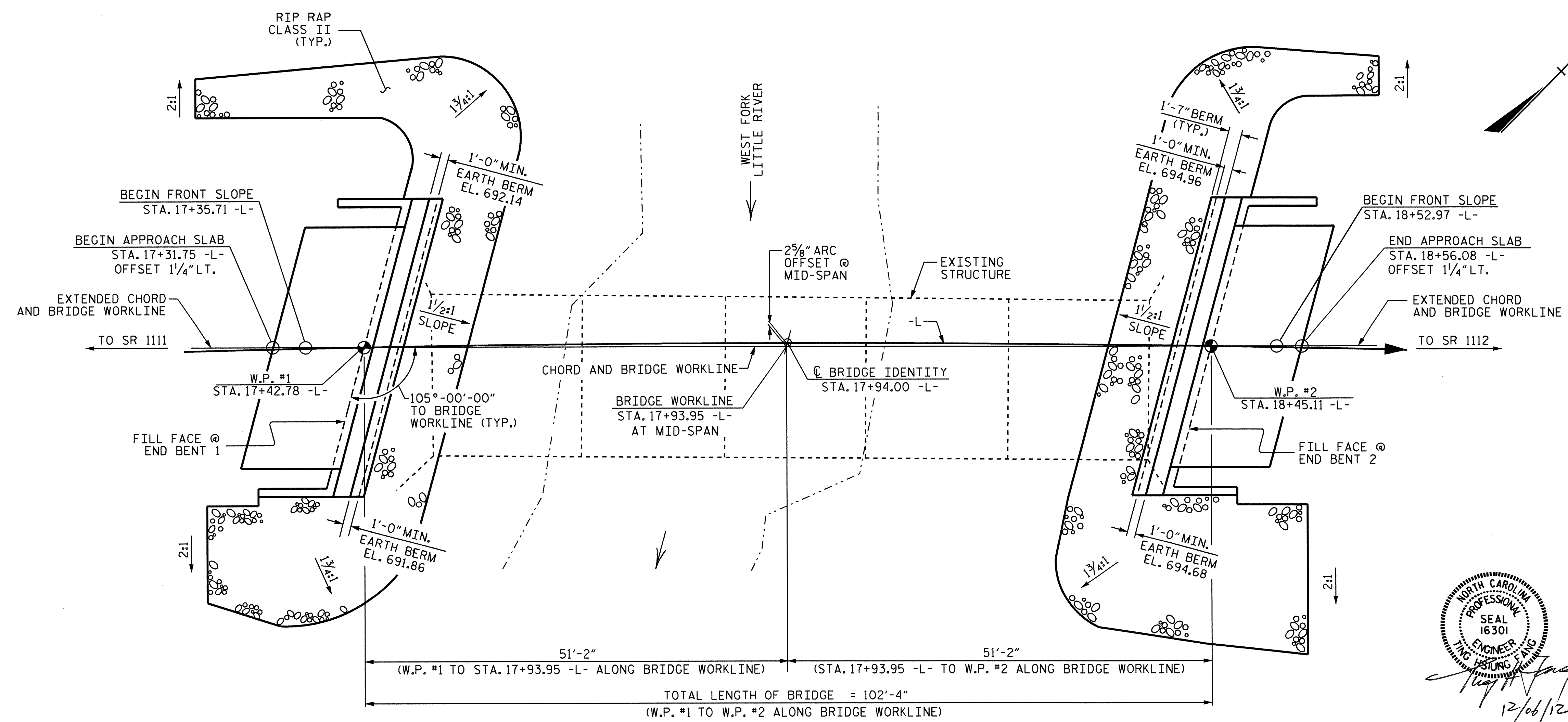


SECTION ALONG -L-
SECTION TAKEN AT RIGHT ANGLE TO END BENTS

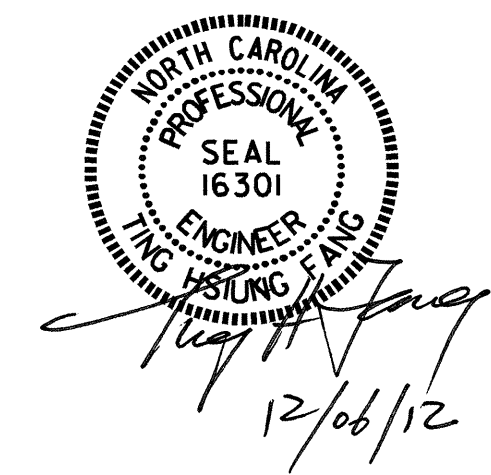
I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS



HORIZONTAL CURVE DATA -L-
 P.I. STA. = 18+00.71
 $\Delta = 2^\circ-04'-33.5''$ (RT.)
 $D = 0^\circ-57'-17.7''$
 $L = 217.40'$
 $T = 108.71'$
 $R = 6,000.00'$

DRAWN BY : K.H. COMPTON DATE : 6/01/11
 CHECKED BY : T. H. FANG DATE : 7/19/11

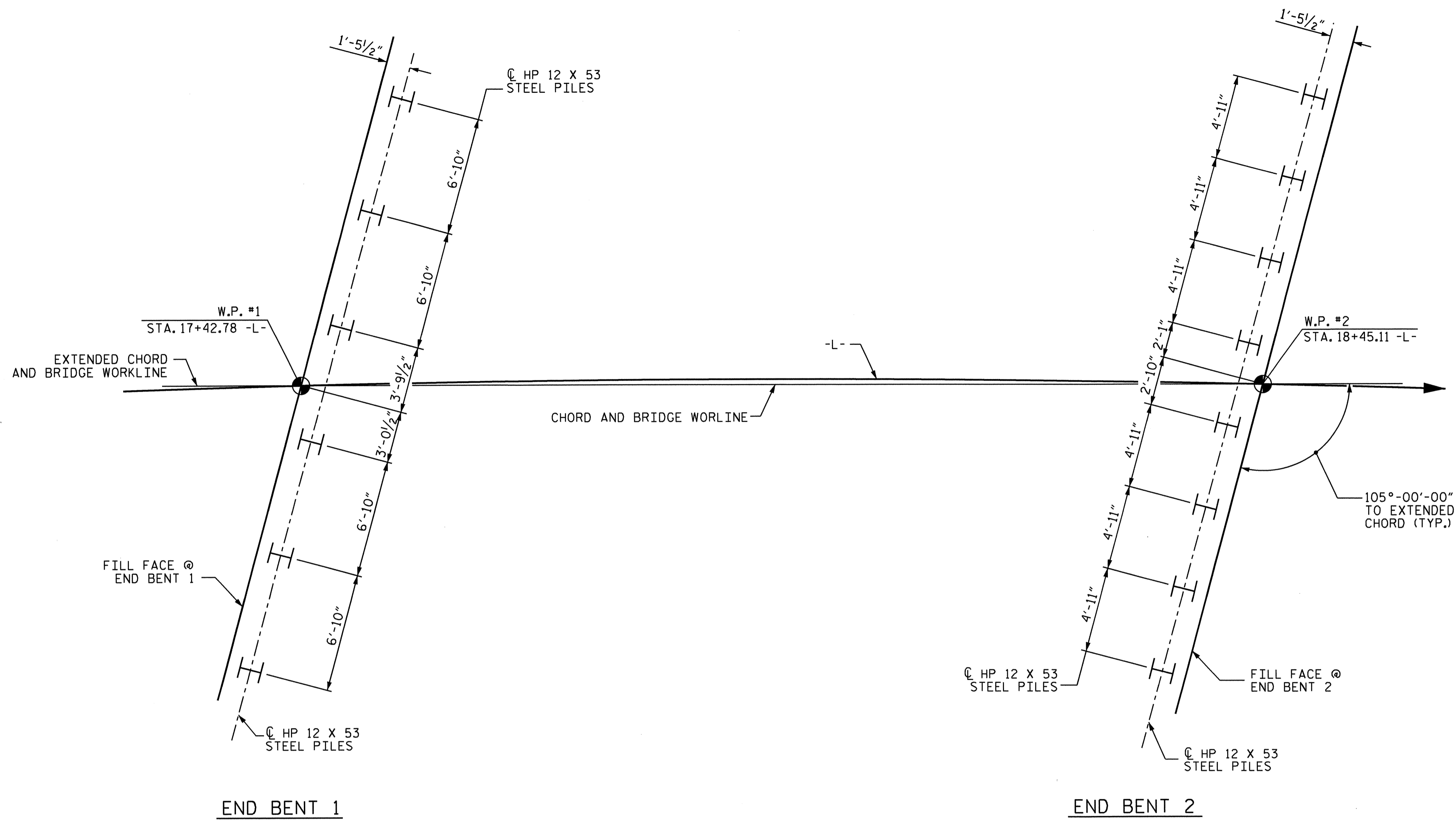
06-DEC-2012 14:58
 Y:\Structures\Final Plans\B4796.sd.gdgn
 swance



PROJECT NO. B-4796
 RANDOLPH COUNTY
 STATION: 17+94.00 -L-
 SHEET 1 OF 3 REPLACES BRIDGE NO. 24

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE OVER
 WEST FORK LITTLE RIVER
 ON SR 1114 BETWEEN
 SR 1111 AND SR 1112

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



FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE

NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 115 TONS PER PILE.

DRIVE PILES AT END BENT 1 TO A REQUIRED DRIVING RESISTANCE OF 195 TONS PER PILE.

PILES AT END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 90 TONS PER PILE.

DRIVE PILES AT END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 150 TONS PER PILE.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT 2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

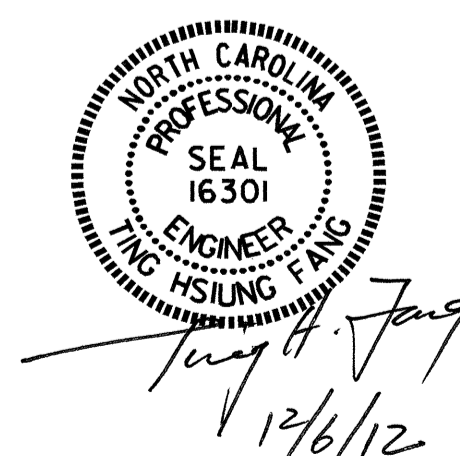
IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 23,000 FT-LB PER BLOW TO 27,000 FT-LB PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENTS 1 AND 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

VIBRATION MONITORING IS REQUIRED AT THE EXISTING PISGAH COVERED BRIDGE. PERFORM VIBRATION MONITORING CONTINUOUSLY DURING PILE DRIVING. FOR VIBRATION MONITORING, SEE CONTROL OF VIBRATION SPECIAL PROVISION IN THE CONTRACT.

A VIBRATORY HAMMER WILL NOT BE ALLOWED ON THIS PROJECT.

PROJECT NO. B-4796
RANDOLPH COUNTY
 STATION: 17+94.00 -L-

SHEET 2 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE OVER
 WEST FORK LITTLE RIVER
 ON SR 1114 BETWEEN
 SR 1111 AND SR 1112

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

DRAWN BY : R. P. PATEL DATE : 4-25-12
 CHECKED BY : T. H. FANG DATE : 8-23-12

TOTAL BILL OF MATERIAL															
	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 12 X 53 STEEL PILES		STEEL PILE POINTS	TWO BAR METAL RAIL	1'-2" X 3'-1" CONCRETE PARAPET	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAMS	
	LUMP SUM	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	EACH	LIN. FT.	LIN. FT.	TONS	SO. YDS.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE									184.04	199.67			LUMP SUM	10	998.33
END BENT 1			18.9		3084	6	180				125	140			
END BENT 2			19.5		2960	8	80	8			135	150			
TOTAL	LUMP SUM	LUMP SUM	38.4	LUMP SUM	6044	14	260	8	184.04	199.67	260	290	LUMP SUM	10	998.33

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES".

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 SHOULD BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

THE EXISTING STRUCTURE CONSISTING OF 5 SPANS: 1 @ 17'-7", 1 @ 17'-3", 1 @ 16'-11", 1 @ 17'-2" AND 1 @ 17'-6" WITH A CLEAR ROADWAY WIDTH OF 19'-4" AND TIMBER DECK ON TIMBER JOISTS WITH A 1" AWS; END & INTERIOR BENTS CONSISTING OF TIMBER CAPS & PILES, INTERIOR BENTS #2 & 3 CONSISTING OF CONCRETE ENCASED PILES AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 18 FT. LEFT SIDE, 23 FT. RIGHT SIDE OF CENTERLINE ROADWAY AT END BENT 1 AND 15 FT. LEFT SIDE, 23 FT. RIGHT SIDE OF CENTERLINE ROADWAY AT END BENT 2 AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATION.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

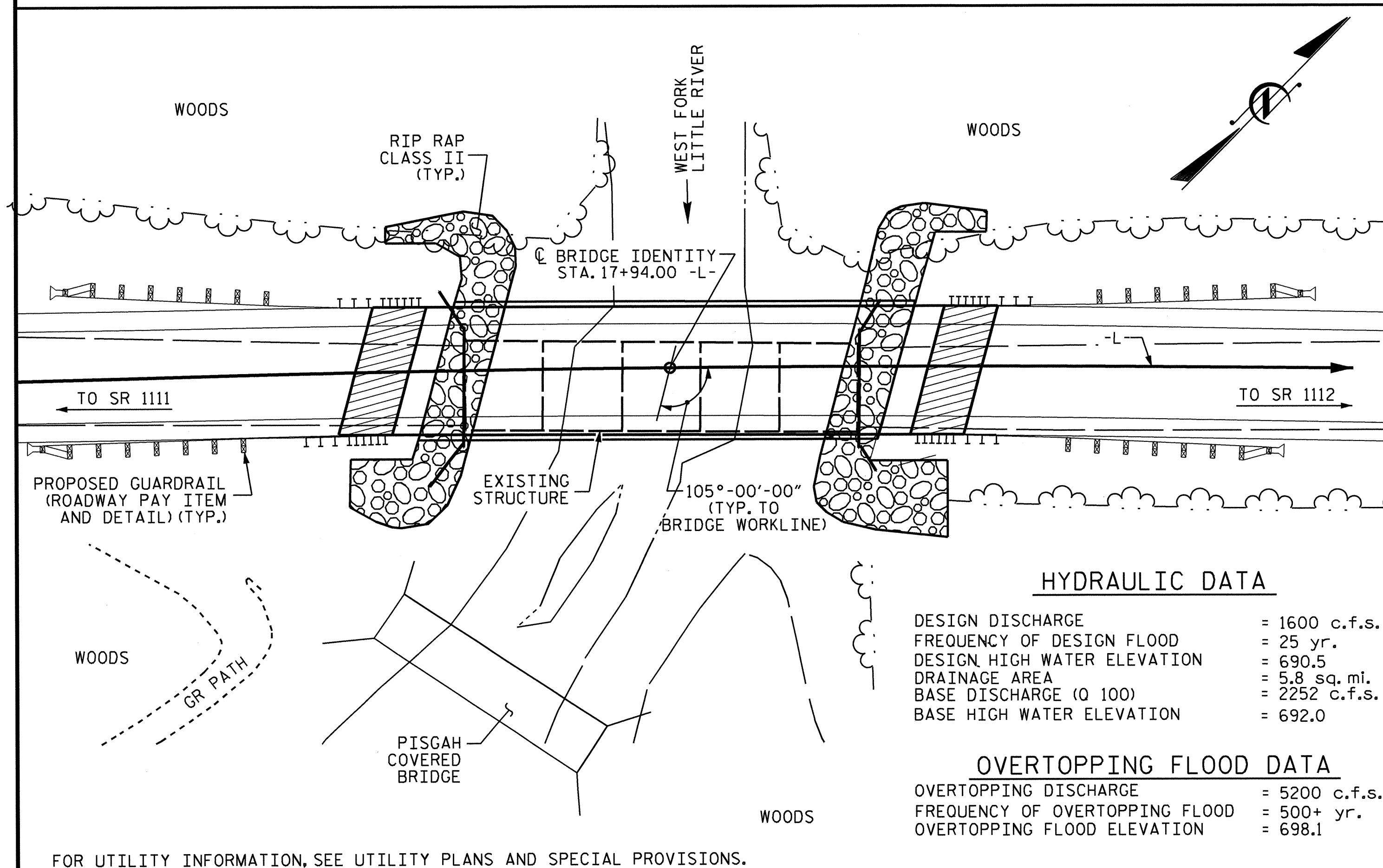
FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

BM #2: RR SPIKE IN BASE OF 26" PINE TREE, -L- STATION 18+33.00, 64' RIGHT, ELEV. 693.77'



HYDRAULIC DATA

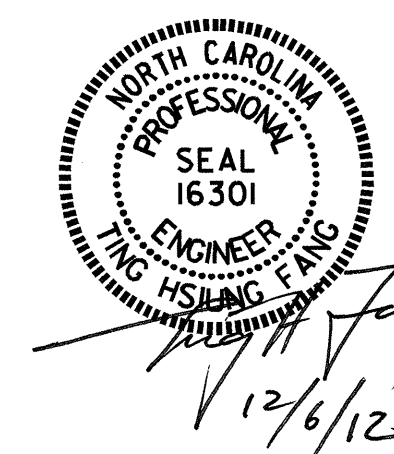
DESIGN DISCHARGE = 1600 c.f.s.
 FREQUENCY OF DESIGN FLOOD = 25 yr.
 DESIGN HIGH WATER ELEVATION = 690.5
 DRAINAGE AREA = 5.8 sq. mi.
 BASE DISCHARGE (Q 100) = 2252 c.f.s.
 BASE HIGH WATER ELEVATION = 692.0

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 5200 c.f.s.
 FREQUENCY OF OVERTOPPING FLOOD = 500+ yr.
 OVERTOPPING FLOOD ELEVATION = 698.1

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH



PROJECT NO. B-4796
RANDOLPH COUNTY
 STATION: 17+94.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE OVER
 WEST FORK LITTLE RIVER
 ON SR 1114 BETWEEN
 SR 1111 AND SR 1112

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTALS
2			4			19

DRAWN BY: R.P. PATEL DATE: 4-25-12
 CHECKED BY: T.H. FANG DATE: 8-23-12

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

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	1.058	--	1.75	0.267	1.29	A	EL	49.224	0.574	1.25	A	EL	9.845	0.80	0.267	1.06	A	EL	49.224		
	HL-93(0pr)	N/A	--	1.621	--	1.35	0.267	1.67	A	EL	49.224	0.574	1.62	A	EL	9.845	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.472	52.983	1.75	0.267	1.79	A	EL	49.224	0.574	1.67	A	EL	9.845	0.80	0.267	1.47	A	EL	49.224		
	HS-20(0pr)	36.000	--	2.168	78.052	1.35	0.267	2.32	A	EL	49.224	0.574	2.17	A	EL	9.845	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.488	47.092	1.4	0.267	5.30	A	EL	49.224	0.574	5.14	A	EL	9.845	0.80	0.267	3.49	A	EL	49.224	
		SNGARBS2	20.000	--	2.527	50.541	1.4	0.267	3.84	A	EL	49.224	0.574	3.60	A	EL	9.845	0.80	0.267	2.53	A	EL	49.224	
		SNAGRIS2	22.000	--	2.364	52.007	1.4	0.267	3.59	A	EL	49.224	0.574	3.32	A	EL	9.845	0.80	0.267	2.36	A	EL	49.224	
		SNCOTTS3	27.250	--	1.734	47.244	1.4	0.267	2.63	A	EL	49.224	0.574	2.56	A	EL	9.845	0.80	0.267	1.73	A	EL	49.224	
		SNAGGRS4	34.925	--	1.421	49.625	1.4	0.267	2.16	A	EL	49.224	0.574	2.09	A	EL	9.845	0.80	0.267	1.42	A	EL	49.224	
		SNS5A	35.550	--	1.391	49.463	1.4	0.267	2.11	A	EL	49.224	0.574	2.10	A	EL	9.845	0.80	0.267	1.39	A	EL	49.224	
	TTST	SNS6A	39.950	--	1.265	50.545	1.4	0.267	1.92	A	EL	49.224	0.574	1.90	A	EL	9.845	0.80	0.267	1.27	A	EL	49.224	
		SNS7B	42.000	--	1.204	50.587	1.4	0.267	1.83	A	EL	49.224	0.574	1.85	A	EL	9.845	0.80	0.267	1.20	A	EL	49.224	
		TNAGRIT3	33.000	--	1.54	50.804	1.4	0.267	2.34	A	EL	49.224	0.574	2.27	A	EL	9.845	0.80	0.267	1.54	A	EL	49.224	
		TNT4A	33.075	--	1.543	51.042	1.4	0.267	2.34	A	EL	49.224	0.574	2.23	A	EL	9.845	0.80	0.267	1.54	A	EL	49.224	
		TNT6A	41.600	--	1.251	52.049	1.4	0.267	1.90	A	EL	49.224	0.574	1.94	A	EL	9.845	0.80	0.267	1.25	A	EL	49.224	
		TNT7A	42.000	--	1.252	52.576	1.4	0.267	1.90	A	EL	49.224	0.574	1.90	A	EL	9.845	0.80	0.267	1.25	A	EL	49.224	
TNT7B	42.000	--	1.281	53.819	1.4	0.267	1.95	A	EL	49.224	0.574	1.82	A	EL	9.845	0.80	0.267	1.28	A	EL	49.224			
TNAGRIT4	43.000	--	1.229	52.851	1.4	0.267	1.87	A	EL	49.224	0.574	1.76	A	EL	9.845	0.80	0.267	1.23	A	EL	49.224			
TNAGT5A	45.000	--	1.164	52.365	1.4	0.267	1.77	A	EL	49.224	0.574	1.73	A	EL	9.845	0.80	0.267	1.16	A	EL	49.224			
TNAGT5B	45.000	3	1.154	51.925	1.4	0.267	1.75	A	EL	49.224	0.574	1.68	A	EL	9.845	0.80	0.267	1.15	A	EL	49.224			

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)

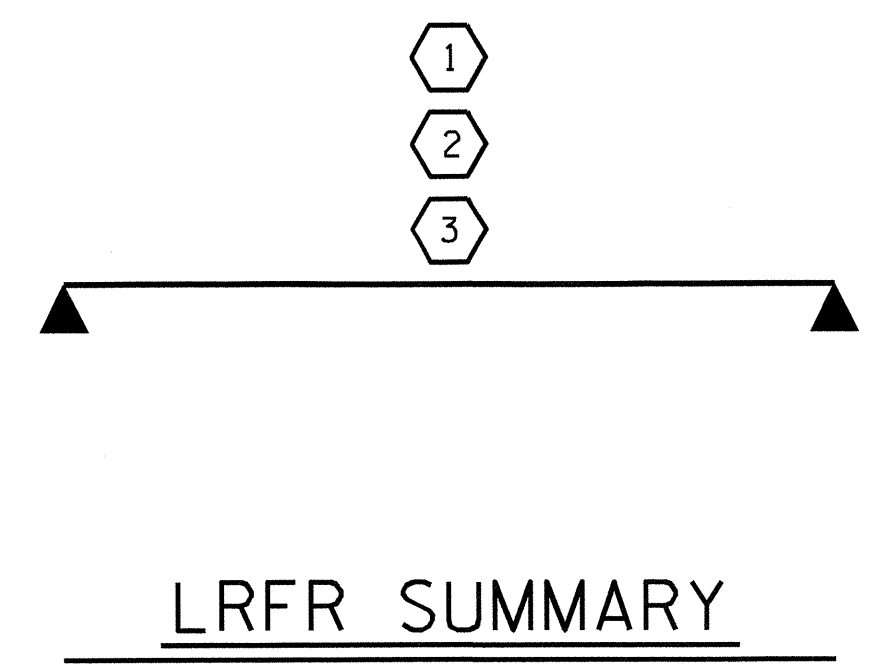
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

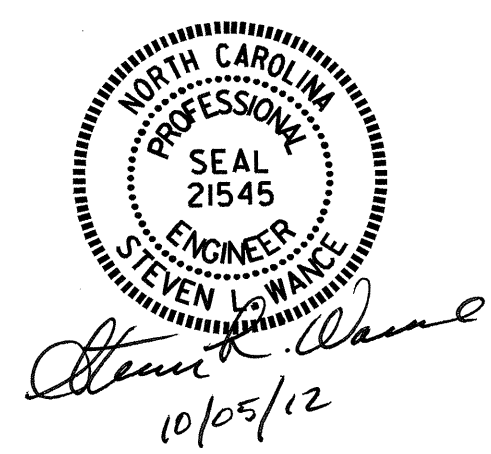
** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



PROJECT NO. B-4796
RANDOLPH COUNTY
 STATION: 17+94.00 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 LRFR SUMMARY FOR
 100' BOX BEAM UNIT
 75° SKEW & 105° SKEW
 (NON-INTERSTATE TRAFFIC)

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

ASSEMBLED BY : R.P.PATEL DATE : 4-19-12
 CHECKED BY : S. WANCE DATE : 07/12
 DRAWN BY : TMG II/II
 CHECKED BY : AAC II/II

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 BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

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

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5500 PSI.

ALL REINFORCING STEEL IN THE CONCRETE PARAPETS SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

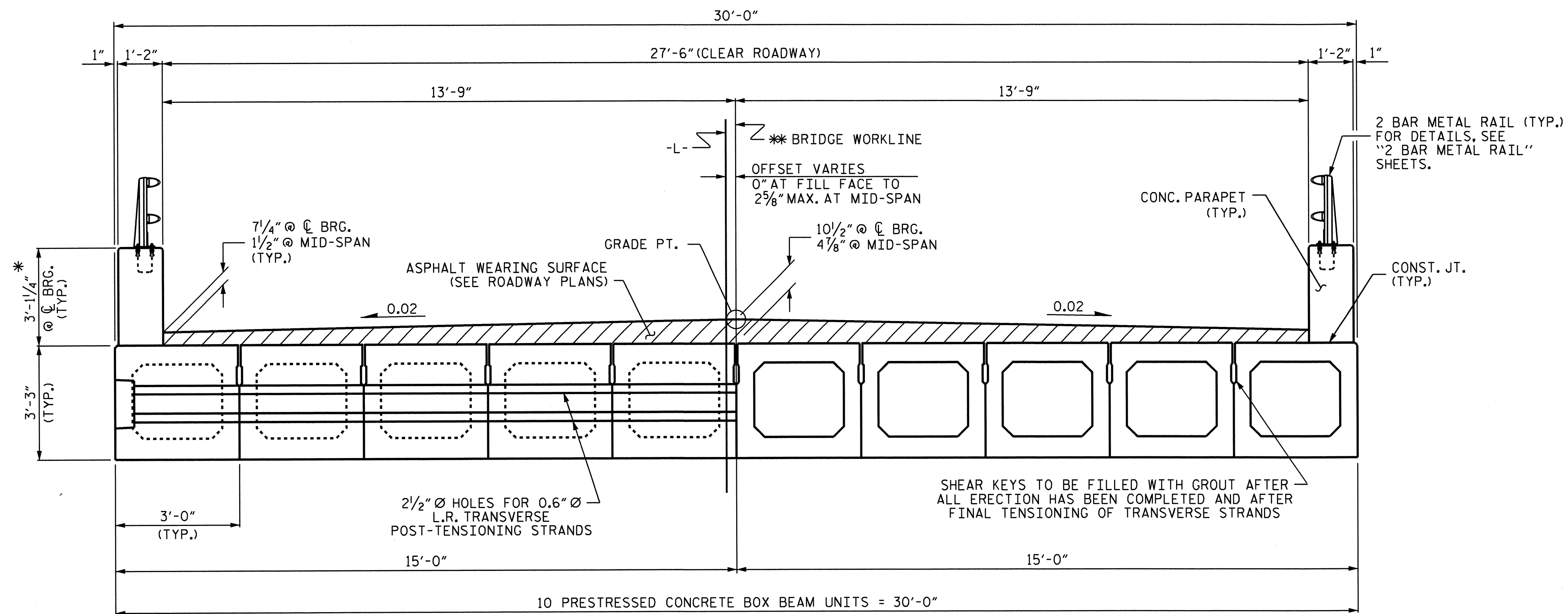
APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

VERTICAL GROOVED CONTRACTION JOINTS, 1*2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A VERTICAL CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

NOTE TO CONTRACTOR:
THE FILL FACE TO © OF BEARING DIMENSION IS 1'-11 1/2" ON BOTH END BENTS.



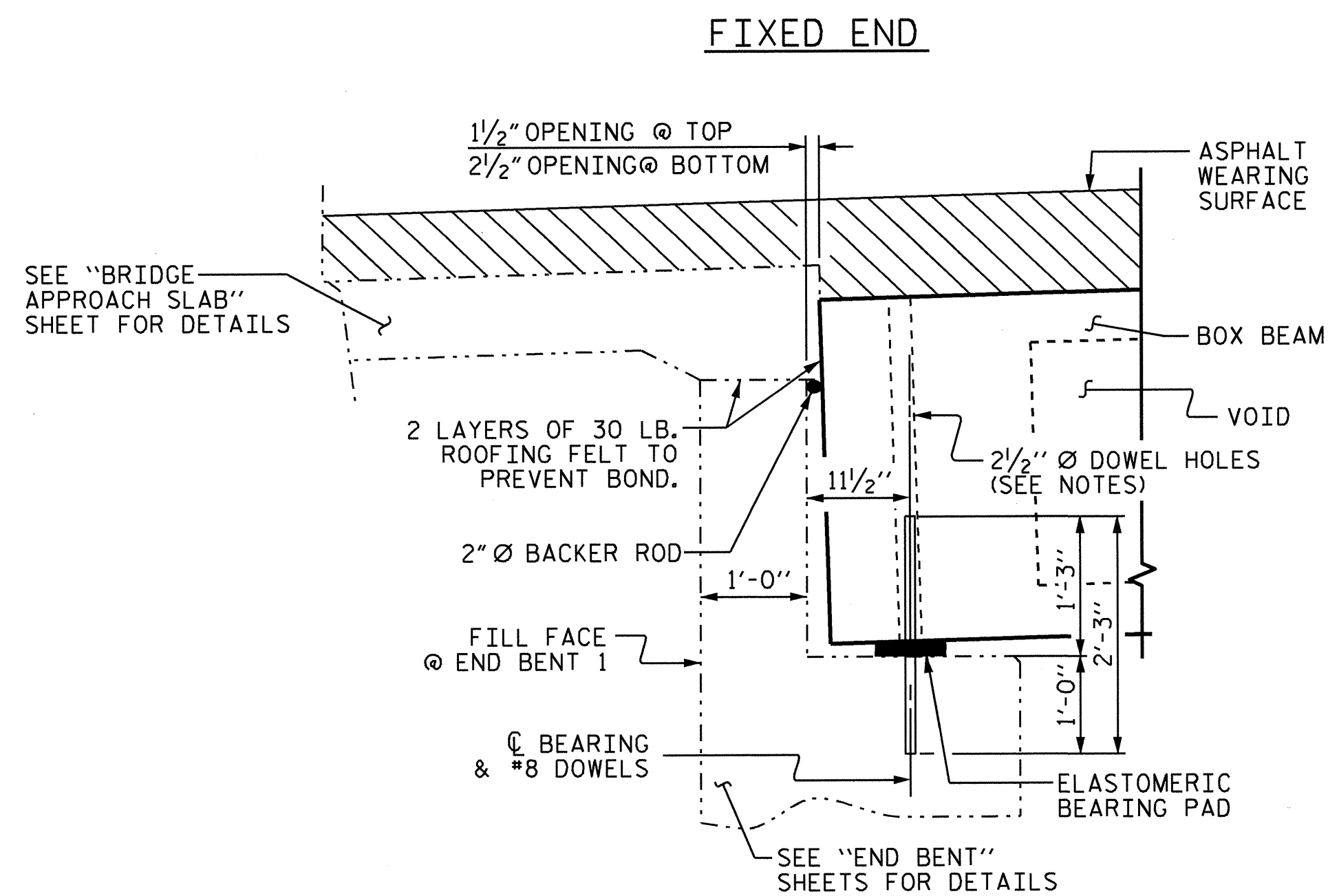
HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

HALF SECTION
THROUGH VOIDS

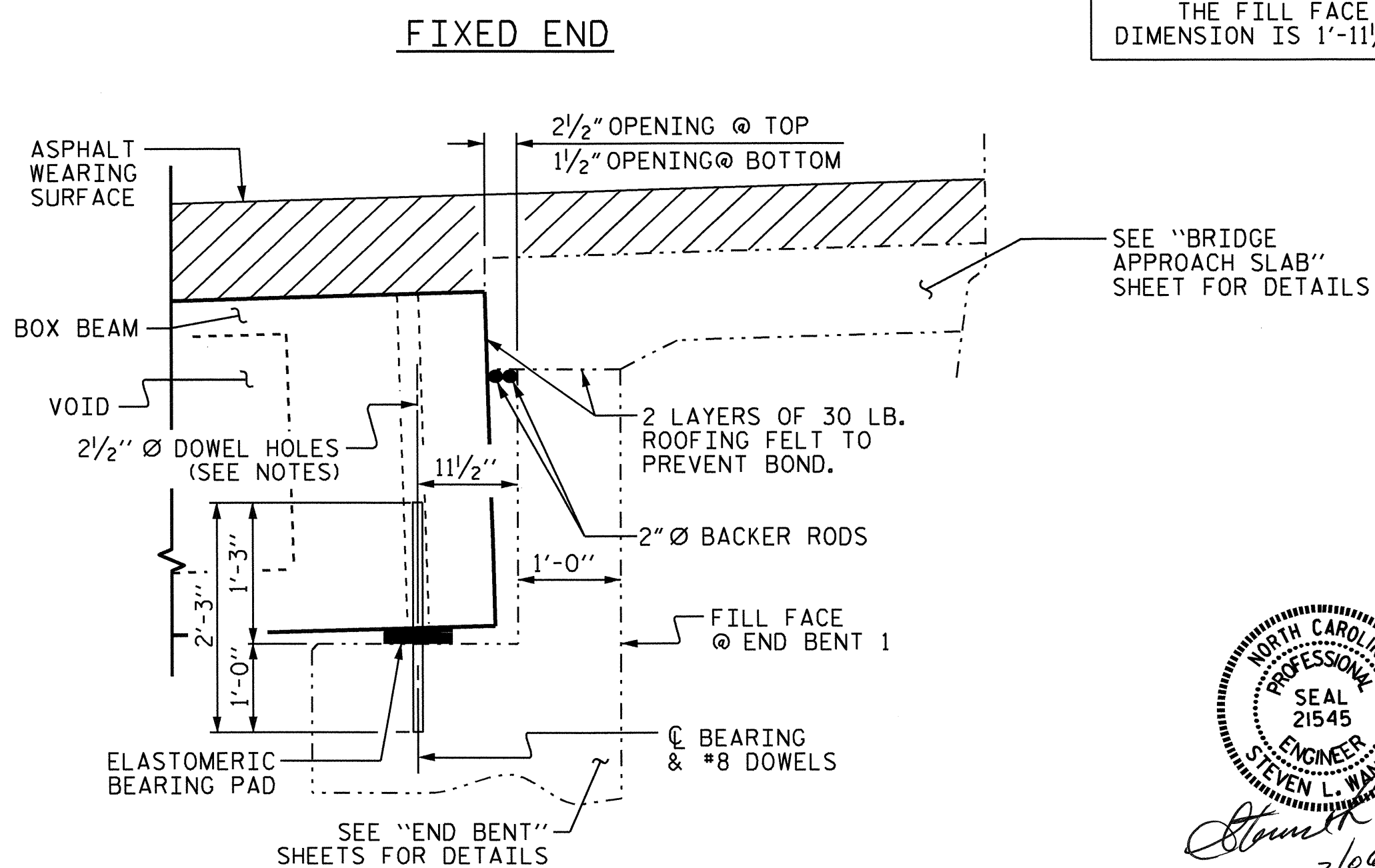
TYPICAL SECTION

* - THE MAXIMUM PARAPET HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE PARAPET AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE PARAPET FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR PARAPET HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "CONCRETE PARAPETS AND END POSTS" DETAIL SHEET S-12.

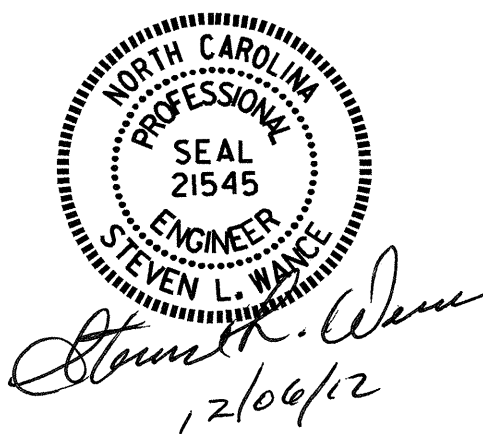
** - THE BRIDGE WORKLINE FOLLOWS A CHORD FROM W.P. #1 TO W.P. #2 AND EXTENDS WITH A 105°-00'-00" SKEW ANGLE.



SECTION AT END BENT No. 1



SECTION AT END BENT No. 2



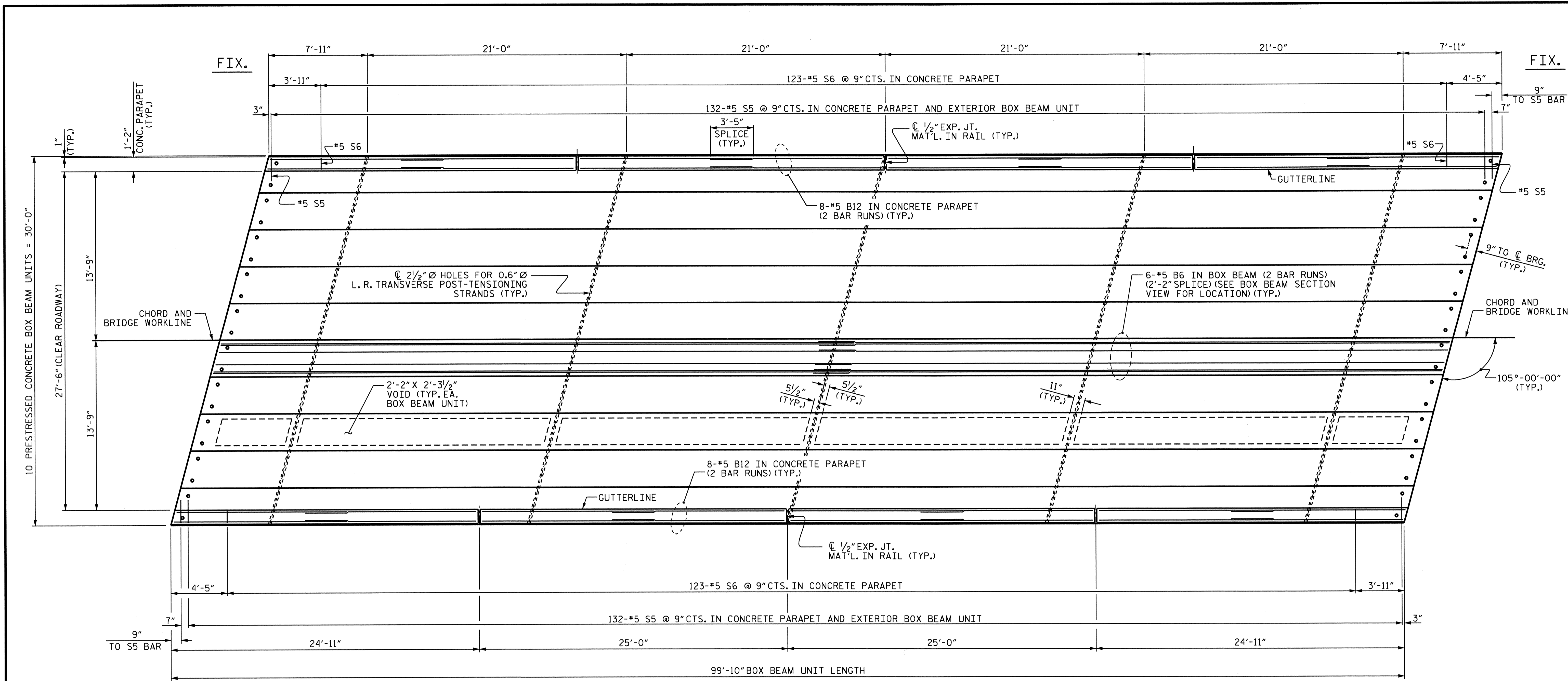
PROJECT NO. B-4796
RANDOLPH COUNTY
STATION: 17+94.00 -L-

SHEET 1 OF 5

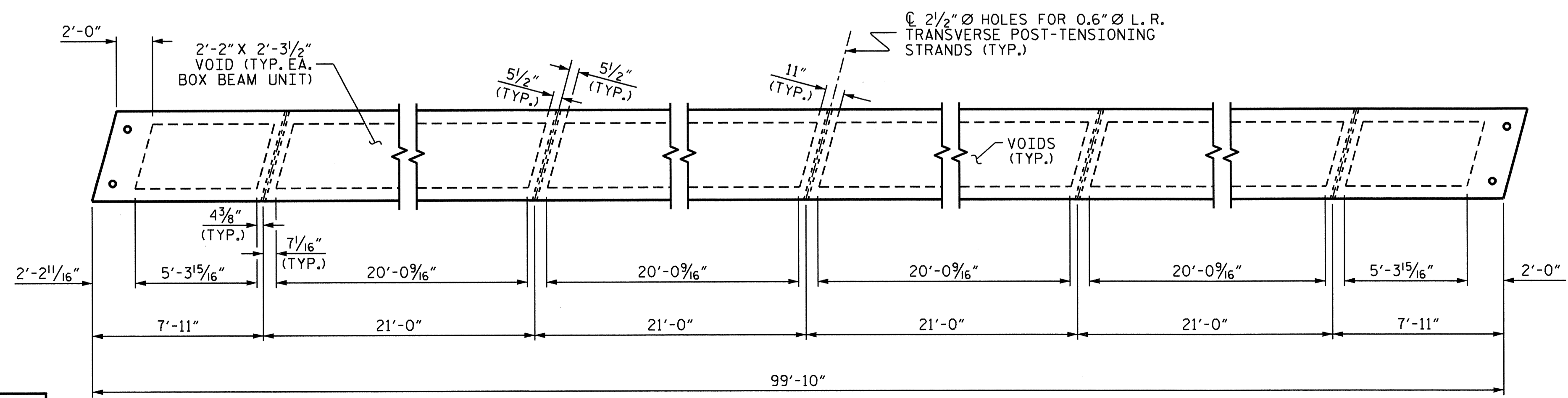
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT

ASSEMBLED BY : R.P.PATEL DATE : 4-19-12
CHECKED BY : S. Wance DATE : 07/12
DRAWN BY : DCE 8/11
CHECKED BY : TMG 11/11

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

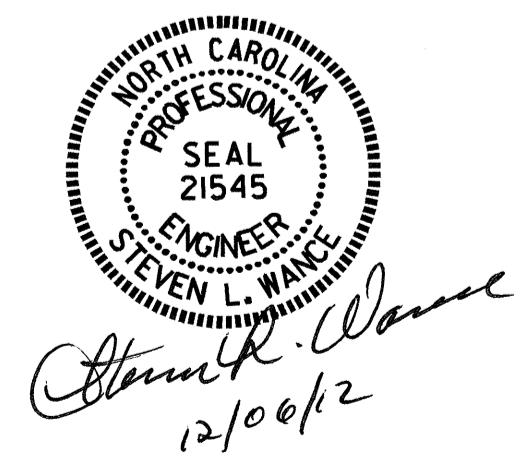


PLAN OF UNIT



DIAPHRAGM AND VOID LAYOUT

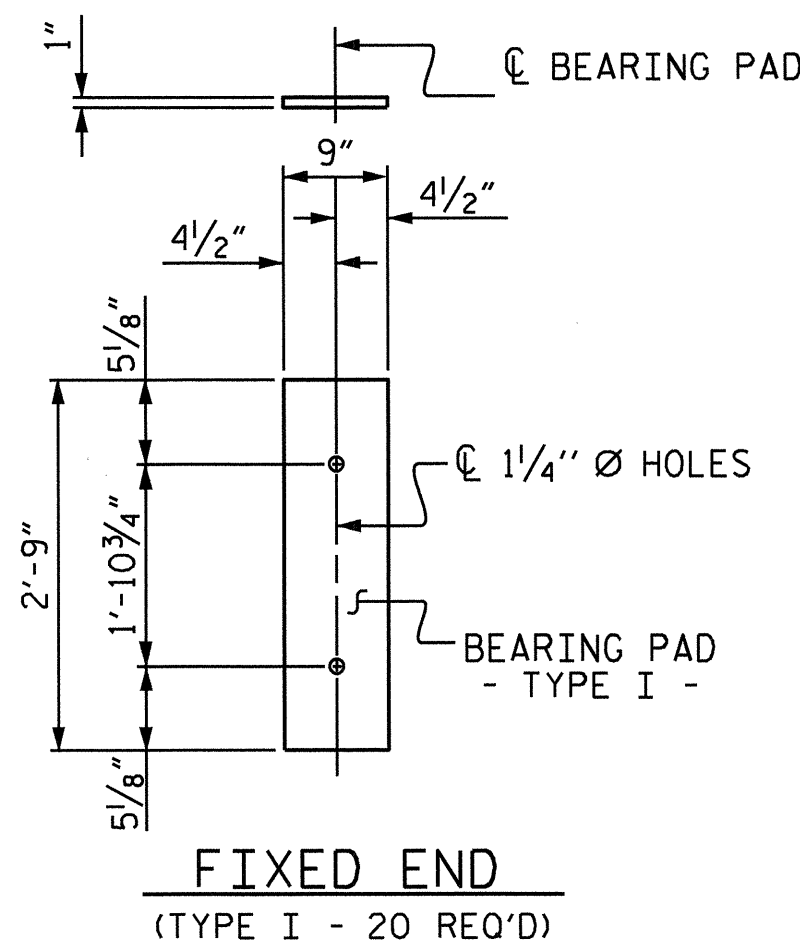
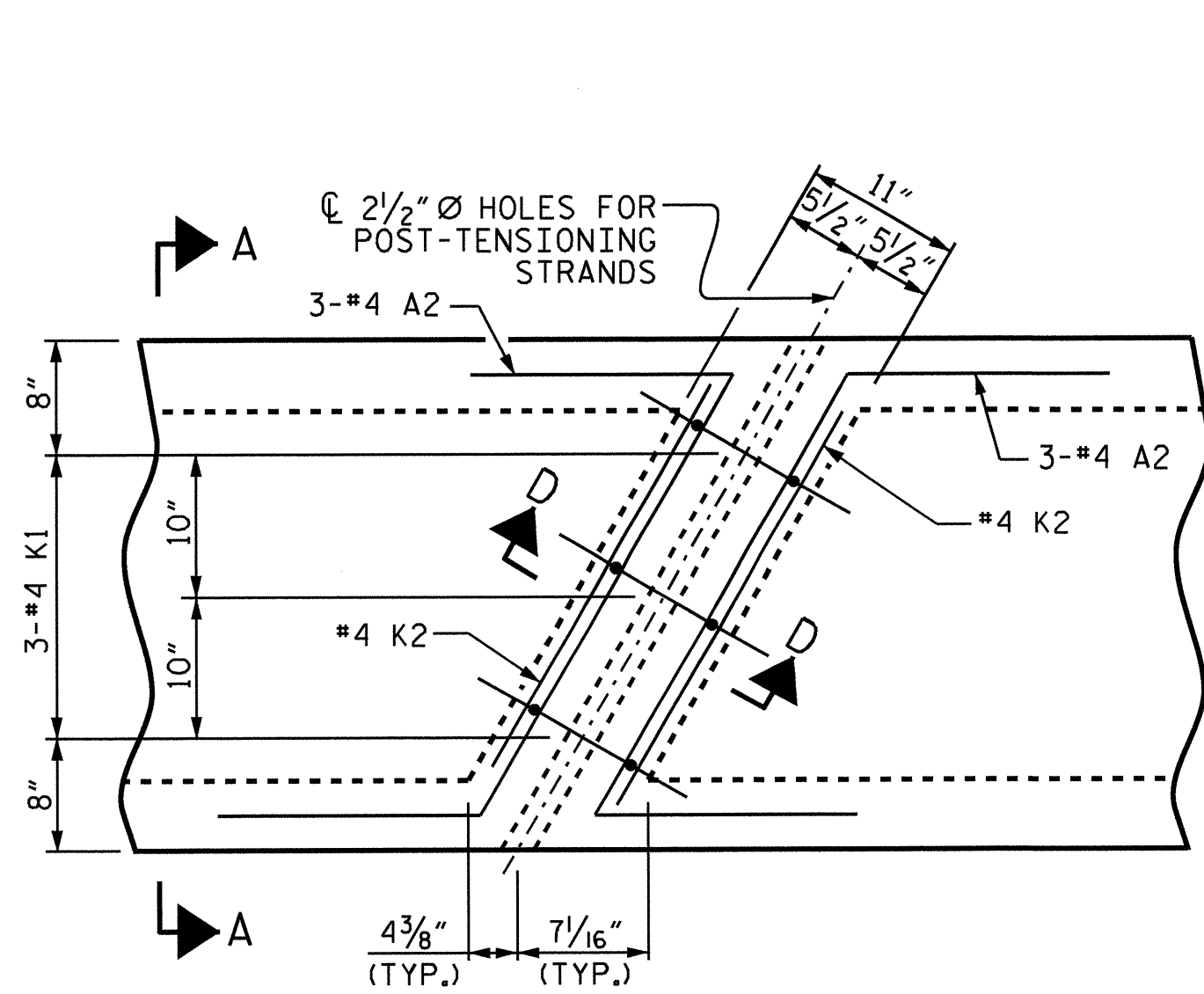
PROJECT NO. B-4796
RANDOLPH COUNTY
 STATION: 17+94.00 -L-
 SHEET 2 OF 4



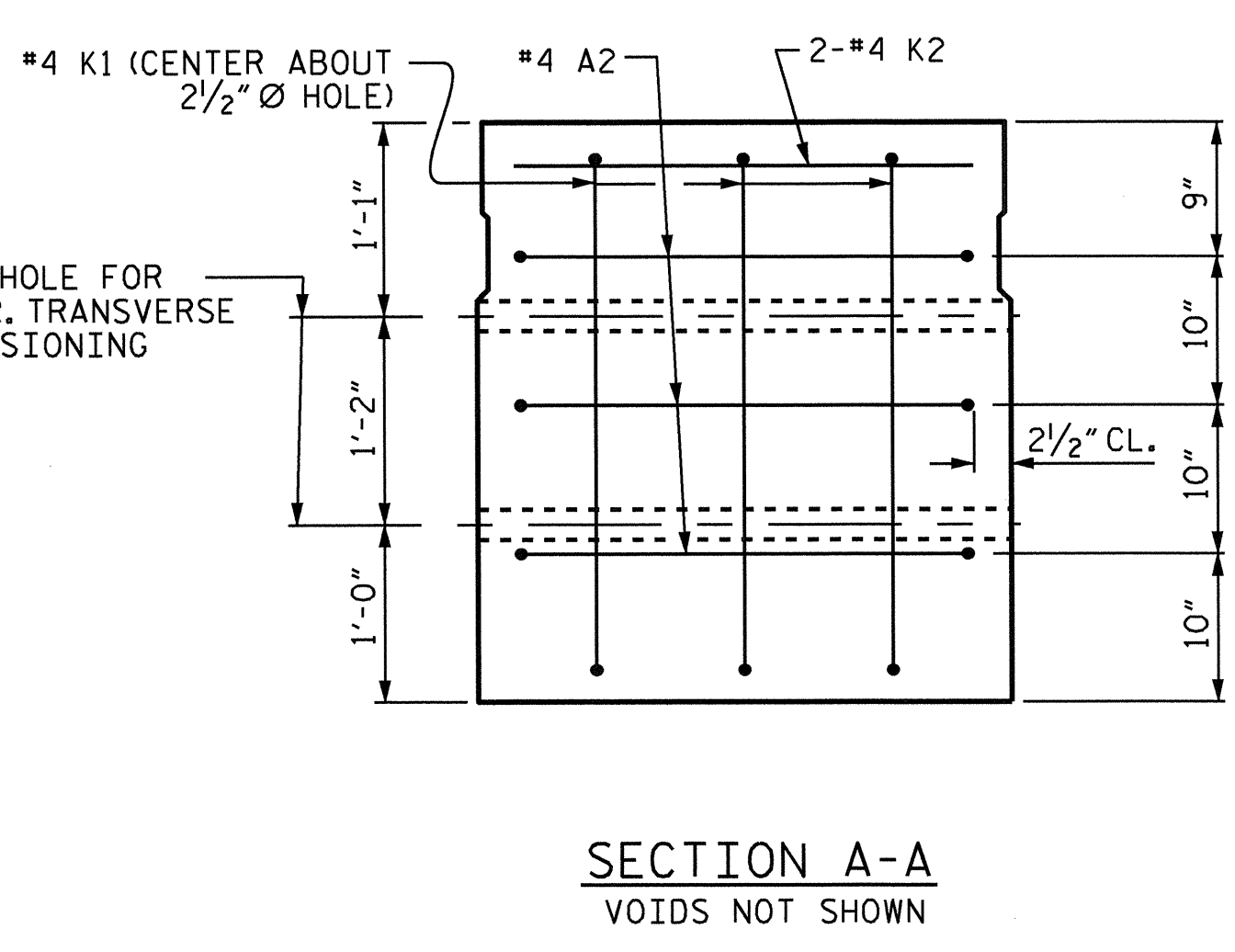
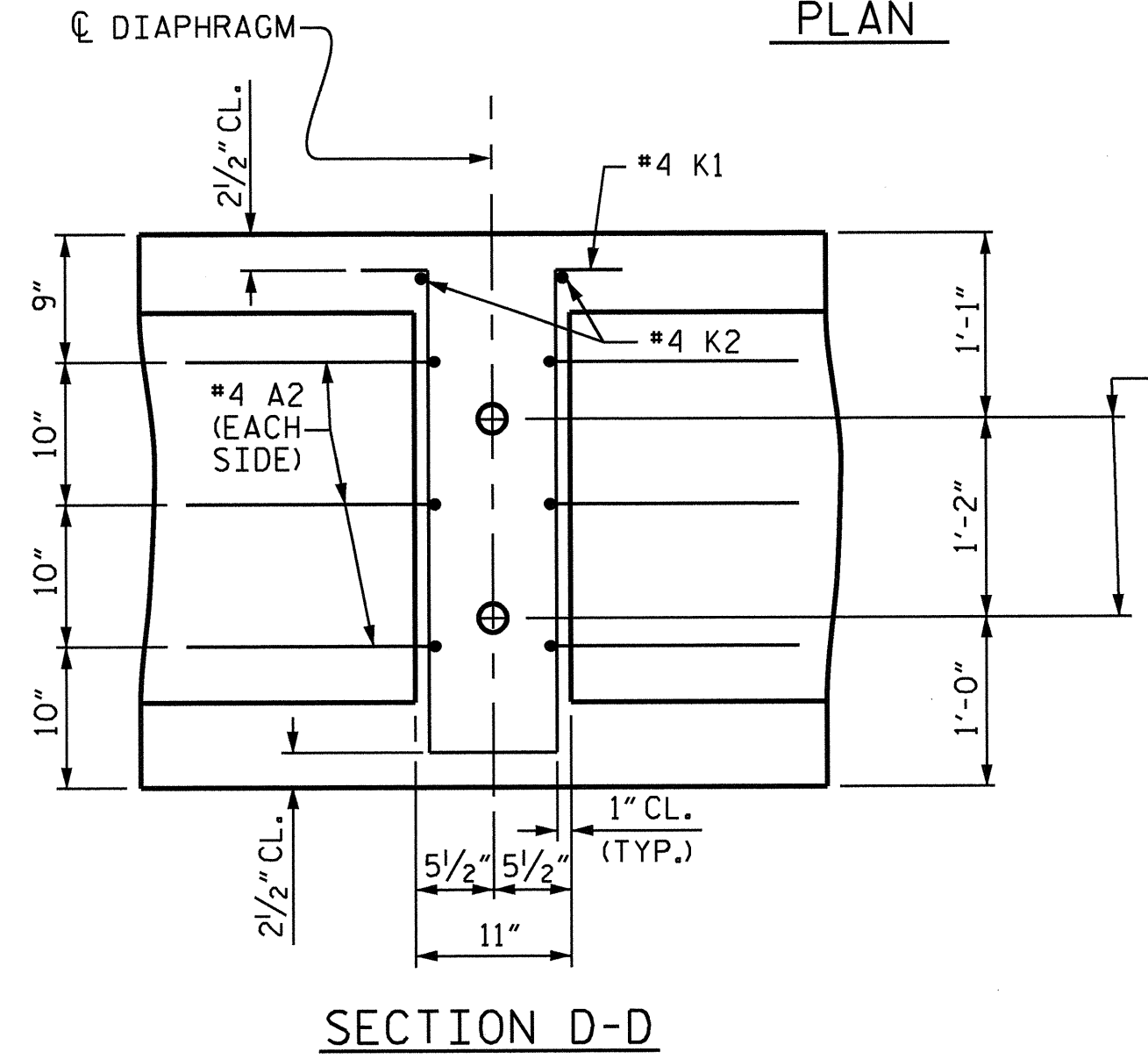
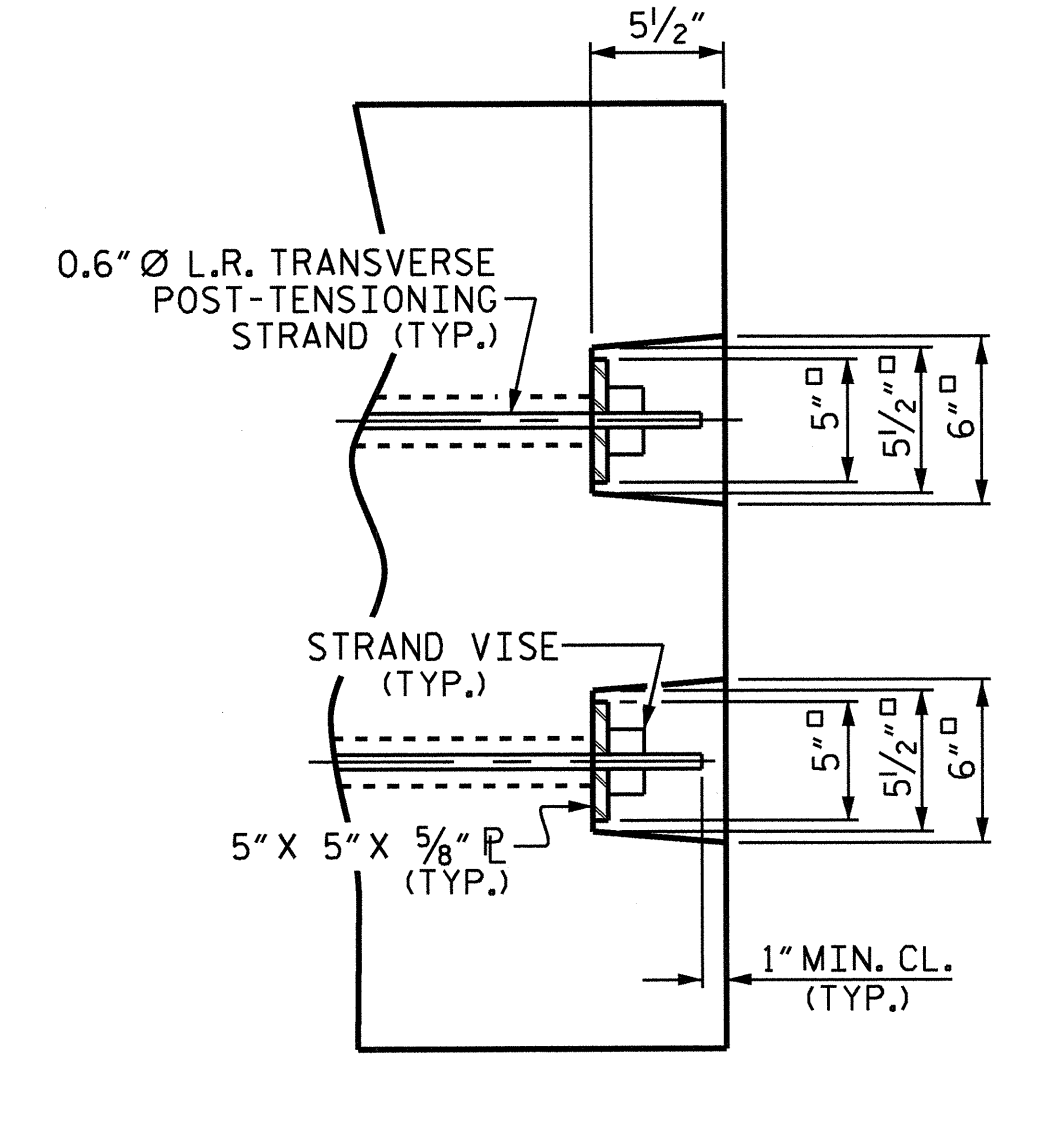
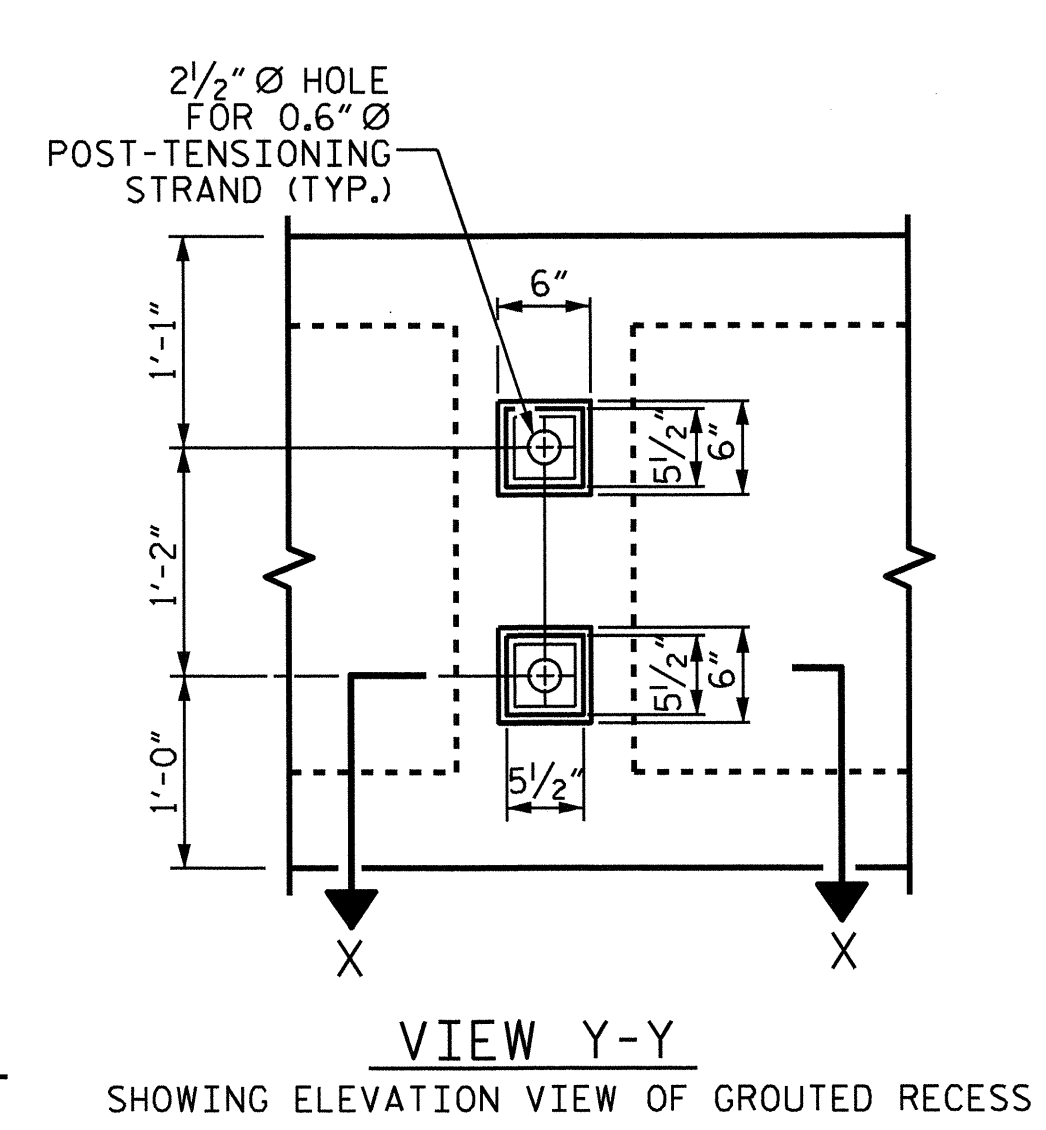
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 PLAN OF SPAN A
 27'-6" CLEAR ROADWAY
 105° SKEW

ASSEMBLED BY : R.P.PATEL DATE : 4-19-12
 CHECKED BY : S. Wance DATE : 7/12
 DRAWN BY : DGE 8/11
 CHECKED BY : TMG 11/11

REVISIONS						SHEET NO. S-6
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 19
2			4			

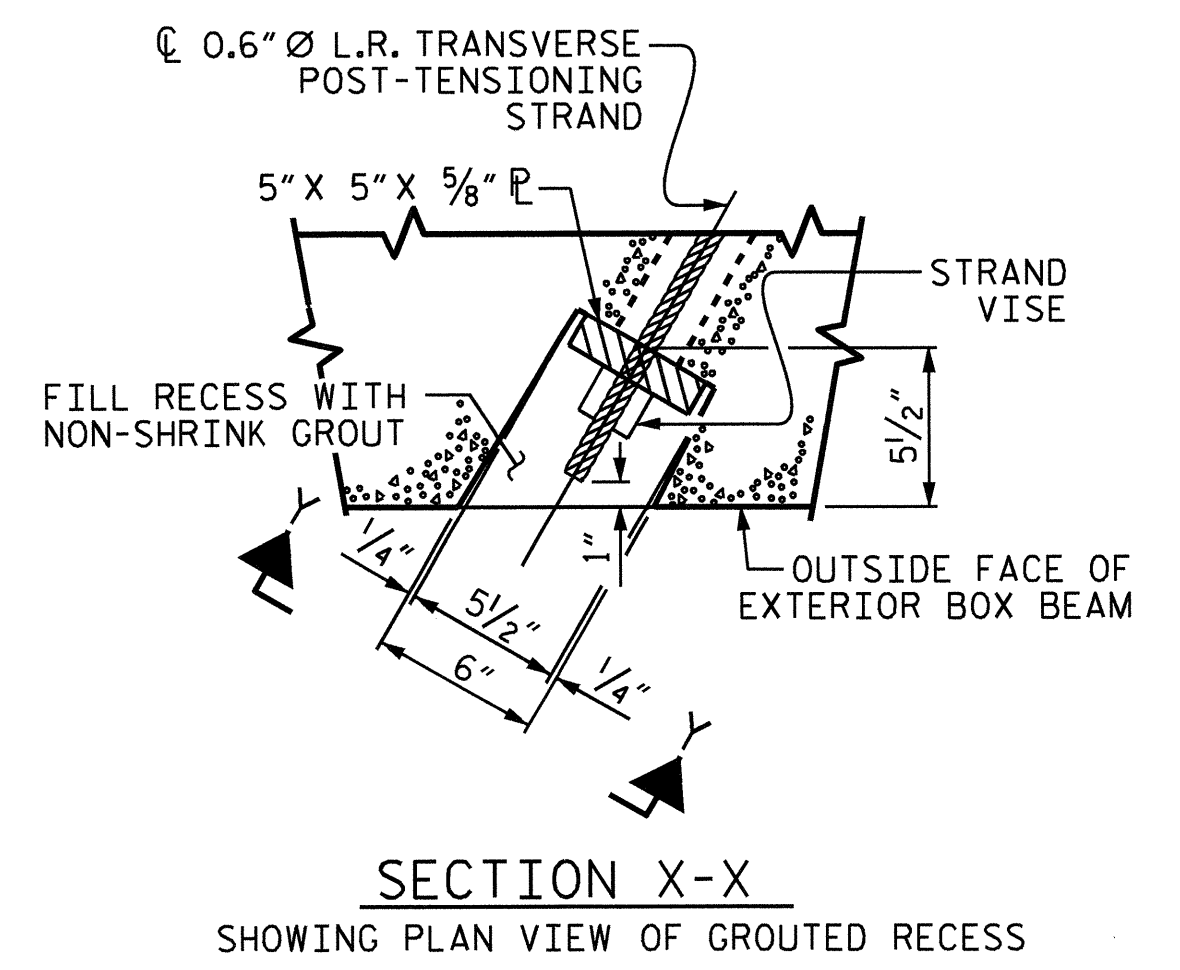
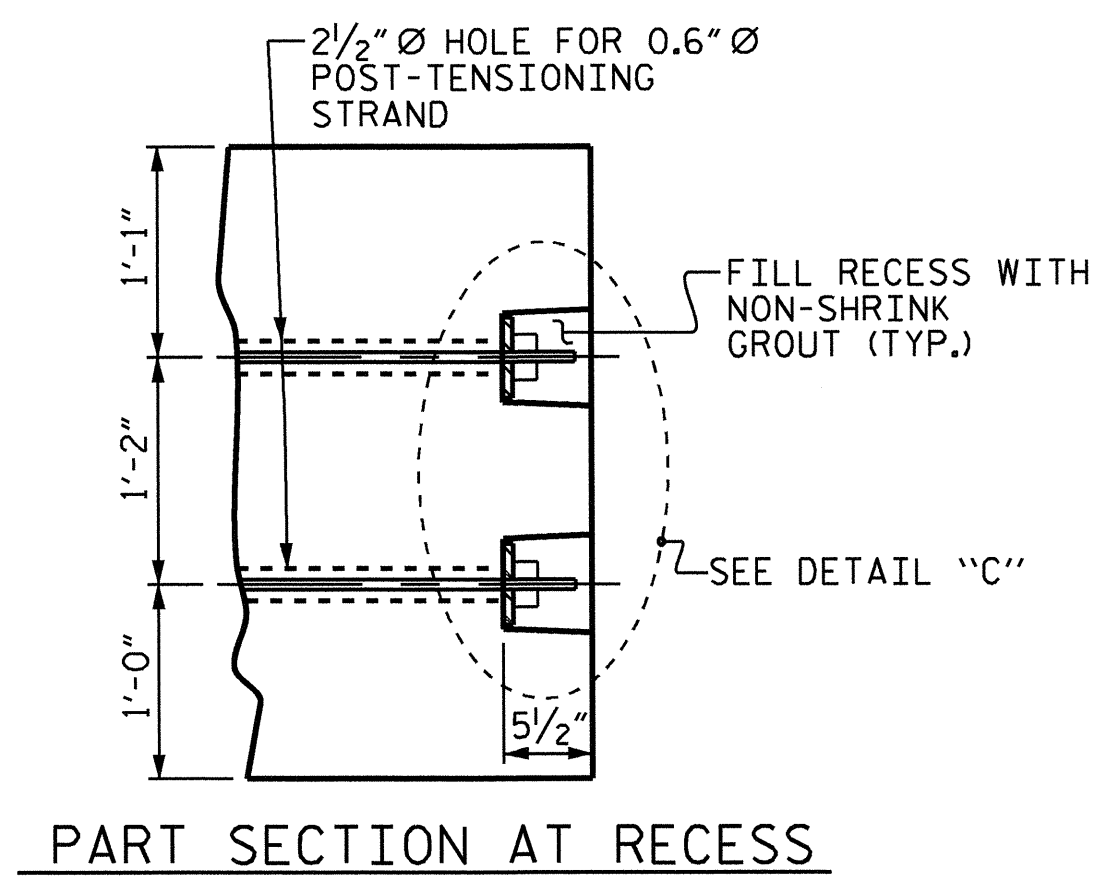


ELASTOMERIC BEARING DETAILS
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

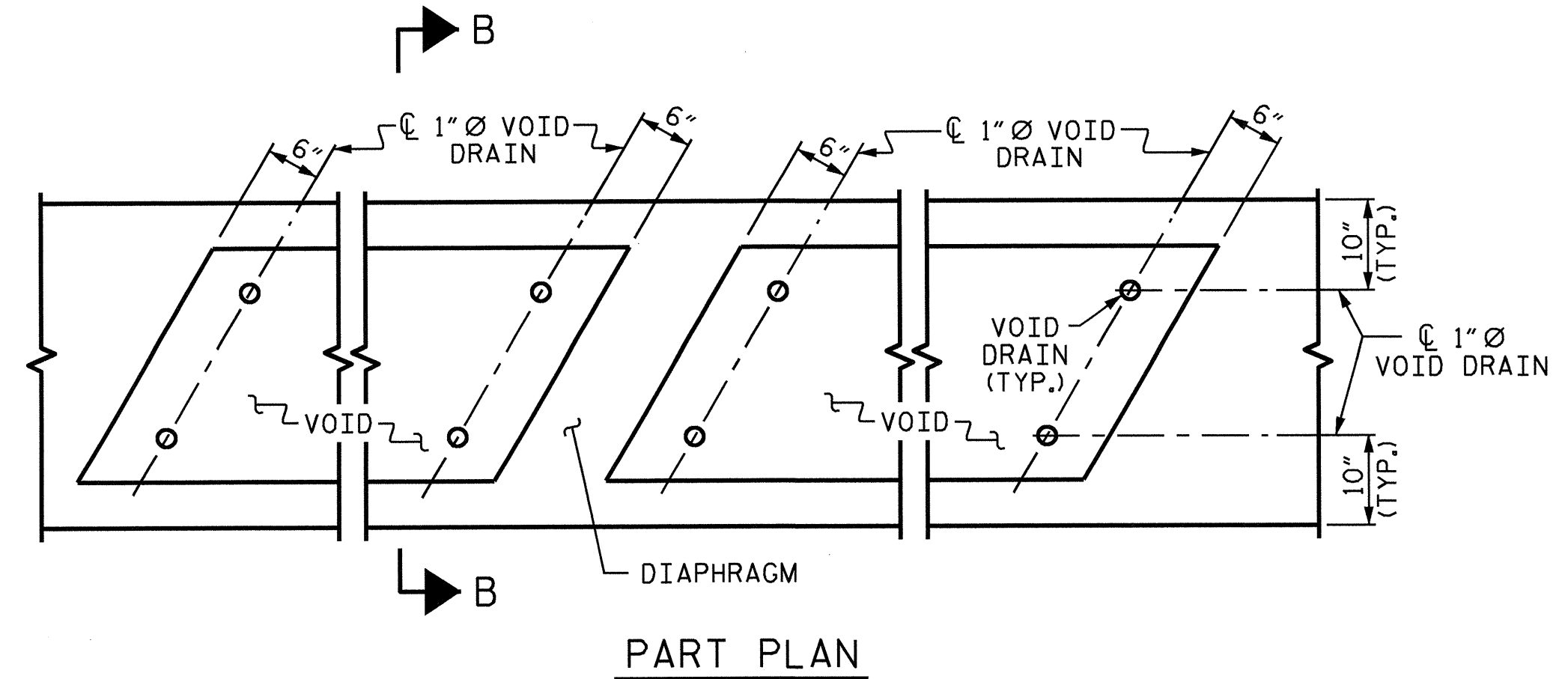
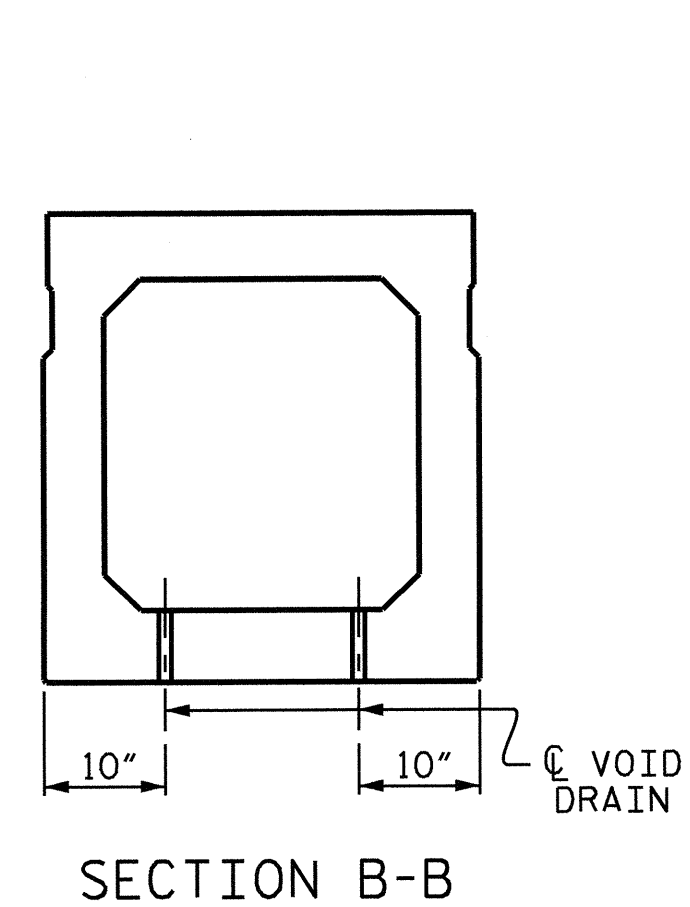


DOUBLE DIAPHRAGM DETAILS

*4 "S" BARS NOT SHOWN. *4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2 1/2" Ø HOLE.



GROUTED RECESS DETAIL AT END OF POST-TENSIONED STRANDS OF EXTERIOR BOX BEAM



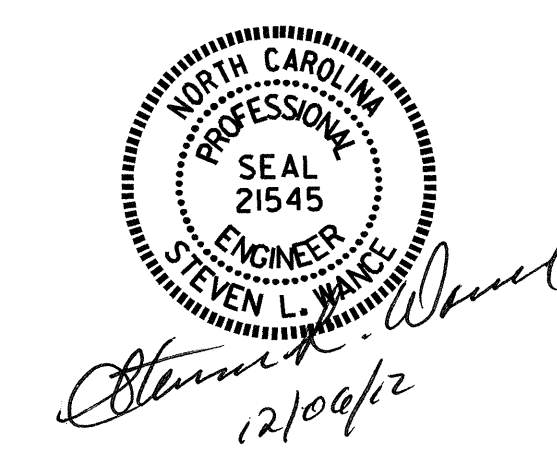
VOID DRAIN DETAILS

(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

DEAD LOAD DEFLECTION AND CAMBER	
99'-10" BOX BEAM UNIT	3'-0" x 3'-3"
CAMBER (SLAB ALONE IN PLACE)	0.6" Ø L.R. STRAND
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD **	3 1/2" ↑
FINAL CAMBER	1" ↓
	2 1/2" ↑

** INCLUDES FUTURE WEARING SURFACE

BOX BEAM UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR B.B.	2	99'-10"	199'-8"
INTERIOR B.B.	8	99'-10"	798'-8"
TOTAL	10		998'-4"



PROJECT NO. B-4796
RANDOLPH COUNTY
STATION: 17+94.00 -L-
SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT

REVISIONS						SHEET NO. S-8
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 19
2			4			

ASSEMBLED BY : R.P.PATEL DATE : 4-19-12
CHECKED BY : S. WANCE DATE : 07/12
DRAWN BY : DGE II/II
CHECKED BY : TMG II/II

NOTES

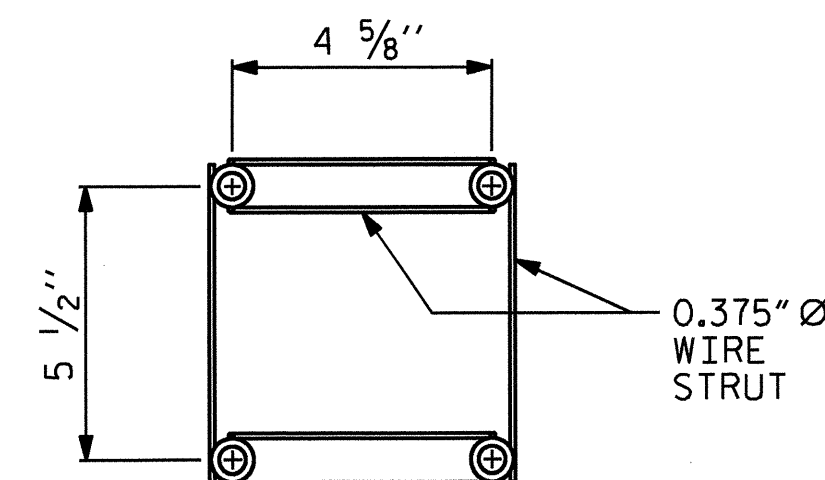
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

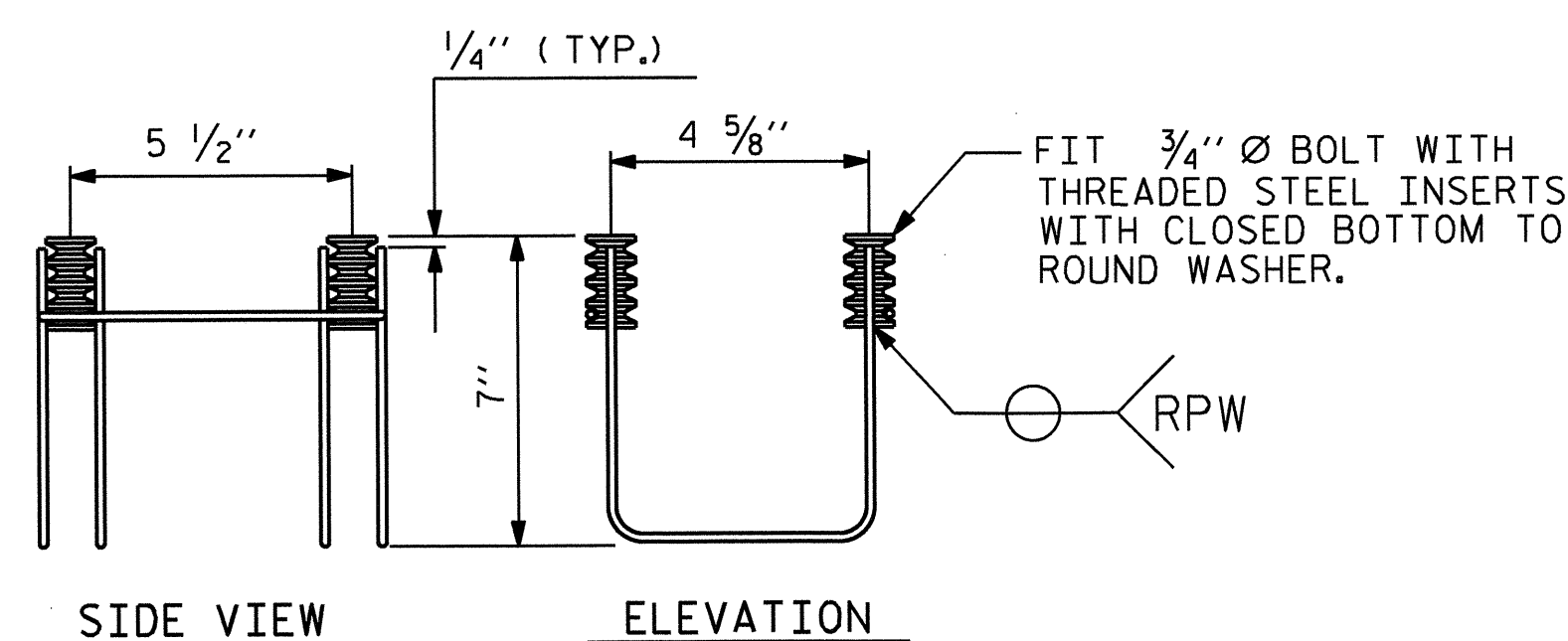
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT 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 THE 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

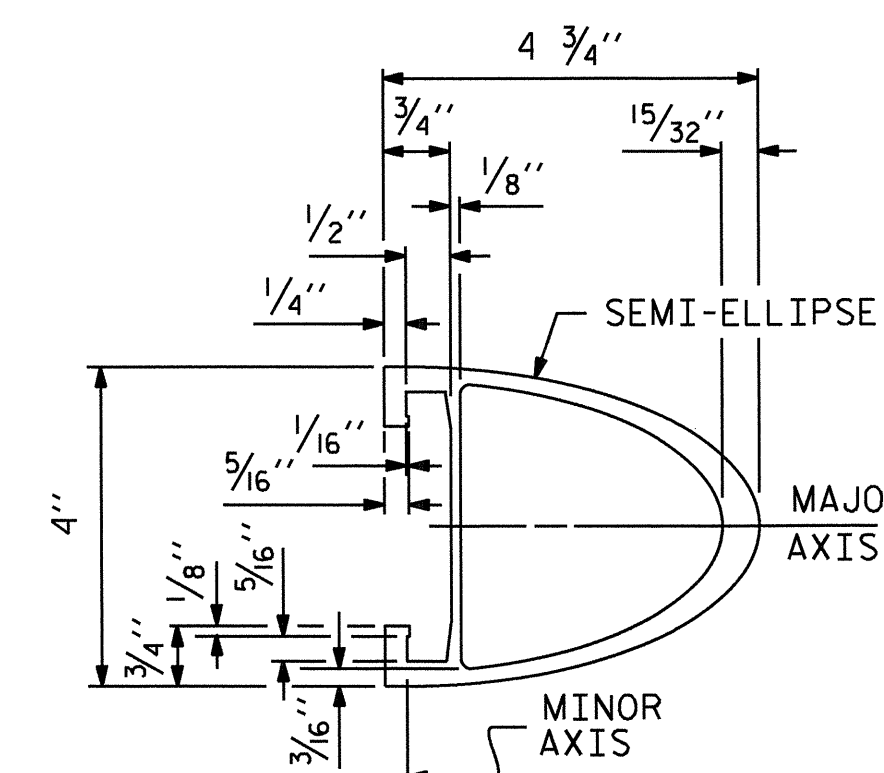


SIDE VIEW

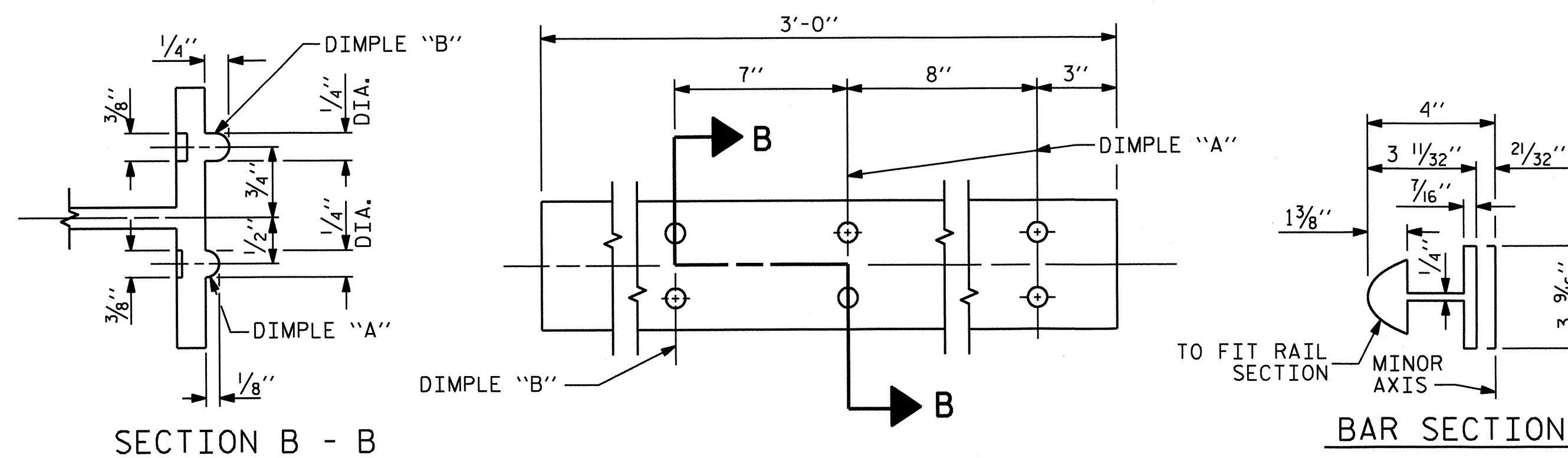
ELEVATION

4-BOLT METAL RAIL ANCHOR ASSEMBLY

(34 ASSEMBLIES REQUIRED)



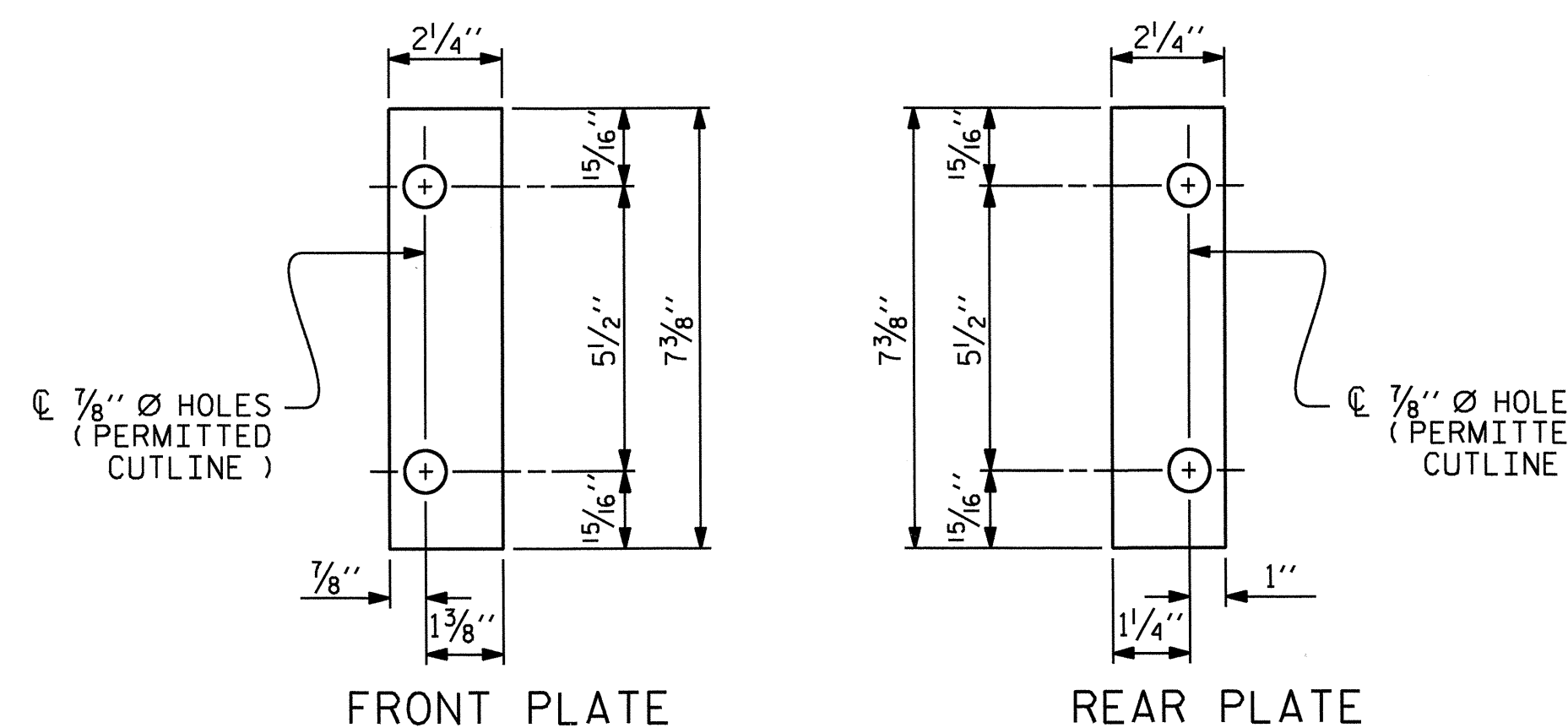
RAIL SECTION



SECTION B - B

EXPANSION BAR DETAILS

BAR SECTION

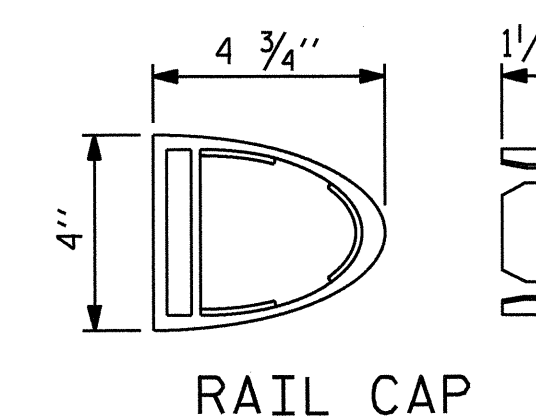


FRONT PLATE

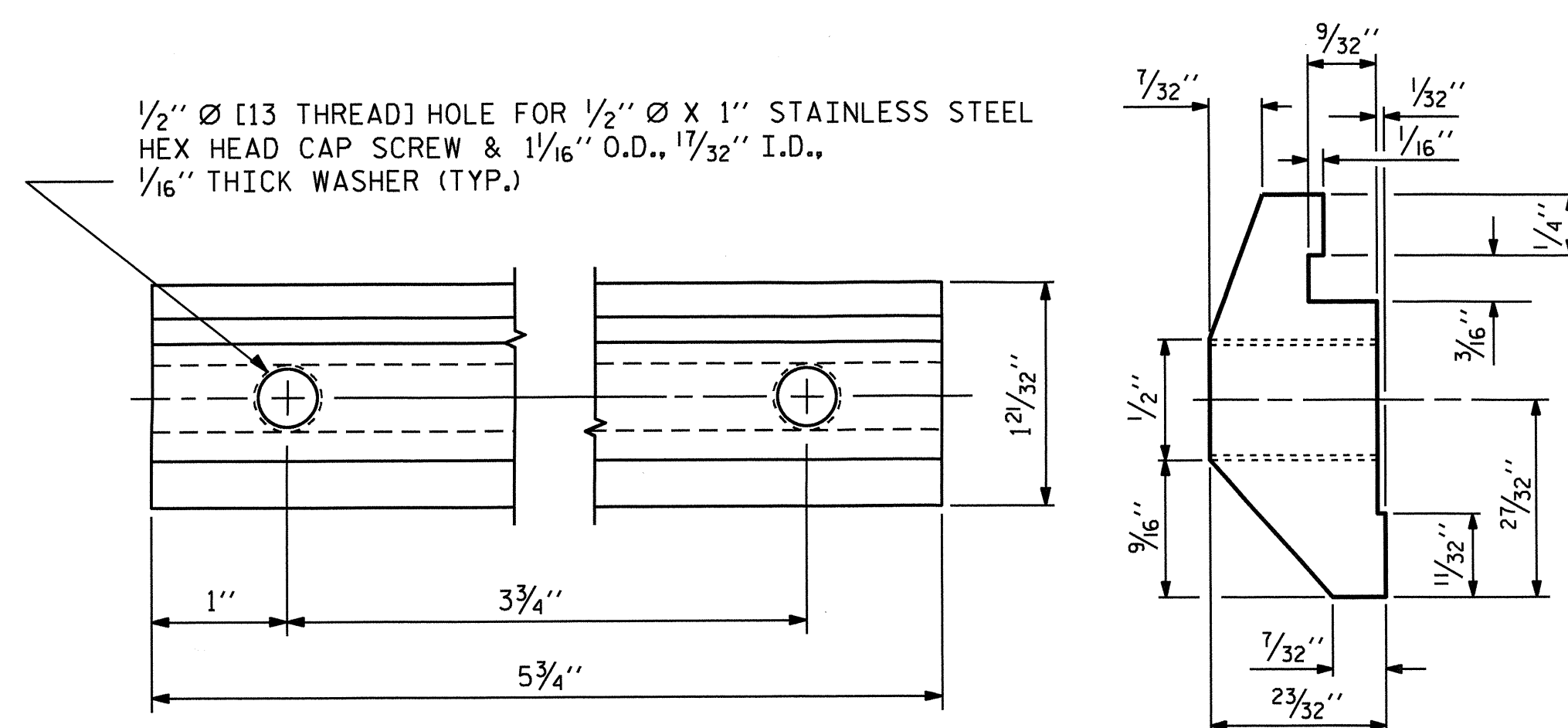
REAR PLATE

SHIM DETAILS

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

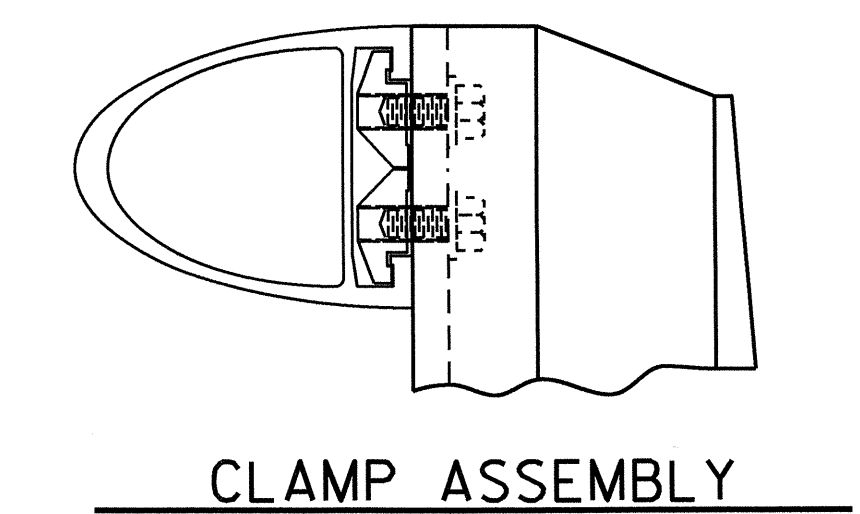


RAIL CAP

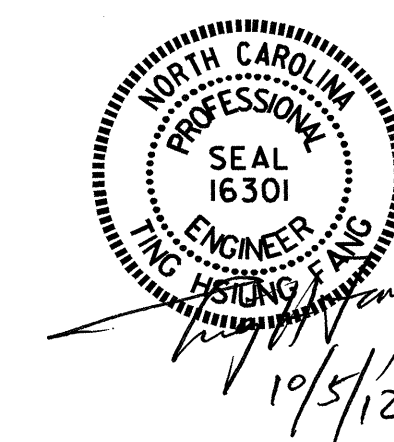


CLAMP BAR DETAIL

(4 REQUIRED PER POST)



CLAMP ASSEMBLY



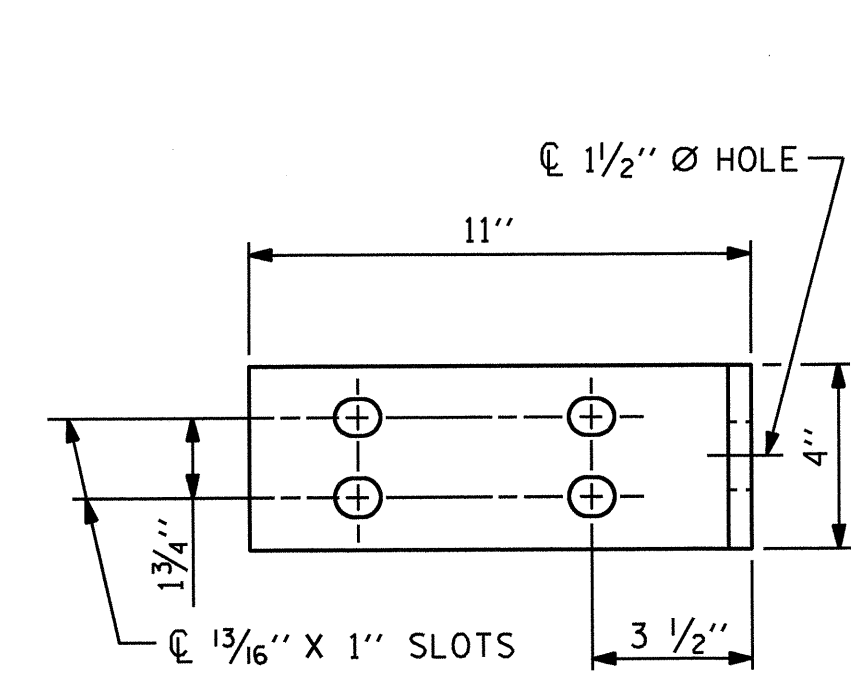
PROJECT NO. B-4796
RANDOLPH COUNTY
 STATION: 17+94.00 -L-

SHEET 2 OF 2

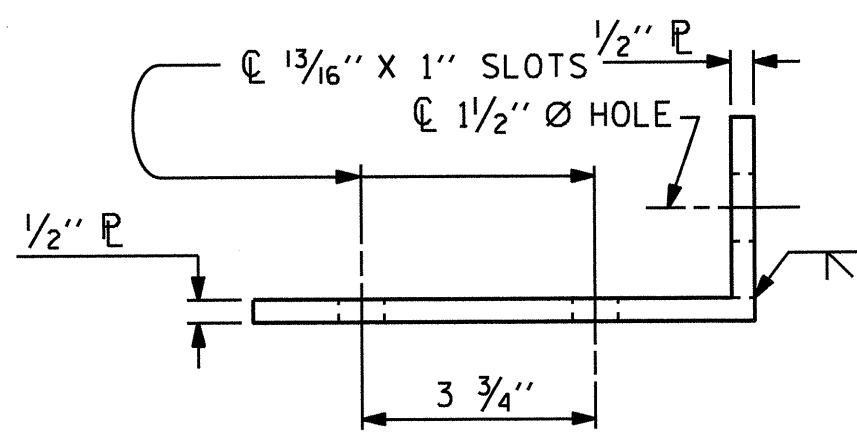
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 2 BAR METAL RAIL

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10	
1			3			TOTAL SHEETS	
2			4			19	

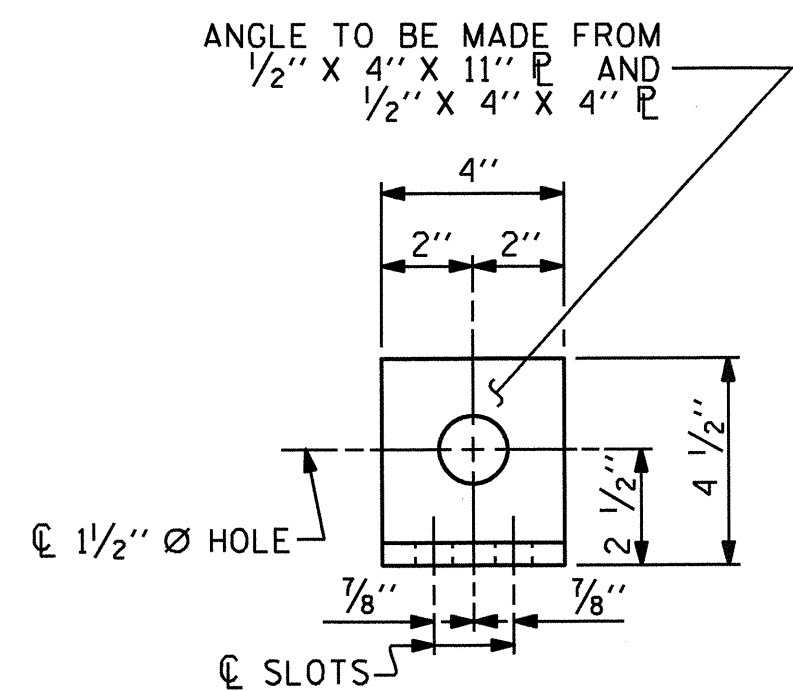
ASSEMBLED BY : R.P.PATEL DATE : 4-25-12
 CHECKED BY : S. WANCE DATE : 07/12
 DRAWN BY : EEM 6/94 REV. 8/16/99 MAB/LES
 CHECKED BY : RGW 6/94 REV. 5/1/06R KMM/GM
 REV. 10/1/11 MAA/GM



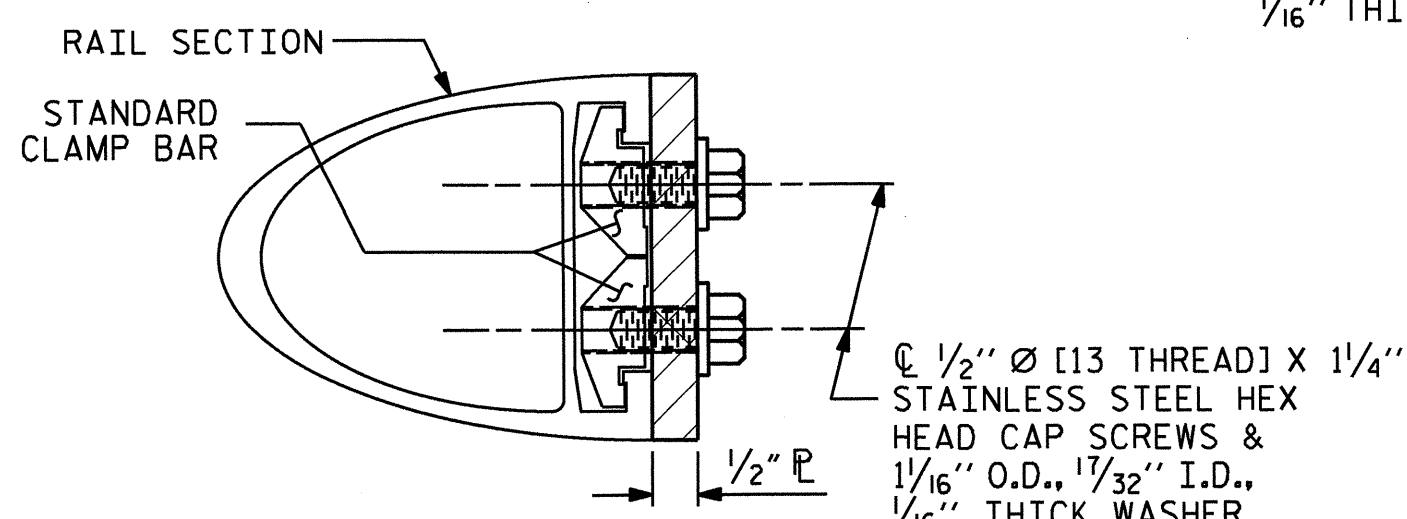
ELEVATION



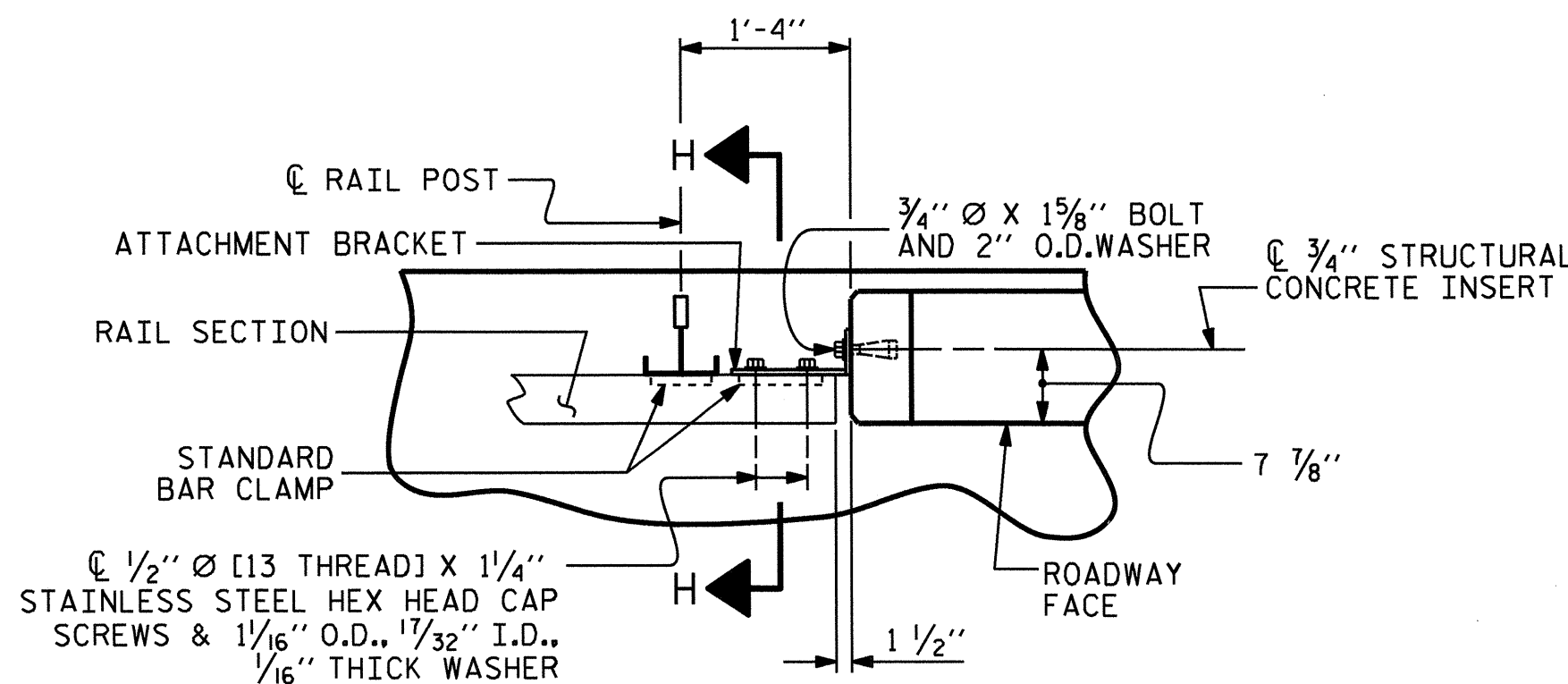
TOP VIEW



END VIEW (FIX AND EXP)

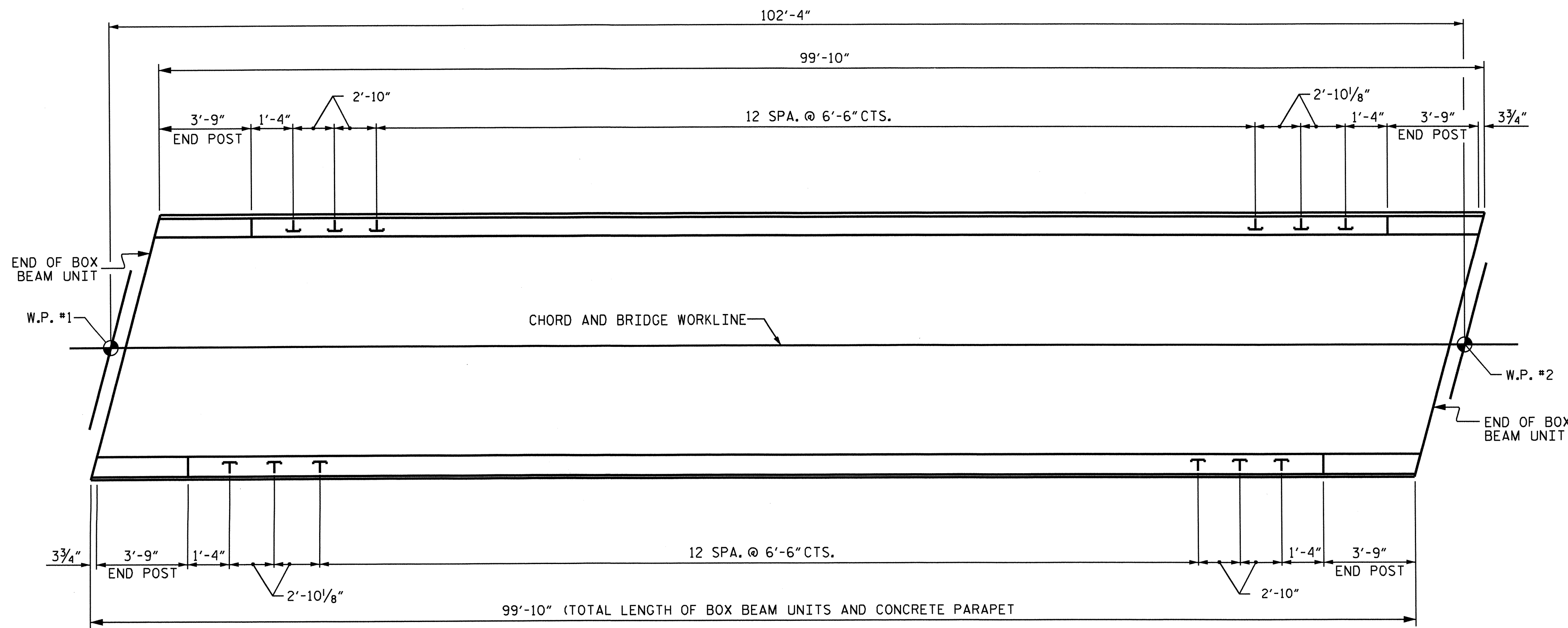


SECTION H-H (FIX)



PLAN - RAIL AND END POST

DETAILS FOR ATTACHING METAL RAIL TO END POST



PLAN OF RAIL POST SPACINGS

TOTAL NUMBER OF RAIL POSTS = 34

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 1/16" 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:

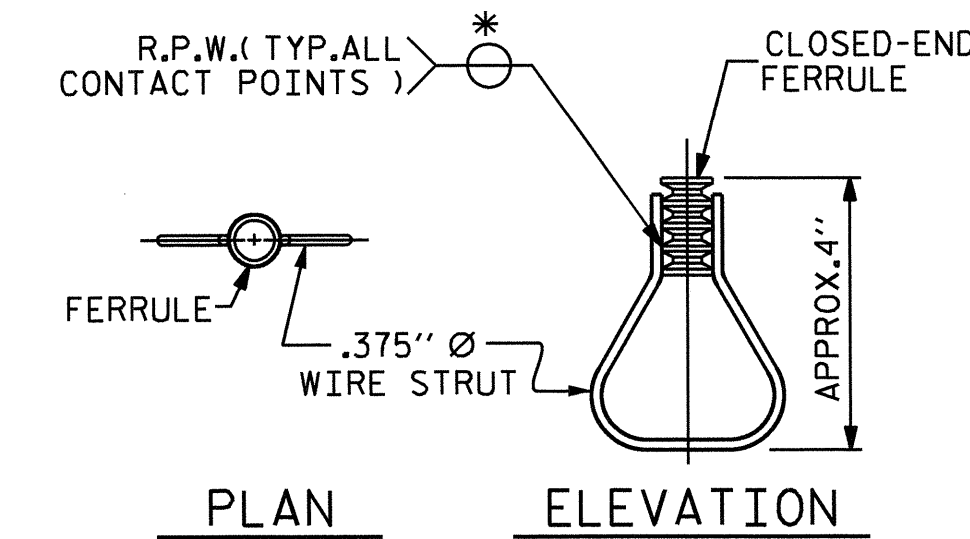
- A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 5/8" BOLT SHALL HAVE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

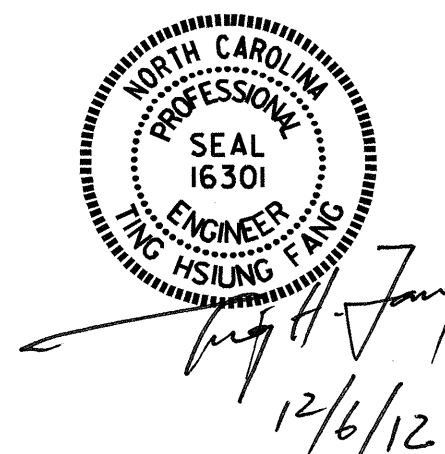
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT 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.



STRUCTURAL CONCRETE INSERT

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

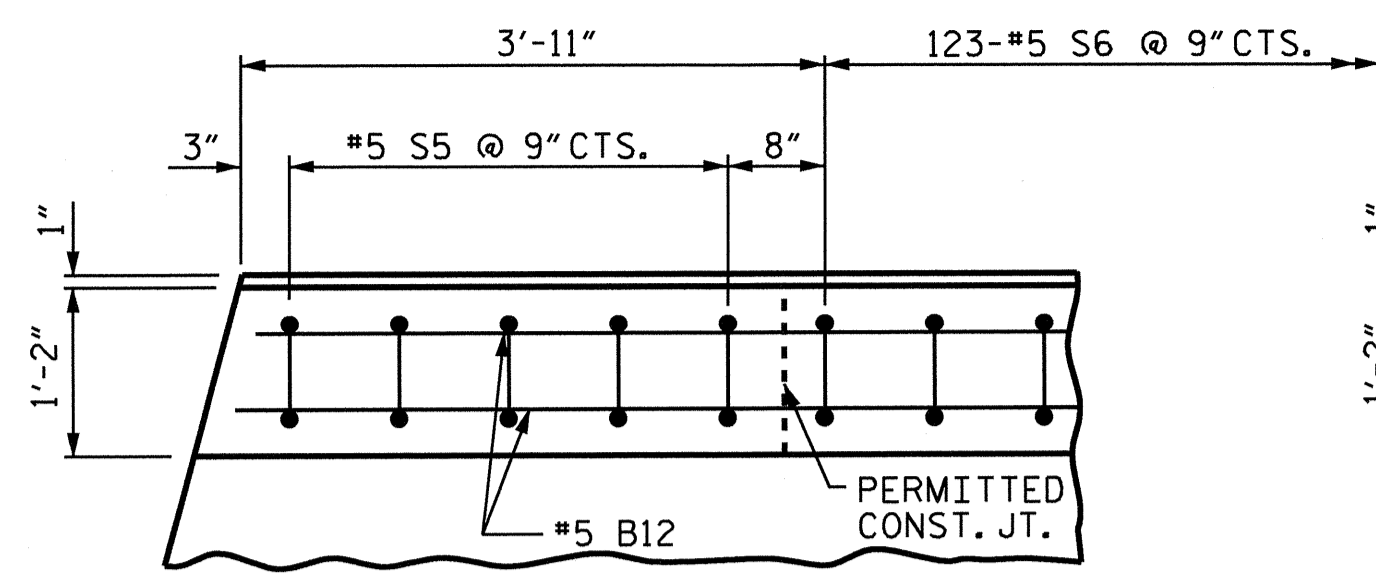
PROJECT NO. B-4796
RANDOLPH COUNTY
 STATION: 17+94.00 -L-



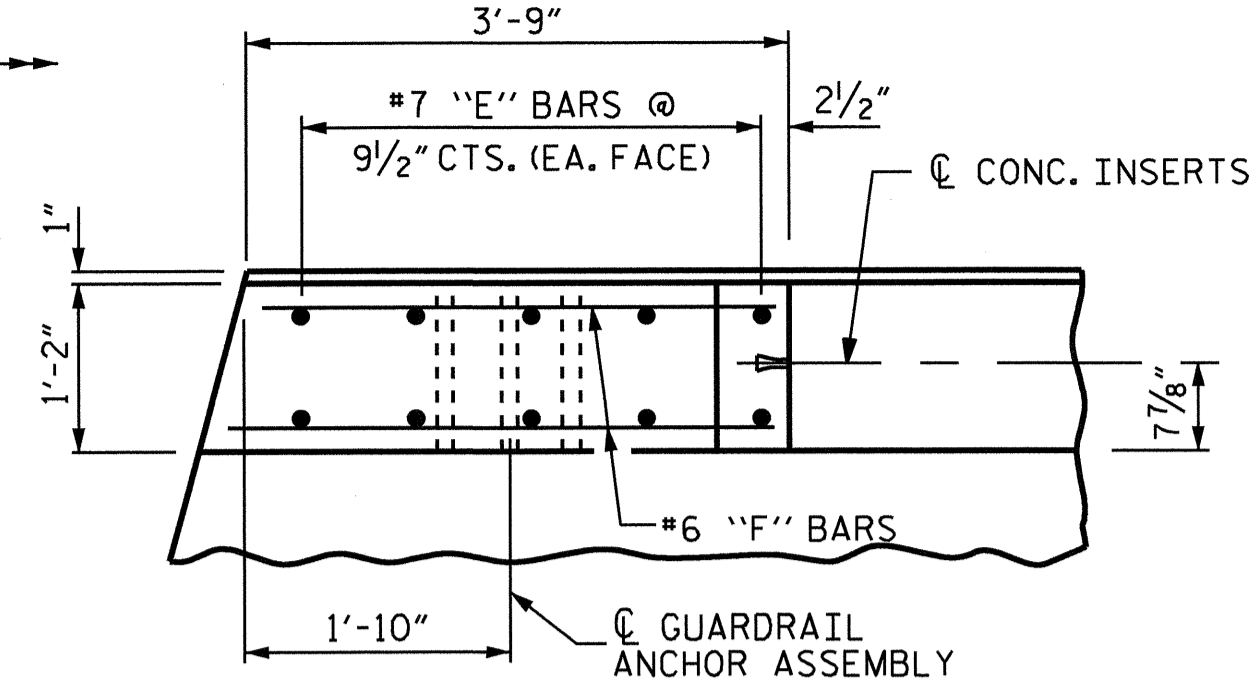
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 RAIL POST SPACINGS
 AND
 END OF RAIL DETAILS
 FOR ONE OR TWO BAR METAL RAILS

REVISIONS						SHEET NO. S-11 TOTAL SHEETS 19
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

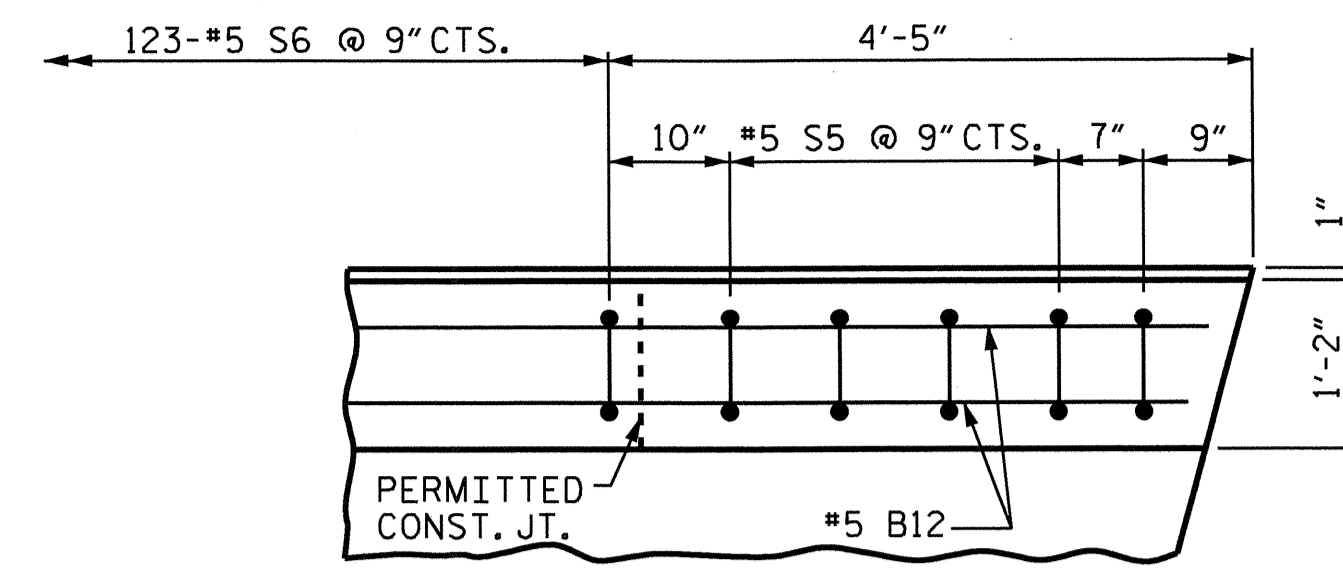
ASSEMBLED BY : R.P.PATEL	DATE : 4-25-12
CHECKED BY : S. WANCE	DATE : 07/12
DRAWN BY : FCJ 1/88	REV. 5/7/03 RWW/JTE
CHECKED BY : CRK 3/89	REV. 5/1/06 TLA/GM
	REV. 10/1/11 MAA/GM



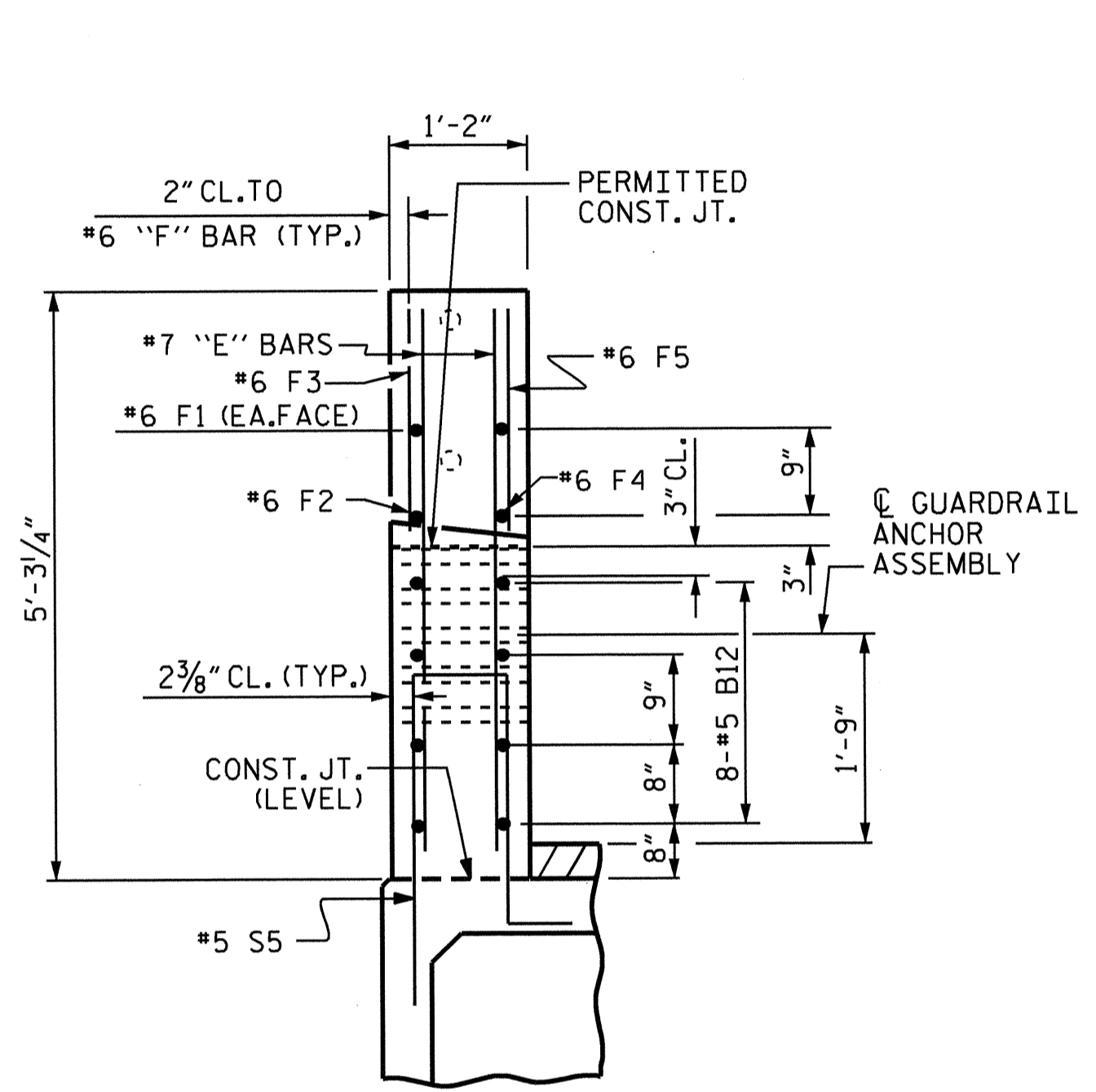
PLAN OF PARAPET
AT END BENT 1, LEFT SIDE



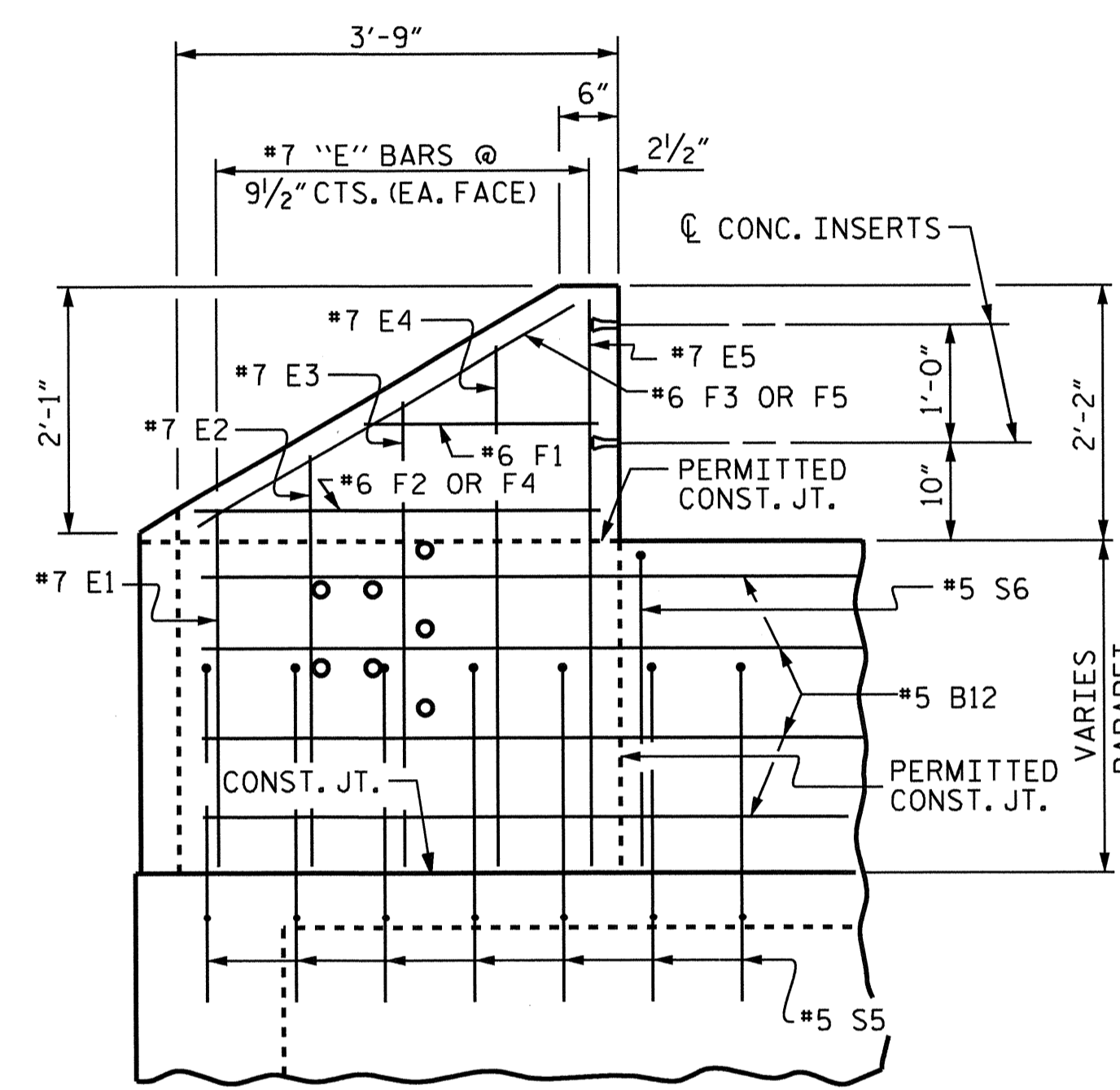
PLAN OF END POST



PLAN OF PARAPET
AT END BENT 2, LEFT SIDE



END VIEW



ELEVATION

PARAPET AND END POST FOR TWO BAR RAIL

NOTES:

ALL REINFORCING STEEL IN PARAPETS AND END POSTS SHALL BE EPOXY COATED.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

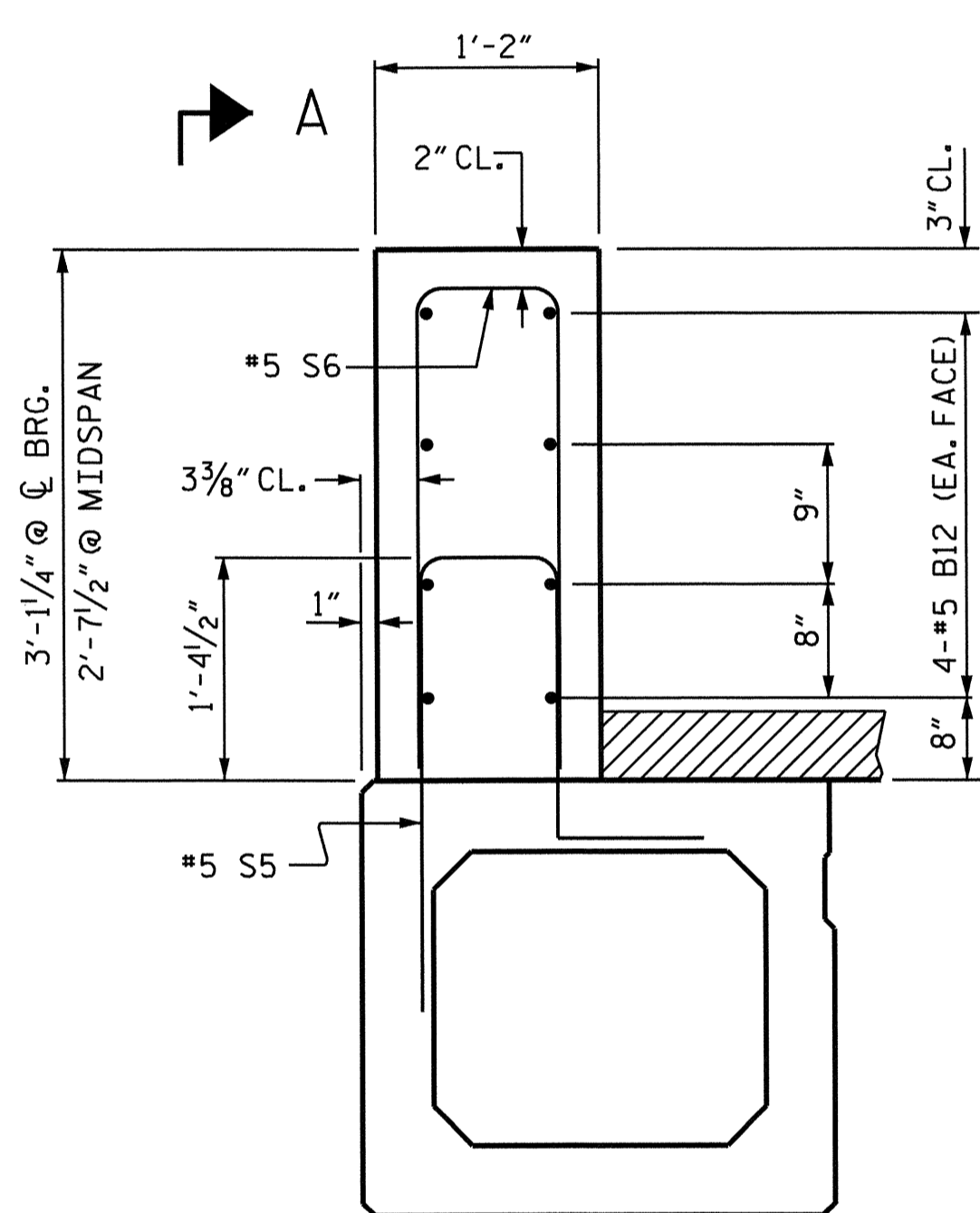
BAR TYPE		BILL OF MATERIAL				
		2 PARAPETS & 4 END POSTS				
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*B12	128	#5	STR	14'-2"	1891	
*E1	8	#7	STR	3'-1"	50	
*E2	8	#7	STR	3'-7"	59	
*E3	8	#7	STR	4'-1"	67	
*E4	8	#7	STR	4'-7"	75	
*E5	8	#7	STR	4'-11"	80	
*F1	8	#6	STR	1'-10"	22	
*F2	4	#6	STR	2'-11"	18	
*F3	4	#6	STR	3'-7"	22	
*F4	4	#6	STR	3'-1"	19	
*F5	4	#6	STR	3'-9"	23	
*S6	246	#5	10	5'-8"	1454	
*EPOXY COATED REINFORCING STEEL LBS.					3780	
CLASS AA CONCRETE					CU.YDS. 25.5	
TOTAL LIN. FT. OF CONCRETE PARAPET					200.0	

BAR DIMENSIONS ARE OUT TO OUT

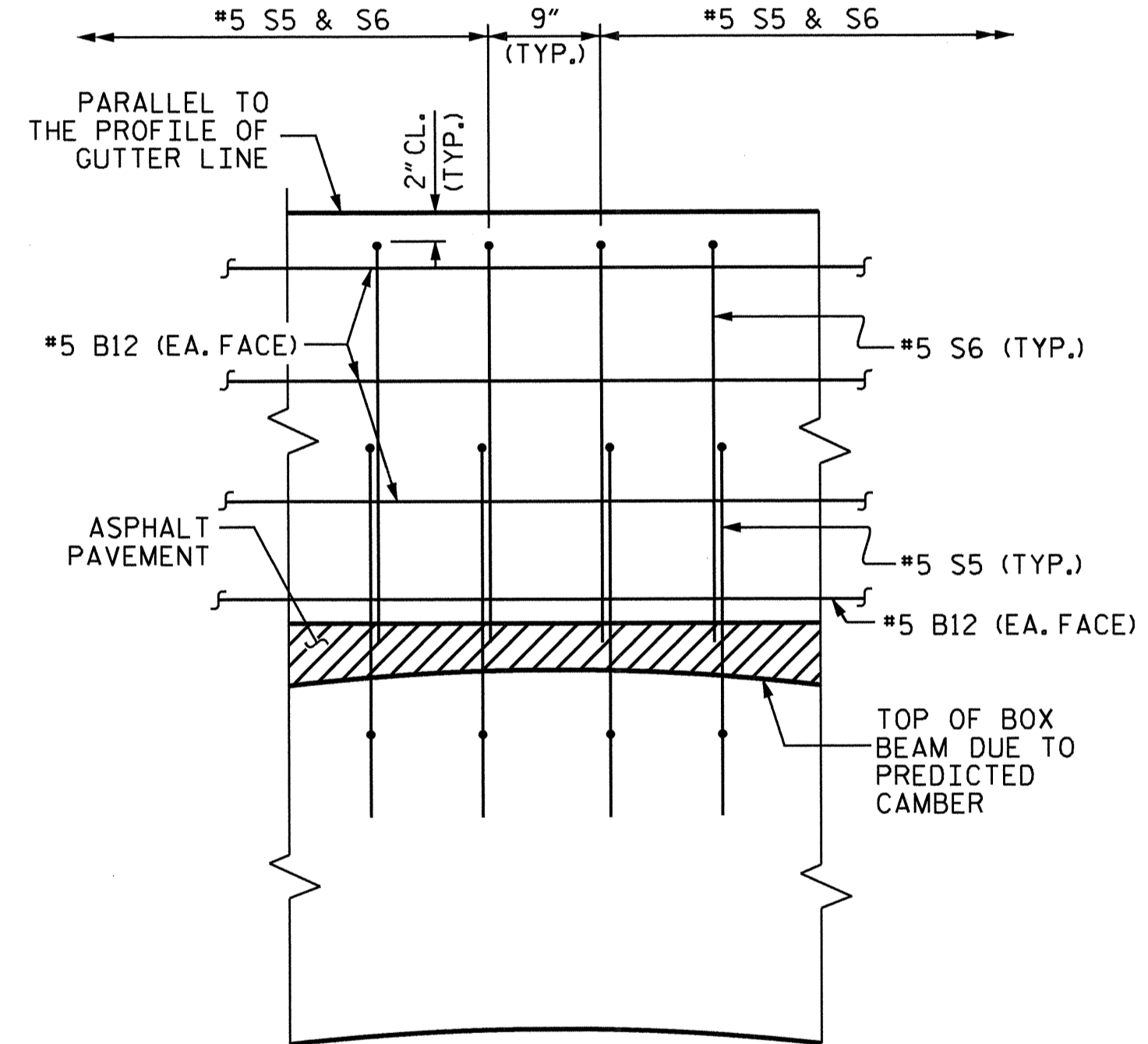
SPLICE LENGTH CHART

BAR SIZE	EPOXY COATED
#5	3'-5"

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

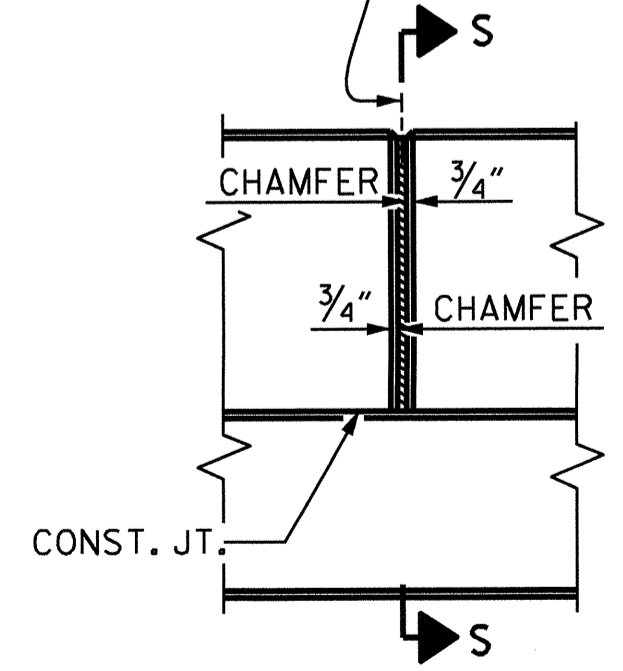


SECTION THRU PARAPET
SHOWN AT BEARING

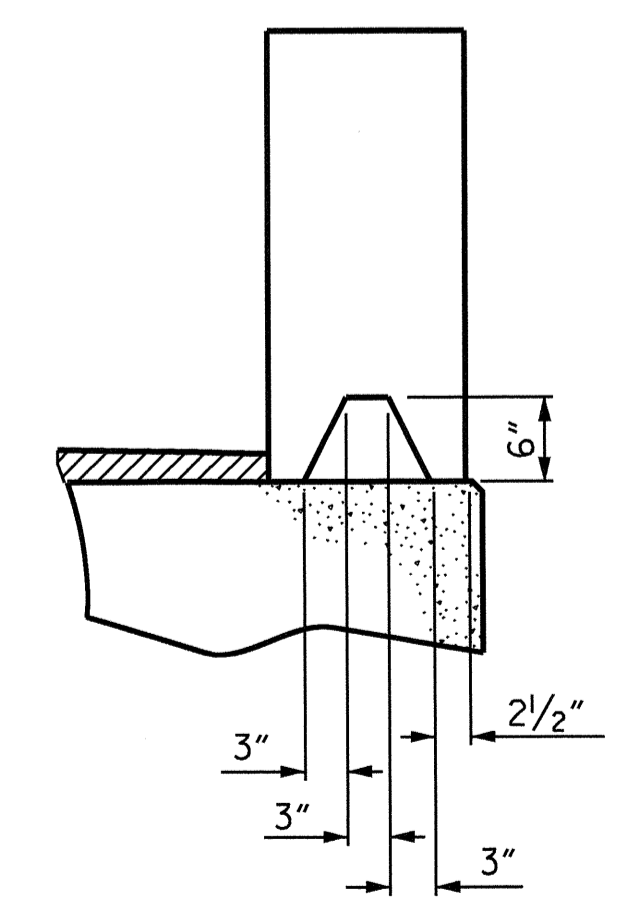


VIEW A-A

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



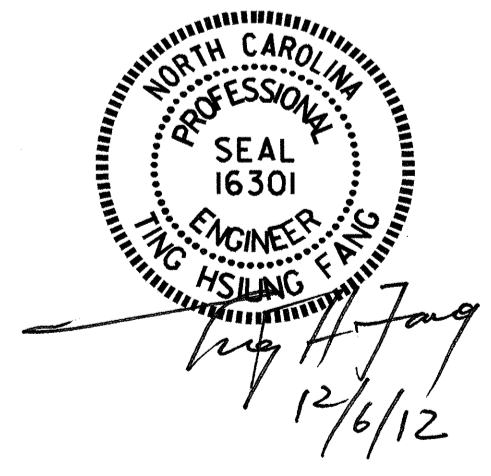
ELEVATION AT EXPANSION JOINTS



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

GUTTERLINE ASPHALT THICKNESS & PARAPET HEIGHT		
	ASPHALT OVERLAY THICKNESS @ MID-SPAN	PARAPET HEIGHT @ MID-SPAN
99'-10" UNITS	1 1/2" *	2'-7 1/2"

* THE THICKNESS AT MIDSPAN REFLECTS THE EFFECTS OF A 3" VERTICAL CURVE ORDINATE.



PROJECT NO. B-4796
RANDOLPH COUNTY
STATION: 17+94.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						STANDARD	
CONCRETE PARAPETS AND END POSTS						SHEET NO. S-12	
REVISIONS						TOTAL SHEETS	
NO.	BY:	DATE:	NO.	BY:	DATE:		
1			3			19	
2			4				

ASSEMBLED BY : R.P.PATEL	DATE : 4-19-12
CHECKED BY : S.WANCE	DATE : 07/12
DRAWN BY : TLA 5/05	ADDED 7/11/05R
CHECKED BY : GM 6/05	REV. 5/1/06RR TLA/GM
	REV. 10/1/11 MAA/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.

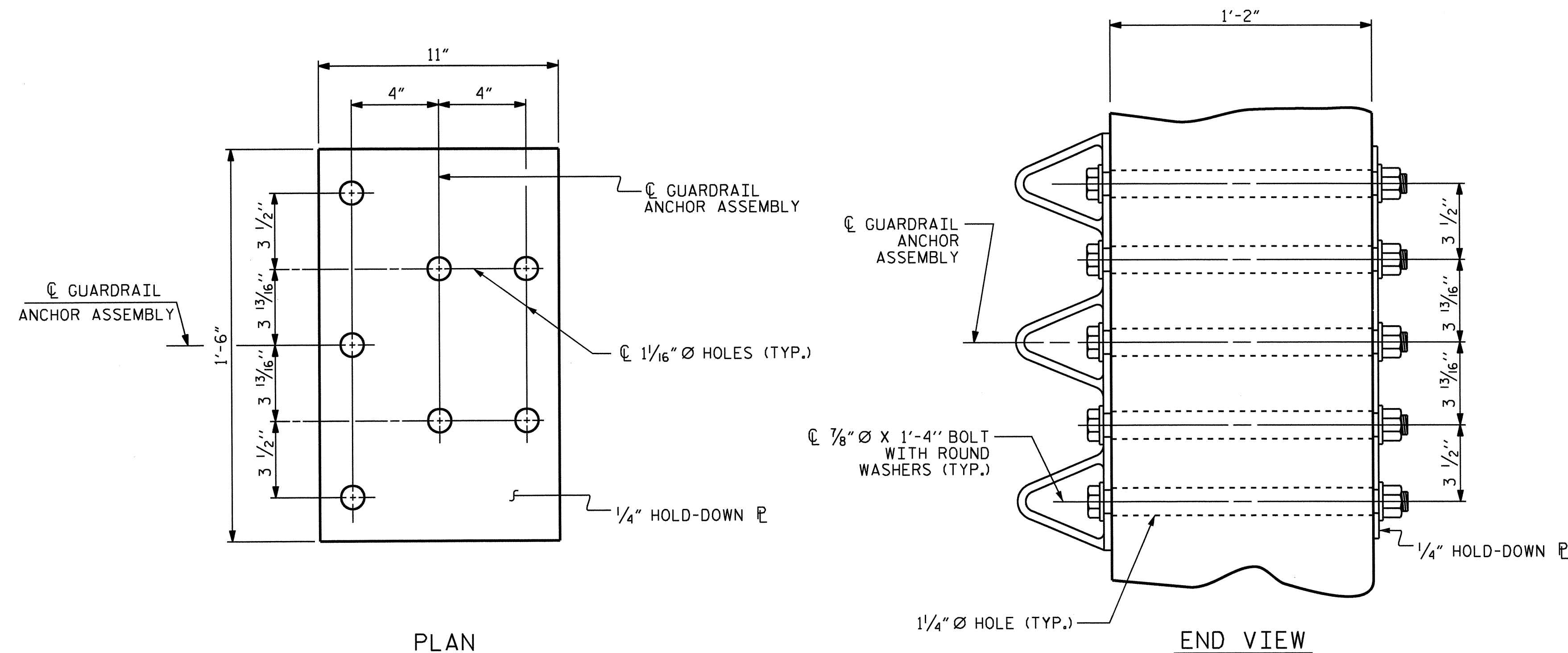
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

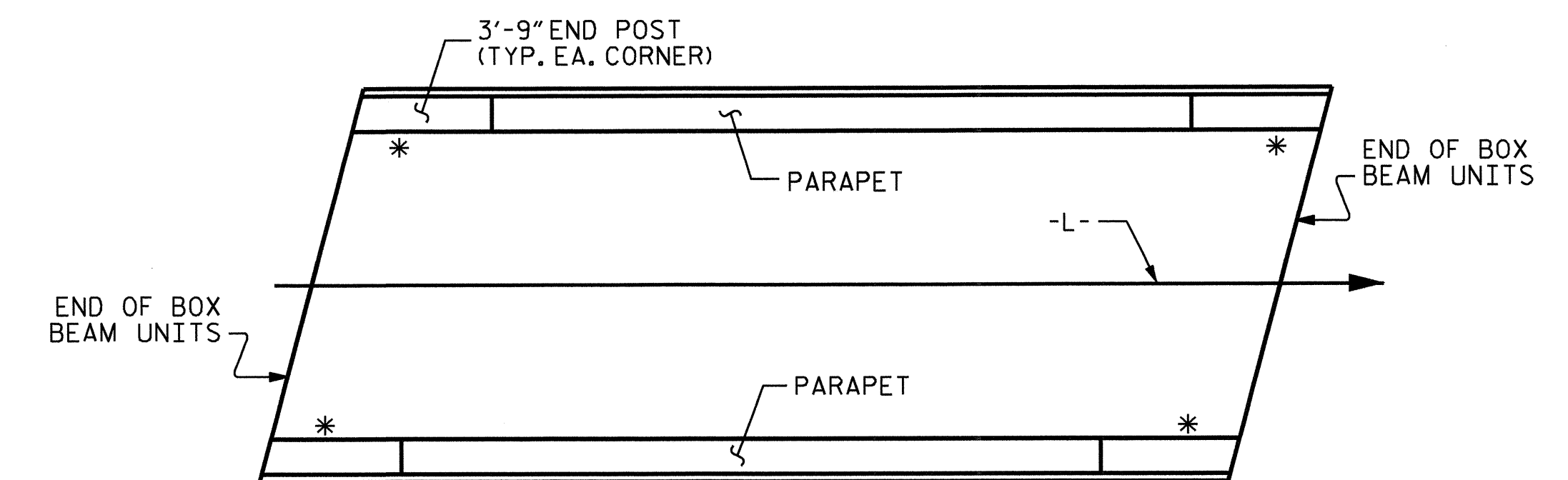
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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.

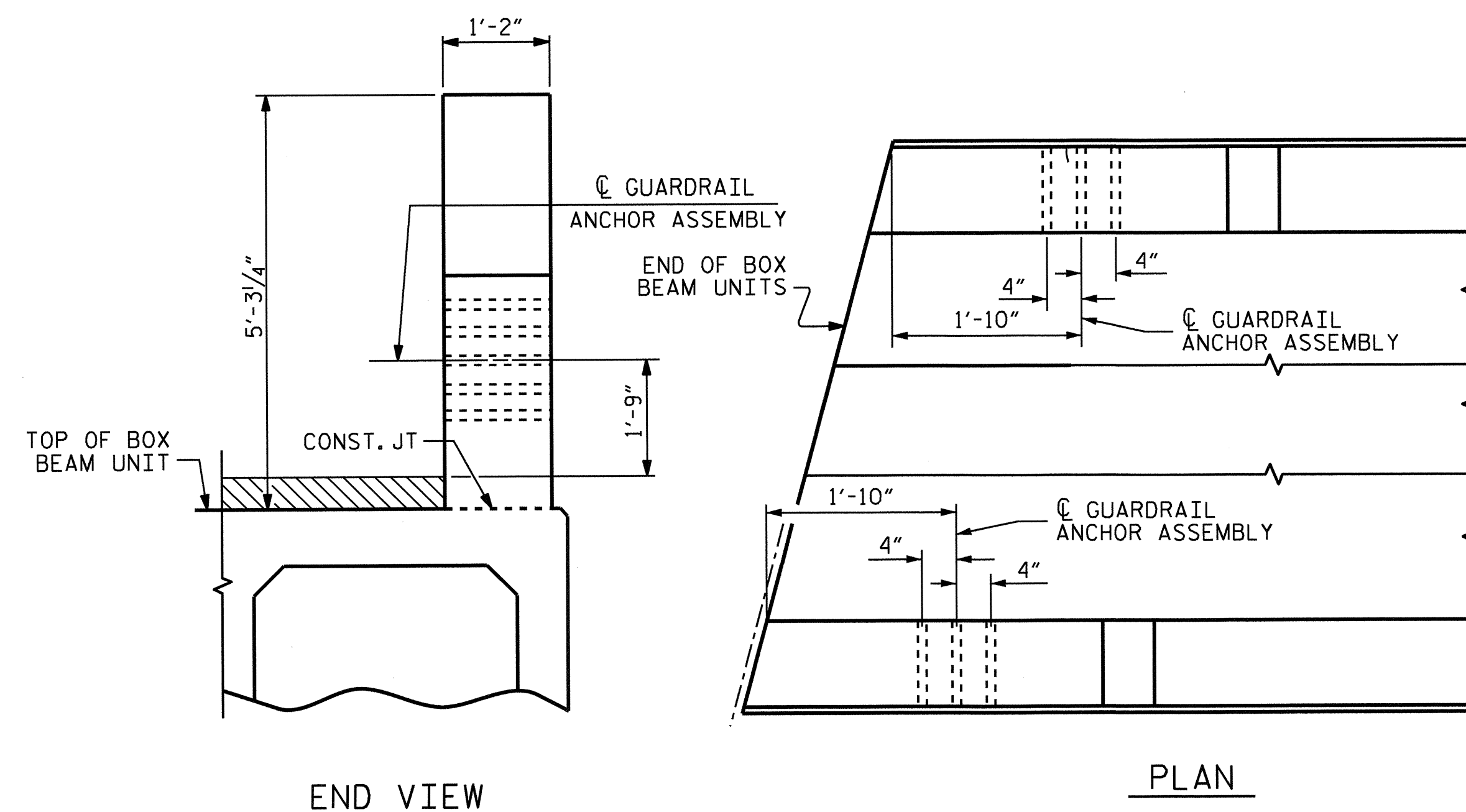


GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT

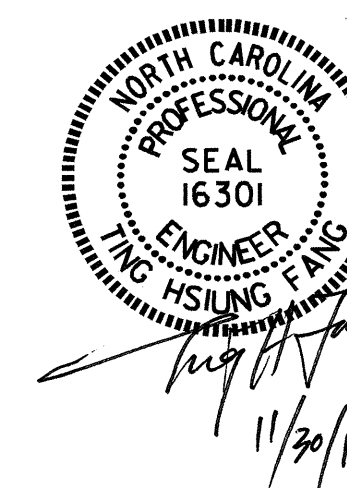
* LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END POST

END BENT 1 SHOWN, END BENT 2 SIMILAR

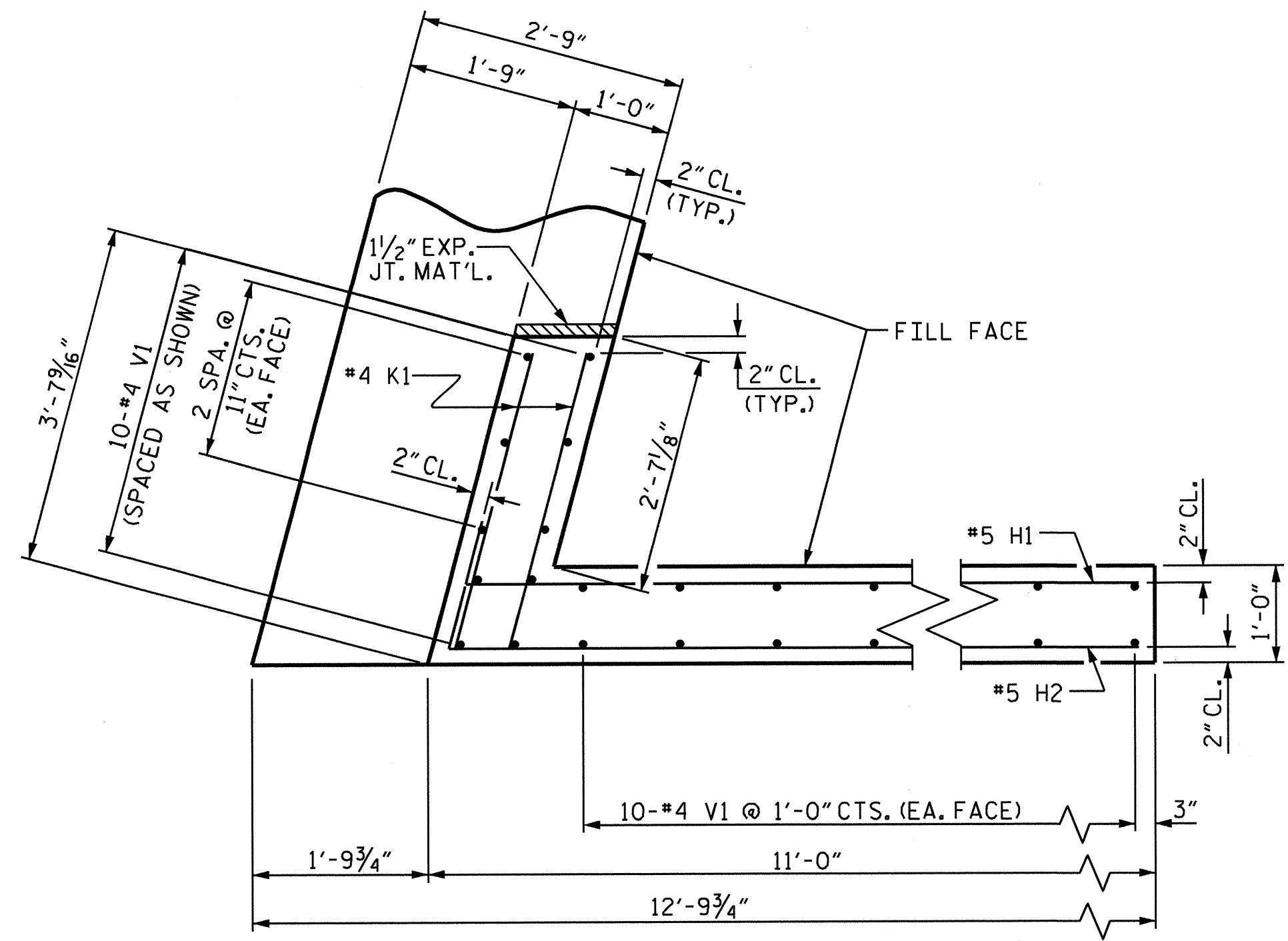
PROJECT NO. B-4796
RANDOLPH COUNTY
 STATION: 17+94.00 -L-



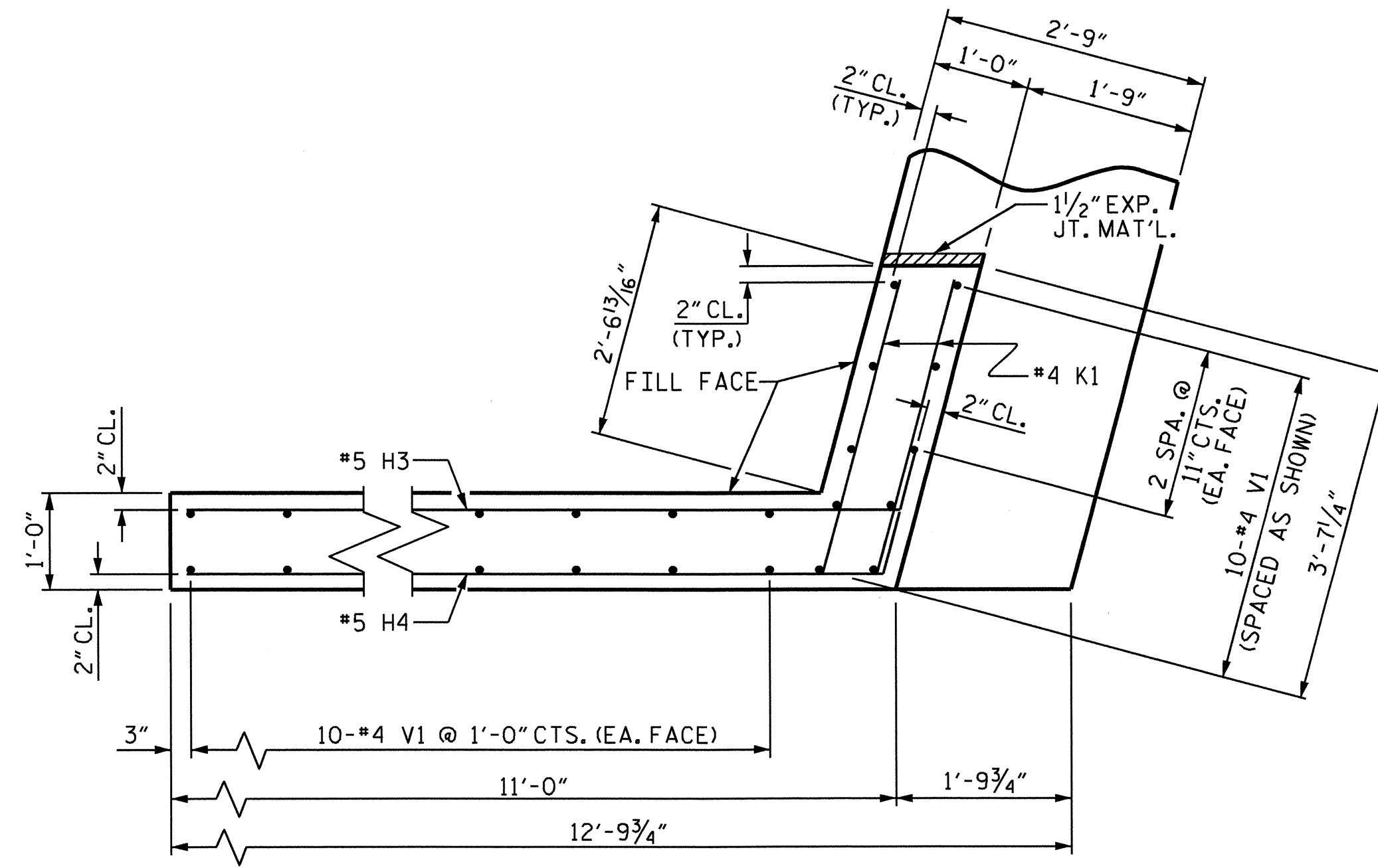
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 DETAILS
 FOR METAL RAILS

ASSEMBLED BY : RAMAN PATEL	DATE : 04/12
CHECKED BY : S. WANCE	DATE : 07/12
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

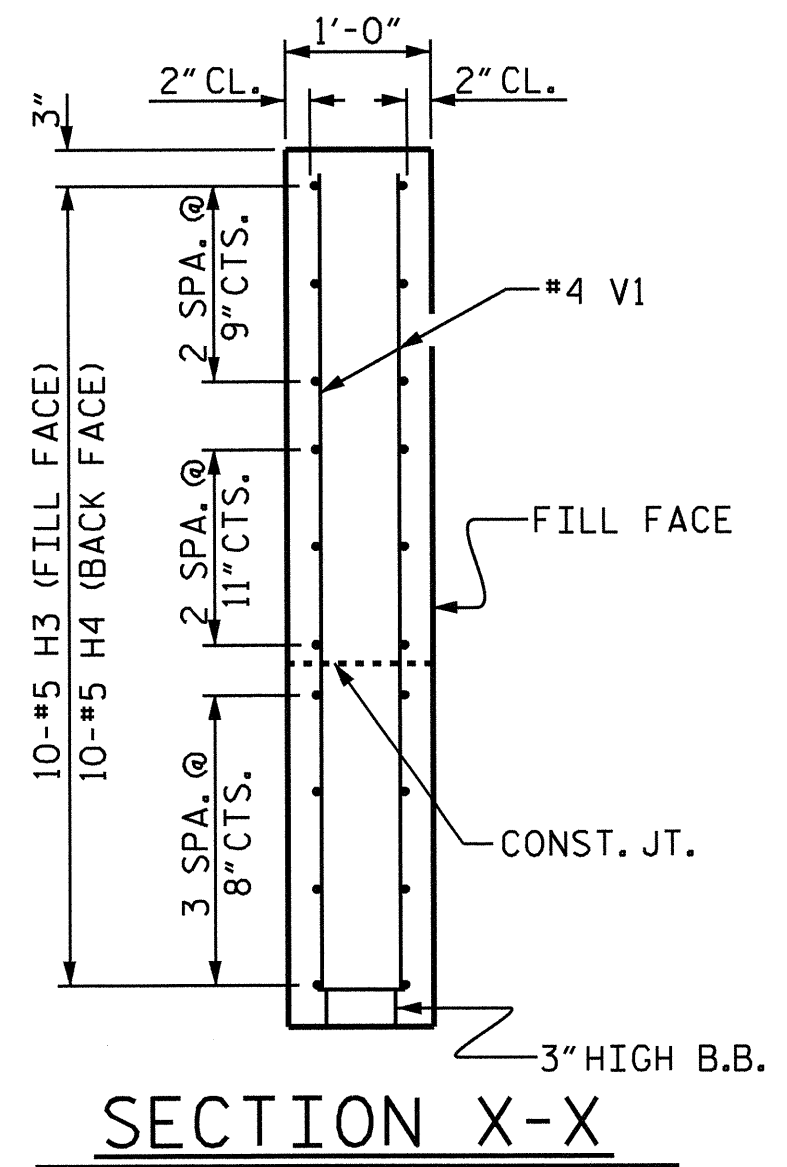
REVISIONS						SHEET NO. S-13
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			19



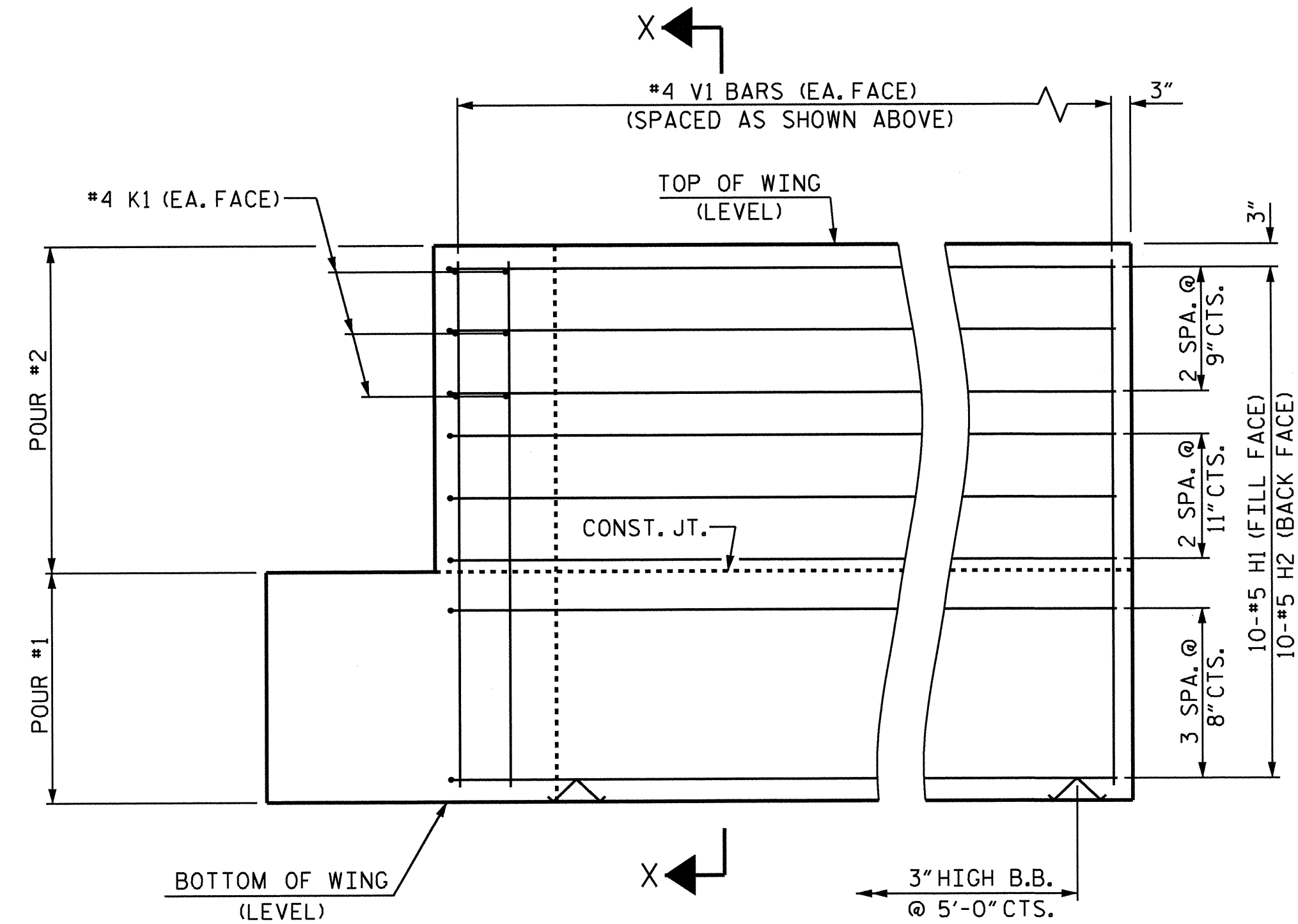
PLAN OF WING (W1)



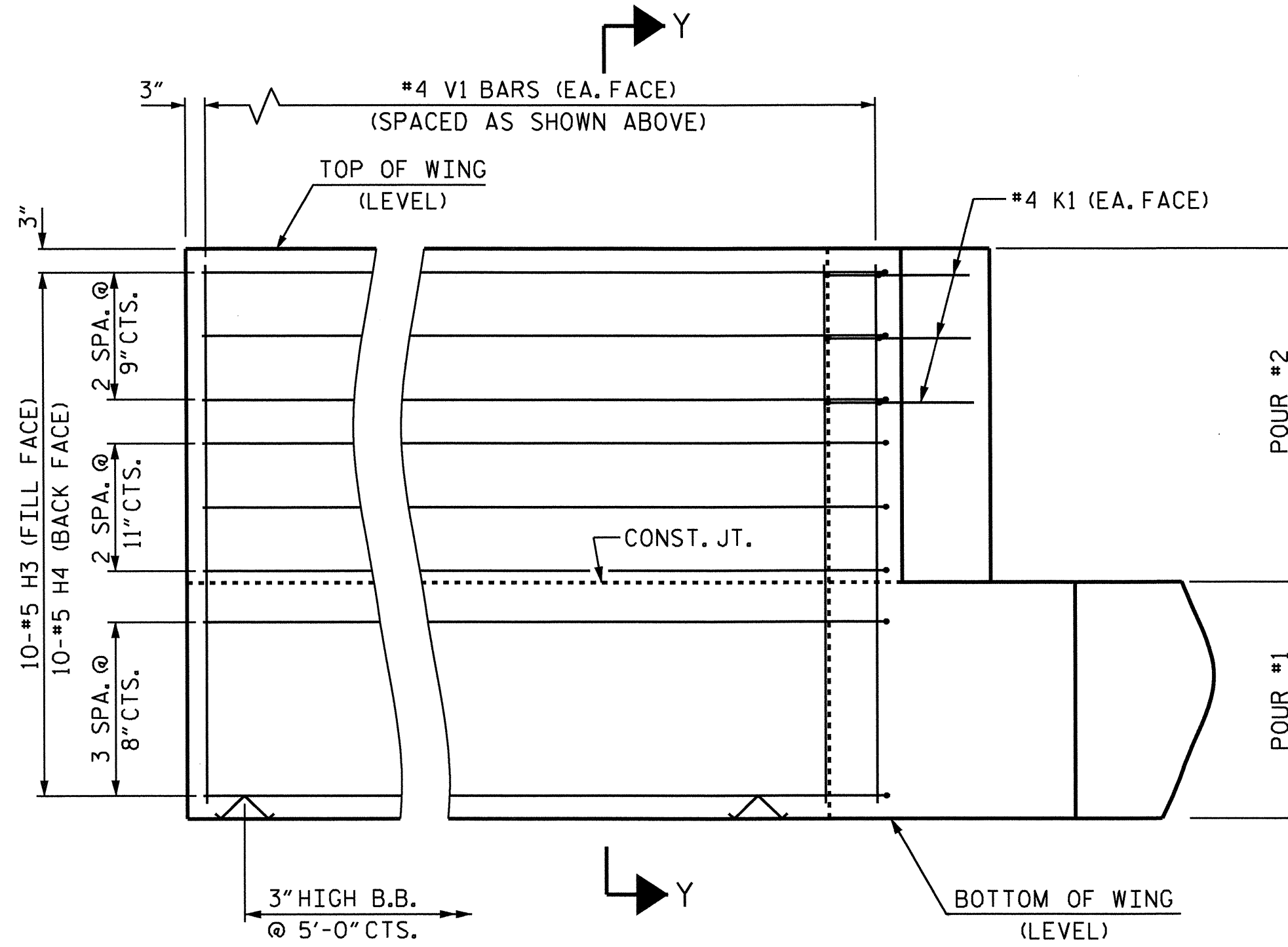
PLAN OF WING (W2)



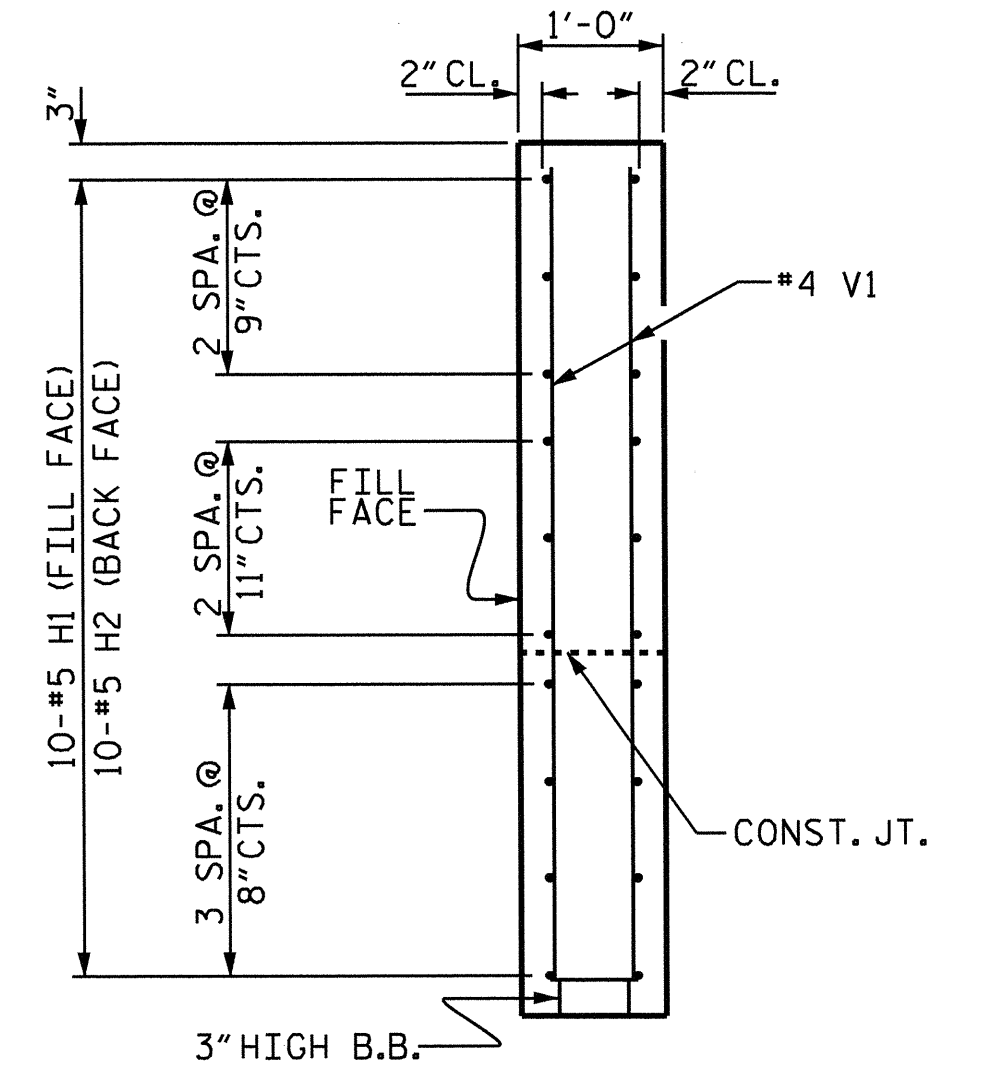
SECTION X-X



ELEVATION OF WING (W1)



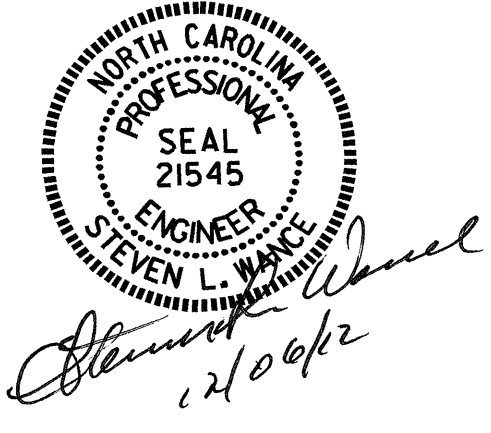
ELEVATION OF WING (W2)



SECTION Y-Y

WING DETAILS

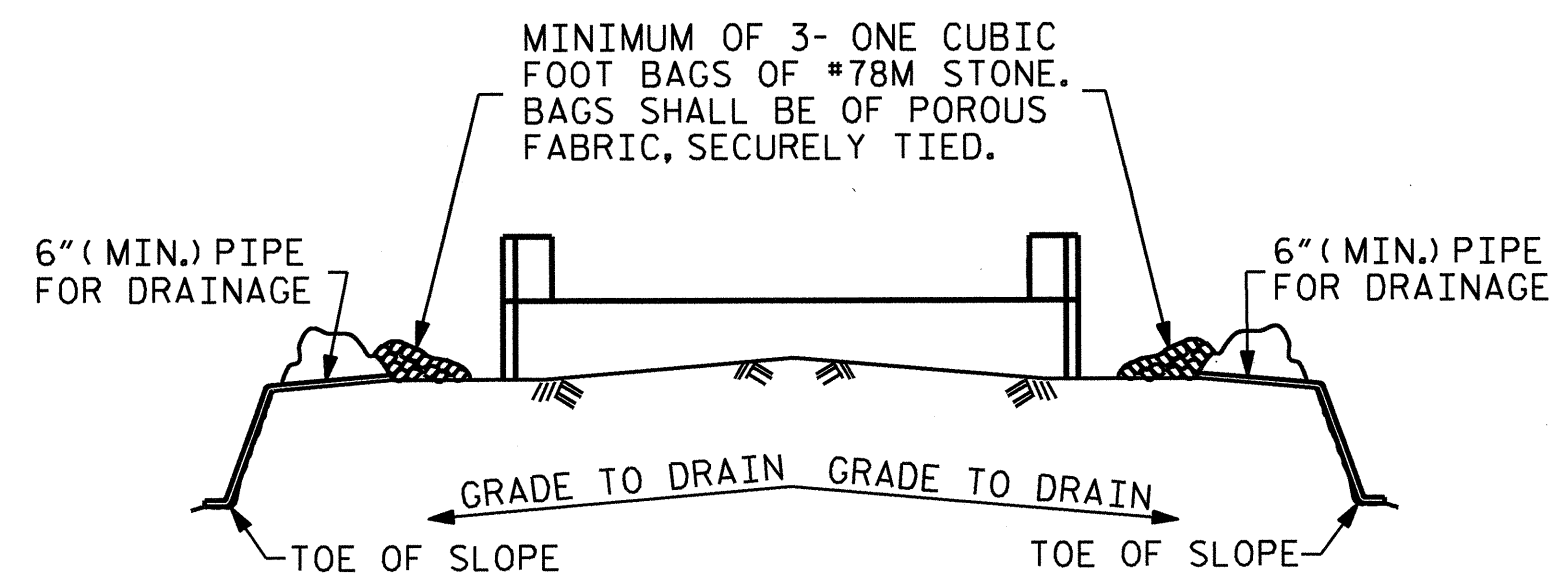
PROJECT NO. BD-5108T
RANDOLPH COUNTY
 STATION: 12+84.00 -L-
 SHEET 3 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT
 WING DETAILS

ASSEMBLED BY : S. WANCE PE DATE : 02/12
 CHECKED BY : T. H. FANG DATE : 03/12
 DRAWN BY : WJH 12/11
 CHECKED BY : AAC 12/11

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			19

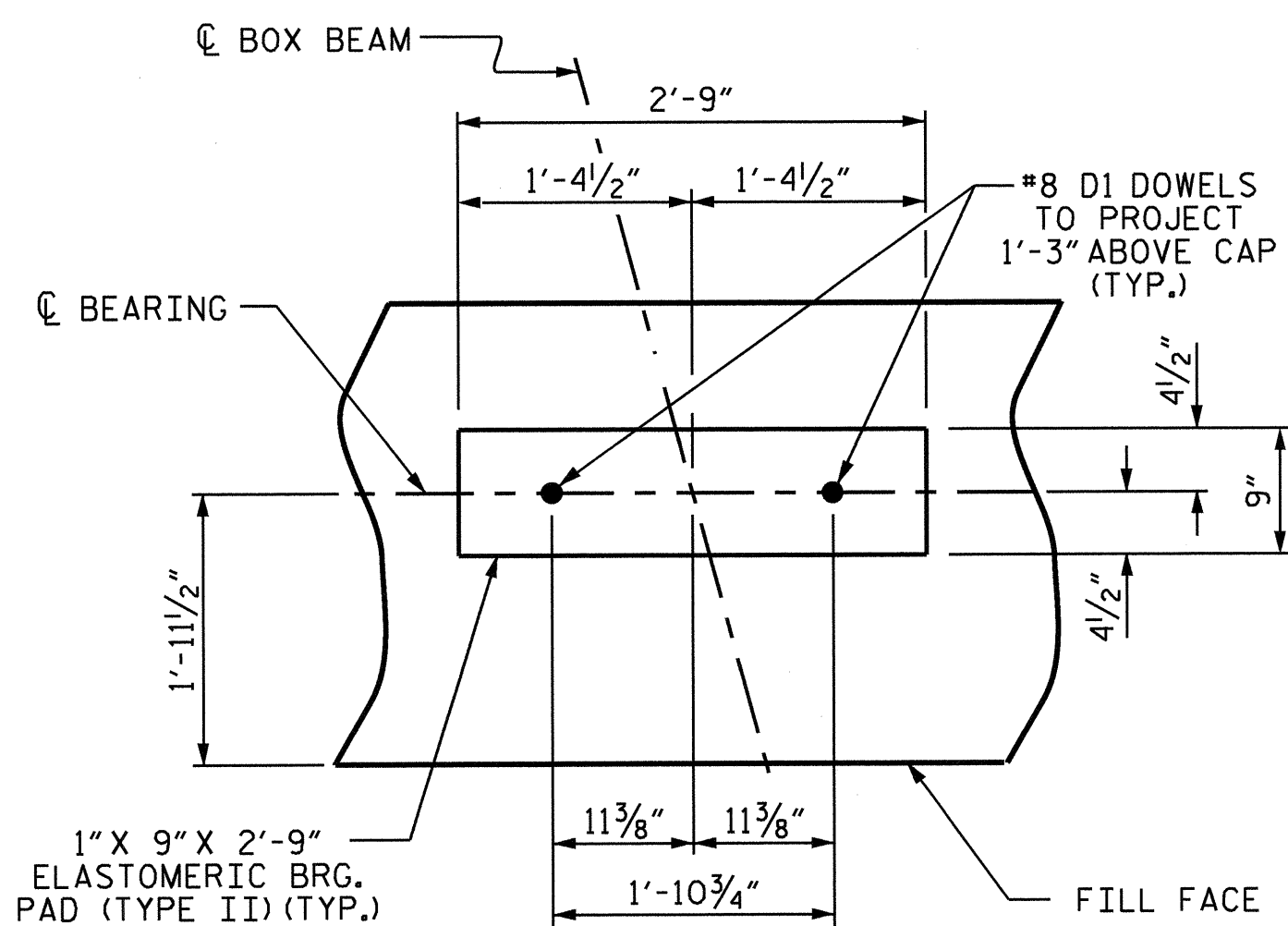


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

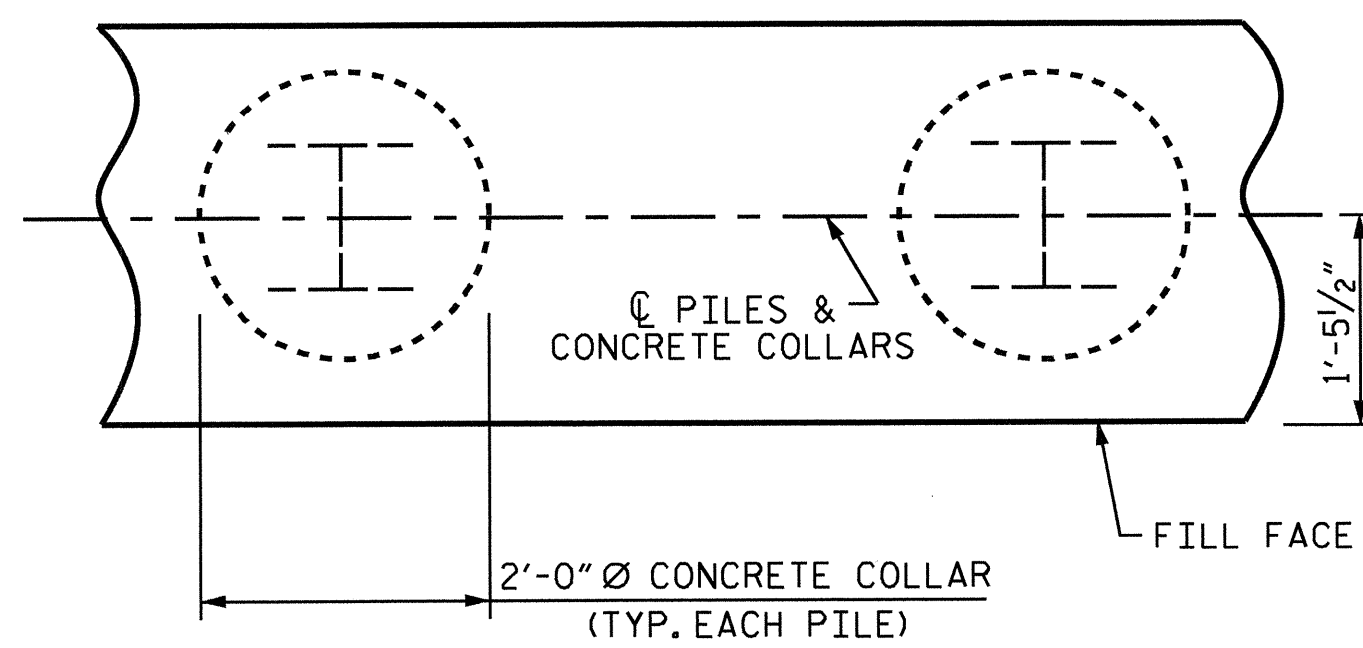
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



DETAIL "A"

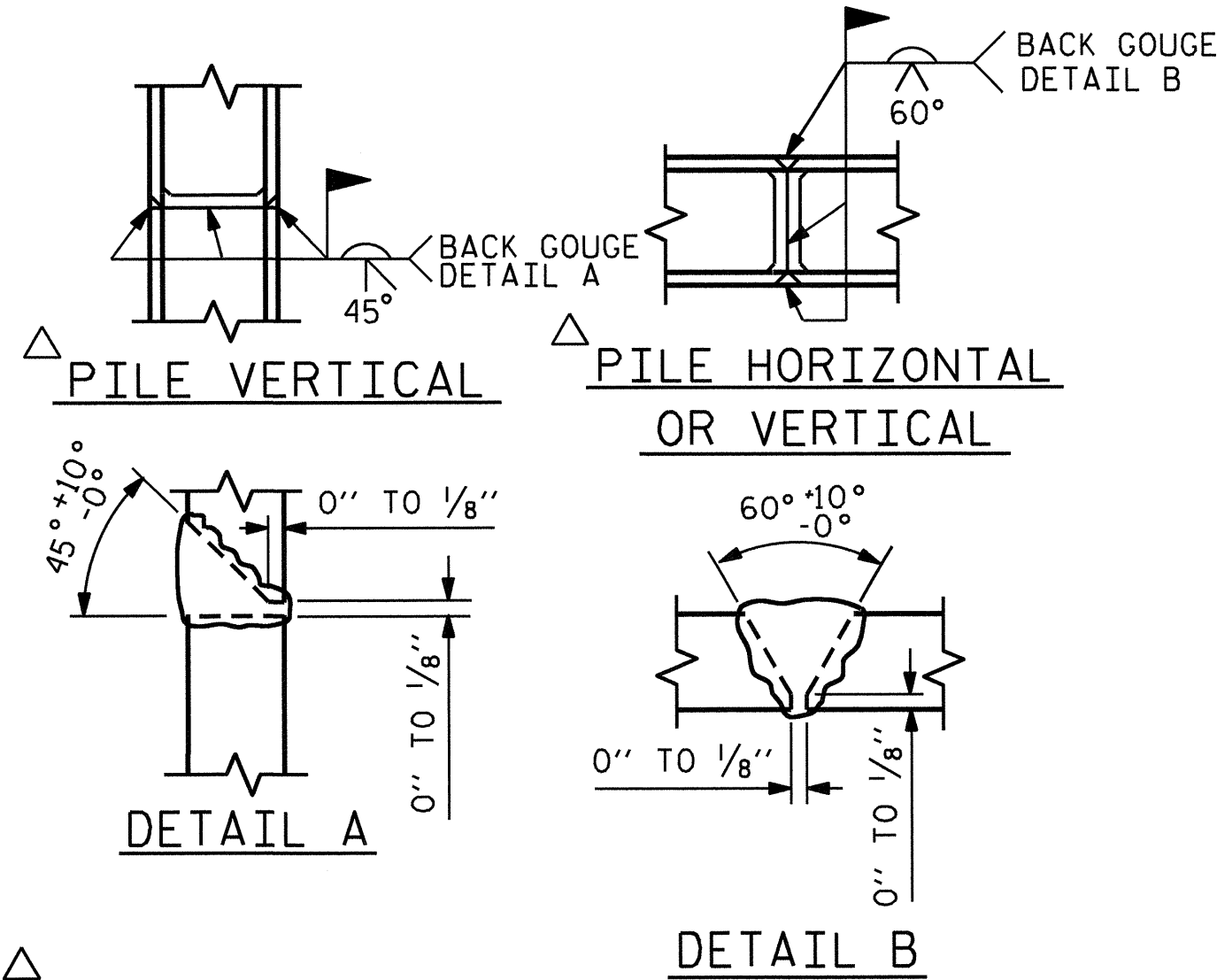
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



PLAN

CORROSION PROTECTION FOR STEEL PILES DETAIL

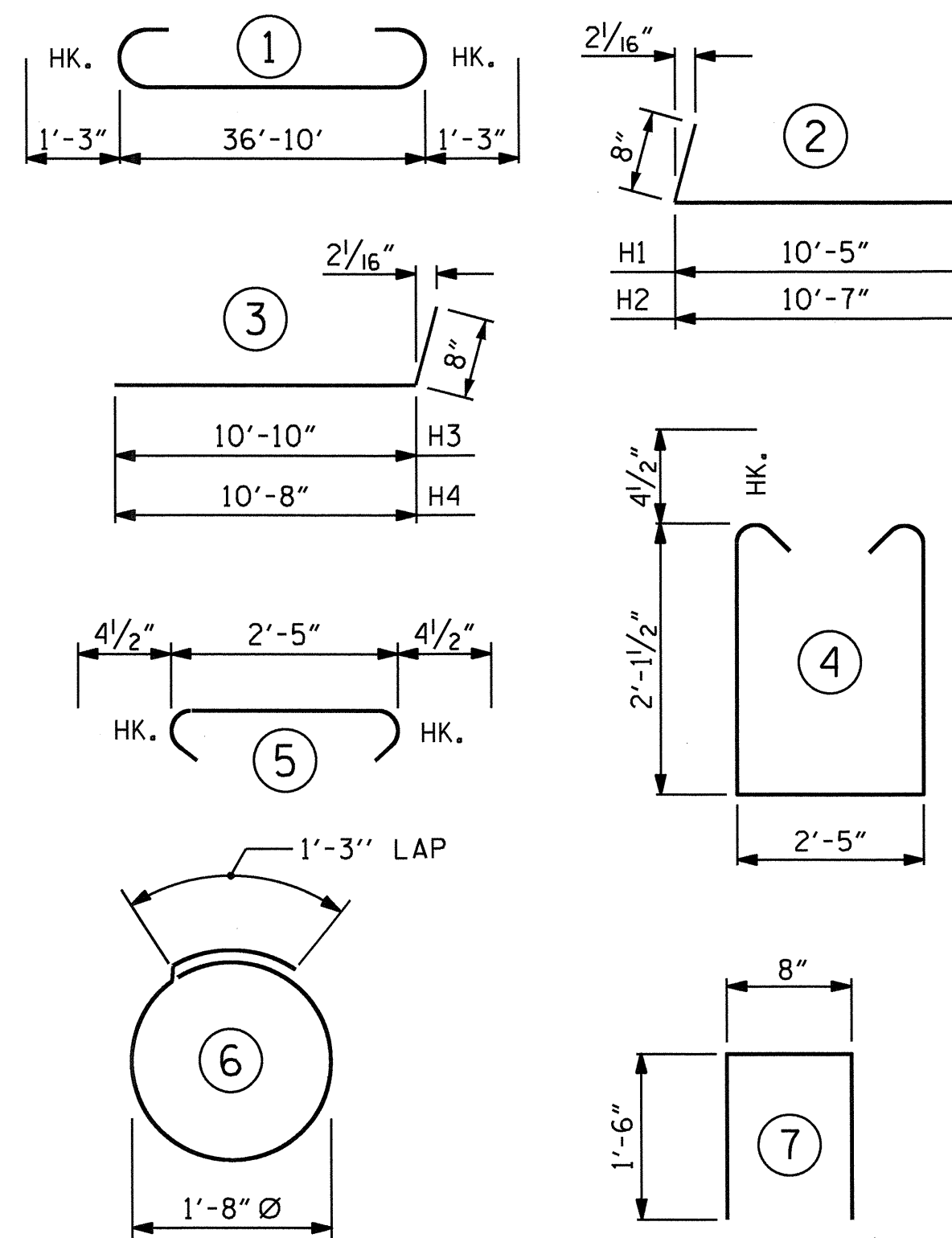
END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION



PILE SPLICE DETAILS

POSITION OF PILE DURING WELDING.

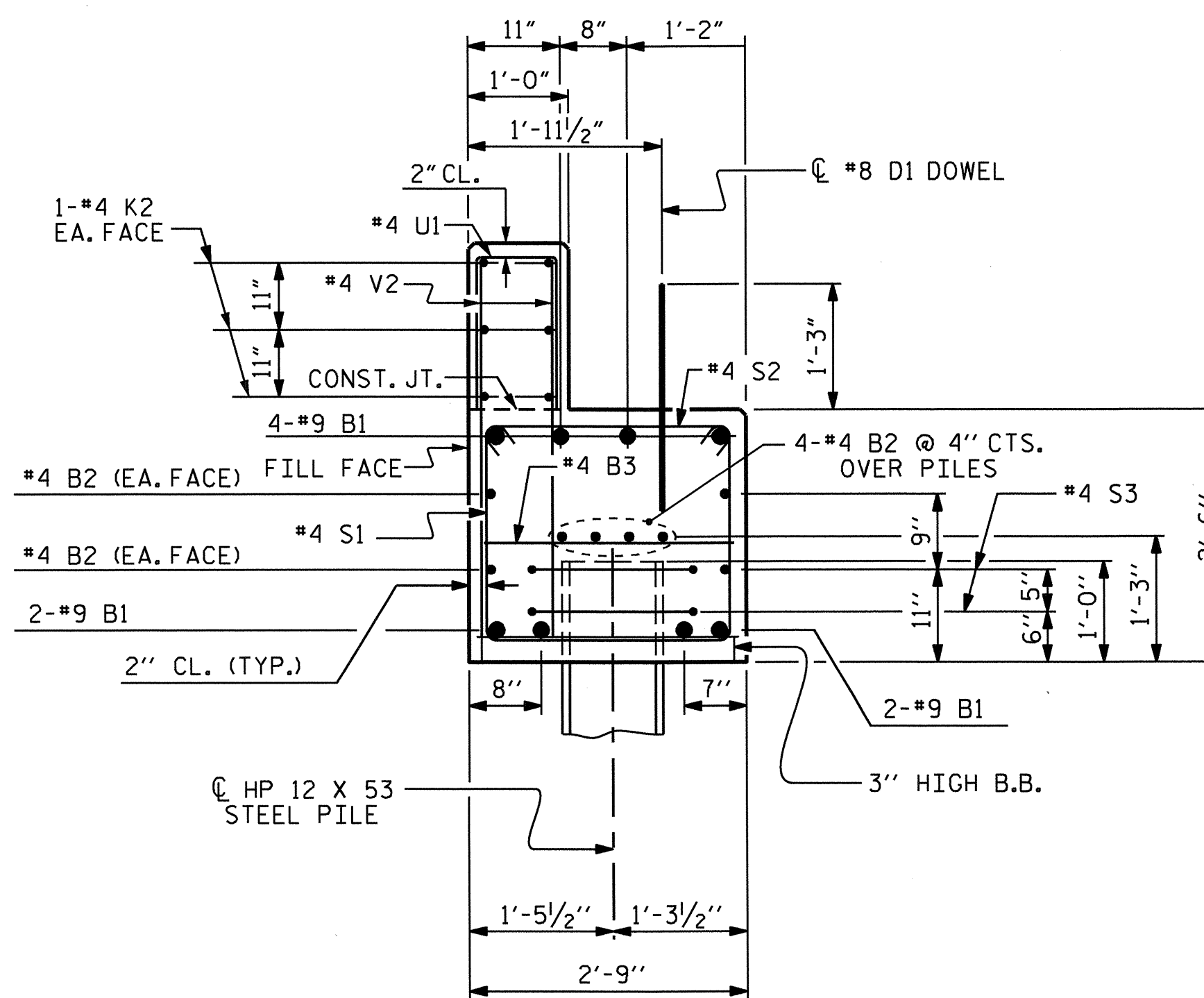
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

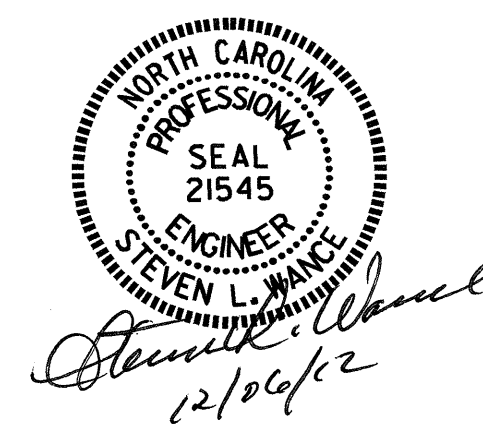
END BENT 1					END BENT 2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	39'-4"	1070	B1	8	#9	1	39'-4"	1070
B2	16	#4	STR	19'-9"	211	B2	16	#4	STR	19'-9"	211
B3	10	#4	STR	2'-5"	16	B3	10	#4	STR	2'-5"	16
D1	20	#8	STR	2'-3"	120	D1	20	#8	STR	2'-3"	120
H1	10	#5	2	11'-1"	116	H1	10	#5	2	11'-1"	116
H2	10	#5	2	11'-3"	117	H2	10	#5	2	11'-3"	117
H3	10	#5	3	11'-6"	120	H3	10	#5	3	11'-6"	120
H4	10	#5	3	11'-4"	118	H4	10	#5	3	11'-4"	118
K1	12	#4	STR	3'-3"	26	K1	12	#4	STR	3'-3"	26
K2	12	#4	STR	19'-9"	158	K2	12	#4	STR	19'-9"	158
S1	62	#4	4	7'-5"	307	S1	42	#4	4	7'-5"	208
S2	62	#4	5	3'-2"	131	S2	42	#4	5	3'-2"	89
S3	12	#4	6	6'-6"	52	S3	16	#4	6	6'-6"	69
U1	31	#4	7	3'-8"	76	U1	31	#4	7	3'-8"	76
V1	60	#4	STR	6'-8"	267	V1	60	#4	STR	6'-8"	267
V2	62	#4	STR	4'-4"	179	V2	62	#4	STR	4'-4"	179
REINFORCING STEEL					3084 LBS.	REINFORCING STEEL					2960 LBS.
CLASS A CONCRETE BREAKDOWN						CLASS A CONCRETE BREAKDOWN					
POUR #1	CAP, LOWER PART OF WINGS & COLLARS				12.4 C.Y.	POUR #1	CAP, LOWER PART OF WINGS & COLLARS				12.8 C.Y.
POUR #2	BACKWALL & UPPER PART OF WINGS				6.5 C.Y.	POUR #2	BACKWALL & UPPER PART OF WINGS				6.7 C.Y.
TOTAL CLASS A CONCRETE					18.9 C.Y.	TOTAL CLASS A CONCRETE					19.5 C.Y.
HP 12 X 53 STEEL PILES						HP 12 X 53 STEEL PILES					
NO: 6					LIN. FT.= 180	NO: 8					LIN. FT.= 80
						STEEL PILE POINTS					EA. = 8



SECTION A-A

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

NOTE TO CONTRACTOR:
THE FILL FACE TO CL OF BEARING DIMENSION IS 1'-11 1/2" ON BOTH END BENTS.



PROJECT NO. B-4796
RANDOLPH COUNTY
 STATION: 17+94.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

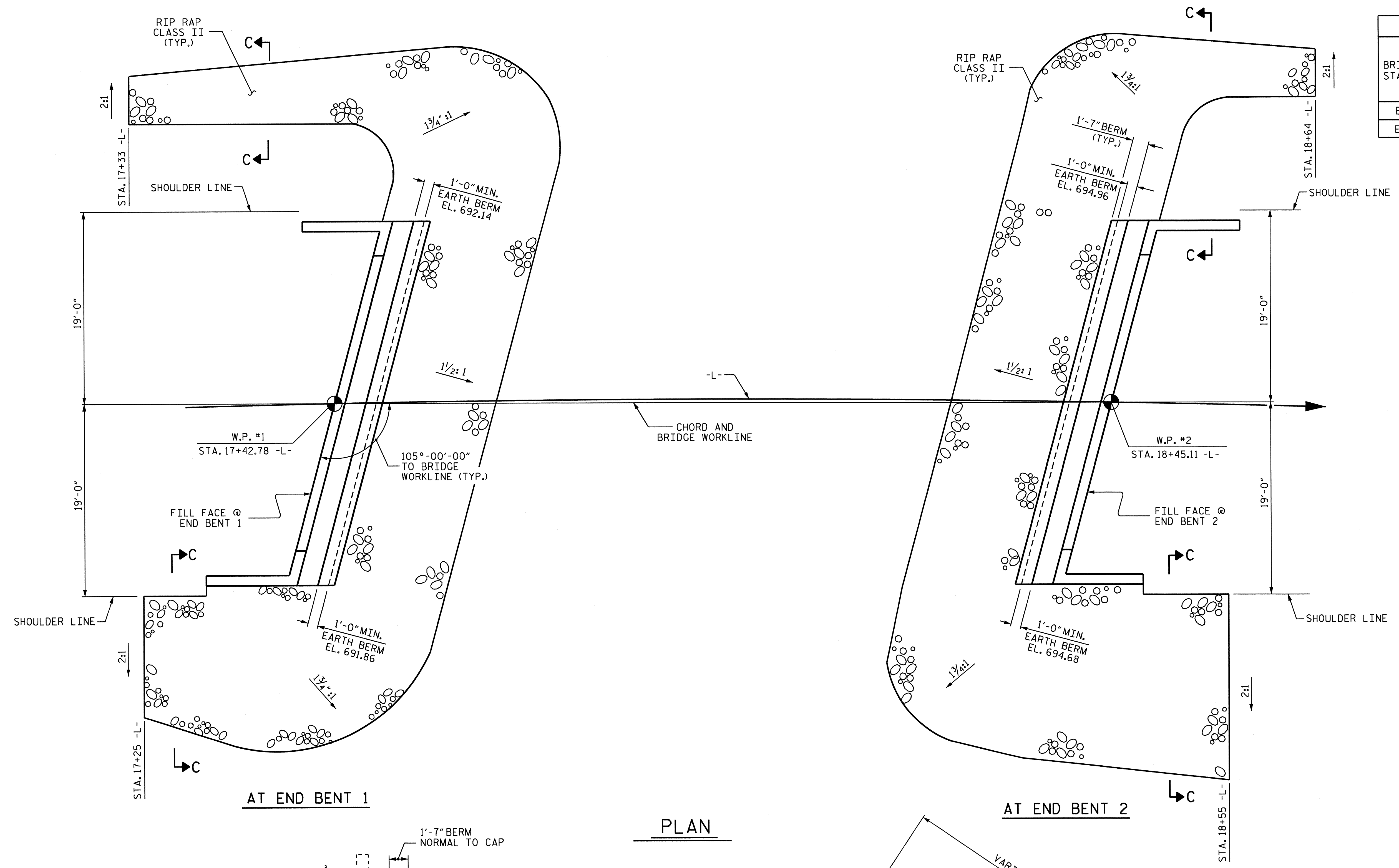
SUBSTRUCTURE

END BENTS 1 & 2
 DETAILS

REVISIONS						SHEET NO. S-17
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 19
2			4			

ASSEMBLED BY : R.P.PATEL	DATE : 4/12
CHECKED BY : S. WANCE	DATE : 07/12
DRAWN BY : WJH 12/11	
CHECKED BY : AAC 12/11	

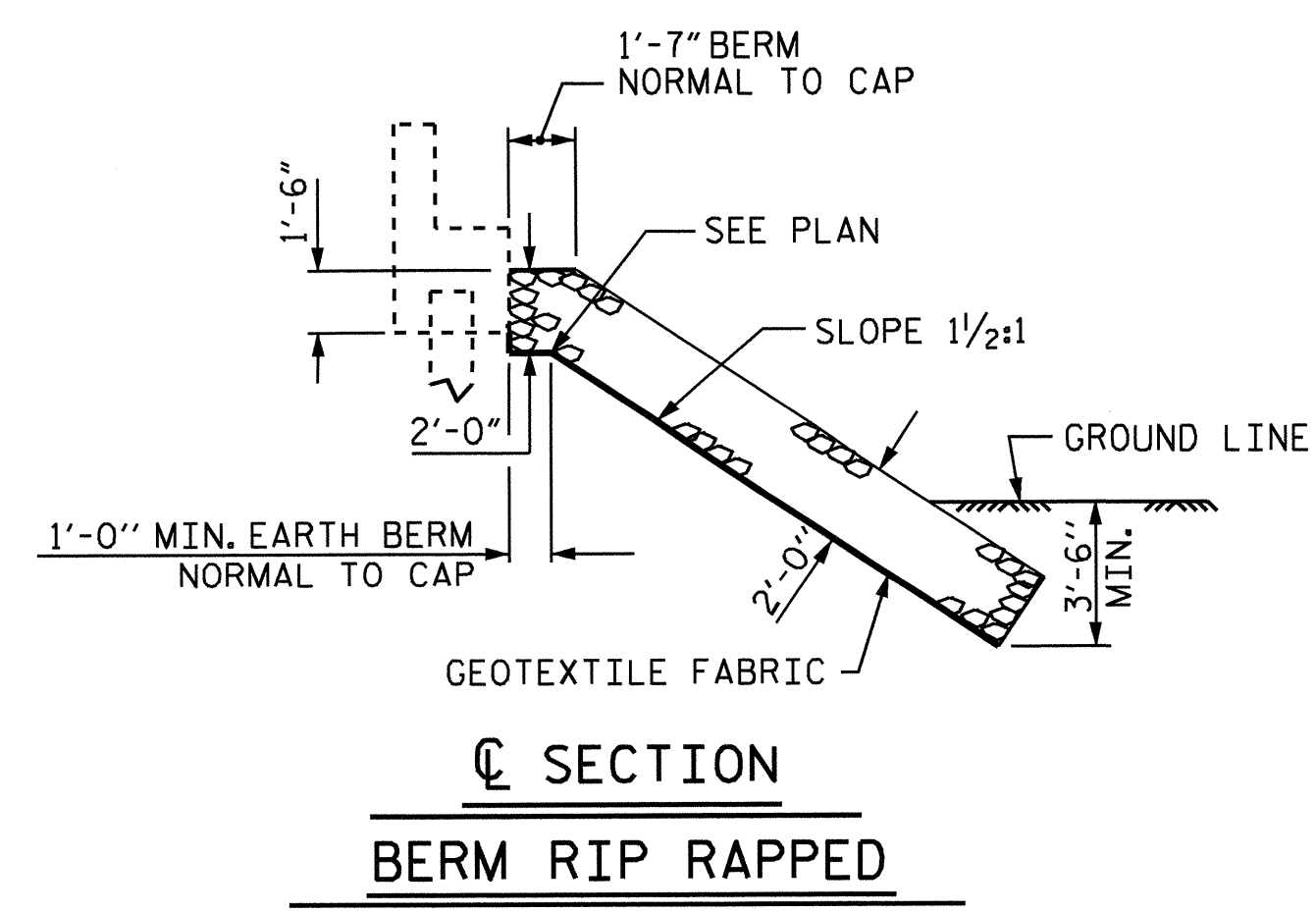
ESTIMATED QUANTITIES		
BRIDGE @ STA. 17+94.00 -L-	CLASS II RIP RAP (2'-0" THICK)	GEOTEXTILE FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	125	140
END BENT 2	135	150



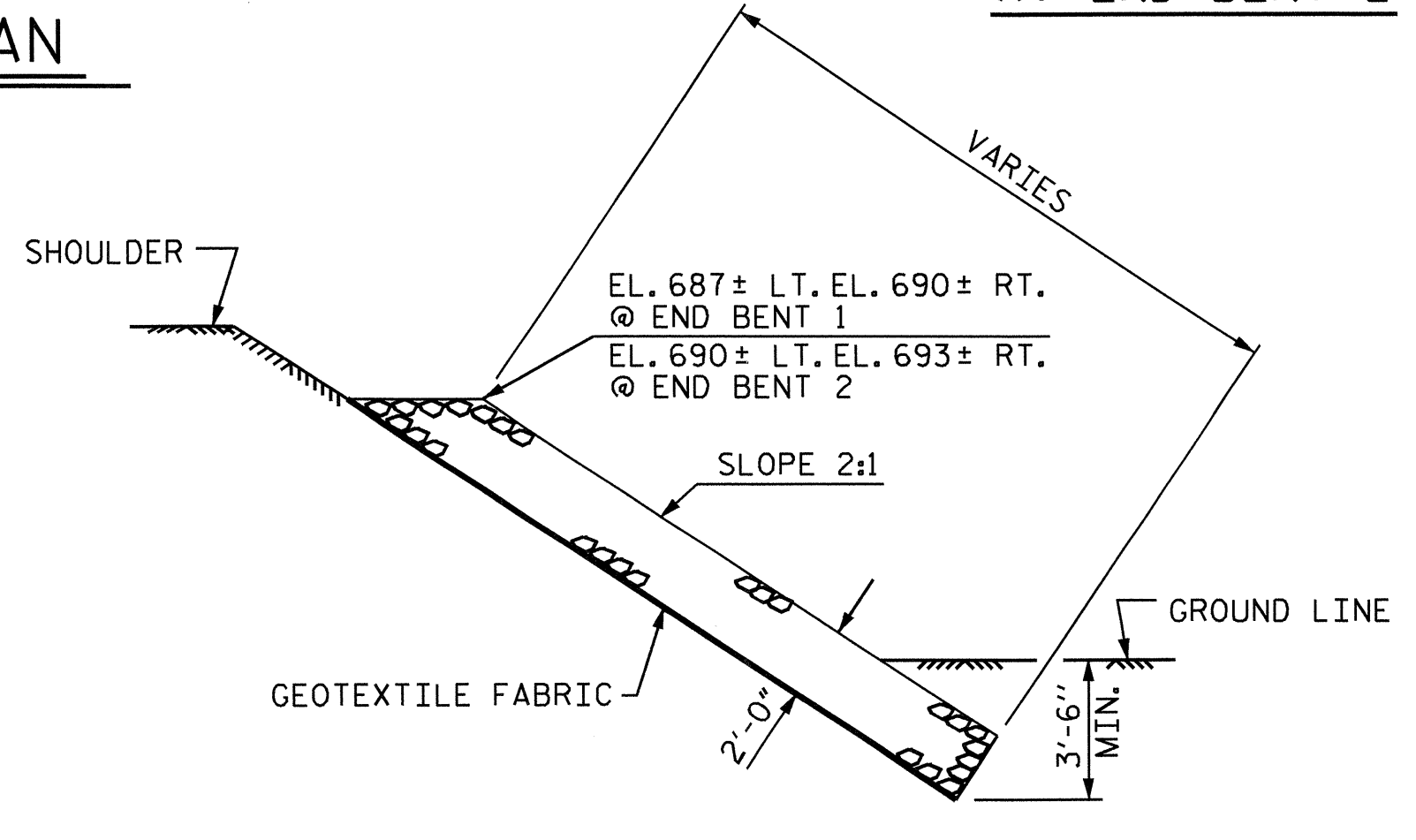
AT END BENT 1

AT END BENT 2

PLAN

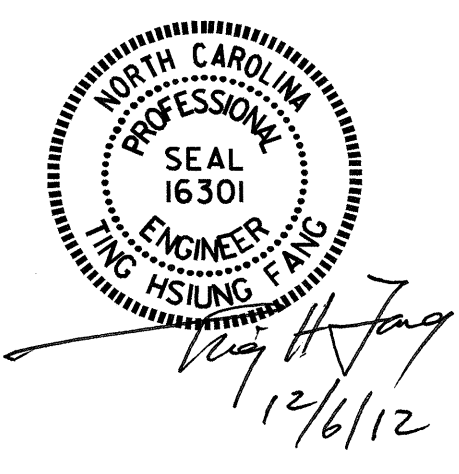


SECTION C-C
BERM RIP RAPPED



SECTION C-C

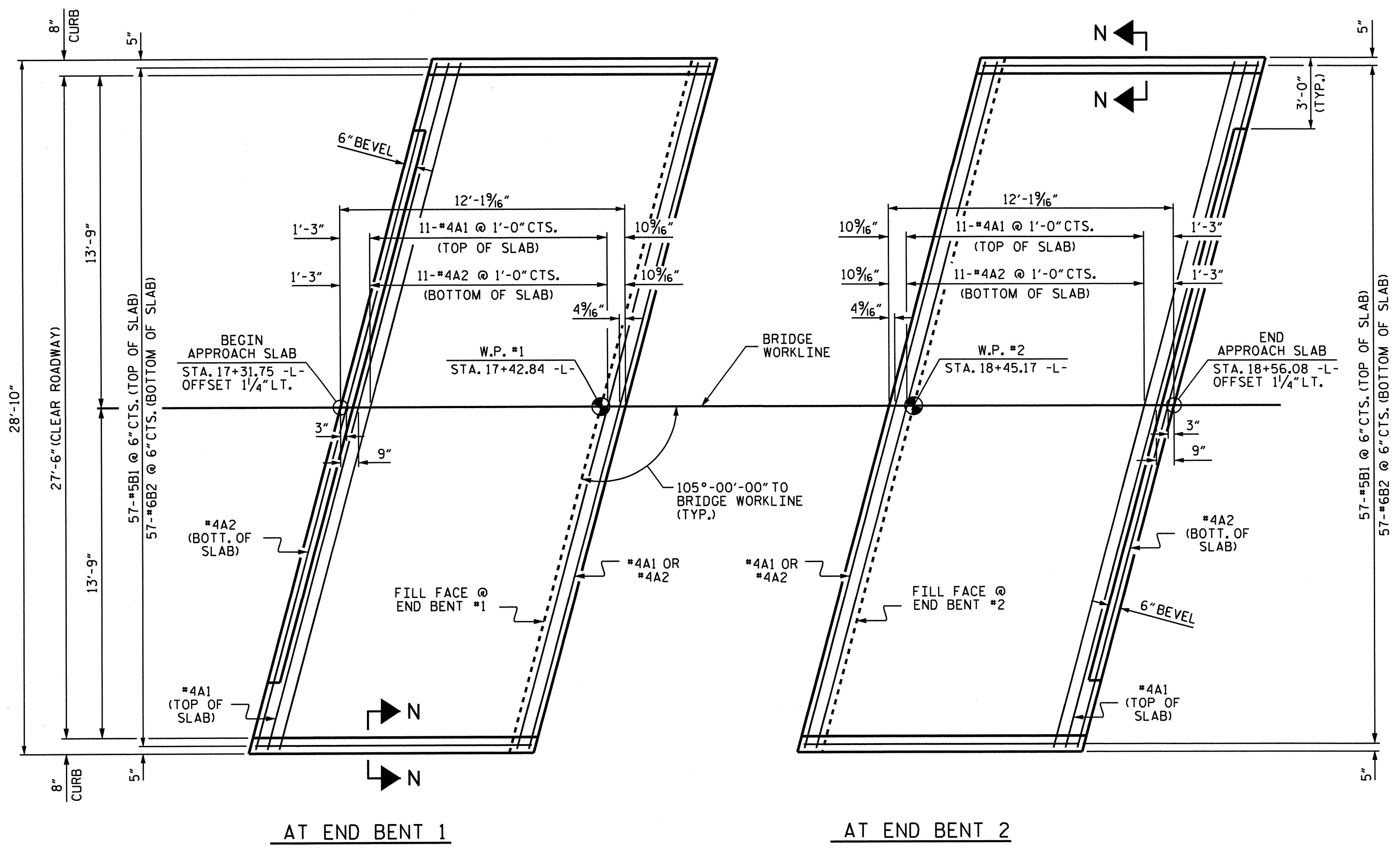
PROJECT NO. B-4796
RANDOLPH COUNTY
 STATION: 17+94.00 -L-



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

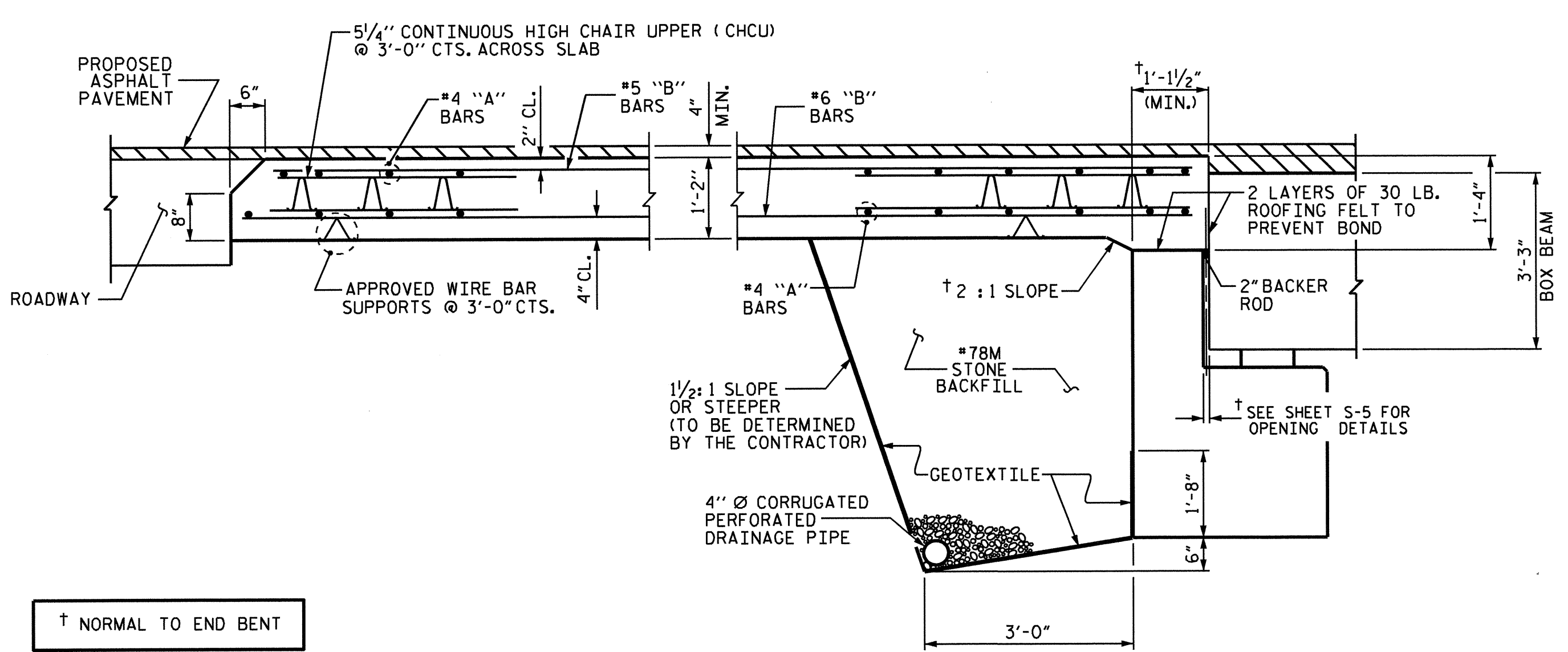
DRAWN BY : R.P.PATEL DATE : 4-30-12
 CHECKED BY : S. WANCE DATE : 07/12

SHEET NO.
S-18
TOTAL SHEETS
19

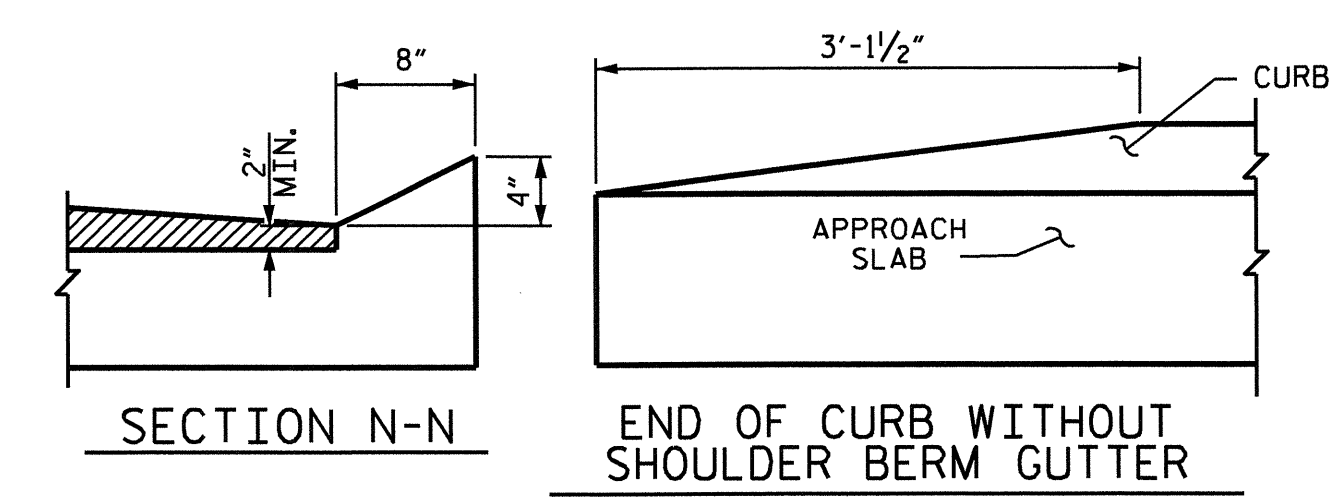


AT END BENT 1 AT END BENT 2

PLAN
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB



CURB DETAILS

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

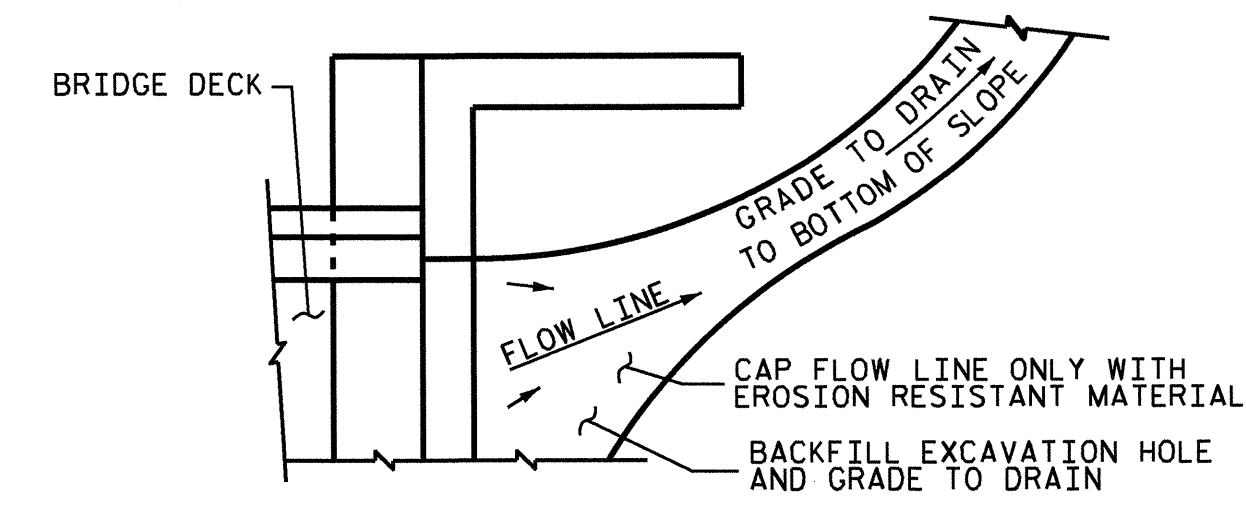
#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

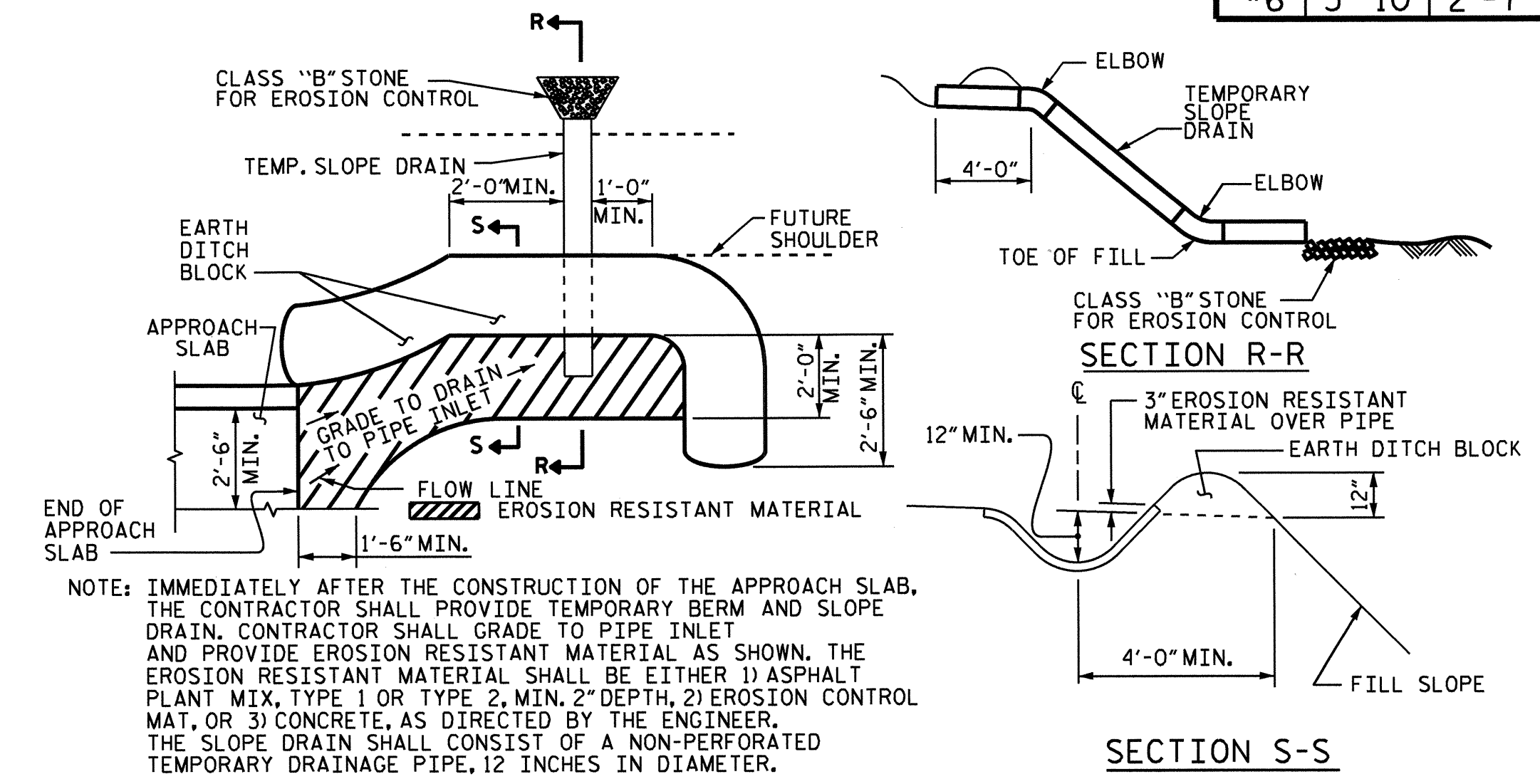
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED, SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



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

TEMPORARY DRAINAGE DETAIL



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

BILL OF MATERIAL

APPROACH SLAB AT EB 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	13	#4	STR	29'-6"	256
A2	13	#4	STR	29'-6"	256
*B1	57	#5	STR	11'-1"	659
B2	57	#6	STR	11'-7"	992
REINFORCING STEEL				LBS.	1248
* EPOXY COATED REINFORCING STEEL				LBS.	915
CLASS AA CONCRETE				C.Y.	15.9

APPROACH SLAB AT EB 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	13	#4	STR	29'-6"	256
A2	13	#4	STR	29'-6"	256
*B1	57	#5	STR	11'-1"	659
B2	57	#6	STR	11'-7"	992
REINFORCING STEEL				LBS.	1248
* EPOXY COATED REINFORCING STEEL				LBS.	915
CLASS AA CONCRETE				C.Y.	15.9

SPLICE LENGTHS

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

PROJECT NO. B-4796
RANDOLPH COUNTY
 STATION: 17+94.00 -L-



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

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

ASSEMBLED BY : R.P.PATEL DATE : 4-19-12
 CHECKED BY : S. WANCE DATE : 07/12
 DRAWN BY : MAA 11/11
 CHECKED BY : AAC 11/11

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16" INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990