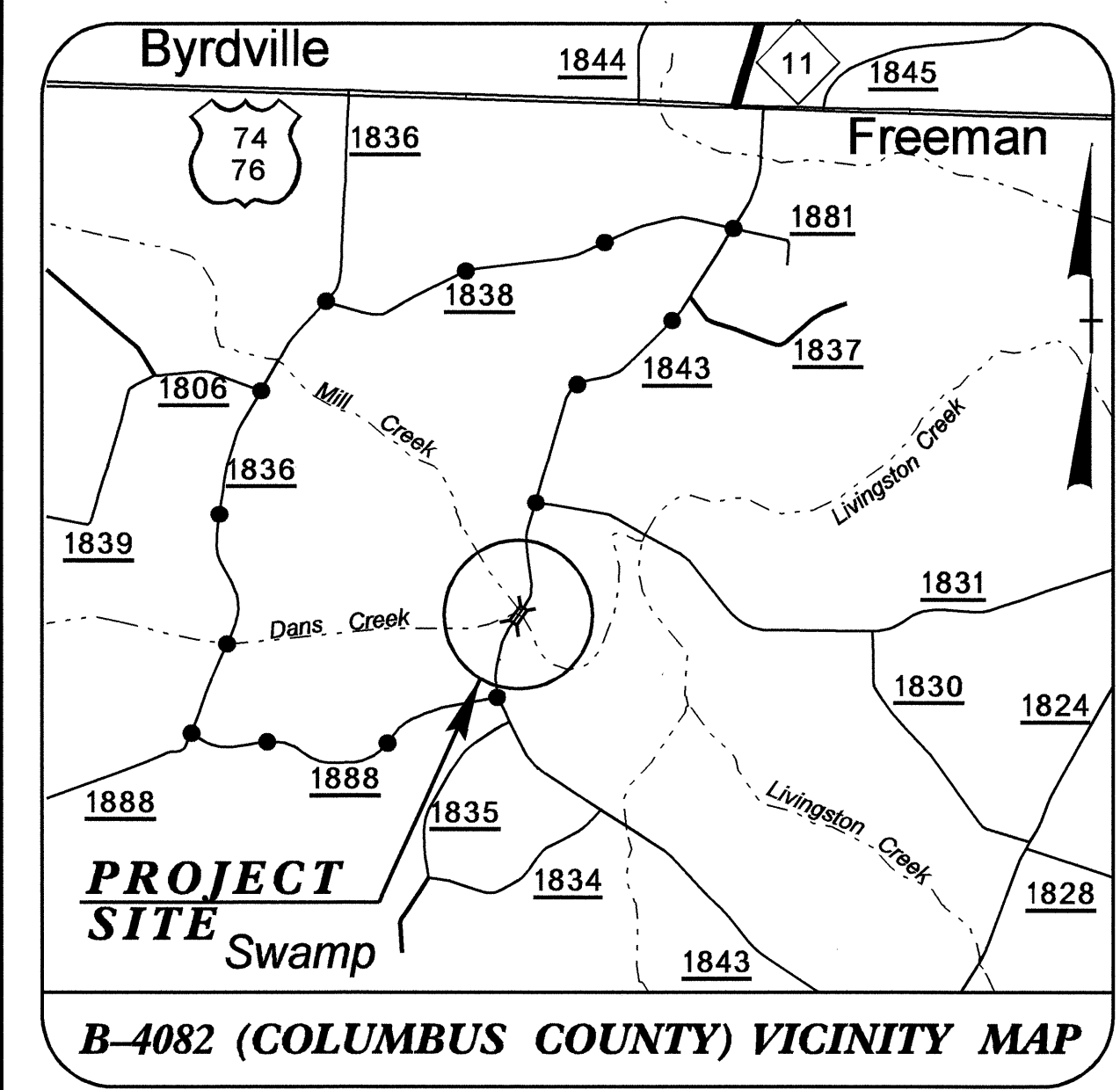


TIP PROJECT: B-4029 / B-4082

CONTRACT: C202120



B-4082 (COLUMBUS COUNTY) VICINITY MAP

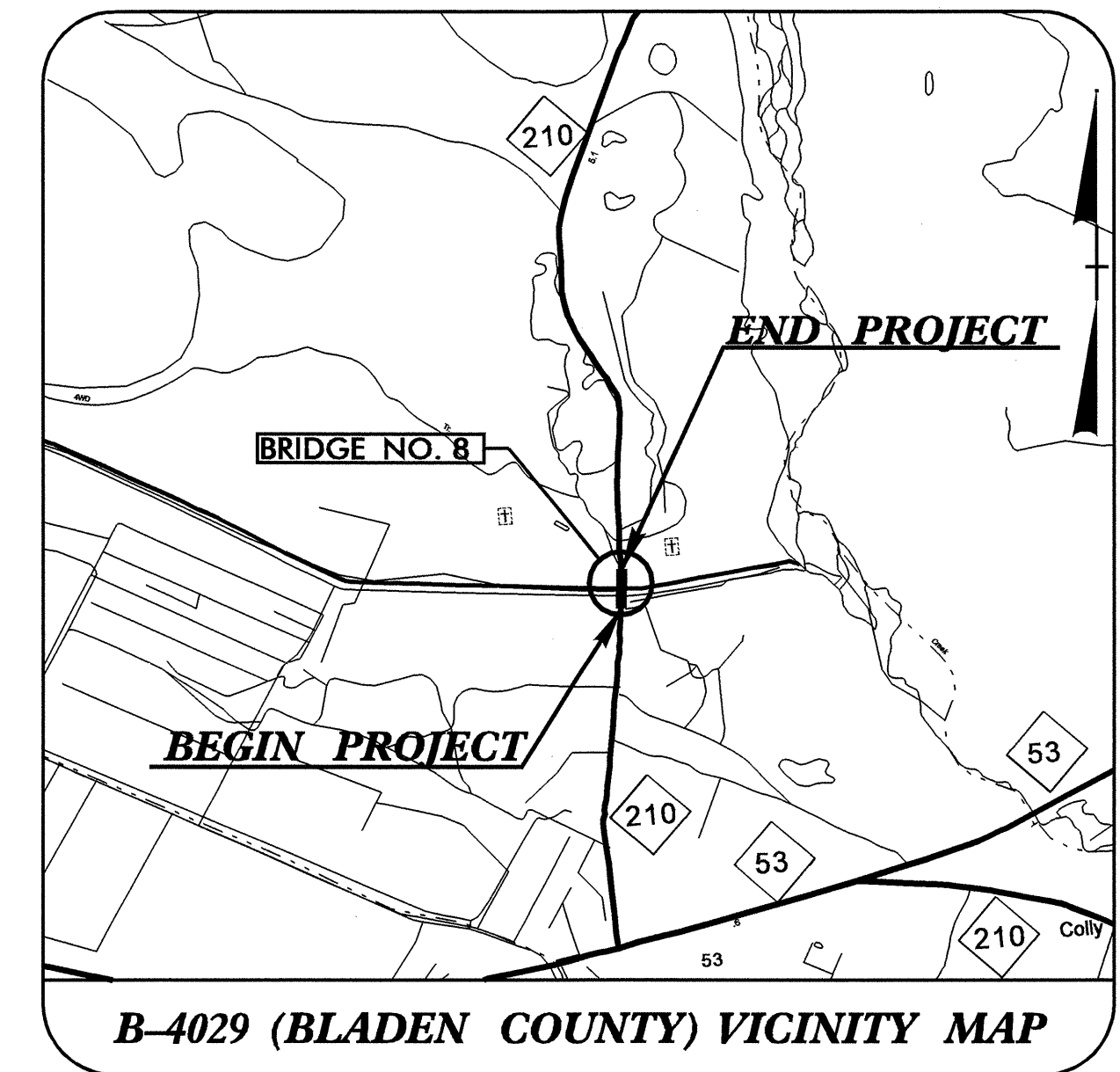
--- DENOTES OFFSITE DETOUR

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# COLUMBUS COUNTY & BLADEN COUNTY

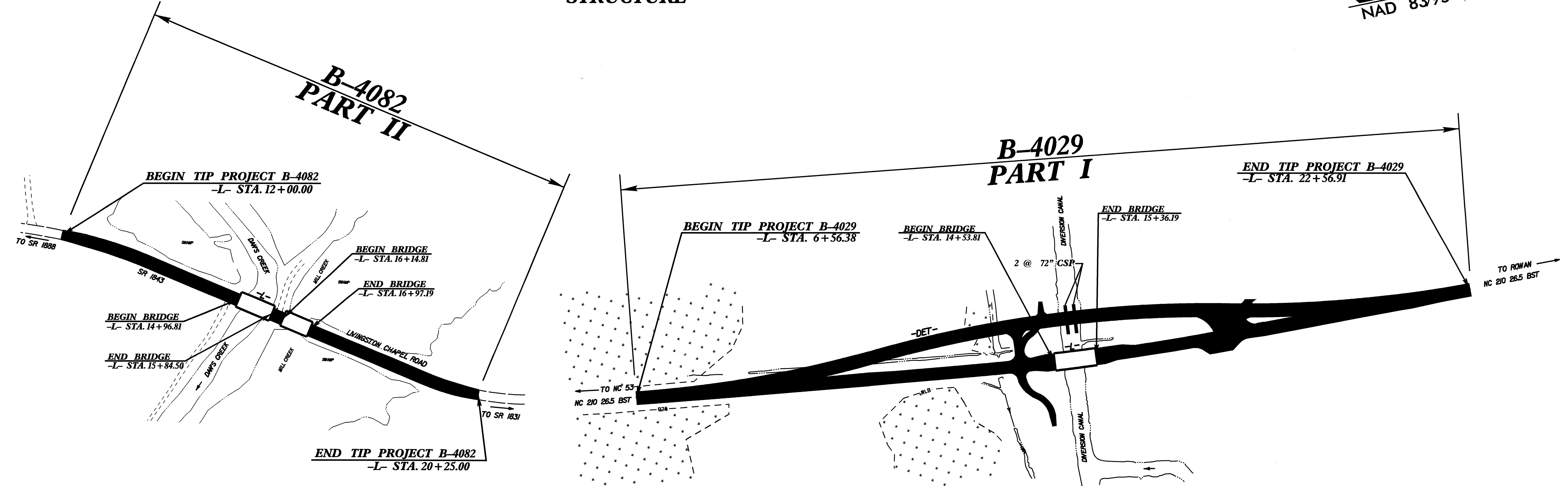
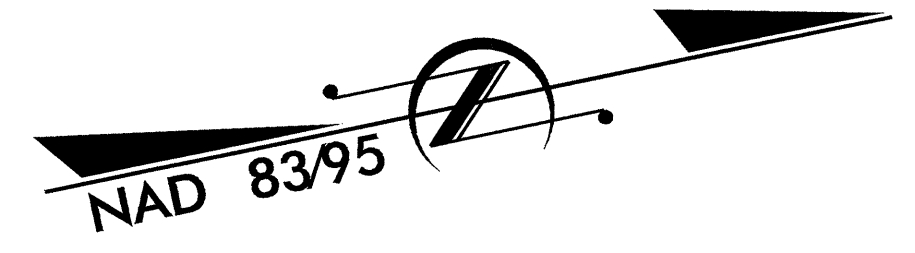
**LOCATION:** BRIDGE NO. 8 OVER DIVERSION CANAL ON NC 210 & BRIDGE NO. 280 OVER DAN'S CREEK AND BRIDGE NO. 281 OVER MILL CREEK ON SR 1843 (LIVINGSTON CHAPEL ROAD)

**TYPE OF WORK:** GRADING, DRAINAGE, PAVING, & STRUCTURE

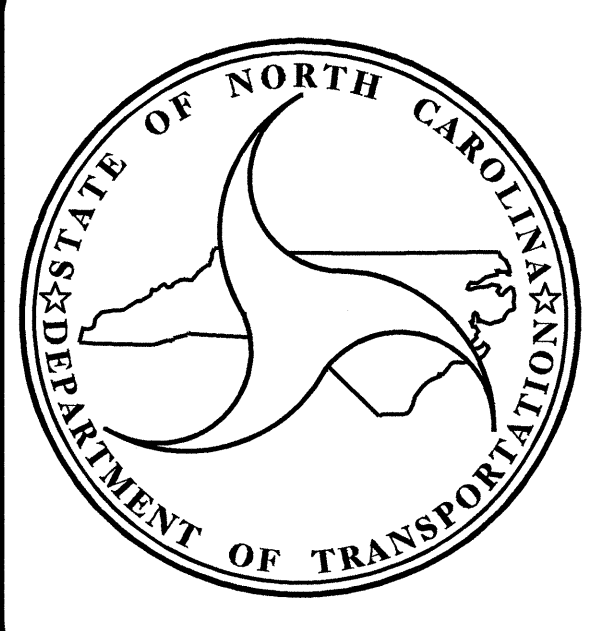


B-4029 (BLADEN COUNTY) VICINITY MAP

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4029/B-4082		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33396.1.1	BRSTP-210 (6)	B-4029 (PE)	
33396.2.1	BRSTP-210 (6)	B-4029 (RW & UTIL.)	
33443.1.1	BRZ-1843 (1)	B-4082 (PE)	
33443.2.1	BRZ-1843 (1)	B-4082 (RW & UTIL.)	
33396.3.1	BRSTP-210 (6)	B-4029 (CONST.)	
33443.3.1	BRZ-1843 (1)	B-4082 (CONST.)	



## STRUCTURES



DESIGN DATA	
B-4029	B-4082
ADT 2008 = 1083	ADT 2008 = 957
ADT 2028 = 1691	ADT 2028 = 1478
DHV = 10 %	DHV = 14 %
D = 60 %	D = 65 %
T = 20 % *	T = 3 % *
V = 60 MPH	V = 60 MPH
* (TTST 15% DUAL 5%)	* (TTST 1% + DUAL 2%)
FUNC = RURAL MAJOR CLASS COLLECTOR	FUNC CLASS = LOCAL

PROJECT LENGTH	
LENGTH ROADWAY TIP PROJECT B-4029/4082 =	0.411 MILES
LENGTH STRUCTURE TIP PROJECT B-4029/4082 =	0.048 MILES
TOTAL LENGTH OF TIP PROJECT B-4029/4082 =	0.459 MILES

Prepared in the Office of:  
**DIVISION OF HIGHWAYS**  
1000 Birch Ridge Dr., Raleigh NC, 27610

2006 STANDARD SPECIFICATIONS

**J. M. BAILEY, PE**  
B-4029 PROJECT ENGINEER

**B. D. KLAPPENBACH, PE**  
B-4029 PROJECT DESIGN ENGINEER

**R. M. GIROLAMI, PE**  
B-4082 PROJECT ENGINEER

**L. E. SUTTON, PE**  
B-4082 PROJECT DESIGN ENGINEER

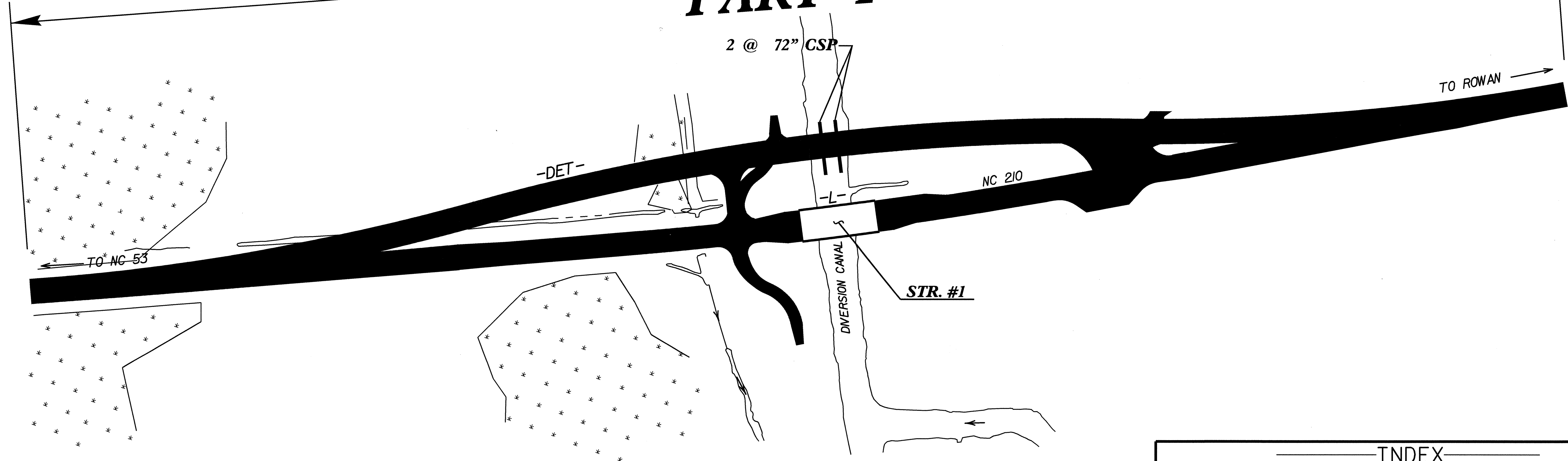
LETTING DATE:  
SEPTEMBER 16, 2008

STRUCTURE DESIGN UNIT  
1000 BIRCH RIDGE DR.  
RALEIGH, NC 27610

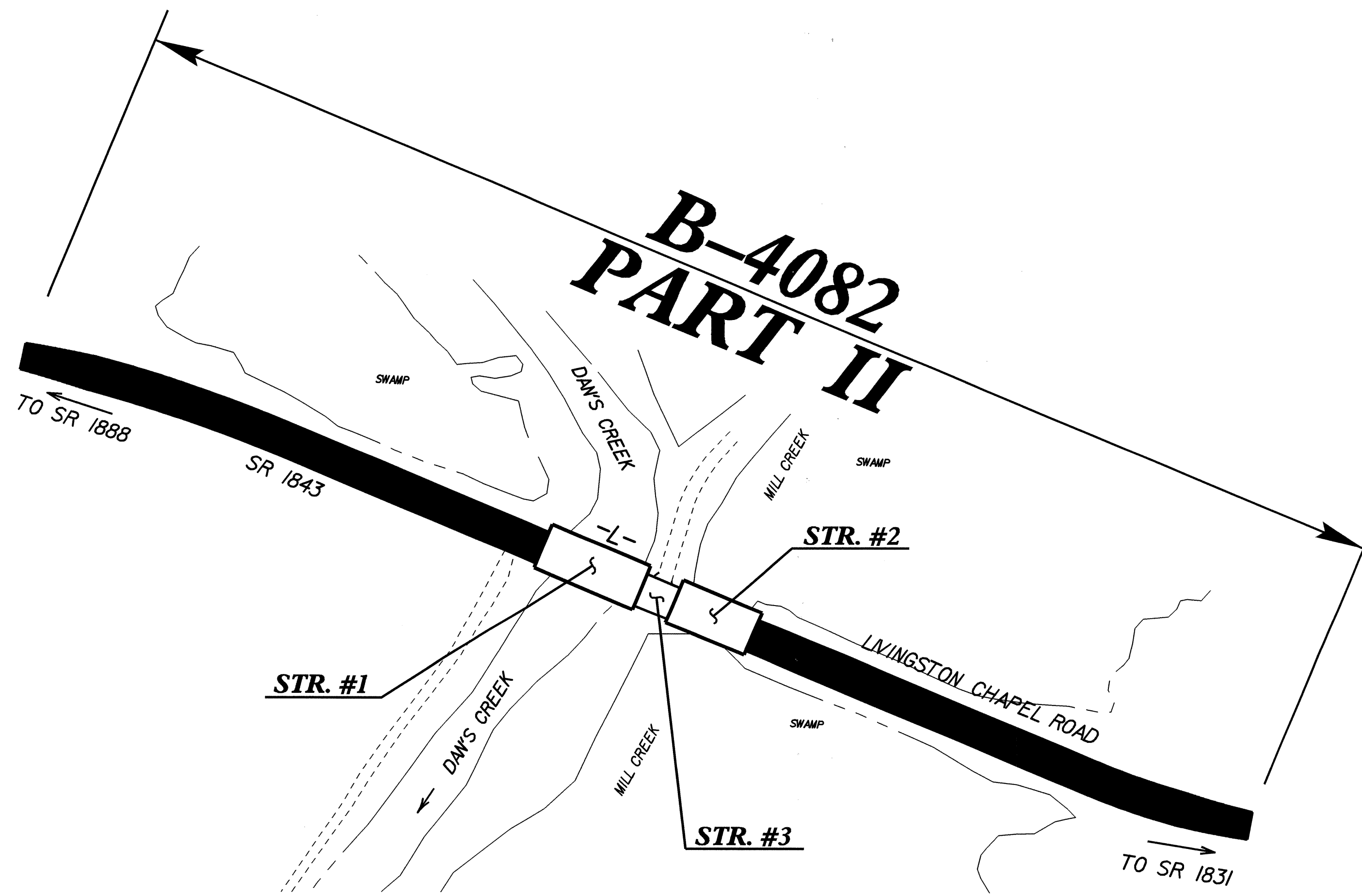
DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

P.E.  
STATE HIGHWAY DESIGN ENGINEER

# B-4029 PART I



# B-4082 PART II



INDEX			
PROJECT NO.	STATION	DESCRIPTION	SHEET NUMBERS
B-4029	15+40.50 -L-	STR. #1 CORED SLAB BRIDGE AND APPROACH SLABS	S-1 THRU S-20
B-4082	15+40.50 -L-	STR. #1 CORED SLAB BRIDGE AND APPROACH SLAB AT END BENT 1	S-21 THRU S-37
	16+56.00 -L-	STR. #2 CORED SLAB BRIDGE AND APPROACH SLAB AT END BENT 2	S-38 THRU S-54
	15+99.50 -L-	STR. #3 SPECIAL APPROACH PAVEMENT	S-55 THRU S-56

B-4029 /  
PROJECT NO. B-4082  
COLUMBUS COUNTY

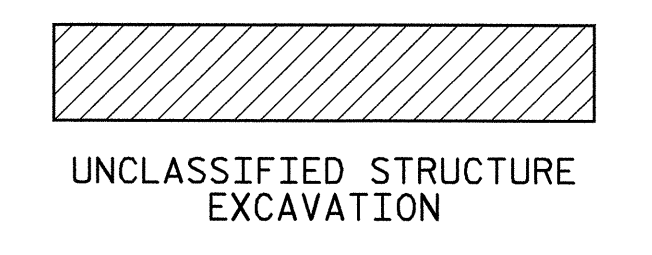
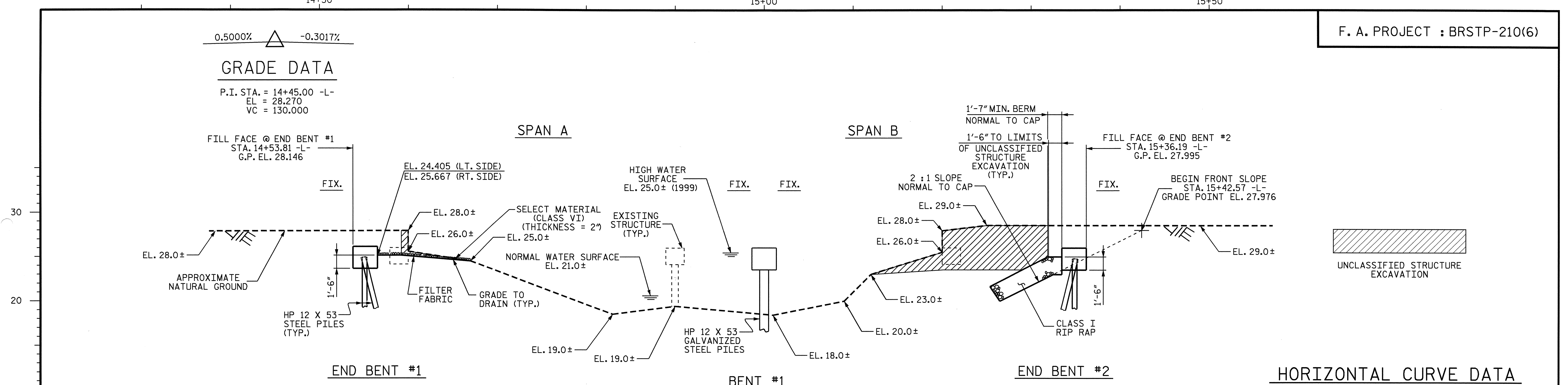
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
INDEX					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS

DRAWN BY : William J. Parker DATE : 06/17/08  
CHECKED BY : L.E. SUTTON DATE : 6/19/08

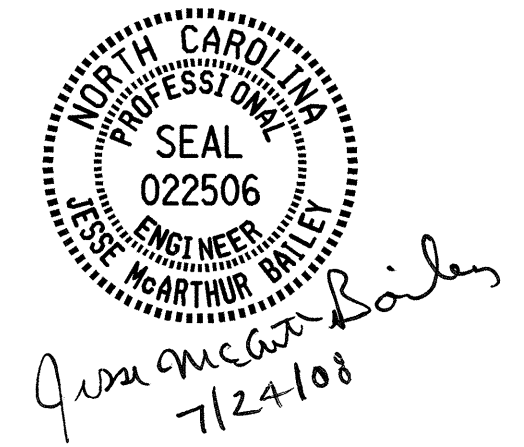
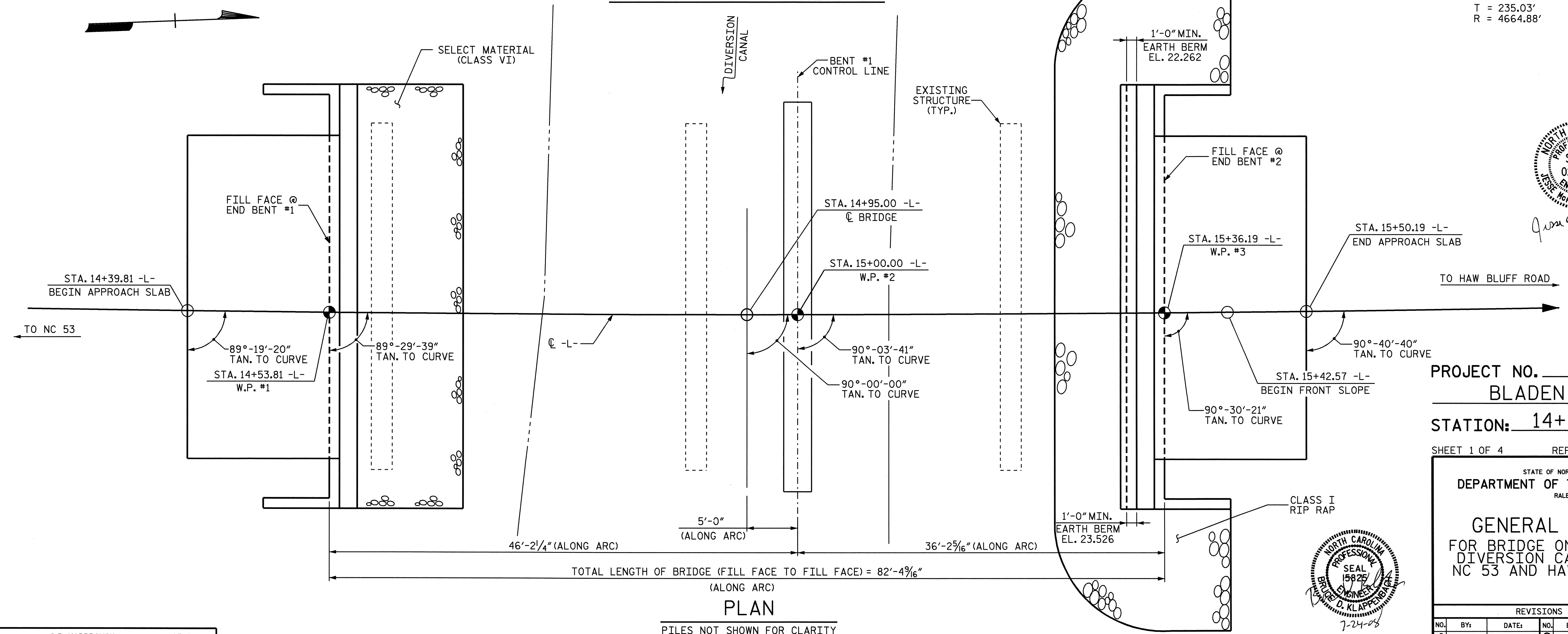
0.5000%  $\triangle$  -0.3017%  
**GRADE DATA**

P.I. STA. = 14+45.00 -L-  
 EL. = 28.270  
 VC = 130.000

F. A. PROJECT : BRSTP-210(6)



**HORIZONTAL CURVE DATA**  
 PI = 15+21.02 -L-  
 $\Delta$  = 5°-46'-06.9" LT.  
 D = 1°-13'-41.7"  
 L = 469.66'  
 T = 235.03'  
 R = 4664.88'

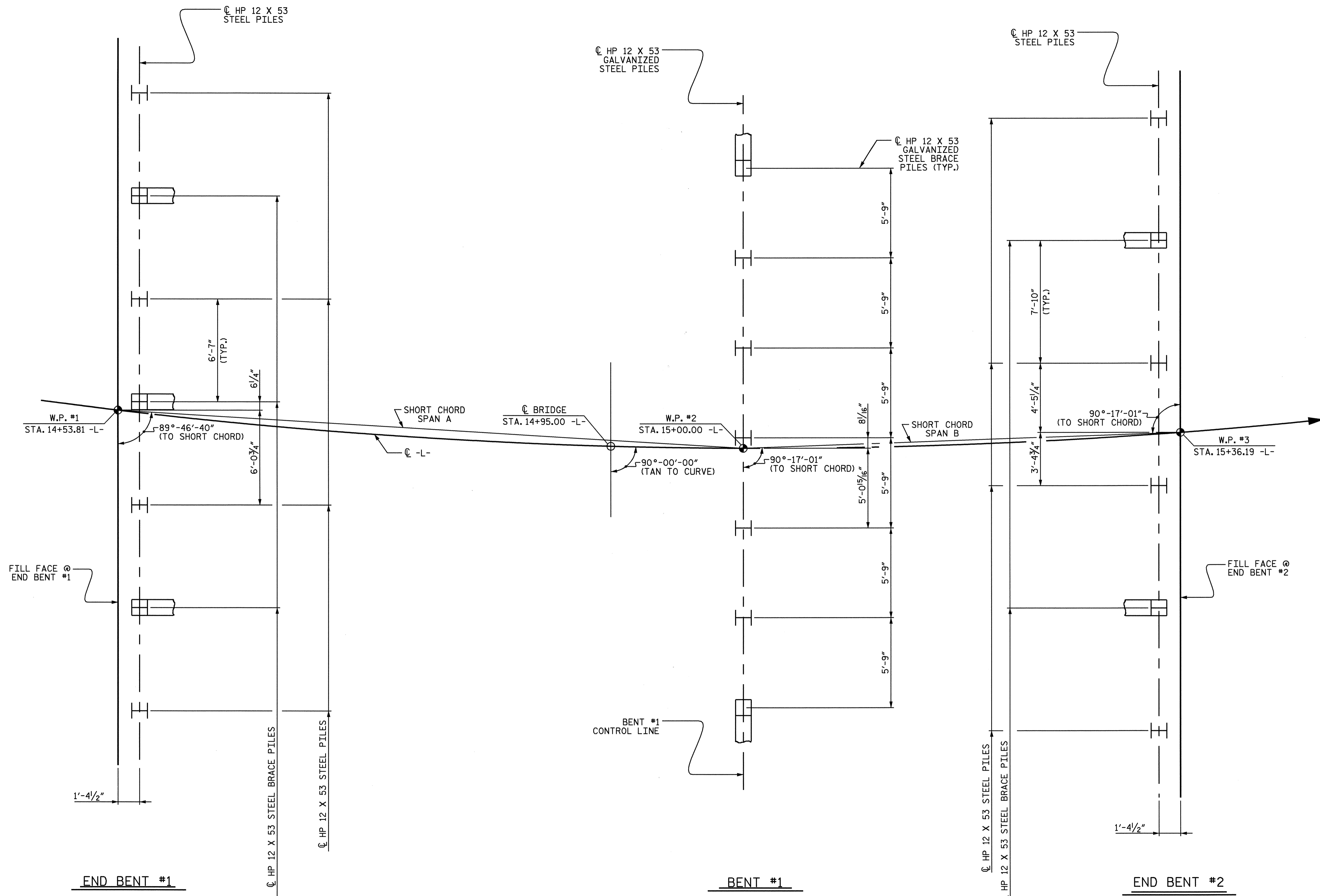


PROJECT NO. B-4029  
BLADEN COUNTY  
 STATION: 14+95.00 -L-  
 SHEET 1 OF 4 REPLACES BRIDGE #8

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
<b>GENERAL DRAWING</b>					
FOR BRIDGE ON NC 210 OVER DIVERSION CANAL BETWEEN NC 53 AND HAW BLUFF ROAD					
REVISIONS					SHEET NO. S-1
NO.	BY:	DATE:	NO.	BY:	
1			3		TOTAL SHEETS 56
2			4		

DRAWN BY : C.R. YARBROUGH DATE : 05-08  
 CHECKED BY : M.G. SHAIKH DATE : 06-08





**FOUNDATION LAYOUT**

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

PROJECT NO. B-4029  
BLADEN COUNTY  
 STATION: 14+95.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

GENERAL DRAWING  
 FOR BRIDGE ON NC 210 OVER  
 DIVERSION CANAL BETWEEN  
 NC 53 AND HAW BLUFF ROAD



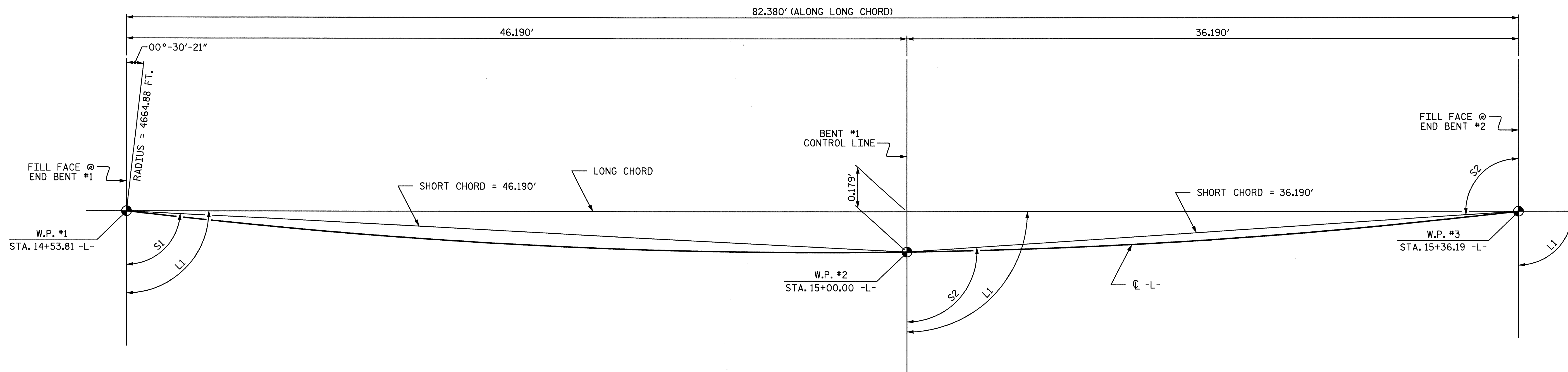
DRAWN BY : C.R. YARBROUGH DATE : 06-08  
 CHECKED BY : M.G. SHAIKH DATE : 06-08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			56

ANGLES			
LONG CHORD		SHORT CHORD	
L1	90°-00'-00"	S1	89°-46'-40"
		S2	90°-17'-01"

HORIZONTAL CURVE DATA

PI = 15+21.02 -L-  
 $\Delta$  = 5°-46'-06.9"LT.  
D = 1°-13'-41.7"  
L = 469.66'  
T = 235.03'  
R = 4664.88'



LONG CHORD LAYOUT

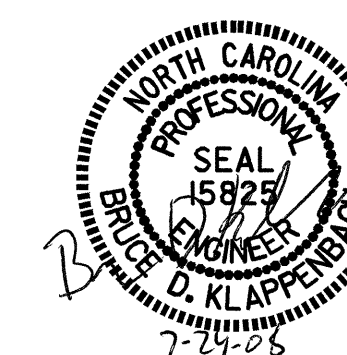
NOTE: ALL BENTS ARE PARALLEL

PROJECT NO. B-4029  
BLADEN COUNTY  
STATION: 14+95.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

GENERAL DRAWING  
FOR BRIDGE ON NC 210 OVER  
DIVERSION CANAL BETWEEN  
NC 53 AND HAW BLUFF ROAD



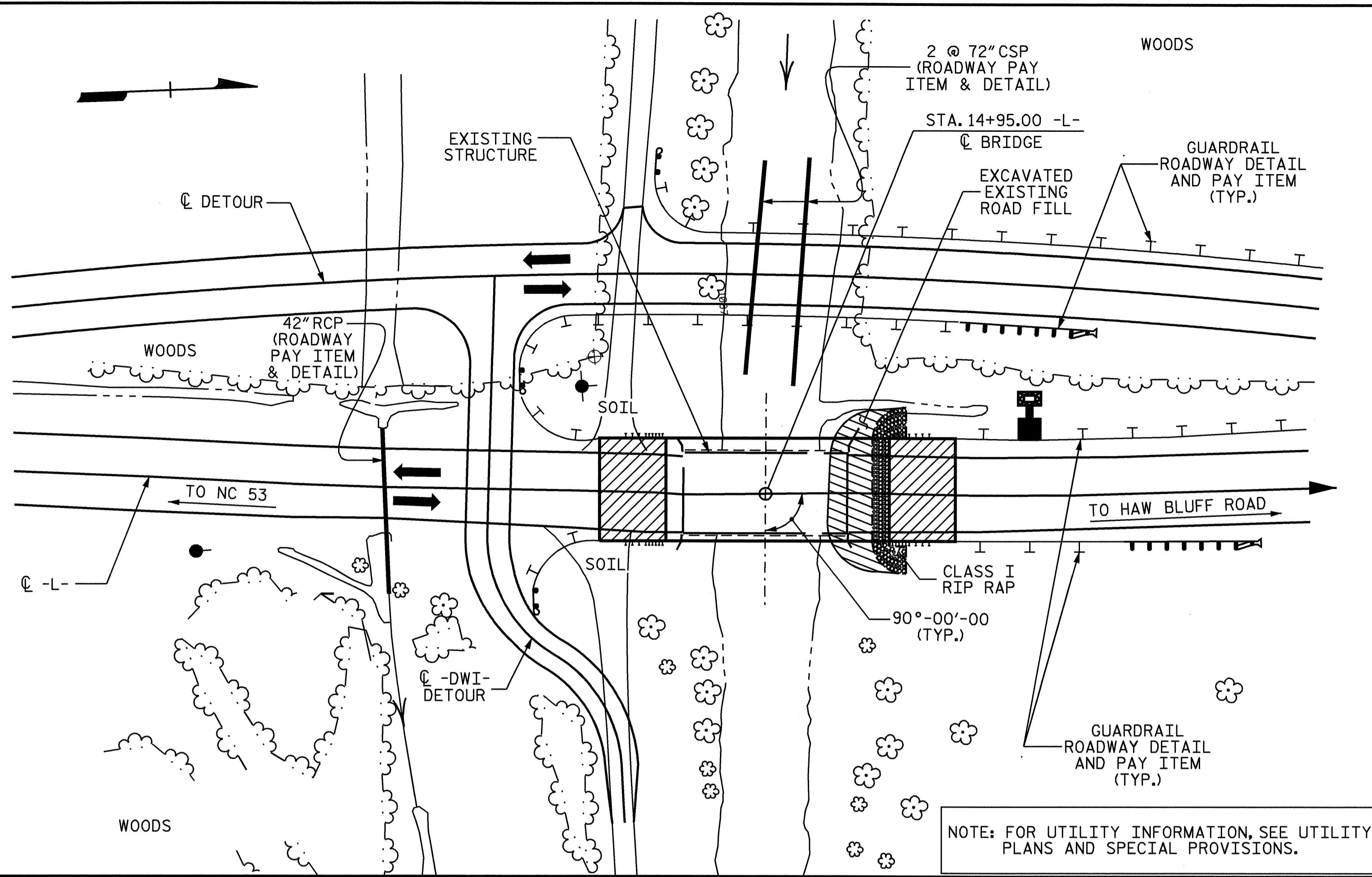
DRAWN BY : C.R. YARBROUGH DATE : 06-08  
CHECKED BY : M.G. SHAIKH DATE : 06-08

22-JUL-2008 16:29  
r:\structures\cyarbrough\mlcrostation\b4029.sd.dgn  
cyarbrough

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			56

NC005

BENCH MARK #2: RAIL ROAD SPIKE SET IN 12" Ø PINE, STA. 18+04.00 -L-, 369' LT., ELEV. 26.46



LOCATION SKETCH

HYDRAULIC DATA

DESIGN DISCHARGE = 1,200 CFS.  
 FREQUENCY OF DESIGN FLOOD = N/A  
 DESIGN HIGH WATER ELEVATION = 25.400  
 DRAINAGE AREA = INDETERMINATE  
 BASIC DISCHARGE (Q100) = N/A  
 BASIC HIGH WATER ELEVATION = N/A

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = N/A  
 FREQUENCY OF OVERTOPPING FLOOD = N/A  
 OVERTOPPING FLOOD ELEVATION = N/A

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	PDA ASSISTANCE	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 12 X 53 STEEL PILES	HP 12 X 53 GALVANIZED STEEL PILES	PILE REDRIVES	CONCRETE BARRIER RAIL	RIP RAP CLASS I	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	SELECT MATERIAL (CLASS VI)	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS		
	LUMP SUM	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	NO.	LIN.FT.	NO.	LIN.FT.	EACH	LIN.FT.	TONS	SQ. YDS.	LUMP SUM	TONS	LIN.FT.
SUPERSTRUCTURE										160.0					LUMP SUM		960.0
END BENT NO. 1				13.0		2137	7	280					49			4	
BENT NO. 1				9.9		1921											
END BENT NO. 2				13.0		2114	6	240					92	98			
TOTAL	LUMP SUM	1	LUMP SUM	35.9	LUMP SUM	6172	13	520	7	315	12	160.0	92	147	LUMP SUM	4	960.0

DRAWN BY : C.R. YARBROUGH DATE : 05-08  
 CHECKED BY : M.G. SHAIKH DATE : 06-08

24-JUL-2008 11:09  
 r:\structures\cyarbr\mlcr\station\b4029.sd.dgn  
 cyarbr

NOTES

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

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

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

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

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

THE EXISTING STRUCTURE CONSISTING OF 2 SPANS, 1 @ 30'-4" AND 1 @ 30'-8", WITH 3" ASPHALT WEARING SURFACE ON 12 PRESTRESSED CONCRETE CHANNEL SECTIONS AND A CLEAR ROADWAY WIDTH OF 29.5', ON CONCRETE CAPS AND TIMBER PILES AT BOTH END BENTS AND THE INTERIOR BENT, LOCATED AT THE SAME LOCATION AS THE 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 AT STATION 14+95.00 -L-.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 30 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

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

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

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

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

THIS BRIDGE SHALL BE CONSTRUCTED USING TOP-DOWN CONSTRUCTION METHODS. THE USE OF A TEMPORARY CAUSEWAY OR WORK BRIDGE IS NOT PERMITTED.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

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

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

DRIVE PILES AT BENT NO.1 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 PLUS ANY ADDITIONAL CAPACITY TO ACCOUNT FOR DOWN DRAG OR NEGATIVE SKIN FRICTION AND SCOUR.

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

DRIVE PILES AT BENT NO.1 TO A TIP ELEVATION NO HIGHER THAN -10.0 FEET.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.1 IS ELEVATION 6 FEET. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

TESTING PILES WITH THE PILE DRIVING ANALYZER FOR LRFD MAY BE REQUIRED AT END BENT NO.1, BENT NO.1, OR END BENT NO.2. SEE PILE DRIVING ANALYZER FOR LRFD SPECIAL PROVISION.

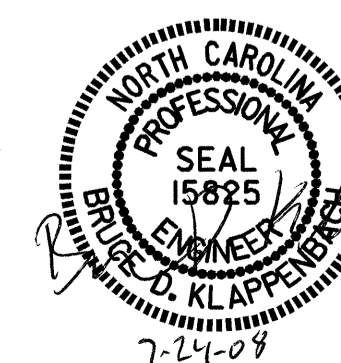
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

PROJECT NO. B-4029  
 BLADEN COUNTY  
 STATION: 14+95.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

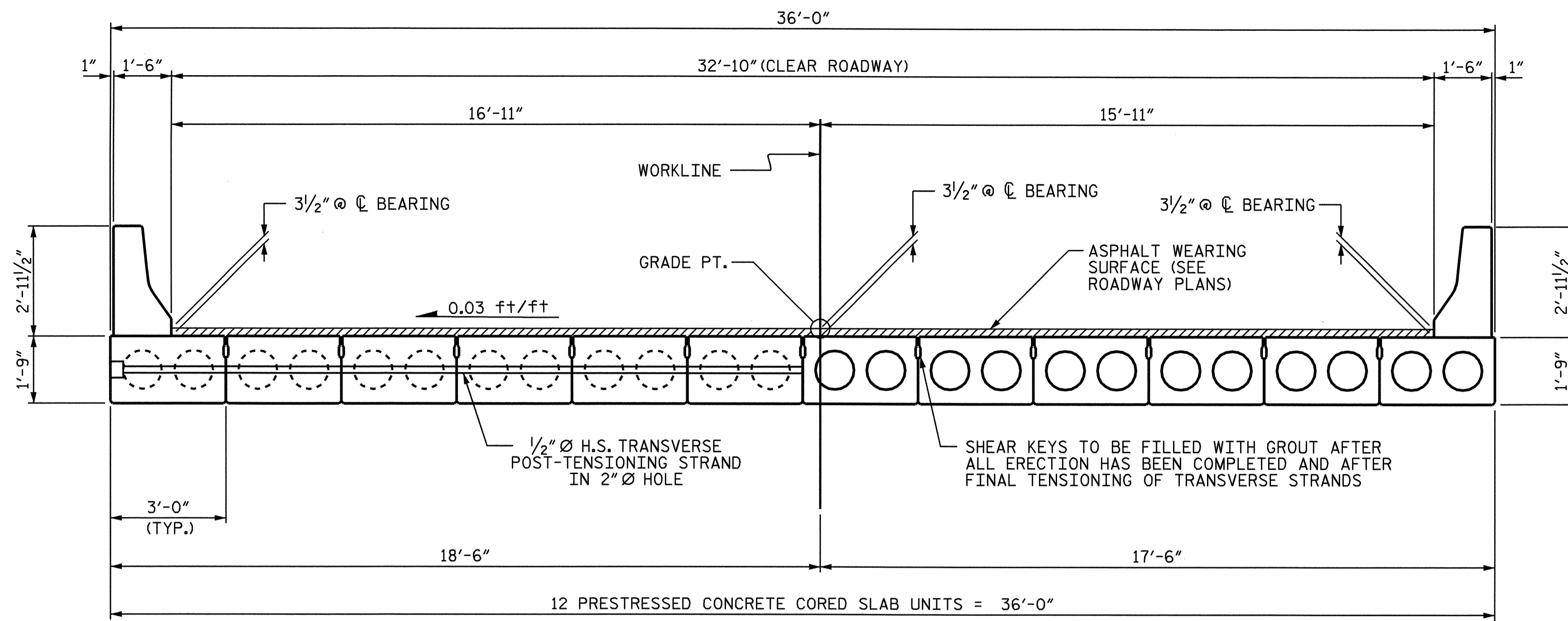
GENERAL DRAWING  
 FOR BRIDGE ON NC 210 OVER  
 DIVERSION CANAL BETWEEN  
 NC 53 AND HAW BLUFF ROAD



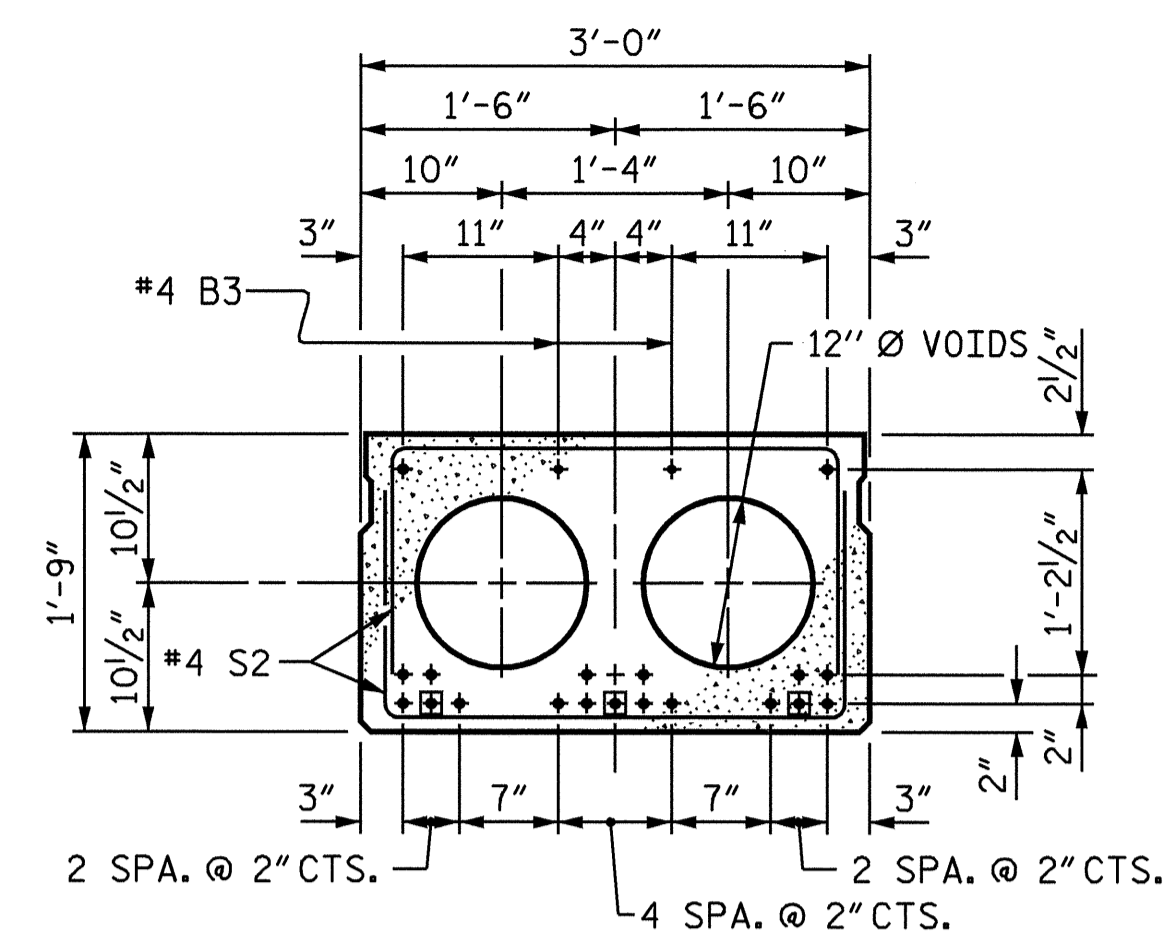
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			56

NC006

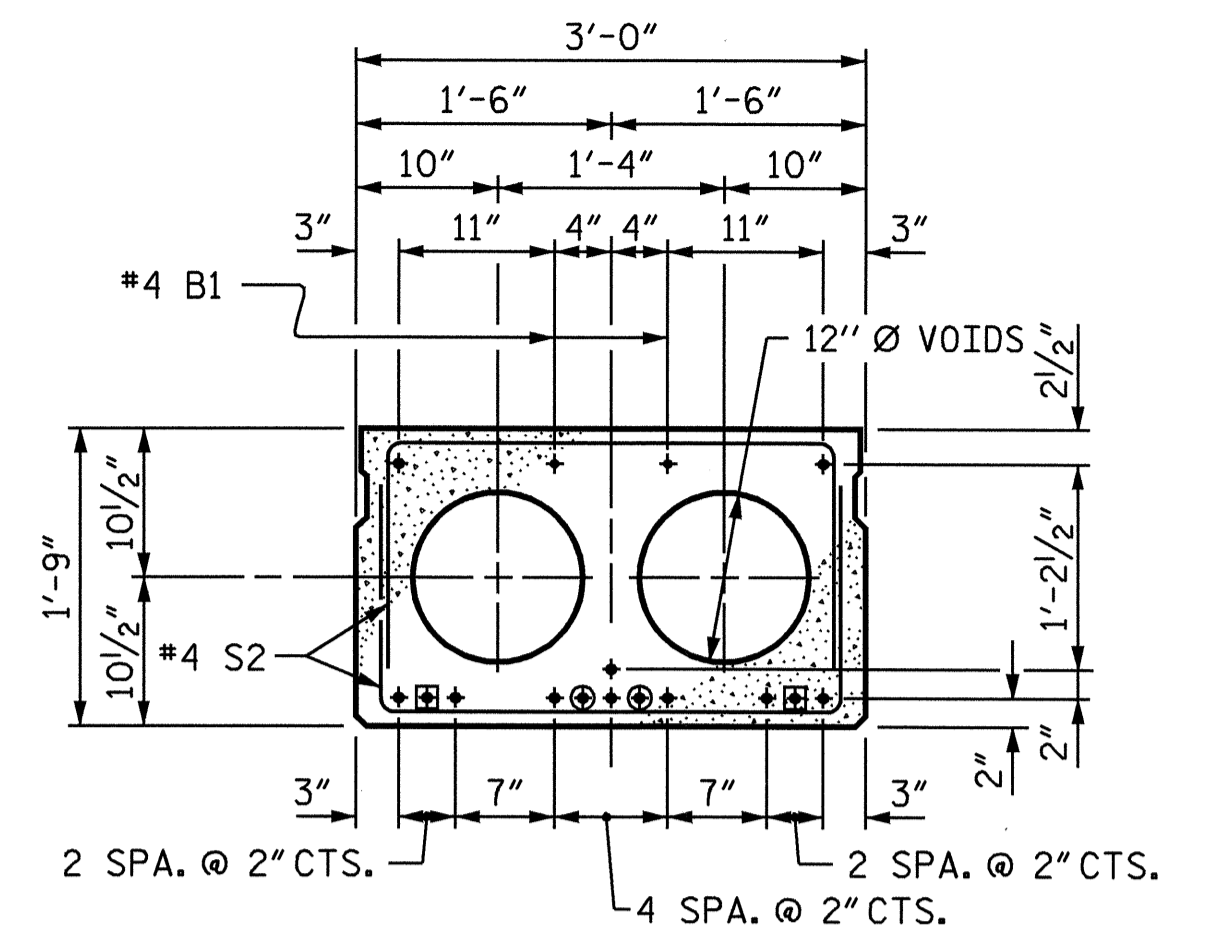




TYPICAL SECTION



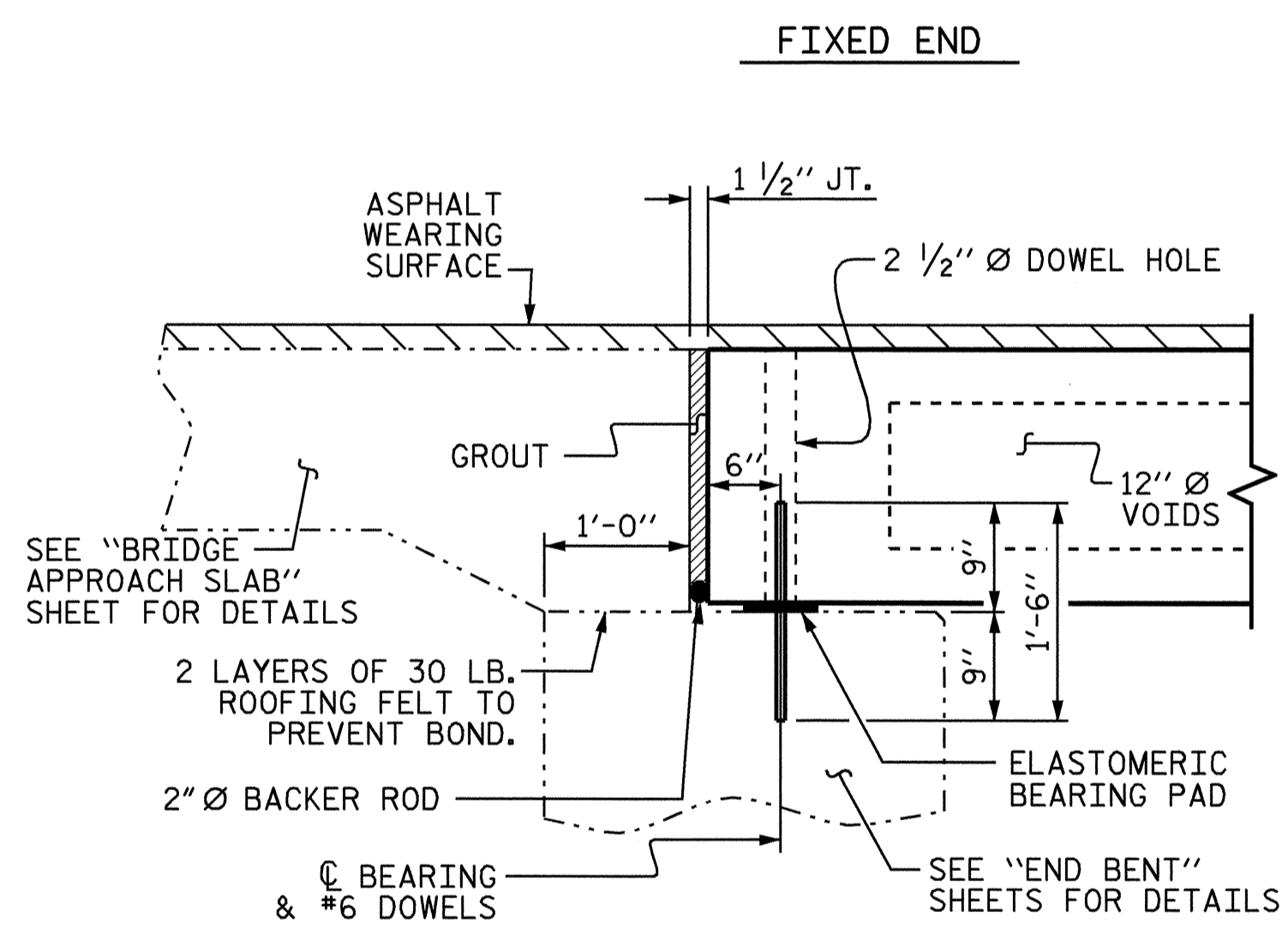
45' - SPAN A  
1/2" Ø LOW RELAXATION STRAND LAYOUT  
19 STRANDS



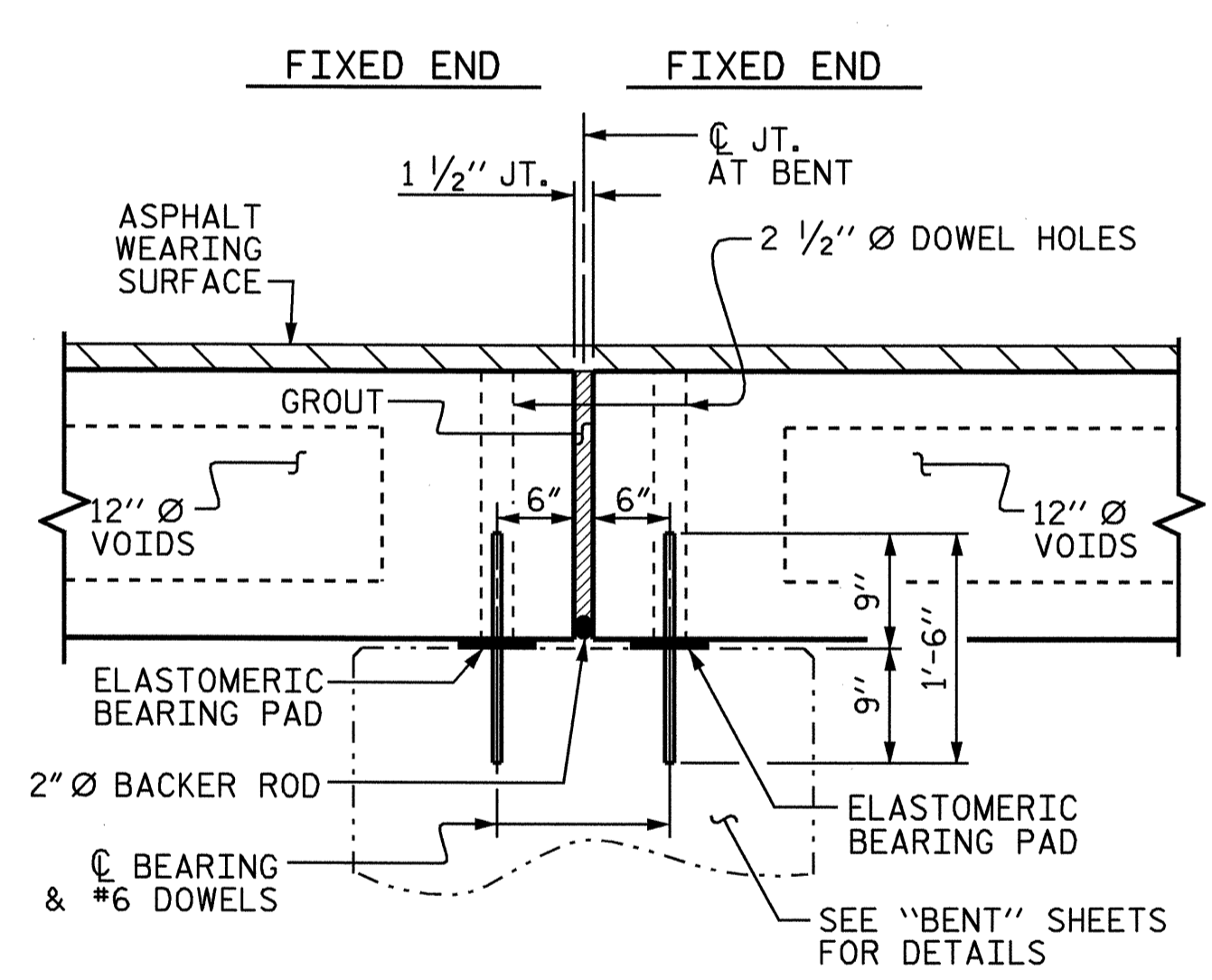
35' - SPAN B  
1/2" Ø LOW RELAXATION STRAND LAYOUT  
12 STRANDS

INTERIOR SLAB SECTION

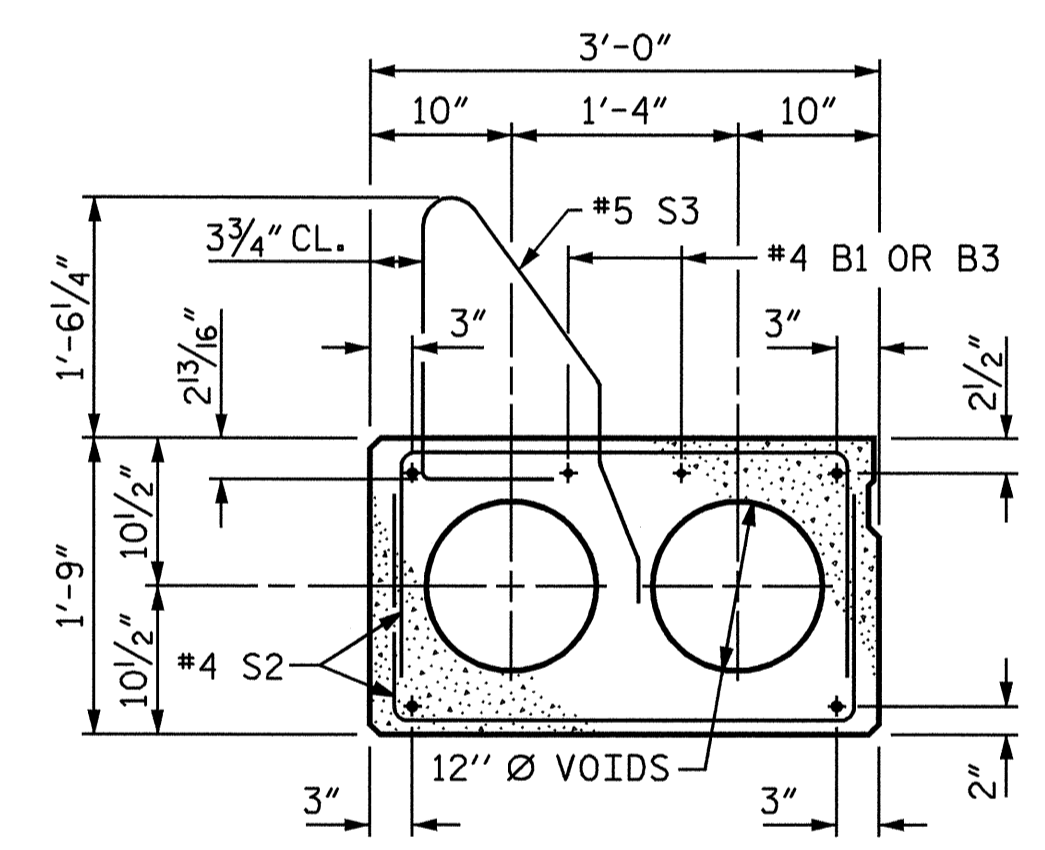
- THE BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 4'-0" FROM END OF THE CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.
- OPTIONAL FULL LENGTH DEBONDED STRANDS.



SECTION AT END BENT

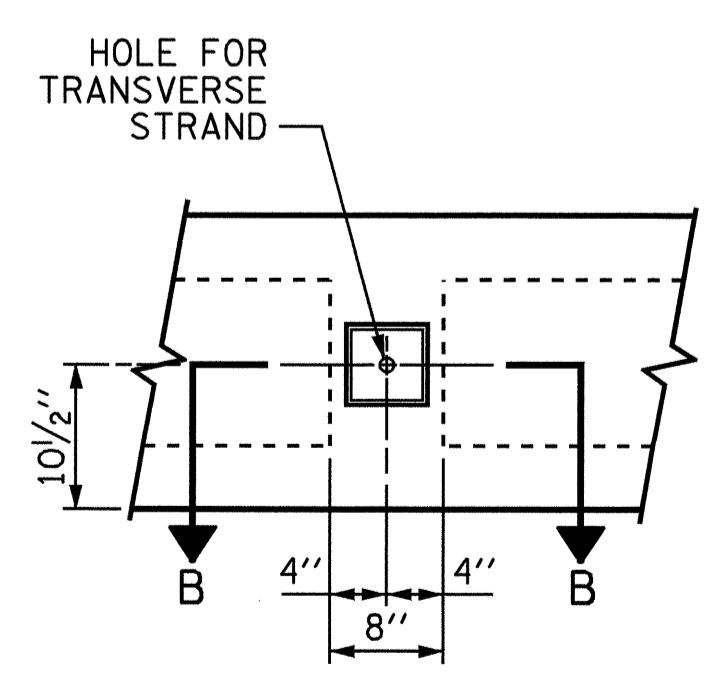


SECTION AT BENT

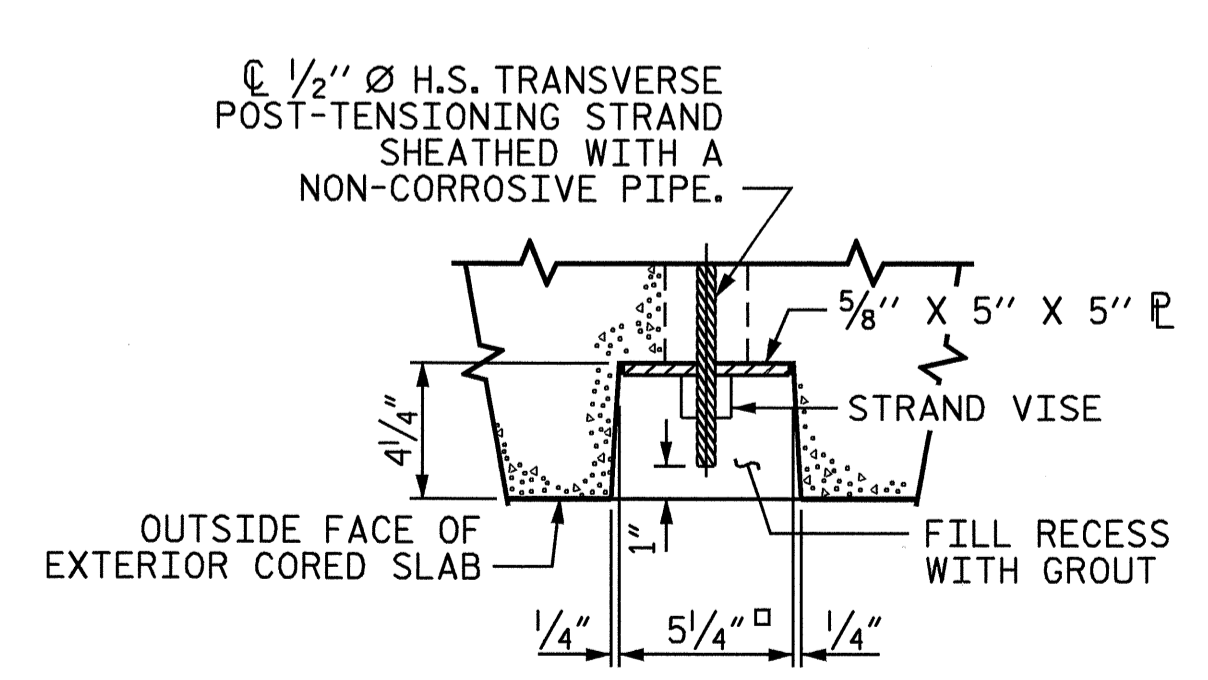


EXTERIOR SLAB SECTION

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

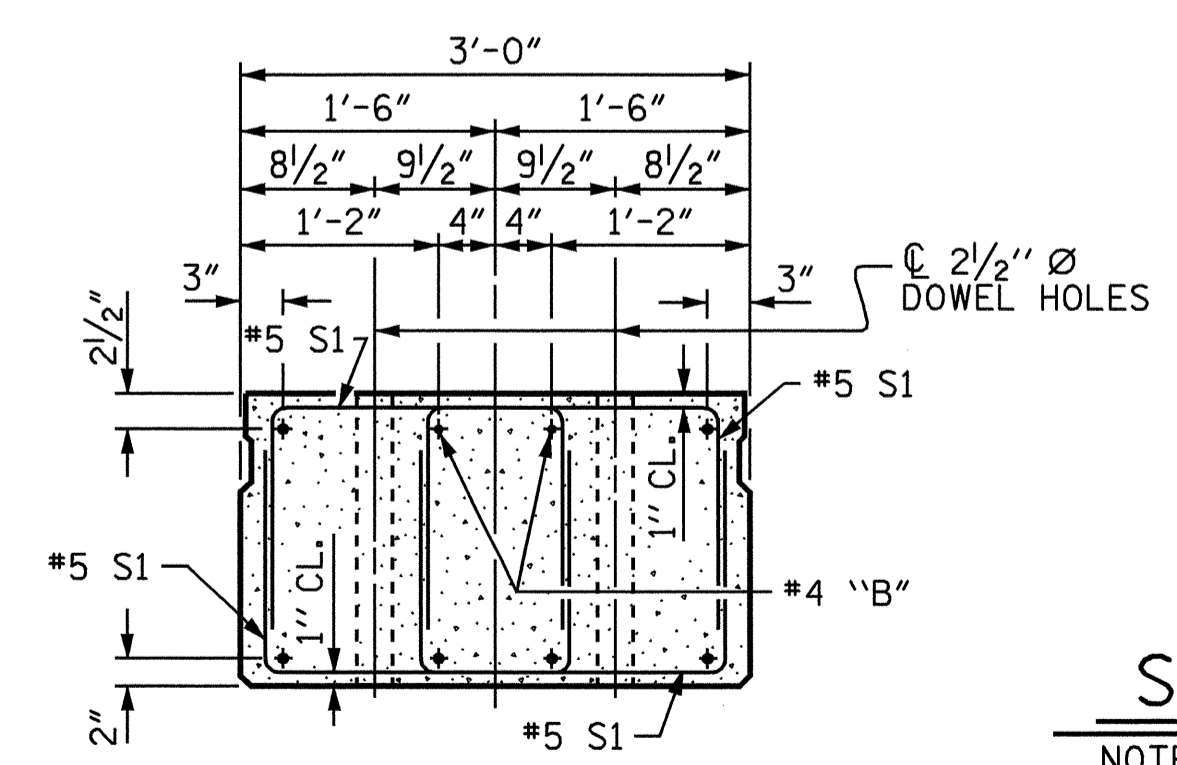


ELEVATION VIEW



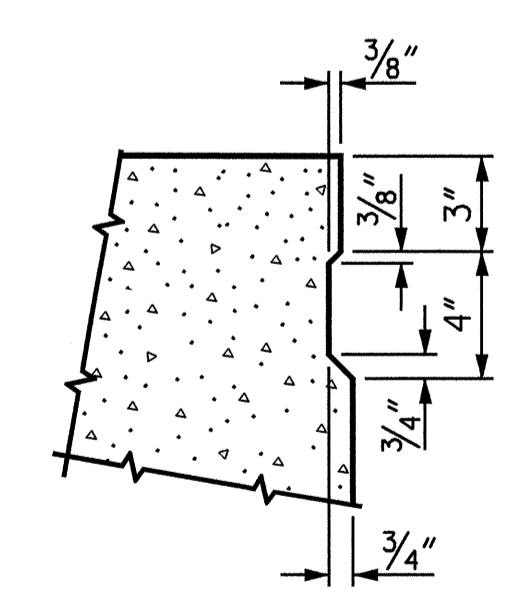
SECTION B-B

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



END ELEVATION

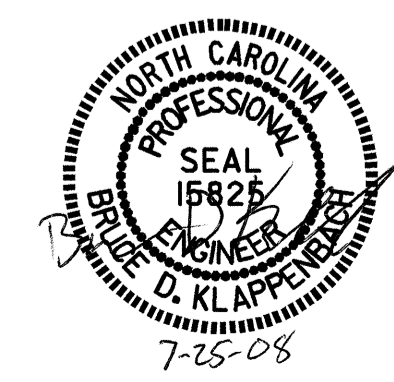
SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB SECTION SHOWN-EXTERIOR SLAB SECTION SIMILAR EXCEPT SHEAR KEY LOCATION.



SHEAR KEY DETAIL

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

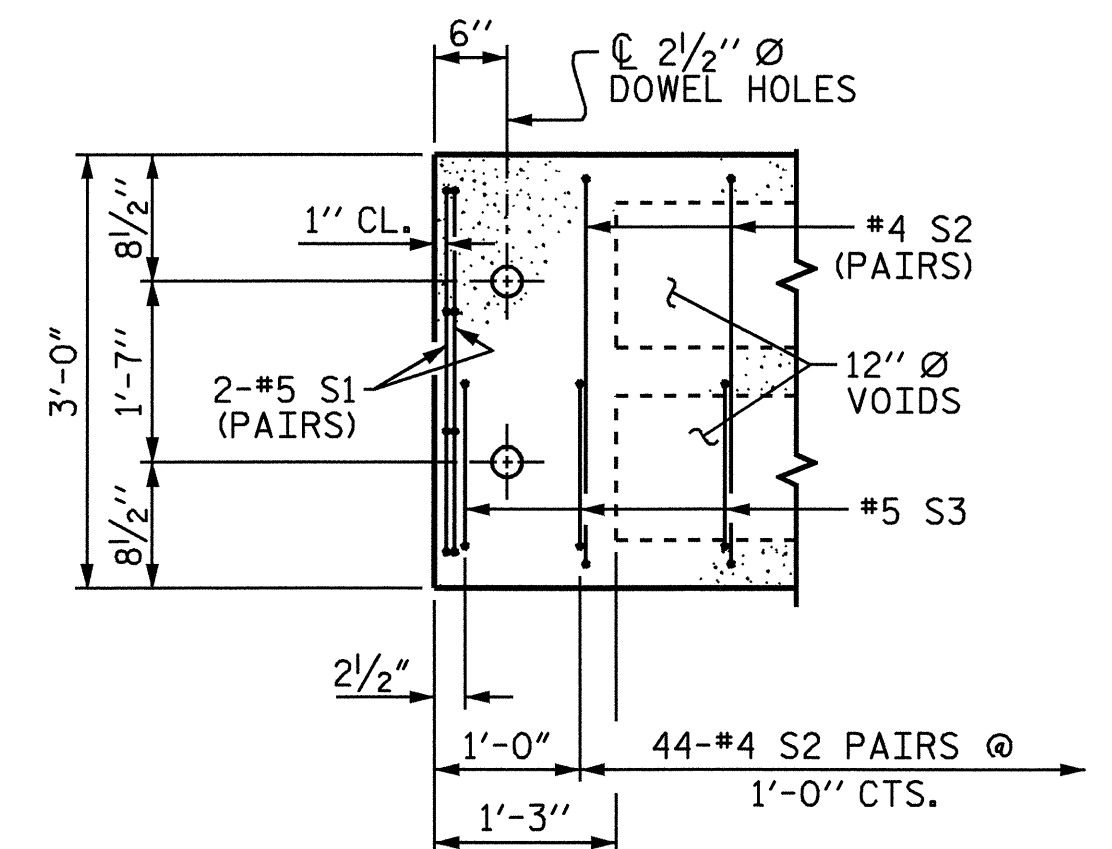
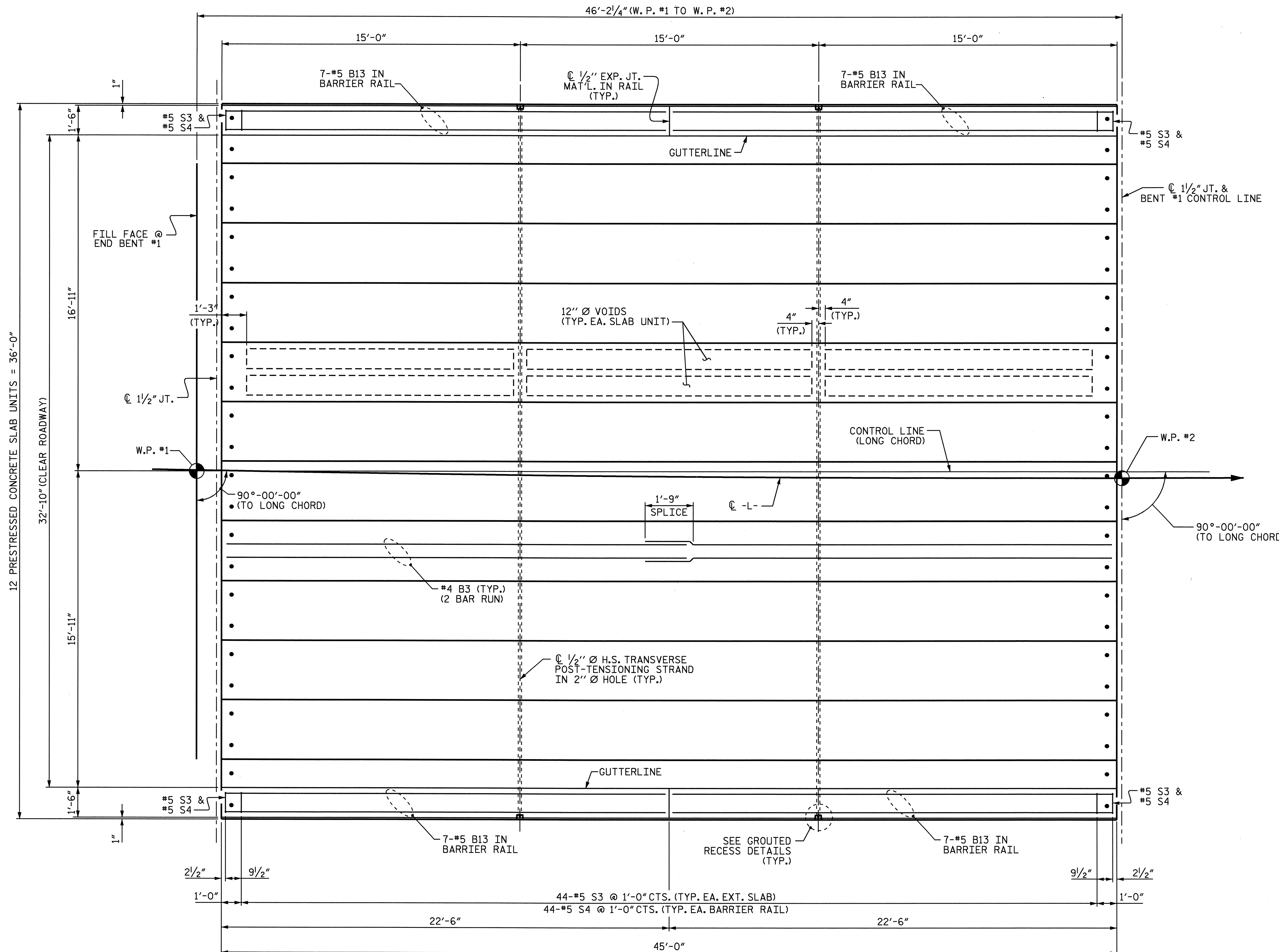
ASSEMBLED BY : M. G. SHAIKH	DATE : 4-08-08
CHECKED BY : B. D. KLAPPENBACH	DATE : 6-11-08
DRAWN BY : WJH	4/89
CHECKED BY : FCJ	5/89
REV. 10/17/00	RWW/LES
REV. 7/10/01RR	RWW/LES
REV. 5/1/06	TLA/GM



PROJECT NO. B-4029  
BLADEN COUNTY  
STATION: 14+95.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-5
					TOTAL SHEETS 56



PART PLAN - SLAB SECTION

NOTE: EXTERIOR SECTION SHOWN - INTERIOR SECTION SIMILAR EXCEPT OMIT #5 S3 BARS.

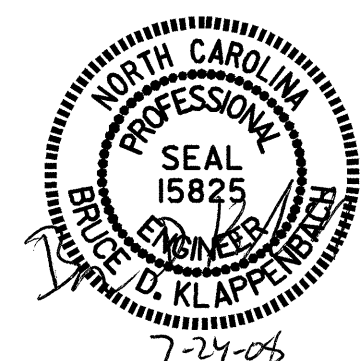
PLAN OF SPAN A

PROJECT NO. B-4029  
 BLADEN COUNTY  
 STATION: 14+95.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

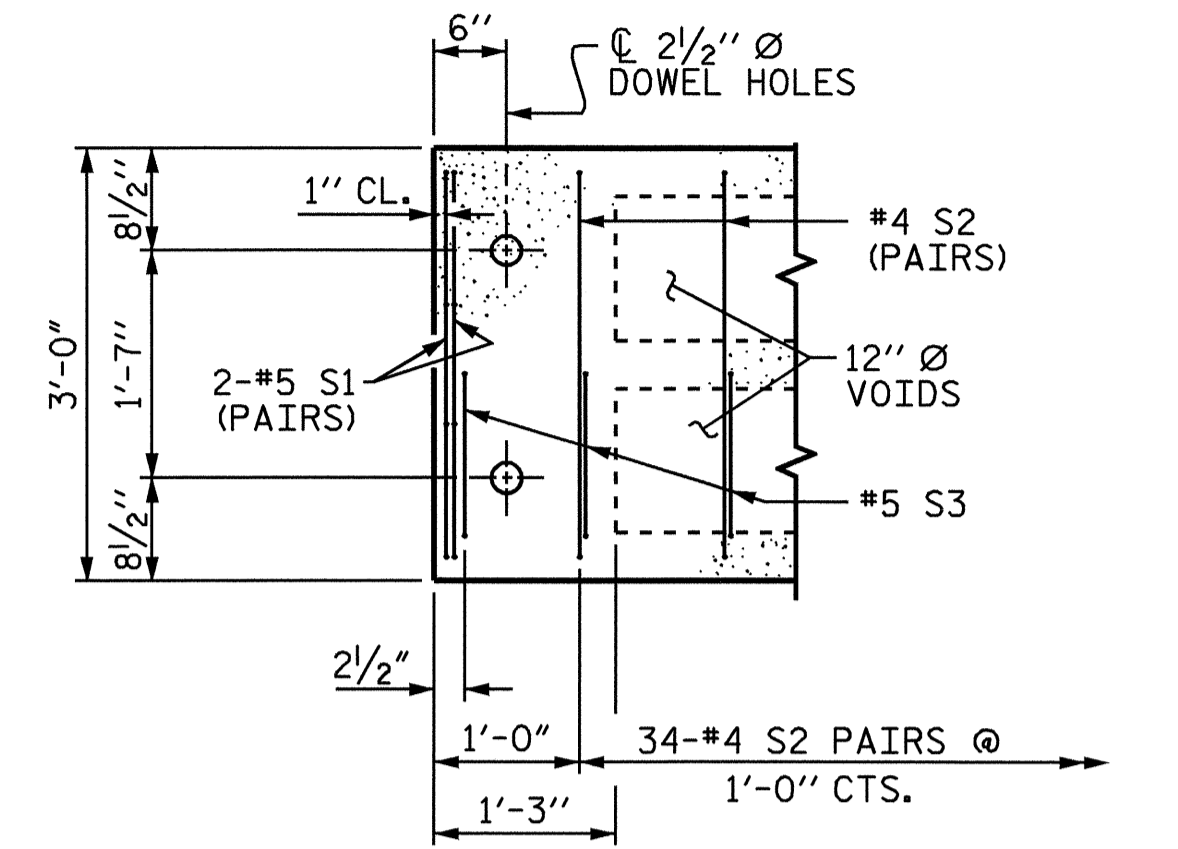
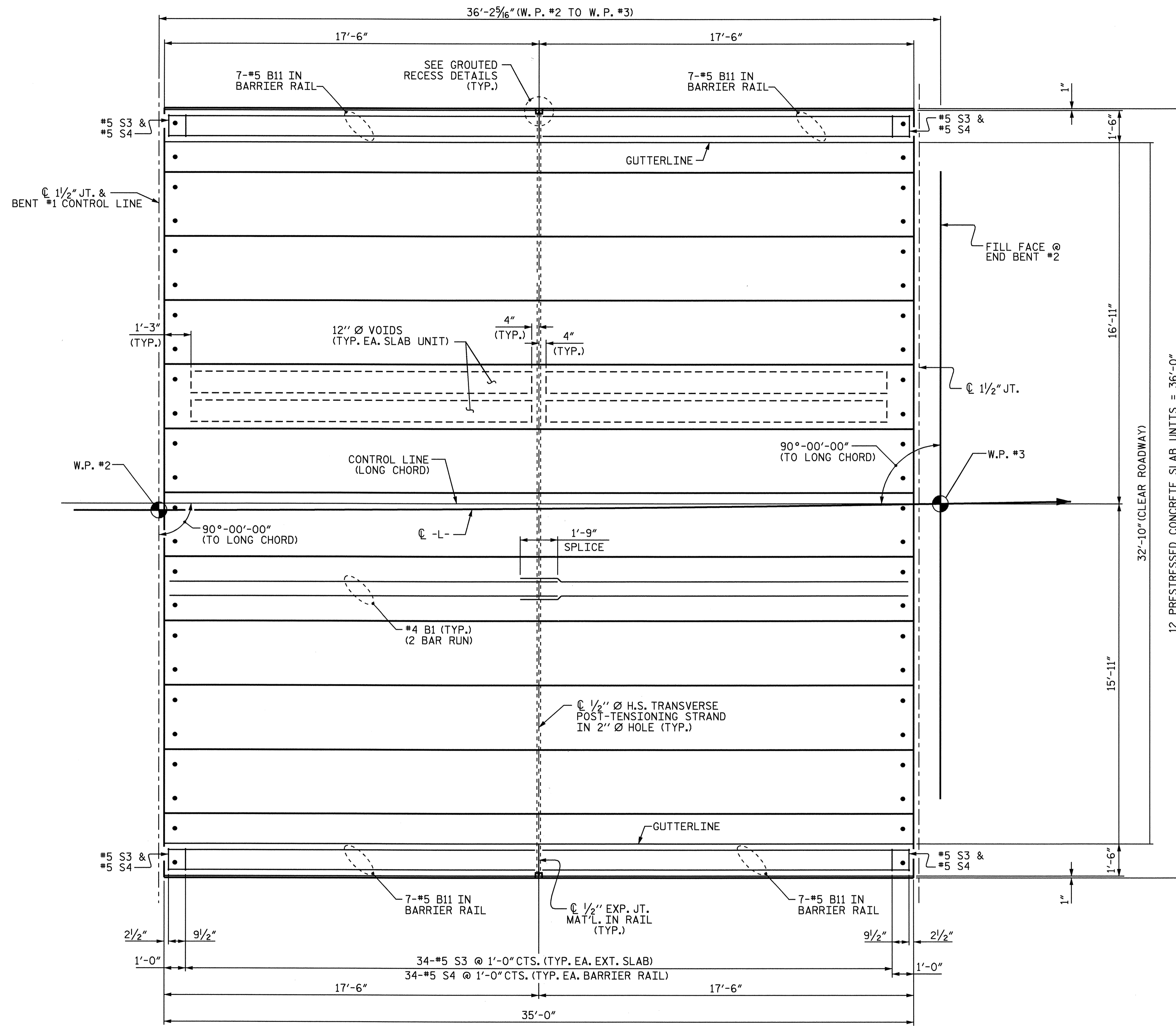
SUPERSTRUCTURE  
 3'-0" X 1'-9"  
 PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 SPAN A



DRAWN BY: M. G. SHAIKH DATE: 4-09-08  
 CHECKED BY: B. D. KLAPPENBACH DATE: 6-11-08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			56

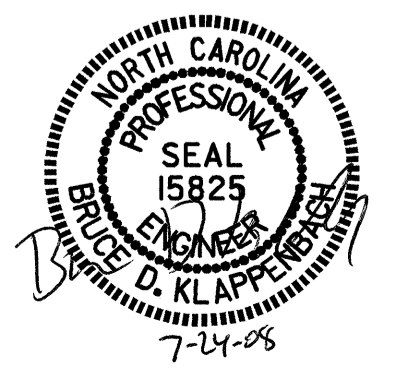




**PART PLAN - SLAB SECTION**  
 NOTE: EXTERIOR SECTION SHOWN - INTERIOR SECTION SIMILAR EXCEPT OMIT #5 S3 BARS.

**PLAN OF SPAN**

PROJECT NO. B-4029  
BLADEN COUNTY  
 STATION: 14+95.00 -L-  
 SHEET 3 OF 4



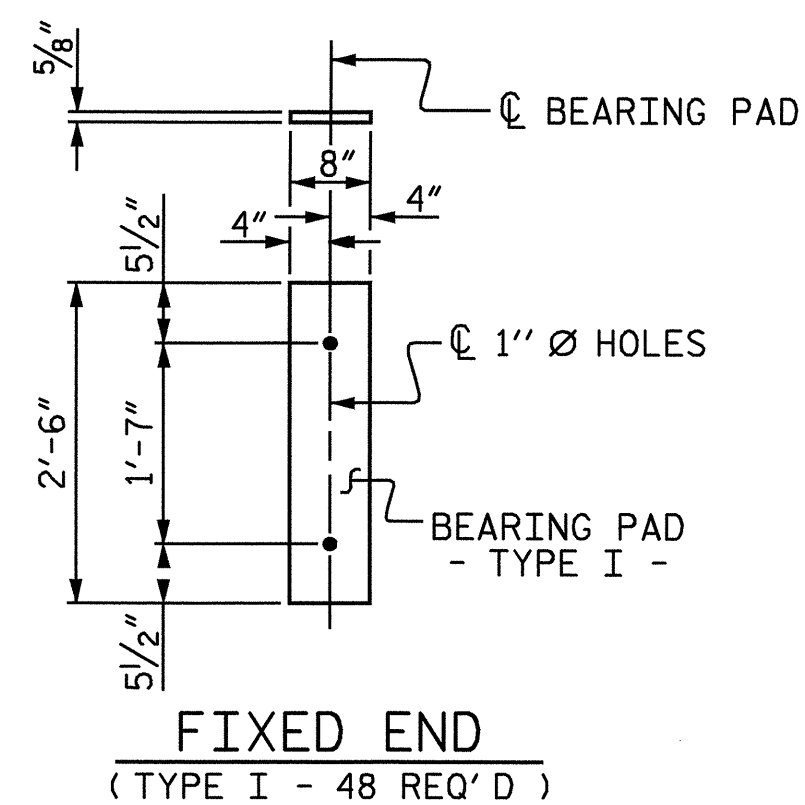
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			56

DRAWN BY: M. G. SHAIKH DATE: 4-09-08  
 CHECKED BY: D. D. KLAPPENBACH DATE: 6-11-08

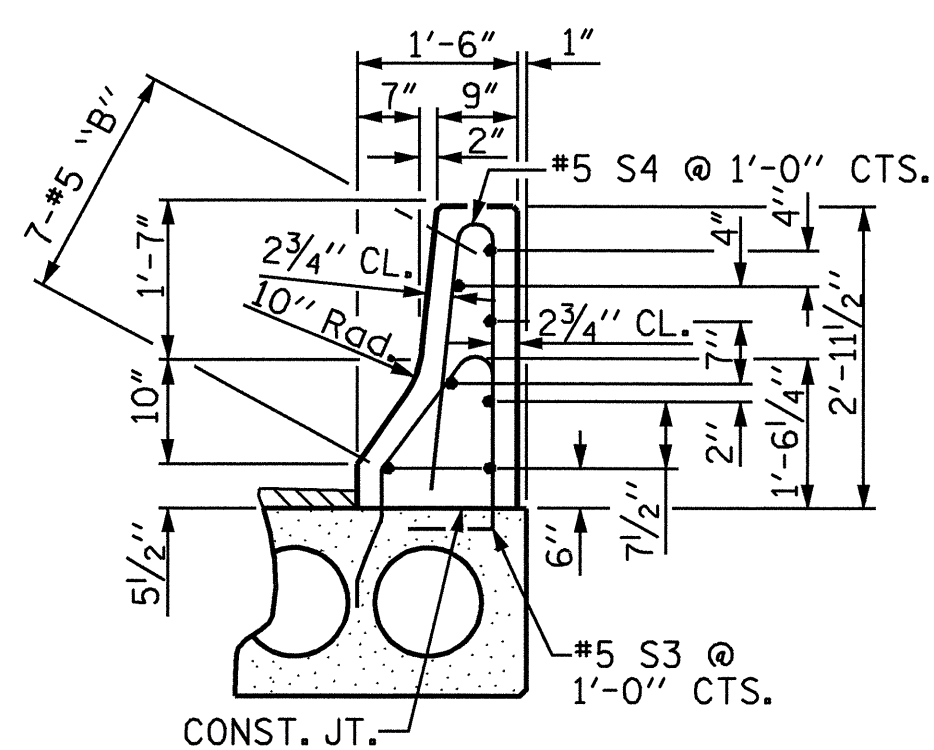
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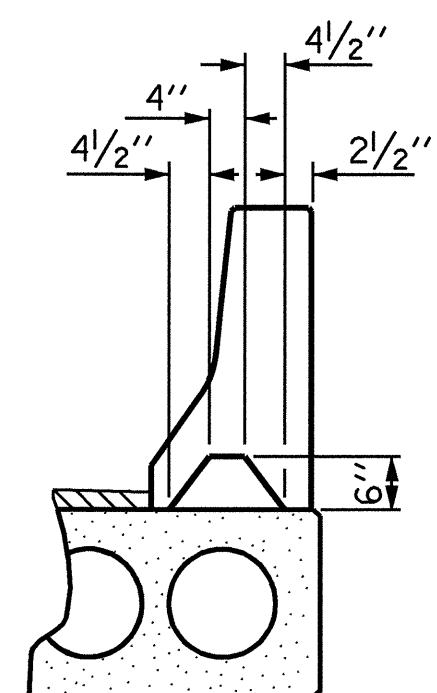
**ELASTOMERIC BEARING DETAILS**

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

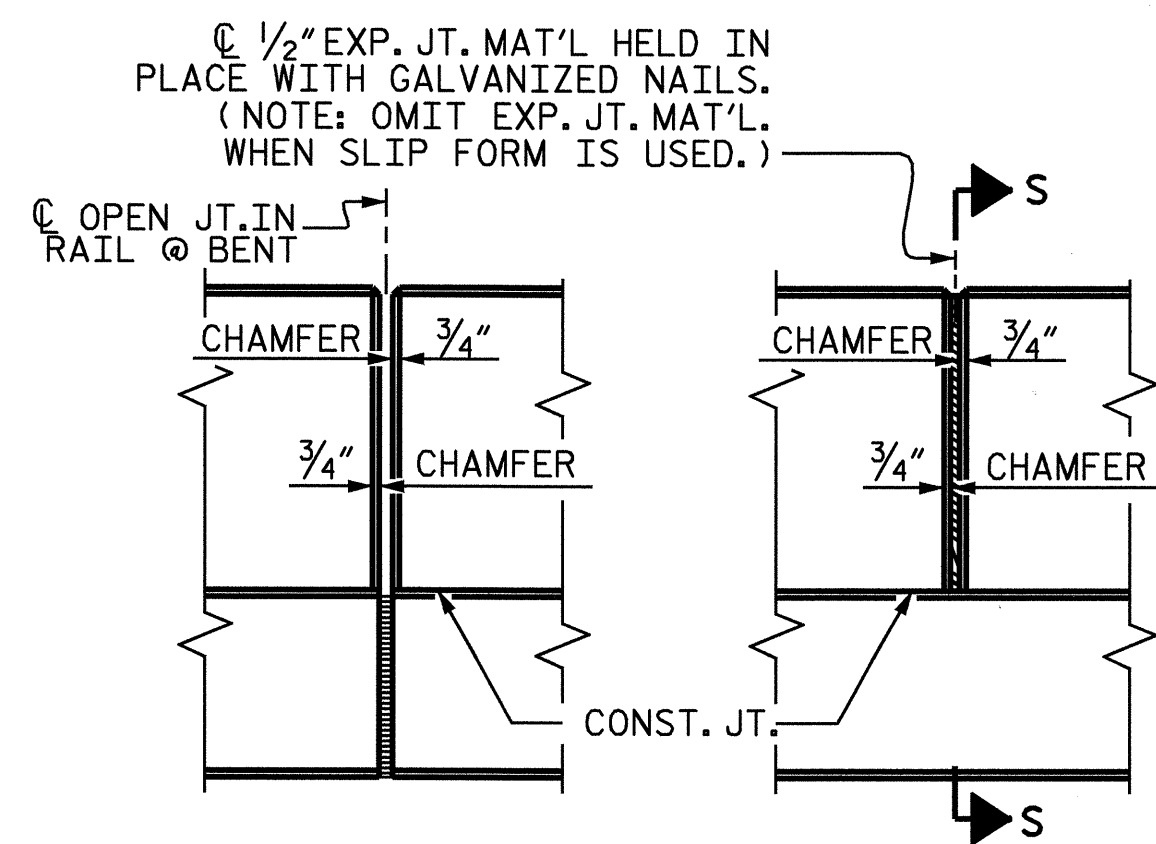
CORED SLAB UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
45' SPAN			
EXTERIOR C.S.	2	45'-0"	90'-0"
INTERIOR C.S.	10	45'-0"	450'-0"
35' SPAN			
EXTERIOR C.S.	2	35'-0"	70'-0"
INTERIOR C.S.	10	35'-0"	350'-0"
TOTAL			960'-0"



SECTION THRU RAIL



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



ELEVATION AT EXPANSION JOINTS

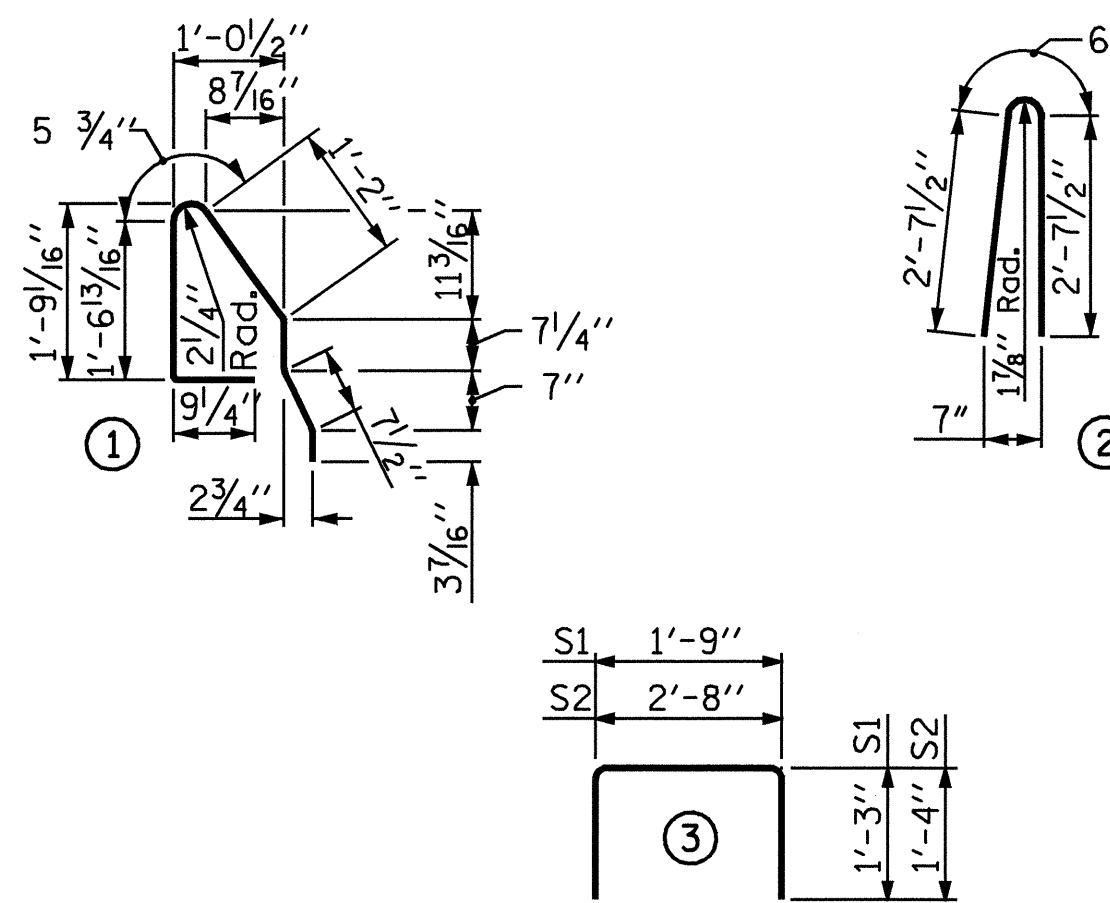
**BARRIER RAIL DETAILS**

BILL OF MATERIAL FOR CONCRETE BARRIER RAIL							
BAR	BARS PER SPAN		TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	45' SPAN	35' SPAN					
* B13	28		28	#5	STR	22'-1"	645
* B11		28	28	#5	STR	17'-1"	499
* S4	92	72	164	#5	2	5'-9"	984
*EPOXY COATED REINFORCING STEEL							LBS. 2128
CLASS AA CONCRETE							CU.YDS. 18.7
TOTAL CONCRETE BARRIER RAIL							LIN. FT. 160.00

ASSEMBLED BY : M. G. SHAIKH DATE : 4-08-08  
 CHECKED BY : B. D. KLAPPENBACH DATE : 6-11-08  
 DRAWN BY : WJH 4/89 REV. 7/10/01 RWW/LES  
 CHECKED BY : FCJ 5/89 REV. 5/7/03RRR RWW/JTE  
 REV. 5/1/06 TLA/GM

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**BAR TYPES**



ALL BAR DIMENSIONS ARE OUT TO OUT.

**BILL OF MATERIAL FOR ONE 45' CORED SLAB SECTION**

BAR	NO.	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B3	4	#4	STR	23'-3"	62	23'-3"	62
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	88	#4	3	5'-4"	314	5'-4"	314
* S3	46	#5	1	5'-6"	264		
REINFORCING STEEL				LBS.	411	LBS.	411
*EPOXY COATED REINFORCING STEEL				LBS.	264		
5000 P.S.I. CONCRETE				CU. YDS.	6.3	CU. YDS.	6.3
1/2" Ø L.R. STRANDS				NO.	19	NO.	19

**BILL OF MATERIAL FOR ONE 35' CORED SLAB SECTION**

BAR	NO.	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B1	4	#4	STR	18'-3"	49	18'-3"	49
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	68	#4	3	5'-4"	242	5'-4"	242
* S3	36	#5	1	5'-6"	207		
REINFORCING STEEL				LBS.	326	LBS.	326
*EPOXY COATED REINFORCING STEEL				LBS.	207		
5000 P.S.I. CONCRETE				CU. YDS.	4.9	CU. YDS.	4.9
1/2" Ø L.R. STRANDS				NO.	12	NO.	12

**NOTES**

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

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

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

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

THE 2" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, A POSITIVE HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. THIS SYSTEM SHALL BE DESIGNED TO BE LEFT IN PLACE UNTIL THE CONCRETE HAS REACHED RELEASE STRENGTH. AT LEAST THREE WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

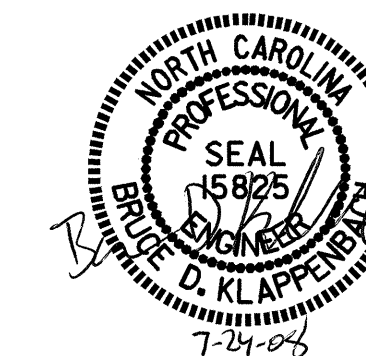
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI.

PROJECT NO. B-4029  
BLADEN COUNTY  
 STATION: 14+95.00 -L-

SHEET 4 OF 4

DEAD LOAD DEFLECTION AND CAMBER		
	3'-0" x 1'-9" 1/2" Ø L.R. STRAND	
	45' SPAN	35' SPAN
CAMBER ( SLAB ALONE IN PLACE )	1 1/2"	1 1/2"
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD **	3/16"	1/16"
FINAL CAMBER	1 5/16"	1 1/16"

\*\* INCLUDES FUTURE WEARING SURFACE.



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

REVISIONS						SHEET NO. S-8
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 56
2			4			

STD. NO. PCS3-36

NOTES

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

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

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

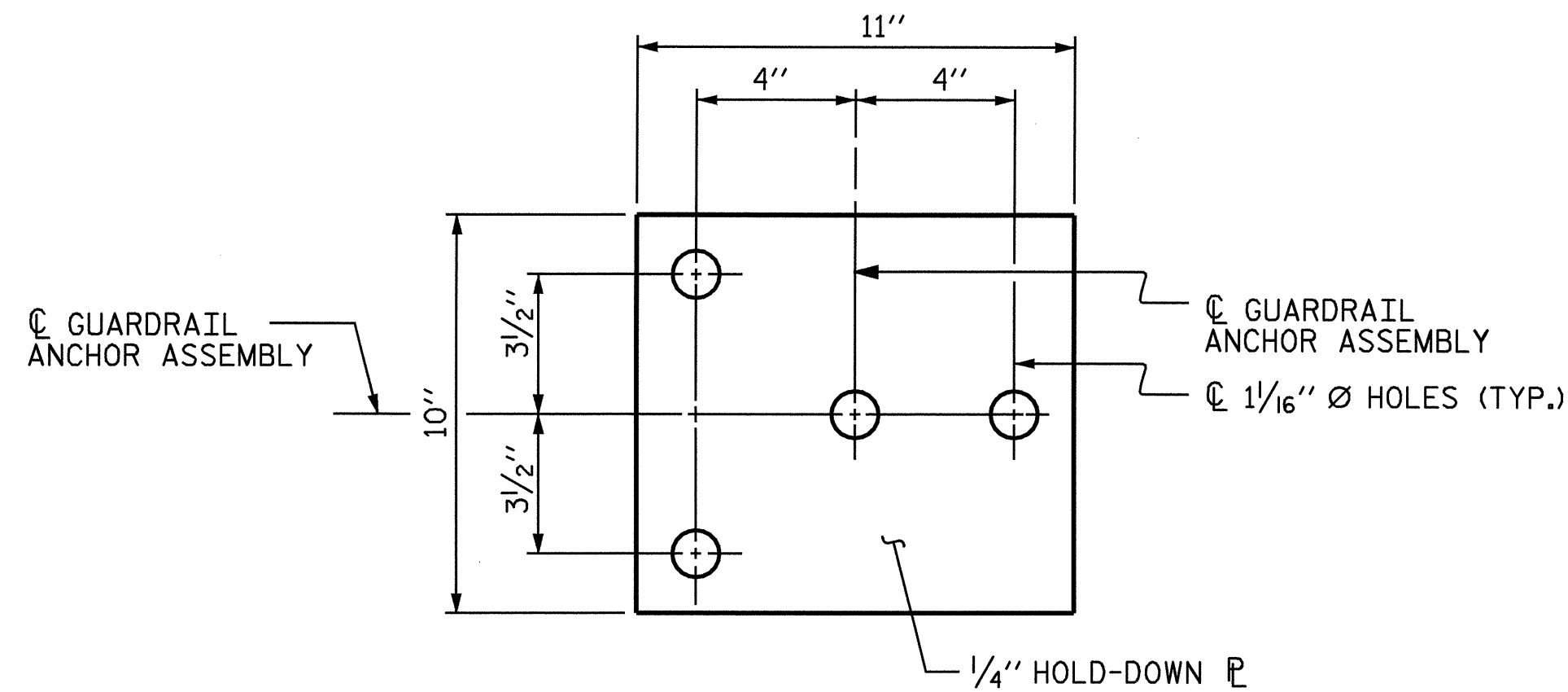
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

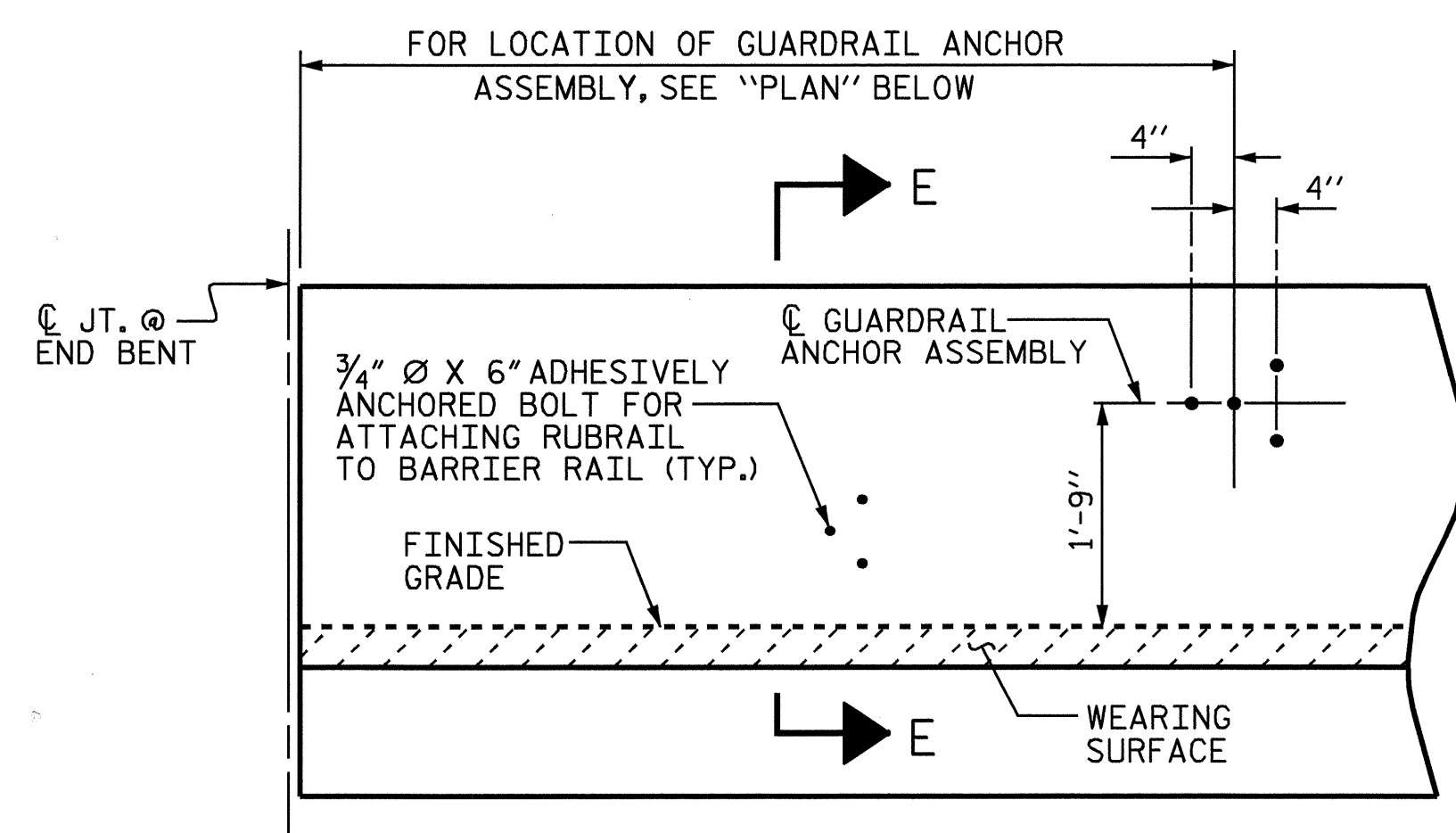
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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.

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.

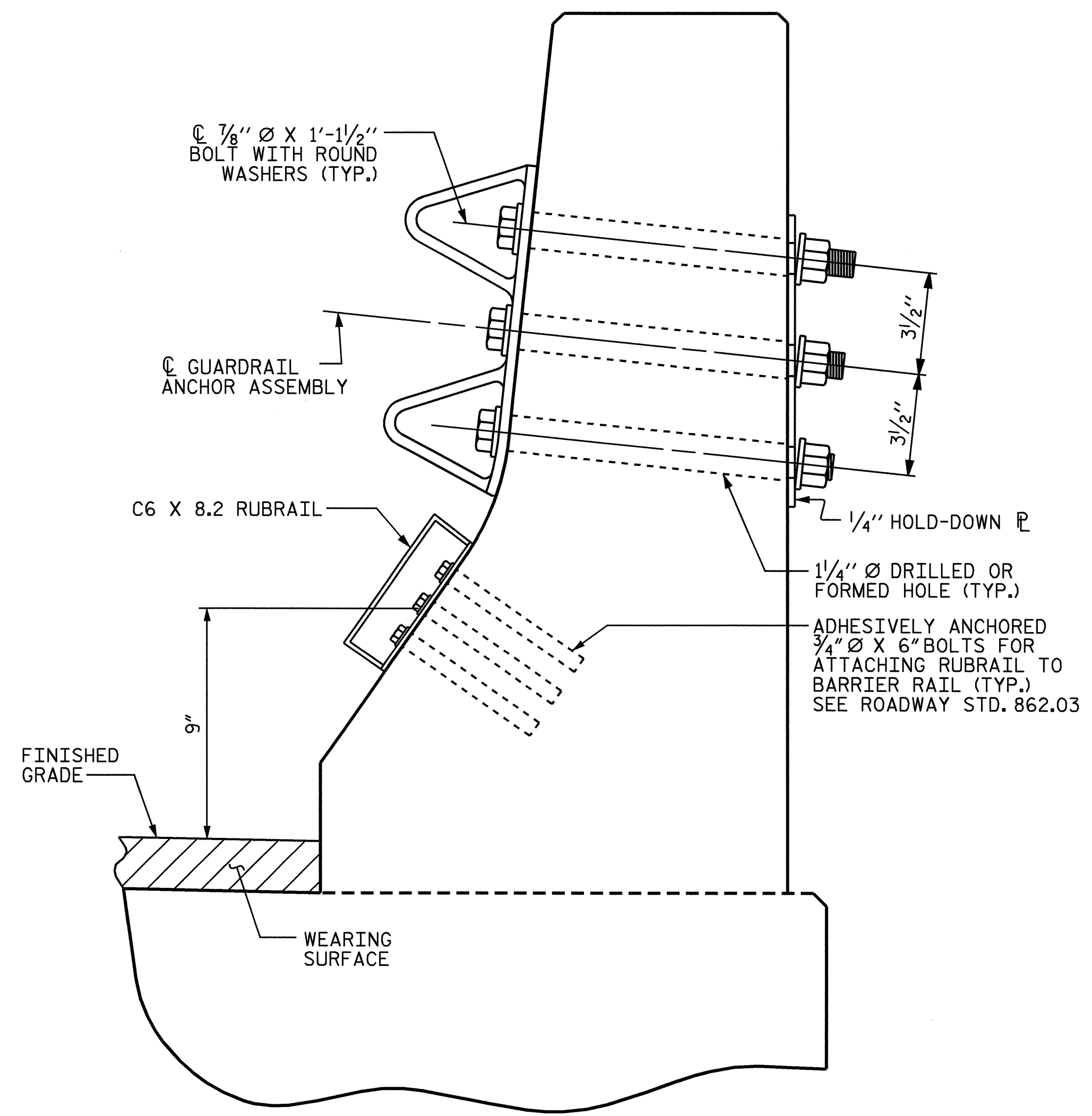


PLAN



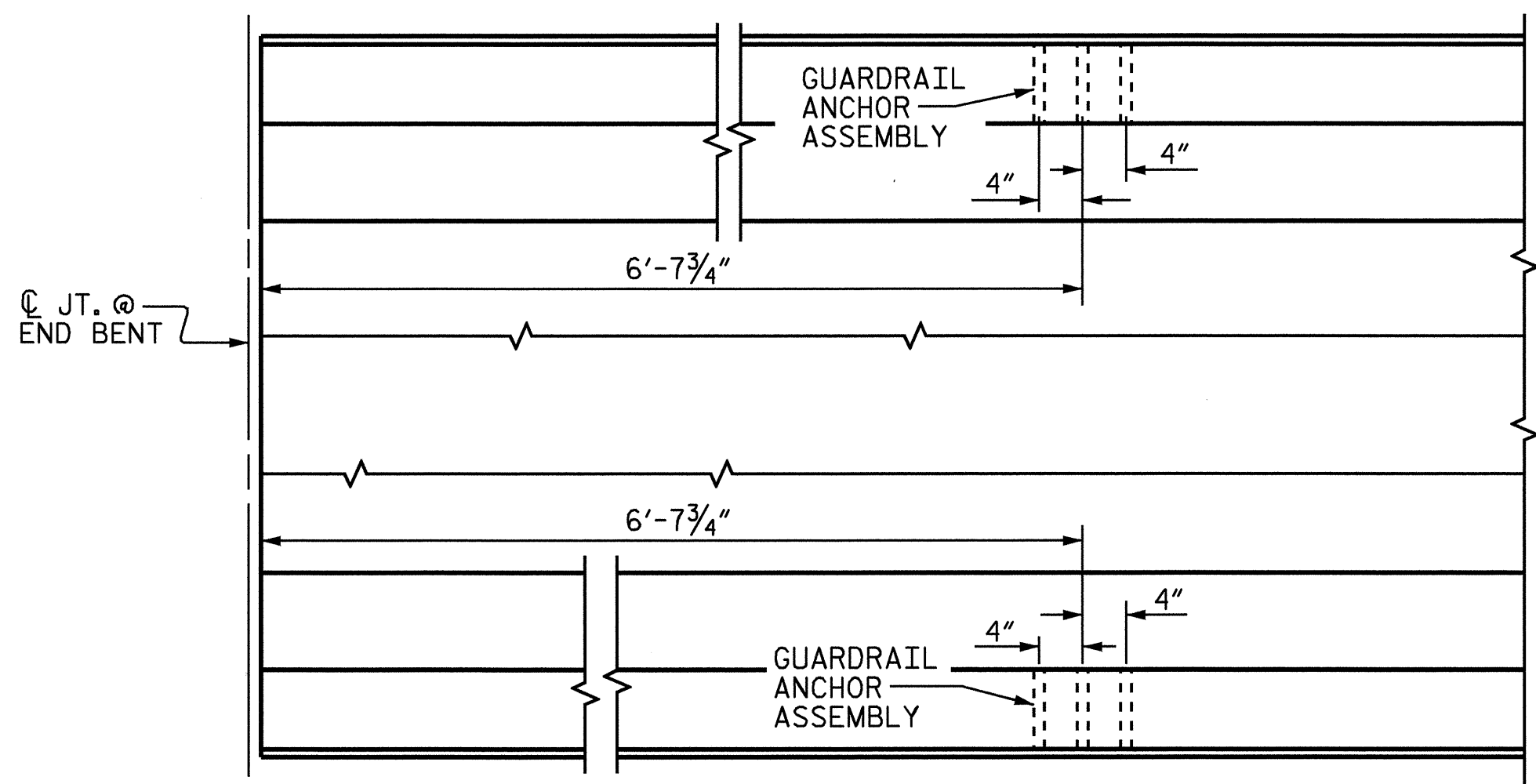
ELEVATION

FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03



SECTION E-E

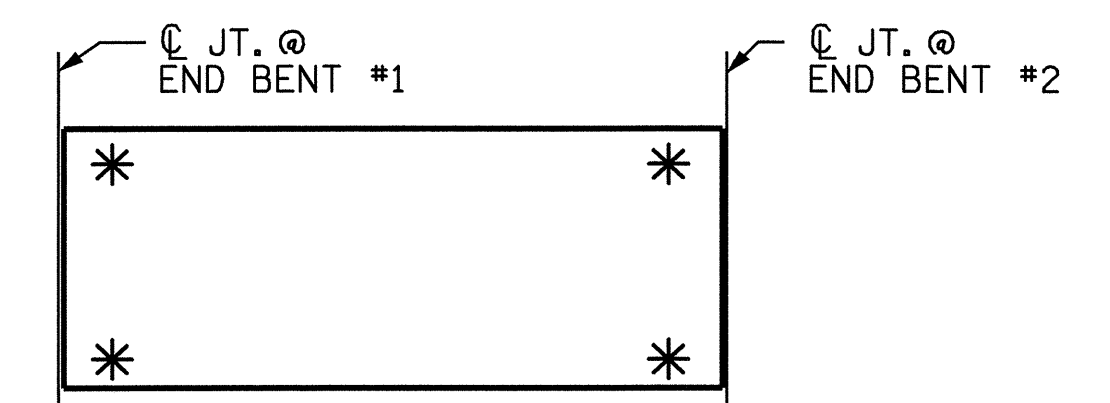
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR.

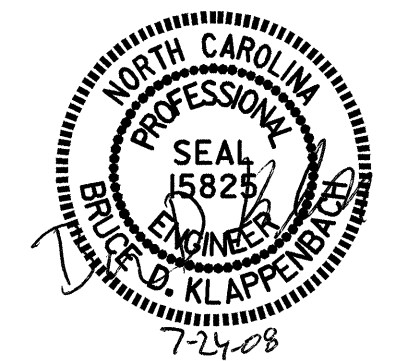


SKETCH SHOWING POINTS OF ATTACHMENTS

\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4029  
BLADEN COUNTY  
 STATION: 14+95.00 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 GUARDRAIL ANCHORAGE  
 FOR BARRIER RAIL



ASSEMBLED BY : M. G. SHAIKH DATE : 6-11-08  
 CHECKED BY : B. D. KLAPPENBACH DATE : 6-11-08  
 DRAWN BY : TLA 5/06  
 CHECKED BY : GM 5/06

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			56



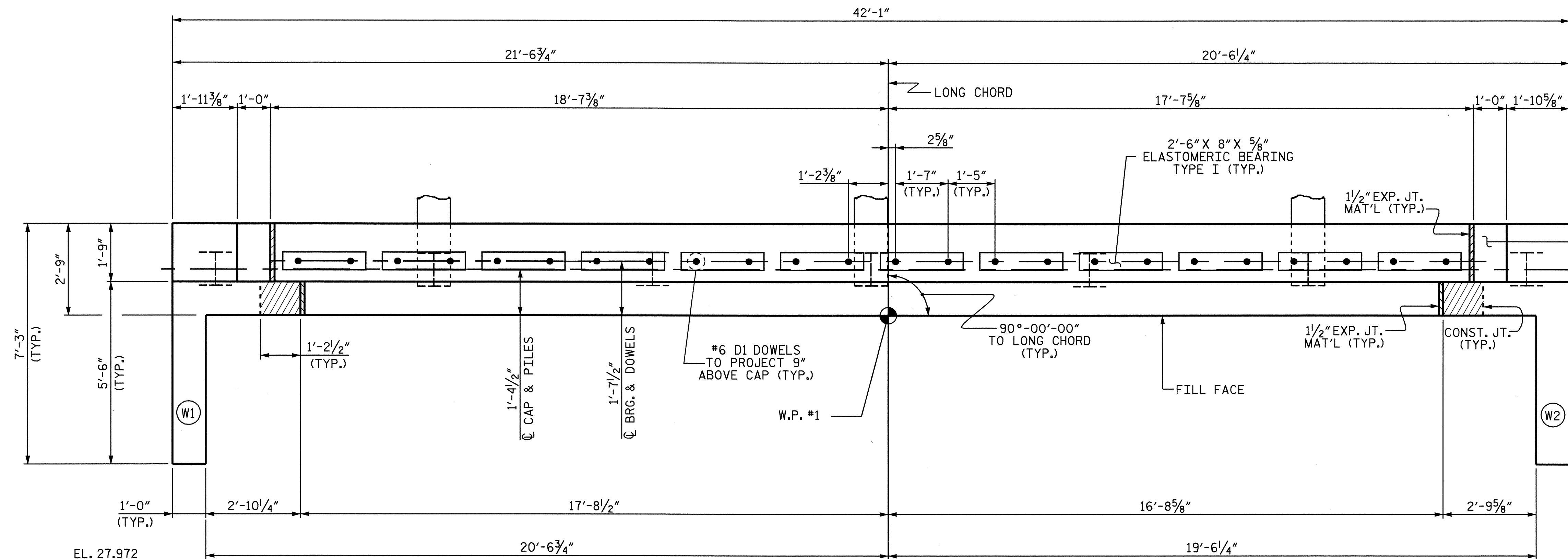
**NOTES**

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

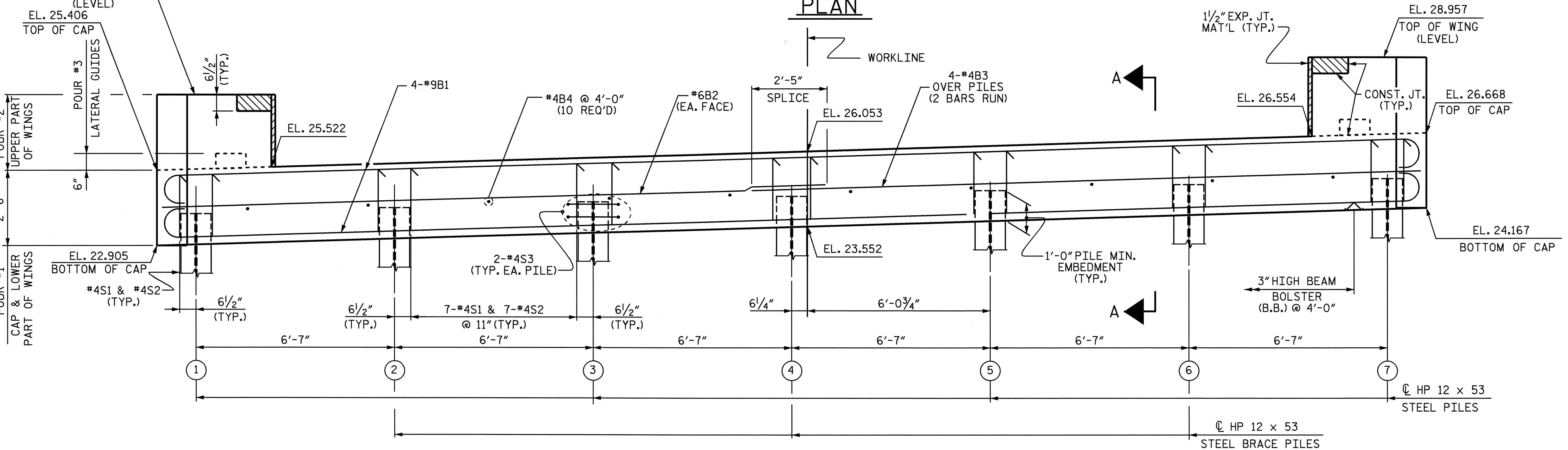
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

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

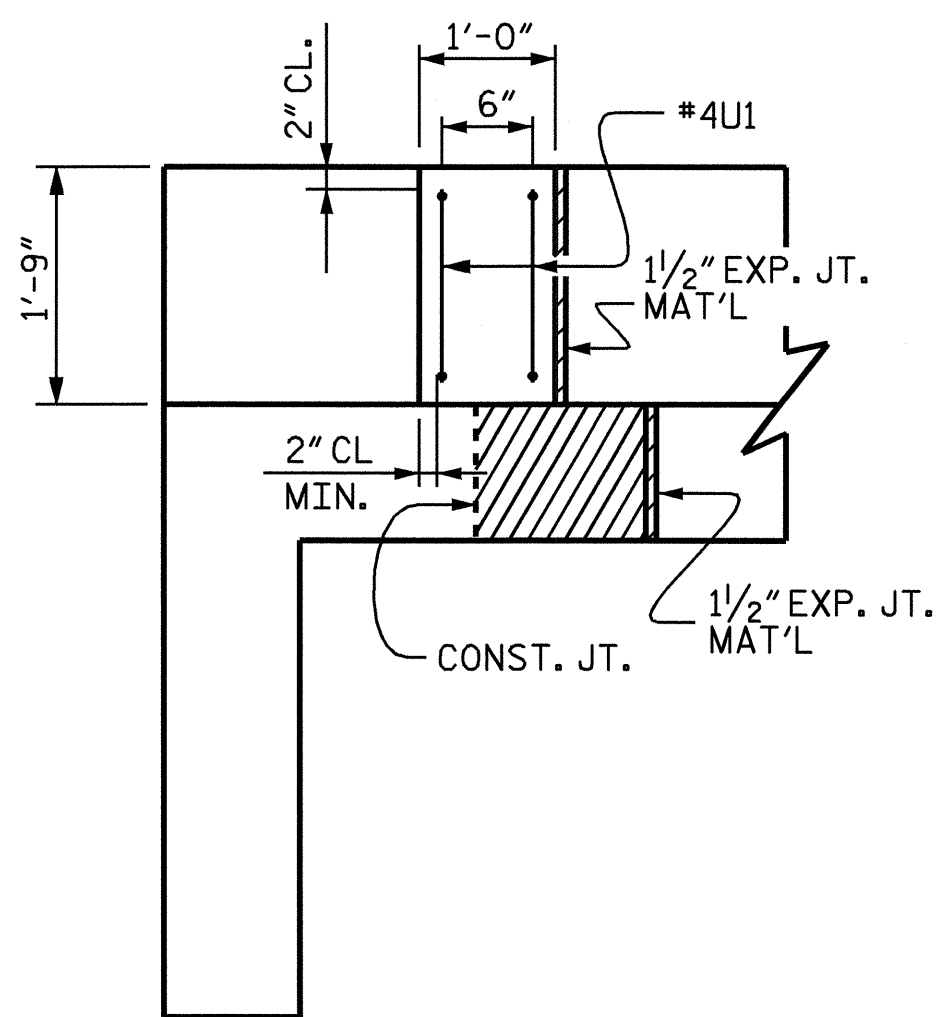
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER CORED SLAB UNITS ARE IN PLACE.



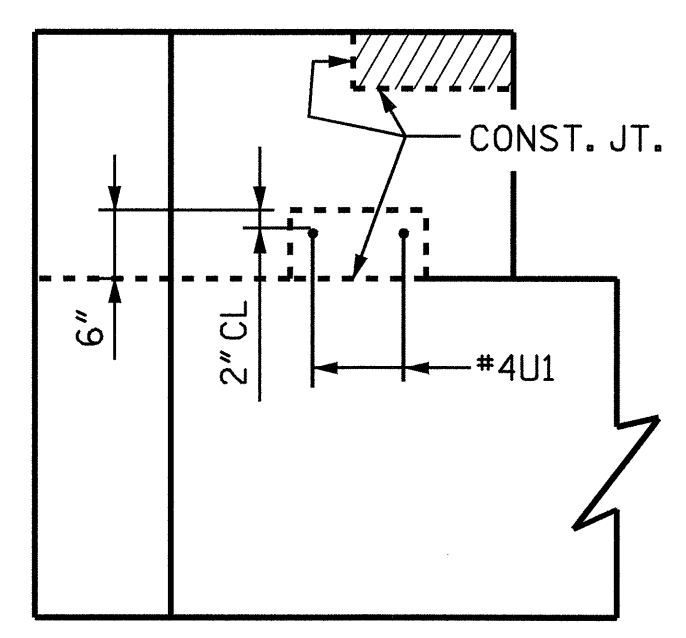
**PLAN**



**ELEVATION**

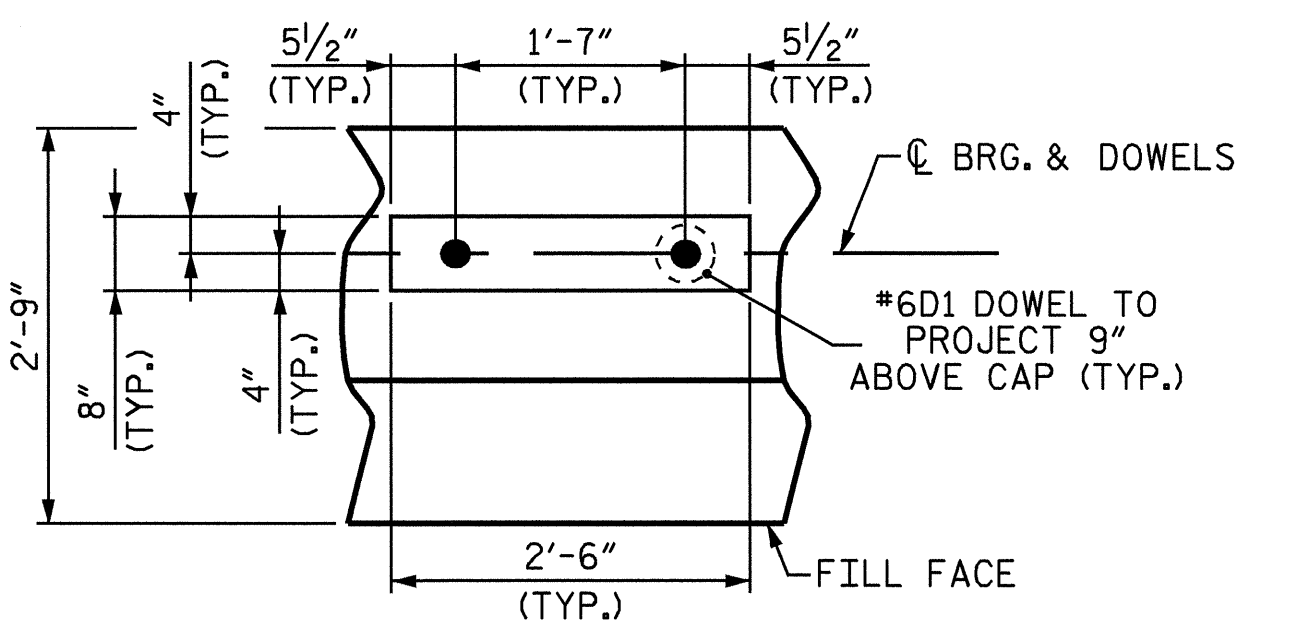


**PLAN**

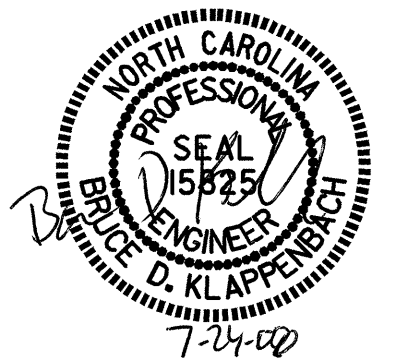


**ELEVATION LATERAL GUIDE**  
(EACH END SIMILAR)

TOP OF PILE ELEVATIONS	
PILE #	ELEVATION
1	EL. 23.959
2	EL. 24.156
3	EL. 24.354
4	EL. 24.551
5	EL. 24.748
6	EL. 24.946
7	EL. 25.143



**BEARING DETAIL**



PROJECT NO. B-4029  
 BLADEN COUNTY  
 STATION: 14+95.00-L-

SHEET 1 OF 3

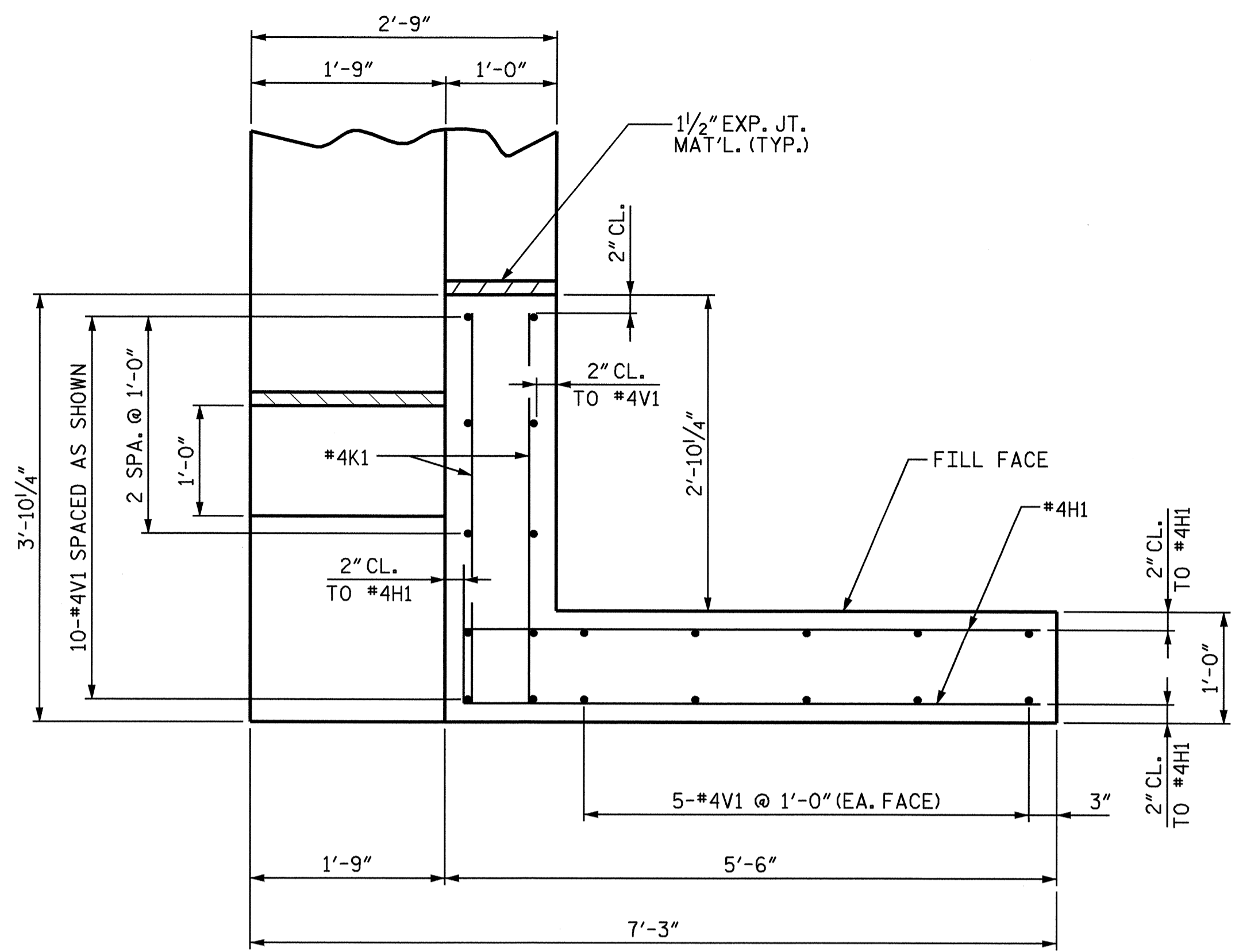
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE  
 END BENT #1**

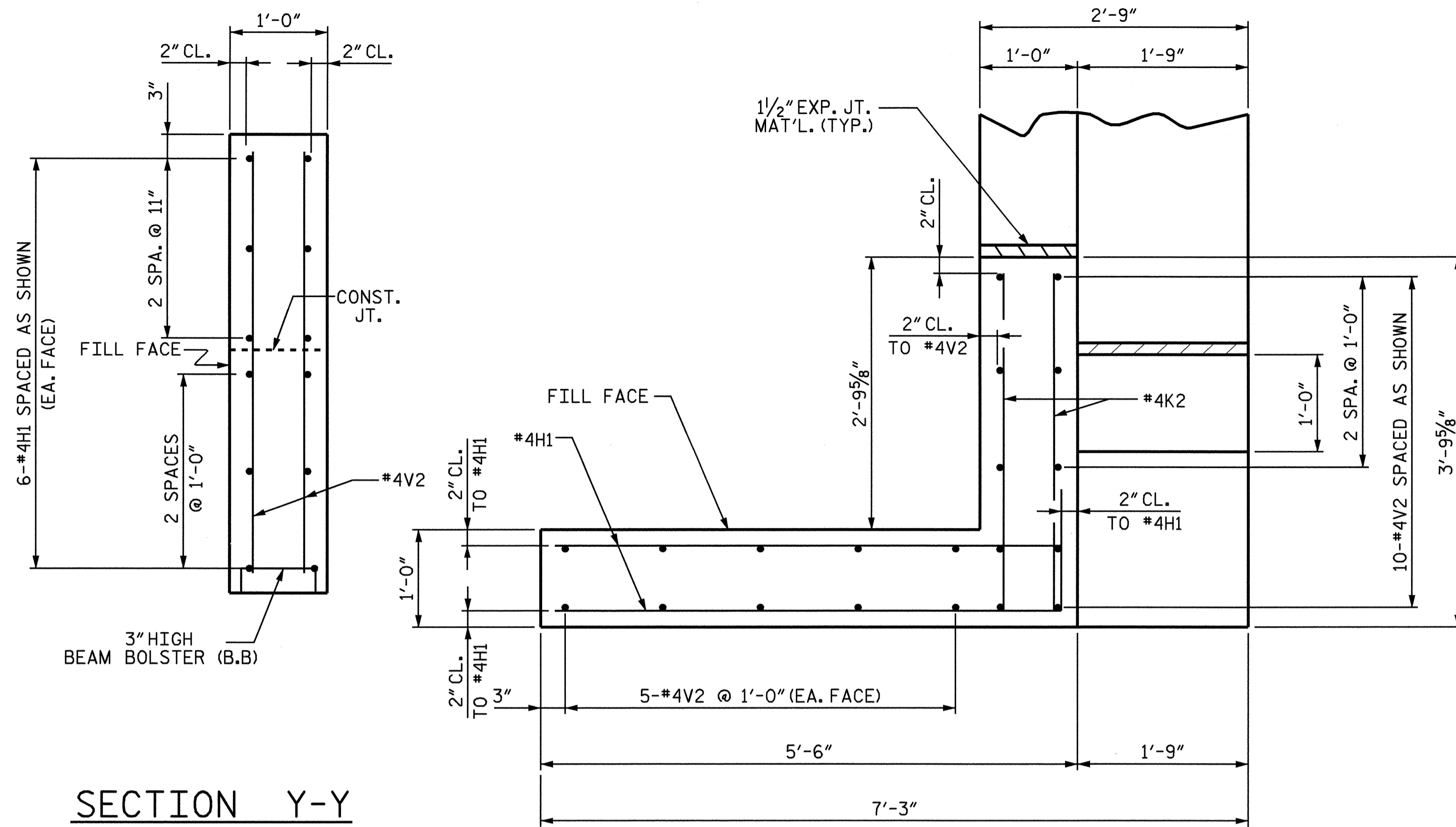
REVISIONS						SHEET NO. S-10
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 56
2			4			

DRAWN BY: H.T. BARBOUR DATE: 4-16-08  
 CHECKED BY: M.G. SHAIKH DATE: 6-08

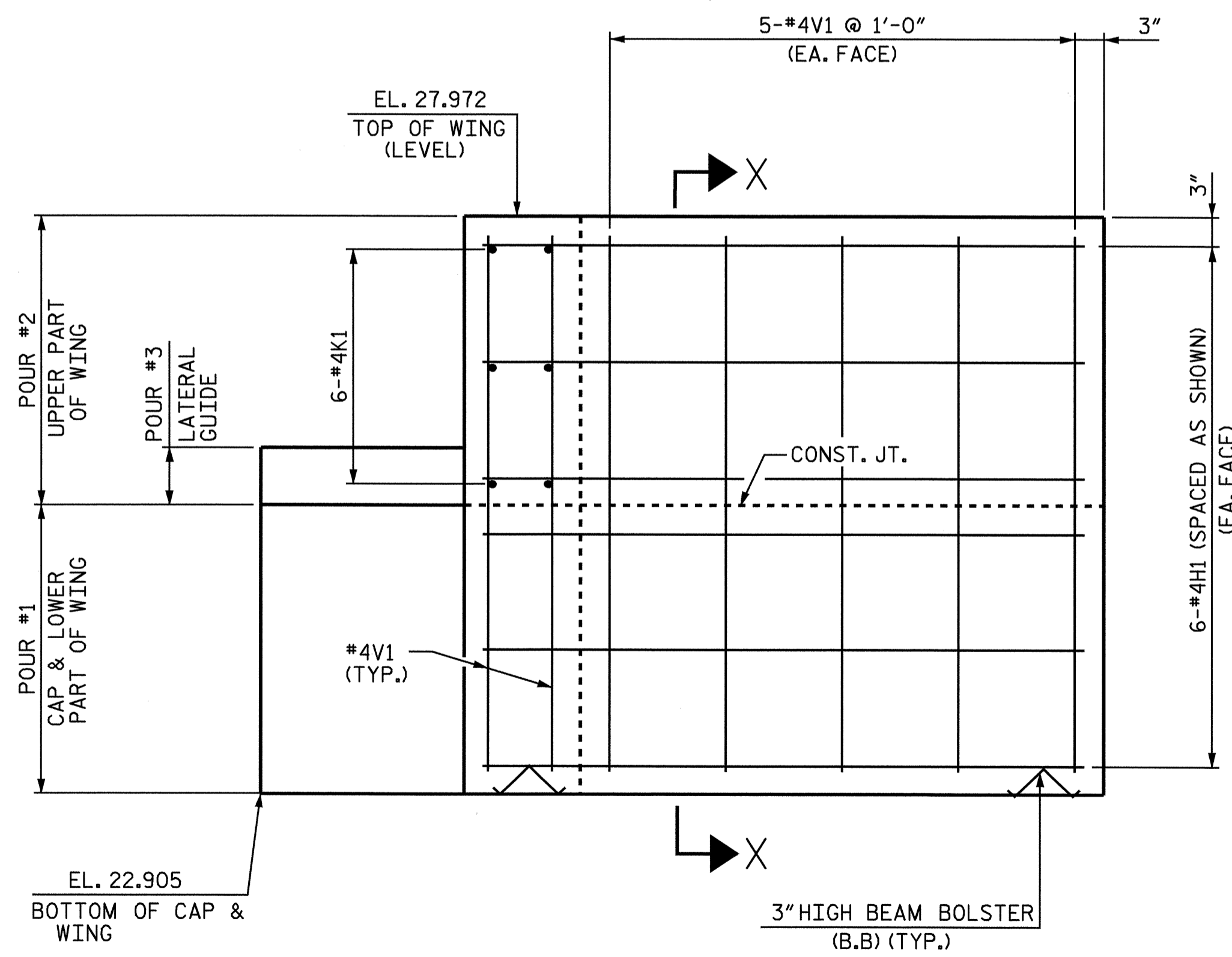
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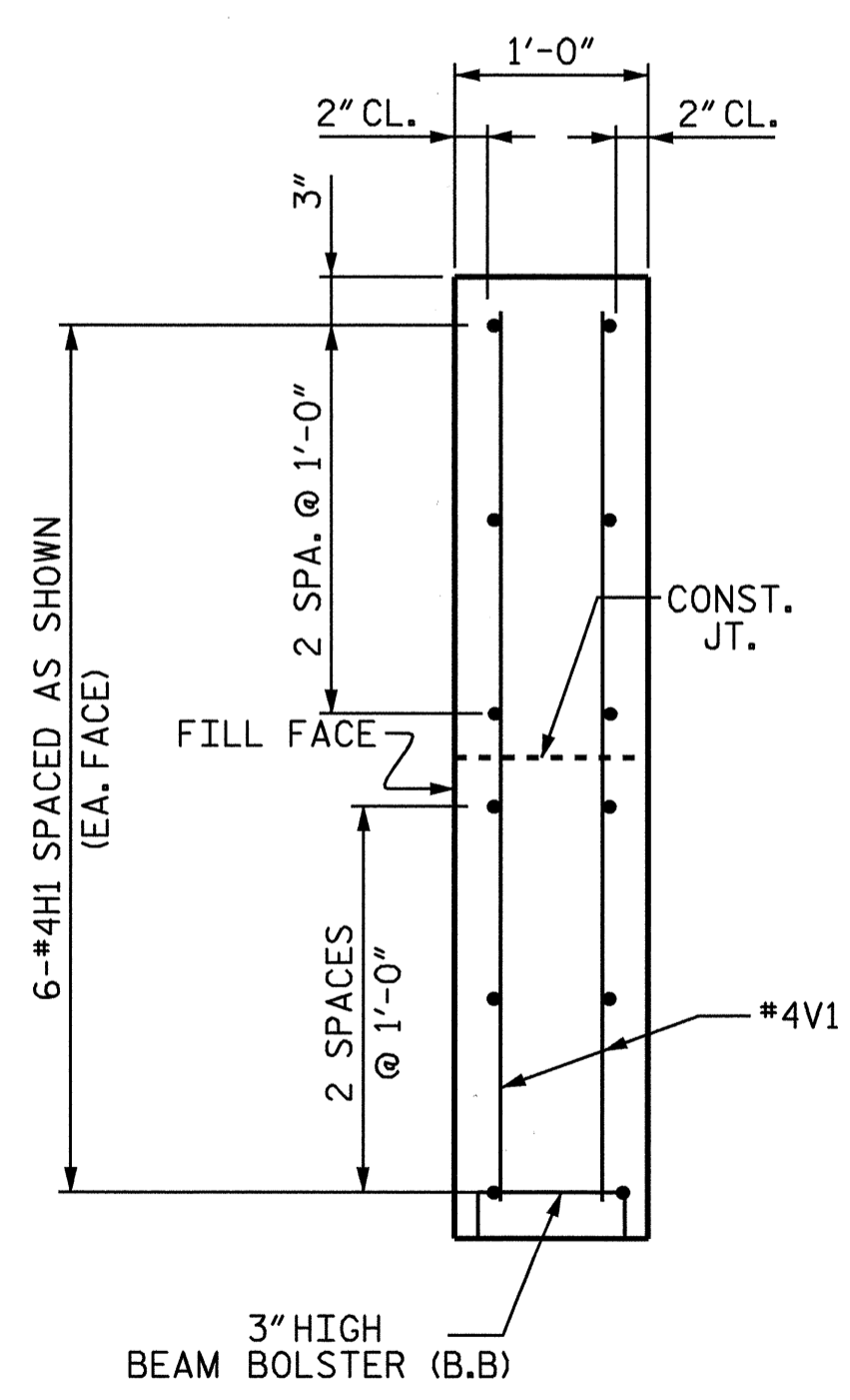
PLAN OF LEFT WING (W1)



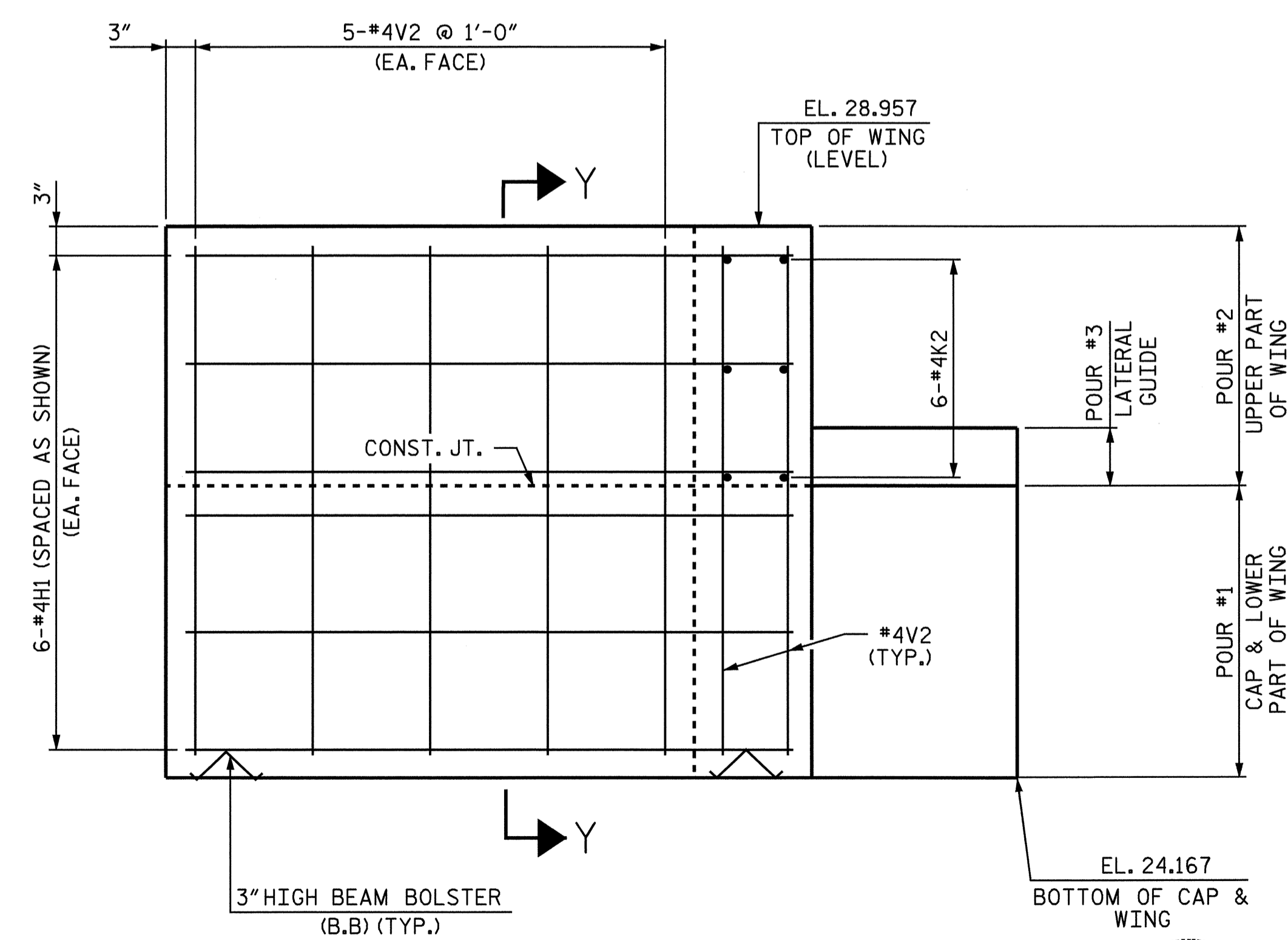
PLAN OF RIGHT WING (W2)



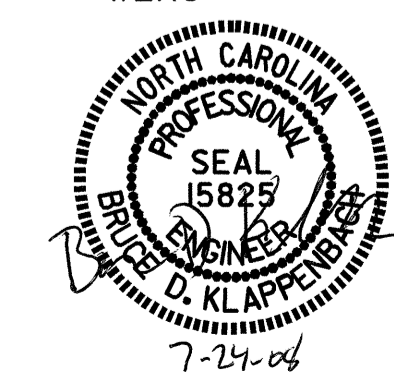
ELEVATION OF LEFT WING (W1)



SECTION X-X



ELEVATION OF RIGHT WING (W2)

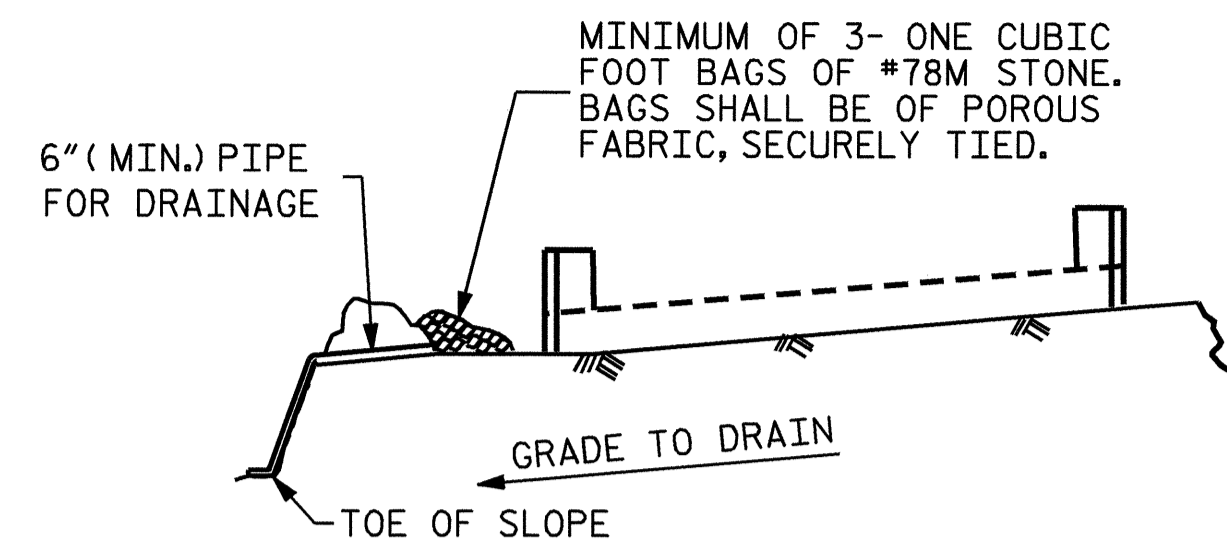


PROJECT NO. B-4029  
 BLADEN COUNTY  
 STATION: 14+95.00-L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT#1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-11
					TOTAL SHEETS 56

DRAWN BY: H.T. BARBOUR DATE: 4-16-08  
 CHECKED BY: M.G. SHATKH DATE: 6-08

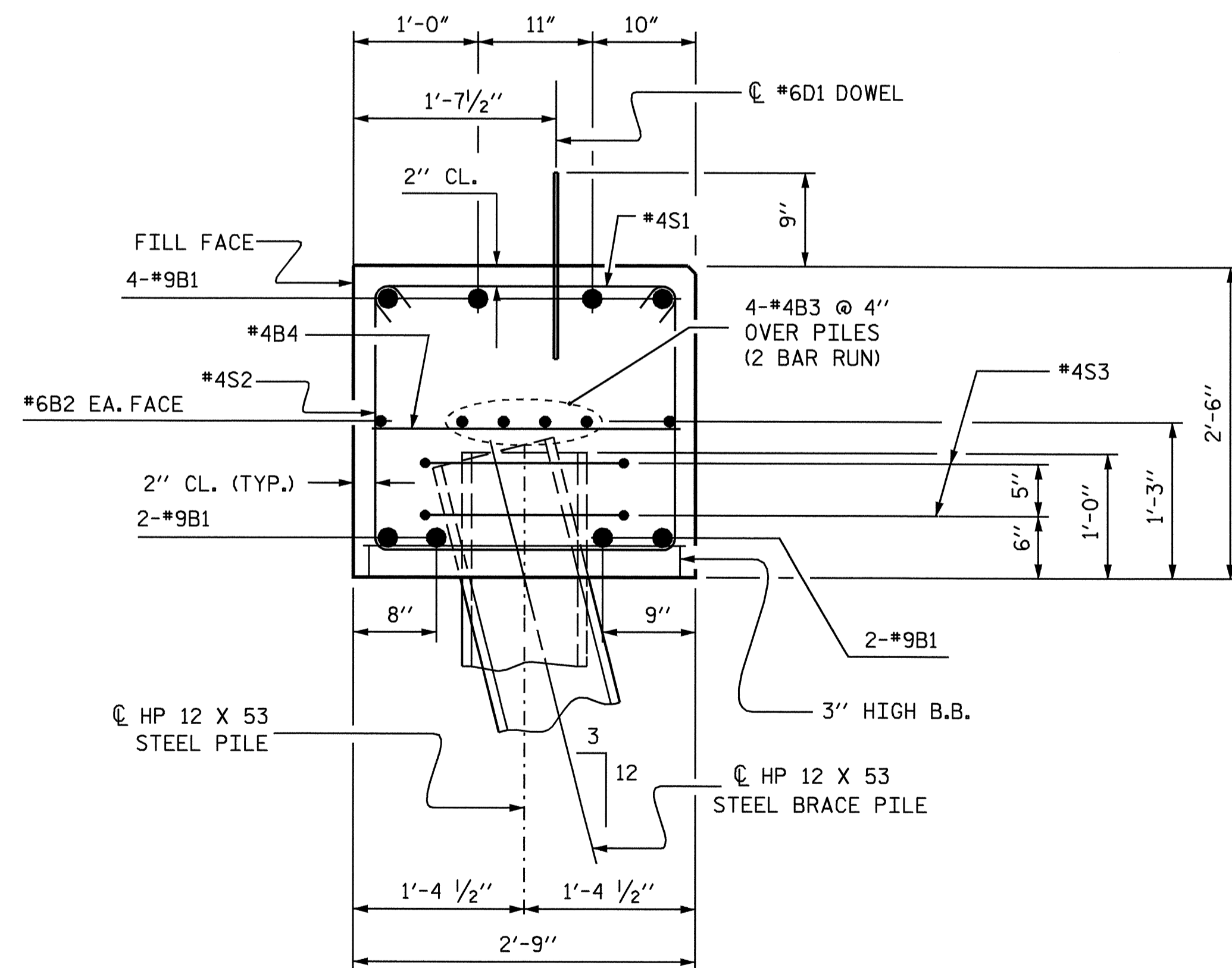


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

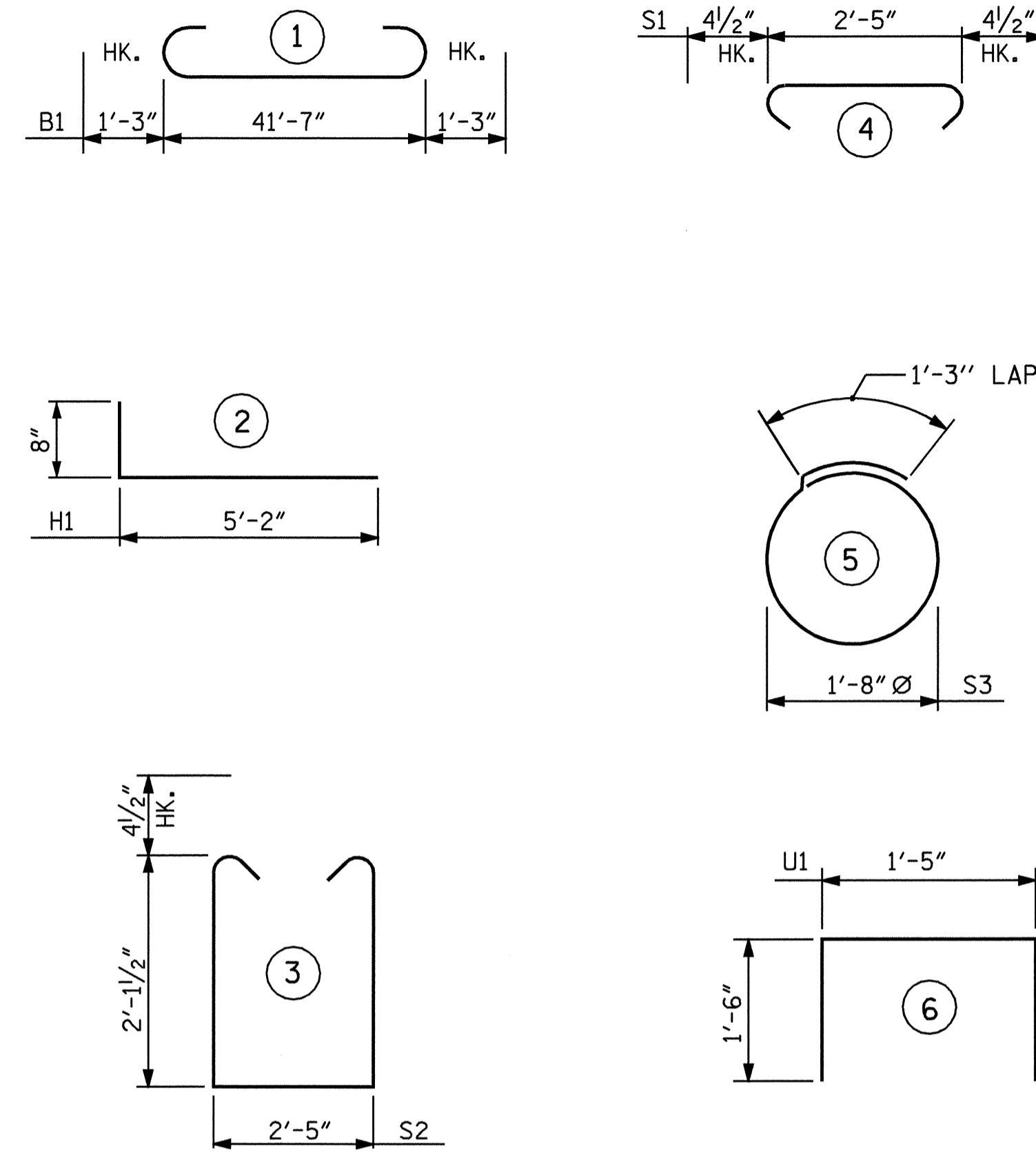


SECTION A-A

DRAWN BY: H.T. BARBOUR DATE: 4-16-08  
 CHECKED BY: M.G. SHAIKH DATE: 6-08

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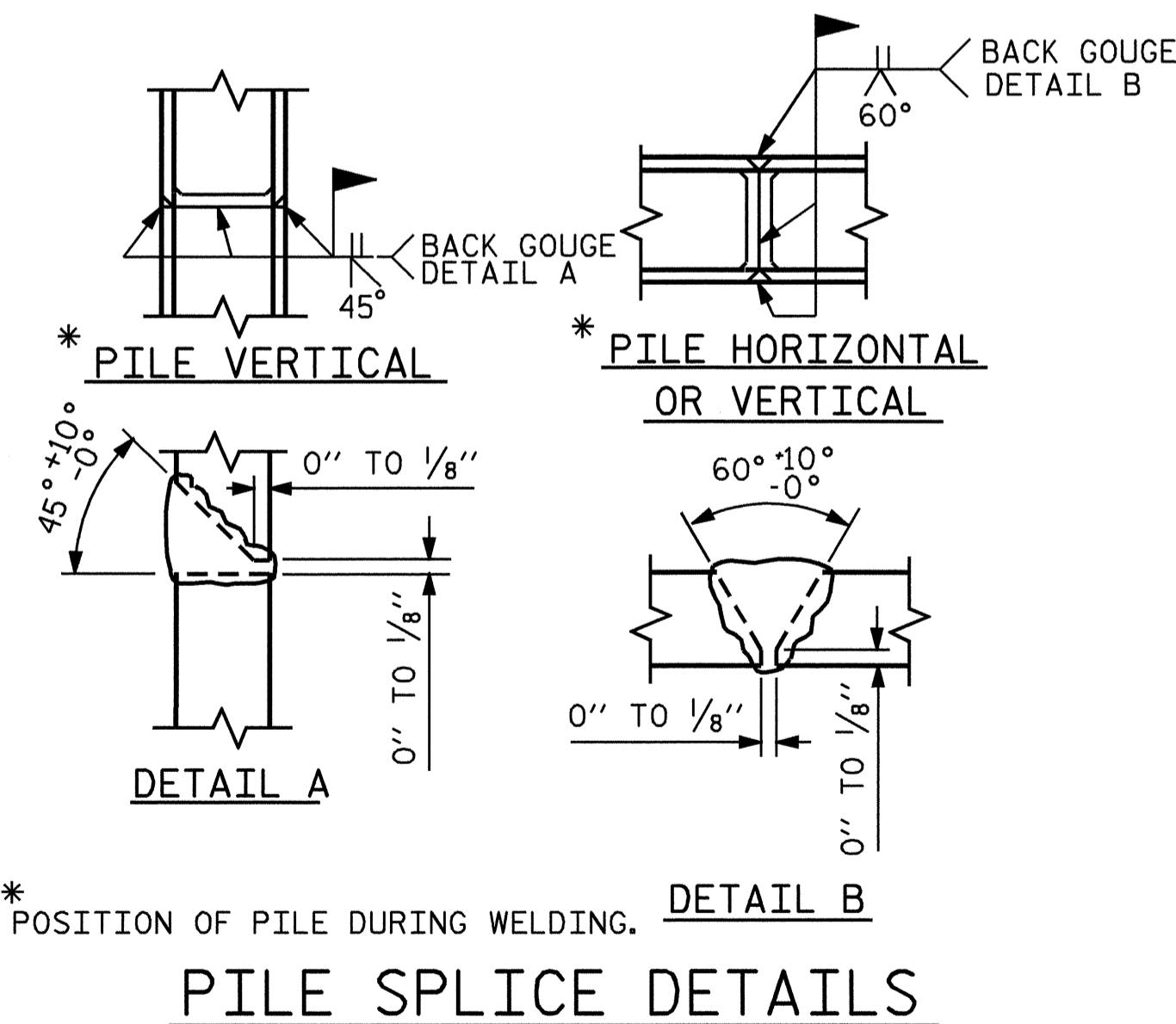
### BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

### BILL OF MATERIAL

END BENT #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		44'-1"	1199
B2	2	#6	STR.	41'-9"	125
B3	8	#4	STR.	22'-1"	118
B4	10	#4	STR.	2'-5"	16
D1	24	#6	STR.	1'-6"	54
H1	24	#4	2	5'-10"	94
K1	6	#4	STR.	3'-6"	14
K2	6	#4	STR.	3'-5"	14
S1	44	#4	4	3'-2"	93
S2	44	#4	3	7'-5"	218
S3	14	#4	5	6'-6"	61
U1	4	#4	6	4'-5"	12
V1	20	#4	STR.	4'-7"	61
V2	20	#4	STR.	4'-4"	58
REINFORCING STEEL =					2137 LBS
CLASS A CONCRETE BREAKDOWN					
POUR #1 CAP LOWER PART OF WINGS					
C.Y.					11.5
POUR #2 UPPER PART OF WINGS					
C.Y.					1.4
POUR #3 LATERAL GUIDES					
C.Y.					0.1
TOTAL CLASS A CONCRETE					
C.Y.					13.0
HP 12 X 53 STEEL PILES					
NO. 7					LIN. FT. 280



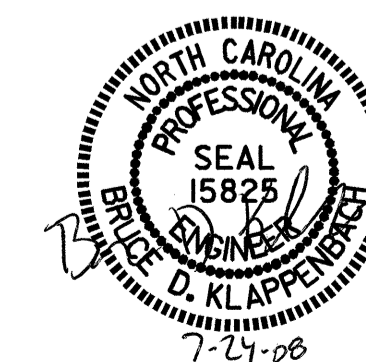
\* POSITION OF PILE DURING WELDING.

PROJECT NO. B-4029  
 BLADEN COUNTY  
 STATION: 14+95.00-L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT #1



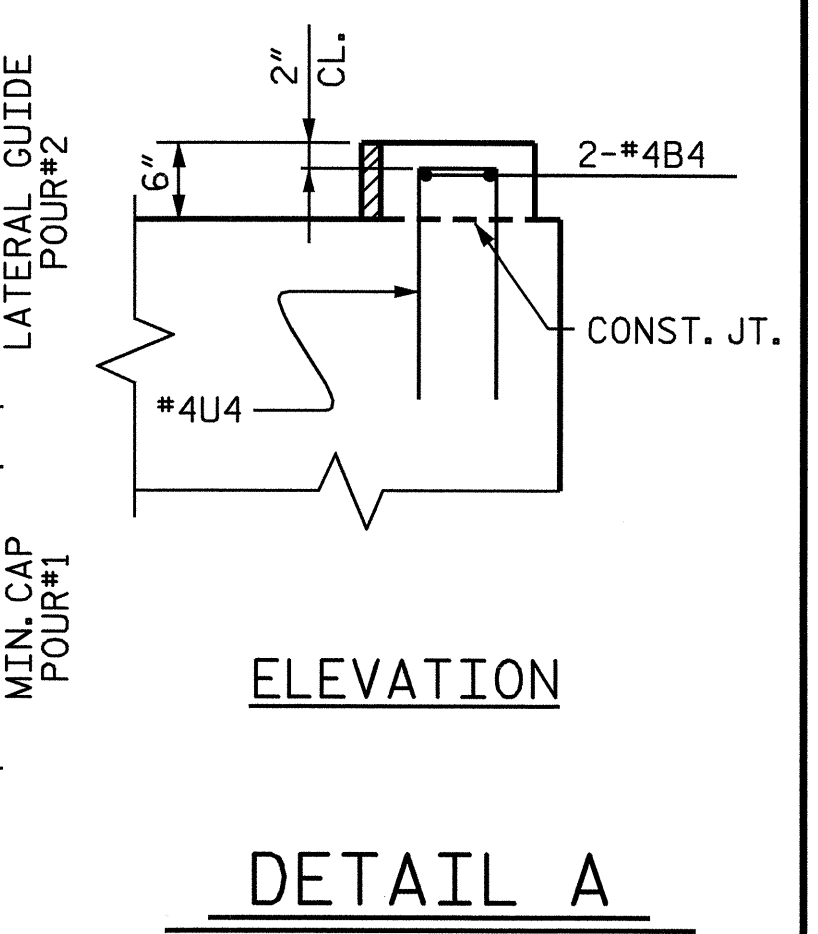
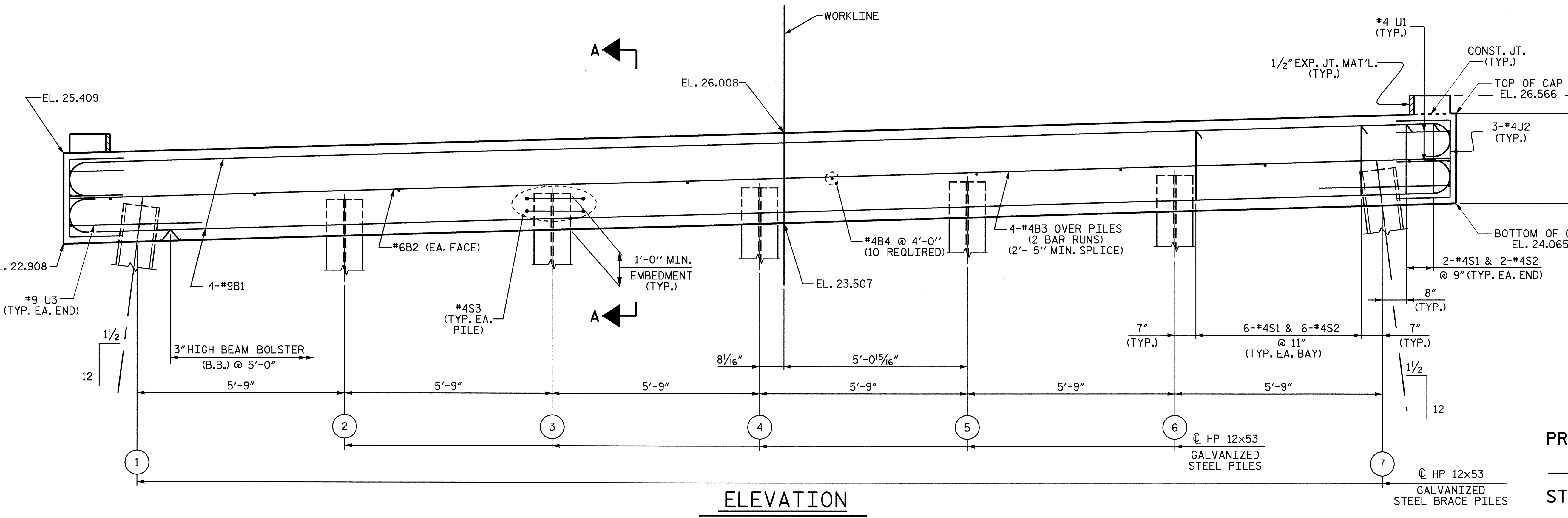
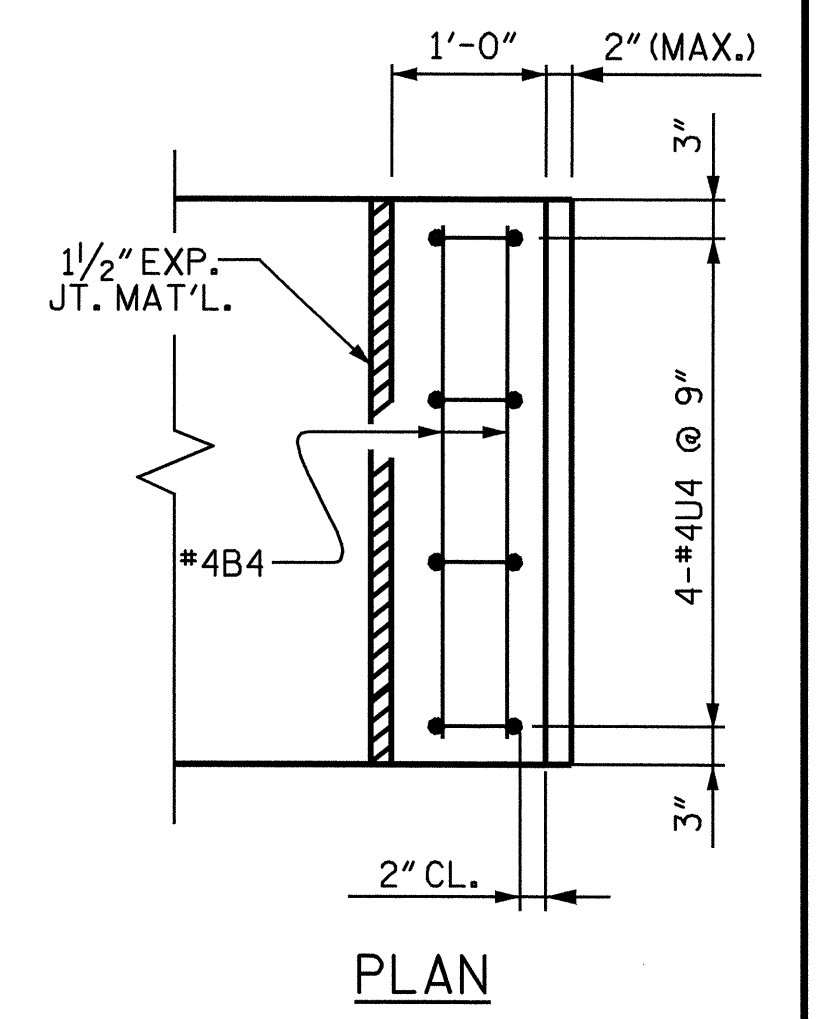
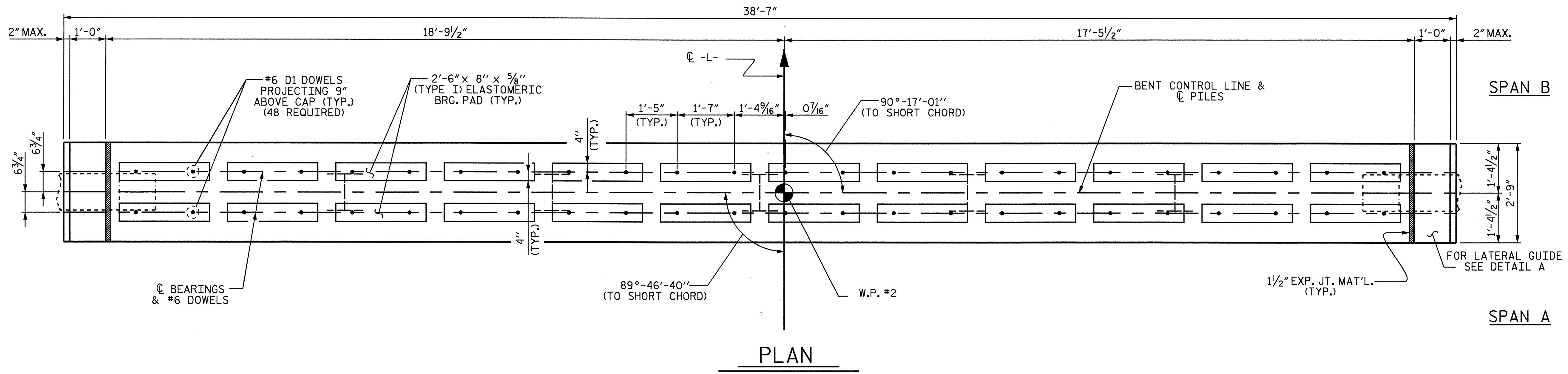
#### REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-12
2			4			TOTAL SHEETS 56



**NOTES**

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6 D1 DOWELS.  
 THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.



TOP OF PILE ELEVATIONS	
PILE #	ELEVATION
PILE #1	23.984
PILE #2	24.157
PILE #3	24.329
PILE #4	24.502
PILE #5	24.674
PILE #6	24.847
PILE #7	25.019

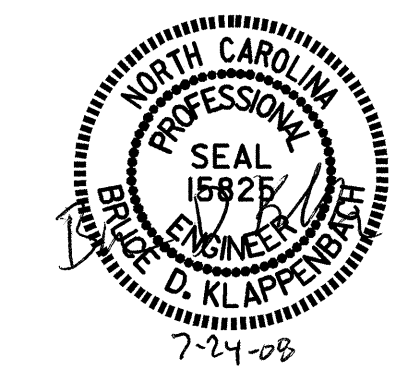
PROJECT NO. B-4029  
BLADEN COUNTY  
 STATION: 14+95.00-L-  
 SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

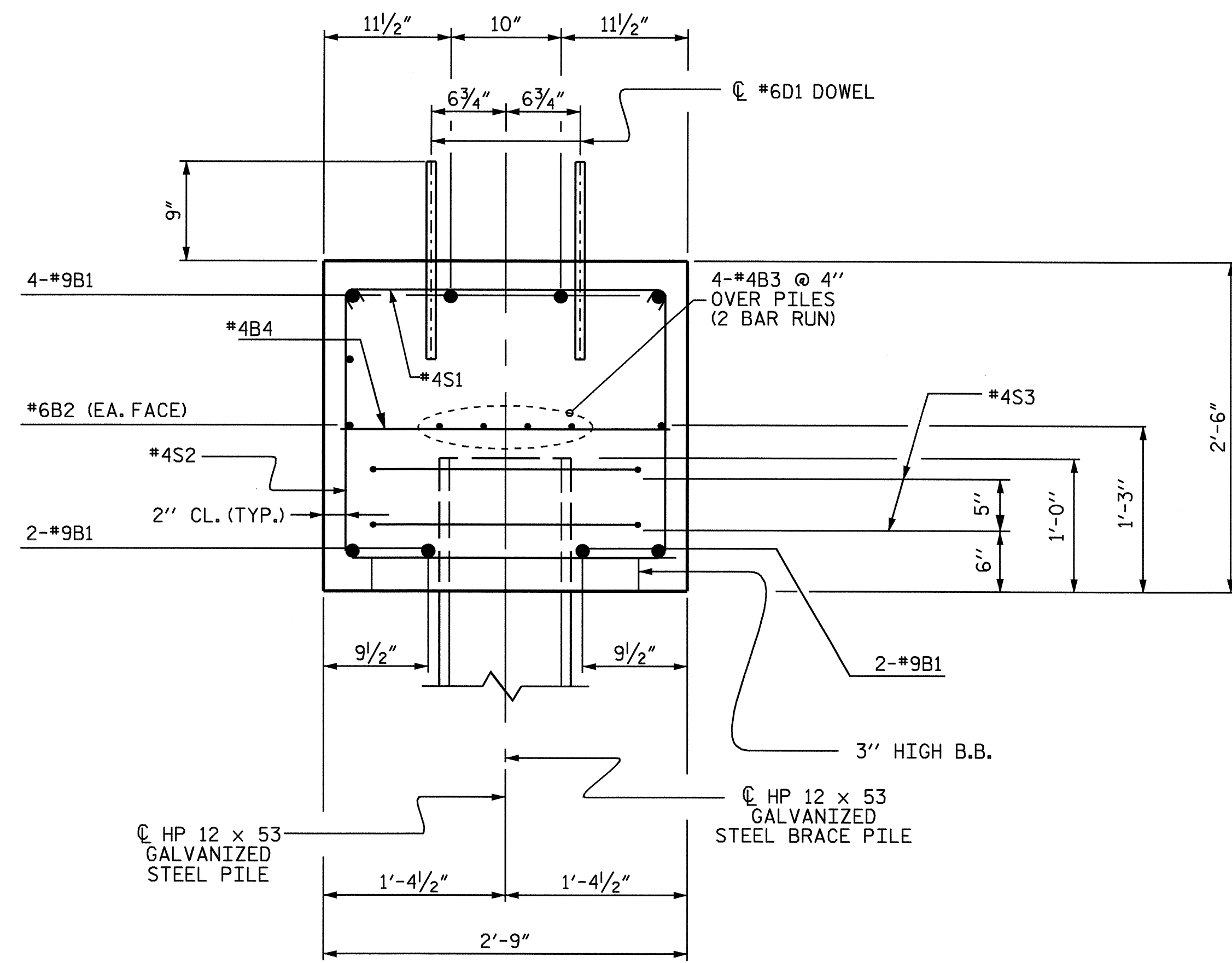
**SUBSTRUCTURE**  
**BENT #1**

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

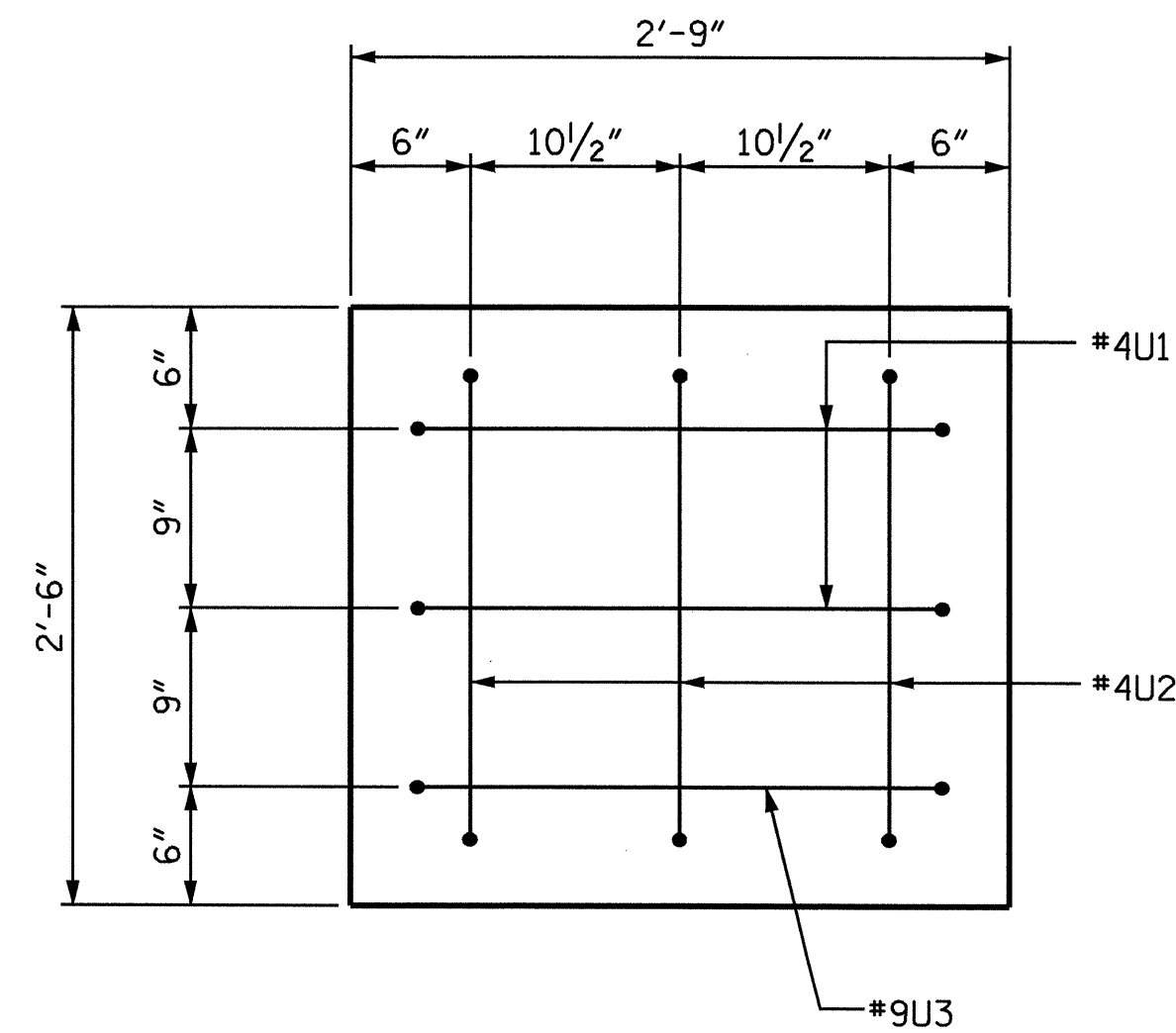
SHEET NO. S-13  
 TOTAL SHEETS 56



DRAWN BY: H. T. BARBOUR DATE: 5-5-08  
 CHECKED BY: B. D. KLAPPENBACH DATE: 6-23-08



SECTION A-A



END VIEW

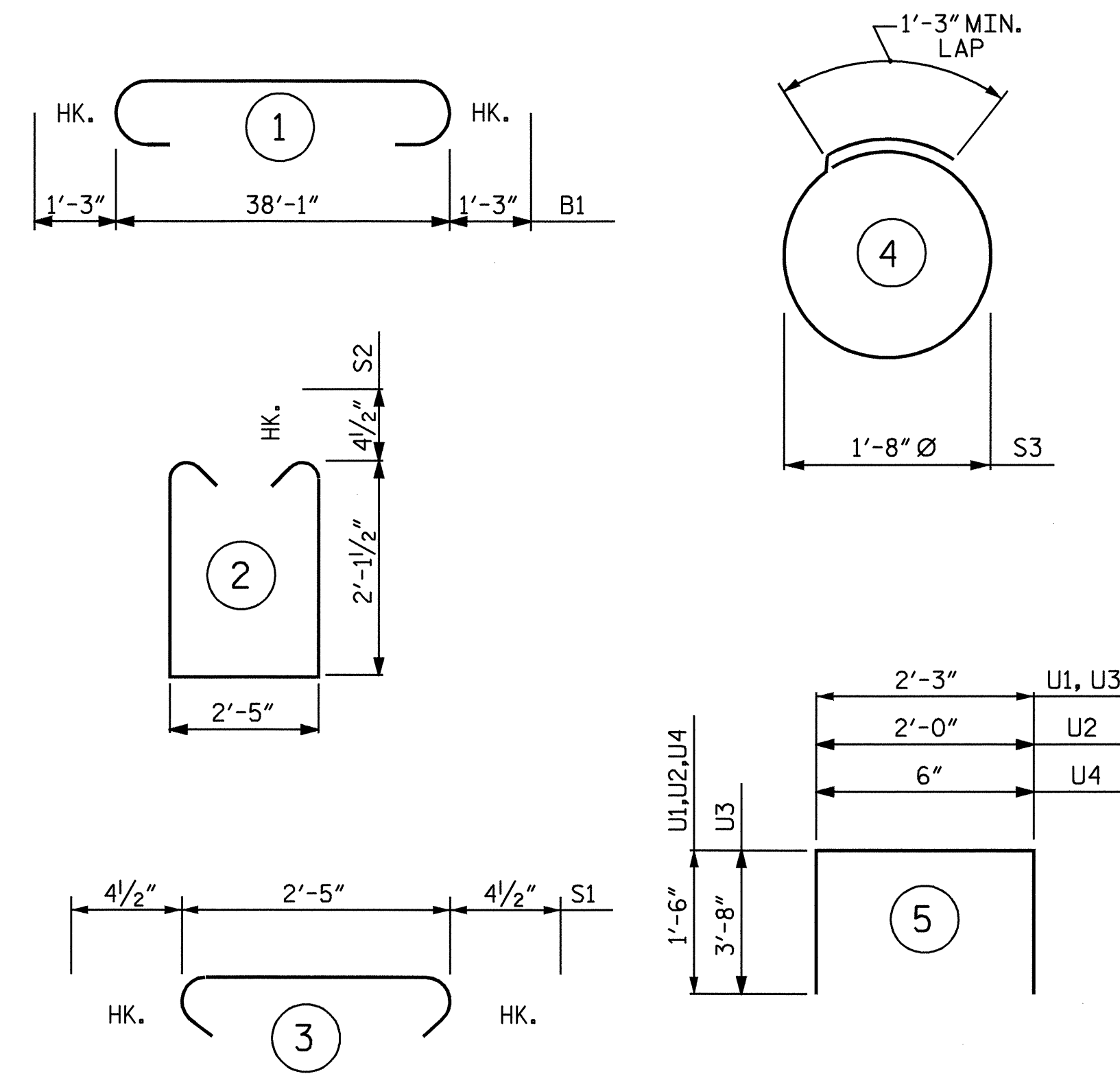
2" MIN. CONCRETE COVER FROM END OF CAP REQUIRED FOR ALL #4U1, #4U2 AND #9U3 BARS.

#4U1, #4U2 AND #9U3 BARS MAY BE SHIFTED UP TO 2" TO CLEAR "B" BARS.

DRAWN BY : H. T. BARBOUR DATE : 5-5-08  
 CHECKED BY : B. D. KLAPPENBACH DATE : 6-23-08

23-JUL-2008 09:01  
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 tbarbour

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

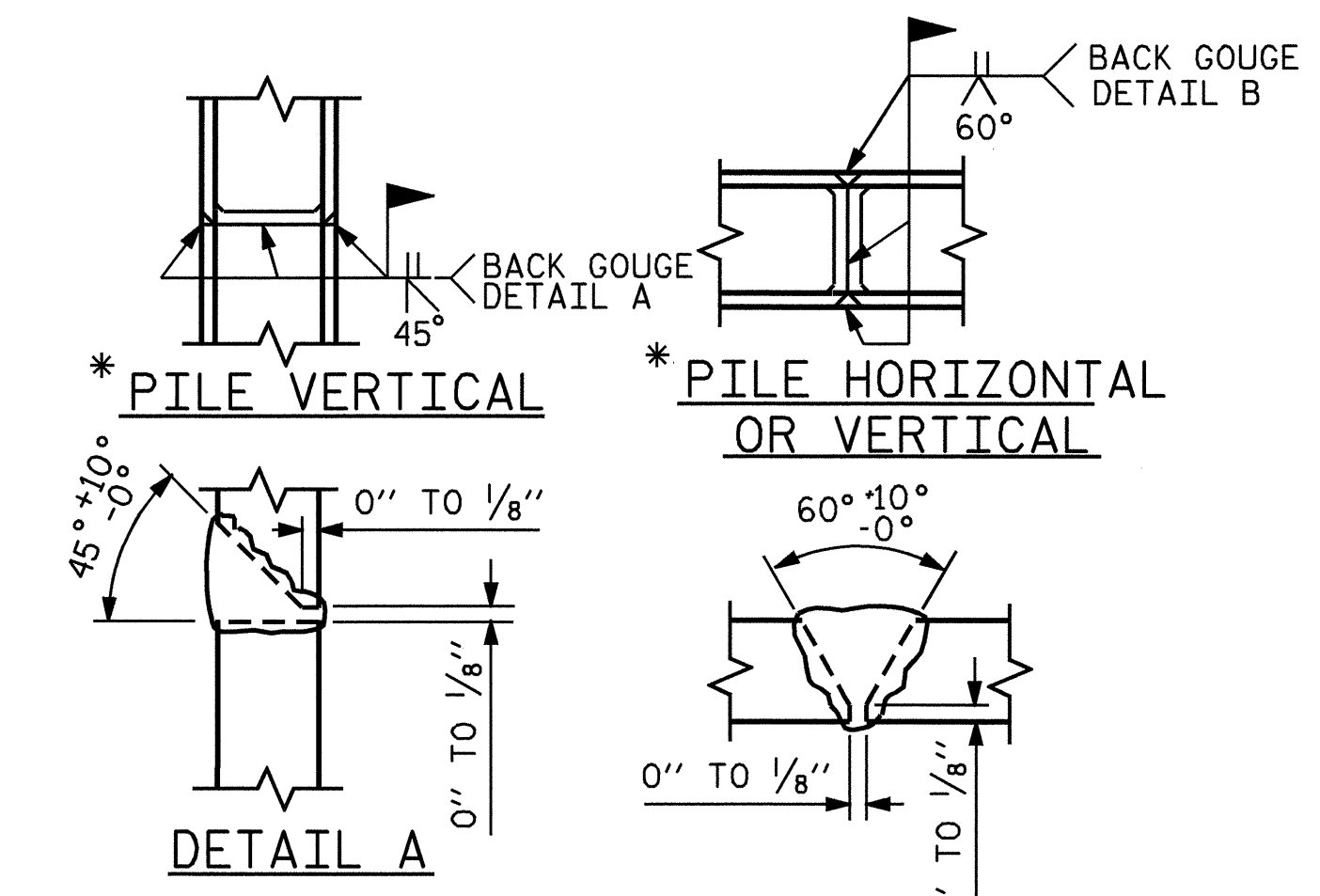
BENT #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	40'-7"	1104
B2	2	#6	STR	38'-3"	115
B3	8	#4	STR	20'-4"	109
B4	14	#4	STR	2'-5"	23
D1	48	#6	STR	1'-6"	108
S1	40	#4	3	3'-2"	85
S2	40	#4	2	7'-5"	198
S3	14	#4	4	6'-6"	61
U1	4	#4	5	5'-3"	14
U2	6	#4	5	5'-0"	20
U3	2	#9	5	9'-7"	65
U4	8	#4	5	3'-6"	19

REINFORCING STEEL = 1921 LBS

CLASS A CONCRETE  
 POUR #1 CAP 9.8 C.Y.  
 POUR #2 LATERAL GUIDE 0.1 C.Y.  
 TOTAL CLASS A CONCRETE 9.9 C.Y.

HP 12 x 53 GALVANIZED STEEL PILES NO. 7 LIN. FT. 315



\* POSITION OF PILE DURING WELDING.

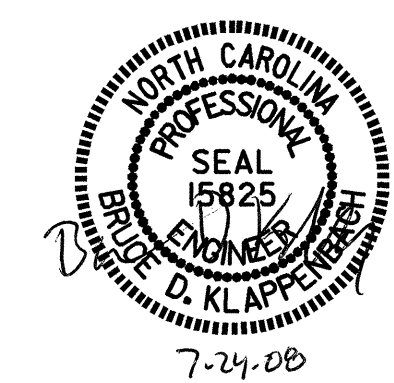
PILE SPLICE DETAILS

PROJECT NO. B-4029  
 BLADEN COUNTY  
 STATION: 14+95.00-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:	5-14
1			3			TOTAL SHEETS 56
2			4			

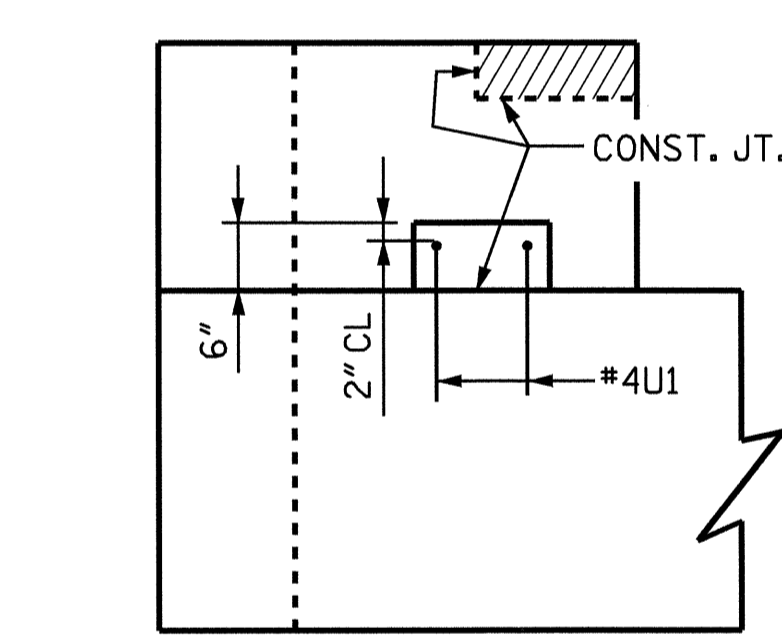
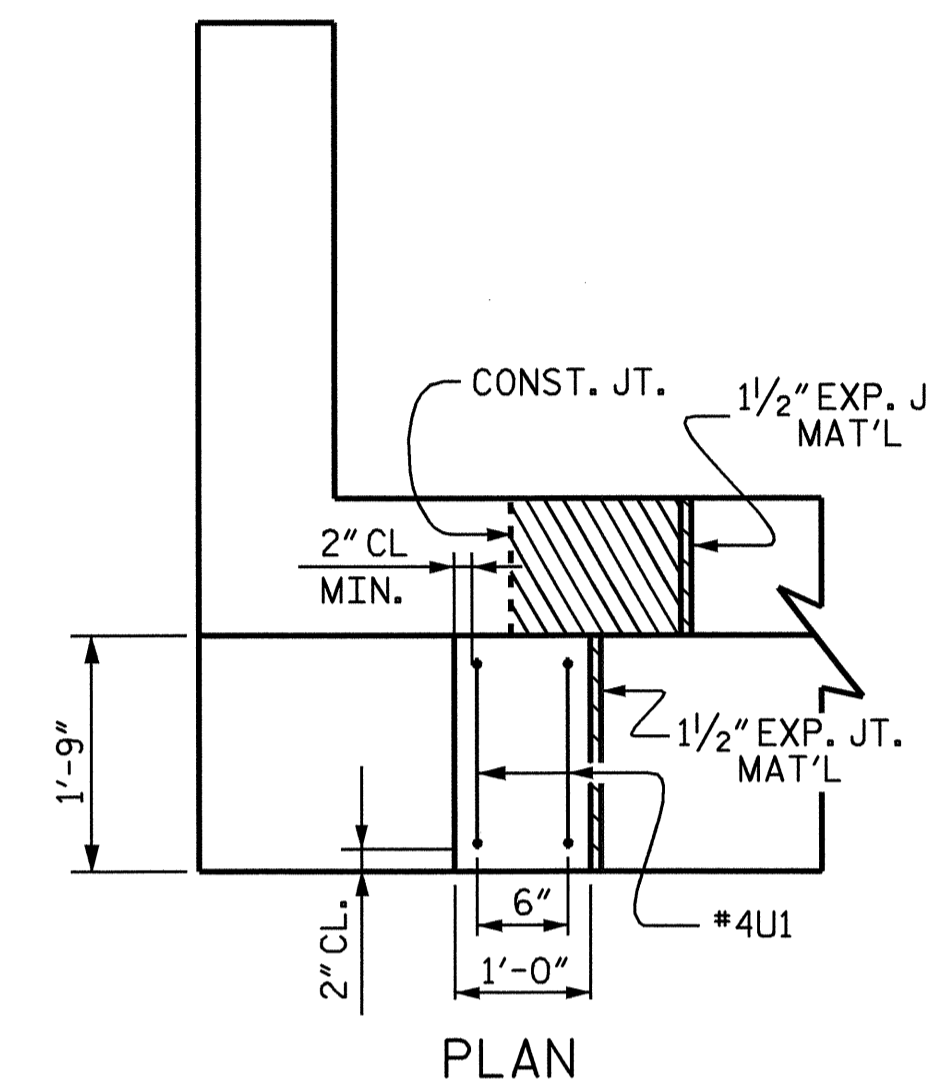
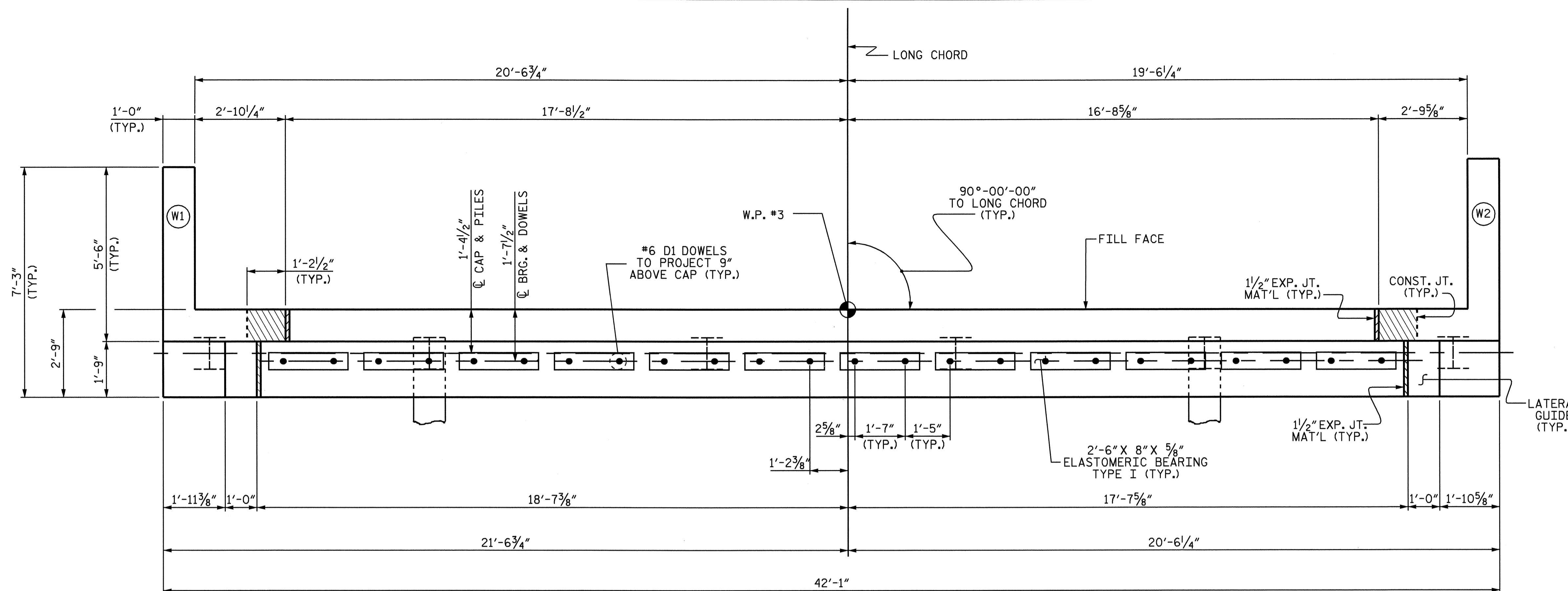
# NOTES

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

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

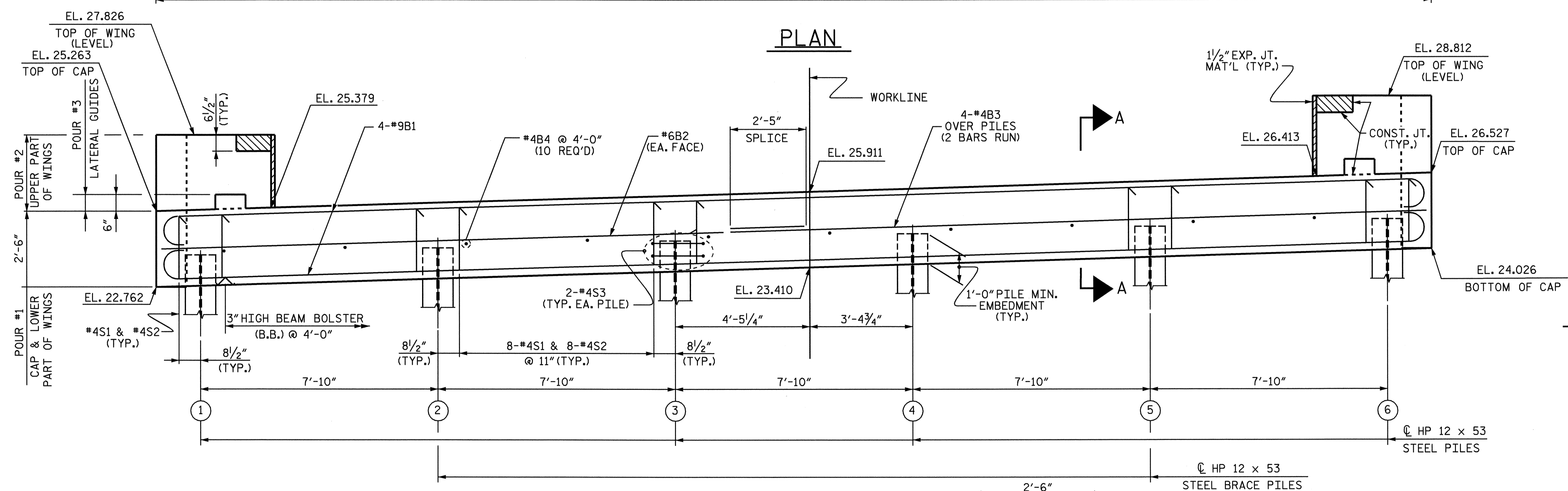
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

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



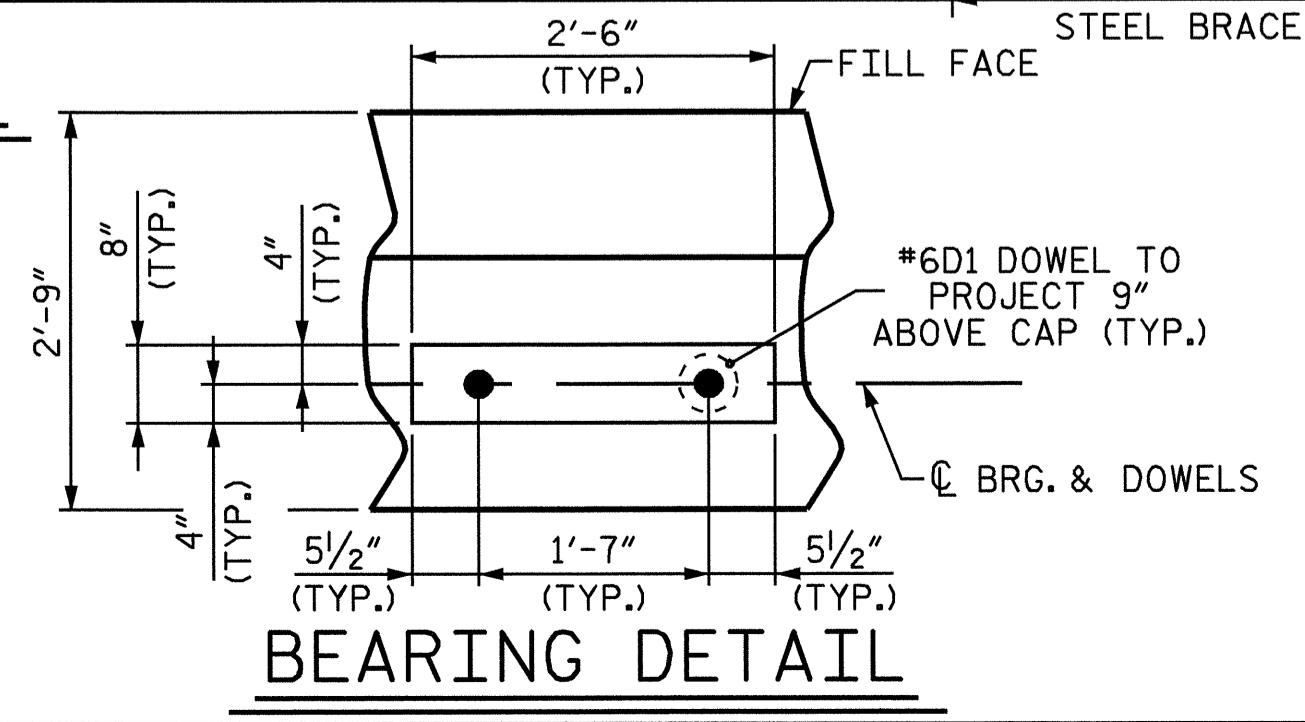
**ELEVATION LATERAL GUIDE**  
(EACH END SIMILAR)

## PLAN



TOP OF PILE ELEVATIONS	
PILE #	ELEVATION
1	EL. 23.821
2	EL. 24.050
3	EL. 24.279
4	EL. 24.509
5	EL. 24.738
6	EL. 24.967

## ELEVATION



**BEARING DETAIL**

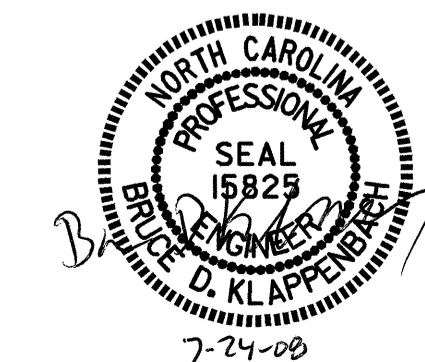
PROJECT NO. B-4029  
BLADEN COUNTY  
 STATION: 14+95.00-L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE END BENT #2**

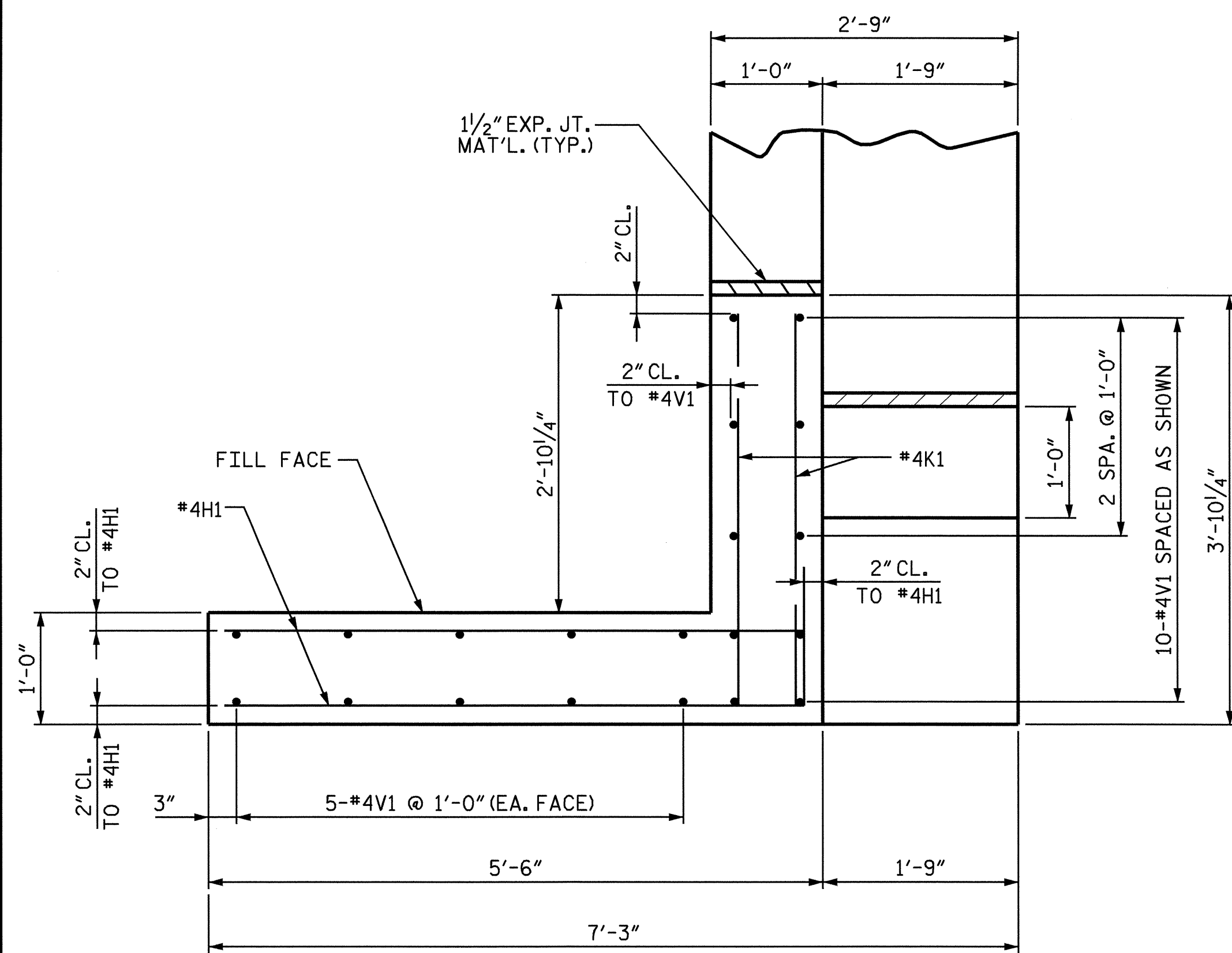
REVISIONS						SHEET NO. S-15
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 56
2			4			



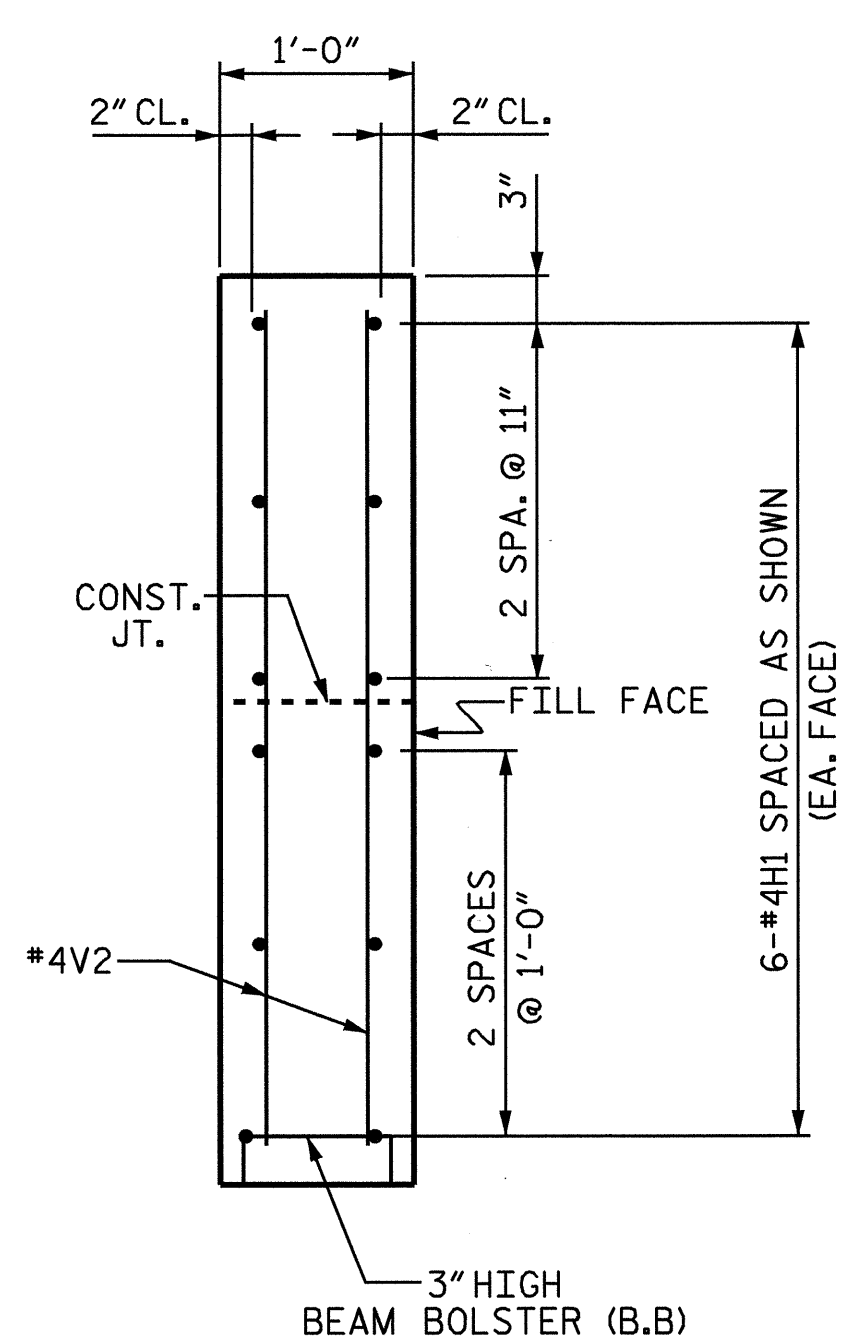
DRAWN BY: H.T. BARBOUR DATE: 4-16-08  
 CHECKED BY: M.G. SHAIKH DATE: 6-08

23-JUL-2008 09:00  
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 tbarbour

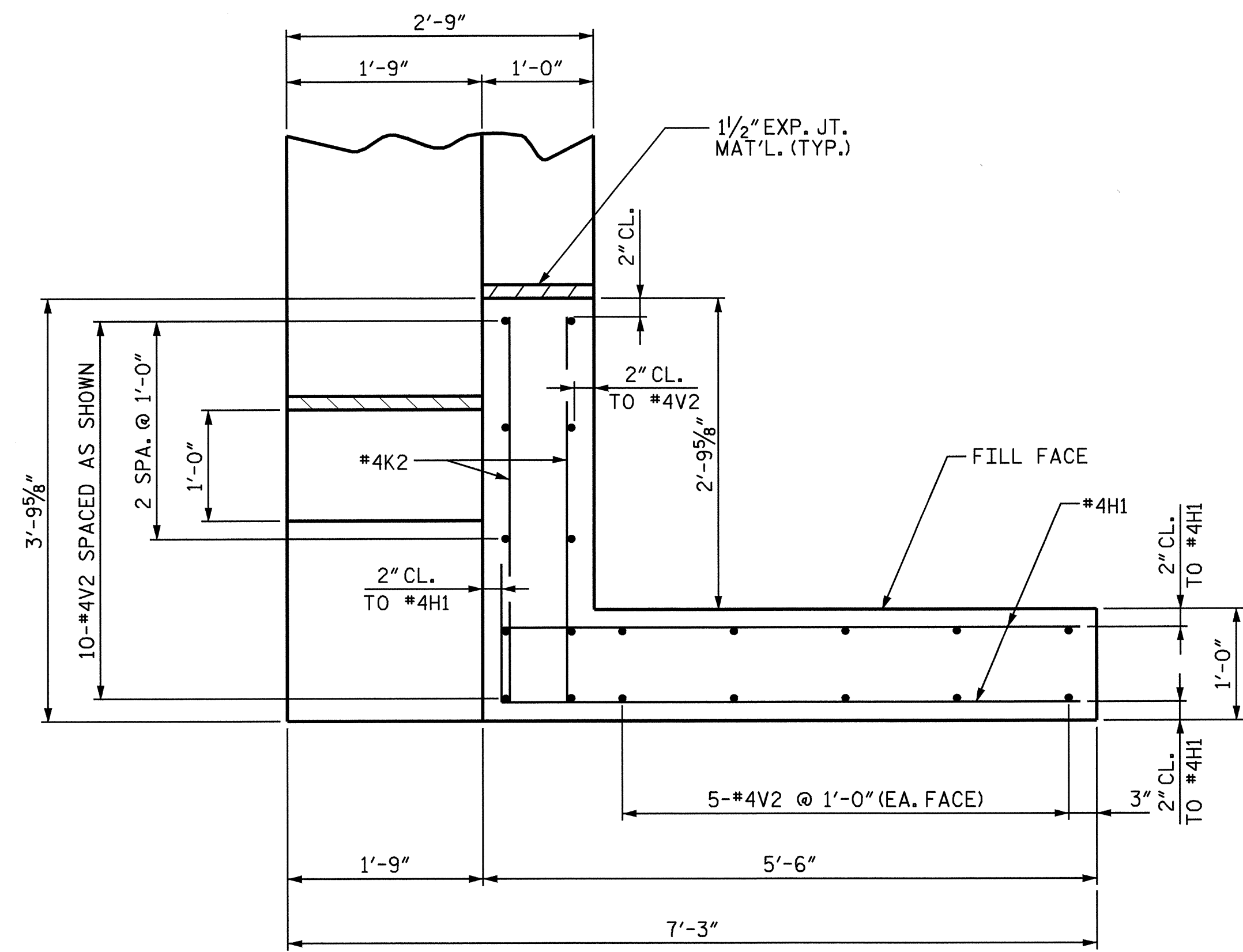




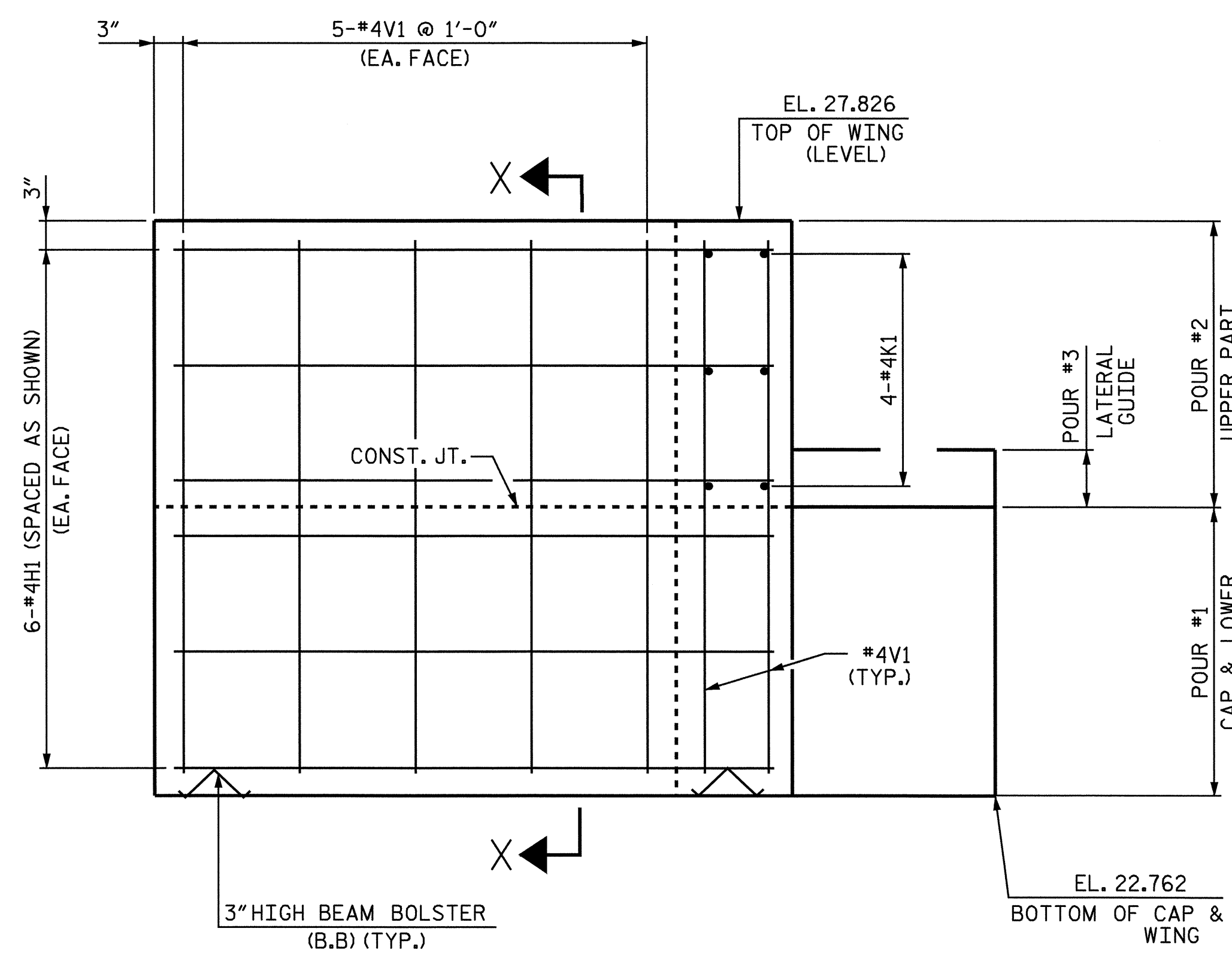
PLAN OF LEFT WING (W1)



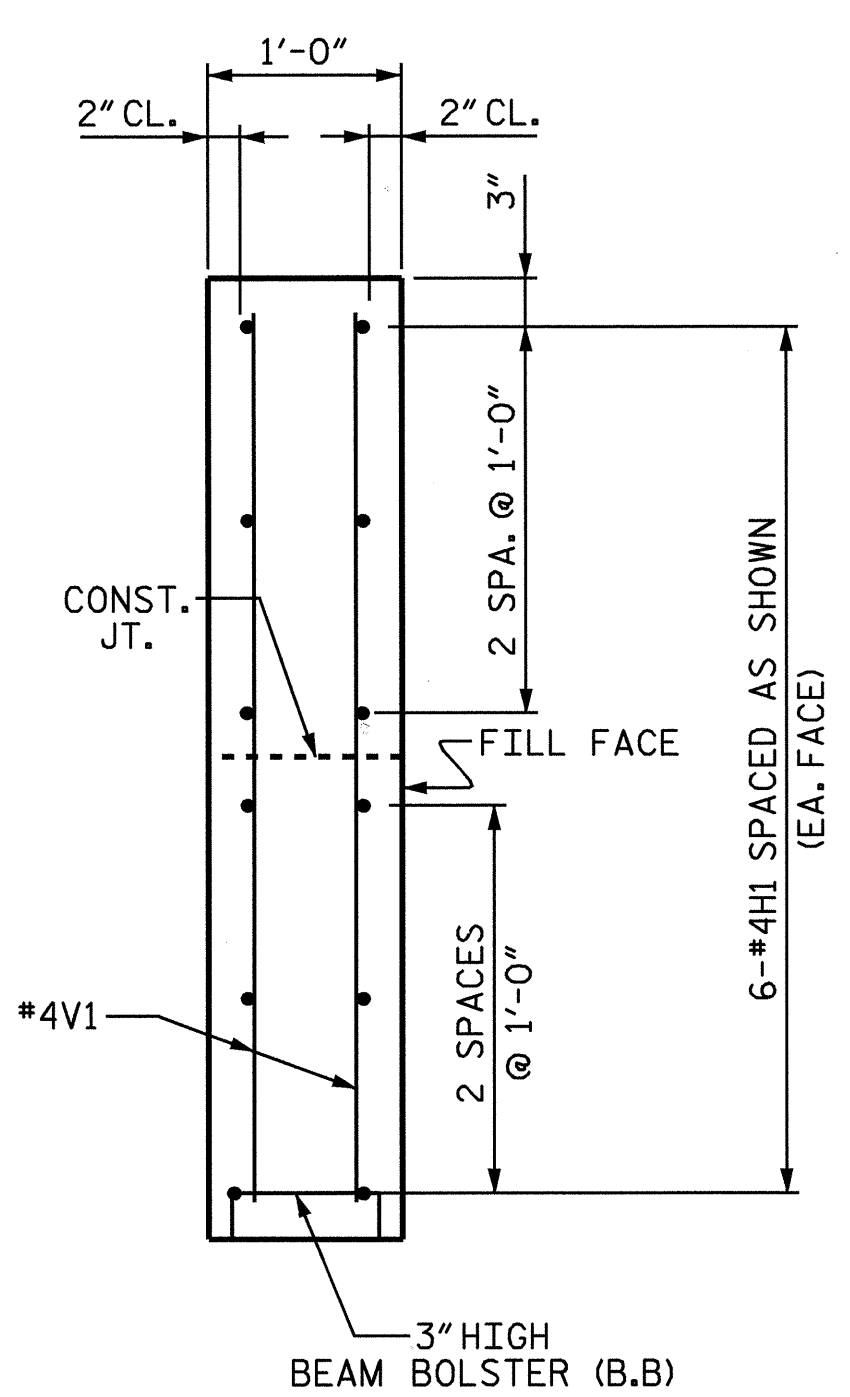
SECTION Y-Y



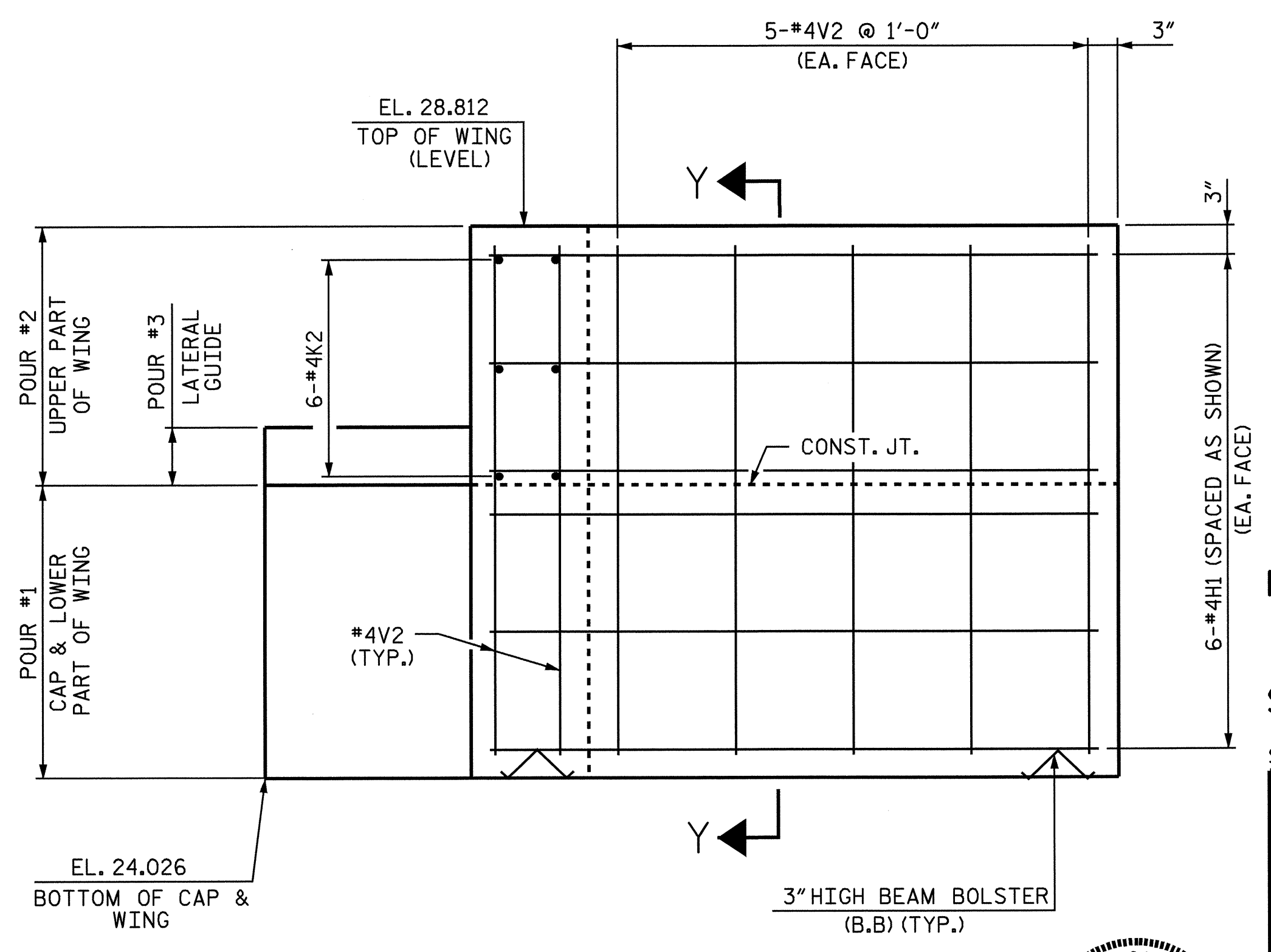
PLAN OF RIGHT WING (W2)



ELEVATION OF LEFT WING (W1)



SECTION X-X



ELEVATION OF RIGHT WING (W2)

PROJECT NO. B-4029  
 BLADEN COUNTY  
 STATION: 14+95.00-L-  
 SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

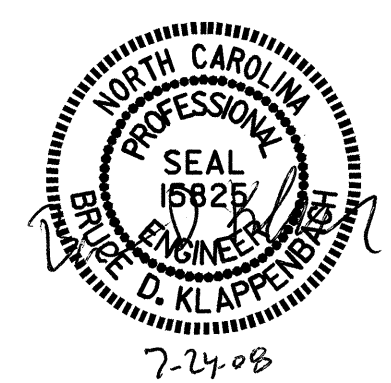
SUBSTRUCTURE  
 END BENT #2

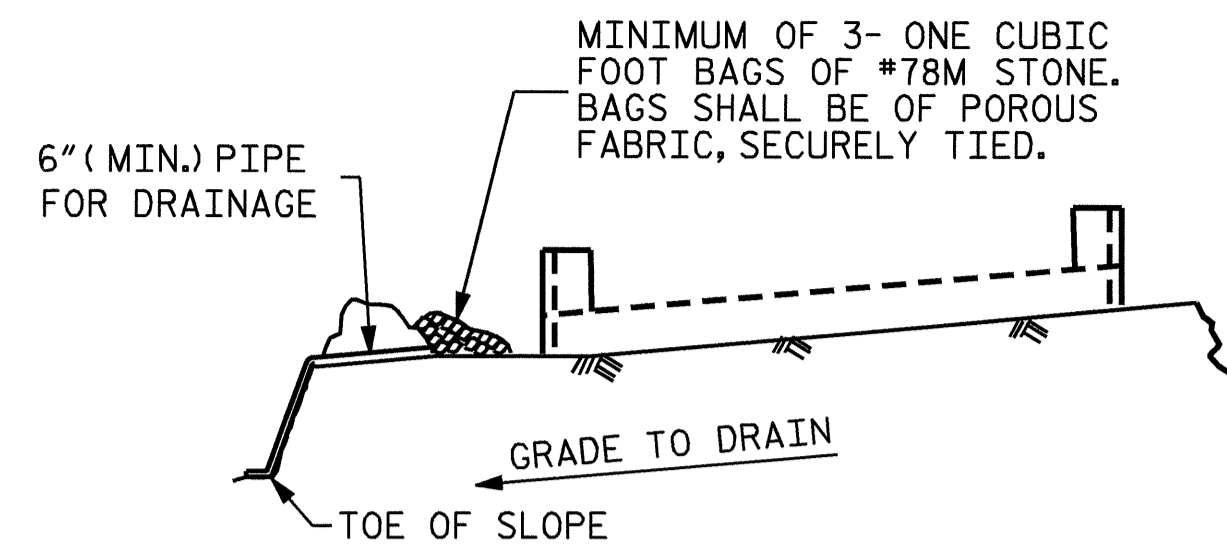
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-16  
 TOTAL SHEETS 56

DRAWN BY: H.T. BARBOUR DATE: 7-11-07  
 CHECKED BY: M.G. SHAIKH DATE: 6-08

23-JUL-2008 09:00  
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 tbarbour



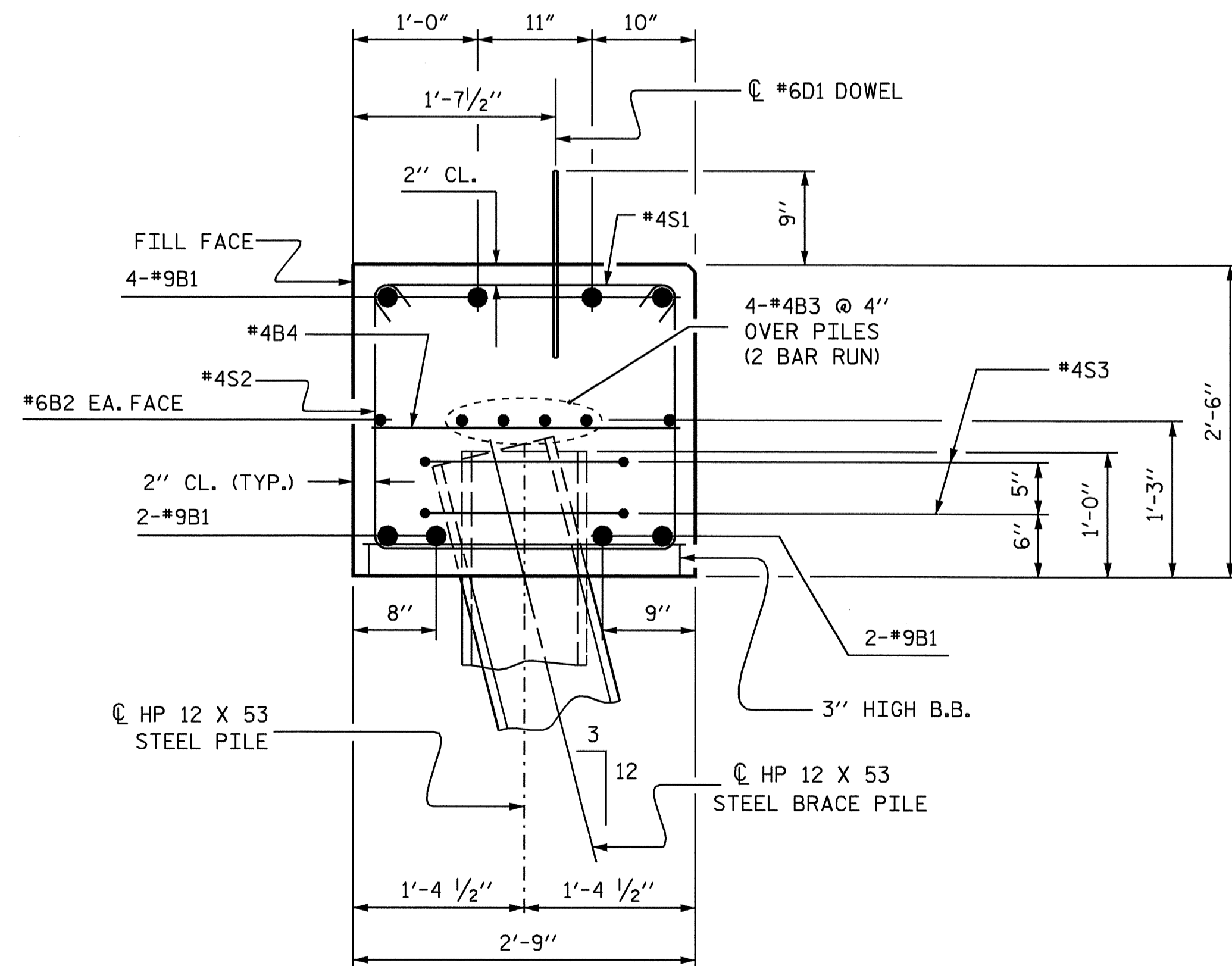


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

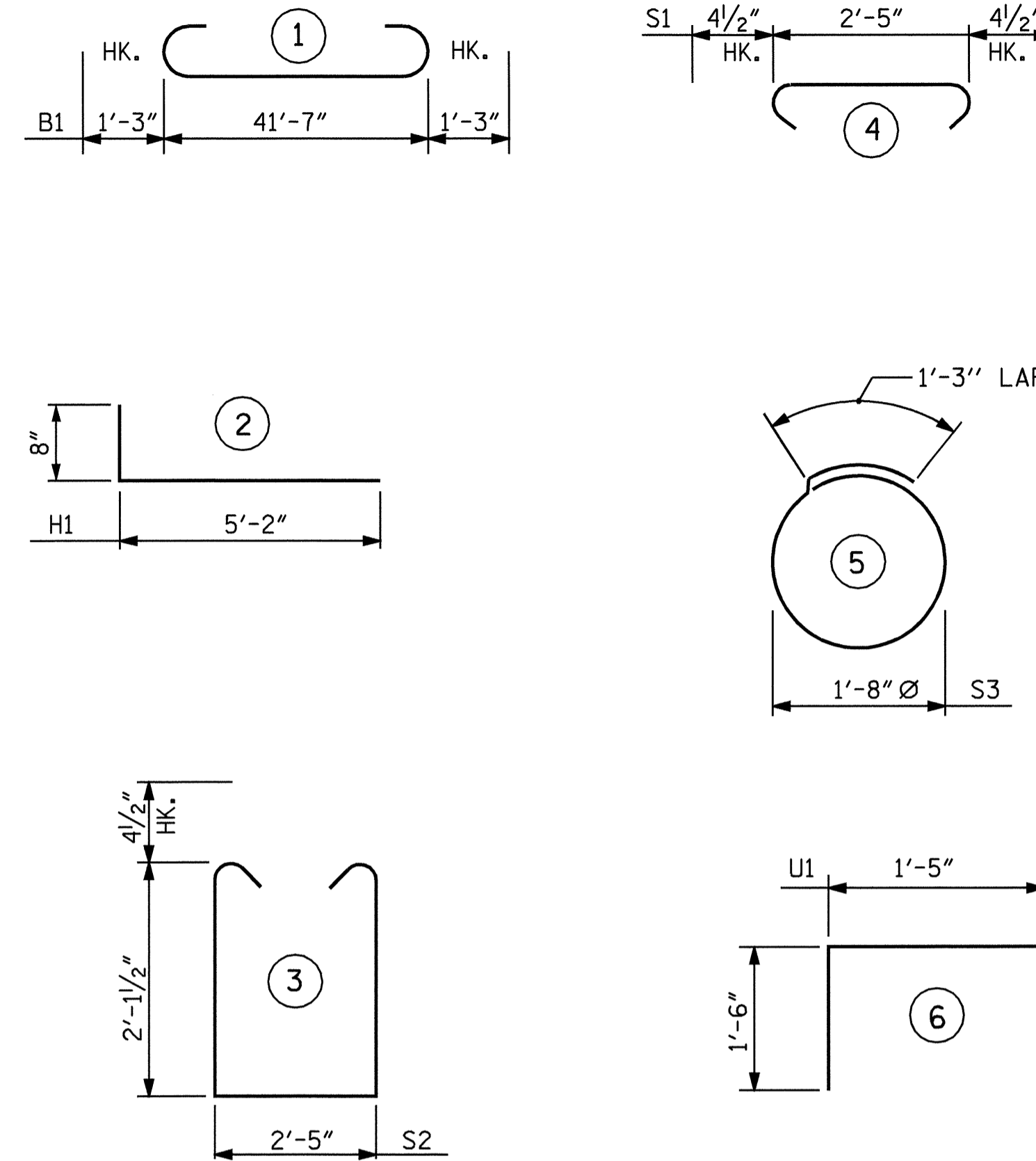


SECTION A-A

DRAWN BY: H.T. BARBOUR DATE: 4-16-08  
 CHECKED BY: M.G. SHAIKH DATE: 6-08

23-JUL-2008 09:01  
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 tbarbour

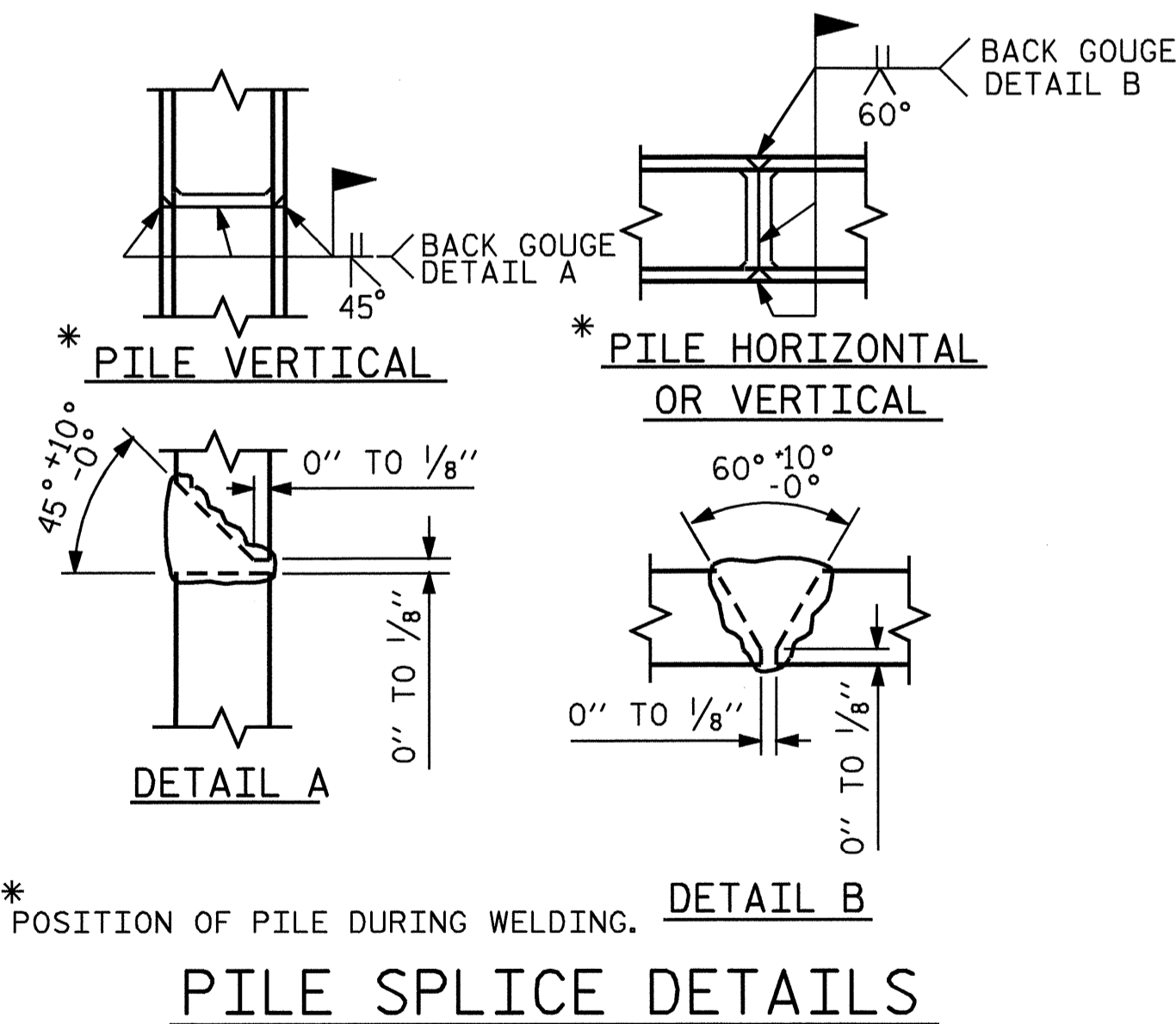
### BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

### BILL OF MATERIAL

END BENT #2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	8	#9		44'-1"	1199	
B2	2	#6	STR.	41'-9"	125	
B3	8	#4	STR.	22'-1"	118	
B4	10	#4	STR.	2'-5"	16	
D1	24	#6	STR.	1'-6"	54	
H1	24	#4	2	5'-10"	94	
K1	6	#4	STR.	3'-6"	14	
K2	6	#4	STR.	3'-5"	14	
S1	42	#4	4	3'-2"	89	
S2	42	#4	3	7'-5"	208	
S3	12	#4	5	6'-6"	52	
U1	4	#4	6	4'-5"	12	
V1	20	#4	STR.	4'-7"	61	
V2	20	#4	STR.	4'-4"	58	
REINFORCING STEEL =					2114 LBS	
CLASS A CONCRETE BREAKDOWN						
POUR #1 CAP LOWER PART OF WINGS						
					C.Y.	11.5
POUR #2 UPPER PART OF WINGS						
					C.Y.	1.4
POUR #3 LATERAL GUIDES						
					C.Y.	0.1
TOTAL CLASS A CONCRETE						
					C.Y.	13.0
HP 12 X 53 STEEL PILES						
NO. 6						LIN. FT. 240

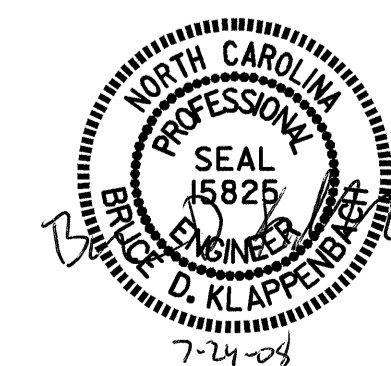


PROJECT NO. B-4029  
 BLADEN COUNTY  
 STATION: 14+95.00-L-

SHEET 3 OF 3

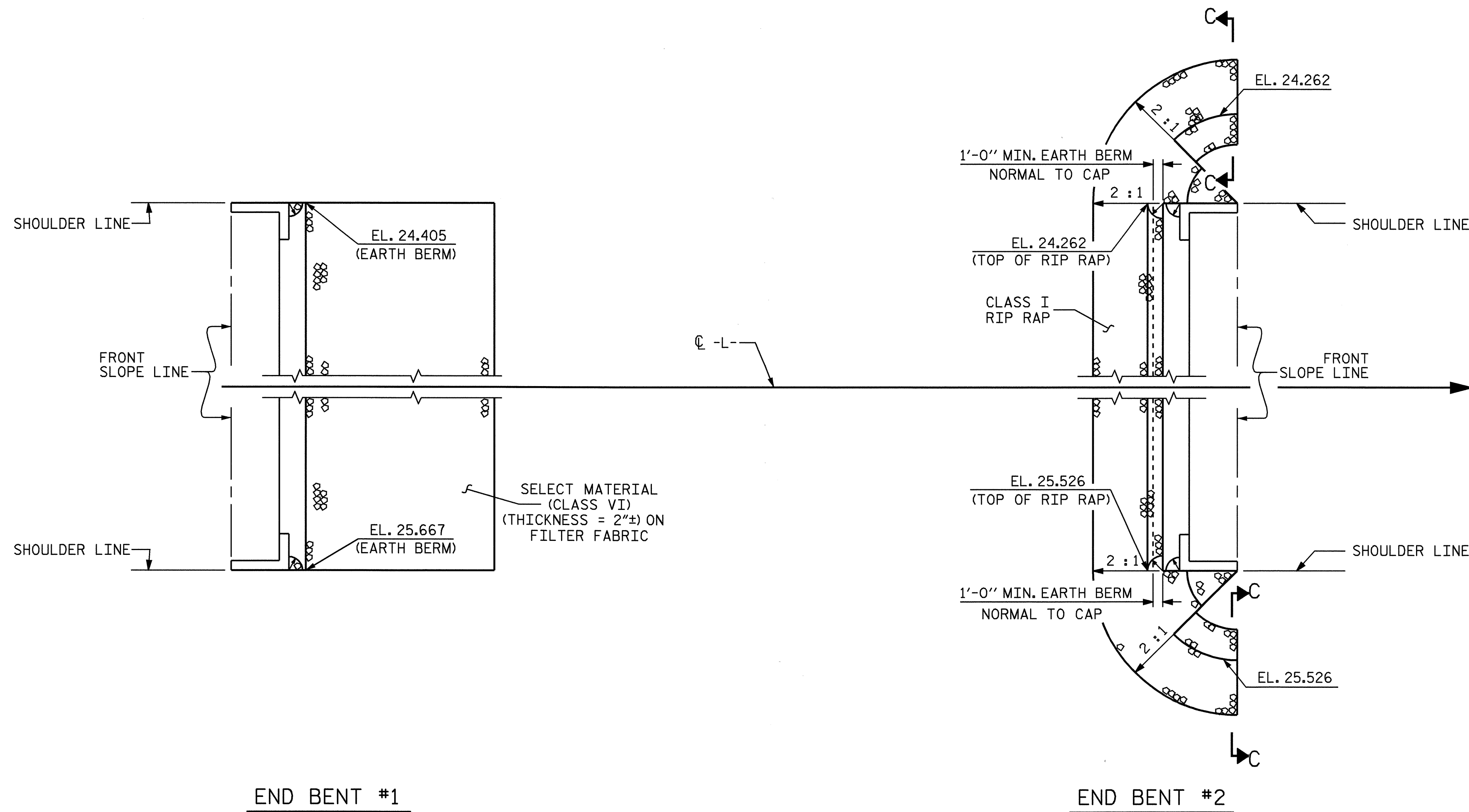
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT #2



#### REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-17
2			4			TOTAL SHEETS 56

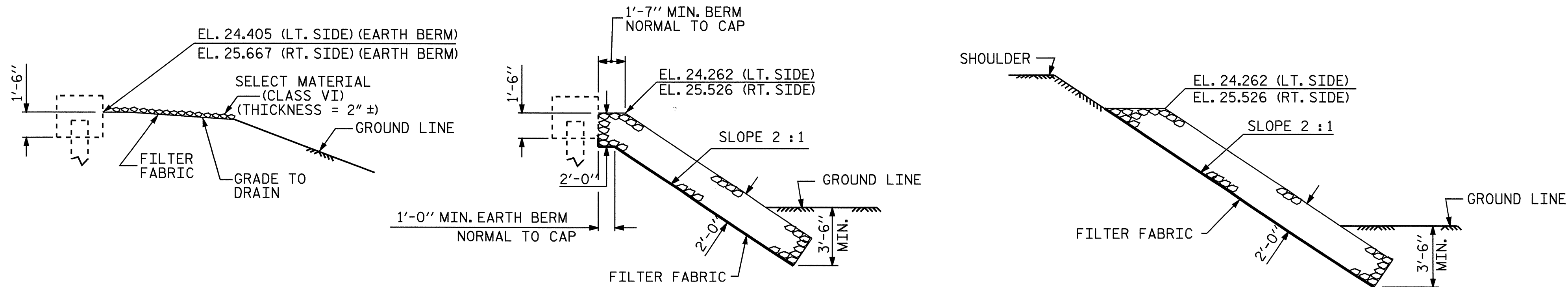


ESTIMATED QUANTITIES			
BRIDGE @ STA. 14+95.00 -L-	SELECT MATERIAL (CLASS VI) (THICKNESS = 2")	RIP RAP CLASS I	FILTER FABRIC FOR DRAINAGE
	TONS	TONS	SQUARE YARDS
END BENT 1	4		49
END BENT 2		92	98
TOTAL	4	92	147

END BENT #1

END BENT #2

PLAN



SECTION @ END BENT #1

SECTION @ END BENT #2

SECTION C-C

BERM RIP RAPPED

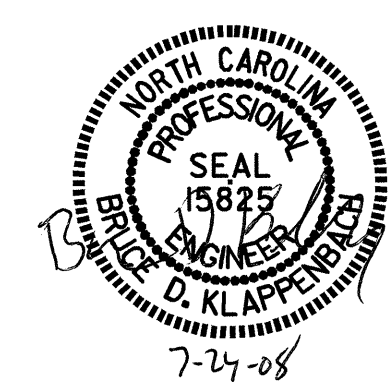
PROJECT NO. B-4029  
 BLADEN COUNTY  
 STATION: 14+95.00 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

— RIP RAP DETAILS —

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

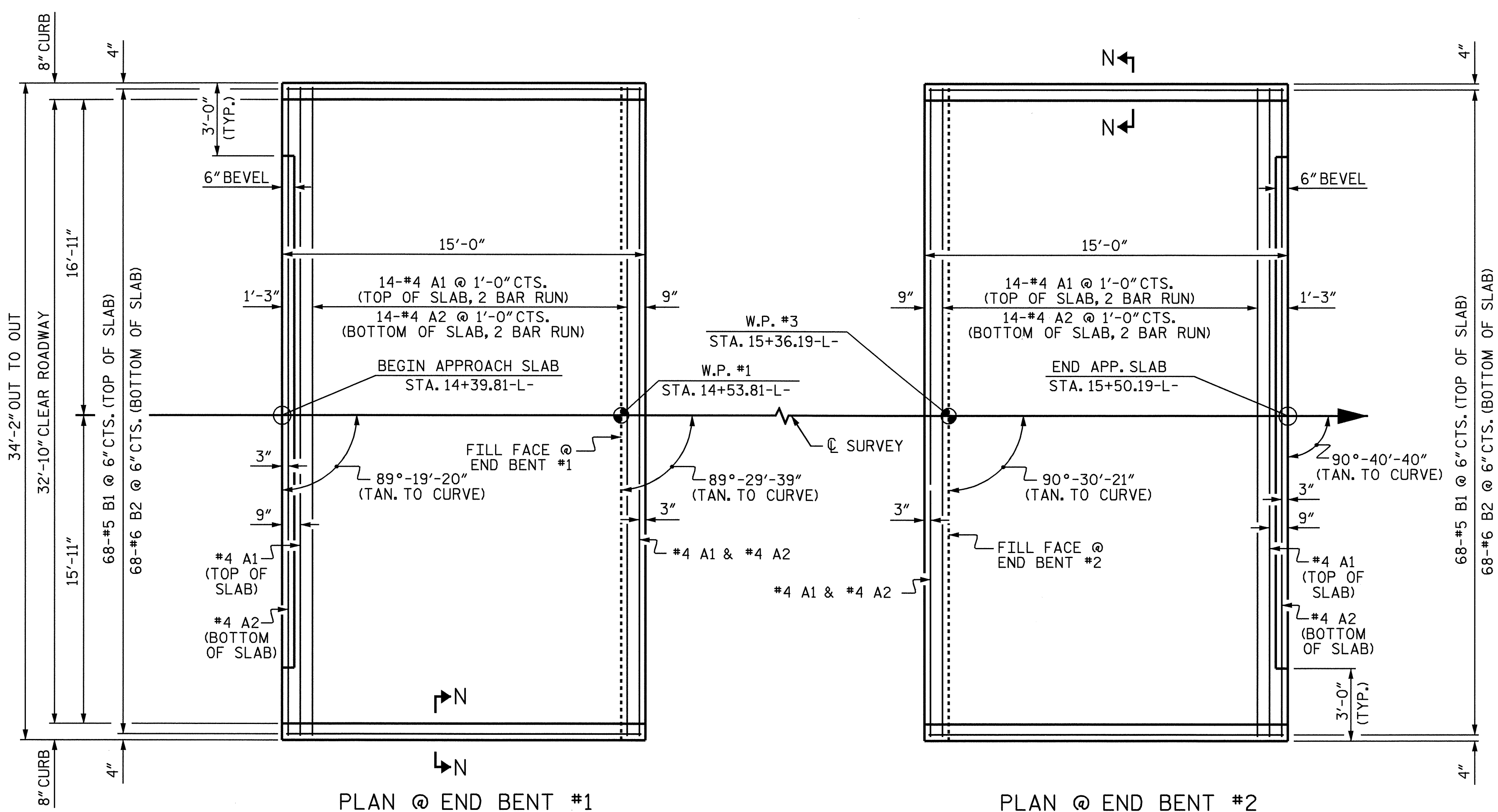
SHEET NO. S-18  
 TOTAL SHEETS 56



ASSEMBLED BY : A. SORSENGNH DATE : 8/21/07  
 CHECKED BY : H. T. BARBOUR DATE : 6-08  
 DRAWN BY : FCJ 2/88 REV. 8/16/99 RWW/LES  
 CHECKED BY : ARB 8/88 REV. 10/17/00 RWW/LES  
 REV. 5/1/06 TLA/GM

23-JUL-2008 09:03  
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 tbarbour





PLAN @ END BENT #1

PLAN @ END BENT #2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS  
ARC OFFSETS ARE NEGLIGIBLE, THEREFORE NOT SHOWN

RADIAL DIMENSIONS

RADIAL DIMENSIONS

NOTES

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

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

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

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

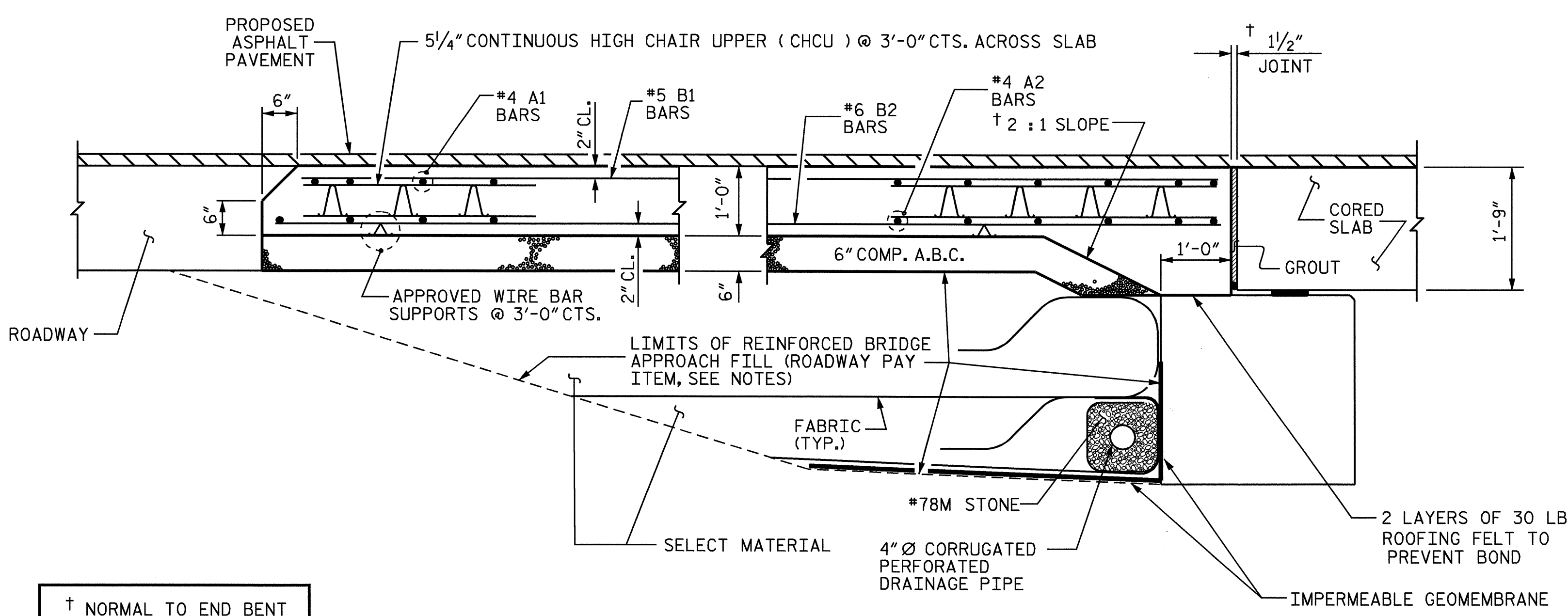
THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER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

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

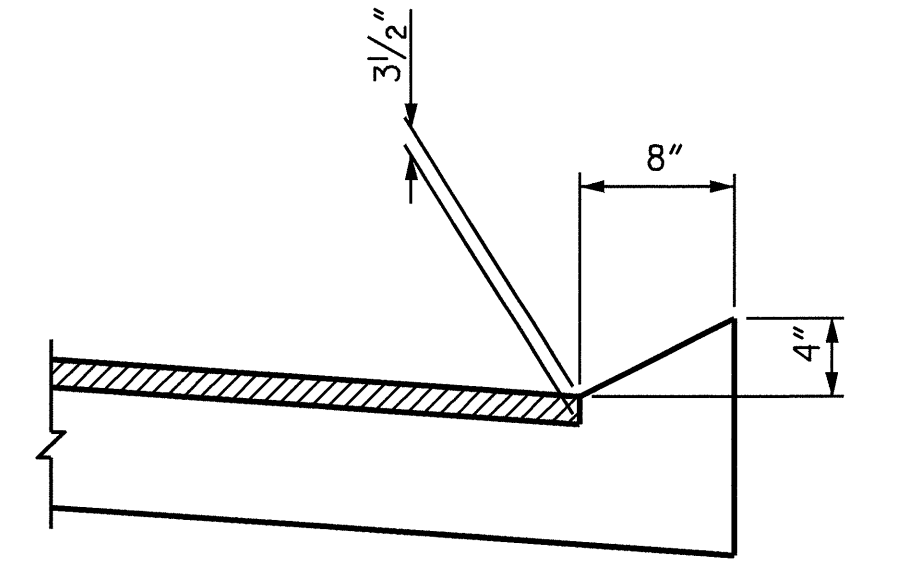
THE JOINT AT THE END BENT SHALL BE GROUTED AS SOON AS PRACTICAL AFTER THE CONSTRUCTION OF THE APPROACH SLABS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

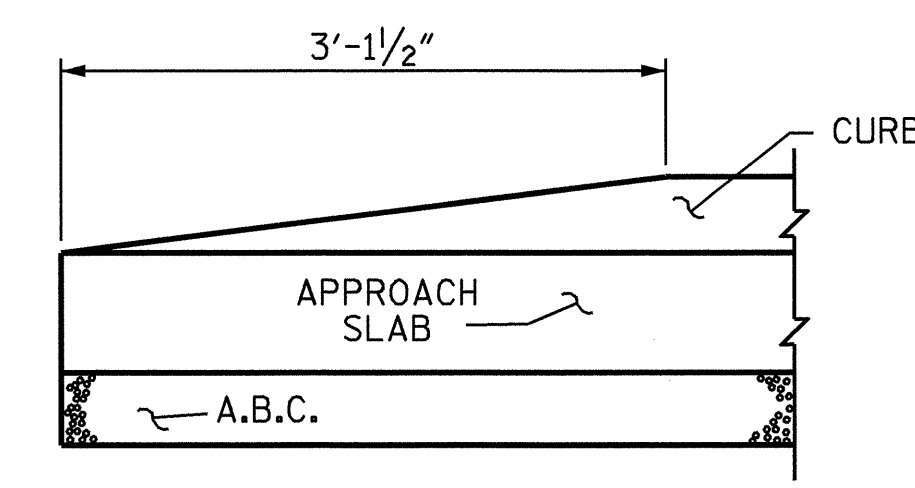
BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	32	#4	STR	17'-11"	383
A2	32	#4	STR	17'-10"	381
* B1	68	#5	STR	14'-2"	1005
B2	68	#6	STR	14'-8"	1498
REINFORCING STEEL				LBS.	1879
* EPOXY COATED REINFORCING STEEL				LBS.	1388
CLASS AA CONCRETE				C. Y.	20.7
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	32	#4	STR	17'-11"	383
A2	32	#4	STR	17'-10"	381
* B1	68	#5	STR	14'-2"	1005
B2	68	#6	STR	14'-8"	1498
REINFORCING STEEL				LBS.	1879
* EPOXY COATED REINFORCING STEEL				LBS.	1388
CLASS AA CONCRETE				C. Y.	20.7



SECTION THRU SLAB



SECTION N-N

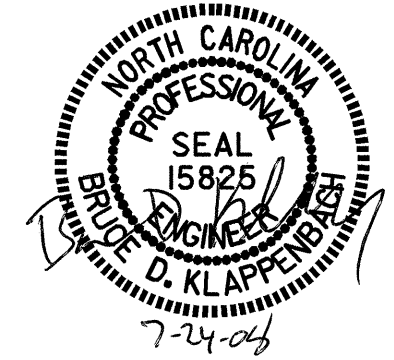


END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

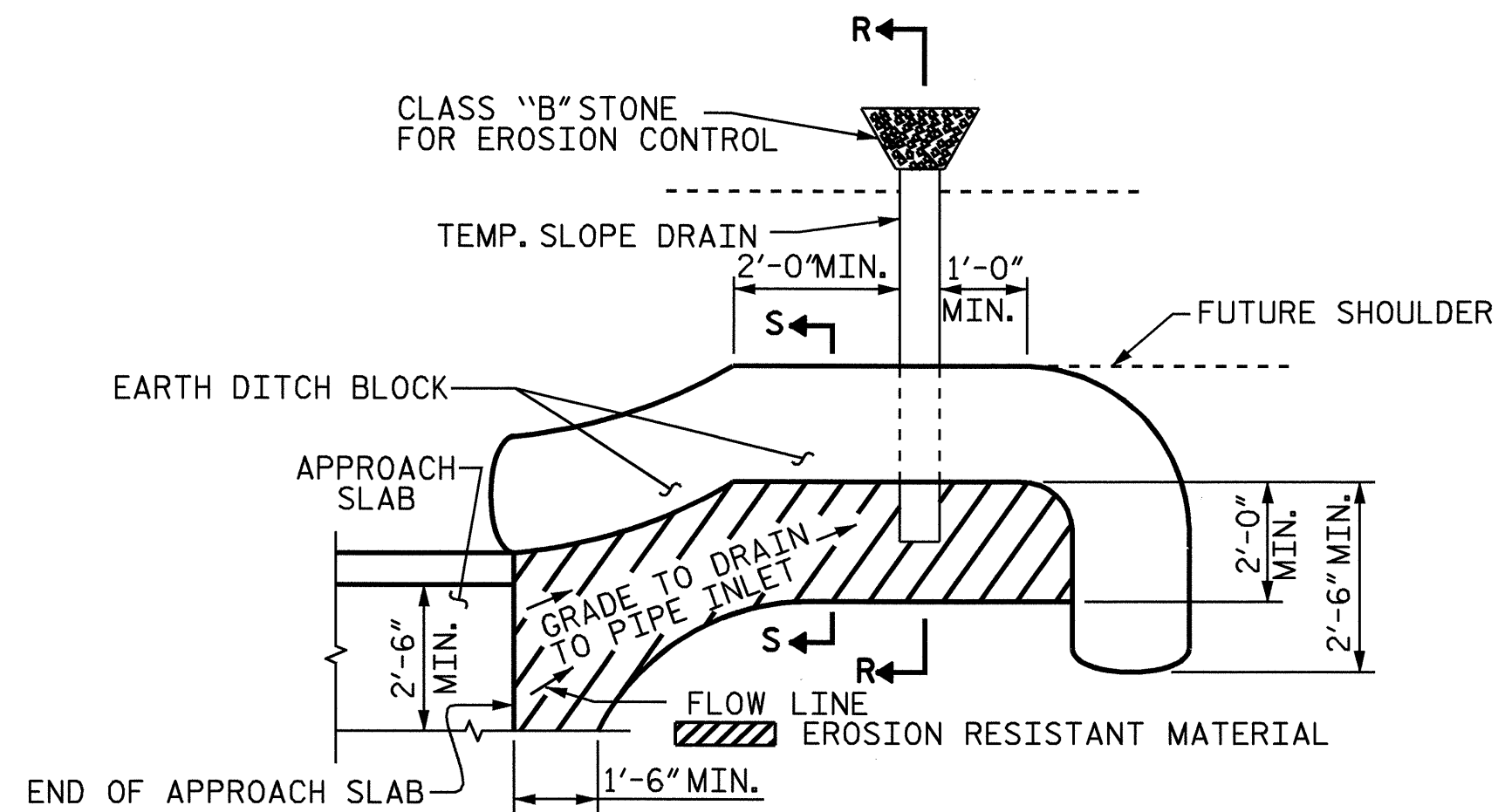
PROJECT NO. B-4029  
BLADEN COUNTY  
STATION: 14+95.00-L-

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



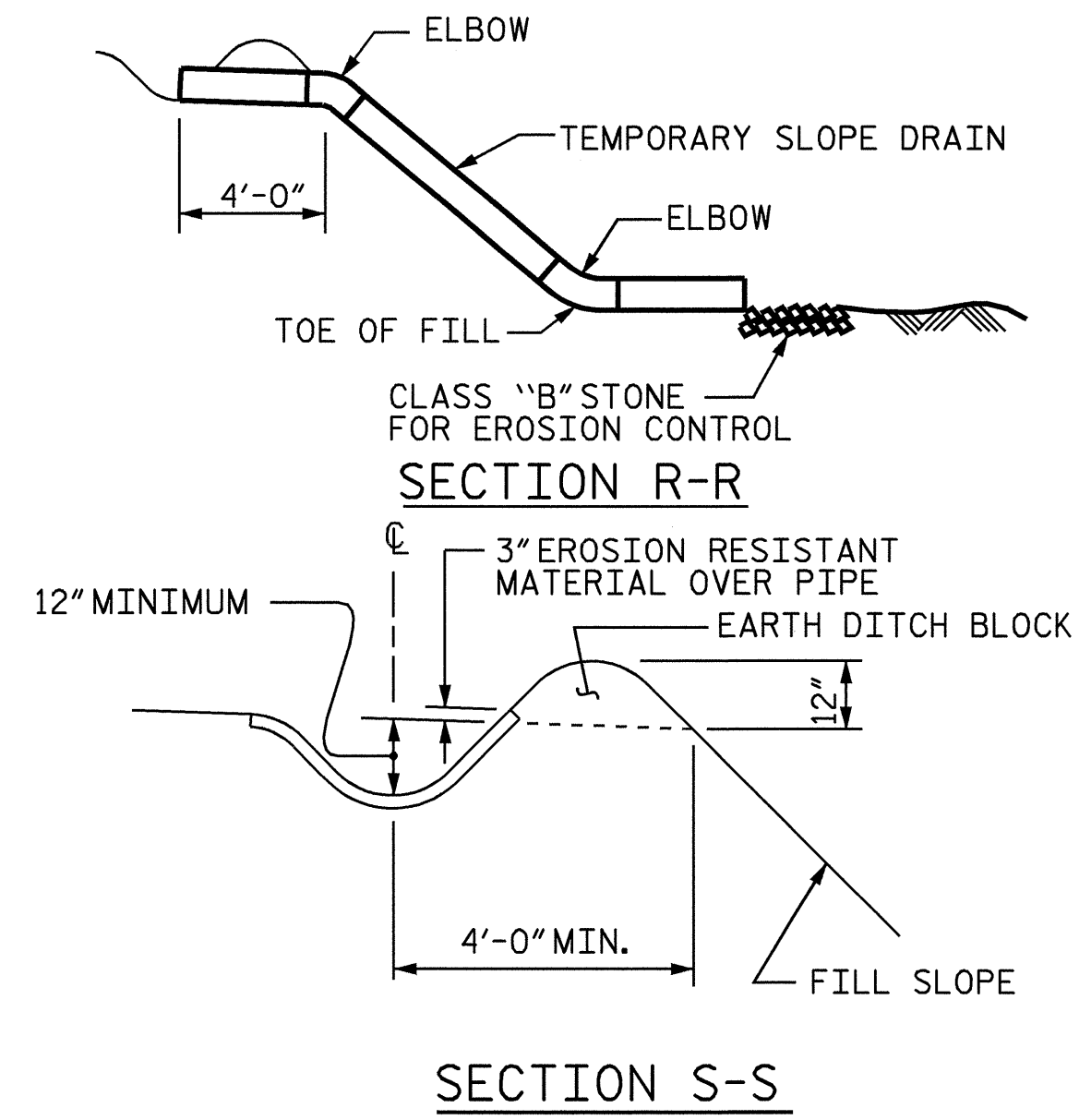
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS 56
2			4			

ASSEMBLED BY : H. T. BARBOUR	DATE : 6-24-08
CHECKED BY : M. G. SHAIKH	DATE : 6-08
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



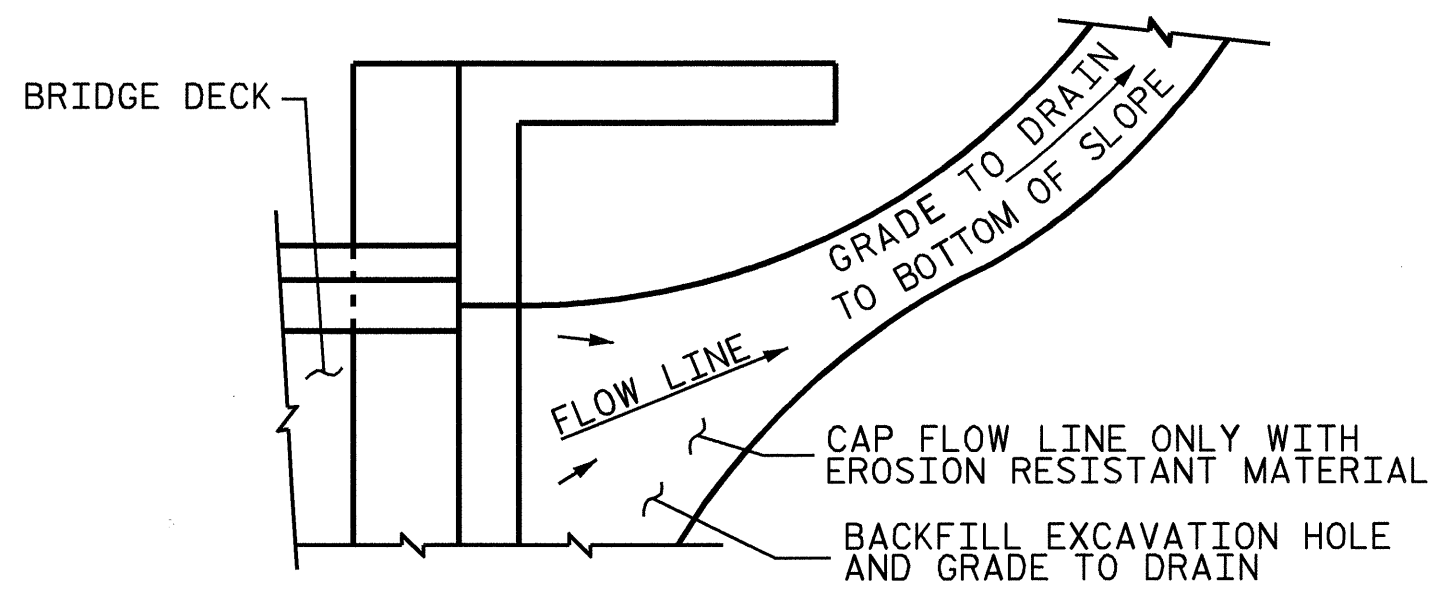
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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



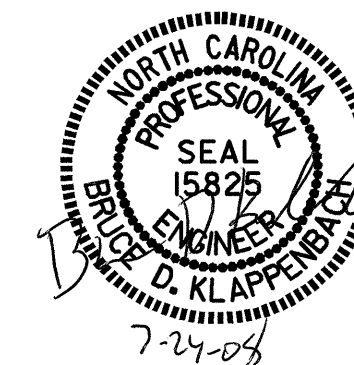
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT 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-4029  
BLADEN COUNTY  
 STATION: 14+95.00-L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
BRIDGE APPROACH SLAB DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-20
					TOTAL SHEETS 56



ASSEMBLED BY :	H. T. BARBOUR	DATE :	6-23-08
CHECKED BY :	M. G. SHAIKH	DATE :	6-08
DRAWN BY :	FCJ 11/88	REV. 10/17/00	RWW/LES
CHECKED BY :	ARB 11/88	REV. 5/17/03	RWW/JTE
		REV. 5/1/06	TLA/GM