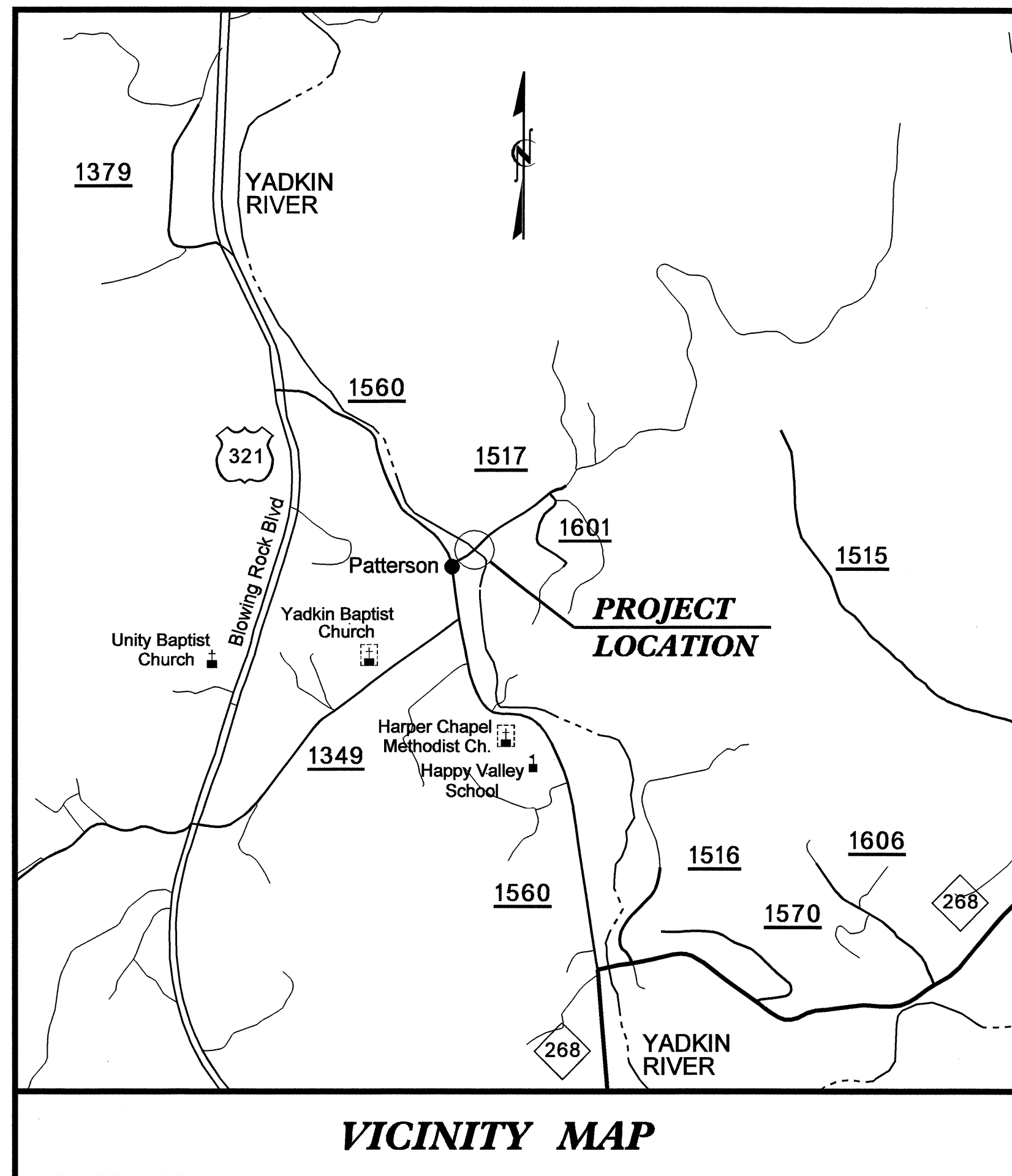


CONTRACT: C201733 TIP PROJECT: B-4054

STRUCTURE



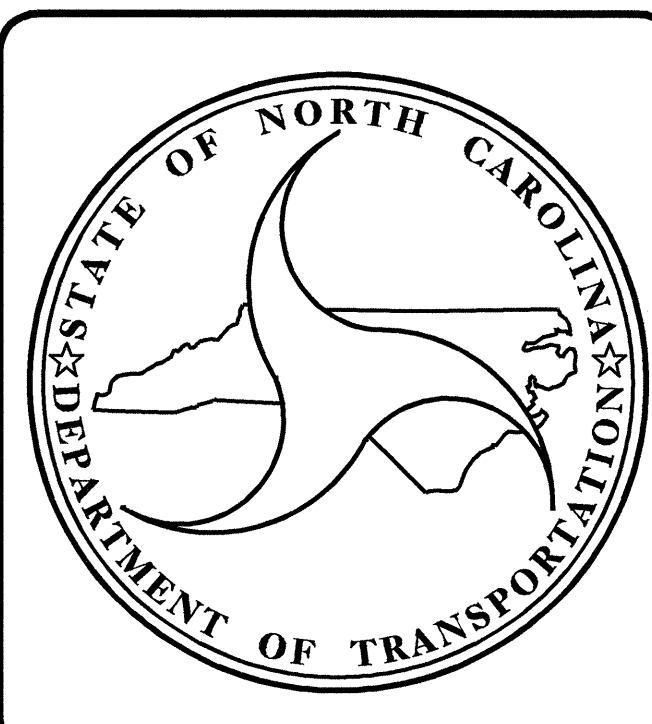
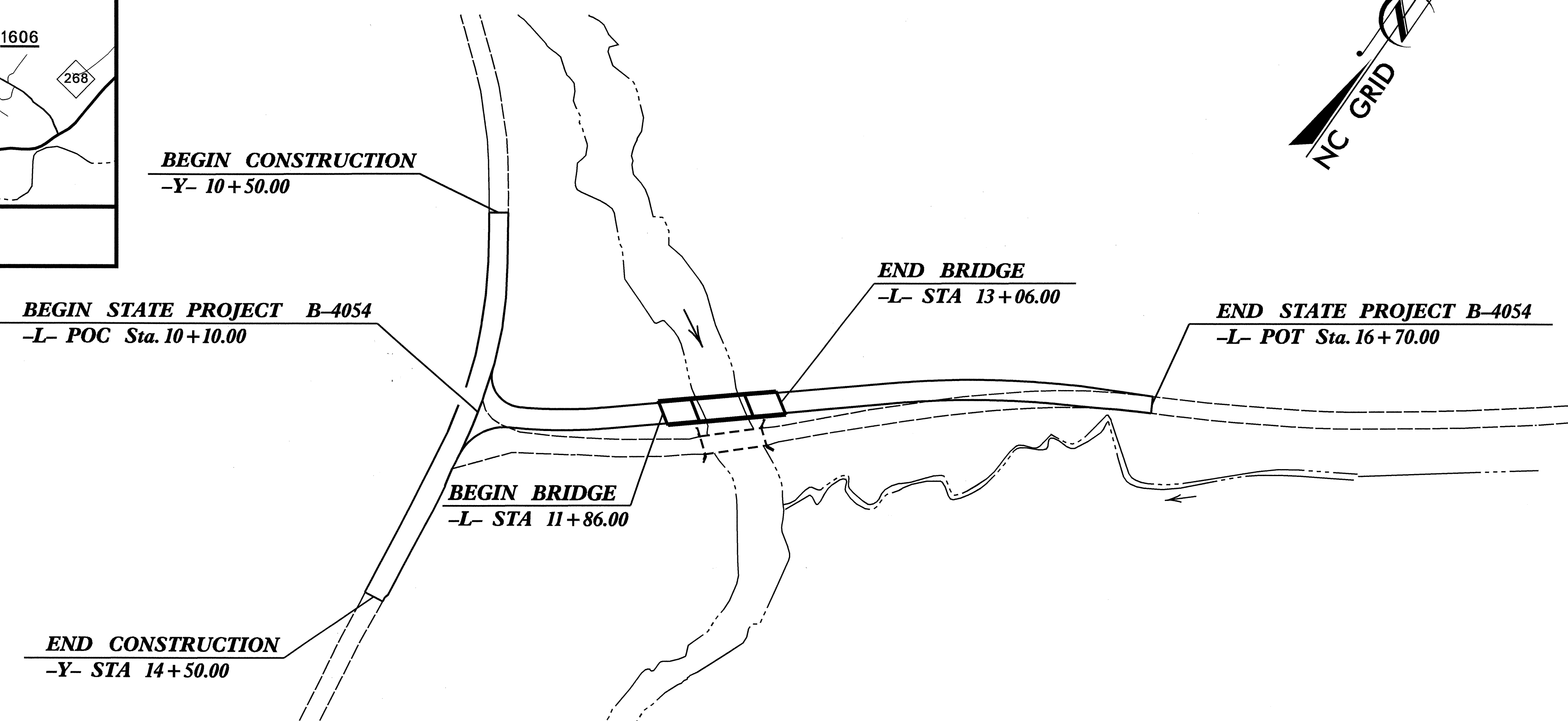
VICINITY MAP

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

CALDWELL COUNTY

LOCATION: BRIDGE NO. 334 OVER YADKIN RIVER ON SR 1517 (WHISNANT ROAD)
TYPE OF WORK: GRADING, DRAINAGE, STRUCTURE, PAVING AND GUARDRAIL

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4054		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33419.1.1	BRZ-1517(3)	P.E.	
33419.2.1	BRZ-1517(3)	UTIL. & RW	
33419.3.1	BRZ-1517(3)	CONST.	



DESIGN DATA

ADT 2007 =	266
ADT 2027 =	526
DHV =	9 %
D =	60 %
T =	3 % *
V =	30 MPH **

* (TTST 1% + DUAL 2%)
 FUNCT CLASS=RURAL LOCAL

PROJECT LENGTH

LENGTH ROADWAY OF F.A. PROJECT =	0.102 MI
LENGTH STRUCTURE OF F.A. PROJECT =	0.023MI
TOTAL LENGTH OF STATE PROJECT =	0.125 MI

Prepared In the Office of:

DIVISION OF HIGHWAYS

2006 STANDARD SPECIFICATIONS

LETTING DATE : January 15, 2008	J. C. FRYE, P.E. <small>PROJECT ENGINEER</small> <hr/> T. H. FANG, P.E. <small>PROJECT DESIGN ENGINEER</small>
------------------------------------	---

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

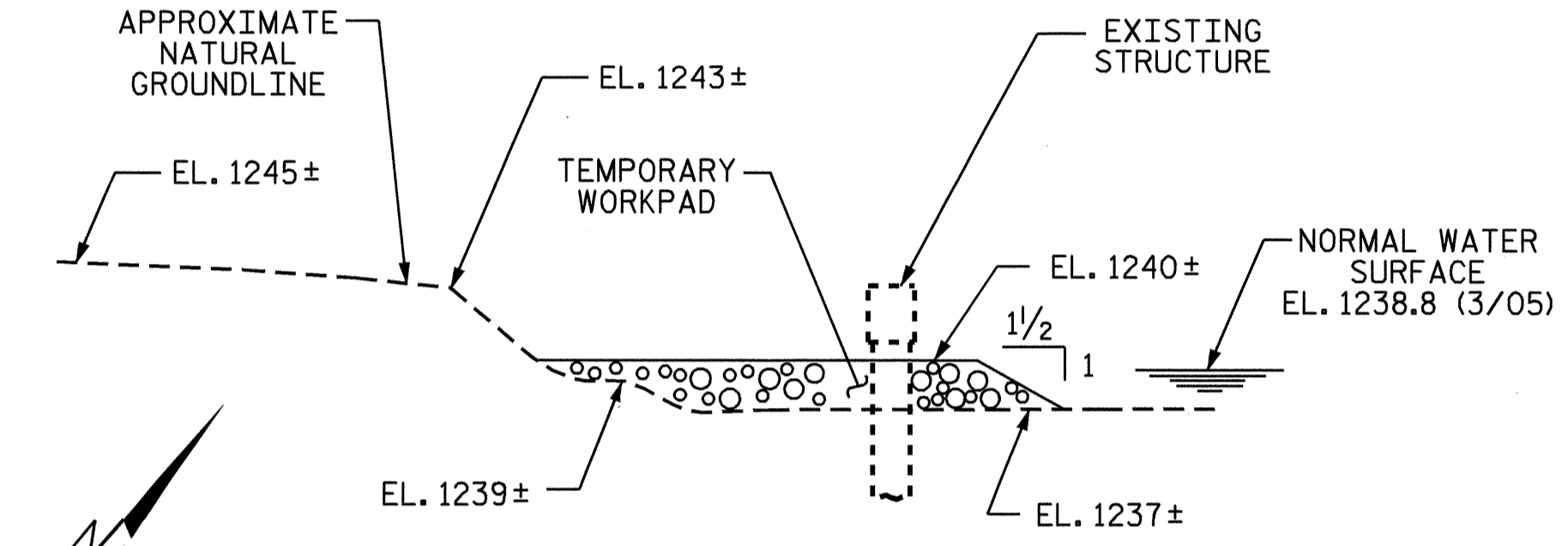
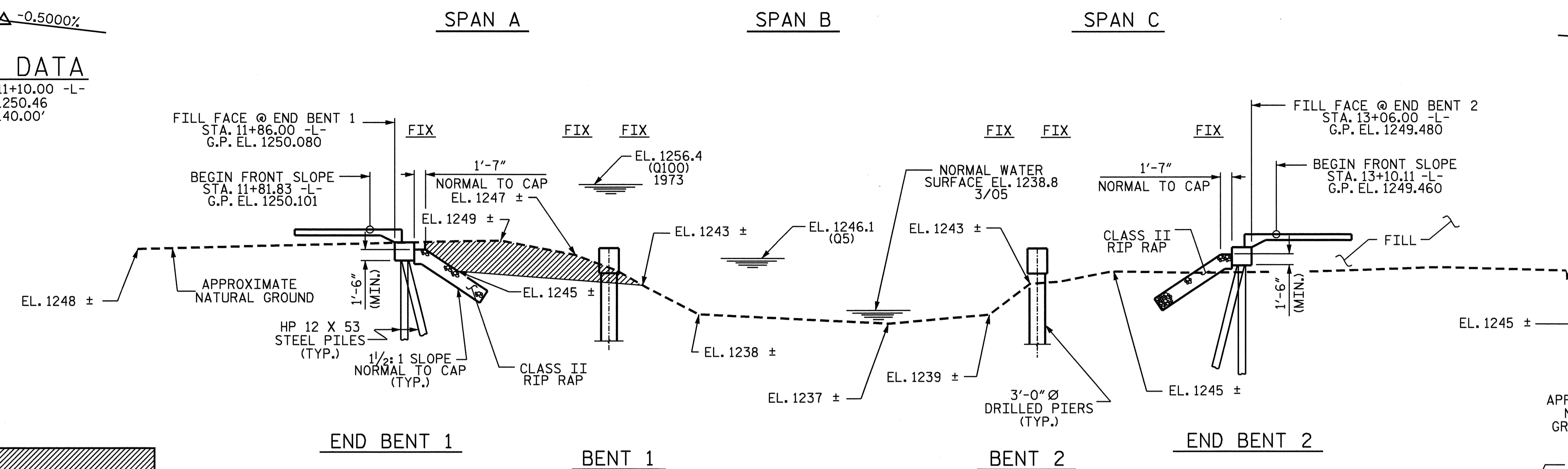
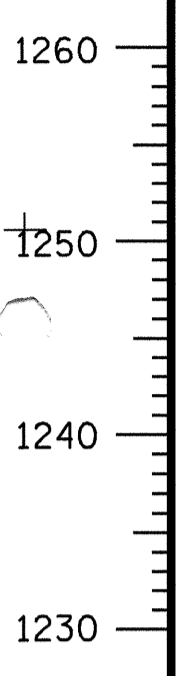
DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA

_____ P.E.
STATE DESIGN ENGINEER
 DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION

APPROVED
 DIVISION ADMINISTRATOR _____ DATE _____

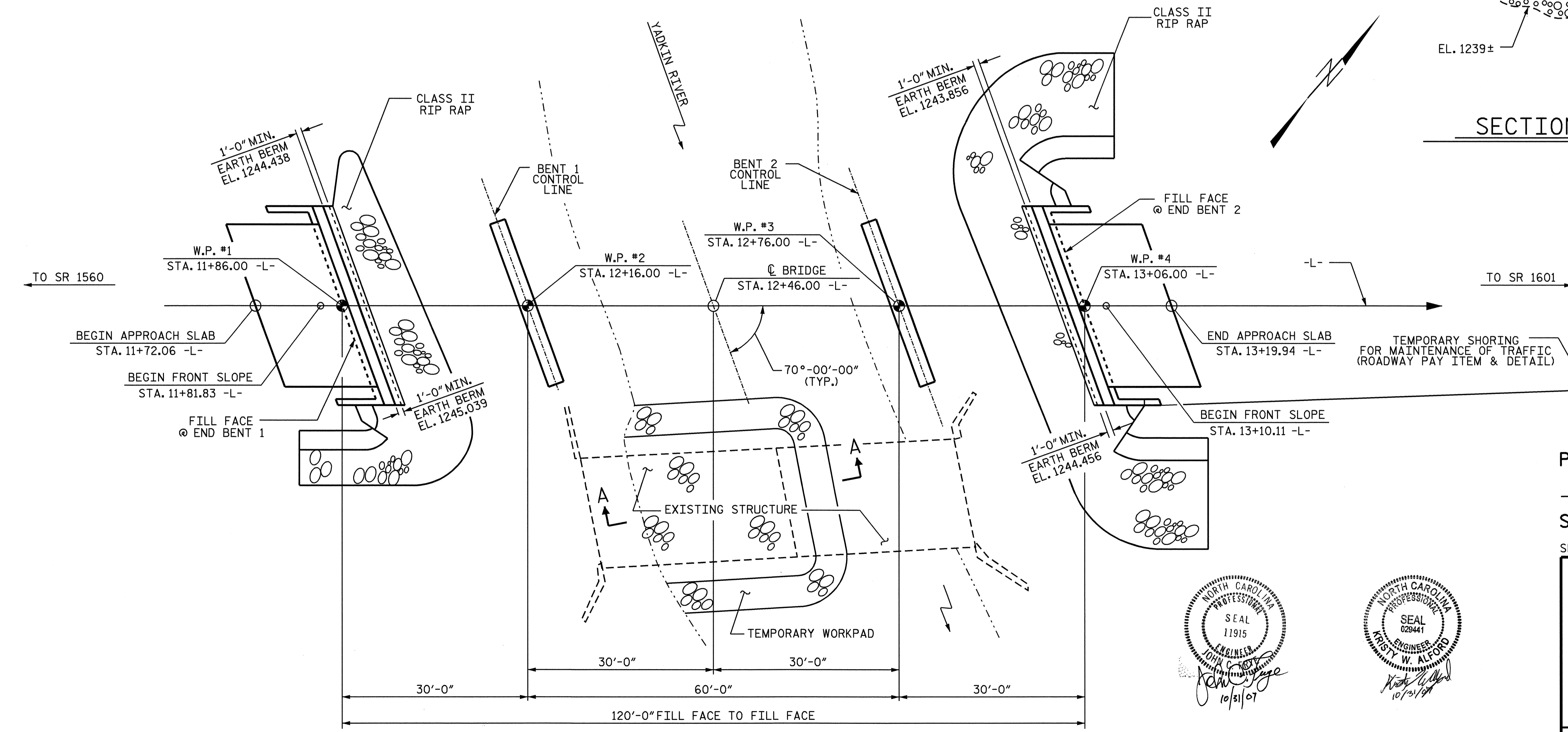
GRADE DATA
 P.I. STA. = 11+10.00 -L-
 EL. = 1250.46
 V.C. = 140.00'

GRADE DATA
 P.I. STA. = 14+10.00 -L-
 EL. = 1248.96
 V.C. = 190.00'

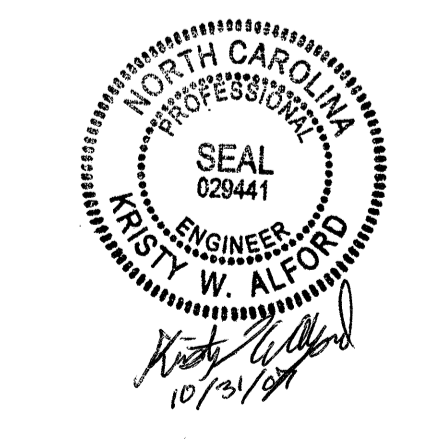
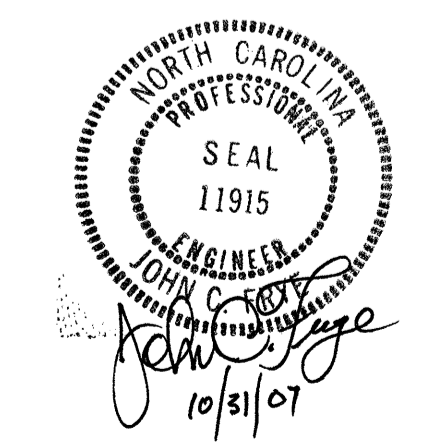


SECTION ALONG -L-
 SECTION TAKEN AT RIGHT ANGLES TO BENTS AND END BENTS

SECTION A-A



PROJECT NO. B-4054
CALDWELL COUNTY
 STATION: 12+46.00 -L-
 SHEET 1 OF 3 REPLACES BRIDGE #334



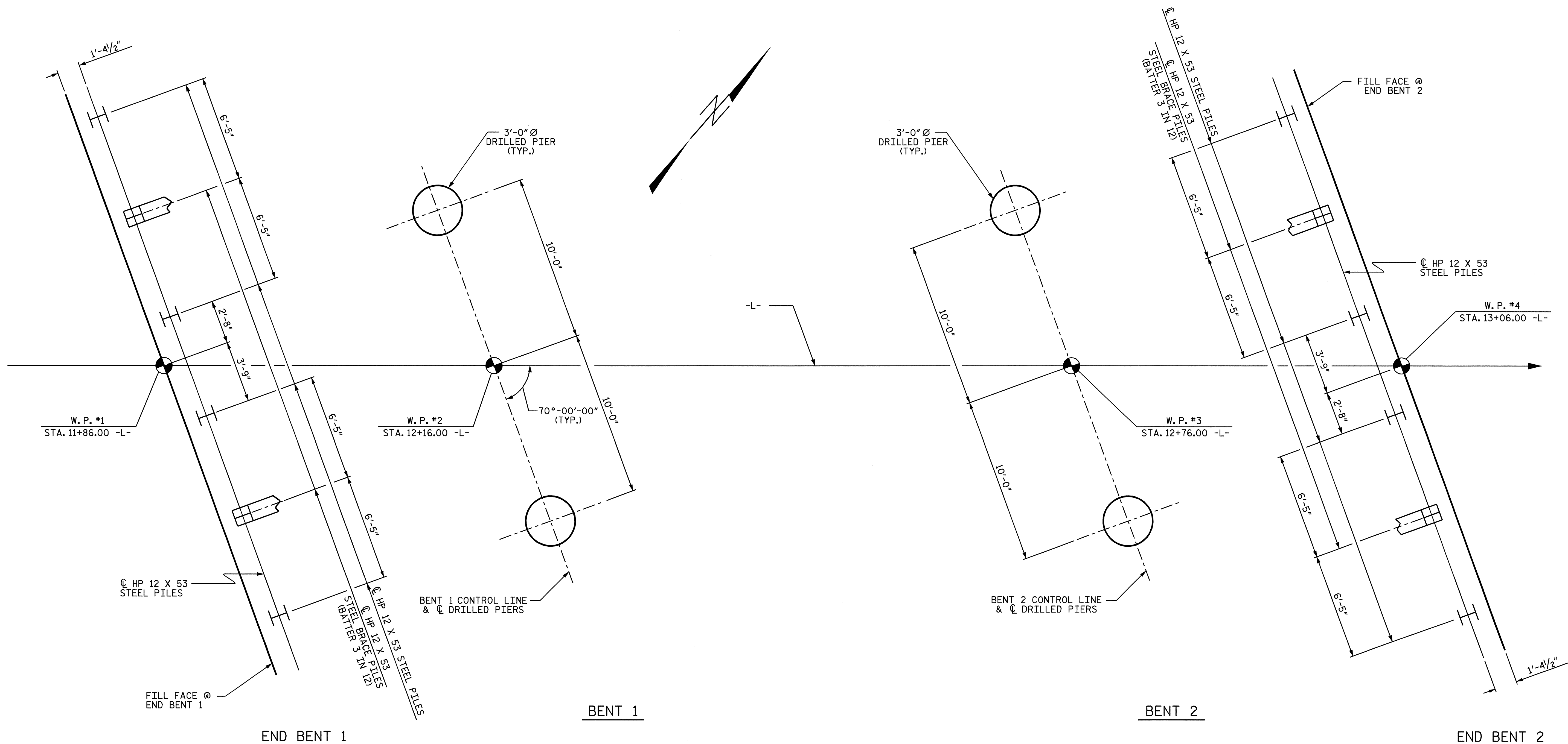
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER
 YADKIN RIVER ON
 SR 1517 BETWEEN
 SR 1560 AND SR 1601

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

DRAWN BY: D. G. ELY DATE: 2/07
 CHECKED BY: K. W. ALFORD DATE: 5/07

PLAN
 (PILES & DRILLED PIERS NOT SHOWN FOR CLARITY)

30-OCT-2007 10:22
 I:\STRUCTURE\del\micro\br-4054\02.dgn



FOUNDATION LAYOUT

DIMENSIONS LOCATING END BENT PILES AND BENT DRILLED PIERS ARE SHOWN TO CENTERLINE OF PILES AND DRILLED PIERS.

NOTES:

DRIVE PILES AT END BENT NO.1 AND END BENT NO.2 TO A REQUIRED BEARING CAPACITY OF 110 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 55 TONS PER PILE.

STEEL PILE POINTS ARE REQUIRED FOR STEEL PILES AT END BENT NO.2. SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

THE DRILLED PIERS AT BENT NO.1 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 80 TSF.

THE DRILLED PIERS AT BENT NO.2 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 60 TSF.

DRILLED PIERS AT BENT NO.1 AND NO.2 ARE DESIGNED FOR AN APPLIED LOAD OF 177 TONS EACH AT THE TOP OF THE COLUMN.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO.1. IF REQUIRED, DO NOT EXTEND THE CASING BELOW ELEVATION 1,237.0 FEET WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING. SEE DRILLED PIERS SPECIAL PROVISION.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO.2. IF REQUIRED, DO NOT EXTEND THE CASING BELOW ELEVATION 1,236.0 FEET WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING. SEE DRILLED PIERS SPECIAL PROVISION.

DRILLED PIERS AT BENT NO.1 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 1,222.0 FEET AND SATISFY THE REQUIRED END BEARING CAPACITY.

DRILLED PIERS AT BENT NO.2 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 1,215.5 FEET AND SATISFY THE REQUIRED END BEARING CAPACITY.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.1 IS ELEVATION 1,224.5 FEET. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.2 IS ELEVATION 1,218.5 FEET. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

FOR DRILLED PIERS, SEE DRILLED PIERS SPECIAL PROVISION.

SPT TESTING IS NOT REQUIRED TO DETERMINE THE END BEARING CAPACITY OF THE DRILLED PIERS AT BENT NO.1 AND NO.2.

SID INSPECTIONS MAY BE REQUIRED TO INSPECT THE BOTTOM CLEANLINESS OF THE DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. SEE DRILLED PIERS SPECIAL PROVISION.

CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR THE DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. SEE CROSSHOLE SONIC LOGGING SPECIAL PROVISION.

DRAWN BY : D. G. ELY DATE : 2/07
 CHECKED BY : K. W. ALFORD DATE : 5/07

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PROJECT NO. B-4054
CALDWELL COUNTY
 STATION: 12+46.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER
 YADKIN RIVER ON
 SR 1517 BETWEEN
 SR 1560 AND SR 1601



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

SHEET NO.
 S-2
 TOTAL SHEETS
 27

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP. ACCESS	REMOVAL OF EXISTING STRUCTURE	3'-0" DIA. DRILLED PIERS IN SOIL	3'-0" DIA. DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" DIA. DRILLED PIERS	SID INSPECTION	CROSSHOLE SONIC LOGGING	UNCLASSIFIED STRUCTURE EXCAVATION	CONCRETE WEARING SURFACE	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	HP 12 X 53 STEEL PILES	STEEL PILE POINTS	ONE BAR METAL RAIL	1'-0" X 2'-0" 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			
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EA.	EA.	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	EACH	LIN. FT.	LIN. FT.	TON	SQ. YDS.	LUMP SUM	LUMP SUM	NO.	LIN. FT.	
SUPERSTRUCTURE									2900	3134		LUMP SUM					219.48	117.60			LUMP SUM	LUMP SUM	27	1056.0		
END BENT 1											11.7		1823		6	150				75	85					
BENT 1			34.2	10.0	14.2		1				16.0		4712													
BENT 2			37.6	19.0	15.6						16.0		5222													
END BENT 2											11.7		1823		6	180	6			95	105					
TOTAL	LUMP SUM	LUMP SUM	71.8	29.0	29.8	2	1	LUMP SUM	2900	3134	55.4	LUMP SUM	13,580	1839	12	330	6	219.48	117.60	170	190	LUMP SUM	LUMP SUM	27	1056.0	

NOTES

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING.

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

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

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

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

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.

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.

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF 2 SPANS @ 31'0", WITH TIMBER FLOOR ON I-BEAMS (LOW WATER TYPE) AND A CLEAR ROADWAY WIDTH OF 15'-10" ON REINFORCED CONCRETE ABUTMENTS AND PIERS AND LOCATED DOWN-STREAM FROM PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT. SEE SPECIAL PROVISIONS FOR REMOVAL OF EXISTING STRUCTURE.

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

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 12+46.00 -L-."

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET 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.

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 12+46.00 -L-.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

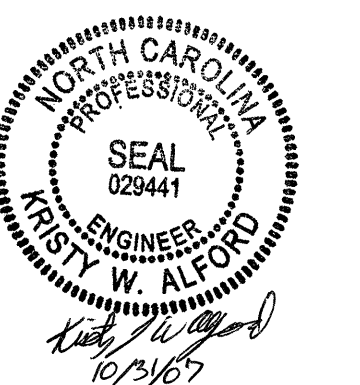
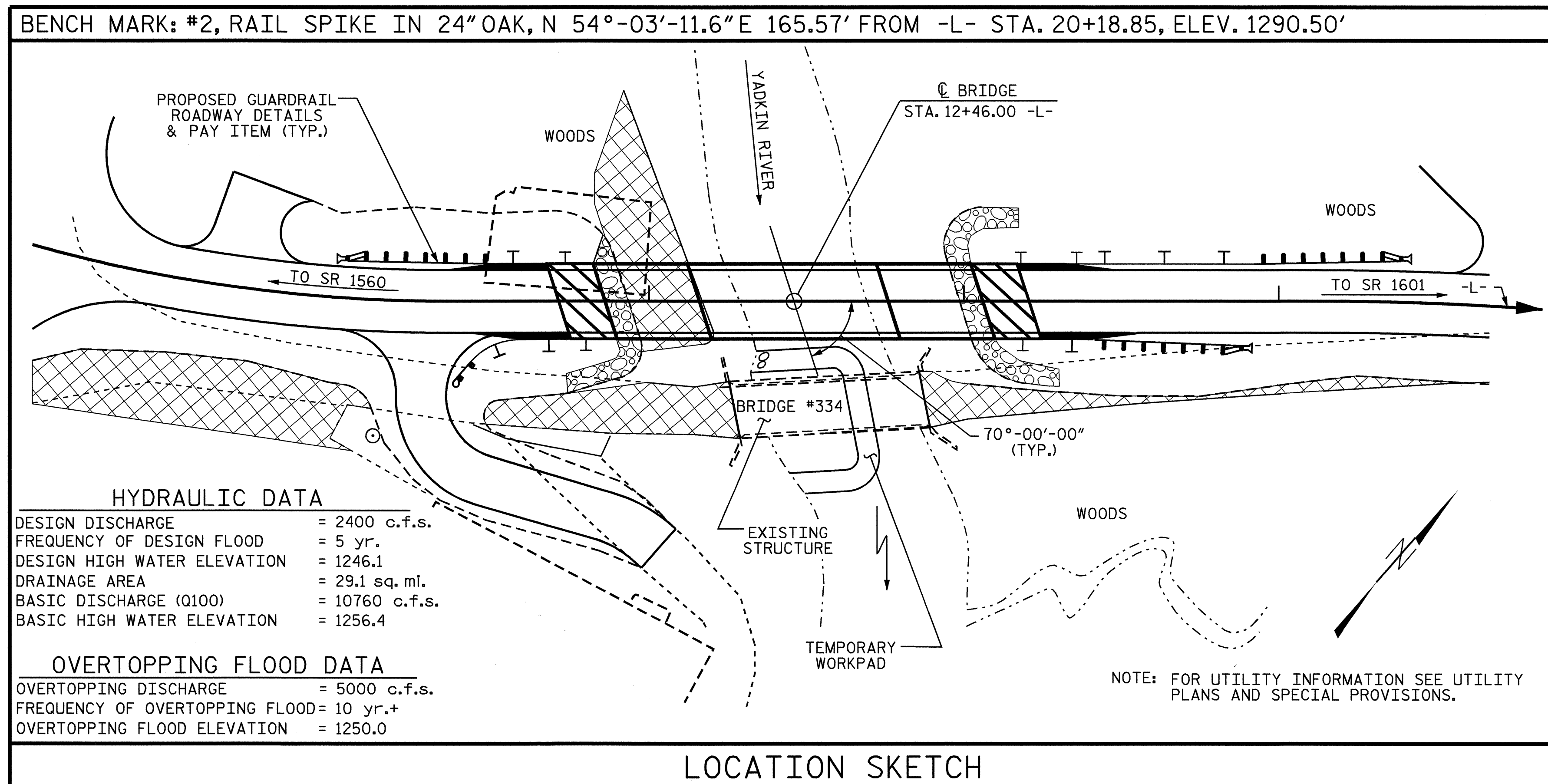
FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS, SEE SPECIAL PROVISIONS.

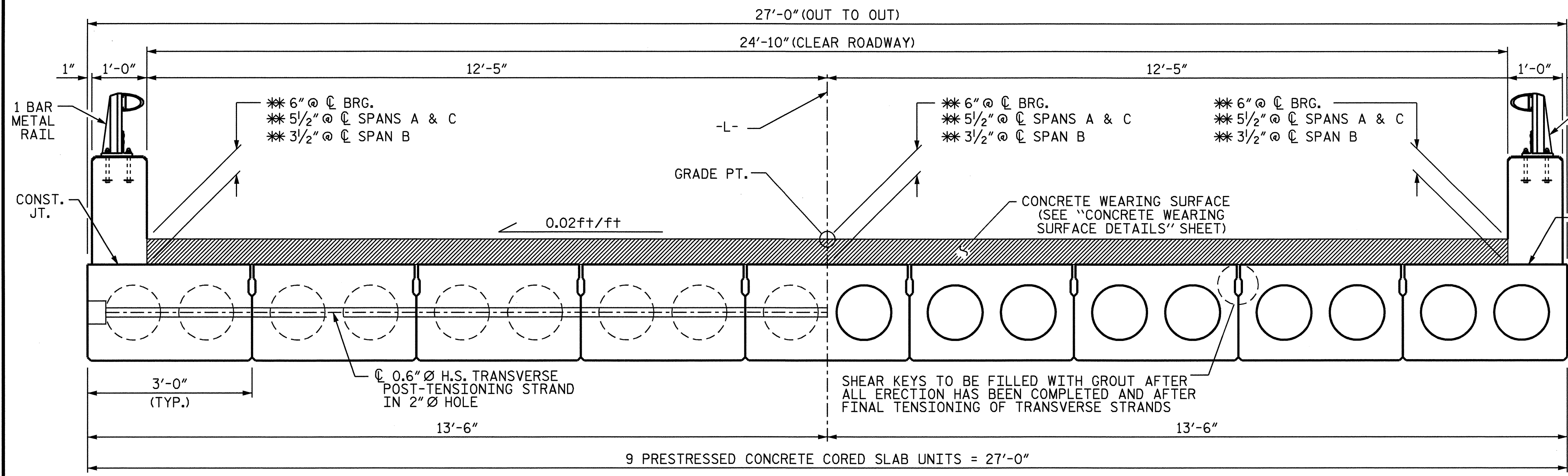


PROJECT NO. B-4054
CALDWELL COUNTY
 STATION: 12+46.00 -L-

SHEET 3 OF 3

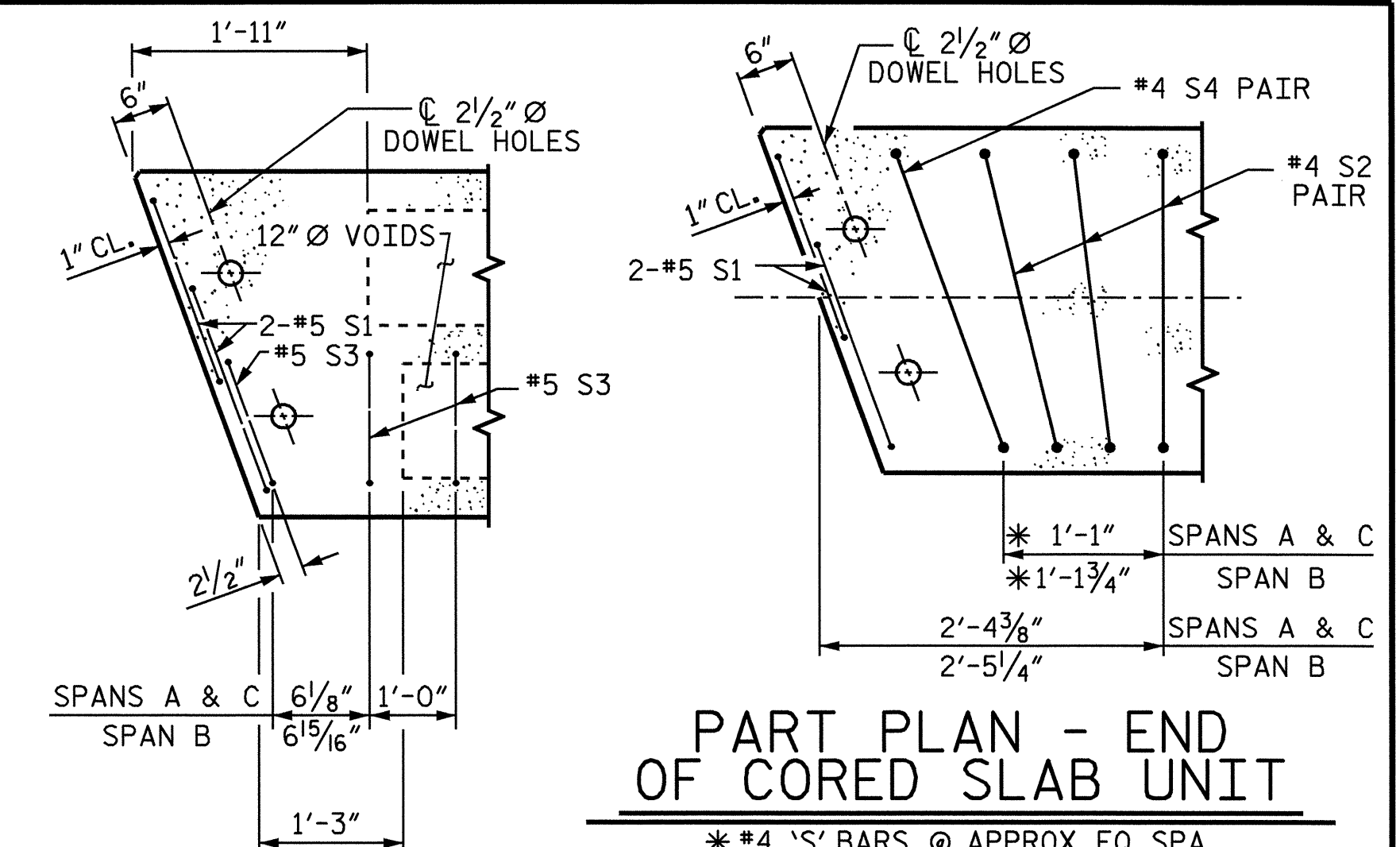
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-3
GENERAL DRAWING FOR BRIDGE OVER YADKIN RIVER ON SR 1517 BETWEEN SR 1560 & SR 1601						TOTAL SHEETS 27
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DRAWN BY : D. G. ELY DATE : 2/07
 CHECKED BY : K. A. ALFORD DATE : 5/07



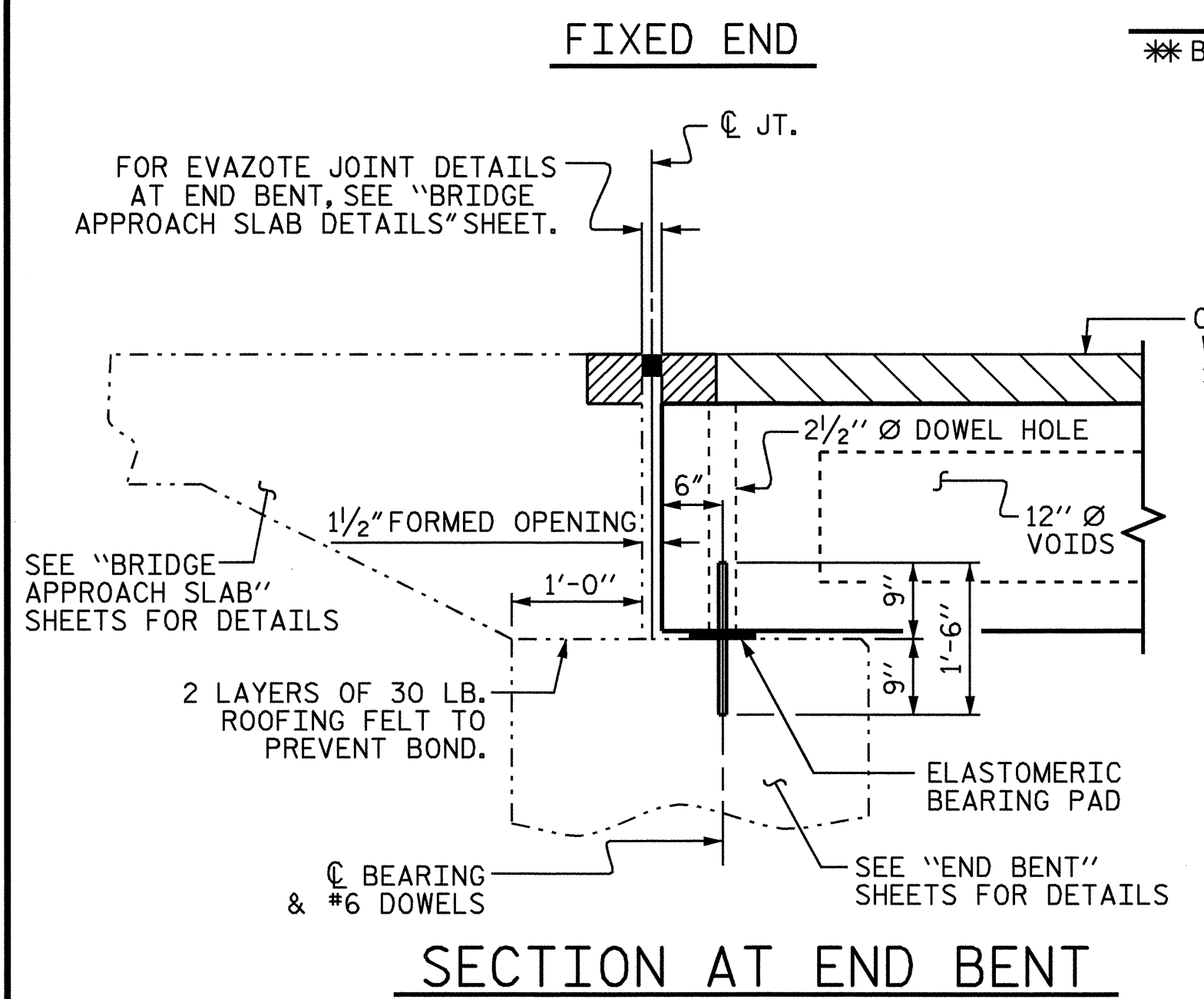
TYPICAL SECTION

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

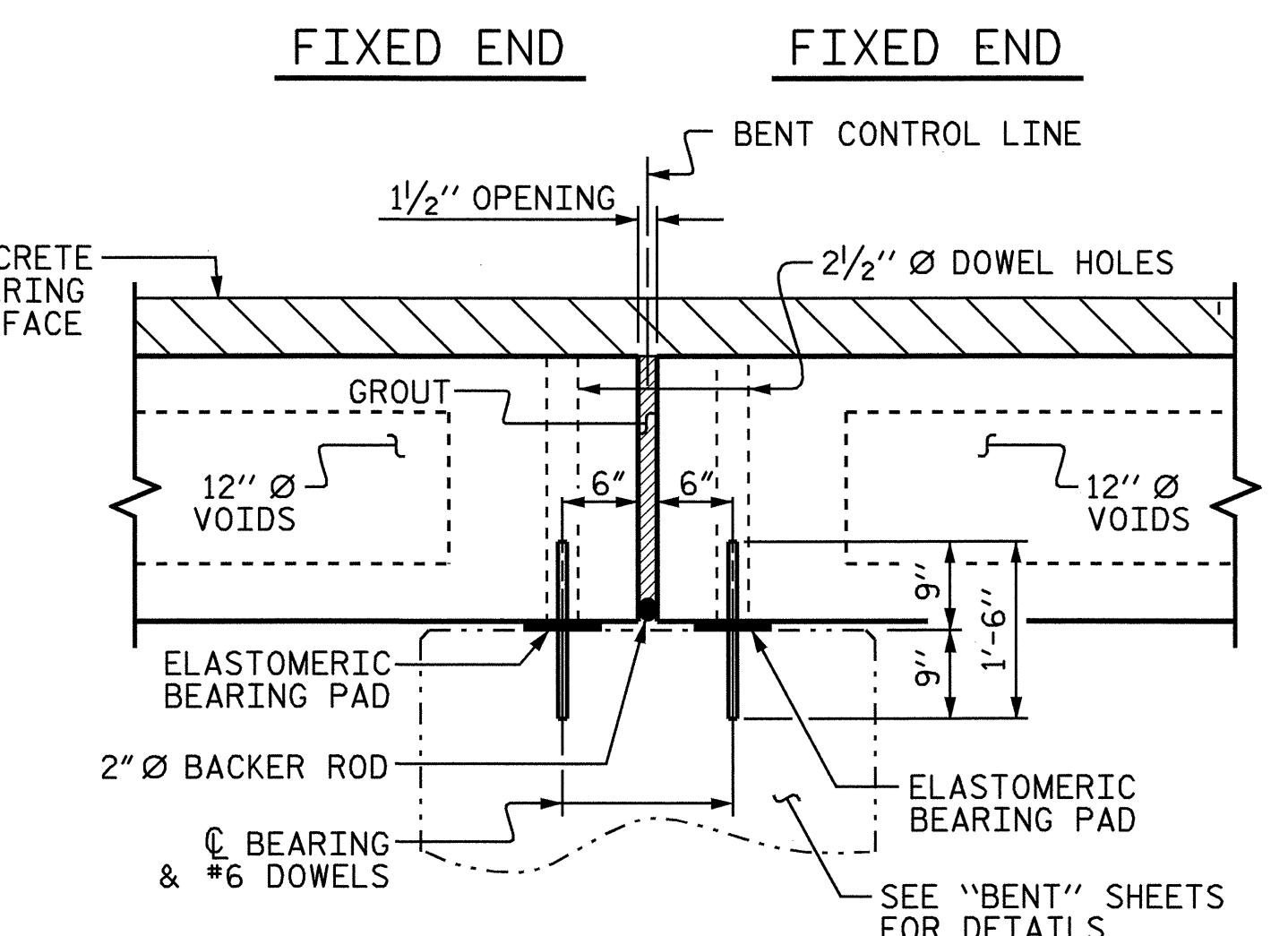


PART PLAN EXTERIOR SECTION

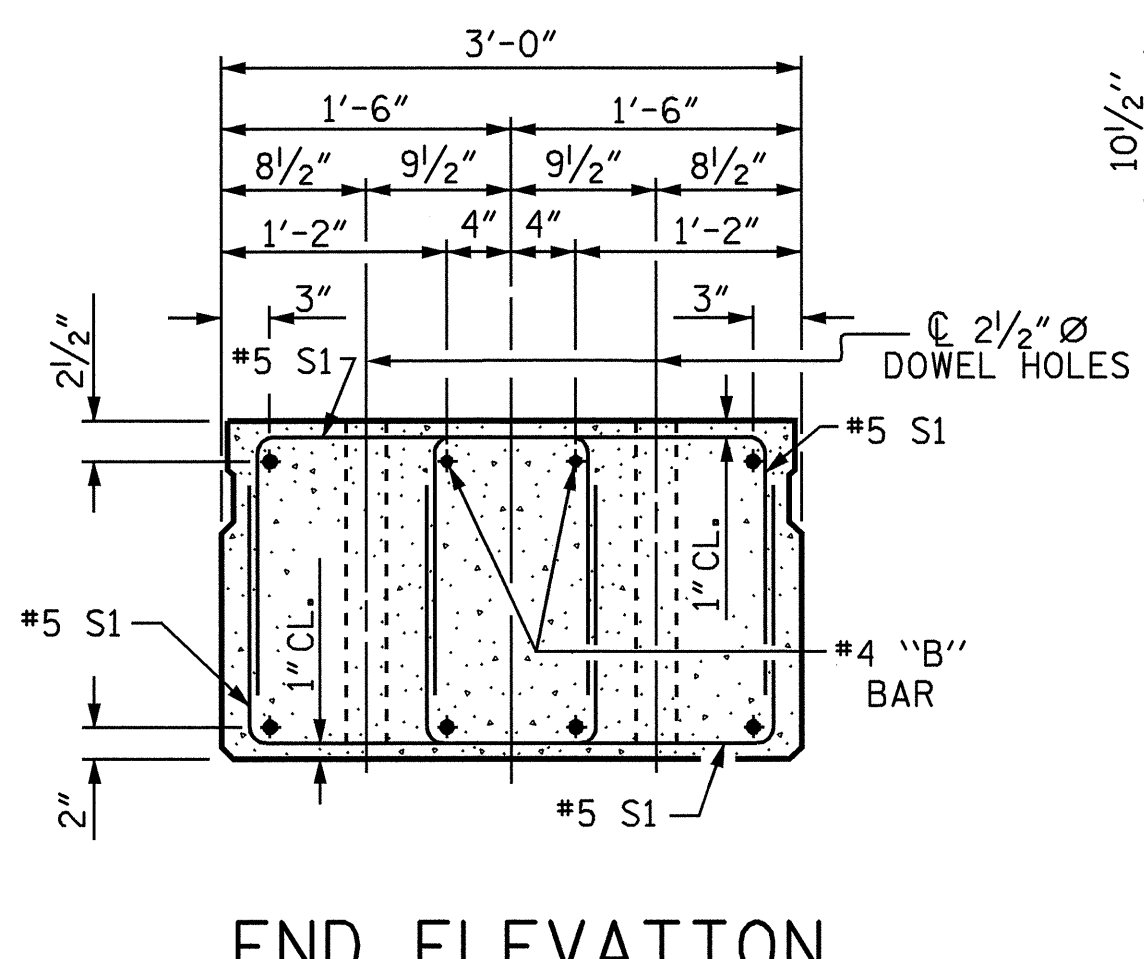
NOTE: EXTERIOR SECTION SHOWN - INTERIOR SECTION SIMILAR EXCEPT OMIT S3 BARS.



SECTION AT END BENT

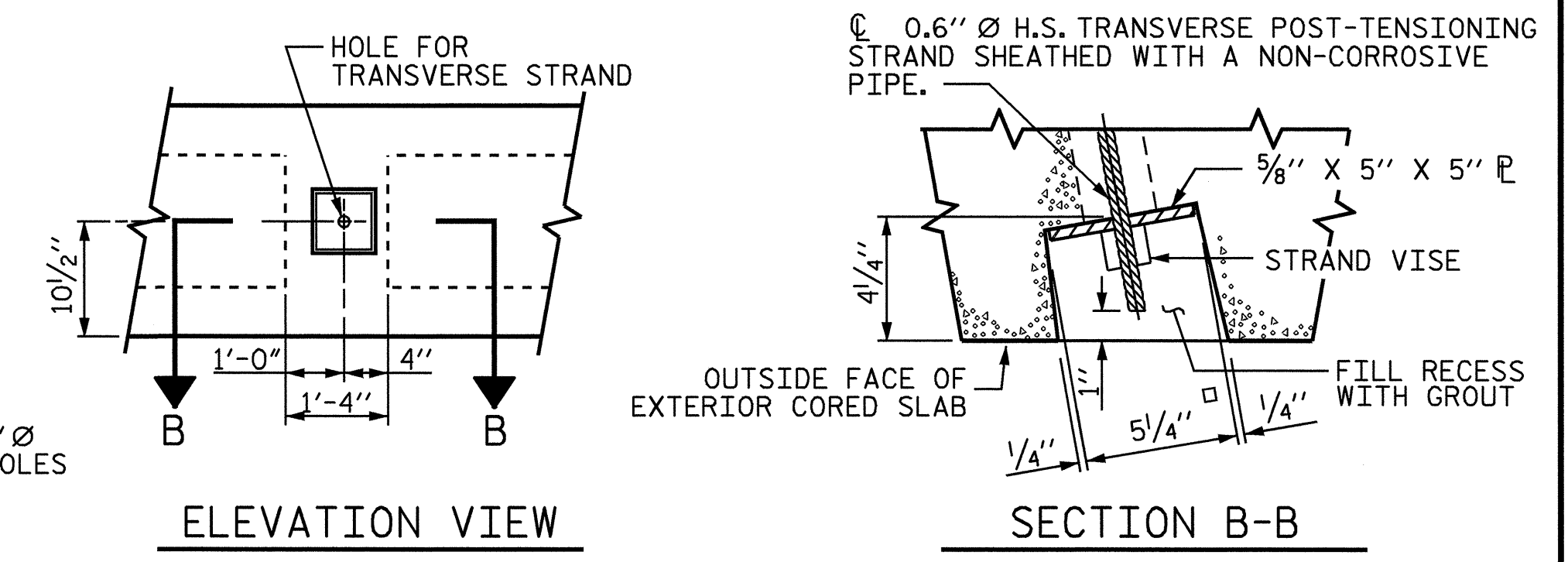


SECTION AT BENT



END ELEVATION

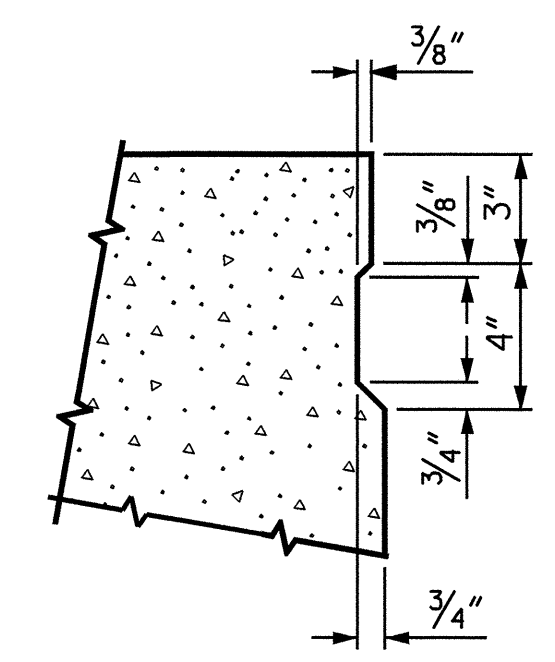
SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB SECTION SHOWN-EXTERIOR SLAB SECTION SIMILAR EXCEPT SHEAR KEY LOCATION.



ELEVATION VIEW

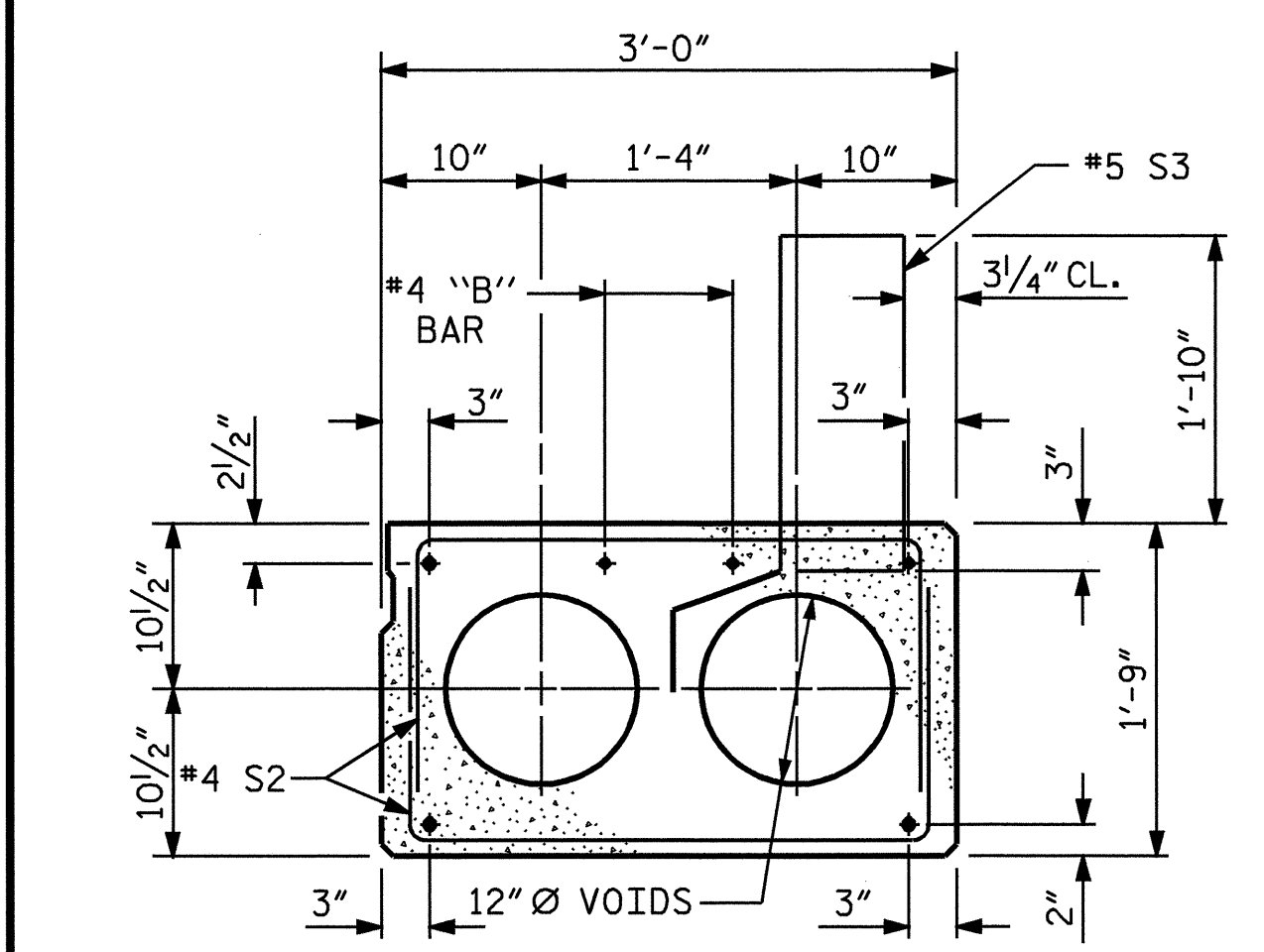
SECTION B-B

GROUTED RECESS AT END OF POST-TENSIONED STRAND



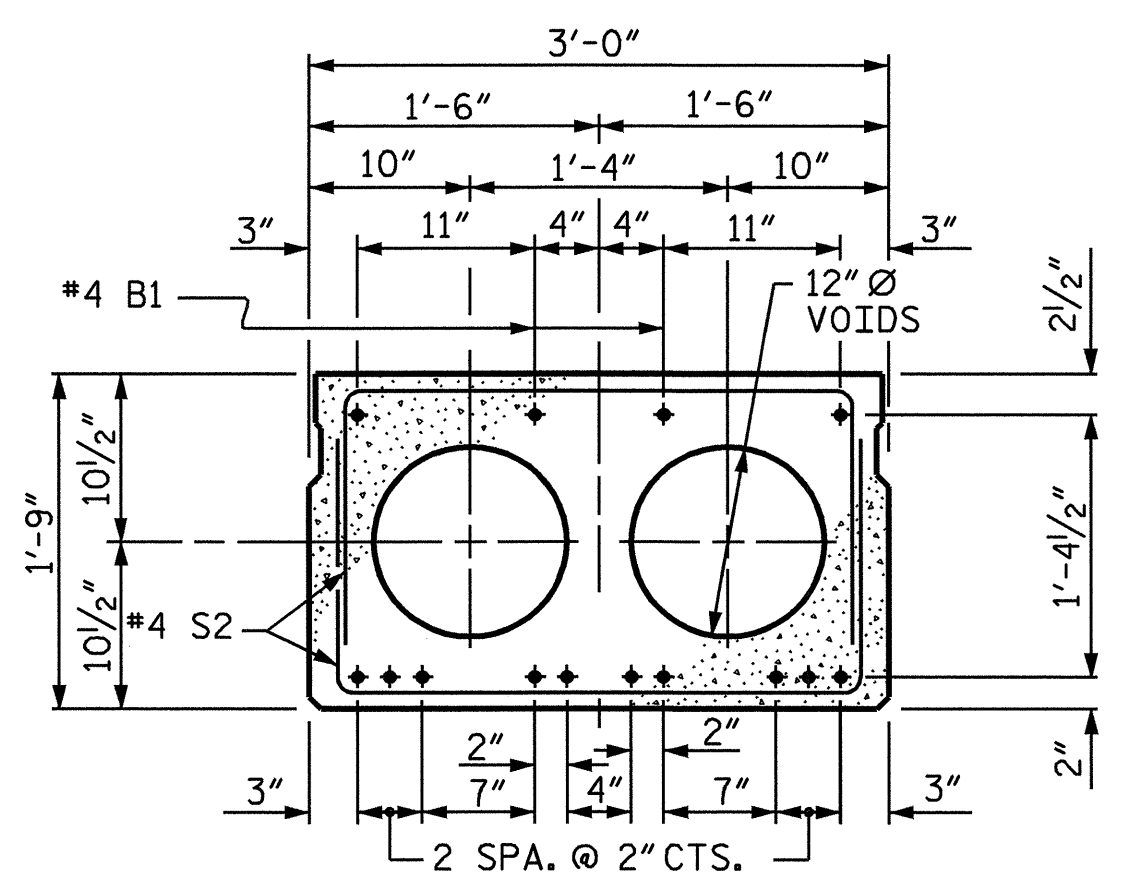
SHEAR KEY DETAIL

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



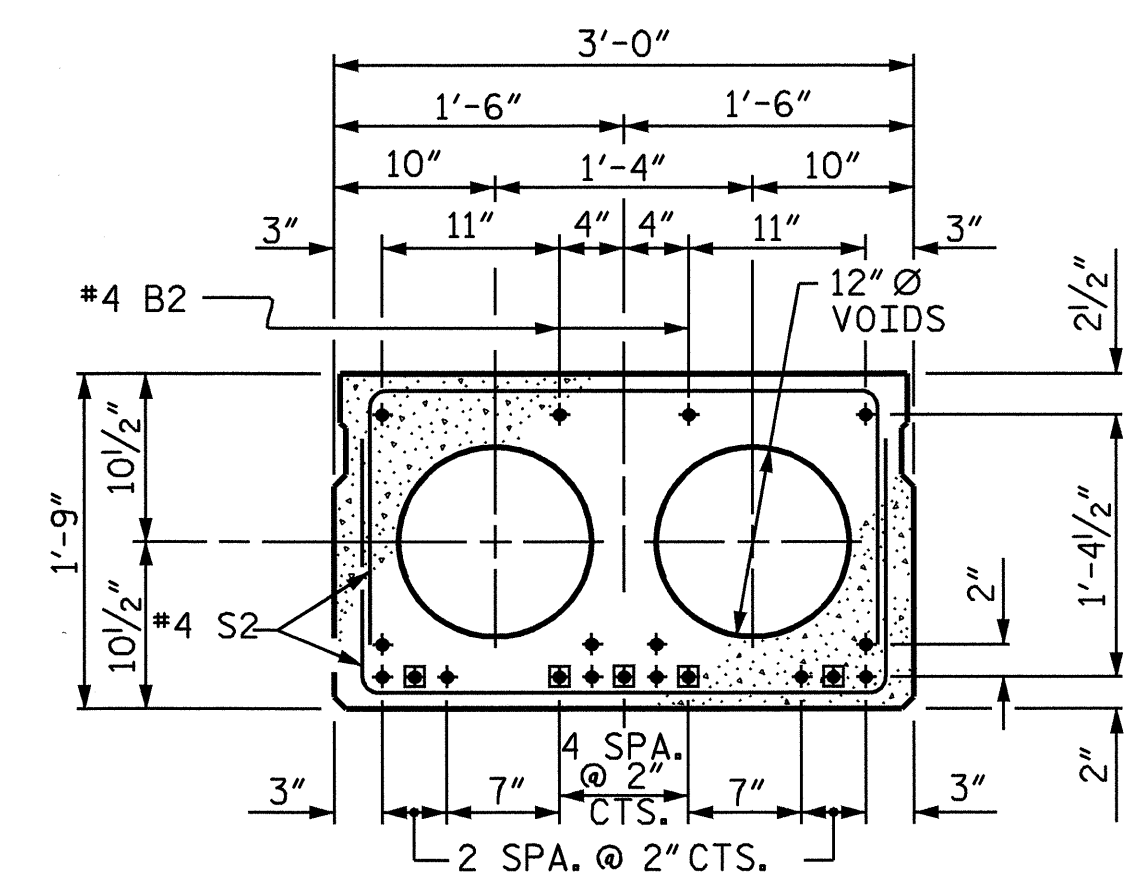
EXTERIOR SLAB SECTION

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



INTERIOR SLAB SECTION (SPAN A & SPAN C)

(12 STRANDS)



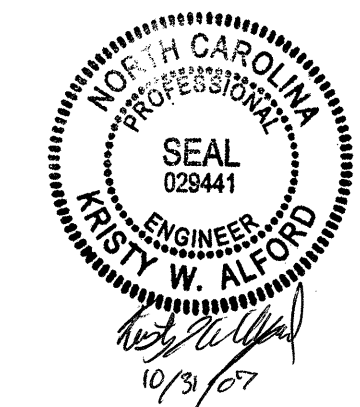
INTERIOR SLAB SECTION (SPAN B)

(17 STRANDS, 5 SHEATHED)

1/2" Ø LOW RELAXATION STRAND LAYOUT

0.6" Ø LOW RELAXATION STRAND LAYOUT

☐ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 4'-11" FROM END OF CORED SLAB UNIT, SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.

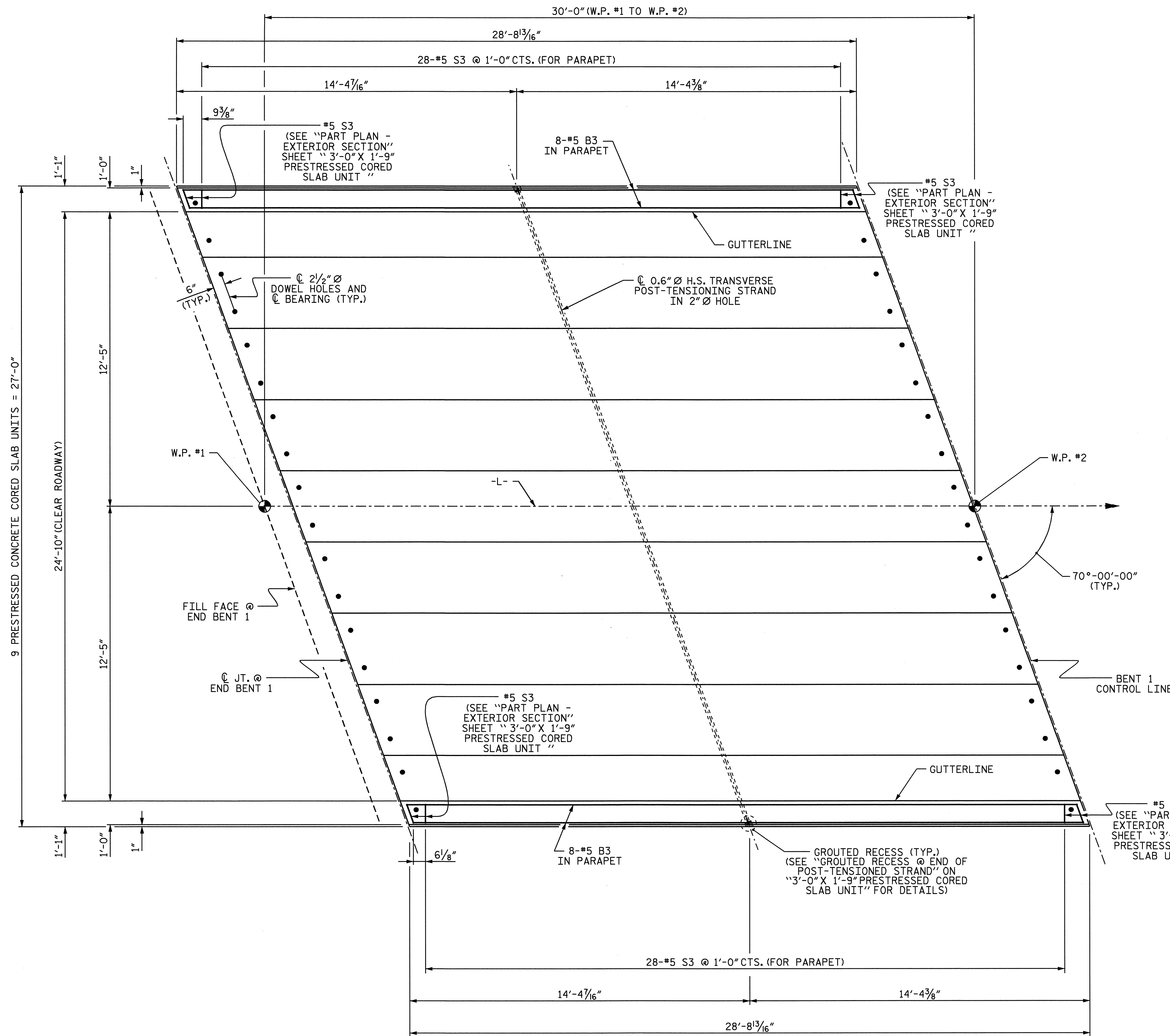


PROJECT NO. B-4054
 CALDWELL COUNTY
 STATION: 12+46.00 -L-

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

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

DRAWN BY: D. G. ELY DATE: 6/06
 CHECKED BY: K. W. ALFORD DATE: 7/06



SPAN A

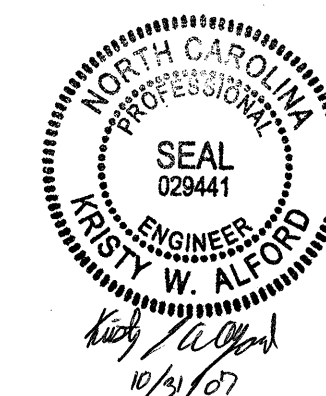
FOR ADDITIONAL CORED SLAB UNIT DETAILS, SEE SHEET 4 OF 5

PROJECT NO. B-4054
CALDWELL COUNTY
 STATION: 12+46.00 -L-

SHEET 1 OF 5

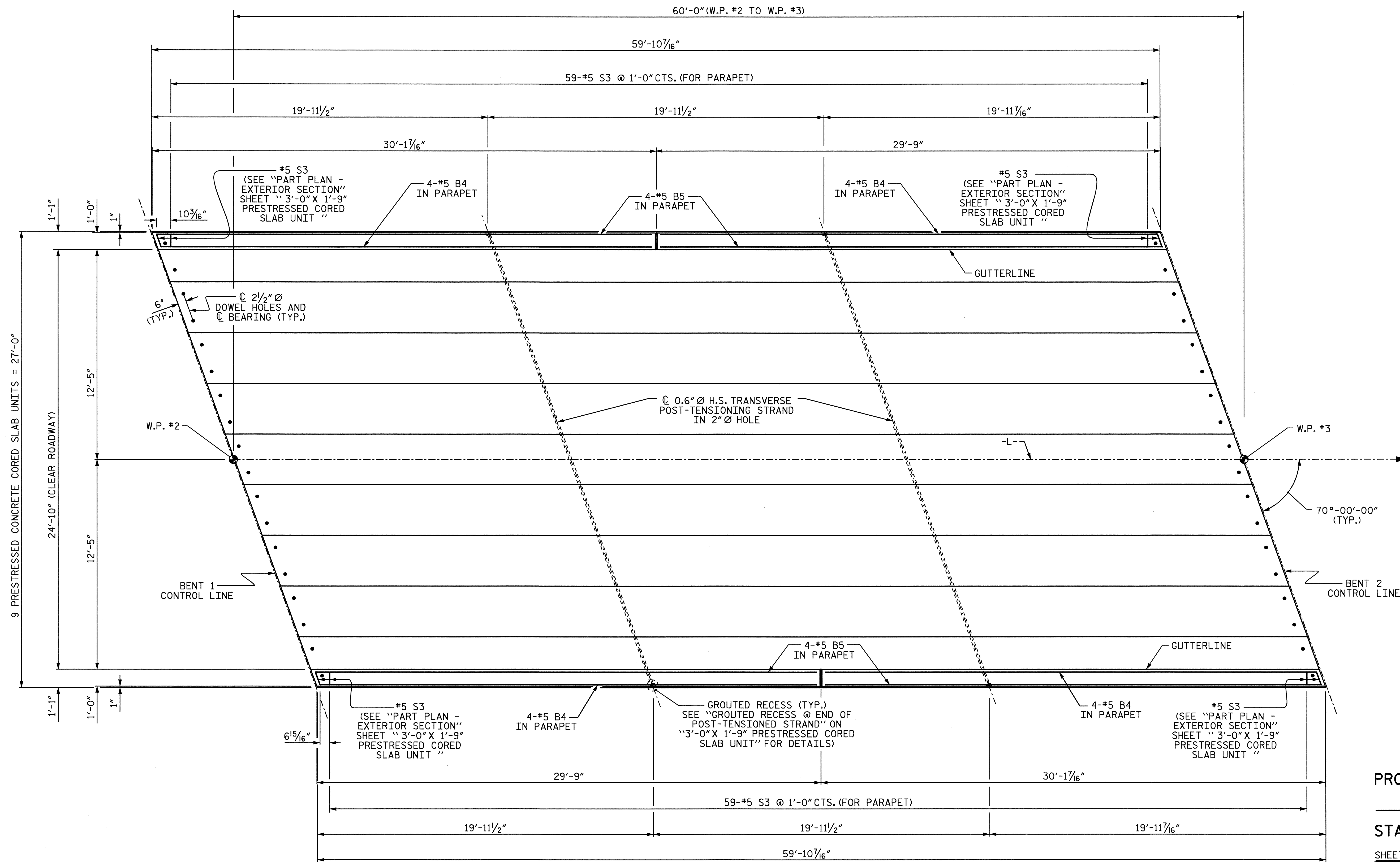
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN
 SPAN A



DRAWN BY: D. G. ELY DATE: 6/06
 CHECKED BY: K. W. ALFORD DATE: 7/06

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



SPAN B

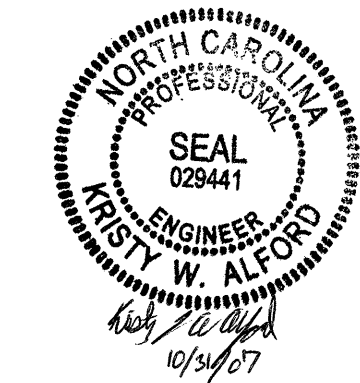
FOR ADDITIONAL CORED SLAB UNIT DETAILS, SEE SHEET 5 OF 5

PROJECT NO. B-4054
CALDWELL COUNTY
 STATION: 12+46.00 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

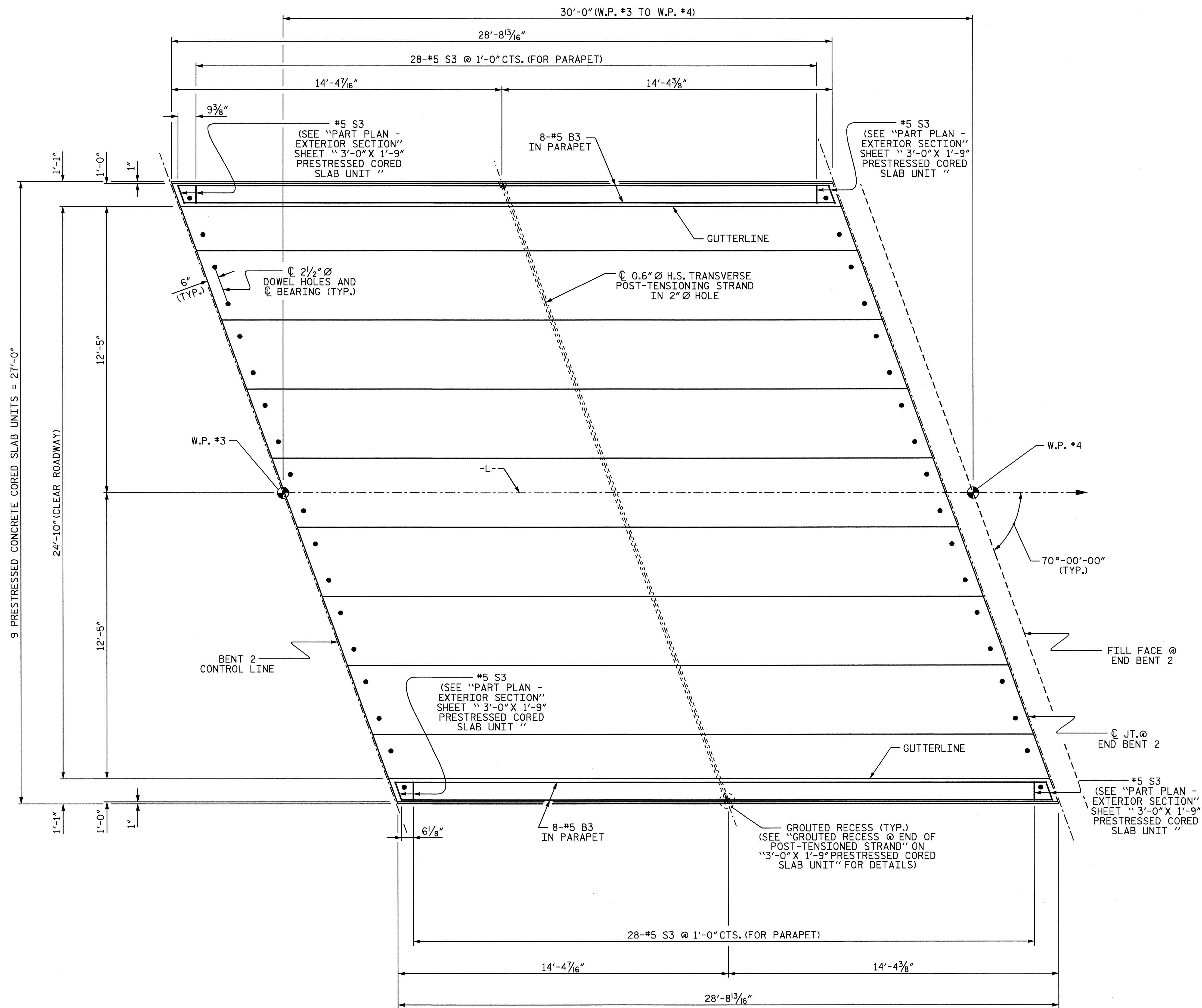
SUPERSTRUCTURE
 PLAN OF SPAN
 SPAN B



DRAWN BY : D. G. ELY DATE : 6/06
 CHECKED BY : K. W. ALFORD DATE : 7/06

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			27

30-OCT-2007 10:20
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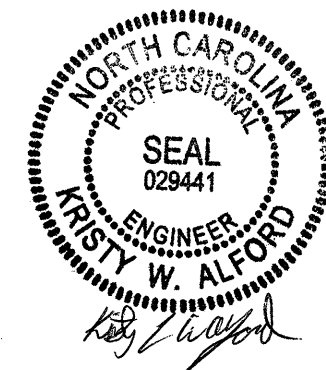


PROJECT NO. B-4054
CALDWELL COUNTY
 STATION: 12+46.00 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

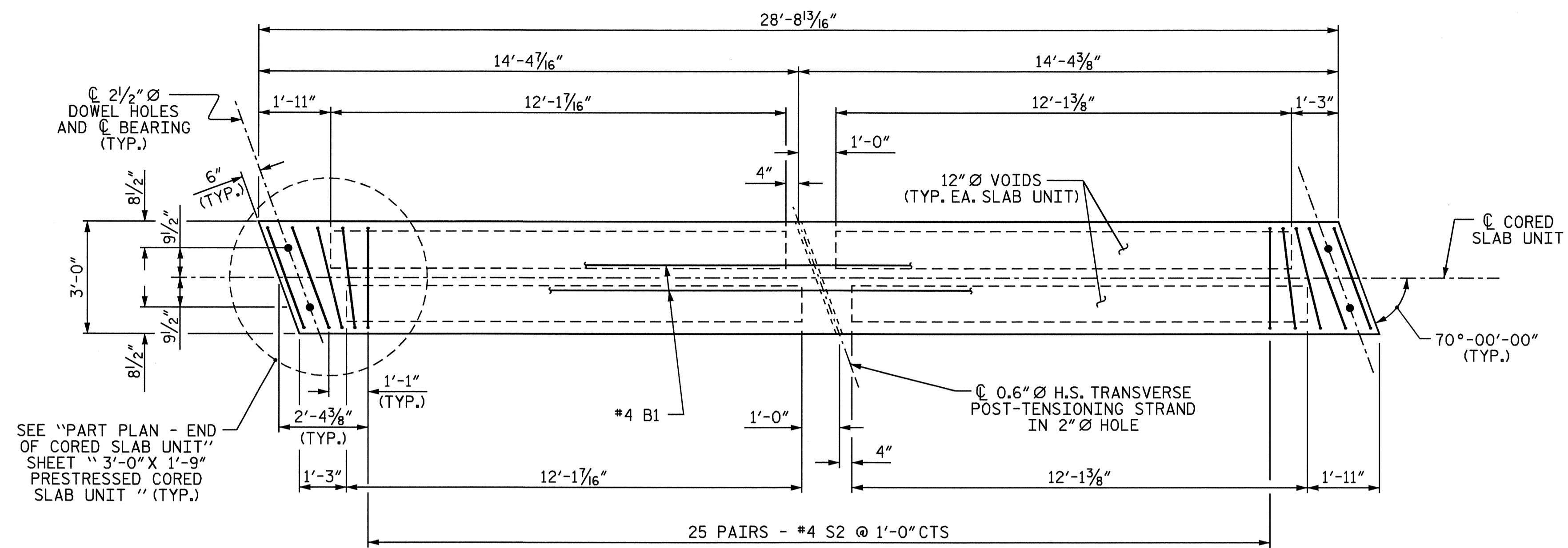
SUPERSTRUCTURE
 PLAN OF SPAN
 SPAN C



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

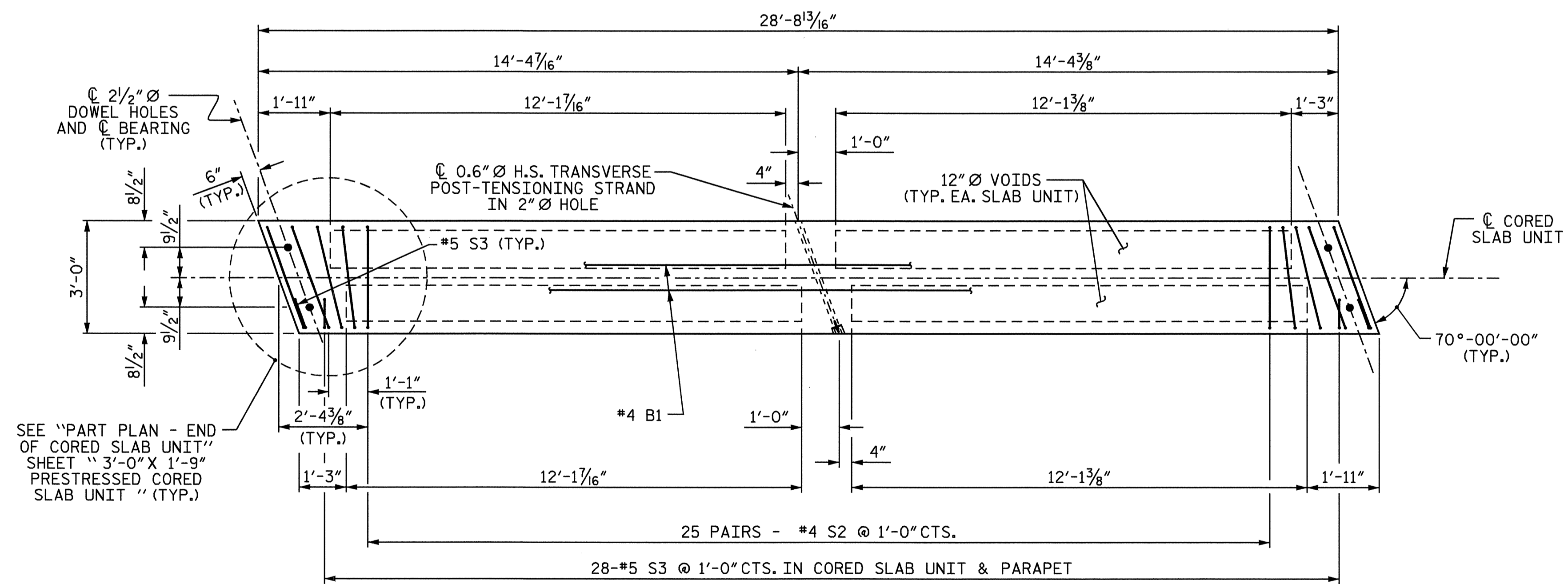
DRAWN BY: D. G. ELY DATE: 6/06
 CHECKED BY: K. W. ALFORD DATE: 7/06

SPAN C
 FOR ADDITIONAL CORED SLAB UNIT DETAILS, SEE SHEET 4 OF 5



PLAN OF INTERIOR CORED SLAB UNIT

(SPAN A & C)



PLAN OF EXTERIOR CORED SLAB UNIT

(SPAN A & C)

PROJECT NO. B-4054
CALDWELL COUNTY
 STATION: 12+46.00 -L-

SHEET 4 OF 5

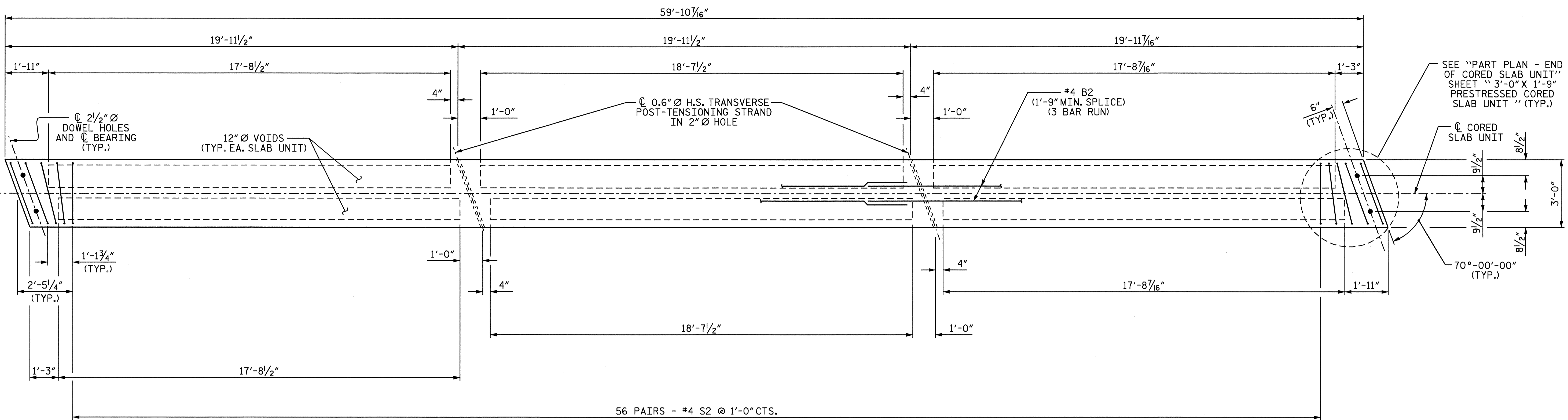
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN
 CORED SLAB
 UNIT DETAILS



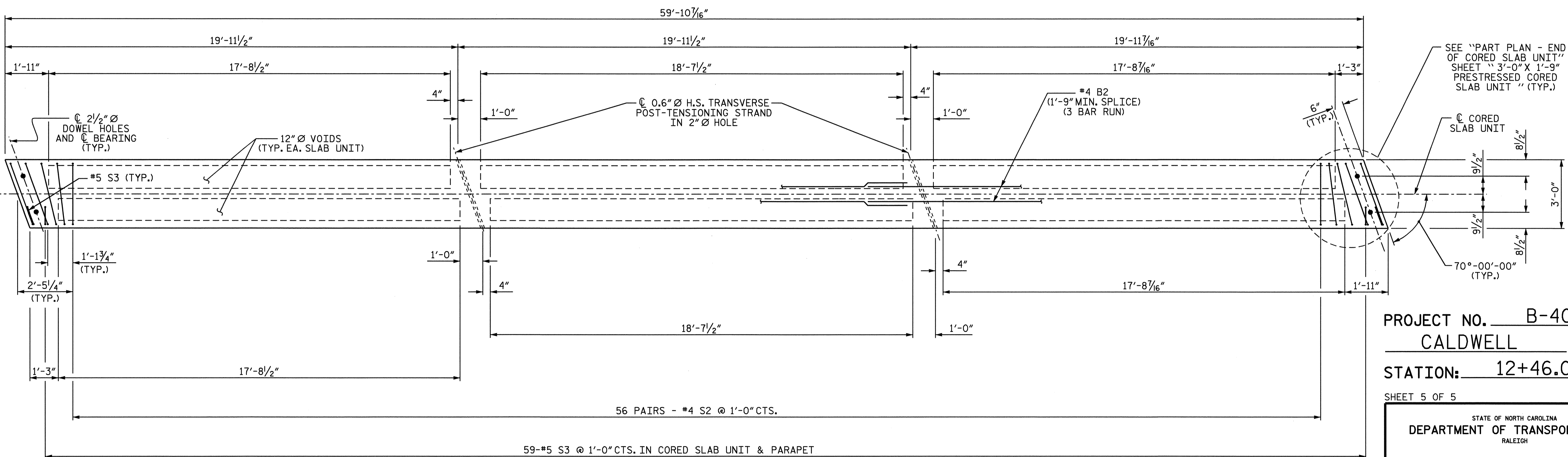
REVISIONS						SHEET NO. S-8
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 27
2			4			

DRAWN BY: D. G. ELY DATE: 6/06
 CHECKED BY: K. W. ALFORD DATE: 7/06



PLAN OF INTERIOR CORED SLAB UNIT

(SPAN B)



PLAN OF EXTERIOR CORED SLAB UNIT

(SPAN B)

PROJECT NO. B-4054
CALDWELL COUNTY
 STATION: 12+46.00 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN
 CORED SLAB
 UNIT DETAILS



DRAWN BY: D. G. ELY DATE: 6/06
 CHECKED BY: K. W. ALFORD DATE: 7/06

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

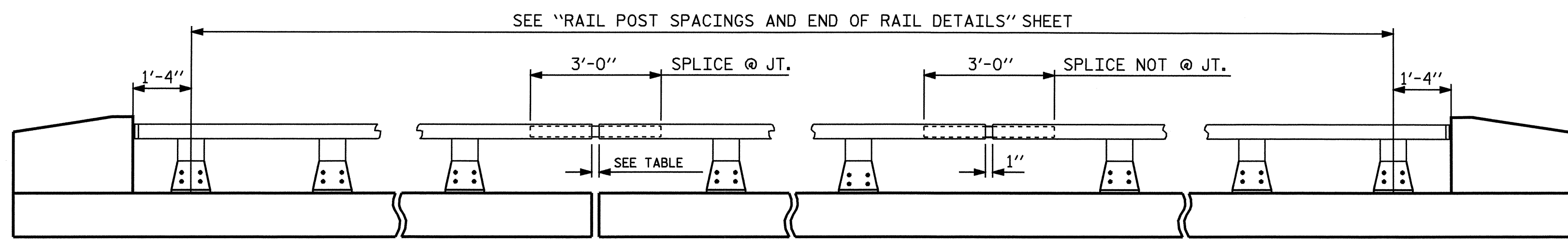


TABLE	
CL JT. @	RAIL OPENING
BENT No. 1	1 1/2"
BENT No. 2	1 1/2"

NOTES

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

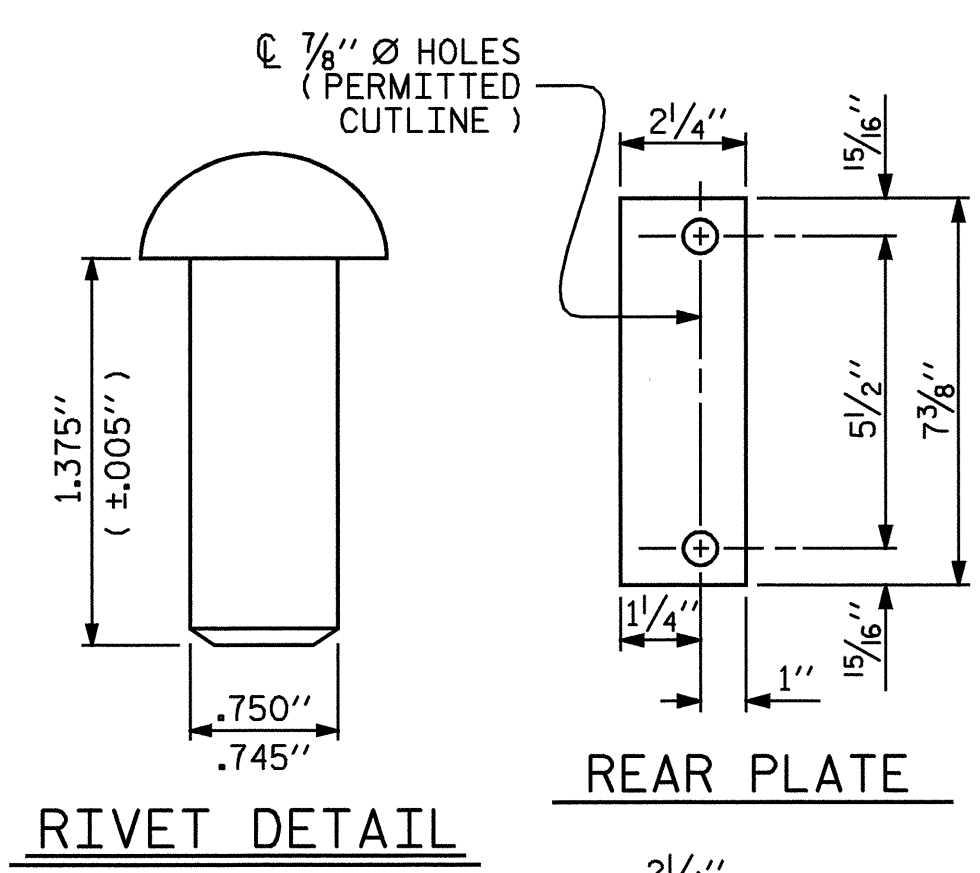
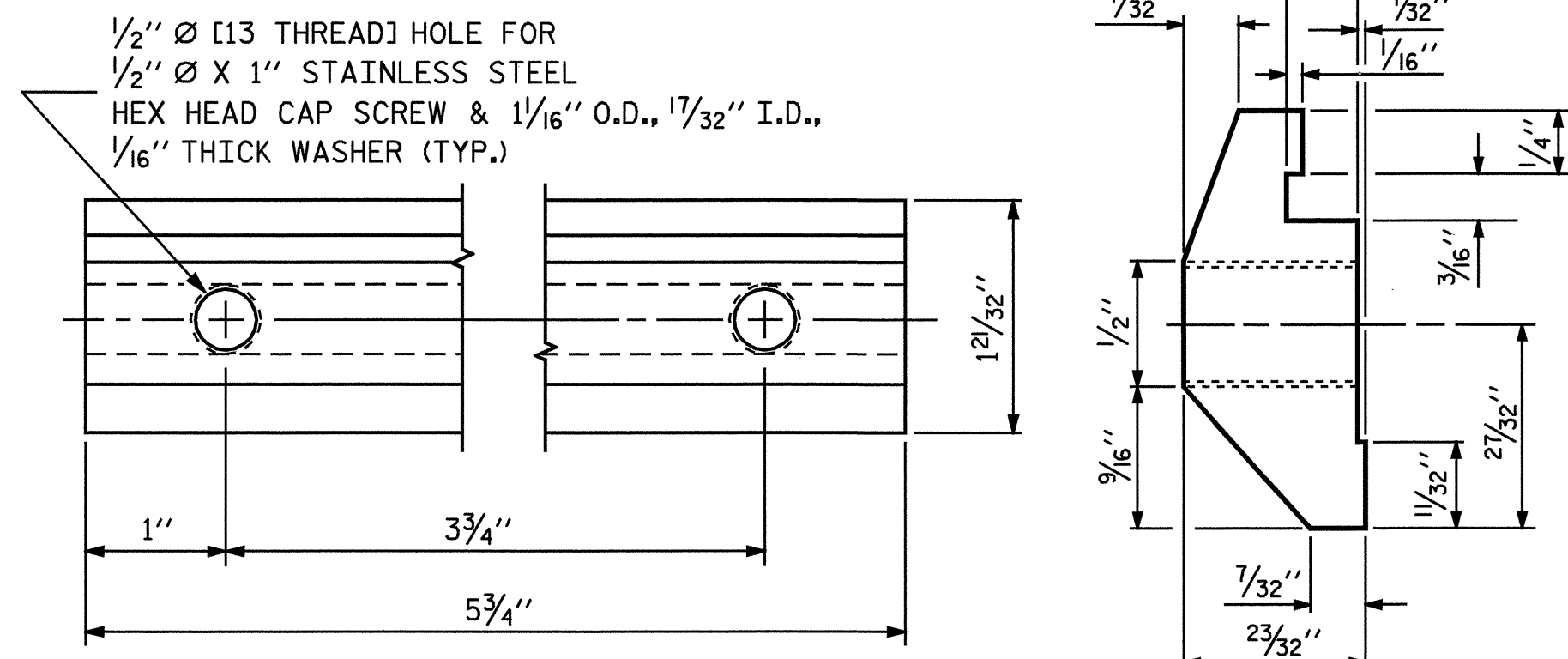
ALUMINUM RAILS
 MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B221 ALLOY 6061-T6. MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

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

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

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

ELEVATION



GALVANIZED STEEL RAILS
 MATERIALS AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:
 POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.

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

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

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

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

GENERAL NOTES

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

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

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

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL.

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

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

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

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

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

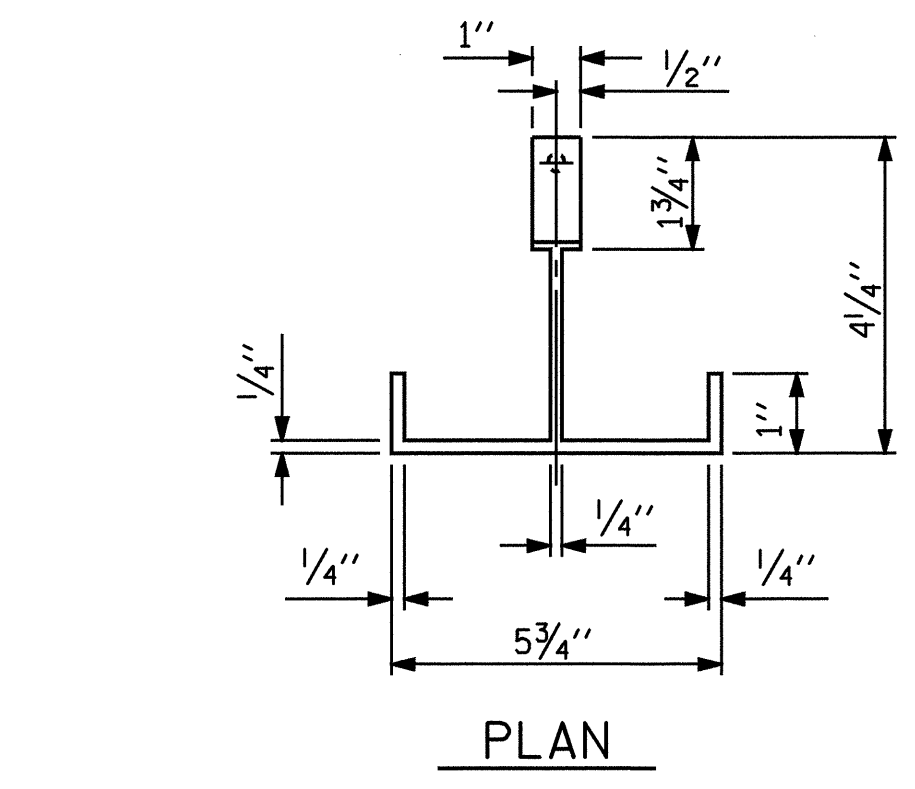
ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

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

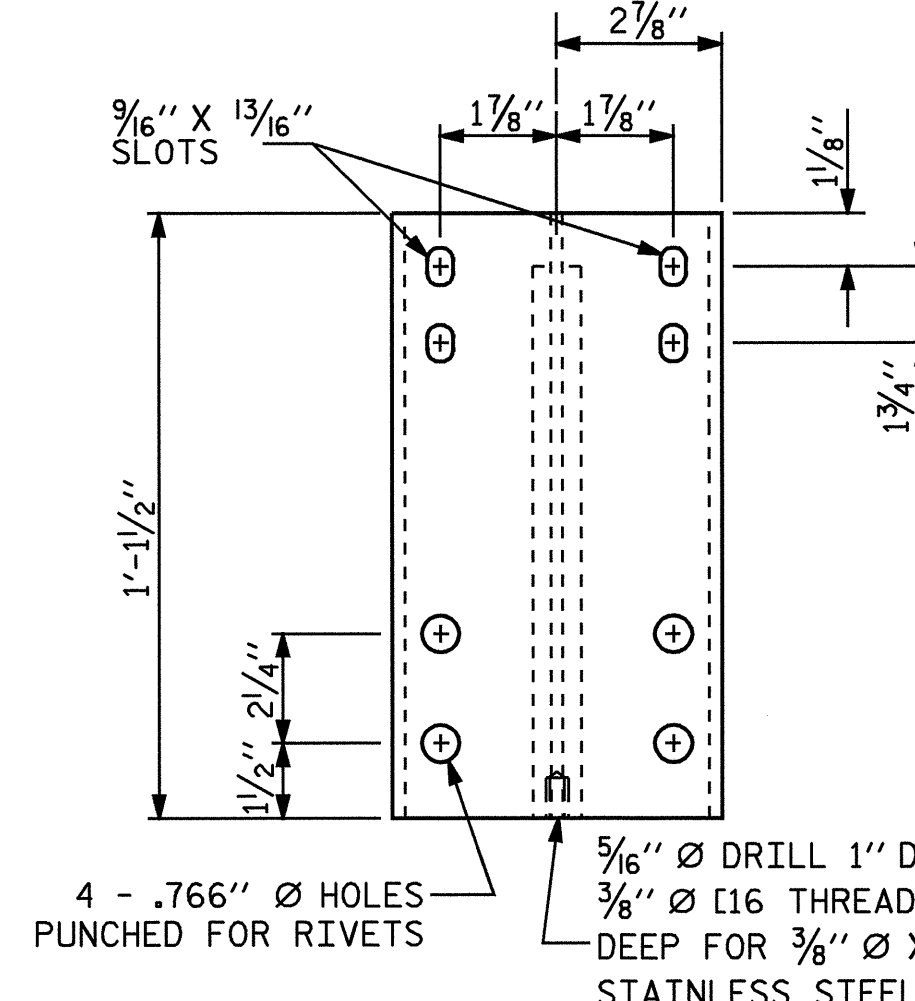
THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE ANCHOR ASSEMBLY. LEVEL TWO FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS SEE SPECIAL PROVISIONS.

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

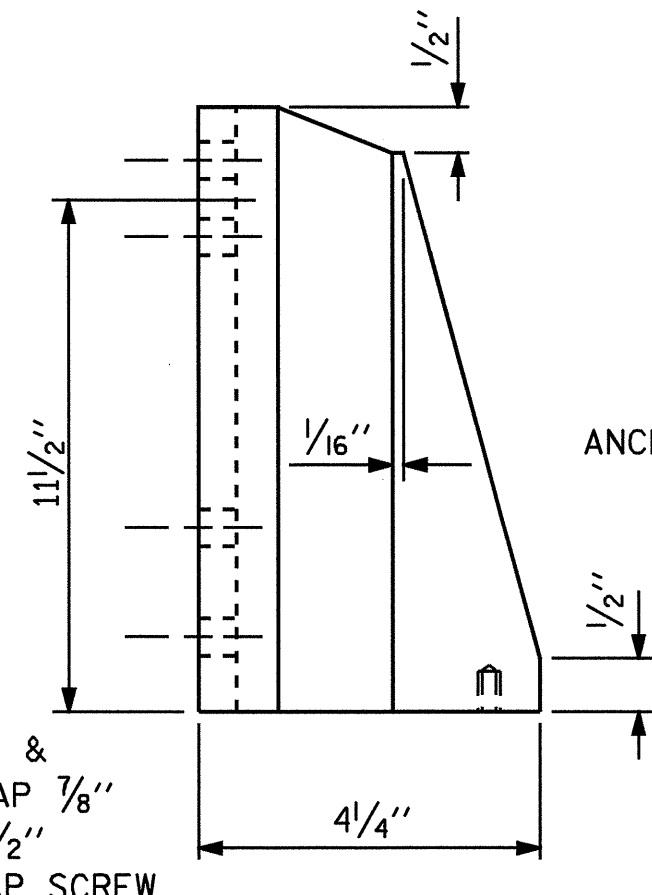
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT A SPACING OF 8FT. TO 10FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR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



PLAN



FRONT ELEVATION

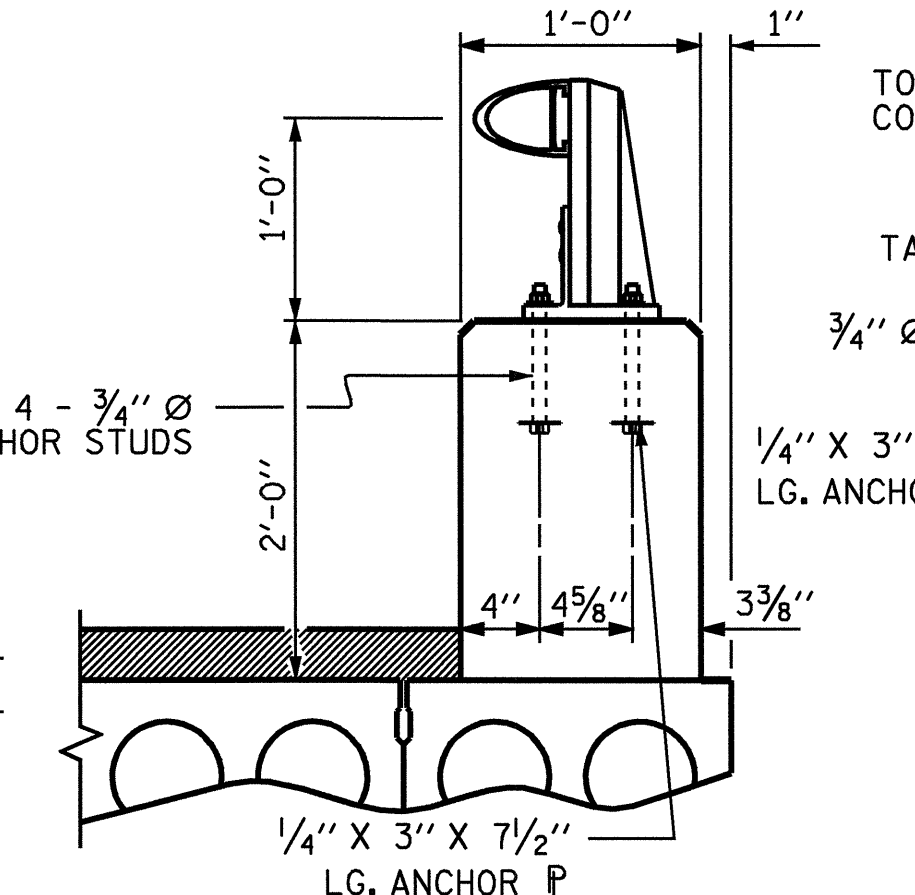


SIDE ELEVATION

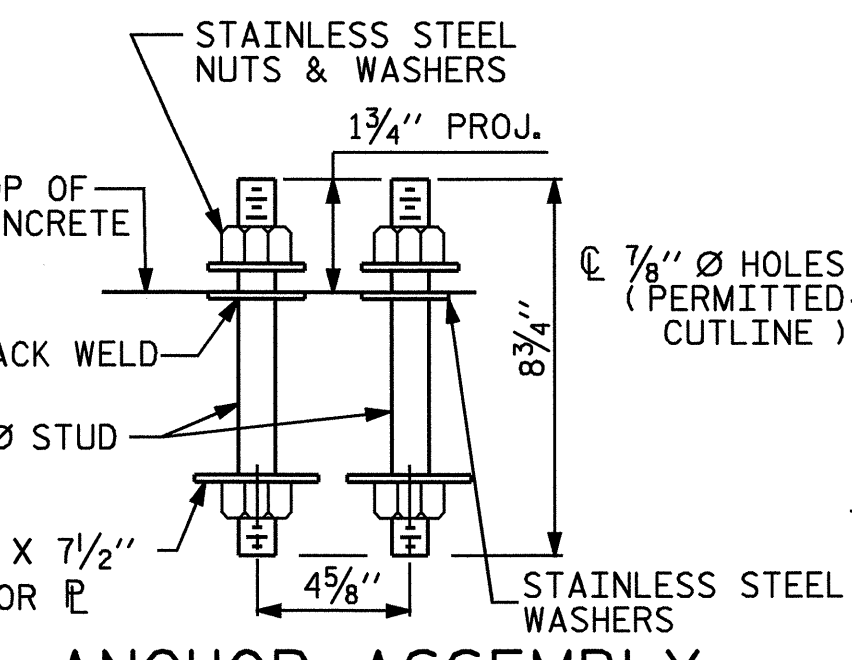
DETAILS OF POST

CLAMP BAR DETAIL

(2 REQUIRED PER POST)



SECTION THRU PARAPET AND RAIL

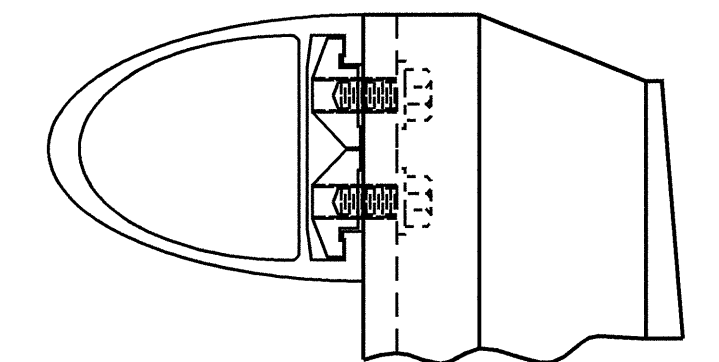


ANCHOR ASSEMBLY

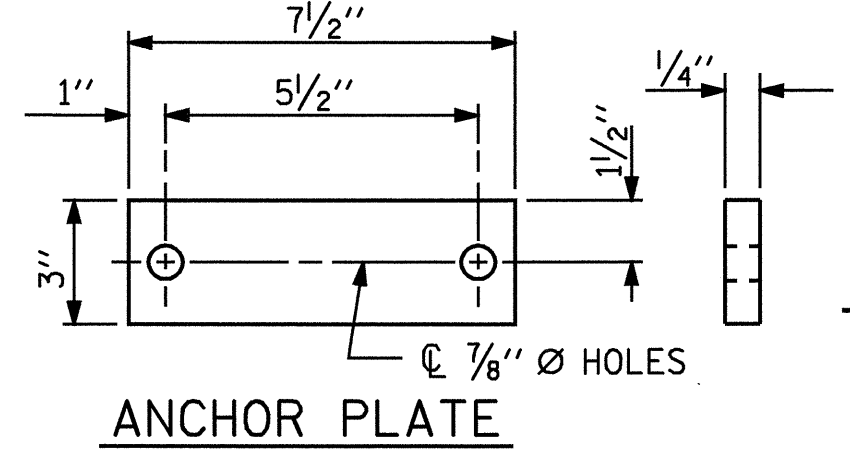
FRONT PLATE

SHIM DETAILS

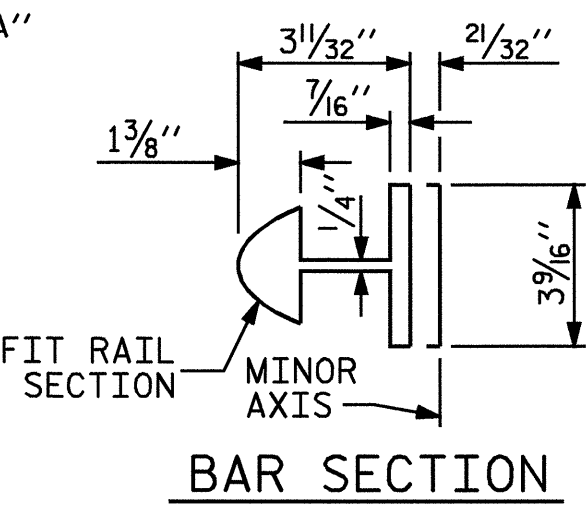
NOTE: SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



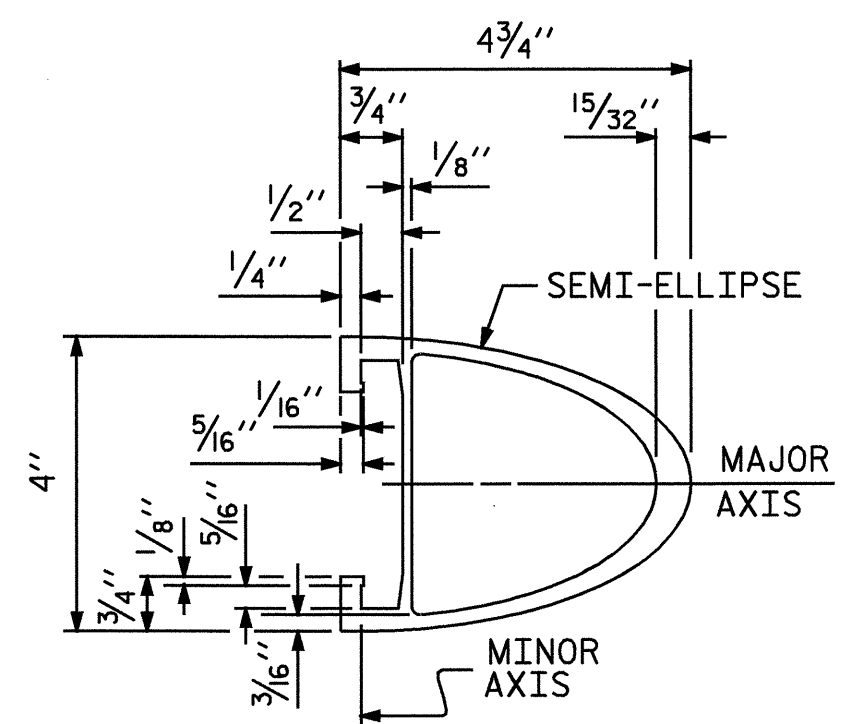
CLAMP & RAIL ASSEMBLY



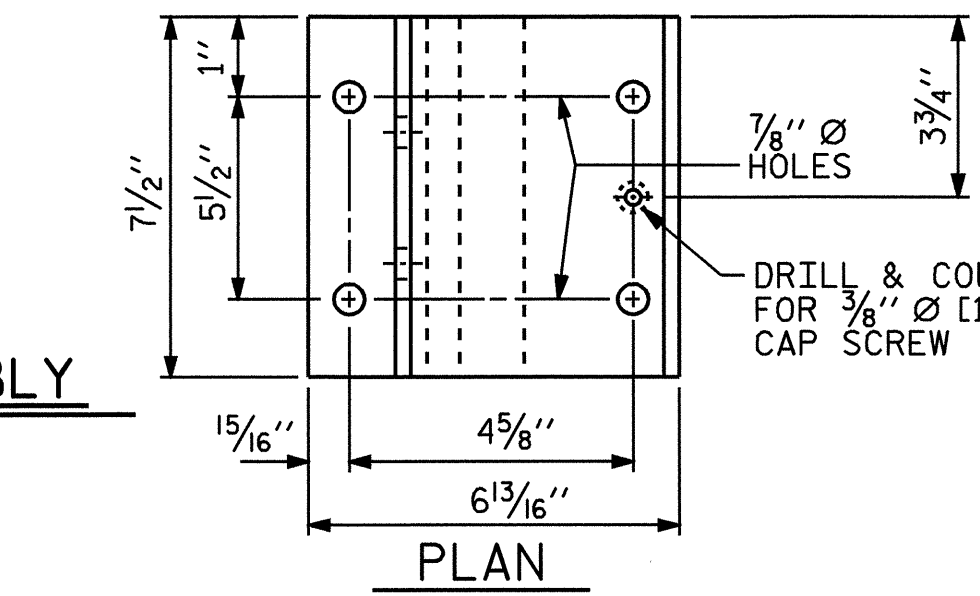
ANCHOR PLATE



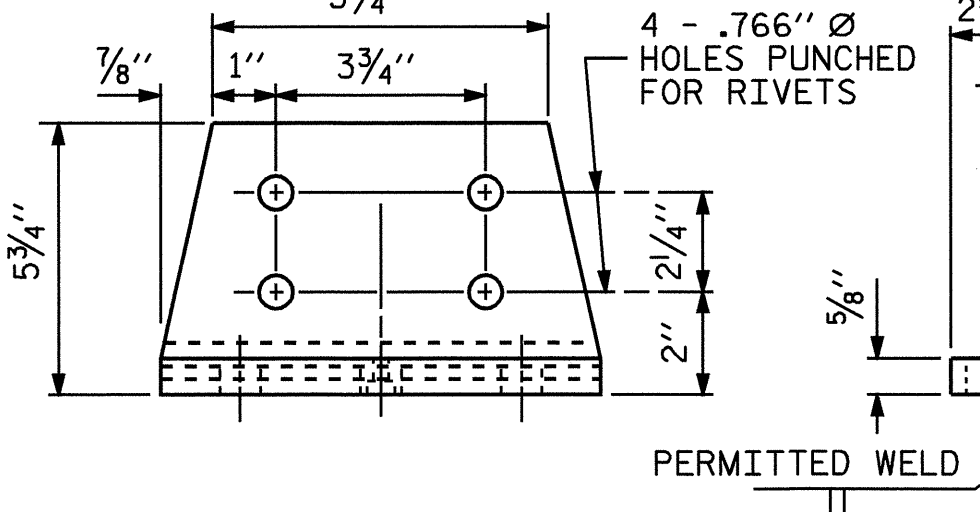
BAR SECTION



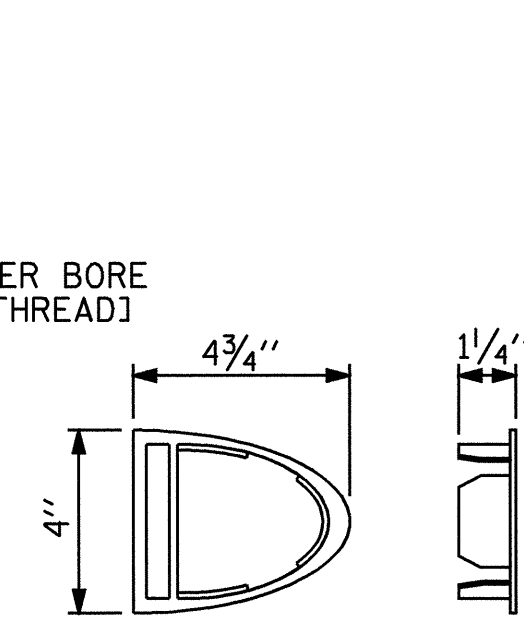
RAIL SECTION



PLAN



FRONT ELEVATION



SIDE ELEVATION

RAIL CAP

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

POST BASE DETAILS

1 BAR METAL RAIL = 219.48 LIN. FT.

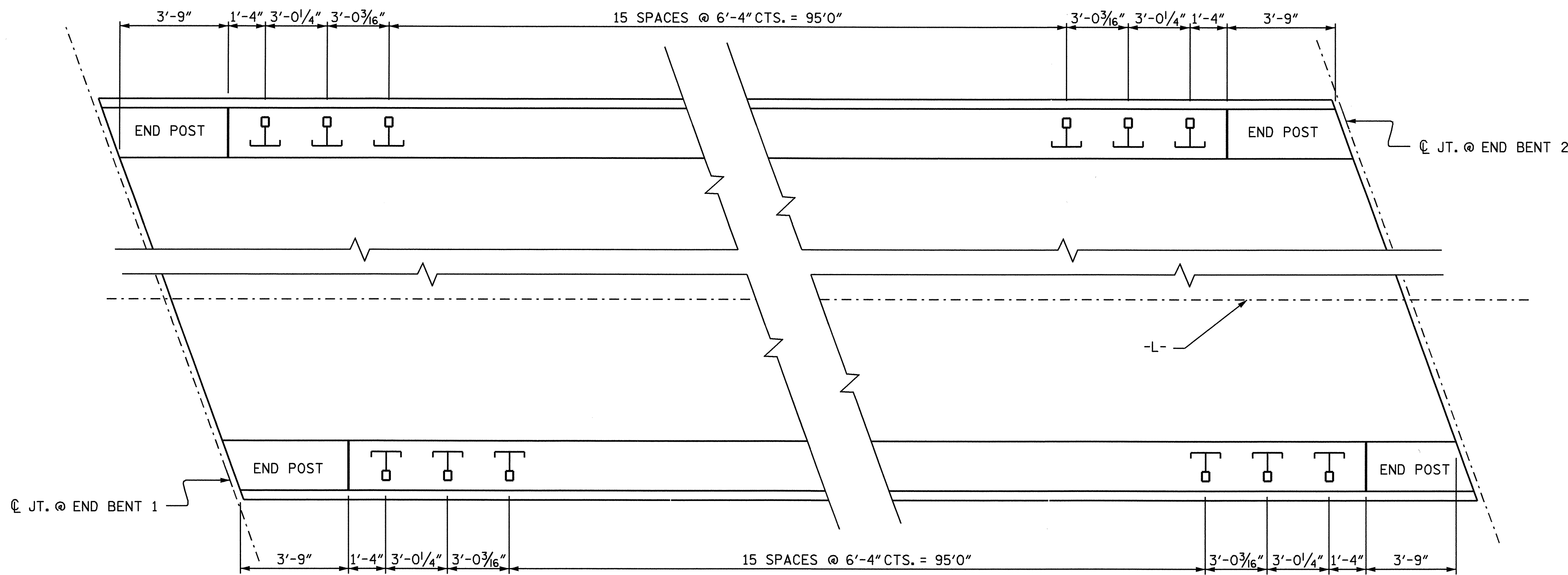
PROJECT NO. B-4054
CALDWELL COUNTY
 STATION: 12+46.00 -L-



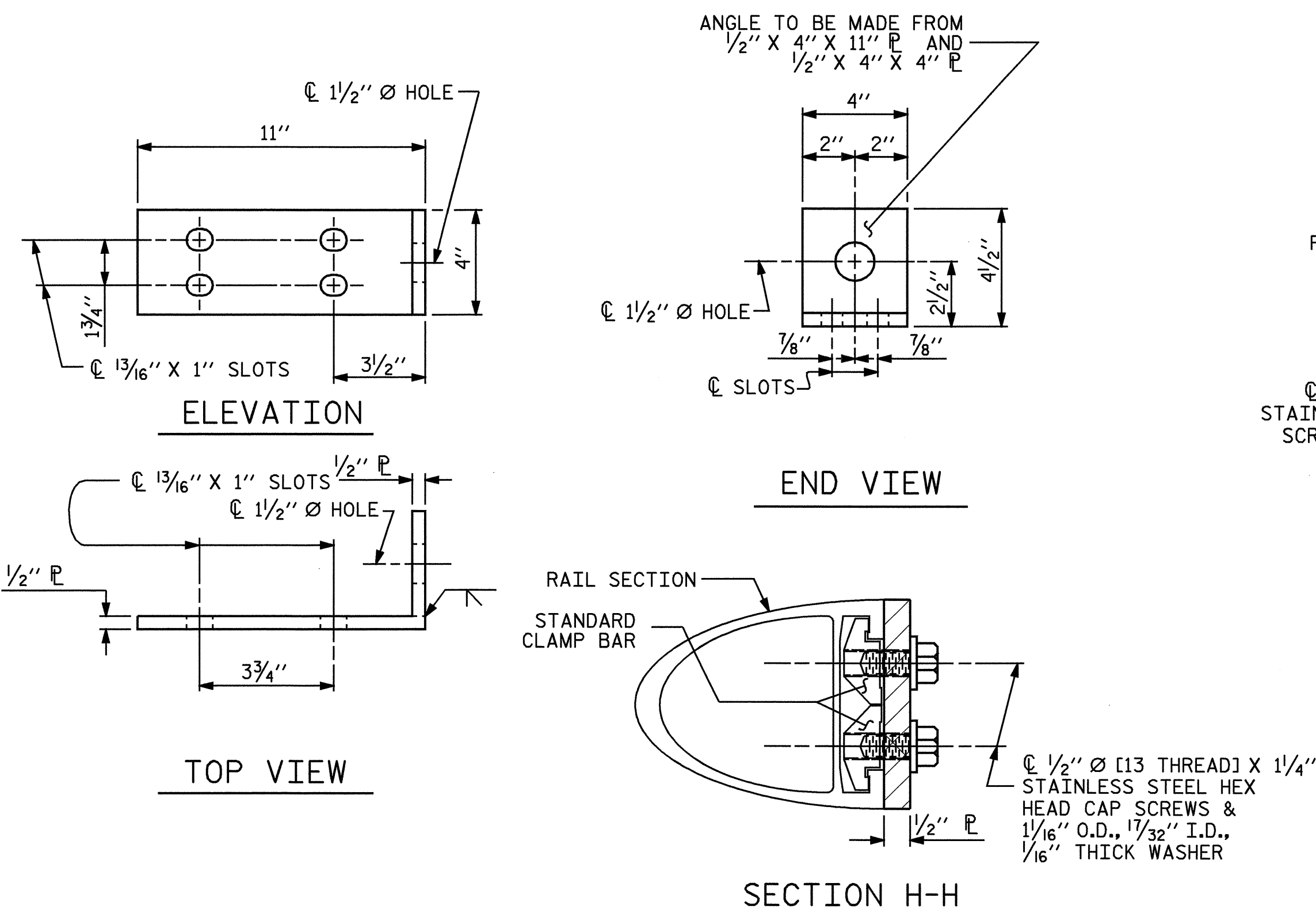
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-10
1			3			TOTAL SHEETS
2			4			27

STD. NO. BMR1

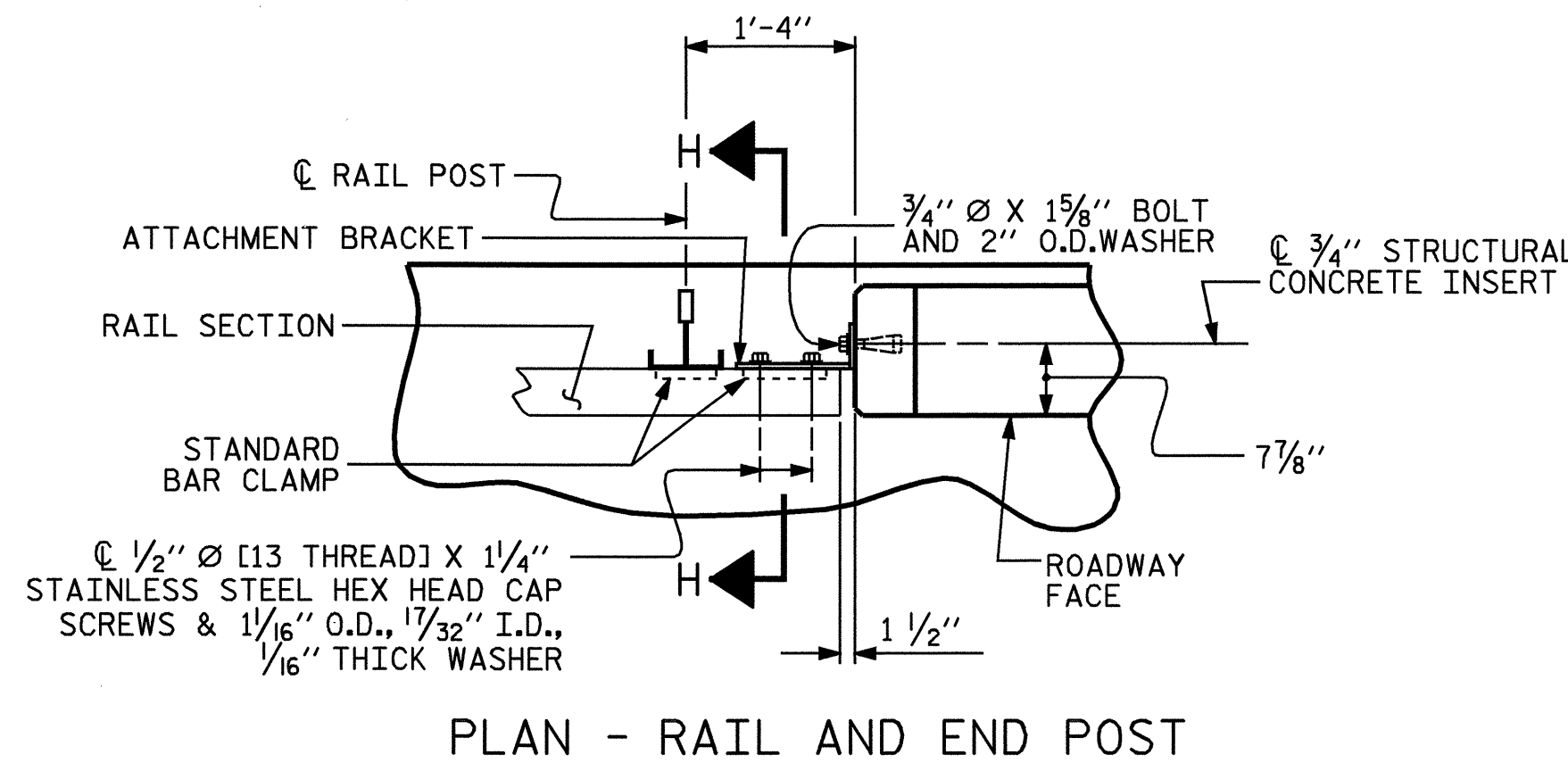
ASSEMBLED BY: D. G. ELY	DATE: 6/06
CHECKED BY: K. W. ALFORD	DATE: 7/06
DRAWN BY: FCJ 1/88	REV. 8/16/99 RWW/LES
CHECKED BY: CRK 3/89	REV. 10/17/00 LES/RDR
	REV. 5/7/03R RWW/JTE



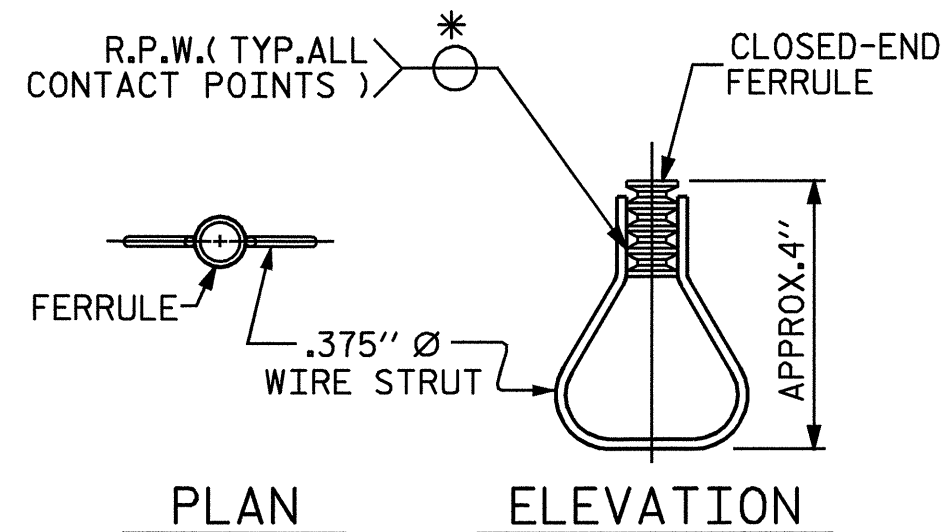
PLAN OF RAIL POST SPACINGS



DETAILS FOR ATTACHING METAL RAIL TO END POST



PLAN - RAIL AND END POST



STRUCTURAL CONCRETE INSERT

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

NOTES

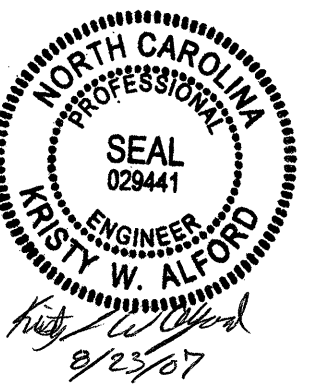
STRUCTURAL CONCRETE INSERT

- THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".
 - B. 1 - 3/4" Ø X 1 5/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 1 5/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
 - C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

- THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
 - B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 5/8" BOLT SHALL HAVE N. C. THREADS.
 - C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.
 - D. STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
 - E. 1/2" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.
- THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 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 MAY USE AN ADHESIVELY ANCHORED BONDING SYSTEM IN PLACE OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. NO FIELD TESTING IS REQUIRED. FOR ADHESIVELY ANCHORED BOLTS, SEE SPECIAL PROVISIONS.



PROJECT NO. B-4054
CALDWELL COUNTY
 STATION: 12+46.00 -L-

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

ASSEMBLED BY :	D. G. ELY	DATE :	6/06
CHECKED BY :	K. W. ALFORD	DATE :	7/06
DRAWN BY :	FCJ 1/88	REV. 8/16/99	RWW/LES
CHECKED BY :	CRK 3/89	REV. 10/17/00	LES/RDR
		REV. 5/7/03	RWW/JTE

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			27

NOTES

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

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

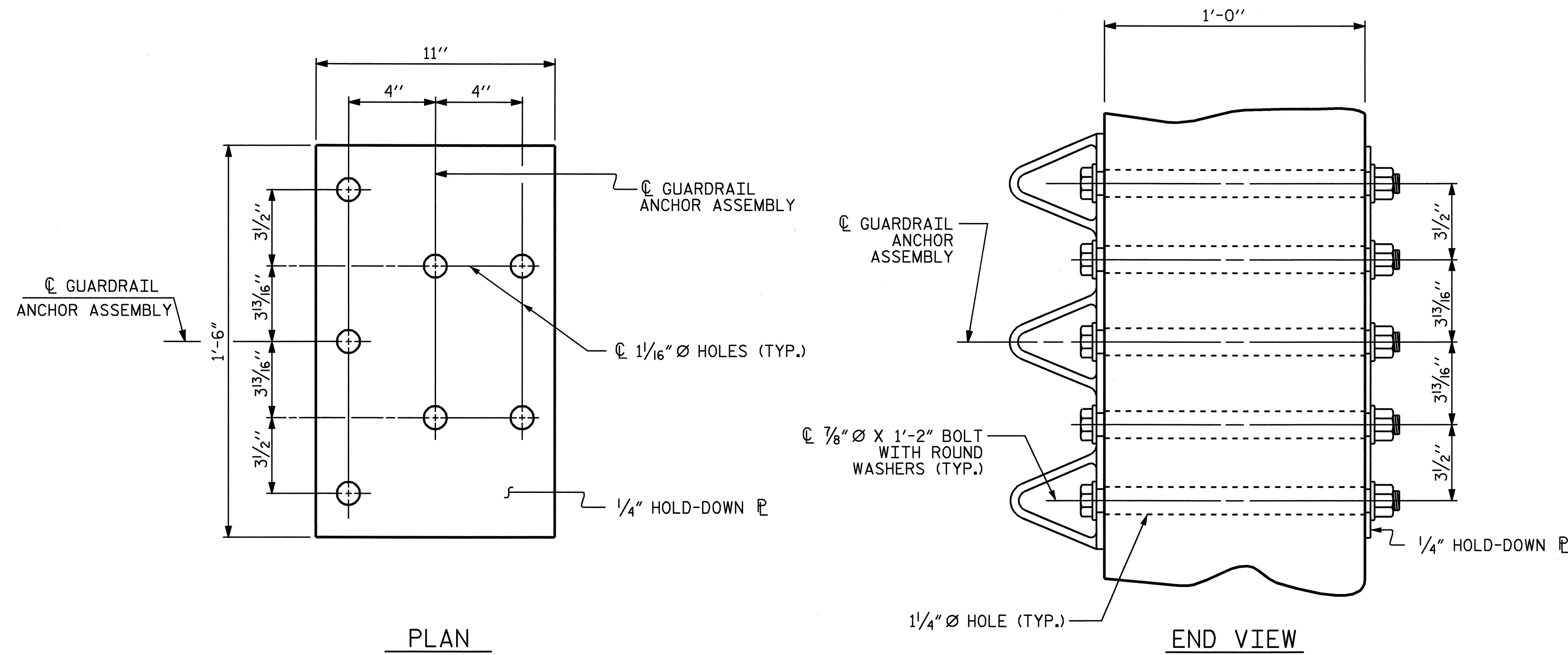
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS.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

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

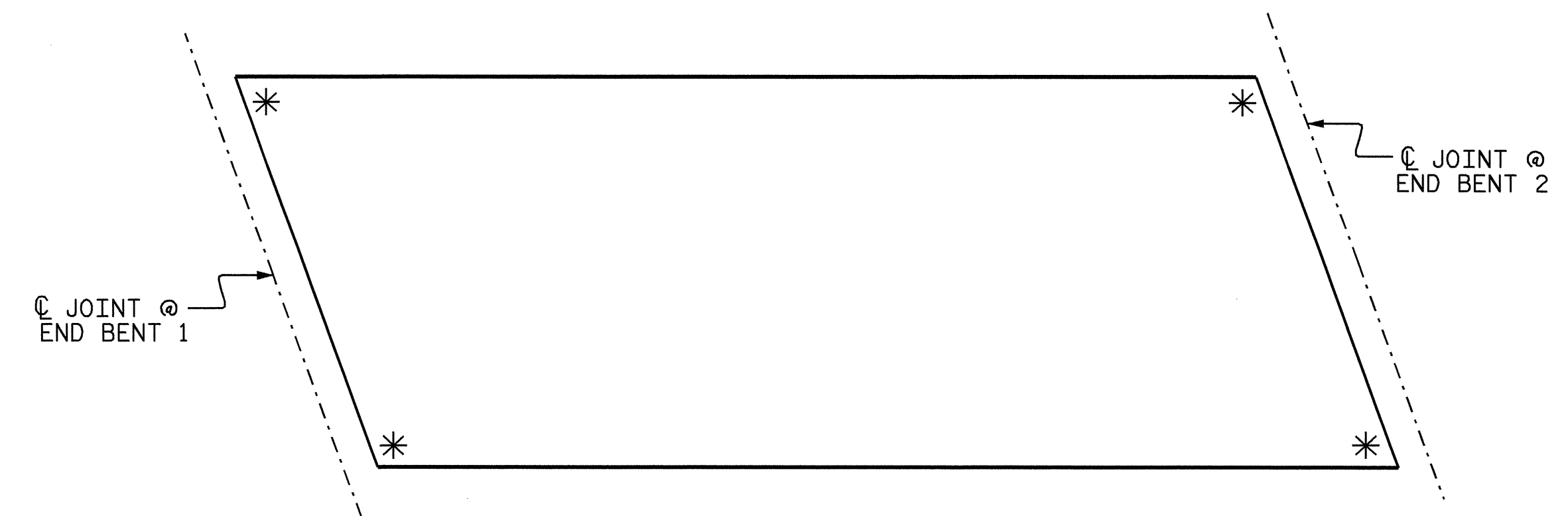
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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

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

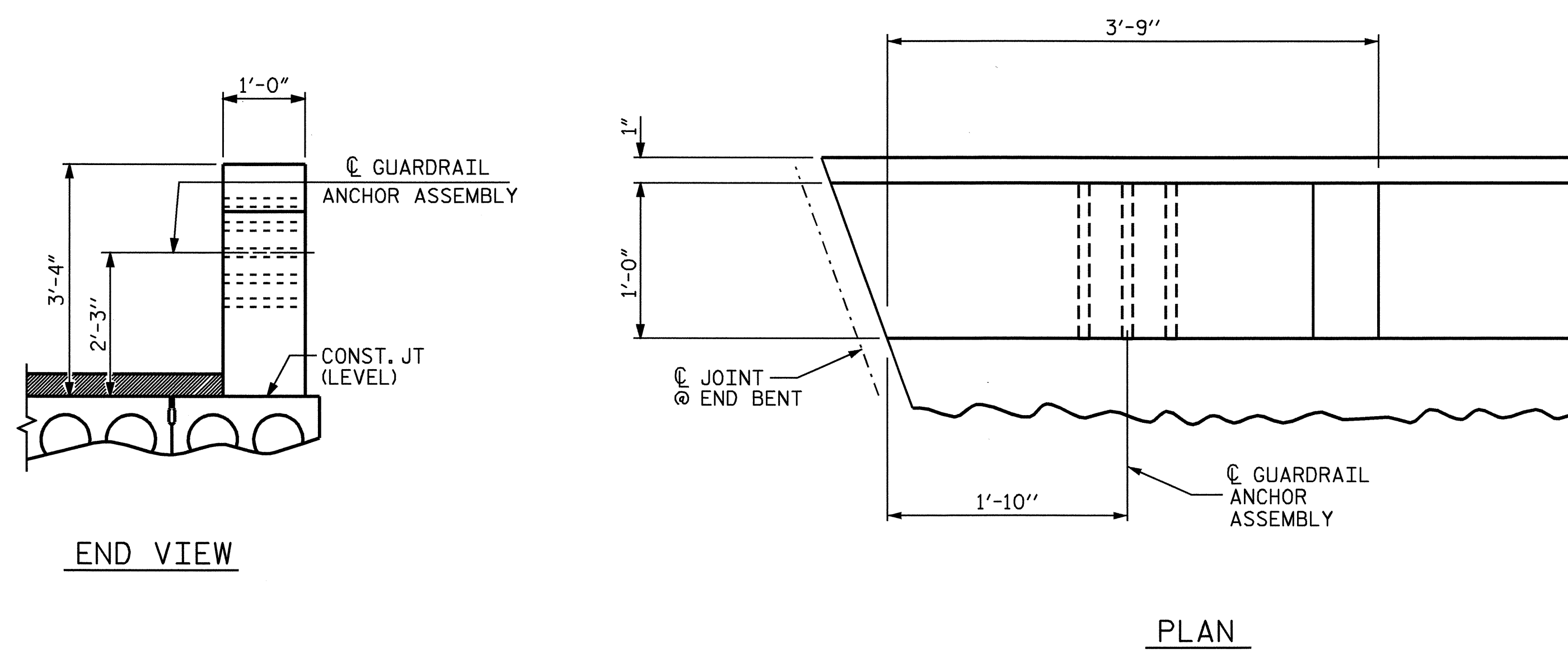


GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



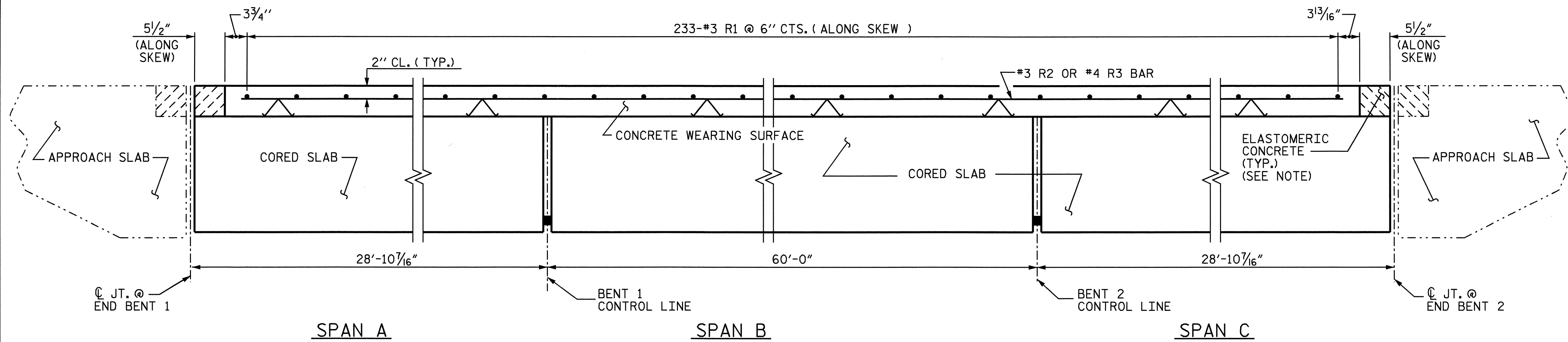
LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. B-4054
CALDWELL COUNTY
 STATION: 12+46.00 -L-

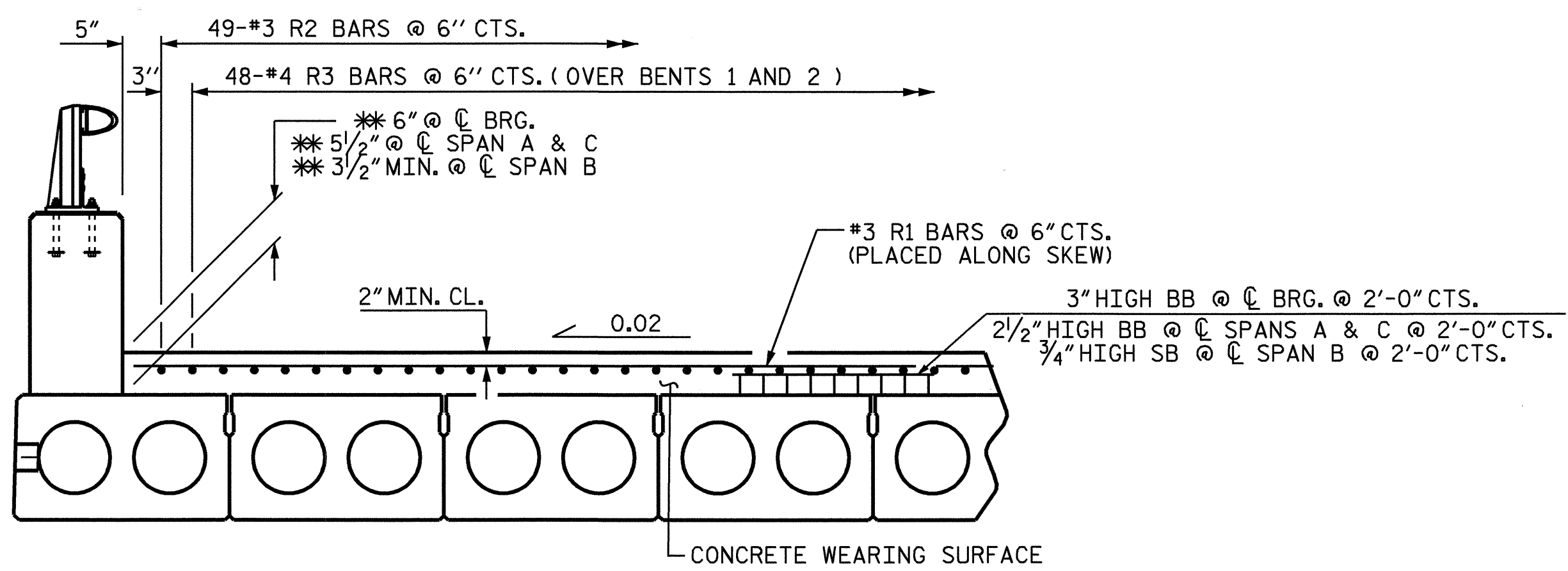
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-12
TOTAL SHEETS					27



ASSEMBLED BY : D.G. ELY	DATE : 6/06
CHECKED BY : K. W. ALFORD	DATE : 7/06
DRAWN BY : EEM 6/94	REV. 8/16/99 RWW/LES
CHECKED BY : RGW 6/94	REV. 10/17/00 RWW/LES
	REV. 5/7/03 RWW/JTE

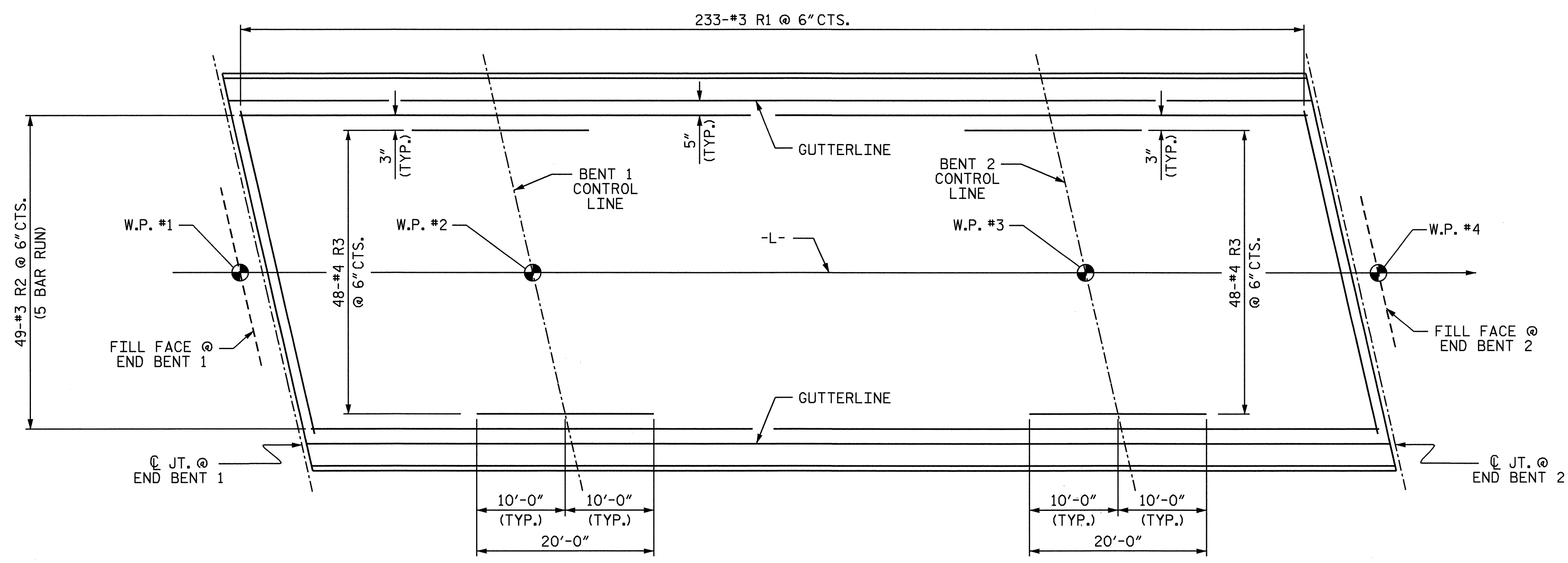


ELEVATION OF THE CONCRETE WEARING SURFACE



REINFORCING DETAIL

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



CONCRETE WEARING SURFACE PLAN

NOTES:

PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE PARAPET. THE COST OF THE BARS 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.

ALL REINFORCING FOR THE CONCRETE WEARING SURFACE SHALL BE EPOXY COATED.

FOR ELASTOMERIC CONCRETE, SEE "BRIDGE APPROACH SLAB DETAILS" SHEET.

BILL OF MATERIAL					
CONCRETE WEARING SURFACE					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*R1	233	3	STR	26'-0"	2278
*R2	245	3	STR	24'-4"	2242
*R3	96	4	STR	20'-0"	1283
* EPOXY COATED REINFORCING STEEL				LBS.	5803
CONCRETE WEARING SURFACE				SQ. FT.	2900

GROOVING BRIDGE FLOORS		
APPROACH SLABS	595	SQ.FT.
BRIDGE DECK	2539	SQ.FT.
TOTAL	3134	SQ.FT.

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

PROJECT NO. B-4054
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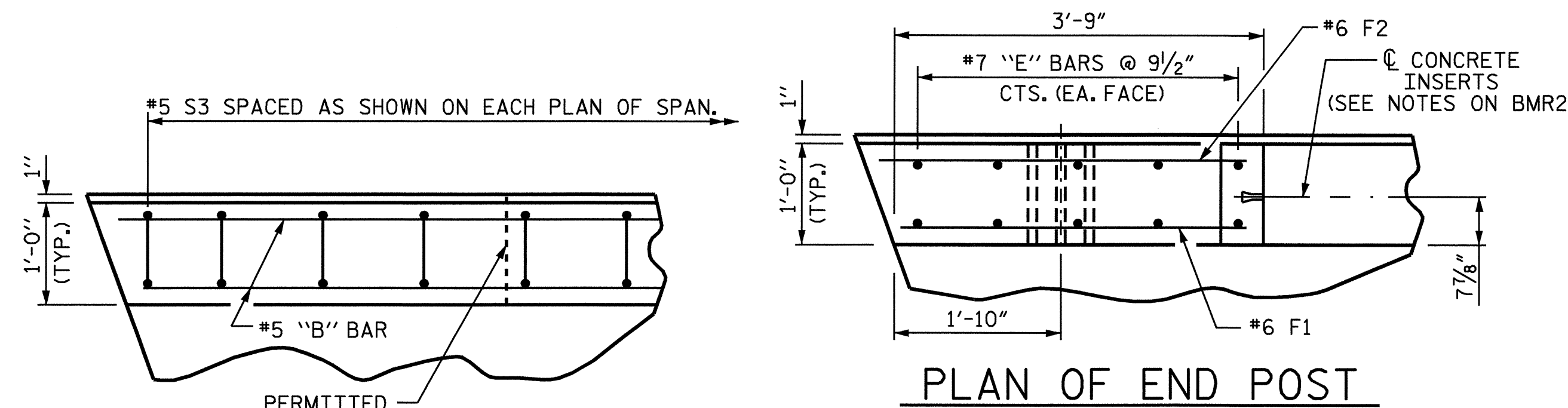
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

CONCRETE WEARING SURFACE DETAILS

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

SHEET NO. S-13
 TOTAL SHEETS 27

DRAWN BY: D. G. ELY DATE: 6/06
 CHECKED BY: K. W. ALFORD DATE: 7/06



BILL OF MATERIAL FOR ONE PARAPET & TWO END POSTS

BAR	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
* B3	16	# 5	STR	28'-4"	473
* B4	8	# 5	STR	29'-5"	245
* B5	8	# 5	STR	29'-8"	248
* E1	4	# 7	STR	2'-6"	20
* E2	4	# 7	STR	2'-8"	22
* E3	4	# 7	STR	2'-10"	23
* E4	4	# 7	STR	3'-0"	25
* E5	4	# 7	STR	3'-1"	25
* F1	4	# 6	STR	3'-3"	20
* F2	4	# 6	STR	3'-6"	21
* EPOXY COATED REINFORCING STEEL				LBS.	1122
CLASS AA CONCRETE				CU.YDS.	9.0
TOTAL LIN. FT. OF CONCRETE PARAPET					117.60

DEAD LOAD DEFLECTION AND CAMBER

3'-0" x 1'-9" CORED SLAB UNIT	SPANS A & C	SPAN B
	1/2" Ø L.R. STRAND	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE) ↑	1/16"	3/2"
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD ** ↓	1/16"	3/4"
FINAL CAMBER ↑	3/8"	2 3/4"

** INCLUDES FUTURE WEARING SURFACE

BAR TYPES

CORED SLABS REQUIRED

SPAN A & SPAN C			
UNIT TYPE	NO.	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	4	28'-8 13/16"	114'-11 1/4"
INTERIOR C.S.	14	28'-8 13/16"	402'-3 3/8"
TOTAL	18		517'-2 5/8"
SPAN B			
UNIT TYPE	NO.	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	59'-10 1/16"	119'-8 7/8"
INTERIOR C.S.	7	59'-10 1/16"	419'-1 1/16"
TOTAL	9		538'-9 5/16"
TOTAL LENGTH			1056'-0 9/16"

NOTES

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

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

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

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

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 FOR SPANS A & C AND 5000 PSI FOR SPAN B.

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

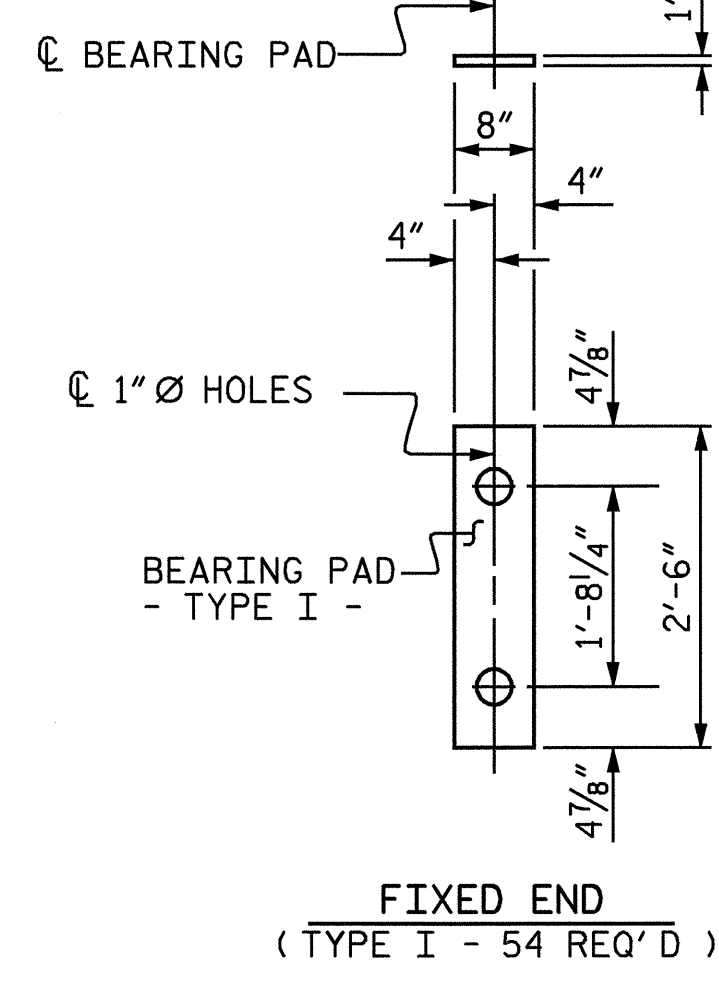
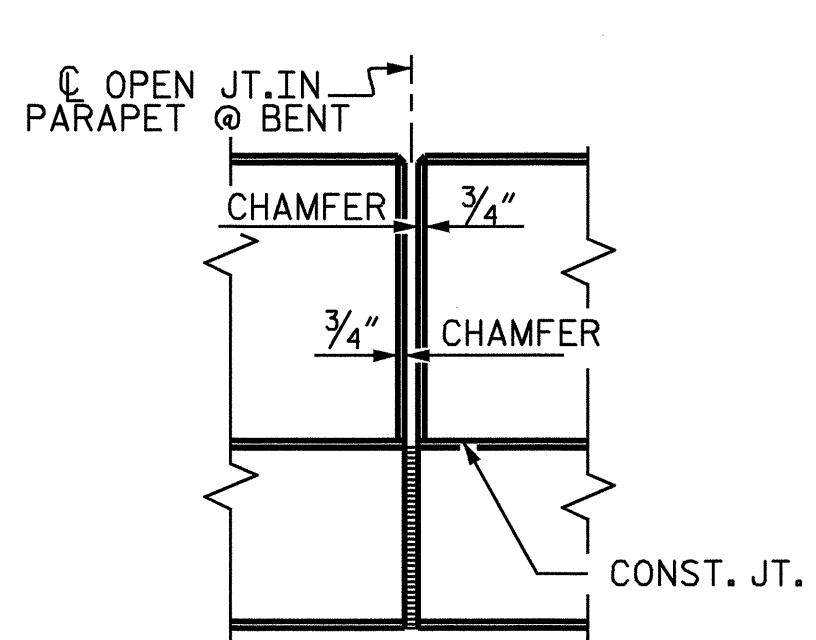
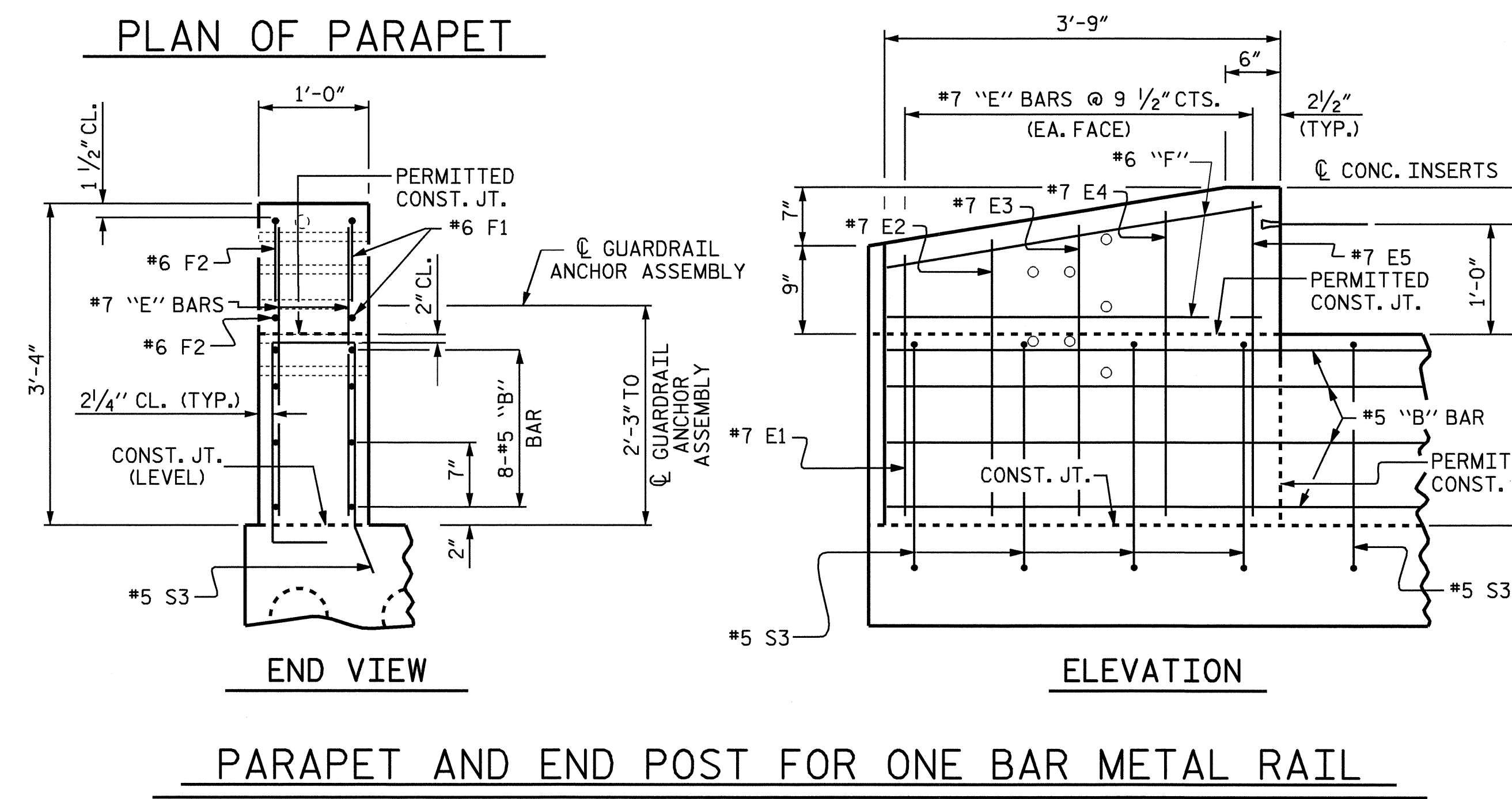
FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

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.

SPLICE LENGTH CHART

BAR SIZE	UNCOATED
#4	1'-9"
#5	3'-5"



BILL OF MATERIAL FOR ONE CORED SLAB SECTION

SPAN A & SPAN C								
BAR	SIZE	TYPE	EXTERIOR UNIT			INTERIOR UNIT		
			NO.	LENGTH	WEIGHT	NO.	LENGTH	WEIGHT
B1	# 4	STR	2	28'-4"	38	2	28'-4"	38
S1	# 5	1	8	4'-4"	36	8	4'-4"	36
S2	# 4	1	58	5'-4"	207	58	5'-4"	207
* S3	# 5	2	30	6'-6"	205	-	-	-
S4	# 4	1	4	5'-6"	15	4	5'-6"	15
REINFORCING STEEL					LBS.	296	296	
* EPOXY COATED REINF. STEEL					LBS.	203	0	
5,000 P.S.I. CONCRETE					CU. YDS.	3.9	3.9	
1/2" Ø L.R. STRANDS - NO.						12	12	
SPAN B								
BAR	SIZE	TYPE	EXTERIOR UNIT			INTERIOR UNIT		
			NO.	LENGTH	WEIGHT	NO.	LENGTH	WEIGHT
B2	# 4	STR	6	21'-2"	85	6	21'-2"	85
S1	# 5	1	8	4'-4"	36	8	4'-4"	36
S2	# 4	1	120	5'-4"	428	120	5'-4"	428
* S3	# 5	2	61	6'-6"	414	-	-	-
S4	# 4	1	4	5'-6"	15	4	5'-6"	15
REINFORCING STEEL					LBS.	564	564	
* EPOXY COATED REINF. STEEL					LBS.	414	0	
6,300 P.S.I. CONCRETE					CU. YDS.	8.2	8.2	
0.6" Ø L.R. STRANDS - NO.						17	17	

GRADE 270 STRANDS

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

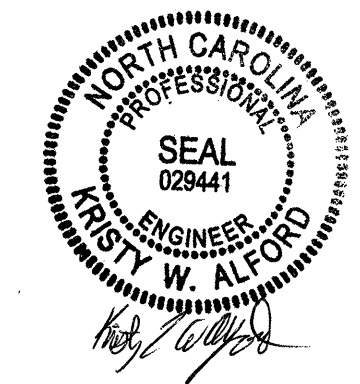
PROJECT NO. B-4054
CALDWELL COUNTY
 STATION: 12+46.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

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

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

ASSEMBLED BY: D. G. ELY DATE: 6/06
 CHECKED BY: K. W. ALFORD DATE: 7/06



NOTES

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

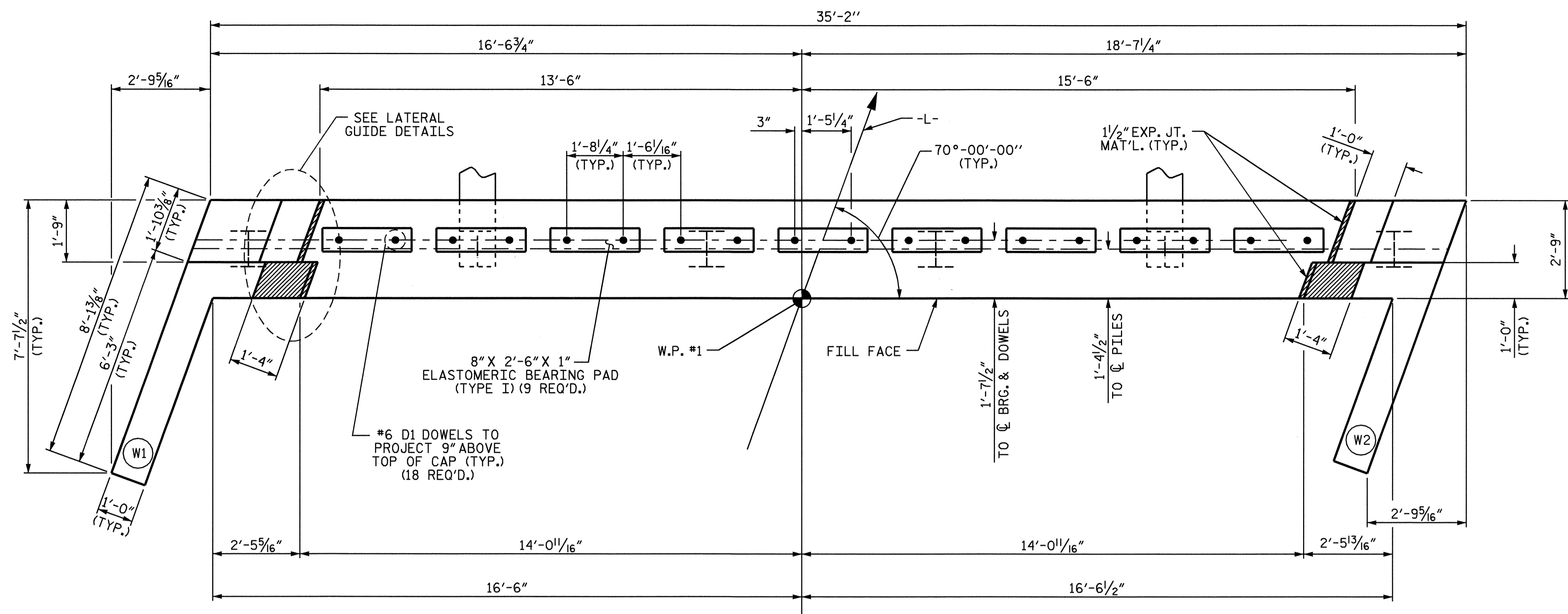
THE LATERAL GUIDE AT EACH END OF CAP IS NOT TO BE POURED UNTIL AFTER CORED SLAB UNITS ARE IN PLACE.

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

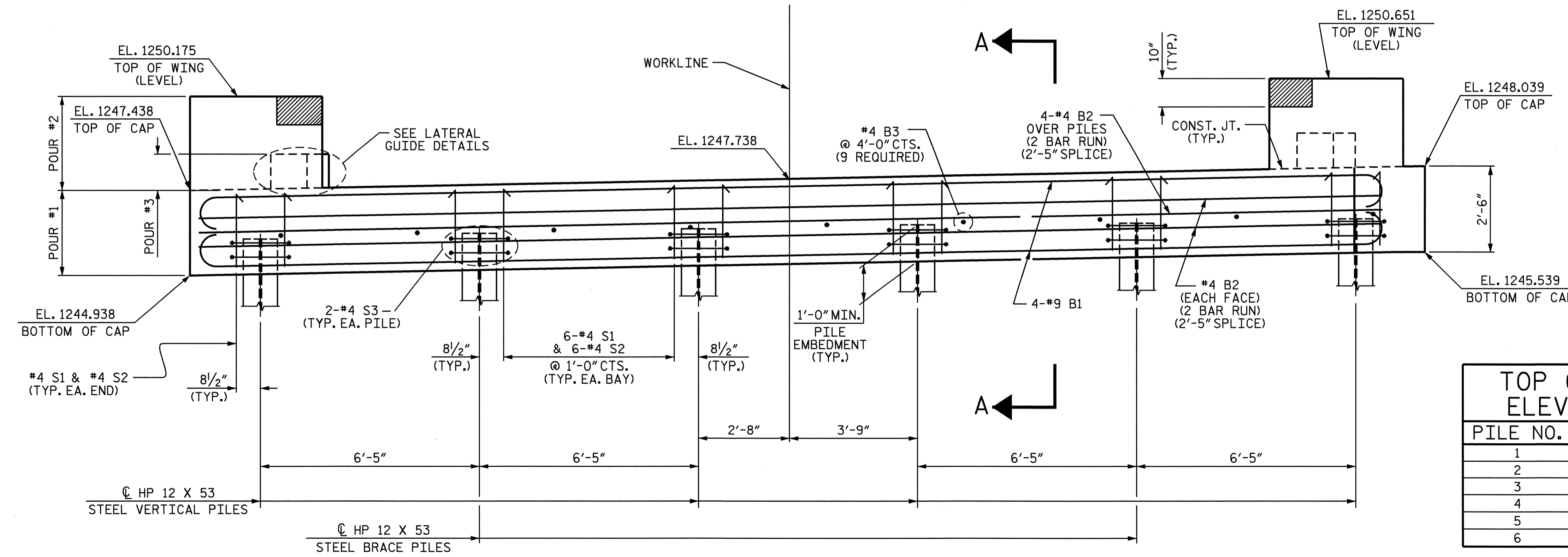
FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

FOR TEMPORARY DRAINAGE DETAILS, SEE SHEET 3 OF 3.

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.

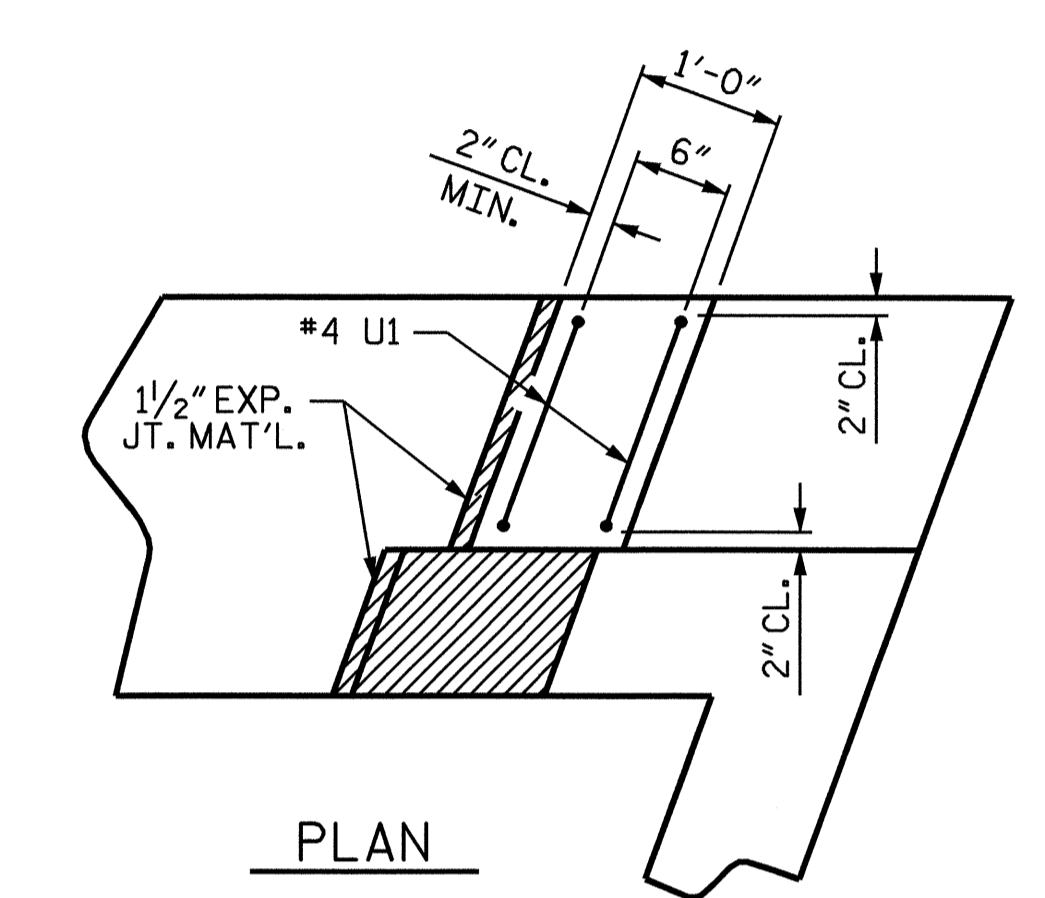


PLAN

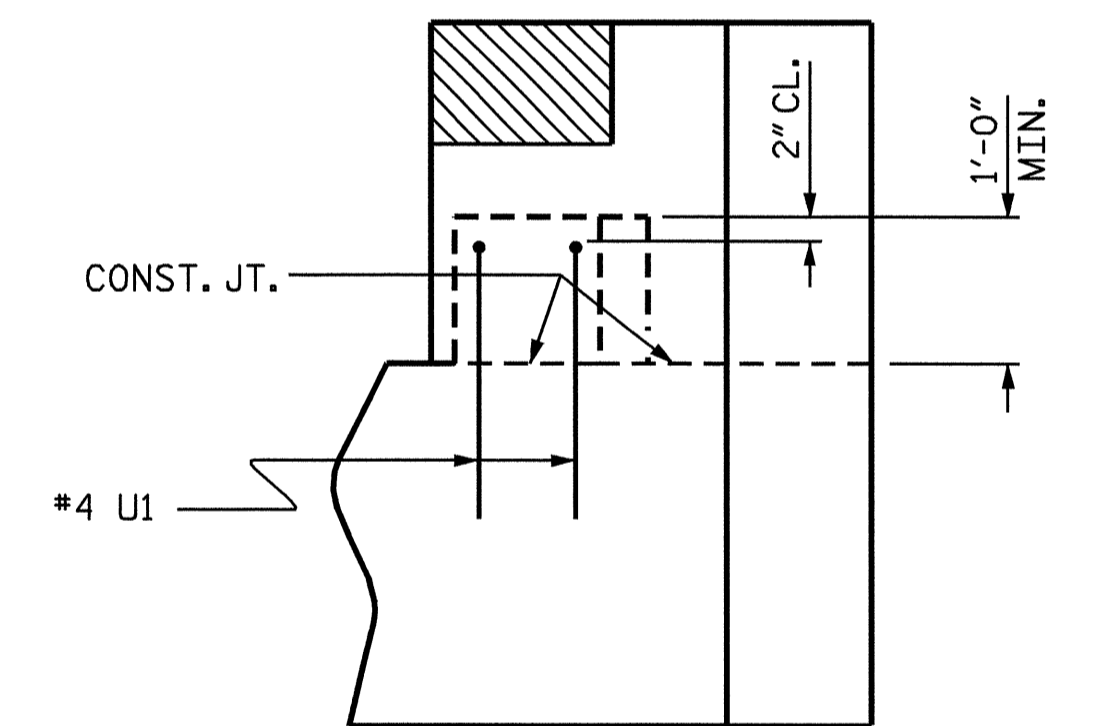


ELEVATION

WINGS NOT SHOWN IN ELEVATION VIEW FOR CLARITY (FOR WING REINFORCING STEEL & DETAILS, SEE SHEET 2 OF 3.)



PLAN



ELEVATION

LATERAL GUIDE DETAILS

EACH END SIMILAR

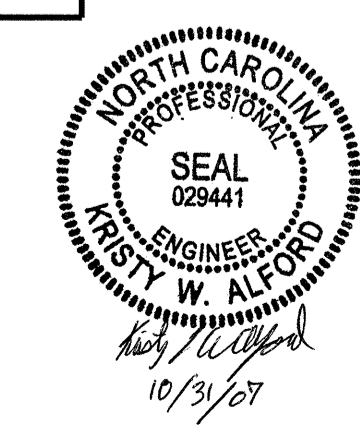
TOP OF PILE ELEVATIONS	
PILE NO.	ELEVATION
1	1245.973
2	1246.083
3	1246.192
4	1246.302
5	1246.412
6	1246.521

PROJECT NO. B-4054
CALDWELL COUNTY
 STATION: 12+46.00 -L-

SHEET 1 OF 3

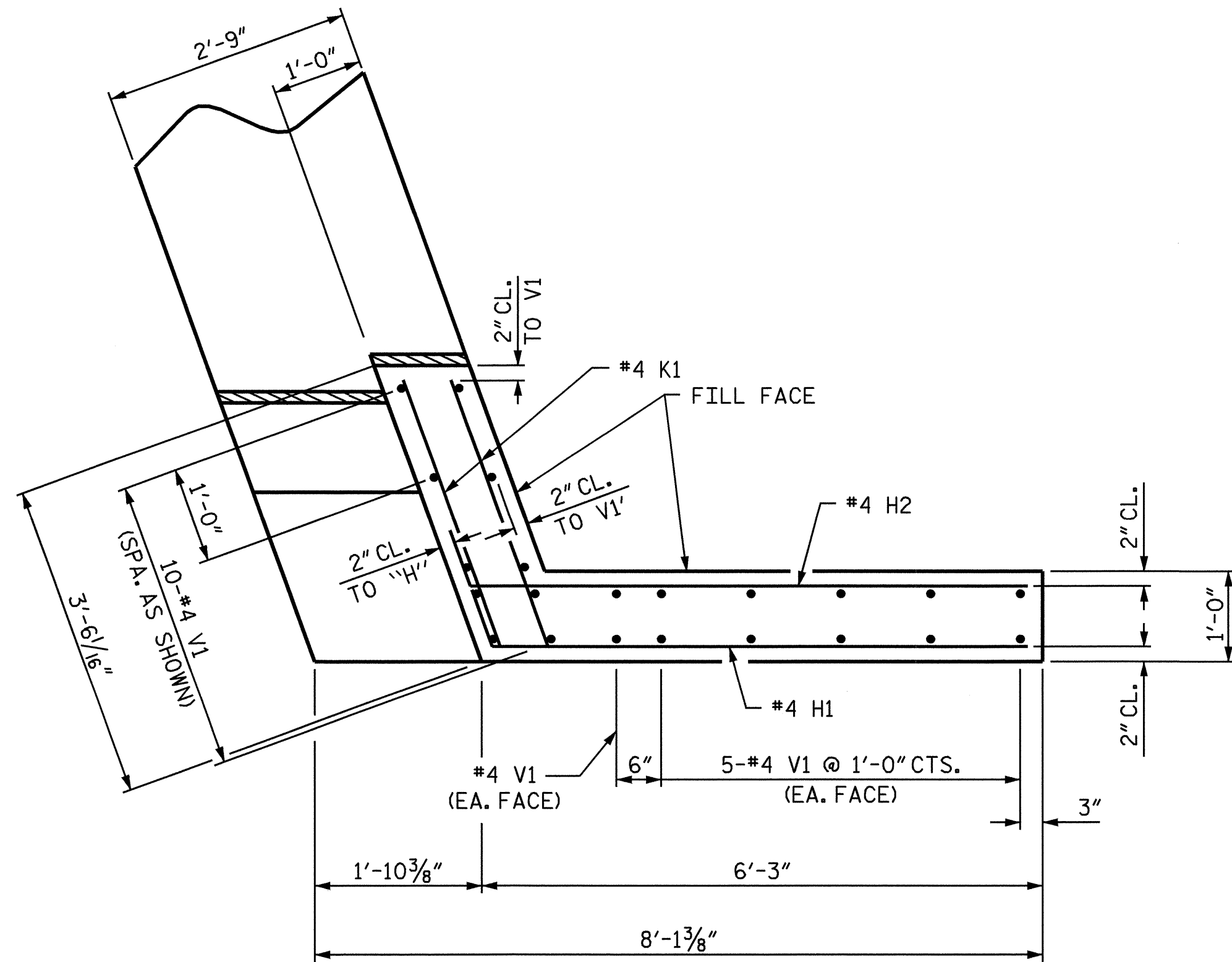
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1

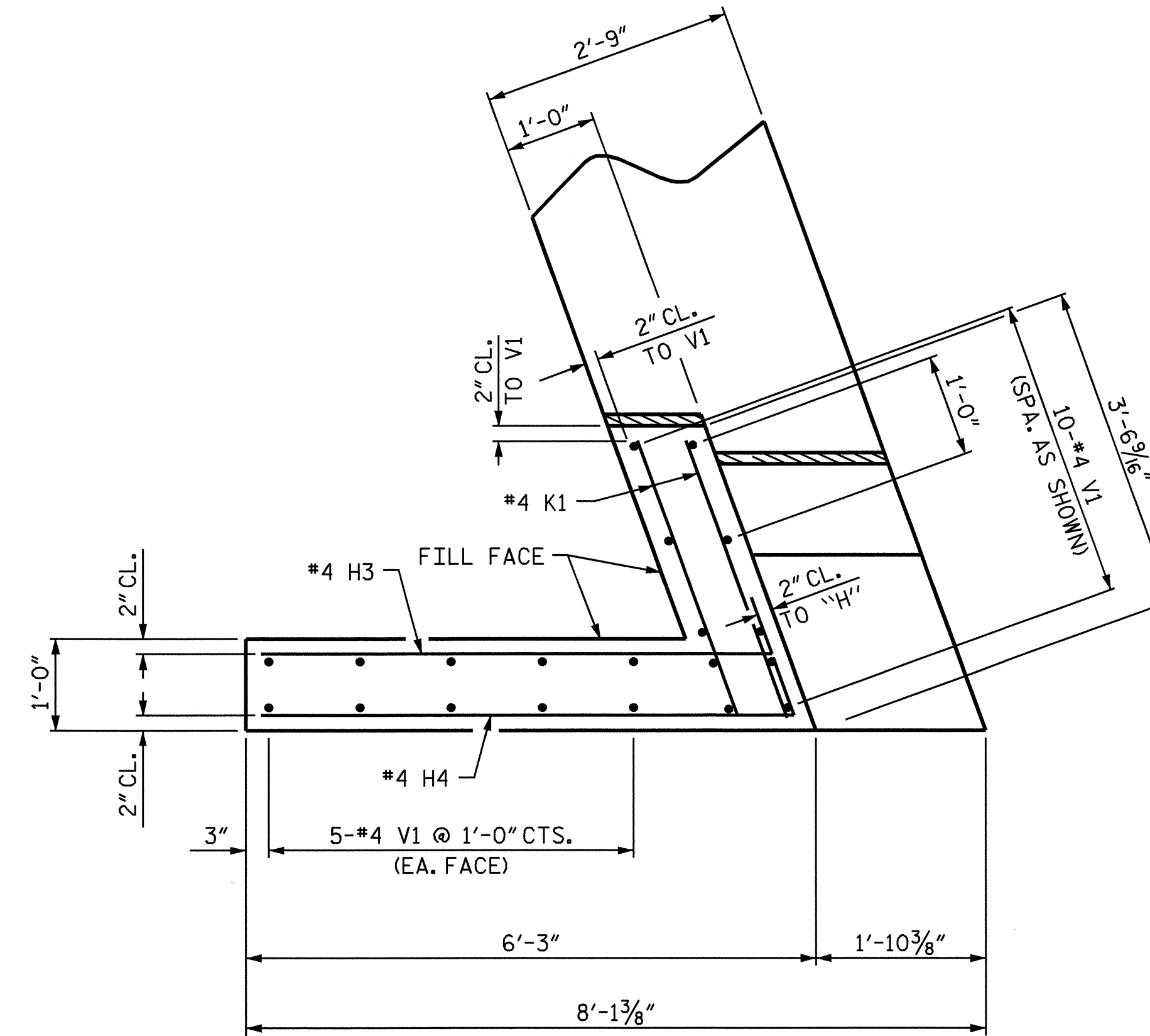


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			27

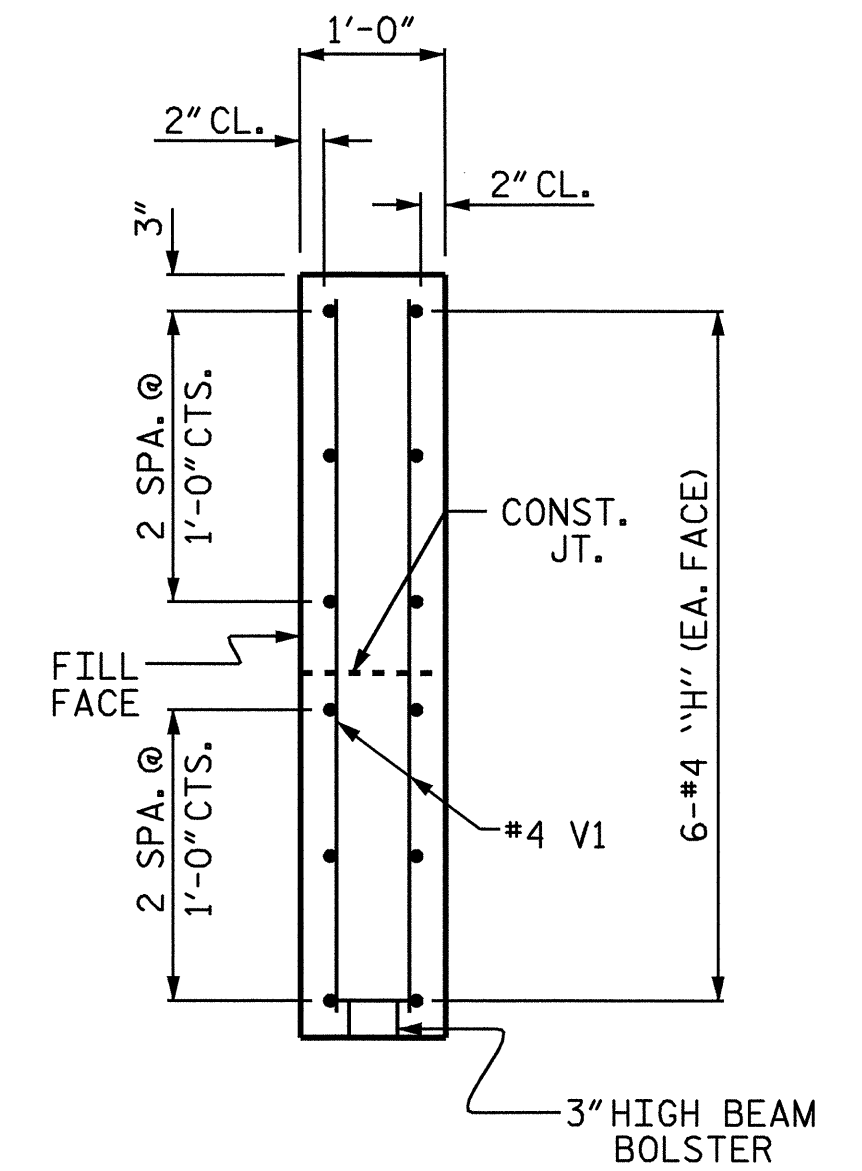
DRAWN BY: D. G. ELY DATE: 1/07
 CHECKED BY: J. L. WALTON DATE: 3/07



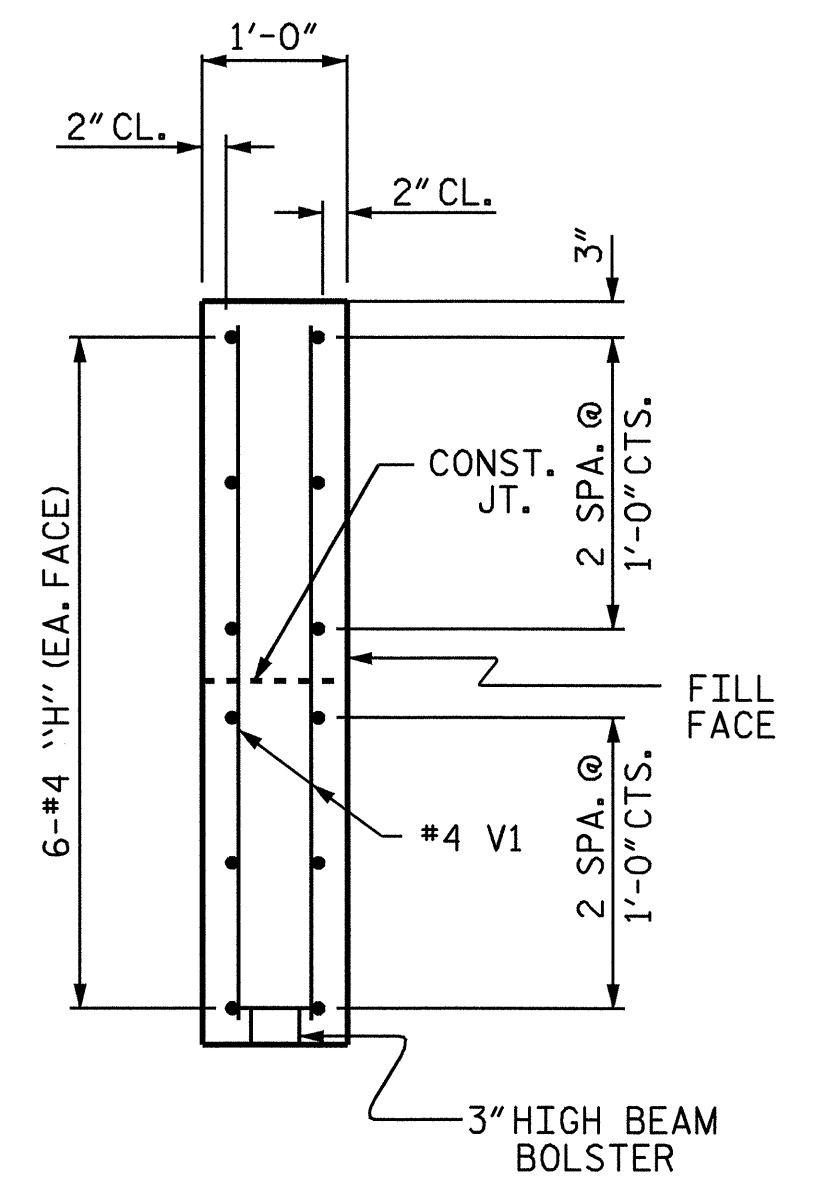
PLAN OF WING - W1



PLAN OF WING - W2



SECTION X-X



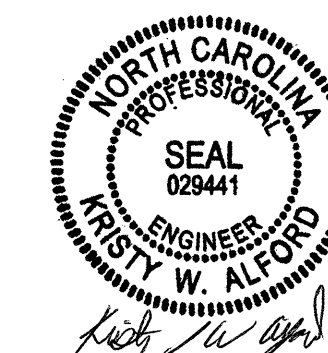
SECTION Y-Y

PROJECT NO. B-4054
CALDWELL COUNTY
 STATION: 12+46.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

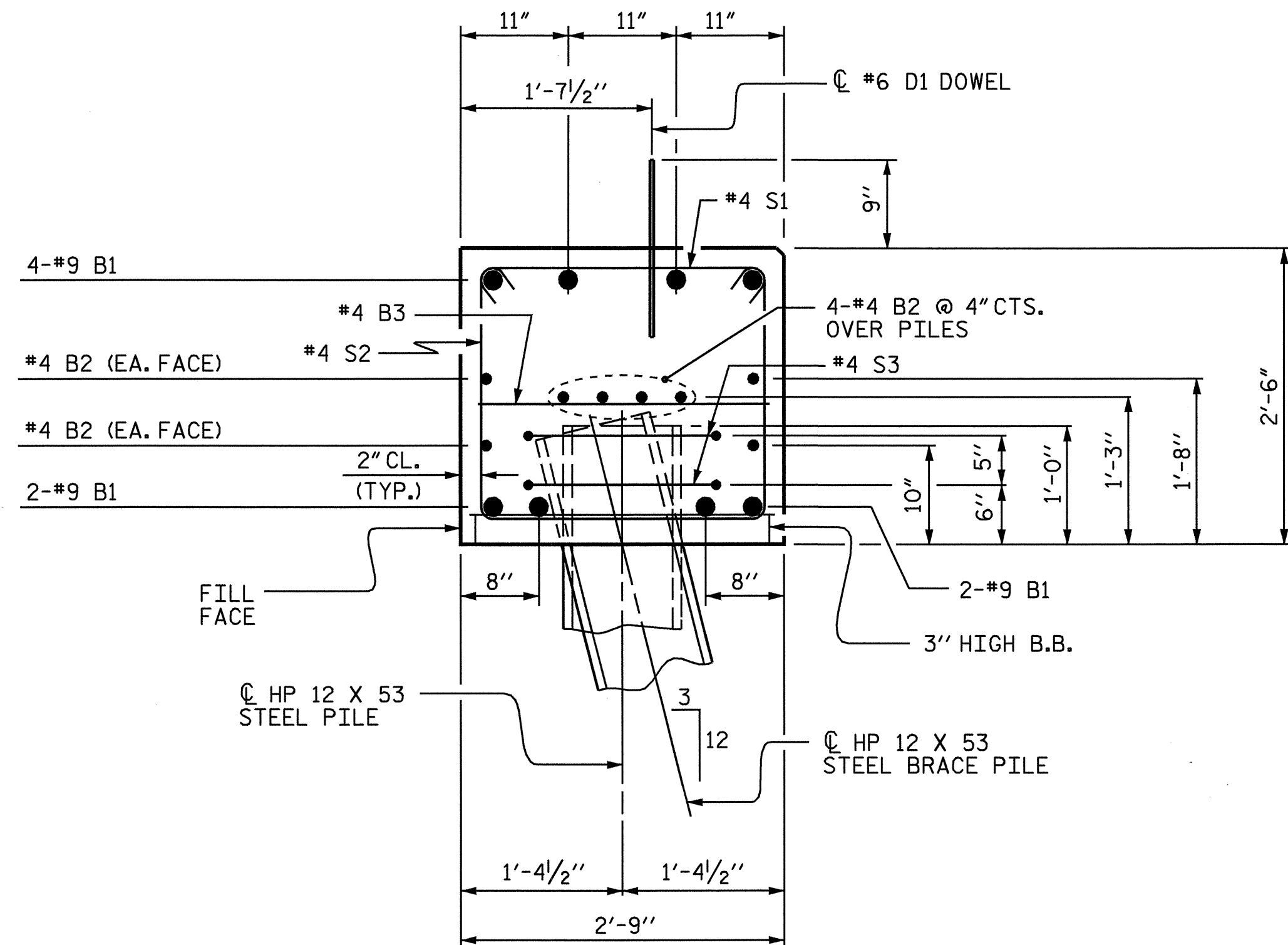
SUBSTRUCTURE
 END BENT 1



REVISIONS

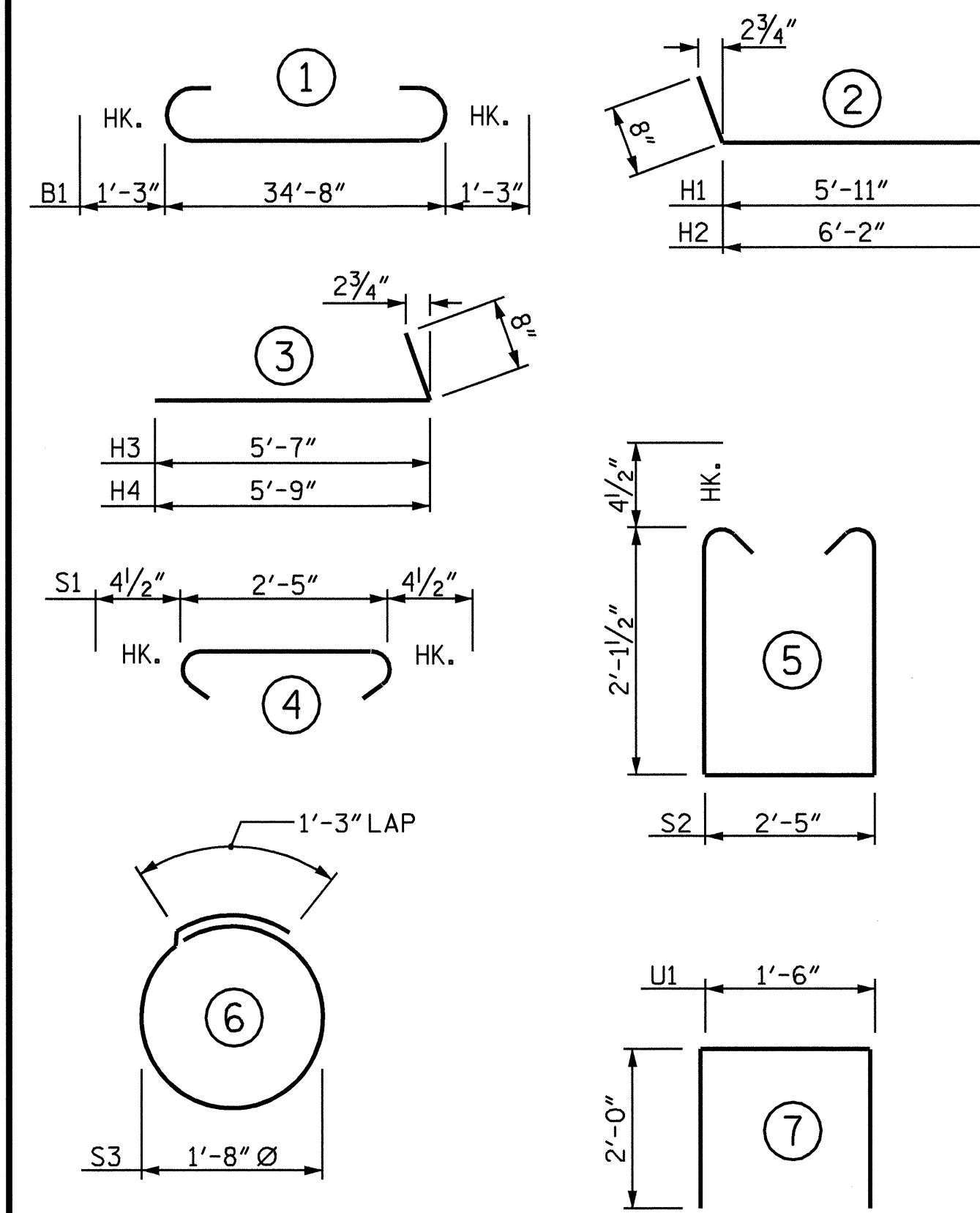
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-16
2			4			TOTAL SHEETS 27

DRAWN BY: D. G. ELY DATE: 2/07
 CHECKED BY: J. L. WALTON DATE: 5/07



SECTION A-A

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	37'-2"	1011
B2	16	#4	STR	18'-8"	200
B3	9	#4	STR	2'-5"	15
D1	18	#6	STR	1'-6"	41
H1	6	#4	2	6'-7"	26
H2	6	#4	2	6'-10"	27
H3	6	#4	3	6'-3"	25
H4	6	#4	3	6'-5"	26
K1	12	#4	STR	3'-1"	25
S1	32	#4	4	3'-2"	68
S2	32	#4	5	7'-5"	159
S3	12	#4	6	6'-6"	52
U1	4	#4	7	5'-6"	15
V1	42	#4	STR	4'-9"	133

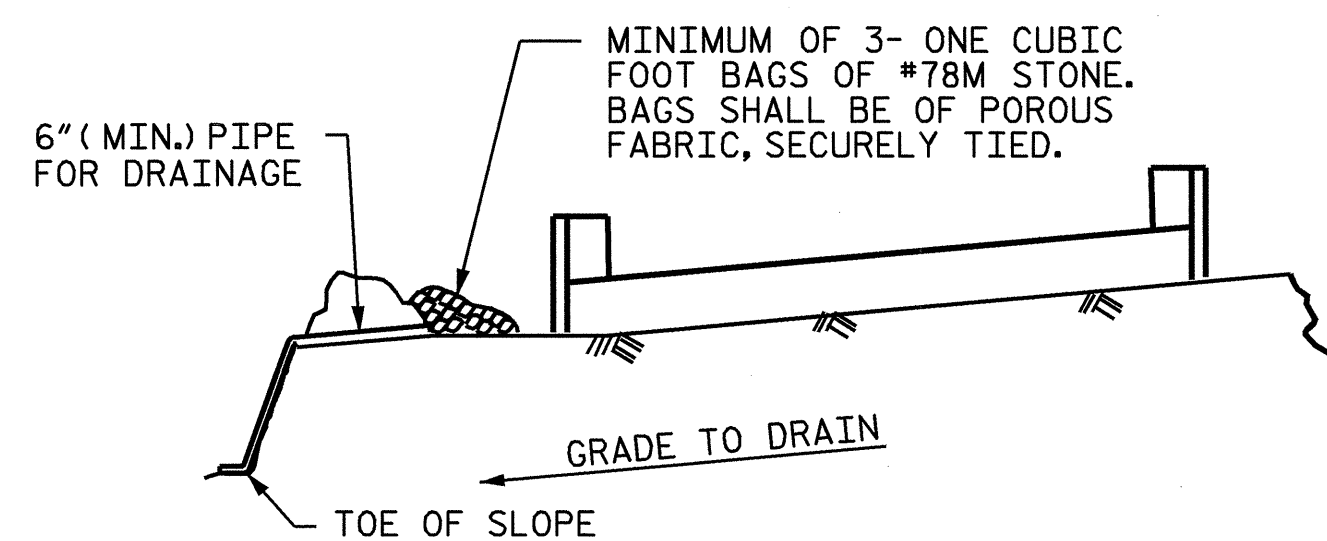
REINFORCING STEEL LBS. 1823

CLASS 'A' CONCRETE		
POUR #1: CAP & LOWER WINGS	C.Y.	9.9
POUR #2: UPPER WINGS	C.Y.	1.7
POUR #3: (LATERAL GUIDES)	C.Y.	0.1
TOTAL:	C.Y.	11.7

HP 12 X 53 STEEL PILES NO. 6 150 LIN. FT.

SPLICE LENGTH CHART

BARS	SIZE	SPLICE LENGTH
B2	#4	2'-5"

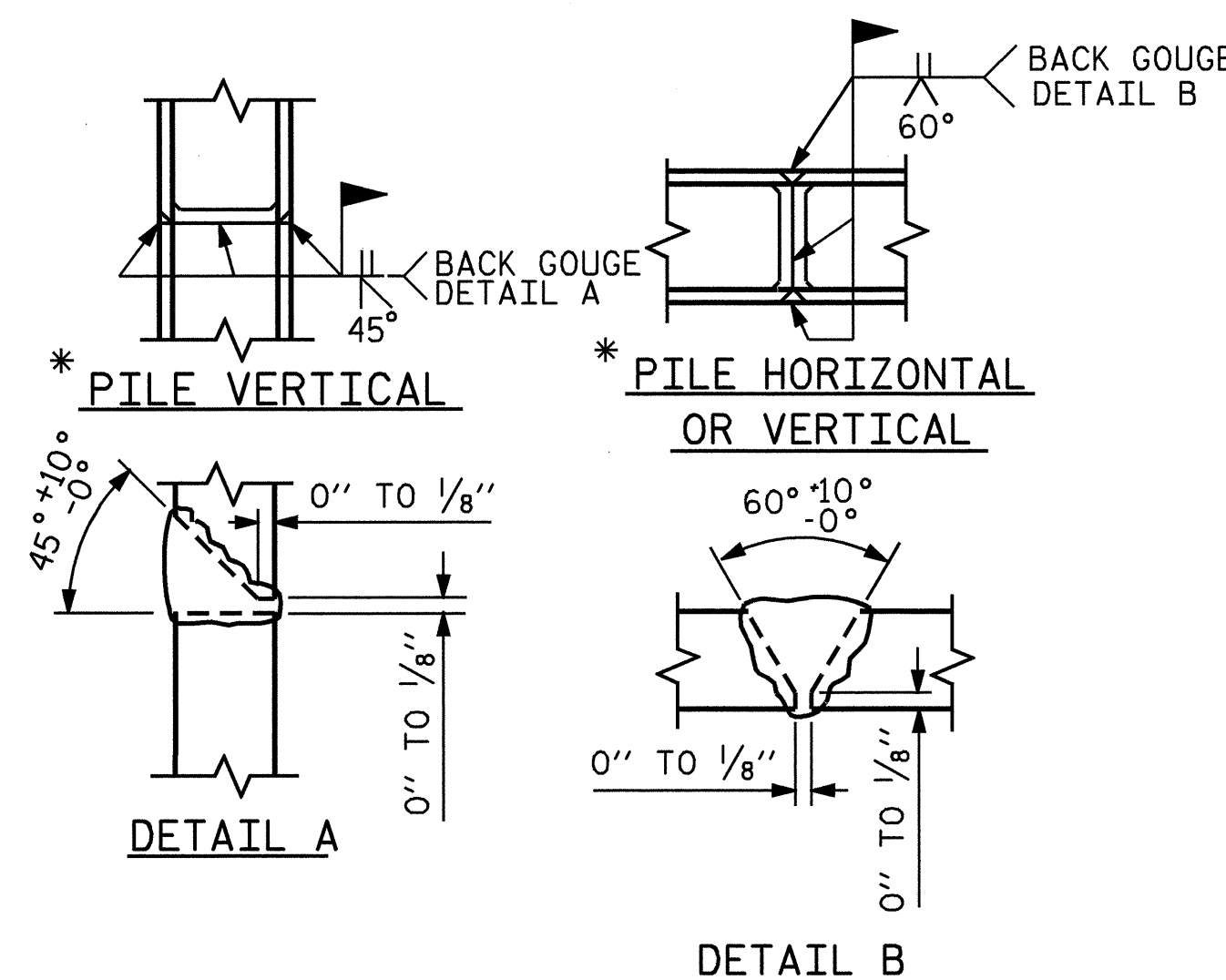


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

TEMPORARY DRAINAGE AT END BENT



PILE SPICE DETAILS

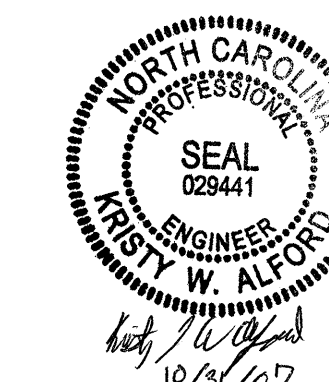
* POSITION OF PILE DURING WELDING.

PROJECT NO. B-4054
CALDWELL COUNTY
STATION: 12+46.00 -L-

SHEET 3 OF 3

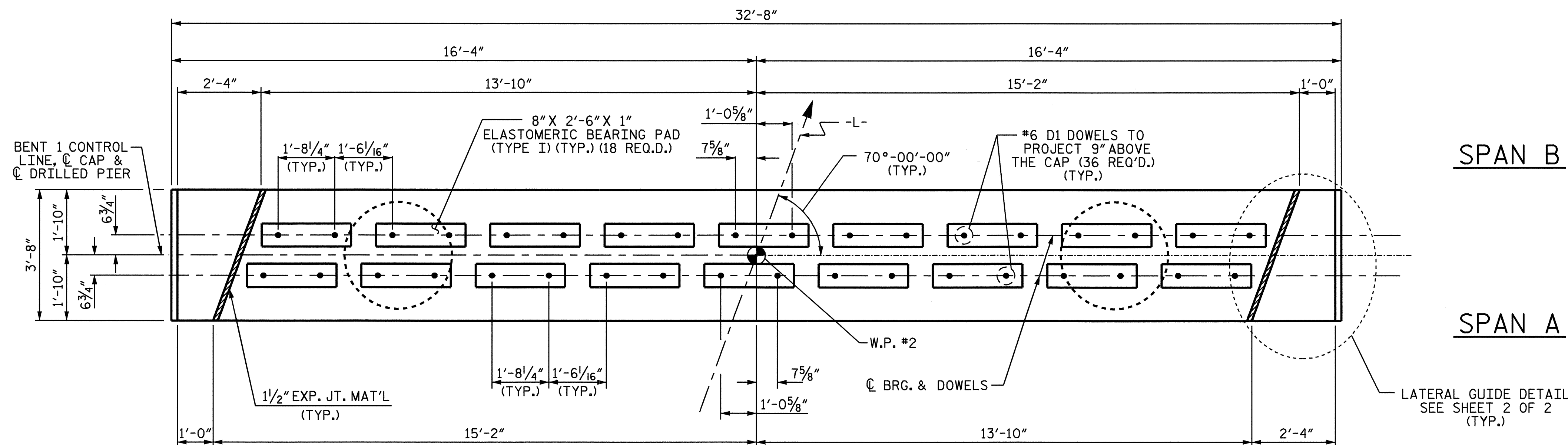
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1

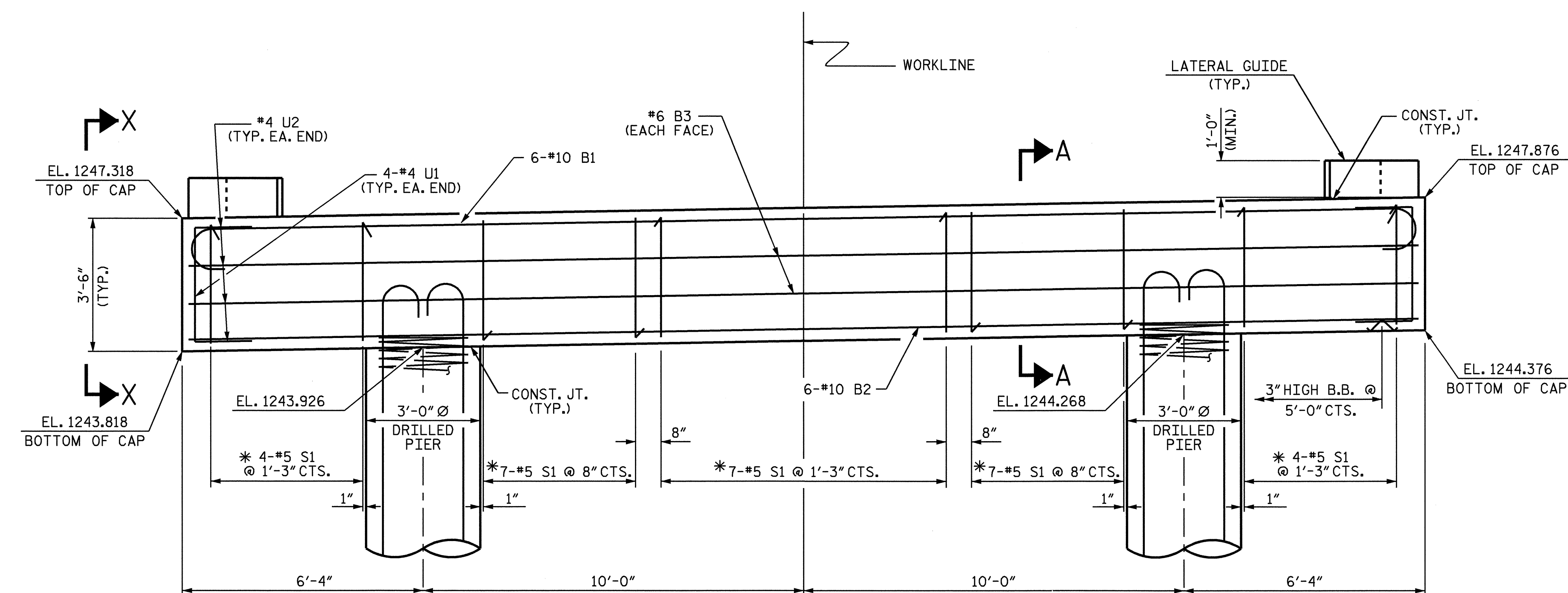


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS 27
2			4			

DRAWN BY: D. G. ELY DATE: 2/07
CHECKED BY: J. L. WALTON DATE: 5/07



PLAN

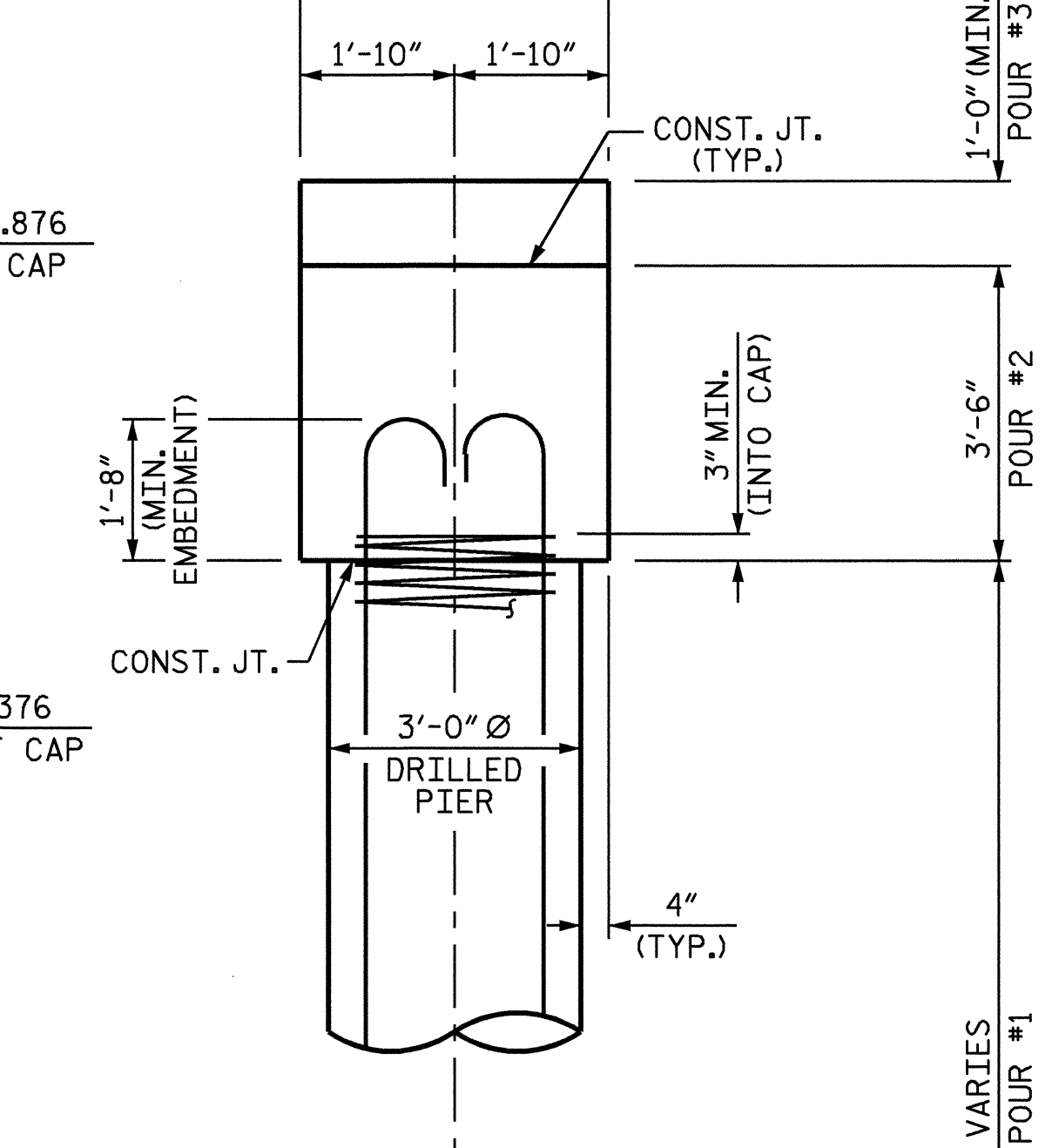


ELEVATION

SPAN B

SPAN A

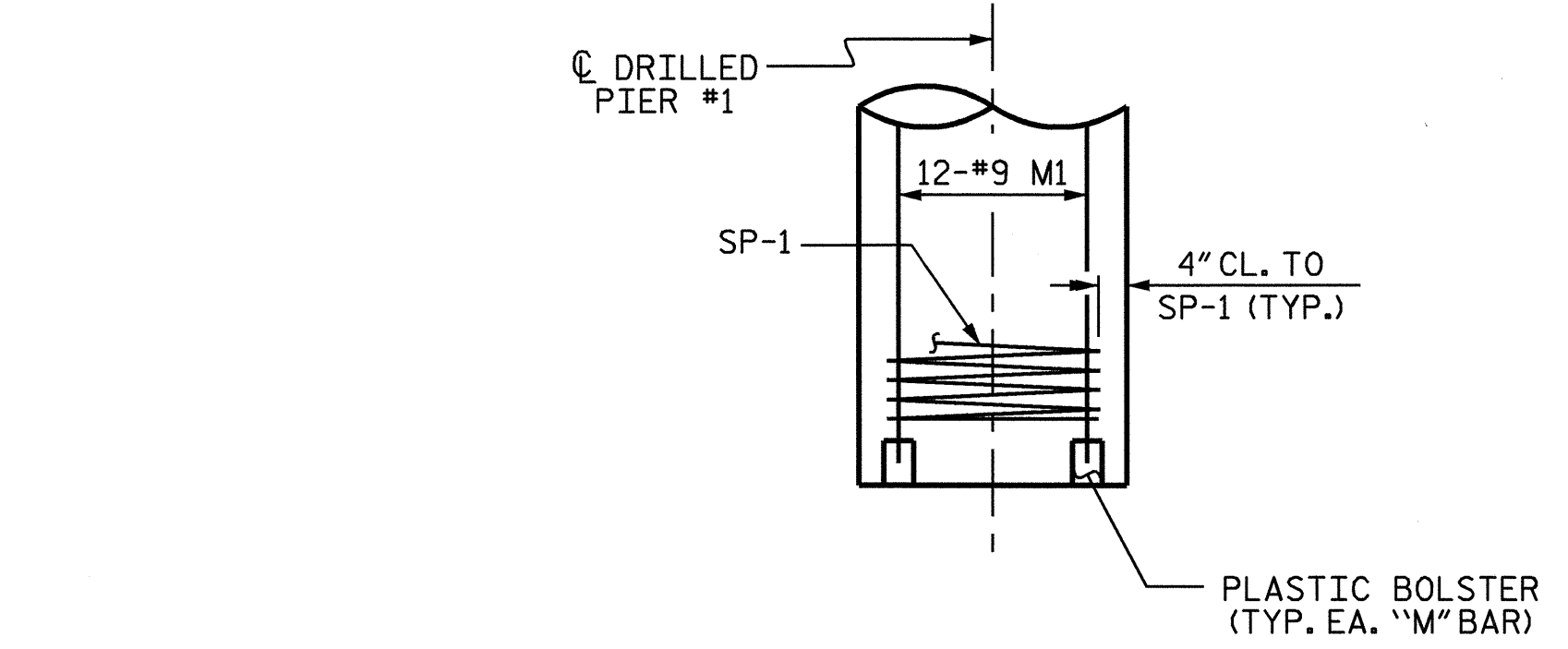
LATERAL GUIDE DETAIL
SEE SHEET 2 OF 2
(TYP.)



END ELEVATION
(TYP. EACH DRILLED PIER)

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6 D1 DOWELS.
- HOOKS ON "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
- ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.
- SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.
- THE LATERAL GUIDE AT THE END OF EACH CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.



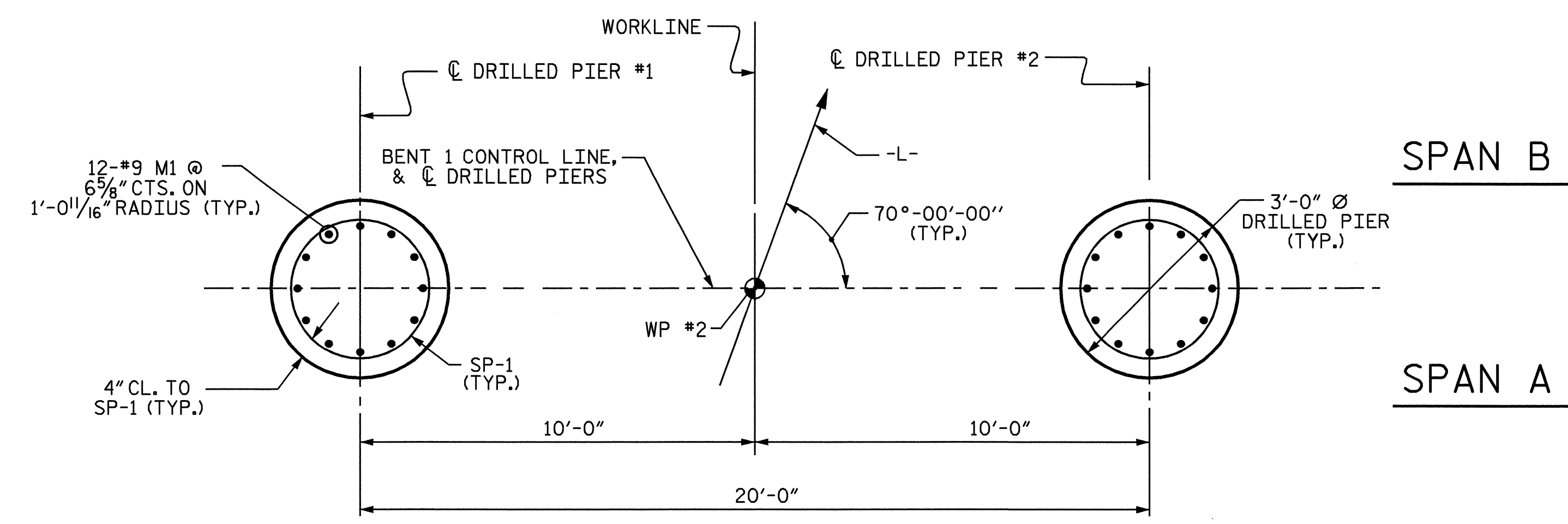
PROJECT NO. B-4054
CALDWELL COUNTY
STATION: 12+46.00 -L-

SHEET 1 OF 2

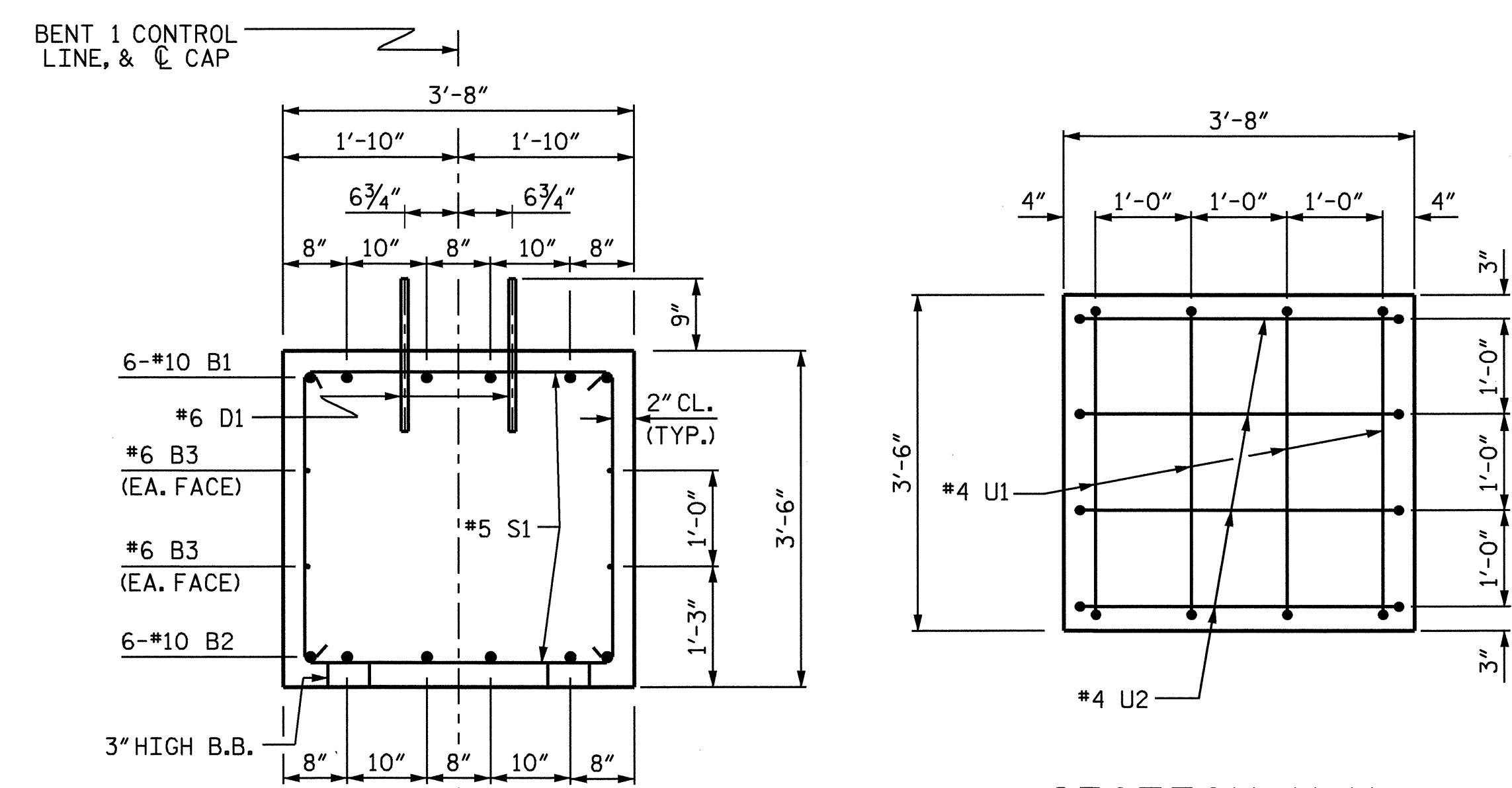
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-18
					TOTAL SHEETS 27

DRAWN BY: D. G. ELY DATE: 2/07
CHECKED BY: J. L. WALTON DATE: 3/07



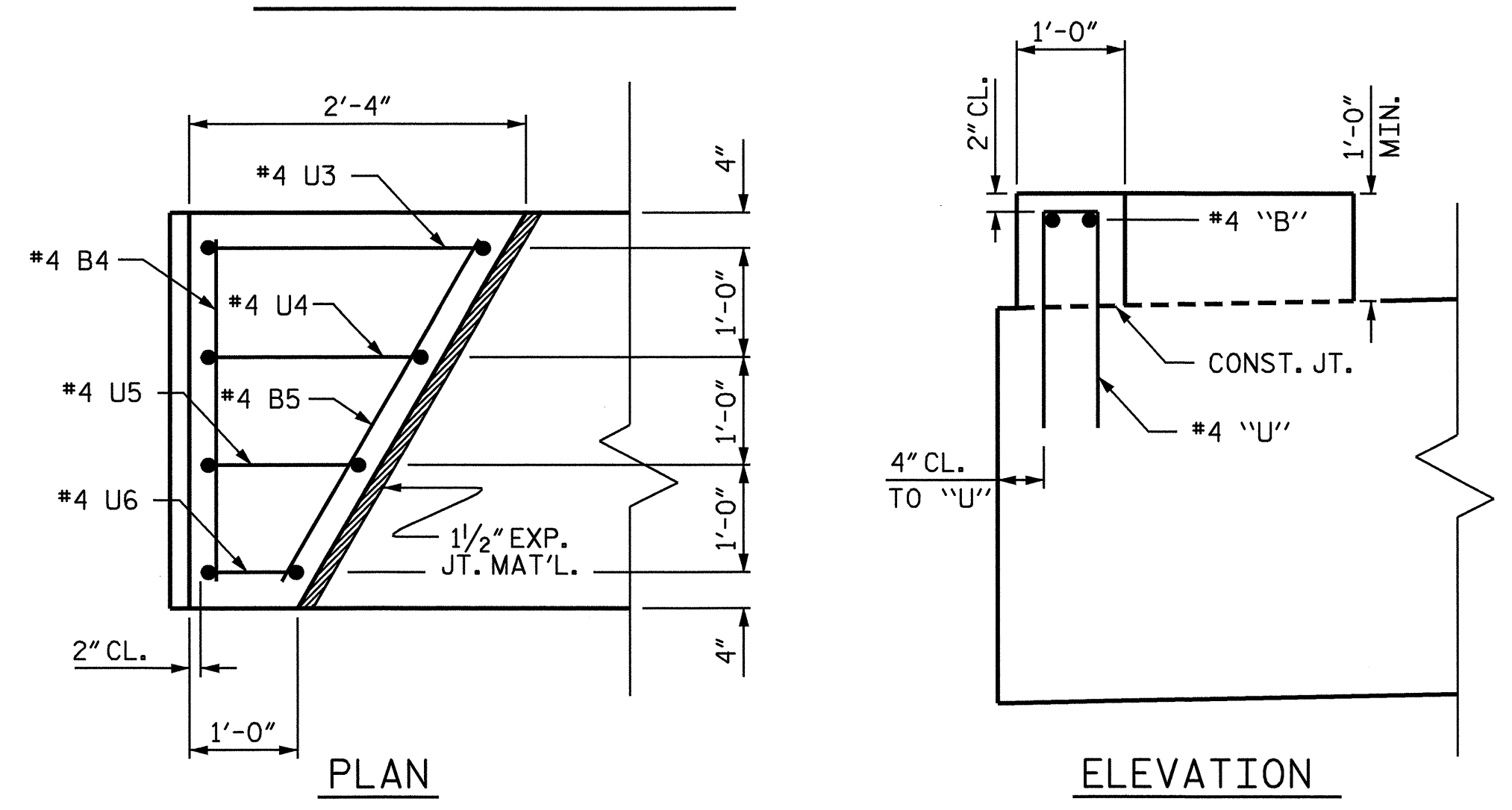


PLAN OF DRILLED PIERS
(DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH DRILLED PIER)



SECTION A-A

SECTION X-X
(TYPICAL EACH END)

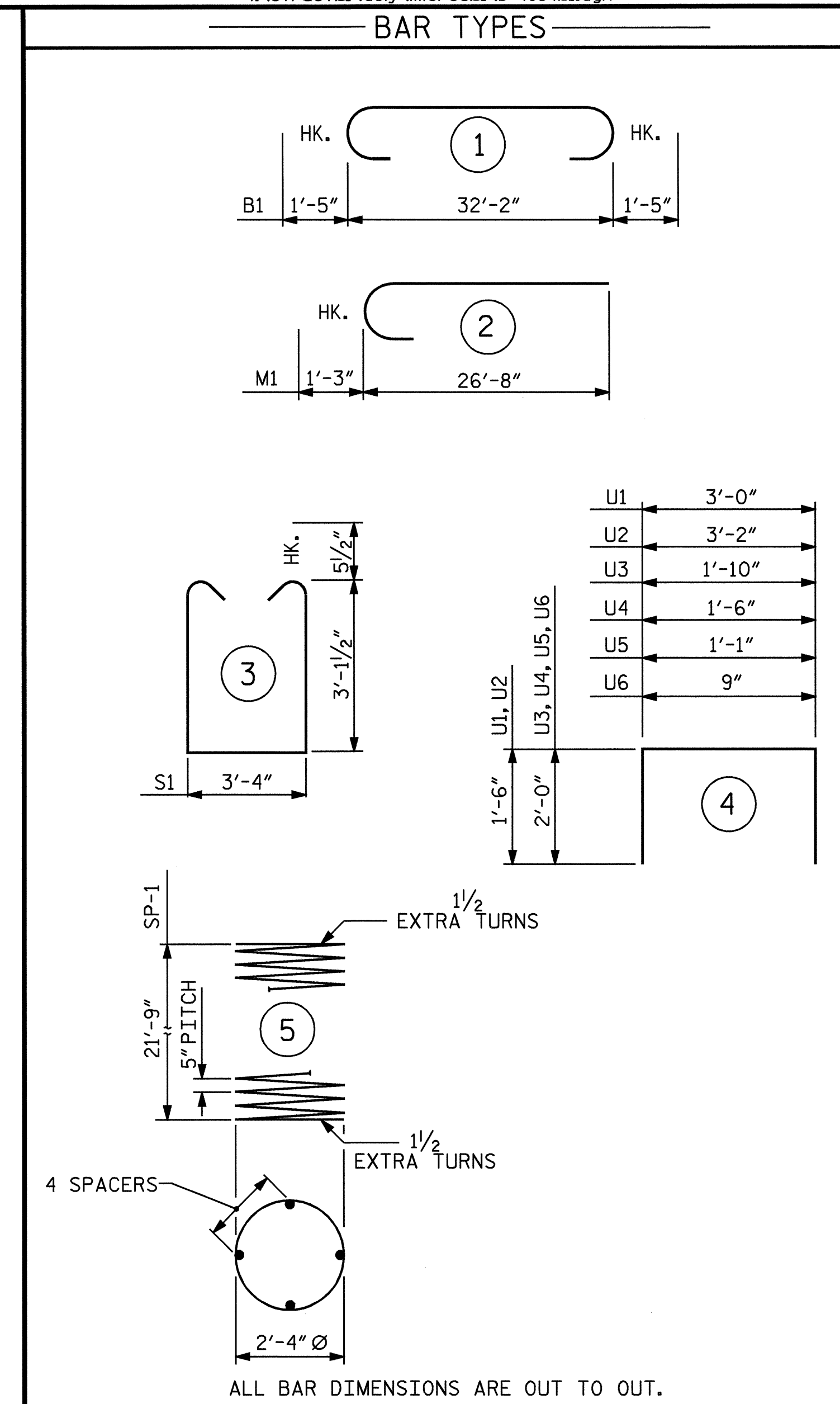


LATERAL GUIDE DETAILS
(EACH END SIMILAR)

DRAWN BY: D. G. ELY DATE: 2/07
CHECKED BY: J. L. WALTON DATE: 3/07

SPAN B

SPAN A



* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR,

BILL OF MATERIAL

BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	1	35'-0"	904
B2	6	#10	STR	32'-4"	835
B3	4	#6	STR	32'-4"	194
B4	2	#4	STR	3'-4"	4
B5	2	#4	STR	3'-6"	5
D1	36	#6	STR	1'-6"	81
M1	24	#9	2	27'-11"	2278
S1	29	#5	3	10'-6"	318
U1	8	#4	4	6'-0"	32
U2	8	#4	4	6'-2"	33
U3	2	#4	4	5'-10"	8
U4	2	#4	4	5'-6"	7
U5	2	#4	4	5'-1"	7
U6	2	#4	4	4'-9"	6

REINFORCING STEEL = 4712 LBS

SP-1	2	**	5	396'-7"	827
------	---	----	---	---------	-----

TOTAL SPIRAL REINFORCING STEEL 827 LBS

CLASS A CONCRETE BREAKDOWN	
POUR #2 CAP	15.5 CY
POUR #3 LATERAL GUIDE	0.5 CY
CLASS A CONCRETE TOTAL	16.0 CY

3'-0" Ø DRILLED PIERS

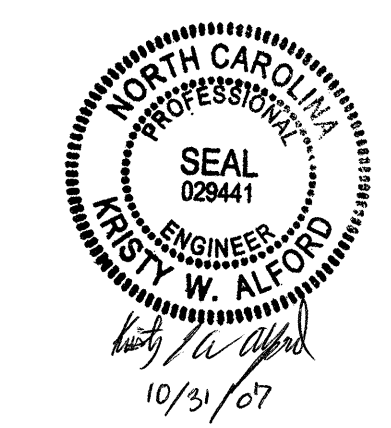
DRILLED PIER CONCRETE BREAKDOWN	
POUR #1 (DRILLED PIERS)	11.6 CY
PERMANENT STEEL CASING	14.2 FT.
DRILLED PIERS IN SOIL	34.2 FT.
DRILLED PIERS NOT IN SOIL	10.0 FT.
CROSSHOLE SONIC LOGGING	1 EA.
CSL TUBES	196.8 FT.

PROJECT NO. B-4054
CALDWELL COUNTY
STATION: 12+46.00 -L-

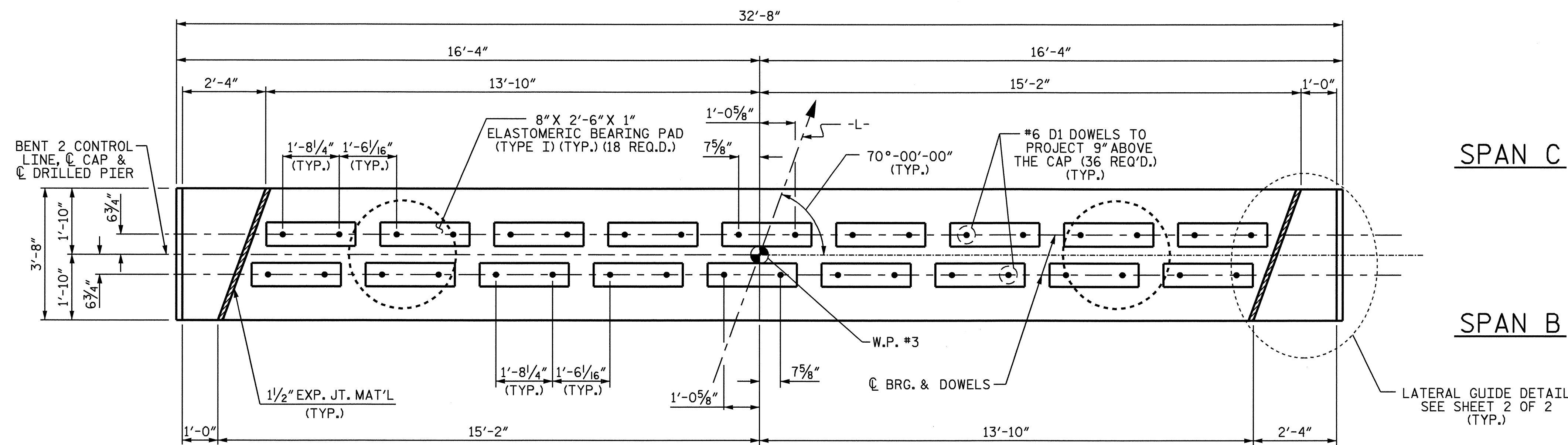
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

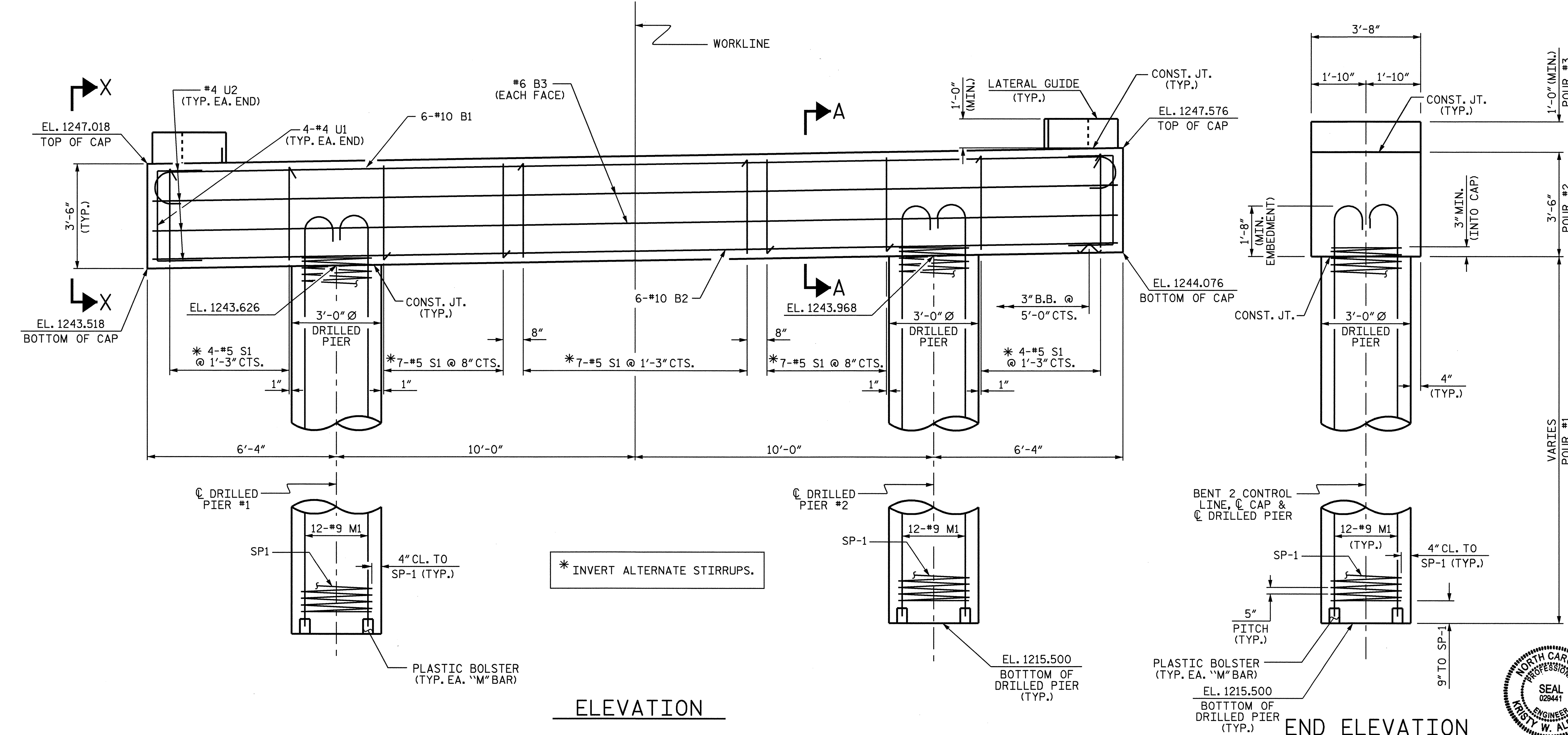
SUBSTRUCTURE
BENT 1



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



PLAN



ELEVATION

SPAN C

SPAN B

END ELEVATION
(TYP. EACH DRILLED PIER)

NOTES

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

HOOKS ON "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.

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

PROJECT NO. B-4054
CALDWELL COUNTY
STATION: 12+46.00 -L-

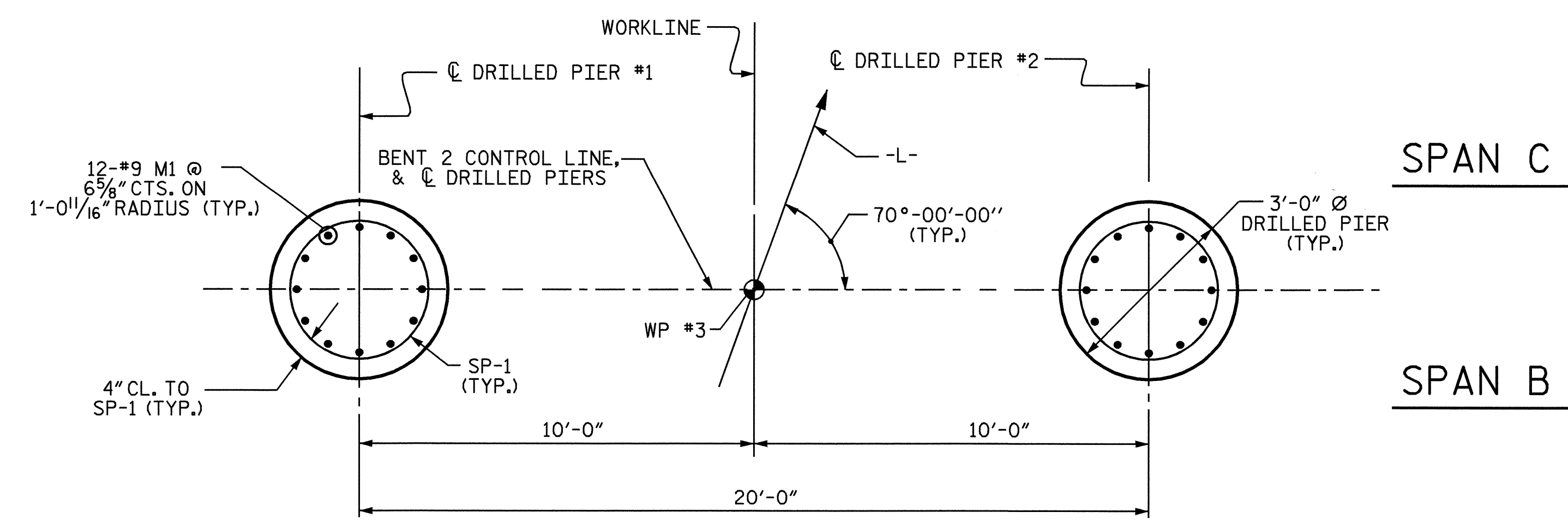
SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-20
					TOTAL SHEETS 27

DRAWN BY: D. G. ELY DATE: 2/07
CHECKED BY: J. L. WALTON DATE: 3/07

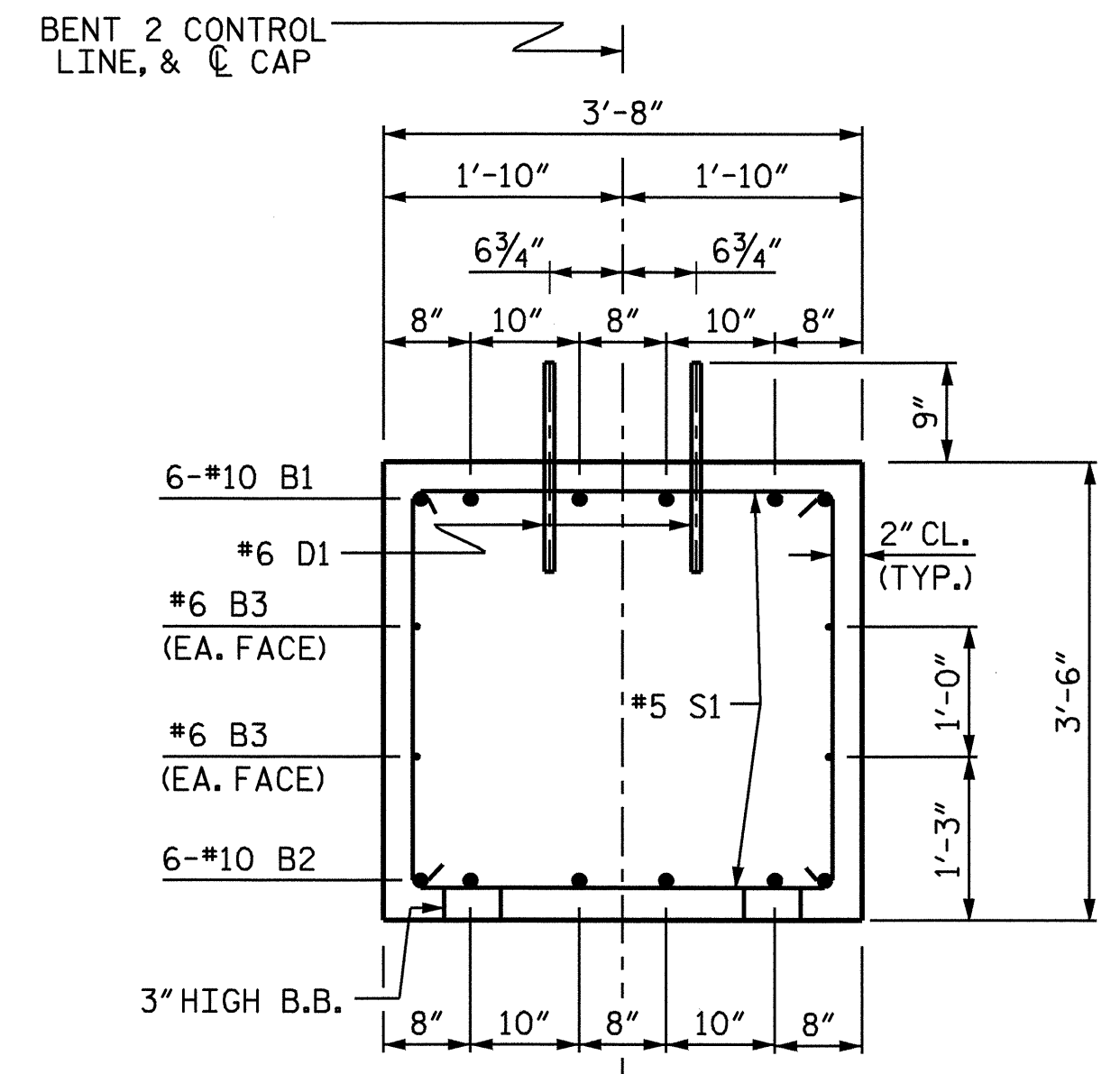
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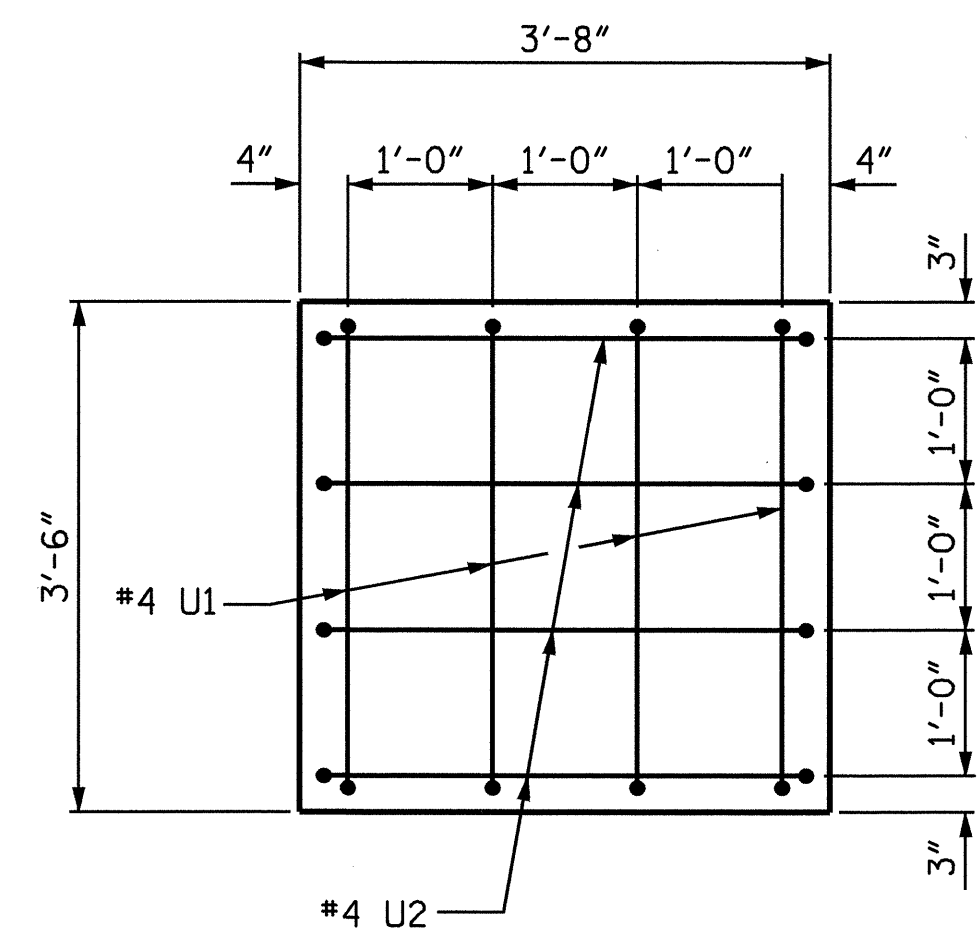


PLAN OF DRILLED PIERS

(DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH DRILLED PIER)

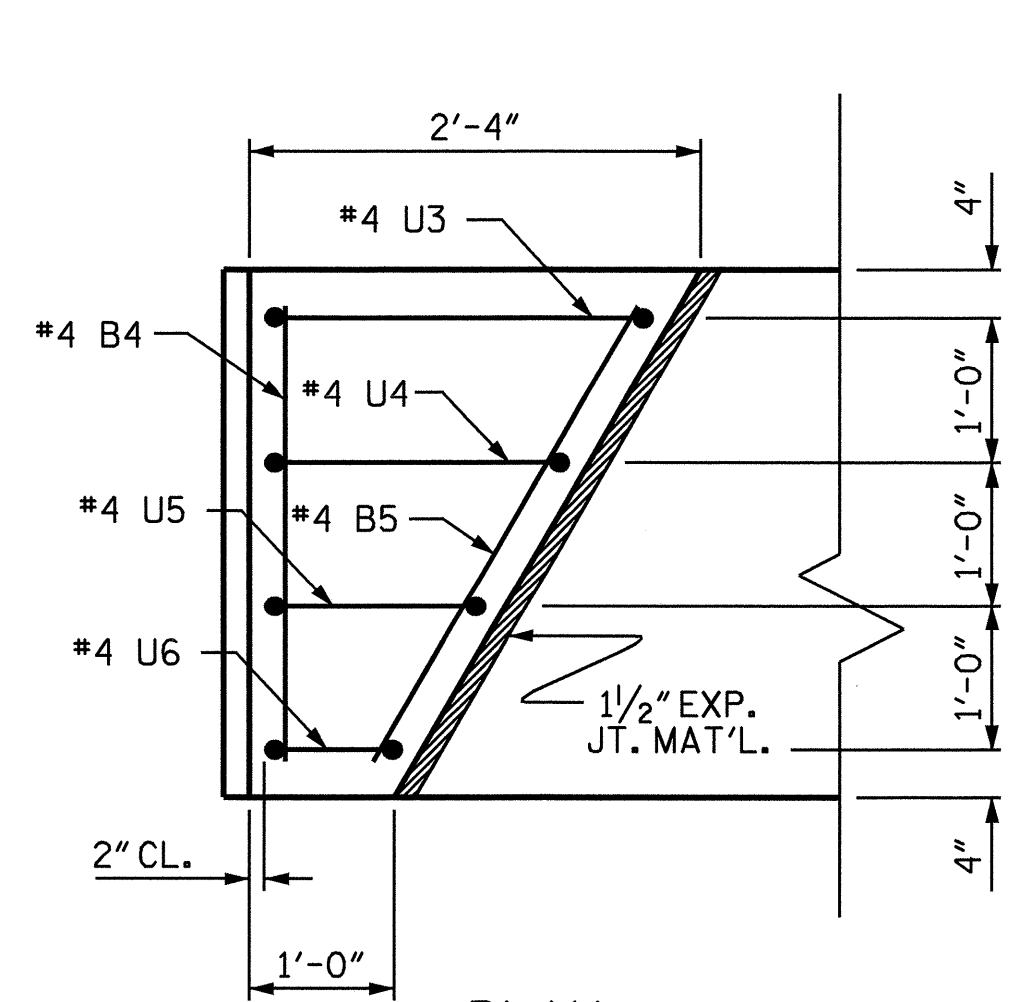


SECTION A-A

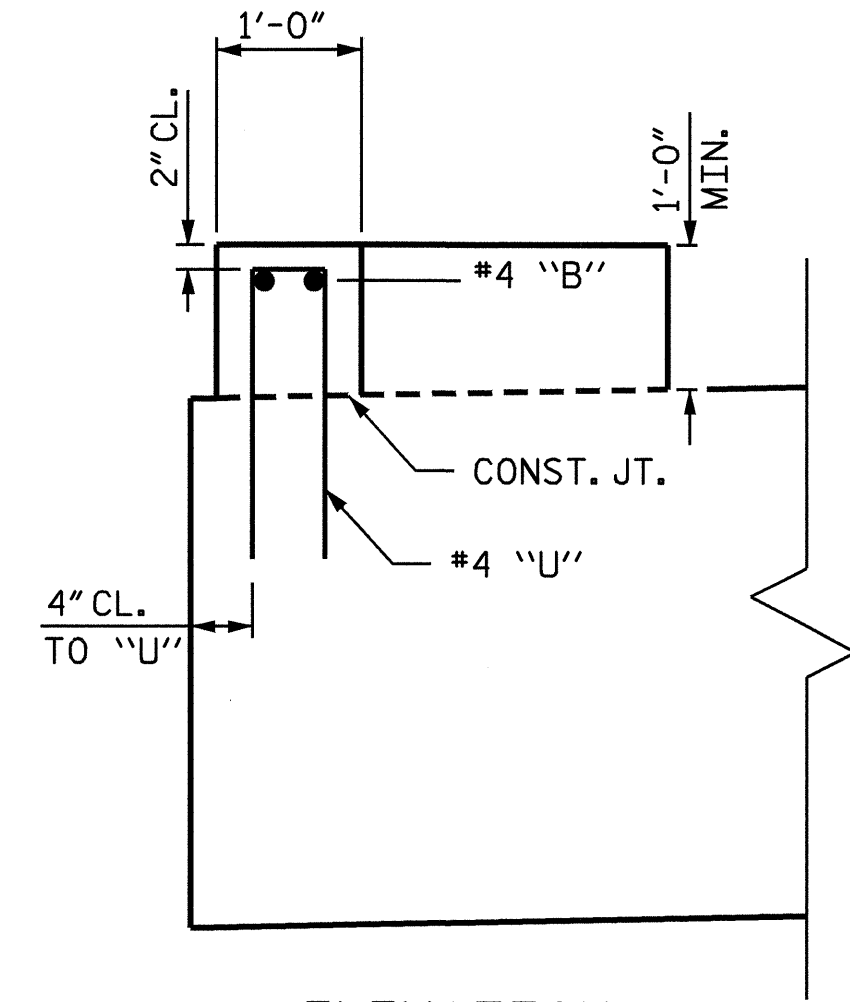


SECTION X-X

(TYPICAL EACH END)



PLAN

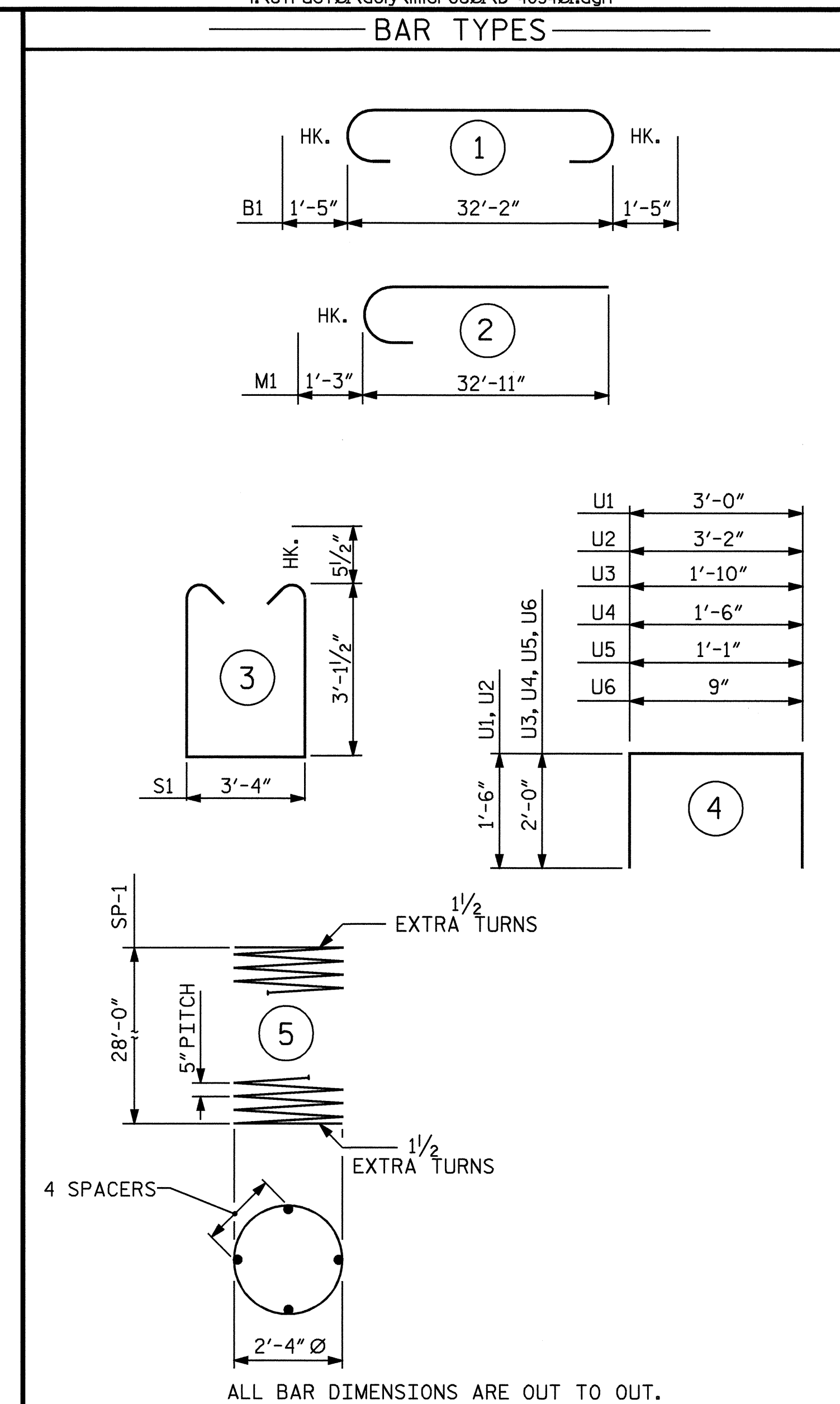


ELEVATION

LATERAL GUIDE DETAILS

(EACH END SIMILAR)

DRAWN BY: D. G. ELY DATE: 2/07
 CHECKED BY: J. L. WALTON DATE: 3/07



** THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR,

BILL OF MATERIAL

BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	1	35'-0"	904
B2	6	#10	STR	32'-4"	835
B3	4	#6	STR	32'-4"	194
B4	2	#4	STR	3'-4"	4
B5	2	#4	STR	3'-6"	5
D1	36	#6	STR	1'-6"	81
M1	24	#9	2	34'-2"	2788
S1	29	#5	3	10'-6"	318
U1	8	#4	4	6'-0"	32
U2	8	#4	4	6'-2"	33
U3	2	#4	4	5'-10"	8
U4	2	#4	4	5'-6"	7
U5	2	#4	4	5'-1"	7
U6	2	#4	4	4'-9"	6

REINFORCING STEEL = 5222 LBS

SP-1	2	**	5	504'-4"	1052
------	---	----	---	---------	------

TOTAL SPIRAL REINFORCING STEEL 1052 LBS

CLASS A CONCRETE BREAKDOWN

POUR #2 CAP	15.5 CY
POUR #3 LATERAL GUIDE	0.5 CY
CLASS A CONCRETE TOTAL	16.0 CY

3'-0" Ø DRILLED PIERS

DRILLED PIER CONCRETE BREAKDOWN

POUR #1 (DRILLED PIERS)	14.8 CY
-------------------------	---------

PERMANENT STEEL CASING	15.6 FT.
DRILLED PIERS IN SOIL	37.6 FT.
DRILLED PIERS NOT IN SOIL	19.0 FT.

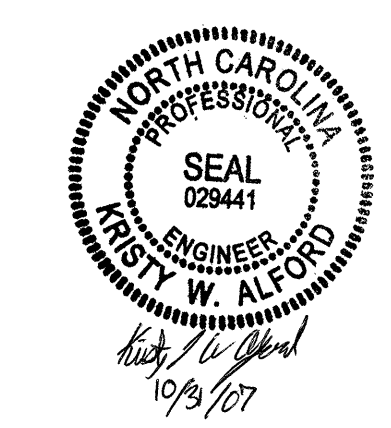
CROSSHOLE SONIC LOGGING	1 EA.
CSL TUBES	246.4 FT.

PROJECT NO. B-4054
CALDWELL COUNTY
 STATION: 12+46.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 BENT 2**



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

NOTES

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

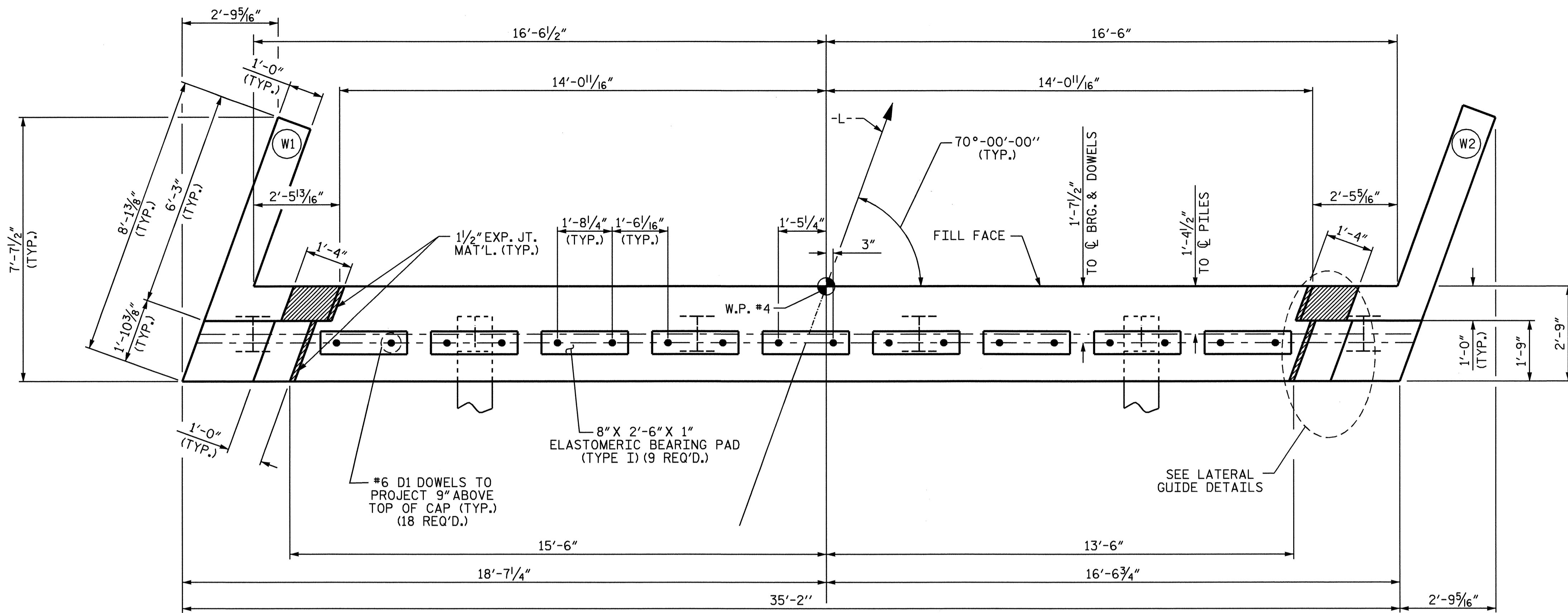
THE LATERAL GUIDE AT EACH END OF CAP IS NOT TO BE POURED UNTIL AFTER CORED SLAB UNITS ARE IN PLACE.

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

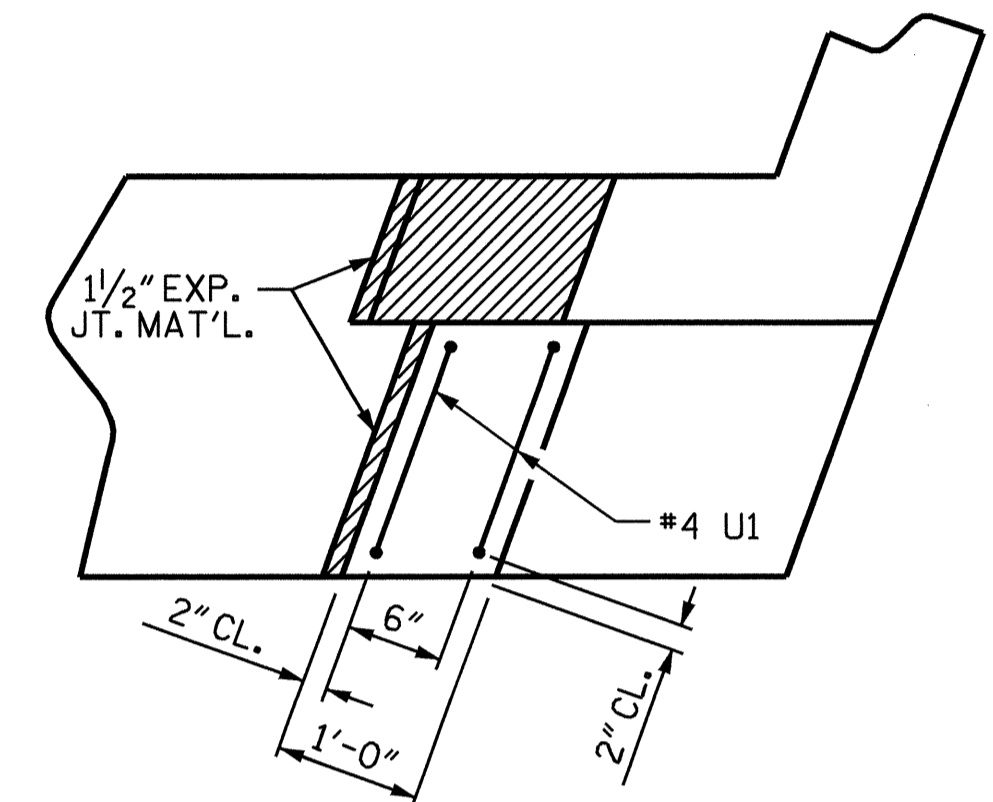
FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

FOR TEMPORARY DRAINAGE DETAILS, SEE SHEET 3 OF 3.

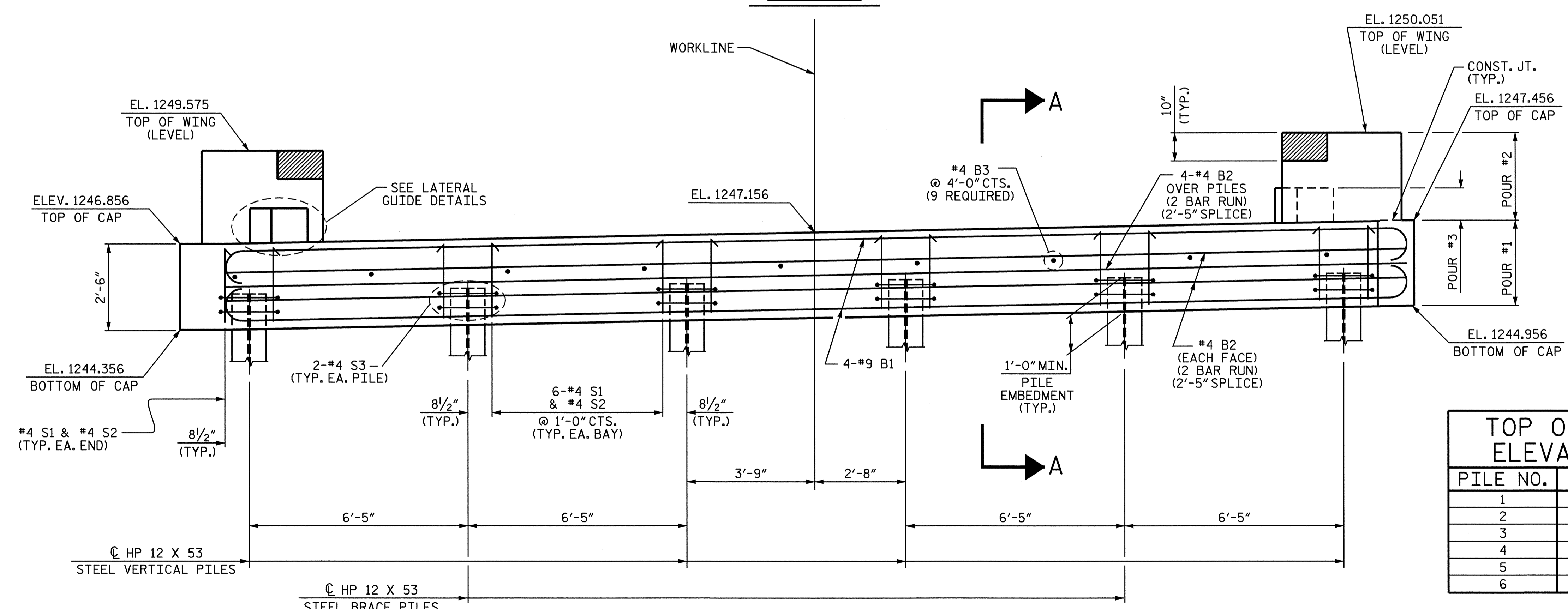
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.



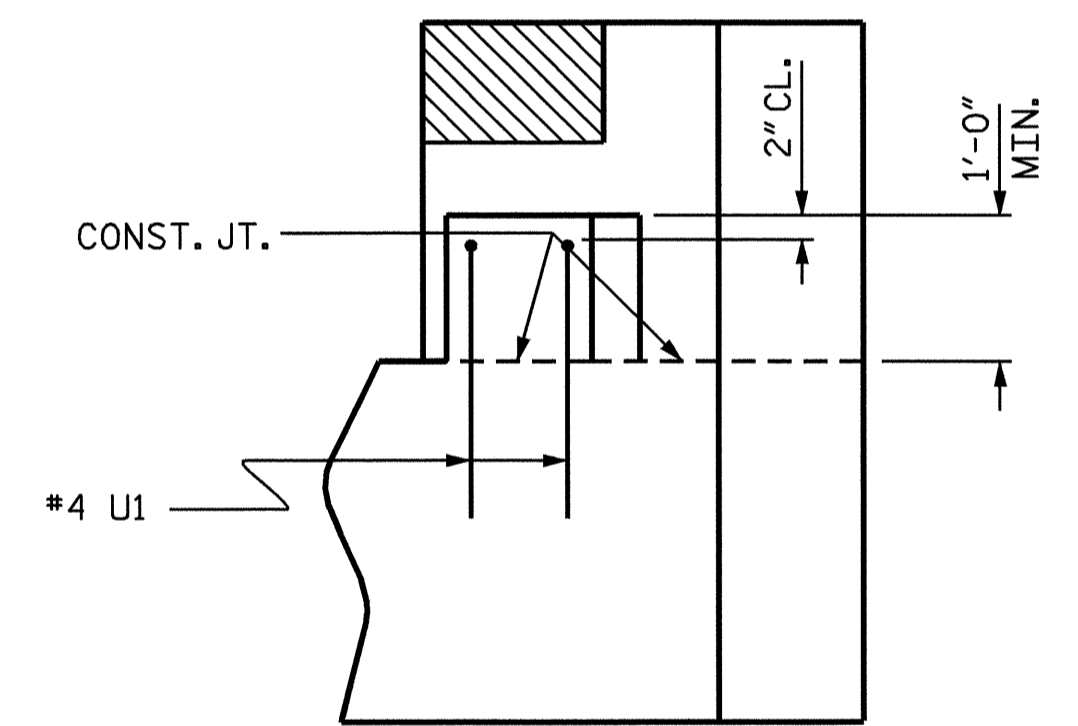
PLAN



PLAN



ELEVATION



ELEVATION

LATERAL GUIDE DETAILS

EACH END SIMILAR

TOP OF PILE ELEVATIONS	
PILE NO.	ELEVATION
1	1245.391
2	1245.500
3	1245.610
4	1245.719
5	1245.830
6	1245.938

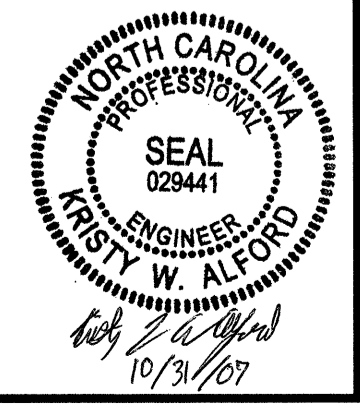
PROJECT NO. B-4054
CALDWELL COUNTY
 STATION: 12+46.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

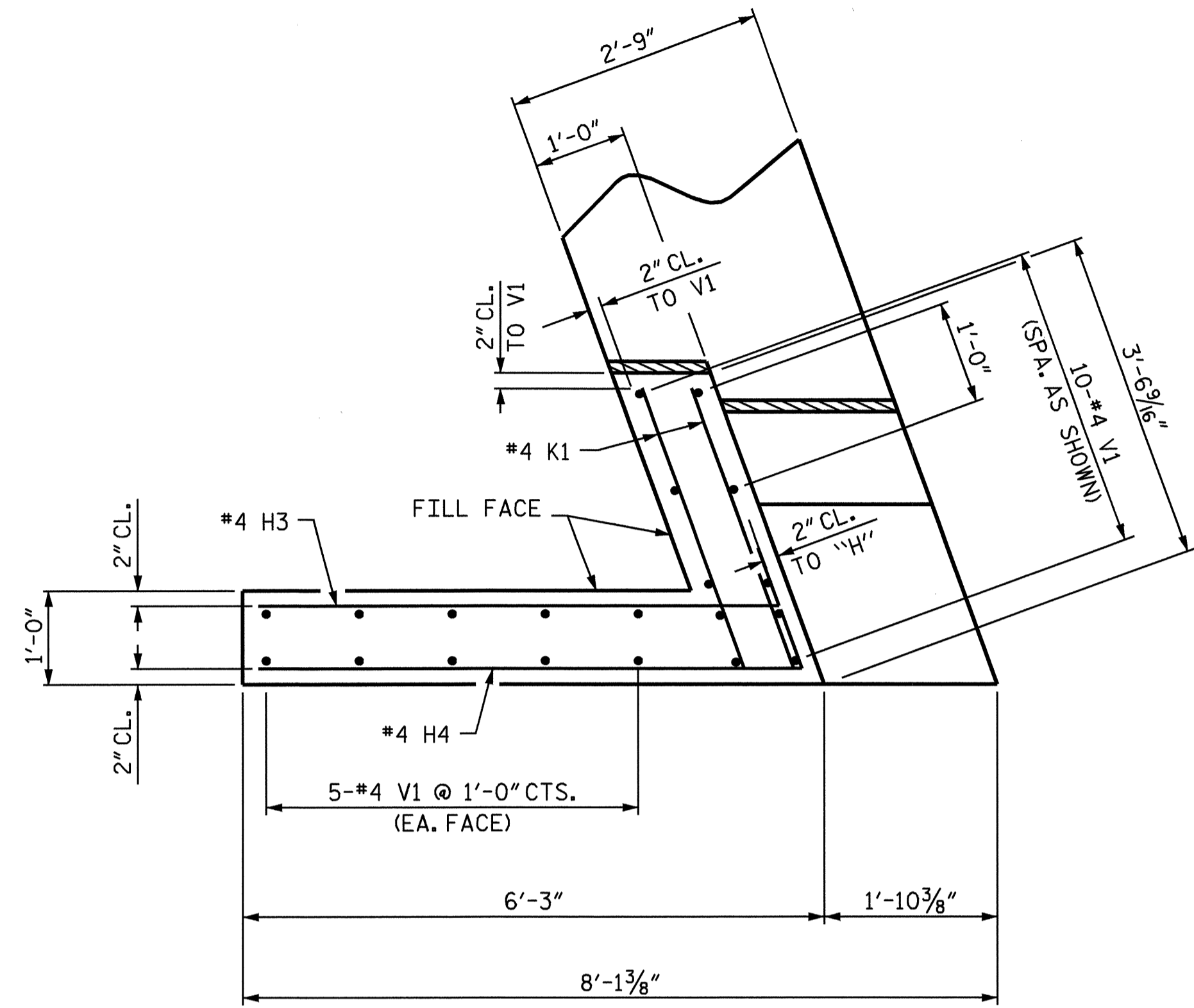
**SUBSTRUCTURE
 END BENT 2**

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

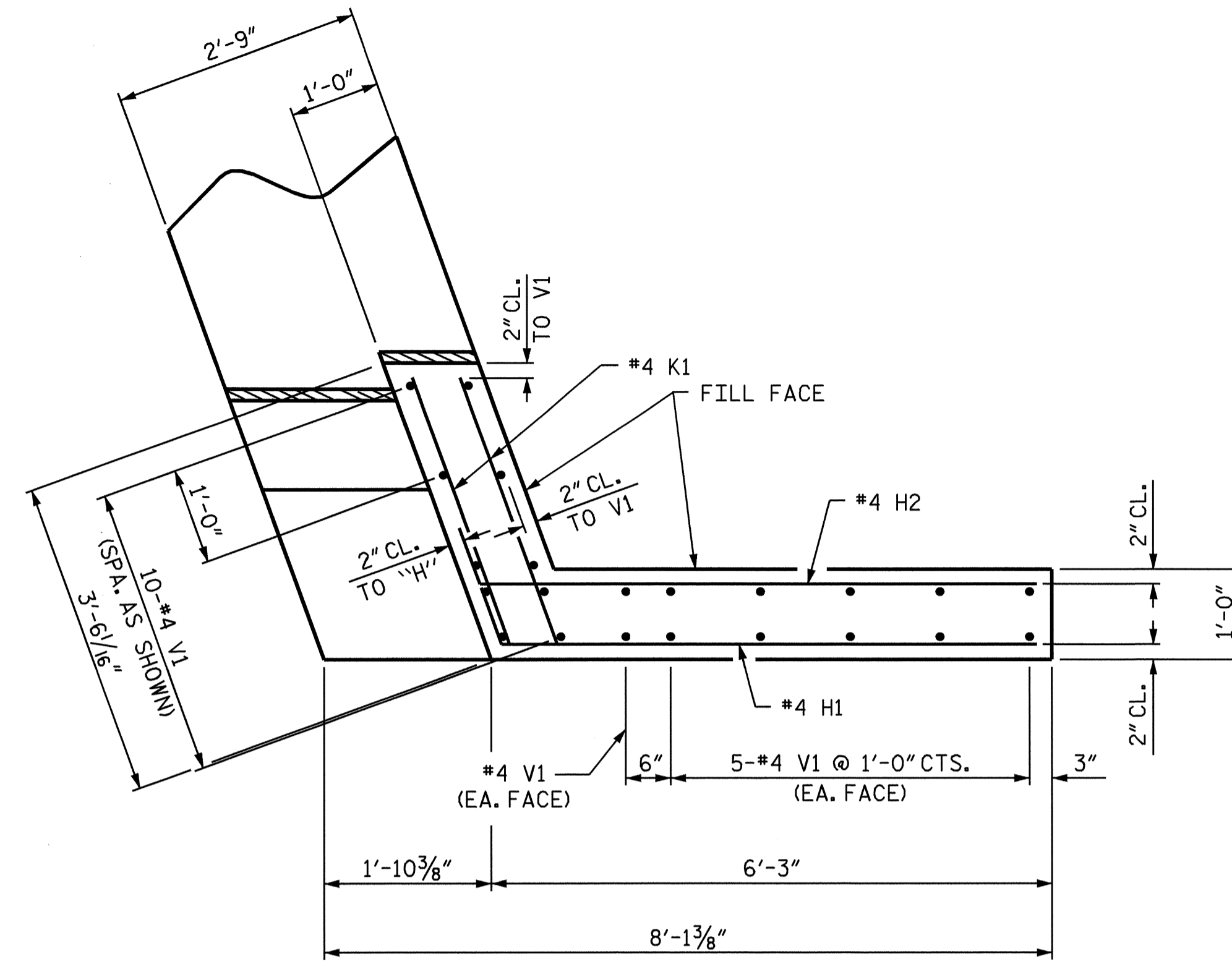


WINGS NOT SHOWN IN ELEVATION VIEW FOR CLARITY
 (FOR WING REINFORCING STEEL & DETAILS, SEE SHEET 2 OF 3.)

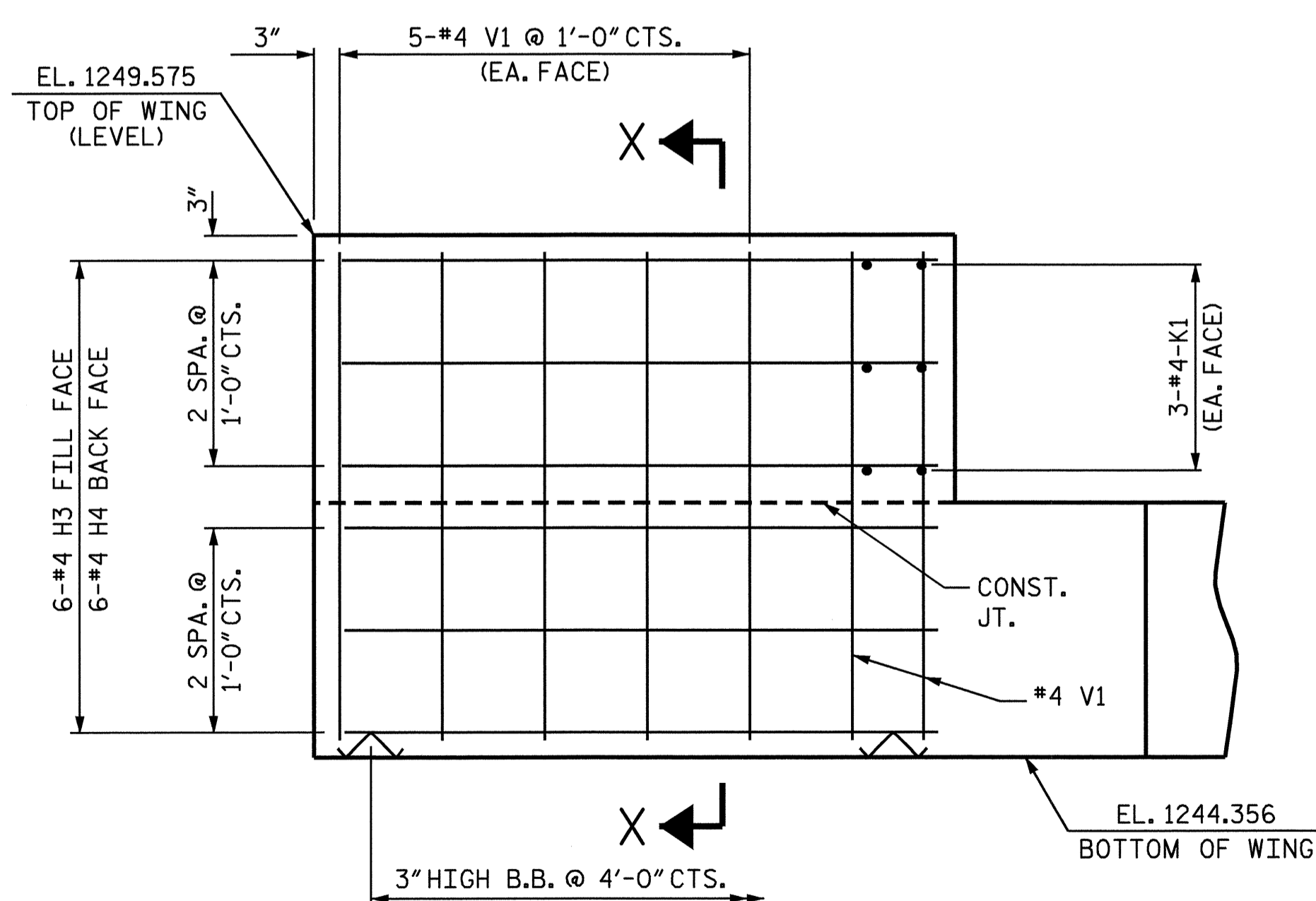
DRAWN BY: D. G. ELY DATE: 1/07
 CHECKED BY: J. L. WALTON DATE: 3/07



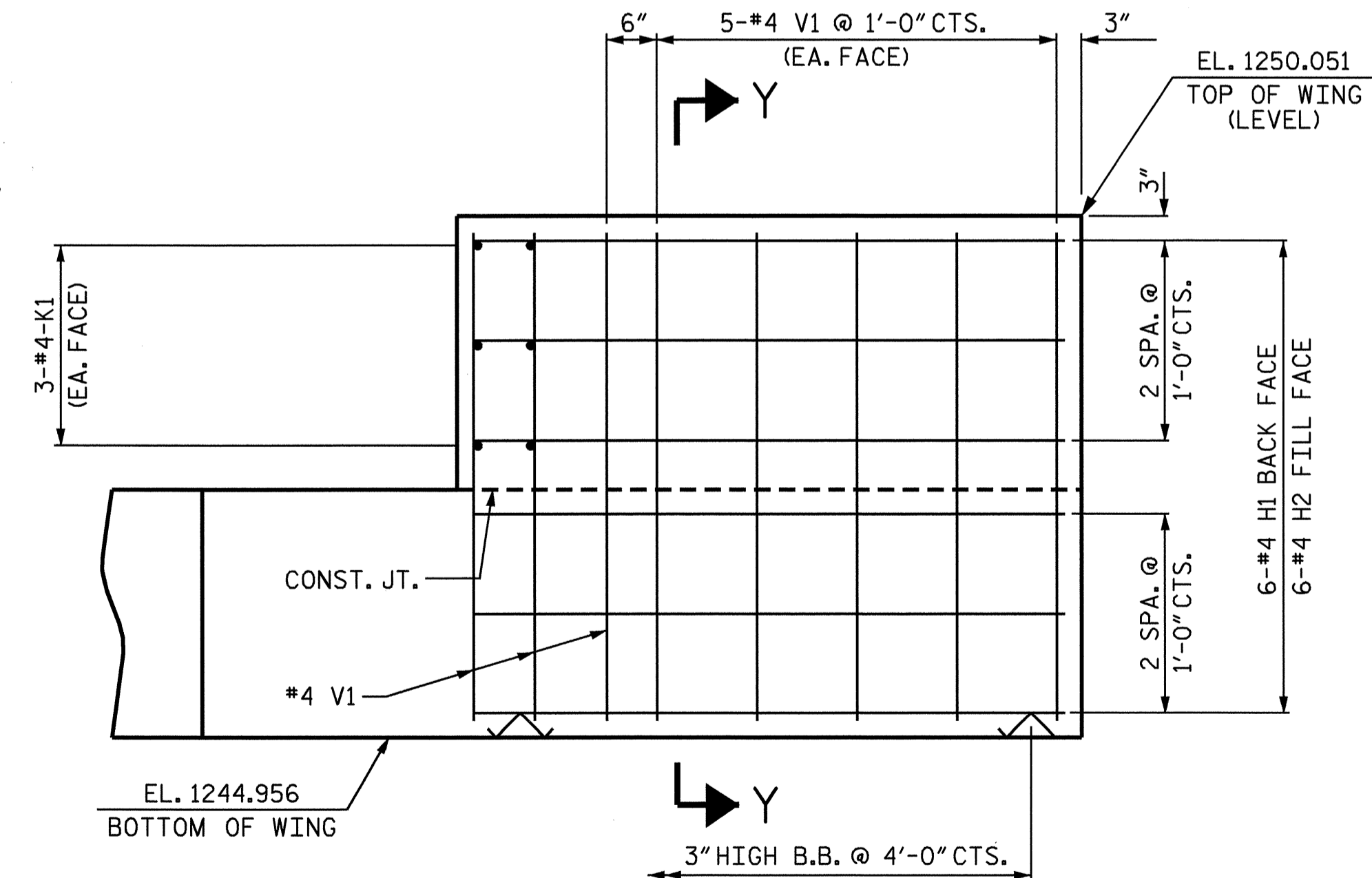
PLAN OF WING - W1



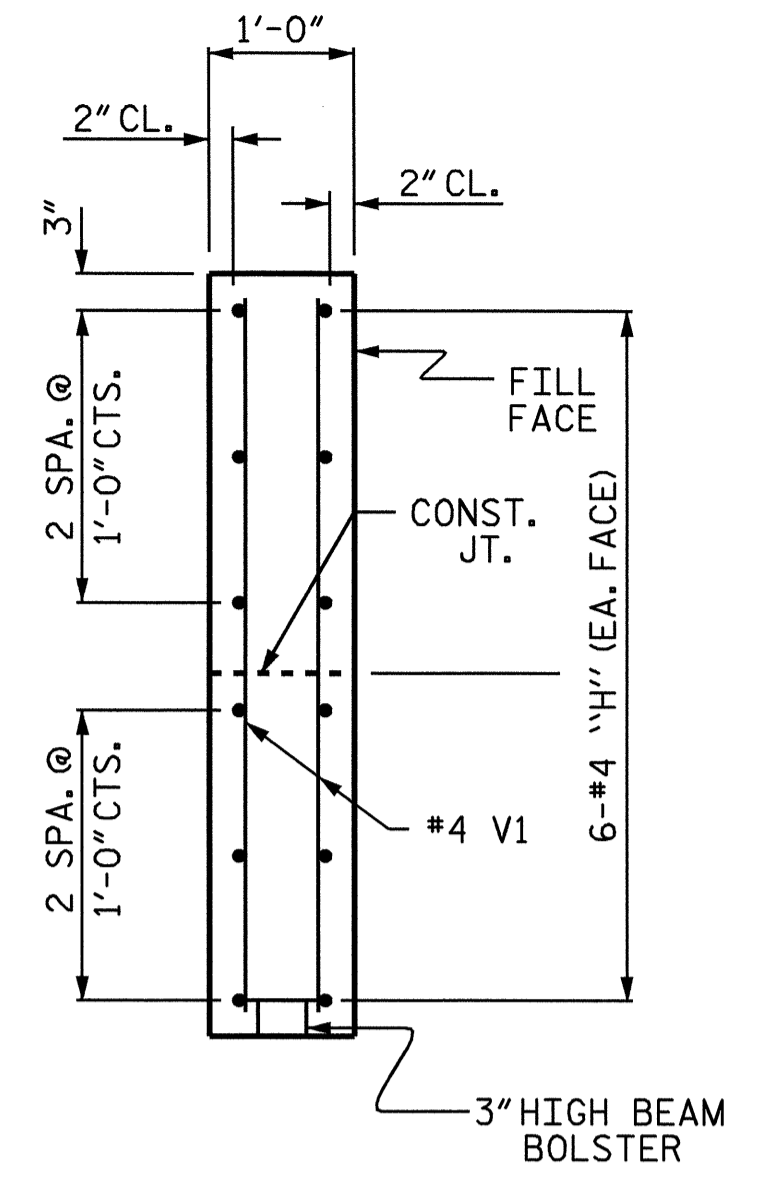
PLAN OF WING - W2



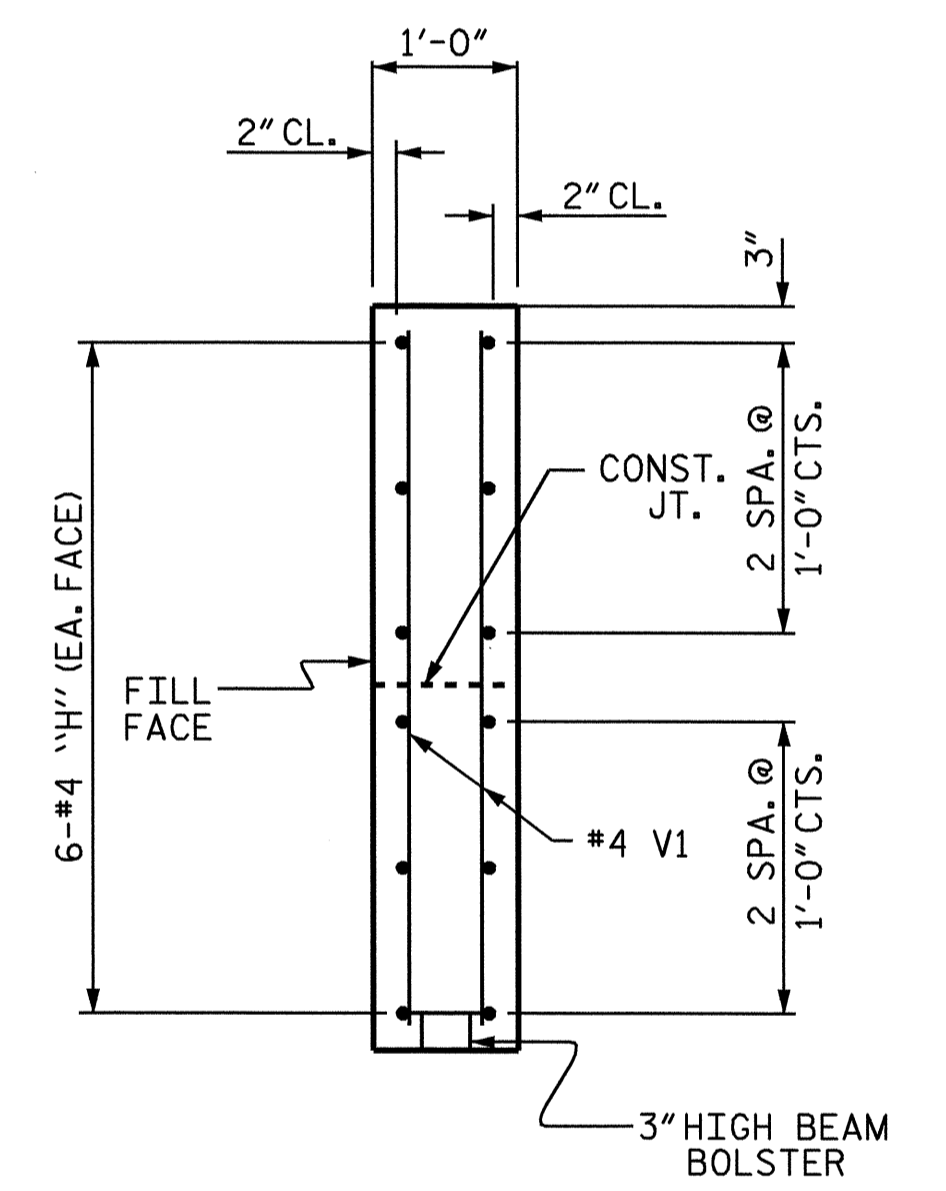
ELEVATION OF WING - W1



ELEVATION OF WING - W2



SECTION X-X

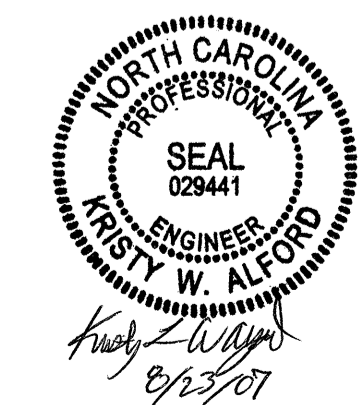


SECTION Y-Y

PROJECT NO. B-4054
 CALDWELL COUNTY
 STATION: 12+46.00 -L-

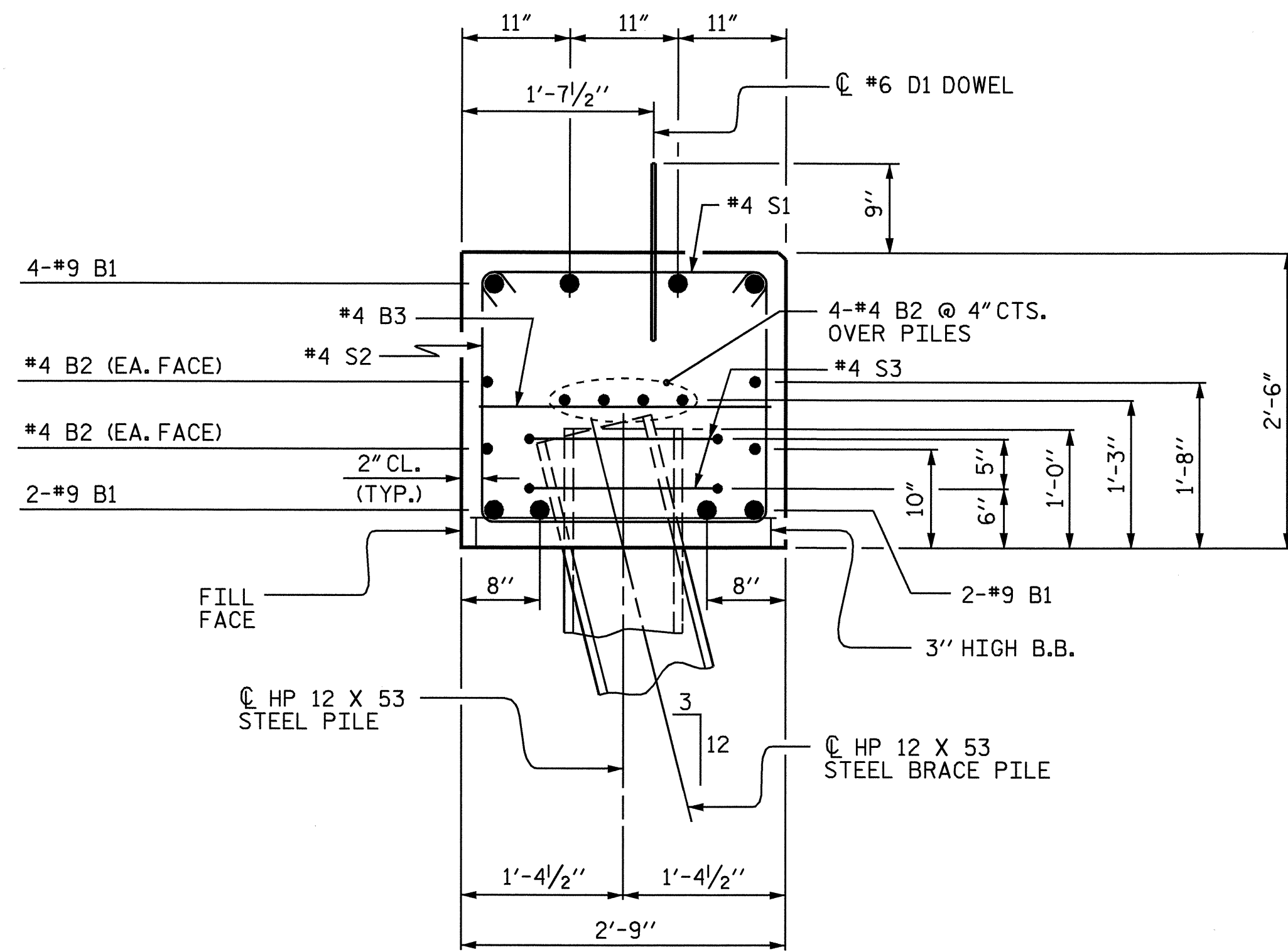
SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-23
					TOTAL SHEETS 27

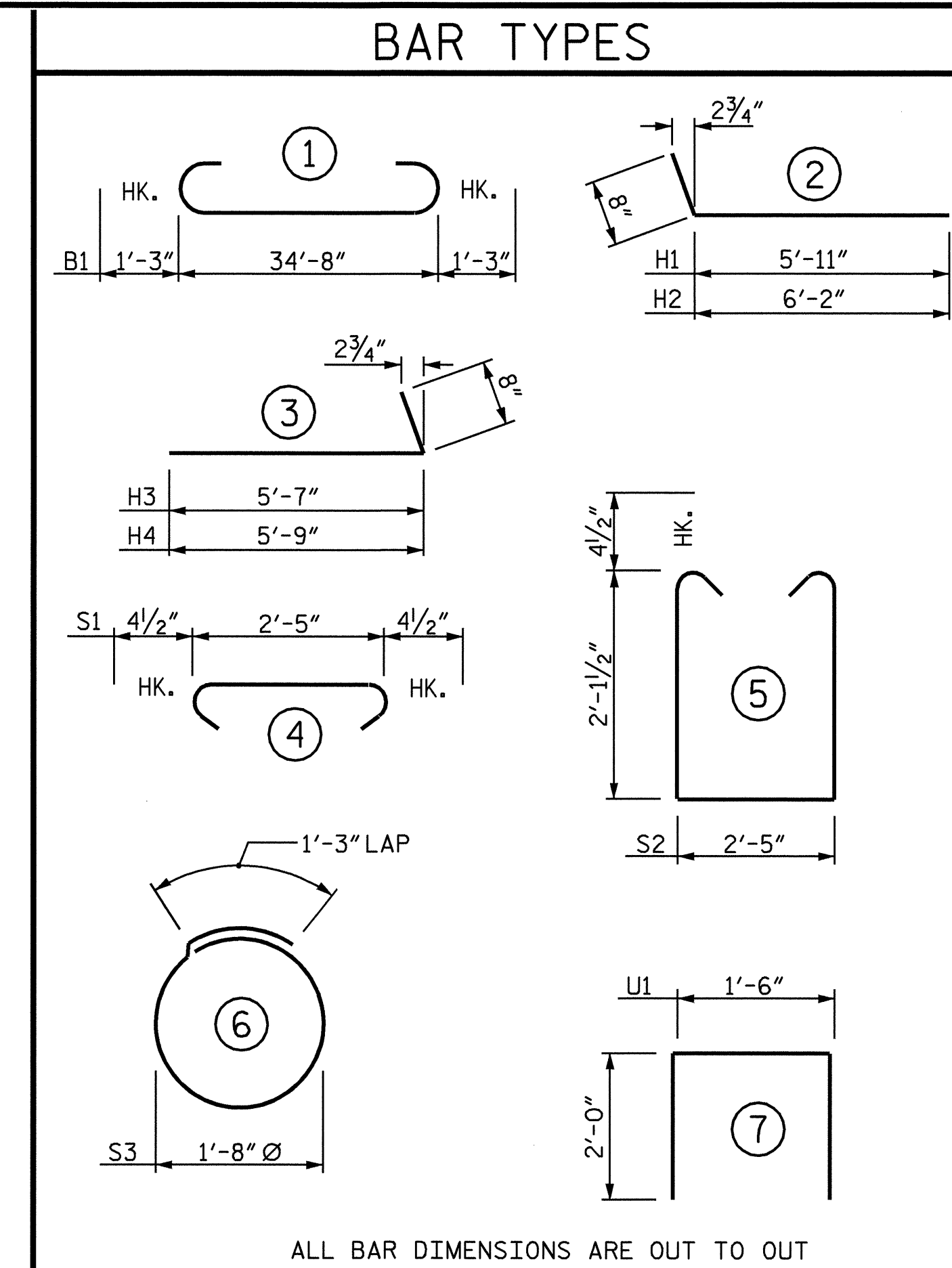


DRAWN BY: D. G. ELY DATE: 2/07
 CHECKED BY: J. L. WALTON DATE: 5/07

21-AUG-2007 07:28
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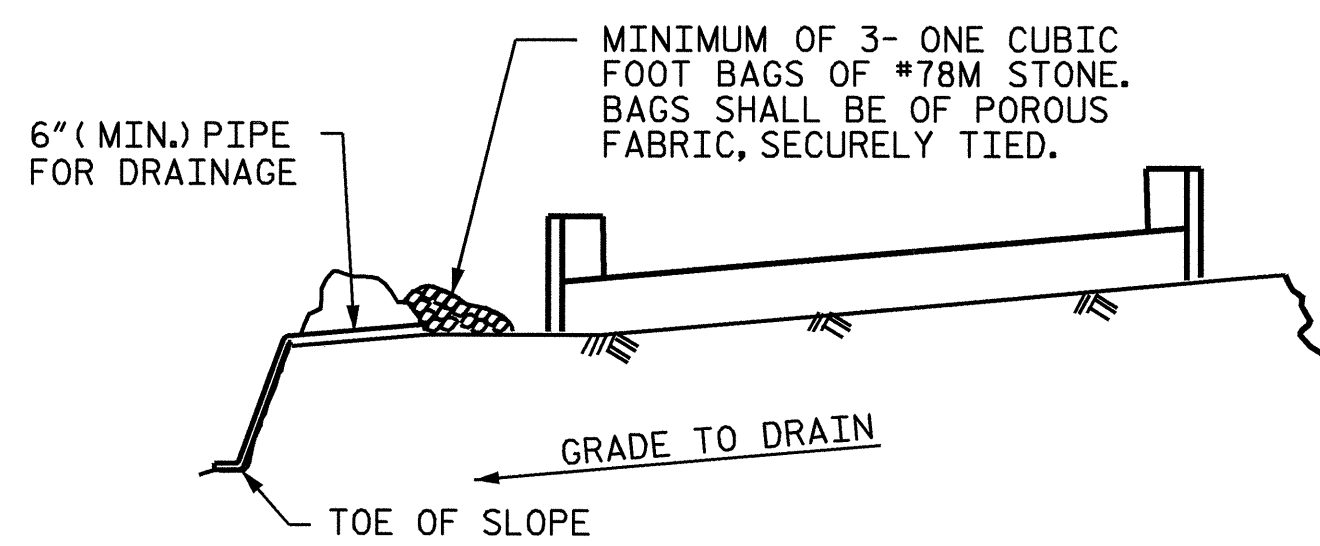


SECTION A-A



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL					
END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	37'-2"	1011
B2	16	#4	STR	18'-8"	200
B3	9	#4	STR	2'-5"	15
D1	18	#6	STR	1'-6"	41
H1	6	#4	2	6'-7"	26
H2	6	#4	2	6'-10"	27
H3	6	#4	3	6'-3"	25
H4	6	#4	3	6'-5"	26
K1	12	#4	STR	3'-1"	25
S1	32	#4	4	3'-2"	68
S2	32	#4	5	7'-5"	159
S3	12	#4	6	6'-6"	52
U1	4	#4	7	5'-6"	15
V1	42	#4	STR	4'-9"	133
REINFORCING STEEL				LBS.	1823
CLASS 'A' CONCRETE					
POUR #1: CAP & LOWER WINGS				C.Y.	9.9
POUR #2: UPPER WINGS				C.Y.	1.7
POUR #3: (LATERAL GUIDES)				C.Y.	0.1
TOTAL:				C.Y.	11.7
HP 12 X 53 STEEL PILES				NO. 6	180 LIN. FT.
STEEL PILE POINTS				NO. 6	

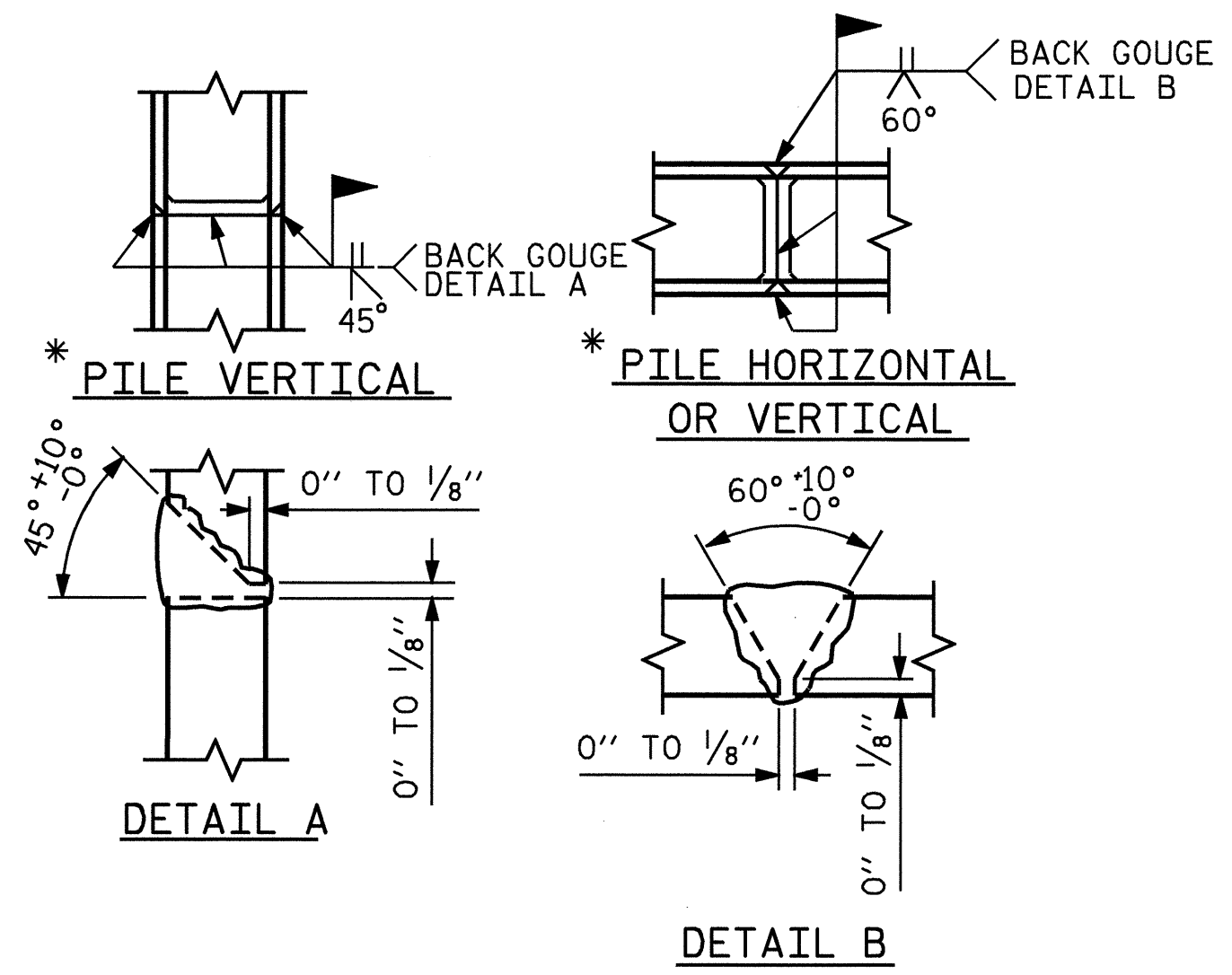


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

TEMPORARY DRAINAGE AT END BENT



PILE SPICE DETAILS

* POSITION OF PILE DURING WELDING.

SPlice LENGTH CHART		
BARS	SIZE	SPlice LENGTH
B2	#4	2'-5"

PROJECT NO. B-4054
CALDWELL COUNTY
 STATION: 12+46.00 -L-

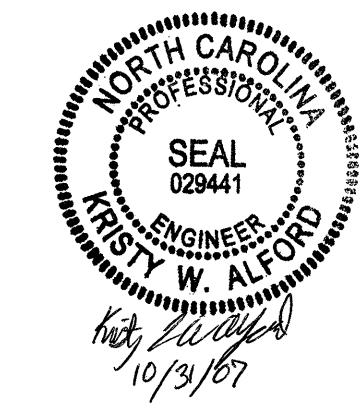
SHEET 3 OF 3

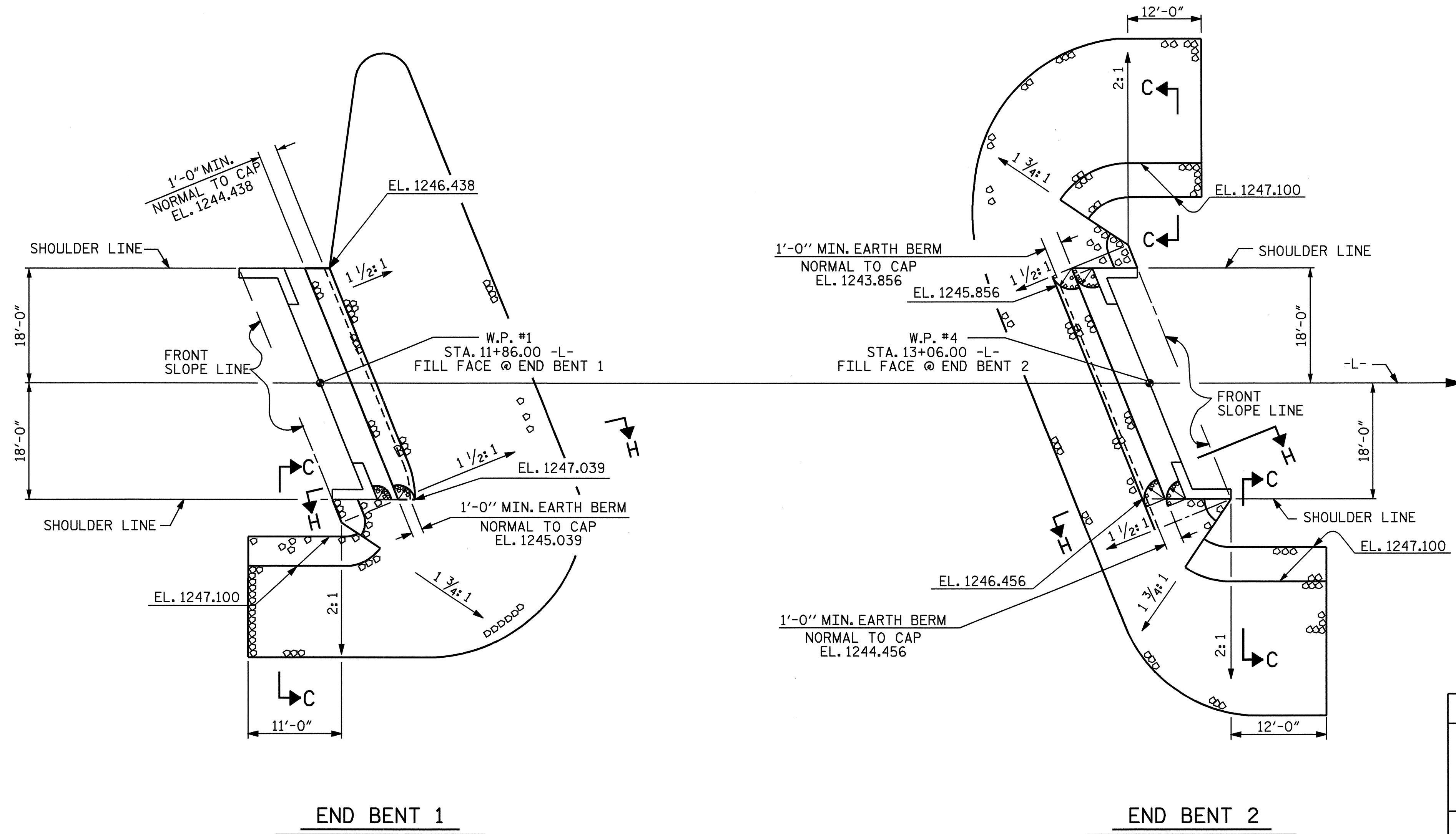
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2

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

DRAWN BY: D. G. ELY DATE: 2/07
 CHECKED BY: J. L. WALTON DATE: 5/07



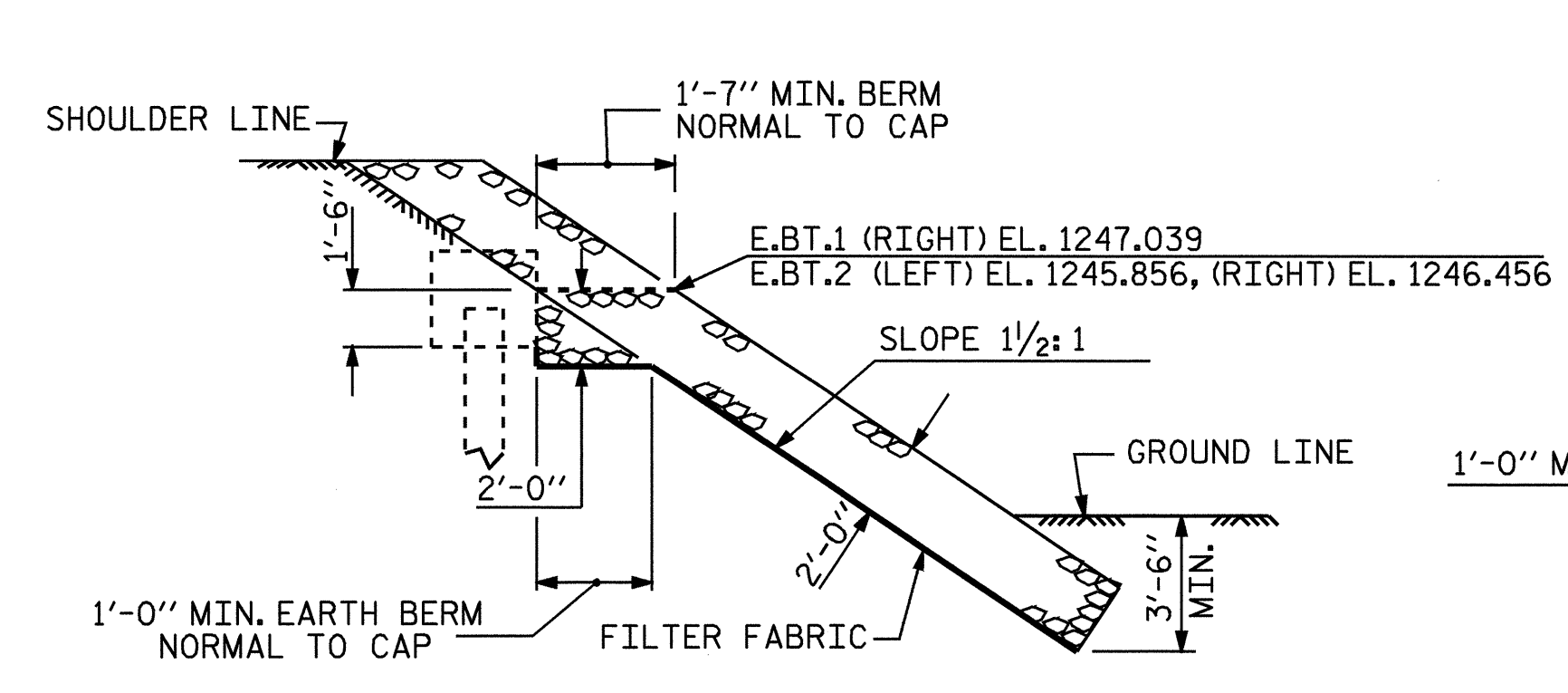


END BENT 1

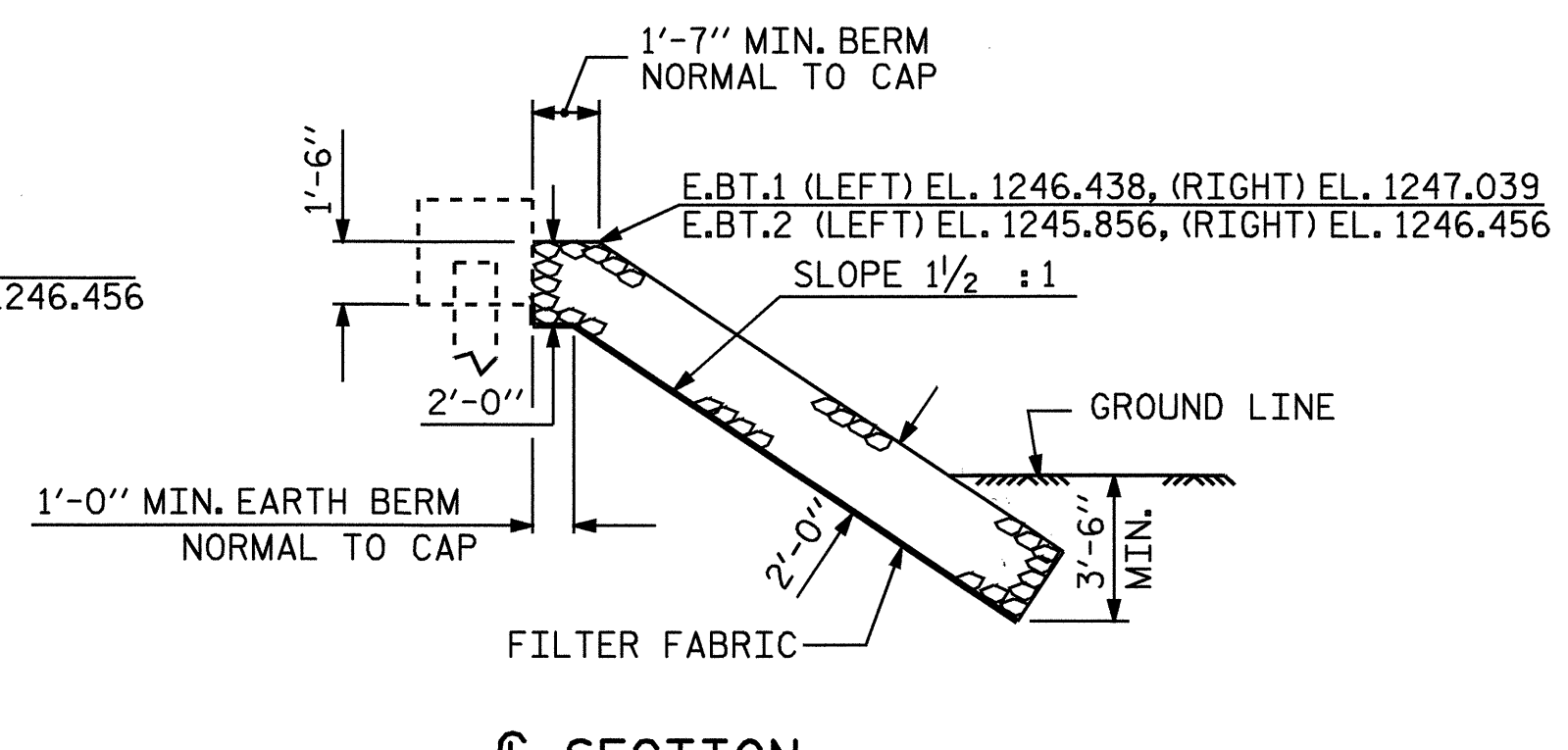
END BENT 2

PLAN

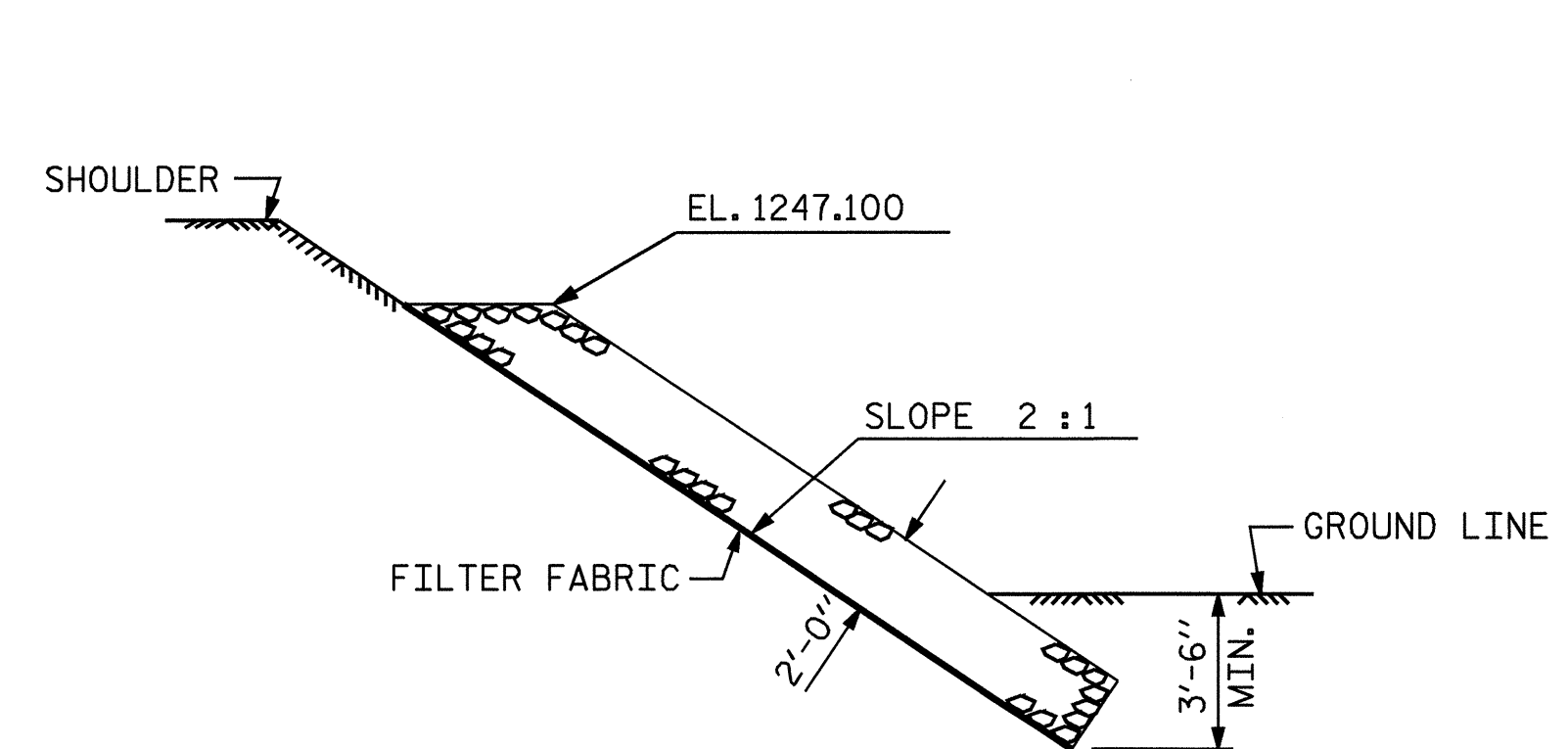
ESTIMATED QUANTITIES		
BRIDGE @ STA. 12+46.00 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	75	85
END BENT 2	95	105



SECTION H-H



SECTION C-C
BERM RIP RAPPED



SECTION C-C

PROJECT NO. B-4054
CALDWELL COUNTY
 STATION: 12+46.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

—RIP RAP DETAILS—

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



ASSEMBLED BY : D. G. ELY DATE : 9/06
 CHECKED BY : K. W. ALFORD DATE : 6/07
 DRAWN BY : REK 1/84
 CHECKED BY : RDU 1/84

REV. 8/16/99 RWW/LES
 REV. 10/17/00 RWW/LES
 REV. 5/1/06 TLA/GM

21-AUG-2007 07:27
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NOTES

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

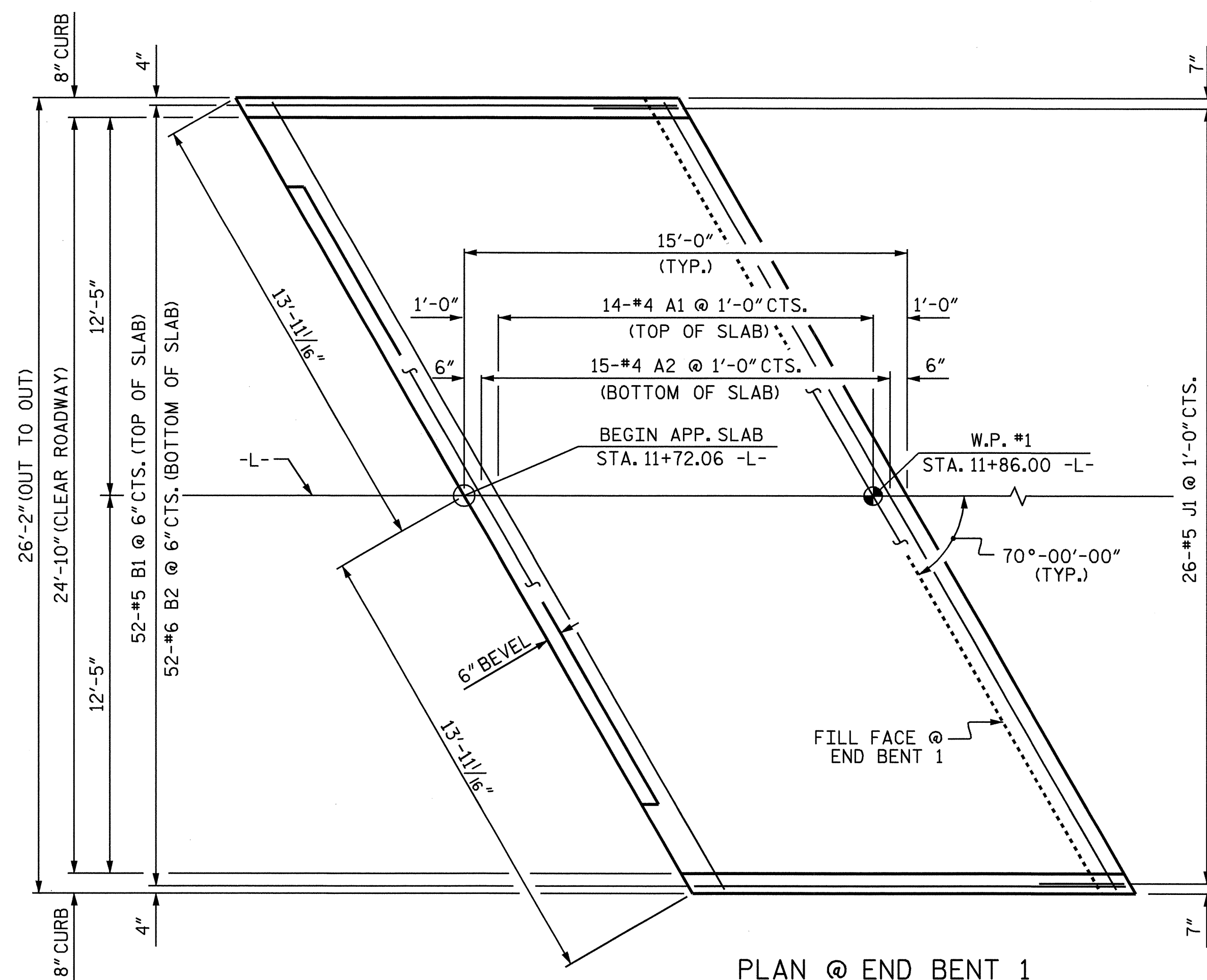
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

THE 6" COMP. A.B.C. SHALL EXTEND 10'-0" BEYOND THE END OF THE APPROACH SLAB AND 1'-0" OUTSIDE OF EACH EDGE OF SLAB.

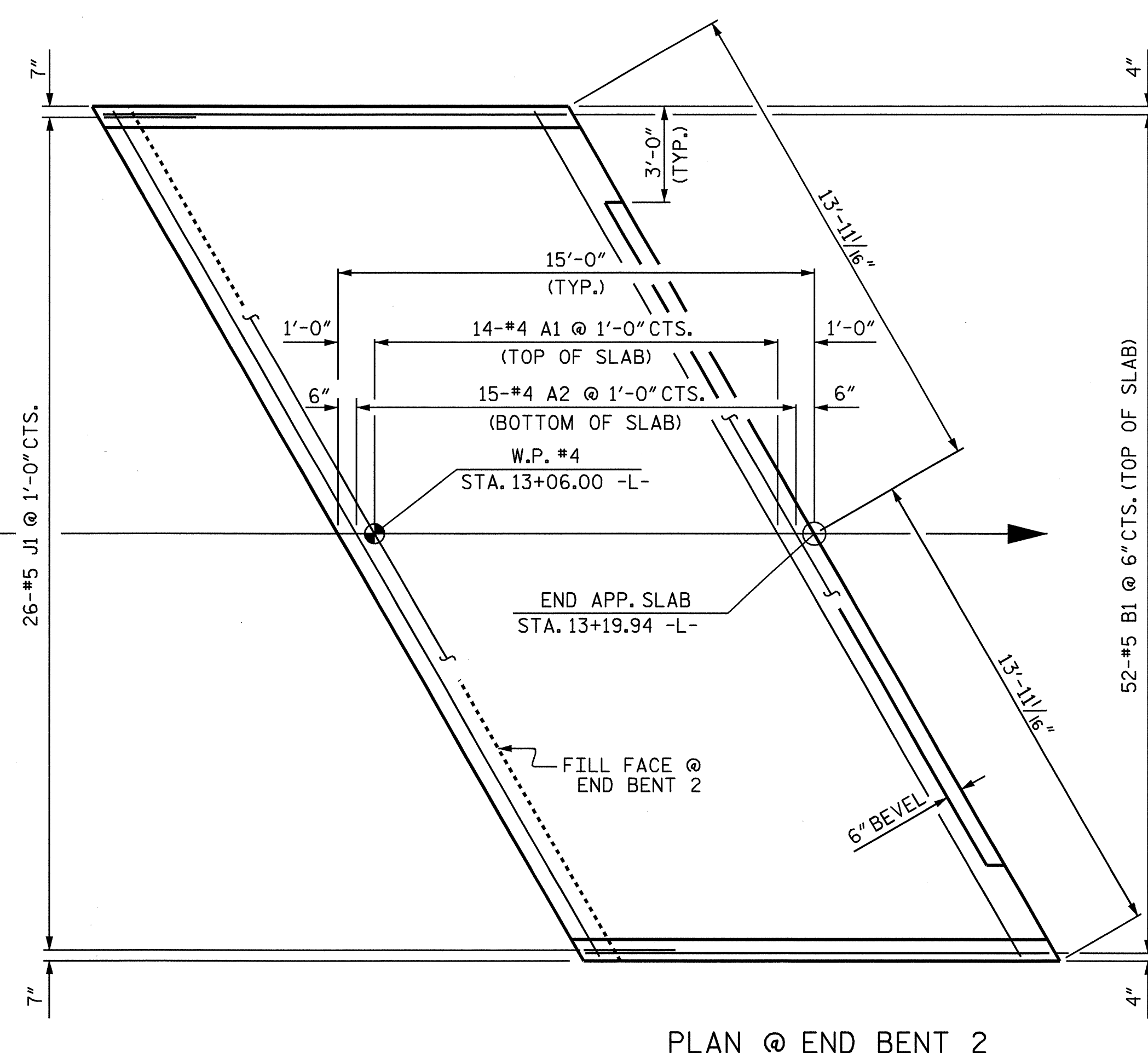
THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL EXTEND 1'-0" BEYOND THE END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

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

APPROACH SLAB SHALL BE POURED AFTER CONCRETE WEARING SURFACE IS POURED.



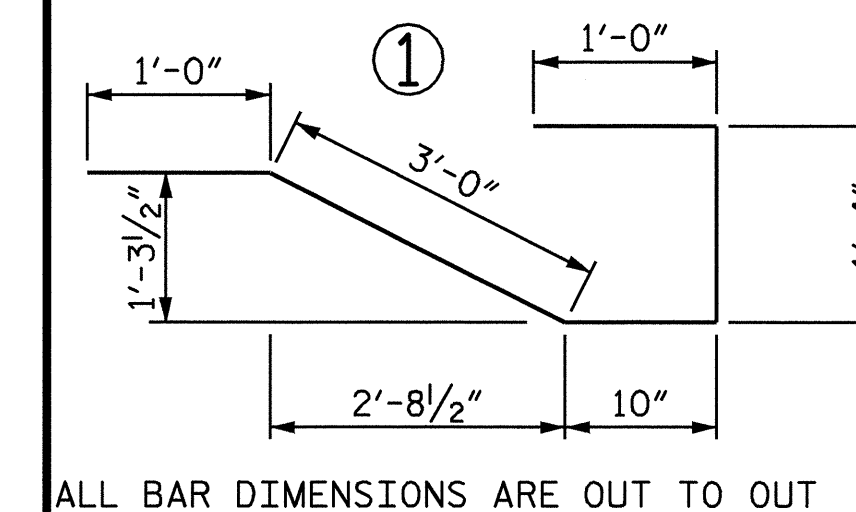
PLAN @ END BENT 1



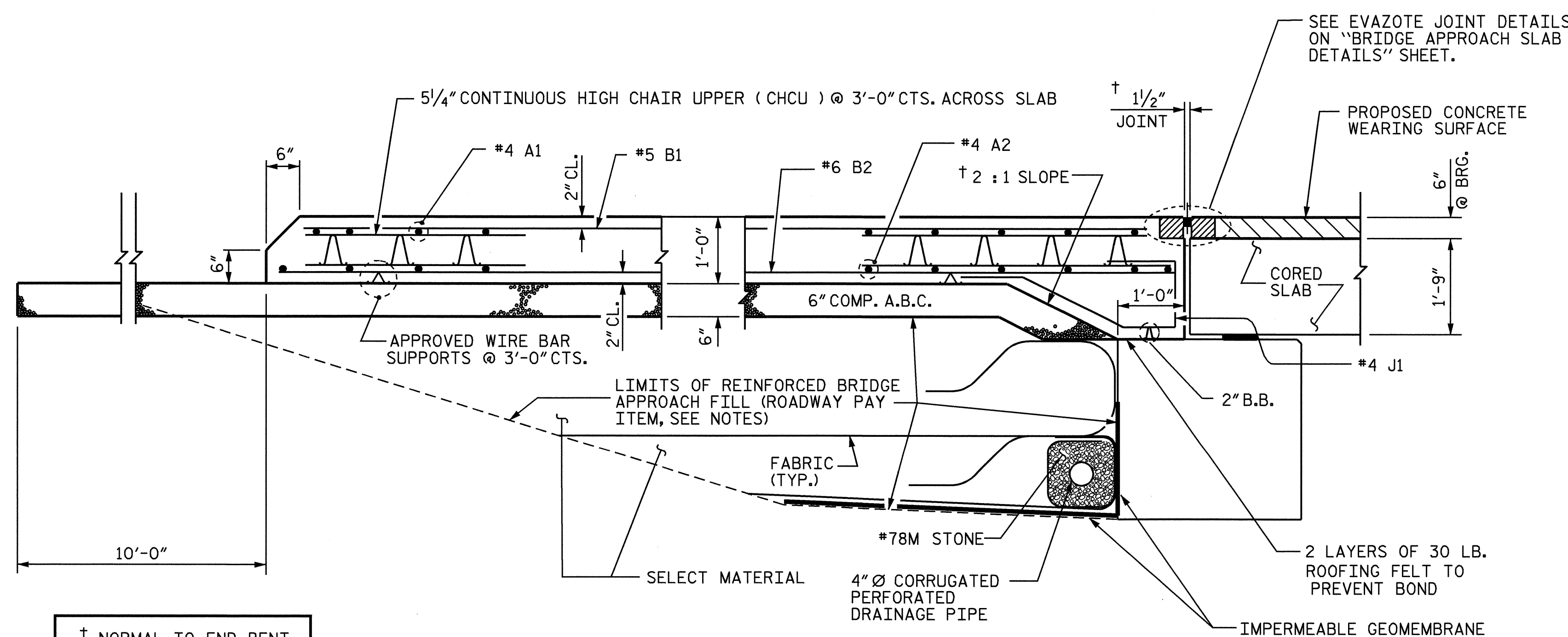
PLAN @ END BENT 2

**BILL OF MATERIAL
FOR ONE APPROACH SLAB
(2 REQ'D)**

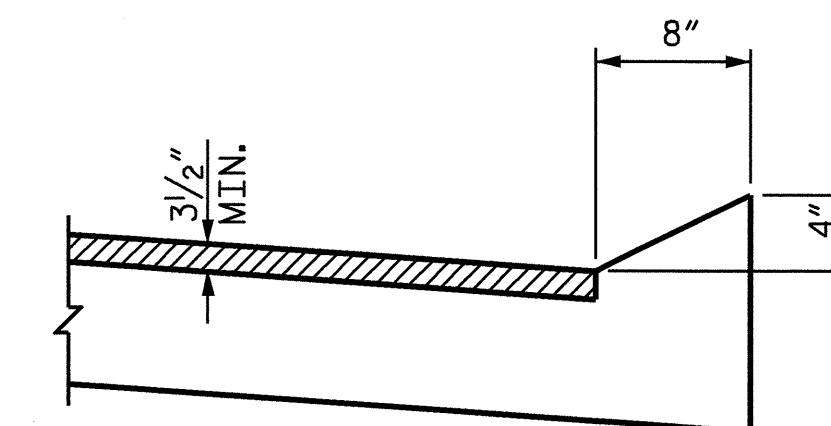
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	14 #4	STR	27'-5"	256
A2	15 #4	STR	27'-5"	275
*B1	52 #5	STR	13'-7"	737
B2	52 #6	STR	14'-7"	1139
J1	26 #4	1	7'-2"	124
REINFORCING STEEL			LBS.	1538
*EPOXY COATED REINFORCING STEEL			LBS.	993
CLASS AA CONCRETE			C. Y.	17.7



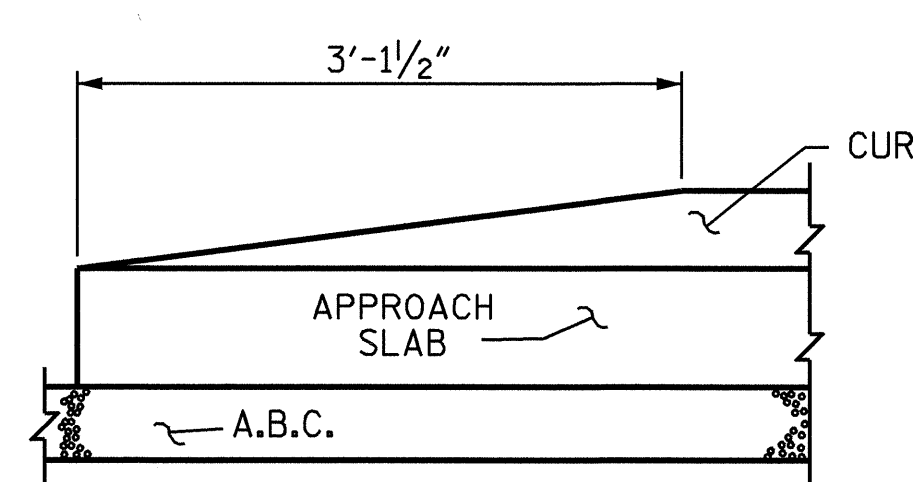
ALL BAR DIMENSIONS ARE OUT TO OUT



SECTION THRU SLAB



SECTION N-N



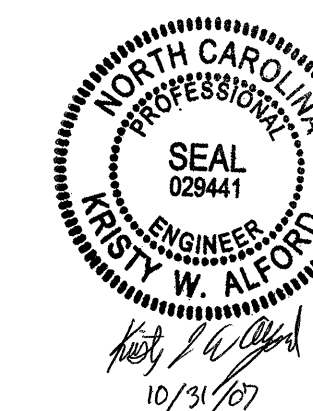
END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

PROJECT NO. B-4054
CALDWELL COUNTY
 STATION: 12+46.00 -L-

SHEET 1 OF 2

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

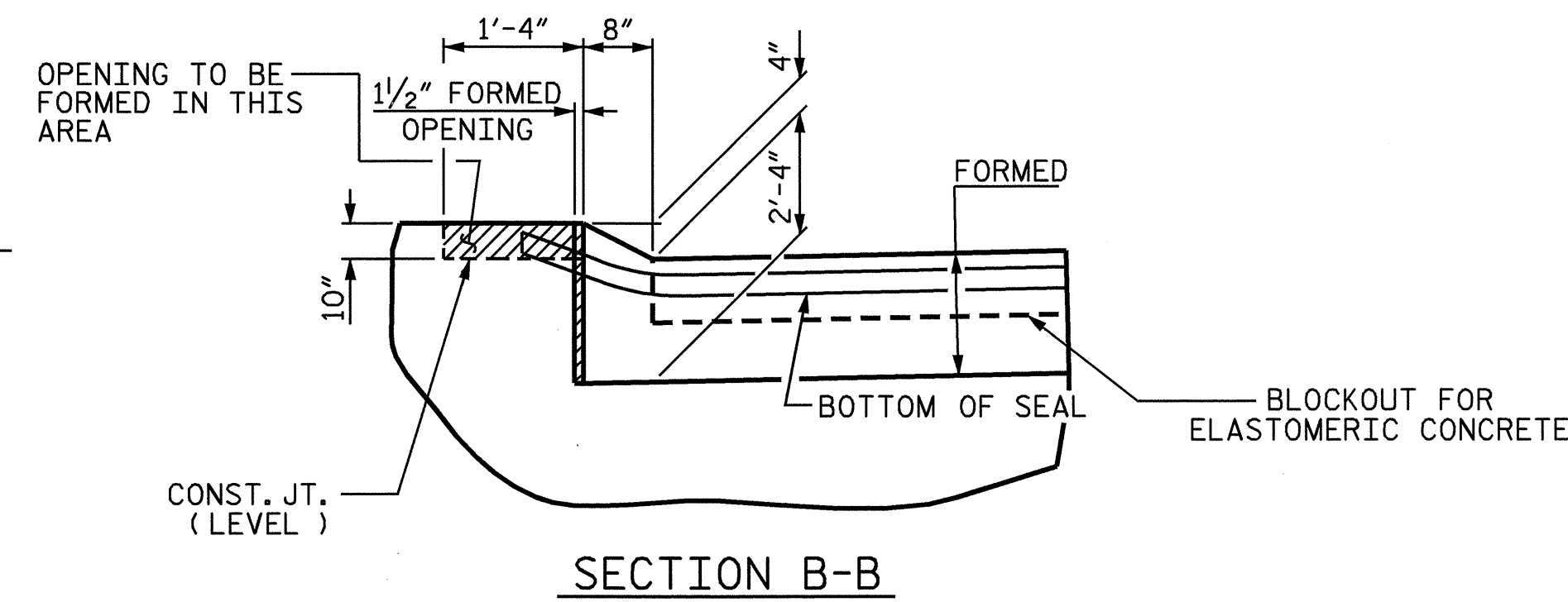
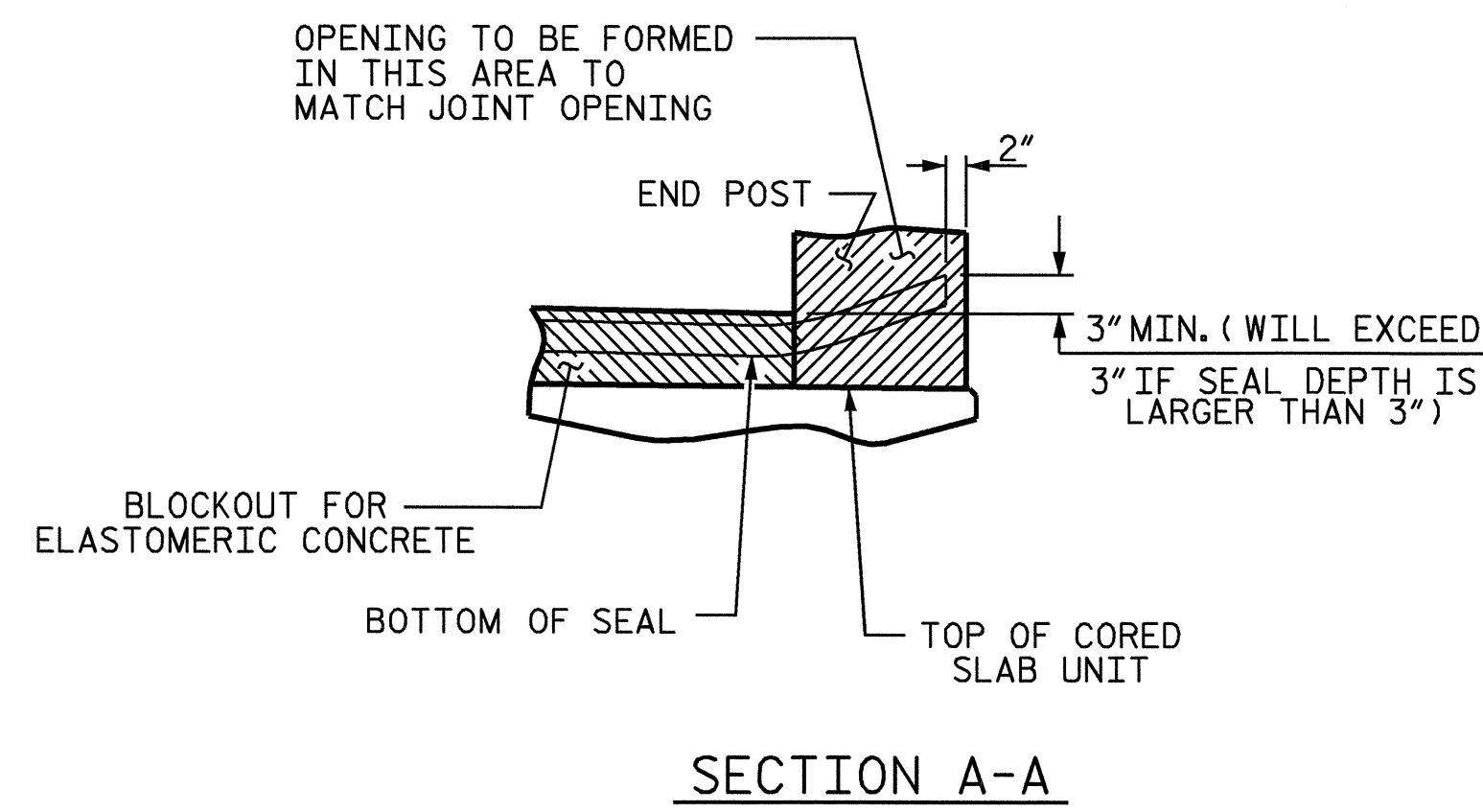
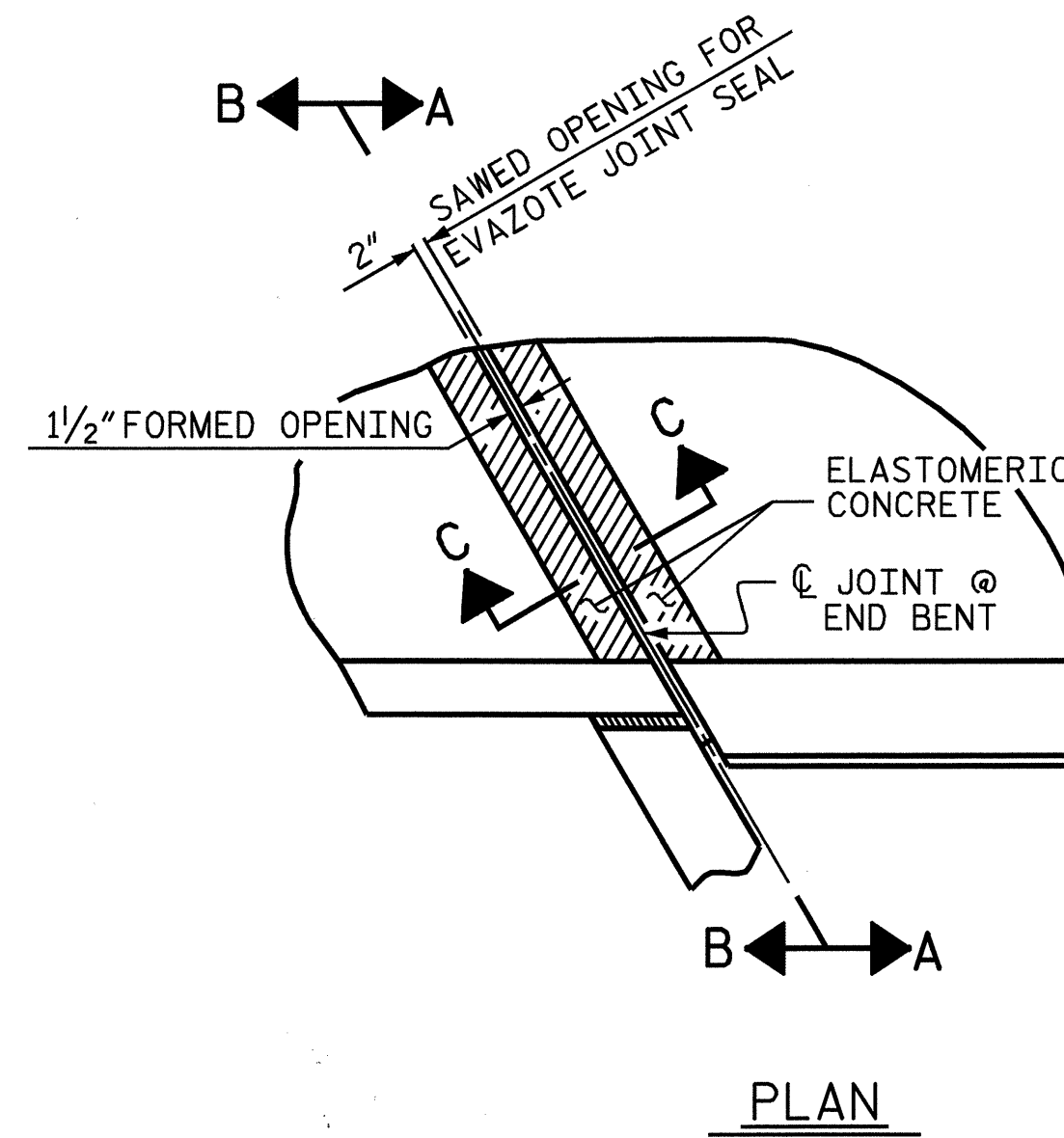
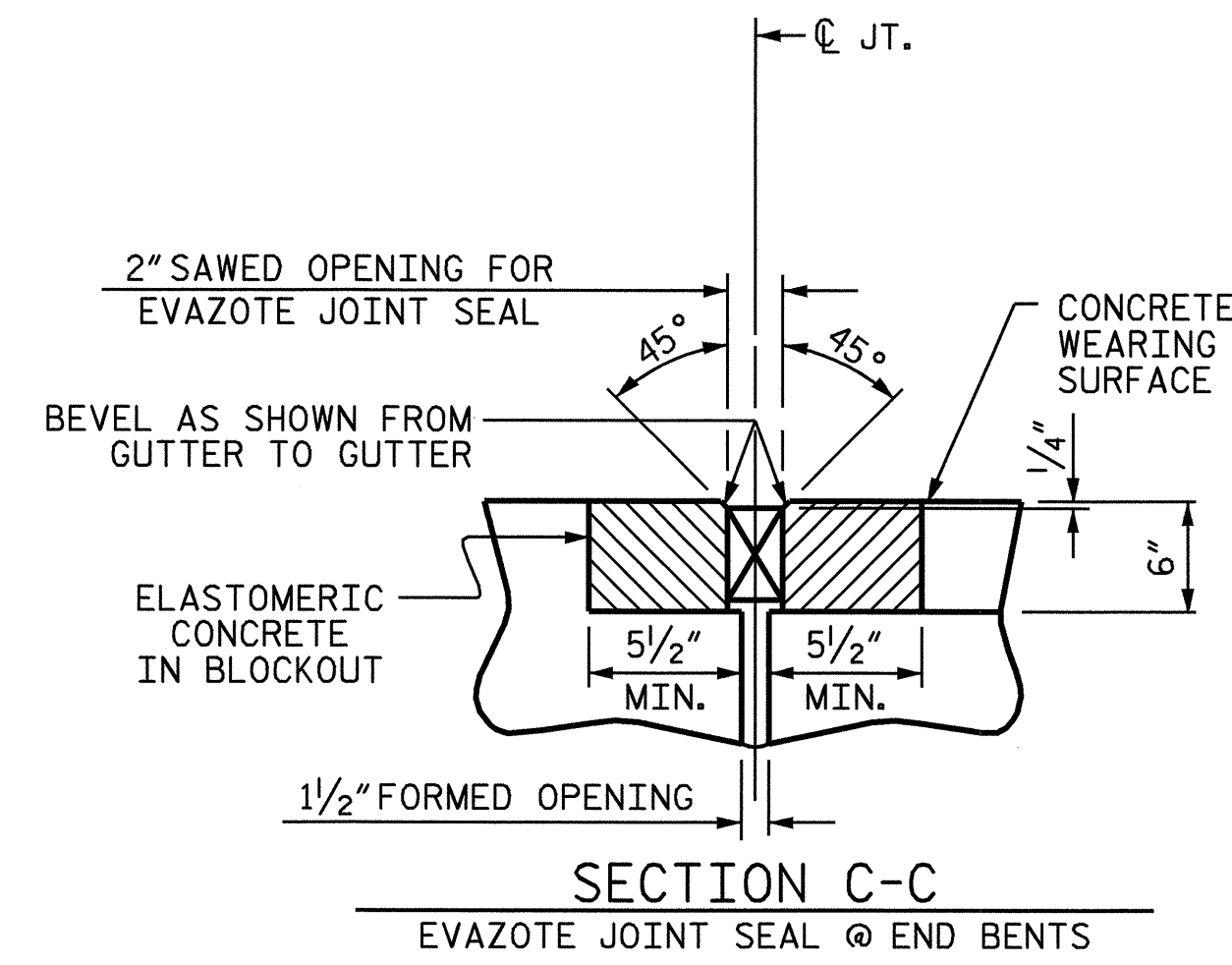


REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

ASSEMBLED BY :	D. G. ELY	DATE :	9/06
CHECKED BY :	H. B. SHAH	DATE :	5/07
DRAWN BY :	FCJ 6/87	REV. 7/10/01	LES/RDR
CHECKED BY :	EGA 6/87	REV. 5/17/03R	RWW/JTE
		REV. 5/1/06	TLA/GM

NOTES

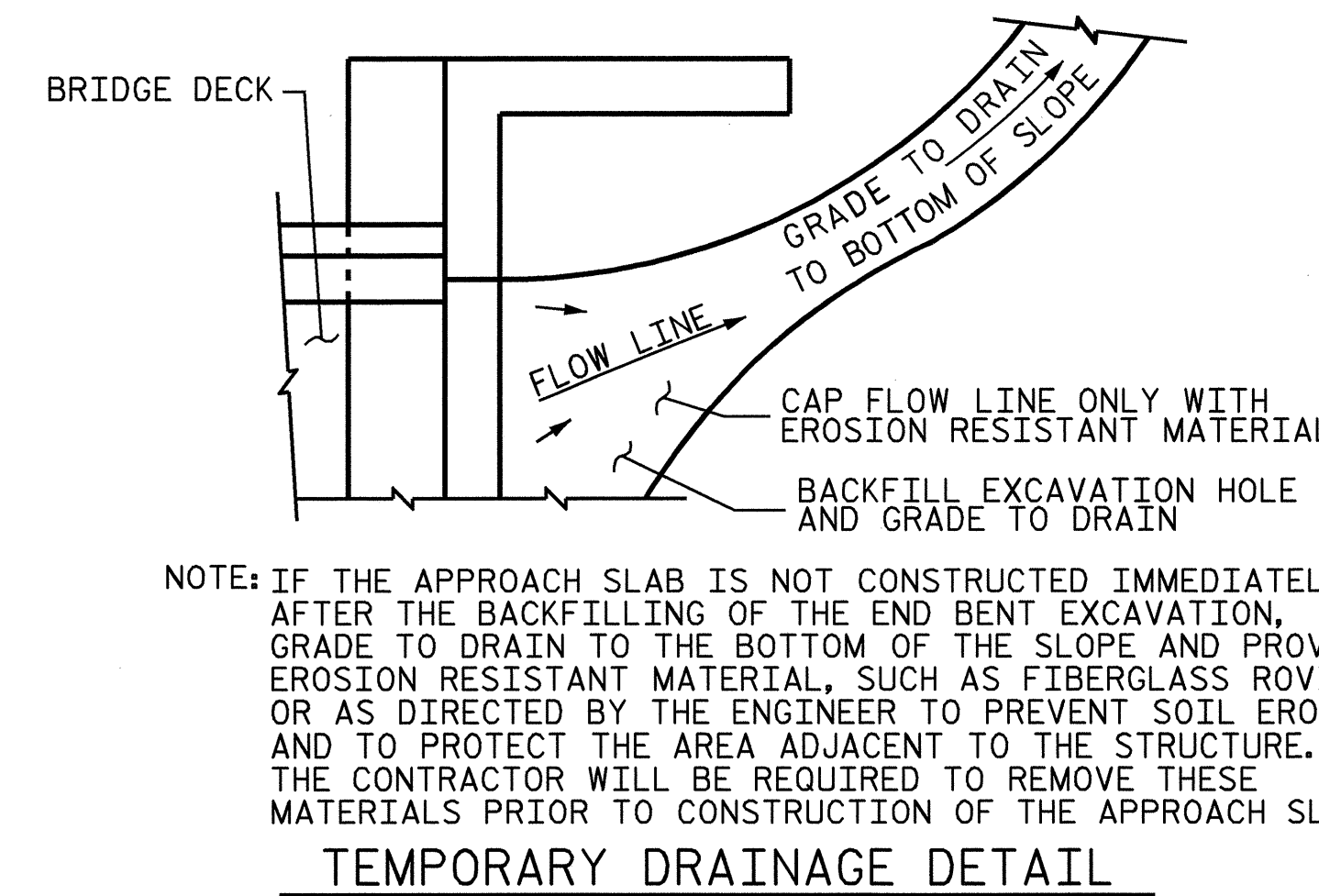
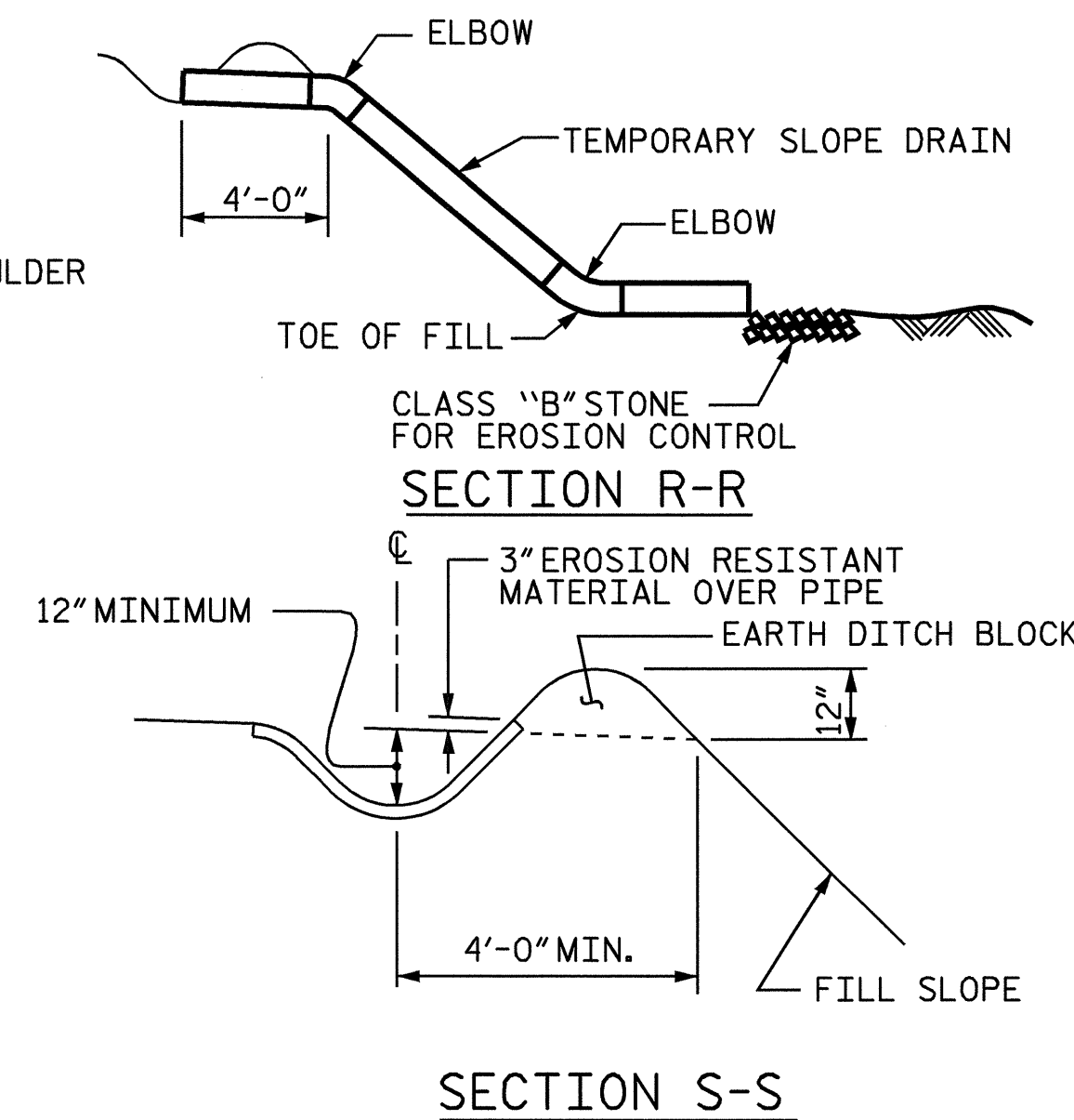
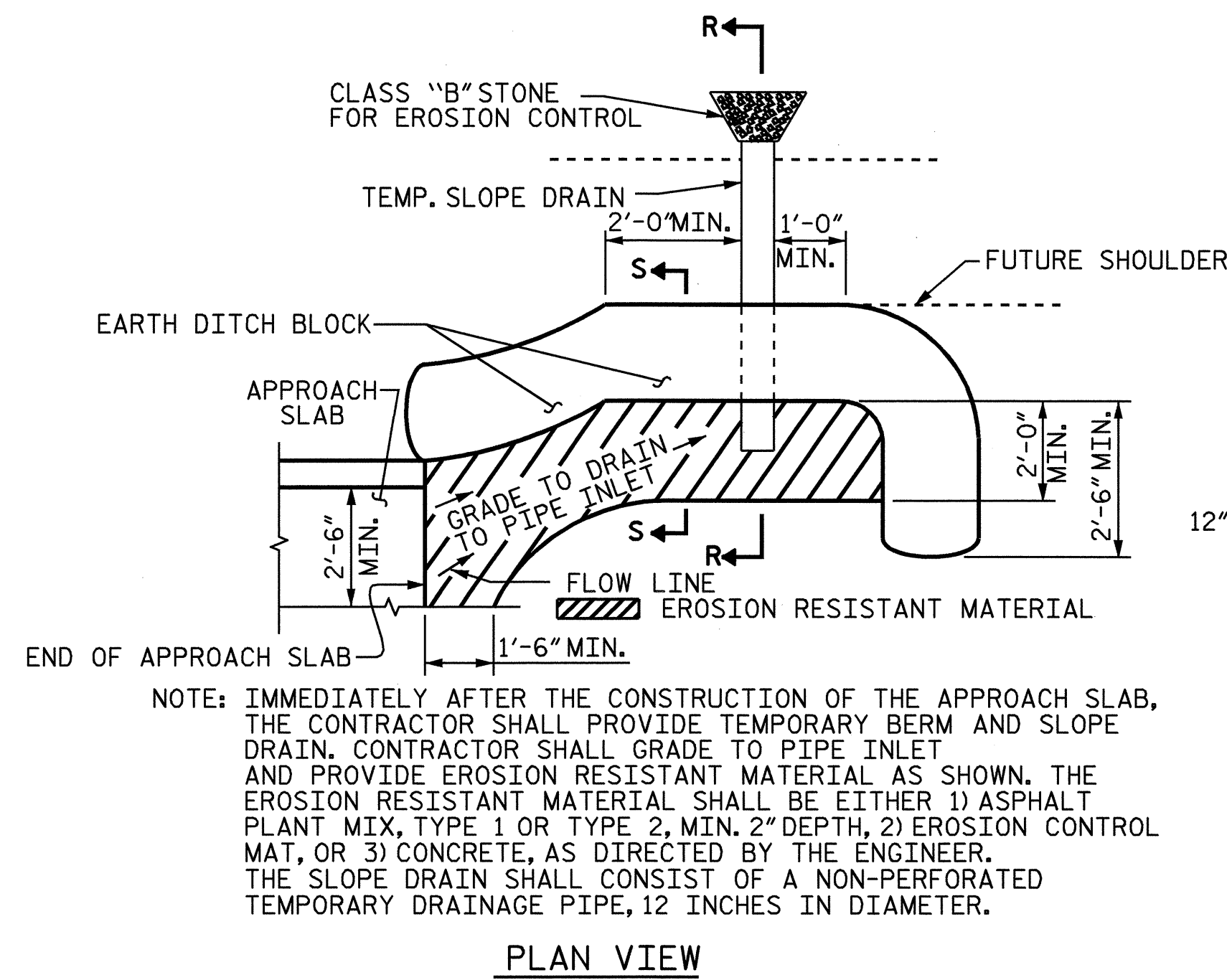
THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2 1/2".
 FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.
 FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.



ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	12.1
2	12.1
TOTAL	24.2

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

JOINT SEAL DETAILS @ END BENT



TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

PROJECT NO. B-4054
 CALDWELL COUNTY
 STATION: 12+46.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE APPROACH
 SLAB DETAILS



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

ASSEMBLED BY : D. G. ELY	DATE : 9/06
CHECKED BY : H. B. SHAH	DATE : 5/07
DRAWN BY : FCJ 11/88	REV. 10/17/00 RWW/LES
CHECKED BY : ARB 11/88	REV. 5/1/03 RWW/JTE
	REV. 5/1/06 TLA/GM

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

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

PLACEMENT OF BEAM OR GIRDER MEMBERS ON TRUCKS FOR HAULING SHALL BE DONE IN COMPLIANCE WITH LIMITS SHOWN ON SKETCHES PROVIDED TO THE MATERIALS AND TEST UNIT APPROVED BY THE STRUCTURE DESIGN UNIT DATED MAY 8, 1991. THESE SKETCHES PRIMARILY LIMIT THE UNSUPPORTED CANTILEVER LENGTH OF MEMBERS. WHEN THE CONTRACTOR WISHES TO PLACE MEMBERS ON TRUCKS NOT IN ACCORDANCE WITH THESE LIMITS, TO SHIP BY RAIL, TO ATTACH SHIPPING RESTRAINTS TO THE MEMBERS OR TO INVERT MEMBERS, HE SHALL SUBMIT A SKETCH FOR APPROVAL PRIOR TO SHIPPING. SEE ALSO ARTICLE 1072-11.

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

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