

TIP PROJECT: B-4200

CONTRACT: C202776

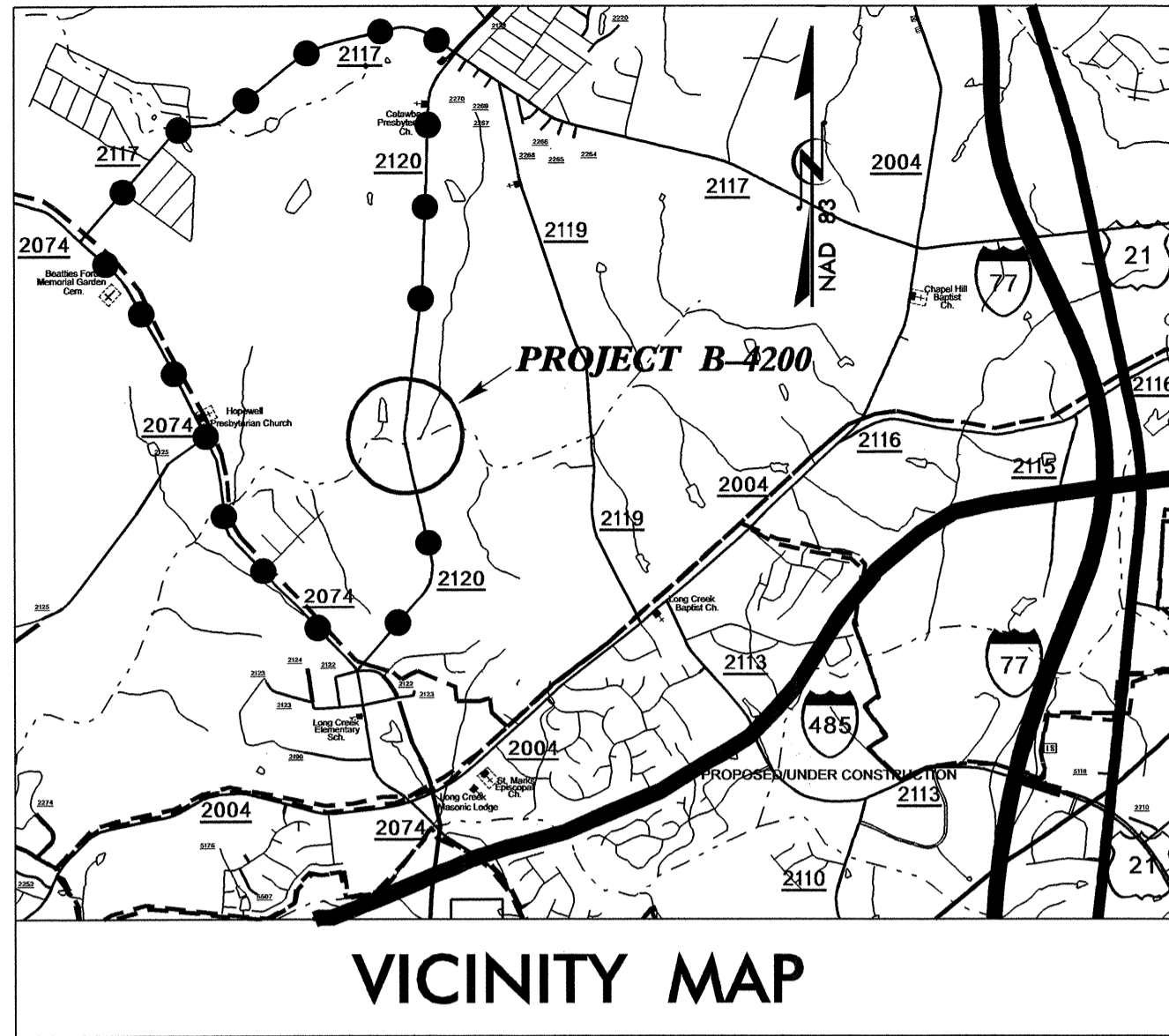
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MECKLENBURG COUNTY

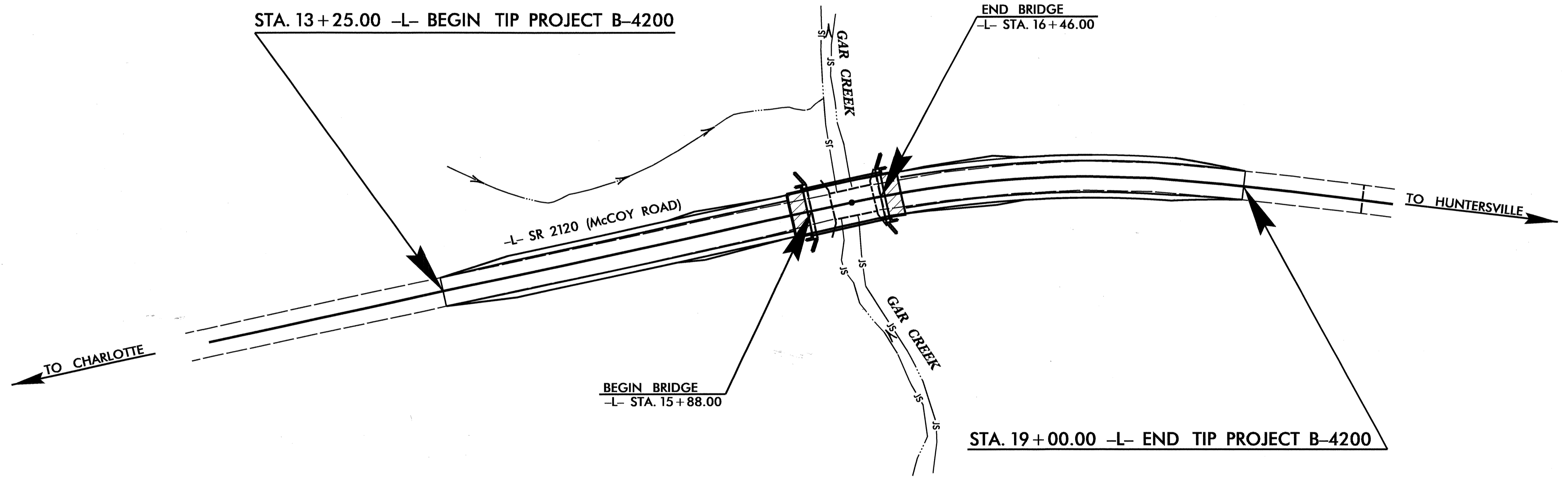
**LOCATION: BRIDGE NO. 100 OVER GAR CREEK ON
SR 2120 (McCoy Road)**

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4200		
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
33547.1.1	BRSTP-2120(2)	PE	
33547.2.1	BRSTP-2120(2)	RW & UTILITIES	
33547.3.1	BRSTP-2120(2)	CONST.	

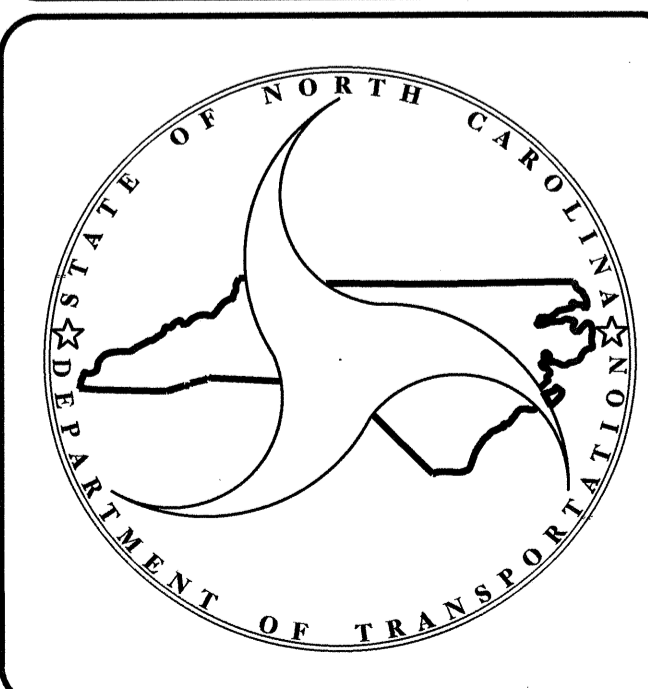


●-●-●- DETOUR ROUTE



STRUCTURE

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF HUNTERSVILLE.



DESIGN DATA

ADT 2012 =	3605
ADT 2035 =	8800
DHV =	12 %
D =	60 %
T =	4 % *
V =	50 MPH
* TTST 1%	DUAL 3%
FUNC. CLASS. = RURAL	
MAJOR COLLECTOR	
"SUB-REGIONAL TIER"	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4200 =	0.098 MILES
LENGTH STRUCTURE TIP PROJECT B-4200 =	0.011 MILES
TOTAL LENGTH OF TIP PROJECT B-4200 =	0.109 MILES

Prepared in the Office of:

DIVISION OF HIGHWAYS

1000 BIRCH RIDGE DR., RALEIGH, NC 27610

2012 STANDARD SPECIFICATIONS	B. C. Hunt, PE PROJECT ENGINEER
LETTING DATE: APRIL 17, 2012	W. K. Fischer, PE PROJECT DESIGN ENGINEER

STRUCTURE MANAGEMENT UNIT

**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**

P.E.
STATE HIGHWAY DESIGN ENGINEER

12-DEC-2011 08:39
\$\$\$\$\$DGN\$\$\$\$\$

15+50

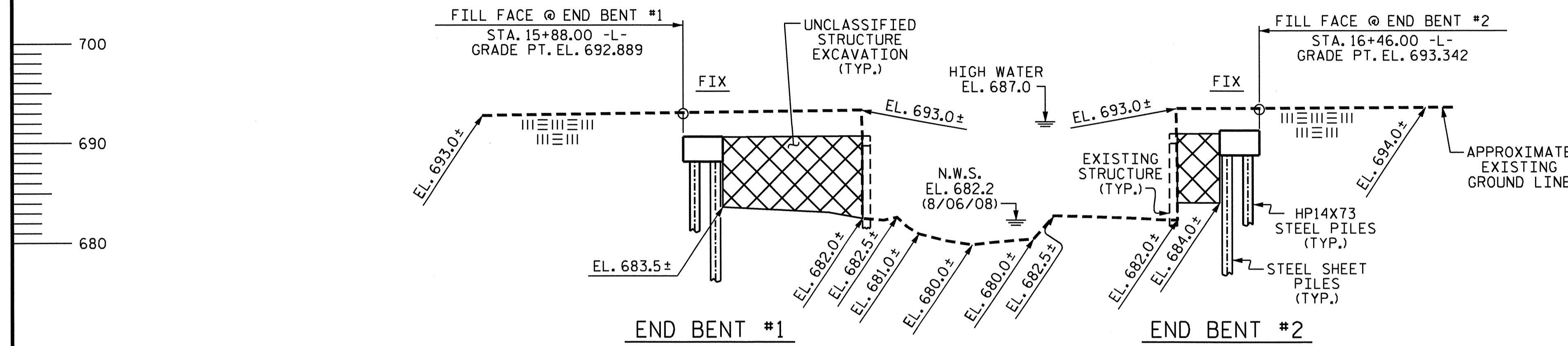
16+00

16+50

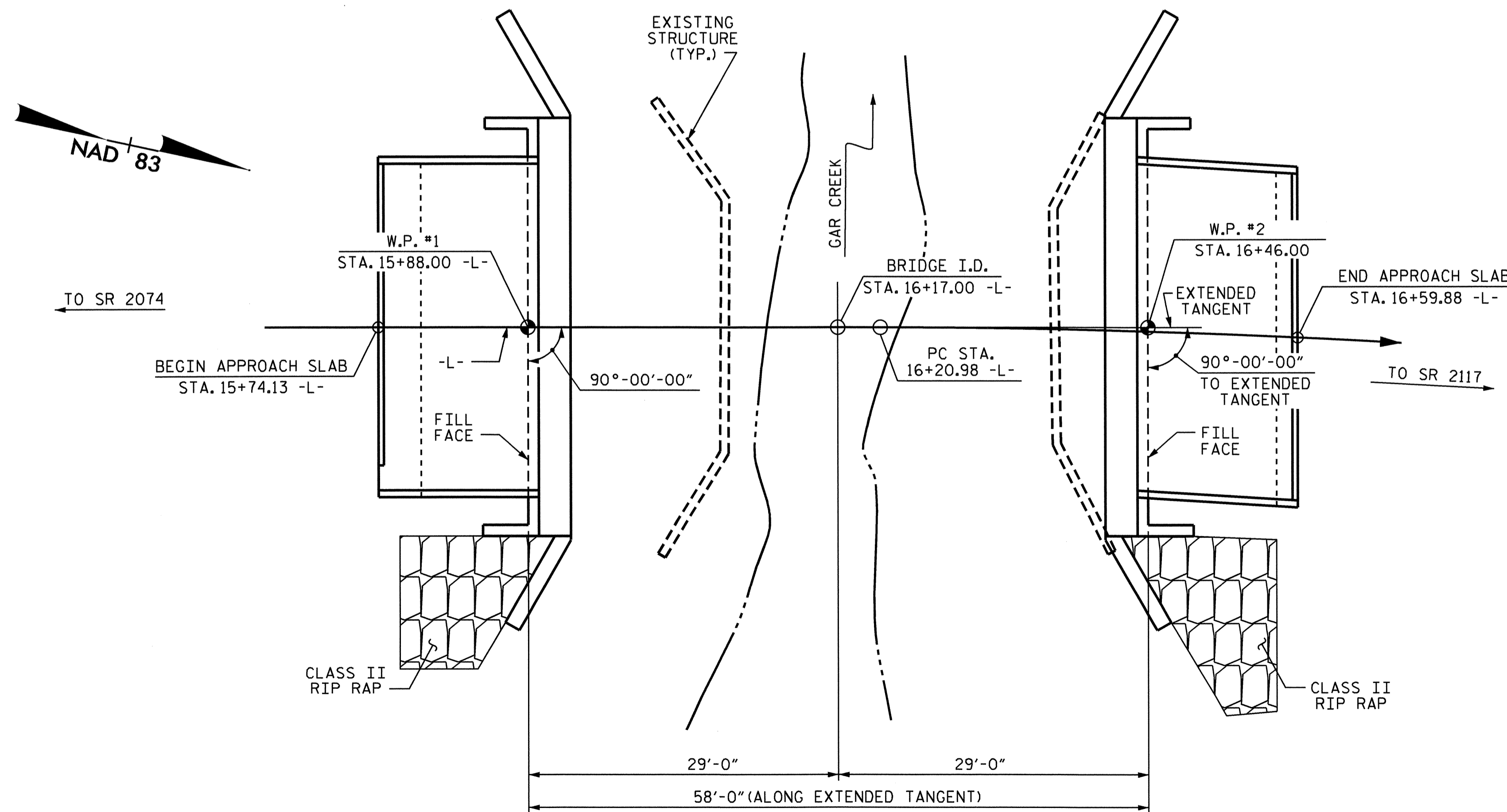
17+00

(-).1439% (+).5593%
 PI = 16+07.00 -L-
 EL. = 692.52
 VC = 230'
GRADE DATA

SPAN A



SECTION ALONG -L-



PLAN

PILES AND SHEET PILES NOT SHOWN FOR CLARITY

PI STA. = 17+55.57 -L-
 $\Delta = 19^\circ-06'-00''$ (RT)
 D = $7^\circ-09'-43.1''$
 L = 266.69'
 T = 134.59'
 R = 800.00'

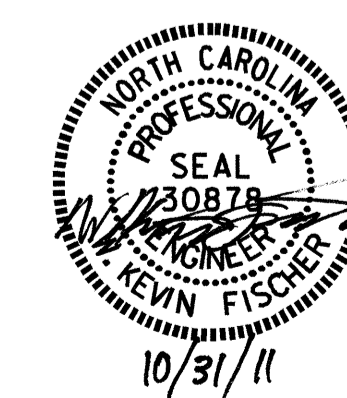
HORIZONTAL CURVE DATA

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. B-4200
MECKLENBURG COUNTY
 STATION: 16+17.00 -L-

SHEET 1 OF 3 REPLACES BRIDGE #100

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER GAR CREEK
 ON SR 2120 (McCOY RD.)
 BETWEEN SR 2074 AND SR 2117



DRAWN BY: KEITH D. LAYNE DATE: 01/18/11
 CHECKED BY: M. K. BEARD DATE: 7-28-11

06-OCT-2011 10:55
 K:\Structures\plans\B4200.sd.dgn
 Klayne

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

NOTES

FOR BLASTING ADJACENT TO HIGHWAY STRUCTURES, SEE ARTICLE 410-9 OF THE STANDARD SPECIFICATIONS.

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT #1 AND END BENT #2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 100 TONS PER PILE.

DRIVE PILES AT END BENT #1 AND END BENT #2 TO A REQUIRED DRIVING RESISTANCE OF 167 TONS PER PILE.

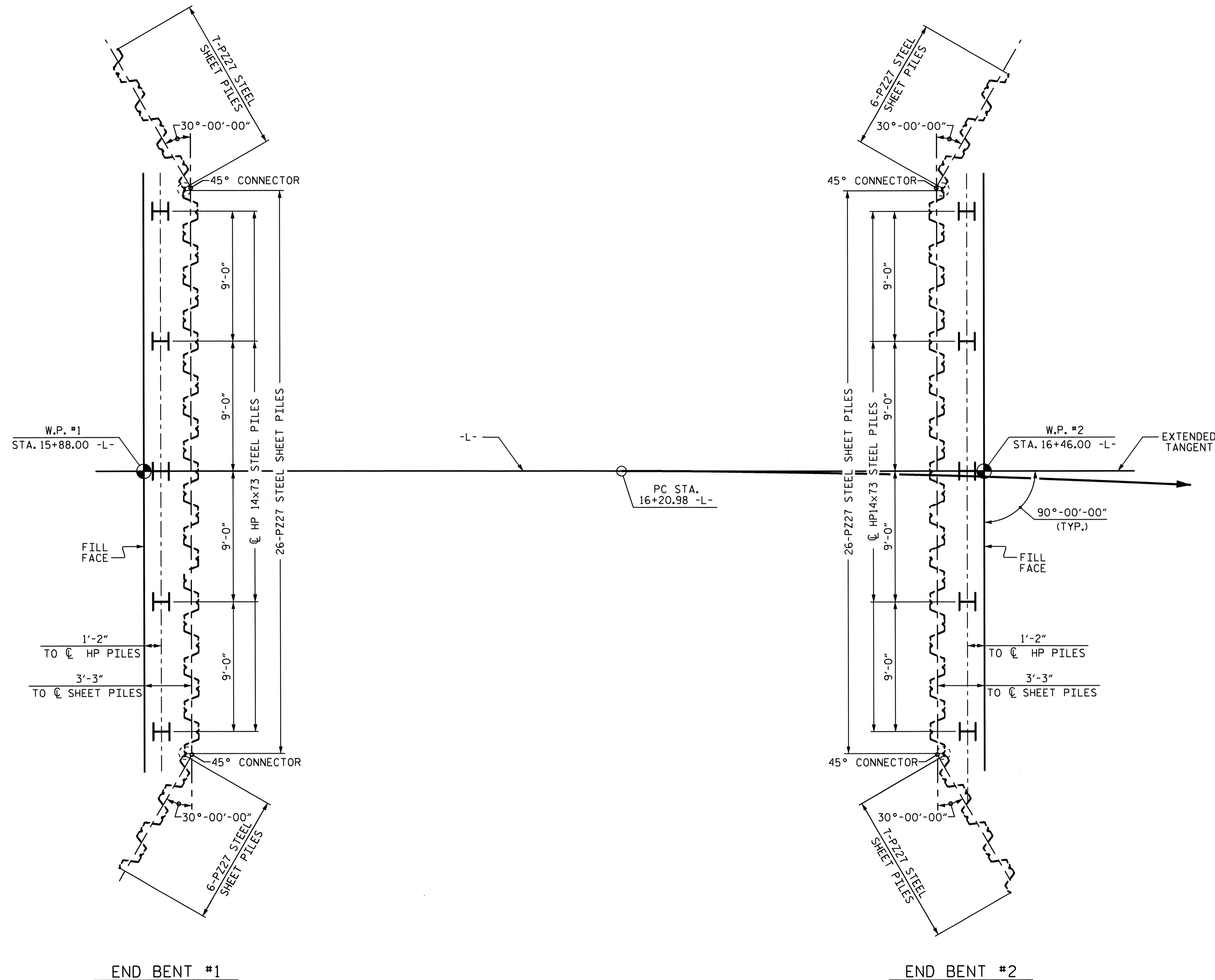
SHEET PILES ARE TO BE INSTALLED TO AN ELEVATION OF 672.000 AT END BENT #1.

SHEET PILES ARE TO BE INSTALLED TO AN ELEVATION OF 677.000 AT END BENT #2.

UNCLASSIFIED EXCAVATION IS REQUIRED AT END BENT NO.2 TO REMOVE BOULDERS FOR THE INSTALLATION OF THE PILES AND SHEETPIILING. THE ESTIMATED QUANTITY OF UNCLASSIFIED EXCAVATION IS 120 CUBIC YARDS.

FOR 18" STEEL SHEET PILES, SEE SPECIAL PROVISIONS.

STEEL SHEET PILES SHALL BE HOT ROLLED.



END BENT #1

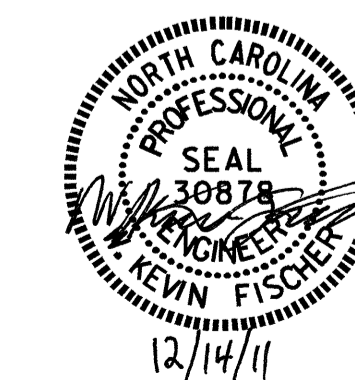
END BENT #2

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE TO THE CENTERLINE OF PILE.

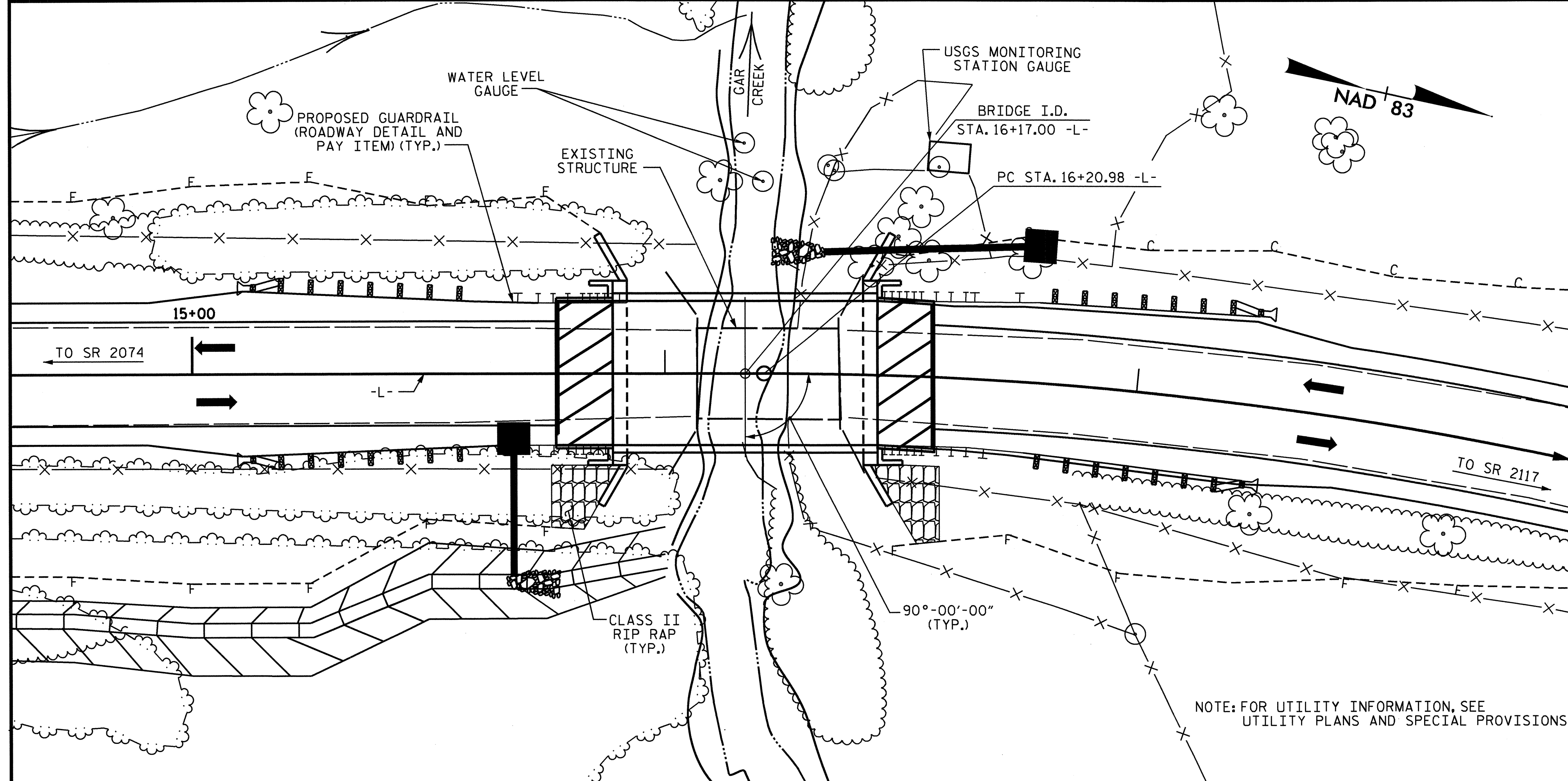
PROJECT NO. B-4200
MECKLENBURG COUNTY
 STATION: 16+17.00 -L-

SHEET 2 OF 3



STATE OF NORTH CAROLINA						SHEET NO. S-2
DEPARTMENT OF TRANSPORTATION RALEIGH						
GENERAL DRAWING						
FOR BRIDGE OVER GAR CREEK ON SR 2120 (McCOY RD.) BETWEEN SR 2074 AND SR 2117						
REVISIONS						TOTAL SHEETS 22
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DRAWN BY : KEITH D. LAYNE DATE : 01/18/11
 CHECKED BY : M. K. BEARD DATE : 7-28-11



LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
 FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

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

THE EXISTING STRUCTURE CONSISTING OF A SINGLE SPAN (30.5') WITH AN ASPHALT WEARING SURFACE, TIMBER DECK AND 7 LINES OF S15x37.5 I-BEAMS, A CLEAR ROADWAY WIDTH OF 19.2' ON TIMBER CAPS, TIMBER PILES AND TIMBER BULKHEADS AND LOCATED AT PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 25 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION, SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

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 SPICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

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 16+17.00 -L-."

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

HYDRAULIC DATA

DESIGN DISCHARGE = 2342 C.F.S.
 FREQUENCY OF DESIGN FLOOD = 25 YR.
 DESIGN HIGH WATER ELEVATION = 690.500
 DRAINAGE AREA = 2.6 SQ.MI.
 BASE DISCHARGE (Q100) = 3062 C.F.S.
 BASE HIGH WATER ELEVATION = 692.100

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 4176 C.F.S.
 FREQUENCY OF OVERTOPPING FLOOD = 500 YR.
 OVERTOPPING FLOOD ELEVATION = 693.000

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	CONCRETE WEARING SURFACE	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL	HP 14x73 STEEL PILES	TWO BAR METAL RAIL	1'-2" X 2'-10" CONCRETE PARAPET	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS	18" STEEL SHEET PILES		
	LUMP SUM	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.	SQ. FT.	
SUPERSTRUCTURE			1,700	2,300		LUMP SUM				96.5	111.50			LUMP SUM	11	613.25		
END BENT #1					18.0		2,407	191	5	200		15	17				645	
END BENT #2					18.0		2,407	191	5	200		20	22				480	
TOTAL	LUMP SUM	LUMP SUM	1,700	2,300	36.0	LUMP SUM	4,814	382	10	400	96.5	111.50	35	39	LUMP SUM	11	613.25	1,125

PROJECT NO. B-4200
MECKLENBURG COUNTY
 STATION: 16+17.00 -L-

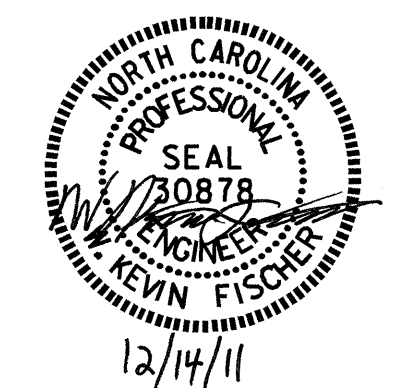
SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER GAR CREEK
 ON SR 2120 (McCOY RD.)
 BETWEEN SR 2074 AND SR 2117

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

DRAWN BY : KEITH D. LAYNE DATE : 01/18/11
 CHECKED BY : M. K. BEARD DATE : 7-28-11



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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.029	--	1.75	0.272	1.17	A	EL	27.375	0.518	1.08	A	EL	2.738	0.80	0.272	1.03	A	EL	27.375		
	HL-93(0pr)	N/A	--	1.405	--	1.35	0.272	1.51	A	EL	27.375	0.518	1.41	A	EL	2.738	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.293	46.563	1.75	0.272	1.46	A	EL	27.375	0.518	1.32	A	EL	2.738	0.80	0.272	1.29	A	EL	27.375		
	HS-20(0pr)	36.000	--	1.716	61.767	1.35	0.272	1.9	A	EL	27.375	0.518	1.72	A	EL	2.738	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.727	36.82	1.4	0.272	3.86	A	EL	27.375	0.518	3.81	A	EL	2.738	0.80	0.272	2.73	A	EL	27.375	
		SNGARBS2	20.000	--	2.112	42.245	1.4	0.272	2.99	A	EL	27.375	0.518	2.75	A	EL	2.738	0.80	0.272	2.11	A	EL	27.375	
		SNAGRIS2	22.000	--	2.036	44.785	1.4	0.272	2.88	A	EL	27.375	0.518	2.57	A	EL	2.738	0.80	0.272	2.04	A	EL	27.375	
		SNCOTTS3	27.250	--	1.359	37.045	1.4	0.272	1.92	A	EL	27.375	0.518	1.91	A	EL	2.738	0.80	0.272	1.36	A	EL	27.375	
		SNAGGRS4	34.925	--	1.166	40.734	1.4	0.272	1.65	A	EL	27.375	0.518	1.61	A	EL	2.738	0.80	0.272	1.17	A	EL	27.375	
		SNS5A	35.550	--	1.138	40.472	1.4	0.272	1.61	A	EL	27.375	0.518	1.65	A	EL	2.738	0.80	0.272	1.14	A	EL	27.375	
		SNS6A	39.950	--	1.058	42.252	1.4	0.272	1.5	A	EL	27.375	0.518	1.51	A	EL	2.738	0.80	0.272	1.06	A	EL	27.375	
	SNS7B	42.000	--	1.008	42.322	1.4	0.272	1.43	A	EL	27.375	0.518	1.50	A	EL	2.738	0.80	0.272	1.01	A	EL	27.375		
	TTST	TNAGRIT3	33.000	--	1.294	42.69	1.4	0.272	1.83	A	EL	27.375	0.518	1.79	A	EL	2.738	0.80	0.272	1.29	A	EL	27.375	
		TNT4A	33.075	--	1.303	43.097	1.4	0.272	1.84	A	EL	27.375	0.518	1.73	A	EL	2.738	0.80	0.272	1.30	A	EL	27.375	
		TNT6A	41.600	--	1.078	44.859	1.4	0.272	1.53	A	EL	27.375	0.518	1.63	A	EL	2.738	0.80	0.272	1.08	A	EL	27.375	
		TNT7A	42.000	--	1.091	45.813	1.4	0.272	1.54	A	EL	27.375	0.518	1.55	A	EL	2.738	0.80	0.272	1.09	A	EL	27.375	
		TNT7B	42.000	--	1.139	47.821	1.4	0.272	1.61	A	EL	27.375	0.518	1.46	A	EL	2.738	0.80	0.272	1.14	A	EL	27.375	
		TNAGRIT4	43.000	--	1.077	46.318	1.4	0.272	1.52	A	EL	27.375	0.518	1.40	A	EL	2.738	0.80	0.272	1.08	A	EL	27.375	
TNAGT5A		45.000	--	1.010	45.429	1.4	0.272	1.43	A	EL	27.375	0.518	1.41	A	EL	2.738	0.80	0.272	1.01	A	EL	27.375		
TNAGT5B	45.000	3	1.000	44.639	1.4	0.272	1.40	A	EL	27.375	0.518	1.33	A	EL	2.738	0.80	0.272	1.00	A	EL	27.375			

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

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

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

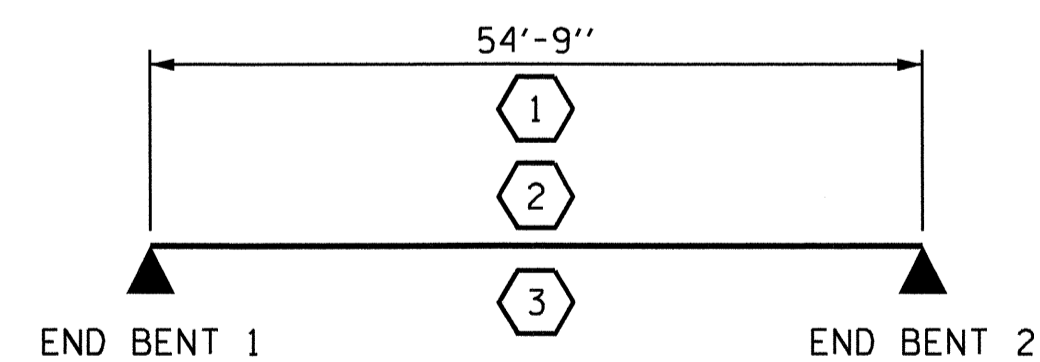
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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

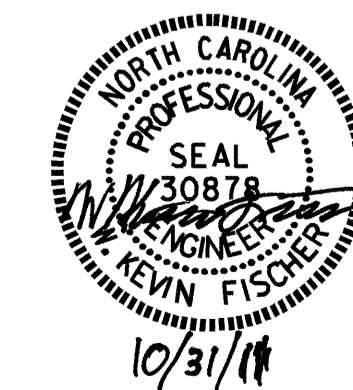


LRFR SUMMARY

PROJECT NO. B-4200
MECKLENBURG COUNTY
 STATION: 16+17.00 -L-

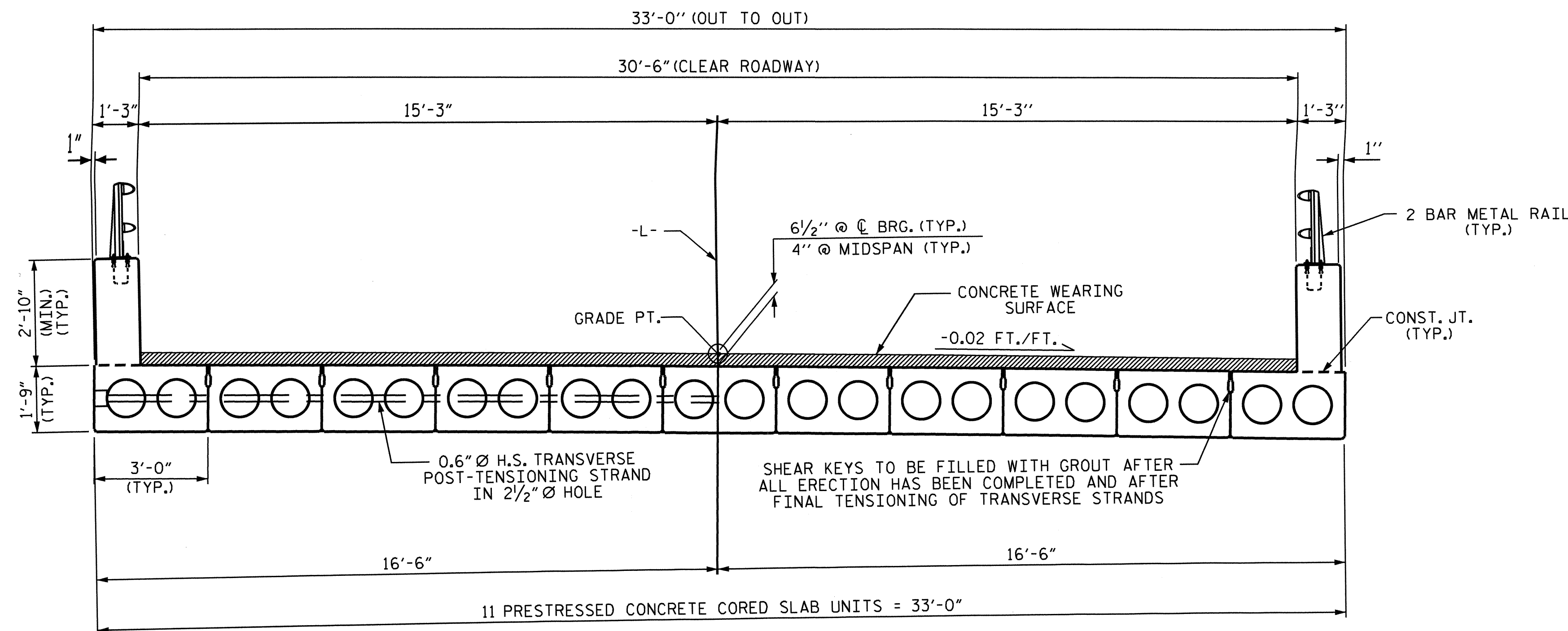
ASSEMBLED BY : B. L. GREEN DATE : 3/09
 CHECKED BY : R. L. CHESSON DATE : 5/10
 DRAWN BY : MAA 1/08 REV. 11/12/08R MAA/GM
 CHECKED BY : GM/DI 2/08

06-OCT-2011 10:55
 K:\Structures\plans\B4200.sd.LRFD.dgn
 Kioyne



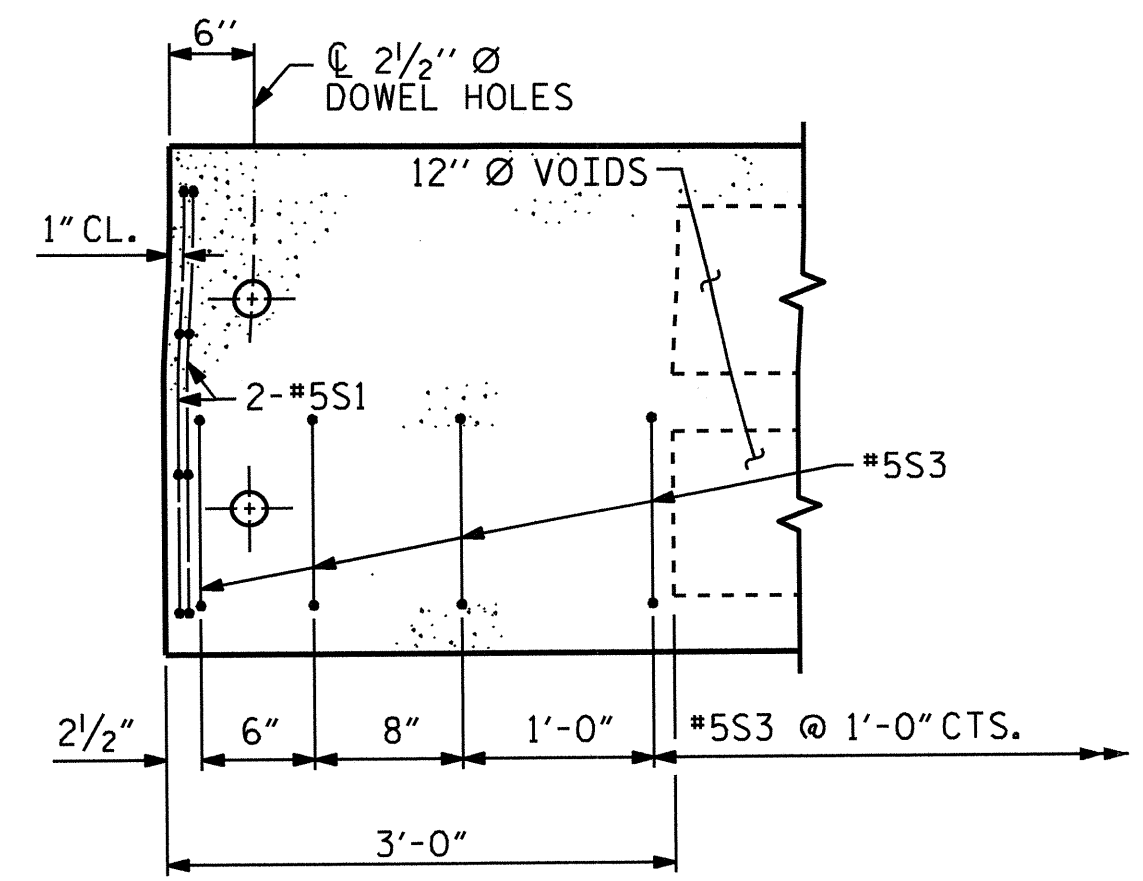
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS (NON-INTERSTATE TRAFFIC)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-4
					TOTAL SHEETS 22

STD. NO. LRFR1



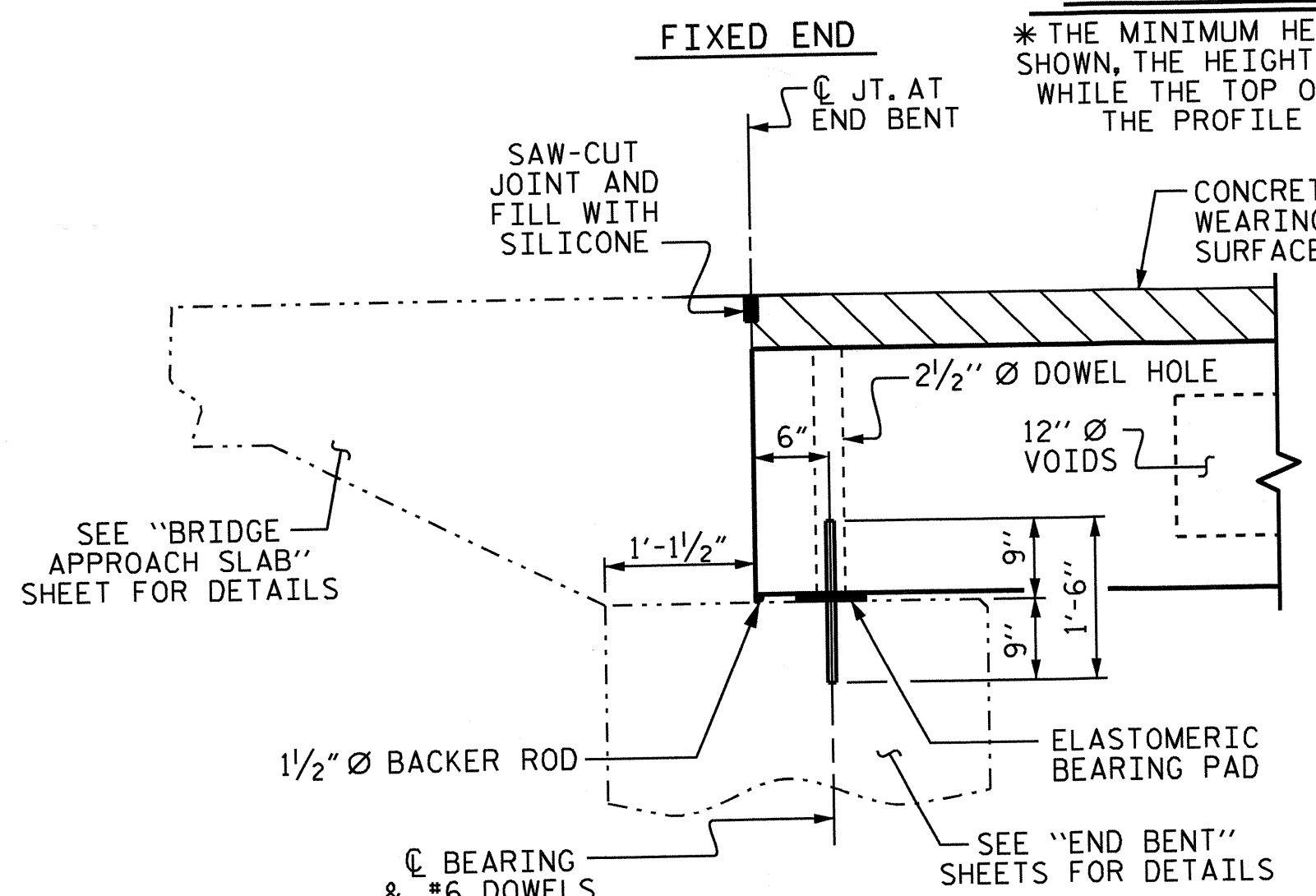
TYPICAL SECTION

* THE MINIMUM HEIGHT OF THE PARAPET IS SHOWN, THE HEIGHT OF THE PARAPET VARIES WHILE THE TOP OF THE PARAPET FOLLOWS THE PROFILE OF THE GUTTERLINE.

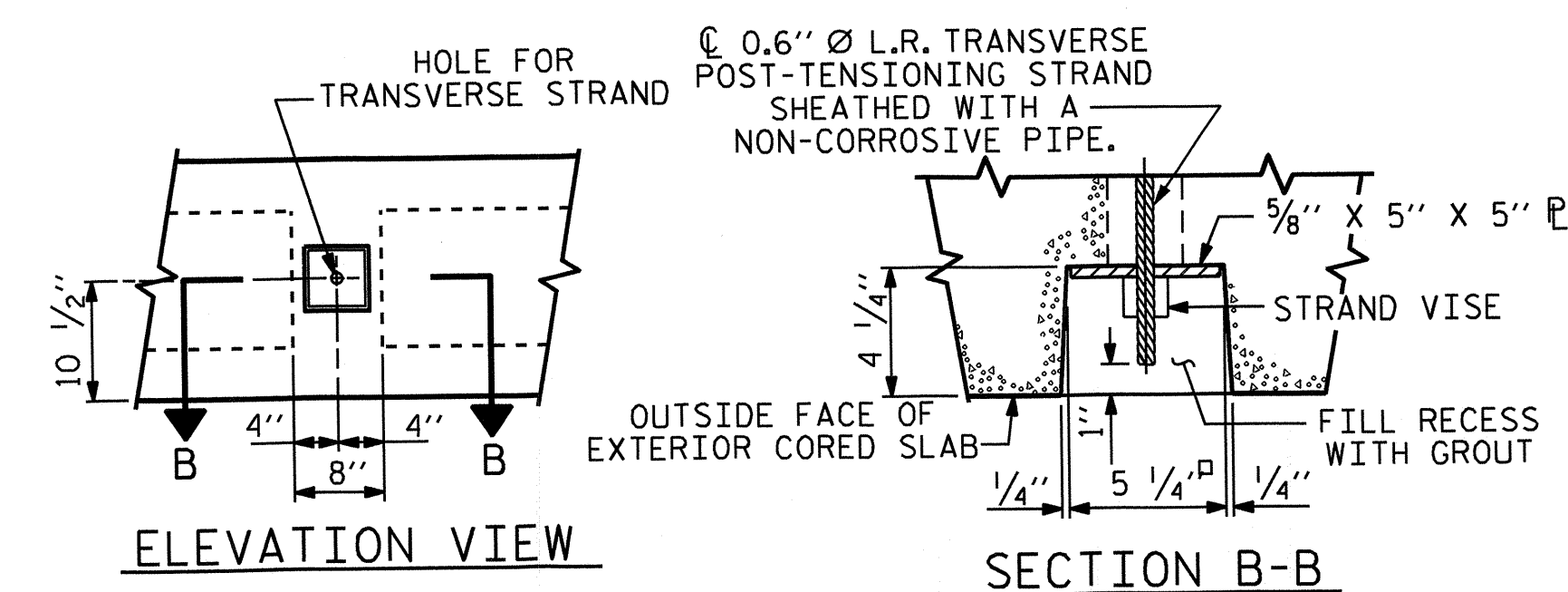


PART PLAN-EXTERIOR SECTION

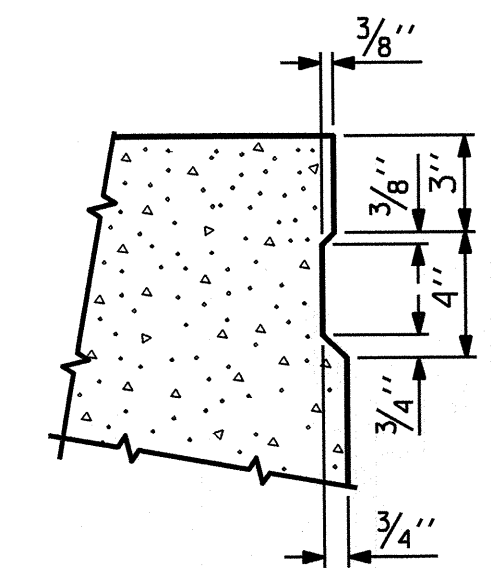
NOTE: EXTERIOR SECTION SHOWN-INTERIOR SECTION SIMILAR EXCEPT OMIT S3 BARS.



SECTION AT END BENT

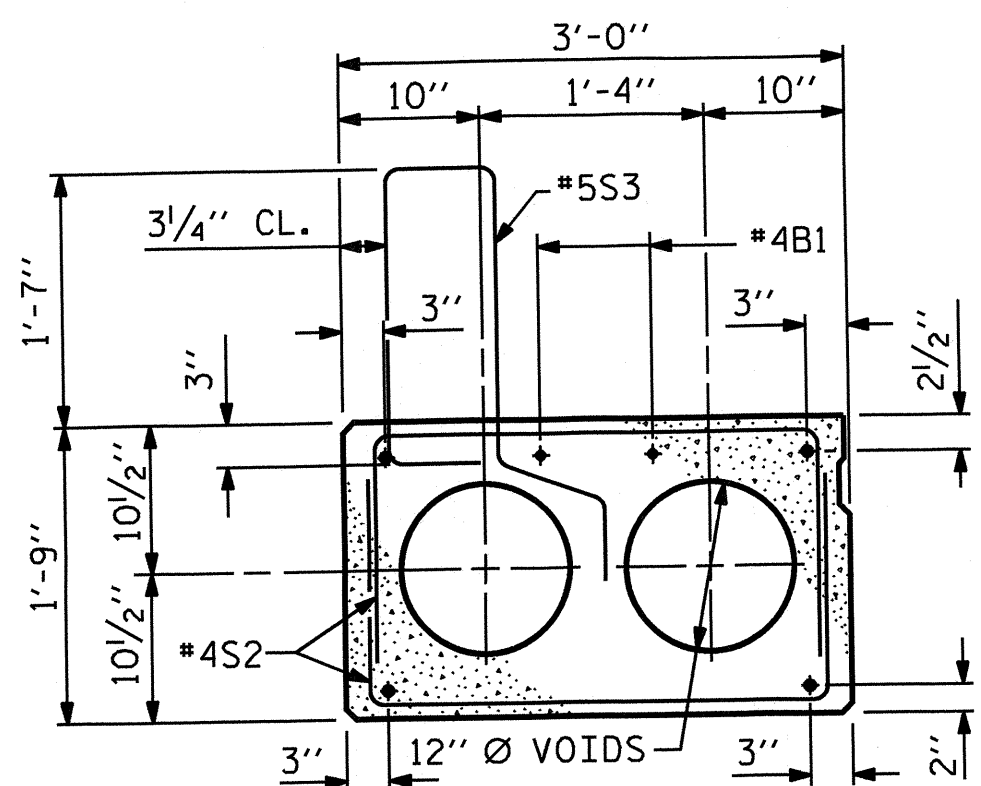


GROUTED RECESS AT END OF POST-TENSIONED STRAND-CORED SLABS



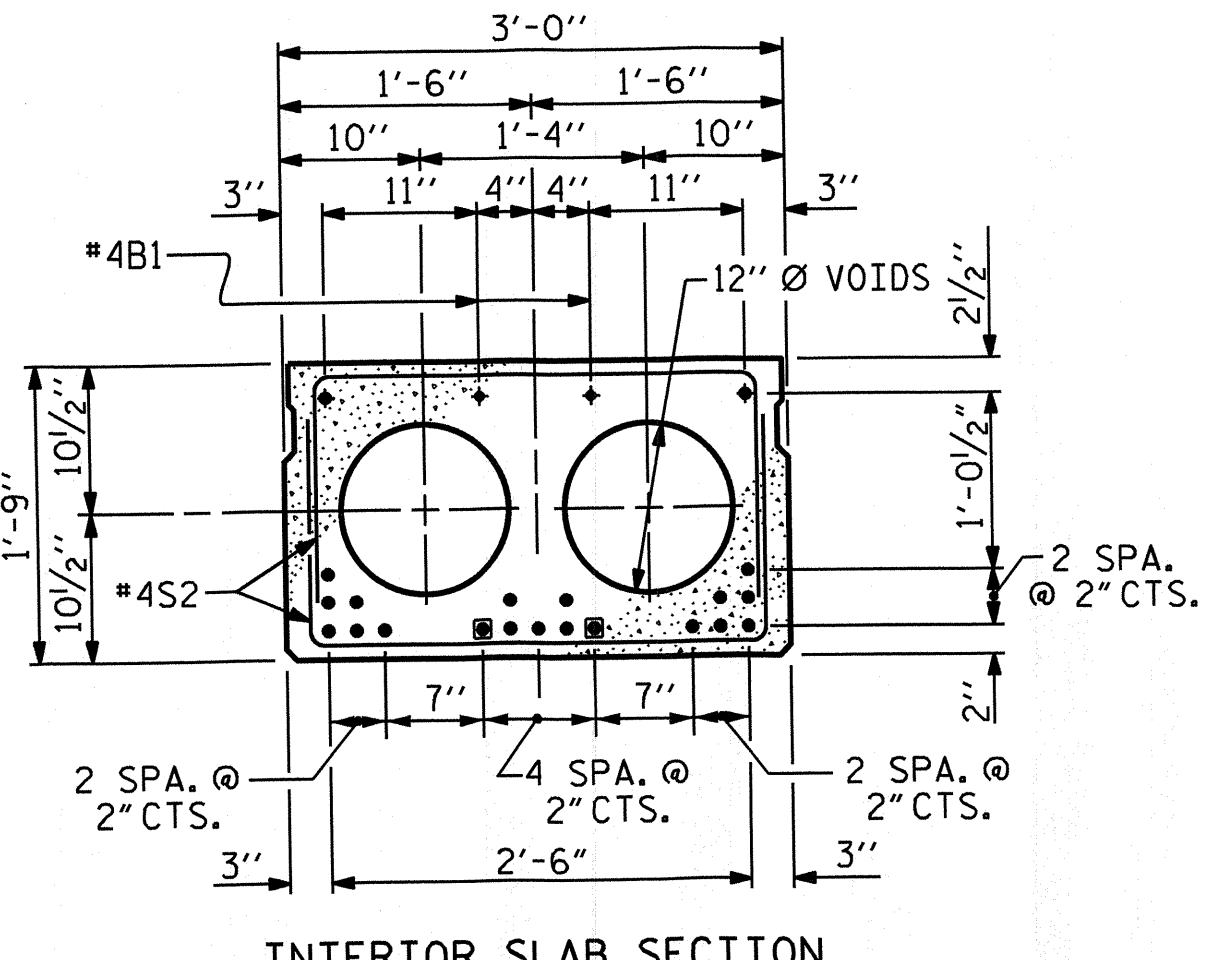
SHEAR KEY DETAIL

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



EXTERIOR SLAB SECTION

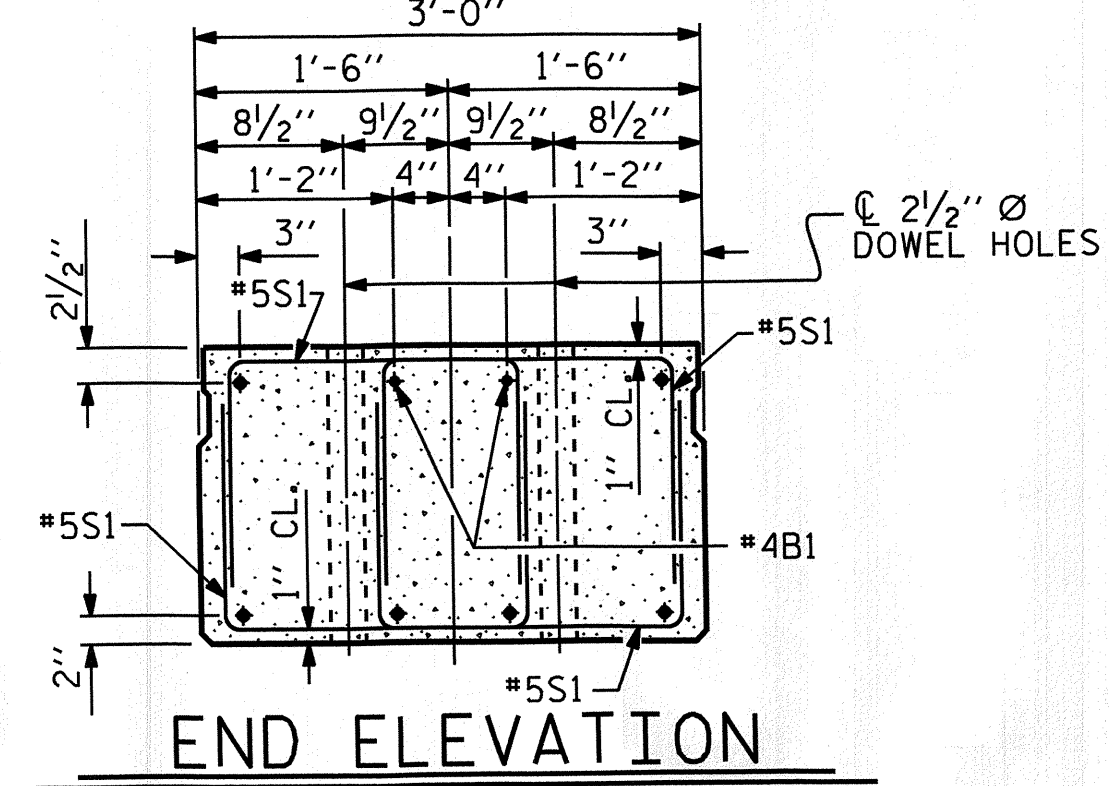
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



INTERIOR SLAB SECTION (21 STRANDS)

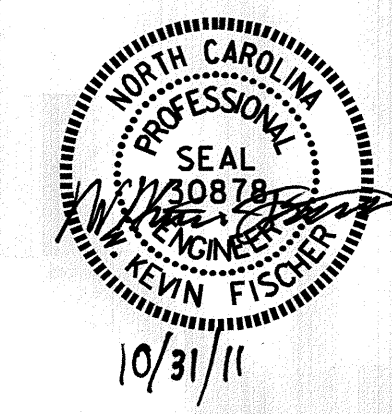
0.6" Ø LOW RELAXATION STRAND LAYOUT

BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM THE END OF THE CORED SLAB UNITS, SEE STANDARD SPECIFICATIONS (21 STRANDS)



END ELEVATION

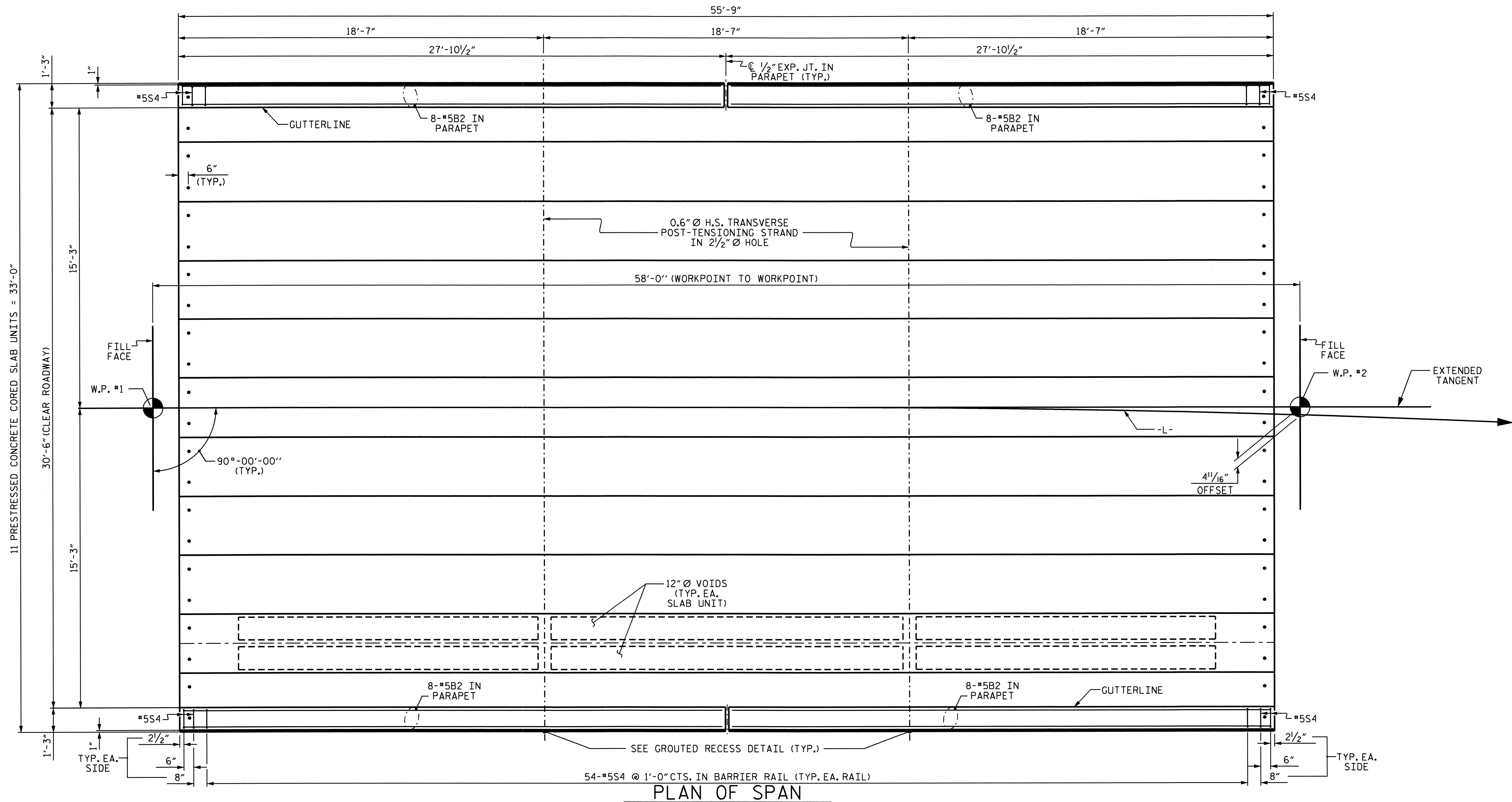
SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB SECTION SHOWN-EXTERIOR SLAB SECTION SIMILAR EXCEPT SHEAR KEY LOCATION.



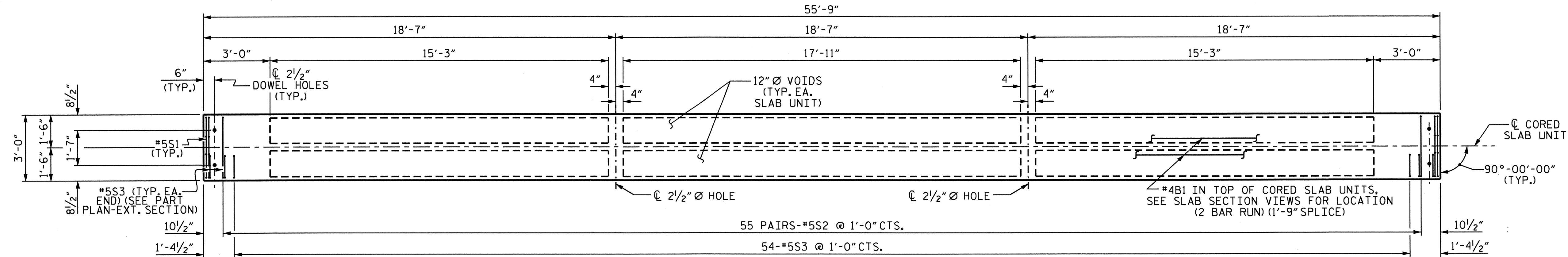
PROJECT NO. B-4200
 MECKLENBURG COUNTY
 STATION: 16+17.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD						SHEET NO.
3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT						S-5
REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	22
1			3			
2			4			

ASSEMBLED BY: R. G. EMERSON	DATE: 06/10
CHECKED BY: M. K. BEARD	DATE: 08/11
DRAWN BY: WJH 4/89	REV. 10/17/00 RWW/LES
CHECKED BY: FCJ 5/89	REV. 7/10/01RR RWW/LES
	REV. 5/1/06R TLA/GM



PLAN OF SPAN



PLAN OF CORED SLAB UNIT

EXTERIOR SLAB UNIT SHOWN, INTERIOR SLAB UNIT SIMILAR, EXCEPT OMIT #5S3



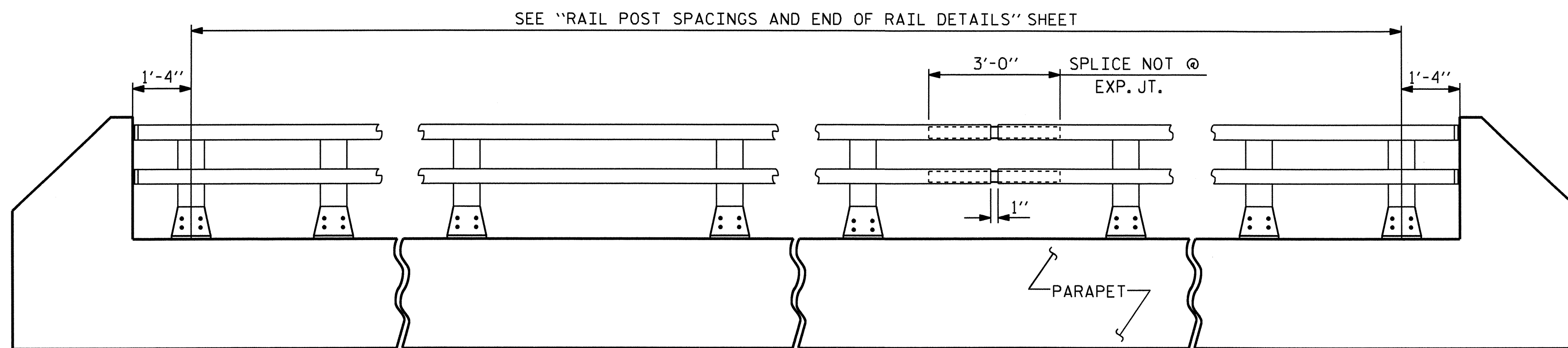
PROJECT NO. B-4200
 MECKLENBURG COUNTY
 STATION: 16+17.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			22

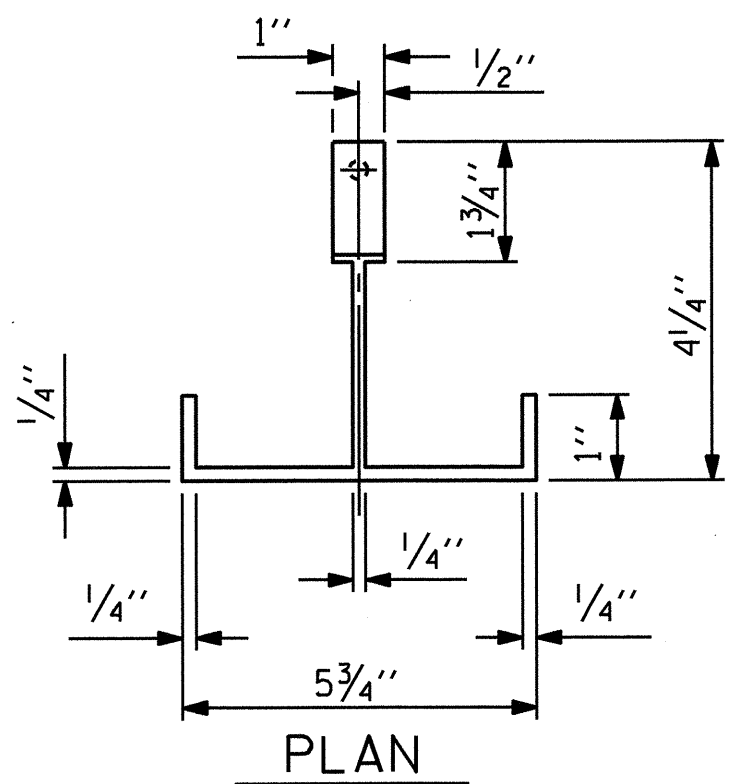
DRAWN BY: R. G. EMERSON DATE: 06/10
 CHECKED BY: M. K. BEARD DATE: 08/11

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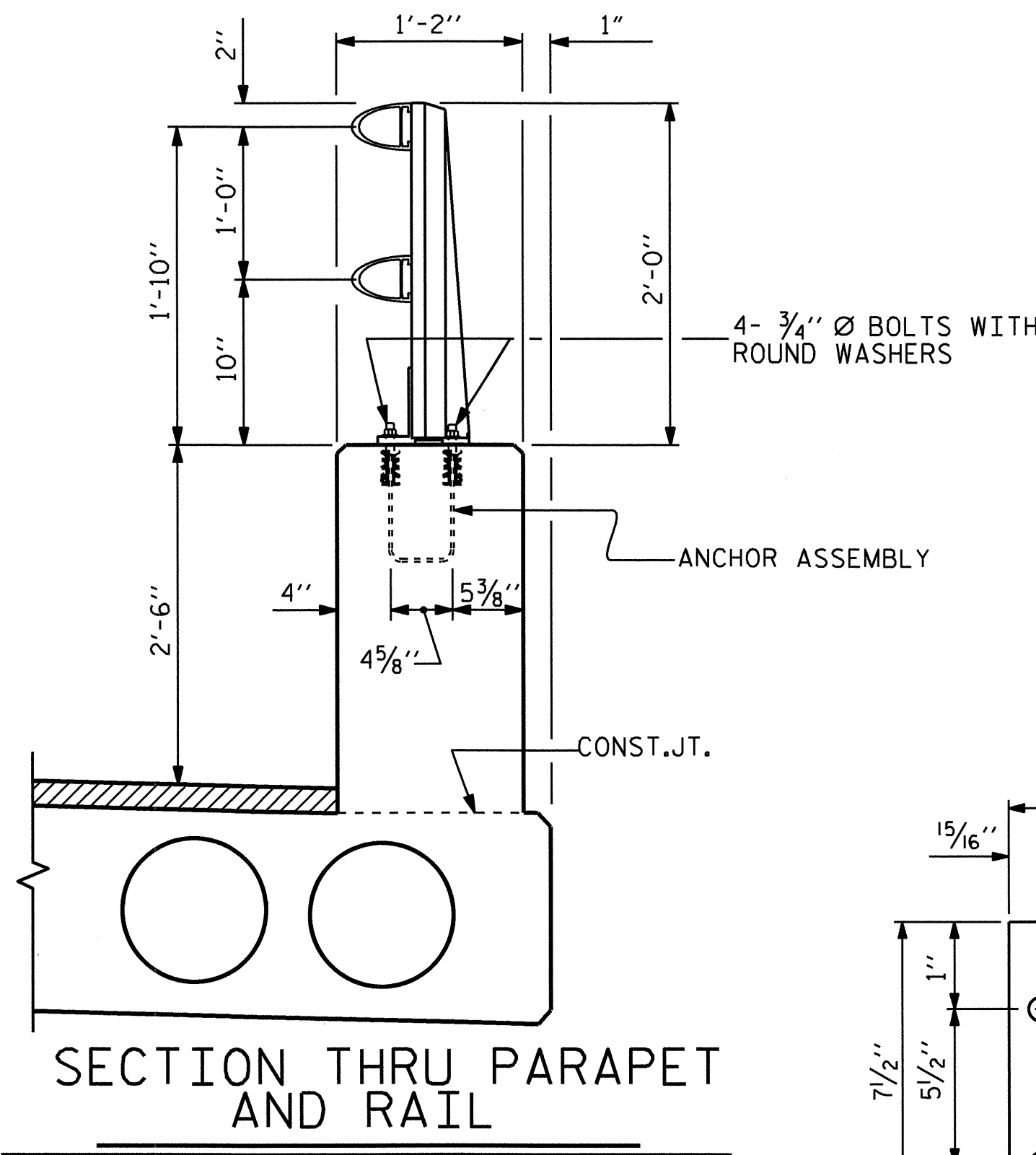


ELEVATION

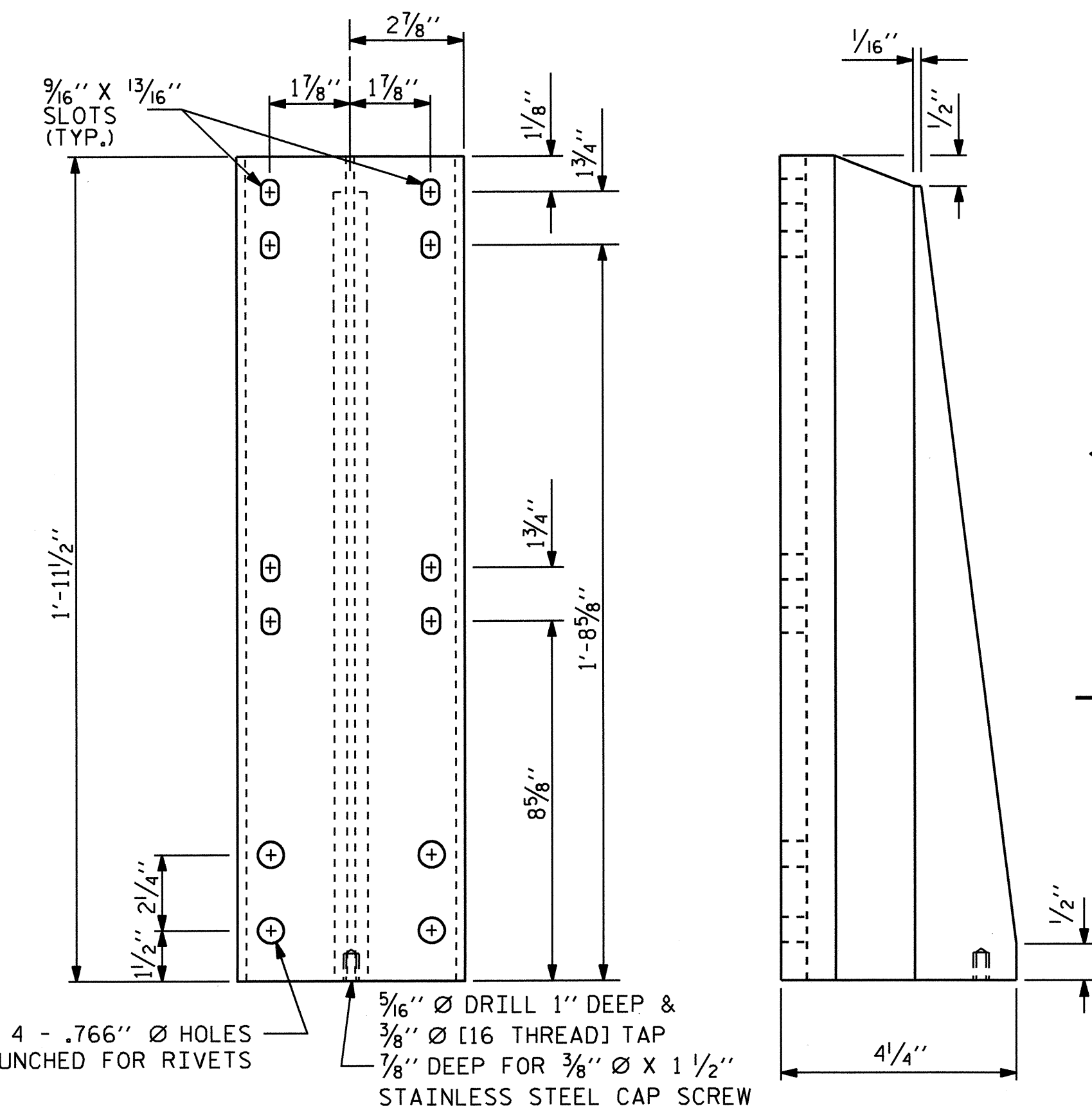
NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2.



PLAN



SECTION THRU PARAPET AND RAIL

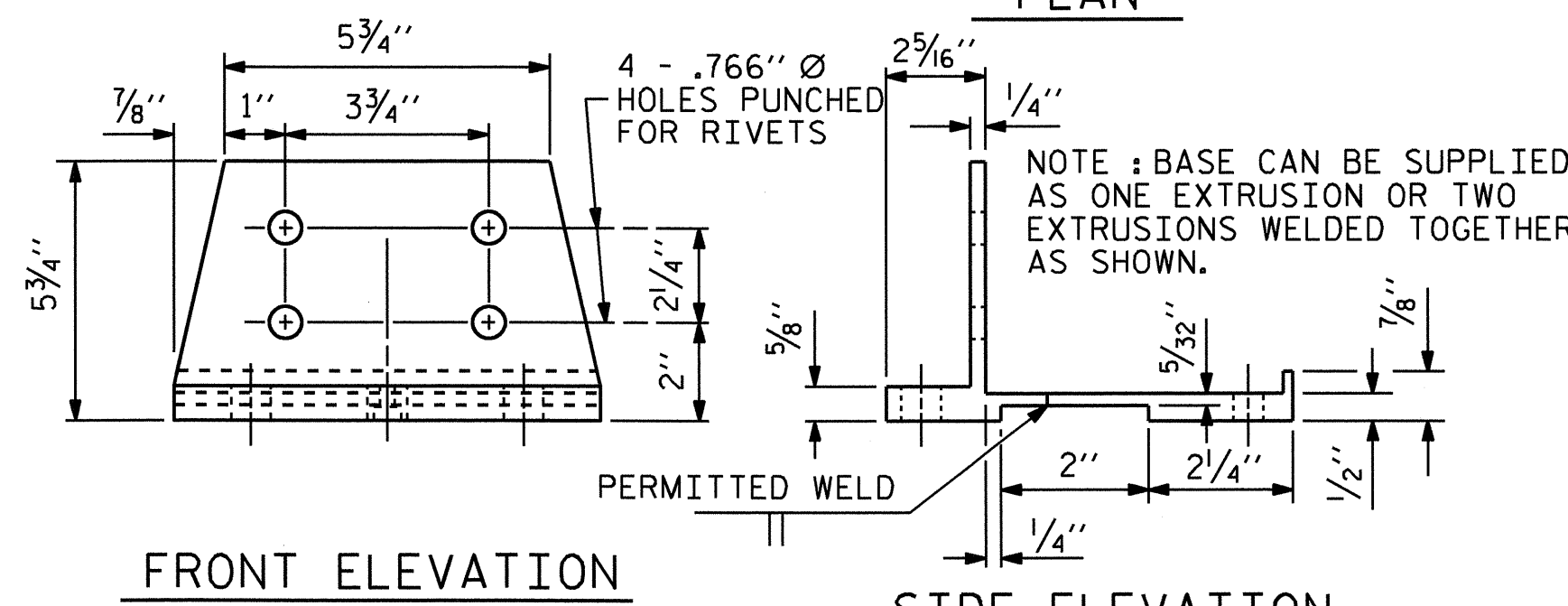


FRONT ELEVATION

SIDE ELEVATION

DETAILS OF POST

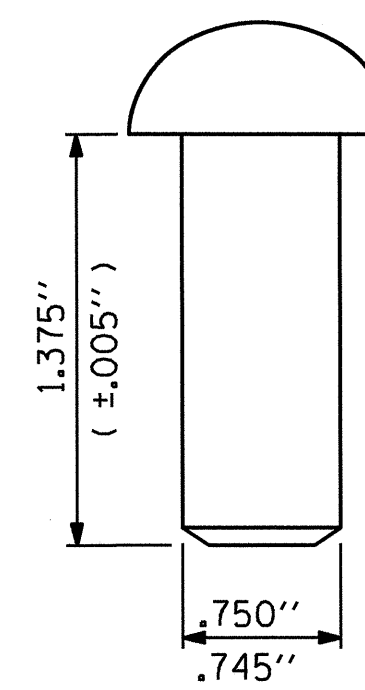
ASSEMBLED BY: R. G. EMERSON DATE: 06/10
 CHECKED BY: M. K. BEARD DATE: 08/11
 DRAWN BY: EEM 6/94 REV. 10/17/00 LES/RDR
 CHECKED BY: RGW 6/94 REV. 5/7/03R RWW/JTE
 REV. 5/1/06 TLA/GM



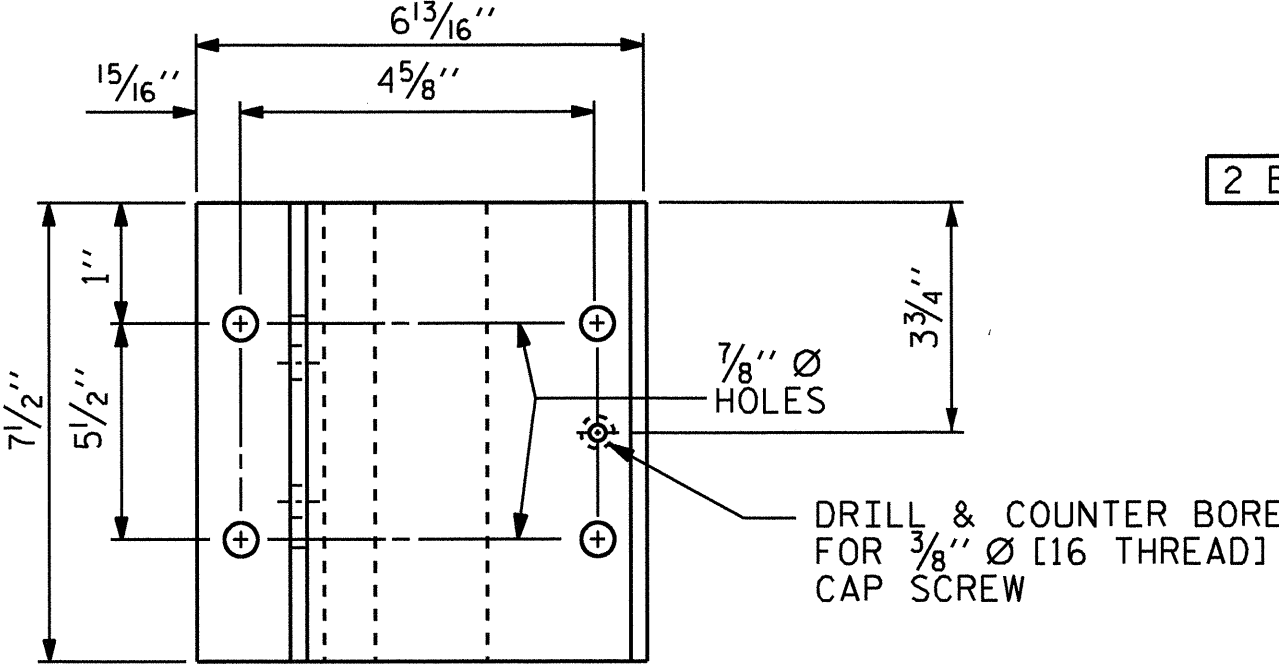
FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS



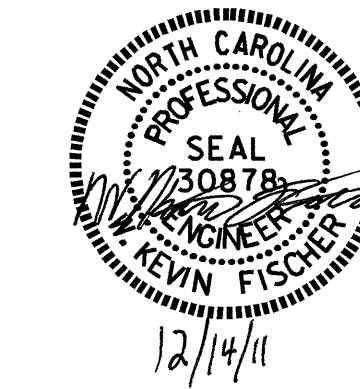
RIVET DETAIL



PLAN

PAY LENGTH = 96.5 LIN. FT.

2 BAR METAL RAIL SHALL BE ANODIZED DARK BROWN, SEE NOTES.



NOTES

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6. MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING. THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY. MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

ANODIZING

ALUMINUM FOR POSTS, BASES, RAILS, EXPANSION BARS, CLAMP BARS, RIVETS, CAPS, SHIMS, ATTACHMENT BRACKETS AND HOLD-DOWN PLATES SHALL BE ANODIZED DARK BROWN.

ANY DAMAGE TO THE ANODIZED SURFACE OF THE RAIL OR COMPONENTS DURING CONSTRUCTION SHALL BE REPAIRED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS AT THE DIRECTION OF THE ENGINEER AND AT THE CONTRACTOR'S EXPENSE.

THE CONTRACTOR SHALL SUBMIT A SAMPLE OF COMPATIBLE DARK BROWN EXTERIOR ACRYLIC PAINT TO THE ENGINEER. THIS PAINT SHALL MATCH THE ANODIZED RAIL COLOR AS CLOSELY AS POSSIBLE. AFTER ERECTION OF THE ANODIZED ALUMINUM RAILING, ALL EXPOSED ANCHOR BOLTS, NUTS, WASHERS, MACHINE SCREWS, CAP SCREWS, BOLTS, ATTACHMENT BRACKETS, AND BUILT UP ANGLES SHALL BE COATED WITH TWO COATS OF THIS PAINT.

GENERAL NOTES

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

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

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

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

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

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

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

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

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

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

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

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 8 FT. TO 10 FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

PROJECT NO. B-4200
 MECKLENBURG COUNTY
 STATION: 16+17.00 -L-

SHEET 1 OF 5

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			22

STD. NO. BMR3

NOTES

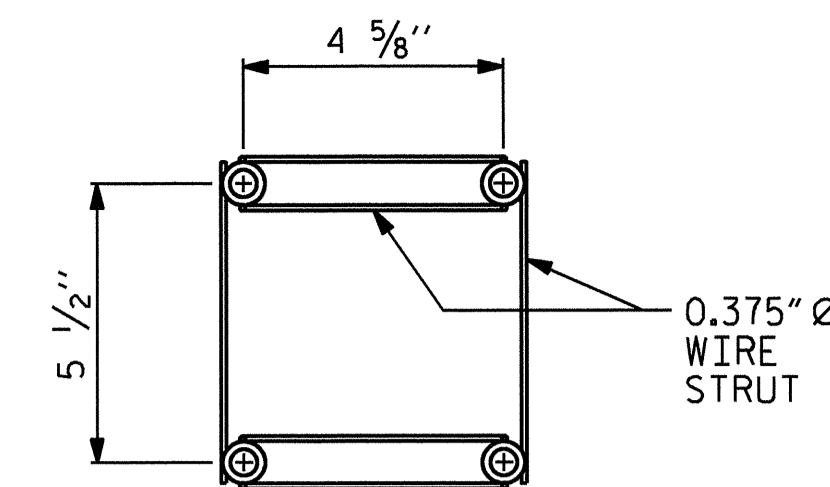
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

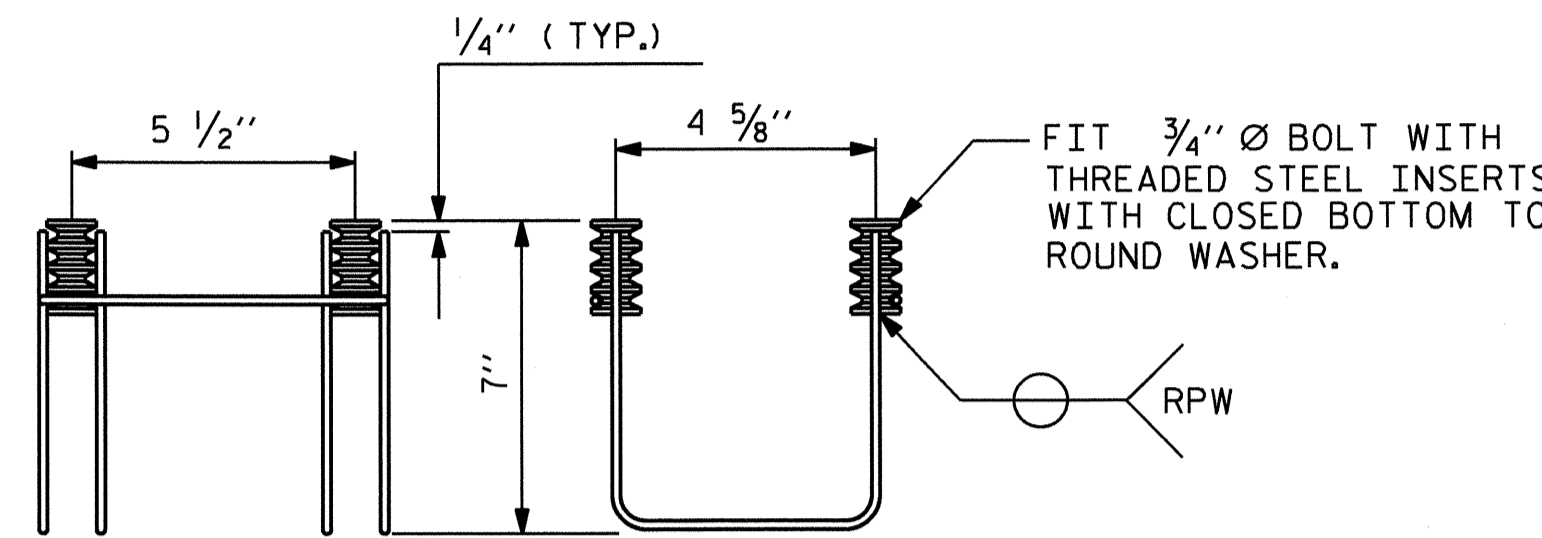
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT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

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

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



PLAN

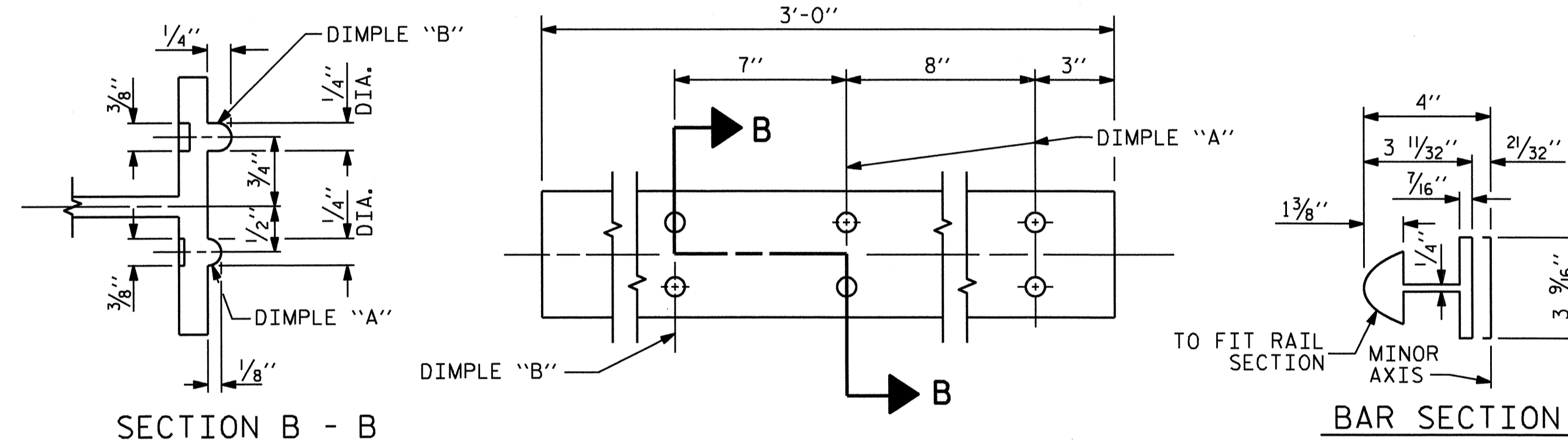


SIDE VIEW

ELEVATION

4-BOLT METAL RAIL ANCHOR ASSEMBLY

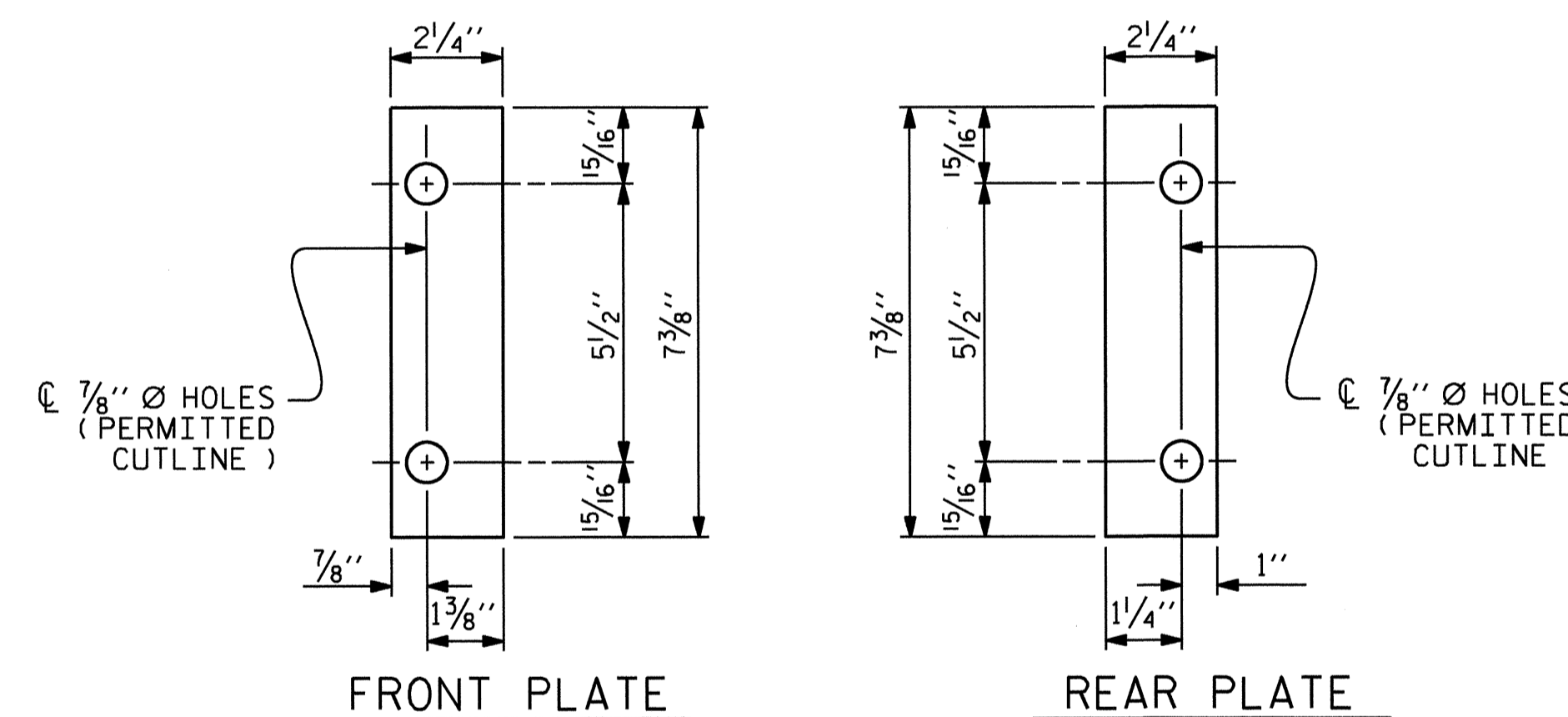
(20 ASSEMBLIES REQUIRED)



SECTION B - B

EXPANSION BAR DETAILS

BAR SECTION

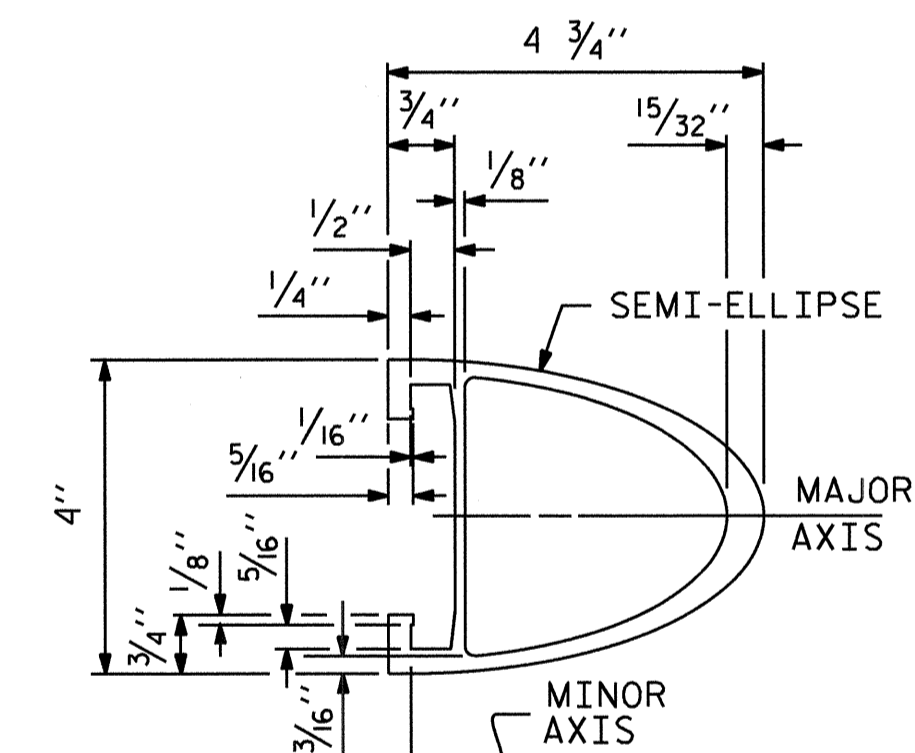


FRONT PLATE

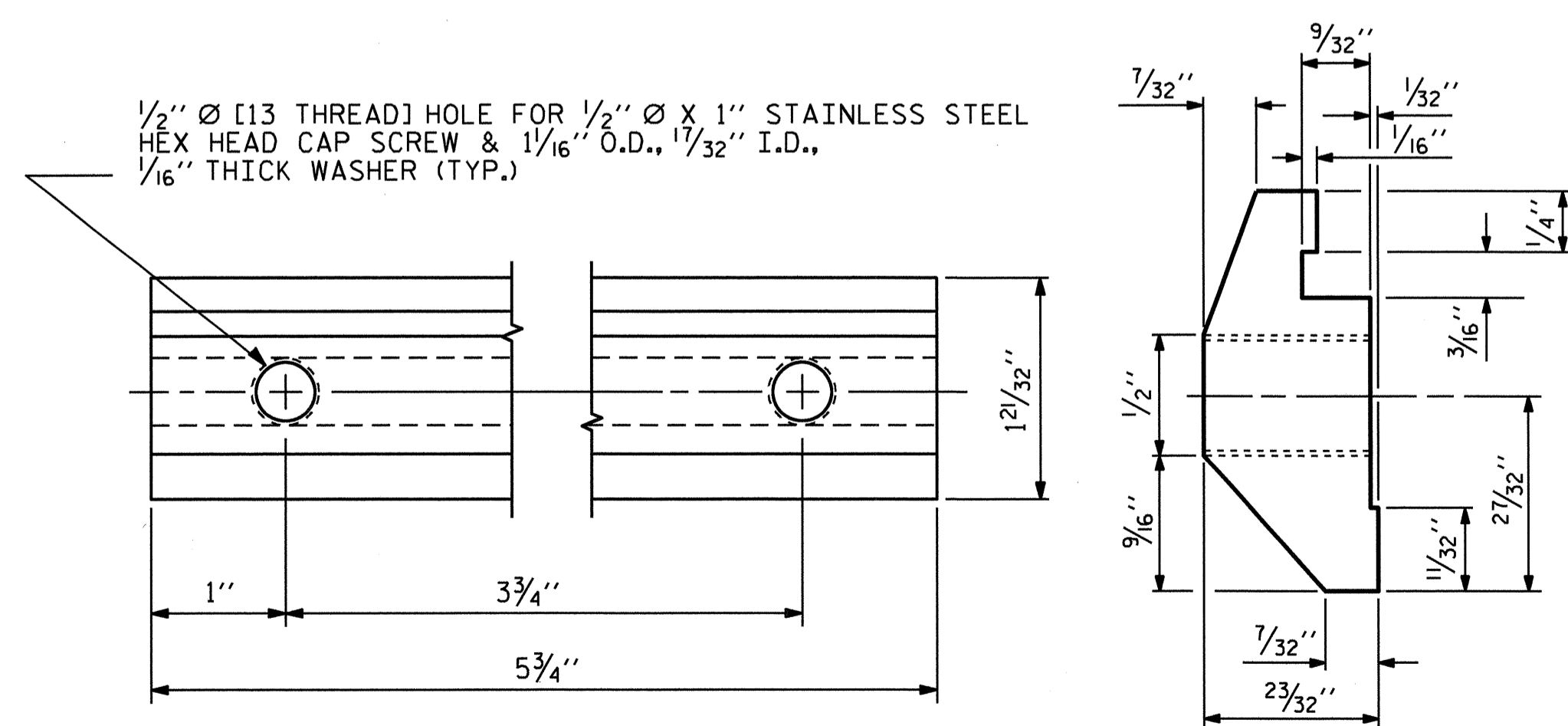
REAR PLATE

SHIM DETAILS

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

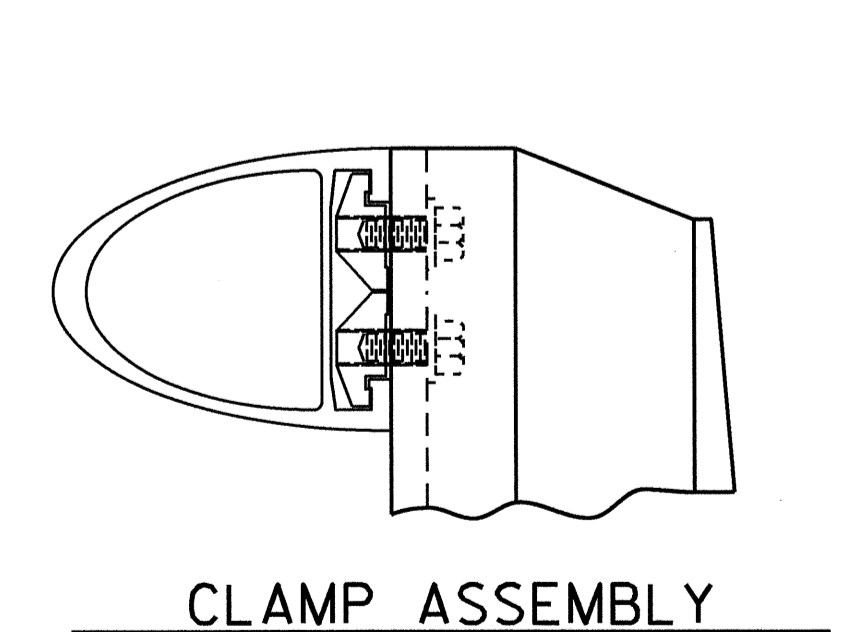


RAIL SECTION

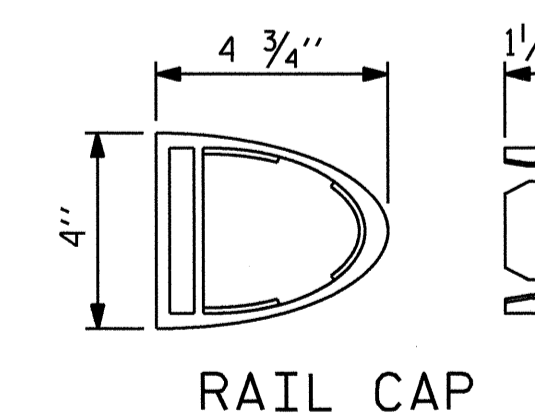


CLAMP BAR DETAIL

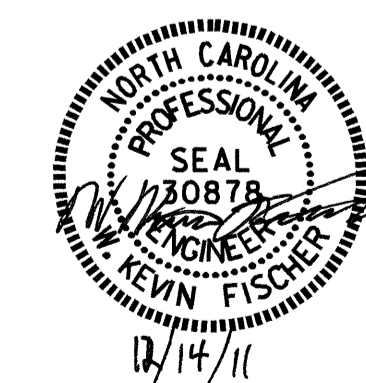
(4 REQUIRED PER POST)



CLAMP ASSEMBLY



RAIL CAP



PROJECT NO. B-4200
MECKLENBURG COUNTY
 STATION: 16+17.00 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

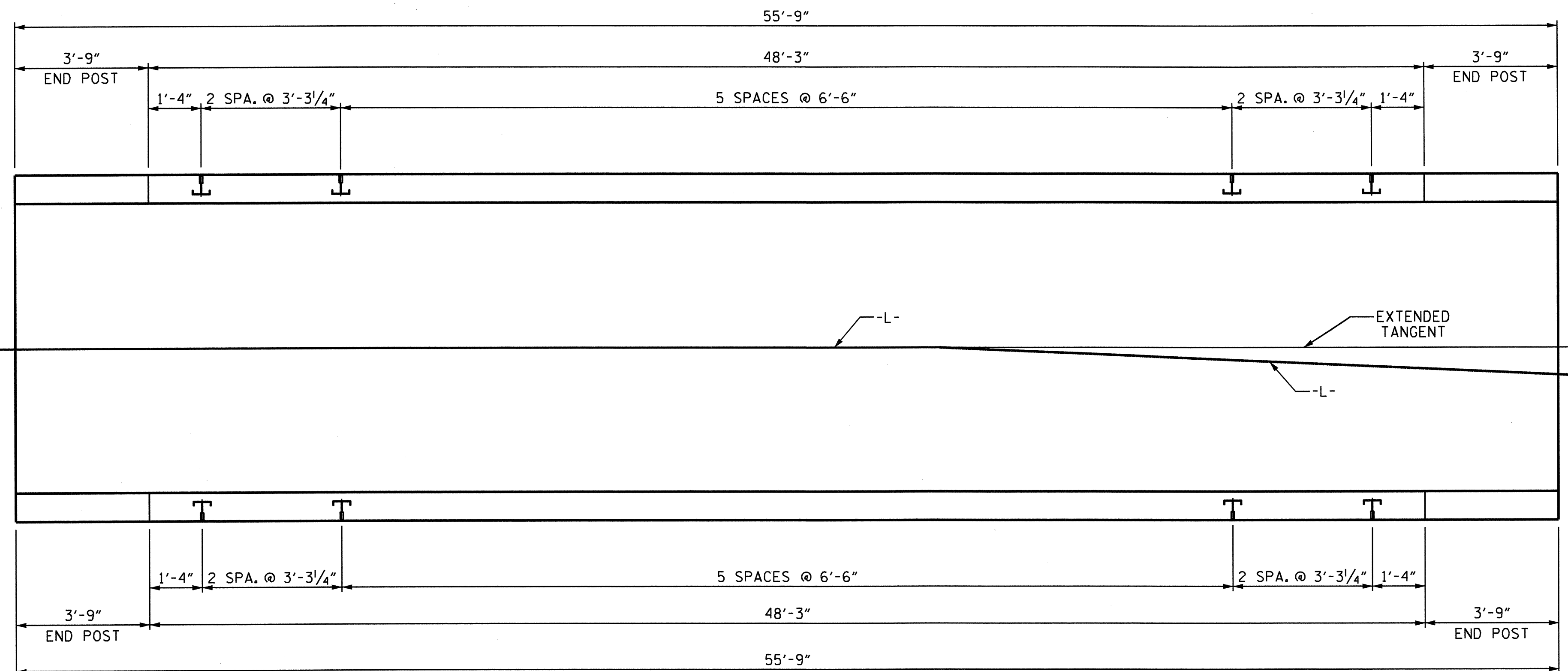
STANDARD

2 BAR METAL RAIL

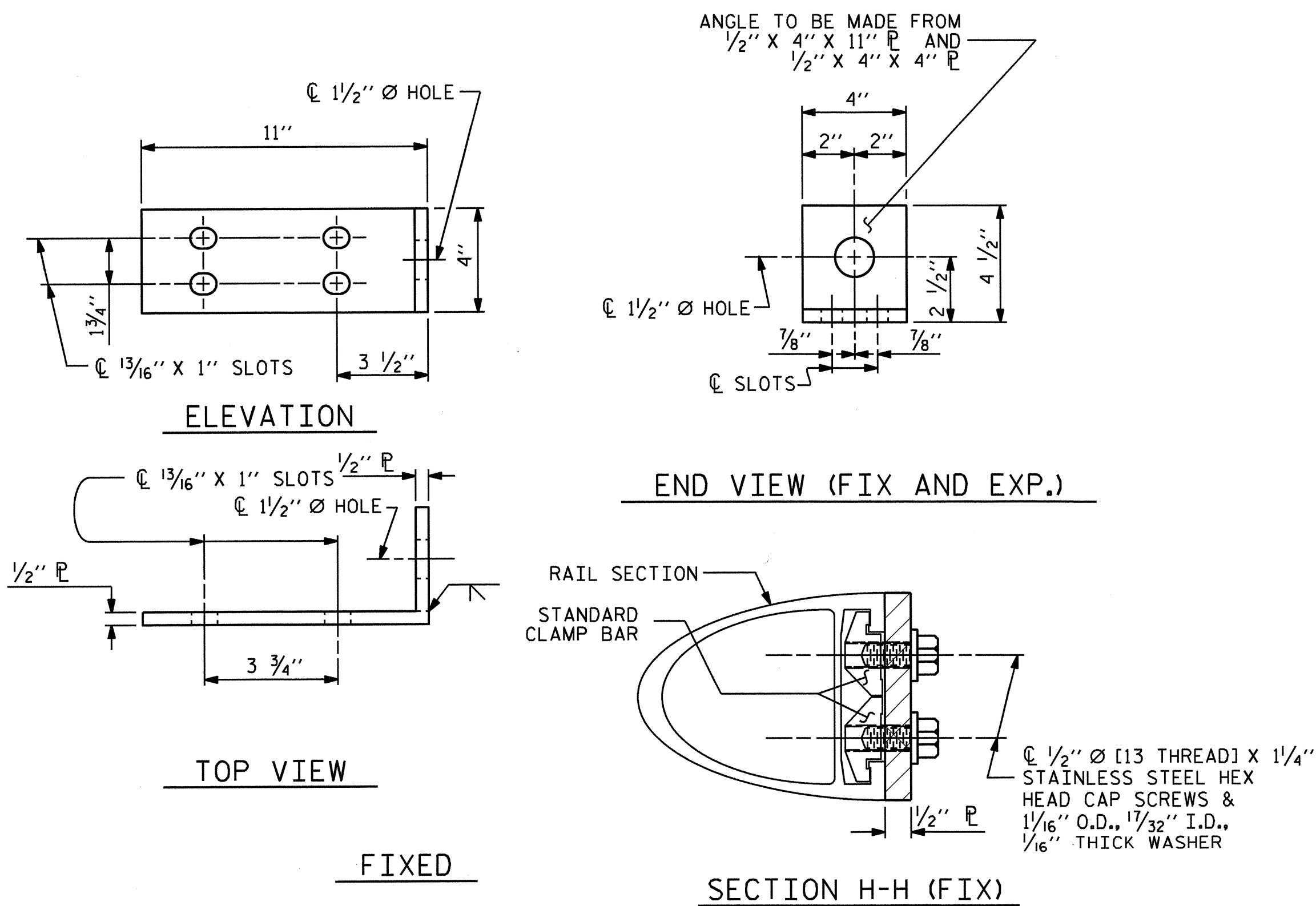
ASSEMBLED BY: R. G. EMERSON	DATE: 06/10
CHECKED BY: M. K. BEARD	DATE: 08/11
DRAWN BY: EEM 6/94	REV. 2/6/97 EEM/RGW
CHECKED BY: RGW 6/94	REV. 8/16/99 MAB/LES
	REV. 5/1/06R KMM/GM

REVISIONS						SHEET NO. S-8
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 22
2			4			

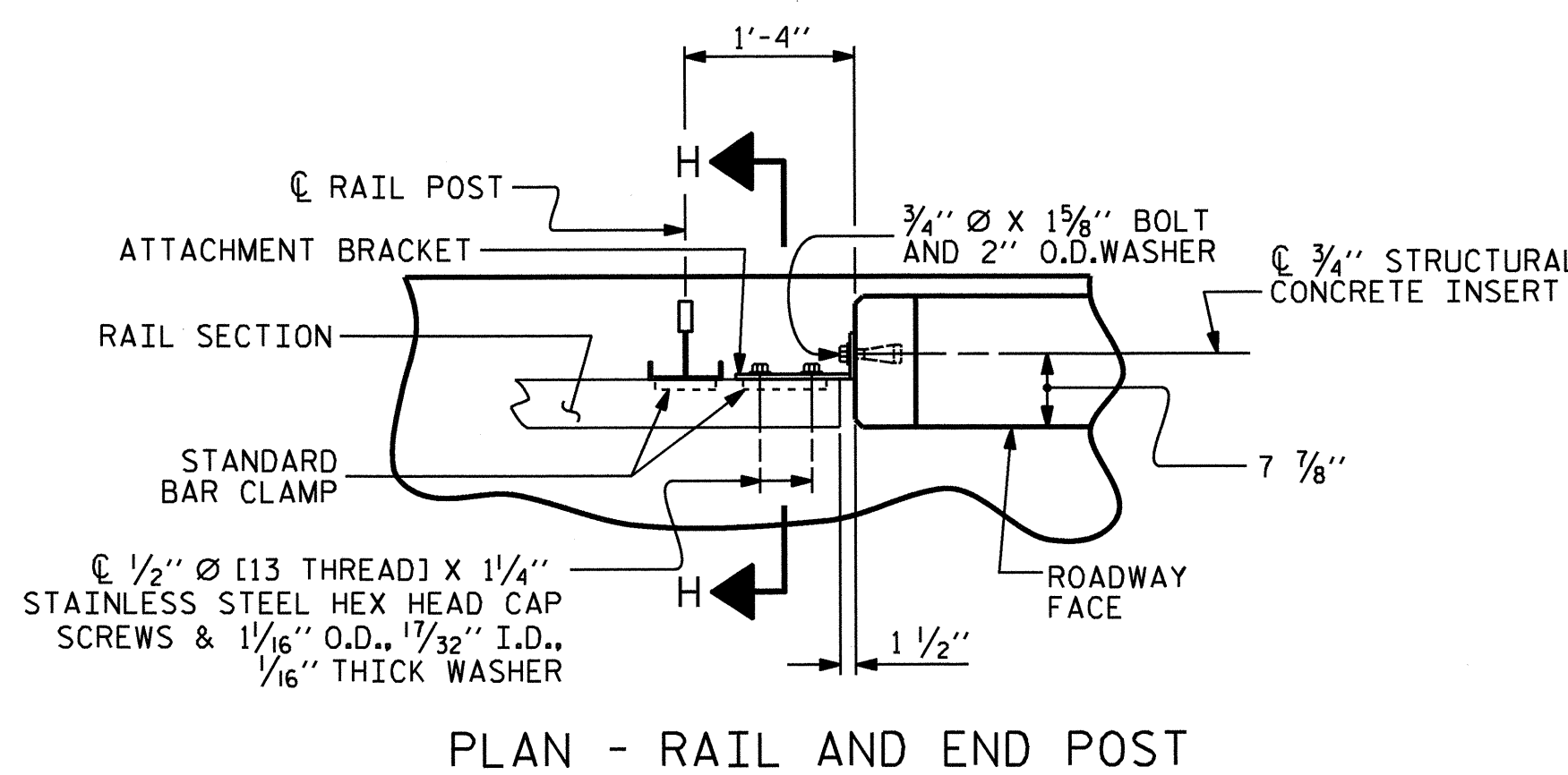
STD. NO. BMR4



PLAN OF RAIL POST SPACINGS



DETAILS FOR ATTACHING METAL RAIL TO END POST



PLAN - RAIL AND 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 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:

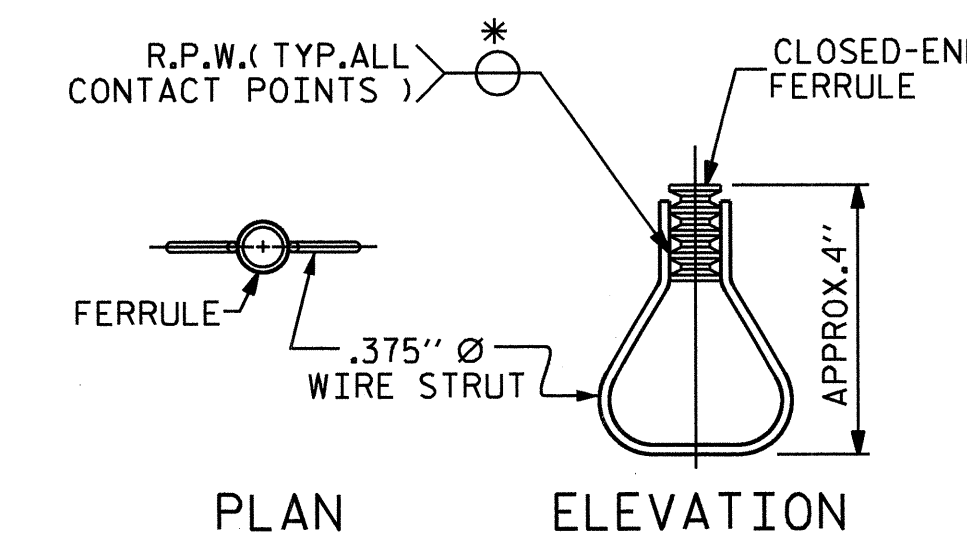
- A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 5/8" BOLT SHALL HAVE 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.

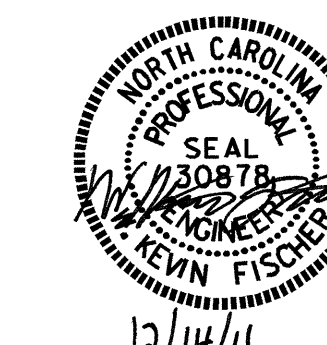


PLAN ELEVATION
STRUCTURAL CONCRETE INSERT

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

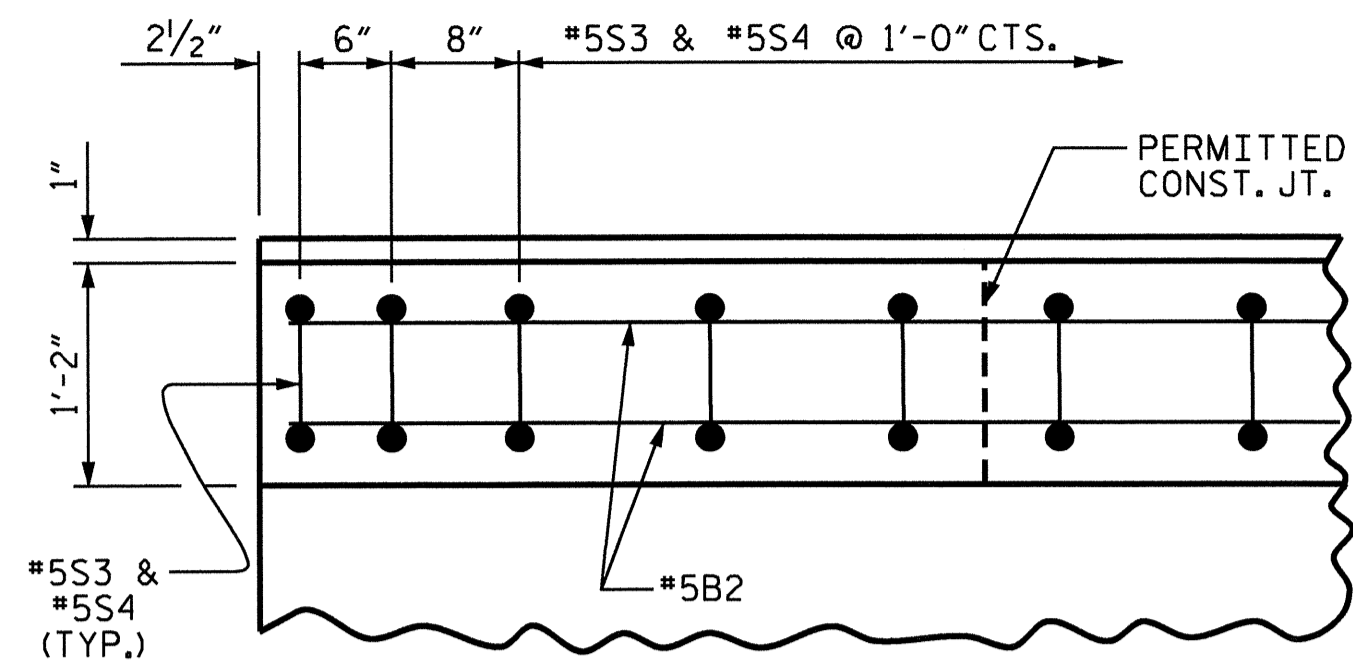
PROJECT NO. B-4200
MECKLENBURG COUNTY
STATION: 16+17.00 -L-

SHEET 3 OF 5

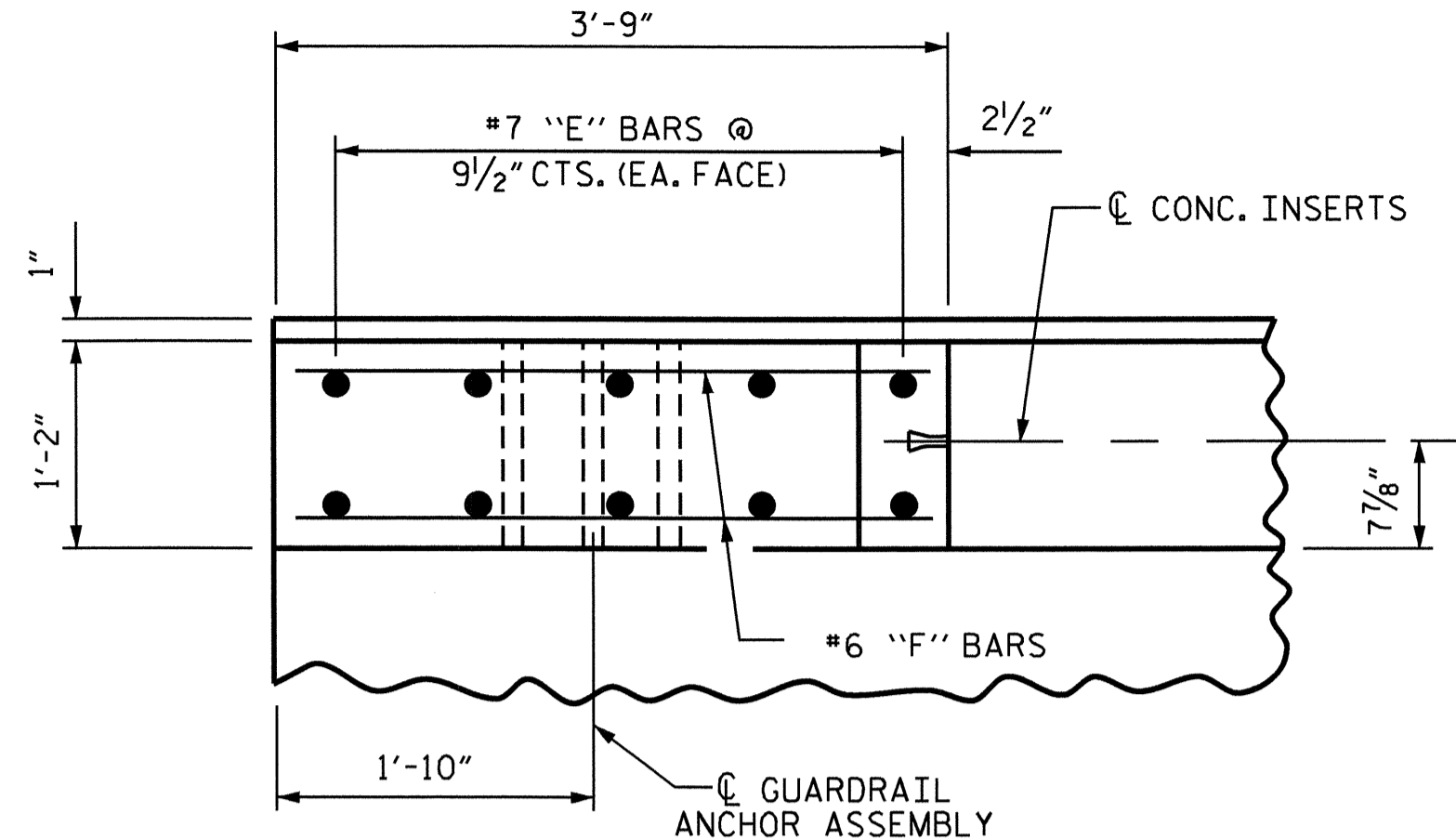


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD RAIL POST SPACINGS AND END OF RAIL DETAILS FOR ONE OR TWO BAR METAL RAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-9
					TOTAL SHEETS 22

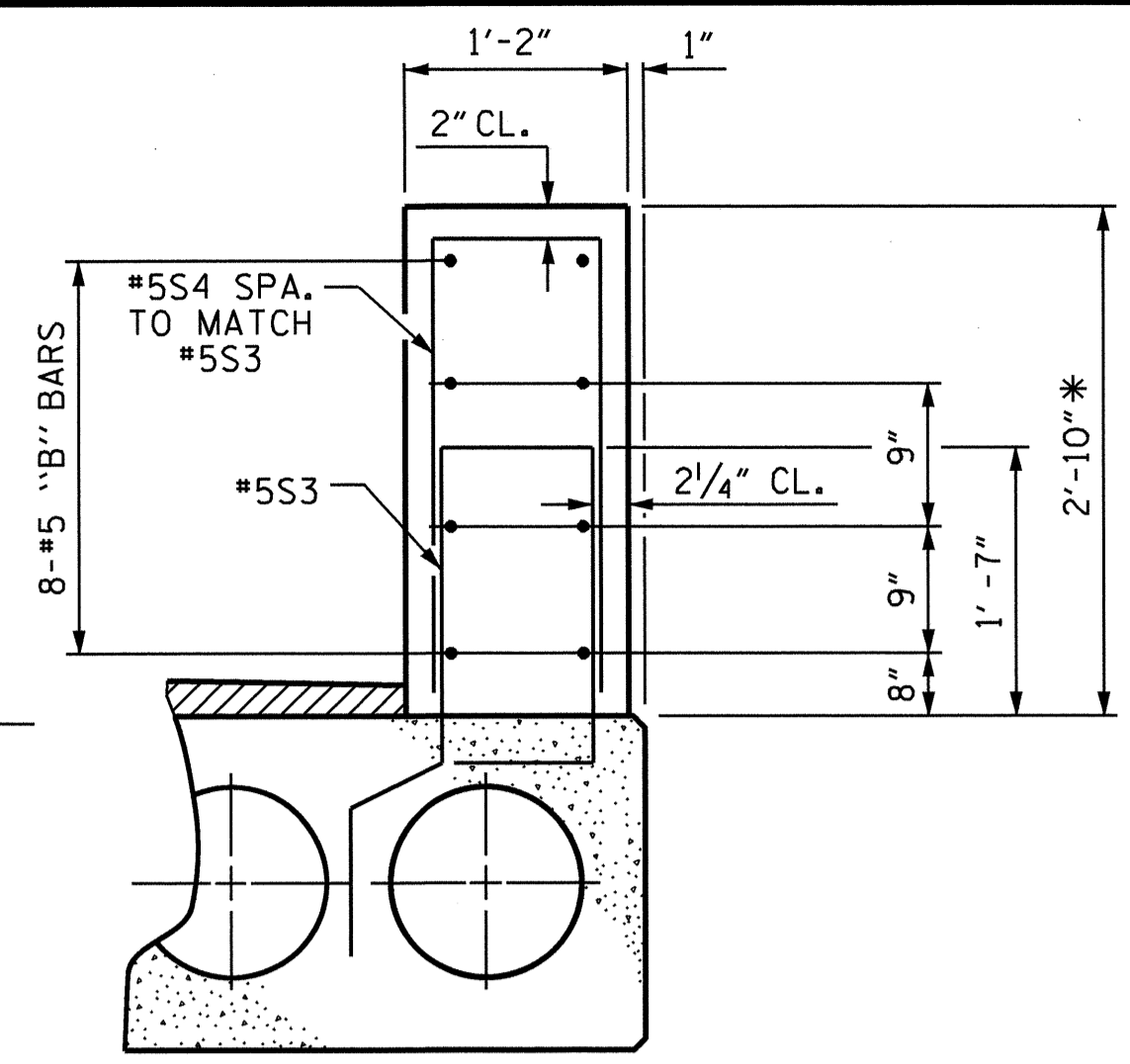
ASSEMBLED BY: R. G. EMERSON	DATE: 06/10
CHECKED BY: M. K. BEARD	DATE: 08/11
DRAWN BY: FCJ 1/88	REV. 10/17/00 LES/RDR
CHECKED BY: CRK 3/89	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM



PLAN OF PARAPET

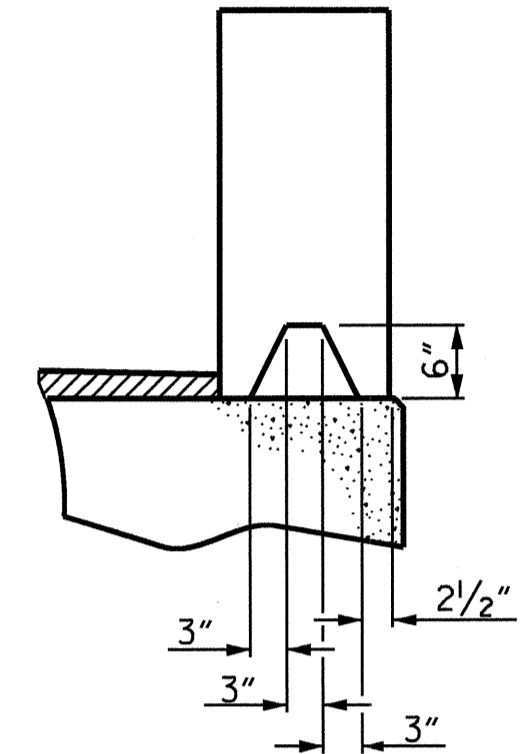


PLAN OF END POST



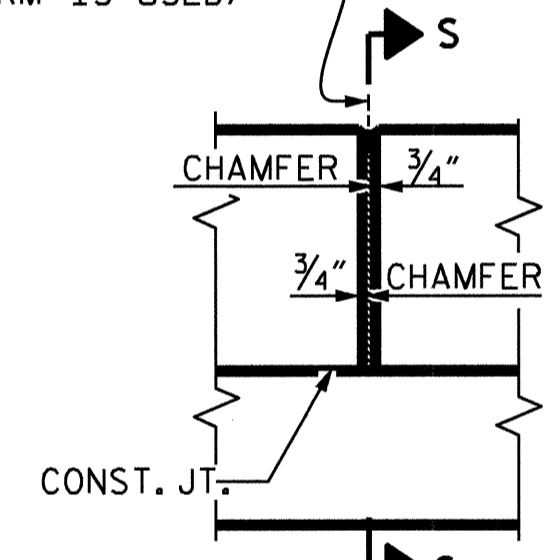
TWO BAR METAL RAIL PARAPET SECTION

NOTES:
 ALL REINFORCING STEEL IN THE PARAPET SHALL BE EPOXY COATED.
 FOR DETAIL OF CONCRETE INSERT AND GUARDRAIL ANCHOR ASSEMBLY, SEE "RAIL POST SPACING AND END OF RAIL DETAILS" SHEET.
 * THE MINIMUM HEIGHT OF THE PARAPET IS SHOWN, THE HEIGHT OF THE PARAPET VARIES WHILE THE TOP OF THE PARAPET FOLLOWS THE PROFILE OF THE GUTTERLINE.

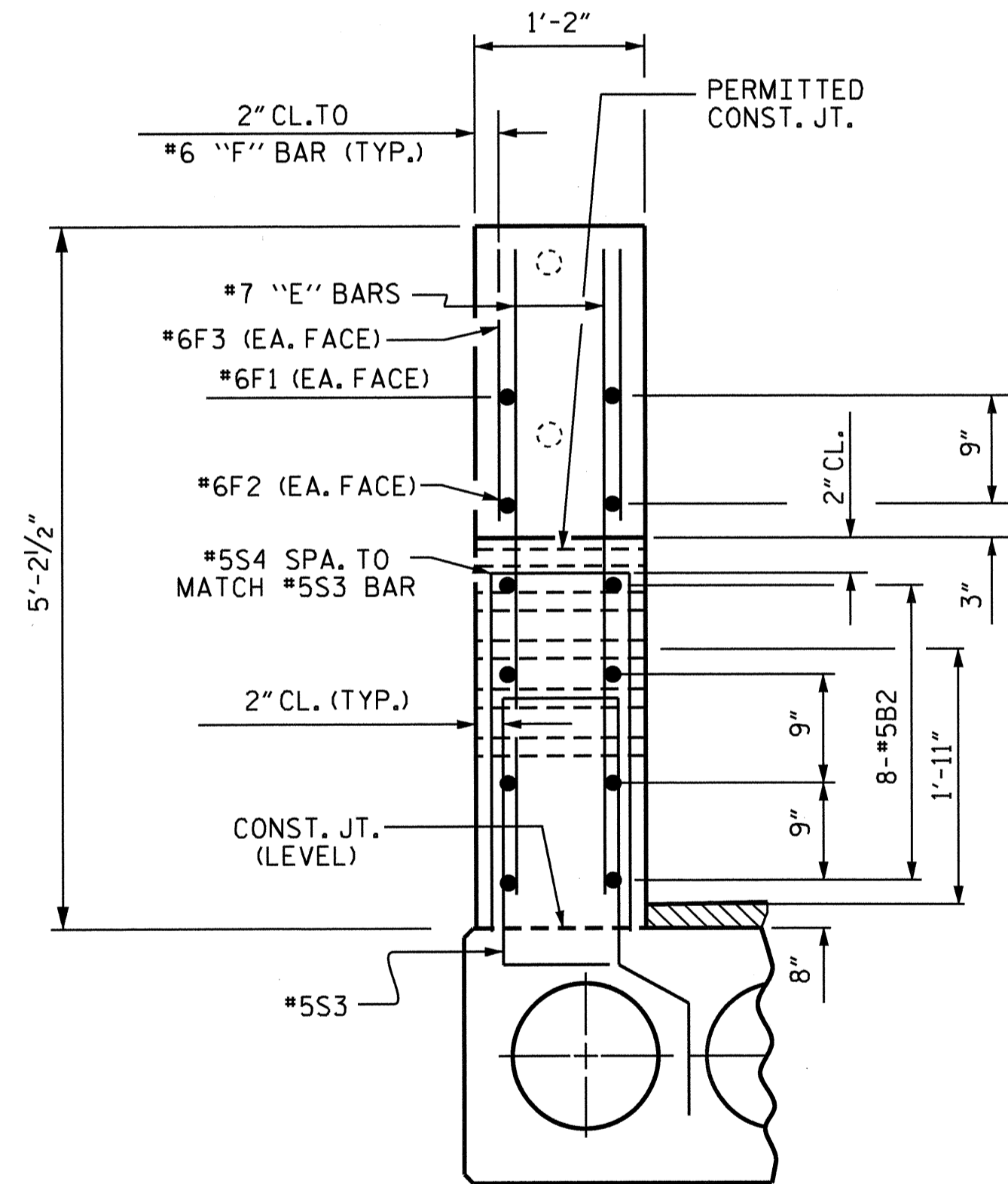


SECTION S-S
 AT DAM IN OPEN JOINT
 (THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

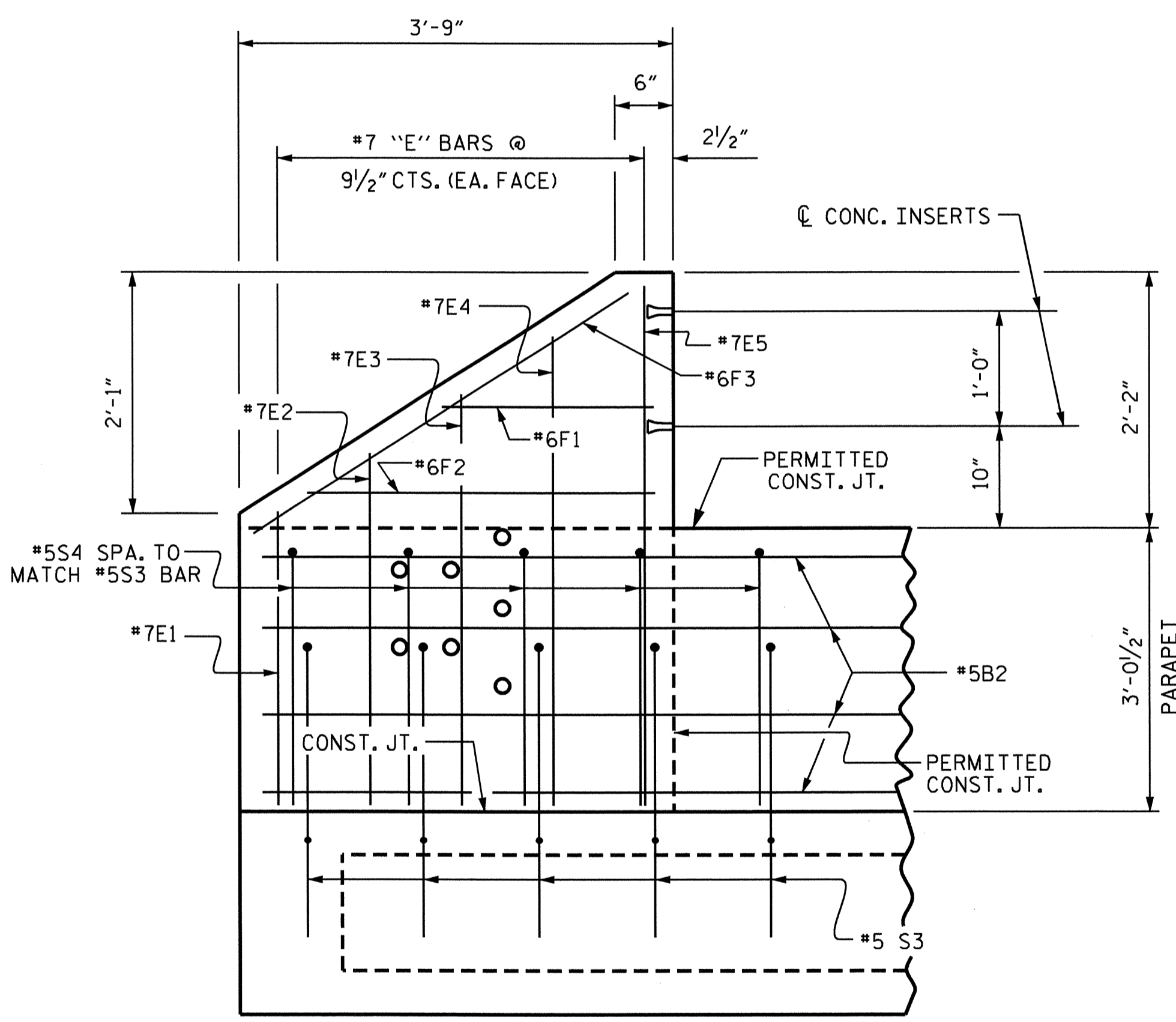
1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS.
 (NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED)



ELEVATION AT EXPANSION JOINTS



END VIEW



ELEVATION

PARAPET AND END POST FOR TWO BAR RAIL

PROJECT NO. B-4200
MECKLENBURG COUNTY
 STATION: 16+17.00 -L-

SHEET 4 OF 5



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END POSTS
 AND
 PARAPET DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			22

DRAWN BY: R. G. EMERSON DATE: 06/10
 CHECKED BY: M. K. BEARD DATE: 08/11

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.

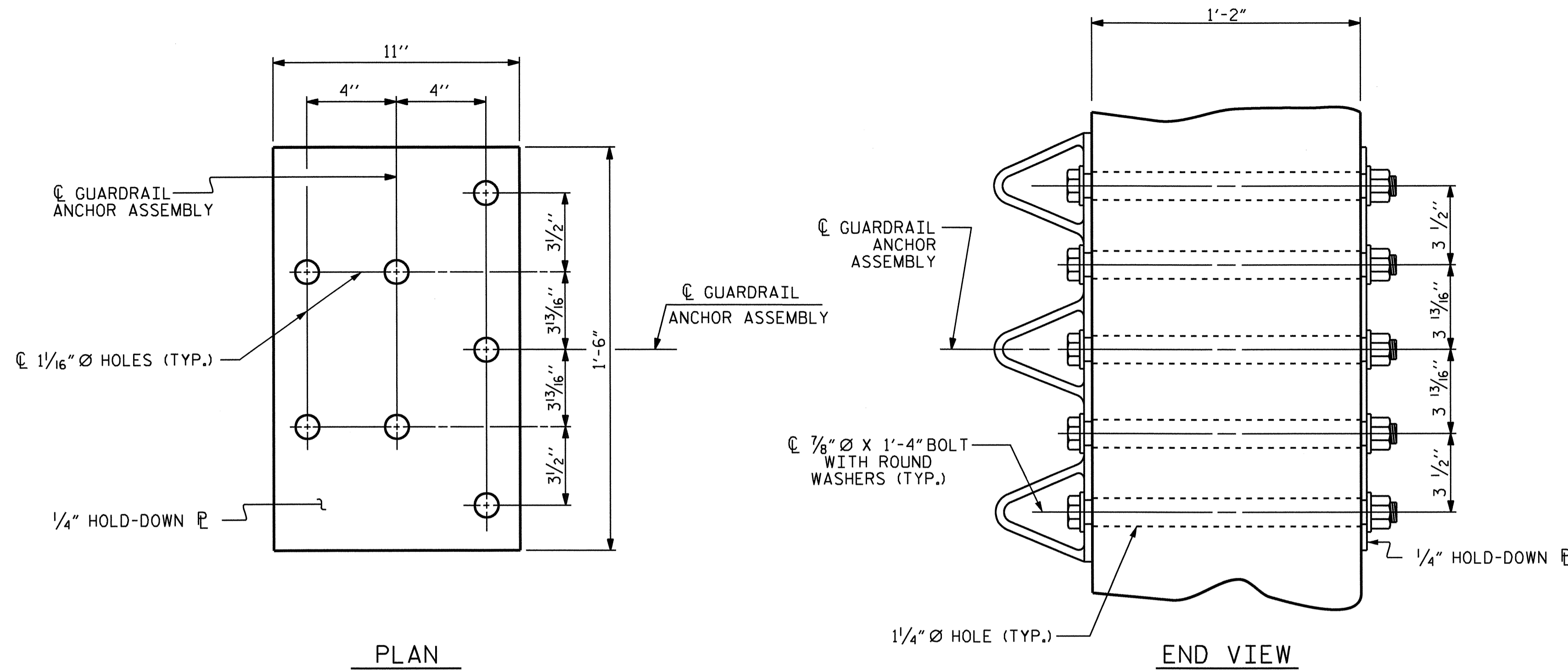
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

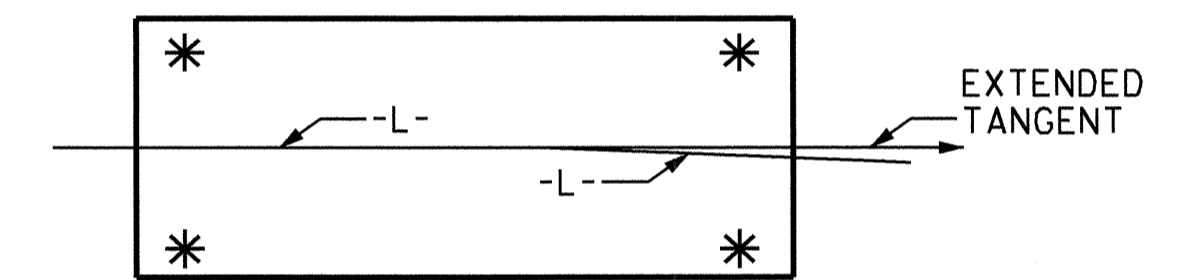
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



PLAN

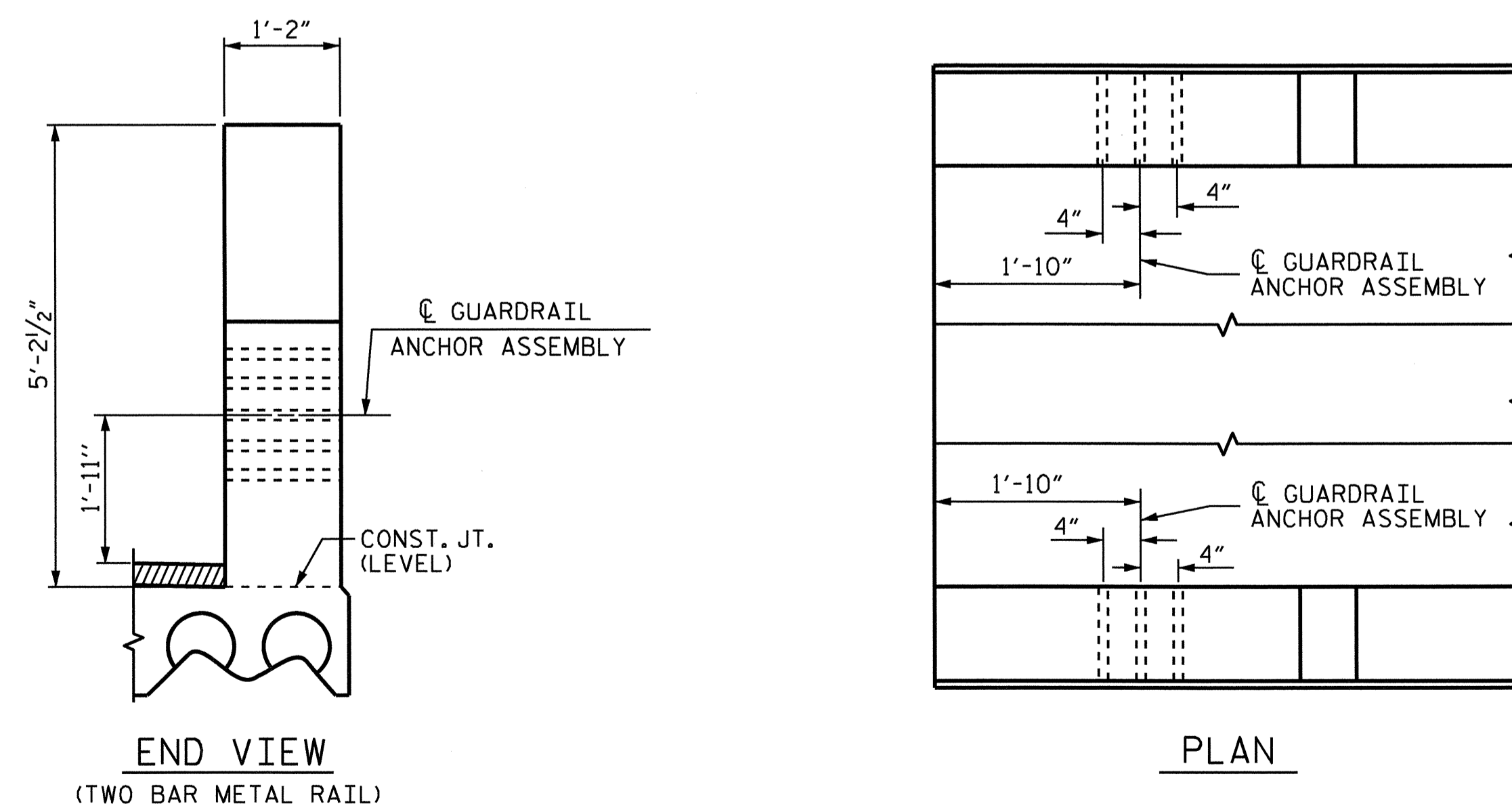
END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



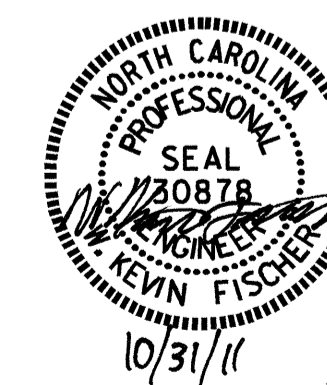
END VIEW

PLAN

LOCATION OF GUARDRAIL ANCHOR AT END POST

ASSEMBLED BY: R. G. EMERSON	DATE: 06/10
CHECKED BY: M. K. BEARD	DATE: 08/11
DRAWN BY: MAA 5/10	ADDED 5/6/10
CHECKED BY: GM 5/10	

06-OCT-2011 10:55
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Klayne



PROJECT NO. B-4200
MECKLENBURG COUNTY
STATION: 16+17.00 -L-

SHEET 5 OF 5

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			22

(SHT 4) STD. NO. GRA3

NOTES

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

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

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

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

THE 1 1/2" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS

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

WHEN A CONCRETE WEARING SURFACE IS DETAILED ON THE CORED SLAB BRIDGE TYPICAL SECTION, THE TOP SURFACE OF THE CORED SLAB UNITS SHALL HAVE A 3/8" RAKED FINISH.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5,300 PSI.

ALL REINFORCING STEEL IN PARAPET SHALL BE EPOXY COATED.

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

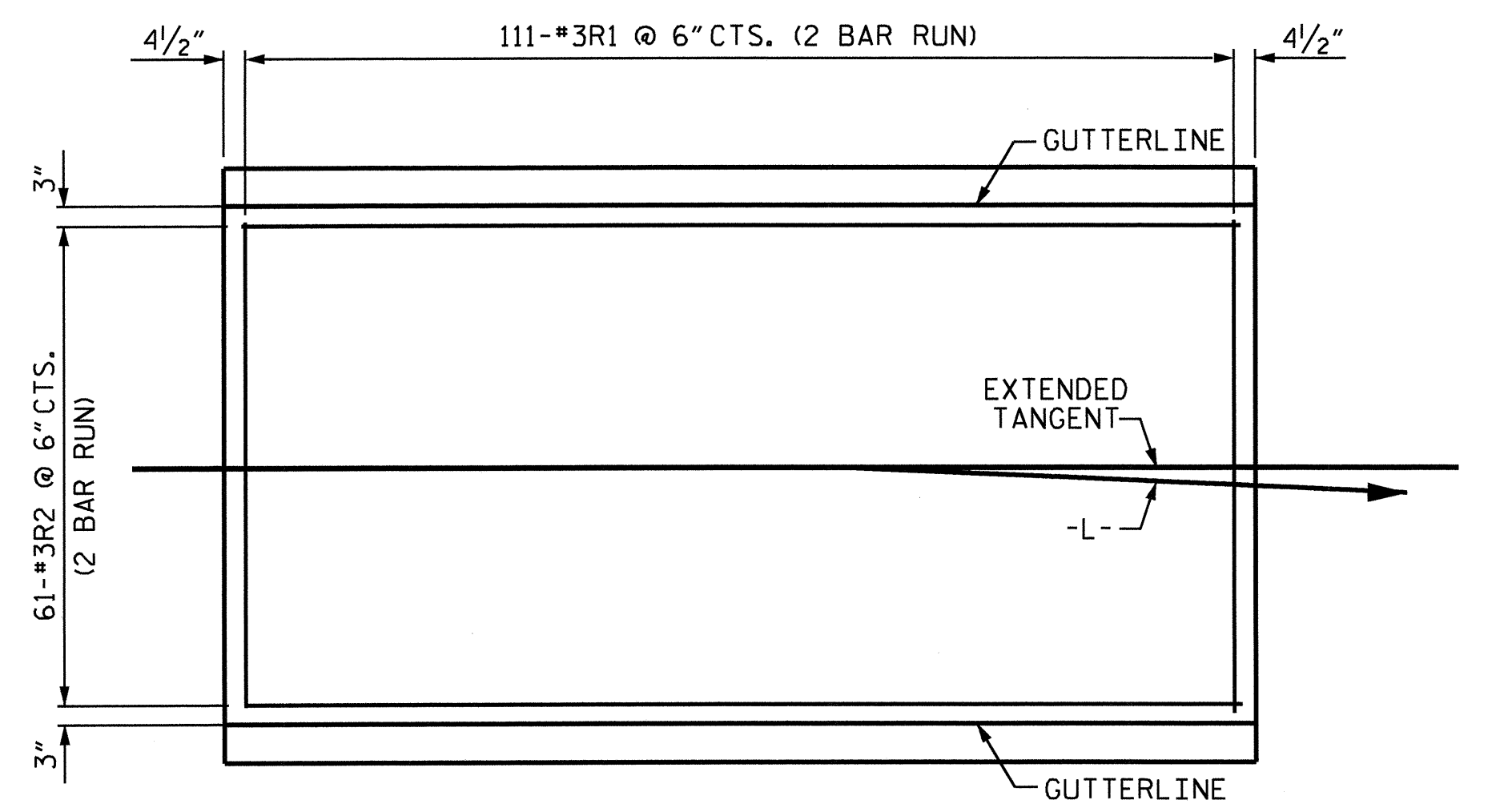
TRANSVERSE POST TENSIONING OF THE CORED SLAB UNITS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE MINIMUM HEIGHT OF THE PARAPET IS SHOWN, THE HEIGHT OF THE PARAPET VARIES WHILE THE TOP OF THE PARAPET FOLLOWS THE PROFILE OF THE GUTTERLINE.

PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING OF THE CONCRETE PARAPET. THE COST OF THE #3 BARS CAST WITH CONCRETE WEARING SURFACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE WEARING SURFACE. FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.



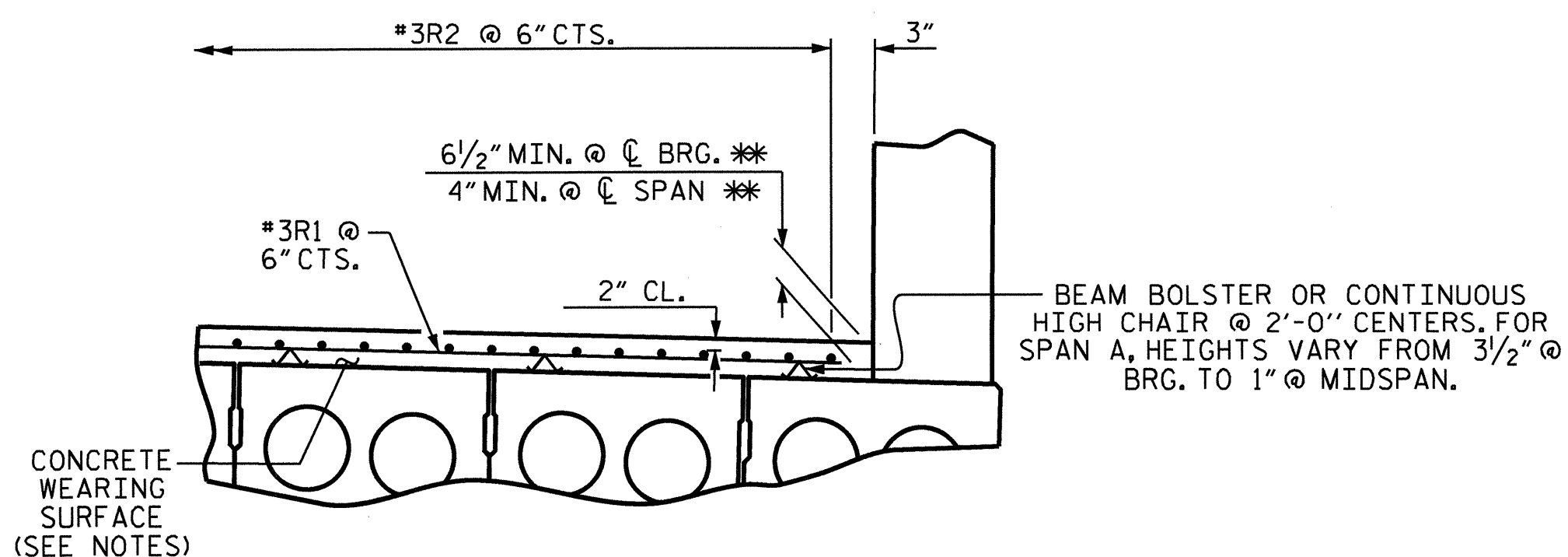
CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	55'-9"	111.50
INTERIOR C.S.	9	55'-9"	501.75
TOTAL	11		613.25

GROOVING BRIDGE FLOORS	
APPROACH SLABS	780 SQ. FT.
BRIDGE DECK	1520 SQ. FT.
TOTAL	2300 SQ. FT.

GRADE 270 STRANDS	
	0.6" Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

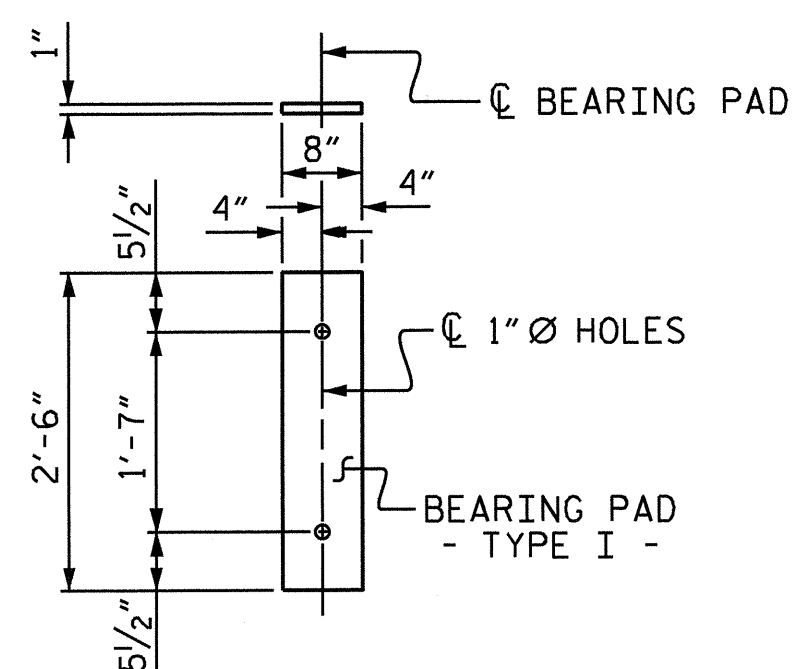
SPLICE LENGTH CHART	
BAR SIZE	EPOXY COATED
#3	1'-3"

PLAN SHOWING CONCRETE WEARING SURFACE REINFORCING STEEL



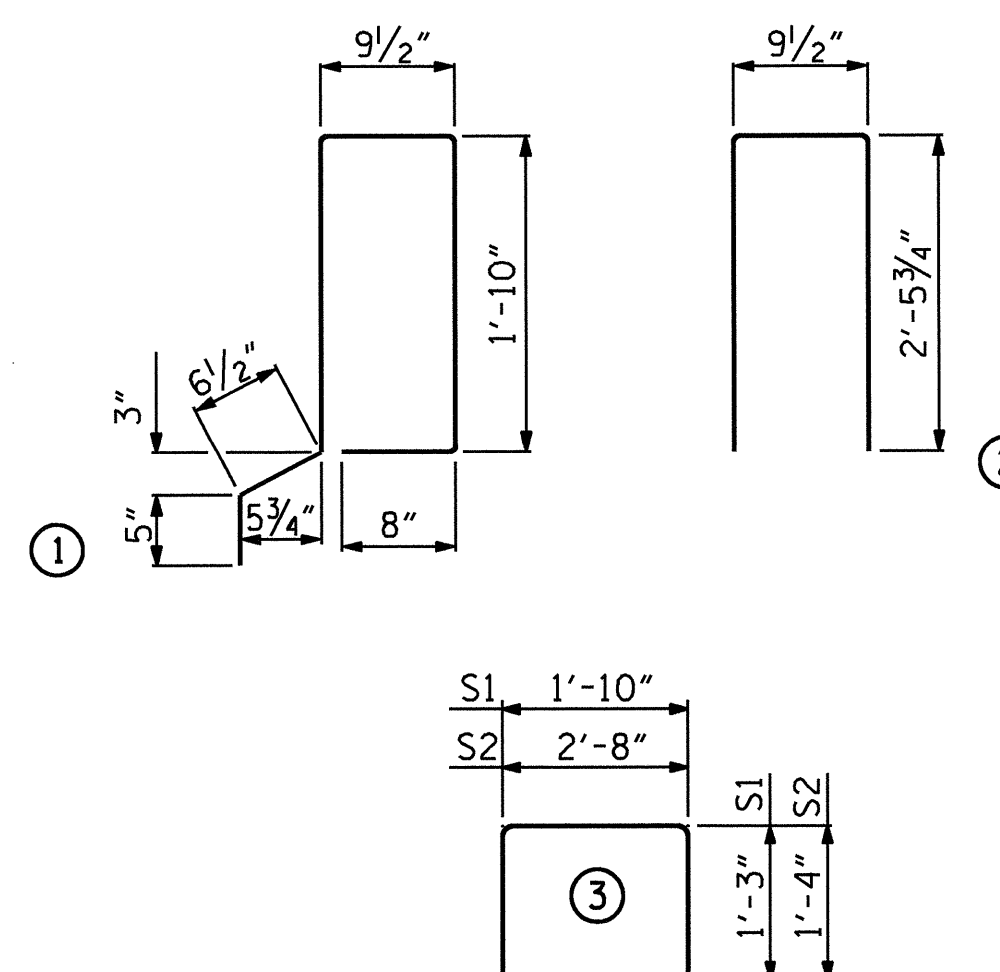
** BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS

BILL OF MATERIAL FOR CONCRETE WEARING SURFACE					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* R1	222	#3	STR	15'-9"	1315
* R2	122	#3	STR	28'-4"	1300
* EPOXY COATED REINFORCING STEEL				LBS.	2615
CONCRETE WEARING SURFACE				SQ. FT.	1700



ELASTOMERIC BEARING DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE CORED SLAB SECTION

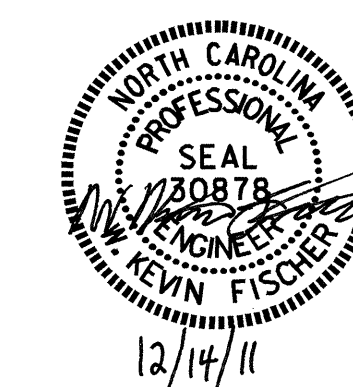
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
B1	4	#4	STR	28'-7"	76	28'-7"	76
S1	8	#5	3	4'-4"	36	4'-4"	36
S2	110	#4	3	5'-4"	392	5'-4"	392
* S3	58	#5	1	6'-1"	368		
REINFORCING STEEL					504 LBS.		504 LBS.
* EPOXY COATED REINFORCING STEEL					368 LBS.		
7,000 P.S.I. CONCRETE					8.0 CU. YDS.		8.0 CU. YDS.
0.6" Ø L.R. STRANDS				No.	21		21

BILL OF MATERIAL FOR PARAPET & END POSTS

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B2	32	#5	STR	27'-6"	918
* E1	8	#7	STR	3'-0"	49
* E2	8	#7	STR	3'-6"	57
* E3	8	#7	STR	4'-0"	65
* E4	8	#7	STR	4'-6"	74
* E5	8	#7	STR	4'-10"	79
* F1	8	#6	STR	1'-10"	22
* F2	8	#6	STR	3'-0"	36
* F3	8	#6	STR	3'-10"	46
* S4	116	#5	2	5'-9"	696
* EPOXY COATED REINFORCING STEEL					2042 LBS.
CLASS AA CONCRETE					15.4 CU. YDS.
1'-2" X 2'-10" CONCRETE PARAPET					111.50 LIN. FT.

DEAD LOAD DEFLECTION AND CAMBER

	3'-0" x 1'-9"
	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2 7/8"
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	5/8"
FINAL CAMBER	2 1/4"



PROJECT NO. B-4200
MECKLENBURG COUNTY
 STATION: 16+17.00 -L-

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

ASSEMBLED BY: R. G. EMERSON	DATE: 06/10
CHECKED BY: M. K. BEARD	DATE: 08/11
DRAWN BY: WJH 4/89	REV. 7/10/01 RWW/LES
CHECKED BY: FCJ 5/89	REV. 5/7/03RRR RWW/JTE
	REV. 5/1/06R TLA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			22

NOTES

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

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE PARAPET AND END POSTS ARE CAST IF SLIP FORMING IS USED.

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

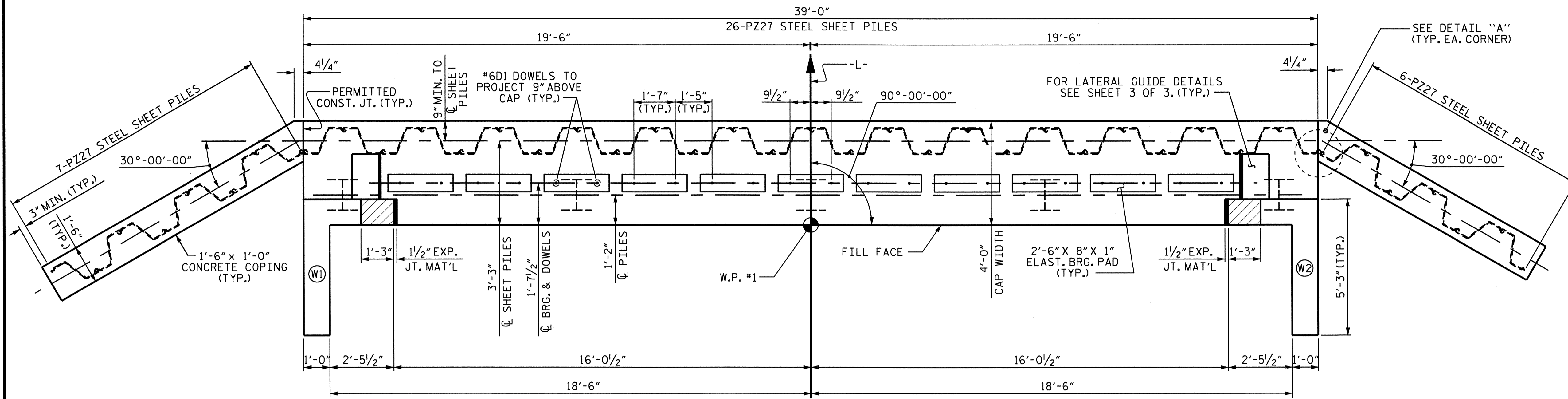
THE LATERAL GUIDES ARE NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

FOR LATERAL GUIDE DETAILS, SEE SHEET 3 OF 3.

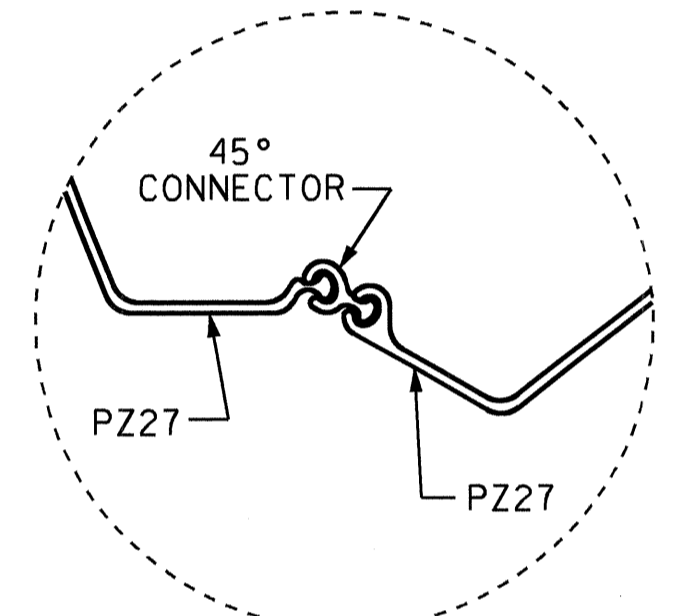
FOR STEEL SHEET PILES, SEE SPECIAL PROVISIONS.

STEEL SHEET PILES SHALL BE EMBEDDED A MINIMUM OF 6" INTO END BENT CAP.

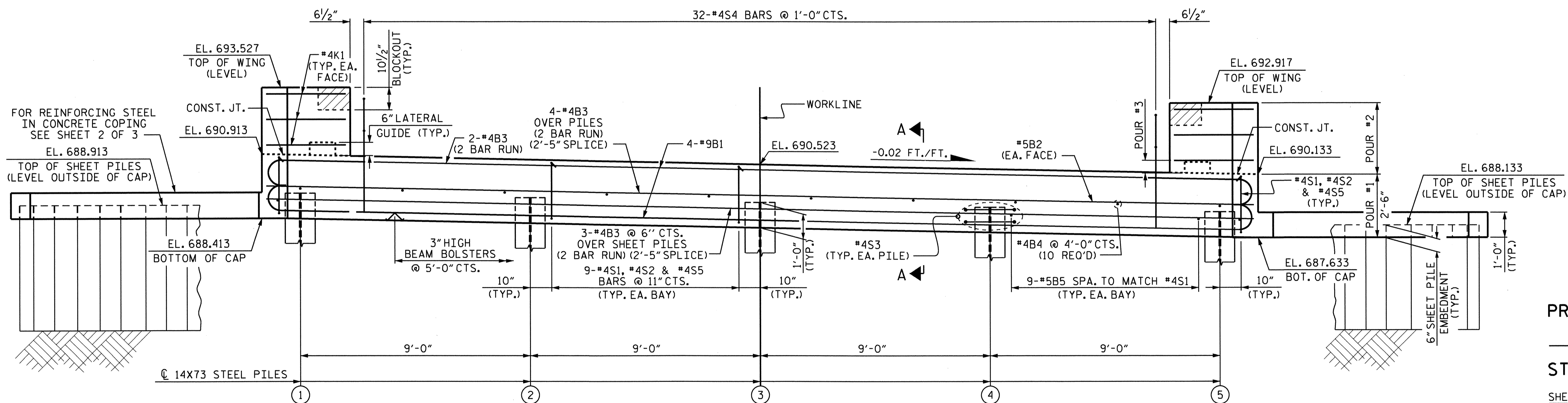
THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDE IF APPROVED BY THE ENGINEER.



PLAN



DETAIL "A"



ELEVATION

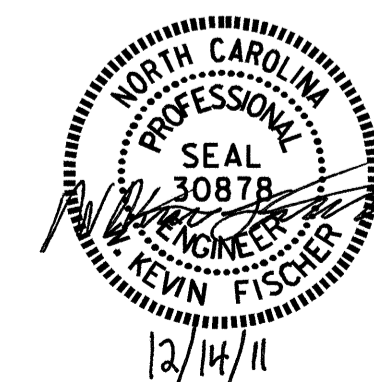
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PROJECT NO. B-4200
MECKLENBURG COUNTY
 STATION: 16+17.00 -L-

SHEET 1 OF 3

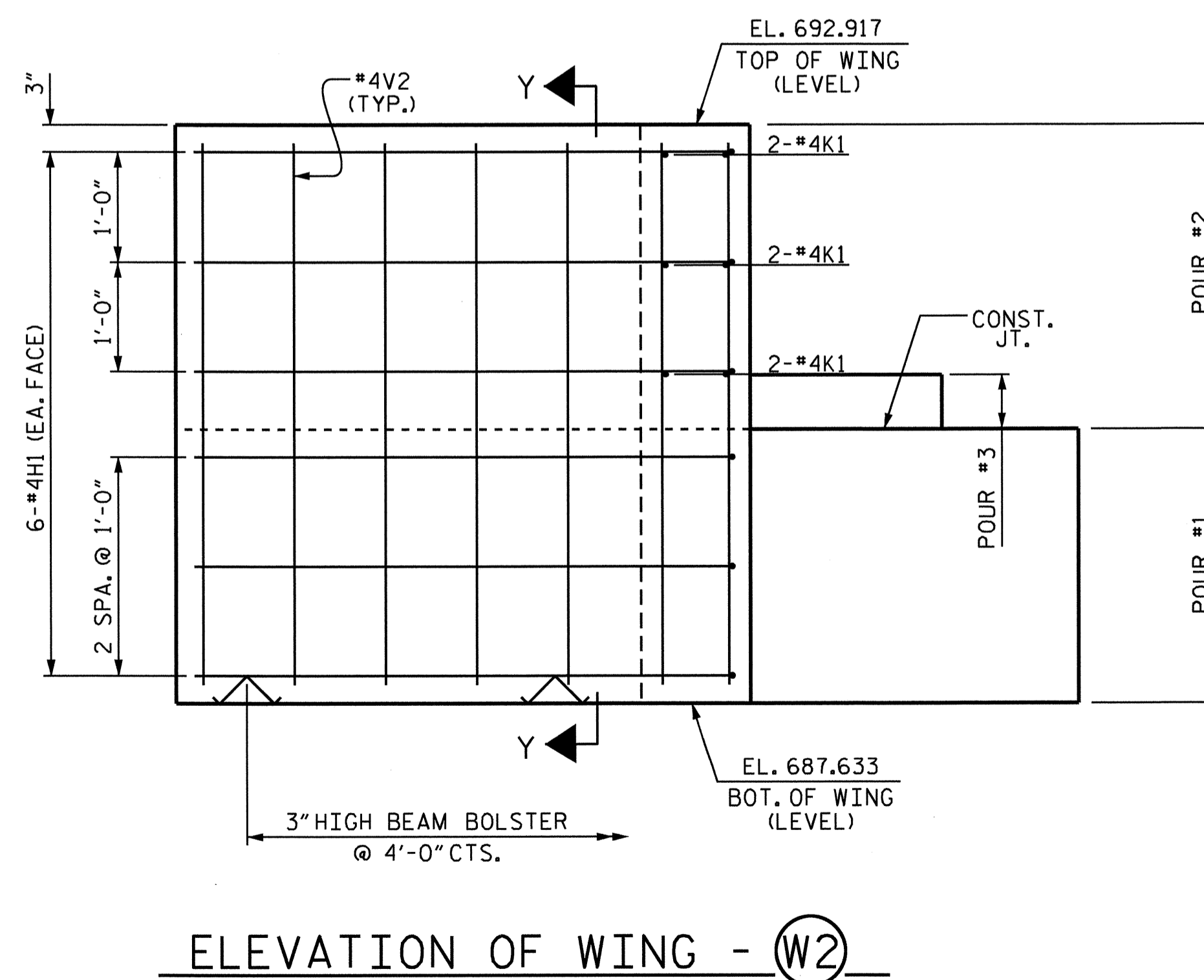
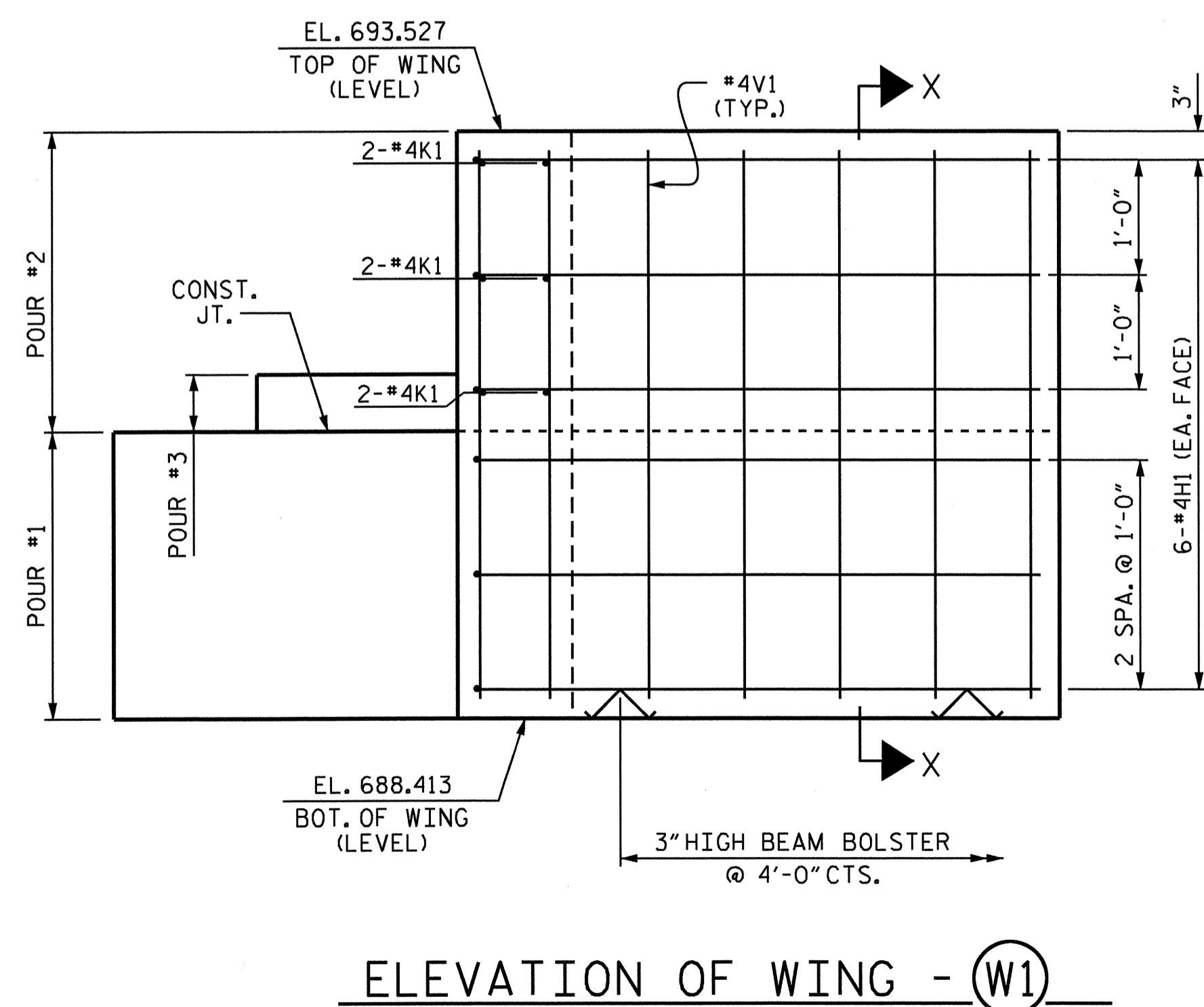
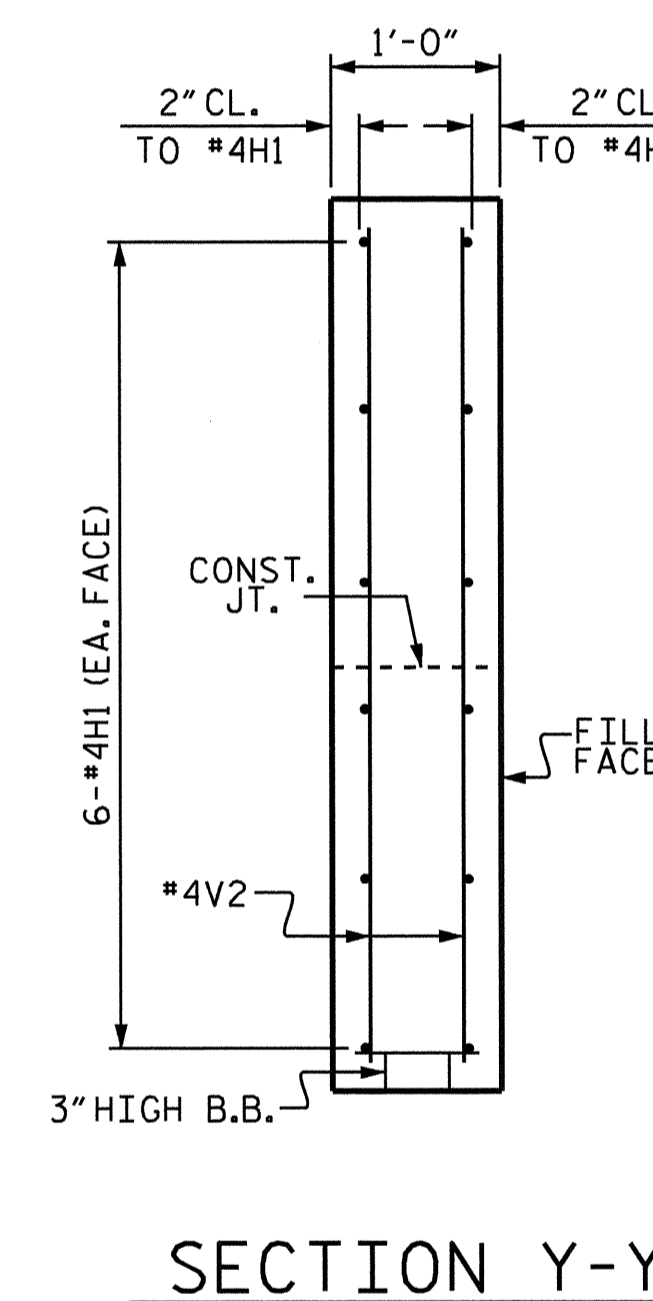
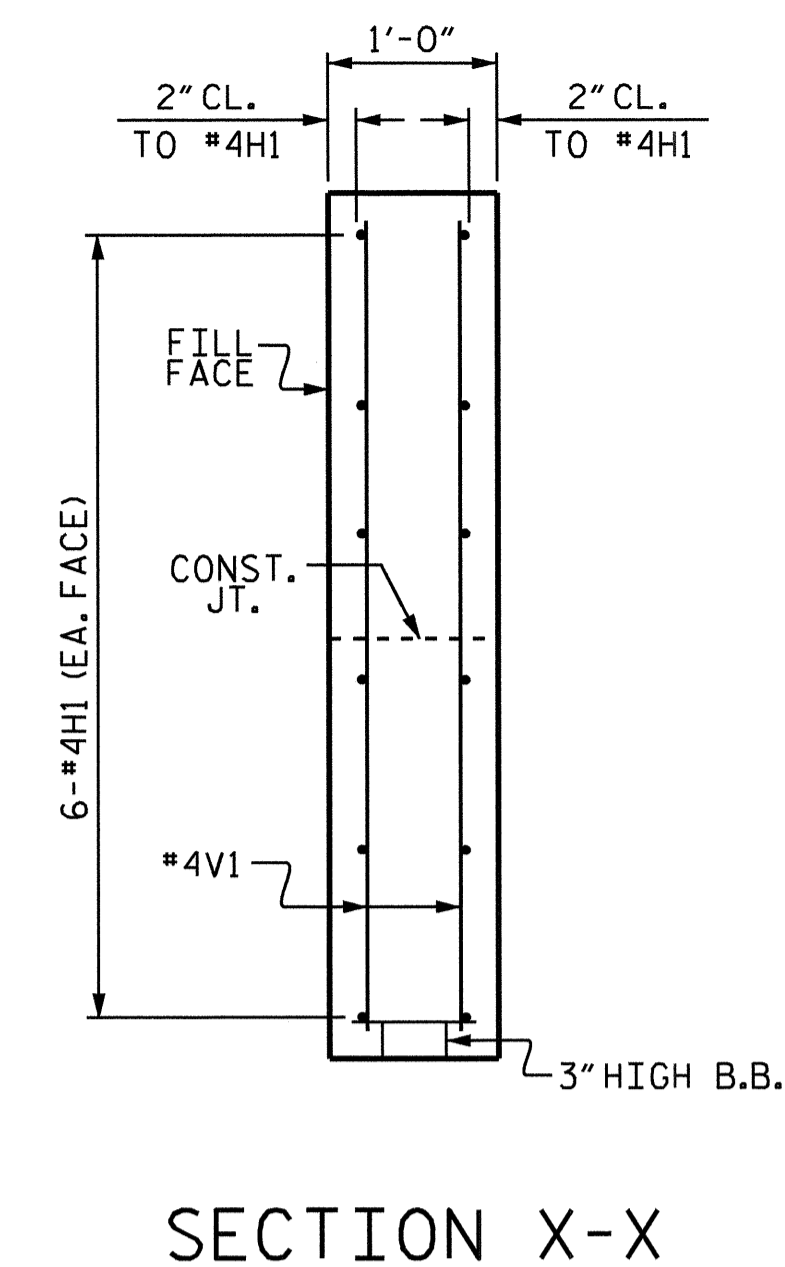
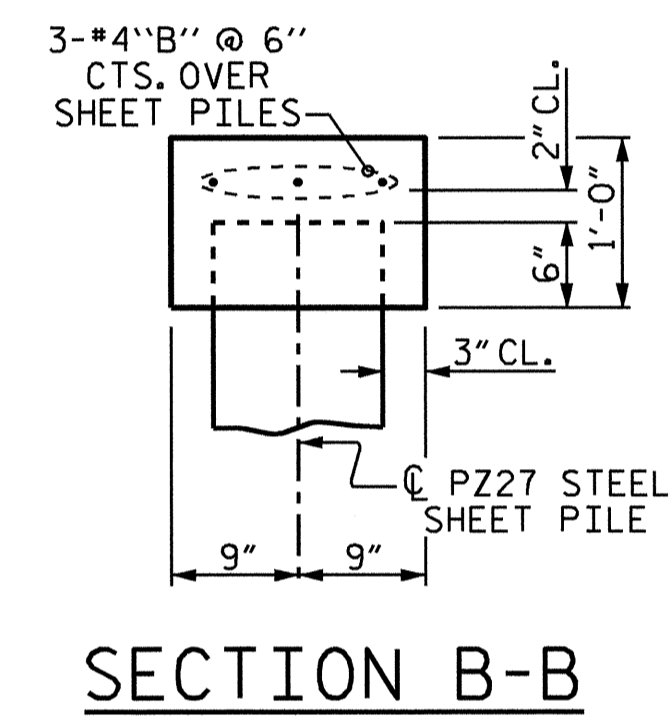
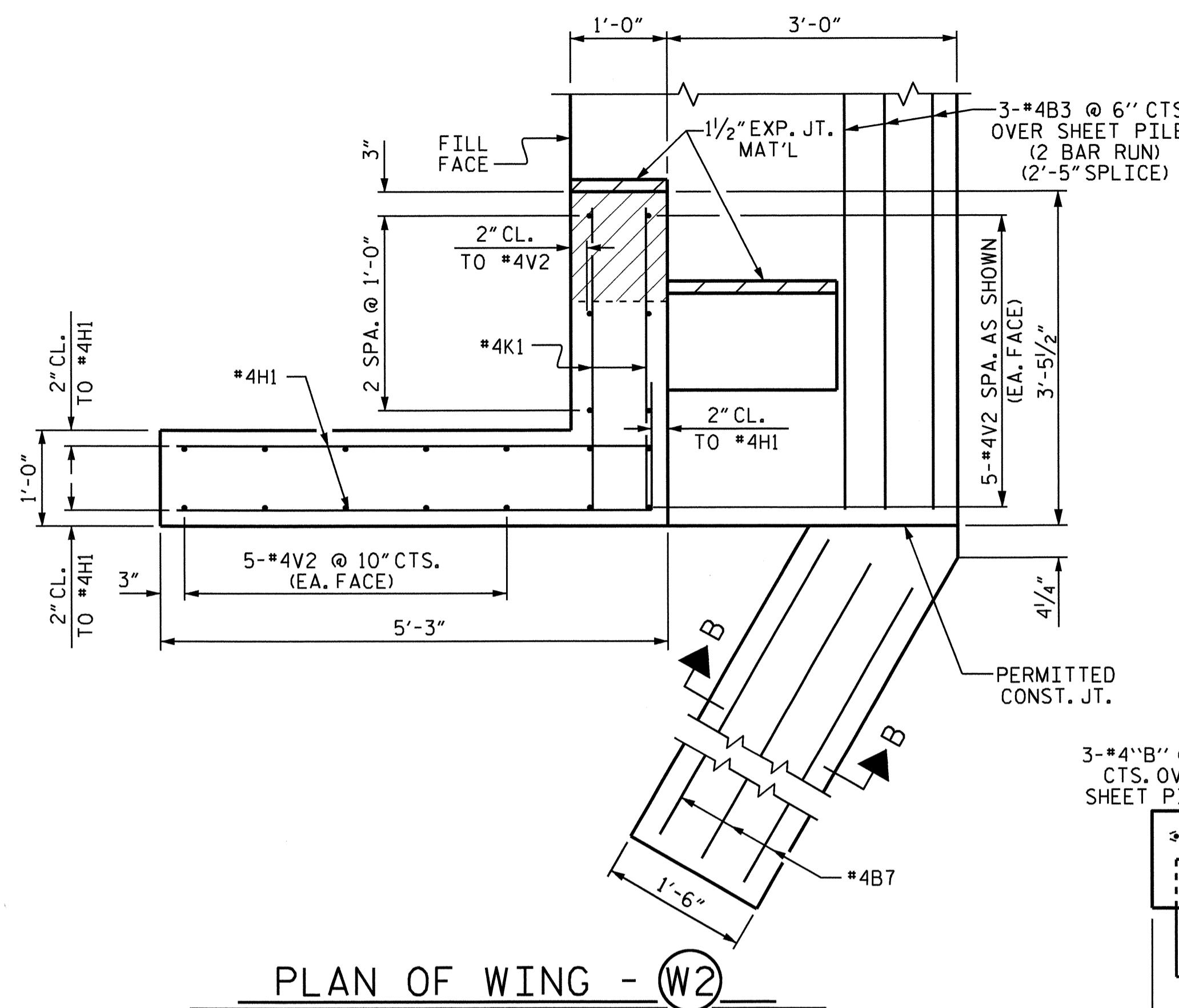
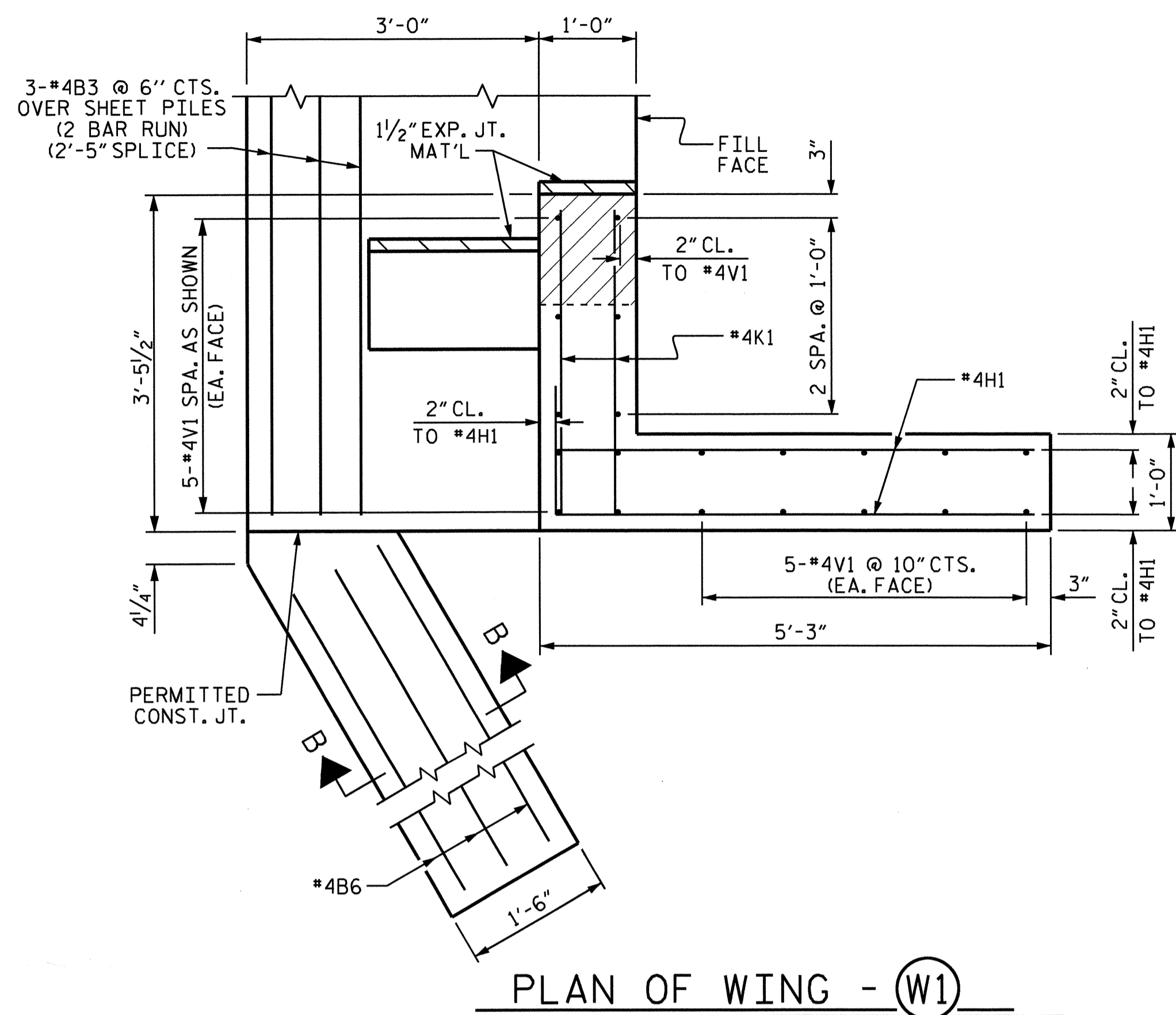
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT #1



REVISIONS						SHEET NO. S-13
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 22
2			4			

DRAWN BY: KEITH D. LAYNE DATE: 8/13/10
 CHECKED BY: M. K. BEARD DATE: 11/16/10



PROJECT NO. B-4200
 MECKLENBURG COUNTY
 STATION: 16+17.00 -L-

SHEET 2 OF 3

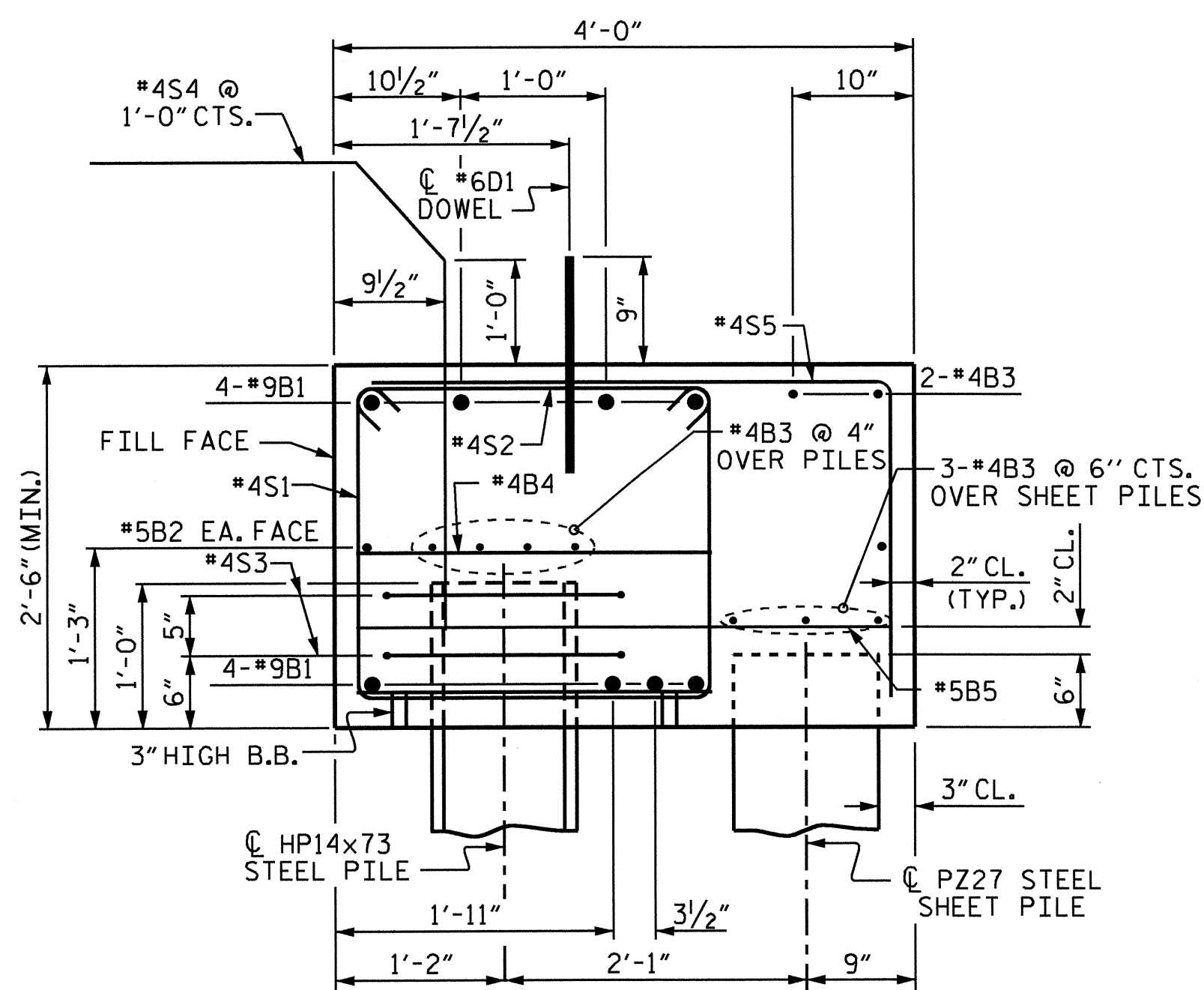
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT #1



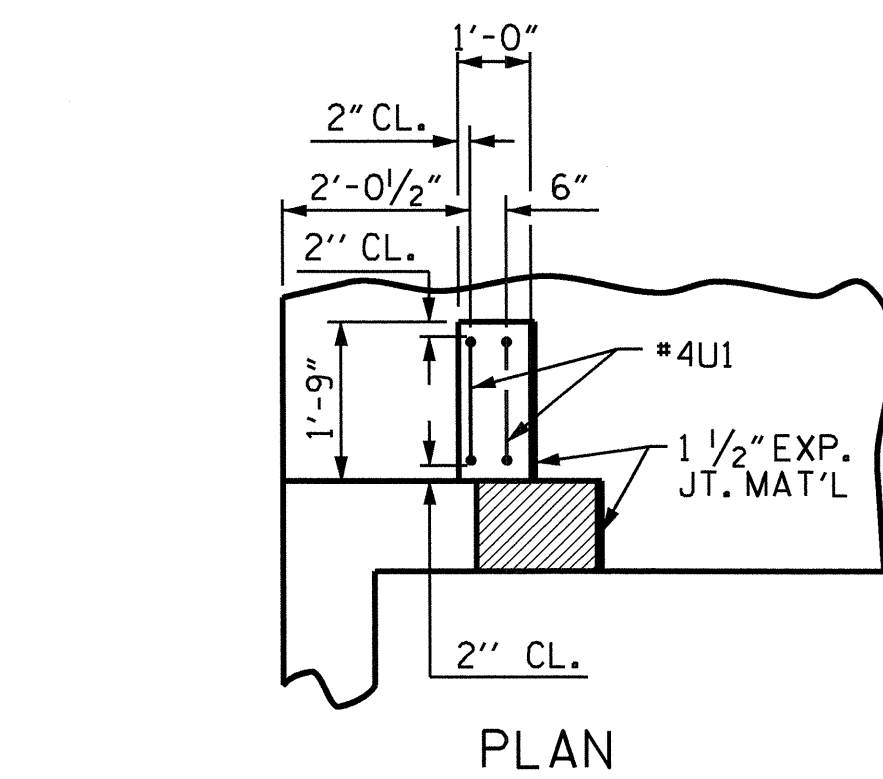
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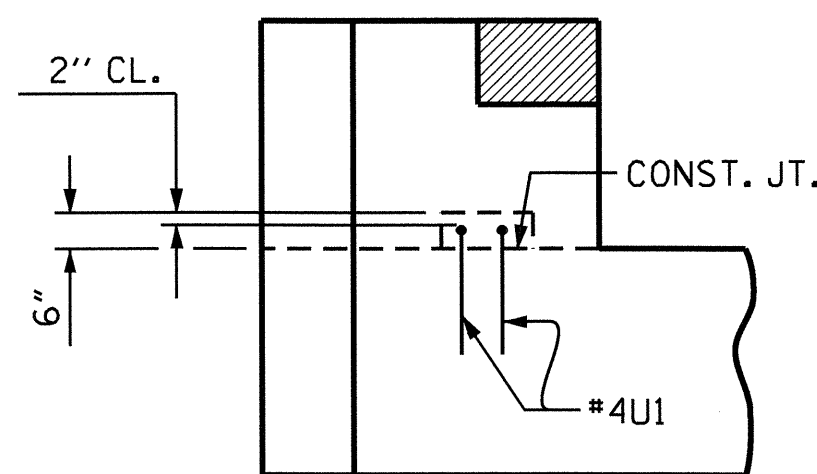
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			22



SECTION A-A



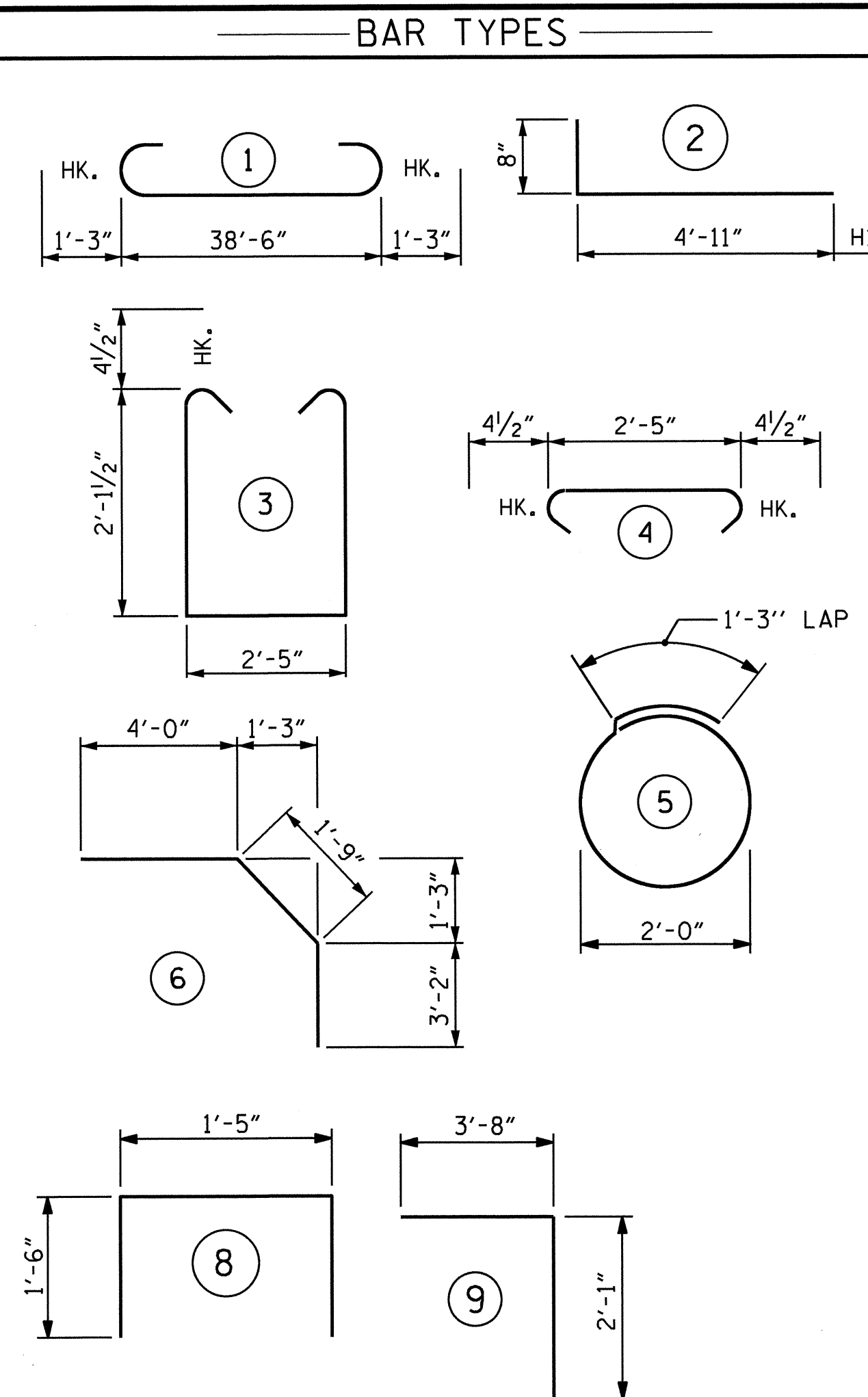
PLAN



ELEVATION

LATERAL GUIDE DETAILS

(EACH END SIMILAR)



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	9	1	41'-0"	1,115
B2	2	5	STR	38'-8"	81
B3	18	4	STR	20'-8"	248
B4	10	4	STR	2'-5"	16
B5	36	5	STR	3'-8"	138
B6	3	4	STR	10'-2'	20
B7	3	4	STR	8'-10'	18
D1	22	6	STR	1'-6"	50
H1	24	4	2	5'-7"	90
K1	12	4	STR	3'-1"	25
S1	38	4	3	7'-5"	188
S2	38	4	4	3'-2"	80
S3	10	4	5	7'-7"	51
*S4	32	4	6	8'-11"	191
S5	38	4	9	5'-9"	146
U1	4	4	8	4'-5"	12
V1	20	4	STR	4'-9"	63
V2	20	4	STR	4'-11"	66

REINFORCING STEEL = 2,407 LBS.

* EPOXY COATED

REINFORCING STEEL = 191 LBS.

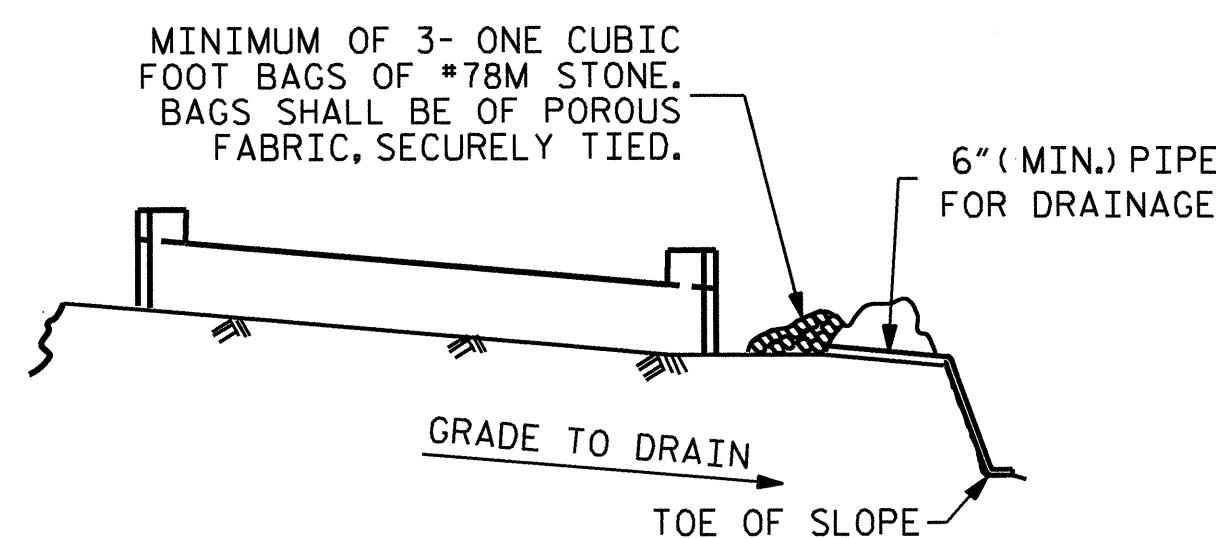
CLASS "A" CONCRETE BREAKDOWN

POUR #1 CAP, LOWER PART OF WINGS AND COPING =	16.4 Cu. Yds.
POUR #2 UPPER WINGS =	1.5 Cu. Yds.
POUR #3 LATERAL GUIDES =	0.1 Cu. Yds.
TOTAL =	18.0 Cu. Yds.

HP14X73 STEEL PILES
NO. 5 200 Lin. Ft.

PZ27 STEEL SHEET PILES
NO. 39 645 Sq. Ft.

45° CONNECTOR (COLT) NO. 2

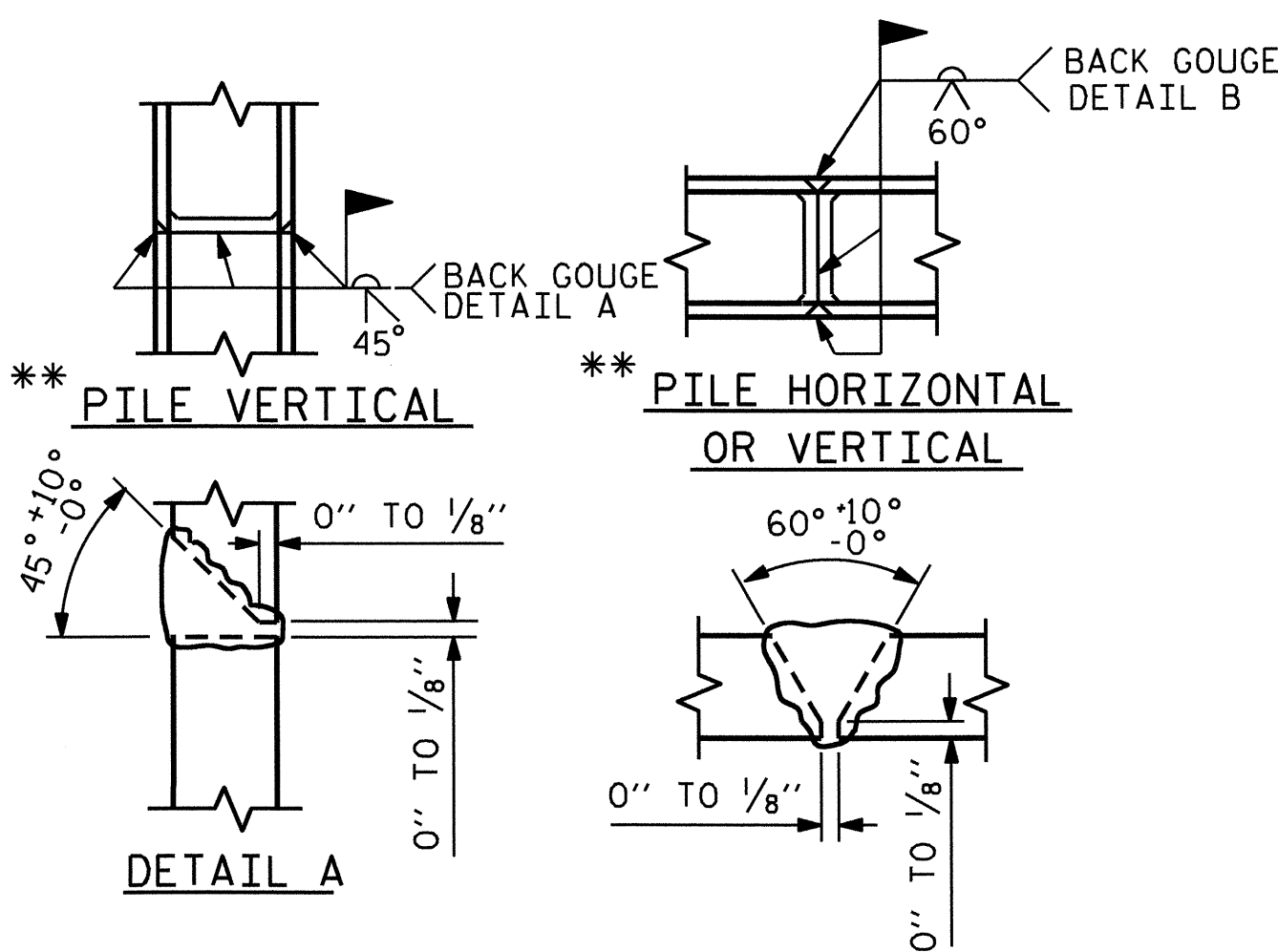


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

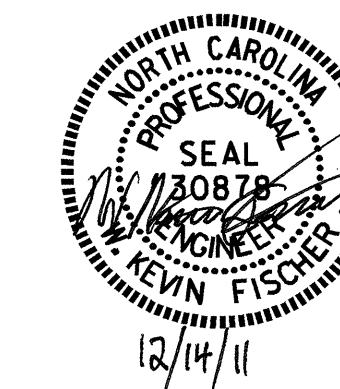


** POSITION OF PILE DURING WELDING. **DETAIL B**

PILE SPLICE DETAILS

DRAWN BY : KEITH D. LAYNE DATE : 8/13/10
CHECKED BY : M. K. BEARD DATE : 11/16/10

12-DEC-2011 09:08
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PROJECT NO. B-4200
MECKLENBURG COUNTY
STATION: 16+17.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-15
1			3			TOTAL SHEETS
2			4			22

NOTES

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

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE PARAPET AND END POSTS ARE CAST IF SLIP FORMING IS USED.

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

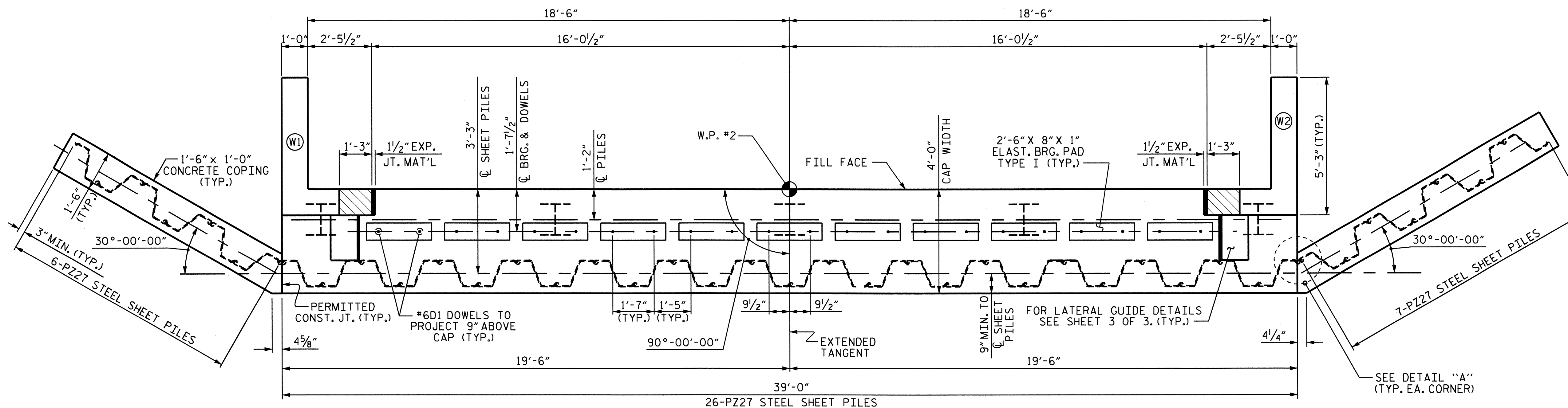
THE LATERAL GUIDES ARE NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

FOR LATERAL GUIDE DETAILS, SEE SHEET 3 OF 3.

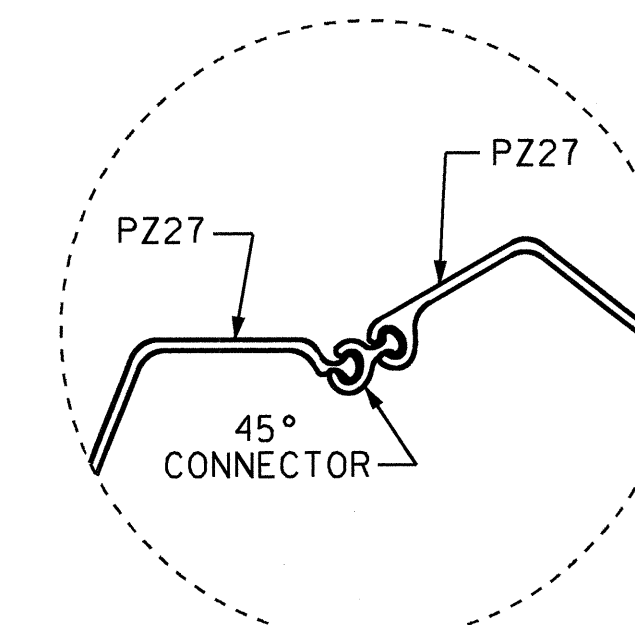
FOR STEEL SHEET PILES, SEE SPECIAL PROVISIONS.

STEEL SHEET PILES SHALL BE EMBEDDED A MINIMUM OF 6" INTO END BENT CAP.

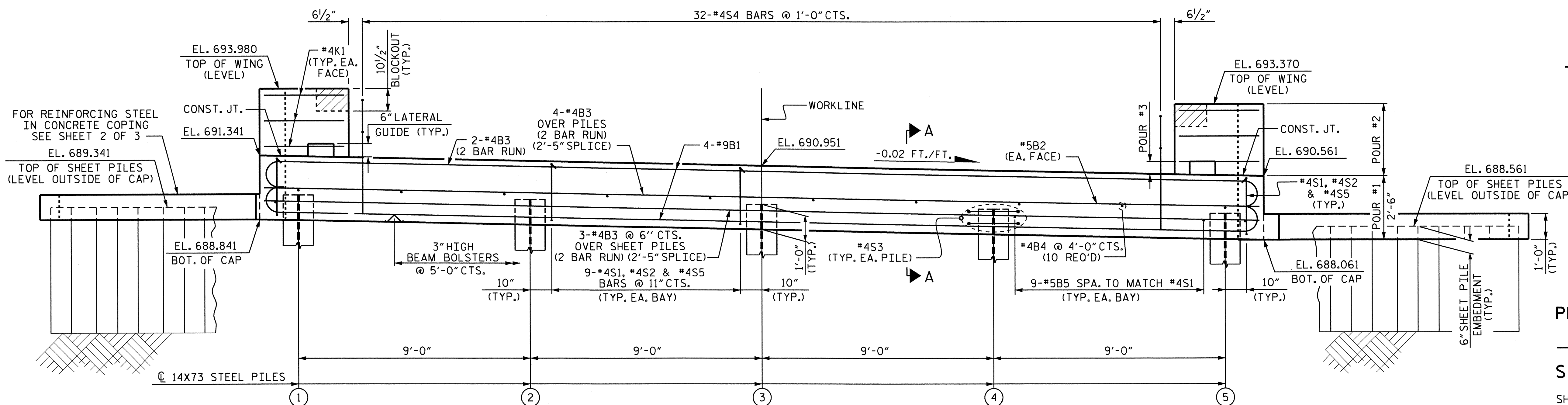
THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDE IF APPROVED BY THE ENGINEER.



PLAN



DETAIL "A"



ELEVATION

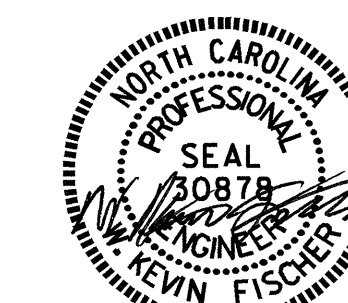
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2	689.631
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5	689.091

PROJECT NO. B-4200
 MECKLENBURG COUNTY
 STATION: 16+17.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

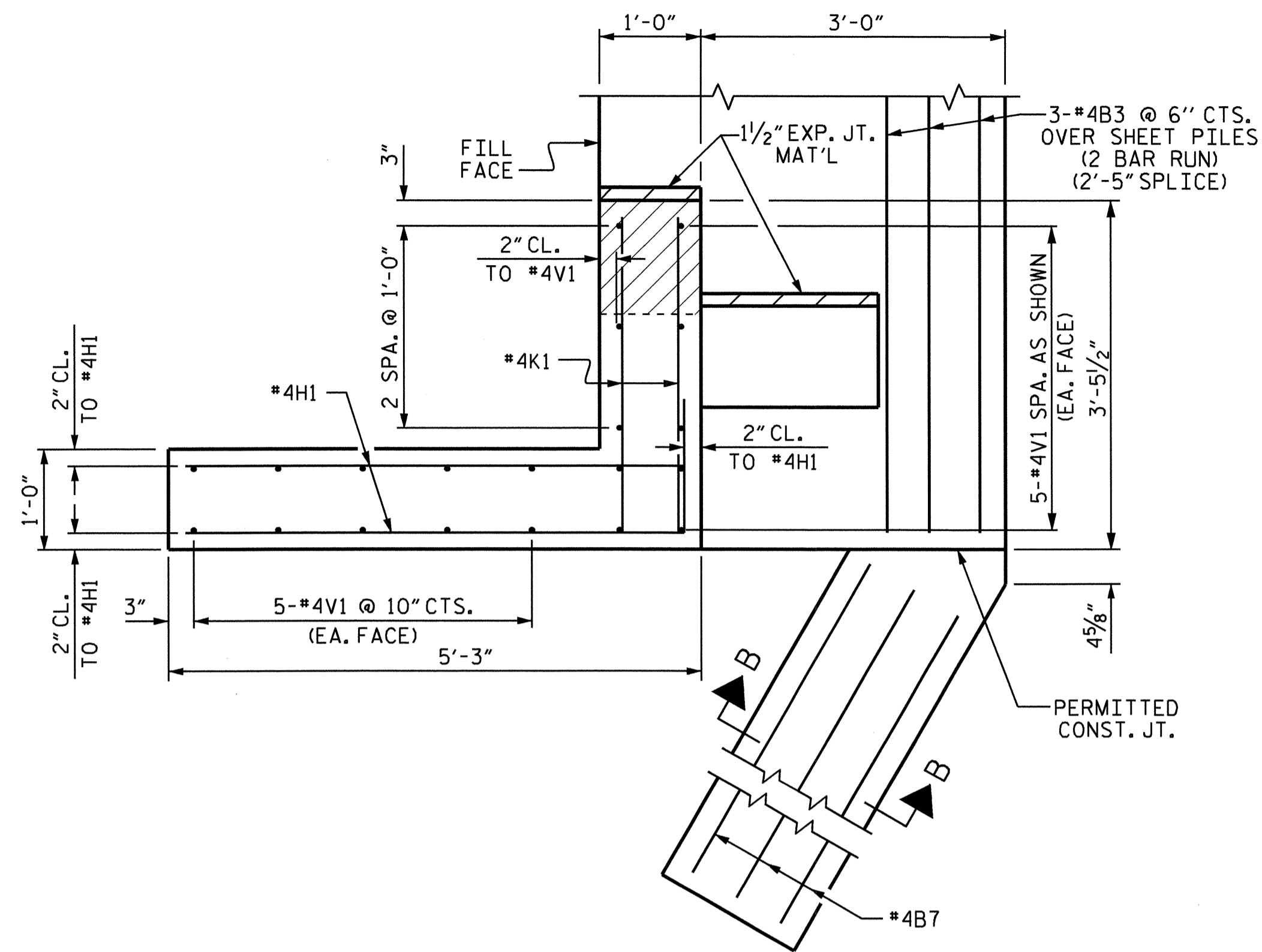
SUBSTRUCTURE
 END BENT #2



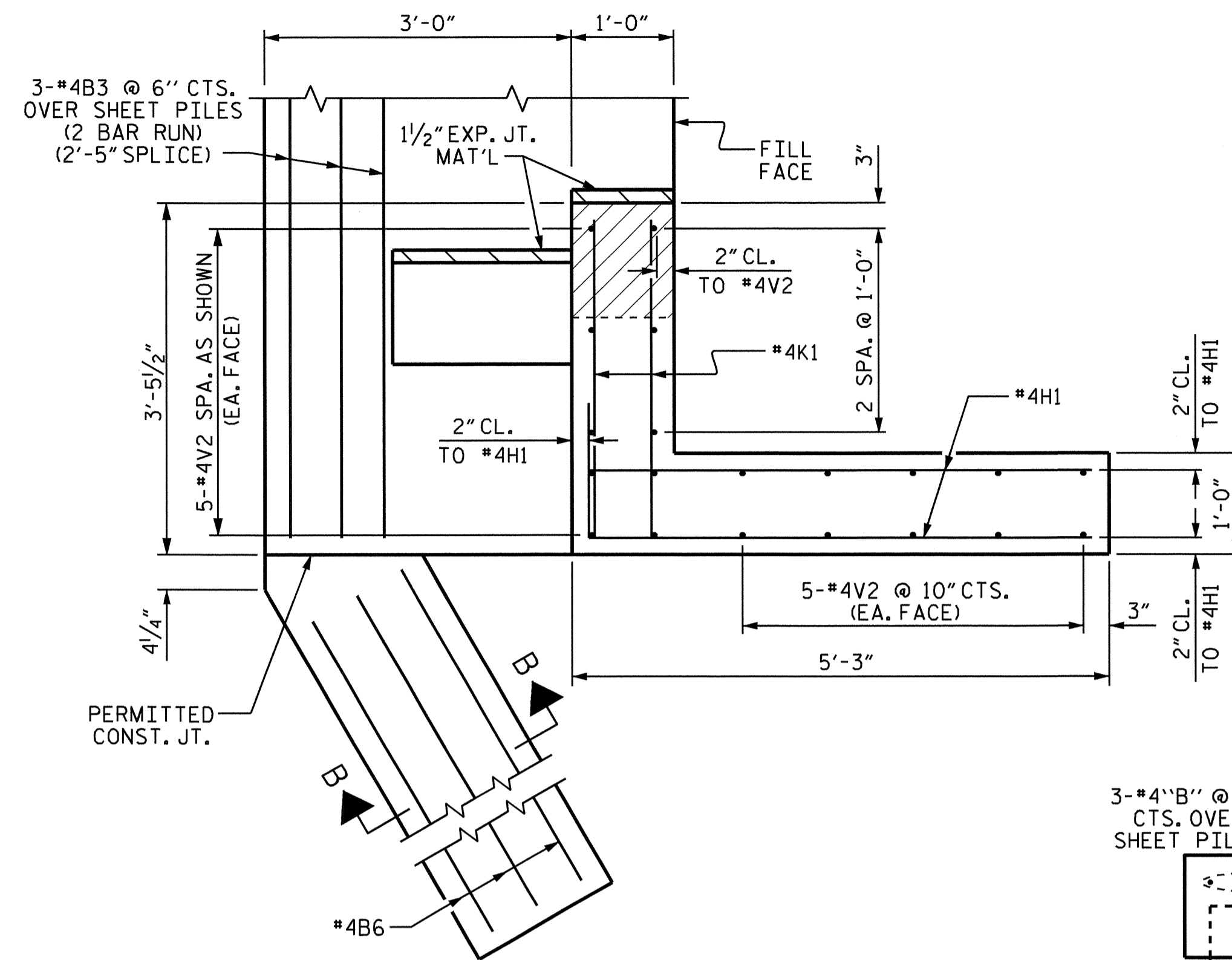
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 CHECKED BY : M. K. BEARD DATE : 11/16/10

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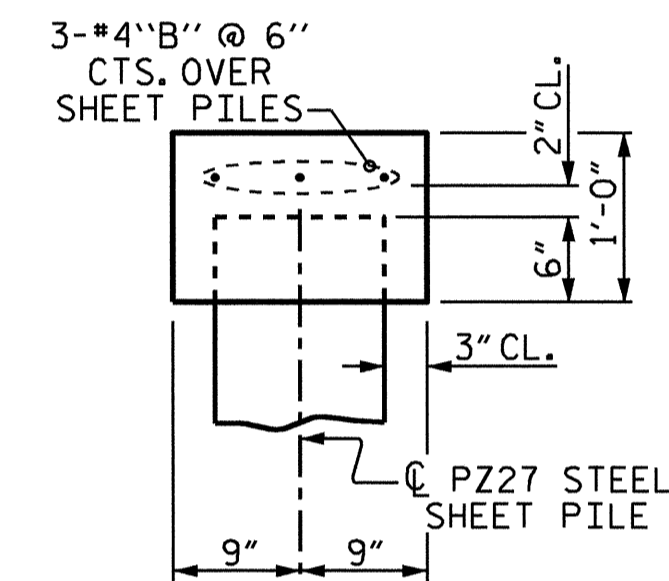
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-16
1			3			TOTAL SHEETS
2			4			22



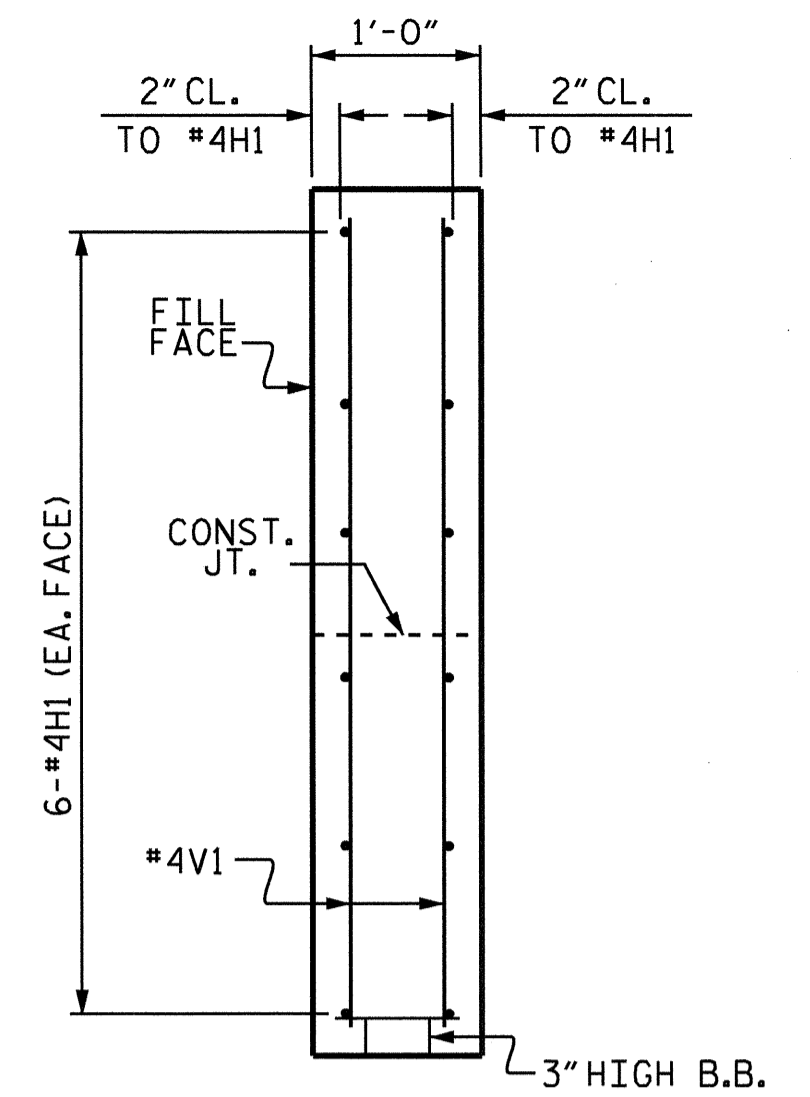
PLAN OF WING - (W1)



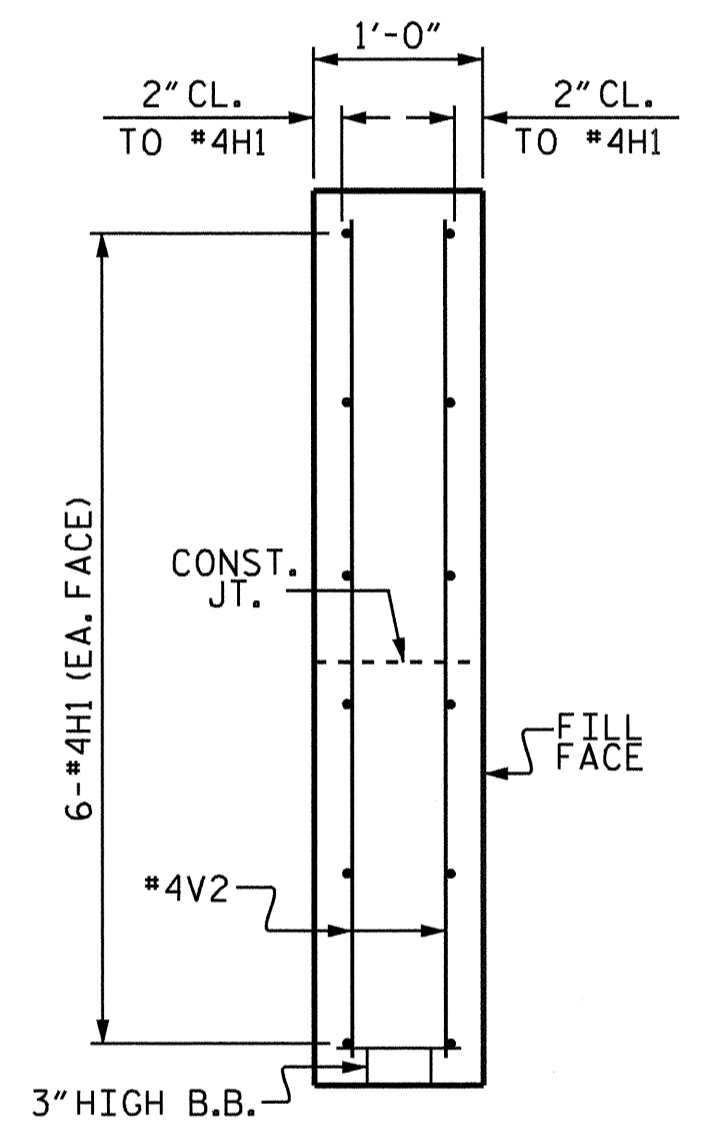
PLAN OF WING - (W2)



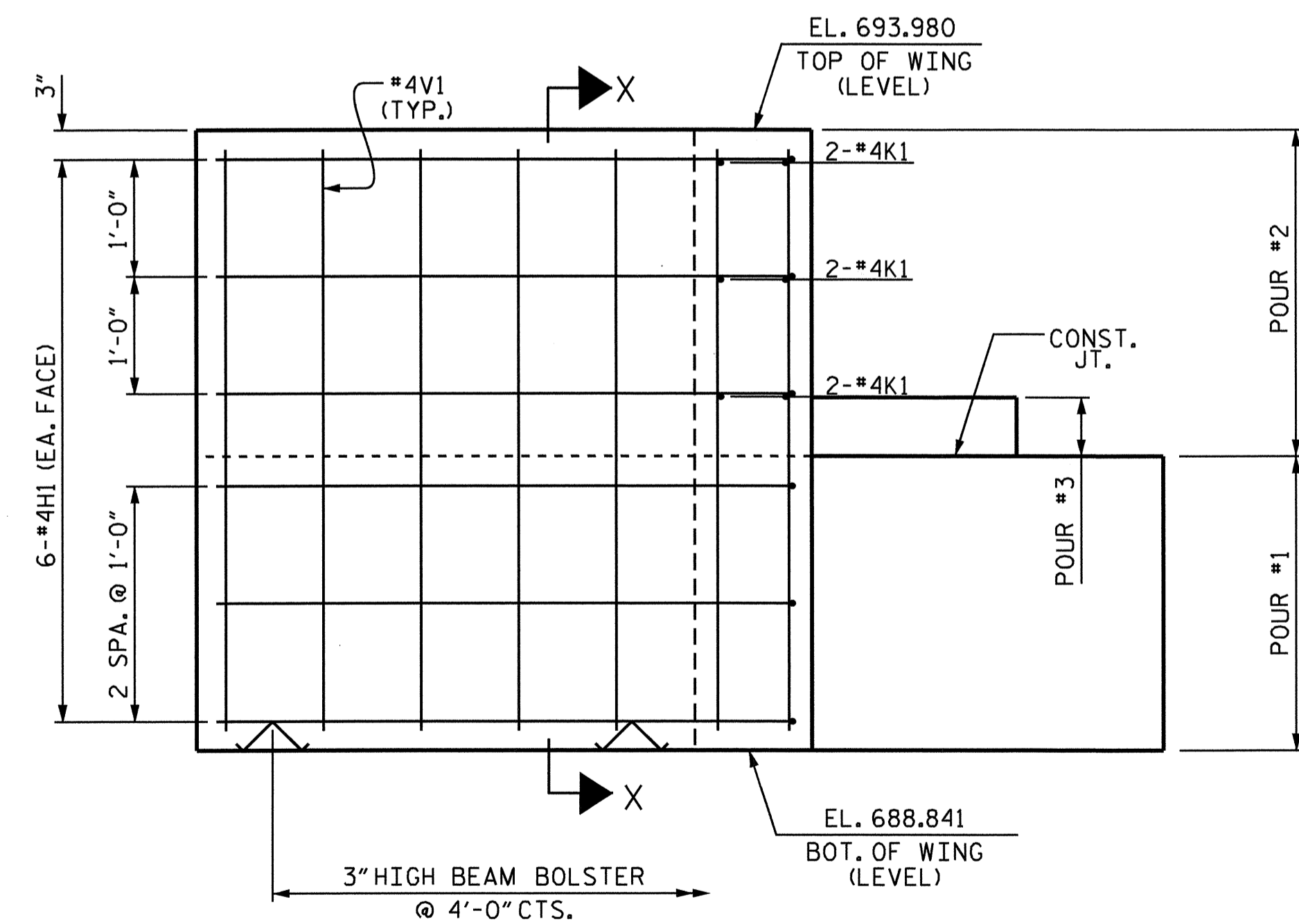
SECTION B-B



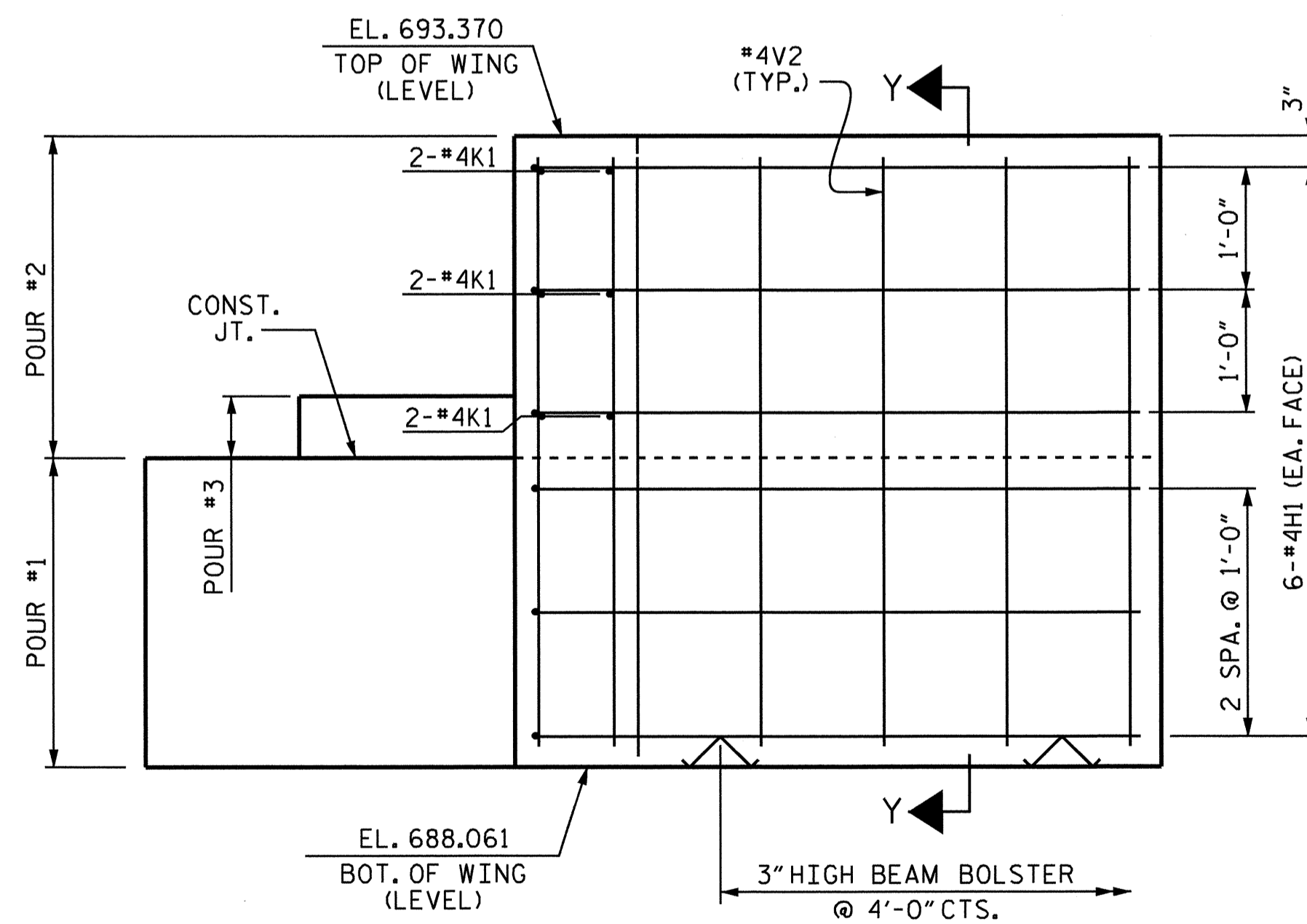
SECTION X-X



SECTION Y-Y



ELEVATION OF WING - (W1)



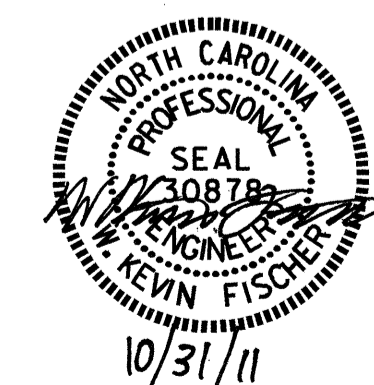
ELEVATION OF WING - (W2)

PROJECT NO. B-4200
MECKLENBURG COUNTY
 STATION: 16+17.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

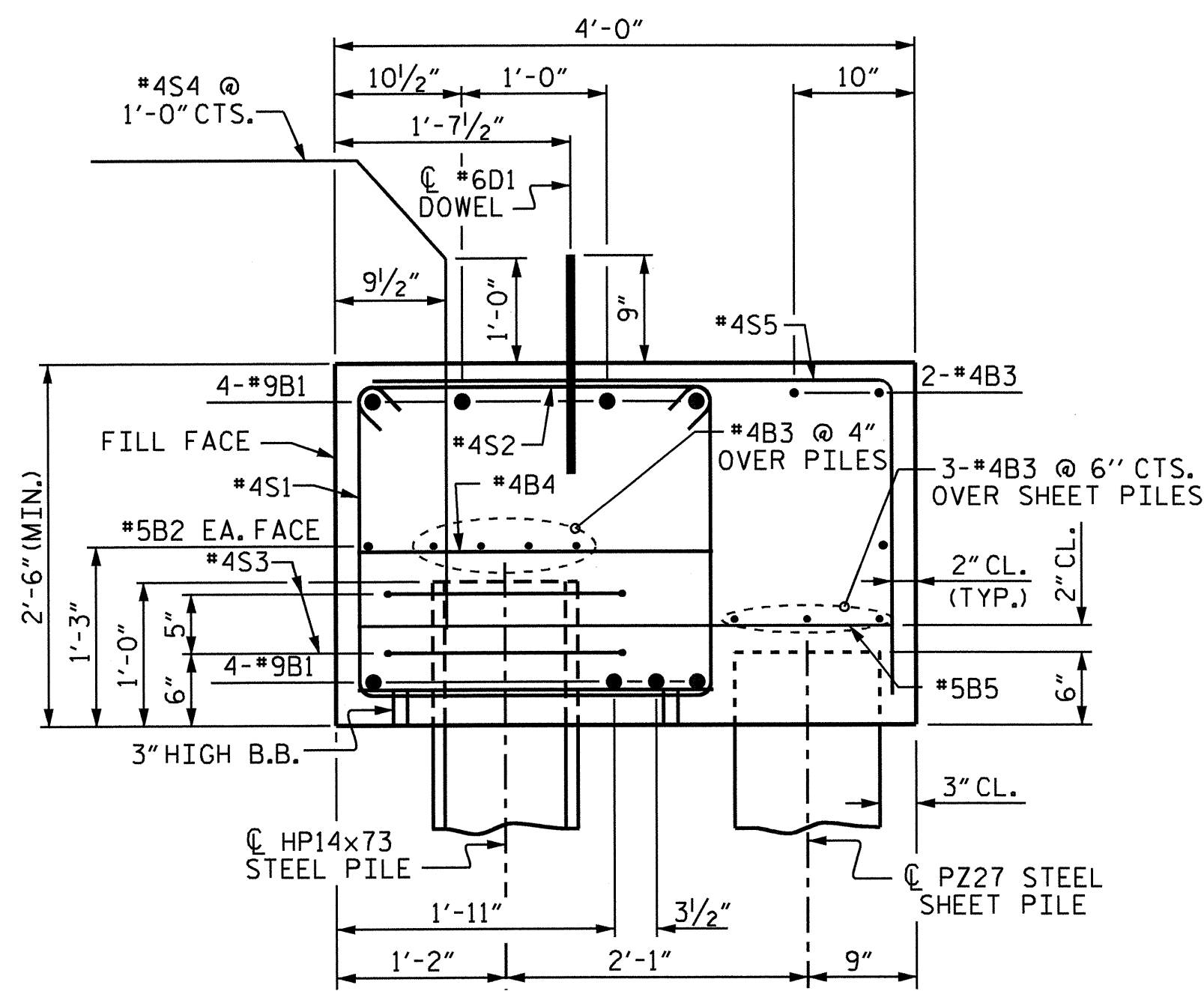
SUBSTRUCTURE
 END BENT #2



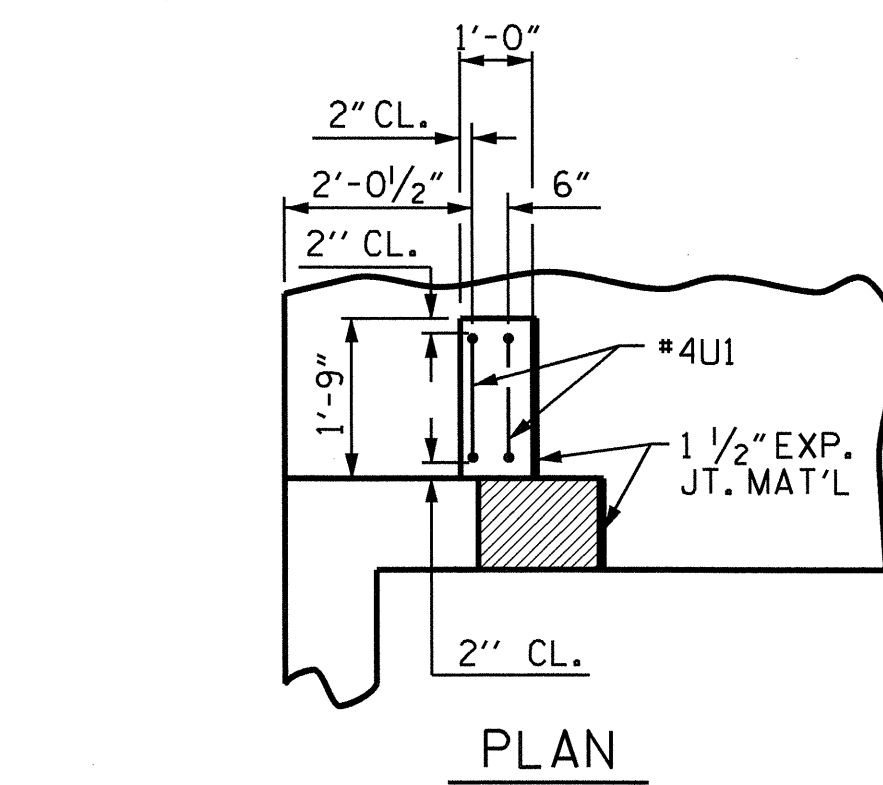
DRAWN BY: KEITH D. LAYNE DATE: 8/13/10
 CHECKED BY: M. K. BEARD DATE: 11/16/10

06-OCT-2011 10:55
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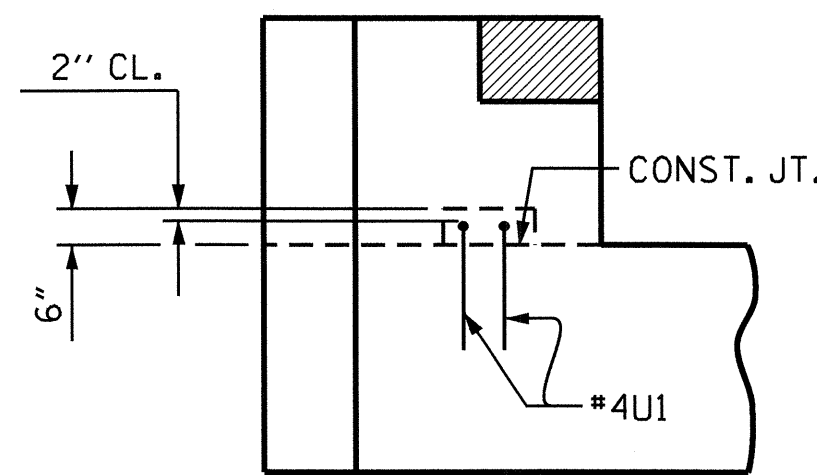
REVISIONS						SHEET NO. S-17
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 22
2			4			



SECTION A-A



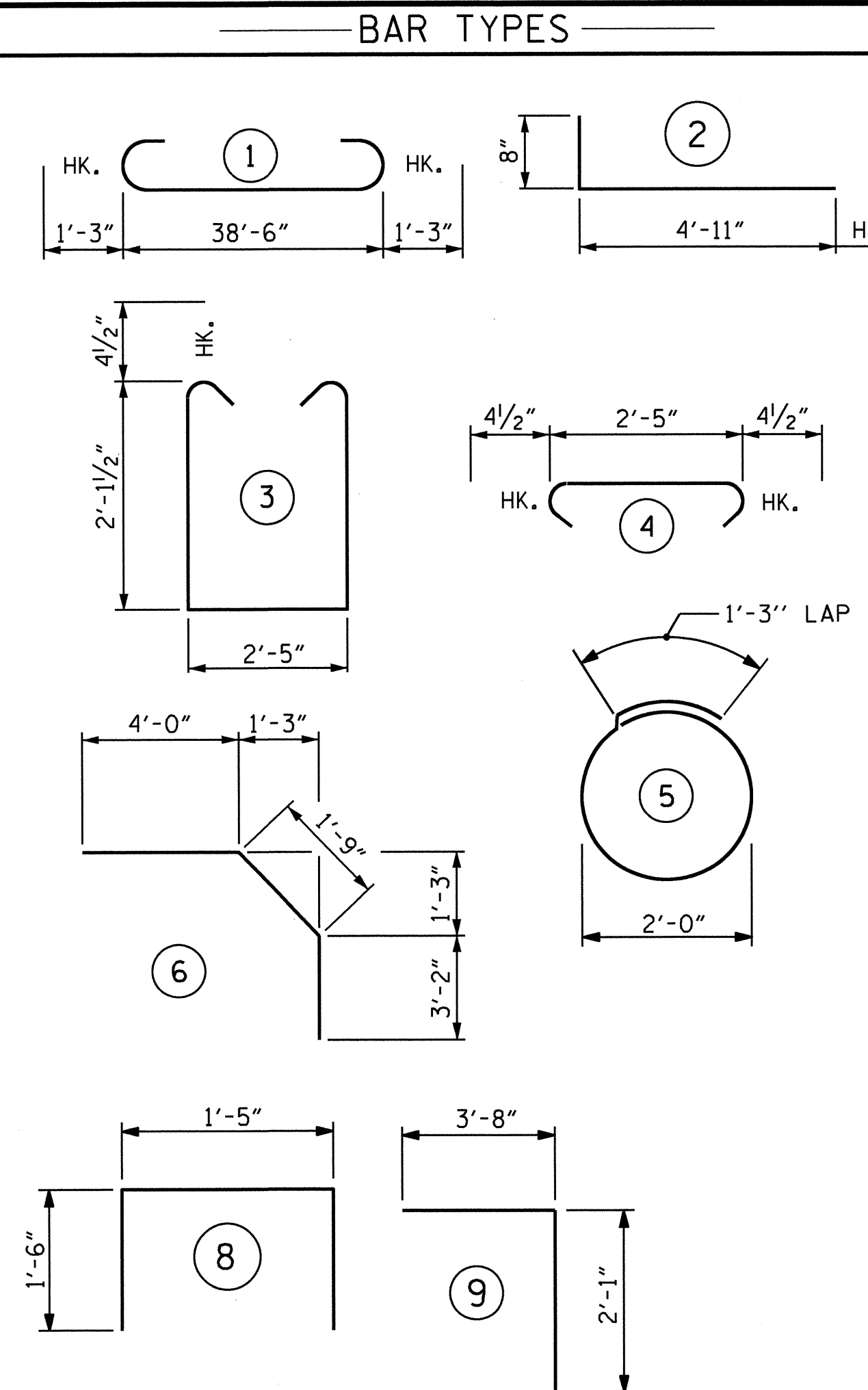
PLAN



ELEVATION

LATERAL GUIDE DETAILS

(EACH END SIMILAR)



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT #2

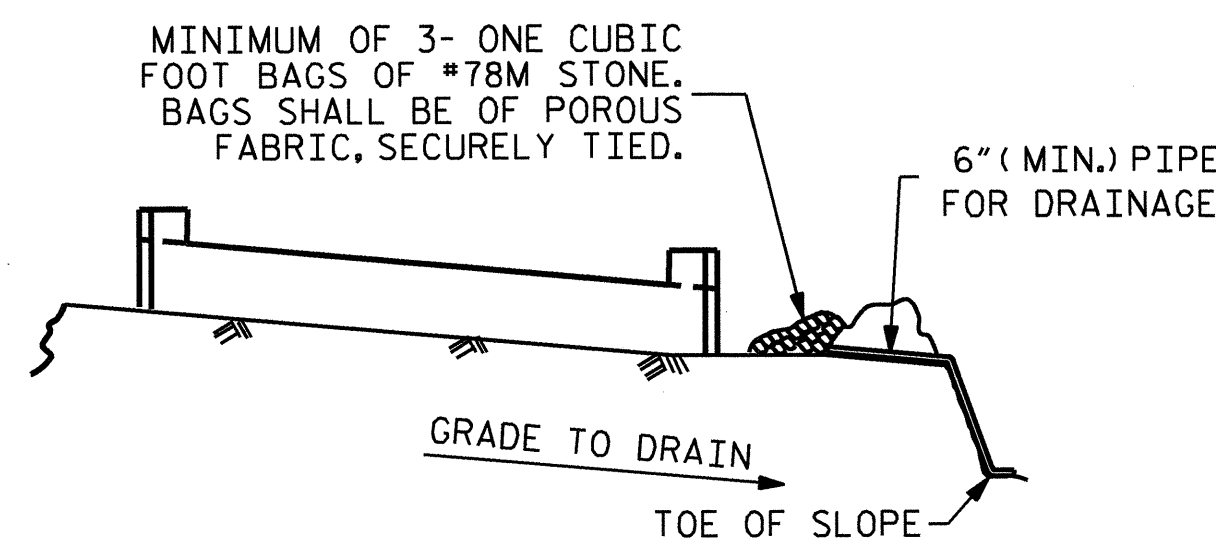
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	9	1	41'-0"	1,115
B2	2	5	STR	38'-8"	81
B3	18	4	STR	20'-8"	248
B4	10	4	STR	2'-5"	16
B5	36	5	STR	3'-8"	138
B6	3	4	STR	10'-2'	20
B7	3	4	STR	8'-10'	18
D1	22	6	STR	1'-6"	50
H1	24	4	2	5'-7"	90
K1	12	4	STR	3'-1"	25
S1	38	4	3	7'-5"	188
S2	38	4	4	3'-2"	80
S3	10	4	5	7'-7"	51
*S4	32	4	6	8'-11"	191
S5	38	4	9	5'-9"	146
U1	4	4	8	4'-5"	12
V1	20	4	STR	4'-9"	63
V2	20	4	STR	4'-11"	66

REINFORCING STEEL = 2,407 LBS.
* EPOXY COATED
REINFORCING STEEL = 191 LBS.

CLASS "A" CONCRETE BREAKDOWN

POUR #1 CAP, LOWER PART OF WINGS AND COPING = 16.4 Cu. Yds.
POUR #2 UPPER WINGS = 1.5 Cu. Yds.
POUR #3 LATERAL GUIDES = 0.1 Cu. Yds.
TOTAL = 18.0 Cu. Yds.

HP14X73 STEEL PILES	
NO. 5	200 Ltn. Ft.
PZ27 STEEL SHEET PILES	
NO. 39	480 Sq. Ft.
45° CONNECTOR (COLT)	NO. 2

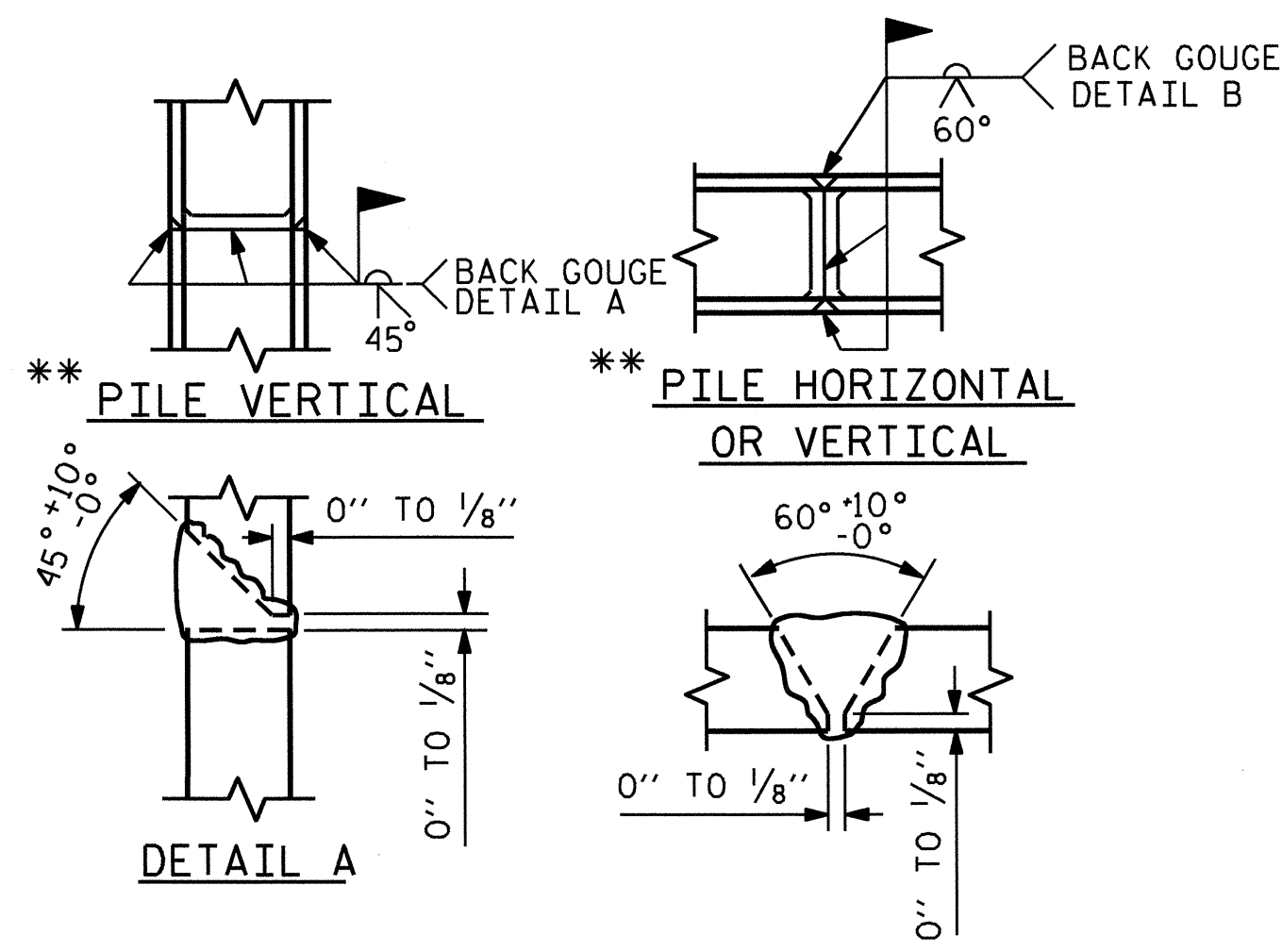


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

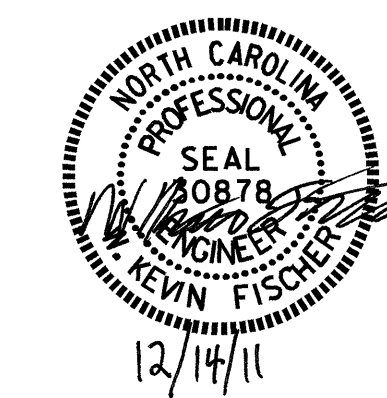


PILE SPLICE DETAILS

** POSITION OF PILE DURING WELDING.

DRAWN BY : KEITH D. LAYNE DATE : 8/13/10
CHECKED BY : M. K. BEARD DATE : 11/16/10

12-DEC-2011 09:07
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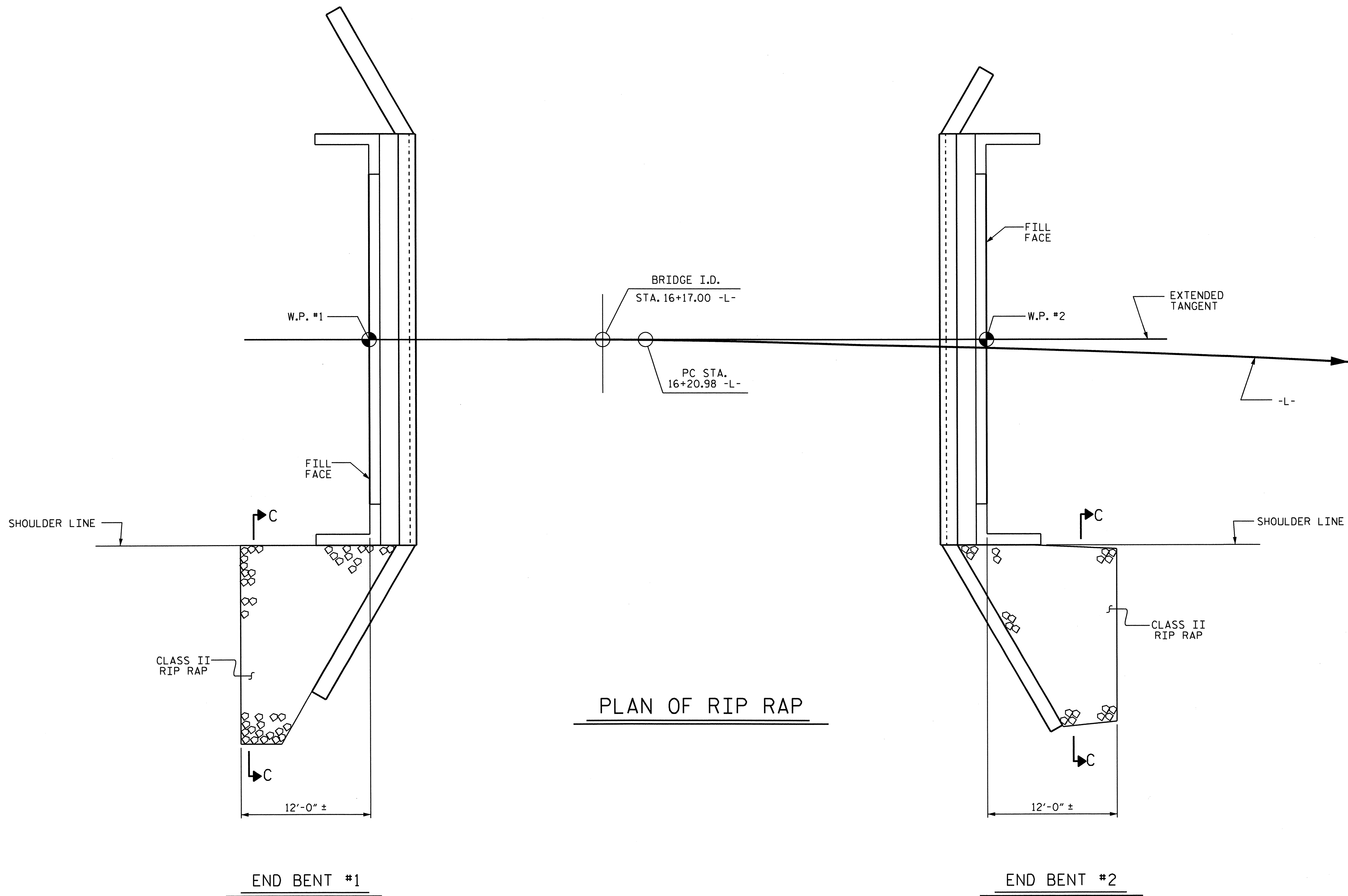
PROJECT NO. B-4200
MECKLENBURG COUNTY
STATION: 16+17.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #2

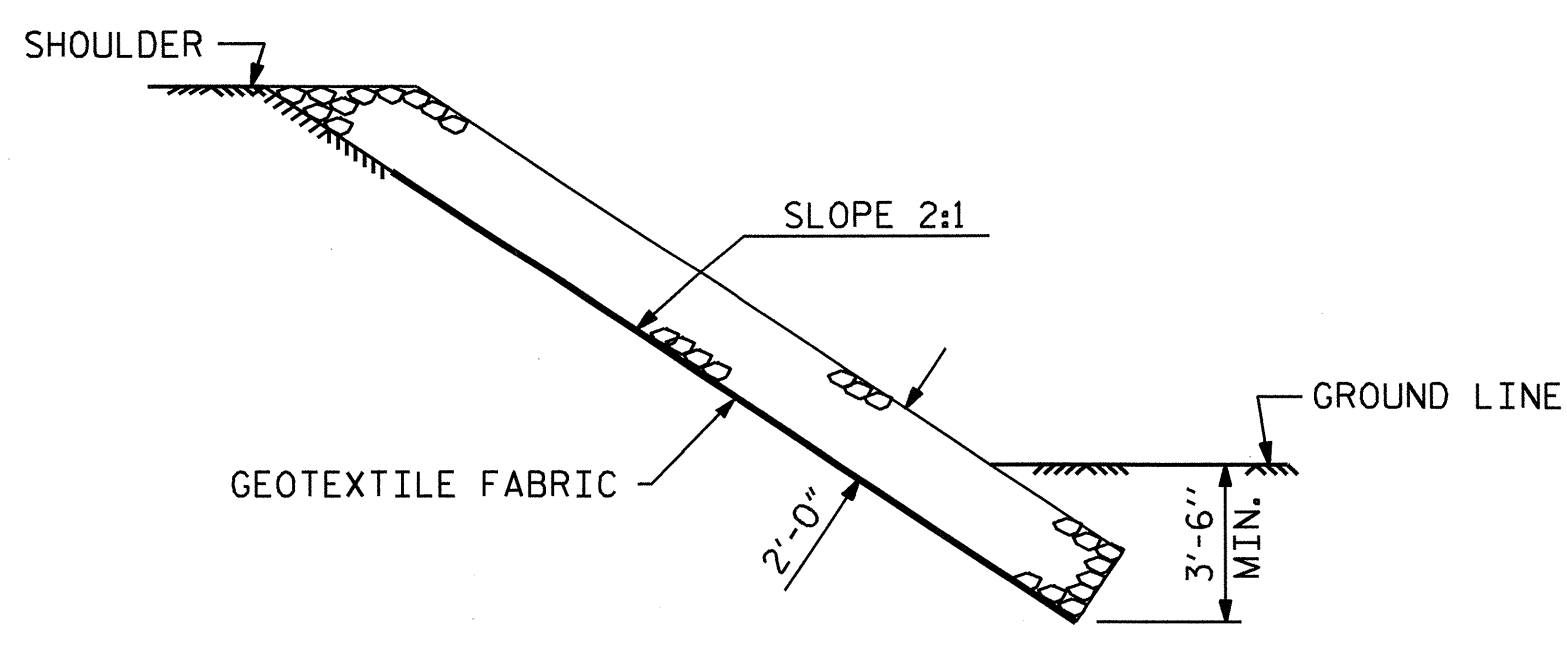
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			22



PLAN OF RIP RAP

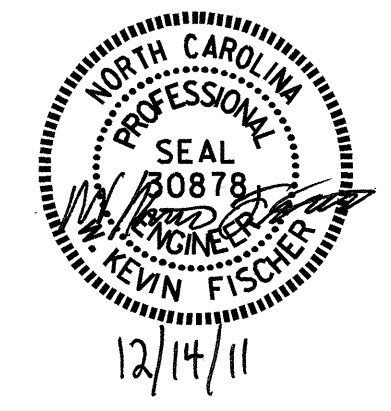
END BENT #1

END BENT #2



SECTION C-C

ESTIMATED QUANTITIES		
BRIDGE @ STA. 16+17.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT #1	15	17
END BENT #2	20	22



PROJECT NO. B-4200
MECKLENBURG COUNTY
 STATION: 16+17.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 = RIP RAP DETAILS =

ASSEMBLED BY: R. G. EMERSON	DATE: 05/11
CHECKED BY: M. K. BEARD	DATE: 07/11
DRAWN BY: FCJ 2/88	REV. 8/16/99 RWW/LES
CHECKED BY: ARB 8/88	REV. 10/17/00 RWW/LES
	REV. 5/1/06R TLA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			22

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NOTES

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

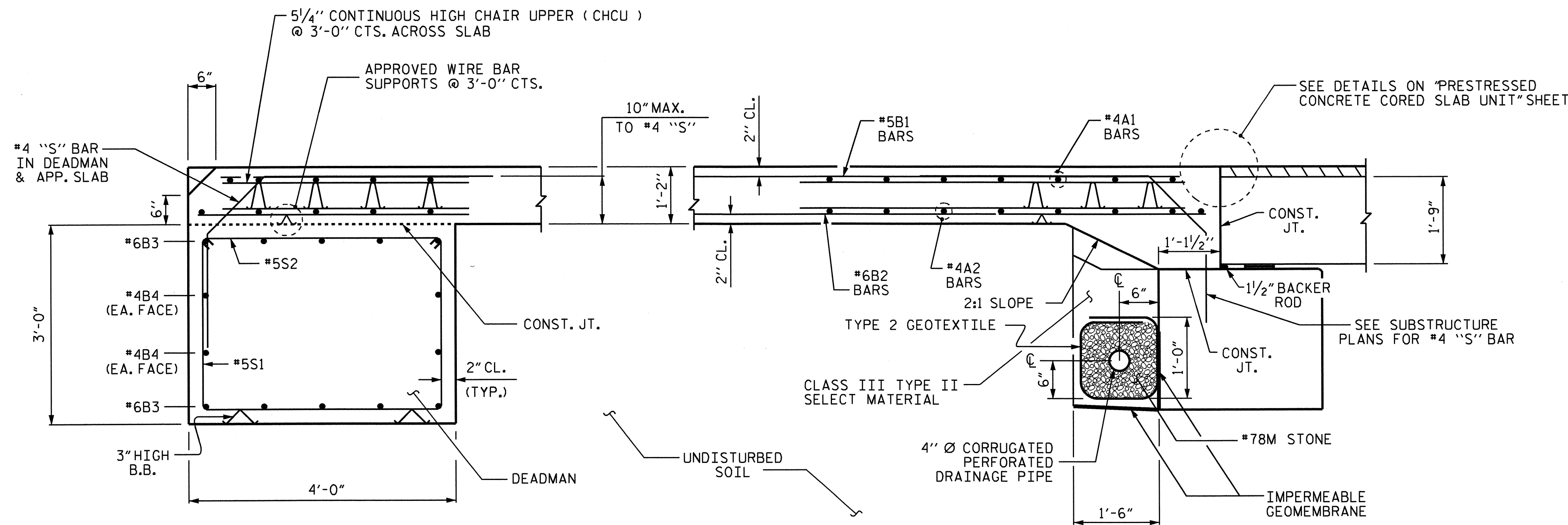
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, CLASS III TYPE II SELECT MATERIAL, 6" COMP. A.B.C. & #78M STONE SHALL BE PAID FOR UNDER LUMP SUM PRICE BID FOR BRIDGE APPROACH SLABS.

THE COST OF THE DEADMAN INCLUDING REINFORCING STEEL AND CONCRETE SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR BRIDGE APPROACH APPROACH SLABS.

APPROACH SLAB GROOVING IS REQUIRED.

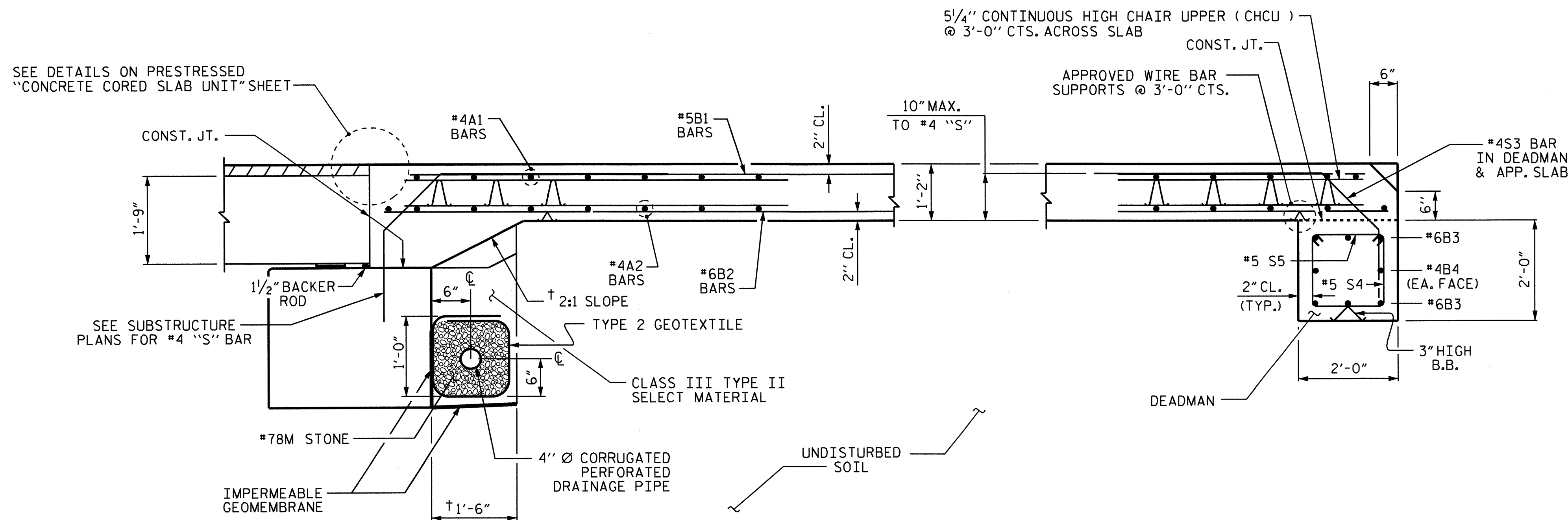
ARC OFFSETS AT APPROACH SLAB #2 ARE NEGLIGIBLE.



SECTION THRU SLAB

AT END BENT #1

† NORMAL TO END BENT



SECTION THRU SLAB

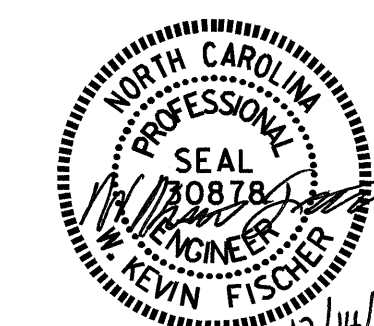
AT END BENT #2

PROJECT NO. B-4200
MECKLENBURG COUNTY
 STATION: 16+17.00 -L-

SHEET 1 OF 3

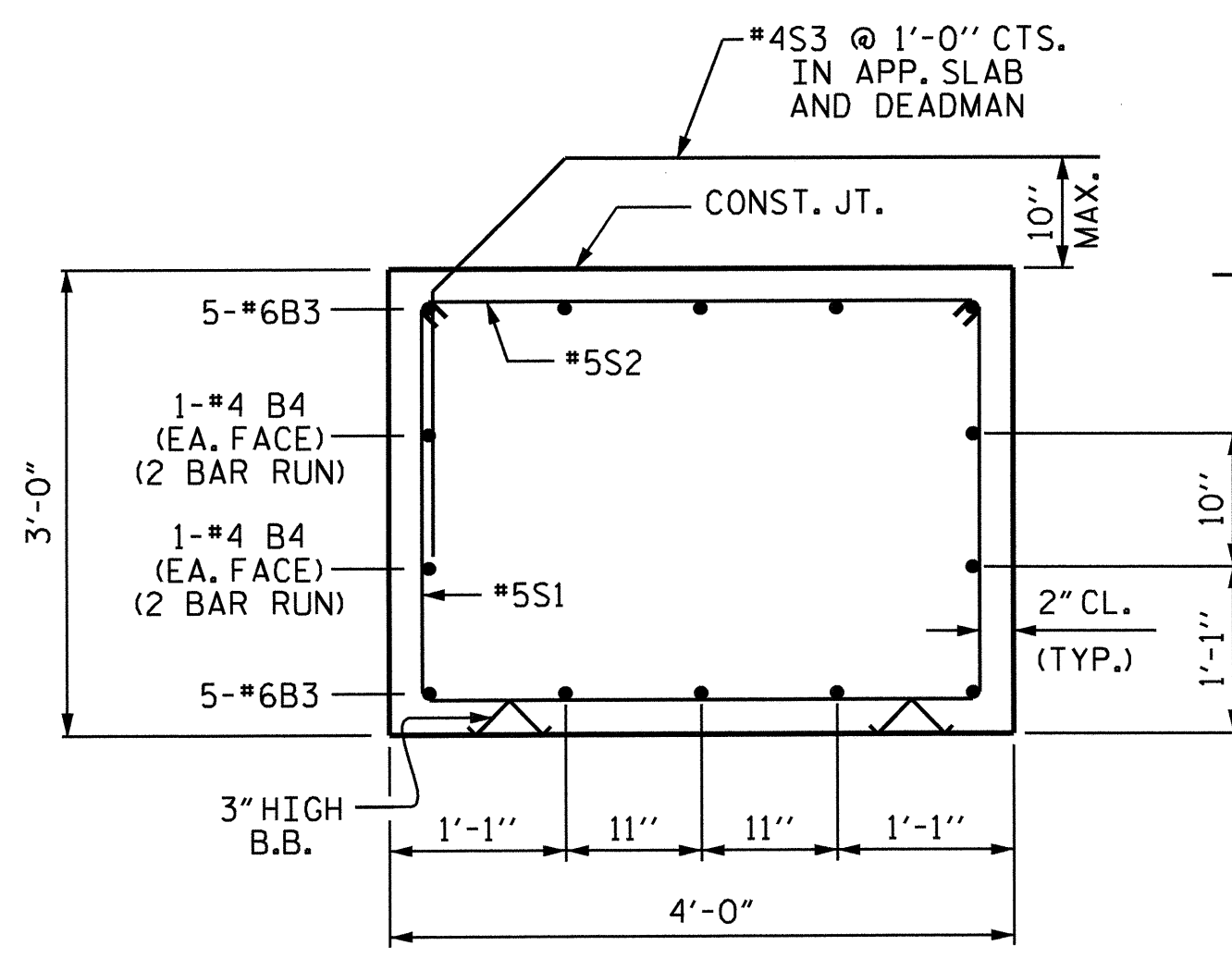
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE APPROACH
 SLAB DETAILS

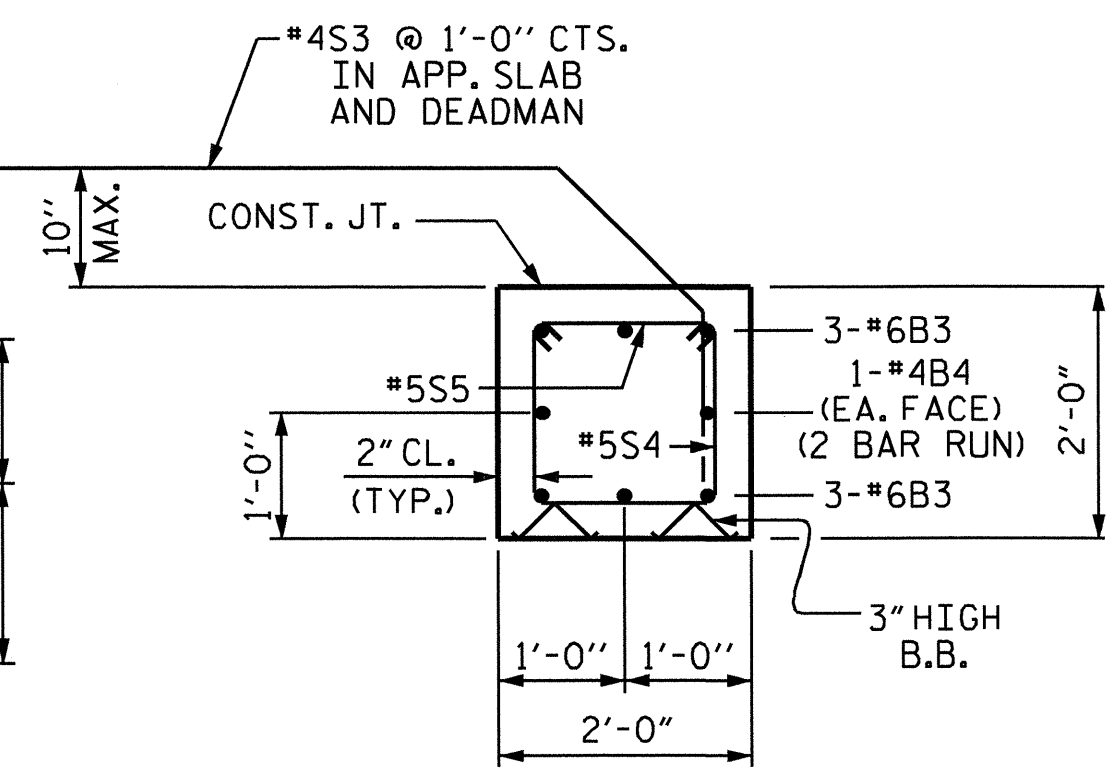


DRAWN BY : B. L. GREEN DATE : 6/11
 CHECKED BY : M. K. BEARD DATE : 8/22/11

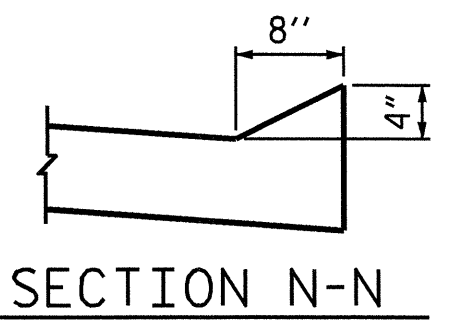
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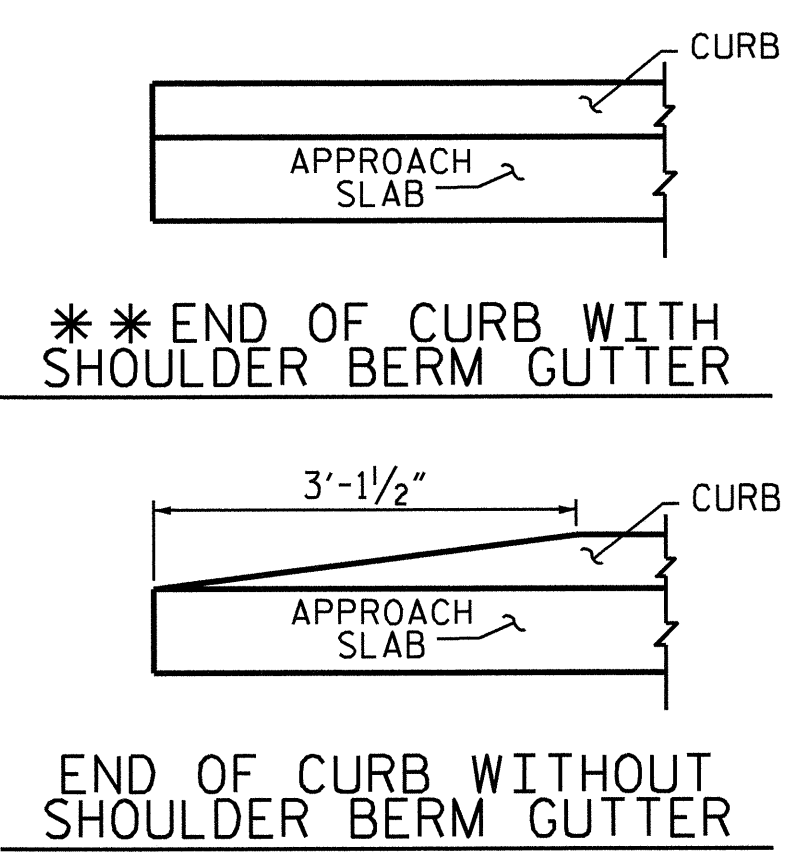
SECTION X-X



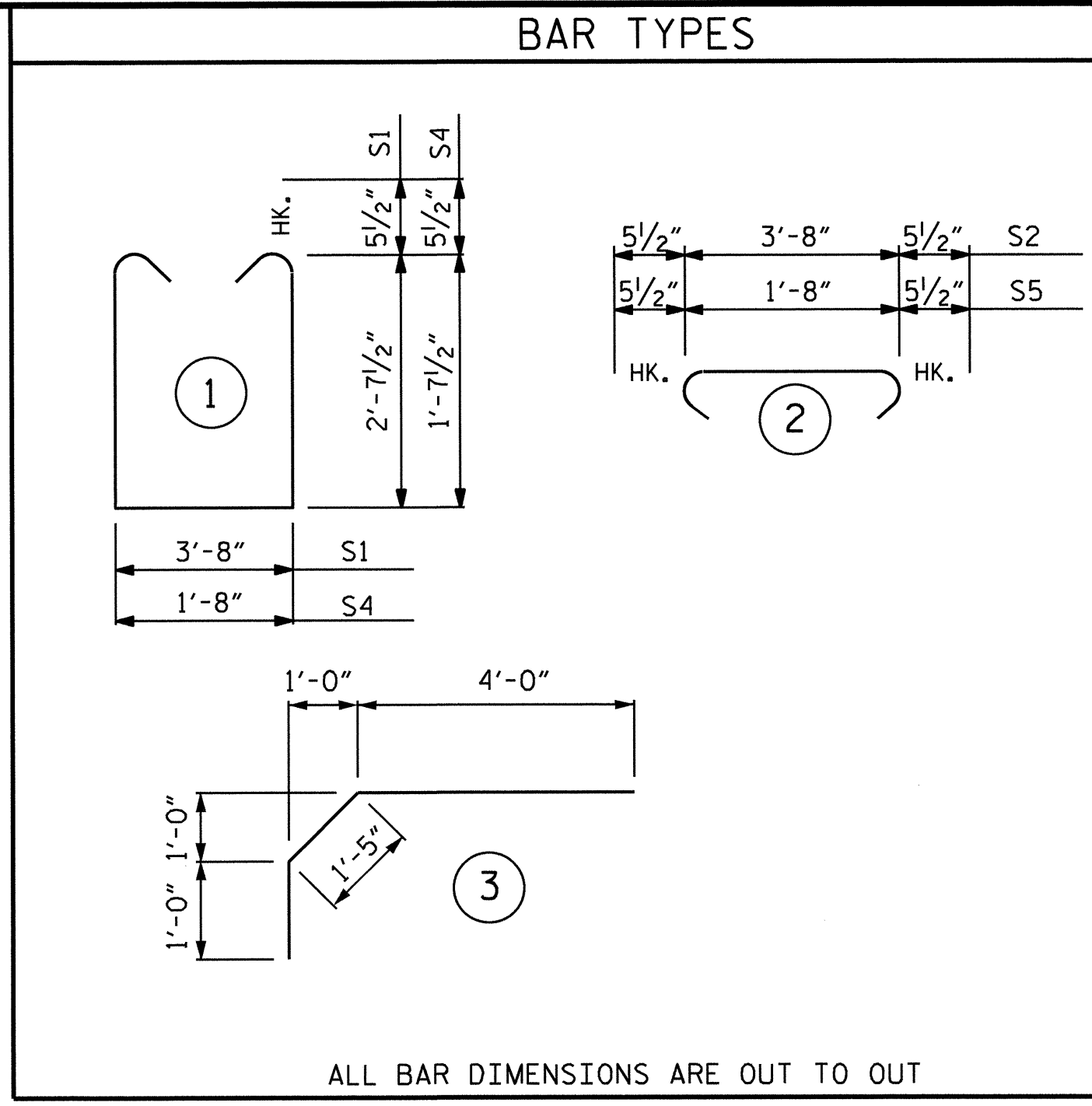
SECTION Y-Y



SECTION N-N



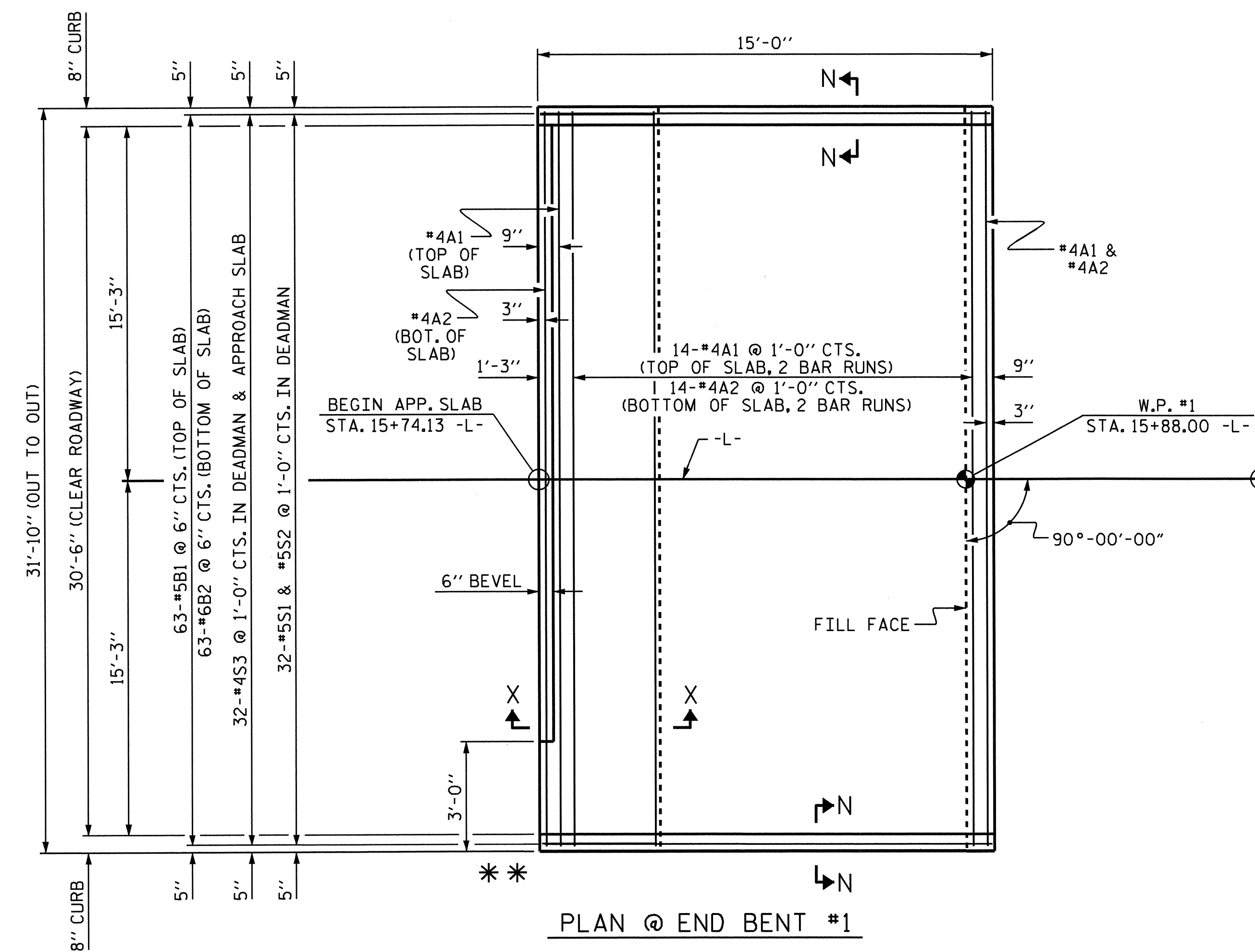
CURB DETAILS



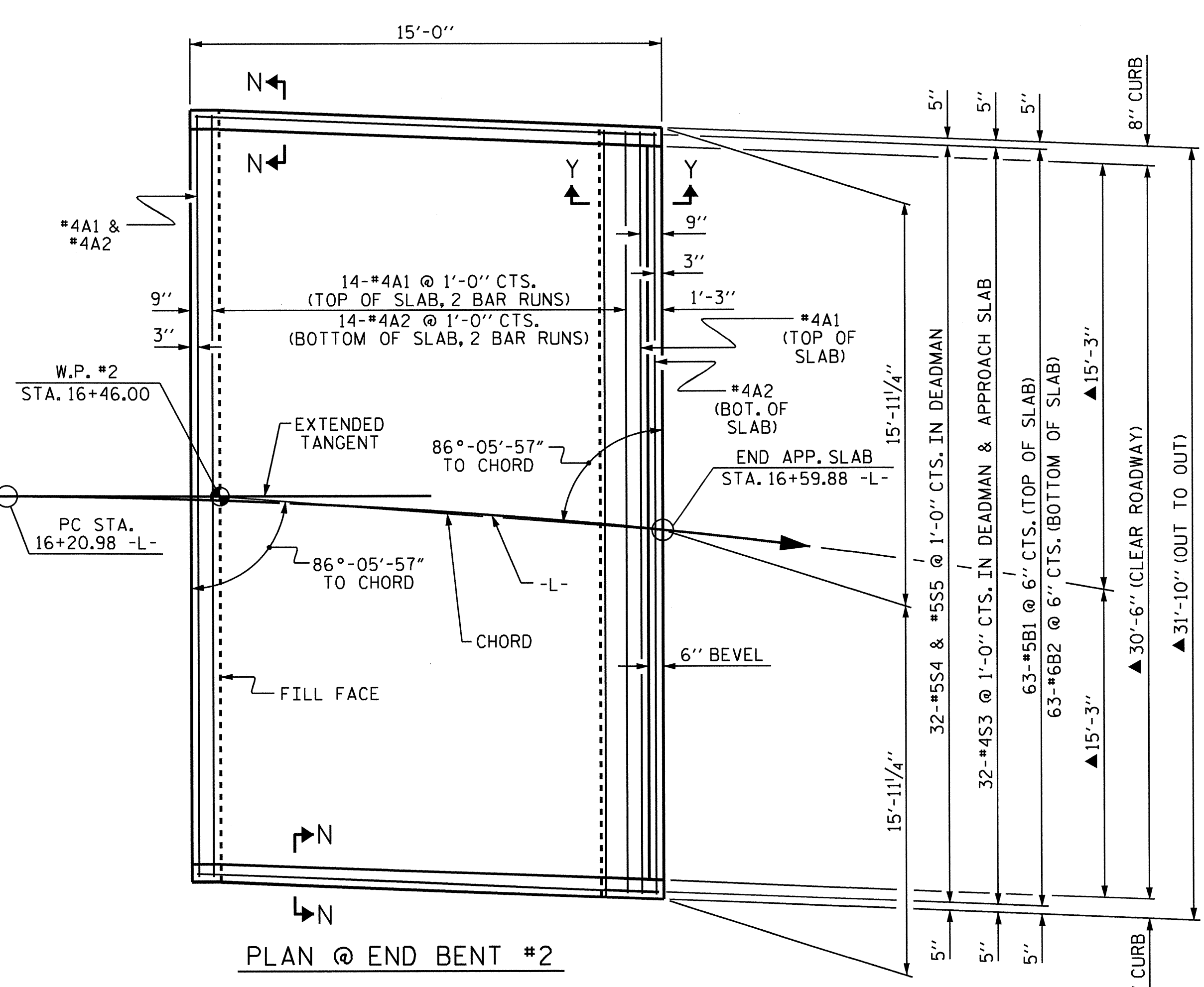
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	32	#4	STR	16'-9"	358
A2	32	#4	STR	16'-8"	356
* B1	63	#5	STR	14'-2"	931
B2	63	#6	STR	14'-8"	1388
B3	10	#6	STR	31'-6"	473
B4	8	#4	STR	16'-8"	89
S1	32	#5	1	9'-10"	328
S2	32	#5	2	4'-7"	153
* S3	32	#4	3	6'-5"	137
REINFORCING STEEL				LBS.	2787
* EPOXY COATED REINFORCING STEEL				LBS.	1426
CLASS AA CONCRETE BREAKDOWN					
POUR 1	DEADMAN	C.Y.	14.1		
POUR 2	APPROACH SLAB	C.Y.	21.7		
TOTAL CLASS AA CONCRETE				C.Y.	35.8
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	32	#4	STR	16'-9"	358
A2	32	#4	STR	16'-8"	356
* B1	63	#5	STR	14'-2"	931
B2	63	#6	STR	14'-8"	1388
B3	6	#6	STR	31'-6"	284
B4	4	#4	STR	16'-8"	45
* S3	32	#4	3	6'-5"	137
S4	32	#5	1	5'-10"	195
S5	32	#5	2	2'-7"	86
REINFORCING STEEL				LBS.	2354
* EPOXY COATED REINFORCING STEEL				LBS.	1426
CLASS AA CONCRETE BREAKDOWN					
POUR 1	DEADMAN	C.Y.	4.7		
POUR 2	APPROACH SLAB	C.Y.	21.7		
TOTAL CLASS AA CONCRETE				C.Y.	26.4

SPlice CHART	
#4 A1	2'-0"
#4 A2	1'-9"
#4 B3	1'-9"
#4 B4	1'-9"



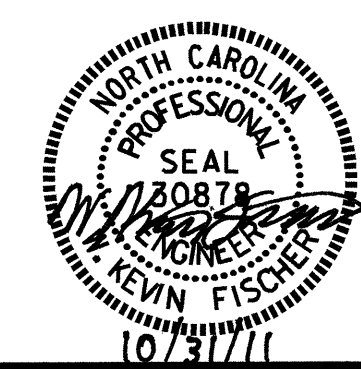
PLAN @ END BENT #1



PLAN @ END BENT #2

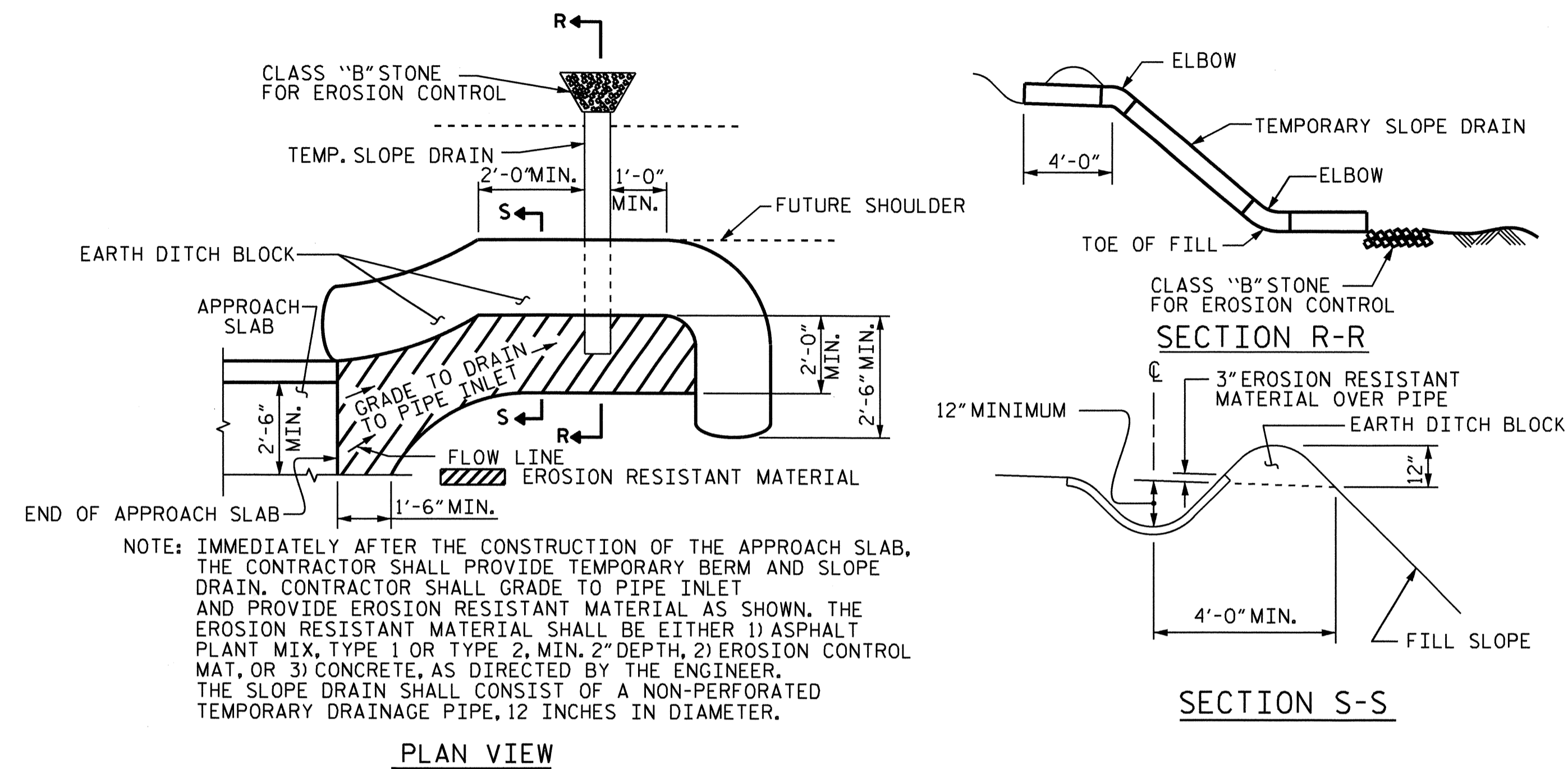
▲ RADIAL DIMENSIONS

ASSEMBLED BY : B. L. GREEN	DATE : 6/11
CHECKED BY : M. K. BEARD	DATE : 8/22/11
DRAWN BY : FCJ 6/87	REV. 7/10/01 LES/RDR
CHECKED BY : EGA 6/87	REV. 5/7/03R RWW/JTE
	REV. 5/1/06R KMW/GM



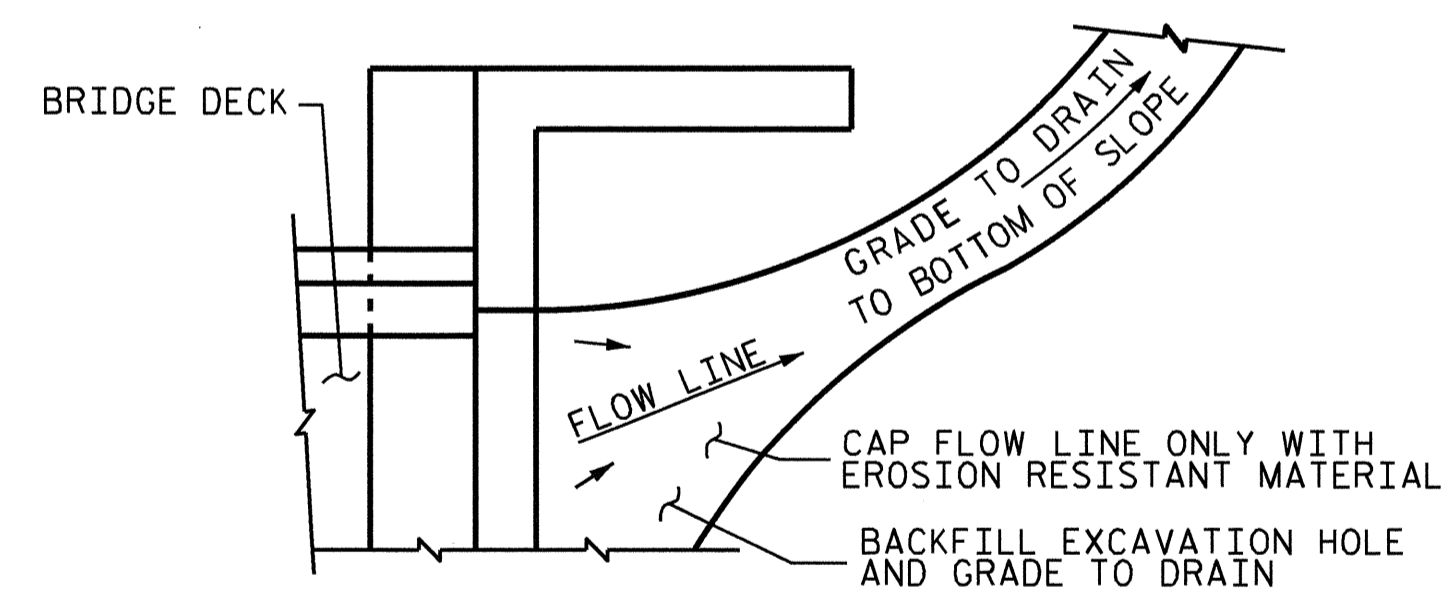
PROJECT NO. B-4200
 MECKLENBURG COUNTY
 STATION: 16+17.00 -L-

REVISIONS						SHEET NO.	
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1			3			TOTAL SHEETS	
2			4			22	



TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

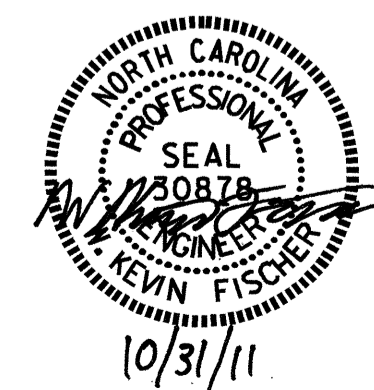
TEMPORARY DRAINAGE DETAIL

PROJECT NO. B-4200
MECKLENBURG COUNTY
 STATION: 16+17.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 BRIDGE APPROACH
 SLAB DETAILS



ASSEMBLED BY : B. L. GREEN	DATE : 6/11
CHECKED BY : M. K. BEARD	DATE : 8/22/11
DRAWN BY : FCJ 11/88	REV. 10/17/00 RWW/LES
CHECKED BY : ARB 11/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06RR MAA/KMM

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2			4			22

STD. NO. BAS10 (SHT 6)

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN