAR METAL RAIL

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 1/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 1/8" 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. WASHERS FOR RAIL ATTACHMENT SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.
- D. STANDARD CLAMP BARS SEE "3 BAR METAL RAIL" SHEET 2 OF 3

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 3 BAR METAL RAIL.

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.

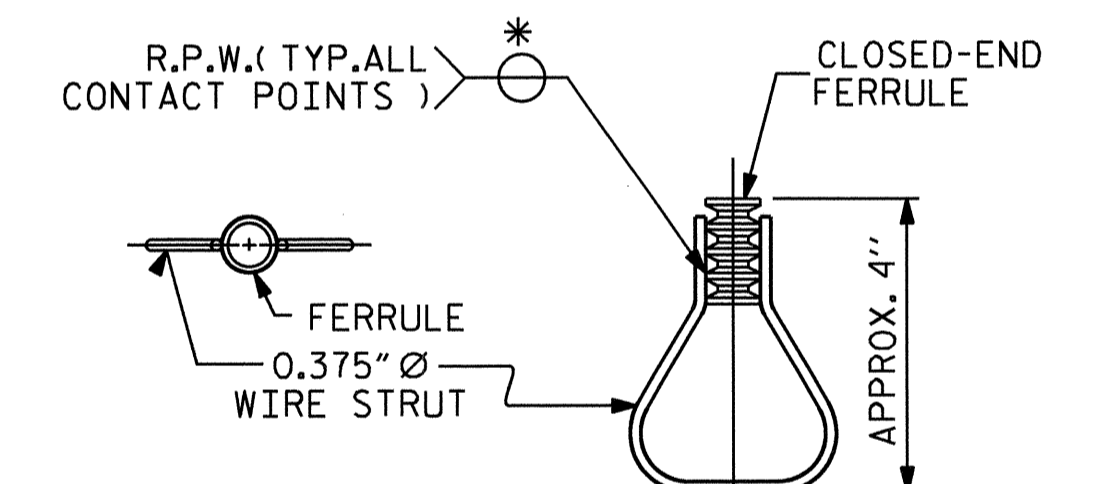
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 1/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 1/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

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 THREADS OF 1 1/2".
- B. 1 - 3/4" Ø X 1 1/8" 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 1/8" 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 1/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.



PLAN ELEVATION
STRUCTURAL CONCRETE INSERT

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

PROJECT NO. U-2810B
CUMBERLAND COUNTY
STATION: 115+52.74 -L-

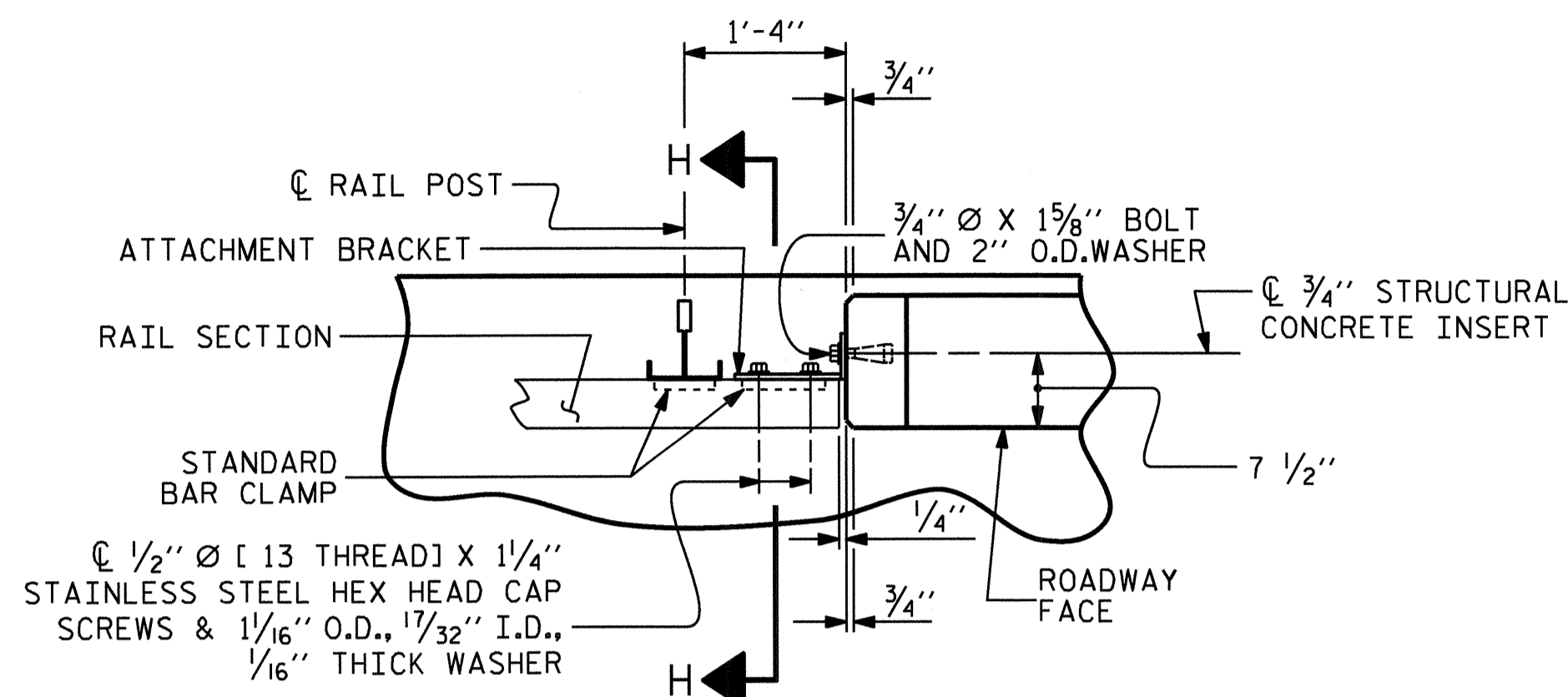
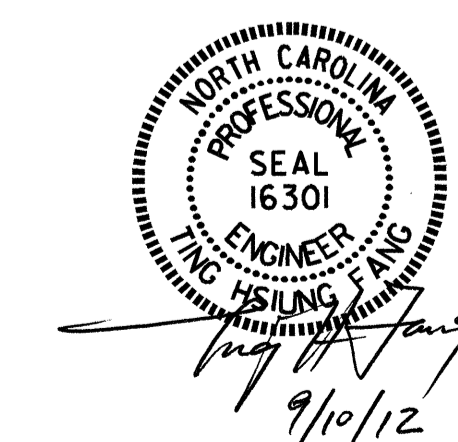
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3 BAR METAL RAIL

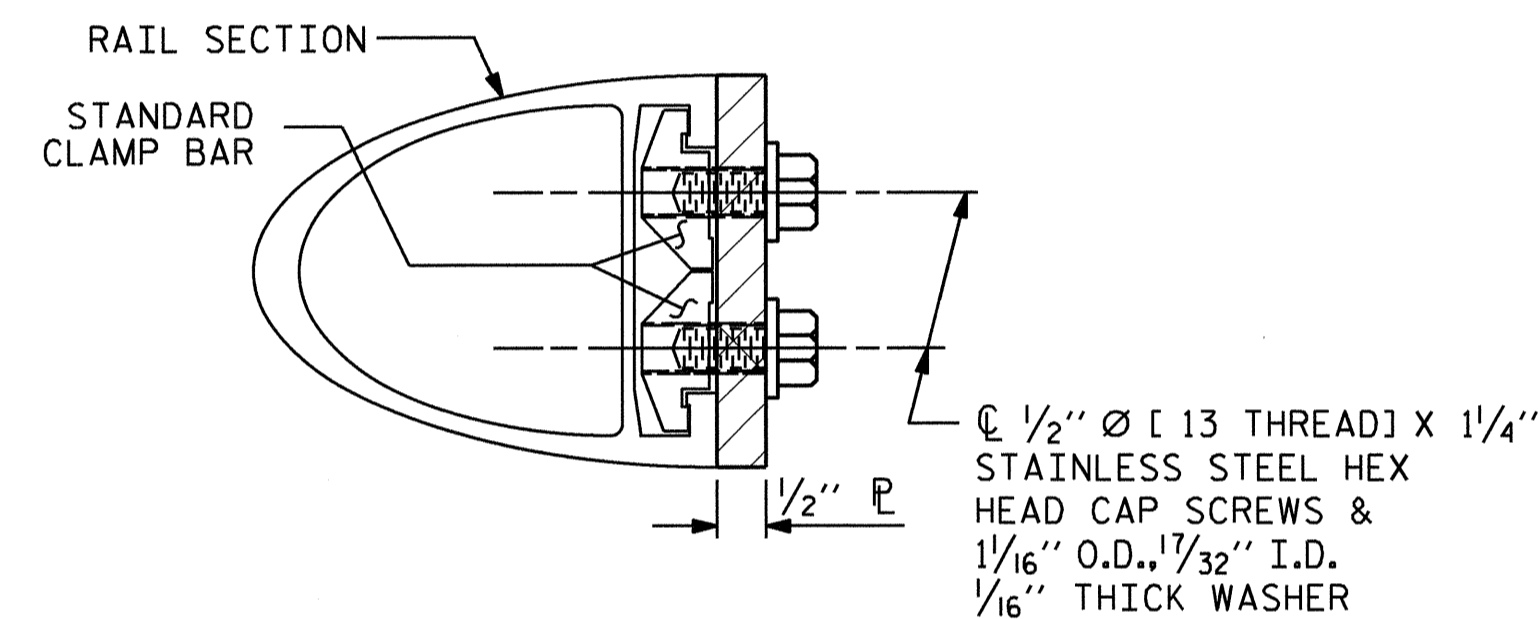
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS 39



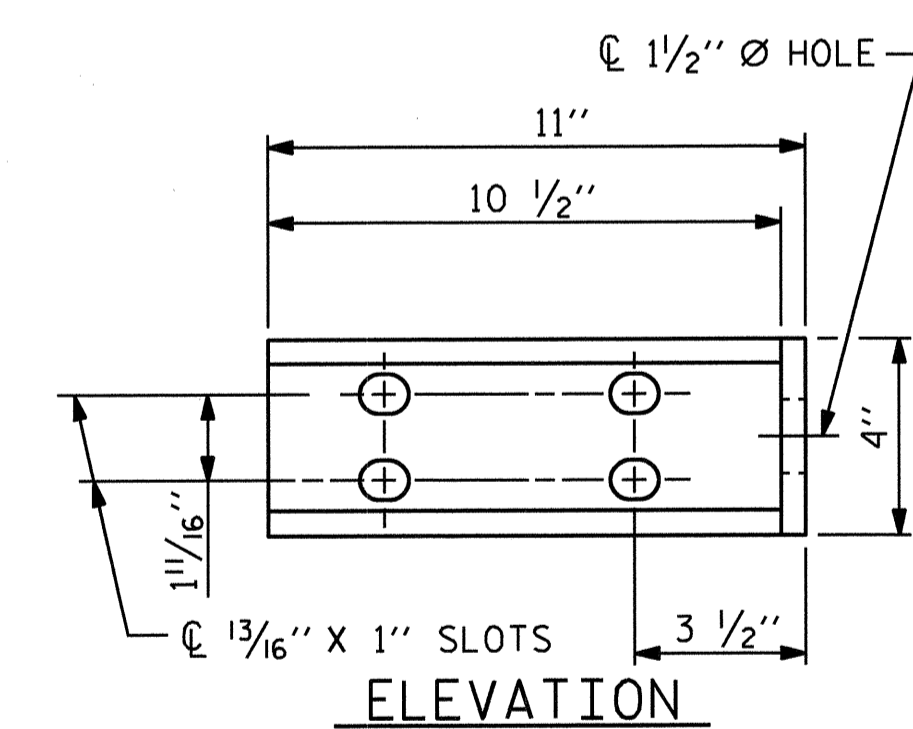
PLAN OF RAIL AND END POST

(STIFFENER ON 1/2" P NOT SHOWN FOR CLARITY)

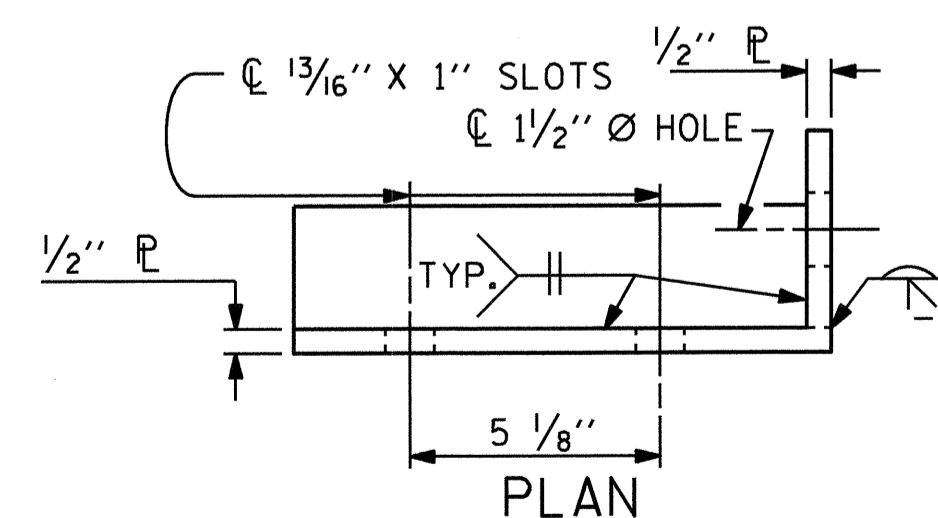


SECTION H-H

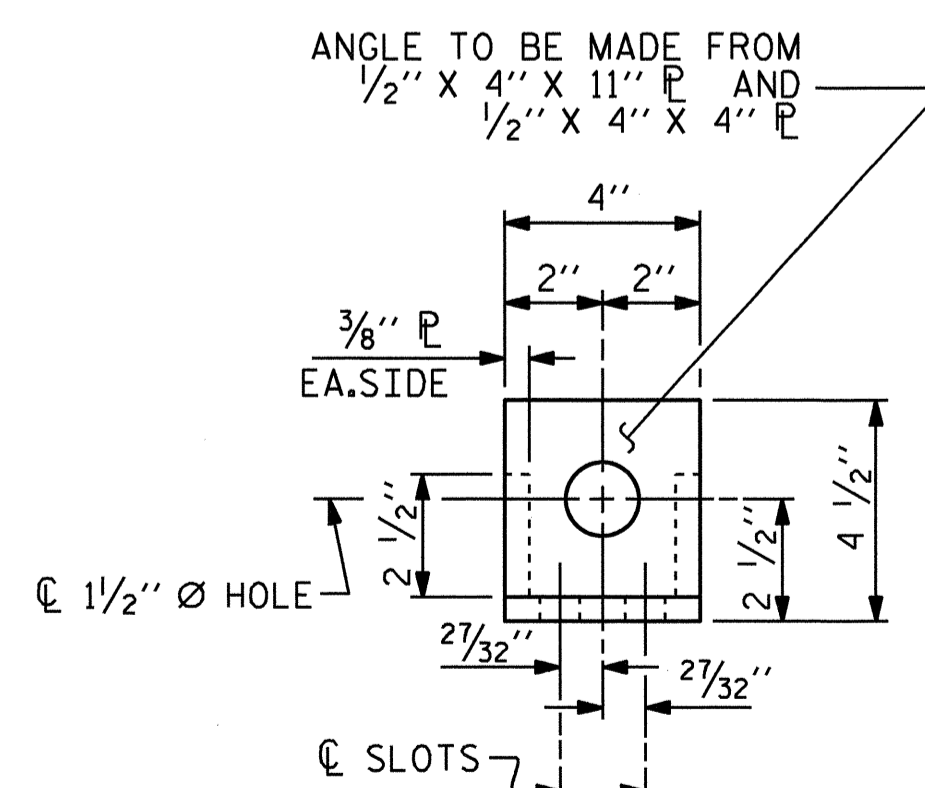
(FOR TOP & MIDDLE RAIL)



ELEVATION



PLAN

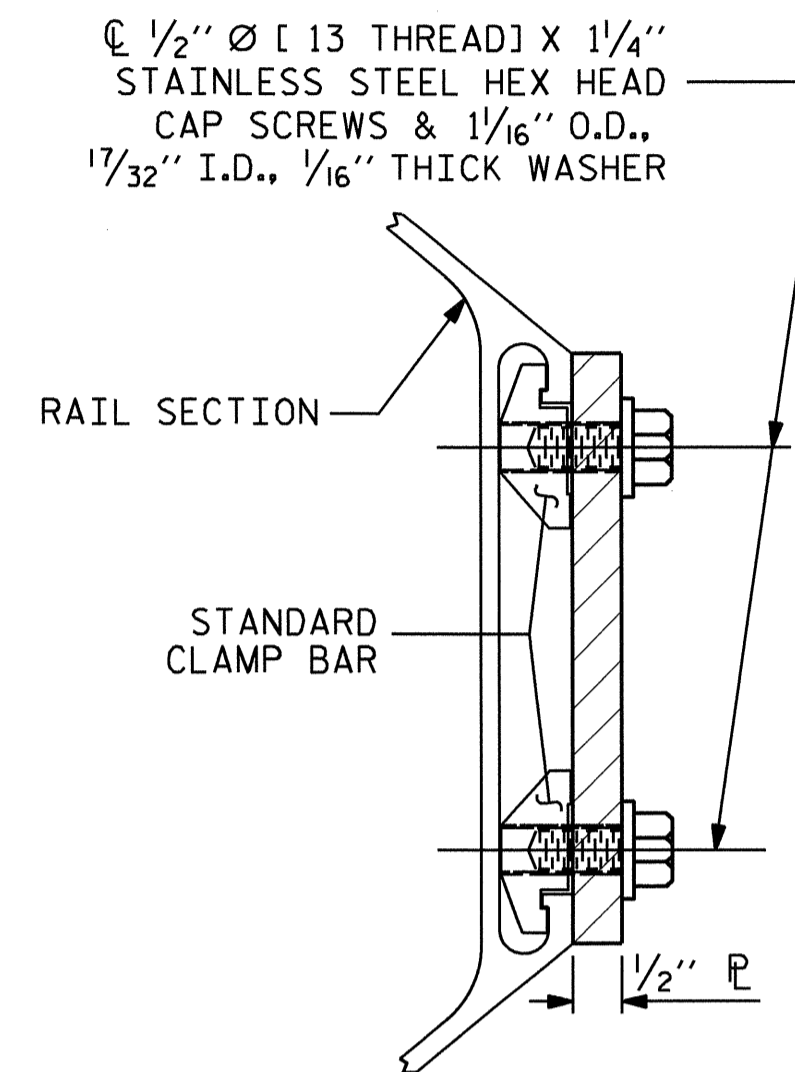


END VIEW

(FIX. AND EXP.)

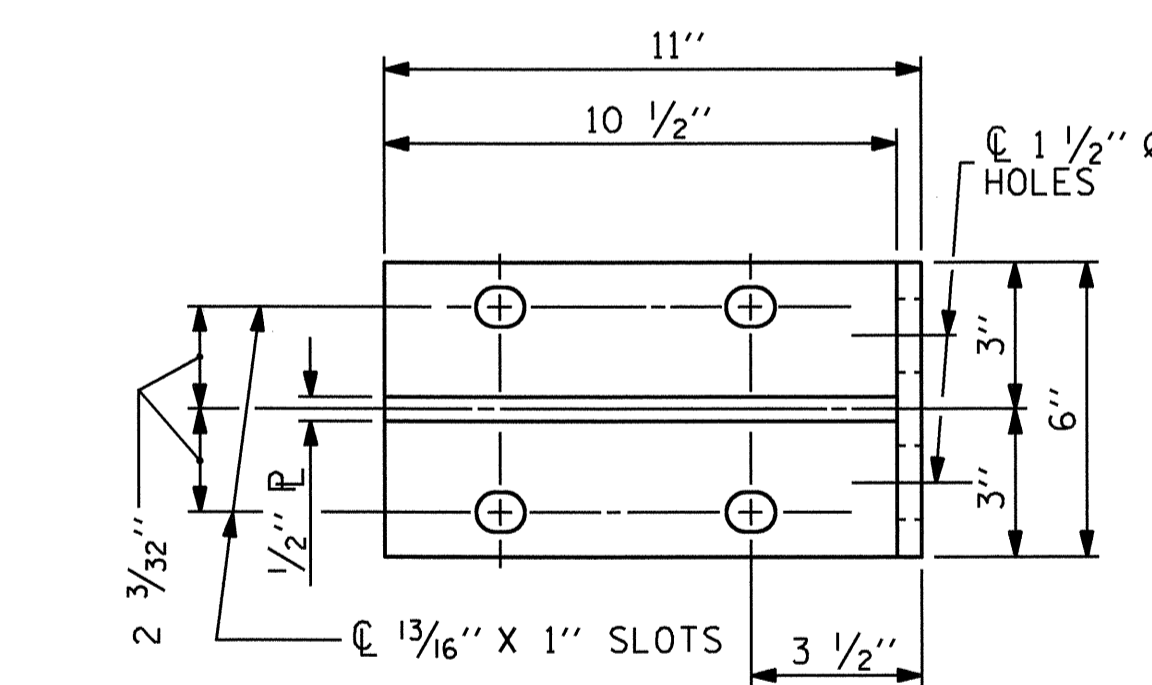
DETAILS FOR ATTACHMENT BRACKET

(TOP & MIDDLE RAIL ONLY)

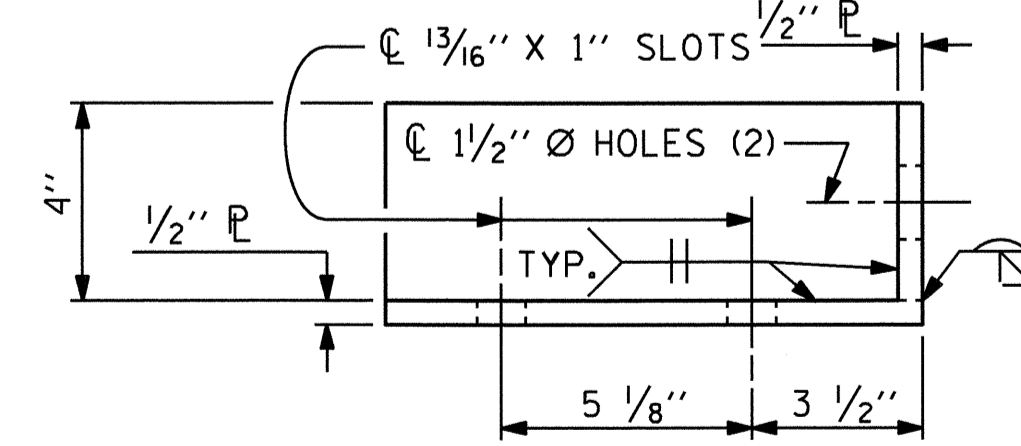


SECTION H-H

(FOR BOTTOM RAIL)



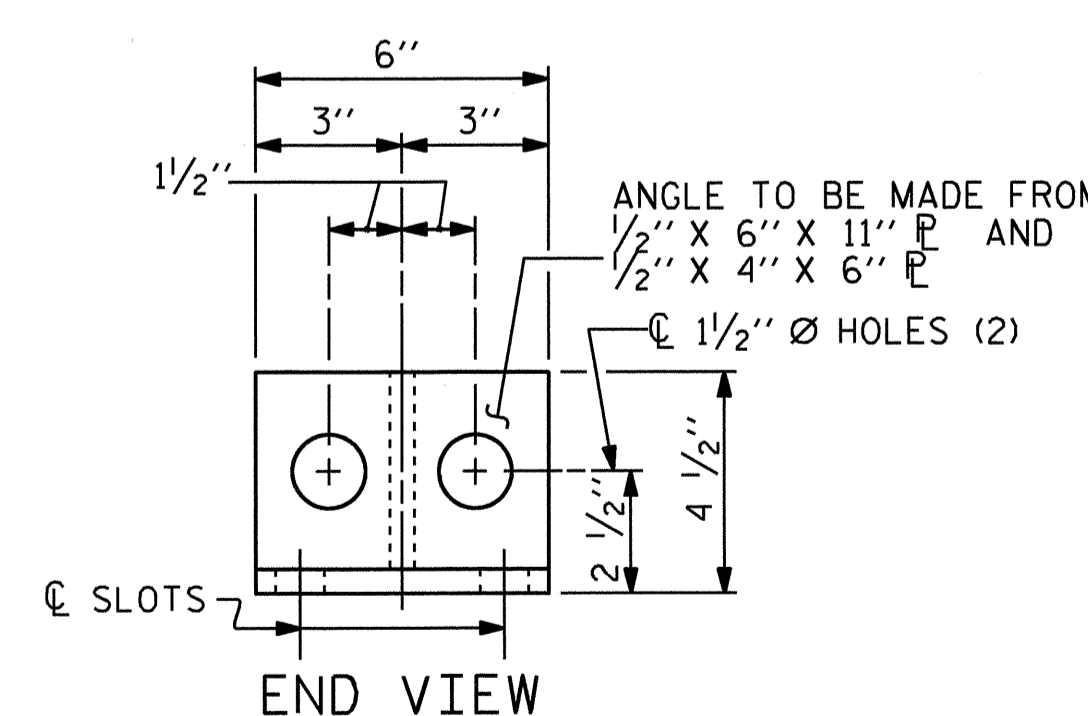
ELEVATION



PLAN

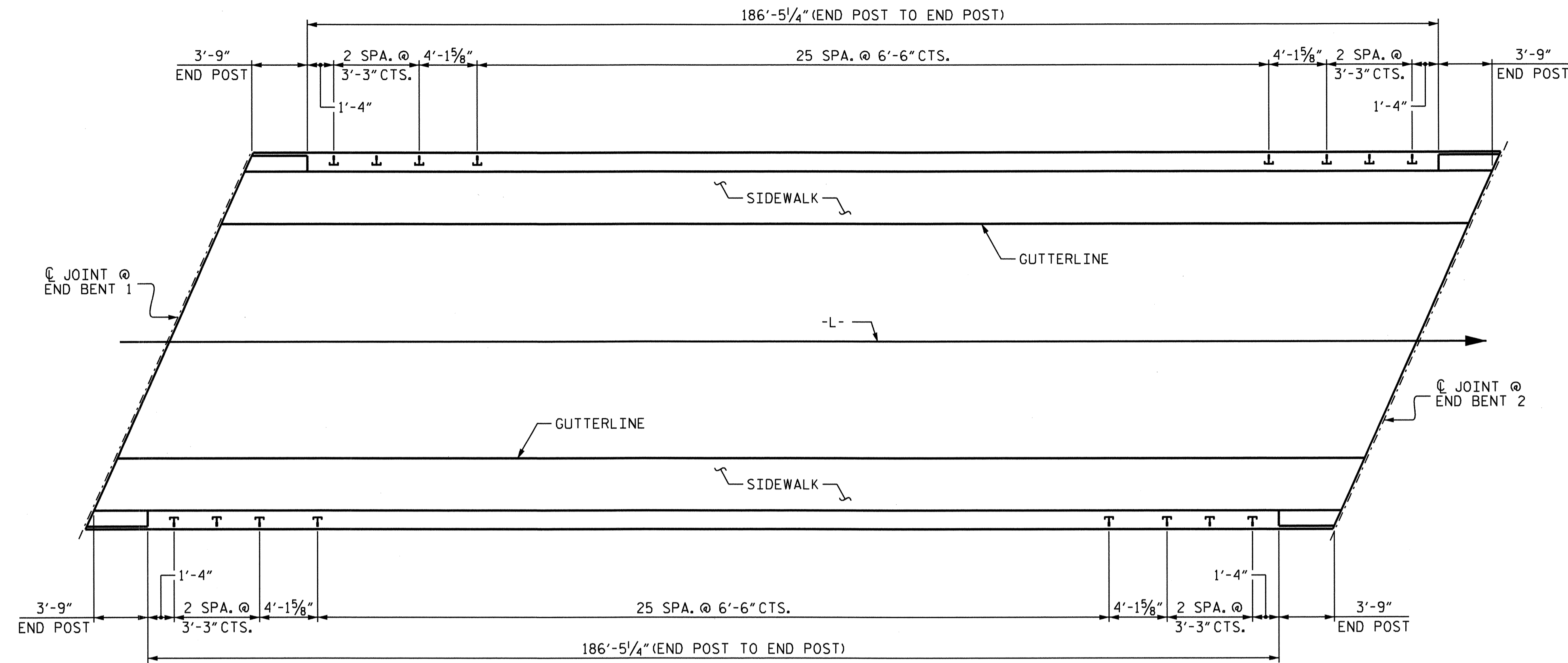
DETAILS FOR ATTACHMENT BRACKET

(BOTTOM RAIL ONLY)

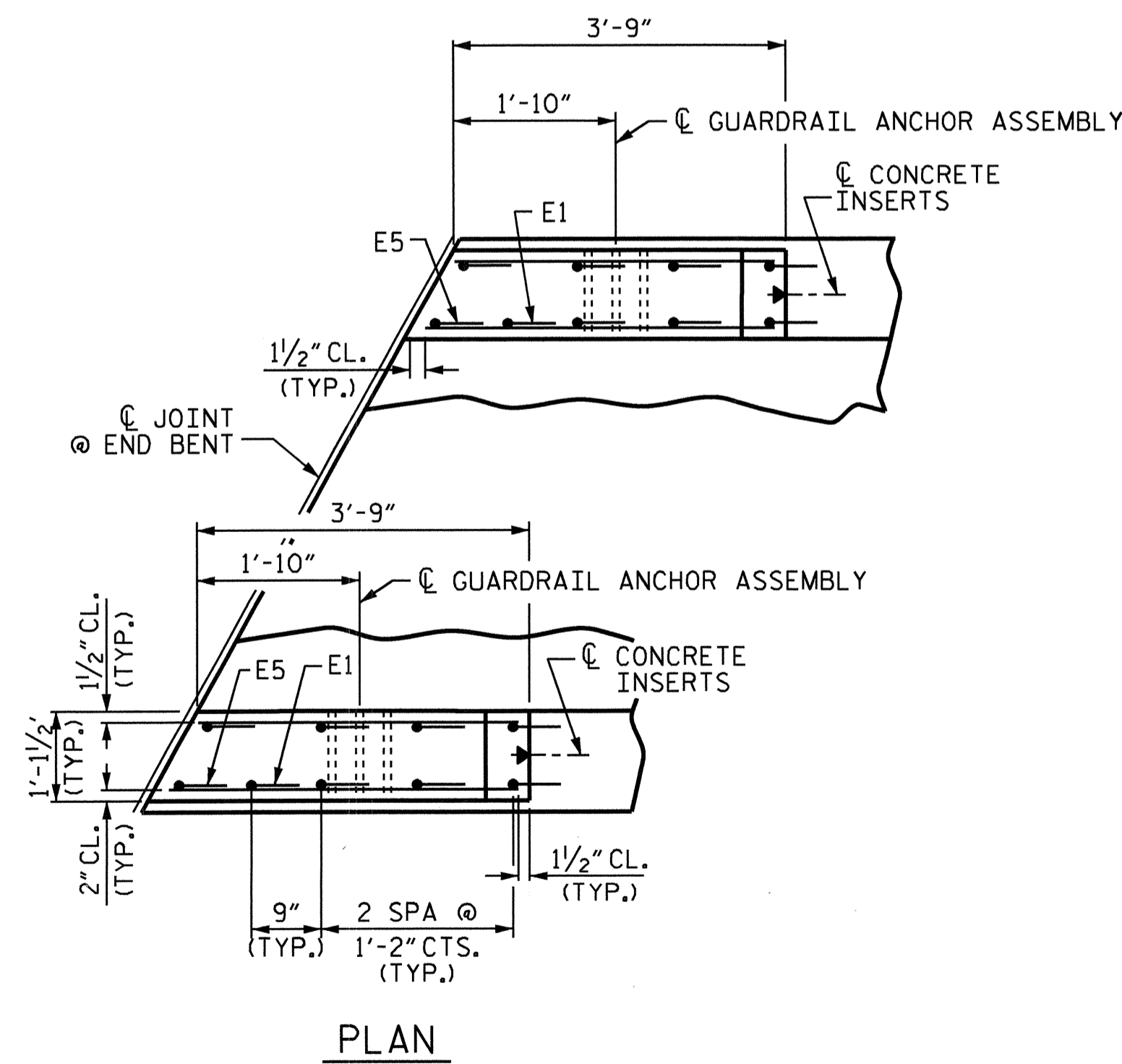


END VIEW

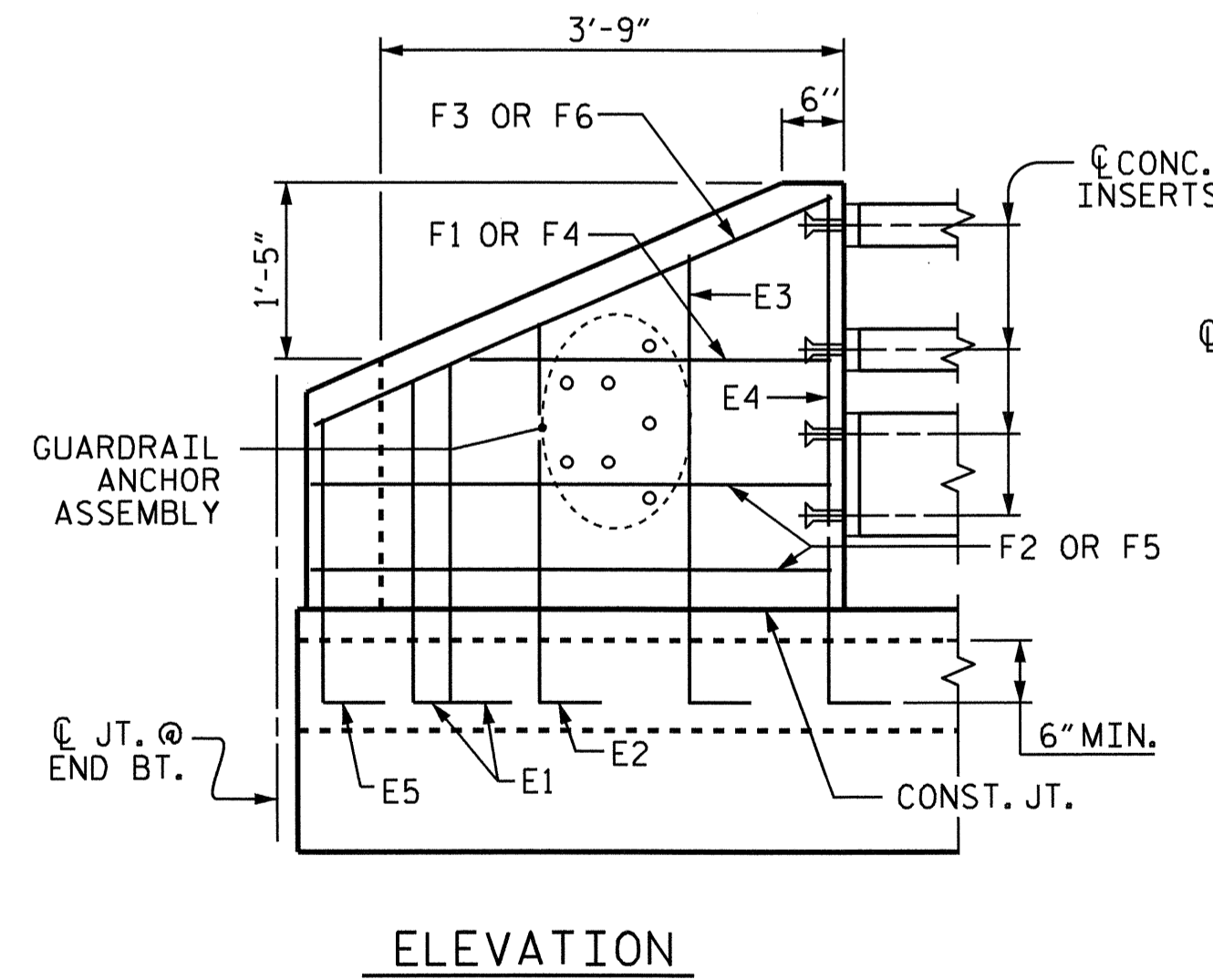
ASSEMBLED BY : E. C. LOCKLEAR	DATE : 3/4/09
CHECKED BY : T. H. FANG	DATE : 8/14/12
DRAWN BY : JMB 1/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM
CHECKED BY : GGH 1/88	REV. 10/1/11 MAA/GM



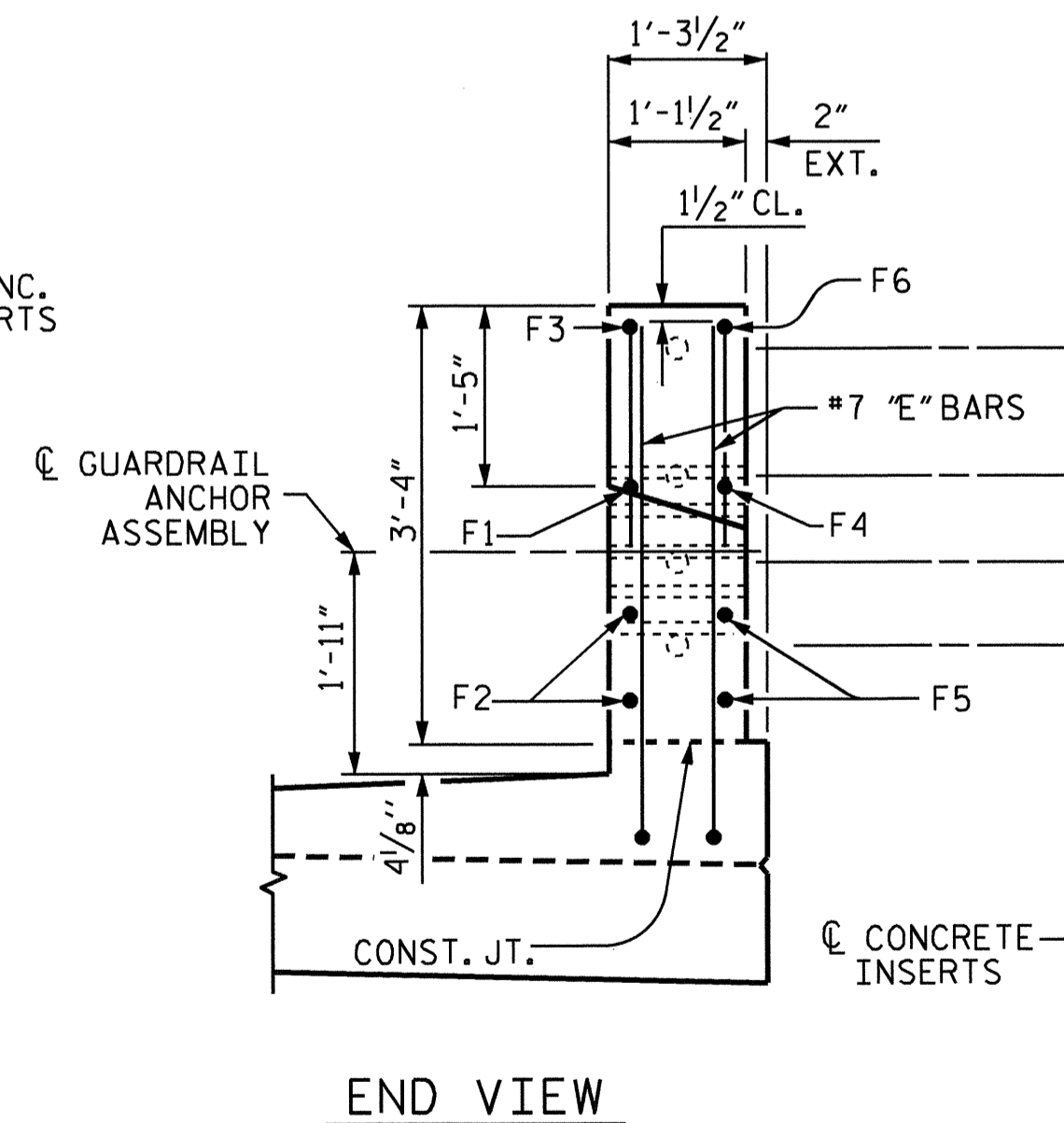
PLAN OF RAIL POST SPACING



PLAN



ELEVATION



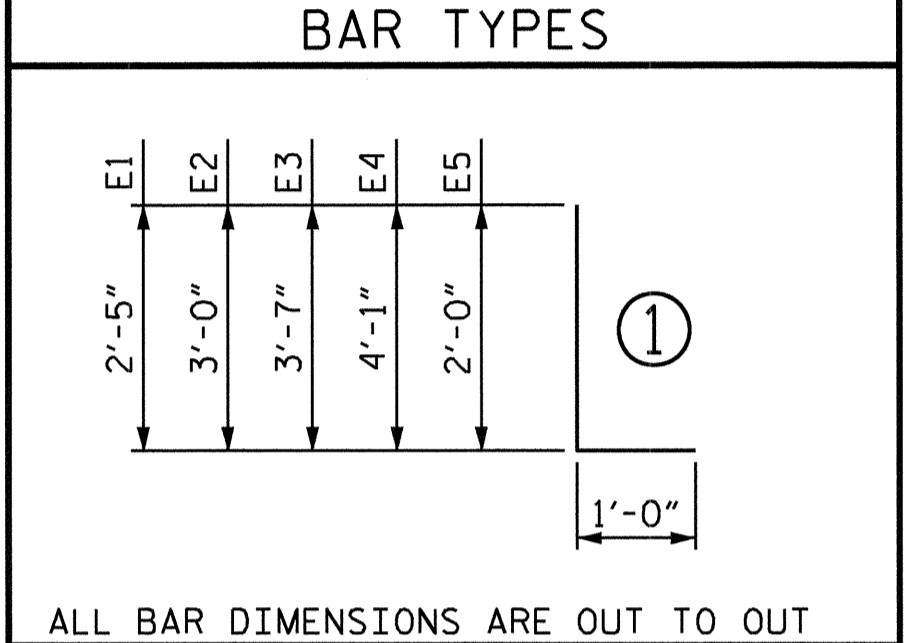
END VIEW

END POST DETAILS

ALL REINFORCING STEEL IN END POSTS SHALL BE EPOXY COATED.

BILL OF MATERIAL					
ONE END POST (4 REQ'D)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* E1	2	#7	1	3'-5"	14
* E2	2	#7	1	4'-0"	16
* E3	2	#7	1	4'-7"	19
* E4	2	#7	1	5'-1"	21
* E5	1	#7	1	3'-0"	6
* F1	1	#6	STR	3'-4"	5
* F2	2	#6	STR	3'-5"	10
* F3	1	#6	STR	3'-8"	6
* F4	1	#6	STR	3'-9"	6
* F5	2	#6	STR	3'-10"	12
* F6	1	#6	STR	4'-1"	6

EPOXY COATED REINFORCING STEEL = 121 LBS.
CLASS AA CONCRETE = 1.8 C.Y.

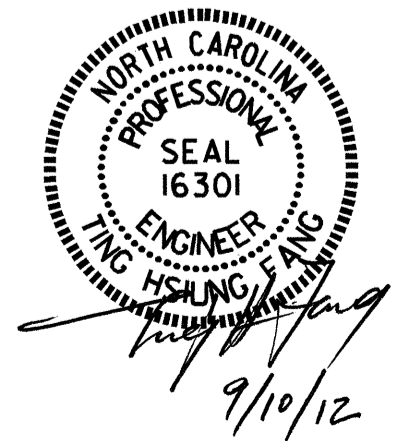


NOTES :

- FOR DETAIL OF GUARDRAIL ANCHOR ASSEMBLY, SEE "GUARDRAIL ANCHORAGE DETAILS FOR METALS RAILS" SHEET.
- FOR DETAILS OF CONCRETE INSERT, SEE "3 BAR METAL RAIL" SHEET 3 OF 3.
- NO ADDITIONAL PAYMENT SHALL BE MADE FOR THE CONCRETE END POSTS AS THIS IS CONSIDERED INCIDENTAL TO THE CONSTRUCTION OF THE 3 BAR METAL RAIL.

PROJECT NO. U-2810B
CUMBERLAND COUNTY
STATION: 115+52.74 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
RAIL POST SPACING
& END POST DETAILS



DRAWN BY : E.C. LOCKLEAR DATE : 3-4-09
CHECKED BY : T. H. FANG DATE : 8-15-12

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

TOTAL SHEETS: 39

10-SEP-2012 11:27
Z:\TIP\Projects-U\U2810\Structures\Plans\str4\Final Plans\U2810b.sd,3mr.dgn
tfang

NOTES

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

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

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

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

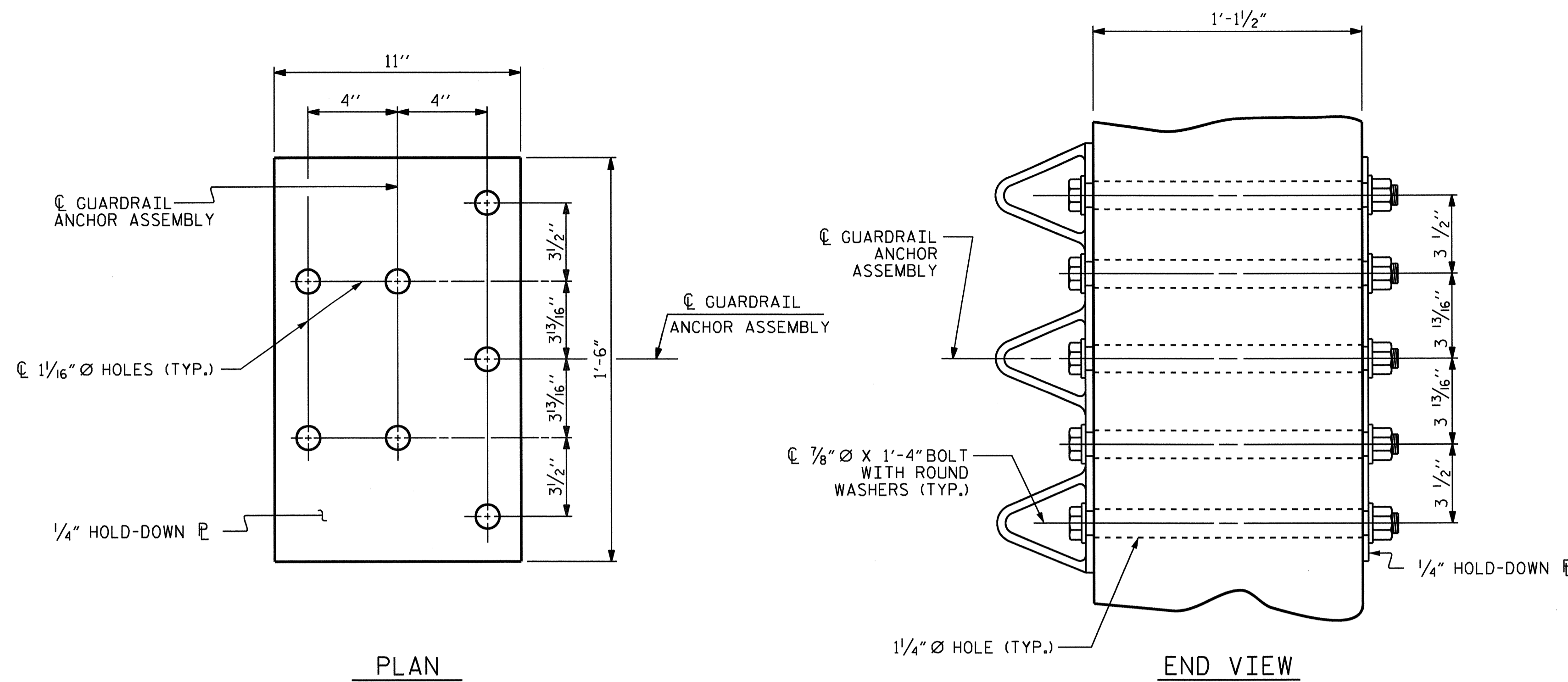
AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

THE COST OF THE GUARDRAIL ANCHOR 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.

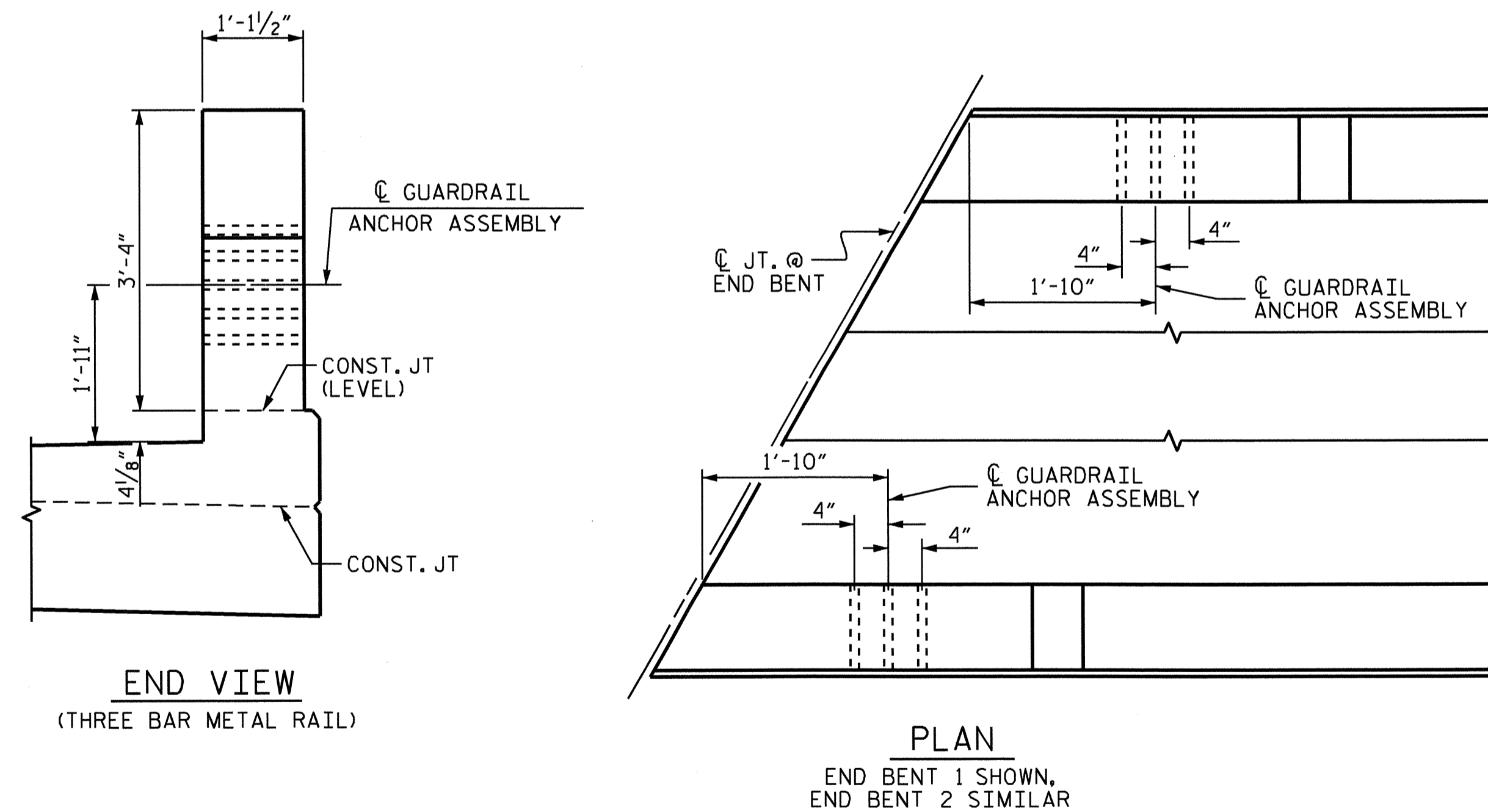
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET, FOR POINTS OF ATTACHMENT, SEE SKETCH.



PLAN

END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS



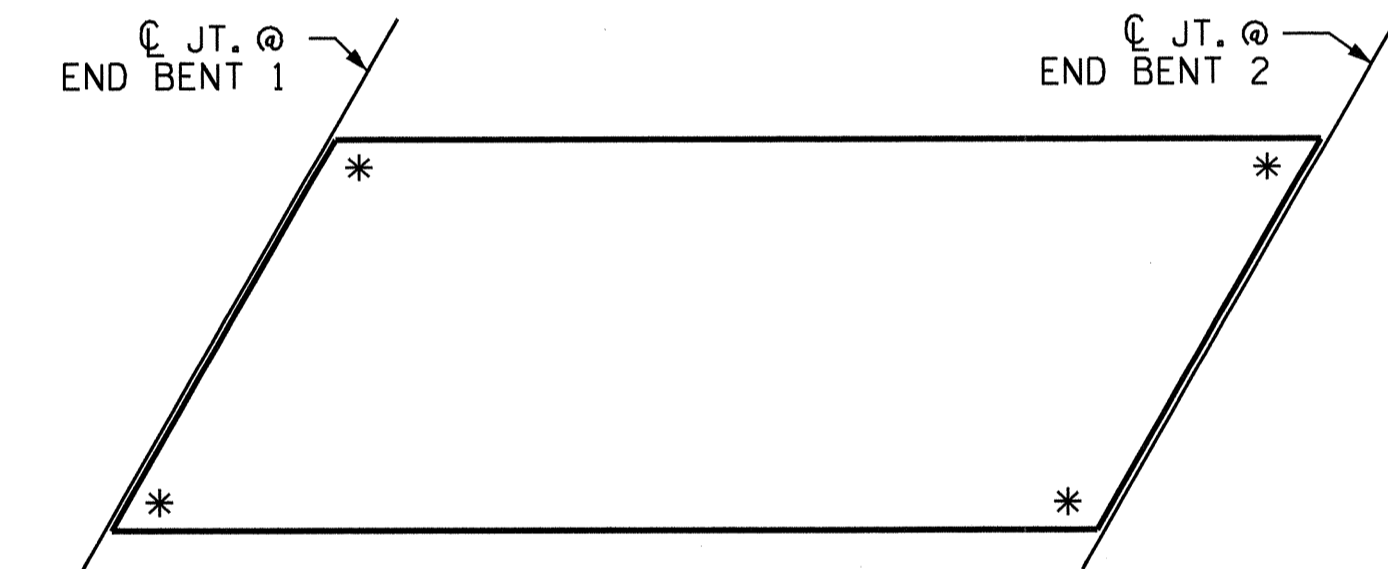
END VIEW

(THREE BAR METAL RAIL)

PLAN

END BENT 1 SHOWN,
END BENT 2 SIMILAR

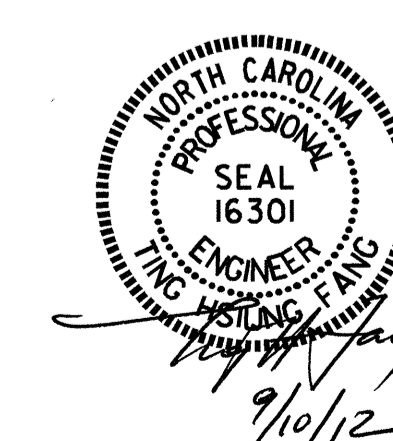
LOCATION OF GUARDRAIL ANCHOR AT END POST



SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT

PROJECT NO. U-2810B
CUMBERLAND COUNTY
 STATION: 115+52.74 -L-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-21
STANDARD GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS						
REVISIONS						TOTAL SHEETS 39
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

ASSEMBLED BY : E.C. LOCKLEAR	DATE : 3-4-09
CHECKED BY : T.H. FANG	DATE : 9-5-12
DRAWN BY : MAA	5/10
CHECKED BY : GM	5/10
ADDED	5/6/10
REV.	10/1/11
REV.	12/5/11

NOTES

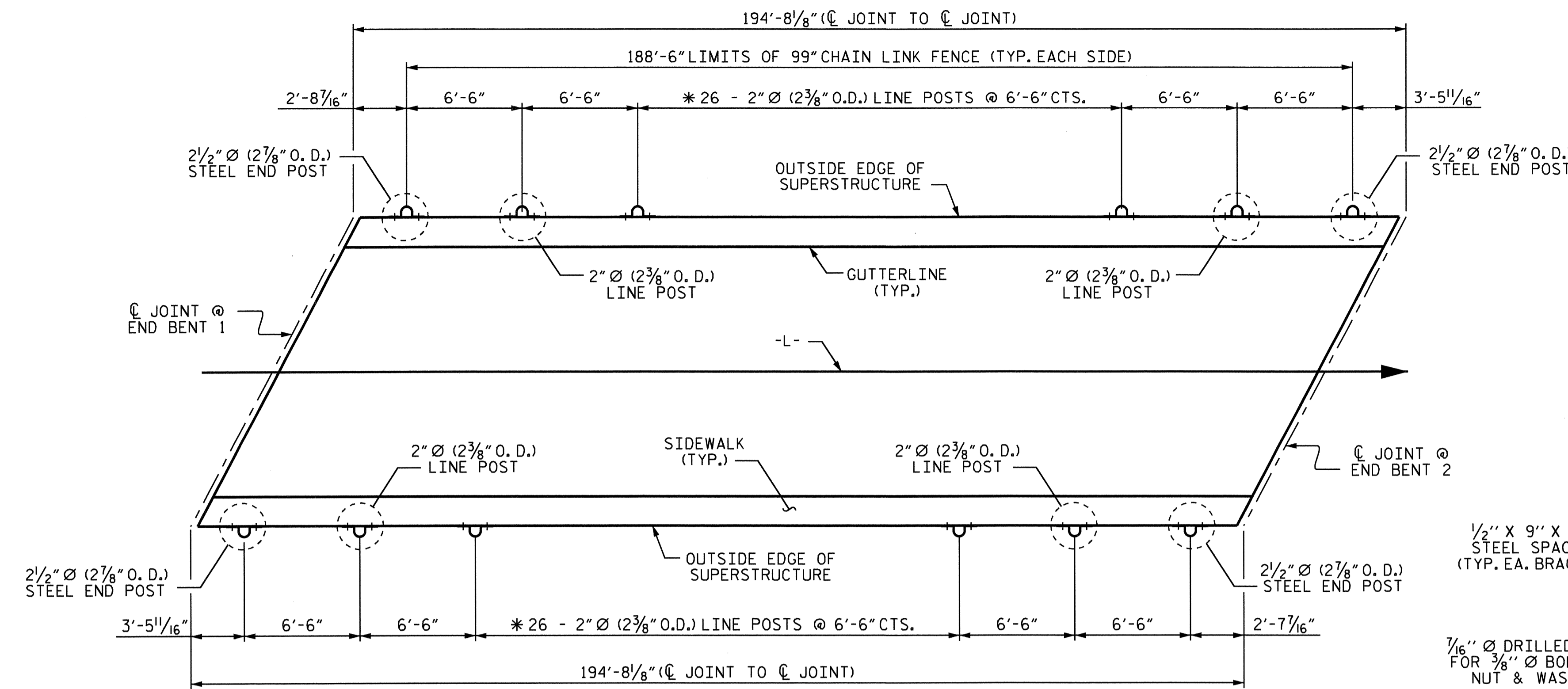
FOR BRIDGE MOUNTED CHAIN LINK FENCE, SEE SPECIAL PROVISIONS.

MATERIAL FOR ANCHOR BOLTS SHALL BE TYPE 304 STAINLESS STEEL WITH A MINIMUM 9000 PSI ULTIMATE STRENGTH. NUTS AND WASHERS SHALL BE TYPE 304 STAINLESS STEEL. ANCHOR BOLTS SHALL BE EMBEDDED AS PER ADHESIVE BONDING SYSTEM MANUFACTURER SPECIFICATIONS. NUTS SHALL BE AMERICAN STANDARD FINISHED HEXAGON THICK NUTS, CLASS 2B THREADS.

FOR SETTING ANCHOR BOLTS, THE CONTRACTOR SHALL USE AN ADHESIVE BONDING SYSTEM. LEVEL ONE FIELD TESTING OF BONDING SYSTEM IS REQUIRED AND THE YIELD LOAD OF THE 3/4" Ø BOLTS IS 12.0 KIPS.

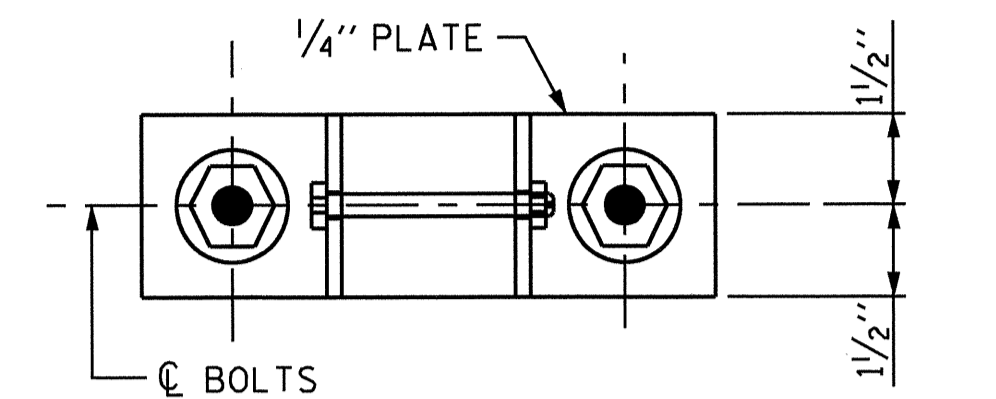
ALL FENCE MATERIAL SHALL MEET THE REQUIREMENTS OF SECTION 1050 OF THE STANDARD SPECIFICATIONS. GALVANIZE ALL STEEL PARTS AND HARDWARE IN ACCORDANCE WITH ARTICLE 1076 OF THE STANDARD SPECIFICATIONS.

PAY LENGTH = 377.0 LIN. FT.

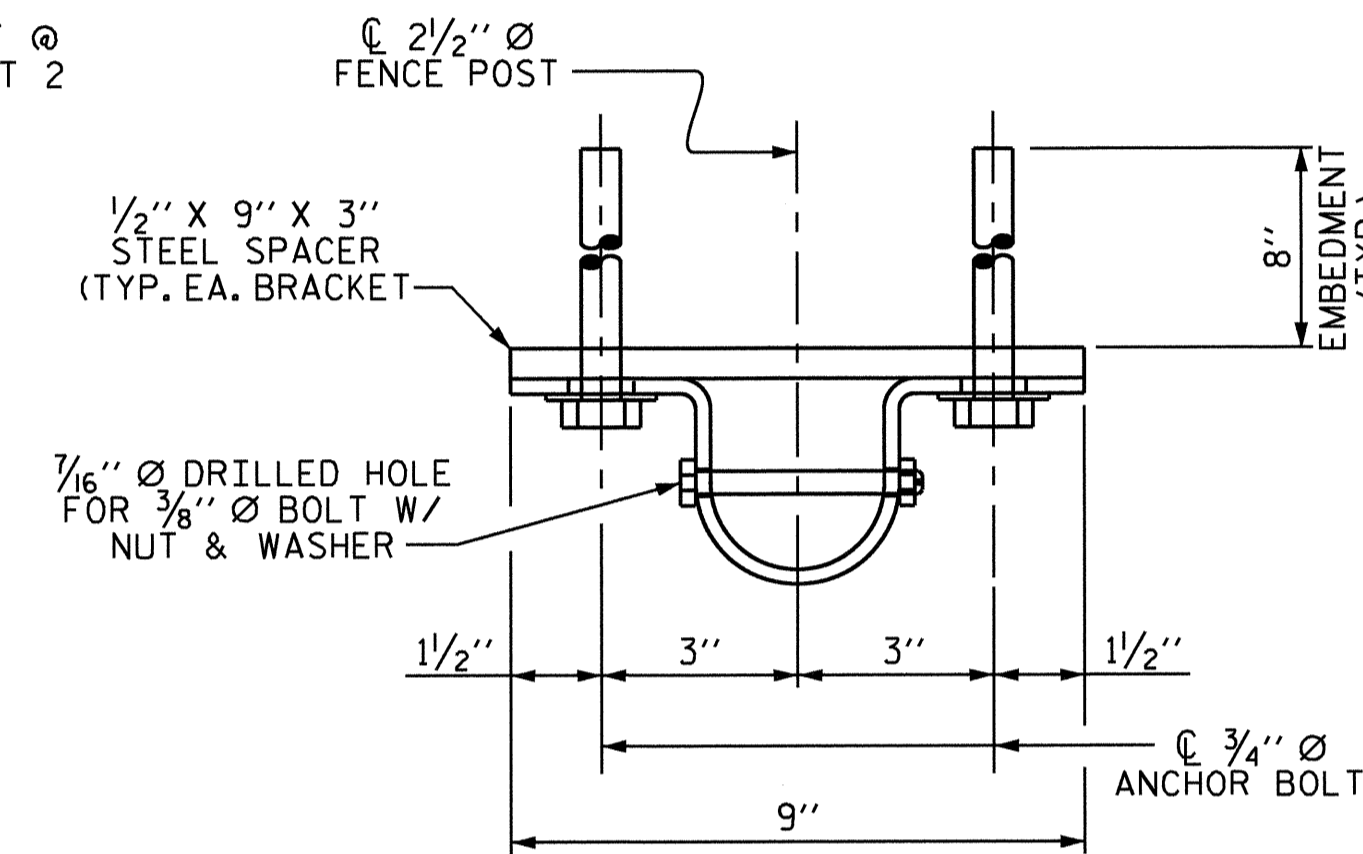


PLAN OF FENCE POST SPACING

DIMENSIONS TAKEN ALONG OUTSIDE FACE OF DECK SLAB AND SIDEWALK.
* CL OF EACH LINE POST SHOULD MATCH TO CL OF 3 BAR METAL RAIL POST.

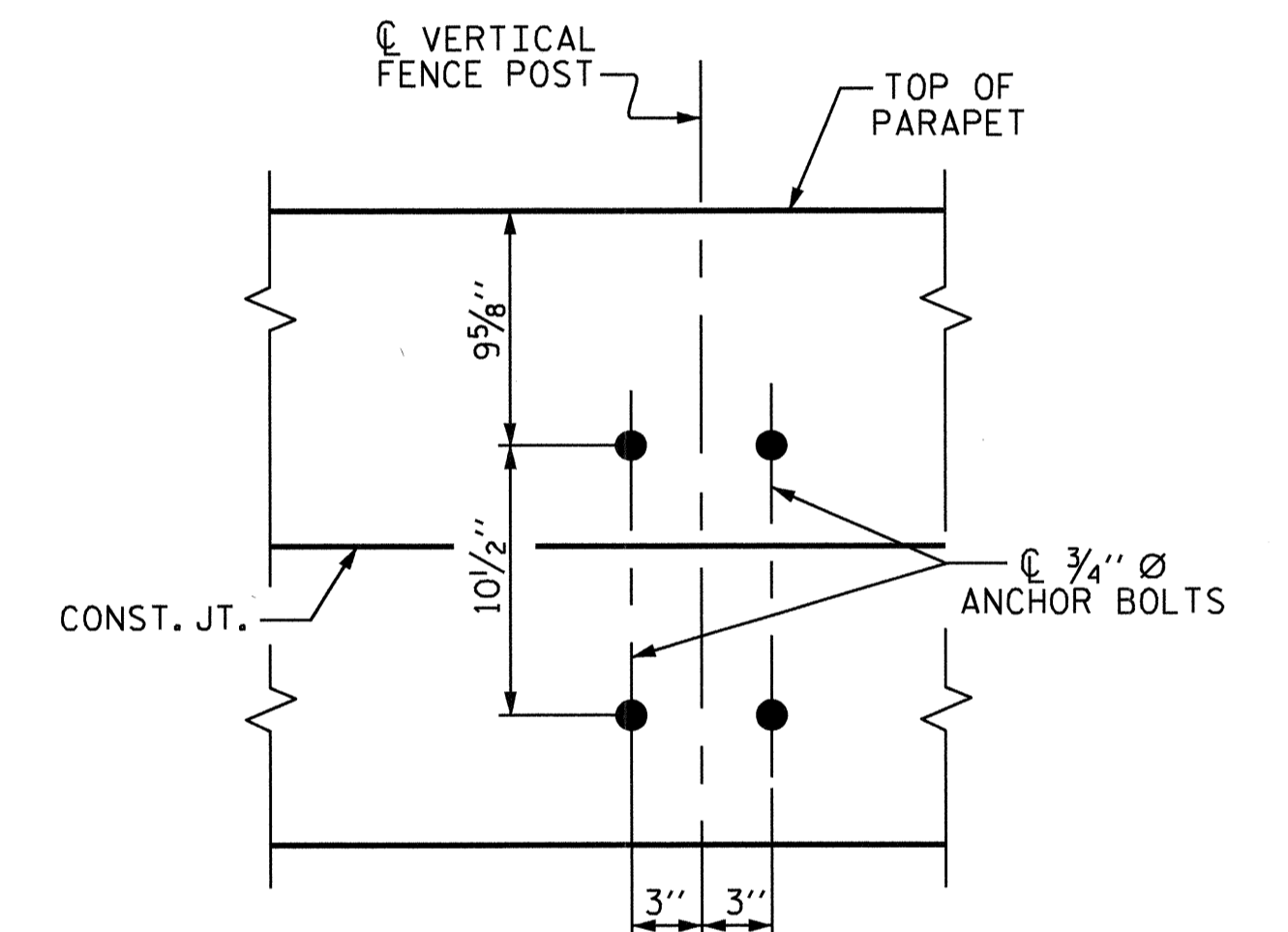


ELEVATION

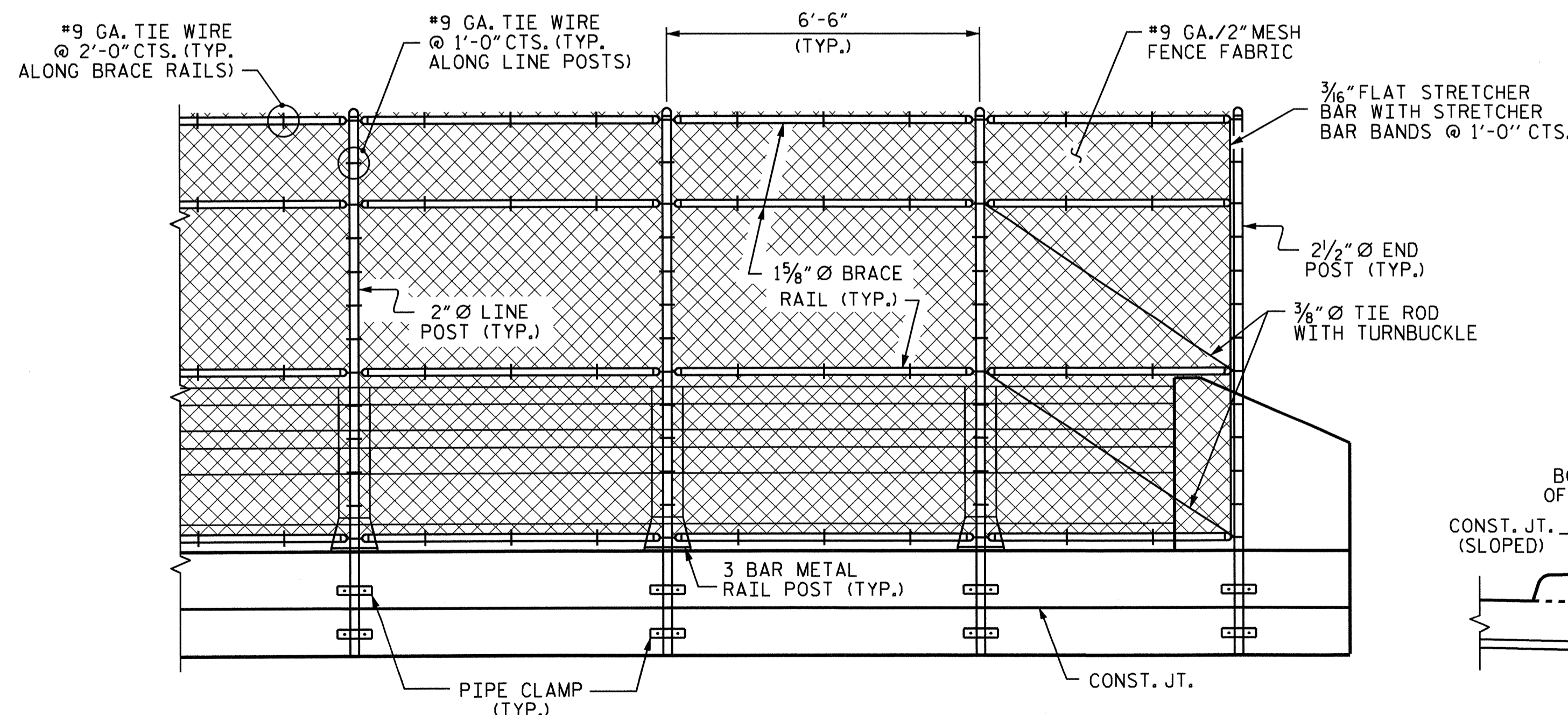


PLAN

PIPE CLAMP DETAILS

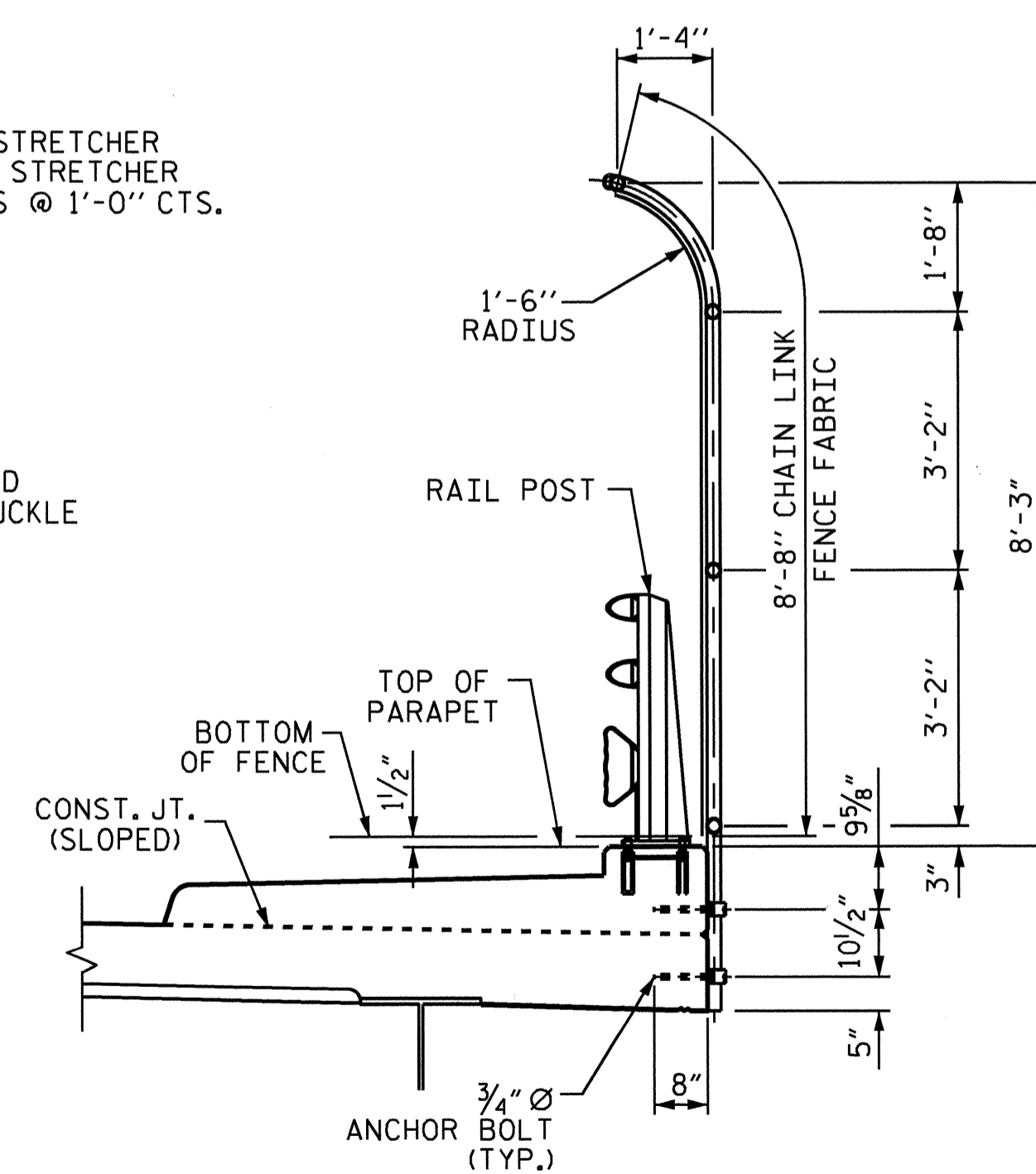


BOLT SETTING PLAN



PARTIAL ELEVATION

FOR 3 BAR METAL RAIL POST LOCATIONS & DETAILS, SEE SHEETS S-17 & S-20.



SECTION THRU FENCE

PROJECT NO. U-2810B
CUMBERLAND COUNTY
STATION: 115+52.74 -L-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE					
BRIDGE MOUNTED CHAIN LINK FENCE					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					39

DRAWN BY : S. H. SOCKWELL DATE : 7-6-12
CHECKED BY : T. H. FANG DATE : 8-15-12

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

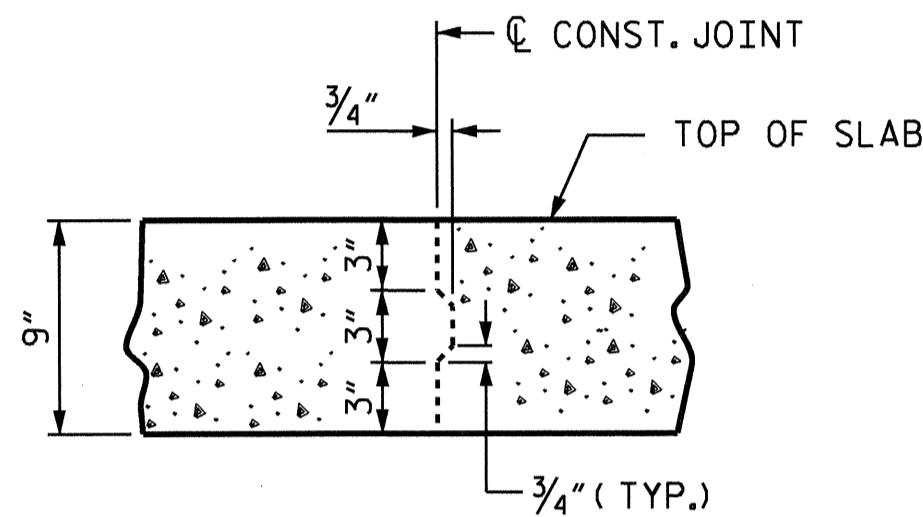
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			

GROOVING BRIDGE FLOORS

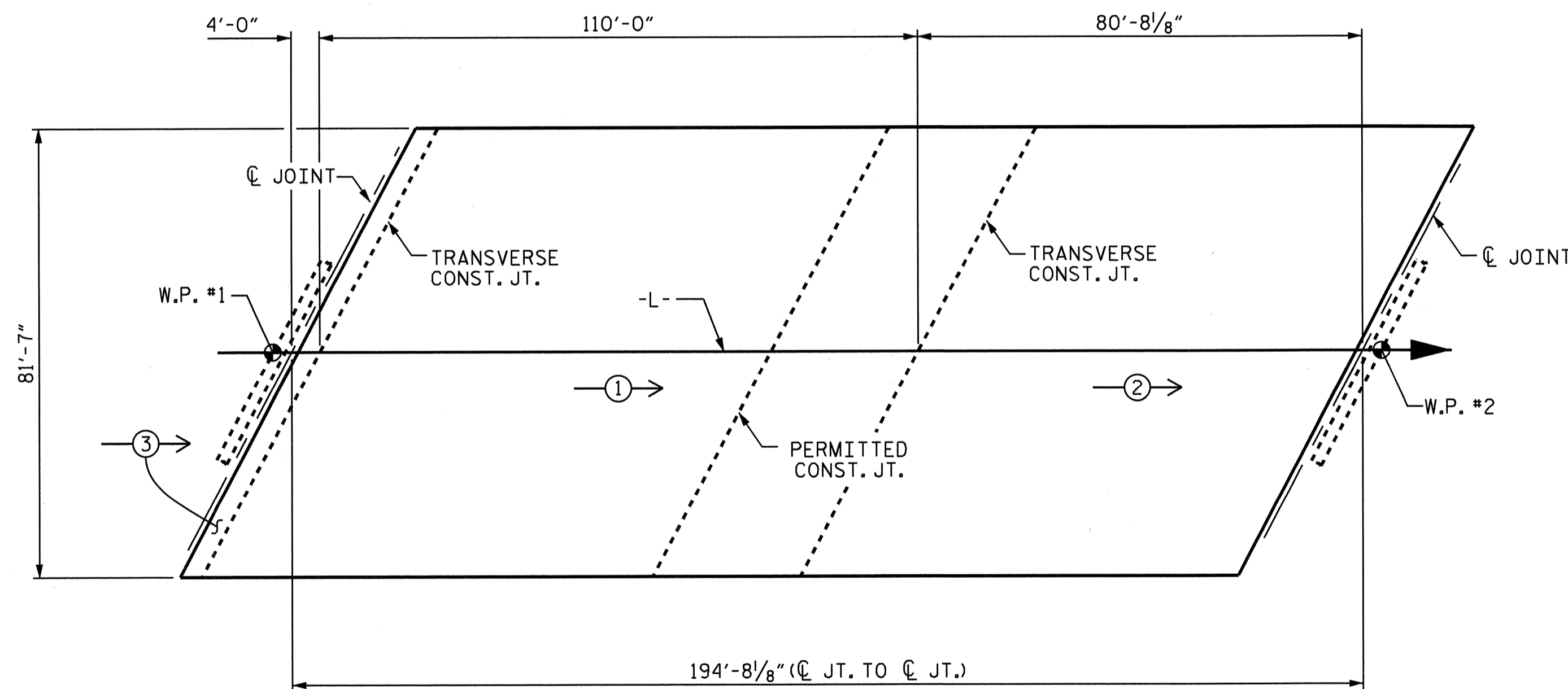
APPROACH SLABS	2,542 SQ. FT.
BRIDGE DECK	10,429 SQ. FT.
TOTAL	12,971 SQ. FT.

SUPERSTRUCTURE BILL OF MATERIAL						
	CLASS AA CONCRETE				REINFORCING STEEL (LBS)	EPOXY COATED REINFORCING STEEL (LBS)
	(CU. YD.)					
	POUR #1	POUR #2	POUR #3	TOTAL		
DECK	295.8	219.9	14.1	529.8	54,466	54,379
SIDEWALK				68.1		**
CONC. MEDIAN				22.7		**
TOTALS **				620.6	54,466	54,379

** QUANTITIES INCLUDED WITH SPAN TOTALS



TRAVERSE CONSTRUCTION JOINT DETAILS

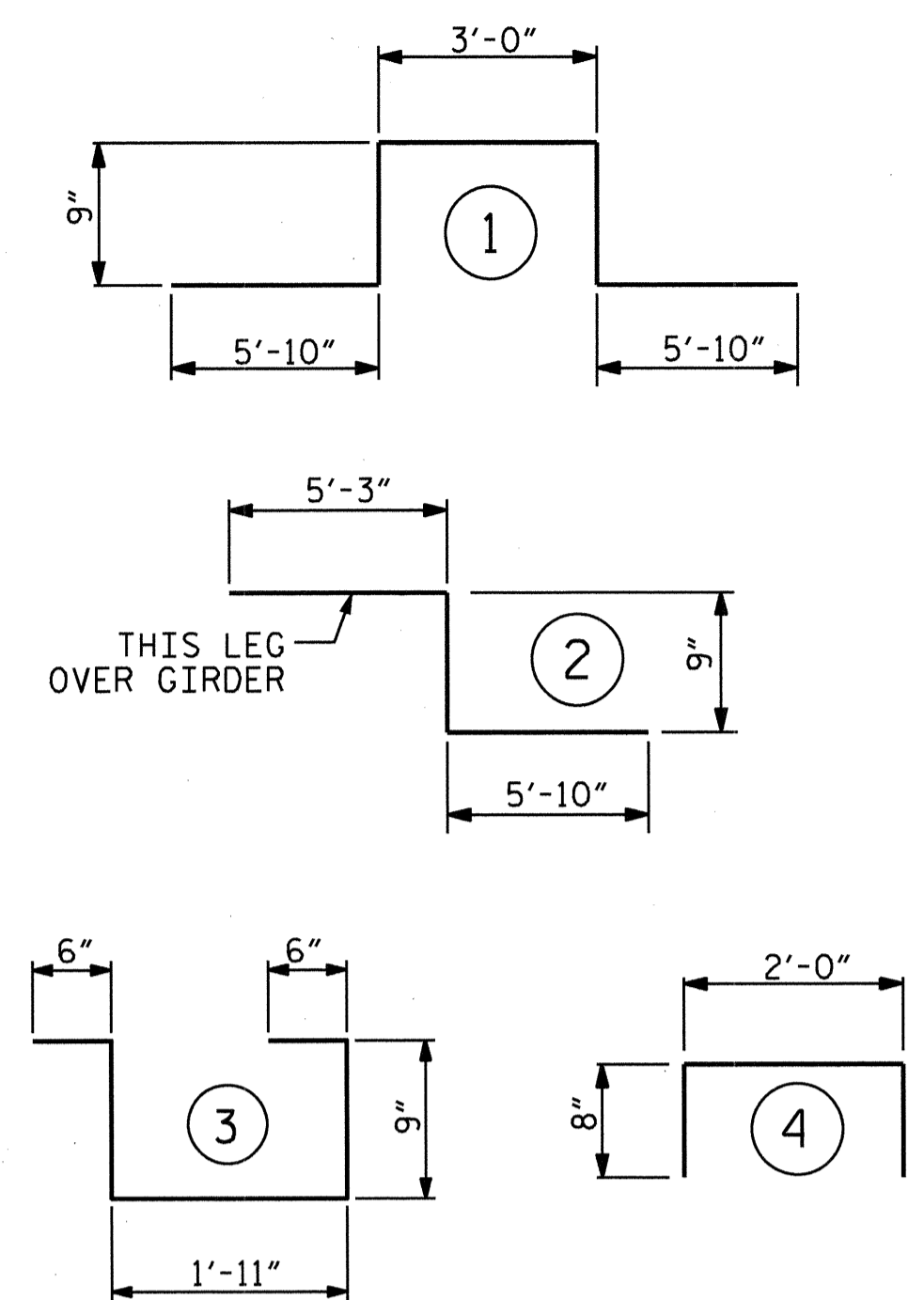


POUR SEQUENCE AND LAYOUT FOR COMPUTING AREA & POURING SEQUENCE OF REINFORCED CONCRETE DECK SLAB (SQ. FT. = 15,882)

BILL OF MATERIAL

BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	660	#5	STR	41'-11"	28855	A210	8	#5	STR	33'-2"	277
A2	660	#5	STR	41'-9"	28740	A211	8	#5	STR	32'-4"	270
* A101	8	#5	STR	41'-1"	343	A212	8	#5	STR	31'-5"	262
* A102	8	#5	STR	40'-3"	336	A213	4	#5	STR	59'-0"	246
* A103	8	#5	STR	39'-5"	329	A214	4	#5	STR	57'-3"	239
* A104	8	#5	STR	38'-6"	321	A215	4	#5	STR	55'-6"	232
* A105	8	#5	STR	37'-8"	314	A216	4	#5	STR	53'-9"	224
* A106	8	#5	STR	36'-9"	307	A217	4	#5	STR	52'-1"	217
* A107	8	#5	STR	35'-11"	300	A218	4	#5	STR	50'-4"	210
* A108	8	#5	STR	35'-1"	293	A219	4	#5	STR	48'-7"	203
* A109	8	#5	STR	34'-2"	285	A220	4	#5	STR	46'-11"	196
* A110	8	#5	STR	33'-4"	278	A221	4	#5	STR	45'-2"	188
* A111	8	#5	STR	32'-6"	271	A222	4	#5	STR	43'-5"	181
* A112	8	#5	STR	31'-7"	264	A223	4	#5	STR	41'-8"	174
* A113	4	#5	STR	58'-11"	246	A224	4	#5	STR	40'-0"	167
* A114	4	#5	STR	57'-3"	239	A225	4	#5	STR	38'-3"	160
* A115	4	#5	STR	55'-6"	232	A226	4	#5	STR	36'-6"	152
* A116	4	#5	STR	53'-9"	224	A227	4	#5	STR	34'-10"	145
* A117	4	#5	STR	52'-1"	217	A228	4	#5	STR	33'-1"	138
* A118	4	#5	STR	50'-4"	210	A229	4	#5	STR	31'-4"	131
* A119	4	#5	STR	48'-7"	203	A230	4	#5	STR	29'-8"	124
* A120	4	#5	STR	46'-11"	196	A231	4	#5	STR	27'-11"	116
* A121	4	#5	STR	45'-2"	188	A232	4	#5	STR	26'-2"	109
* A122	4	#5	STR	43'-5"	181	A233	4	#5	STR	24'-5"	102
* A123	4	#5	STR	41'-8"	174	A234	4	#5	STR	22'-9"	95
* A124	4	#5	STR	40'-0"	167	A235	4	#5	STR	21'-0"	88
* A125	4	#5	STR	38'-3"	160	A236	4	#5	STR	19'-3"	80
* A126	4	#5	STR	36'-6"	152	A237	4	#5	STR	17'-6"	73
* A127	4	#5	STR	34'-10"	145	A238	4	#5	STR	15'-10"	66
* A128	4	#5	STR	33'-1"	138	A239	4	#5	STR	14'-1"	59
* A129	4	#5	STR	31'-4"	131	A240	4	#5	STR	12'-4"	51
* A130	4	#5	STR	29'-8"	124	A241	4	#5	STR	10'-8"	45
* A131	4	#5	STR	27'-11"	116	A242	4	#5	STR	8'-11"	37
* A132	4	#5	STR	26'-2"	109	A243	4	#5	STR	7'-2"	30
* A133	4	#5	STR	24'-5"	102	A244	4	#5	STR	5'-6"	23
* A134	4	#5	STR	22'-9"	95	A245	4	#5	STR	3'-9"	16
* A135	4	#5	STR	21'-0"	88	A246	4	#5	STR	2'-0"	6
* A136	4	#5	STR	19'-3"	80	* B1	392	#4	STR	29'-6"	7725
* A137	4	#5	STR	17'-6"	73	B2	396	#5	STR	50'-2"	20720
* A138	4	#5	STR	15'-10"	66	* B3	84	#4	STR	29'-6"	1655
* A139	4	#5	STR	14'-1"	59	* B4	49	#4	STR	29'-4"	960
* A140	4	#5	STR	12'-4"	51	* G1	8	#5	STR	47'-3"	394
* A141	4	#5	STR	10'-8"	45	* G2	390	#4	STR	7'-2"	1867
* A142	4	#5	STR	8'-11"	37	* G3	129	#4	STR	6'-10"	589
* A143	4	#5	STR	7'-2"	30	* K1	12	#5	2	11'-10"	148
* A144	4	#5	STR	5'-6"	23	* K2	36	#5	1	16'-2"	607
* A145	4	#5	STR	3'-9"	16	* S1	140	#4	3	4'-5"	413
* A146	4	#5	STR	2'-0"	8	* U1	116	#4	4	3'-4"	258
A201	8	#5	STR	40'-11"	341						
A202	8	#5	STR	40'-1"	334						
A203	8	#5	STR	39'-3"	328						
A204	8	#5	STR	38'-4"	320						
A205	8	#5	STR	37'-6"	313						
A206	8	#5	STR	36'-8"	306						
A207	8	#5	STR	35'-9"	298						
A208	8	#5	STR	34'-11"	291						
A209	8	#5	STR	34'-1"	284						
					REINFORCING STEEL	=	54,466	LBS			
					* EPOXY COATED REINF. STEEL	=	54,379	LBS			

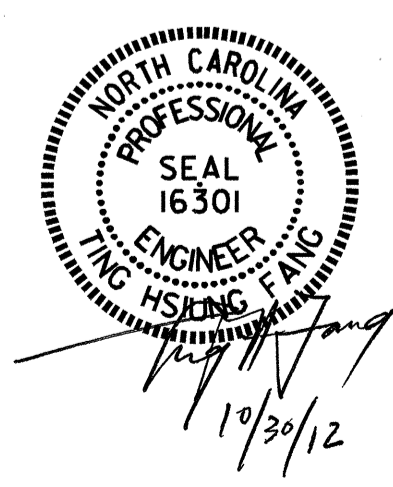
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

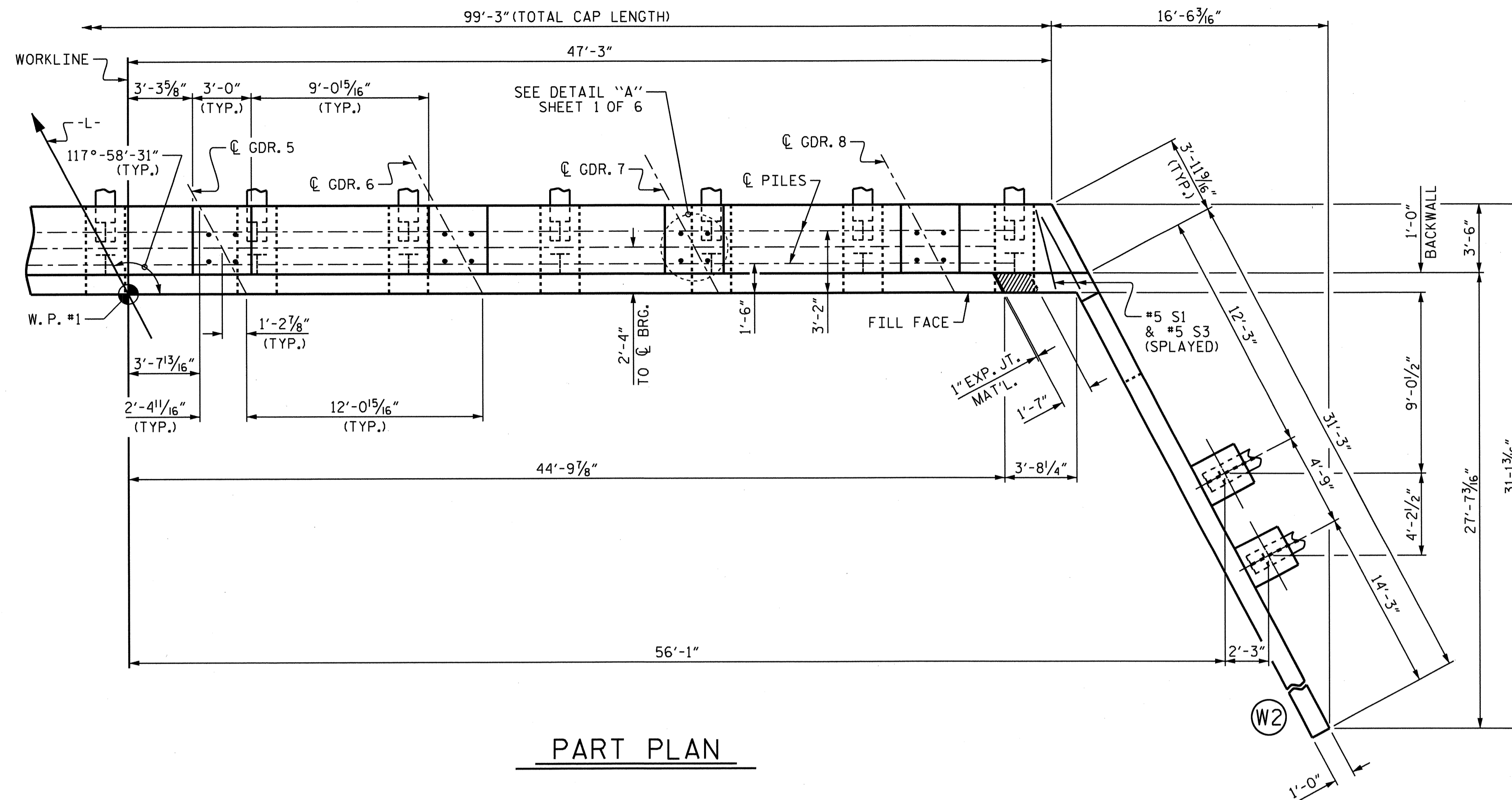
PROJECT NO. U-2810B
CUMBERLAND COUNTY
STATION: 115+52.74 -L-

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

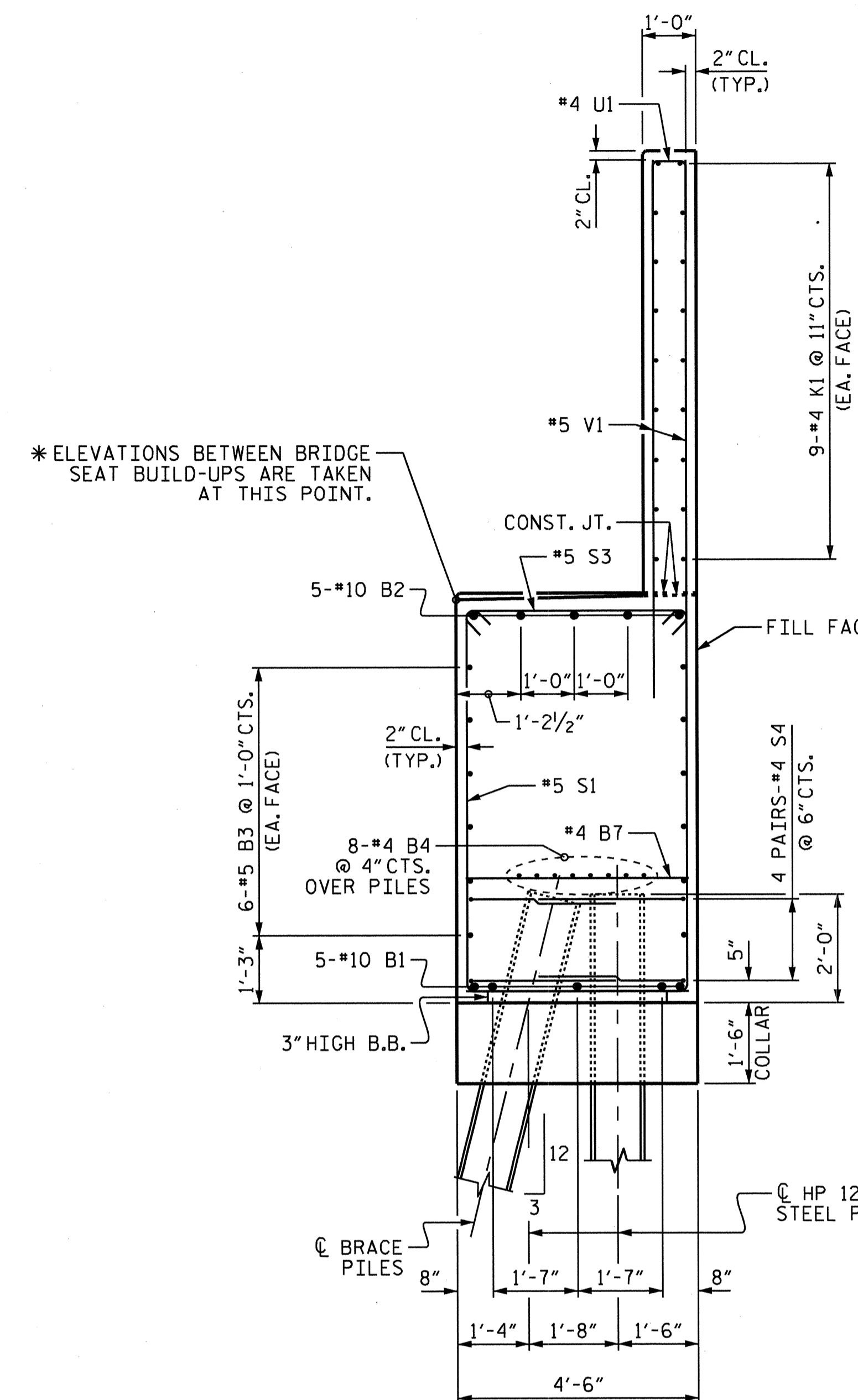


REVISIONS						SHEET NO. S-23
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 39
2			4			

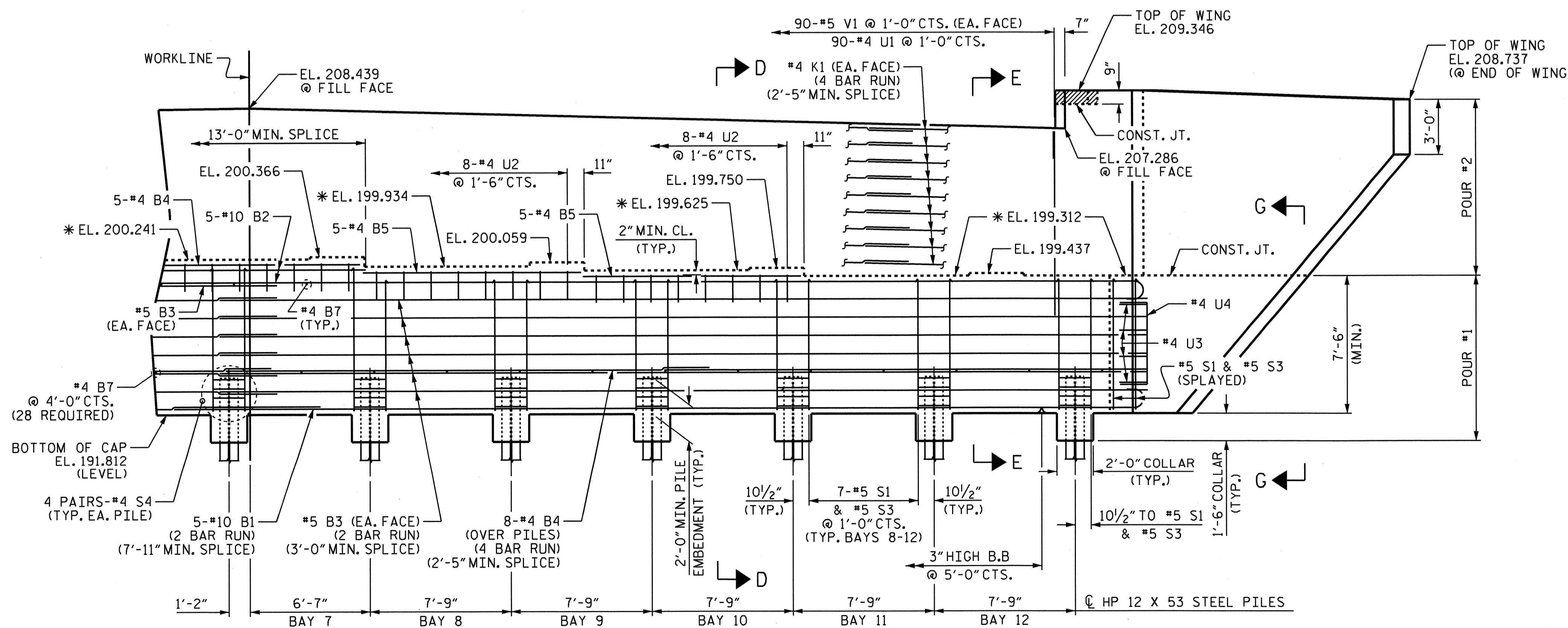
DRAWN BY: S. DOMBROWSKI DATE: 7/30/09
CHECKED BY: T. H. FANG DATE: 8/20/12



PART PLAN



SECTION E-E



PART ELEVATION

PROJECT NO. U-2810B
CUMBERLAND COUNTY
 STATION: 115+52.74 -L-
 SHEET 2 OF 6

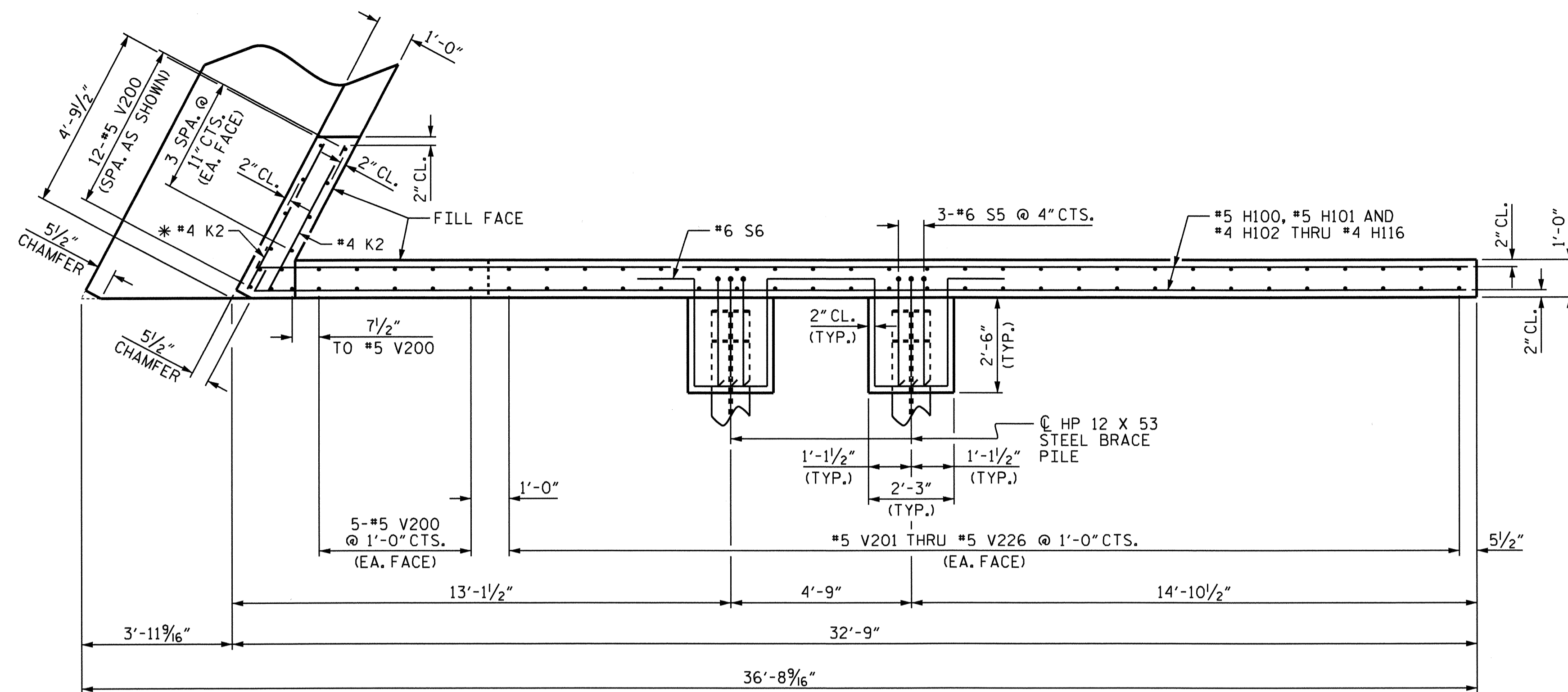


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
END BENT 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

DRAWN BY: P. K. NEWTON DATE: 8/23/12
 CHECKED BY: S. H. SOCKWELL DATE: 8/24/12

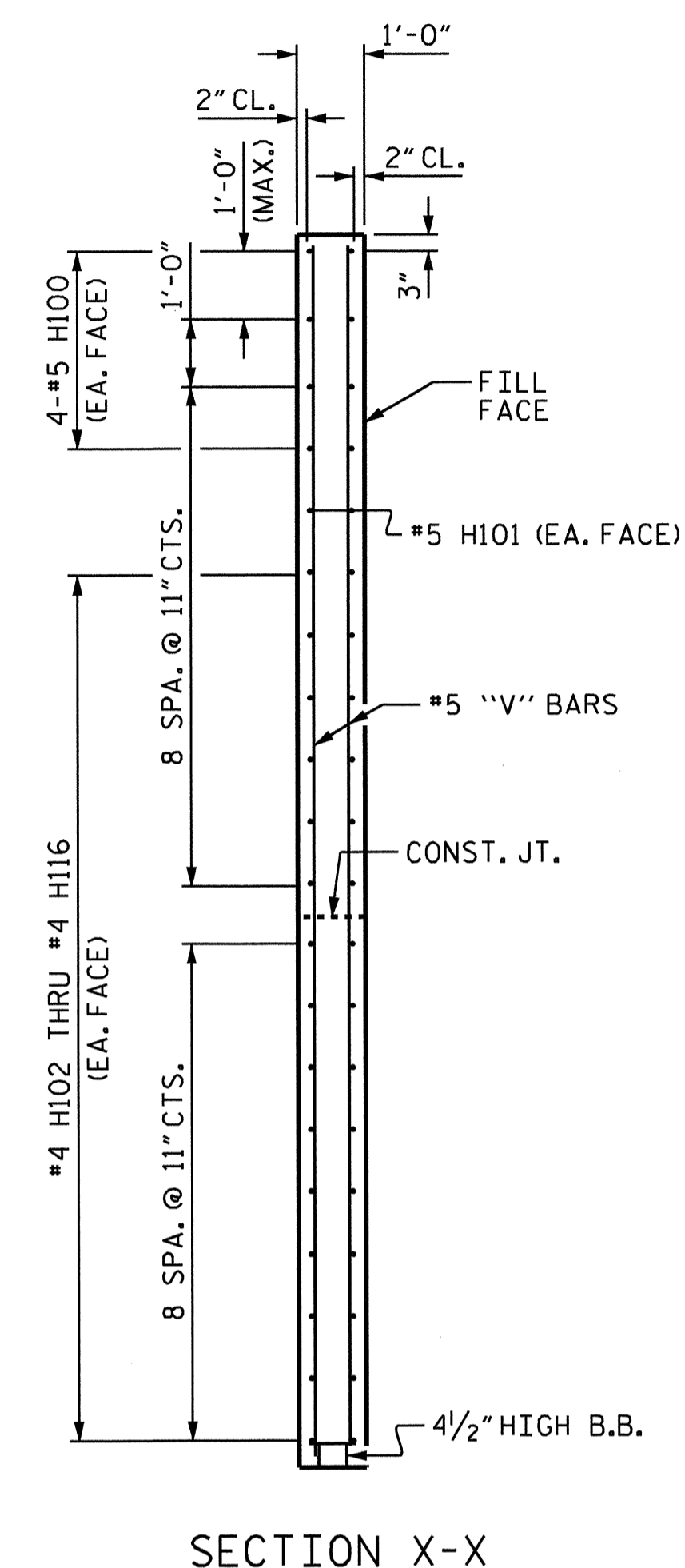
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SHEET NO.
S-25
TOTAL SHEETS
39

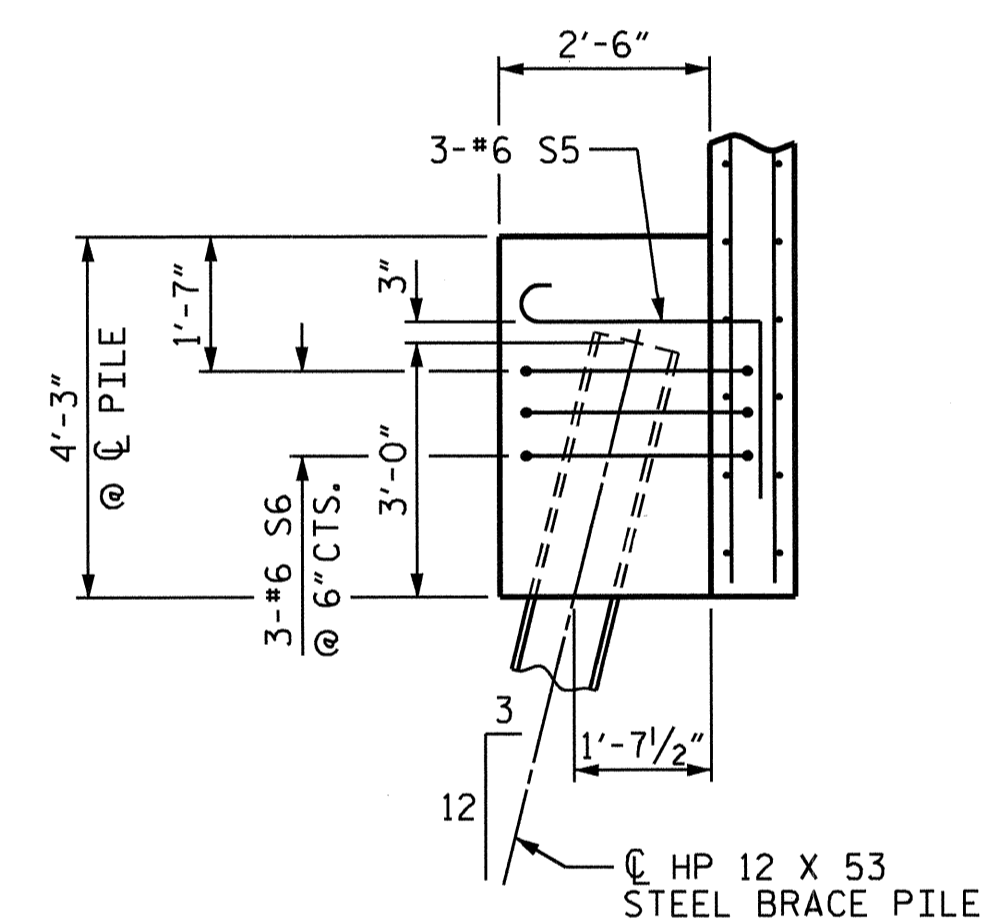


PLAN OF WING W1

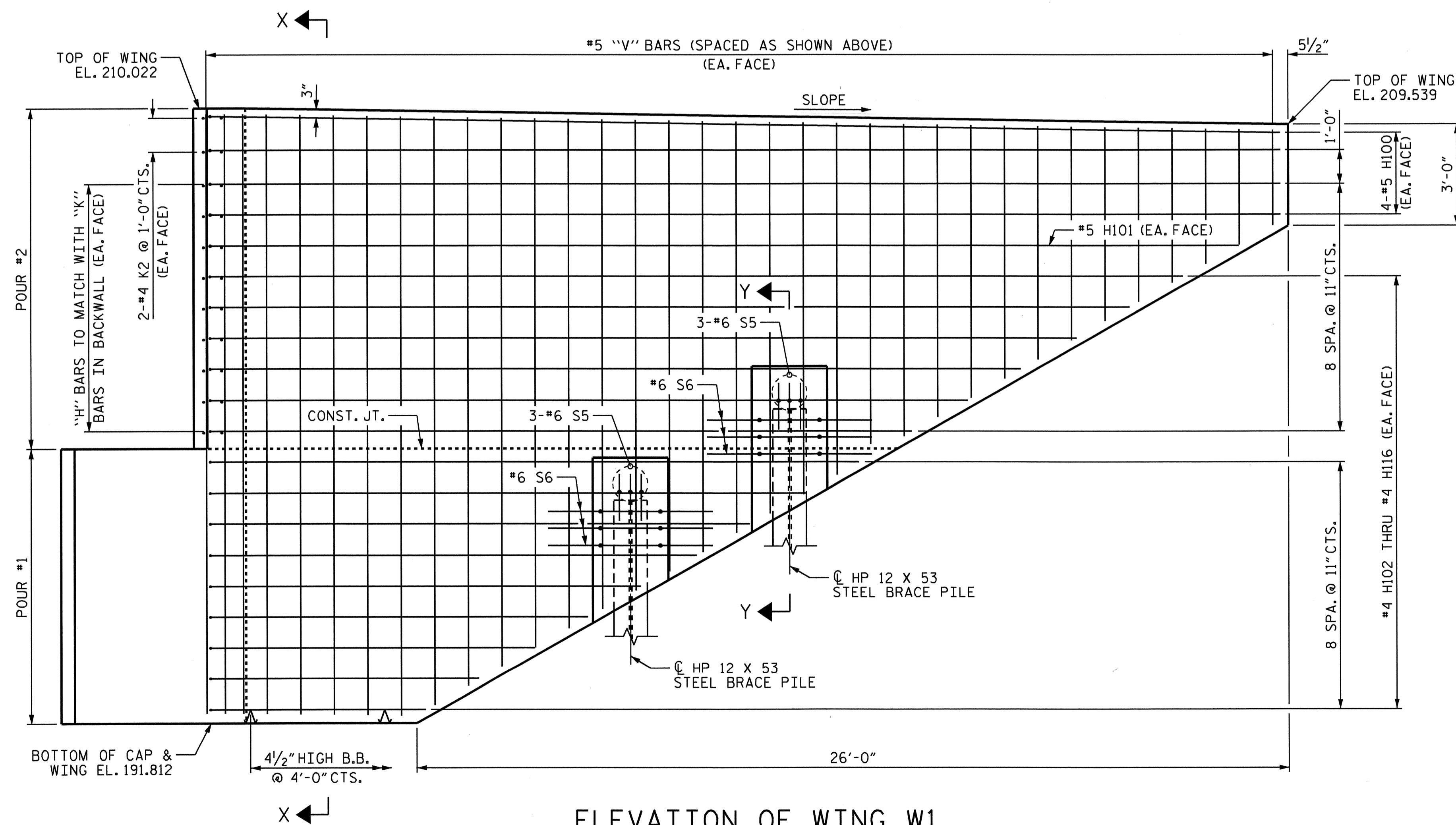
* FIELD CUT #4 K2 AS NECESSARY TO PROVIDE 2" MIN. CLEARANCE TO CHAMFER.



SECTION X-X



PARTIAL SECTION Y-Y
TYP. EA. WING BRACE PILE



ELEVATION OF WING W1



PROJECT NO. U-2810B
CUMBERLAND COUNTY
 STATION: 115+52.74 -L-

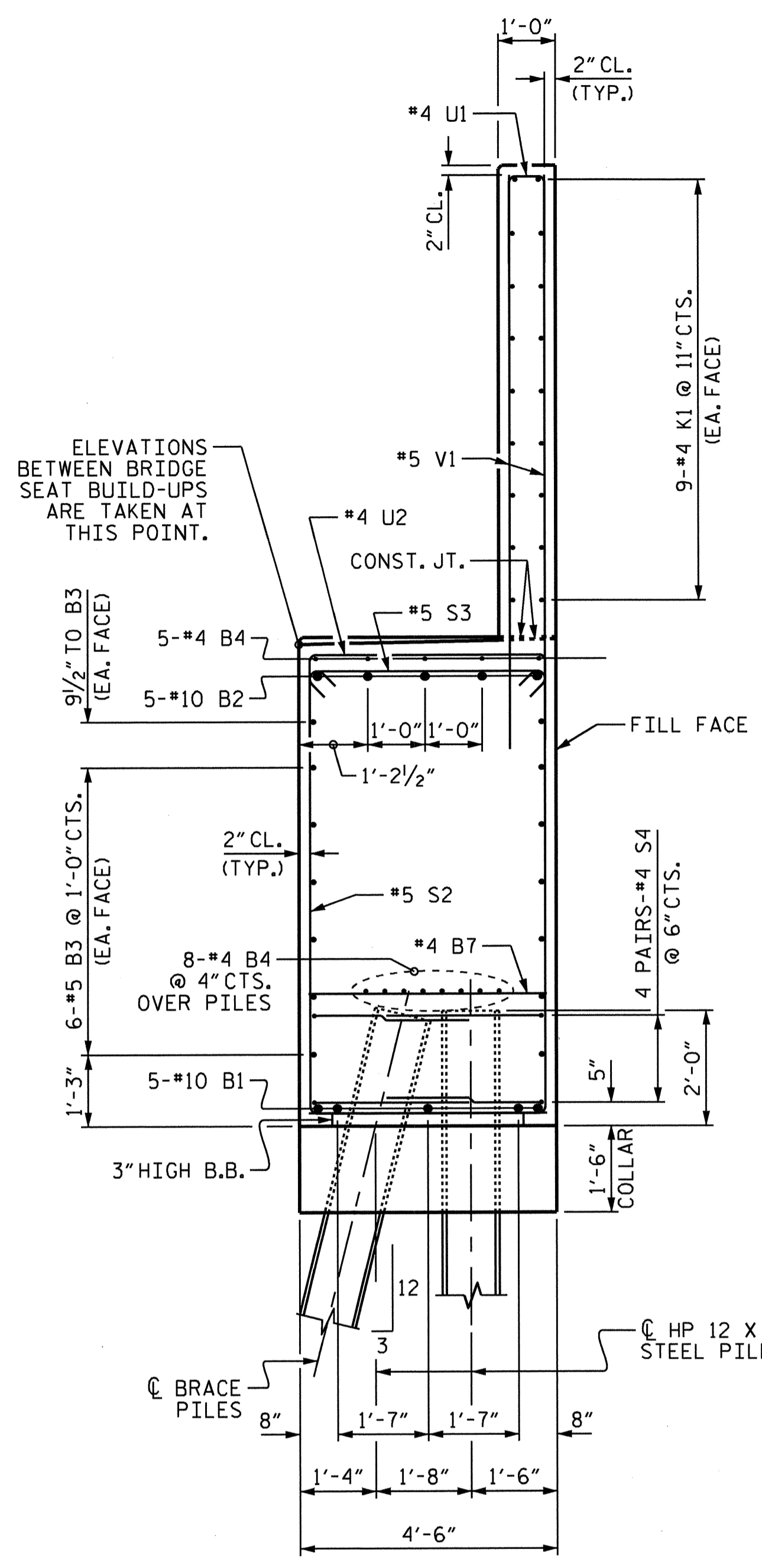
SHEET 3 OF 6

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

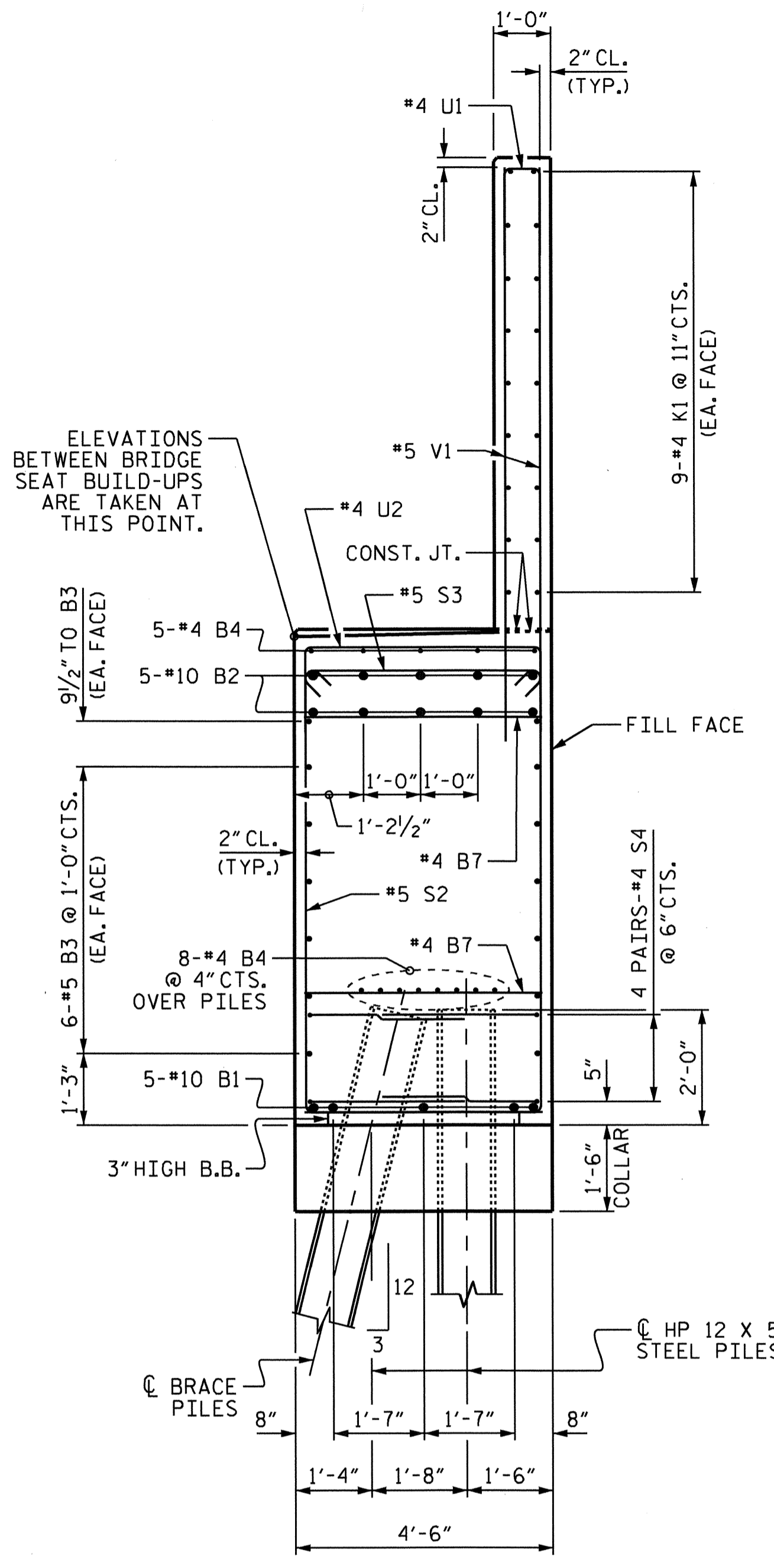
DRAWN BY : P. K. NEWTON DATE : 8/23/12
 CHECKED BY : S. H. SOCKWELL DATE : 8/24/12

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

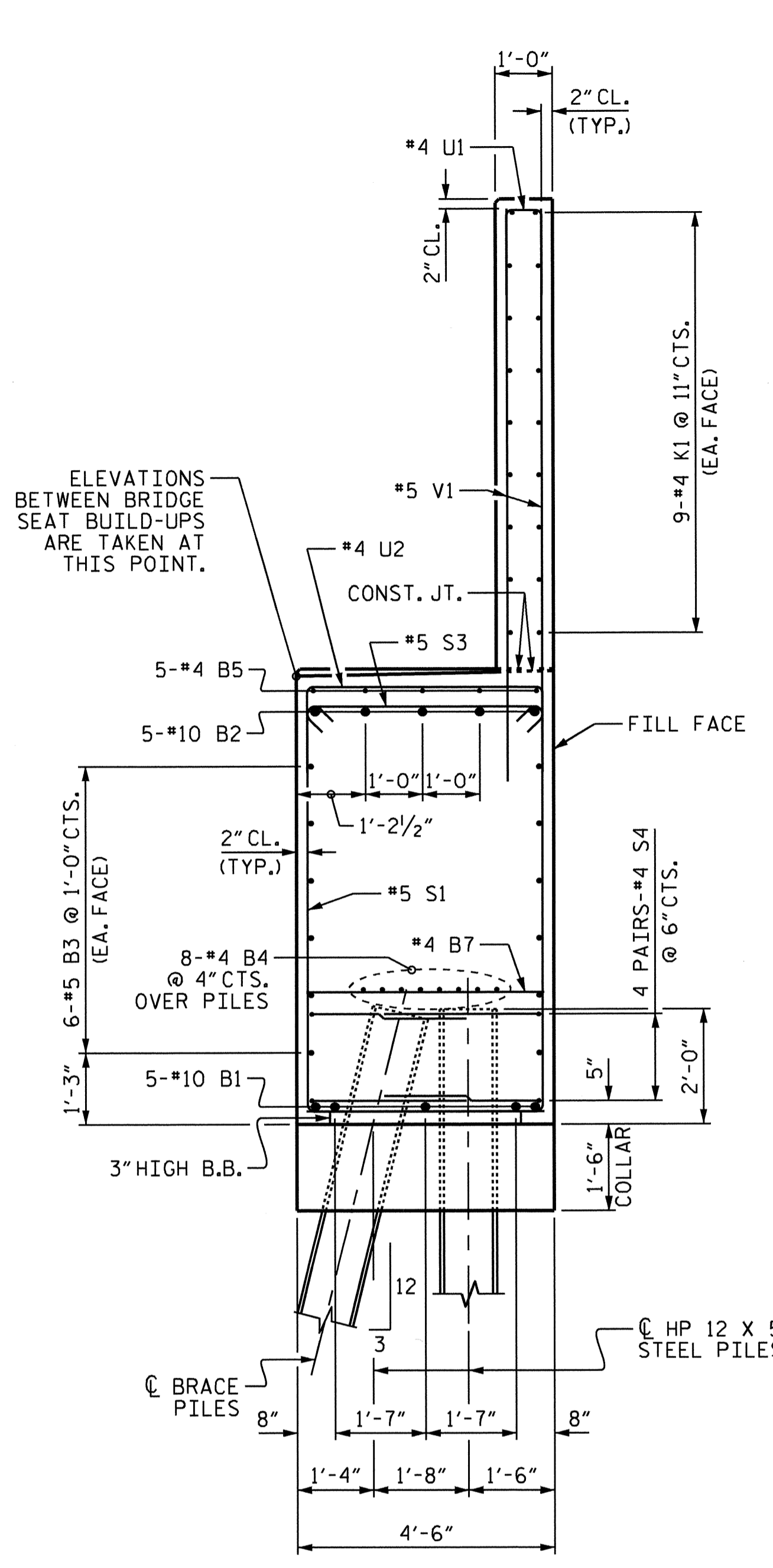
TOTAL SHEETS: 39



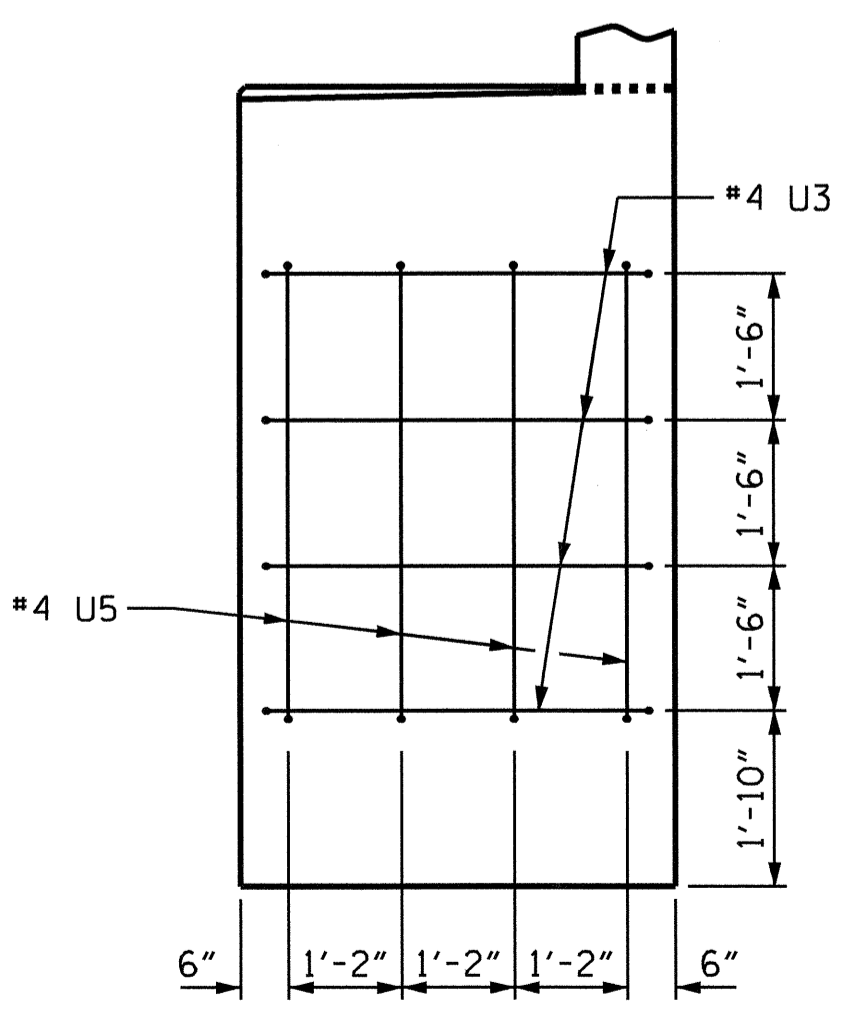
SECTION B-B



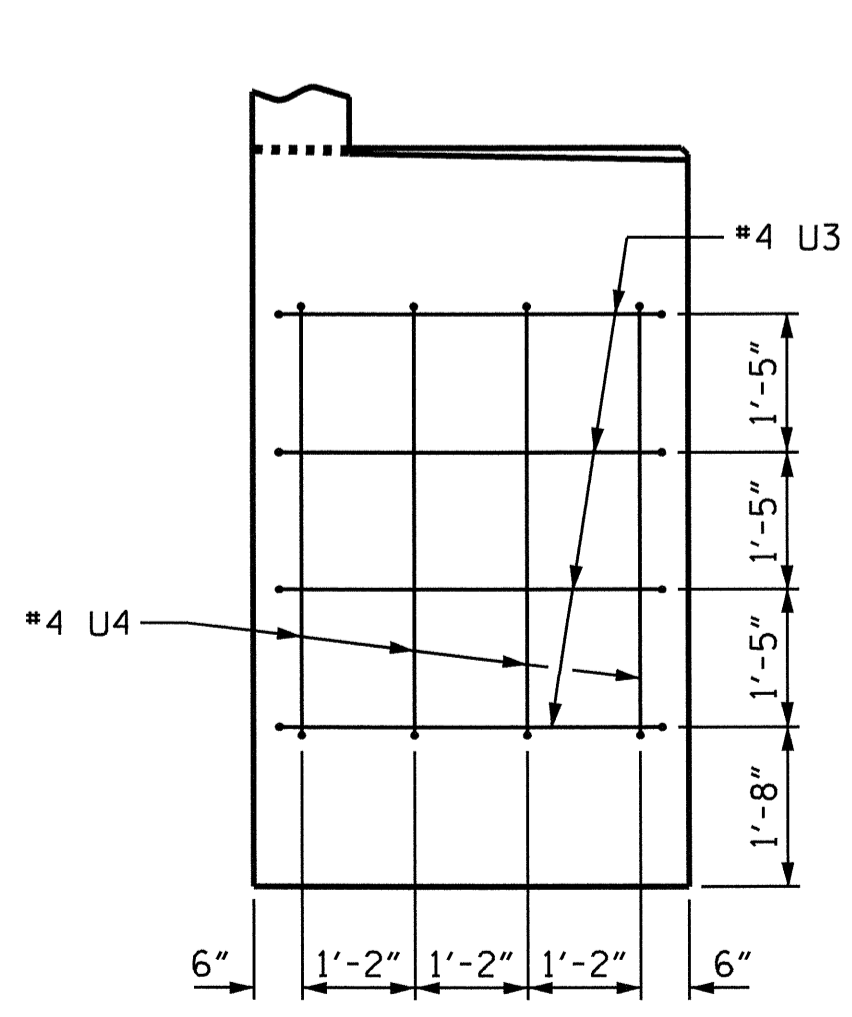
SECTION C-C



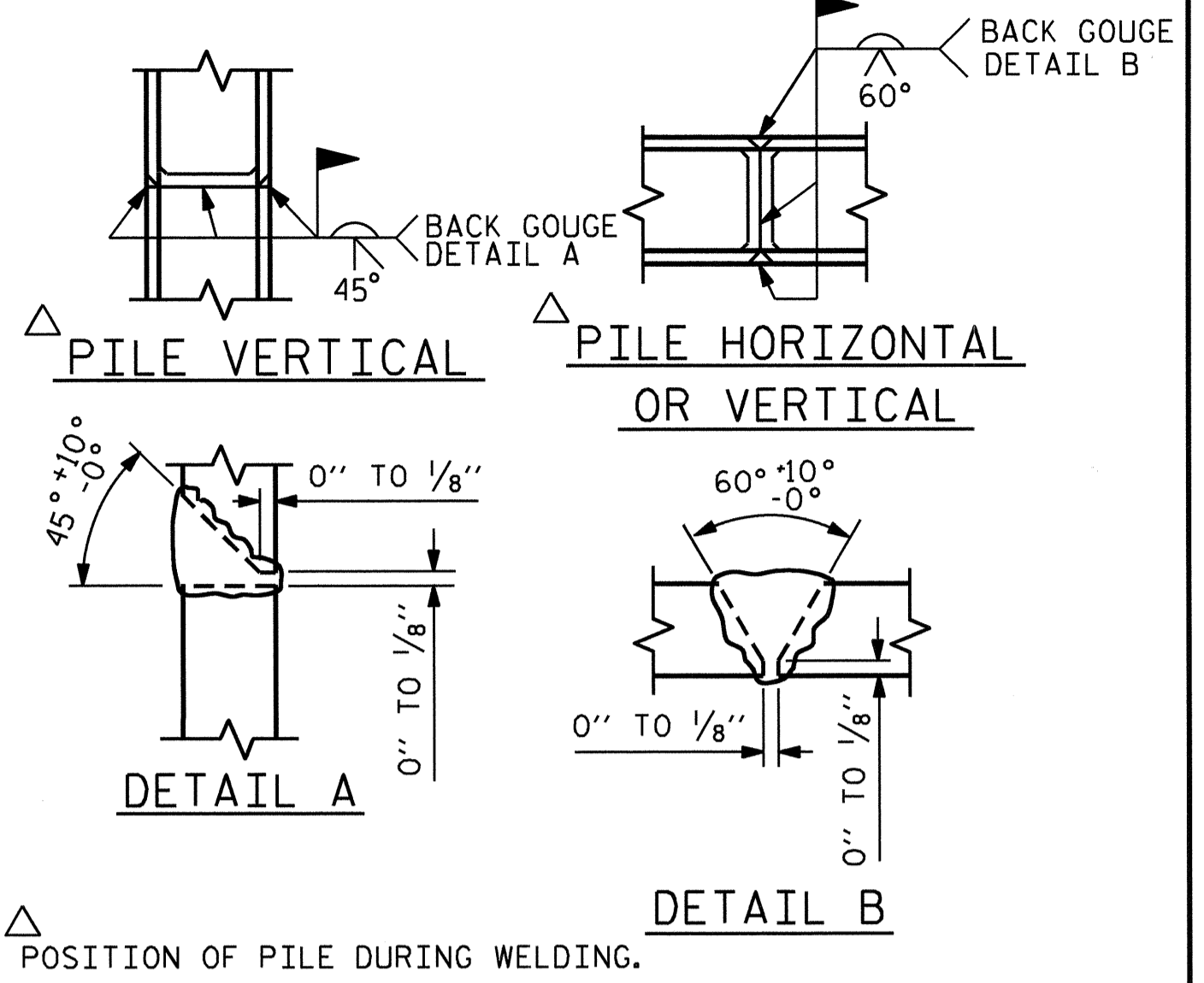
SECTION D-D



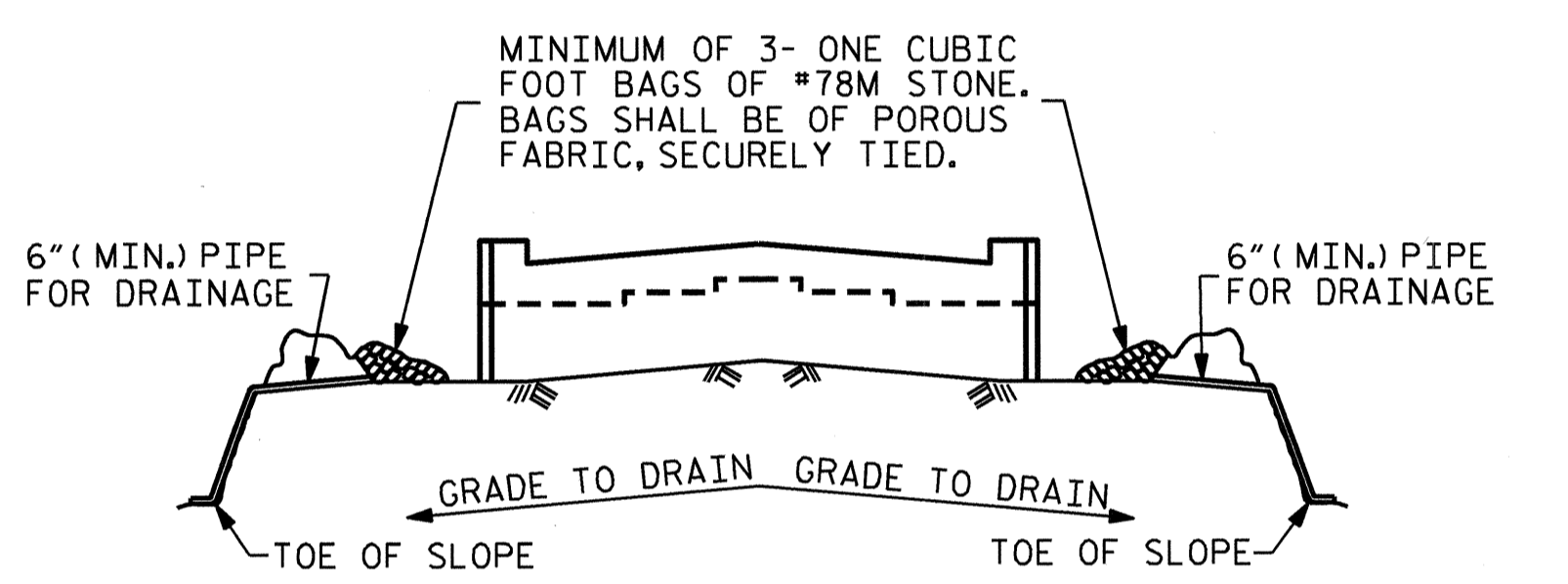
VIEW F-F



VIEW G-G



PILE SPLICE DETAILS



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

DRAWN BY : P. K. NEWTON DATE : 3/29/12
 CHECKED BY : S. H. SOCKWELL DATE : 8/24/12

10-SEP-2012 11:55
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 kpnewton

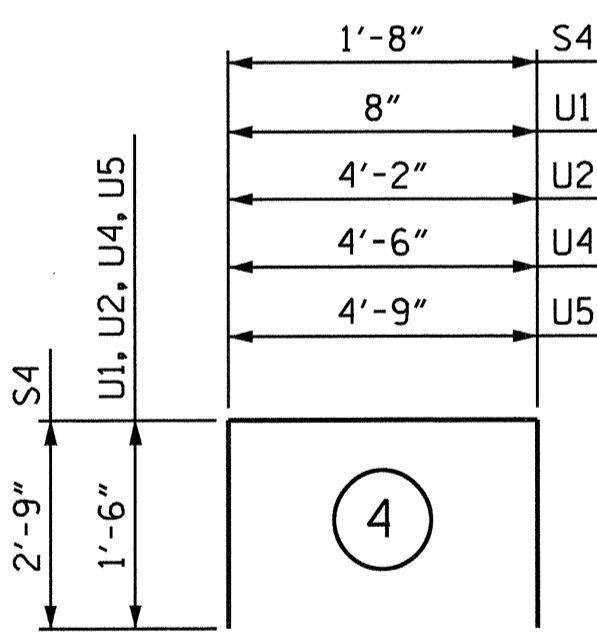
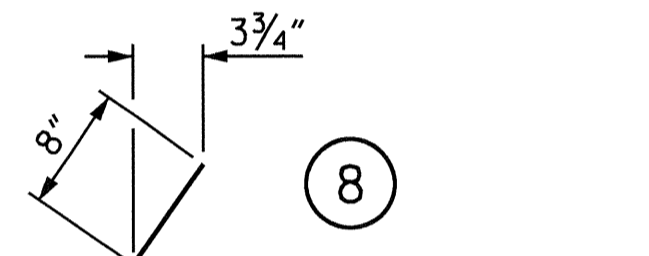
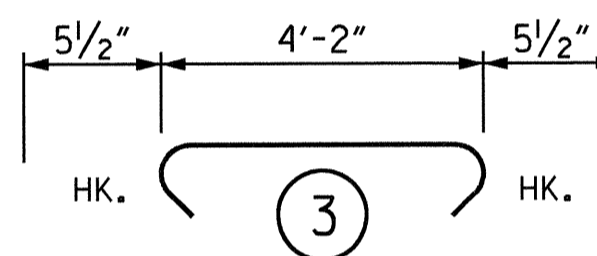
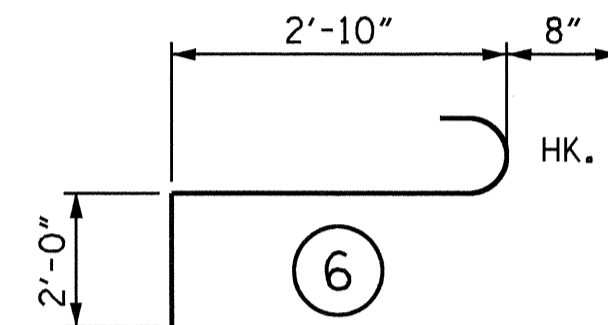
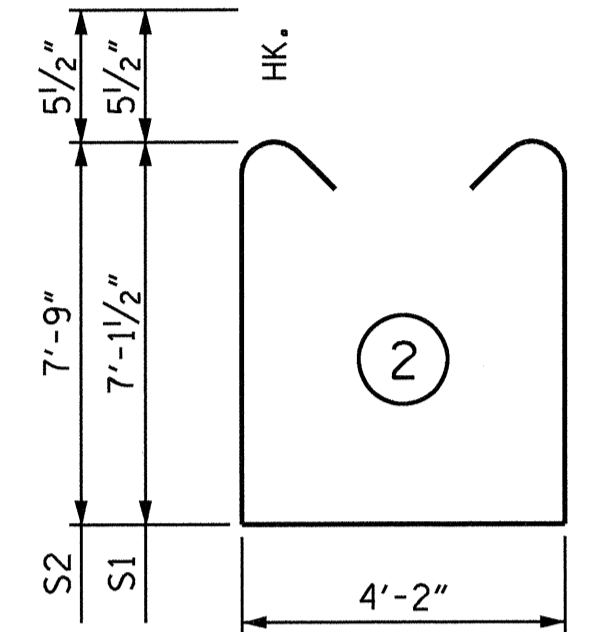
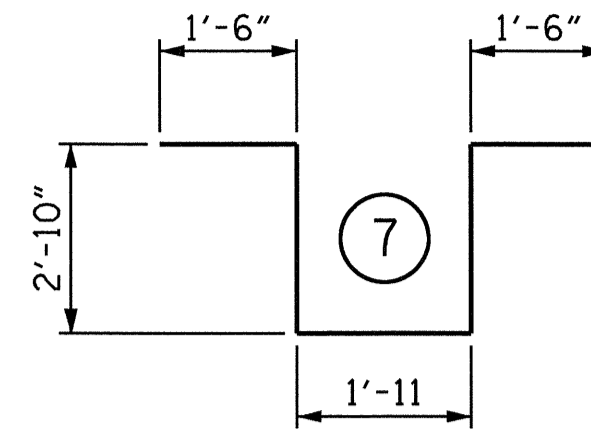
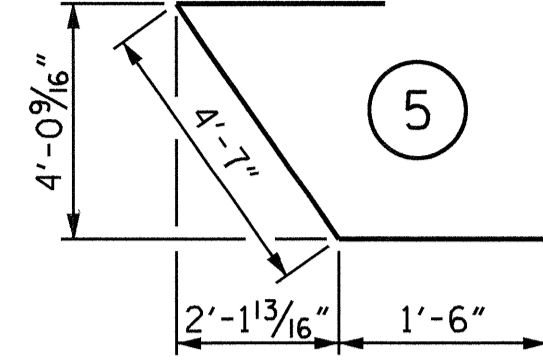
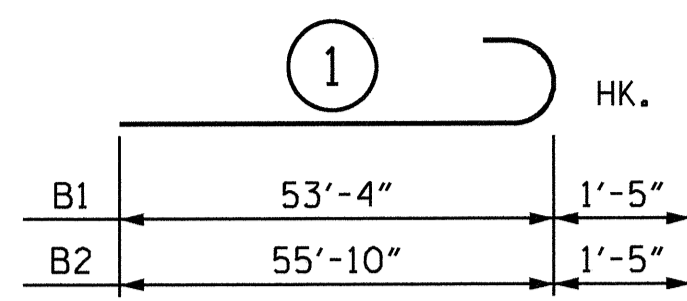
PROFESSIONAL SEAL
 ENGINEER
 KOREY NEWTON
 9/10/2012

PROJECT NO. U-2810B
 CUMBERLAND COUNTY
 STATION: 115+52.74 -L-
 SHEET 5 OF 6

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
END BENT 1					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					39

BAR TYPES

BILL OF MATERIAL



31'-11"	H100
30'-8"	H101
29'-0"	H102
27'-5"	H103
25'-10"	H104
24'-2"	H105
22'-7"	H106
20'-11"	H107
19'-4"	H108
17'-9"	H109
16'-1"	H110
14'-6"	H111
12'-10"	H112
11'-3"	H113
9'-8"	H114
8'-0"	H115
6'-5"	H116

31'-3"	H200
30'-3"	H201
28'-6"	H202
26'-10"	H203
25'-2"	H204
23'-6"	H205
21'-10"	H206
20'-2"	H207
18'-4"	H208
16'-7"	H209
14'-10"	H210
13'-1"	H211
11'-4"	H212
9'-7"	H213
7'-10"	H214
6'-1"	H215
30'-11"	H300
29'-11"	H301
28'-2"	H302
26'-6"	H303
24'-10"	H304
23'-2"	H305
21'-6"	H306
19'-10"	H307
18'-0"	H308
16'-3"	H309
14'-6"	H310
12'-9"	H311
11'-0"	H312
9'-3"	H313
7'-6"	H314
5'-9"	H315

END BENT 1

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT			
B1	10	#10	1	54'-9"	2356	H307	1	#4	9	20'-6"	14	V221	2	#5	STR	5'-9"	12
B2	10	#10	1	57'-3"	2463	H308	1	#4	9	18'-8"	12	V222	2	#5	STR	5'-2"	11
B3	26	#5	STR	51'-0"	1383	H309	1	#4	9	16'-11"	11	V223	2	#5	STR	4'-7"	10
B4	37	#4	STR	26'-9"	661	H310	1	#4	9	15'-2"	10	V224	2	#5	STR	4'-0"	8
B5	10	#4	STR	12'-0"	80	H311	1	#4	9	13'-5"	9	V225	2	#5	STR	3'-5"	7
B6	5	#4	STR	2'-8"	9	H312	1	#4	9	11'-8"	8	V226	2	#5	STR	2'-10"	6
B7	28	#4	STR	4'-2"	78	H313	1	#4	9	9'-11"	7	V300	21	#5	STR	17'-1"	374
						H314	1	#4	9	8'-2"	5	V301	2	#5	STR	17'-0"	35
						H315	1	#4	9	6'-5"	4	V302	2	#5	STR	16'-5"	34
H100	8	#5	8	32'-7"	272							V303	2	#5	STR	15'-10"	33
H101	2	#5	8	31'-4"	65							V304	2	#5	STR	15'-4"	32
H102	2	#4	8	29'-8"	40	K1	72	#4	STR	26'-7"	1279	V305	2	#5	STR	14'-9"	31
H103	2	#4	8	28'-1"	38	K2	8	#4	STR	4'-4"	23	V306	2	#5	STR	14'-2"	30
H104	2	#4	8	26'-6"	35							V307	2	#5	STR	13'-7"	28
H105	2	#4	8	24'-10"	33	S1	38	#5	2	19'-4"	766	V308	2	#5	STR	13'-1"	27
H106	2	#4	8	23'-0"	31	S2	52	#5	2	20'-7"	1116	V309	2	#5	STR	12'-6"	26
H107	2	#4	8	21'-7"	29	S3	90	#5	3	5'-1"	477	V310	2	#5	STR	11'-11"	25
H108	2	#4	8	20'-0"	27	S4	104	#4	4	7'-2"	498	V311	2	#5	STR	11'-4"	24
H109	2	#4	8	18'-5"	25	S5	12	#6	6	5'-6"	99	V312	2	#5	STR	10'-9"	22
H110	2	#4	8	16'-9"	22	S6	12	#6	7	10'-7"	191	V313	2	#5	STR	10'-3"	21
H111	2	#4	8	15'-2"	20							V314	2	#5	STR	9'-4"	19
H112	2	#4	8	13'-6"	18	U1	90	#4	4	3'-8"	220	V315	2	#5	STR	9'-1"	19
H113	2	#4	8	11'-11"	16	U2	37	#4	4	7'-2"	177	V316	2	#5	STR	8'-6"	18
H114	2	#4	8	10'-4"	14	U3	8	#4	5	7'-7"	41	V317	2	#5	STR	8'-0"	17
H115	2	#4	8	8'-8"	12	U4	4	#4	4	7'-6"	20	V318	2	#5	STR	7'-5"	15
H116	2	#4	8	7'-1"	9	U5	4	#4	4	7'-9"	21	V319	2	#5	STR	6'-10"	14
H200	4	#5	9	31'-11"	133							V320	2	#5	STR	6'-3"	13
H201	1	#5	9	30'-11"	32	V1	180	#5	STR	10'-0"	1877	V321	2	#5	STR	5'-8"	12
H202	1	#4	9	29'-2"	19	V200	23	#5	STR	17'-9"	426	V322	2	#5	STR	5'-2"	11
H203	1	#4	9	27'-6"	18	V201	2	#5	STR	17'-5"	36	V323	2	#5	STR	4'-7"	10
H204	1	#4	9	25'-10"	17	V202	2	#5	STR	16'-10"	35	V324	2	#5	STR	4'-0"	8
H205	1	#4	9	24'-2"	16	V203	2	#5	STR	16'-3"	34	V325	2	#5	STR	3'-5"	7
H206	1	#4	9	22'-6"	15	V204	2	#5	STR	15'-8"	33	V326	2	#5	STR	2'-10"	6
H207	1	#4	9	20'-10"	14	V205	2	#5	STR	15'-1"	31						
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H209	1	#4	9	17'-3"	12	V207	2	#5	STR	13'-11"	29						
H210	1	#4	9	15'-6"	10	V208	2	#5	STR	13'-4"	28						
H211	1	#4	9	13'-9"	9	V209	2	#5	STR	12'-9"	27						
H212	1	#4	9	12'-0"	8	V210	2	#5	STR	12'-2"	25						
H213	1	#4	9	10'-3"	7	V211	2	#5	STR	11'-7"	24						
H214	1	#4	9	8'-6"	6	V212	2	#5	STR	11'-0"	23						
H215	1	#4	9	6'-9"	5	V213	2	#5	STR	10'-5"	22						
H300	4	#5	9	31'-7"	132	V214	2	#5	STR	9'-6"	20						
H301	1	#5	9	30'-7"	32	V215	2	#5	STR	9'-3"	19						
H302	1	#4	9	28'-10"	19	V216	2	#5	STR	8'-8"	18						
H303	1	#4	9	27'-2"	18	V217	2	#5	STR	8'-1"	17						
H304	1	#4	9	25'-6"	17	V218	2	#5	STR	7'-6"	16						
H305	1	#4	9	23'-10"	16	V219	2	#5	STR	6'-11"	14						
H306	1	#4	9	22'-2"	15	V220	2	#5	STR	6'-4"	13						

REINFORCING STEEL LBS. 17089

CLASS A CONCRETE

POUR #1 (COLLARS, CAP, & LOWER WINGS) 149.4 C.Y.

POUR #2 (BACKWALL & UPPER WINGS) 49.4 C.Y.

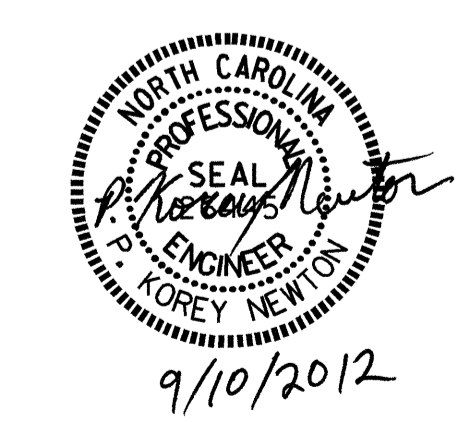
TOTAL 198.8 C.Y.

HP 12 X 53 STEEL PILES

NUMBER = 30 LIN. FT. = 2550

PROJECT NO. U-2810B
 CUMBERLAND COUNTY
 STATION: 115+52.74 -L-

SHEET 6 OF 6

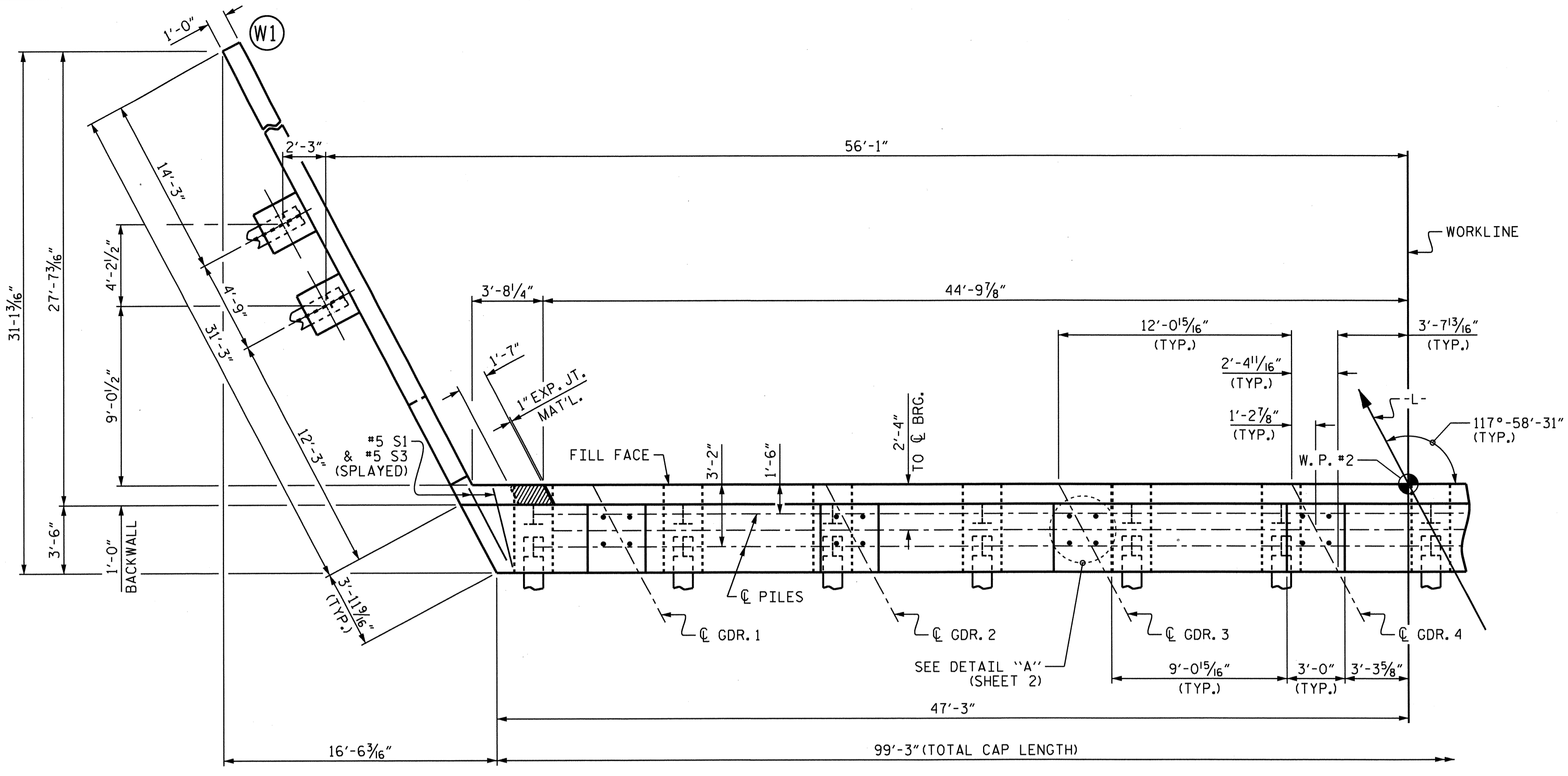


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1

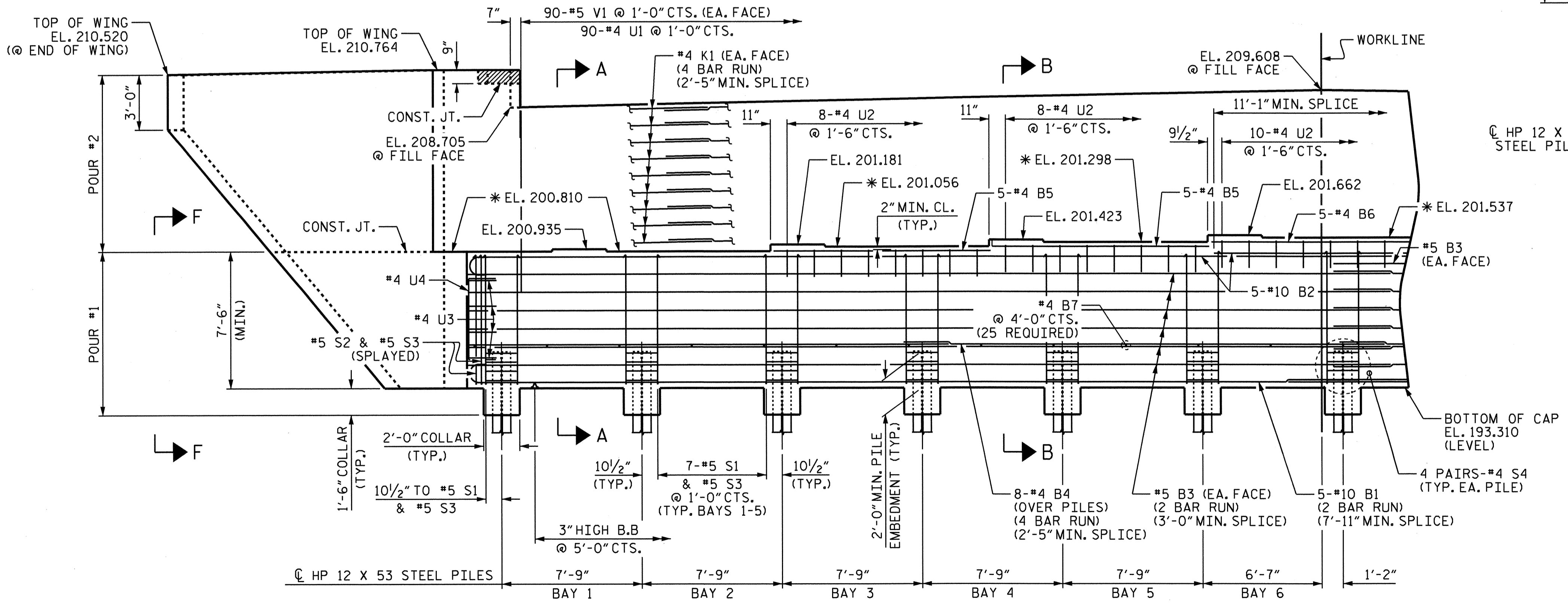
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

DRAWN BY : P. K. NEWTON DATE : 8/23/12
 CHECKED BY : S. H. SOCKWELL DATE : 8/24/12

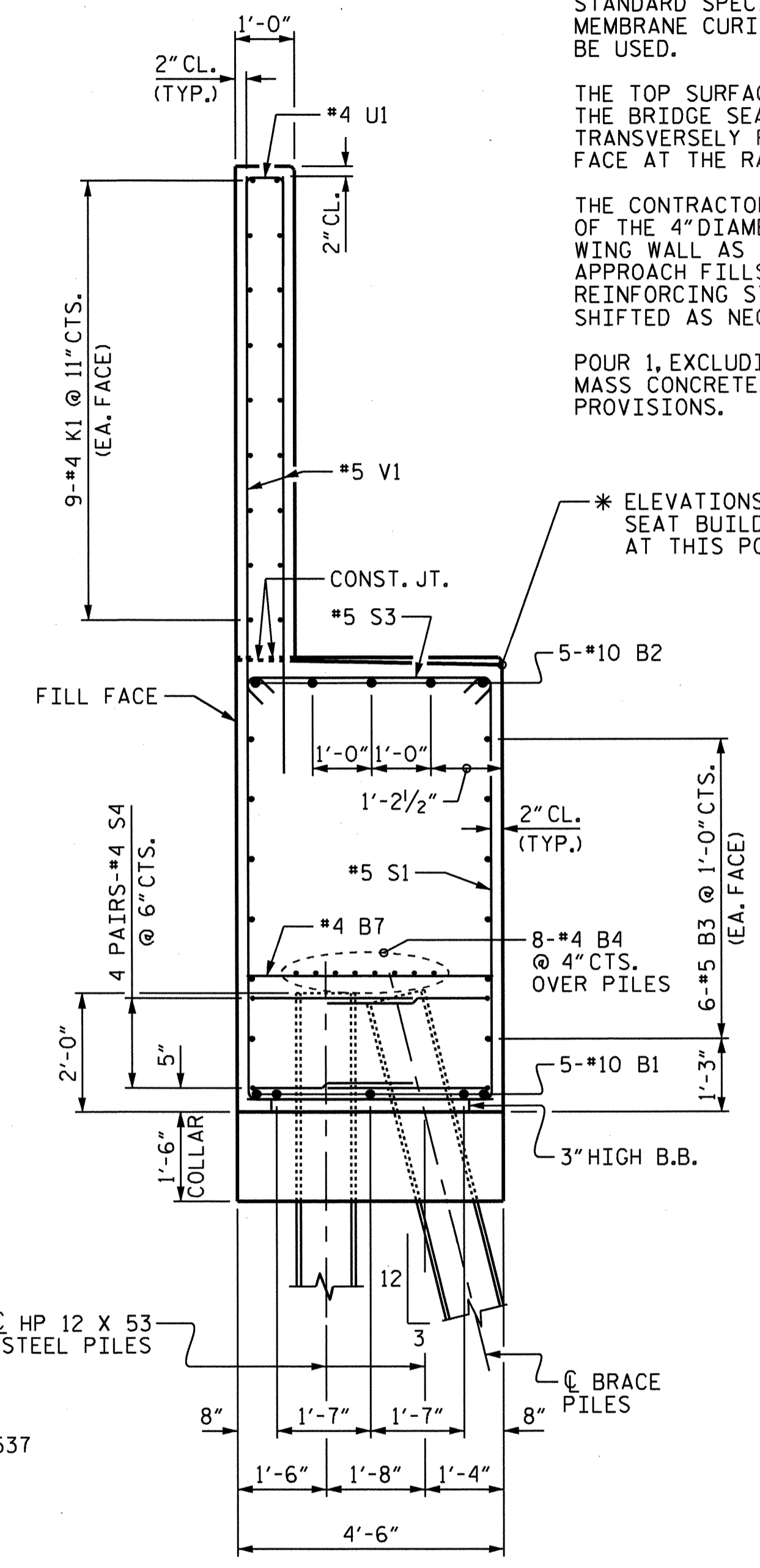
10-SEP-2012 11:55
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 kpnewton



PART PLAN



PART ELEVATION



SECTION A-A

NOTES

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

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

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.

POUR 1, EXCLUDING THE WINGS, IS CONSIDERED MASS CONCRETE. FOR MASS CONCRETE, SEE SPECIAL PROVISIONS.

PROJECT NO. U-2810B
CUMBERLAND COUNTY
 STATION: 115+52.74 -L-
 SHEET 1 OF 6

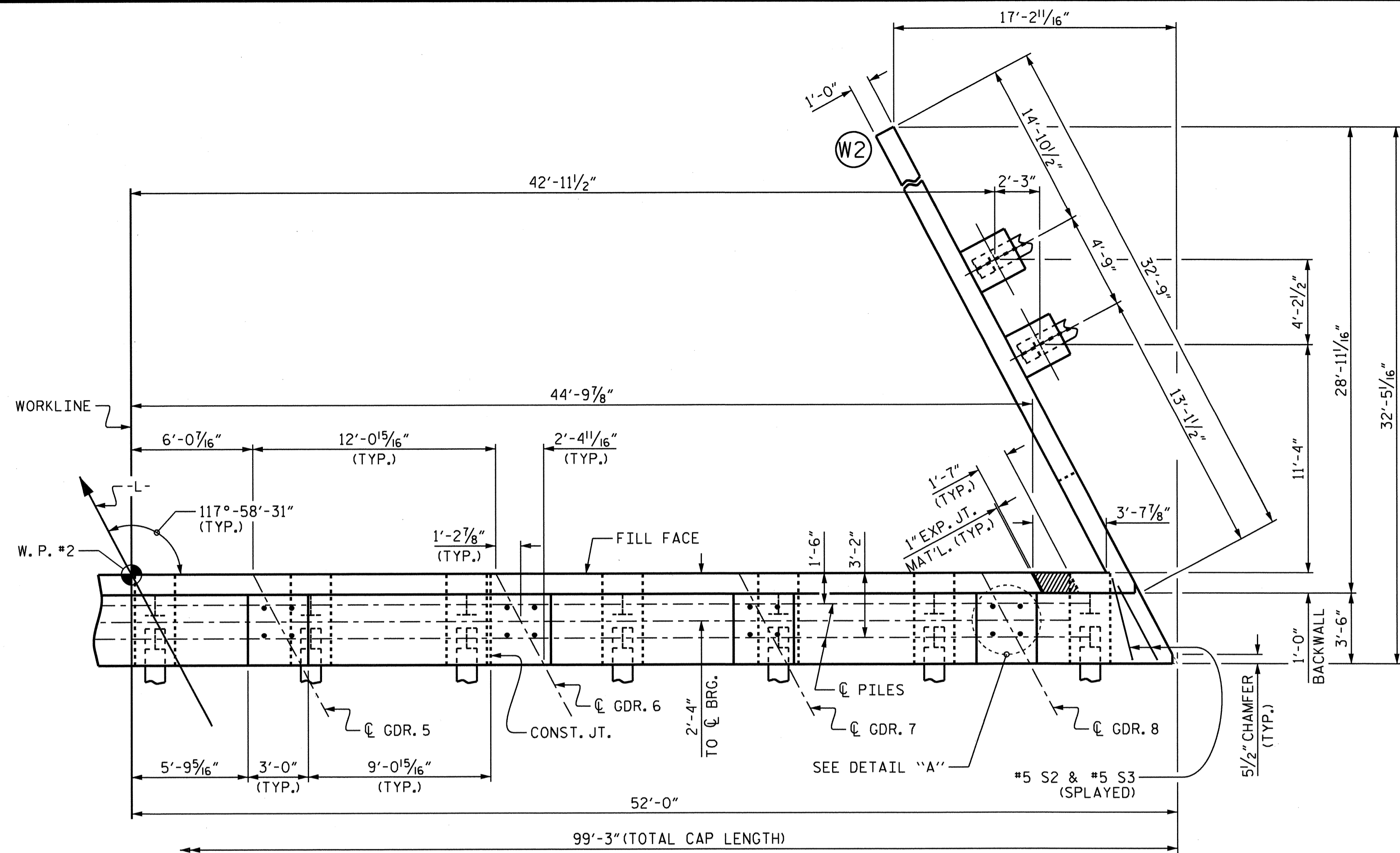


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 CHECKED BY: S. H. SOCKWELL DATE: 8/24/12

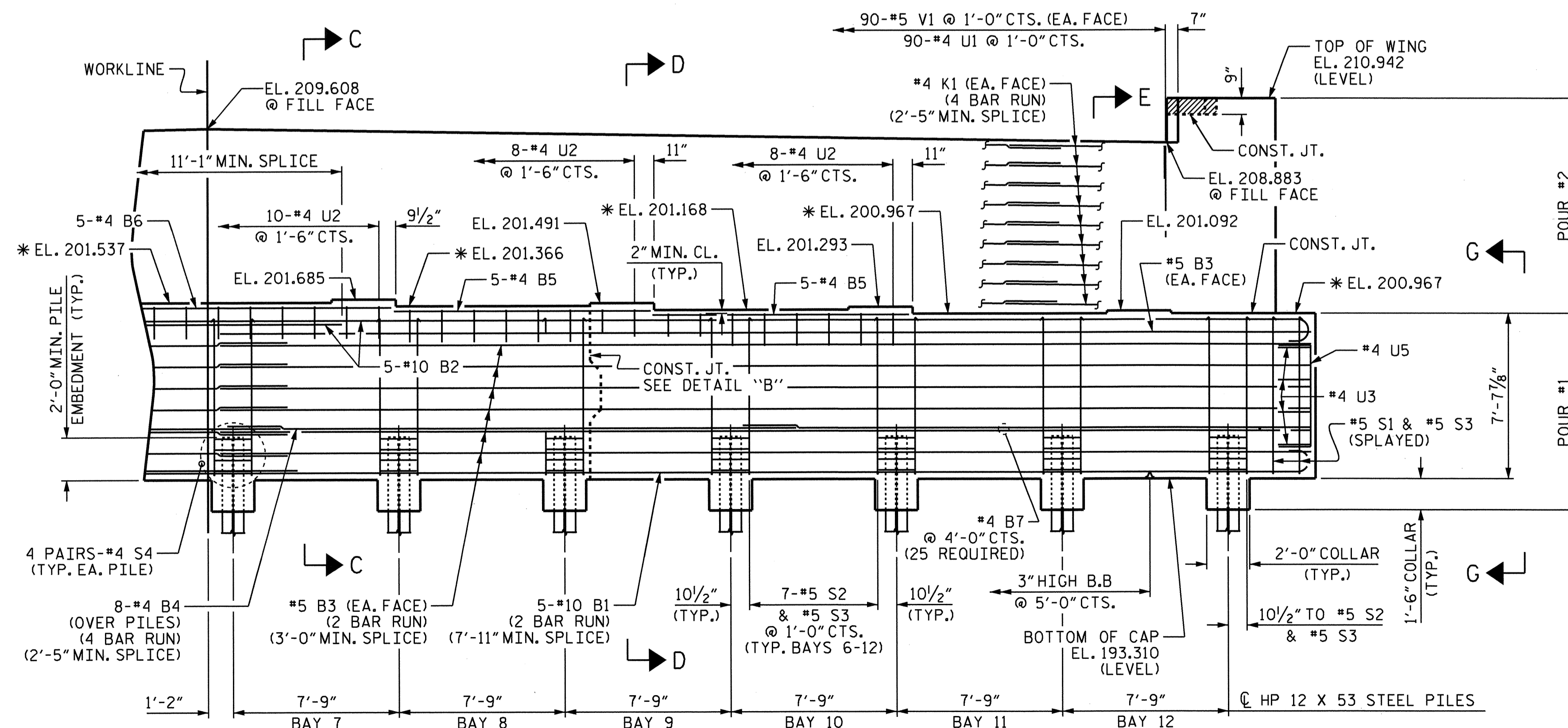
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REVISIONS						SHEET NO. S-30
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 39
2			4			

BRACE PILES IN WING NOT SHOWN FOR CLARITY.

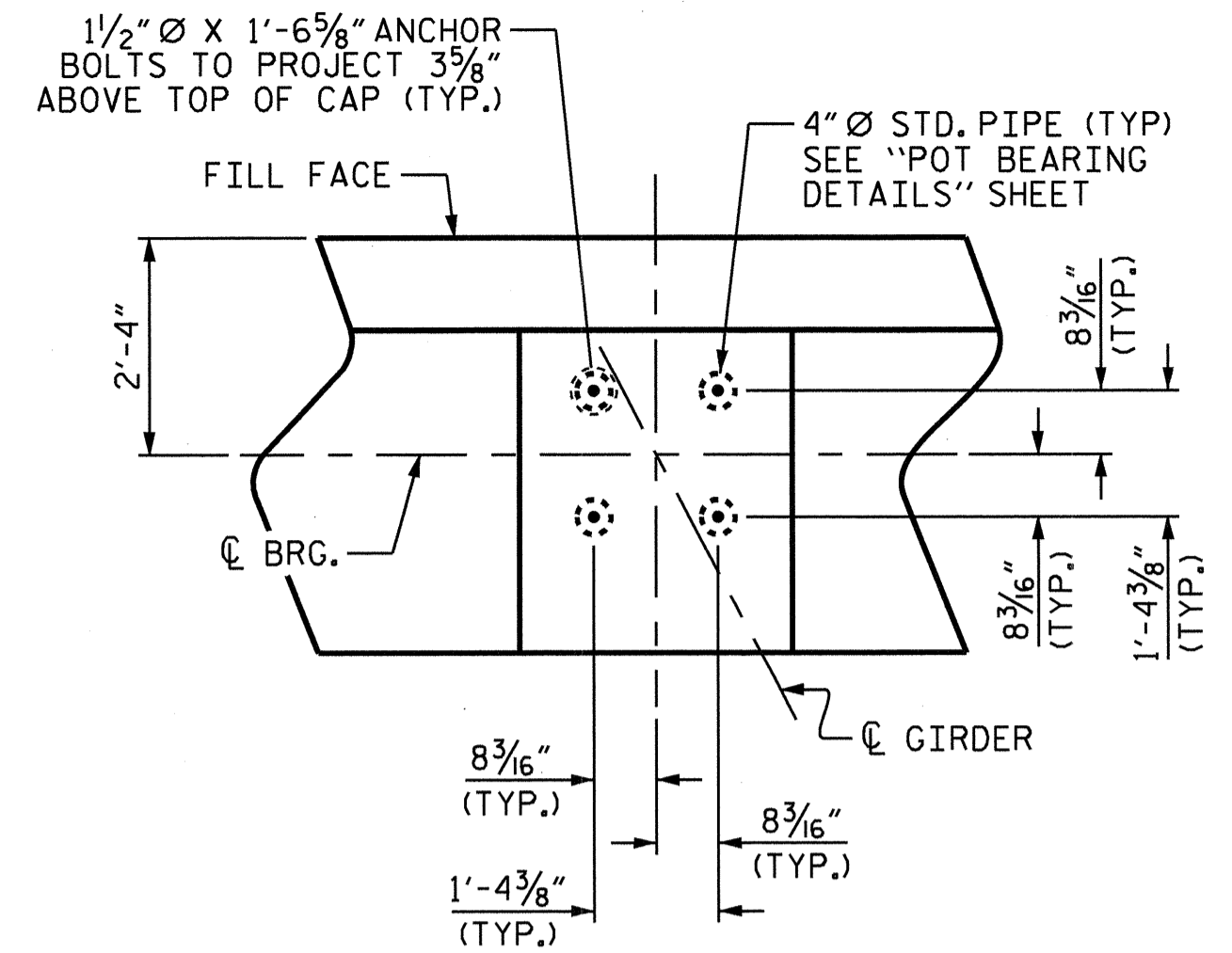


PART PLAN

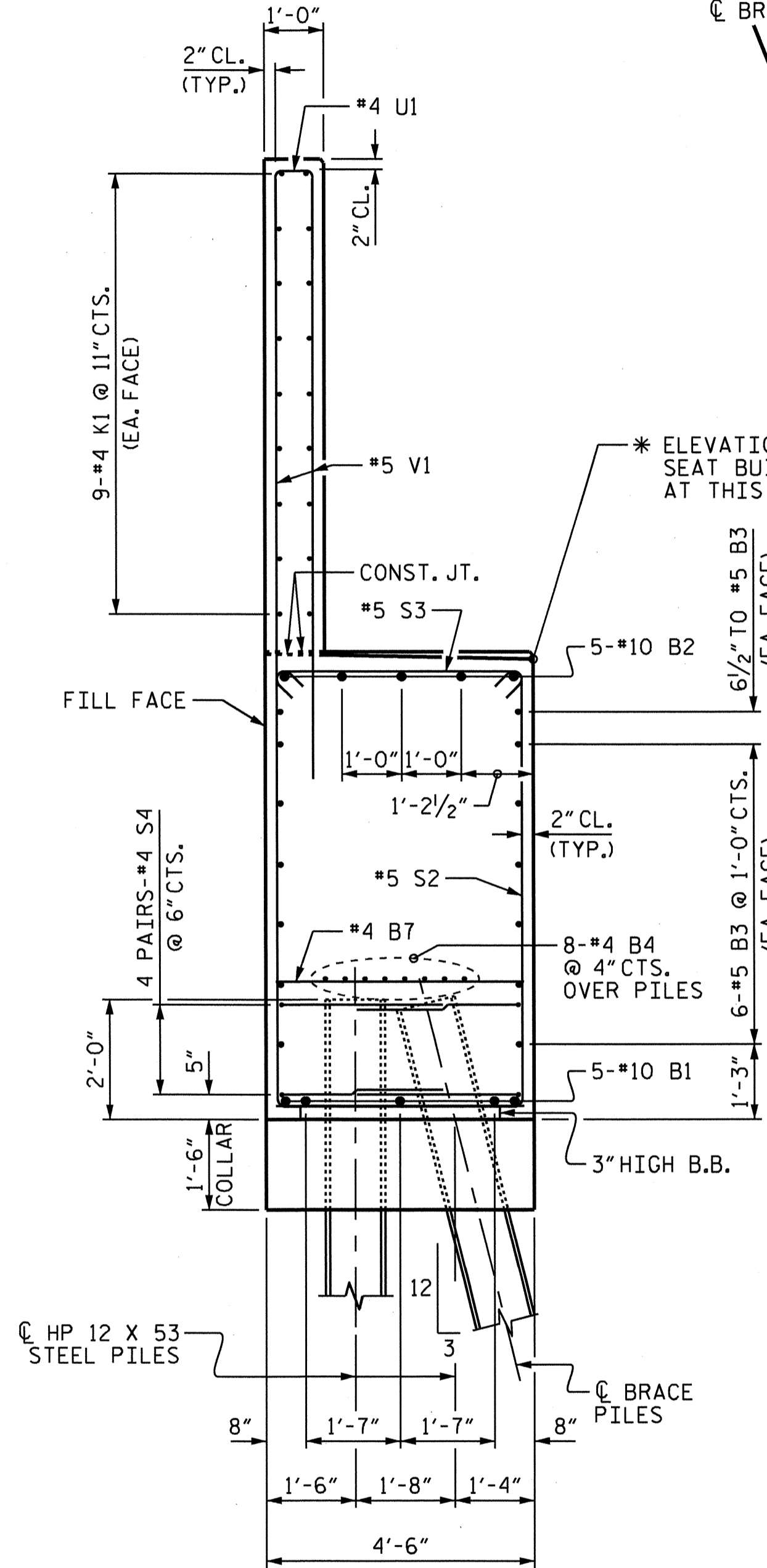


PART ELEVATION

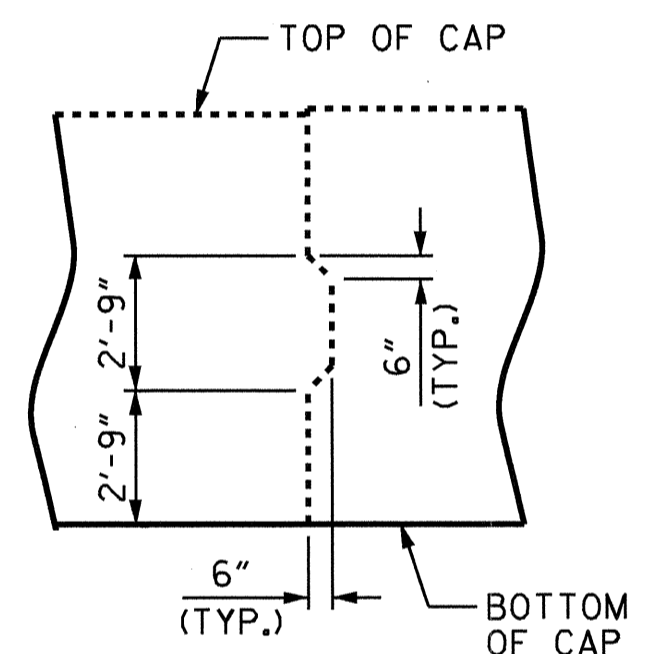
BRACE PILES IN WING NOT SHOWN FOR CLARITY.



DETAIL "A"



SECTION E-E



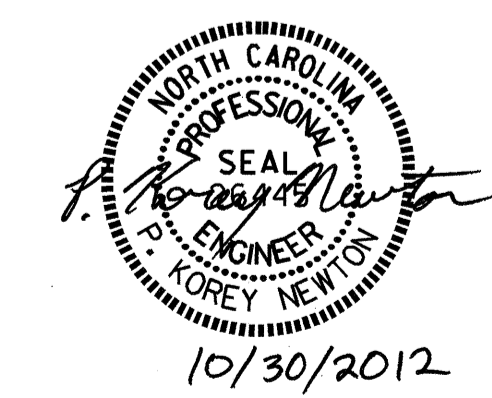
DETAIL "B"

COLLAR NOT SHOWN FOR CLARITY.

PROJECT NO. U-2810B
CUMBERLAND COUNTY
 STATION: 115+52.74 -L-

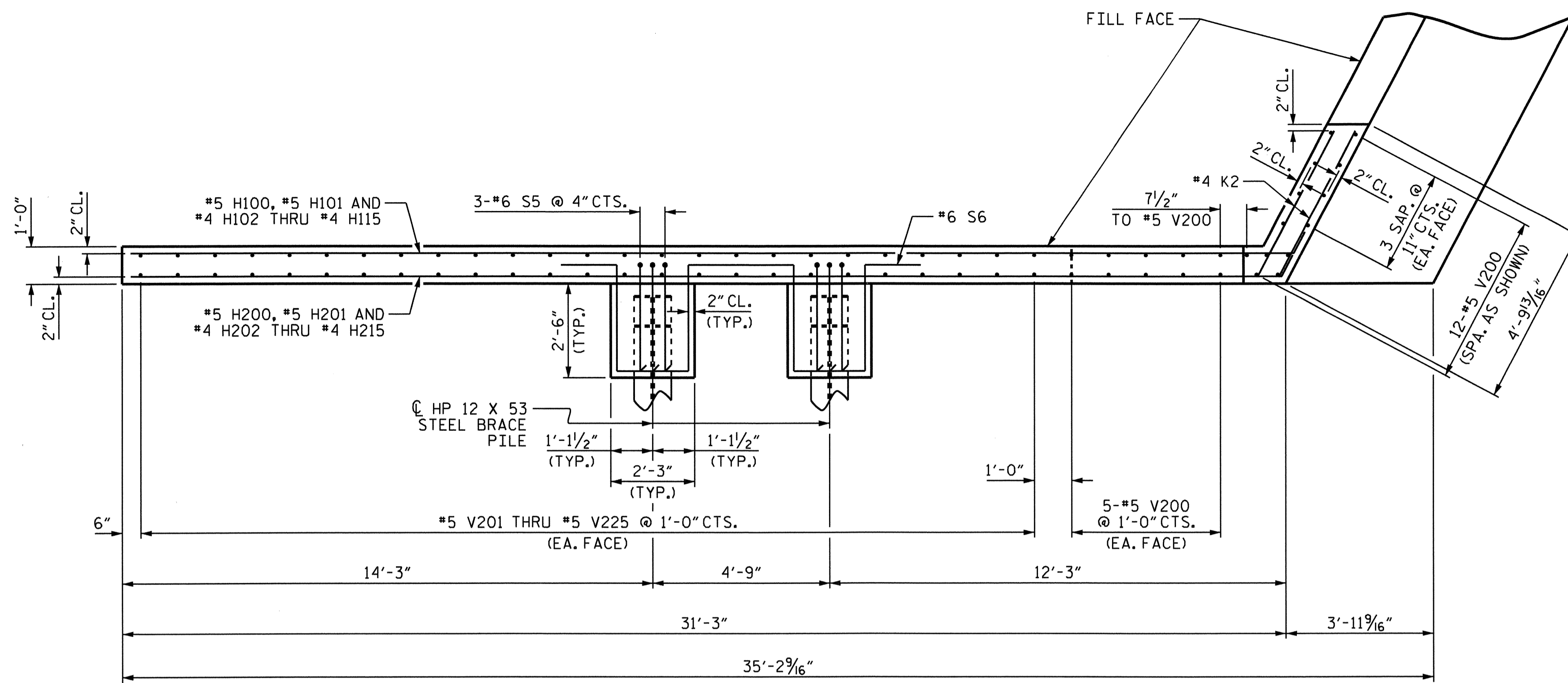
SHEET 2 OF 6

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

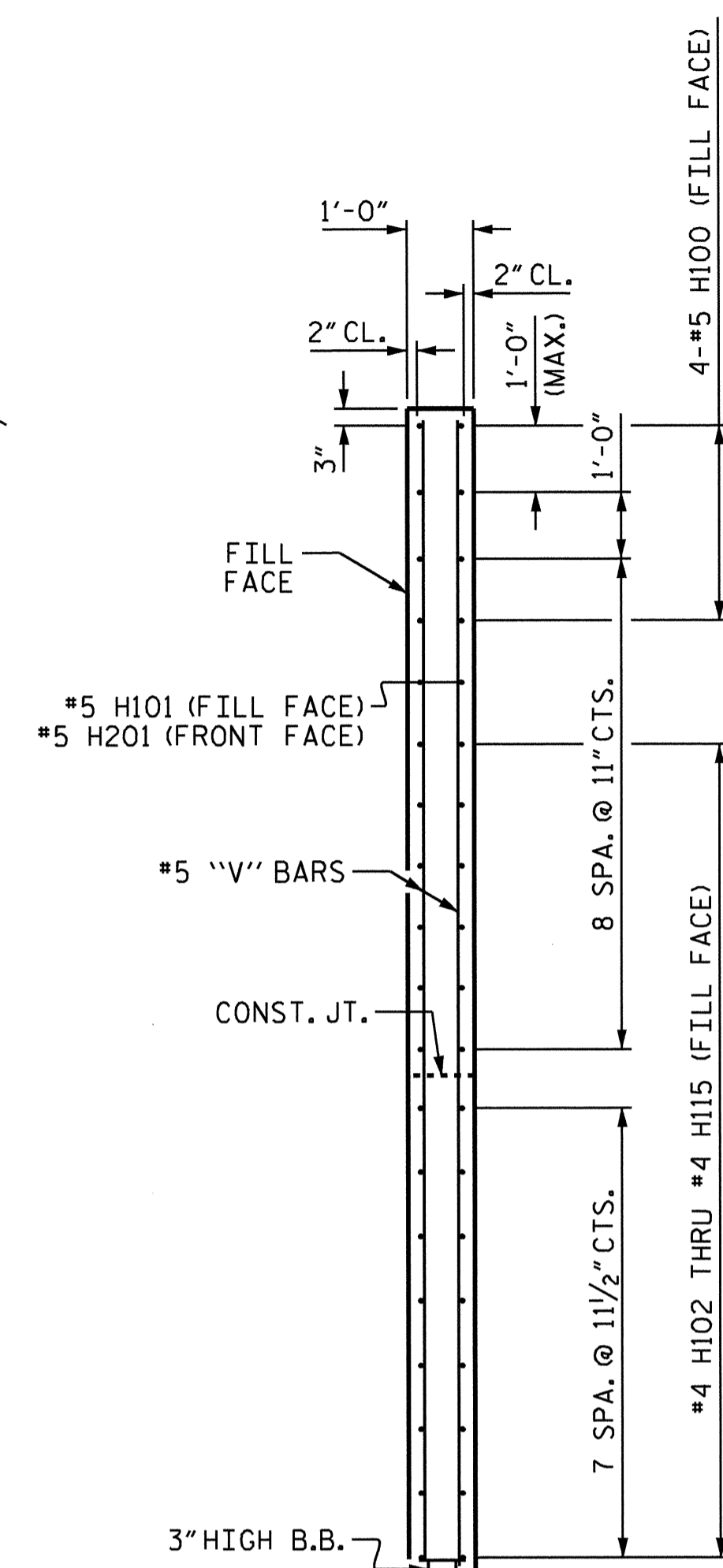


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 CHECKED BY: S. H. SOCKWELL DATE: 8/24/12

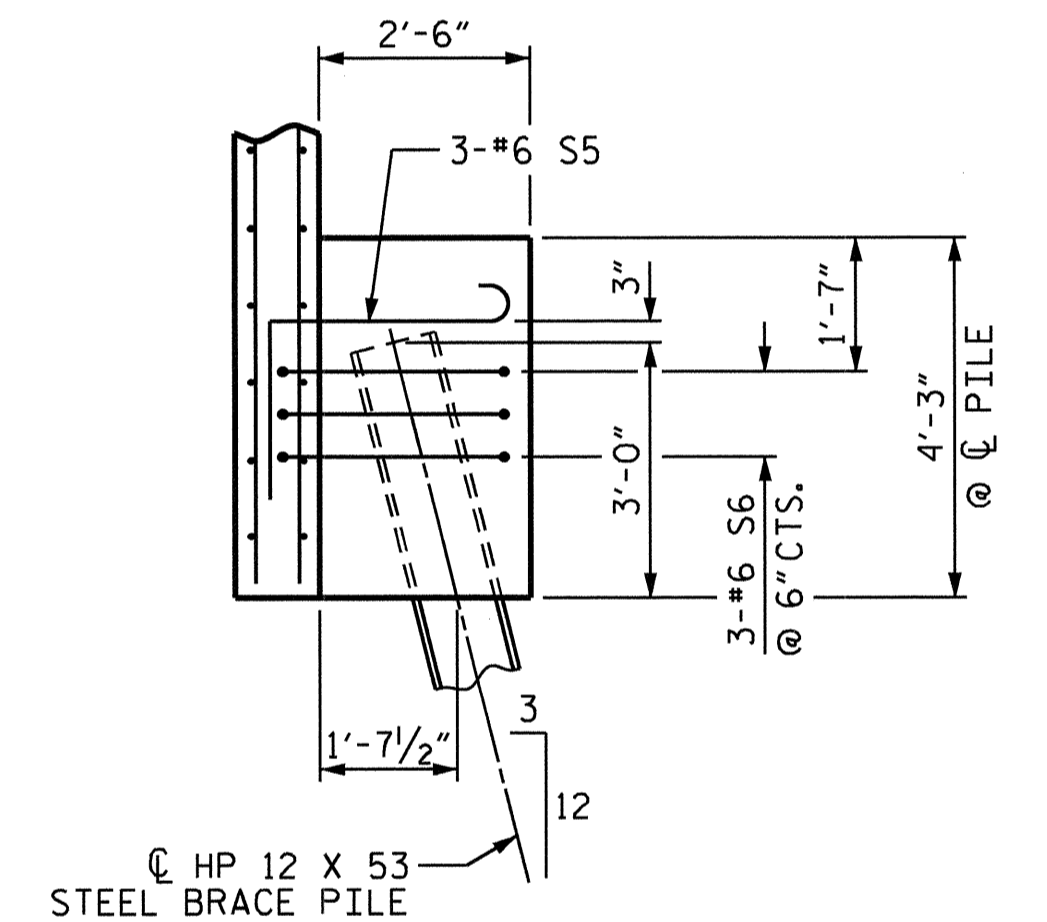
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 39
2			4			



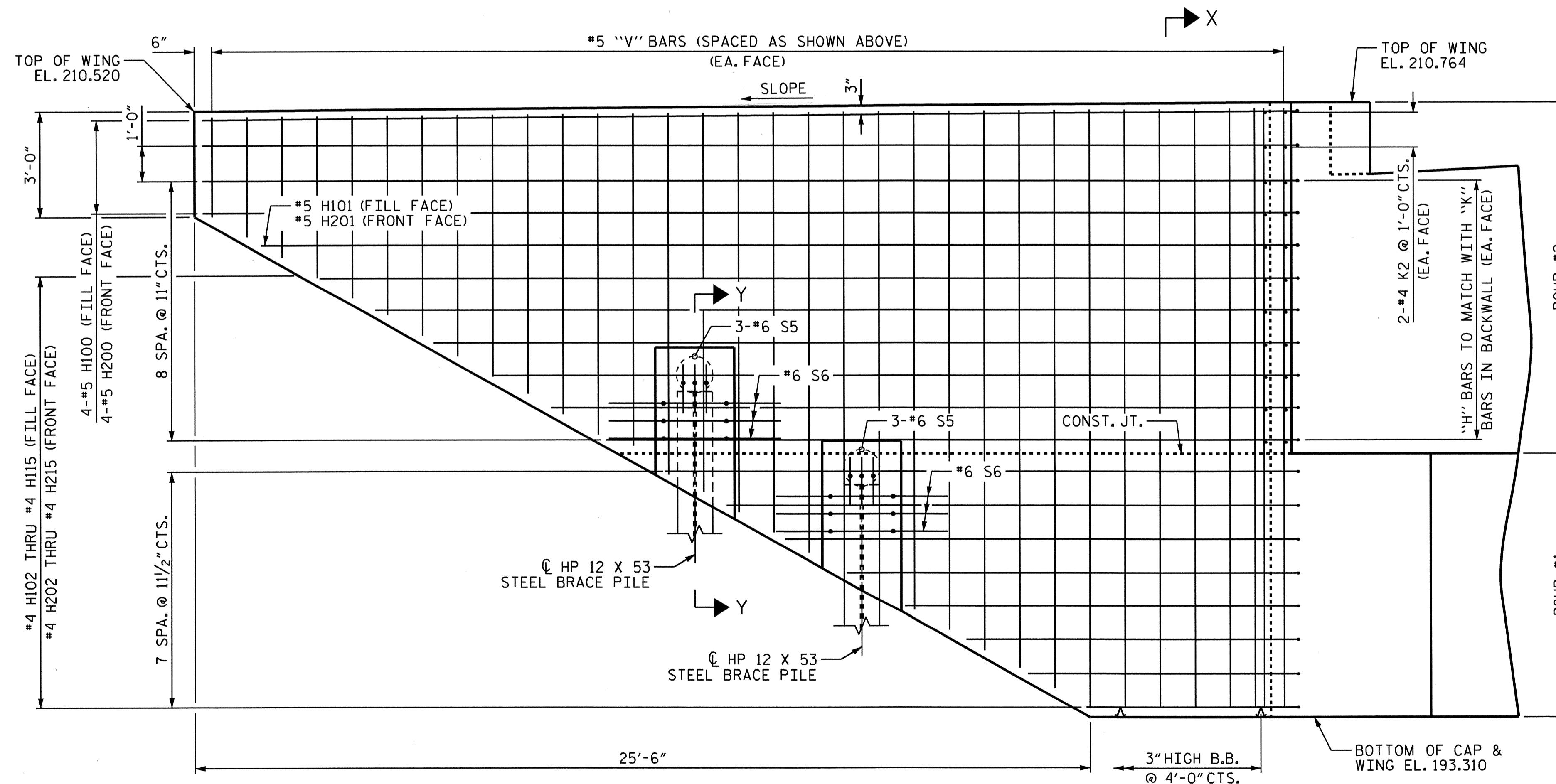
PLAN OF WING W1



SECTION X-X



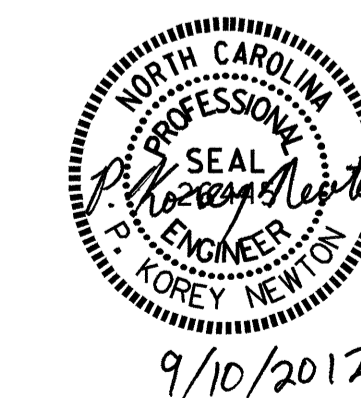
PARTIAL SECTION Y-Y
TYP. EA. WING BRACE PILE



ELEVATION OF WING W1

DRAWN BY : P. K. NEWTON DATE : 8/23/12
 CHECKED BY : S. H. SOCKWELL DATE : 8/24/12

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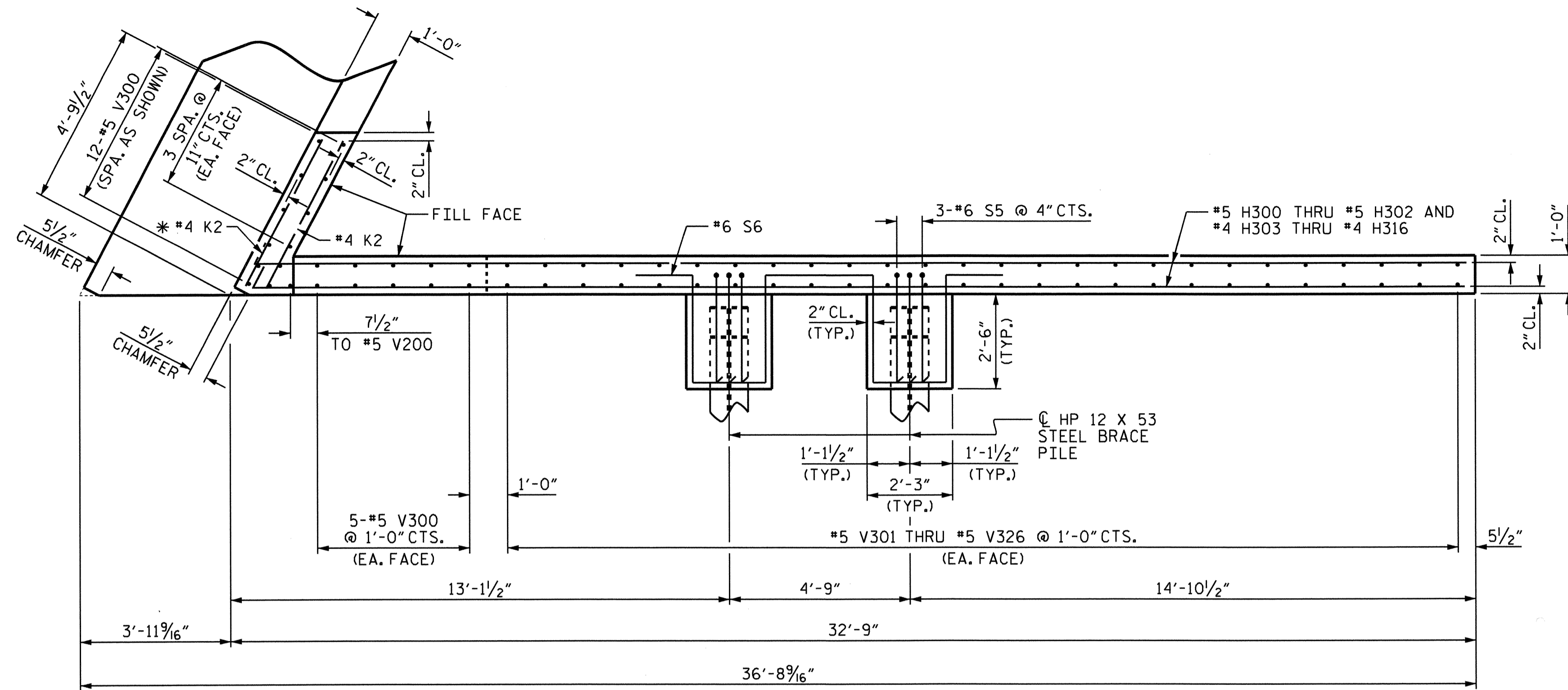


PROJECT NO. U-2810B
 CUMBERLAND COUNTY
 STATION: 115+52.74 -L-

SHEET 3 OF 6

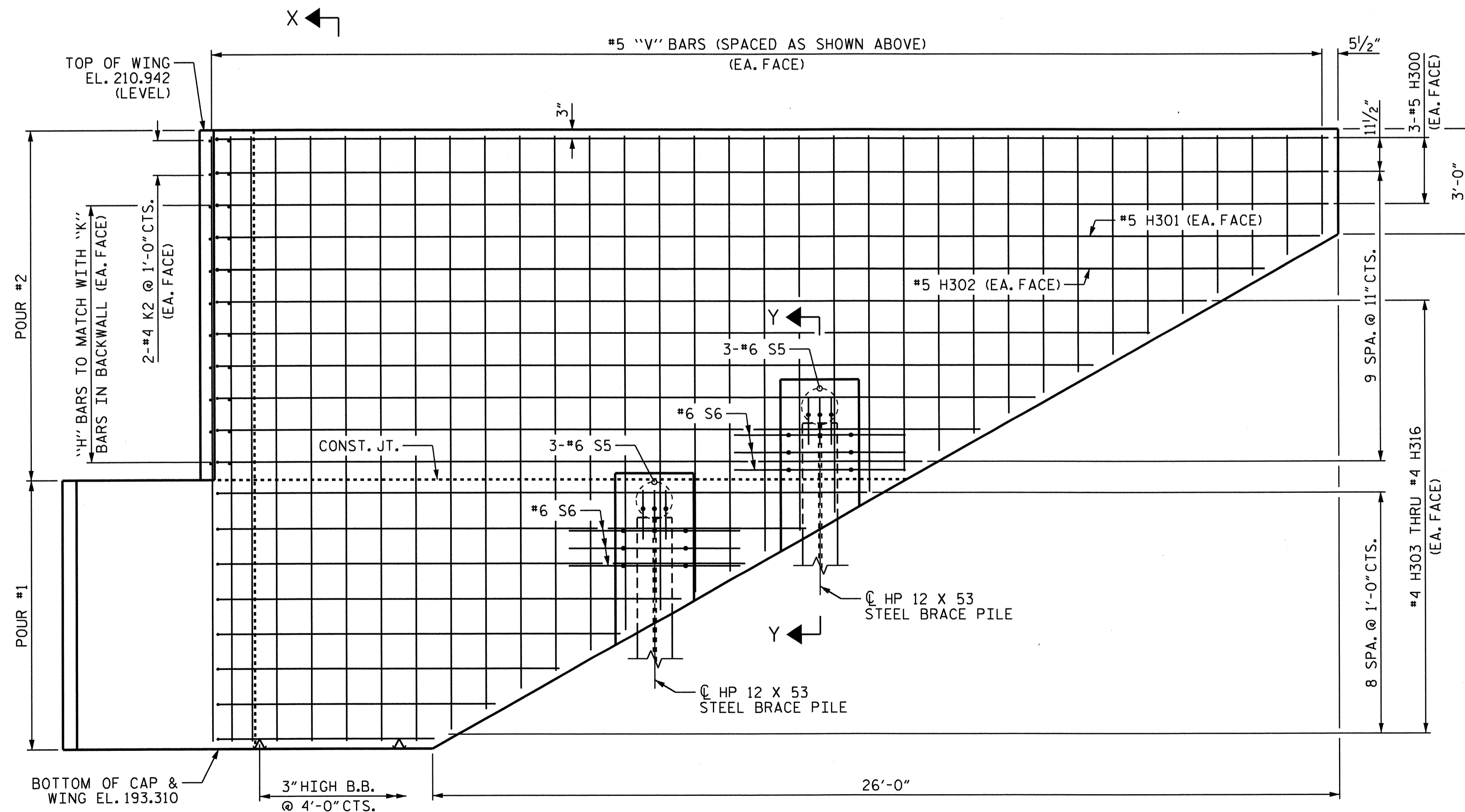
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 2

REVISIONS						SHEET NO. S-32
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 39
2			4			

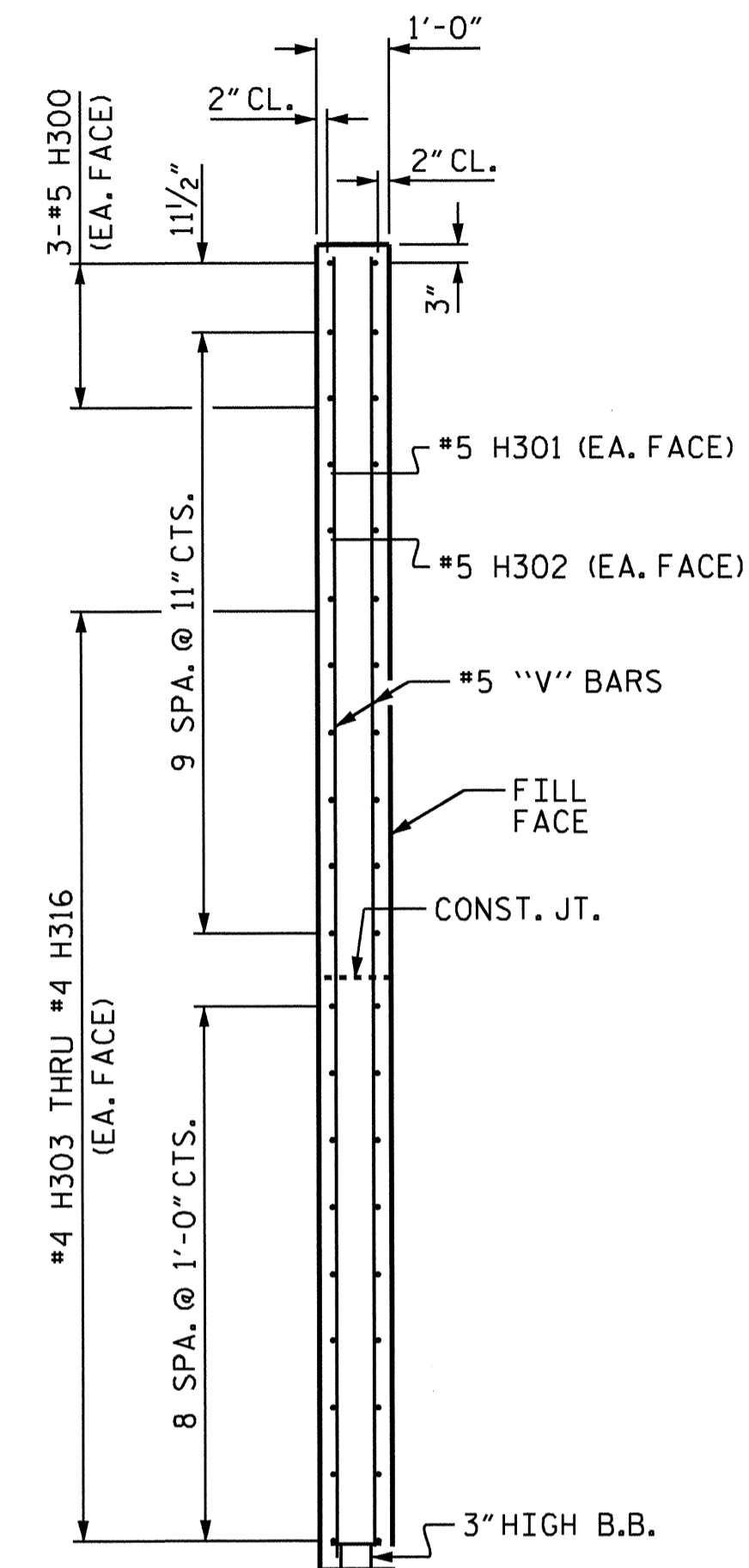


PLAN OF WING W2

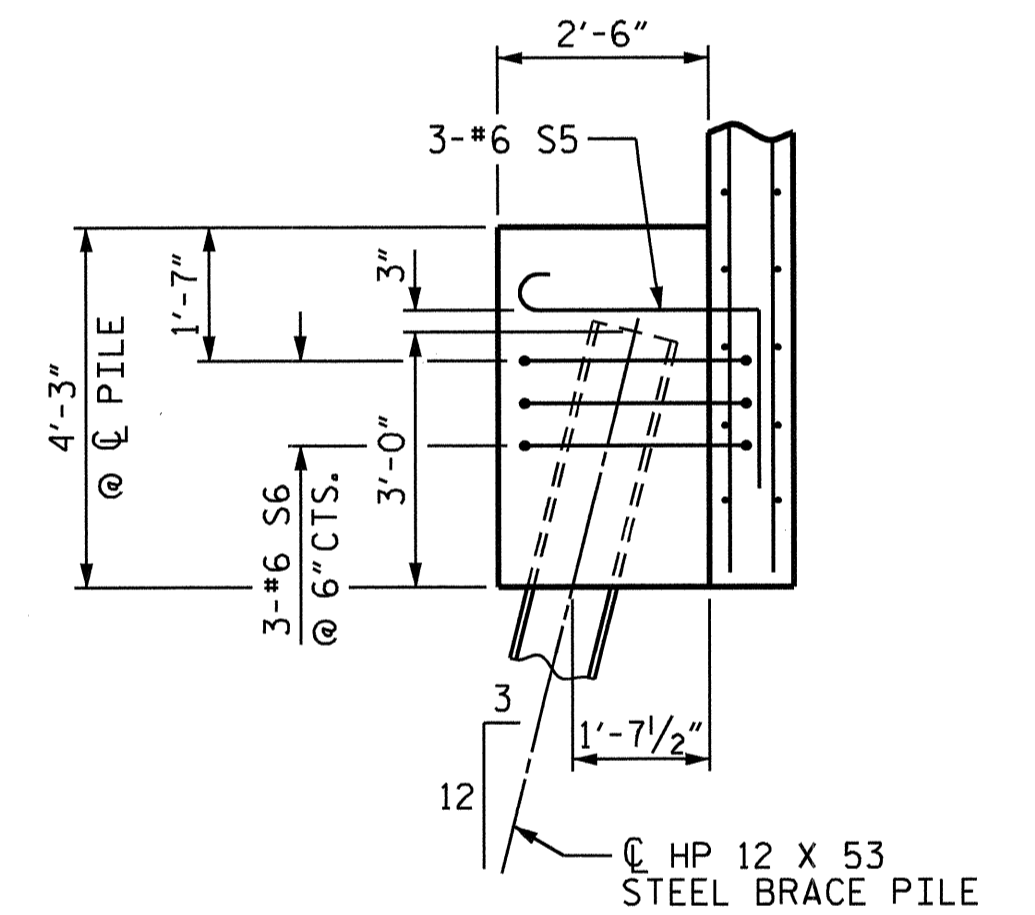
* FIELD CUT #4 K2 AS NECESSARY TO PROVIDE 2" MIN. CLEARANCE TO CHAMFER.



ELEVATION OF WING W2



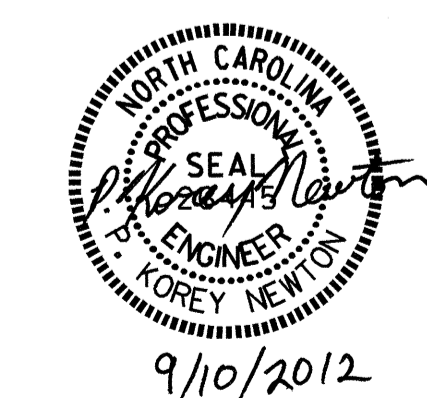
SECTION X-X



PARTIAL SECTION Y-Y
TYP. EA. WING BRACE PILE

PROJECT NO. U-2810B
CUMBERLAND COUNTY
STATION: 115+52.74 -L-

SHEET 4 OF 6

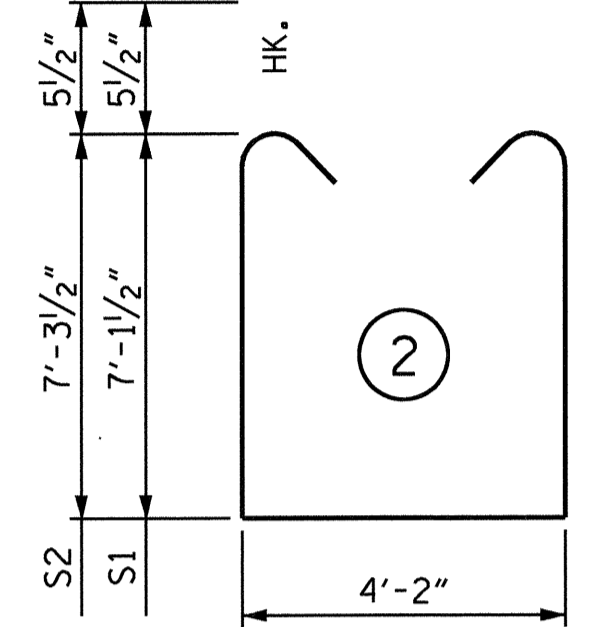
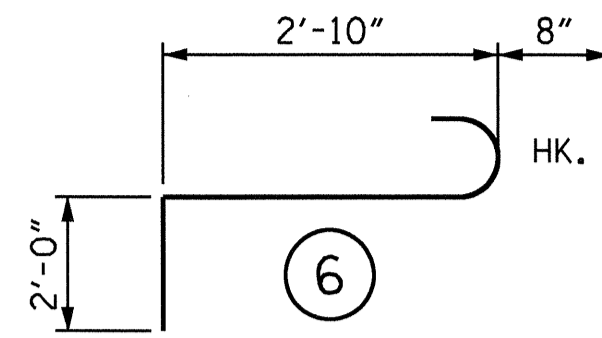
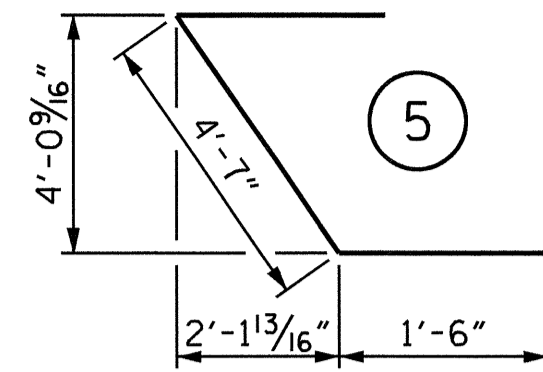
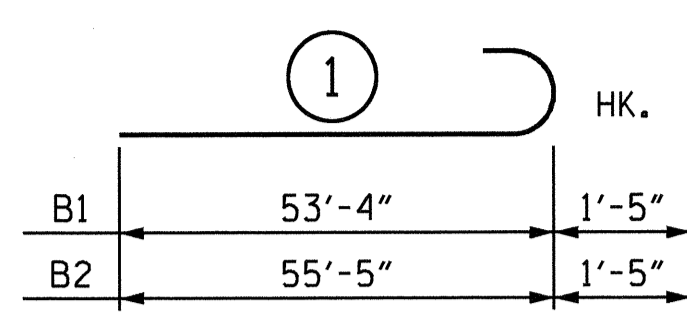


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-33					TOTAL SHEETS 39

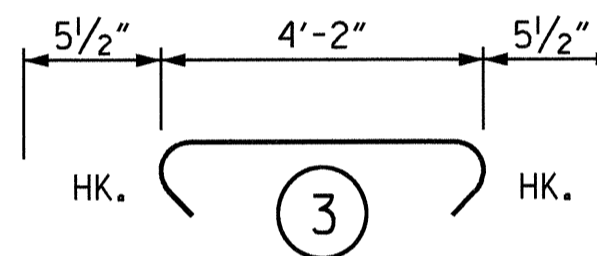
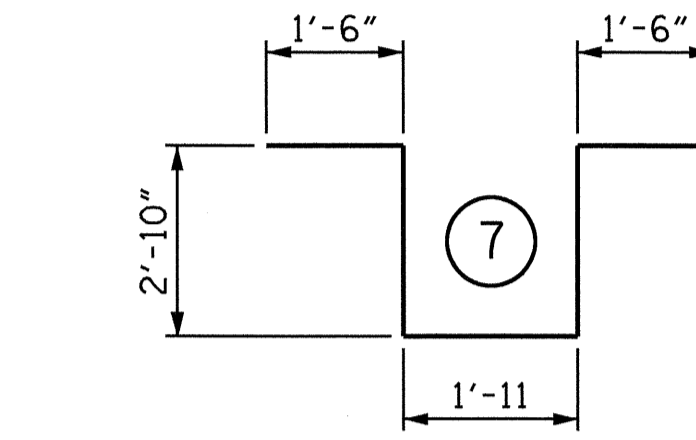
DRAWN BY: P. K. NEWTON DATE: 8/23/12
CHECKED BY: S. H. SOCKWELL DATE: 8/24/12

BAR TYPES

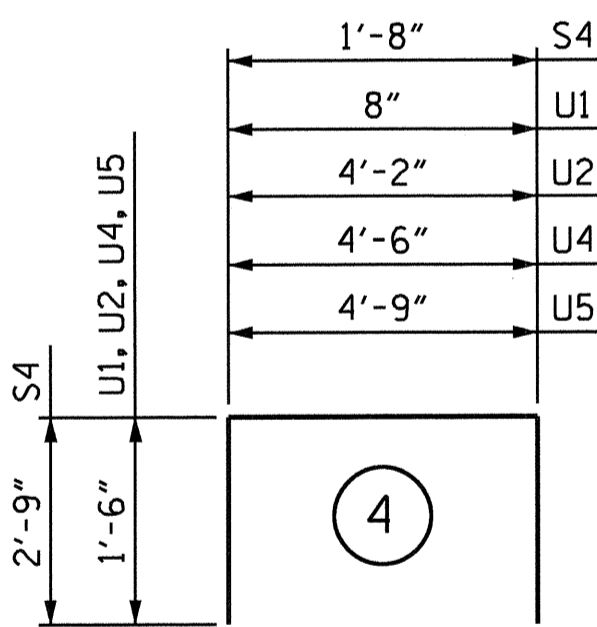
BILL OF MATERIAL



H100	31'-3"
H101	29'-7"
H102	27'-11"
H103	26'-4"
H104	24'-8"
H105	23'-0"
H106	21'-4"
H107	19'-9"
H108	18'-1"
H109	16'-4"
H110	14'-8"
H111	12'-11"
H112	11'-3"
H113	9'-6"
H114	7'-9"
H115	6'-1"
H200	30'-11"
H201	29'-3"
H202	27'-7"
H203	26'-0"
H204	24'-4"
H205	22'-8"
H206	21'-0"
H207	19'-5"
H208	17'-9"
H209	16'-0"
H210	14'-4"
H211	12'-7"
H212	10'-11"
H213	9'-2"
H214	7'-5"
H215	5'-9"



H300	31'-11"
H301	31'-8"
H302	30'-1"
H303	28'-5"
H304	26'-10"
H305	25'-2"
H306	23'-6"
H307	21'-11"
H308	20'-3"
H309	18'-8"
H310	16'-11"
H311	15'-2"
H312	13'-4"
H313	11'-7"
H314	9'-10"
H315	8'-0"
H316	6'-3"



END BENT 2

BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#10	1	54'-9"	2356	H308	2	#4	9	20'-11"	28	V221	2	#5	STR	5'-2"	11
B2	10	#10	1	56'-10"	2446	H309	2	#4	9	19'-4"	26	V222	2	#5	STR	4'-7"	10
B3	26	#5	STR	51'-0"	1383	H310	2	#4	9	17'-7"	23	V223	2	#5	STR	4'-0"	8
B4	32	#4	STR	26'-7"	568	H311	2	#4	9	15'-10"	21	V224	2	#5	STR	3'-5"	7
B5	20	#4	STR	12'-8"	160	H312	2	#4	9	14'-0"	19	V225	2	#5	STR	2'-10"	6
B6	5	#4	STR	14'-8"	49	H313	2	#4	9	12'-3"	16	V300	23	#5	STR	17'-3"	414
B7	25	#4	STR	4'-2"	70	H314	2	#4	9	10'-6"	14	V301	2	#5	STR	16'-11"	35
						H315	2	#4	9	8'-8"	12	V302	2	#5	STR	16'-4"	34
						H316	2	#4	9	6'-11"	9	V303	2	#5	STR	15'-9"	33
H100	4	#5	8	31'-11"	133							V304	2	#5	STR	15'-3"	32
H101	1	#5	8	30'-3"	32							V305	2	#5	STR	14'-8"	31
H102	1	#4	8	28'-7"	19	K1	72	#4	STR	26'-7"	1279	V306	2	#5	STR	14'-1"	29
H103	1	#4	8	27'-0"	18	K2	8	#4	STR	4'-4"	23	V307	2	#5	STR	13'-6"	28
H104	1	#4	8	25'-4"	17							V308	2	#5	STR	13'-0"	27
H105	1	#4	8	23'-8"	16	S1	38	#5	2	19'-4"	766	V309	2	#5	STR	12'-5"	26
H106	1	#4	8	22'-0"	15	S2	52	#5	2	19'-8"	1067	V310	2	#5	STR	11'-10"	25
H107	1	#4	8	20'-5"	14	S3	90	#5	3	5'-1"	477	V311	2	#5	STR	11'-3"	23
H108	1	#4	8	18'-9"	13	S4	104	#4	4	7'-2"	498	V312	2	#5	STR	10'-9"	22
H109	1	#4	8	17'-0"	11	S5	12	#6	6	5'-6"	99	V313	2	#5	STR	10'-2"	21
H110	1	#4	8	15'-4"	10	S6	12	#6	7	10'-7"	191	V314	2	#5	STR	9'-7"	20
H111	1	#4	8	13'-7"	9							V315	2	#5	STR	9'-0"	19
H112	1	#4	8	11'-11"	8	U1	90	#4	4	3'-8"	220	V316	2	#5	STR	8'-6"	18
H113	1	#4	8	10'-2"	7	U2	42	#4	4	7'-2"	201	V317	2	#5	STR	7'-11"	17
H114	1	#4	8	8'-5"	6	U3	8	#4	5	7'-7"	41	V318	2	#5	STR	7'-4"	15
H115	1	#4	8	6'-9"	5	U4	4	#4	4	7'-6"	20	V319	2	#5	STR	6'-9"	14
H200	4	#5	8	31'-7"	132	U5	4	#4	4	7'-9"	21	V320	2	#5	STR	6'-3"	13
H201	1	#5	8	29'-11"	31							V321	2	#5	STR	5'-8"	12
H202	1	#4	8	28'-3"	19	V1	180	#5	STR	10'-0"	1877	V322	2	#5	STR	5'-1"	11
H203	1	#4	8	26'-8"	18	V200	23	#5	STR	17'-0"	408	V323	2	#5	STR	4'-6"	9
H204	1	#4	8	25'-0"	17	V201	2	#5	STR	16'-5"	34	V324	2	#5	STR	4'-0"	8
H205	1	#4	8	23'-4"	16	V202	2	#5	STR	15'-10"	33	V325	2	#5	STR	3'-5"	7
H206	1	#4	8	21'-8"	14	V203	2	#5	STR	15'-4"	32	V326	2	#5	STR	2'-10"	6
H207	1	#4	8	20'-1"	13	V204	2	#5	STR	14'-9"	31						
H208	1	#4	8	18'-5"	12	V205	2	#5	STR	14'-2"	30						
H209	1	#4	8	16'-8"	11	V206	2	#5	STR	13'-7"	28						
H210	1	#4	8	15'-0"	10	V207	2	#5	STR	13'-0"	27						
H211	1	#4	8	13'-3"	9	V208	2	#5	STR	12'-6"	26						
H212	1	#4	8	11'-7"	8	V209	2	#5	STR	11'-11"	25						
H213	1	#4	8	9'-10"	7	V210	2	#5	STR	11'-4"	24						
H214	1	#4	8	8'-1"	5	V211	2	#5	STR	10'-9"	22						
H215	1	#4	8	6'-5"	4	V212	2	#5	STR	10'-3"	21						
H300	6	#5	9	32'-7"	204	V213	2	#5	STR	9'-5"	20						
H301	2	#5	9	32'-4"	67	V214	2	#5	STR	9'-1"	19						
H302	2	#5	9	30'-9"	64	V215	2	#5	STR	8'-6"	18						
H303	2	#4	9	29'-1"	39	V216	2	#5	STR	7'-11"	17						
H304	2	#4	9	27'-6"	37	V217	2	#5	STR	7'-5"	15						
H305	2	#4	9	25'-10"	35	V218	2	#5	STR	6'-10"	14						
H306	2	#4	9	24'-2"	32	V219	2	#5	STR	6'-3"	13						
H307	2	#4	9	22'-7"	30	V220	2	#5	STR	5'-8"	12						

REINFORCING STEEL	LBS.	17007
CLASS A CONCRETE		
POUR #1 (COLLARS, CAP, & LOWER WINGS)		145.1 C.Y.
POUR #2 (BACKWALL & UPPER WINGS)		49.0 C.Y.
TOTAL		194.1 C.Y.
HP 12 X 53 STEEL PILES		
NUMBER = 30	LIN. FT. =	2550

ALL BAR DIMENSIONS ARE OUT TO OUT.

DRAWN BY : P. K. NEWTON DATE : 4/30/12
 CHECKED BY : S. H. SOCKWELL DATE : 8/24/12

10-SEP-2012 11:55
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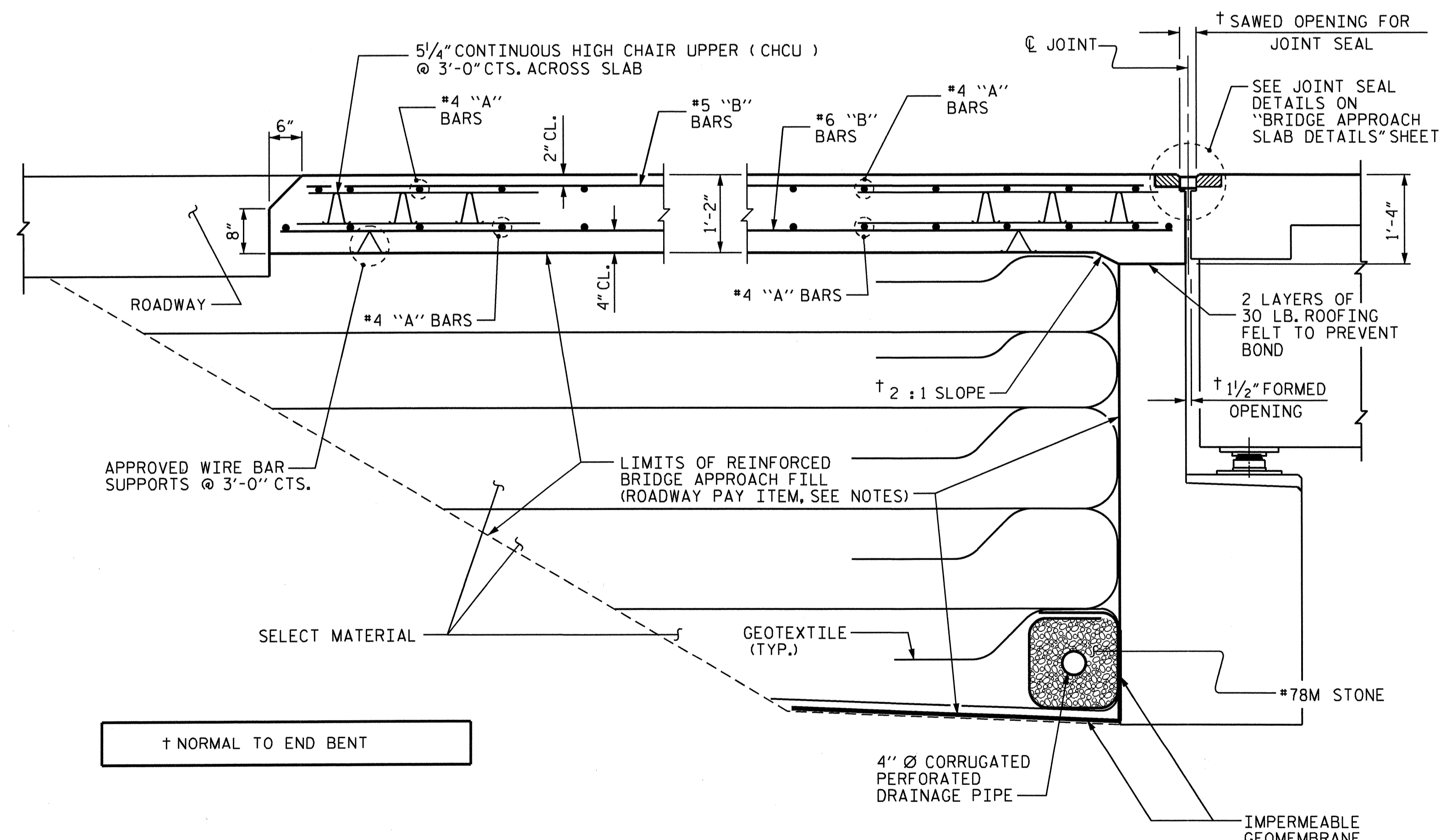


PROJECT NO. U-2810B
 CUMBERLAND COUNTY
 STATION: 115+52.74 -L-

SHEET 6 OF 6

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 2					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					39

SEE PLAN OF APPROACH
SLABS, SHEET 2 OF 3.



SECTION THRU SLAB

NOTES

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

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

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

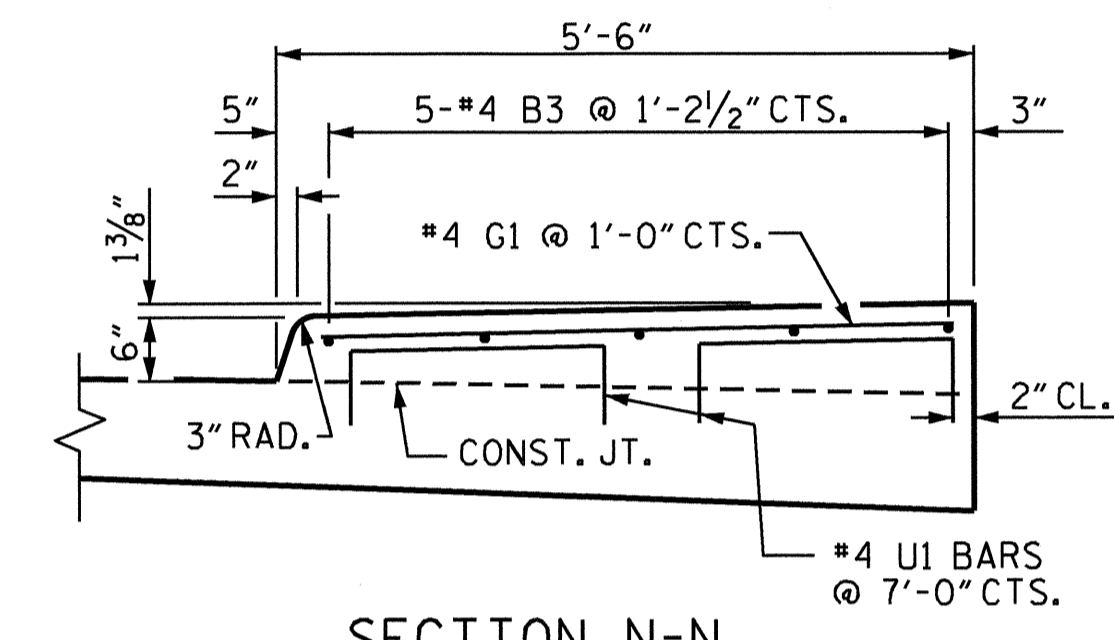
THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE SIDEWALKS AND CONCRETE MEDIAN.

WITH FOAM JOINT SEAL

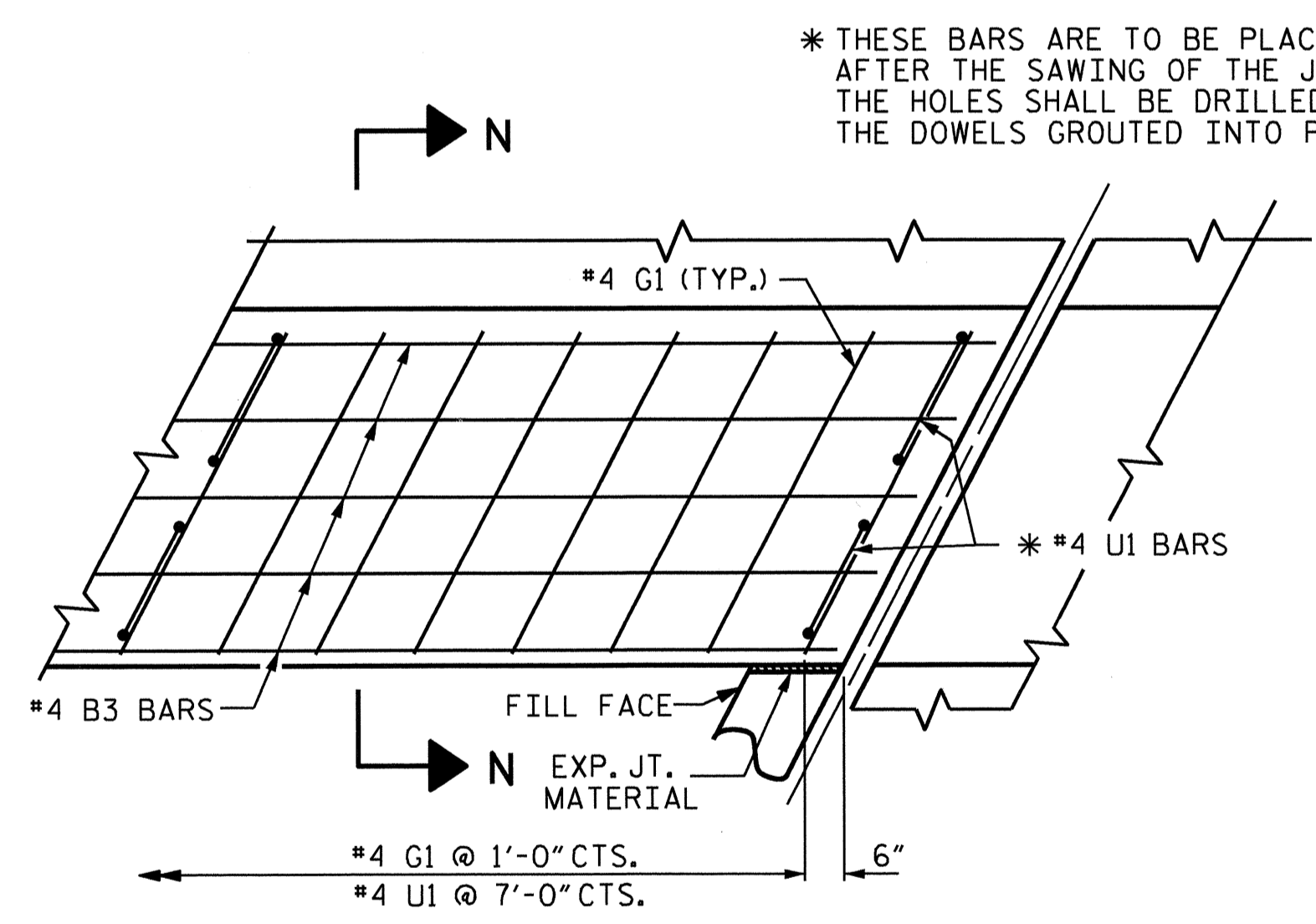
FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 3/16" AT END BENT 2.

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.



SECTION N-N



PLAN

SIDEWALK DETAILS
END BENT 1 SHOWN, END BENT 2 SIMILAR.

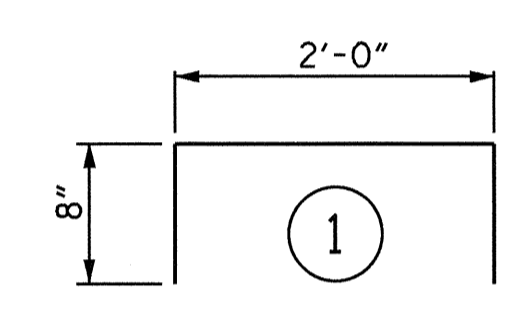
BILL OF MATERIAL
FOR ONE APPROACH SLAB
(2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	100	#4	STR	23'-10"	1592
A2	104	#4	STR	23'-8"	1644
* B1	158	#5	STR	23'-6"	3873
B2	158	#6	STR	24'-7"	5834
* B3	10	#4	STR	24'-7"	164
* B4	7	#4	STR	24'-0"	112
* G1	50	#4	STR	5'-8"	189
* G2	16	#4	STR	6'-10"	73
* U1	16	#4	STR	3'-4"	36

REINFORCING STEEL	LBS.	7478
* EPOXY COATED REINFORCING STEEL	LBS.	6039

CLASS AA CONCRETE			
POUR #1 - SLAB	C. Y.	85.5	
POUR #2 - SIDEWALKS	C. Y.	6.2	
POUR #3 - CONC. MEDIAN	C. Y.	2.9	
TOTAL	C. Y.	94.6	

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

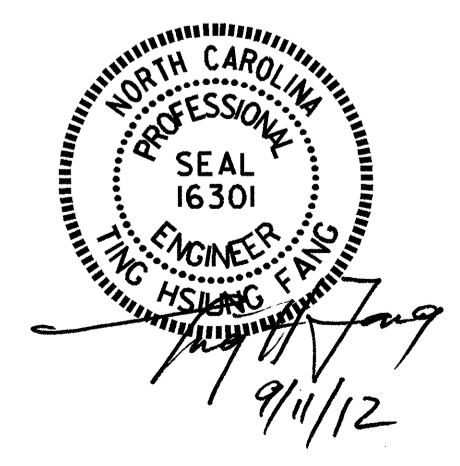
SPLICE LENGTHS

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

PROJECT NO. U-2810B
CUMBERLAND COUNTY
STATION: 115+52.74 -L-

SHEET 1 OF 3

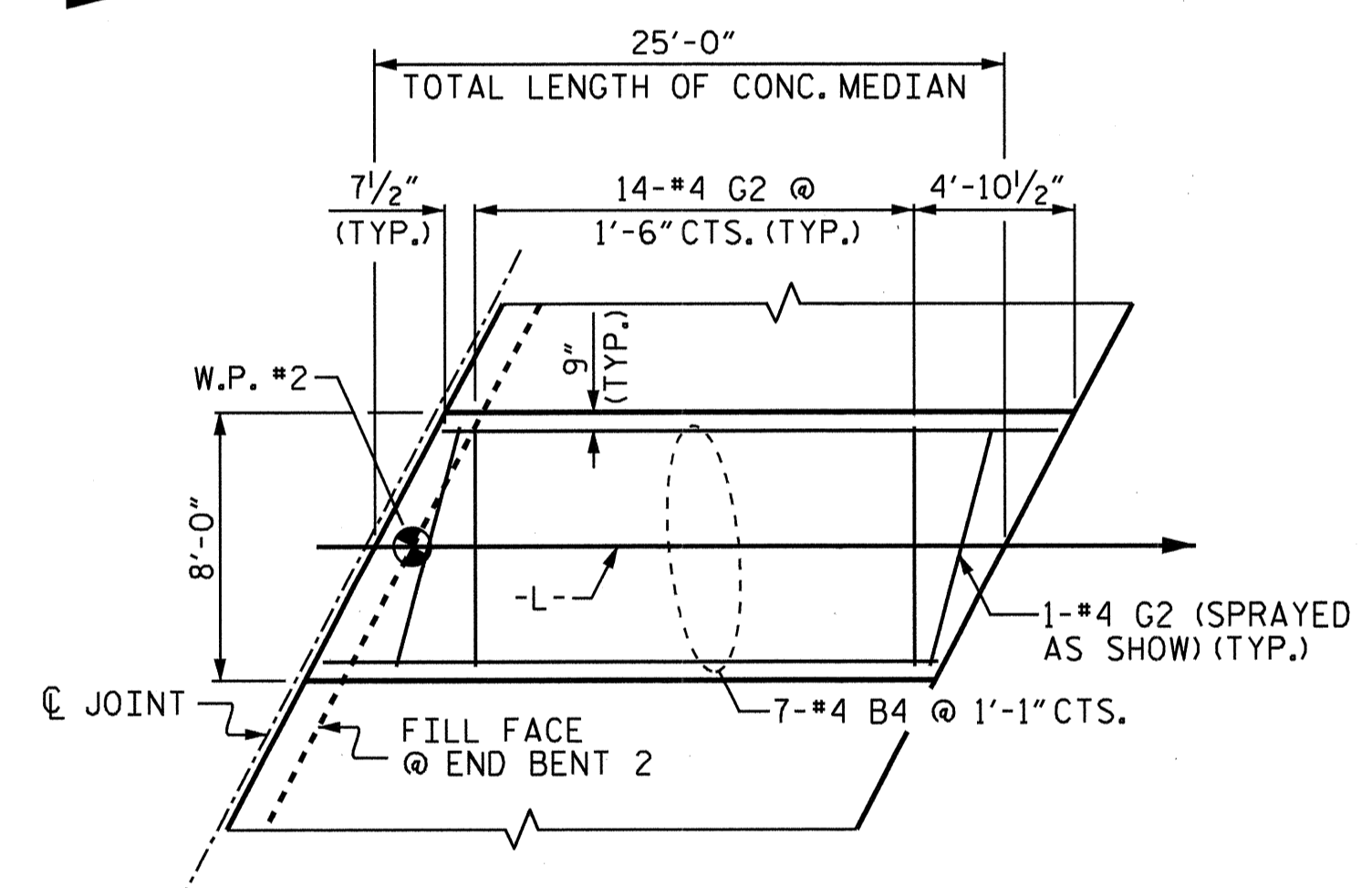
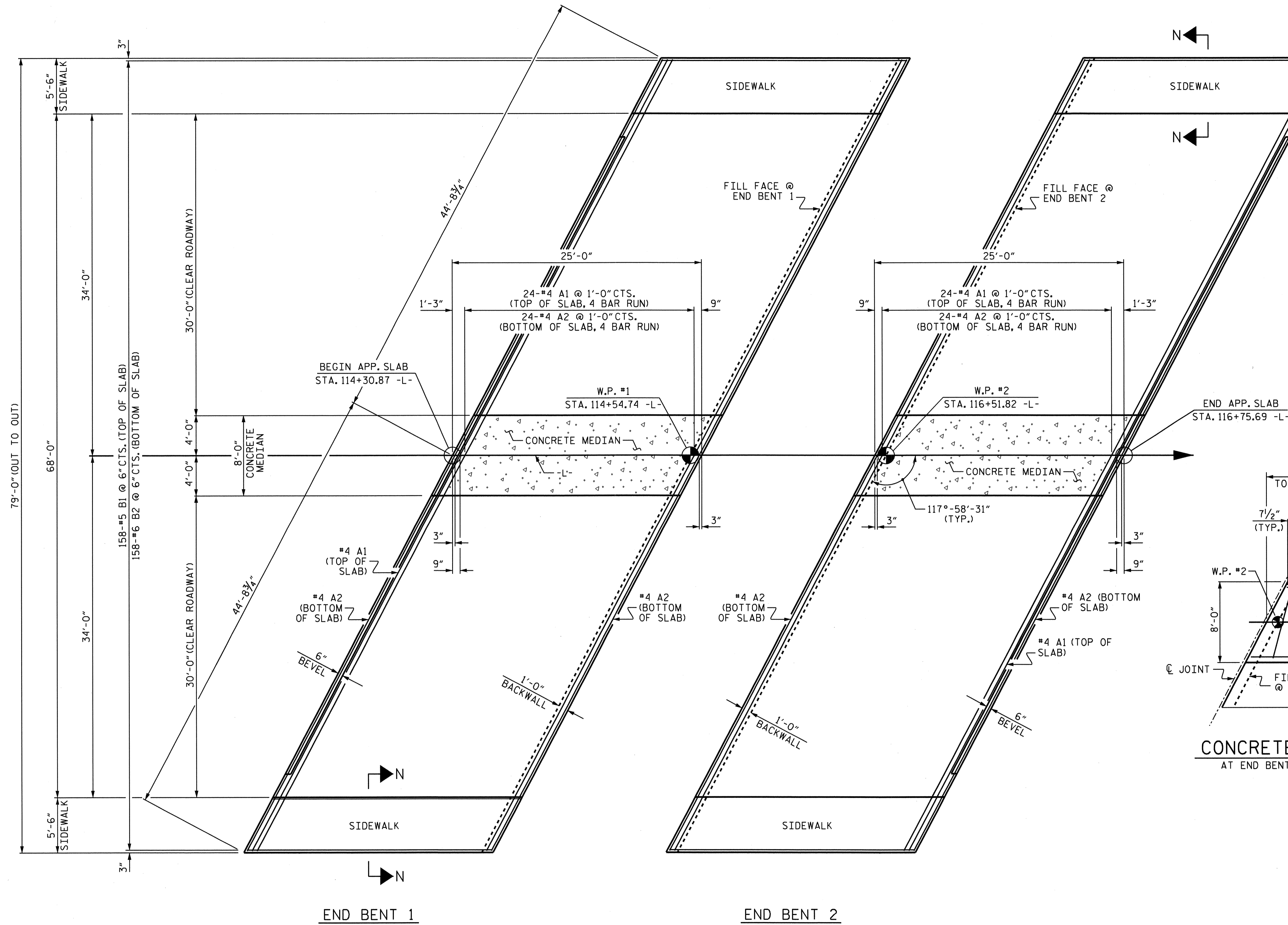
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BRIDGE APPROACH SLAB
FOR FLEXIBLE PAVEMENT



ASSEMBLED BY : S. WANCE PE	DATE : 01/12
CHECKED BY : T. H. FANG	DATE : 8/15/12
DRAWN BY : EEM 3/95	REV. 7/10/01 LES/RDR
CHECKED BY : VAP 3/95	REV. 5/17/03R RWW/JTE
	REV. 5/1/06R KMM/GM

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

TOTAL SHEETS 39



CONCRETE MEDIAN DETAILS
AT END BENT 2 SHOWN, END BENT 1 SIMILAR.

PLAN

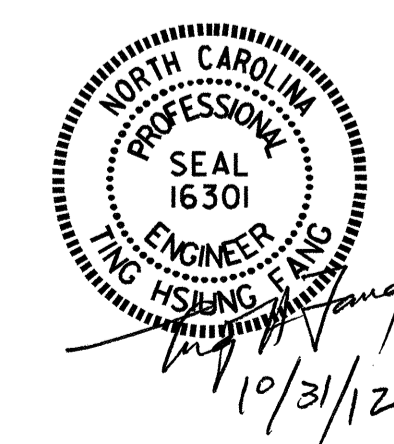
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS.
FOR CONCRETE MEDIAN TYPICAL SECTION AND SECTION THRU
JOINT, SEE "CONCRETE MEDIAN" SHEET.

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STATION: 115+52.74 -L-

SHEET 2 OF 3

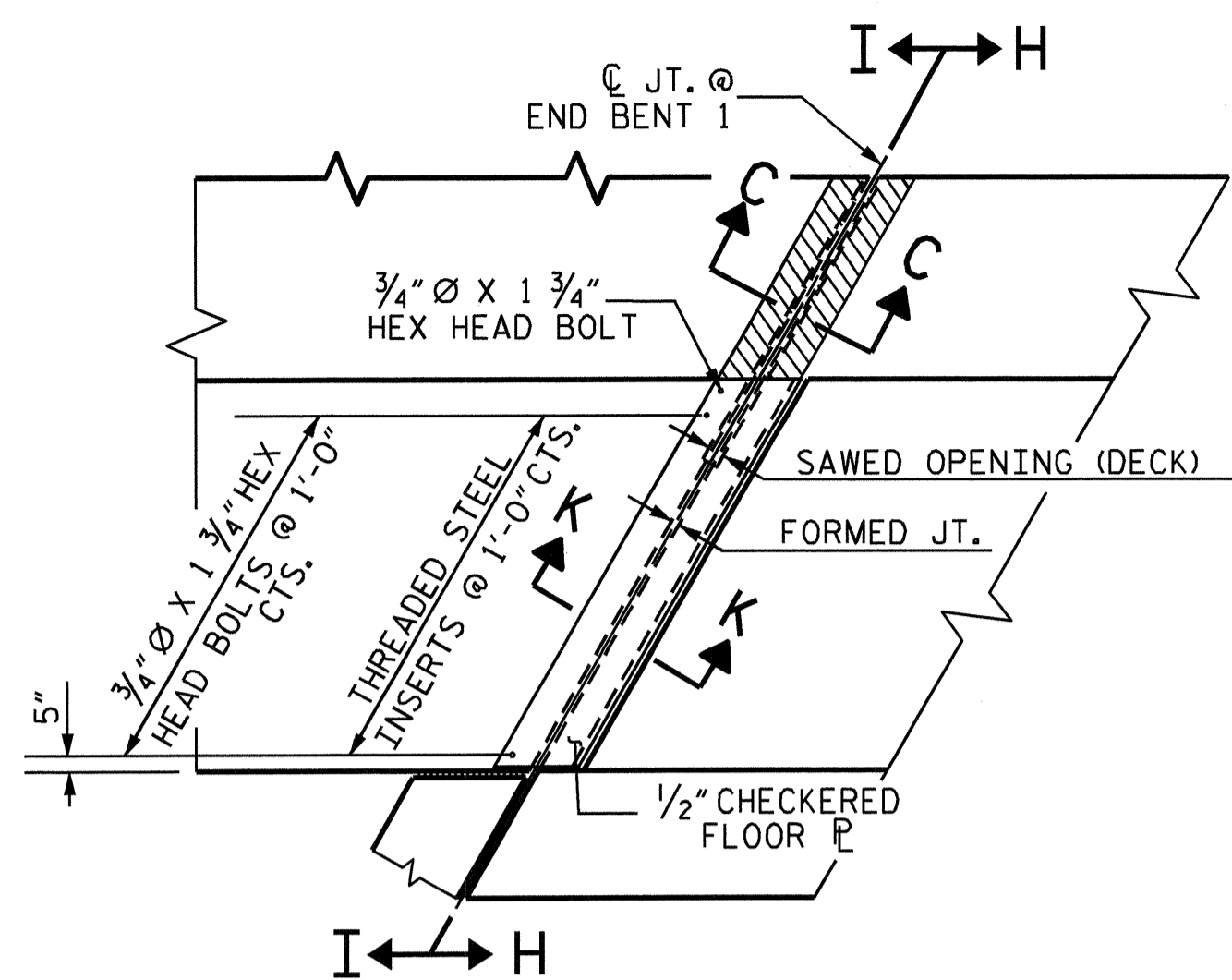
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**BRIDGE
APPROACH SLABS**

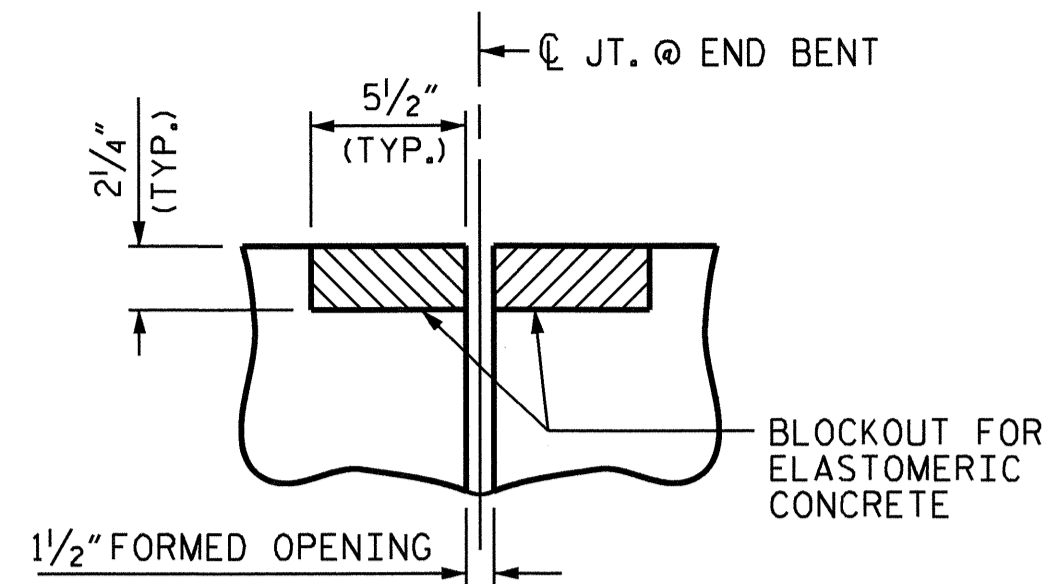


REVISIONS						SHEET NO. S-38
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 39
2			4			

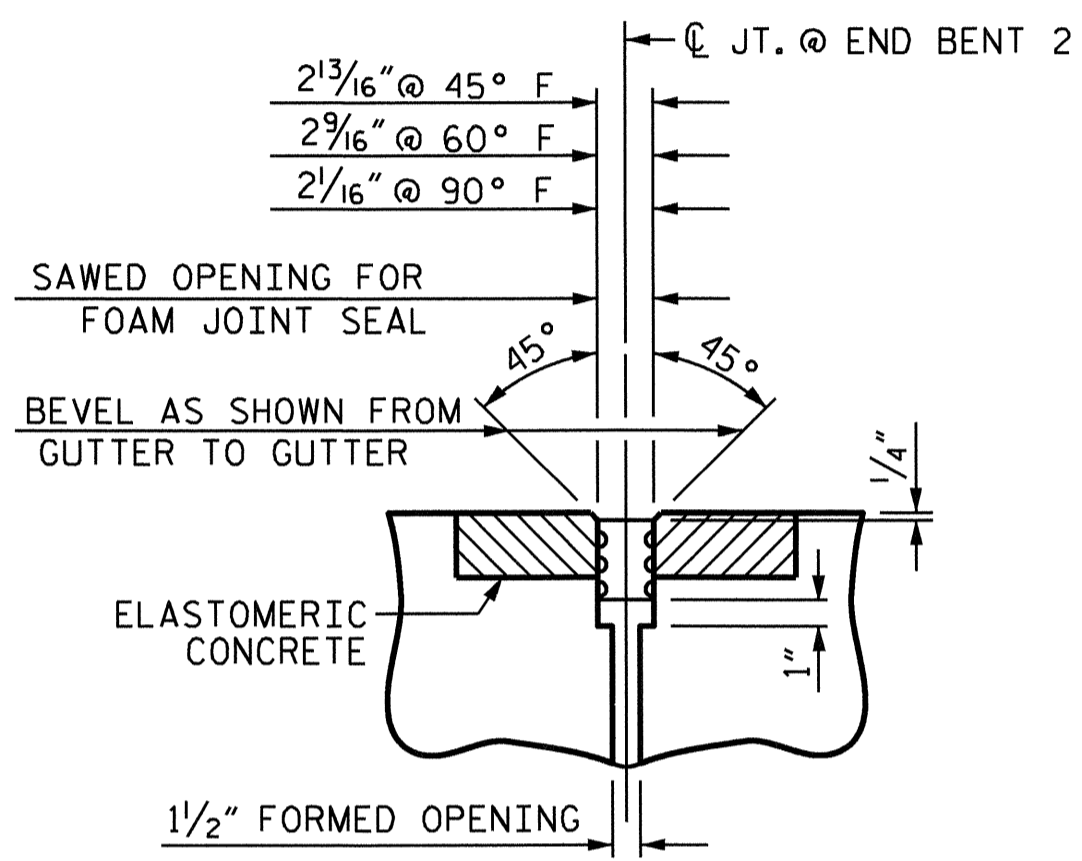
DRAWN BY : S. WANCE PE DATE : 01/12
CHECKED BY : T. H. FANG DATE : 8/21/12



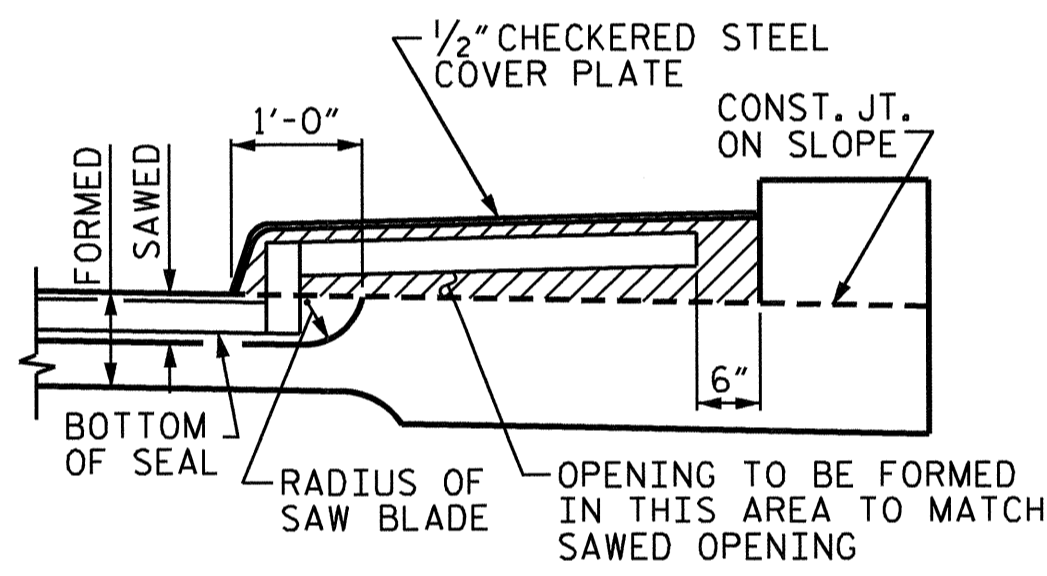
PLAN VIEW OF FOAM JOINT SEAL @ END BENT FOR SIDEWALK



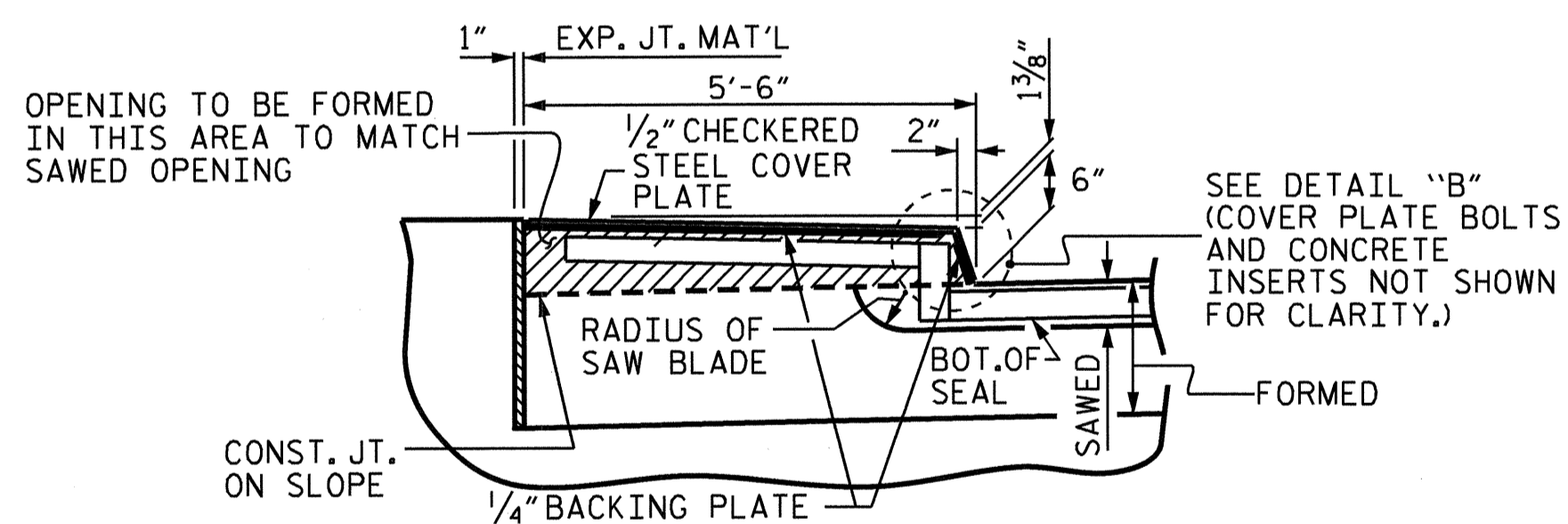
SECTION C-C
FOAM JOINT SEAL
(PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS)



SECTION C-C
FOAM JOINT SEAL
(EXPANSION)



SECTION H-H



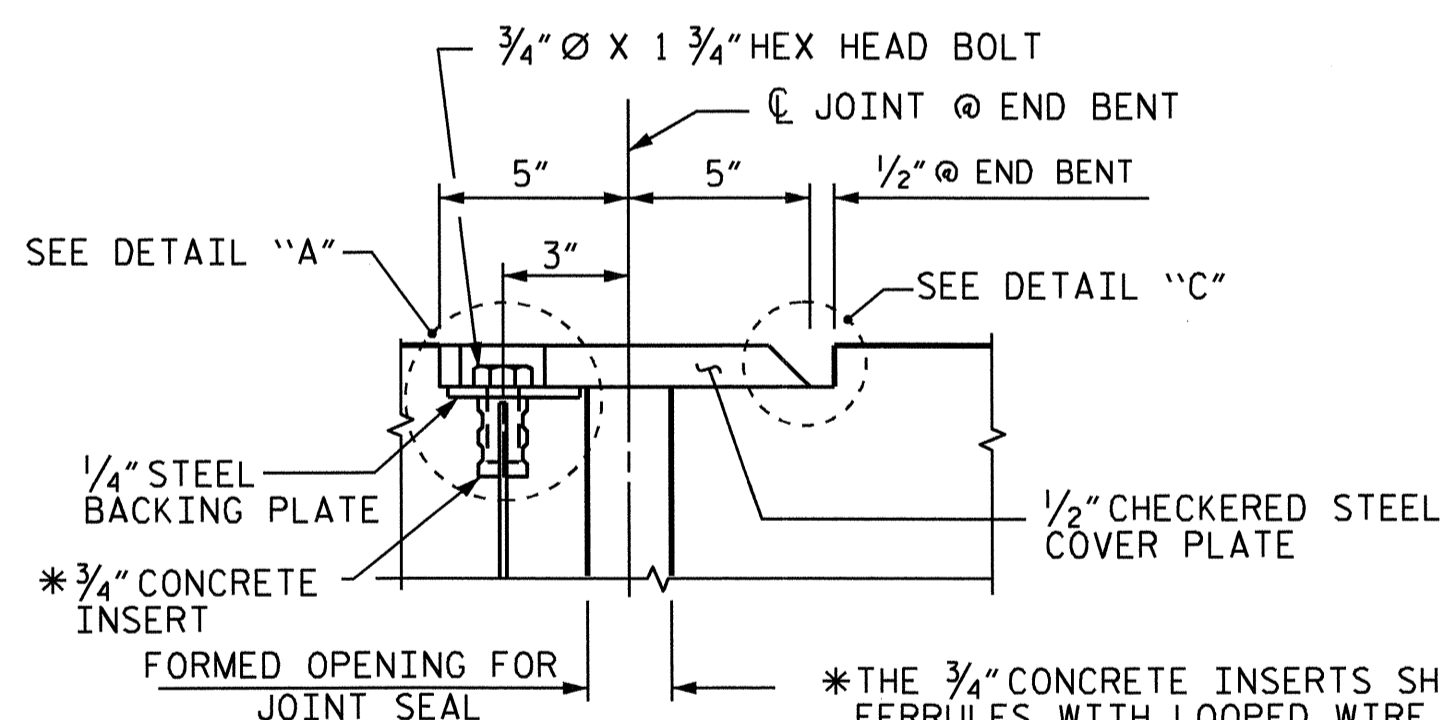
SECTION I-I

THE STEEL PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 OR APPROVED EQUAL. AFTER FABRICATION, THE PLATES SHALL BE COMMERCIALY BLAST CLEANED AND EITHER COATED WITH A MINIMUM THICKNESS OF 4 MILS (DRY) OF ZINC-RICH PAINT, GALVANIZED OR METALLIZED TO A MINIMUM THICKNESS OF 6 MILS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

THE 3/4" DIAMETER HEX HEAD BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL.

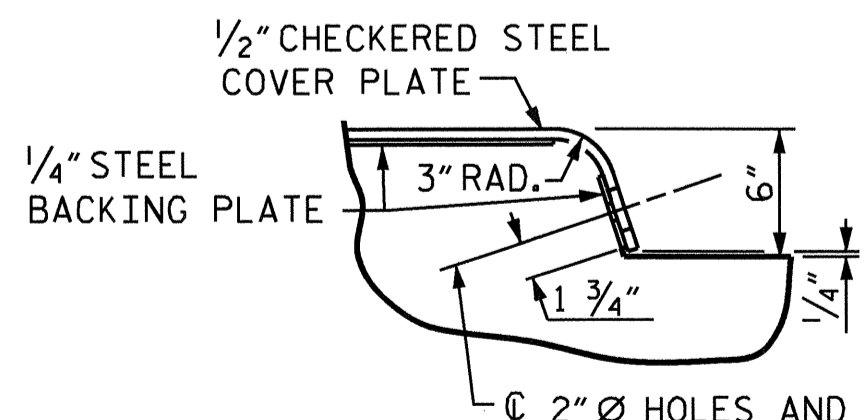
NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE COVER PLATE. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR "FOAM JOINT SEALS".

JOINT SEAL DETAILS @ END BENT

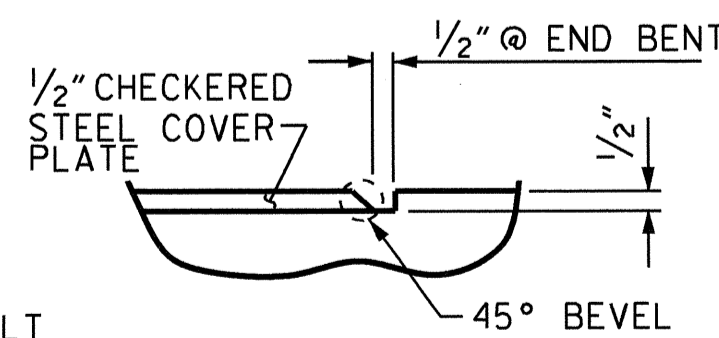


SECTION K-K

*THE 3/4" CONCRETE INSERTS SHALL BE CLOSED-END FERRULES WITH LOOPED WIRE STRUTS ATTACHED TO THEM. THE INSERTS SHALL CONFORM TO AASHTO M169, GRADE 12L14 AND SHALL HAVE A TENSILE WORKING LOAD CAPACITY OF 3000 LBS.



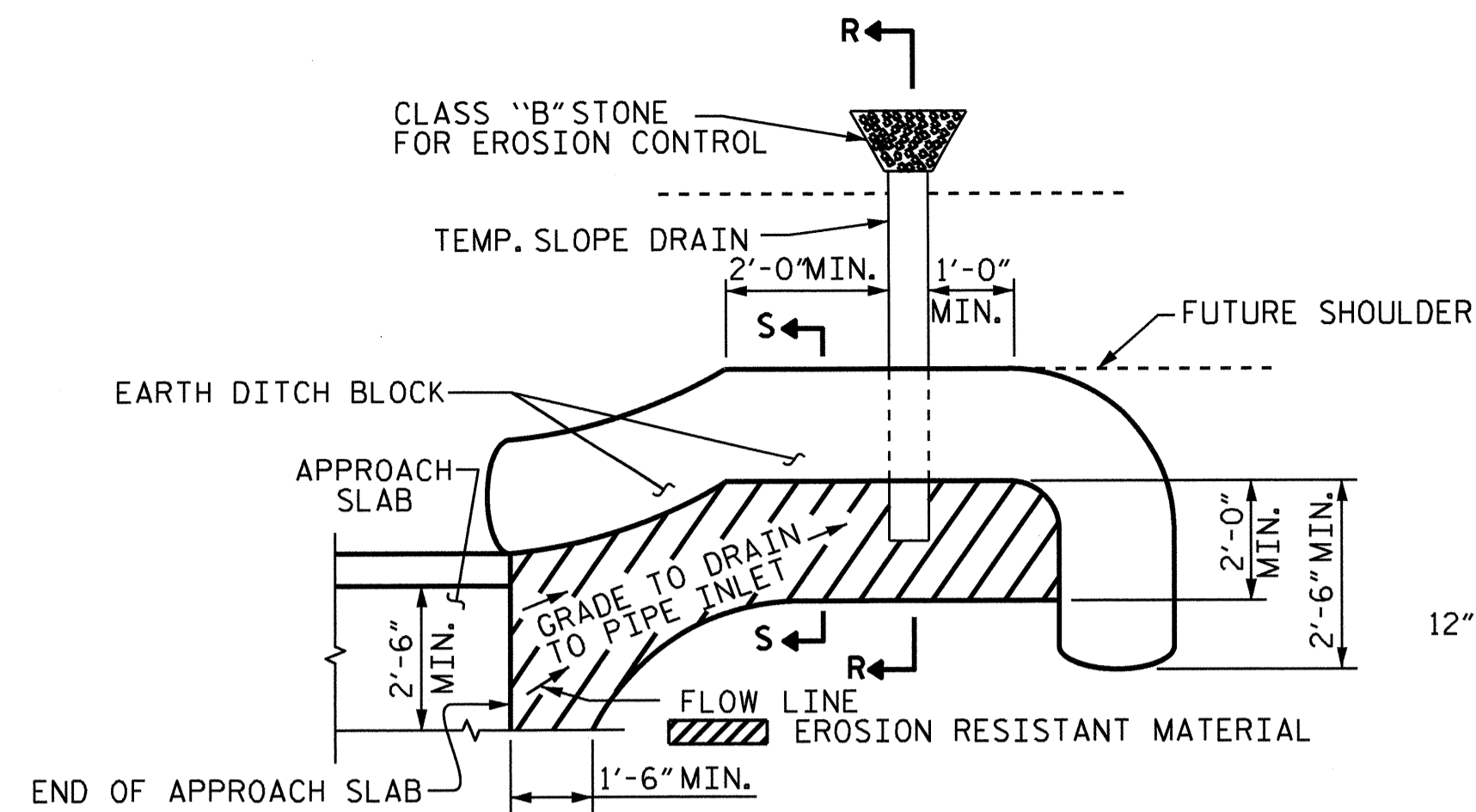
DETAIL "B"



DETAIL "C"

ELASTOMERIC CONCRETE	
END BENT	ELASTOMERIC CONCRETE * (CU. FT.)
1	15.0
2	15.0
TOTAL	30.0

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

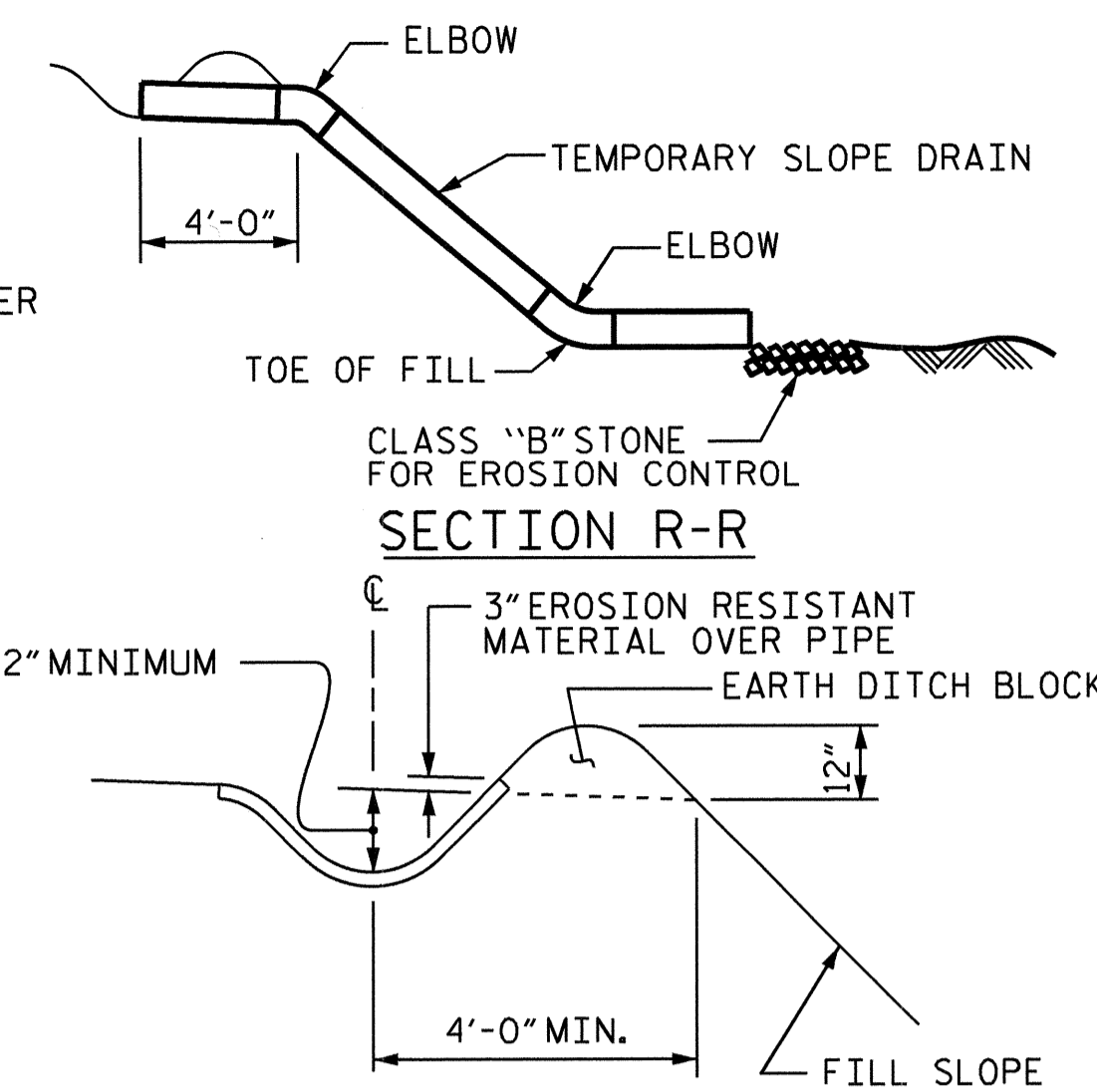


PLAN VIEW

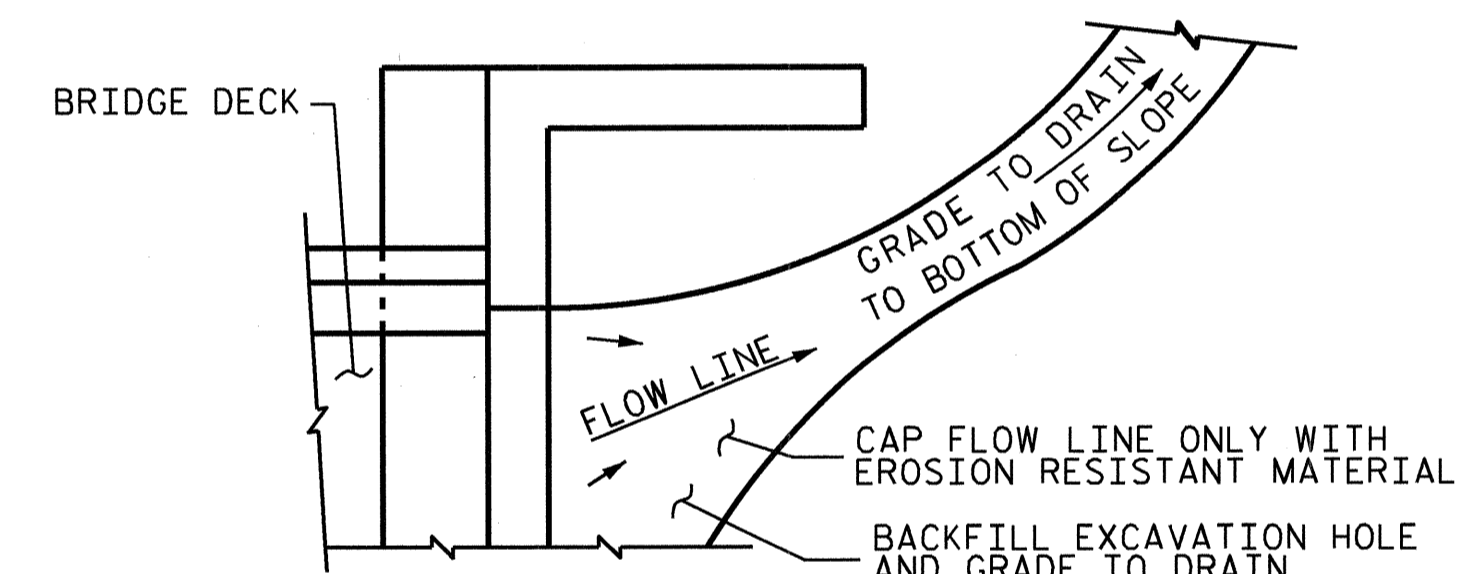
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION S-S



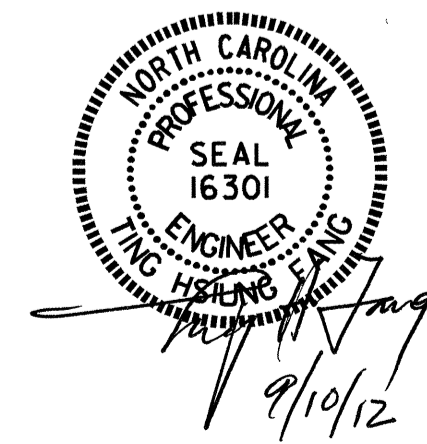
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

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SHEET 3 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD BRIDGE APPROACH SLAB DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-39
					TOTAL SHEETS 39



ASSEMBLED BY : S. WANCE PE	DATE : 01/12
CHECKED BY : T. H. FANG	DATE : 8/21/12
DRAWN BY : FCJ 11/88	REV. 5/7/03 RWW/JTE
CHECKED BY : ARB 11/88	REV. 5/1/06RRR MAA/KMM
	REV. 10/1/11 MAA/GM

