



-2.4909%  $\Delta$  -0.3845%

P.I. STA. = 15+85.00 -L-  
EL. = 290.860  
VC = 220'

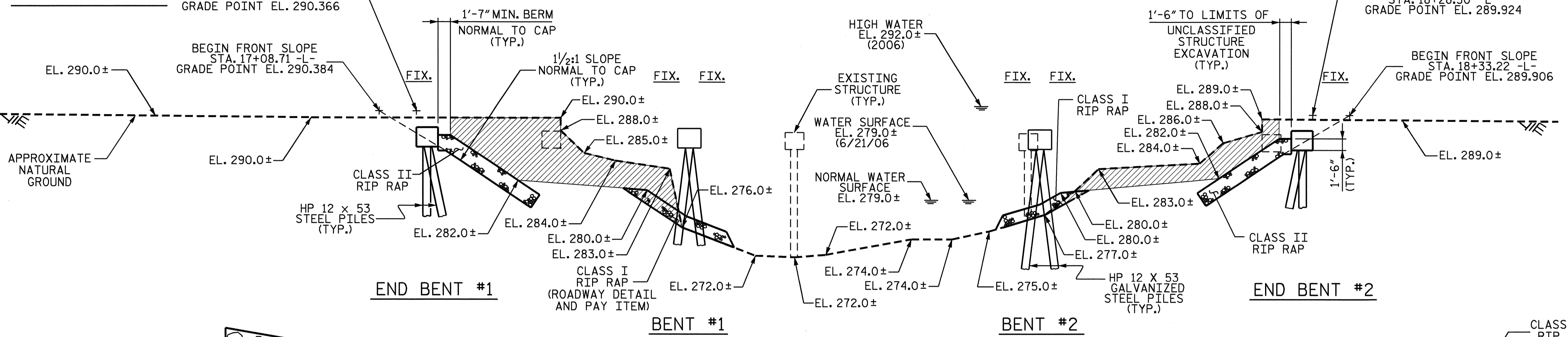
**GRADE DATA**

FILL FACE @ END BENT #1  
STA. 17+13.50 -L-  
GRADE POINT EL. 290.366

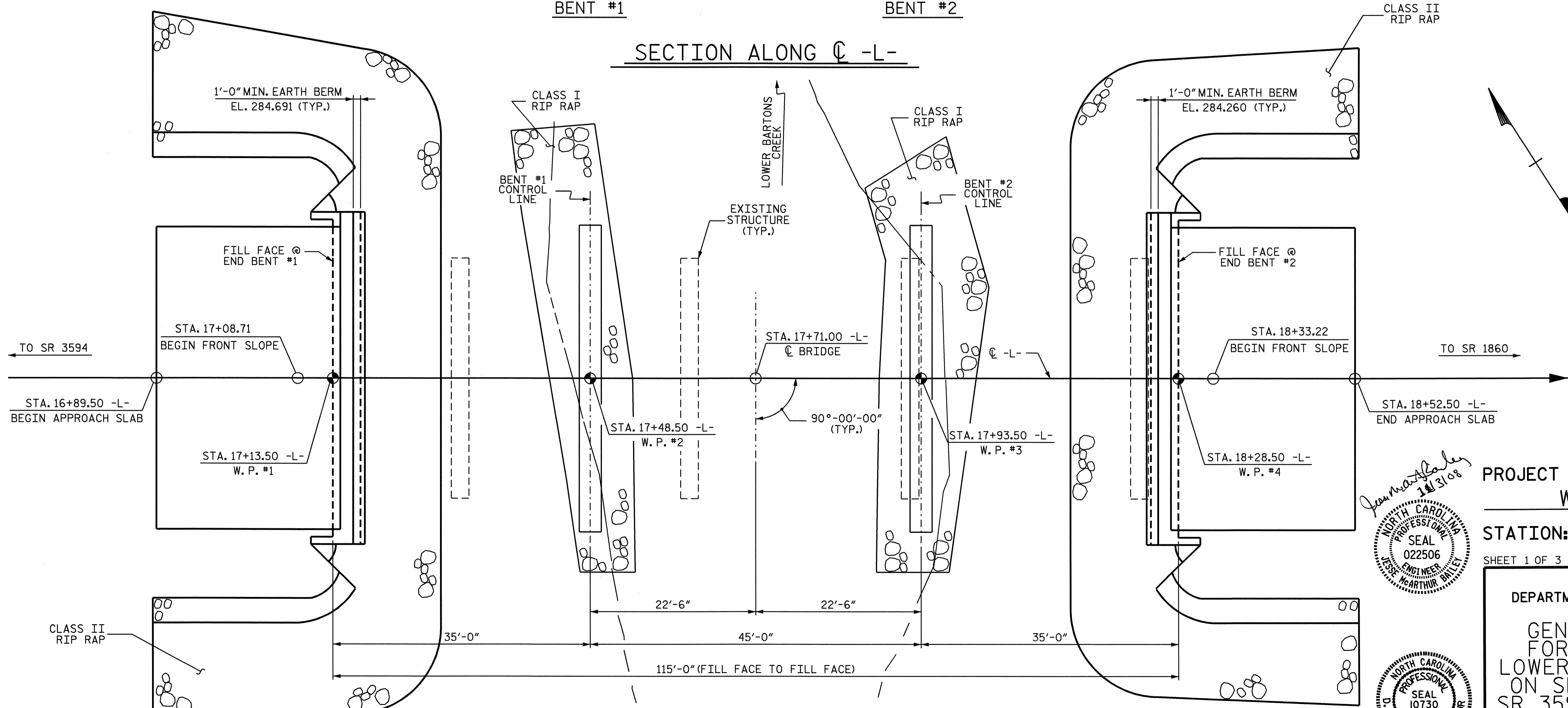
BEGIN FRONT SLOPE  
STA. 17+08.71 -L-  
GRADE POINT EL. 290.384

FILL FACE @ END BENT #2  
STA. 18+28.50 -L-  
GRADE POINT EL. 289.924

BEGIN FRONT SLOPE  
STA. 18+33.22 -L-  
GRADE POINT EL. 289.906

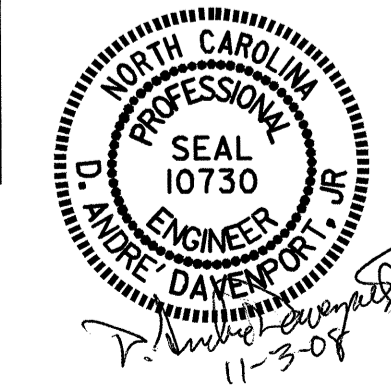
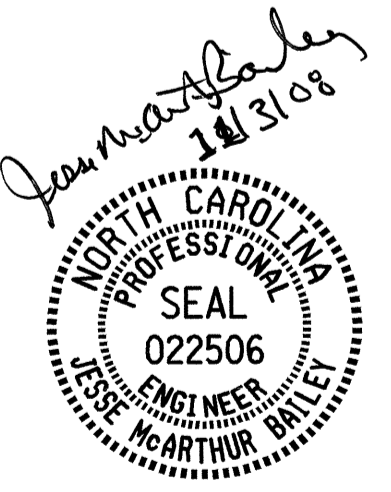


**SECTION ALONG C-L-**



**PLAN**

PILES NOT SHOWN IN PLAN VIEW.

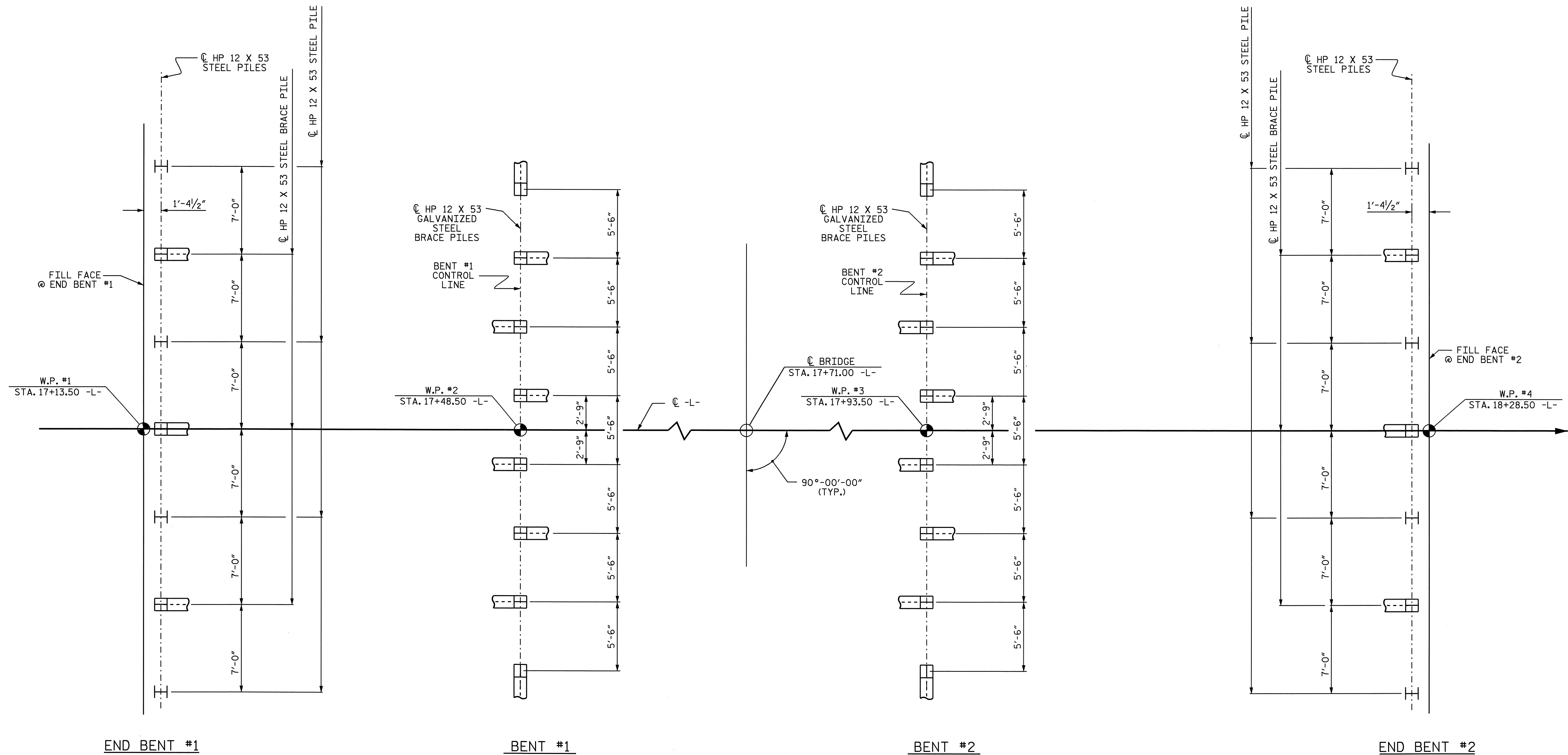


PROJECT NO. B-4303  
WAKE COUNTY  
STATION: 17+71.00 -L-  
SHEET 1 OF 3      REPLACES BRIDGE #102

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
GENERAL DRAWING  
FOR BRIDGE OVER  
LOWER BARTONS CREEK  
ON SR 1844 BETWEEN  
SR 3594 AND SR 1860

REVISIONS						SHEET NO. S-1
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 29
2			4			

DRAWN BY: D.A. DAVENPORT      DATE: 03-08  
CHECKED BY: A. SORSENGINH      DATE: 03-08



END BENT #1

BENT #1

BENT #2

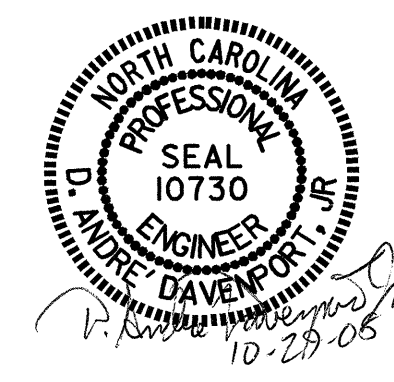
END BENT #2

### FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE.  
 BRACE PILES AT END BENTS ARE BATTERED 3 : 12.  
 BRACE PILES AT BENTS ARE BATTERED 1/2 : 12.

PROJECT NO. B-4303  
WAKE COUNTY  
 STATION: 17+71.00 -L-

SHEET 2 OF 3



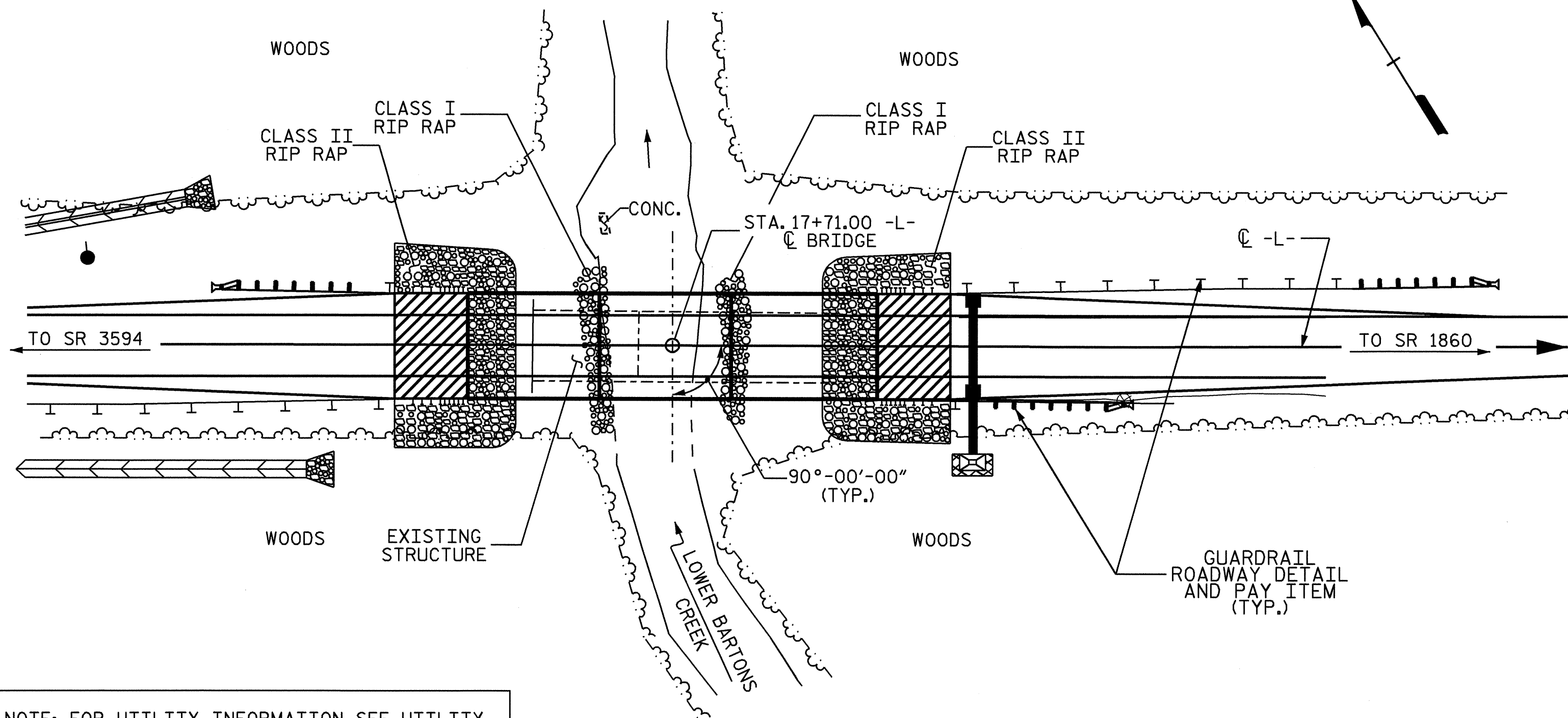
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 GENERAL DRAWING FOR  
 BRIDGE OVER LOWER  
 BARTONS CREEK ON  
 SR 1844 BETWEEN  
 SR 3594 AND SR 1860

DRAWN BY : D.A. DAVENPORT DATE : 03-08  
 CHECKED BY : A. SORSENGINH DATE : 03-08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			29
2			4			



**NOTES**



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

LOCATION SKETCH

**HYDRAULIC DATA**

DESIGN DISCHARGE = 2,600 C.F.S.  
 FREQUENCY OF DESIGN FLOOD = 25 YR.  
 DESIGN HIGH WATER ELEVATION = 287.900  
 DRAINAGE AREA = 7.84 SQ. MI.  
 BASIC DISCHARGE (Q100) = 3,300 C.F.S.  
 BASIC HIGH WATER ELEVATION = 288.600

**OVERTOPPING FLOOD DATA**

OVERTOPPING DISCHARGE = 3,700 C.F.S.  
 FREQUENCY OF OVERTOPPING FLOOD = 100 YR. +  
 OVERTOPPING FLOOD ELEVATION = 288.900

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

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 3 SIMPLE SPANS, @ 30'-0" EACH, WITH 5" ASPHALT WEARING SURFACE ON PRECAST PRESTRESSED CONCRETE CHANNELS ON PRECAST PRESTRESSED CONCRETE CAPS ON TIMBER PILES WITH INTERIOR PILES JACKETED WITH REINFORCED CONCRETE, WITH A CLEAR ROADWAY WIDTH OF 24'-0" AND LOCATED AT THE PROPOSED SITE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 25 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

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 GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2 TO A REQUIRED BEARING CAPACITY OF 100 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENT NO. 1 AND END BENT NO. 2 IS 50 TONS PER PILE.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 AND BENT NO. 2 IS EL. 267.000. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

DRIVE PILES AT BENT NO. 1 AND BENT NO. 2 TO A REQUIRED BEARING CAPACITY OF 135 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO PLUS ANY ADDITIONAL CAPACITY TO ACCOUNT FOR DOWN DRAG OR NEGATIVE SKIN FRICTION AND SCOUR.

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

INSTALL PILES AT BENT NO. 1 AND BENT NO. 2 TO A TIP ELEVATION NO HIGHER THAN ELEVATION 263.000.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

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

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

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.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING GUARDRAIL 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+71.00-L-"

**TOTAL BILL OF MATERIAL**

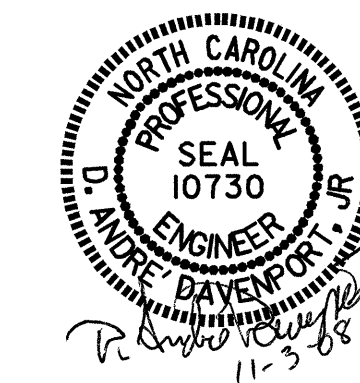
	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	CONCRETE WEARING SURFACE	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 12 X 53 STEEL PILES	HP 12 X 53 GALVANIZED STEEL PILES	2 BAR METAL RAIL	1'-2" X 2'-10 5/8" CONCRETE PARAPET	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS	RIP RAP CLASS I		
	LUMP SUM	LUMP SUM	SQ. FT.	SQ. FT.	CU. YD.	LUMP SUM	LBS.	NO.	LIN. FT.	LIN. FT.	LIN. FT.	TONS	SQ. YD.	LUMP SUM	LUMP SUM	LIN. FT.	TONS		
SUPERSTRUCTURE			4082.00	5335.00						210.00	225.50					1462.50			
END BENT NO. 1					15.1		2,177	7	175			200	225						
BENT NO. 1					11.6		2,217		8	200			70				50		
BENT NO. 2					11.6		2,217		8	200			75				55		
END BENT NO. 2					15.1		2,179	7	210			180	200						
TOTAL	LUMP SUM	LUMP SUM	4082.00	5335.00	53.4	LUMP SUM	8,790	14	385	16	400	210.00	225.50	380	570	LUMP SUM	LUMP SUM	1462.50	105

PROJECT NO. B-4303

WAKE COUNTY

STATION: 17+71.00 -L-

SHEET 3 OF 3

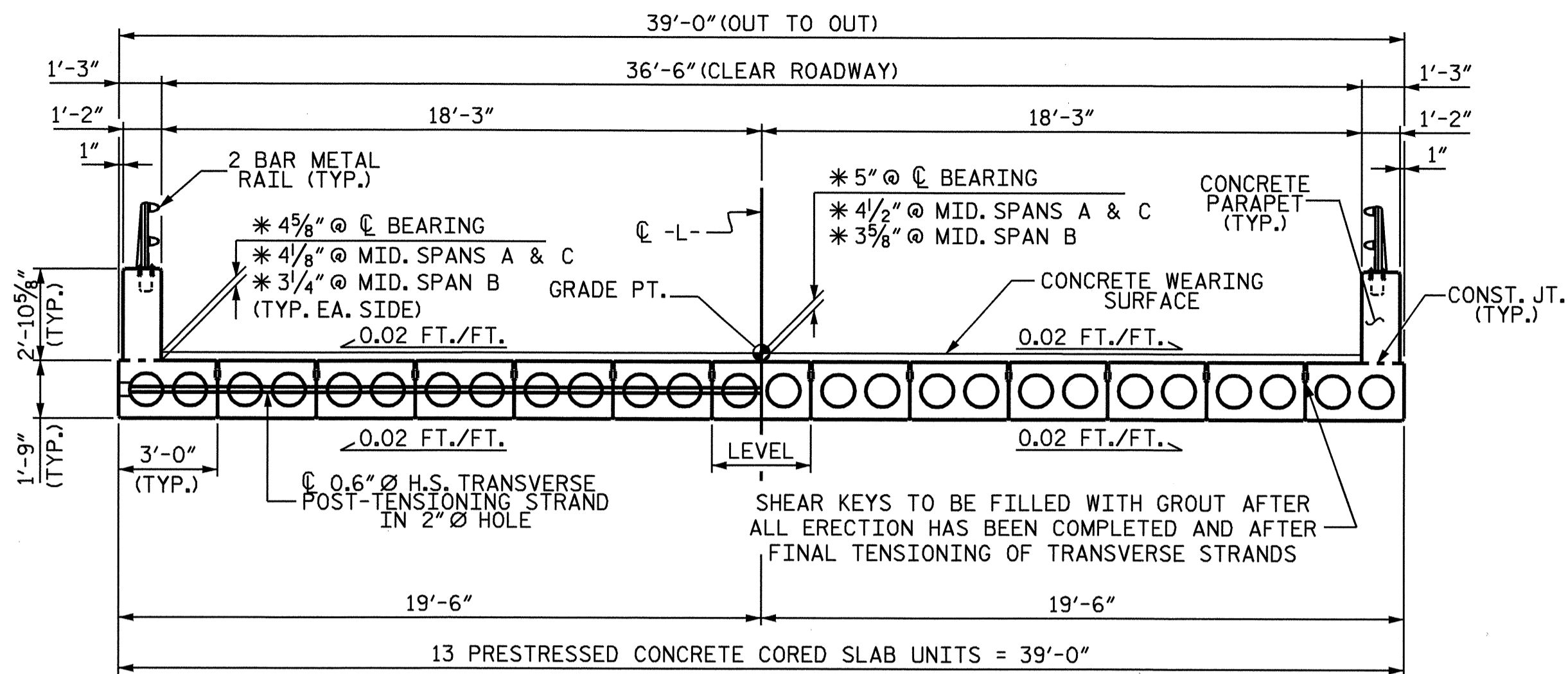


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 GENERAL DRAWING  
 FOR BRIDGE OVER  
 LOWER BARTONS CREEK  
 ON SR 1844 BETWEEN  
 SR 3594 AND SR 1860

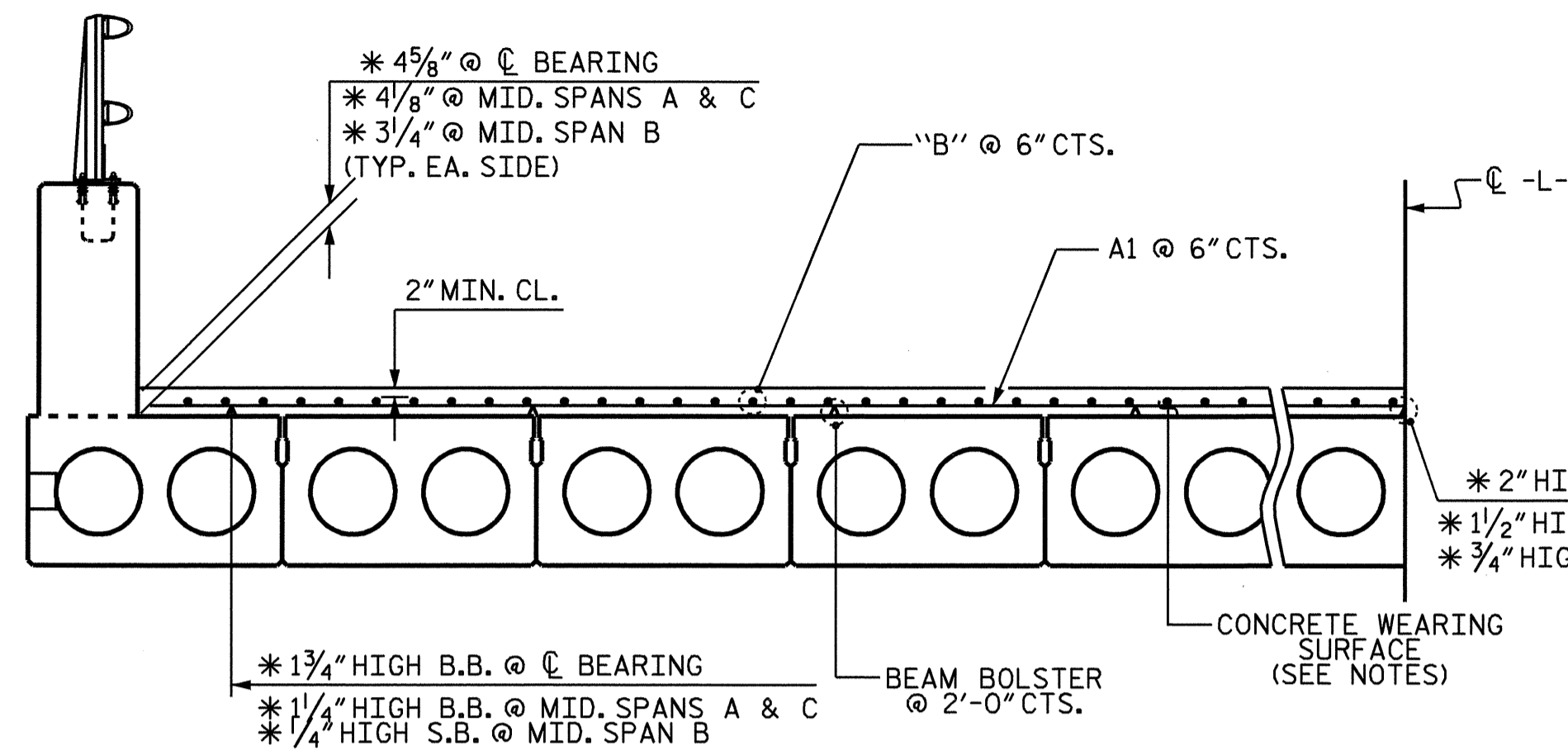
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			29
2			4			

DRAWN BY: D.A. DAVENPORT DATE: 03-08  
 CHECKED BY: A. SORSENGINH DATE: 03-08

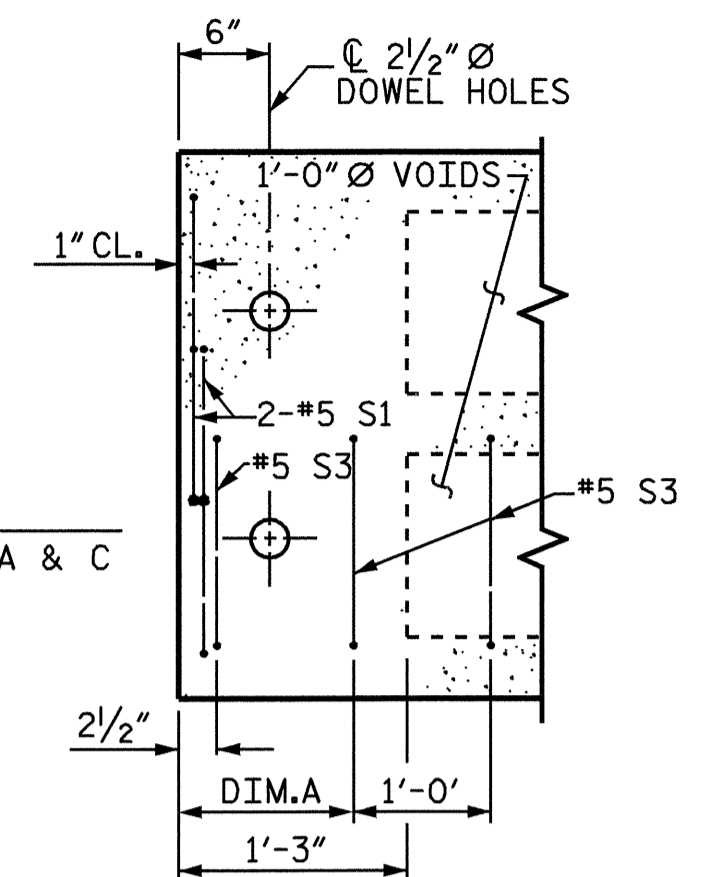




**TYPICAL SECTION**

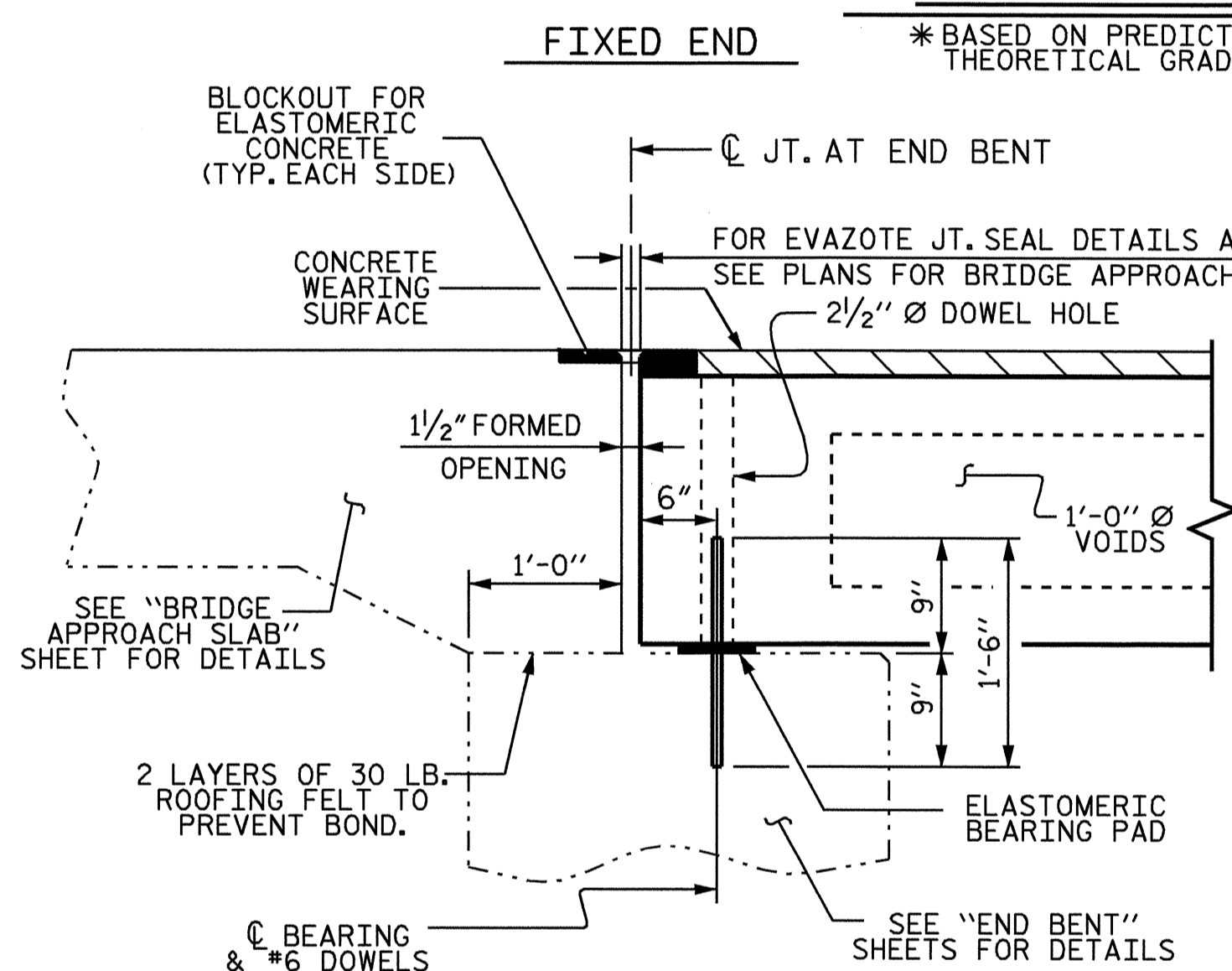


**REINFORCING FOR CONCRETE WEARING SURFACE**

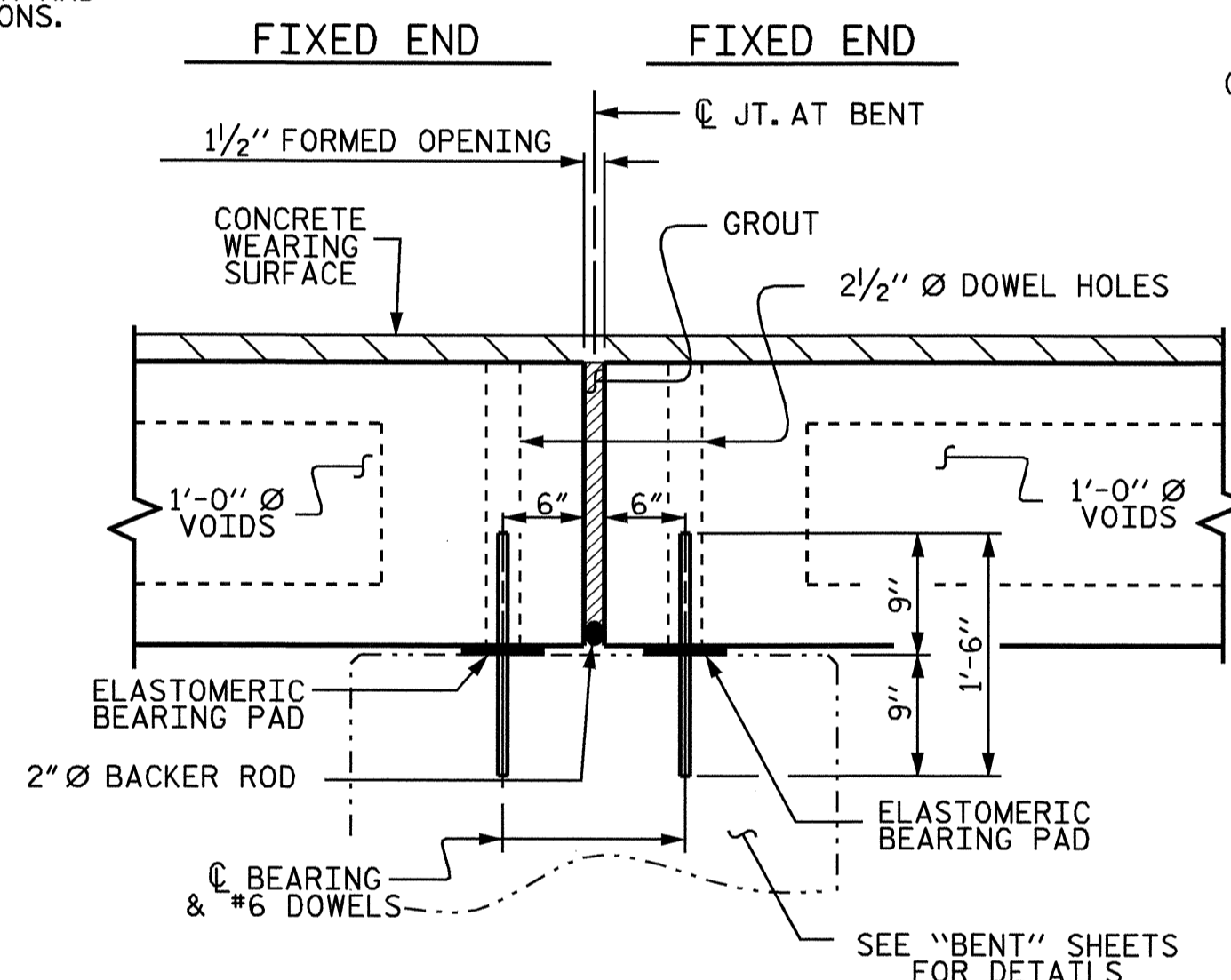


**PART PLAN-EXTERIOR SECTION**

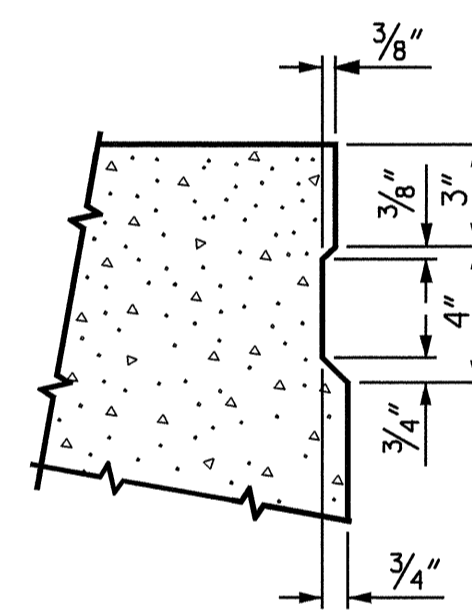
NOTE: EXTERIOR SECTION SHOWN-INTERIOR SECTION SIMILAR EXCEPT OMIT S3 BARS FOR DIM. A, SEE PLAN OF SPAN



**SECTION AT END BENT**

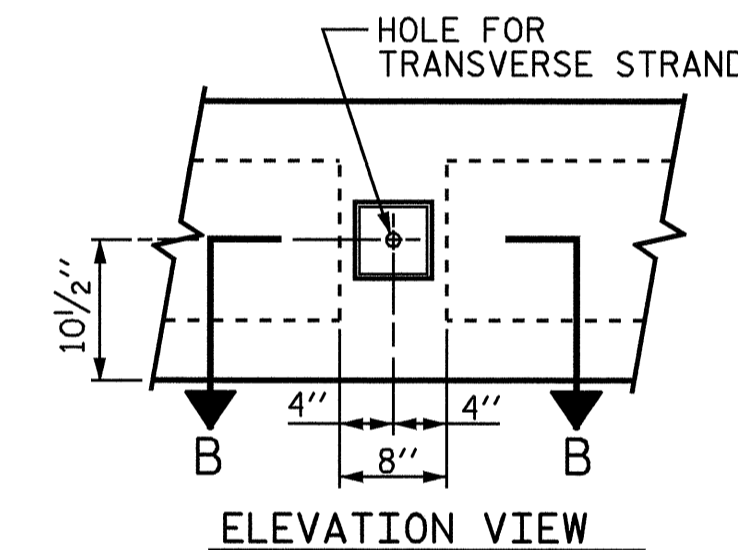


**SECTION AT BENT**



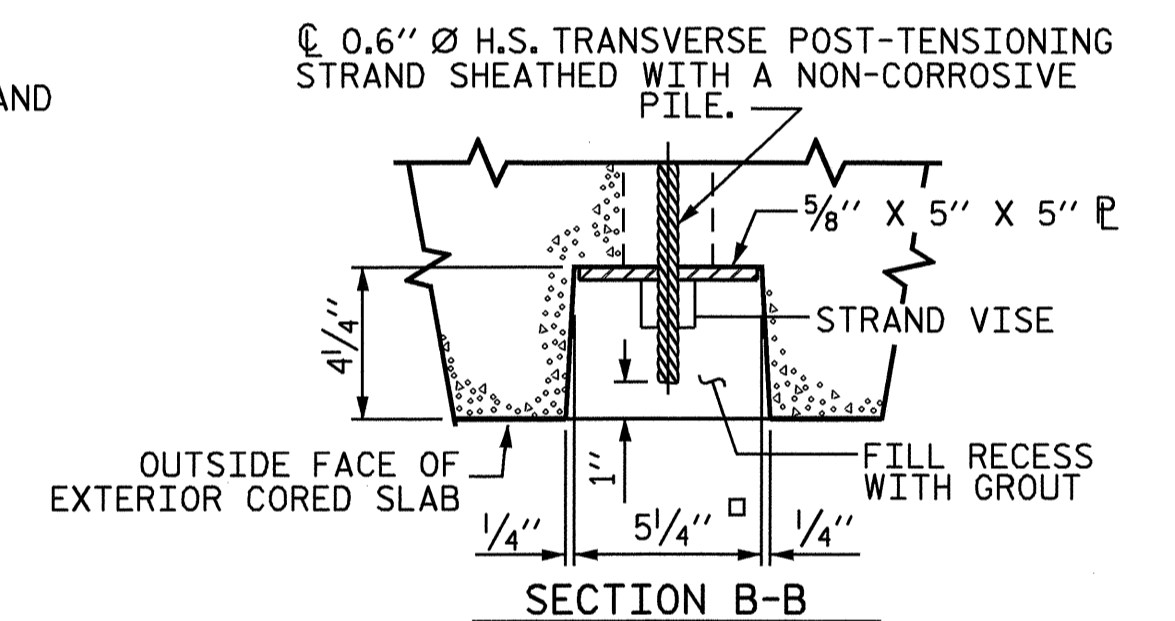
**SHEAR KEY DETAIL**

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

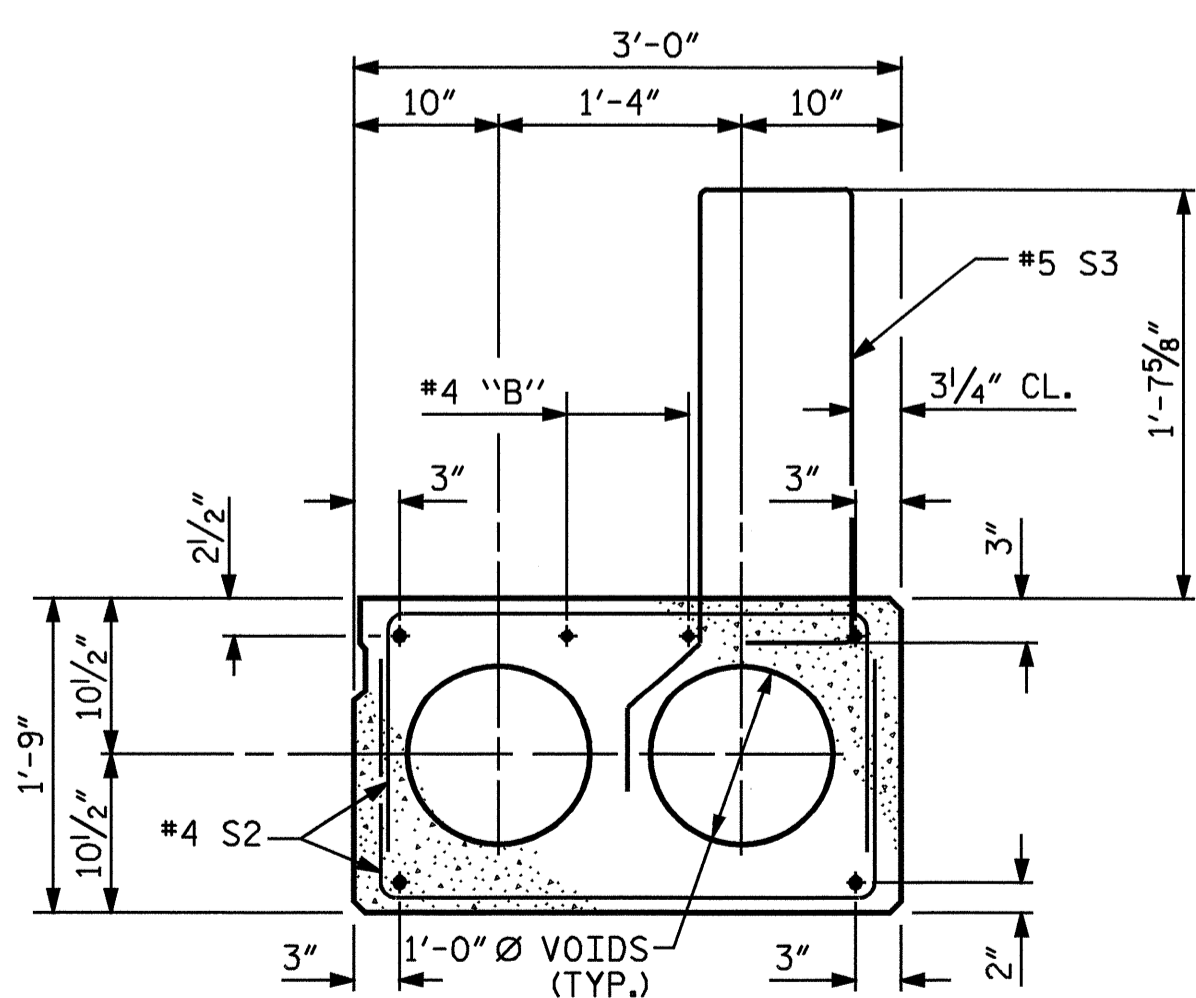


**ELEVATION VIEW**

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

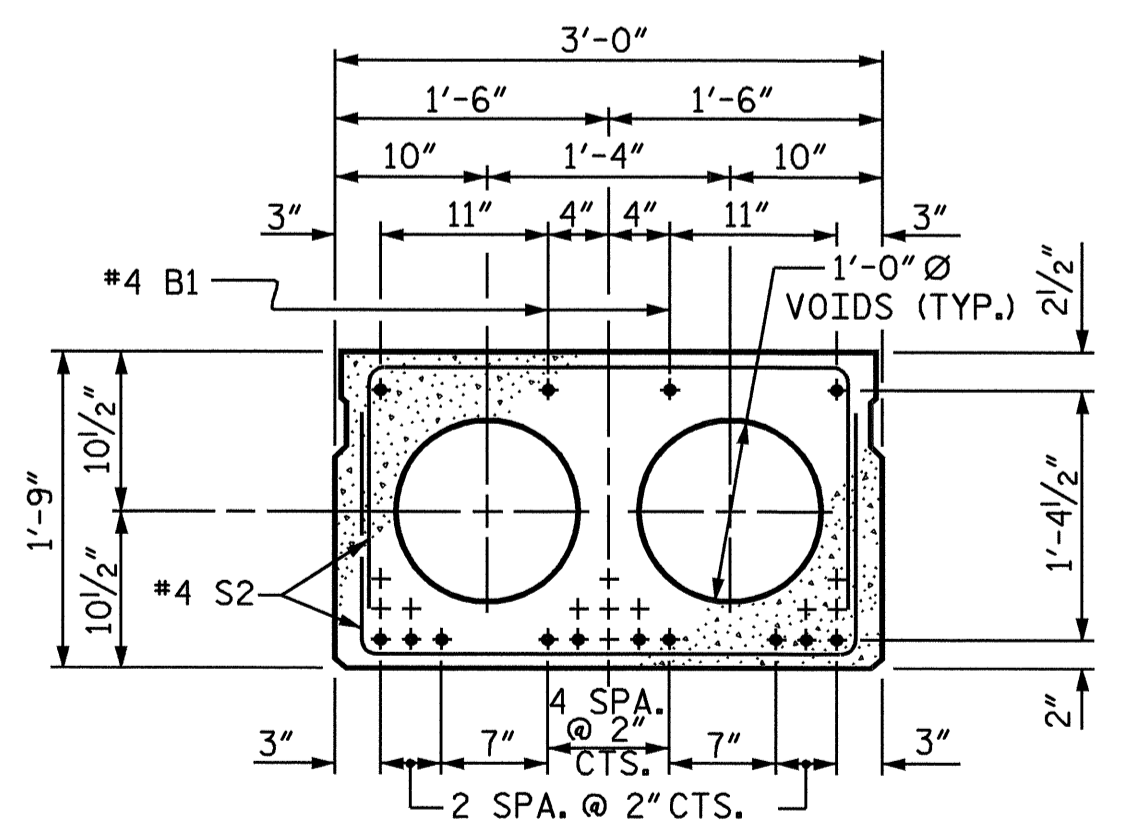


**SECTION B-B**



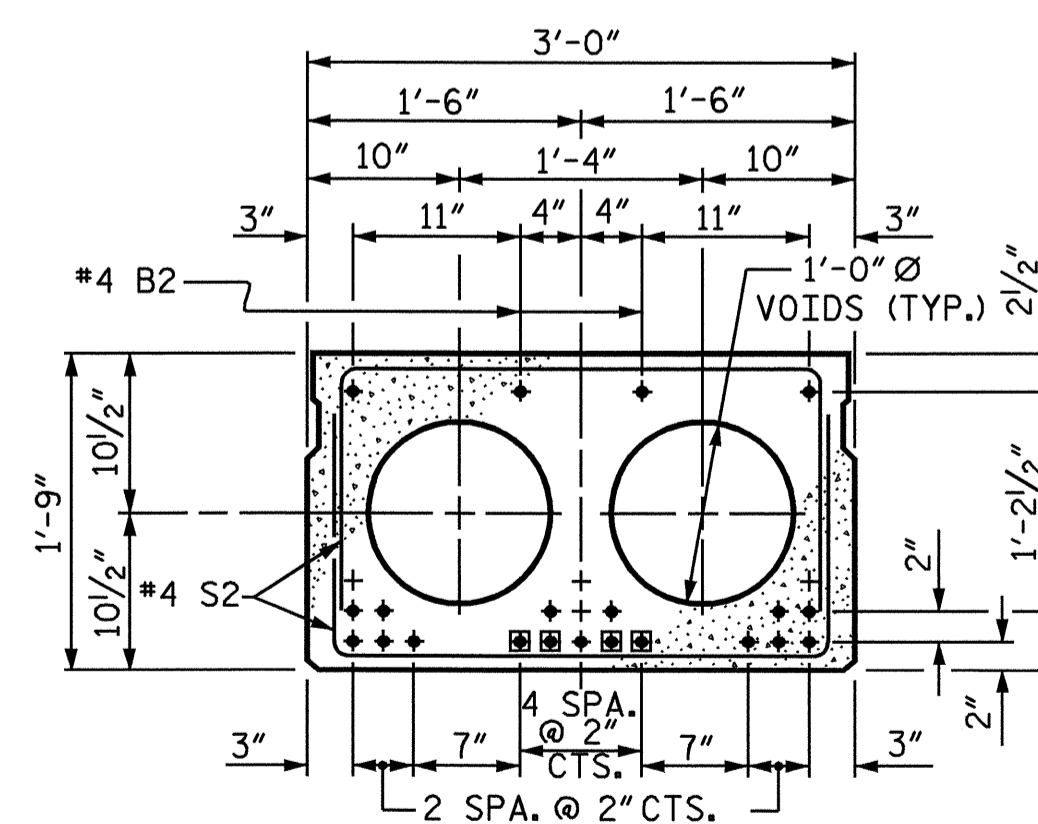
**EXTERIOR SLAB SECTION**

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



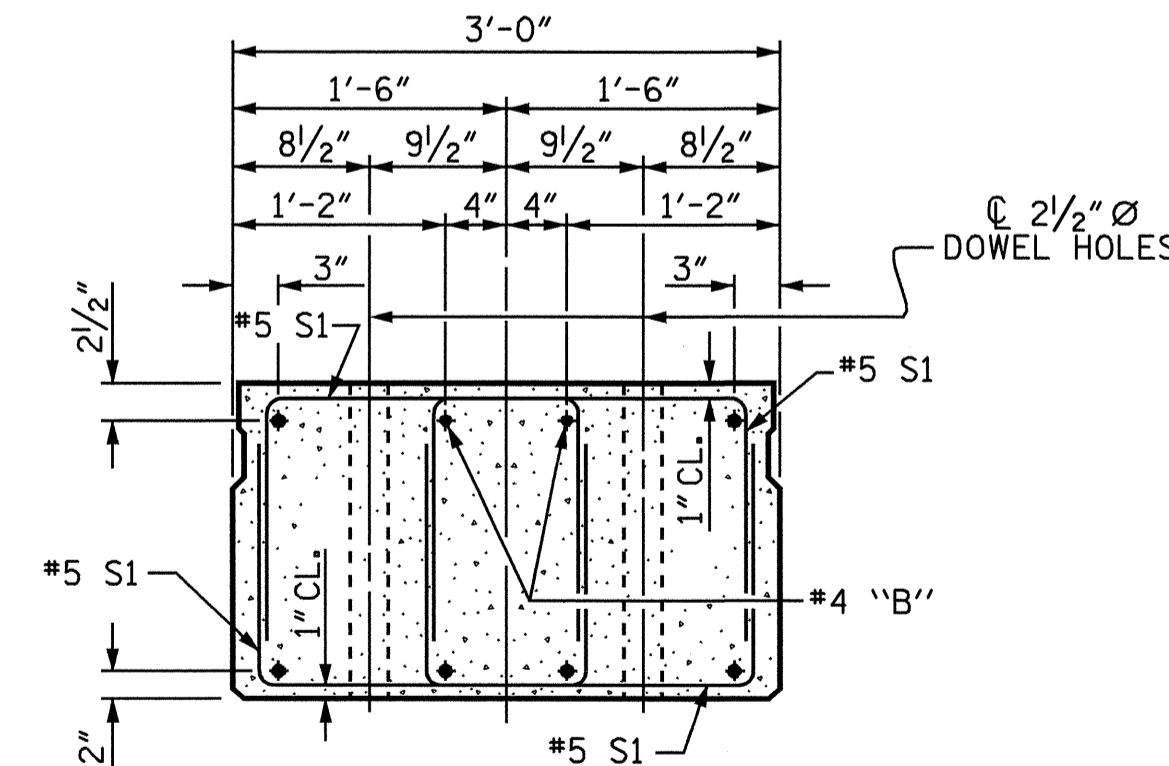
**INTERIOR SLAB SECTION SPAN A & C**

**12-1/2" Ø LOW RELAXATION STRAND LAYOUT**



**INTERIOR SLAB SECTION SPAN B**

**19-1/2" Ø LOW RELAXATION STRAND LAYOUT**



**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.

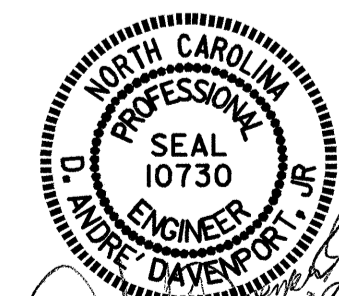
BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 4'-6" FROM END OF CORED SLAB UNIT, SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.

PROJECT NO. B-4303  
WAKE COUNTY  
 STATION: 17+71.00 -L-

SHEET 1 OF 8

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT**

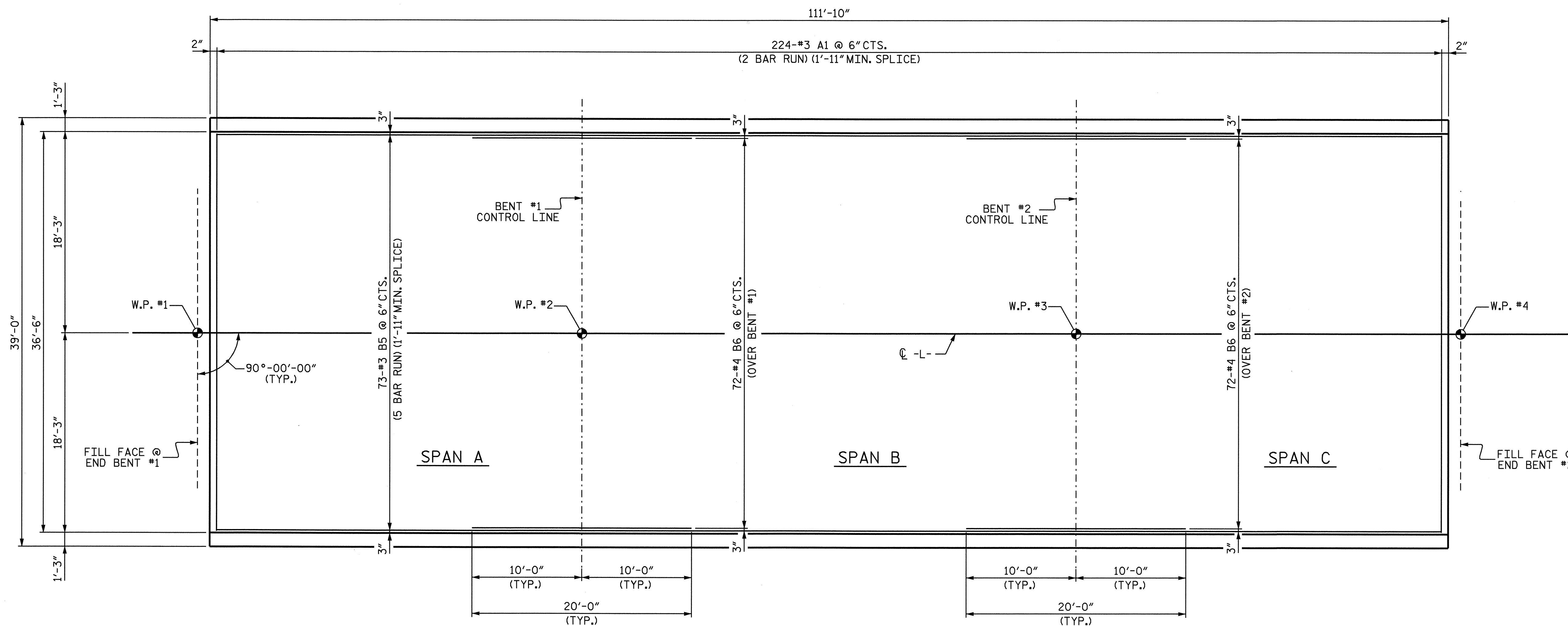


REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	DATE:	S-4
1			3		TOTAL SHEETS
2			4		29

DRAWN BY: A. SORSENGINH DATE: 8/17/07  
 CHECKED BY: D.A. GLADDEN DATE: 10/2/07

**NOTES**

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



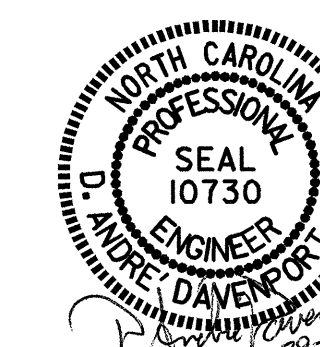
**PLAN OF REINFORCING STEEL FOR CONCRETE WEARING SURFACE**

PROJECT NO. B-4303  
WAKE COUNTY  
 STATION: 17+71.00 -L-

SHEET 2 OF 8

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

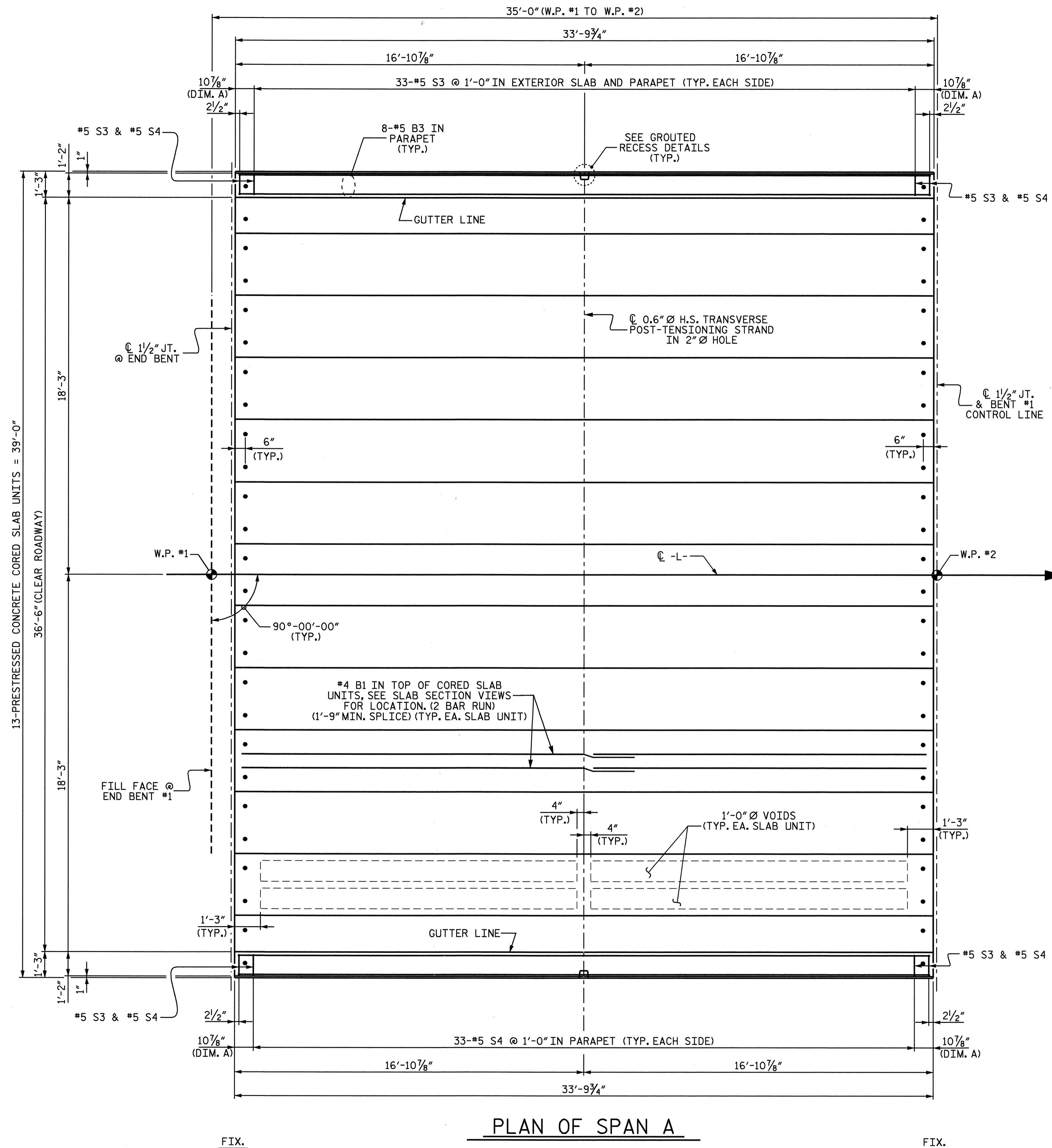
REINFORCING STEEL  
 FOR CONCRETE  
 WEARING SURFACE



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			29

DRAWN BY : A. SORSENGINH DATE : 10/4/07  
 CHECKED BY : D.A. GLADDEN DATE : 10/3/07





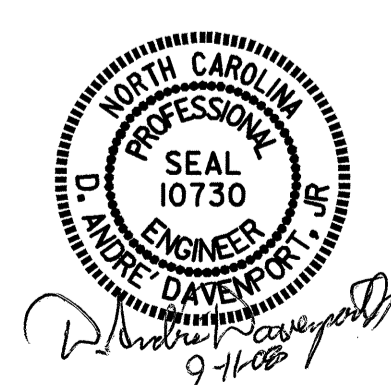
PLAN OF SPAN A

PROJECT NO. B-4303  
WAKE COUNTY  
 STATION: 17+71.00 -L-

SHEET 3 OF 8

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 PLAN OF SPAN A

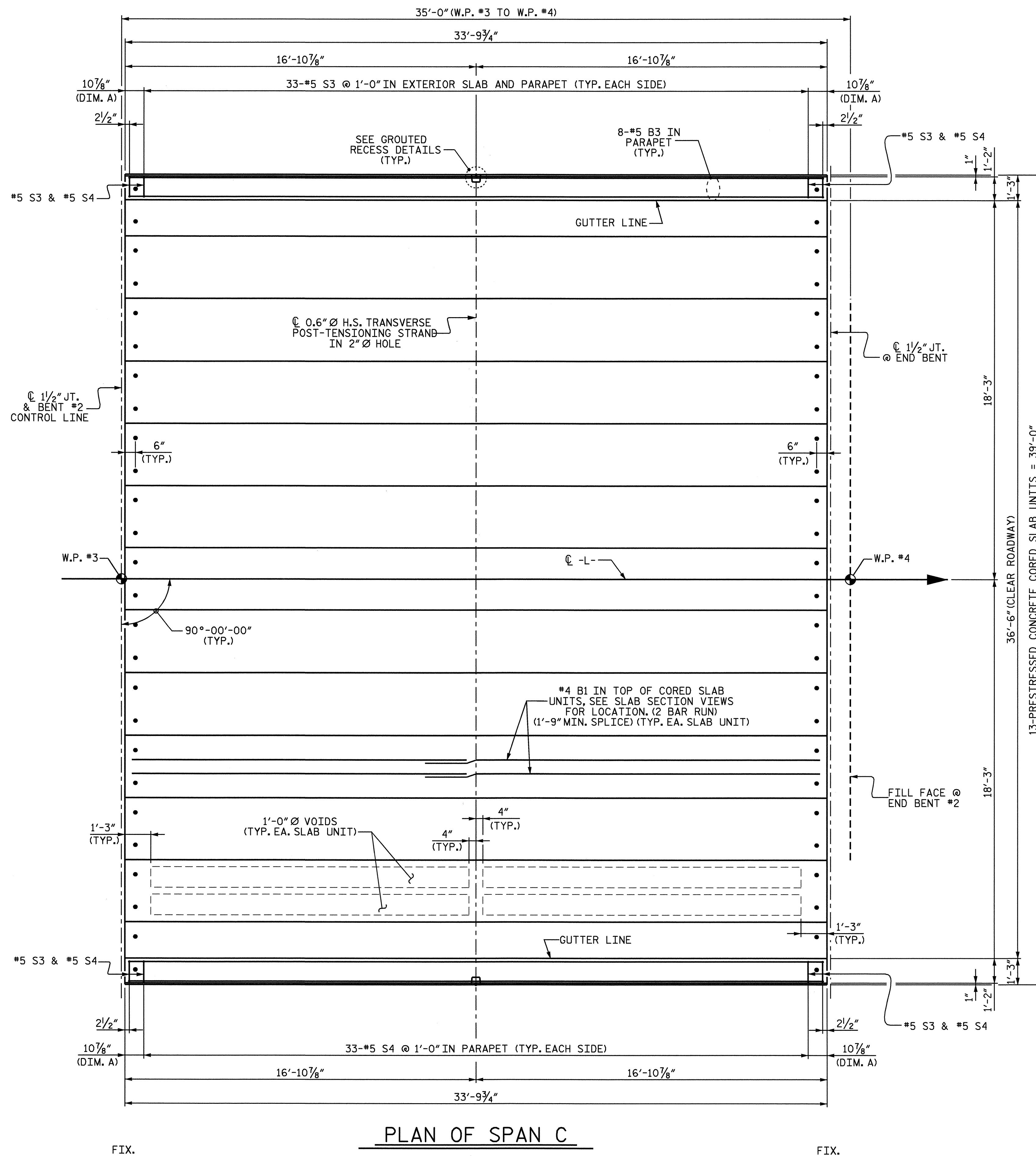


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			29

DRAWN BY : A. SORSENGIN DATE : 8/17/07  
 CHECKED BY : D.A. GLADDEN DATE : 10/2/07



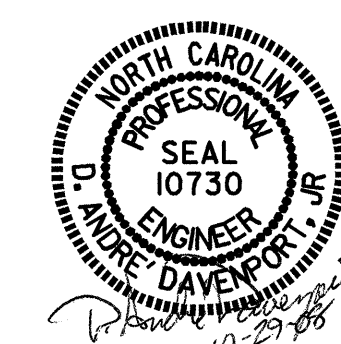




PLAN OF SPAN C

PROJECT NO. B-4303  
WAKE COUNTY  
 STATION: 17+71.00 -L-

SHEET 5 OF 8

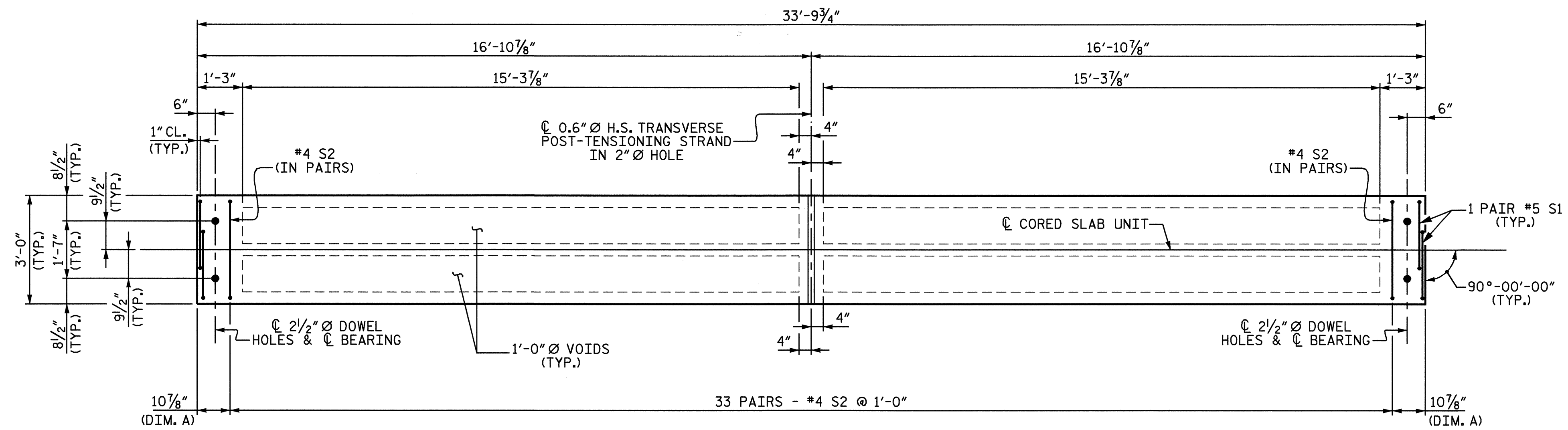


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

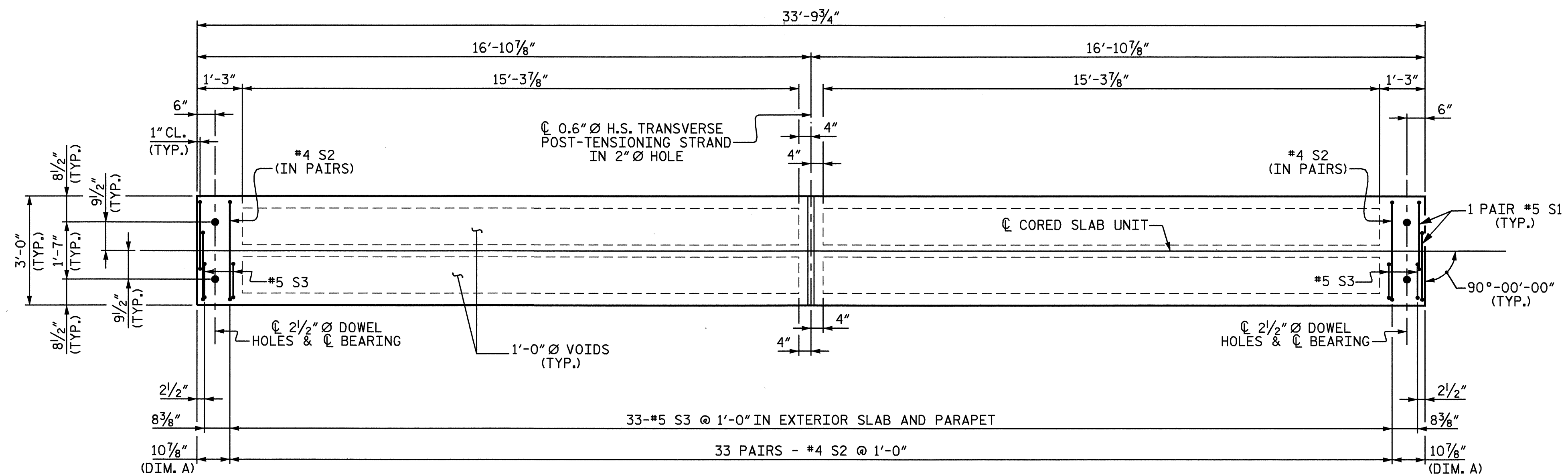
SUPERSTRUCTURE  
 PLAN OF SPAN C

DRAWN BY: A. SORSENGINH DATE: 8/17/07  
 CHECKED BY: D.A. GLADDEN DATE: 10/2/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			29



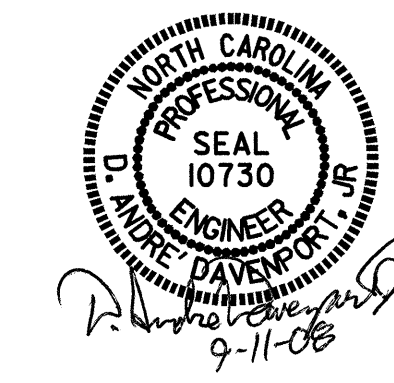
PLAN OF INTERIOR SLAB - SPAN A & C



PLAN OF EXTERIOR SLAB - SPAN A & C

PROJECT NO. B-4303  
WAKE COUNTY  
 STATION: 17+71.00 -L-

SHEET 6 OF 8

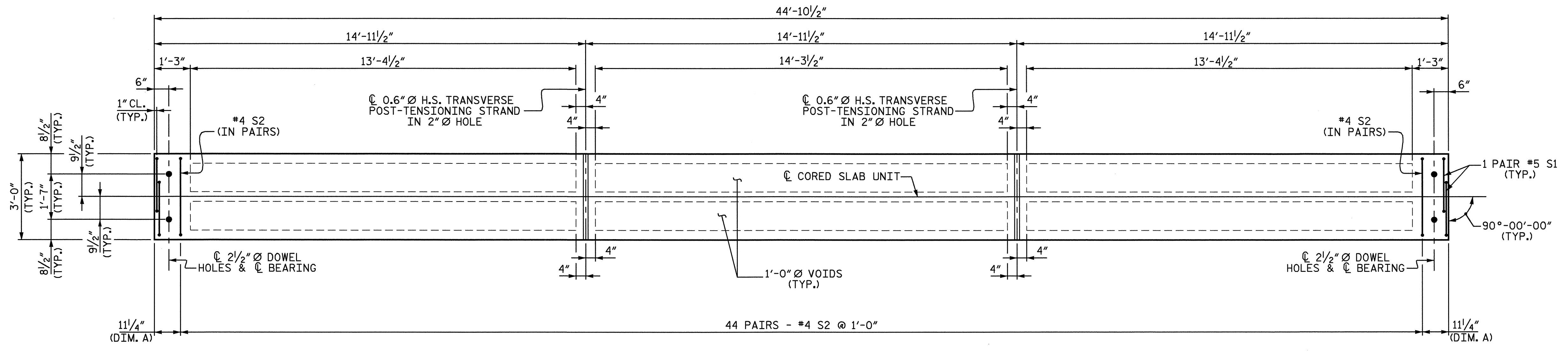


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 3'-0" X 1'-9"  
 PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 DETAILS

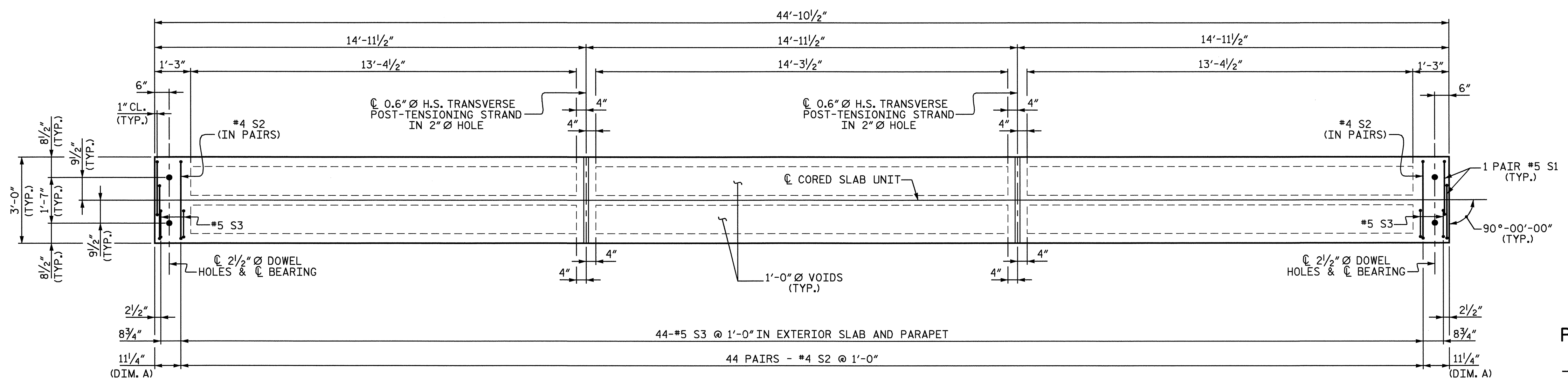
DRAWN BY : A. SORSENGINH DATE : 8/20/07  
 CHECKED BY : D.A. GLADDEN DATE : 10/2/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			29





PLAN OF INTERIOR SLAB - SPAN B

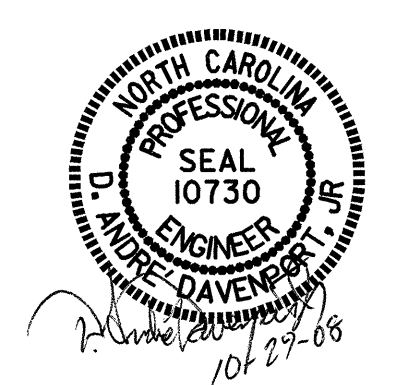


PLAN OF EXTERIOR SLAB - SPAN B

PROJECT NO. B-4303  
WAKE COUNTY  
 STATION: 17+71.00 -L-

SHEET 7 OF 8

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

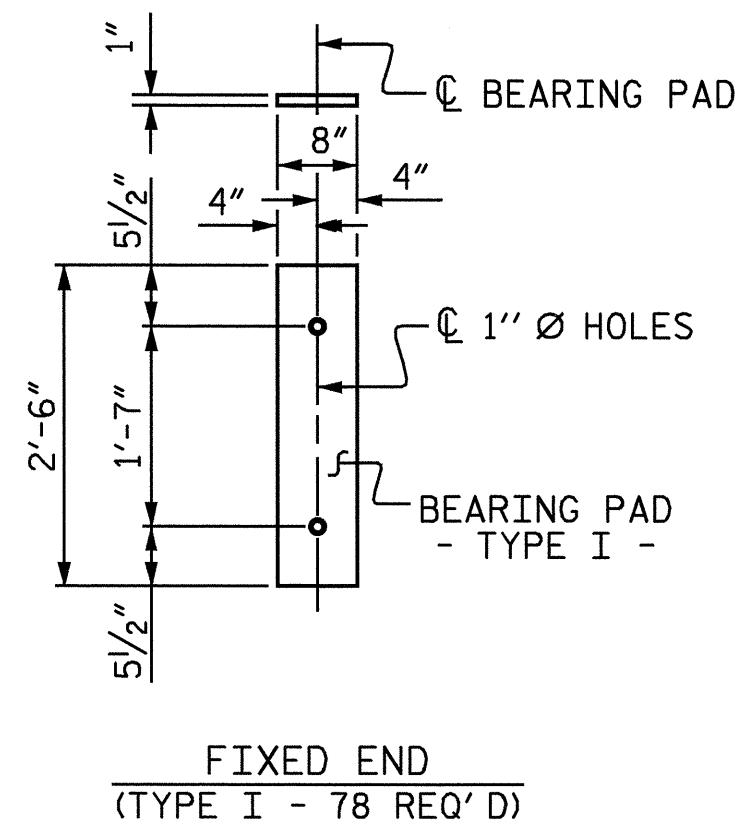


DRAWN BY : A. SORSENGINH DATE : 8/20/07  
 CHECKED BY : D.A. GLADDEN DATE : 10/3/07

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10	
1			3			TOTAL SHEETS	29
2			4				

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

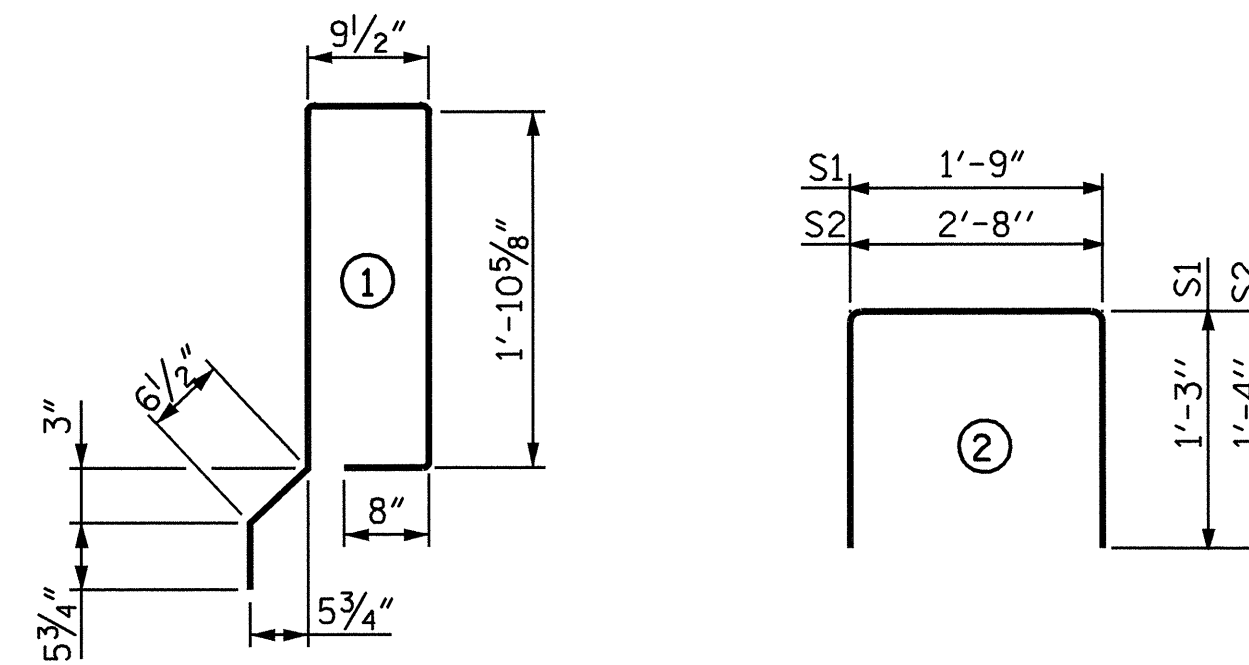
DEAD LOAD DEFLECTION AND CAMBER		
	SPAN A & C	SPAN B
CAMBER (SLAB ALONE IN PLACE)	9/16"	1/2"
DEFLECTION DUE TO CONCRETE OVERLAY	1/16"	1/8"
FINAL CAMBER	1/2"	1 3/8"



### ELASTOMERIC BEARING DETAILS

GROOVING BRIDGE FLOORS	
BRIDGE DECK	3735
APPROACH SLABS	1600
TOTAL	5335

### BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

### BILL OF MATERIAL FOR ONE CORED SLAB SECTION

					EXTERIOR UNIT		INTERIOR UNIT		
	BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	
SPAN A & C	B1	4	#4	STR	17'-9"	47	17'-9"	47	
	S1	8	#5	2	4'-3"	35	4'-3"	35	
	S2	66	#4	2	5'-4"	235	5'-4"	235	
	* S3	35	#5	1	6'-3"	228			
	REINFORCING STEEL LBS.					317		317	
	* EPOXY COATED REINFORCING STEEL LBS.					228			
	5,000 P.S.I. CONCRETE CU. YDS.					4.8		4.8	
	1/2" Ø L.R. STRANDS No.					12		12	
	SPAN B	B2	4	#4	STR	23'-3"	62	23'-3"	62
		S1	8	#5	2	4'-3"	35	4'-3"	35
S2		88	#4	2	5'-4"	314	5'-4"	314	
* S3		46	#5	1	6'-3"	300			
REINFORCING STEEL LBS.					411		411		
* EPOXY COATED REINFORCING STEEL LBS.					300				
5,000 P.S.I. CONCRETE CU. YDS.					6.4		6.3		
1/2" Ø L.R. STRANDS No.					19		19		

### BILL OF MATERIAL FOR CONCRETE WEARING SURFACE

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
* A1	448	#3	STR	19'-1"	3215
* B5	365	#3	STR	24'-1"	3305
* B6	144	#4	STR	20'-0"	1924
* EPOXY COATED REINFORCING STEEL					8444 LBS.
CONCRETE WEARING SURFACE (SQ. FT.)					4082

### CORED SLABS REQUIRED

SPAN A			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	33'-9 3/4"	67'-7 1/2"
INTERIOR C.S.	11	33'-9 3/4"	371'-11 1/4"
SUBTOTAL	13		439'-6 3/4"
SPAN B			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	44'-10 1/2"	89'-9"
INTERIOR C.S.	11	44'-10 1/2"	493'-7 1/2"
SUBTOTAL	13		583'-4 1/2"
SPAN C			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	33'-9 3/4"	67'-7 1/2"
INTERIOR C.S.	11	33'-9 3/4"	371'-11 1/4"
SUBTOTAL	13		439'-6 3/4"
TOTAL LENGTH			1462'-6"

### 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 NON-SHRINK 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 SIDWAYS. THIS SYSTEM SHALL BE DESIGNED TO BE LEFT IN PLACE UNTIL THE CONCRETE HAS REACHED RELEASE STRENGTH. AT LEAST THREE WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI.

ALL REINFORCING STEEL IN PARAPET SHALL BE EPOXY COATED.

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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.

TRANSVERSE POST TENSIONING OF THE CORED SLAB SECTIONS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, EXCEPT THAT THE 0.6" Ø STRANDS SHALL BE TENSIONED TO 43,950 POUNDS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

PROJECT NO. B-4303

WAKE COUNTY

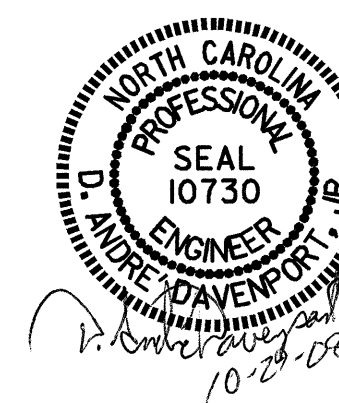
STATION: 17+71.00 -L-

SHEET 8 OF 8

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

3'-0" X 1'-9"  
PRESTRESSED  
CONCRETE CORED  
SLAB UNIT

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11	
1			3			TOTAL SHEETS	29
2			4				



STD. NO. PCS3

ASSEMBLED BY :	A. SORSENGINH	DATE :	8-20-07
CHECKED BY :	D.A. GLADDEN	DATE :	10-3-07
DRAWN BY :	WJH 4/89	REV. 10/17/00	RWW/LES
CHECKED BY :	FCJ 5/89	REV. 7/10/01	RWW/LES
		REV. 5/7/03	RWW/JTE



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 "RAIL POST SPACING AND END OF RAIL DETAILS" SHEET.

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

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

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

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

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

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

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

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

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

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

PAY LENGTH = 210.00 LIN. FT.

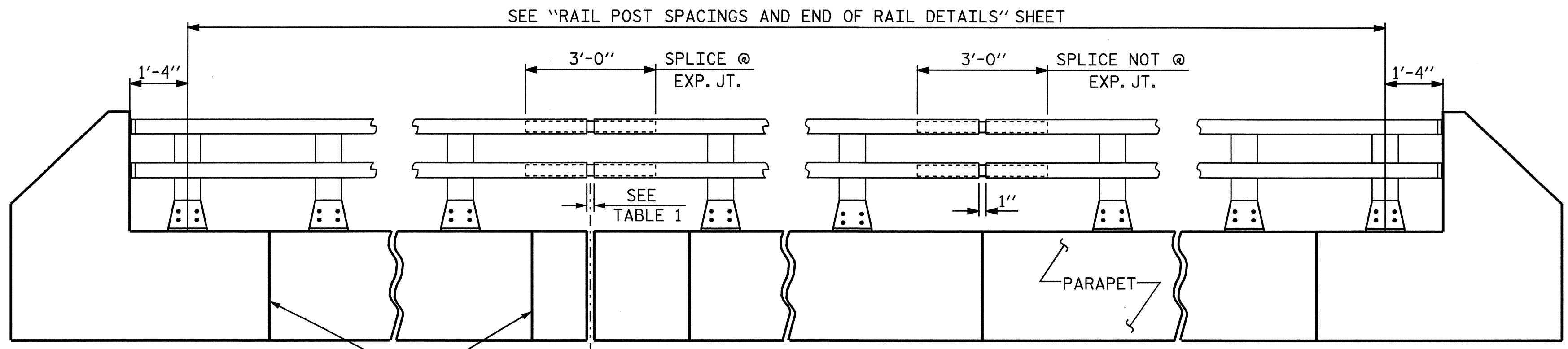
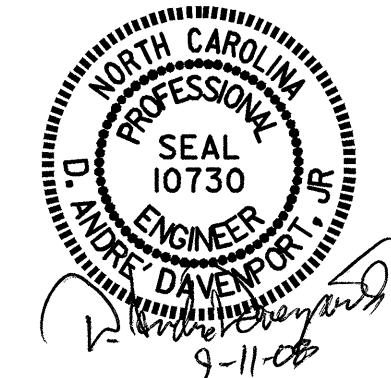
PROJECT NO. B-4303  
WAKE COUNTY  
 STATION: 17+71.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

2 BAR METAL RAIL

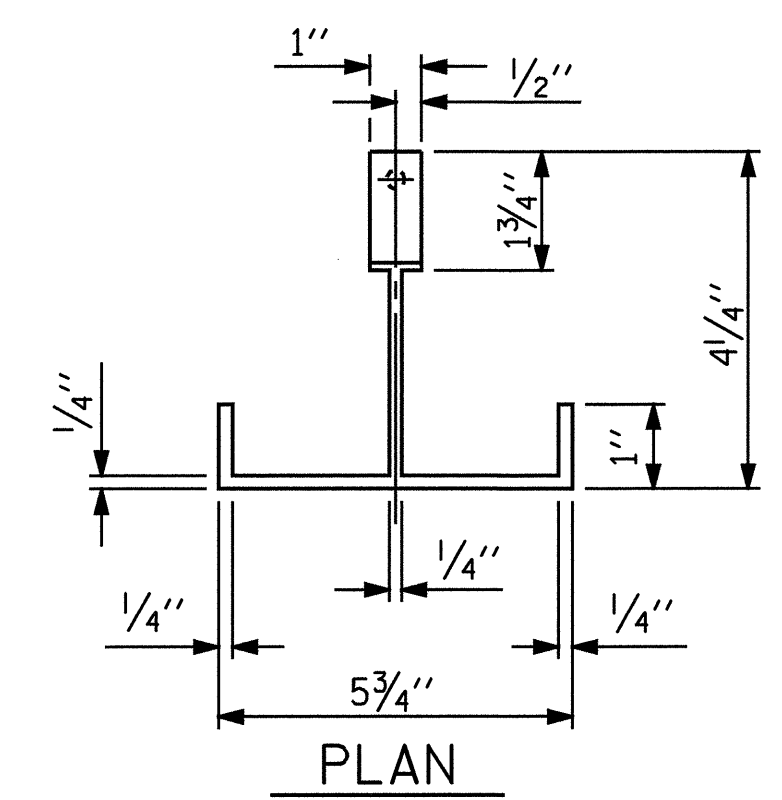
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			29



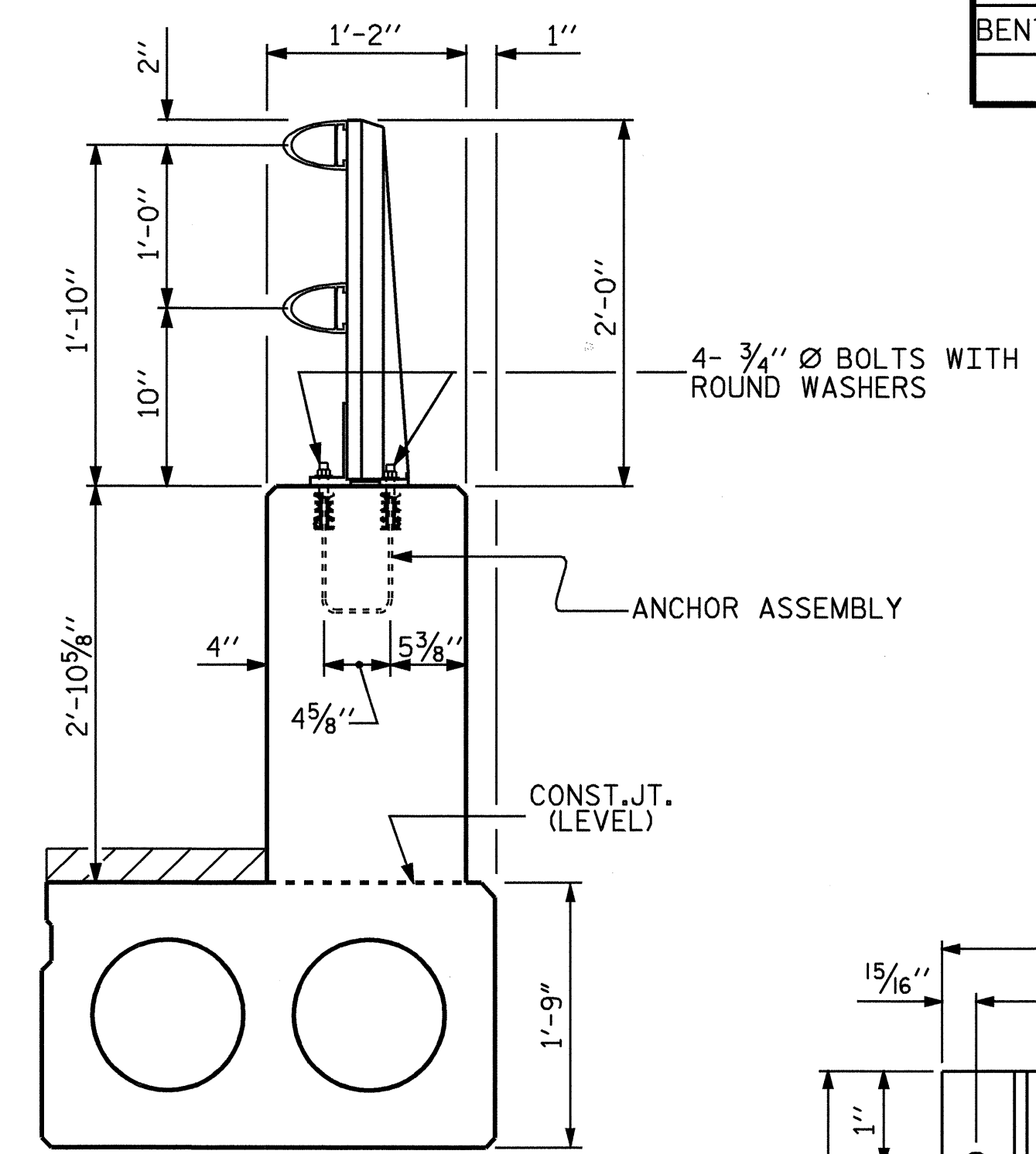
ELEVATION

NOTE: FOR ATTACHMENT OF METAL RAIL TO END POST, SEE "RAIL POST SPACING AND END OF RAIL DETAILS" SHEET

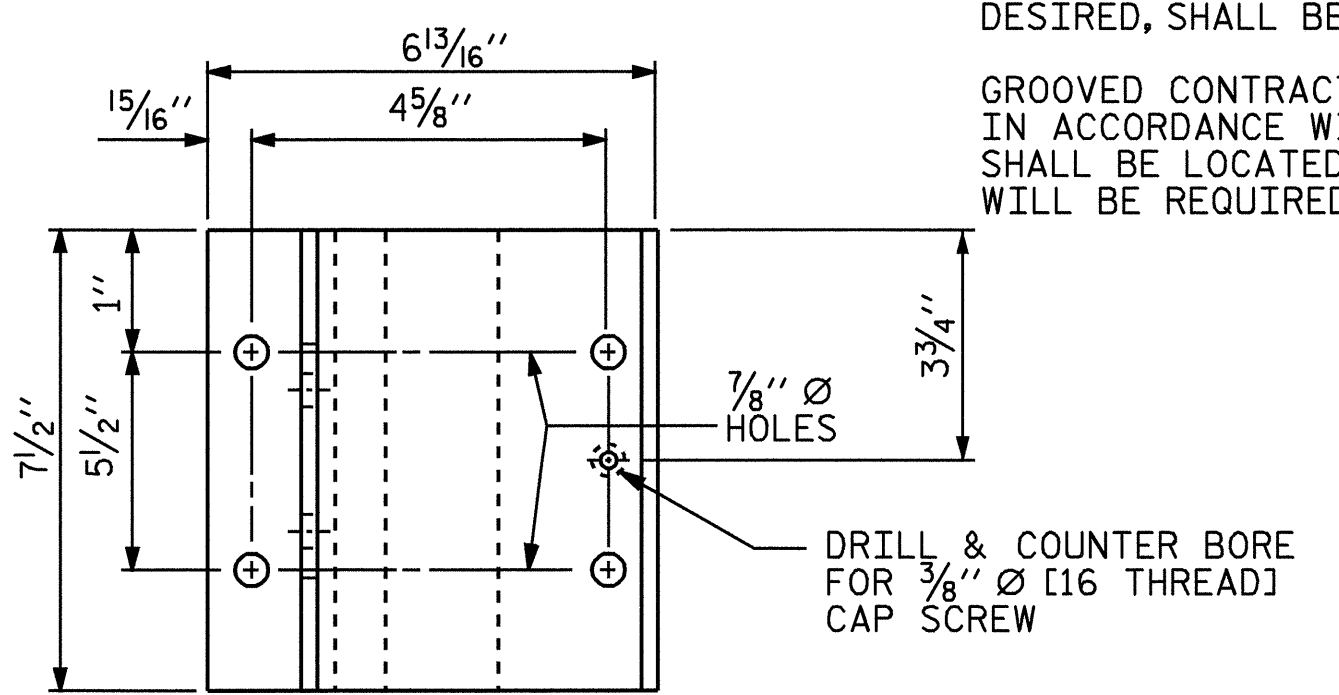
EXP. JT. @	RAIL OPENING
BENT No. 1	1 1/2"
BENT No. 2	1 1/2"



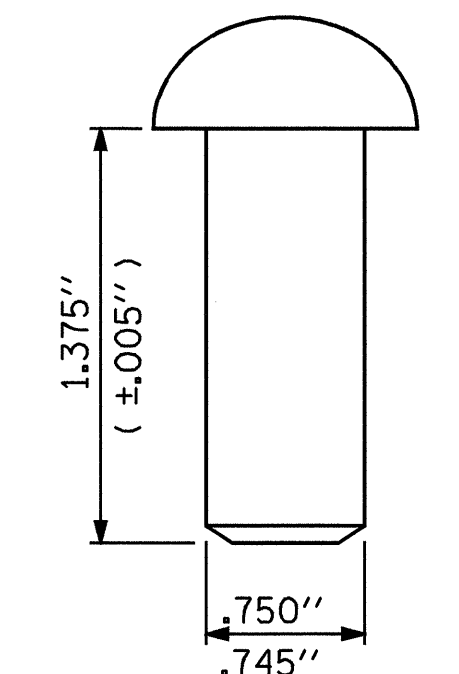
PLAN



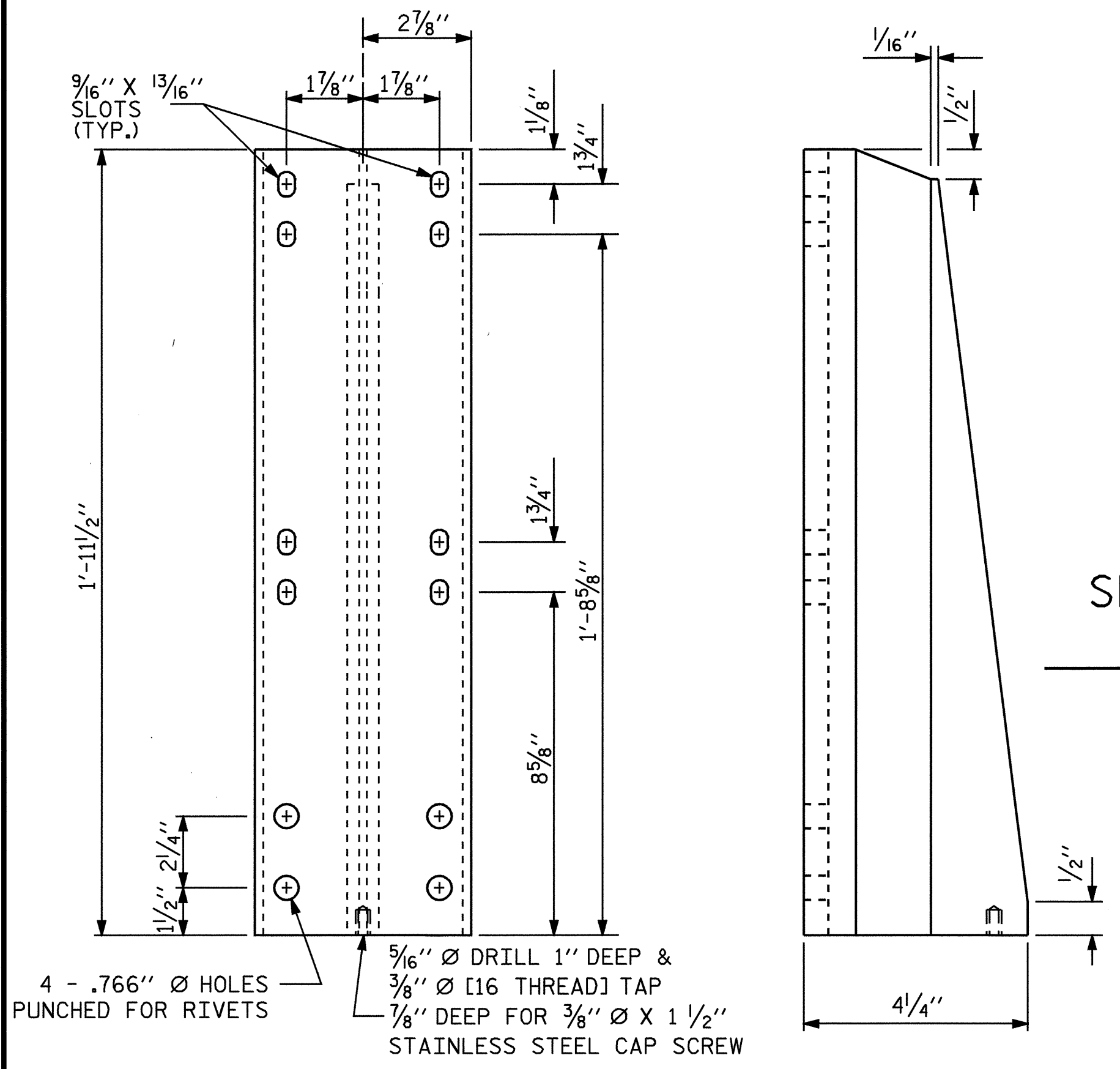
SECTION THRU PARAPET AND RAIL



PLAN



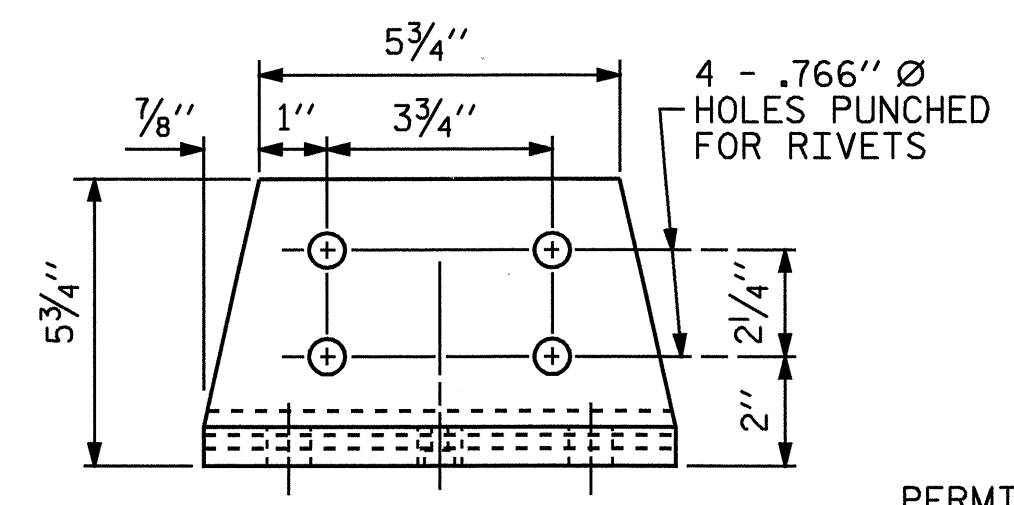
RIVET DETAIL



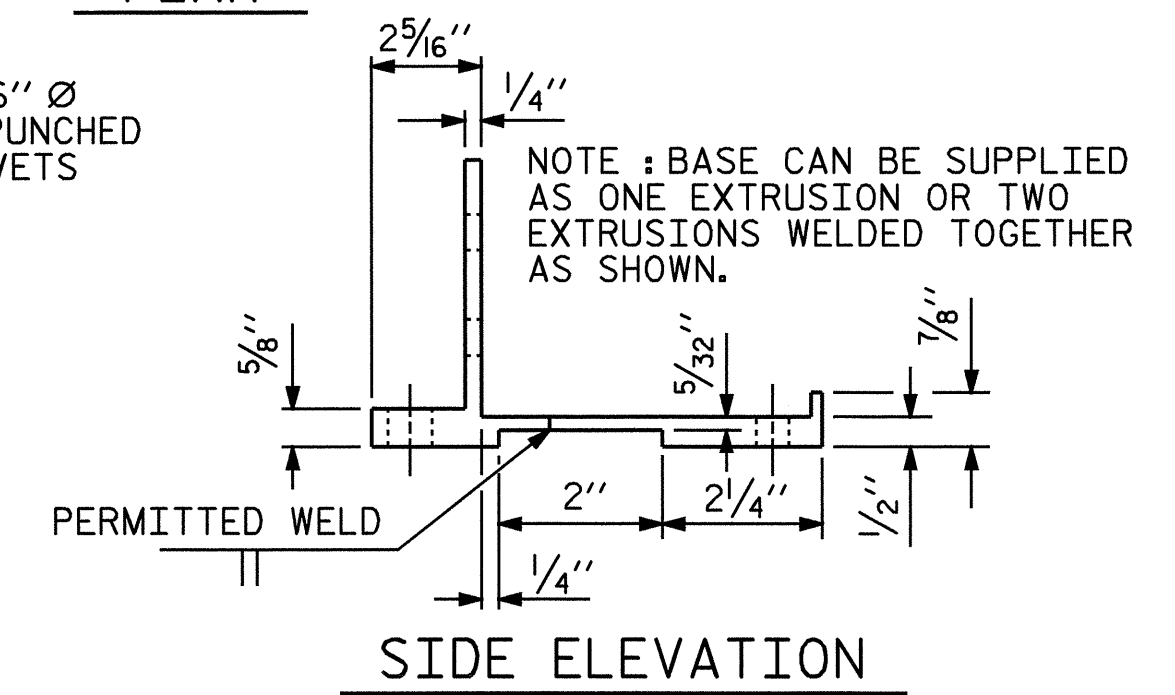
FRONT ELEVATION

SIDE ELEVATION

DETAILS OF POST



FRONT ELEVATION



SIDE ELEVATION

POST BASE DETAILS

ASSEMBLED BY: A. SORSENGINH	DATE: 8/20/07
CHECKED BY: D.A. GLADDEN	DATE: 10/3/07
DRAWN BY: EEM	6/94
CHECKED BY: RGW	6/94
REV. 2/6/97	EEM/RGW
REV. 8/16/99	RWW/LES
REV. 10/17/00R	LES/RDR

**NOTES**

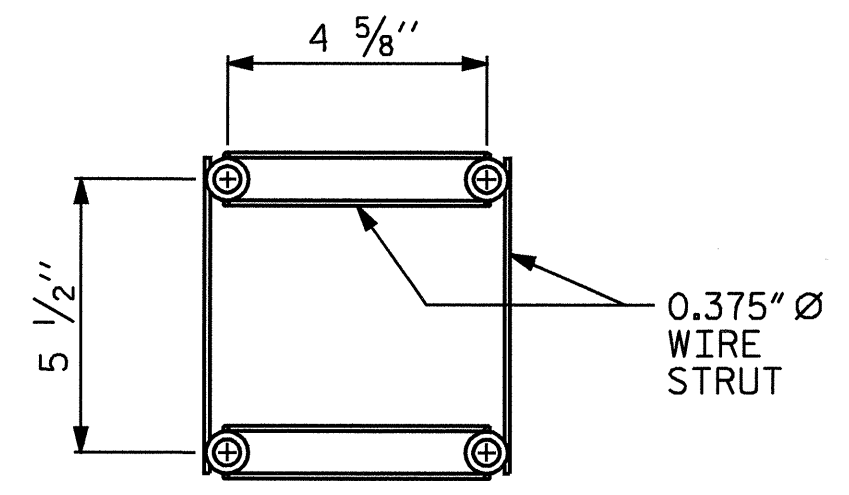
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

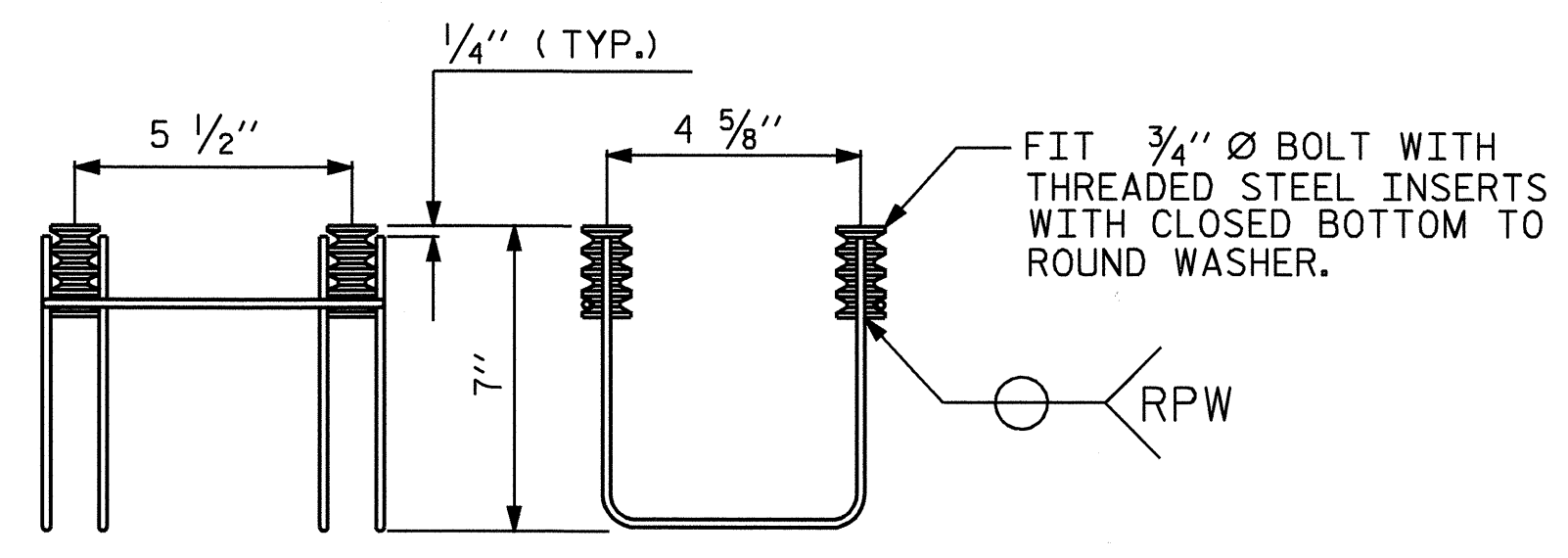
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT 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 1/16" 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 SPECIAL PROVISIONS.

WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 517 MPa 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



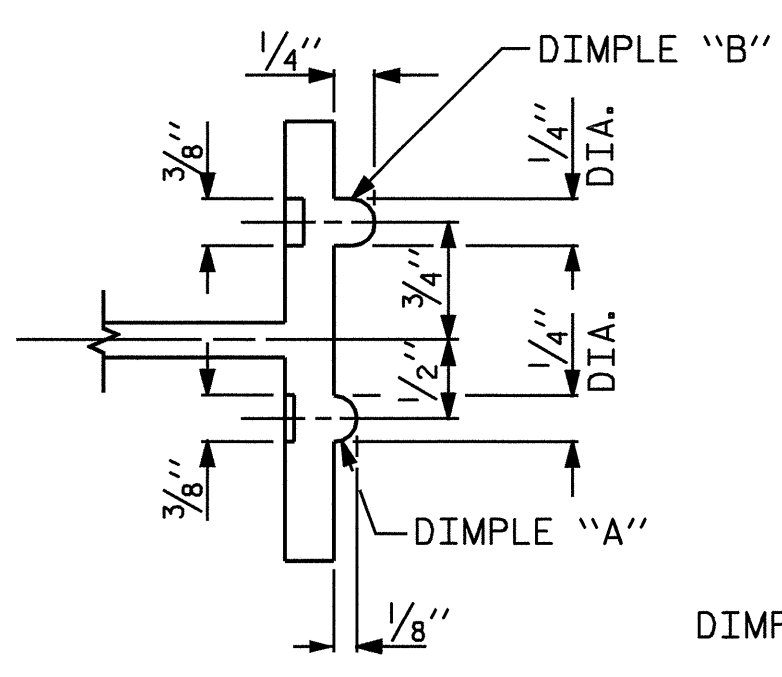
SIDE VIEW

ELEVATION

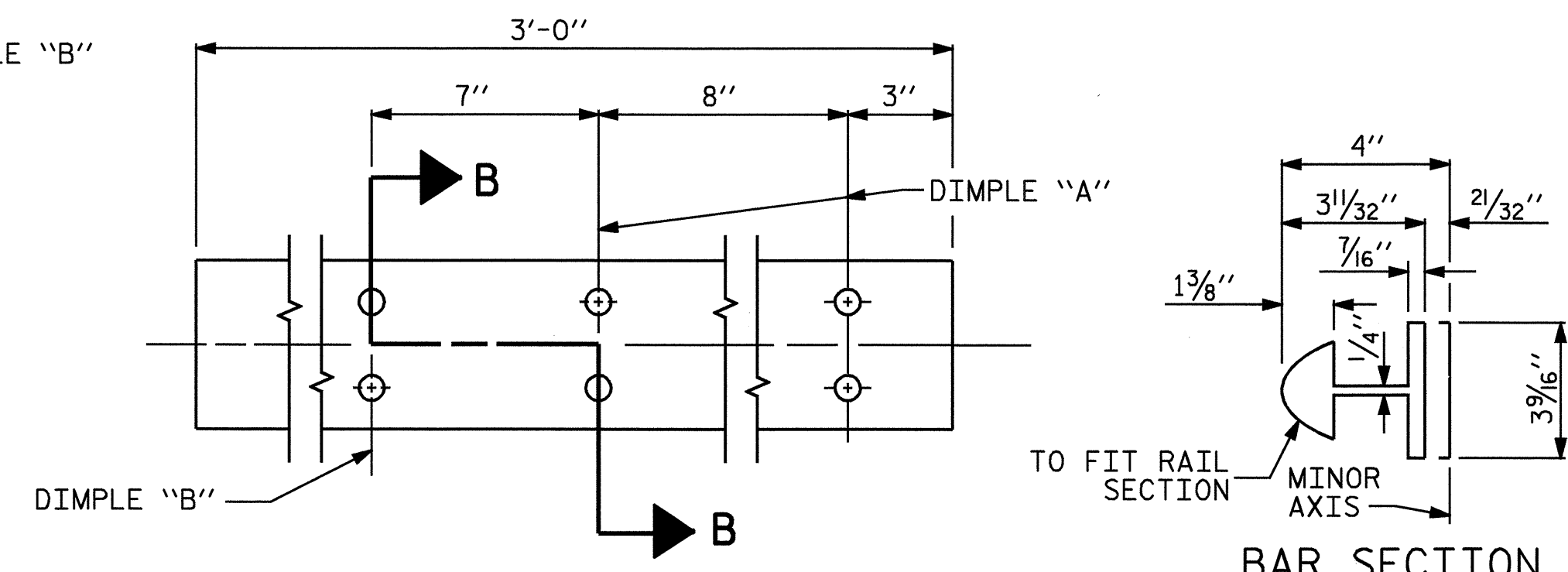
MINIMUM LENGTH OF THREADS IN INSERT (FERRULE) : 1 3/4"

**4-BOLT METAL RAIL ANCHOR ASSEMBLY**

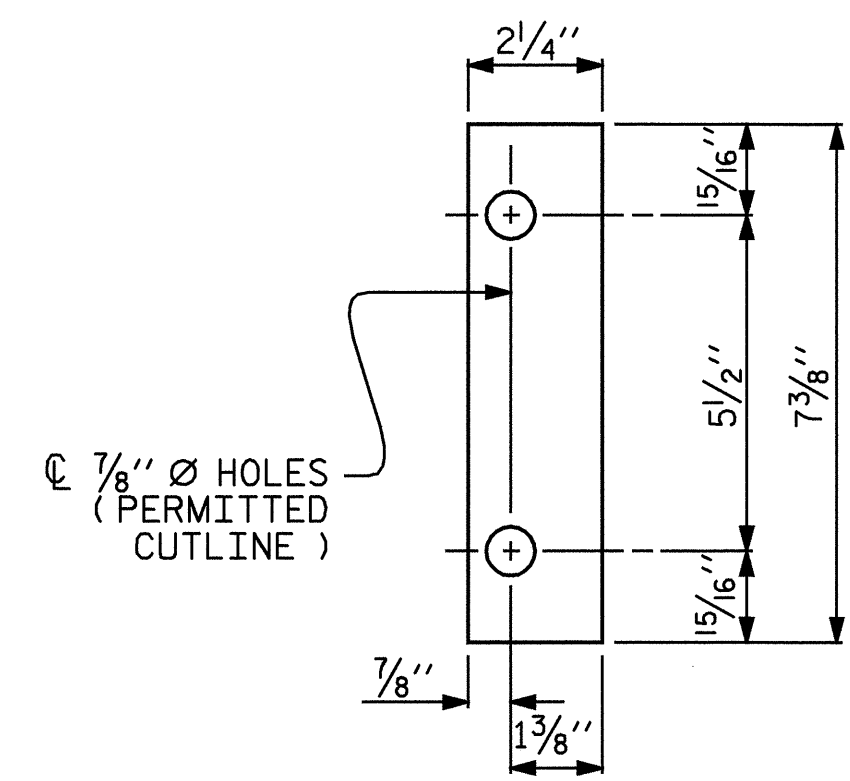
(38 ASSEMBLIES REQUIRED)



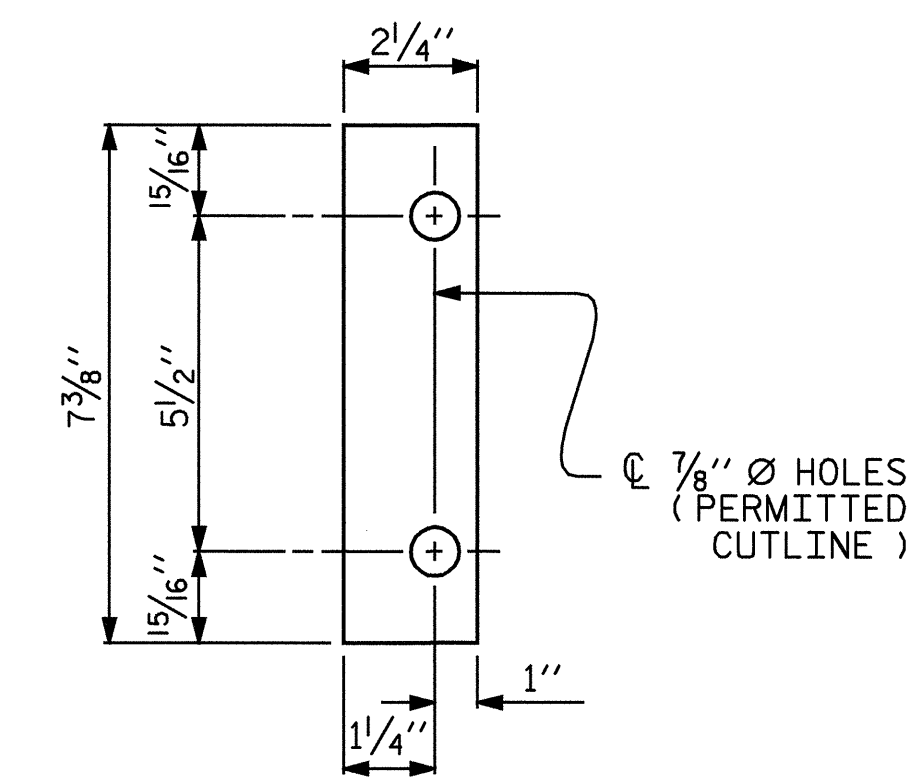
SECTION B-B



**EXPANSION BAR DETAILS**



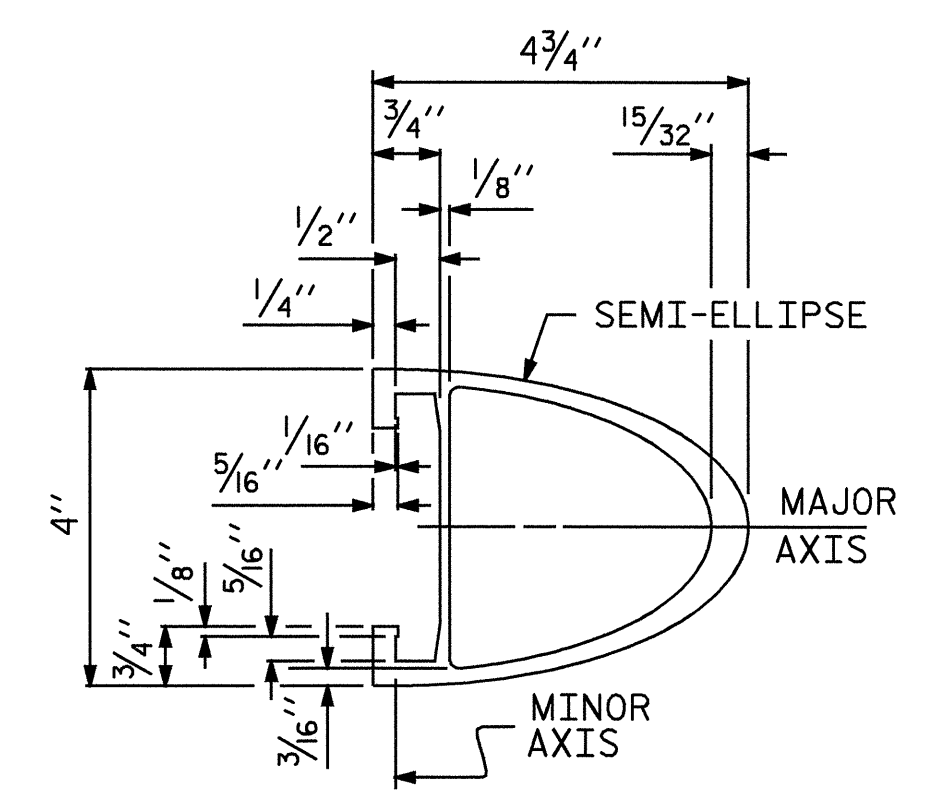
FRONT PLATE



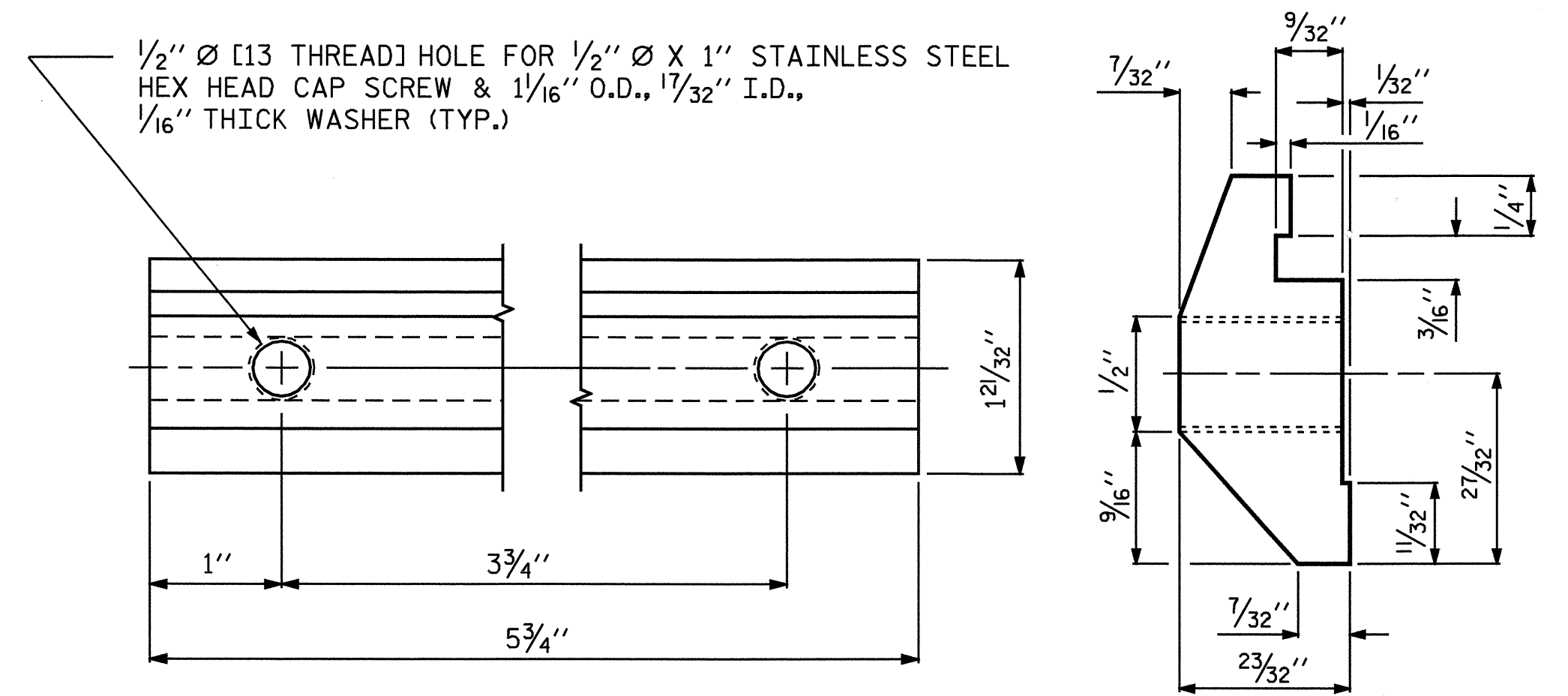
REAR PLATE

**SHIM DETAILS**

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

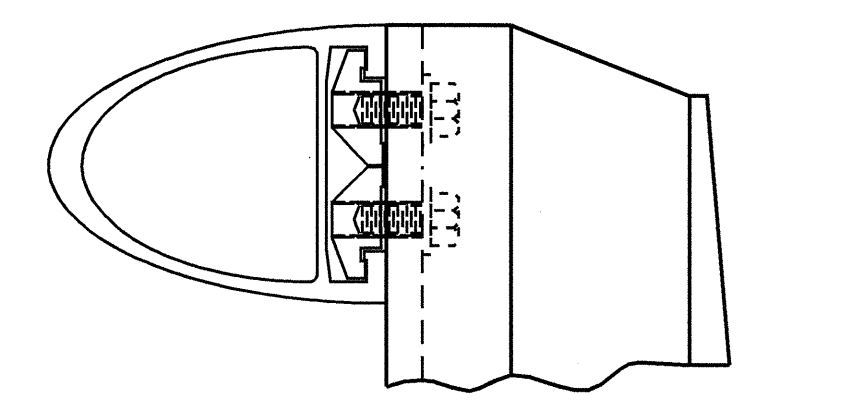


RAIL SECTION

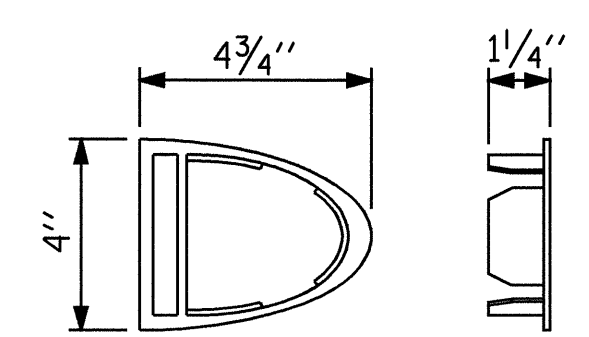


**CLAMP BAR DETAIL**

(4 REQUIRED PER POST)



CLAMP ASSEMBLY



RAIL CAP

PROJECT NO. B-4303  
WAKE COUNTY  
 STATION: 17+71.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

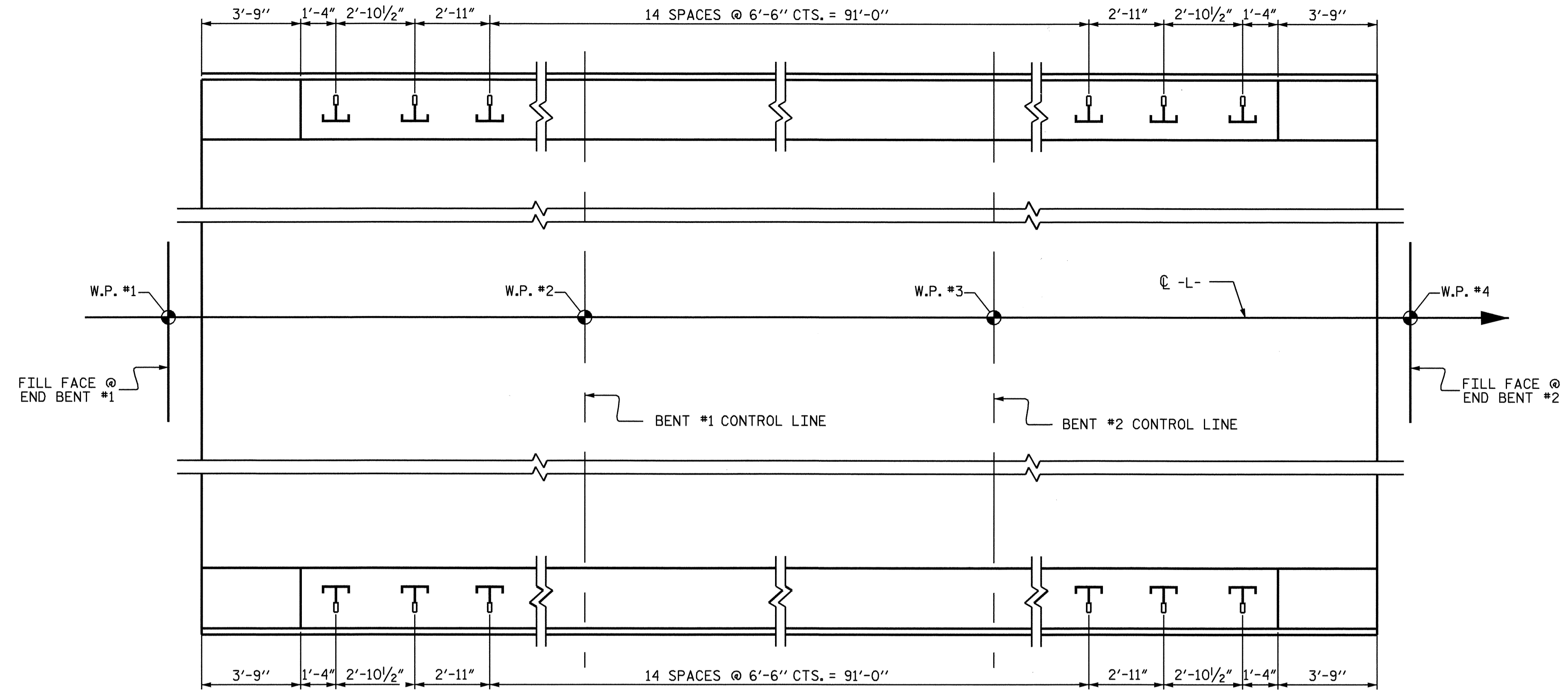
**2 BAR METAL RAIL**

ASSEMBLED BY : A. SORSENGINH	DATE : 8/20/07
CHECKED BY : D.A. GLADDEN	DATE : 10/3/07
DRAWN BY : EEM 6/94	REV. 2/6/97 EEM/RGW
CHECKED BY : RGW 6/94	REV. 8/16/99 MAB/LES
	REV. 10/17/00 LES/RDR

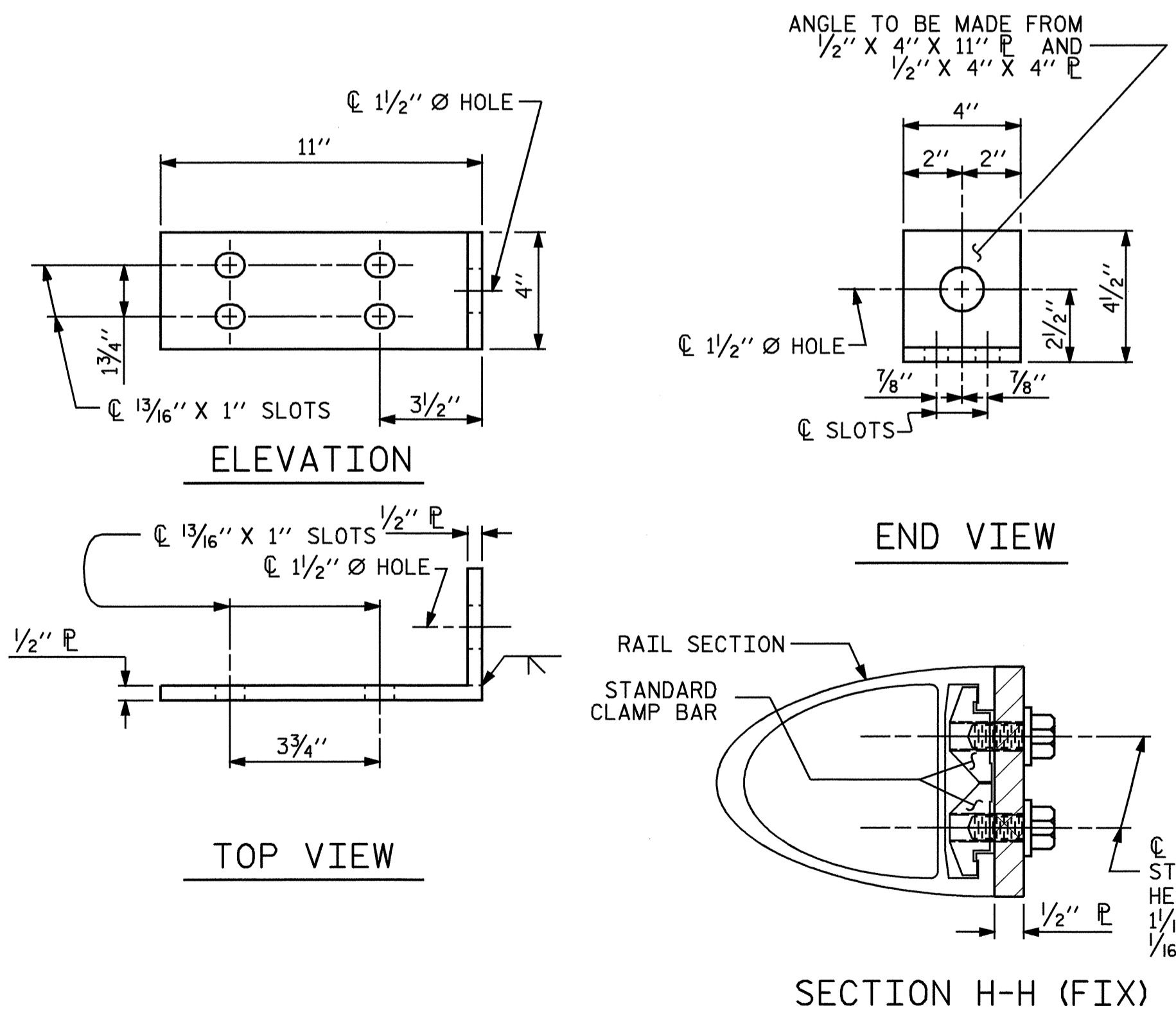
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

TOTAL SHEETS: 29





**PLAN OF RAIL POST SPACINGS**



**SECTION H-H (FIX)**

**DETAILS FOR ATTACHING METAL RAIL TO END POST**

**NOTES**  
 STRUCTURAL CONCRETE INSERT

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

- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF 1/2".
- 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.)
- 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:

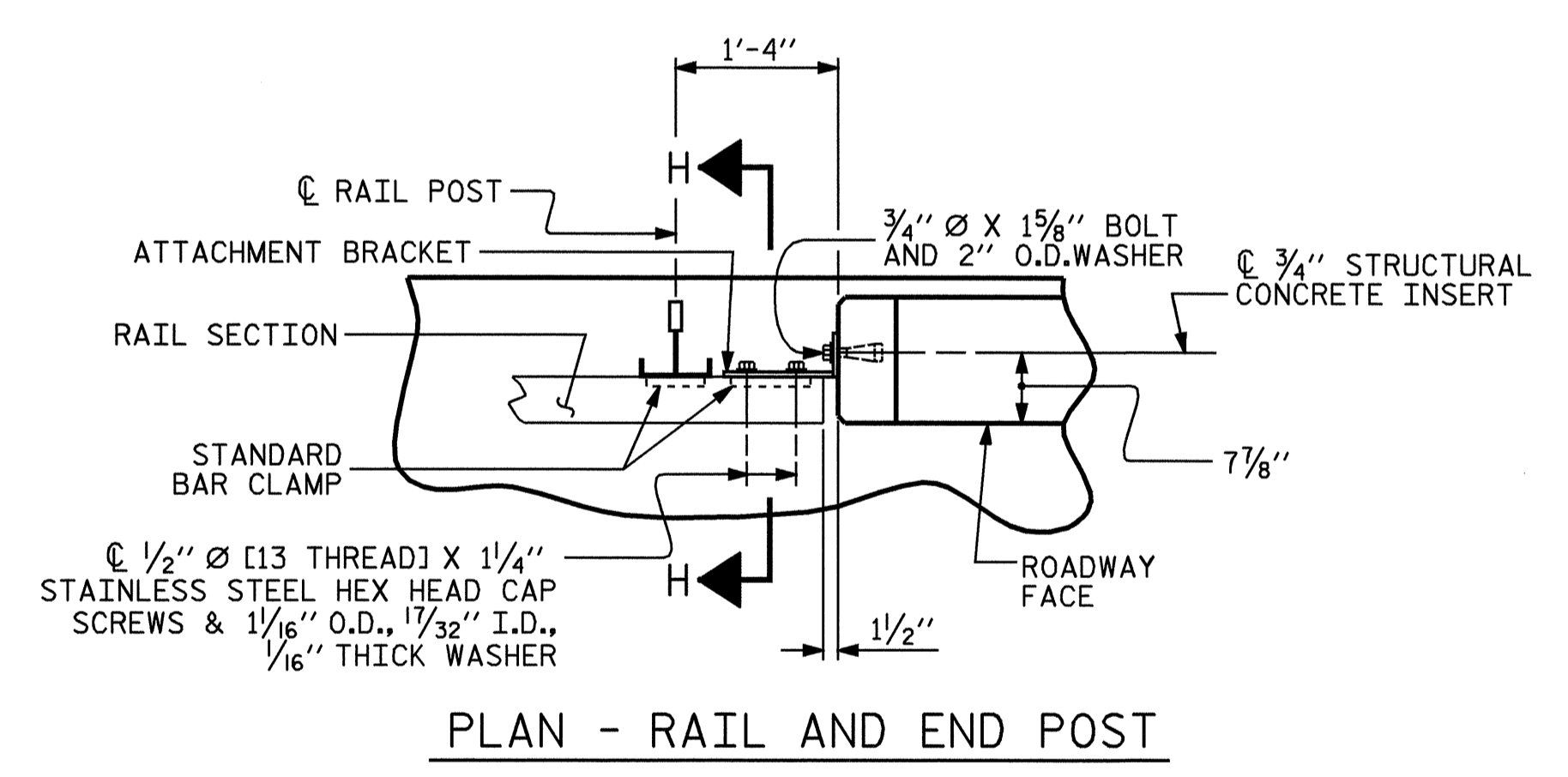
- 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 5/8" BOLT SHALL HAVE N. C. THREADS.
- 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°.
- STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
- 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 2 BAR METAL RAILS.

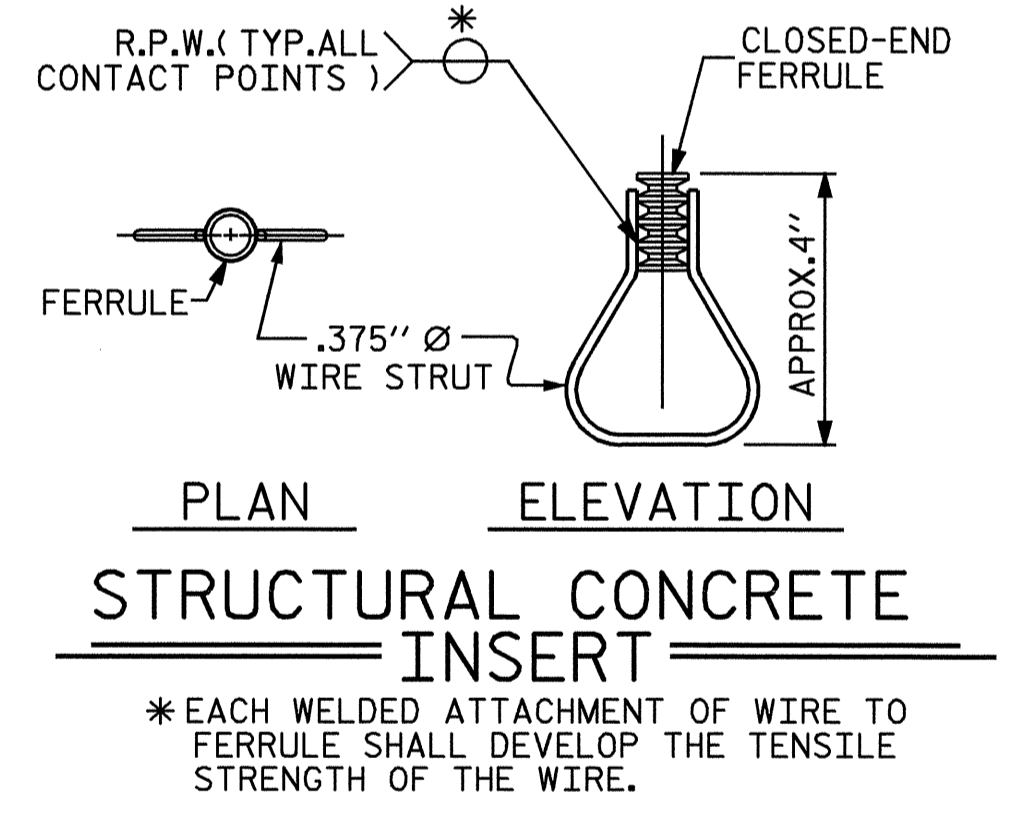
THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

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

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 5/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



**PLAN - RAIL AND END POST**



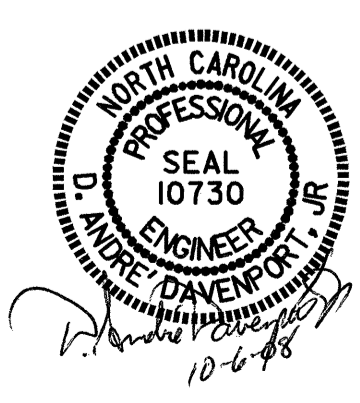
**STRUCTURAL CONCRETE INSERT**

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

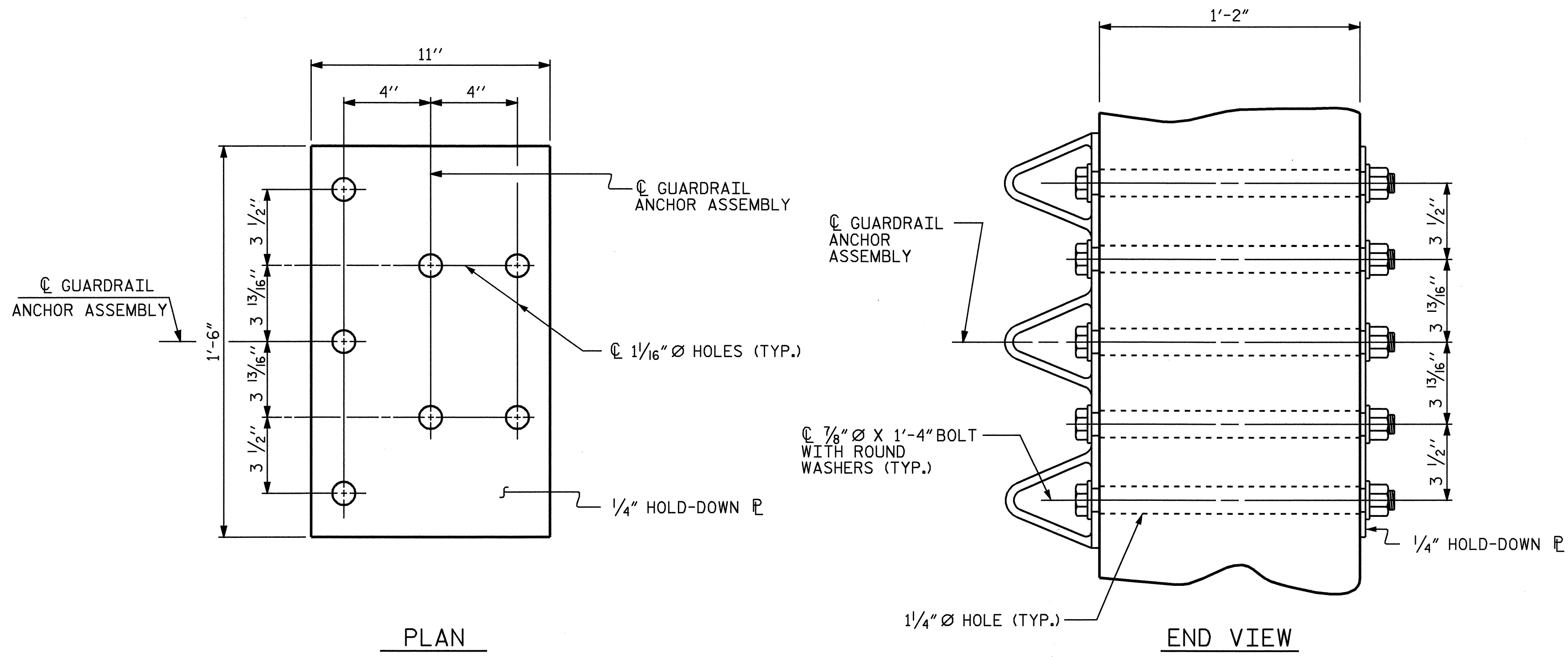
PROJECT NO. B-4303  
WAKE COUNTY  
 STATION: 17+71.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH			
<b>RAIL POST SPACINGS AND END OF RAIL DETAILS</b>			
REVISIONS			
NO.	BY:	DATE:	NO.
1			3
2			4
SHEET NO.			S-14
TOTAL SHEETS			29

ASSEMBLED BY :	A. SORSENGINH	DATE :	8/20/07
CHECKED BY :	D.A. GLADDEN	DATE :	10/3/07
DRAWN BY :	FCJ 1/88	REV. 2/6/97	EEM/RGW
CHECKED BY :	CRK 3/89	REV. 8/16/99	RWW/LES
		REV. 10/17/00R	LES/RDR







GUARDRAIL ANCHOR ASSEMBLY DETAILS

**NOTES**

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

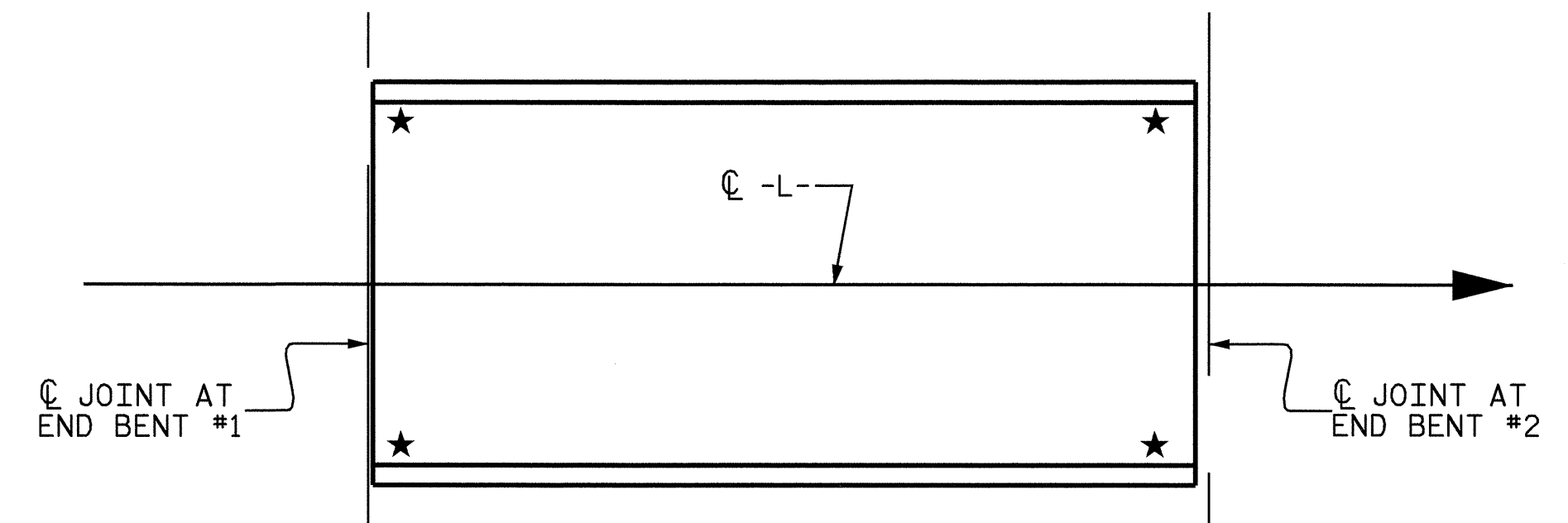
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. 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.

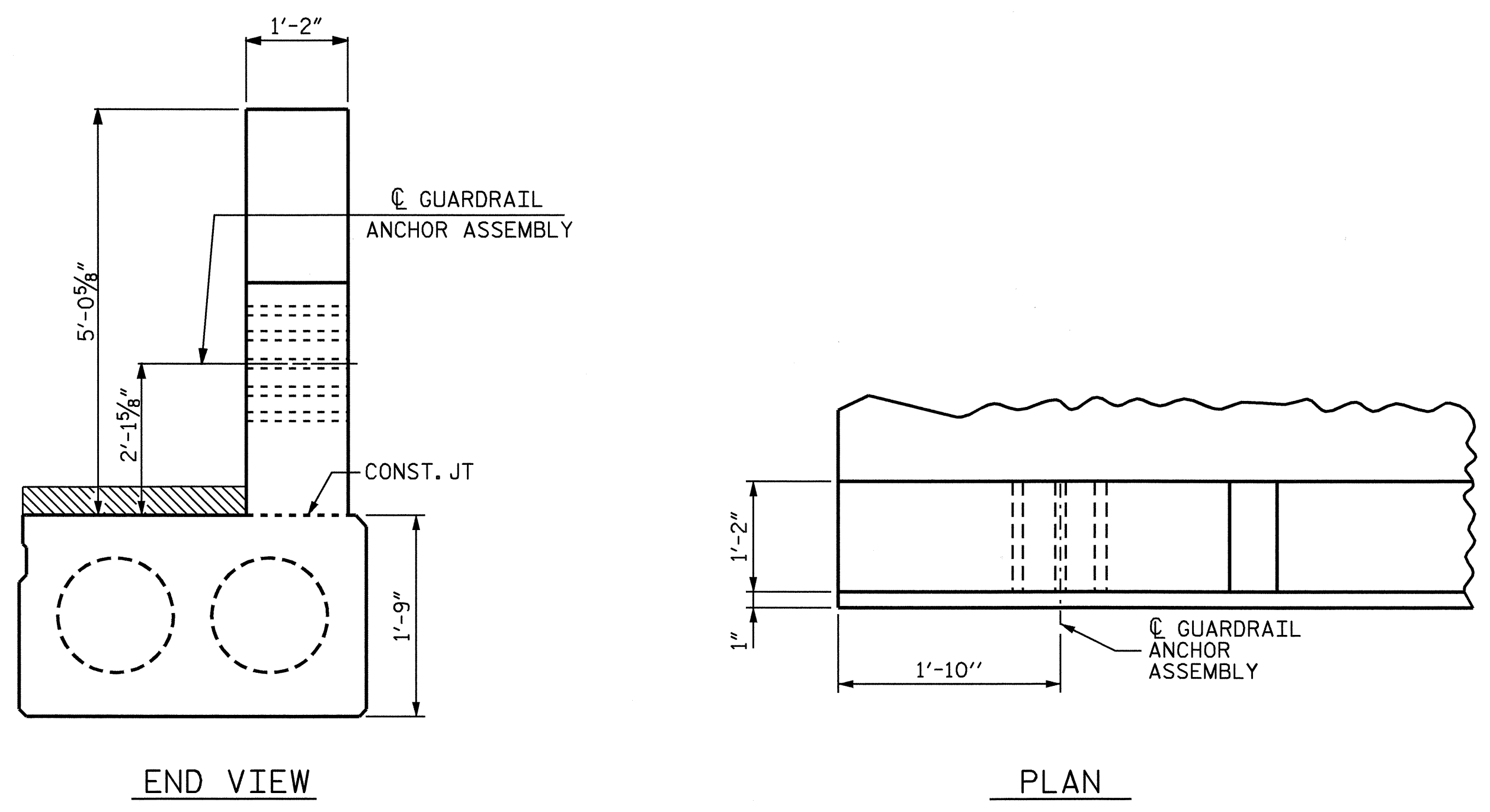
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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.

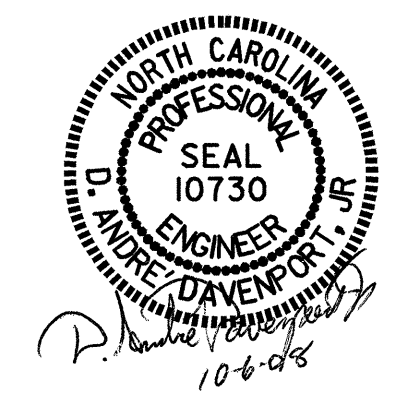


SKETCH SHOWING POINTS OF ATTACHMENT  
 ★ LOCATION OF GUARDRAIL ATTACHMENT



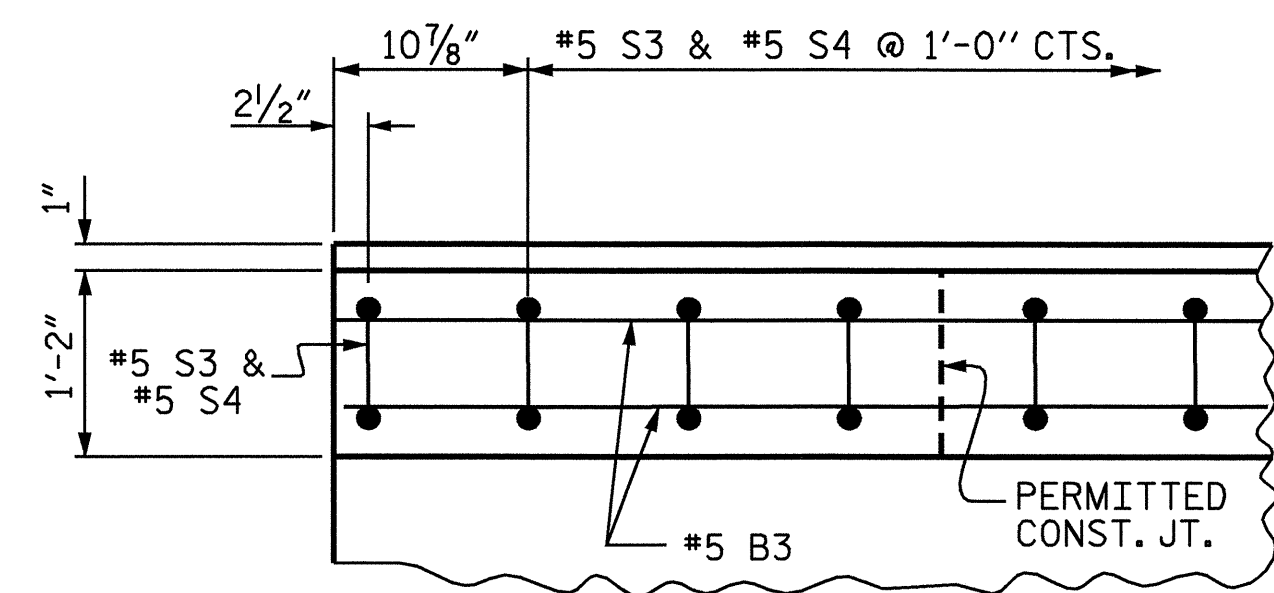
LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. B-4303  
WAKE COUNTY  
 STATION: 17+71.00 -L-

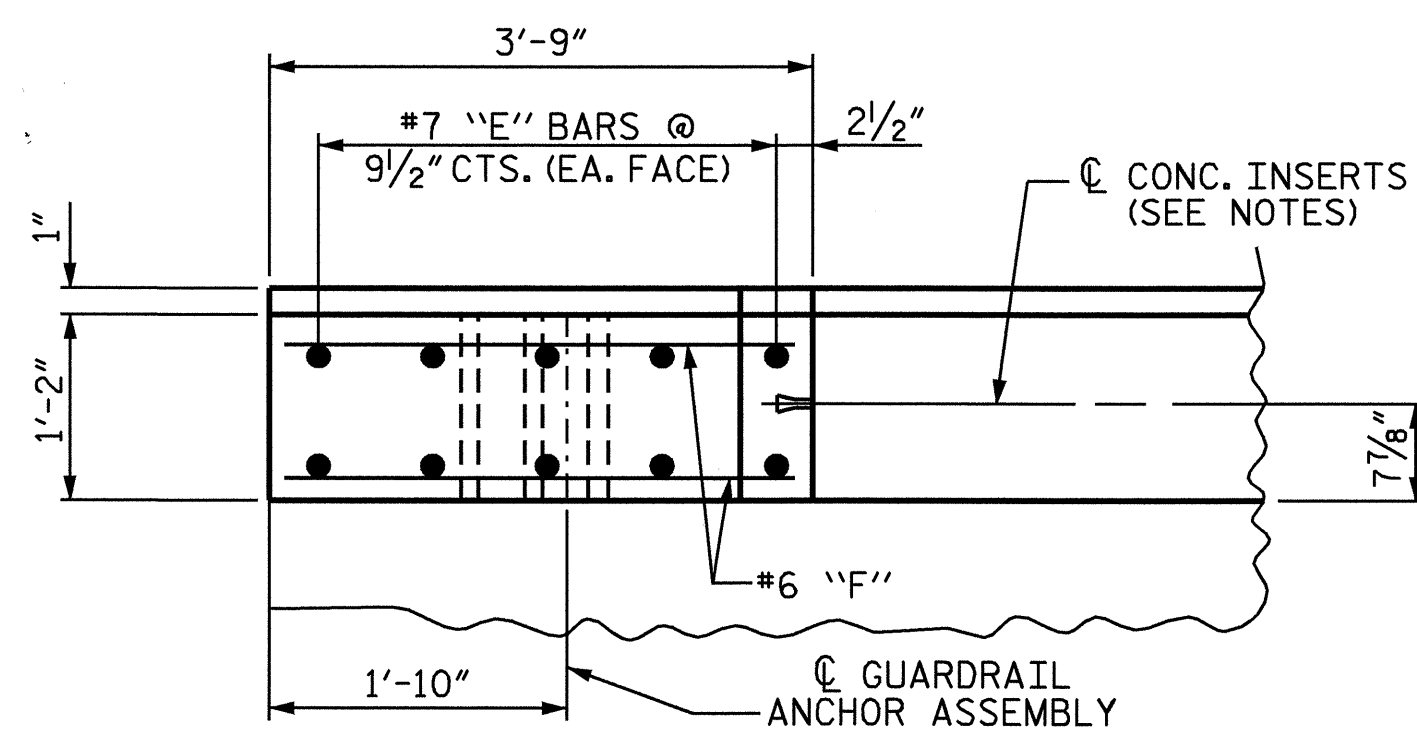


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					29

ASSEMBLED BY :	A. SORSENGINH	DATE :	8/21/07
CHECKED BY :	D.A. GLADDEN	DATE :	10/3/07
DRAWN BY :	EEM	6/94	REV. 8/16/99 RWW/LES
CHECKED BY :	RGW	6/94	REV. 10/17/00R RWW/LES



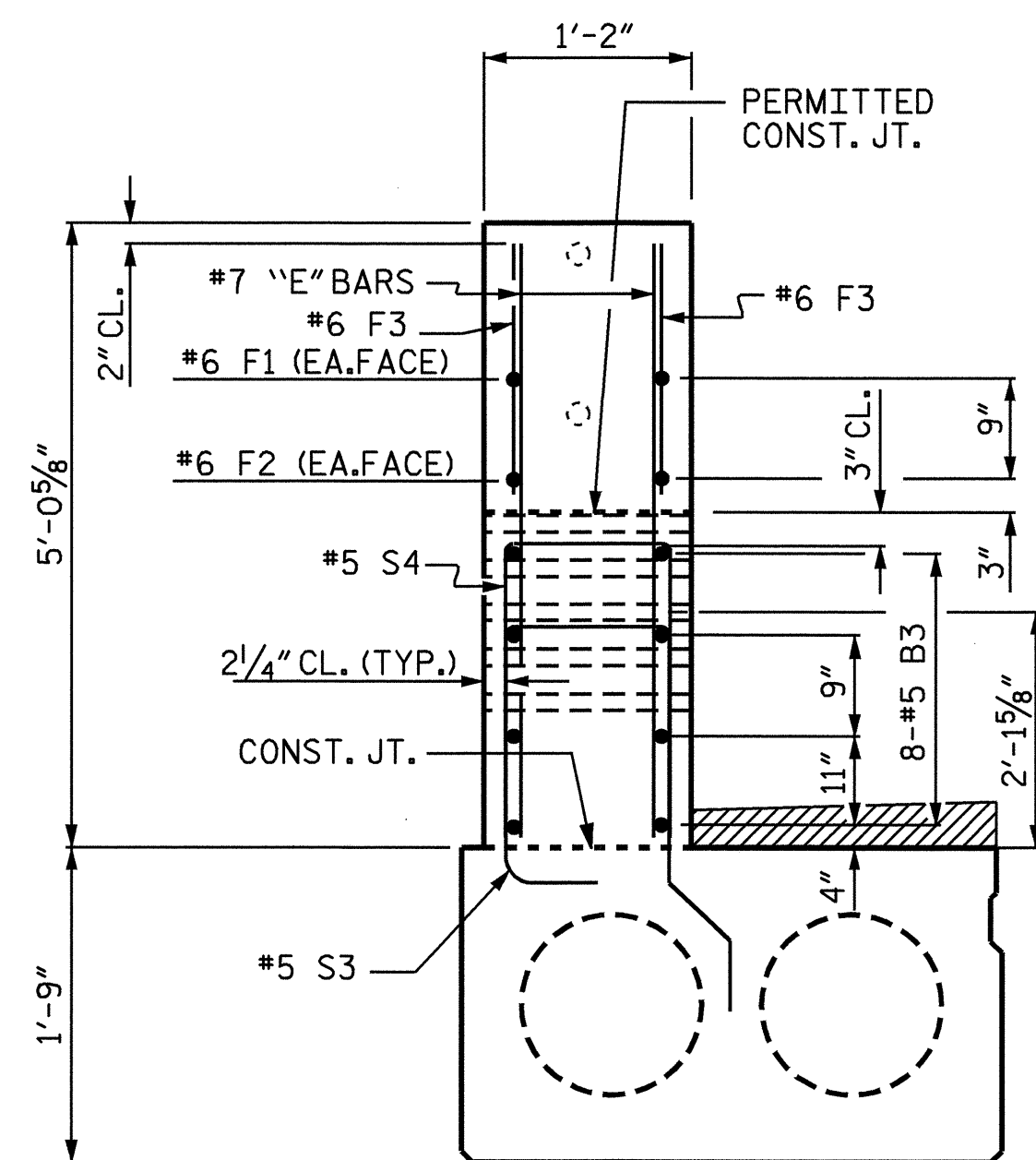
PLAN OF PARAPET



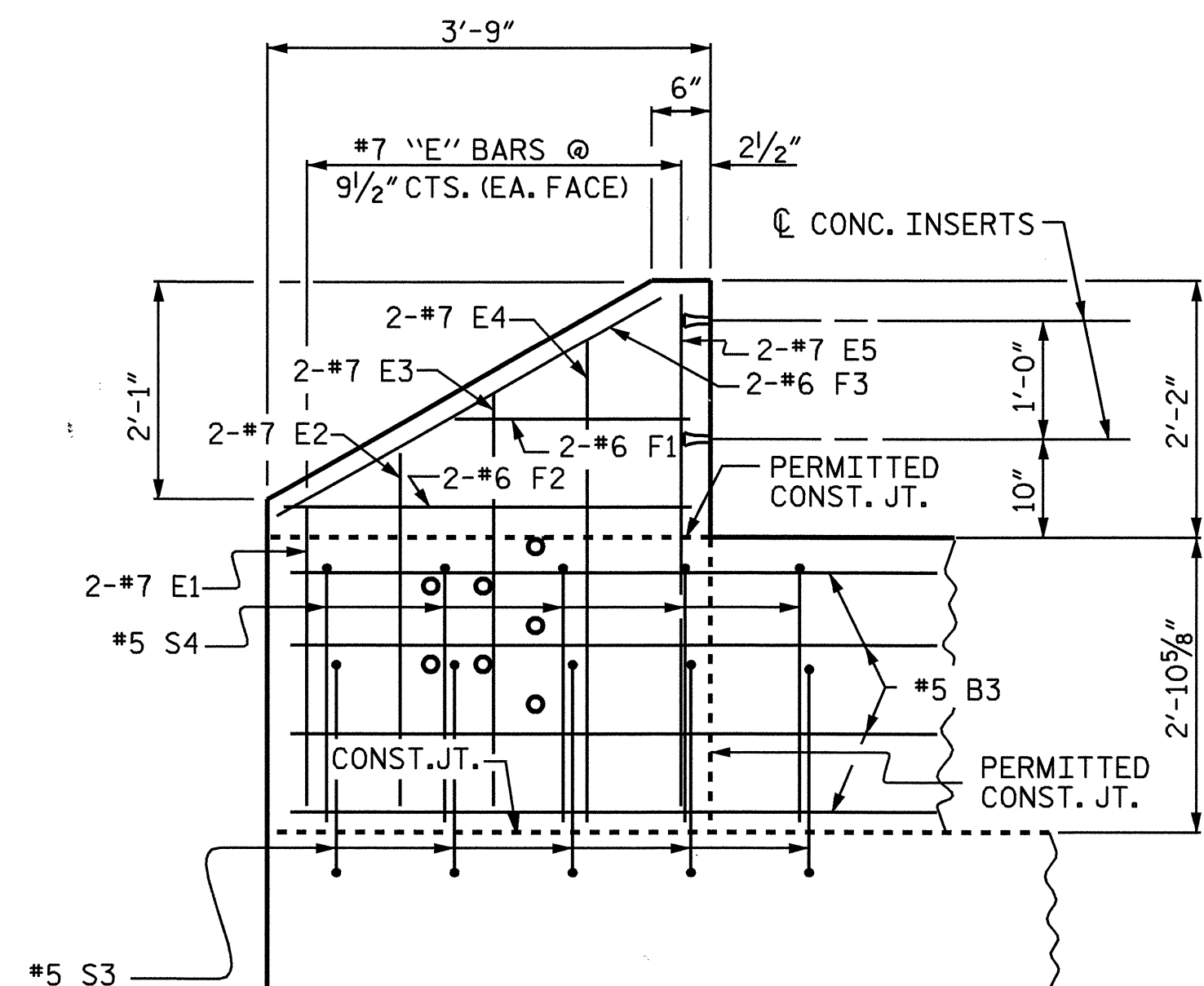
PLAN OF END POST

BAR	BARS PER SPAN			TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	SPAN A	SPAN B	SPAN C					
* B3	16		16	32	#5	STR	33'-5"	1115
* B4		32		32	#5	STR	22'-0"	734
* E1	4		4	8	#7	STR	2'-10"	46
* E2	4		4	8	#7	STR	3'-4"	55
* E3	4		4	8	#7	STR	3'-10"	63
* E4	4		4	8	#7	STR	4'-4"	71
* E5	4		4	8	#7	STR	4'-8"	76
* F1	4		4	8	#6	STR	1'-10"	22
* F2	4		4	8	#6	STR	3'-0"	36
* F3	4		4	8	#6	STR	3'-8"	44
* S4	70	92	70	232	#5	1	5'-9"	1391
* EPOXY COATED REINF. STEEL							LBS.	3653
CLASS AA CONCRETE							CU. YDS.	28.9
TOTAL LIN. FT. OF CONCRETE PARAPET								225.50

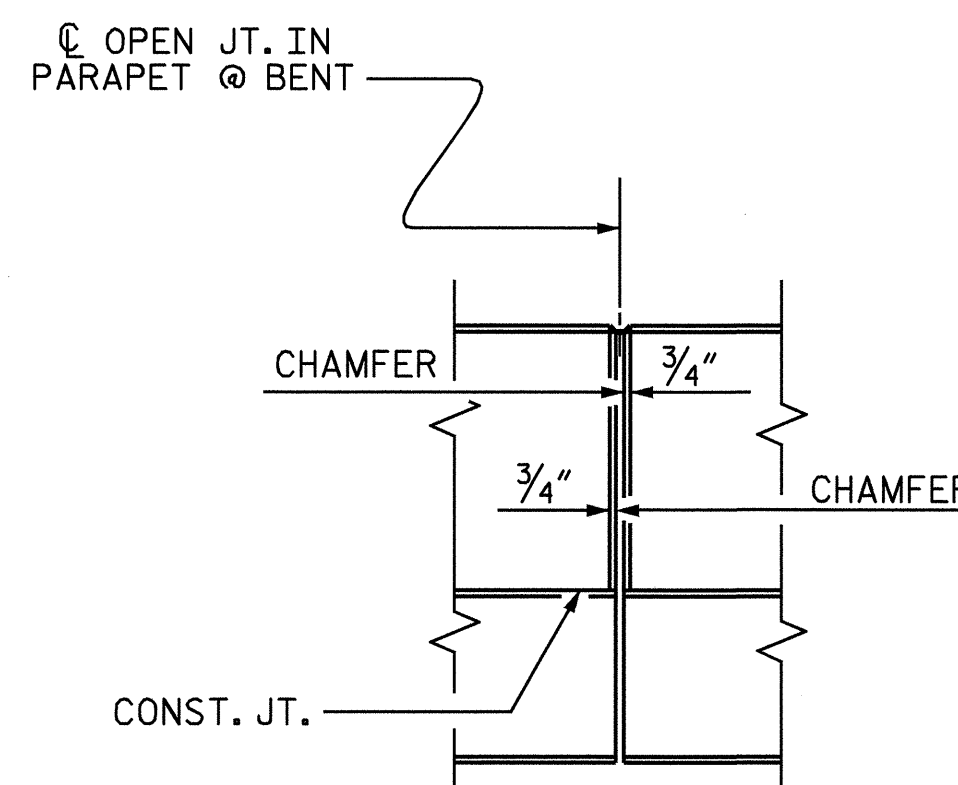
ALL BAR DIMENSIONS ARE OUT TO OUT.



END VIEW



ELEVATION



ELEVATION AT EXPANSION JOINTS

PARAPET DETAILS

PARAPET AND END POST FOR TWO BAR RAIL

NOTES

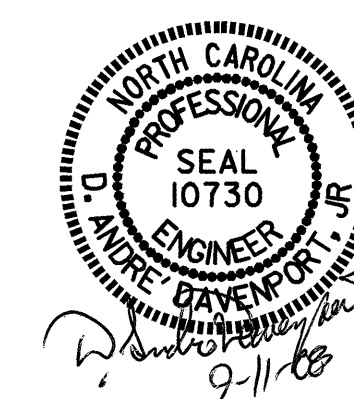
- FOR DETAILS OF CONCRETE INSERT AND GUARDRAIL ANCHOR ASSEMBLY, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEETS.
- ALL DIMENSIONS ARE TAKEN ALONG OUTSIDE EDGE OF PARAPET.
- ALL REINFORCING STEEL IN CONCRETE PARAPET SHALL BE EPOXY COATED.
- THE REINFORCING STEEL & CONCRETE IN THE END POSTS IS INCLUDED IN THE UNIT PRICE BID FOR THE CONCRETE PARAPET.

DRAWN BY : A. SORSENGINH DATE : 8/20/07  
CHECKED BY : D.A. GLADDEN DATE : 10/3/07

PROJECT NO. B-4303  
WAKE COUNTY  
STATION: 17+71.00 -L-

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
CONCRETE PARAPET  
DETAILS



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			29

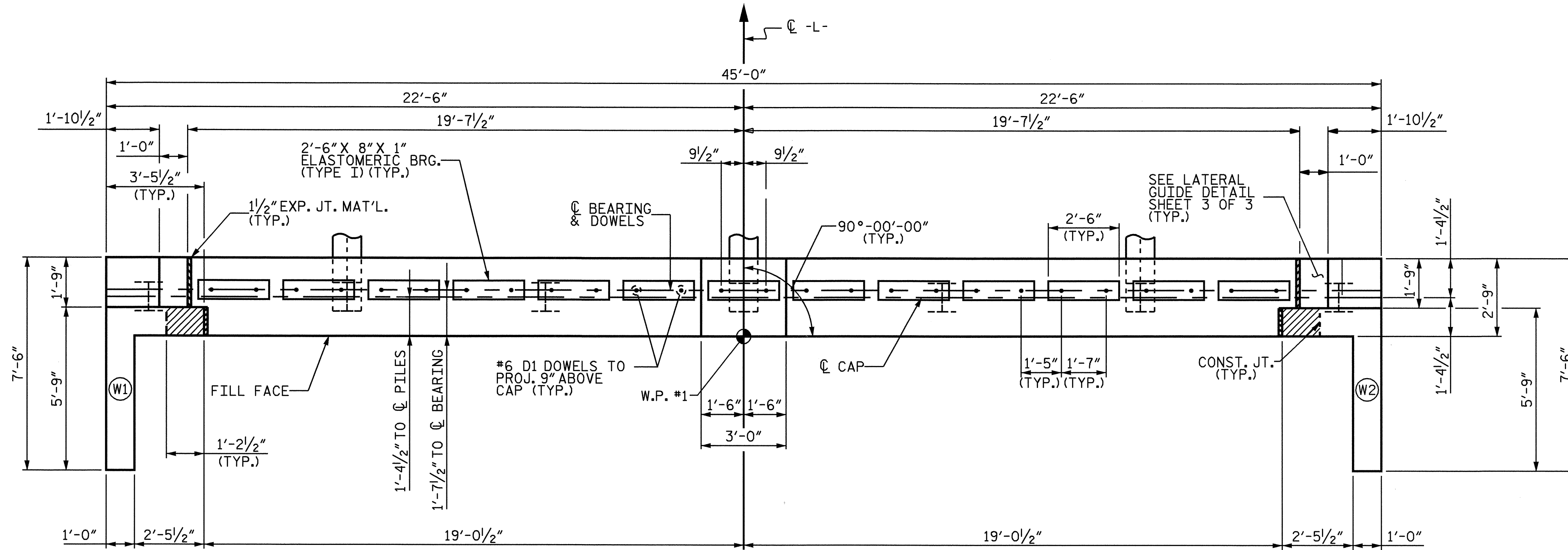
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6 D1 DOWELS.

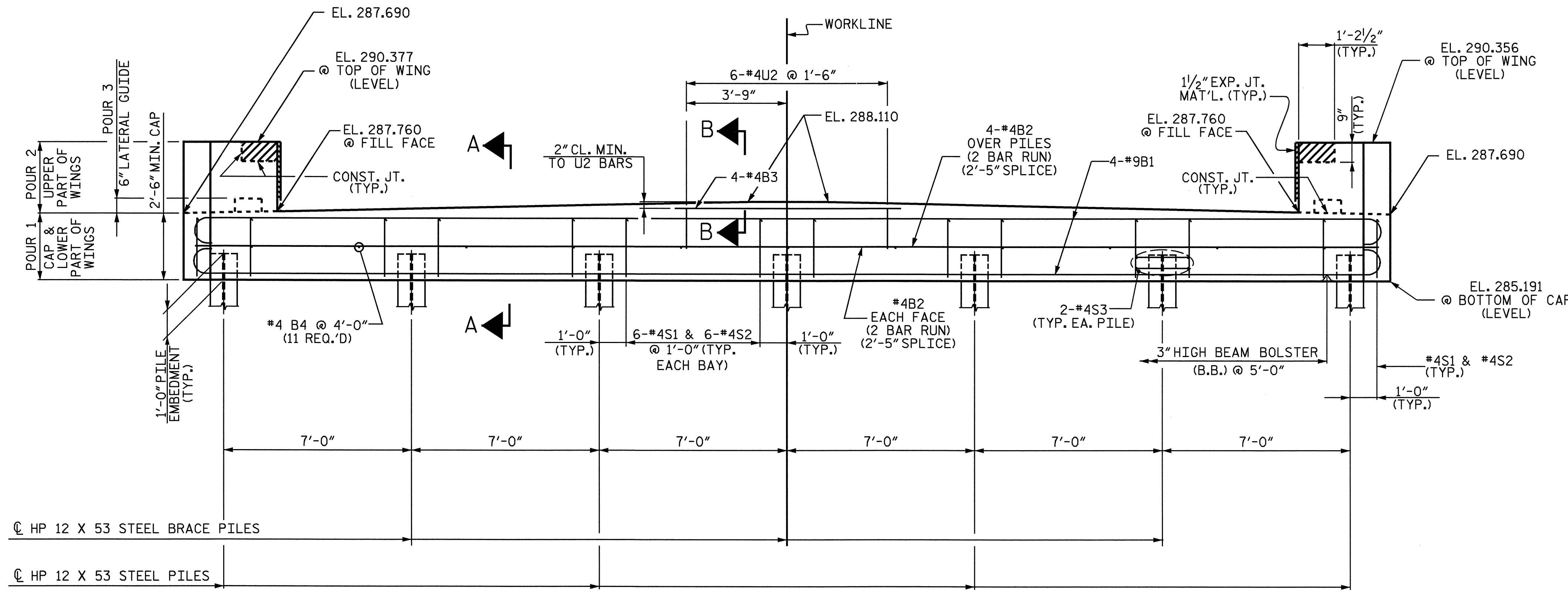
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

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



PLAN



ELEVATION

PROJECT NO. B-4303  
WAKE COUNTY  
 STATION: 17+71.00-L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT #1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-17
					TOTAL SHEETS 29

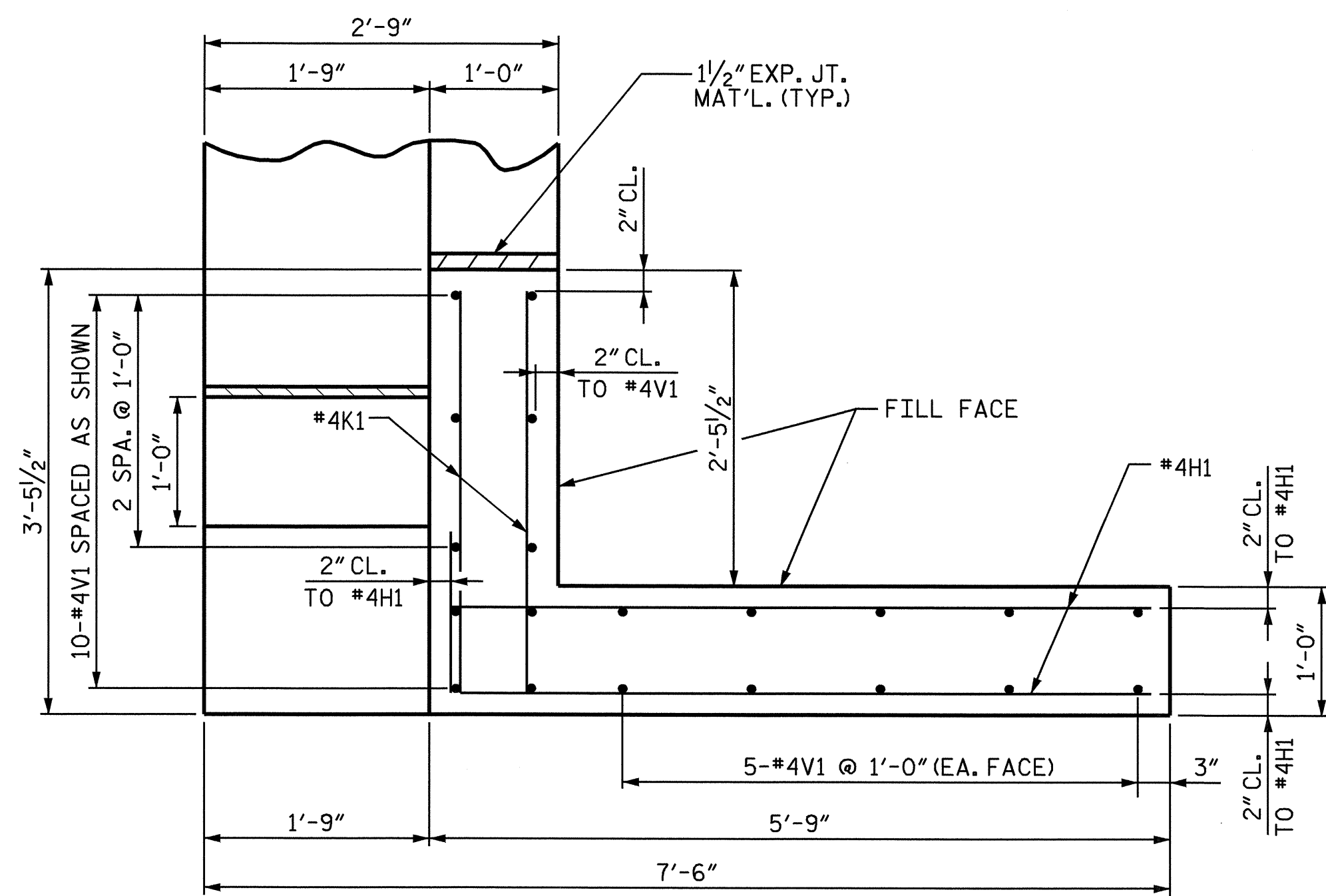


DRAWN BY: D.A. DAVENPORT DATE: 03-08  
 CHECKED BY: D.A. GLADDEN DATE: 03-08

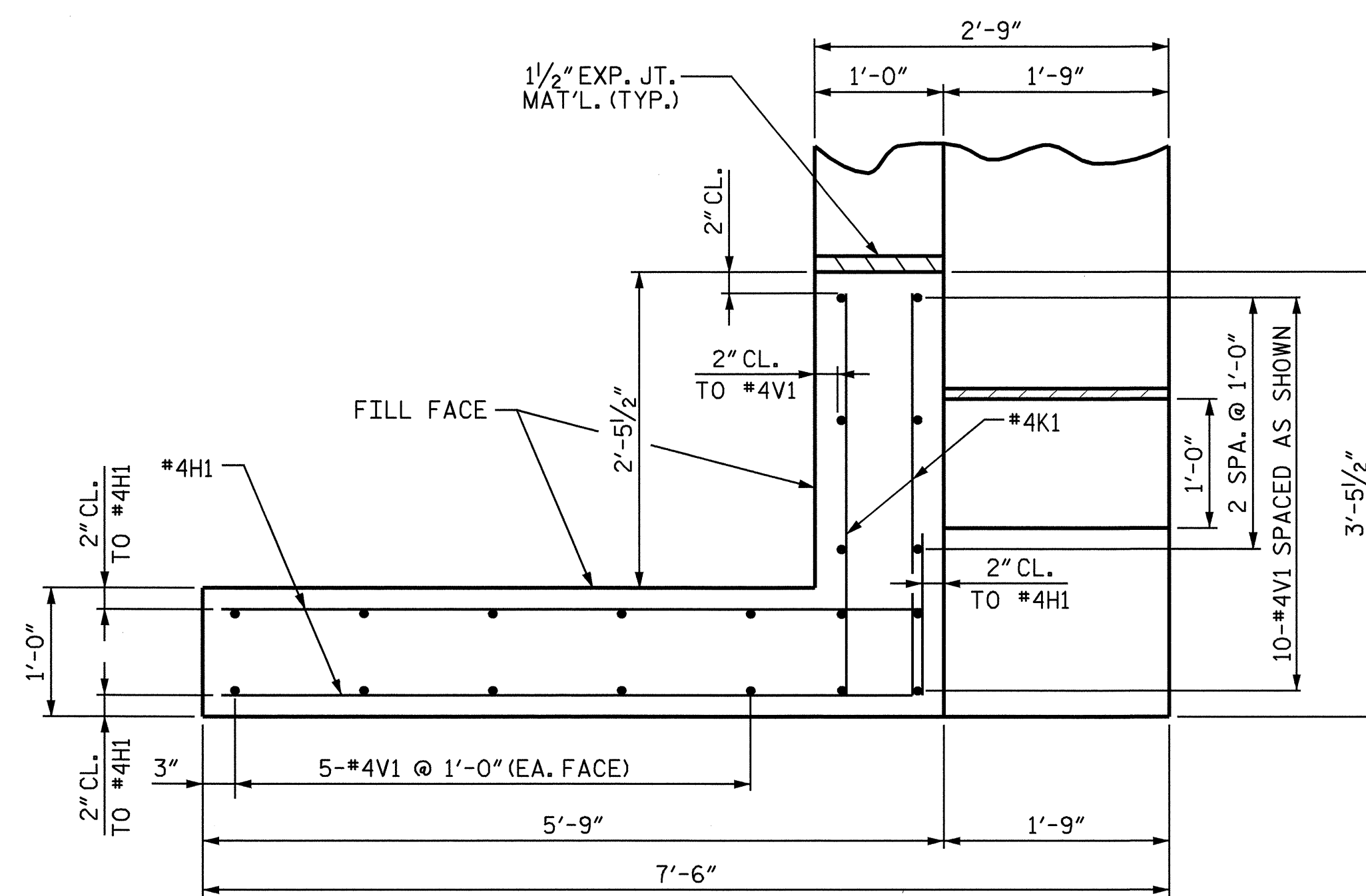
29-OCT-2008 07:11  
 Z:\structures\adavenport\b-4303.sd.E\*.dgn  
 adavenport

NC005

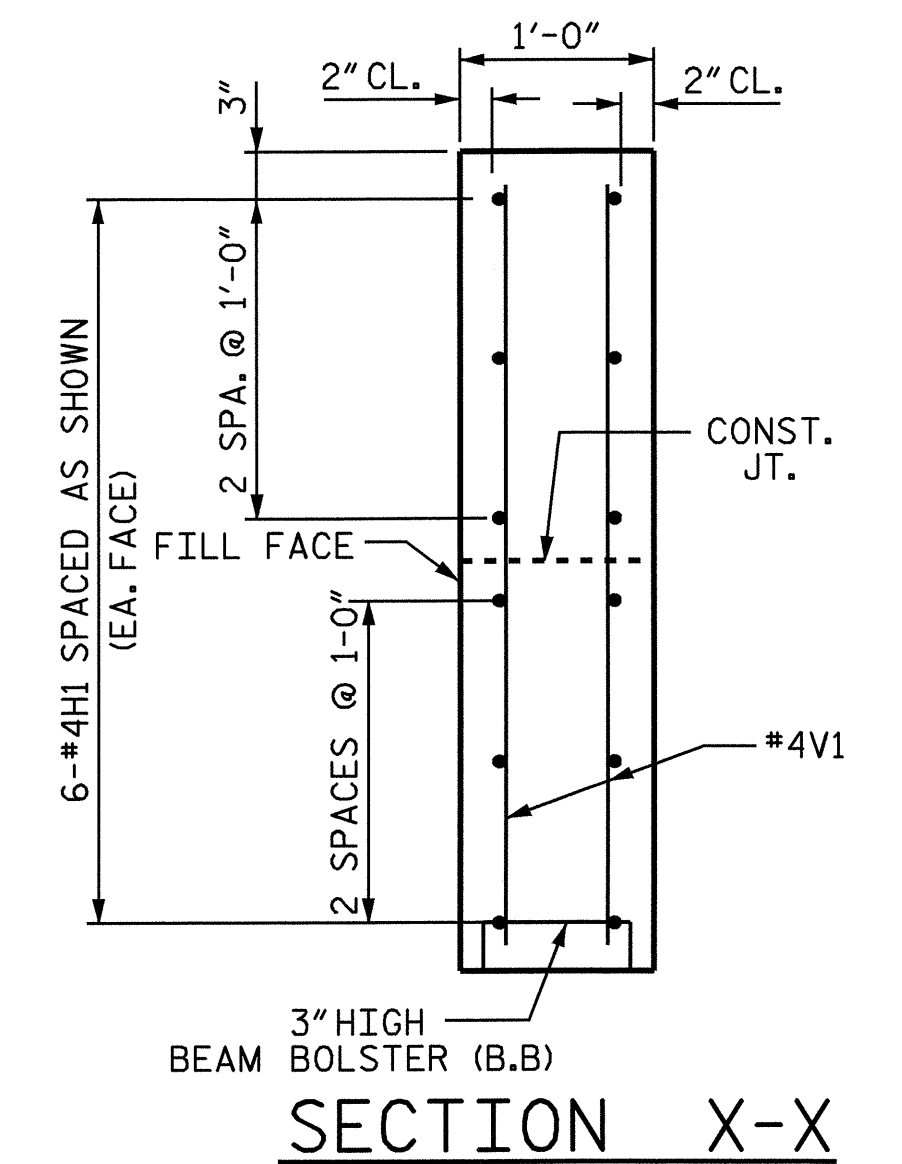




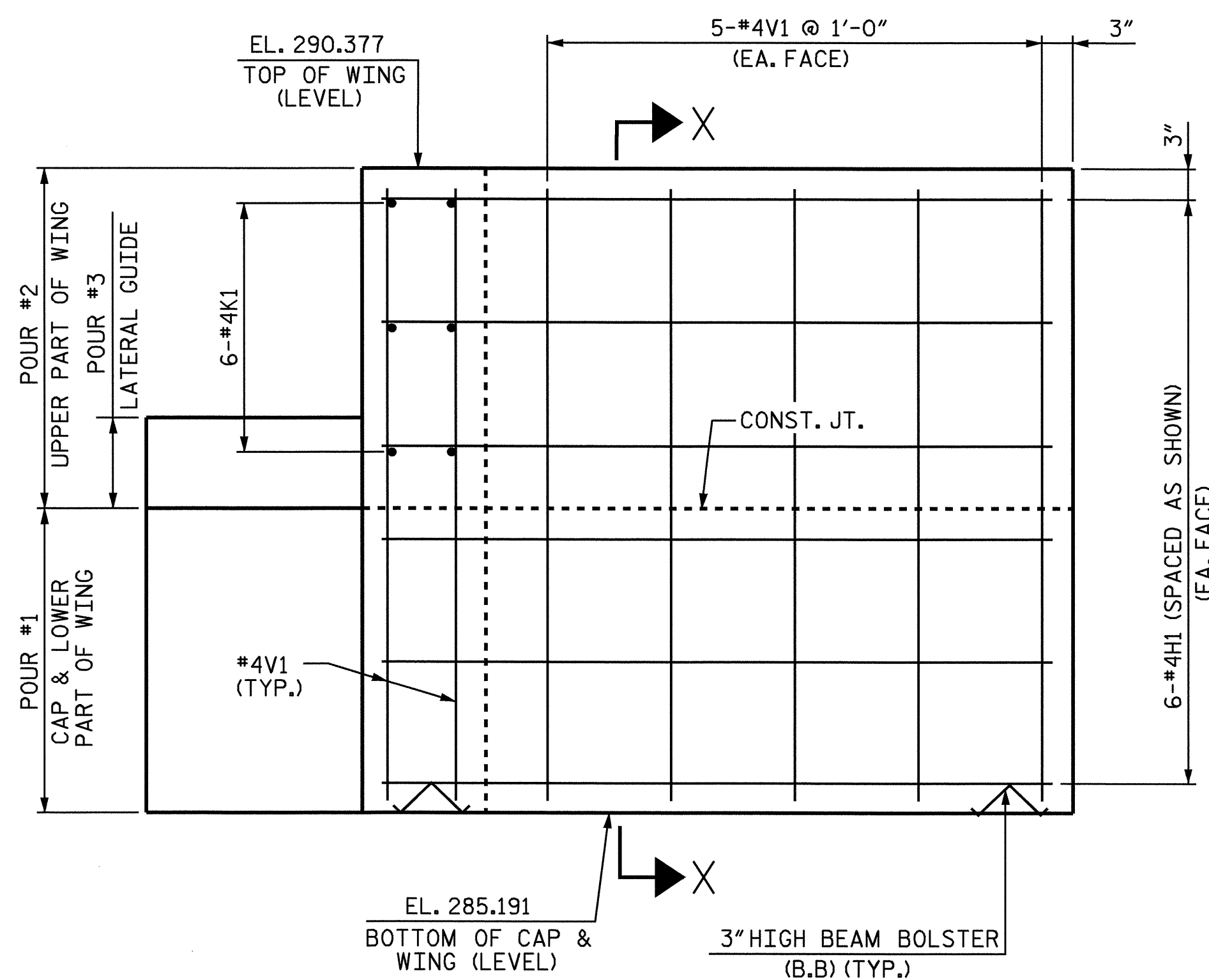
PLAN OF LEFT WING (W1)



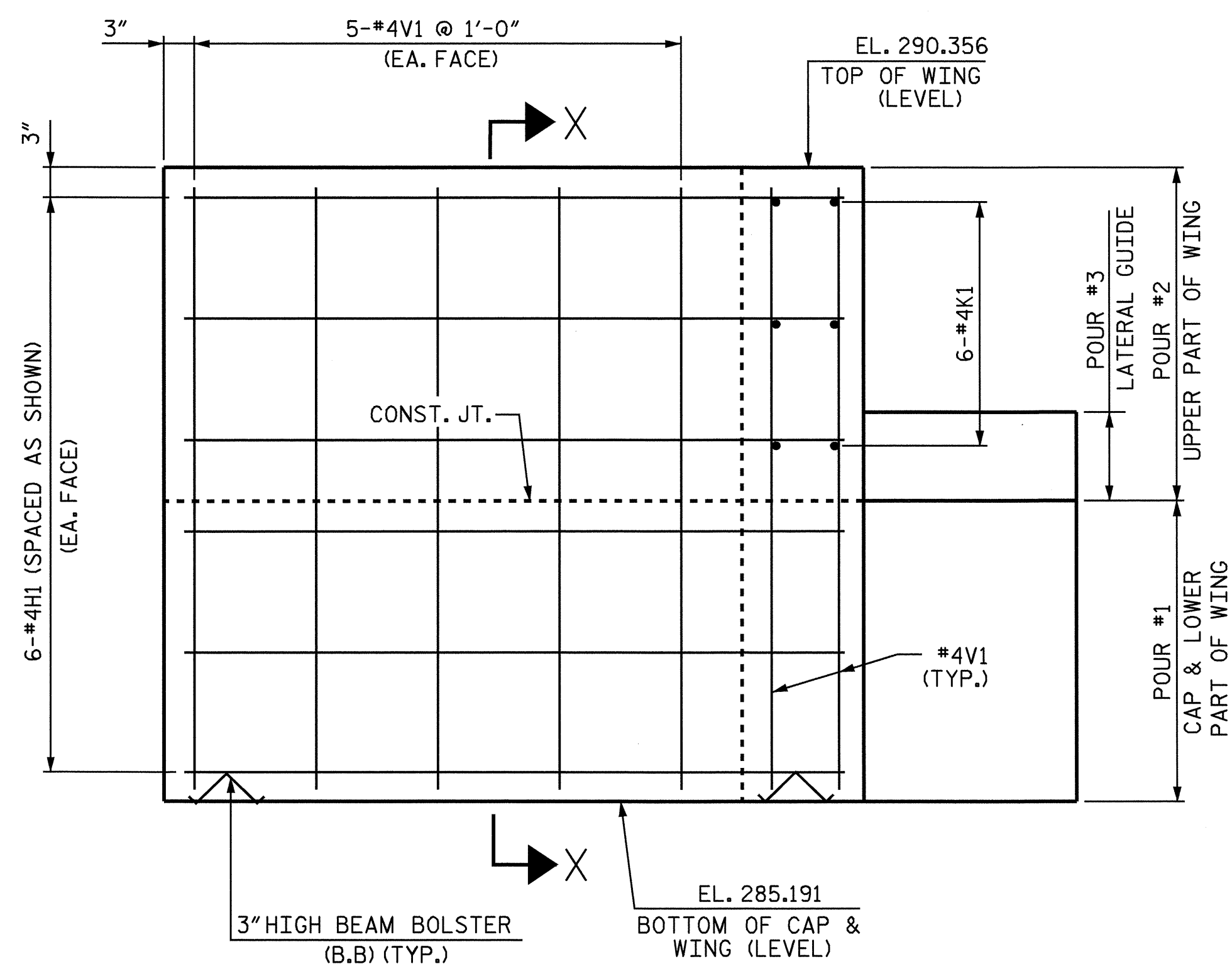
PLAN OF RIGHT WING (W2)



SECTION X-X



ELEVATION OF LEFT WING (W1)



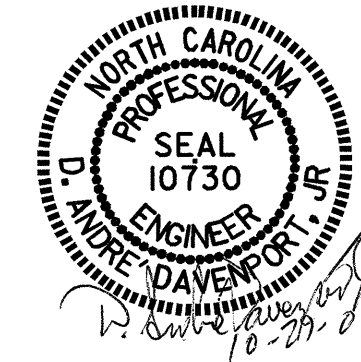
ELEVATION OF RIGHT WING (W2)

PROJECT NO. B-4303  
 WAKE COUNTY  
 STATION: 17+71.00-L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

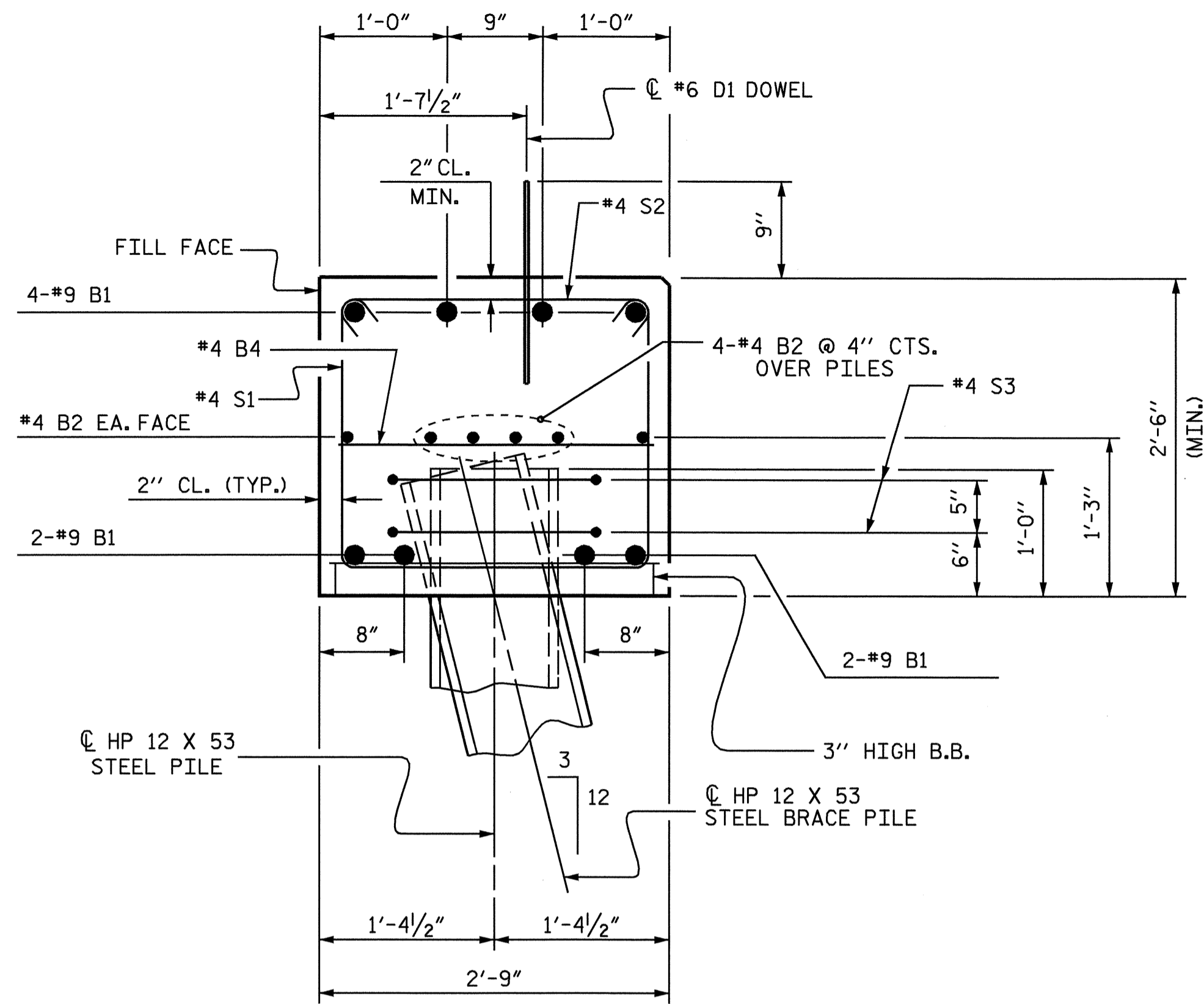
SUBSTRUCTURE  
 END BENT #1



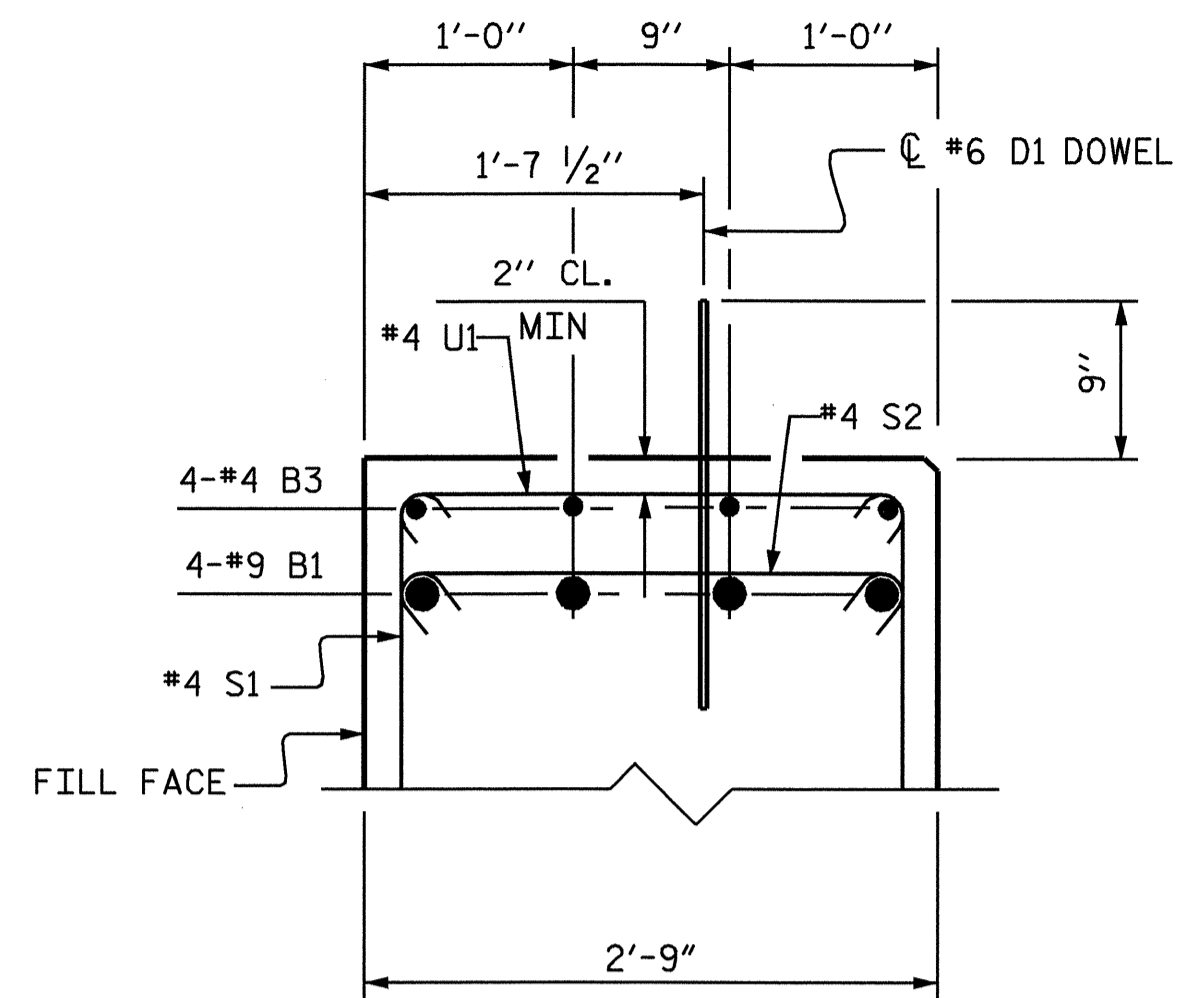
DRAWN BY: D. A. DAVENPORT DATE: 03-08  
 CHECKED BY: D. A. GLADDEN DATE: 03-08

29-OCT-2008 07:11  
 Z:\structures\adavenport\4303.sd.E\*.dgn  
 adavenport

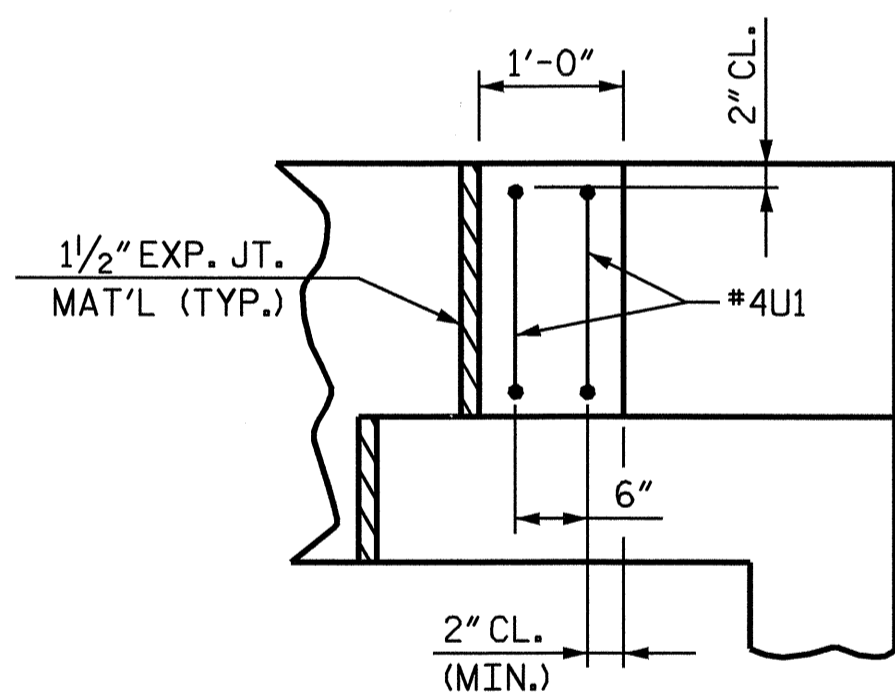
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18	
1			3			TOTAL SHEETS 29	
2			4				



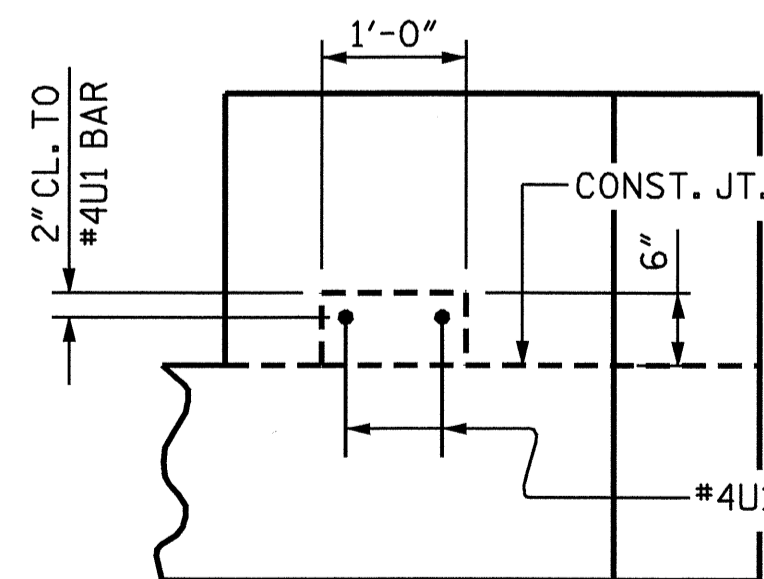
SECTION A-A



SECTION B-B



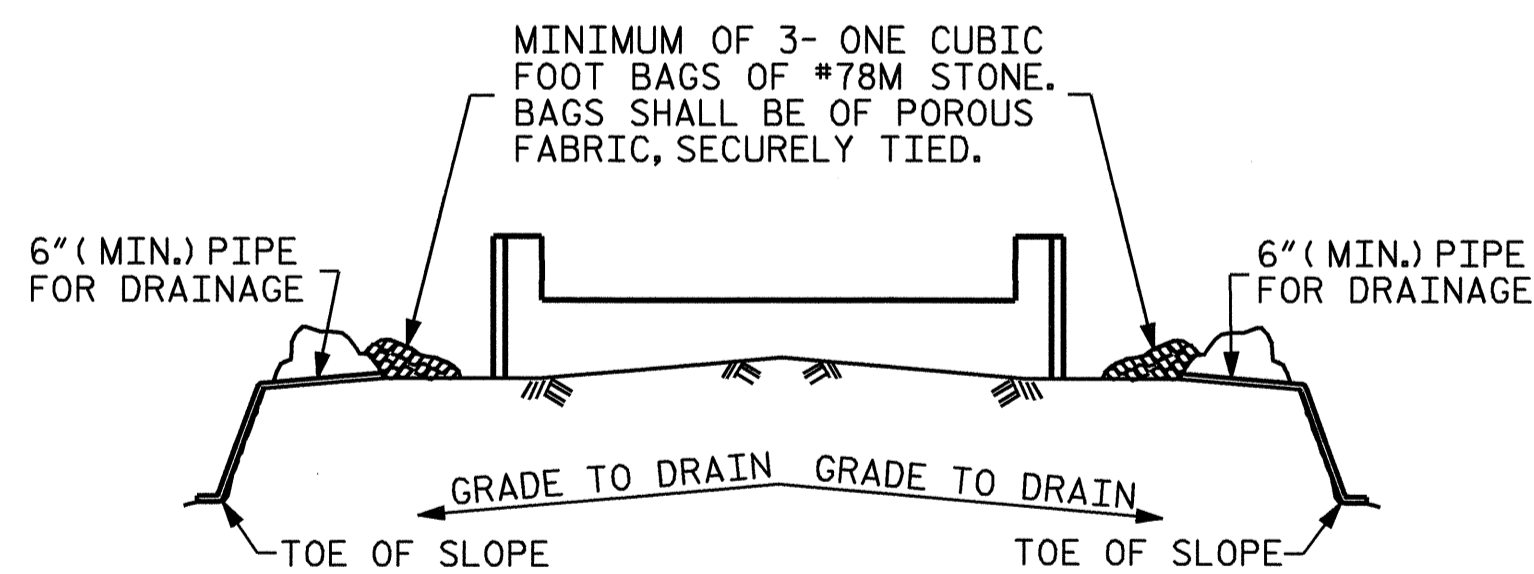
PLAN



ELEVATION

LATERAL GUIDE

(TYPICAL EACH SIDE)



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

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

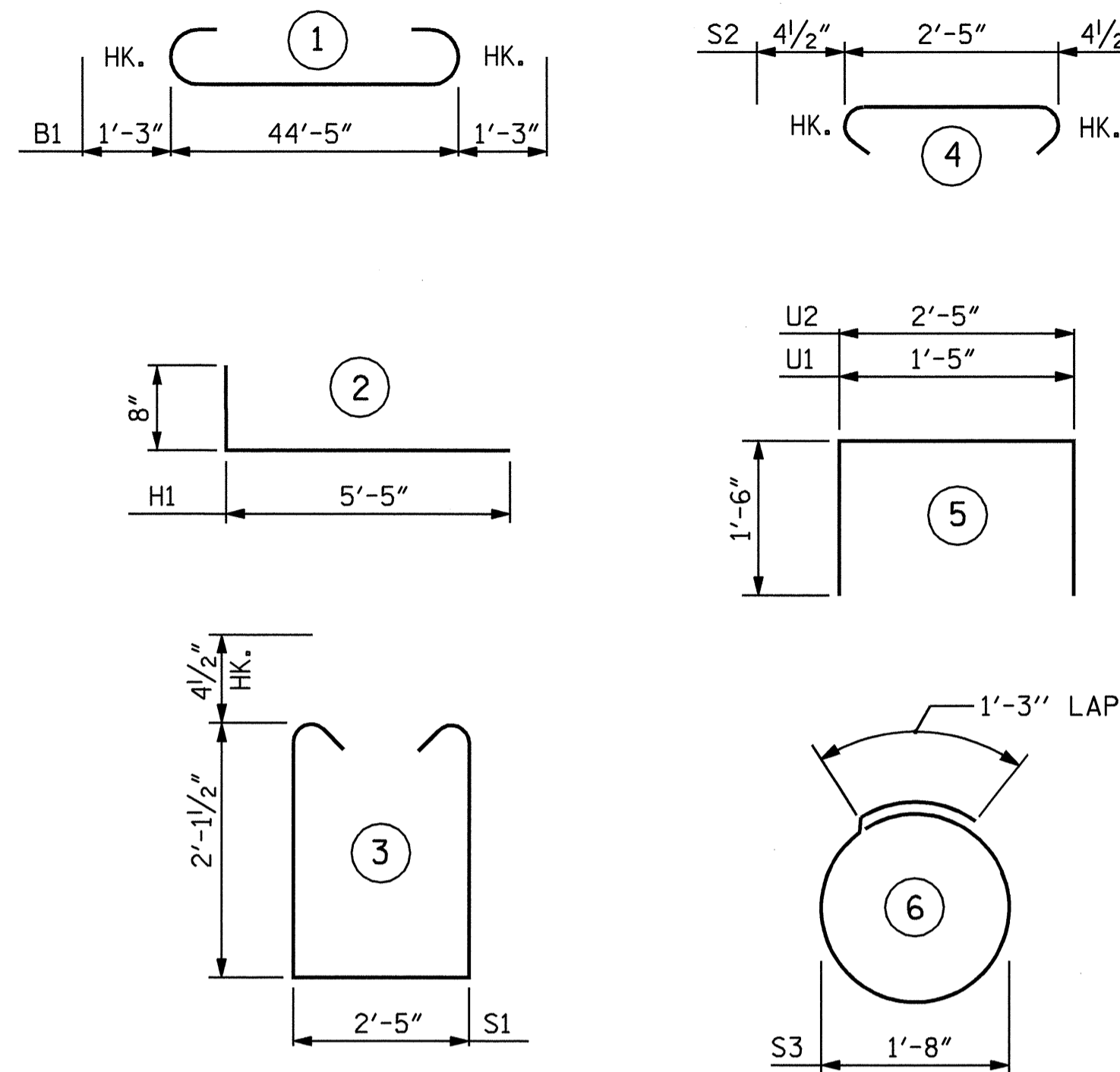
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

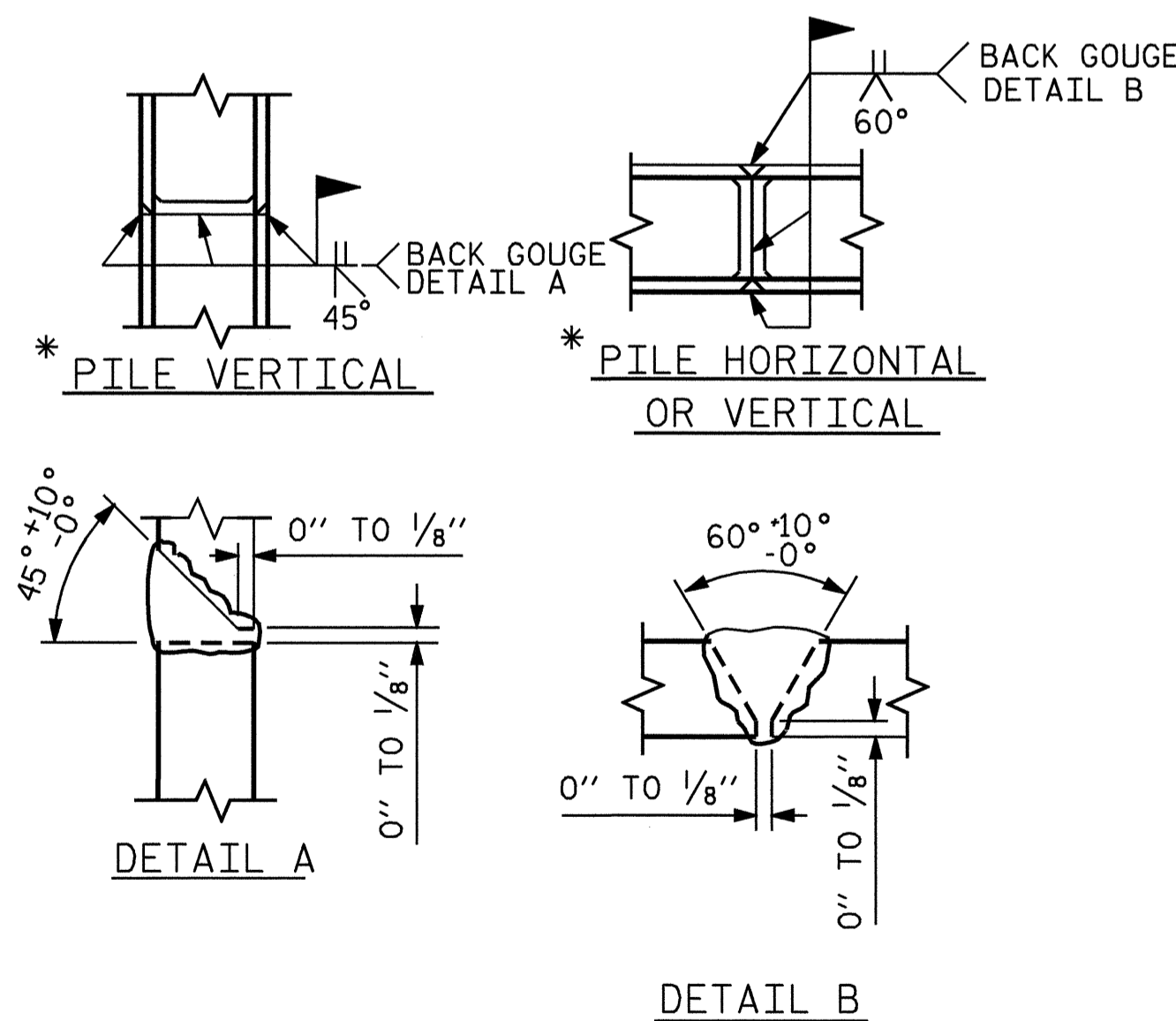
DRAWN BY : D. A. DAVENPORT DATE : 03-08  
 CHECKED BY : D. A. GLADDEN DATE : 03-08

09-OCT-2008 12:27  
 F:\structures\gdavenport\b-4303.ed.E\*.dgn  
 ssackwell

BAR TYPES

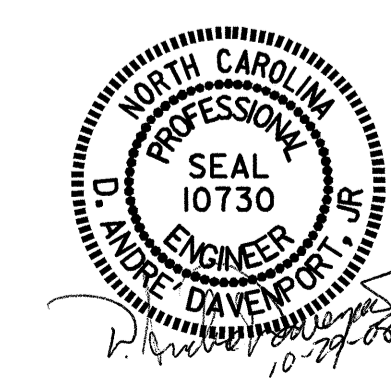


ALL BAR DIMENSIONS ARE OUT TO OUT.



PILE SPLICE DETAILS

\* POSITION OF PILE DURING WELDING.



BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		46'-11"	1276
B2	12	#4	STR	23'-7"	189
B3	4	#4	STR	8'-5"	22
B4	11	#4	STR	2'-5"	18
D1	26	#6	STR	1'-6"	59
H1	24	#4	2	6'-1"	98
K1	12	#4	STR	3'-1"	25
S1	38	#4	3	7'-5"	188
S2	38	#4	4	3'-2"	80
S3	14	#4	6	6'-6"	61
U1	4	#4	5	4'-5"	12
U2	6	#4	5	5'-5"	22
V1	40	#4	STR	4'-9"	127

REINFORCING STEEL LBS = 2177

CLASS A CONCRETE BREAKDOWN

POUR #1 CAP & LOWER PART OF WINGS (C.Y.)	13.4
POUR #2 UPPER PART OF WINGS (C.Y.)	1.6
POUR #3 LATERAL GUIDES (C.Y.)	0.1

TOTAL CLASS A CONCRETE (C.Y.) 15.1

HP 12 X 53 STEEL PILES NO. 7 (LIN FT.) 175

PROJECT NO. B-4303  
 WAKE COUNTY  
 STATION: 17+71.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

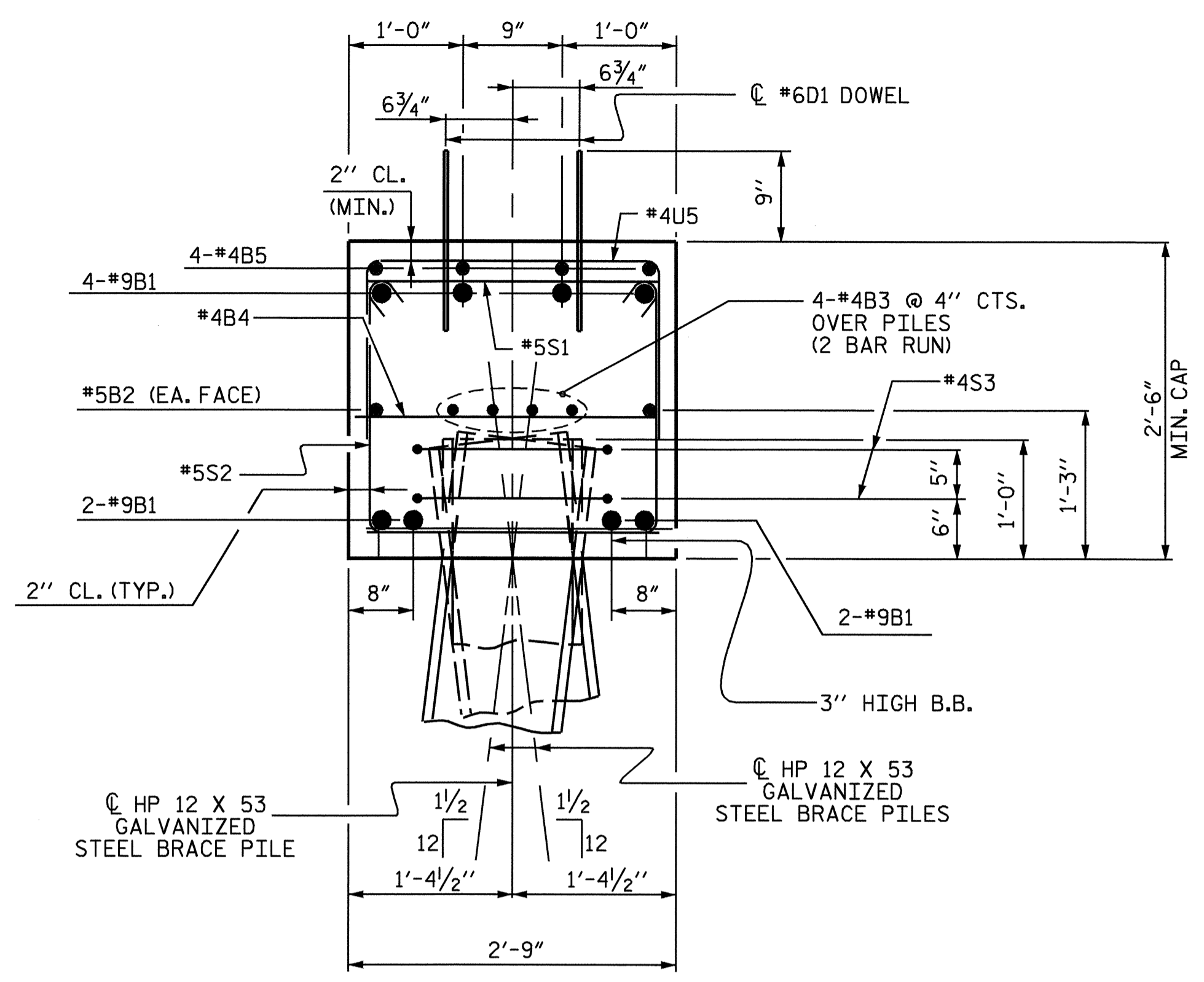
SUBSTRUCTURE  
 END BENT #1

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19	
1			3			TOTAL SHEETS	
2			4			29	

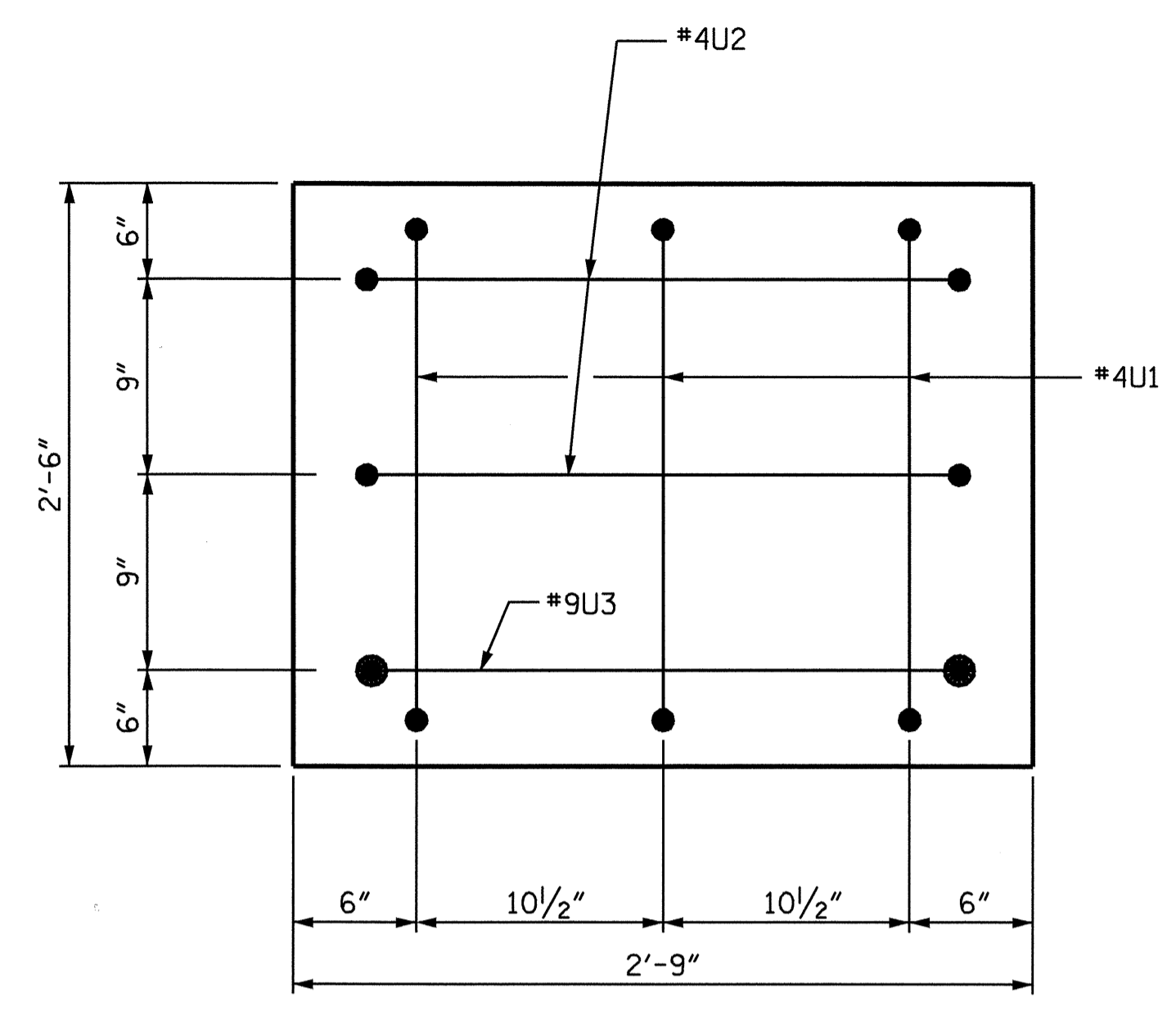
NC006







**SECTION A-A**

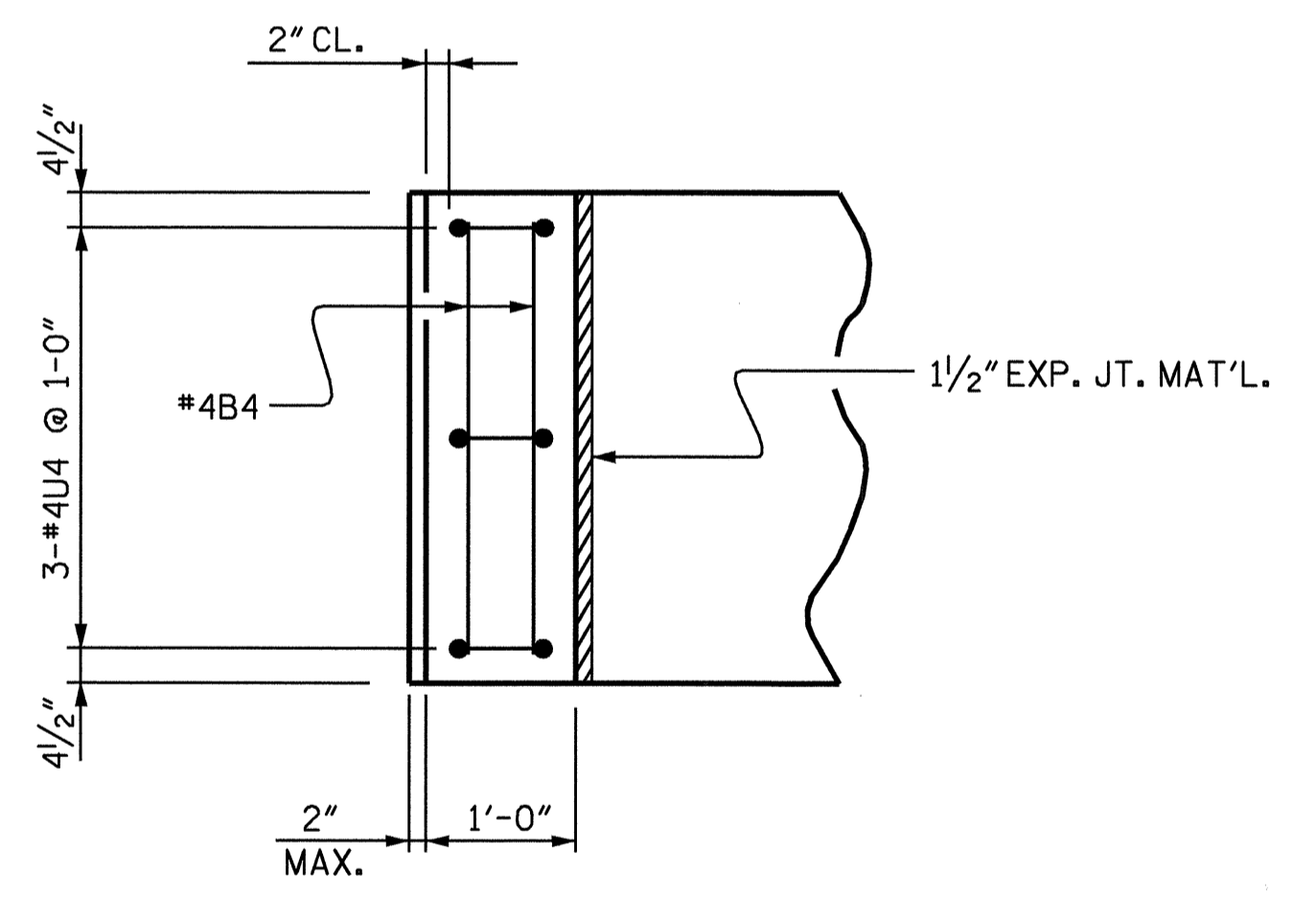


**END VIEW**

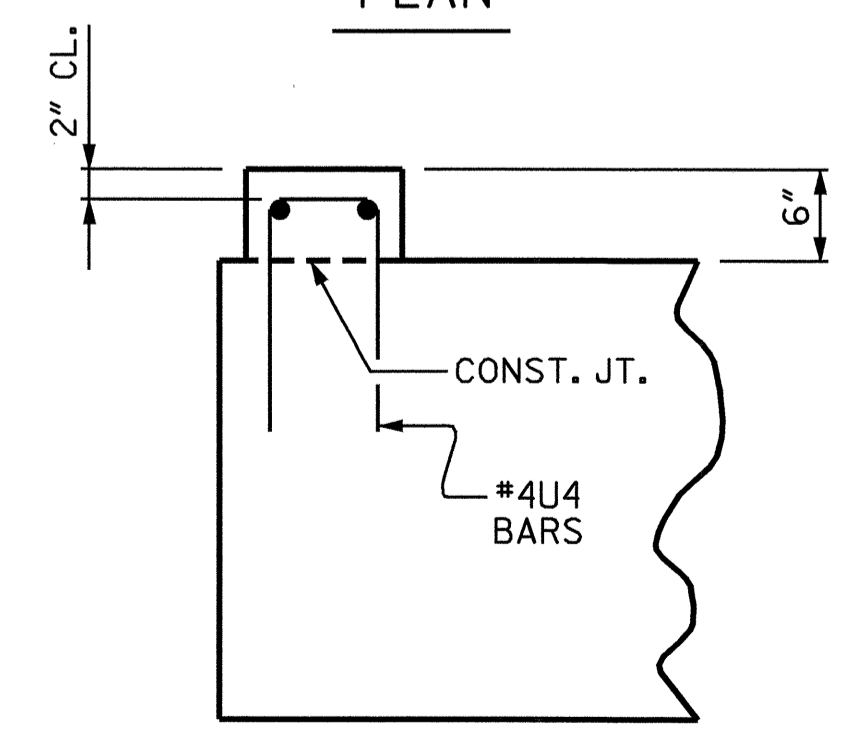
2" MIN. CONCRETE COVER FROM END OF CAP REQUIRED FOR ALL #4U1, #4U2 AND #9U3 BARS.  
 #4U1, #4U2 AND #9U3 BARS MAY BE SHIFTED UP TO 2" TO CLEAR "B" BARS.

BAR TYPES					BILL OF MATERIAL						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	43'-7"	1185	D1	52	#6	STR	1'-6"	117
B2	2	#5	STR	41'-3"	86	S1	37	#5	2	3'-4"	129
B3	8	#4	STR	21'-10"	117	S2	37	#5	3	7'-7"	293
B4	15	#4	STR	2'-5"	24	S3	16	#4	4	6'-6"	69
B5	4	#4	STR	16'-7"	44	U1	6	#4	5	5'-0"	20
						U2	4	#4	5	5'-3"	14
						U3	2	#9	5	9'-7"	65
						U4	6	#4	5	3'-6"	14
						U5	11	#4	5	5'-5"	40
REINFORCING STEEL										=	2217 LBS
CLASS A CONCRETE											
POUR #1 CAP										CU. YDS.	11.5
POUR #2 LATERAL GUIDE										CU. YDS.	0.1
TOTAL										CU. YDS.	11.6
HP 12 X 53 GALVANIZED STEEL PILES										LIN. FT.	200
NO. 8											

ALL BAR DIMENSIONS ARE OUT TO OUT.

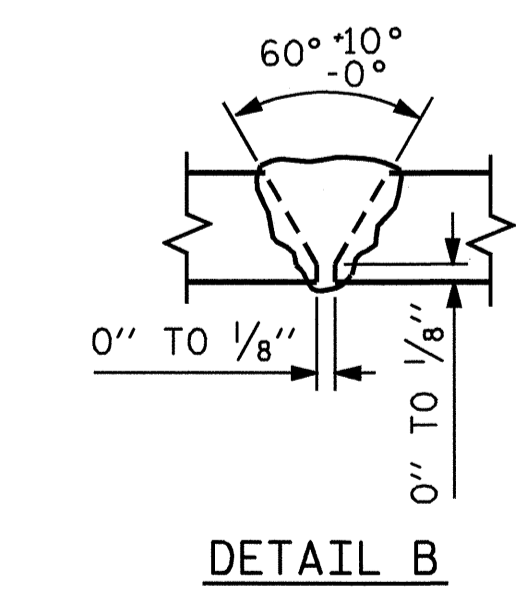
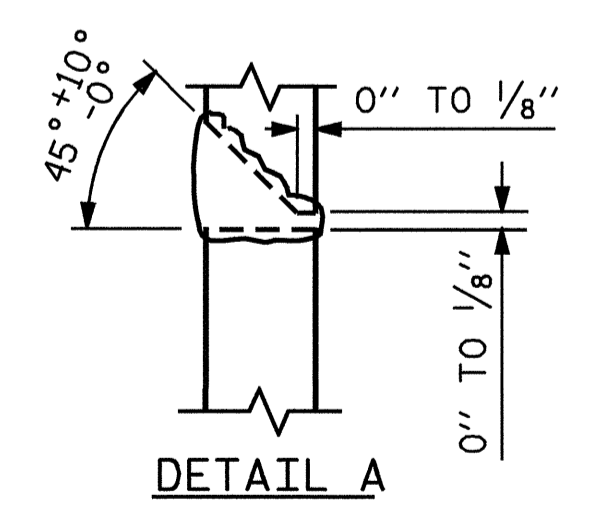
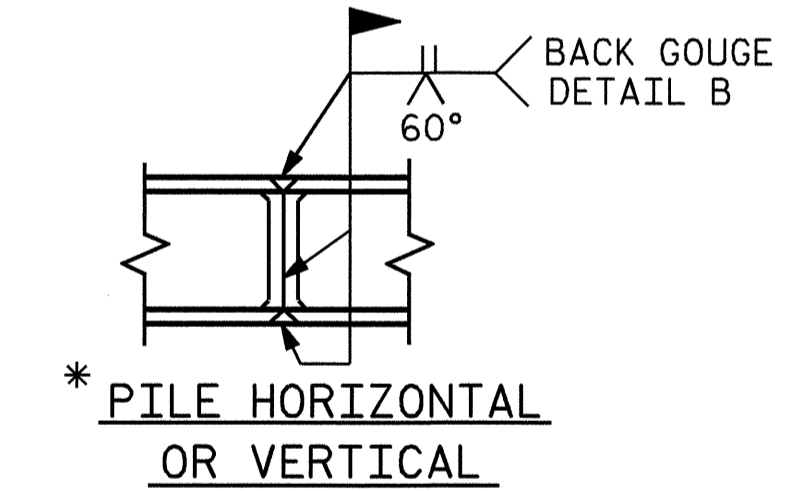
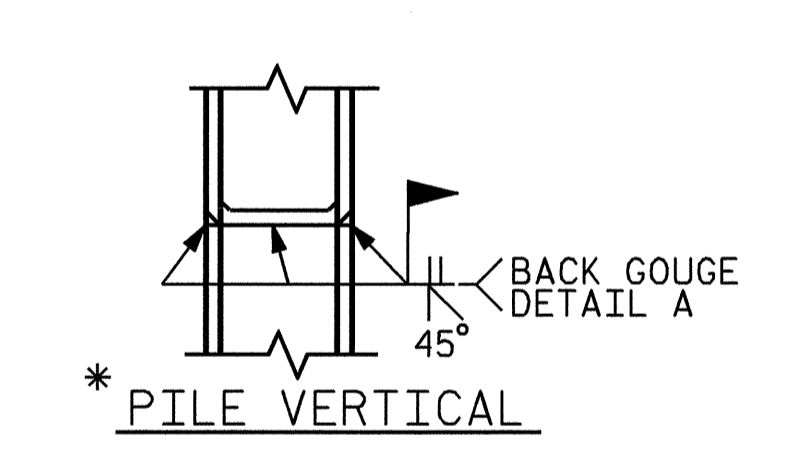


**PLAN**



**ELEVATION**

**LATERAL GUIDE DETAILS**



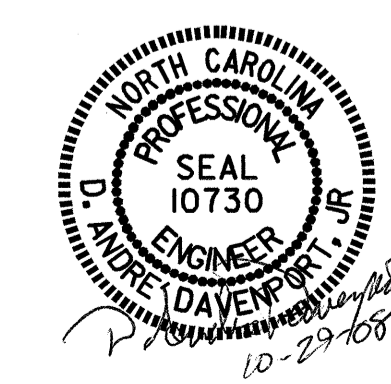
**PILE SPLICE DETAILS**

\* POSITION OF PILE DURING WELDING.

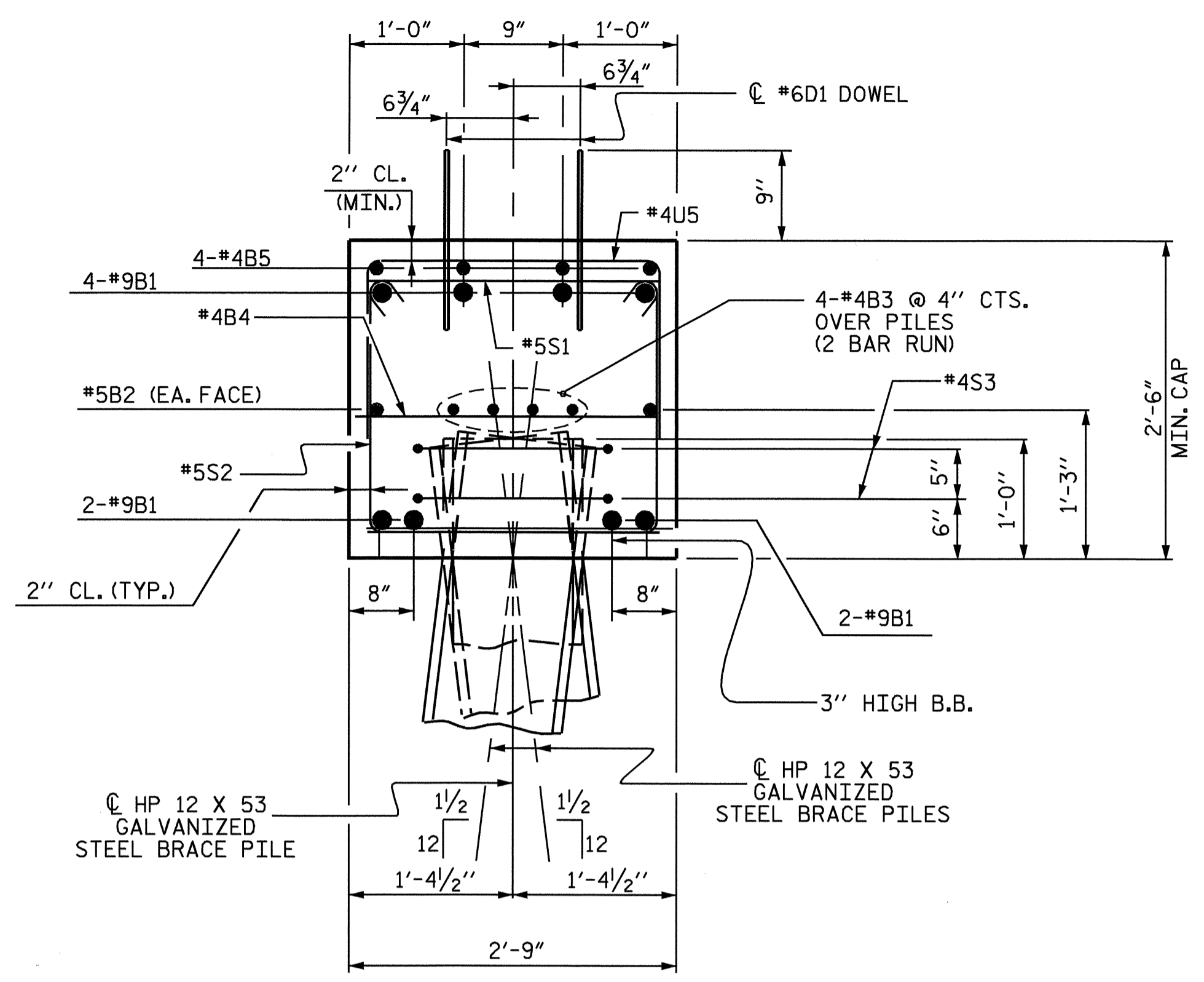
PROJECT NO. B-4303  
WAKE COUNTY  
 STATION: 17+71.00-L-  
 SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH				
SUBSTRUCTURE BENT #1				
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	
				TOTAL SHEETS 29

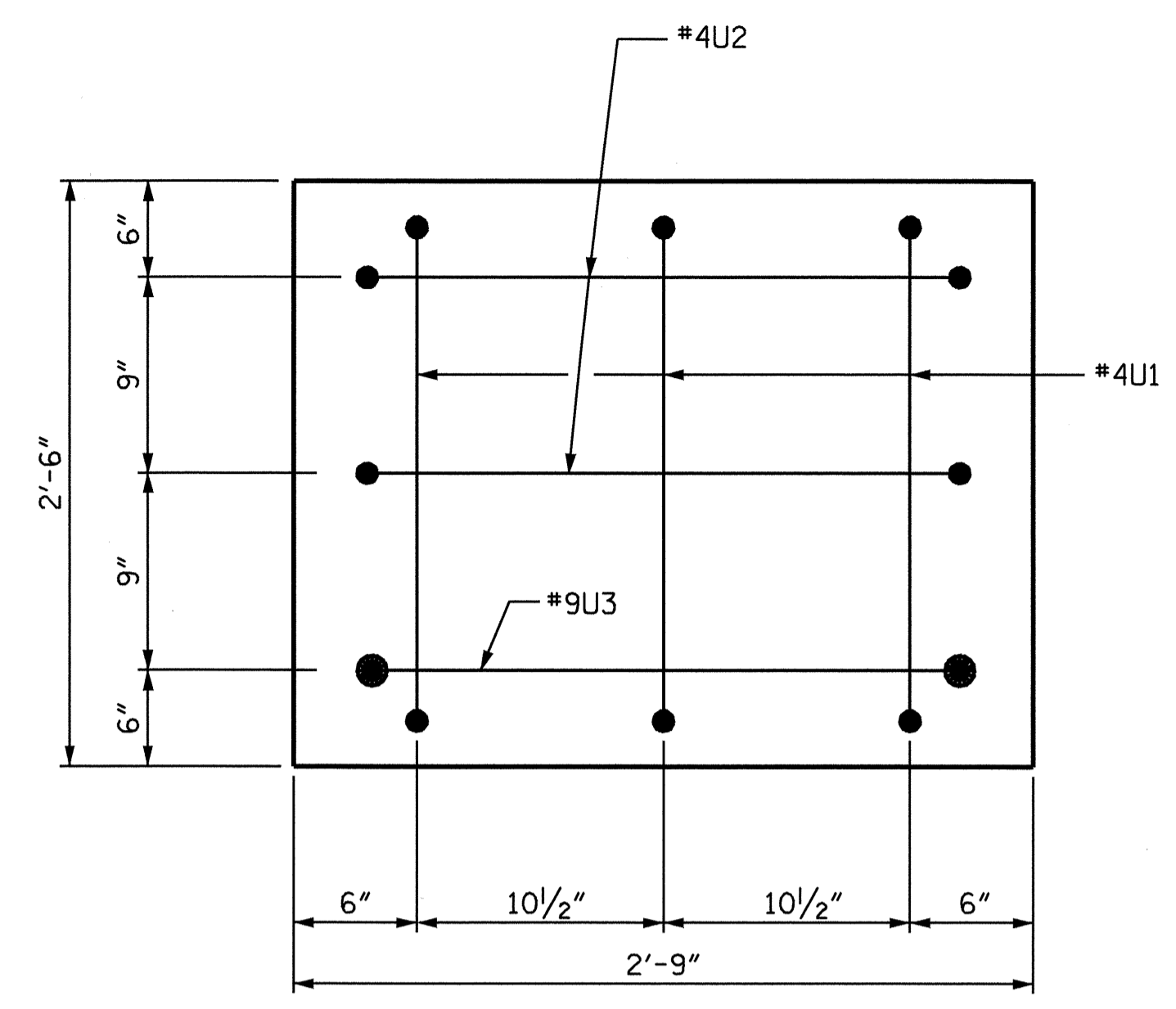
DRAWN BY : D.A. DAVENPORT DATE : 07-08  
 CHECKED BY : D.A. GLADDEN DATE : 10/08





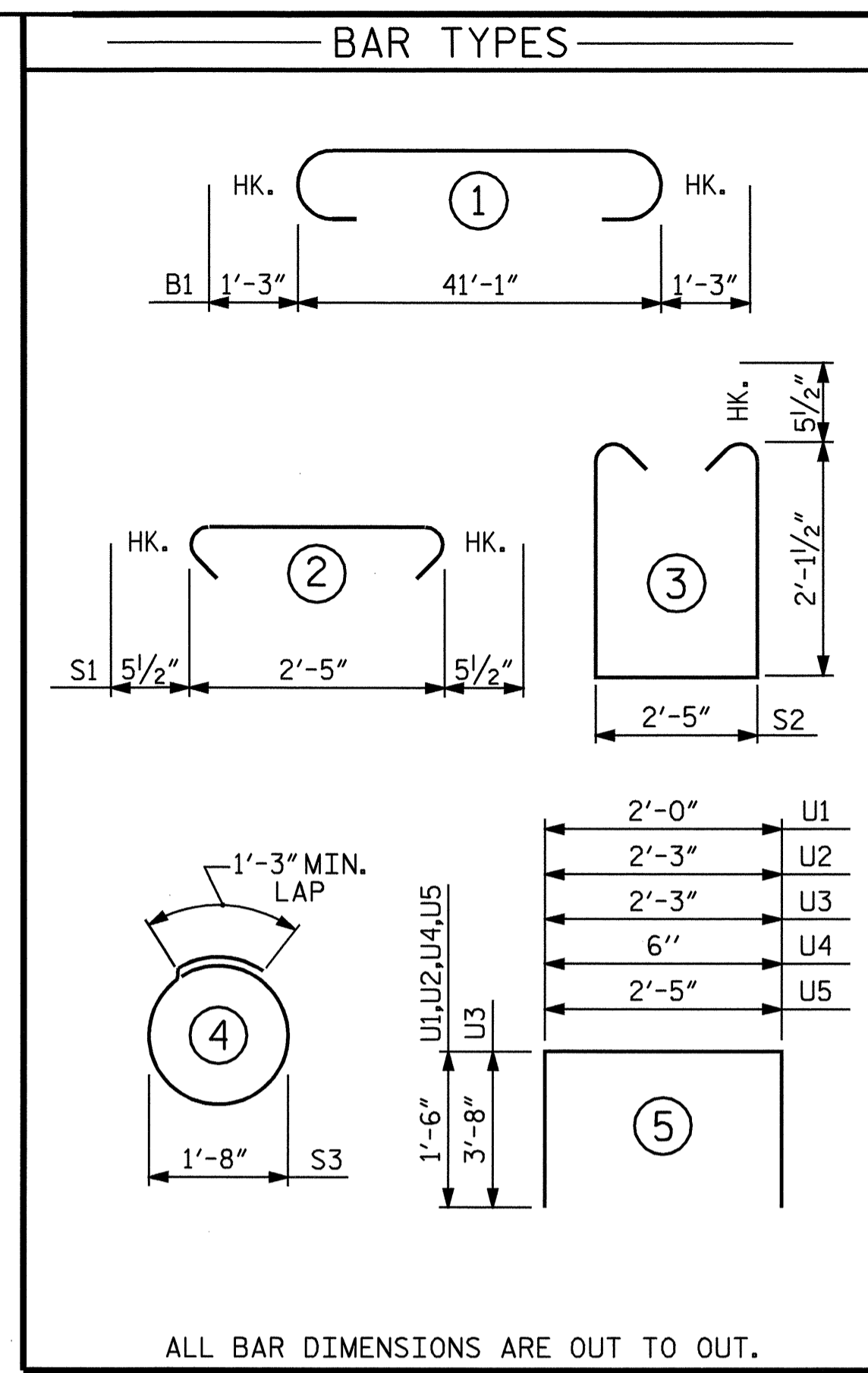


**SECTION A-A**



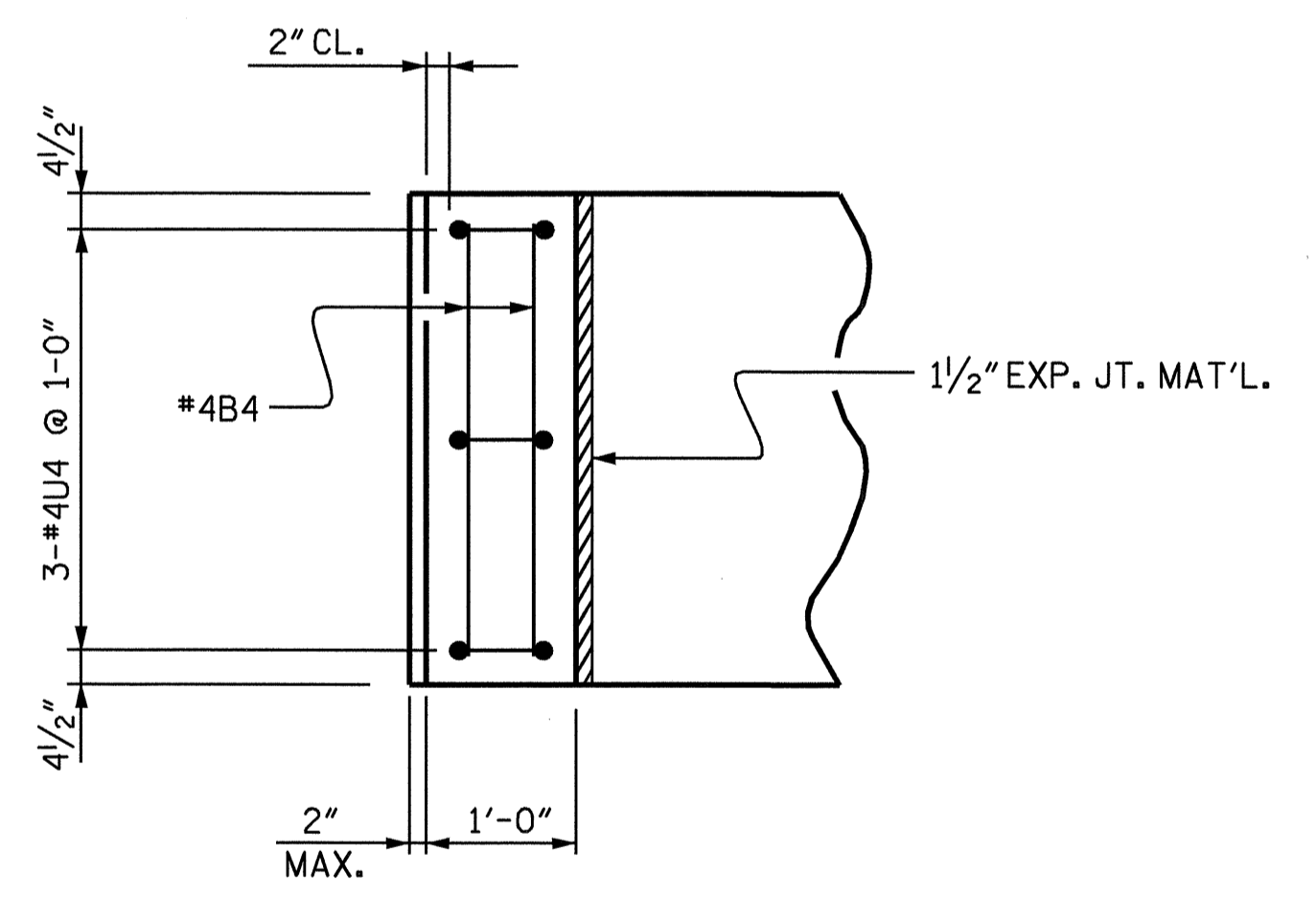
**END VIEW**

2" MIN. CONCRETE COVER FROM END OF CAP  
 REQUIRED FOR ALL #4U1, #4U2 AND #9U3 BARS.  
 #4U1, #4U2 AND #9U3 BARS MAY BE  
 SHIFTED UP TO 2" TO CLEAR "B" BARS.

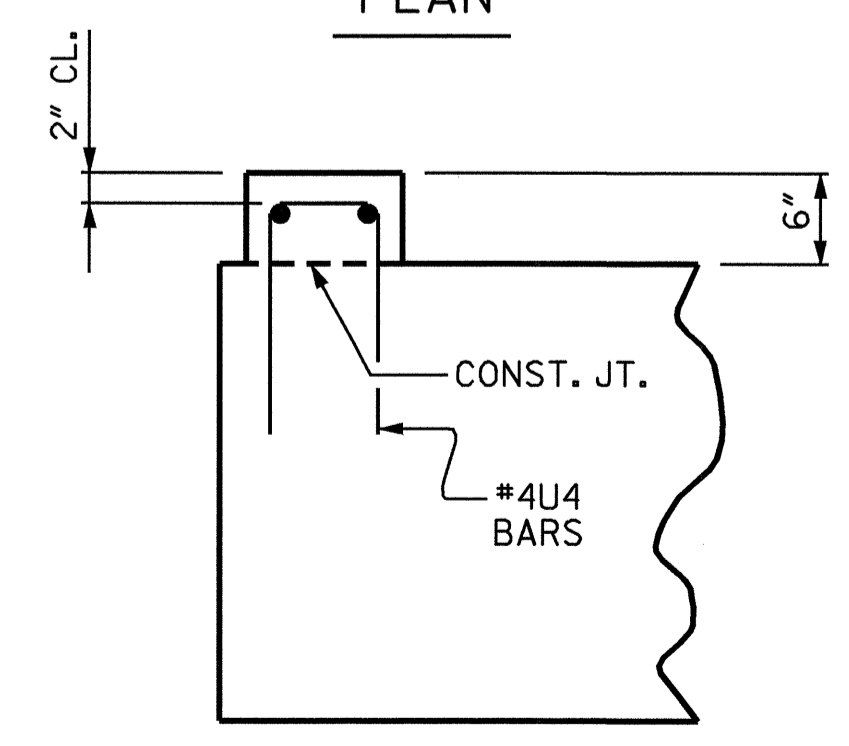


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	43'-7"	1185
B2	2	#5	STR	41'-3"	86
B3	8	#4	STR	21'-10"	117
B4	15	#4	STR	2'-5"	24
B5	4	#4	STR	16'-7"	44
D1	52	#6	STR	1'-6"	117
S1	37	#5	2	3'-4"	129
S2	37	#5	3	7'-7"	293
S3	16	#4	4	6'-6"	69
U1	6	#4	5	5'-0"	20
U2	4	#4	5	5'-3"	14
U3	2	#9	5	9'-7"	65
U4	6	#4	5	3'-6"	14
U5	11	#4	5	5'-5"	40
REINFORCING STEEL					= 2217 LBS
CLASS A CONCRETE				POUR #1 CAP	CU. YDS. 11.5
POUR #2 LATERAL				GUIDE	CU. YDS. 0.1
TOTAL					CU. YDS. 11.6
HP 12 X 53 GALVANIZED				STEEL PILES	LIN. FT. 200
NO. 8					

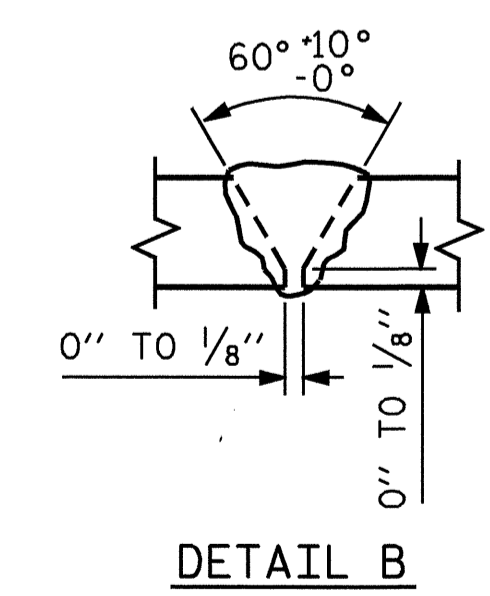
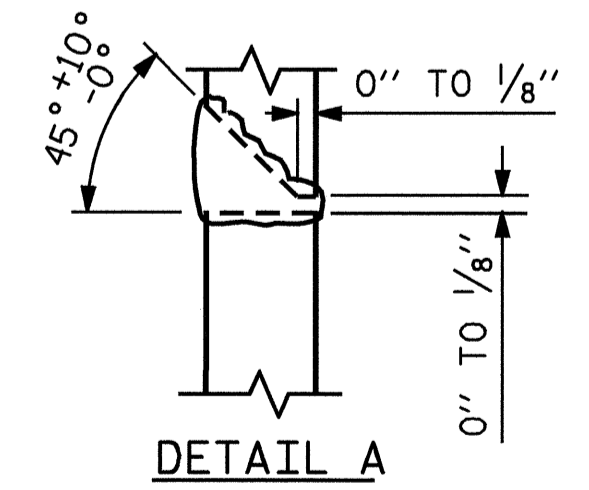
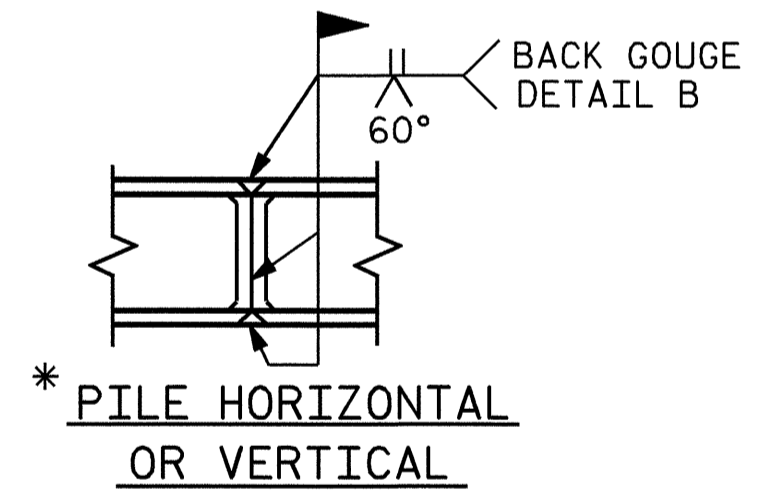
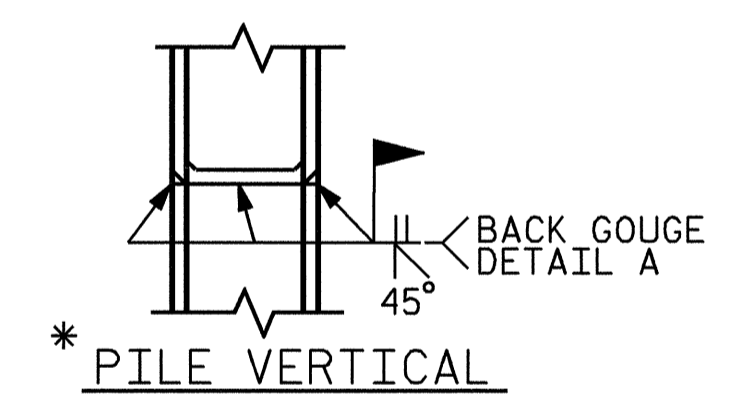


**PLAN**



**ELEVATION**

**LATERAL GUIDE DETAILS**



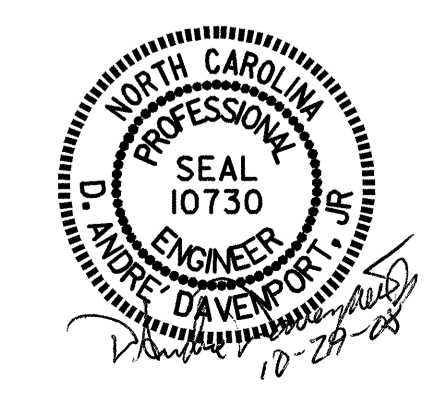
**PILE SPLICE DETAILS**

\* POSITION OF PILE DURING WELDING.

PROJECT NO. B-4303  
WAKE COUNTY  
 STATION: 17+71.00-L-  
 SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE BENT #2**



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

TOTAL SHEETS 29



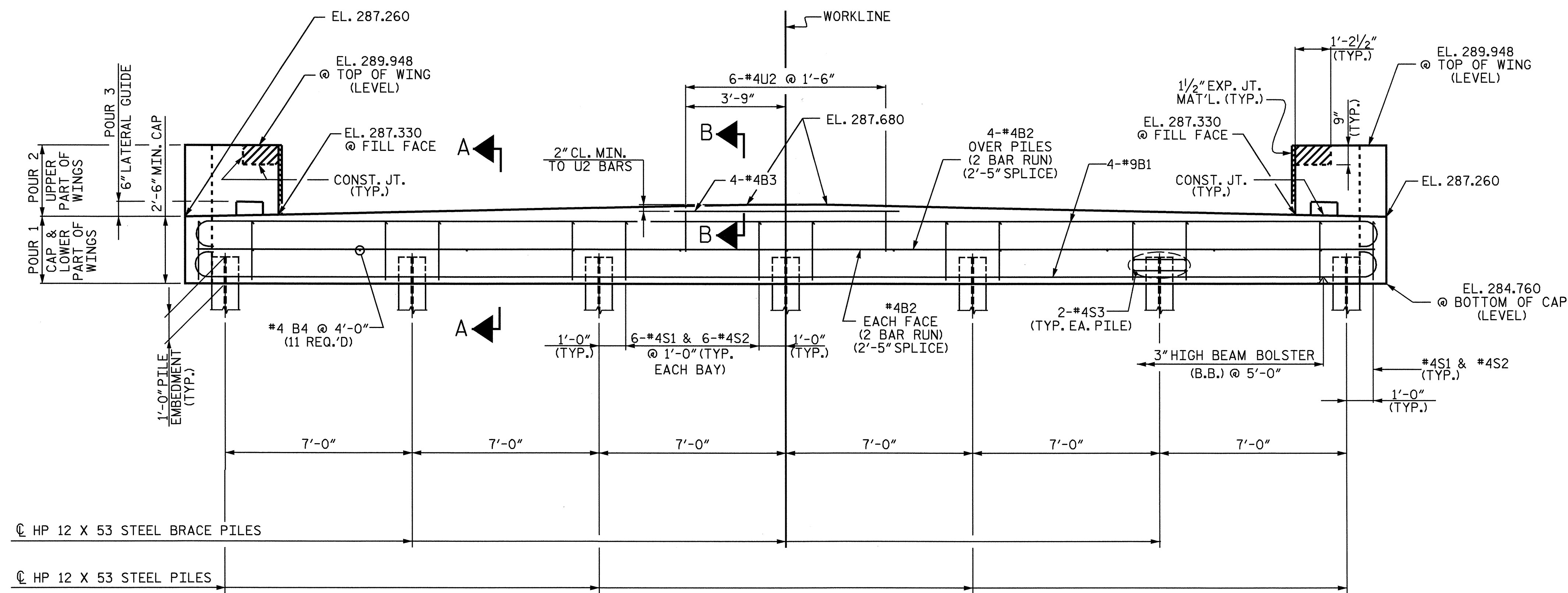
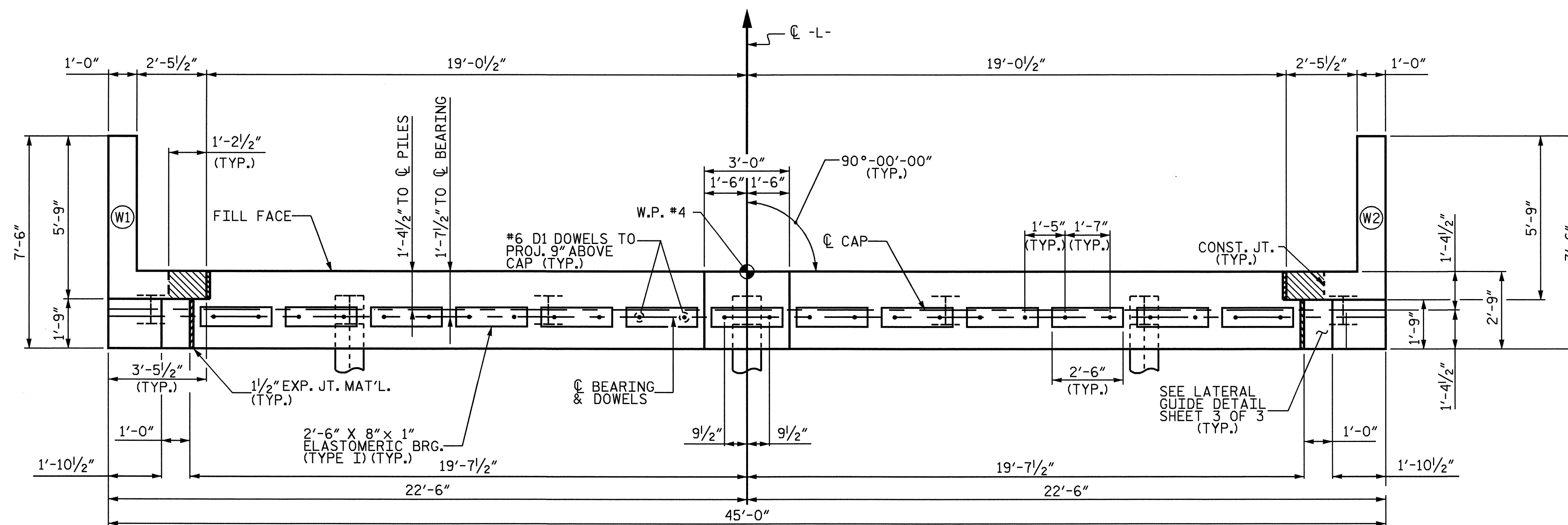
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6 D1 DOWELS.

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

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

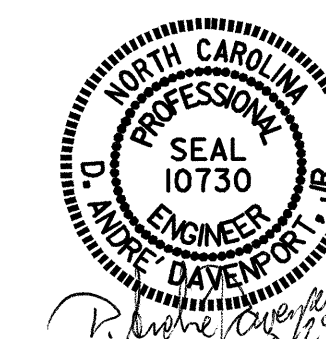


PROJECT NO. B-4303  
WAKE COUNTY  
 STATION: 17+71.00-L-

SHEET 1 OF 3

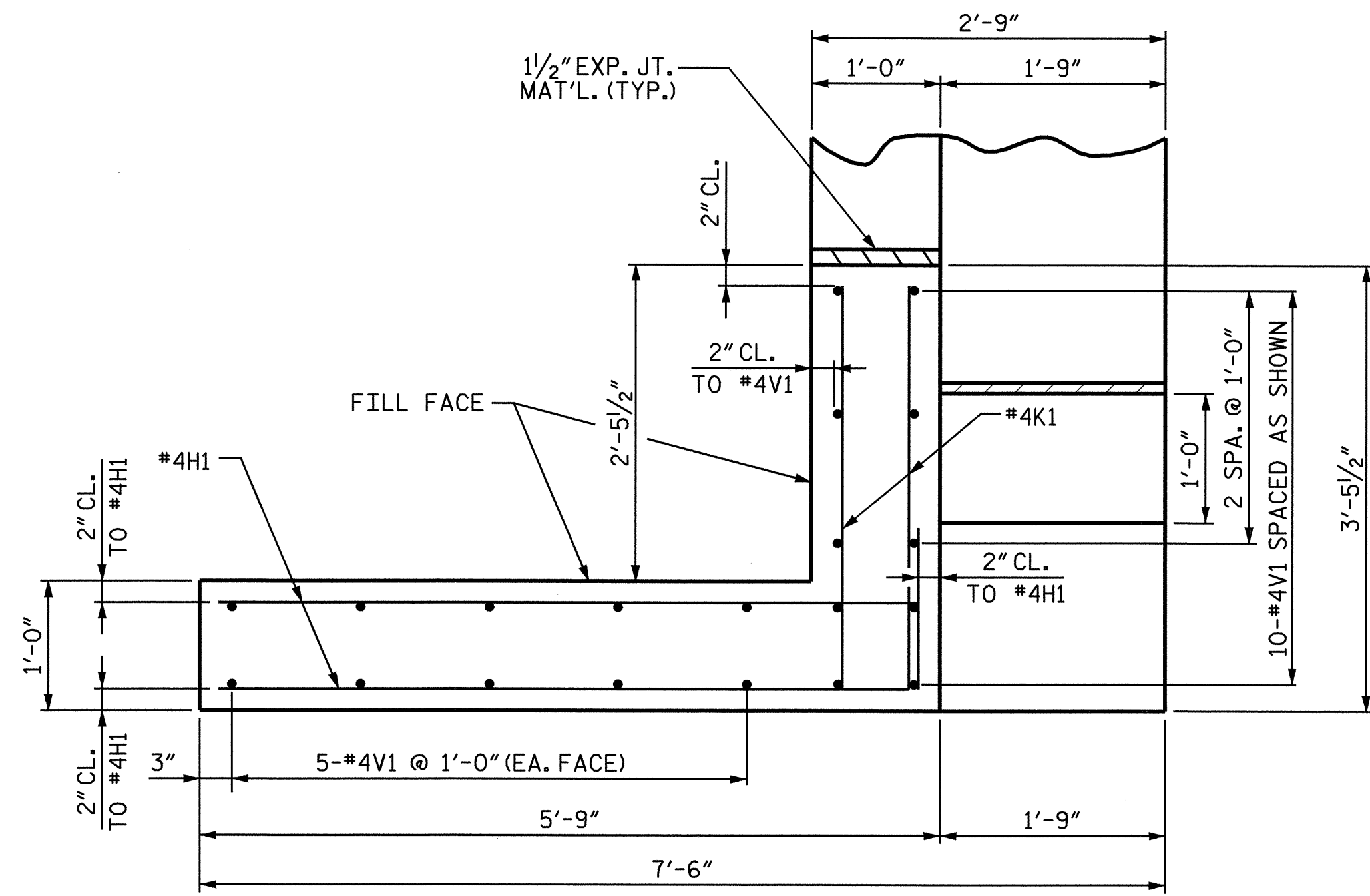
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT #2

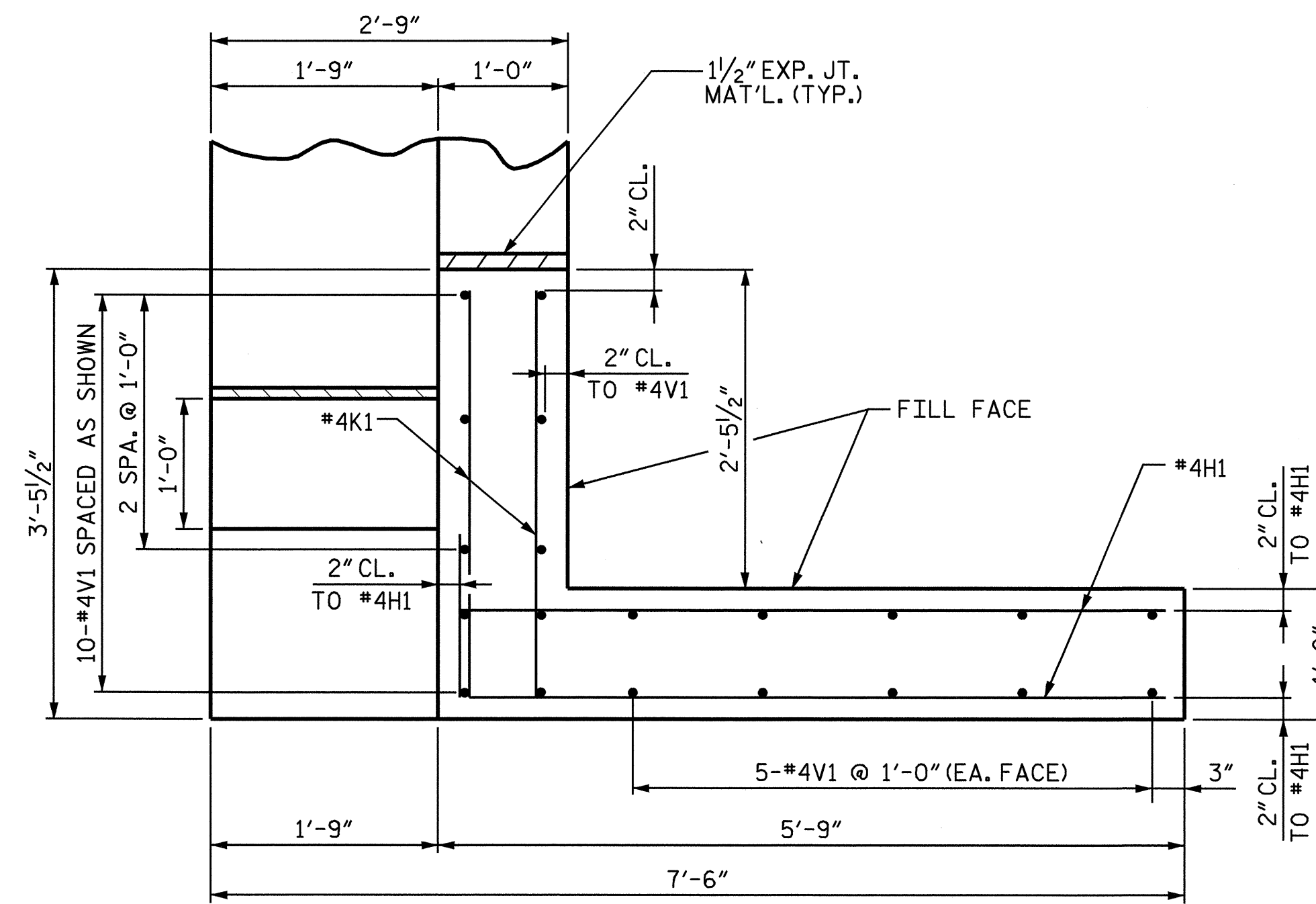


REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24	
1			3			TOTAL SHEETS	29
2			4				

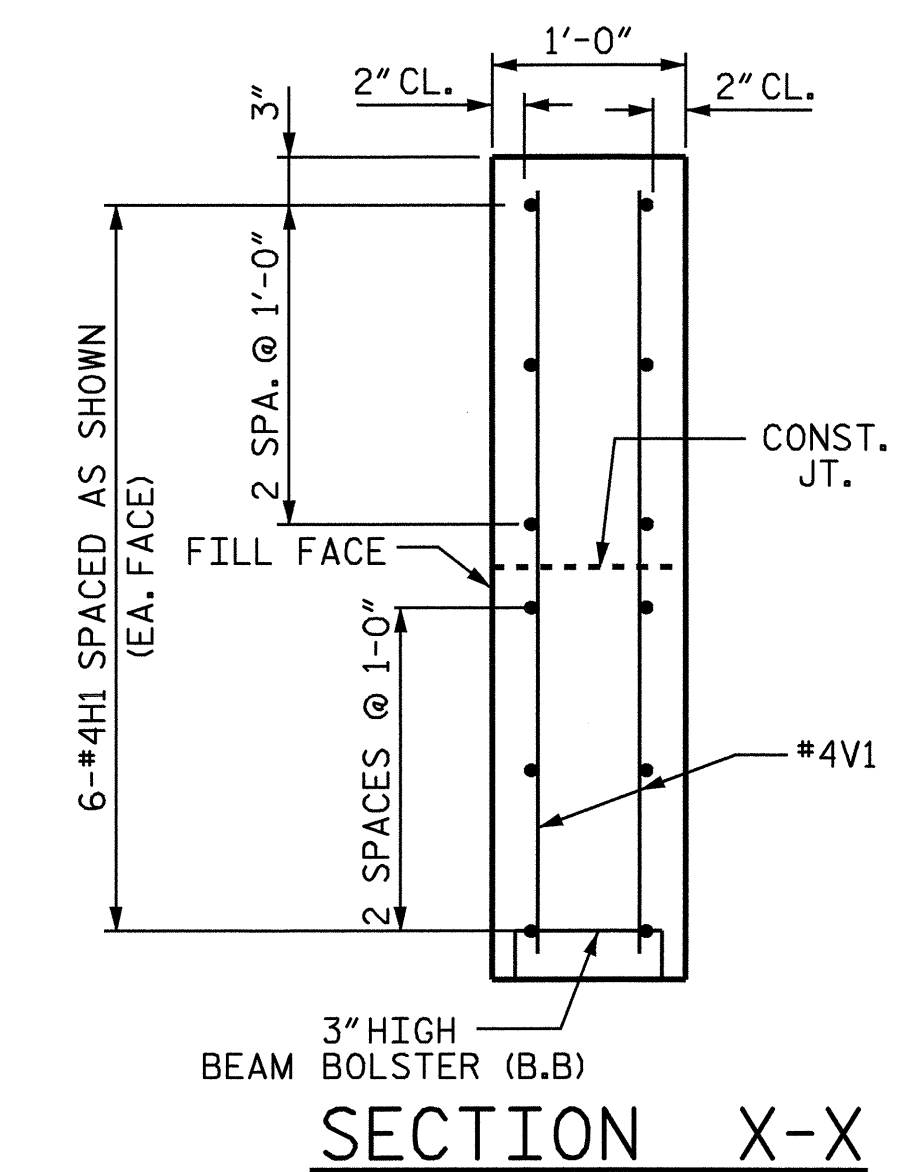
DRAWN BY: D.A. DAVENPORT DATE: 03-08  
 CHECKED BY: D.A. GLADDEN DATE: 03-08



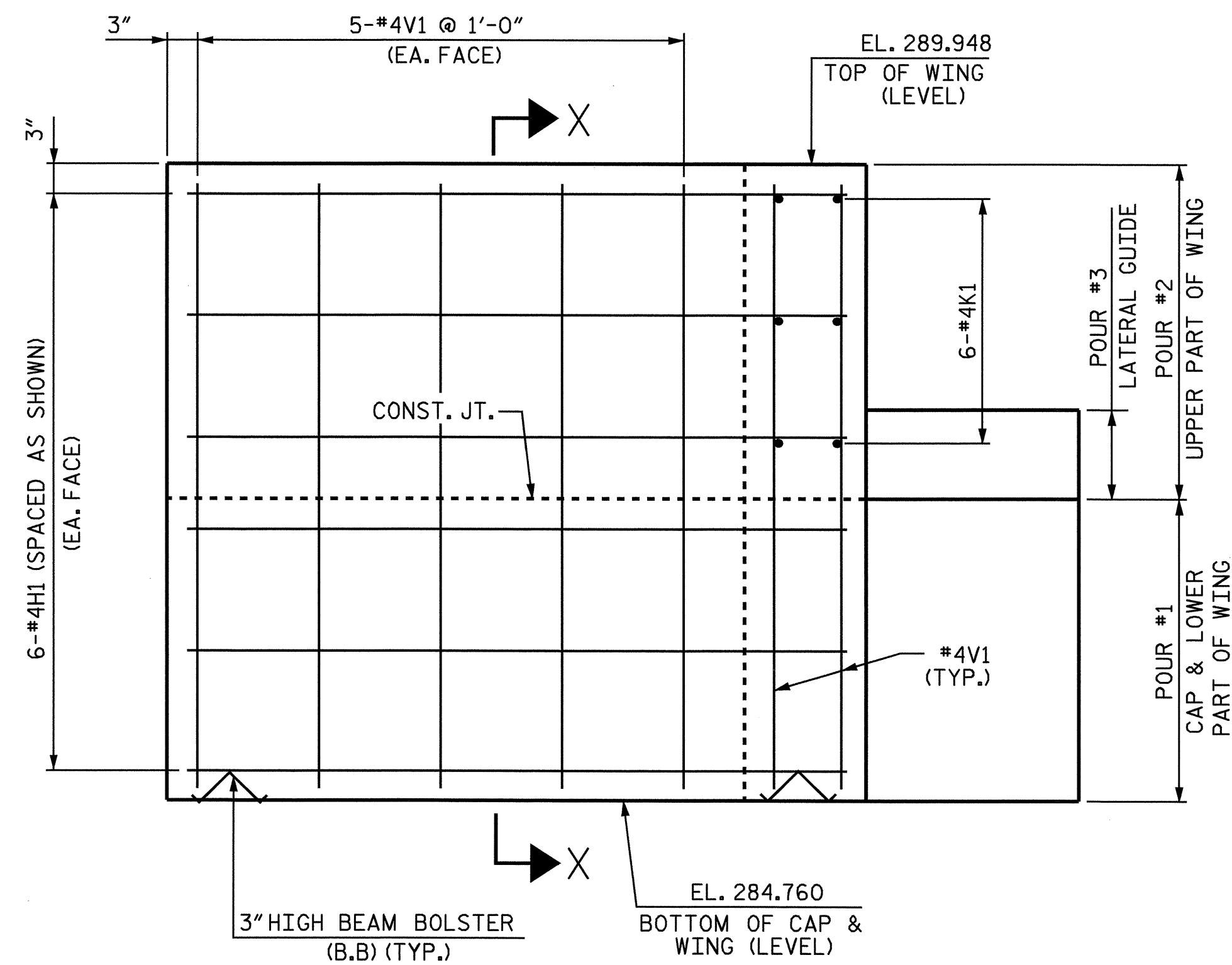
PLAN OF LEFT WING (W1)



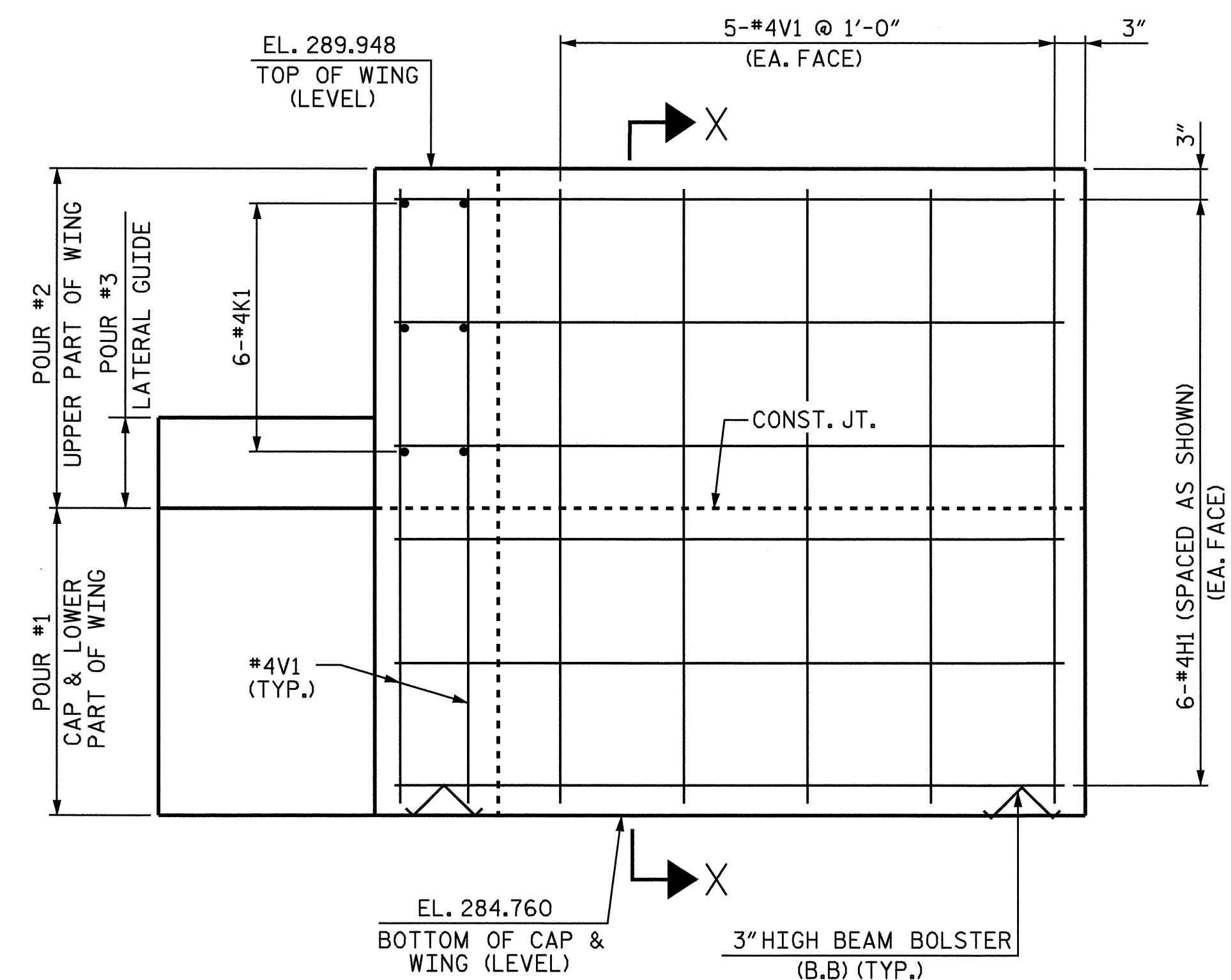
PLAN OF RIGHT WING (W2)



SECTION X-X



ELEVATION OF LEFT WING (W1)



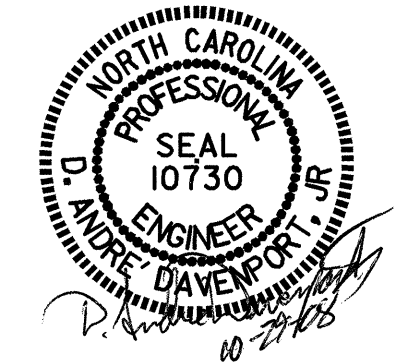
ELEVATION OF RIGHT WING (W2)

PROJECT NO. B-4303  
 WAKE COUNTY  
 STATION: 17+71.00-L-

SHEET 2 OF 3

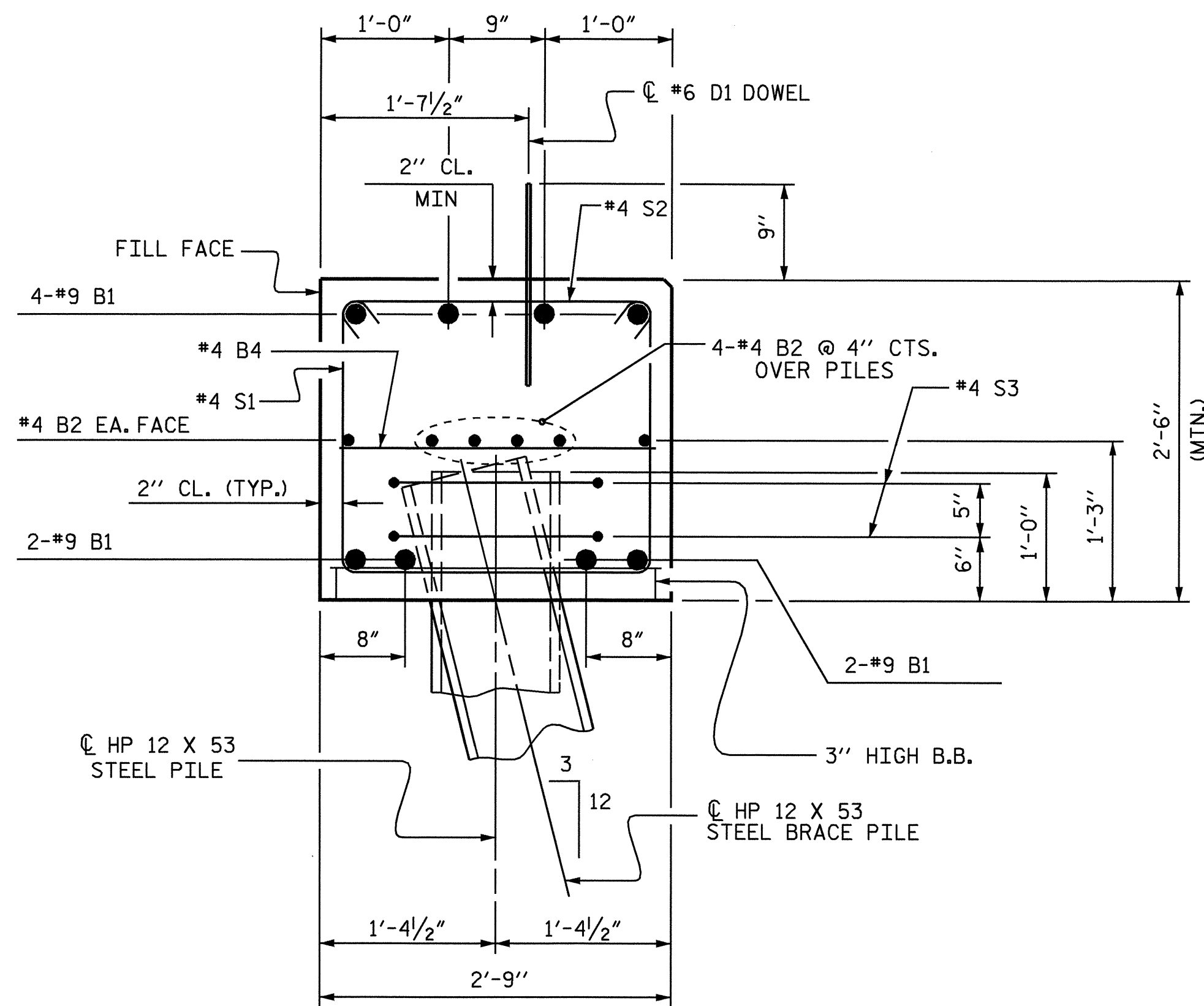
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT #2

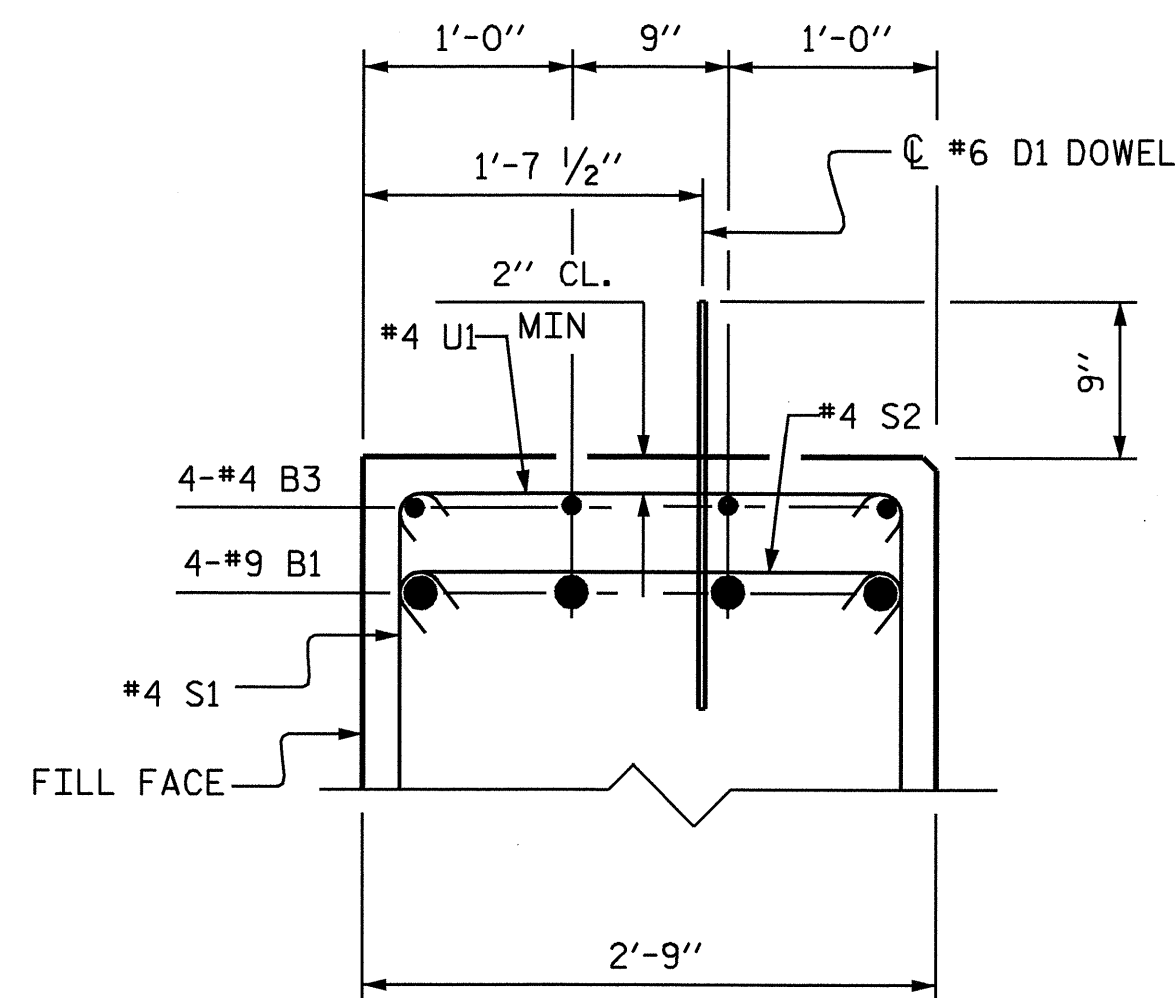


REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25	
1			3			INITIALS	
2			4			29	

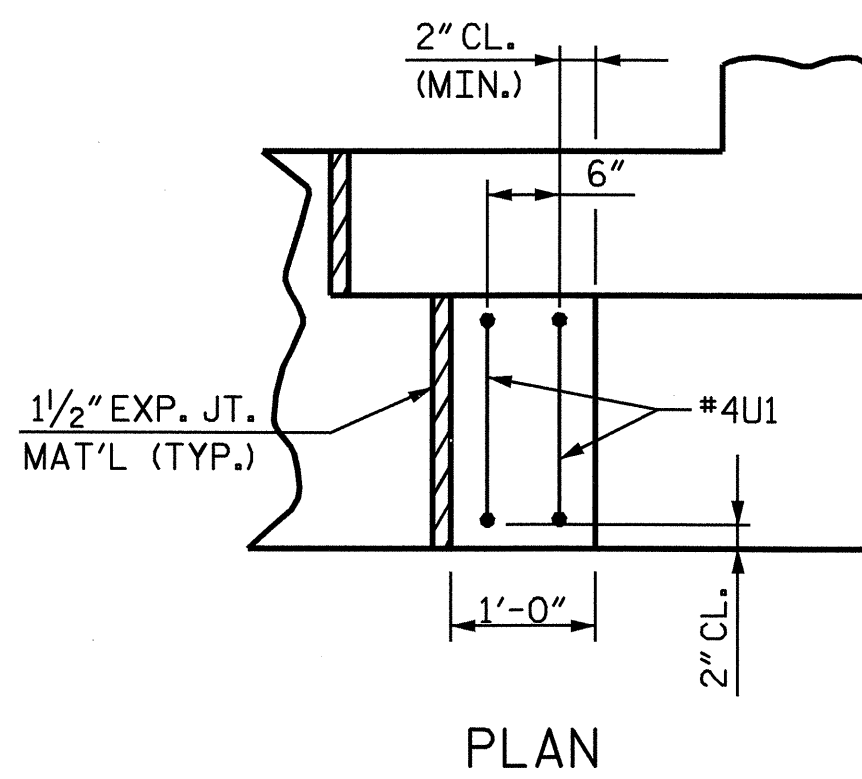
DRAWN BY: D. A. DAVENPORT DATE: 03-08  
 CHECKED BY: D. A. GLADDEN DATE: 03-08



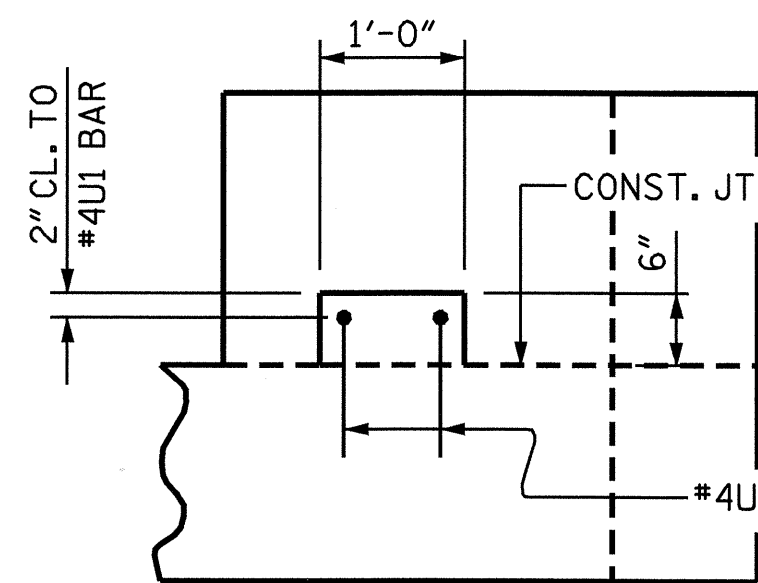
SECTION A-A



SECTION B-B



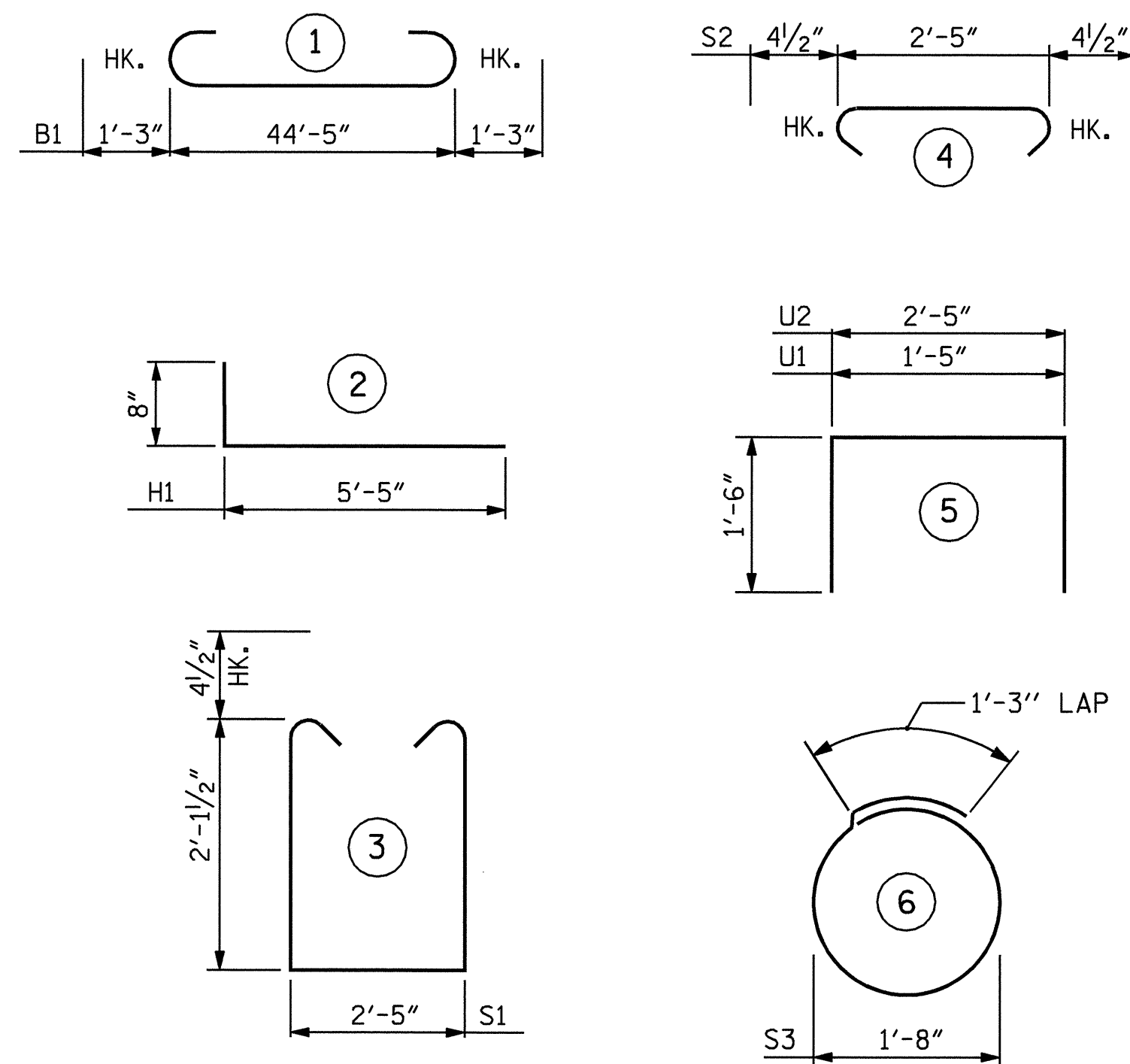
PLAN



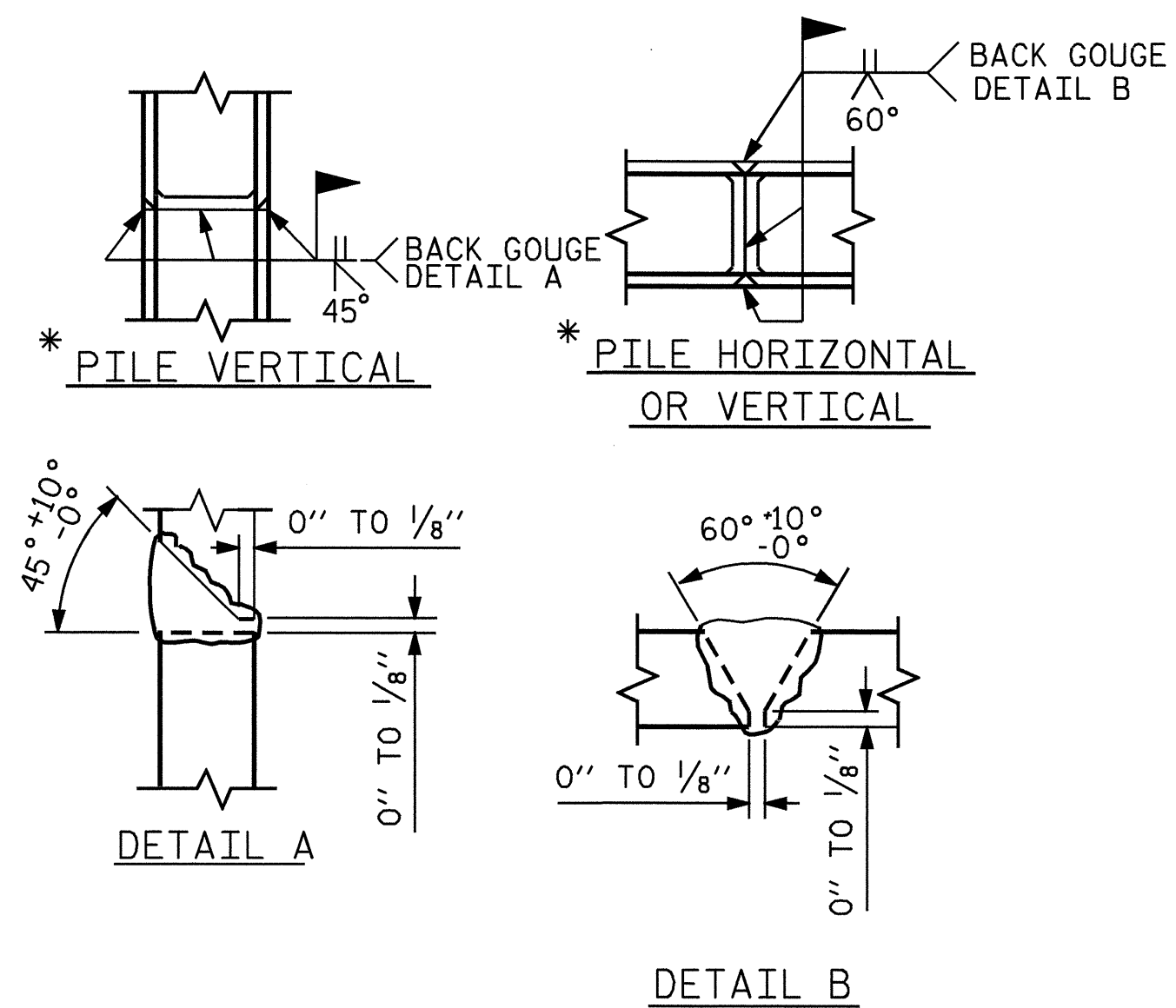
ELEVATION

LATERAL GUIDE

(TYPICAL EACH SIDE)

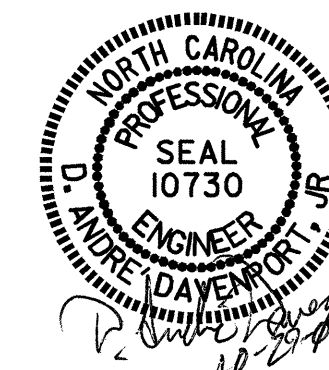


ALL BAR DIMENSIONS ARE OUT TO OUT.



PILE SPLICE DETAILS

\* POSITION OF PILE DURING WELDING.



BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	46'-11"	1276
B2	12	#4	STR	23'-7"	189
B3	4	#4	STR	8'-5"	22
B4	11	#4	STR	2'-5"	18
D1	26	#6	STR	1'-6"	59
H1	24	#4	2	6'-1"	98
K1	12	#4	STR.	3'-1"	25
S1	38	#4	3	7'-5"	188
S2	38	#4	4	3'-2"	80
S3	14	#4	6	6'-6"	61
U1	4	#4	5	4'-5"	12
U2	6	#4	5	5'-5"	22
V1	40	#4	STR	4'-10"	129

REINFORCING STEEL LBS = 2179

CLASS A CONCRETE BREAKDOWN

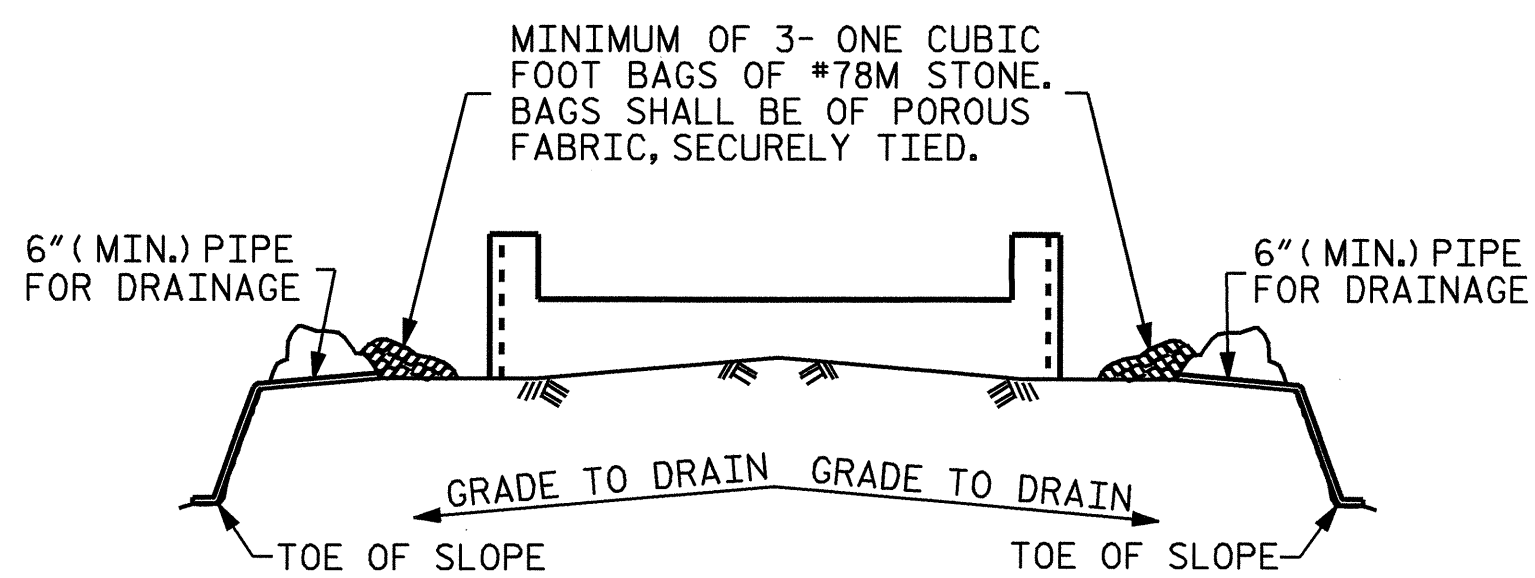
POUR #1 CAP & LOWER PART OF WINGS (C.Y.) 13.4

POUR #2 UPPER PART OF WINGS (C.Y.) 1.6

POUR #3 LATERAL GUIDES (C.Y.) 0.1

TOTAL CLASS A CONCRETE (C.Y.) 15.1

HP 12 X 53 STEEL PILES NO. 7 (LIN FT.) 210



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

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

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

TEMPORARY DRAINAGE AT END BENT

DRAWN BY: D. A. DAVENPORT DATE: 03-08  
CHECKED BY: D. A. GLADDEN DATE: 03-08

10-OCT-2008 07:24  
F:\structures\davenport\B-4303.sd.E\*.dgn  
sstockwell

PROJECT NO. B-4303  
WAKE COUNTY  
STATION: 17+71.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

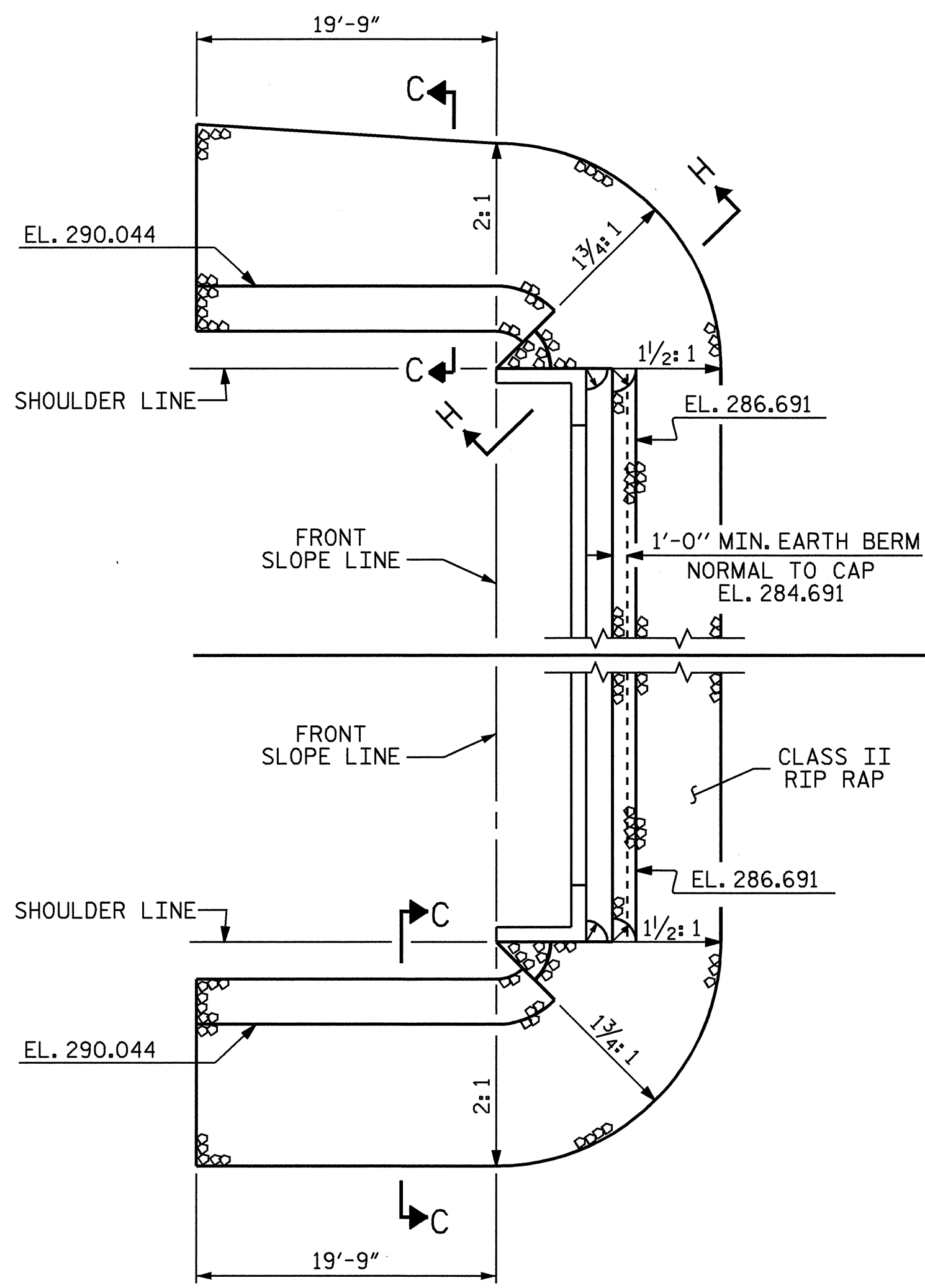
SUBSTRUCTURE  
END BENT#2

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

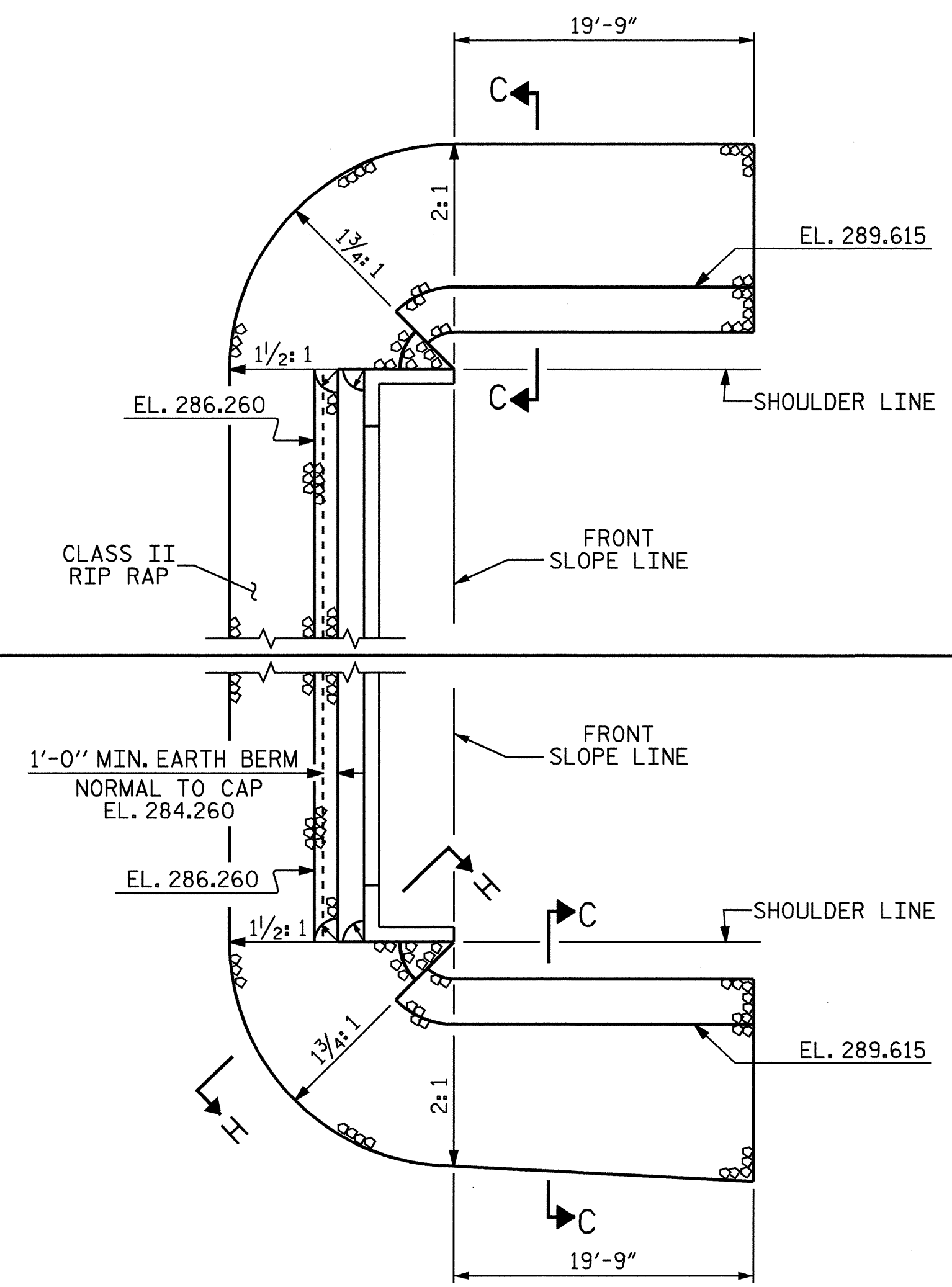
TOTAL SHEETS 29

NC006





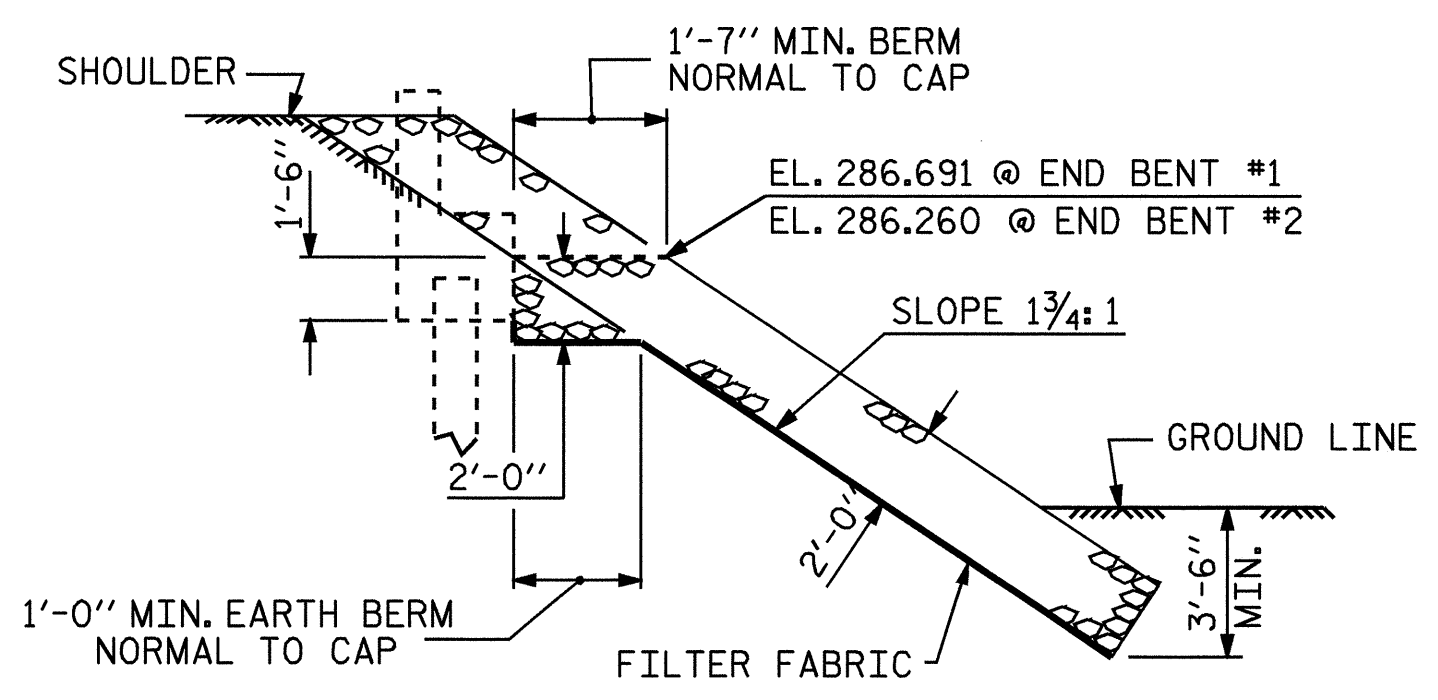
END BENT #1



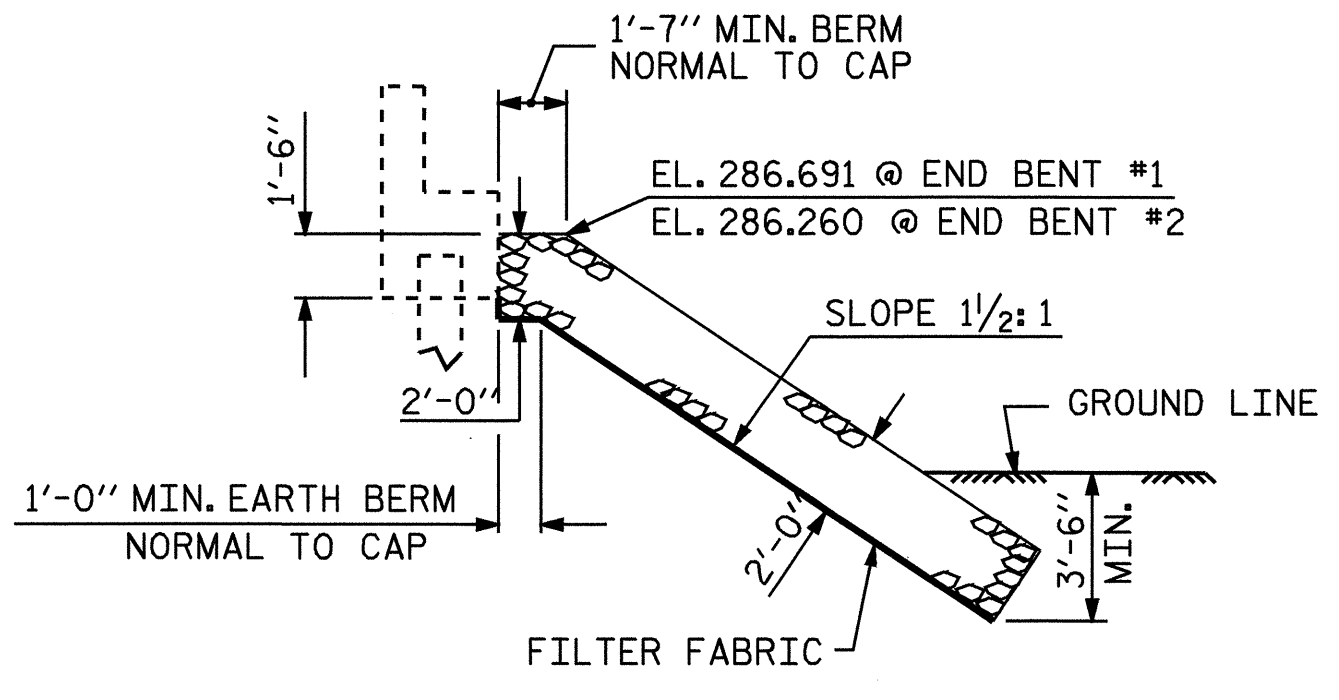
END BENT #2

PLAN

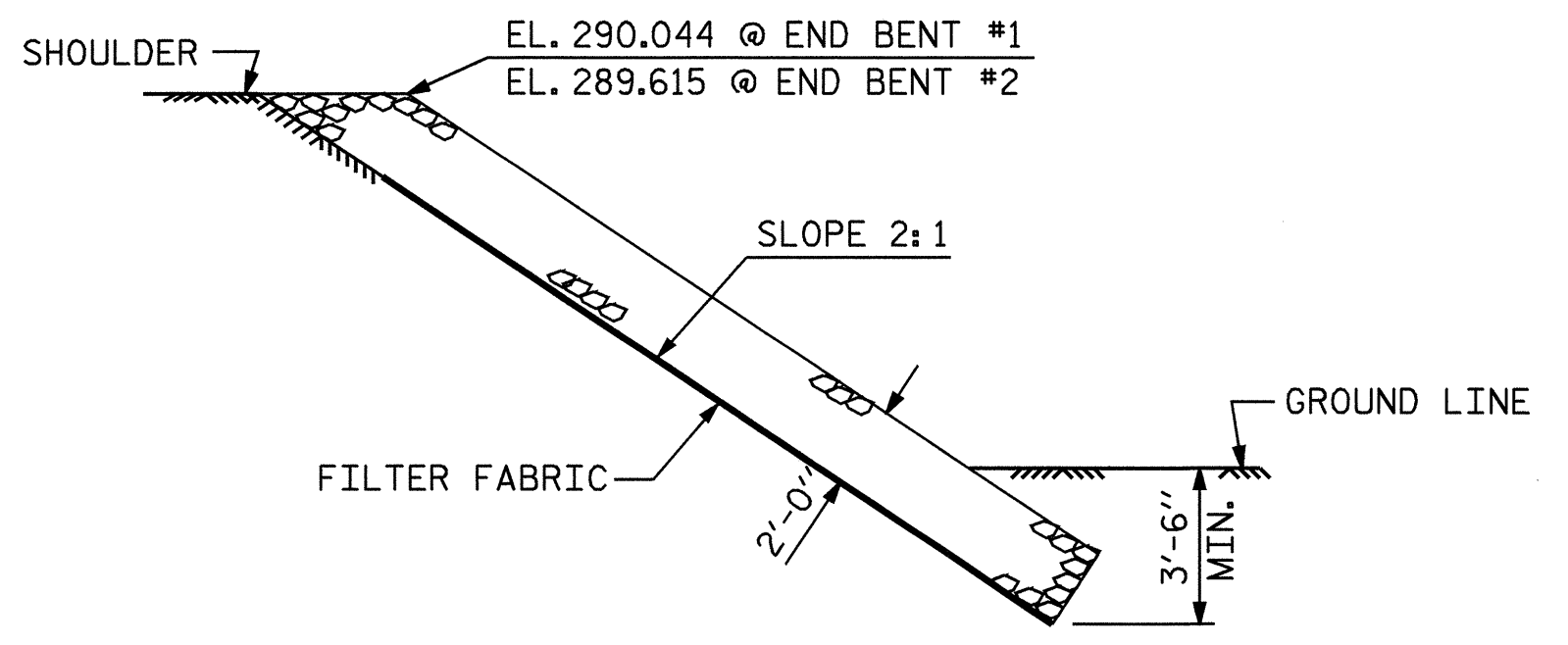
ESTIMATED QUANTITIES		
BRIDGE @ STA. 17+71.00 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	200	225
END BENT 2	180	200
TOTAL	380	425



SECTION H-H



SECTION C-C  
BERM RIP RAPPED



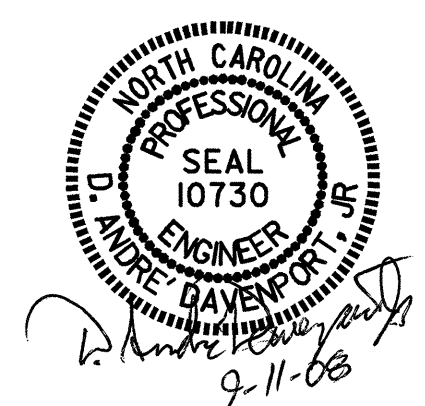
SECTION C-C

PROJECT NO. B-4303  
WAKE COUNTY  
STATION: 17+71.00 -L-

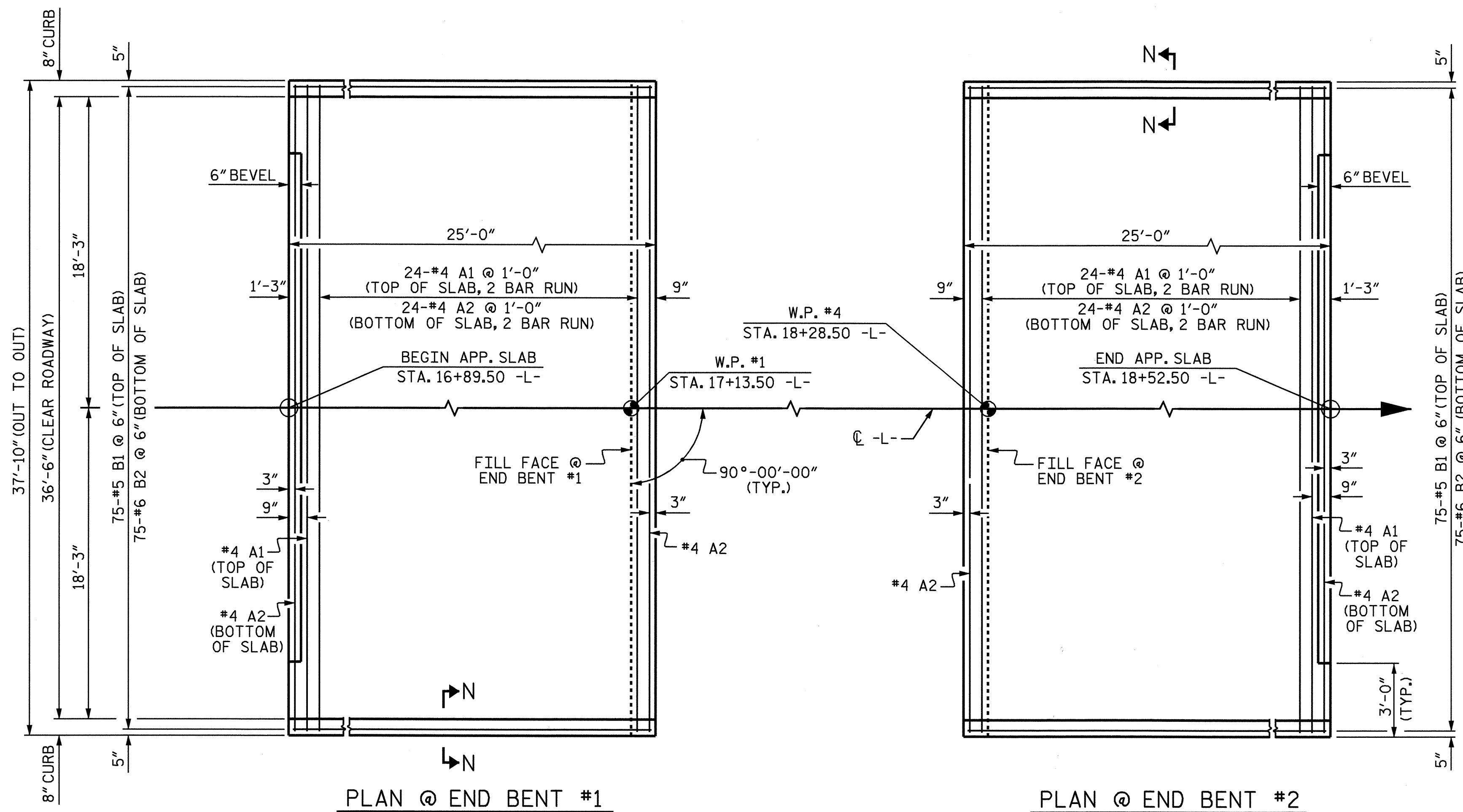
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

== RIP RAP DETAILS ==

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			29



ASSEMBLED BY : M. G. SHAIKH DATE : 3-06-08  
CHECKED BY : A. SORSENGINH DATE : 4-01-08  
DRAWN BY : FCJ 2/88 REV. 8/16/99 RWW/LES  
CHECKED BY : ARB 8/88 REV. 10/17/00 RWW/LES  
REV. 5/1/06 TLA/GM



PLAN @ END BENT #1 PLAN @ END BENT #2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

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 THE APPROACH SLAB.

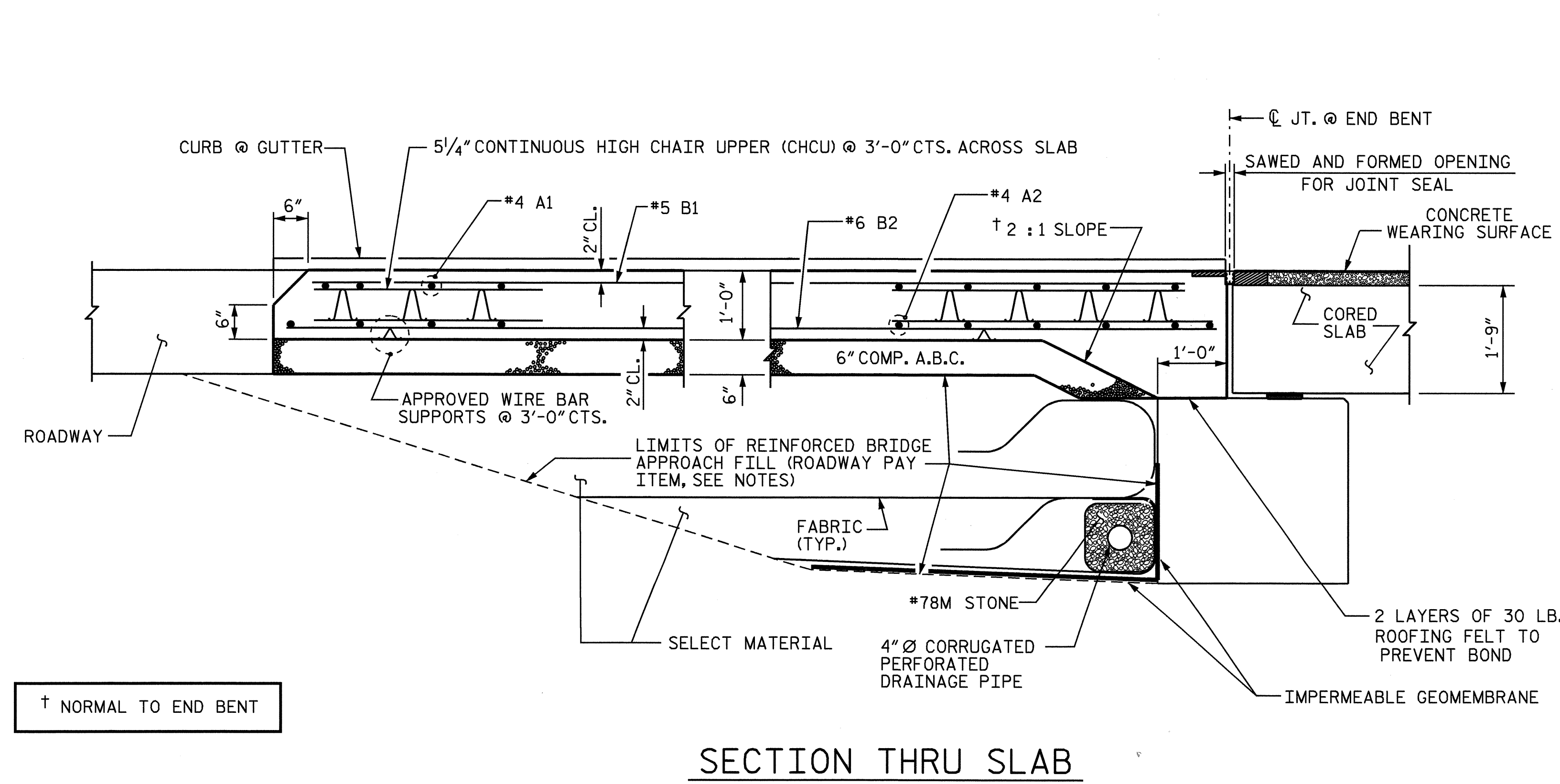
THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

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 BE FLUSH WITH THE ROADWAY 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.

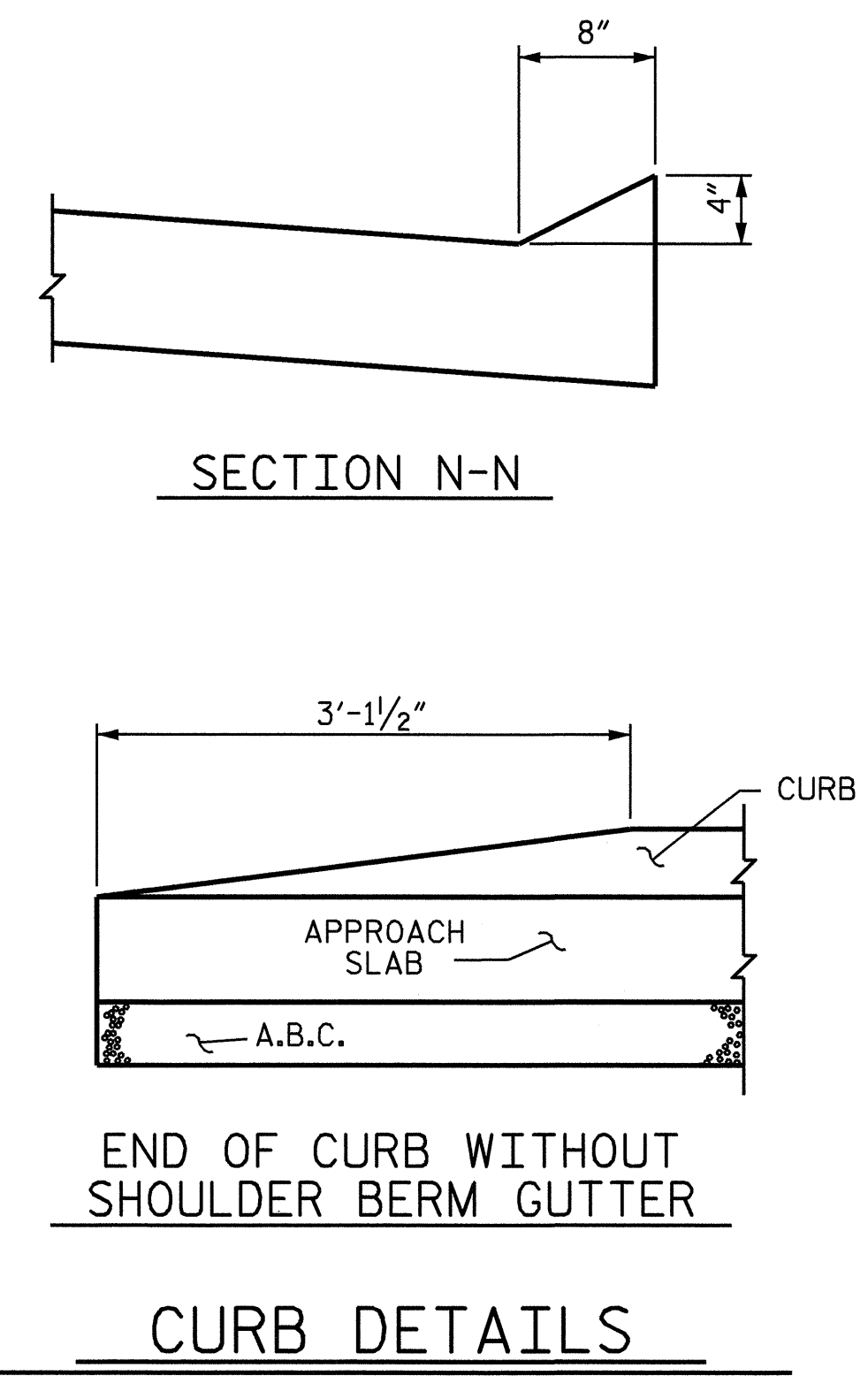
FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS. THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2 1/2".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS. APPROACH SLABS SHALL BE POURED AFTER CONCRETE OVERLAY IS POURED. THE JOINT SHALL BE SAWED AFTER THE CASTING OF THE PARAPET.

BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	50	#4	STR	19'-9"	660
A2	52	#4	STR	19'-8"	683
*B1	75	#5	STR	23'-7"	1845
B2	75	#6	STR	24'-8"	2779
REINFORCING STEEL				LBS.	3462
*EPOXY COATED REINFORCING STEEL				LBS.	2505
CLASS AA CONCRETE				C. Y.	38.9
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	50	#4	STR	19'-9"	660
A2	52	#4	STR	19'-8"	683
*B1	75	#5	STR	23'-7"	1845
B2	75	#6	STR	24'-8"	2779
REINFORCING STEEL				LBS.	3462
*EPOXY COATED REINFORCING STEEL				LBS.	2505
CLASS AA CONCRETE				C. Y.	38.9



SECTION THRU SLAB



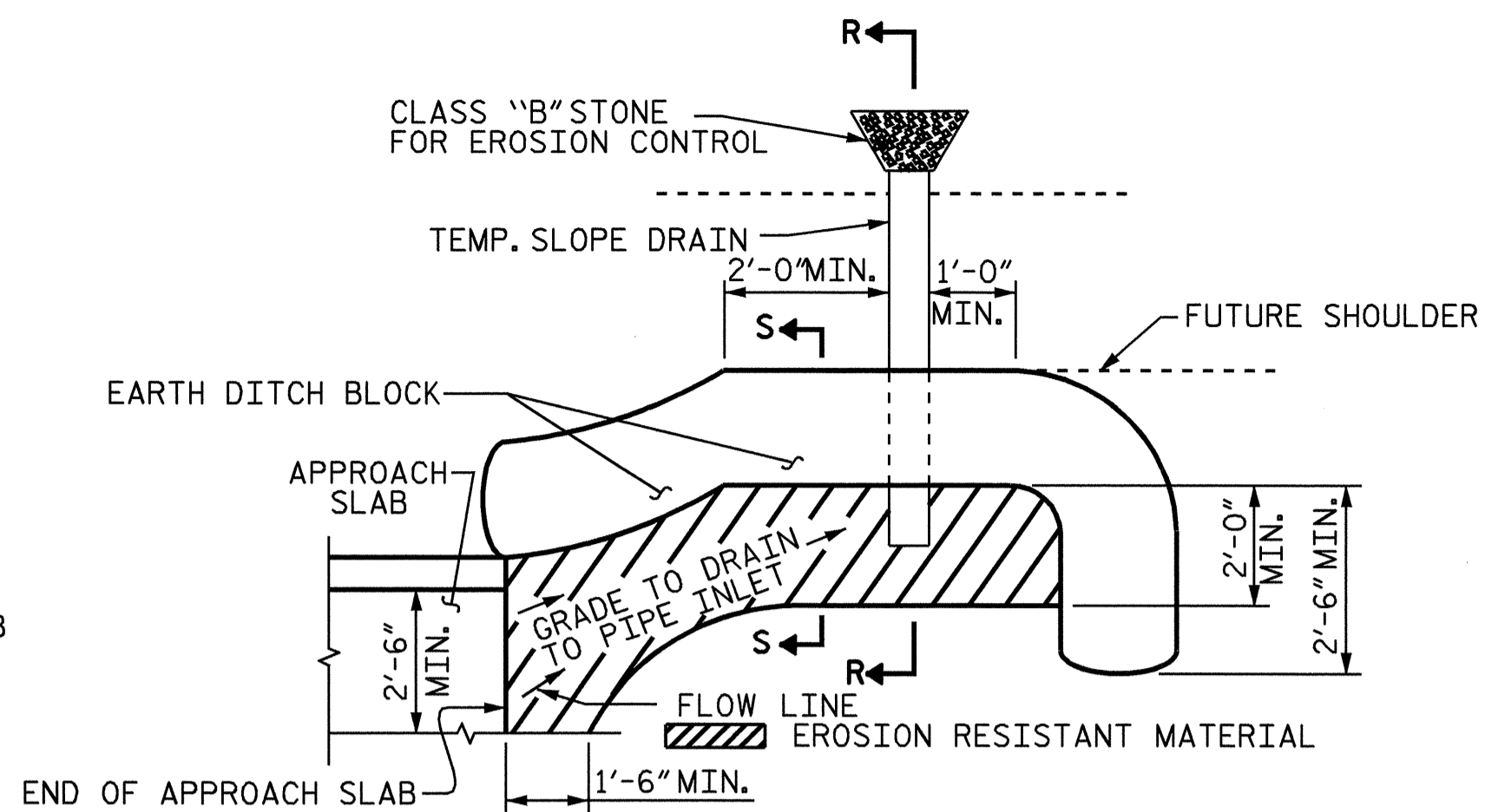
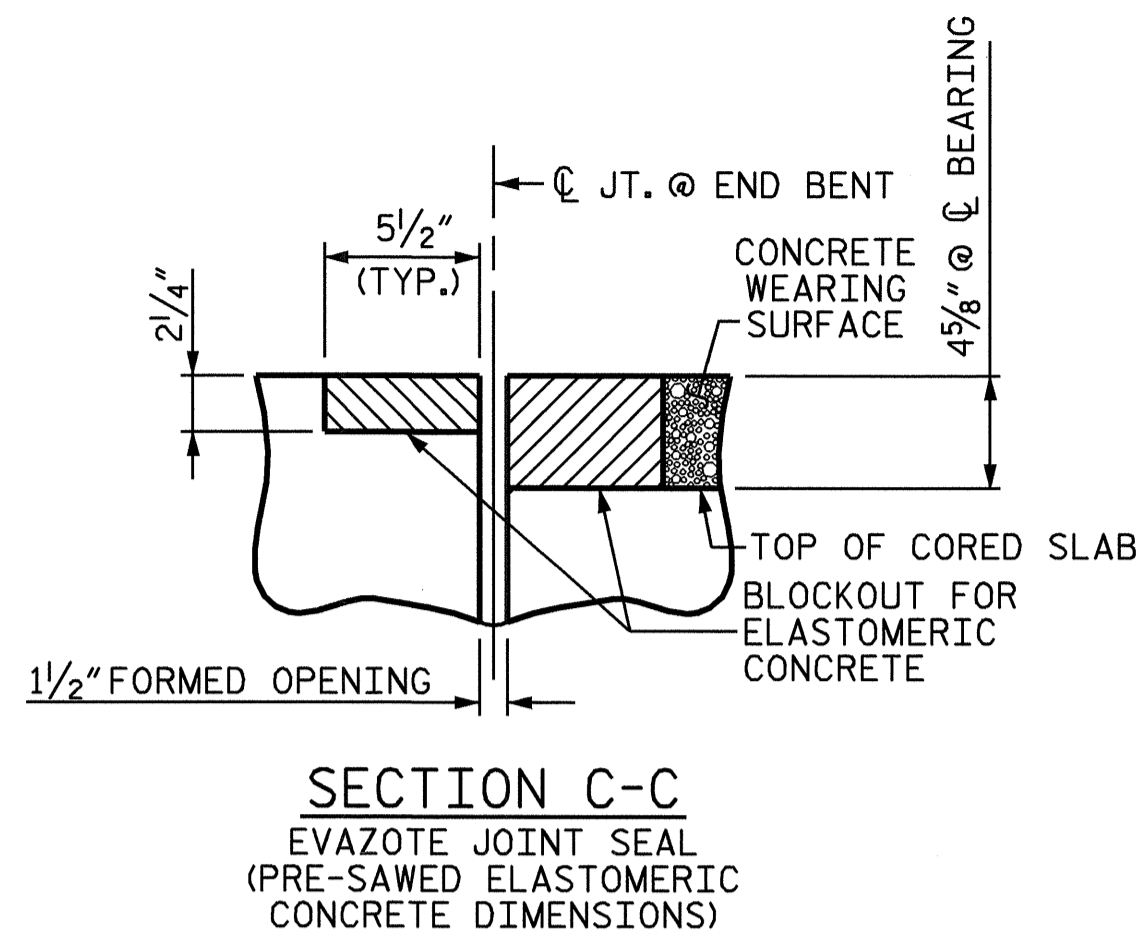
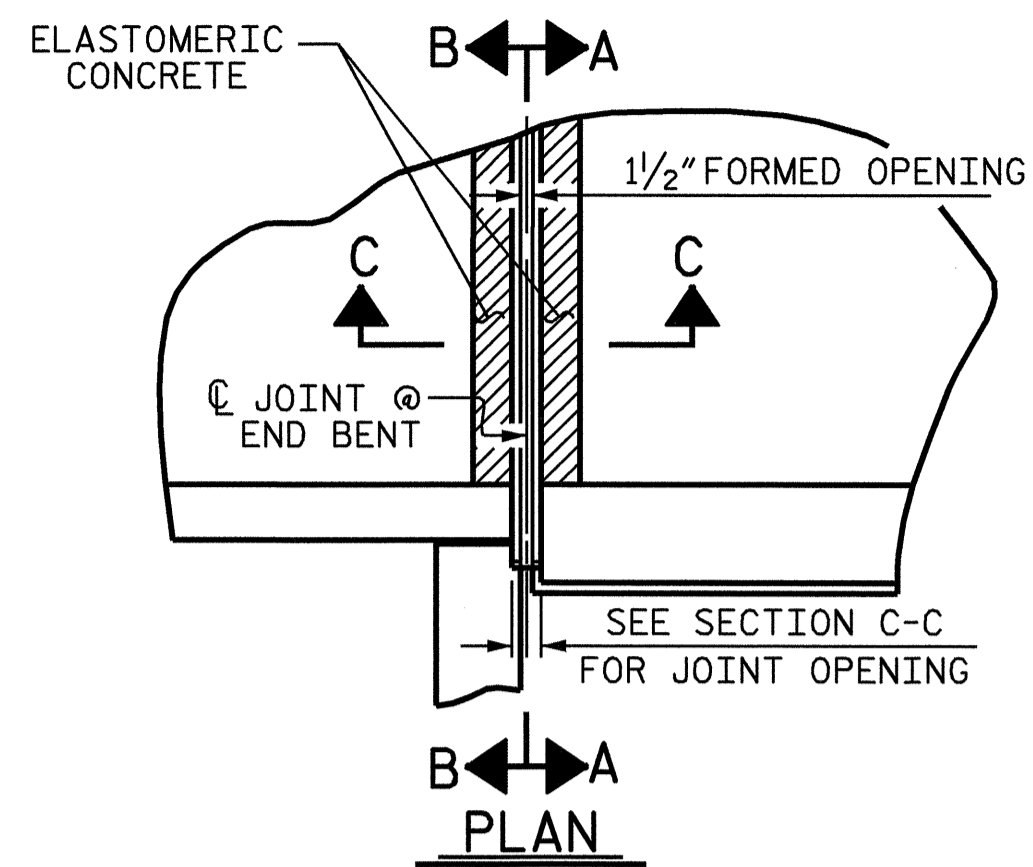
CURB DETAILS

PROJECT NO. B-4303  
 WAKE COUNTY  
 STATION: 17+71.00 -L-

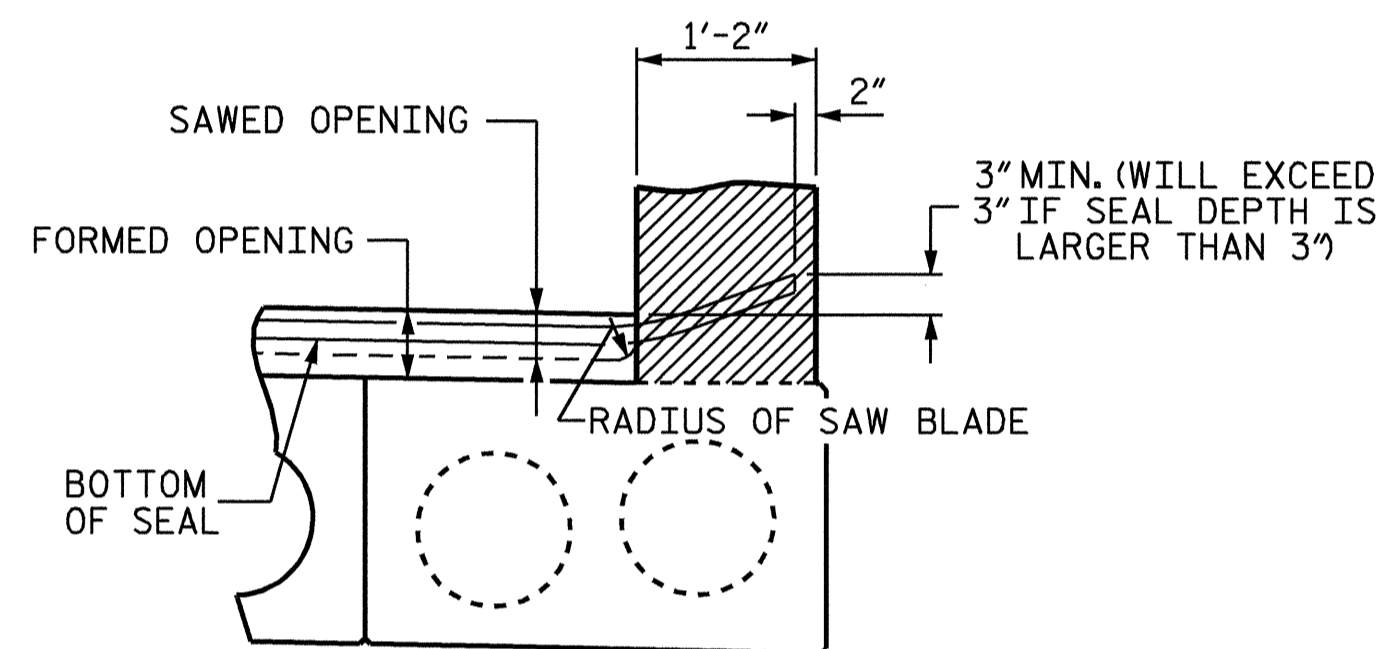
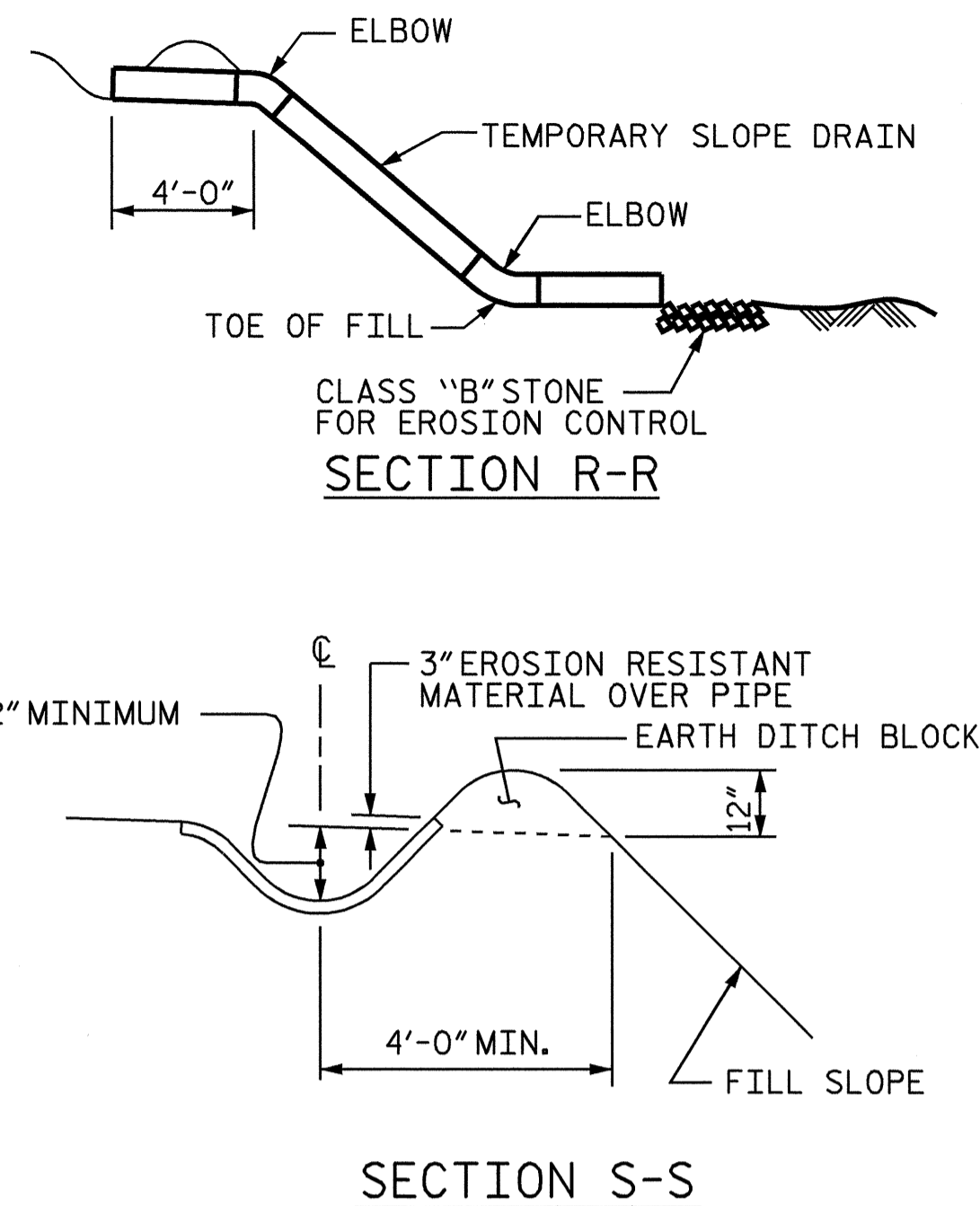
SHEET 1 OF 2  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 BRIDGE APPROACH  
 SLAB FOR PRESTRESSED  
 CONCRETE CORED SLAB

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28	
1			3			TOTAL SHEETS	
2			4			29	

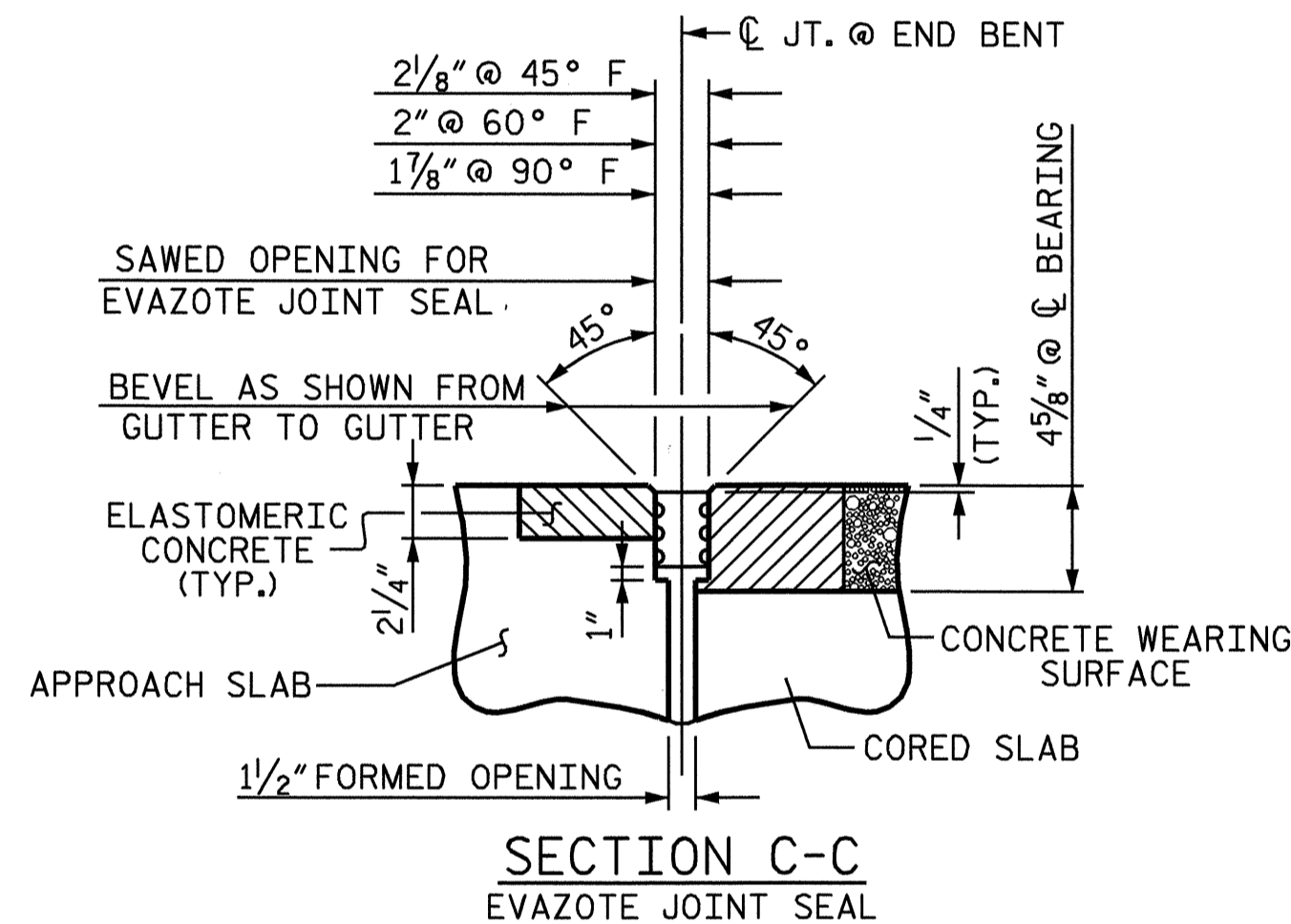
ASSEMBLED BY :	A. SORSENGINH	DATE :	8/7/2007
CHECKED BY :	D.A. GLADDEN	DATE :	10/3/07
DRAWN BY :	FCJ	REV. 7/10/01	LES/RDR
CHECKED BY :	EGA	REV. 5/1/03R	RWW/JTE
		REV. 5/1/06	TLA/GM



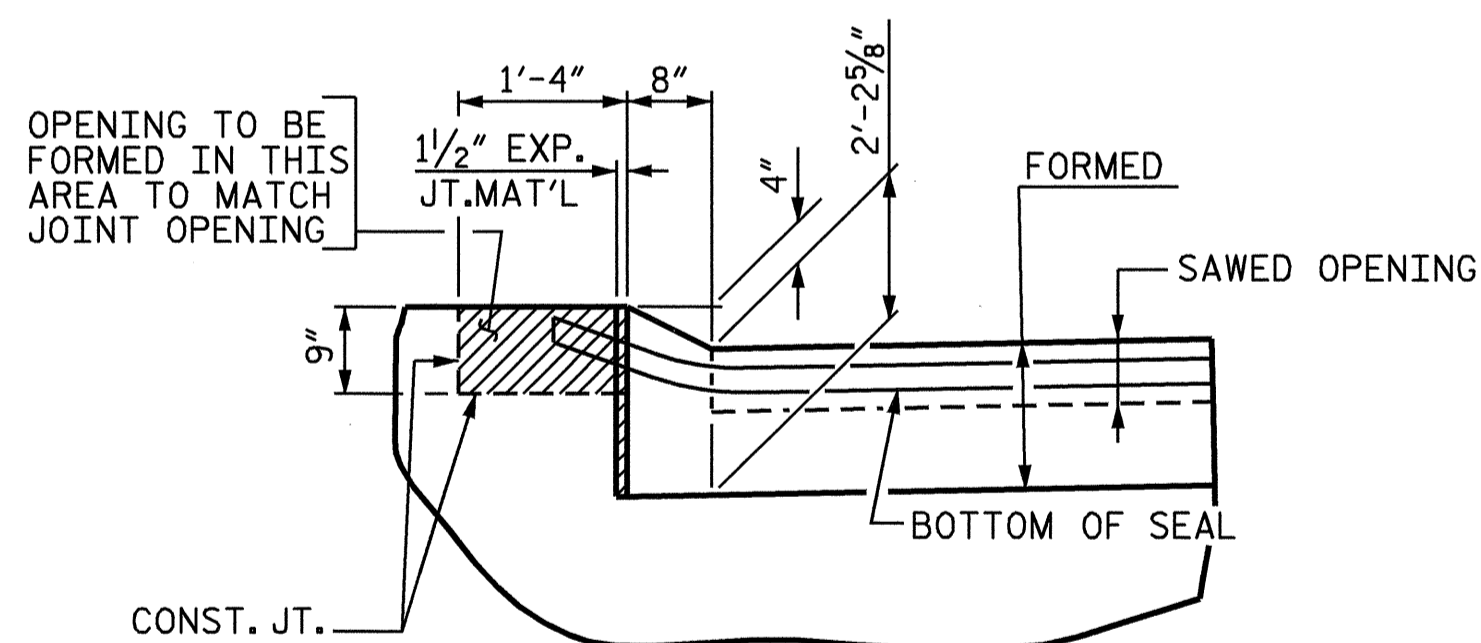
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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



SECTION A-A



SECTION C-C  
EVAZOTE JOINT SEAL



SECTION B-B

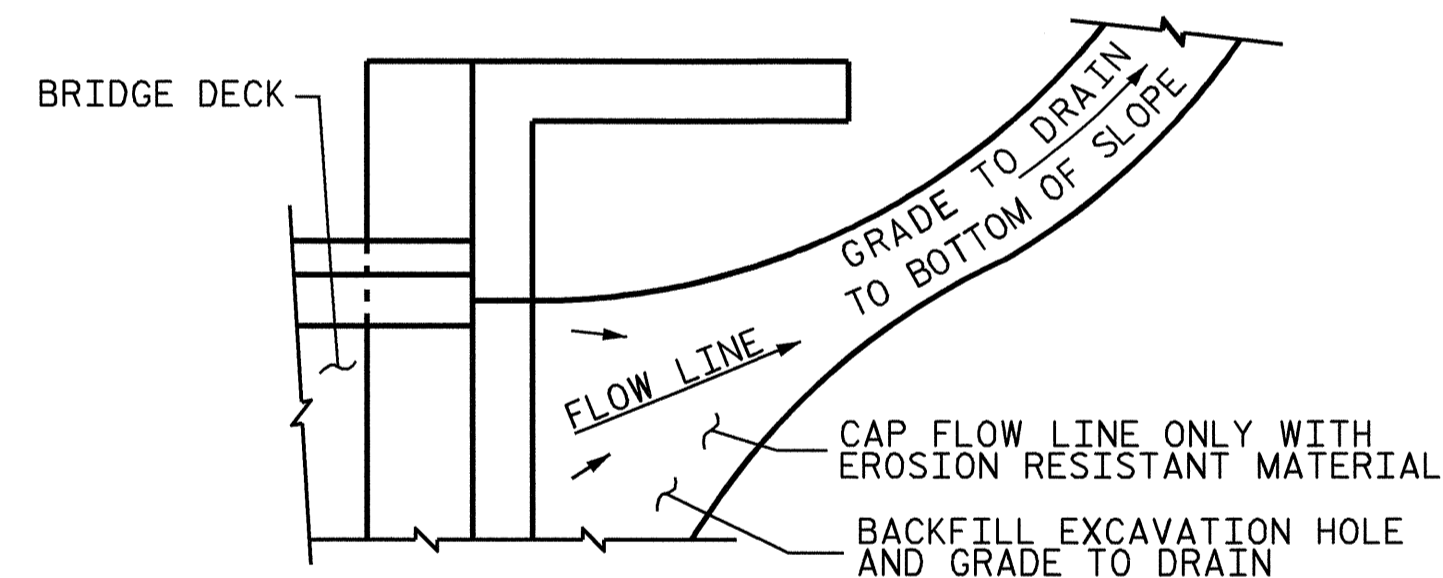
JOINT SEAL DETAILS @ END BENT

ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	9.58
2	9.58
TOTAL	19.16

\* BASED ON THE MINIMUM BLOCKOUT SHOWN.

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

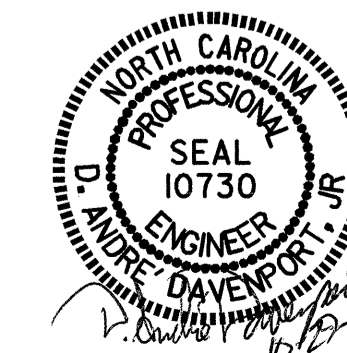
TEMPORARY DRAINAGE DETAIL

PROJECT NO. B-4303  
WAKE COUNTY  
 STATION: 17+71.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BRIDGE APPROACH  
 SLAB DETAILS



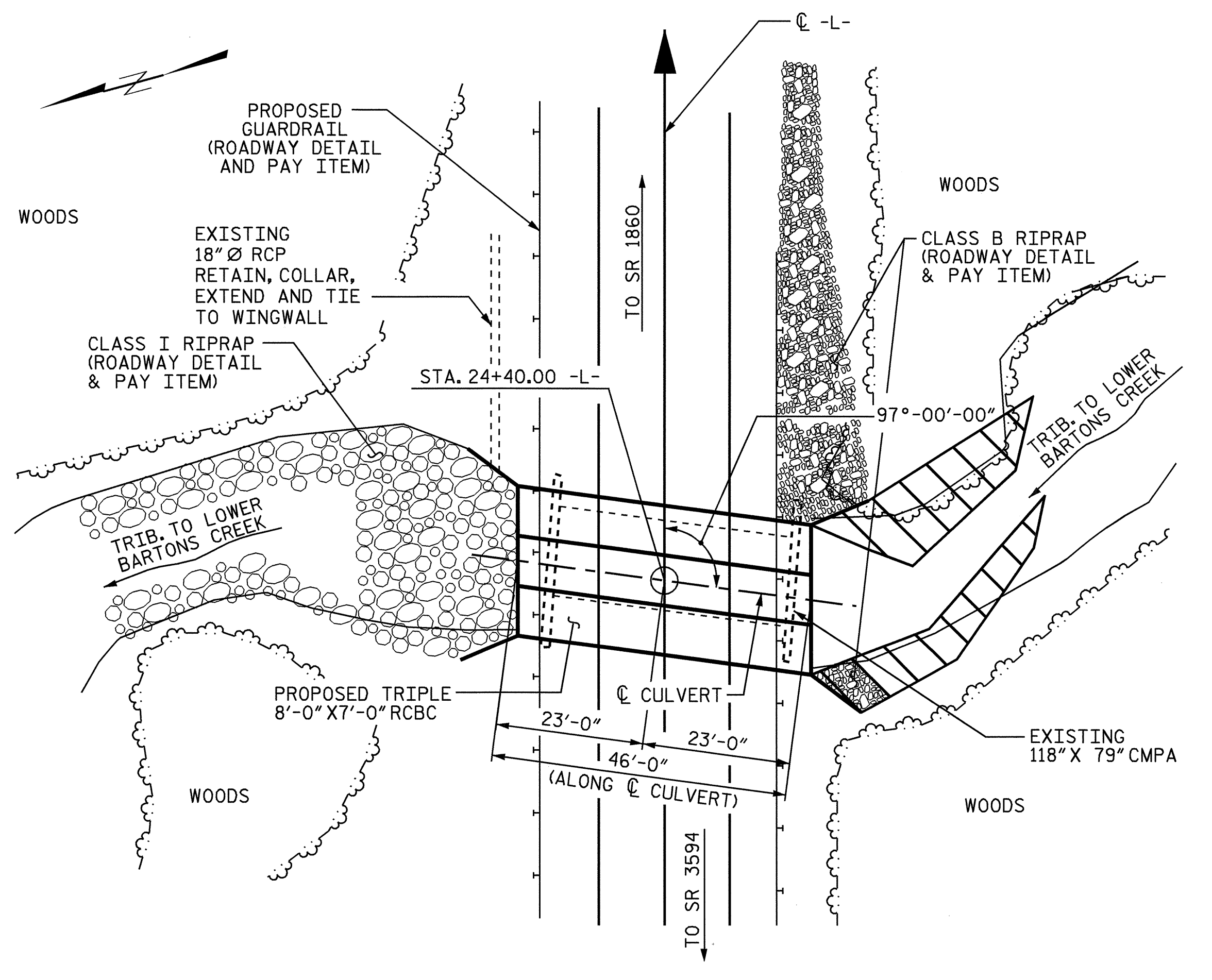
REVISIONS						SHEET NO. S-29
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 29
2			4			

ASSEMBLED BY :	A. SORSENGINH	DATE :	8/7/2007
CHECKED BY :	D.A. GLADDEN	DATE :	10/3/2007
DRAWN BY :	FCJ	REV. 10/17/00	RWW/LES
CHECKED BY :	ARB	REV. 5/1/03	RWW/JTE
		REV. 5/1/06	TLA/GM



BENCHMARK #52 RAILROAD SPIKE IN 18" Ø POPLAR TREE 47.45 FEET RIGHT OF STA. 24+72.78 -L-, EL. 289.00

F. A. PROJECT NO. BRZ-1844(1)



FOR UTILITY INFORMATION SEE UTILITY PLANS AND SPECIAL PROVISIONS

LOCATION SKETCH

ROADWAY DATA

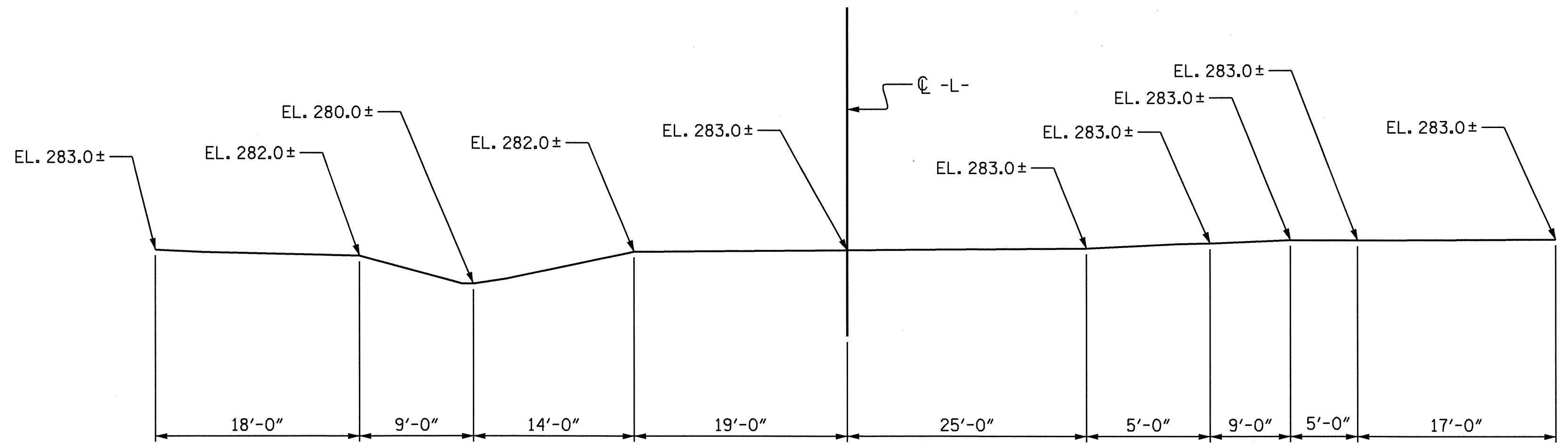
GRADE POINT ELEV. @ STA 24+40.00 -L- = 290.332  
 BED ELEV. @ STA. 24+40.00 -L- = 281.650  
 ROADWAY SLOPES = 2:1

HYDRAULIC DATA

DESIGN DISCHARGE = 900 CFS  
 FREQUENCY OF DESIGN FLOOD = 25 YR.  
 DESIGN HIGH WATER ELEVATION = 289.000  
 DRAINAGE AREA = 1.40 SQ. MI.  
 BASIC DISCHARGE (Q100) = 1200 CFS  
 BASIC HIGH WATER ELEVATION = 290.200

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 1125 CFS  
 FREQUENCY OF OVERTOPPING FLOOD = 50 YR.±  
 OVERTOPPING FLOOD ELEVATION = 290.000

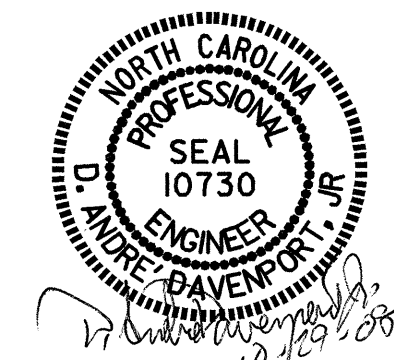
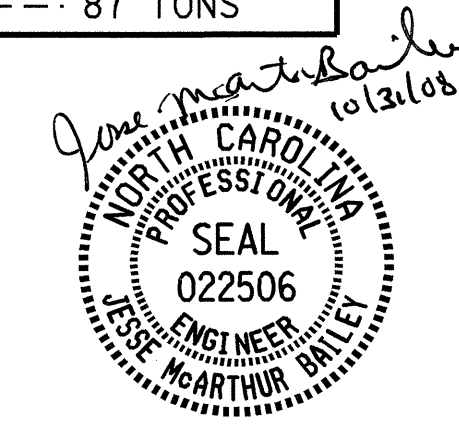


PROFILE ALONG CULVERT

TOTAL STRUCTURE QUANTITIES		
CLASS A CONCRETE		
BARREL @	2.432	CY/FT 111.9 C.Y.
WINGS ETC.		26.7 C.Y.
TOTAL		138.6 C.Y.
REINFORCING STEEL		
BARREL	20324	LBS.
WINGS ETC.	1344	LBS.
TOTAL	21668	LBS.
CULVERT EXCAVATION ----- LUMP SUM		
FOUNDATION COND.MAT'L ----- 87 TONS		

NOTES

- ASSUMED LIVE LOAD -----HS20-44 OR ALTERNATE LOADING.
- DESIGN FILL----- 1.86 FT.
- FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.
- 3" Ø WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.
- CONCRETE IN CULVERTS TO BE POURED IN THE FOLLOWING ORDER:
  1. WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.
  2. THE REMAINING PORTIONS OF THE WALLS AND WINGS FULL HEIGHT FOLLOWED BY ROOF SLAB AND HEADWALLS.
- THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.
- DIMENSIONS FOR WING LAYOUT AS WELL AS ADDITIONAL REINFORCING STEEL EMBEDDED IN BARREL ARE SHOWN ON WING SHEET.
- STEEL IN THE BOTTOM SLAB MAY BE SPLICED AT THE PERMITTED CONSTRUCTION JOINT AT THE CONTRACTOR'S OPTION. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.
- AT THE CONTRACTOR'S OPTION, HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF EXTERIOR WALL AND BOTH FACES OF INTERIOR WALLS ABOVE LOWER WALL CONSTRUCTION JOINT. THE SPLICE LENGTH SHALL BE AS PROVIDED IN THE SPLICE LENGTH CHART SHOWN ON THE PLANS. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.
- AT THE CONTRACTOR'S OPTION HE MAY SUBMIT, TO THE ENGINEER FOR APPROVAL, DESIGN AND DETAIL DRAWINGS FOR A PRECAST REINFORCED CONCRETE BOX CULVERT IN LIEU OF THE CAST-IN-PLACE CULVERT SHOWN ON THE PLANS. THE DESIGN SHALL PROVIDE THE SAME SIZE AND NUMBER OF BARRELS AS USED ON THE CAST-IN-PLACE DESIGN. FOR OPTIONAL PRECAST REINFORCED CONCRETE BOX CULVERT, SEE SPECIAL PROVISIONS.
- A 3 FOOT STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT.
- STOCKPILE THE MATERIAL THAT IS EXCAVATED FOR THE FOUNDATION AND PLACE IN THE CULVERT. THIS BED MATERIAL SHALL BE PLACED BETWEEN THE LOW FLOW SILLS IN THE CULVERT TO PROVIDE A CONTINUOUS LOW FLOW CHANNEL BETWEEN THE LOW SILLS.
- FOR CULVERT DIVERSION DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.
- 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.
- THE 18" DIA. PIPE THROUGH THE WINGWALL OF THE CULVERT SHALL BE LOCATED BY THE ENGINEER. THE REINFORCING STEEL SHALL BE FIELD BENT AS NECESSARY TO CLEAR PIPE.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.



PROJECT NO. B-4303  
 WAKE COUNTY  
 STATION: 24+40.00 -L-  
 SHEET 1 OF 5 BRIDGE NO. C-1214

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

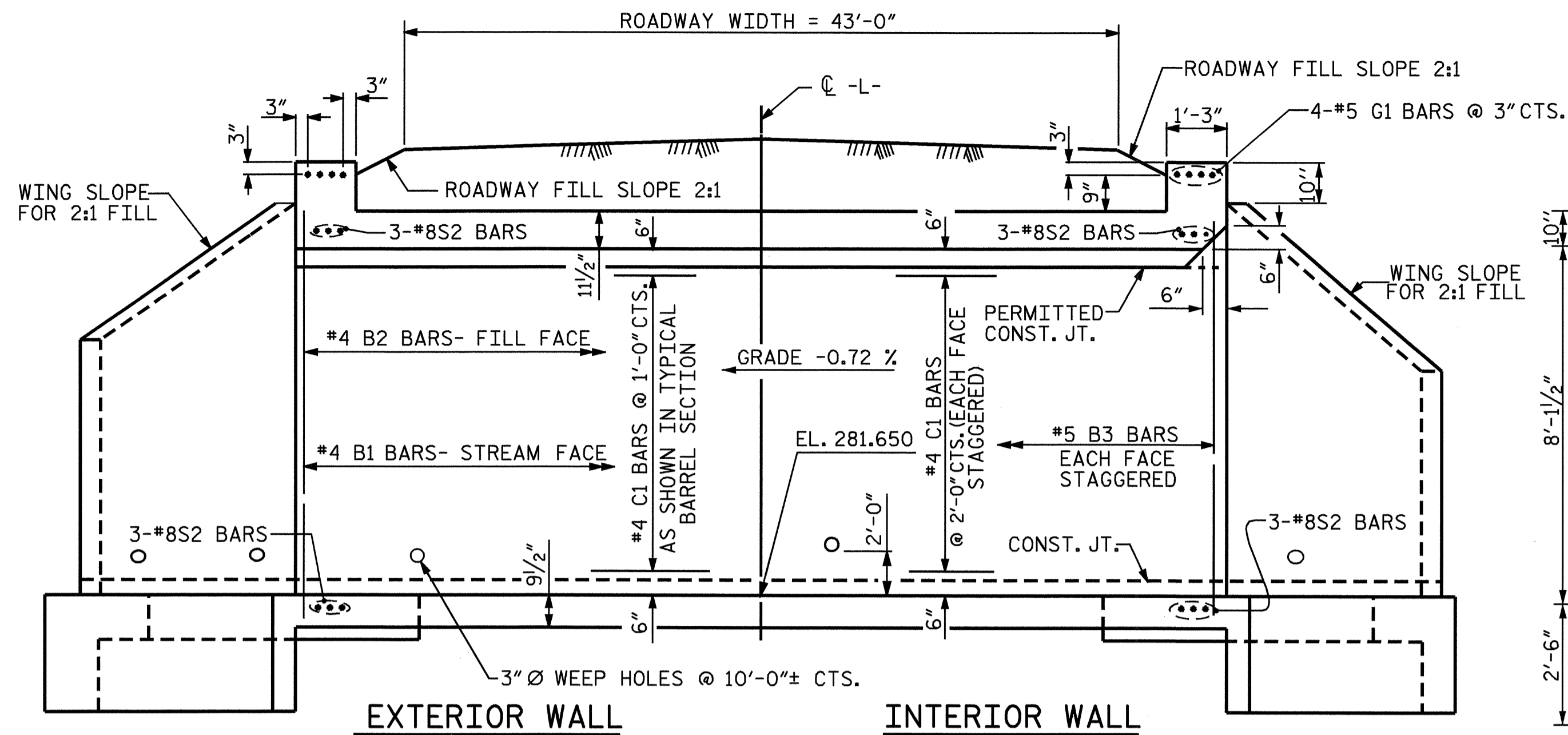
TRIPLE 8 FT. X 7 FT.  
 CONCRETE BOX CULVERT  
 97°-00'-00" SKEW

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

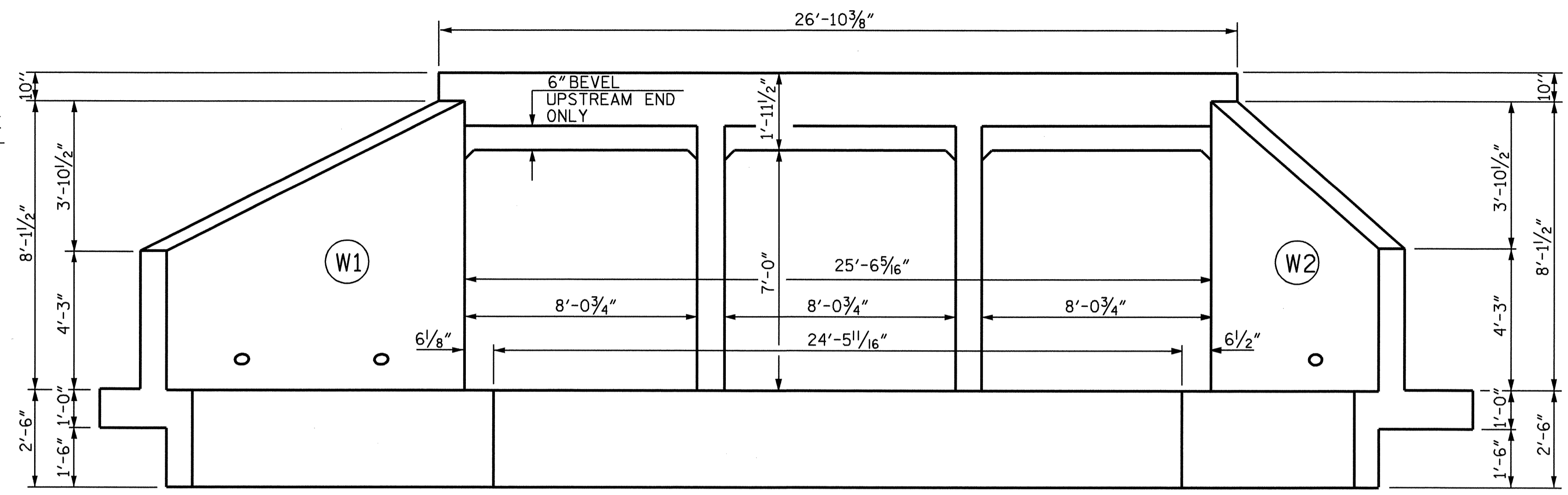
TOTAL SHEETS 5

ADDED 8-27-90

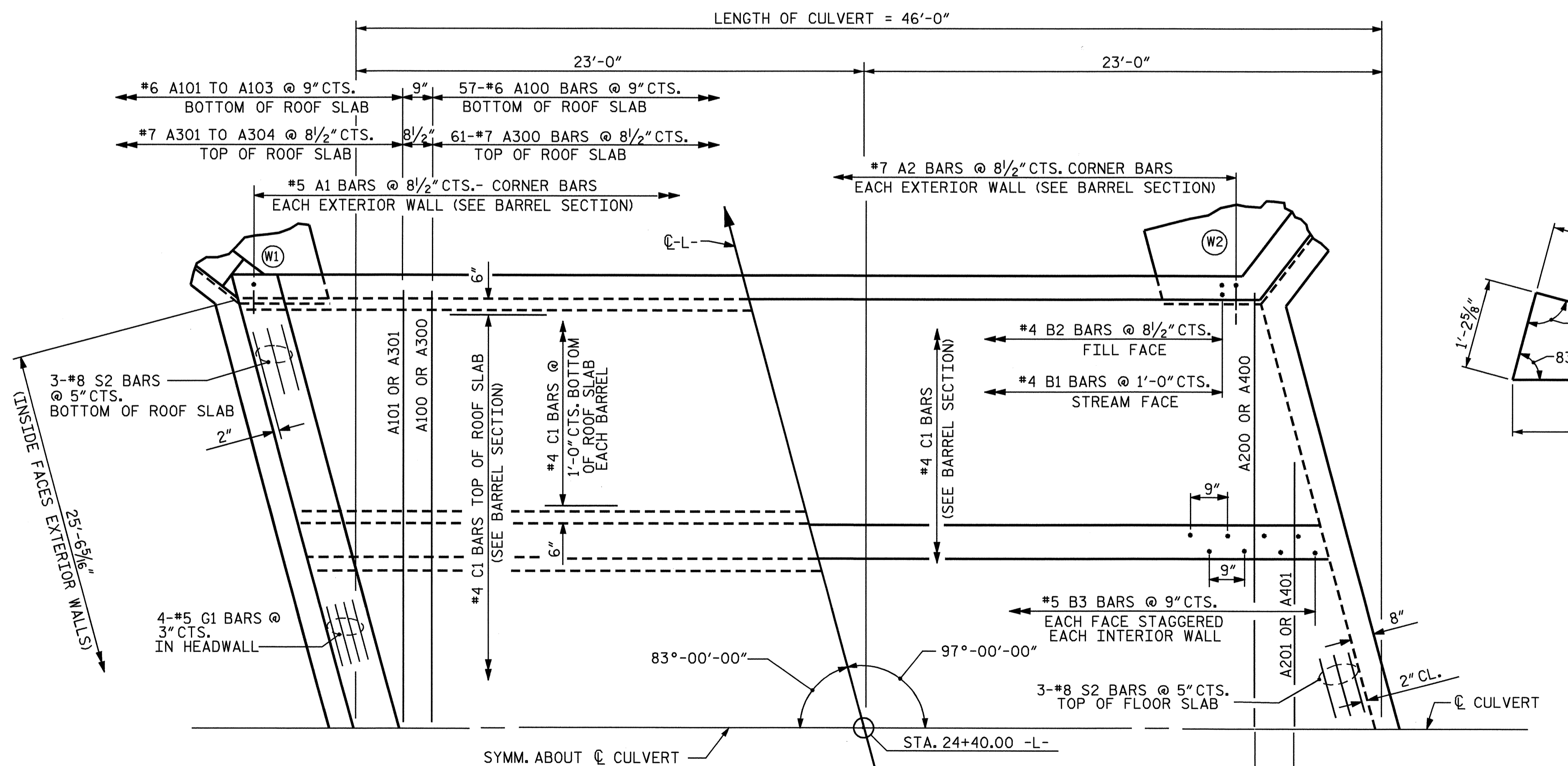
ASSEMBLED BY : M. G. SHAIKH	DATE : 8-27-07	SPECIAL
CHECKED BY : D. A. DAVENPORT	DATE : 3-17-08	
DRAWN BY : C.O. CUEVAS	DATE : 8-27-90	STANDARD
CHECKED BY : M.A. JONES	DATE : 10-4-90	



CULVERT SECTION NORMAL TO ROADWAY

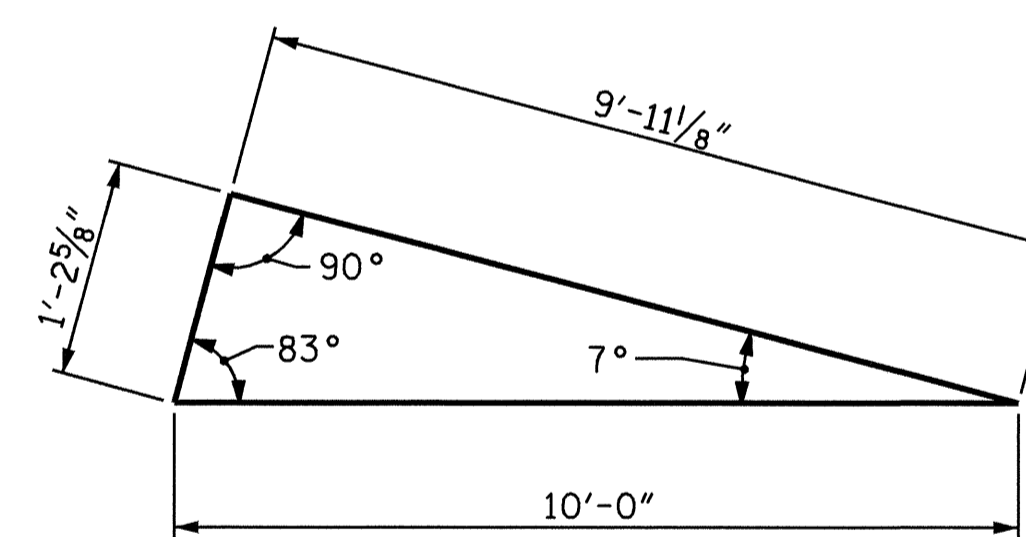


END ELEVATION NORMAL TO SKEW

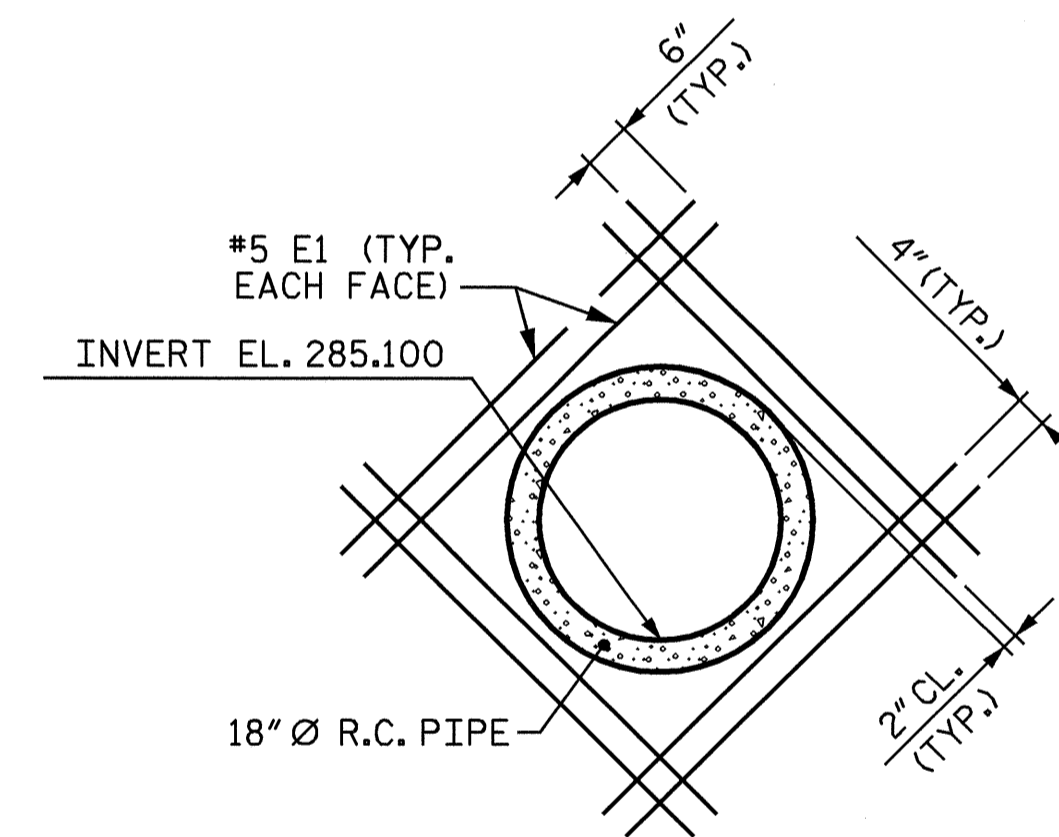


PART PLAN - ROOF SLAB

PART PLAN - FLOOR SLAB



SKEW TRIANGLE

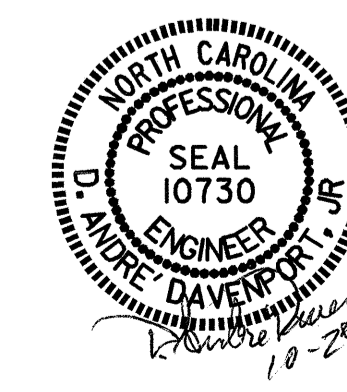


DETAIL OF REINFORCING AROUND 18" Ø PIPE (WING W1 OUTLET END ONLY)

PROJECT NO. B-4303  
WAKE COUNTY  
 STATION: 24+40.00 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 TRIPLE 8 FT. X 7 FT.  
 CONCRETE BOX CULVERT  
 97°-00'-00" SKEW



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

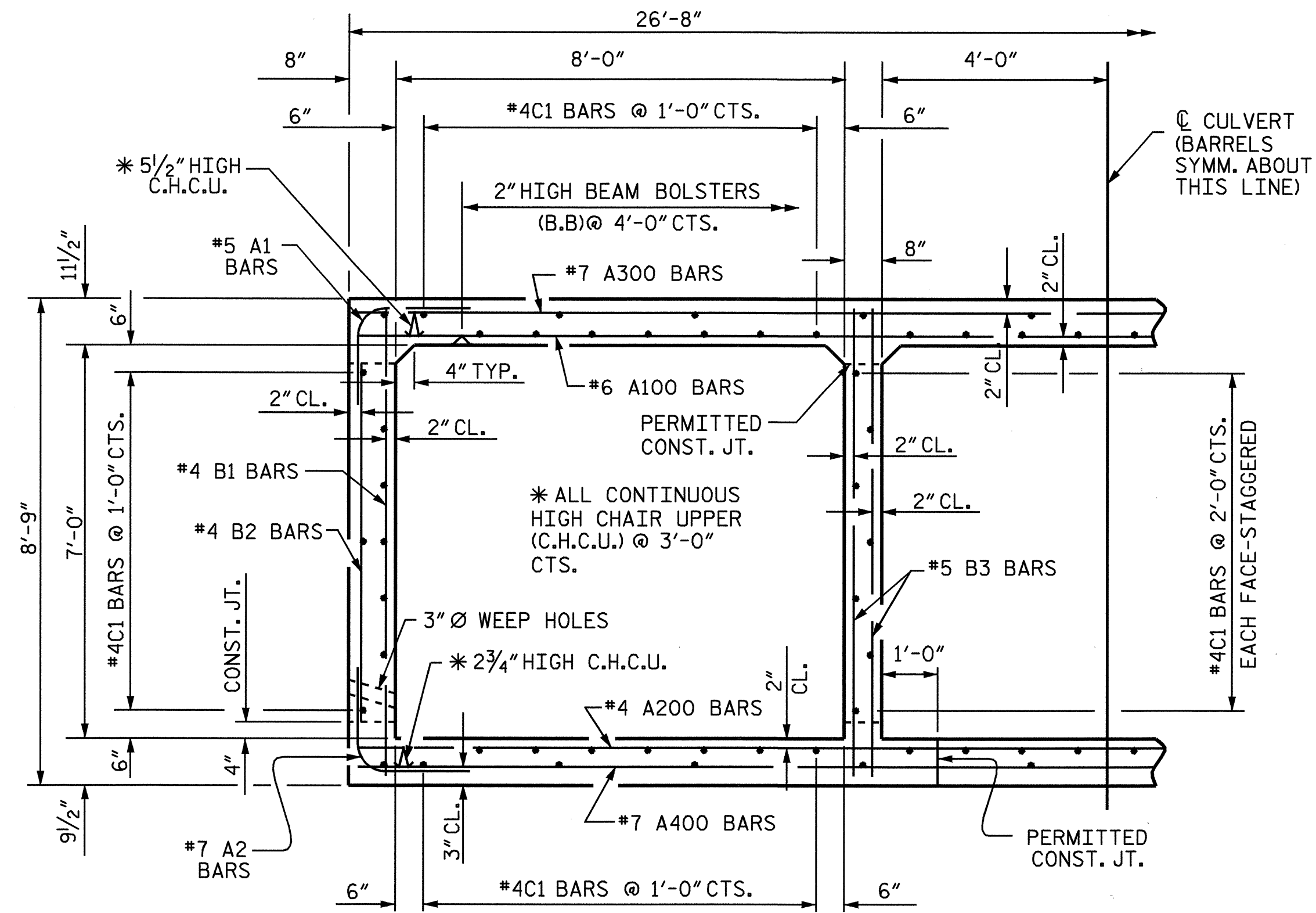
TOTAL SHEETS: 5

STD. NO. CR223

REVISED 11-19-99 BY M.M. CHECKED BY R.W.W.  
 REVISION 8-29-92 BY E.L.C. CHECKED BY G.R.P.  
 REDRAWN 8-27-90 BY C.O.C. CHECKED BY M.A.J.

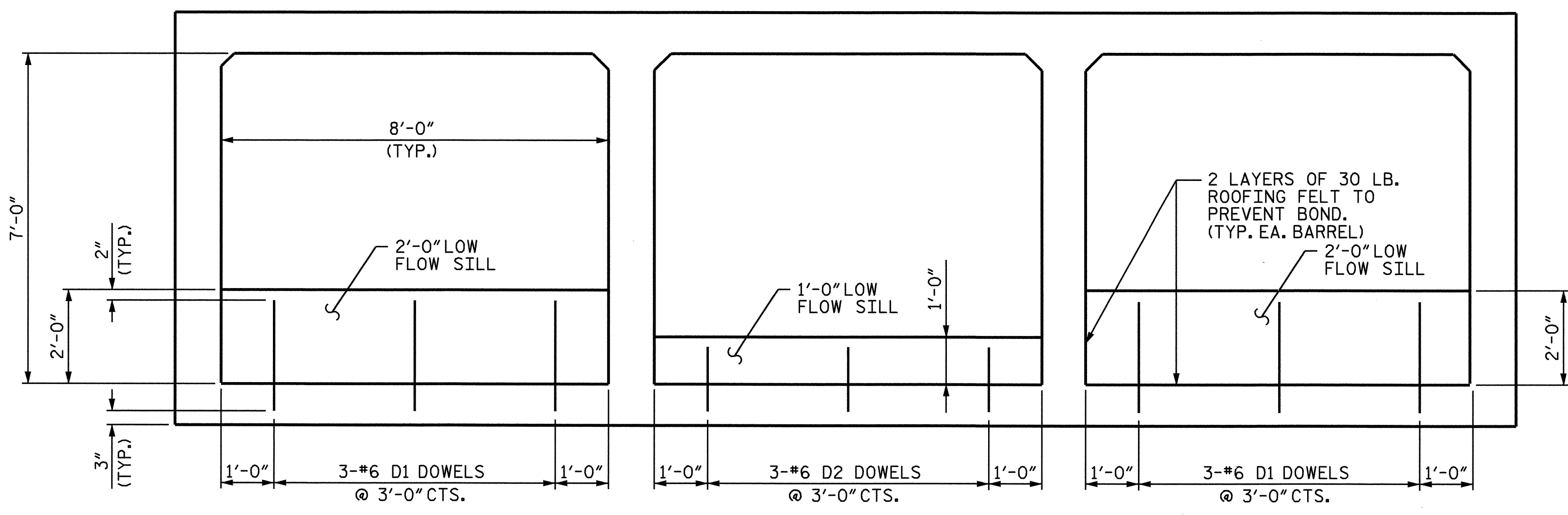
ASSEMBLED BY: <u>M. G. SHAIKH</u> DATE: <u>8-27-07</u>	SPECIAL
CHECKED BY: <u>D. A. DAVENPORT</u> DATE: <u>3-17-08</u>	
DRAWN BY: <u>BRAIN STALEY III</u> DATE: <u>11-30-71</u>	STANDARD
CHECKED BY: <u>JOEL A. JOHNSON</u> DATE: <u>12-30-71</u>	



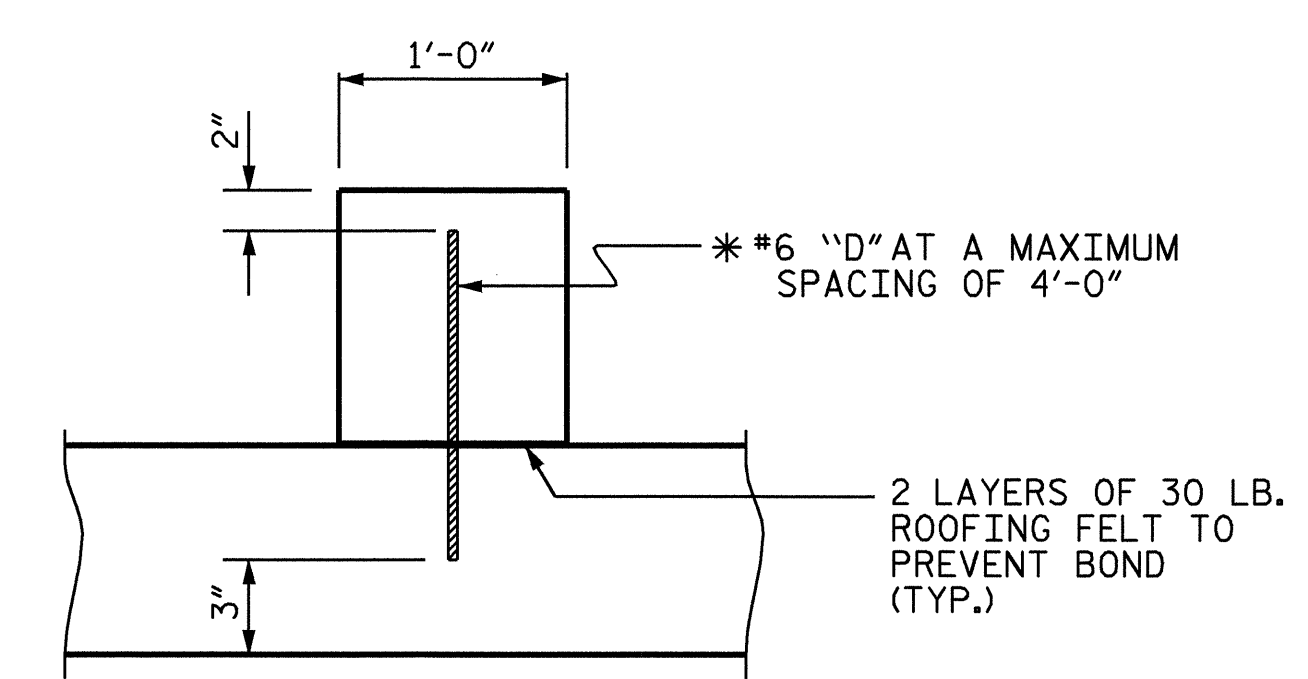


**RIGHT ANGLE SECTION OF BARREL**  
THERE ARE 98 "C" BARS IN SECTION OF BARREL

BILL OF MATERIAL											
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	130	#5	1	4'-9"	644	B1	92	#4	STR	8'-3"	507
A2	130	#7	1	6'-9"	1794	B2	130	#4	STR	6'-4"	550
						B3	248	#5	STR	8'-3"	2134
A100	57	#6	STR	26'-3"	2247						
						C1	196	#4	STR	23'-11"	3131
A101	2	#6	STR	18'-11"	57						
A102	2	#6	STR	12'-10"	39	D1	12	#6	STR	2'-4"	42
A103	2	#6	STR	6'-9"	20						
						D2	6	#6	STR	1'-4"	12
A200	64	#4	STR	26'-3"	1122	G1	8	#5	STR	26'-6"	221
A201	2	#4	STR	19'-7"	26	S2	12	#8	STR	26'-6"	849
A202	2	#4	STR	14'-2"	19	REINFORCING STEEL = 20324 LBS.					
A203	2	#4	STR	8'-9"	12	<b>BAR TYPE</b>					
A204	2	#4	STR	3'-4"	4	<p>DIMENSIONS ARE OUT TO OUT</p>					
A300	61	#7	STR	26'-3"	3273						
A301	2	#7	STR	19'-3"	79						
A302	2	#7	STR	13'-6"	55						
A303	2	#7	STR	7'-9"	32						
A304	2	#7	STR	2'-0"	8						
A400	61	#7	STR	26'-3"	3273						
A401	2	#7	STR	19'-3"	79						
A402	2	#7	STR	13'-6"	55						
A403	2	#7	STR	7'-9"	32						
A404	2	#7	STR	2'-0"	8						



**CULVERT SILL DETAILS**  
(INLET AND OUTLET FACE)



**SECTION THROUGH SILL**  
\* DOWELS MAY BE PUSHED INTO GREEN CONCRETE AFTER SLAB HAS BEEN FLOAT FINISHED.

SPLICE LENGTHS CHART		
BAR	SIZE	SPLICE LENGTH
A200	4	1'-9"
A400	7	3'-1"
B1	4	1'-9"
B3	5	1'-9"
C1	4	1'-11"

PROJECT NO. B-4303  
WAKE COUNTY  
 STATION: 24+40.00 -L-

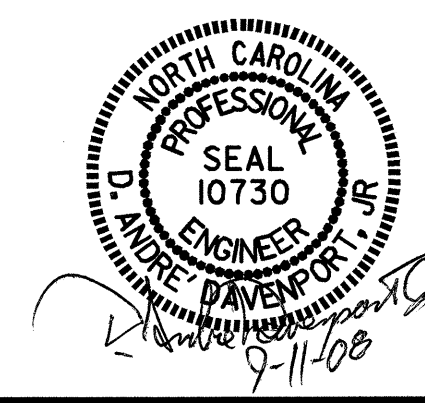
SHEET 3 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

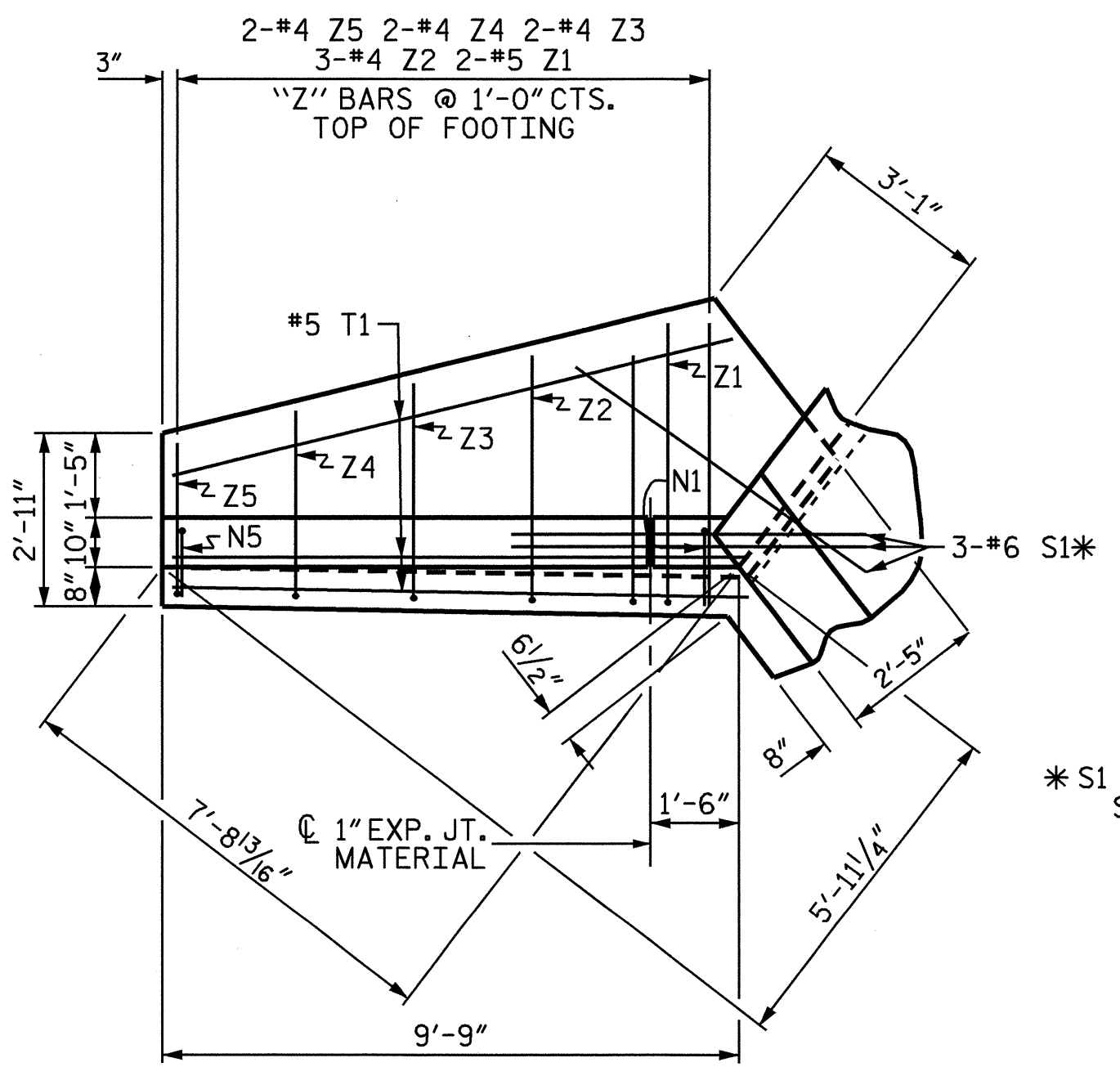
TRIPLE 8 FT. X 7 FT.  
 CONCRETE BOX CULVERT  
 97°-00'-00" SKEW

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

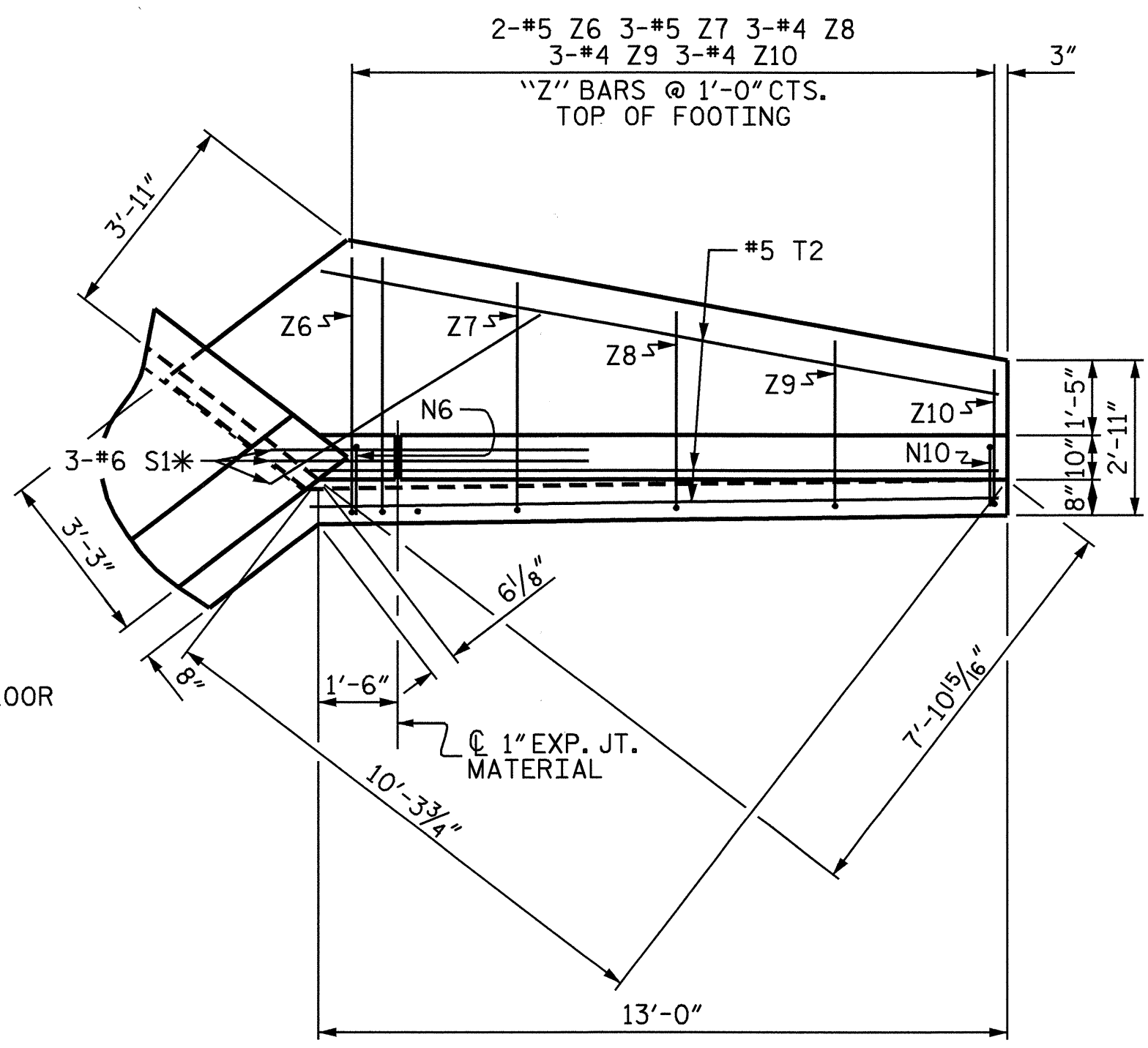
DRAWN BY: M. G. SHAIKH DATE: 8-30-07  
 CHECKED BY: D. A. DAVENPORT DATE: 3-17-08



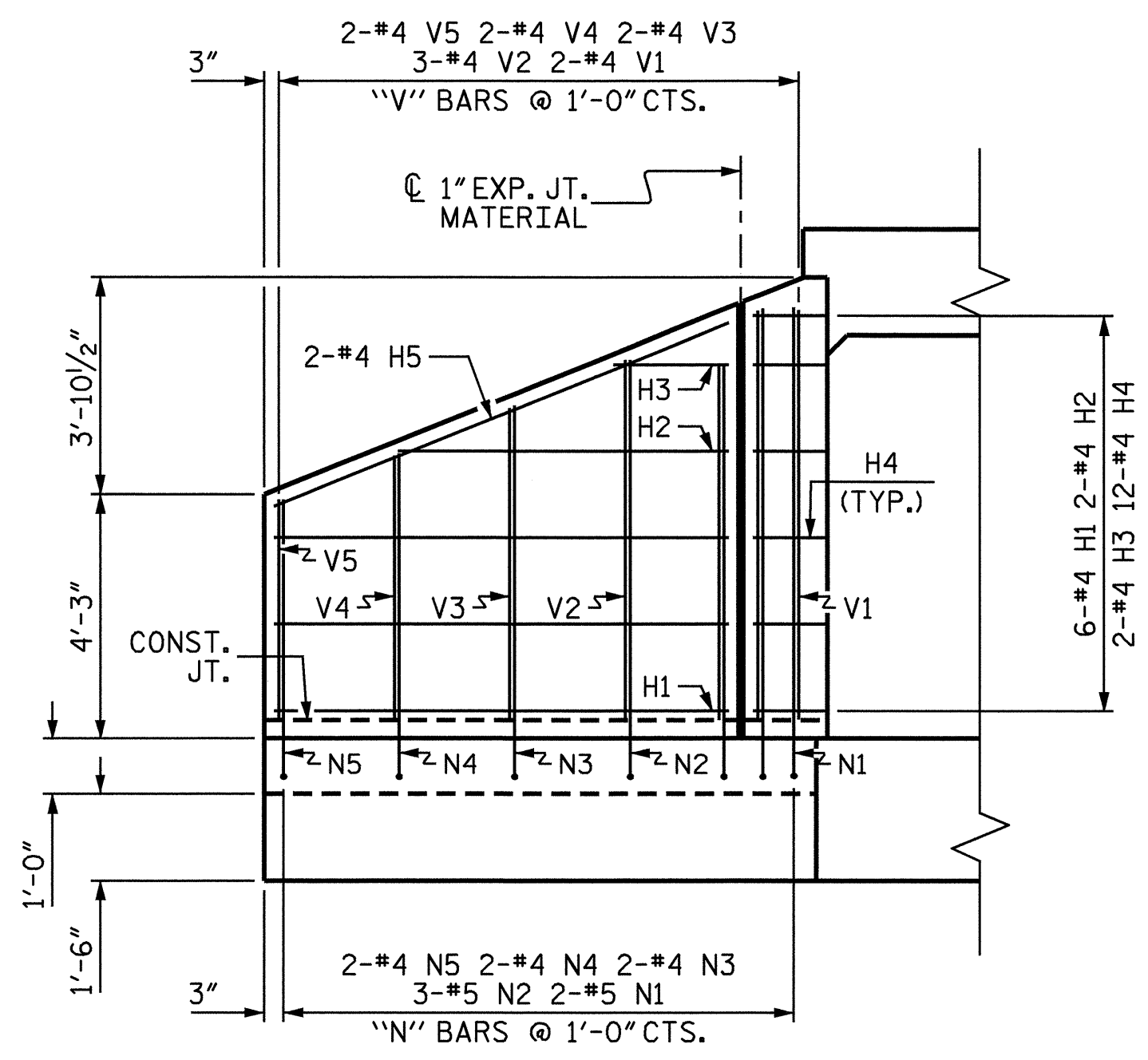




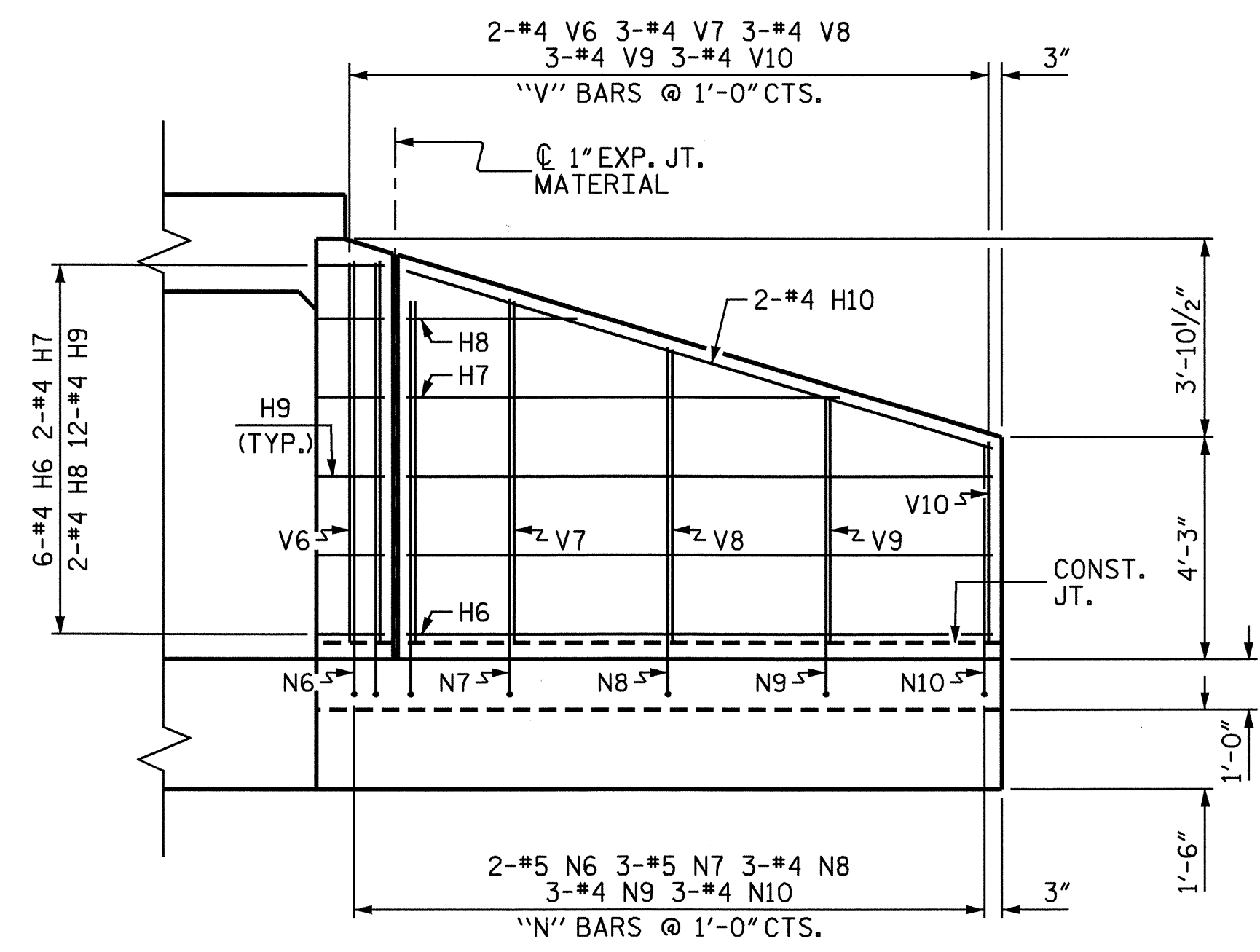
PLAN W2



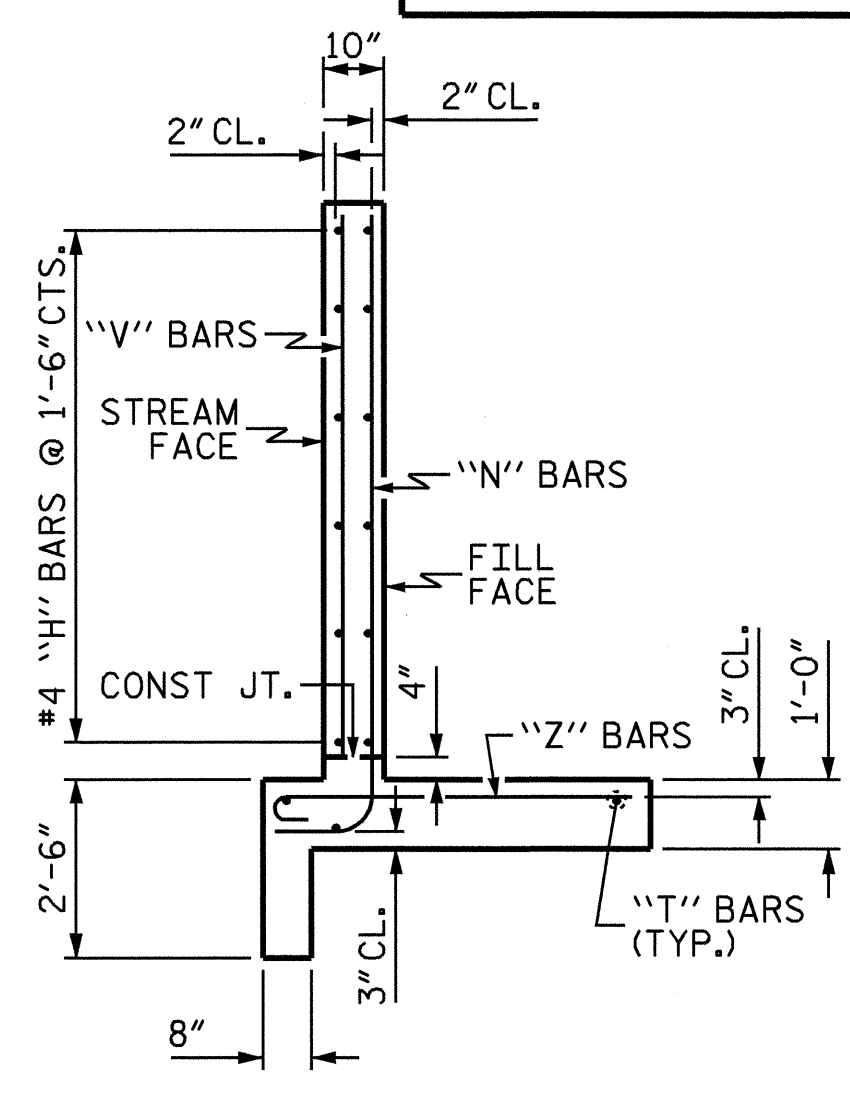
PLAN W1



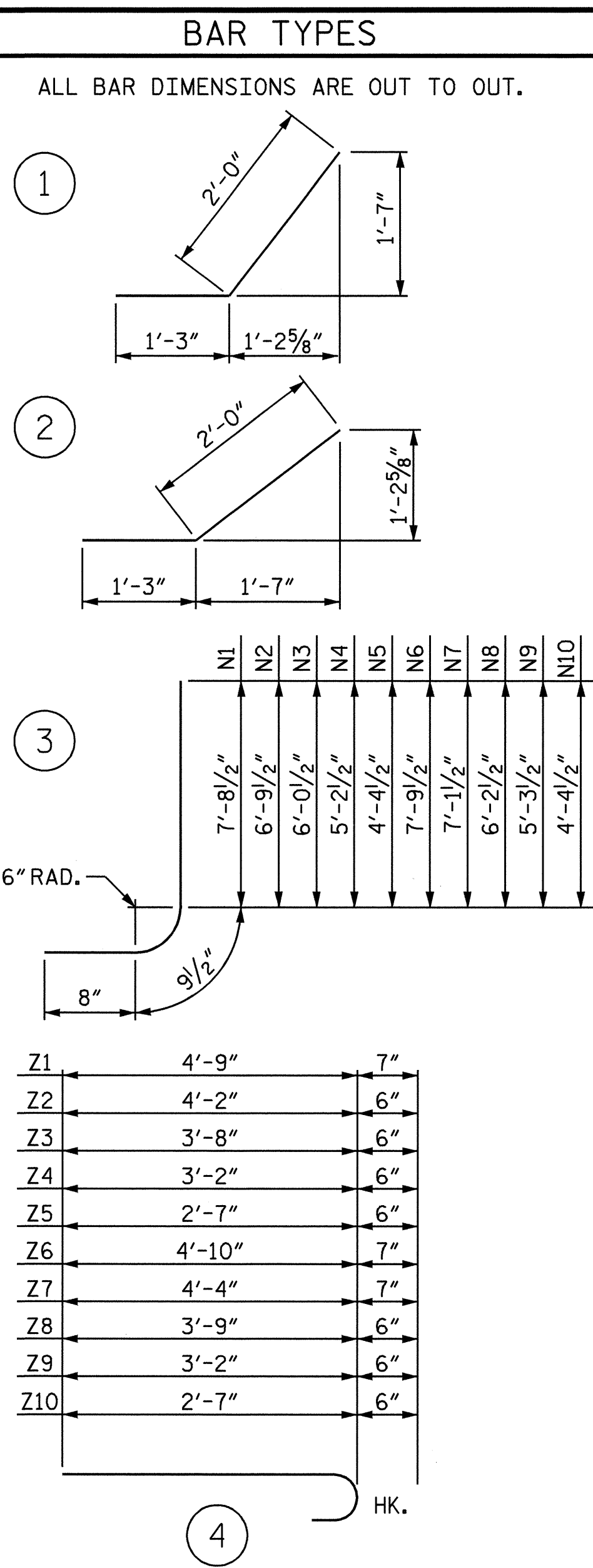
ELEVATION W2



ELEVATION W1



TYPICAL WING SECTION

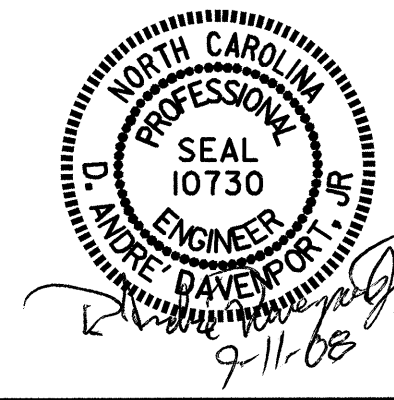


BILL OF MATERIAL					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
E1	16	#5	STR	4'-0"	67
H1	12	#4	STR	7'-10"	63
H2	4	#4	STR	5'-8"	15
H3	4	#4	STR	2'-0"	5
H4	24	#4	1	3'-3"	52
H5	4	#4	STR	8'-5"	22
H6	12	#4	STR	11'-1"	89
H7	4	#4	STR	8'-2"	22
H8	4	#4	STR	3'-3"	9
H9	24	#4	2	3'-3"	52
H10	4	#4	STR	11'-7"	31
N1	4	#5	3	9'-2"	38
N2	6	#5	3	8'-3"	52
N3	4	#4	3	7'-6"	20
N4	4	#4	3	6'-8"	18
N5	4	#4	3	5'-10"	16
N6	4	#5	3	9'-3"	39
N7	6	#5	3	8'-7"	54
N8	6	#4	3	7'-8"	31
N9	6	#4	3	6'-9"	27
N10	6	#4	3	5'-10"	23
S1	12	#6	STR	6'-0"	108
T1	6	#5	STR	9'-9"	61
T2	6	#5	STR	13'-0"	81
V1	4	#4	STR	7'-1"	19
V2	6	#4	STR	6'-3"	25
V3	4	#4	STR	5'-5"	14
V4	4	#4	STR	4'-7"	12
V5	4	#4	STR	3'-10"	10
V6	4	#4	STR	7'-3"	19
V7	6	#4	STR	6'-6"	26
V8	6	#4	STR	5'-7"	22
V9	6	#4	STR	4'-8"	19
V10	6	#4	STR	3'-10"	15
Z1	4	#5	4	5'-4"	22
Z2	6	#4	4	4'-8"	19
Z3	4	#4	4	4'-2"	11
Z4	4	#4	4	3'-8"	10
Z5	4	#4	4	3'-1"	8
Z6	4	#5	4	5'-5"	23
Z7	6	#5	4	4'-11"	31
Z8	6	#4	4	4'-3"	17
Z9	6	#4	4	3'-8"	15
Z10	6	#4	4	3'-1"	12

REINFORCING STEEL FOR 4 WINGS	1344 LBS
CLASS A CONCRETE	
4 WINGS	18.2 CY
2 HEADWALLS	2.5 CY
2 END CURTAIN WALLS	3.0 CY
LOW FLOW SILL	3.0 CY
<b>TOTAL</b>	<b>26.7 CY</b>

PROJECT NO. B-4303  
 WAKE COUNTY  
 STATION: 24+40.00 -L-

SHEET 4 OF 5  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**WINGS FOR CONCRETE BOX CULVERT**  
 H = 7'-0" SLOPE = 2:1  
 97°-00'-00" SKEW



ASSEMBLED BY : M. G. SHAIKH DATE : 8-30-07  
 CHECKED BY : D. A. DAVENPORT DATE : 3-17-08  
 DRAWN BY : CCJ 12/99  
 CHECKED BY : RWW 03/00

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

NOTES

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

GUARDRAIL ANCHOR ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY TO INSURE FIT.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CLASS "A" CONCRETE.

FERRULES TO BE PLUGGED DURING POURING OF SLAB AS RECOMMENDED BY THE MANUFACTURER.

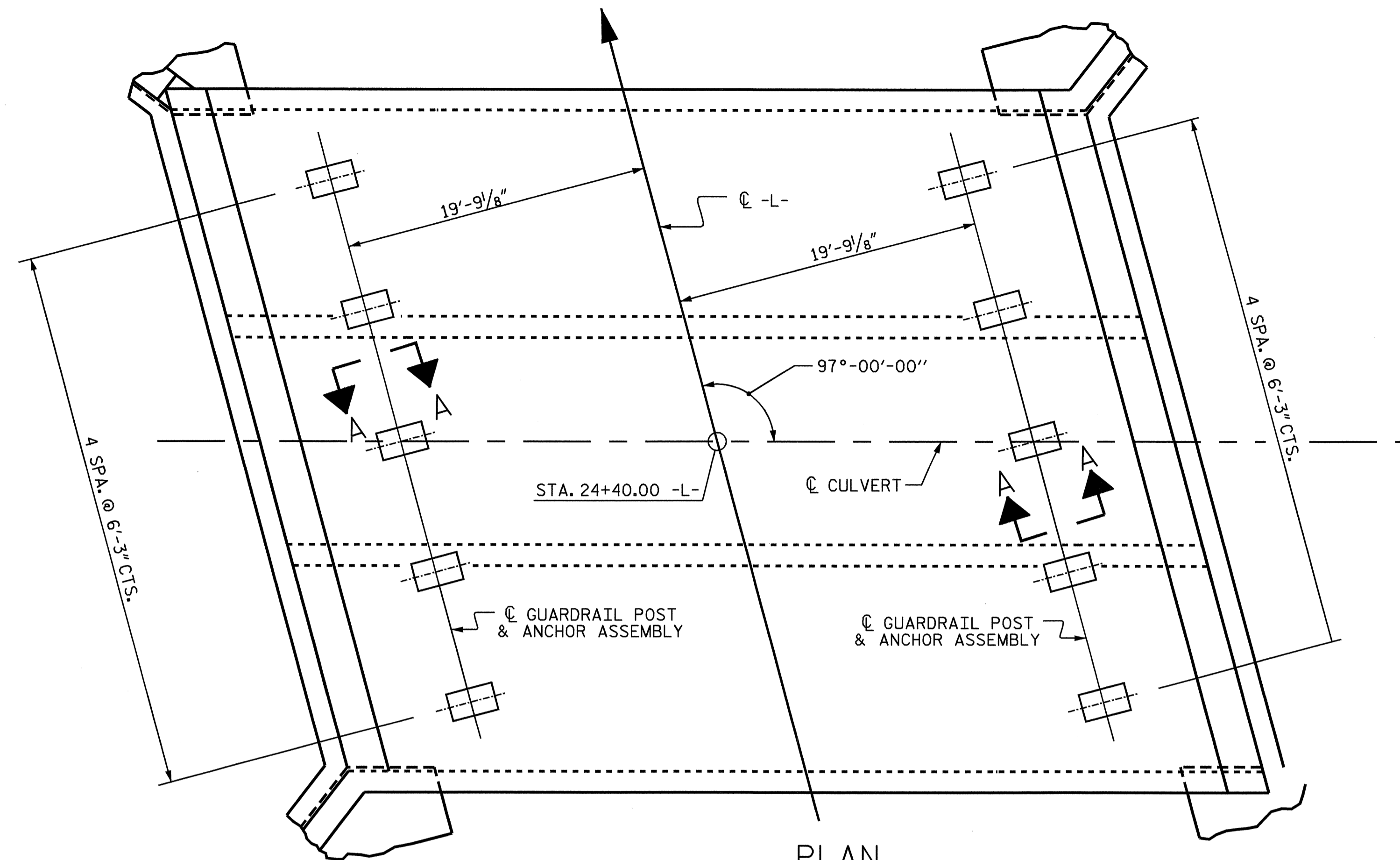
AT THE CONTRACTOR'S OPTION, FERRULES WITH OPEN OR CLOSED ENDS MAY BE USED.

PAYMENT FOR GUARDRAIL, POSTS, AND POST BASE PLATES IS INCLUDED IN ROADWAY PAY ITEMS.

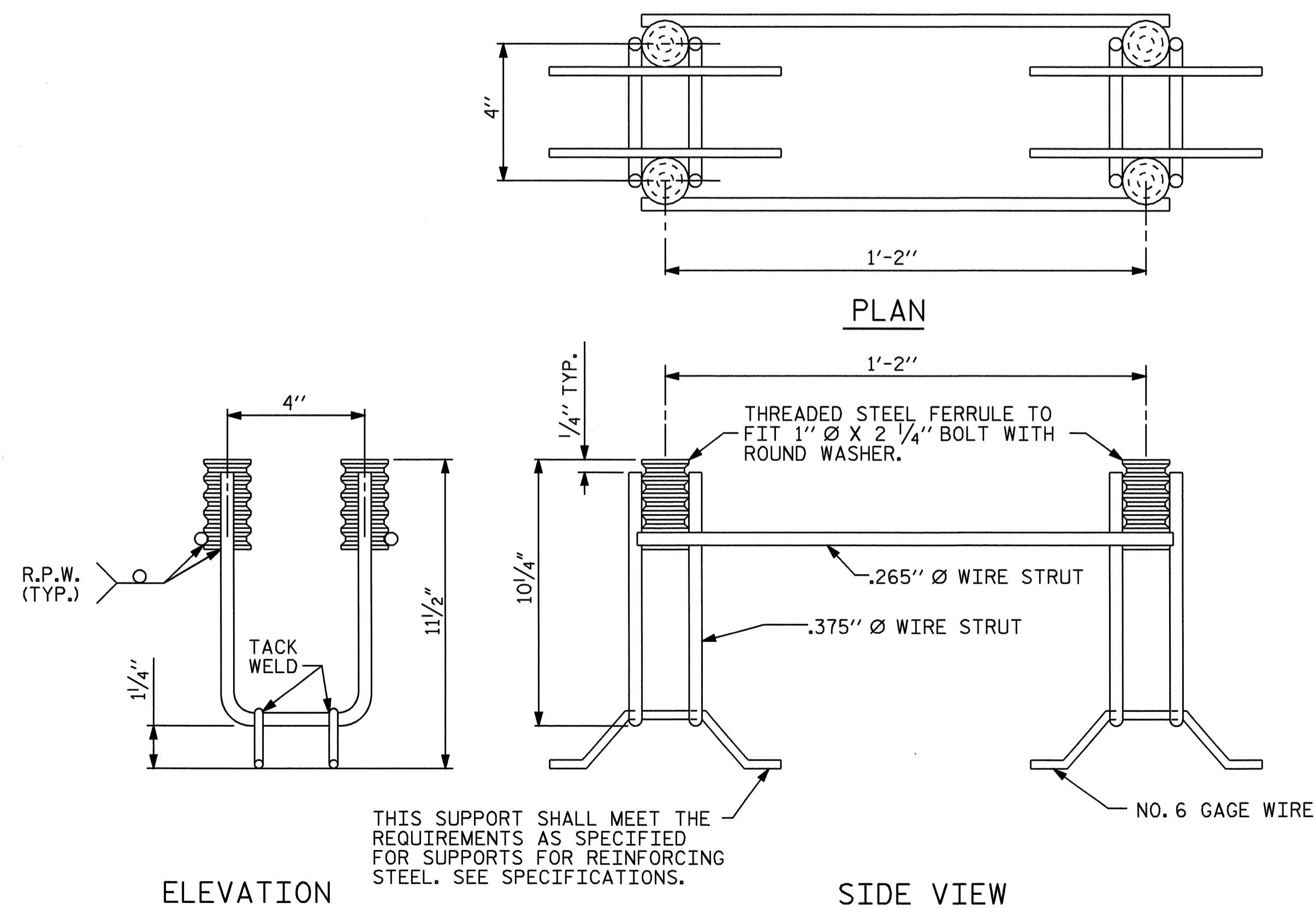
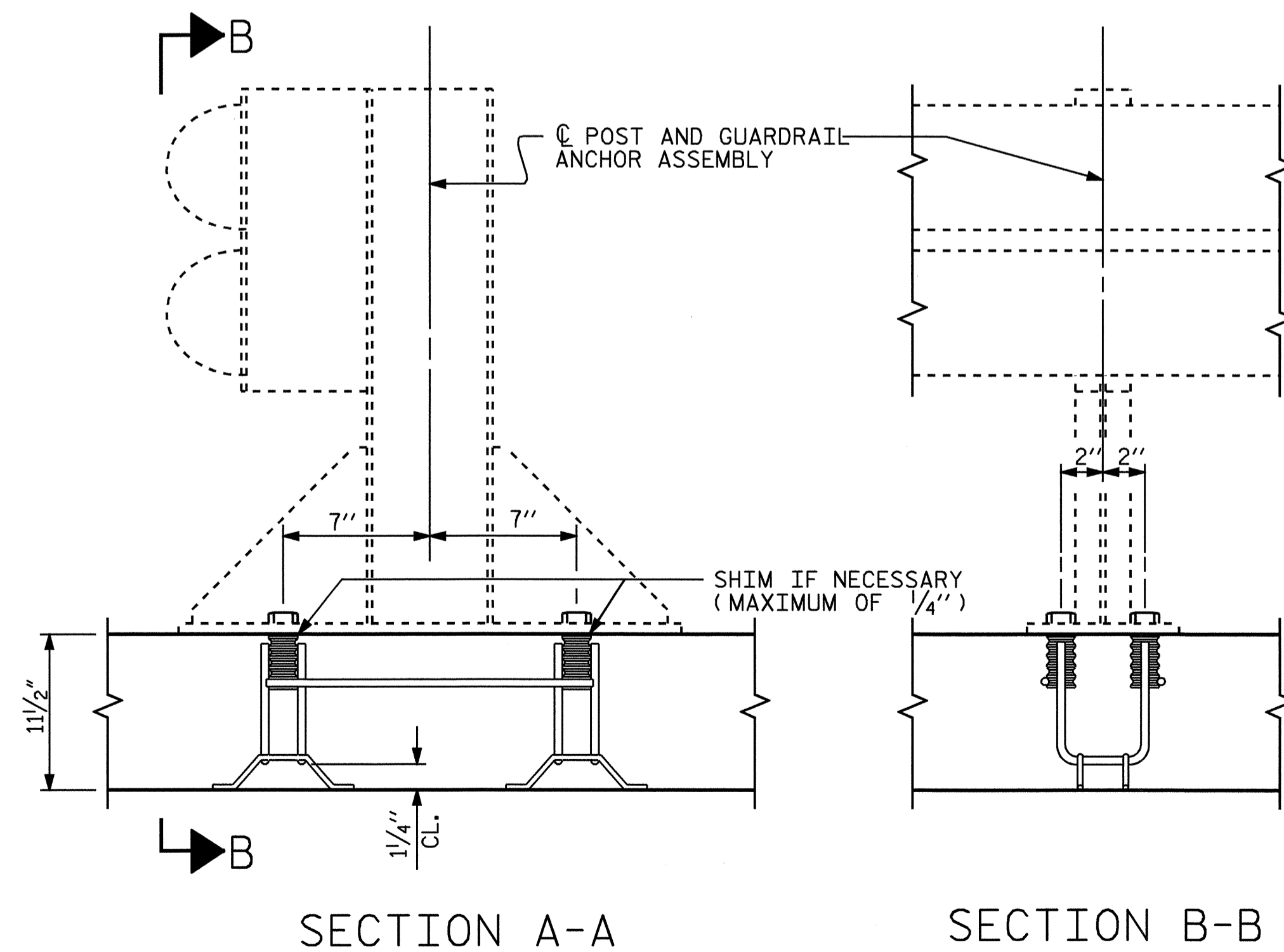
SLAB REINFORCING STEEL MAY BE SHIFTED AS NECESSARY TO CLEAR GUARDRAIL ANCHOR ASSEMBLY. CARE SHOULD BE TAKEN TO KEEP THE SHIFTING OF REINFORCING STEEL TO A MINIMUM.

THE CONTRACTOR MAY, USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF GUARDRAIL ANCHOR ASSEMBLY. THE YIELD LOAD OF THE 1" Ø BOLT IS 21.8 KIPS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS REQUIRED.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF GUARDRAIL ANCHOR ASSEMBLY. LEVEL TWO FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 1" Ø BOLT IS 21.8 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

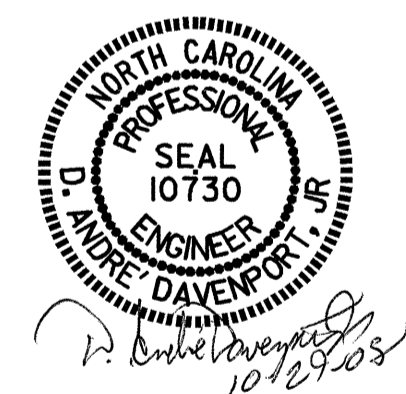


PLAN  
SHOWING GUARDRAIL ANCHOR ASSEMBLY SPACING.



THIS SUPPORT SHALL MEET THE REQUIREMENTS AS SPECIFIED FOR SUPPORTS FOR REINFORCING STEEL. SEE SPECIFICATIONS.

GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS



PROJECT NO. B-4303  
 WAKE COUNTY  
 STATION: 24+40.00 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

ANCHORAGE DETAILS  
 FOR GUARDRAIL ANCHOR  
 ASSEMBLY FOR CULVERTS

ASSEMBLED BY :	M. G. SHAIKH	DATE :	06-08-07
CHECKED BY :	D. A. DAVENPORT	DATE :	3-17-08
DRAWN BY :	FCJ	6/88	REV. 7/10/01
CHECKED BY :	ARB	6/88	REV. 5/7/03
			REV. 5/1/06
			LES/RDR
			RWW/JTE
			TLA/GM

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



## 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

STD. NO. SN