

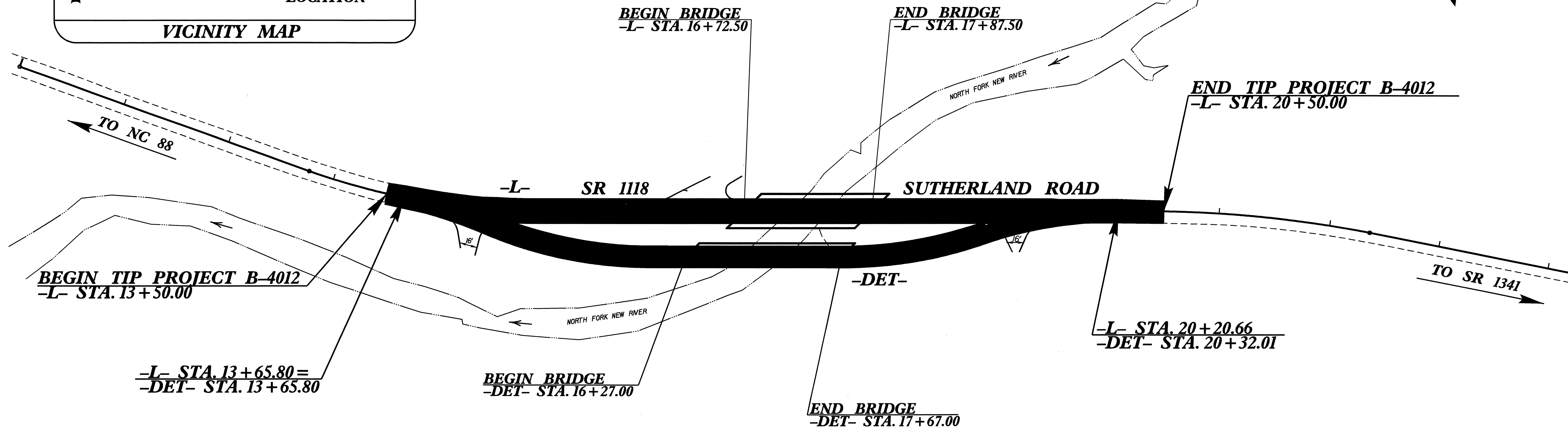
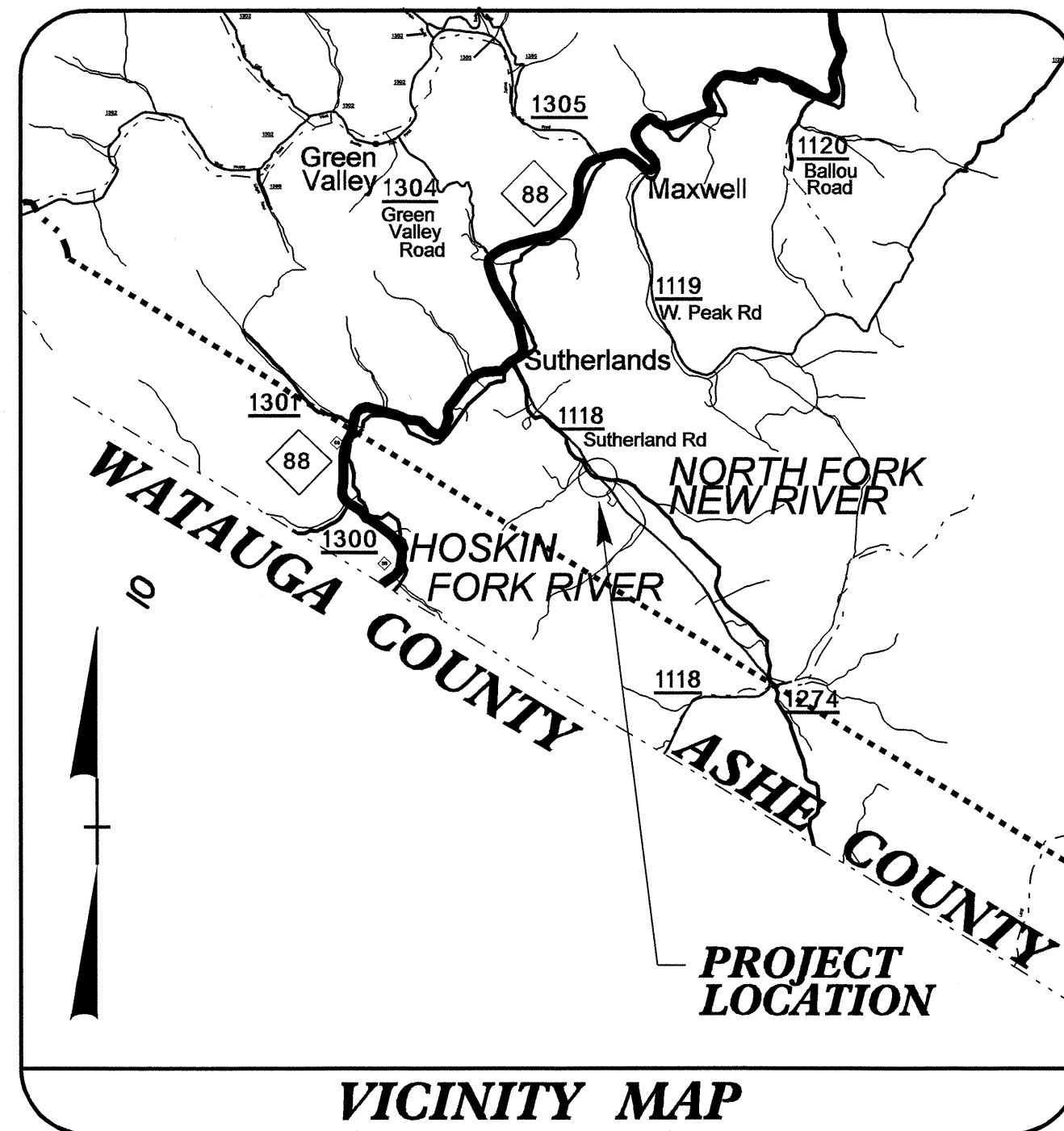
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ASHE COUNTY

LOCATION: BRIDGE NO. 117 OVER NORTH FORK NEW RIVER
ON SR 1118 (SUTHERLAND ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES
& SIGNALS

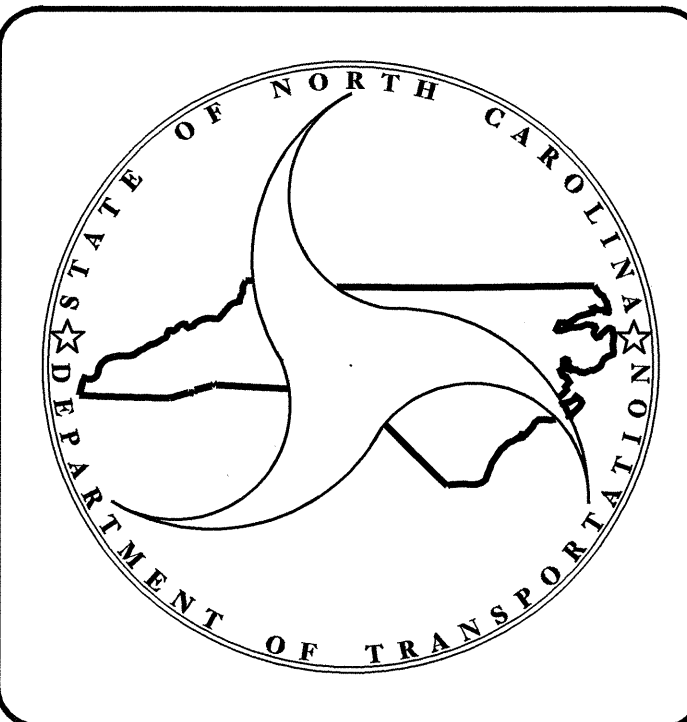
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4012		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33380.1.1	BRZ-1118(3)	PE	
33380.2.1	BRZ-1118(3)	R/W & UTIL.	
33380.3.1	BRZ-1118(3)	CONST	



STRUCTURE

22-FEB-2008 09:08
\$\$\$\$\$DGN\$\$\$\$\$
Sombrowski

TIP PROJECT: B-4012
CONTRACT: C201767



DESIGN DATA	
ADT 2008 =	580
ADT 2025 =	800
DHV =	12 %
D =	60 %
T =	3 % *
V =	50 MPH
FUNC. CLASS. =	LOCAL
* TTST 1%	DUAL 2%

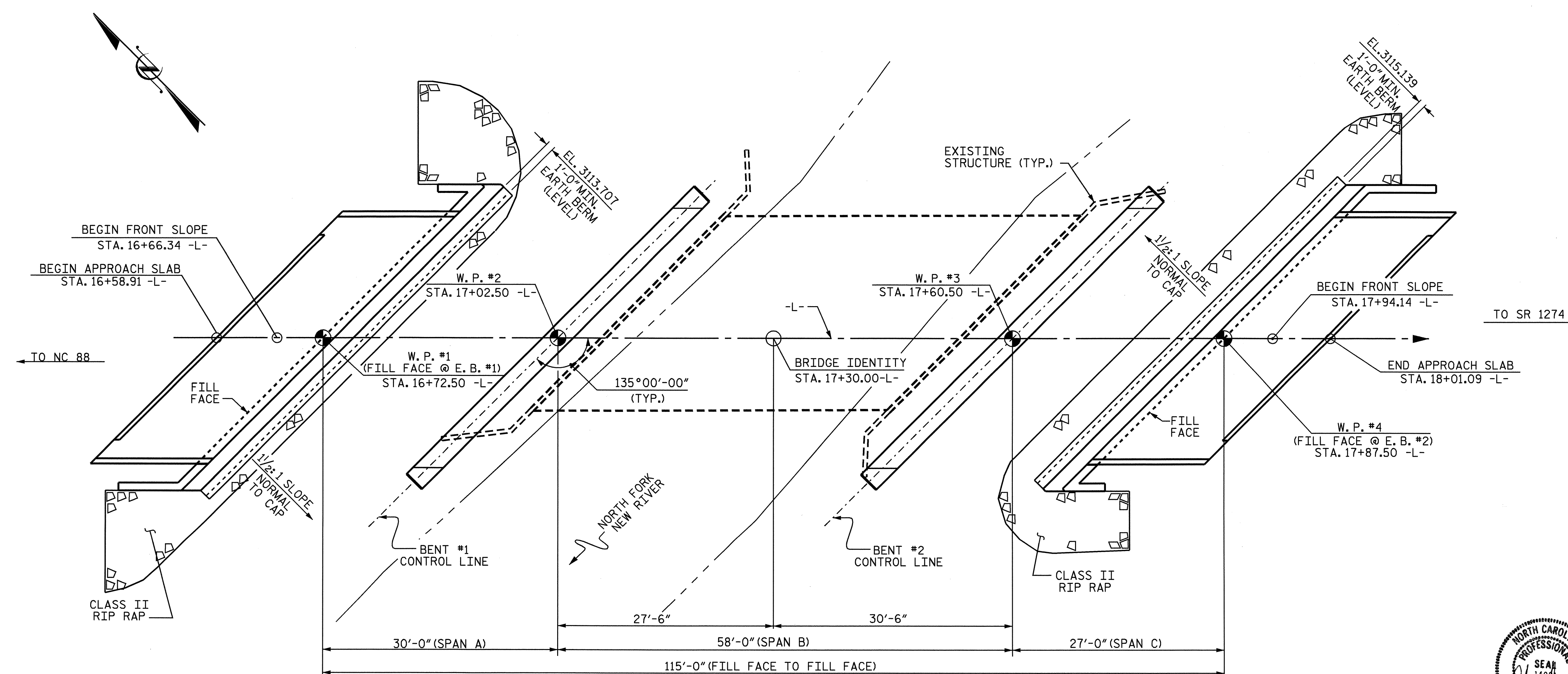
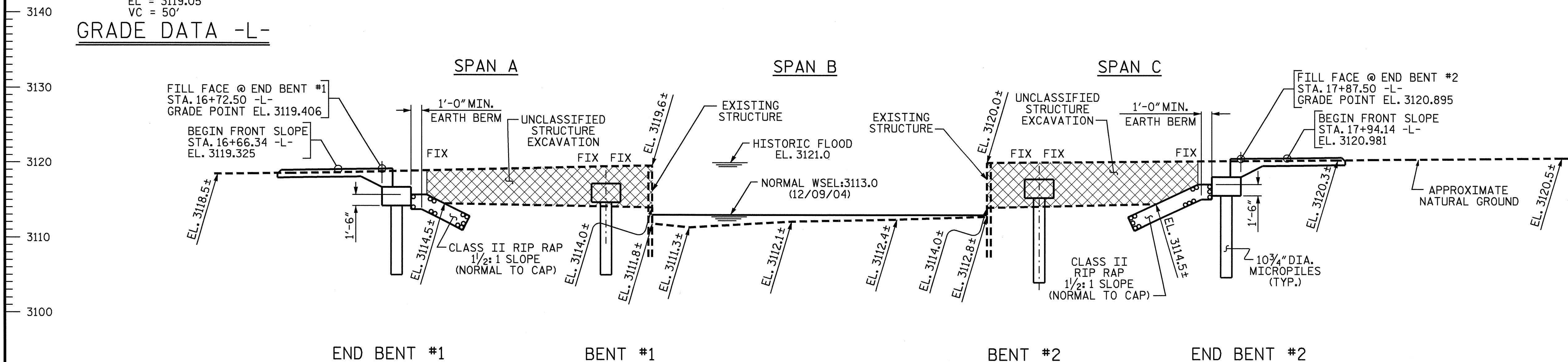
PROJECT LENGTH
LENGTH ROADWAY TIP PROJECT B-4012 = 0.111 MILES
LENGTH STRUCTURE TIP PROJECT B-4012 = 0.022 MILES
TOTAL LENGTH TIP PROJECT B-4012 = 0.133 MILES

Prepared in the Office of: DIVISION OF HIGHWAYS 1000 BIRCH RIDGE DR., RALEIGH, NC 27610	
2006 STANDARD SPECIFICATIONS	B. C. Hunt, PE PROJECT ENGINEER
LETTING DATE: December 16, 2008	V. A. Patel, PE PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT

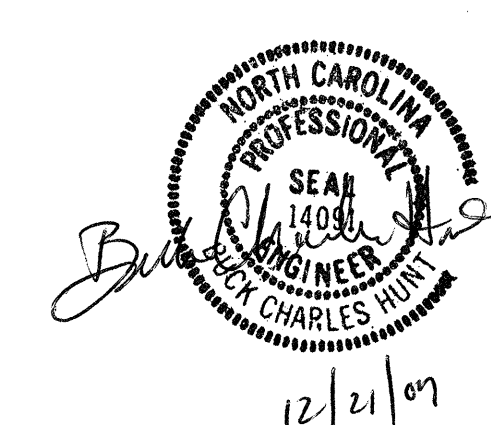
DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA
P.E. STATE HIGHWAY DESIGN ENGINEER

16+50
 (+)1.6207% (+)1.2946%
 PI = 16+45.00
 EL = 3119.05
 VC = 50'
GRADE DATA -L-



PROJECT NO. B-4012
ASHE COUNTY
 STATION: 17+30.00 -L-
 SHEET 1 OF 3 REPLACES BRIDGE NO. 117

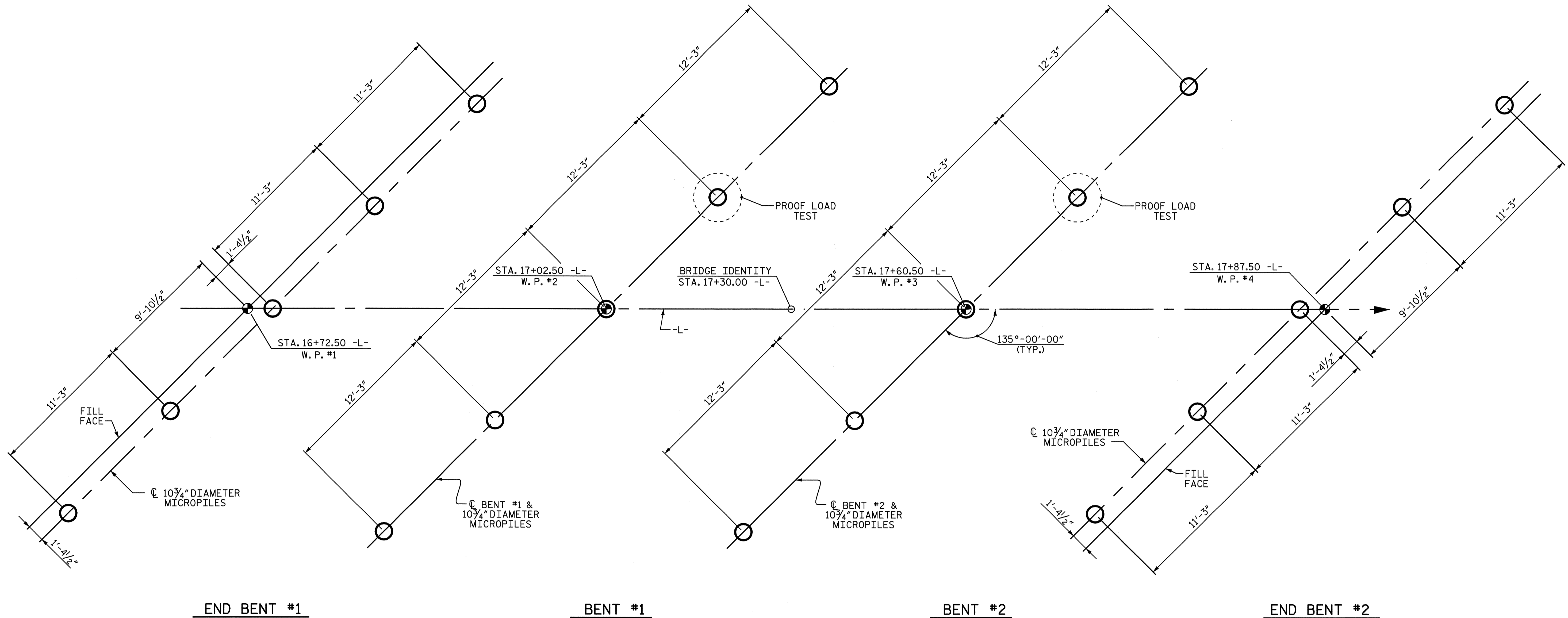
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER
 NORTH FORK NEW RIVER
 ON (SUTHERLAND RD.)
 SR 1118 BETWEEN
 SR 1274 AND NC 88



DRAWN BY : KEITH D. LAYNE DATE : 08/07
 CHECKED BY : V. A. PATEL DATE : 09/07

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

TOTAL SHEETS: 27



FOUNDATION LAYOUT

DIMENSIONS LOCATING MICROPILES ARE SHOWN TO THE PILE CENTERLINE.

FOUNDATION NOTES

FOR MICROPILES, SEE SPECIAL PROVISION.

DESIGN BOND LENGTH FOR MICROPILES AT BOTH END BENT #1 AND END BENT #2 FOR AN ALLOWABLE LOAD OF 50 TONS PER PILE.

DESIGN BOND LENGTH FOR MICROPILES AT BOTH BENT #1 AND BENT #2 FOR AN ALLOWABLE LOAD OF 110 TONS PER PILE.

INSTALL REINFORCING CASINGS FOR MICROPILES AT END BENT #1 TO A TIP ELEVATION NO HIGHER THAN 3106.000 AND WITH A MINIMUM PENETRATION OF 5 FT. INTO ROCK.

INSTALL REINFORCING CASINGS FOR MICROPILES AT BENT #1 TO A TIP ELEVATION NO HIGHER THAN 3106.000 AND WITH A MINIMUM PENETRATION OF 5 FT. INTO ROCK.

INSTALL REINFORCING CASINGS FOR MICROPILES AT BENT #2 TO A TIP ELEVATION NO HIGHER THAN 3108.000 (LEFT) AND 3105.000 (RIGHT) AND WITH A MINIMUM PENETRATION OF 5 FT. INTO ROCK.

INSTALL REINFORCING CASINGS FOR MICROPILES AT END BENT #2 TO A TIP ELEVATION NO HIGHER THAN 3108.000 (LEFT) AND 3103.000 (RIGHT) AND WITH A MINIMUM PENETRATION OF 5 FT. INTO ROCK.

DESIGN REINFORCING CASINGS JOINTS FOR A BENDING MOMENT CAPACITY OF 13.1 KIPS-FT FOR MICROPILES AT END BENT #1 AND END BENT #2.

DESIGN REINFORCING CASINGS JOINTS FOR A BENDING MOMENT CAPACITY OF 15.4 KIPS-FT FOR MICROPILES AT BENT #1 AND BENT #2.

GALVANIZE EXPOSED PORTIONS OF REINFORCING CASINGS AND PERMANENT CASINGS THAT CONNECT DIRECTLY TO THE CAP FOR MICROPILES AT BENT #1 AND BENT #2. APPLY ORGANIC-ZINC REPAIR PAINT TO EXPOSED CASING JOINTS.

THE SCOUR CRITICAL ELEVATION FOR BENT #1 IS EL. 3109.000. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SCOUR CRITICAL ELEVATION FOR BENT #2 IS EL. 3111.000. (LEFT) AND EL. 3108.0 (RIGHT), SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

PROOF LOAD TESTS ARE REQUIRED FOR MICROPILES AT BENT #1 AND BENT #2 AS SHOWN. LOAD TEST PILES TO 220 TONS FOR PROOF TESTS. THIS TEST LOAD IS EQUAL TO 165% OF THE ALLOWABLE LOAD PLUS ANY ADDITIONAL LOAD TO ACCOUNT FOR MATERIAL ABOVE THE BOND.

MOVEMENT FOR TOP OF MICROPILES DURING LOAD TESTING MAY NOT EXCEED 1" AT A LOAD OF 220 TONS.

PROJECT NO. B-4012

ASHE COUNTY

STATION: 17+30.00-L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FOUNDATION LAYOUT

Bud W. [Signature]
NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 14081
12/21/07

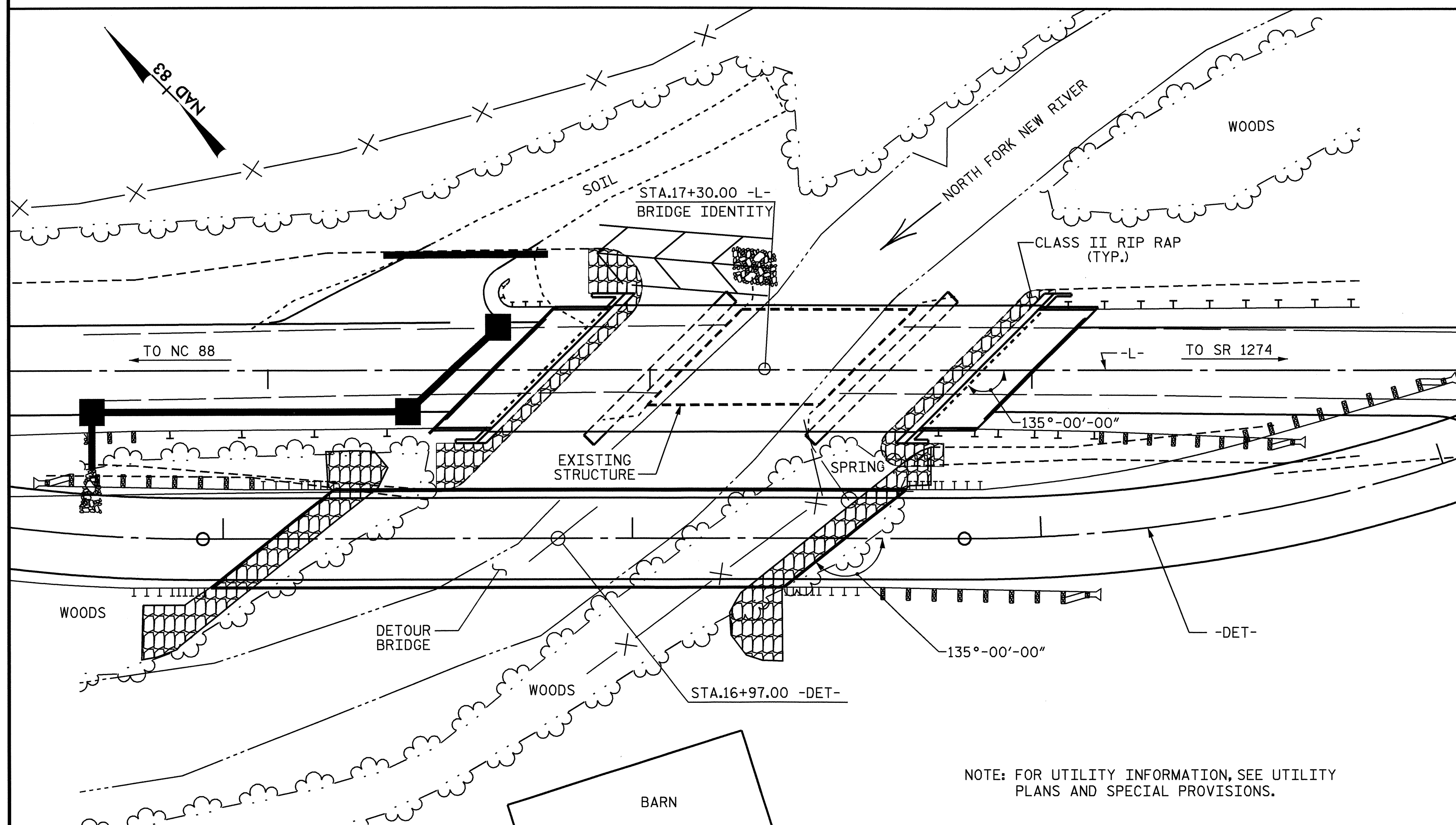
DRAWN BY : KEITH D. LAYNE DATE : 08-07
CHECKED BY : V. A. PATEL DATE : 09/07

20-DEC-2007 10:34
H:\STRUCT\B-4012\Plans\B4012_04.DGN
Klayne

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

10 3/4" DIAMETER MICROPILES

BM#2 8" SPIKE IN THE ROOT OF 36" Ø HEMLOCK ON SOUTH SIDE OF THE CREEK,
77.25' RIGHT OF STA.16+63.56 -L- EL. 3114.460



NOTE: FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

HYDRAULIC DATA

DESIGN DISCHARGE _____ 1,800 CFS
 FREQUENCY OF DESIGN FLOOD _____ 25 YRS
 DESIGN HIGH WATER ELEVATION _____ 3120.4
 DRAINAGE AREA _____ 9.5 SQ.MI.
 BASIC DISCHARGE (Q100) _____ 3,310 CFS
 BASIC HIGH WATER ELEVATION _____ 3122.5

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE _____ -1,800 CFS
 FREQUENCY OF OVERTOPPING FLOOD _____ -25 YRS
 OVERTOPPING FLOOD ELEVATION _____ 3119.1

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP. STRUCTURE	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	TWO BAR METAL RAIL	1'-2" x 2'-10" CONCRETE PARAPET	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS	10 3/4" DIAMETER MICROPILES	MICROPILE PROOF TESTS	10 3/4" DIAMETER NON PRODUCTION MICROPILES	LATERAL LOAD TESTING ASSISTANCE	TEMPORARY CAP	
	LUMP SUM	LUMP SUM	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.	EACH	EACH	EACH	LUMP SUM	LUMP SUM
SUPERSTRUCTURE					LUMP SUM		206.31	223.64			LUMP SUM	33	1226.18					
END BENT #1				18.6		3070			125	140			5					
BENT #1				14.7		3124							5	1				
BENT #2				14.7		3124							5	1				
END BENT #2				18.6		3084			175	195			5					
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	66.6	LUMP SUM	12402	206.31	223.64	300	335	LUMP SUM	33	1226.18	20	2	16	LUMP SUM	LUMP SUM

NOTES

ASSUMED LIVE LOAD = HS20 OR ALTERNATE LOADING, EXCEPT THAT CORED SLAB UNITS HAVE BEEN DESIGNED FOR HS25.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO STANDARD SPECIFICATIONS FOR SEISMIC DESIGN OF HIGHWAY BRIDGES FOR SEISMIC PERFORMANCE CATEGORY A.

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

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

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

THE EXISTING STRUCTURE CONSISTING OF A SINGLE SPAN OF 45.5 FT. WITH 10 LINES OF 18 INCH I-BEAMS WITH AN ASPHALT WEARING SURFACE ON A TIMBER FLOOR WITH A 24.8 FT. CLEAR ROADWAY WIDTH ON TIMBER CAPS AND TIMBER POSTS AT END BENTS AND LOCATED AT THE PROPOSED SITE 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 THE STANDARD SPECIFICATIONS.

THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY STRUCTURE AT STATION 17+30.00 -L- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 20 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.

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.

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 17+30.00 -L-'.

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

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

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

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR LATERAL LOAD TESTING ASSISTANCE, SEE SPECIAL PROVISIONS.

FOR 10 3/4" NON PRODUCTION MICROPILES, SEE SPECIAL PROVISIONS.

FOR LAYOUT OF NON PRODUCTION MICROPILES AND TEMPORARY CAP FOR NON PRODUCTION MICROPILE TESTS, SEE SHEETS S-24A AND S-24B.

FOR TEMPORARY CAP, SEE SPECIAL PROVISIONS.

PROJECT NO. B-4012
ASHE COUNTY
 STATION: 17+30.00 -L-

SHEET 3 OF 3

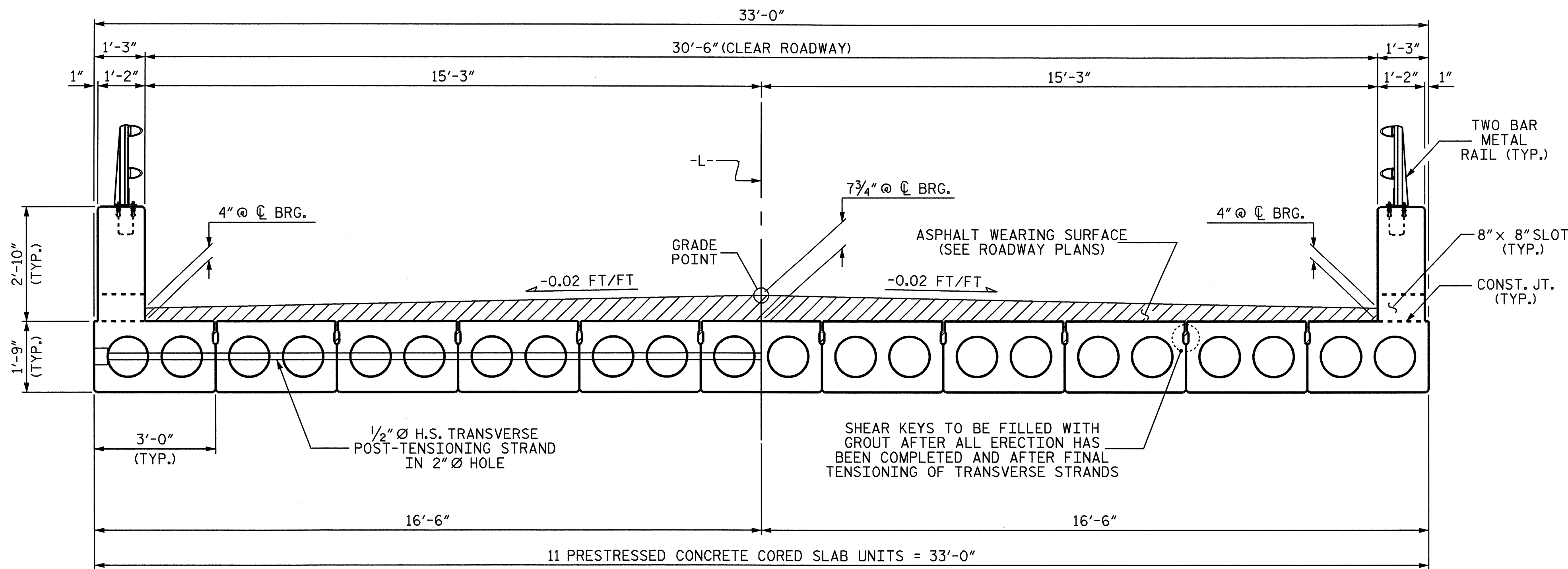
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER
 NORTH FORK NEW RIVER ON
 SR 1118 (SUTHERLAND RD.)
 BETWEEN
 SR 1274 AND NC 88

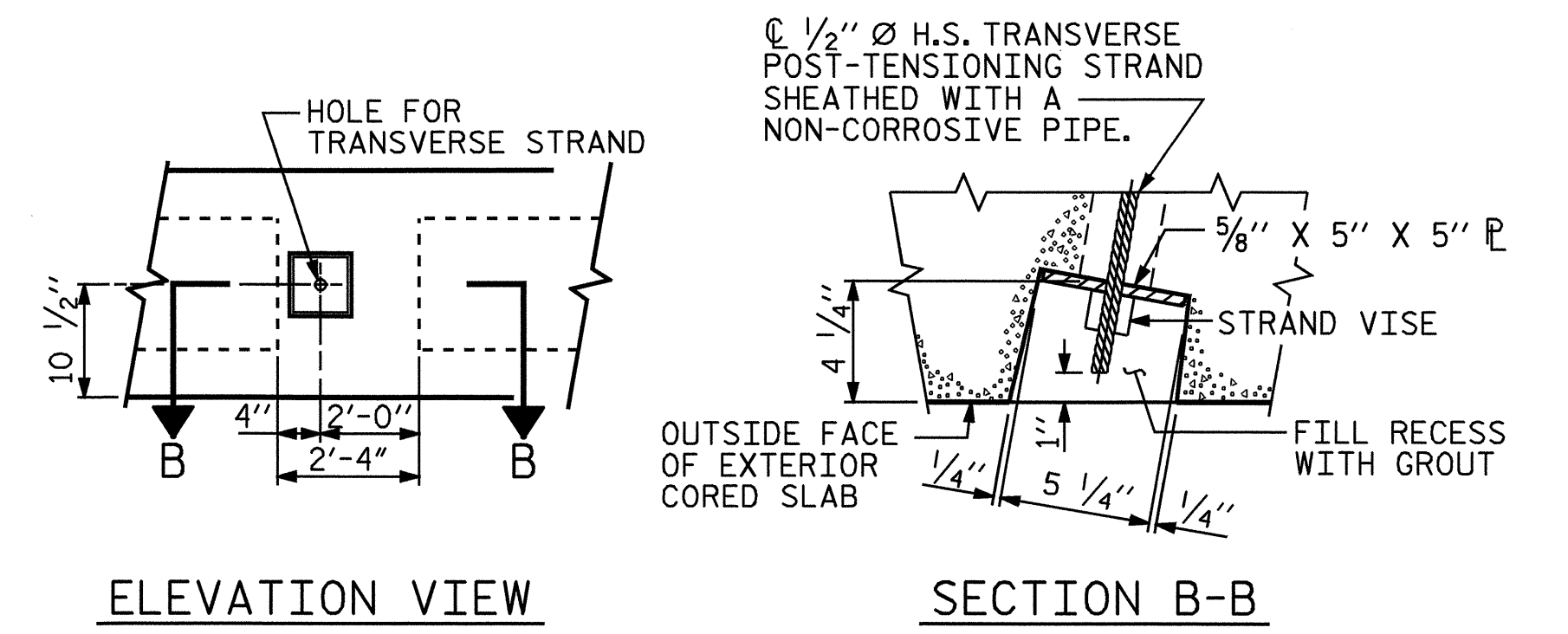


DRAWN BY: KEITH D. LAYNE DATE: 08/07
 CHECKED BY: V. A. PATEL DATE: 09/07

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



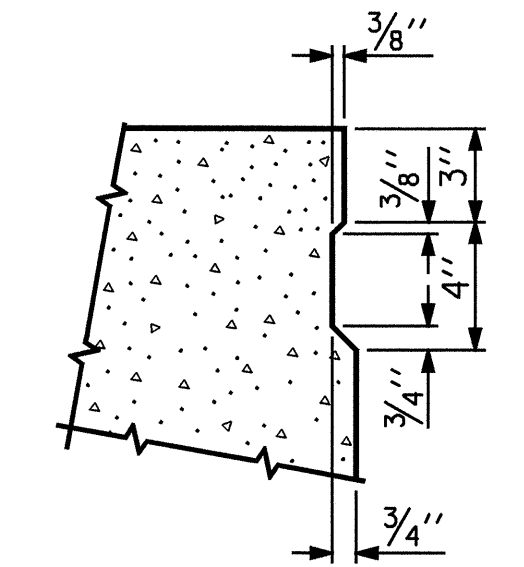
TYPICAL SECTION



ELEVATION VIEW

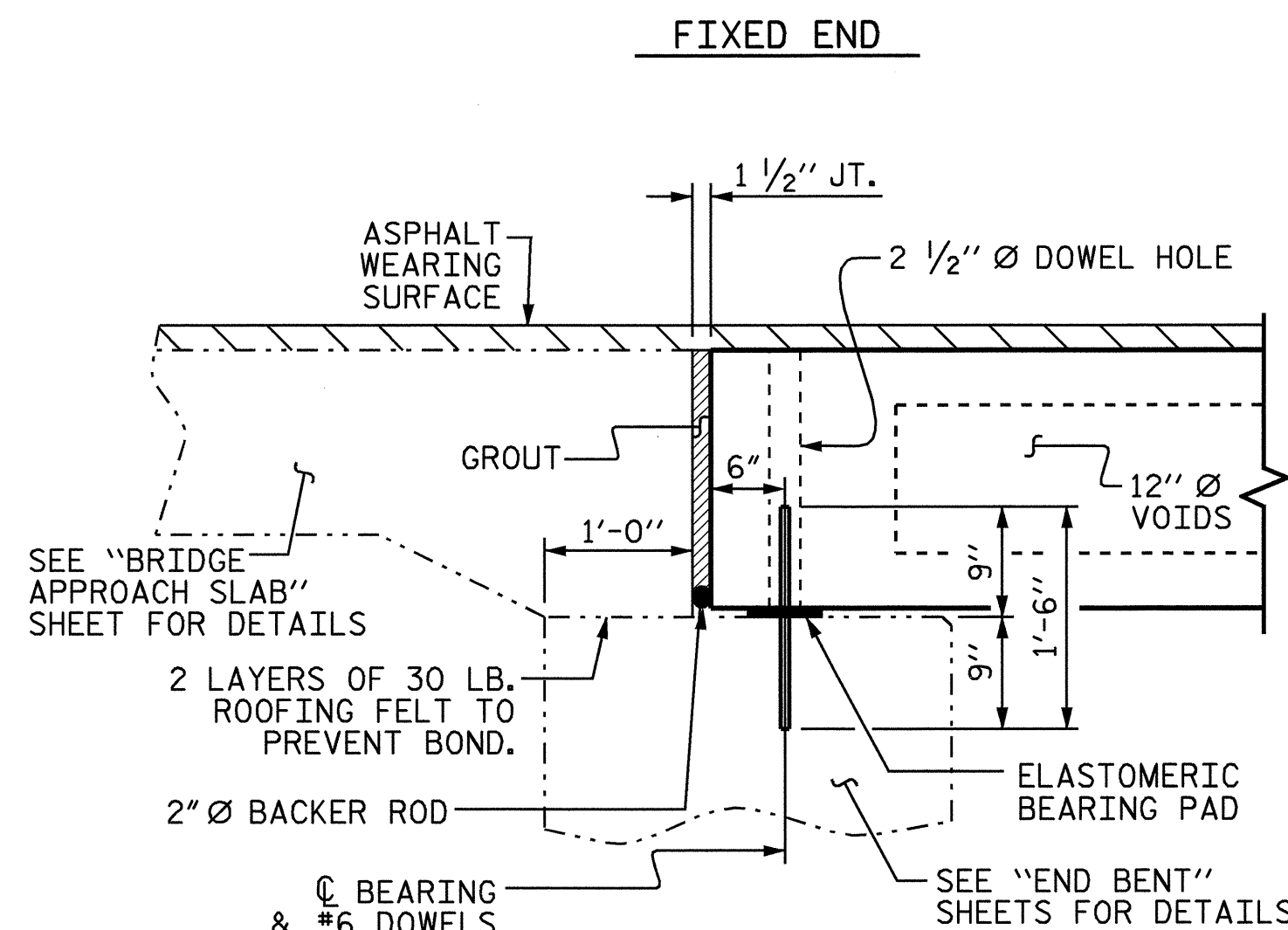
SECTION B-B

GROUTED RECESS AT END OF POST-TENSIONED STRAND CORED SLABS

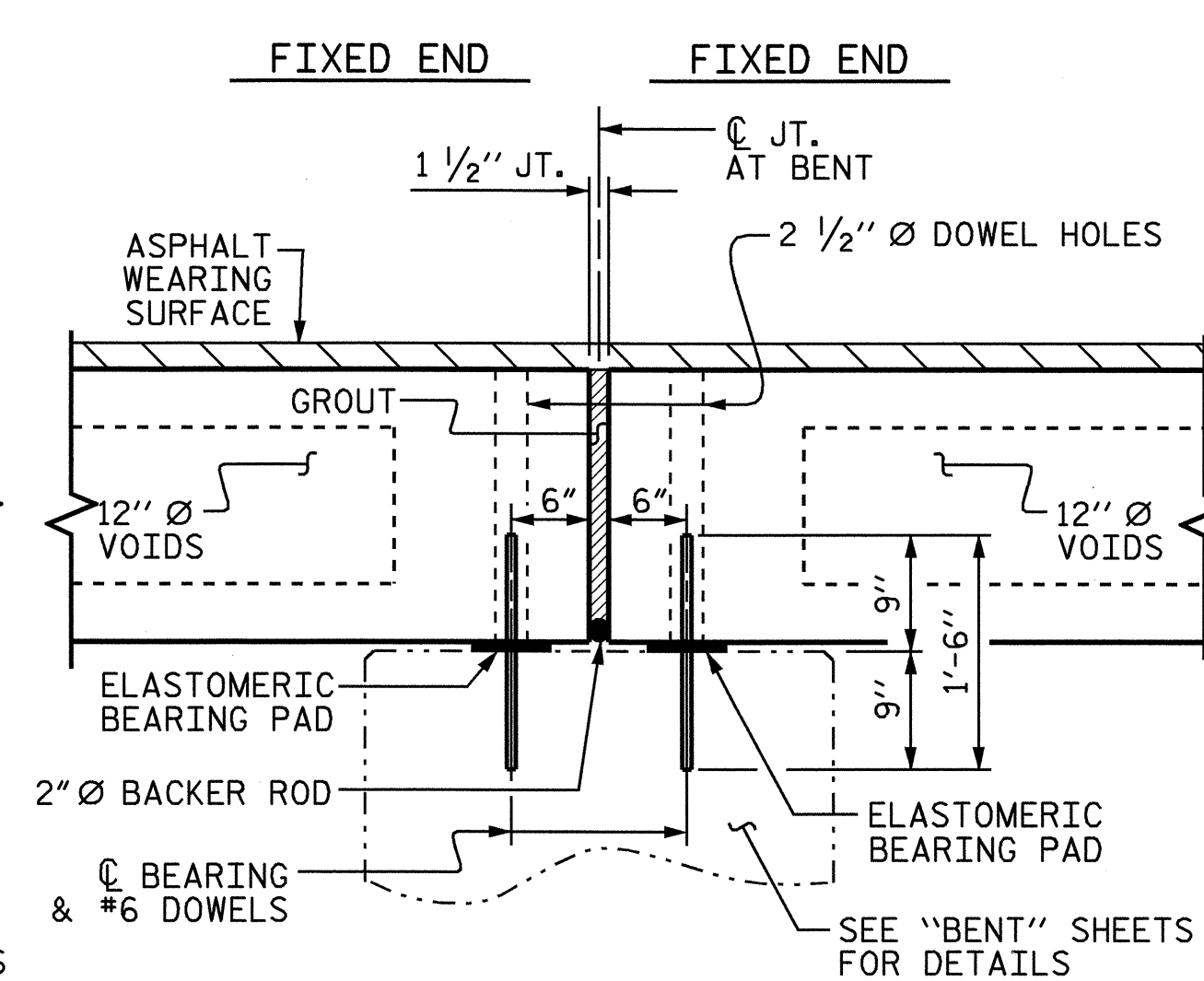


SHEAR KEY DETAIL

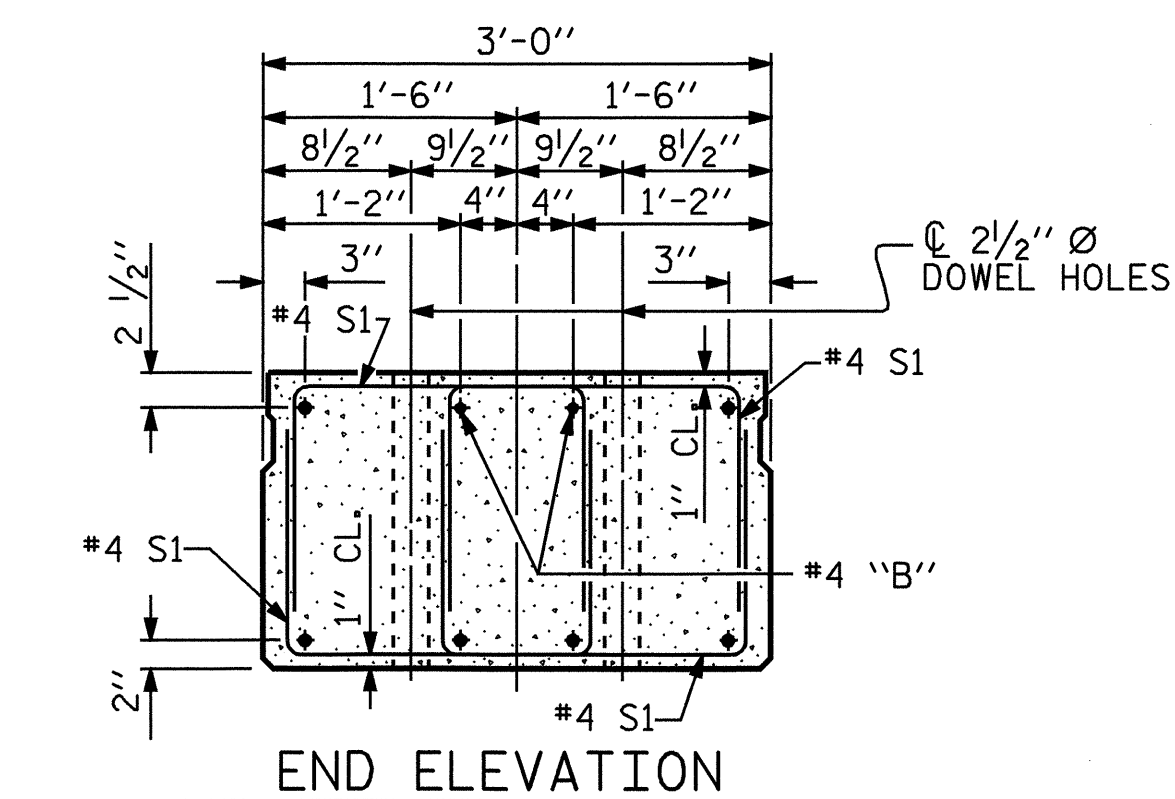
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



SECTION AT END BENT

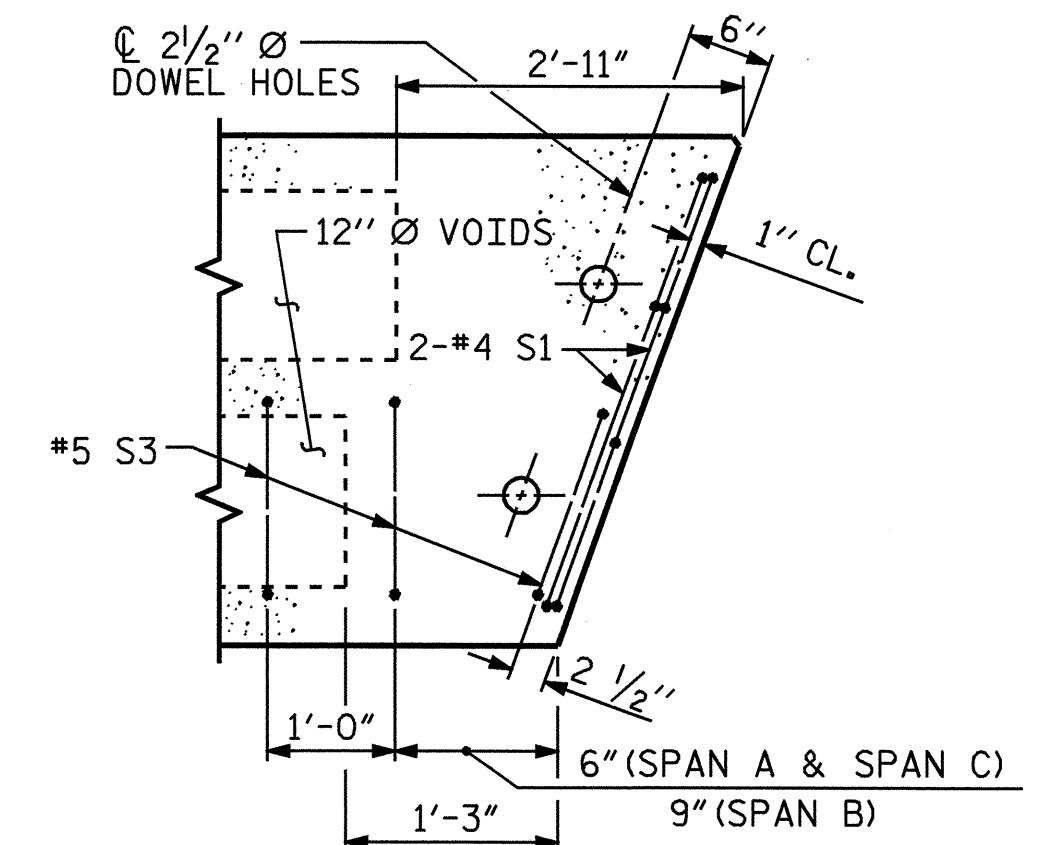


SECTION AT BENT



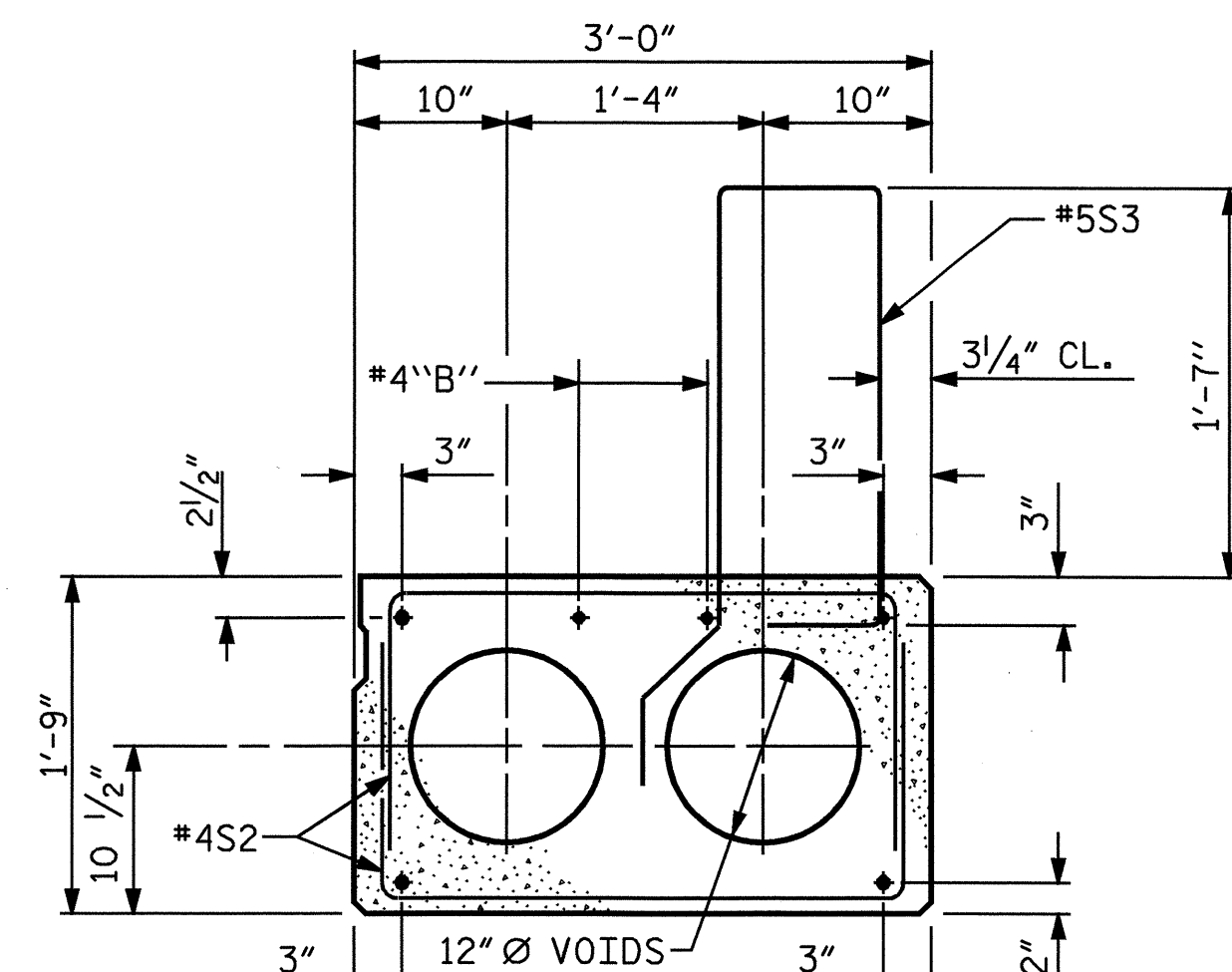
END ELEVATION

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



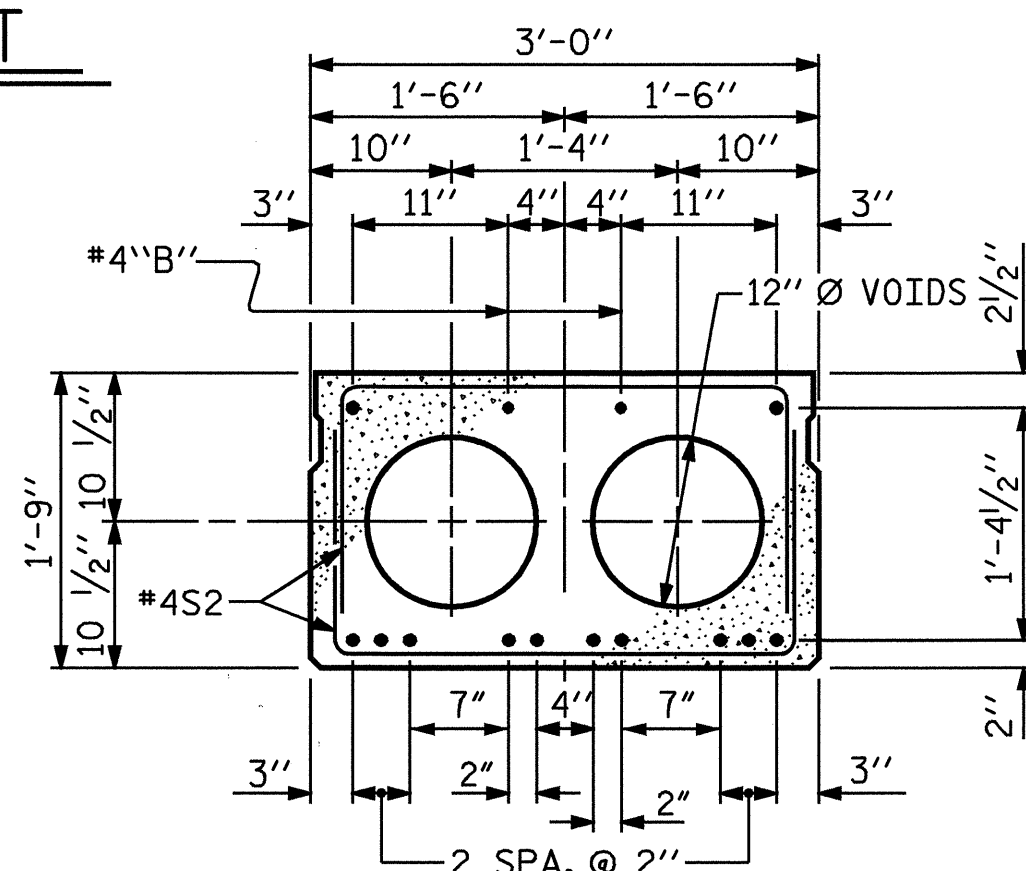
PART PLAN-EXTERIOR SECTION

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



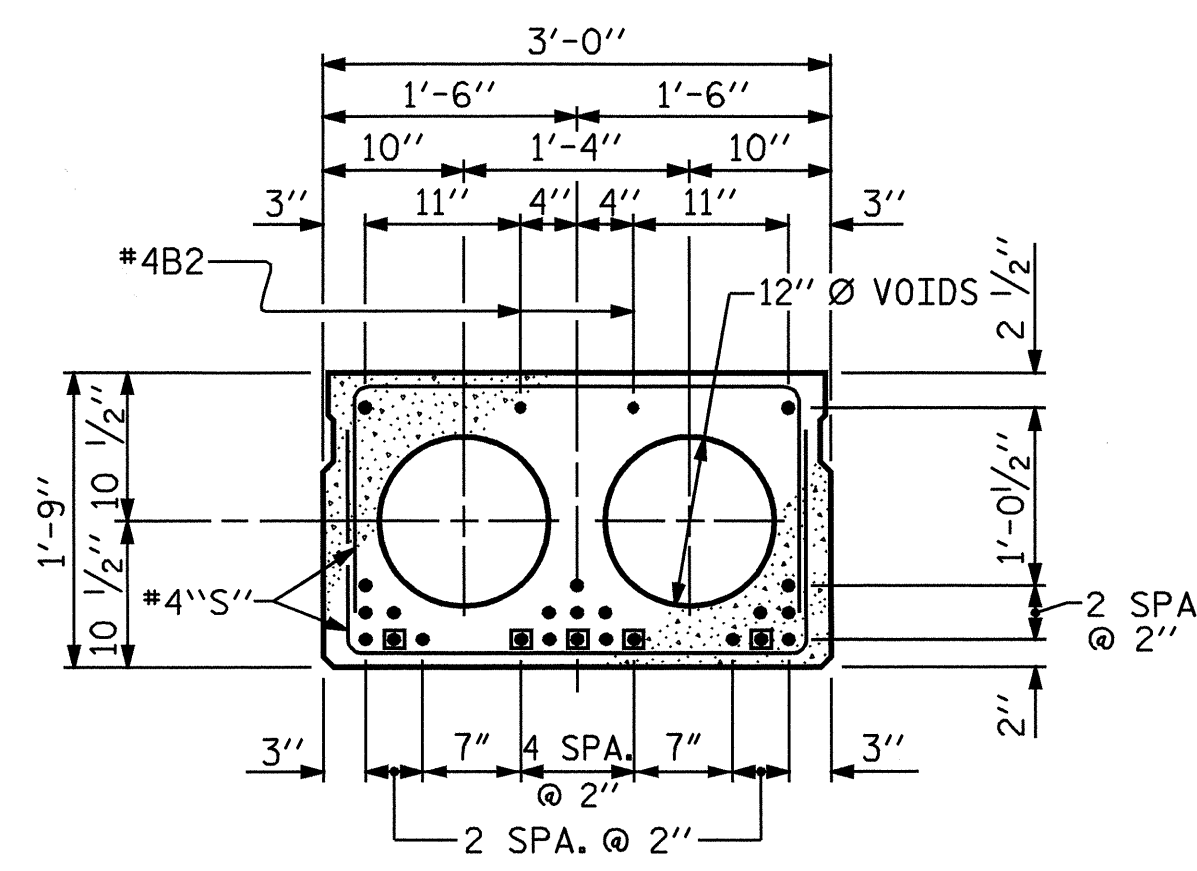
EXTERIOR SLAB SECTION

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



SPAN A & SPAN C INTERIOR SLAB SECTION

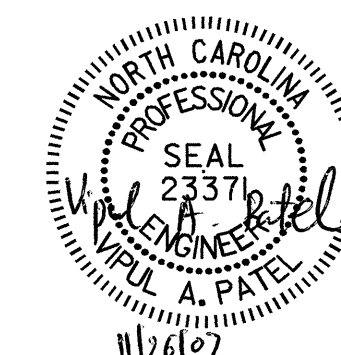
1/2" Ø LOW RELAXATION STRAND LAYOUT



SPAN B INTERIOR SLAB SECTION

0.6" Ø LOW RELAXATION STRAND LAYOUT

BONDS SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 4'-6" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.

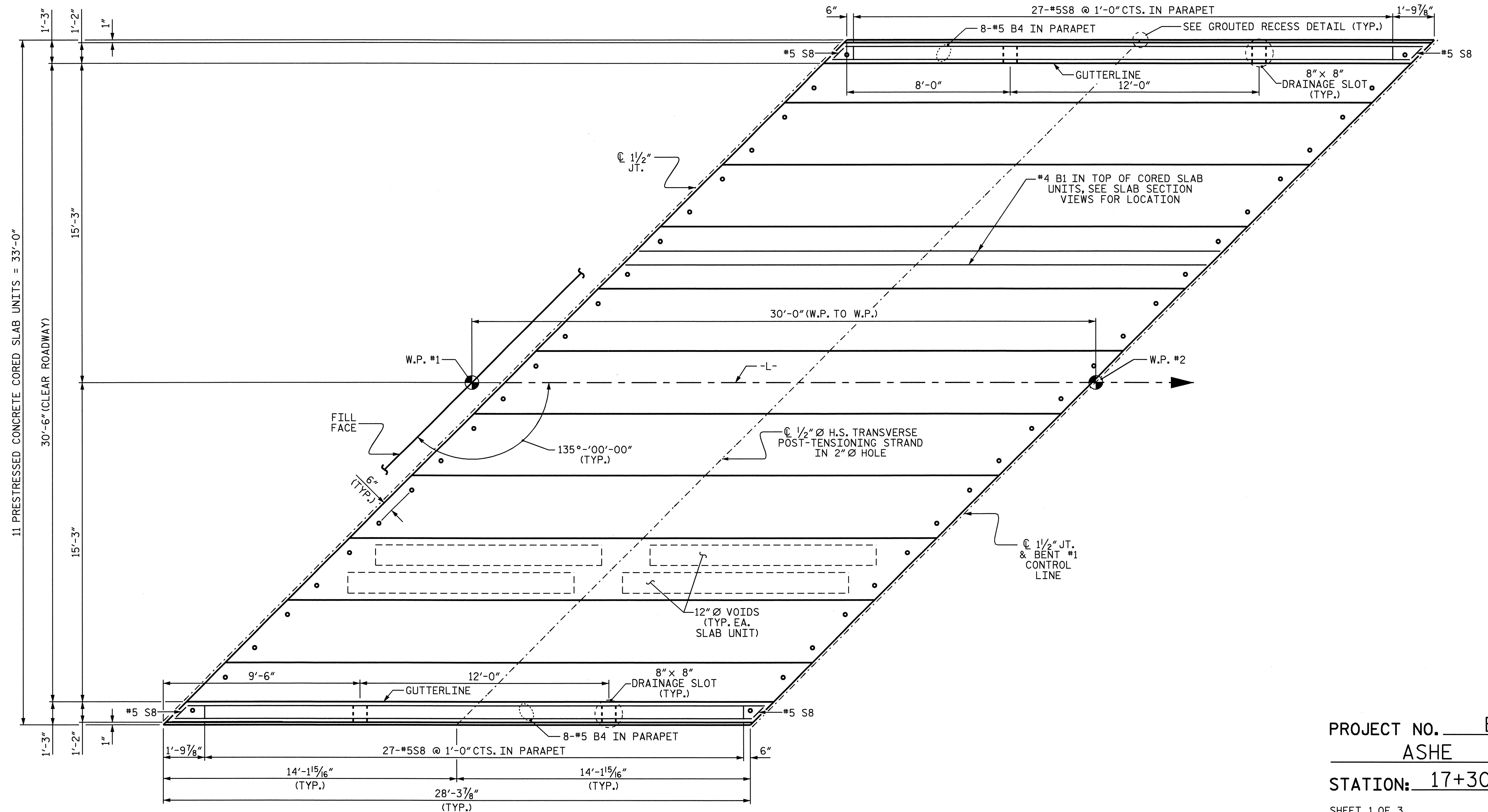


ASSEMBLED BY : D.V. JOYNER/SFDDATE : 6/07	CHECKED BY : J.P. ADAMS/KDL DATE : 6/07
DRAWN BY : WJH 4/89	REV. 10/17/00 RWW/LES
CHECKED BY : FCJ 5/89	REV. 7/10/01RR RWW/LES
	REV. 5/1/06 TLA/GM

PROJECT NO. B-4012
 ASHE COUNTY
 STATION: 17+30.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT				SHEET NO. S-4
REVISIONS				TOTAL SHEETS 27
NO.	BY:	DATE:	NO.	BY:
1			3	
2			4	



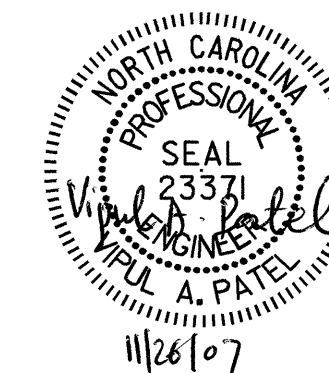
PLAN OF SPAN A

PROJECT NO. B-4012
ASHE COUNTY
 STATION: 17+30.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

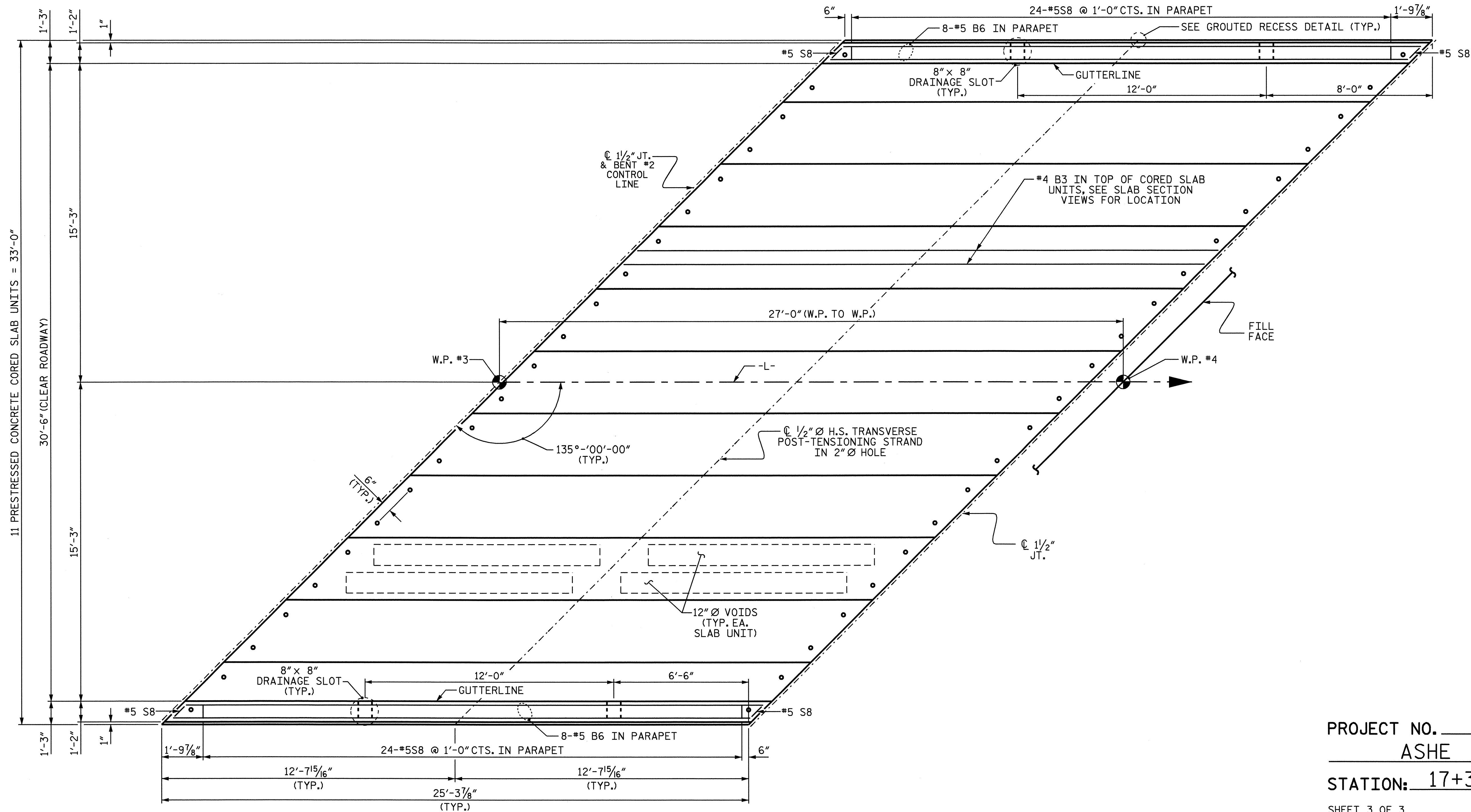
SUPERSTRUCTURE
 PLAN OF SPAN A



DRAWN BY : D.V. JOYNER/SFD DATE : 6/07
 CHECKED BY : J.P. ADAMS/KDL DATE : 6/07

16-NOV-2007 10:33
 R:\Structures\B-4012\Plans\B-4012.ed..CS.dgn
 sdombrowski

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			27

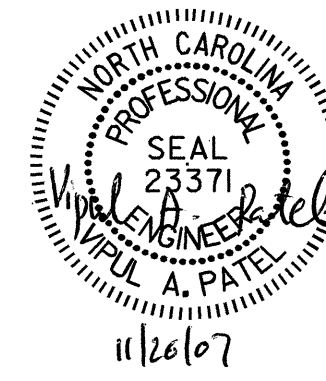


PLAN OF SPAN C

PROJECT NO. B-4012
ASHE COUNTY
 STATION: 17+30.00 -L-

SHEET 3 OF 3

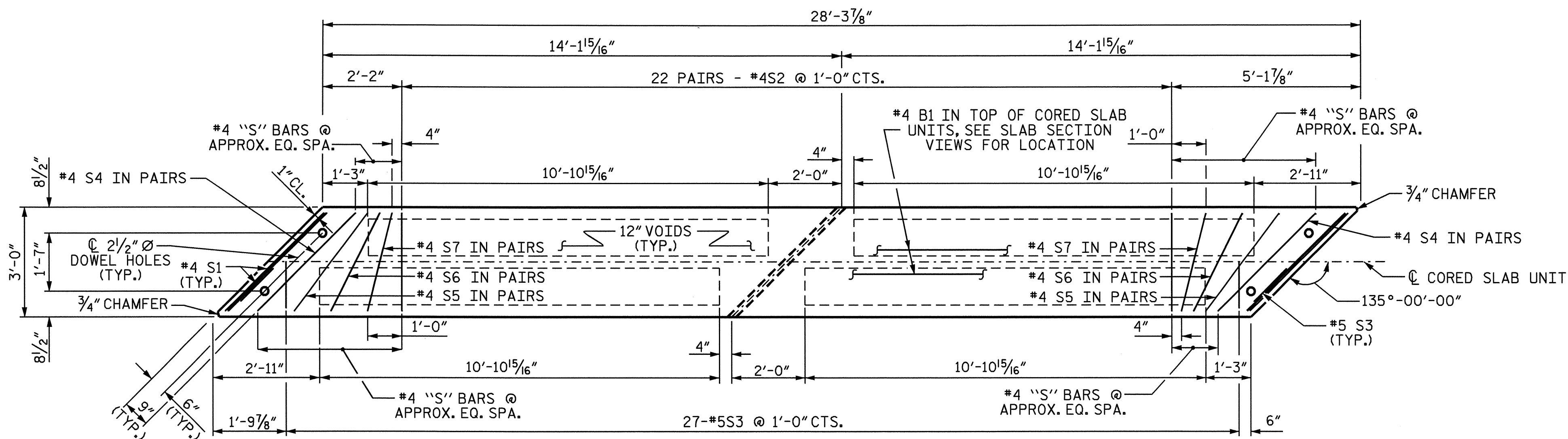
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN C



DRAWN BY : D.V. JOYNER/SFD DATE : 6/07
 CHECKED BY : J.P. ADAMS/KDL DATE : 6/07

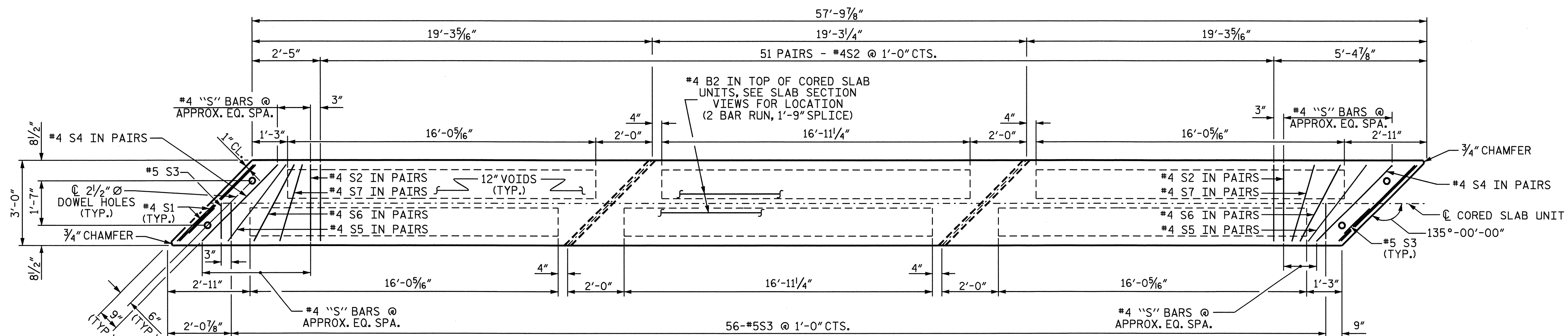
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 sdombrowski

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			27



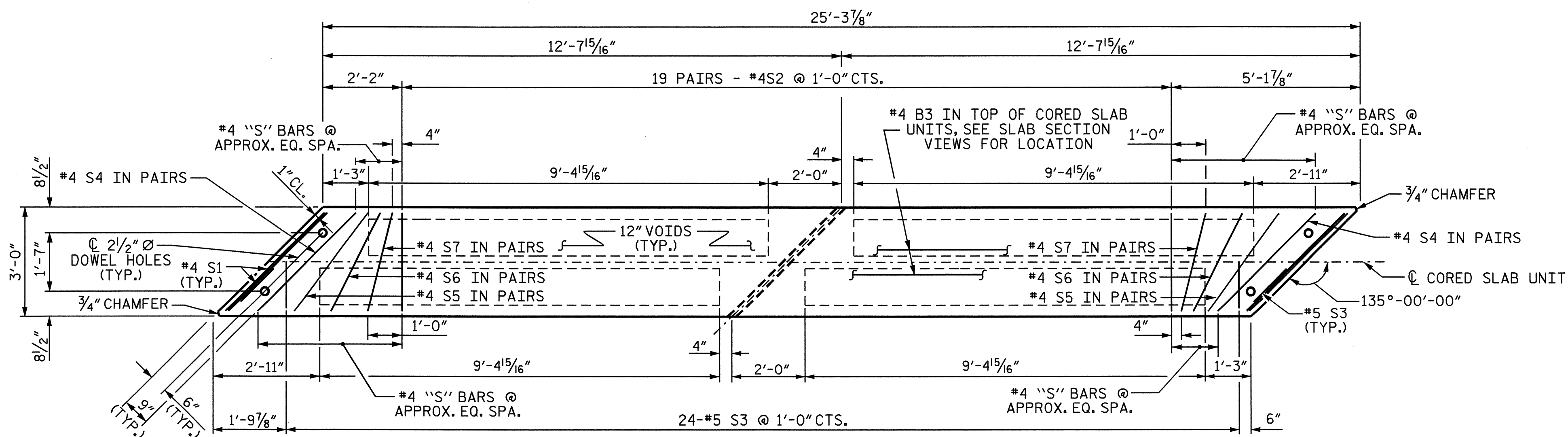
PLAN OF EXTERIOR CORED SLAB UNIT - SPAN A

(EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS)



PLAN OF EXTERIOR CORED SLAB UNIT - SPAN B

(EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS)



PLAN OF EXTERIOR CORED SLAB UNIT - SPAN C

(EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS)

PROJECT NO. B-4012

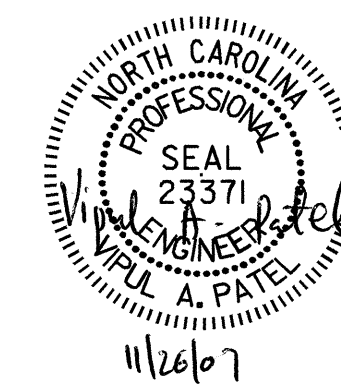
ASHE COUNTY

STATION: 17+30.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF
CORED SLAB UNIT
(SPANS A, B & C)

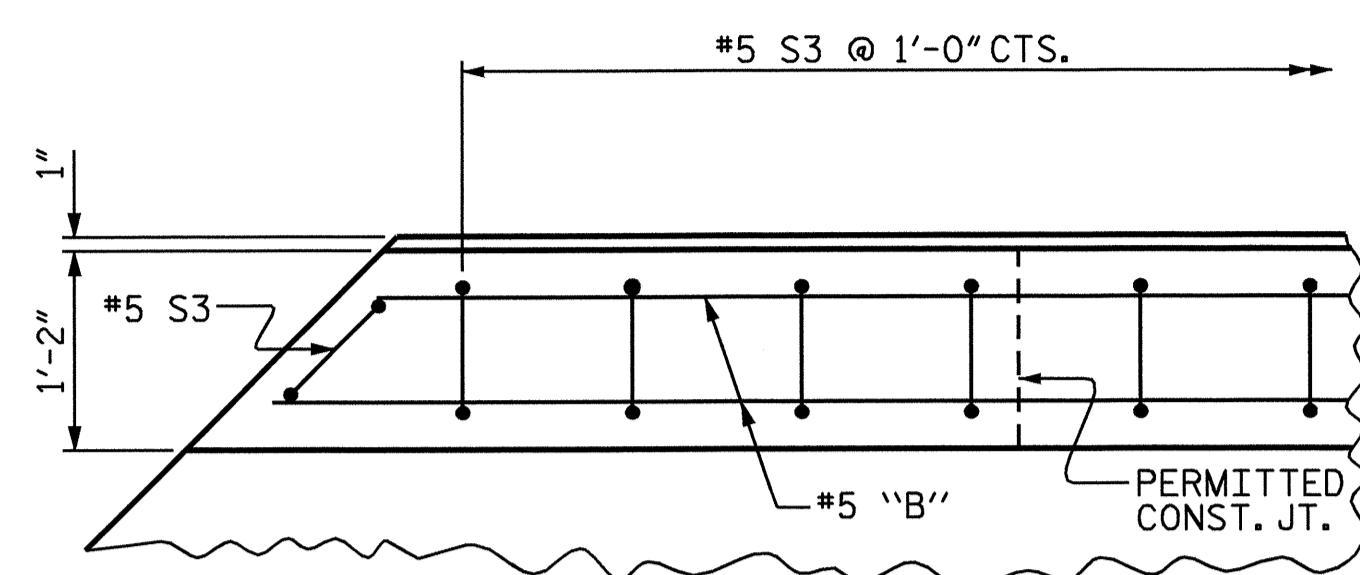


DRAWN BY : D.V. JOYNER/SFD DATE : 6/07
CHECKED BY : J.P. ADAMS/KDL DATE : 6/07

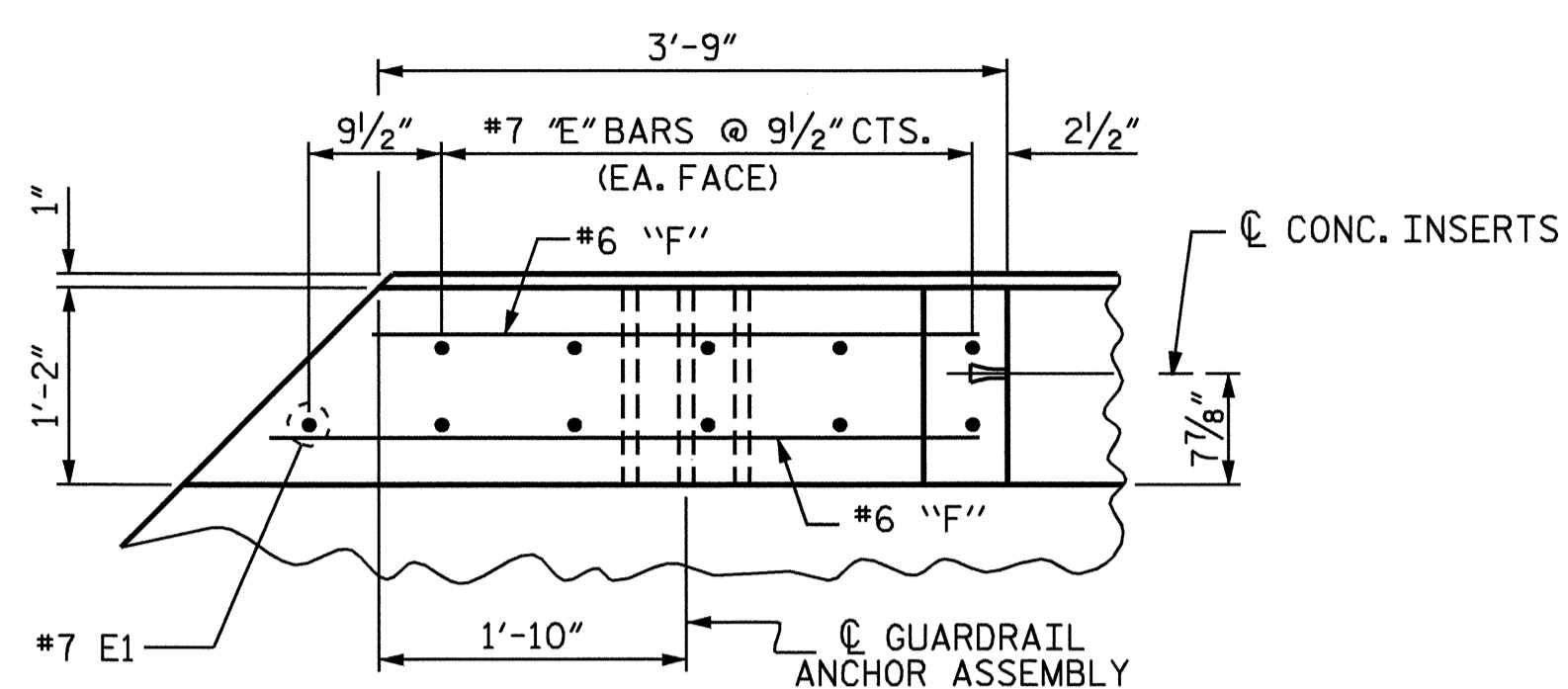
16-NOV-2007 10:33
R:\Structures\B-4012\Plans\B-4012.sd.dgn
sdbrowski

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

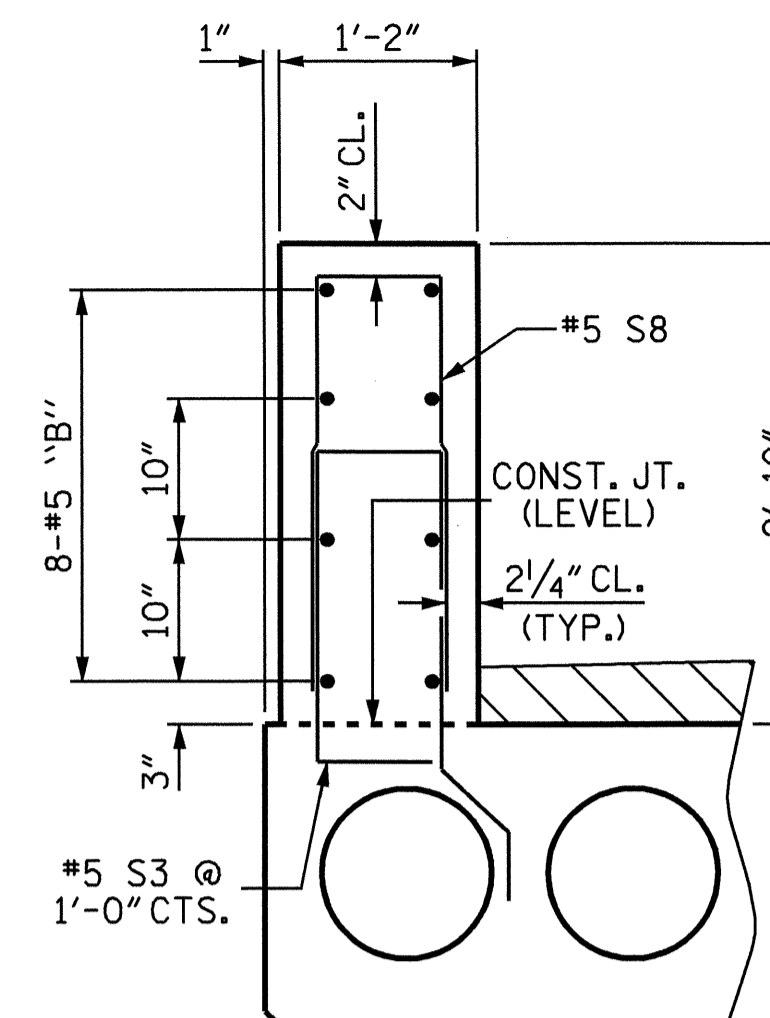
S-8
TOTAL SHEETS
27



PLAN OF PARAPET



PLAN OF END POST



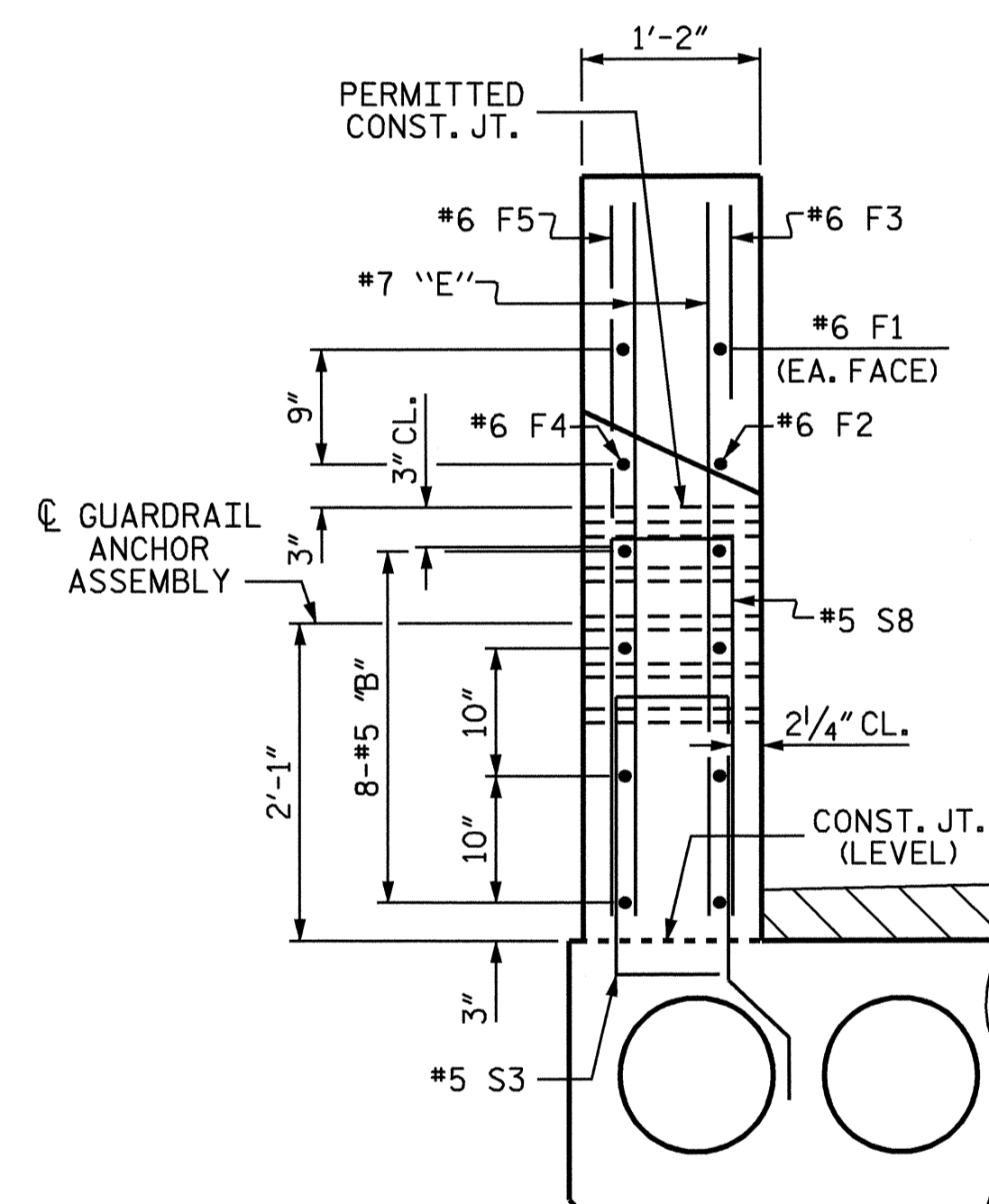
SECTION THRU PARAPET

NOTES

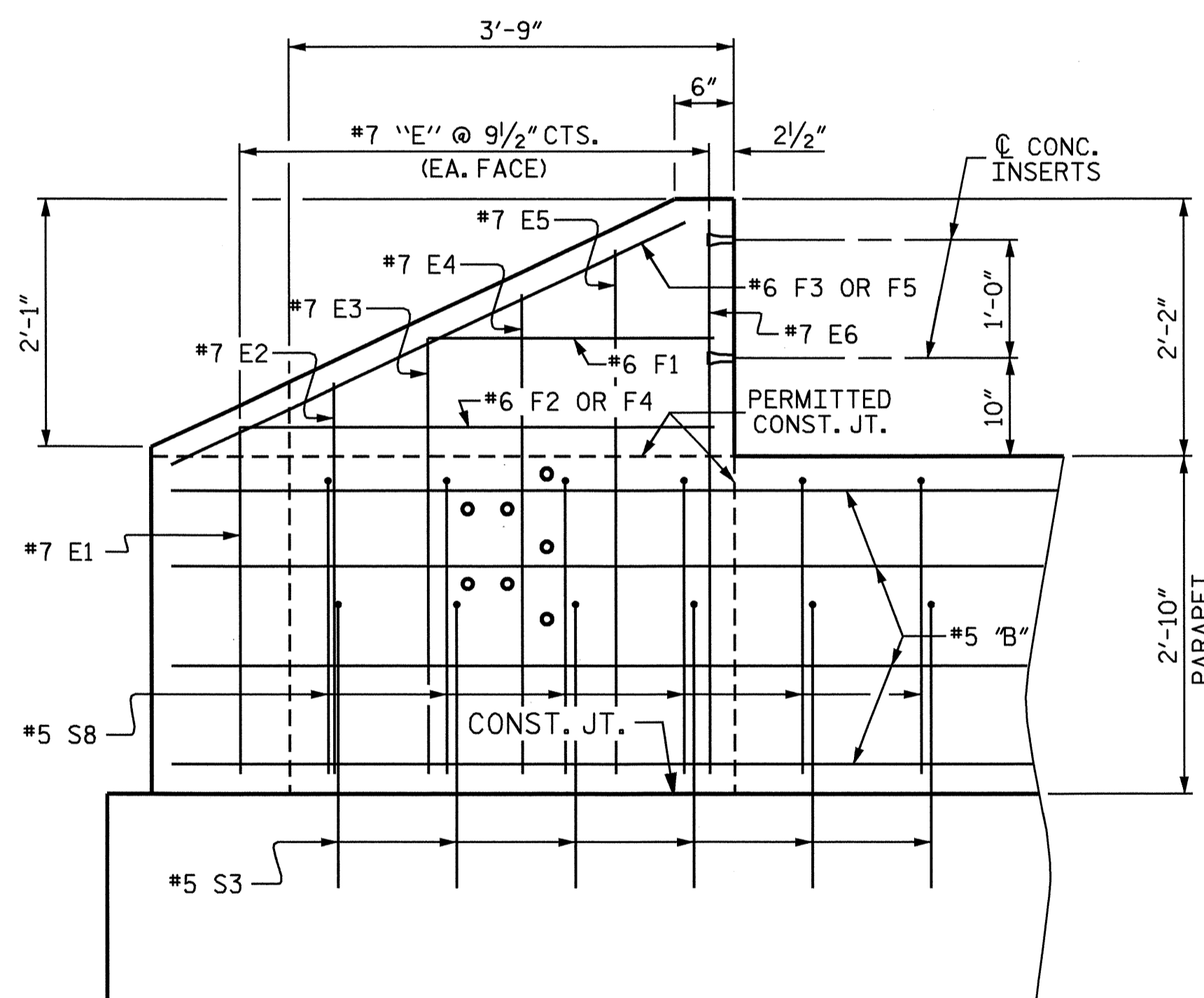
ALL REINFORCING STEEL IN THE PARAPET SHALL BE EPOXY COATED.

FOR DETAIL OF CONCRETE INSERT AND GUARDRAIL ANCHOR ASSEMBLY, SEE "RAIL POST SPACING AND END OF RAIL DETAILS" SHEET.

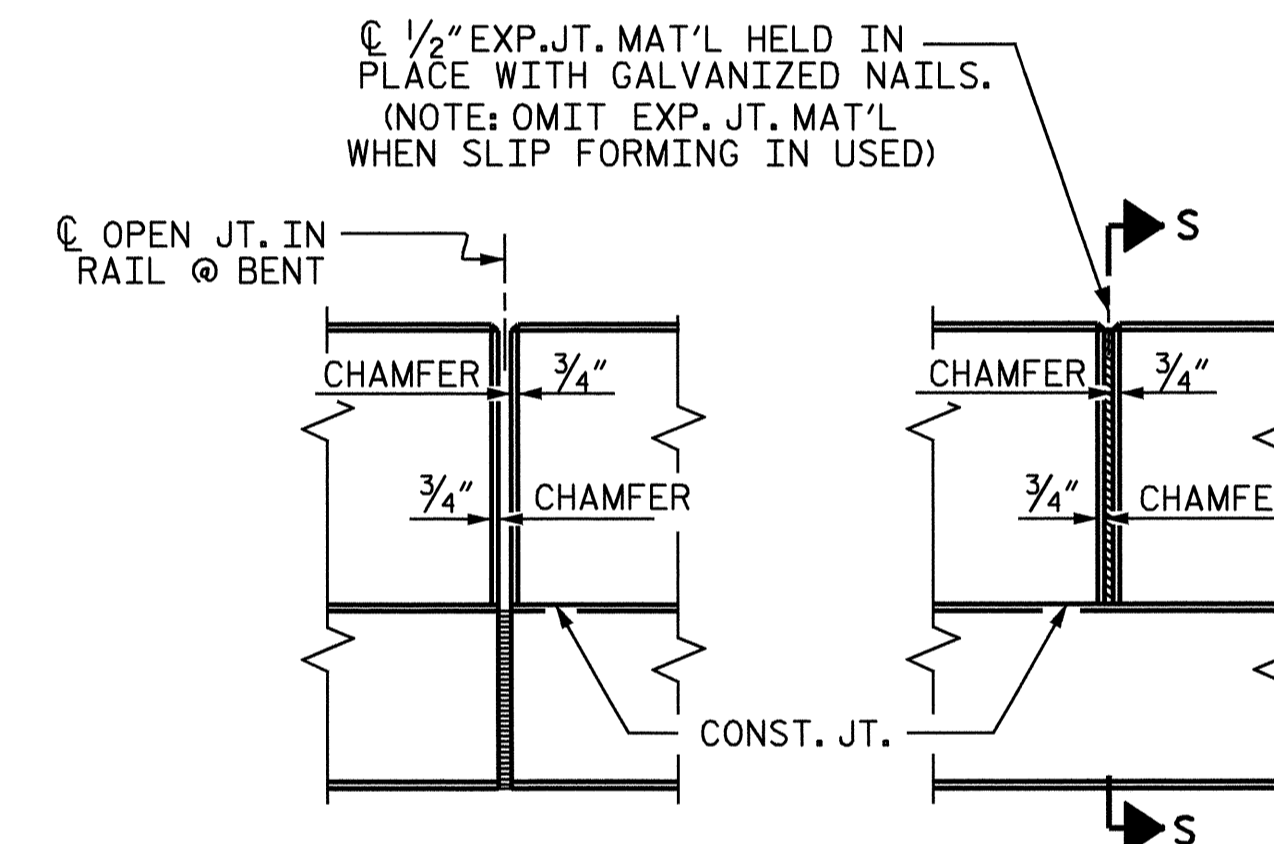
REINFORCING STEEL IN THE PARAPET MAY BE SHIFTED OR FIELD CUT TO CLEAR 8" X 8" DRAINAGE SLOTS.



END VIEW

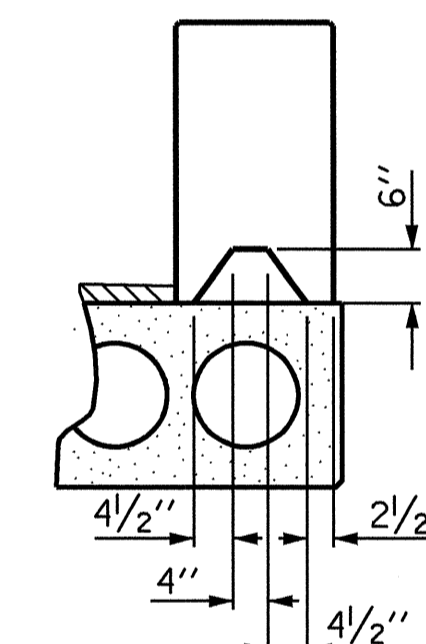


ELEVATION



ELEVATION AT EXPANSION JOINTS

PARAPET DETAILS



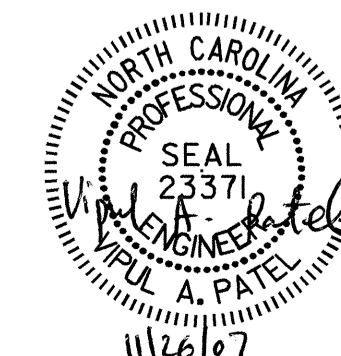
SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY
WHEN SLIP FORM IS USED)

PARAPET AND END POST FOR TWO BAR RAIL

PROJECT NO. B-4012
ASHE COUNTY
 STATION: 17+30.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

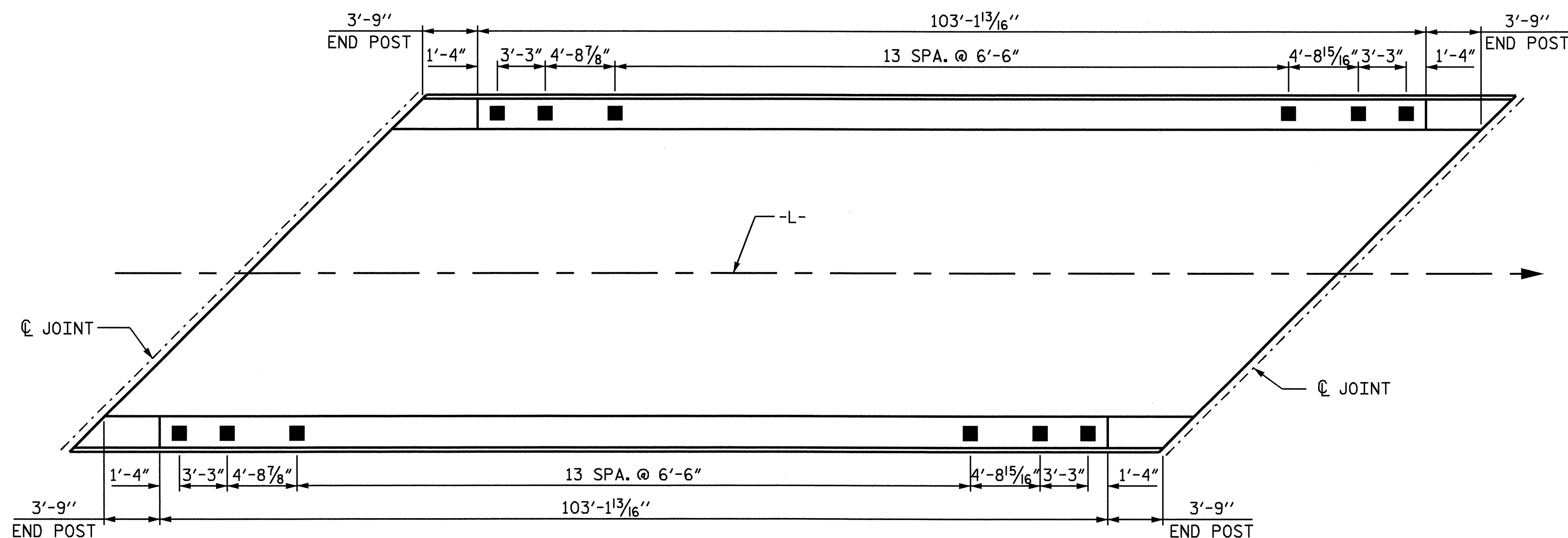
END POSTS
 AND
 PARAPET DETAILS



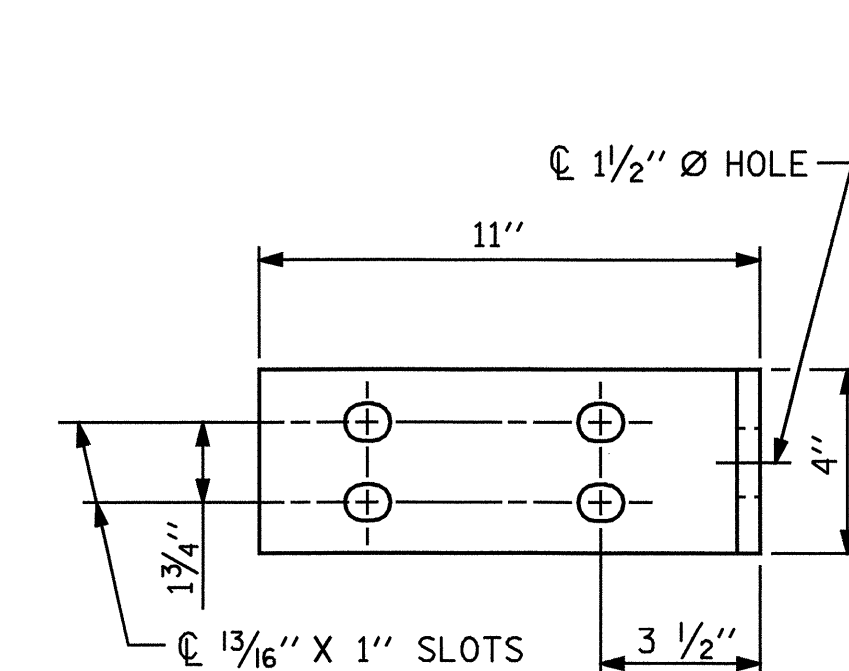
DRAWN BY: S. DOMBROWSKI DATE: 6/20/07
 CHECKED BY: K.D. LAYNE DATE: 6/07

16-NOV-2007 10:33
 R:\Structures\B-4012\Plans\B-4012.ed.CS.dgn
 sdombrowski

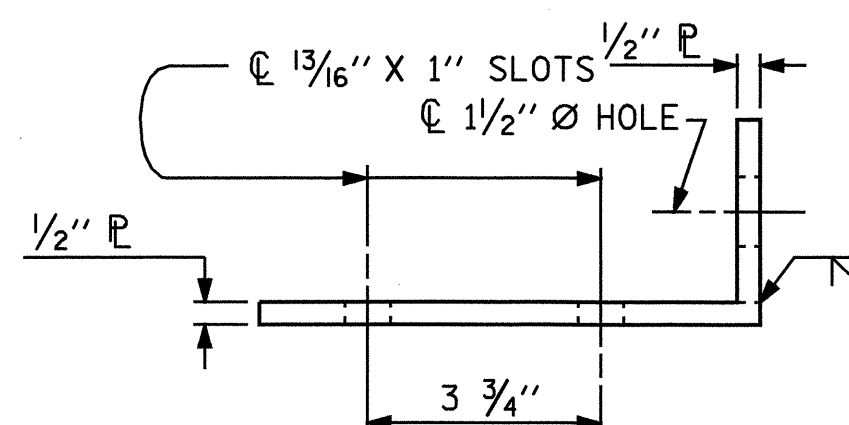
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			27



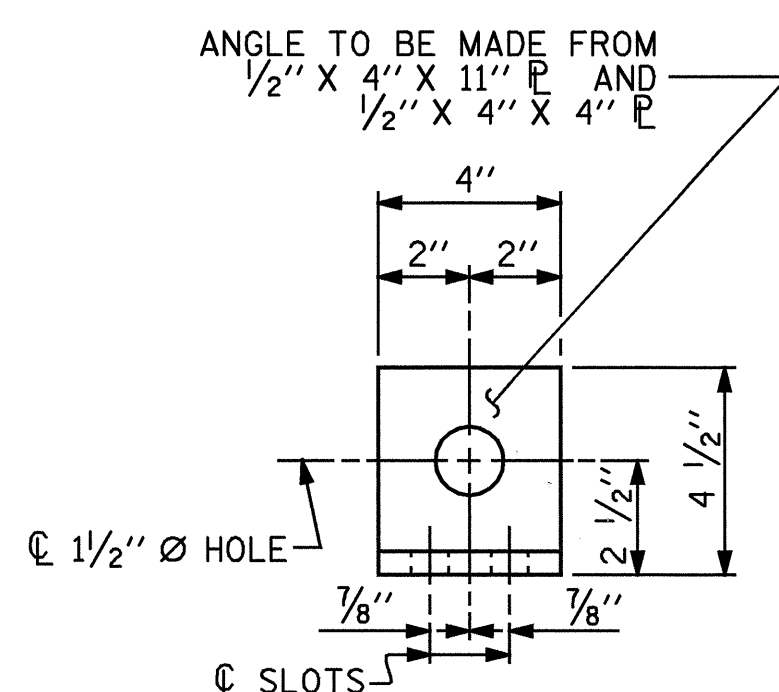
PLAN OF RAIL POST SPACING
(TYPICAL FOR EACH SIDE)



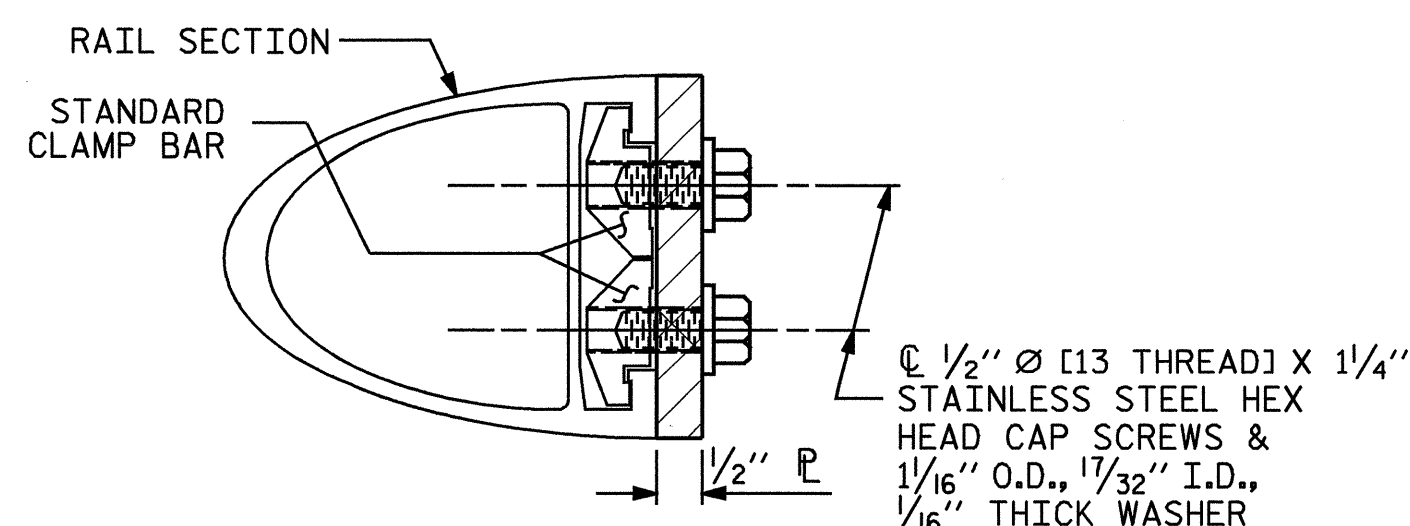
ELEVATION



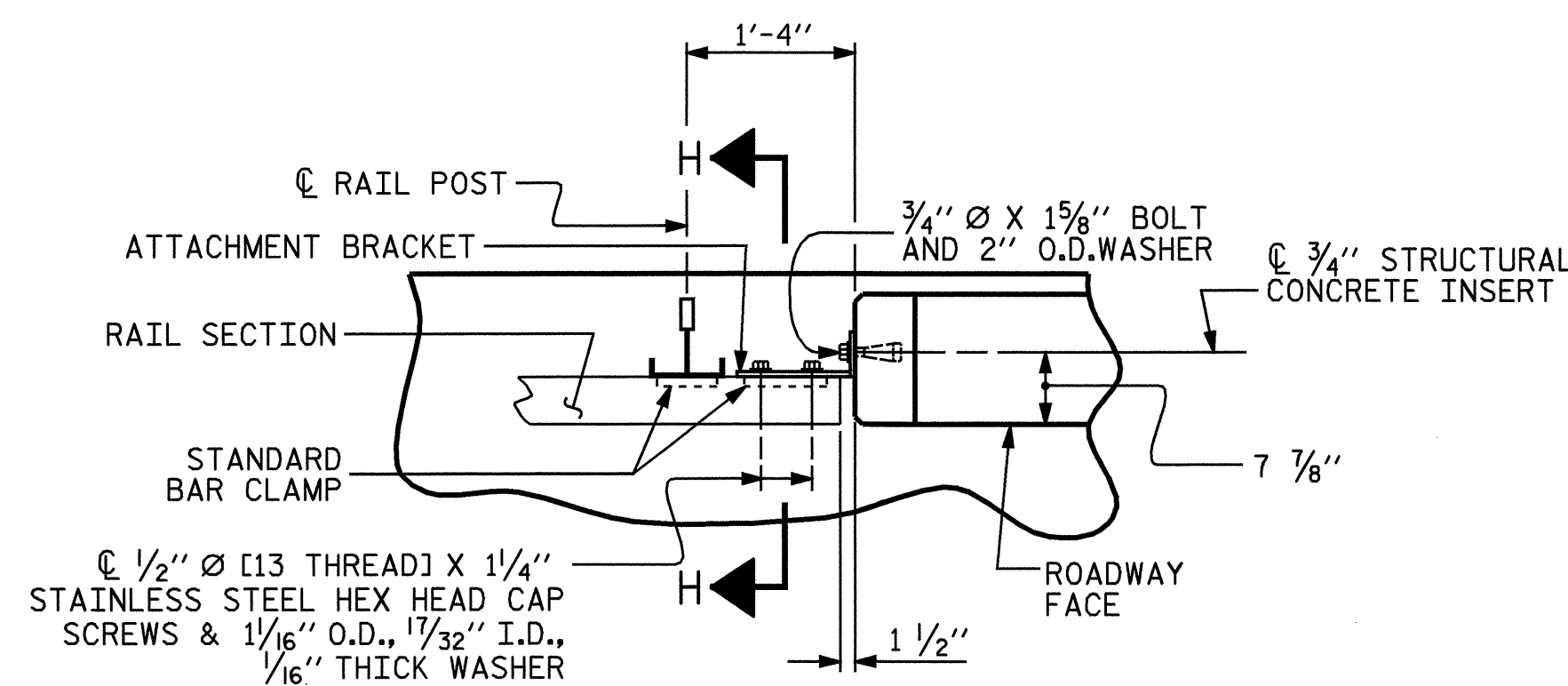
TOP VIEW



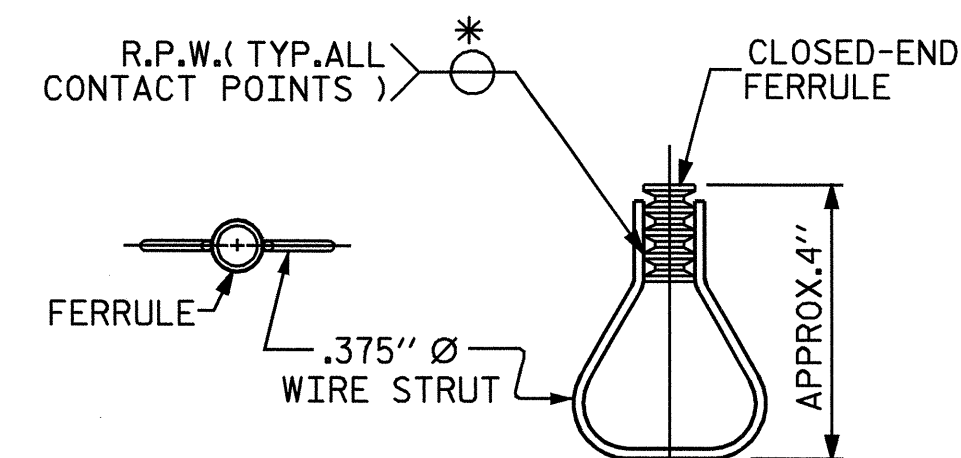
END VIEW



SECTION H-H (FIX)



PLAN - RAIL AND END POST



PLAN ELEVATION

STRUCTURAL CONCRETE INSERT

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

DETAILS FOR ATTACHING METAL RAIL TO END POST

ASSEMBLED BY : S. DOMBROWSKI	DATE : 6/20/07
CHECKED BY : K. D. LAYNE	DATE : 6/07
DRAWN BY : FCJ 1/88	REV. 10/17/00 LES/RDR
CHECKED BY : CRK 3/89	REV. 5/7/03 RWW/JTE
	REV. 5/1/06R KMM/TKK

16-NOV-2007 10:33
R:\Structures\B-4012\Plans\B-4012.ed.CS.dgn
sdombrowski

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°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.

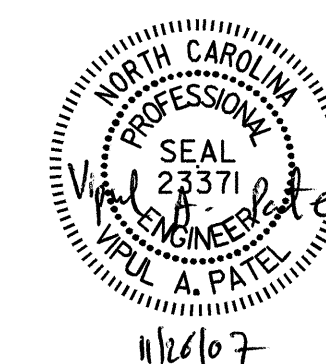
THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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.

PROJECT NO. B-4012
ASHE COUNTY
 STATION: 17+30.00 -L-

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

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



NOTES

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

ALUMINUM RAILS

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

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

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

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

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

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

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

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

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

GENERAL NOTES

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

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

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

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

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

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

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

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

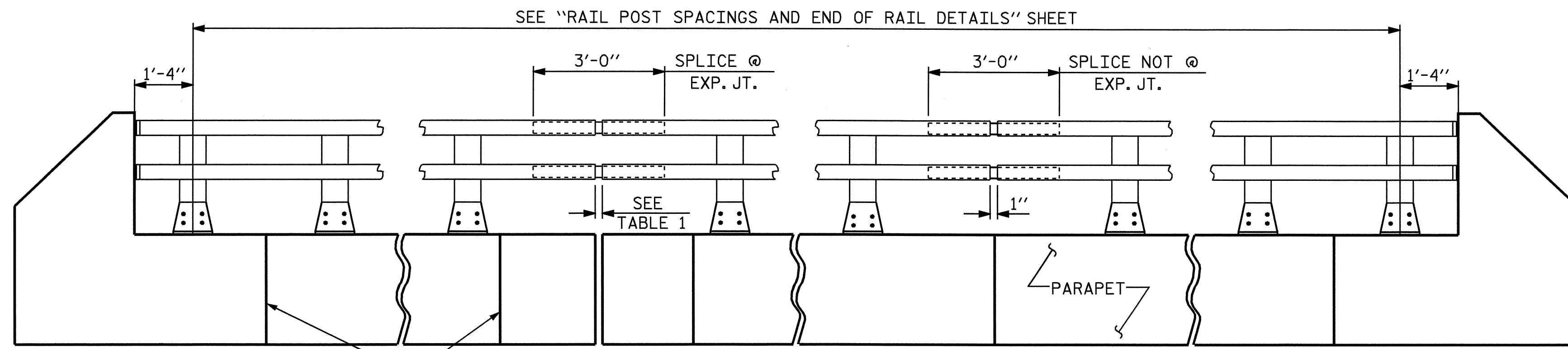
SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

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

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

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

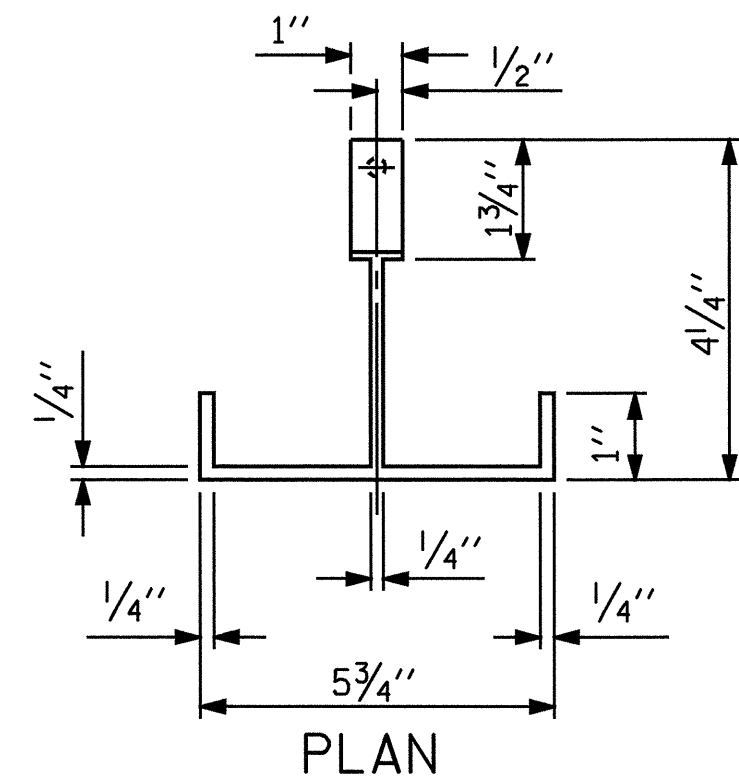
PAY LENGTH = 206.31 LIN. FT.



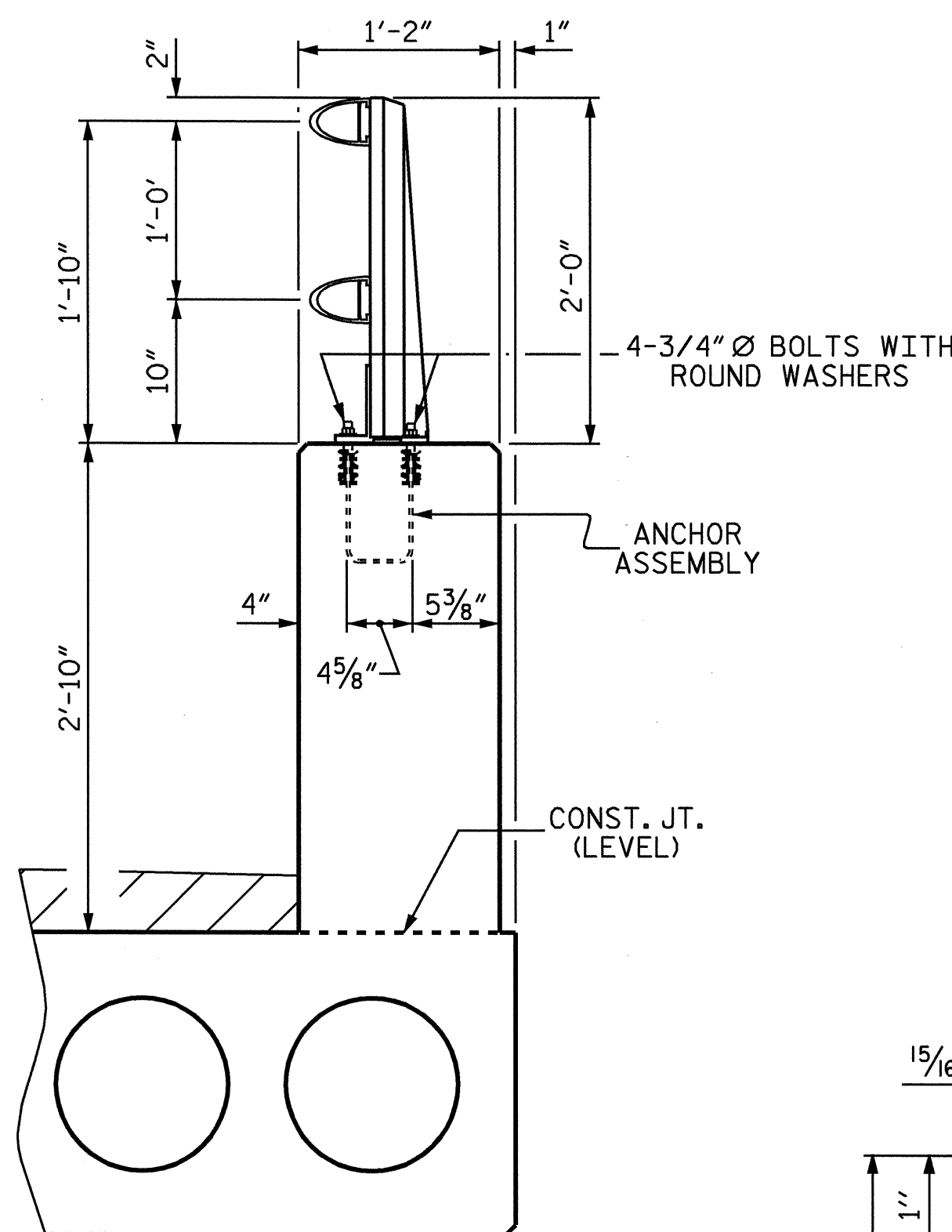
ELEVATION

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

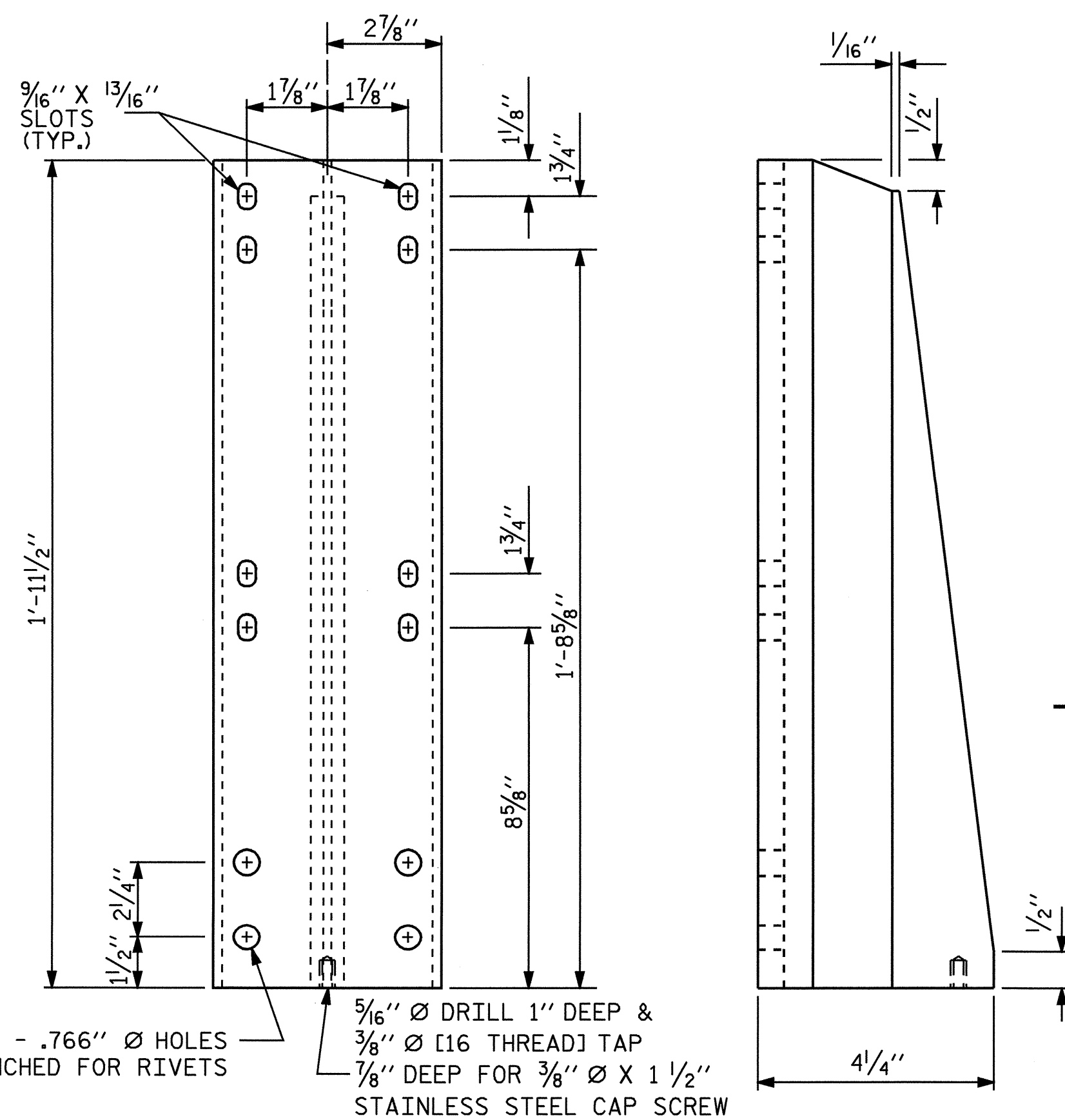
TABLE 1	
C. EXP. JT. @	RAIL OPENING
BENT #1	1 1/2"
BENT #2	1 1/2"



PLAN



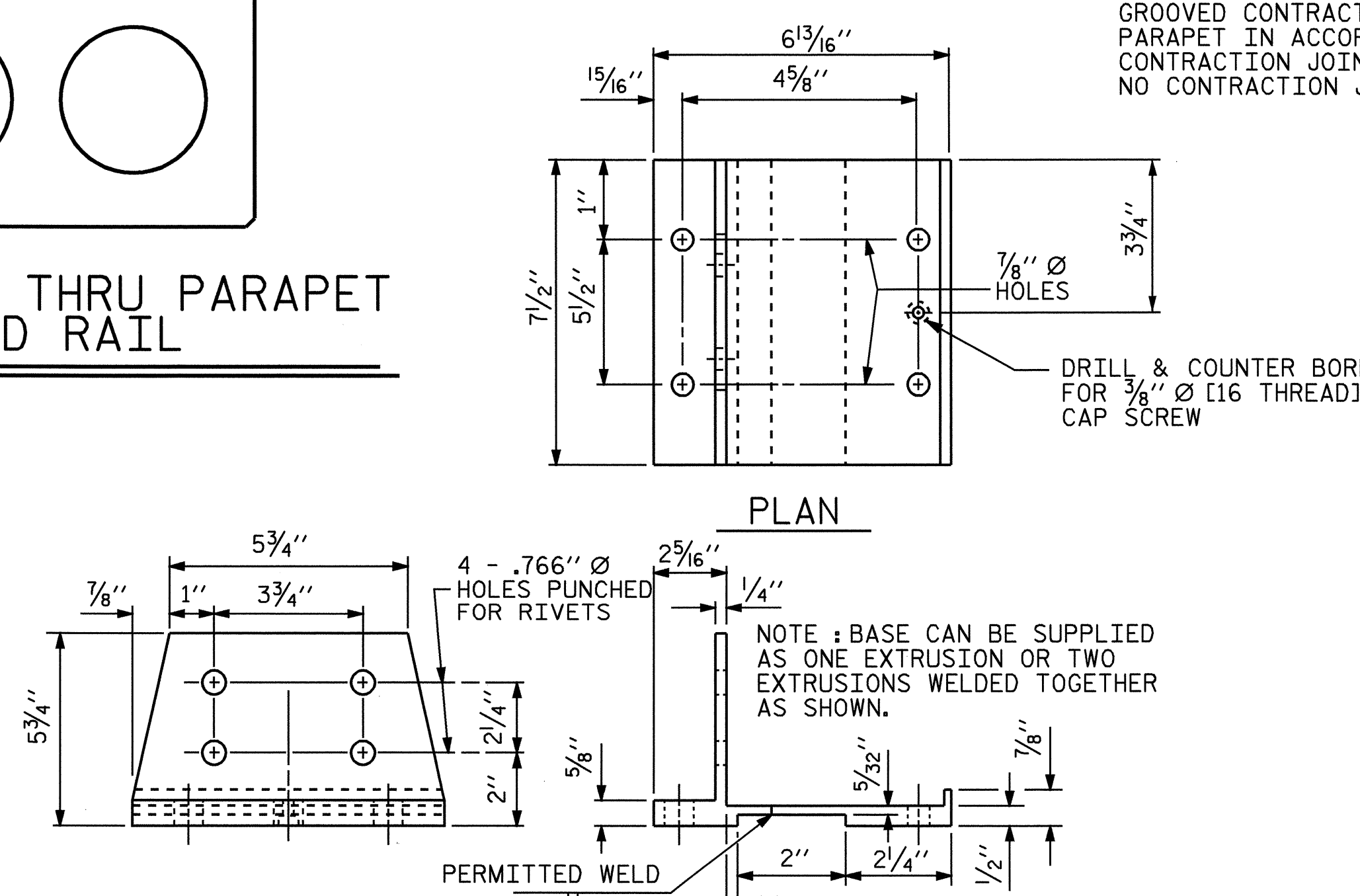
SECTION THRU PARAPET AND RAIL



FRONT ELEVATION

SIDE ELEVATION

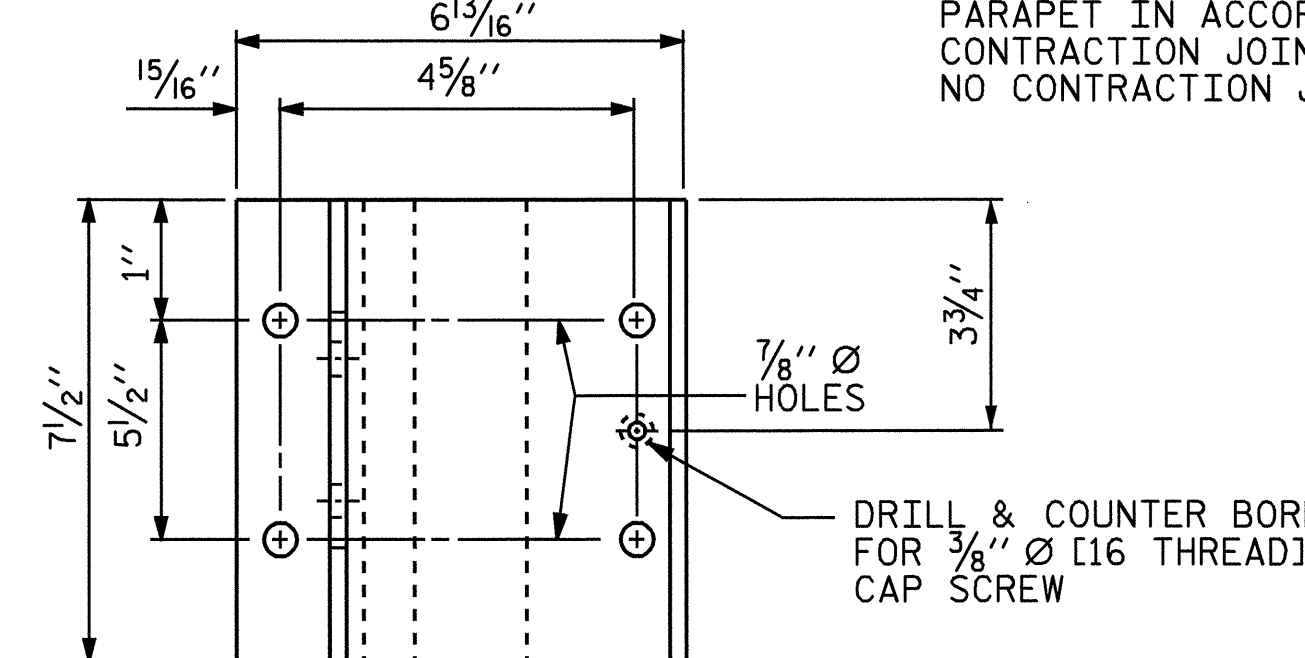
DETAILS OF POST



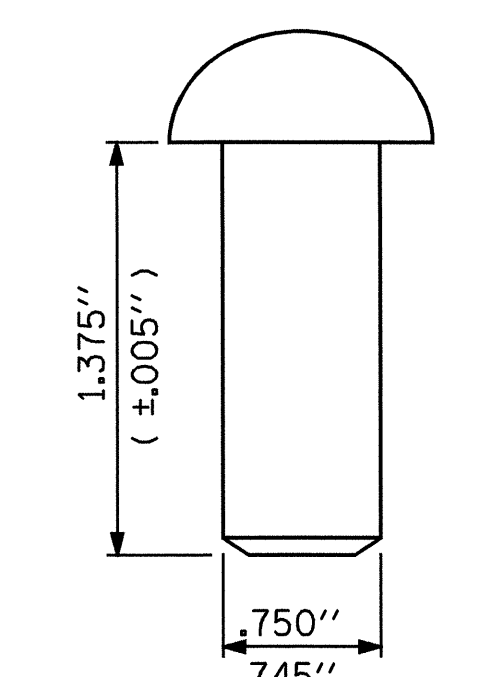
FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS



PLAN



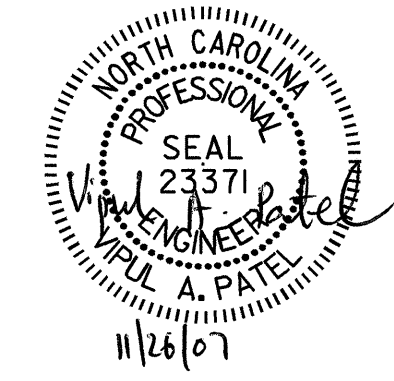
RIVET DETAIL

ASSEMBLED BY : S.DOMBROWSKI DATE : 6/19/07
 CHECKED BY : K.D. LAYNE DATE : 6/07
 DRAWN BY : EEM 6/94 REV. 10/17/00 LES/RDR
 CHECKED BY : RGW 6/94 REV. 5/1/03R RWW/JTE
 REV. 5/1/06 TLA/GM

PROJECT NO. B-4012
ASHE COUNTY
 STATION: 17+30.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA				SHEET NO.	
DEPARTMENT OF TRANSPORTATION				S-11	
RALEIGH				TOTAL SHEETS	
STANDARD				27	
2 BAR METAL RAIL					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		



NOTES

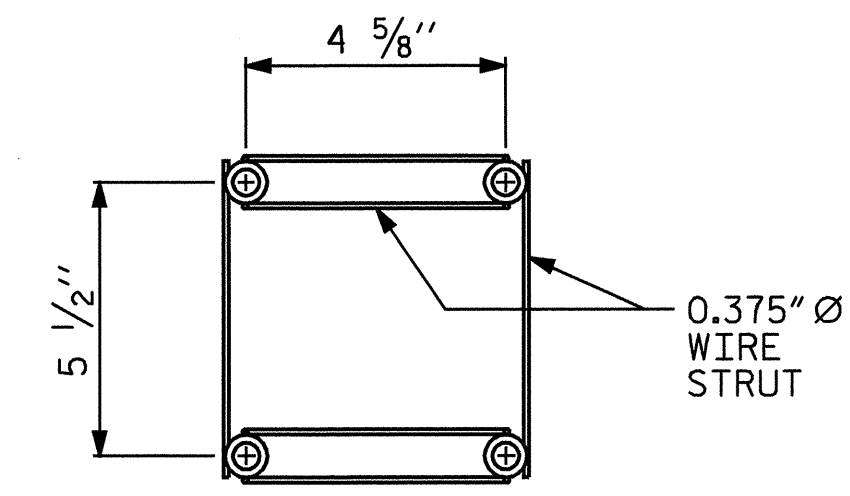
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

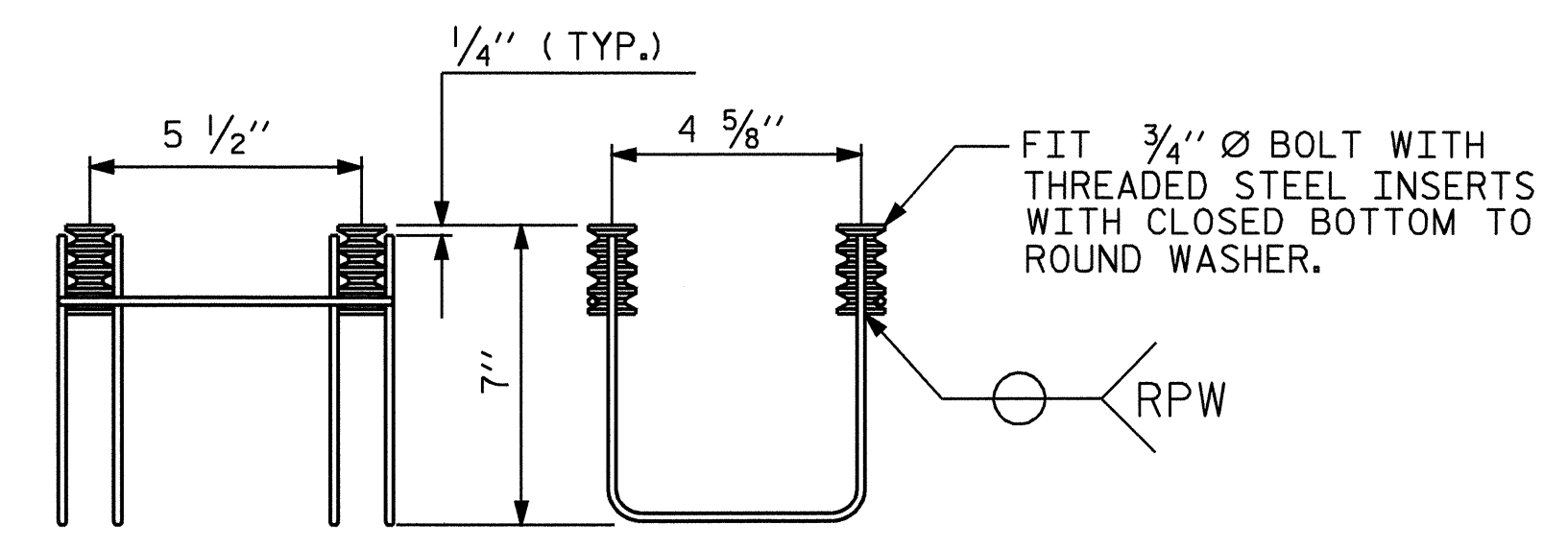
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT 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 1/6" 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 SPECIAL PROVISIONS.

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



PLAN



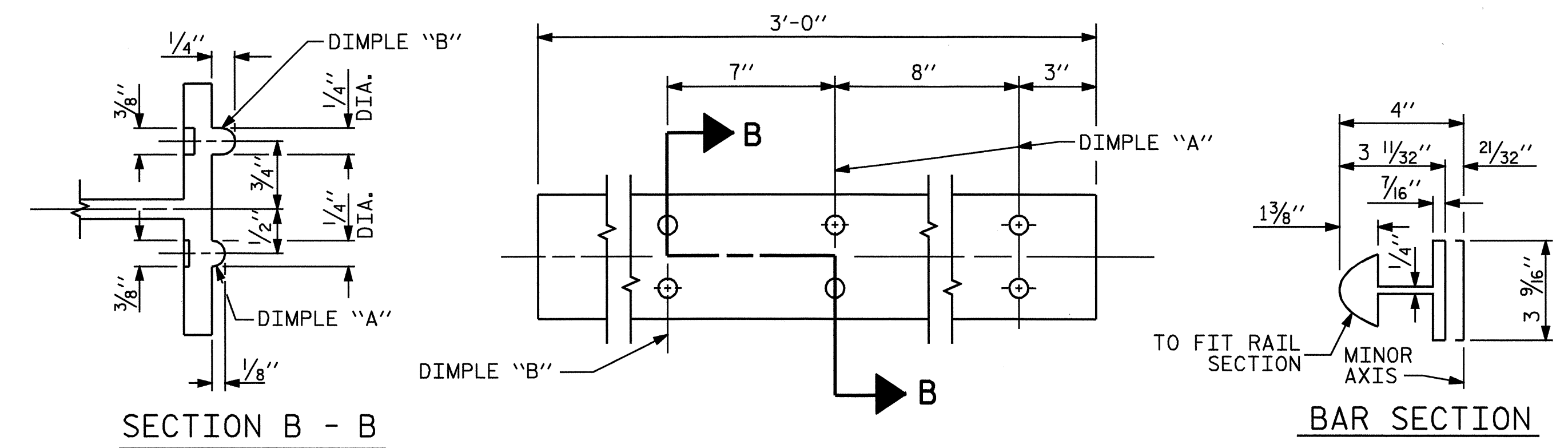
SIDE VIEW

ELEVATION

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

4-BOLT METAL RAIL ANCHOR ASSEMBLY

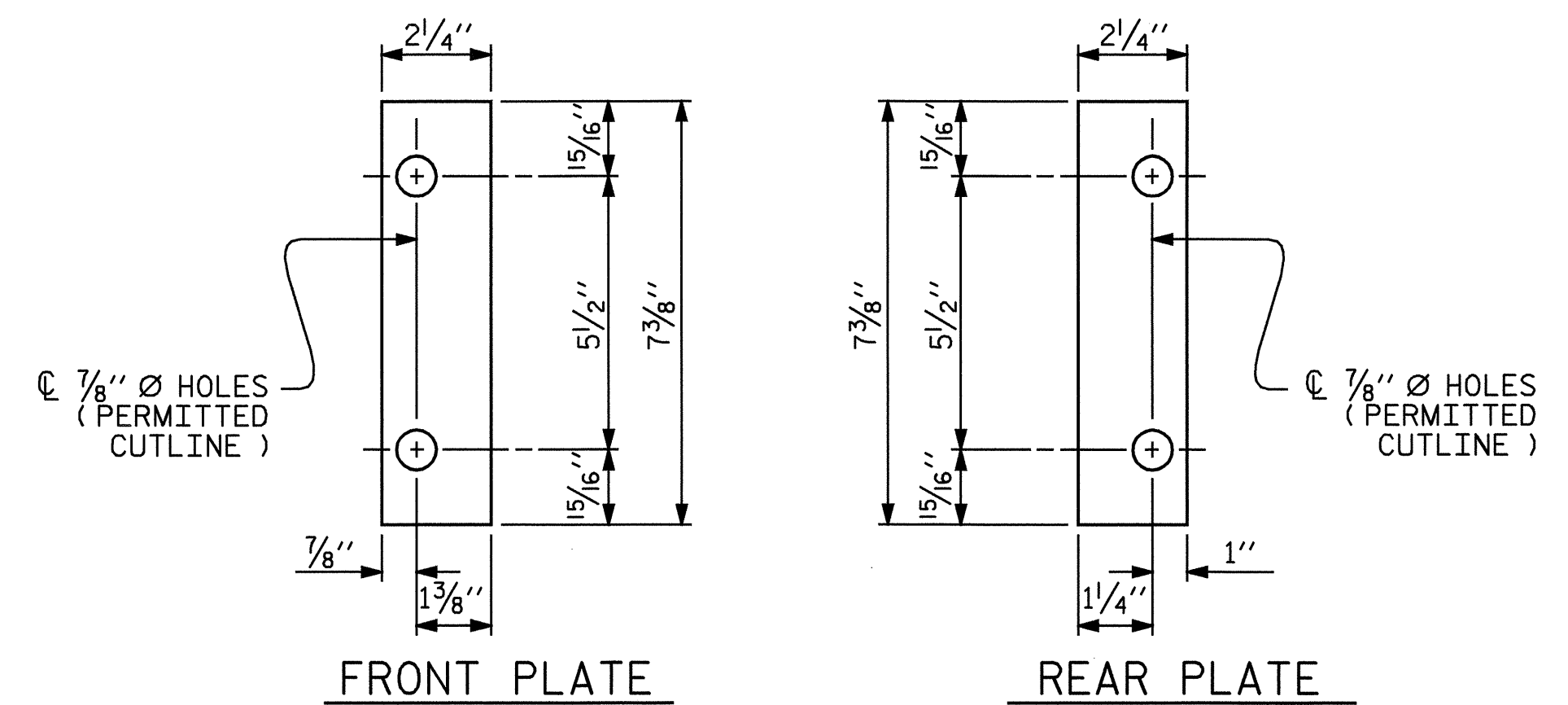
(36 ASSEMBLIES REQUIRED)



SECTION B - B

EXPANSION BAR DETAILS

BAR SECTION

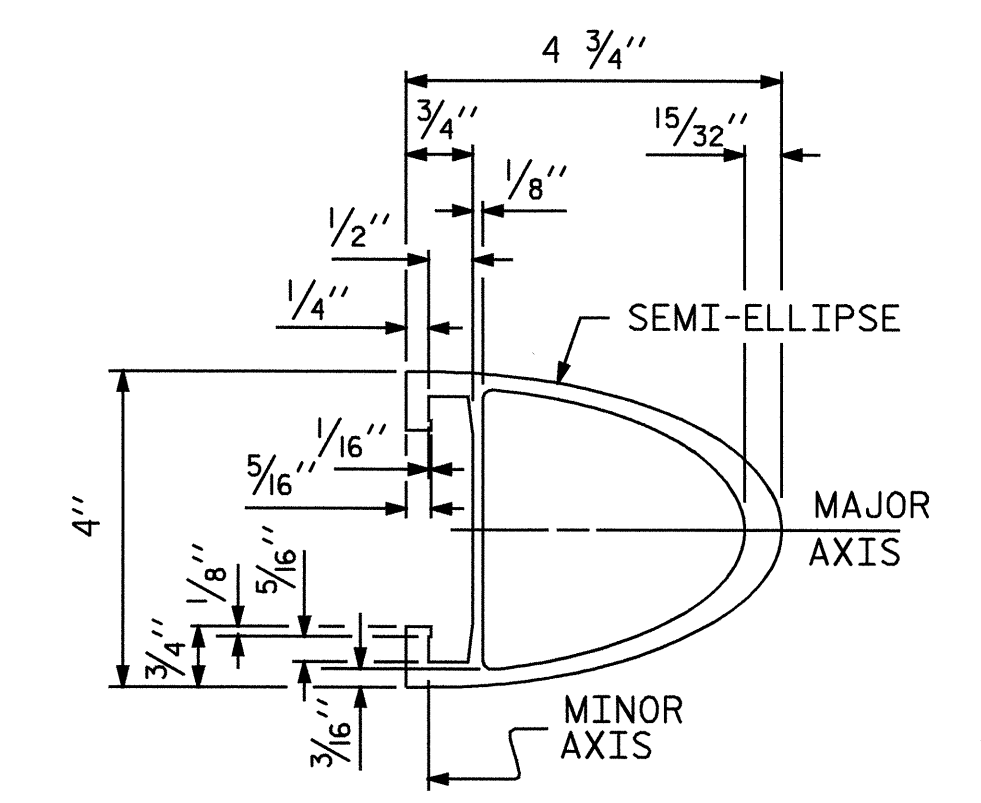


FRONT PLATE

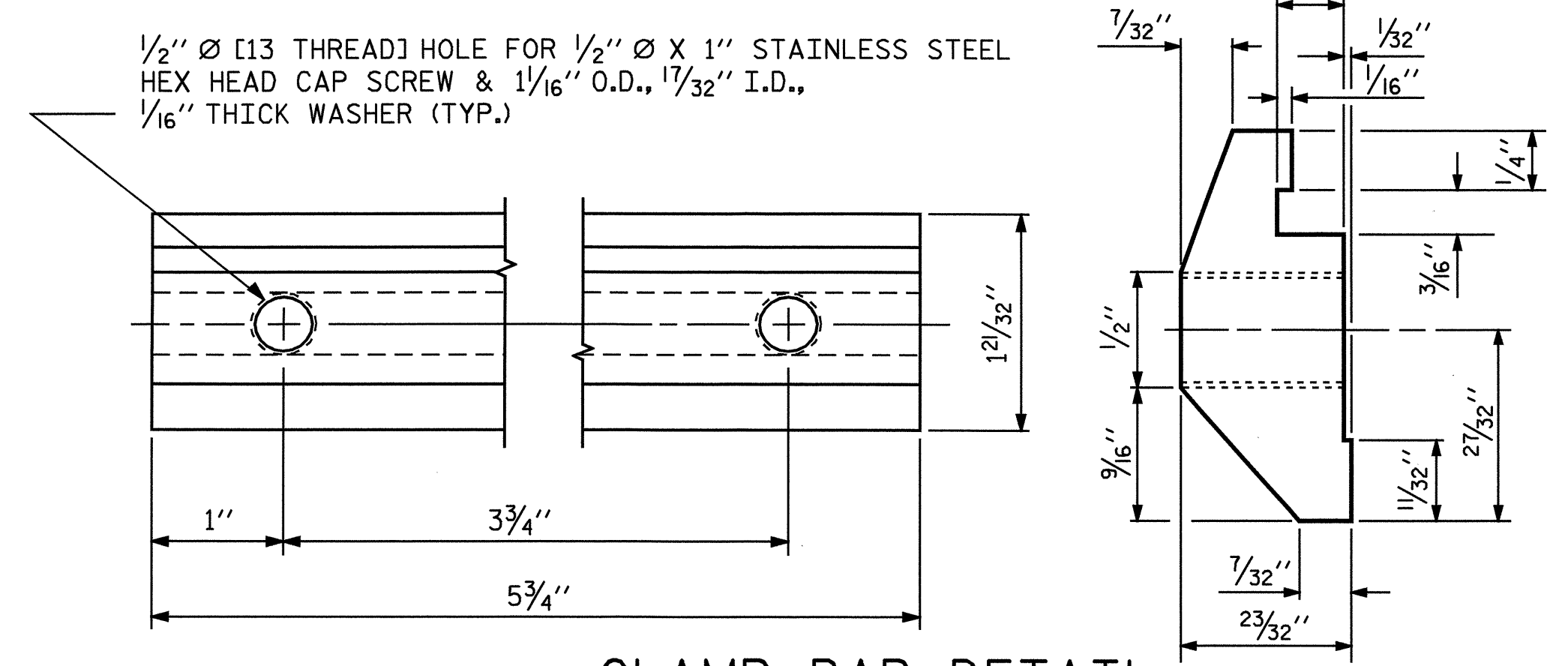
REAR PLATE

SHIM DETAILS

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

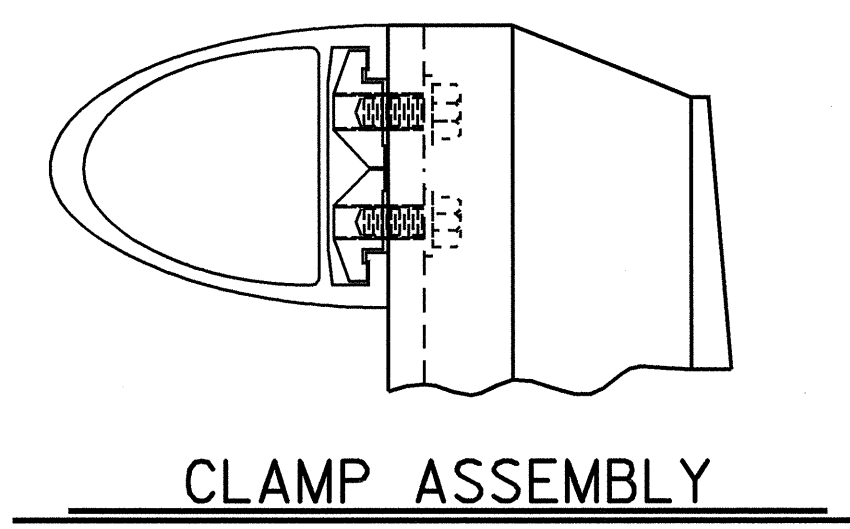


RAIL SECTION

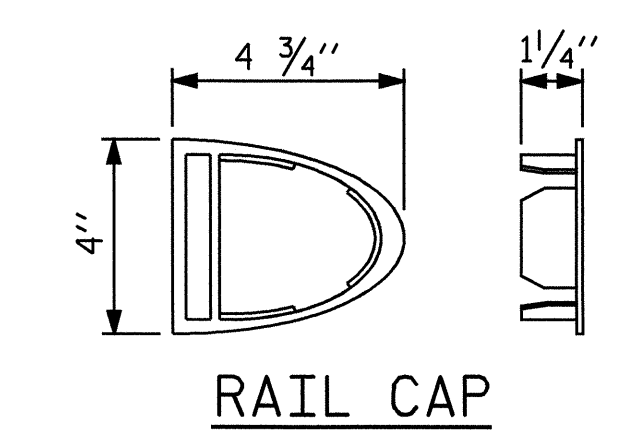


CLAMP BAR DETAIL

(4 REQUIRED PER POST)



CLAMP ASSEMBLY

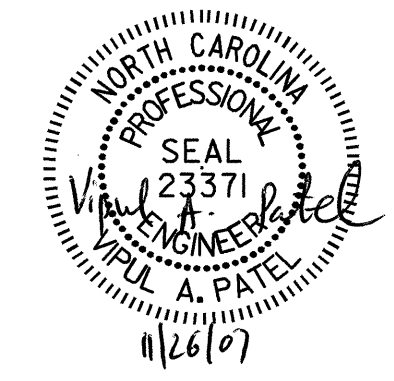


RAIL CAP

PROJECT NO. B-4012
 ASHE COUNTY
 STATION: 17+30.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-12
STANDARD						TOTAL SHEETS 27
2 BAR METAL RAIL						
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



ASSEMBLED BY : S.DOMBROWSKI	DATE : 6/19/07
CHECKED BY : K.D.LAYNE	DATE : 6/07
DRAWN BY : EEM 6/94	REV. 2/6/97 EEM/RGW
CHECKED BY : RGW 6/94	REV. 8/16/99 MAB/LES
	REV. 5/1/06R KMM/TKK

NOTES

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

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

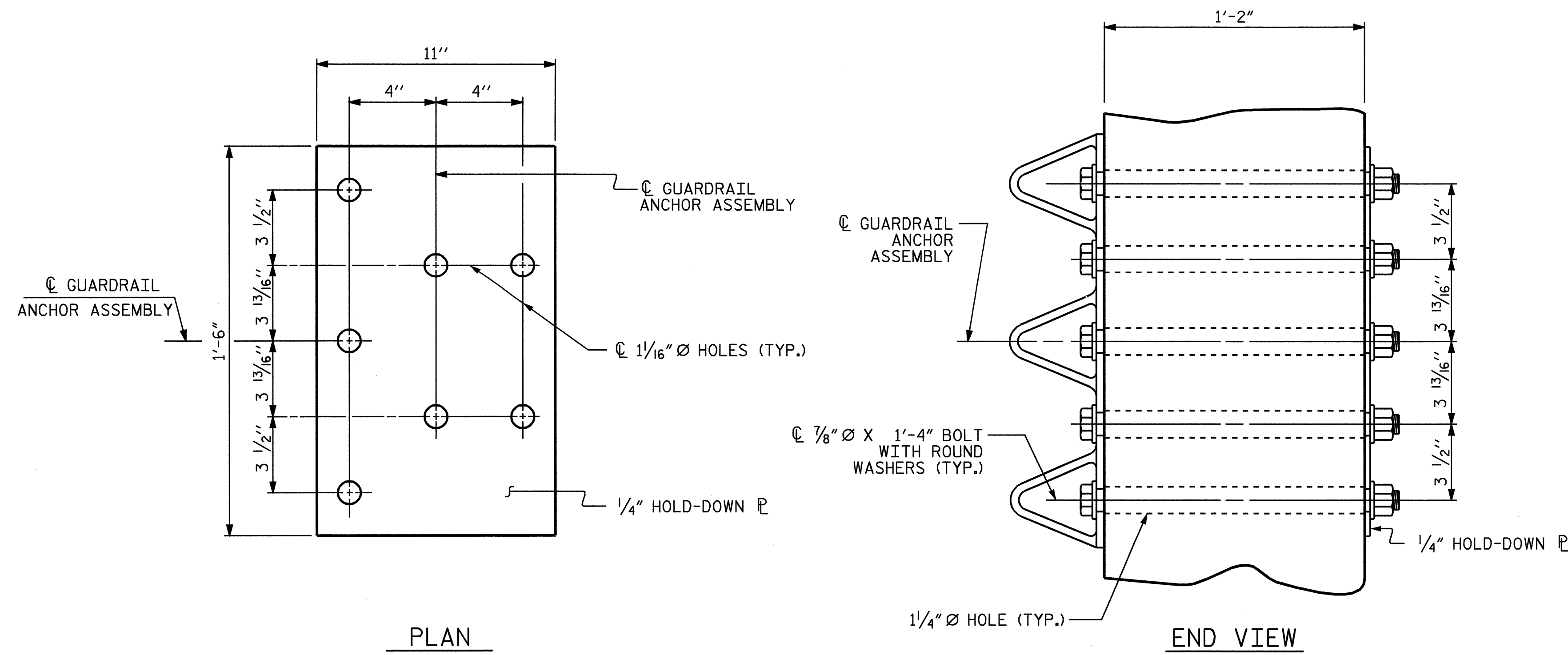
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS.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

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

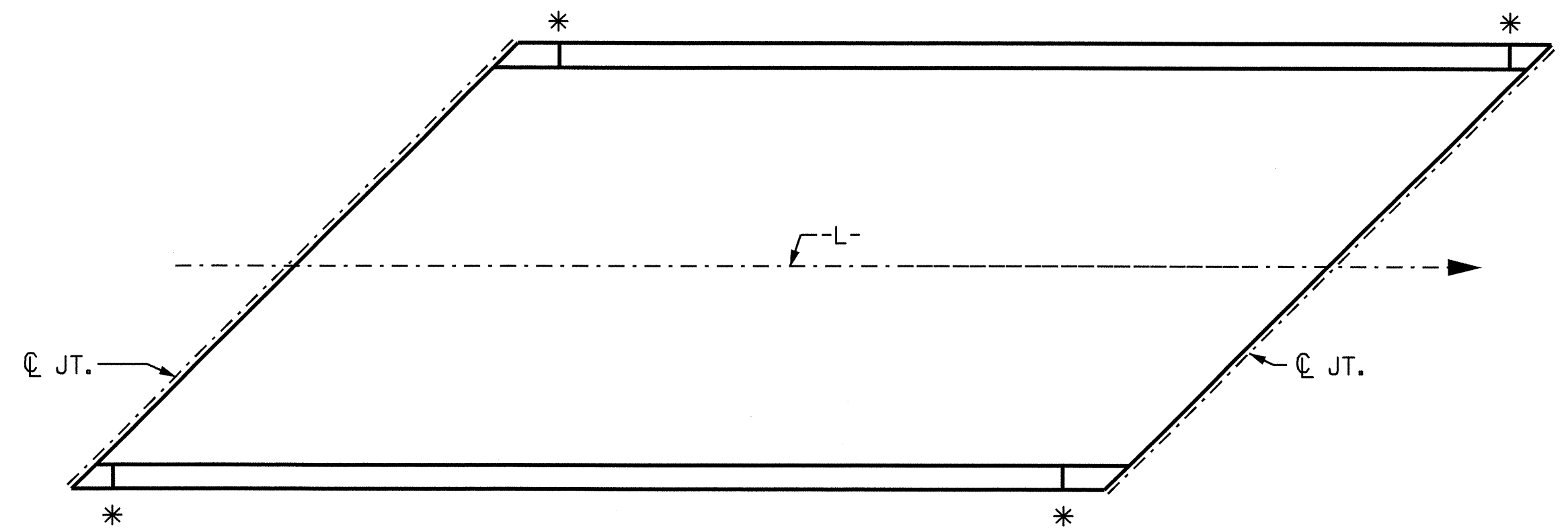
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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

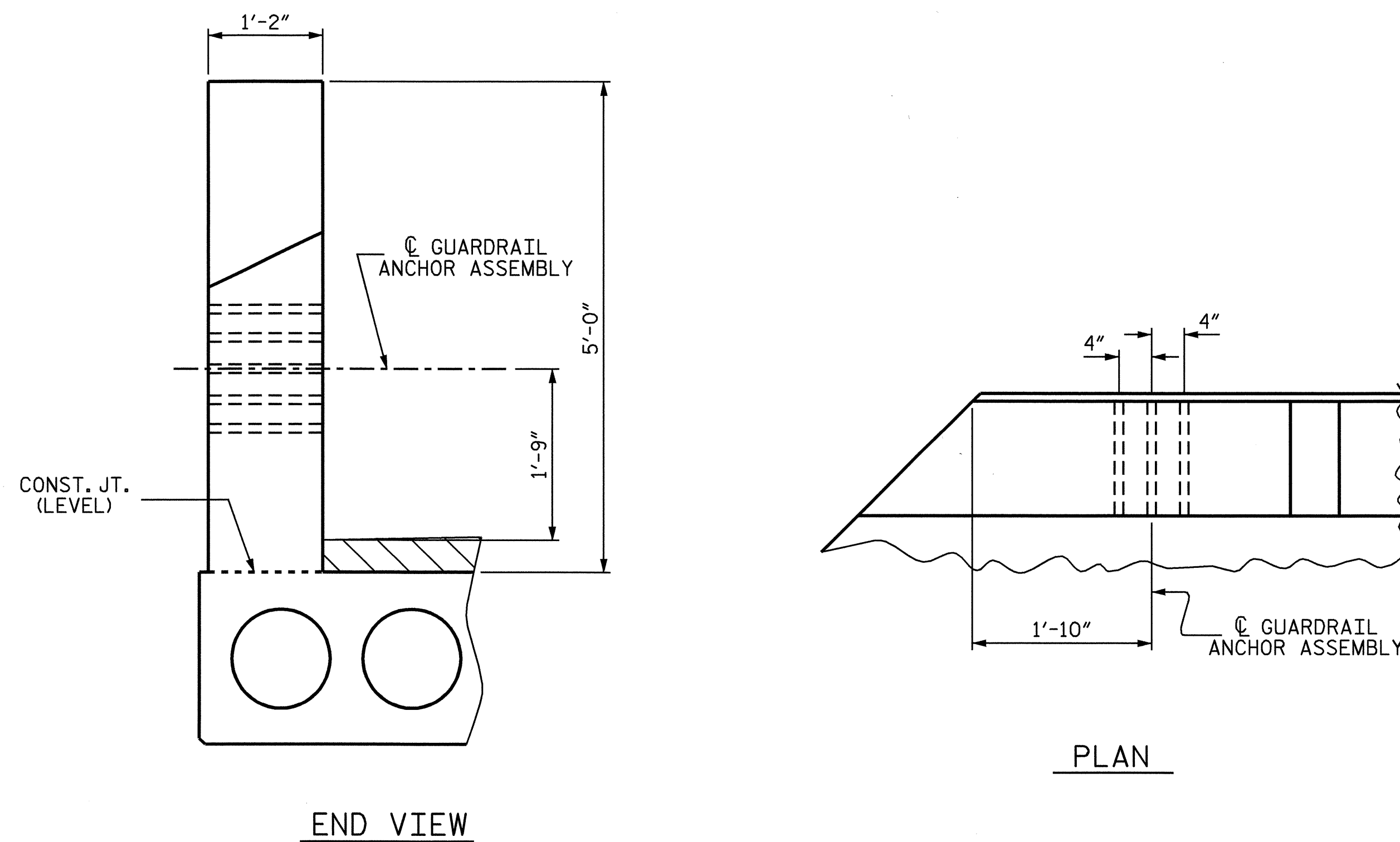
THE 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



GUARDRAIL ANCHOR ASSEMBLY DETAILS



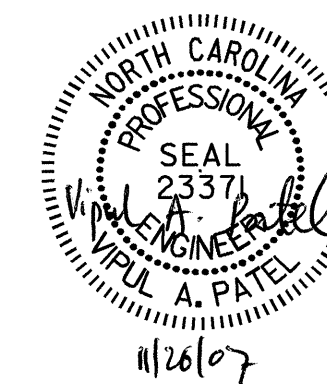
SKETCH SHOWING POINTS OF ATTACHMENT
* LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. B-4012
ASHE COUNTY
 STATION: 17+30.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-13					TOTAL SHEETS 27



ASSEMBLED BY : S. DOMBROWSKI	DATE : 6/07
CHECKED BY : K.D. LAYNE	DATE : 6/07
DRAWN BY : EEM 6/94	REV. 10/17/00 RWW/LES
CHECKED BY : RGW 6/94	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

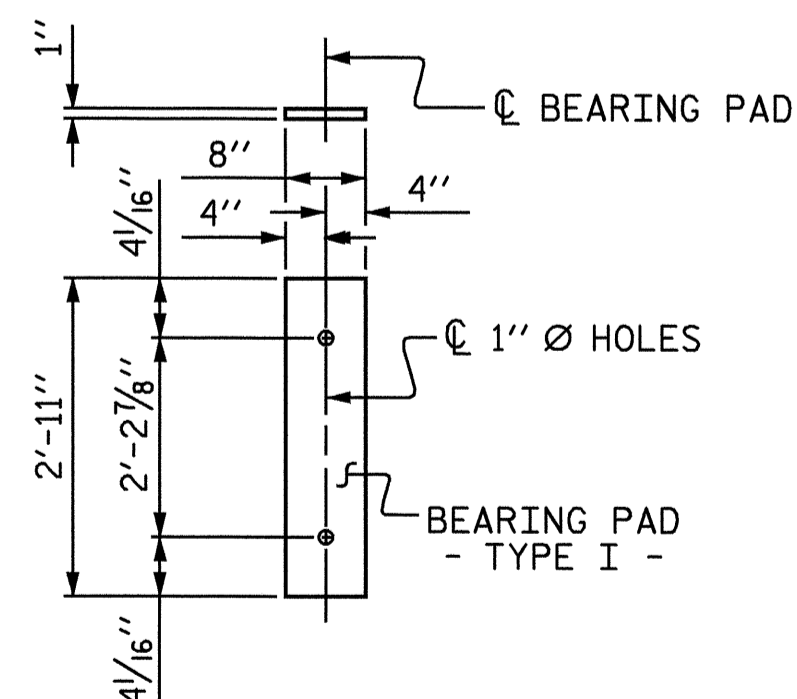
DEAD LOAD DEFLECTION AND CAMBER			
	SPAN A	SPAN B	SPAN C
	1/2" Ø L.R. STRAND	0.6" Ø L.R. STRAND	1/2" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	7/16" ↑	3/2" ↑	3/8" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/16" ↓	5/8" ↓	1/16" ↓
FINAL CAMBER	3/8" ↑	2 7/8" ↑	3/16" ↑

** INCLUDES FUTURE WEARING SURFACE

CORED SLABS REQUIRED			
SPAN A	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	28'-3 3/8"	56.65
INTERIOR C.S.	9	28'-3 3/8"	254.91
TOTAL	11	28'-3 3/8"	311.56
SPAN B	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	57'-9 7/8"	115.65
INTERIOR C.S.	9	57'-9 7/8"	520.41
TOTAL	11	57'-9 7/8"	636.06
SPAN C	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	25'-3 3/8"	50.65
INTERIOR C.S.	9	25'-3 3/8"	227.91
TOTAL	11	25'-3 3/8"	278.56
TOTAL LENGTH			1226.18

GRADE 270 STRANDS		
	1/2" Ø L.R.	0.6" Ø L.R.
AREA (SQUARE INCHES)	0.153	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	41,300	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	30,980	43,950

BILL OF MATERIAL FOR PARAPET AND END POST					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B4	16	#5	STR	27'-9"	463
*B5	64	#5	STR	16'-4"	1090
*B6	16	#5	STR	24'-9"	413
*E1	4	#7	STR	2'-11"	24
*E2	8	#7	STR	3'-3"	53
*E3	8	#7	STR	3'-8"	60
*E4	8	#7	STR	4'-0"	65
*E5	8	#7	STR	4'-5"	72
*E6	8	#7	STR	4'-8"	76
*F1	8	#6	STR	2'-7"	31
*F2	4	#6	STR	4'-0"	24
*F3	4	#6	STR	4'-9"	29
*F4	4	#6	STR	3'-5"	21
*F5	4	#6	STR	3'-6"	21
*S8	228	#5	2	5'-9"	1367
* EPOXY COATED REINFORCING STEEL				3809 LBS.	
CLASS AA CONCRETE				28.4 CU. YDS.	
CONCRETE PARAPET				223.64 LIN. FT.	

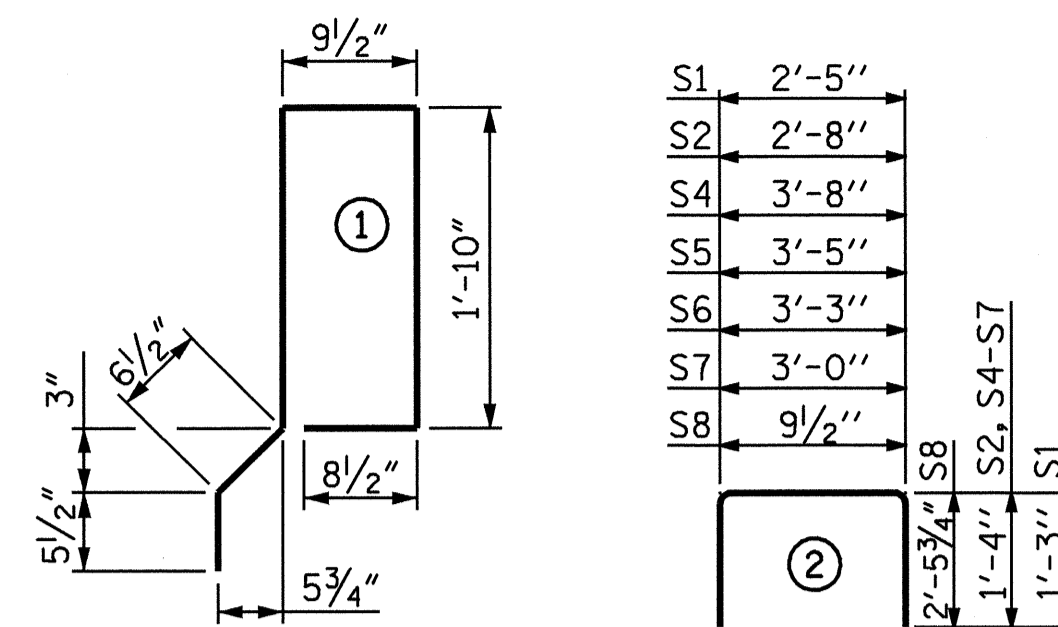


FIXED END
(TYPE I - 66 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE CORED SLAB SECTION

SPAN A				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B1	2	#4	STR	27'-10"	37	27'-10"	37
S1	8	#4	2	4'-11"	26	4'-11"	26
S2	44	#4	2	5'-4"	157	5'-4"	157
*S3	29	#5	1	6'-2"	187		
S4	4	#4	2	6'-4"	17	6'-4"	17
S5	4	#4	2	6'-1"	16	6'-1"	16
S6	4	#4	2	5'-11"	16	5'-11"	16
S7	4	#4	2	5'-8"	15	5'-8"	15
REINFORCING STEEL				284 LBS.		284 LBS.	
* EPOXY COATED REINFORCING STEEL				187 LBS.			
5,000 P.S.I. CONCRETE				4.2 CU. YDS.		4.2 CU. YDS.	
1/2" Ø L.R. STRANDS				No. 12		No. 12	
SPAN B				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B2	4	#4	STR	29'-7"	79	29'-7"	79
S1	8	#4	2	4'-11"	26	4'-11"	26
S2	106	#4	2	5'-4"	378	5'-4"	378
*S3	59	#5	1	6'-2"	379		
S4	4	#4	2	6'-4"	17	6'-4"	17
S5	4	#4	2	6'-1"	16	6'-1"	16
S6	4	#4	2	5'-11"	16	5'-11"	16
S7	4	#4	2	5'-8"	15	5'-8"	15
REINFORCING STEEL				547 LBS.		547 LBS.	
* EPOXY COATED REINFORCING STEEL				379 LBS.			
6,500 P.S.I. CONCRETE				8.3 CU. YDS.		8.3 CU. YDS.	
0.6" Ø L.R. STRANDS				No. 23		No. 23	
SPAN C				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B3	2	#4	STR	24'-10"	33	24'-10"	33
S1	8	#4	2	4'-11"	26	4'-11"	26
S2	38	#4	2	5'-4"	135	5'-4"	135
*S3	26	#5	1	6'-2"	167		
S4	4	#4	2	6'-4"	17	6'-4"	17
S5	4	#4	2	6'-1"	16	6'-1"	16
S6	4	#4	2	5'-11"	16	5'-11"	16
S7	4	#4	2	5'-8"	15	5'-8"	15
REINFORCING STEEL				258 LBS.		258 LBS.	
* EPOXY COATED REINFORCING STEEL				167 LBS.			
5,000 P.S.I. CONCRETE				3.8 CU. YDS.		3.8 CU. YDS.	
1/2" Ø L.R. STRANDS				No. 12		No. 12	

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 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 SIDEWAYS. 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.

FOR 1/2" Ø LOW-RELAXATION GRADE 270 STRANDS, THE TRANSFER OF LOAD SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4,000 PSI IN SPANS A AND C.

FOR 0.6" Ø LOW-RELAXATION GRADE 270 STRANDS, THE TRANSFER OF LOAD SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4,900 PSI IN SPAN B.

ALL REINFORCING STEEL IN BARRIER RAILS 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.

VERTICAL 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 VERTICAL 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.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

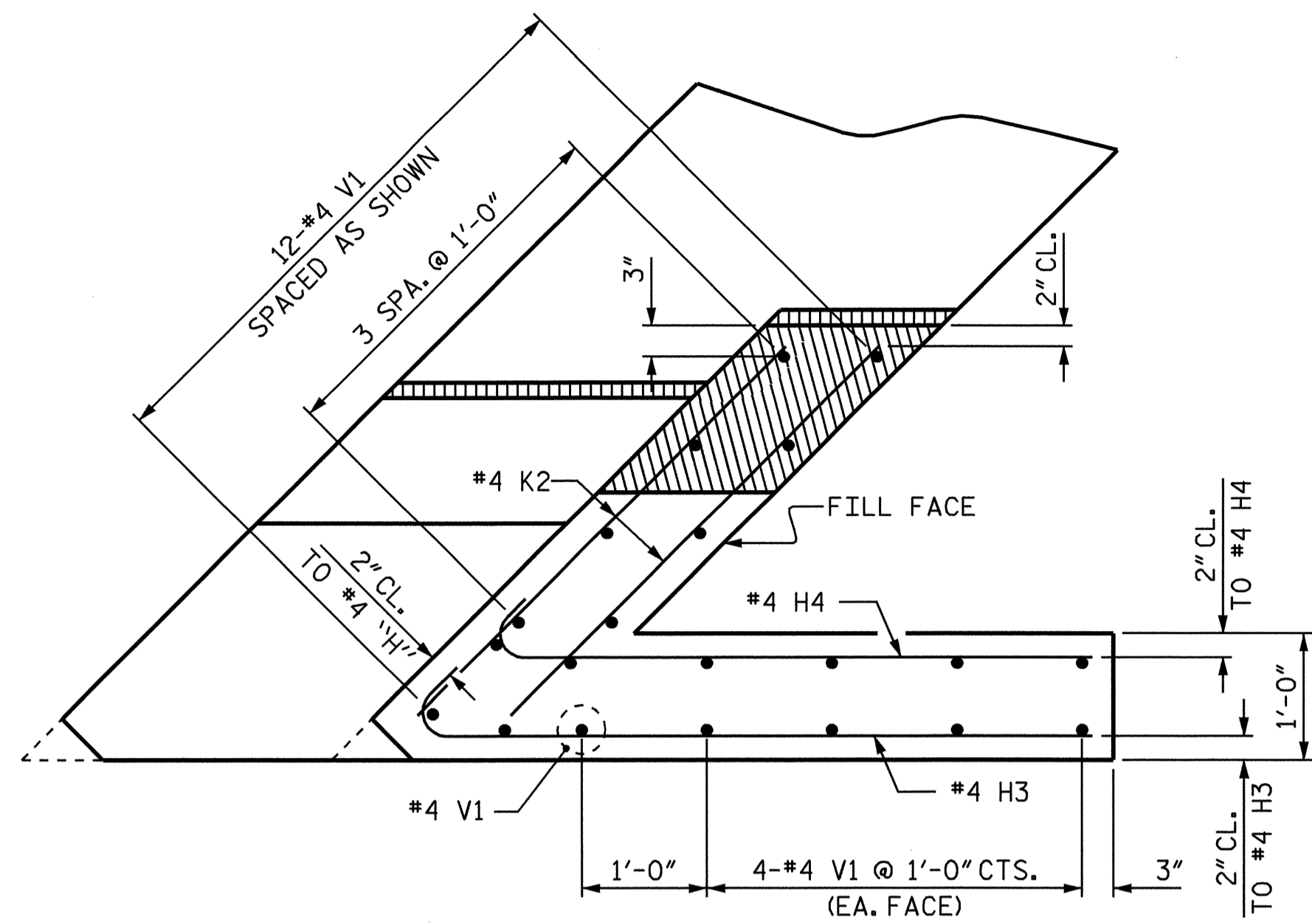
FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

PROJECT NO. B-4012
ASHE COUNTY
 STATION: 17+30.00 -L-

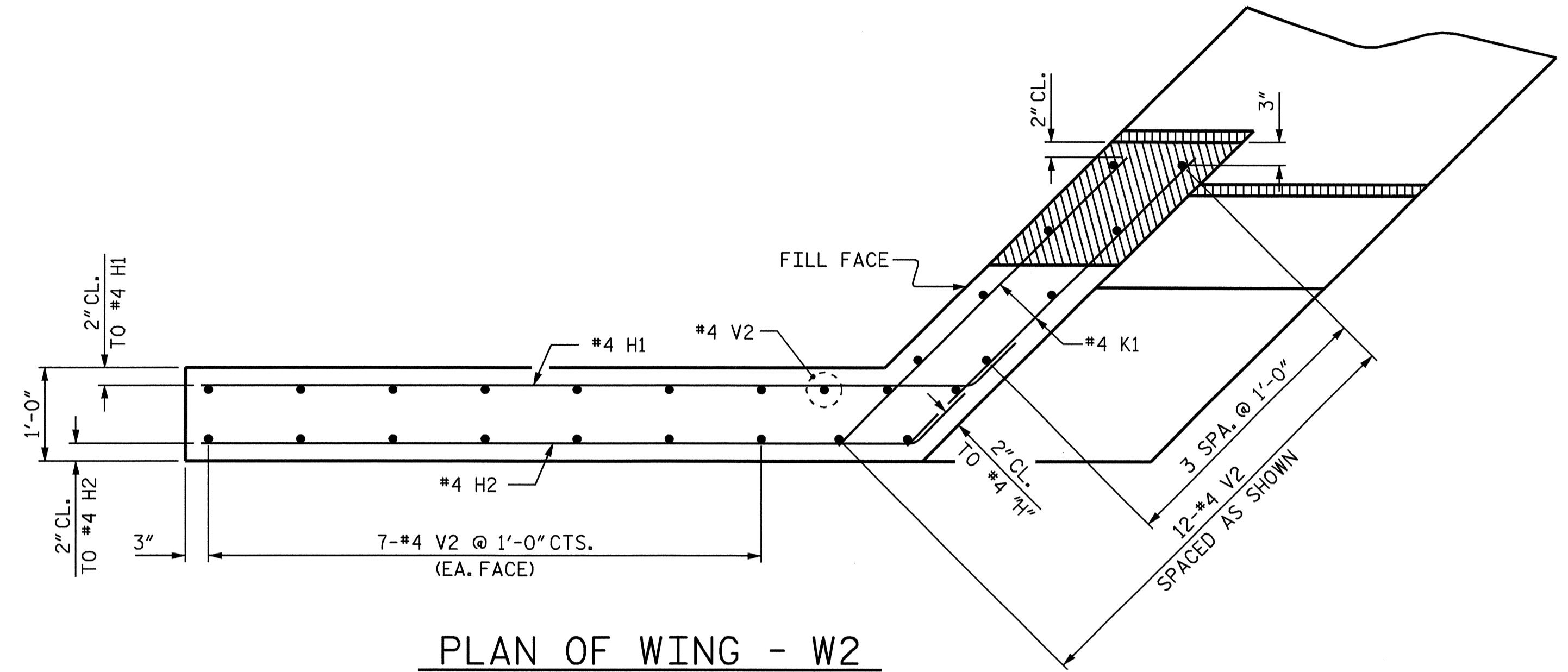
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 1'-9"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT



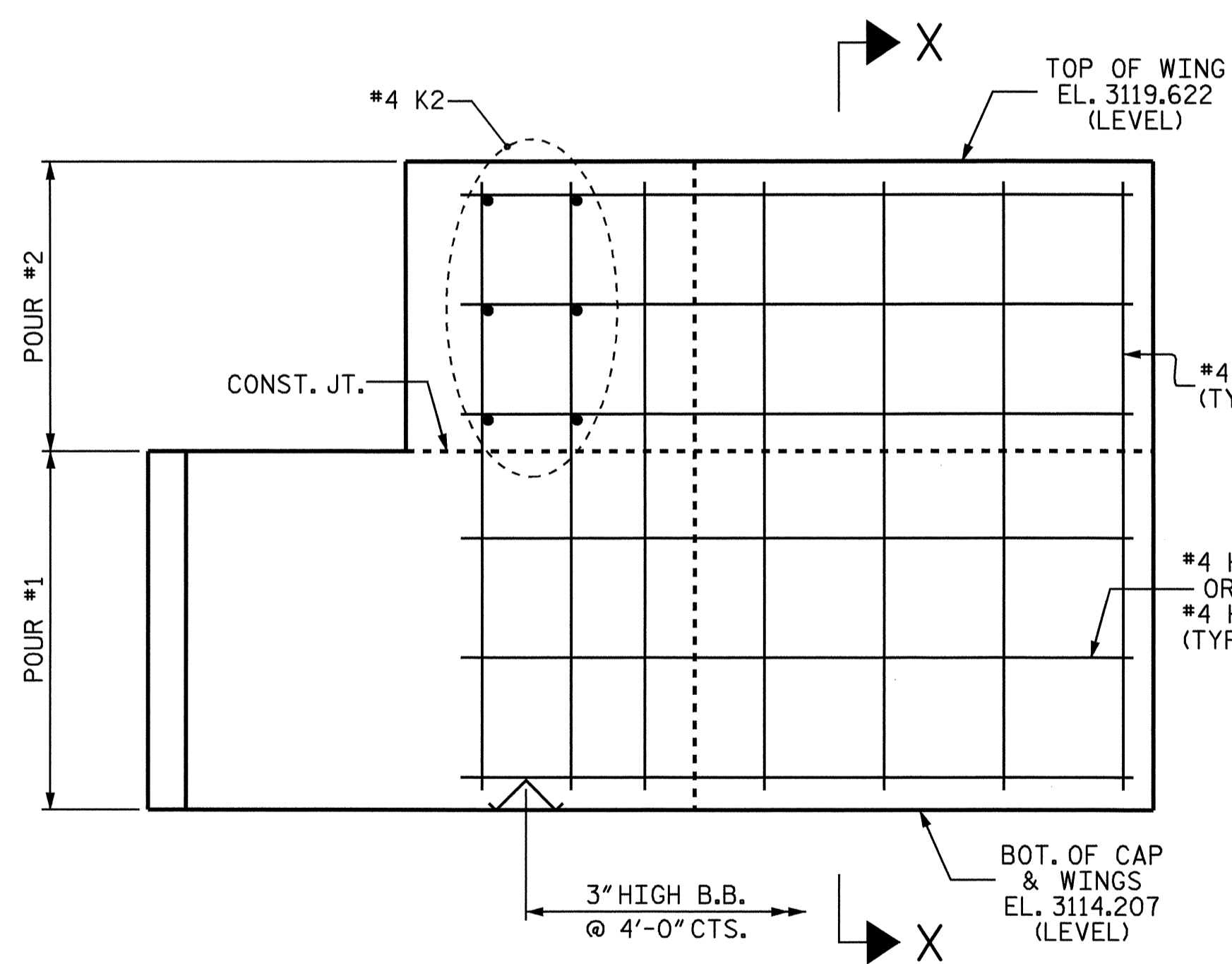
ASSEMBLED BY : S. DOMBROWSKI	DATE : 6/07
CHECKED BY : K.D. LAYNE	DATE : 6/07
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CHECKED BY : FCJ 5/89	REV. 5/7/03RRR RWW/JTE
	REV. 5/1/06 TLG/GM



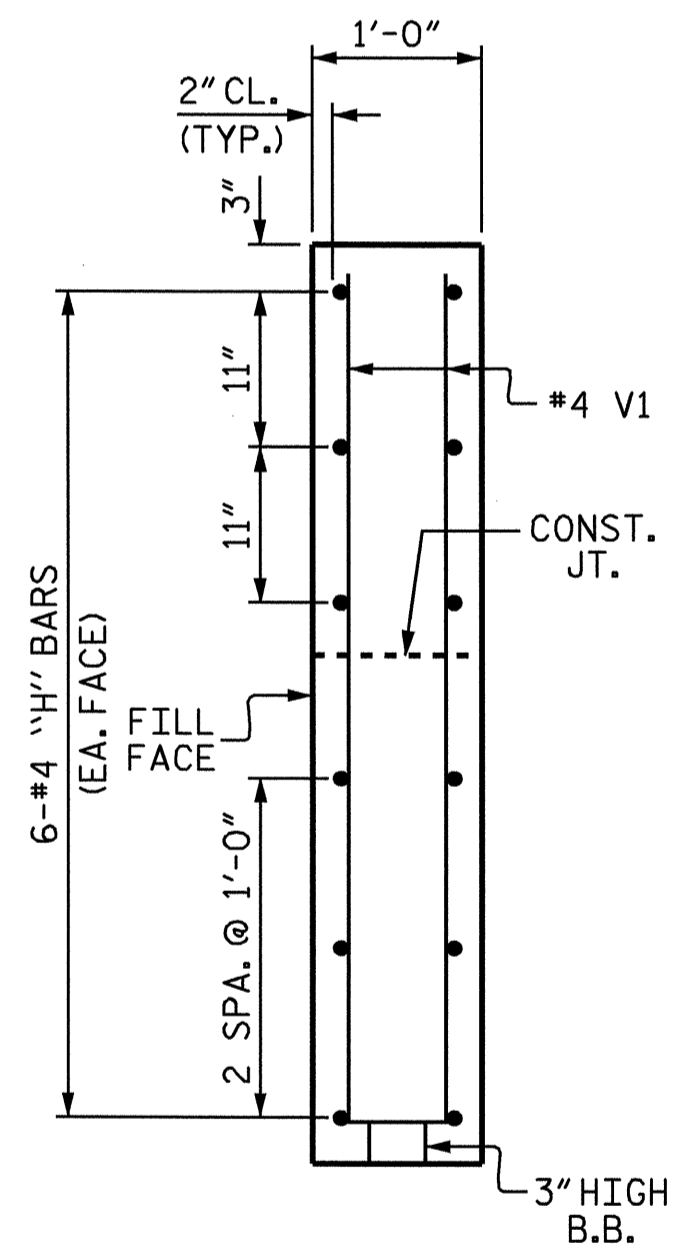
PLAN OF WING - W1



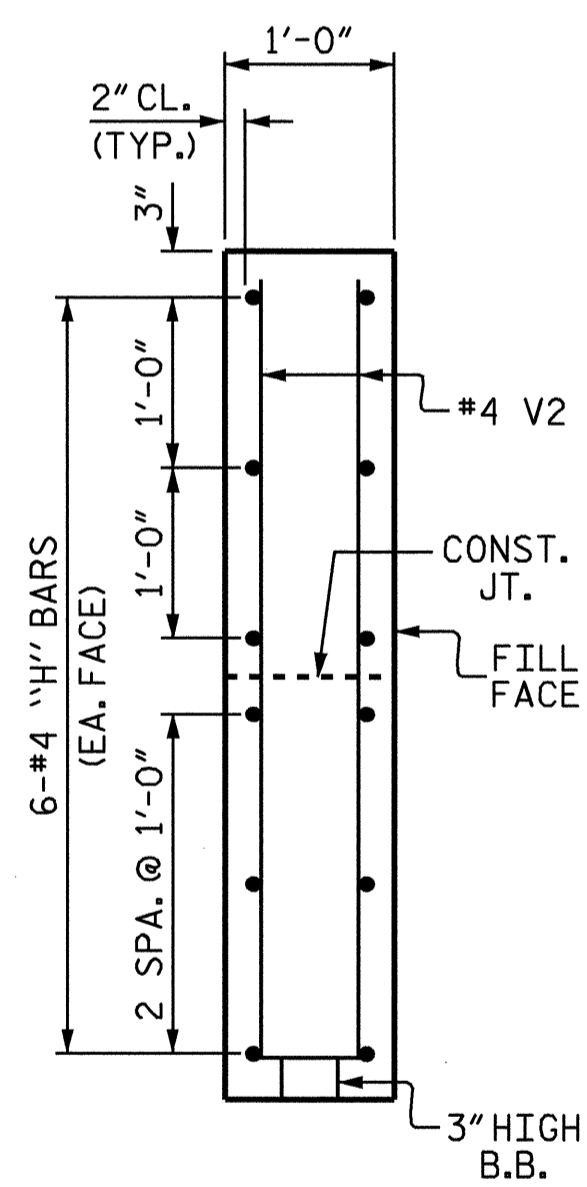
PLAN OF WING - W2



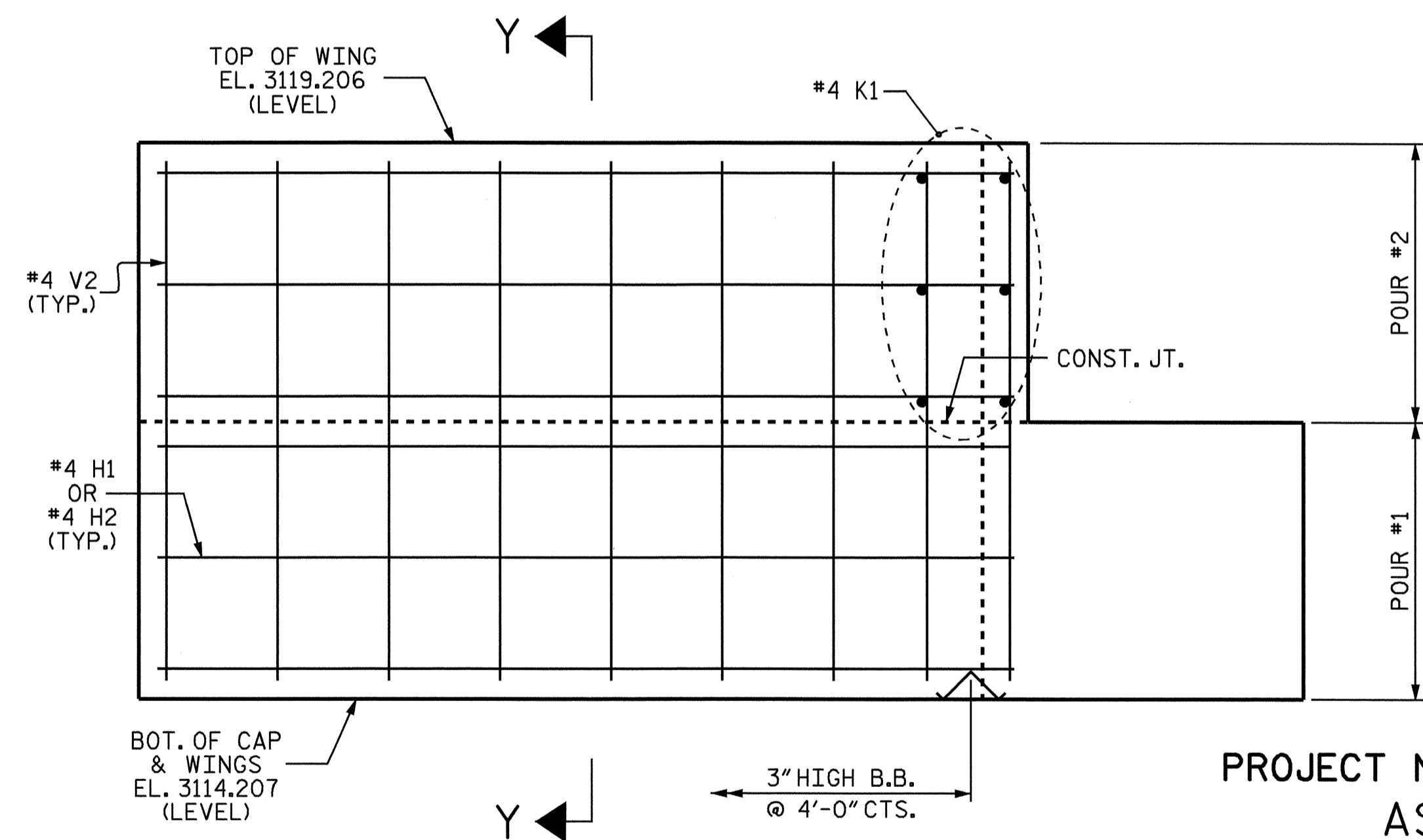
ELEVATION OF WING - W1



SECTION X-X



SECTION Y-Y



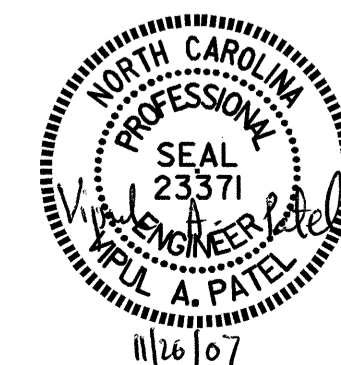
ELEVATION OF WING - W2

PROJECT NO. B-4012
ASHE COUNTY
 STATION: 17+30.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT #1

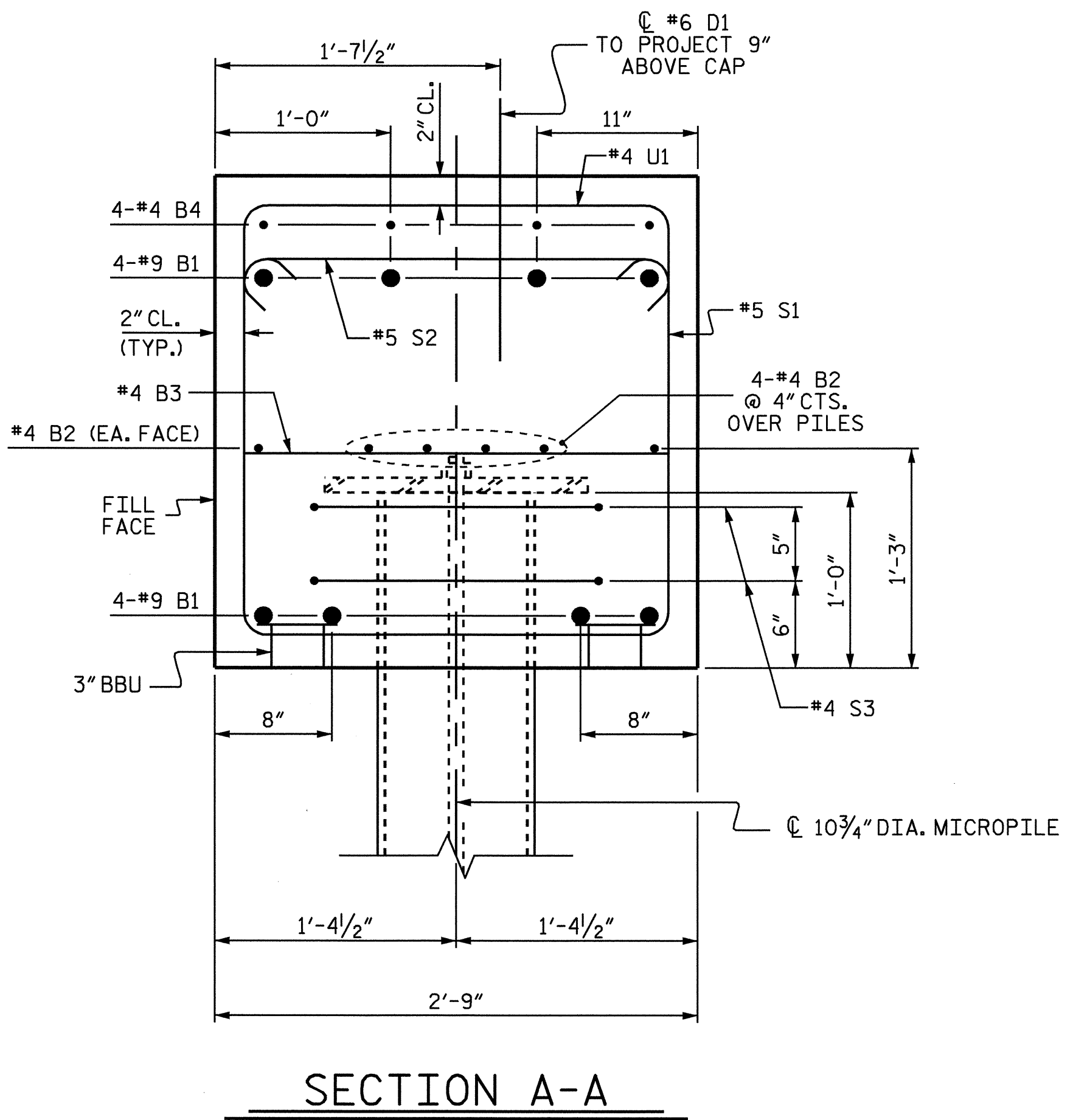


DRAWN BY: S. DOMBROWSKI DATE: 7/07
 CHECKED BY: V. PATEL DATE: 8/07

16-NOV-2007 10:33
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 sdombrowski

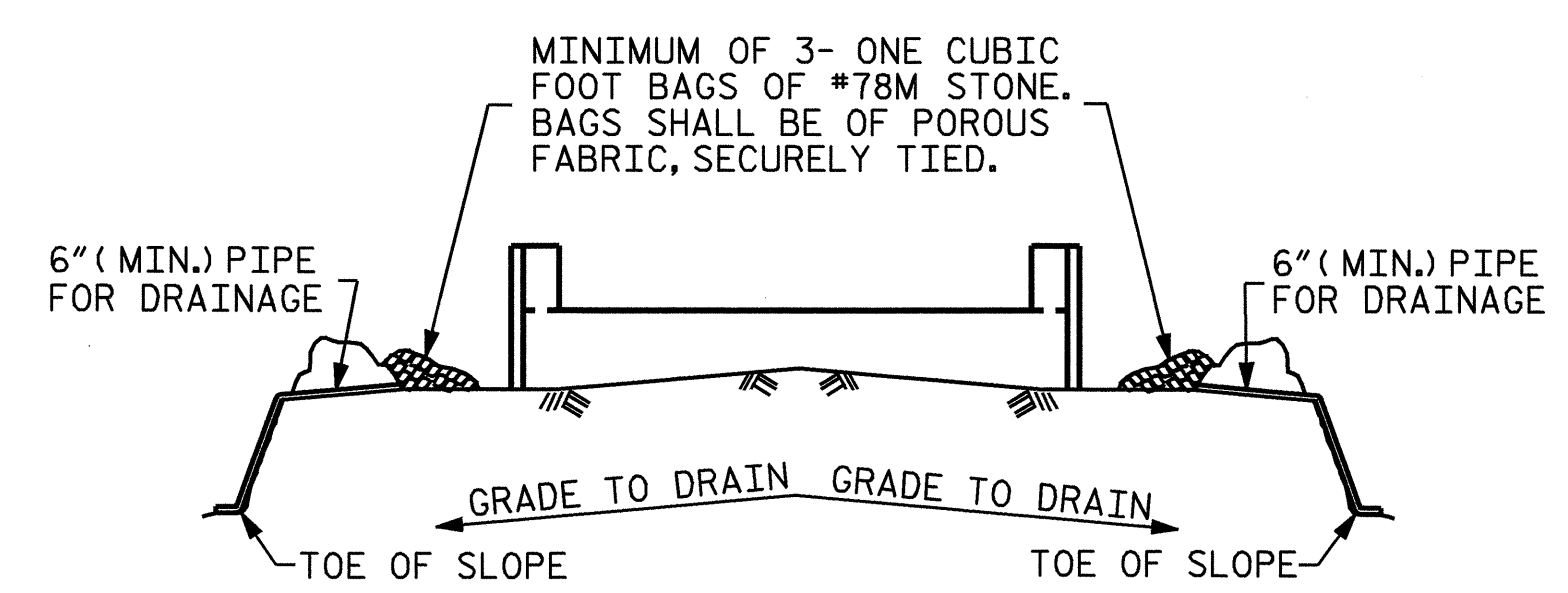
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			27

NC006



BILL OF MATERIAL					
END BENT #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	9	1	57'-0"	1550
B2	12	4	STR	28'-8"	230
B3	13	4	STR	2'-5"	21
B4	4	4	STR	30'-0"	80
D1	22	6	STR	1'-6"	50
H1	6	4	2	9'-0"	36
H2	6	4	2	8'-5"	34
H3	6	4	3	6'-3"	25
H4	6	4	3	5'-8"	23
K1	6	4	STR	4'-6"	18
K2	6	4	STR	4'-2"	17
S1	62	5	4	7'-7"	490
S2	62	5	5	3'-4"	216
S3	10	4	6	6'-6"	43
U1	19	4	7	5'-5"	69
U2	4	4	7	5'-0"	13
V1	21	4	STR	5'-1"	71
V2	27	4	STR	4'-8"	84
REINFORCING STEEL				LBS	3070
CLASS 'A' CONCRETE BREAKDOWN					
POUR #1 CAP & LOWER PART OF WINGS					
16.6 C.Y.					
POUR #2 UPPER WINGS & BACKWALL					
1.9 C.Y.					
POUR #2 UPPER WINGS & BACKWALL					
0.1 C.Y.					
CLASS 'A' CONCRETE TOTAL					18.6 C.Y.
10 3/4" DIA. MICROPILES					5 EA.

ALL BAR DIMENSIONS ARE OUT TO OUT

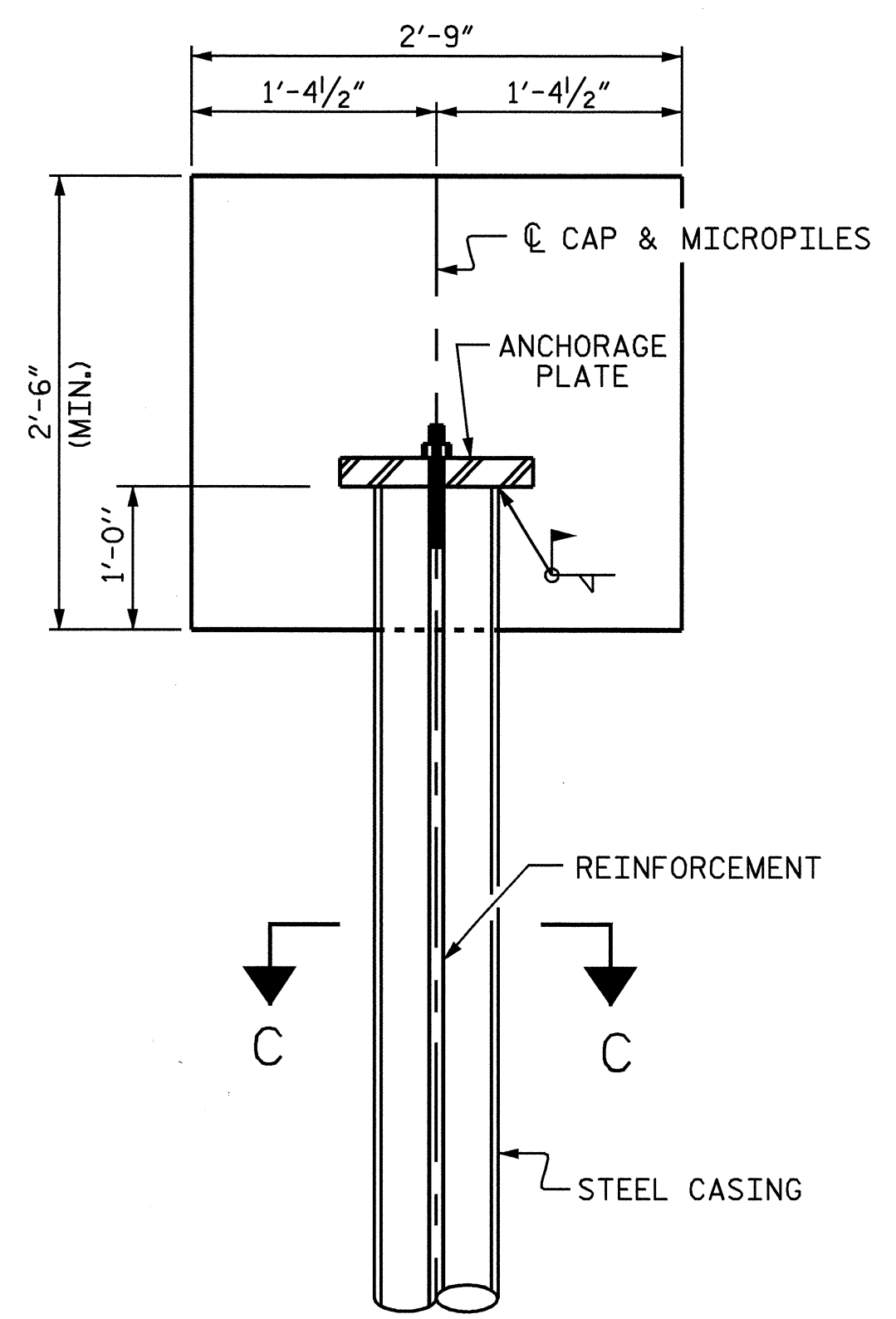


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

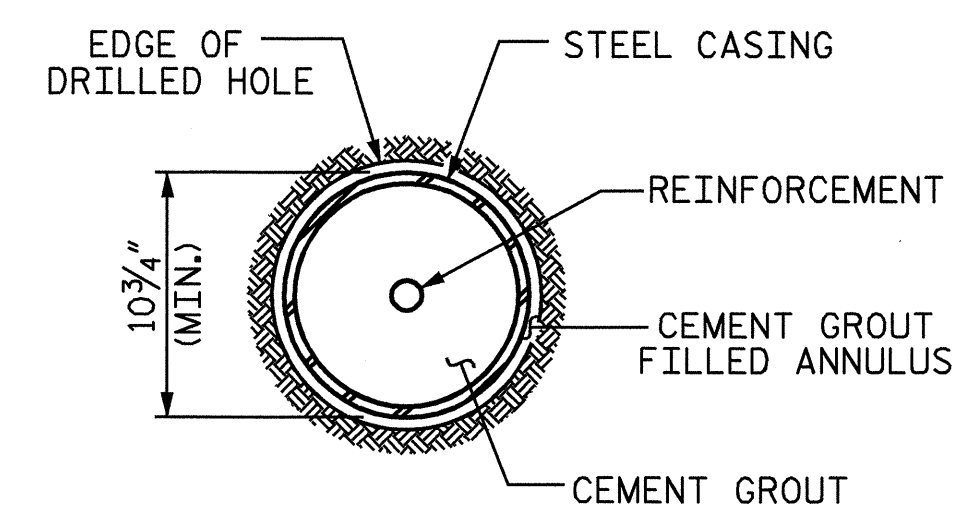
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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



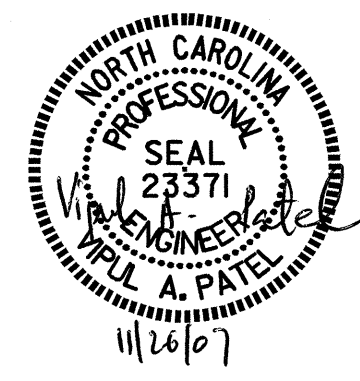
MICROPILE DETAIL
(TYP. EACH MICROPILE)



SECTION C-C

PROJECT NO. B-4012
ASHE COUNTY
 STATION: 17+30.00 -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:
1			3		
2			4		
TOTAL SHEETS					27



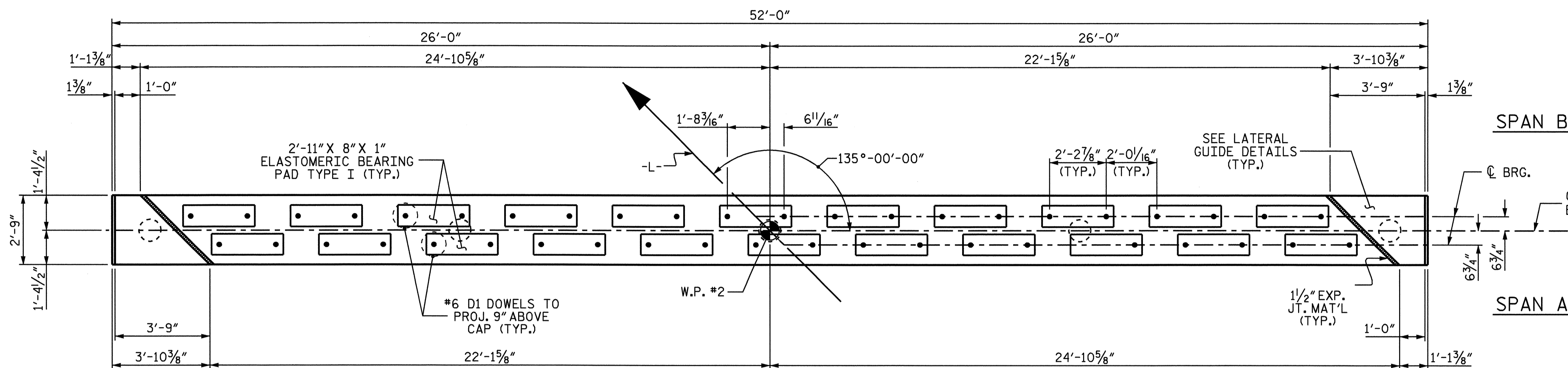
DRAWN BY: S. DOMBROWSKI DATE: 7/07
 CHECKED BY: V. PATEL DATE: 8/07

NOTES

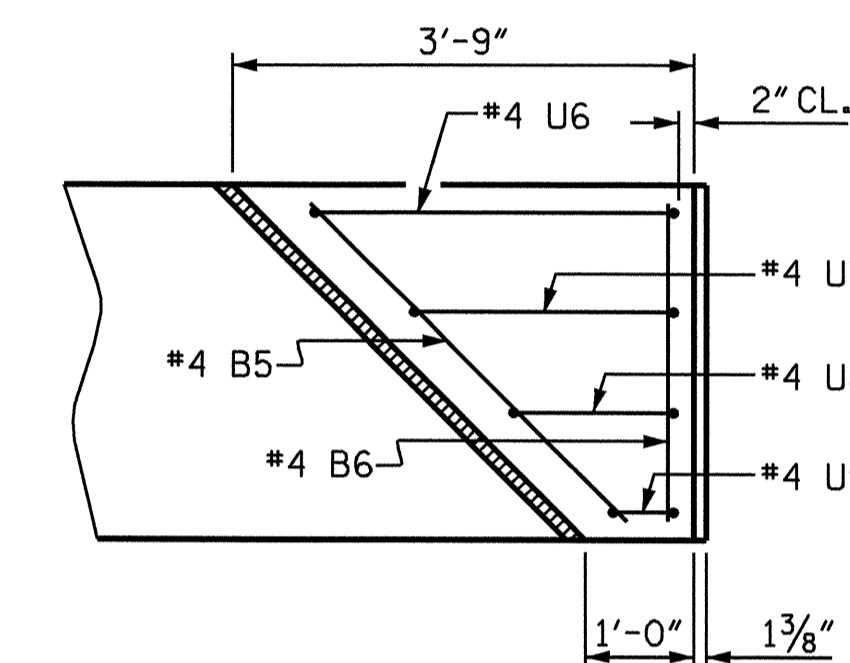
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

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

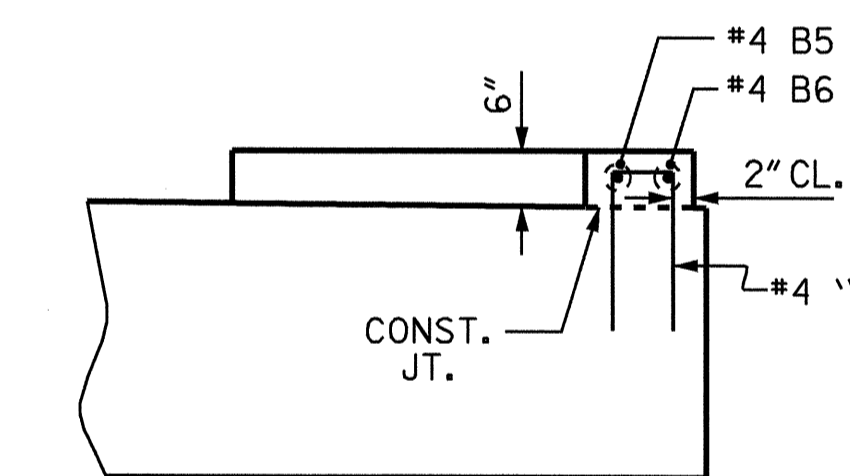
FOR MICROPILES, SEE SPECIAL PROVISIONS.



PLAN



PLAN



ELEVATION

LATERAL GUIDE DETAILS

PROJECT NO. B-4012
ASHE COUNTY
 STATION: 17+30.00 -L-

SHEET 1 OF 2

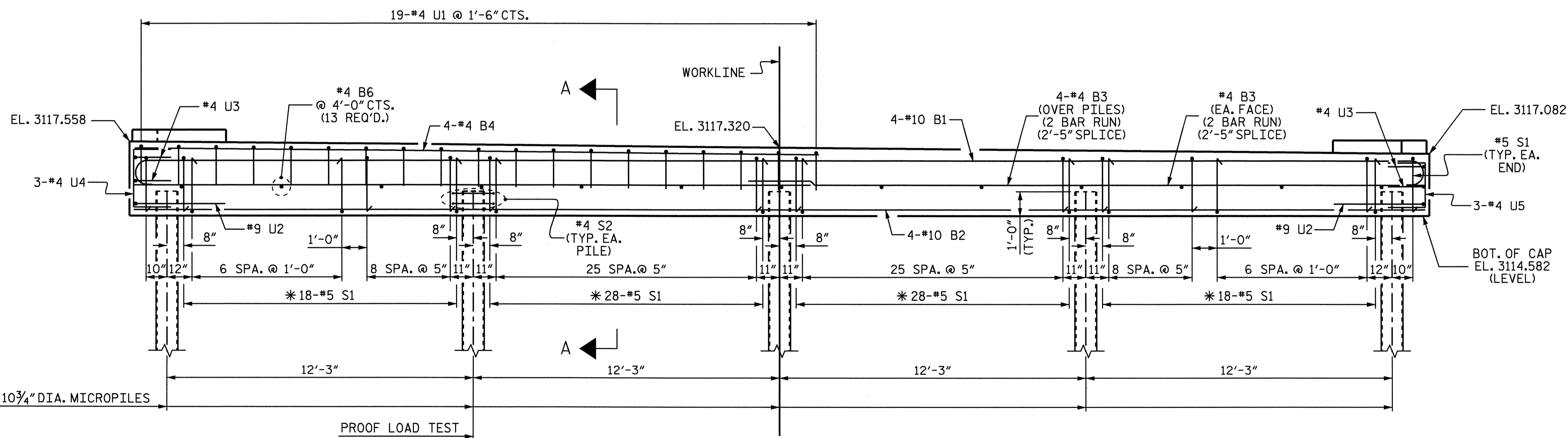
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT #1

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



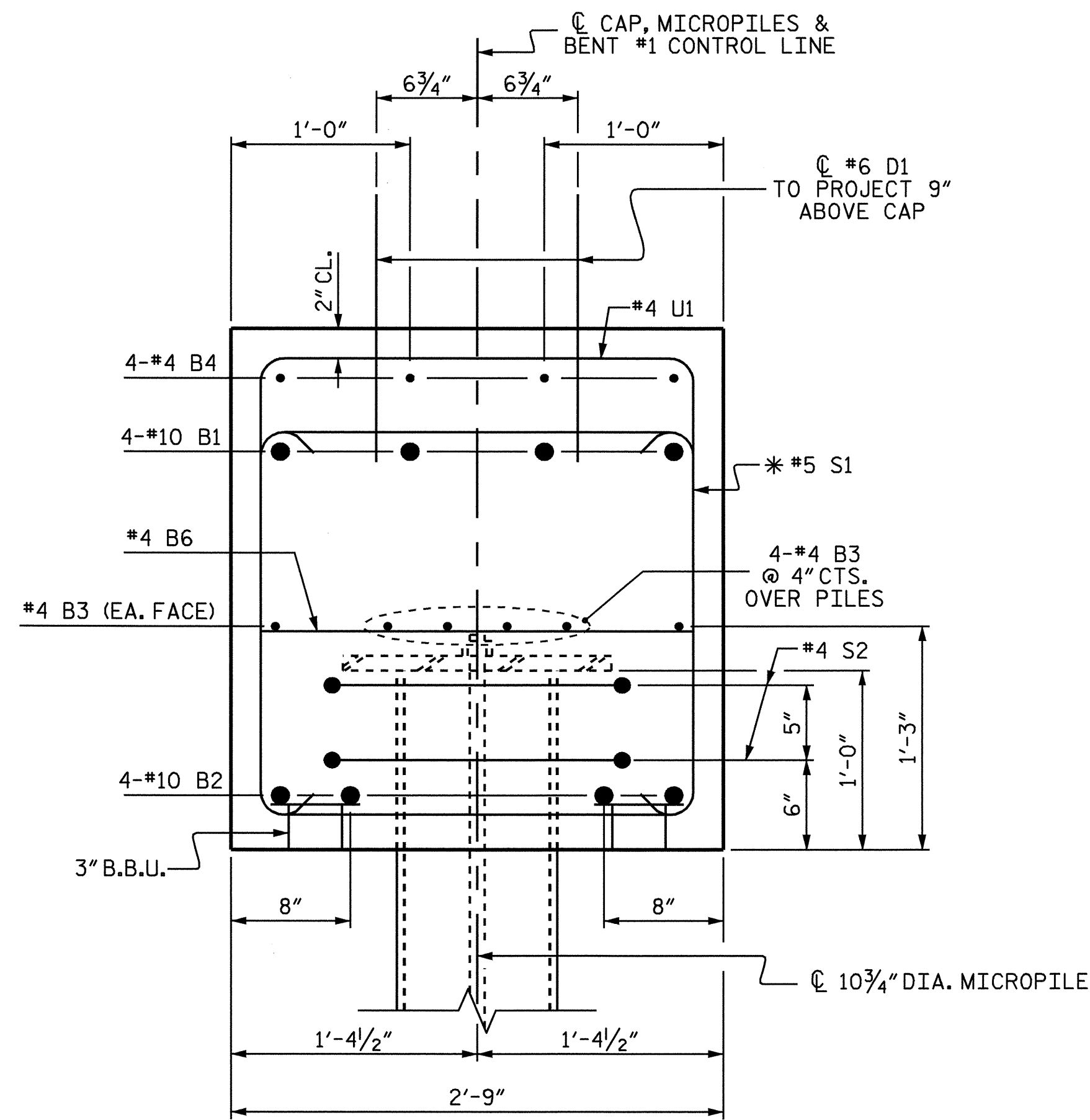
NCBDS



* NOTE: INVERT ALTERNATE STIRRUPS

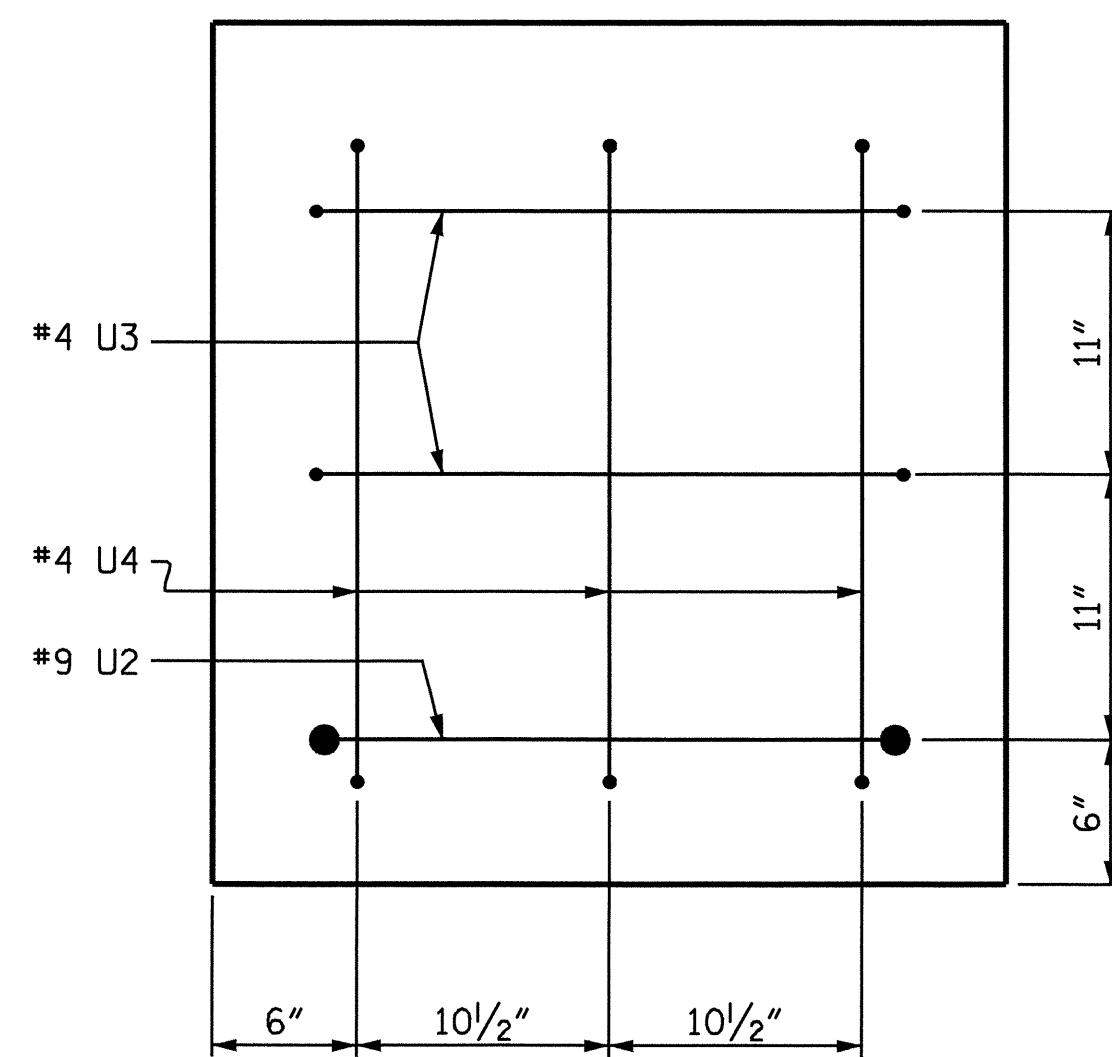
ELEVATION

DRAWN BY: S. DOMBROWSKI DATE: 4/10/07
 CHECKED BY: V. PATEL DATE: 8/28/07

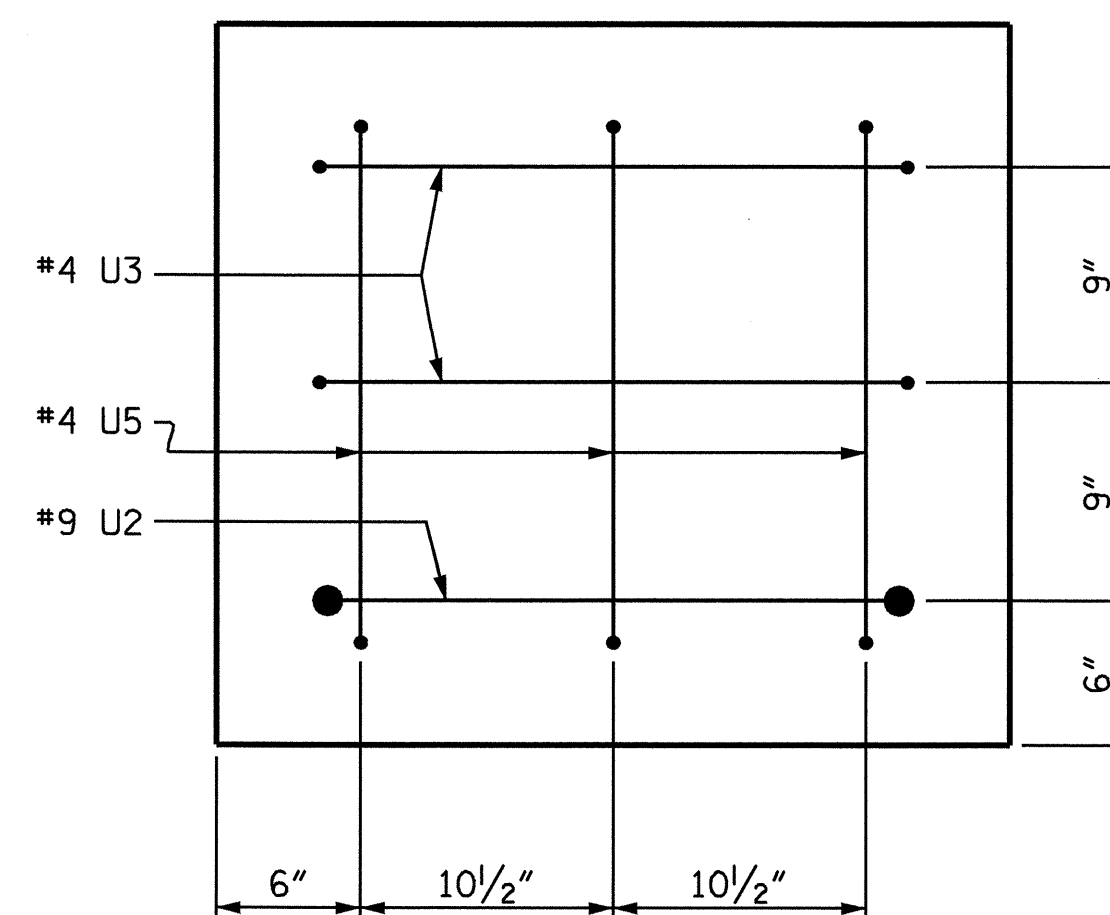


SECTION A-A

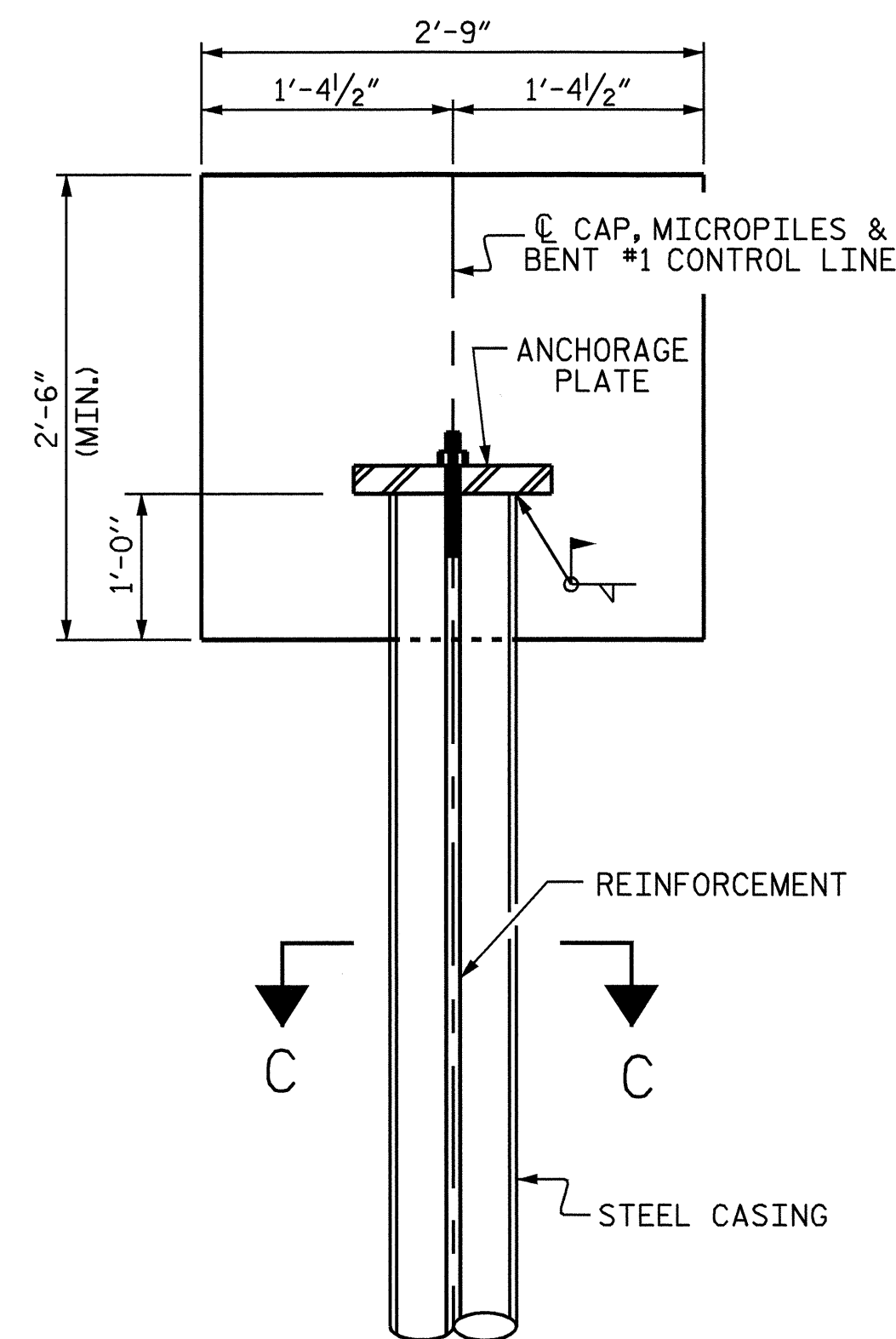
* INVERT ALTERNATE STIRRUPS



END VIEW- LEFT END

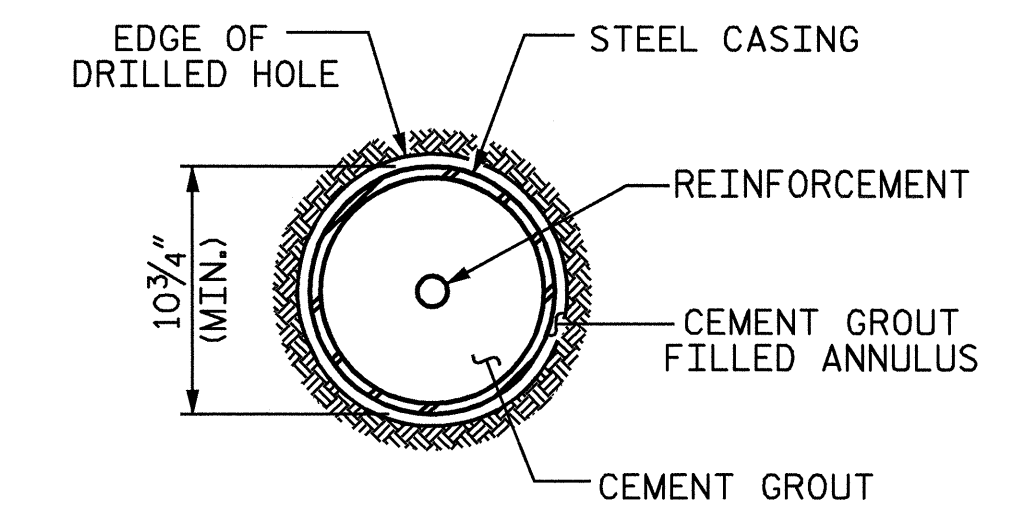


END VIEW- RIGHT END



MICROPILE DETAIL

(TYP. EACH MICROPILE)



SECTION C-C

BAR TYPES		BILL OF MATERIAL				
		BENT #1				
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	4	10		54'-4"	935	
B2	4	10	STR	51'-8"	889	
B3	12	4	STR	27'-1"	217	
B4	4	4	STR	27'-6"	73	
B5	2	4	STR	3'-5"	5	
B6	15	4	STR	2'-5"	24	
S1	94	5	2	7'-7"	743	
S2	10	4	3	6'-6"	43	
U1	19	4	4	5'-5"	69	
U2	2	9	4	9'-7"	65	
U3	4	4	4	5'-3"	14	
U4	3	4	4	5'-6"	11	
U5	3	4	4	5'-0"	10	
U6	2	4	4	5'-10"	8	
U7	2	4	4	5'-1"	7	
U8	2	4	4	4'-4"	6	
U9	2	4	4	3'-7"	5	
REINFORCING STEEL					LBS	3124
CLASS 'A' CONCRETE BREAKDOWN						
POUR #1 CAP						14.5 C.Y.
POUR #2 LATERAL GUIDE						0.2 C.Y.
CLASS 'A' CONCRETE TOTAL						14.7 C.Y.
10 3/4" DIA. MICROPILES						5 EA.
MICROPILE PROOF TESTS						1 EA.

ALL BAR DIMENSIONS ARE OUT TO OUT

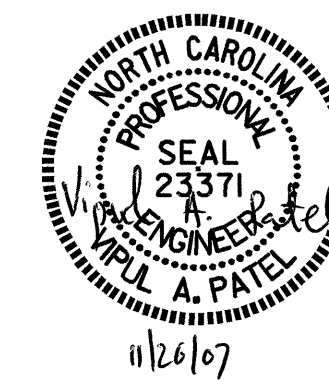
PROJECT NO. B-4012
ASHE COUNTY
 STATION: 17+30.00 -L-

SHEET 2 OF 2

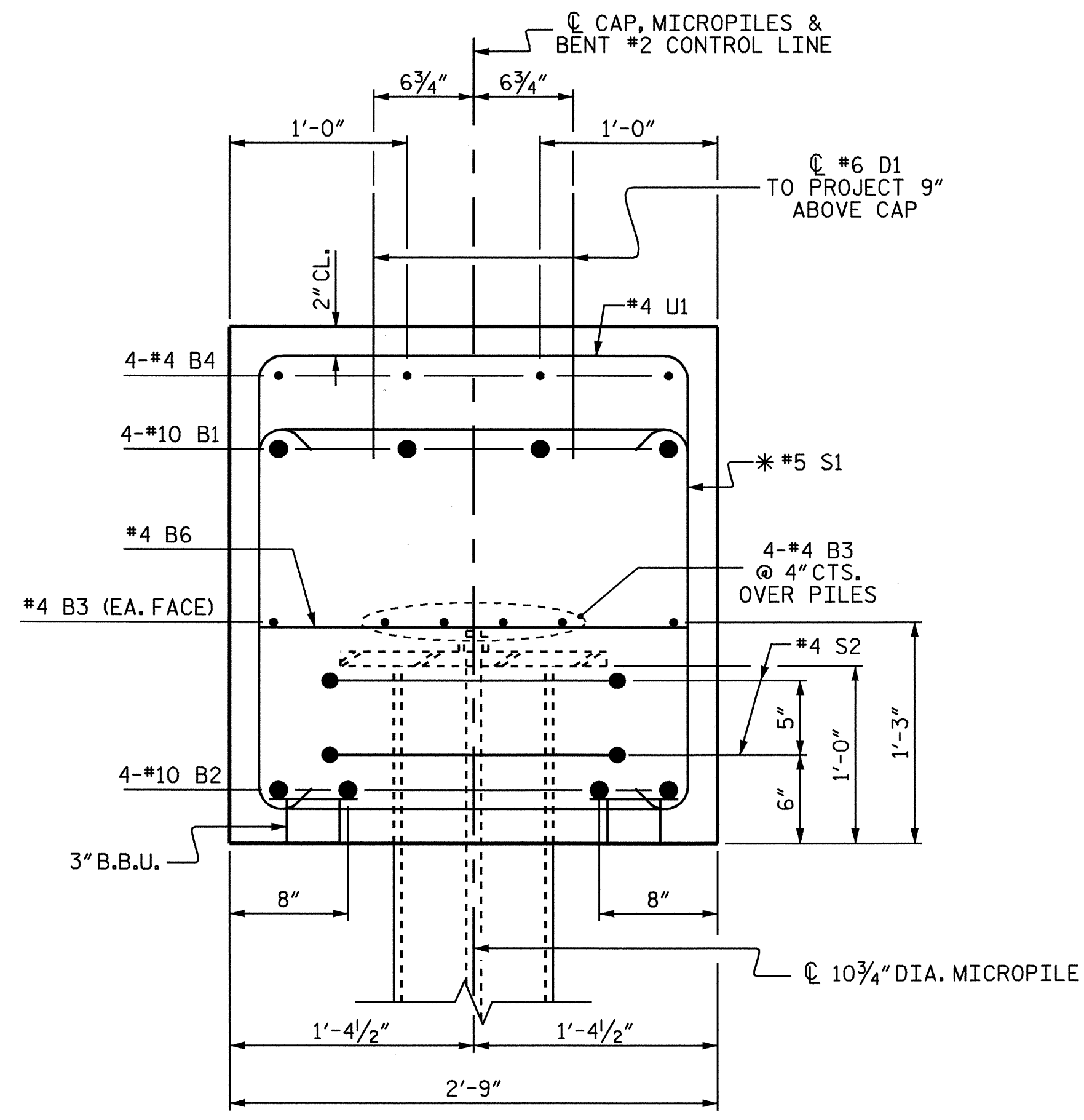
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT #1

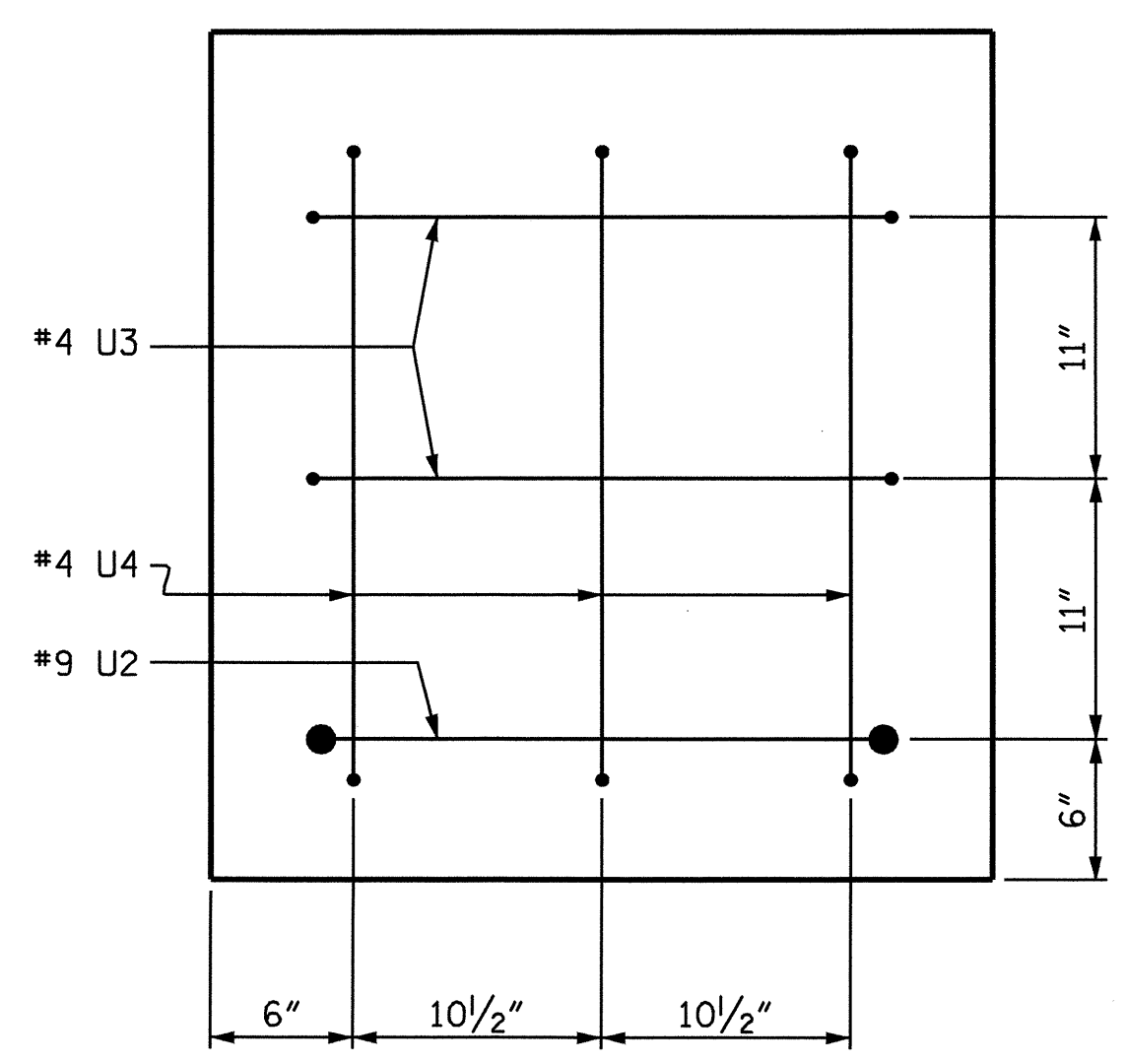
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			27



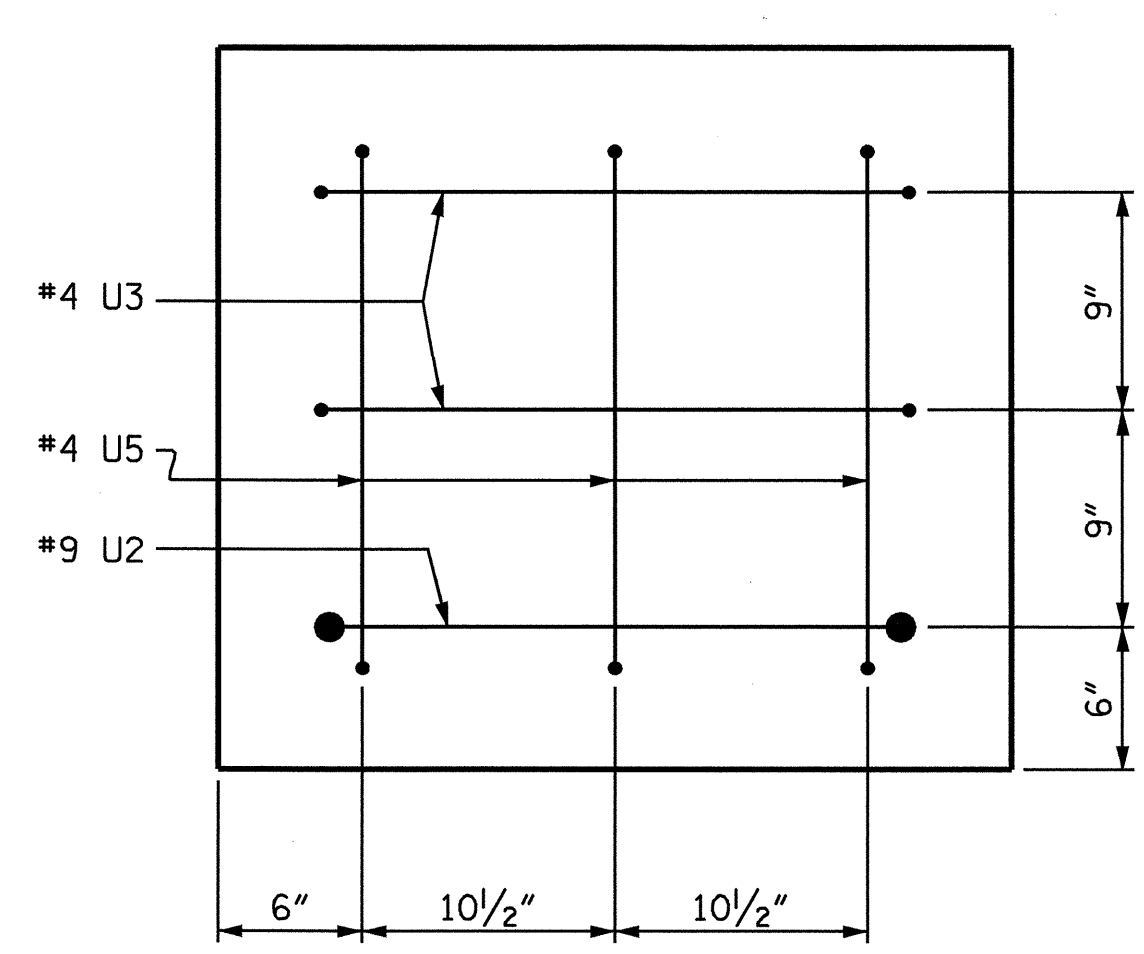
DRAWN BY : S. DOMBROWSKI DATE : 7/07
 CHECKED BY : V. PATEL DATE : 8/07



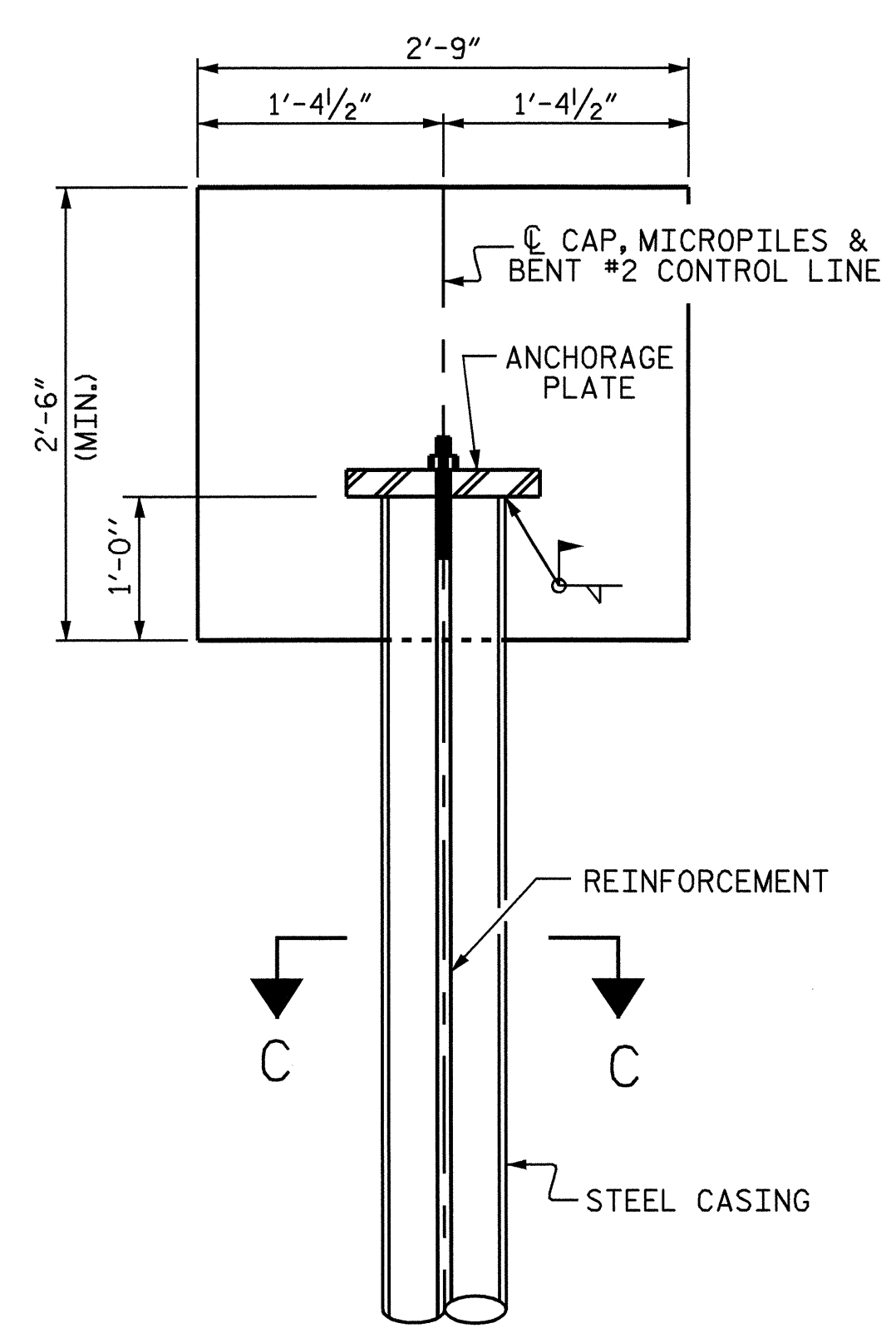
SECTION A-A
* INVERT ALTERNATE STIRRUPS



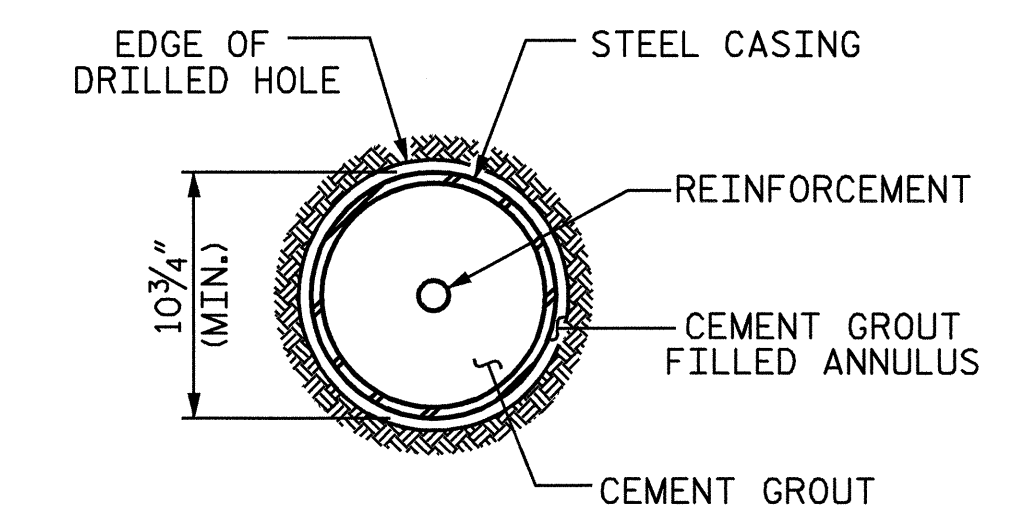
END VIEW- LEFT END



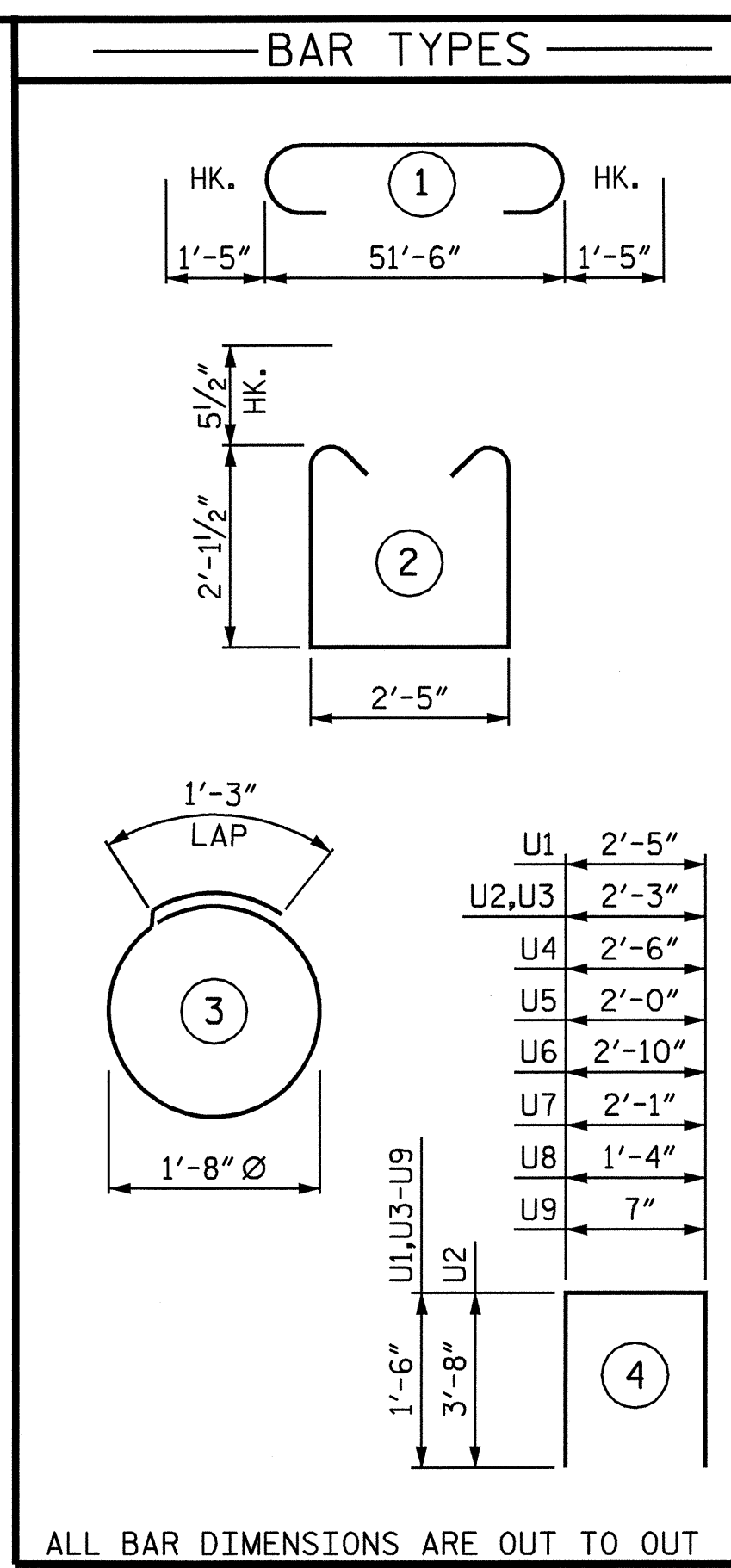
END VIEW- RIGHT END



MICROPILE DETAIL
(TYP. EACH MICROPILE)



SECTION C-C



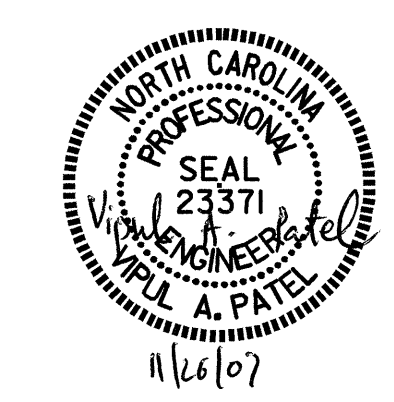
BILL OF MATERIAL					
BENT #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	10	1	54'-4"	935
B2	4	10	STR	51'-8"	889
B3	12	4	STR	27'-1"	217
B4	4	4	STR	27'-6"	73
B5	2	4	STR	3'-5"	5
B6	15	4	STR	2'-5"	24
S1	94	5	2	7'-7"	743
S2	10	4	3	6'-6"	43
U1	19	4	4	5'-5"	69
U2	2	9	4	9'-7"	65
U3	4	4	4	5'-3"	14
U4	3	4	4	5'-6"	11
U5	3	4	4	5'-0"	10
U6	2	4	4	5'-10"	8
U7	2	4	4	5'-1"	7
U8	2	4	4	4'-4"	6
U9	2	4	4	3'-7"	5
REINFORCING STEEL				LBS	3124
CLASS 'A' CONCRETE BREAKDOWN					
POUR #1 CAP					14.5 C.Y.
POUR #2 LATERAL GUIDE					0.2 C.Y.
CLASS 'A' CONCRETE TOTAL					14.7 C.Y.
10 3/4" DIA. MICROPILES					5 EA.
MICROPILE PROOF TESTS					1 EA.

PROJECT NO. B-4012
ASHE COUNTY
 STATION: 17+30.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT #2



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

SHEET NO. S-21
 TOTAL SHEETS 27

DRAWN BY: S. DOMBROWSKI DATE: 7/07
 CHECKED BY: V. PATEL DATE: 8/07

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 sdombrowski

NOTES

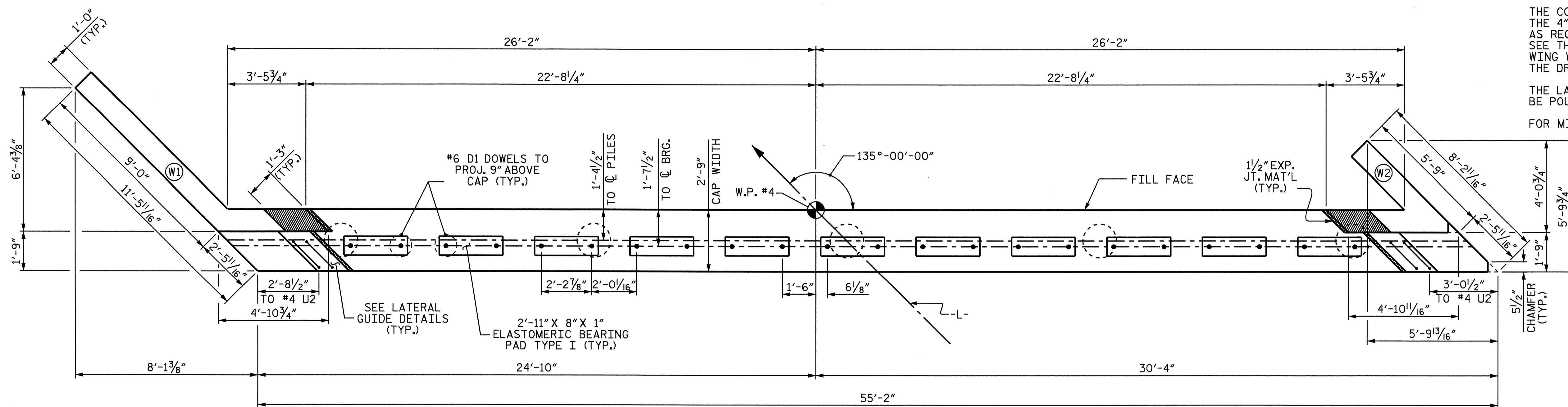
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND THE APPROACH SLAB HAS BEEN SAWED AND THE CONCRETE BARRIER RAIL ARE CAST IF SLIP FORMING IS USED.

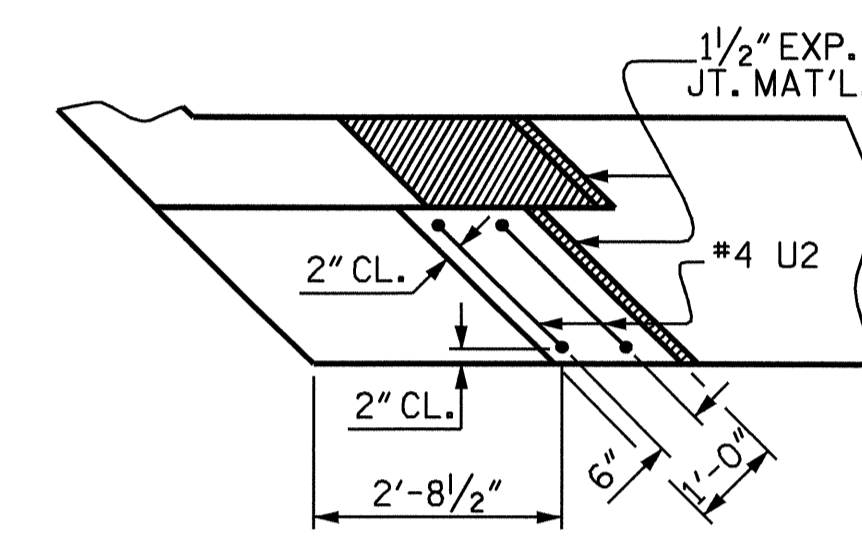
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER CORED SLAB UNITS ARE IN PLACE.

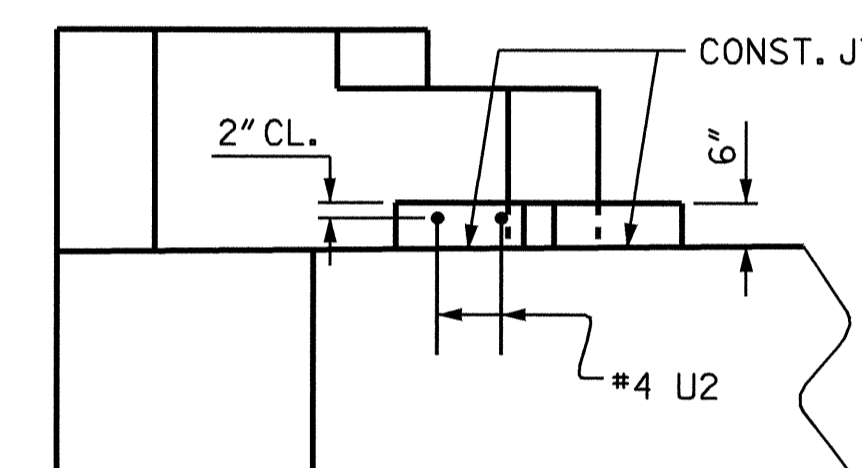
FOR MICROPILES, SEE SPECIAL PROVISIONS.



PLAN

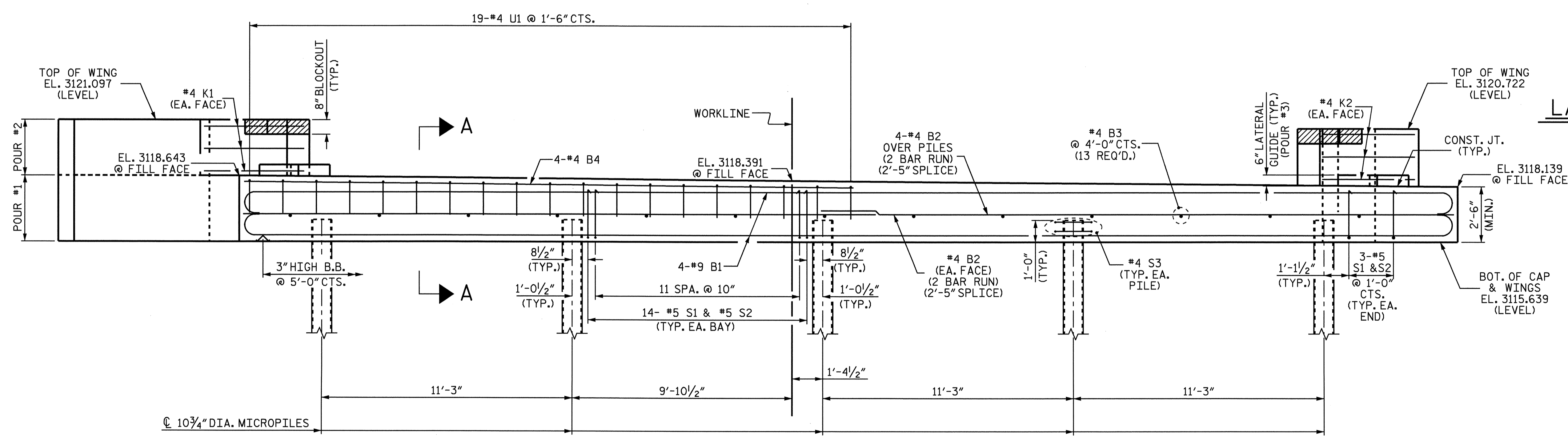


PLAN



ELEVATION

LATERAL GUIDE DETAILS



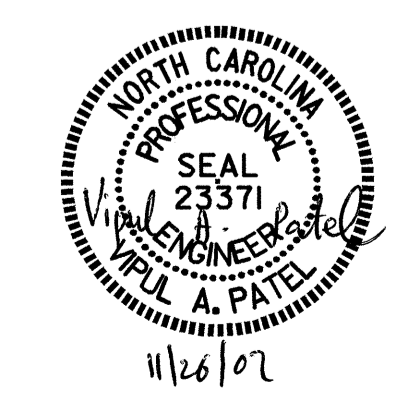
ELEVATION

PROJECT NO. B-4012
ASHE COUNTY
 STATION: 17+30.00 -L-

SHEET 1 OF 3

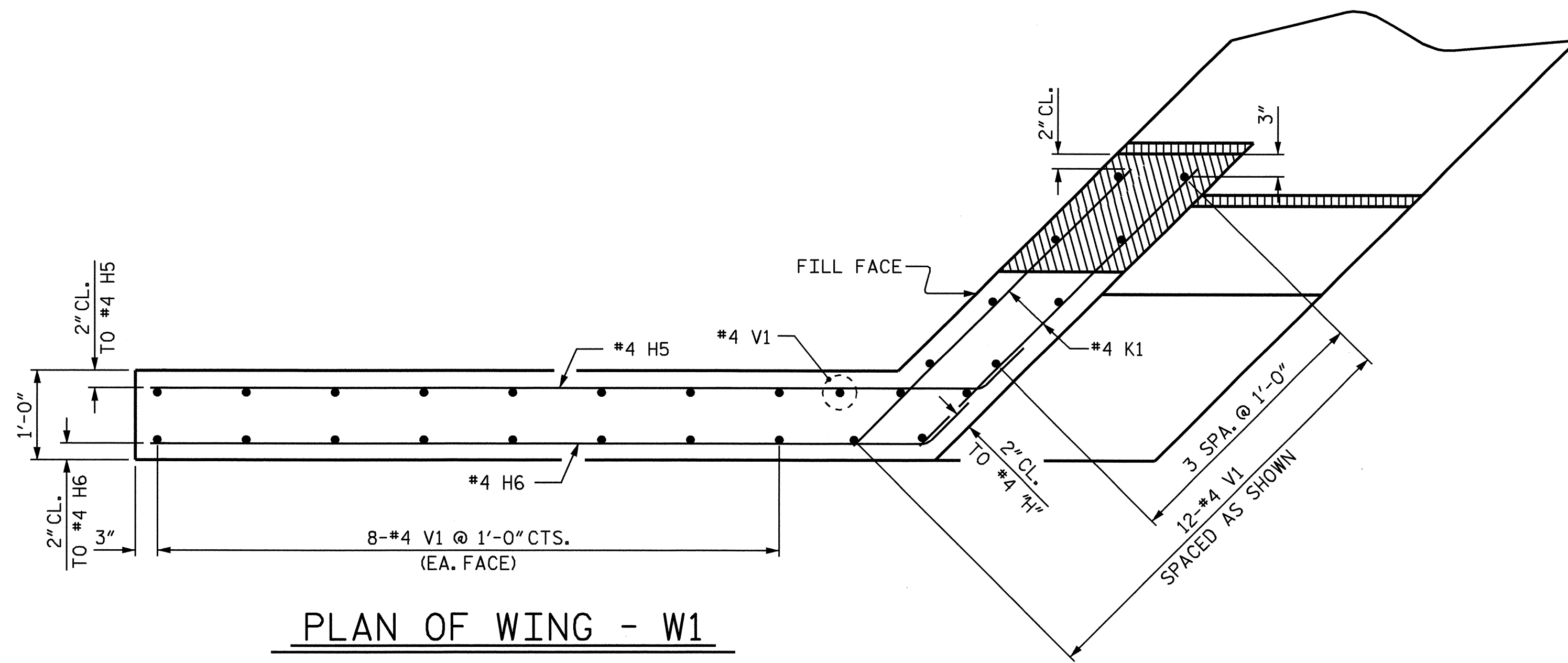
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT #2

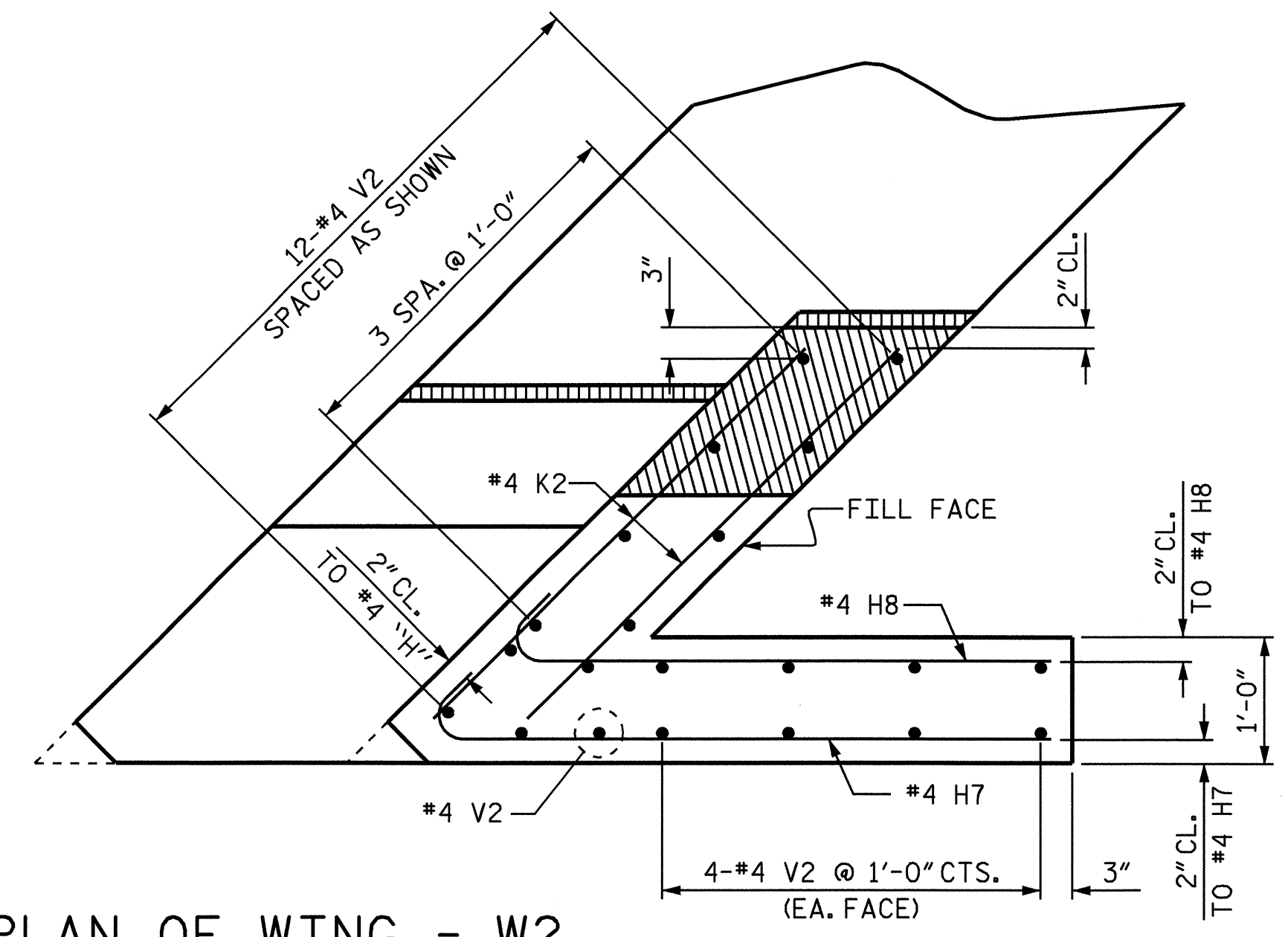


DRAWN BY: S. DOMBROWSKI DATE: 6/07
 CHECKED BY: V. PATEL DATE: 8/07

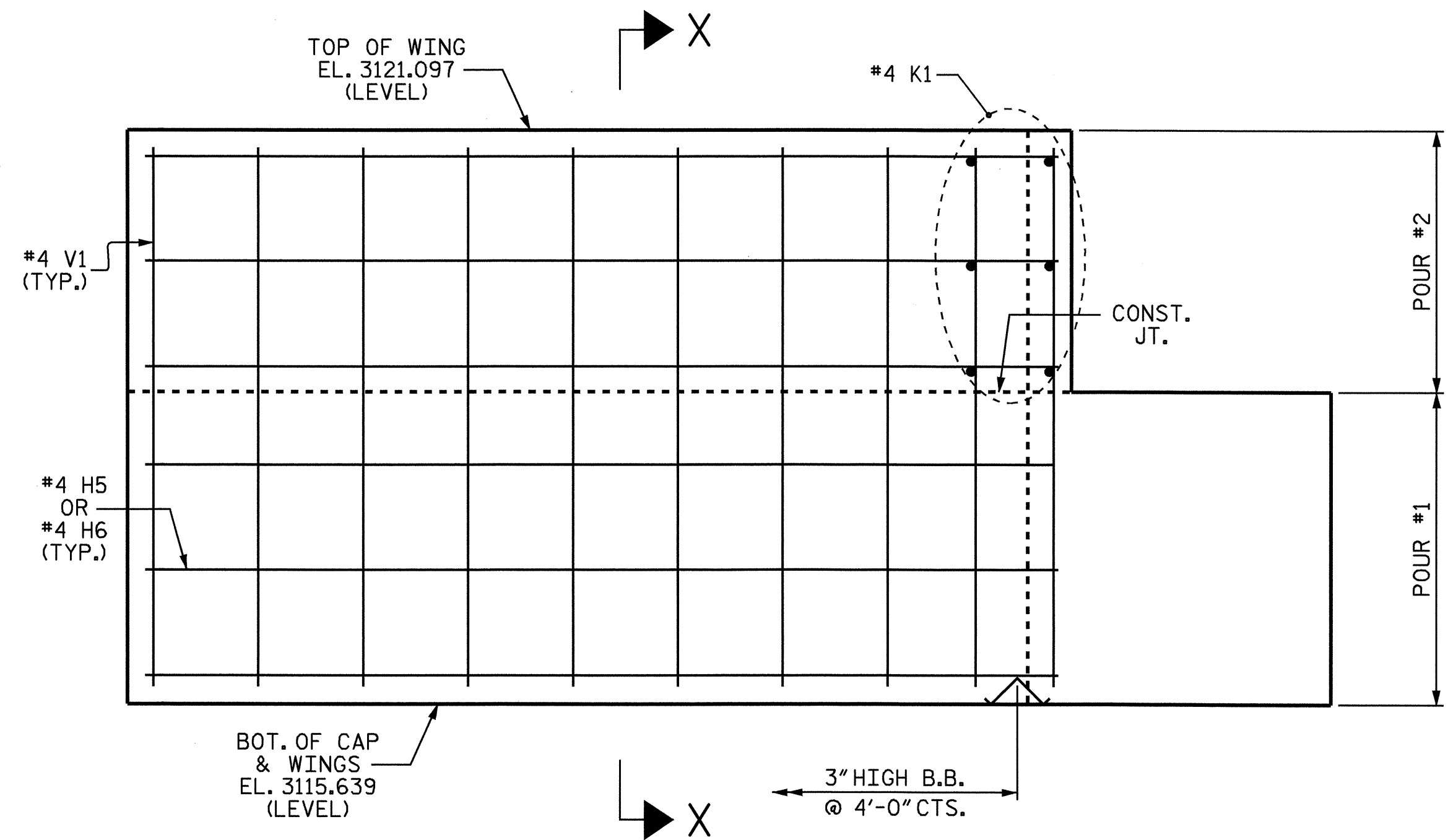
REVISIONS						SHEET NO. S-22
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 27
2			4			



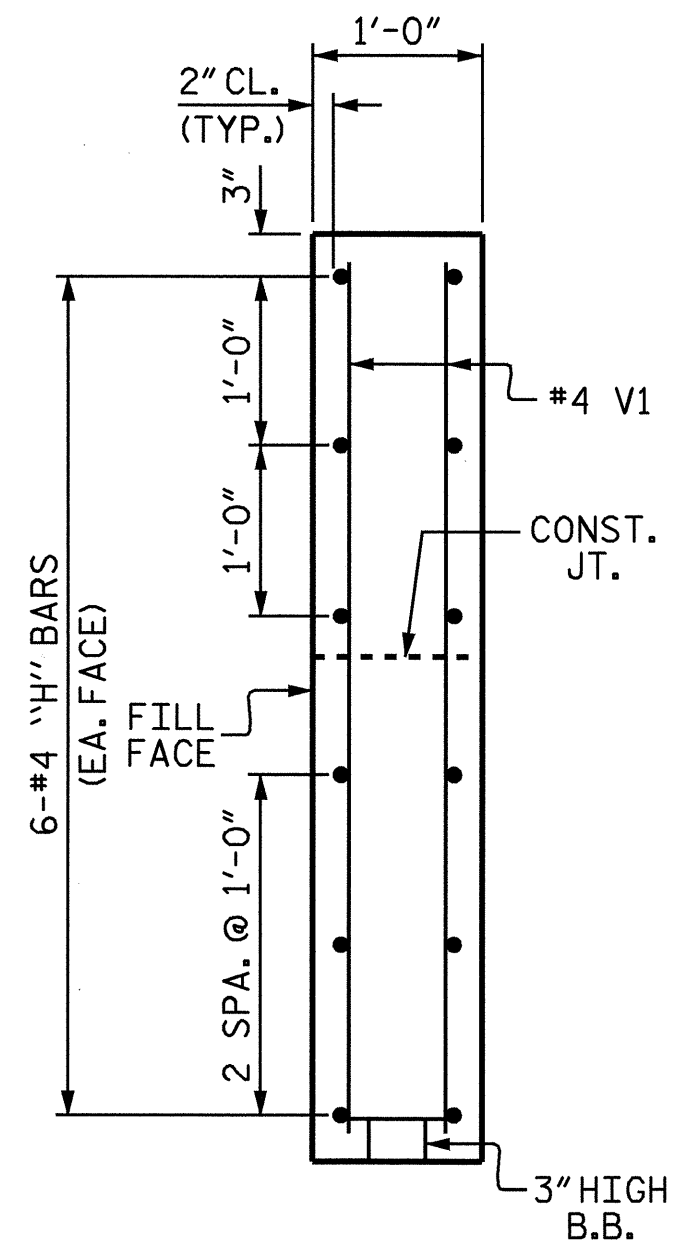
PLAN OF WING - W1



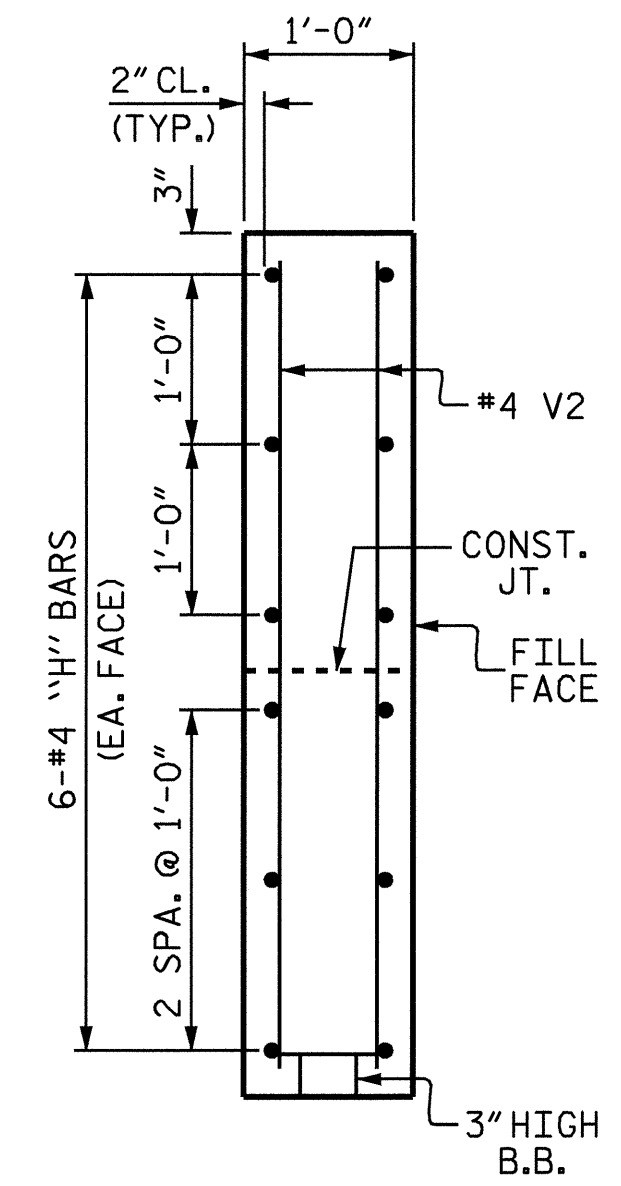
PLAN OF WING - W2



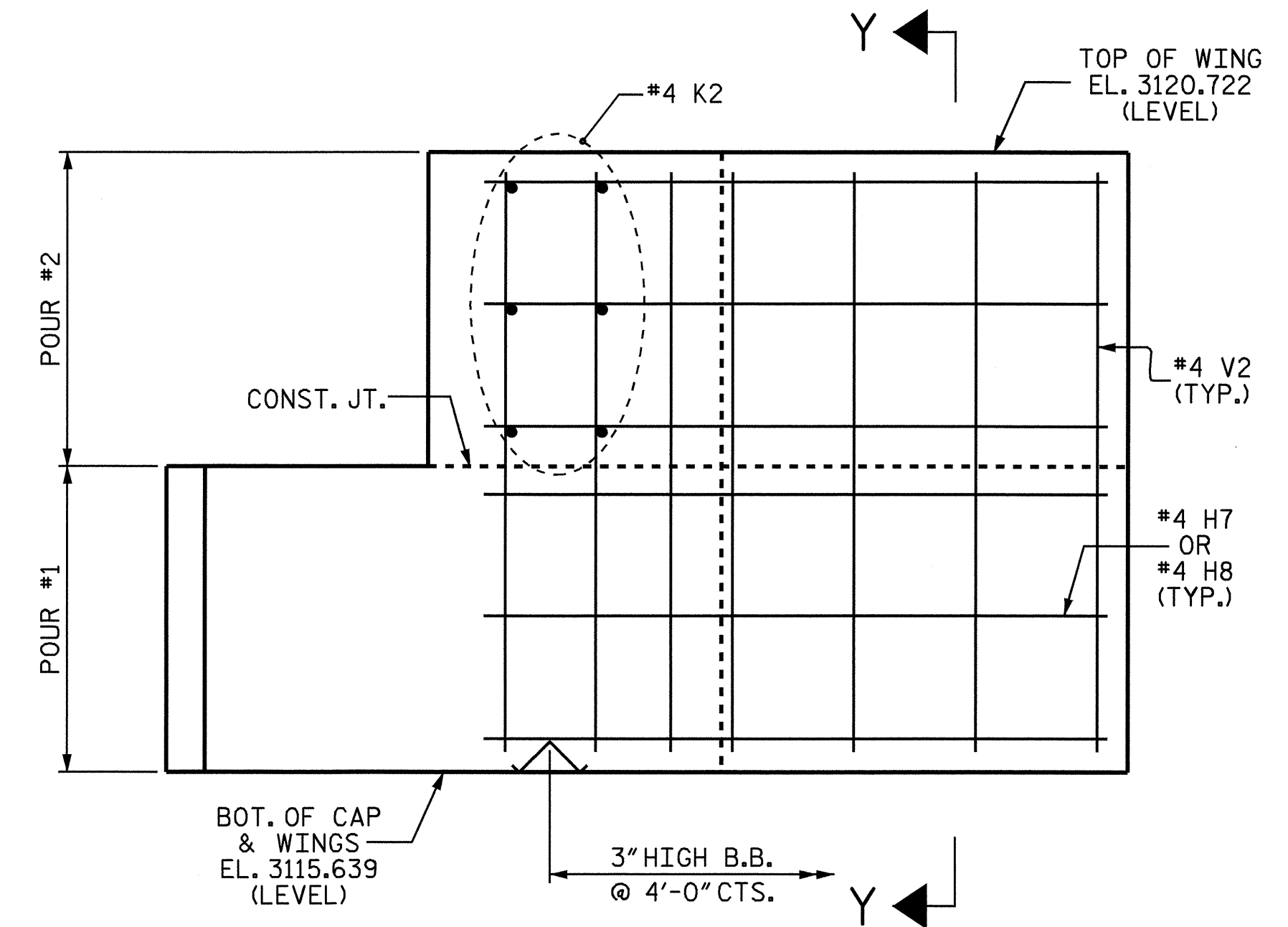
ELEVATION OF WING - W1



SECTION X-X



SECTION Y-Y



ELEVATION OF WING - W2

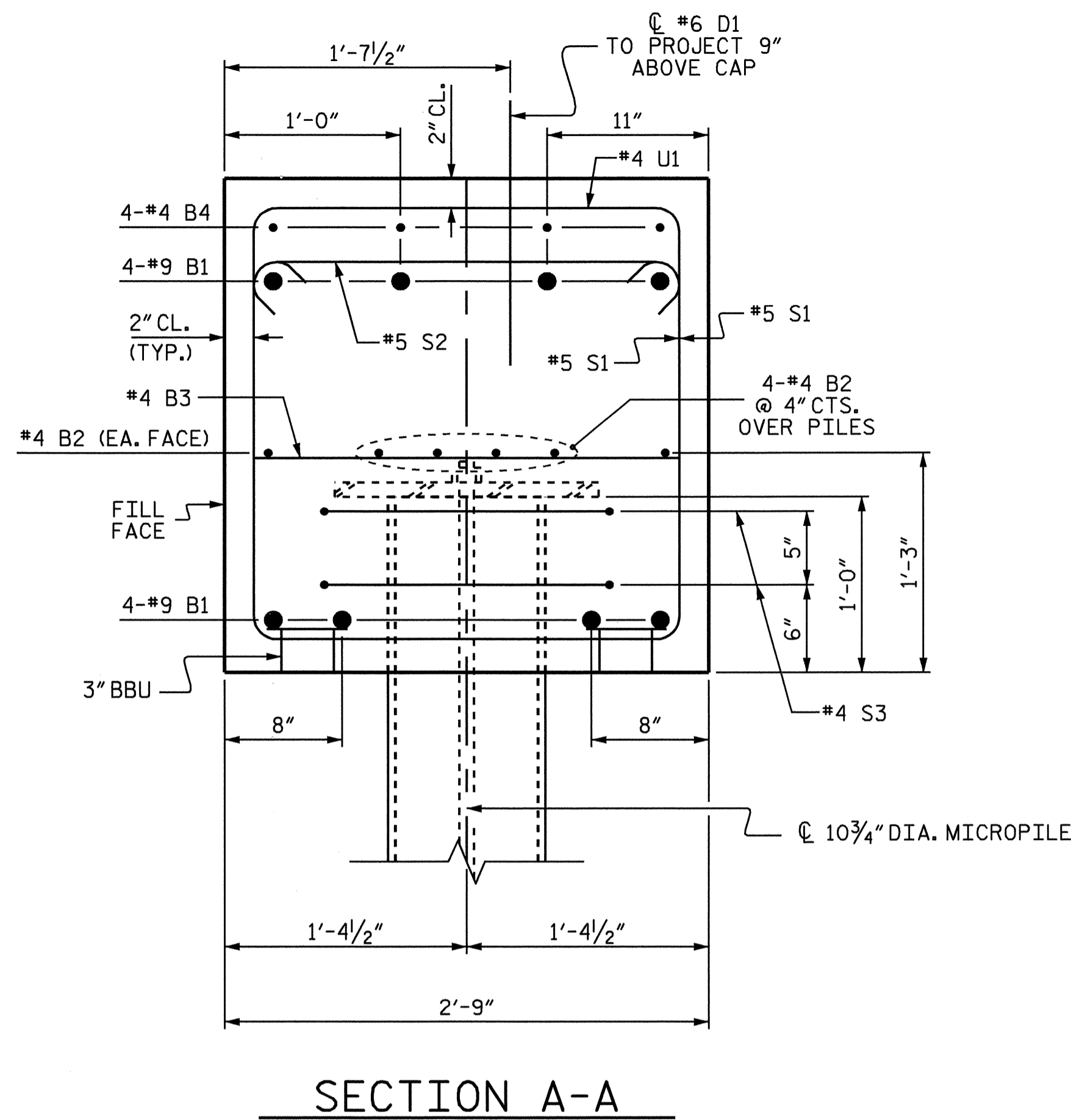
PROJECT NO. B-4012
 ASHE COUNTY
 STATION: 17+30.00 -L-
 SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT #2					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					27

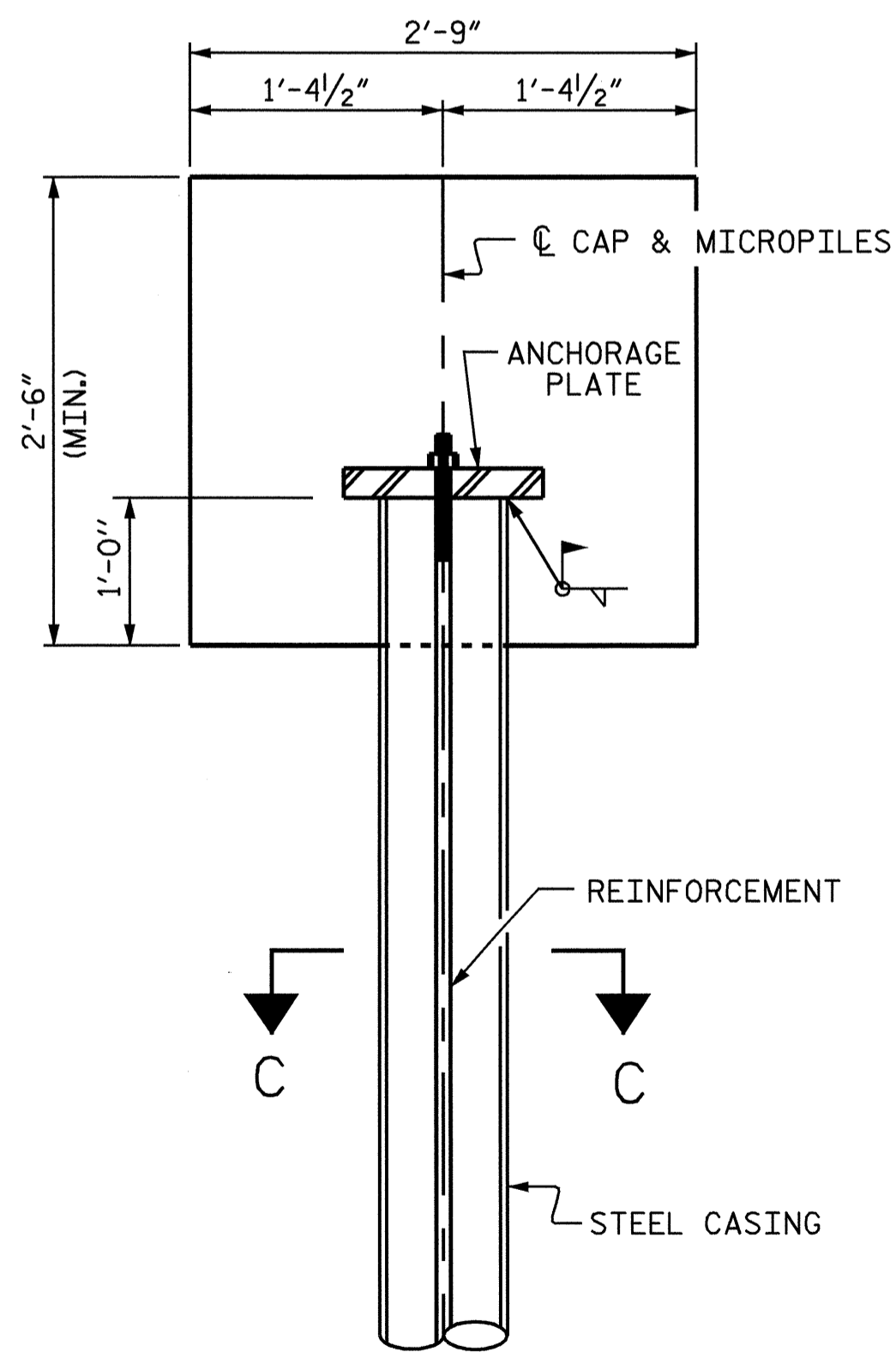


DRAWN BY: S. DOMBROWSKI DATE: 7/07
 CHECKED BY: V. PATEL DATE: 8/07

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 sdombrowski

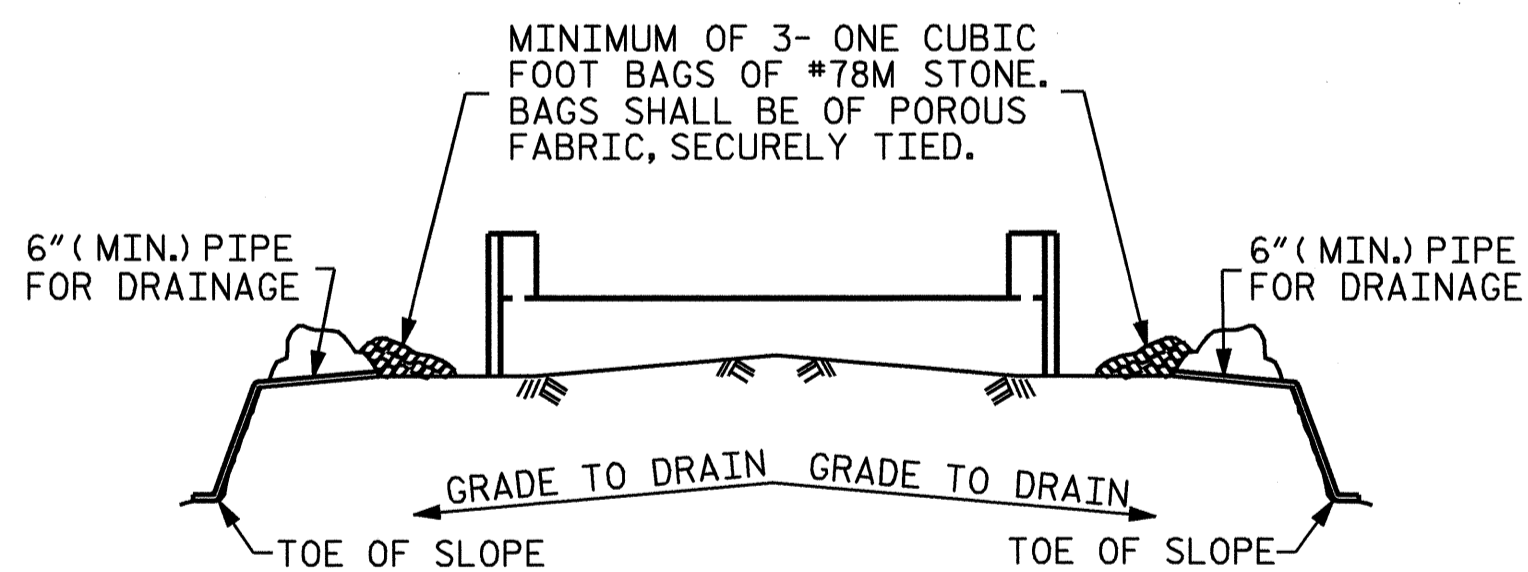


SECTION A-A



MICROPILE DETAIL

(TYP. EACH MICROPILE)



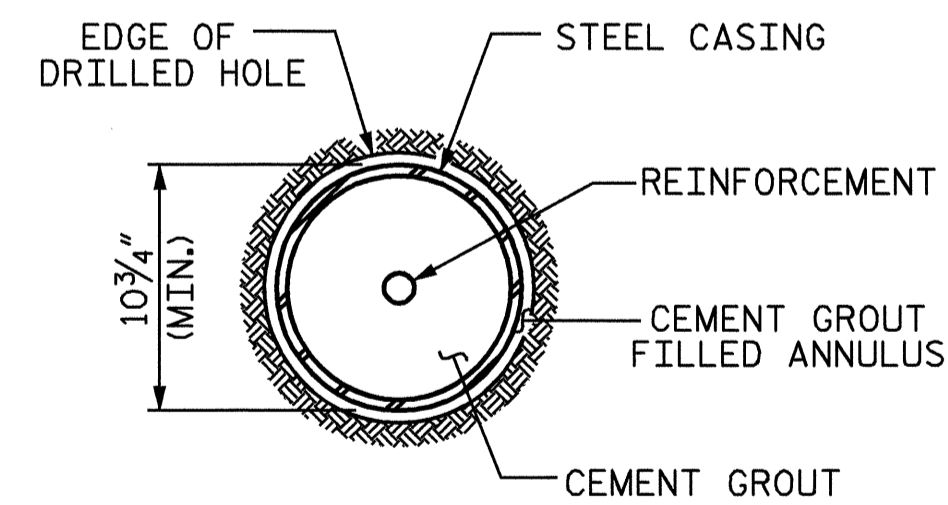
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

TEMPORARY DRAINAGE AT END BENT

BILL OF MATERIAL					
END BENT #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	9		57'-0"	1550
B2	12	4	STR	28'-8"	230
B3	13	4	STR	2'-5"	21
B4	4	4	STR	30'-0"	80
D1	22	6	STR	1'-6"	50
H5	6	4	2	10'-0"	40
H6	6	4	2	9'-5"	38
H7	6	4	3	5'-9"	23
H8	6	4	3	5'-2"	21
K1	6	4	STR	4'-6"	18
K2	6	4	STR	4'-2"	17
S1	62	5	4	7'-7"	490
S2	62	5	5	3'-4"	216
S3	10	4	6	6'-6"	43
U1	19	4	7	5'-5"	69
U2	4	4	7	5'-0"	13
V1	29	4	STR	5'-1"	98
V2	21	4	STR	4'-9"	67
REINFORCING STEEL				LBS	3084
CLASS 'A' CONCRETE BREAKDOWN					
POUR #1 CAP & LOWER PART OF WINGS					
16.6 C.Y.					
POUR #2 UPPER WINGS & BACKWALL					
1.9 C.Y.					
POUR #2 UPPER WINGS & BACKWALL					
0.1 C.Y.					
CLASS 'A' CONCRETE TOTAL				18.6 C.Y.	
10 3/4" DIA. MICROPILES				5 EA.	



SECTION C-C

PROJECT NO. B-4012

ASHE COUNTY

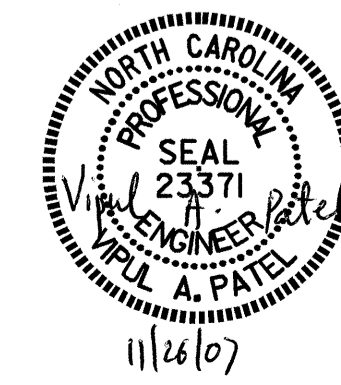
STATION: 17+30.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #2

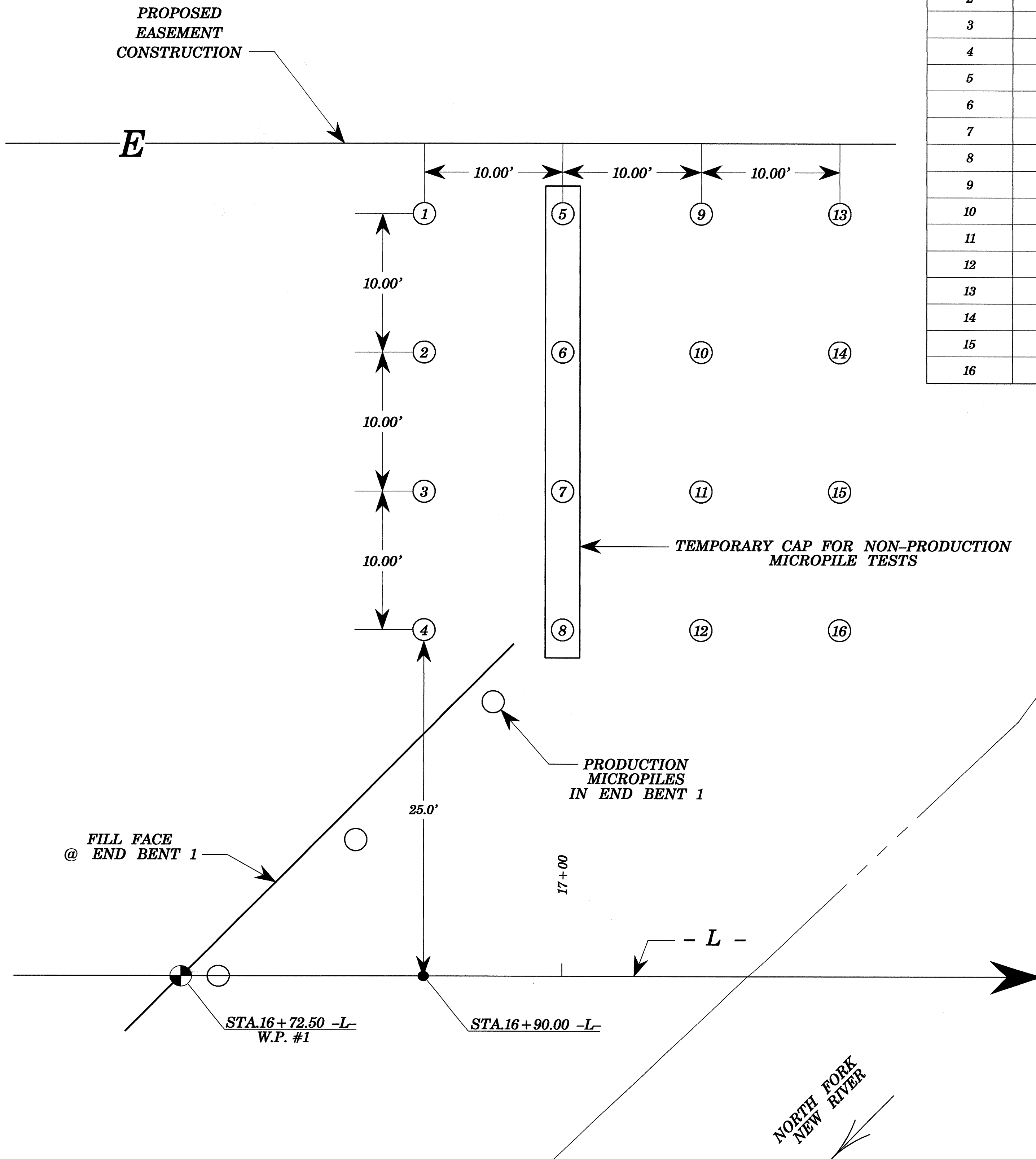
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS 27
2			4			



DRAWN BY: S. DOMBROWSKI DATE: 7/07
CHECKED BY: V. PATEL DATE: 8/07

NON PRODUCTION MICROPILE TEST LAYOUT

DIMENSION LOCATING MICROPILES ARE SHOWN TO THE PILE CENTERLINE



NON-PRODUCTION MICROPILE SCHEDULE

NON-PRODUCTION MICROPILE	REQUIRED REINFORCING CASING PLUNGE IN CRYSTALLINE ROCK (FT)	BOND LENGTH (FT)	ESTIMATED TIP ELEVATION OF REINFORCING CASING	TOP ELEVATION OF REINFORCING CASING (FT)	ESTIMATED MICROPILE LENGTH (FT)	INTERNAL BAR REINFORCEMENT	EXPOSED REINFORCING CASING JOINT ABOVE GROUND SURFACE
1	1	0	3109	3121	12	YES	NO
2	2	0	3108	3121	13	YES	NO
3	5	0	3105	3121	16	YES	NO
4	5	5	3105	3121	26	NO	YES
5	5	5	3105	3121	21	YES	YES
6	5	5	3105	3121	21	YES	YES
7	5	5	3105	3121	21	YES	YES
8	5	5	3105	3121	21	YES	YES
9	5	5	3105	3121	21	YES	YES
10	5	5	3105	3121	21	YES	YES
11	5	5	3105	3121	21	YES	YES
12	5	5	3105	3121	21	YES	YES
13	1	0	3109	3121	12	YES	NO
14	2	0	3108	3121	13	YES	NO
15	5	0	3105	3121	16	YES	NO
16	5	5	3105	3121	21	NO	NO

GEOTECHNICAL ENGINEER

ENGINEER

STATE OF NORTH CAROLINA
PROFESSIONAL SEAL
023480
JOHN S. W. FARGHER

SIGNATURE _____ DATE _____

SIGNATURE _____ DATE _____

NOTES:

- NON-PRODUCTION MICROPILES SHALL BE INSTALLED USING DUPLEX DRILLING.
- NON-PRODUCTION MICROPILES SHALL BE PAID FOR PER EACH. SEE MICROPILE SPECIAL PROVISION.
- NON-PRODUCTION MICROPILES SHALL BE INSTRUMENTED WITH STRAIN GAGES ATTACHED TO THE REINFORCING CASING.
- NON-PRODUCTION MICROPILES ARE TO BE TESTED Laterally BY THE NCDOT.
- ASSISTANCE FROM THE CONTRACTOR WILL BE PAID FOR UNDER LATERAL LOAD TESTING ASSISTANCE. SEE LATERAL LOAD TESTING ASSISTANCE SPECIAL PROVISION.
- THE CONTRACTOR WILL TAKE NECESSARY CARE NOT TO DAMAGE INSTRUMENTATION DURING MICROPILE CONSTRUCTION.
- THE STRAIN GAGES WILL BE PROVIDED BY THE NCDOT.
- NON-PRODUCTION MICROPILES SHALL BE CUT-OFF 2 FOOT BELOW GRADE AFTER COMPLETION OF THE LATERAL LOAD TESTING.

PROJECT NO.: B-4012
ASHE COUNTY
 STATION: 17+30.00 -L-

GEOTECHNICAL ENGINEERING UNIT

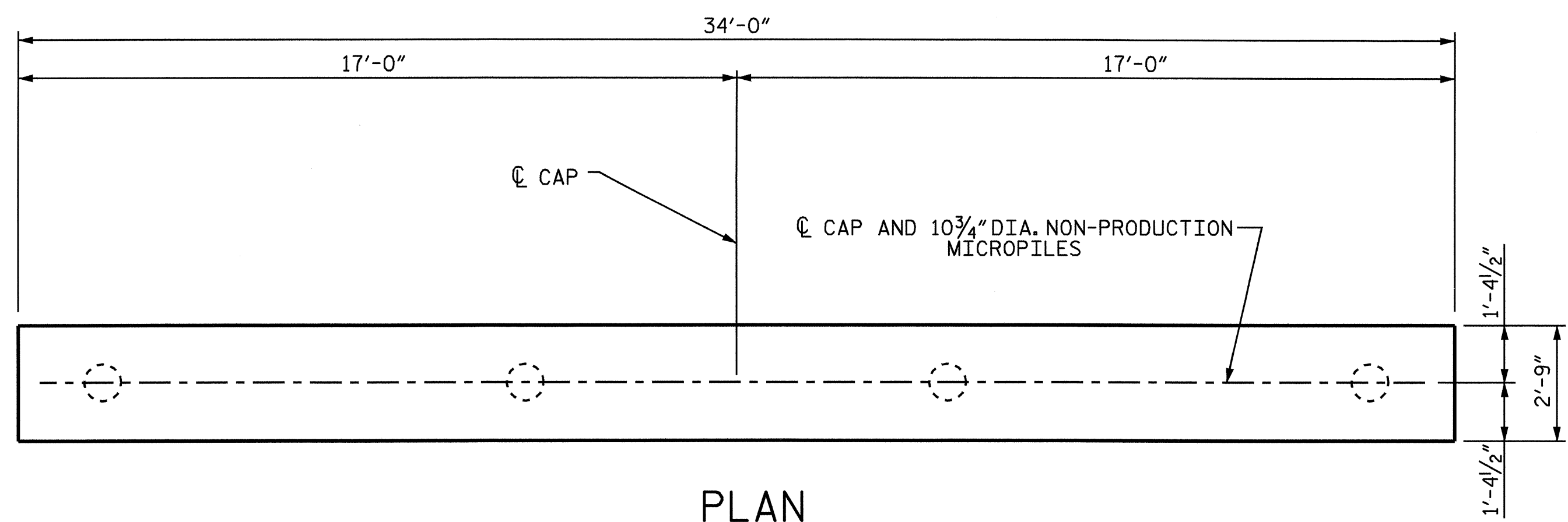
EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

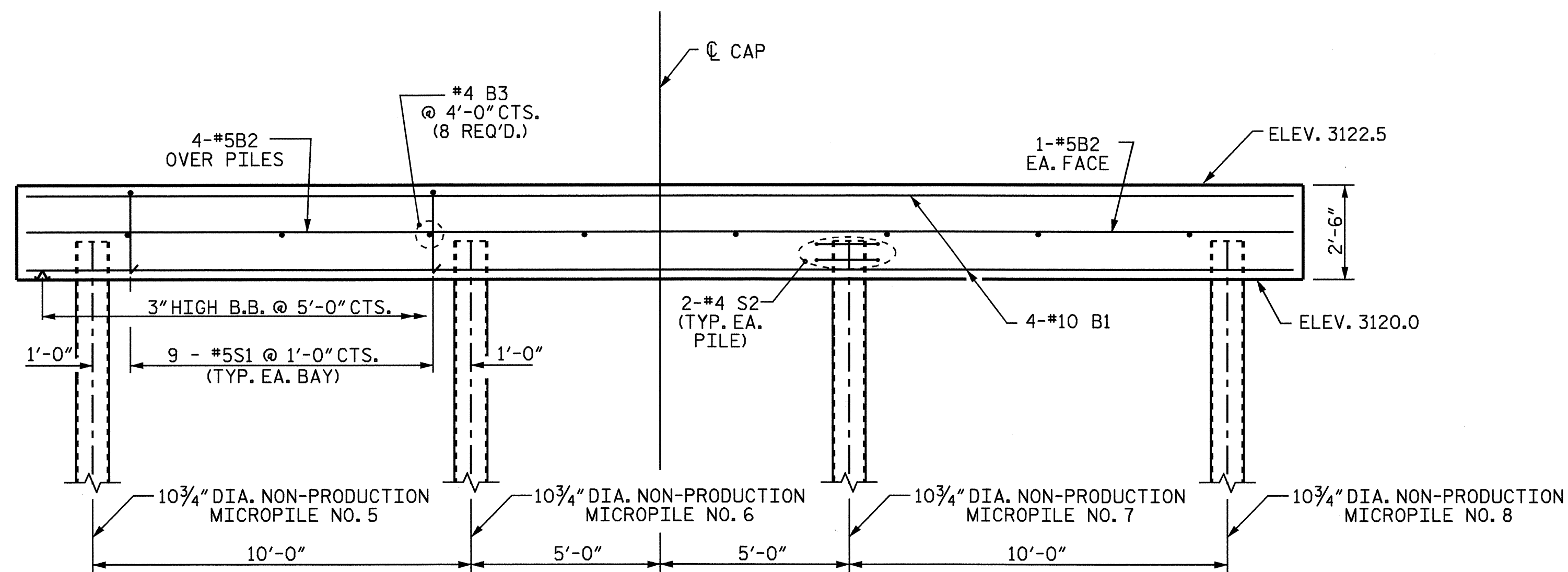
NON PRODUCTION MICROPILE TEST LAYOUT

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

PREPARED BY: C. E. BURRIS DATE: 01/08
 REVIEWED BY: JOHN FARGHER DATE: 01/08

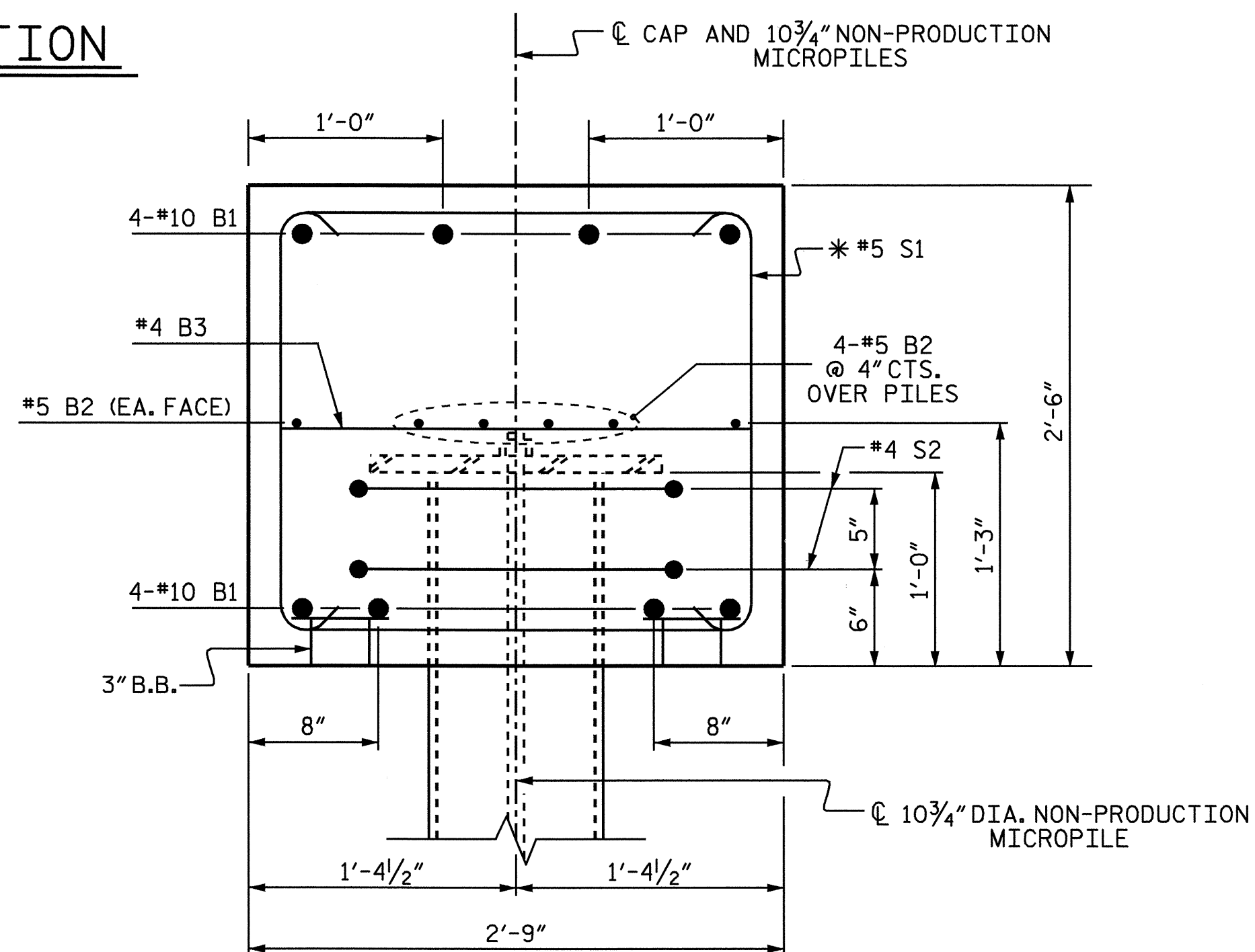


PLAN



* NOTE: INVERT ALTERNATE STIRRUPS

ELEVATION



SECTION THRU CAP

* INVERT ALTERNATE STIRRUPS

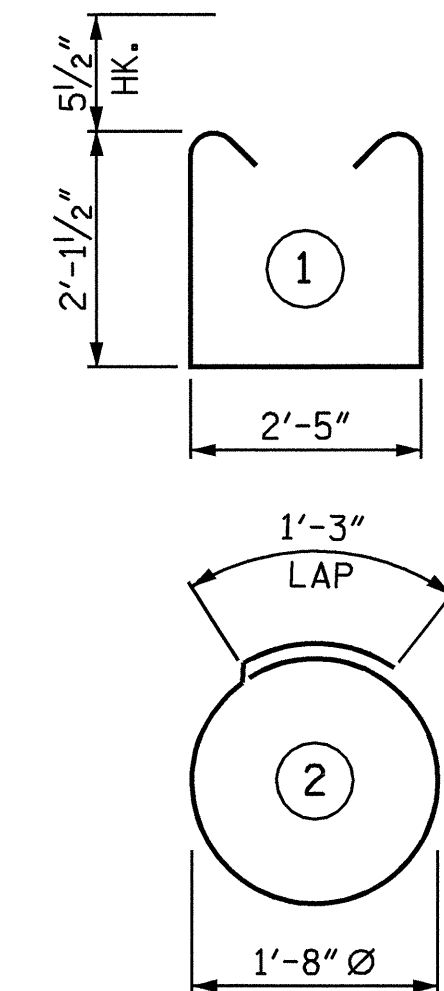
NOTES

FOR 10 3/4" DIA. NON-PRODUCTION MICROPILES, SEE MICROPILES SPECIAL PROVISIONS.

FOR TEMPORARY CAP FOR NON PRODUCTION MICROPILE TESTS, SEE THE SPECIAL PROVISION ENTITLED "LATERAL LOAD TEST ASSISTANCE".

FOR LAYOUT OF THE 10 3/4" DIA. NON PRODUCTION MICROPILES, SEE SHEET S-24A.

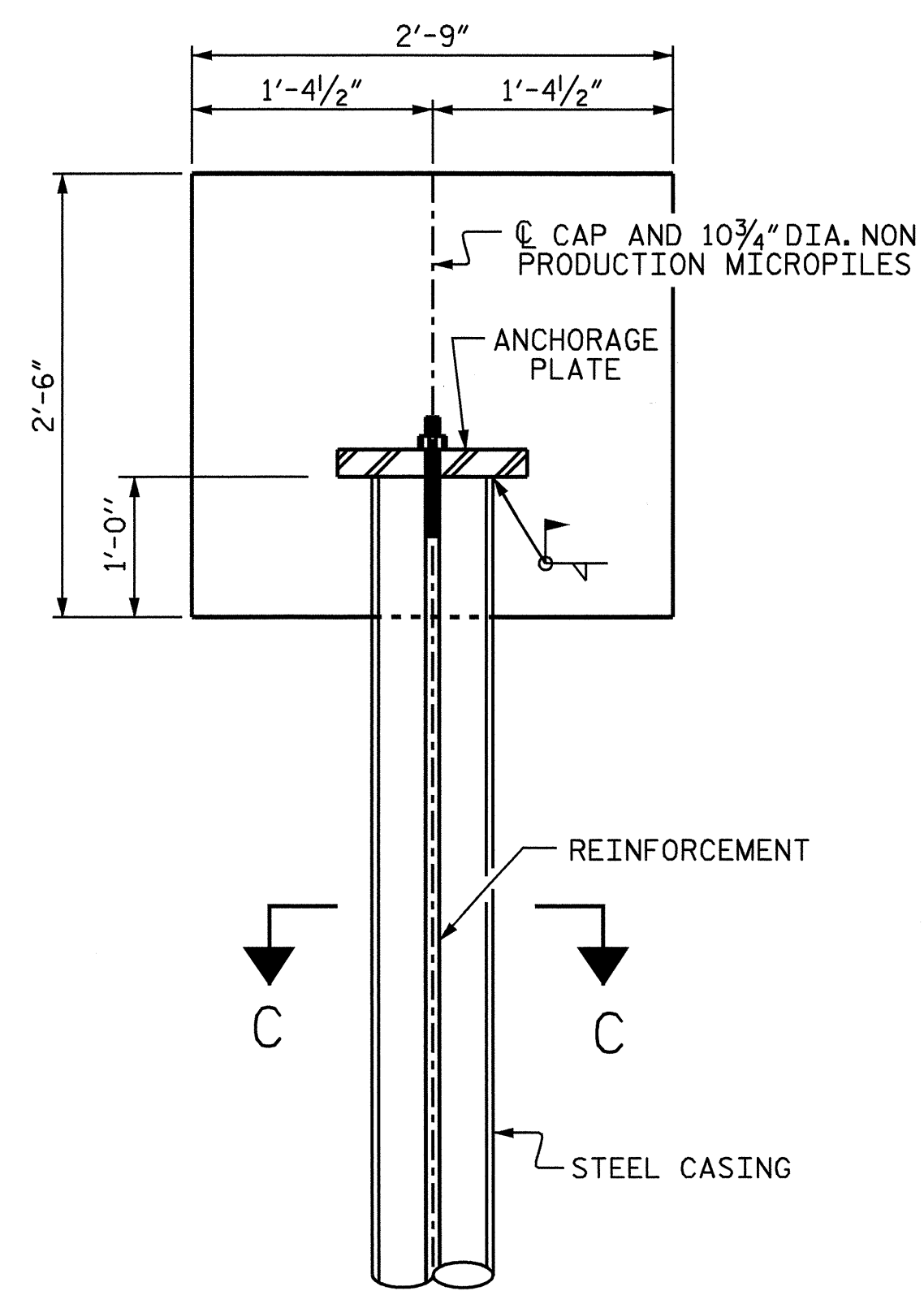
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

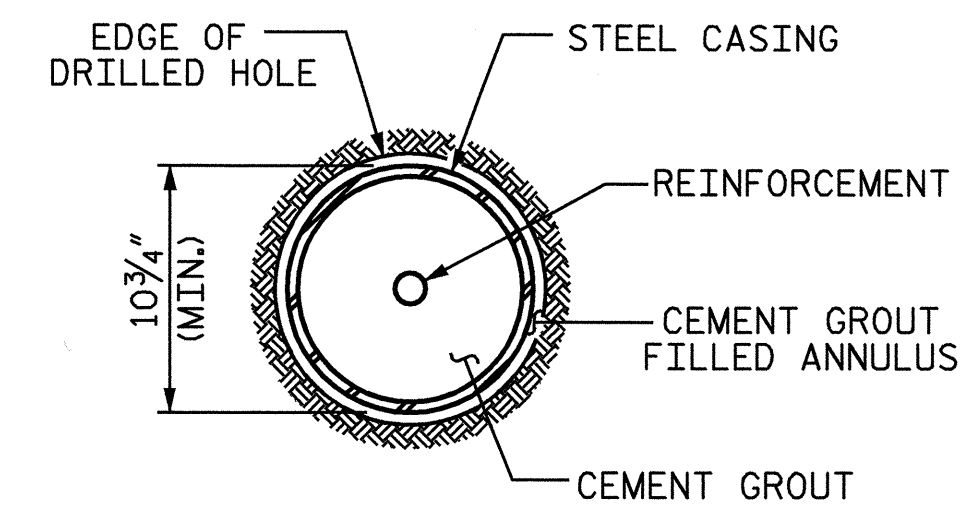
BILL OF MATERIAL

TEMPORARY CAP					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	10	STR	33'-8"	1159
B2	6	5	STR	33'-8"	211
B3	8	4	STR	2'-5"	13
S1	27	5	1	7'-7"	214
S2	8	4	2	6'-6"	35
REINFORCING STEEL					LBS 1632
CLASS 'A' CONCRETE					8.7 C.Y.
TEMPORARY CAP					LUMP SUM



MICROPILE DETAIL

(TYP. EACH MICROPILE)



SECTION C-C

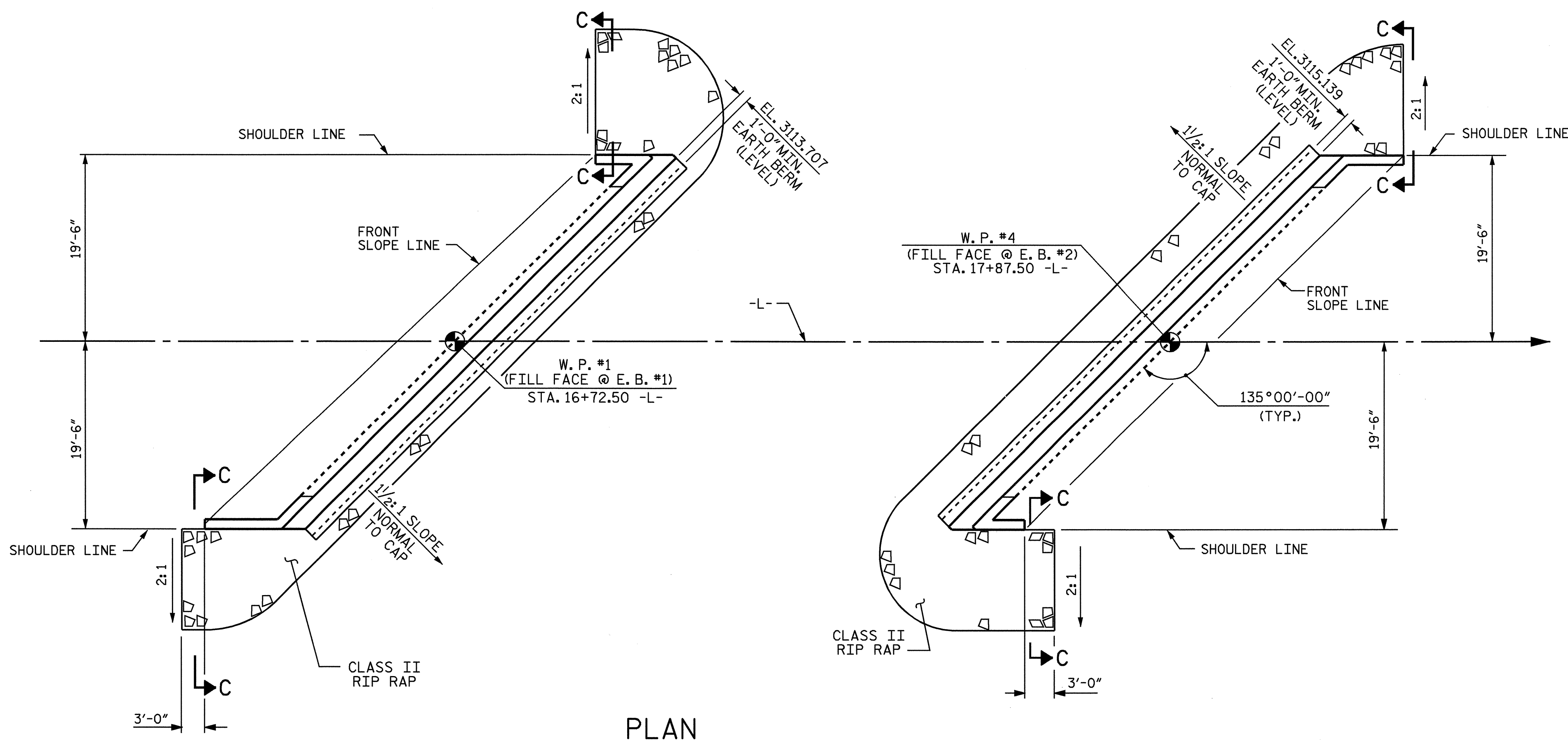
PROJECT NO. B-4012
ASHE COUNTY
 STATION: 17+30.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 TEMPORARY CAP
 FOR NON PRODUCTION
 MICROPILE TESTS



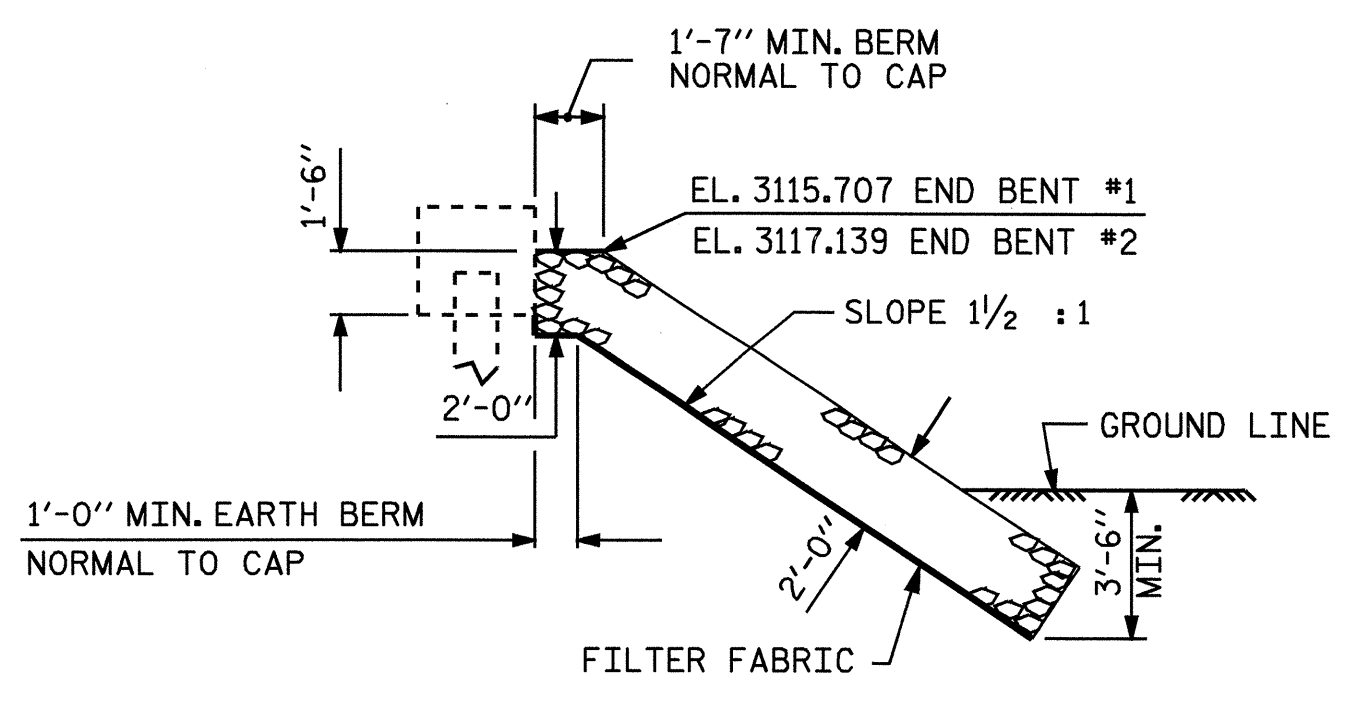
DRAWN BY: B. C. HUNT DATE: 1/14/08
 CHECKED BY: T. G. PAYNE DATE: 1/14/08

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

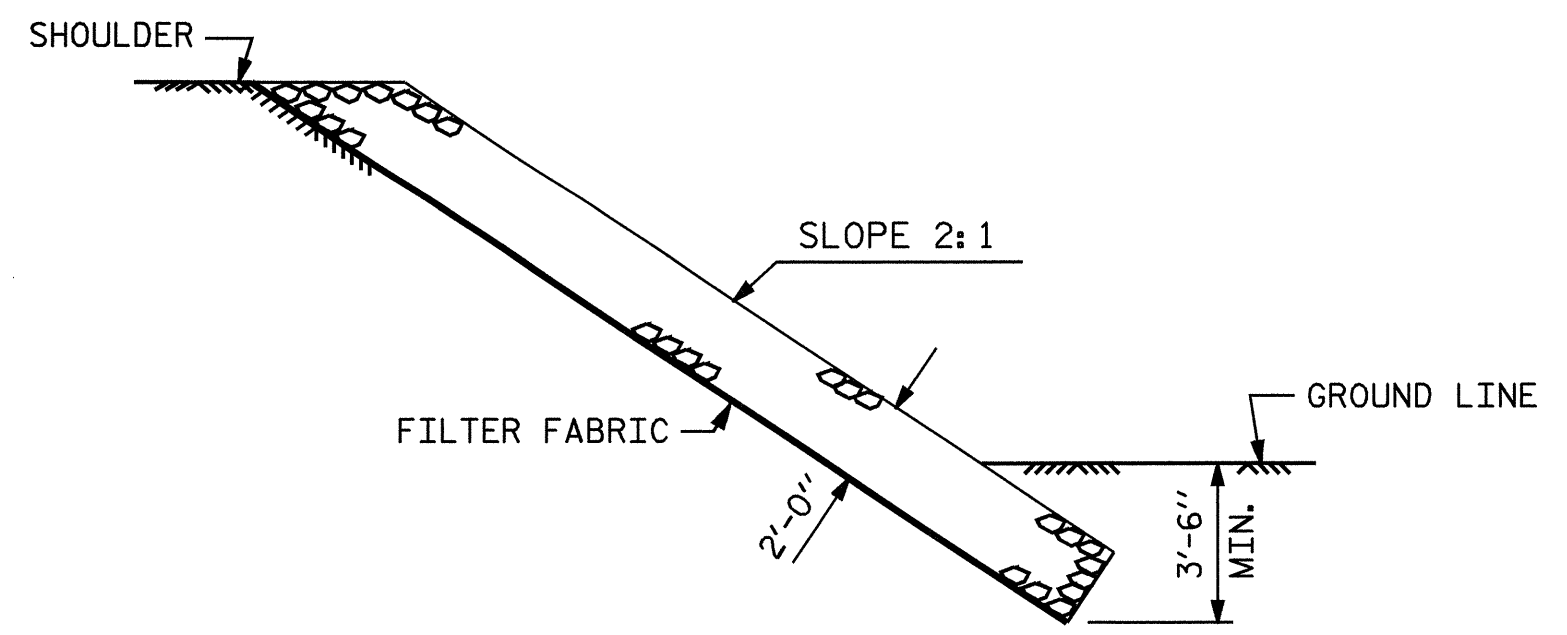


PLAN

ESTIMATED QUANTITIES		
BRIDGE @ STA. 17+30.00 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT #1	125	140
END BENT #2	175	195



SECTION
BERM RIP RAPPED



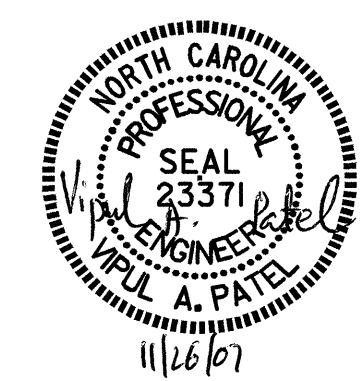
SECTION C-C

PROJECT NO. B-4012
ASHE COUNTY
 STATION: 17+30.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

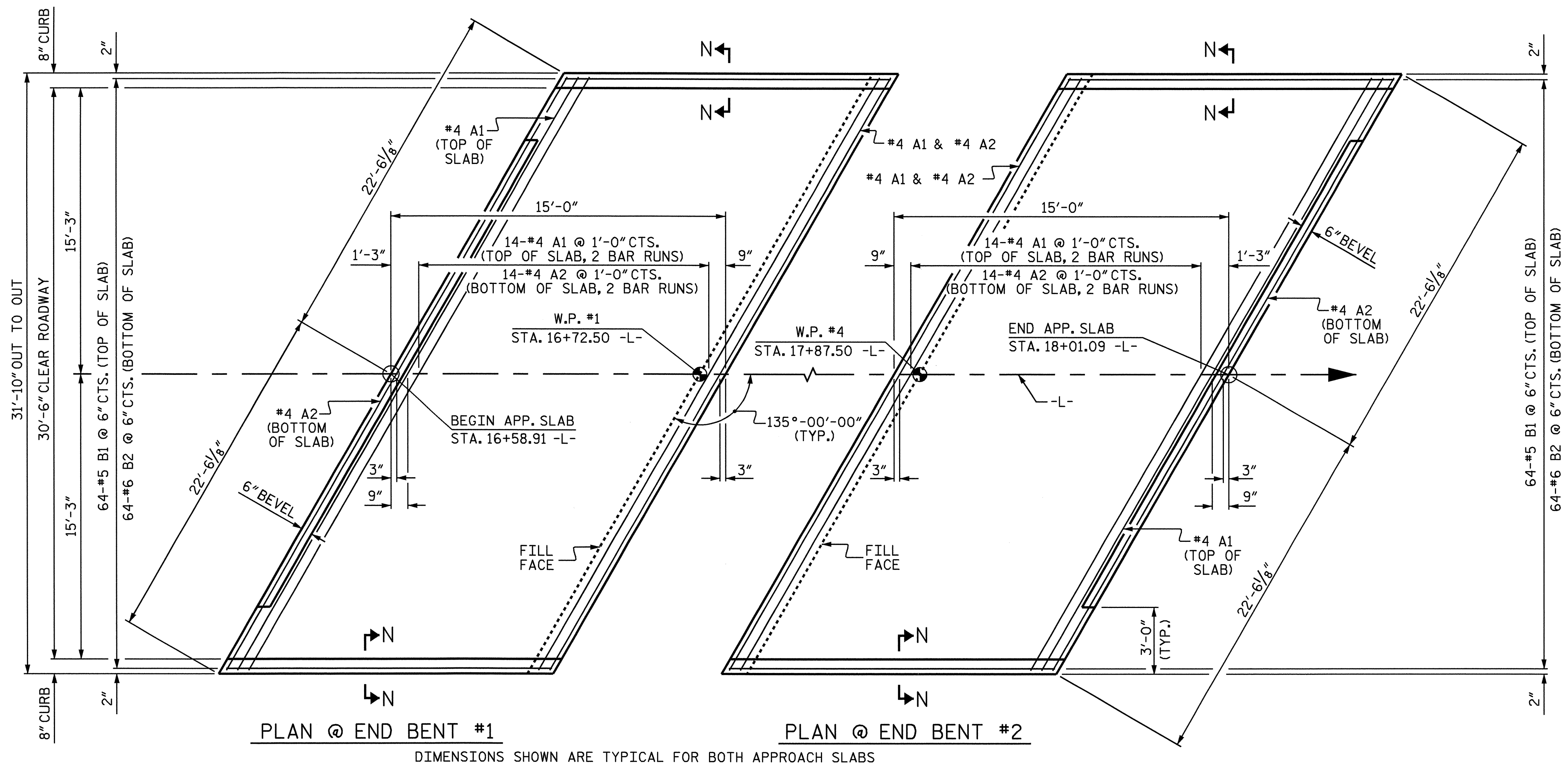
— RIP RAP DETAILS —

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



DRAWN BY : K.D. LAYNE DATE : 10/07
 CHECKED BY : S. DOMBROWSKI DATE : 10/07

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 sdombrowski



SPLICE CHART		
* #4 A1		2'-0"
#4 A2		1'-9"

BILL OF MATERIAL					
FOR ONE APPROACH SLAB (2 REQUIRED)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	32	#4	STR	23'-4"	499
A2	32	#4	STR	23'-2"	495
* B1	64	#5	STR	14'-0"	935
B2	64	#6	STR	14'-6"	1394
REINFORCING STEEL				LBS.	1889
* EPOXY COATED REINFORCING STEEL				LBS.	1434
CLASS AA CONCRETE				C. Y.	20.1

NOTES

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

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

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

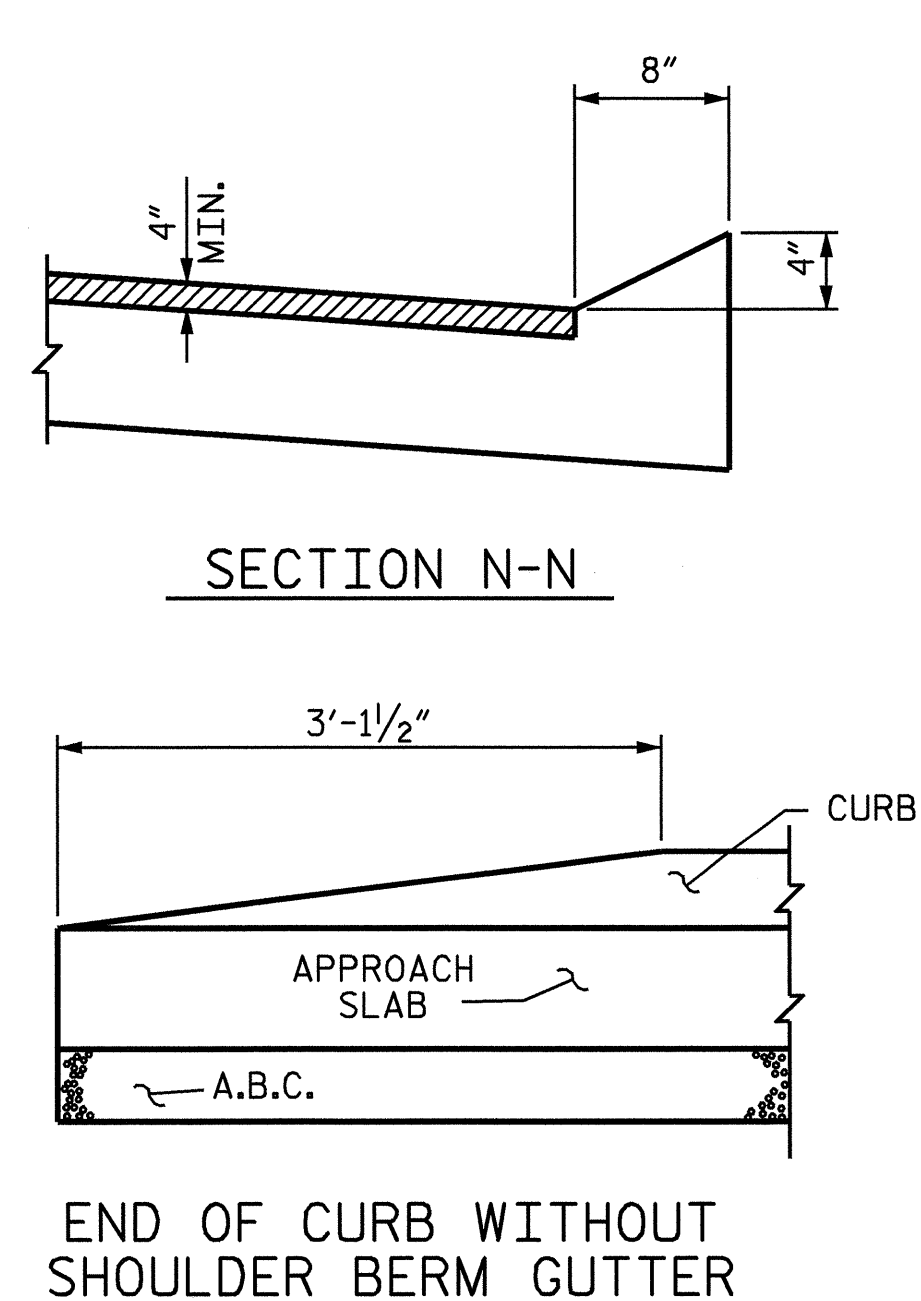
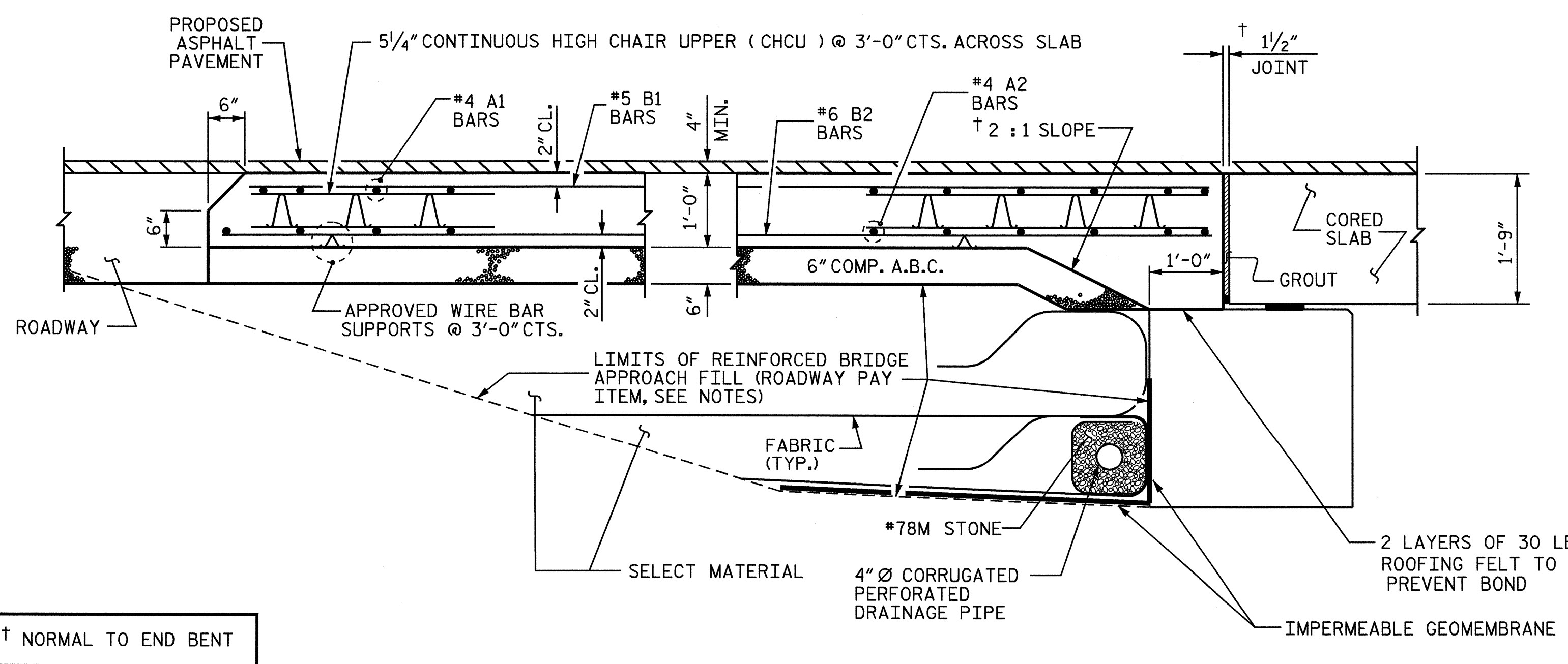
THE CONTRACTOR MAY USE 4" TYPE B-25,0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL EXTEND 1'-0" BEYOND THE END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE CORED SLAB UNIT" SHEETS.

THE JOINT AT THE END BENT SHALL BE GROUTED AS SOON AS PRACTICAL AFTER THE CONSTRUCTION OF THE APPROACH SLABS.

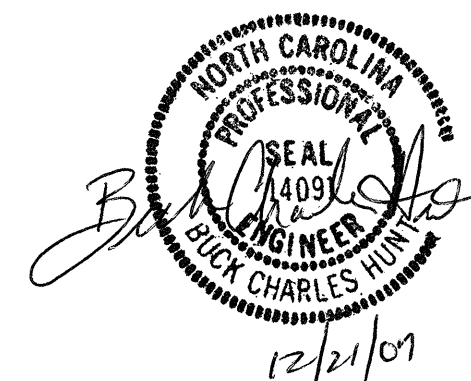
APPROACH SLAB GROOVING IS NOT REQUIRED.



PROJECT NO. B-4012
ASHE COUNTY
 STATION: 17+30.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR PRESTRESSED CONCRETE
 CORED SLAB

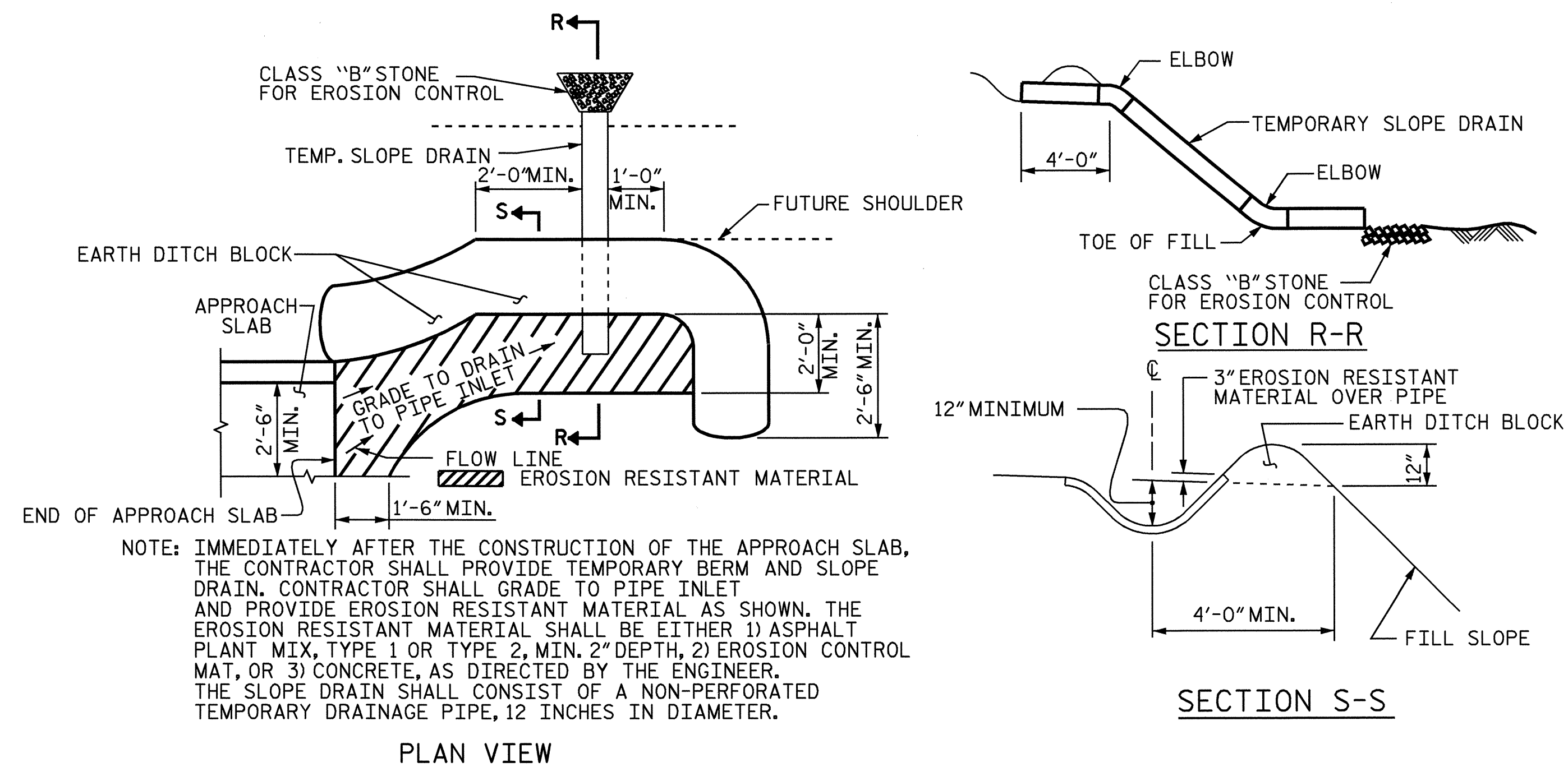


ASSEMBLED BY : S. DOMBROWSKI	DATE : 6/07
CHECKED BY : V. PATEL	DATE : 6/07
DRAWN BY : FCJ 6/87	REV. 7/10/01 LES/RDR
CHECKED BY : EGA 6/87	REV. 5/7/03R RWW/JTE
	REV. 5/1/06 TLA/GM

SECTION THRU SLAB

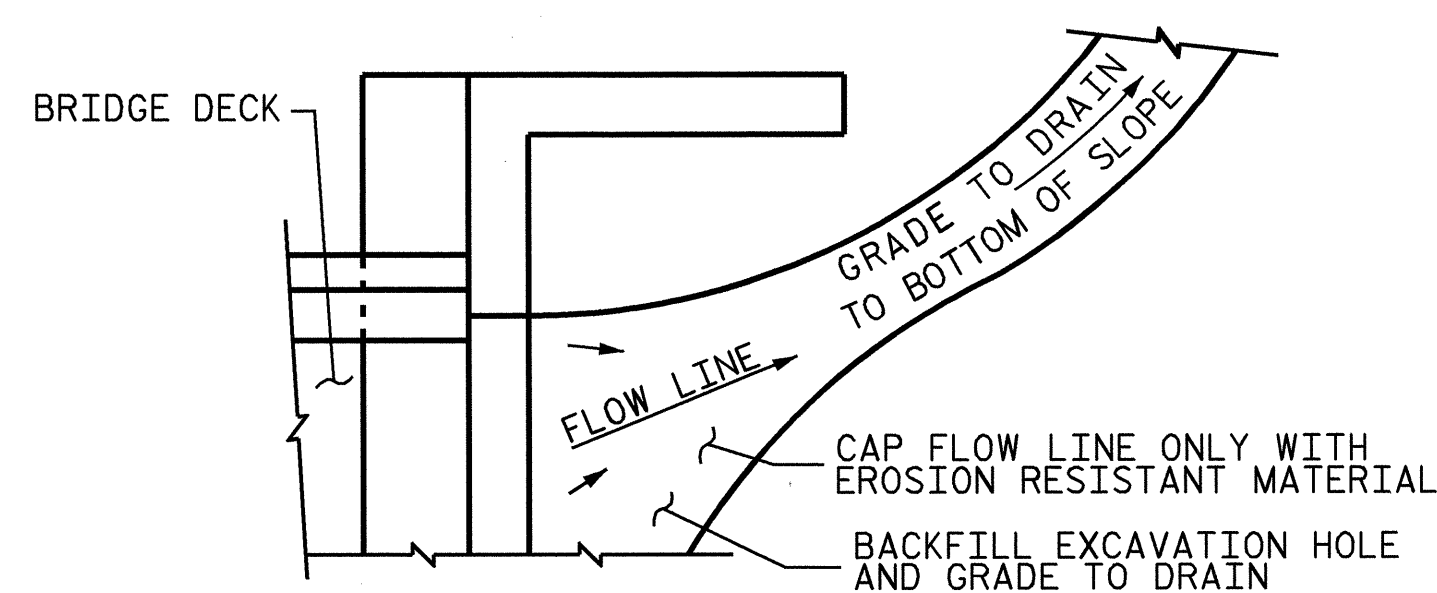
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.	
S-26	TOTAL SHEETS 27



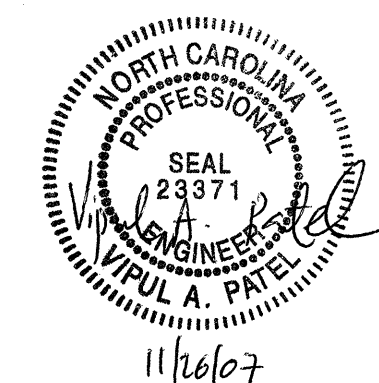
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



PROJECT NO. B-4012
ASHE COUNTY
 STATION: 17+30.00 -L-

SHEET 2 OF 2



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						1988
STANDARD BRIDGE APPROACH SLAB DETAILS						SHEET NO. S-27
REVISIONS						TOTAL SHEETS 27
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

ASSEMBLED BY : S. DOMBROWSKI	DATE : 6/07
CHECKED BY : V. PATEL	DATE : 6/07
DRAWN BY : FCJ 11/88	REV. 10/17/00 RWW/LES
CHECKED BY : ARB 11/88	REV. 5/1/03 RWW/JTE
	REV. 5/1/06 TLA/GM

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2002 STANDARD SPECIFICATIONS "FOR ROADS AND STRUCTURES" OF THE N.C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

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

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

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

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED WITH THE EXCEPTION OF #2 BARS WHICH MAY BE FABRICATED FROM COLD DRAWN STEEL WIRE. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

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

STRUCTURAL STEEL:

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

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

PLACEMENT OF BEAM OR GIRDER MEMBERS ON TRUCKS FOR HAULING SHALL BE DONE IN COMPLIANCE WITH LIMITS SHOWN ON SKETCHES PROVIDED TO THE MATERIALS AND TEST UNIT APPROVED BY THE STRUCTURE DESIGN UNIT DATED MAY 8, 1991.

THESE SKETCHES PRIMARILY LIMIT THE UNSUPPORTED CANTILEVER LENGTH OF MEMBERS. WHEN THE CONTRACTOR WISHES TO PLACE MEMBERS ON TRUCKS NOT IN ACCORDANCE WITH THESE LIMITS, TO SHIP BY RAIL, TO ATTACH SHIPPING RESTRAINTS TO THE MEMBERS OR TO INVERT MEMBERS, HE SHALL SUBMIT A SKETCH FOR APPROVAL PRIOR TO SHIPPING. SEE ALSO ARTICLE 1072-11.

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

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