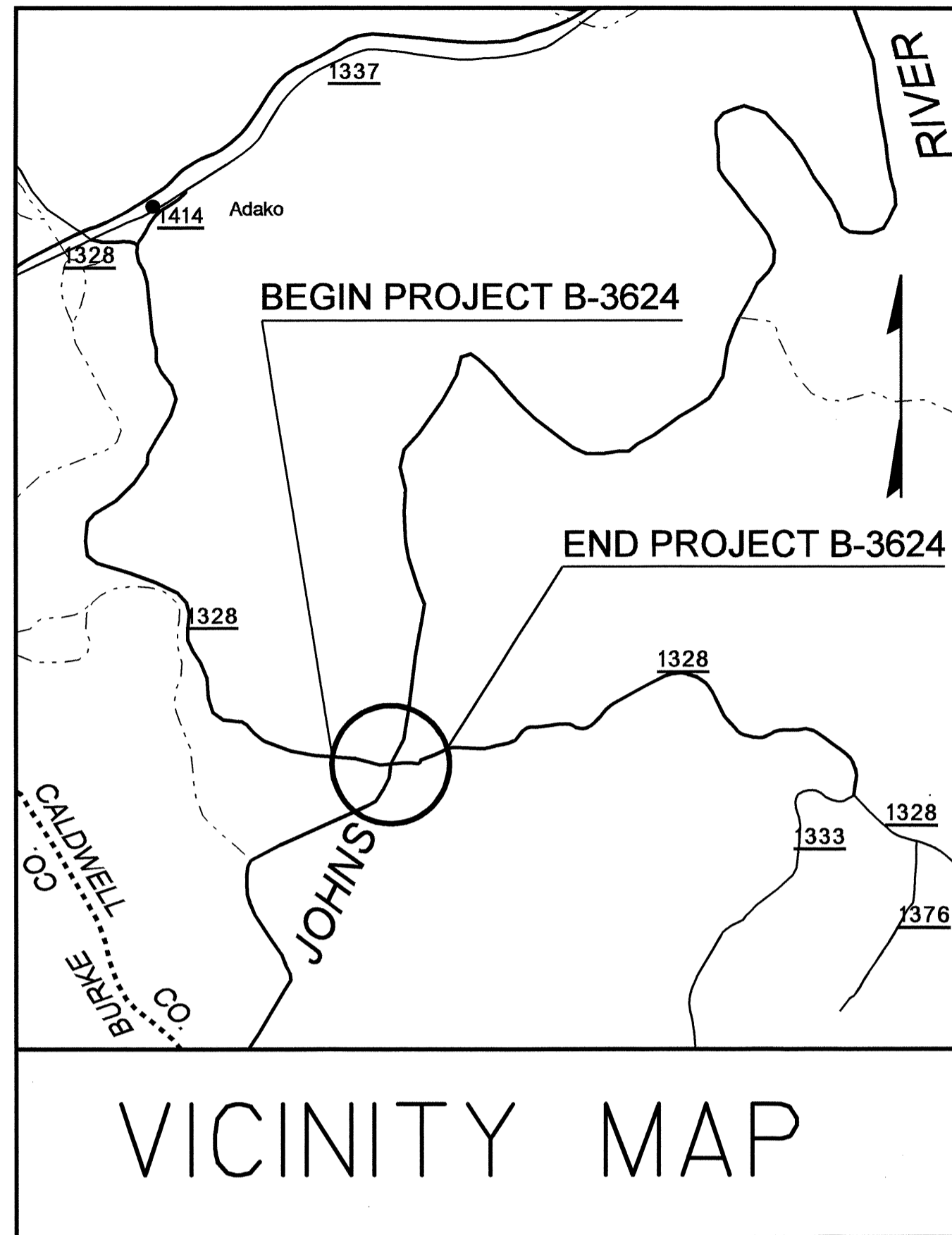


TIP PROJECT: B-3624

CONTRACT: C201920

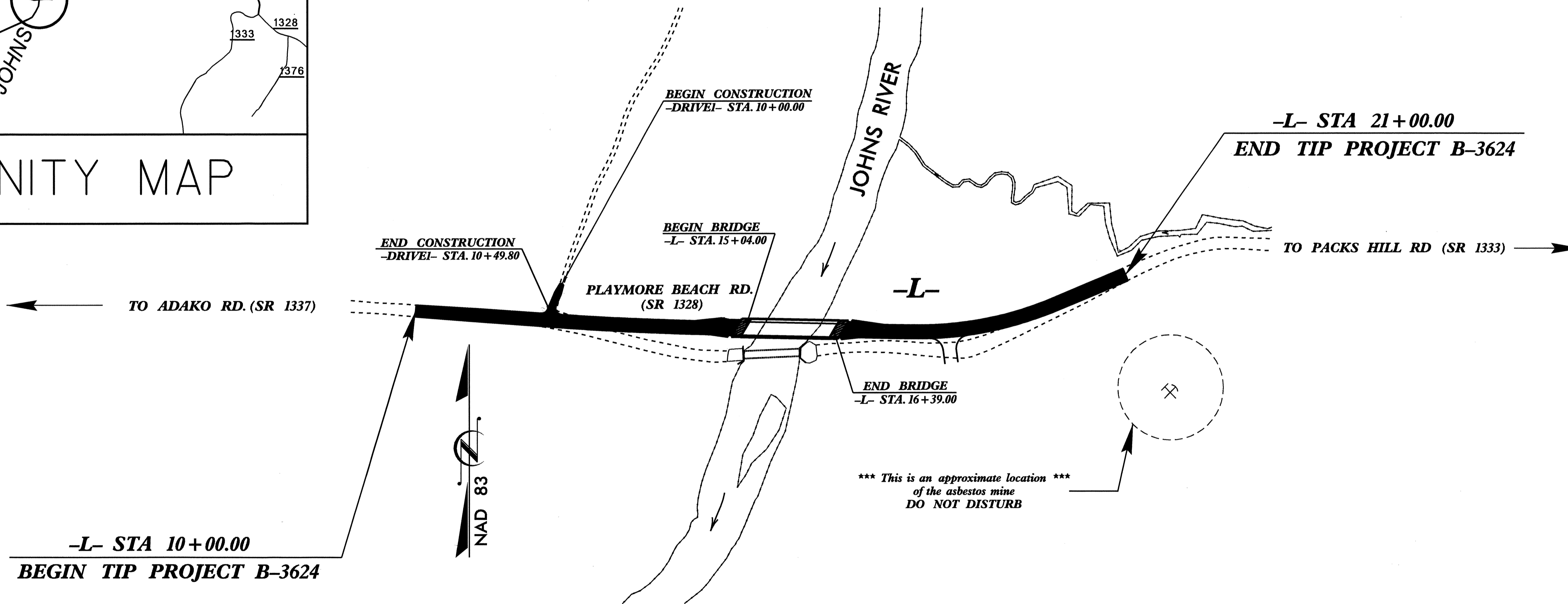
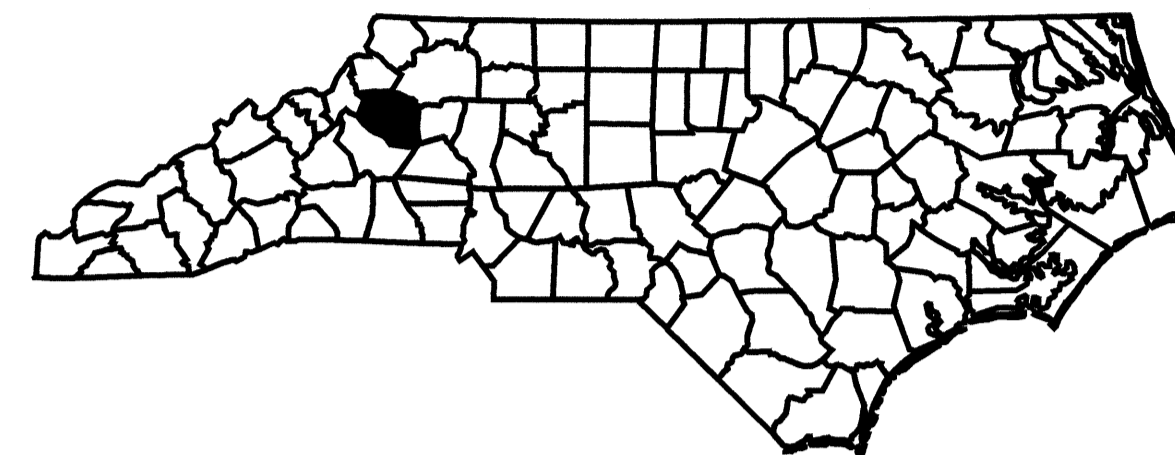
STRUCTURES



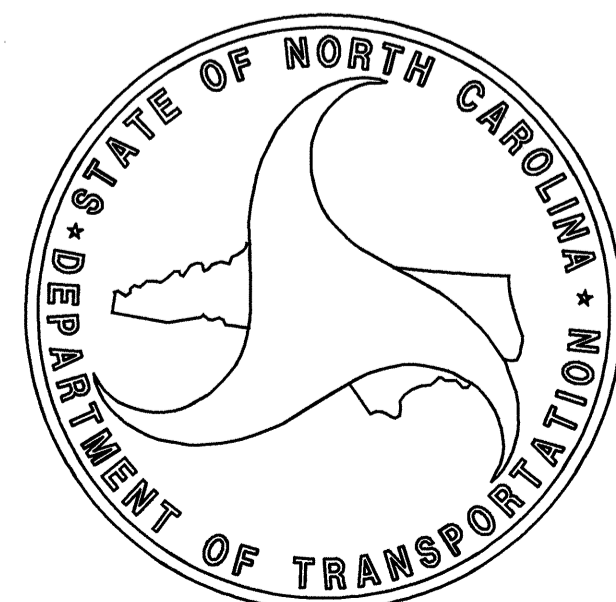
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
**CALDWELL COUNTY**

**LOCATION : BRIDGE No. 190 OVER JOHNS RIVER ON SR 1328**  
**TYPE OF WORK : GRADING, PAVING, DRAINAGE, AND STRUCTURE**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3624		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33172.1.1	BRZ-1328(4)	P.E.	
33172.2.1	BRZ-1328(4)	R/W, UTIL	
33172.3.1	BRZ-1328(4)	CONST.	



THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.



DESIGN DATA	
ADT 2008 =	277
ADT 2028 =	662
DHV =	12 %
D =	60 %
T =	3 % *
V =	40 MPH
FUNC CLASS =	LOCAL
* TTST 1	DUAL 2

PROJECT LENGTH	
LENGTH OF ROADWAY TIP PROJECT B-3624 =	0.182 MILES
LENGTH OF STRUCTURE TIP PROJECT B-3624 =	0.026 MILES
TOTAL LENGTH OF TIP PROJECT B-3624 =	0.208 MILES

Prepared In the Office of: DIVISION OF HIGHWAYS	
2006 STANDARD SPECIFICATIONS	
LETTING DATE: December 16, 2008	Q.H. NGUYEN, P.E. PROJECT ENGINEER
	MARC G. CHEEK, P.E. PROJECT DESIGN ENGINEER

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

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA	
STATE DESIGN ENGINEER	P.E.
DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION	
APPROVED	DATE
DIVISION ADMINISTRATOR	

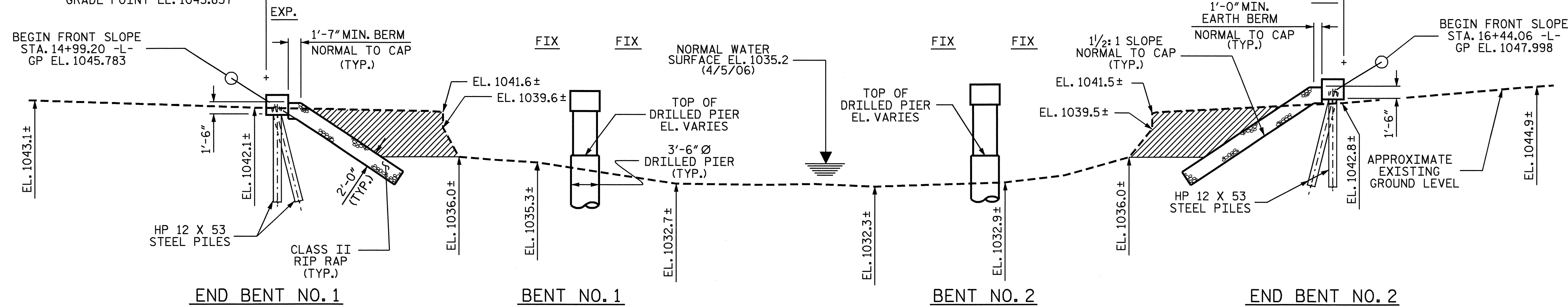
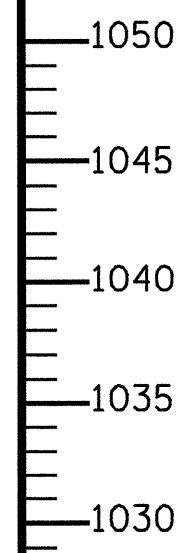
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-5.5082% 1.5290%  
 P.I. STA. = 13+61.00 -L-  
 EL. = 1043.670  
 V.C. = 275.00

**GRADE DATA**

FILL FACE @ END BENT NO. 1  
 STA. 15+04.00 -L-  
 GRADE POINT EL. 1045.857

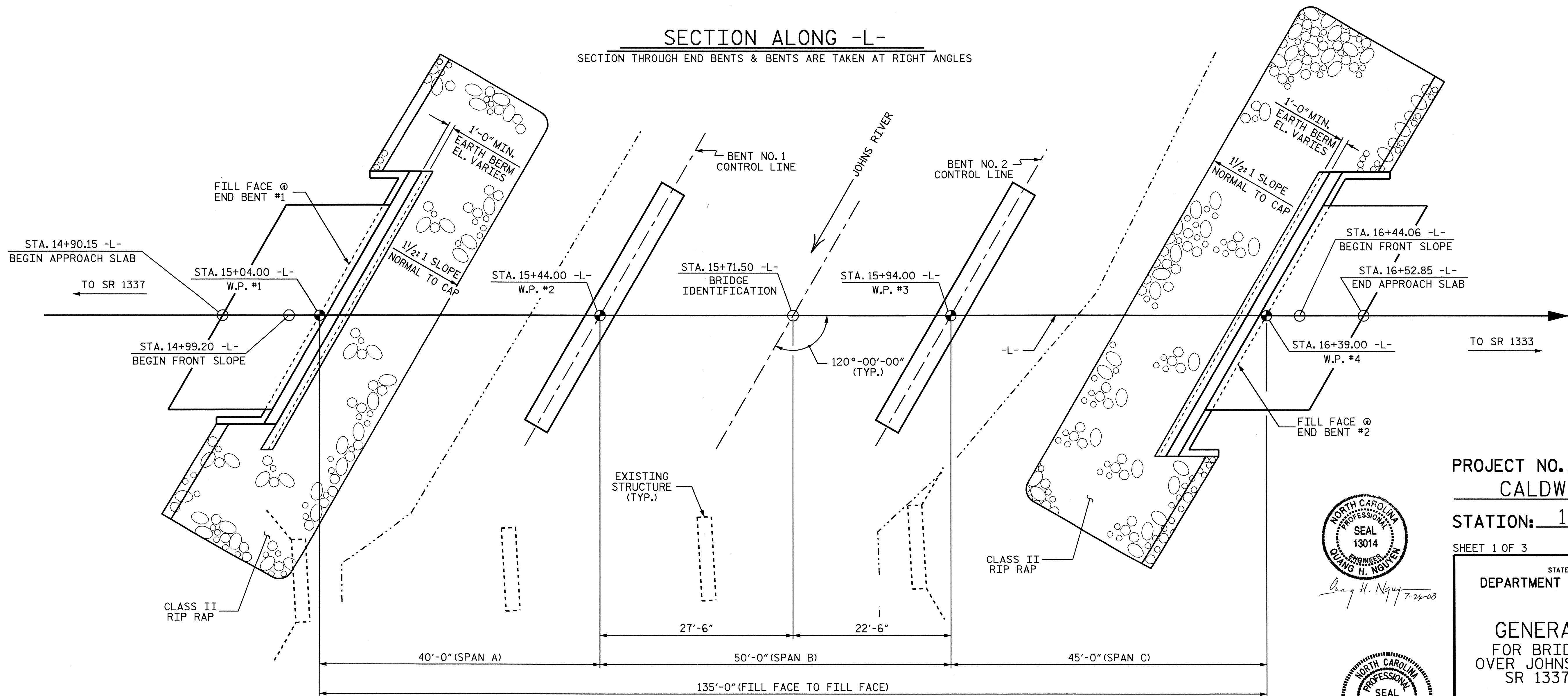
FILL FACE @ END BENT NO. 2  
 STA. 16+39.00 -L-  
 GRADE POINT EL. 1047.921



UNCLASSIFIED STRUCTURE EXCAVATION  
 NOTE: SEE SHEET S-4 FOR TEMPORARY ACCESS

**SECTION ALONG -L-**

SECTION THROUGH END BENTS & BENTS ARE TAKEN AT RIGHT ANGLES



**PLAN**

(PILES & COLUMNS NOT SHOWN FOR CLARITY)

DRAWN BY : A.L. FIGUEROA DATE : 04-08-08  
 CHECKED BY : M.G. CHEEK DATE : 05-27-08

24-JUL-2008 10:59  
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Quang H. Nguyen 7-24-08



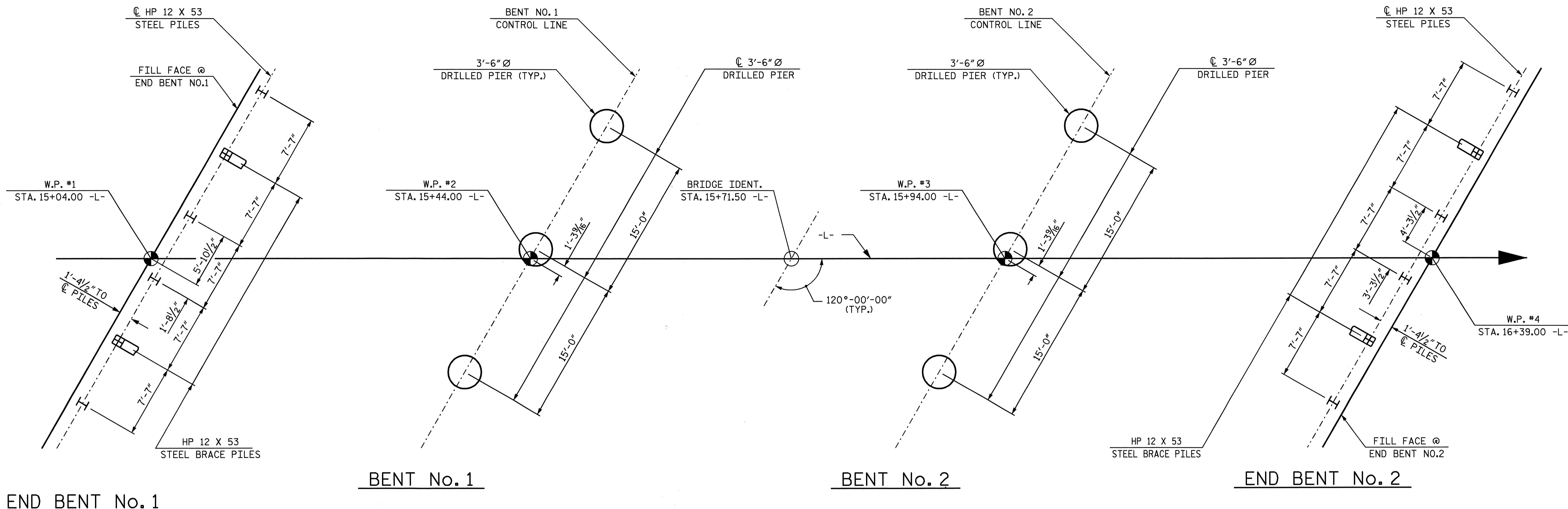
PROJECT NO. B-3624  
 CALDWELL COUNTY  
 STATION: 15+71.50 -L-

SHEET 1 OF 3 REPLACES BRIDGE NO. 190

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

GENERAL DRAWING  
 FOR BRIDGE ON SR 1328  
 OVER JOHNS RIVER BETWEEN  
 SR 1337 AND SR 1333

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



**FOUNDATION LAYOUT**

ALL END BENT PILES ARE HP 12 X 53  
 DIMENSIONS LOCATING PILES ARE SHOWN TO THE  
 PILE CENTERLINE AT THE BOTTOM OF THE CAP.  
 END BENT BRACE PILES ARE BATTERED 3:12.

**NOTES**

DRILLED PIERS AT BENT NO.1 AND NO.2 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 20 TONS PER SQ. FOOT.

DRILLED PIERS AT BENT NO.1 AND NO. 2 ARE DESIGNED FOR AN APPLIED LOAD OF 166 TONS EACH AT THE TOP OF THE COLUMN.

PERMANENT STEEL CASING IS REQUIRED FOR DRILLED PIERS AT BENT NO.1 AND BENT NO.2. DO NOT EXTEND THE CASING BELOW ELEVATION 1016 FOR BENT NO.1 AND 1013 (LT), 1018 (CENTER) AND 1021 (RT) FOR BENT NO. 2 WITHOUT PRIOR APPROVAL FROM THE ENGINEER. SEE DRILLED PIERS SPECIAL PROVISION.

DRILLED PIERS AT BENT NO.1 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 1001 AND SATISFY THE REQUIRED END BEARING CAPACITY.

DRILLED PIERS AT BENT NO.2 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 1003 (LT), 1007 (CENTER) AND 1011 (RT) AND SATISFY THE REQUIRED END BEARING CAPACITY.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.1 IS ELEVATION 1015. THE SCOUR CRITICAL ELEVATION FOR BENT NO.2 IS ELEVATION 1012 (LT), 1016 (CENTER) AND 1020 (RT). BRIDGE MAINTENANCE USES THE SCOUR CRITICAL ELEVATIONS 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 BENT NO.2.

DO NOT USE SLURRY CONSTRUCTION FOR THIS PROJECT.

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 PROVISIONS.

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.

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 END BENT NO.1 AND NO.2 IS 50 TONS PER PILE.

INSTALL PERMANENT STEEL CASING AT BENT NO.1 AND BENT NO.2 BY VIBRATING, SCREWING, OR DRIVING THE CASING BEFORE EXCAVATING OR DISTURBING ANY MATERIAL BELOW ELEVATION 1027.

DRAWN BY : A.L. FIGUEROA DATE : 5-14-08  
 CHECKED BY : M.G. CHEEK DATE : 5-27-08

24-JUL-2008 10:31  
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PROJECT NO. B-3624  
CALDWELL COUNTY  
 STATION: 15+71.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

GENERAL DRAWING  
 FOR BRIDGE ON SR 1328  
 OVER JOHNS RIVER BETWEEN  
 SR 1337 AND SR 1333

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

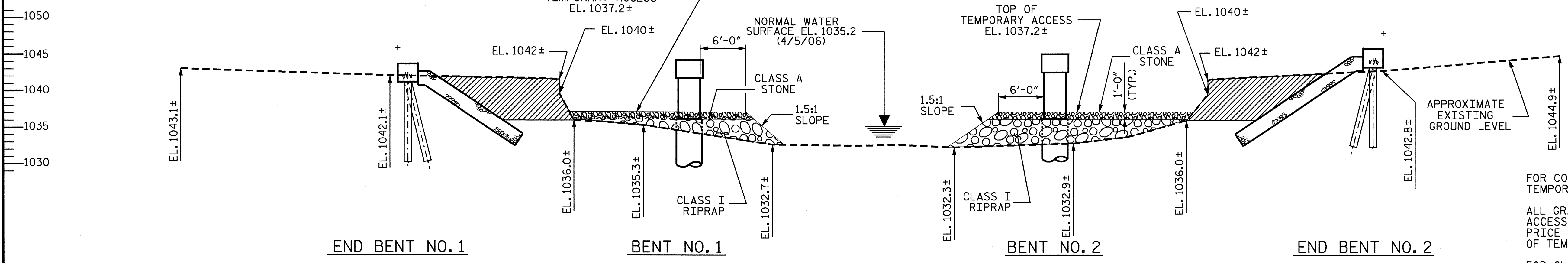


15+00 15+50 16+00 16+50

SPAN A

SPAN B

SPAN C



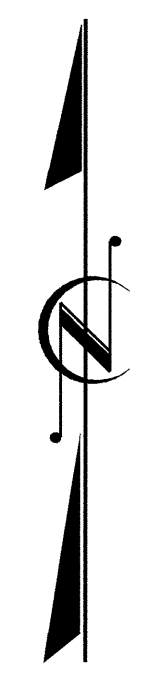
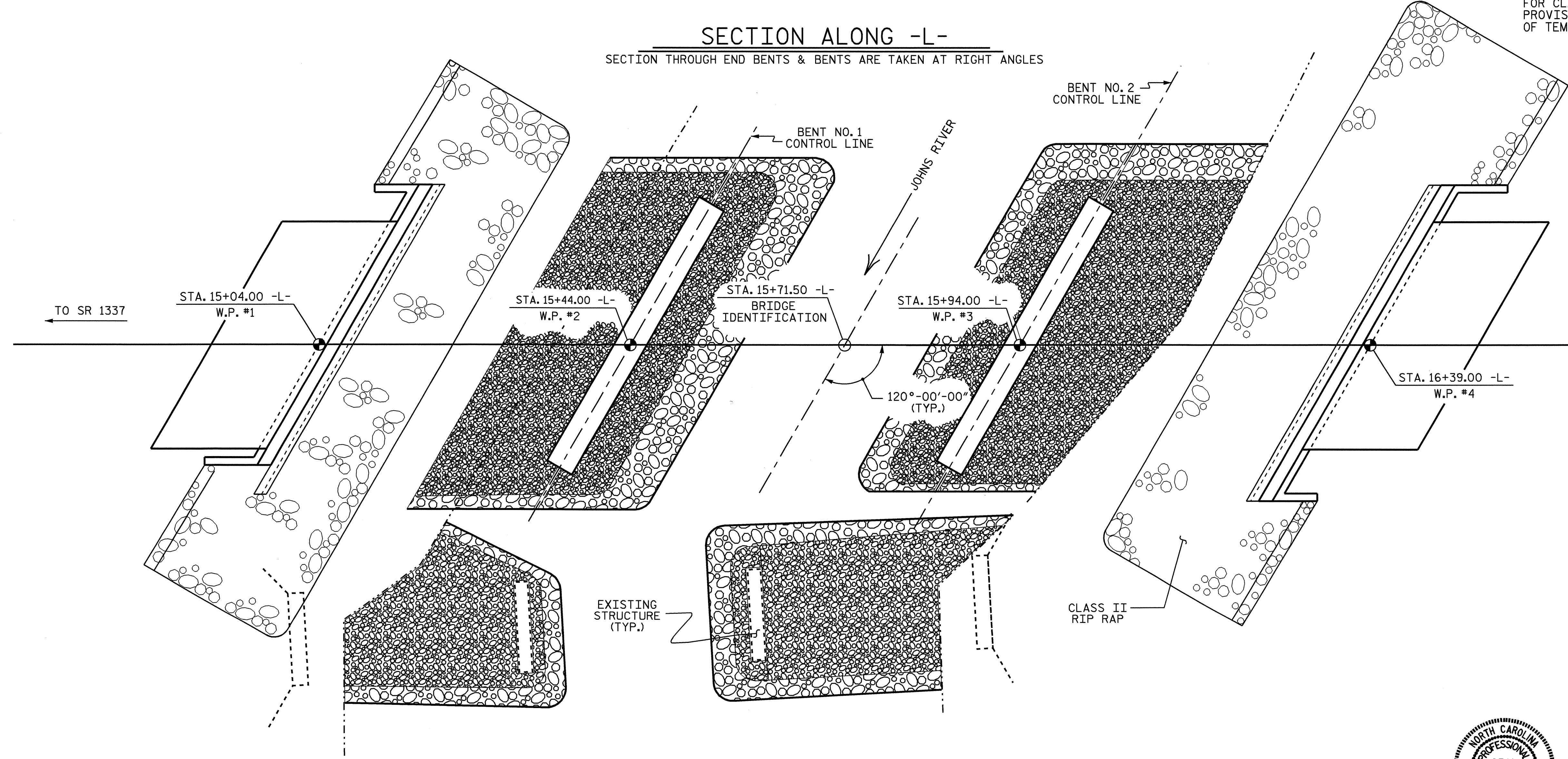
UNCLASSIFIED STRUCTURE EXCAVATION

NOTES

FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS, SEE SPECIAL PROVISIONS.  
 ALL GRADING REQUIRED FOR ACCESS TO THE TEMPORARY ACCESS SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR "CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS".  
 FOR CLASS I RIP RAP AND CLASS A STONE, SEE SPECIAL PROVISION, "CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS".

SECTION ALONG -L-

SECTION THROUGH END BENTS & BENTS ARE TAKEN AT RIGHT ANGLES



PLAN

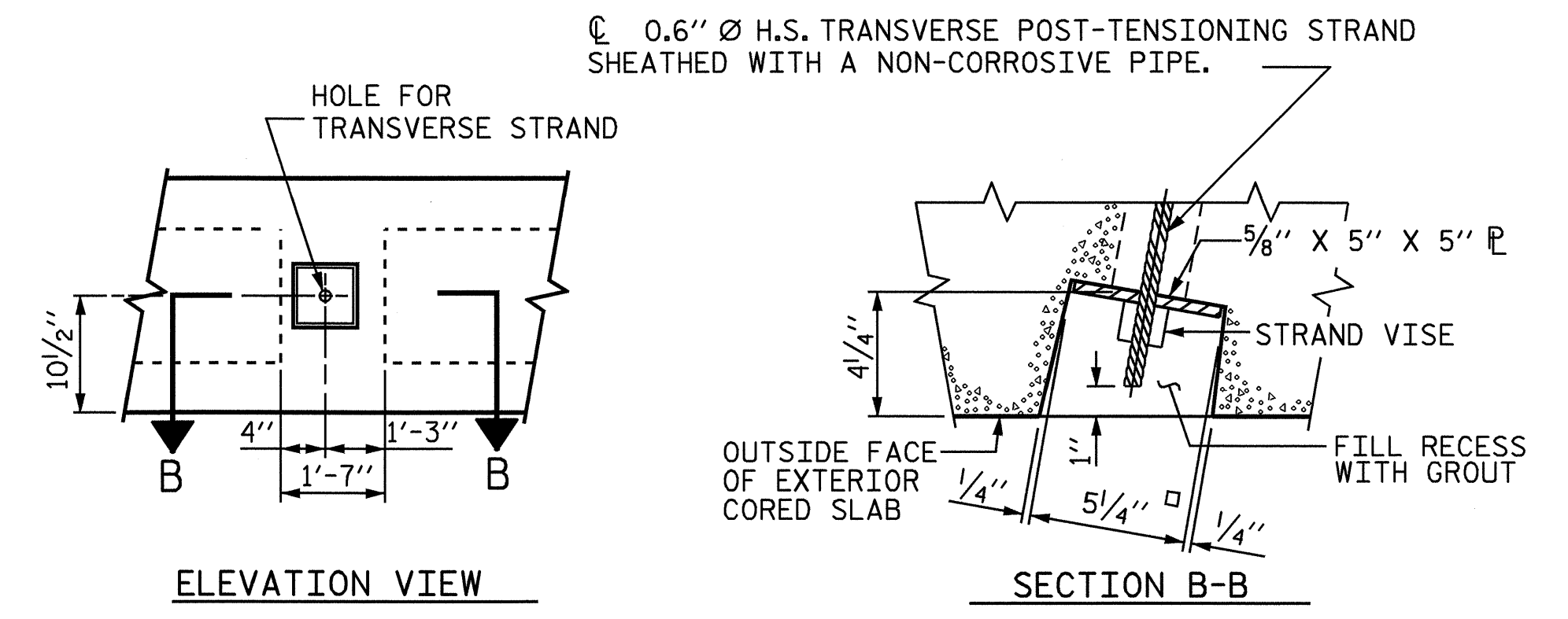
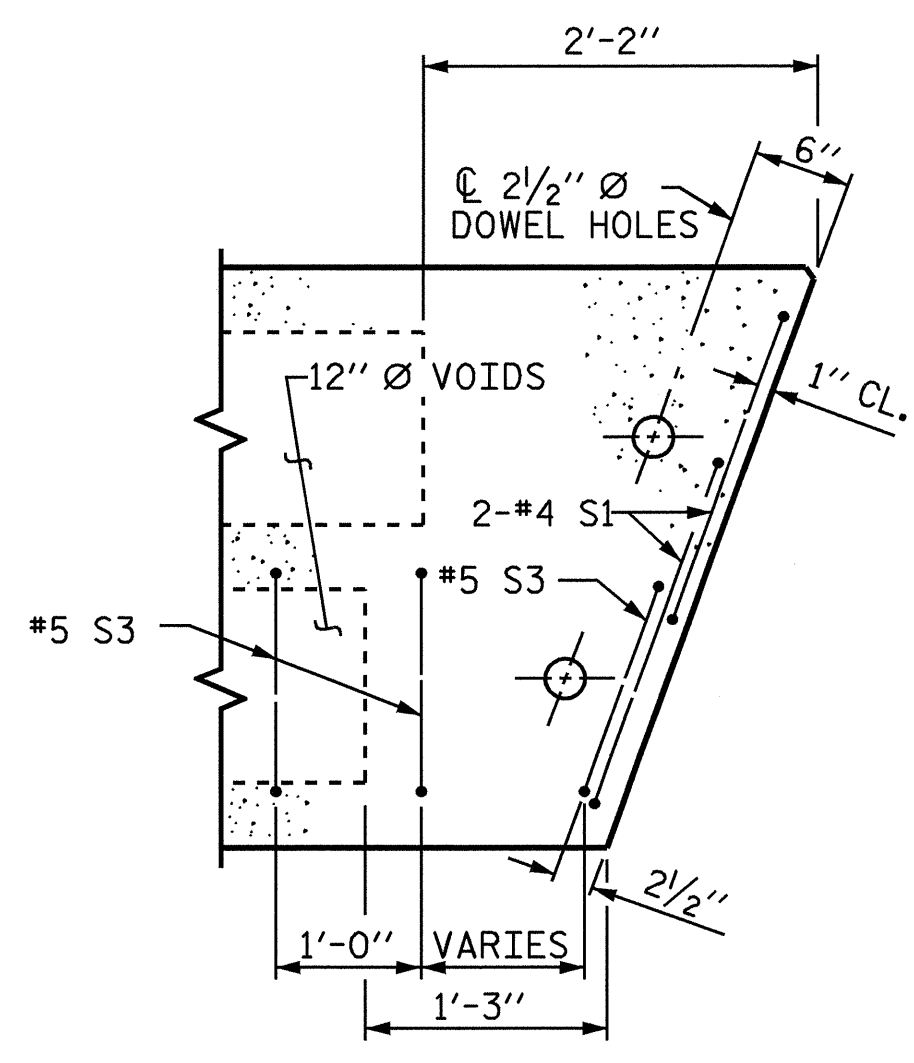
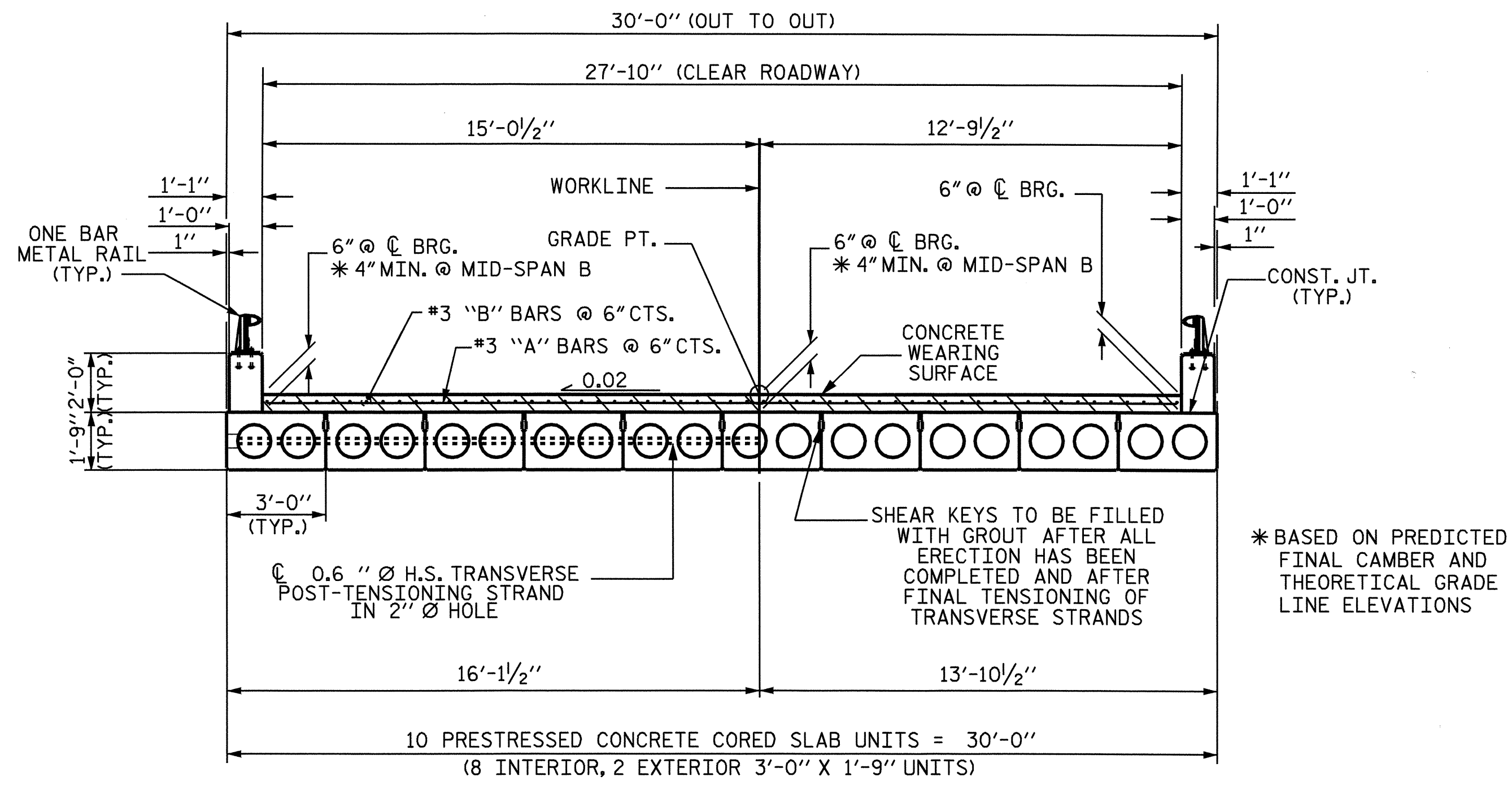
(PILES & COLUMNS NOT SHOWN FOR CLARITY)

PROJECT NO. B-3624  
 CALDWELL COUNTY  
 STATION: 15+71.50 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
TEMPORARY ACCESS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-4
TOTAL SHEETS					29



DRAWN BY : A.L. FIGUEROA DATE : 05-20-08  
 CHECKED BY : M.G. CHEEK DATE : 06-02-08



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

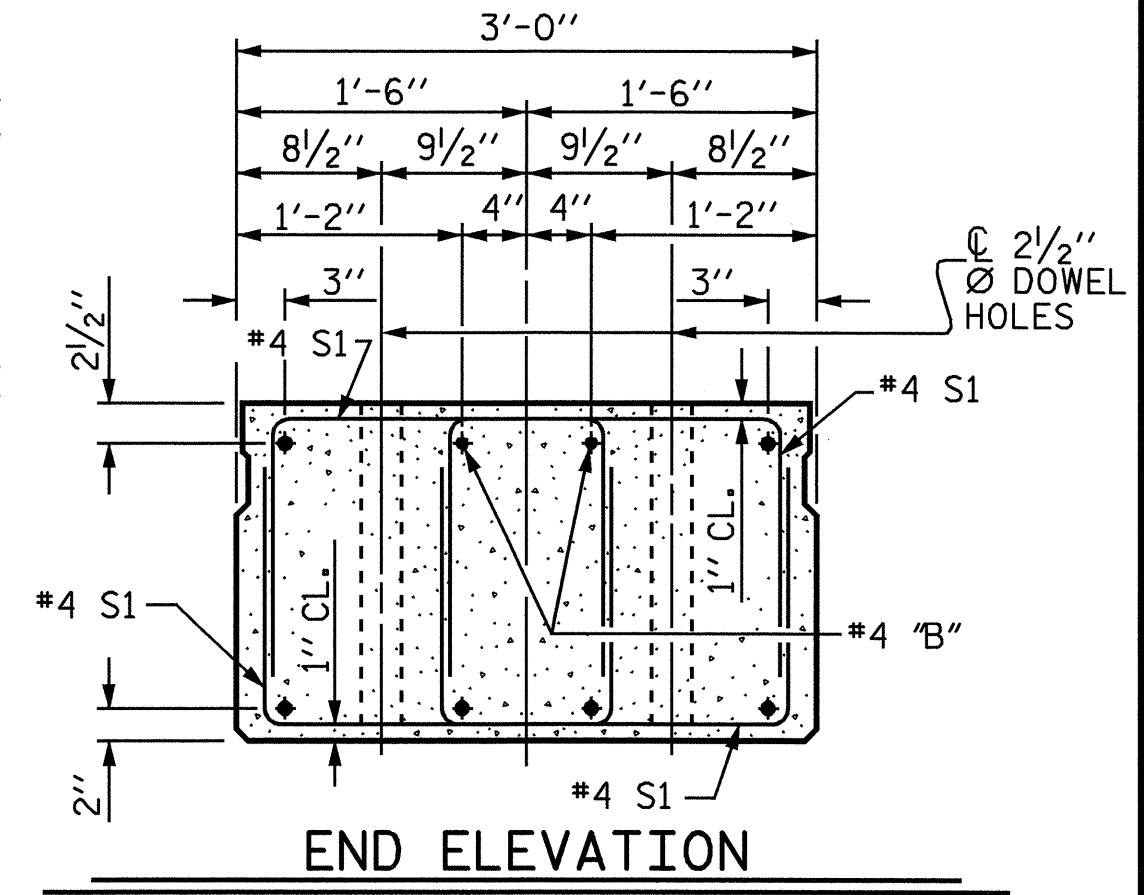
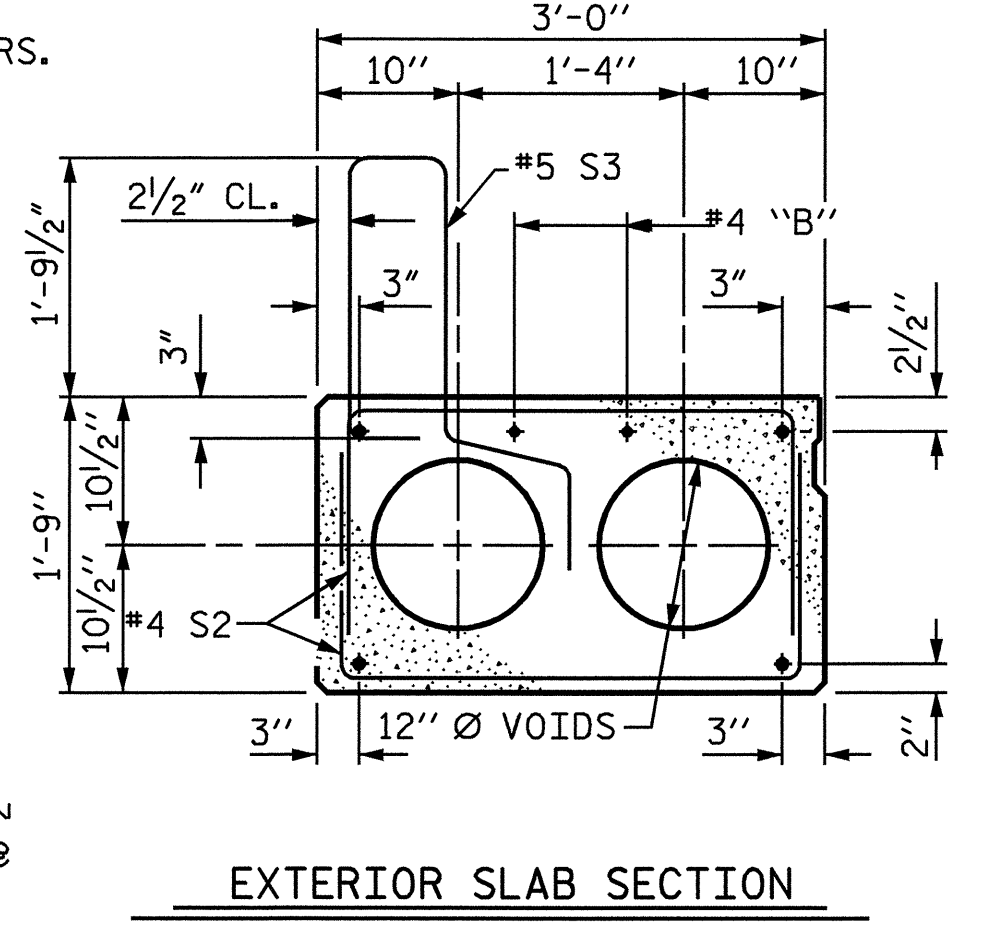
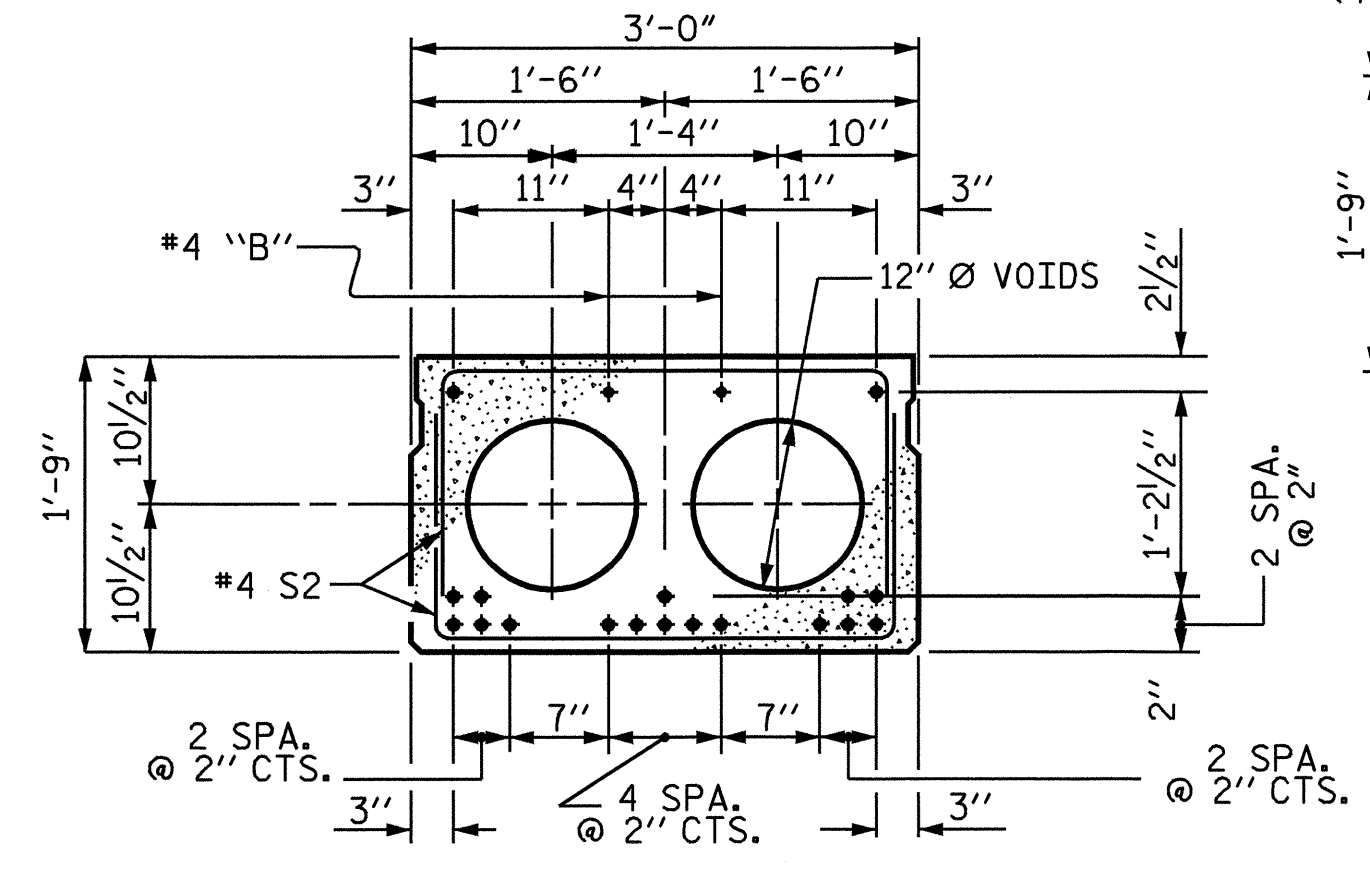
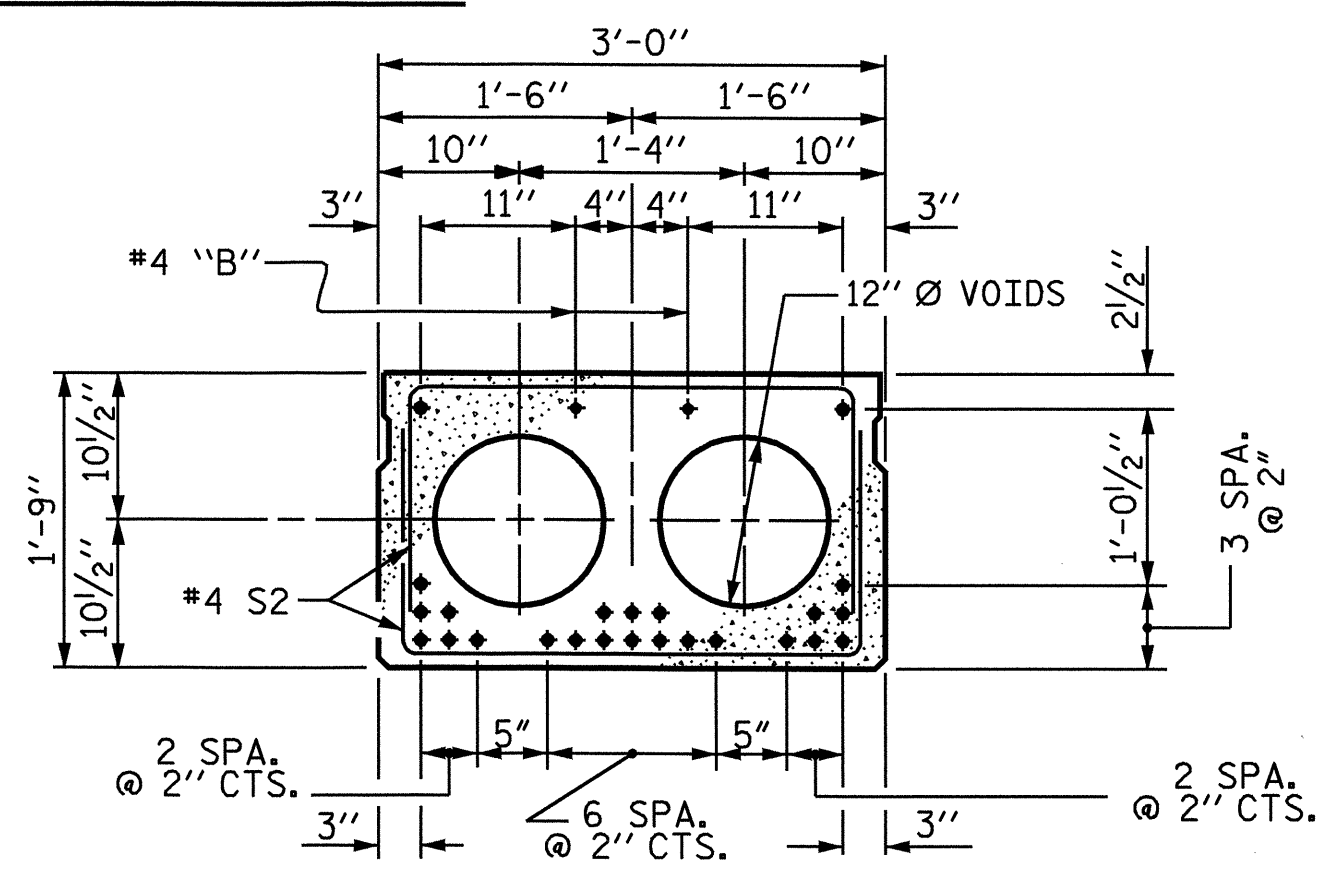
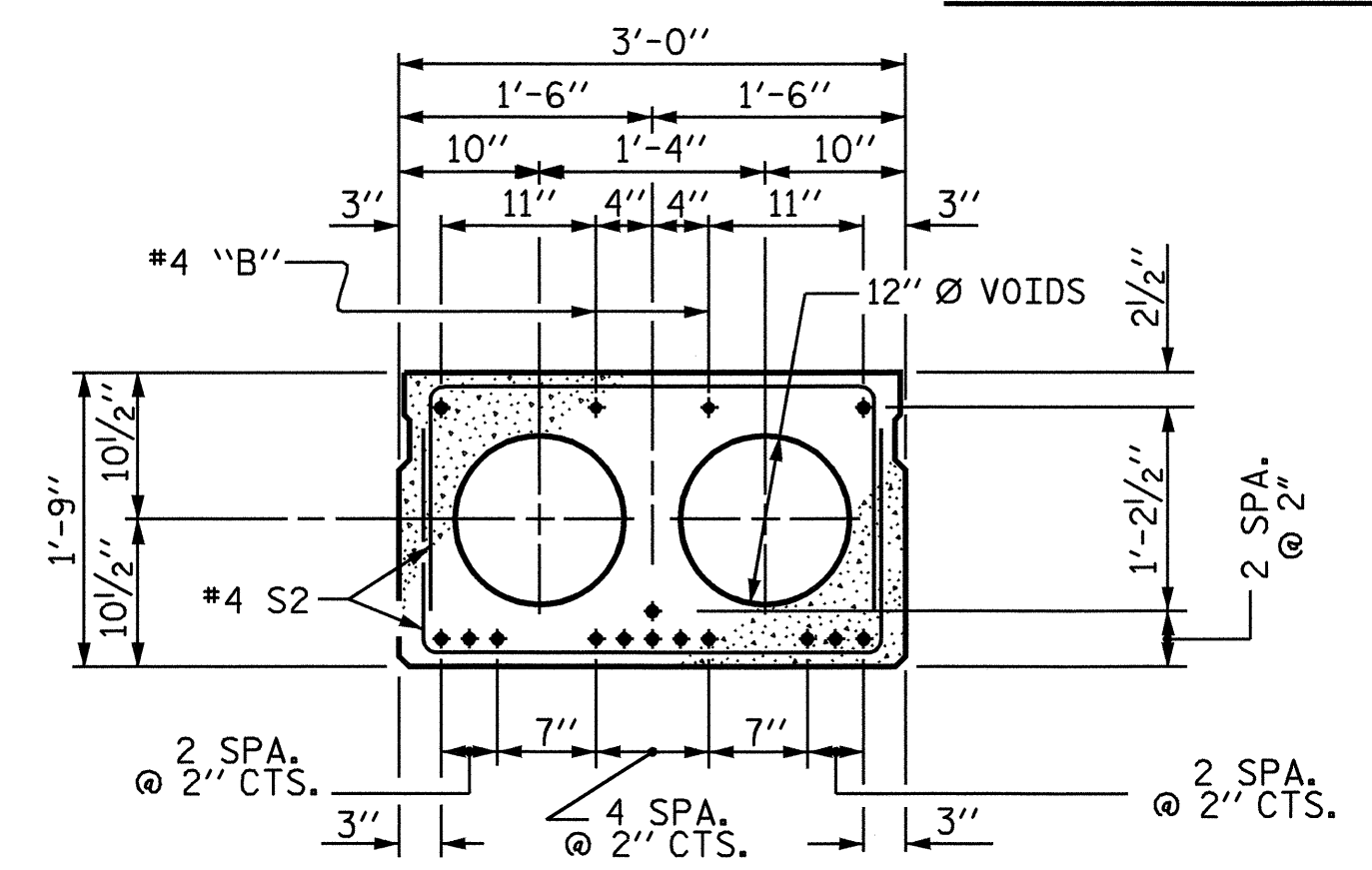
PART PLAN-EXTERIOR SECTION

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

HALF SECTION @ POST-TENSIONING LOCATIONS

HALF SECTION @ END BENT & BENT

TYPICAL SECTION

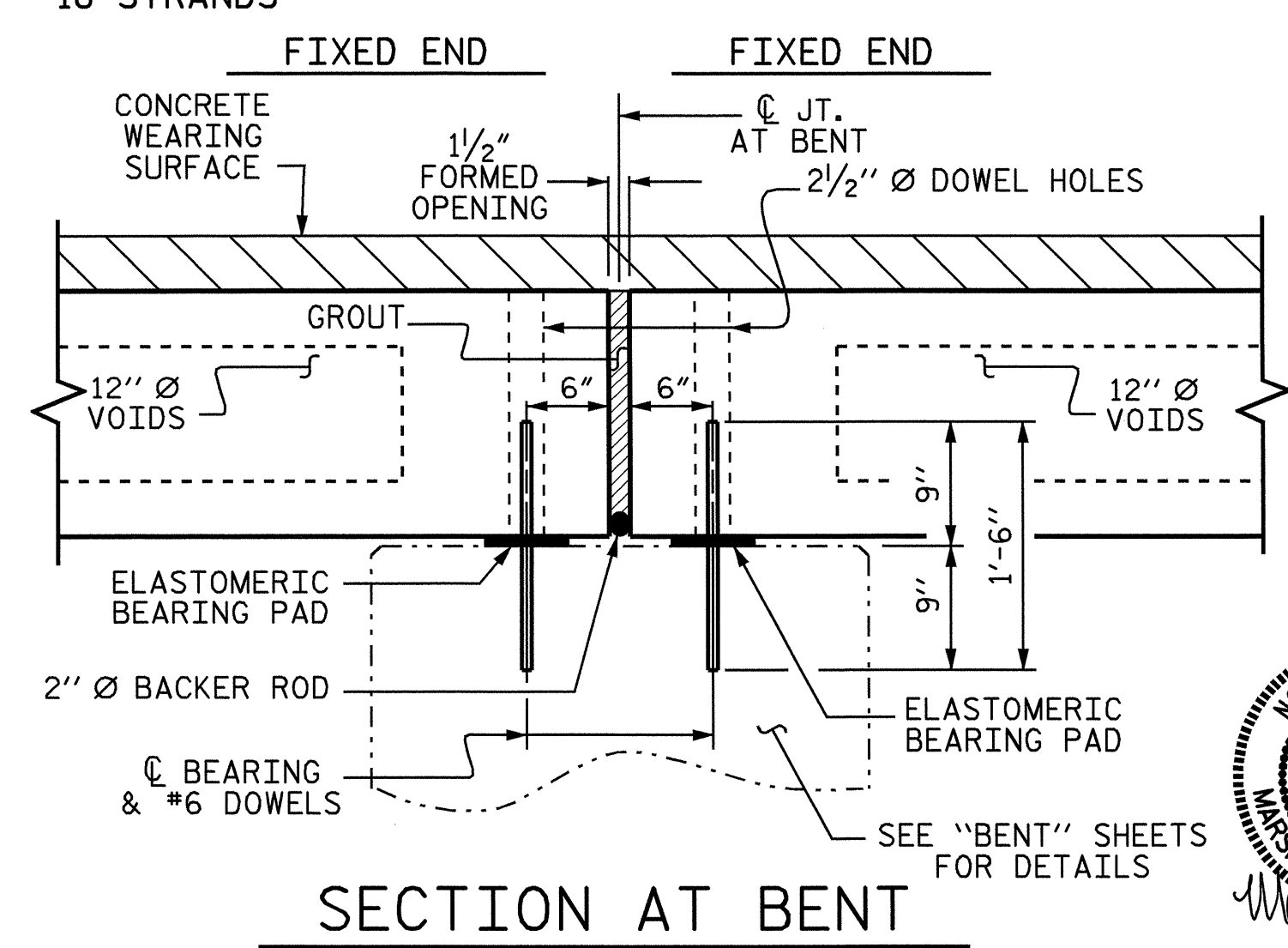
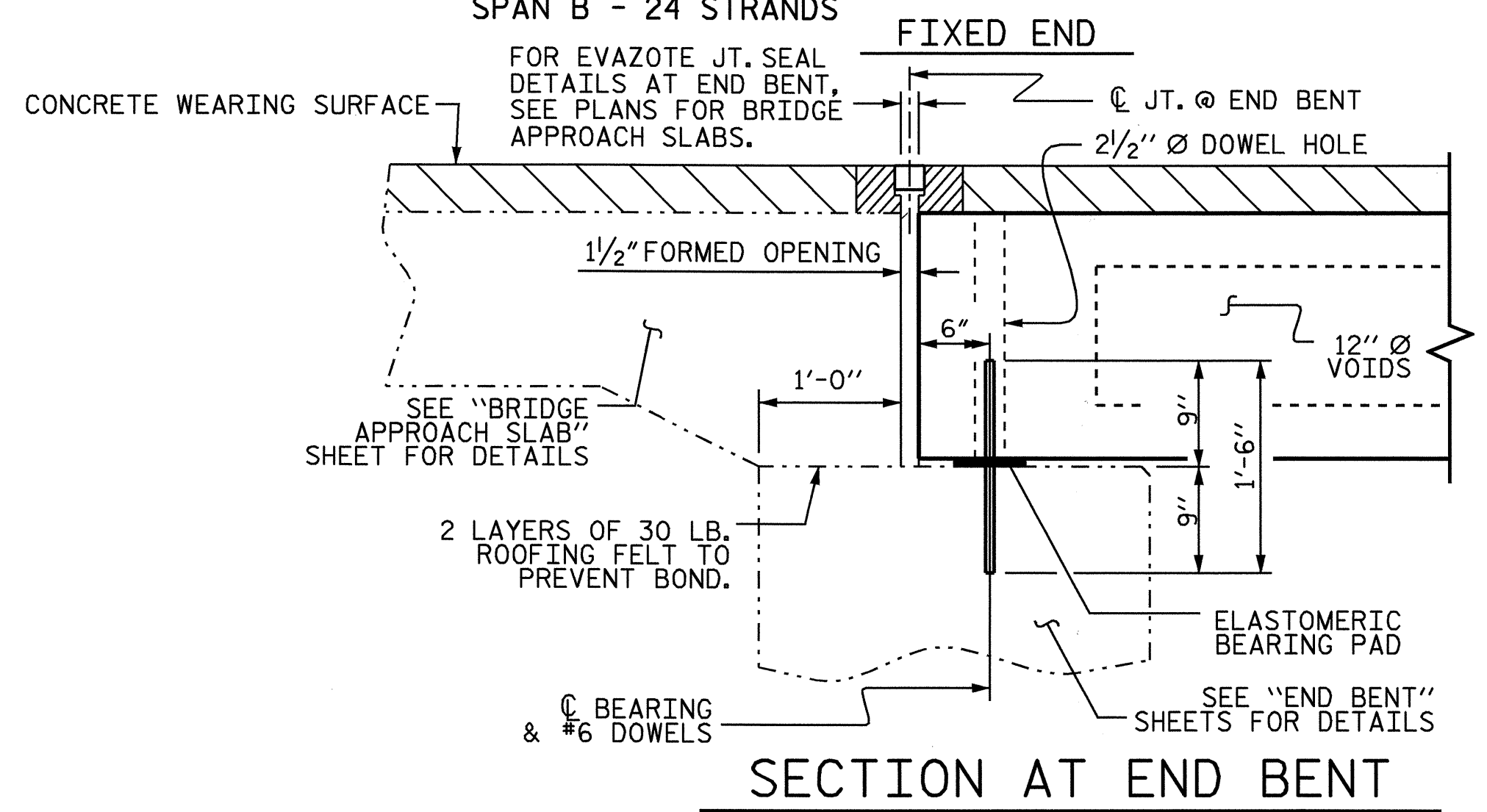
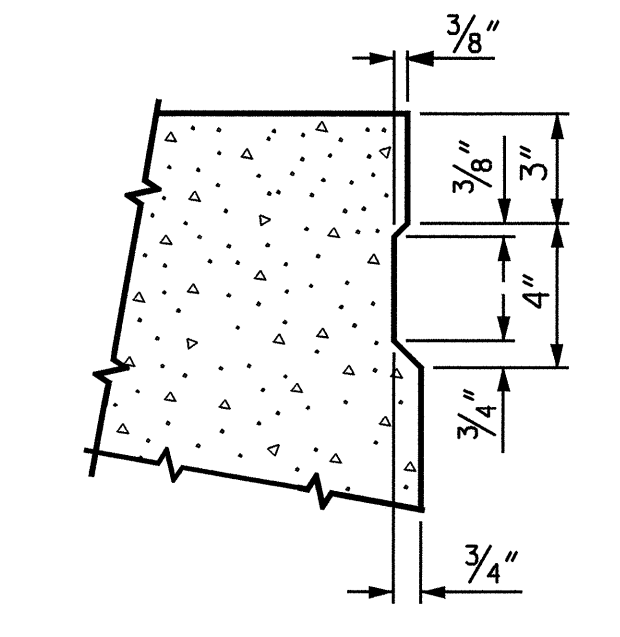


SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB SECTION SHOWN-EXTERIOR SLAB SECTION SIMILAR EXCEPT SHEAR KEY LOCATION.

INTERIOR SLAB SECTION 1/2" Ø LOW RELAXATION STRAND LAYOUT SPAN A - 14 STRANDS

INTERIOR SLAB SECTION 1/2" Ø LOW RELAXATION STRAND LAYOUT SPAN B - 24 STRANDS

INTERIOR SLAB SECTION 1/2" Ø LOW RELAXATION STRAND LAYOUT SPAN C - 18 STRANDS



PROJECT NO. B-3624  
CALDWELL COUNTY  
STATION: 15+71.50 -L-

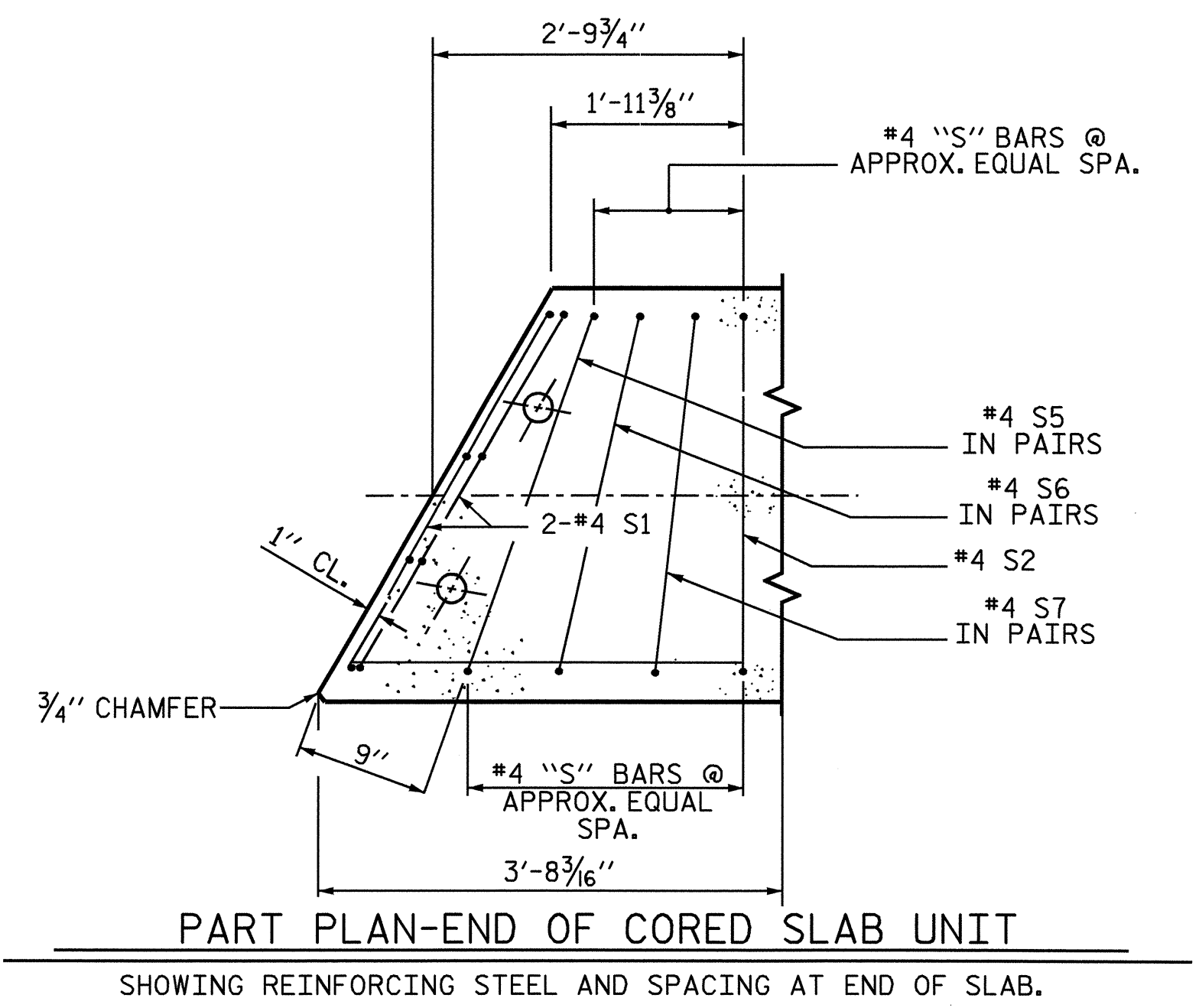
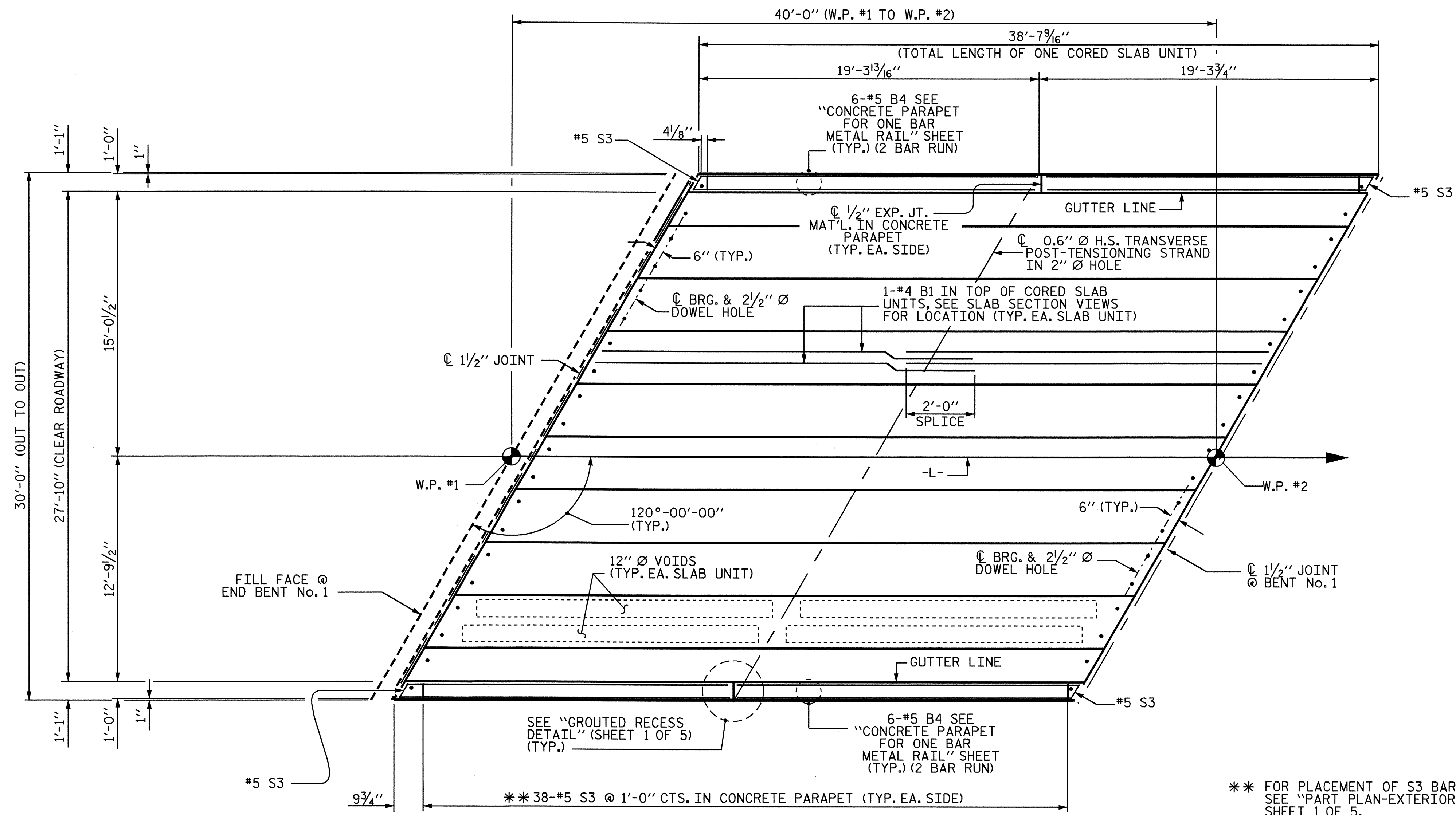
SHEET 1 OF 5

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
TYPICAL SECTION DETAILS

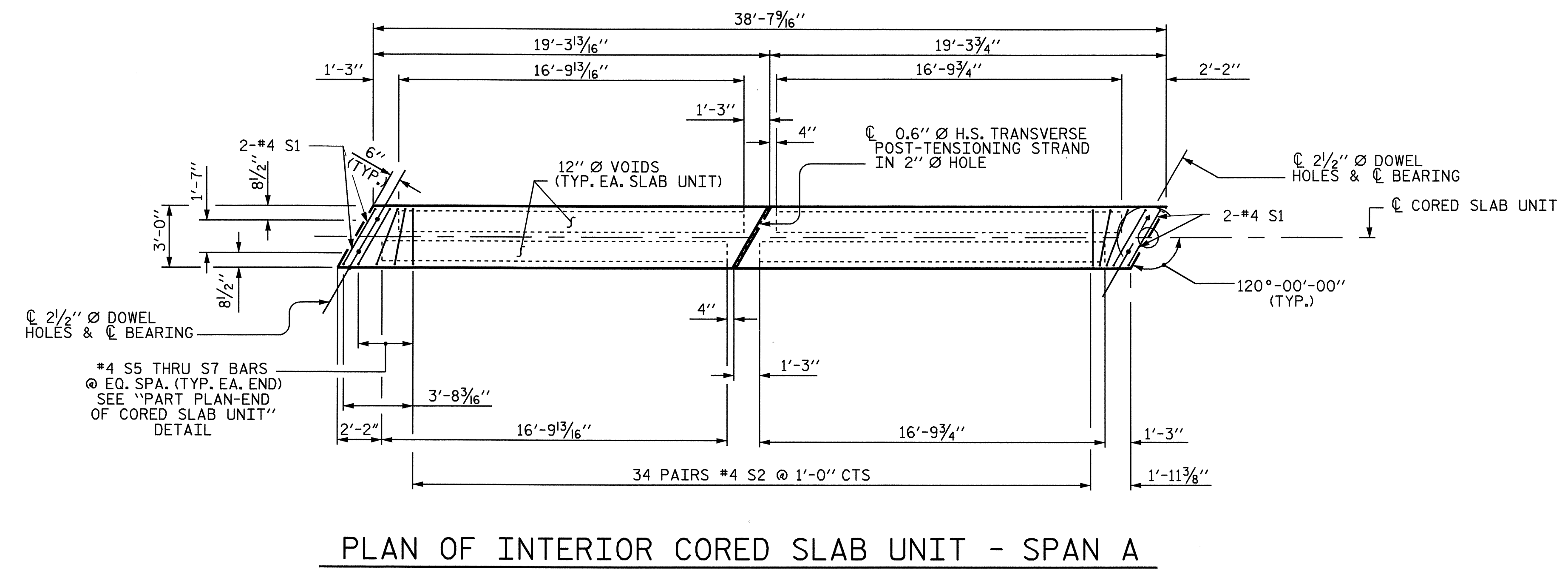


DRAWN BY: M. POOLE DATE: 04-08  
CHECKED BY: M. G. CHEEK DATE: 05-08

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



**SPAN A**



**PLAN OF INTERIOR CORED SLAB UNIT - SPAN A**

(INTERIOR SLAB UNIT SHOWN, EXTERIOR UNIT SIMILAR, SEE "SPAN A" FOR ADDITIONAL REINFORCEMENT IN EXTERIOR SLAB UNITS DUE TO ONE BAR METAL RAIL)

\*\* FOR PLACEMENT OF S3 BARS, SEE "PART PLAN-EXTERIOR SECTION", SHEET 1 OF 5.

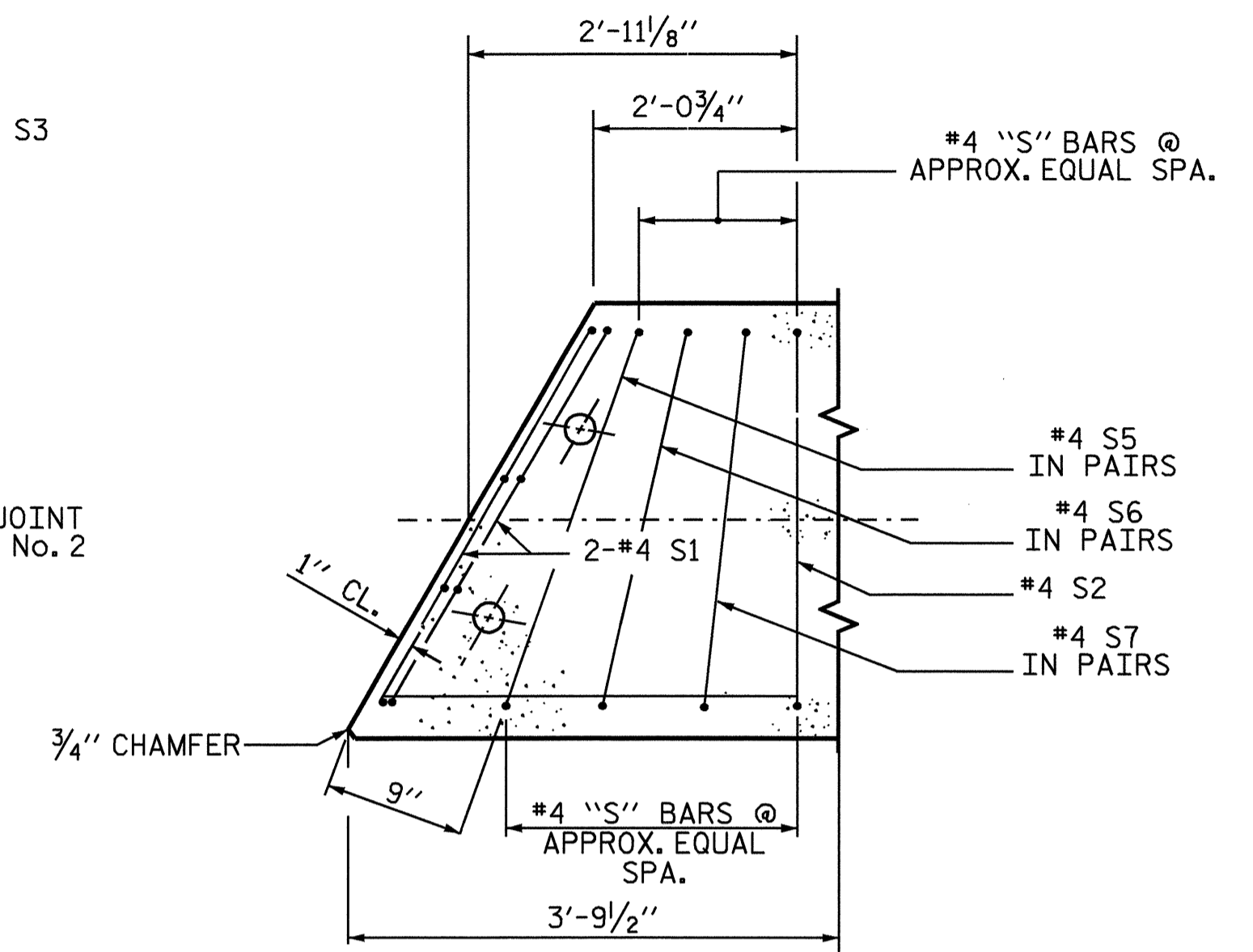
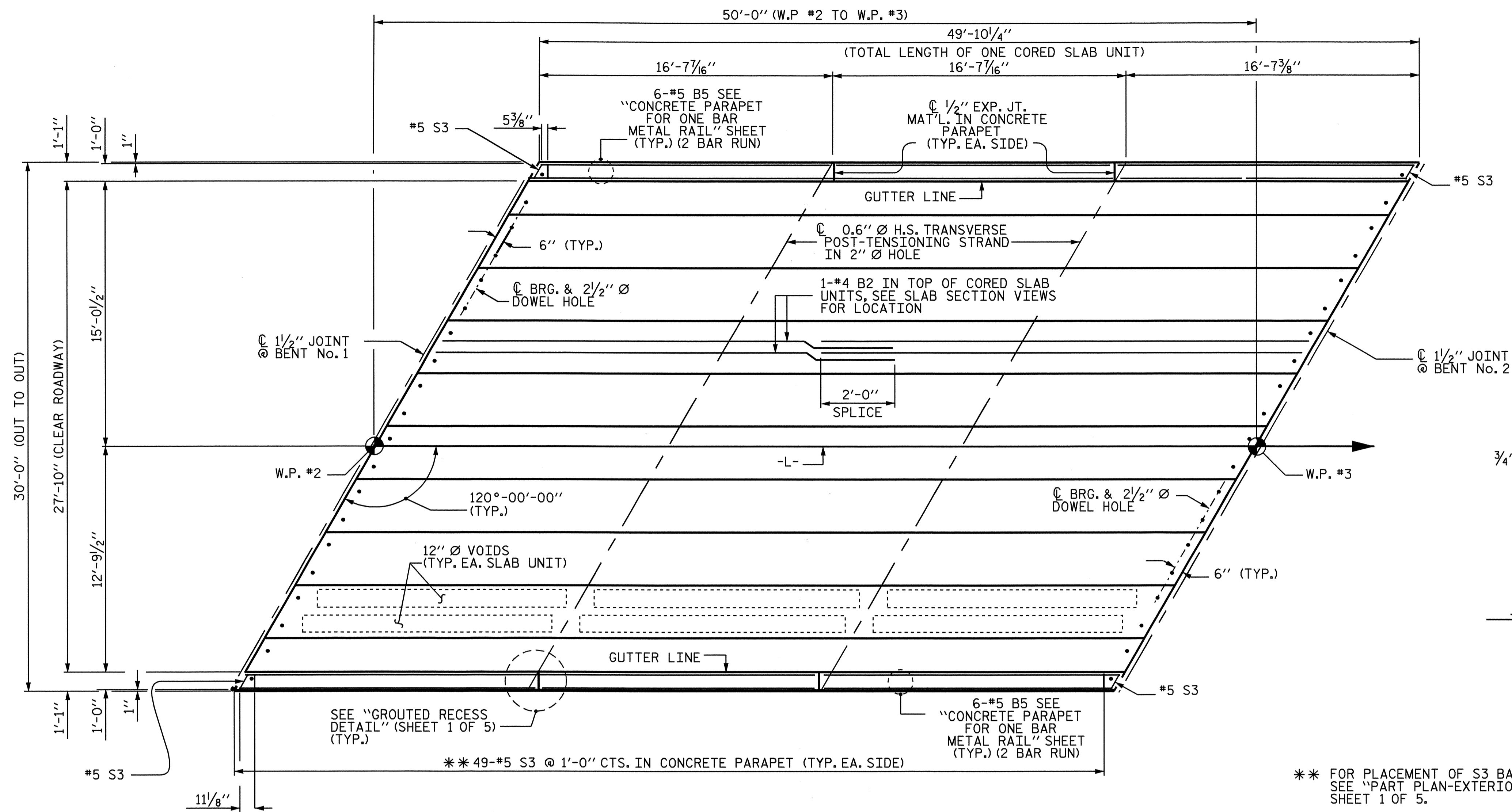
PROJECT NO. B-3624  
CALDWELL COUNTY  
 STATION: 15+71.50 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
PLAN OF SPAN SPAN A					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-6					TOTAL SHEETS 29

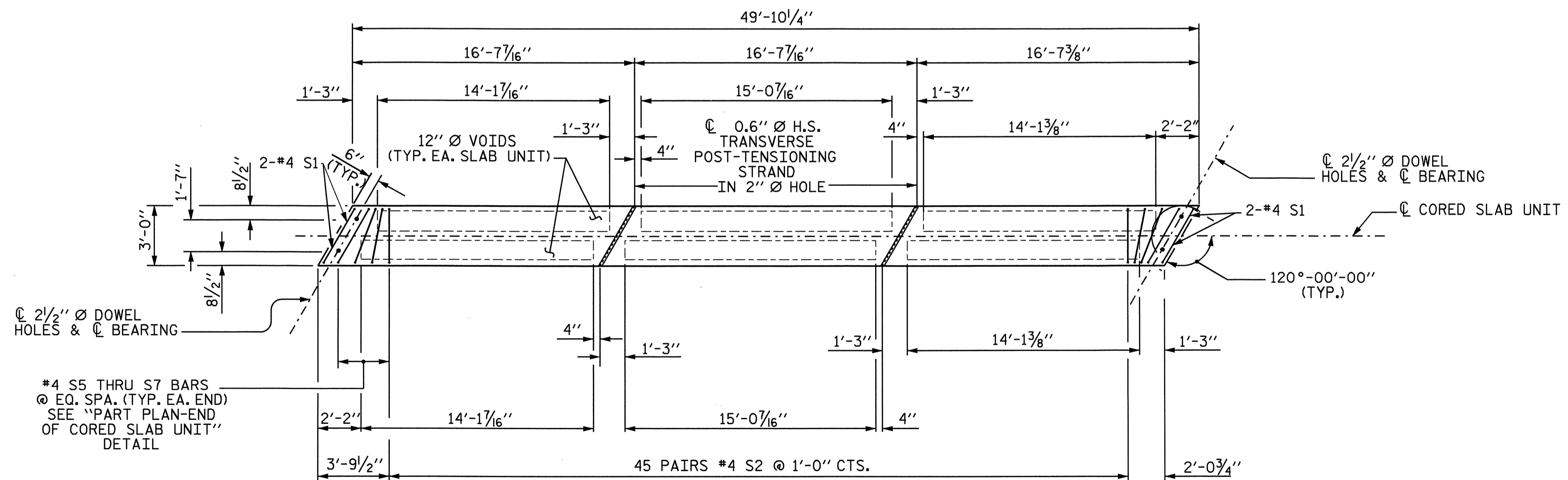


DRAWN BY: M. POOLE DATE: 04-08  
 CHECKED BY: M. G. CHEEK DATE: 05-08



PART PLAN-END OF CORED SLAB UNIT  
SHOWING REINFORCING STEEL AND SPACING AT END OF SLAB.

**SPAN B**



**PLAN OF INTERIOR CORED SLAB UNIT - SPAN B**

(INTERIOR SLAB UNIT SHOWN, EXTERIOR UNIT SIMILAR, SEE "SPAN B" FOR ADDITIONAL REINFORCEMENT IN EXTERIOR SLAB UNITS DUE TO ONE BAR METAL RAIL)

PROJECT NO. B-3624  
CALDWELL COUNTY  
 STATION: 15+71.50 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

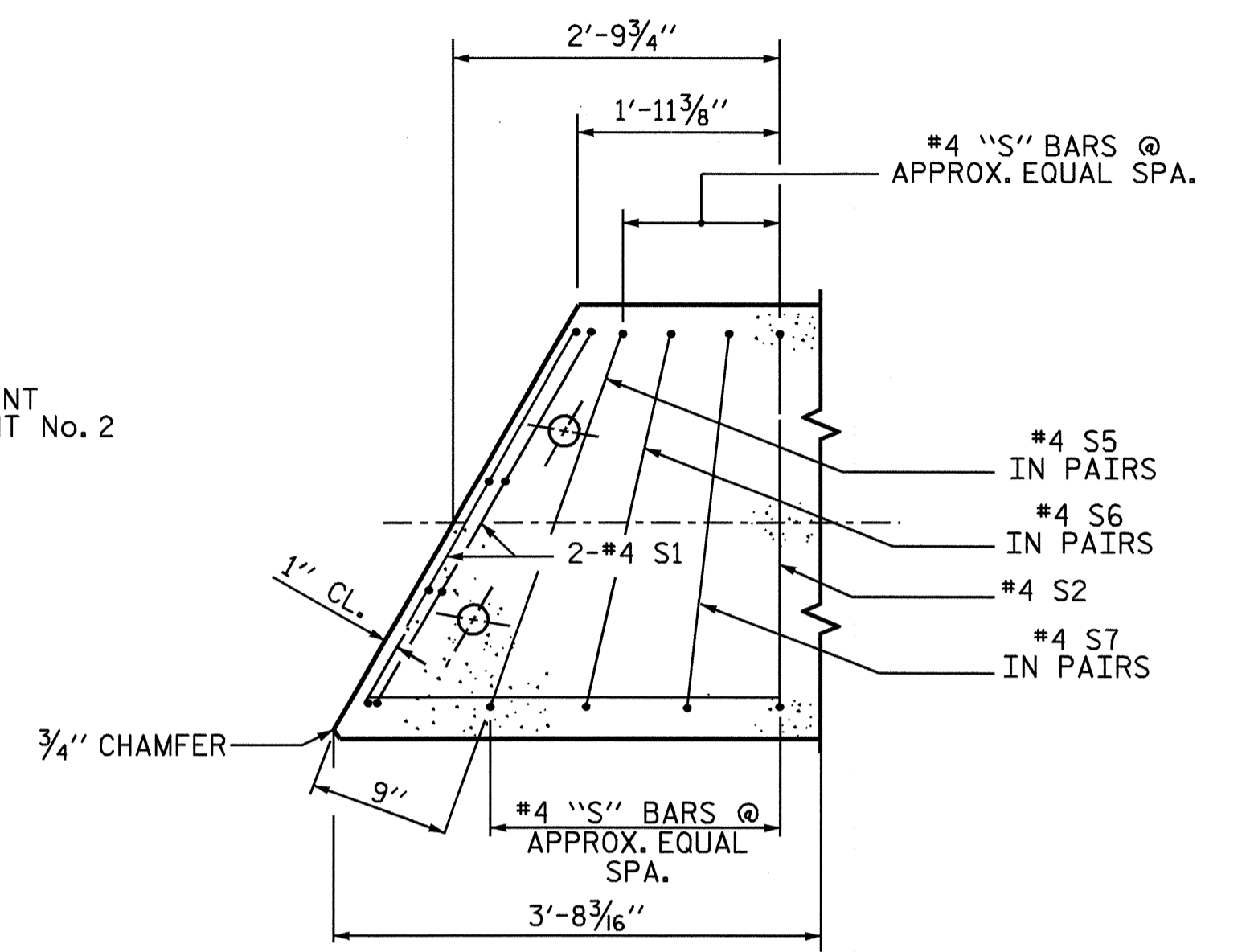
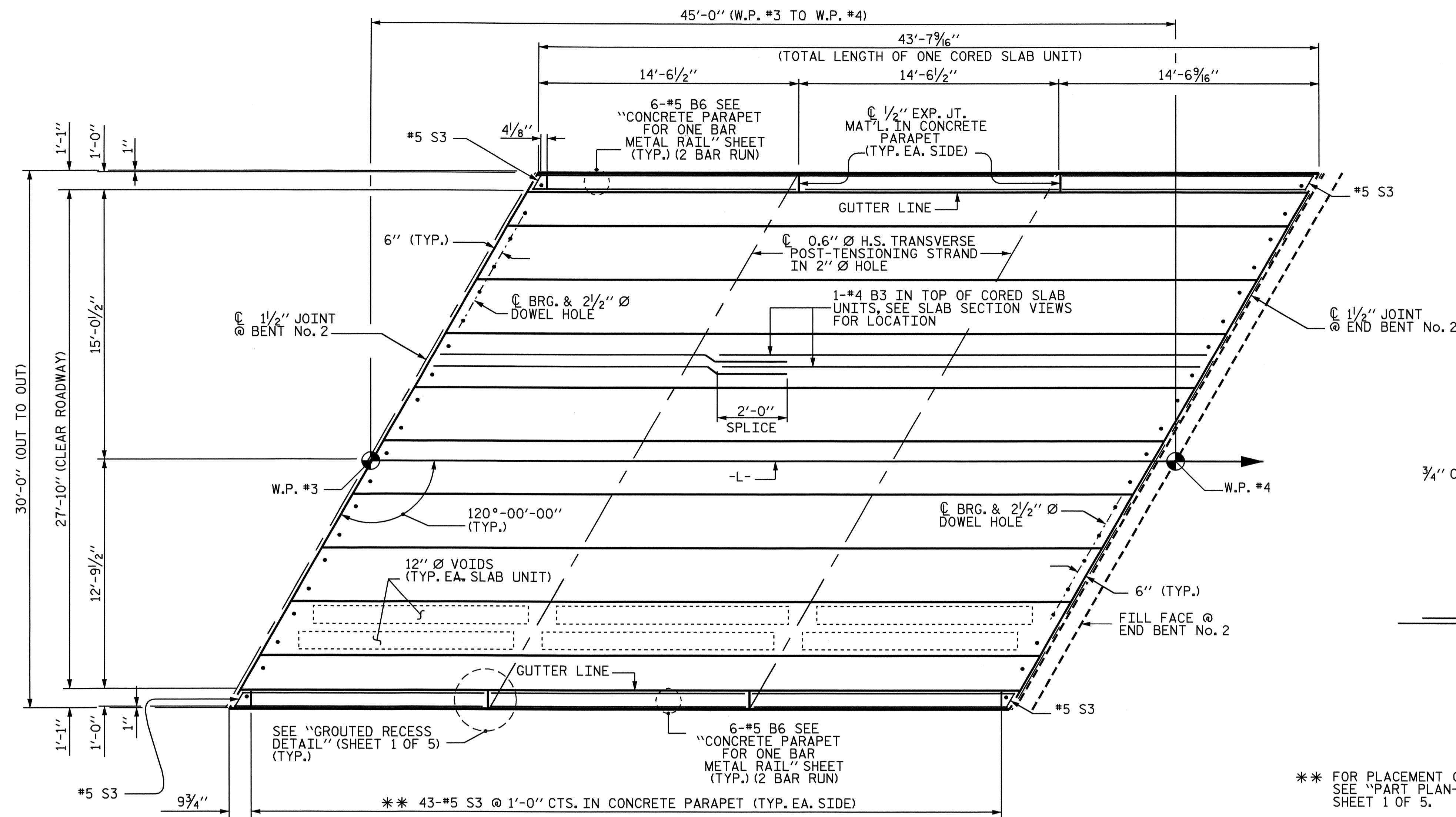
**PLAN OF SPAN  
 SPAN B**



REVISIONS						SHEET NO. S-7
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 29
2			4			

DRAWN BY: M. POOLE DATE: 04-08  
 CHECKED BY: M. G. CHEEK DATE: 05-08

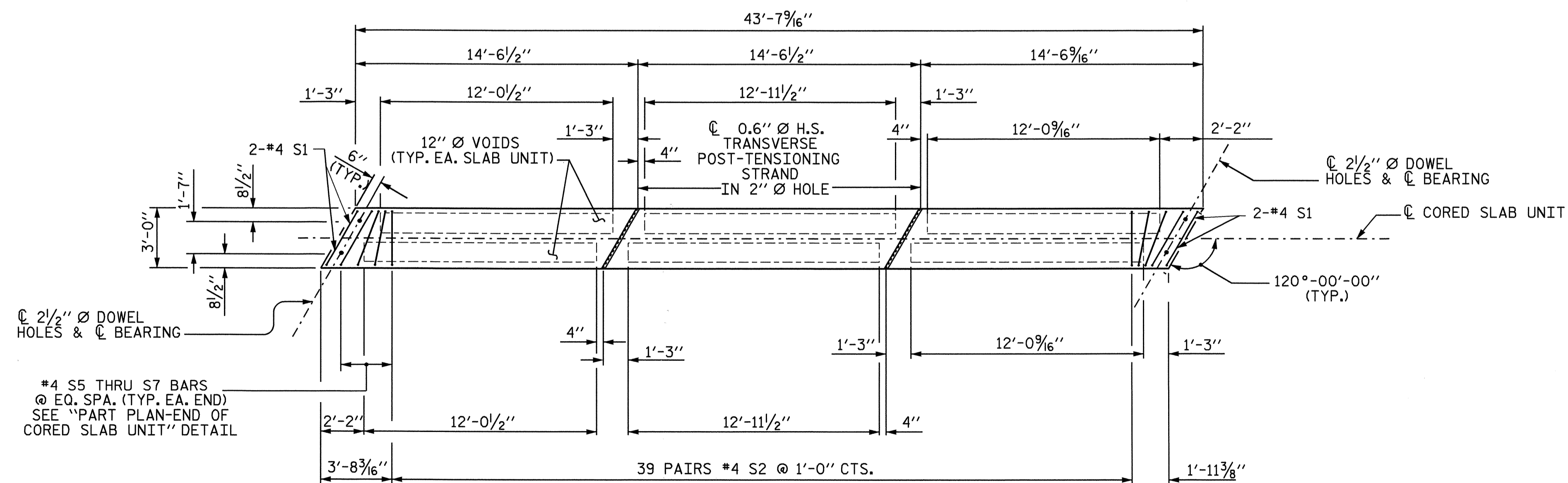




PART PLAN-END OF CORED SLAB UNIT  
SHOWING REINFORCING STEEL AND SPACING AT END OF SLAB.

\*\* FOR PLACEMENT OF S3 BARS, SEE "PART PLAN-EXTERIOR SECTION", SHEET 1 OF 5.

SPAN C



PLAN OF INTERIOR CORED SLAB UNIT - SPAN C

(INTERIOR SLAB UNIT SHOWN, EXTERIOR UNIT SIMILAR, SEE "SPAN C" FOR ADDITIONAL REINFORCEMENT IN EXTERIOR SLAB UNITS DUE TO ONE BAR METAL RAIL)

PROJECT NO. B-3624  
CALDWELL COUNTY  
STATION: 15+71.50 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

PLAN OF SPAN  
SPAN C

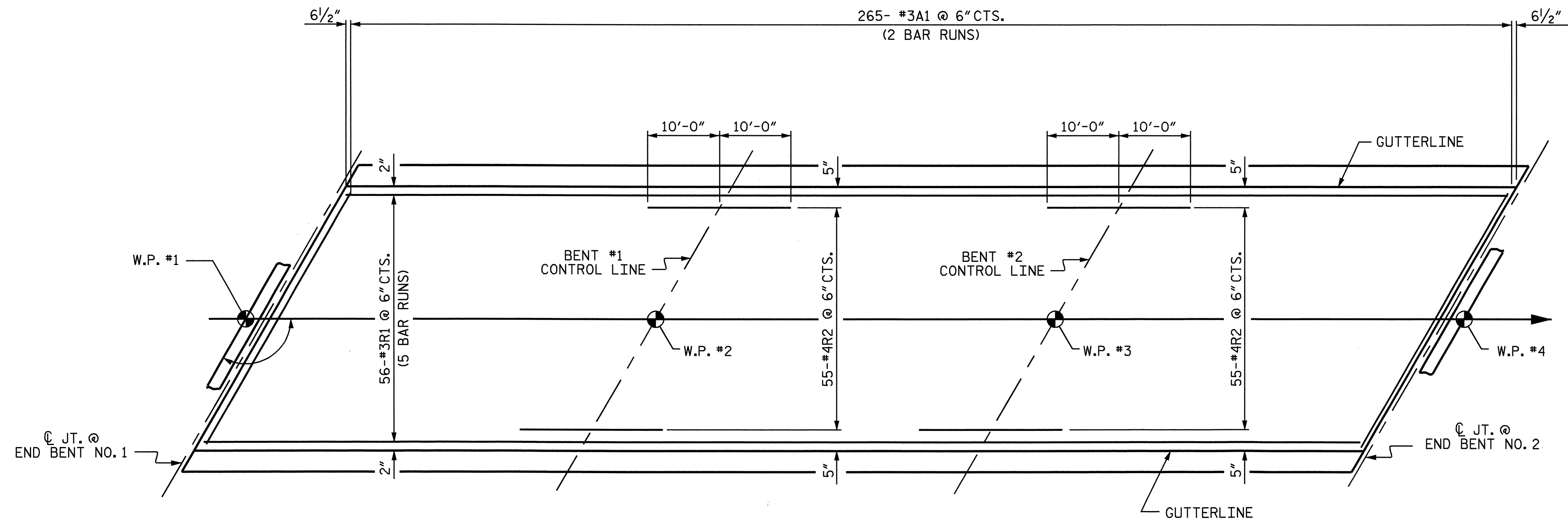


DRAWN BY: M. POOLE DATE: 04-08  
CHECKED BY: M. G. CHEEK DATE: 05-08

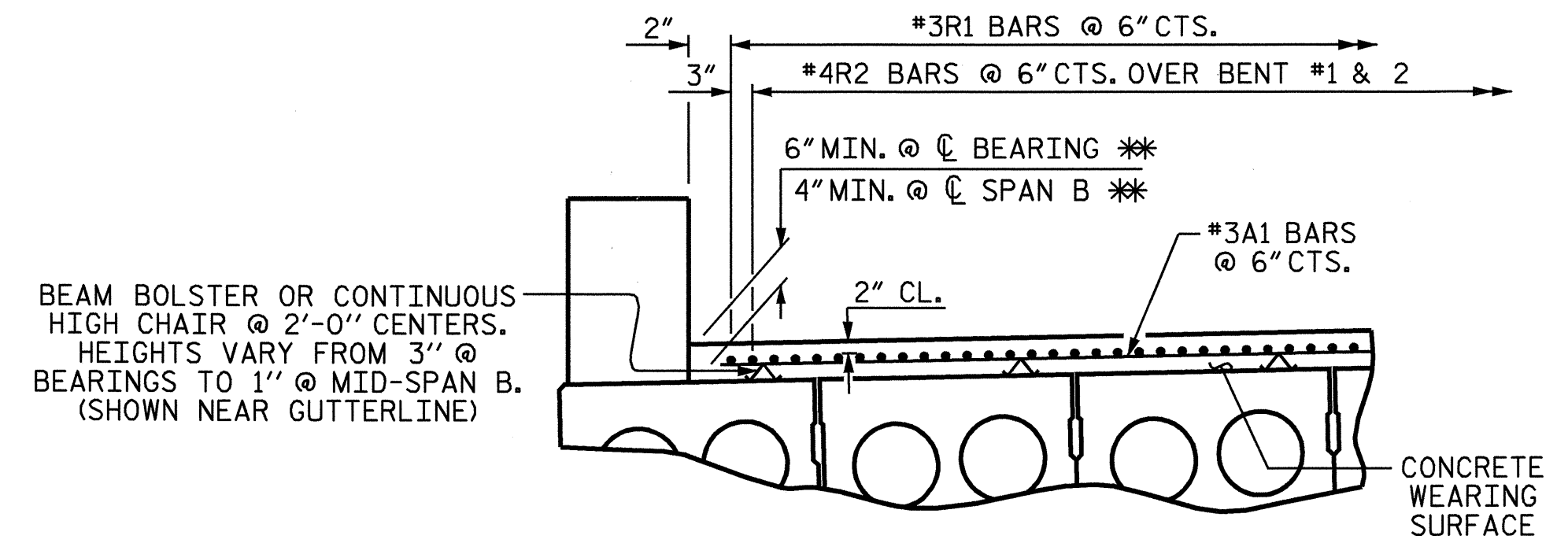
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REVISIONS						SHEET NO. S-8
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 29
2			4			

NC006



PLAN SHOWING CONCRETE WEARING SURFACE REINFORCING STEEL



REINFORCING FOR CONCRETE WEARING SURFACE  
 \*\*BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS

BILL OF MATERIAL FOR CONCRETE WEARING SURFACE					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	530	#3	STR	16'-7"	3305
*R1	280	#3	STR	27'-6"	2895
*R2	110	#4	STR	20'-0"	1470
* EPOXY COATED REINFORCING STEEL				LBS.	7670
CONCRETE WEARING SURFACE				SQ. FT.	3686

\* THESE BARS ARE EPOXY COATED.

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

NOTES

PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE CONCRETE RAIL. THE COST OF THE #3 & #4 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.

PROJECT NO. B-3624  
CALDWELL COUNTY  
 STATION: 15+71.50 -L-

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



DRAWN BY: L.L. MURPHY DATE: 6-08  
 CHECKED BY: M.G. CHEEK DATE: 6-08

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

### BILL OF MATERIAL FOR ONE CORED SLAB SECTION - SPAN A

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B1	4	4	STR	20'-2"	54	20'-2"	54
S1	8	4	2	4'-6"	24	4'-6"	24
S2	68	4	2	5'-4"	242	5'-4"	242
* S3	40	5	1	6'-9"	282		
S5	4	4	2	5'-9"	15	5'-9"	15
S6	4	4	2	5'-7"	15	5'-7"	15
S7	4	4	2	5'-5"	14	5'-5"	14
REINFORCING STEEL				LBS.	364		364
* EPOXY COATED REINFORCING STEEL				LBS.	282		
5,000 P.S.I. CONCRETE				CU. YDS.	5.5		5.5
1/2" Ø L.R. STRANDS				No.	14		14

### BILL OF MATERIAL FOR ONE CORED SLAB SECTION - SPAN B

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B2	4	4	STR	25'-10"	69	25'-9"	69
S1	8	4	2	4'-6"	24	4'-6"	24
S2	90	4	2	5'-4"	321	5'-4"	321
* S3	51	5	1	6'-9"	359		
S5	4	4	2	5'-9"	15	5'-9"	15
S6	4	4	2	5'-7"	15	5'-7"	15
S7	4	4	2	5'-5"	14	5'-5"	14
REINFORCING STEEL				LBS.	458		458
* EPOXY COATED REINFORCING STEEL				LBS.	359		
5,000 P.S.I. CONCRETE				CU. YDS.	7.2		7.2
1/2" Ø L.R. STRANDS				No.	24		24

### BILL OF MATERIAL FOR ONE CORED SLAB SECTION - SPAN C

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B3	4	4	STR	22'-8"	61	22'-8"	61
S1	8	4	2	4'-6"	24	4'-6"	24
S2	78	4	2	5'-4"	278	5'-4"	278
* S3	45	5	1	6'-9"	317		
S5	4	4	2	5'-9"	15	5'-9"	15
S6	4	4	2	5'-7"	15	5'-7"	15
S7	4	4	2	5'-5"	14	5'-5"	14
REINFORCING STEEL				LBS.	407		407
* EPOXY COATED REINFORCING STEEL				LBS.	317		
5,000 P.S.I. CONCRETE				CU. YDS.	6.3		6.3
1/2" Ø L.R. STRANDS				No.	18		18

\* THESE BARS ARE EPOXY COATED

### CORED SLABS REQUIRED

UNIT TYPE	NUMBER	LENGTH	TOTAL LENGTH
INTERIOR C.S. - SPAN A	8	38'-7 7/16"	309'-0 1/2"
EXTERIOR C.S. - SPAN A	2	38'-7 7/16"	77'-3 1/8"
INTERIOR C.S. - SPAN B	8	49'-10 1/4"	398'-10"
EXTERIOR C.S. - SPAN B	2	49'-10 1/4"	99'-8 1/2"
INTERIOR C.S. - SPAN C	8	43'-7 7/16"	349'-0 1/2"
EXTERIOR C.S. - SPAN C	2	43'-7 7/16"	87'-3 1/8"
TOTAL	30		1321'-1 3/4"

ASSEMBLED BY : M. POOLE	DATE : 04-08
CHECKED BY : M. G. CHEEK	DATE : 05-08
DRAWN BY : WJH 4/89	REV. 2/6/97 EEM/RGW
CHECKED BY : FCJ 5/89	REV. 8/16/99 RWW/LES
	REV. 10/17/00 RWW/LES

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 offigueroa

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

THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE SL LOW MODULUS SILICONE SEALANT. 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.

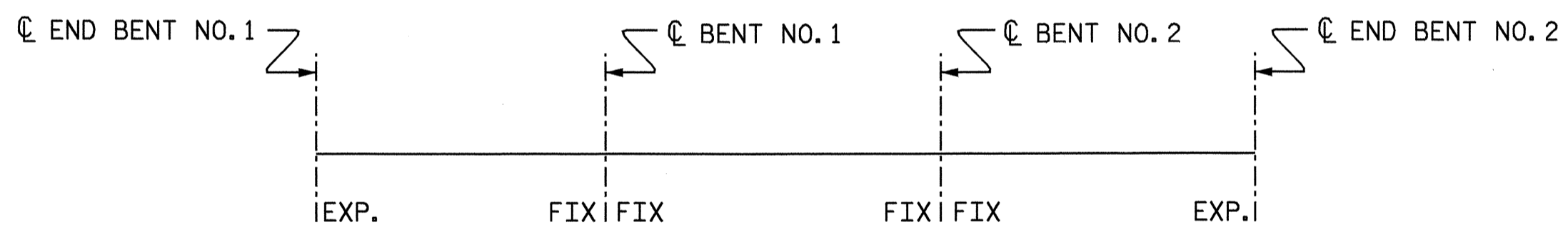
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI.

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

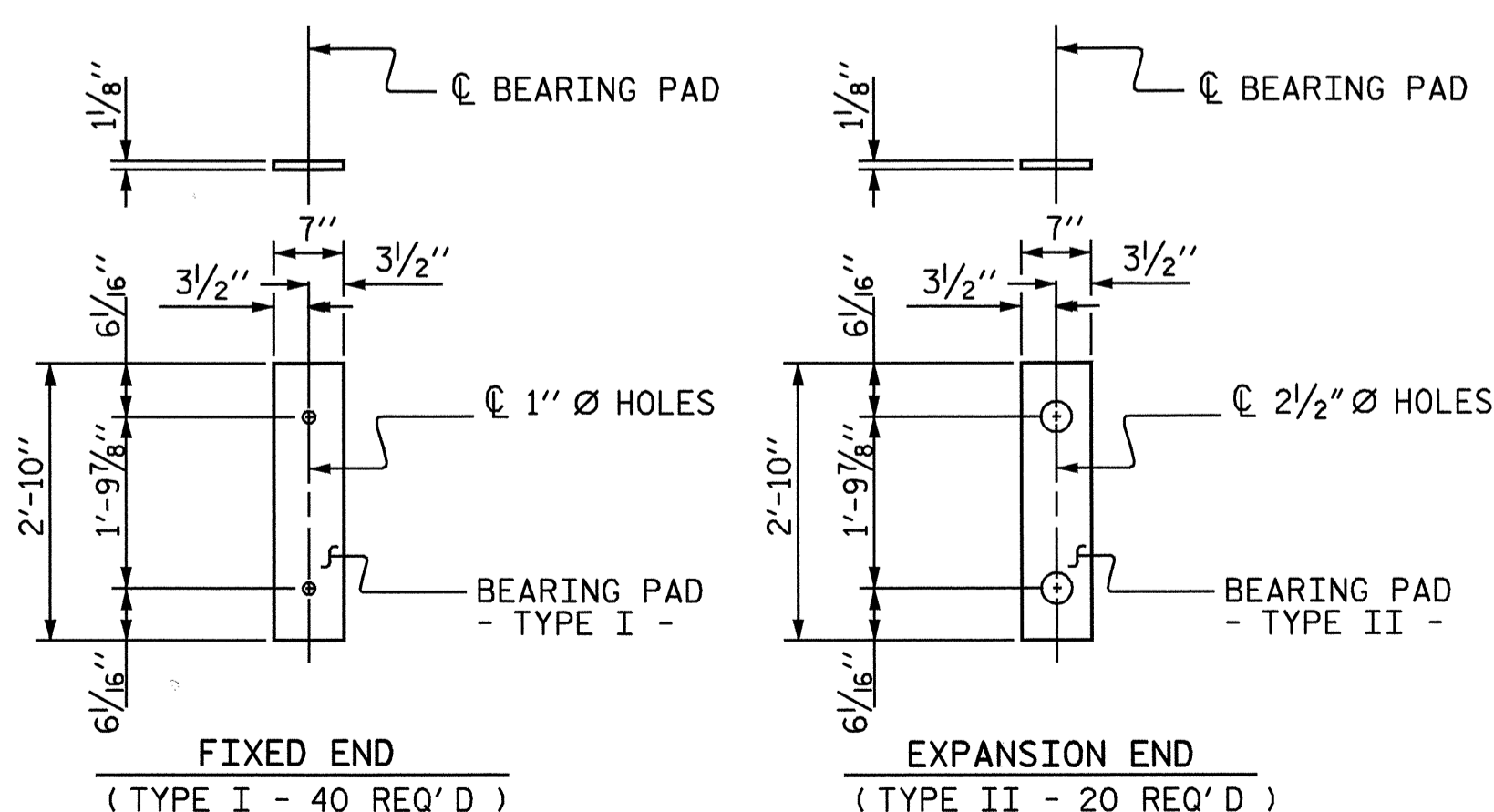
APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

FOR PRECAST CONCRETE MEMBERS, SEE SPECIAL PROVISIONS,

THE TOP SURFACE OF THE CONCRETE WEARING SURFACE SHALL HAVE A 3/8" RAKED FINISH.



### ELASTOMERIC BEARING LOCATION SKETCH



### ELASTOMERIC BEARING DETAILS

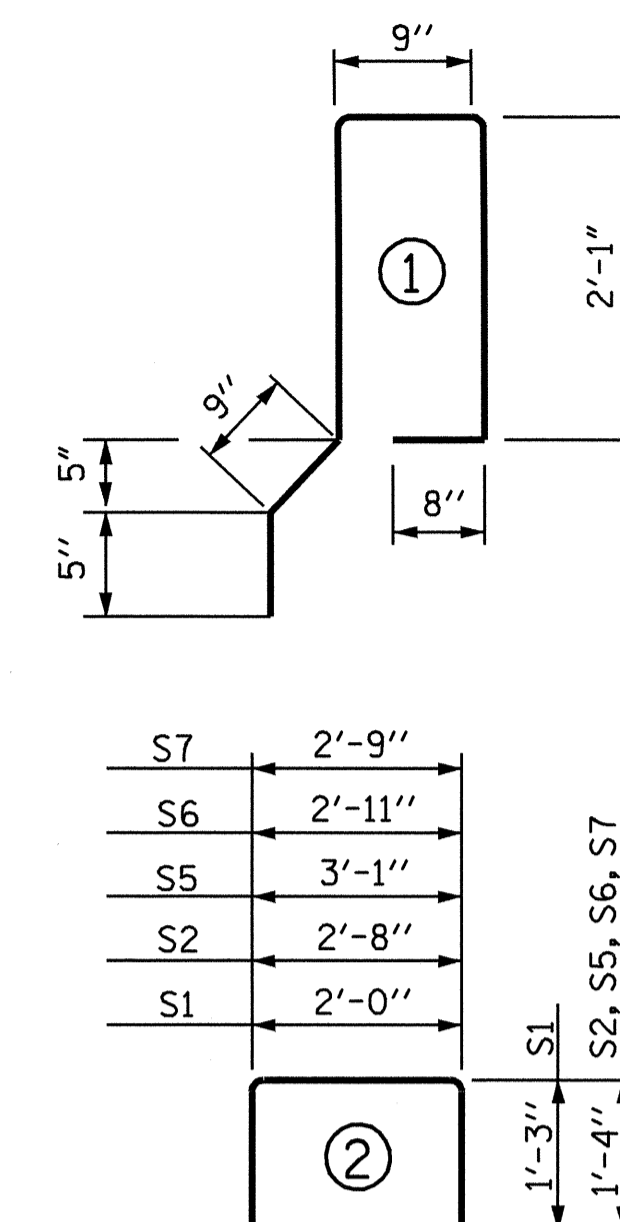
### GROOVING BRIDGE FLOORS

APPROACH SLABS	695	SQ. FT.
BRIDGE DECK	3253	SQ. FT.
TOTAL	3948	SQ. FT.

### GRADE 270 STRANDS

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

### BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

### DEAD LOAD DEFLECTION AND CAMBER

SPAN A	
CAMBER (SLAB ALONE IN PLACE)	1/16" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD ***	1/16" ↓
FINAL CAMBER	5/8" ↓
SPAN B	
CAMBER (SLAB ALONE IN PLACE)	2 5/16" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD ***	3/8" ↓
FINAL CAMBER	1 5/16" ↓
SPAN C	
CAMBER (SLAB ALONE IN PLACE)	1 3/16" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD ***	1/8" ↓
FINAL CAMBER	1 1/16" ↓

\*\*\* DOES NOT INCLUDE DEFLECTION DUE TO RAIL AND FUTURE WEARING SURFACE.

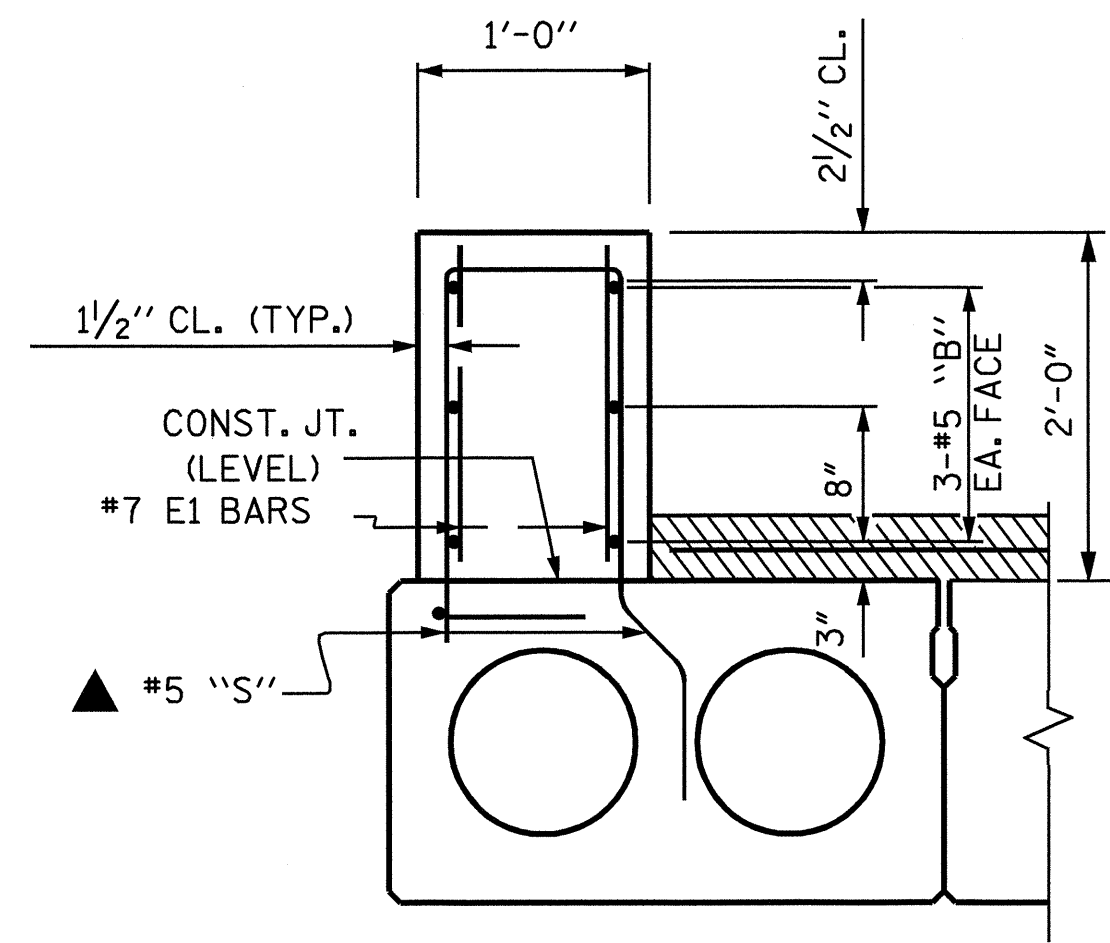
PROJECT NO. B-3624  
CALDWELL COUNTY  
 STATION: 15+71.50 -L-

SHEET 5 OF 5

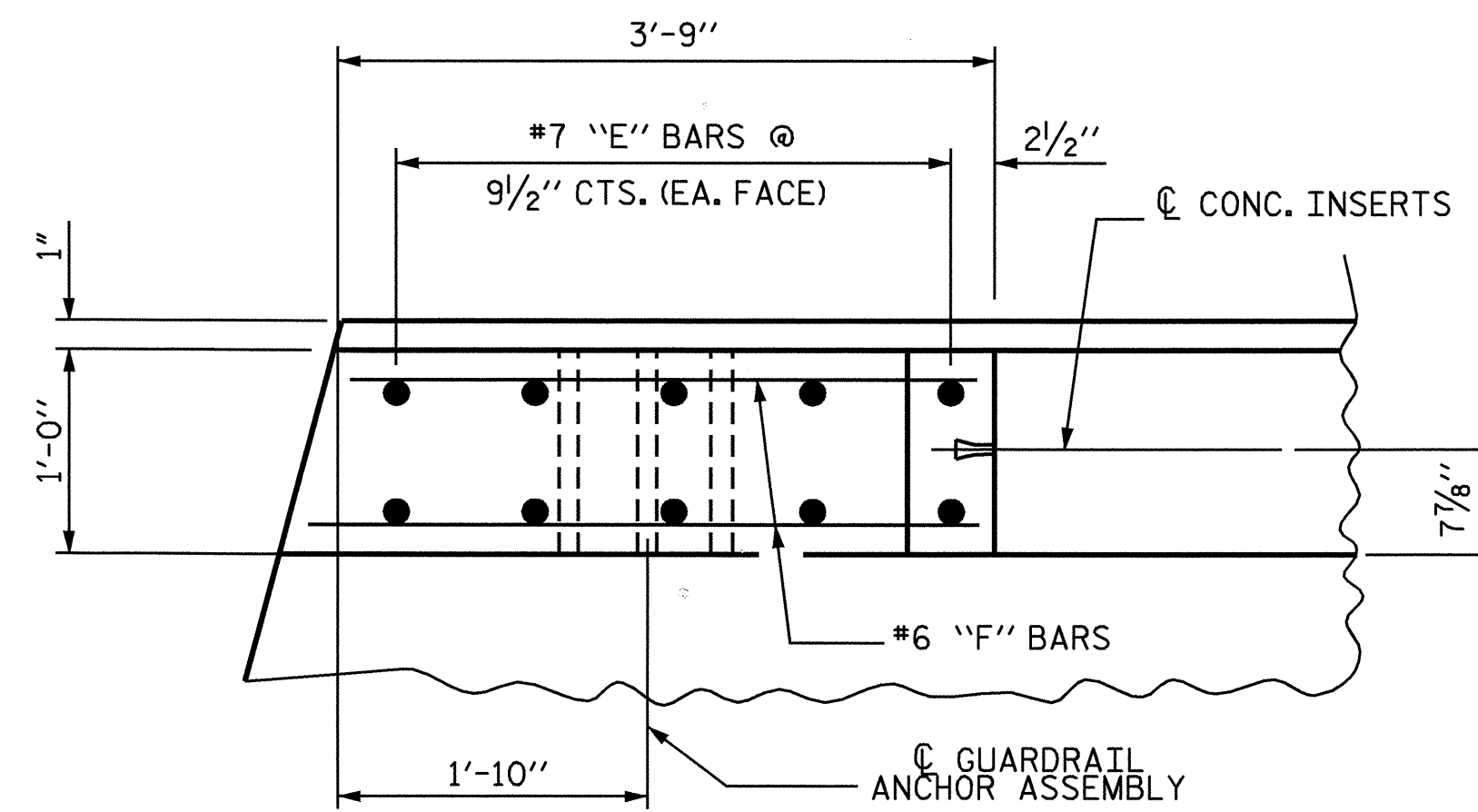


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 3'-0" X 1'-9"  
 PRESTRESSED CONCRETE  
 CORED SLAB UNIT

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

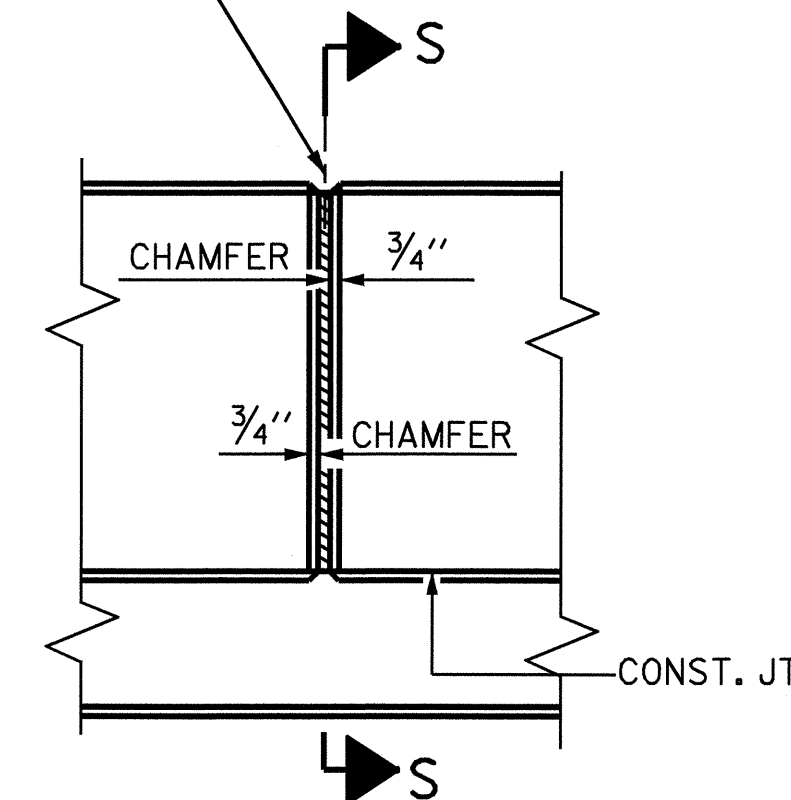


SECTION THRU PARAPET

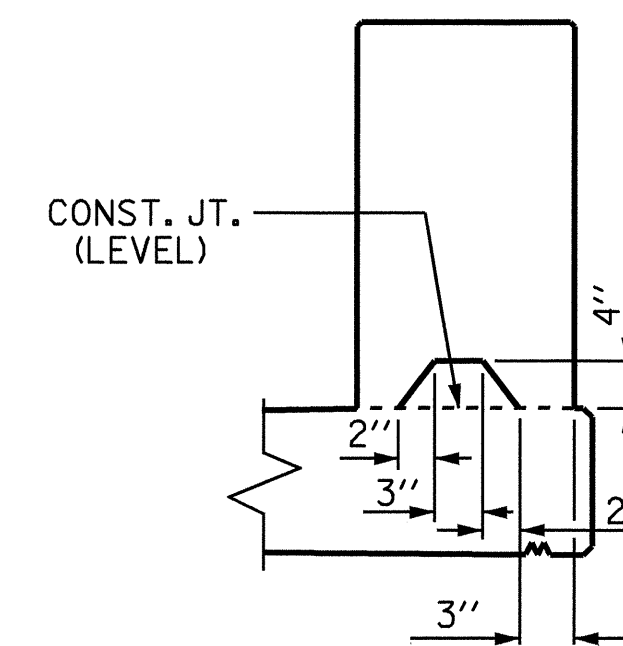


PLAN OF END POST

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

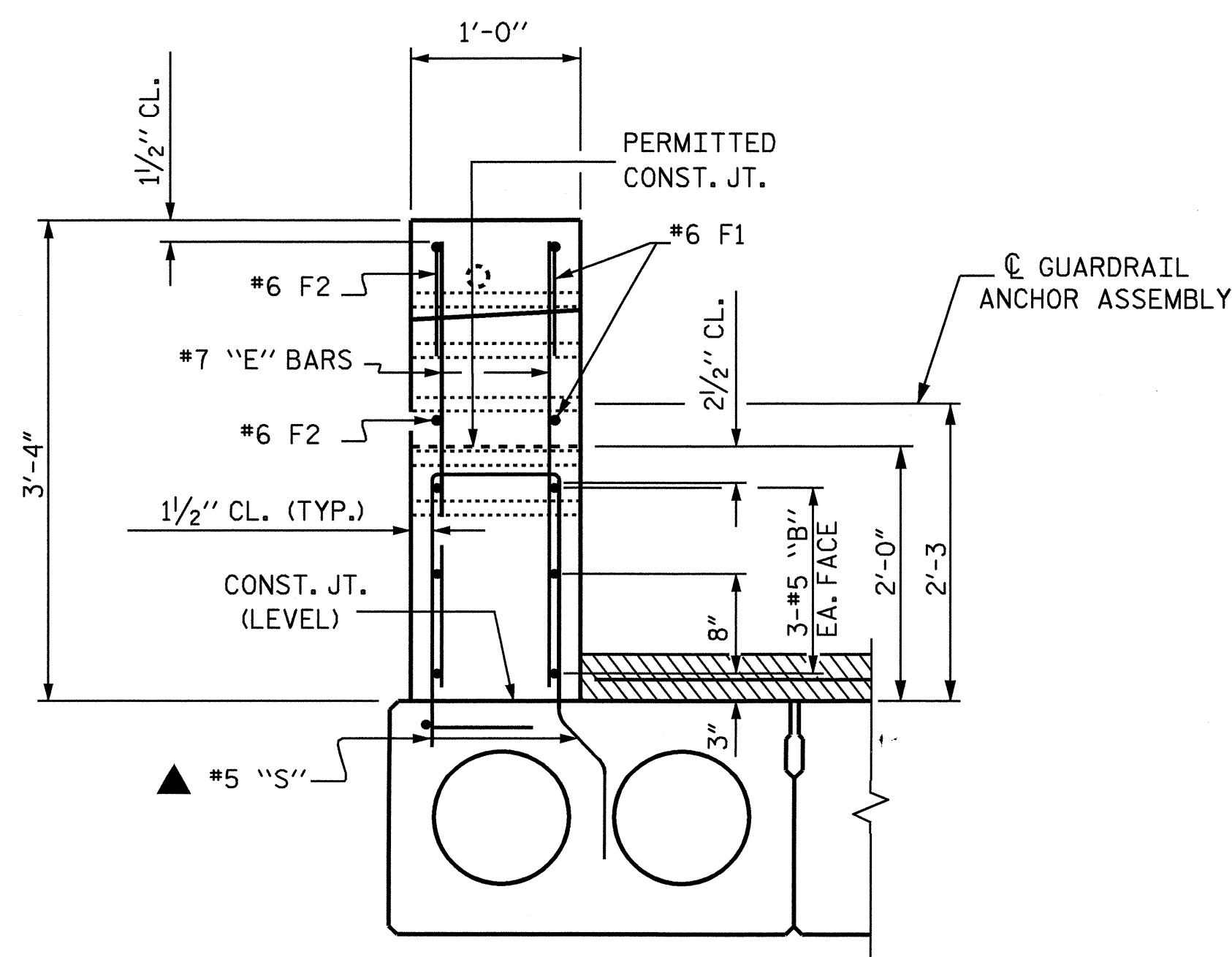


ELEVATION AT JOINTS IN PARAPET

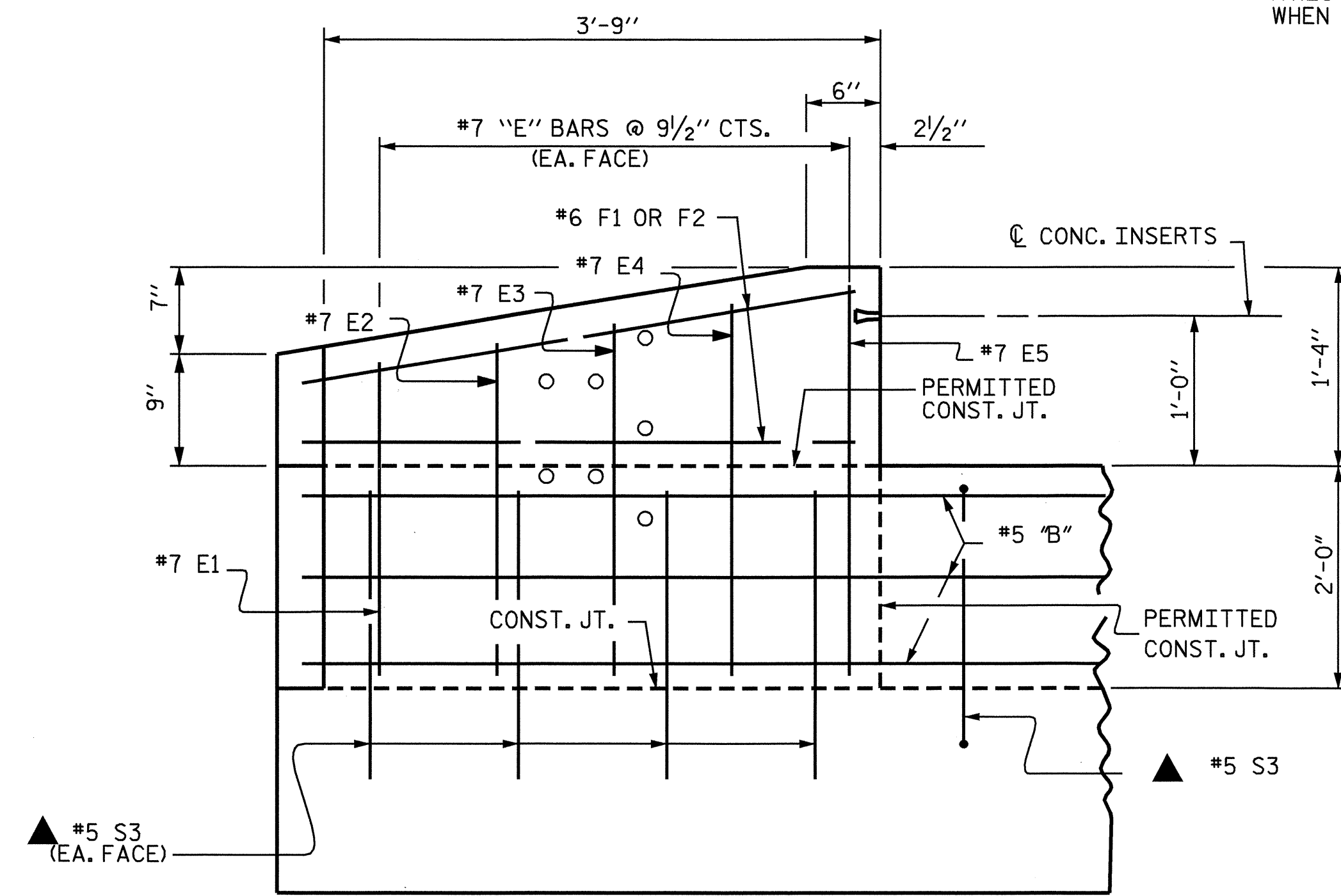


SECTION S-S

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



END VIEW



ELEVATION

FOR #5 S BAR QUANTITIES, SEE "BILL OF MATERIAL FOR ONE CORED SLAB UNIT"

BILL OF MATERIAL

CONCRETE PARAPET & END POSTS FOR TWO PARAPETS AND FOUR END POSTS

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B4	48	5	STR	11'-6"	576
* B5	72	5	STR	10'-3"	770
* B6	72	5	STR	9'-2"	688
* E1	8	7	STR	2'-4"	38
* E2	8	7	STR	2'-6"	41
* E3	8	7	STR	2'-9"	45
* E4	8	7	STR	2'-10"	46
* E5	8	7	STR	2'-11"	48
* F1	8	6	STR	2'-10"	34
* F2	8	6	STR	3'-3"	39

\* EPOXY COATED REINFORCING STEEL 2325 LBS.  
 CLASS AA CONCRETE 20.7 C.Y.  
 1'-0" X 2'-0" CONCRETE PARAPET 264.80 LIN. FEET

SPLICE LENGTH CHART

BAR SIZE	EPOXY COATED
#5 B	3'-5"

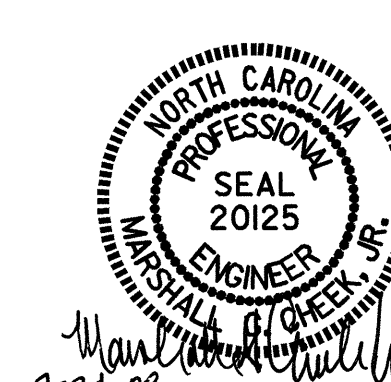
NOTES:

- 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.
- FOR DETAILS OF CONCRETE INSERT AND GUARDRAIL ANCHOR ASSEMBLY, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET.
- GROOVED CONTRACTION JOINTS 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF PARAPET IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FEET TO 10 FEET BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

PROJECT NO. B-3624  
 CALDWELL COUNTY  
 STATION: 15+71.50 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

1'-0" X 2'-0"  
 CONCRETE PARAPET  
 FOR  
 1 BAR METAL RAIL



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

DRAWN BY: M. POOLE DATE: 04-08  
 CHECKED BY: M. G. CHEEK DATE: 05-08

PARAPET AND END POST FOR ONE BAR RAIL

**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 BUTT 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**

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 SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

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

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.

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.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

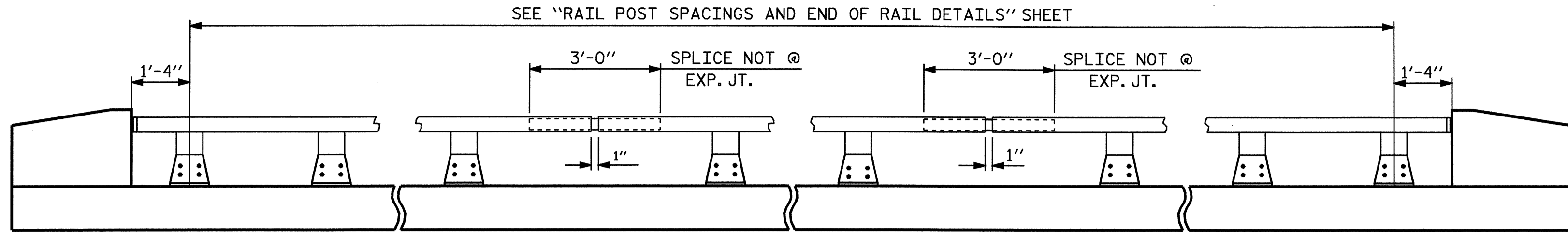
ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

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" BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

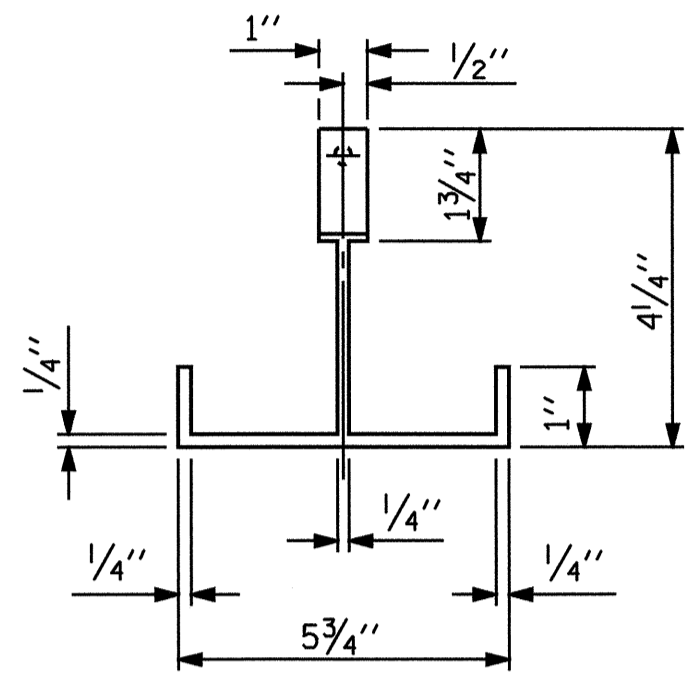
WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS, NUTS AND WASHERS SHALL MEET THE SAME REQUIREMENTS AS THE ANCHOR STUDS, NUTS AND WASHERS FOR USE WITH THE ANCHOR ASSEMBLY.

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.

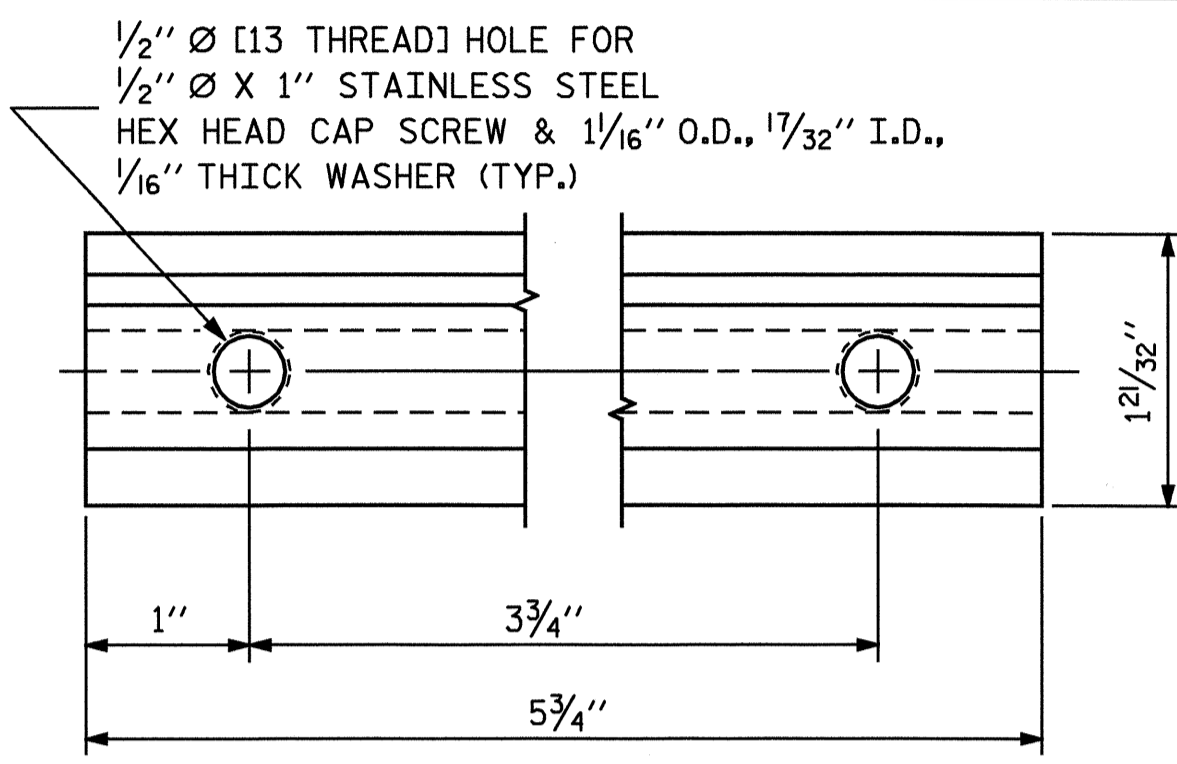


**ELEVATION**

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

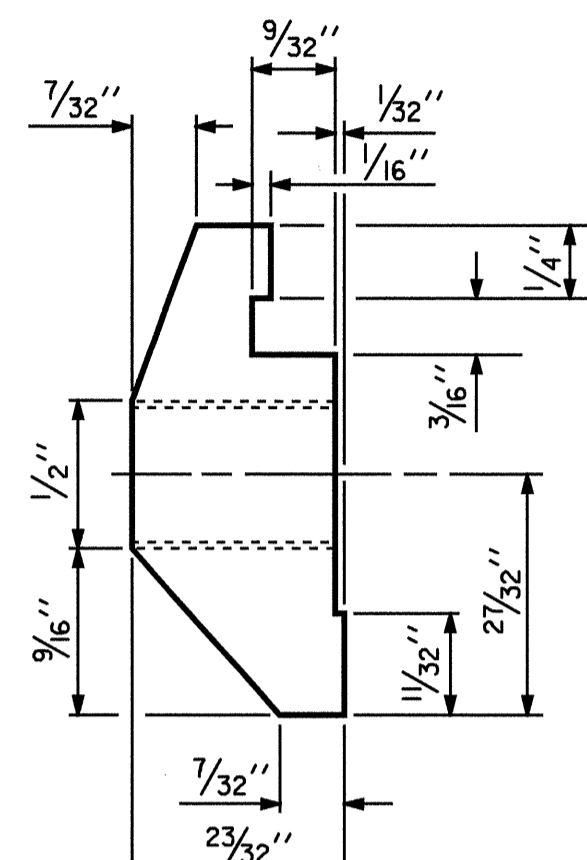


**PLAN**

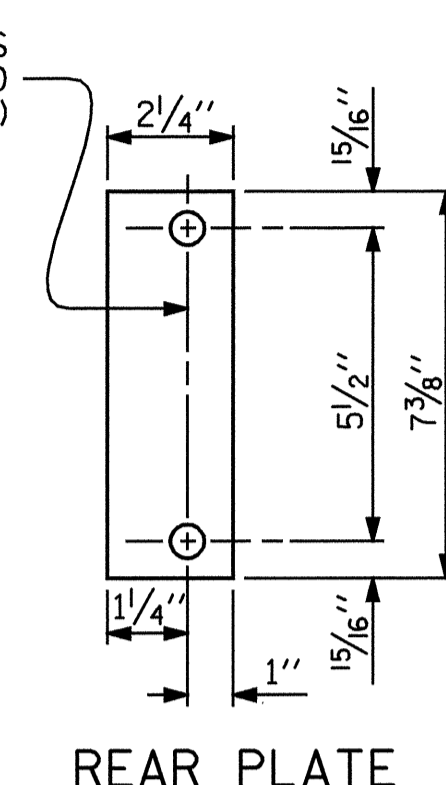


**CLAMP BAR DETAIL**

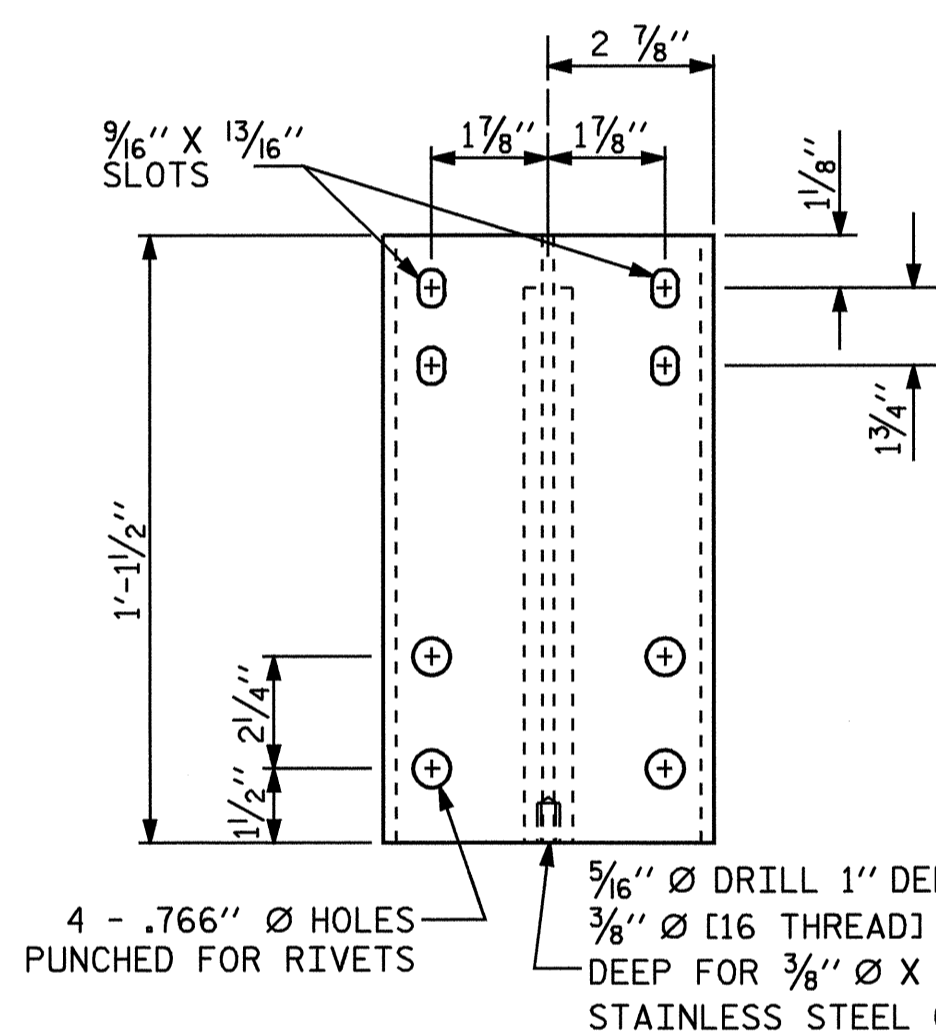
(2 REQUIRED PER POST)



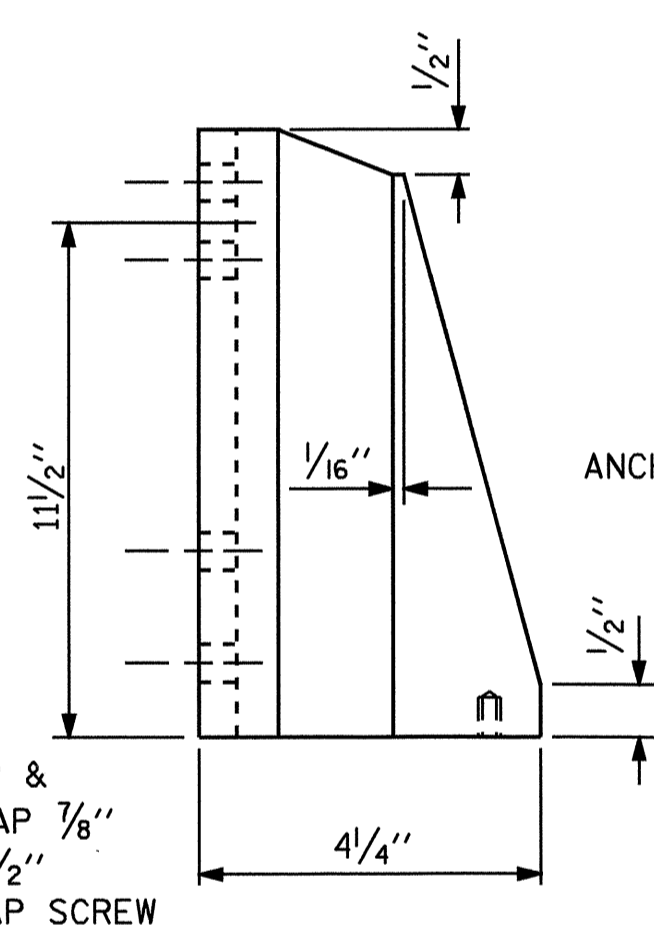
**RIVET DETAIL**



**REAR PLATE**

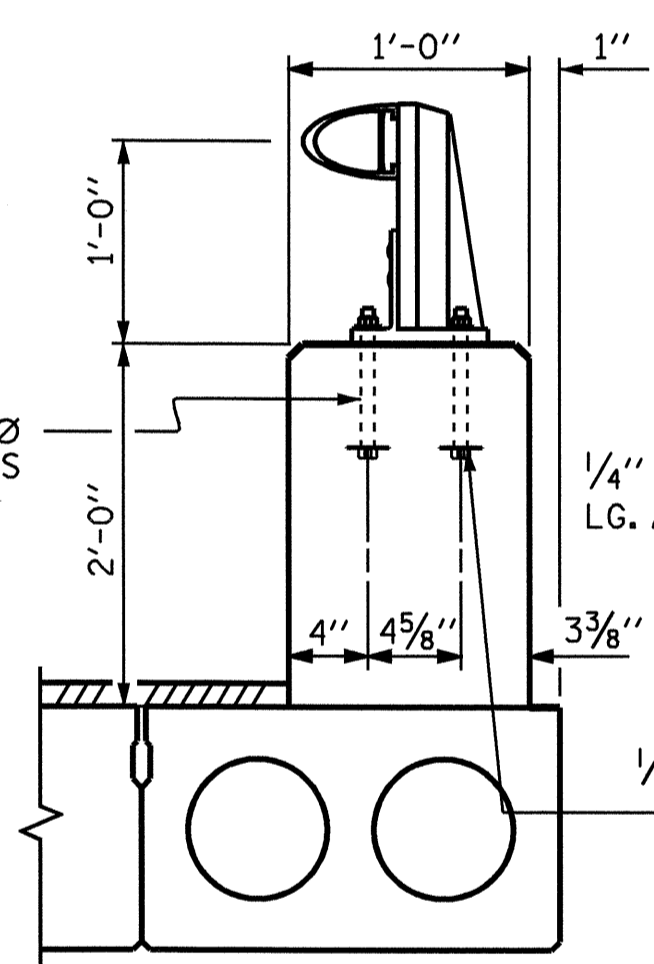


**FRONT ELEVATION**

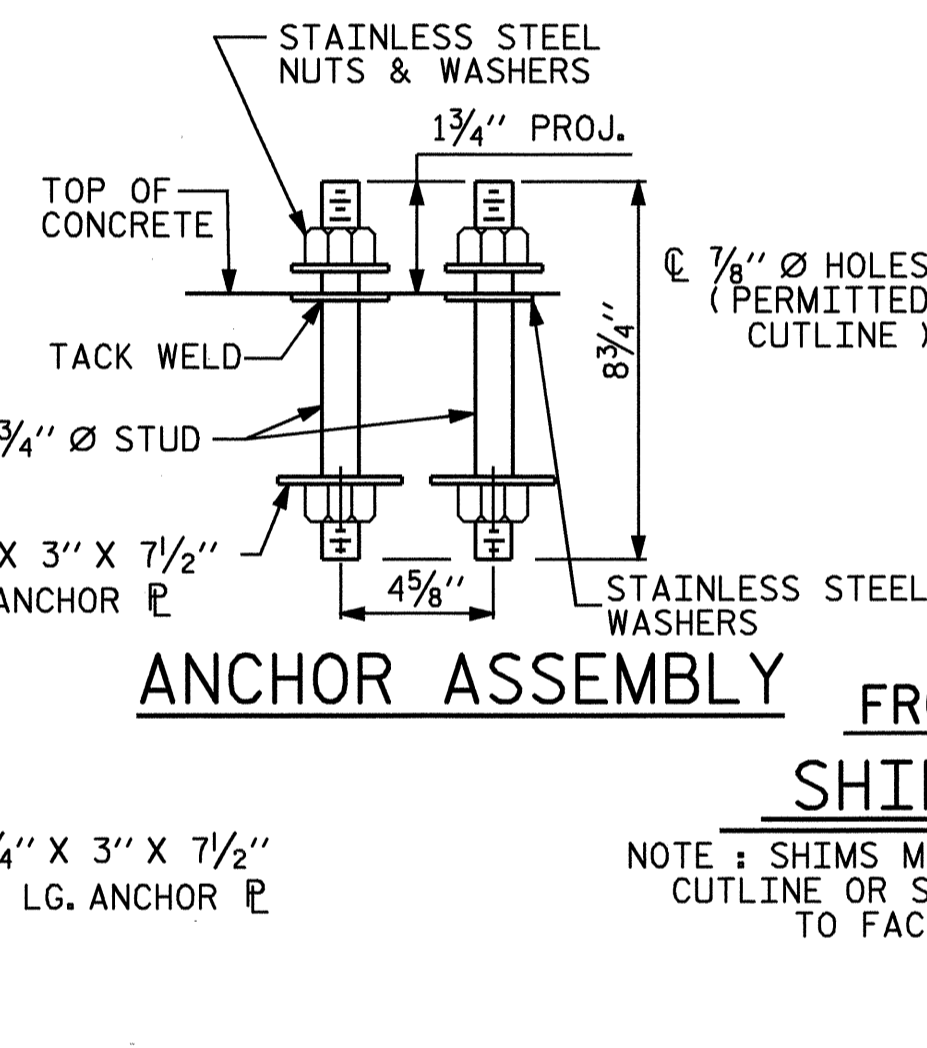


**SIDE ELEVATION**

**DETAILS OF POST**



**SECTION THRU PARAPET AND RAIL**

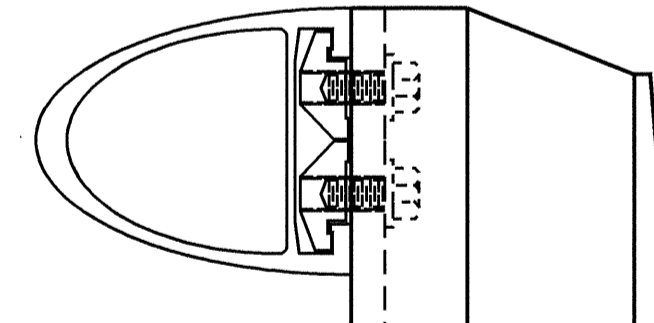


**ANCHOR ASSEMBLY**

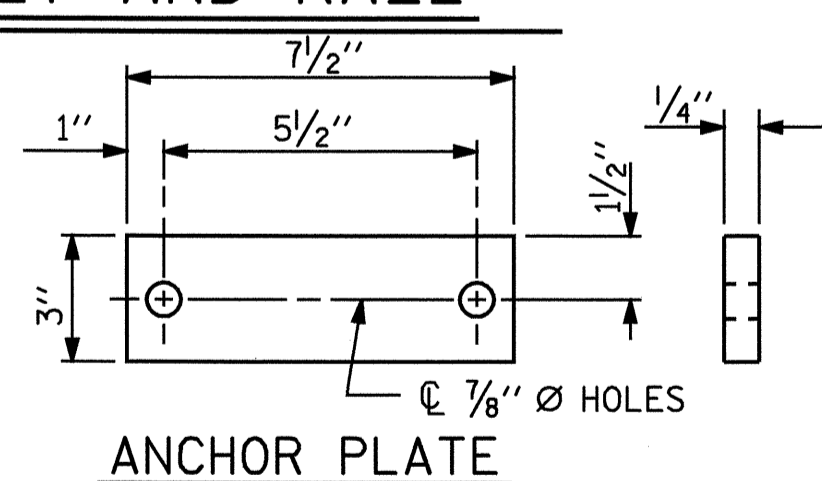
**FRONT PLATE**

**SHIM DETAILS**

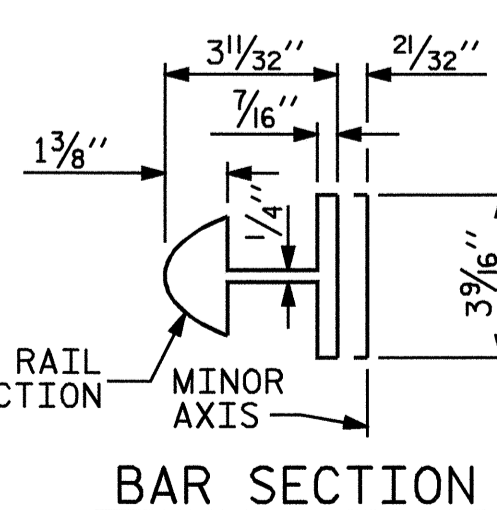
NOTE: SHIMS MAY BE CUT ALONG PERMITTED OUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



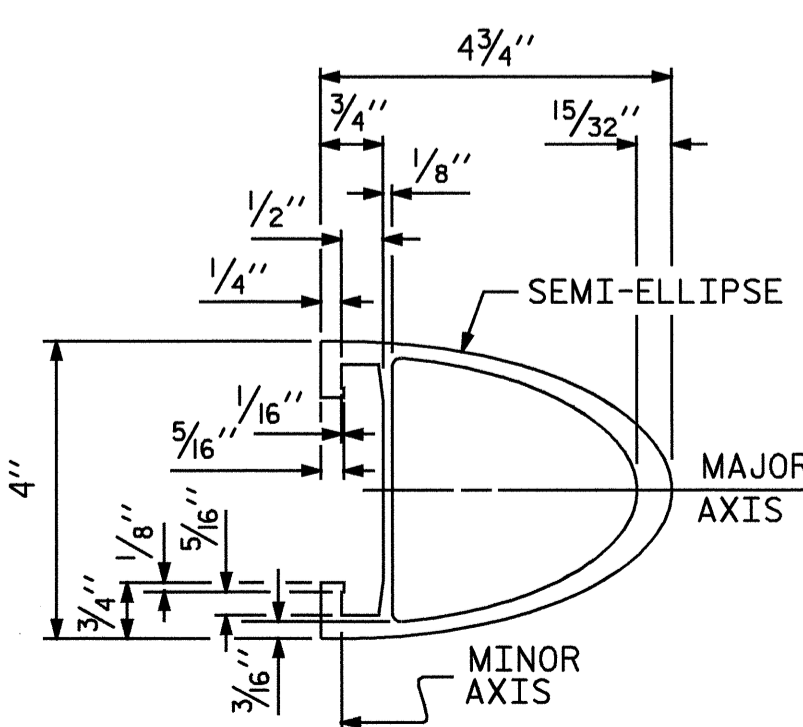
**CLAMP & RAIL ASSEMBLY**



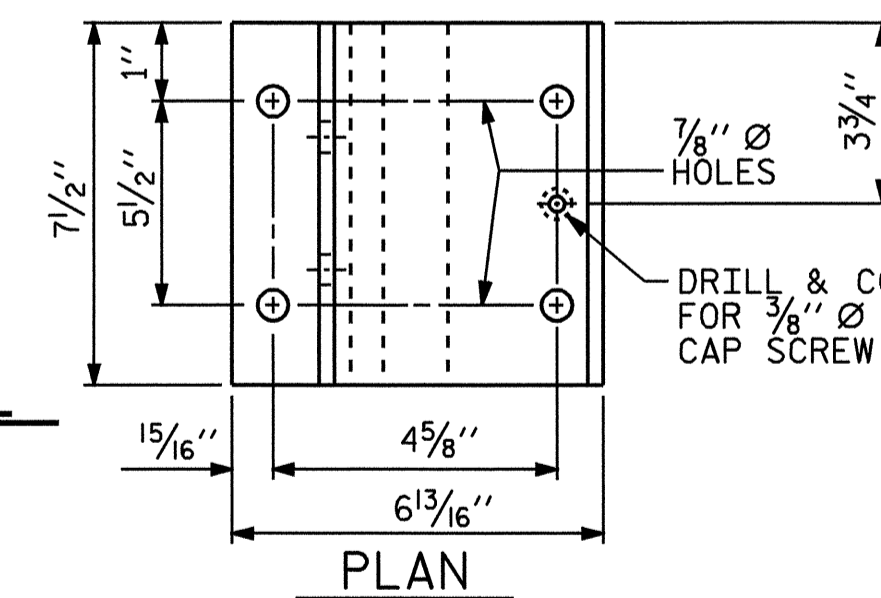
**ANCHOR PLATE**



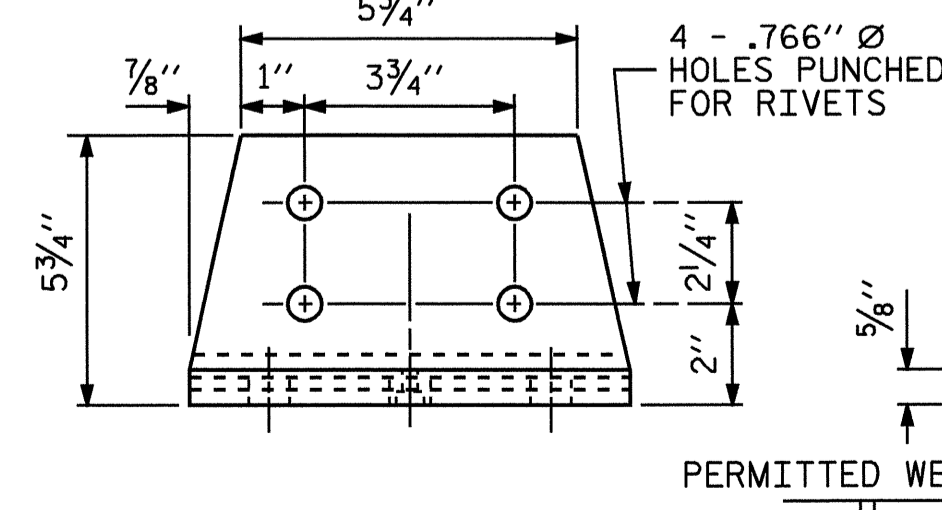
**BAR SECTION**



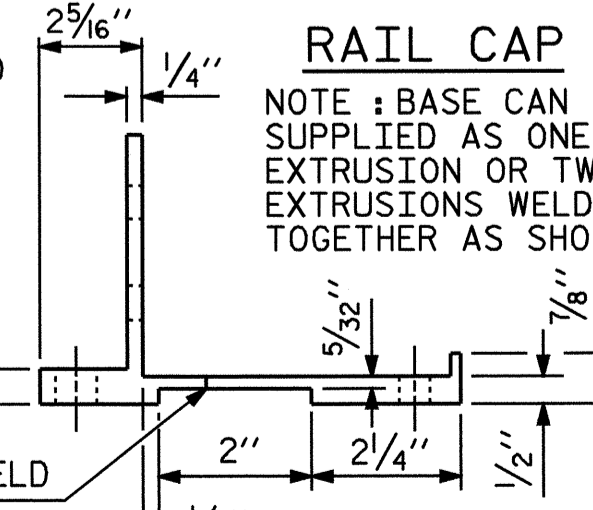
**RAIL SECTION**



**PLAN**



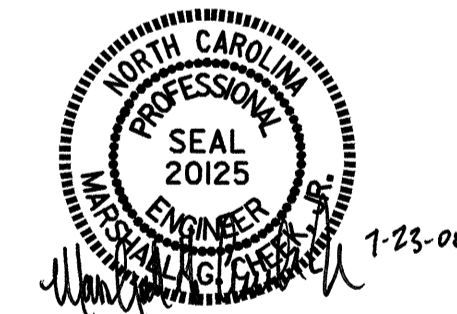
**FRONT ELEVATION**



**SIDE ELEVATION**

**POST BASE DETAILS**

PAY LENGTH = 248.65 LIN. FT.



PROJECT NO. **B-3624**  
**CALDWELL** COUNTY  
 STATION: **15+71.50 -L-**

SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
<b>1 BAR METAL RAIL</b>					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 29

ASSEMBLED BY: M. POOLE	DATE: 04-08
CHECKED BY: M. G. CHEEK	DATE: 05-08
DRAWN BY: FCJ 1/88	REV. 10/17/00 LES/RDR
CHECKED BY: CRK 3/89	REV. 5/7/03R RWW/JTE
	REV. 5/1/06R KMM/GM

**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 1/2".
- B. 1 - 3/4" Ø X 1 1/8" 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 1/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/6" 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:

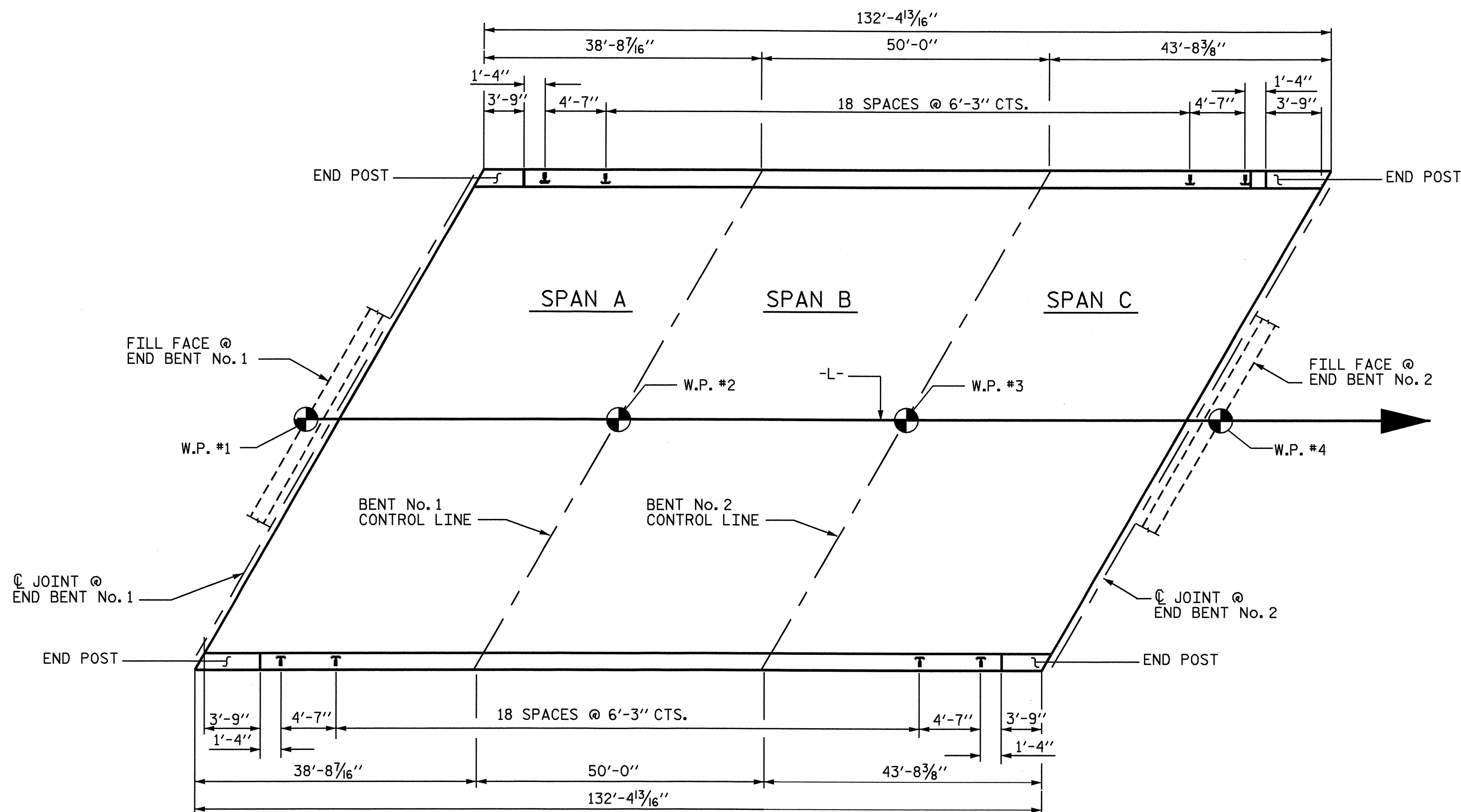
- A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 1/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 1/8" BOLT SHALL HAVE N. C. THREADS.
- C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.
- D. STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
- E. 1/2" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

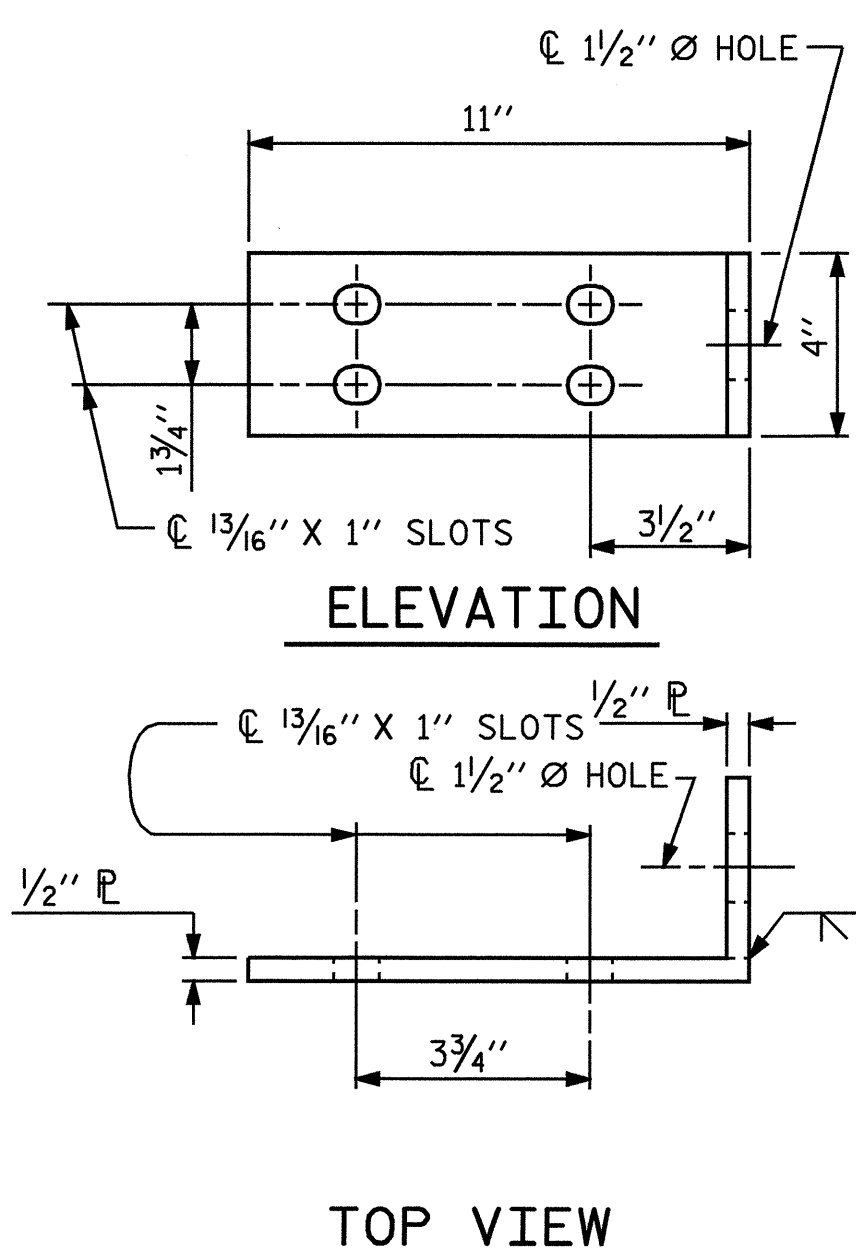
THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

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

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 1/8" 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 1/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

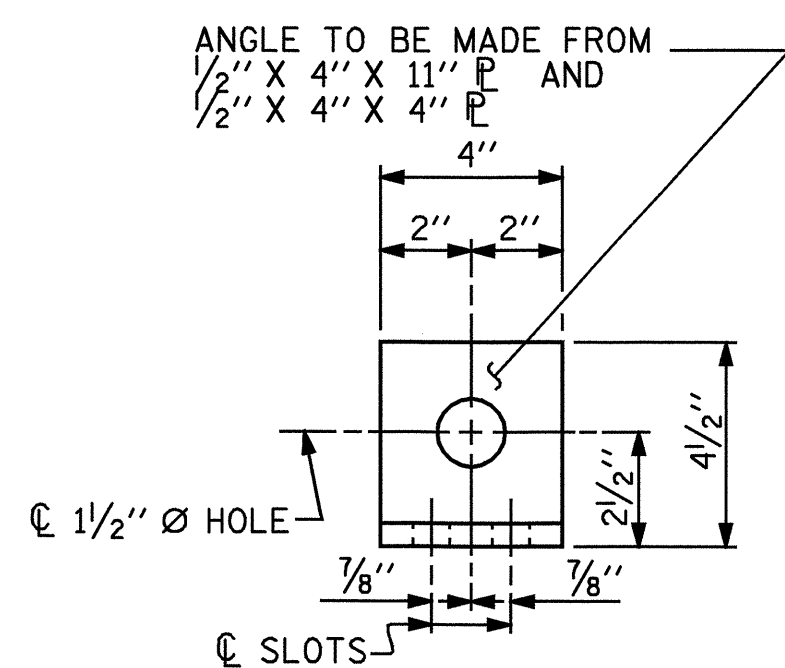


**PLAN OF RAIL POSTS SPACINGS  
(38 POST REQUIRED)**

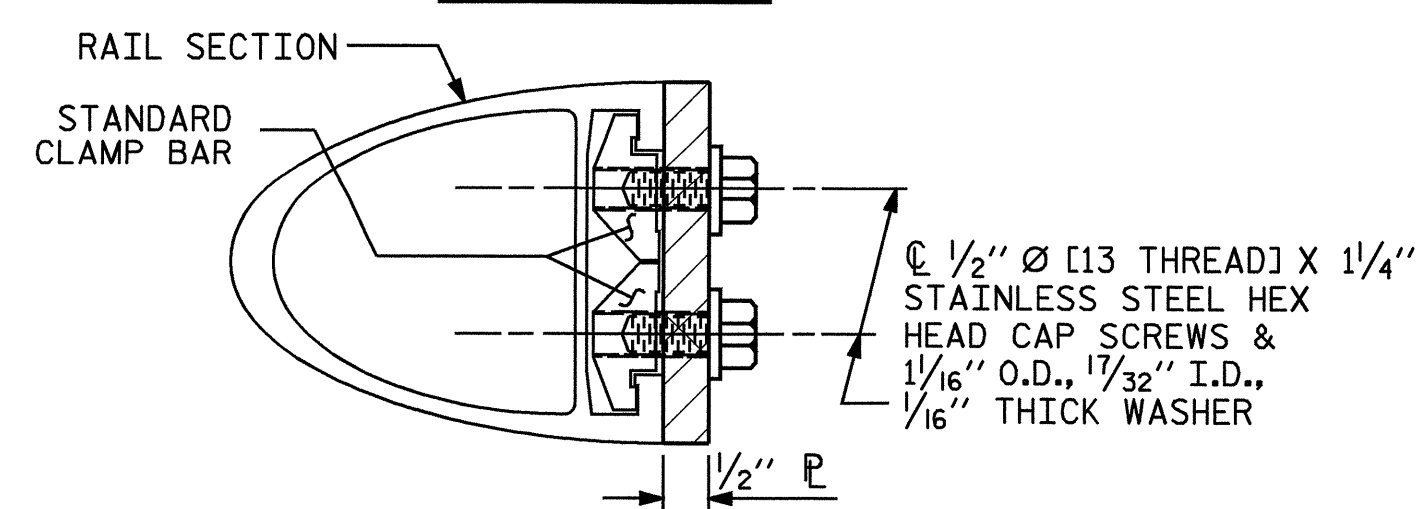


**ELEVATION**

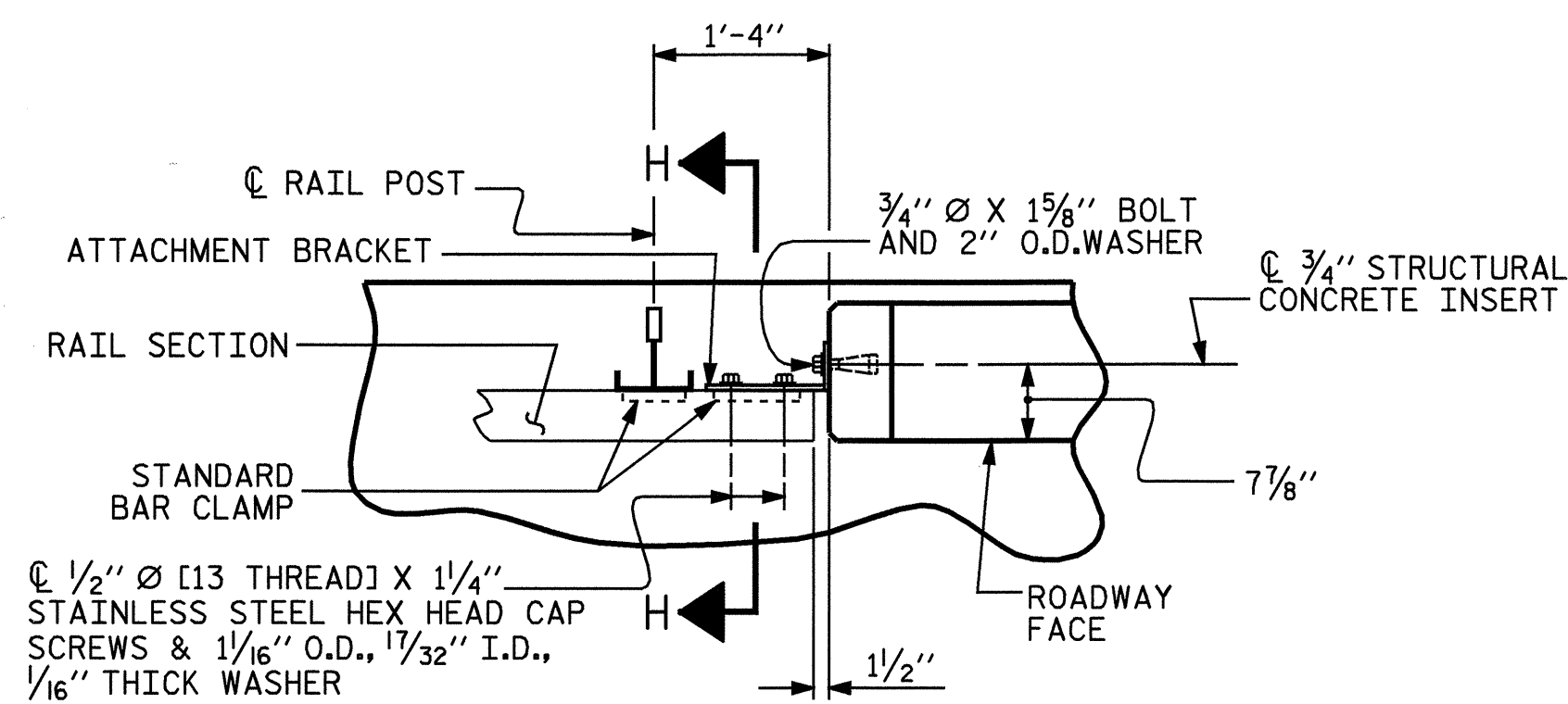
**TOP VIEW**



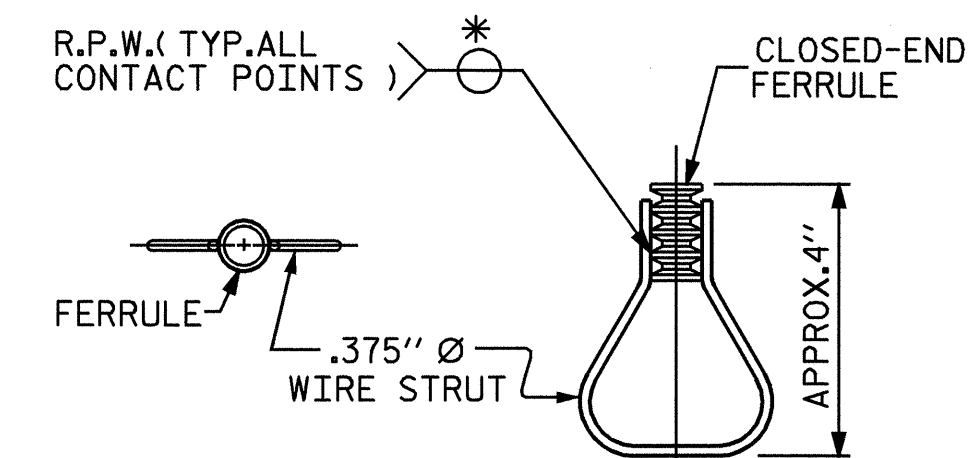
**END VIEW**



**SECTION H-H**



**PLAN - RAIL AND END POST**



**PLAN ELEVATION**

**STRUCTURAL CONCRETE INSERT**

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

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

ASSEMBLED BY : M. POOLE	DATE : 04-08
CHECKED BY : M. G. CHEEK	DATE : 05-08
DRAWN BY : FCJ 1/88	REV. 10/17/00 LES/RDR
CHECKED BY : CRK 3/89	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM



PROJECT NO. B-3624  
 CALDWELL COUNTY  
 STATION: 15+71.50 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD RAIL POST SPACINGS AND END OF RAIL DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-13					TOTAL SHEETS 29

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.

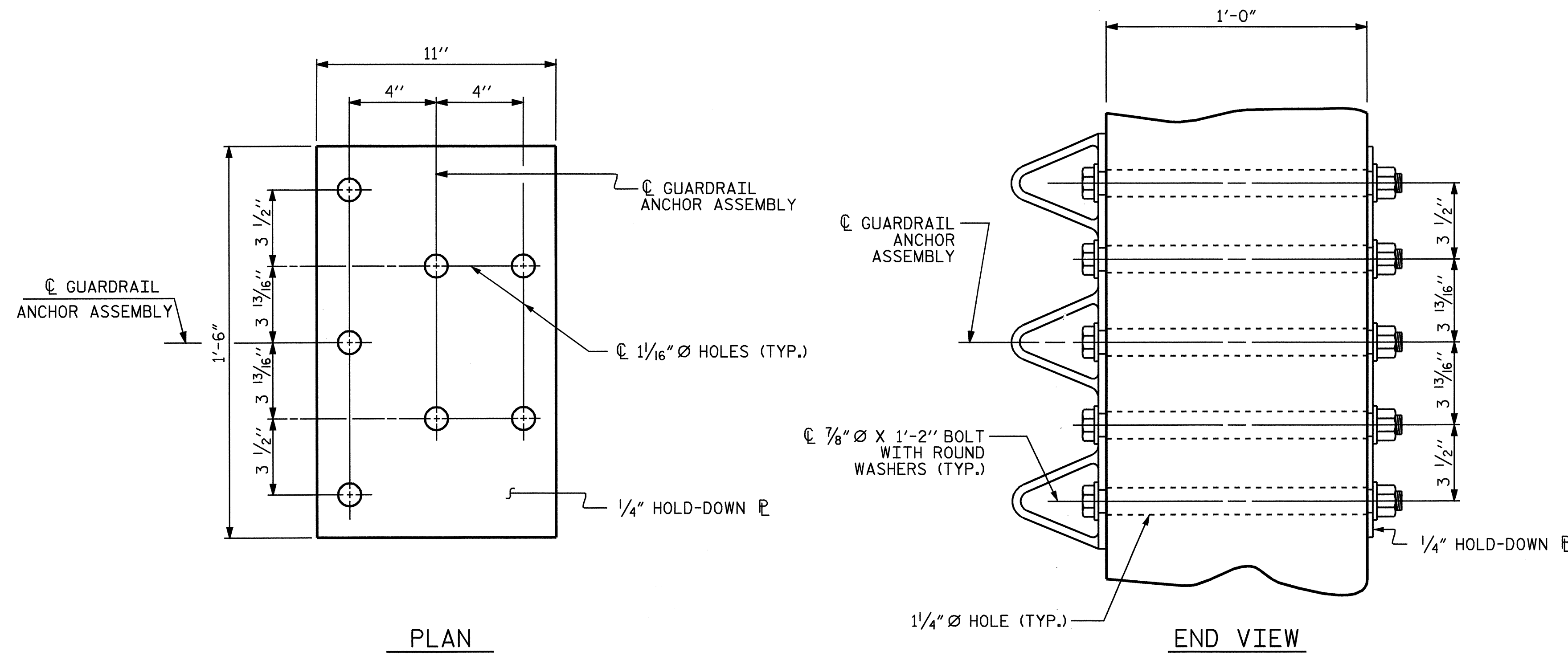
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS.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

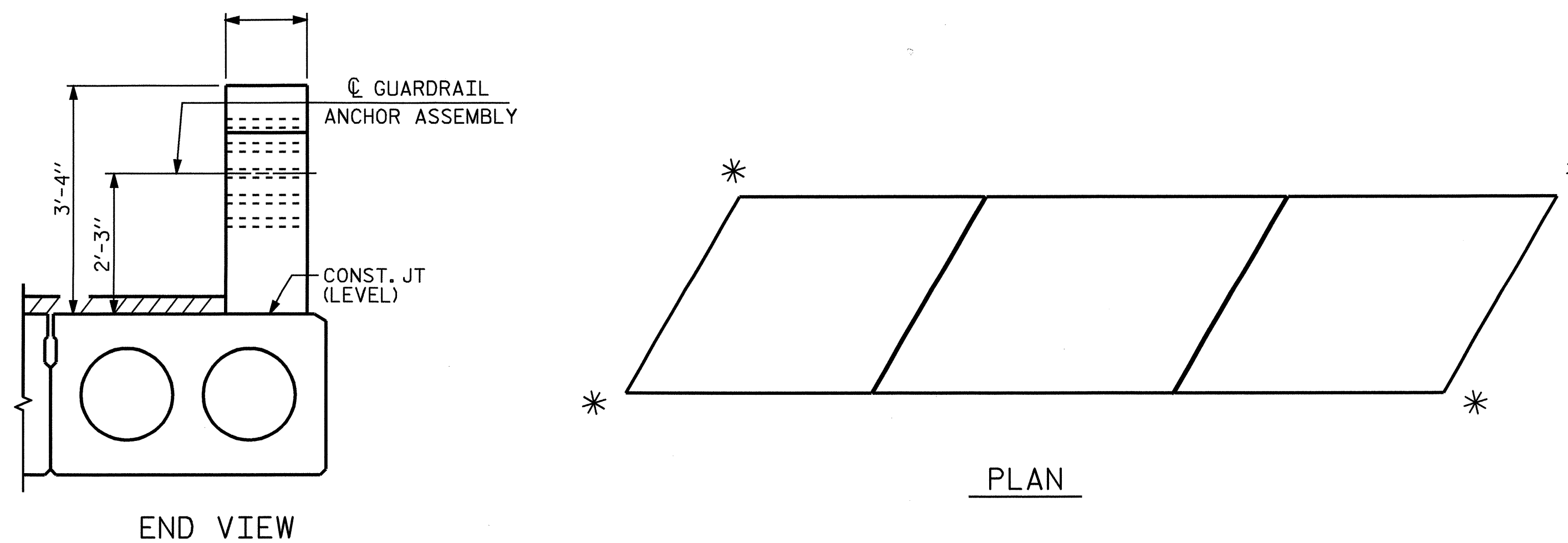
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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

THE 1 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



LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. B-3624  
CALDWELL COUNTY  
 STATION: 15+71.50 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-14
					TOTAL SHEETS 29



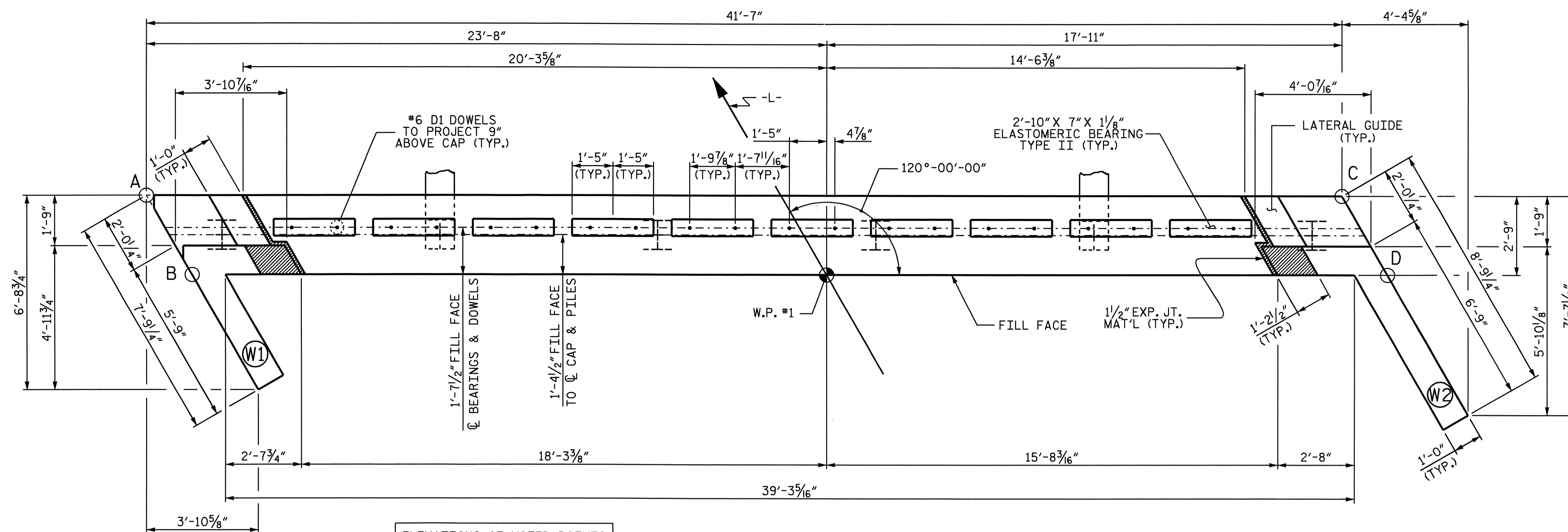
ASSEMBLED BY : M. POOLE	DATE : 04-08
CHECKED BY : M. G. CHEEK	DATE : 05-08
DRAWN BY : EEM 6/94	REV. 10/17/00 RWW/LES
CHECKED BY : RGW 6/94	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

**NOTES**

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

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

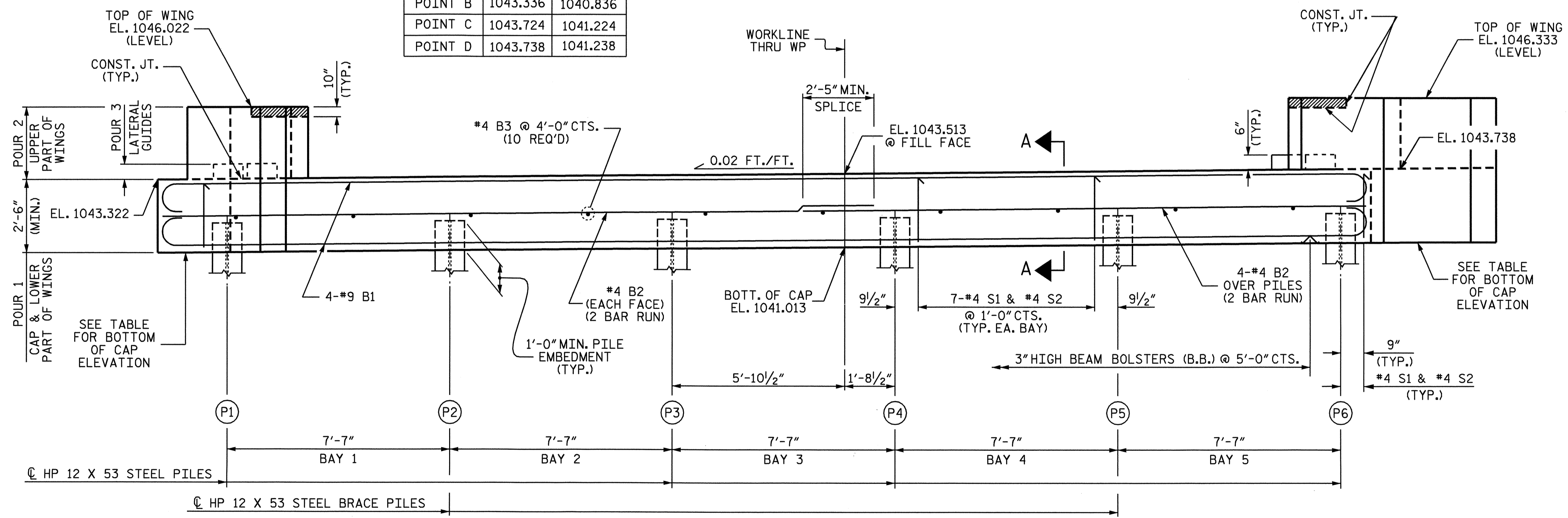
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER CORED SLAB UNITS ARE IN PLACE.



**ELEVATIONS OF NOTED POINTS**

	TOP OF CAP	BOTTOM OF CAP
POINT A	1043.322	1040.822
POINT B	1043.336	1040.836
POINT C	1043.724	1041.224
POINT D	1043.738	1041.238

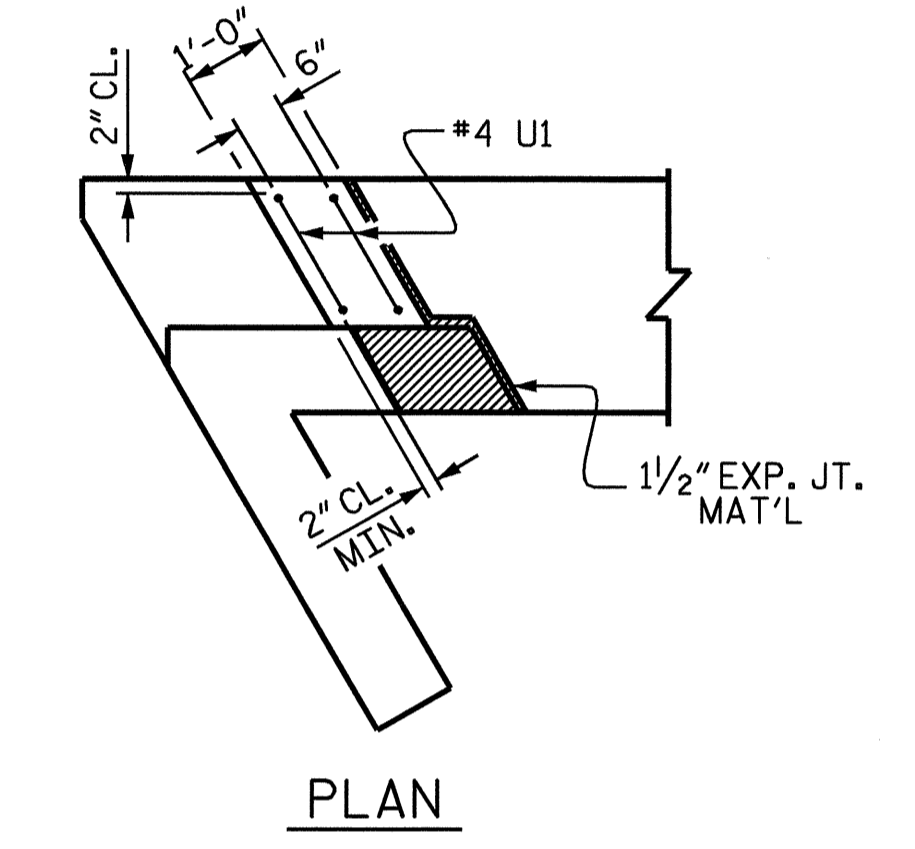
**PLAN**



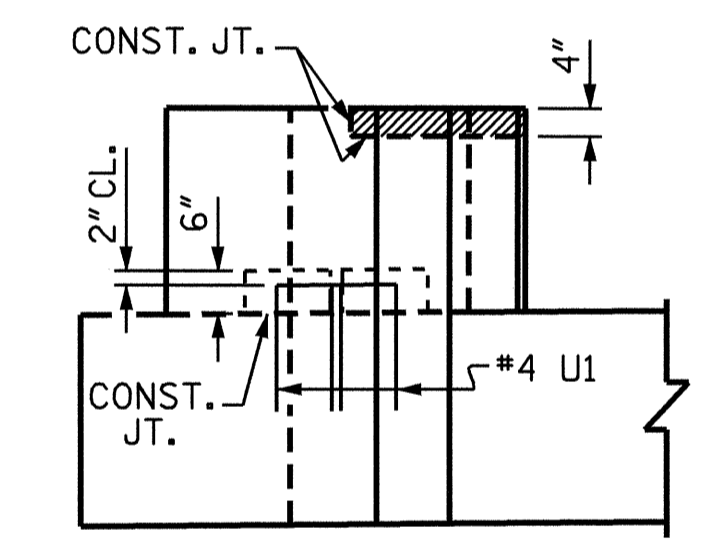
**TOP OF PILE ELEVATIONS**

PILE NO.	ELEVATIONS
P1	1041.838
P2	1041.911
P3	1041.985
P4	1042.058
P5	1042.132
P6	1042.205

**ELEVATION**



**PLAN**



**ELEVATION**

**LATERAL GUIDE**  
(EACH END SIMILAR)

PROJECT NO. B-3624  
CALDWELL COUNTY  
 STATION: 15+71.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE  
 END BENT NO. 1**



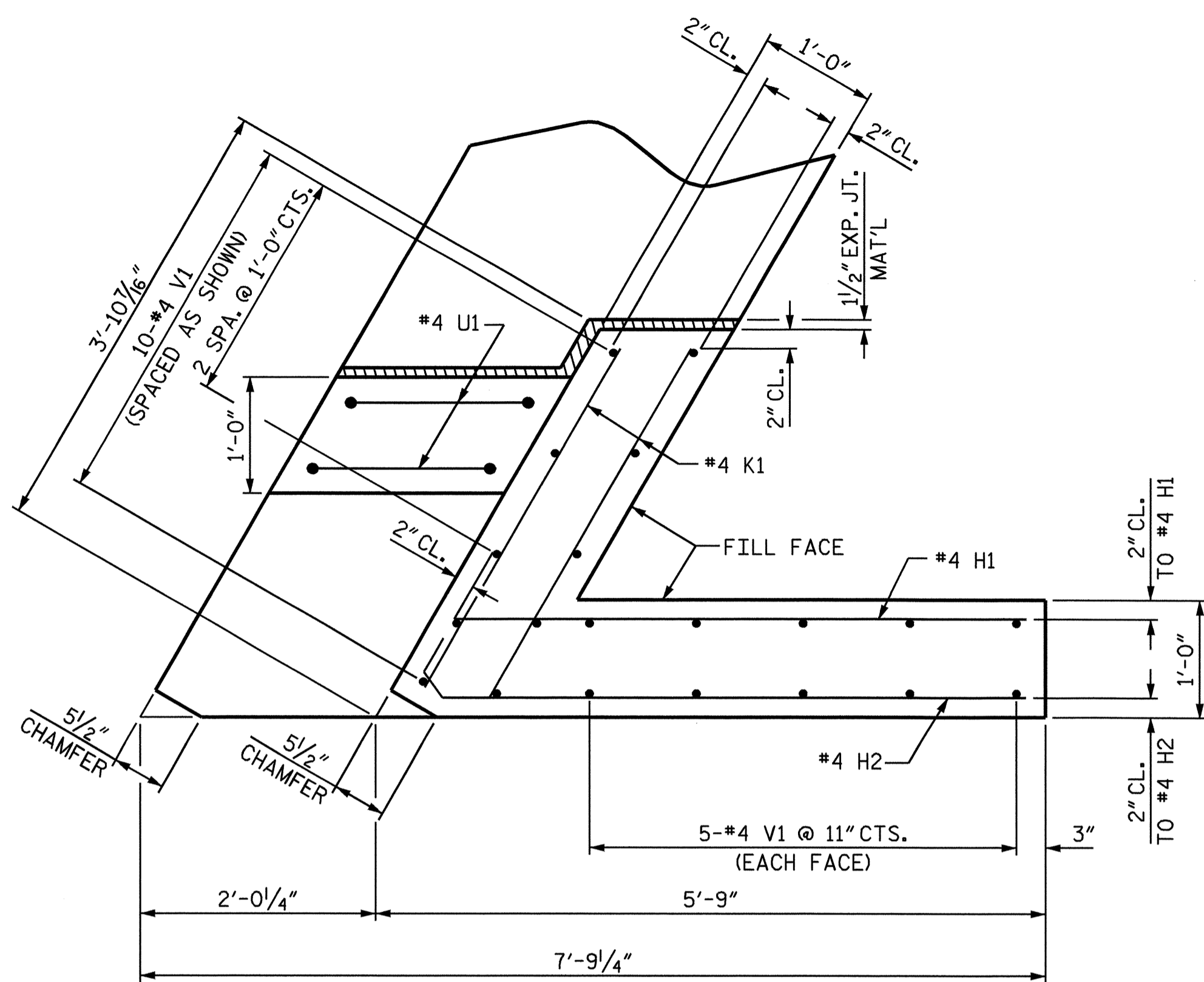
**REVISIONS**

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

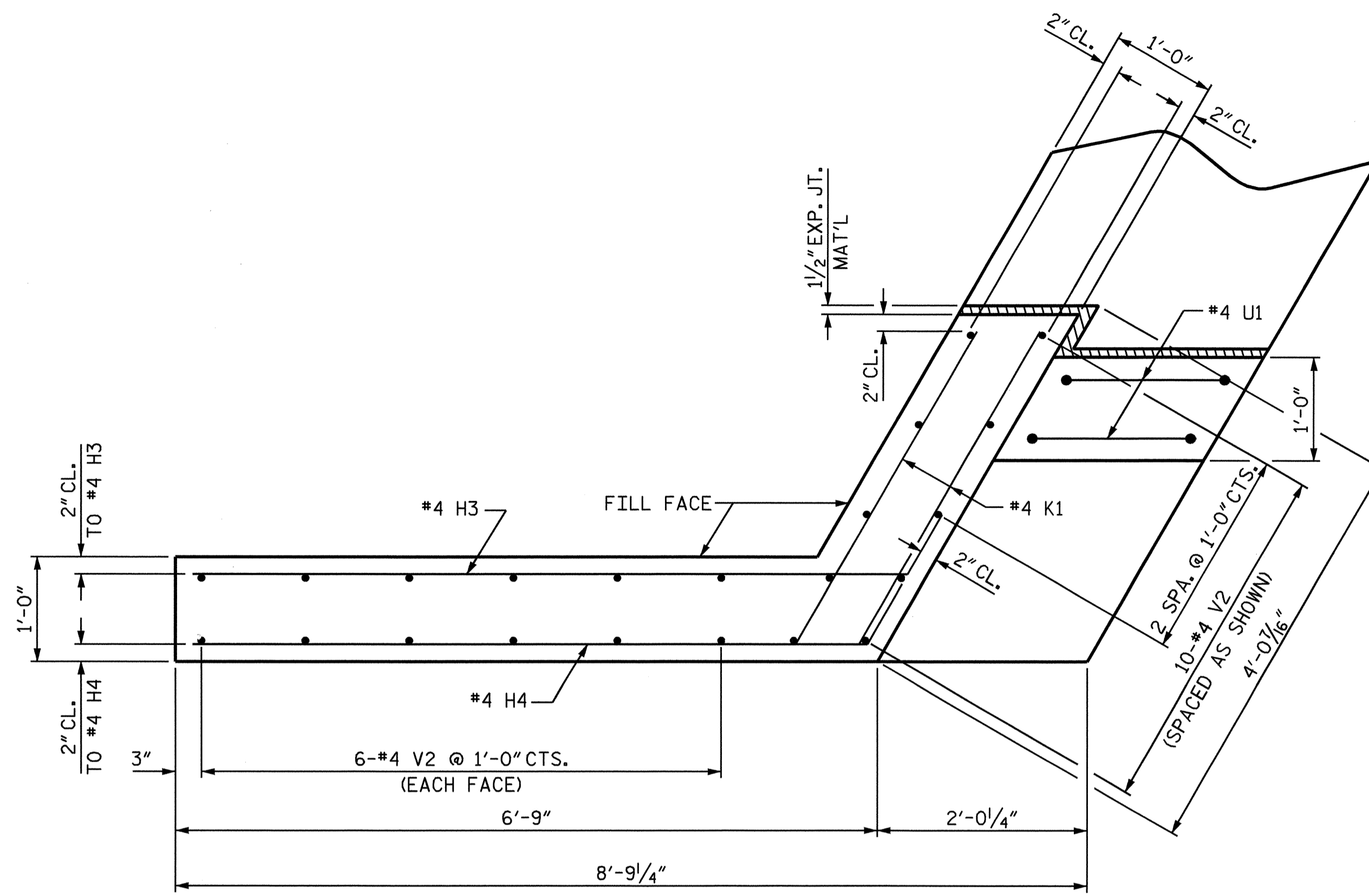
SHEET NO.  
 S-15  
 TOTAL SHEETS  
 29

DRAWN BY: A. SORSENGINH DATE: 4/25/08  
 CHECKED BY: M.L. BROWN DATE: 5-08

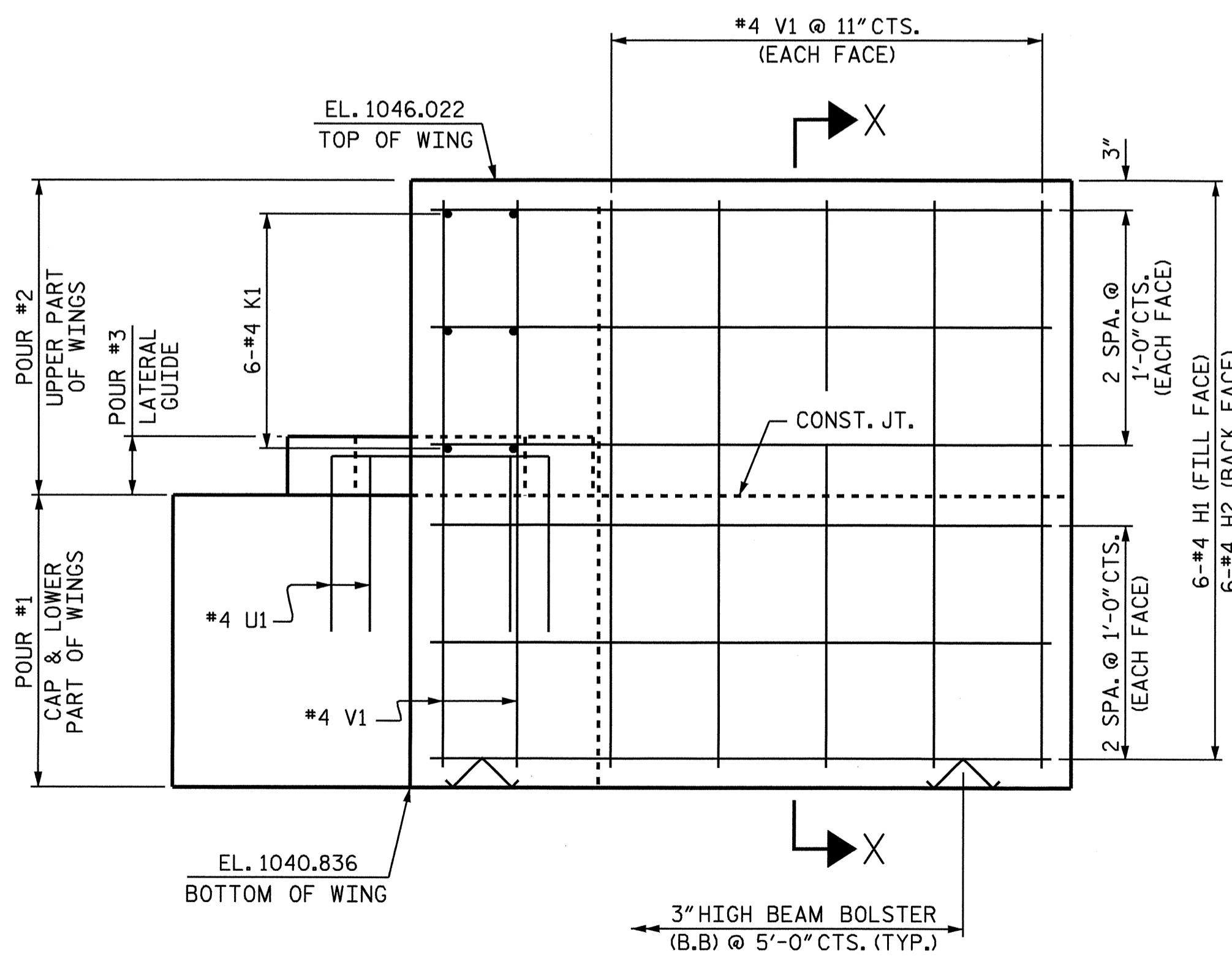




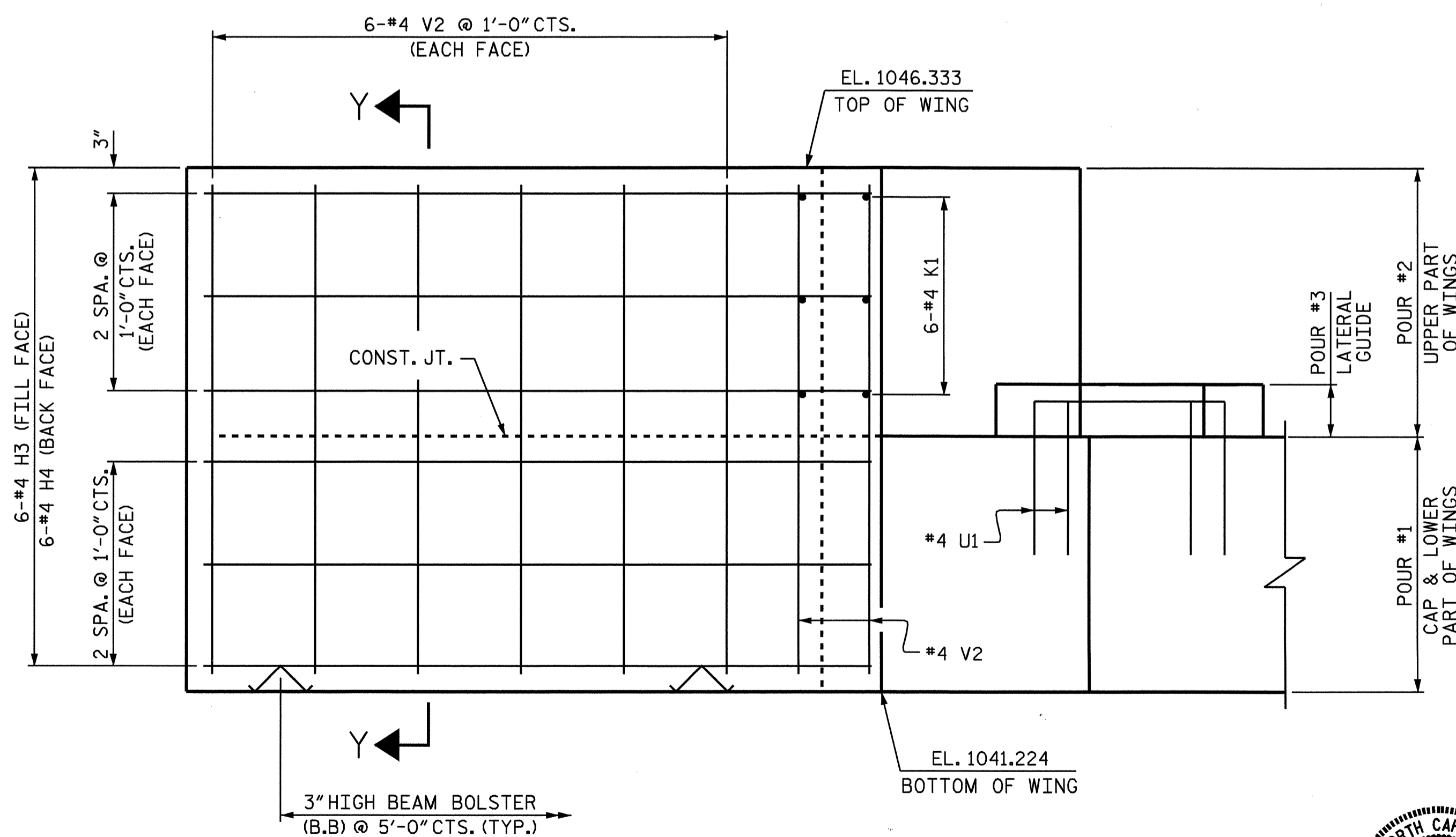
PLAN OF LEFT WING (W1)



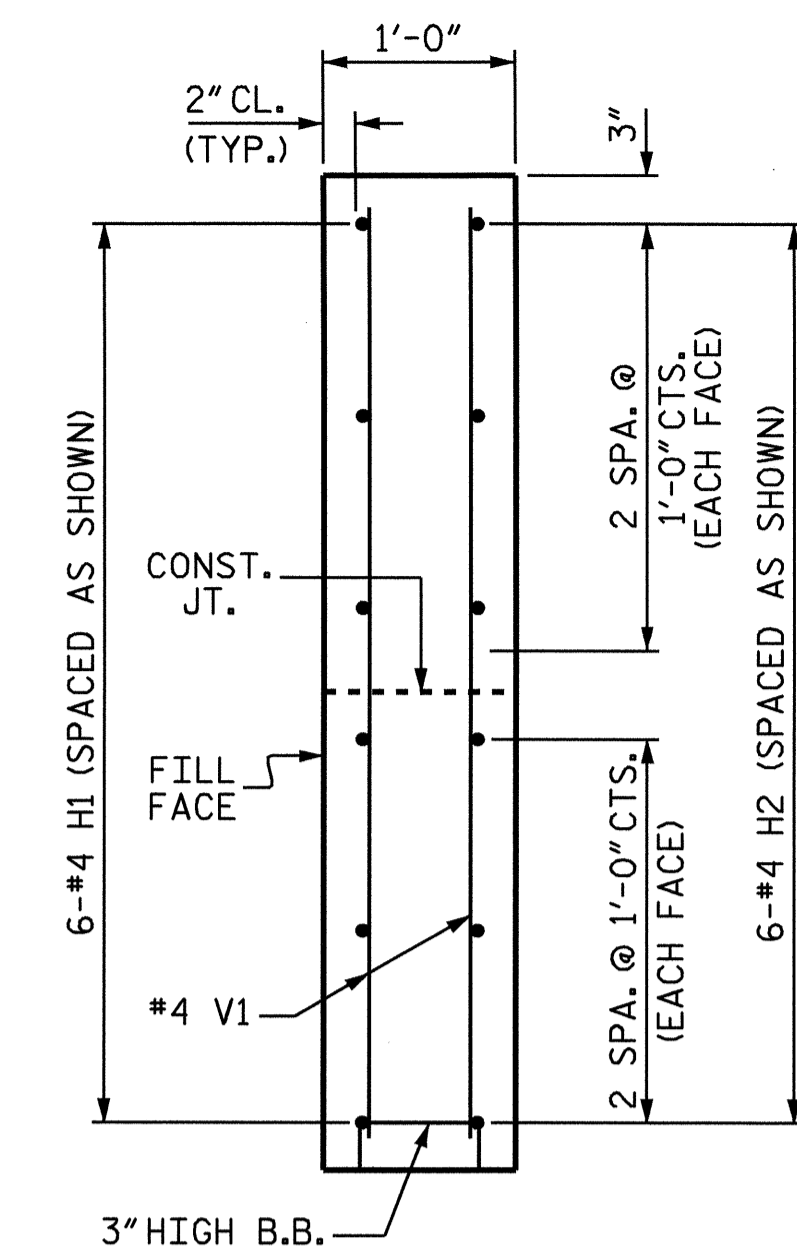
PLAN OF RIGHT WING (W2)



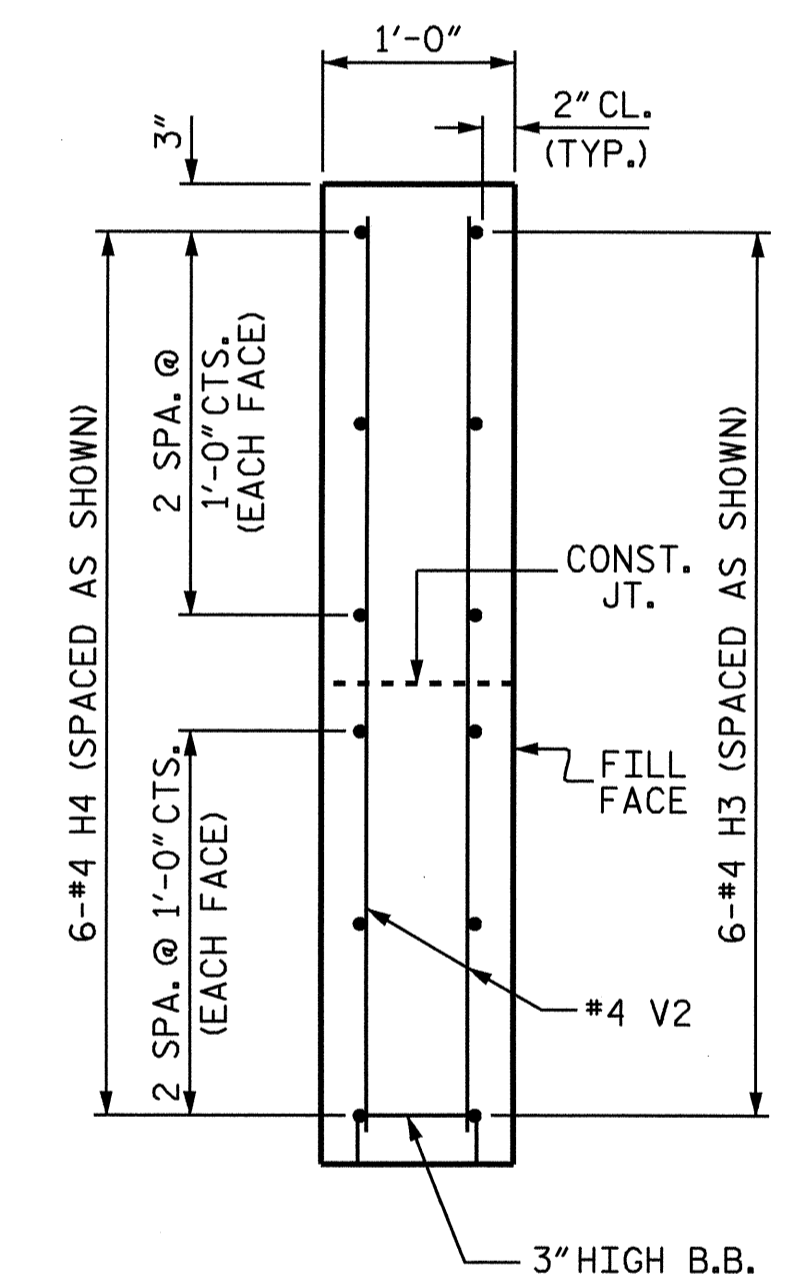
ELEVATION OF LEFT WING (W1)



ELEVATION OF RIGHT WING (W2)



SECTION X-X



SECTION Y-Y

PROJECT NO. B-3624  
 CALDWELL COUNTY  
 STATION: 15+71.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT NO. 1



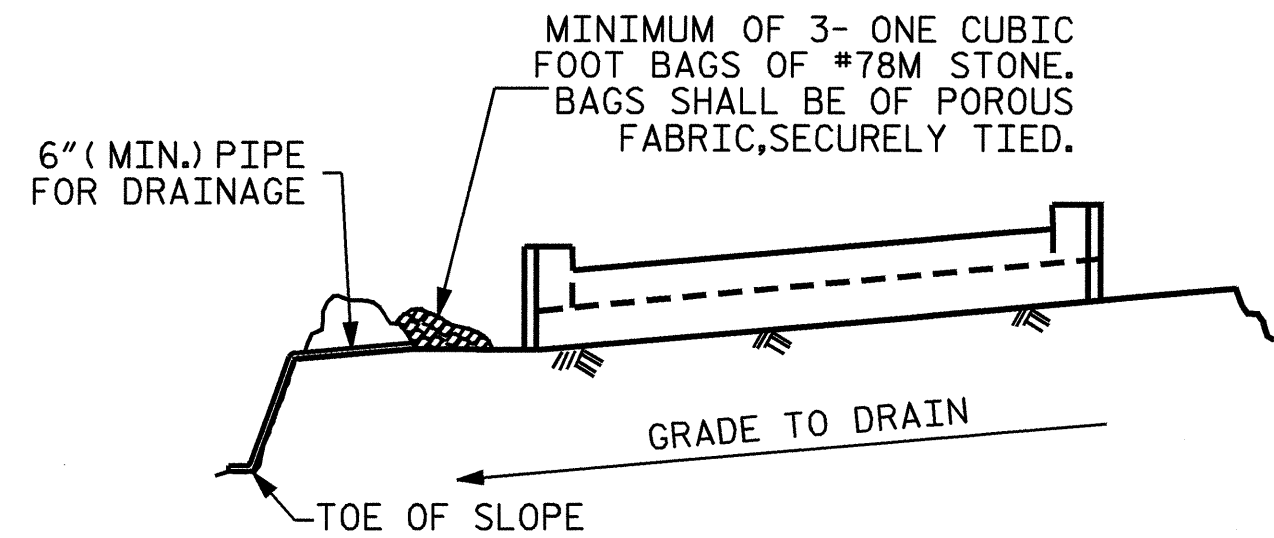
DRAWN BY: A. SORSENGINH DATE: 4/25/08  
 CHECKED BY: M.L. BROWN DATE: 5-08

06-JUN-2008 10:50  
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REVISIONS

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

SHEET NO.  
 S-16  
 TOTAL SHEETS  
 29

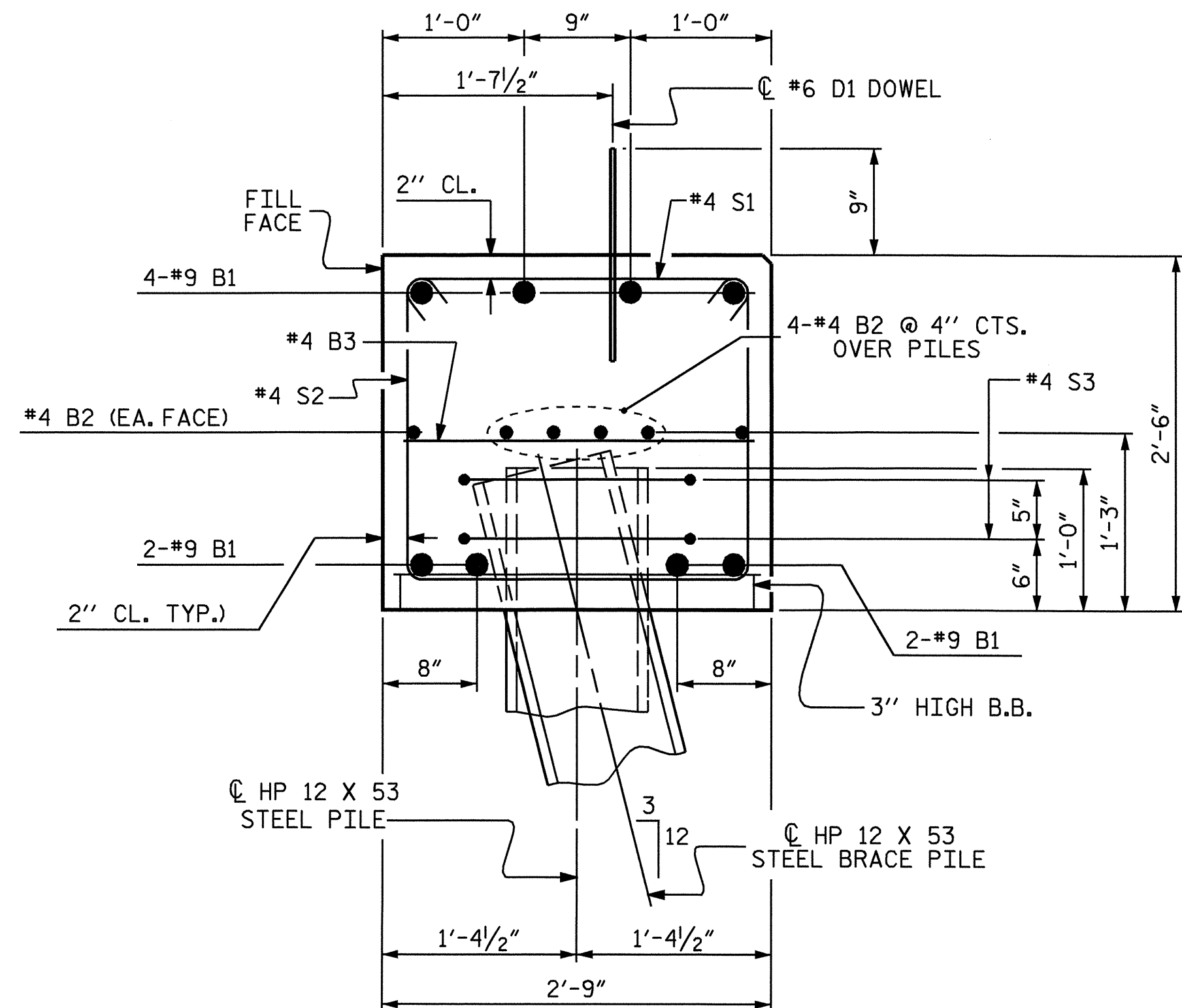


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

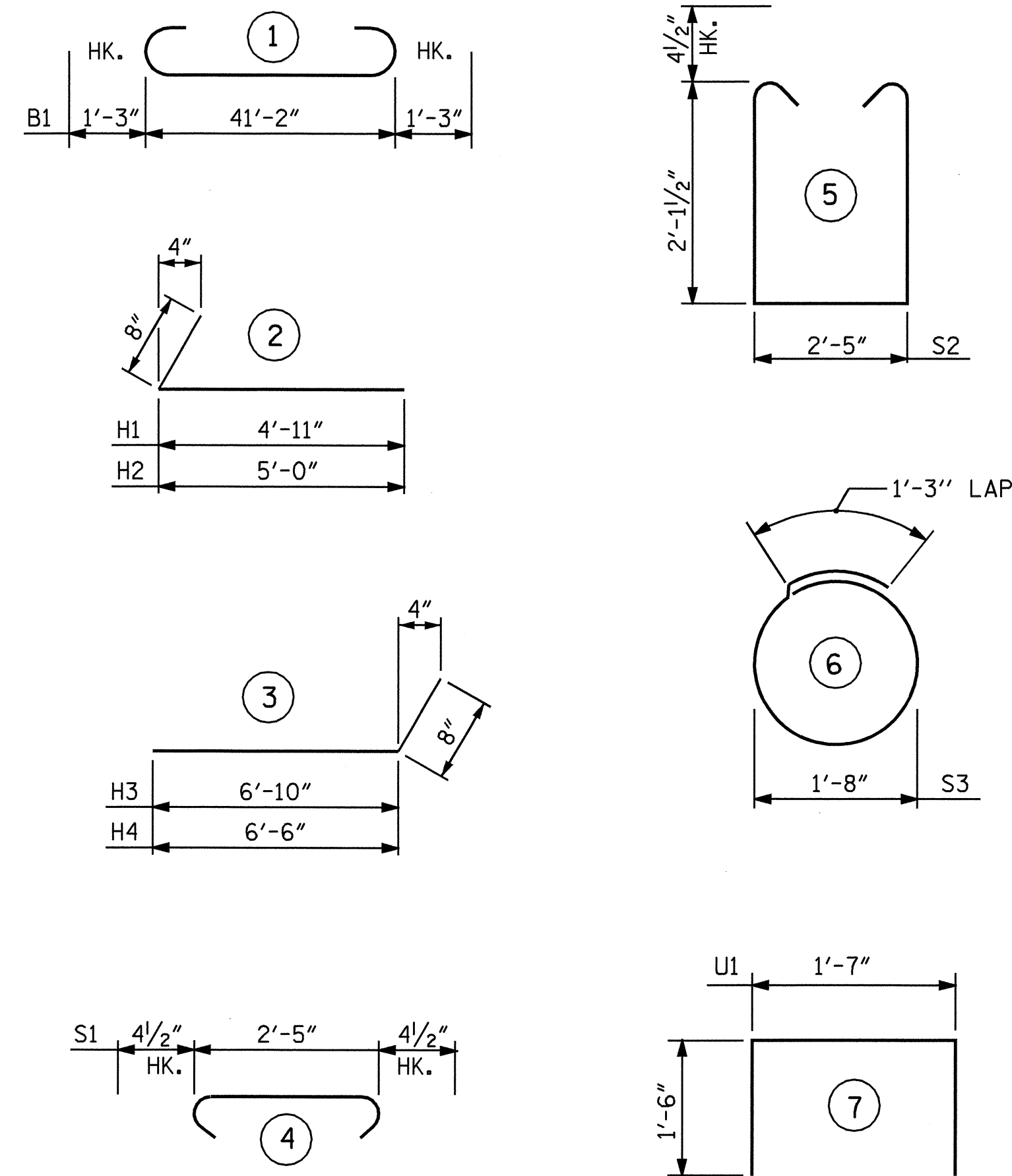
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

### TEMPORARY DRAINAGE AT END BENT



SECTION A-A

### BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

### BILL OF MATERIAL

#### END BENT NO. 1

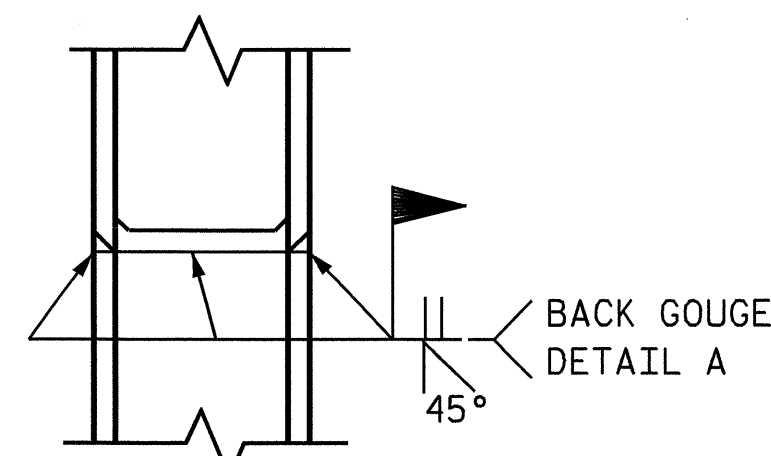
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		43'-8"	1188
B2	12	#4	STR.	21'-10"	175
B3	10	#4	STR.	2'-5"	16
D1	20	#6	STR.	1'-6"	45
H1	6	#4	2	5'-7"	22
H2	6	#4	2	5'-8"	23
H3	6	#4	3	7'-6"	30
H4	6	#4	3	7'-2"	29
K1	12	#4	STR.	3'-5"	27
S1	37	#4	4	3'-2"	78
S2	37	#4	5	7'-5"	183
S3	12	#4	6	6'-6"	52
U1	4	#4	7	4'-7"	12
V1	20	#4	STR.	4'-10"	65
V2	22	#4	STR.	4'-9"	70

REINFORCING STEEL = 2015 LBS

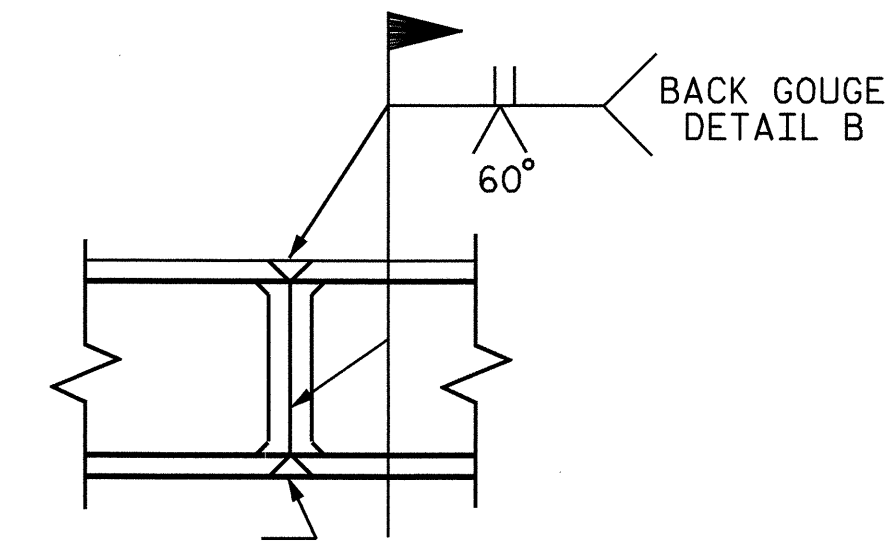
#### CLASS A CONCRETE BREAKDOWN

POUR #1 CAP & LOWER PART OF WINGS	11.5 C.Y.
POUR #2 UPPER PART OF WINGS	1.8 C.Y.
POUR #3 LATERAL GUIDES	0.1 C.Y.
<b>TOTAL CLASS A CONCRETE</b>	<b>13.4 C.Y.</b>

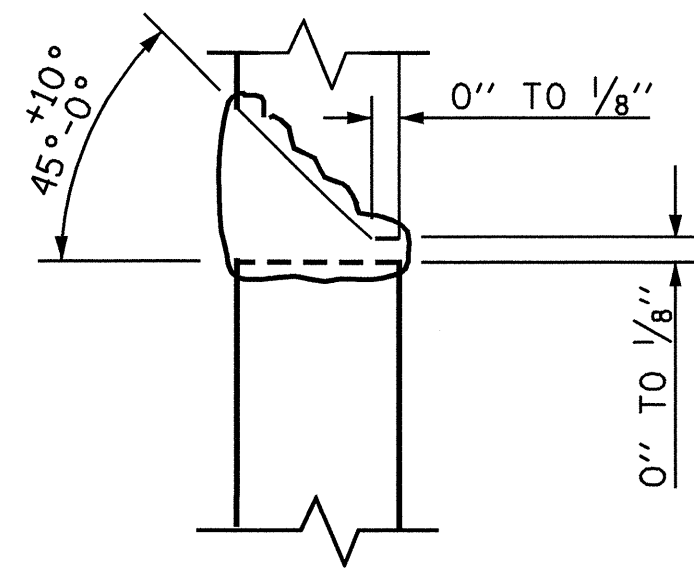
HP 12 X 53 STEEL PILES NO. 6 120 LIN. FT.



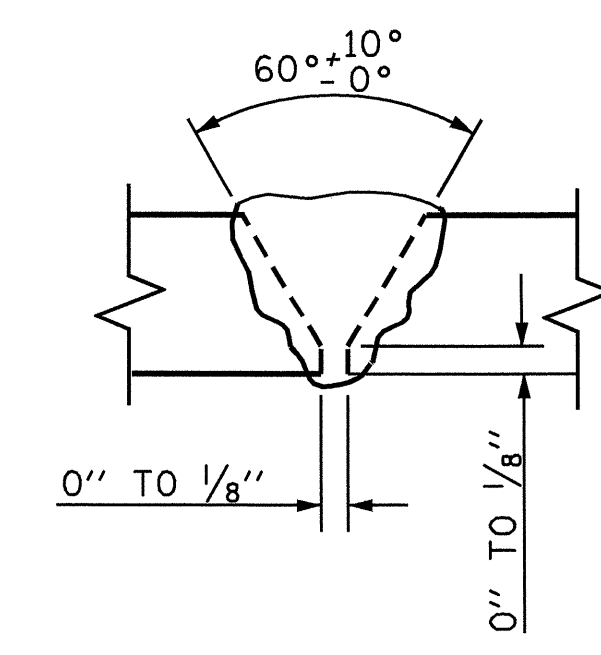
\*PILE VERTICAL



\*PILE HORIZONTAL OR VERTICAL



DETAIL A



DETAIL B

### PILE SPLICE DETAILS

\* POSITION OF PILE DURING WELDING.



PROJECT NO. B-3624  
 CALDWELL COUNTY  
 STATION: 15+71.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT NO. 1

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

TOTAL SHEETS 29

DRAWN BY: A. SORSENGINH DATE: 4/25/08  
 CHECKED BY: M.L. BROWN DATE: 5-08

06-JUN-2008 10:53  
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NC0006

**NOTES**

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

HOOKS ON "V" 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.

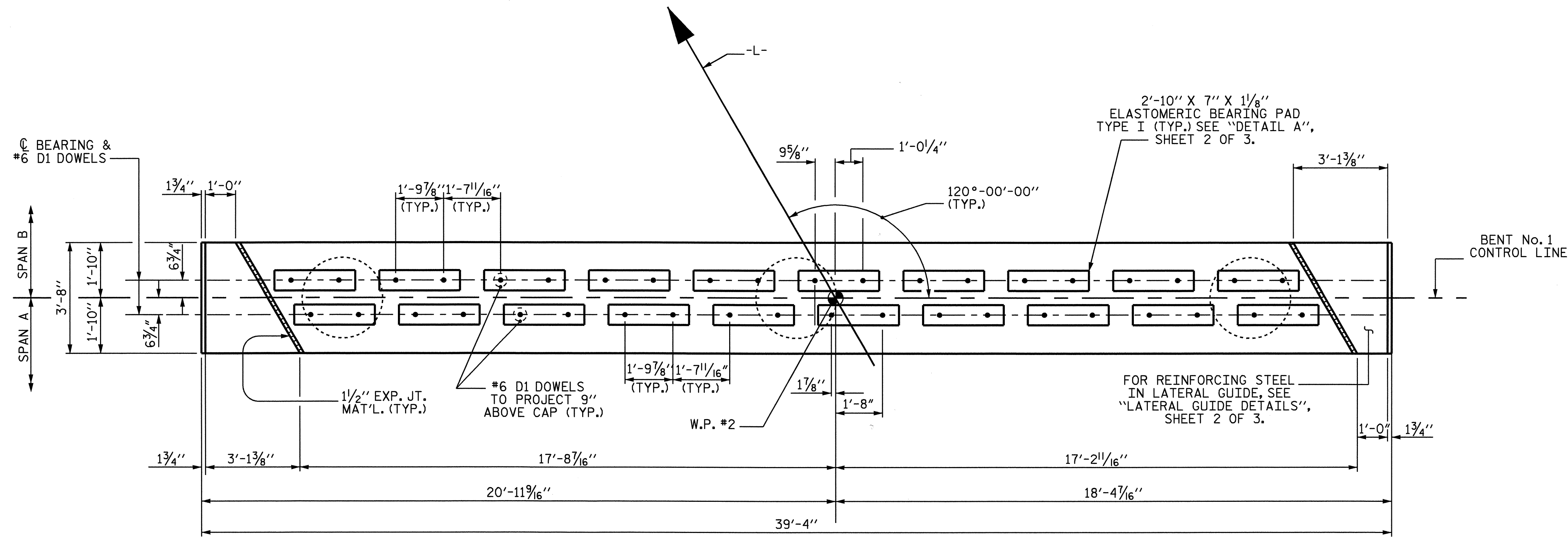
SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIERS WILL NOT BE PERMITTED.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

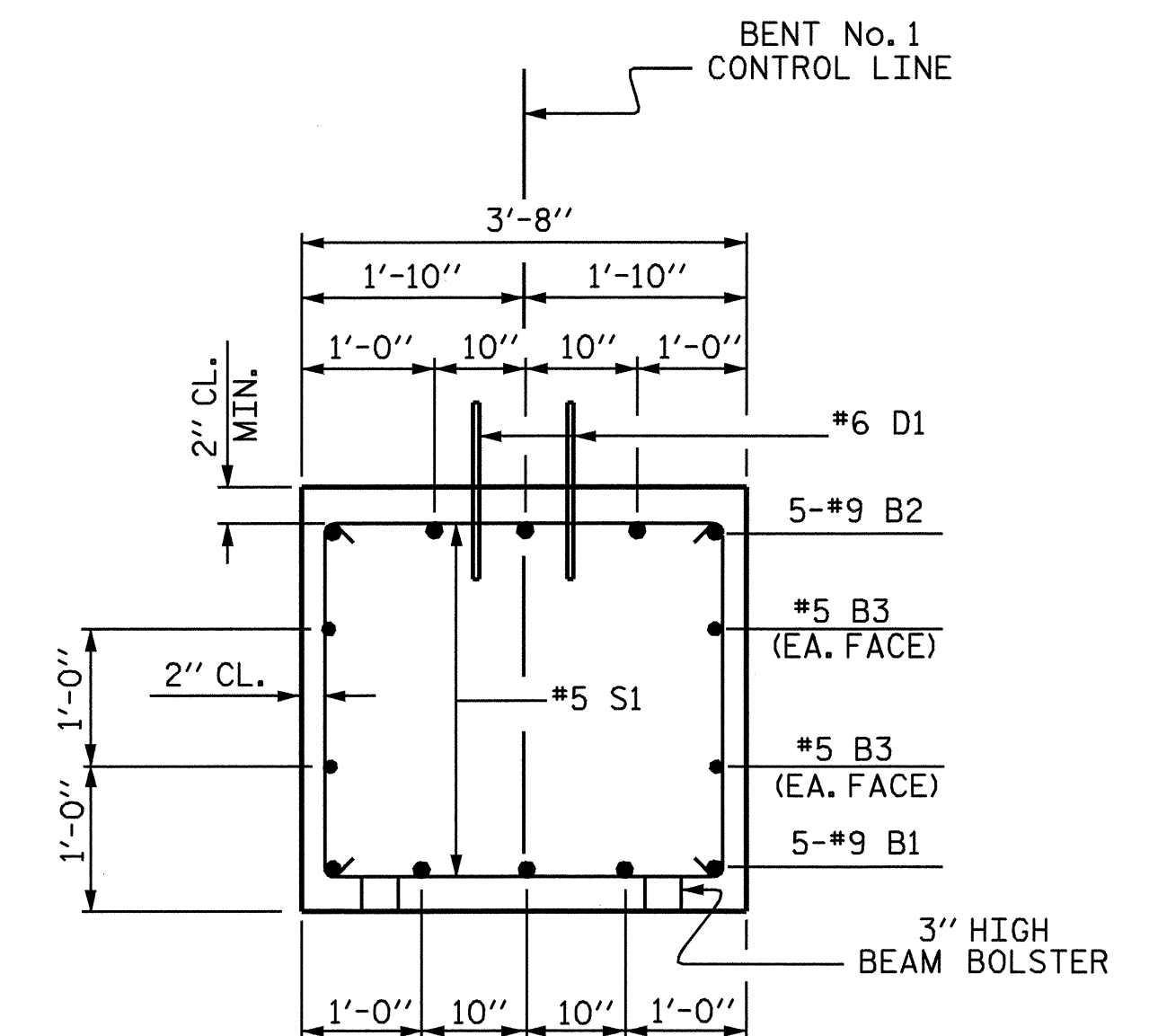
THE LATERAL GUIDES AT EACH END OF THE CAP ARE NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

"U" BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR THE "B" BARS.

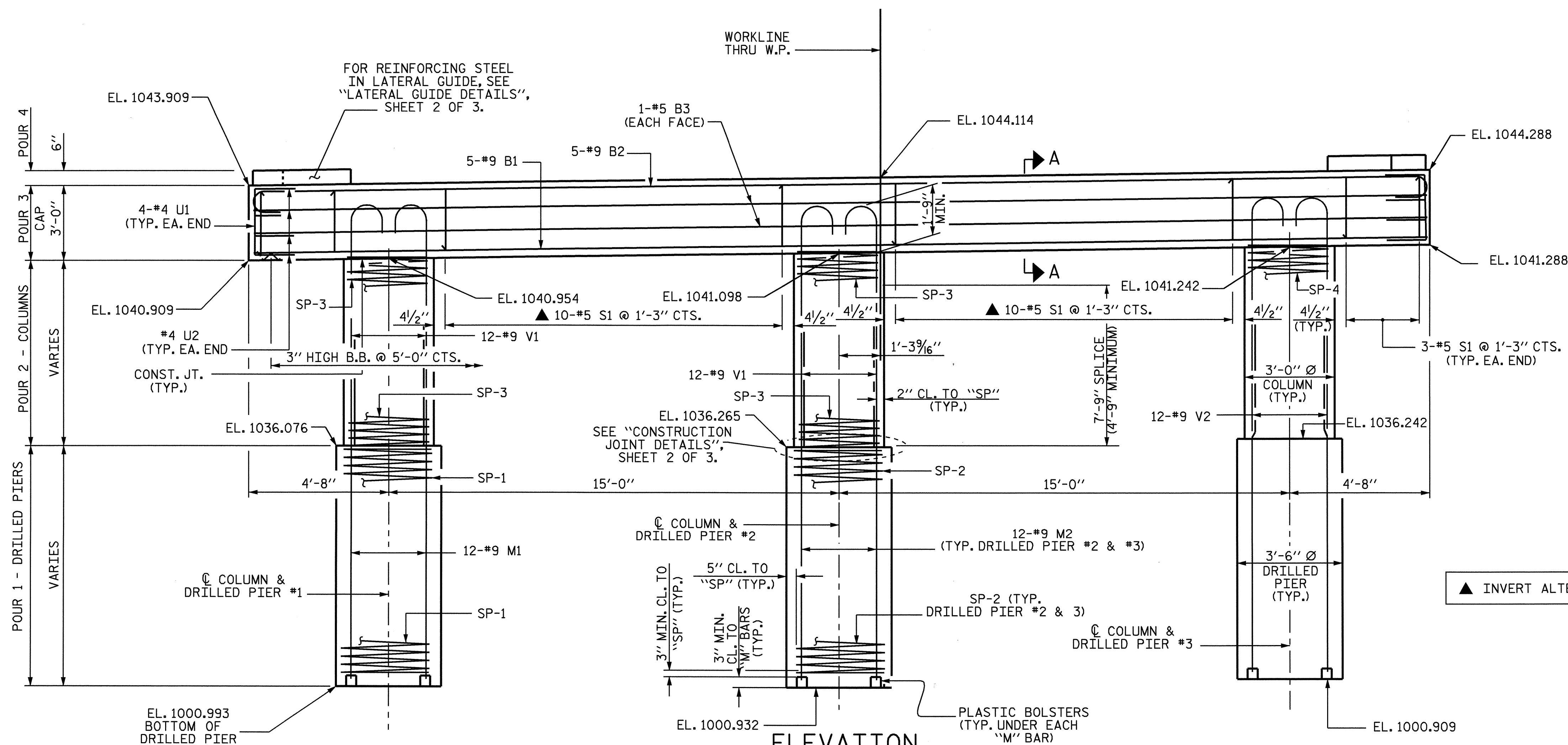
2" MINIMUM CONCRETE COVER FROM THE END OF CAP IS REQUIRED FOR ALL "U" BARS.



**PLAN**



**SECTION A-A**



**ELEVATION**

PROJECT NO. B-3624  
CALDWELL COUNTY  
 STATION: 15+71.50 -L-

SHEET 1 OF 3

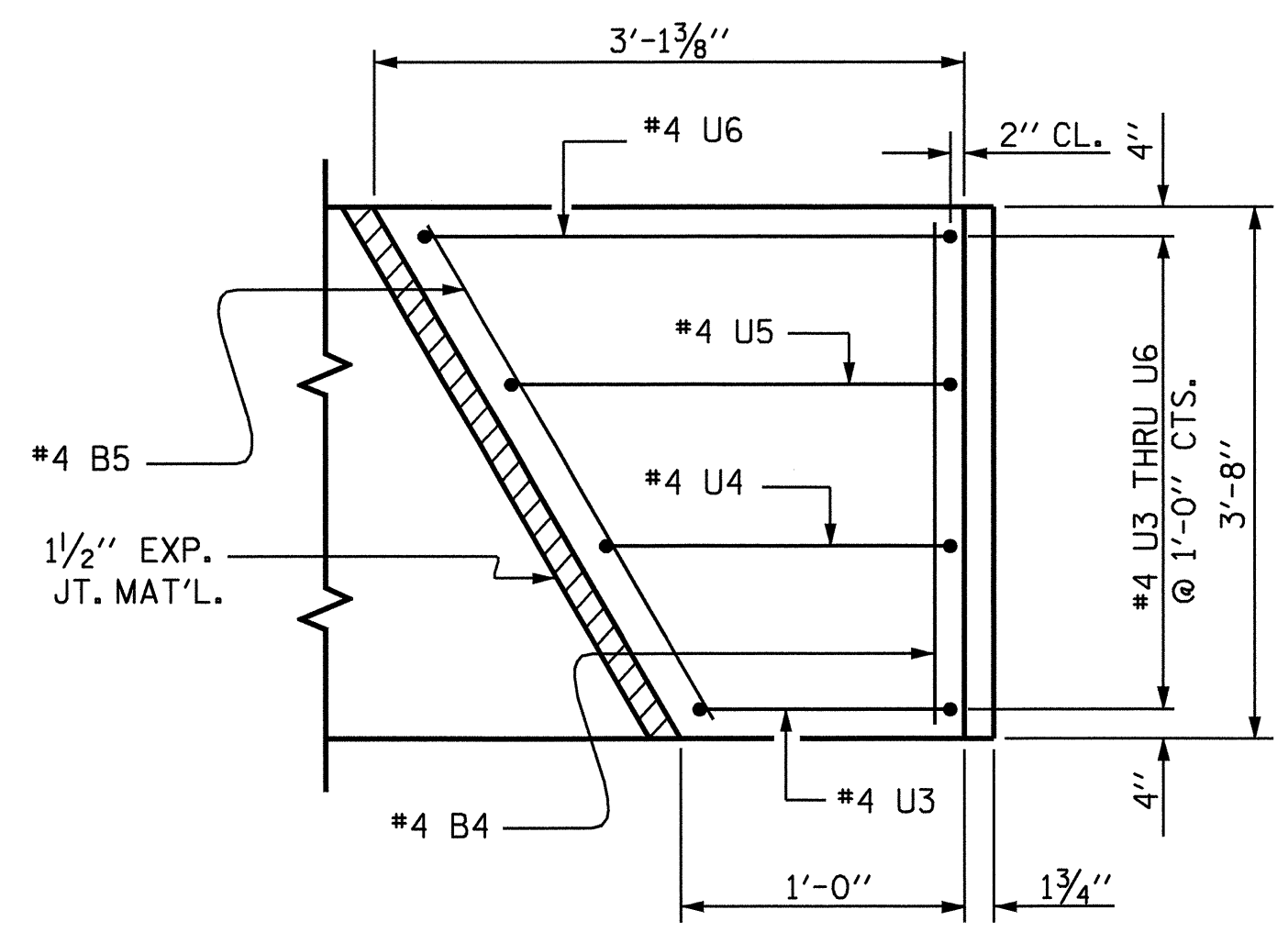
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE  
 BENT No. 1**

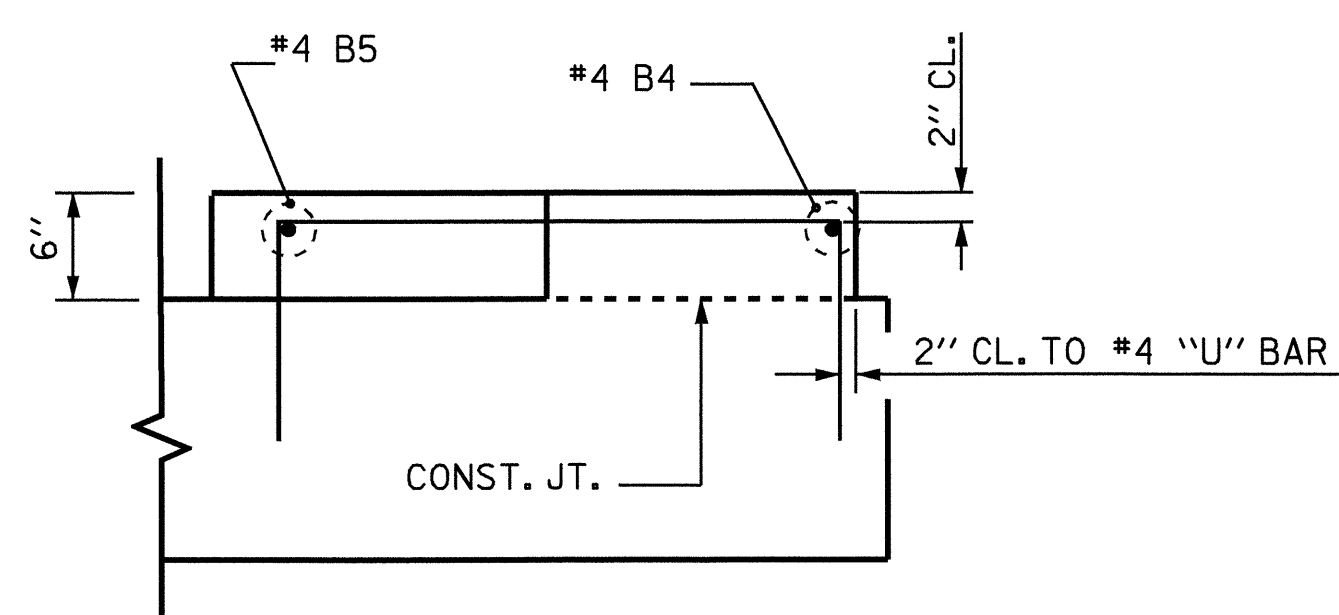


DRAWN BY: M. POOLE DATE: 03-08  
 CHECKED BY: M. G. CHEEK DATE: 05-08

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



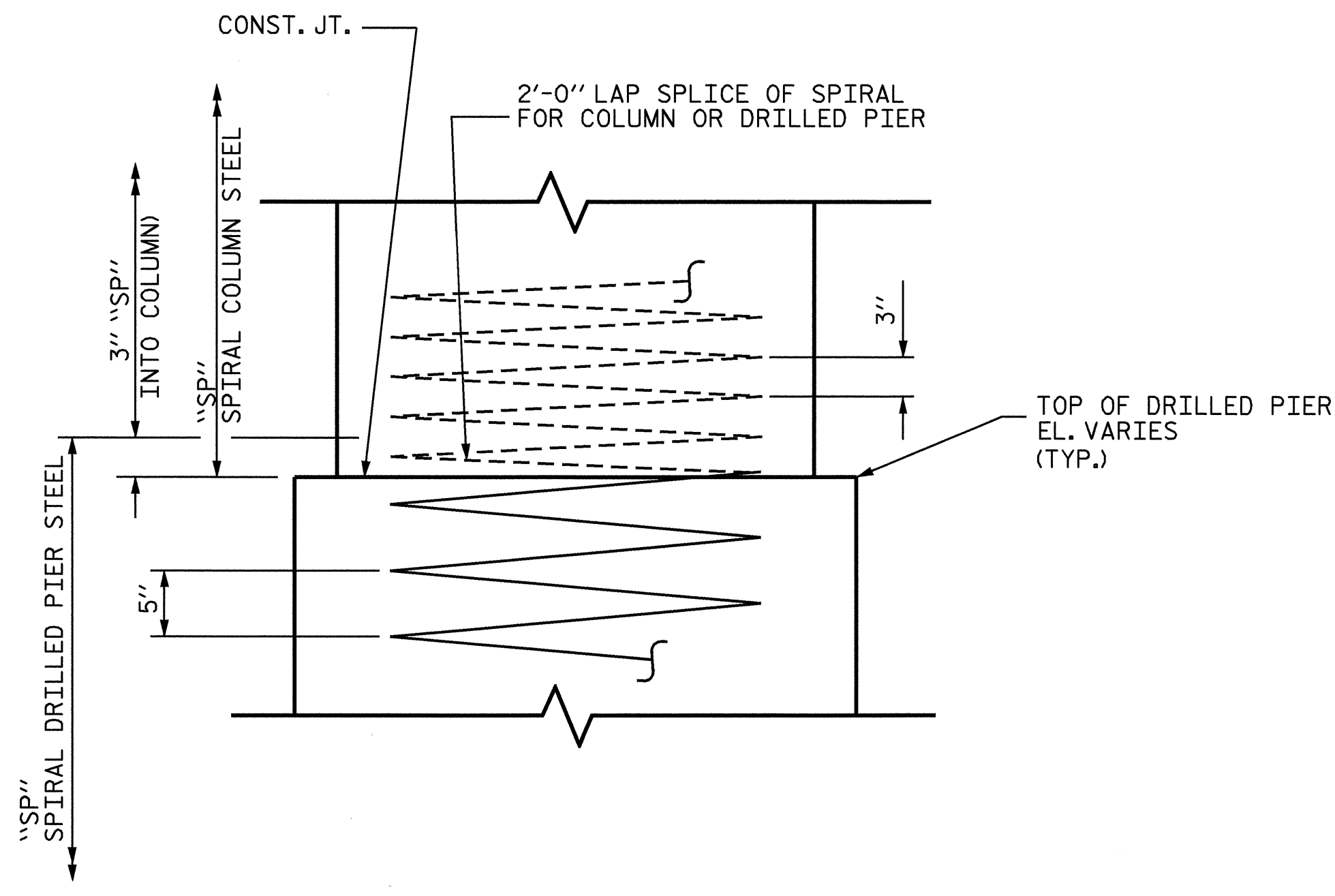
PLAN



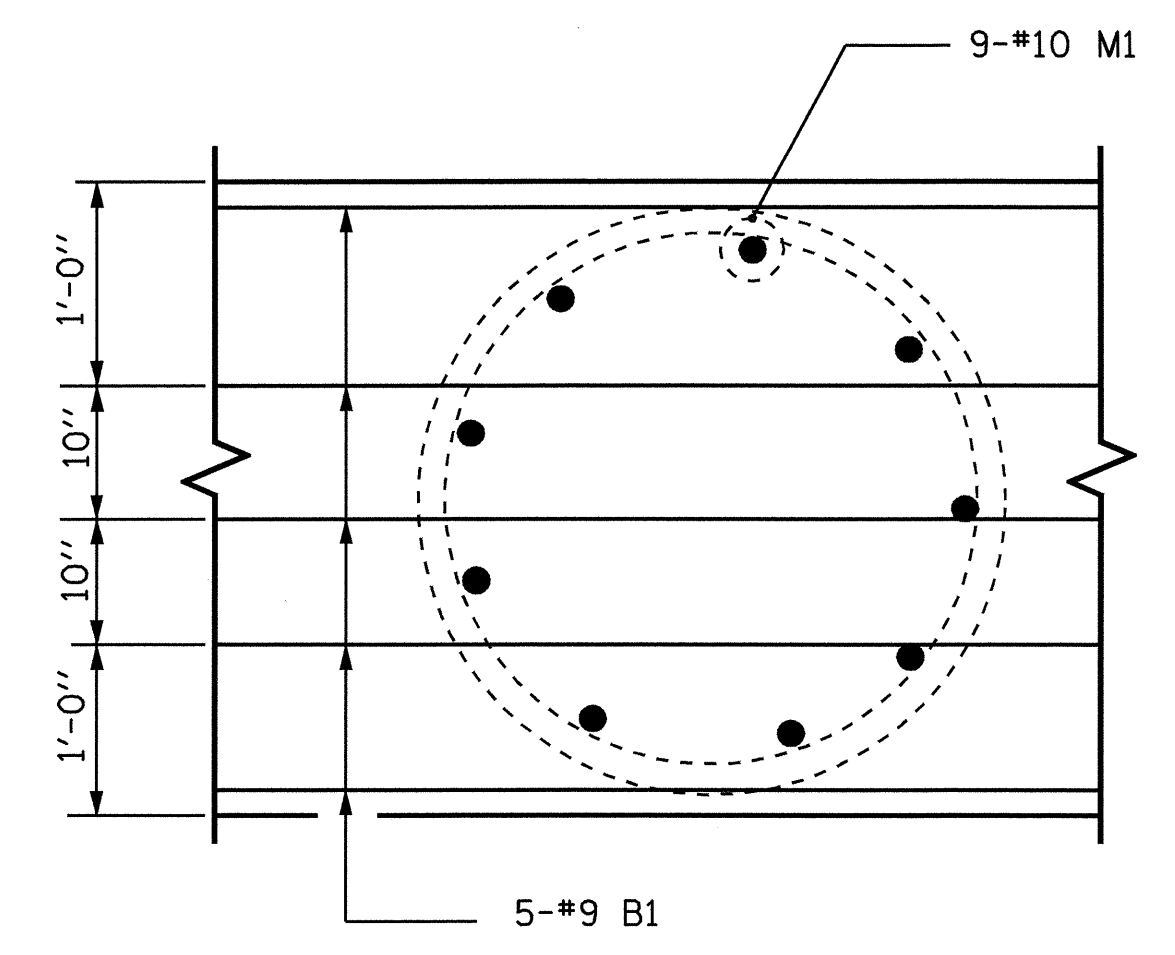
ELEVATION

LATERAL GUIDE DETAILS

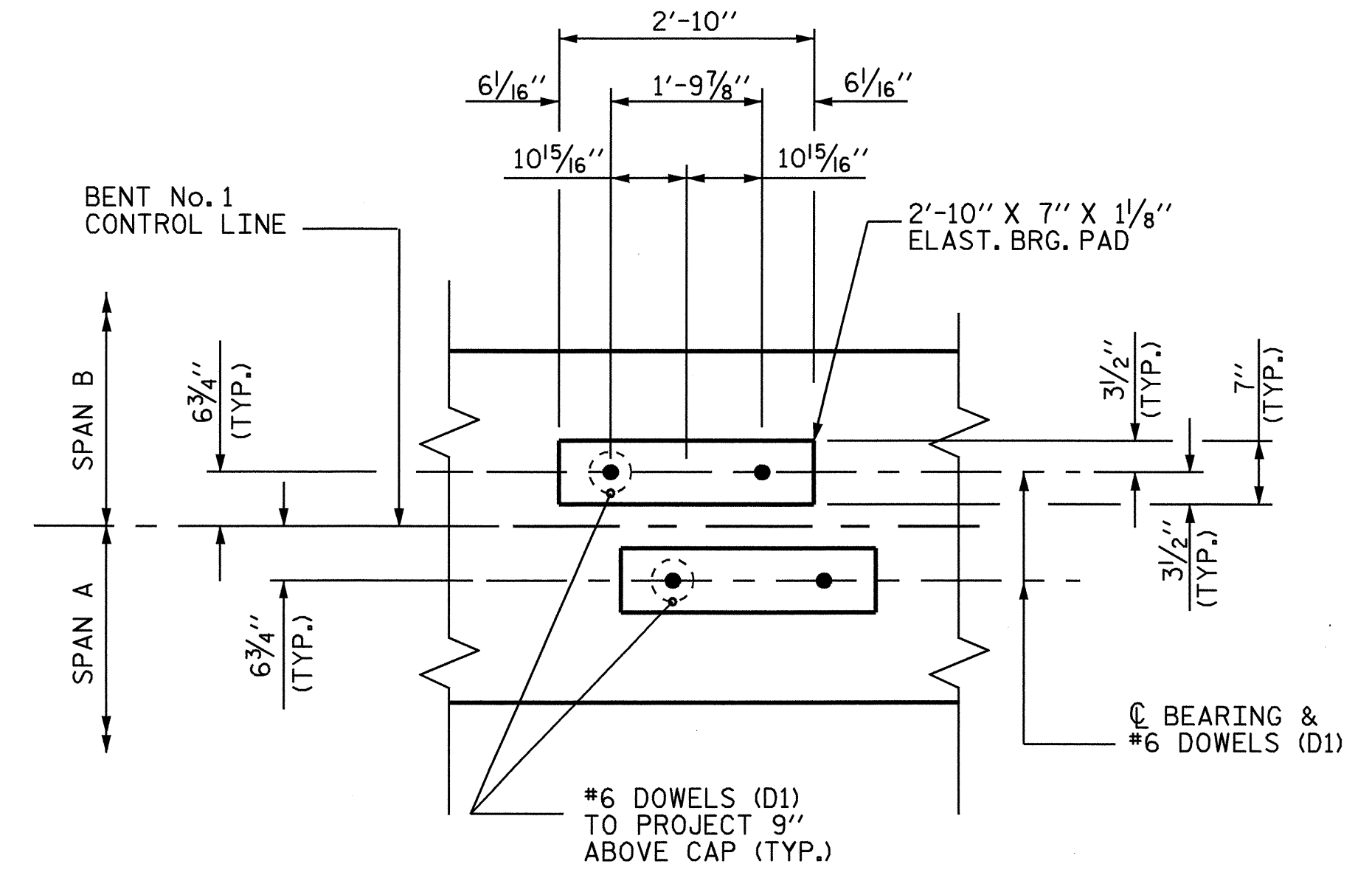
(EACH END SIMILAR)



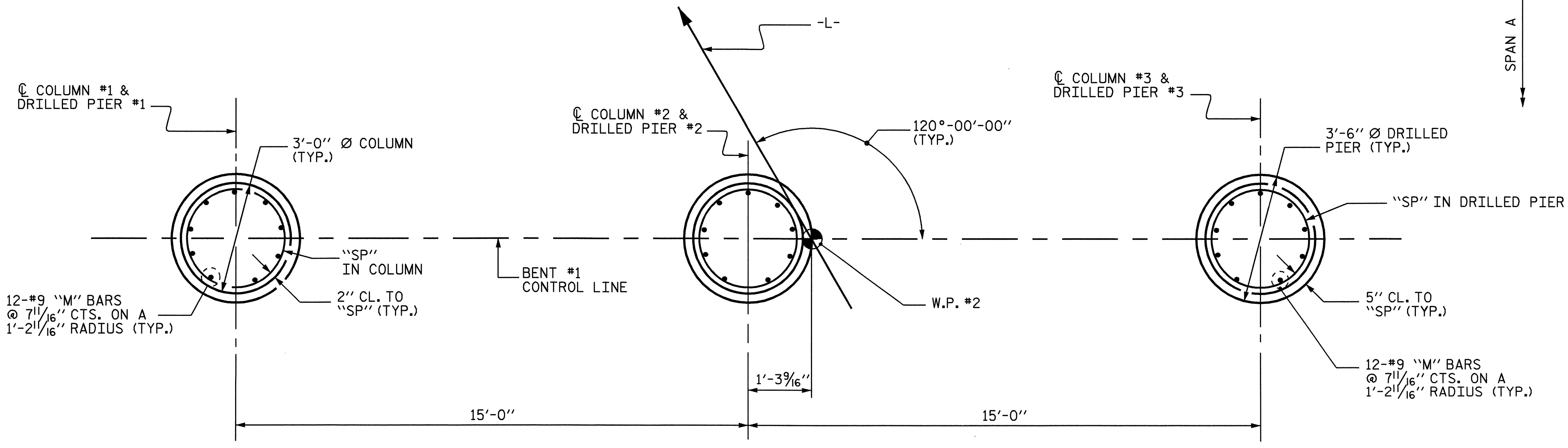
CONSTRUCTION JOINT DETAIL



BOTTOM OF CAP



DETAIL A



PLAN OF DRILLED PIERS & COLUMNS

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

PROJECT NO. B-3624  
CALDWELL COUNTY  
 STATION: 15+71.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

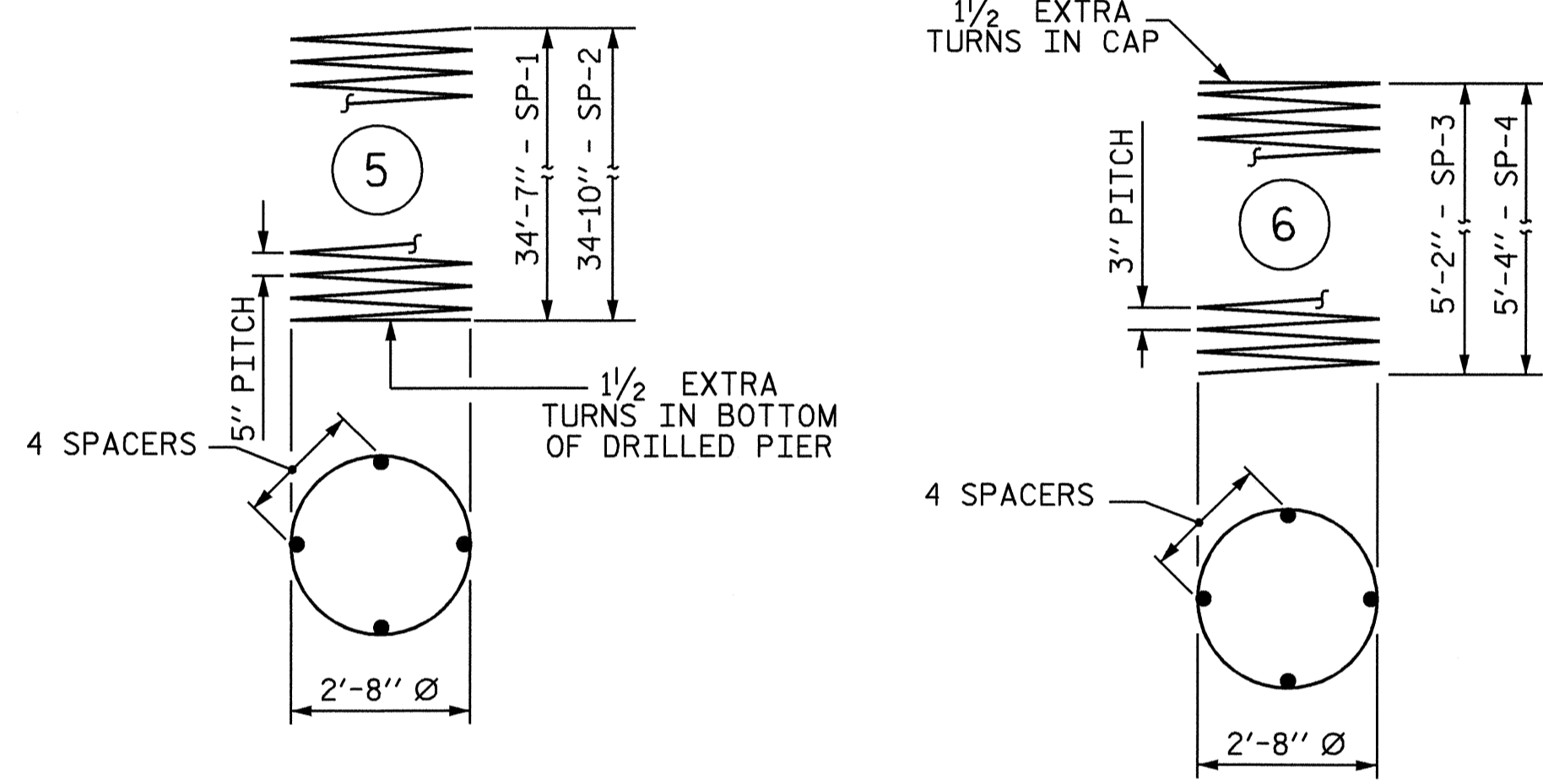
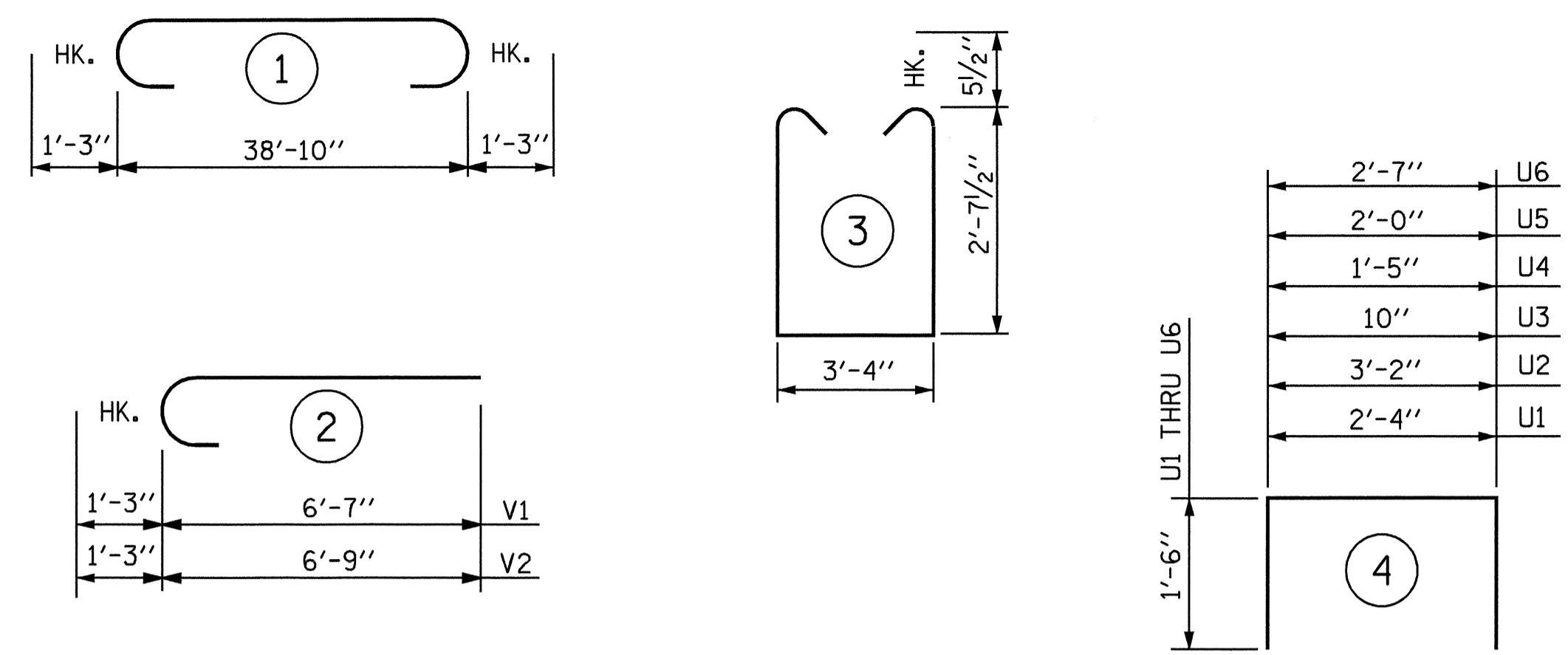
SUBSTRUCTURE  
 BENT No. 1



DRAWN BY: M. POOLE DATE: 4/2008  
 CHECKED BY: M. G. CHEEK DATE: 06-08

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

\*\* THE SP-3 & SP-4 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.  
\*\*\* THE SP-1 & SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

BILL OF MATERIAL

BENT No. 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	5	9	STR	39'-0"	663
B2	5	9	1	41'-4"	703
B3	4	5	STR	39'-0"	163
B4	2	4	STR	3'-4"	4
B5	2	4	STR	3'-10"	5
D1	40	6	STR	1'-6"	90
M1	12	9	STR	42'-7"	1737
M2	24	9	STR	42'-10"	3495
S1	26	5	3	9'-6"	258
U1	8	4	4	5'-4"	29
U2	8	4	4	6'-2"	33
U3	2	4	4	3'-10"	5
U4	2	4	4	4'-5"	6
U5	2	4	4	5'-0"	7
U6	2	4	4	5'-7"	7
V1	24	9	2	7'-10"	639
V2	12	9	2	8'-0"	326

REINFORCING STEEL 8170 LBS.

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-1	1	***	5	695'-0"	725
SP-2	2	***	5	701'-2"	1463
SP-3	2	**	6	181'-7"	243
SP-4	1	**	6	187'-9"	125

SPIRAL COLUMN REINF. STEEL = 2556 LBS.

CLASS "A" CONCRETE				
POUR 2	COLUMNS			3.8 C.Y.
POUR 3	CAP			16.0 C.Y.
POUR 4	LATERAL GUIDE			0.3 C.Y.
TOTAL				20.1 C.Y.

DRILLED PIER QUANTITIES

DRILLED PIER CONCRETE BREAKDOWN	
POUR 1 (DRILLED PIERS)	37.7 C.Y.
3'-6" Ø DRILLED PIERS NOT IN SOIL	14.00 LIN. FT.
3'-6" Ø DRILLED PIERS IN SOIL	91.75 LIN. FT.
PERMANENT STEEL CASING	60.58 LIN. FT.
▲ CSL TUBES	453.00 LIN. FT.

▲ NO SEPARATE PAYMENT WILL BE MADE FOR CSL TUBES. CSL TUBES WILL BE INCLUDED IN THE UNIT BID FOR DRILLED PIERS.

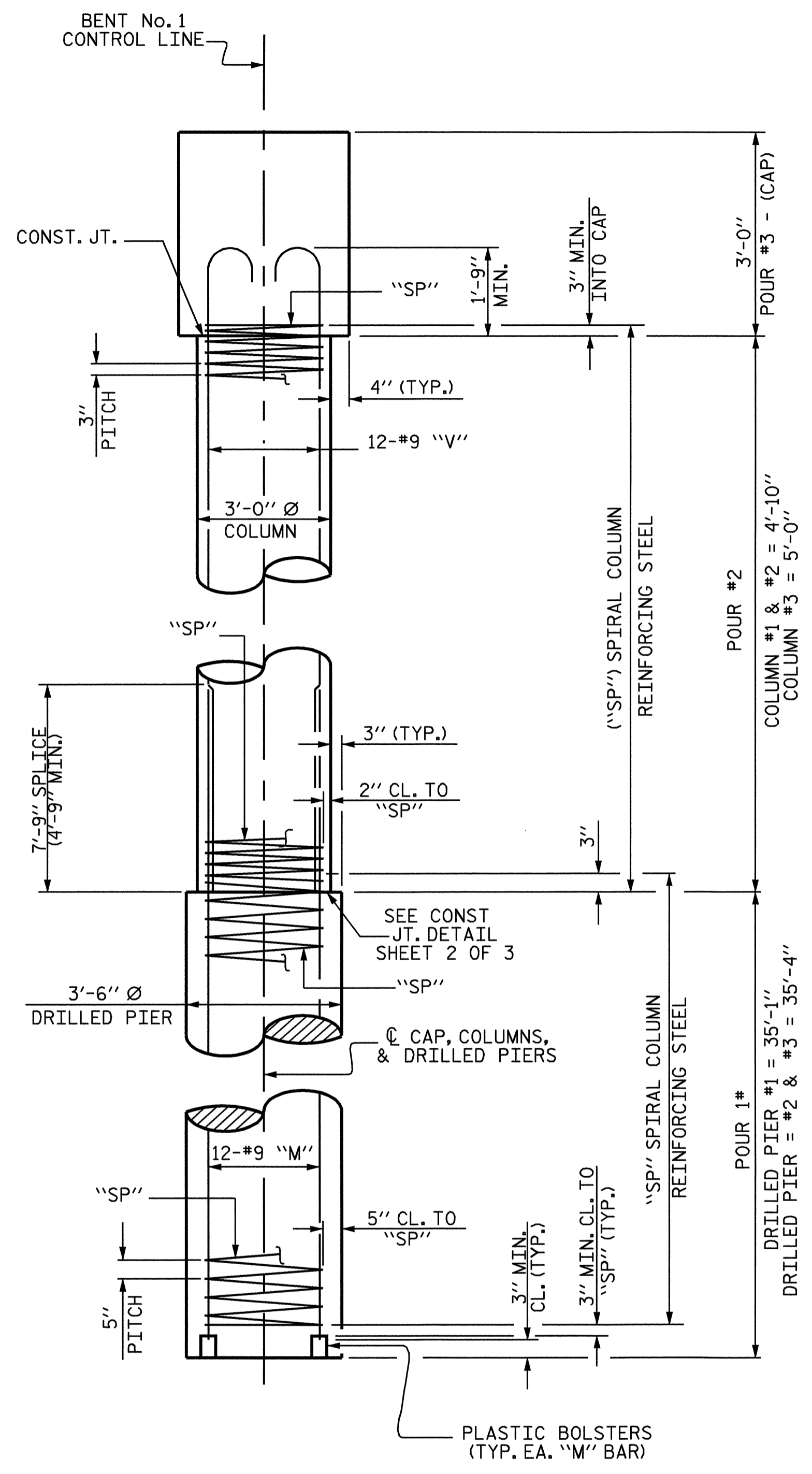
PROJECT NO. B-3624  
CALDWELL COUNTY  
STATION: 15+71.50 -L-

SHEET 3 OF 3

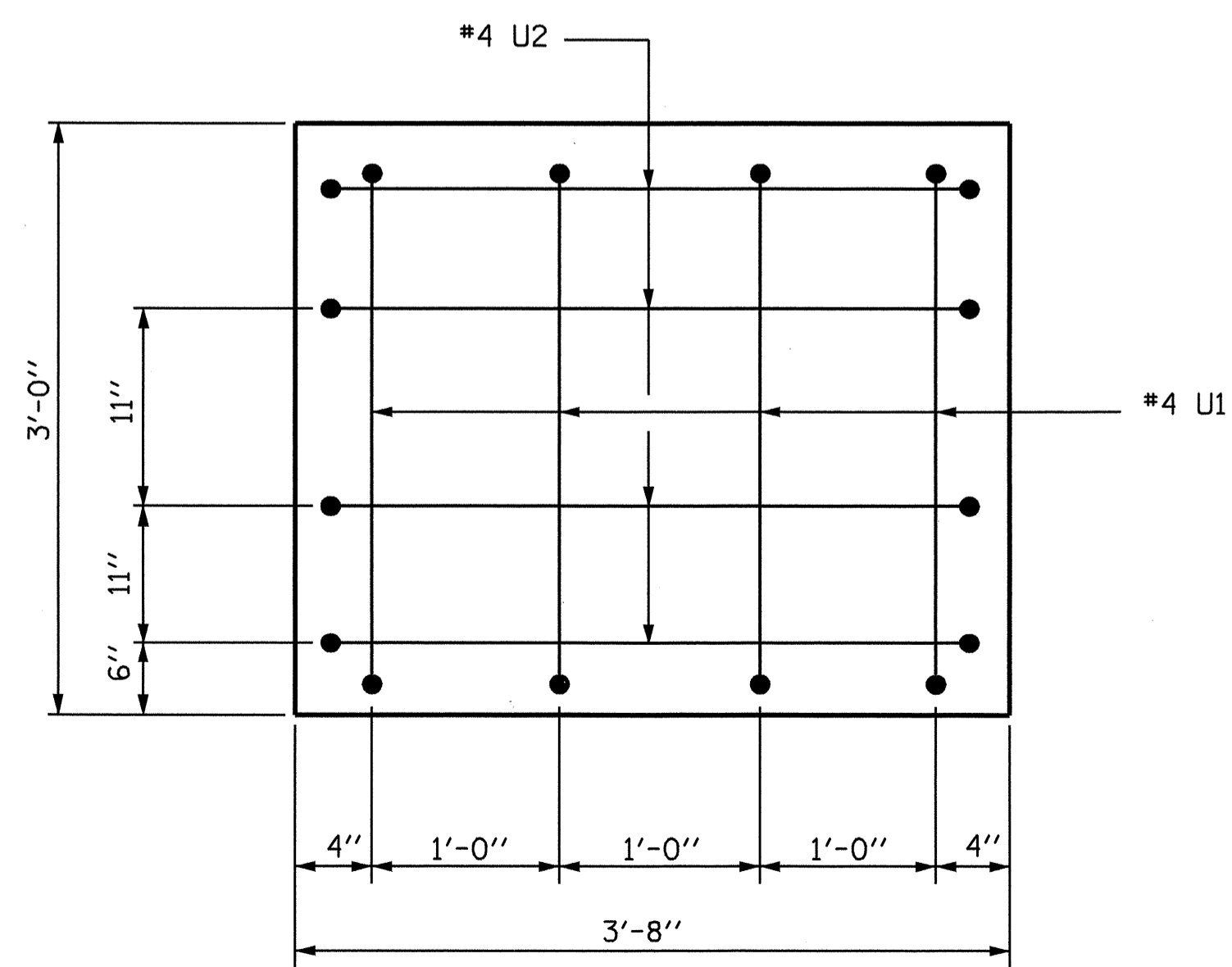
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
BENT No. 1

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20	
1			3			TOTAL SHEETS	
2			4			29	



END ELEVATION



END OF CAP ELEVATION

(TYP. EA. END)

DRAWN BY: M. POOLE DATE: 3/2008  
CHECKED BY: M. G. CHEEK DATE: 6/2008

**NOTES**

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

HOOKS ON "V" 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.

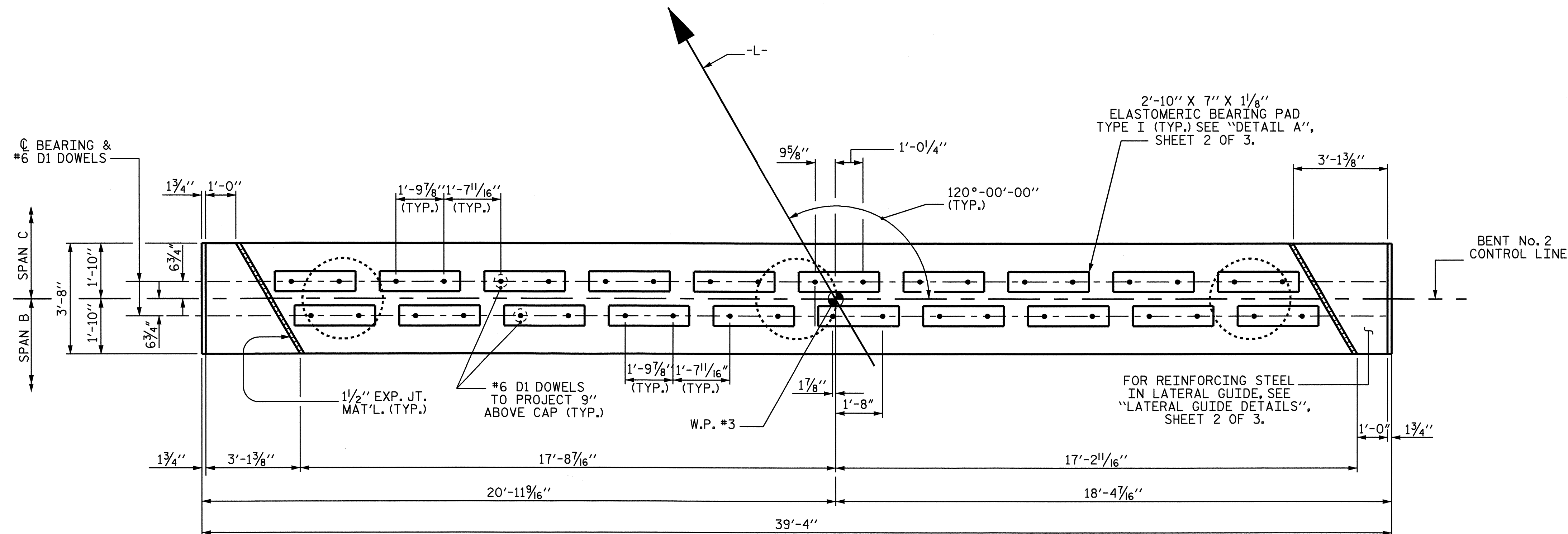
SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIERS WILL NOT BE PERMITTED.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

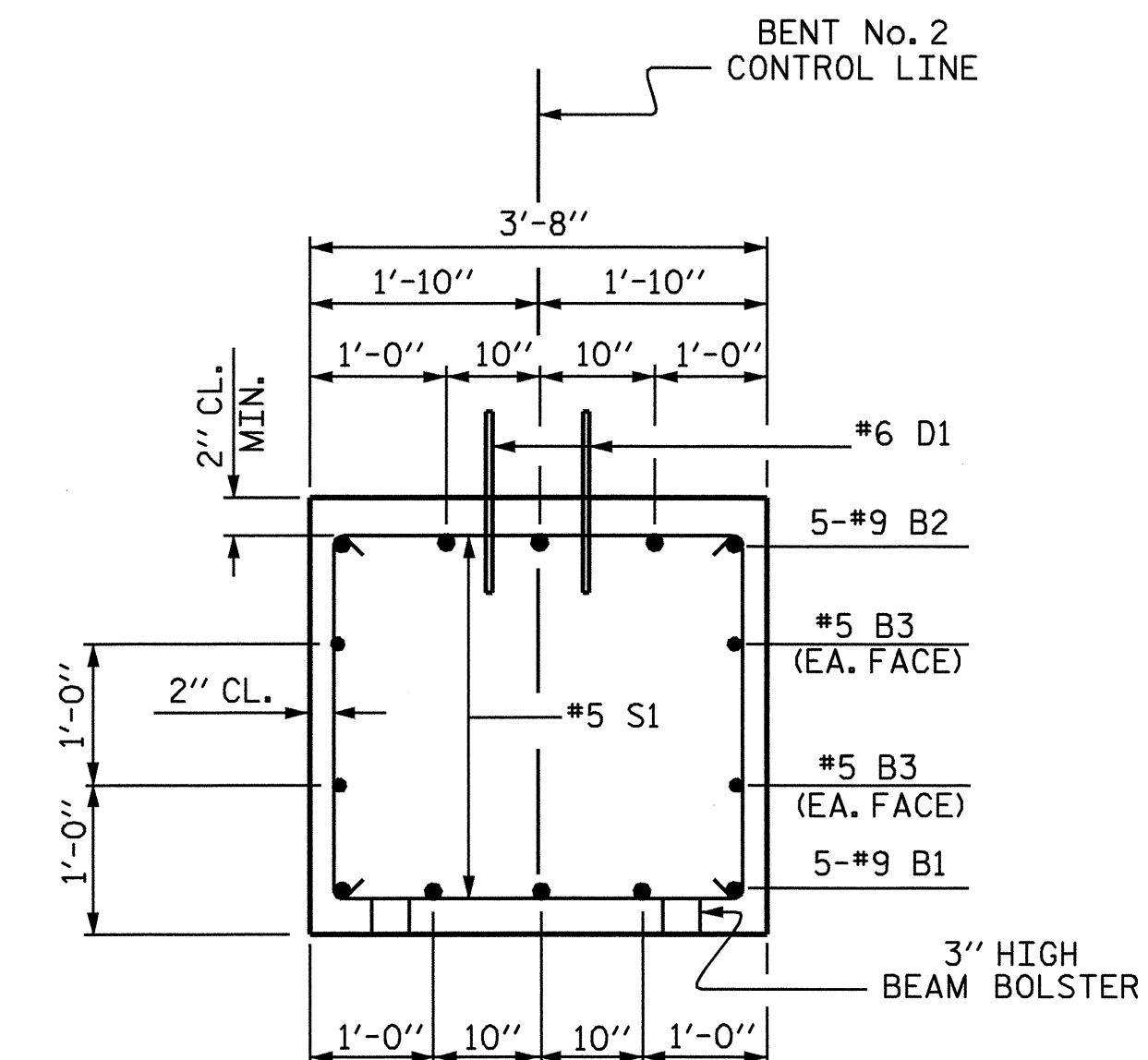
THE LATERAL GUIDES AT EACH END OF THE CAP ARE NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

"U" BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR THE "B" BARS.

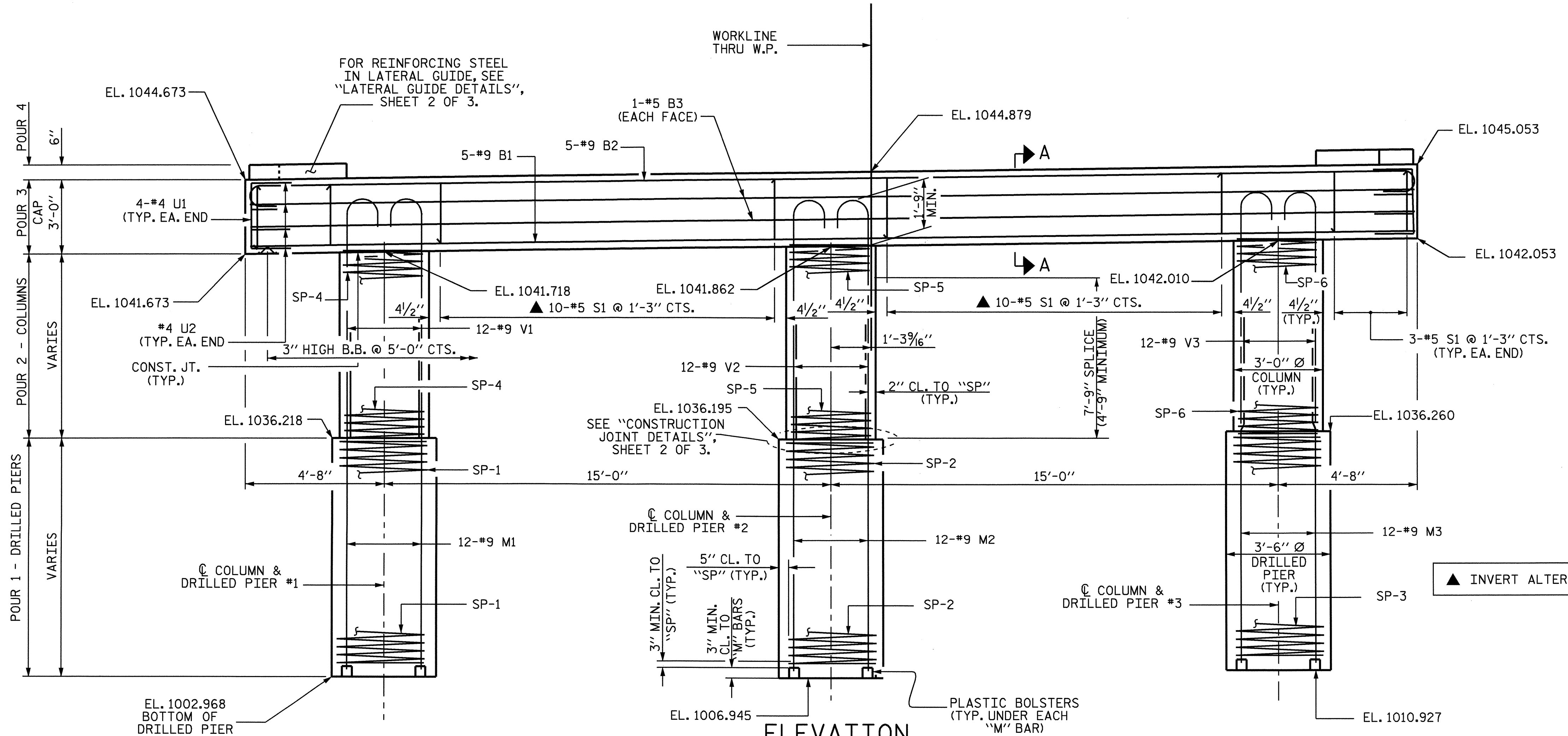
2" MINIMUM CONCRETE COVER FROM THE END OF CAP IS REQUIRED FOR ALL "U" BARS.



**PLAN**



**SECTION A-A**

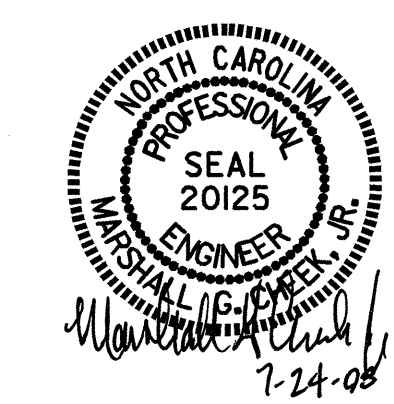


**ELEVATION**

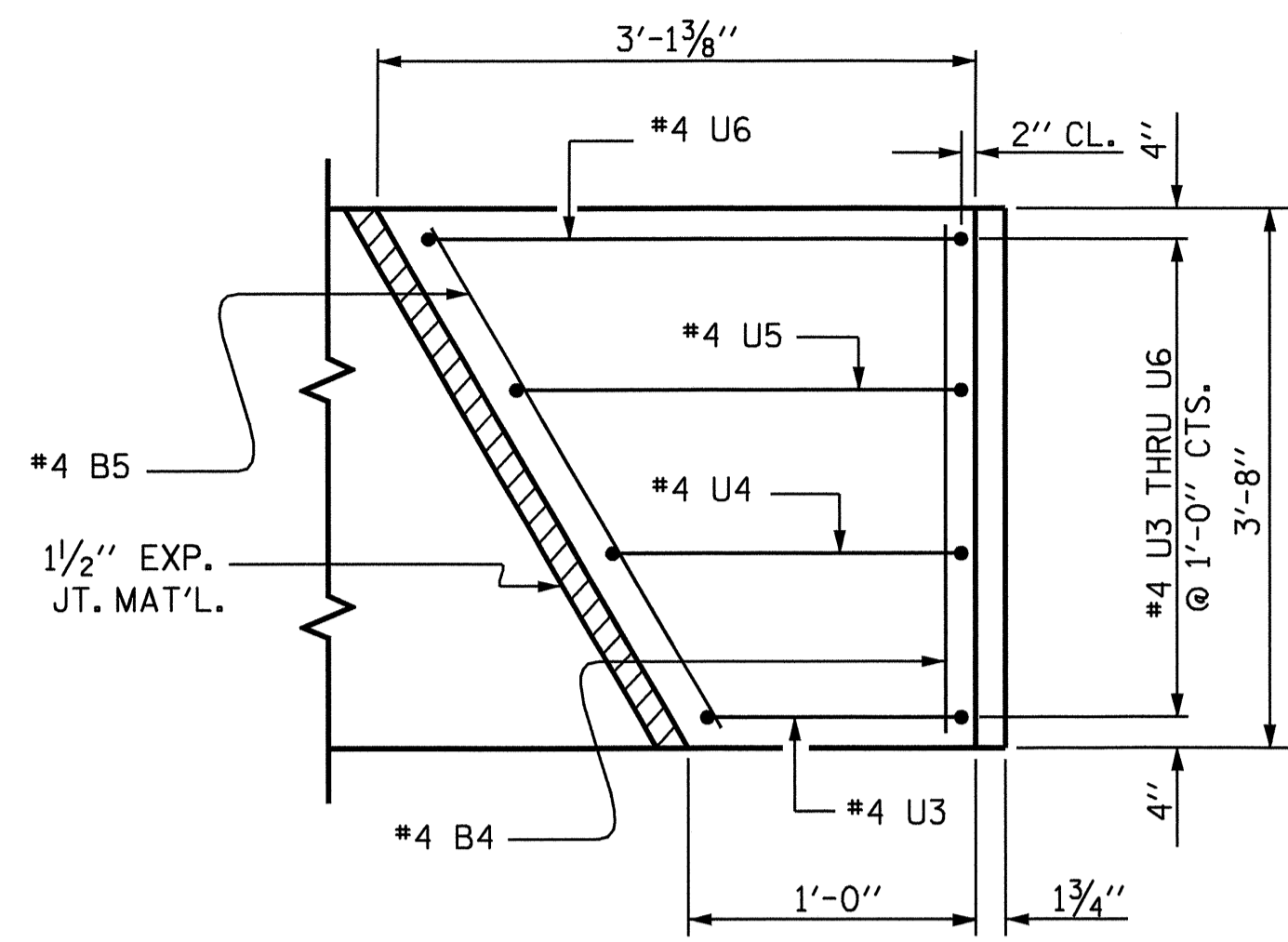
PROJECT NO. B-3624  
CALDWELL COUNTY  
 STATION: 15+71.50 -L-

SHEET 1 OF 3

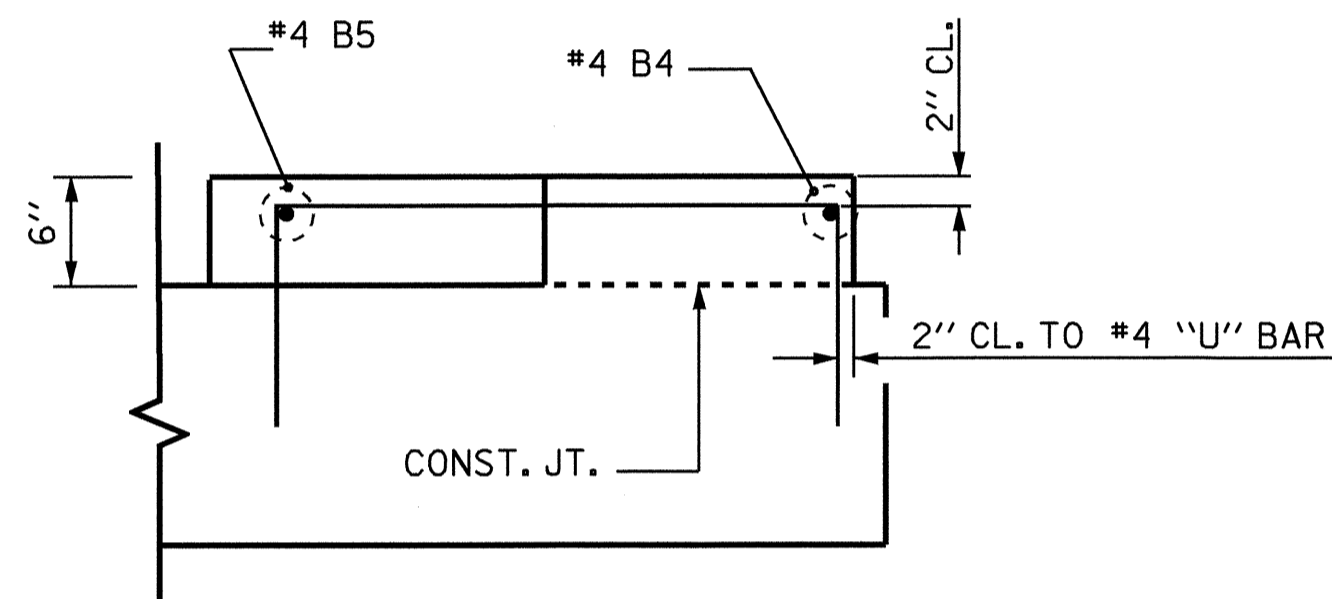
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT No. 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-21
					TOTAL SHEETS 29



DRAWN BY: M. POOLE DATE: 03-08  
 CHECKED BY: M. G. CHEEK DATE: 05-08



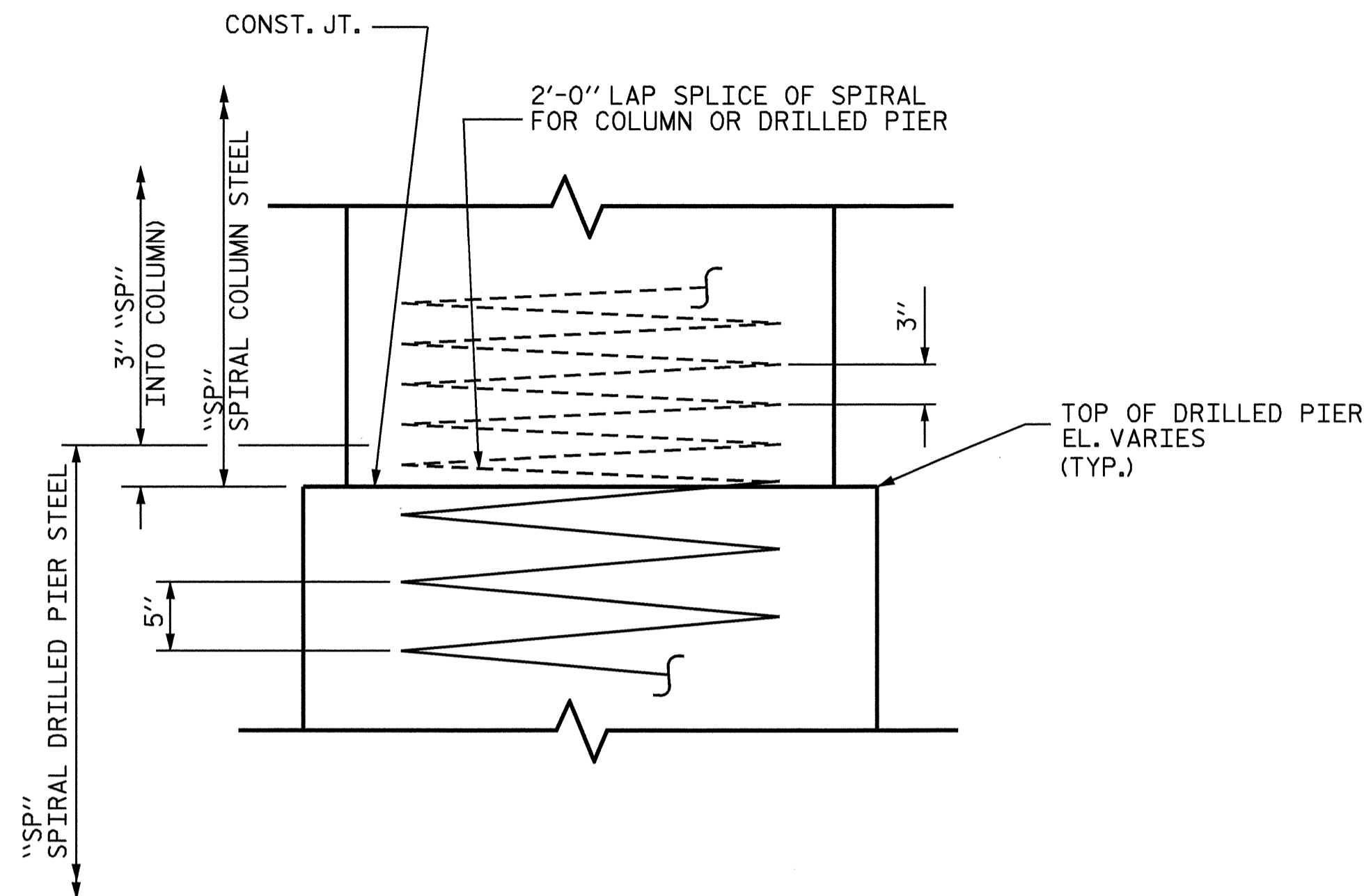
PLAN



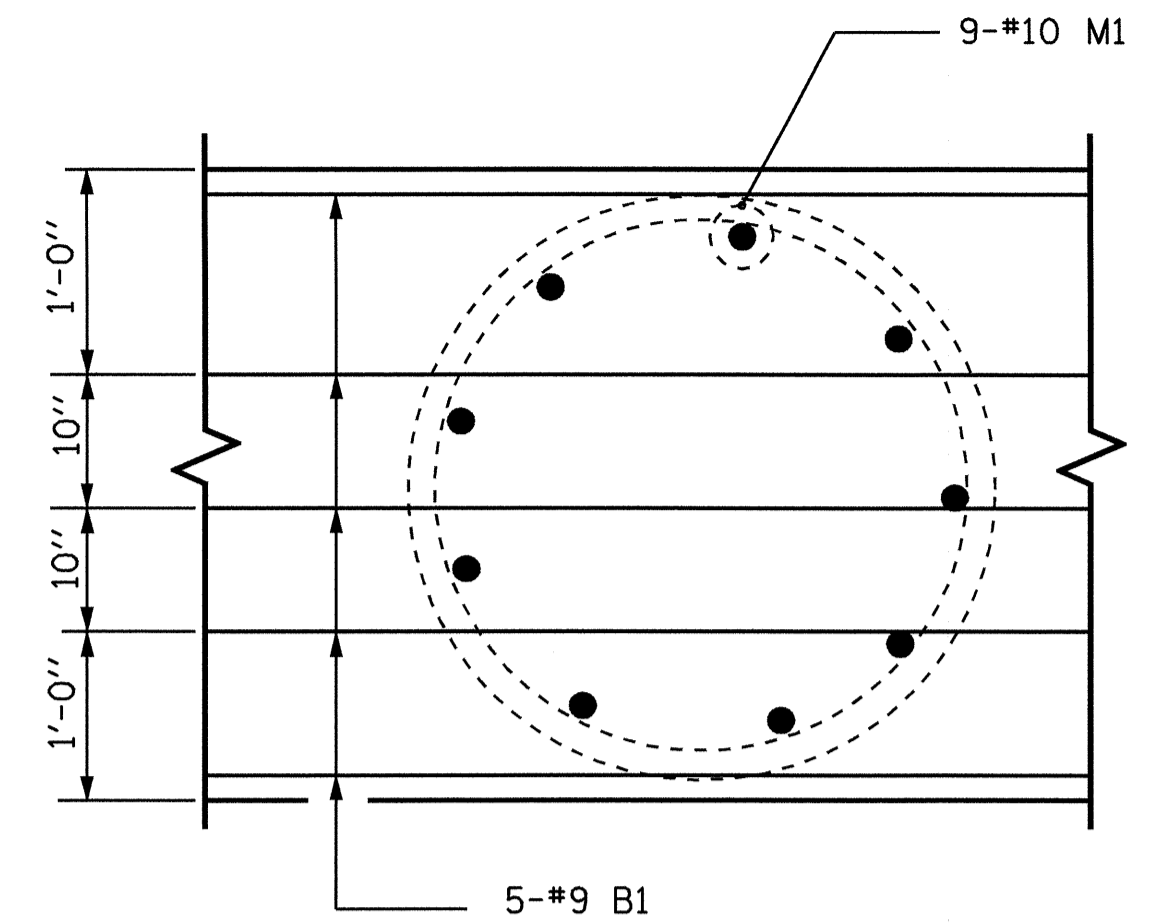
ELEVATION

LATERAL GUIDE DETAILS

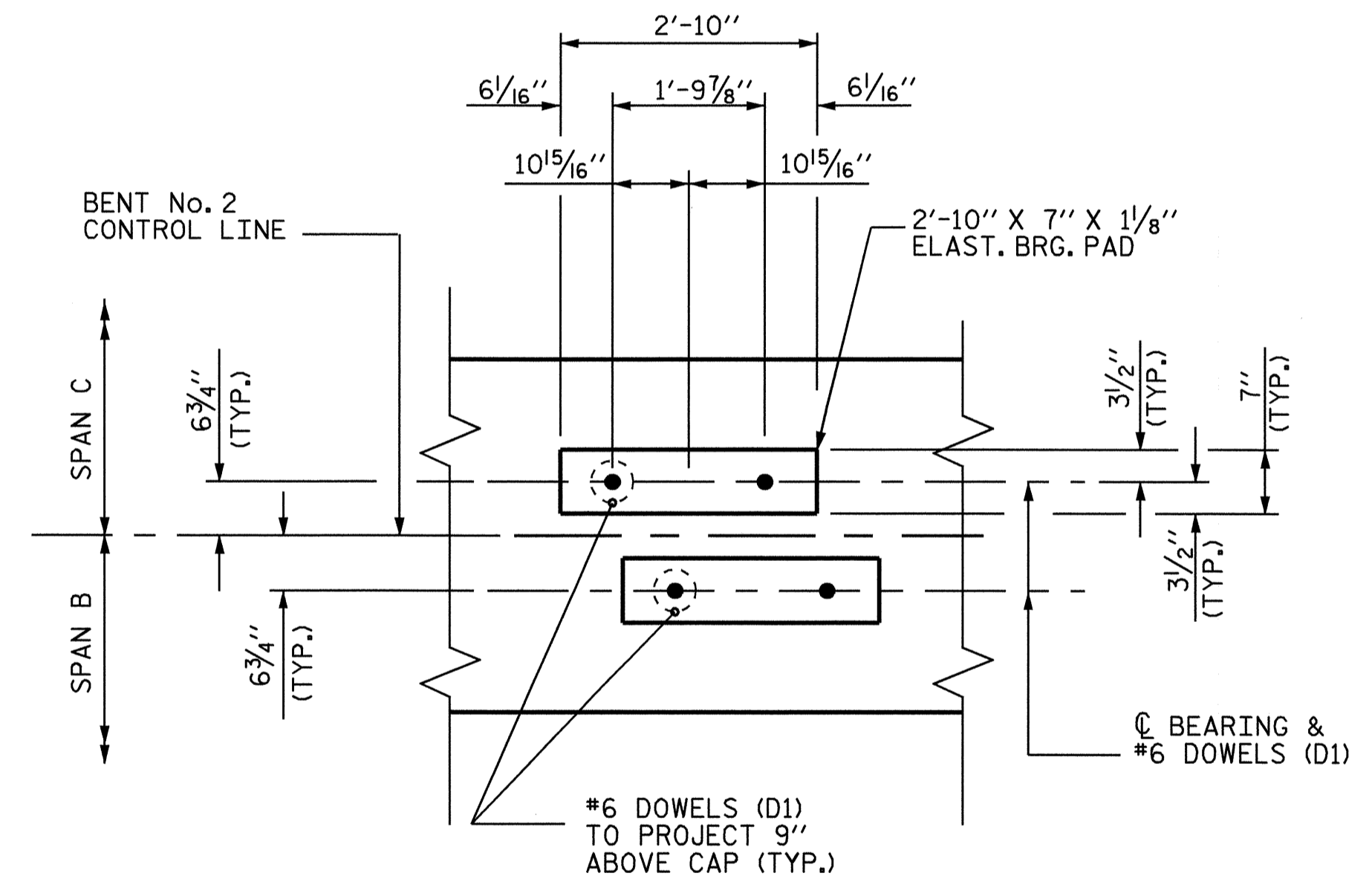
(EACH END SIMILAR)



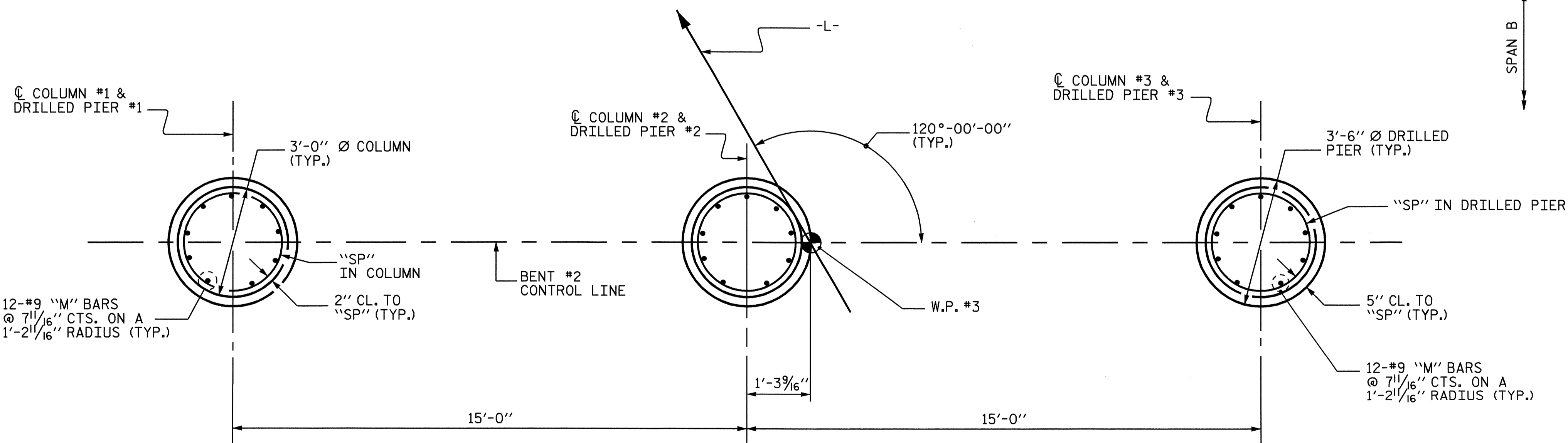
CONSTRUCTION JOINT DETAIL



BOTTOM OF CAP



DETAIL A



PLAN OF DRILLED PIERS & COLUMNS

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

PROJECT NO. B-3624  
 CALDWELL COUNTY  
 STATION: 15+71.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

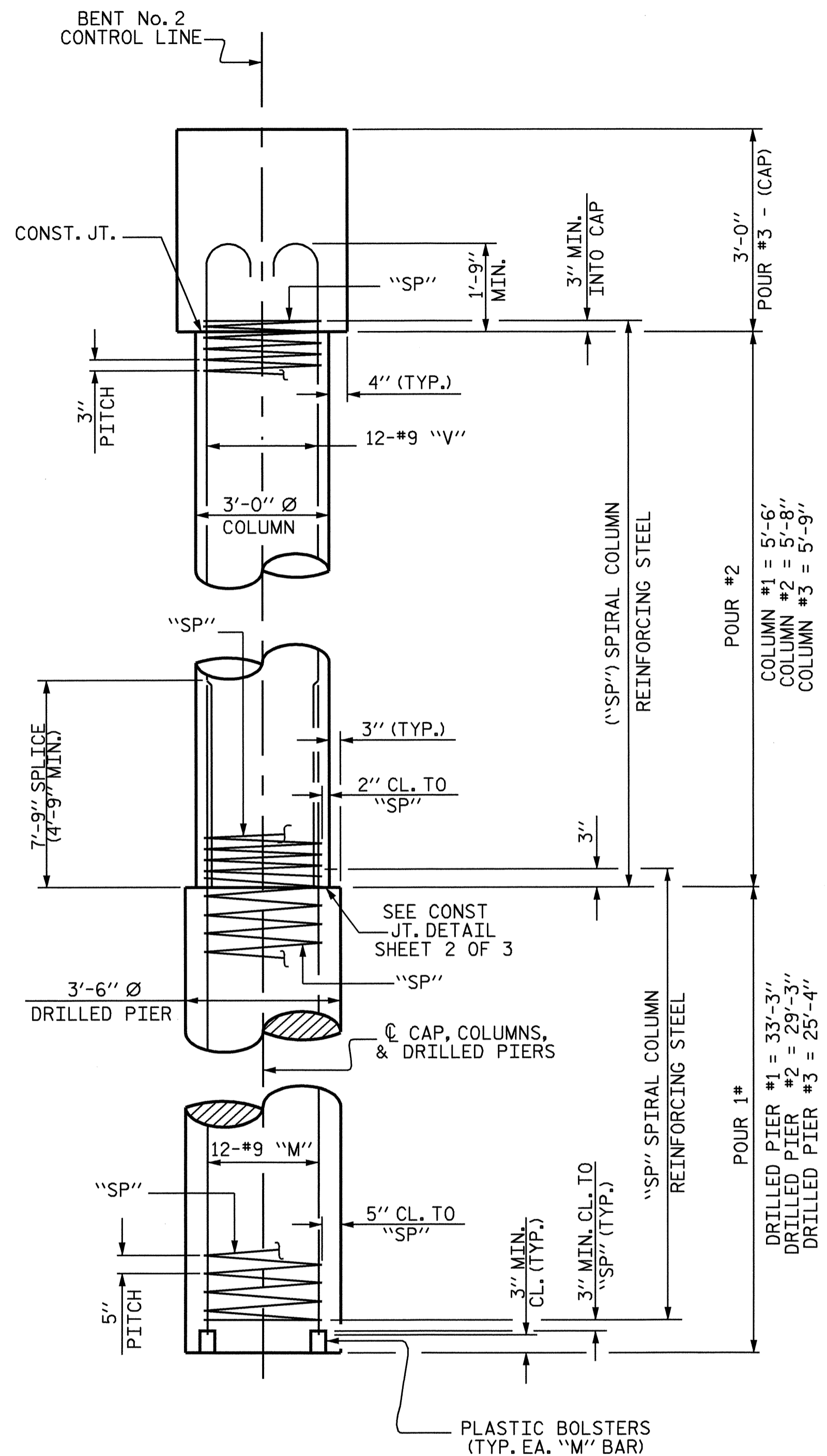
SUBSTRUCTURE  
 BENT No. 2



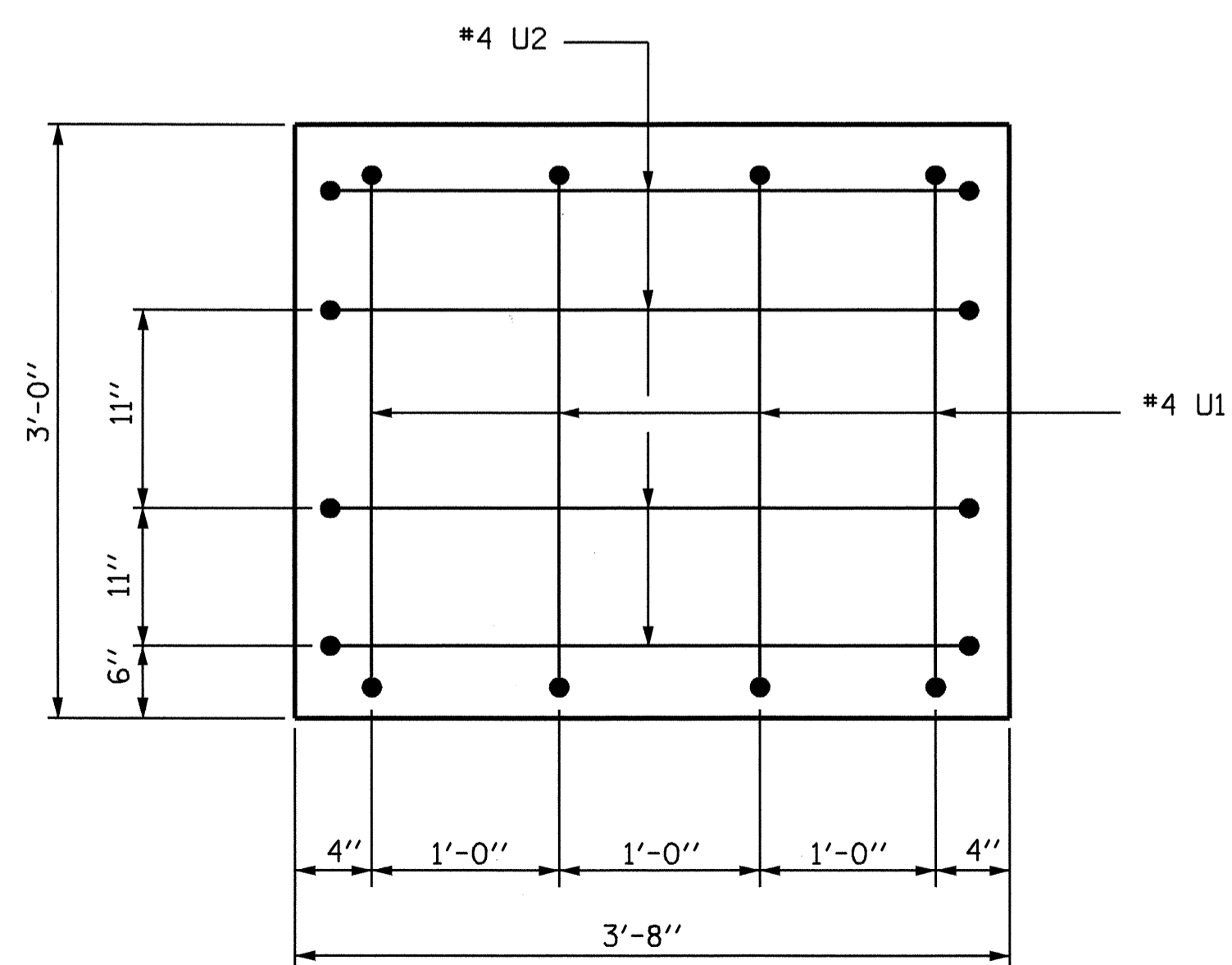
DRAWN BY: M. POOLE DATE: 4/2008  
 CHECKED BY: M. G. CHEEK DATE: 06-08

05-JUN-2008 08:36  
 RA\Structures\mipoole\B3624.ed.B2.01.dgn  
 mipoole

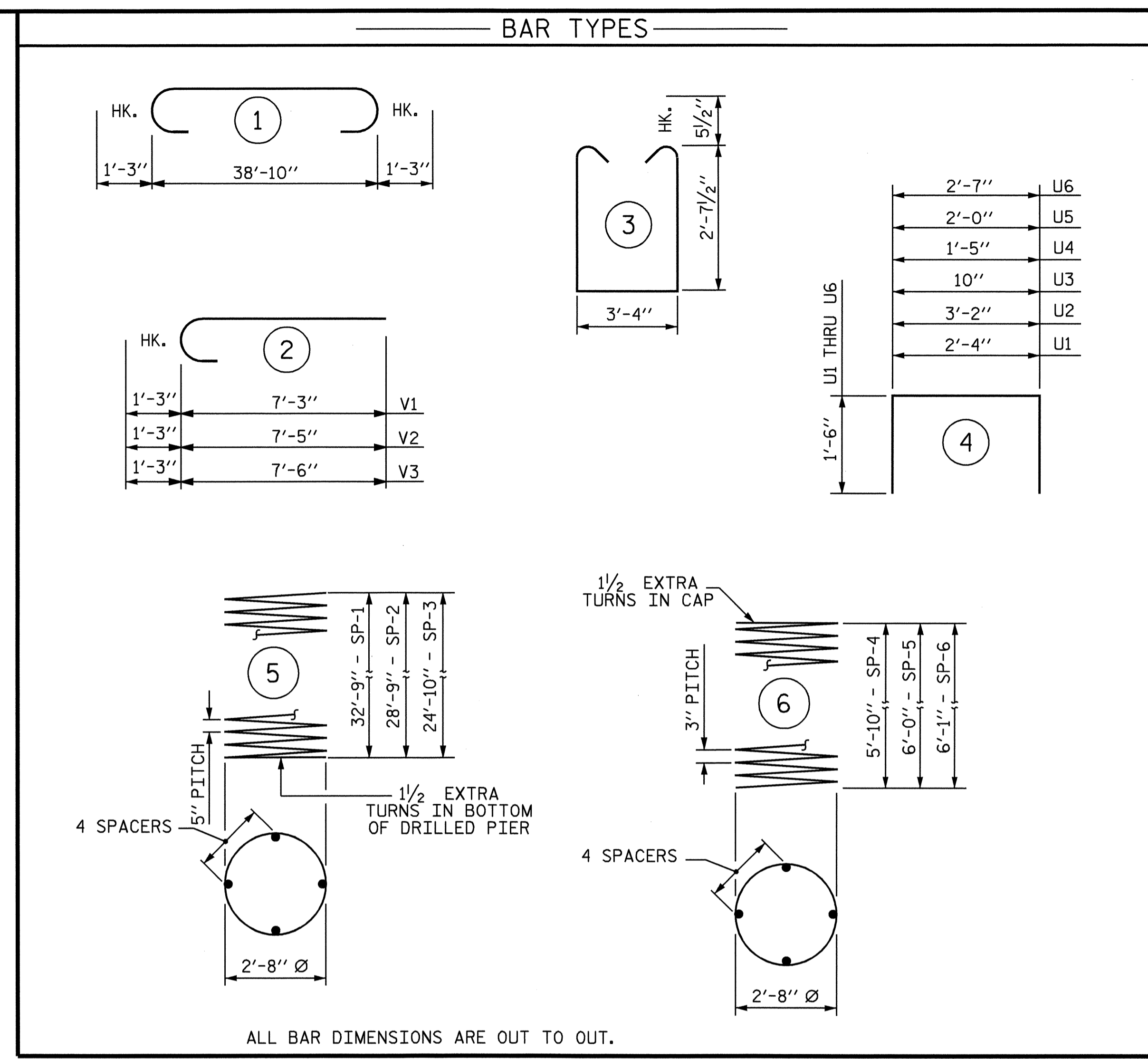
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			29



END ELEVATION



END OF CAP ELEVATION  
(TYP. EA. END)



ALL BAR DIMENSIONS ARE OUT TO OUT.  
 \*\* THE SP-3 & SP-4 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.  
 \*\*\* THE SP-1 & SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

▲ NO SEPARATE PAYMENT WILL BE MADE FOR CSL TUBES. CSL TUBES WILL BE INCLUDED IN THE UNIT BID FOR DRILLED PIERS.

BILL OF MATERIAL

BENT No. 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	5	9	STR	39'-0"	663
B2	5	9	1	41'-4"	703
B3	4	5	STR	39'-0"	163
B4	2	4	STR	3'-4"	4
B5	2	4	STR	3'-10"	5
D1	40	6	STR	1'-6"	90
M1	12	9	STR	40'-9"	1663
M2	12	9	STR	36'-9"	1499
M3	12	9	STR	32'-10"	1340
S1	26	5	3	9'-6"	258
U1	8	4	4	5'-4"	29
U2	8	4	4	6'-2"	33
U3	2	4	4	3'-10"	5
U4	2	4	4	4'-5"	6
U5	2	4	4	5'-0"	7
U6	2	4	4	5'-7"	7
V1	12	9	2	8'-6"	347
V2	12	9	2	8'-8"	354
V3	12	9	2	8'-9"	357

REINFORCING STEEL 7533 LBS.

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-1	1	***	5	660'-1"	688
SP-2	1	***	5	579'-10"	605
SP-3	1	***	5	503'-10"	525
SP-4	1	**	6	204'-3"	136
SP-5	1	**	6	208'-4"	139
SP-6	1	**	6	212'-6"	142

SPIRAL COLUMN REINF. STEEL = 2235 LBS.

CLASS "A" CONCRETE		
POUR 2	COLUMNS	4.5 C.Y.
POUR 3	CAP	16.0 C.Y.
POUR 4	LATERAL GUIDE	0.3 C.Y.
TOTAL		20.8 C.Y.

DRILLED PIER QUANTITIES

DRILLED PIER CONCRETE BREAKDOWN  
 POUR 1 (DRILLED PIERS) 31.3 C.Y.

3'-6" Ø DRILLED PIERS NOT IN SOIL 11.00 LIN. FT.  
 3'-6" Ø DRILLED PIERS IN SOIL 76.83 LIN. FT.

PERMANENT STEEL CASING 56.67 LIN. FT.

▲ CSL TUBES 381.33 LIN. FT.

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SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT No. 2



DRAWN BY: M. POOLE DATE: 3/2008  
 CHECKED BY: M. G. CHEEK DATE: 6/2008

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			29

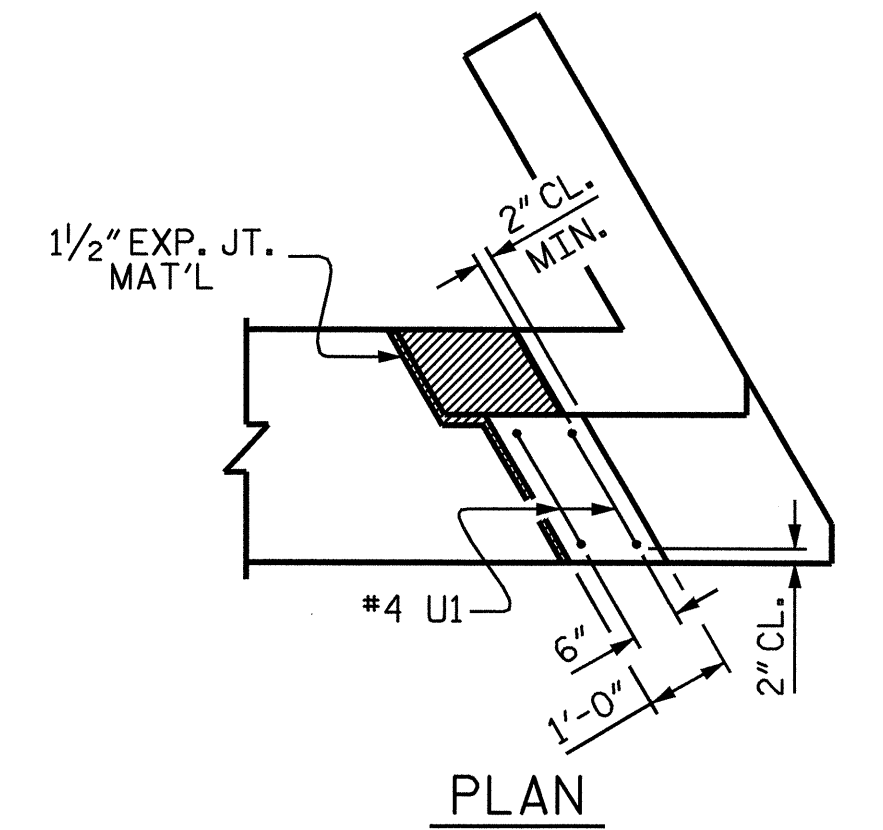
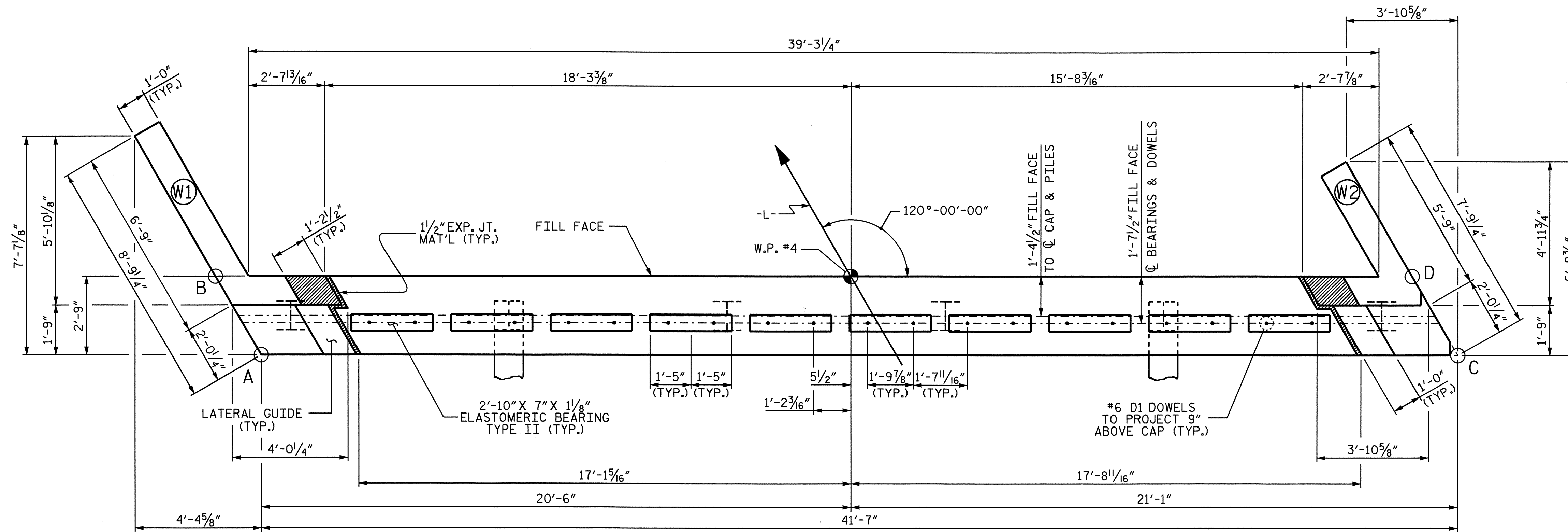


**NOTES**

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

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

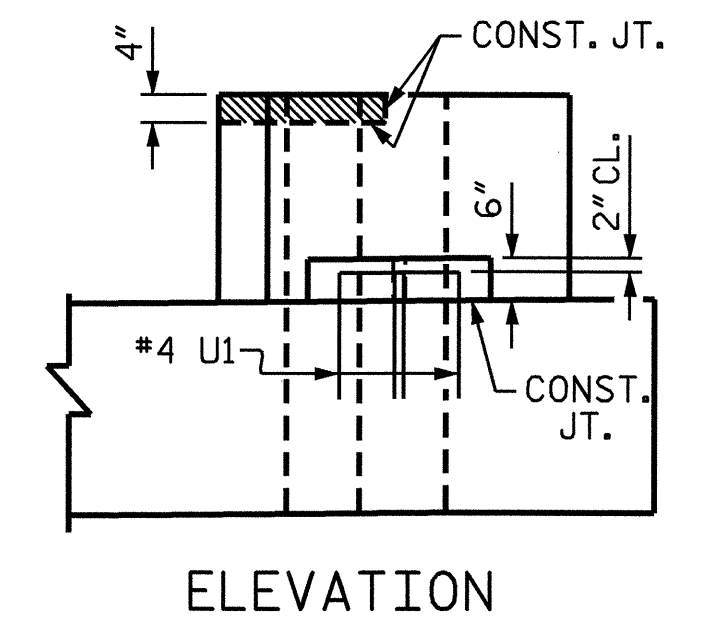
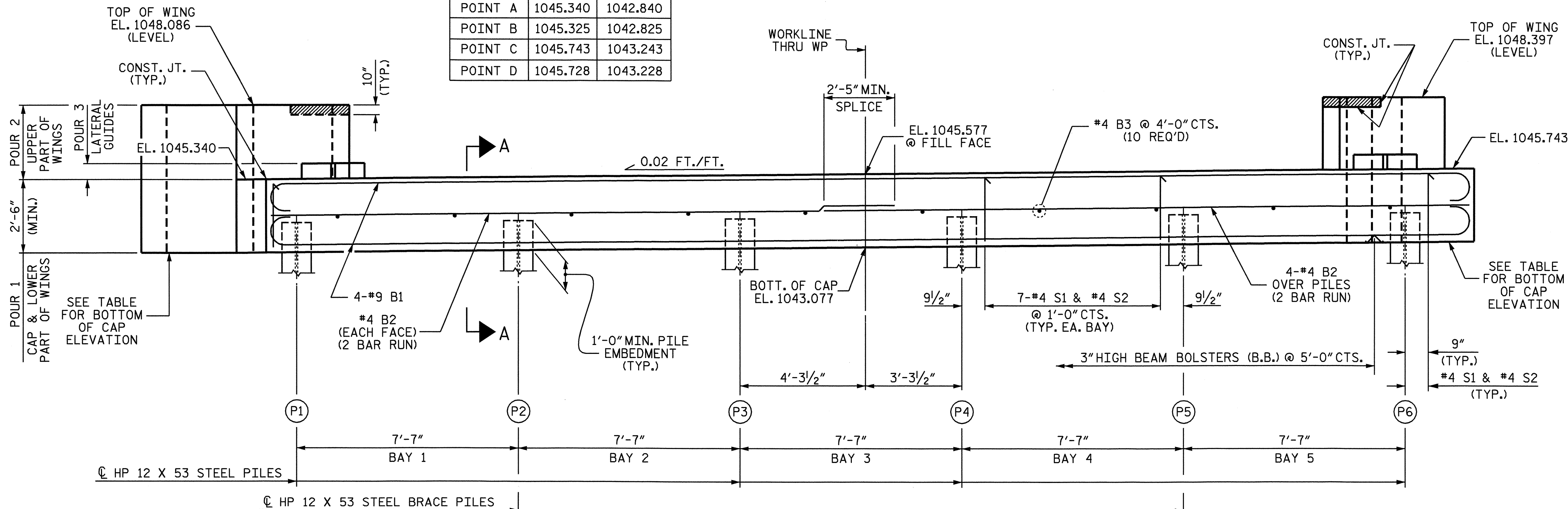
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER CORED SLAB UNITS ARE IN PLACE.



**ELEVATIONS OF NOTED POINTS**

	TOP OF CAP	BOTTOM OF CAP
POINT A	1045.340	1042.840
POINT B	1045.325	1042.825
POINT C	1045.743	1043.243
POINT D	1045.728	1043.228

**PLAN**



**TOP OF PILE ELEVATIONS**

PILE NO.	ELEVATIONS
P1	1043.869
P2	1043.942
P3	1044.016
P4	1044.089
P5	1044.163
P6	1044.236

**ELEVATION**

**LATERAL GUIDE**  
(EACH END SIMILAR)

PROJECT NO. B-3624  
CALDWELL COUNTY  
 STATION: 15+71.50 -L-

SHEET 1 OF 3

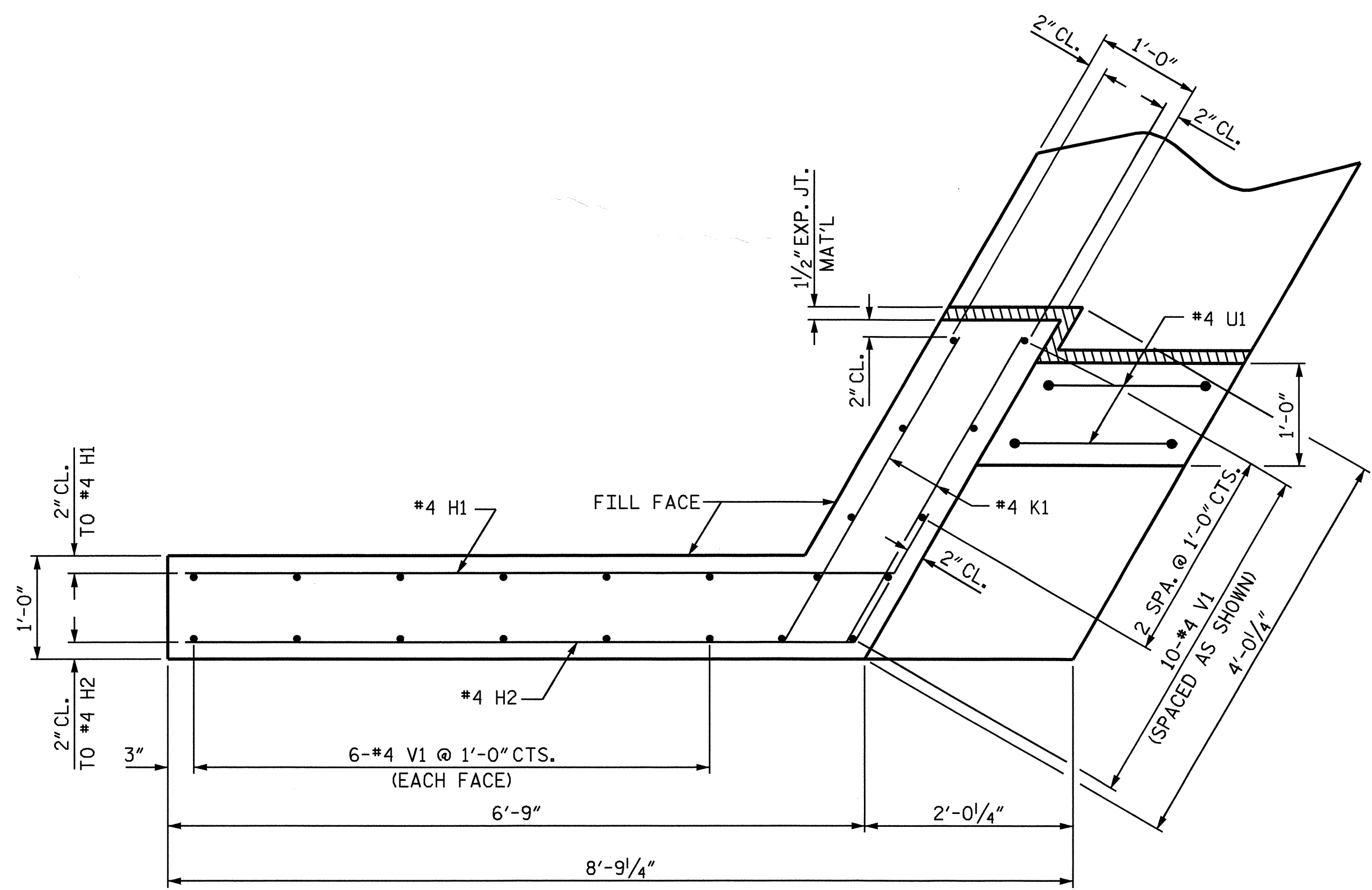
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE  
 END BENT NO. 2**

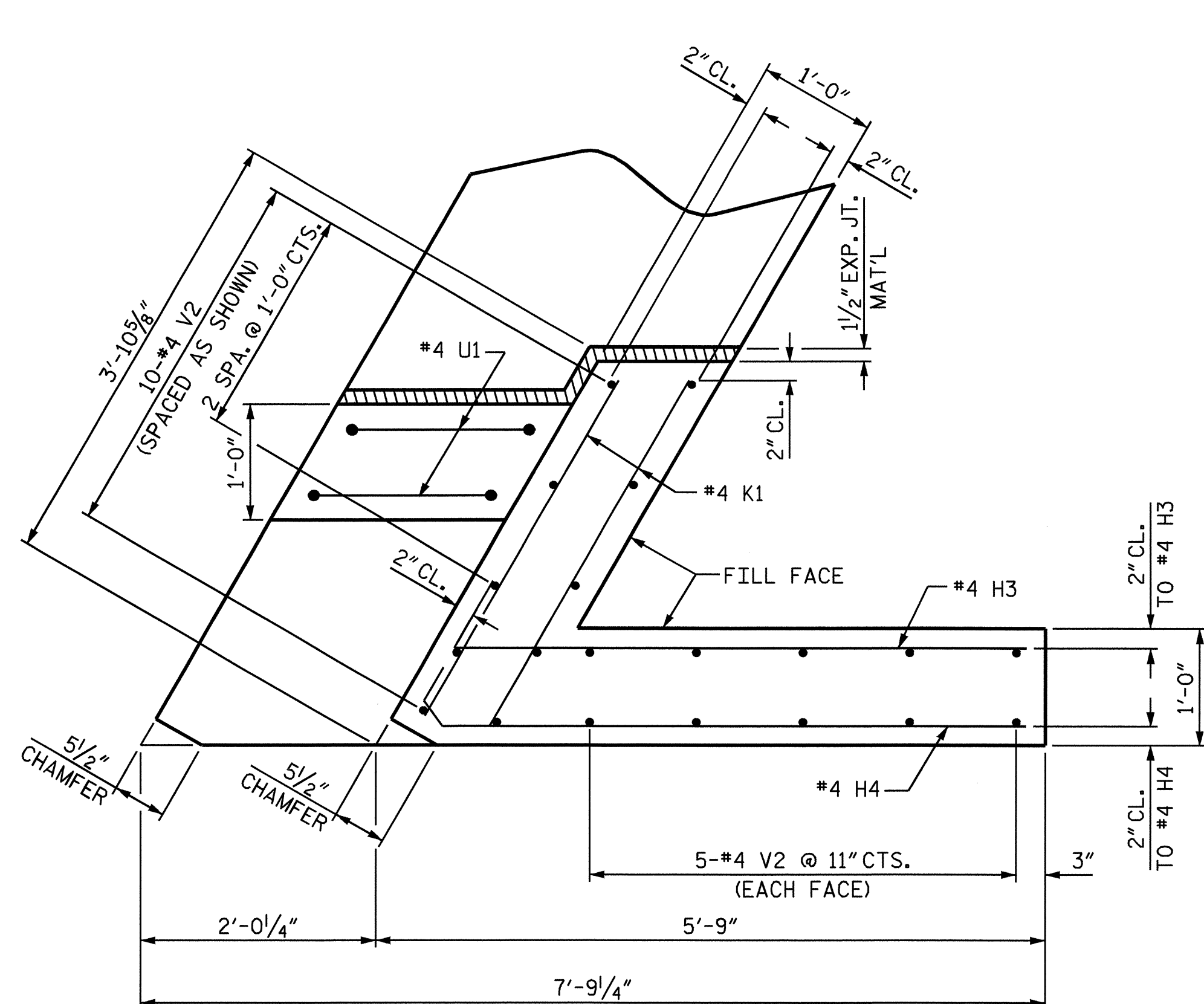
REVISIONS						SHEET NO. S-24
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 29
2			4			



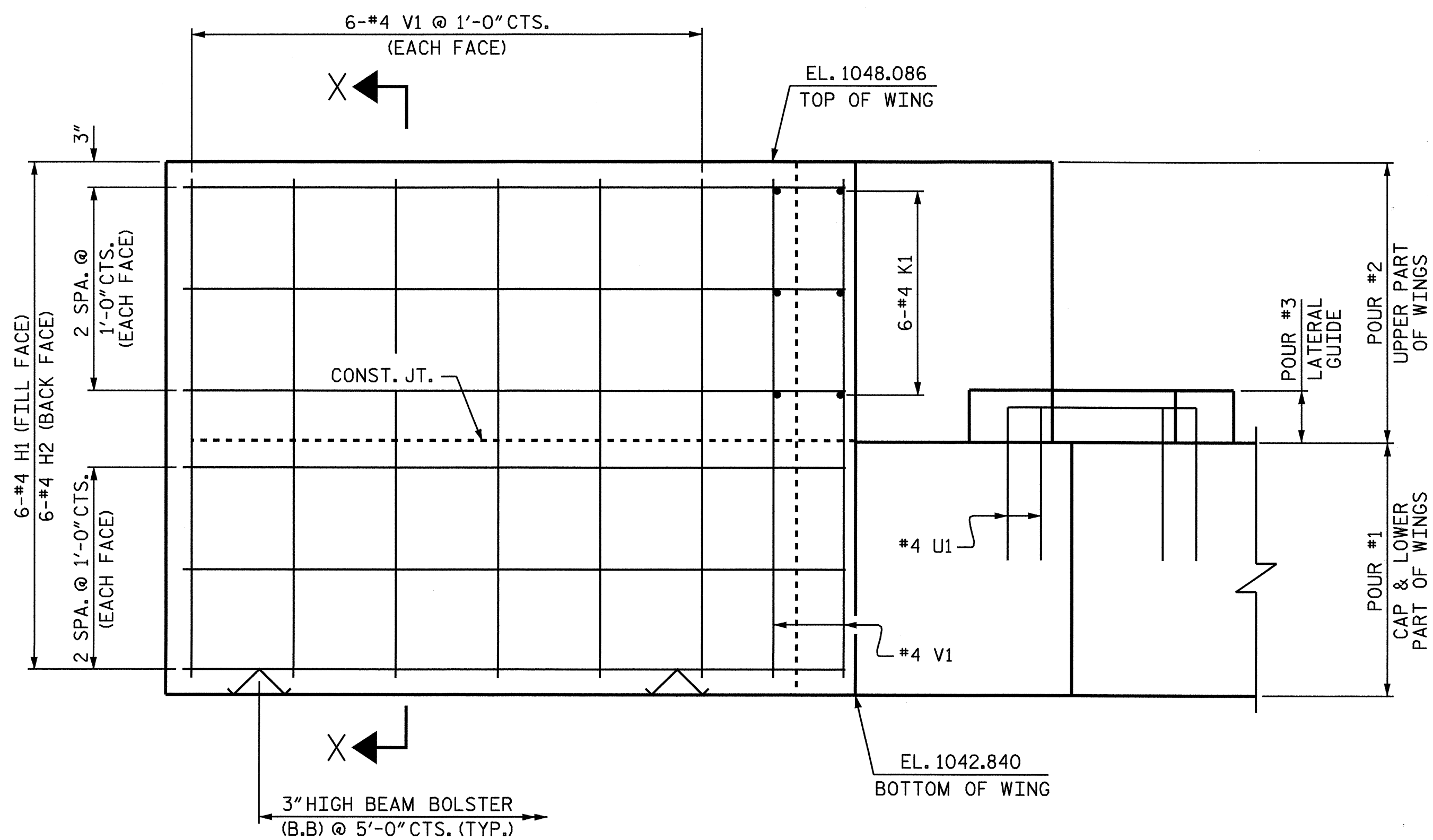
DRAWN BY: A. SORSENGINH DATE: 4/25/08  
 CHECKED BY: M.L. BROWN DATE: 5-08



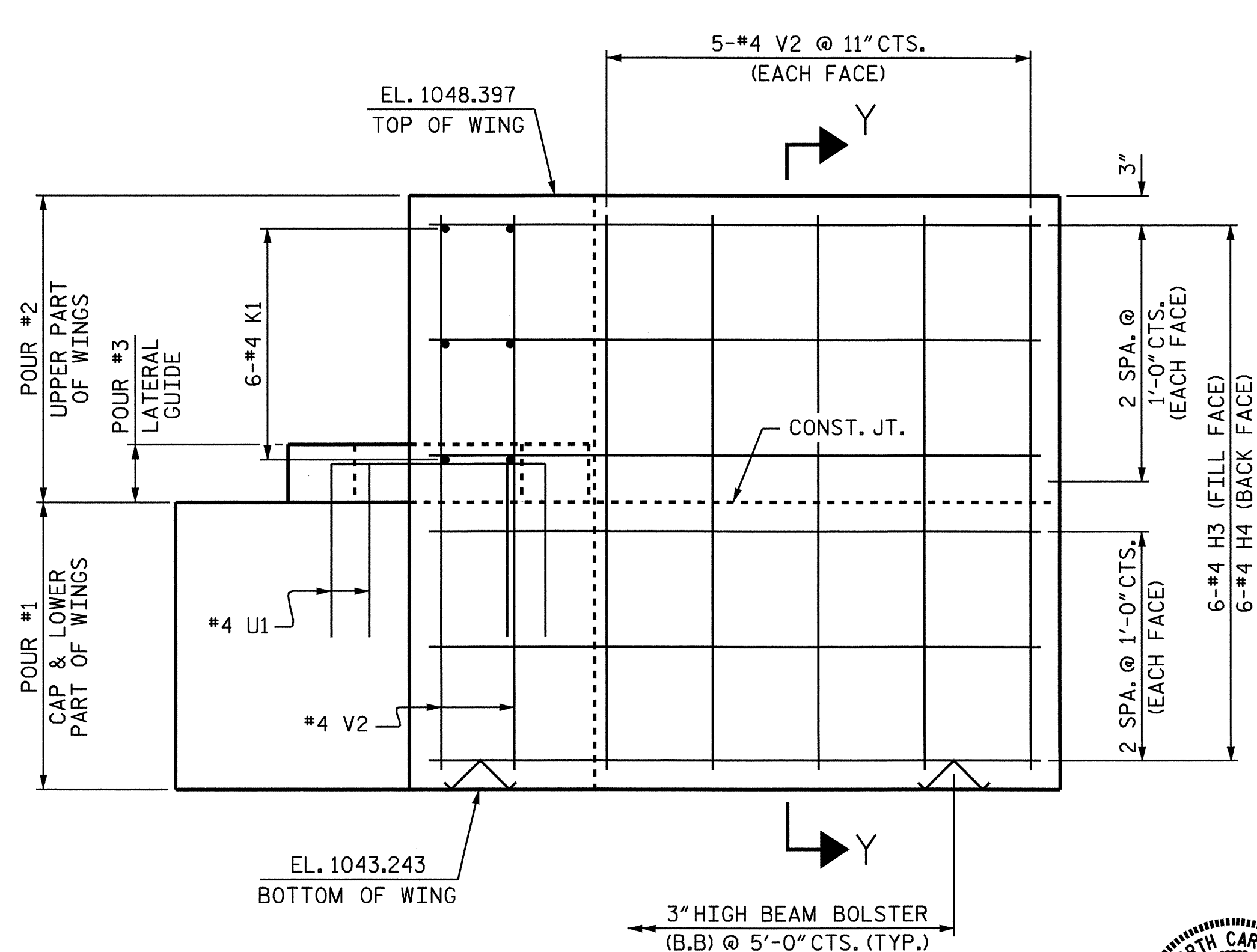
PLAN OF LEFT WING (W1)



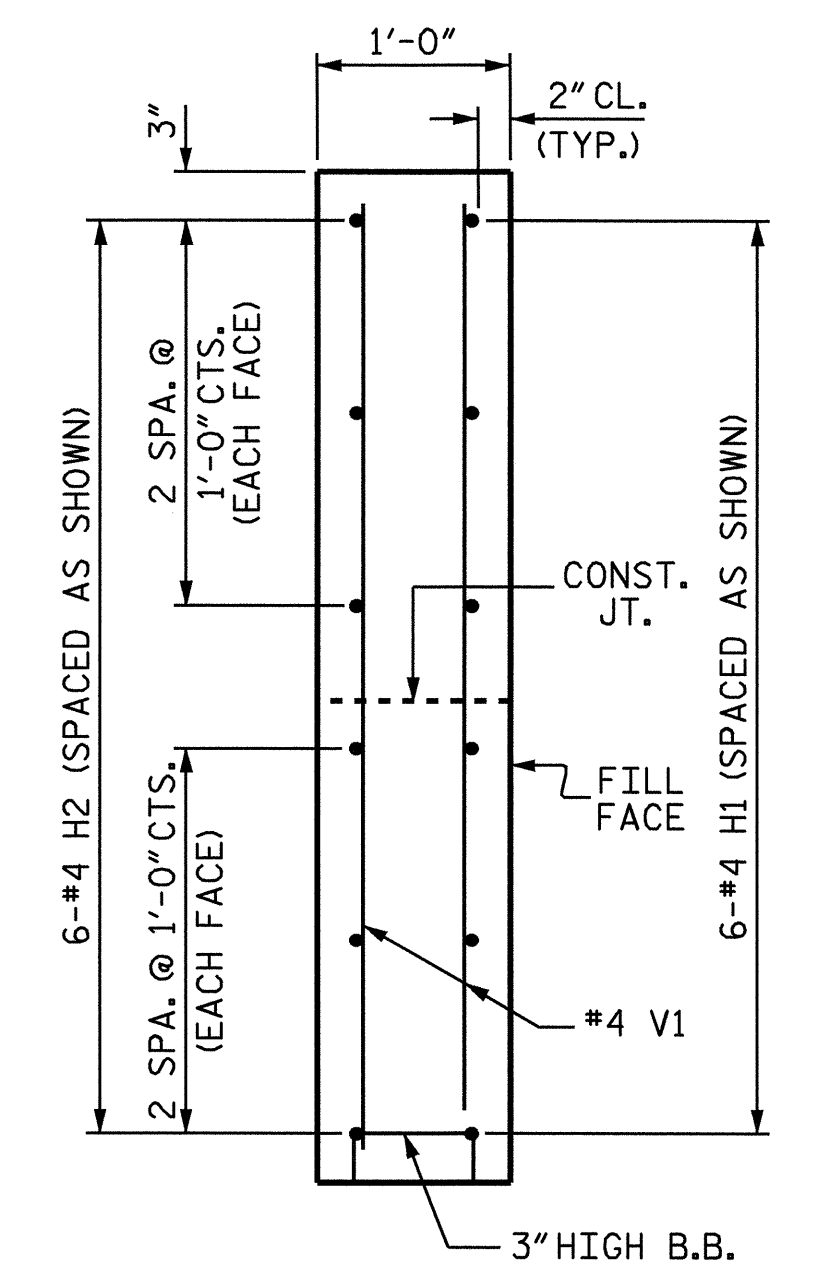
PLAN OF RIGHT WING (W2)



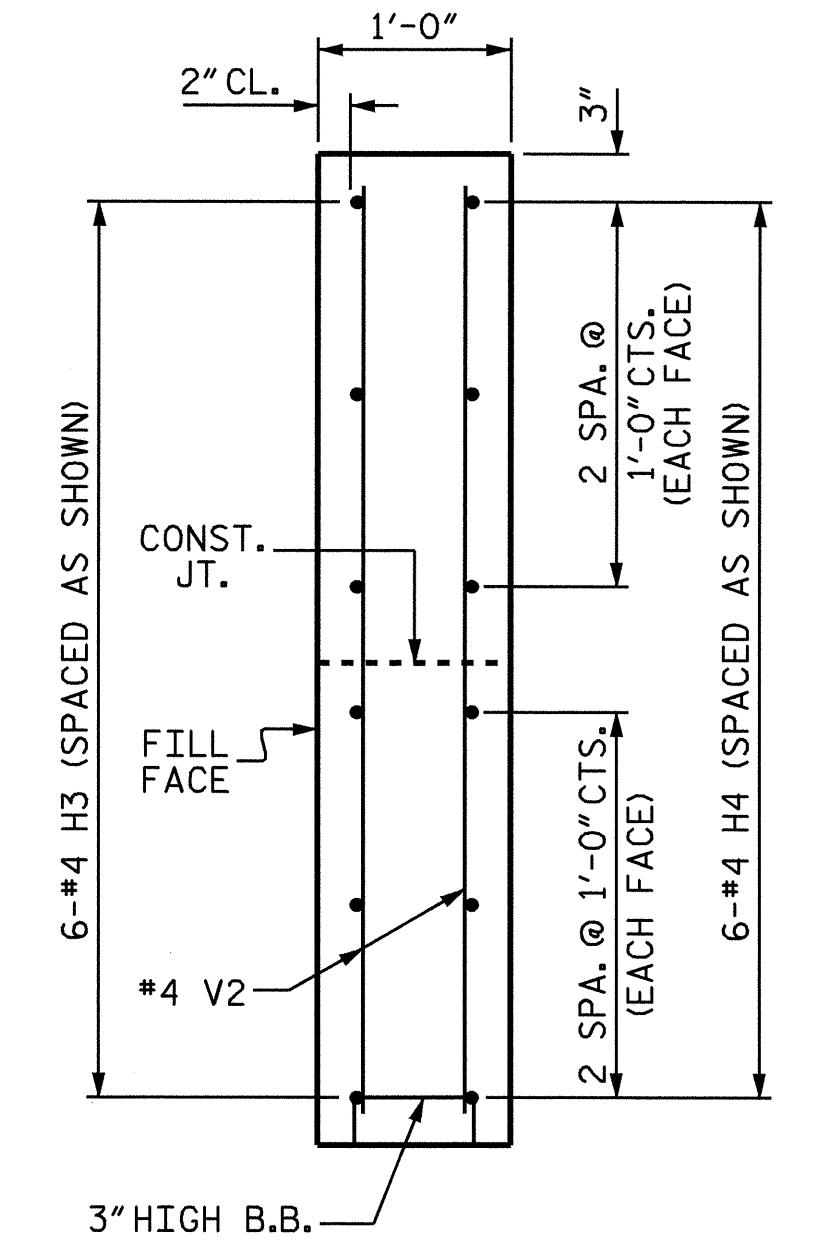
ELEVATION OF LEFT WING (W1)



ELEVATION OF RIGHT WING (W2)



SECTION X-X



SECTION Y-Y

PROJECT NO. B-3624  
CALDWELL COUNTY  
 STATION: 15+71.50 -L-

SHEET 2 OF 3

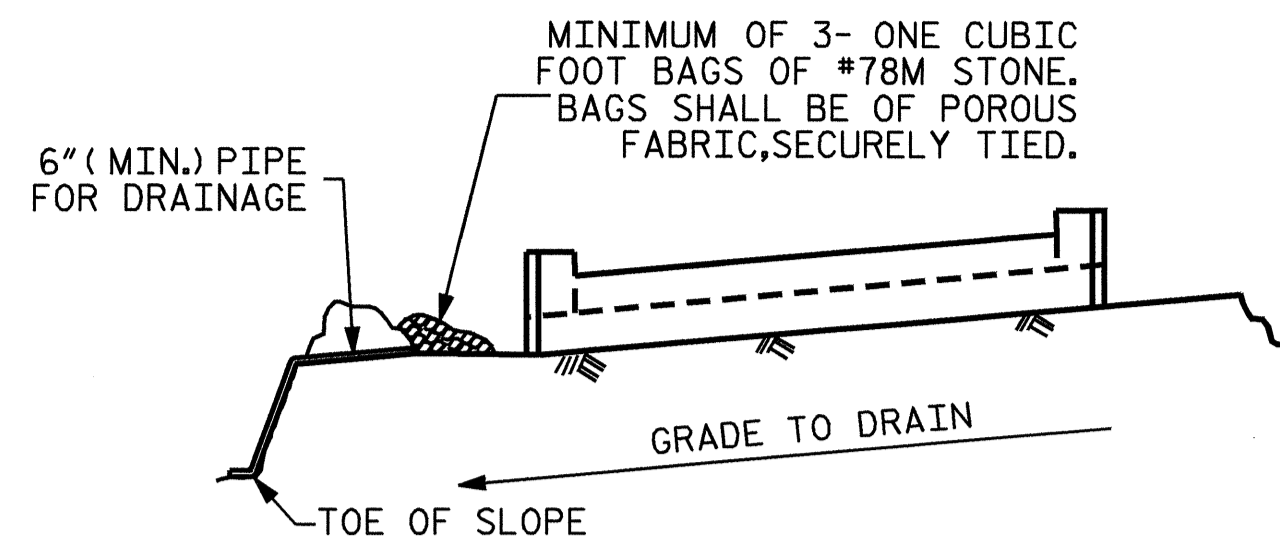
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT NO. 2



DRAWN BY: A. SORSENGINH DATE: 4/25/08  
 CHECKED BY: M.L. BROWN DATE: 5-08

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

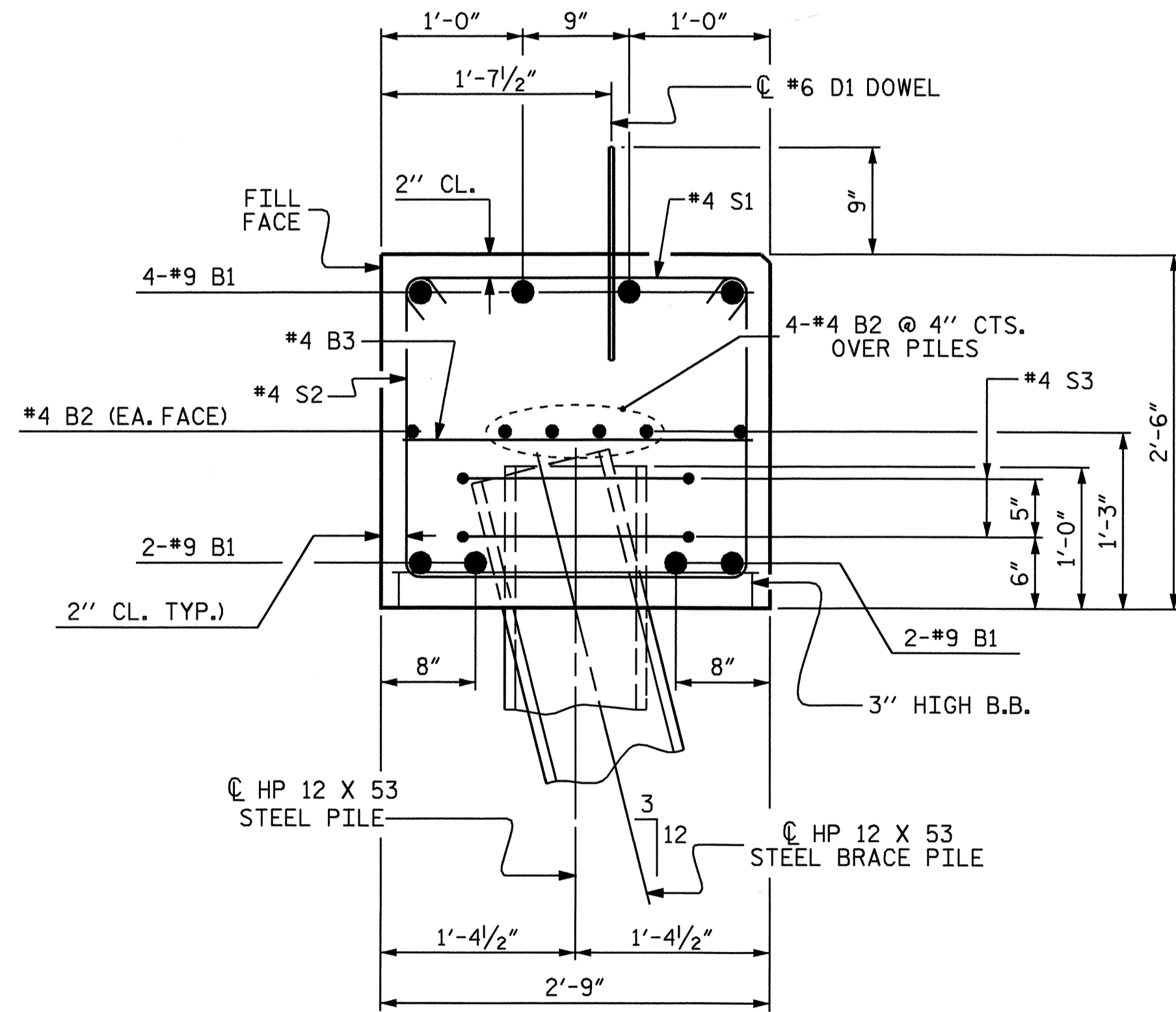


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

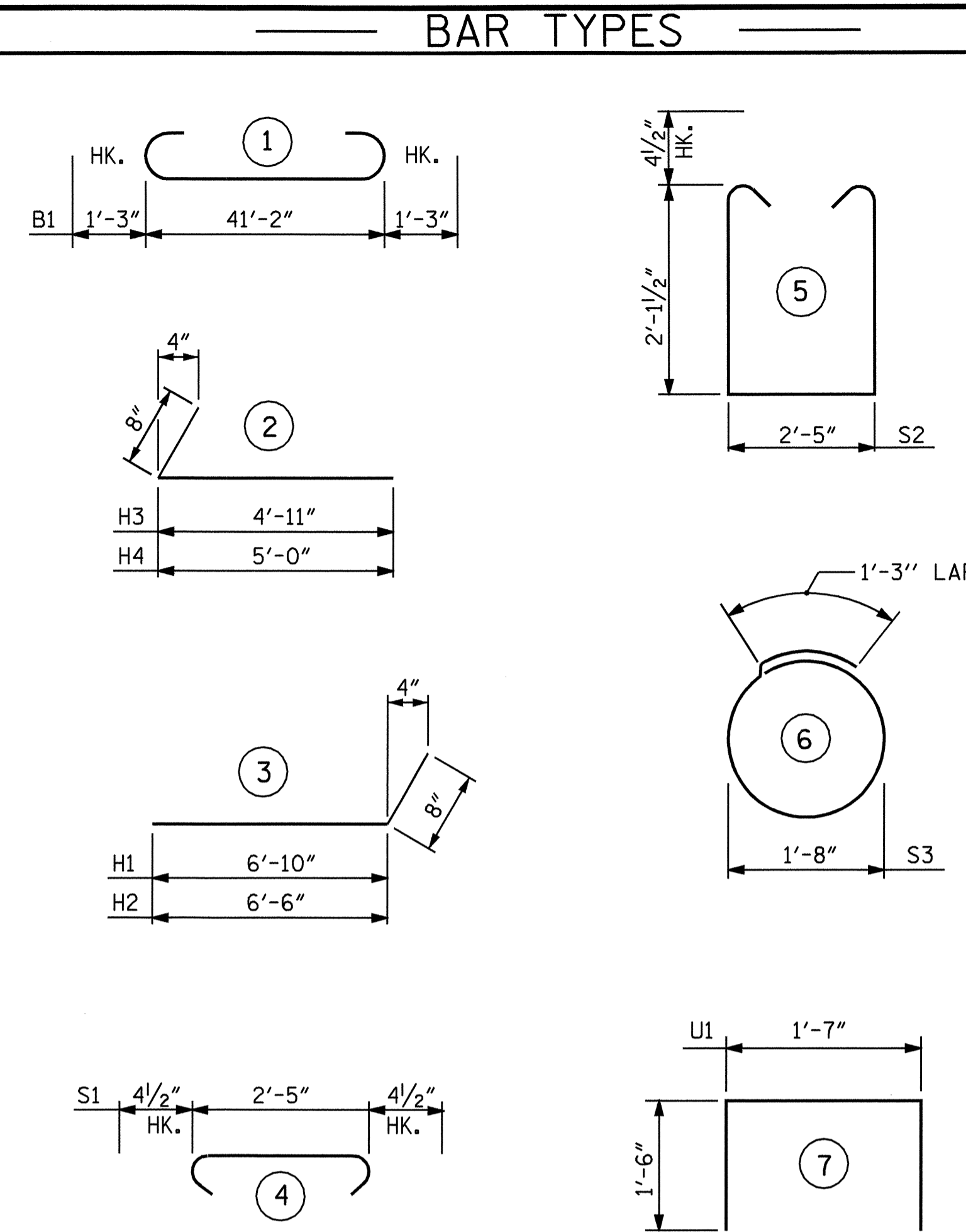
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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



SECTION A-A



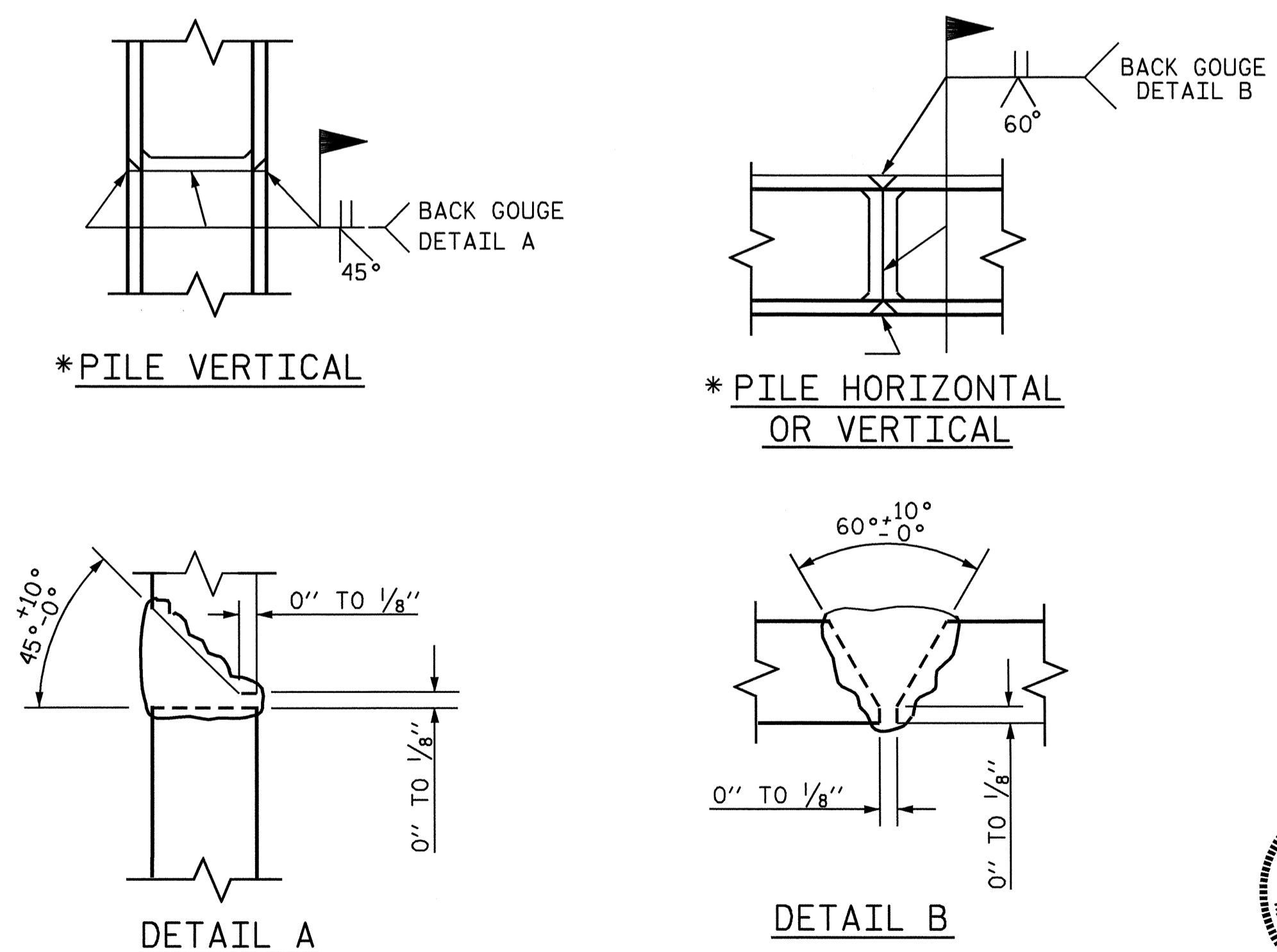
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT NO. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		43'-8"	1188
B2	12	#4	STR.	21'-10"	175
B3	10	#4	STR.	2'-5"	16
D1	20	#6	STR.	1'-6"	45
H1	6	#4	3	7'-6"	30
H2	6	#4	3	7'-2"	29
H3	6	#4	2	5'-7"	22
H4	6	#4	2	5'-8"	23
K1	12	#4	STR.	3'-5"	27
S1	37	#4	4	3'-2"	78
S2	37	#4	5	7'-5"	183
S3	12	#4	6	6'-6"	52
U1	4	#4	7	4'-7"	12
V1	22	#4	STR.	4'-8"	69
V2	20	#4	STR.	4'-7"	61

REINFORCING STEEL = 2010 LBS

CLASS A CONCRETE BREAKDOWN	
POUR #1 CAP & LOWER PART OF WINGS	11.5 C.Y.
POUR #2 UPPER PART OF WINGS	1.8 C.Y.
POUR #3 LATERAL GUIDES	0.1 C.Y.
TOTAL CLASS A CONCRETE	13.4 C.Y.

HP 12 X 53 STEEL PILES  
NO. 6 210 LIN. FT.



### PILE SPLICE DETAILS

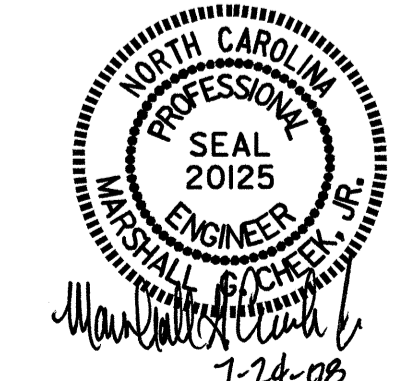
\* POSITION OF PILE DURING WELDING.

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SHEET 3 OF 3

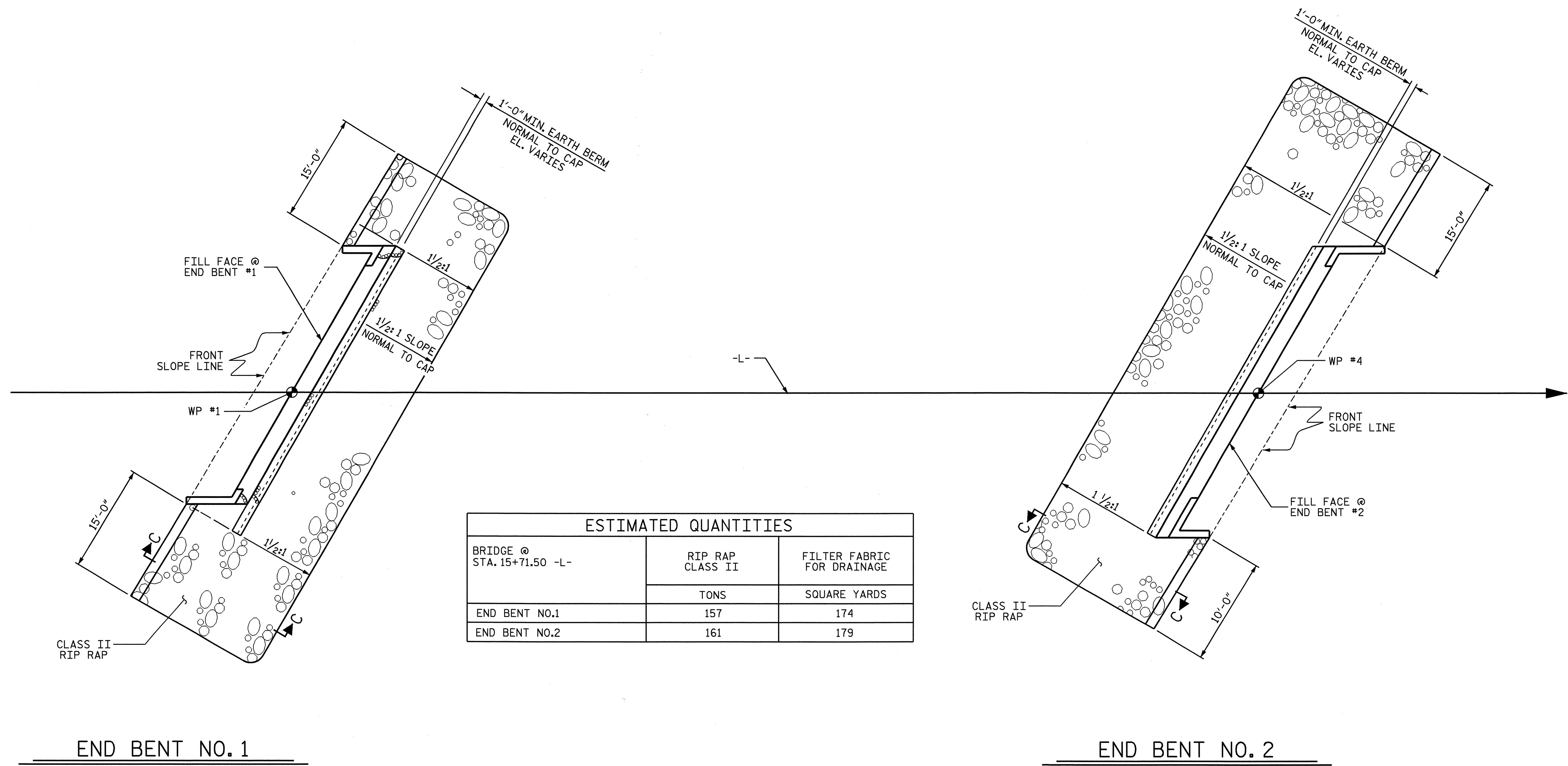
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
END BENT NO. 2



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			29

DRAWN BY: A. SORSENGINH DATE: 4/25/08  
CHECKED BY: M.L. BROWN DATE: 5-08

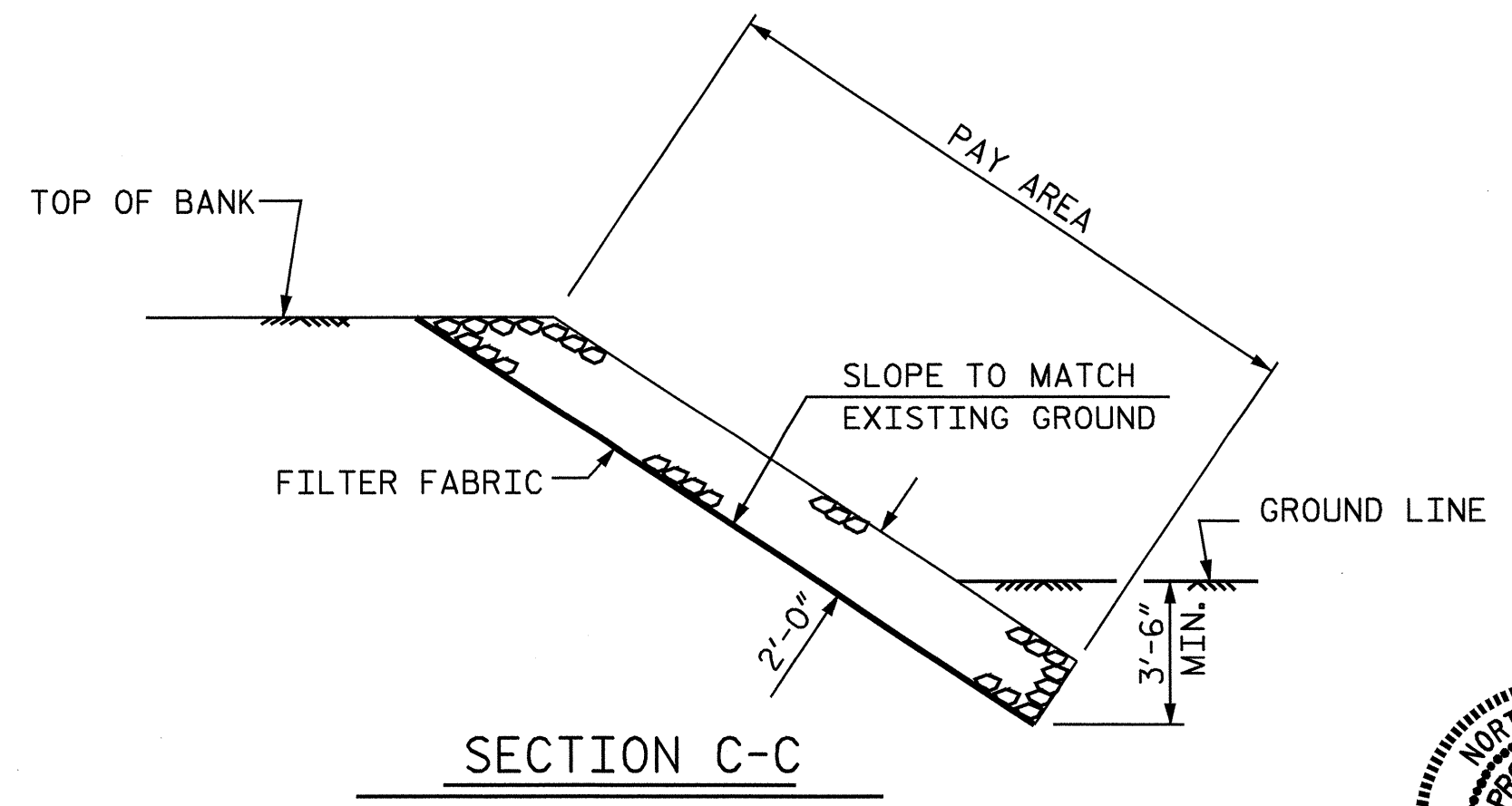
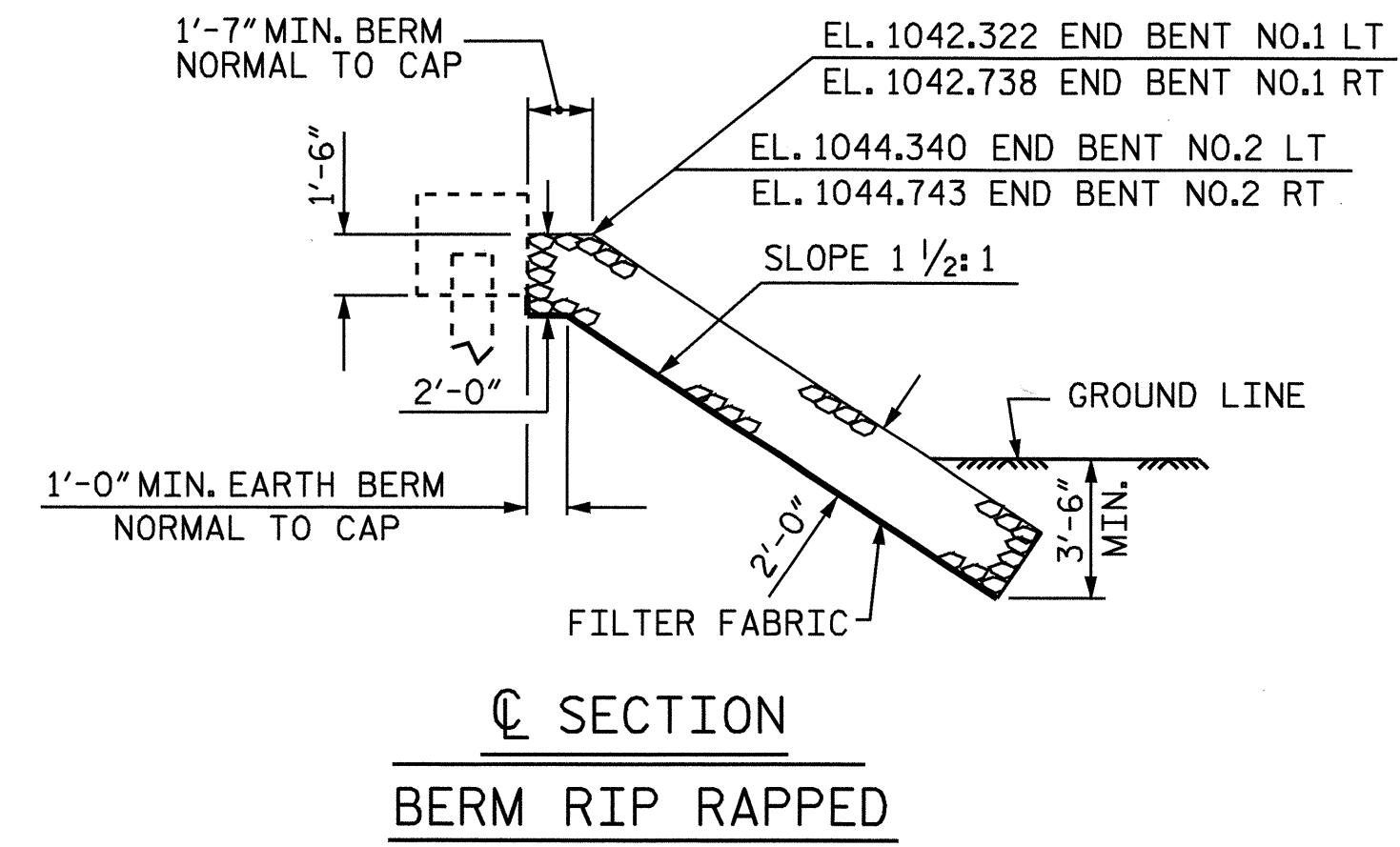


ESTIMATED QUANTITIES		
BRIDGE @ STA. 15+71.50 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT NO.1	157	174
END BENT NO.2	161	179

END BENT NO. 1

END BENT NO. 2

PLAN



PROJECT NO. B-3624  
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STATION: 15+71.50 -L-

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

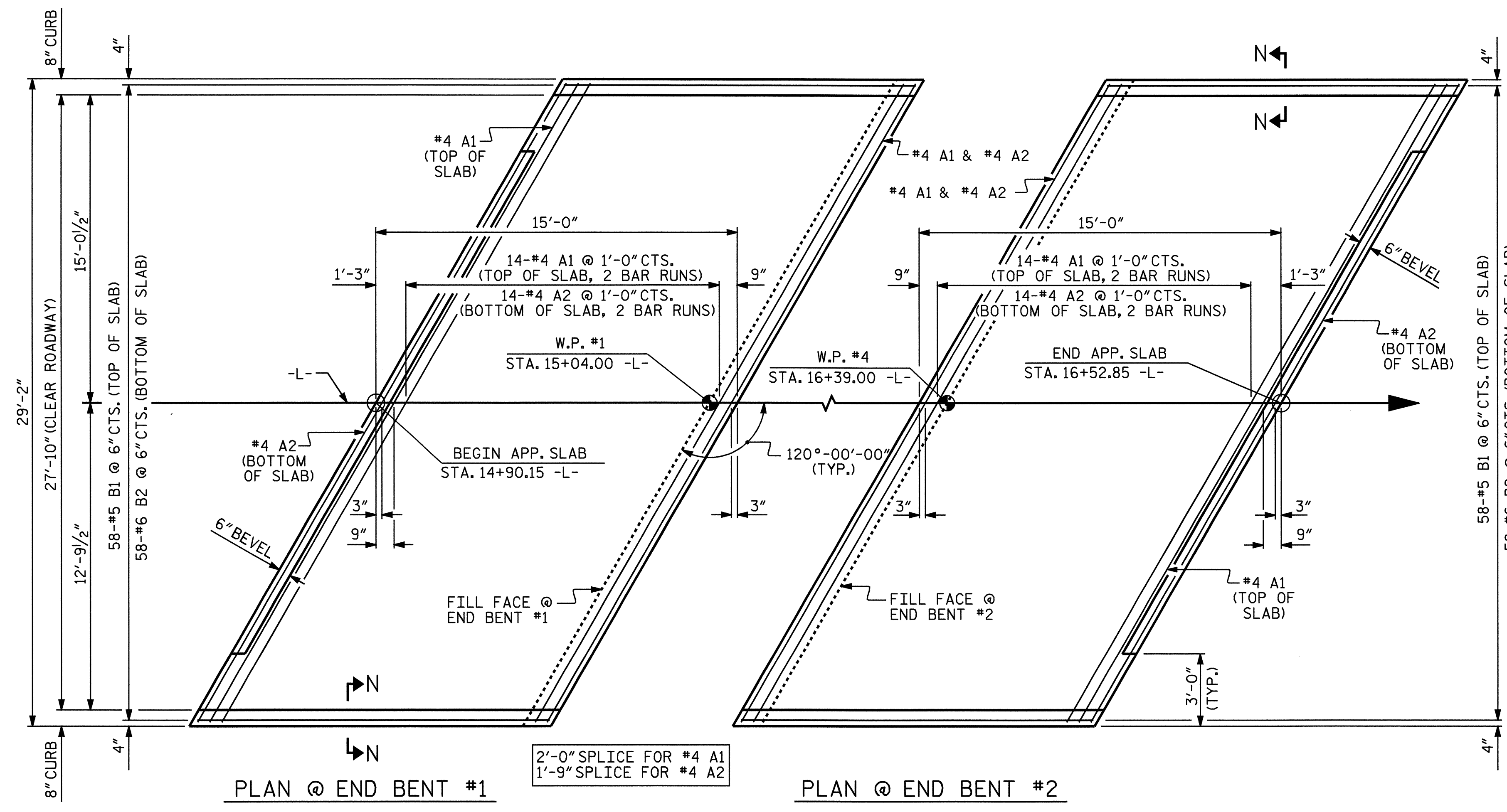
STANDARD  
RIP RAP DETAILS



ASSEMBLED BY : A.L. FIGUEROA DATE : 5-15-08  
CHECKED BY : D. HODGE DATE : 6-17-08

DRAWN BY : REK 1/84 REV. 8/16/99 RWW/LES  
CHECKED BY : RDU 1/84 REV. 10/17/00 RWW/LES  
REV. 5/1/06 TLA/GM

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



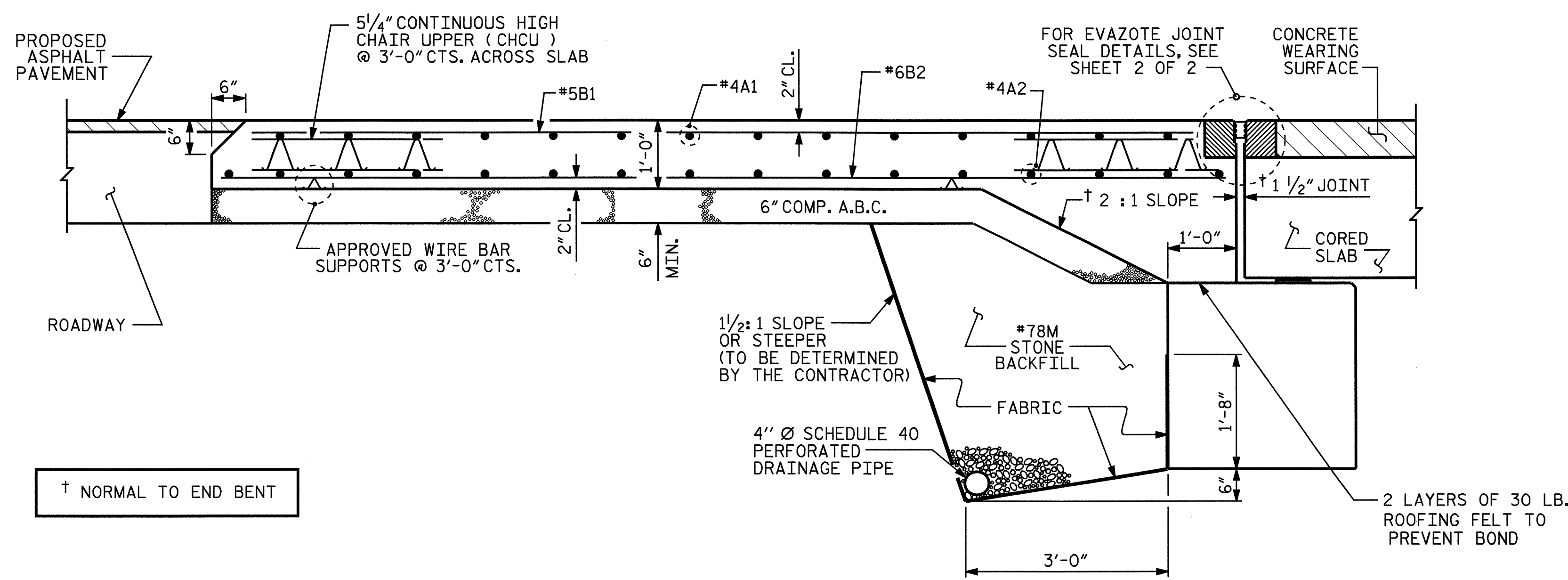
PLAN @ END BENT #1

PLAN @ END BENT #2

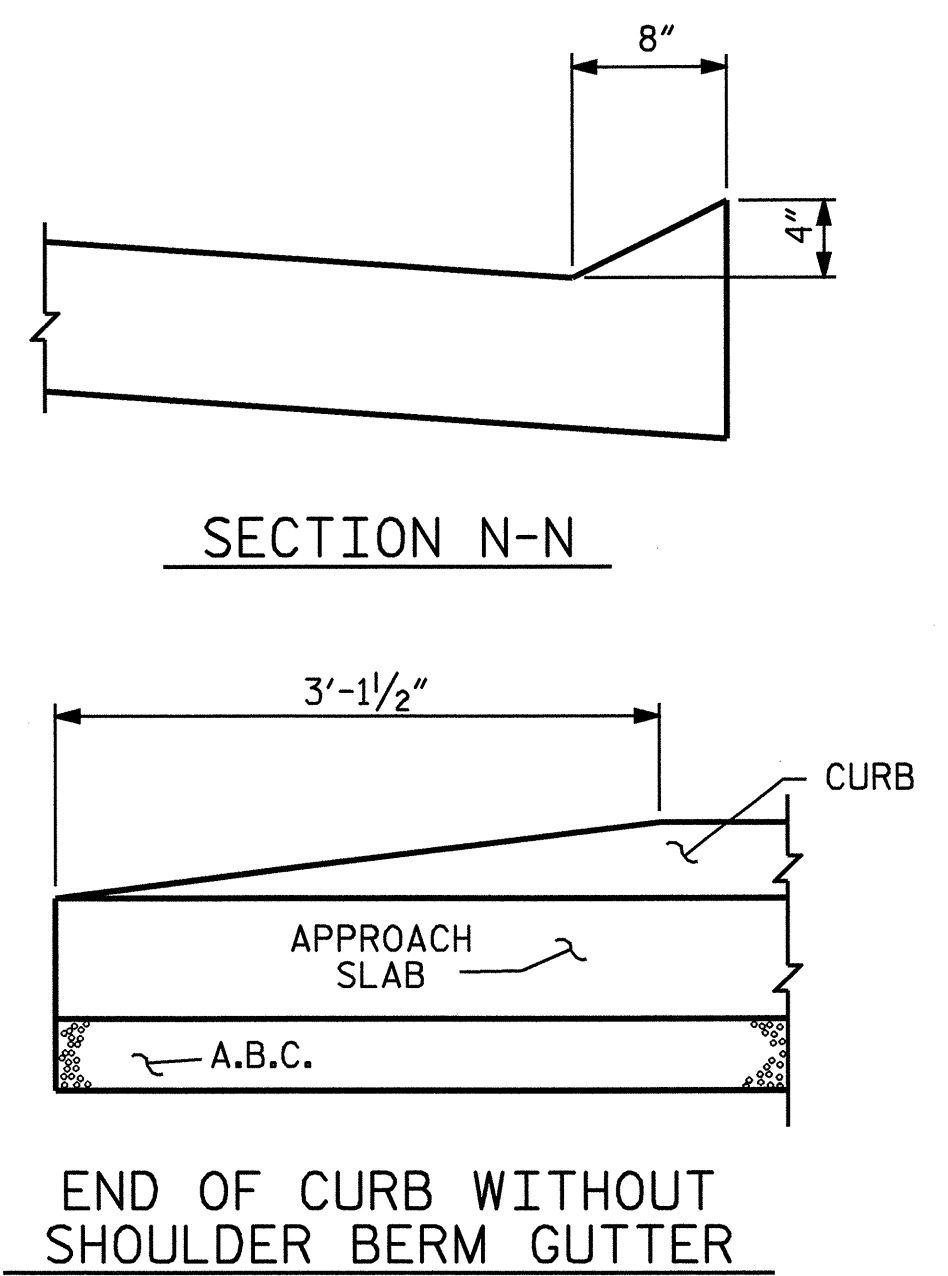
NOTES

- FOR BRIDGE APPROACH FILL INCLUDING FABRIC, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.
- APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
- FABRIC SHALL BE TYPE 1 ENGINEERING FABRIC IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.
- #78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.
- #78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.
- FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.
- AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.
- 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 SLAB GROOVING IS REQUIRED. PAYMENT FOR APPROACH SLAB GROOVING IS INCLUDED IN THE "GROOVING BRIDGE FLOORS" PAY ITEM.

BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	32	#4	STR	17'-8"	378
A2	32	#4	STR	17'-6"	374
*B1	58	#5	STR	14'-1"	852
B2	58	#6	STR	14'-7"	1270
REINFORCING STEEL				LBS.	1644
*EPOXY COATED REINFORCING STEEL				LBS.	1230
CLASS AA CONCRETE				C. Y.	18.0
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	32	#4	STR	17'-8"	378
A2	32	#4	STR	17'-6"	374
*B1	58	#5	STR	14'-1"	852
B2	58	#6	STR	14'-7"	1270
REINFORCING STEEL				LBS.	1644
*EPOXY COATED REINFORCING STEEL				LBS.	1230
CLASS AA CONCRETE				C. Y.	18.0
* THESE BARS ARE EPOXY COATED					
ELASTOMERIC CONCRETE					
AT END BENT #1				CU. FT.	14.7
AT END BENT #2				CU. FT.	14.7
TOTAL				CU. FT.	29.4



SECTION THRU SLAB



CURB DETAILS

ASSEMBLED BY : A.L.FIGUEROA	DATE : 6/28/06
CHECKED BY : M.G.CHEEK	DATE : 3/31/08
DRAWN BY : FCJ 6/87	REV. 7/10/01 LES/RDR
CHECKED BY : EGA 6/87	REV. 5/7/03R RWW/JTE
	REV. 5/1/06R KMM/GM

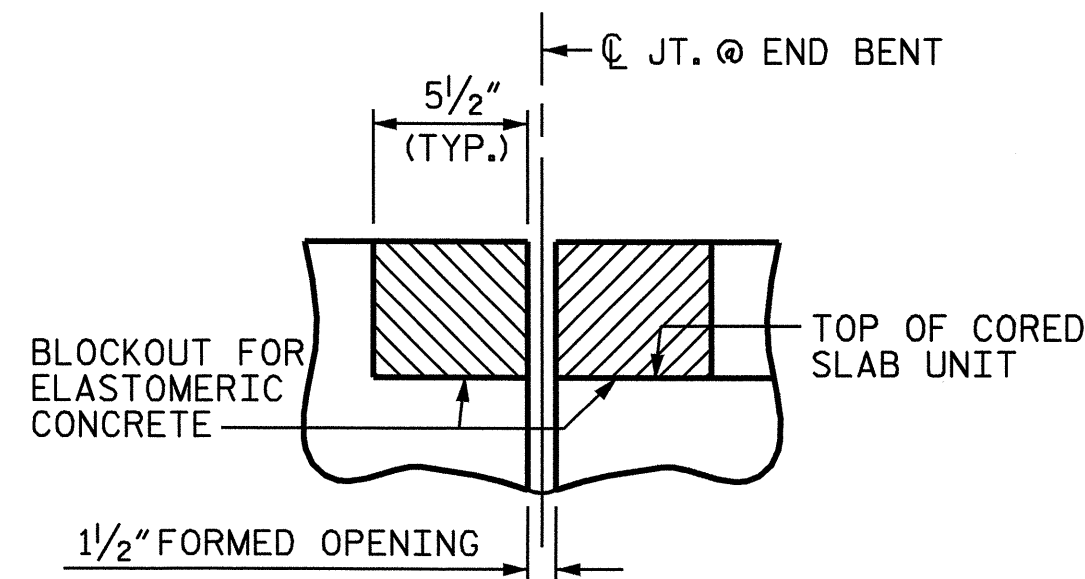
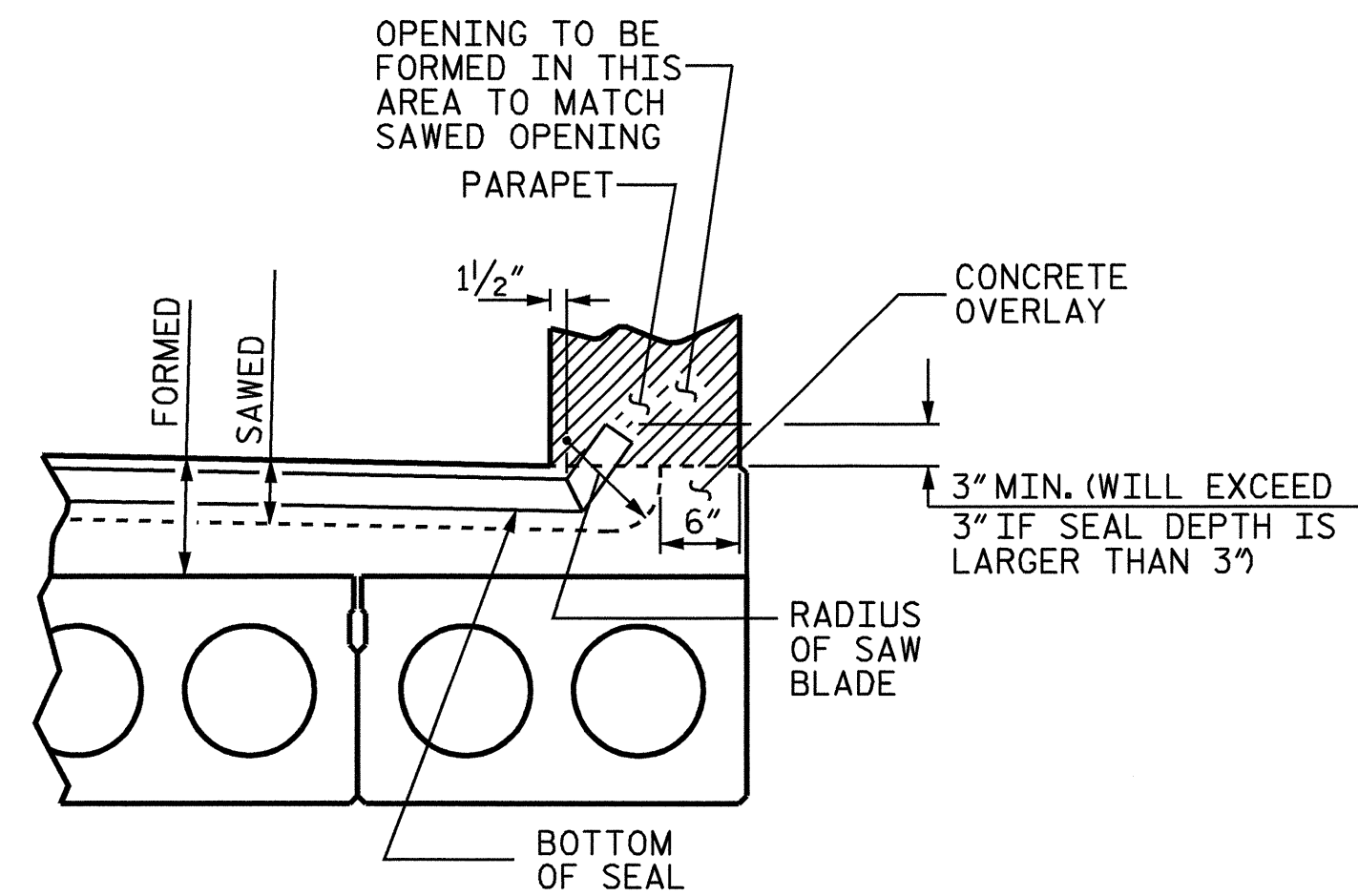
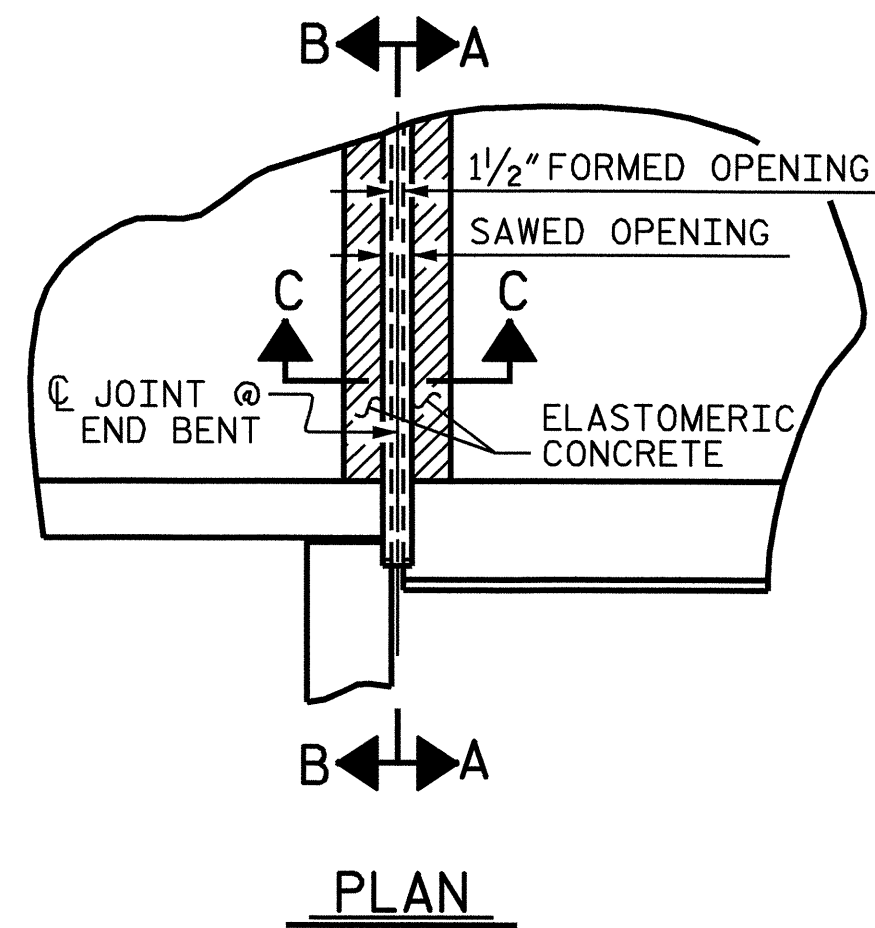
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 dahodge



PROJECT NO. B-3624  
CALDWELL COUNTY  
 STATION: 15+71.50 -L-  
 SHEET 1 OF 2

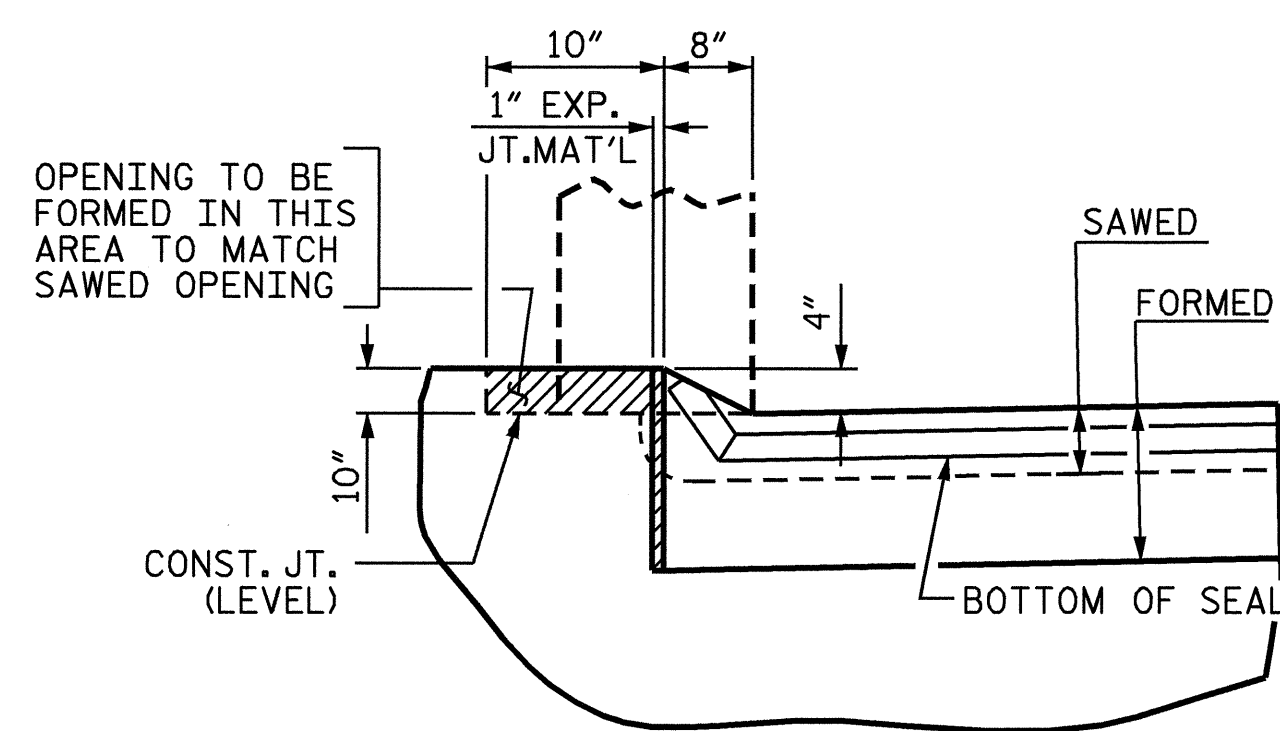
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD					
BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-28
					TOTAL SHEETS 29

STD. NO. BAS13



SECTION C-C  
EVAZOTE JOINT SEAL  
(PRE-SAWED ELASTOMERIC  
CONCRETE DIMENSIONS)

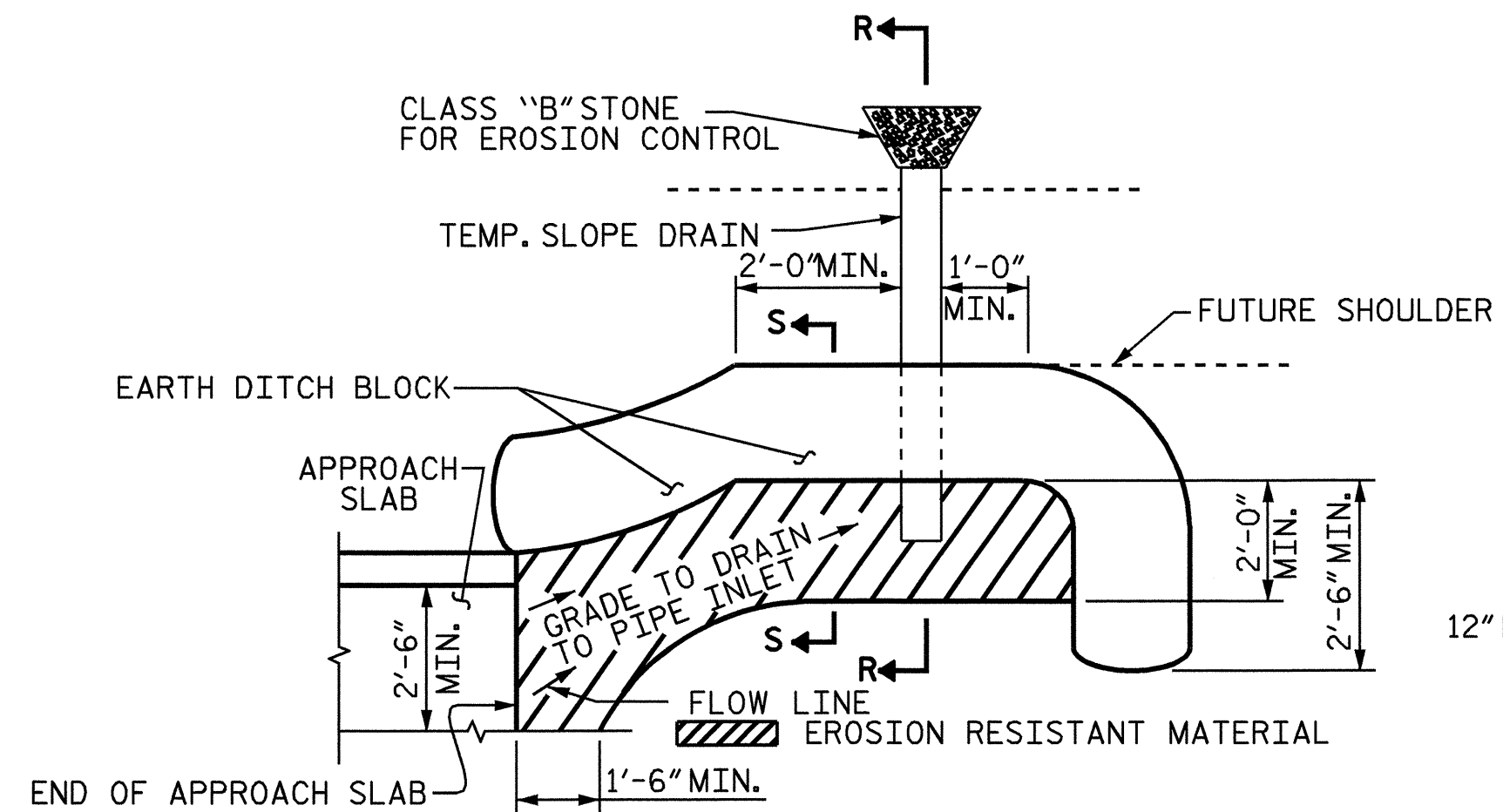
SECTION A-A



SECTION B-B

**JOINT SEAL DETAILS @ END BENT**

THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE PARAPET.

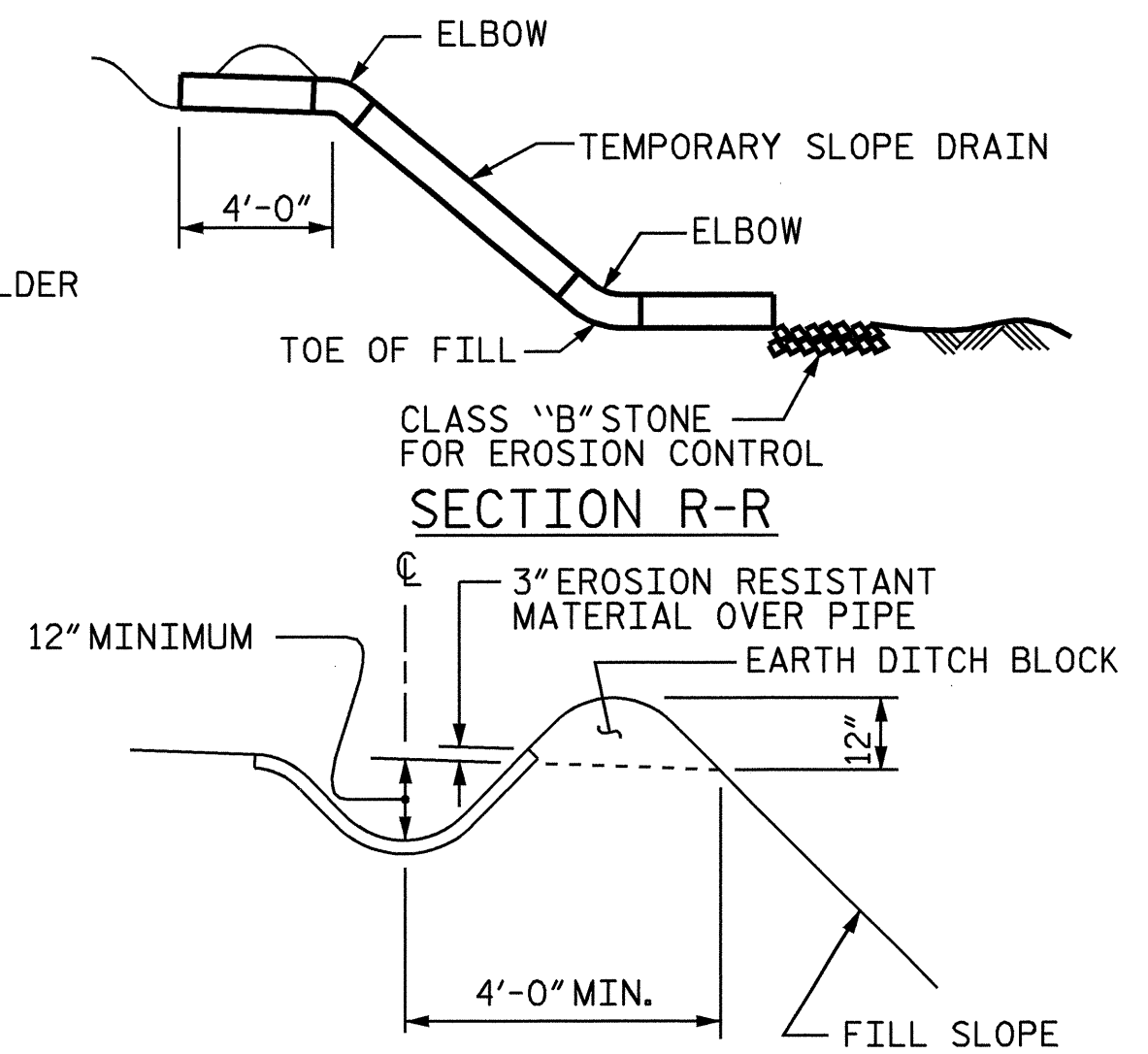


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 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.

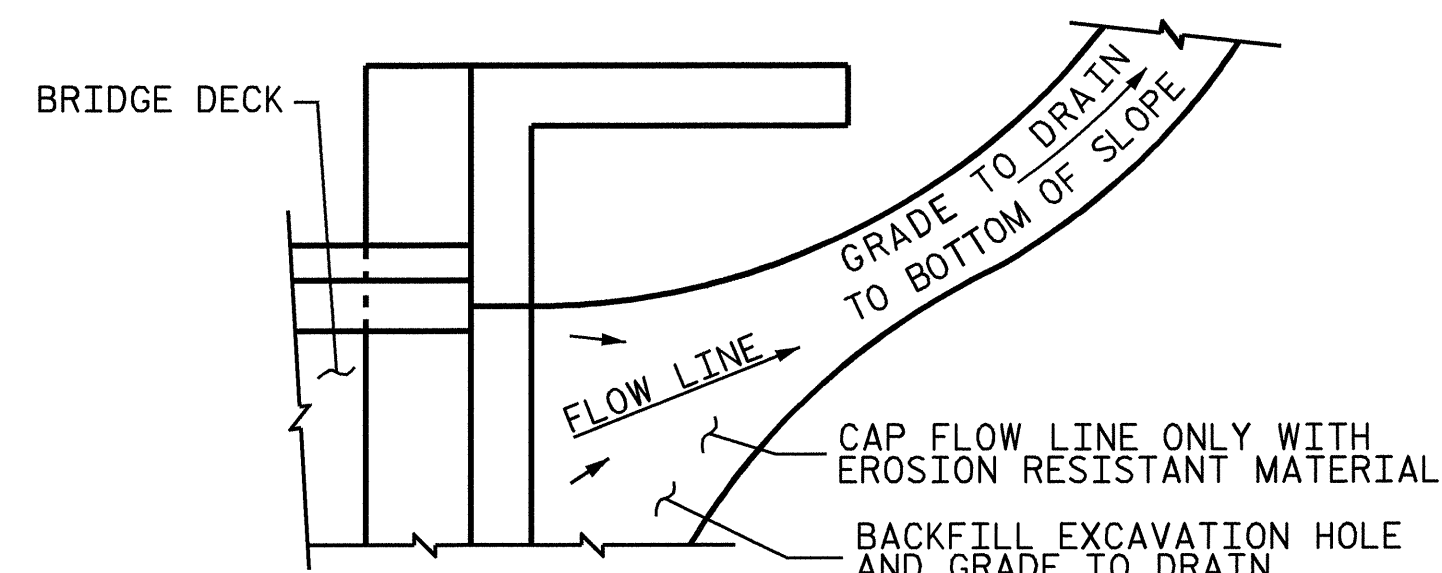
PLAN VIEW

**TEMPORARY BERM AND SLOPE DRAIN DETAILS**

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION S-S



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-3624  
CALDWELL COUNTY  
STATION: 15+71.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
BRIDGE APPROACH SLAB  
DETAILS

ASSEMBLED BY : A.L.FIGUEROA	DATE : 6/28/06
CHECKED BY : M.G.CHEEK	DATE : 3/31/08
DRAWN BY : FCJ 6/87	REV. 7/10/01 LES/RDR
CHECKED BY : EGA 6/87	REV. 5/7/03R RWW/JTE
	REV. 5/1/06R KMM/GM



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

## 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