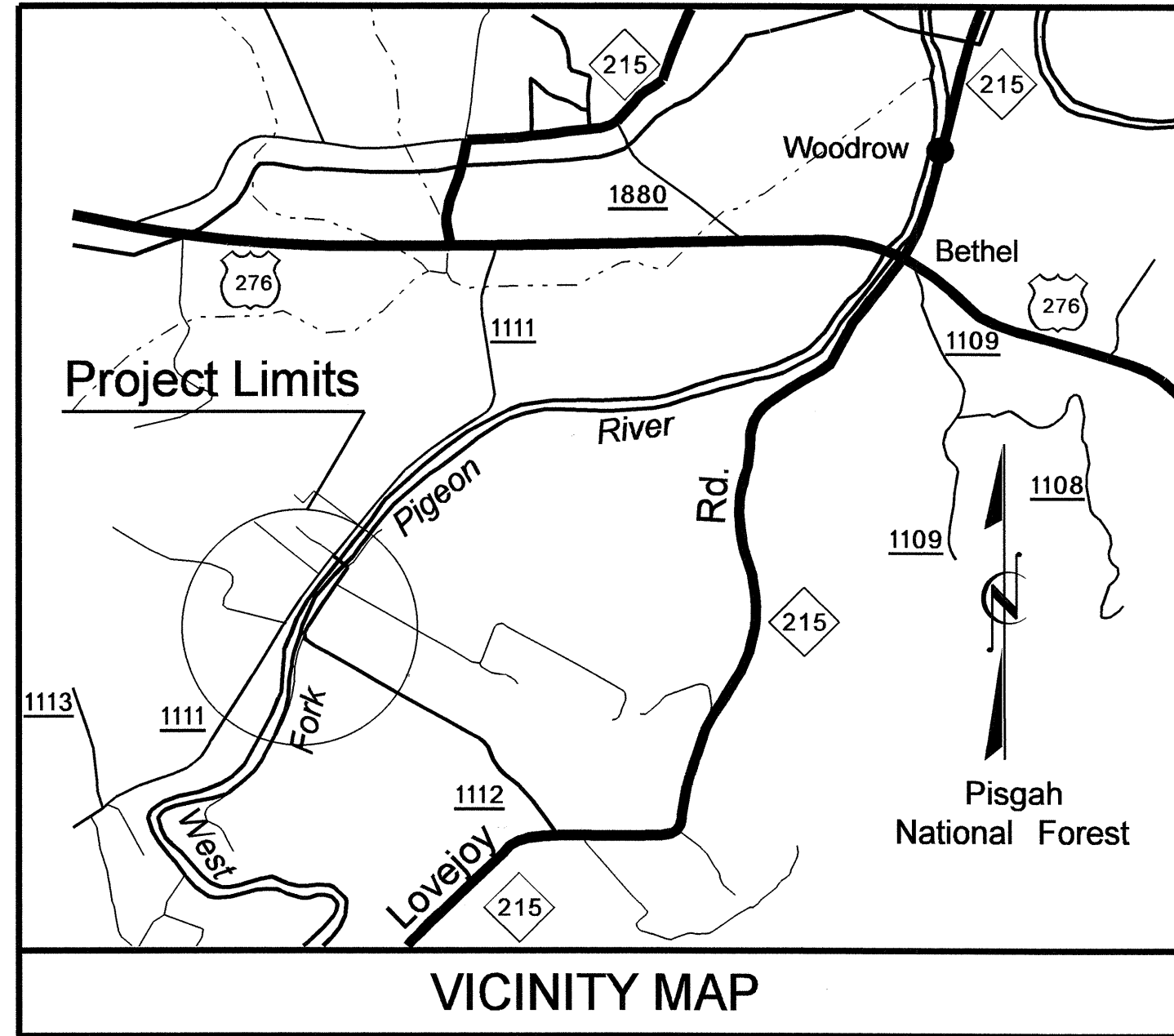


09/08/99

TIP PROJECT: B-3187

CONTRACT: C202323

STRUCTURES



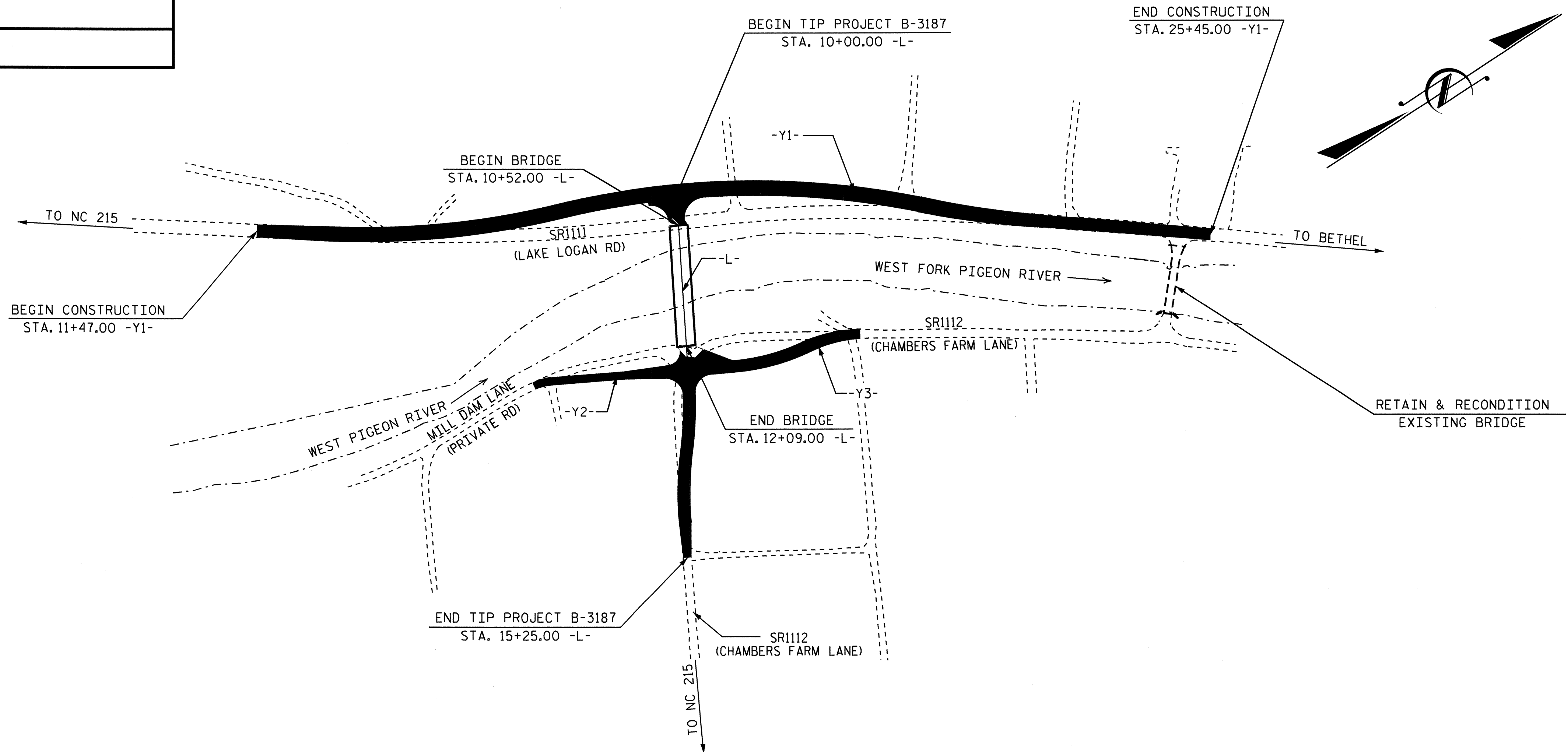
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HAYWOOD COUNTY

**LOCATION: BRIDGE #79 ON SR 1112 (CHAMBERS FARM LANE)
OVER WEST FORK PIGEON RIVER**

**TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE AND
RECONDITION EXISTING STRUCTURE**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3187		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
32919.1.1	BRZ-1112 (2)	PE	
32919.2.1	BRZ-1112 (2)	R /W & UTILITIES	
32919.3.1	BRZ-1112 (2)	CONSTRUCTION	



DESIGN DATA

ADT 2010 = 208 VPD
ADT 2030 = 425 VPD
DHV = 10 %
D = 60 %
* T = 4 %
* * V = 25 MPH
* TTST 1% DUAL 3%

FUNCTIONAL CLASSIFICATION
SUB REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3187 = 0.069 MILES
LENGTH STRUCTURE TIP PROJECT B-3187 = 0.030 MILES
TOTAL LENGTH TIP PROJECT B-3187 = 0.099 MILES

PLANS PREPARED IN THE OFFICE OF:
DIVISION OF HIGHWAYS

2006 STANDARD SPECIFICATIONS

LETTING DATE:
AUGUST 16, 2011

Q. H. NGUYEN, P.E.
PROJECT ENGINEER

MARC G. CHEEK, P.E.
PROJECT DESIGN ENGINEER

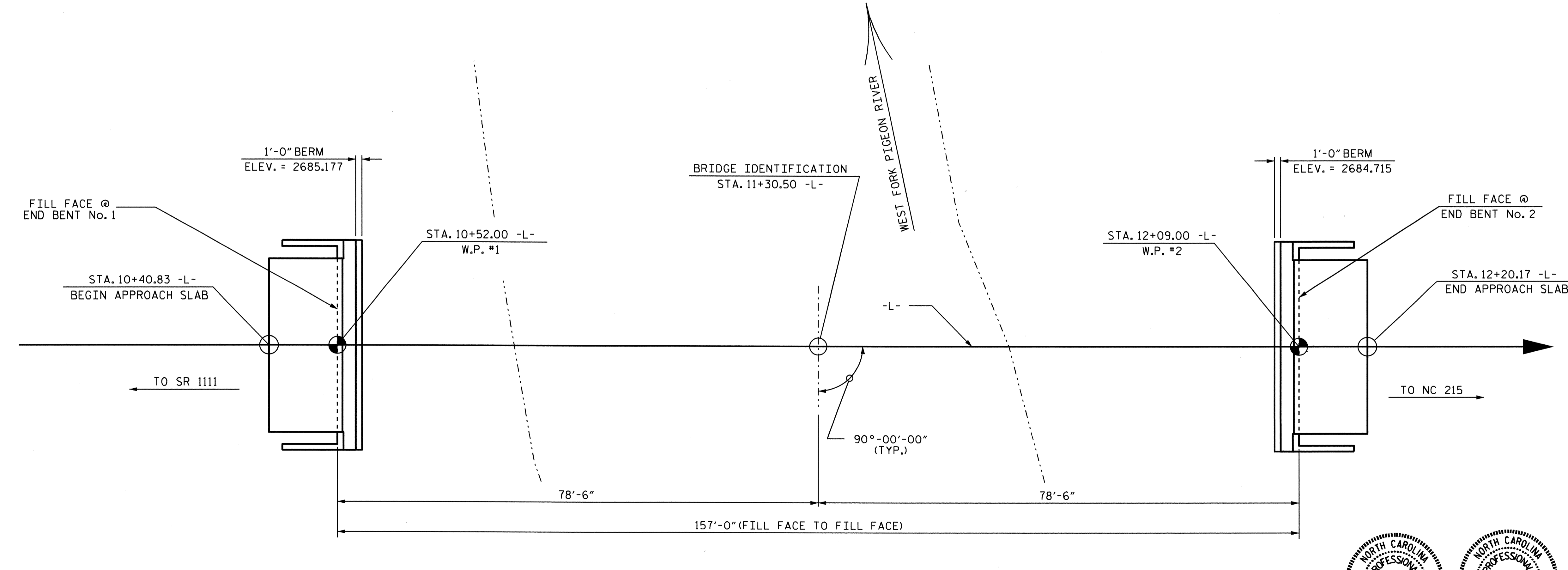
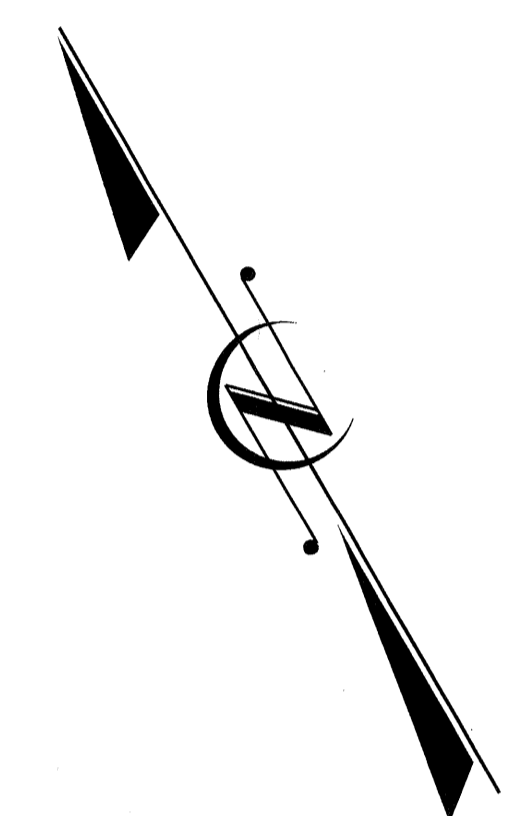
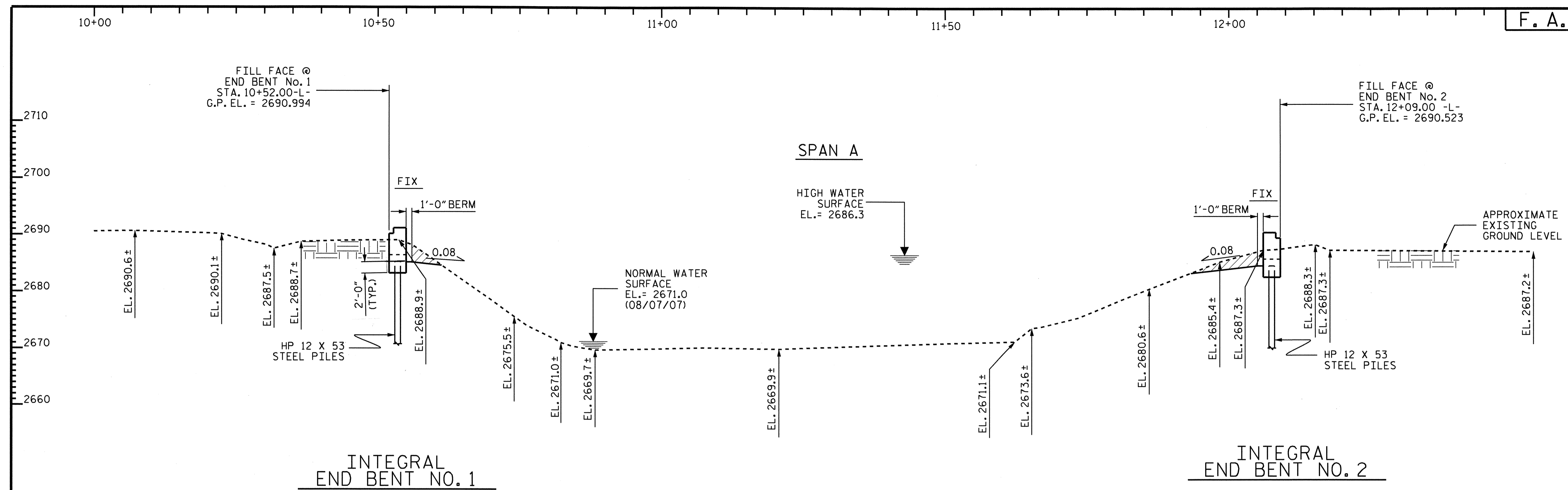
STRUCTURE DESIGN UNIT
1000 BIRCH RIDGE DRIVE
RALEIGH, N.C. 27610

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

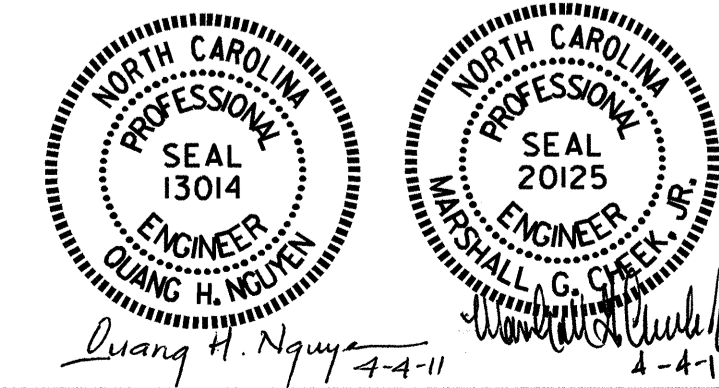
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PROJECT NO. B-3187
HAYWOOD COUNTY
 STATION: 11+30.50 -L-
 SHEET 1 OF 3 BRIDGE #464

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

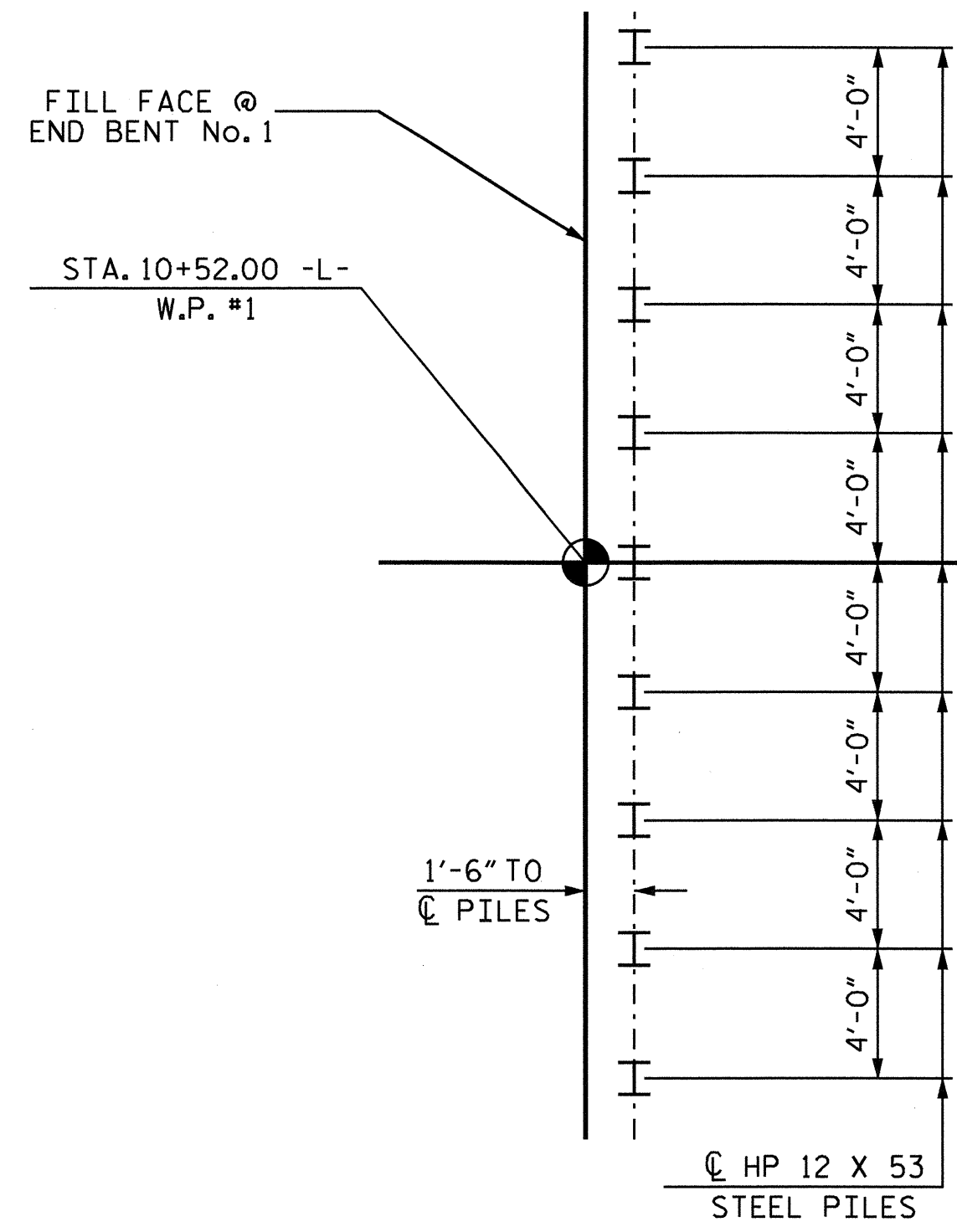
GENERAL DRAWING
 FOR
 BRIDGE ON SR 1112 OVER
 WEST FORK PIGEON RIVER
 BETWEEN SR 1111 AND NC 215



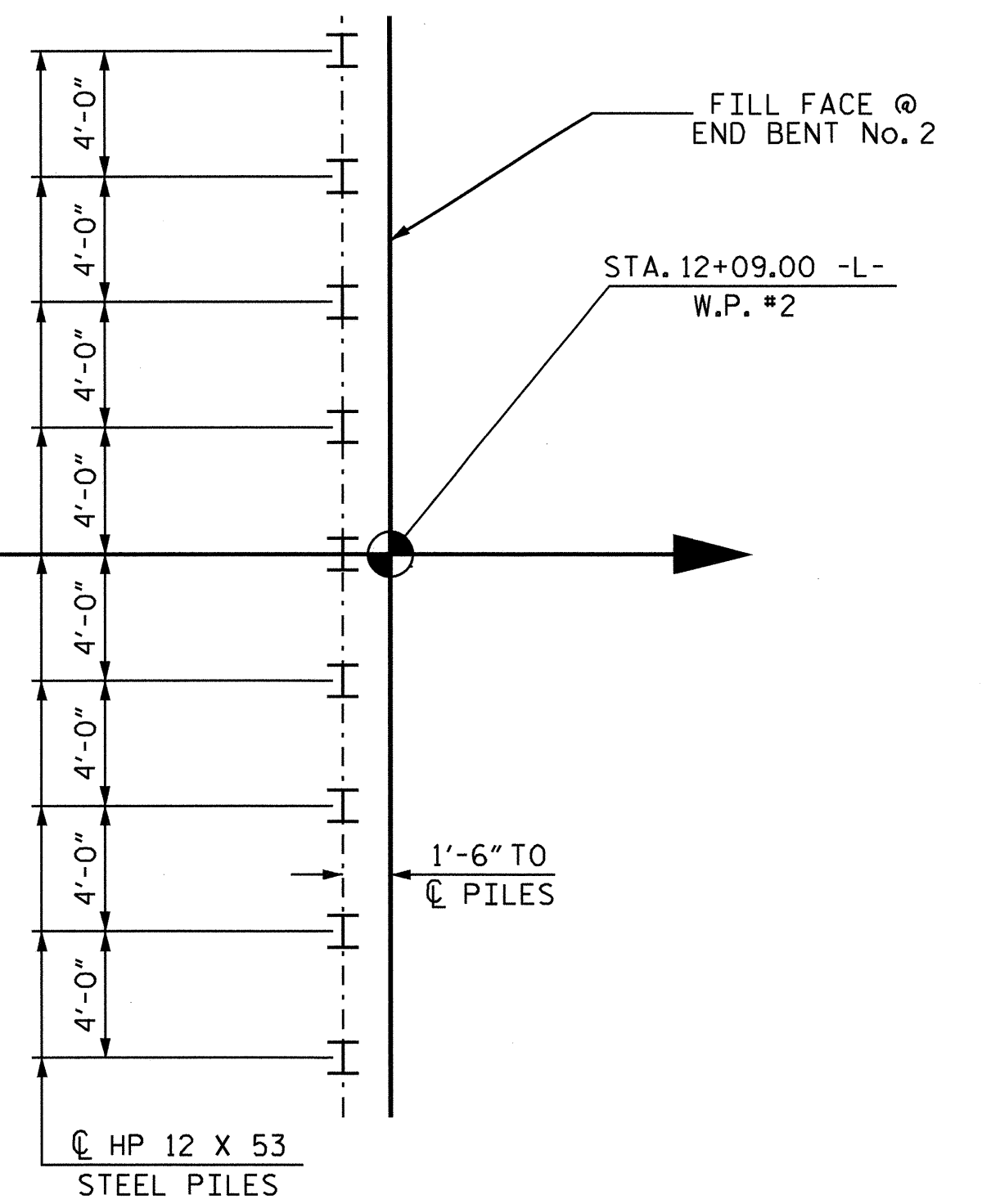
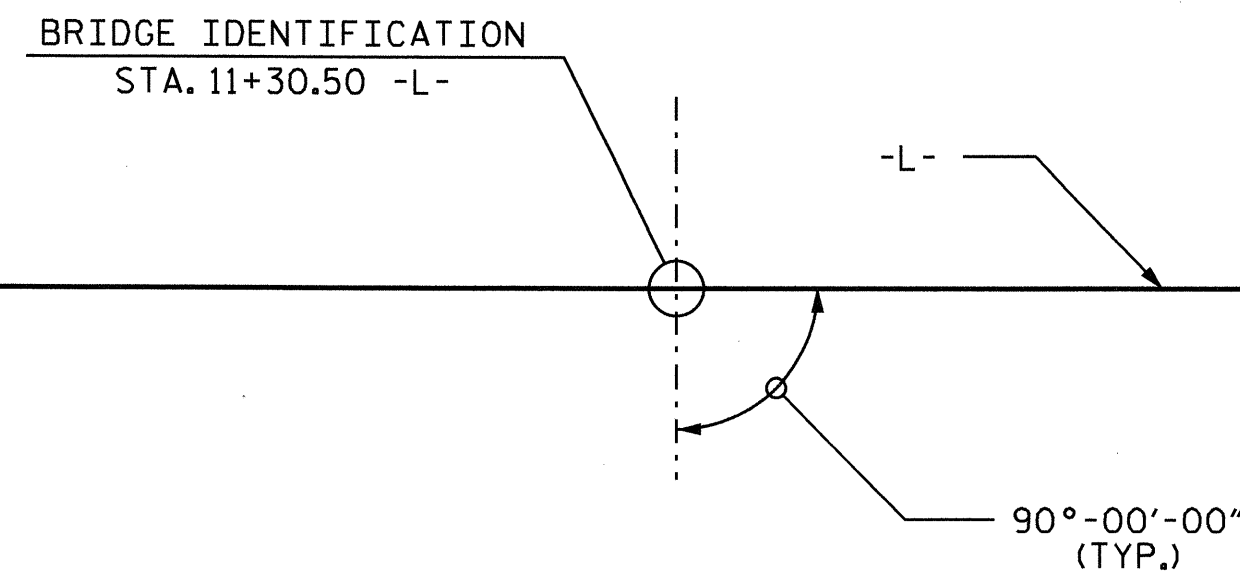
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 CHECKED BY: M.G. CHEEK DATE: 10-08-10

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

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 danodge



END BENT No. 1



END BENT No. 2

FOUNDATION LAYOUT

ALL END BENT PILES ARE HP 12 X 53

NOTES

DRIVE PILES AT END BENT NO.1 AND END BENT NO.2 TO A REQUIRED BEARING CAPACITY OF 120 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENT NO.1 AND END BENT NO.2 IS 60 TONS PER PILE.

PILE EXCAVATION IS REQUIRED TO INSTALL PILES AT END BENT NO.1. EXCAVATE HOLES TO ELEVATION 2676.0 FEET.

PILE EXCAVATION IS REQUIRED TO INSTALL PILES AT END BENT NO.2. EXCAVATE HOLES TO ELEVATION 2679.5 FEET.

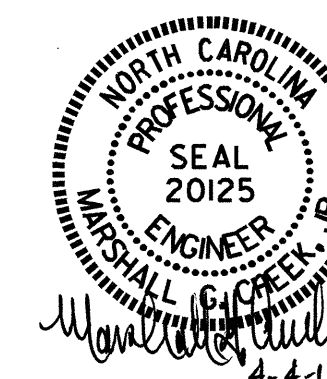
FOR PILE EXCAVATION, SEE SPECIAL PROVISIONS.

PROJECT NO. B-3187
HAYWOOD COUNTY
 STATION: 11+30.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR
 BRIDGE ON SR 1112 OVER
 WEST FORK PIGEON RIVER
 BETWEEN SR 1111 AND NC 215



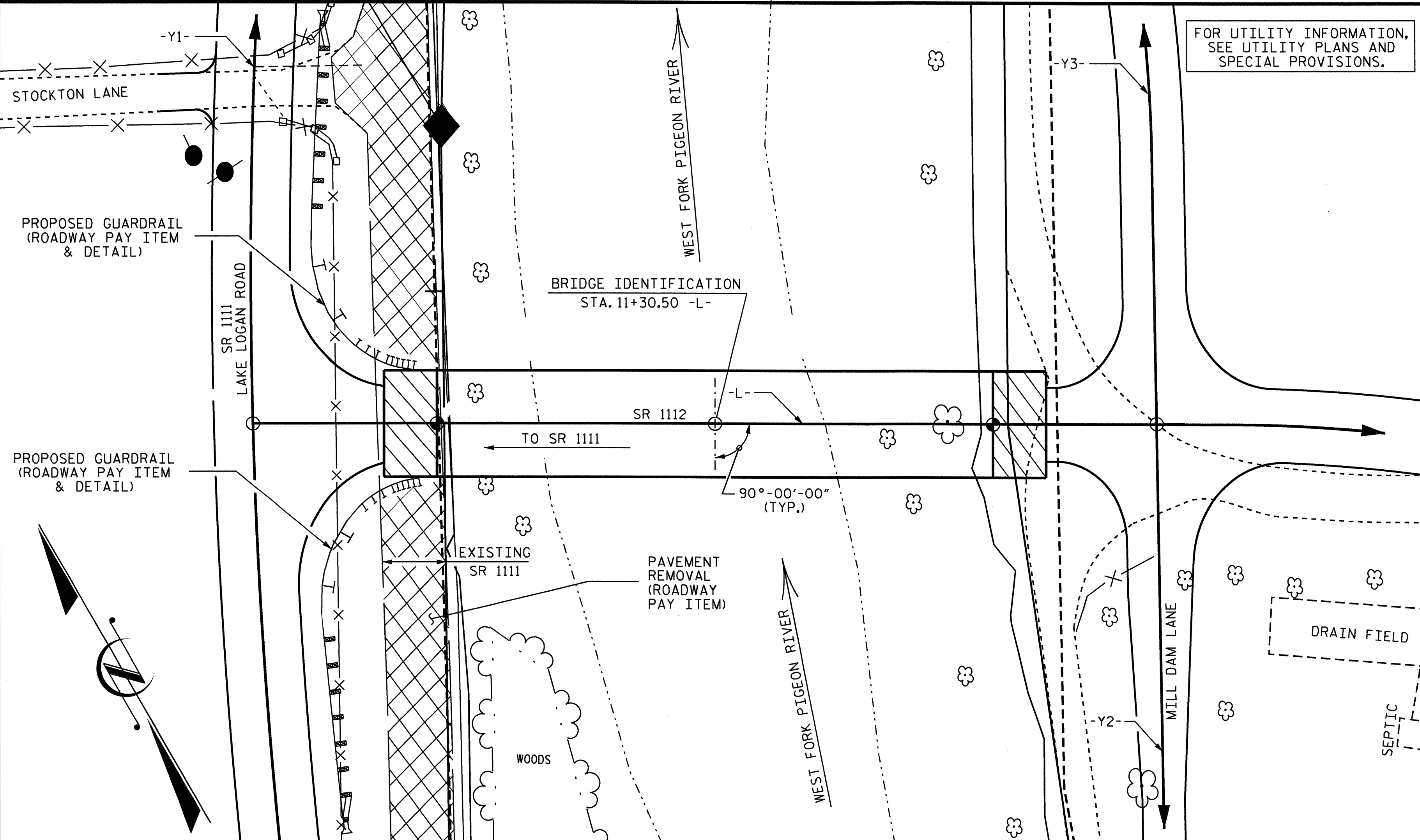
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1			3		
2			4		

S-2
TOTAL SHEETS
27

BENCHMARK#2: 8" SPIKE SET IN TOP OF 10" LOCUST STUMP, STA. 12+06.99 -L-, 7.04 FEET LEFT, ELEV.= 2689.51'



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

NOTES

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING, EXCEPT THAT THE GIRDERS HAVE BEEN DESIGNED FOR HS-25.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR SHIPPING STEEL STRUCTURAL MEMBERS, SEE SPECIAL PROVISIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA (SEE SHEET 1 OF 3) SHALL BE EXCAVATED FOR A DISTANCE OF 15 FEET TO EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION, SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLE 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, 'EVALUATING SCOUR AT BRIDGES', MAY, 2001.

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

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

THIS BRIDGE HAS BEEN DESIGNED BY THE STRENGTH DESIGN METHOD AS SPECIFIED IN AASHTO STANDARD SPECIFICATIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CURING CONCRETE, SEE SPECIAL PROVISIONS. FOR PILES, SEE SPECIAL PROVISIONS.

FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

HYDRAULIC DATA

DESIGN DISCHARGE = 10,500 C.F.S.
 FREQUENCY OF DESIGN FLOOD = 25 YRS.
 DESIGN HIGH WATER ELEVATION = 2,684.1
 DRAINAGE AREA = 58.3 SQ. MI
 BASIC DISCHARGE (Q100) = 14,200 C.F.S.
 BASIC HIGH WATER ELEVATION = 2,686.3

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 20,800 C.F.S.
 FREQUENCY OF OVERTOPPING FLOOD = 500 YRS.±
 OVERTOPPING FLOOD ELEVATION = 2,689.32

TOTAL BILL OF MATERIAL

	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	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	ONE BAR METAL RAIL	1'-0" X 1'-6" CONCRETE PARAPET	EVAZOTE JOINT SEALS
	LIN. FT.	LIN. FT.	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	APPROX. LBS.	NO.	LIN. FT.	LIN. FT.	LUMP SUM
SUPERSTRUCTURE				4435	4105		LUMP SUM		342,600		299.00	314.00	LUMP SUM
END BENT NO. 1		91.00	LUMP SUM			18.3		2741		9	225		
END BENT NO. 2	49.00	11.00	LUMP SUM			18.3		2741		9	205		
TOTAL	49.00	102.00	LUMP SUM	4435	4105	36.6	LUMP SUM	5482	342,600	18	430	314.00	LUMP SUM

PROJECT NO. B-3187
HAYWOOD COUNTY
 STATION: 11+30.50 -L-

SHEET 3 OF 3

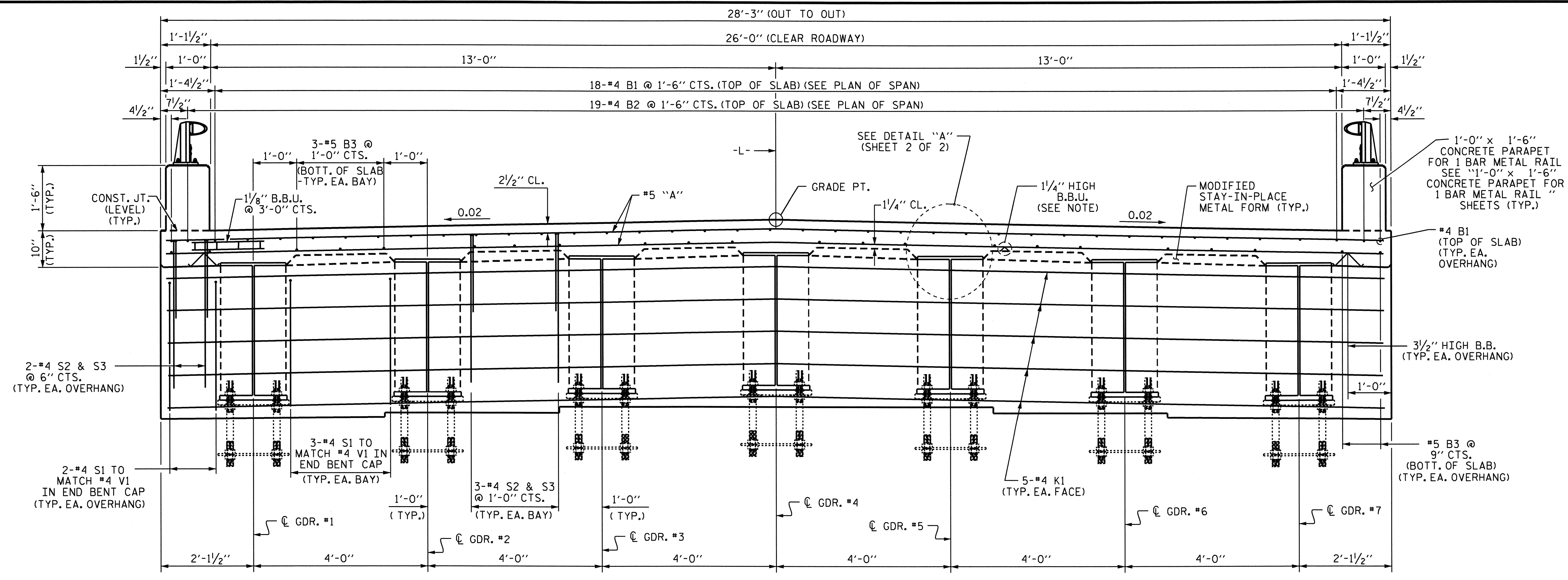
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR
 BRIDGE ON SR 1112 OVER
 WEST FORK PIGEON RIVER
 BETWEEN SR 1111 AND NC 215



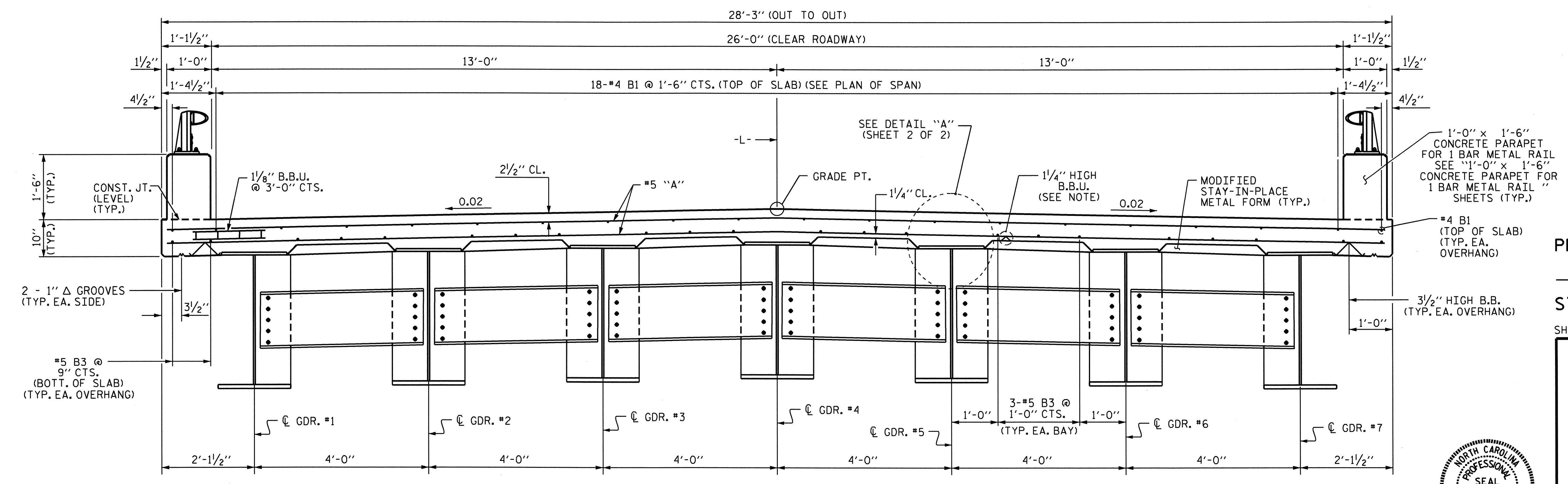
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2			4			

DRAWN BY : A.L. FIGUEROA DATE : 06-30-10
 CHECKED BY : M.G. CHEEK DATE : 11/10



END ELEVATION

(END BENT #1 SHOWN, END BENT #2 SIMILAR)



TYPICAL SECTION

(SHOWING INTERMEDIATE BENT DIAPHRAGMS)

PROJECT NO. B-3187
HAYWOOD COUNTY
 STATION: 11+30.50 -L-
 SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

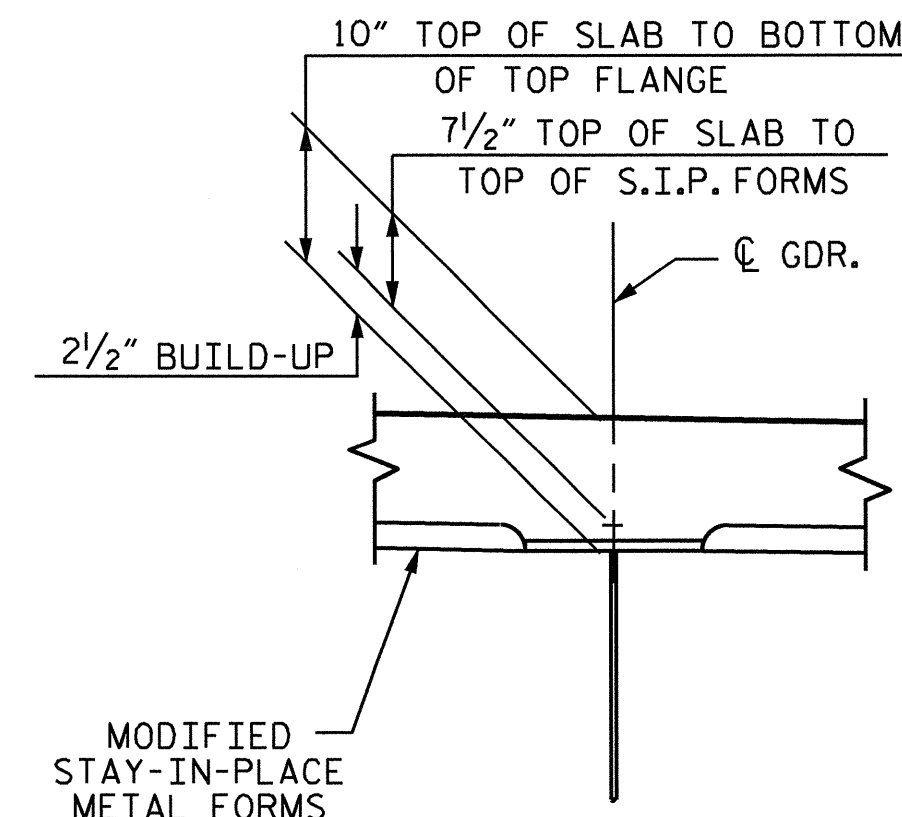
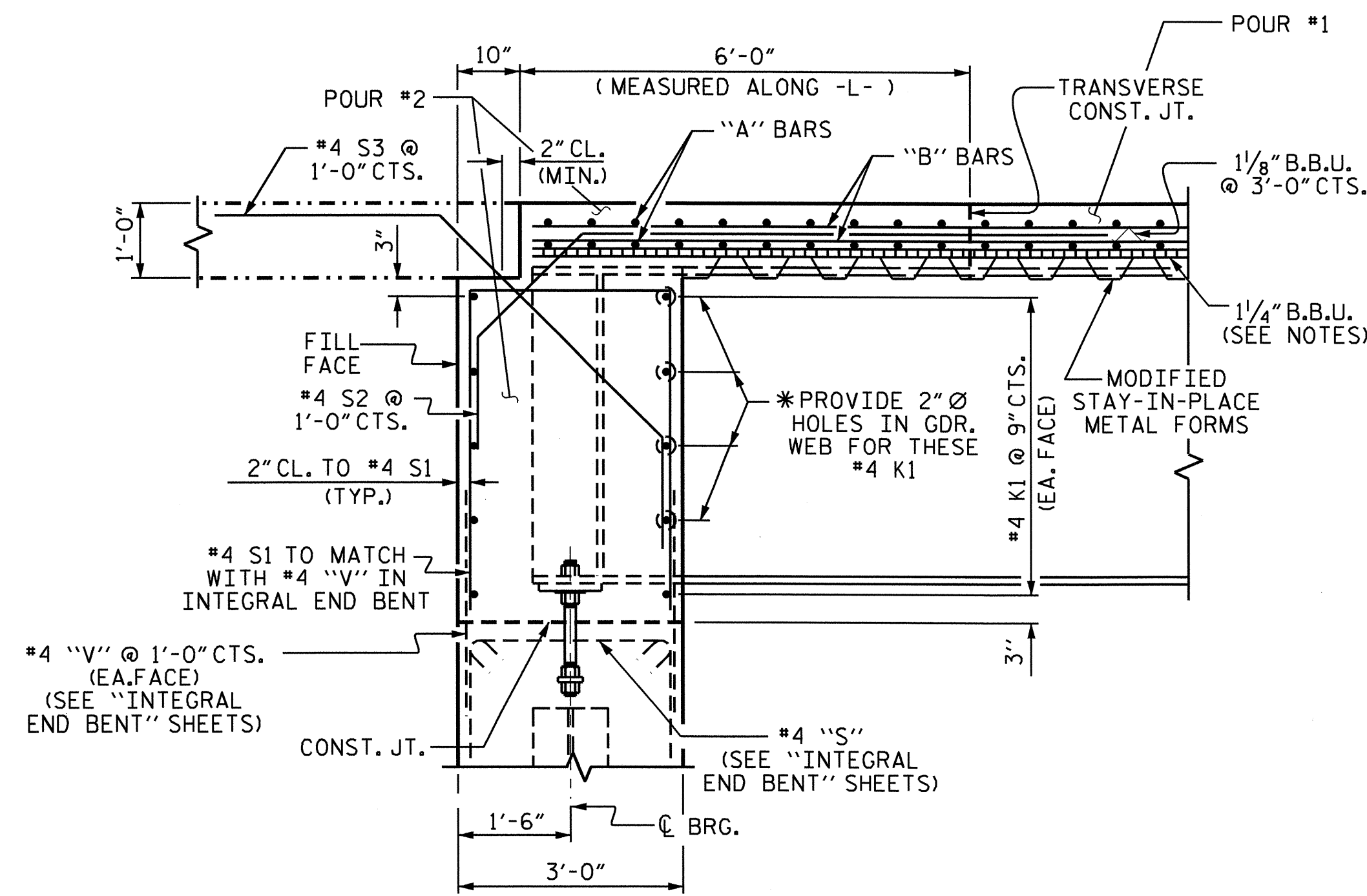
**SUPERSTRUCTURE
 TYPICAL SECTIONS**



DRAWN BY: V.X. NGUYEN DATE: 8-24-09
 CHECKED BY: M.G. CHEEK DATE: 6-10

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2			4			SHEETS	27

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DETAIL "A"

NOTES

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

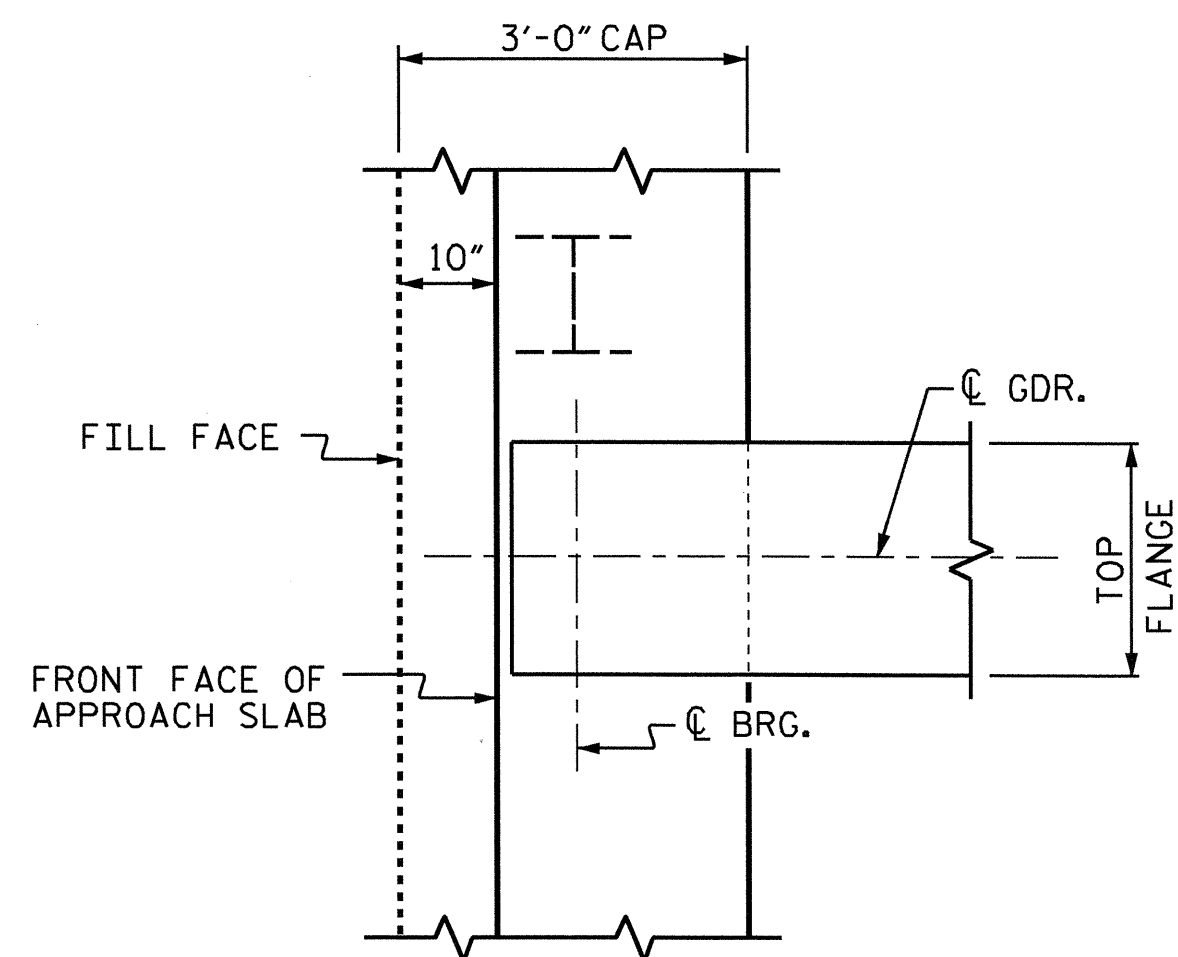
MODIFIED METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO BEAM OR GIRDER FLANGES IN THE ZONES REQUIRING CHARPY V-NOTCH TEST. SEE STRUCTURAL STEEL DETAIL SHEETS.

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

STAY-IN-PLACE METAL FORMS SHALL BE MODIFIED WITH EXCLUDER PLATES TO EXCLUDE CONCRETE FROM THE VALLEYS IN THE FORMS. FILLER MATERIAL SUCH AS STYROFOAM WILL NOT BE ALLOWED.

END OF GIRDER DETAIL AT INTEGRAL END BENT

REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT



PLAN OF GIRDER AT INTEGRAL END BENT

PROJECT NO. B-3187
HAYWOOD COUNTY
 STATION: 11+30.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 TYPICAL SECTIONS

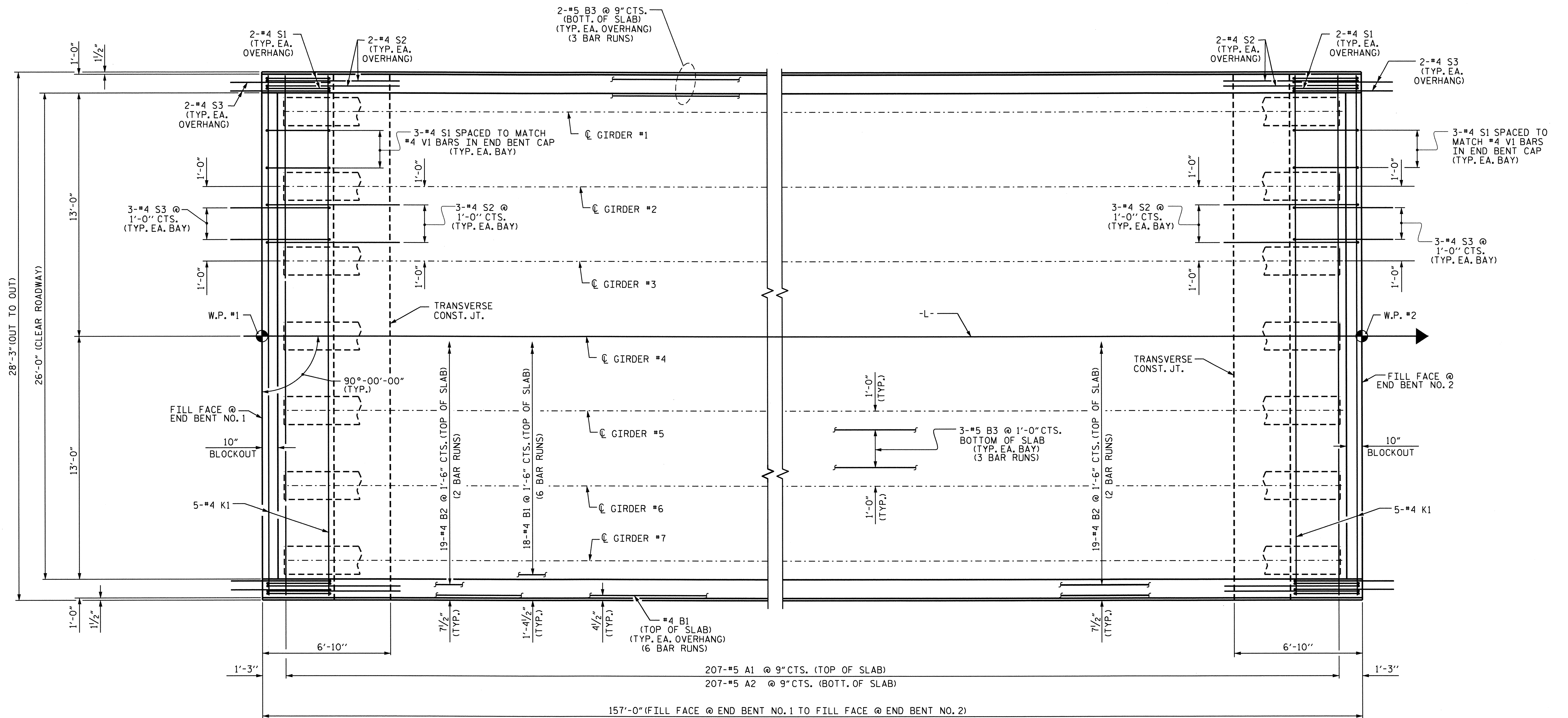


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 CHECKED BY: M.G. CHEEK DATE: 6-10

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REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			27

NC006



PLAN OF SPAN A

PROJECT NO. B-3187
HAYWOOD COUNTY
 STATION: 11+30.50 -L-

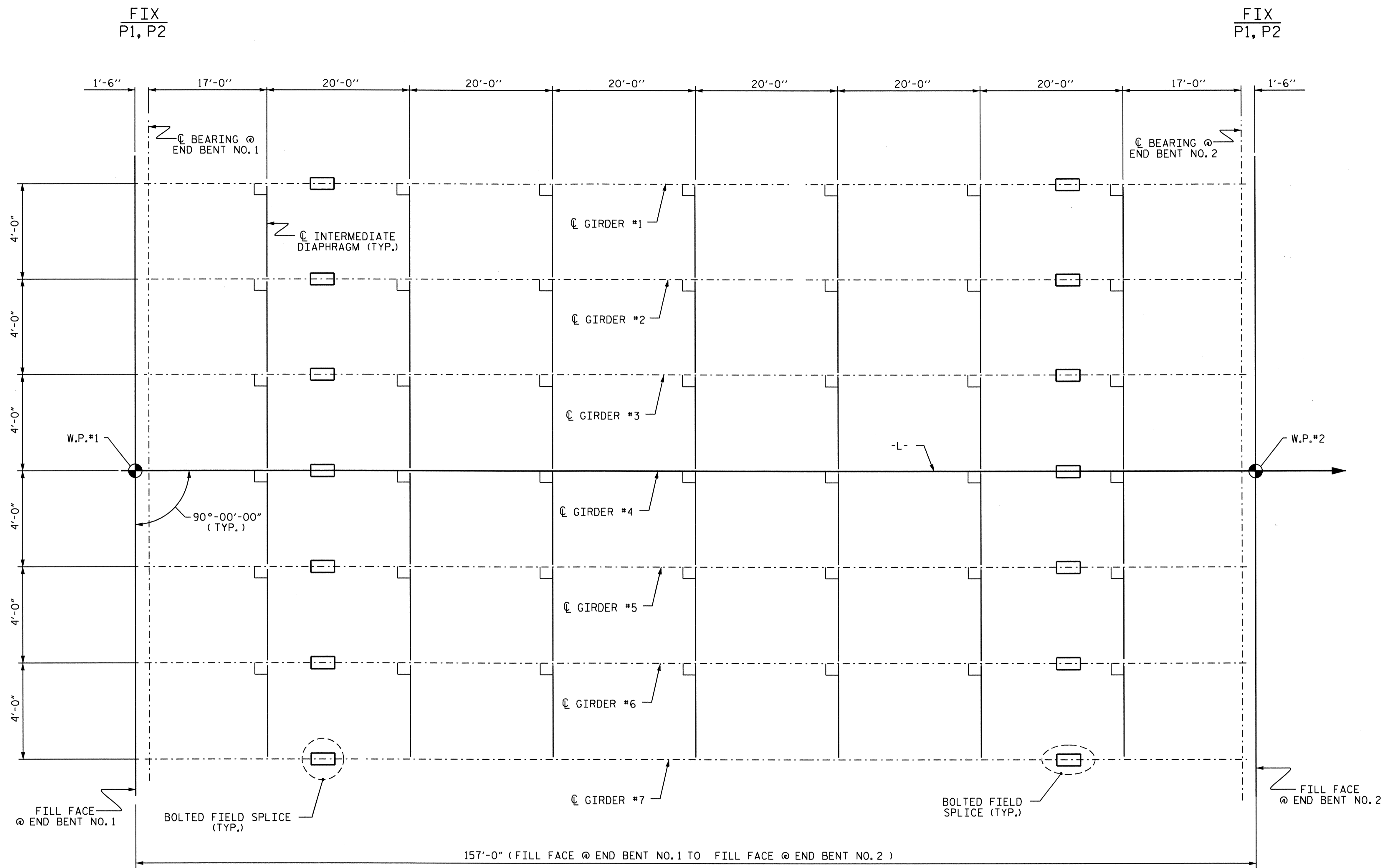
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN A

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1			3			TOTAL SHEETS
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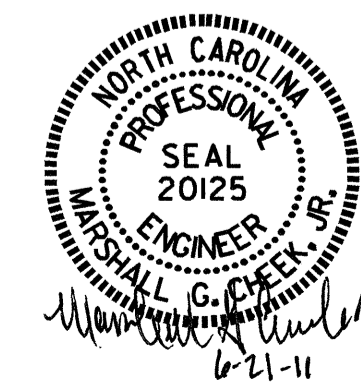
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 CHECKED BY : M.G. CHEEK DATE : 6-10



GIRDER LAYOUT

PROJECT NO. B-3187
HAYWOOD COUNTY
 STATION: 11+30.50 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE GIRDER LAYOUT					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
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TOTAL SHEETS					27



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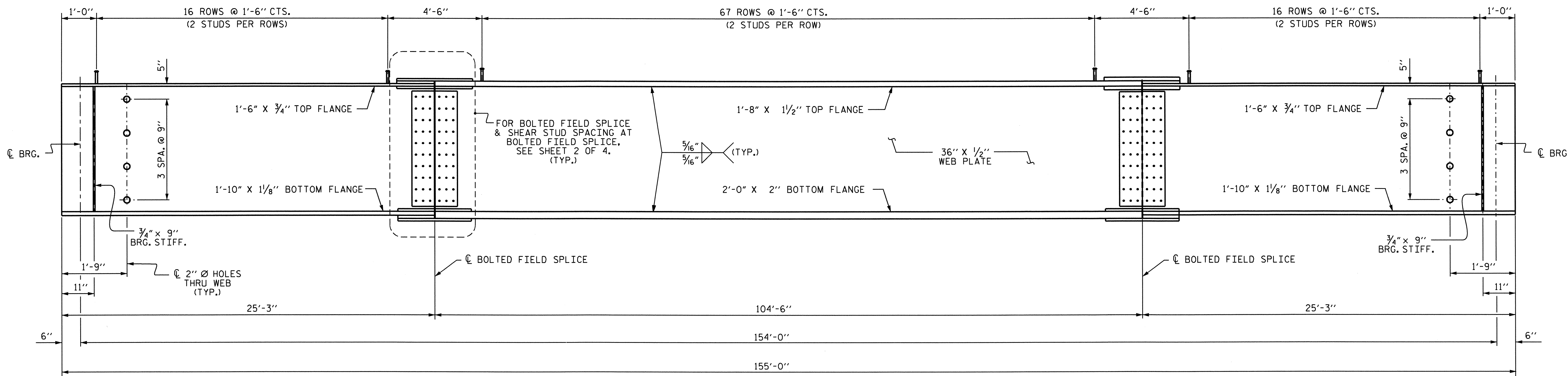
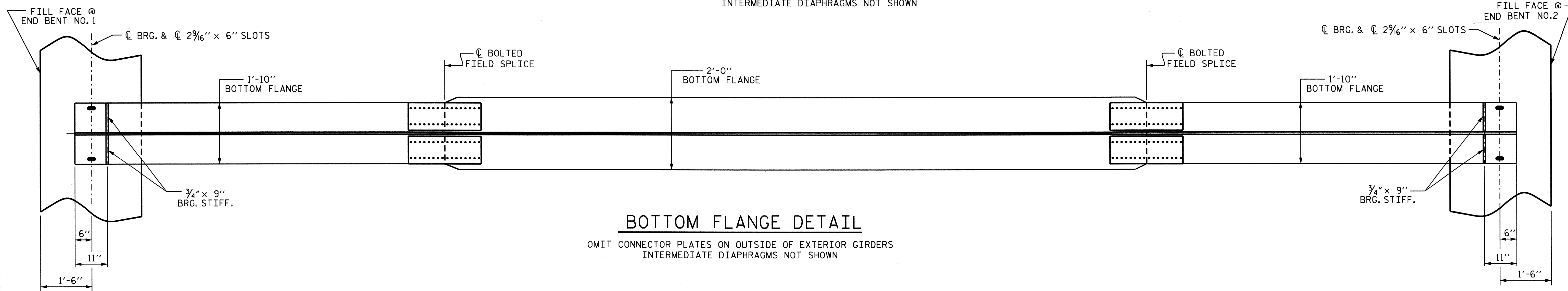
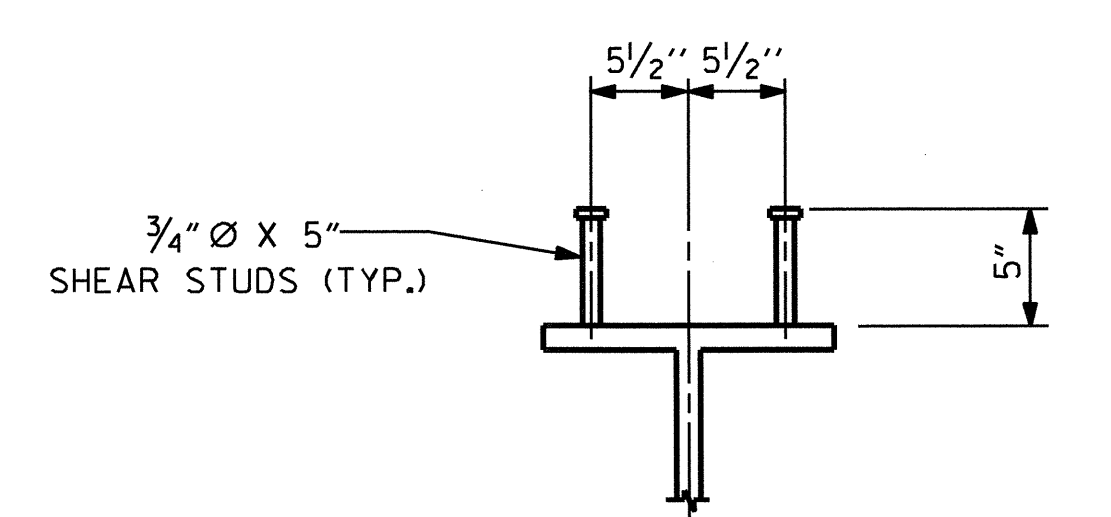


PLATE GIRDER ELEVATION
INTERMEDIATE DIAPHRAGMS NOT SHOWN



BOTTOM FLANGE DETAIL
OMIT CONNECTOR PLATES ON OUTSIDE OF EXTERIOR GIRDERS
INTERMEDIATE DIAPHRAGMS NOT SHOWN



SHEAR STUD DETAILS

PROJECT NO. B-3187
HAYWOOD COUNTY
 STATION: 11+30.50 -L-
 SHEET 1 OF 4

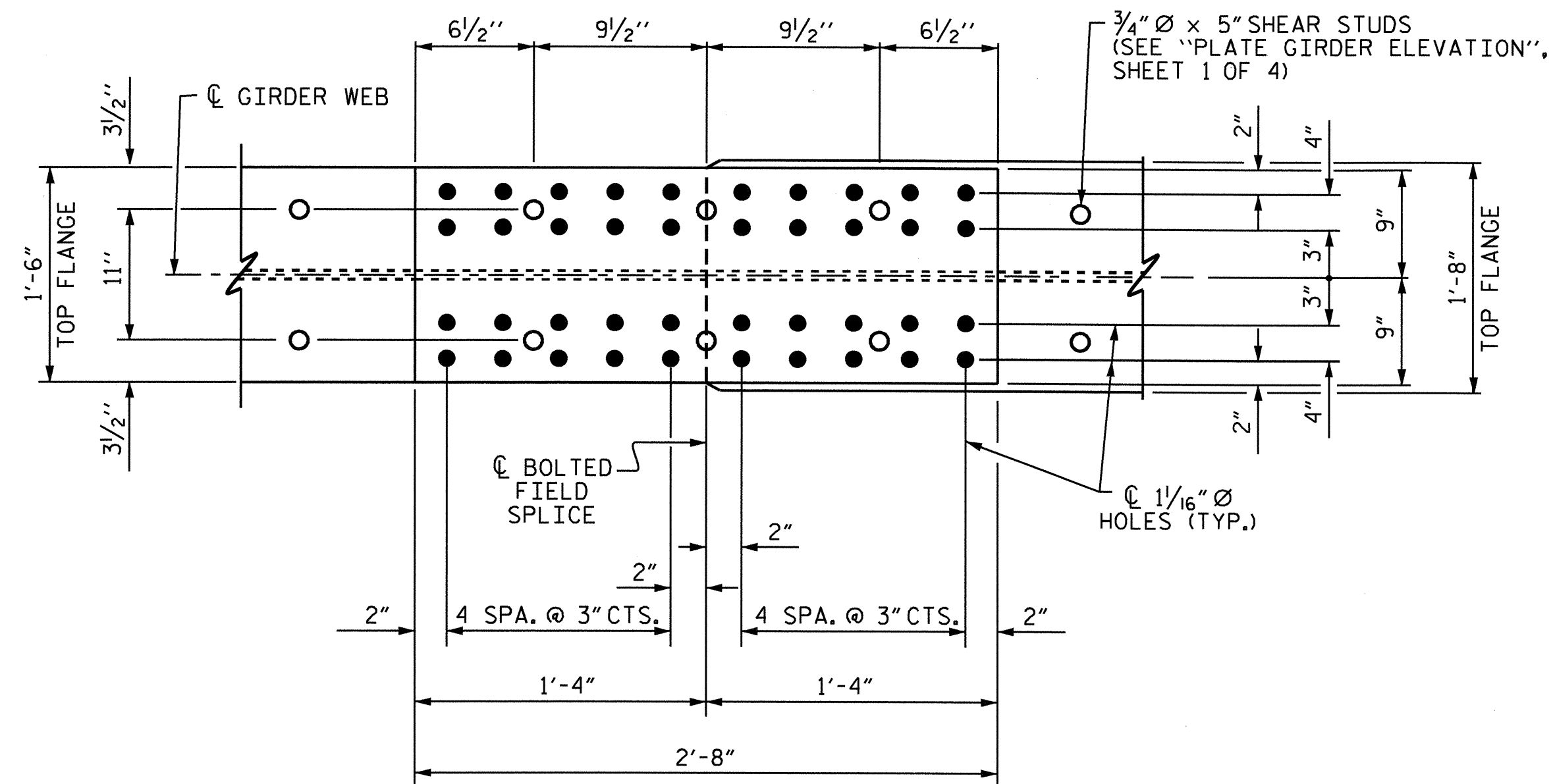
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 STRUCTURAL STEEL
 DETAILS



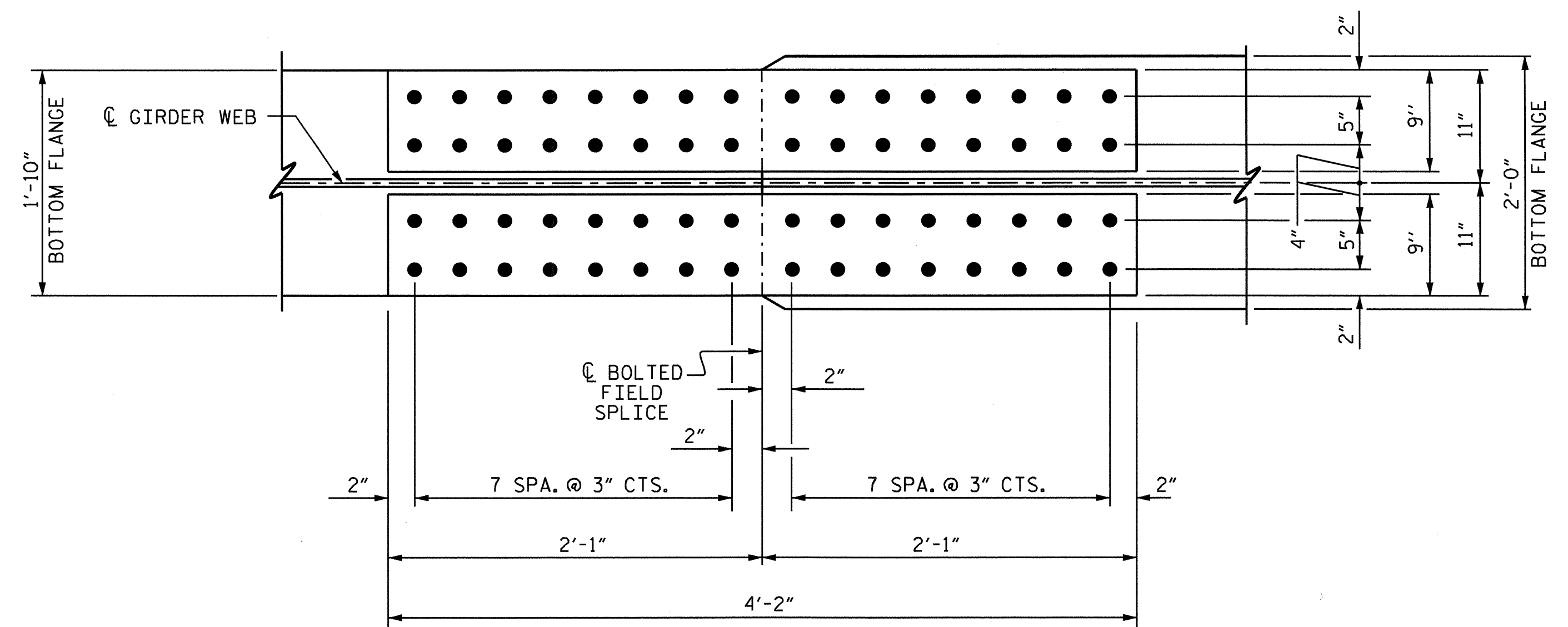
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1			3			TOTAL	27
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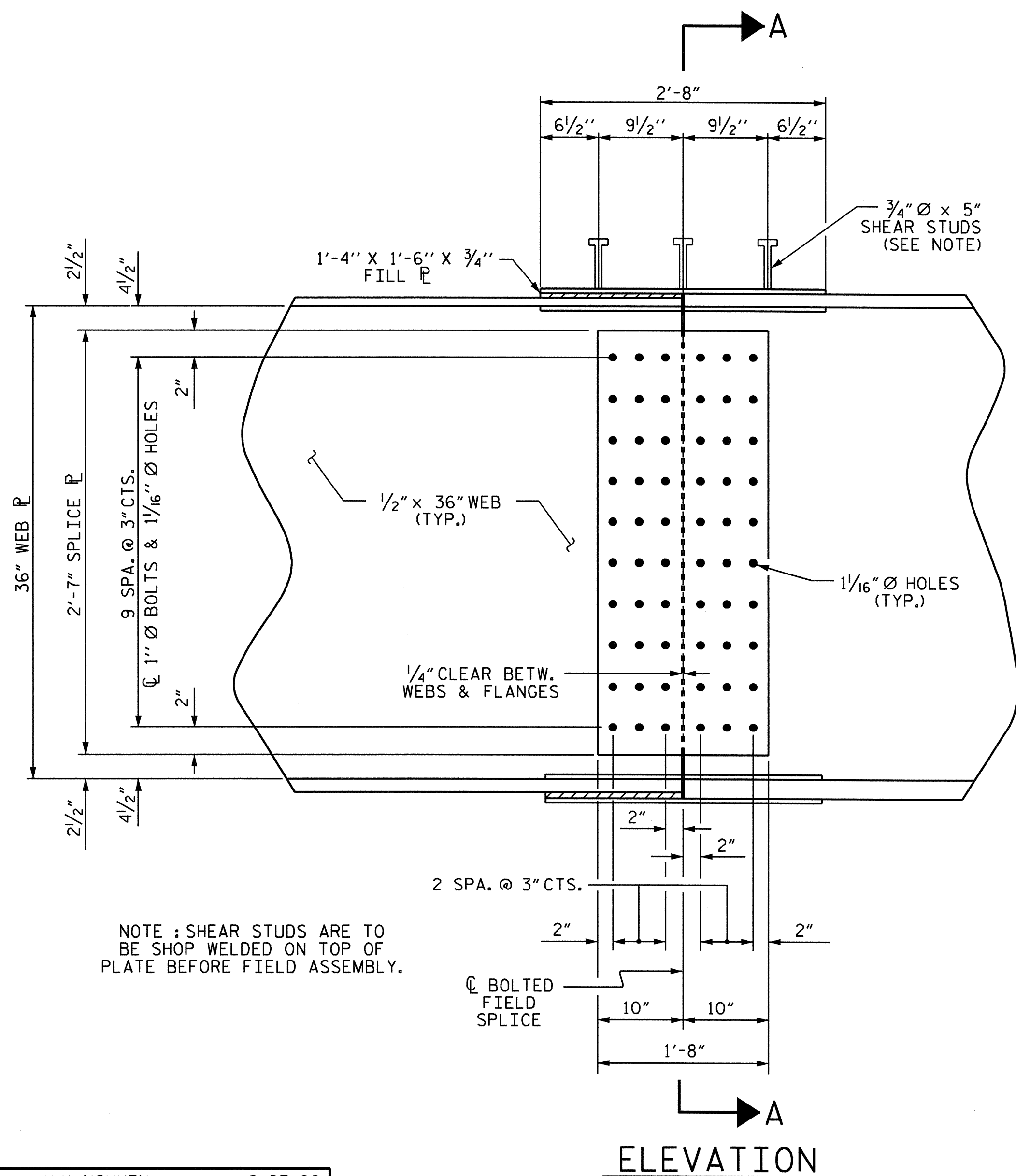
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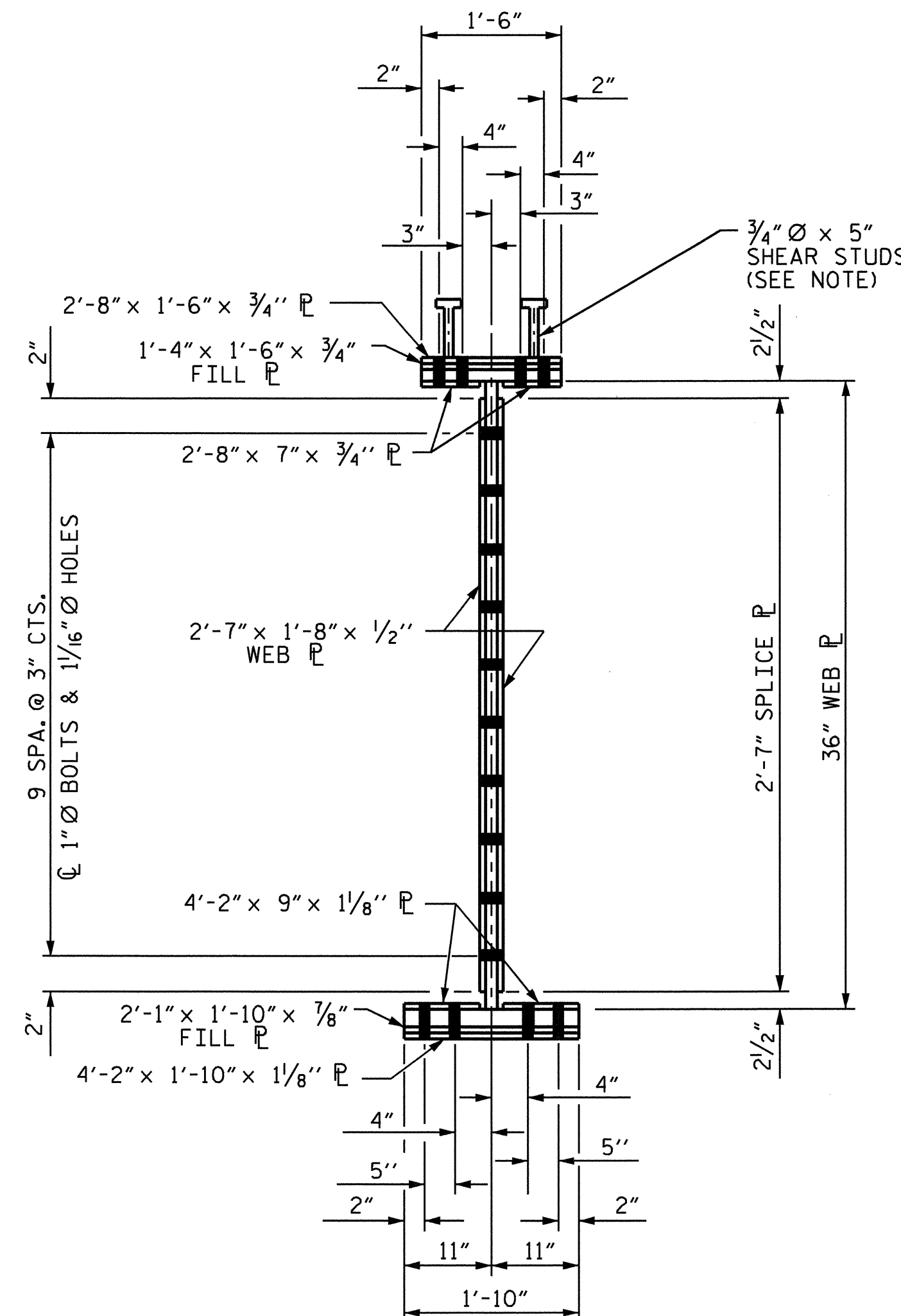
PLAN (TOP OF TOP FLANGE)



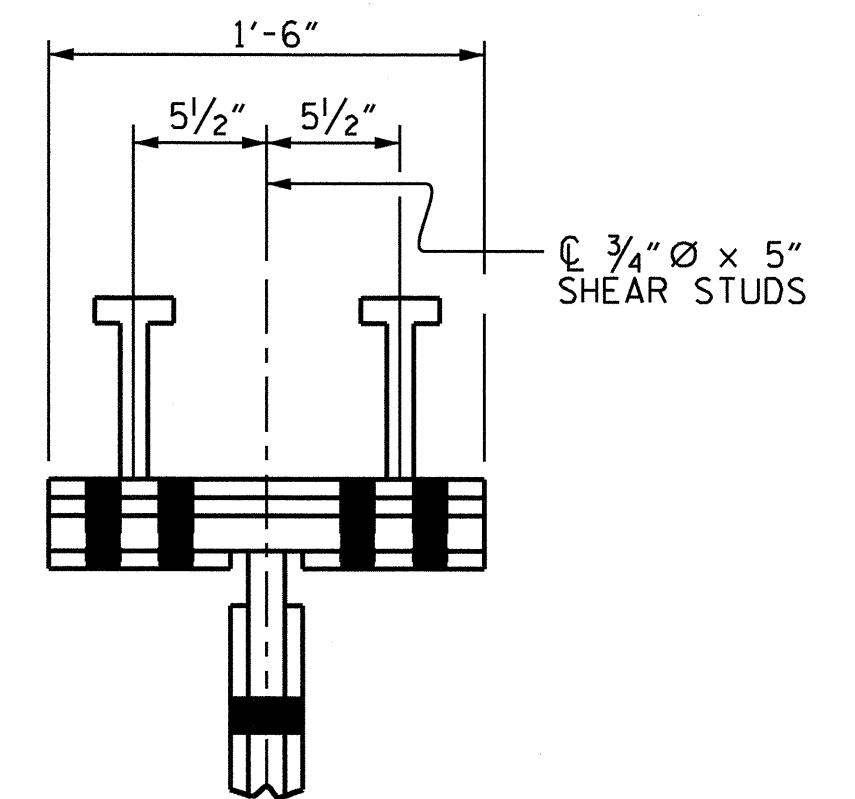
PLAN (TOP OF BOTTOM FLANGE)



ELEVATION



SECTION A-A



SHEAR STUD DETAIL FOR TOP FLANGE SPLICE PLATE

BOLTED FIELD SPLICE DETAILS

TYPICAL EACH FIELD SPLICE

PROJECT NO. B-3187
HAYWOOD COUNTY
 STATION: 11+30.50 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 STRUCTURAL STEEL
 DETAILS



DRAWN BY: V.X. NGUYEN DATE: 8-27-09
 CHECKED BY: M.G. CHEEK DATE: 6/10

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TOTAL SHEETS: 27

NOTES

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W.

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

ALL BOLTED FIELD SPLICE CONNECTIONS ARE TO BE 1" DIAMETER HIGH STRENGTH BOLTS. ALL OTHER FIELD CONNECTIONS ARE TO BE 7/8" DIAMETER HIGH STRENGTH BOLTS. FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.

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

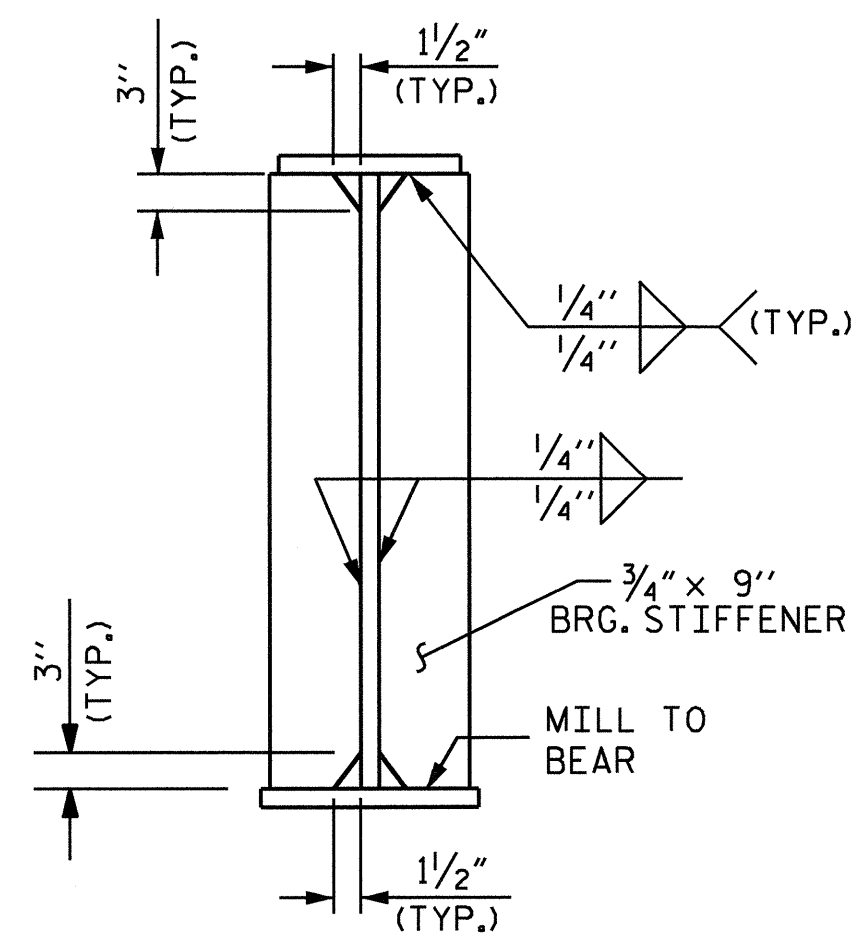
A CHARPY V-NOTCH TEST IS REQUIRED FOR WEB PLATES, BOTTOM FLANGE PLATES, BOTTOM FLANGE SPLICE PLATES, WEB SPLICE PLATES AND TOP FLANGE PLATES WITHIN .2L FT. FROM END OF GIRDER FOR ALL GIRDERS AND IN ACCORDANCE WITH ARTICLE 1072-9 OF THE STANDARD SPECIFICATIONS.

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

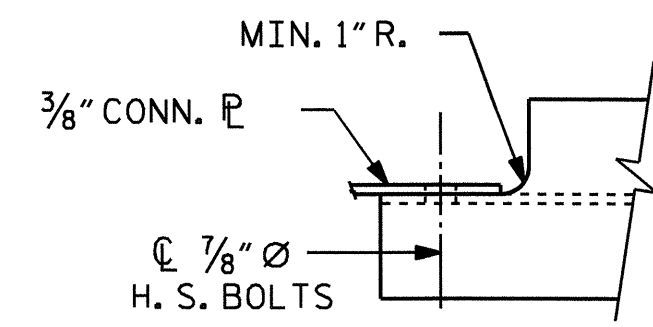
STUDS ON GIRDERS MAY BE SHIFTED UP TO 1" IF NECESSARY TO CLEAR FLANGE SPLICE WELD.

ENDS OF GIRDERS SHALL BE PLUMB.

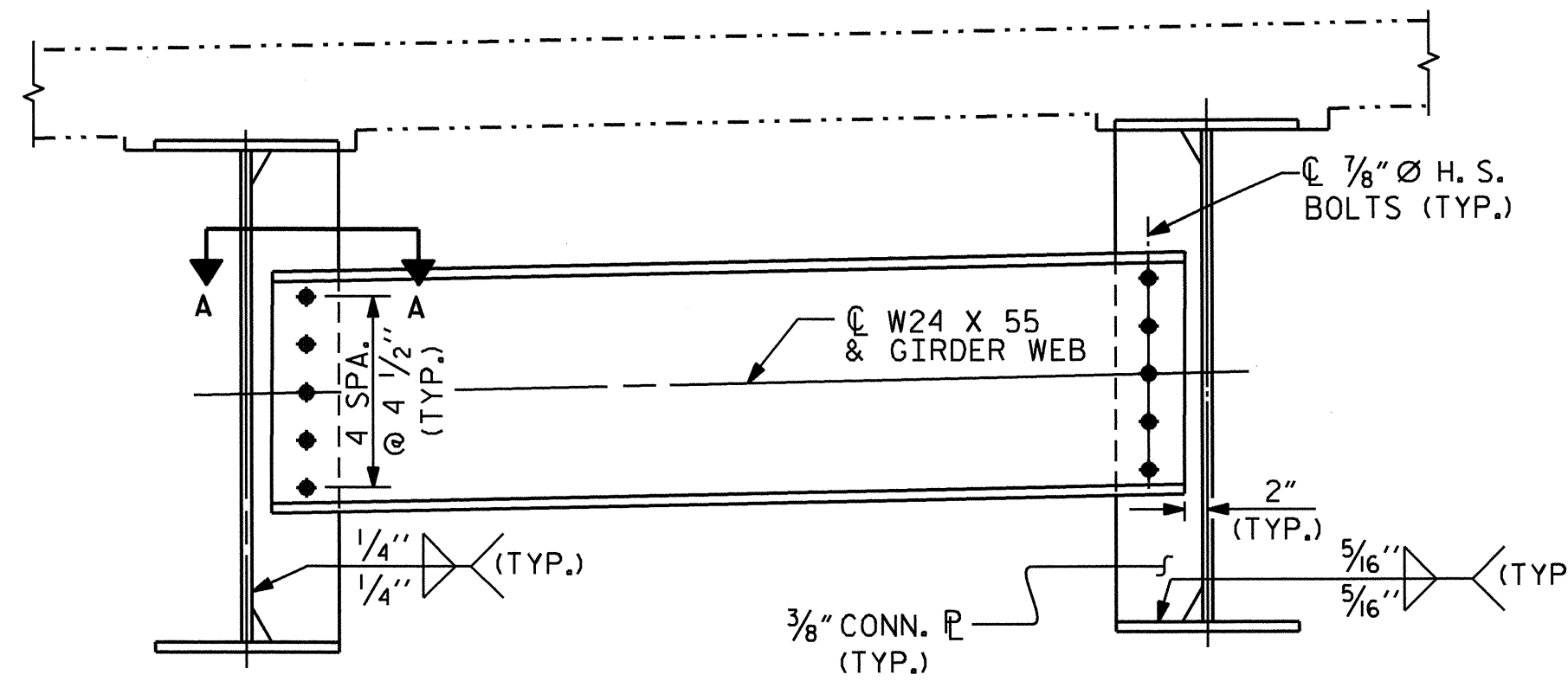
TENSION ON THE AASHTO M164 BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS. FOR DIRECT TENSION INDICATORS, SEE SPECIAL PROVISIONS.



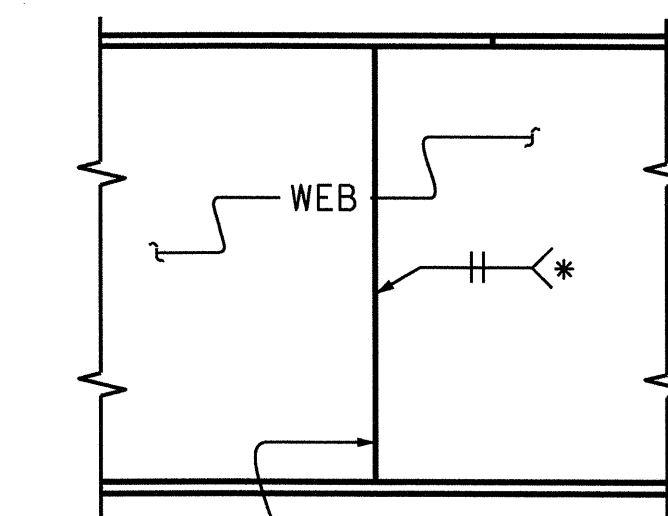
BEARING STIFFENER



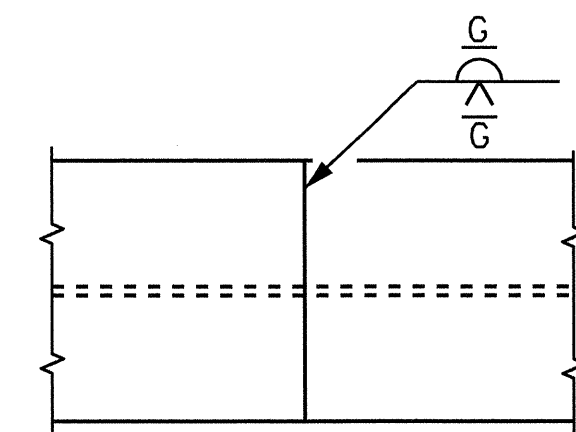
SECTION A-A



INTERMEDIATE DIAPHRAGM



PERMITTED WEB SPLICE

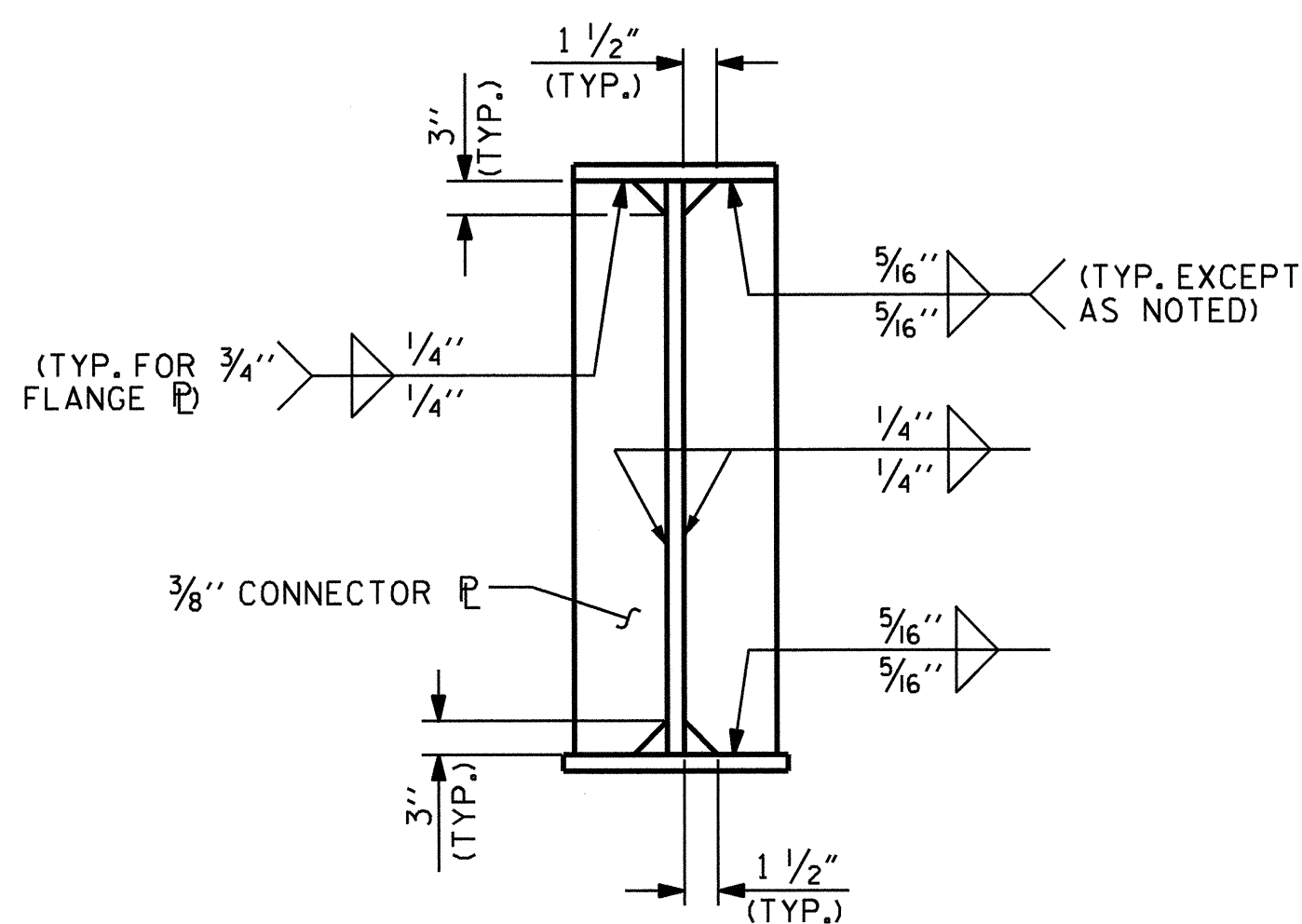


PLAN OF FLANGE

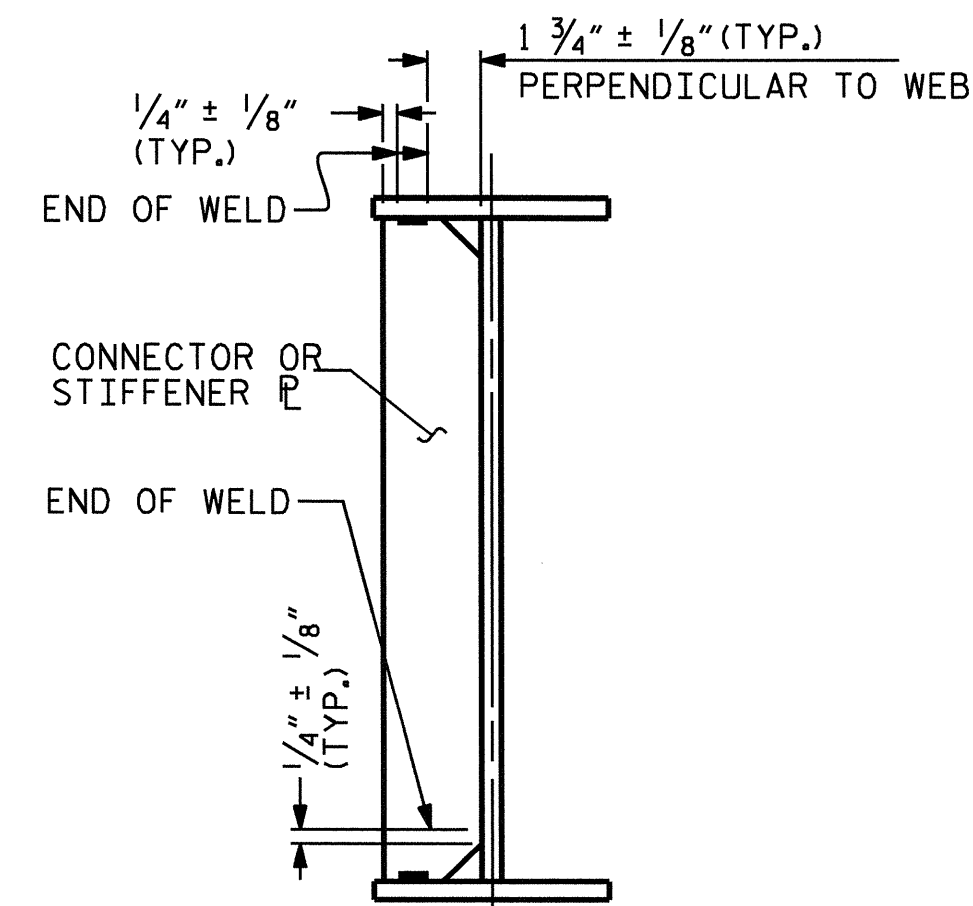
ELEVATION

PERMISSIBLE SHOP FLANGE AND WEB SPLICE

* GRIND SMOOTH AND FLUSH ON OUTSIDE OF EXTERIOR GIRDERS



CONNECTOR PLATE



TYPICAL STIFFENER OR CONNECTOR PLATE CONNECTIONS

WELD TERMINATION DETAILS

PROJECT NO. B-3187
HAYWOOD COUNTY
 STATION: 11+30.50 -L-

SHEET 3 OF 4

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



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

DRAWN BY : V.X. NGUYEN DATE : 8/28/09
 CHECKED BY : M.G. CHEEK DATE : 6/10

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
SPAN A																					
GIRDERS 1 & 7																					
TWENTIETH POINTS	CL BRG.	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	CL BRG.
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.068	0.133	0.192	0.243	0.288	0.326	0.356	0.378	0.392	0.396	0.392	0.378	0.356	0.326	0.288	0.243	0.192	0.133	0.068	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.008	0.016	0.023	0.029	0.035	0.039	0.043	0.046	0.047	0.048	0.047	0.046	0.043	0.039	0.035	0.029	0.023	0.016	0.008	0
DEFLECTION DUE TO WEIGHT OF PARAPET	0	0.011	0.021	0.031	0.039	0.047	0.053	0.058	0.062	0.064	0.065	0.064	0.062	0.058	0.053	0.047	0.039	0.031	0.021	0.011	0
TOTAL DEAD LOAD DEFLECTION	0	0.087	0.170	0.246	0.311	0.370	0.418	0.457	0.486	0.503	0.509	0.503	0.486	0.457	0.418	0.370	0.311	0.246	0.170	0.087	0
REQUIRED CAMBER	0	1/16"	2/16"	2 5/16"	3 3/4"	4 7/16"	5"	5 1/2"	5 3/16"	6 1/16"	6 1/8"	6 1/16"	5 3/16"	5 1/2"	5"	4 7/16"	3 3/4"	2 5/16"	2 1/16"	1 1/16"	0

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
SPAN A																					
GIRDERS 2 & 6																					
TWENTIETH POINTS	CL BRG.	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	CL BRG.
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.068	0.133	0.192	0.243	0.288	0.326	0.356	0.378	0.392	0.396	0.392	0.378	0.356	0.326	0.288	0.243	0.192	0.133	0.068	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.008	0.015	0.021	0.027	0.032	0.036	0.040	0.042	0.044	0.044	0.044	0.042	0.040	0.036	0.032	0.027	0.021	0.015	0.008	0
DEFLECTION DUE TO WEIGHT OF PARAPET	0	0.011	0.021	0.031	0.039	0.047	0.053	0.058	0.062	0.064	0.065	0.064	0.062	0.058	0.053	0.047	0.039	0.031	0.021	0.011	0
TOTAL DEAD LOAD DEFLECTION	0	0.087	0.169	0.244	0.309	0.367	0.415	0.454	0.482	0.500	0.505	0.500	0.482	0.454	0.415	0.367	0.309	0.244	0.169	0.087	0
REQUIRED CAMBER	0	1/16"	2/16"	2 5/16"	3 1/16"	4 3/8"	5"	5 7/16"	5 3/16"	6"	6 1/16"	6"	5 3/16"	5 7/16"	5"	4 3/8"	3 1/16"	2 5/16"	2 1/16"	1 1/16"	0

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

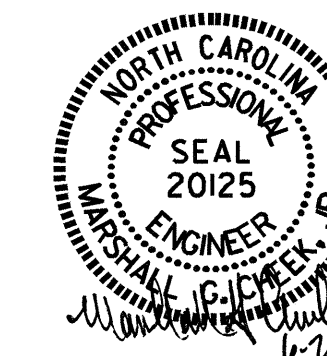
DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
SPAN A																					
GIRDERS 3, 4 & 5																					
TWENTIETH POINTS	CL BRG.	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	CL BRG.
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.068	0.133	0.192	0.243	0.288	0.326	0.356	0.378	0.392	0.396	0.392	0.378	0.356	0.326	0.288	0.243	0.192	0.133	0.068	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.007	0.014	0.020	0.025	0.030	0.033	0.037	0.039	0.040	0.041	0.040	0.039	0.037	0.033	0.030	0.025	0.020	0.014	0.007	0
DEFLECTION DUE TO WEIGHT OF PARAPET	0	0.011	0.021	0.031	0.039	0.047	0.053	0.058	0.062	0.064	0.065	0.064	0.062	0.058	0.053	0.047	0.039	0.031	0.021	0.011	0
TOTAL DEAD LOAD DEFLECTION	0	0.086	0.168	0.243	0.307	0.365	0.412	0.451	0.479	0.496	0.502	0.496	0.479	0.451	0.412	0.365	0.307	0.243	0.168	0.086	0
REQUIRED CAMBER	0	1/16"	2"	2 5/16"	3 1/16"	4 3/8"	4 5/16"	5 7/16"	5 3/4"	5 5/16"	6"	5 5/16"	5 3/4"	5 7/16"	4 5/16"	4 3/8"	3 1/16"	2 5/16"	2"	1 1/16"	0

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

PROJECT NO. B-3187
HAYWOOD COUNTY
STATION: 11+30.50 -L-

SHEET 4 OF 4

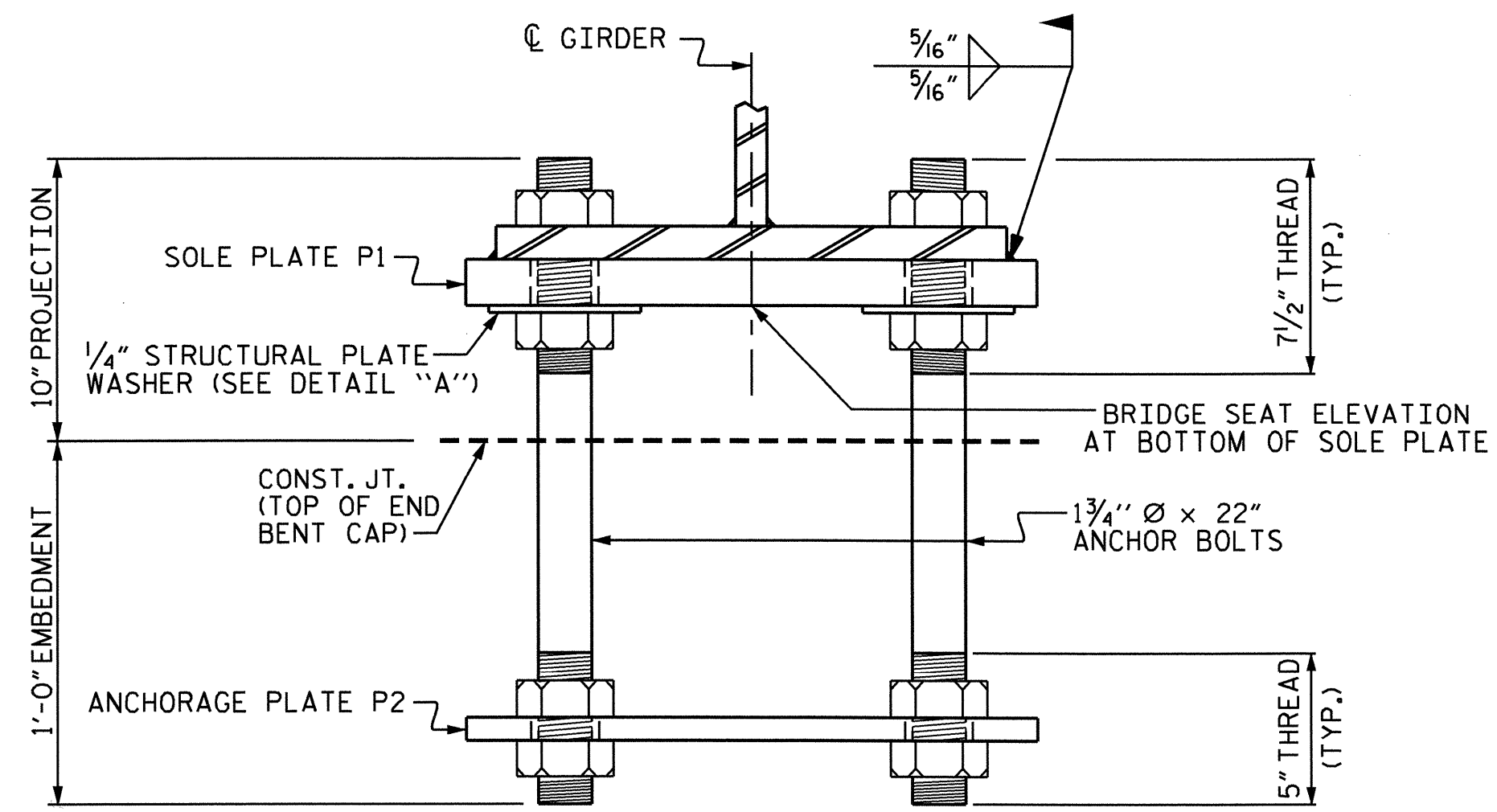
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
DEAD LOAD
DEFLECTIONS



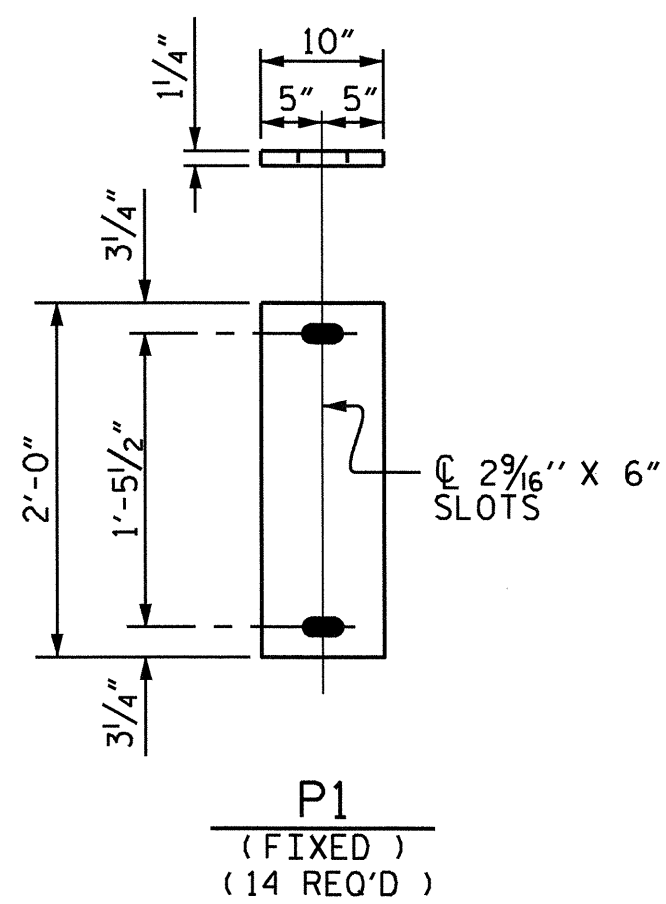
DRAWN BY: V.X. NGUYEN DATE: 8/26/10
CHECKED BY: M.G. CHEEK DATE: 06/10

16-JUN-2011 11:43
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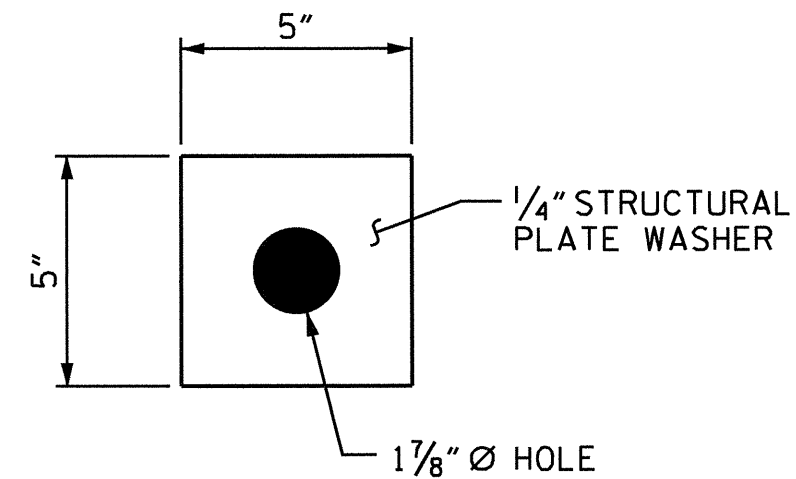
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			27



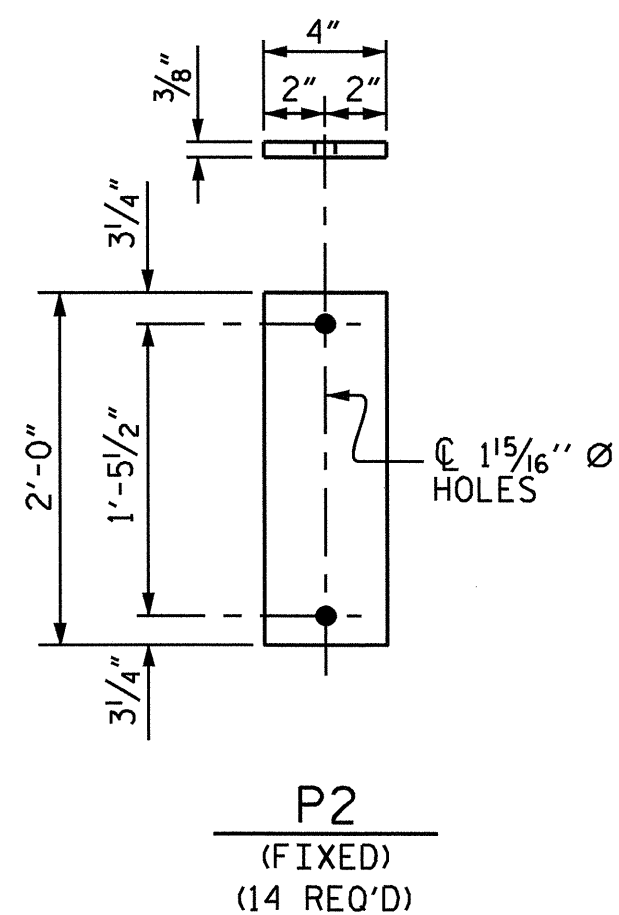
FIXED
END VIEW



P1
(FIXED)
(14 REQ'D)
SOLE PLATE DETAILS



DETAIL A



P2
(FIXED)
(14 REQ'D)
ANCHORAGE PLATE DETAILS

NOTES

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

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

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

PAYMENT FOR ANCHOR BOLTS, SOLE PLATES, AND ANCHORAGE PLATES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR STRUCTURAL STEEL.

PROJECT NO. B-3187
HAYWOOD COUNTY
STATION: 11+30.50 -L-

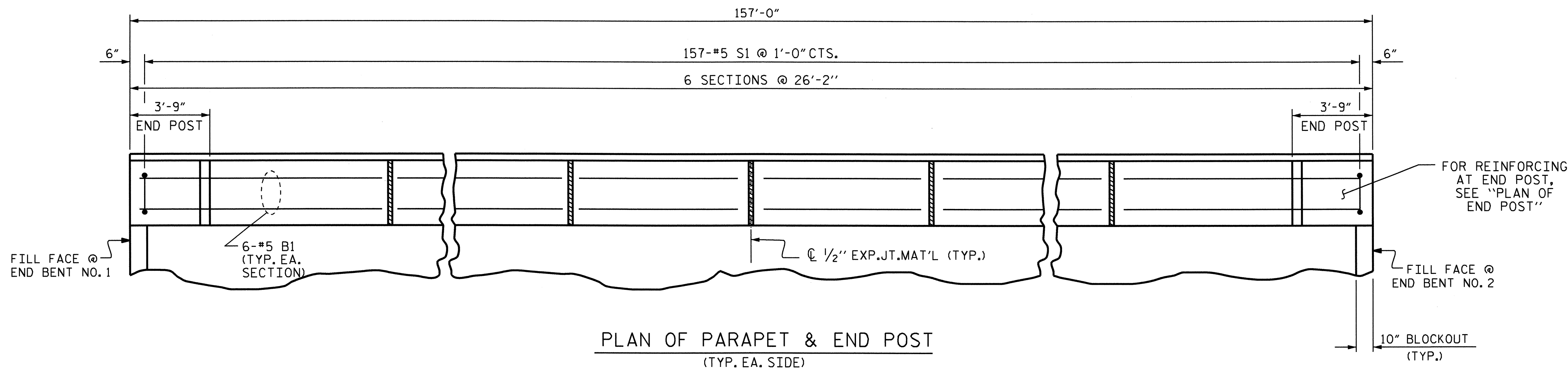
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
BEARING DETAILS

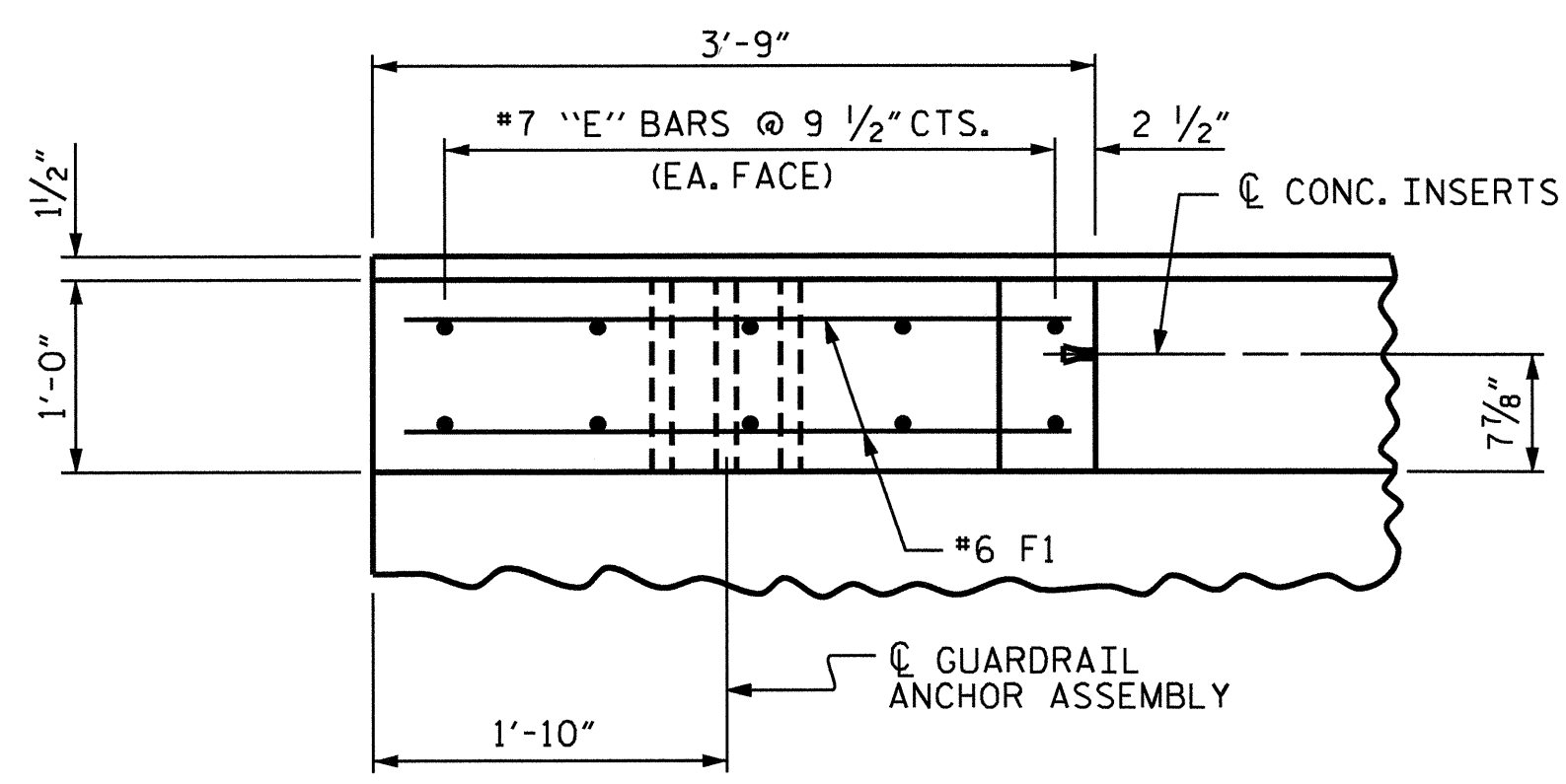


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			27

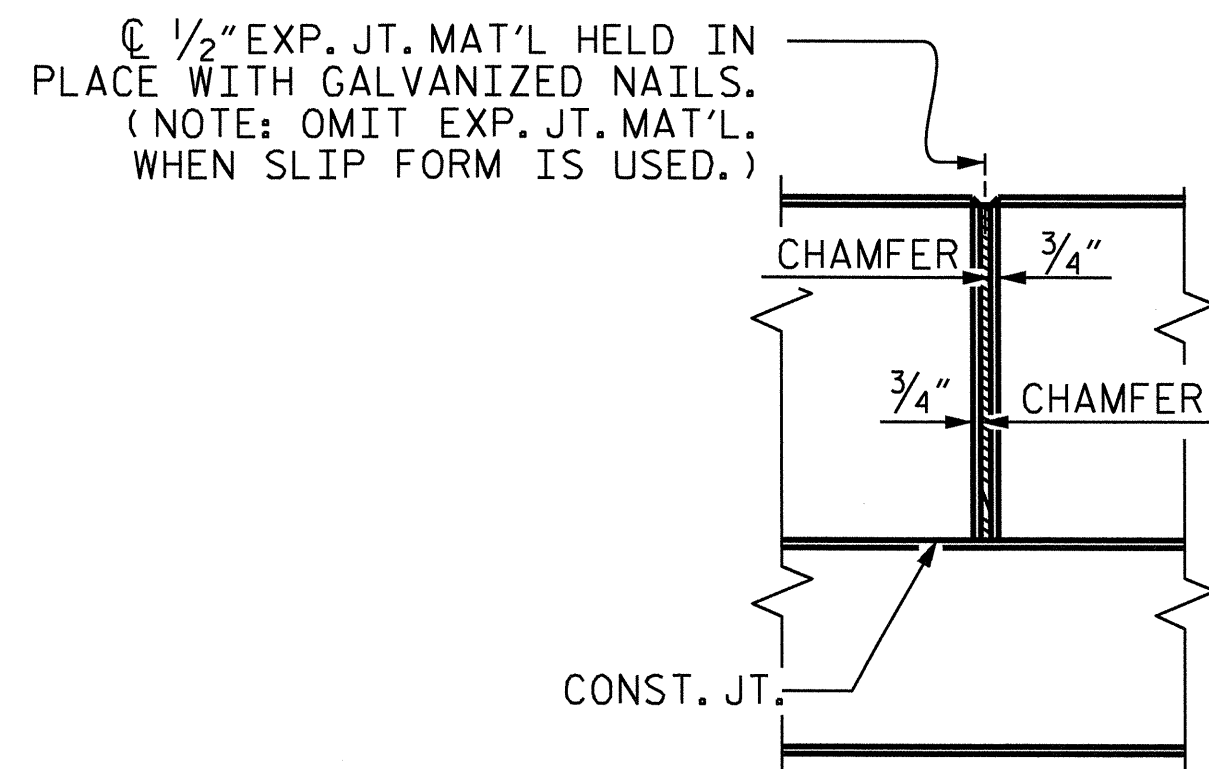
DRAWN BY : V. X. NGUYEN DATE : 8-28-09
CHECKED BY : M.G. CHEEK DATE : 6/10



PLAN OF PARAPET & END POST
(TYP. EA. SIDE)



PLAN OF END POST



ELEVATION AT JOINT DETAIL

NOTES

FOR DETAILS OF CONCRETE INSERT AND GUARDRAIL ANCHOR ASSEMBLY, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEETS.

ALL REINFORCING STEEL IN CONCRETE PARAPET SHALL BE EPOXY COATED.

THE REINFORCING STEEL & CONCRETE IN THE END POSTS IS INCLUDED IN THE UNIT PRICE BID FOR THE CONCRETE PARAPET.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION 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.

BILL OF MATERIAL

CONCRETE PARAPET & END POSTS

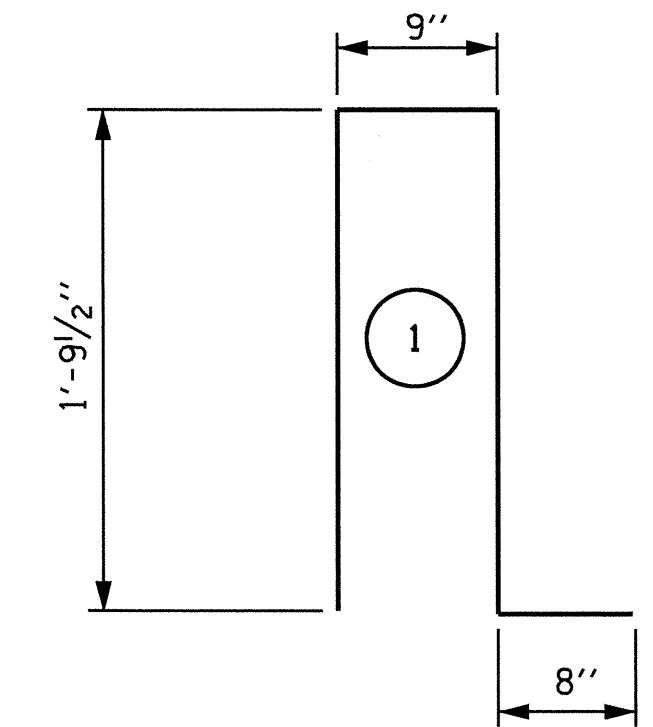
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	72	5	STR	25'-9"	1934
* E1	8	7	STR	2'-0"	33
* E2	8	7	STR	2'-2"	35
* E3	8	7	STR	2'-4"	38
* E4	8	7	STR	2'-6"	41
* E5	8	7	STR	2'-7"	42
* F1	16	6	STR	3'-5"	82
* S1	314	5	1	5'-0"	1638

* EPOXY COATED REINFORCING STEEL 3843 LBS.

CLASS AA CONCRETE 18.0 C.Y.

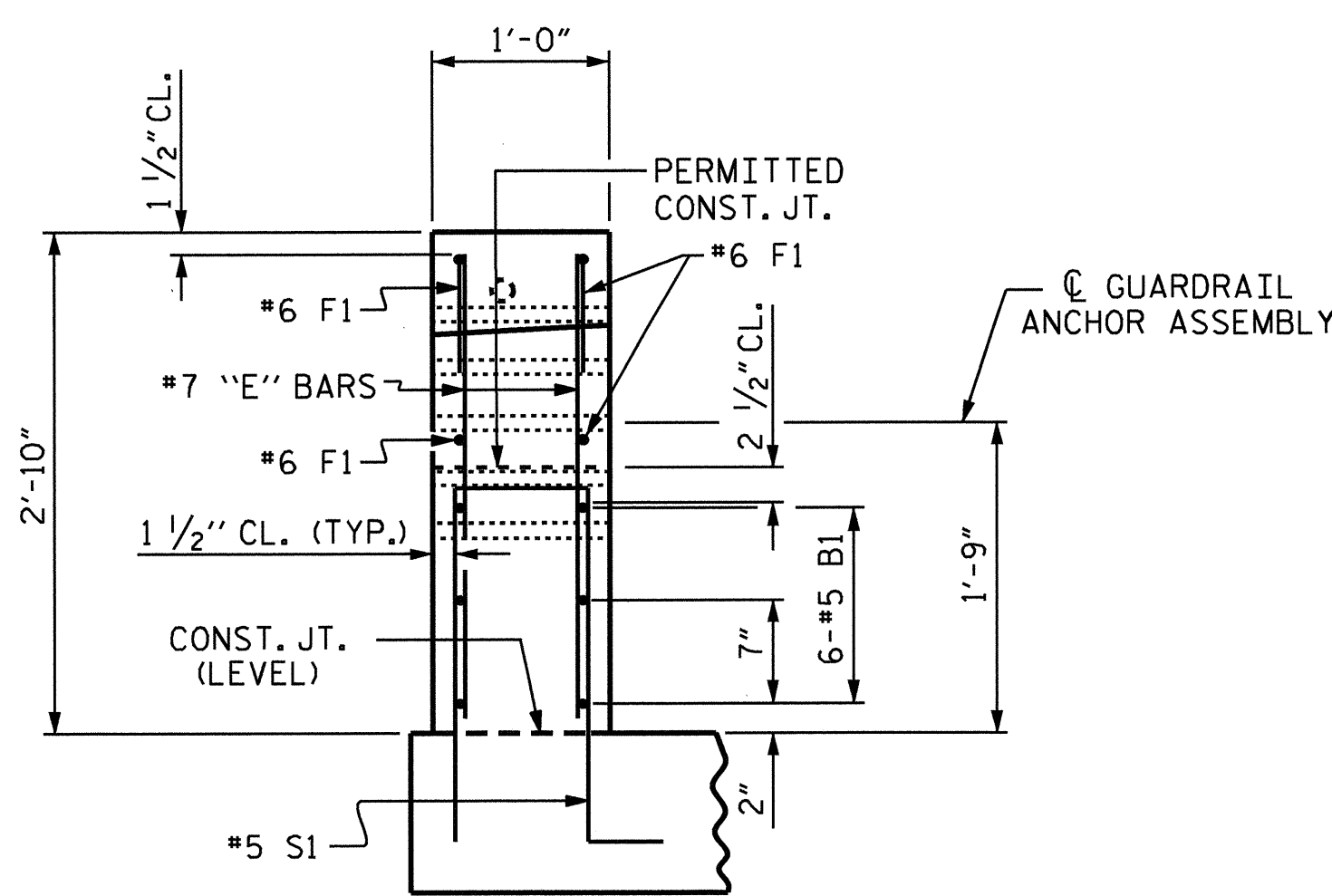
1'-0" x 1'-6" CONCRETE PARAPET 314.00 LIN. FEET

BAR TYPE

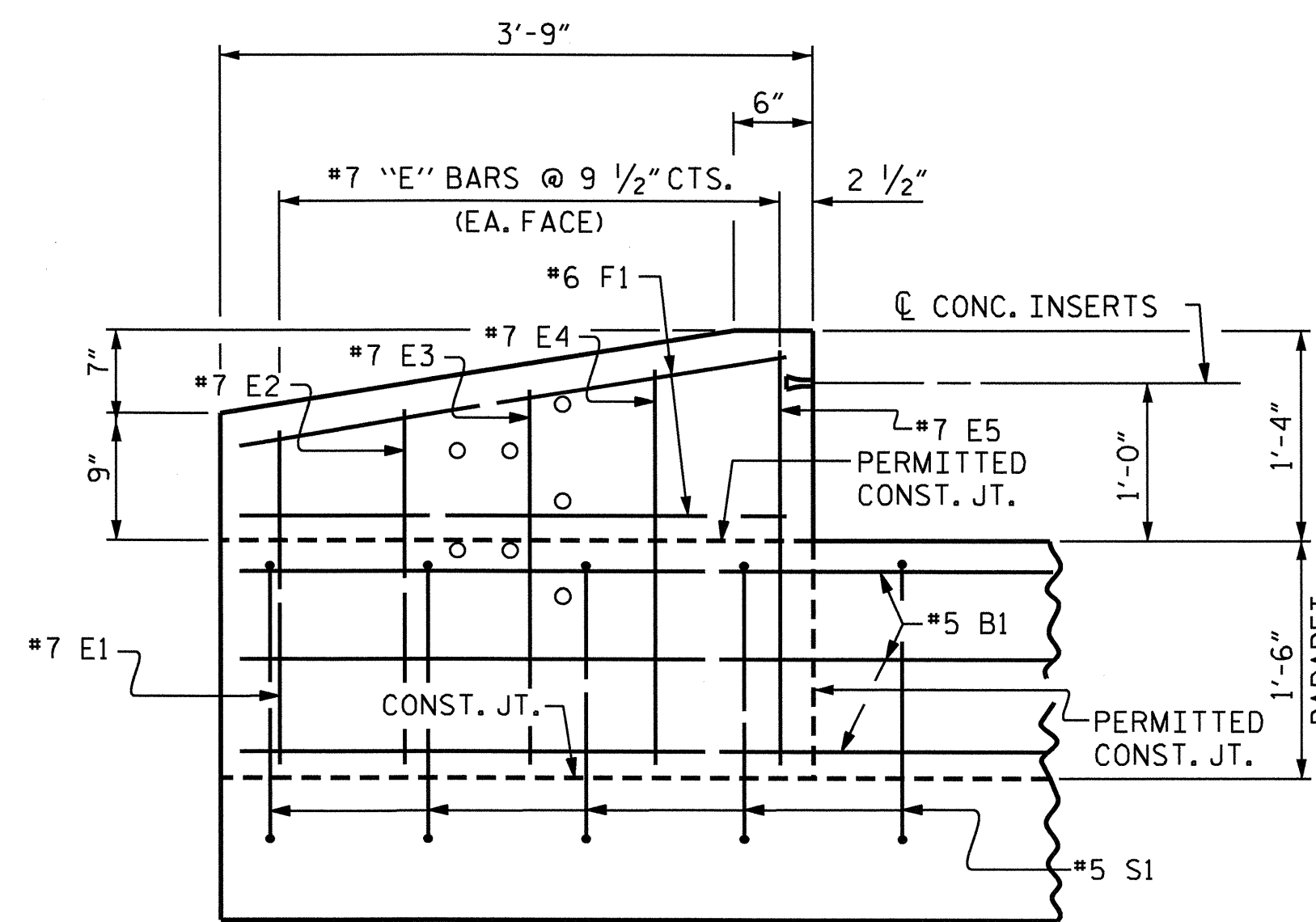


BAR DIMENSIONS ARE OUT TO OUT

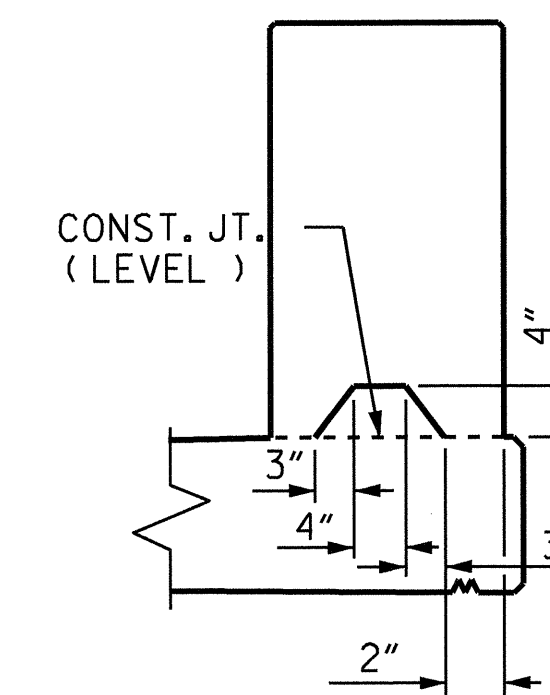
* THESE BARS ARE EPOXY COATED



END VIEW



ELEVATION



SECTION S-S

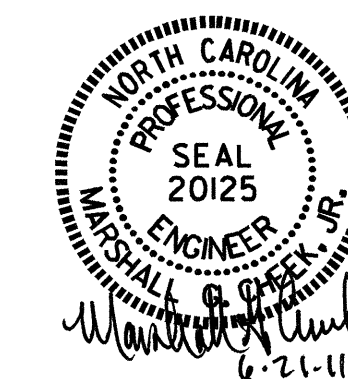
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

PROJECT NO. B-3187
HAYWOOD COUNTY
STATION: 11+30.50 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

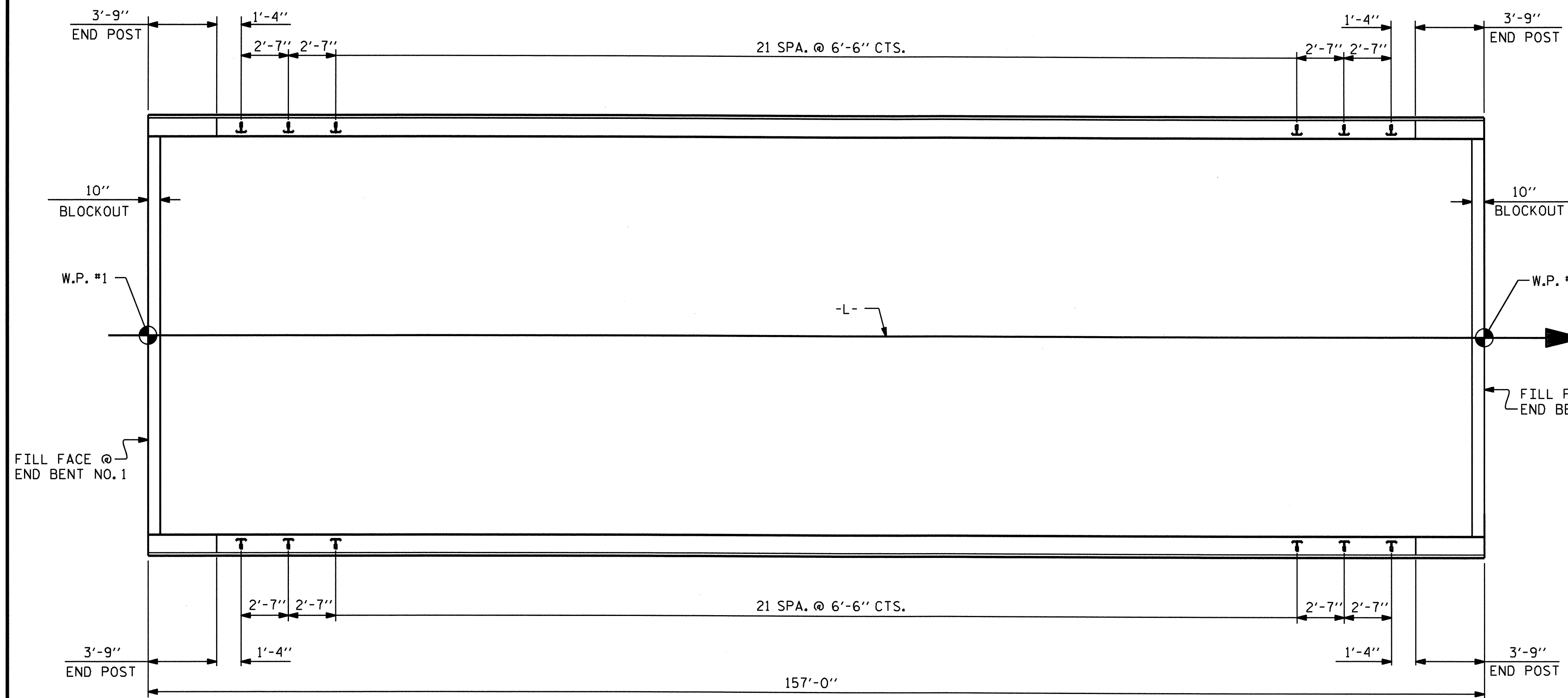
1'-0" X 1'-6"
CONCRETE PARAPET
FOR
1 BAR METAL RAIL



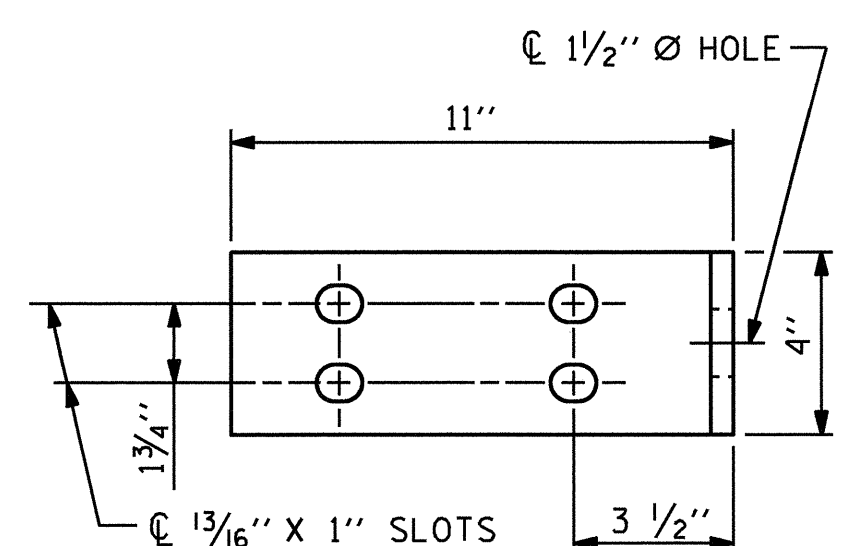
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

S-13
TOTAL SHEETS
27

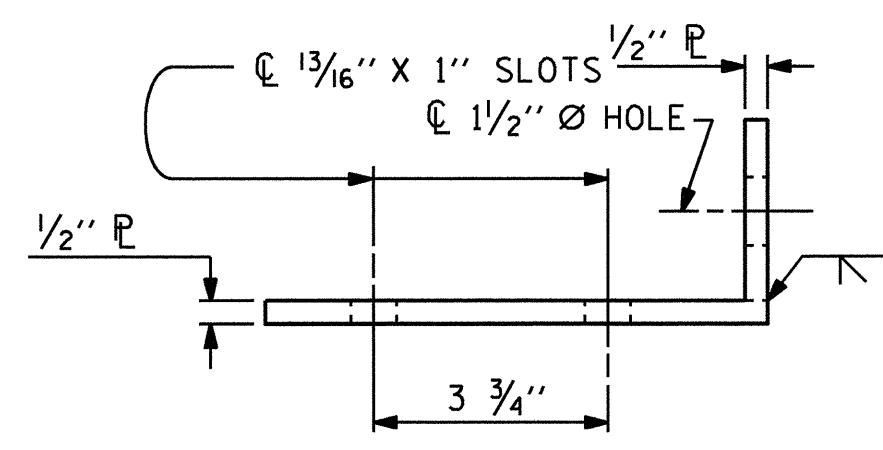
DRAWN BY: V. X. NGUYEN DATE: 8-28-09
CHECKED BY: M. G. CHEEK DATE: 6-10



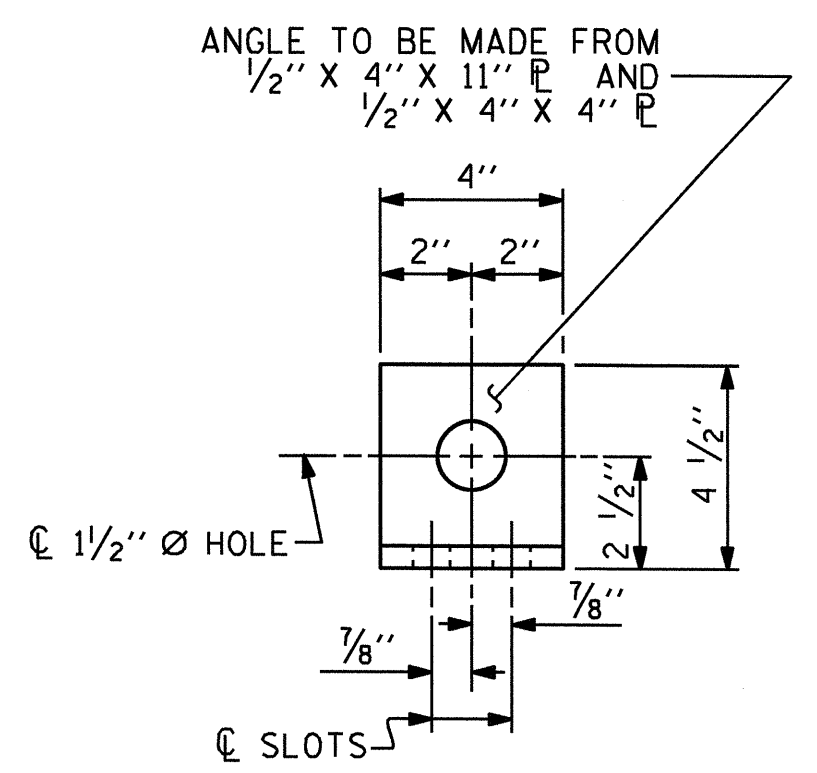
PLAN OF RAIL POST SPACINGS



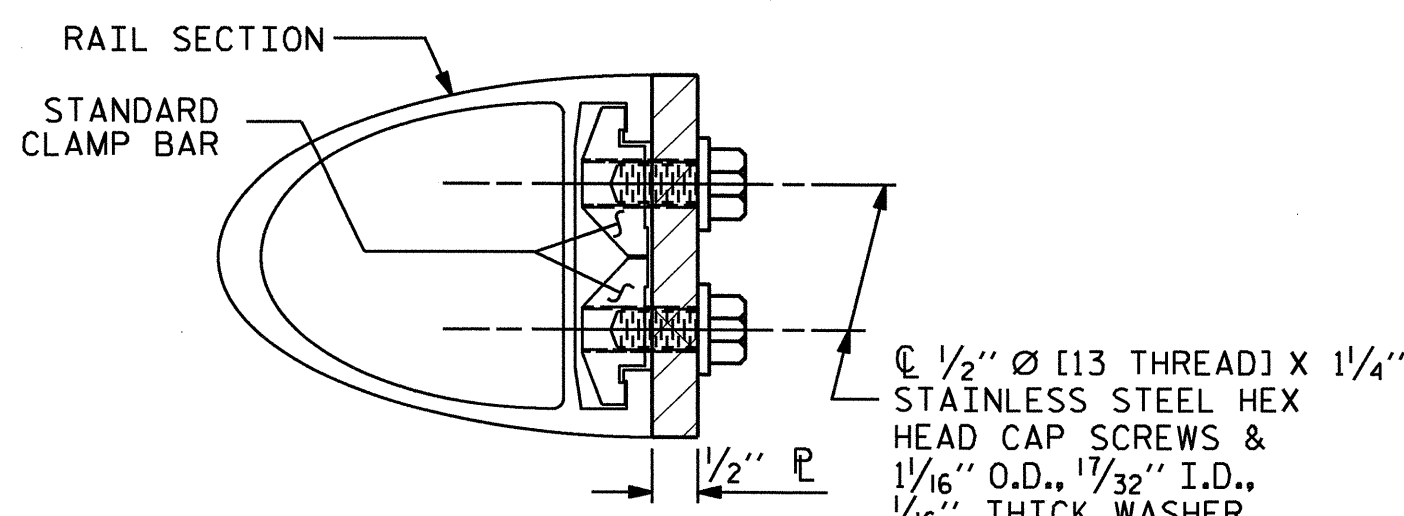
ELEVATION



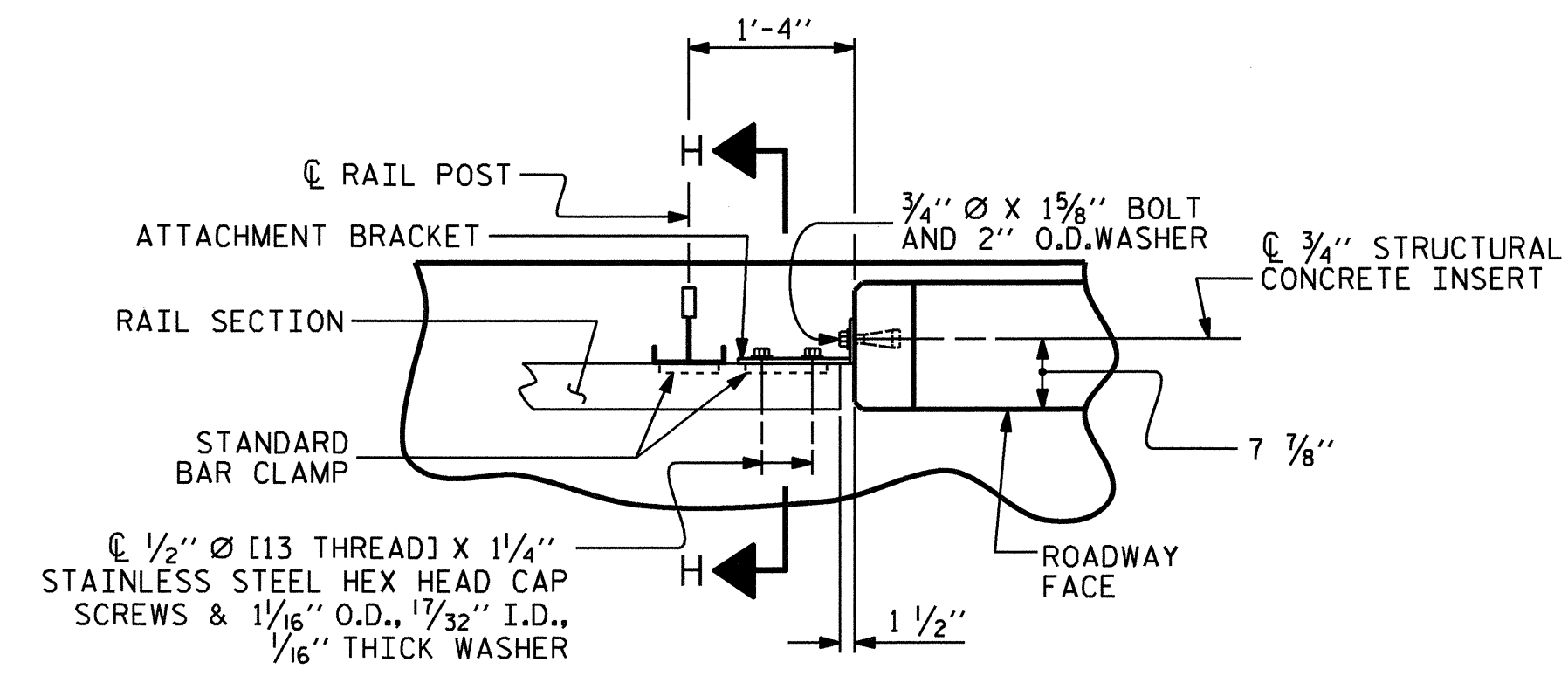
TOP VIEW



END VIEW (FIX AND EXP.)



SECTION H-H (FIX)



PLAN - RAIL AND END POST

DETAILS FOR ATTACHING METAL RAIL TO END POST

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

NOTES

METAL RAIL TO END POST CONNECTION

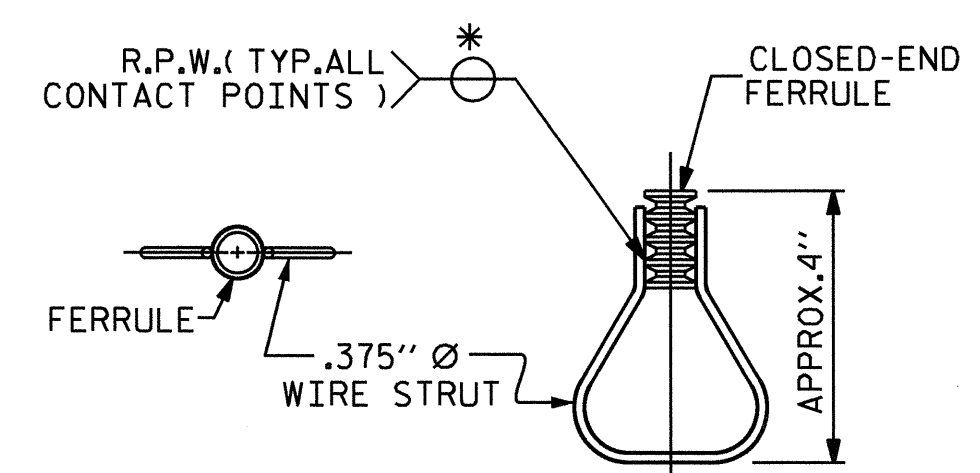
- THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
 - B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A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

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

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

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

THE CONTRACTOR, 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 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 5/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



PLAN ELEVATION

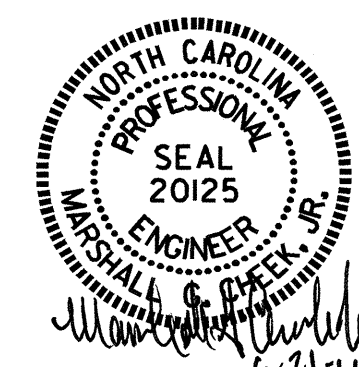
STRUCTURAL CONCRETE INSERT

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

PROJECT NO. B-3187
HAYWOOD COUNTY
 STATION: 11+30.50 -L-

SHEET 2 OF 4

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



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			27

ASSEMBLED BY : V. X. NGUYEN	DATE : 8-28-09
CHECKED BY : M.G. CHEEK	DATE : 6-10
DRAWN BY : FCJ 1/88	REV. 10/17/00 LES/RDR
CHECKED BY : CRK 3/89	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

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

MATERIALS 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.

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

GENERAL NOTES

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

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

MATERIAL FOR ANCHOR STUDS SHALL BE ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. STUDS TO BE EMBEDDED 7" IN CONCRETE. NUTS SHALL BE AMERICAN STANDARD FINISHED HEXAGON THICK, CLASS 2B THREAD, AND MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL. ANCHOR P SHALL BE AASHTO M270 GRADE 36.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 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.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

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

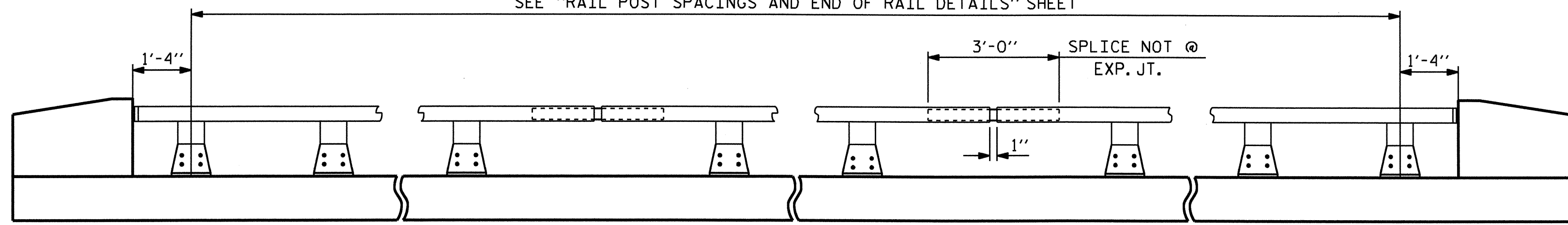
MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE ANCHOR ASSEMBLY. LEVEL TWO FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS, NUTS AND WASHERS SHALL MEET THE SAME REQUIREMENTS AS THE ANCHOR STUDS, NUTS AND WASHERS FOR USE WITH THE ANCHOR ASSEMBLY.

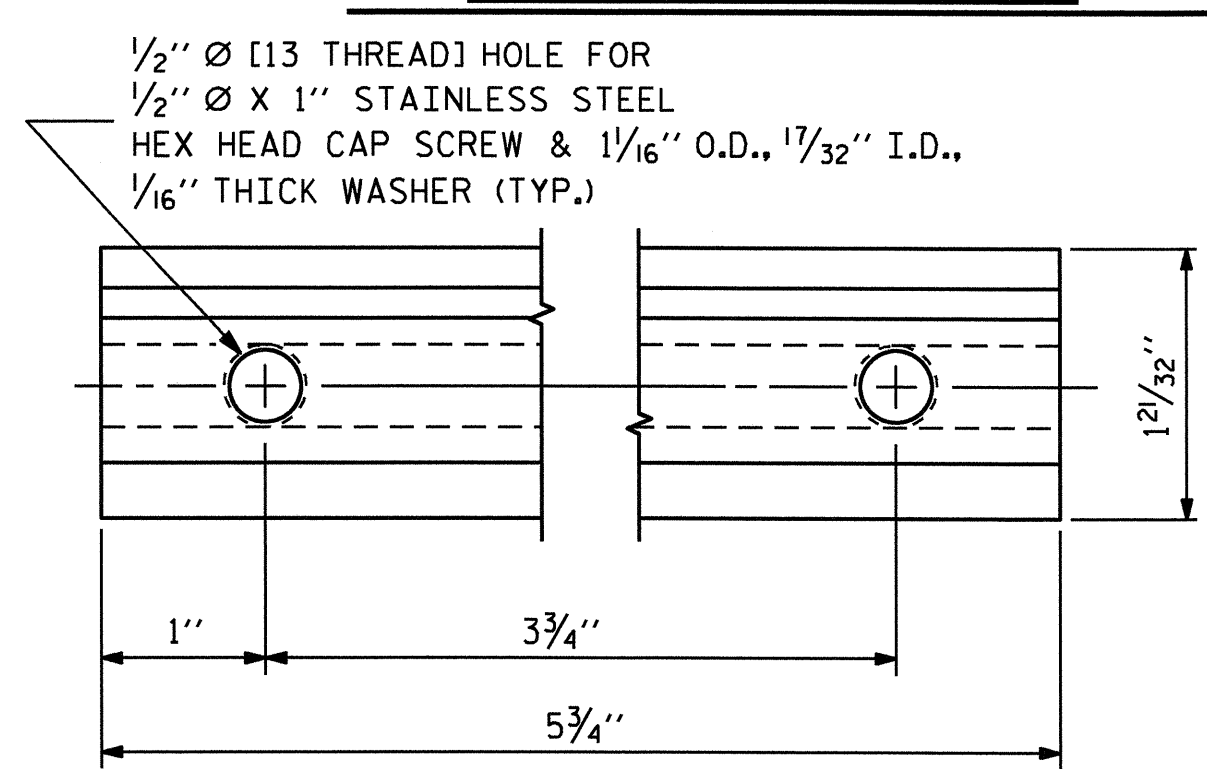
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT A SPACING OF 8FT. TO 10FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR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

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



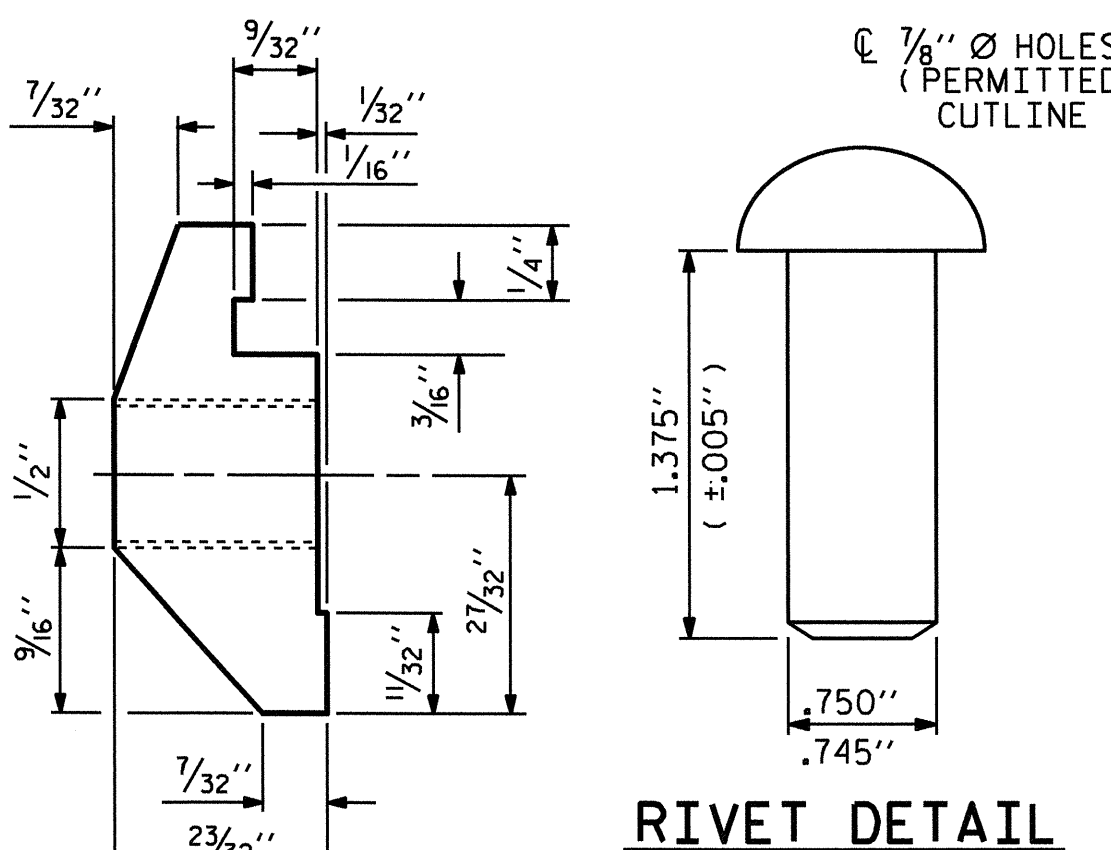
NOTE:
FOR ATTACHMENT OF METAL RAIL TO END POST, SEE SHEET 2 OF 4.

ELEVATION

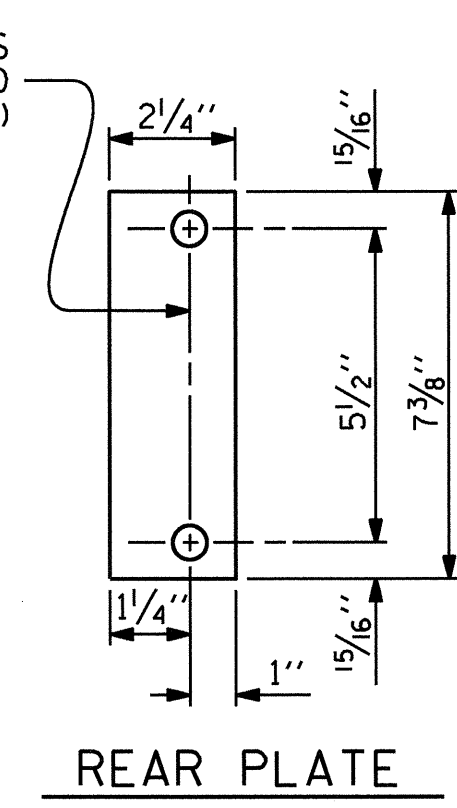


CLAMP BAR DETAIL

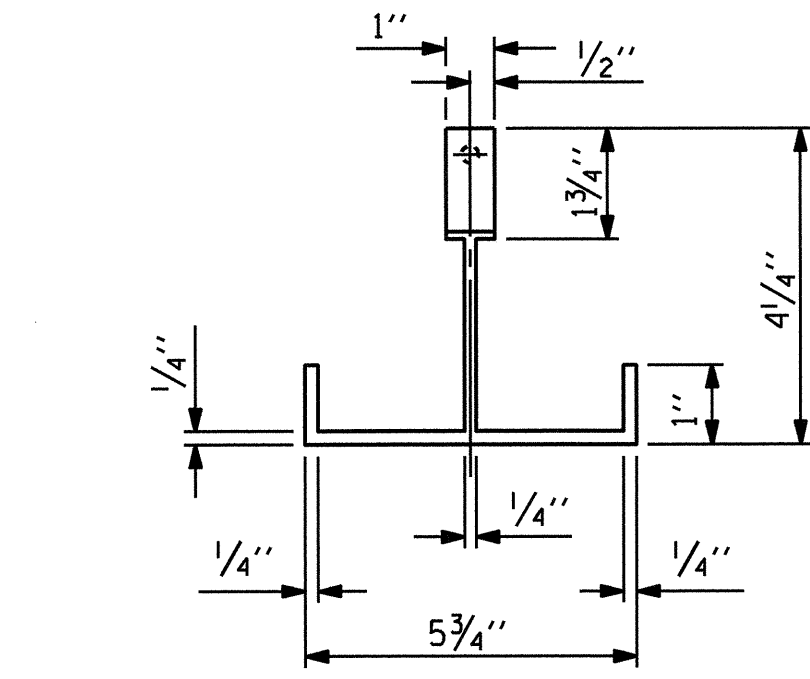
(2 REQUIRED PER POST)



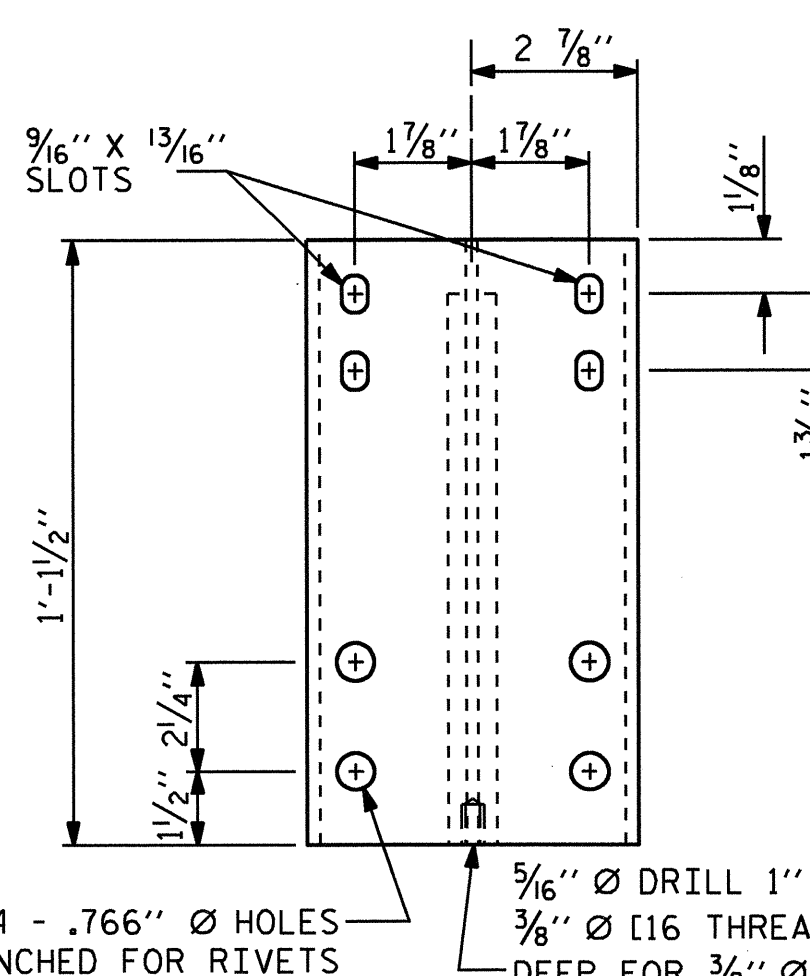
RIVET DETAIL



REAR PLATE



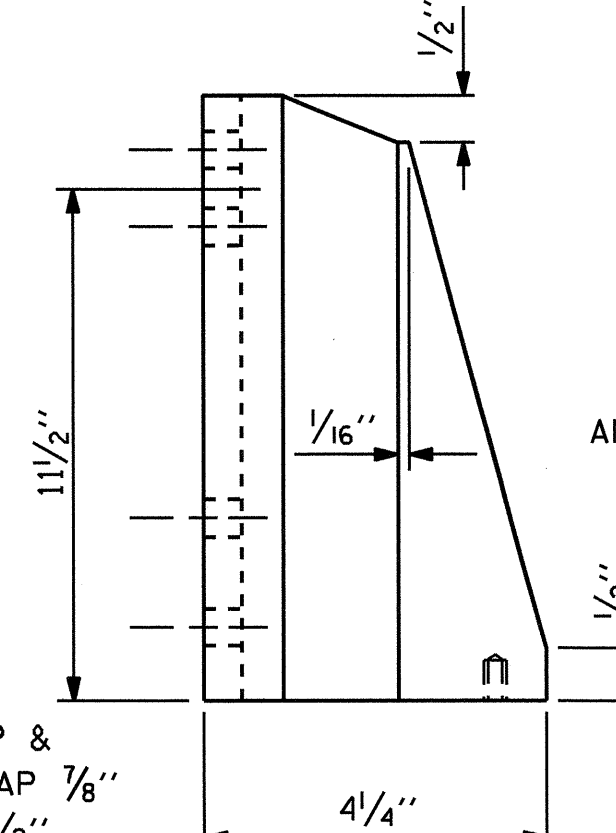
PLAN



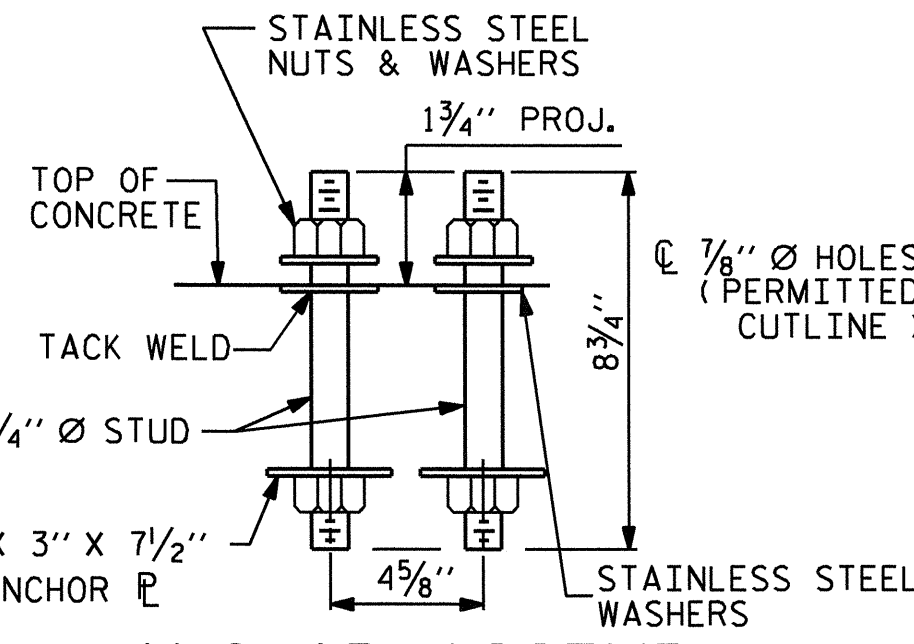
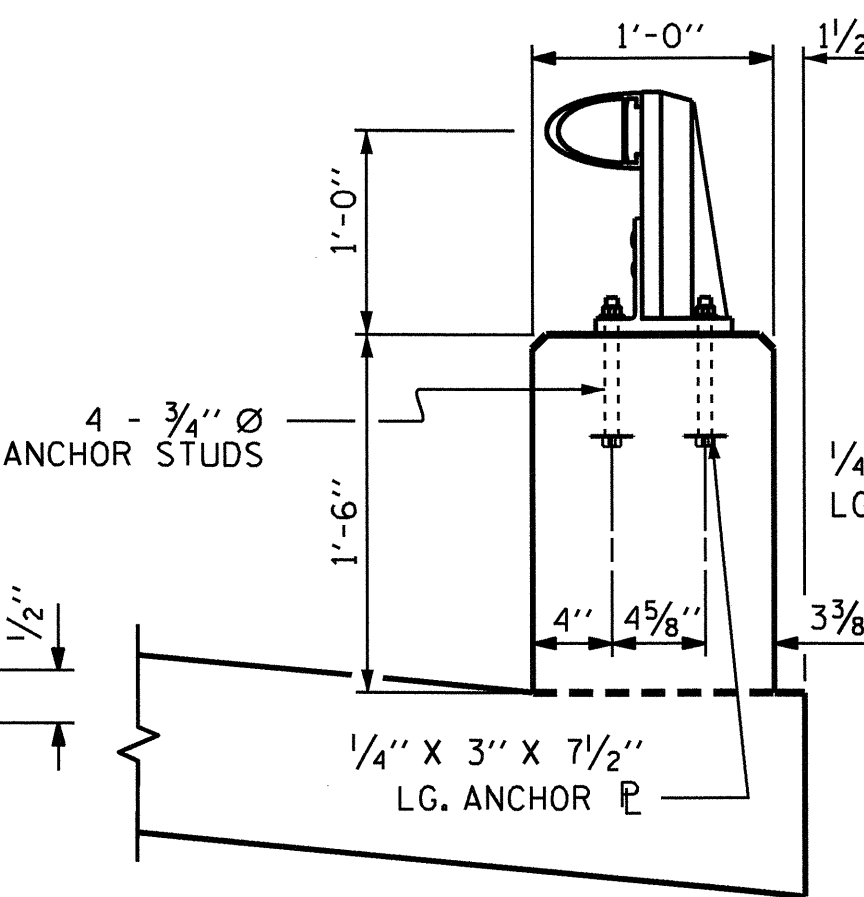
FRONT ELEVATION

SIDE ELEVATION

DETAILS OF POST



SECTION THRU PARAPET AND RAIL

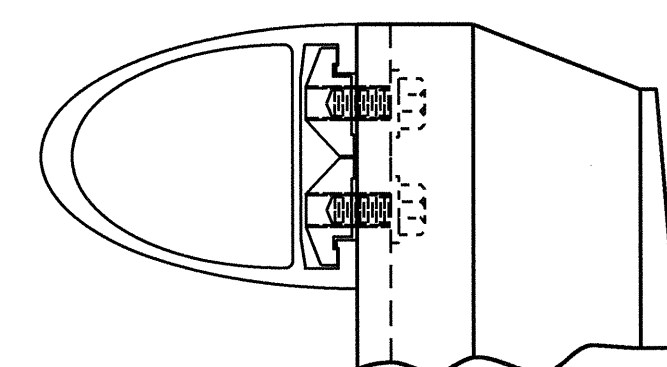


ANCHOR ASSEMBLY

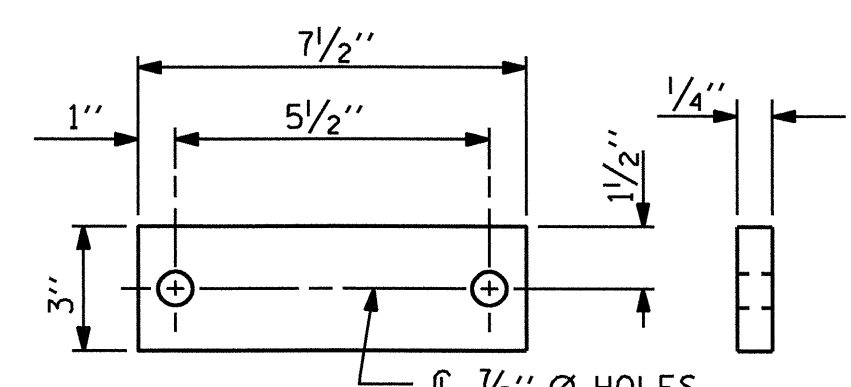
FRONT PLATE

SHIM DETAILS

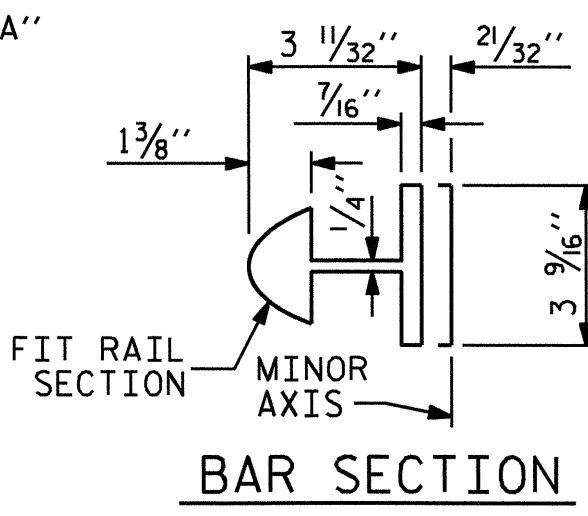
NOTE: SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



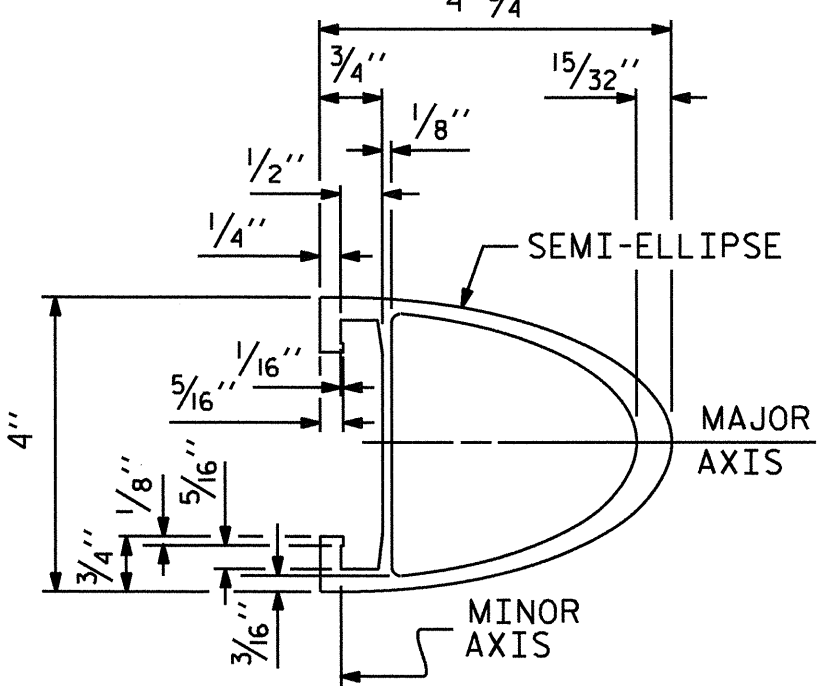
CLAMP & RAIL ASSEMBLY



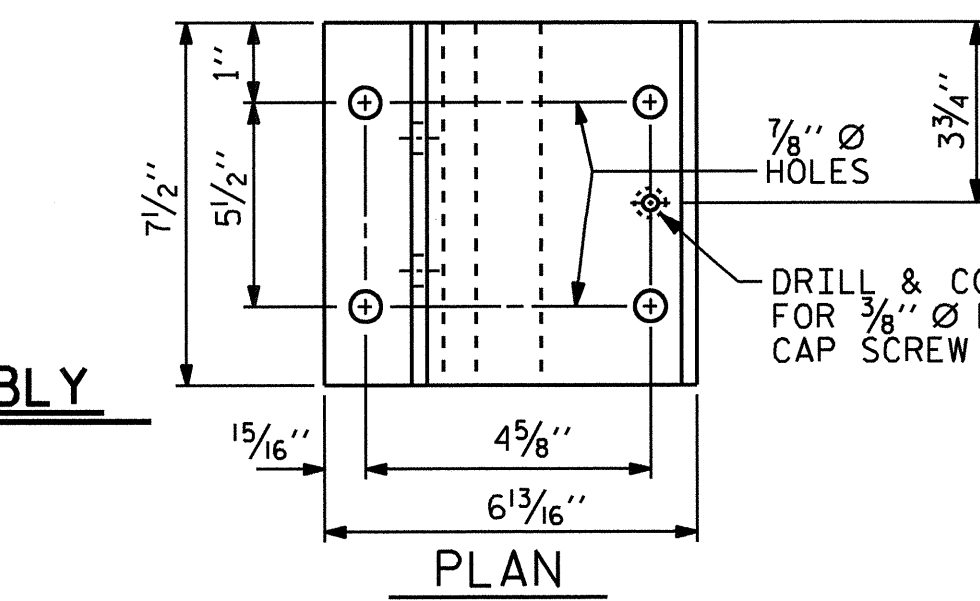
ANCHOR PLATE



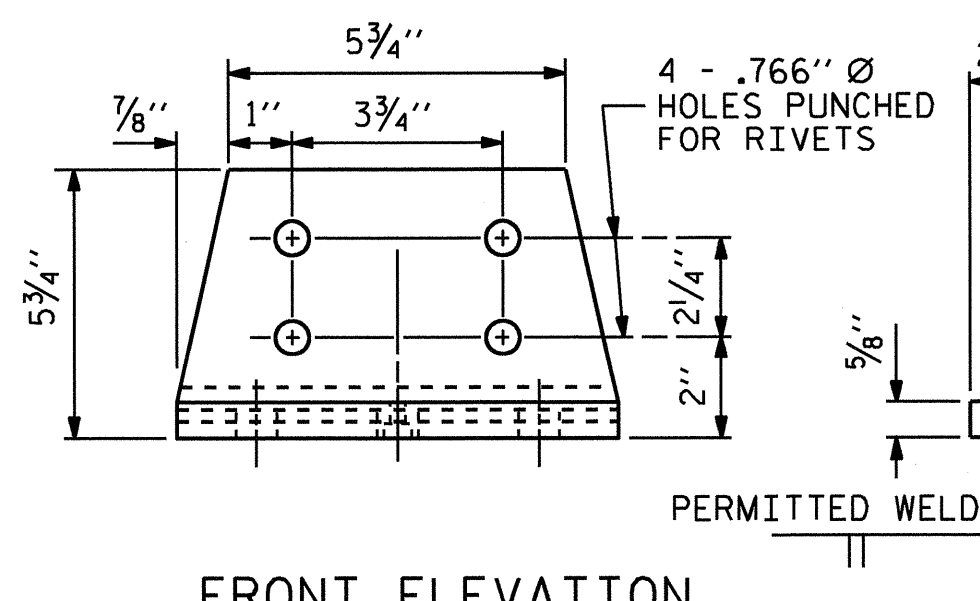
BAR SECTION



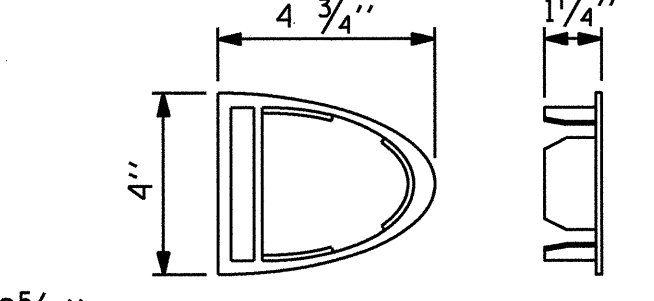
RAIL SECTION



PLAN



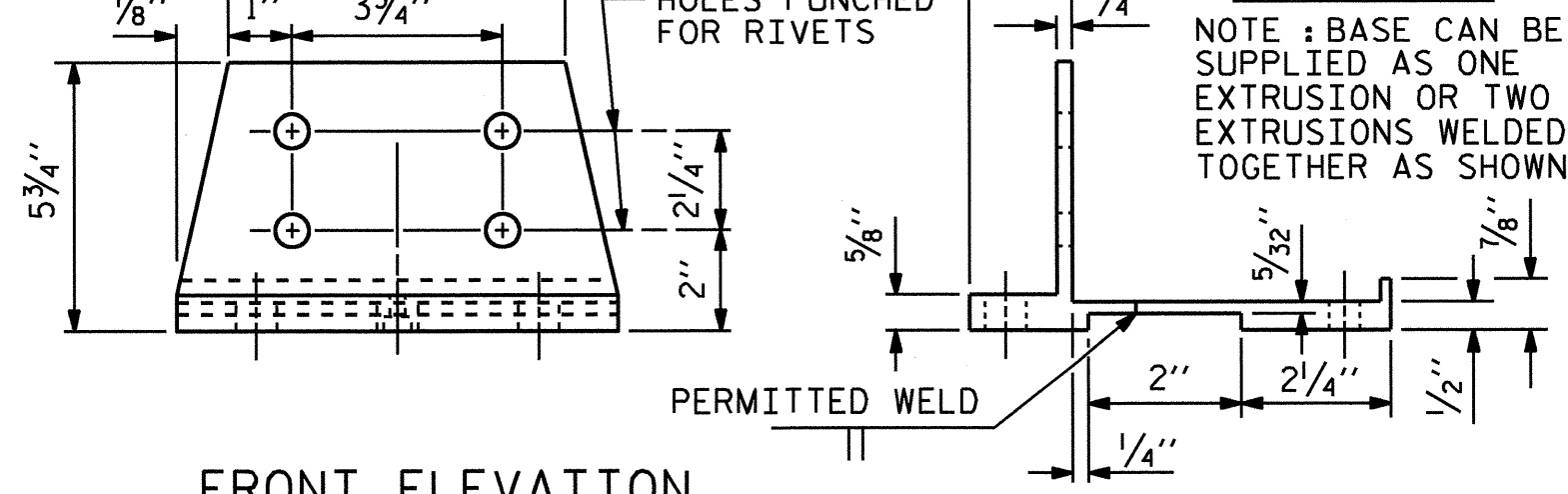
FRONT ELEVATION



SIDE ELEVATION

RAIL CAP

NOTE: BASE CAN BE SUPPLIED AS ONE EXTRUSION OR TWO EXTRUSIONS WELDED TOGETHER AS SHOWN.



POST BASE DETAILS

PAY LENGTH = 299.00 LIN. FT.



PROJECT NO. **B-3187**
HAYWOOD COUNTY
 STATION: **11+30.50 -L-**

SHEET 3 OF 4

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

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

ASSEMBLED BY: V. X. NGUYEN	DATE: 8-28-09
CHECKED BY: M.G. CHEEK	DATE: 6-10
DRAWN BY: FCJ 1/88	REV. 10/17/00 LES/RDR
CHECKED BY: CRK 3/89	REV. 5/7/03R RWW/JTE
	REV. 5/1/06R KMM/GM

NOTES

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

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

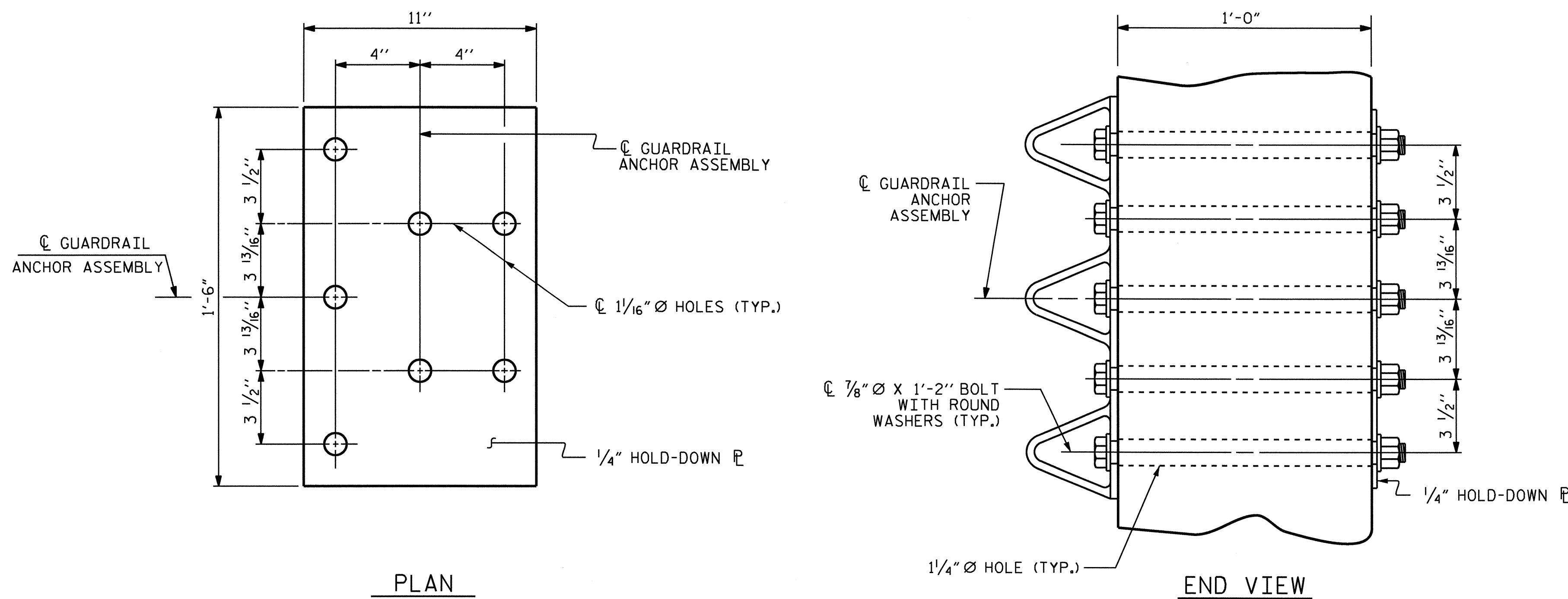
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS.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

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.

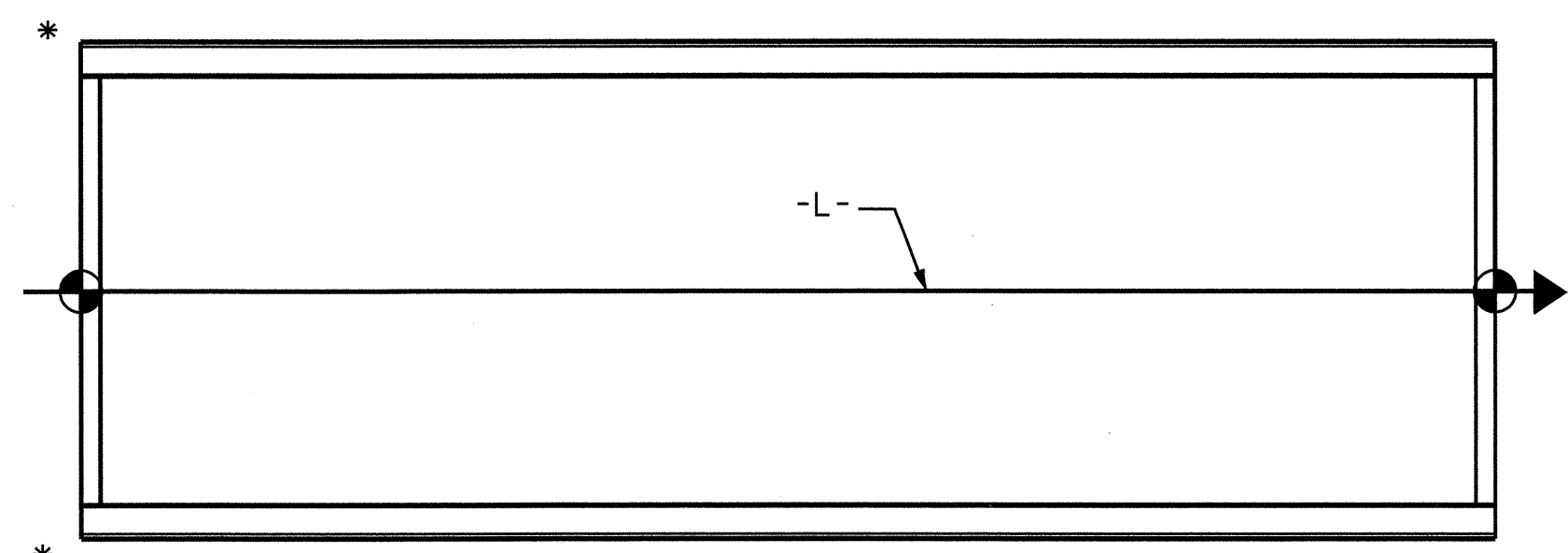
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



PLAN

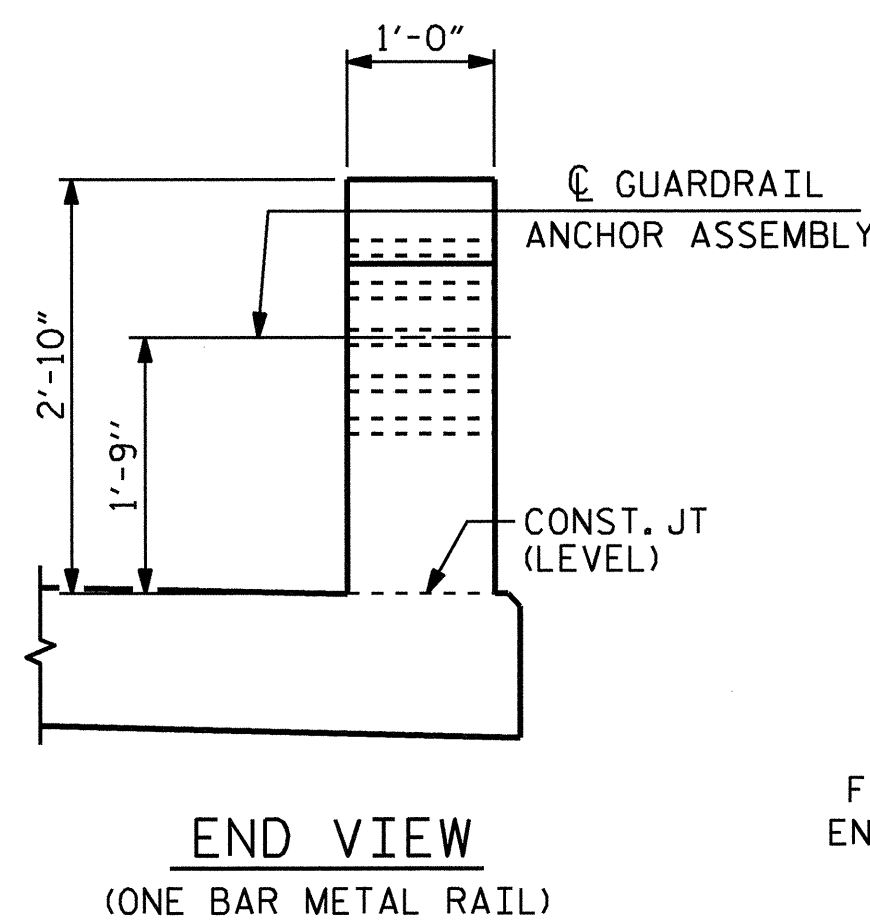
END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS



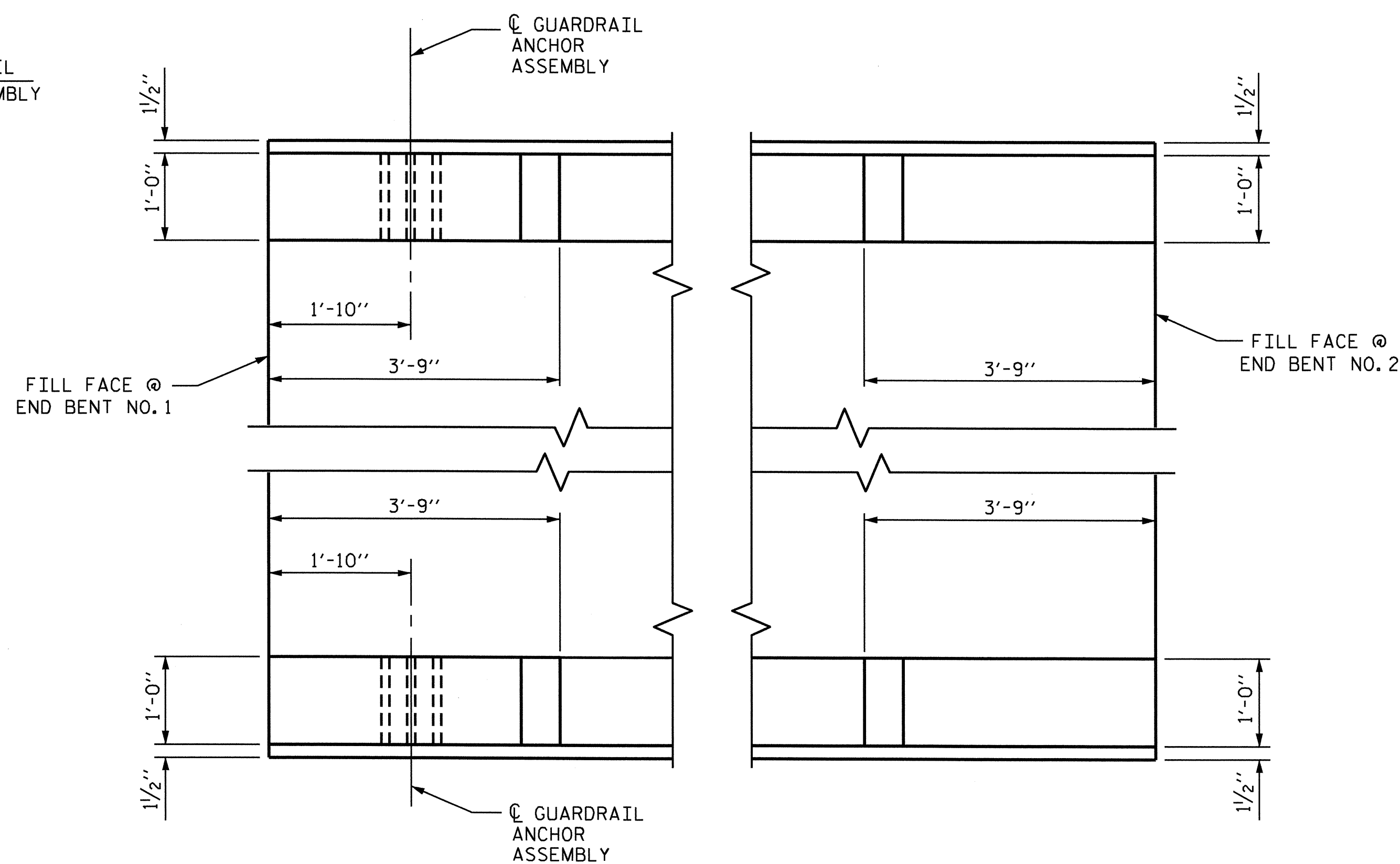
SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



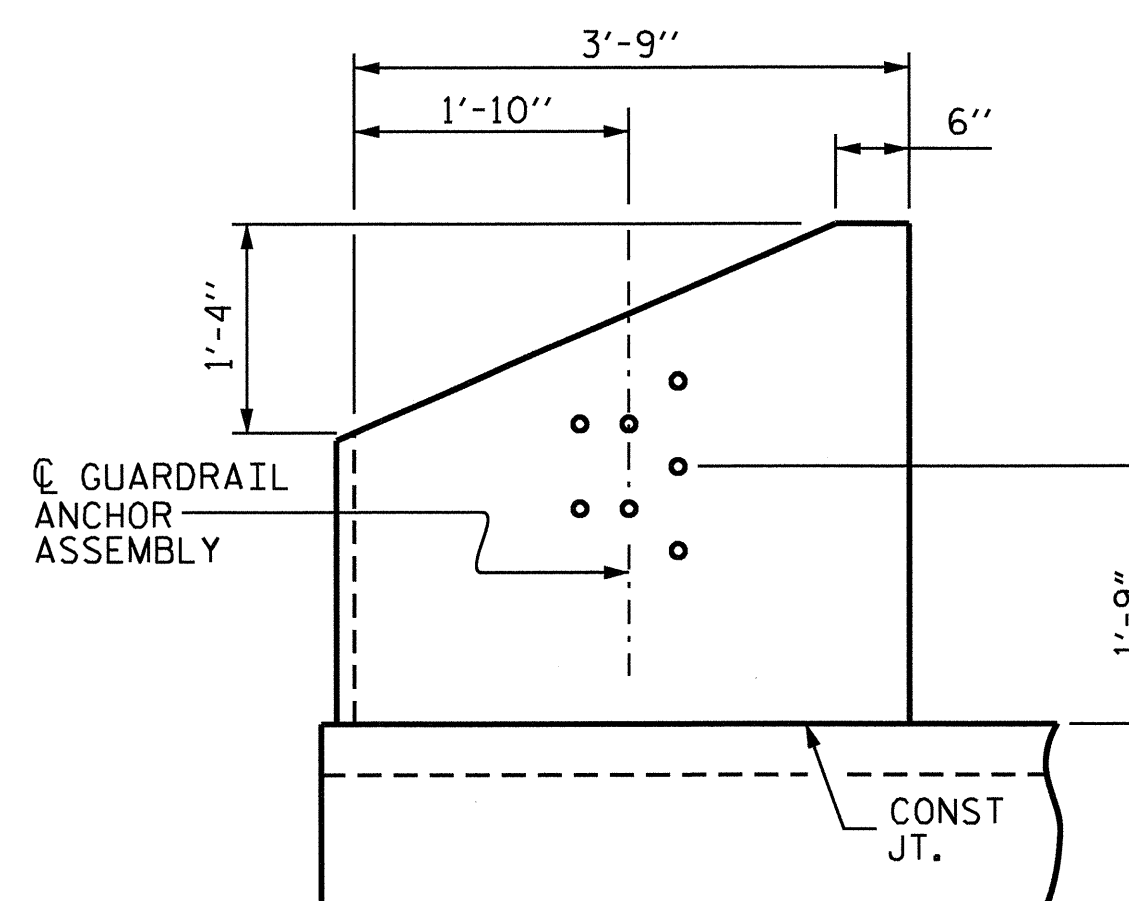
END VIEW

(ONE BAR METAL RAIL)



PLAN

LOCATION OF GUARDRAIL ANCHOR AT END POST



ELEVATION

PROJECT NO. B-3187
HAYWOOD COUNTY
 STATION: 11+30.50 -L-

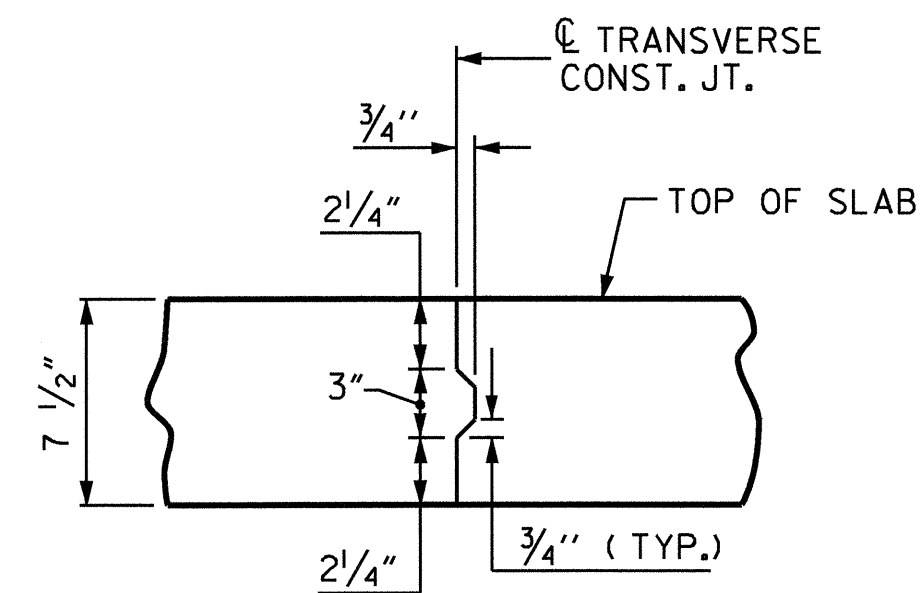
SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 DETAILS
 FOR METAL RAILS



ASSEMBLED BY :	V. X. NGUYEN	DATE :	9-1-09
CHECKED BY :	M.G. CHEEK	DATE :	6-10
DRAWN BY :	EEM 6/94	REV. 10/17/00	RWW/LES
CHECKED BY :	RCW 6/94	REV. 5/7/03	RWW/JTE
		REV. 5/1/06	TLA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			27



TRANSVERSE CONSTRUCTION JOINT DETAIL

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

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"			

BAR SCHEDULE

SPAN A					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	207	#5	STR	27'-11"	6027
A2	207	#5	STR	27'-11"	6027
* B1	120	#4	STR	27'-6"	2204
* B2	76	#4	STR	16'-10"	855
B3	66	#5	STR	53'-2"	3660
K1	20	#4	2	27'-11"	373
S1	44	#4	2	8'-8"	255
* S2	44	#4	1	11'-8"	343
* S3	44	#4	1	9'-5"	277

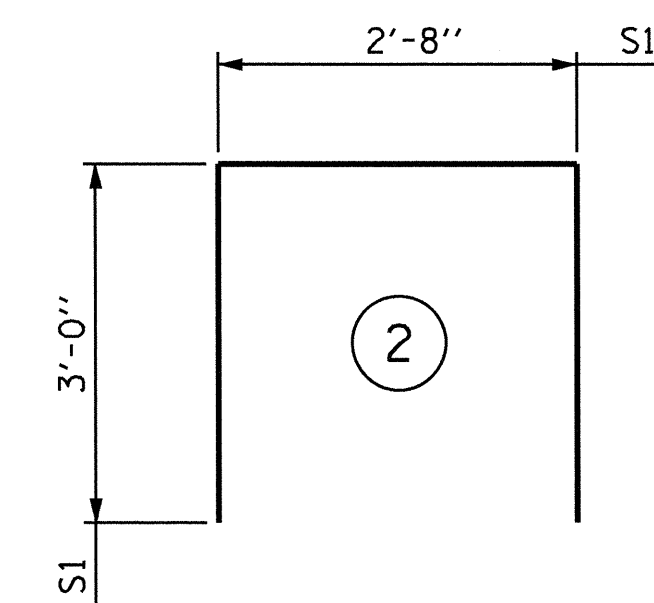
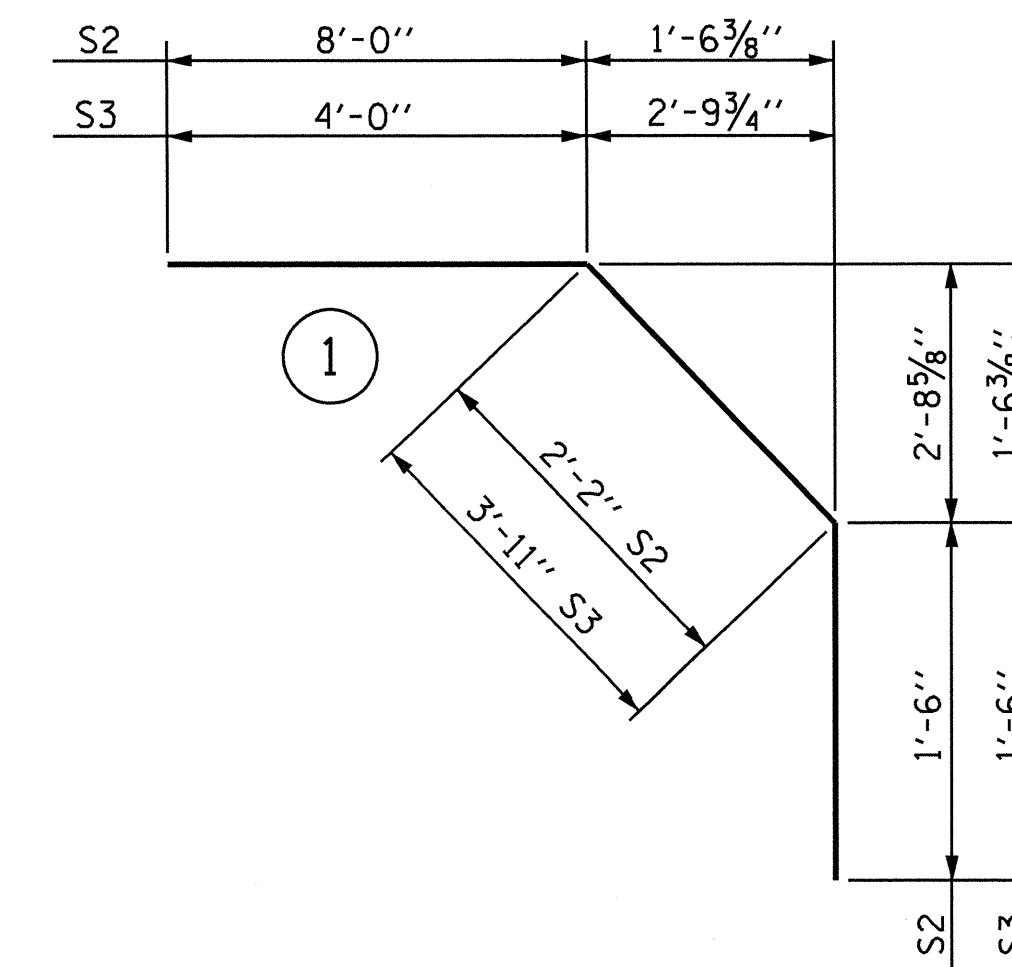
REINFORCING STEEL = 10,315 LBS.
* EPOXY COATED REINF. STEEL = 9,706 LBS.

* THESE BARS ARE EPOXY COATED

GROOVING BRIDGE FLOORS

APPROACH SLABS	540	SQ.FT.
BRIDGE DECK	3,565	SQ.FT.
TOTAL	4,105	SQ.FT.

BAR TYPES

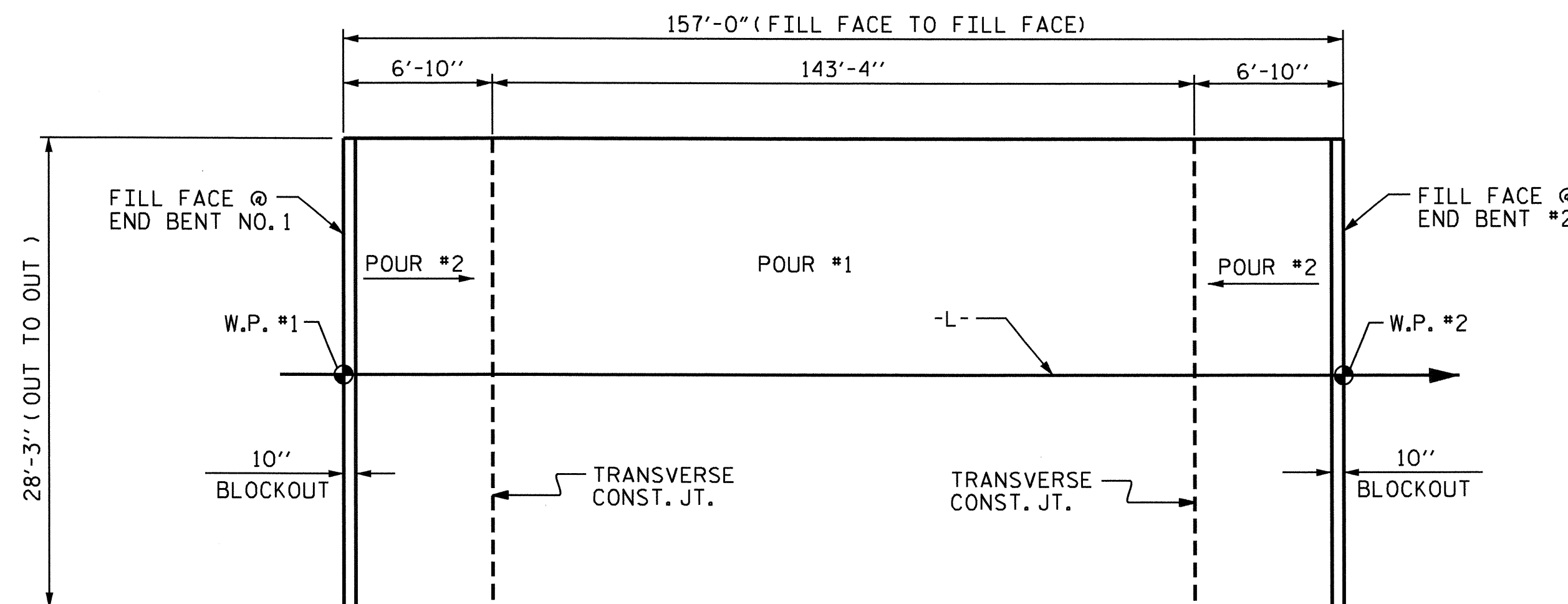


ALL BAR DIMENSIONS ARE OUT TO OUT

— SUPERSTRUCTURE BILL OF MATERIAL —

	CLASS AA CONCRETE (CU.YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
SPAN "A"		10,315	9,706
POUR #1	113.0		
POUR #2	33.1		
TOTALS**	146.1	10,315	9,706

** QUANTITIES FOR PARAPET ARE NOT INCLUDED



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB (SQ. FT. = 4,435)

PROJECT NO. B-3187
HAYWOOD COUNTY
STATION: 11+30.50 -L-

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

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

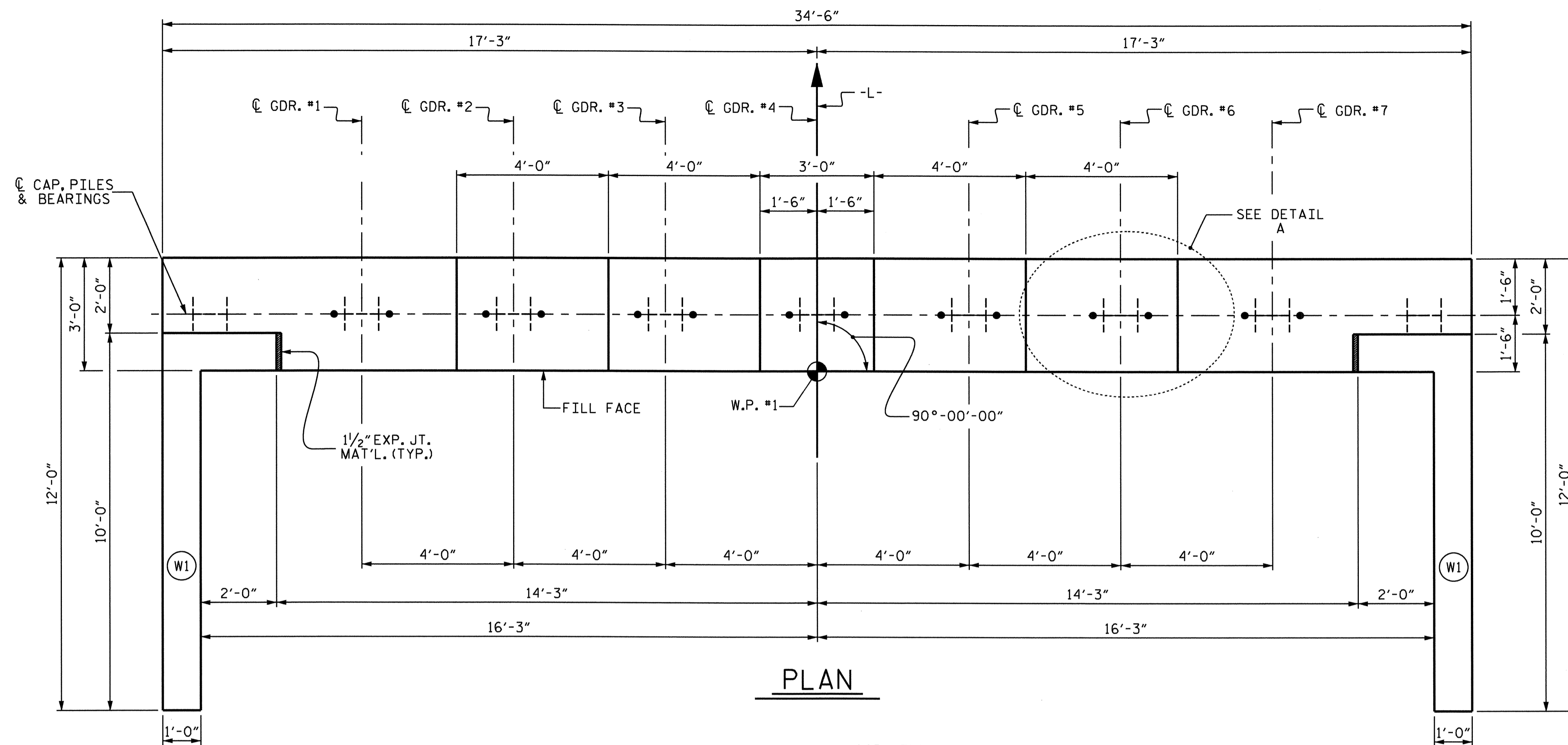


ASSEMBLED BY :	V. X. NGUYEN	DATE :	8-31-09
CHECKED BY :	M.G. CHEEK	DATE :	6-10
DRAWN BY :	JMB 5/87	REV. 6/1/94	EEM/GRP
CHECKED BY :	SJD 9/87	REV. 8/16/99	RWW/LES
		REV. 5/1/06	TLA/GM

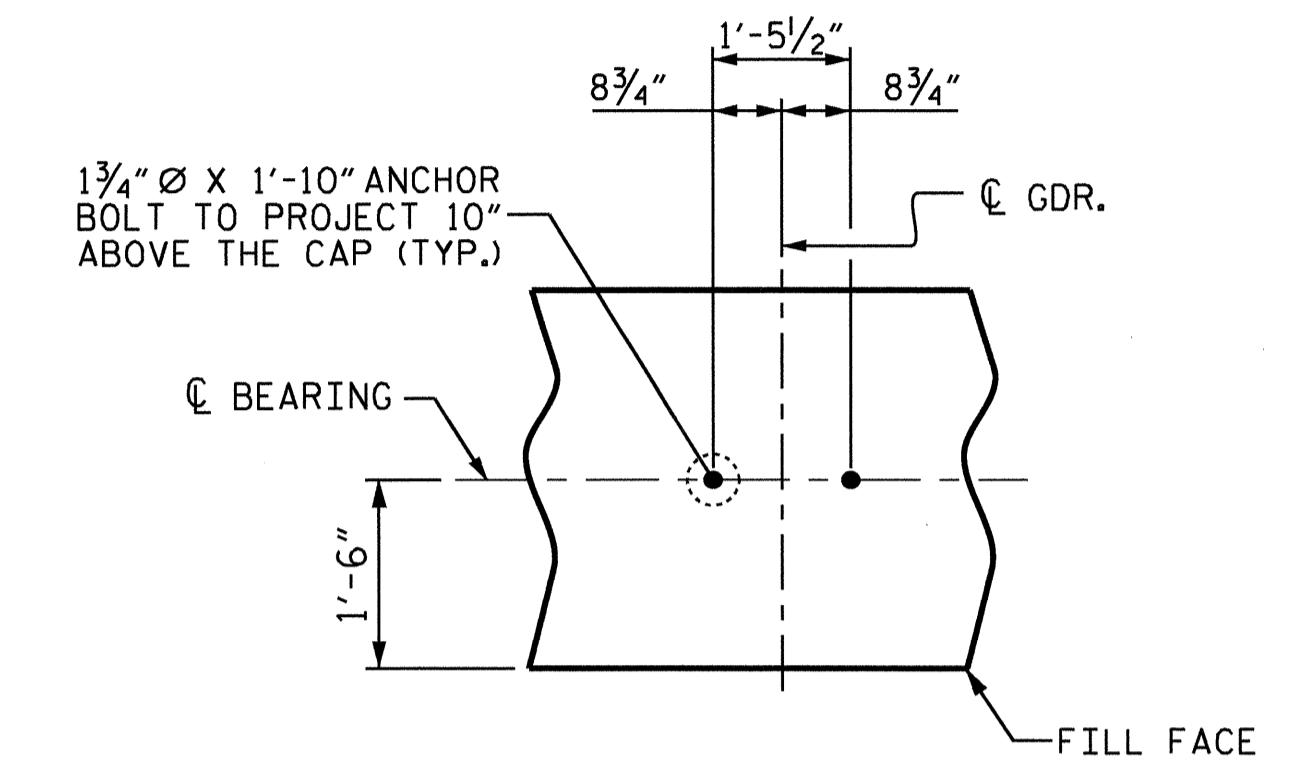
NOTES

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.

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

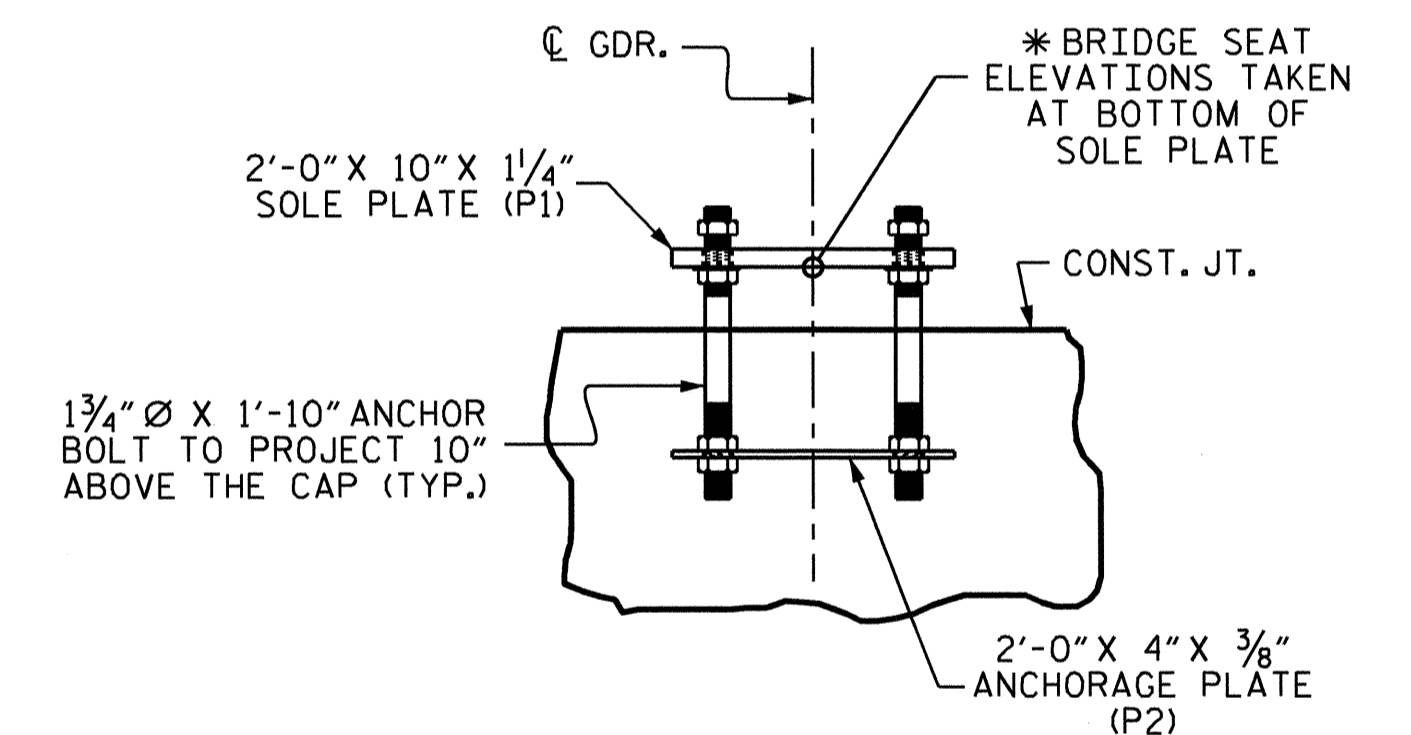


PLAN



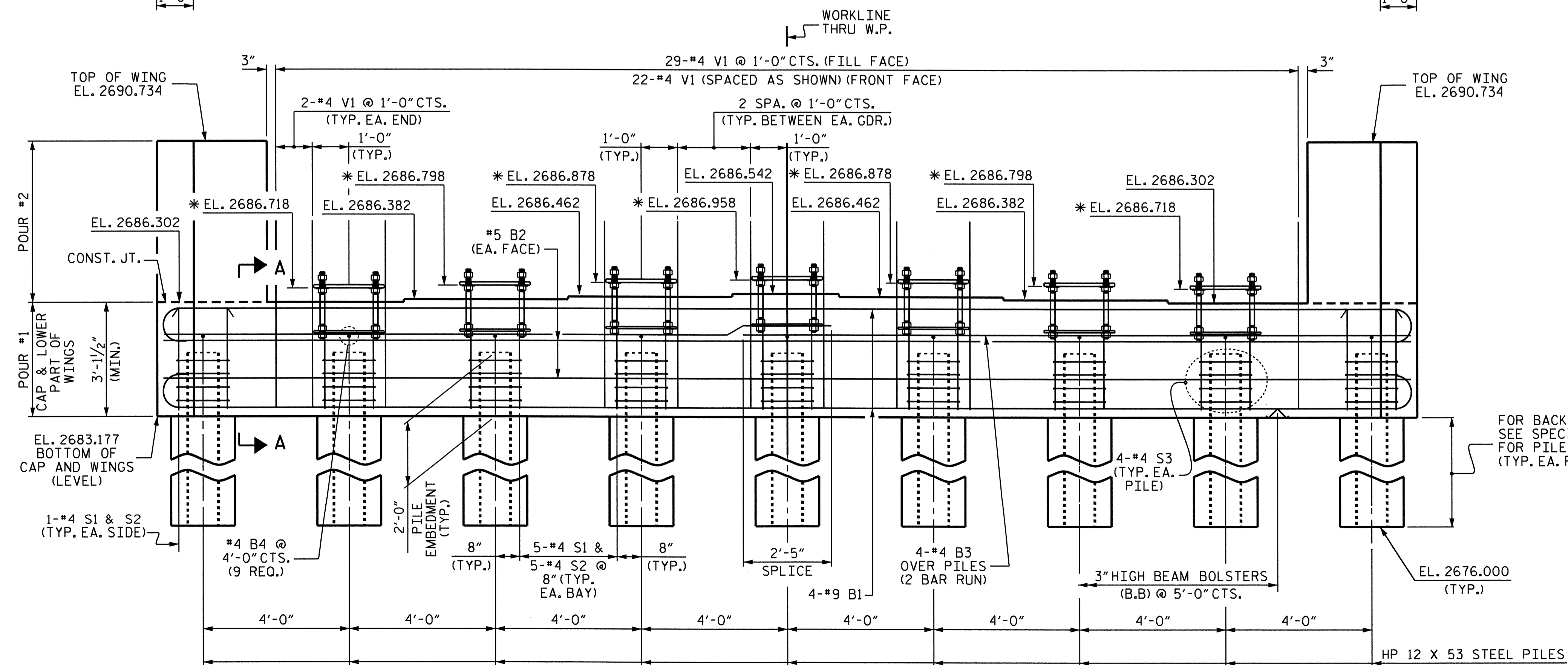
DETAIL A

(TYP. EA. GIRDER)



ANCHORAGE DETAILS

(TYP. EA. GIRDER)



ELEVATION

FOR BACKFILL MATERIALS, SEE SPECIAL PROVISION FOR PILE EXCAVATION (TYP. EA. PILE)

PROJECT NO. B-3187
HAYWOOD COUNTY
 STATION: 11+30.50 -L-

SHEET 1 OF 3

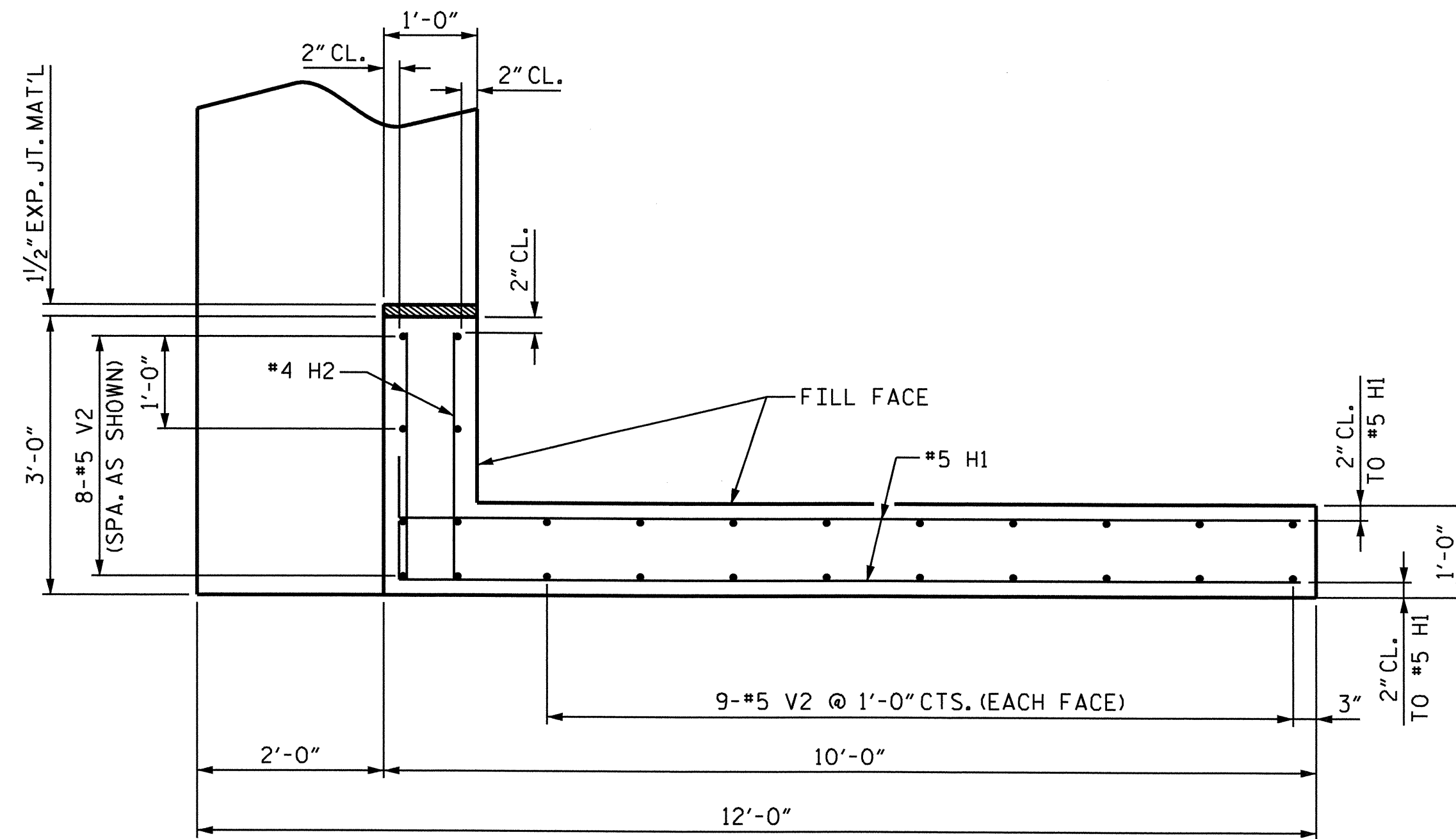
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 INTEGRAL
 END BENT NO. 1**

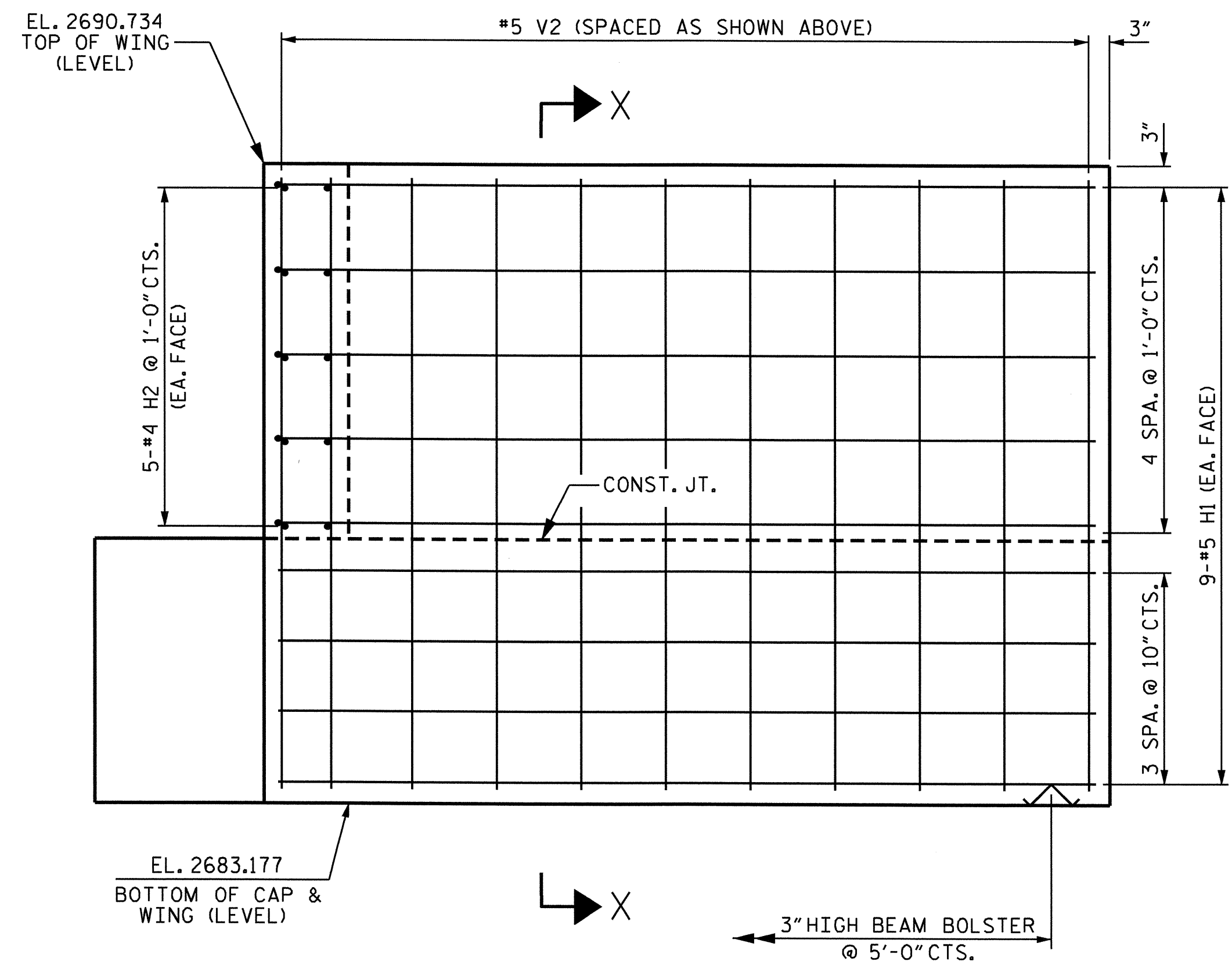
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			27



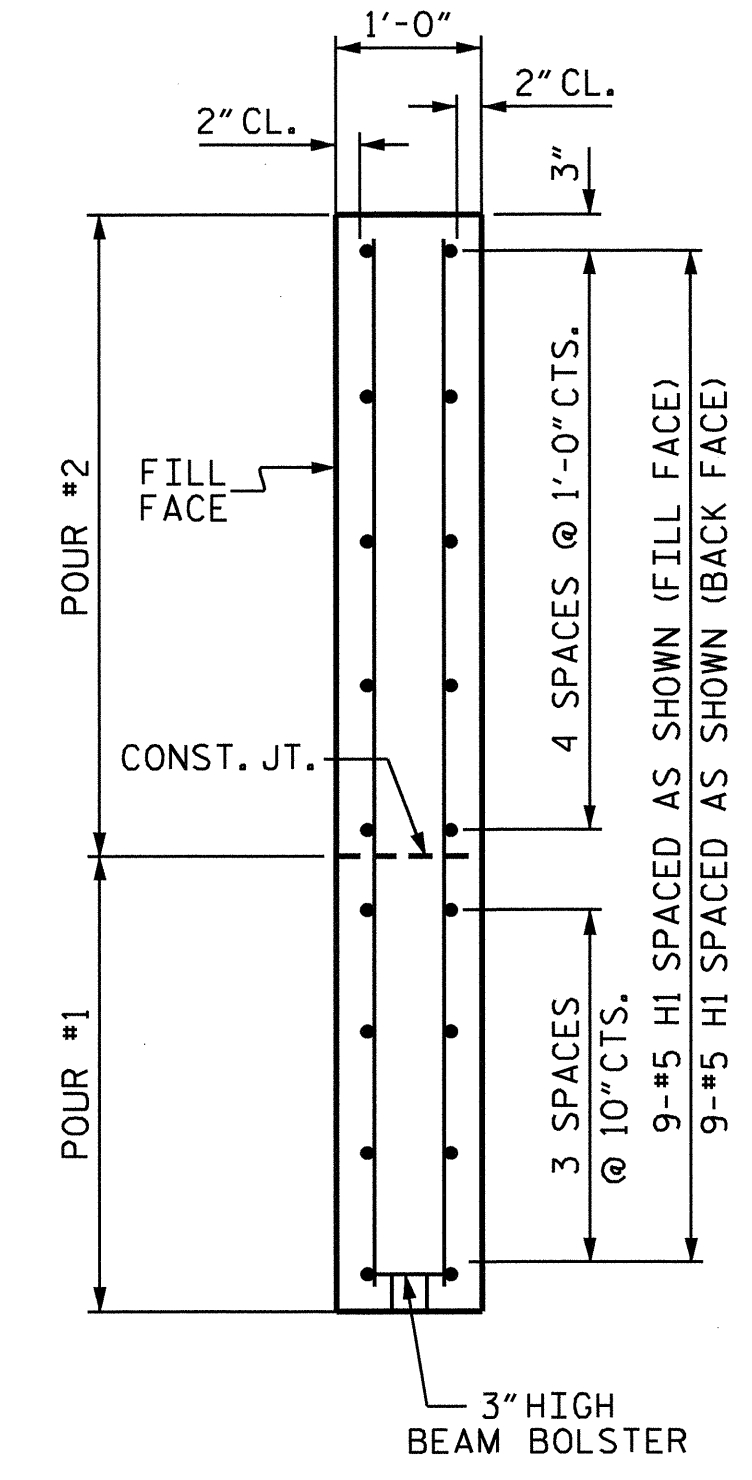
DRAWN BY: A. SORSENGINH DATE: 7/27/09
 CHECKED BY: M.G. CHEEK DATE: 8/10



PLAN OF WING (W1)



ELEVATION OF WING (W1)



SECTION X-X

PROJECT NO. B-3187
HAYWOOD COUNTY
 STATION: 11+30.50 -L-

SHEET 2 OF 3

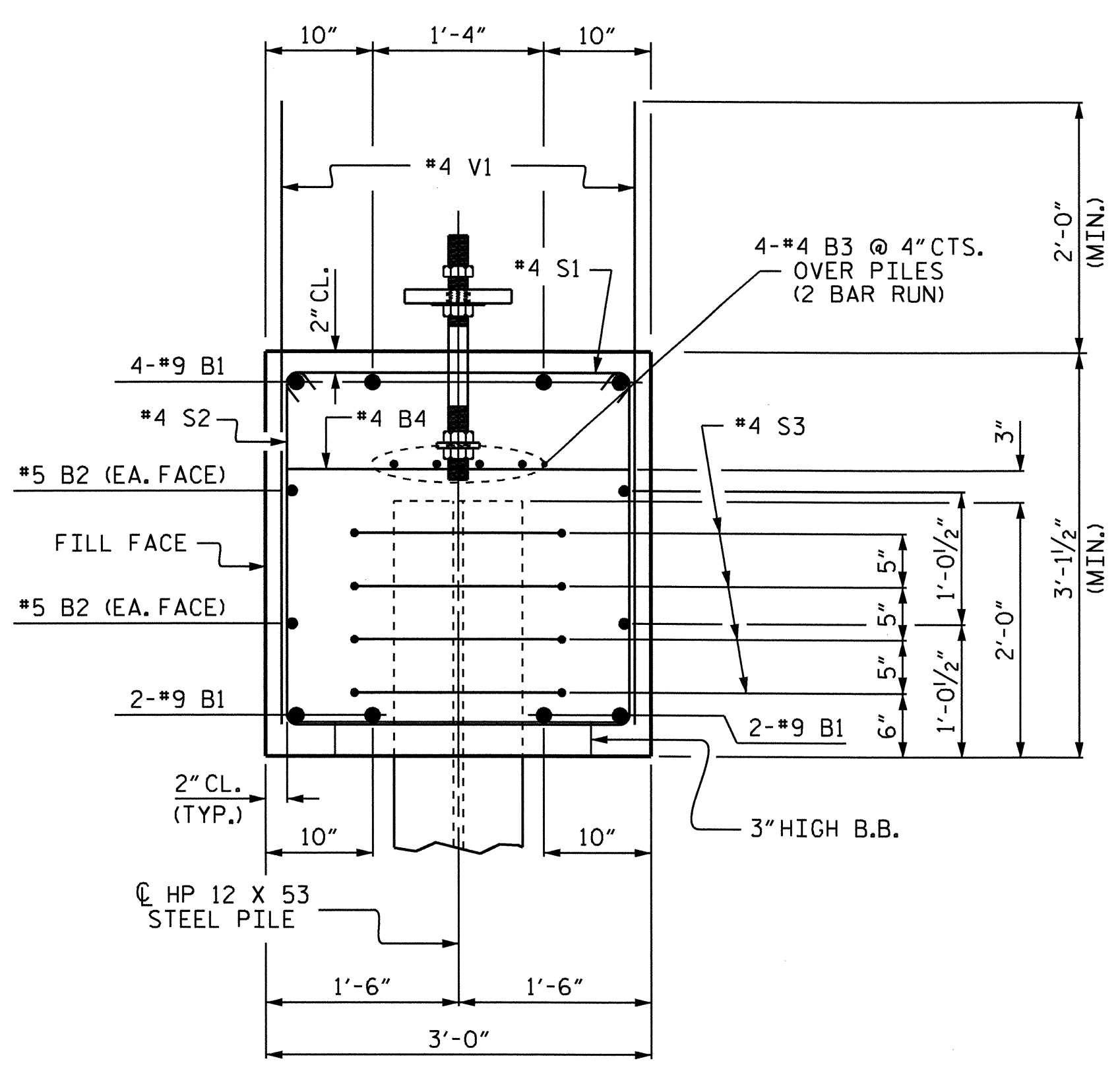
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 INTEGRAL
 END BENT NO. 1

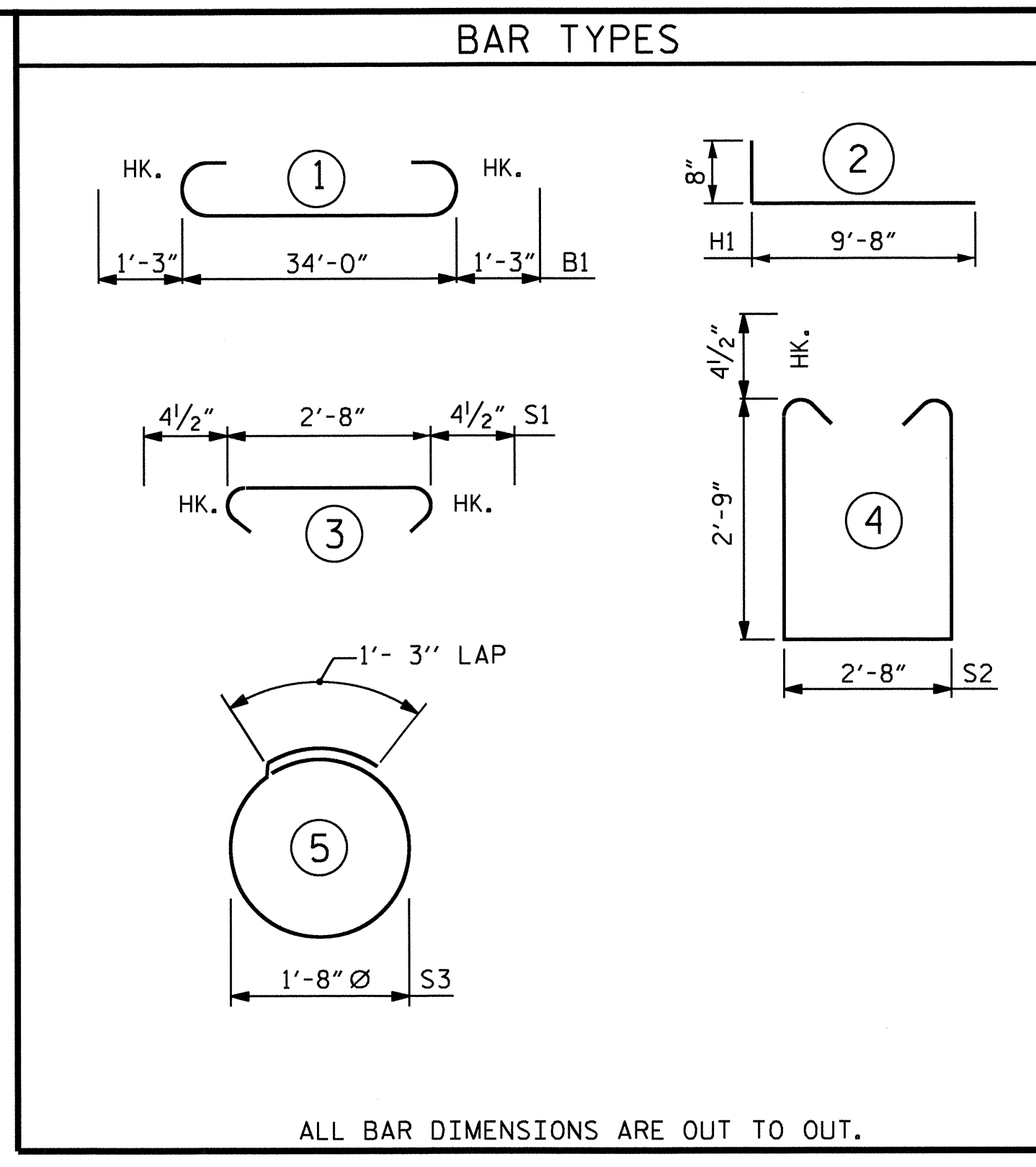


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			27

DRAWN BY : A. SORSENGINH DATE : 7/28/09
 CHECKED BY : M.G. CHEEK DATE : 8/10

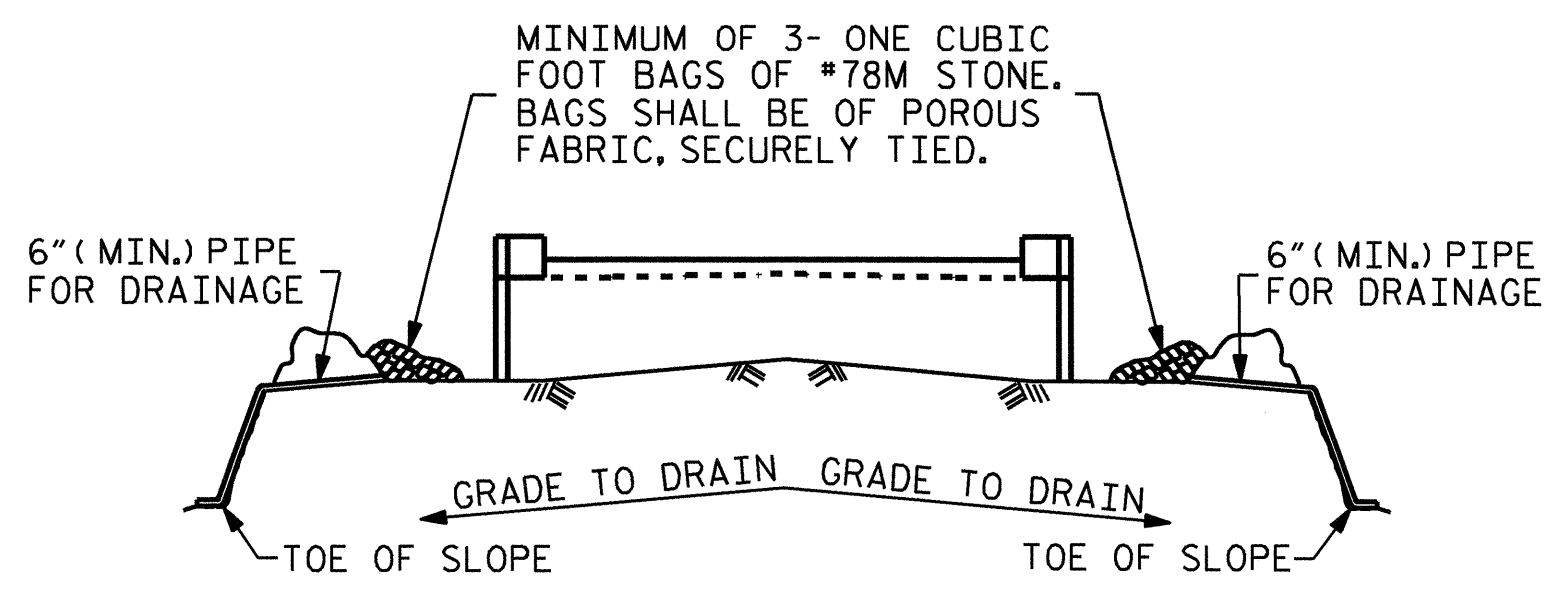


SECTION A-A



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT NO. 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		36'-6"	993
B2	4	#5	STR	34'-2"	143
B3	8	#4	STR	18'-4"	98
B4	9	#4	STR	2'-8"	16
H1	36	#5		10'-4"	388
H2	20	#4	STR	2'-8"	36
S1	42	#4		3'-5"	96
S2	42	#4		8'-11"	250
S3	36	#4		6'-6"	156
V1	51	#4	STR	5'-2"	176
V2	52	#5	STR	7'-2"	389
REINFORCING STEEL					LBS. 2741
CLASS A CONCRETE BREAKDOWN:					
POUR #1 - CAP & LOWER PORTION OF WINGS				C.Y.	14.4
POUR #2 - UPPER PORTION OF WINGS				C.Y.	3.9
TOTAL				C.Y.	18.3
HP 12 X 53 STEEL PILES					
NUMBER = 9				LIN. FT. =	225.00
PILE EXCAVATION NOT IN SOIL 91.00 FEET					



MINIMUM OF 3- ONE CUBIC FOOT BAGS OF #78M STONE. BAGS SHALL BE OF POROUS FABRIC, SECURELY TIED.

6" (MIN.) PIPE FOR DRAINAGE

GRADE TO DRAIN

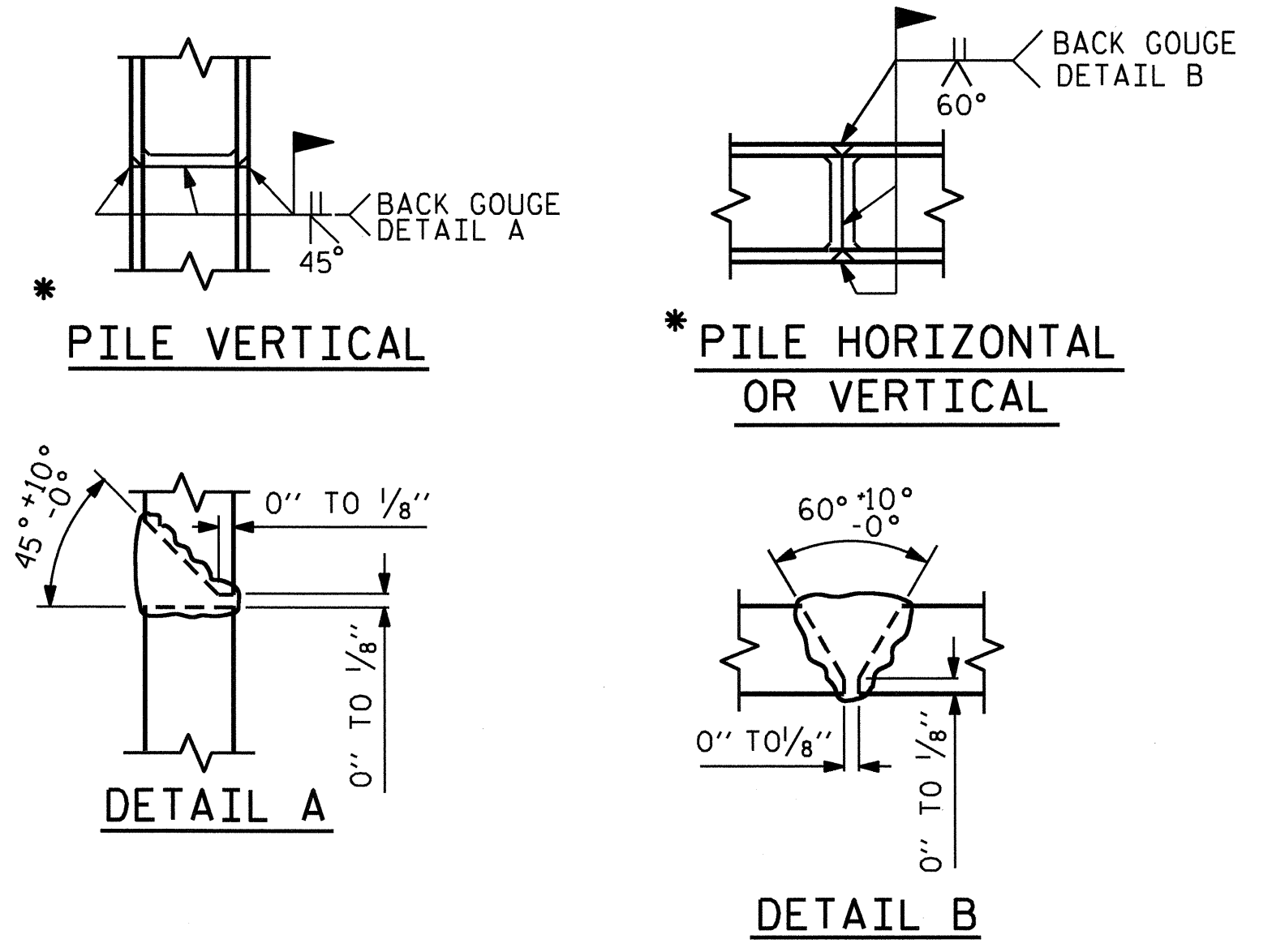
TOE OF SLOPE

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

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

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

TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

* POSITION OF PILE DURING WELDING.

PROJECT NO. B-3187
HAYWOOD COUNTY
 STATION: 11+30.50 -L-

SHEET 3 OF 3

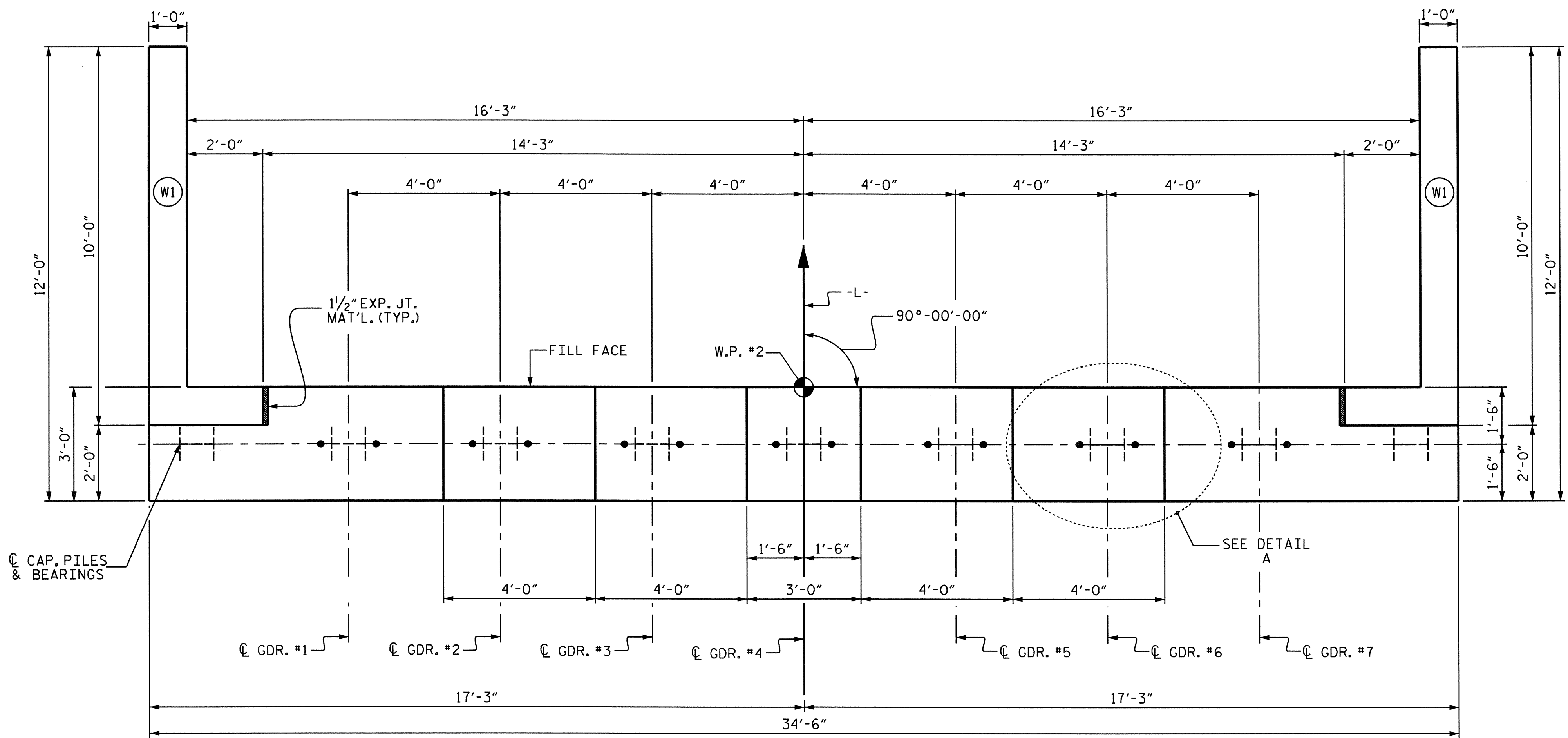
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 INTEGRAL
 END BENT NO. 1

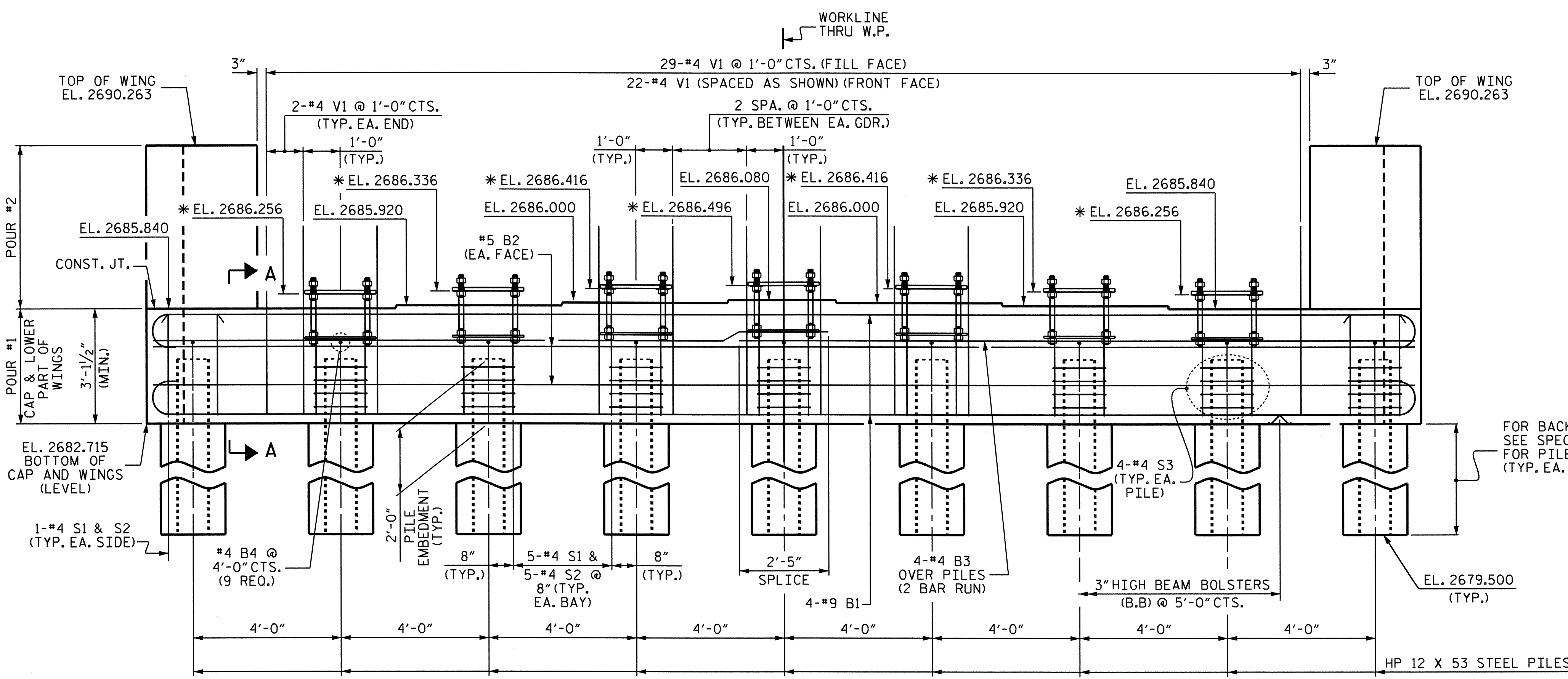


DRAWN BY : A. SORSENGINH DATE : 7/28/09
 CHECKED BY : M.G. CHEEK DATE : 8/10

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			27



PLAN

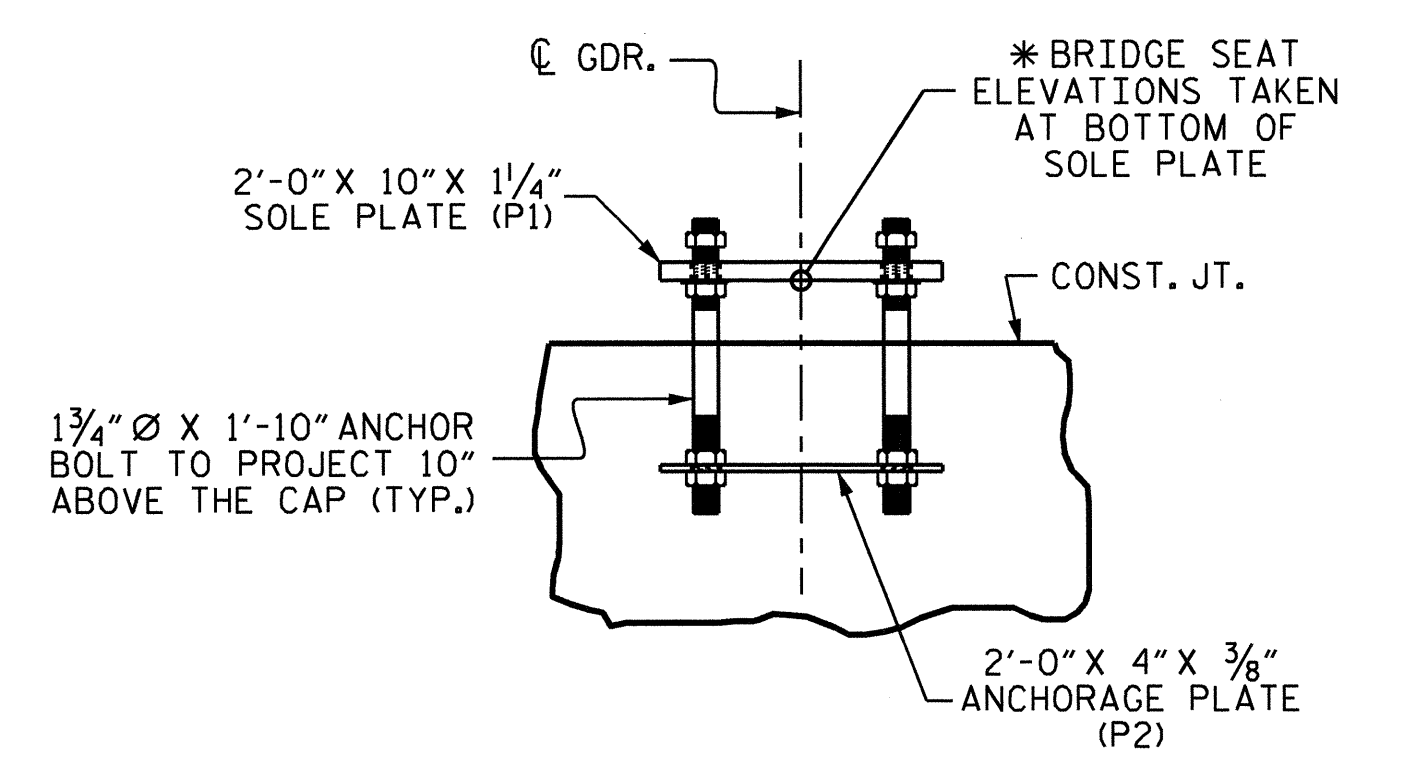
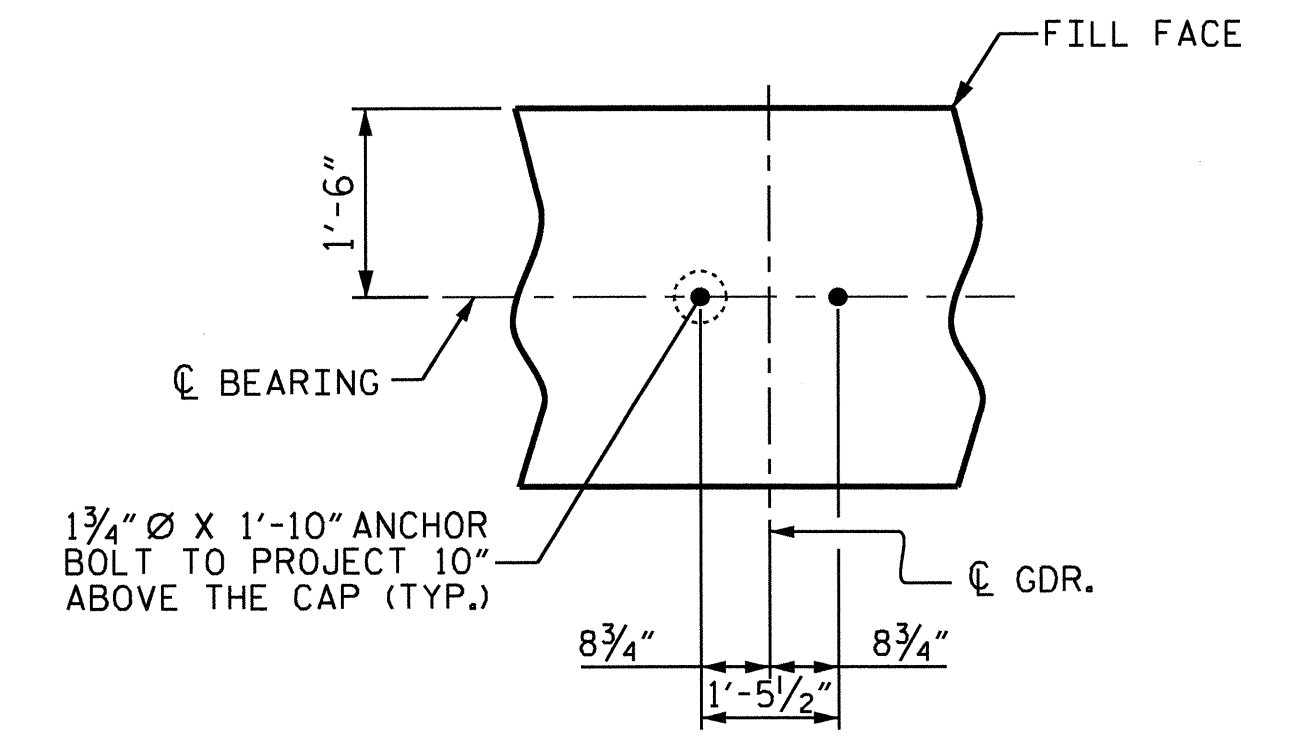


ELEVATION

NOTES

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.

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



PROJECT NO. B-3187
HAYWOOD COUNTY
 STATION: 11+30.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

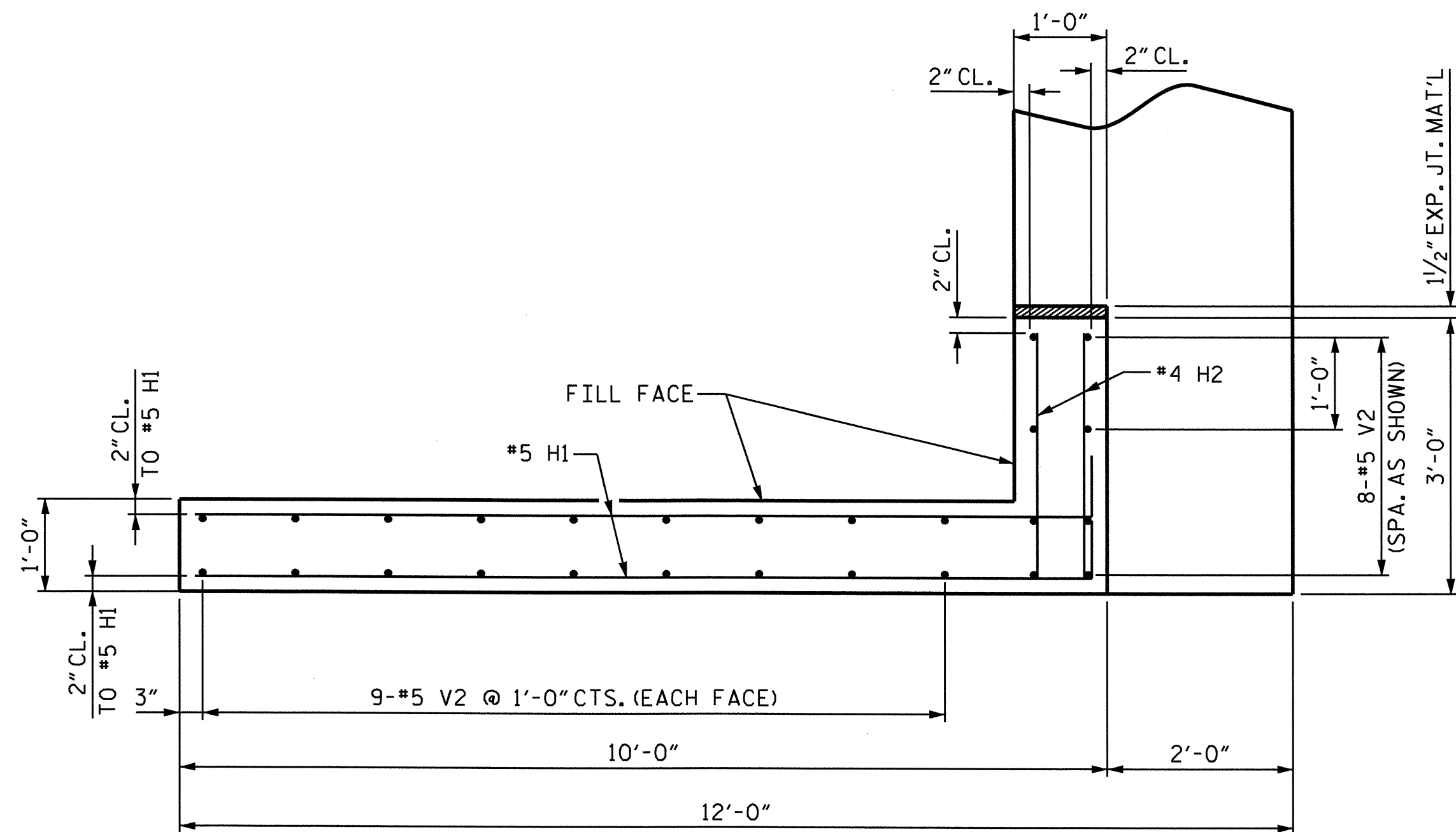
**SUBSTRUCTURE
 INTEGRAL
 END BENT NO. 2**

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

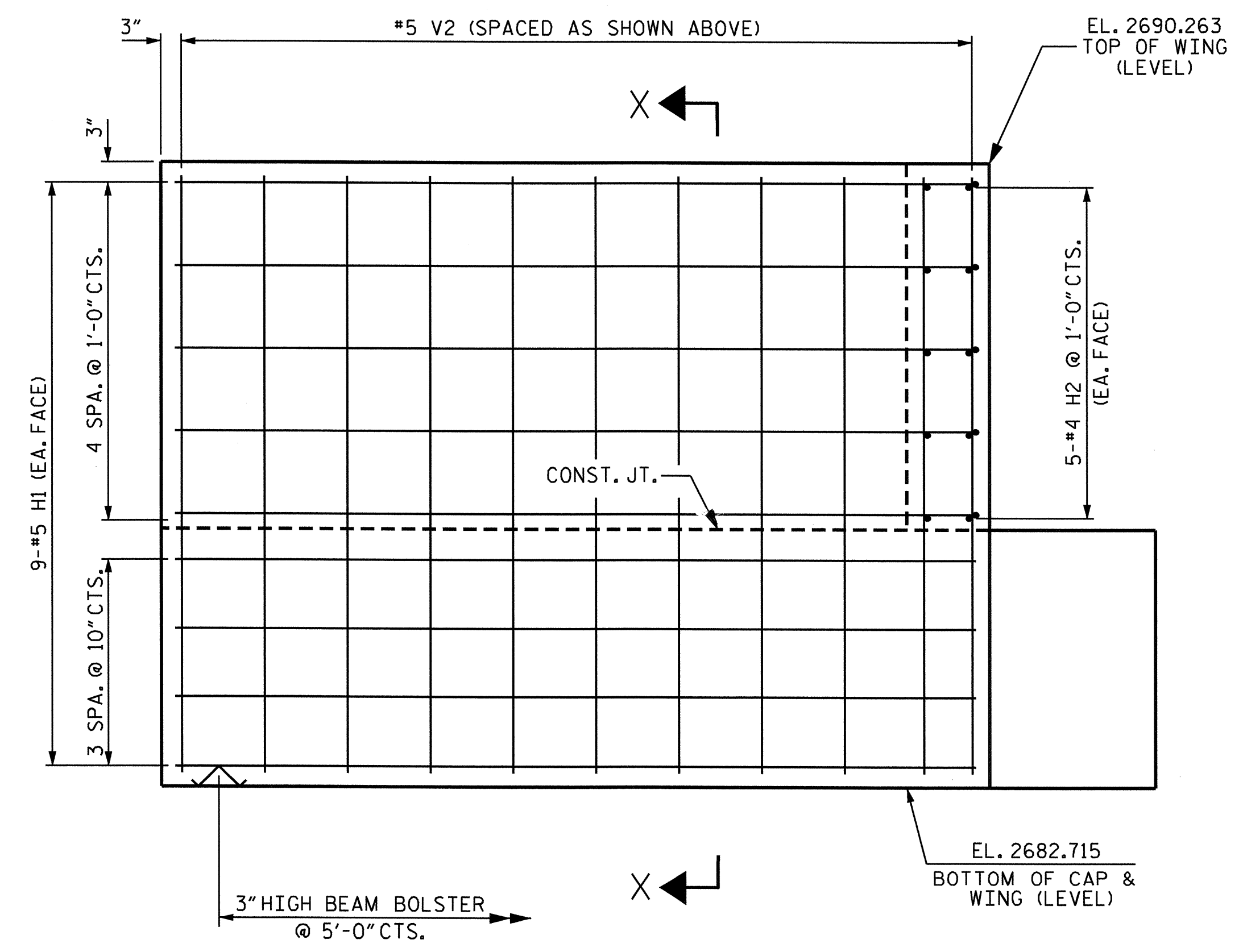


DRAWN BY: A. SORSENGINH DATE: 7/27/09
 CHECKED BY: M.G. CHEEK DATE: 8/10

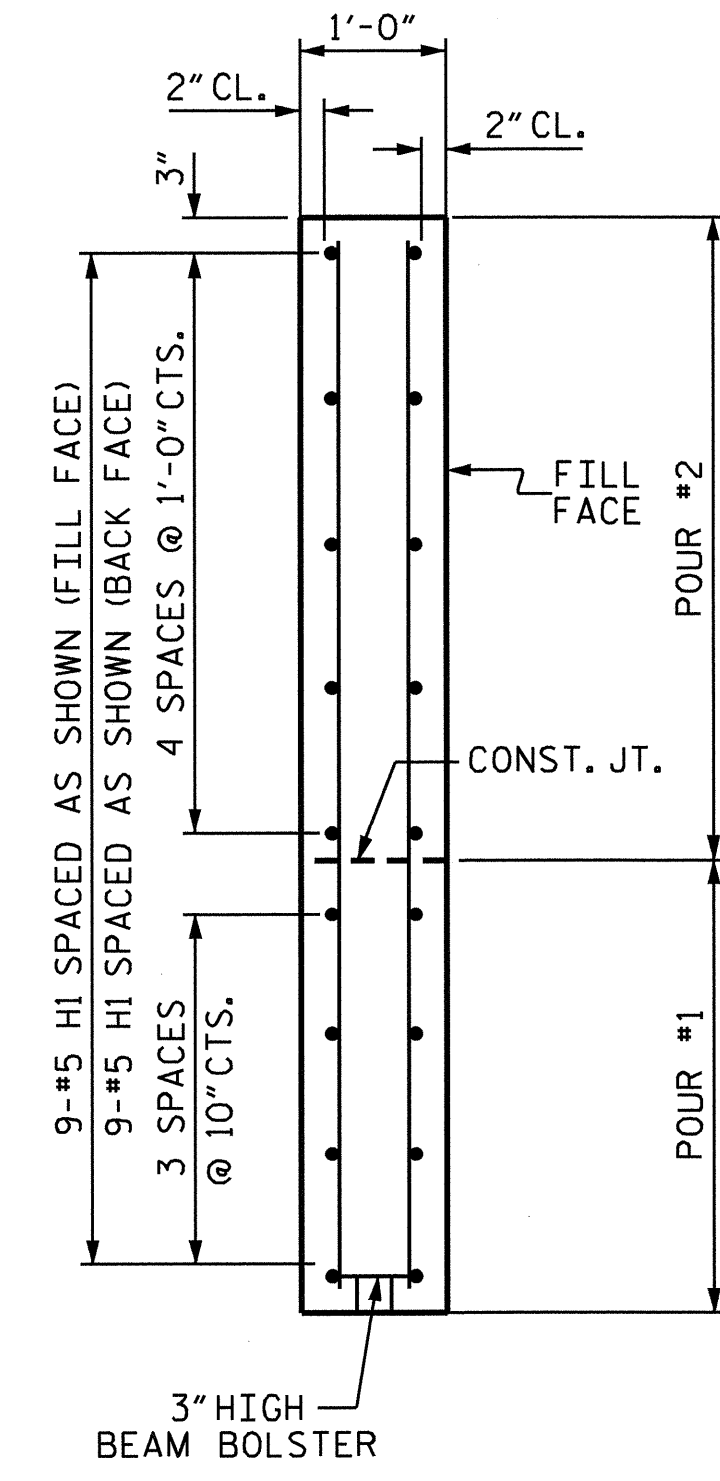
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PLAN OF WING (W1)



ELEVATION OF WING (W1)



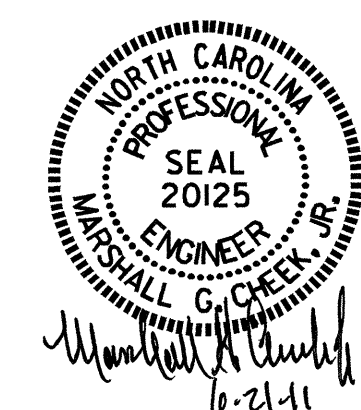
SECTION X-X

PROJECT NO. B-3187
HAYWOOD COUNTY
 STATION: 11+30.50 -L-

SHEET 2 OF 3

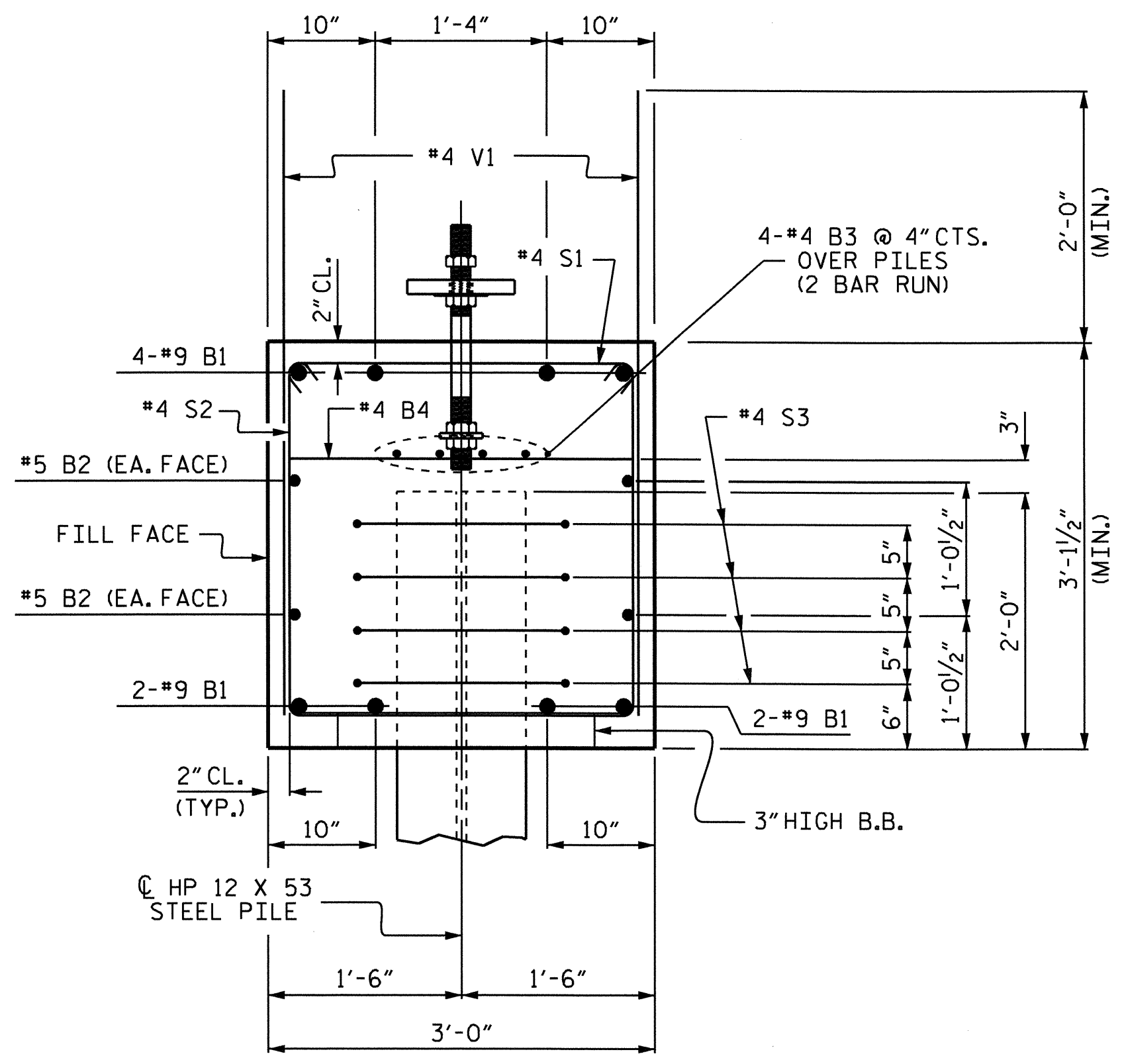
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 INTEGRAL
 END BENT NO. 2

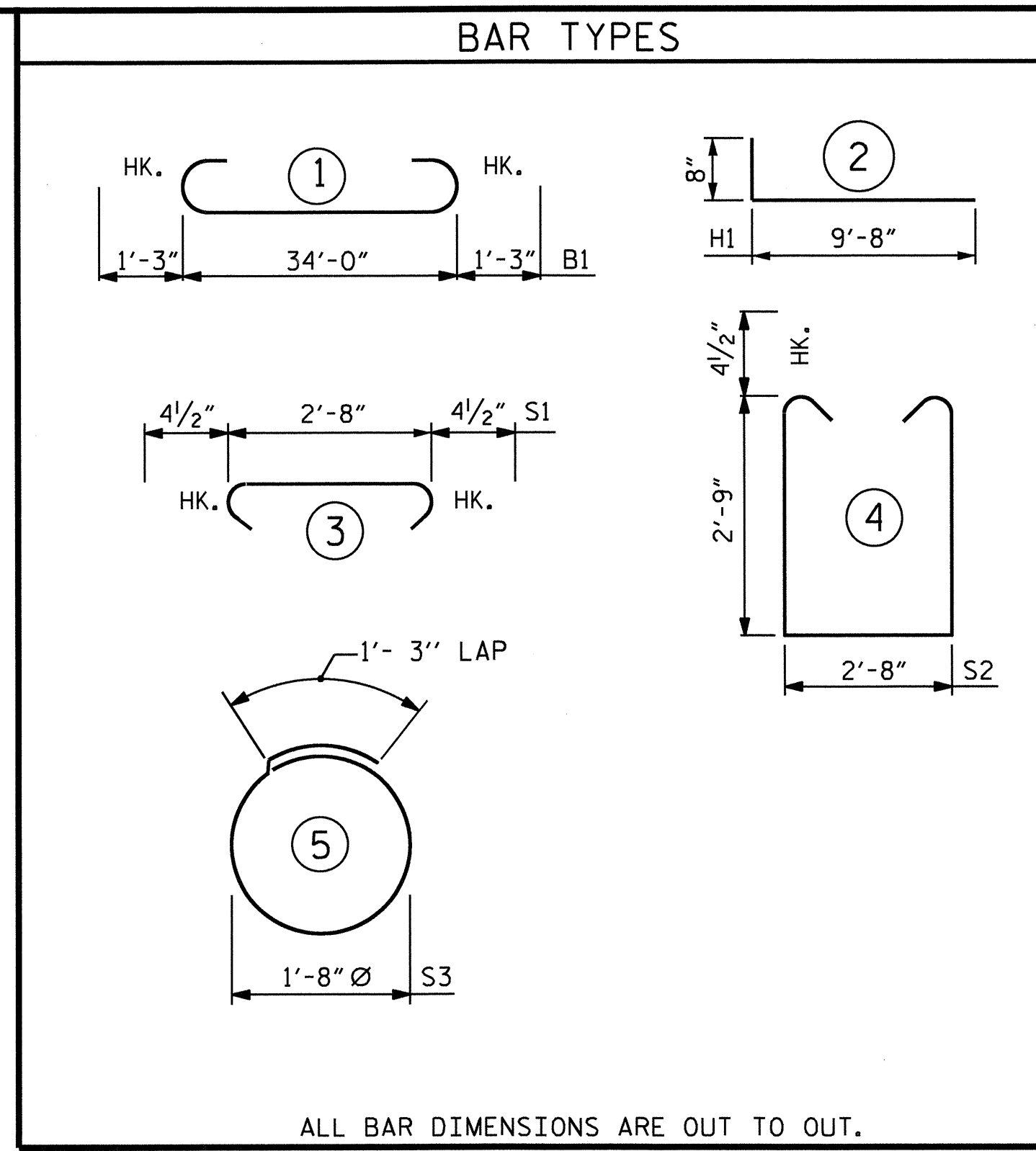


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NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
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 CHECKED BY : M.G. CHEEK DATE : 8/10

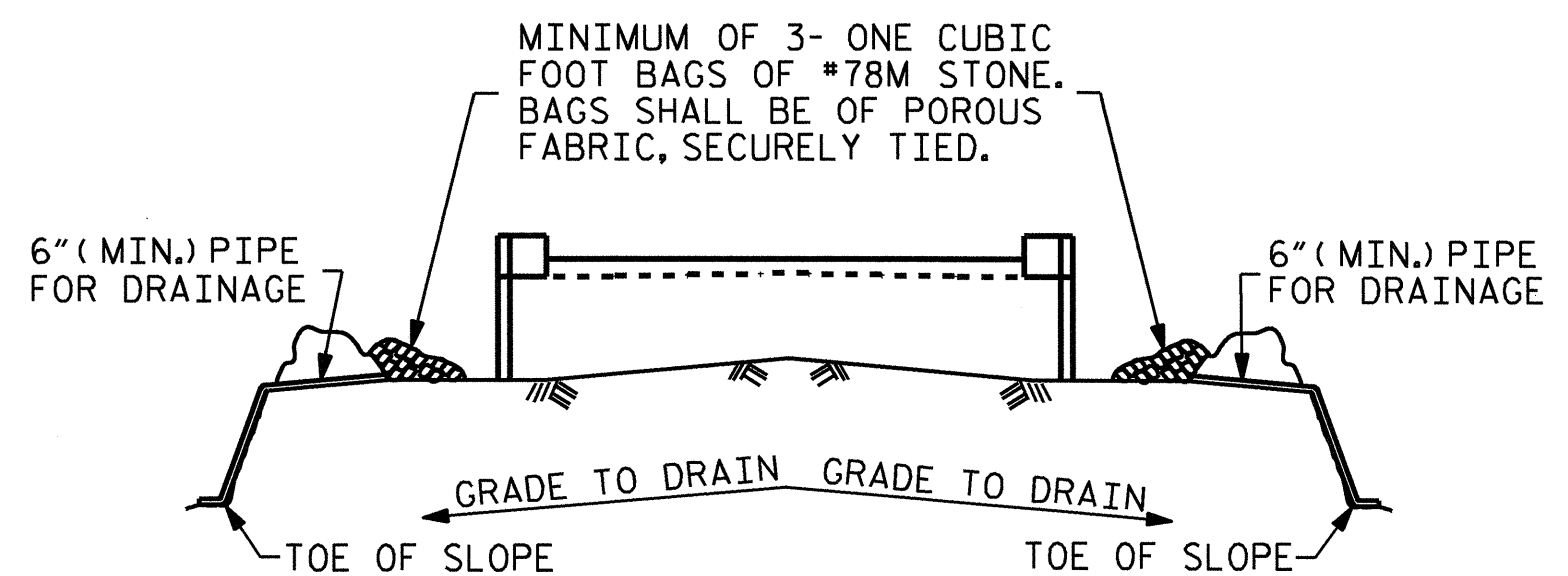


SECTION A-A



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT NO. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		36'-6"	993
B2	4	#5	STR	34'-2"	143
B3	8	#4	STR	18'-4"	98
B4	9	#4	STR	2'-8"	16
H1	36	#5		10'-4"	388
H2	20	#4	STR	2'-8"	36
S1	42	#4		3'-5"	96
S2	42	#4		8'-11"	250
S3	36	#4		6'-6"	156
V1	51	#4	STR	5'-2"	176
V2	52	#5	STR	7'-2"	389
REINFORCING STEEL				LBS.	2741
CLASS A CONCRETE BREAKDOWN:					
POUR #1 - CAP & LOWER PORTION OF WINGS				C.Y.	14.4
POUR #2 - UPPER PORTION OF WINGS				C.Y.	3.9
TOTAL				C.Y.	18.3
HP 12 X 53 STEEL PILES					
NUMBER = 9				LIN. FT. =	205.00
PILE EXCAVATION IN SOIL				49.00 FEET	
PILE EXCAVATION NOT IN SOIL				11.00 FEET	



MINIMUM OF 3- ONE CUBIC FOOT BAGS OF #78M STONE. BAGS SHALL BE OF POROUS FABRIC, SECURELY TIED.

6" (MIN.) PIPE FOR DRAINAGE

GRADE TO DRAIN

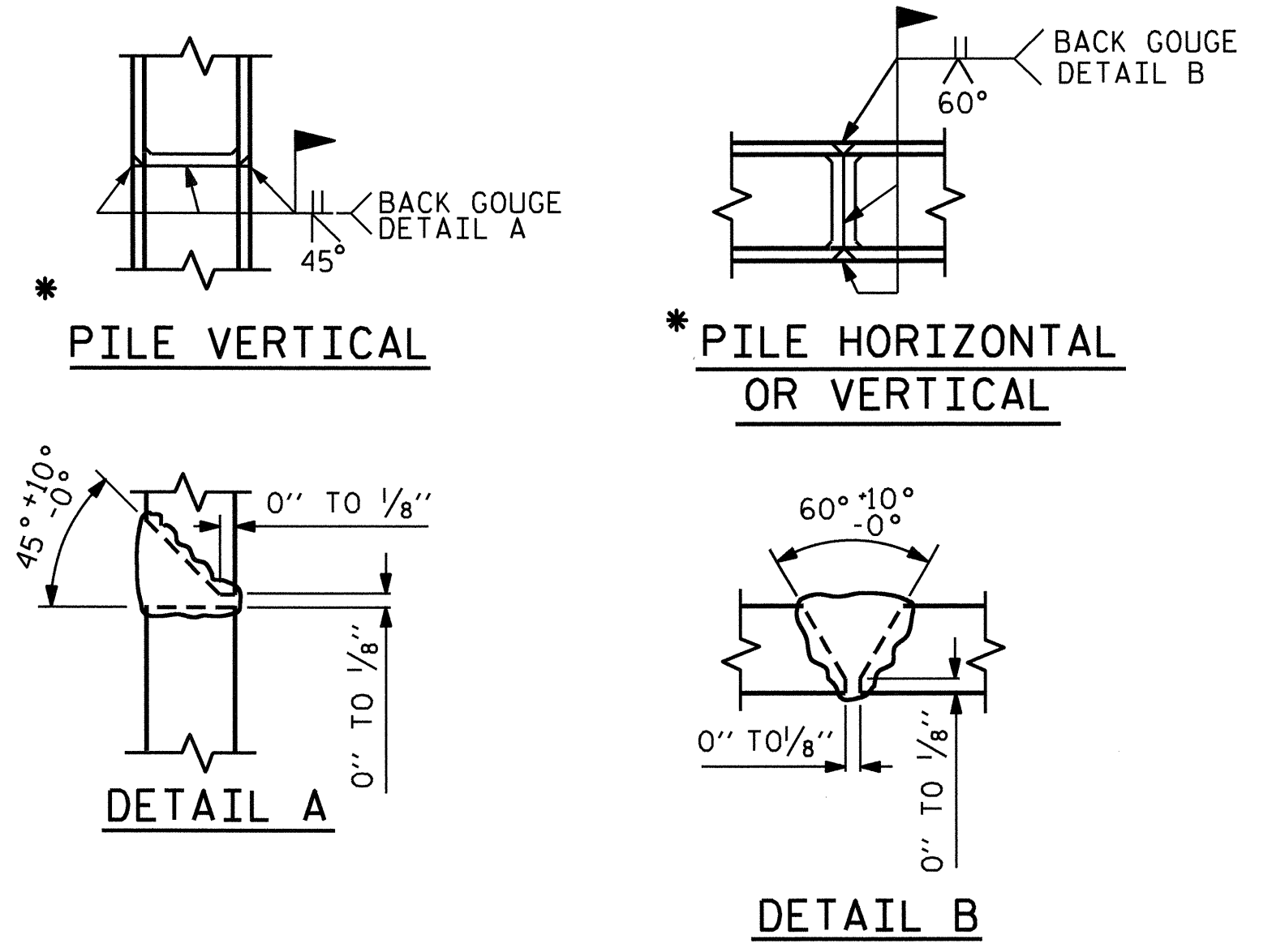
TOE OF SLOPE

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

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

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

TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

* POSITION OF PILE DURING WELDING.

PROJECT NO. B-3187
HAYWOOD COUNTY
STATION: 11+30.50 -L-

SHEET 3 OF 3

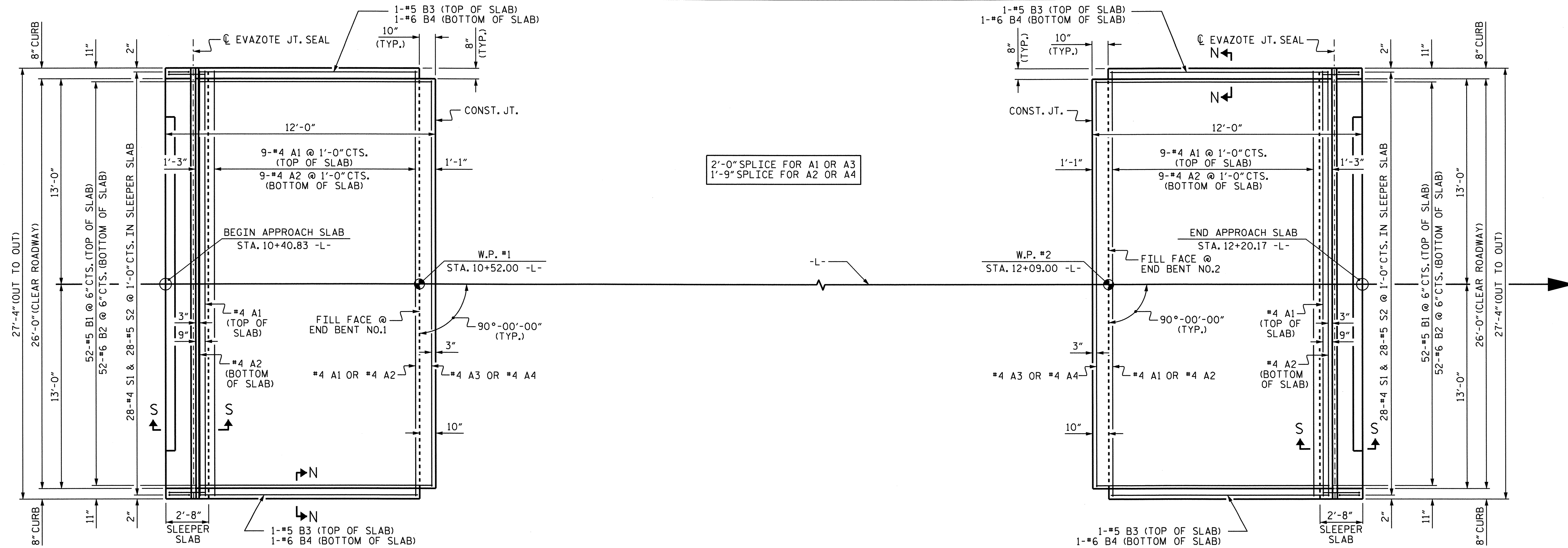
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
INTEGRAL
END BENT NO. 2



DRAWN BY: A. SORSENGINH DATE: 7/29/09
CHECKED BY: M.G. CHEEK DATE: 8/10

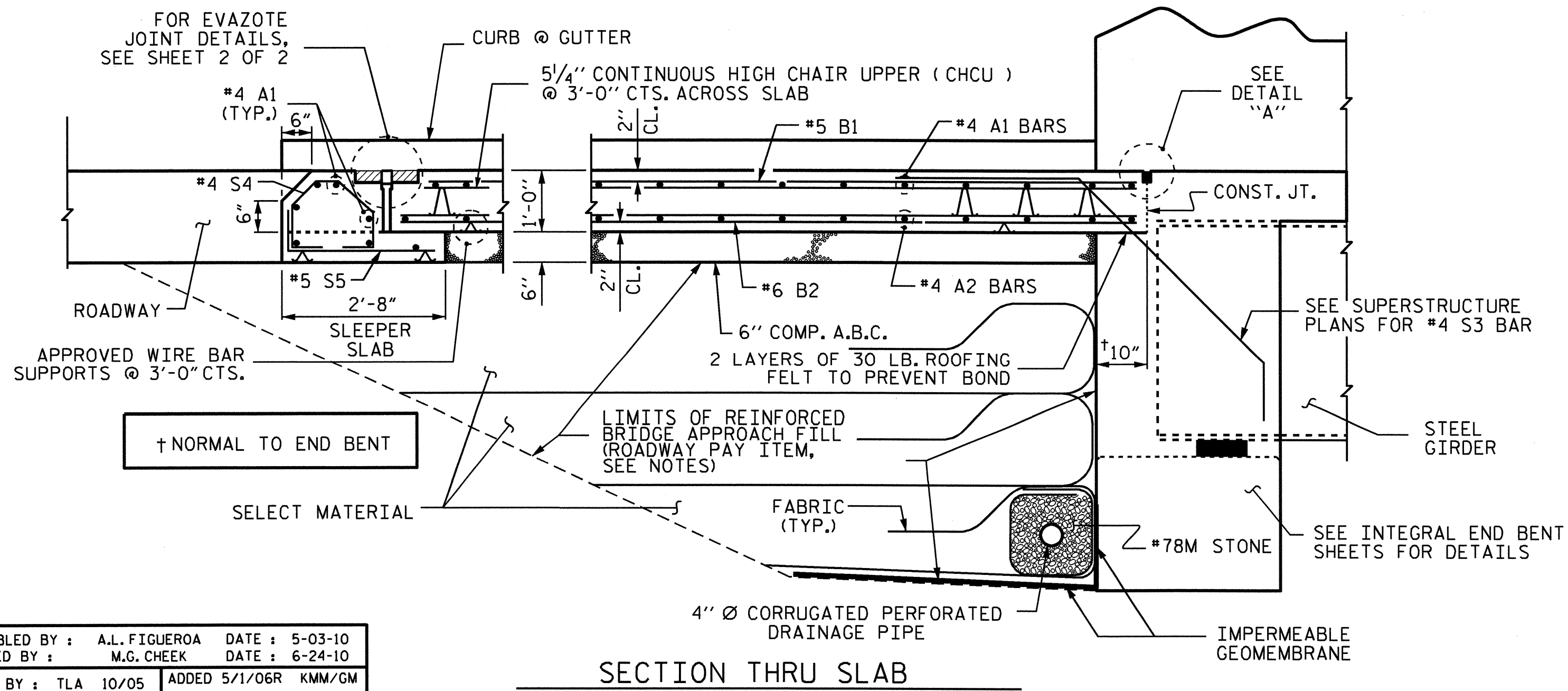
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
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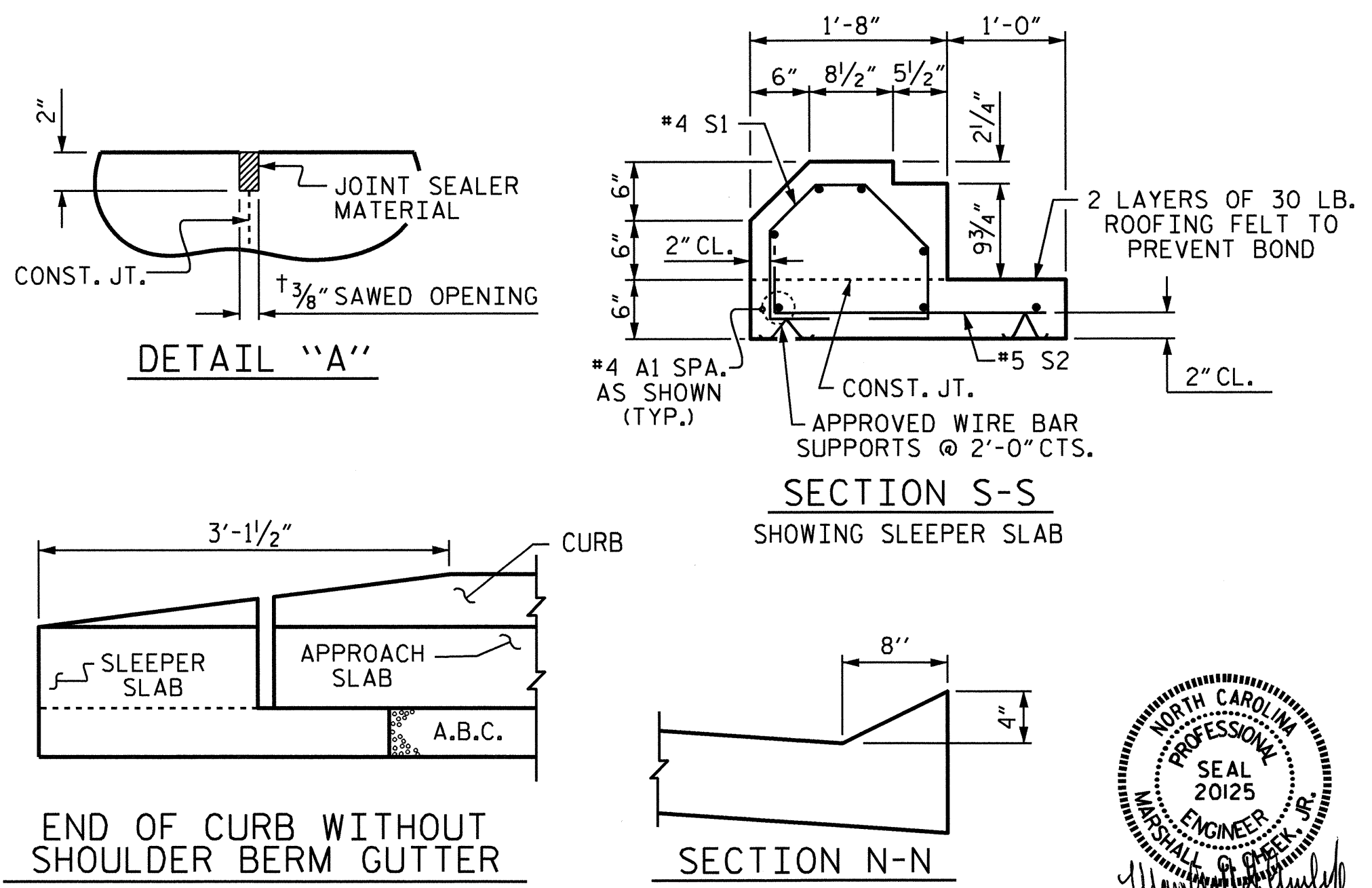
APPROACH SLAB @ END BENT NO. 1

PLAN
 #4 A1 BARS IN SLEEPER SLAB NOT SHOWN FOR CLARITY.

APPROACH SLAB @ END BENT NO. 2



SECTION THRU SLAB



END OF CURB WITHOUT SHOULDER BERM GUTTER

SECTION N-N

PROJECT NO. B-3187
HAYWOOD COUNTY
 STATION: 11+30.50 -L-

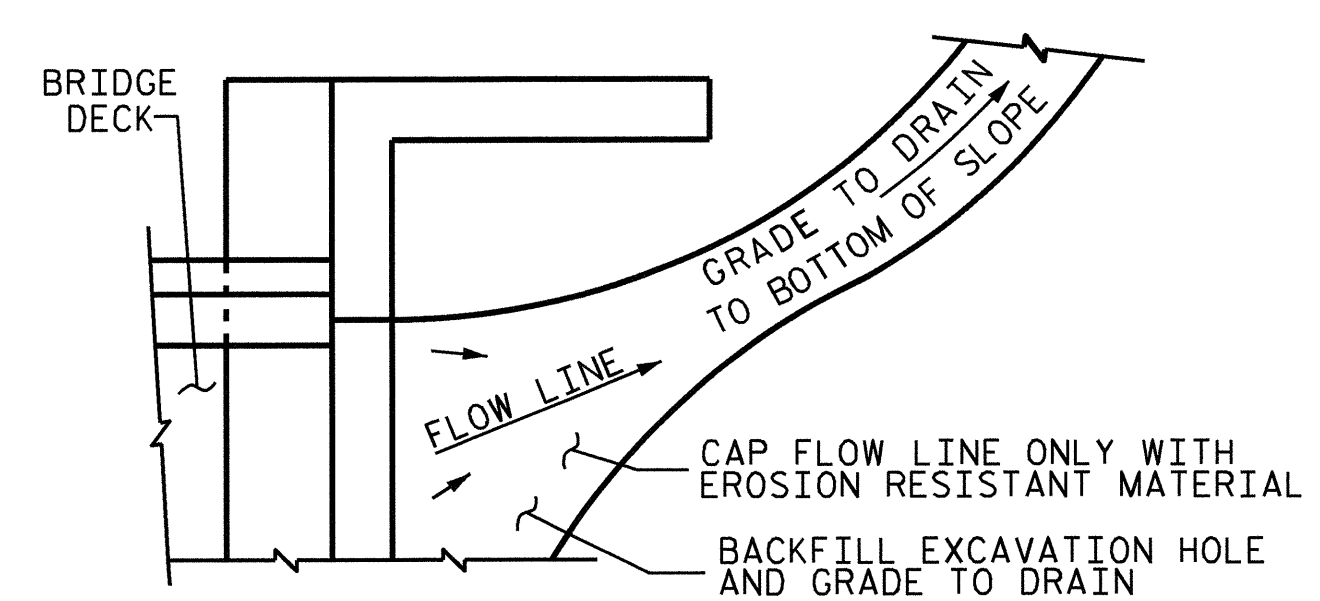
SHEET 1 OF 2

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

ASSEMBLED BY : A.L. FIGUEROA DATE : 5-03-10
 CHECKED BY : M.G. CHEEK DATE : 6-24-10
 DRAWN BY : TLA 10/05
 CHECKED BY : GM 5/06
 ADDED 5/1/06R KMM/GM

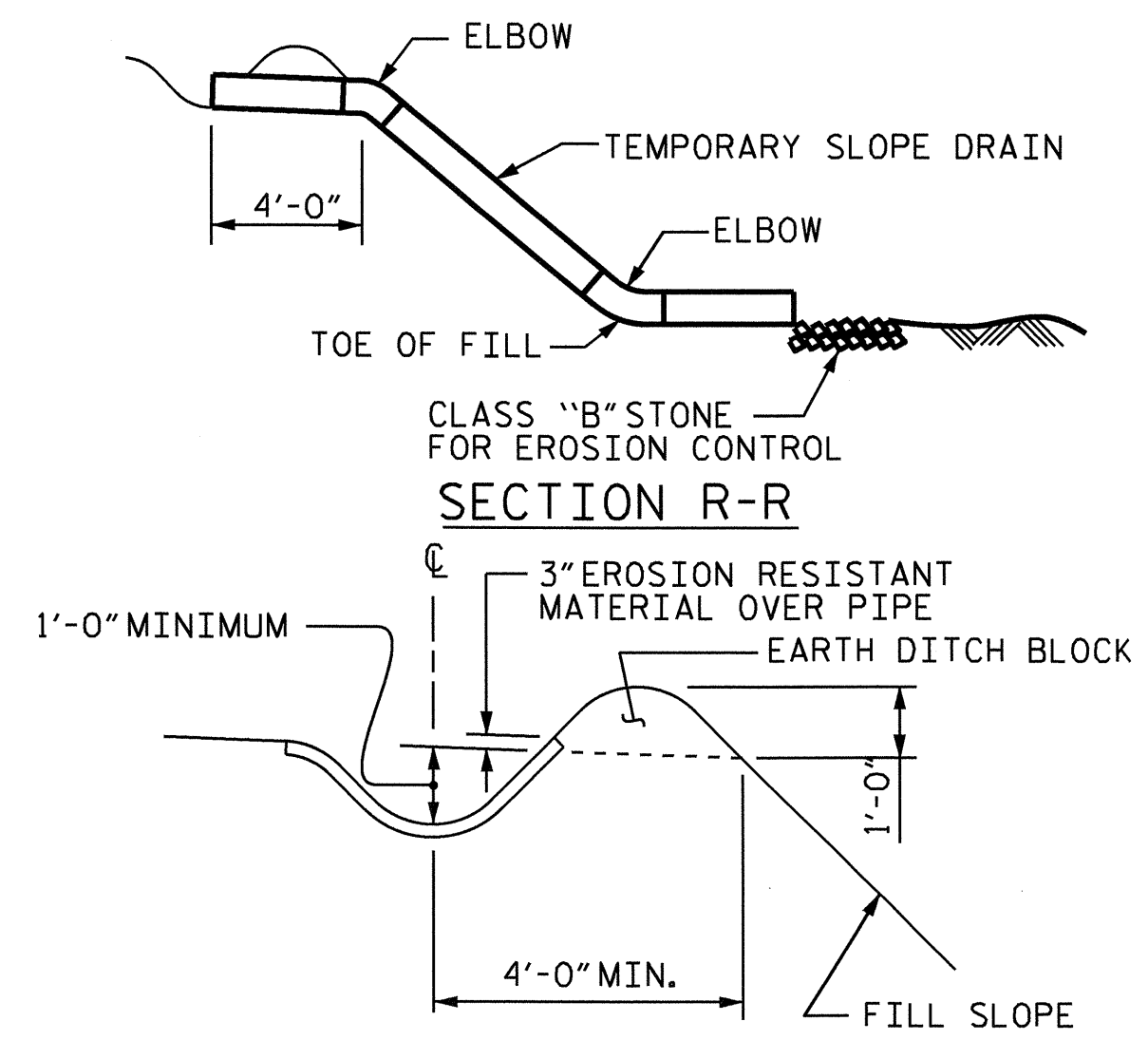
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STD. NO. BAS11

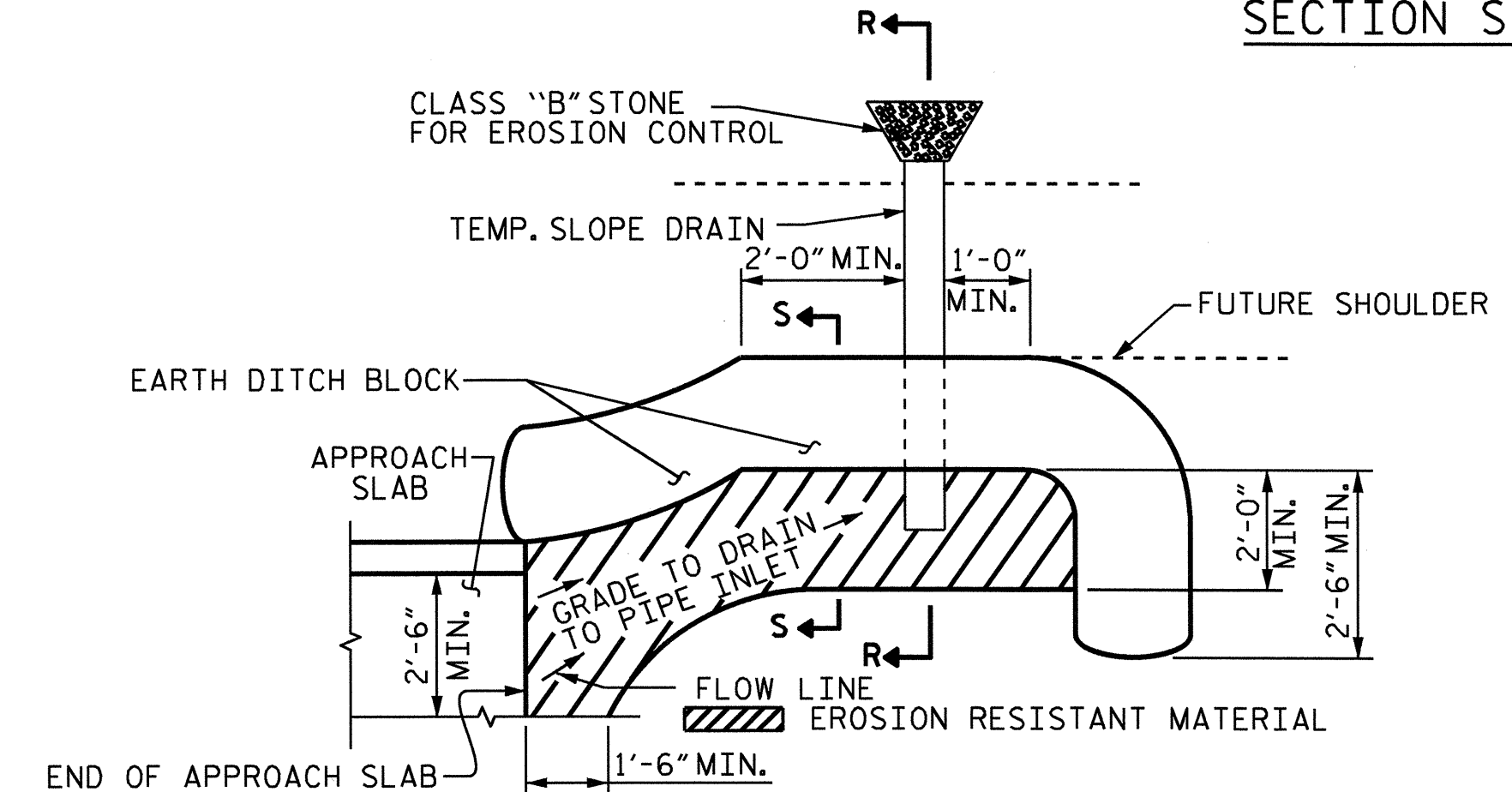


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL



SECTION S-S



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 DIAMETER.

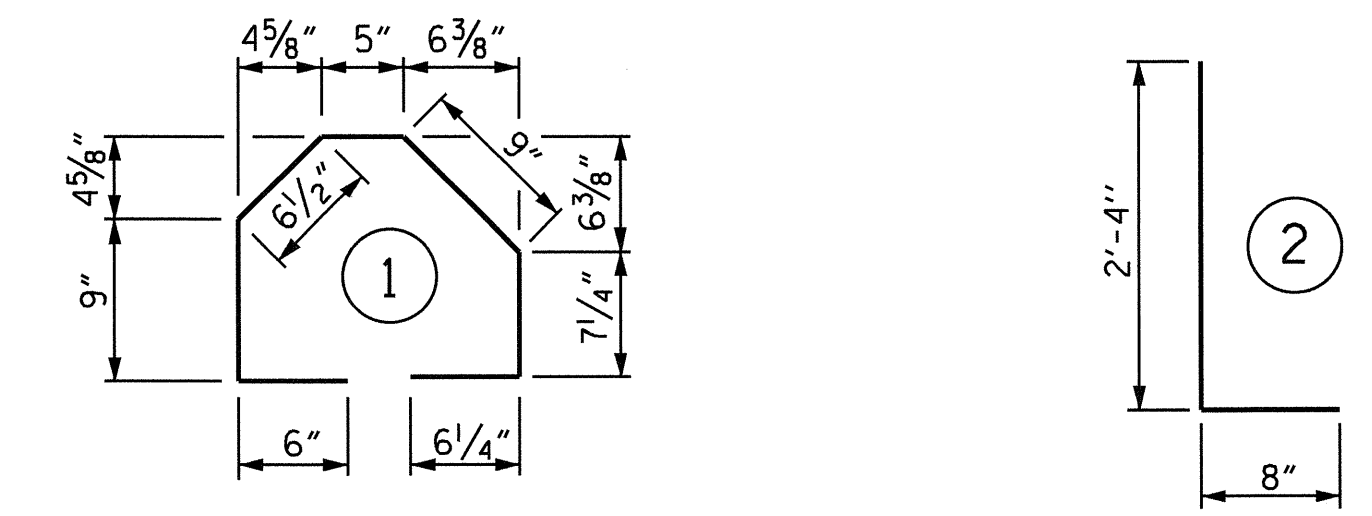
PLAN VIEW

TEMPORARY BERM AND SLOPE DRAIN DETAILS

BILL OF MATERIAL

APPROACH SLAB AT EB NO.1						APPROACH SLAB AT EB NO.2							
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT		
*A1	17	#4	STR	27'-0"	307	*A1	17	#4	STR	27'-0"	307		
A2	10	#4	STR	27'-0"	180	A2	10	#4	STR	27'-0"	180		
*A3	1	#4	STR	25'-8"	17	*A3	1	#4	STR	25'-8"	17		
A4	1	#4	STR	25'-8"	17	A4	1	#4	STR	25'-8"	17		
*B1	52	#5	STR	9'-5"	511	*B1	52	#5	STR	9'-5"	511		
B2	52	#6	STR	9'-10"	768	B2	52	#6	STR	9'-10"	768		
*B3	2	#5	STR	8'-7"	18	*B3	2	#5	STR	8'-7"	18		
B4	2	#6	STR	9'-0"	27	B4	2	#6	STR	9'-0"	27		
*S1	28	#4	1	4'-1"	76	*S1	28	#4	1	4'-1"	76		
S2	28	#5	2	3'-0"	88	S2	28	#5	2	3'-0"	88		
REINFORCING STEEL					LBS.	1,080	REINFORCING STEEL					LBS.	1,080
*EPOXY COATED REINFORCING STEEL					LBS.	929	*EPOXY COATED REINFORCING STEEL					LBS.	929
CLASS AA CONCRETE							CLASS AA CONCRETE						
POUR #1 SLEEPER SLAB					2.8	C.Y.	POUR #1 SLEEPER SLAB					2.8	C.Y.
POUR #2 SLAB & CURBS					10.5	C.Y.	POUR #2 SLAB & CURBS					10.5	C.Y.
TOTAL					13.3	C.Y.	TOTAL					13.3	C.Y.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT
* THESE BARS ARE EPOXY COATED

NOTES

APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
FOR REINFORCED BRIDGE APPROACH FILL INCLUDING FABRIC, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, AND SELECT MATERIAL, SEE ROADWAY PLANS.
TEMPORARY DRAINAGE AND TEMPORARY BERM AND SLOPE DRAINS WILL BE PAID FOR UNDER THE LUMP SUM PRICE FOR BRIDGE APPROACH SLAB.

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

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

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

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

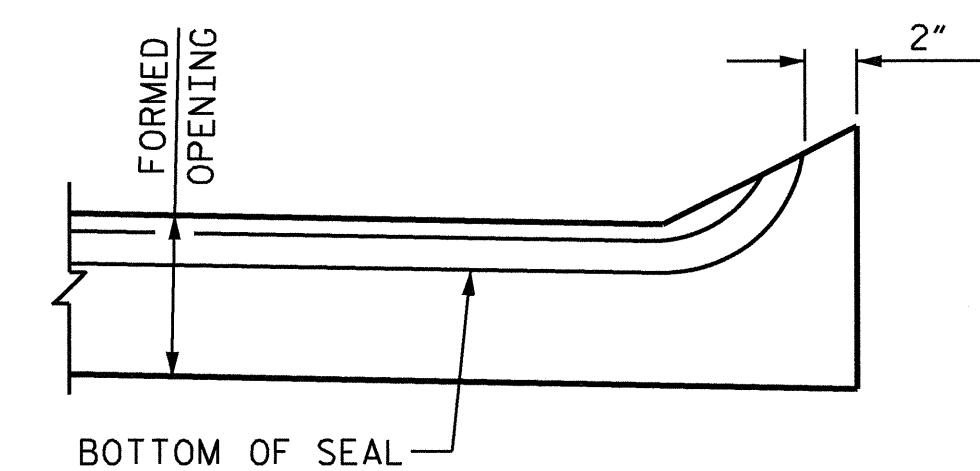
THE VERTICAL JOINT ON THE RIGHT AND LEFT SIDE OF THE APPROACH SLAB AT THE ENDS OF THE EVAZOTE JOINT SHALL BE FILLED WITH SILICONE OR OTHER APPROVED MATERIAL IN ORDER TO PREVENT BACKFILL FROM ENTERING THE JOINT OPENING.

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

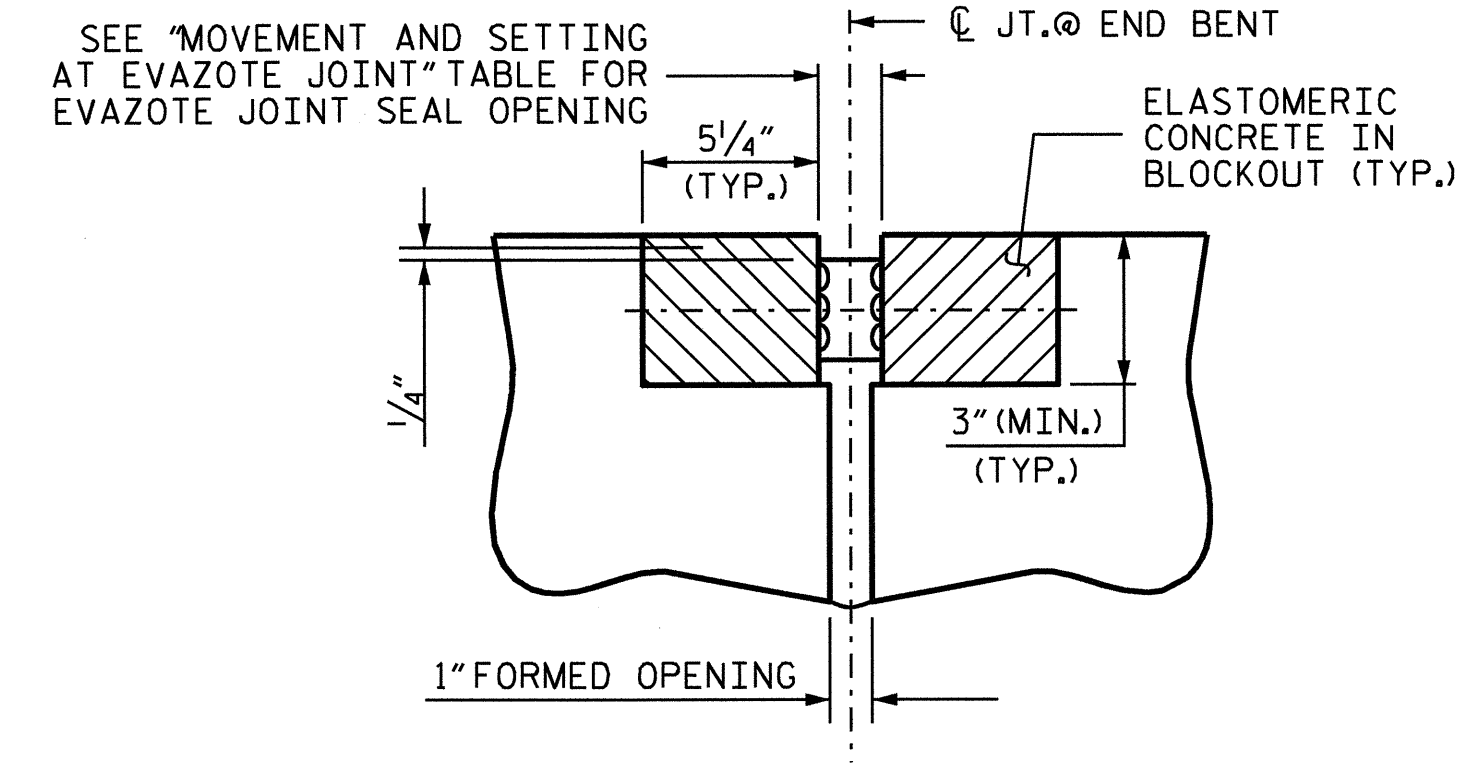
GROOVING BRIDGE FLOORS IS NOT REQUIRED ON THE TOP SURFACE OF THE SLEEPER SLAB. INSTEAD, APPLY A BROOMED TEXTURE IN ACCORDANCE WITH ARTICLE 442-3 OF THE STANDARD SPECIFICATIONS.

SEE SPECIAL PROVISIONS FOR EVAZOTE JOINT SEALS.
THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2 1/2".

SEE SPECIAL PROVISIONS FOR ELASTOMERIC CONCRETE.



SECTION A-A



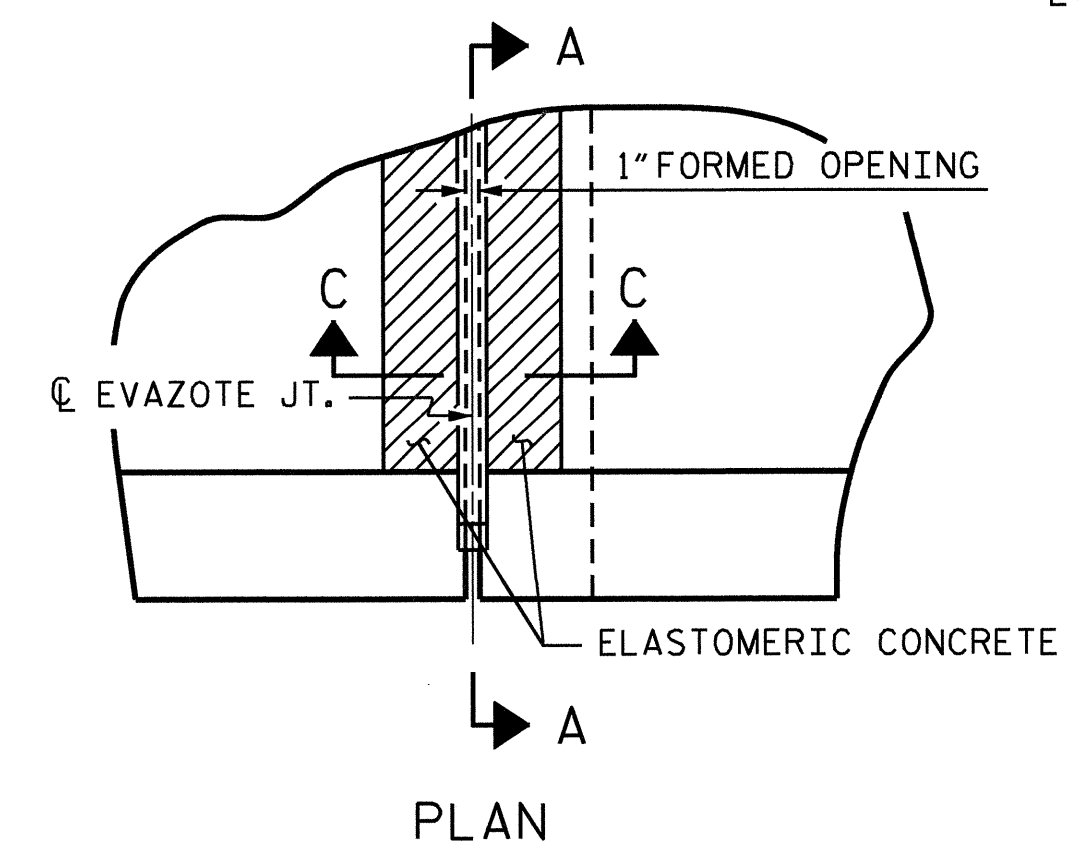
SECTION C-C
EVAZOTE JOINT SEAL

MOVEMENT AND SETTING AT EVAZOTE JOINT							
END BENT NO.	SKEW ANGLE	NOMINAL UNCOMPRESSED SEAL WIDTH	TOTAL MOVEMENT (ALONG C.R.D.WY)	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F	FORMED OPENING
1	90°	2 1/2"	1/8"	2"	1 1/8"	1 5/8"	1"
2	90°	2 1/2"	1/8"	2"	1 1/8"	1 5/8"	1"

TOTAL MOVEMENT IS CALCULATED ALONG THE CENTERLINE OF ROADWAY. JOINT OPENINGS ARE MEASURED PERPENDICULAR TO THE JOINT.

ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE ** (CU. FT.)
1	5.7
2	5.7
TOTAL	11.4

** BASED ON THE MINIMUM BLOCKOUT SHOWN.



JOINT SEAL DETAILS

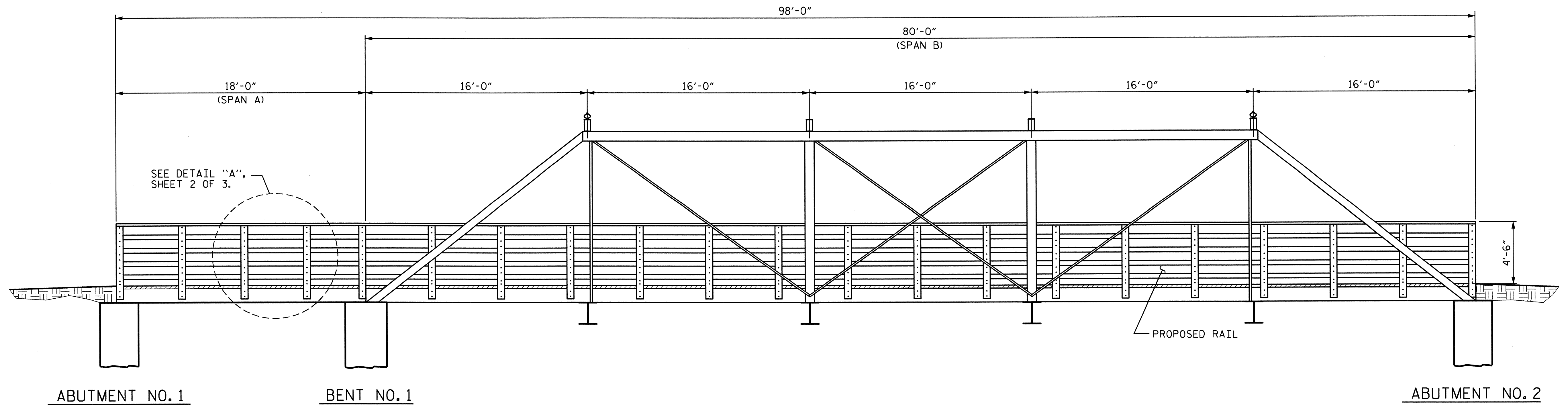
PROJECT NO. B-3187
HAYWOOD COUNTY
STATION: 11+30.50 -L-

SHEET 2 OF 2

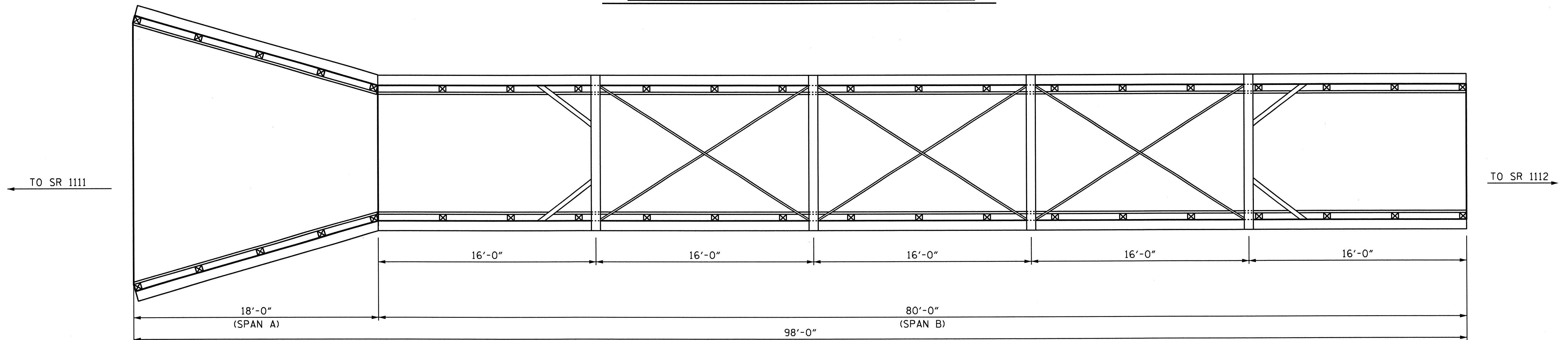
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BRIDGE APPROACH
SLAB DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS 27
2			4			

ASSEMBLED BY : A.L. FIGUEROA DATE : 5-03-10
CHECKED BY : M.G. CHEEK DATE : 6-24-10
DRAWN BY : FCJ 11/88 REV. 10/17/00 RWW/LJS
CHECKED BY : ARB 11/88 REV. 5/7/03 RWW/JTE
REV. 5/1/06 TLA/GM



ELEVATION



PLAN

TOTAL BILL OF MATERIAL	
	REHABILITATION OF EXISTING STRUCTURE
	LUMP SUM
TOTAL	LUMP SUM

PROJECT NO. B-3187
HAYWOOD COUNTY

STATION: _____

SHEET 1 OF 2 BRIDGE NO. 79

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE NO. 79
 OVER
 WEST FORK PIGEON RIVER
 BETWEEN
 SR 1111 AND SR 1112



REVISIONS						SHEET NO. S-26 TOTAL SHEETS 27
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DRAWN BY : A.L. FIGUEROA DATE : 09/07/10
 CHECKED BY : M.G. CHEEK DATE : 10/07/10

NOTES

DIMENSIONS SHOWN ON THE PLANS ARE APPROXIMATE AND SHOULD BE VERIFIED BY THE CONTRACTOR IN THE FIELD AS NEEDED.

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

PROVIDE NEW TIMBER BRIDGE RAILS TO THE SAME SIZE, POST SPACING, AND LENGTHS AS EXISTING BRIDGE RAILS OR AS DIRECTED BY THE ENGINEER. SEE SPECIAL PROVISION FOR "STRUCTURAL TIMBER AND LUMBER".

ALL TREATED LUMBER FOR THE GUARDRAIL & POSTS SHALL MEET THE REQUIREMENTS OF SECTION 1082 OF THE NCDOT STANDARD SPECIFICATIONS.

ALL SCREWS, BOLTS, NUTS AND WASHERS ARE TO BE HOT DIPPED GALVANIZED AND SHALL MEET THE REQUIREMENTS OF SECTION 1076 OF THE STANDARD SPECIFICATIONS.

STAGGER 2" X 6" END JOINTS SO THAT THERE ARE NO MORE THAN 2 JOINTS ON A POST.

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 COST 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 "REHABILITATION OF EXISTING STRUCTURE".

FOR REHABILITATION OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

FOR UNDER STRUCTURE WORK PLATFORM, SEE SPECIAL PROVISIONS.

ALL STRUCTURAL STEEL MEMBERS SHALL BE CLEANED AND PAINTED. THE APPROXIMATE STEEL AREA TO BE CLEANED AND PAINTED IS 1400 SQUARE FEET. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE ACTUAL AREA TO BE CLEANED AND PAINTED.

FOR CLEANING AND PAINTING EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

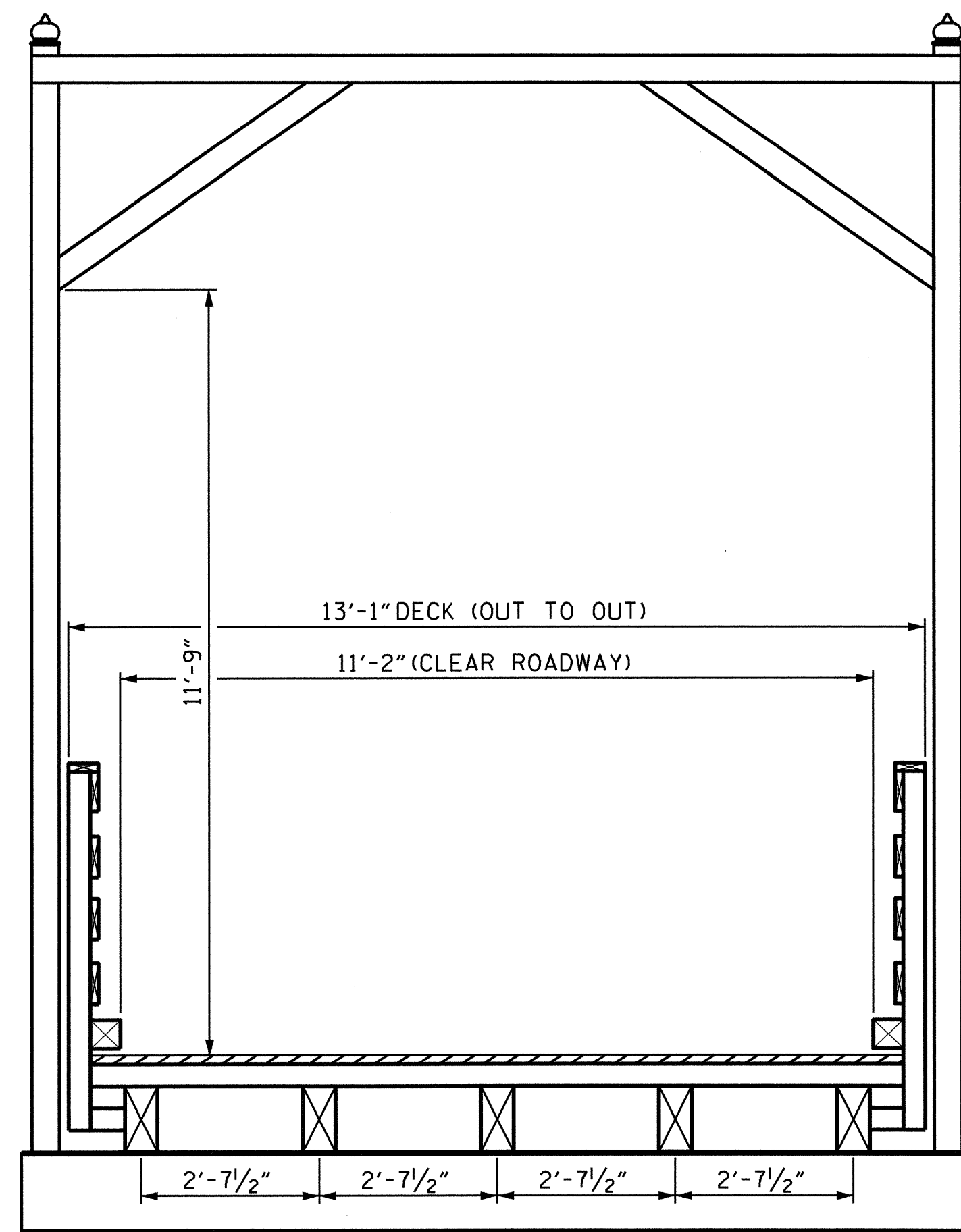
FOR MANAGING BRIDGE WASH WATER, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.

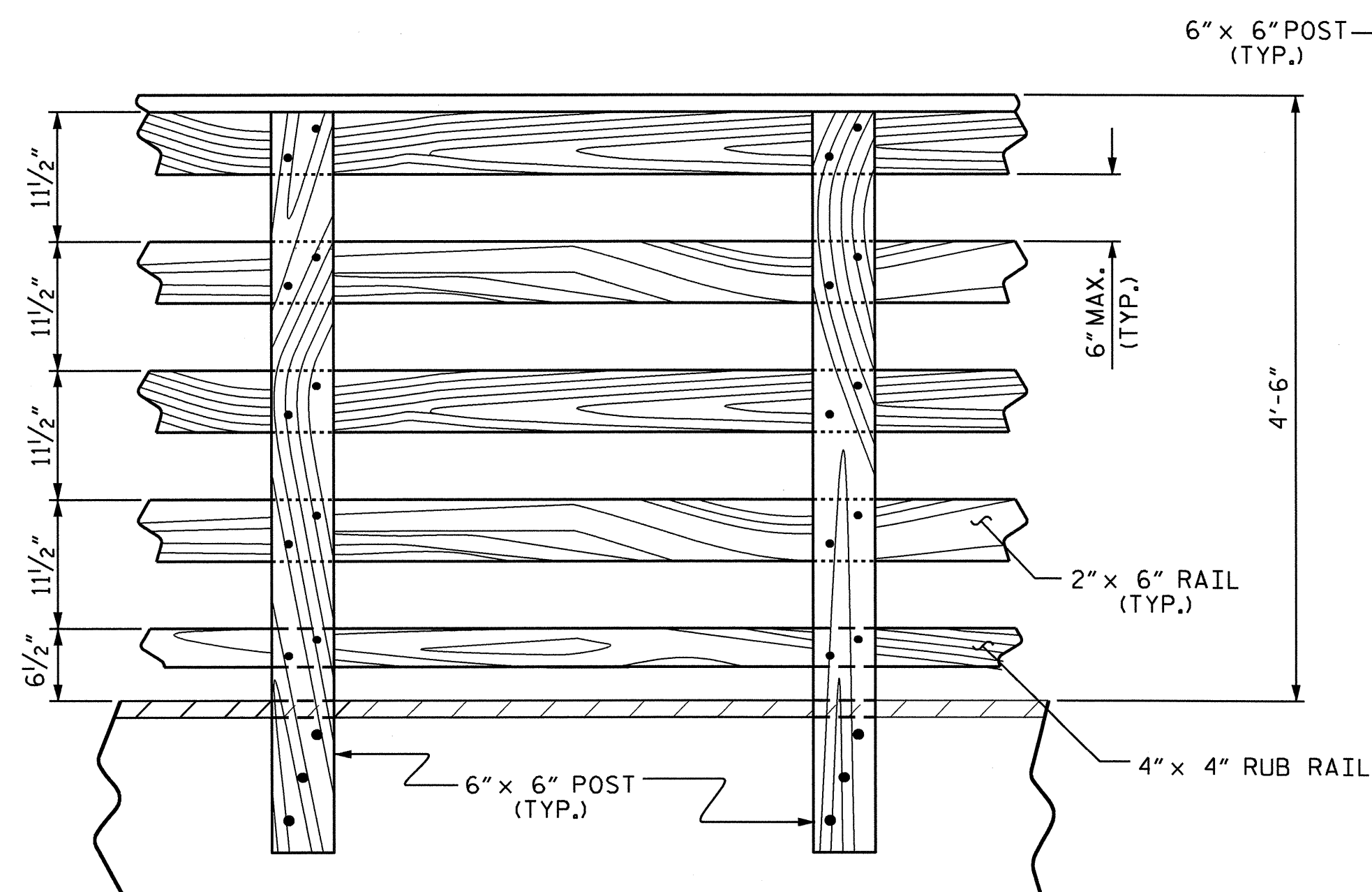
TENSION ON HIGH STRENGTH BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATORS. FOR DIRECT TENSION INDICATORS, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.



TYPICAL SECTION THRU TRUSS

(SHOWING PROPOSED RAIL REPLACEMENT)

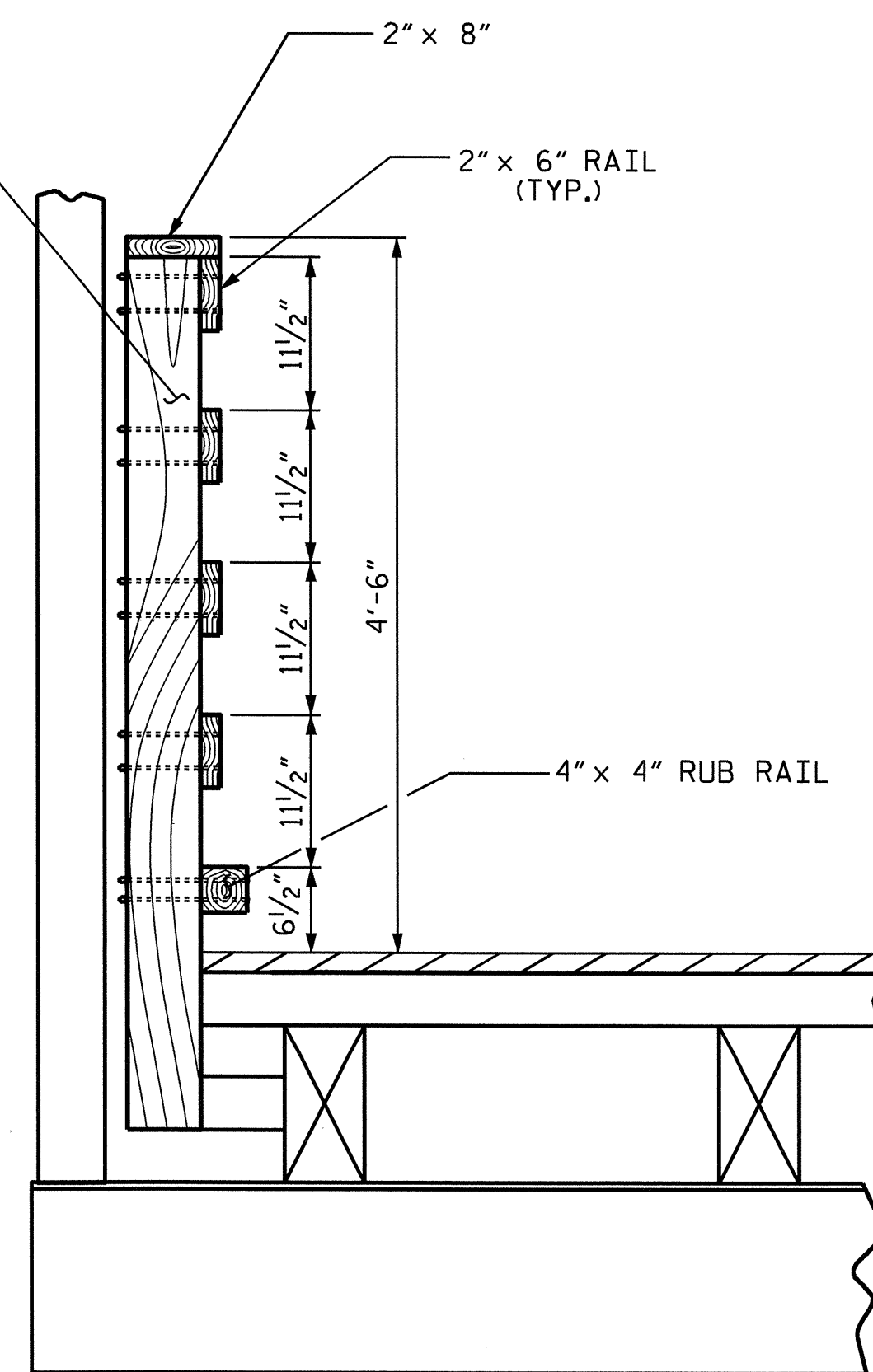


DETAIL "A"

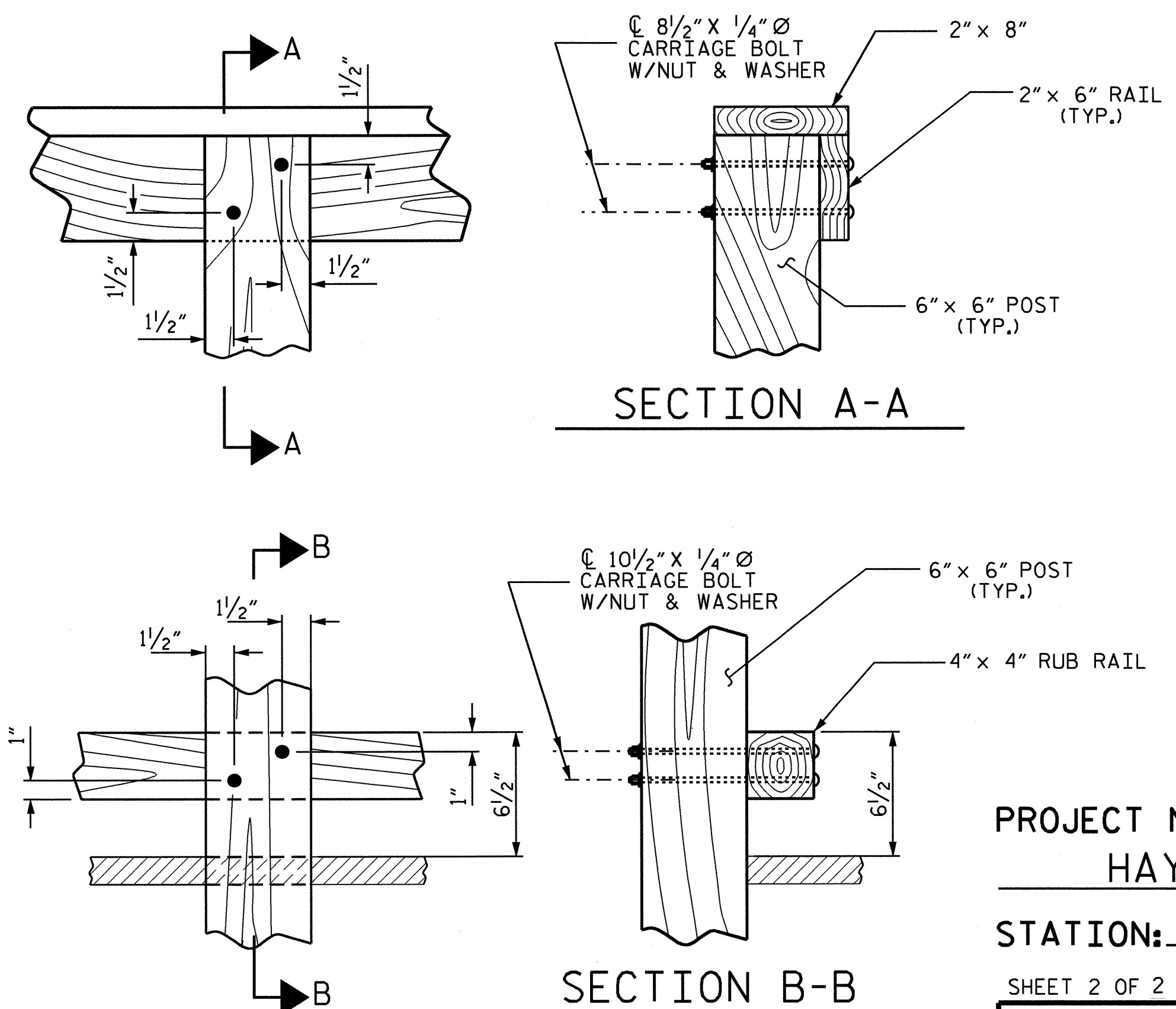
NOTE: OPENING BETWEEN RAILS MAY NOT EXCEED 6"

DRAWN BY : W.J. HARRIS/ALF DATE : 10-10
 CHECKED BY : M.G. CHEEK DATE : 10-10

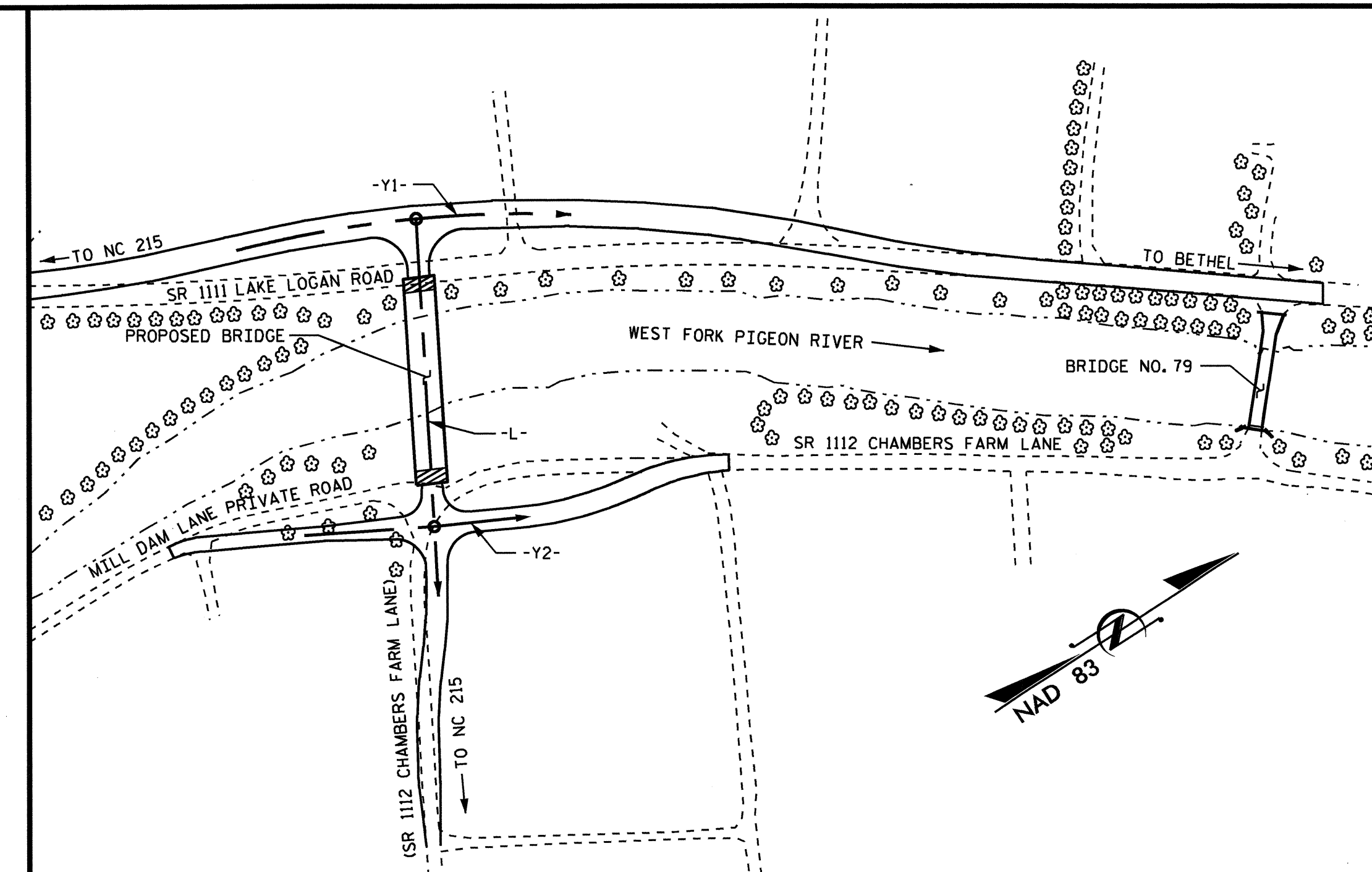
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SECTION THRU RAIL



CONNECTION DETAILS



LOCATION SKETCH

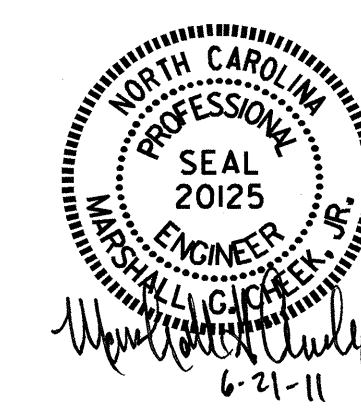
PROJECT NO. B-3187
 HAYWOOD COUNTY

STATION: _____

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE NO. 79
 DETAILS



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

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE. ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER. DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

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

STRUCTURAL STEEL:

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

HANDRAILS AND POSTS:

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

SPECIAL NOTES:

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

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