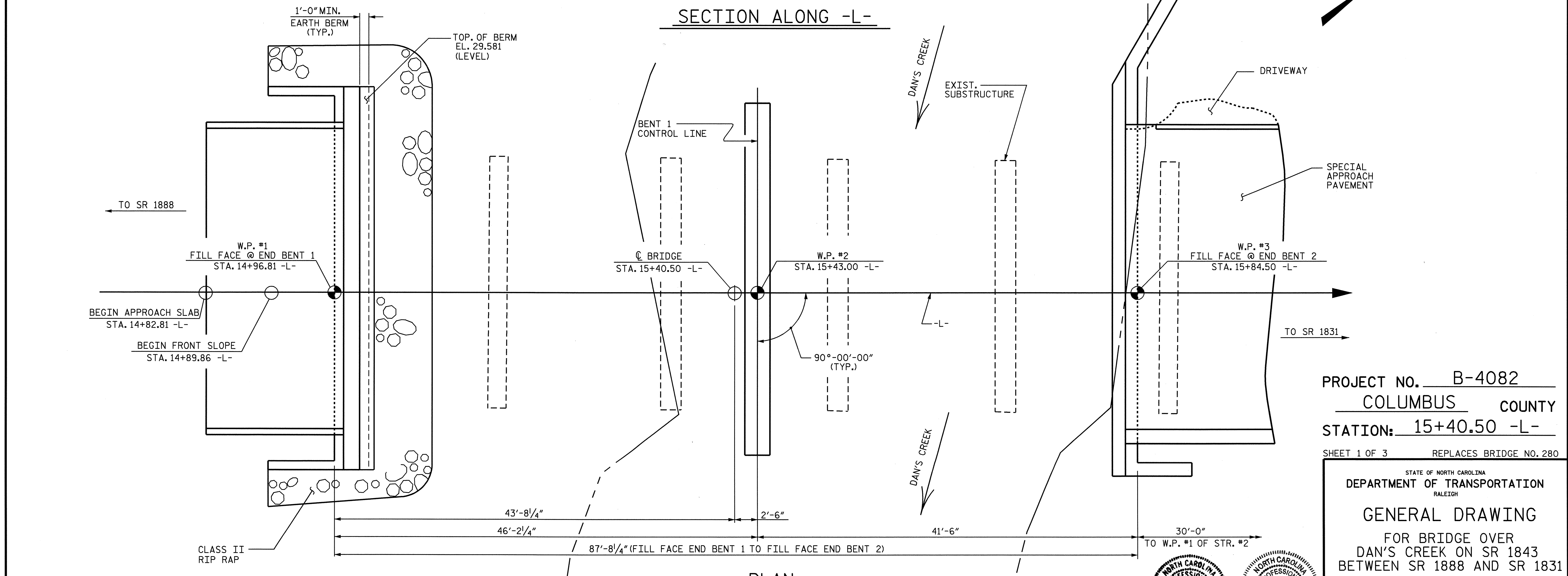


(+0.5016%  $\Delta$  (-0.8712%  
 PI = 16+05.00 -L-  
 EL = 33.51  
 VC = 250'  
 GRADE DATA -L-



PLAN  
 (PILES NOT SHOWN FOR CLARITY)

PROJECT NO. B-4082  
 COLUMBUS COUNTY  
 STATION: 15+40.50 -L-

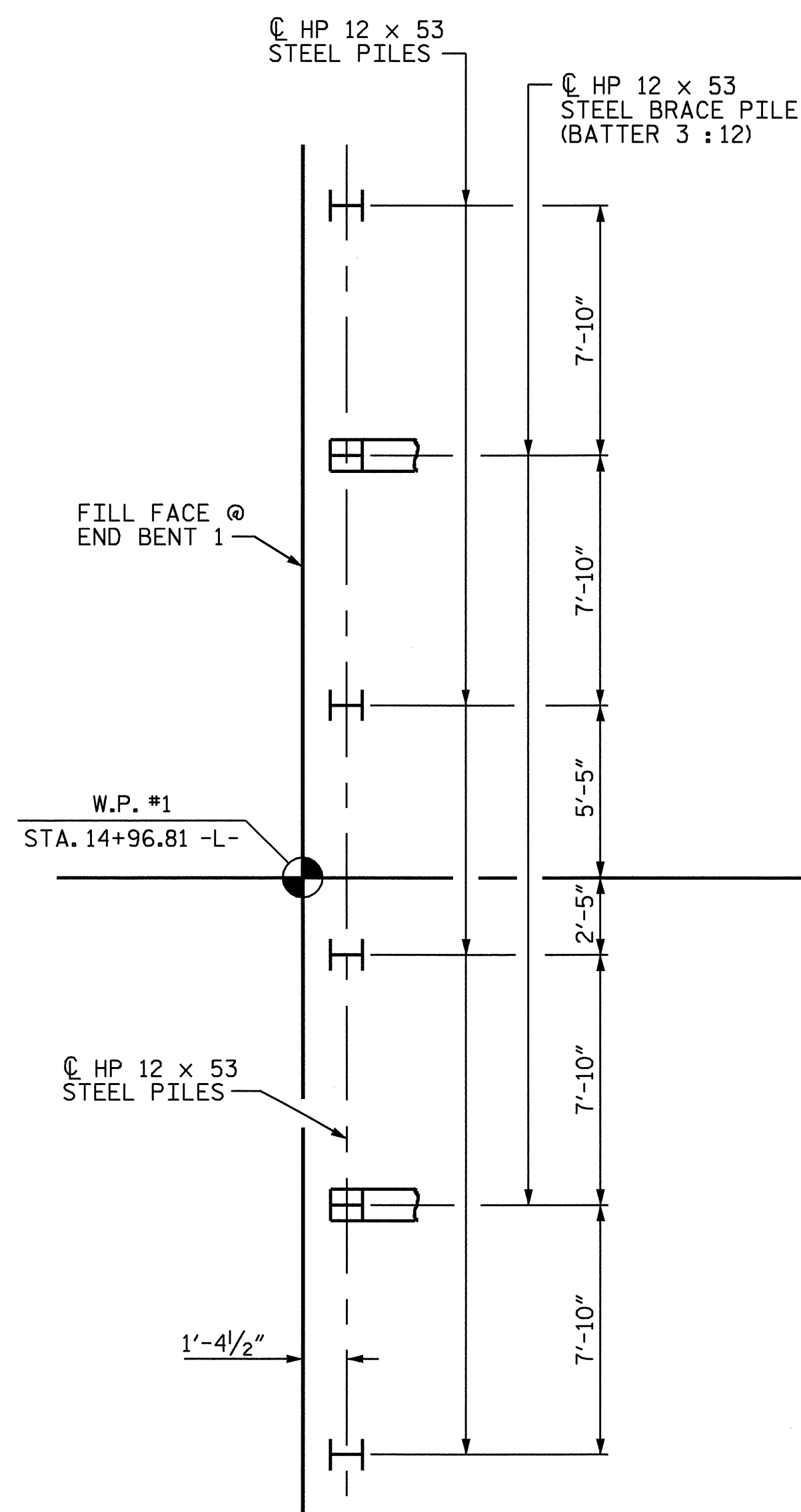
SHEET 1 OF 3 REPLACES BRIDGE NO. 280

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 GENERAL DRAWING  
 FOR BRIDGE OVER  
 DAN'S CREEK ON SR 1843  
 BETWEEN SR 1888 AND SR 1831

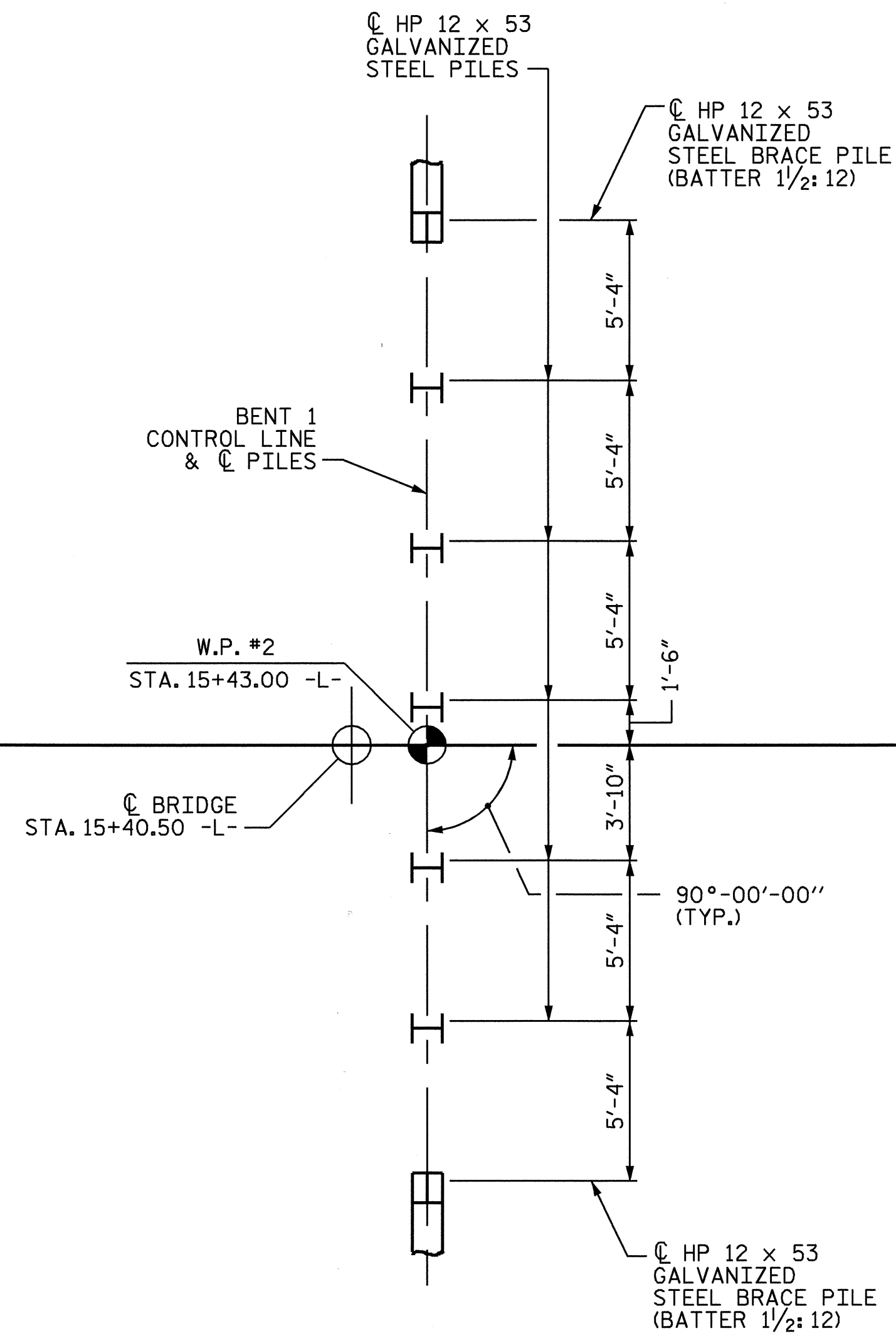
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			56

DRAWN BY: A.S. CALLAWAY DATE: 4/25/08  
 CHECKED BY: S.M. RASHIDI DATE: 5/20/08

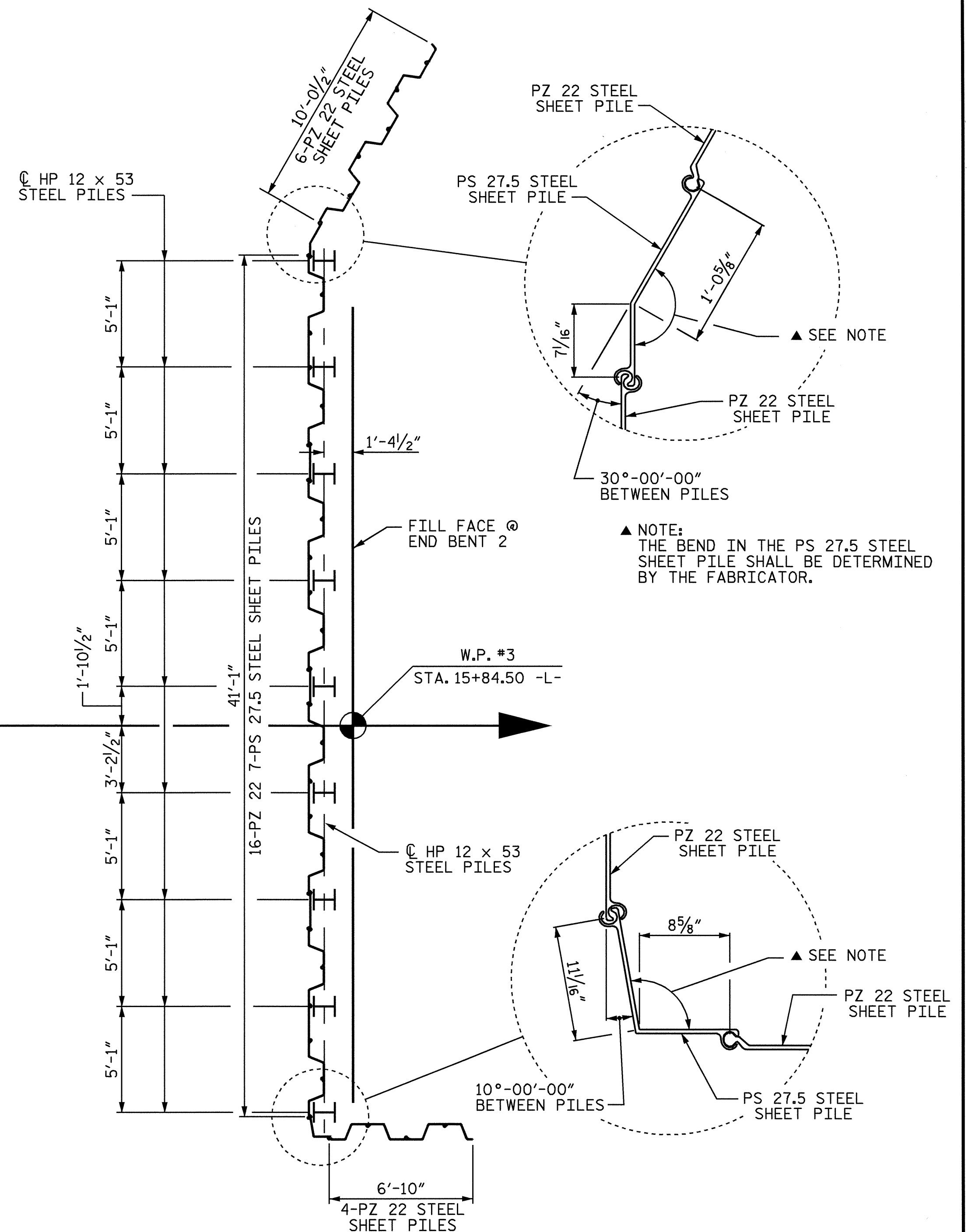
PROFESSIONAL ENGINEER  
 SEAL 9804  
 NORTH CAROLINA  
 PROFESSIONAL ENGINEER  
 SEAL 21638  
 NORTH CAROLINA  
 L. LAURA E. SUTTON  
 7-23-08



END BENT 1



BENT 1



END BENT 2

**FOUNDATION LAYOUT**  
DIMENSIONS LOCATING PILES ARE TO PILE CENTERLINE.

**NOTES**

DRIVE PILES AT END BENT 1 TO A REQUIRED BEARING CAPACITY OF 120 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 1 IS 60 TONS PER PILE.

DRIVE PILES AT BENT 1 AND END BENT 2 TO A REQUIRED BEARING CAPACITY OF 125 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 1 AND END BENT 2 IS 60 TONS PER PILE.

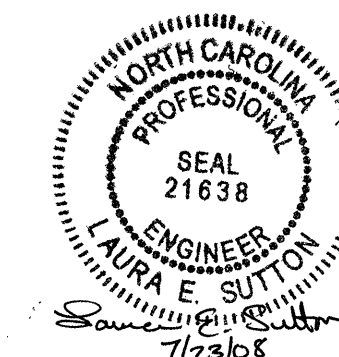
DRIVE PILES AT BENT 1 AND END BENT 2 TO A TIP ELEVATION NO HIGHER THAN 0 FT.

THE SCOUR CRITICAL ELEVATION FOR BENT 1 AND END BENT 2 IS ELEVATION 15 FT. 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 1, BENT 1, OR END BENT 2. SEE PILE DRIVING ANALYZER FOR LRFD SPECIAL PROVISION.

PROJECT NO. B-4082  
COLUMBUS COUNTY  
STATION: 15+40.50 -L-

SHEET 2 OF 3

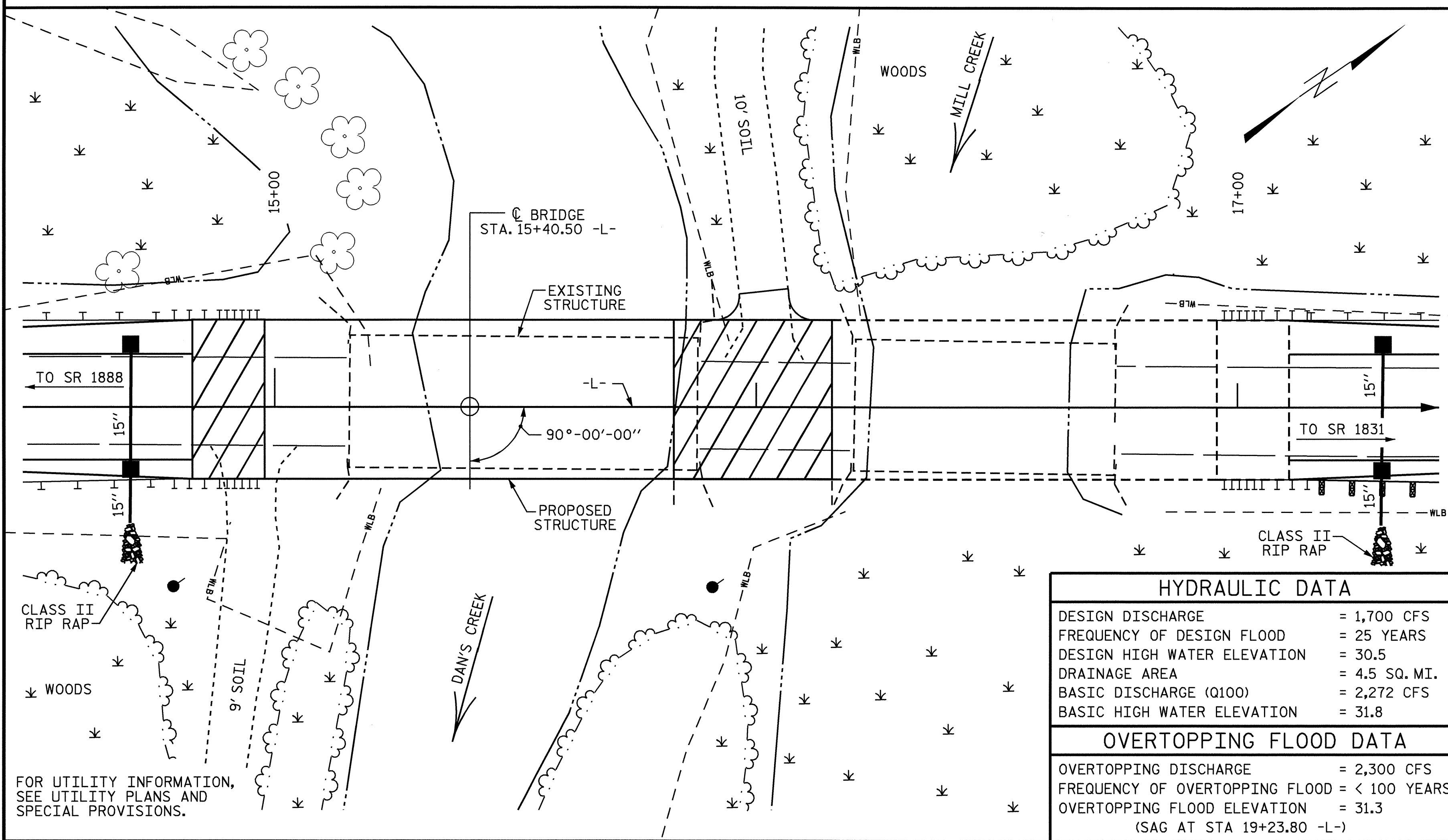


STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
**GENERAL DRAWING**  
FOR BRIDGE OVER  
DAN'S CREEK ON SR 1843  
BETWEEN SR 1888 AND SR 1831

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			56

DRAWN BY: A.S. CALLAWAY DATE: 4/23/08  
CHECKED BY: S.M. RASHIDI DATE: 5/20/08

BM #80: RR SPIKE IN BASE OF 18" PINE, 52' RIGHT STA. 9+48 -BL-, EL. 29.86



LOCATION SKETCH

HYDRAULIC DATA	
DESIGN DISCHARGE	= 1,700 CFS
FREQUENCY OF DESIGN FLOOD	= 25 YEARS
DESIGN HIGH WATER ELEVATION	= 30.5
DRAINAGE AREA	= 4.5 SQ. MI.
BASIC DISCHARGE (Q100)	= 2,272 CFS
BASIC HIGH WATER ELEVATION	= 31.8
OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE	= 2,300 CFS
FREQUENCY OF OVERTOPPING FLOOD	= < 100 YEARS
OVERTOPPING FLOOD ELEVATION	= 31.3
(SAG AT STA 19+23.80 -L-)	

NOTES

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING, EXCEPT THAT CORED SLAB UNITS HAVE BEEN DESIGNED FOR HS 25.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

THE EXISTING STRUCTURE CONSISTING OF 4 SPANS (1 @ 18.3' AND 3 @ 18.2') WITH A CLEAR ROADWAY WIDTH OF 24.0' AND HAVING A CONCRETE DECK SUPPORTED BY STEEL I-BEAMS ON CONCRETE CAPS AND TIMBER PILES SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 35 FT. RIGHT AND 25 FT. LEFT 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.

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

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

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

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 15+40.50 -L-".

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

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	19.69" STEEL SHEET PILES	22" STEEL SHEET PILES	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	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	SQ. FT.	SQ. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.	
SUPERSTRUCTURE														170.00					24	1,020.00
END BENT 1				14.1		2,118	6	300							119	132				
BENT 1				9.9		1,786			7	280										
END BENT 2				13.9		2,343	9	360				225	760							
TOTAL	LUMP SUM	1	LUMP SUM	37.9	LUMP SUM	6,247	15	660	7	280	15	225	760	170.00	119	132	LUMP SUM	24	1,020.00	

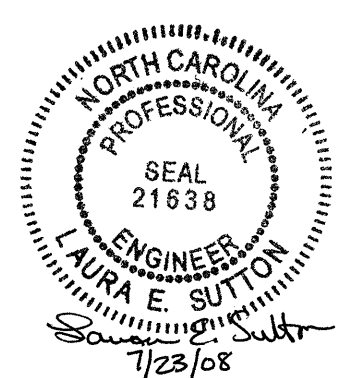
PROJECT NO. B-4082  
COLUMBUS COUNTY  
 STATION: 15+40.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

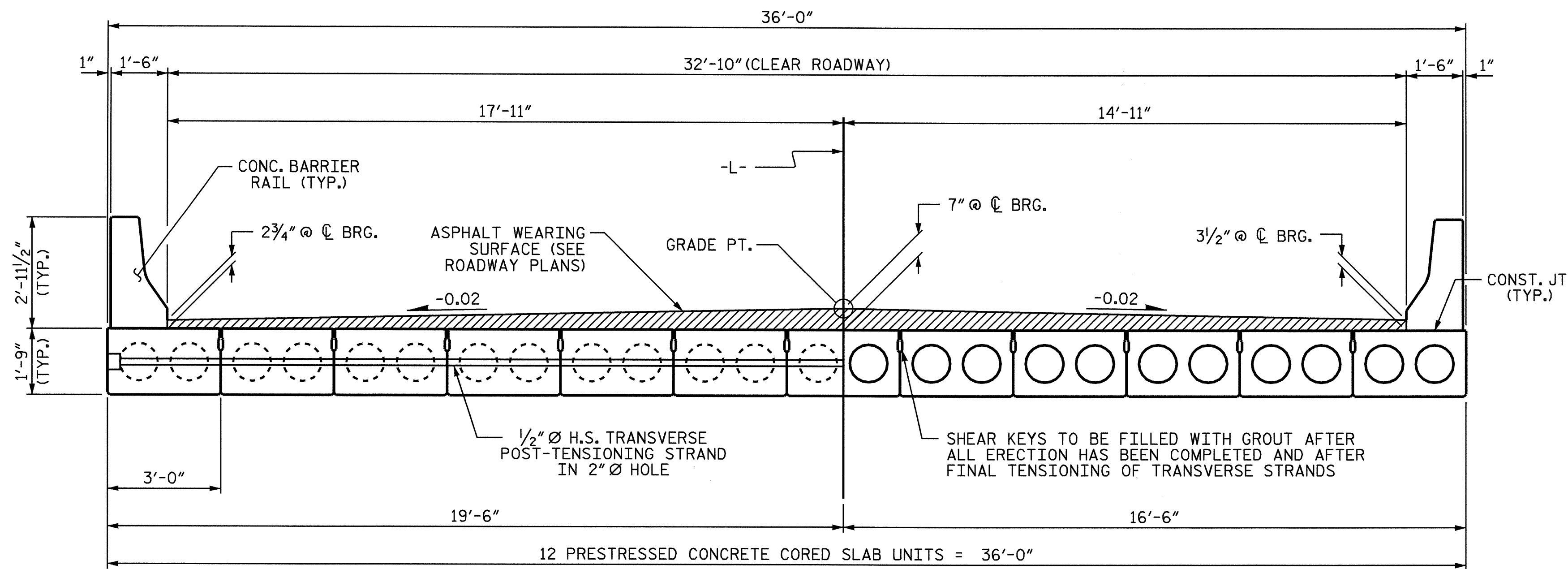
GENERAL DRAWING  
 FOR BRIDGE OVER  
 DAN'S CREEK ON SR 1843  
 BETWEEN SR 1888 & SR 1831

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			56



DRAWN BY : A.S. CALLAWAY DATE : 4/25/08  
 CHECKED BY : S.M. RASHIDI DATE : 5/20/08

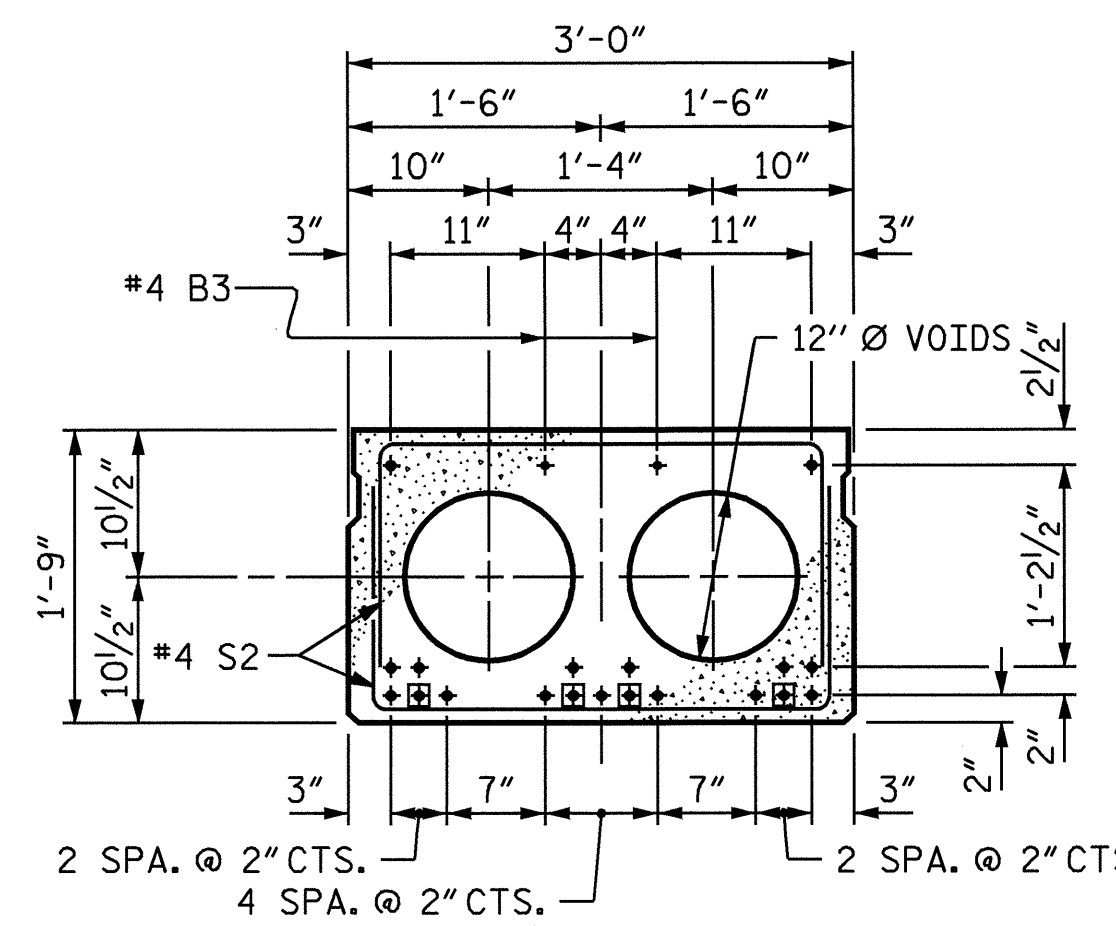




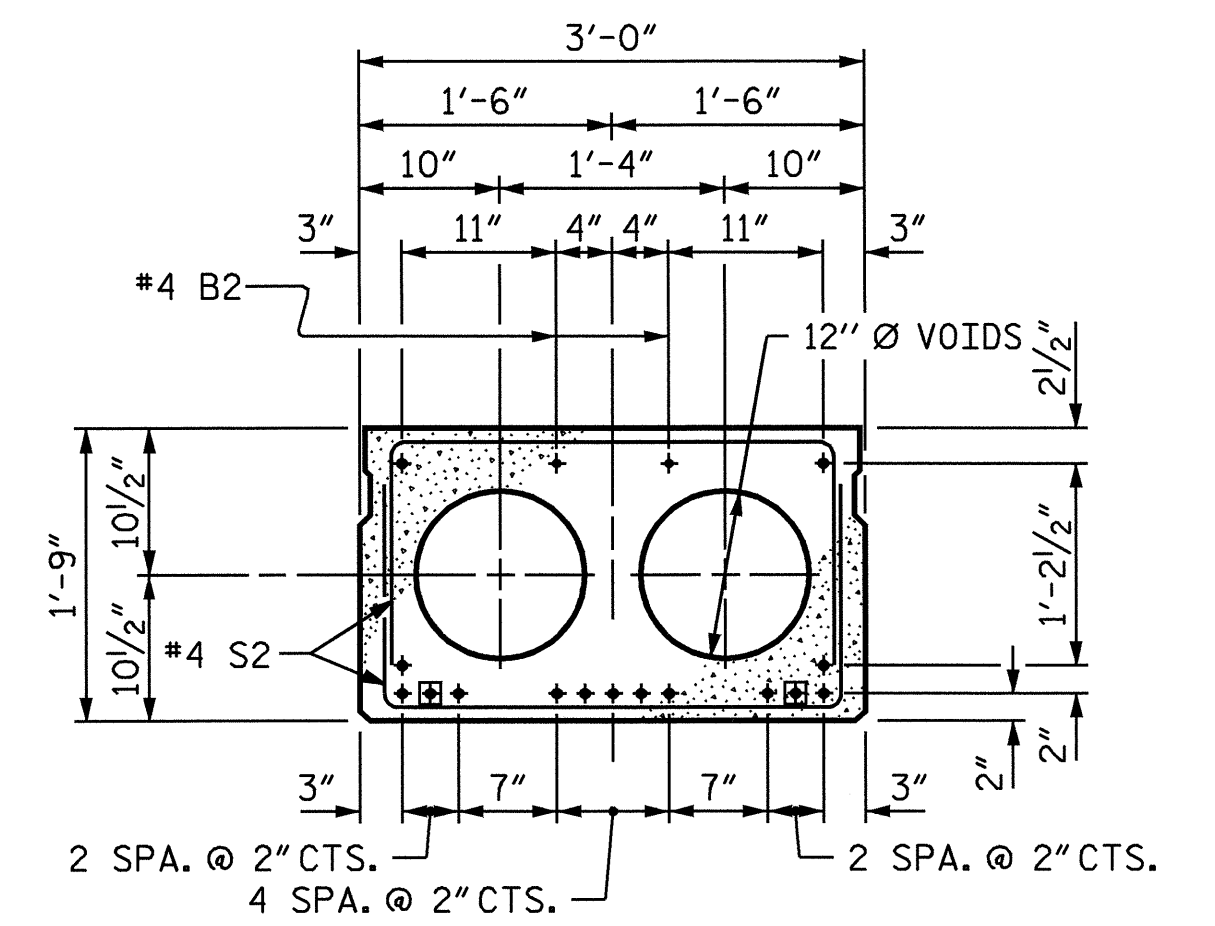
HALF SECTION  
AT INTERMEDIATE DIAPHRAGMS

HALF SECTION  
THROUGH VOIDS

TYPICAL SECTION



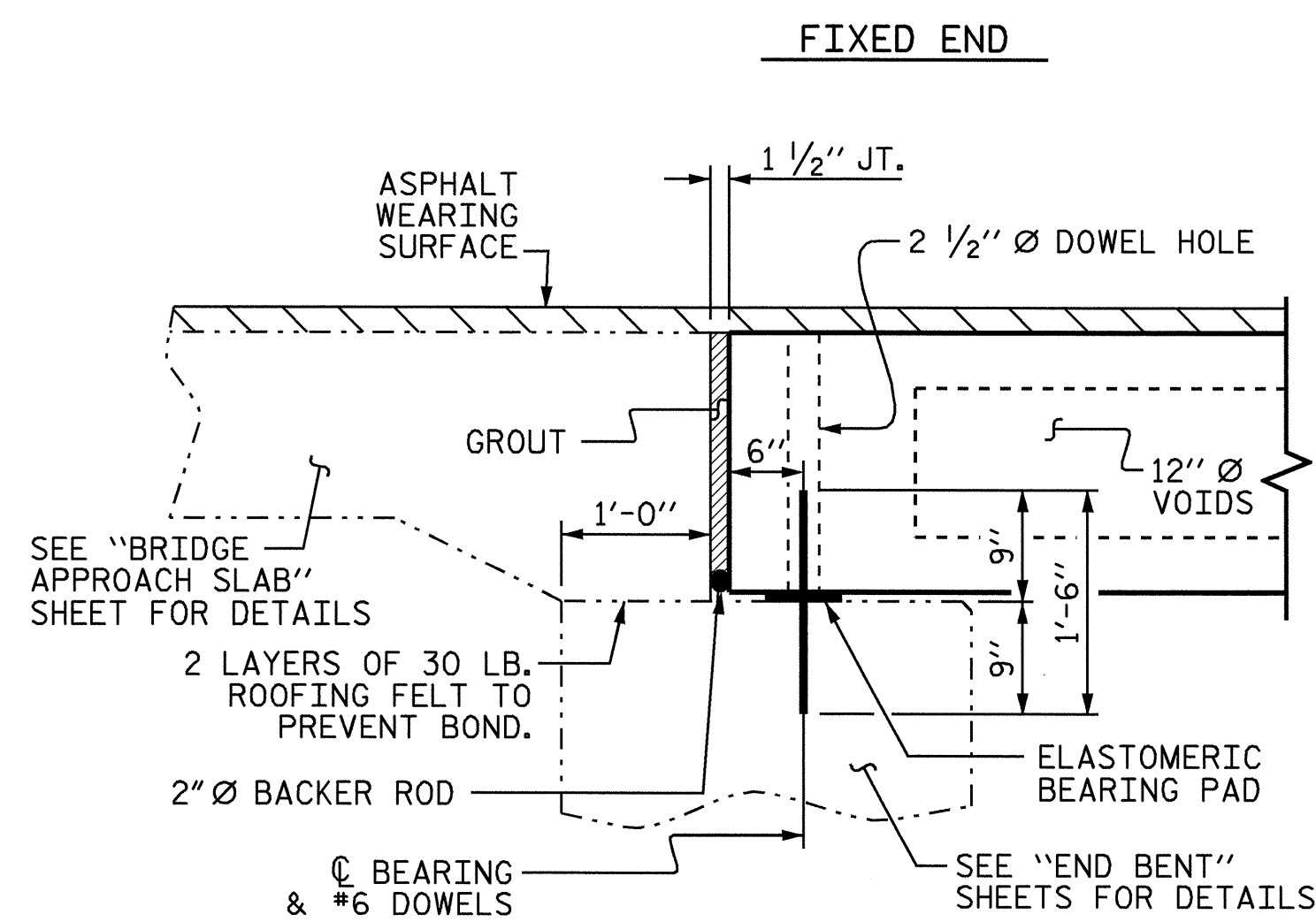
45' - SPAN "A"  
1/2" Ø LOW RELAXATION STRAND LAYOUT  
19 STRANDS



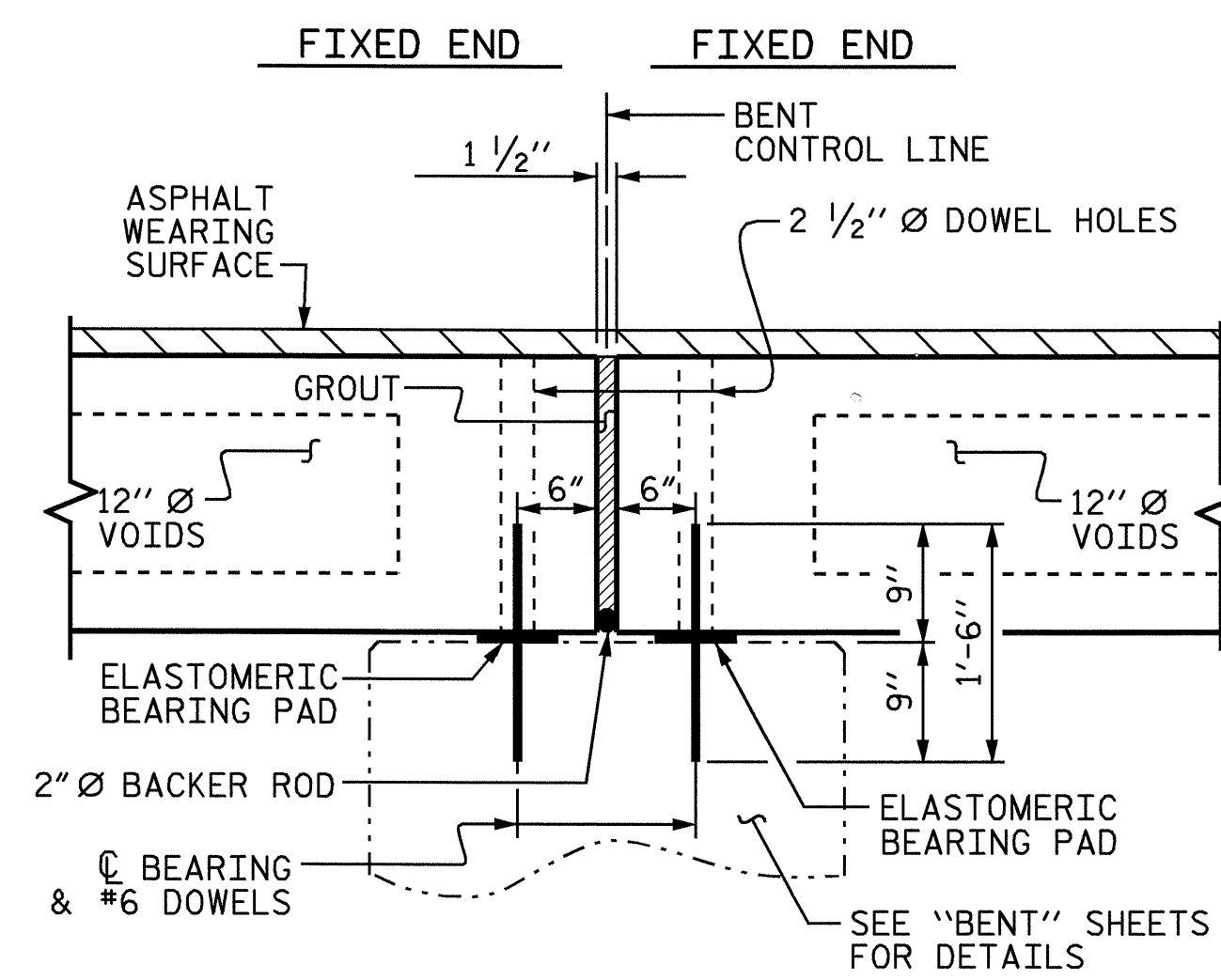
40' - SPAN "B"  
1/2" Ø LOW RELAXATION STRAND LAYOUT  
15 STRANDS

INTERIOR SLAB SECTION

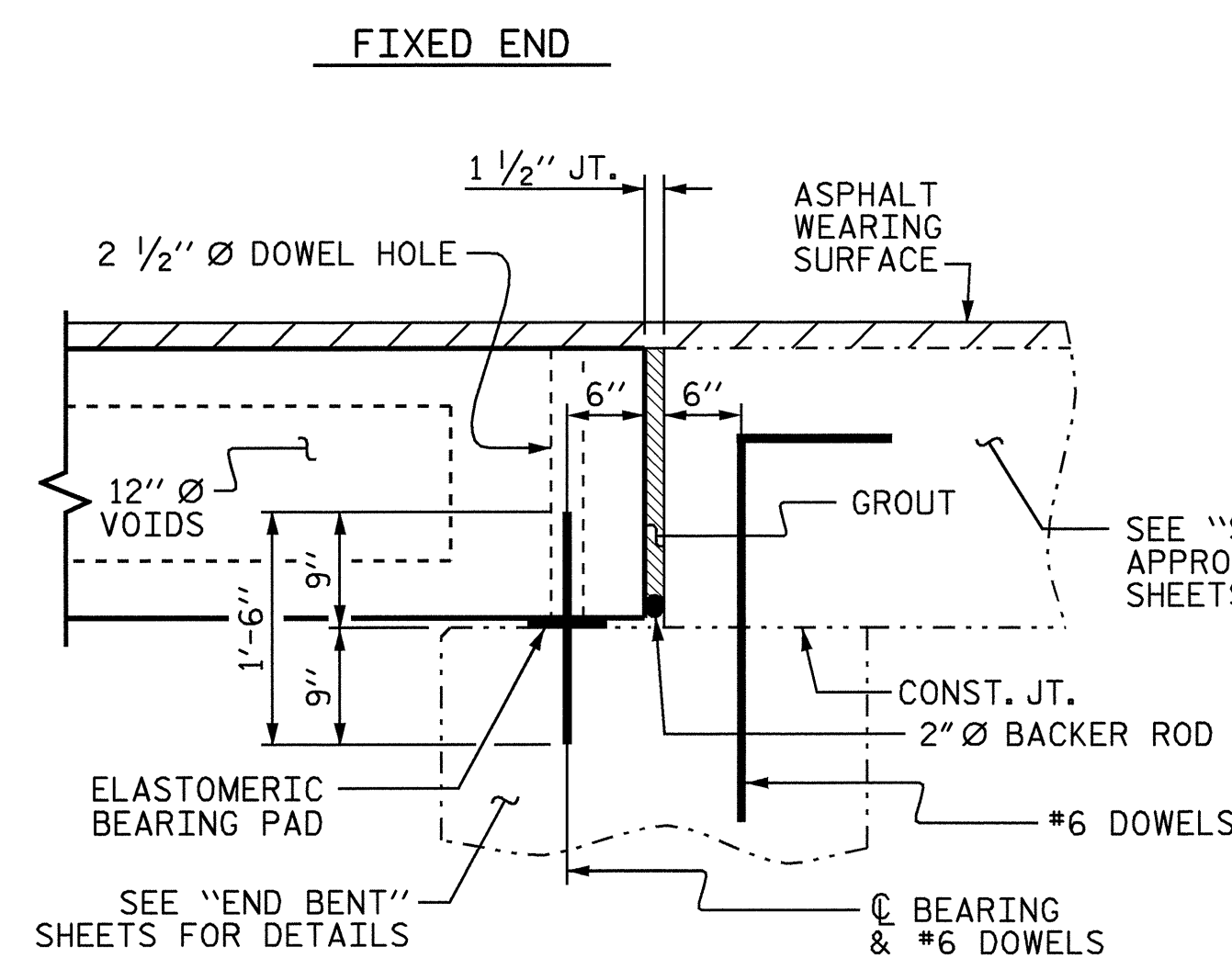
THE BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 4'-0" FROM END OF THE CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.



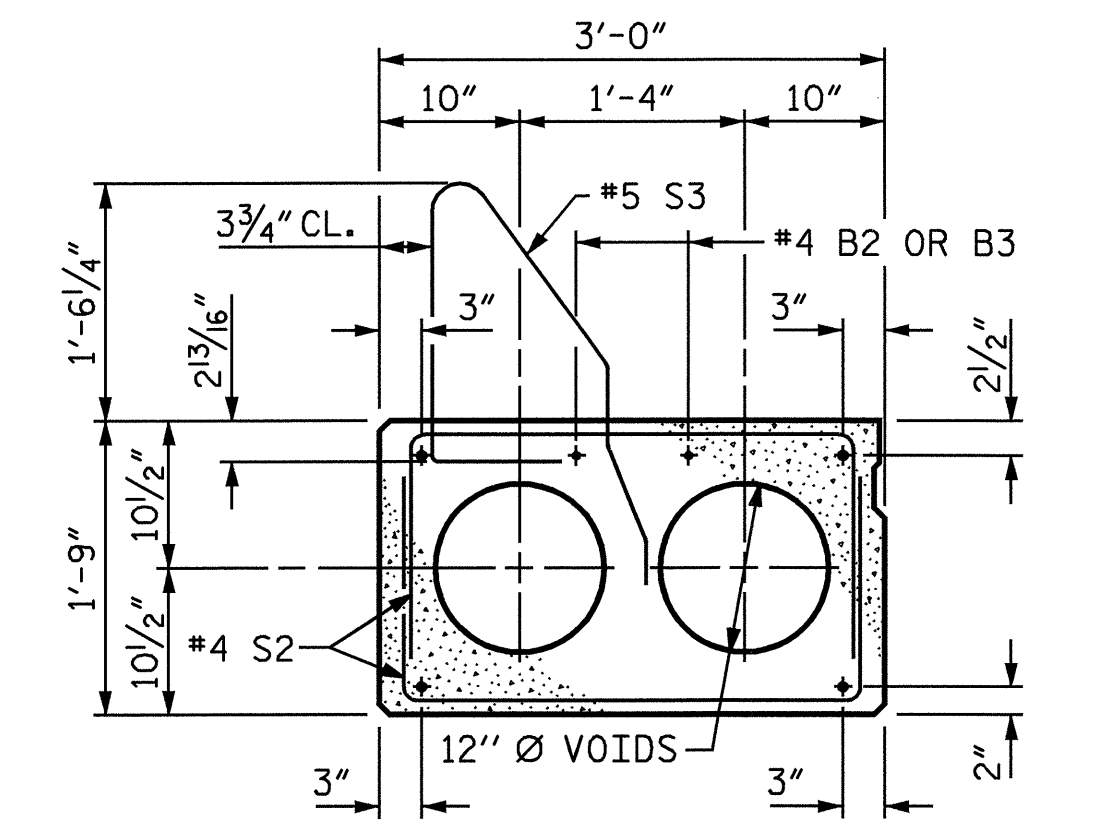
SECTION AT END BENT 1



SECTION AT BENT

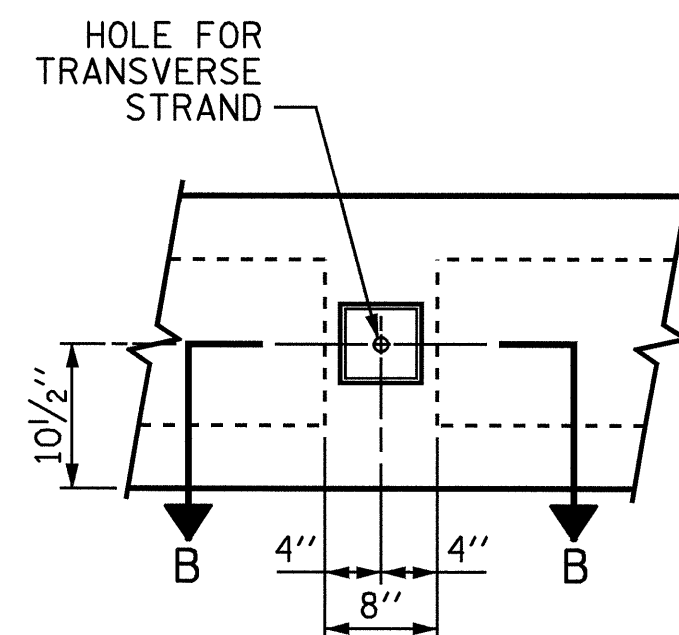


SECTION AT END BENT 2

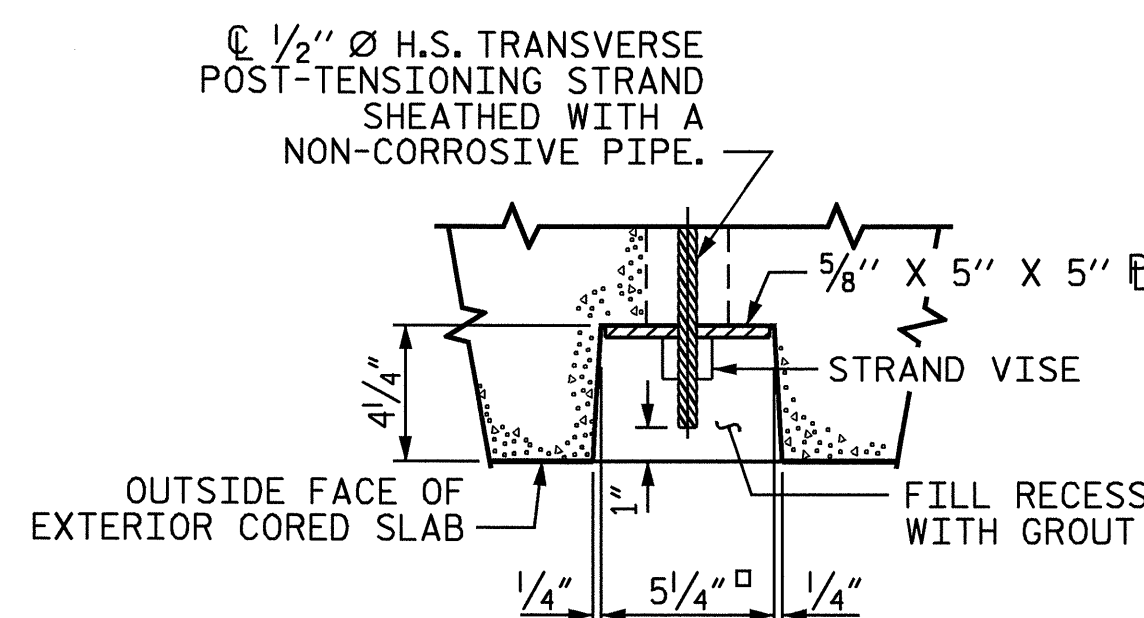


EXTERIOR SLAB SECTION

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

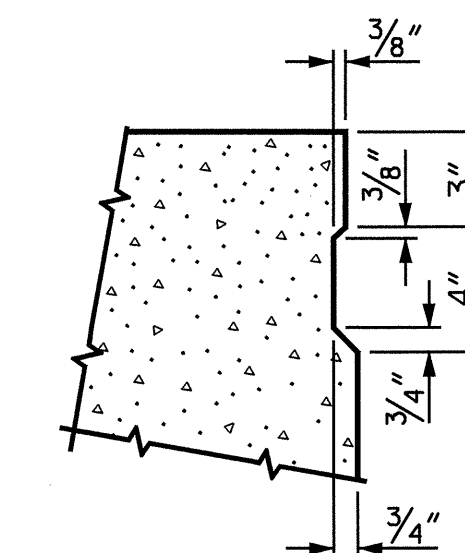


ELEVATION VIEW



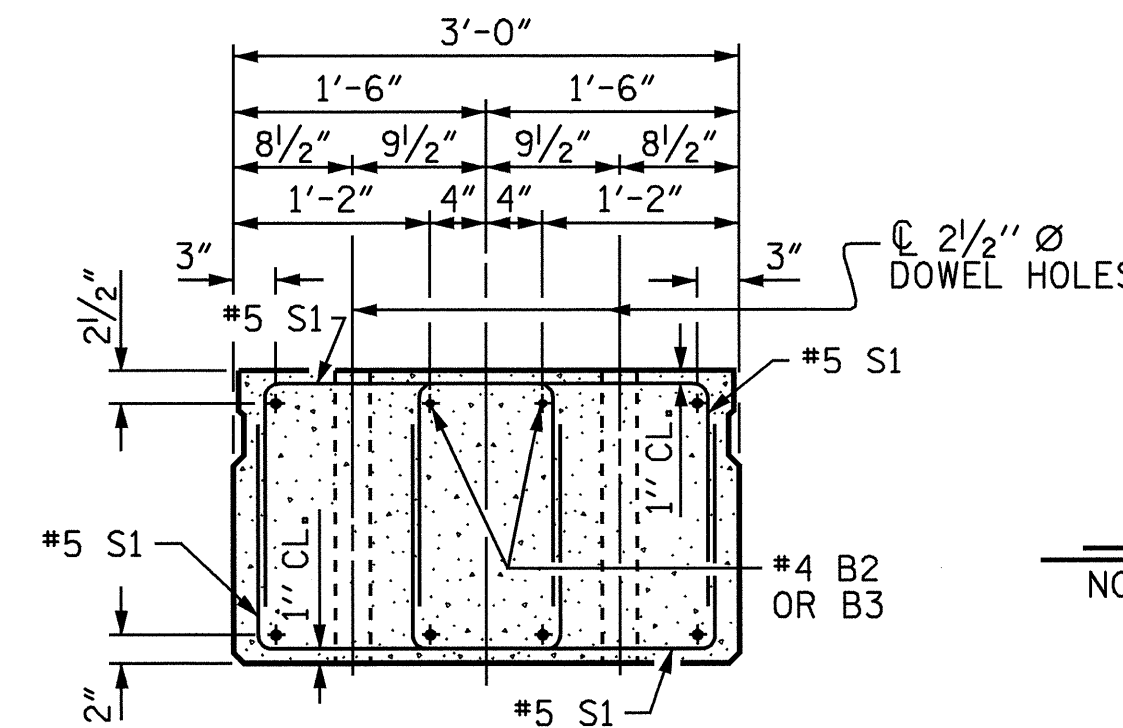
SECTION B-B

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



SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR 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.

ASSEMBLED BY :	L.E. SUTTON	DATE :	5/22/08
CHECKED BY :	A.S. CALLAWAY	DATE :	5/27/08
DRAWN BY :	WJH 4/89	REV. 10/17/00	RWW/LES
CHECKED BY :	FCJ 5/89	REV. 7/10/01RR	RWW/LES
		REV. 5/1/06	TLA/GM

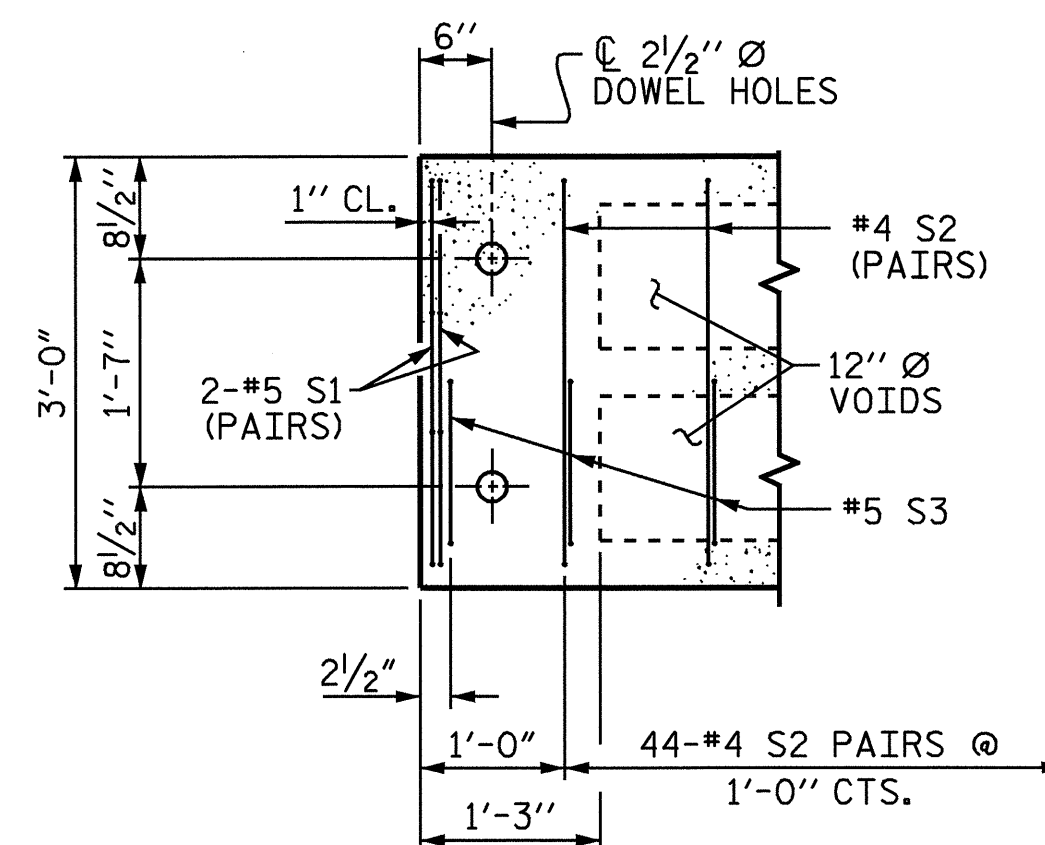
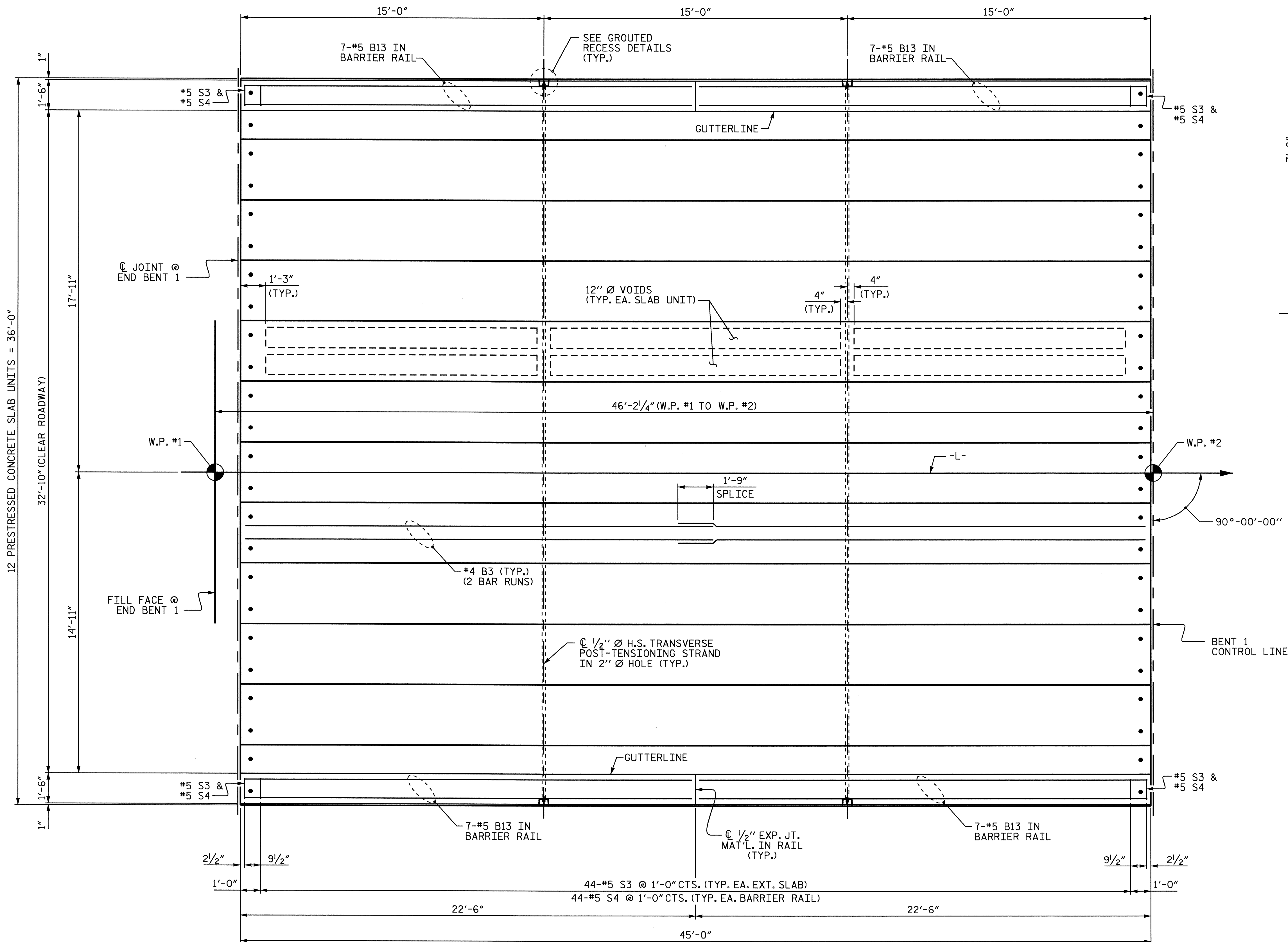


PROJECT NO. B-4082  
COLUMBUS COUNTY  
STATION: 15+40.50 -L-

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-24
					TOTAL SHEETS 56





PART PLAN - SLAB SECTION

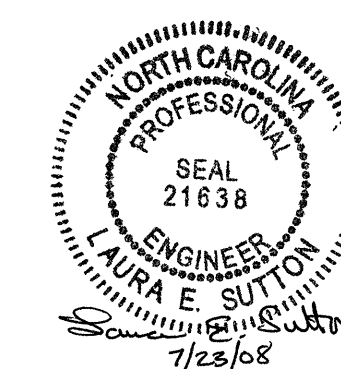
NOTE: EXTERIOR SECTION SHOWN - INTERIOR SECTION SIMILAR EXCEPT OMIT #5 S3 BARS.

PLAN OF SPAN "A"

PROJECT NO. B-4082  
COLUMBUS COUNTY  
 STATION: 15+40.50 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 PLAN OF SPAN  
 32'-10" CLEAR ROADWAY  
 90° SKEW - 45' SPAN

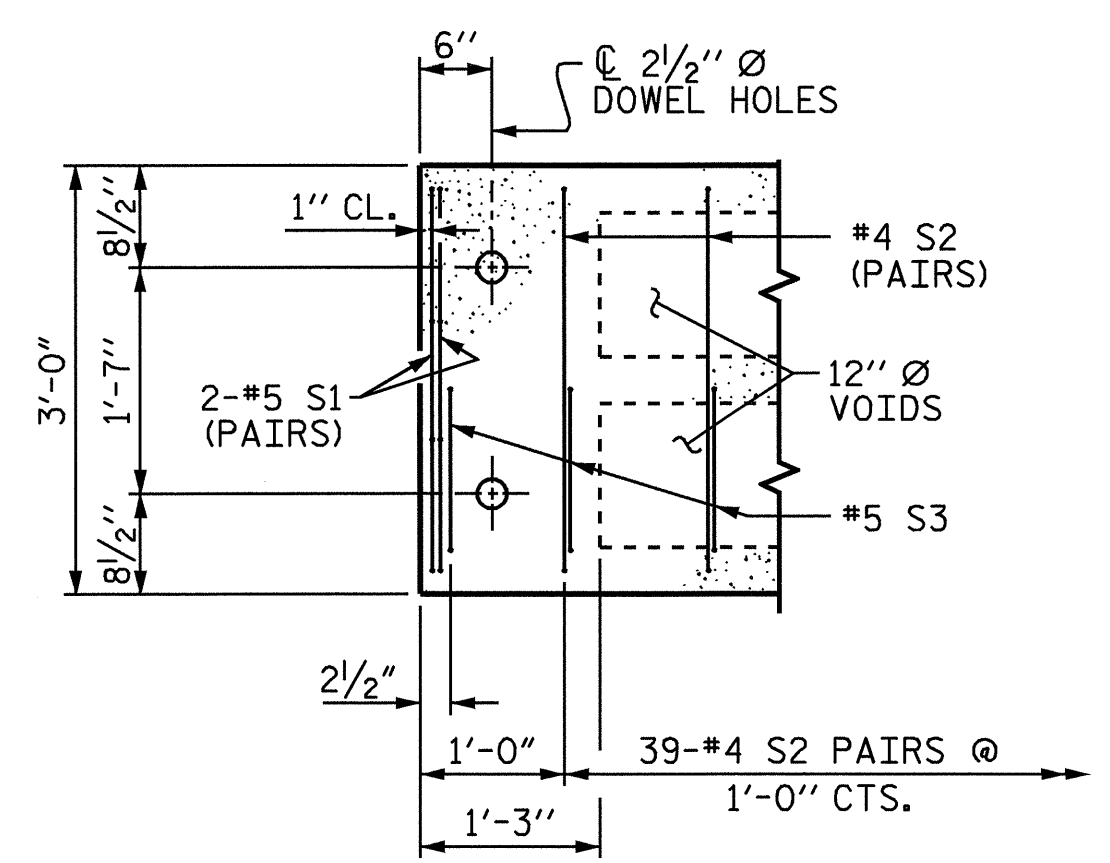
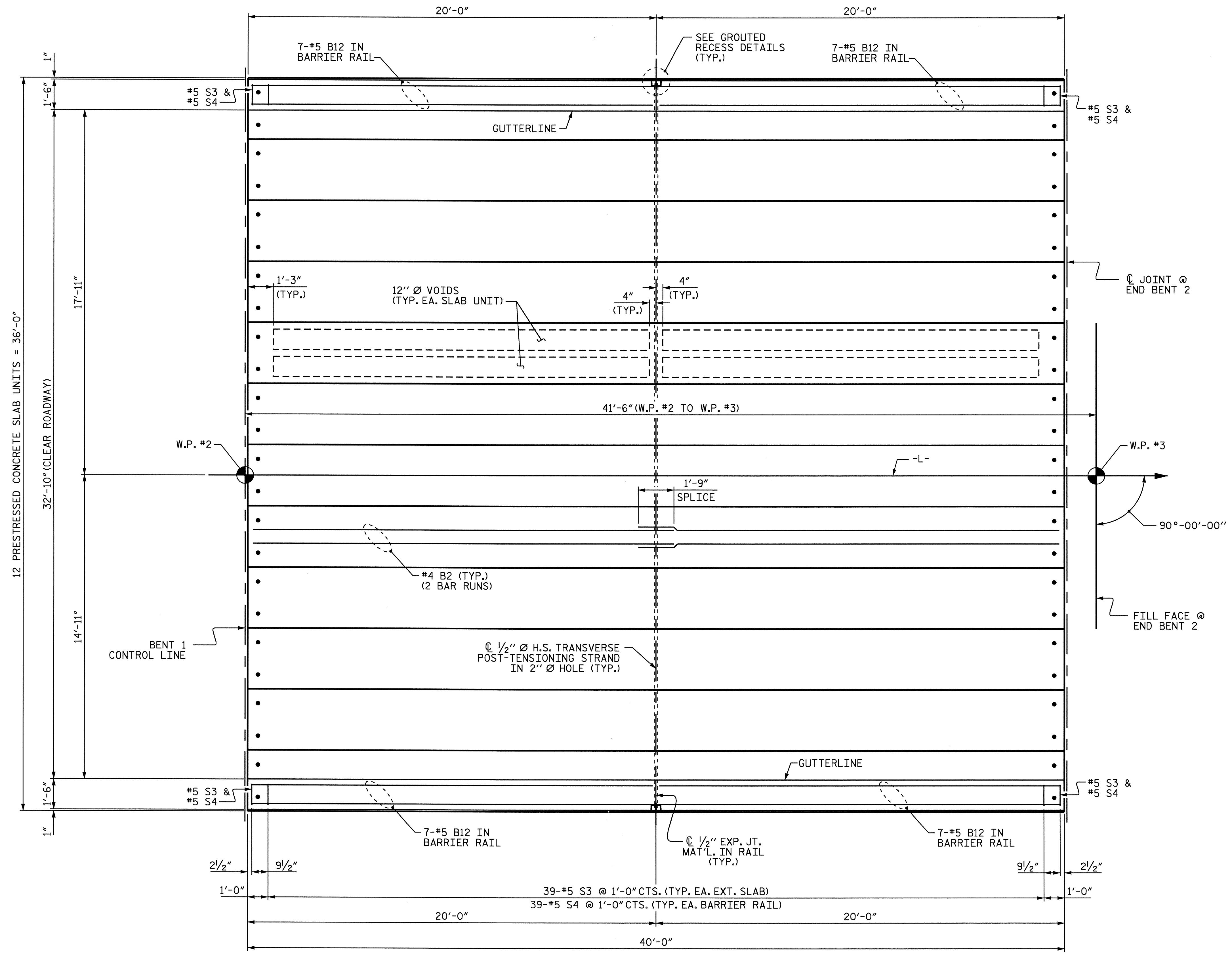


DRAWN BY: L.E. SUTTON DATE: 5/22/08  
 CHECKED BY: A.S. CALLAWAY DATE: 5/27/08

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 lsutton

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			56

STR. #1



PART PLAN - SLAB SECTION

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

PLAN OF SPAN "B"

PROJECT NO. B-4082  
COLUMBUS COUNTY  
 STATION: 15+40.50 -L-

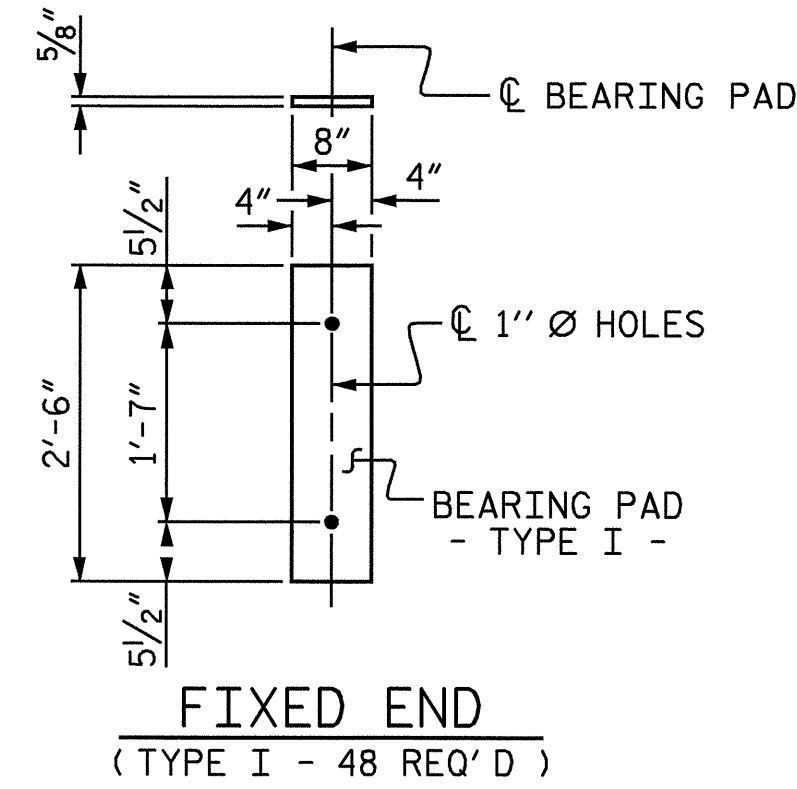
SHEET 3 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 PLAN OF SPAN  
 32'-10" CLEAR ROADWAY  
 90° SKEW - 40' SPAN



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			56

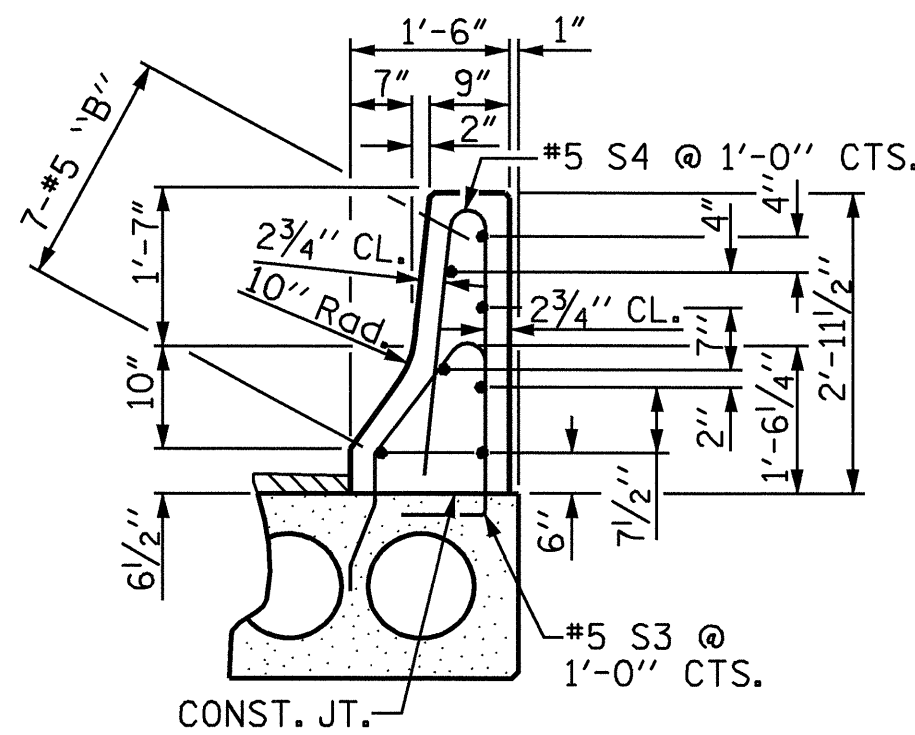
DRAWN BY: L.E. SUTTON DATE: 5/22/08  
 CHECKED BY: A.S. CALLAWAY DATE: 5/27/08



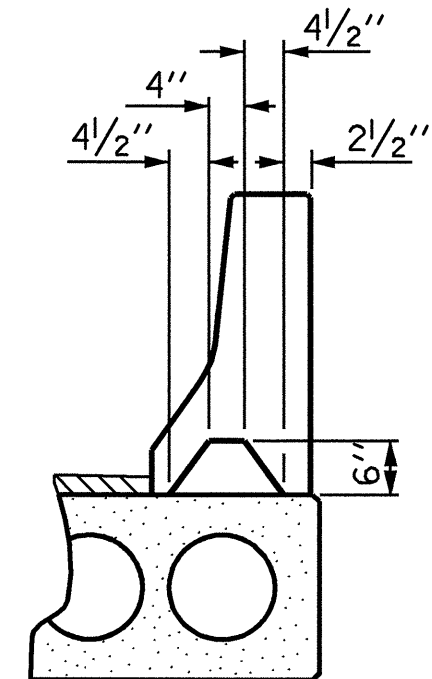
**ELASTOMERIC BEARING DETAILS**

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

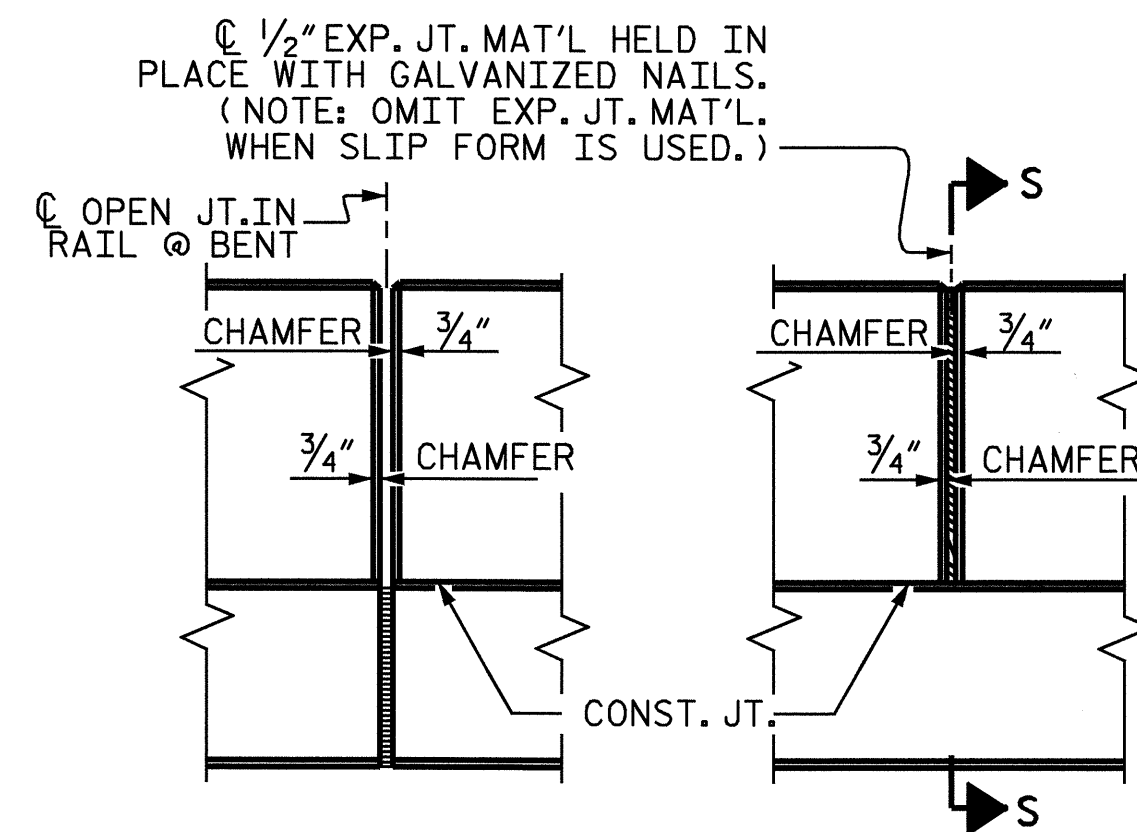
CORED SLAB UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
SPAN A			
EXTERIOR C.S.	2	45'-0"	90'-0"
INTERIOR C.S.	10	45'-0"	450'-0"
SPAN B			
EXTERIOR C.S.	2	40'-0"	80'-0"
INTERIOR C.S.	10	40'-0"	400'-0"
TOTAL	24	—	1020'-0"



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

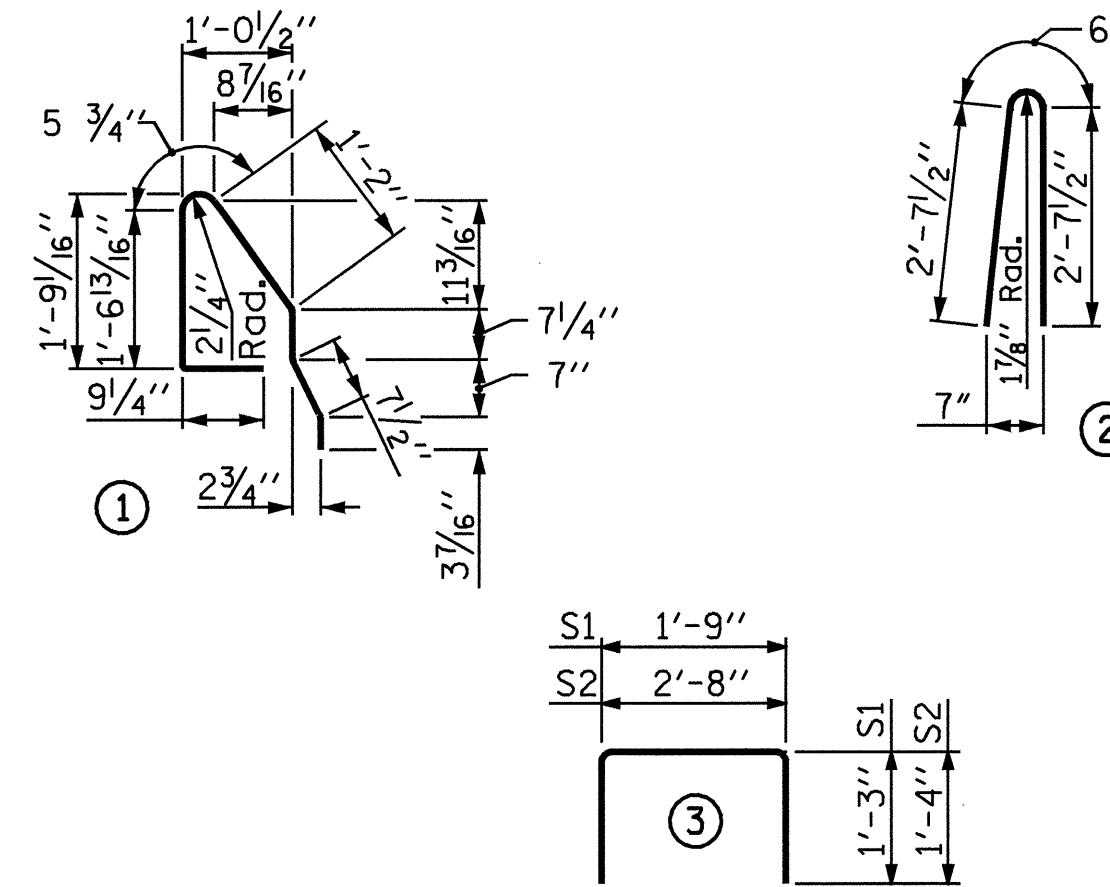
**BARRIER RAIL DETAILS**

BILL OF MATERIAL FOR CONCRETE BARRIER RAIL							
BAR	BARS PER SPAN		TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	SPAN A	SPAN B					
* B12	—	28	28	#5	STR	19'-7"	572
* B13	28	—	28	#5	STR	22'-1"	645
* S4	92	82	174	#5	2	5'-9"	1044
*EPOXY COATED REINFORCING STEEL						LBS.	2,261
CLASS AA CONCRETE						CU.YDS.	19.8
TOTAL CONCRETE BARRIER RAIL						LIN. FT.	170.00

ASSEMBLED BY : L.E. SUTTON DATE : 5/23/08  
 CHECKED BY : A.S. CALLAWAY DATE : 5/27/08  
 DRAWN BY : WJH 4/89 REV. 7/10/01 RWW/LES  
 CHECKED BY : FCJ 5/89 REV. 5/17/03RRR 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 (SPAN "A")**

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 40' CORED SLAB SECTION (SPAN "B")**

BAR	NO.	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B2	4	#4	STR	20'-9"	55	20'-9"	55
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	78	#4	3	5'-4"	278	5'-4"	278
* S3	41	#5	1	5'-6"	235	—	—
REINFORCING STEEL				LBS.	368	LBS.	368
*EPOXY COATED REINFORCING STEEL				LBS.	235	—	—
5000 P.S.I. CONCRETE				CU. YDS.	5.6	CU. YDS.	5.6
1/2" Ø L.R. STRANDS				NO.	15	NO.	15

DEAD LOAD DEFLECTION AND CAMBER		
	3'-0" x 1'-9" 1/2" Ø L.R. STRAND	
	SPAN A	SPAN B
CAMBER ( SLAB ALONE IN PLACE )	1 9/16"	1 5/16"
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD **	1/4"	1/8"
FINAL CAMBER	1 5/16"	1 3/16"

\*\* INCLUDES FUTURE WEARING SURFACE.

**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-4082  
COLUMBUS COUNTY  
 STATION: 15+40.50 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 3'-0" X 1'-9"  
 PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 90° SKEW



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

STR. #1

STD. NO. PCS3



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.)

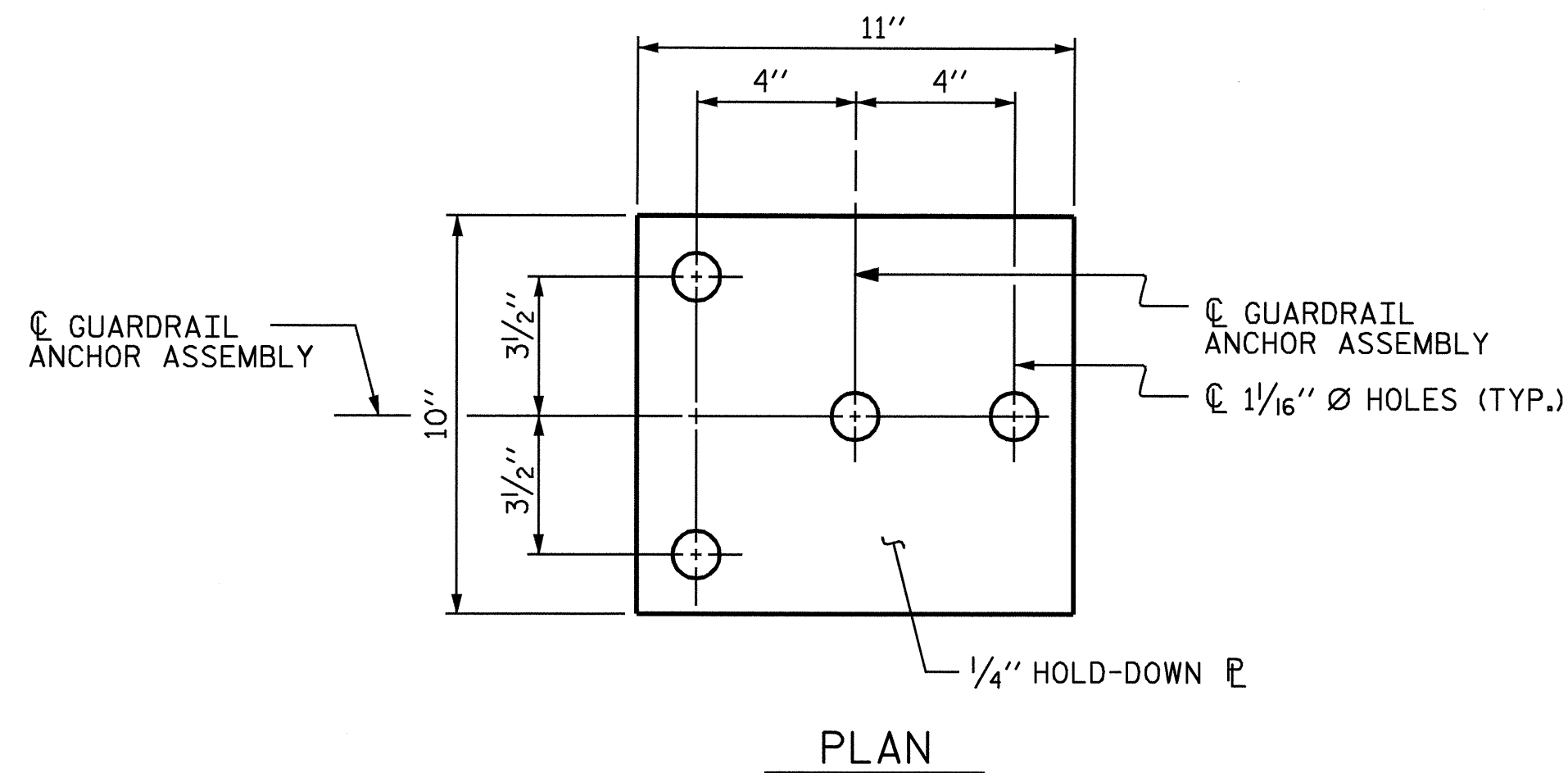
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

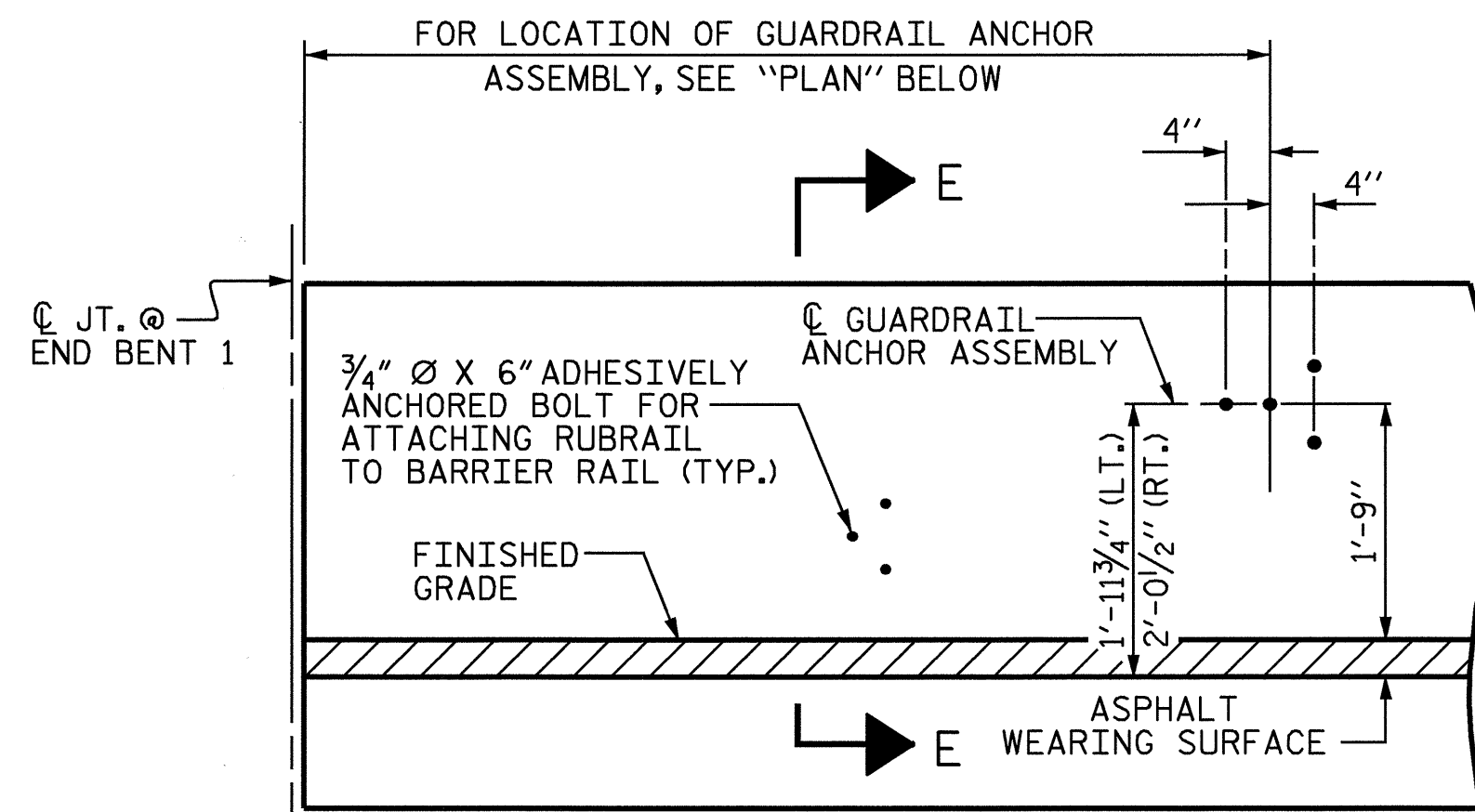
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

THE 1/4" 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.

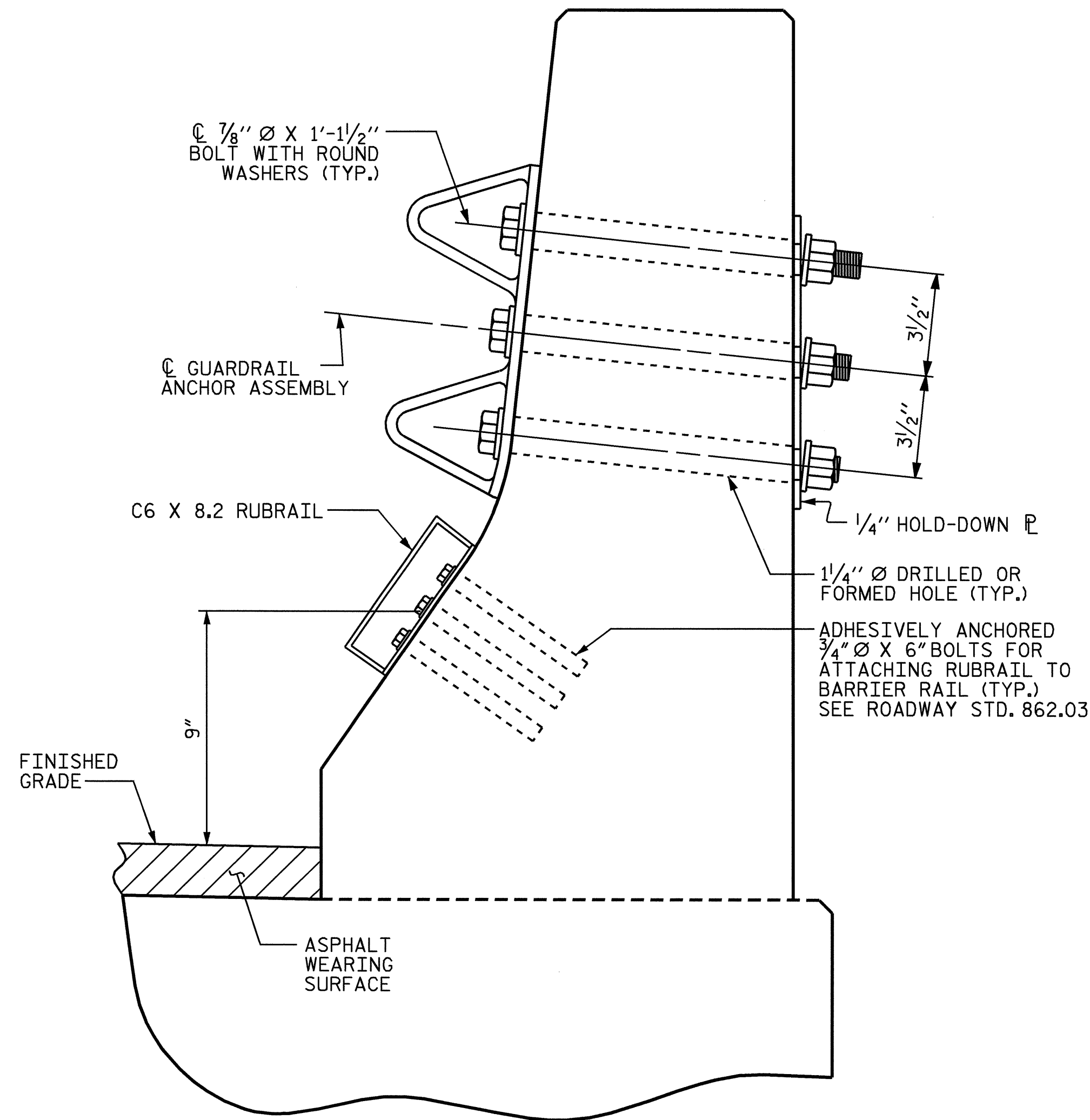


PLAN



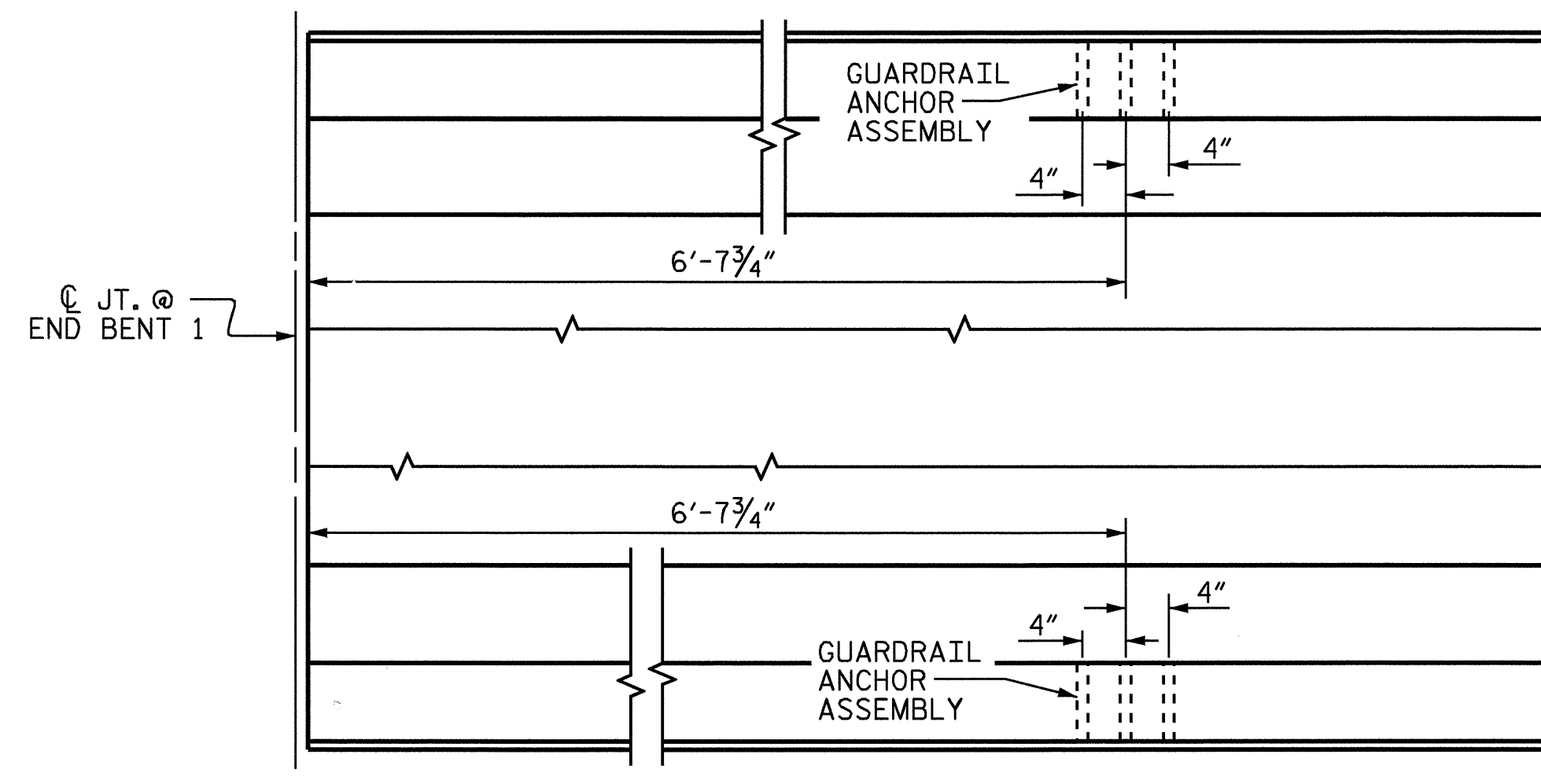
ELEVATION

FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03



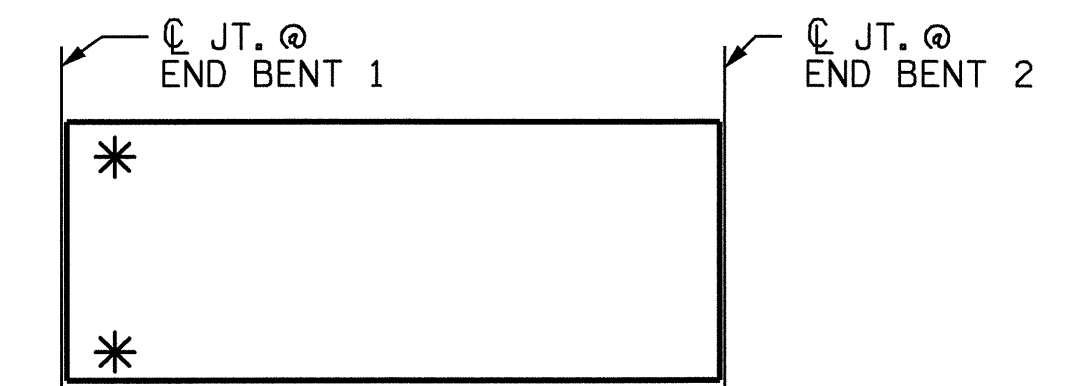
SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL



SKETCH SHOWING POINTS OF ATTACHMENTS

\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4082  
COLUMBUS COUNTY  
 STATION: 15+40.50 -L-

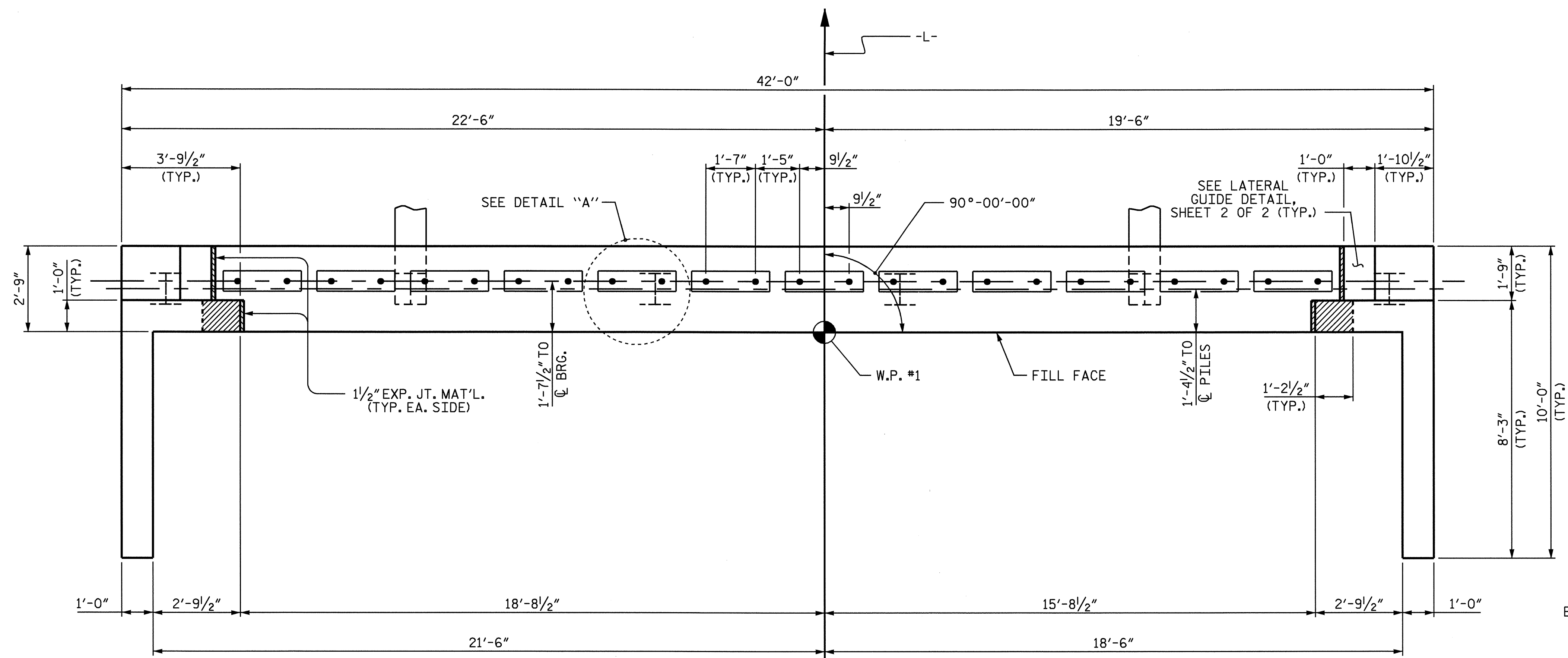


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 GUARDRAIL ANCHORAGE  
 FOR BARRIER RAIL

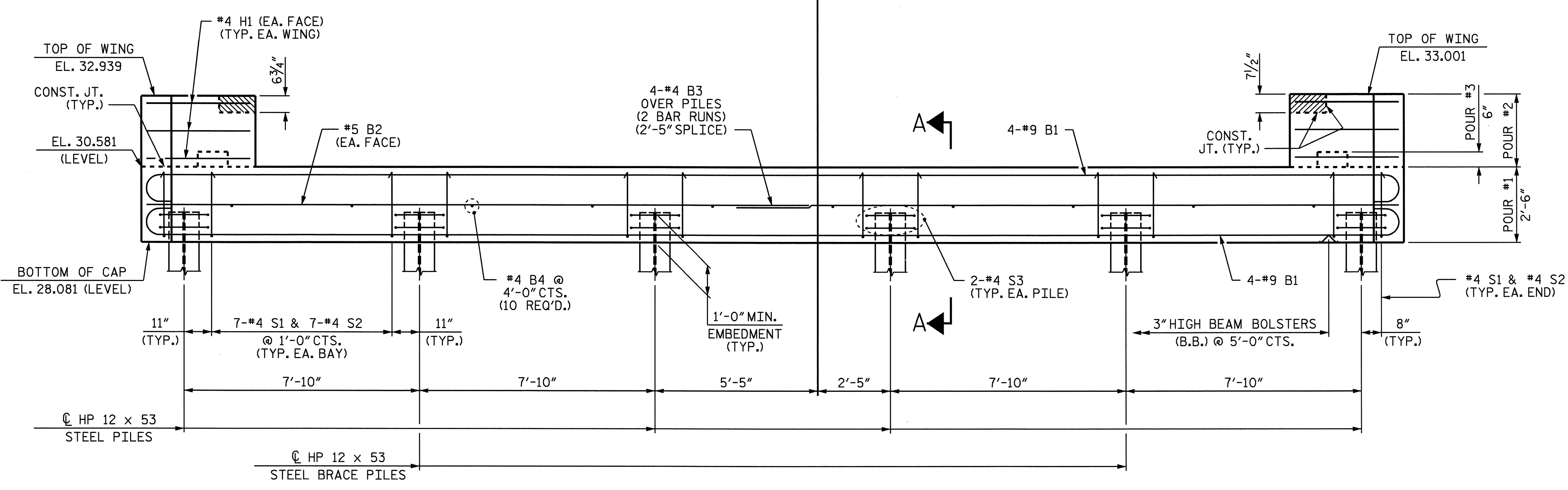
ASSEMBLED BY : L.E. SUTTON DATE : 5/22/08  
 CHECKED BY : A.S. CALLAWAY DATE : 5/27/08  
 DRAWN BY : TLA 5/06  
 CHECKED BY : GM 5/06

ADDED 5/1/06R KMM/GM

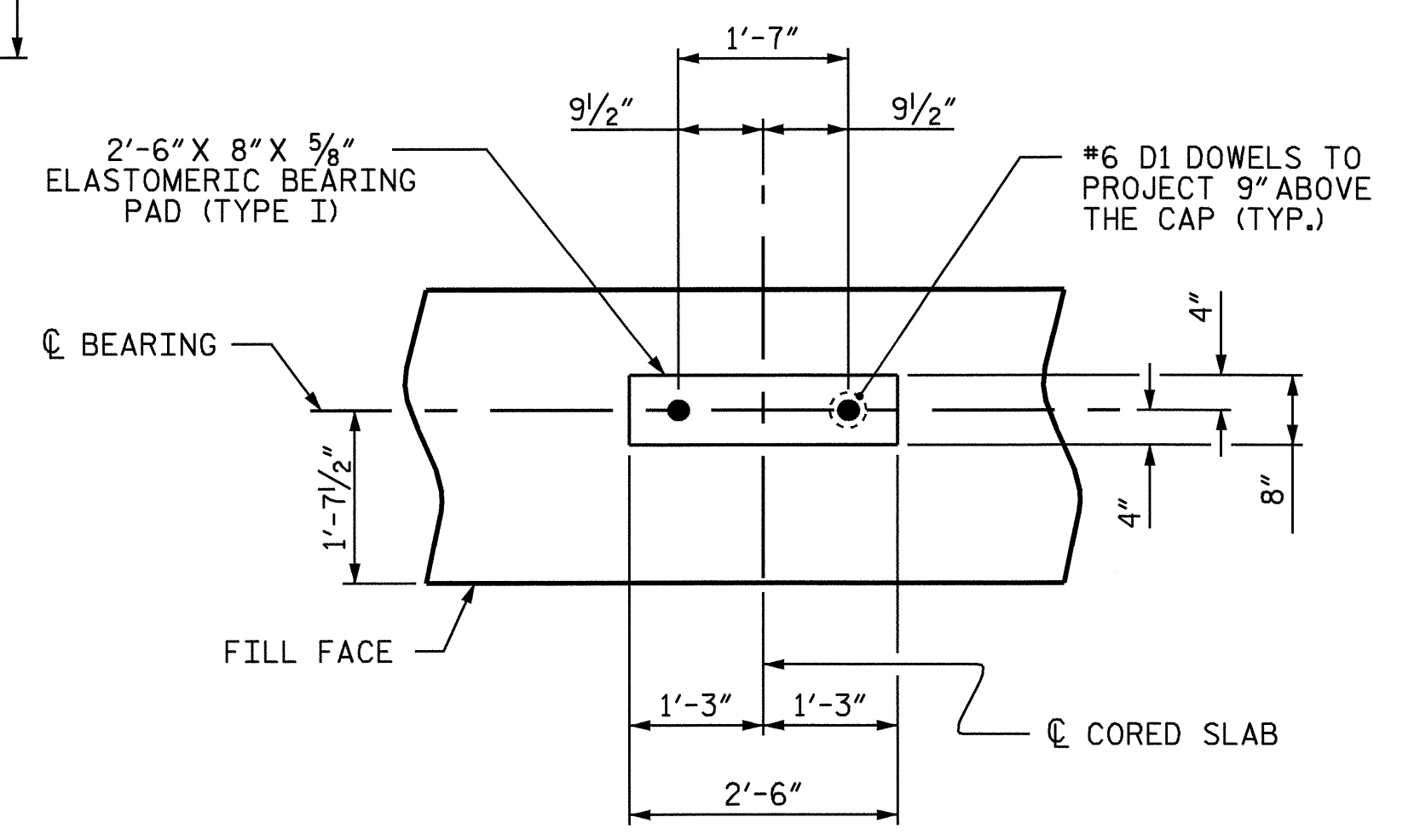
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			56



PLAN



ELEVATION



DETAIL "A"  
(TYP. EA. CORED SLAB UNIT)

**NOTES**

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

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

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

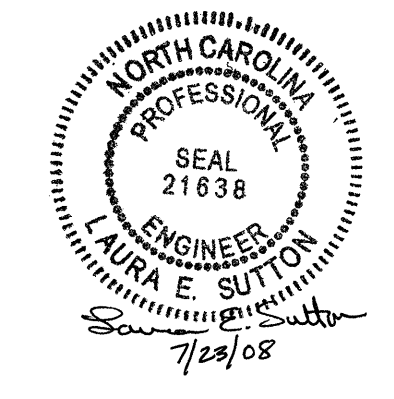
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR TEMPORARY DRAINAGE AT END BENT, SEE END BENT 2.

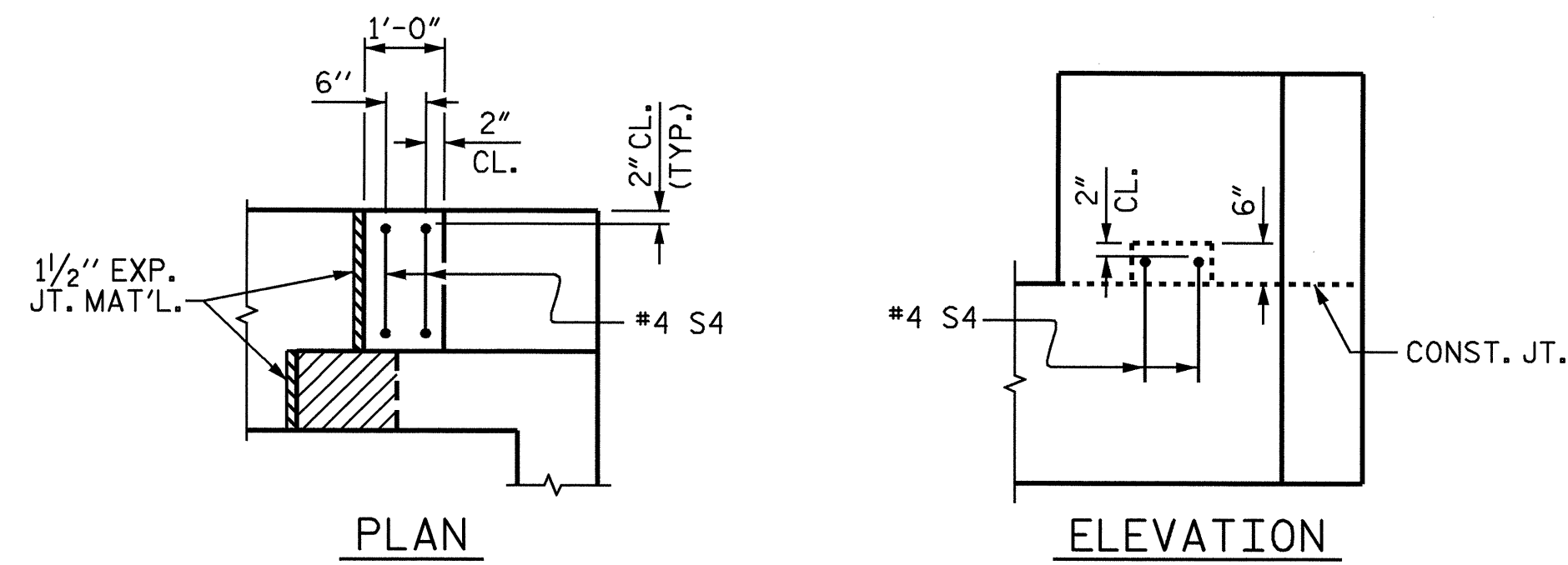
PROJECT NO. B-4082  
COLUMBUS COUNTY  
 STATION: 15+40.50 -L-

SHEET 1 OF 2

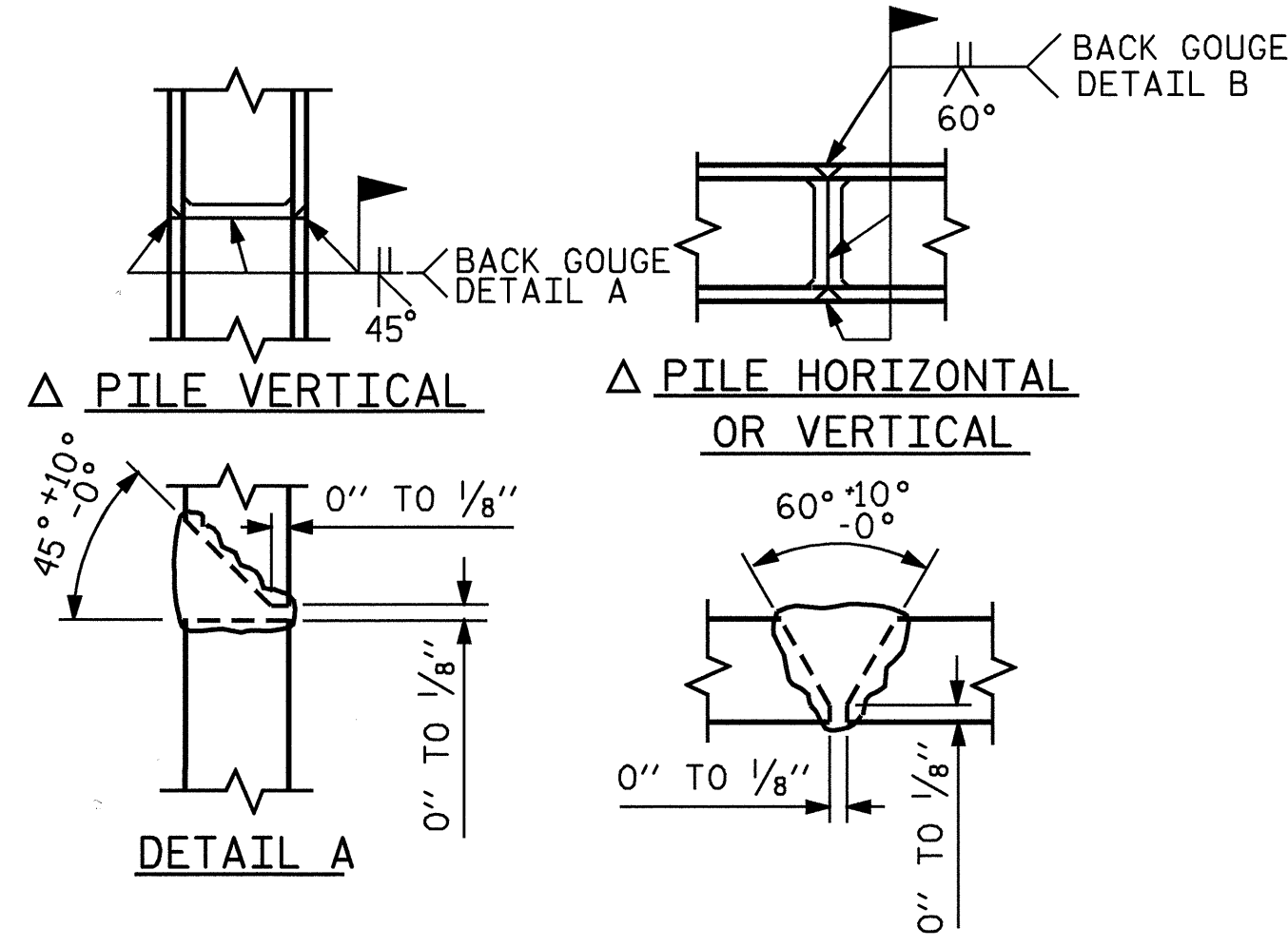
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 1					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					56



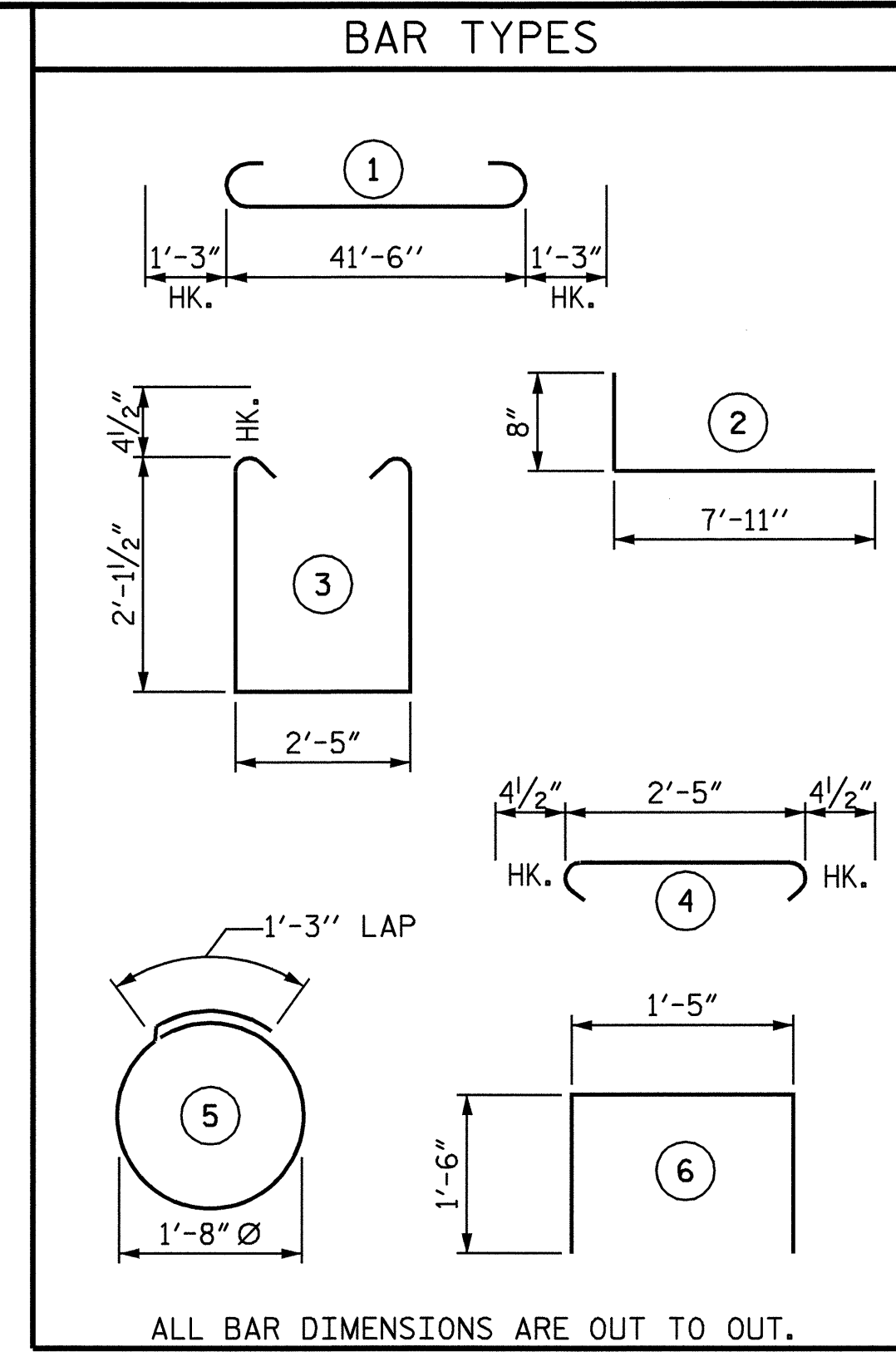
DRAWN BY: S. M. RASHIDI DATE: 11/9/07  
 CHECKED BY: W. F. PARKER DATE: 2/20/08



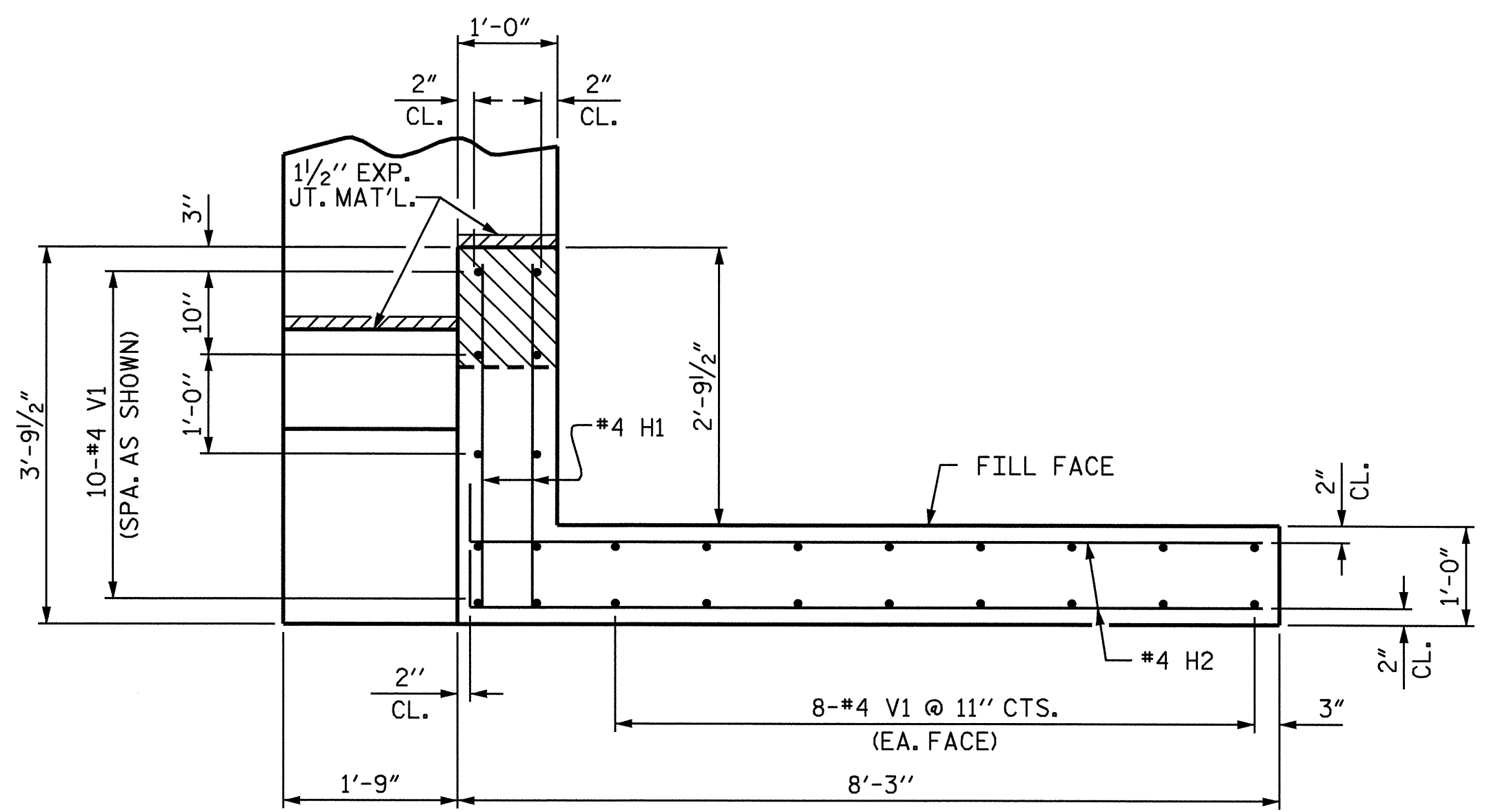
**LATERAL GUIDE DETAIL**  
(RT. SIDE SHOWN, LT. SIDE SIMILAR)



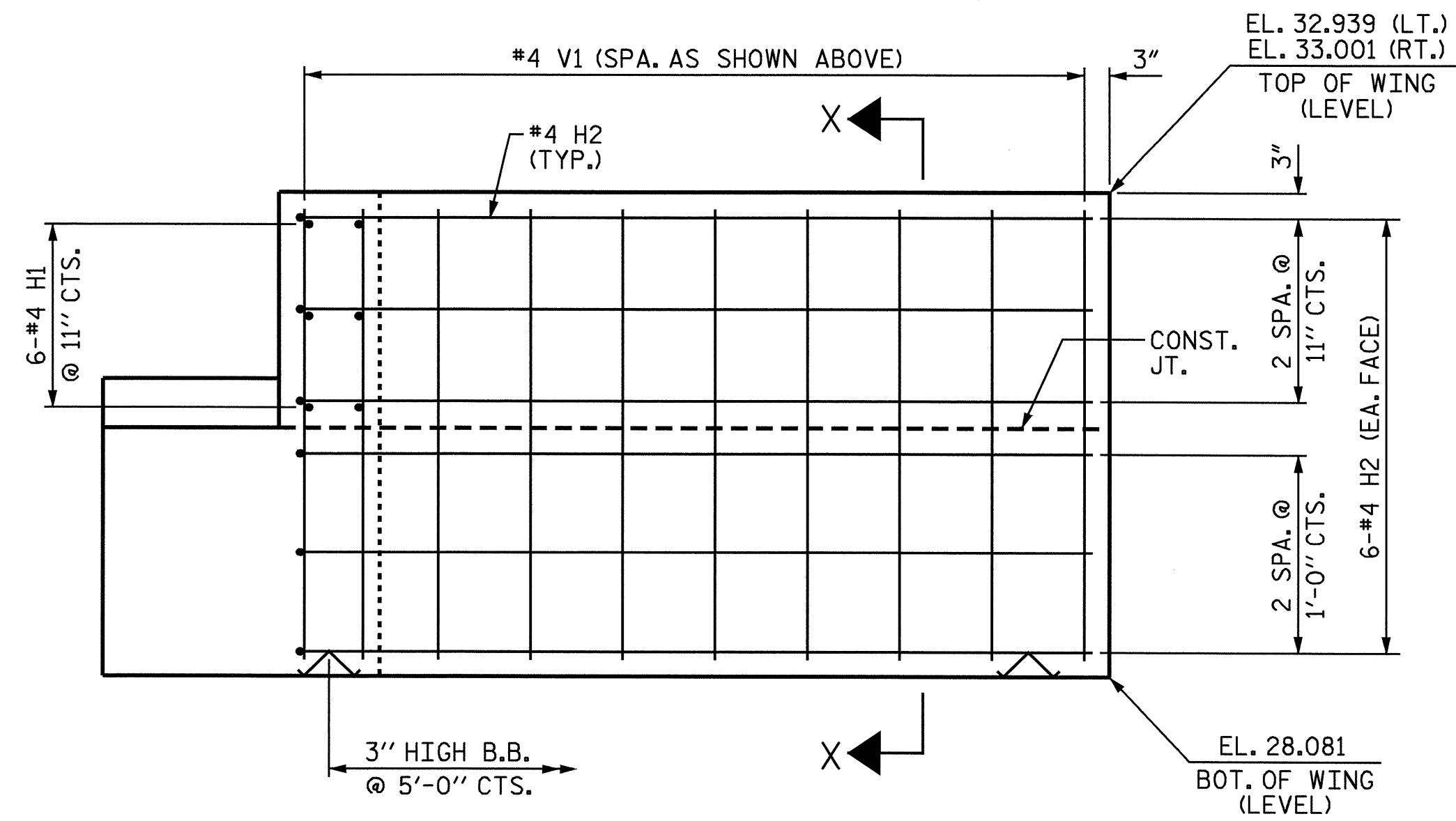
**PILE SPLICE DETAILS**  
△ POSITION OF PILE DURING WELDING.



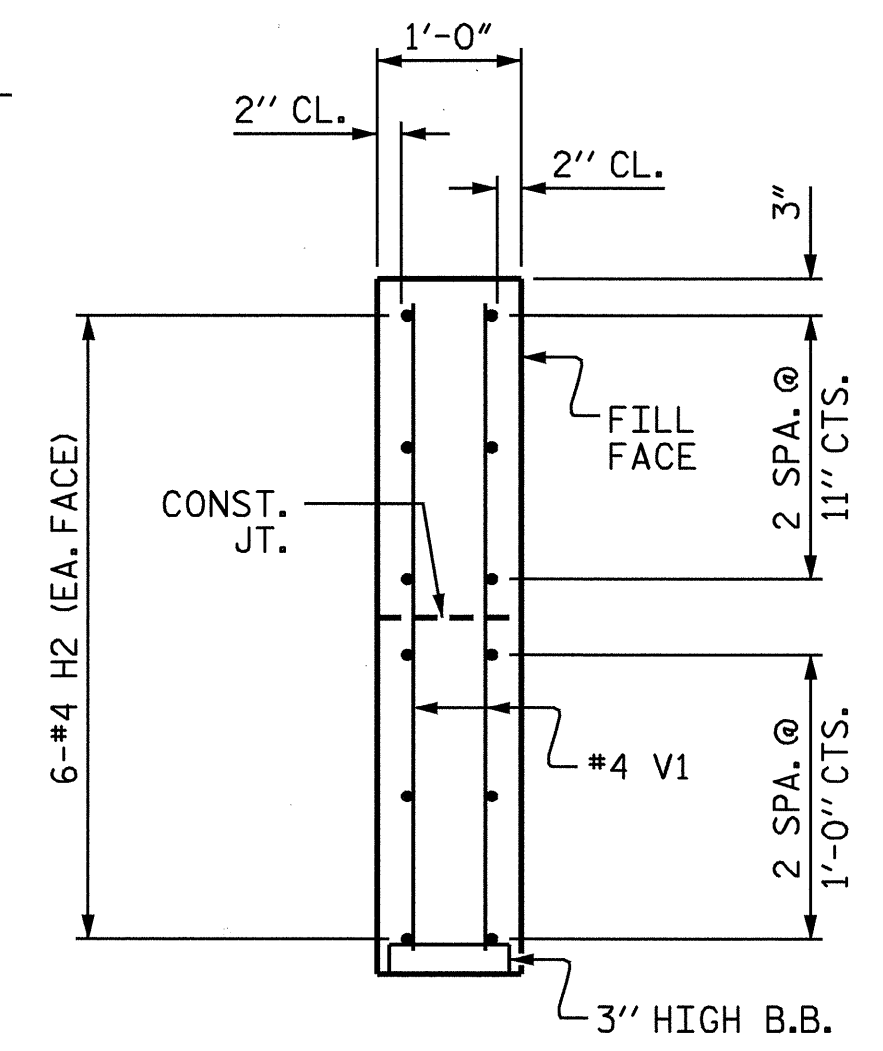
BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	44'-0"	1197
B2	2	#5	STR	41'-8"	87
B3	8	#4	STR	22'-1"	118
B4	10	#4	STR	2'-5"	16
D1	24	#6	STR	1'-6"	54
H1	12	#4	STR	3'-5"	27
H2	24	#4	2	8'-7"	138
S1	37	#4	3	7'-5"	183
S2	37	#4	4	3'-2"	78
S3	12	#4	5	6'-6"	52
S4	4	#4	6	4'-5"	12
V1	52	#4	STR	4'-6"	156
REINFORCING STEEL				LBS.	2,118
CLASS A CONCRETE BREAKDOWN :					
POUR #1 - CAP & LOWER WINGS				CU. YDS.	12.0
POUR #2 - UPPER WINGS				CU. YDS.	2.0
POUR #3 - LATERAL GUIDES				CU. YDS.	0.1
TOTAL				CU. YDS.	14.1
HP 12 x 53 STEEL PILES				LIN. FT.	300
NO. = 6					



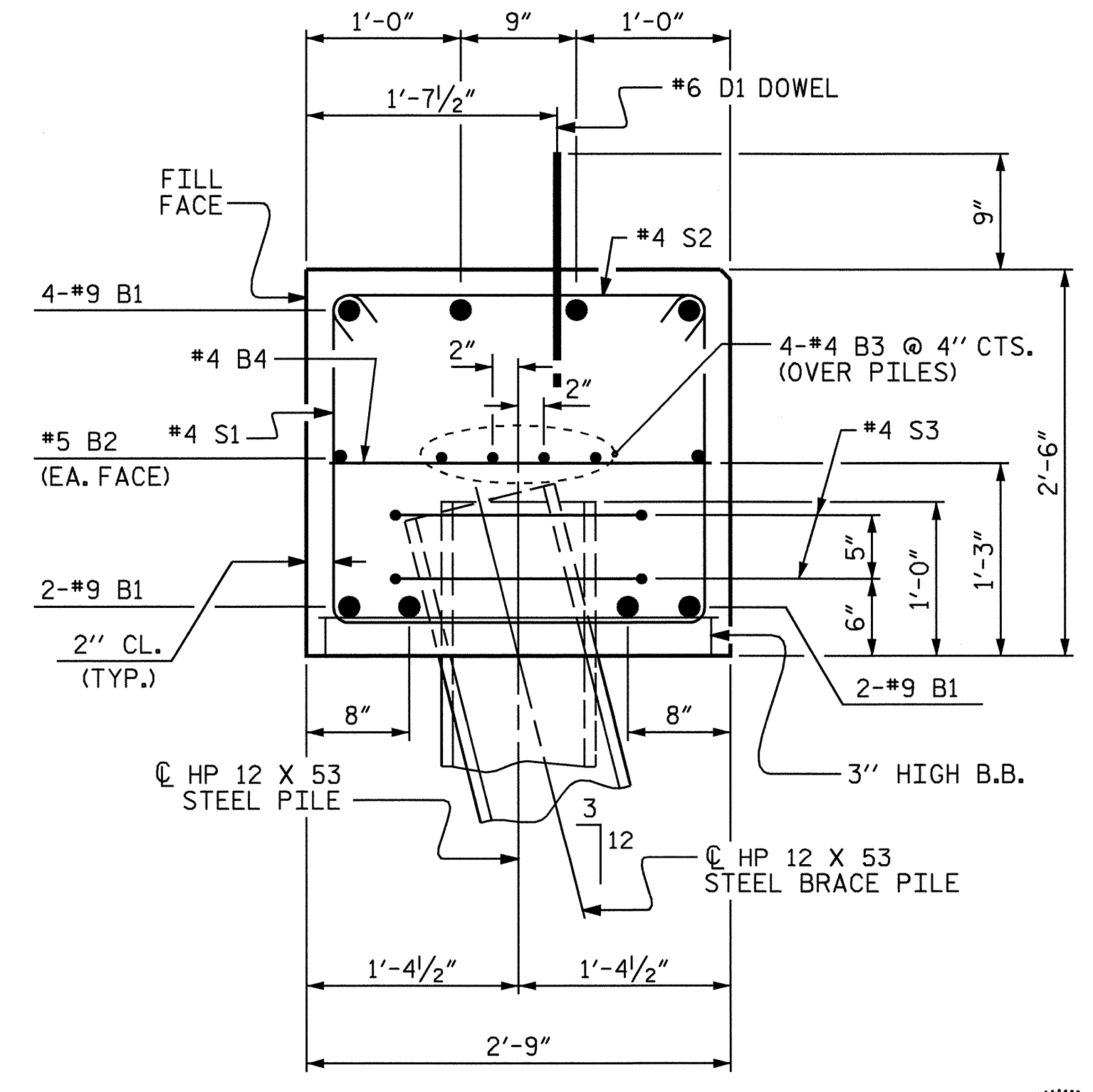
**PLAN OF WING**  
(LT. SIDE SHOWN, RT. SIDE SIMILAR)



**ELEVATION OF WING**



**SECTION X-X**



**SECTION A-A**

PROJECT NO. B-4082  
COLUMBUS COUNTY  
STATION: 15+40.50 -L-

SHEET 2 OF 2  
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUBSTRUCTURE  
END BENT 1



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS
2			4			56

DRAWN BY: S.M. RASHIDI DATE: 11/9/07  
CHECKED BY: W.F. PARKER DATE: 2/20/08

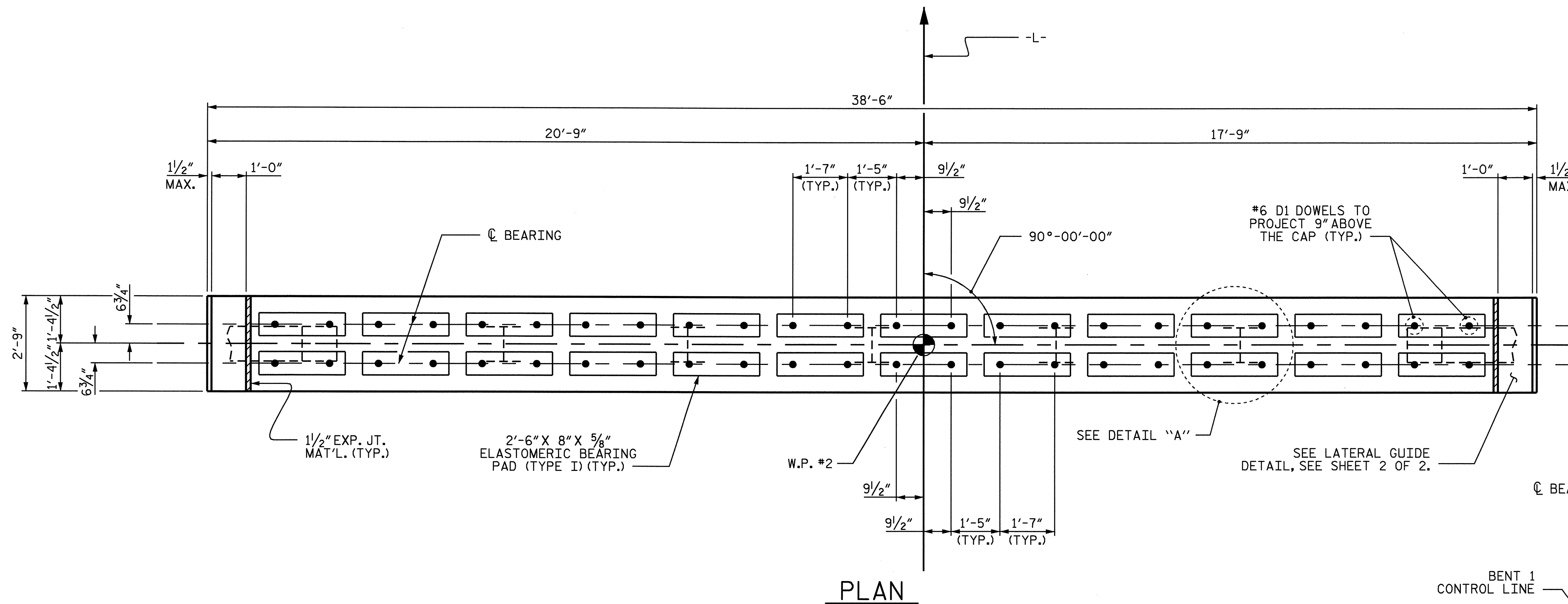


**NOTES**

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

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

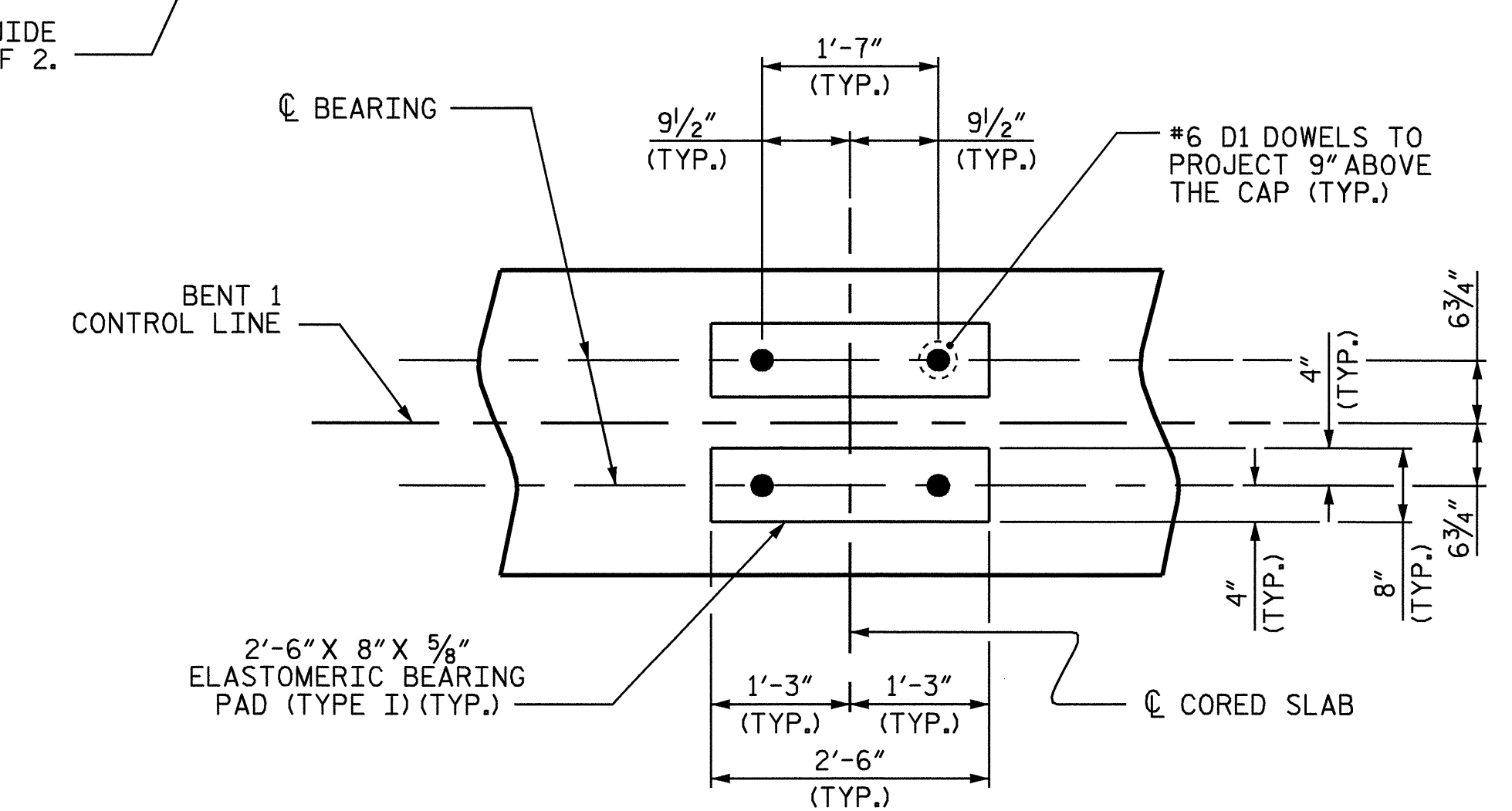
THE STEEL PILES SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



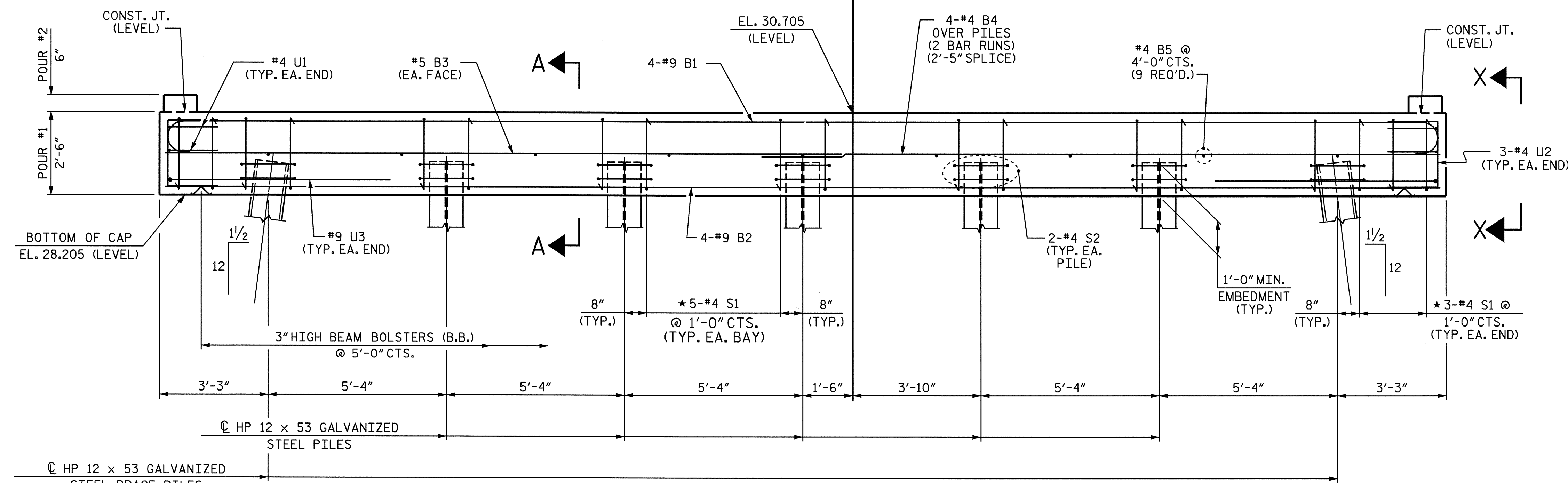
SPAN "B"

SPAN "A"

PLAN



DETAIL "A"  
(TYP. EA. CORED SLAB UNIT)



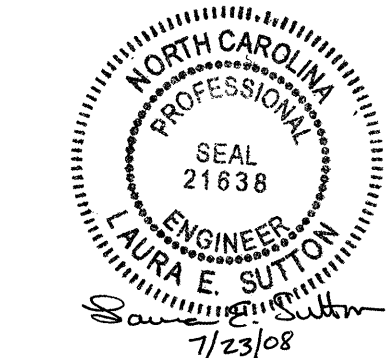
ELEVATION

\* INVERT ALTERNATE STIRRUPS AS SHOWN.

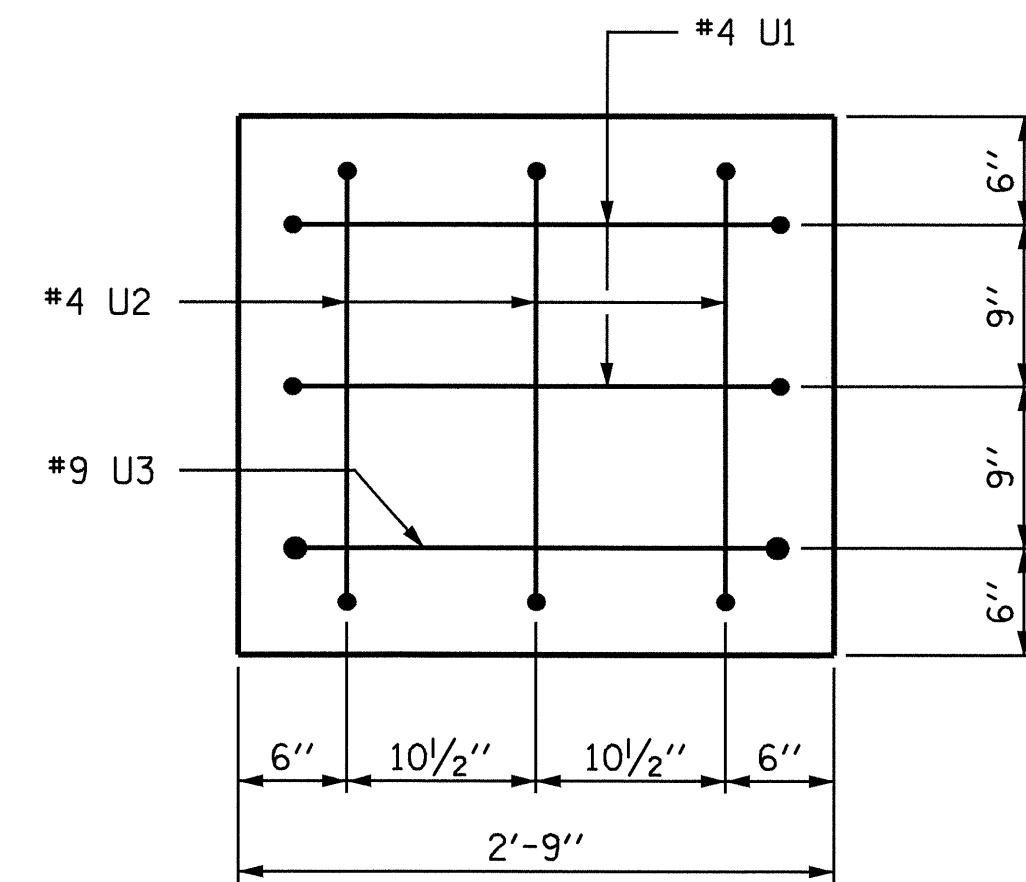
PROJECT NO. B-4082  
COLUMBUS COUNTY  
 STATION: 15+40.50 -L-

SHEET 1 OF 2

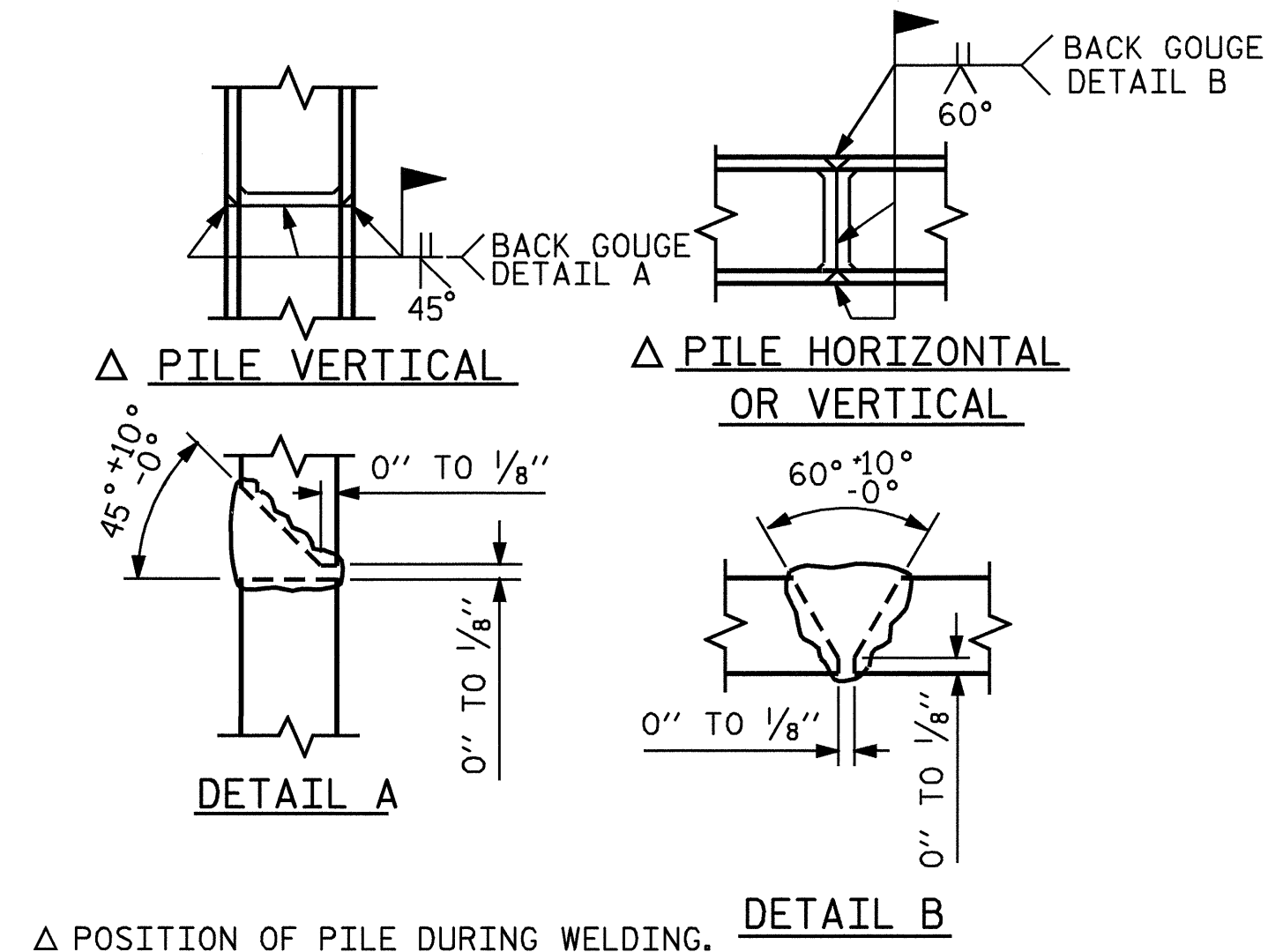
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-31
					TOTAL SHEETS 56



DRAWN BY: L.E. SUTTON DATE: 5/01/08  
 CHECKED BY: S.M. RASHIDI DATE: 5/13/08

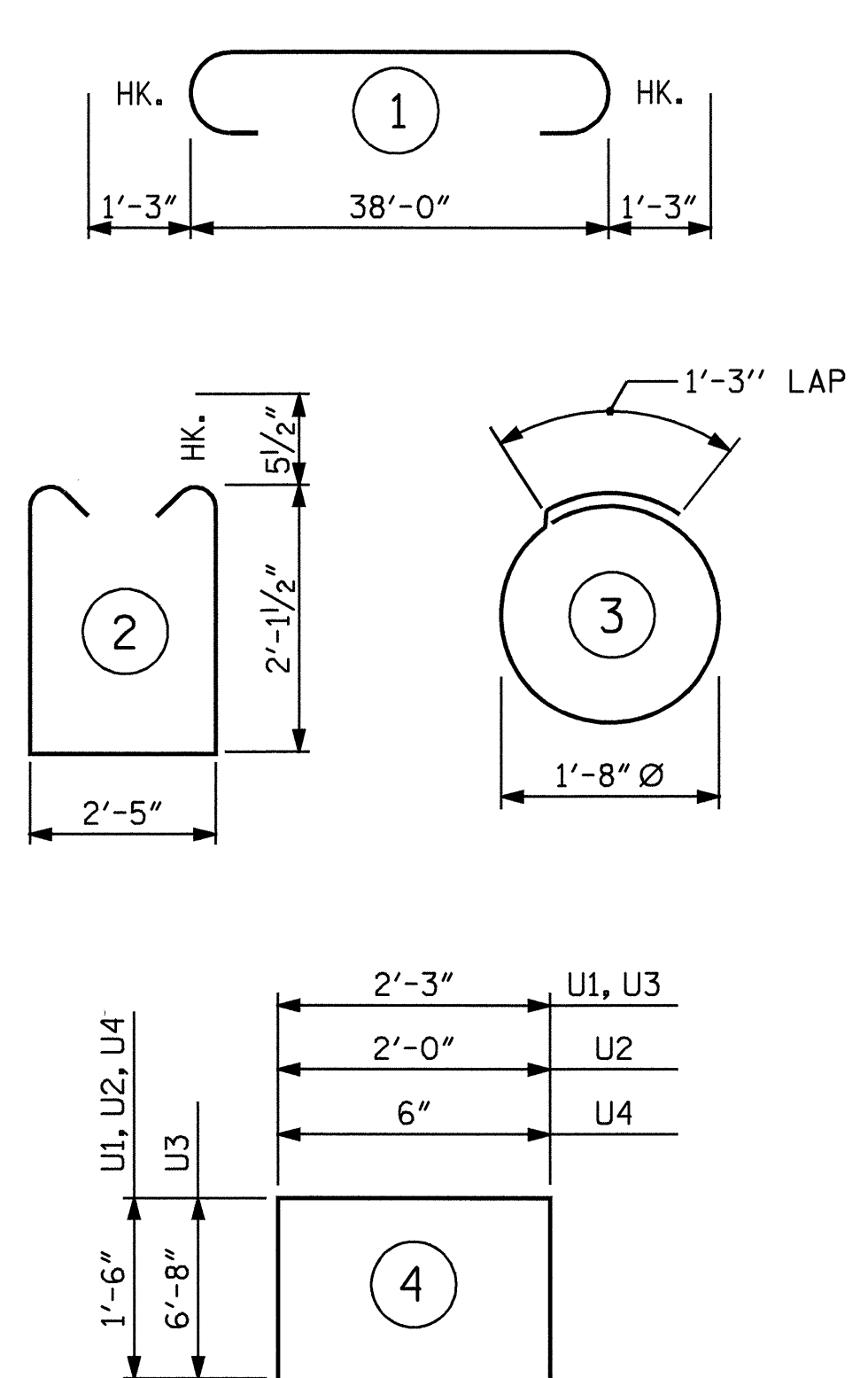


**VIEW X-X**  
(TYP. BOTH ENDS)

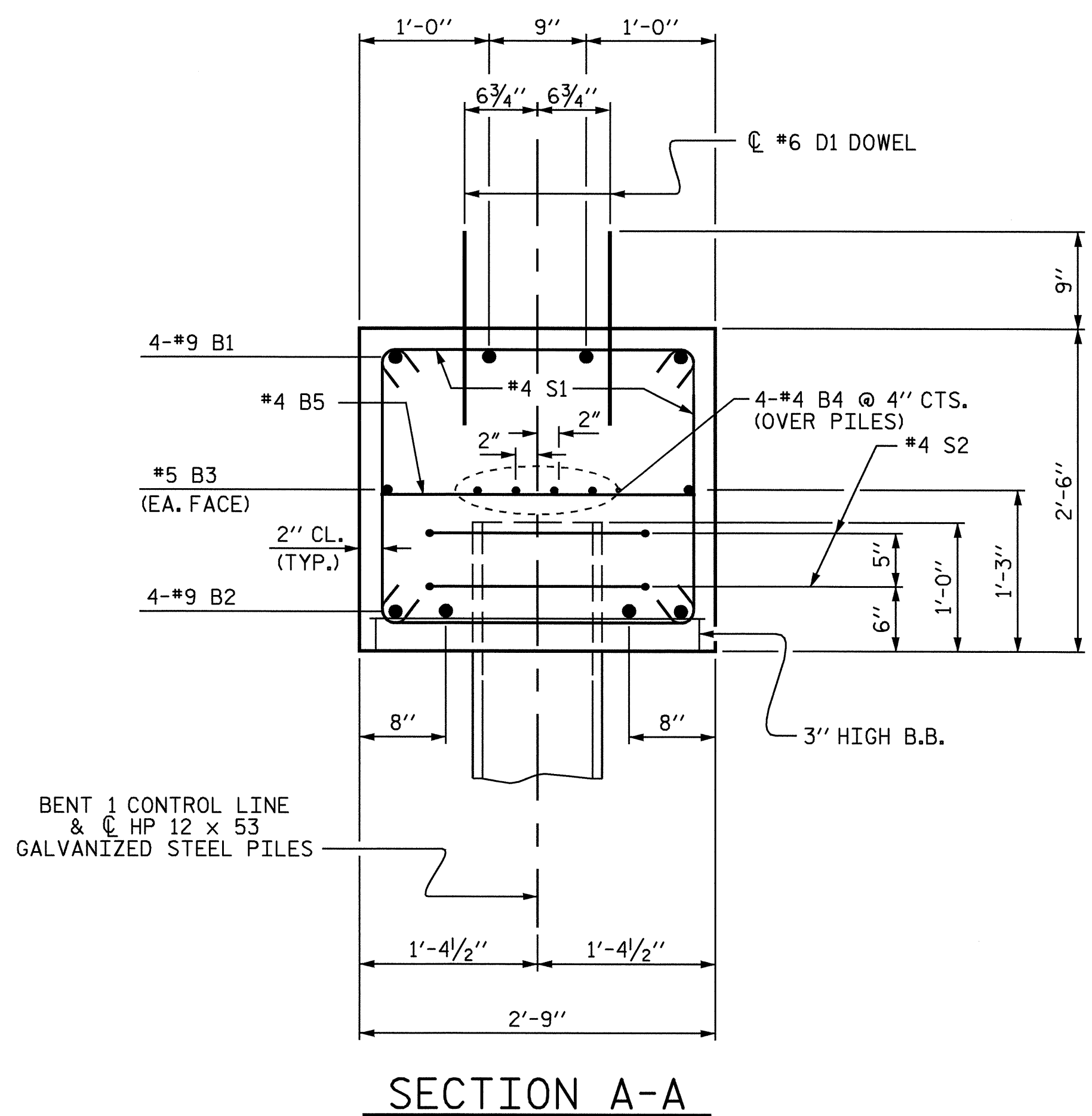


**PILE SPLICE DETAILS**  
△ POSITION OF PILE DURING WELDING.

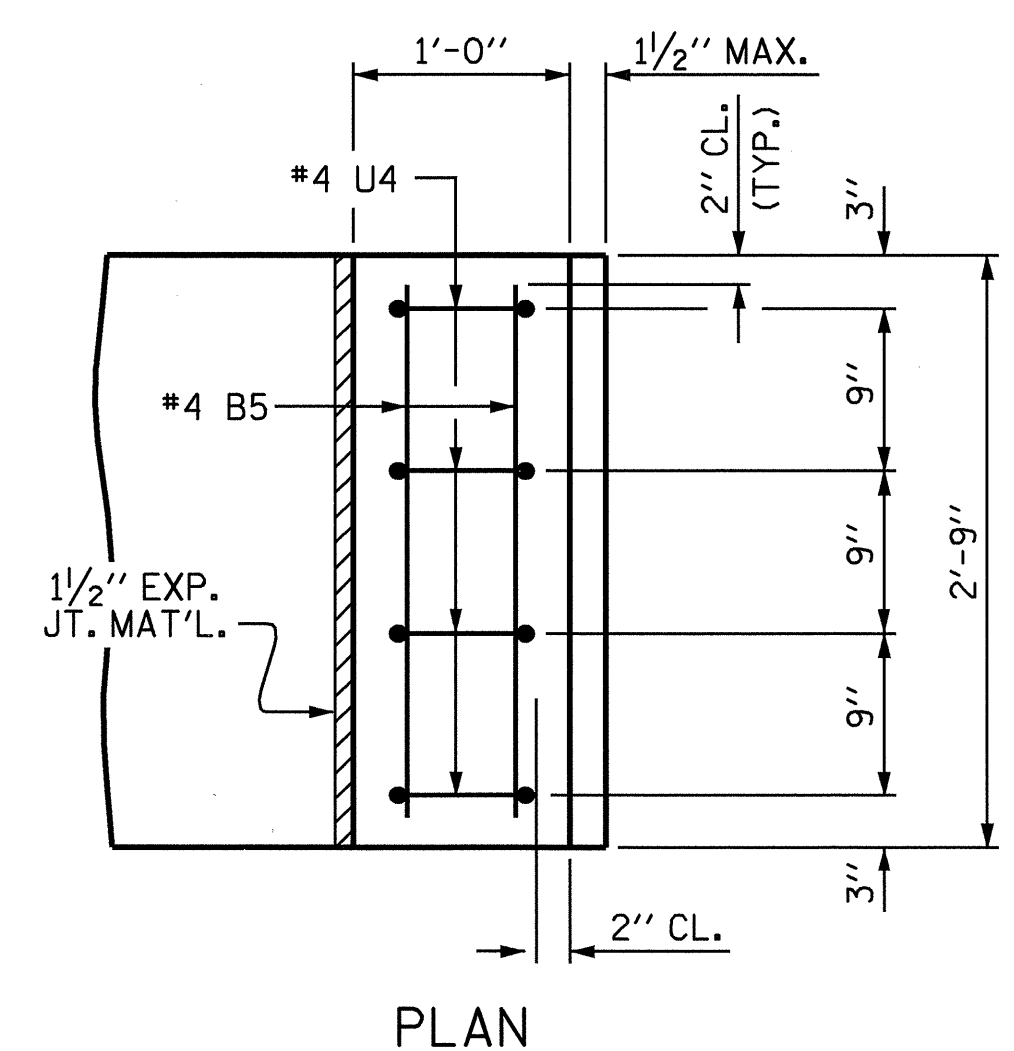
BAR TYPES				BILL OF MATERIAL			
BENT 1							
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT		
B1	4	#9	1	40'-6"	551		
B2	4	#9	STR	38'-2"	519		
B3	2	#5	STR	38'-2"	80		
B4	8	#4	STR	20'-4"	109		
B5	13	#4	STR	2'-5"	21		
D1	48	#6	STR	1'-6"	108		
S1	36	#4	2	7'-5"	178		
S2	14	#4	3	6'-6"	61		
U1	4	#4	4	5'-3"	14		
U2	6	#4	4	5'-0"	20		
U3	2	#9	4	15'-7"	106		
U4	8	#4	4	3'-6"	19		
REINFORCING STEEL				LBS.	1,786		
CLASS A CONCRETE BREAKDOWN :							
POUR #1 - CAP				CU. YDS.	9.8		
POUR #2 - LATERAL GUIDES				CU. YDS.	0.1		
TOTAL				CU. YDS.	9.9		
HP 12 x 53 GALVANIZED STEEL PILES							
NO. = 7				LIN. FT.	280		



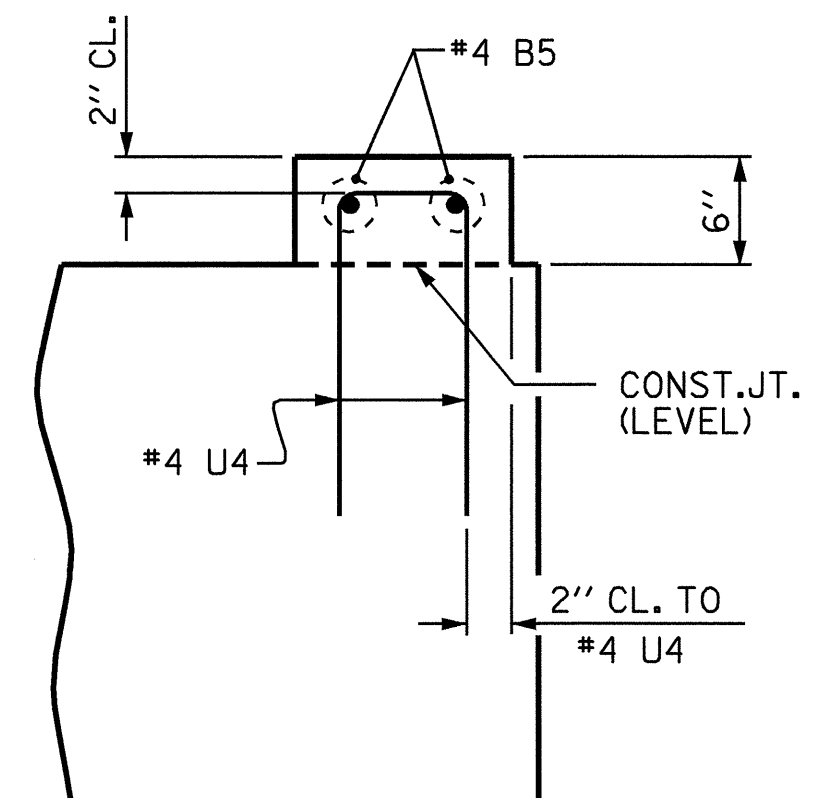
ALL BAR DIMENSIONS ARE OUT TO OUT.



**SECTION A-A**



**PLAN**



**ELEVATION**

**LATERAL GUIDE DETAIL**  
(RT. SIDE SHOWN, LT. SIDE SIMILAR)

PROJECT NO. B-4082  
COLUMBUS COUNTY  
STATION: 15+40.50 -L-

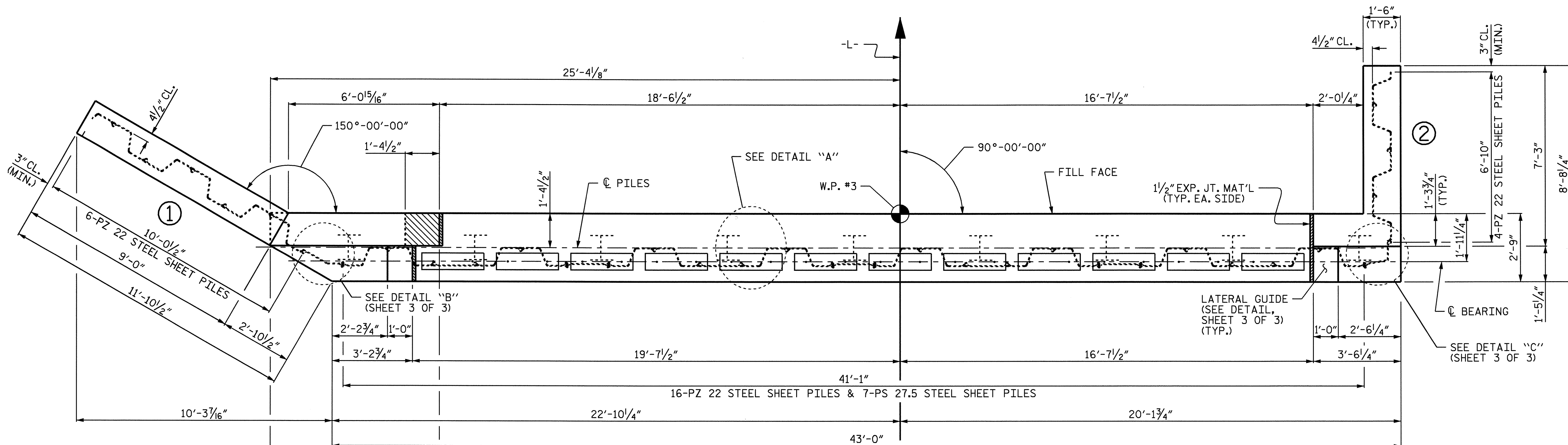
SHEET 2 OF 2

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-32
TOTAL SHEETS					56

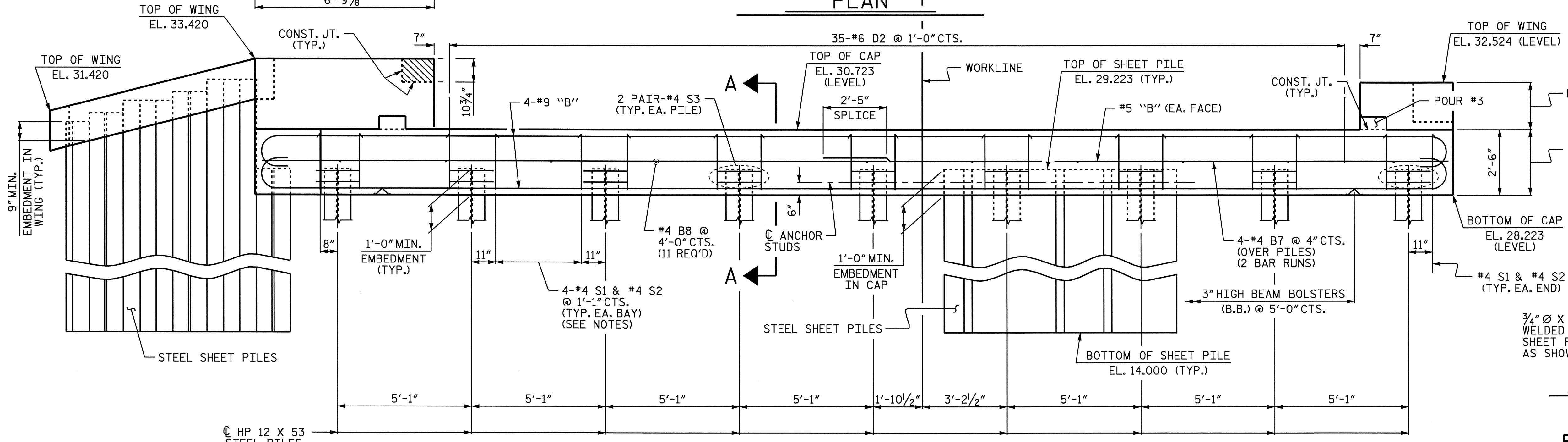


DRAWN BY : L.E. SUTTON DATE : 5/01/08  
CHECKED BY : S.M. RASHIDI DATE : 5/13/08

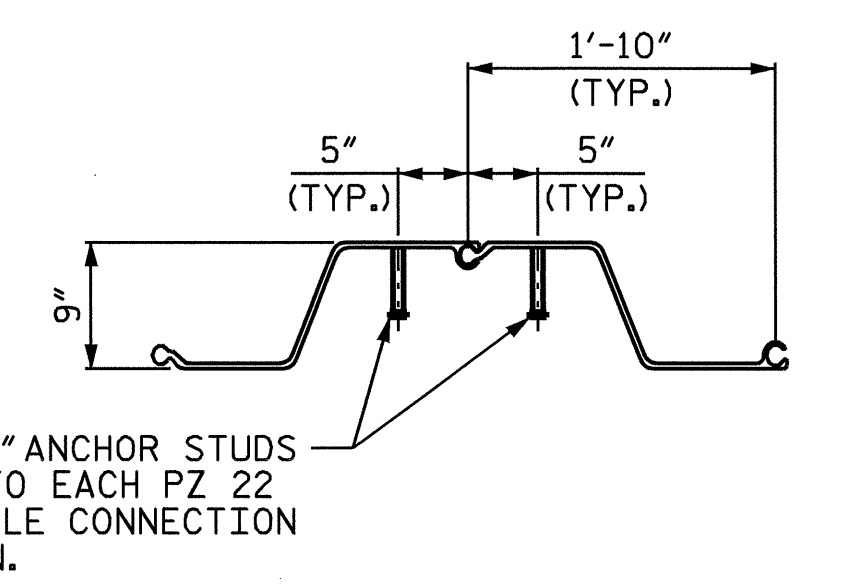
STR. #1



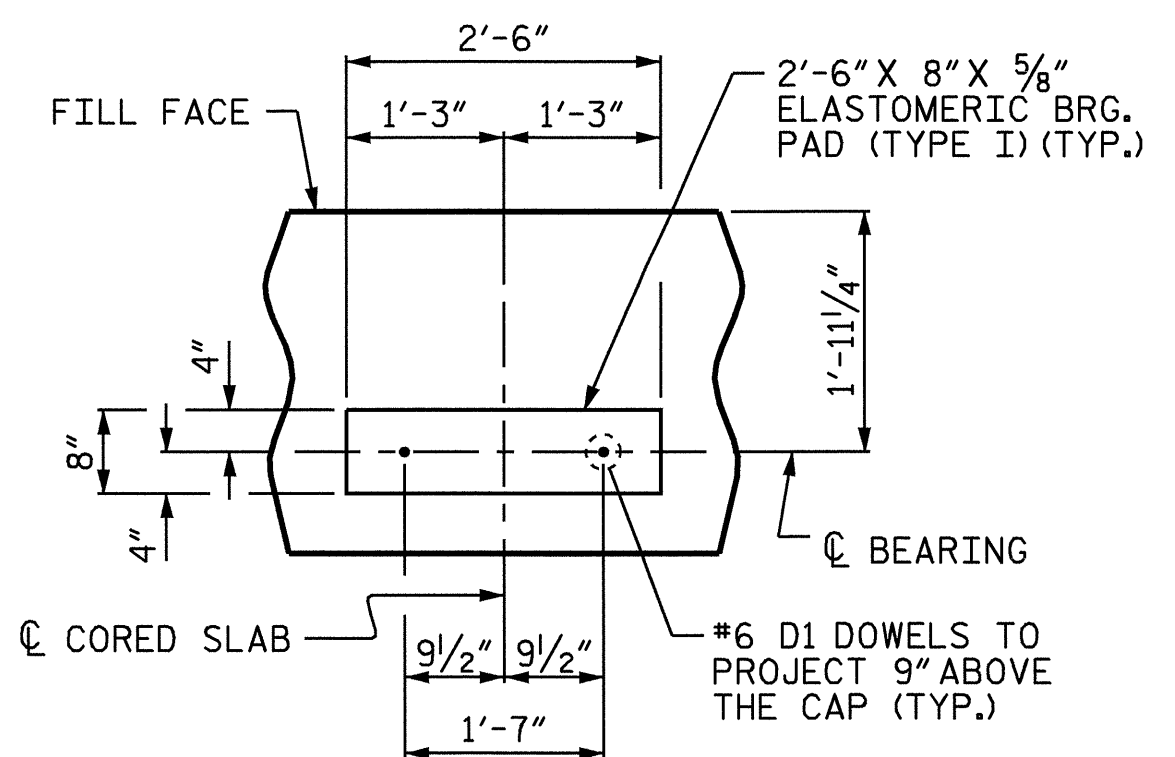
PLAN



ELEVATION



ANCHOR STUD DETAIL



DETAIL "A"

(TYP. EACH CORED SLAB UNIT)

NOTES:

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
- THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.
- THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
- FOR PILE SPLICE DETAILS, SEE END BENT 1.
- BURN A HOLE IN THE SHEET PILES TO ALLOW FOR PLACEMENT OF THE STIRRUPS IN THE CAP.

- THE #4 S3 BARS AROUND PILES MAY BE SHIFTED AS NECESSARY TO AVOID SHEET PILES.
- FOR STEEL SHEET PILES, SEE SPECIAL PROVISIONS.
- THE #6 D2 DOWELS MAY BE INSTALLED USING AN ADHESIVE ANCHORING SYSTEM. LEVEL ONE FIELD TESTING IS REQUIRED AND THE YIELD LOAD FOR THE #6 D2 DOWELS IS 26.4 KIPS. INSTALL ONE STRAIGHT DOWEL FOR TESTING. SEE SPECIAL PROVISIONS FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS.

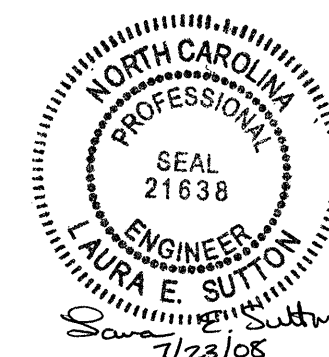
DRAWN BY : P.C. BREWER DATE : 2/26/08  
 CHECKED BY : W.F. PARKER DATE : 3/01/08

23-JUL-2008 10:56  
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PROJECT NO. B-4082  
 COLUMBUS COUNTY  
 STATION: 15+40.50 -L-

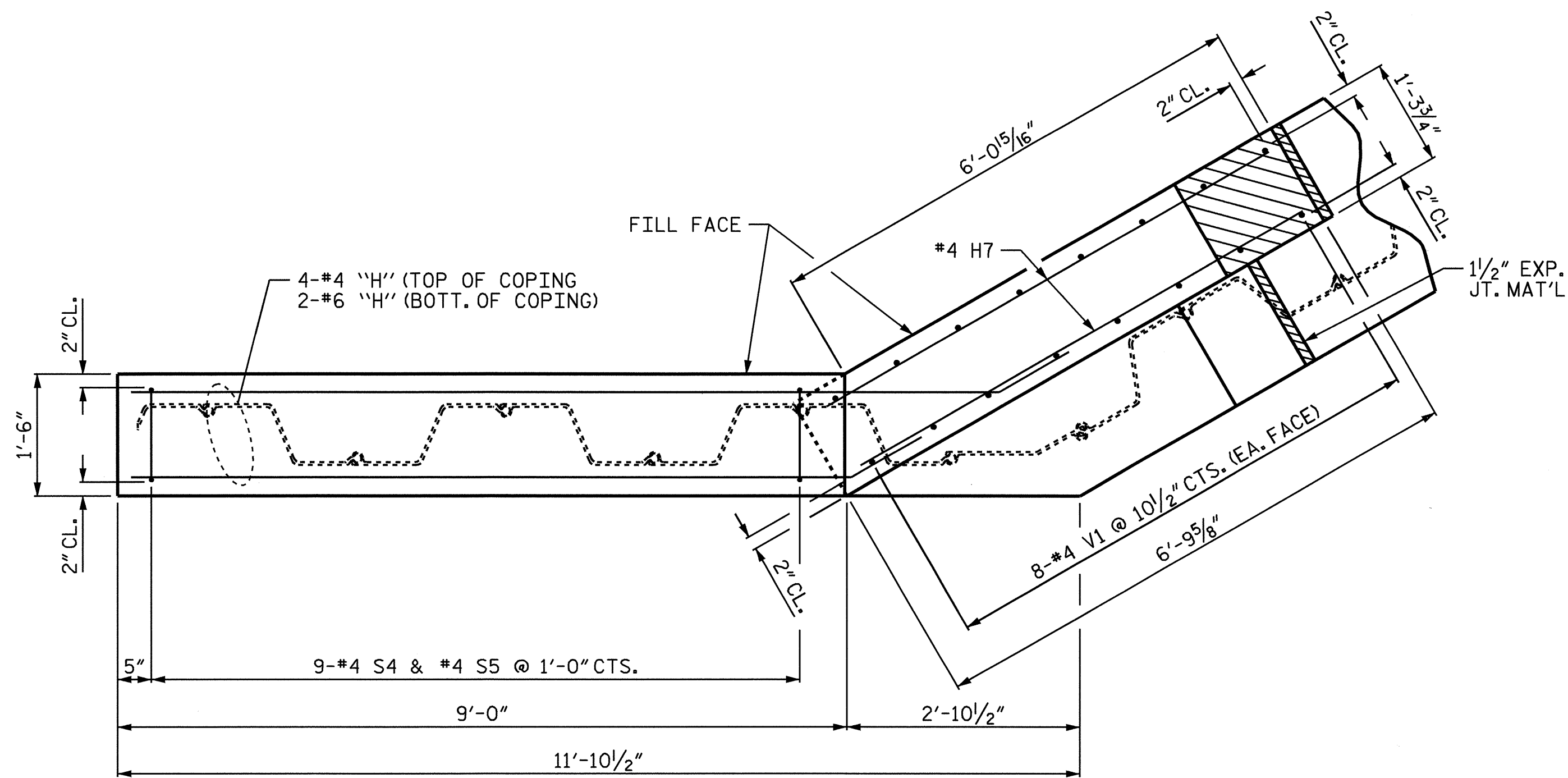
SHEET 1 OF 3

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-33
					TOTAL SHEETS 56

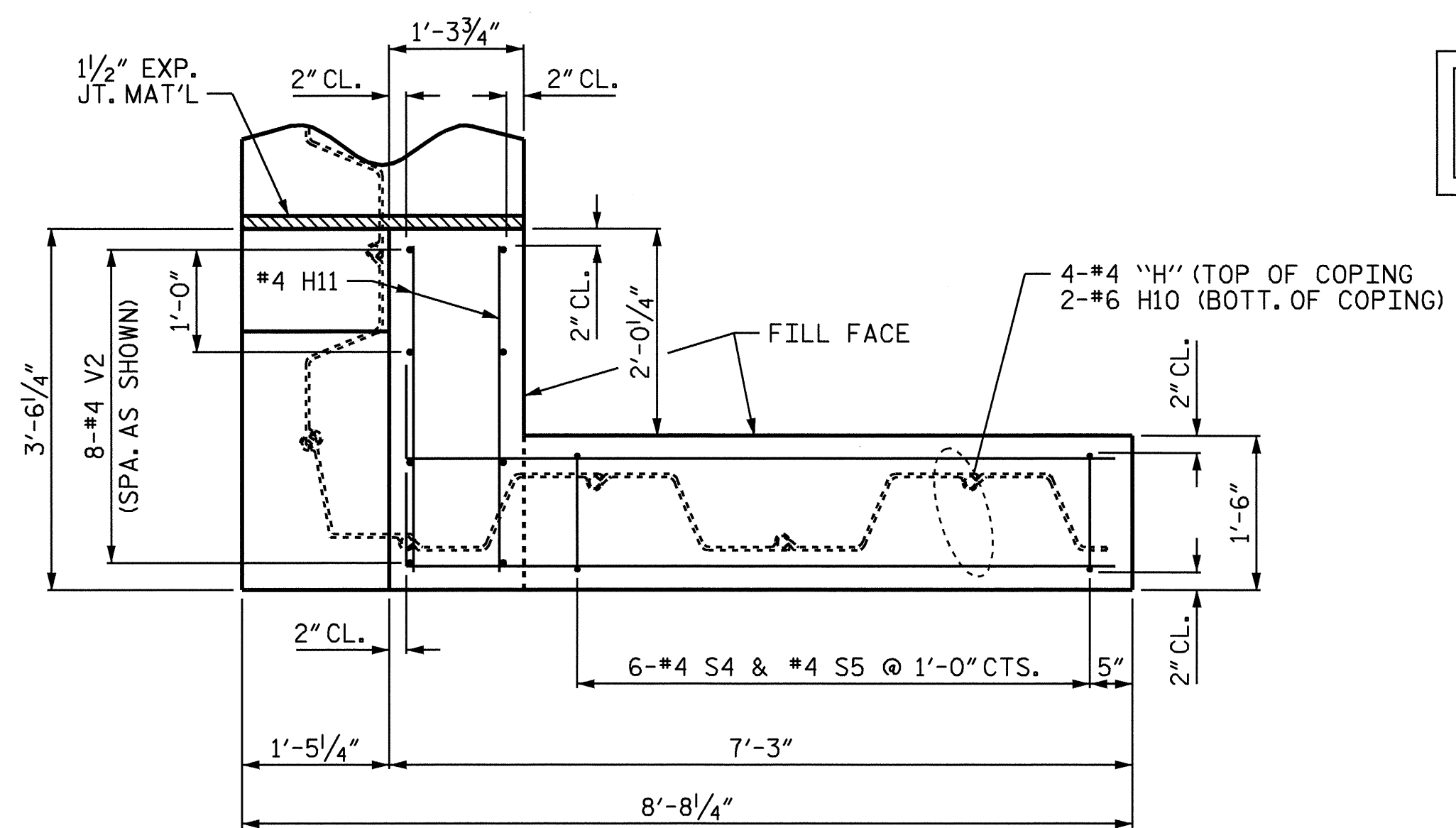


STR. #1



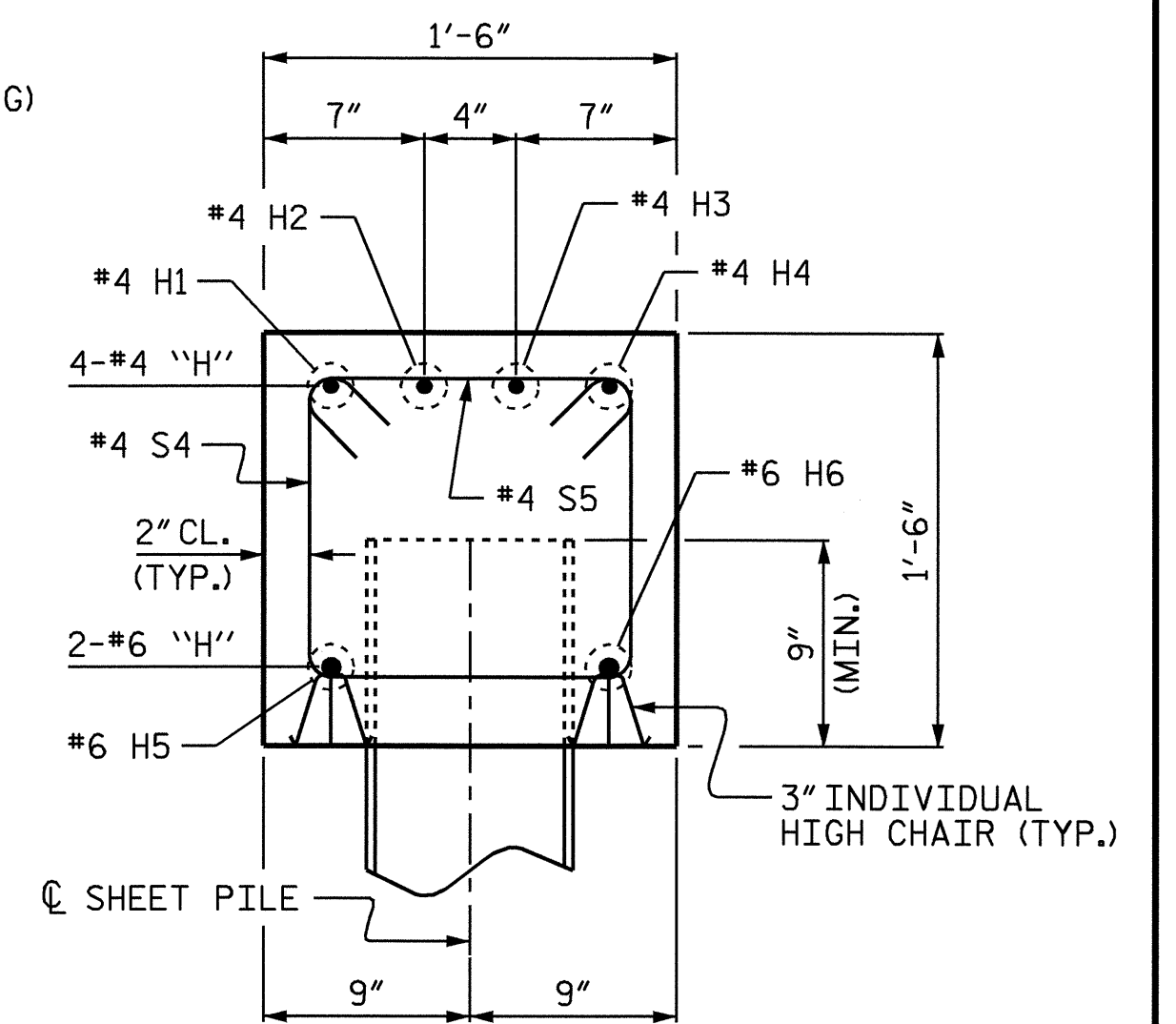


PLAN OF WING (W1)

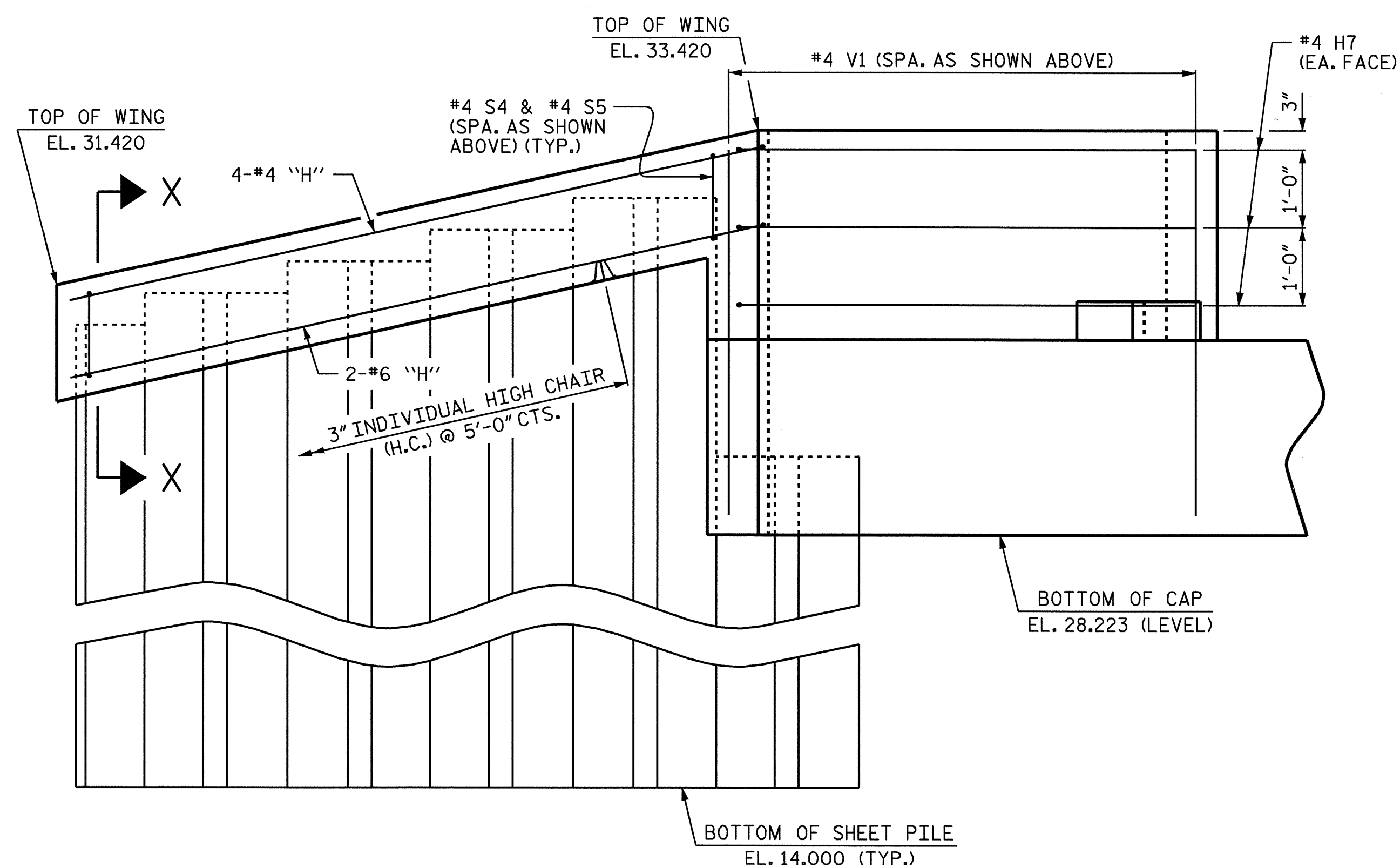


PLAN OF WING (W2)

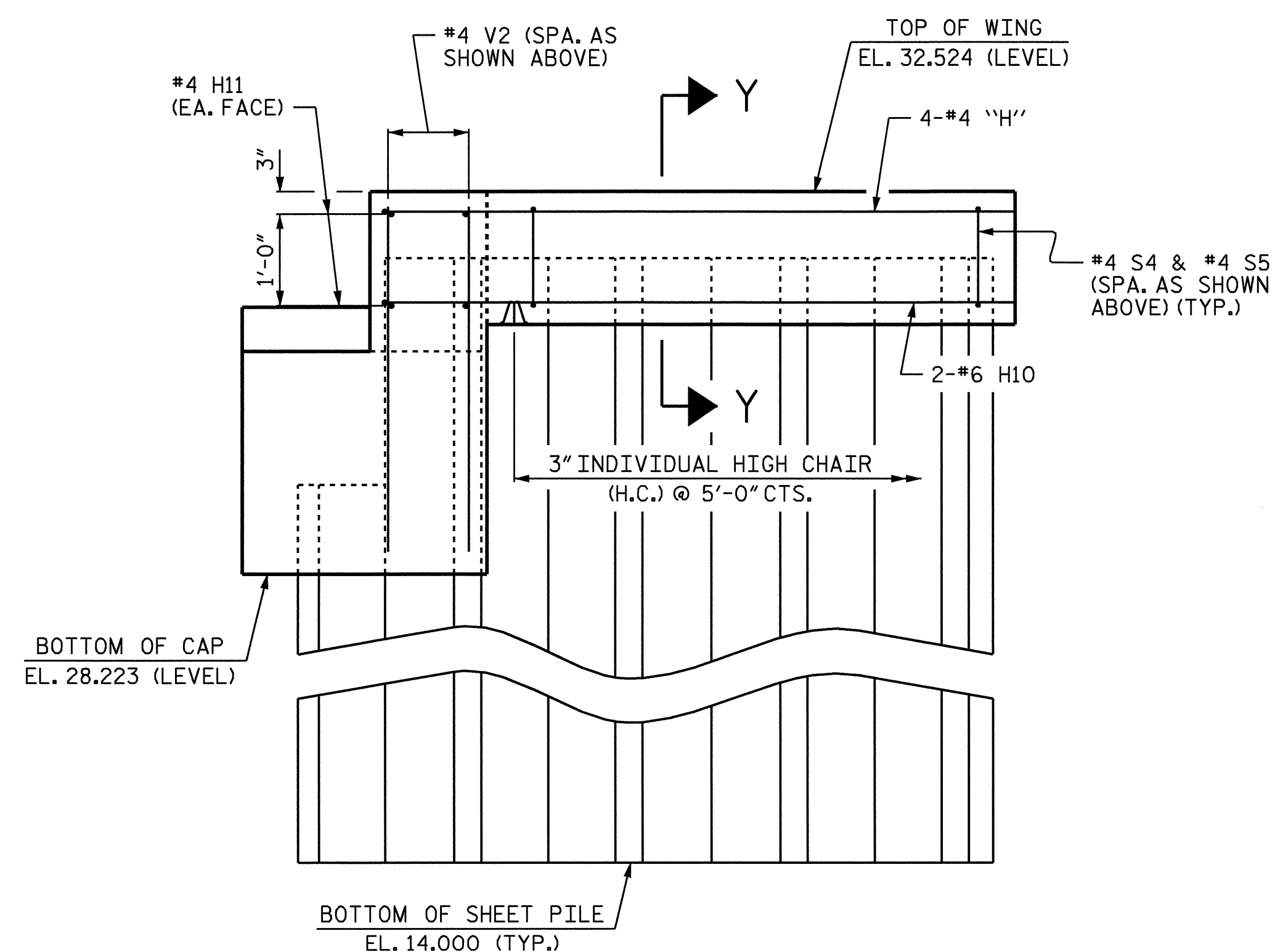
BURN A HOLE IN THE SHEET PILES TO ALLOW FOR PLACEMENT OF THE #4 'S' BARS IN THE WINGS.



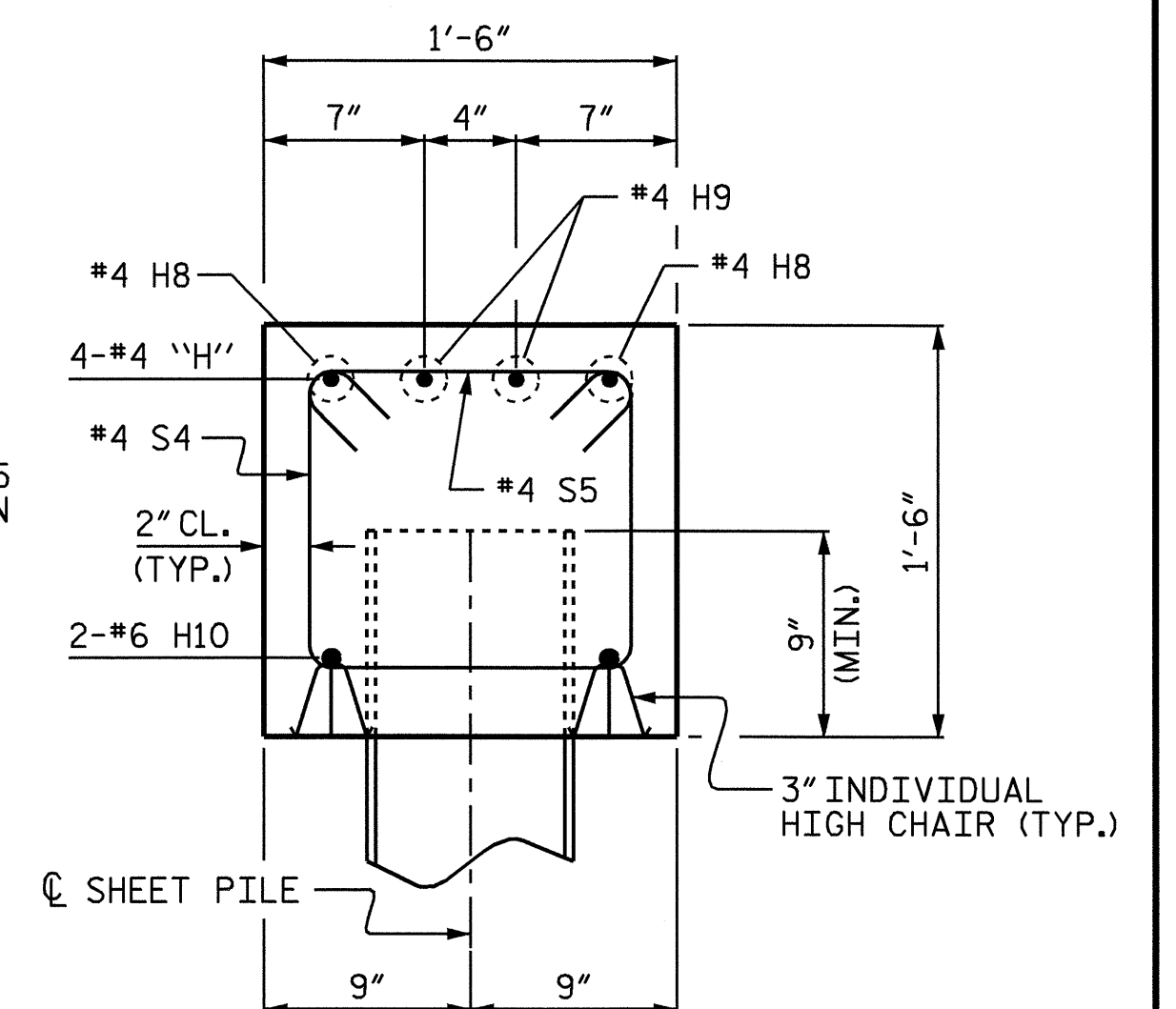
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



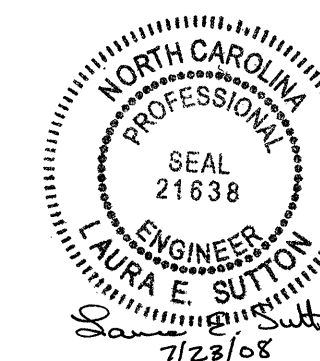
SECTION Y-Y

PROJECT NO. B-4082  
COLUMBUS COUNTY  
STATION: 15+40.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
END BENT 2

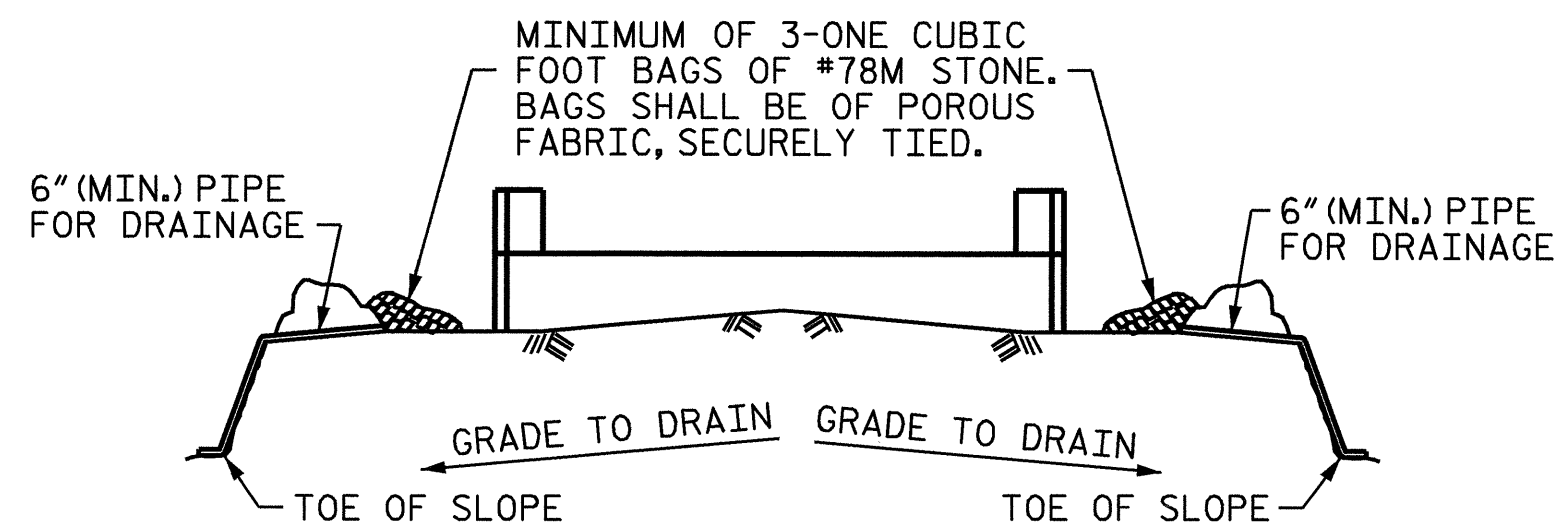


REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-34	
1			3			TOTAL SHEETS	
2			4			56	

DRAWN BY: P.C. BREWER DATE: 2/26/08  
CHECKED BY: W.F. PARKER DATE: 3/01/08

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lsutton

STR. #1

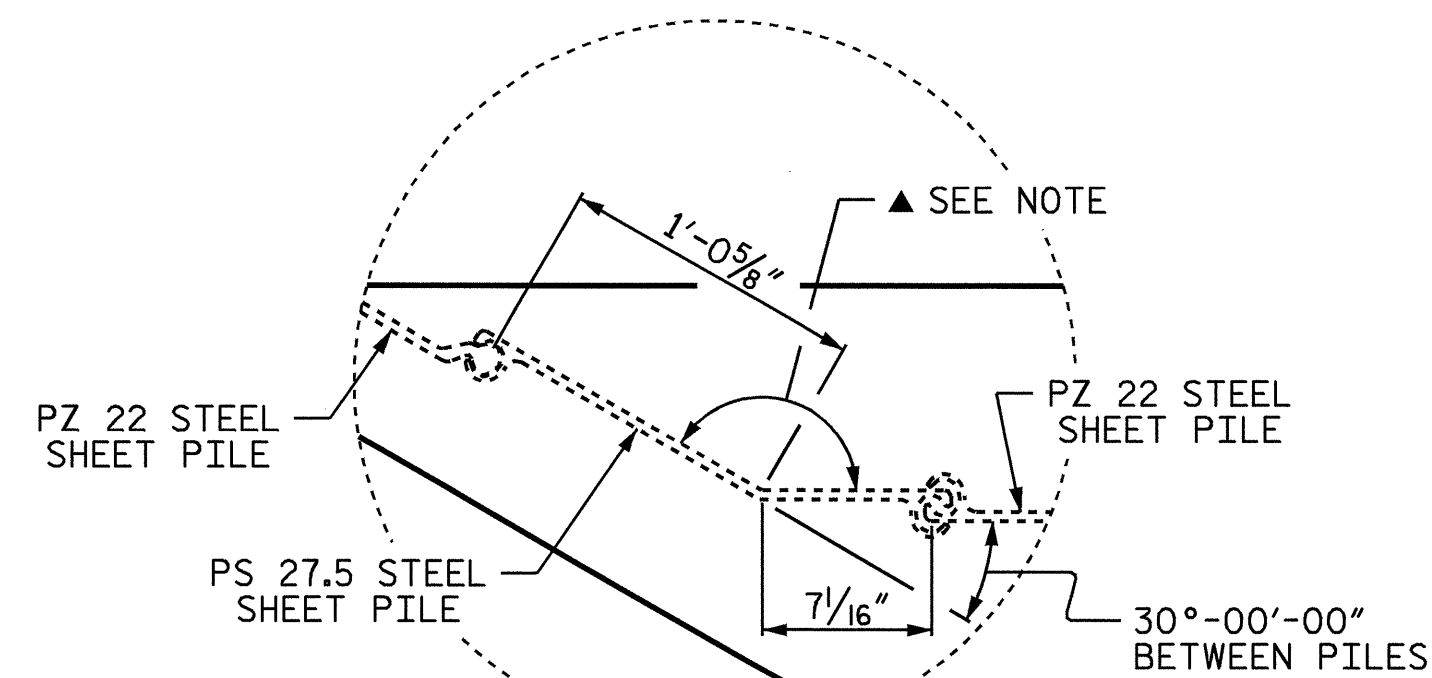


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

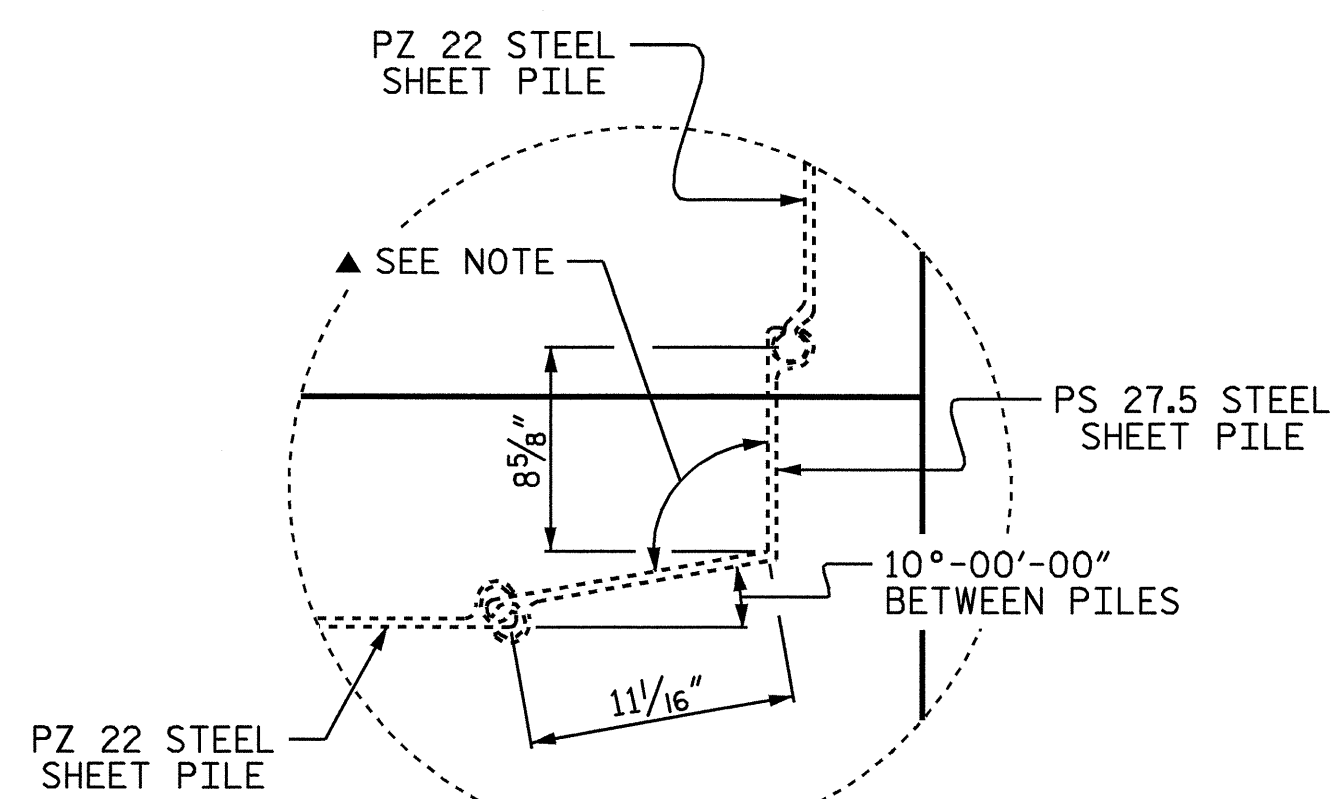
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

### TEMPORARY DRAINAGE AT END BENT

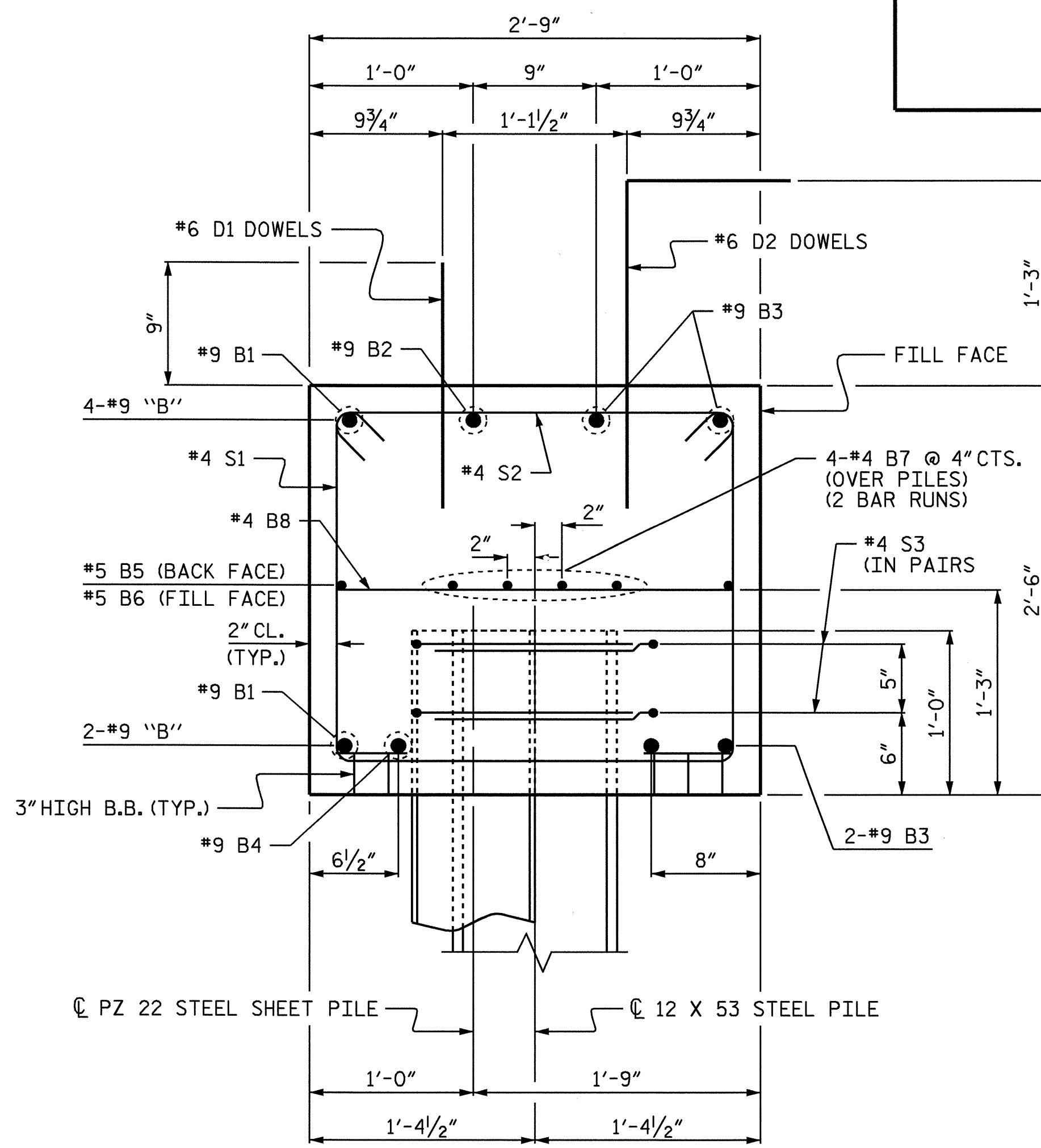


DETAIL "B"

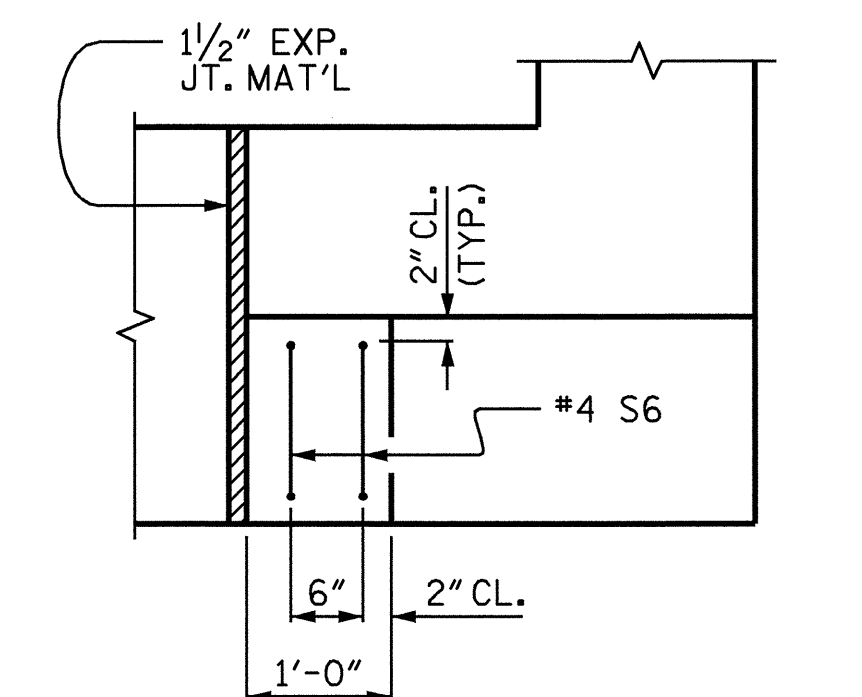
▲ NOTE:  
THE BEND IN THE PS 27.5 STEEL SHEET PILE SHALL BE DETERMINED BY THE FABRICATOR.



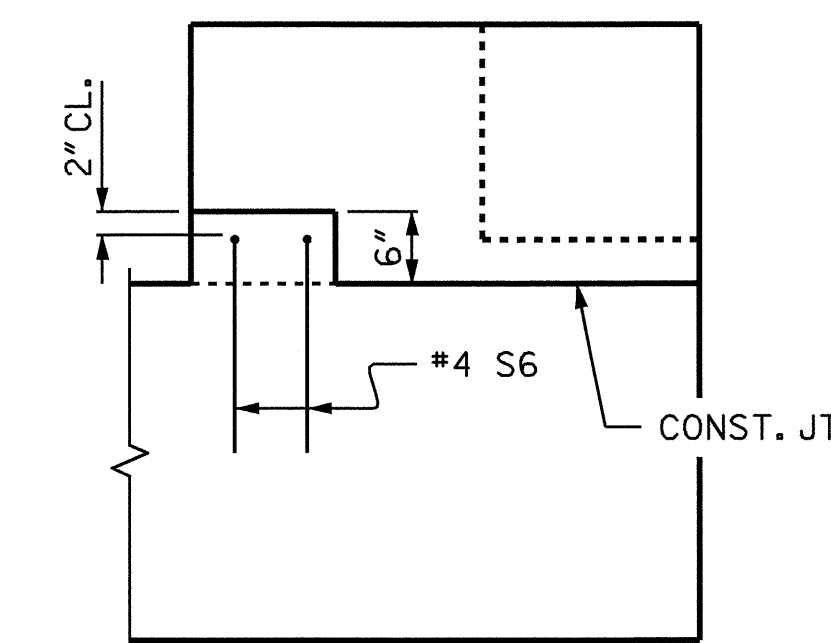
DETAIL "C"



SECTION A-A



PLAN

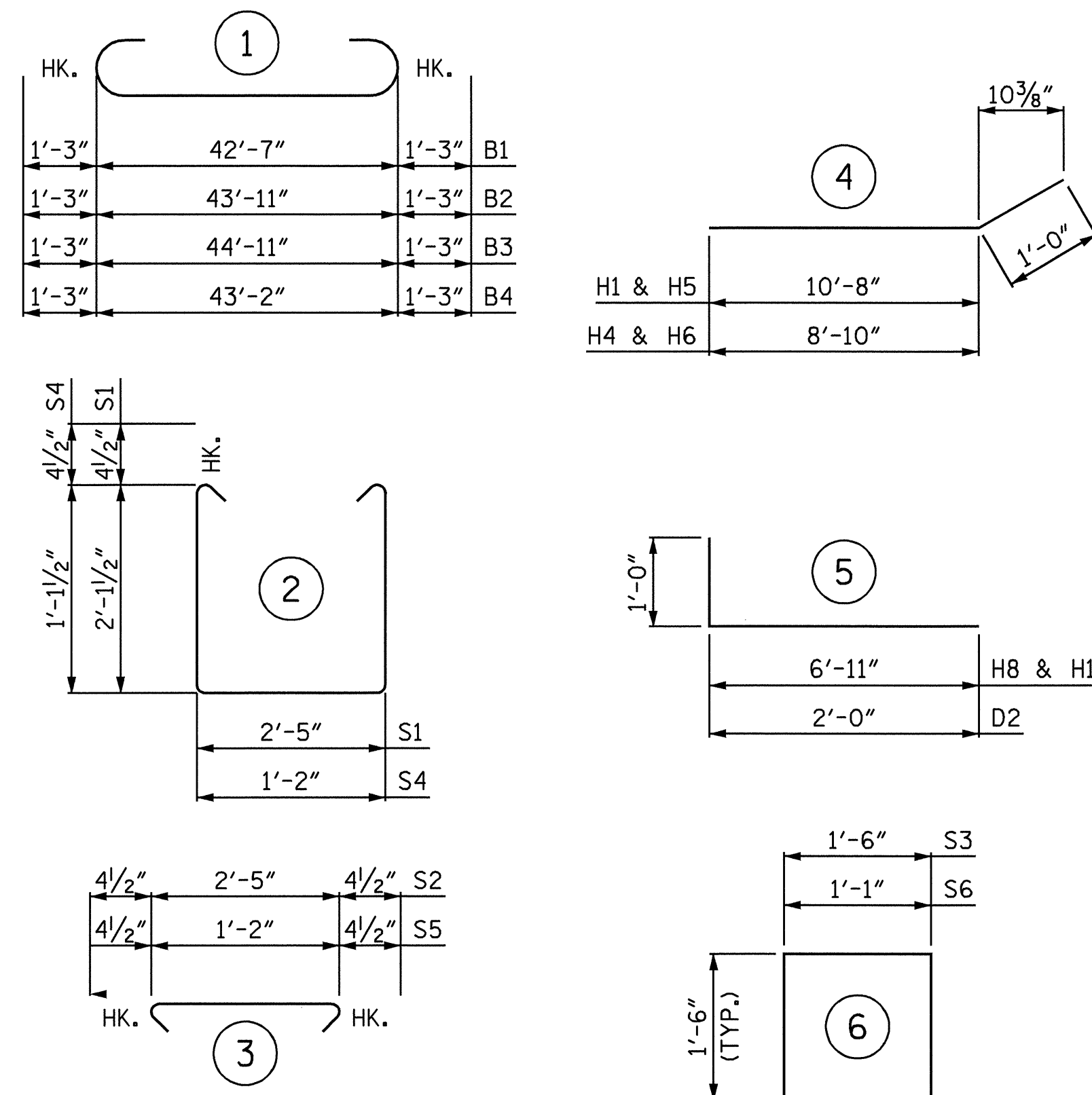


ELEVATION

LATERAL GUIDE DETAIL

(RIGHT SIDE SHOWN, LEFT SIDE SIMILAR)

### BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

### BILL OF MATERIAL

#### END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	9	1	45'-1"	307
B2	1	9	1	46'-5"	158
B3	4	9	1	47'-5"	645
B4	1	9	1	45'-8"	155
B5	1	5	STR	42'-10"	45
B6	1	5	STR	45'-1"	47
B7	8	4	STR	23'-10"	127
B8	11	4	STR	2'-5"	18
D1	24	6	STR	1'-6"	54
D2	35	6	5	3'-0"	158
H1	1	4	4	11'-8"	8
H2	1	4	STR	10'-1"	7
H3	1	4	STR	9'-6"	6
H4	1	4	4	9'-10"	7
H5	1	6	4	11'-8"	18
H6	1	6	4	9'-10"	15
H7	6	4	STR	6'-3"	25
H8	2	4	5	7'-11"	11
H9	2	4	STR	6'-11"	9
H10	2	6	5	7'-11"	24
H11	4	4	STR	3'-2"	8
S1	34	4	2	7'-5"	168
S2	34	4	3	3'-2"	72
S3	36	4	6	4'-6"	108
S4	15	4	2	4'-2"	42
S5	15	4	3	1'-11"	19
S6	4	4	6	4'-1"	11
V1	16	4	STR	4'-9"	51
V2	8	4	STR	3'-10"	20

REINFORCING STEEL	LBS.	2,343
CLASS A CONCRETE BREAKDOWN :		
POUR #1 - CAP	CU. YDS.	11.4
POUR #2 - UPPER WINGS & COPING	CU. YDS.	2.4
POUR #3 - LATERAL GUIDES	CU. YDS.	0.1
TOTAL	CU. YDS.	13.9
HP 12 x 53 STEEL PILES	LIN. FT.	360
NO. = 9		
19.69" STEEL SHEET PILES (PS 27.5)	SQ. FT.	225
NO. = 9		
22" STEEL SHEET PILES (PZ 22)	SQ. FT.	760
NO. 26		

PROJECT NO. B-4082  
COLUMBUS COUNTY  
 STATION: 15+40.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT 2

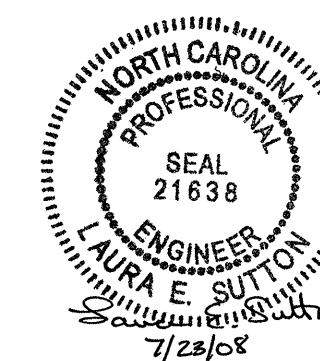
#### REVISIONS

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

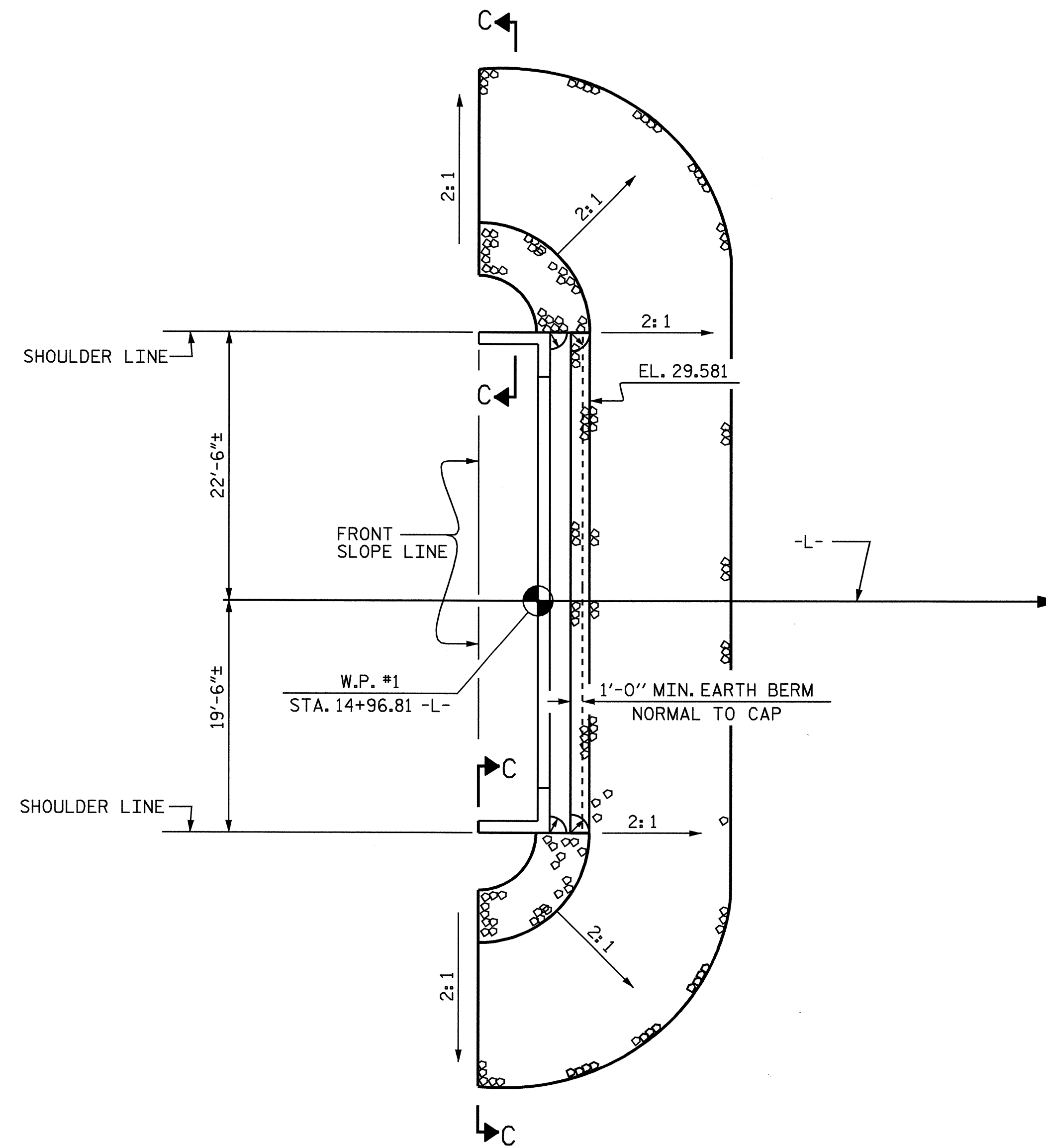
SHEET NO.  
 S-35  
 TOTAL SHEETS  
 56

DRAWN BY : P.C. BREWER DATE : 2/26/08  
 CHECKED BY : W.F. PARKER DATE : 3/01/08

23-JUL-2008 10:56  
 R:\Structures\str1\pbrw\Microstation\b4082.sd\_e2.01.dgn  
 isutton

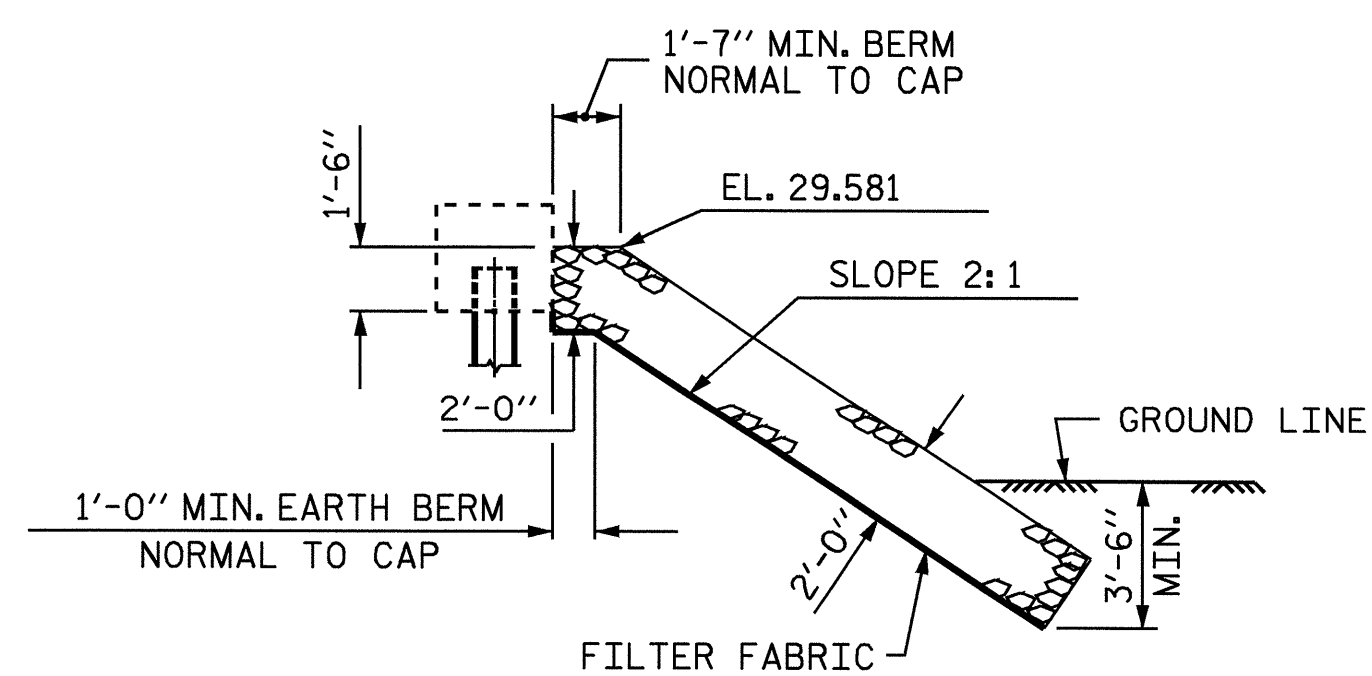


STR. #1

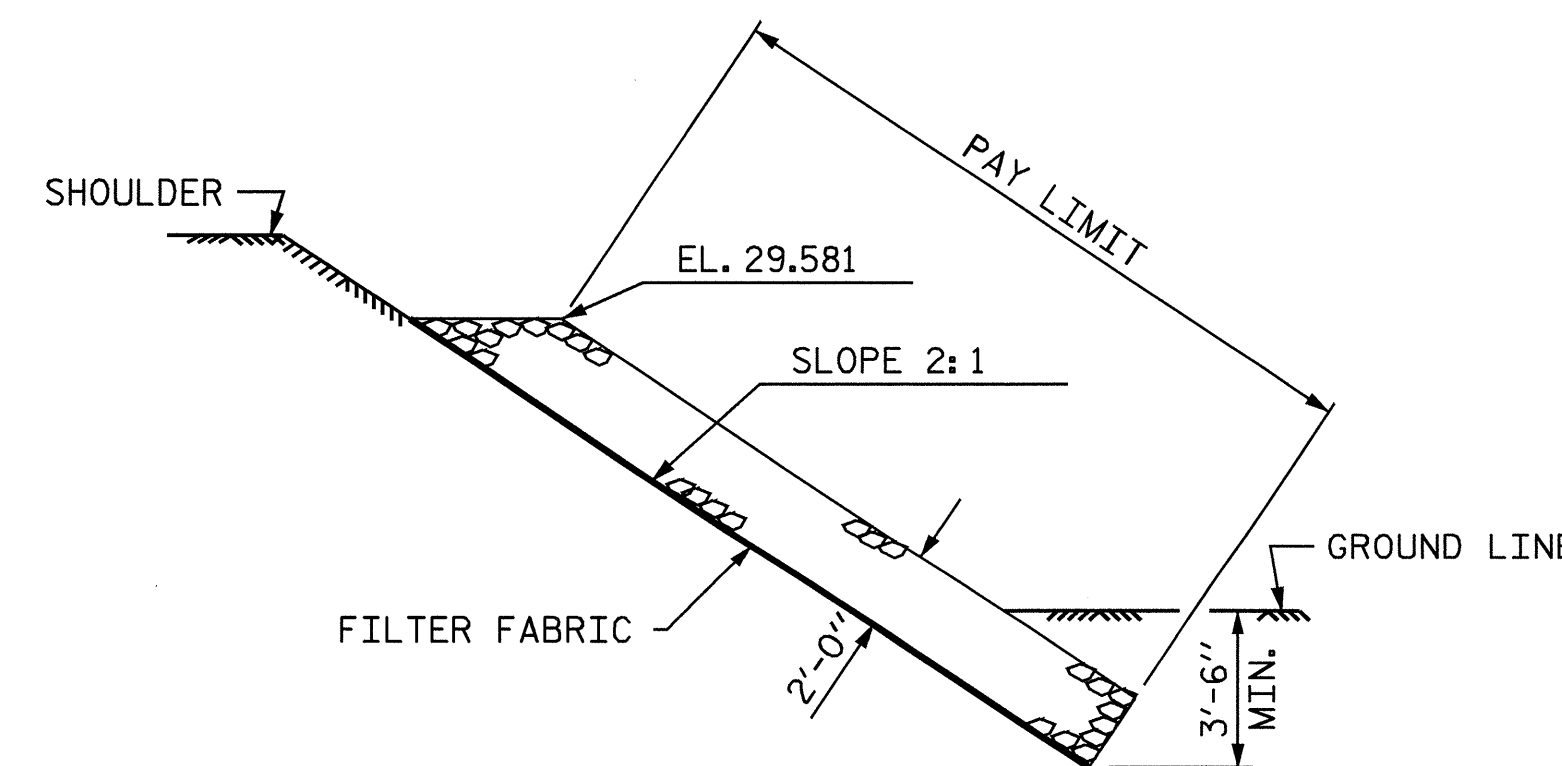


@ END BENT 1

ESTIMATED QUANTITIES		
BRIDGE @ STA. 15+40.50 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	119	132
END BENT 2	—	—



C SECTION



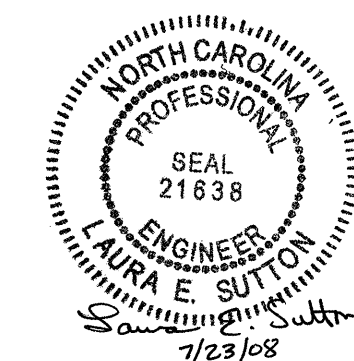
SECTION C-C

PROJECT NO. B-4082  
COLUMBUS COUNTY  
 STATION: 15+40.50 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

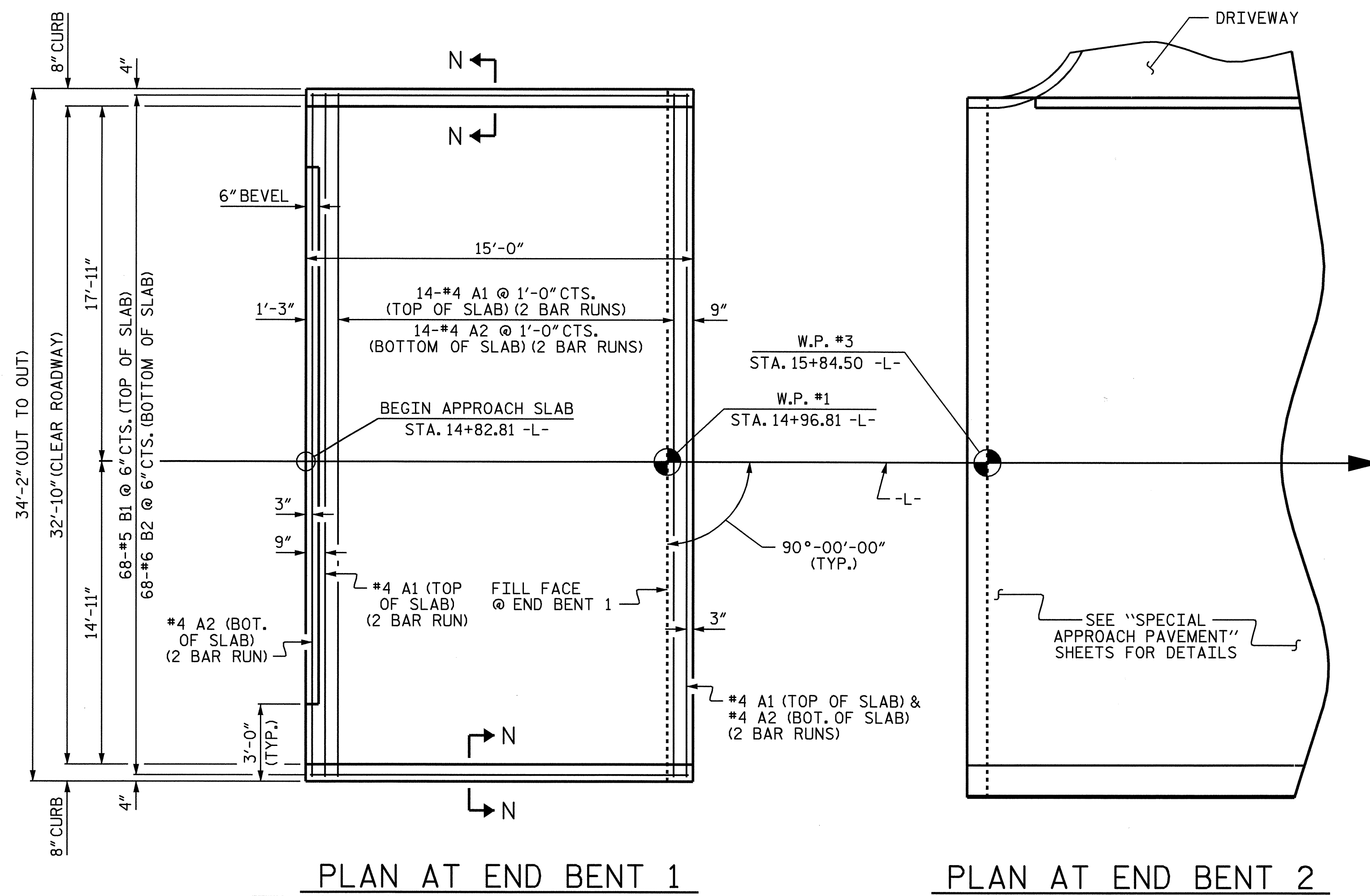
STANDARD  
 RIP RAP DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-36
1			3			TOTAL SHEETS
2			4			56



ASSEMBLED BY : S.M. RASHIDI DATE : 3/06/08  
 CHECKED BY : W. P. PARKER DATE : 3/12/08  
 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





**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.

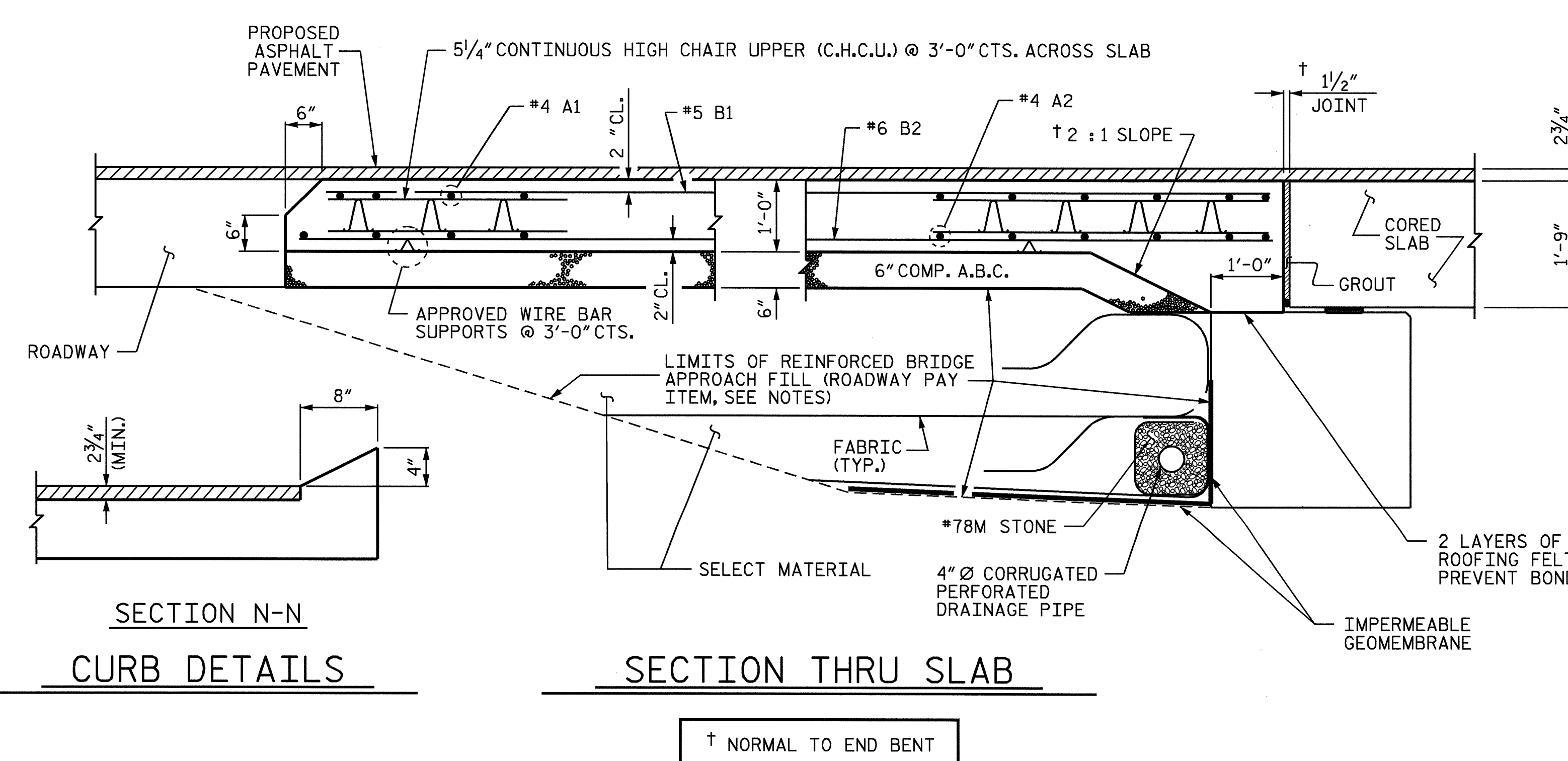
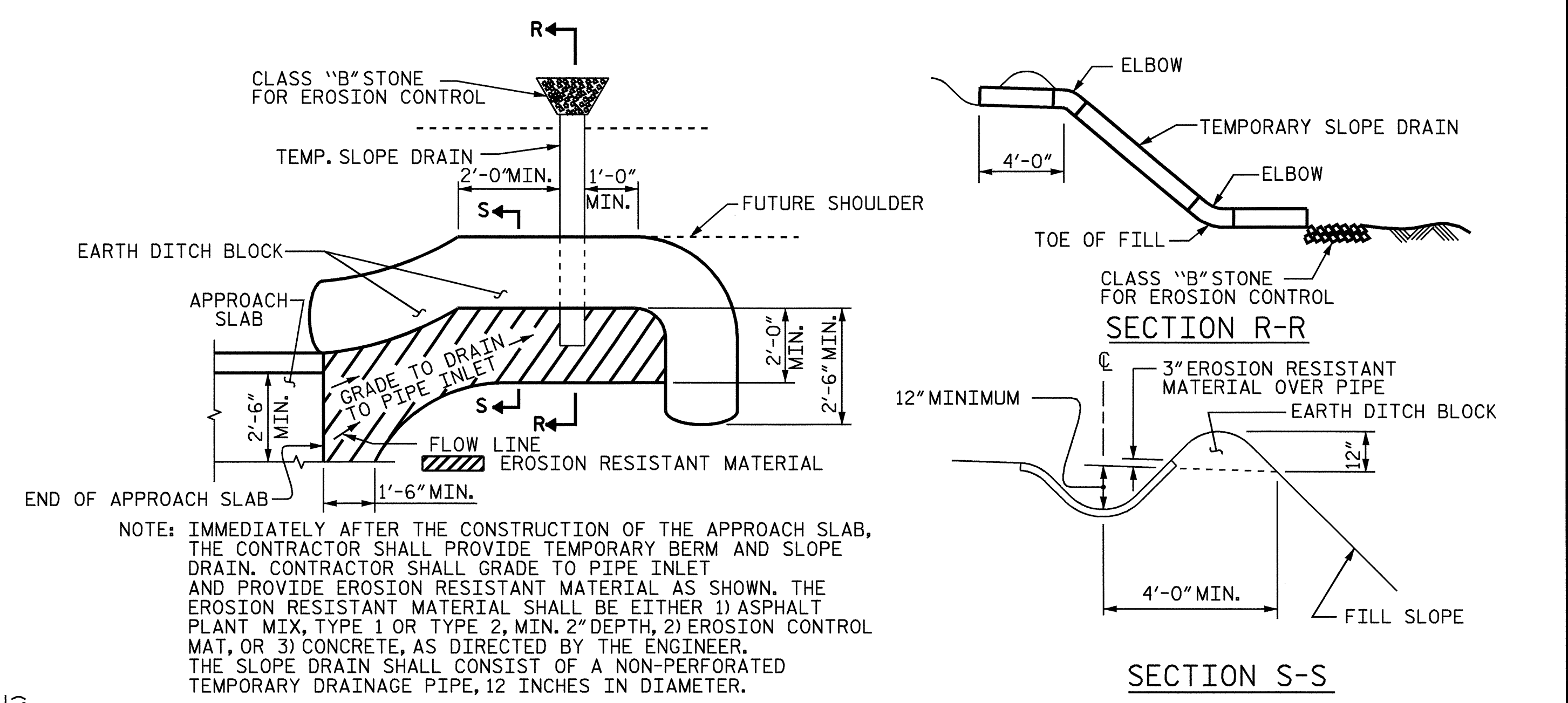
THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER 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.

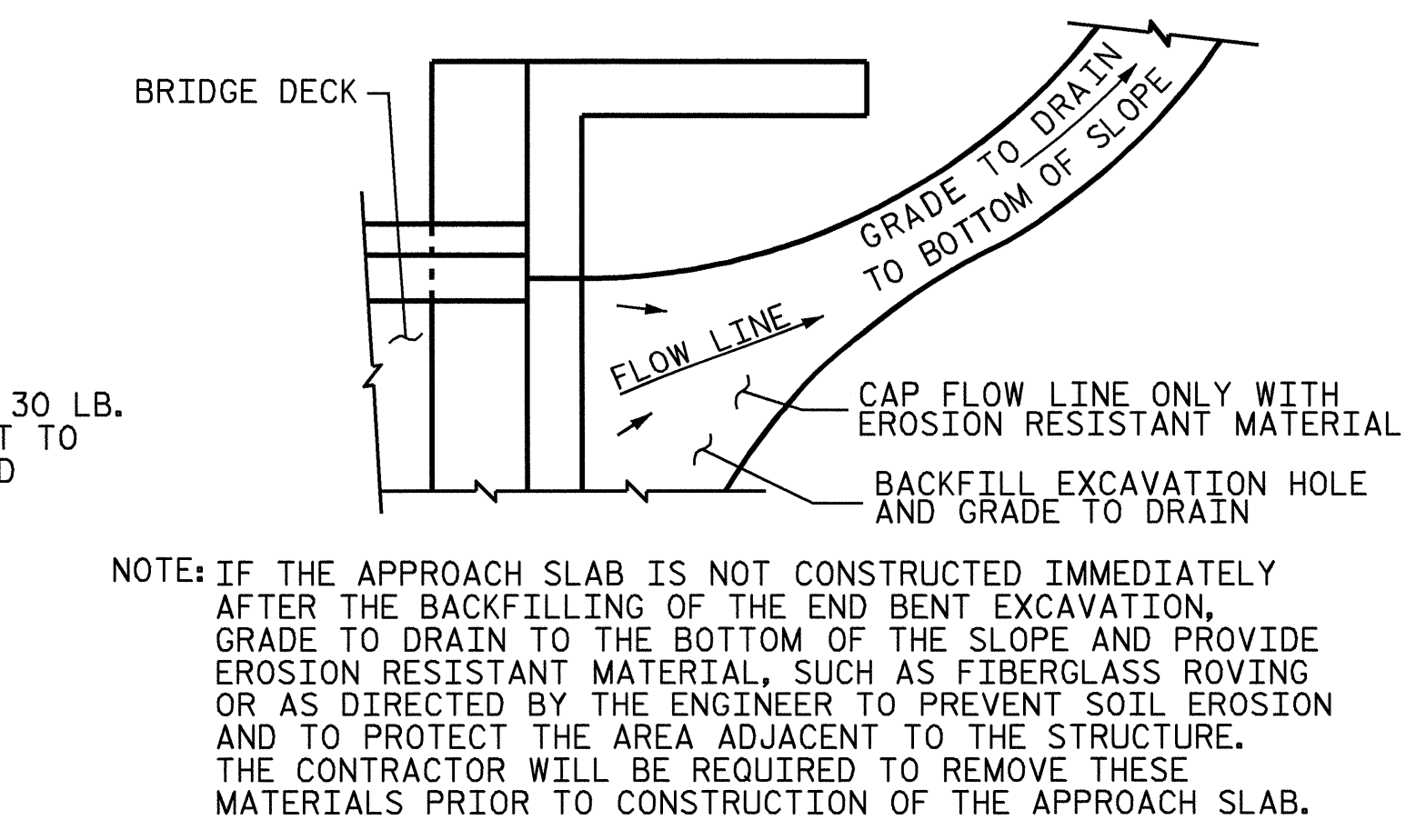
THE JOINT AT THE END BENT SHALL BE GROUTED AS SOON AS PRACTICAL AFTER CONSTRUCTION OF THE APPROACH SLAB.

APPROACH SLAB GROOVING IS NOT REQUIRED.

BILL OF MATERIAL					
APPROACH SLAB AT END BENT 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'-3"	1011
B2	68	#6	STR	14'-8"	1498
REINFORCING STEEL				LBS.	1,879
*EPOXY COATED REINFORCING STEEL				LBS.	1,394
CLASS AA CONCRETE				CU. YDS.	20.8
SPlice LENGTH CHART					
BAR SIZE	EPOXY COATED	UNCOATED			
#4	2'-0"	1'-9"			



**TEMPORARY BERM AND SLOPE DRAIN DETAILS**  
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



PROJECT NO. B-4082  
COLUMBUS COUNTY  
 STATION: 15+40.50 -L-



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

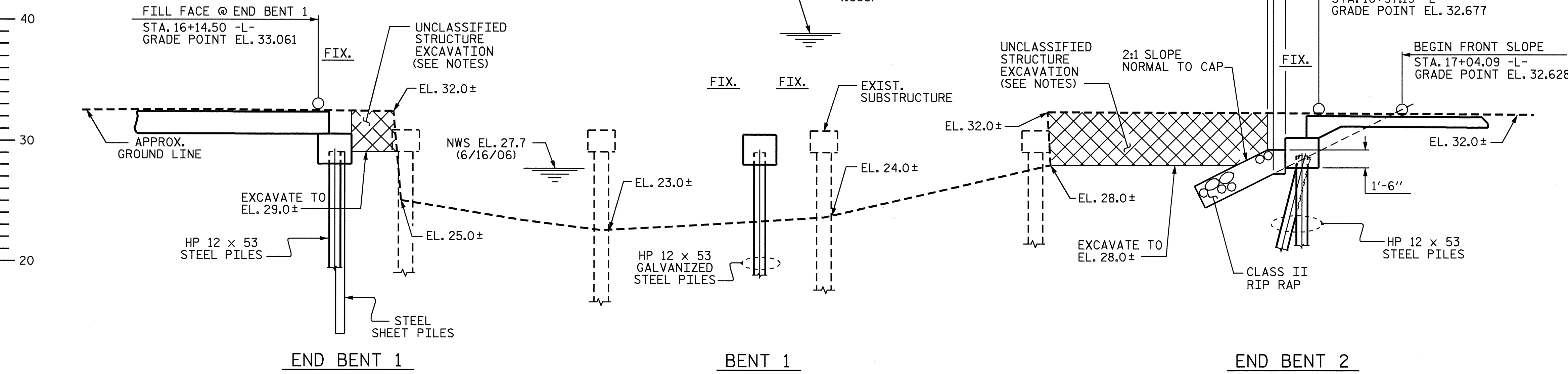
BRIDGE APPROACH SLAB  
 FOR PRESTRESSED CONCRETE  
 CORED SLAB

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

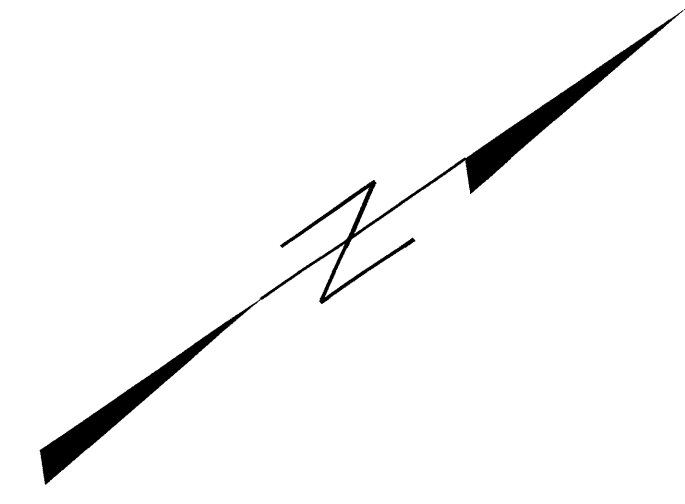
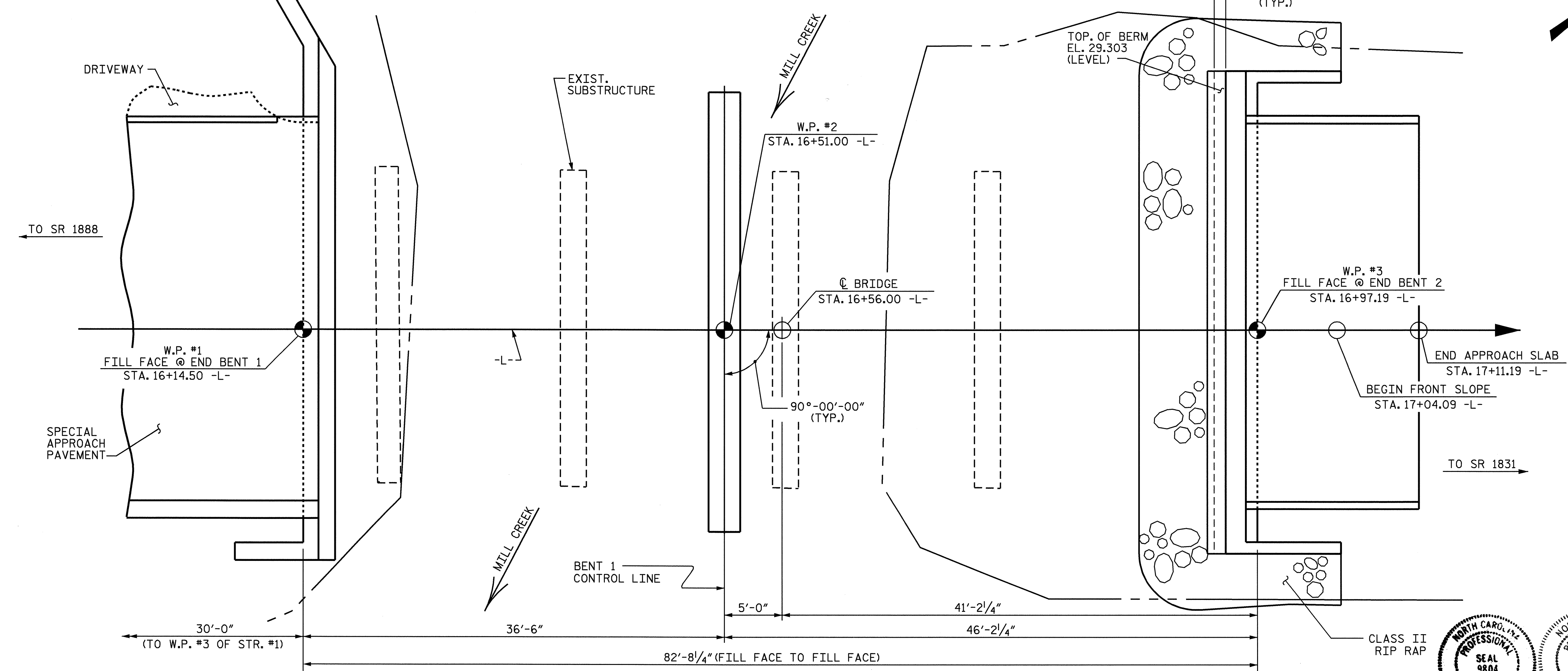
SHEET NO. S-37  
 TOTAL SHEETS 56

DRAWN BY: L.E. SUTTON DATE: 5/29/08  
 CHECKED BY: P.C. BREWER DATE: 6/02/08

16+00  
 (+)0.5016% (-)0.8712%  
 PI = 16+05.00 -L-  
 VC = 250'  
 EL = 33.51  
**GRADE DATA -L-**



**SECTION ALONG -L-**



PROJECT NO. B-4082  
 COLUMBUS COUNTY  
 STATION: 16+56.00 -L-

SHEET 1 OF 3 REPLACES BRIDGE NO. 281

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

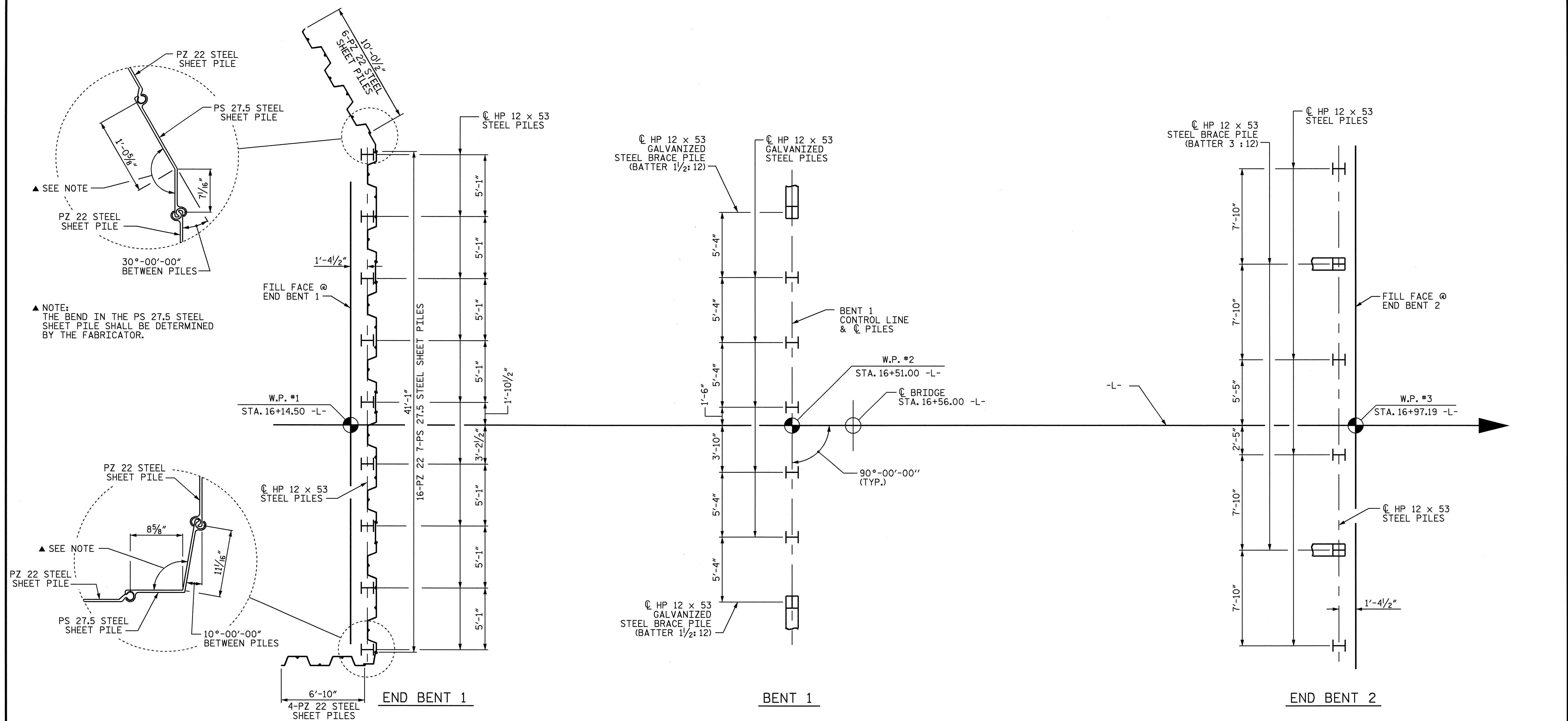
**GENERAL DRAWING**  
 FOR BRIDGE OVER  
 MILL CREEK ON SR 1843  
 BETWEEN SR 1888 AND SR 1831

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-38
1			3			TOTAL SHEETS
2			4			56

DRAWN BY: A.S. CALLAWAY DATE: 4/25/08  
 CHECKED BY: S.M. RASHIDI DATE: 5/20/08

PROFESSIONAL ENGINEER  
 SEAL 9804  
 ROY M. GROOM  
 7-25-08

PROFESSIONAL ENGINEER  
 SEAL 21638  
 LAURA E. SUTTON  
 7/22/08



▲ SEE NOTE  
 ▲ NOTE:  
 THE BEND IN THE PS 27.5 STEEL SHEET PILE SHALL BE DETERMINED BY THE FABRICATOR.

▲ SEE NOTE

**FOUNDATION LAYOUT**

DIMENSIONS LOCATING PILES ARE TO PILE CENTERLINE.

**NOTES**

DRIVE PILES AT END BENT 1 AND BENT 1 TO A REQUIRED BEARING CAPACITY OF 135 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO PLUS ANY ADDITIONAL CAPACITY TO ACCOUNT FOR DOWN DRAG OR NEGATIVE SKIN FRICTION AND SCOUR.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENT 1 AND BENT 1 IS 60 TONS PER PILE.

DRIVE PILES AT END BENT 1 AND BENT 1 TO A TIP ELEVATION NO HIGHER THAN -2 FT.

THE SCOUR CRITICAL ELEVATION FOR END BENT 1 AND BENT 1 IS ELEVATION 15 FEET AND 13 FEET RESPECTIVELY. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

DRIVE PILES AT END BENT 2 TO A REQUIRED BEARING CAPACITY OF 120 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 2 IS 60 TONS PER PILE.

TESTING PILES WITH THE PILE DRIVING ANALYZER FOR LRFD MY BE REQUIRED AT END BENT 1, BENT 1 OR END BENT 2. SEE PILE DRIVING ANALYZER FOR LRFD SPECIAL PROVISION.

PROJECT NO. B-4082  
COLUMBUS COUNTY  
 STATION: 16+56.00 -L-

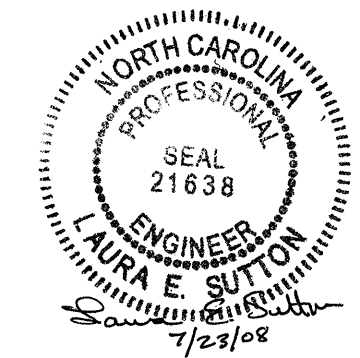
SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**

FOR BRIDGE OVER  
 DAN'S CREEK ON SR 1843  
 BETWEEN SR 1888 AND SR 1831

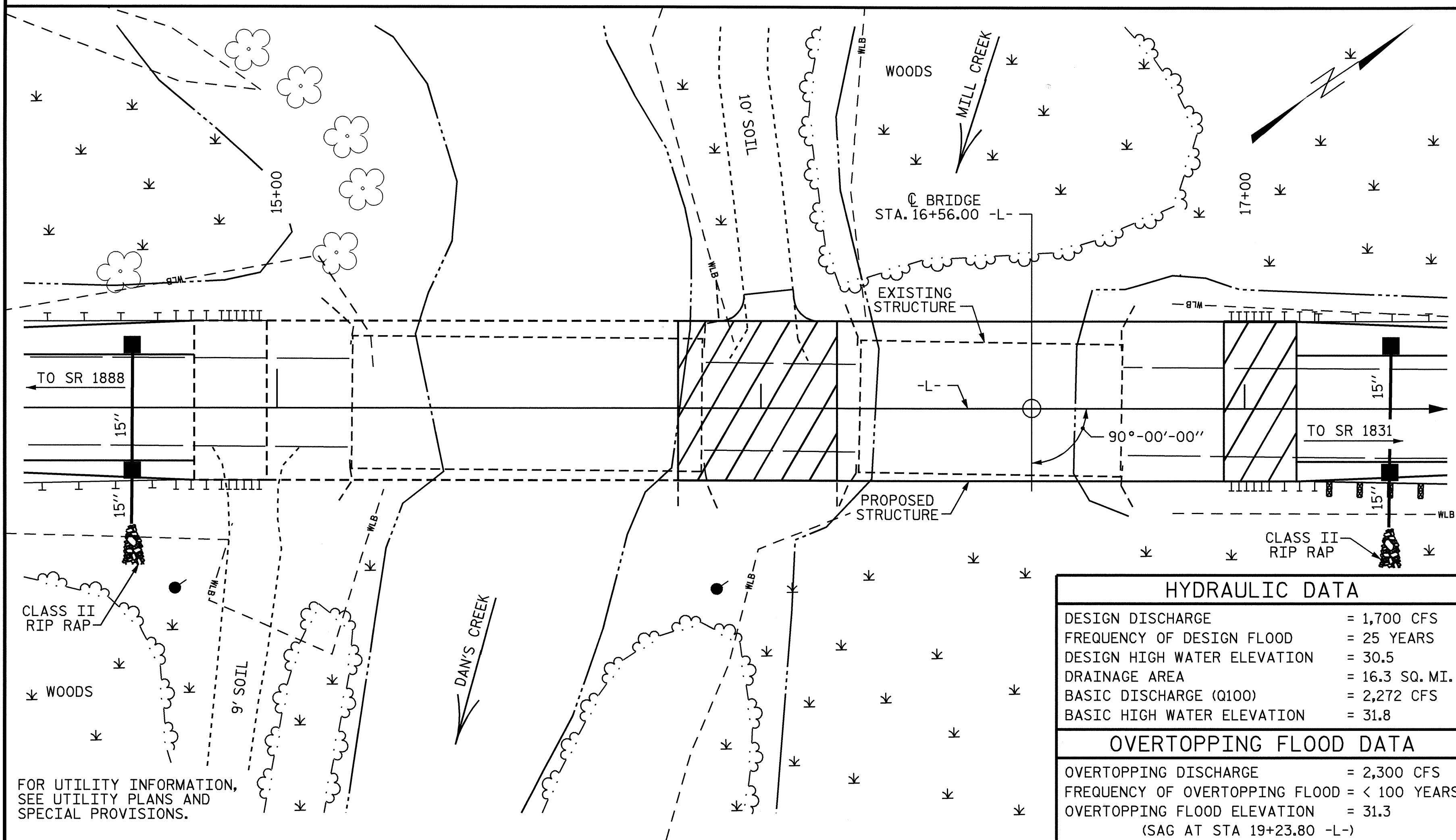
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-39
1			3			TOTAL SHEETS
2			4			56



DRAWN BY : A.S. CALLAWAY DATE : 4/23/08  
 CHECKED BY : S.M. RASHIDI DATE : 5/20/08



BM #80: RR SPIKE IN BASE OF 18" PINE, 52' RIGHT STA. 9+48 -BL-, EL. 29.86



LOCATION SKETCH

HYDRAULIC DATA	
DESIGN DISCHARGE	= 1,700 CFS
FREQUENCY OF DESIGN FLOOD	= 25 YEARS
DESIGN HIGH WATER ELEVATION	= 30.5
DRAINAGE AREA	= 16.3 SQ. MI.
BASIC DISCHARGE (Q100)	= 2,272 CFS
BASIC HIGH WATER ELEVATION	= 31.8
OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE	= 2,300 CFS
FREQUENCY OF OVERTOPPING FLOOD	= < 100 YEARS
OVERTOPPING FLOOD ELEVATION	= 31.3
(SAG AT STA 19+23.80 -L-)	

NOTES

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING, EXCEPT THAT CORED SLAB UNITS HAVE BEEN DESIGNED FOR HS 25.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

THE EXISTING STRUCTURE CONSISTING OF 3 SPANS @ 18.2' WITH A CLEAR ROADWAY WIDTH OF 24.0' AND HAVING A CONCRETE DECK SUPPORTED BY STEEL I-BEAMS ON CONCRETE CAPS AND TIMBER PILES SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 23 FT. RIGHT AND 27 FT. LEFT 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.

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

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

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

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 16+56.00 -L-".

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

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	19.69" STEEL SHEET PILES	22" STEEL SHEET PILES	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	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	SQ. FT.	SQ. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.	
SUPERSTRUCTURE														160.00					24	960.00
END BENT 1				13.9		2,343	9	405				225	765							
BENT 1				9.9		1,786			7	280										
END BENT 2				14.1		2,118	6	270							113	125				
TOTAL	LUMP SUM	1	LUMP SUM	37.9	LUMP SUM	6,247	15	675	7	280	15	225	765	160.00	113	125	LUMP SUM	24	960.00	

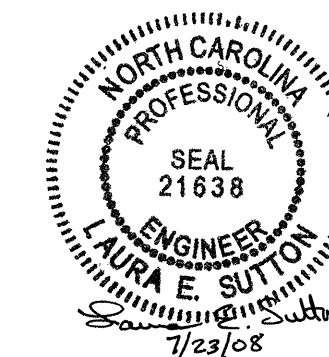
PROJECT NO. B-4082  
COLUMBUS COUNTY  
 STATION: 16+56.00 -L-

SHEET 3 OF 3

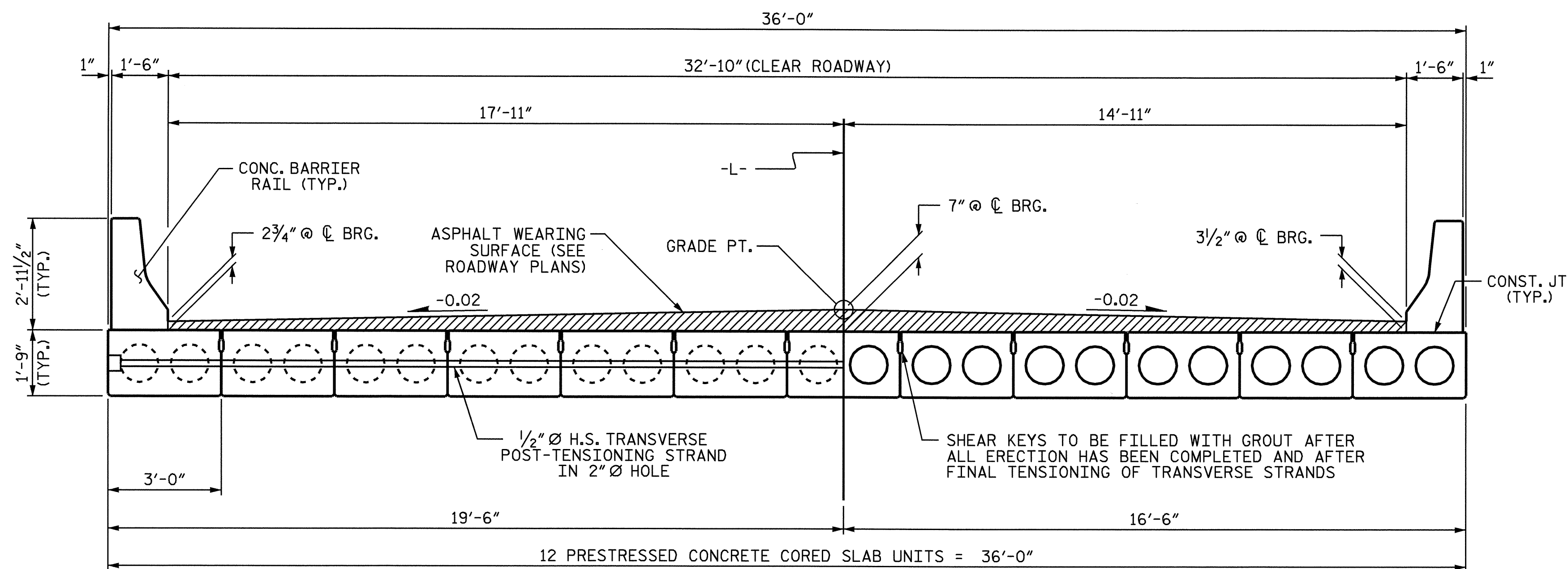
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

GENERAL DRAWING  
 FOR BRIDGE OVER  
 MILL CREEK ON SR 1843  
 BETWEEN SR 1888 & SR 1831

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-40
1			3			TOTAL SHEETS
2			4			56



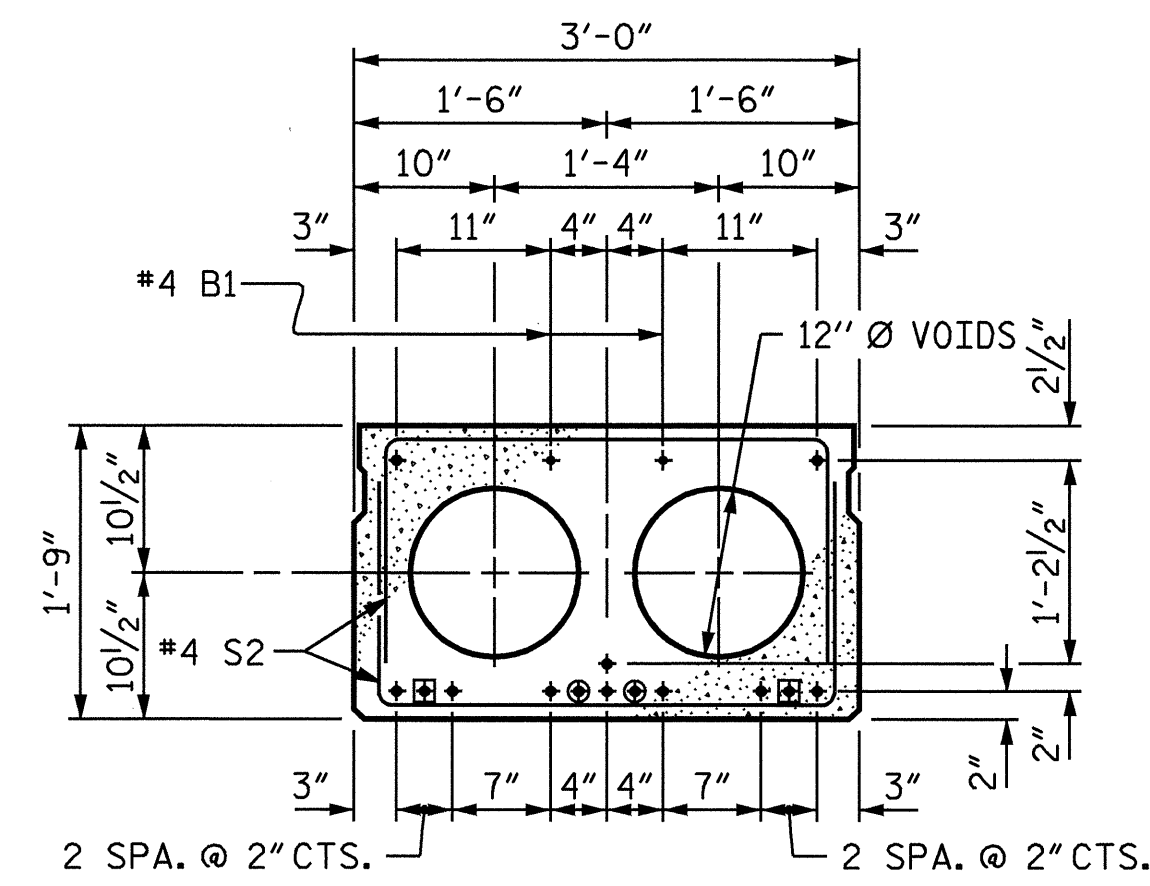
DRAWN BY: A.S. CALLAWAY DATE: 4/25/08  
 CHECKED BY: S.M. RASHIDI DATE: 5/20/08



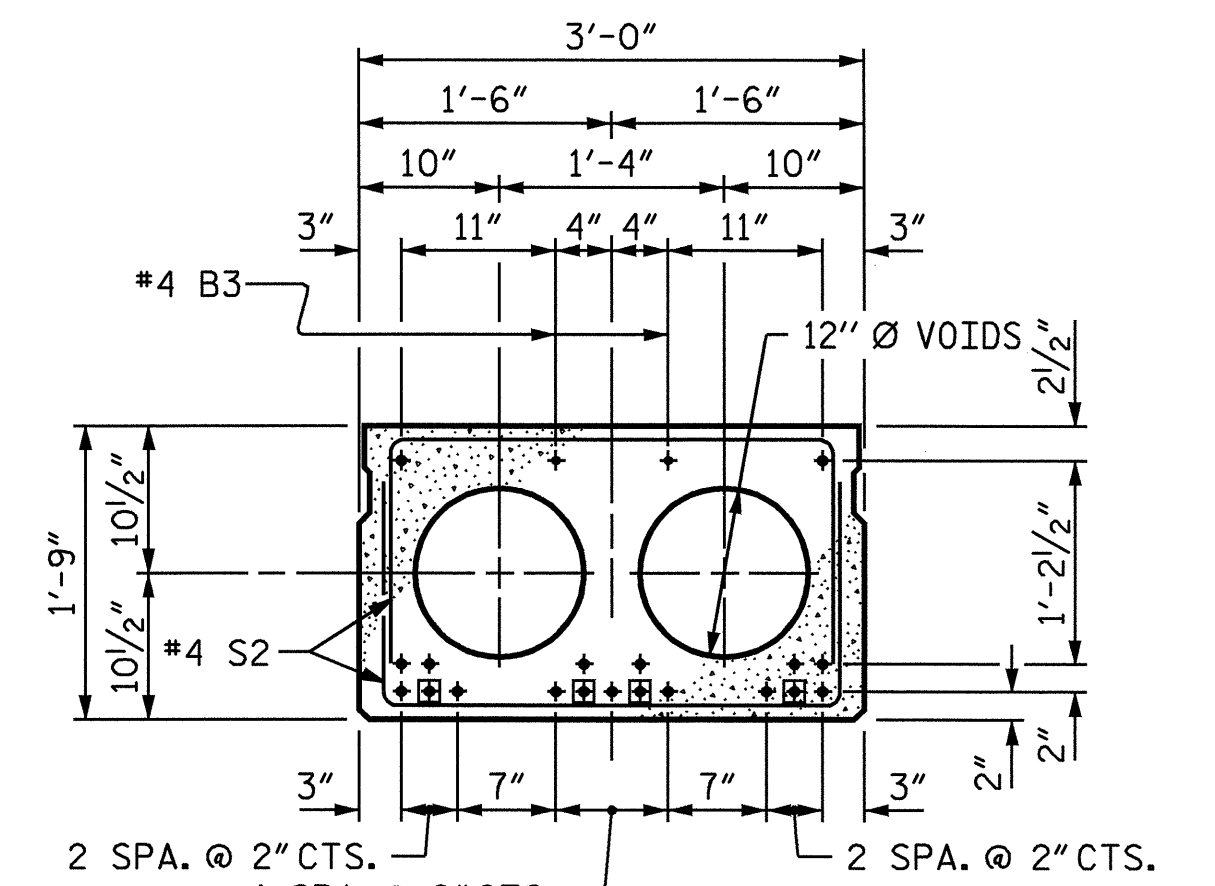
HALF SECTION  
AT INTERMEDIATE DIAPHRAGMS

HALF SECTION  
THROUGH VOIDS

TYPICAL SECTION



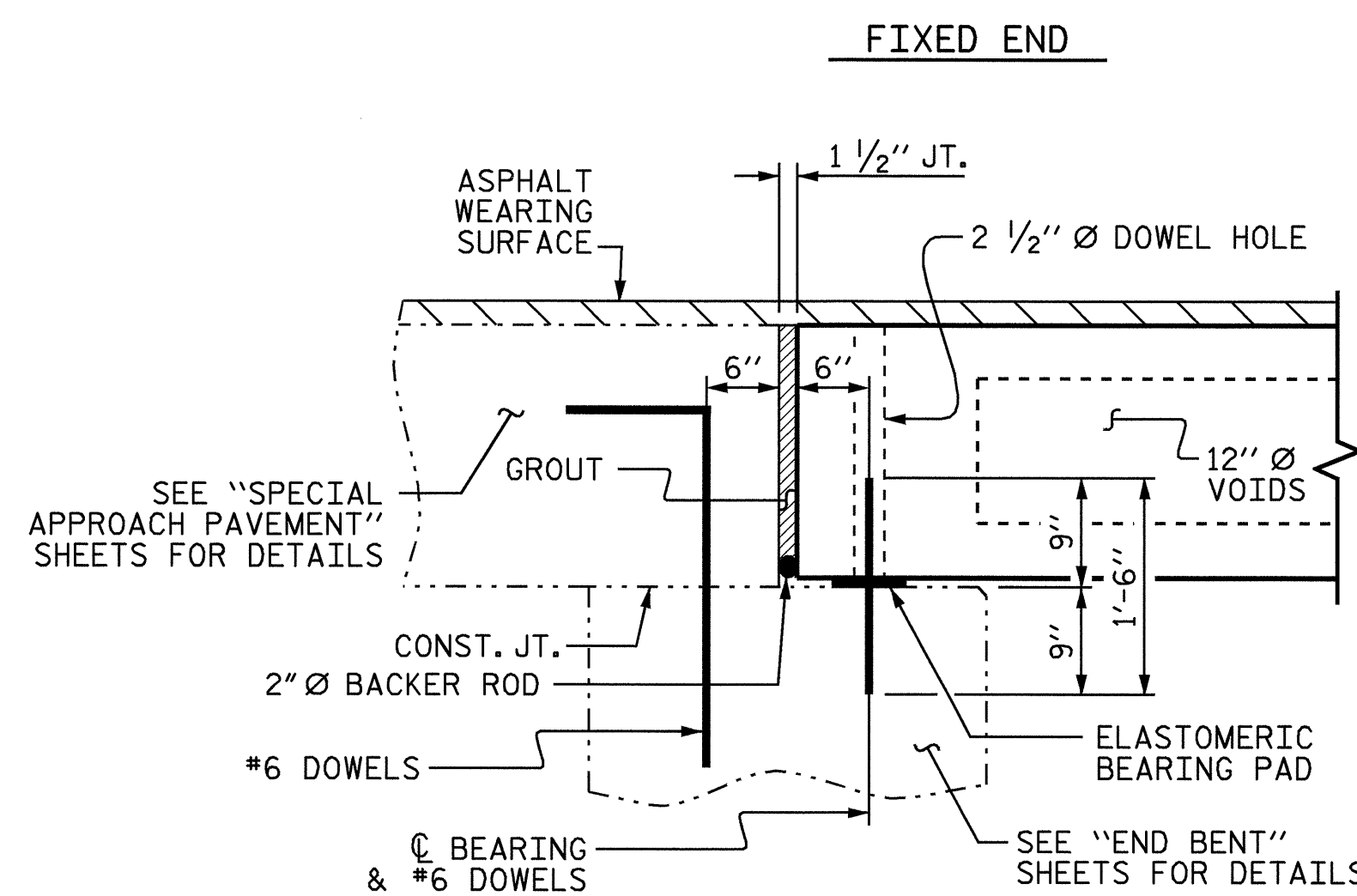
35' - SPAN "A"  
1/2" Ø LOW RELAXATION STRAND LAYOUT  
12 STRANDS



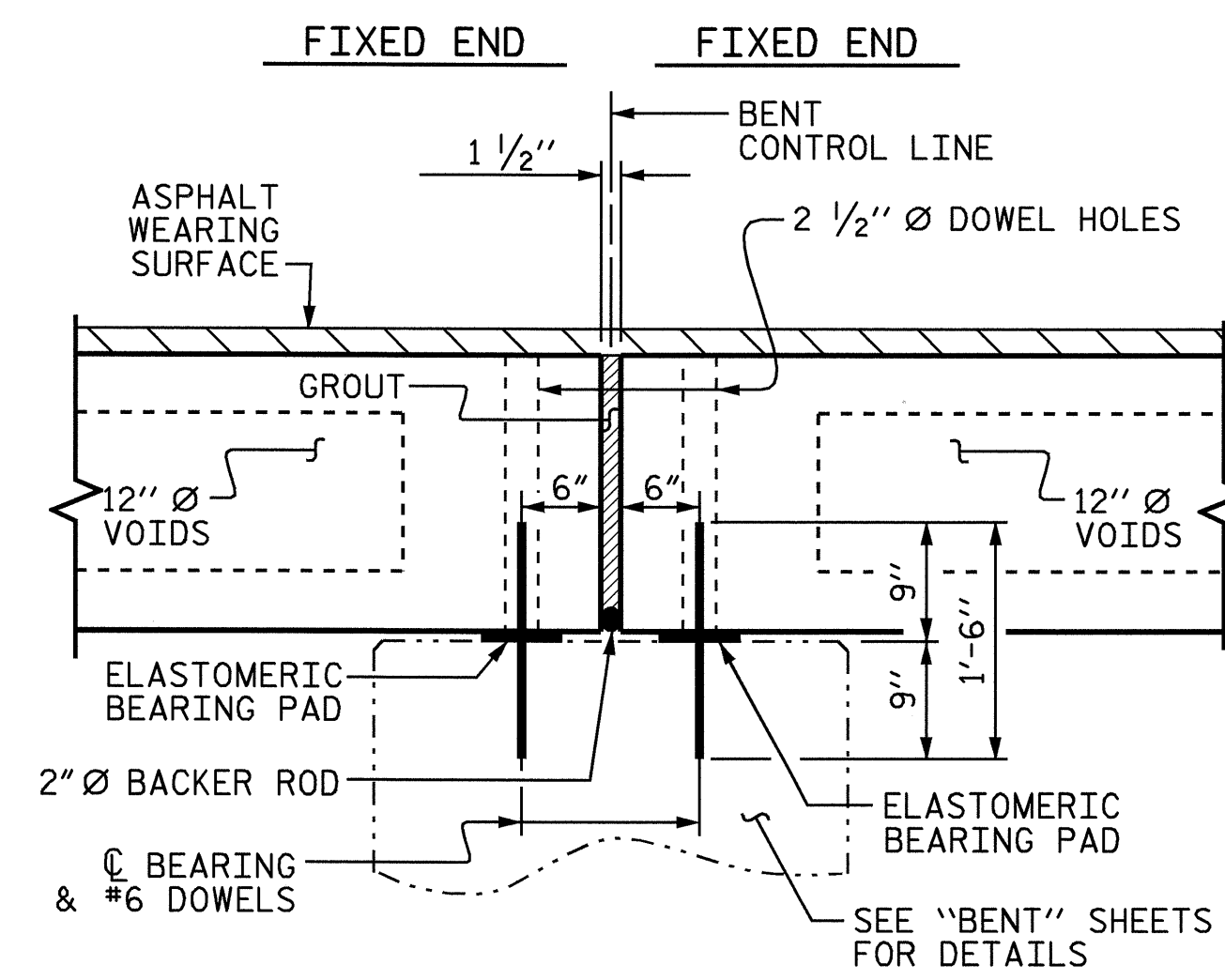
45' - SPAN "B"  
1/2" Ø LOW RELAXATION STRAND LAYOUT  
19 STRANDS

INTERIOR SLAB SECTION

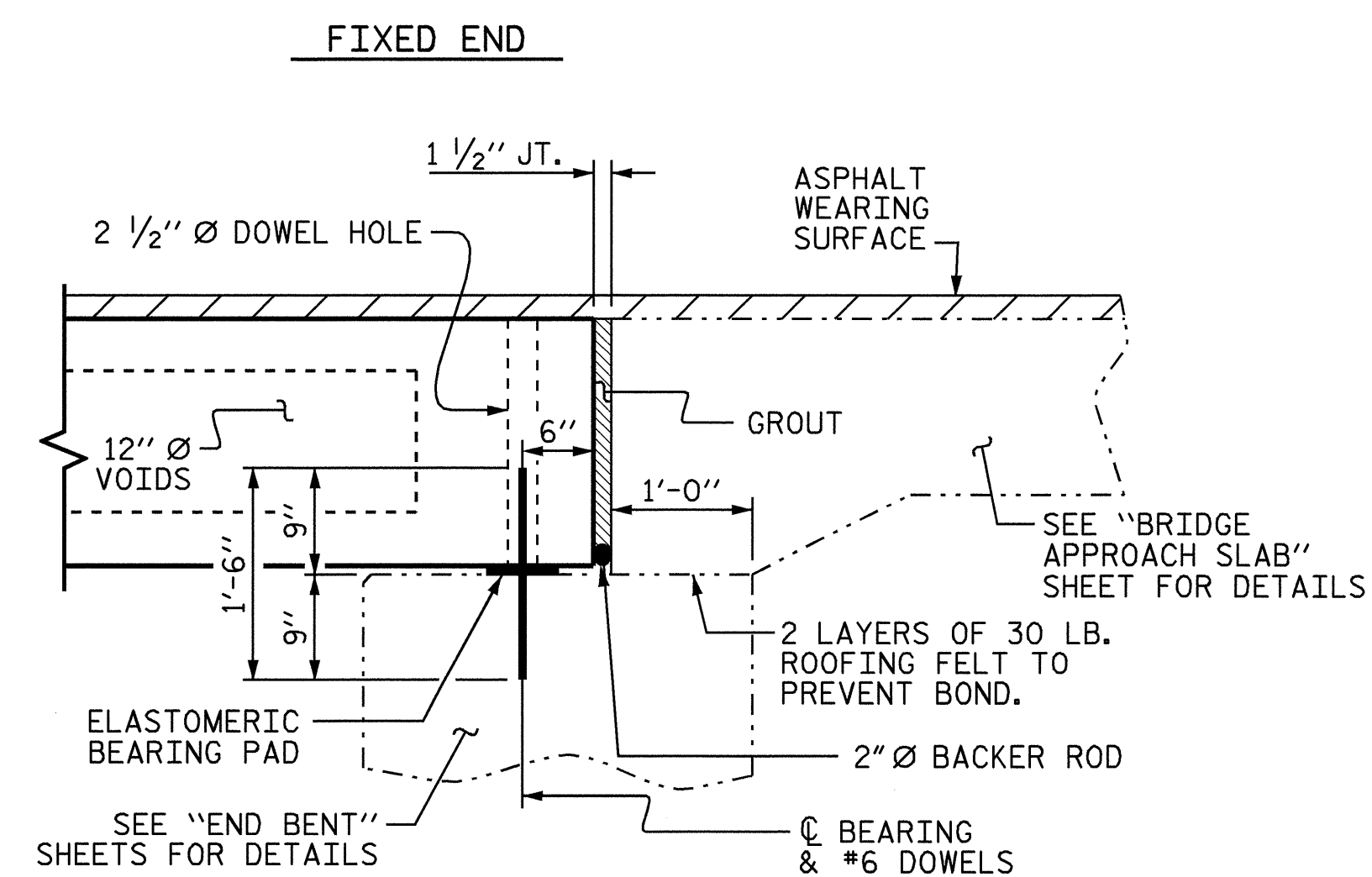
- THE BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 4'-0" FROM END OF THE CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.
- OPTIONAL FULL LENGTH DEBONDED STRANDS.



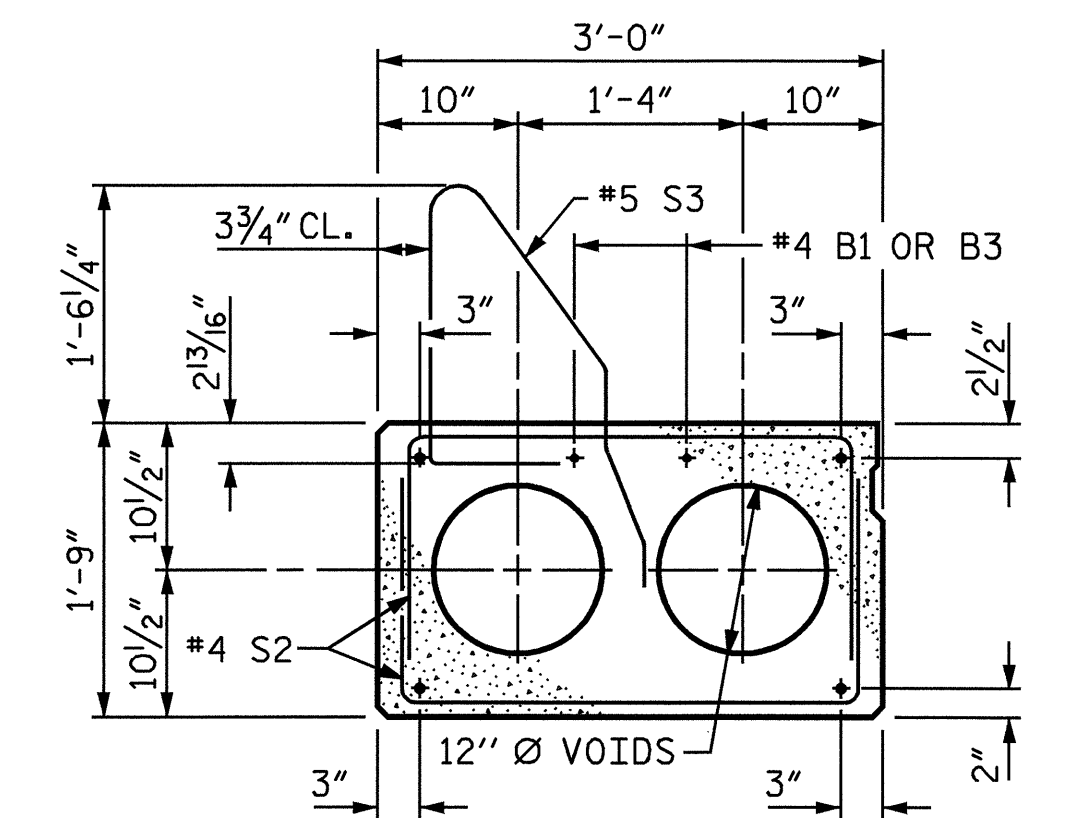
SECTION AT END BENT 1



SECTION AT BENT

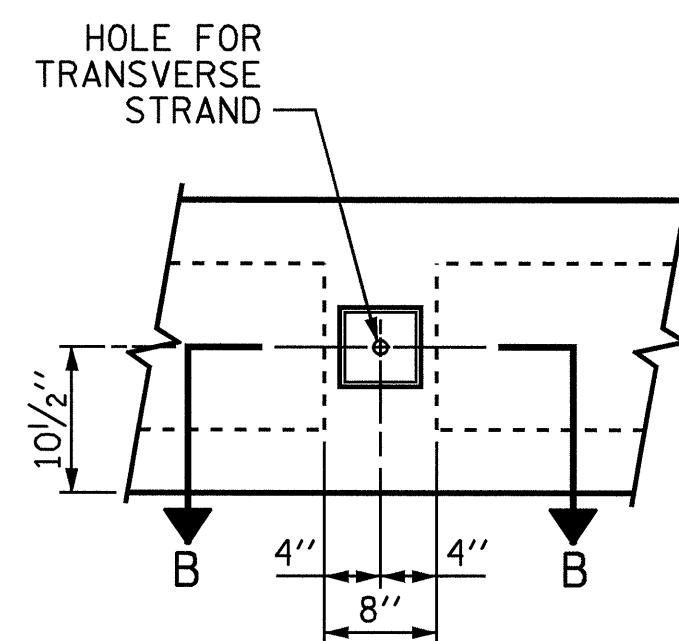


SECTION AT END BENT 2

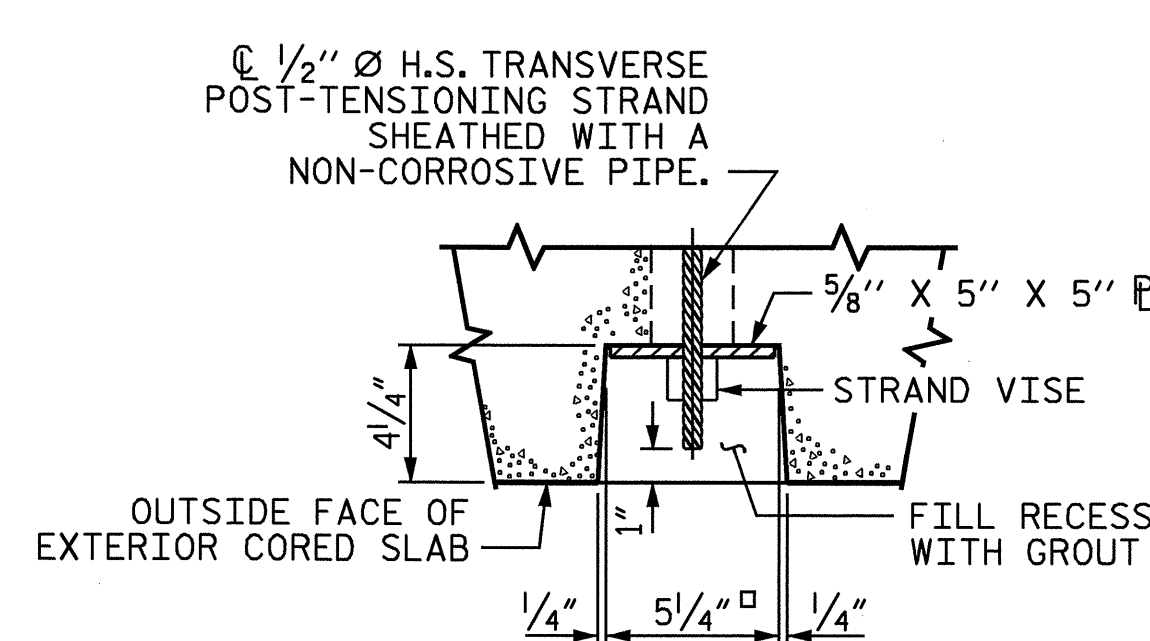


EXTERIOR SLAB SECTION

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

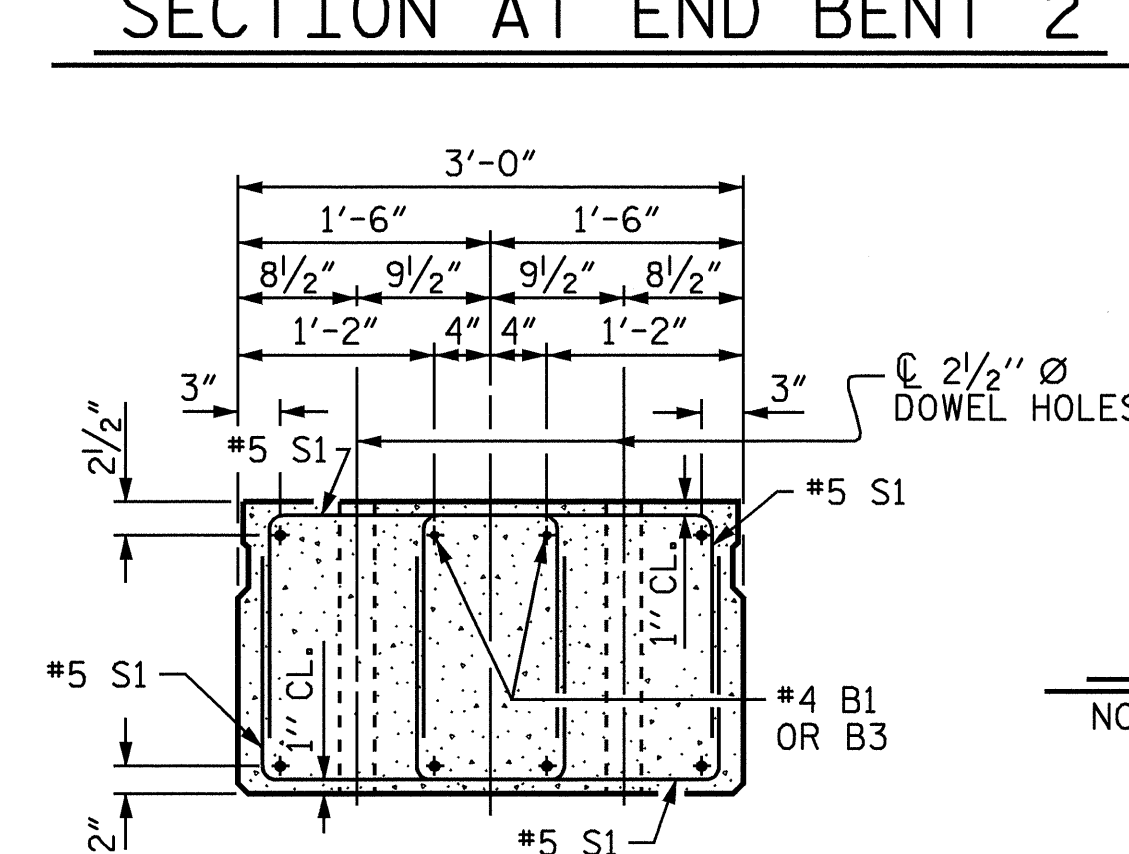


ELEVATION VIEW



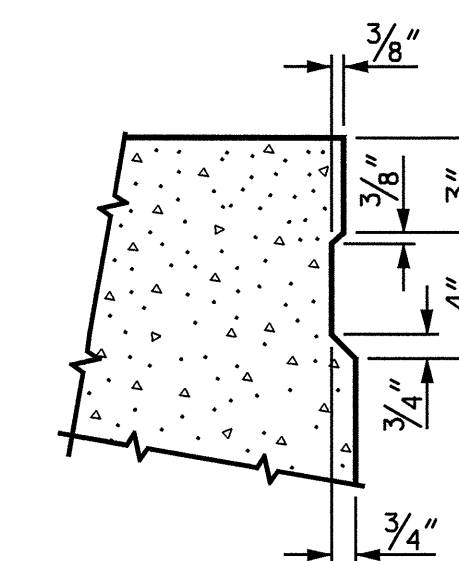
SECTION B-B

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 :	L.E. SUTTON	DATE :	5/23/08
CHECKED BY :	A.S. CALLAWAY	DATE :	5/27/08
DRAWN BY :	WJH	4/89	REV. 10/17/00 RWW/LES
CHECKED BY :	FCJ	5/89	REV. 7/10/01RR RWW/LES
			REV. 5/1/06 TLA/GM

PROJECT NO. B-4082  
COLUMBUS COUNTY  
STATION: 16+56.00 -L-

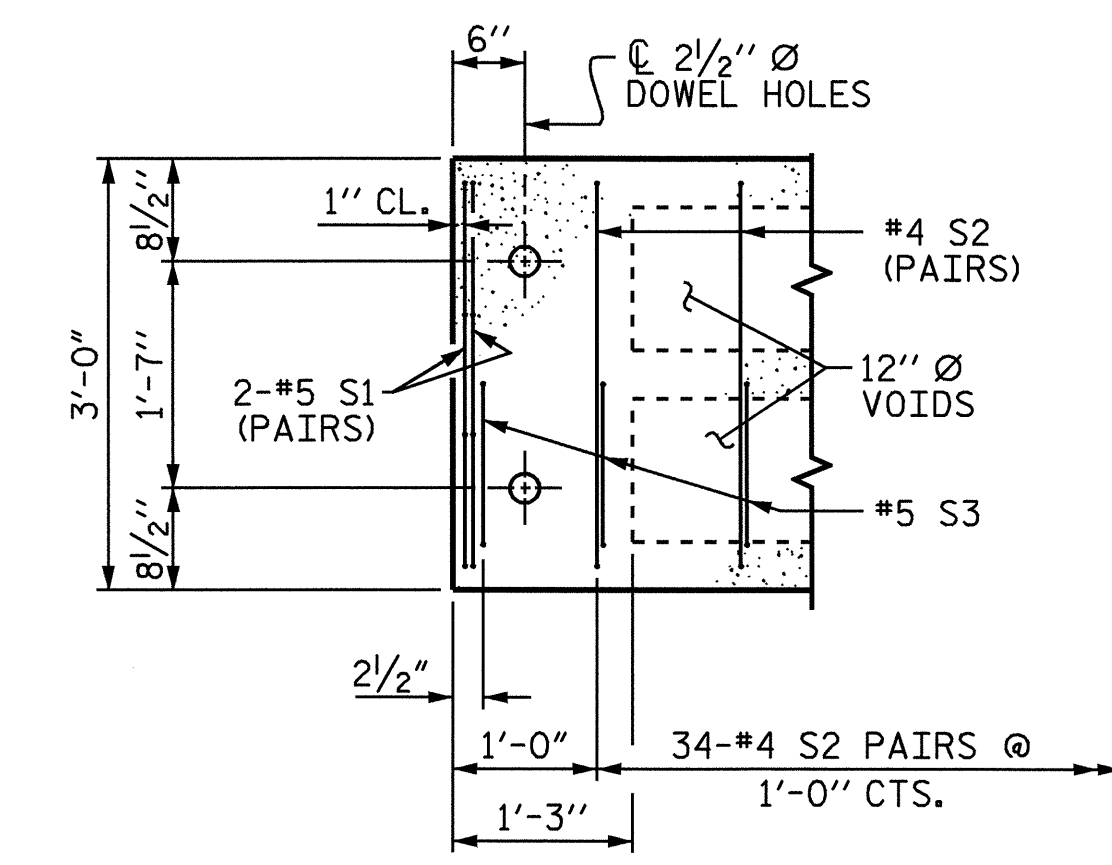
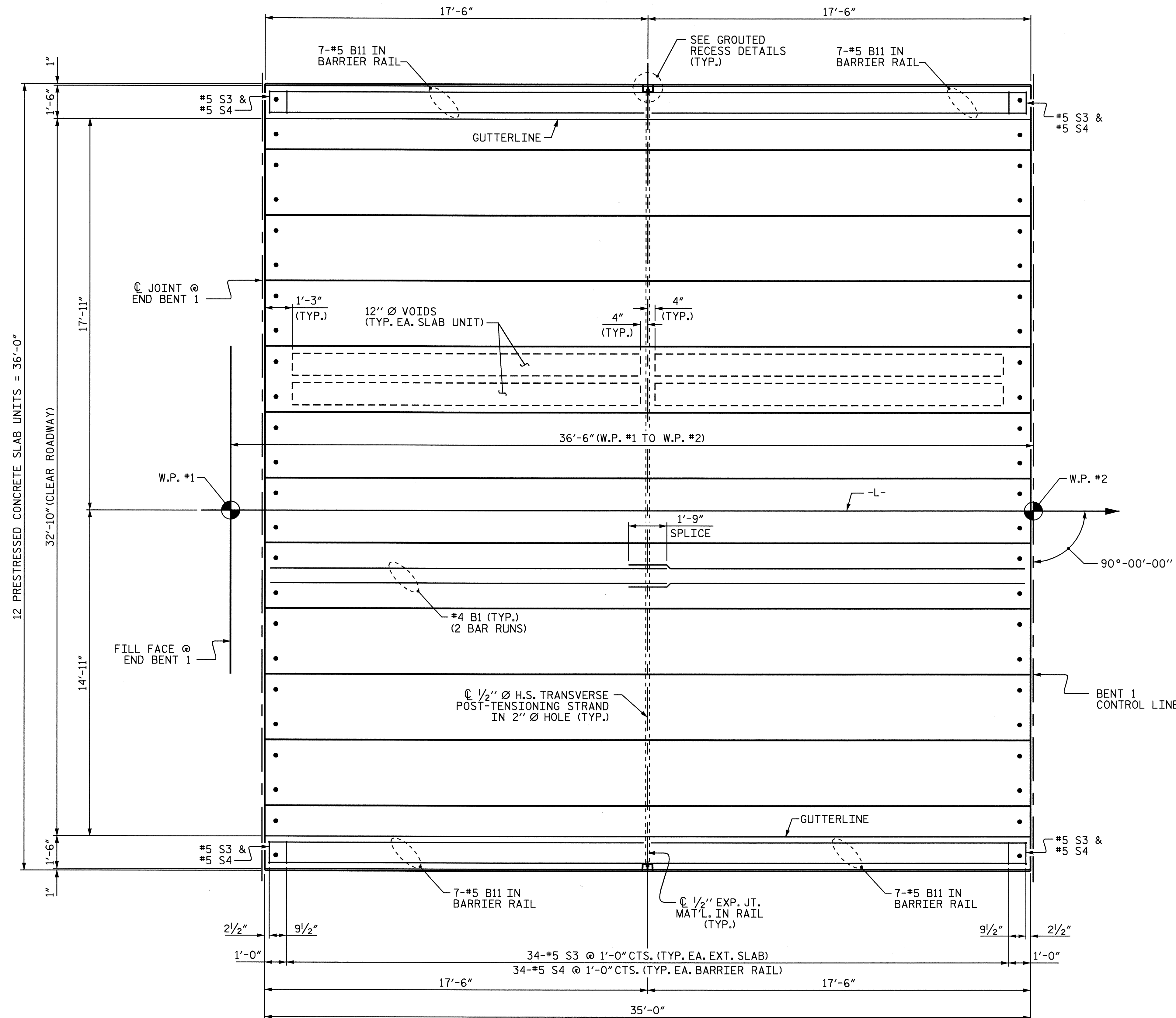
SHEET 1 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
3'-0" X 1'-9"  
PRESTRESSED CONCRETE  
CORED SLAB UNIT  
90° SKEW

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

S-41  
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-4082  
COLUMBUS COUNTY  
 STATION: 16+56.00 -L-

SHEET 2 OF 4

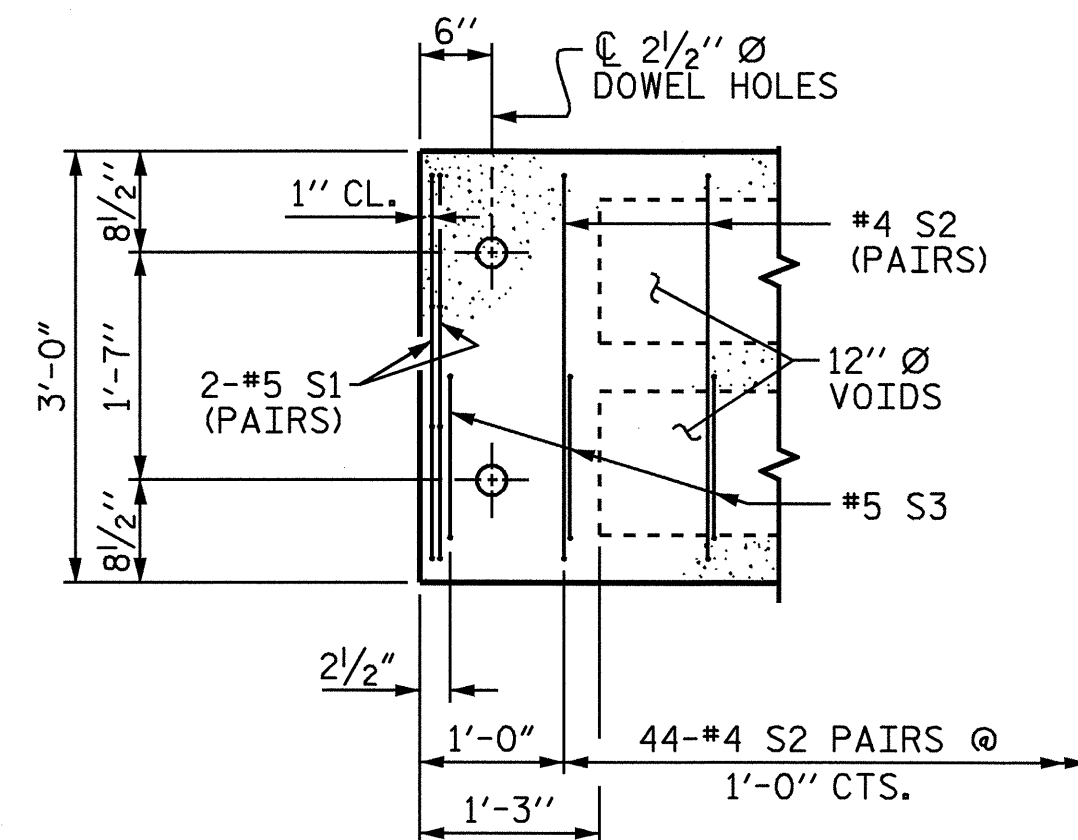
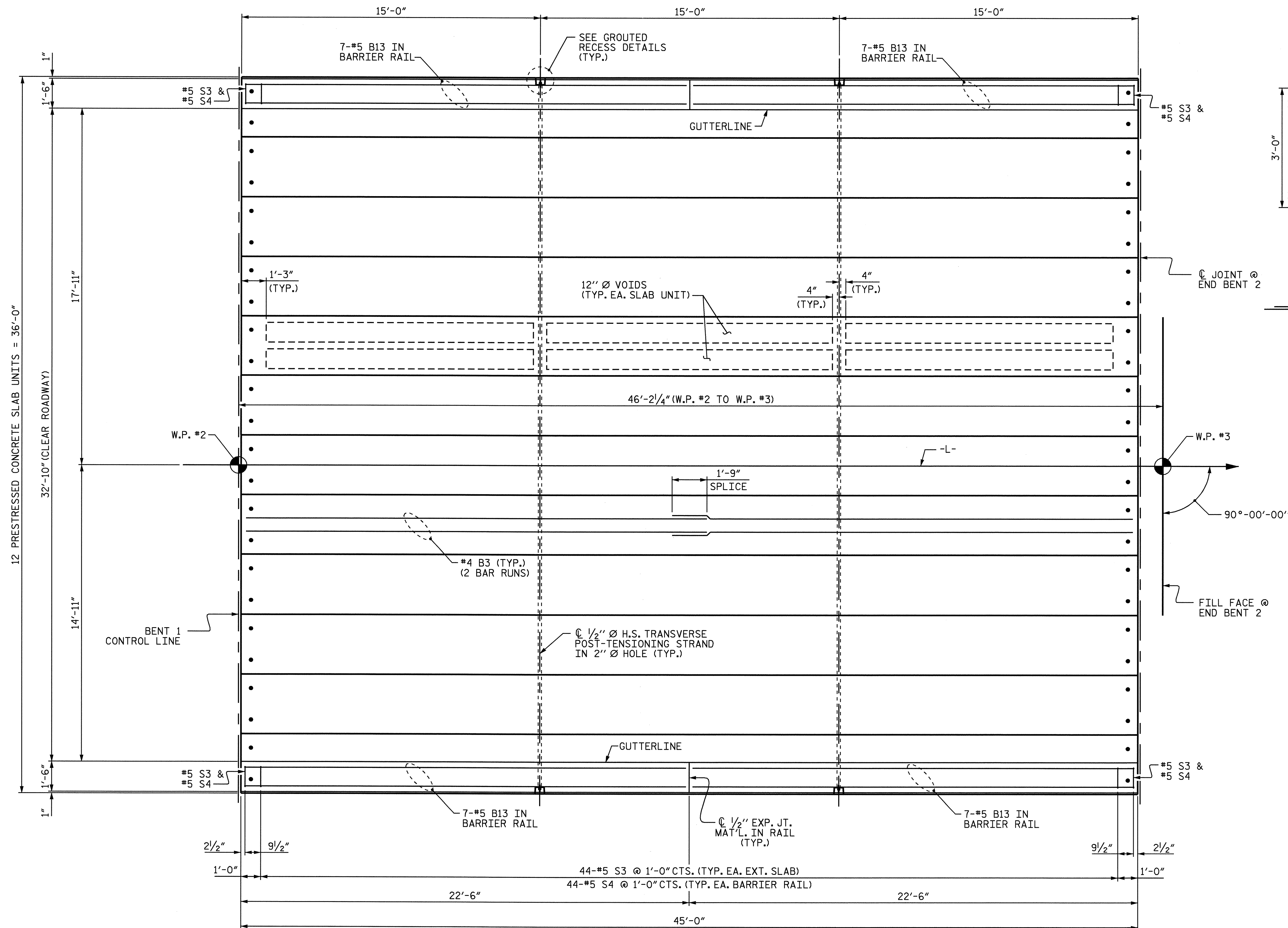


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 PLAN OF SPAN  
 32'-10" CLEAR ROADWAY  
 90° SKEW - 35' SPAN

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-42
1			3			TOTAL SHEETS
2			4			56

DRAWN BY: L.E. SUTTON DATE: 5/23/08  
 CHECKED BY: A.S. CALLAWAY DATE: 5/27/08





PART PLAN - SLAB SECTION

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

PLAN OF SPAN "B"

PROJECT NO. B-4082  
COLUMBUS COUNTY  
 STATION: 16+56.00 -L-

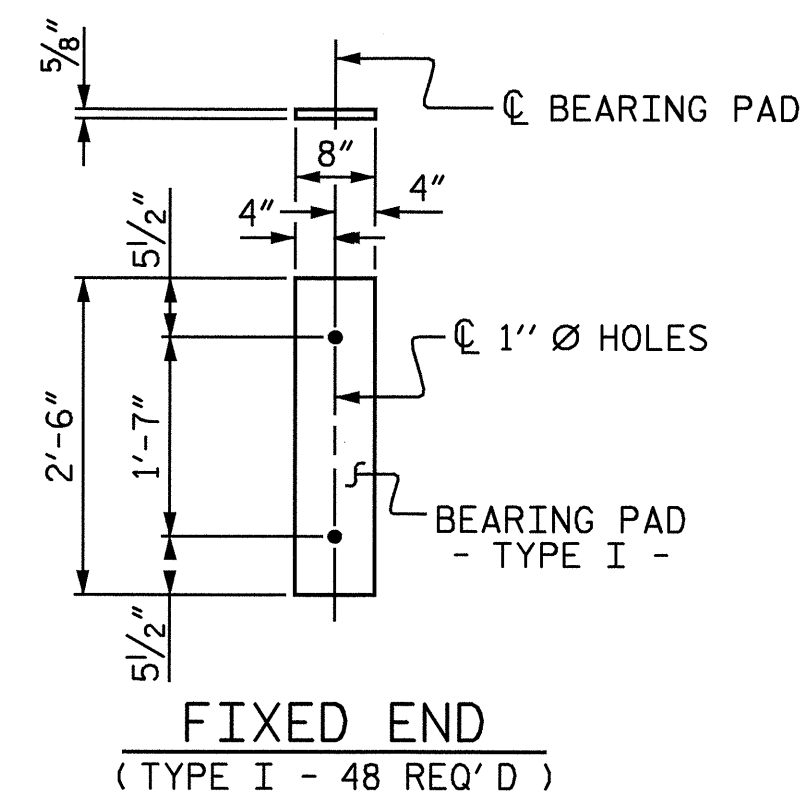
SHEET 3 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 PLAN OF SPAN  
 32'-10" CLEAR ROADWAY  
 90° SKEW - 45' SPAN



DRAWN BY: L.E. SUTTON DATE: 5/23/08  
 CHECKED BY: A.S. CALLAWAY DATE: 5/27/08

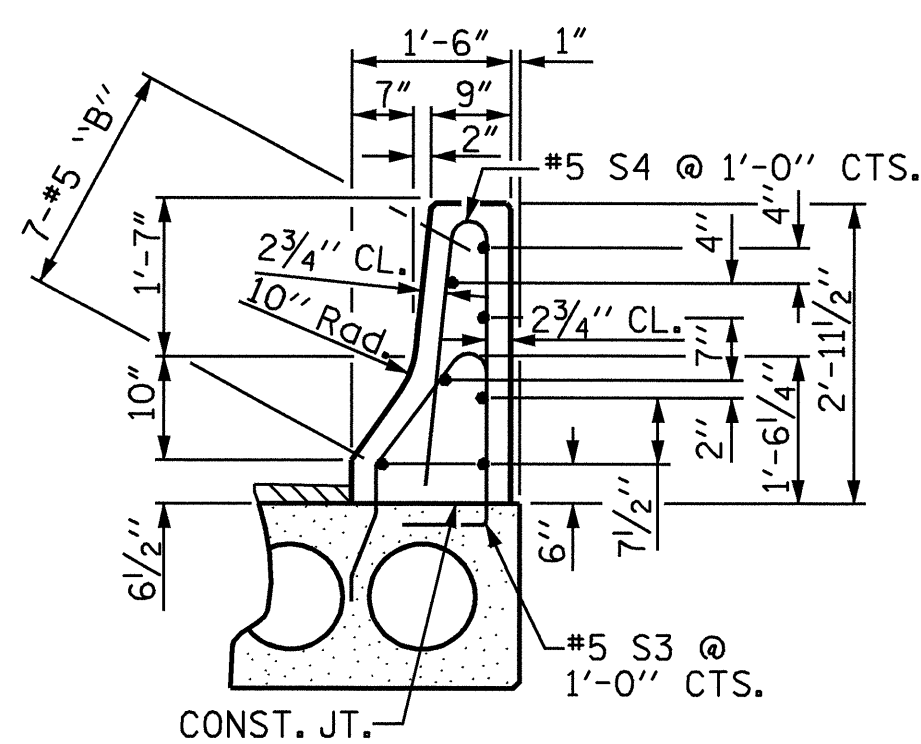
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-43
1			3			TOTAL SHEETS
2			4			56



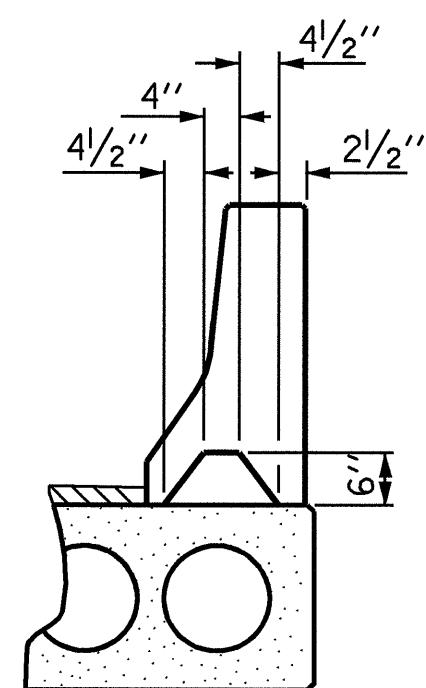
**ELASTOMERIC BEARING DETAILS**

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

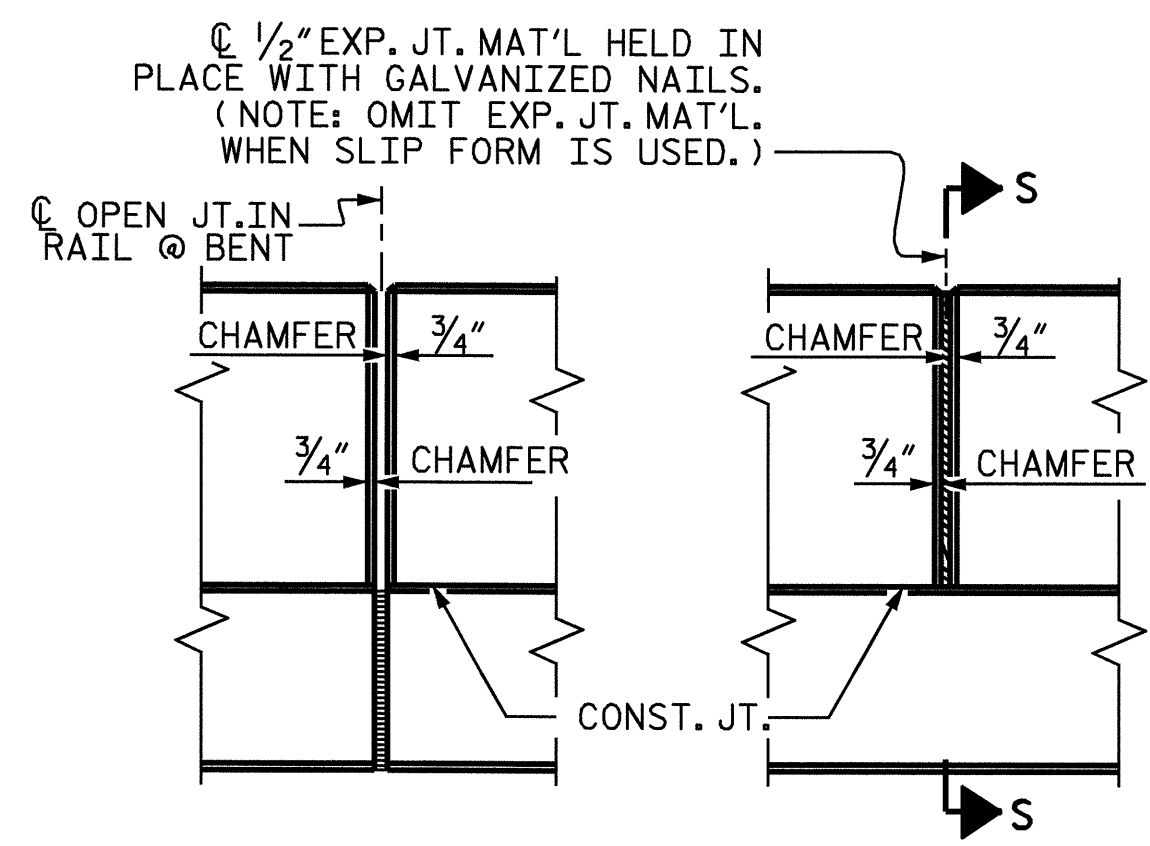
CORED SLAB UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
SPAN A			
EXTERIOR C.S.	2	35'-0"	70'-0"
INTERIOR C.S.	10	35'-0"	350'-0"
SPAN B			
EXTERIOR C.S.	2	45'-0"	90'-0"
INTERIOR C.S.	10	45'-0"	450'-0"
TOTAL	24	—	960'-0"



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

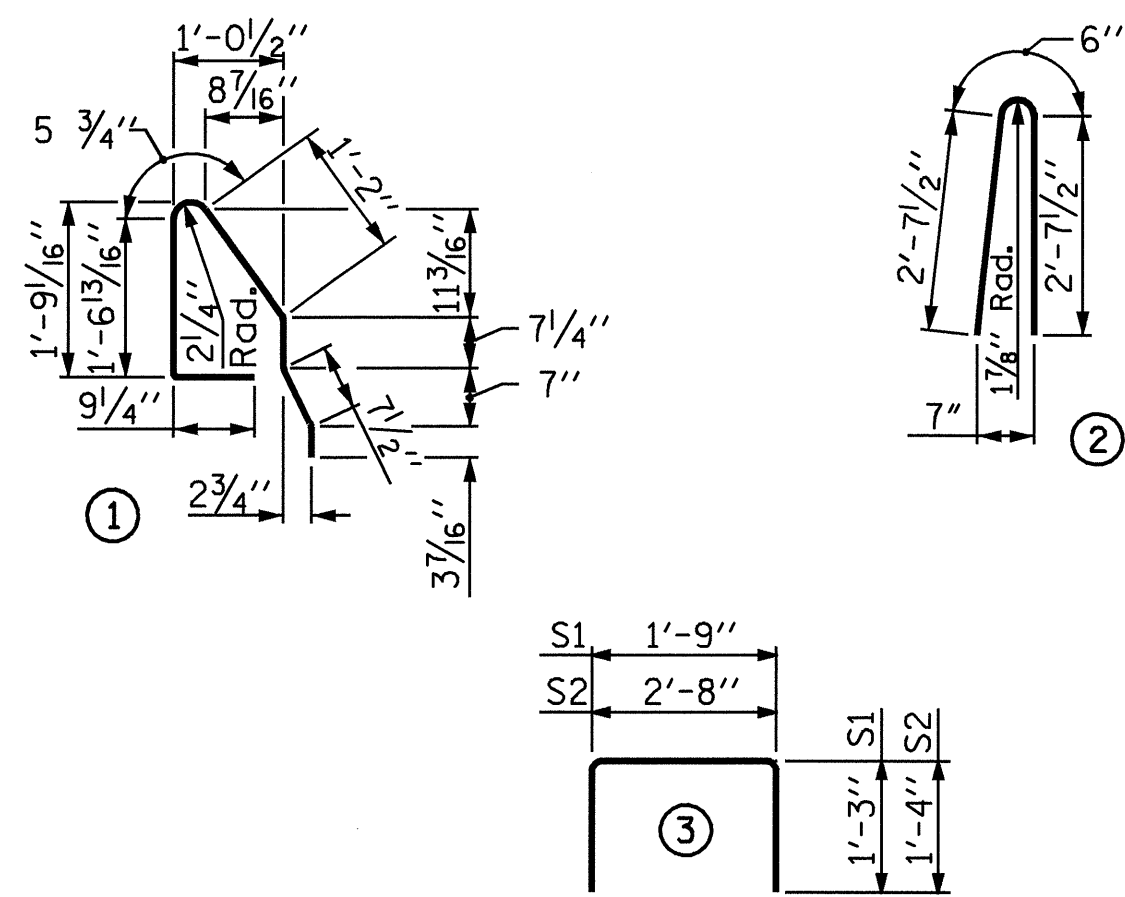
**BARRIER RAIL DETAILS**

BILL OF MATERIAL FOR CONCRETE BARRIER RAIL						
BAR	BARS PER SPAN		TOTAL NO.	SIZE	TYPE	WEIGHT
	SPAN A	SPAN B				
*B11	28	—	28	#5	STR	499
*B13	—	28	28	#5	STR	645
*S4	72	92	164	#5	2	984
*EPOXY COATED REINFORCING STEEL			LBS.	2,128		
CLASS AA CONCRETE			CU.YDS.	18.7		
TOTAL CONCRETE BARRIER RAIL			LIN. FT.	160.00		

ASSEMBLED BY : L.E. SUTTON DATE : 5/23/08  
 CHECKED BY : A.S. CALLAWAY DATE : 5/27/08  
 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

23-JUL-2008 10:56  
 R:\Structures\str2\sutton\B4082.sd.CS.02.dgn  
 lsutton

**BAR TYPES**



ALL BAR DIMENSIONS ARE OUT TO OUT.

**BILL OF MATERIAL FOR ONE 35' CORED SLAB SECTION (SPAN "A")**

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

**BILL OF MATERIAL FOR ONE 45' CORED SLAB SECTION (SPAN "B")**

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

DEAD LOAD DEFLECTION AND CAMBER		
	3'-0" x 1'-9" 1/2" Ø L.R. STRAND	
	SPAN A	SPAN B
CAMBER (SLAB ALONE IN PLACE)	1/2"	1 1/16"
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD **	1/16"	1/4"
FINAL CAMBER	7/16"	1 5/16"

\*\* INCLUDES FUTURE WEARING SURFACE.

**NOTES**

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

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

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

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

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

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

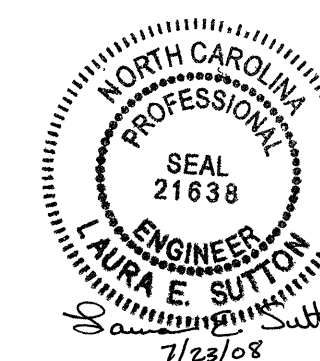
APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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-4082  
COLUMBUS COUNTY  
 STATION: 16+56.00 -L-

SHEET 4 OF 4



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 3'-0" X 1'-9"  
 PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-44
1			3			TOTAL SHEETS
2			4			56

STR. #2

STD. NO. PCS3

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.)

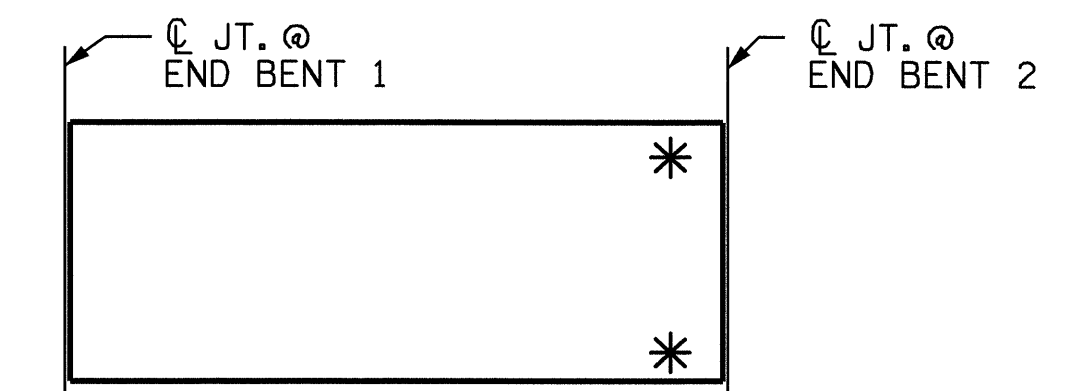
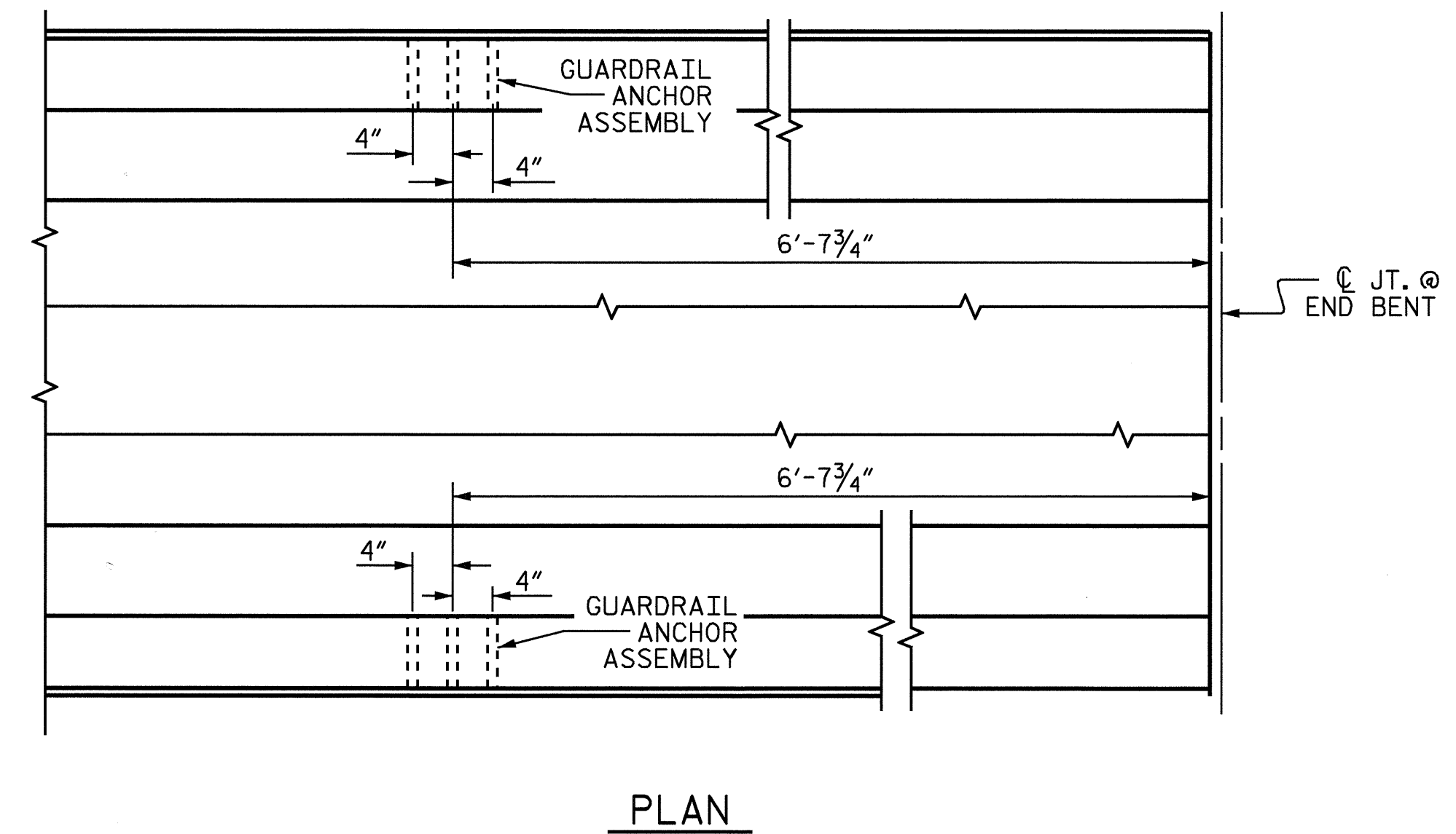
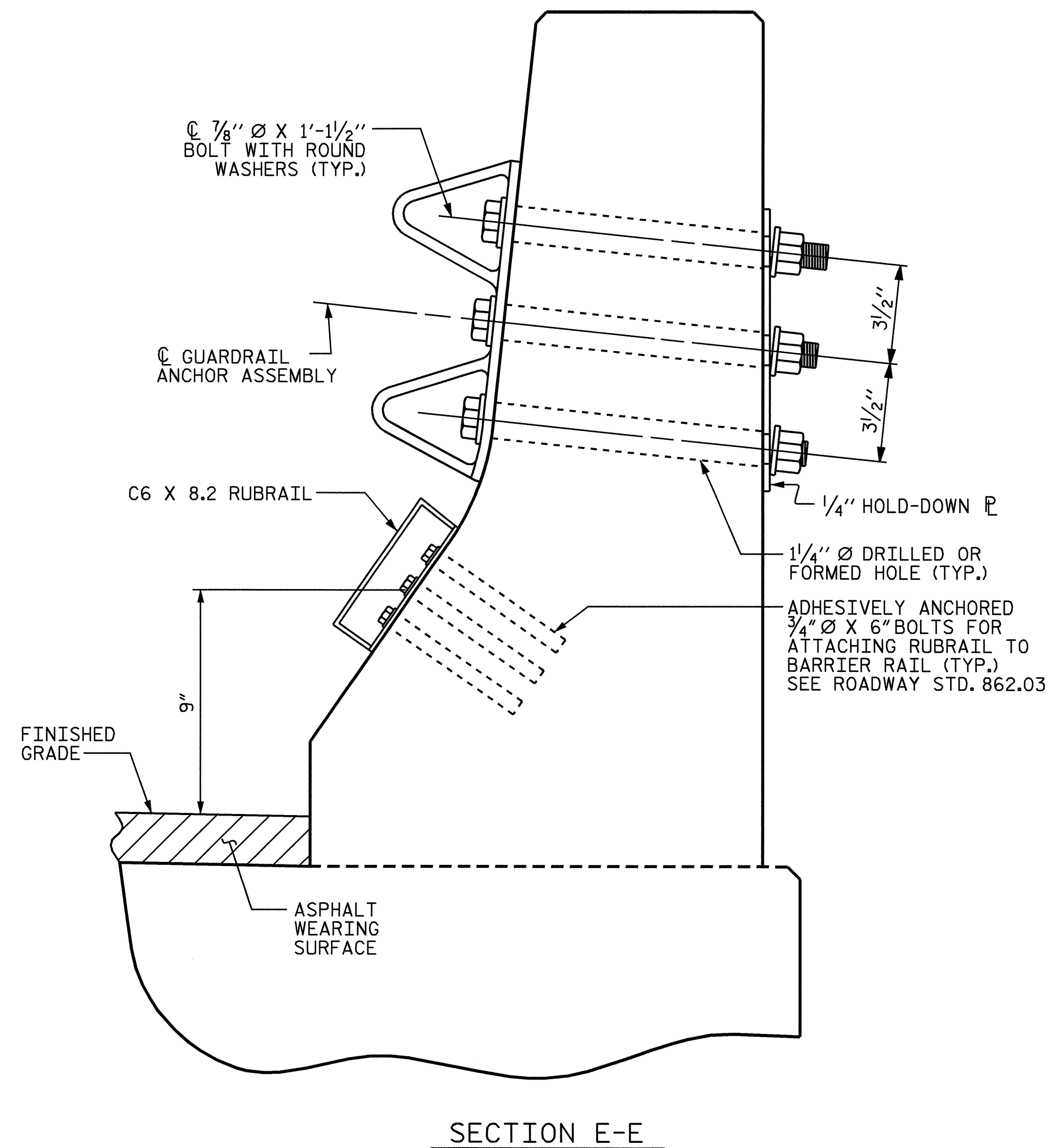
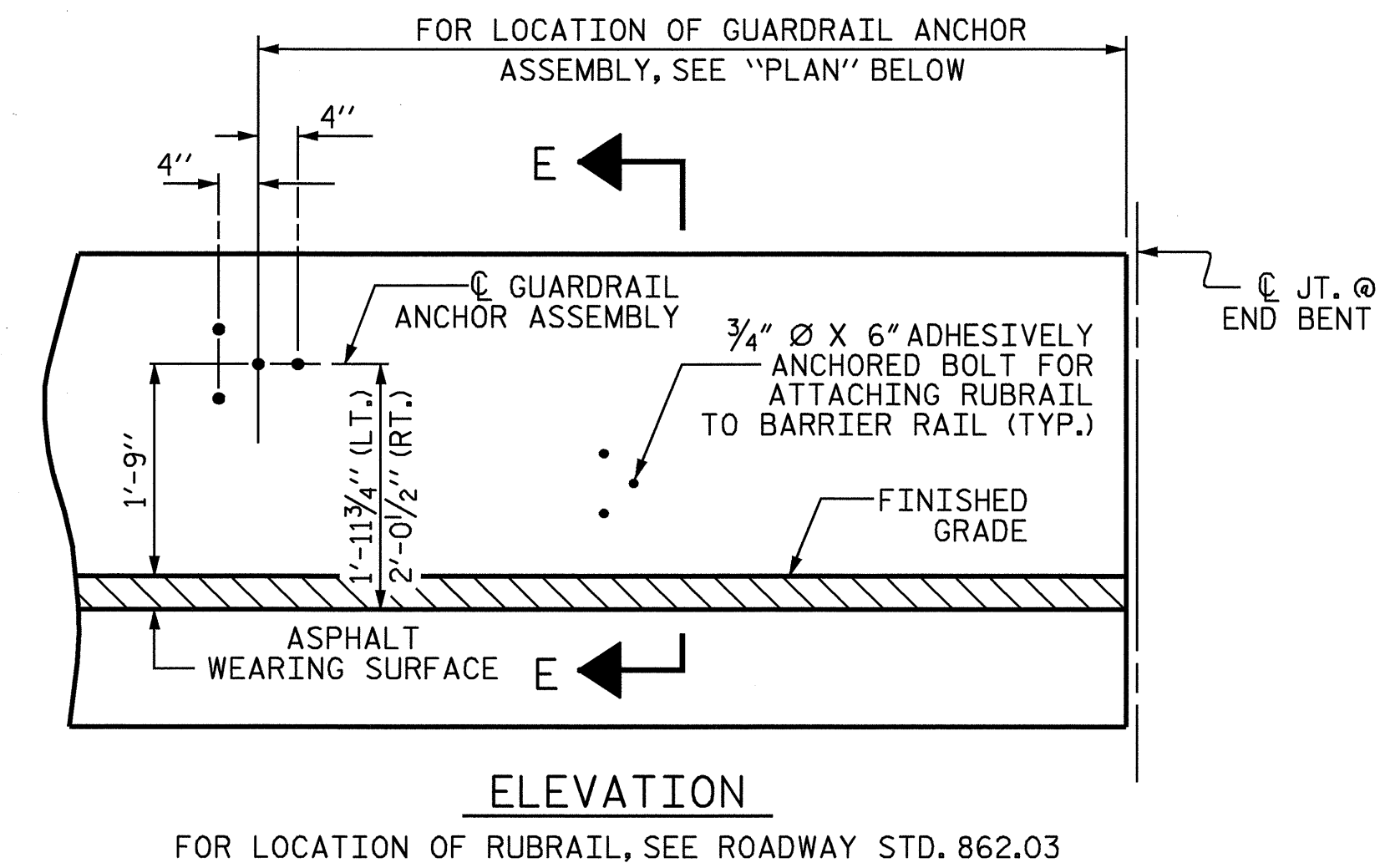
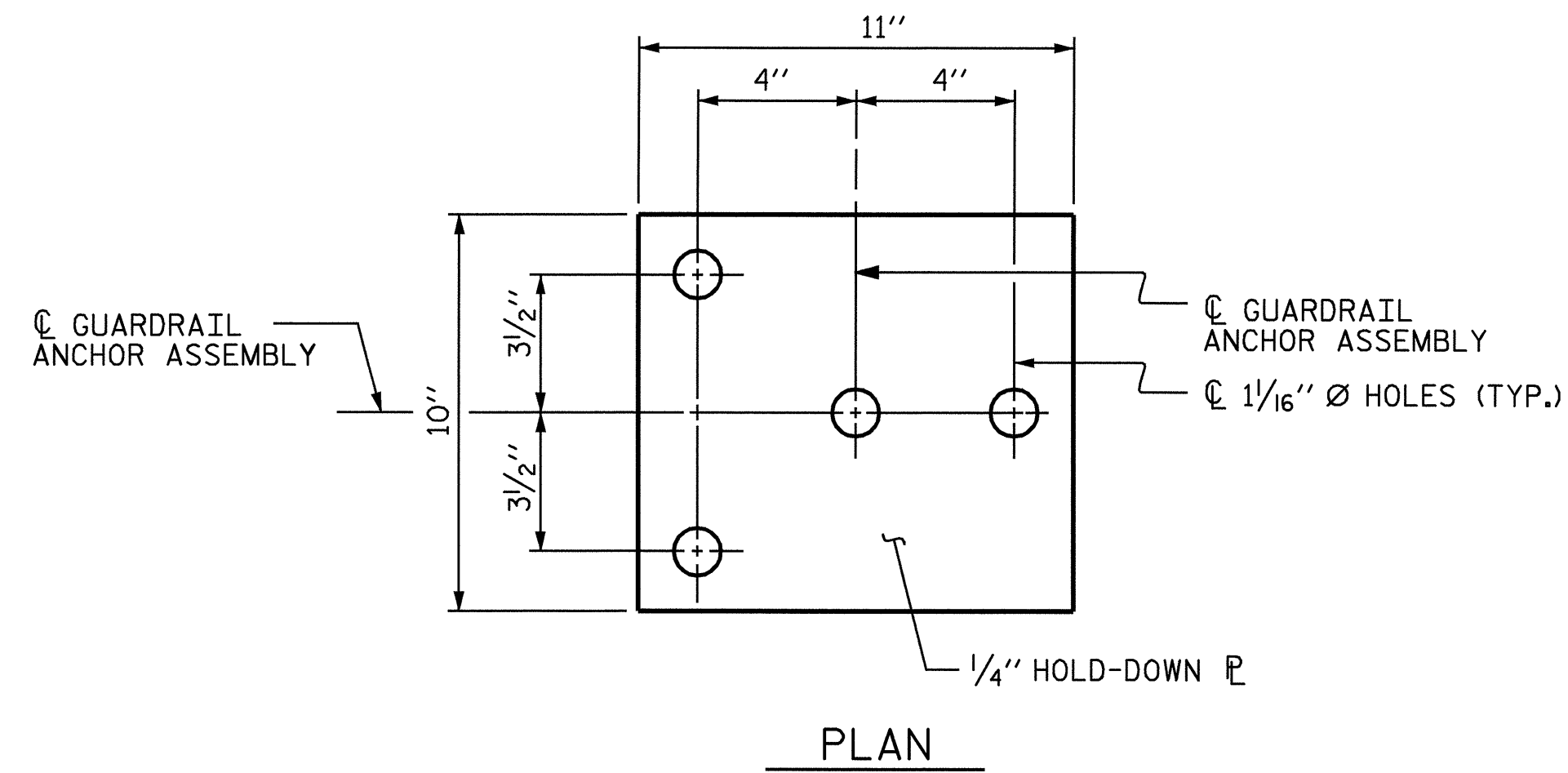
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.



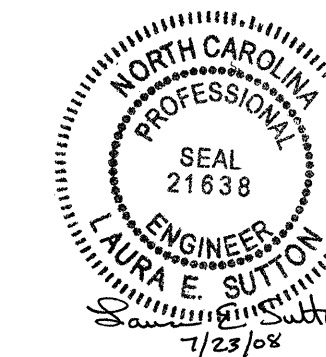
LOCATION OF ANCHORS FOR GUARDRAIL

SKETCH SHOWING POINTS OF ATTACHMENTS

\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4082  
 COLUMBUS COUNTY  
 STATION: 16+56.00 -L-

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



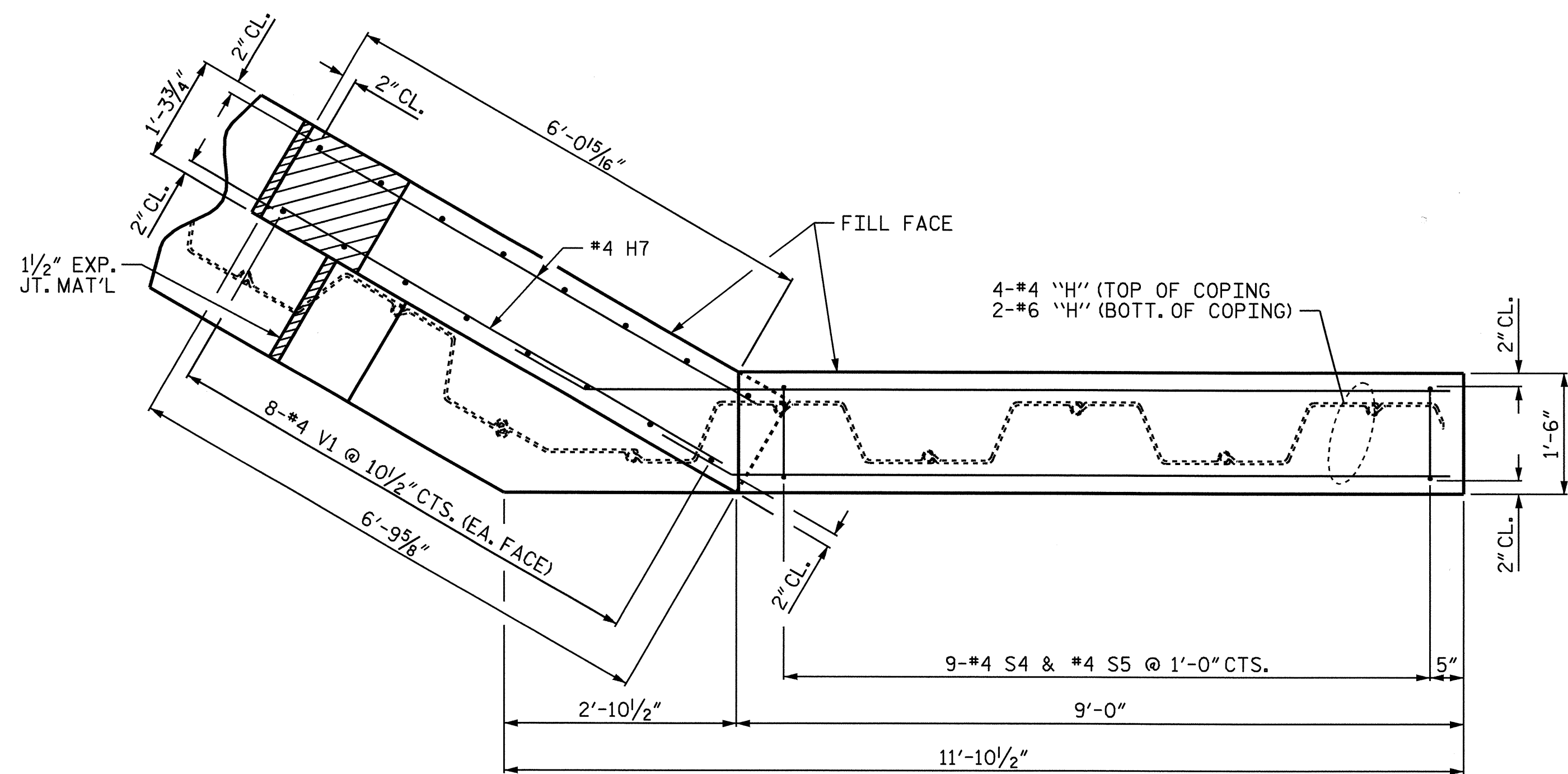
ASSEMBLED BY : L.E. SUTTON DATE : 5/22/08  
 CHECKED BY : A.S. CALLAWAY DATE : 5/27/08  
 DRAWN BY : TLA 5/06  
 CHECKED BY : GM 5/06

ADDED 5/1/06R KMM/GM

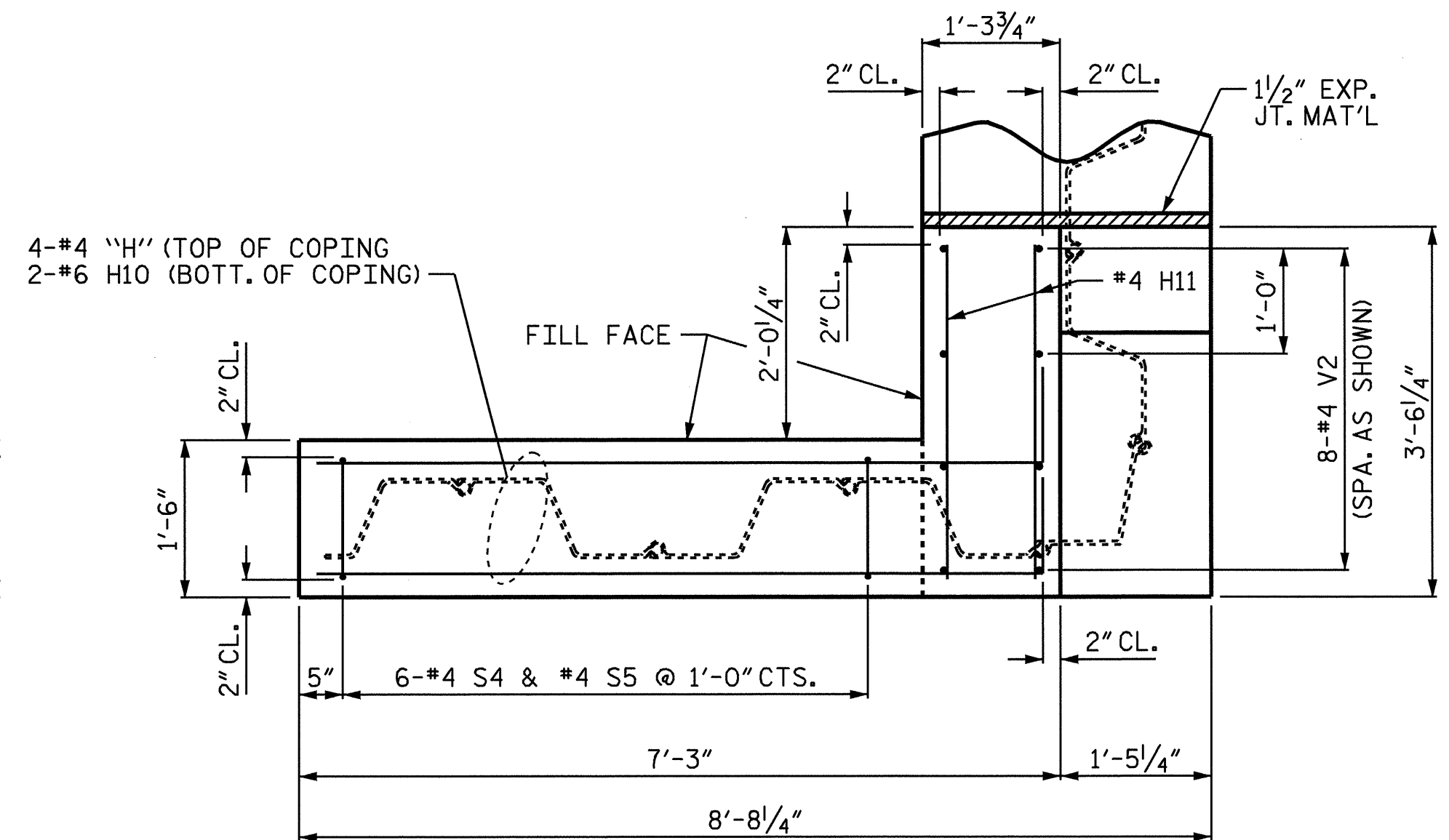
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-45
1			3			TOTAL SHEETS
2			4			56





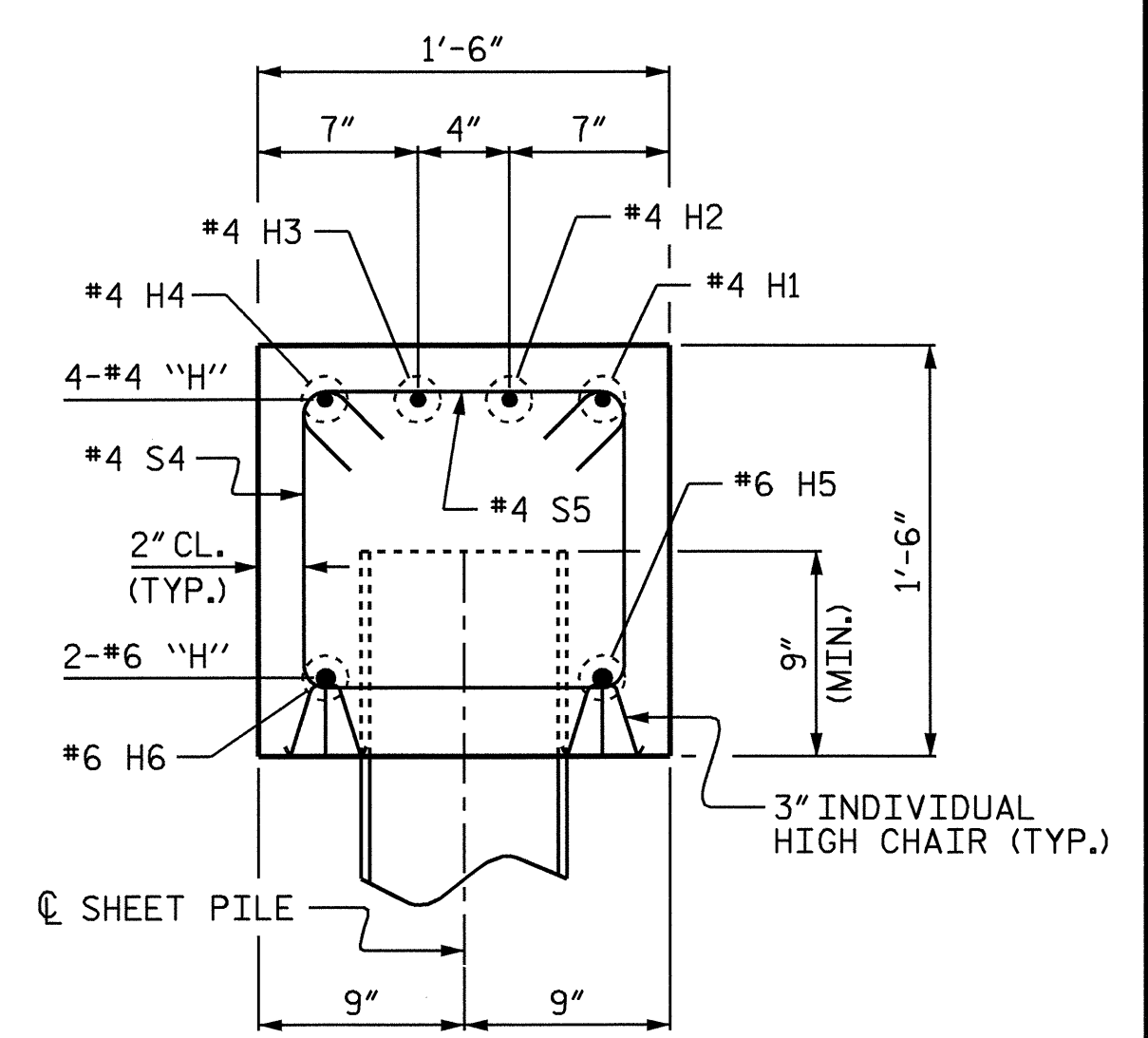


PLAN OF WING (W1)

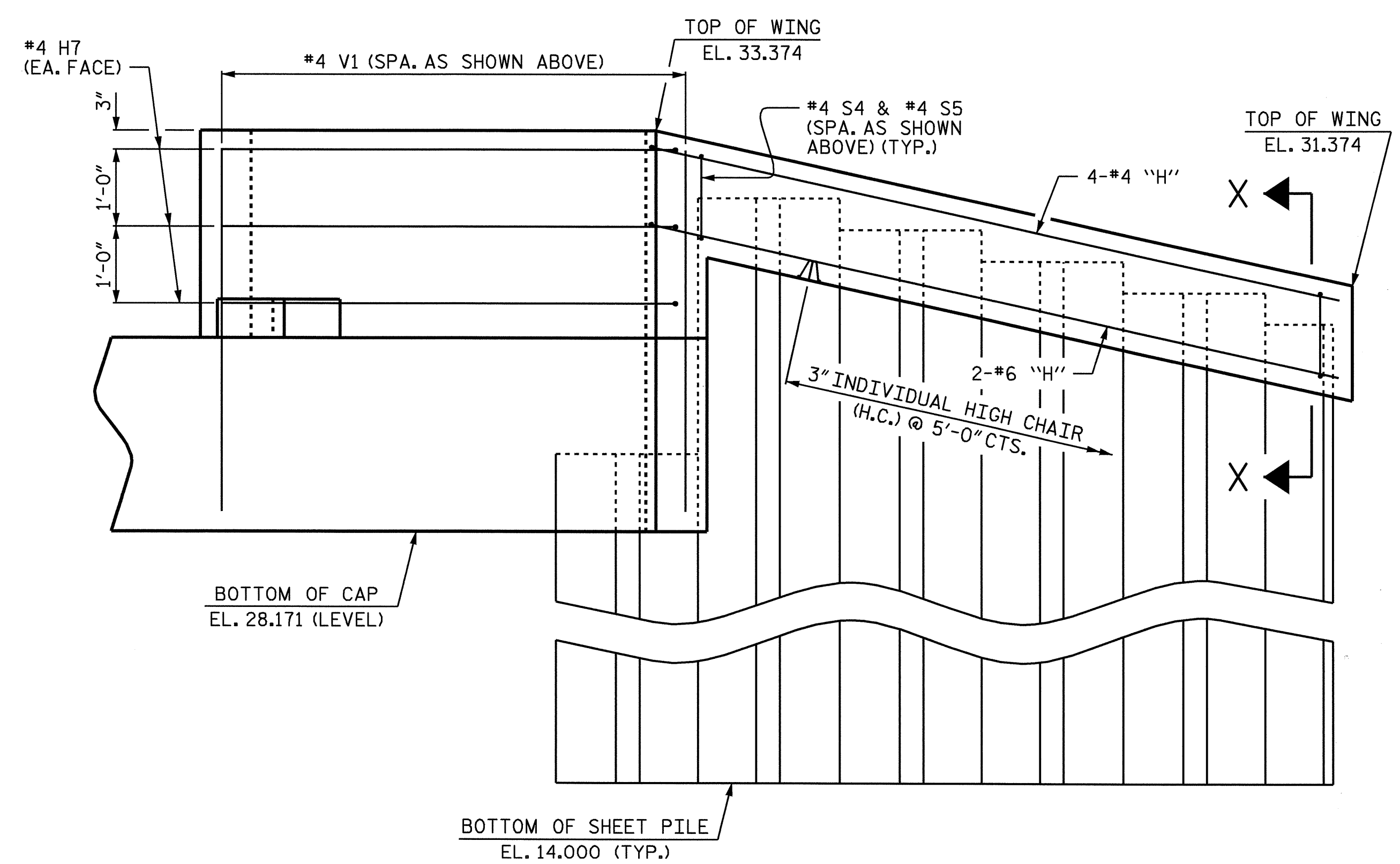


PLAN OF WING (W2)

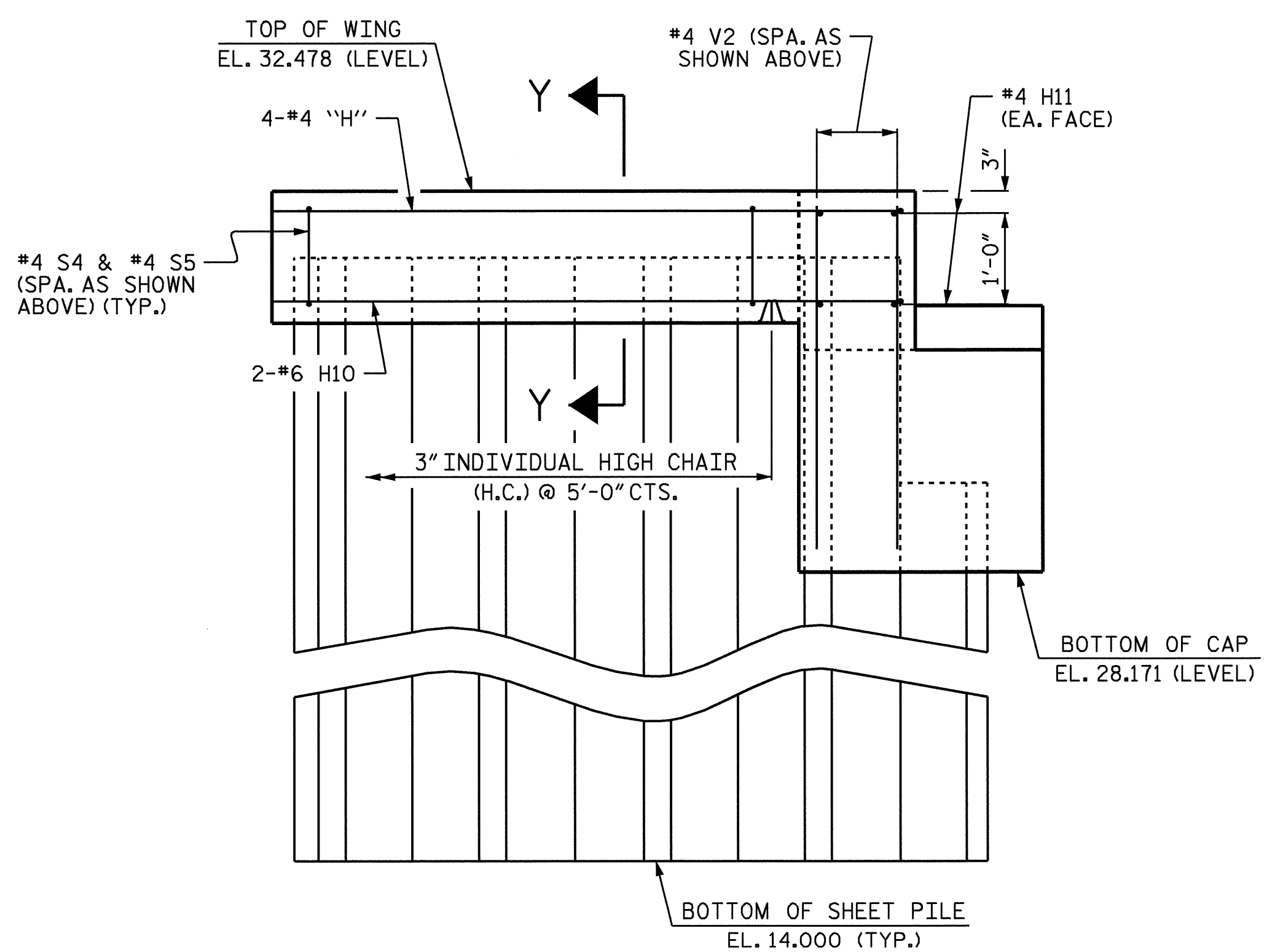
BURN A HOLE IN THE SHEET PILES TO ALLOW FOR PLACEMENT OF THE #4 "S" BARS IN THE WINGS.



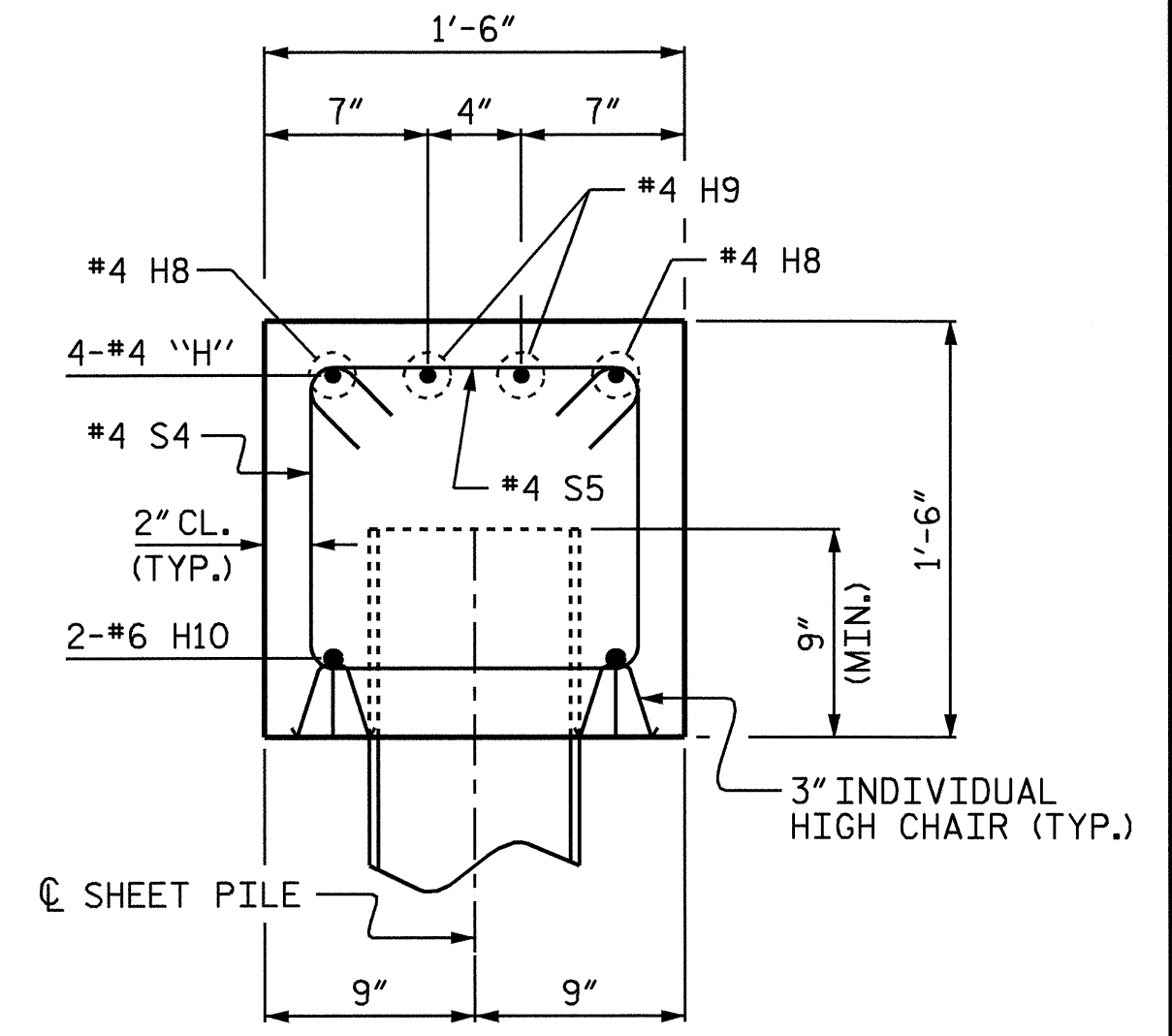
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION Y-Y

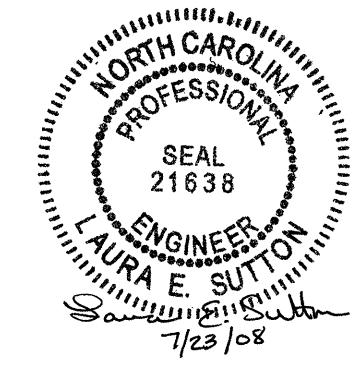
PROJECT NO. B-4082  
 COLUMBUS COUNTY  
 STATION: 16+56.00 -L-

SHEET 2 OF 3

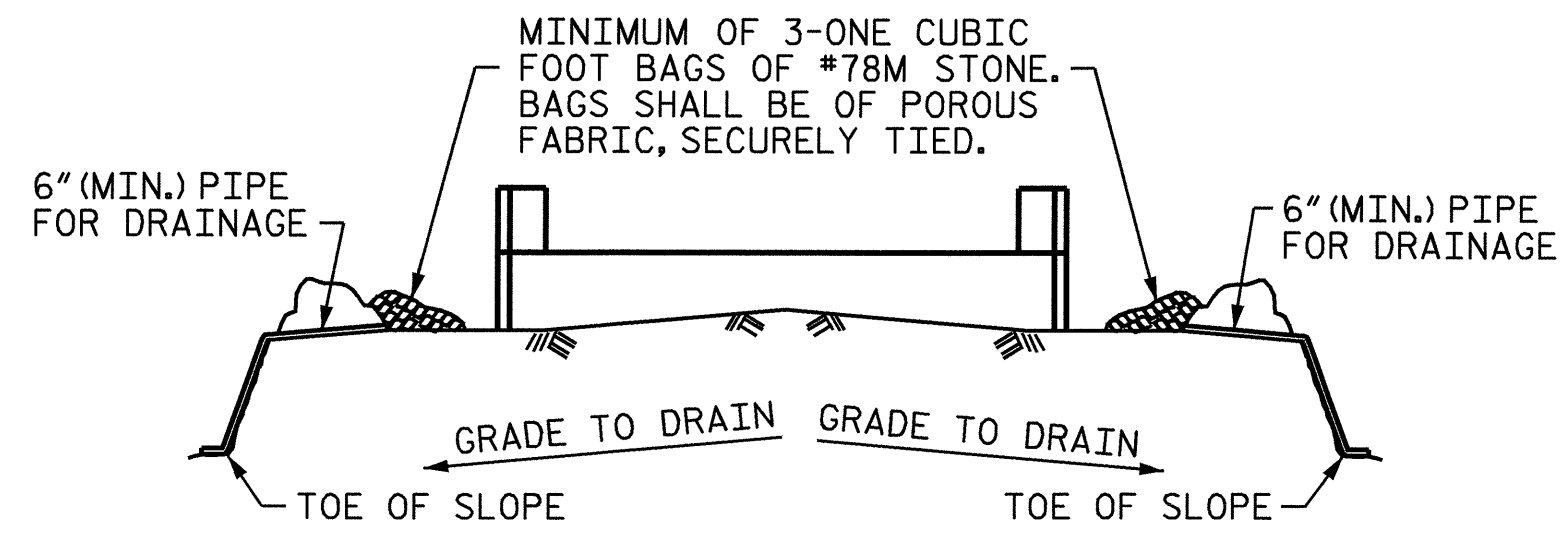
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-47
1			3			TOTAL SHEETS
2			4			56



DRAWN BY: P.C. BREWER DATE: 2/26/08  
 CHECKED BY: W.F. PARKER DATE: 3/01/08

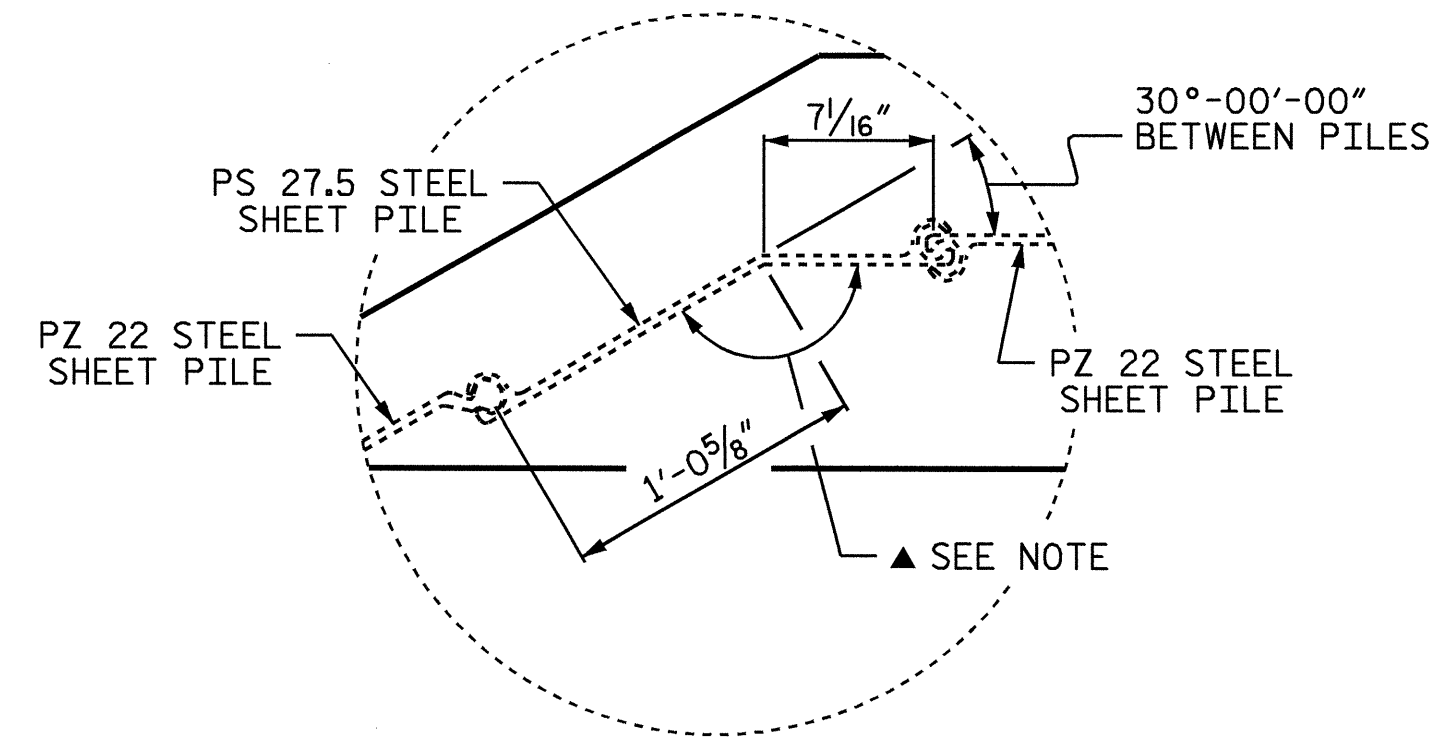


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

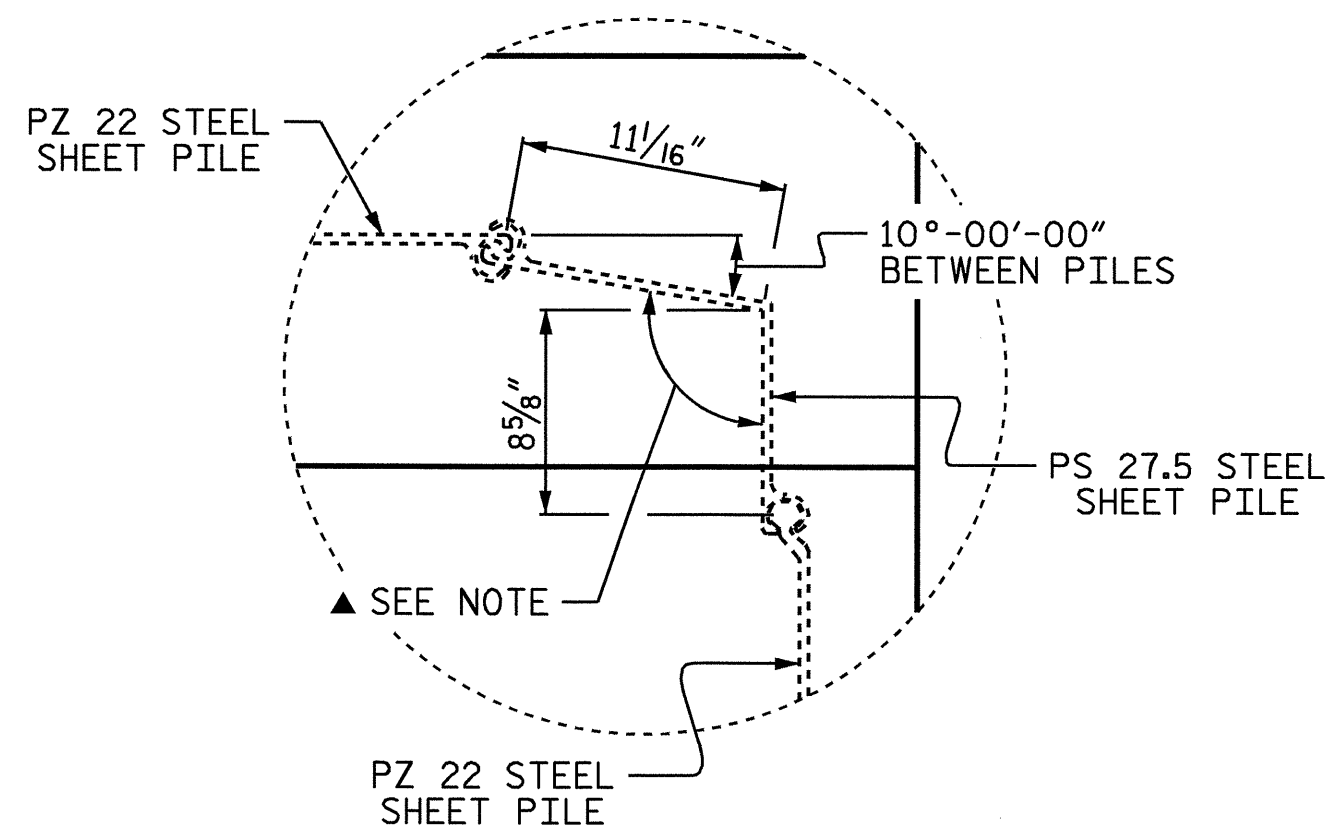
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

**TEMPORARY DRAINAGE AT END BENT**

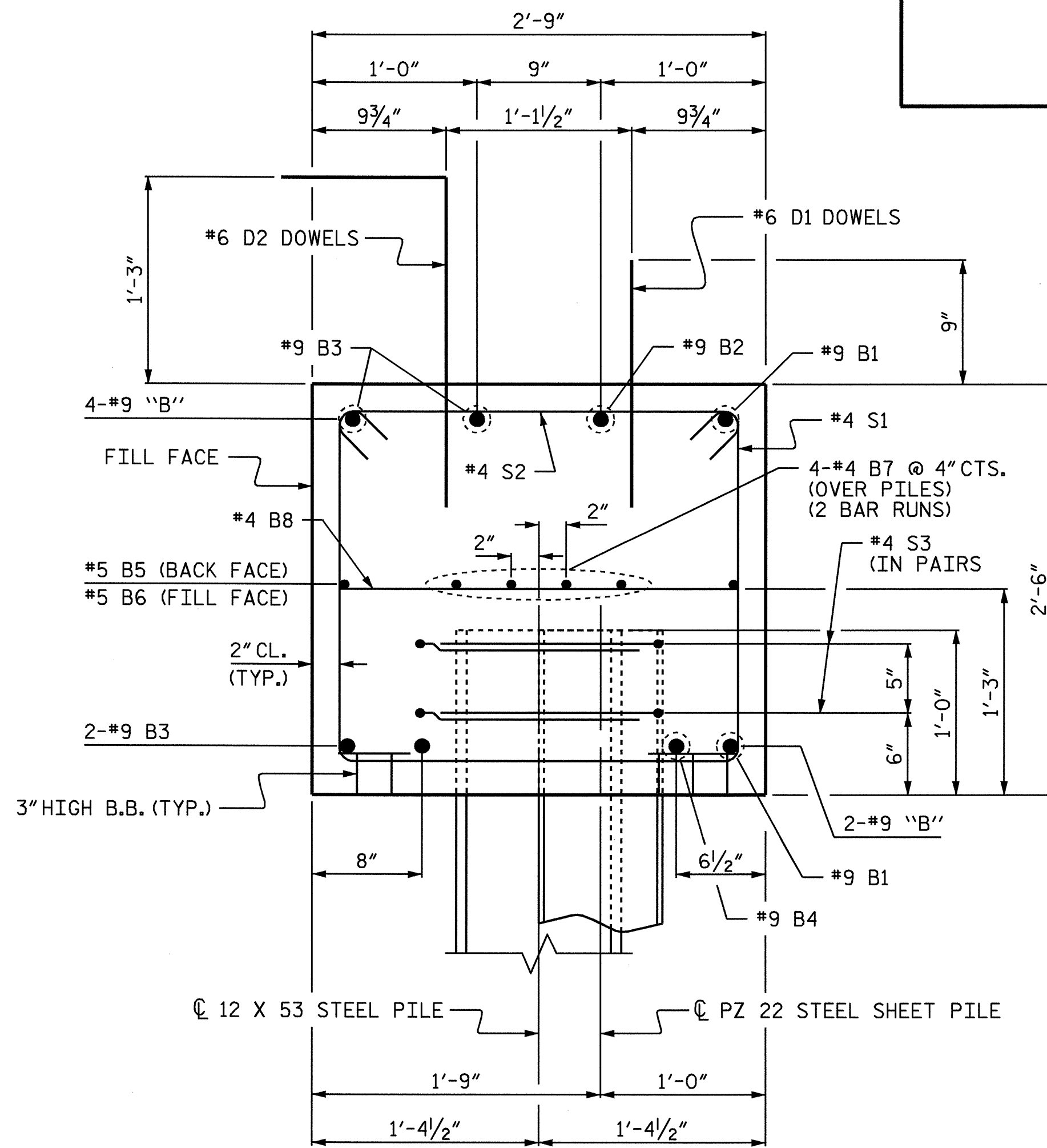


**DETAIL "B"**

▲ NOTE: THE BEND IN THE PS 27.5 STEEL SHEET PILE SHALL BE DETERMINED BY THE FABRICATOR.

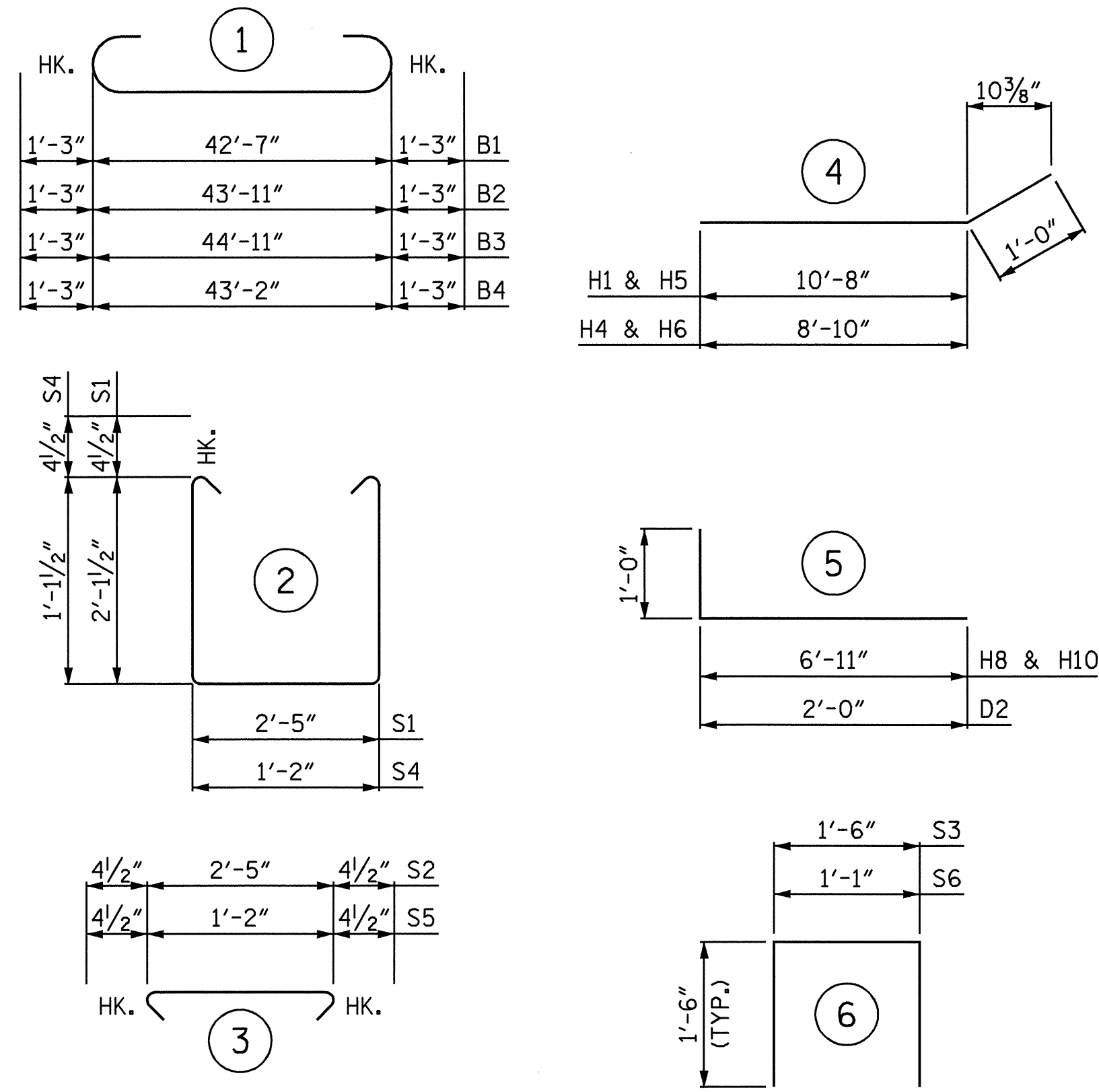


**DETAIL "C"**

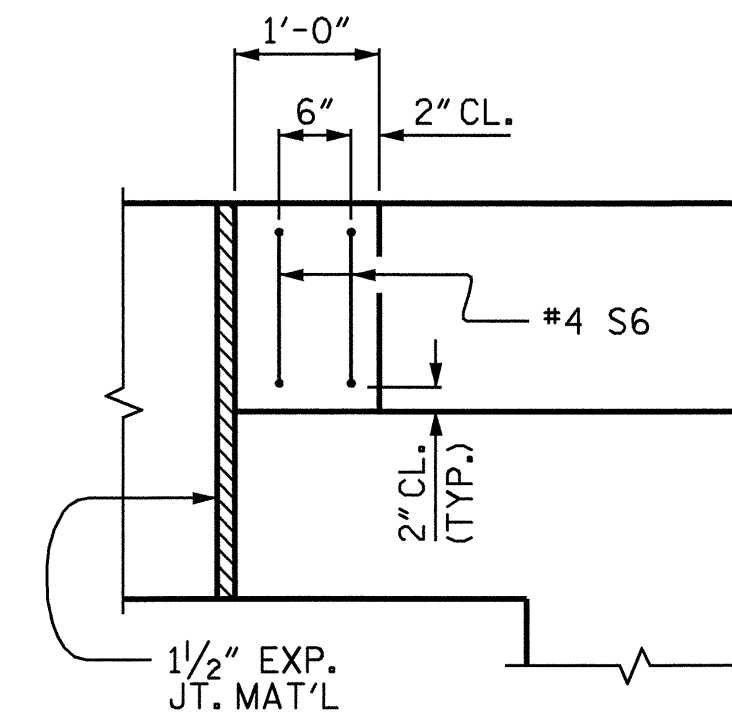


**SECTION A-A**

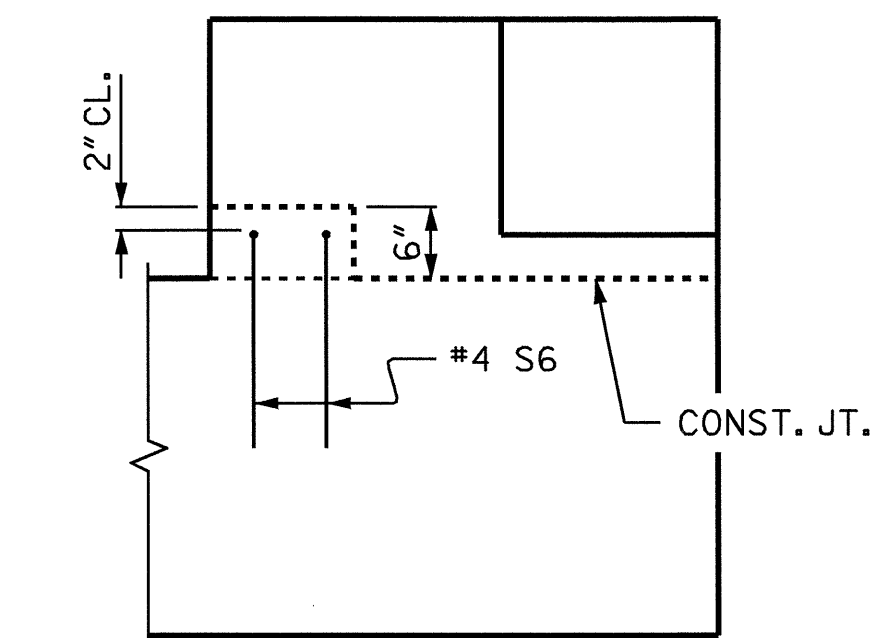
**BAR TYPES**



ALL BAR DIMENSIONS ARE OUT TO OUT.



**PLAN**



**ELEVATION**

**LATERAL GUIDE DETAIL**

(RIGHT SIDE SHOWN, LEFT SIDE SIMILAR)

**BILL OF MATERIAL**

**END BENT 1**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	9	1	45'-1"	307
B2	1	9	1	46'-5"	158
B3	4	9	1	47'-5"	645
B4	1	9	1	45'-8"	155
B5	1	5	STR	42'-10"	45
B6	1	5	STR	45'-1"	47
B7	8	4	STR	23'-10"	127
B8	11	4	STR	2'-5"	18
D1	24	6	STR	1'-6"	54
D2	35	6	5	3'-0"	158
H1	1	4	4	11'-8"	8
H2	1	4	STR	10'-1"	7
H3	1	4	STR	9'-6"	6
H4	1	4	4	9'-10"	7
H5	1	6	4	11'-8"	18
H6	1	6	4	9'-10"	15
H7	6	4	STR	6'-3"	25
H8	2	4	5	7'-11"	11
H9	2	4	STR	6'-11"	9
H10	2	6	5	7'-11"	24
H11	4	4	STR	3'-2"	8
S1	34	4	2	7'-5"	168
S2	34	4	3	3'-2"	72
S3	36	4	6	4'-6"	108
S4	15	4	2	4'-2"	42
S5	15	4	3	1'-11"	19
S6	4	4	6	4'-1"	11
V1	16	4	STR	4'-9"	51
V2	8	4	STR	3'-10"	20

REINFORCING STEEL	LBS.	2,343
<b>CLASS A CONCRETE BREAKDOWN :</b>		
POUR #1 - CAP	CU. YDS.	11.4
POUR #2 - UPPER WINGS & COPING	CU. YDS.	2.4
POUR #3 - LATERAL GUIDES	CU. YDS.	0.1
<b>TOTAL</b>	<b>CU. YDS.</b>	<b>13.9</b>
HP 12 x 53 STEEL PILES	LIN. FT.	405
NO. = 9		
19.69" STEEL SHEET PILES (PS 27.5)	SQ. FT.	225
NO. = 9		
22" STEEL SHEET PILES (PZ 22)	SQ. FT.	765
NO. 26		

PROJECT NO. B-4082  
COLUMBUS COUNTY  
 STATION: 16+56.00 -L-

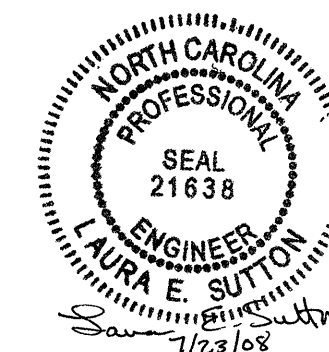
SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE  
 END BENT 1**

REVISIONS				SHEET NO.		
NO.	BY:	DATE:	NO.	BY:	DATE:	S-48
1			3			TOTAL SHEETS
2			4			56

DRAWN BY : P.C. BREWER DATE : 2/26/08  
 CHECKED BY : W.F. PARKER DATE : 3/01/08



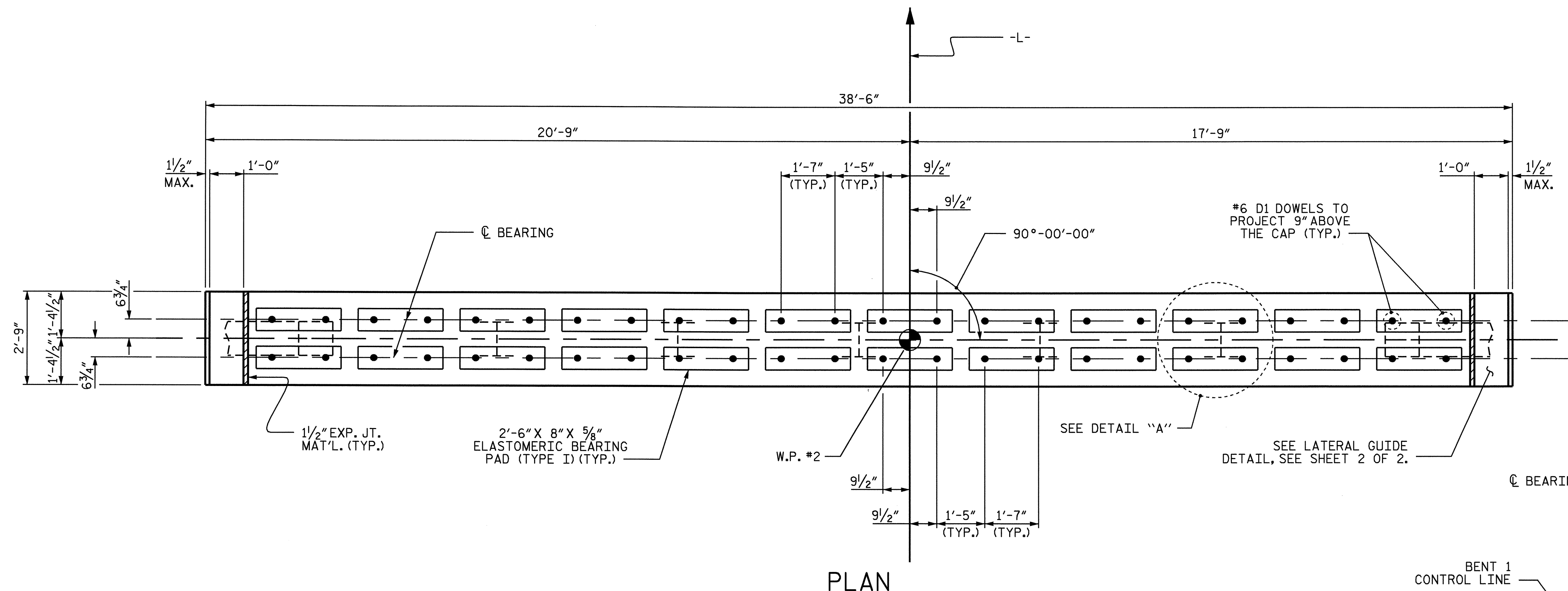


NOTES

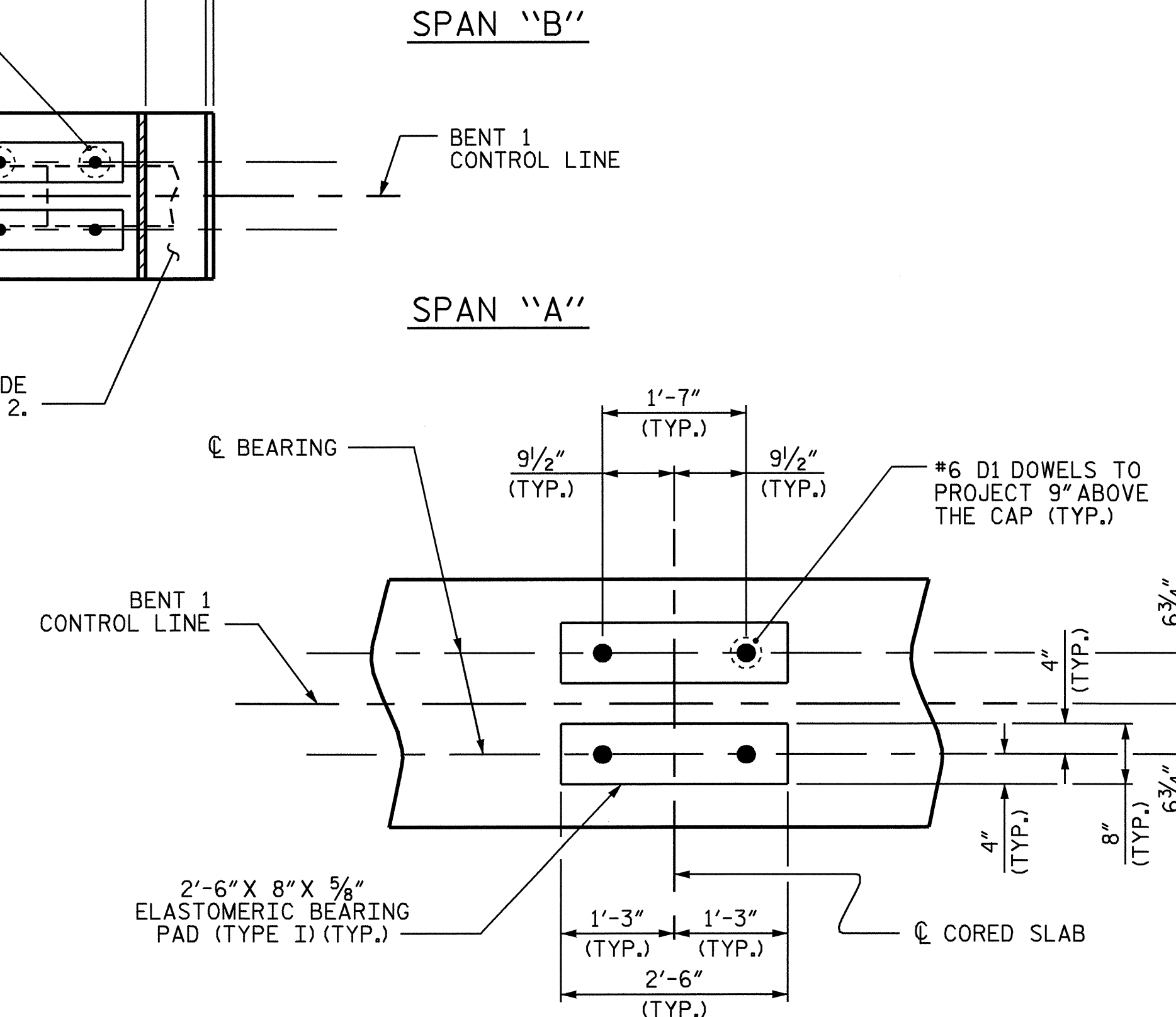
STIRRUPS BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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

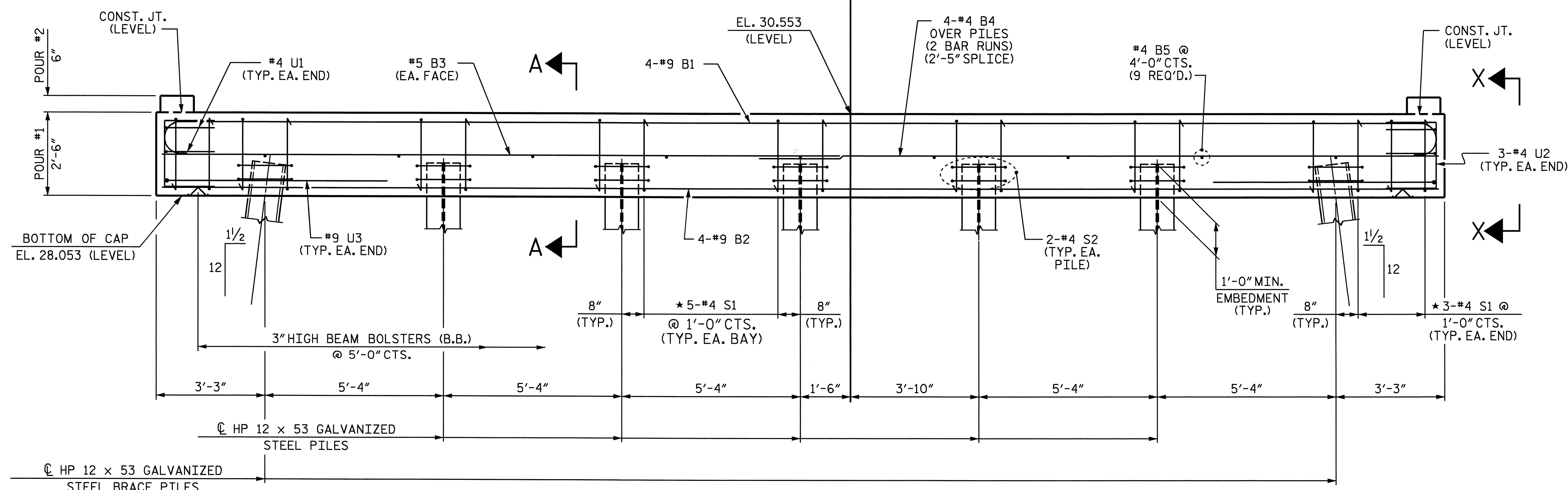
THE STEEL PILES SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



PLAN



DETAIL "A"  
(TYP. EA. CORED SLAB UNIT)



ELEVATION

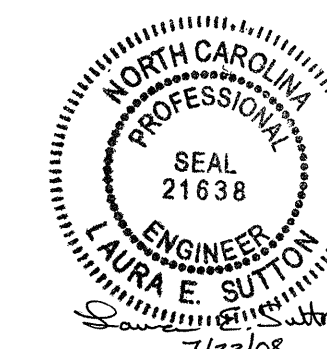
\* INVERT ALTERNATE STIRRUPS AS SHOWN.

PROJECT NO. B-4082  
COLUMBUS COUNTY  
STATION: 16+56.00 -L-

SHEET 1 OF 2

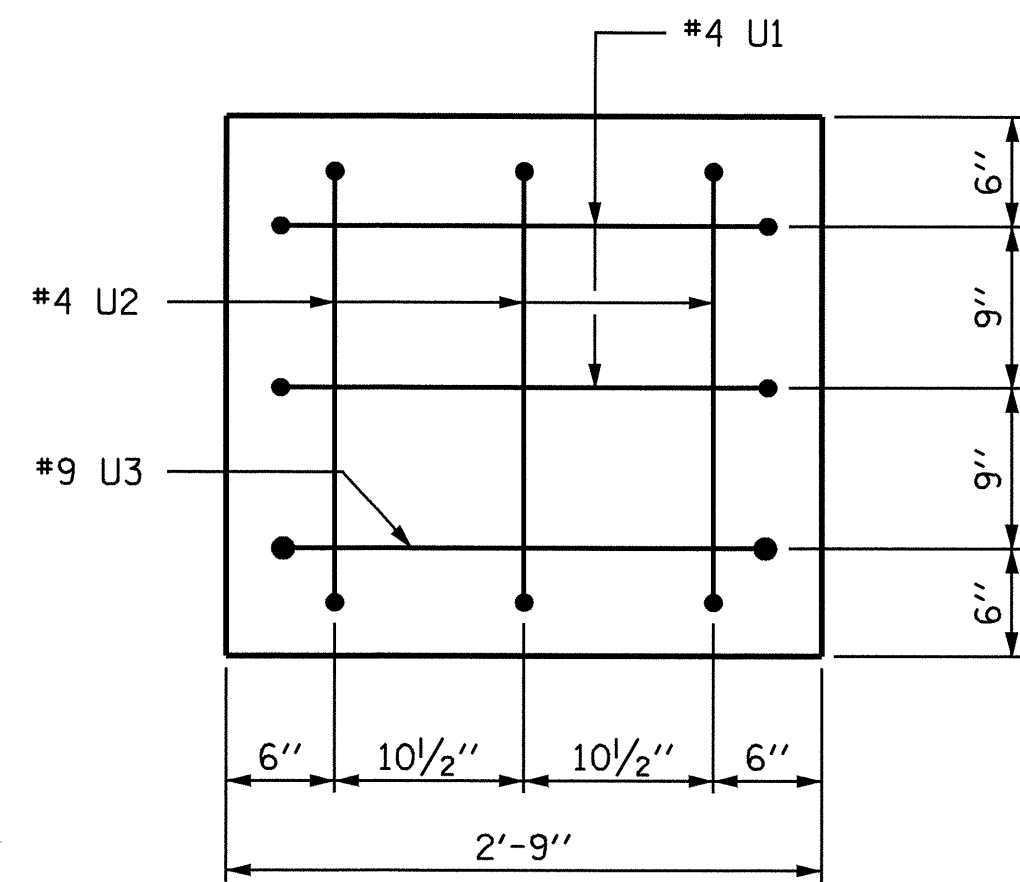
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
BENT 1

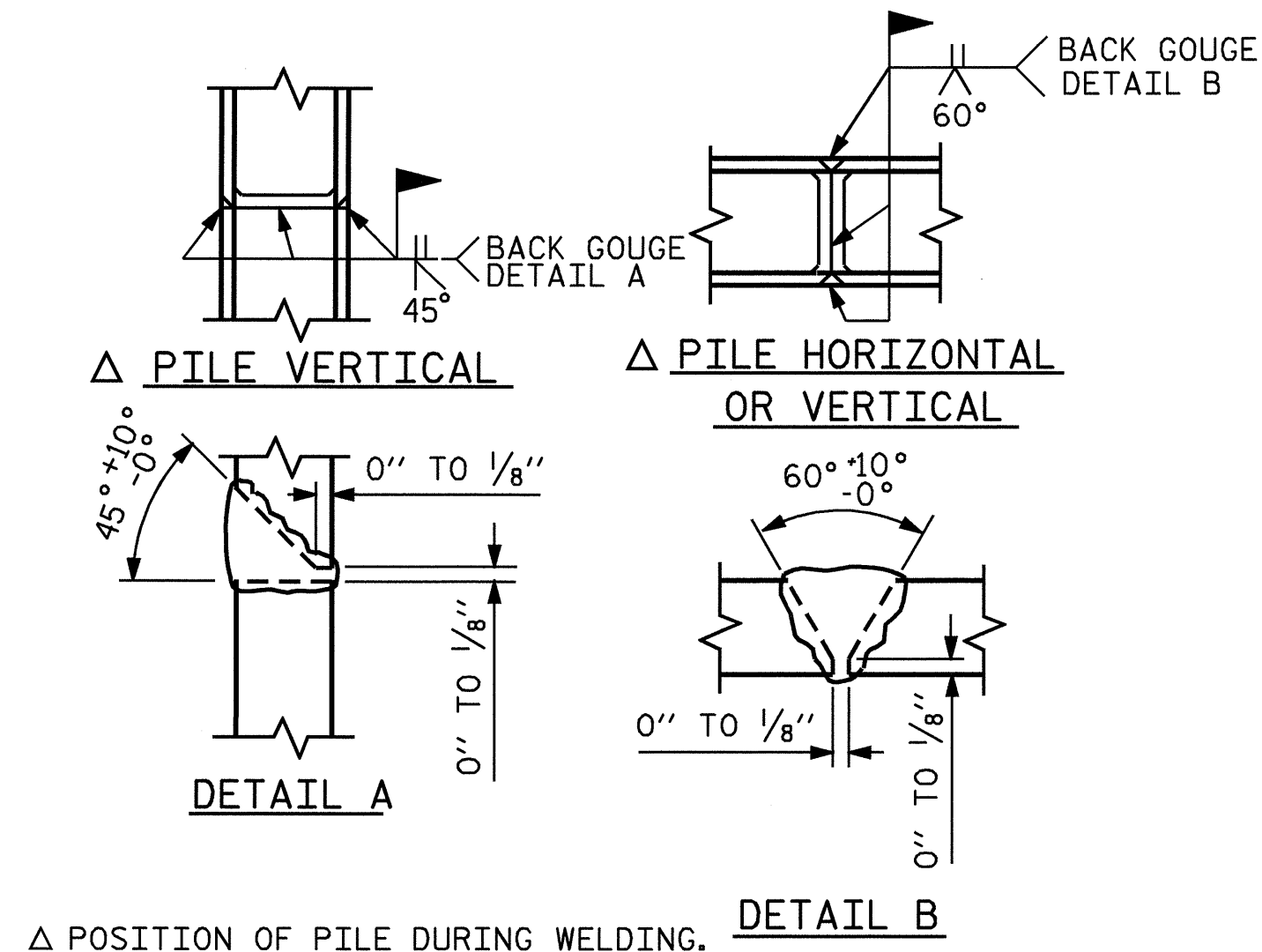


REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-49	
1			3			TOTAL SHEETS	
2			4			56	

DRAWN BY: L.E. SUTTON DATE: 5/01/08  
CHECKED BY: S.M. RASHIDI DATE: 5/13/08

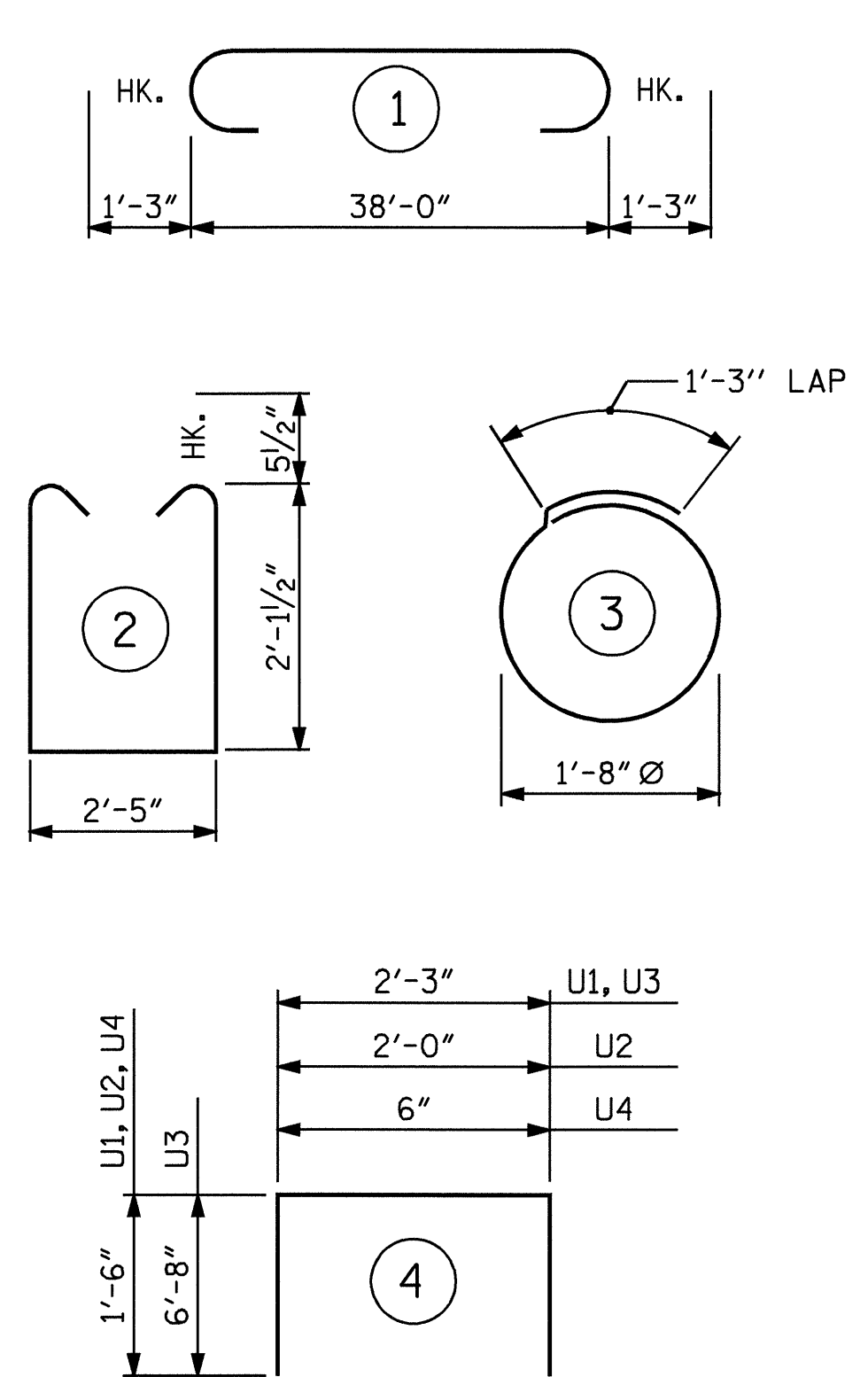


**VIEW X-X**  
(TYP. BOTH ENDS)

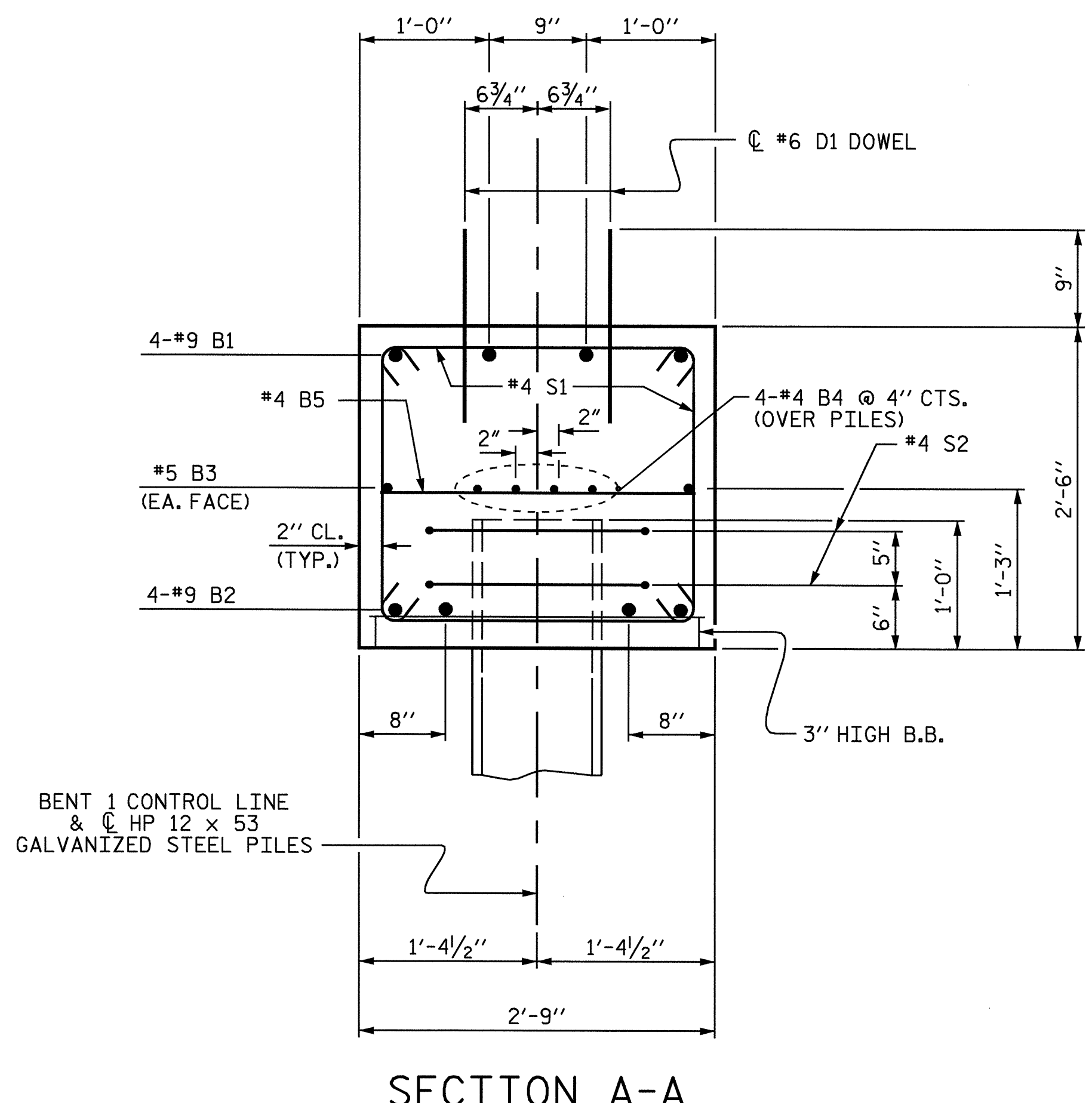


△ POSITION OF PILE DURING WELDING.  
**PILE SPLICE DETAILS**

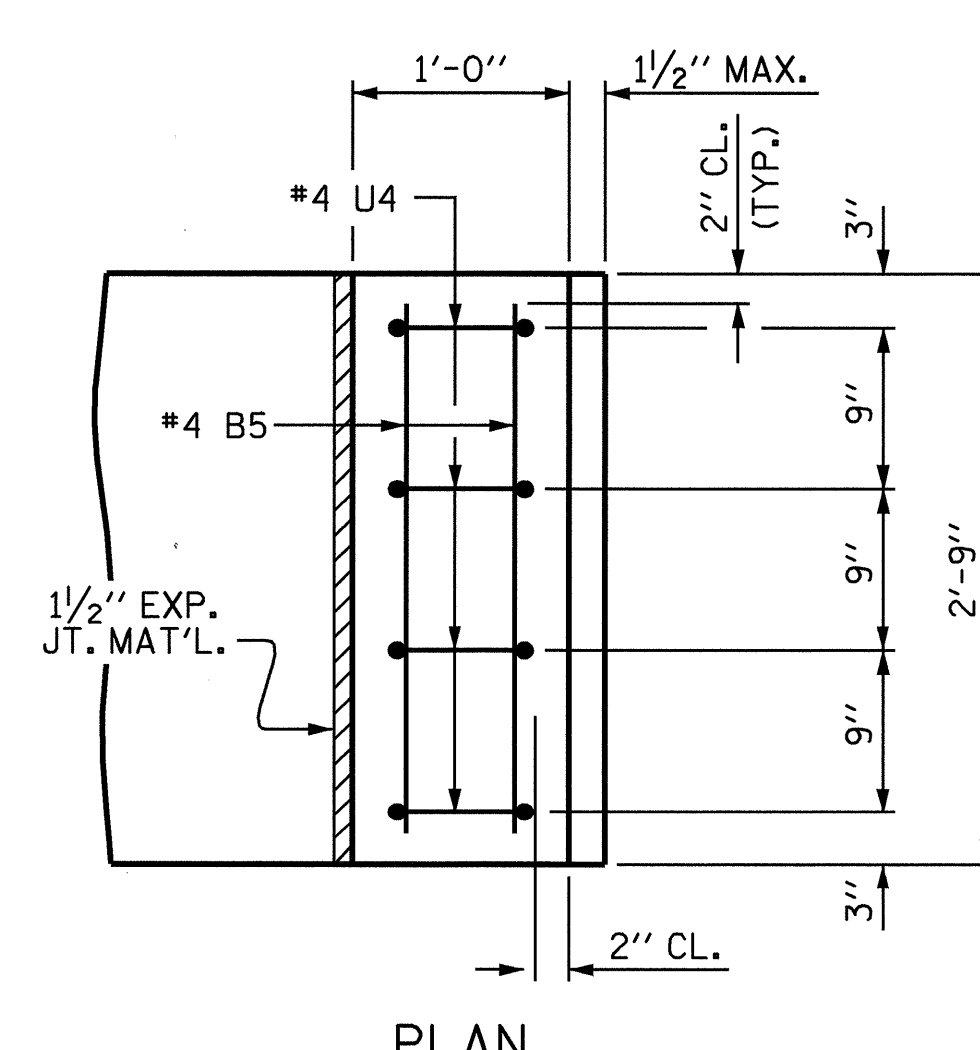
BAR TYPES				BILL OF MATERIAL		
BENT 1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	4	#9	1	40'-6"	551	
B2	4	#9	STR	38'-2"	519	
B3	2	#5	STR	38'-2"	80	
B4	8	#4	STR	20'-4"	109	
B5	13	#4	STR	2'-5"	21	
D1	48	#6	STR	1'-6"	108	
S1	36	#4	2	7'-5"	178	
S2	14	#4	3	6'-6"	61	
U1	4	#4	4	5'-3"	14	
U2	6	#4	4	5'-0"	20	
U3	2	#9	4	15'-7"	106	
U4	8	#4	4	3'-6"	19	
REINFORCING STEEL				LBS.	1,786	
CLASS A CONCRETE BREAKDOWN :						
POUR #1 - CAP				CU. YDS.	9.8	
POUR #2 - LATERAL GUIDES				CU. YDS.	0.1	
TOTAL				CU. YDS.	9.9	
HP 12 x 53 GALVANIZED STEEL PILES						
NO. = 7				LIN. FT.	280	



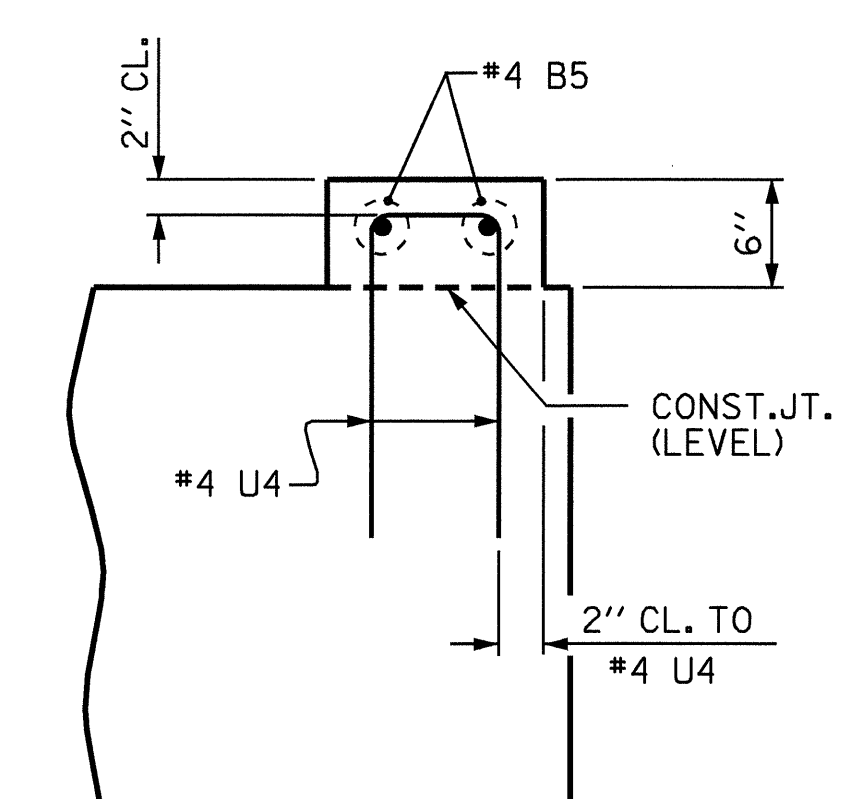
ALL BAR DIMENSIONS ARE OUT TO OUT.



**SECTION A-A**



**PLAN**

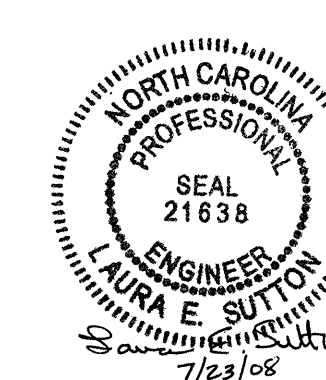


**ELEVATION**

**LATERAL GUIDE DETAIL**  
(RT. SIDE SHOWN, L.T. SIDE SIMILAR)

PROJECT NO. B-4082  
COLUMBUS COUNTY  
 STATION: 16+56.00 -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:
1			3		
2			4		
					S-50
					TOTAL SHEETS 56



DRAWN BY : L.E. SUTTON DATE : 5/01/08  
 CHECKED BY : S.M. RASHIDI DATE : 5/13/08

**NOTES**

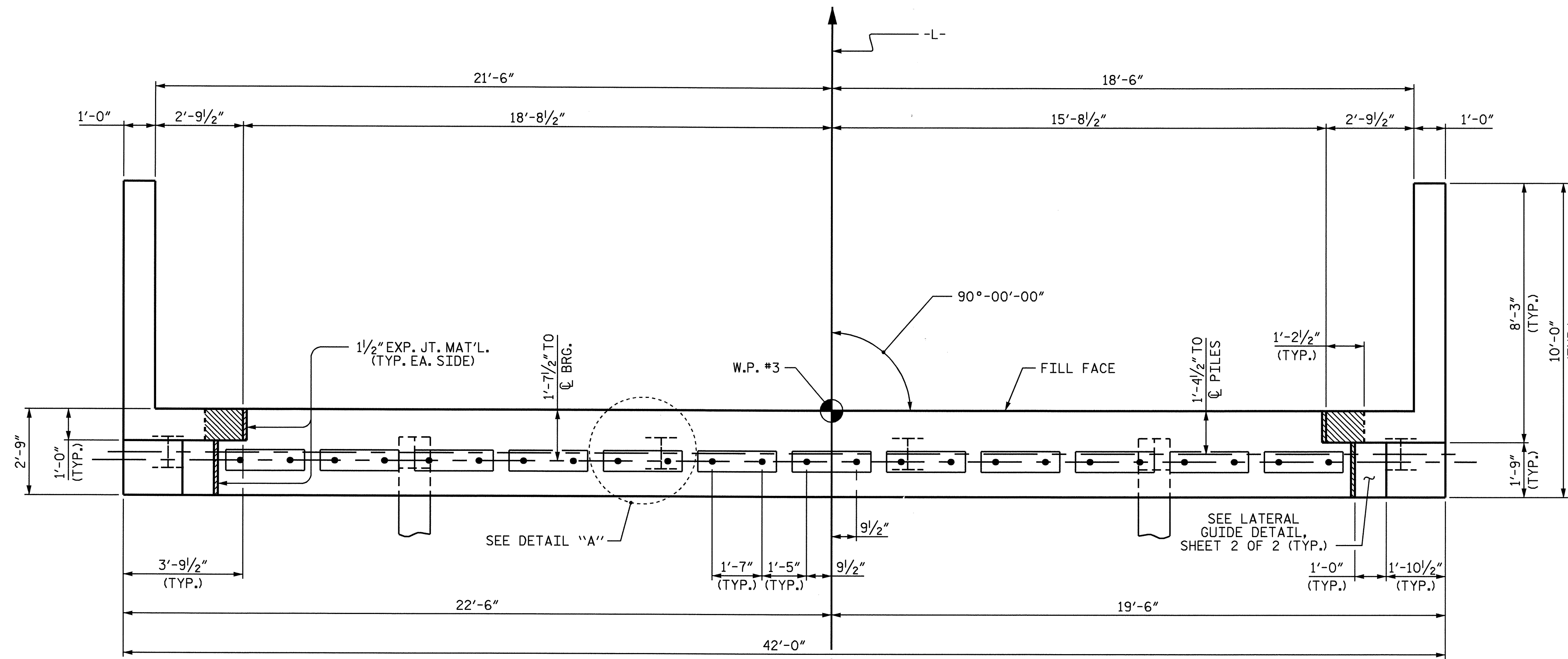
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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

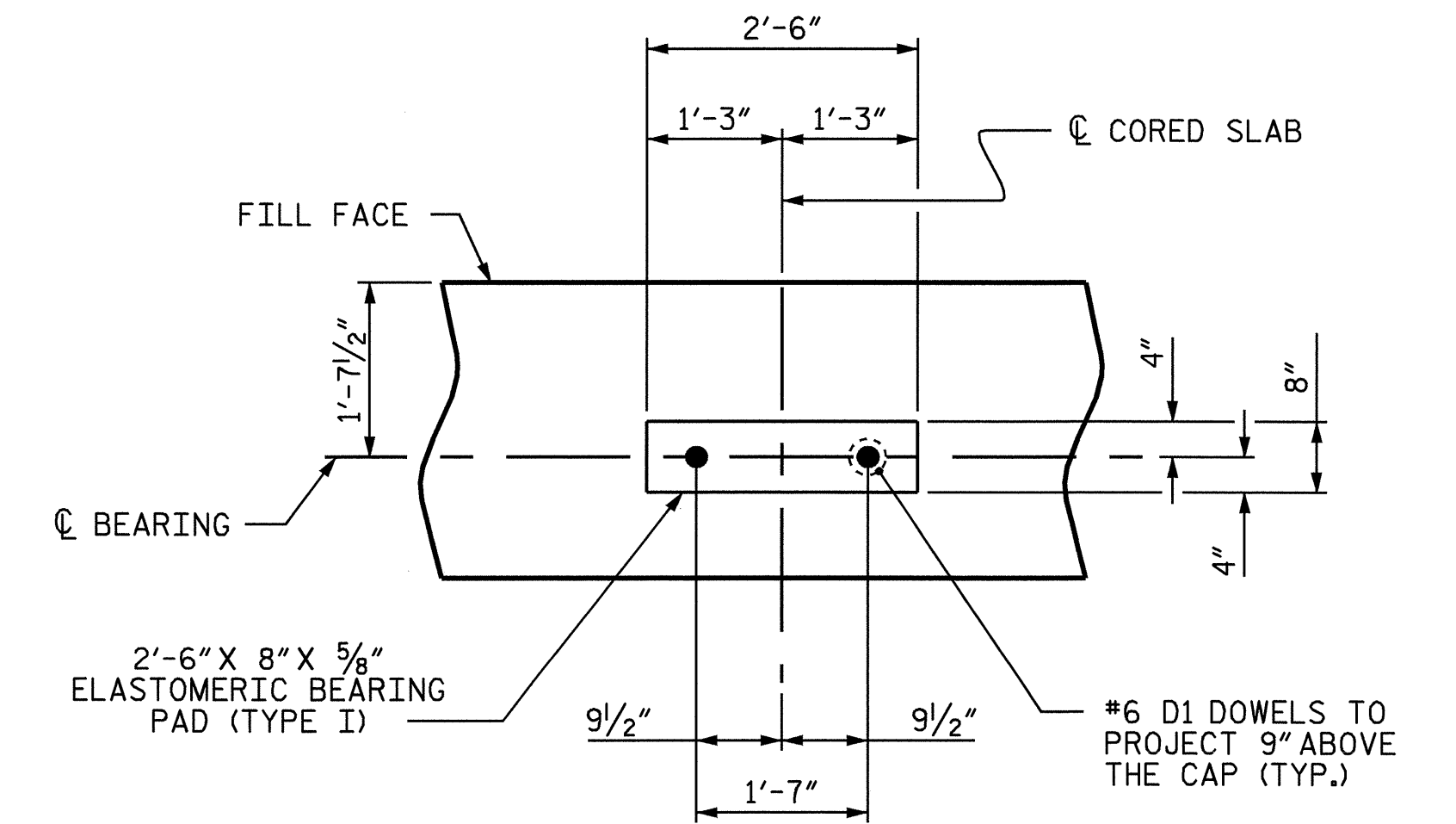
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

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

FOR TEMPORARY DRAINAGE AT END BENT, SEE END BENT 1.

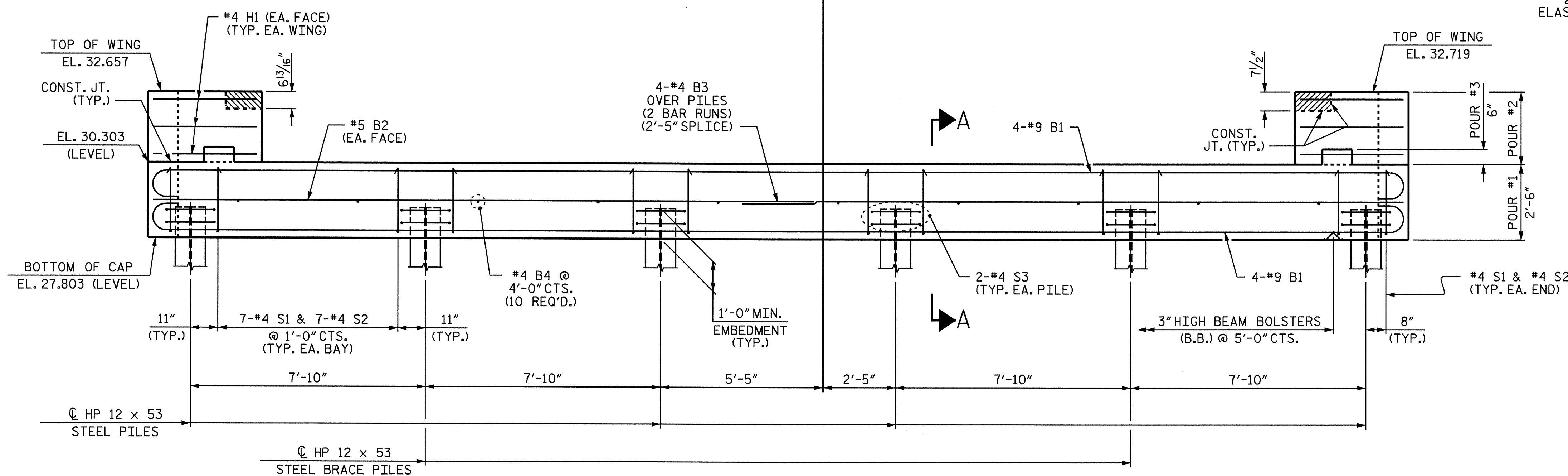


**PLAN**



**DETAIL "A"**

(TYP. EA. CORED SLAB UNIT)



**ELEVATION**

PROJECT NO. B-4082

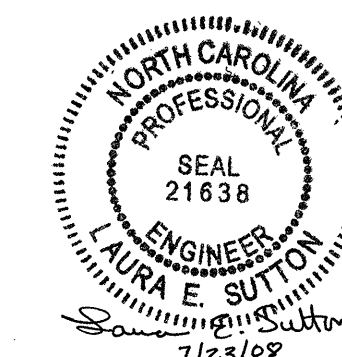
COLUMBUS COUNTY

STATION: 16+56.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
END BENT 2



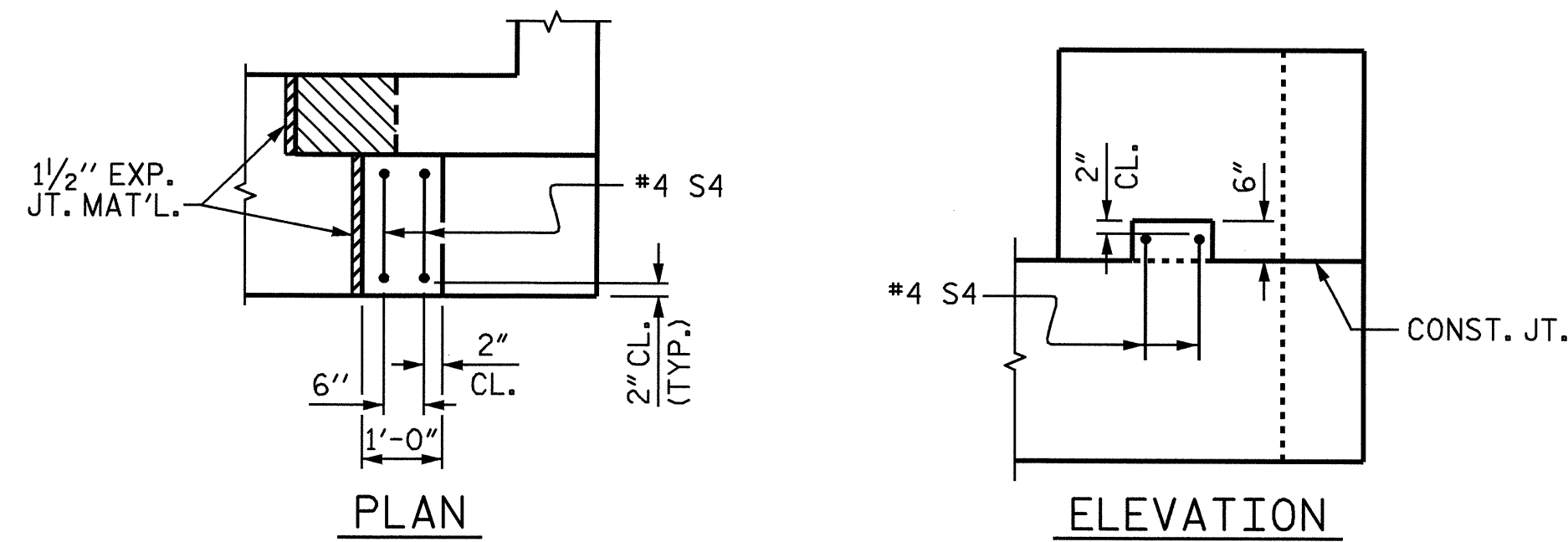
**REVISIONS**

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

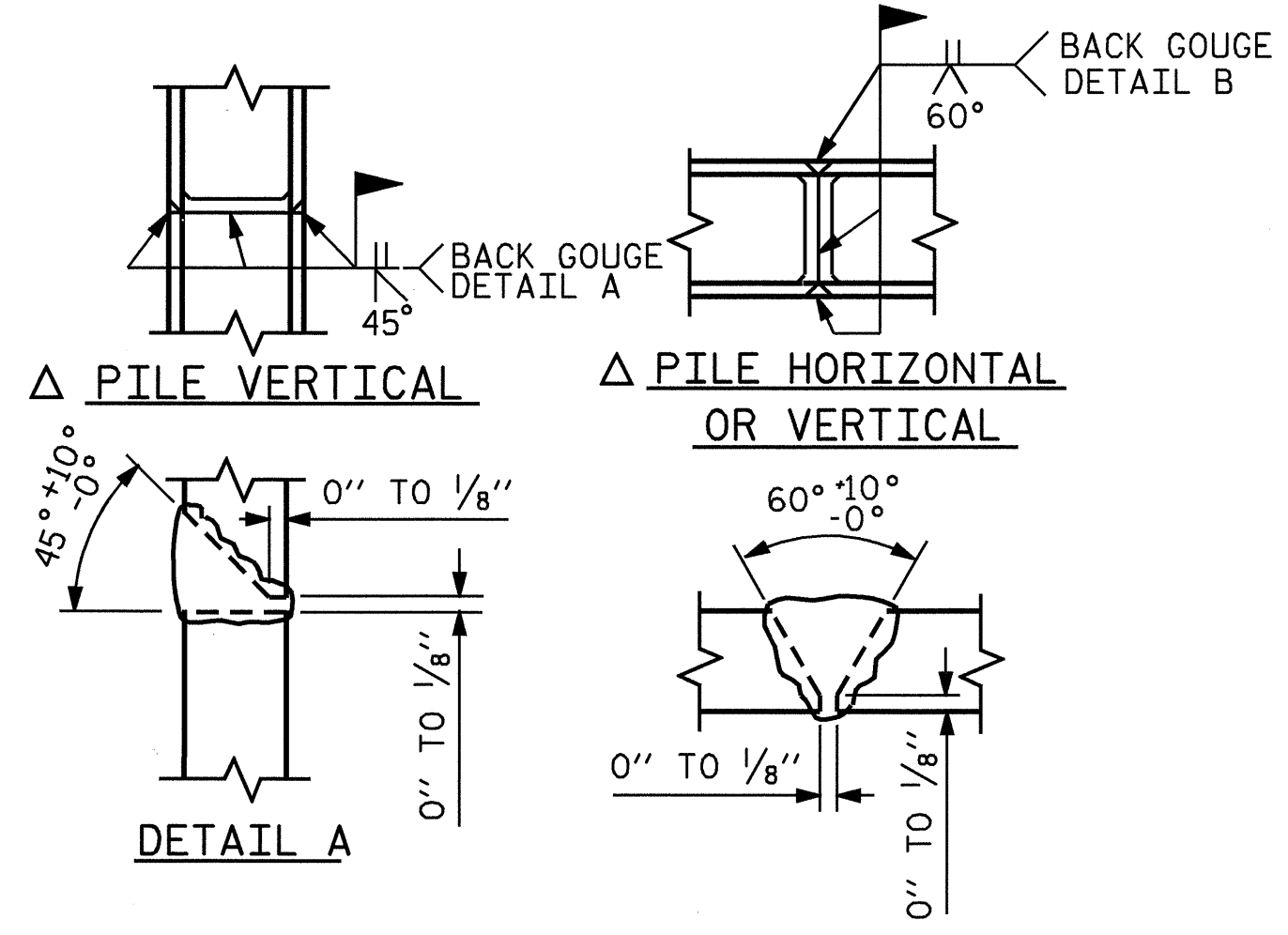
SHEET NO.	
S-51	TOTAL SHEETS
56	

DRAWN BY : S. M. RASHIDI DATE : 11/9/07  
CHECKED BY : W. F. PARKER DATE : 2/20/08

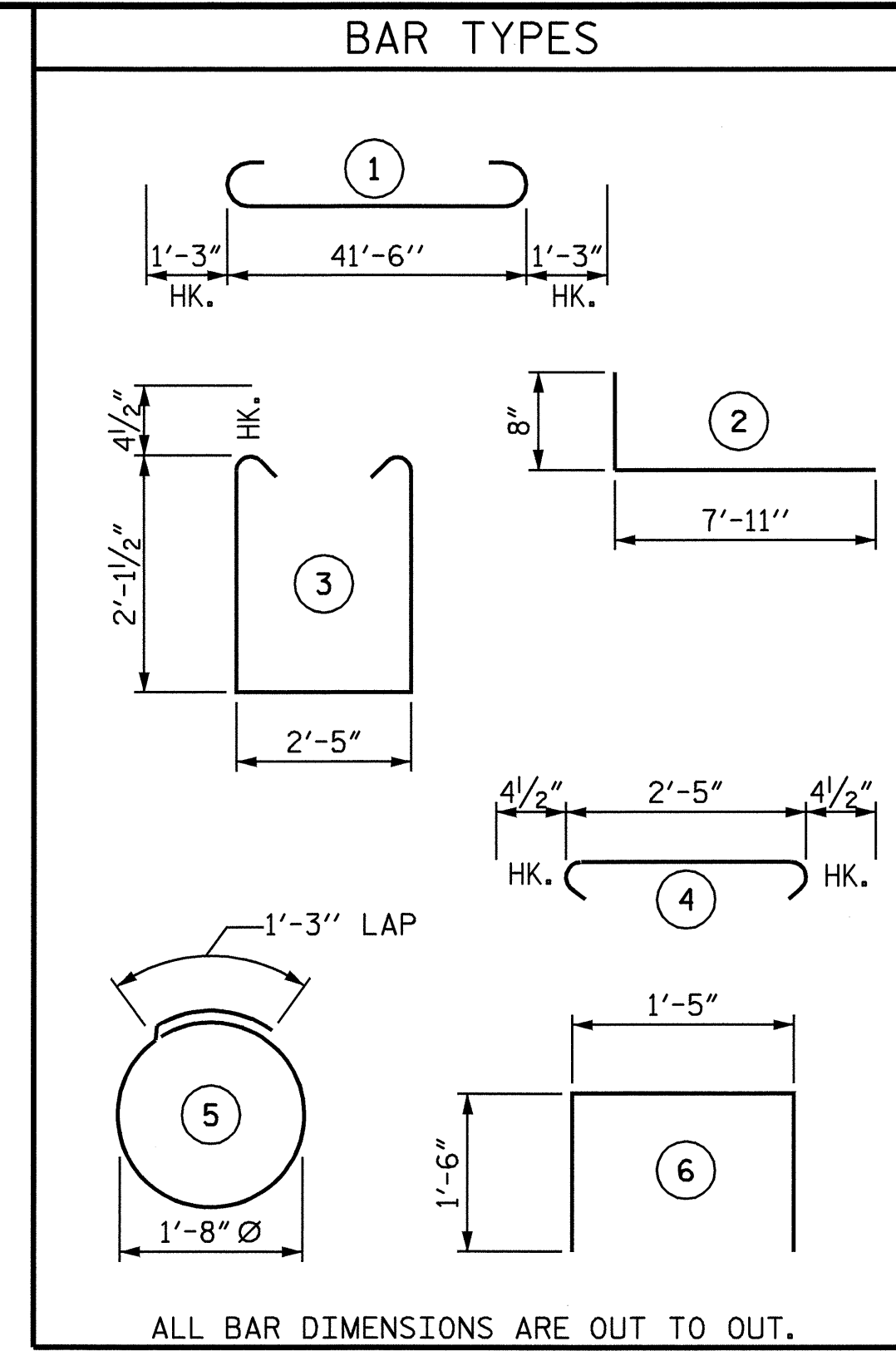




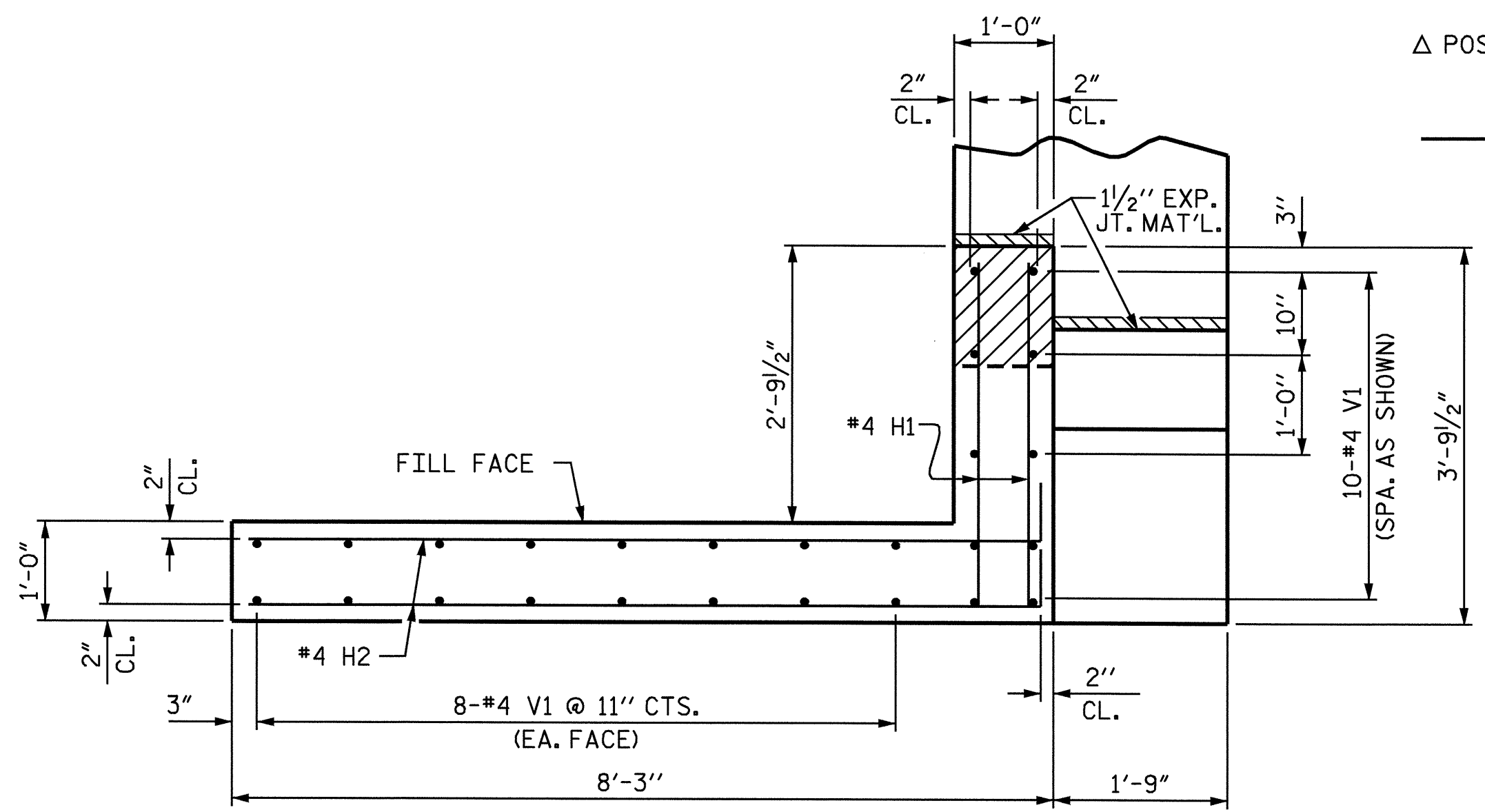
**LATERAL GUIDE DETAIL**  
(RT. SIDE SHOWN, LT. SIDE SIMILAR)



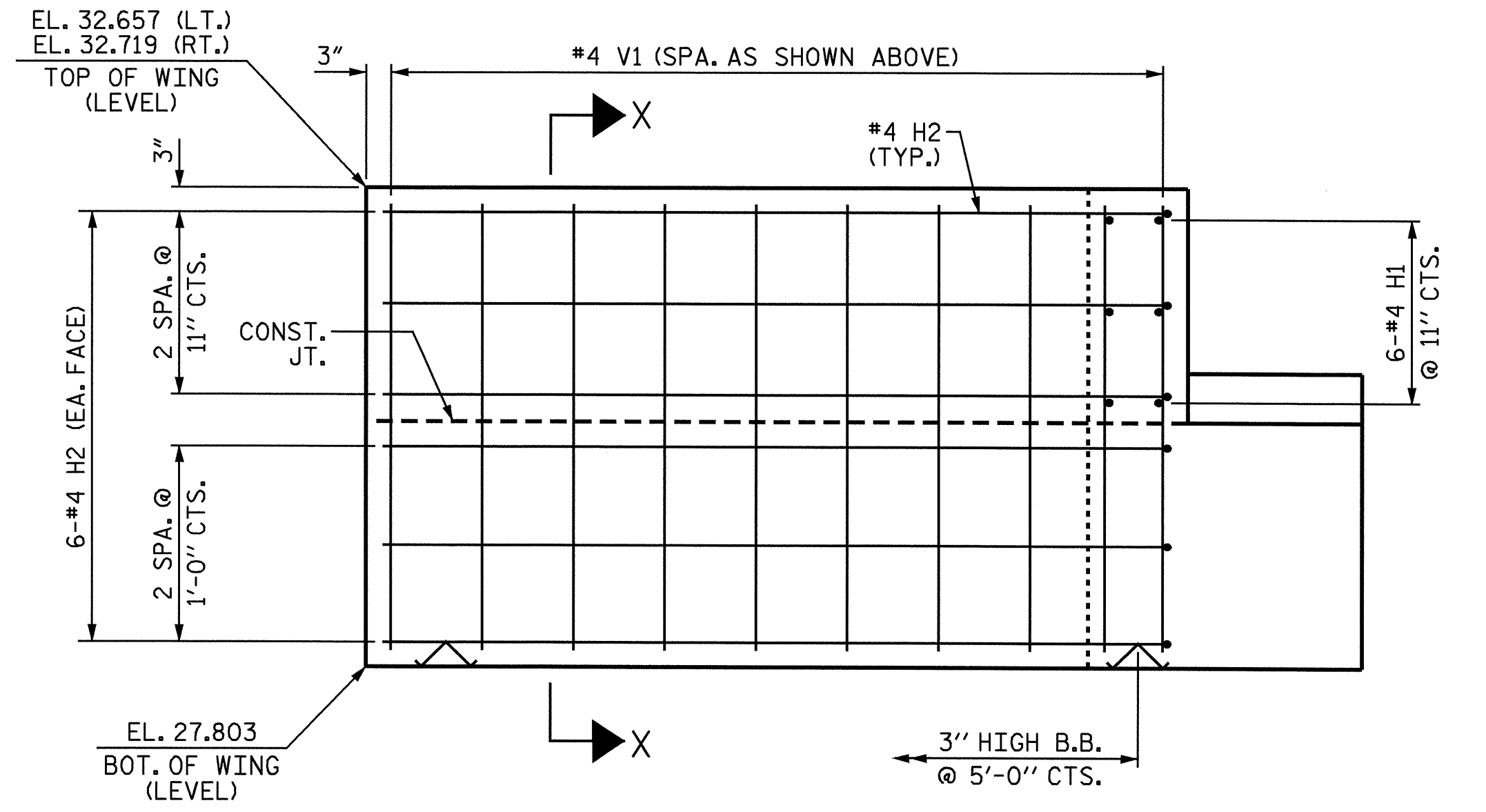
**PILE SPLICE DETAILS**  
△ POSITION OF PILE DURING WELDING.



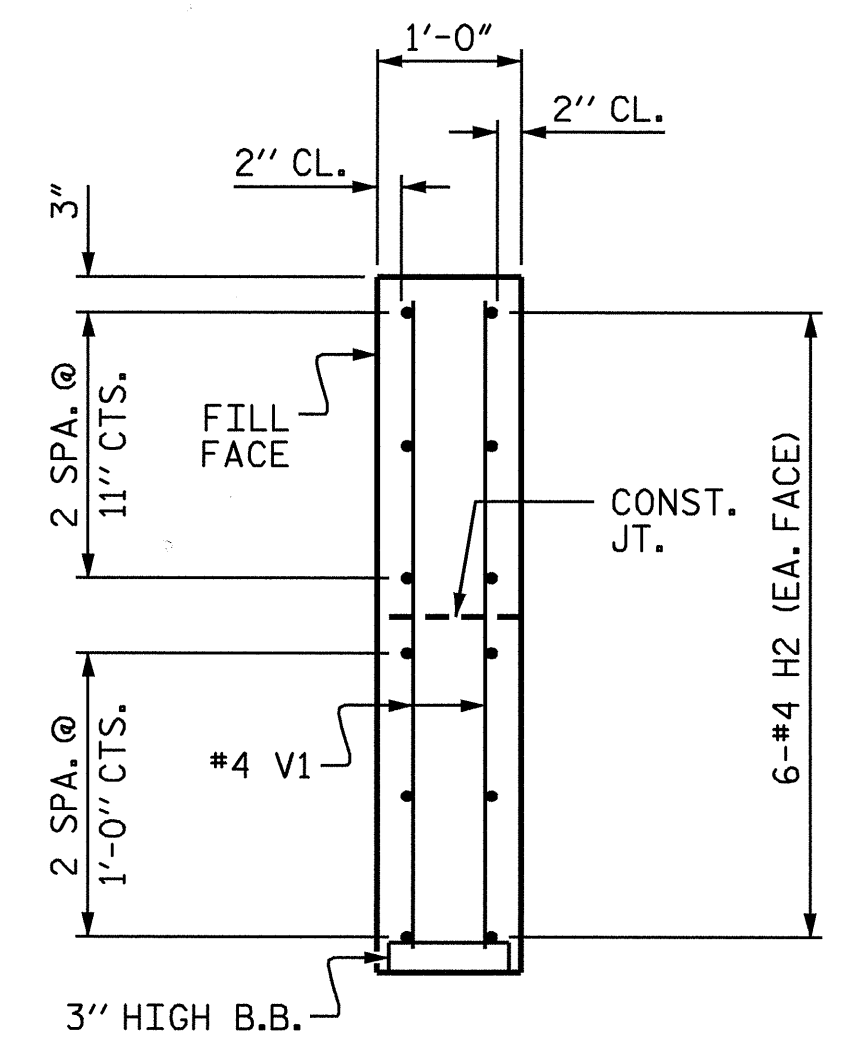
BILL OF MATERIAL					
END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	44'-0"	1197
B2	2	#5	STR	41'-8"	87
B3	8	#4	STR	22'-1"	118
B4	10	#4	STR	2'-5"	16
D1	24	#6	STR	1'-6"	54
H1	12	#4	STR	3'-5"	27
H2	24	#4	2	8'-7"	138
S1	37	#4	3	7'-5"	183
S2	37	#4	4	3'-2"	78
S3	12	#4	5	6'-6"	52
S4	4	#4	6	4'-5"	12
V1	52	#4	STR	4'-6"	156
REINFORCING STEEL				LBS.	2,118
CLASS A CONCRETE BREAKDOWN :					
POUR #1 - CAP & LOWER WINGS				CU. YDS.	12.0
POUR #2 - UPPER WINGS				CU. YDS.	2.0
POUR #3 - LATERAL GUIDES				CU. YDS.	0.1
TOTAL				CU. YDS.	14.1
HP 12 x 53 STEEL PILES				LIN. FT.	270
NO. = 6					



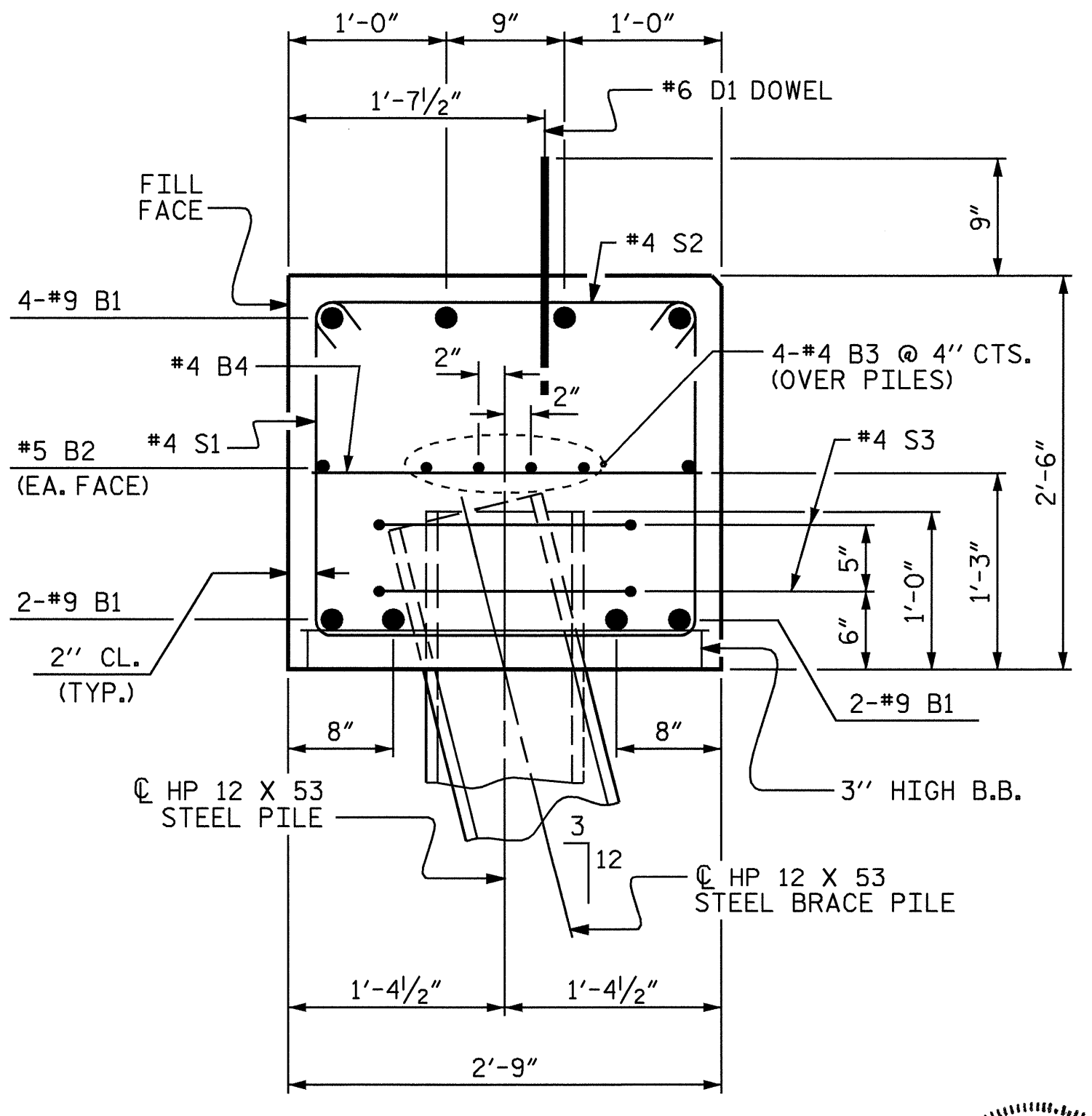
**PLAN OF WING**  
(LT. SIDE SHOWN, RT. SIDE SIMILAR)



**ELEVATION OF WING**



**SECTION X-X**



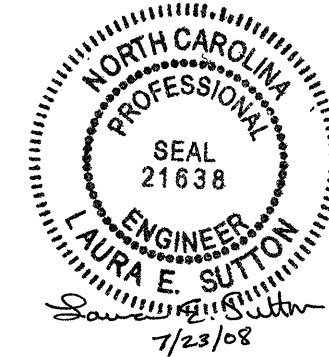
**SECTION A-A**

PROJECT NO. B-4082  
COLUMBUS COUNTY  
 STATION: 16+56.00 -L-

SHEET 2 OF 2

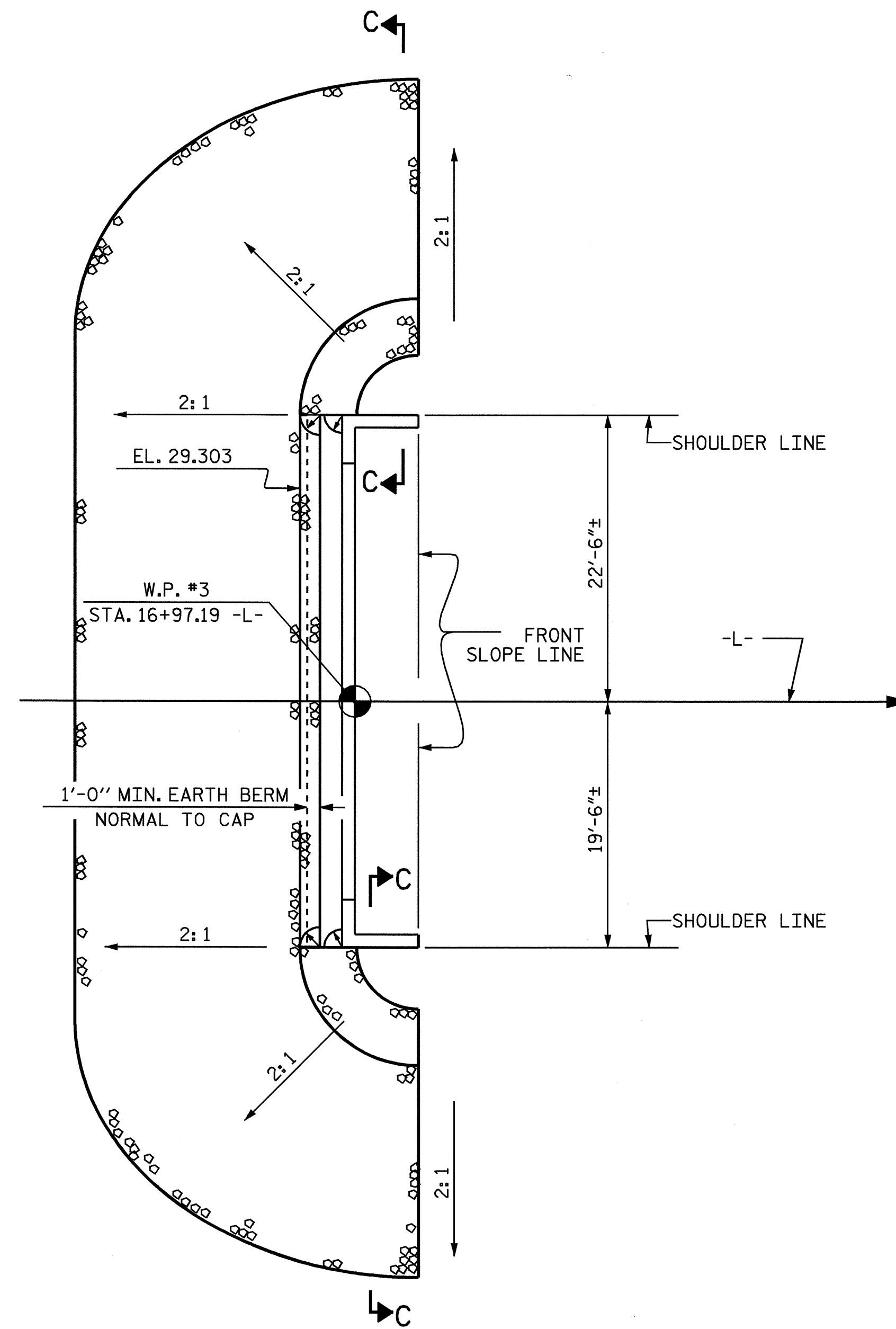
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE  
 END BENT 2**



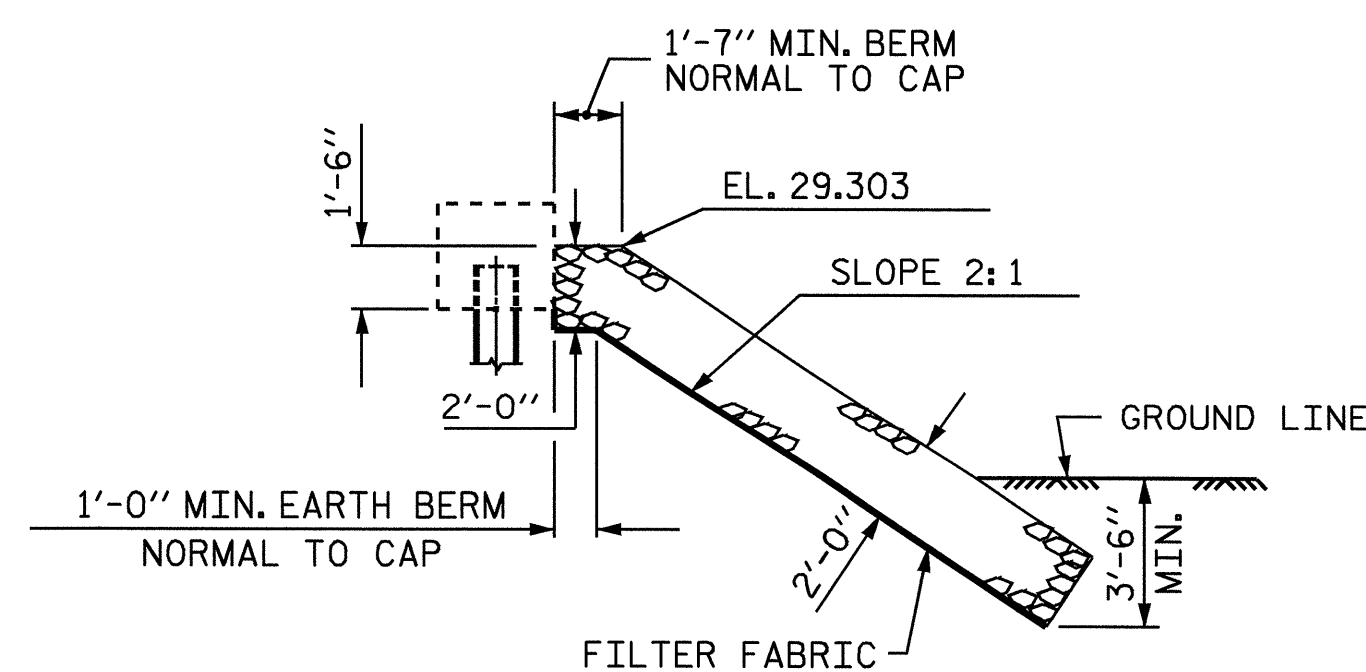
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-52
1			3			TOTAL SHEETS
2			4			56

DRAWN BY: S.M. RASHIDI DATE: 11/9/07  
 CHECKED BY: W.F. PARKER DATE: 2/20/08

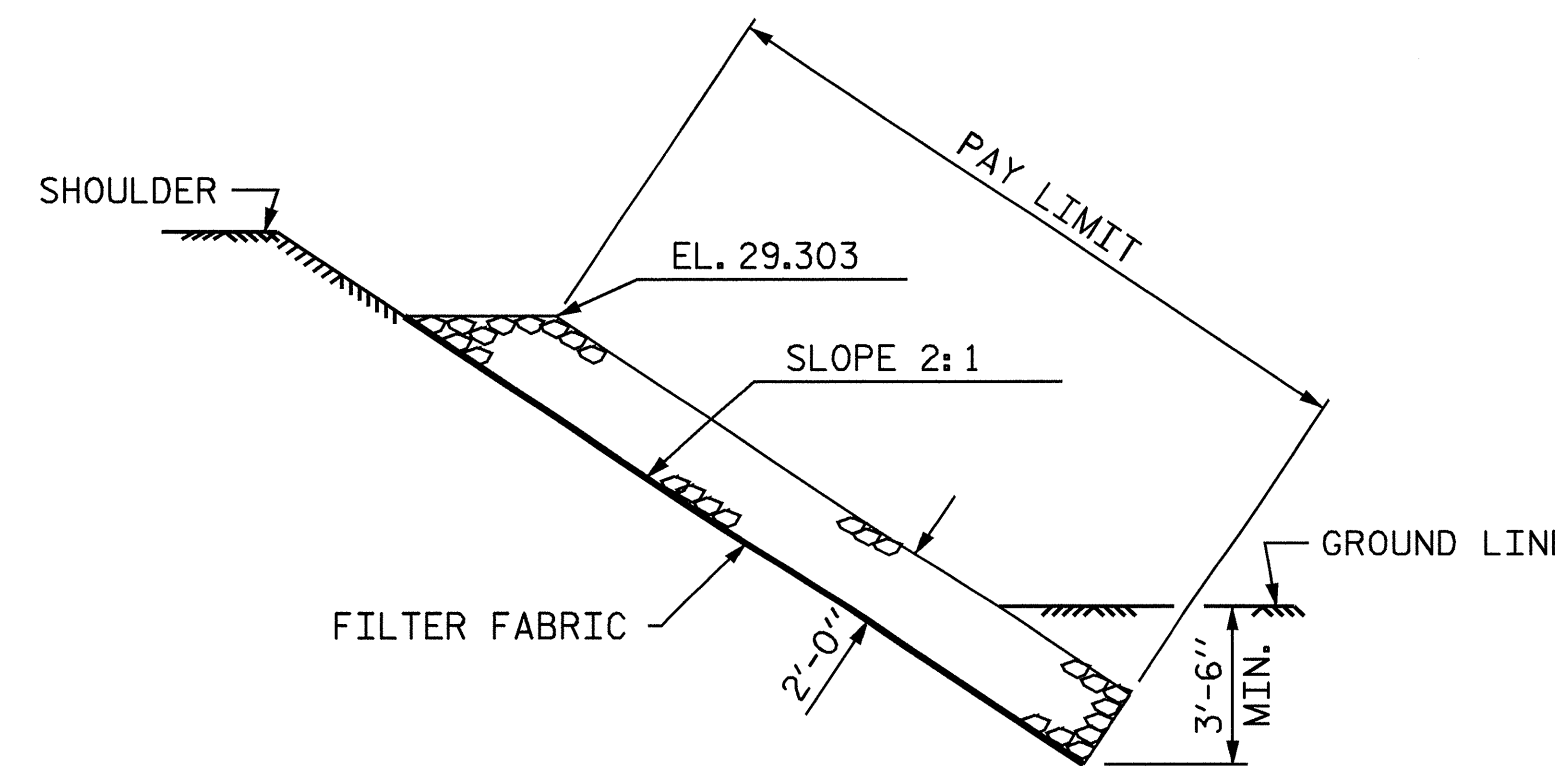


@ END BENT 2

ESTIMATED QUANTITIES		
BRIDGE @ STA. 16+56.00 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	—	—
END BENT 2	113	125

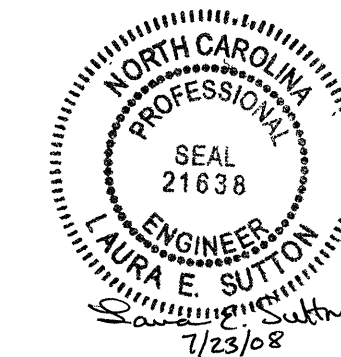


C SECTION



SECTION C-C

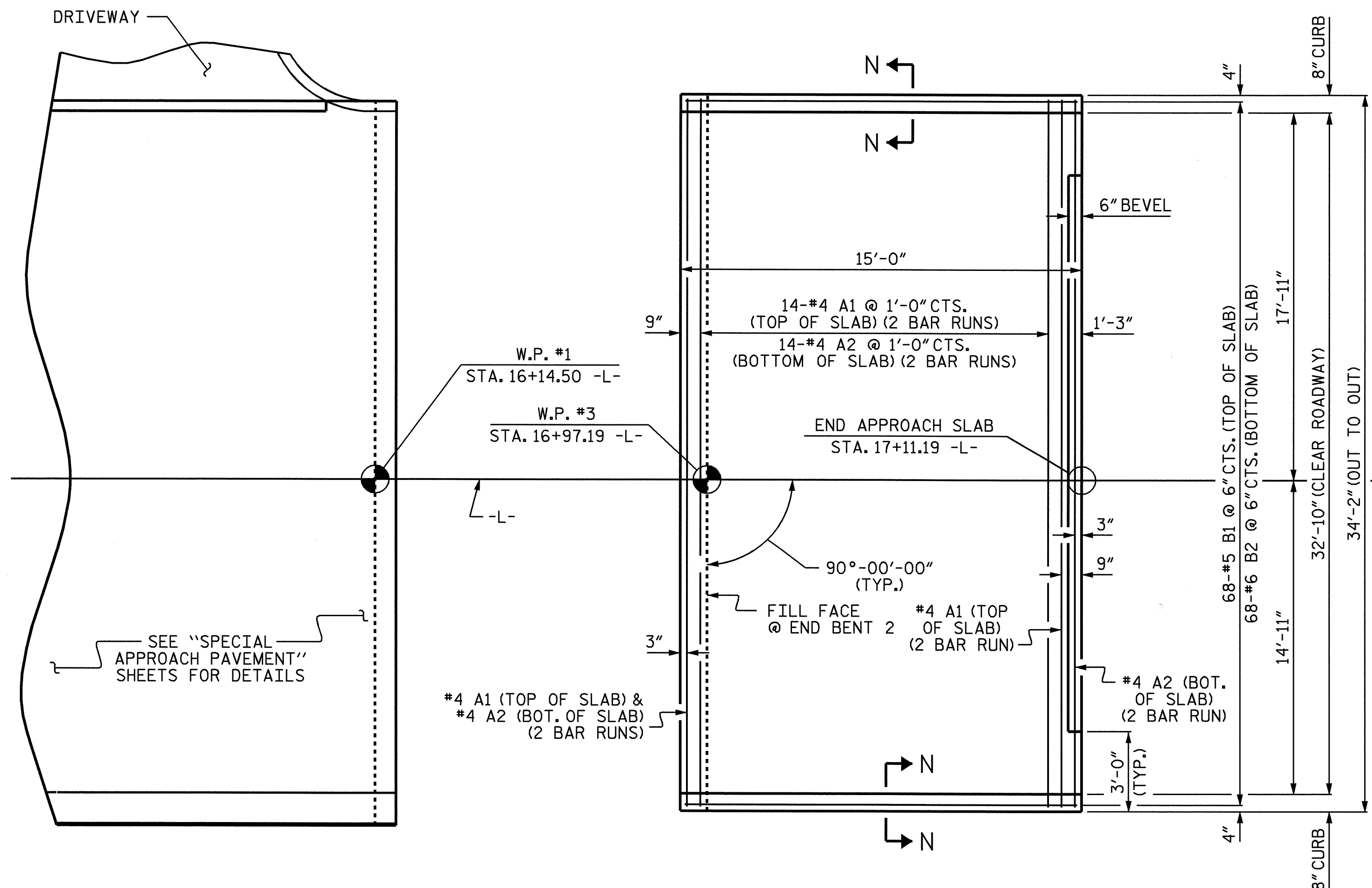
PROJECT NO. B-4082  
COLUMBUS COUNTY  
 STATION: 16+56.00 -L-



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 RIP RAP DETAILS

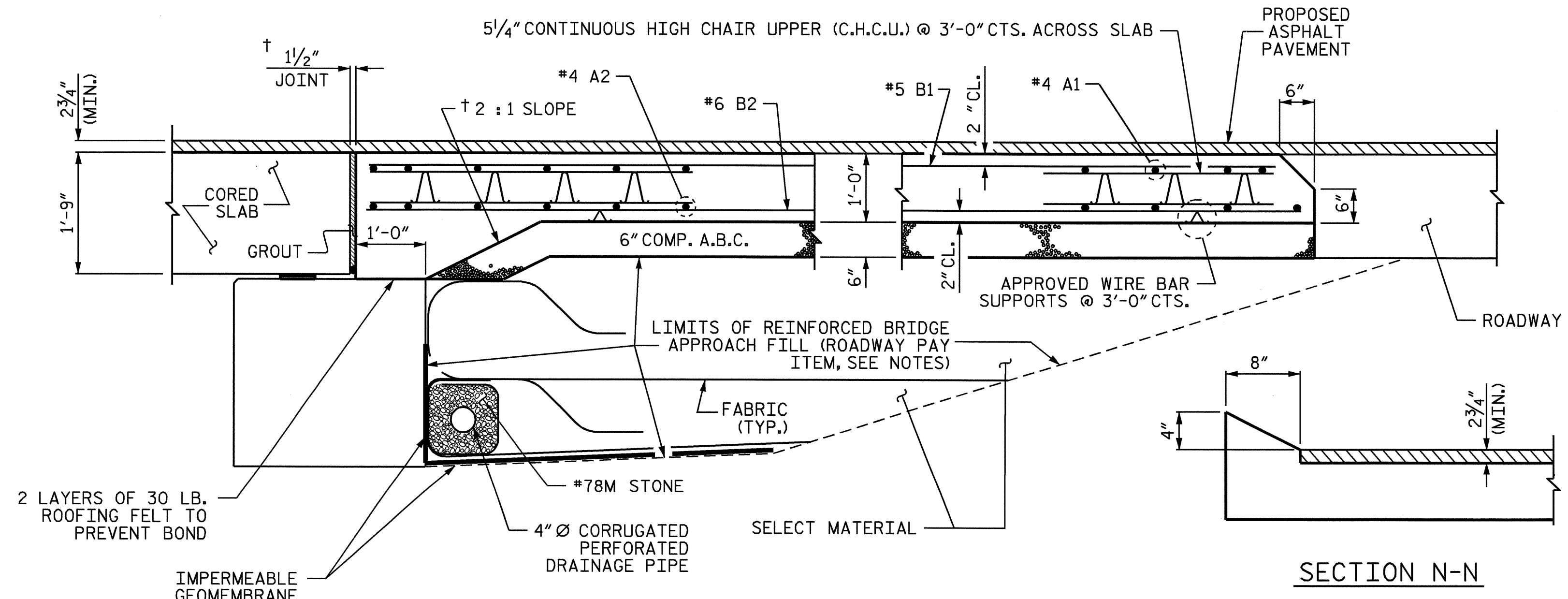
ASSEMBLED BY : S.M. RASHIDI DATE : 3/06/08  
 CHECKED BY : W. P. PARKER DATE : 3/12/08  
 DRAWN BY : FCJ 2/88 REV. 8/16/99 RWW/LES  
 CHECKED BY : ARB 8/88 REV. 10/17/00 RWW/LES  
 REV. 5/1/06 TLA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-53
1			3			TOTAL SHEETS
2			4			56



PLAN AT END BENT 1

PLAN AT END BENT 2



SECTION THRU SLAB

SECTION N-N CURB DETAILS

† NORMAL TO END BENT

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.

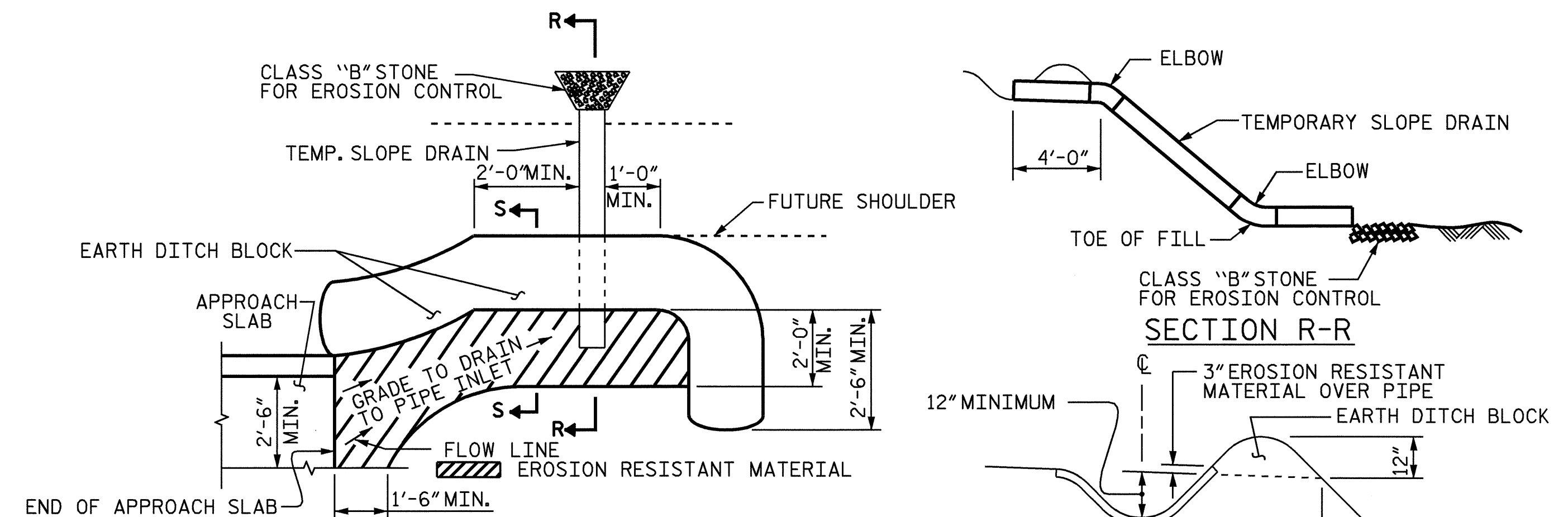
THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

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 CONSTRUCTION OF THE APPROACH SLAB.

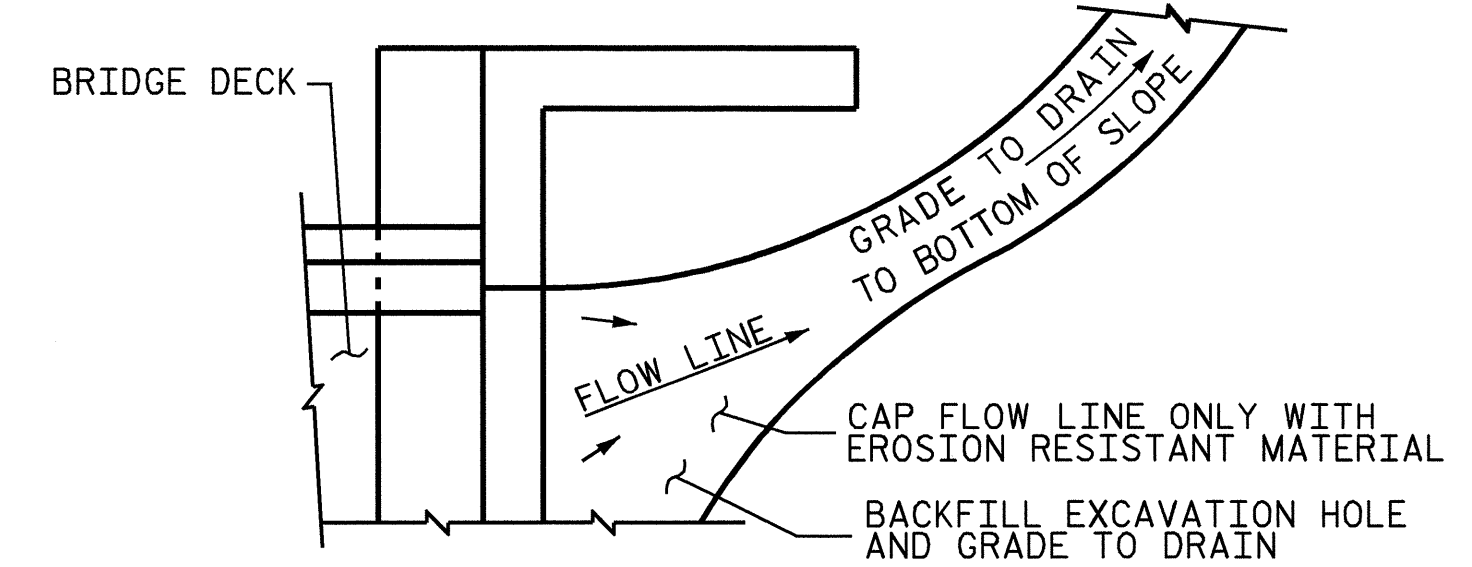
APPROACH SLAB GROOVING IS NOT REQUIRED.



PLAN VIEW

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

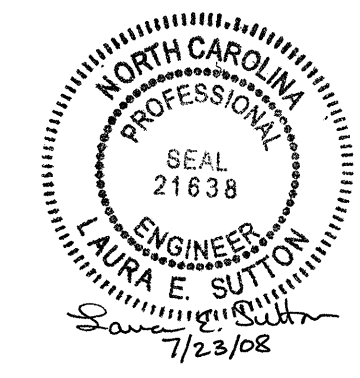


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

BILL OF MATERIAL					
APPROACH SLAB AT END BENT 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'-3"	1011
B2	68	#6	STR	14'-8"	1498
REINFORCING STEEL				LBS.	1,879
*EPOXY COATED REINFORCING STEEL				LBS.	1,394
CLASS AA CONCRETE				CU. YDS.	20.8
SPlice LENGTH CHART					
BAR SIZE	EPOXY COATED	UNCOATED			
#4	2'-0"	1'-9"			

DRAWN BY: L.E. SUTTON DATE: 5/29/08  
 CHECKED BY: P.C. BREWER DATE: 6/02/08

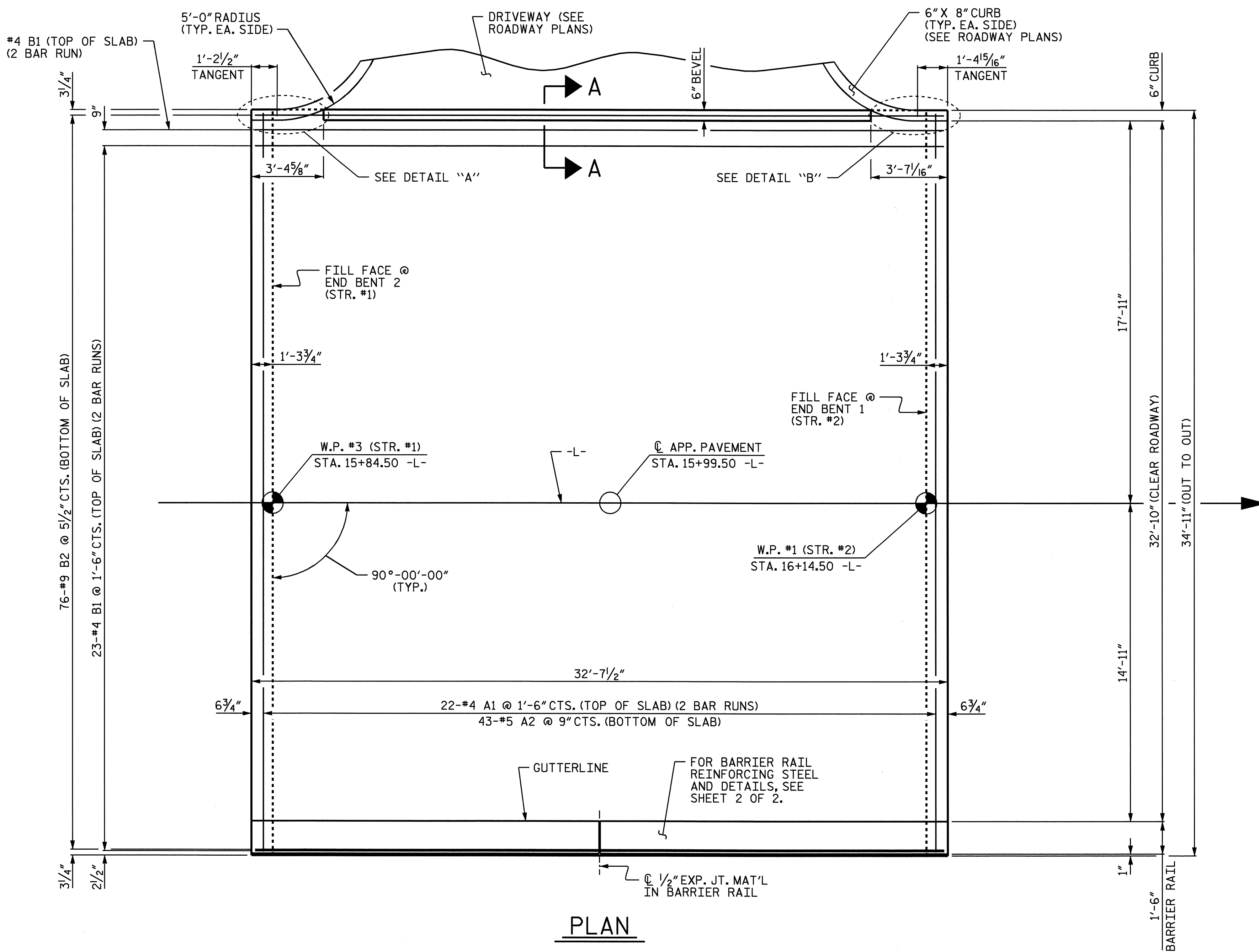


PROJECT NO. B-4082  
 COLUMBUS COUNTY  
 STATION: 16+56.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-54  
 TOTAL SHEETS 56





PLAN

NOTES

CLASS AA IN THE SPECIAL APPROACH PAVEMENT CONCRETE SHALL CONTAIN HIGH EARLY STRENGTH CEMENT TO MEET INTERMEDIATE CONTRACT TIMES AS SPECIFIED IN THE TRAFFIC CONTROL PLANS. THE CONCRETE SHALL MEET THE REQUIREMENTS OF ARTICLES 1000-4 AND 1000-6 OF THE STANDARD SPECIFICATIONS.

AREA BETWEEN THE WINGWALL AND APPROACH PAVEMENT 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 PAVEMENT AND SHALL EXTEND 1'-0" OUTSIDE OF EACH EDGE OF THE APPROACH PAVEMENT.

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 PAVEMENT AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH PAVEMENT.

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 PAVEMENT.

GROOVING IS NOT REQUIRED ON THE APPROACH PAVEMENT.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED DOWELS IN PLACE OF #4 D1 DOWELS. NO FIELD TESTING IS REQUIRED. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

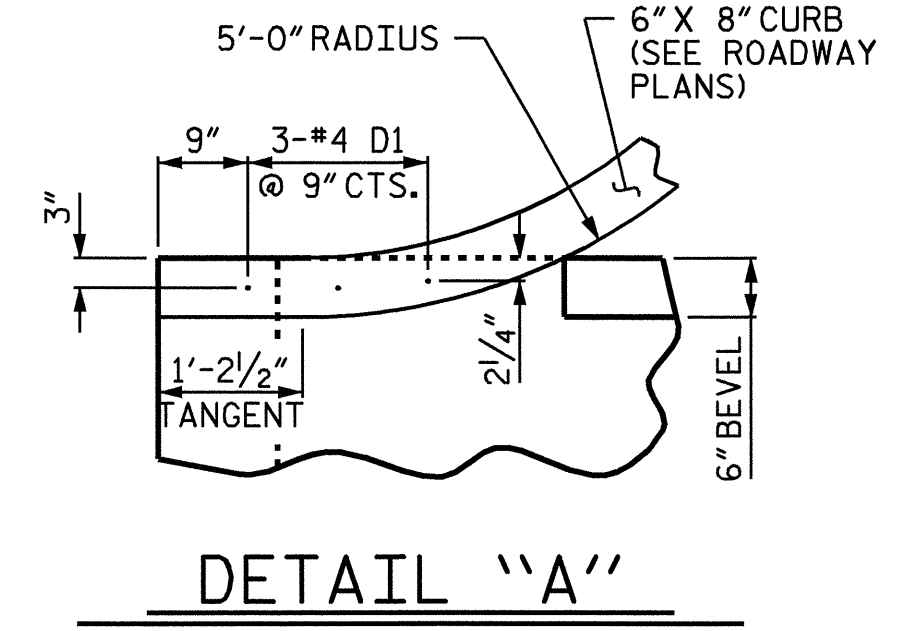
ALL FALSEWORK AND FORMS FOR THE APPROACH PAVEMENT SHALL REMAIN IN PLACE UNTIL THE ENTIRE UNIT IS CAST AND CURED.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

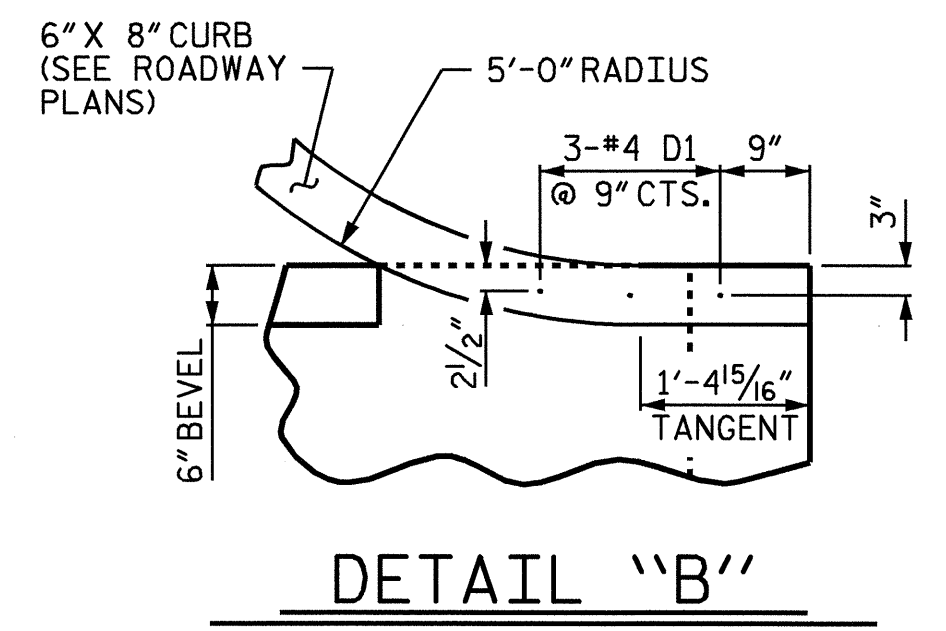
FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

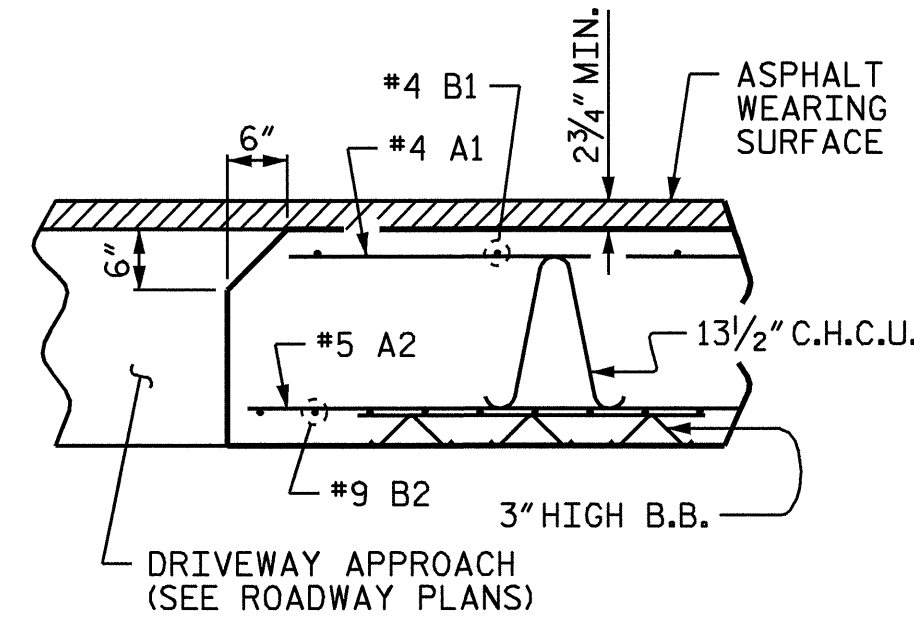
BILL OF MATERIAL					
SPECIAL APPROACH PAVEMENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	44	*4	STR	18'-1"	532
A2	43	*5	STR	34'-7"	1551
*B1	48	*4	STR	17'-2"	550
B2	76	*9	STR	32'-3"	8333
*D1	6	*4	STR	1'-6"	6
REINFORCING STEEL				LBS.	9,884
*EPOXY COATED REINFORCING STEEL				LBS.	1,088
CLASS AA CONCRETE				CU. YDS.	75.9
SPlice LENGTH CHART					
BAR SIZE	EPOXY COATED	UNCOATED			
#4	2'-0"	1'-9"			



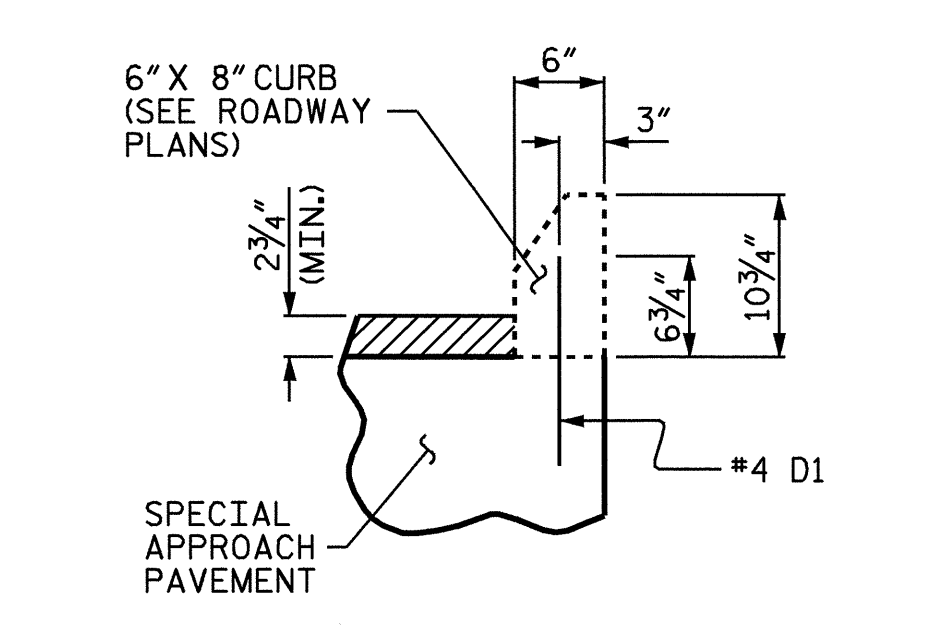
DETAIL "A"



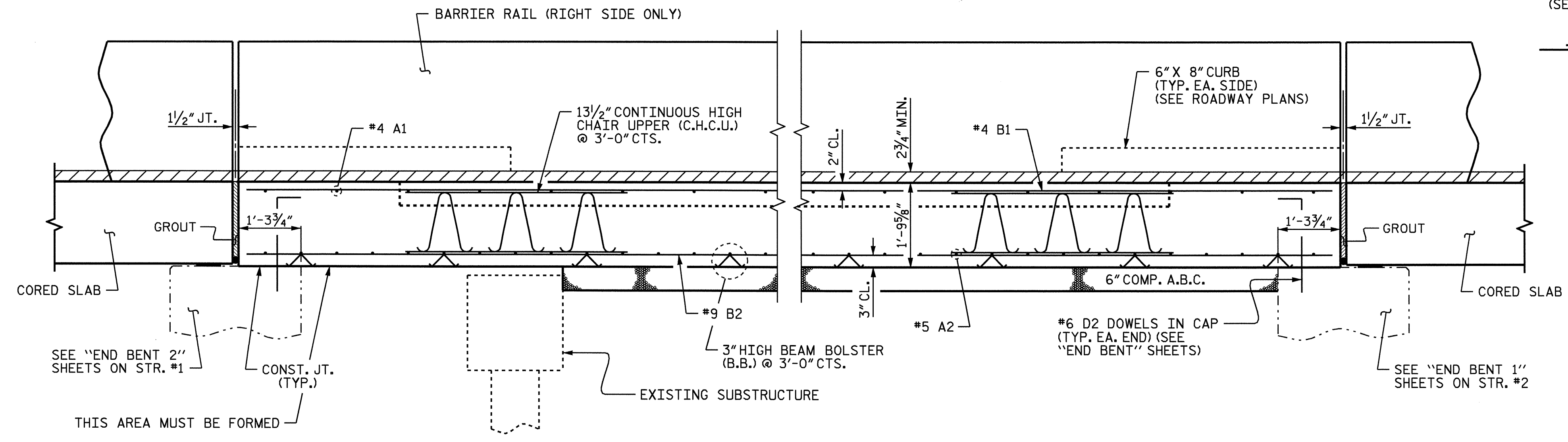
DETAIL "B"



SECTION A-A



DOWEL PLACEMENT DETAIL



SECTION THRU SLAB

PROJECT NO. B-4082  
COLUMBUS COUNTY  
 STATION: 15+99.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SPECIAL APPROACH PAVEMENT**

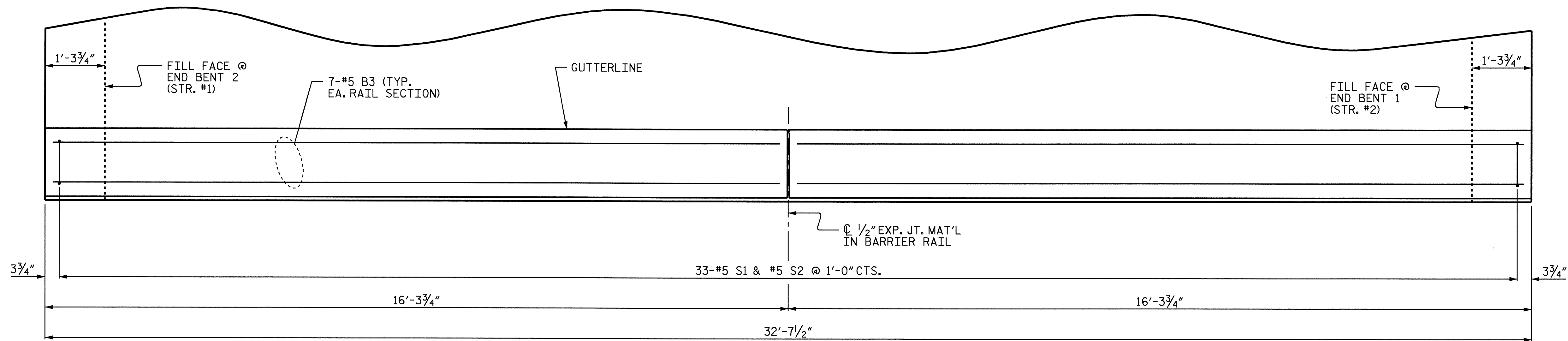
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
				S-55	
				TOTAL SHEETS	
				56	

DRAWN BY: P.C. BREWER DATE: 2/4/08  
 CHECKED BY: W.F. PARKER DATE: 2/13/08

**NORTH CAROLINA PROFESSIONAL SEAL 9804**  
 ENGINEER  
 LAURA E. SUITTON  
 1/23/08

23-JUL-2008 11:39  
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STR. #3



PLAN OF BARRIER RAIL

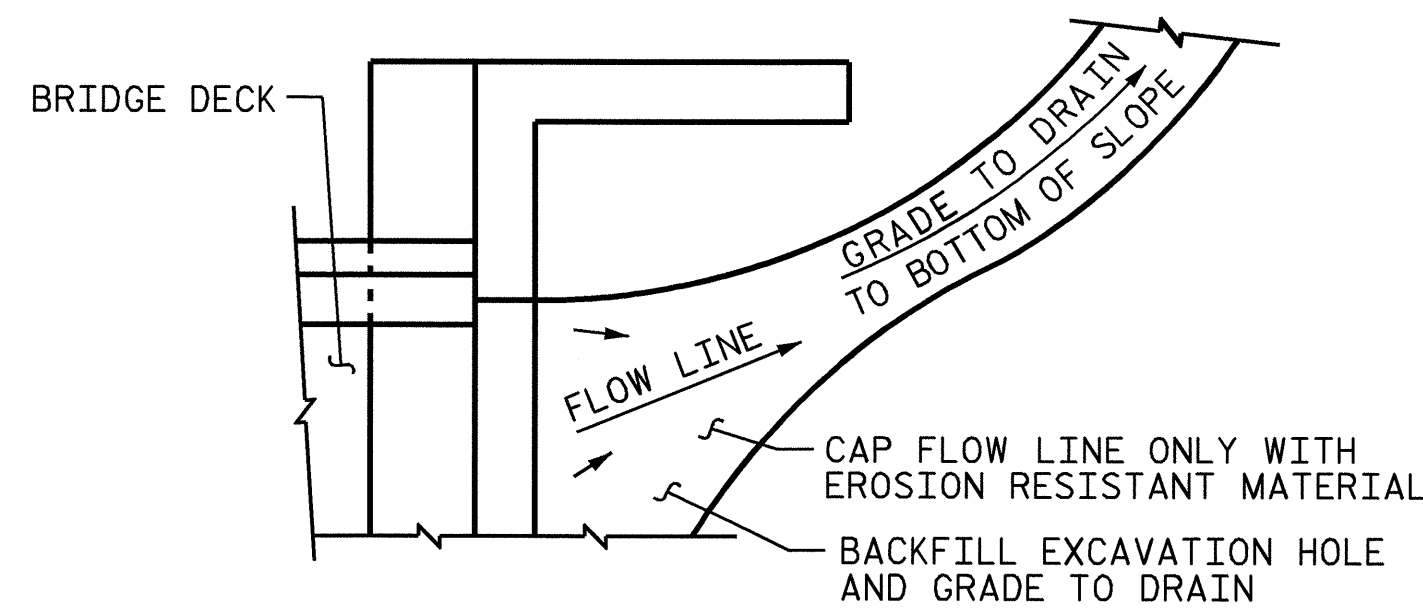
BAR TYPES					
ALL BAR DIMENSIONS ARE OUT TO OUT.					
BILL OF MATERIAL					
FOR CONCRETE BARRIER RAIL ONLY					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
* B3	14	#5 STR	15'-11"	232	
* S1	33	#5	1	7'-1"	244
* S2	33	#5	2	5'-9"	198
* EPOXY COATED REINFORCING STEEL				LBS.	674
CLASS AA CONCRETE				CU. YDS.	3.8
CONCRETE BARRIER RAIL				LIN. FT.	32.63

NOTES:

THE BARRIER RAIL SHALL NOT BE CAST UNTIL ALL APPROACH PAVEMENT CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

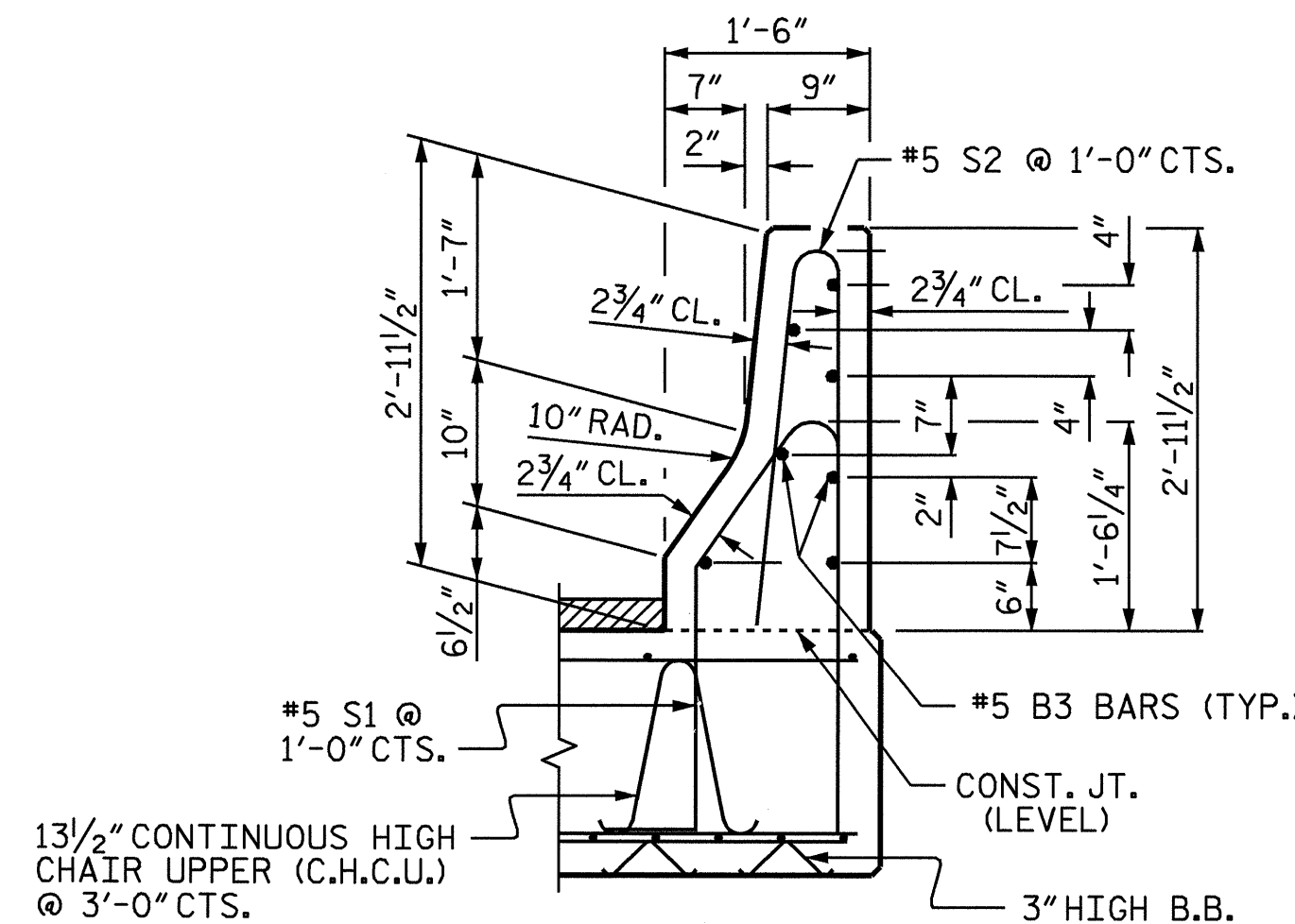
ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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. THE 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.



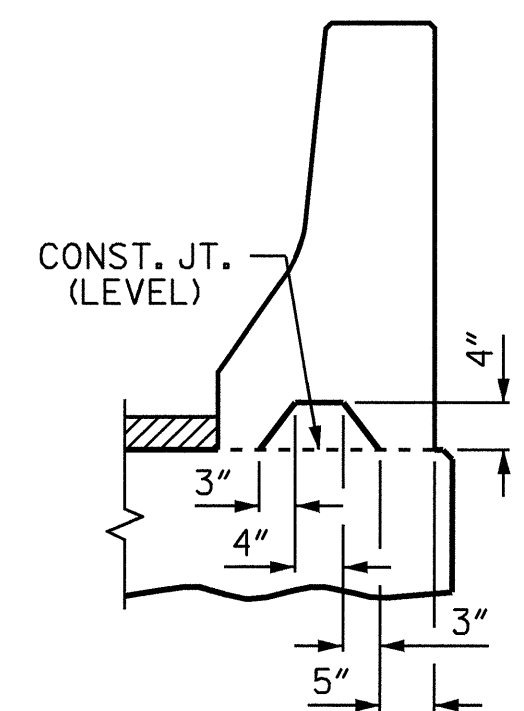
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

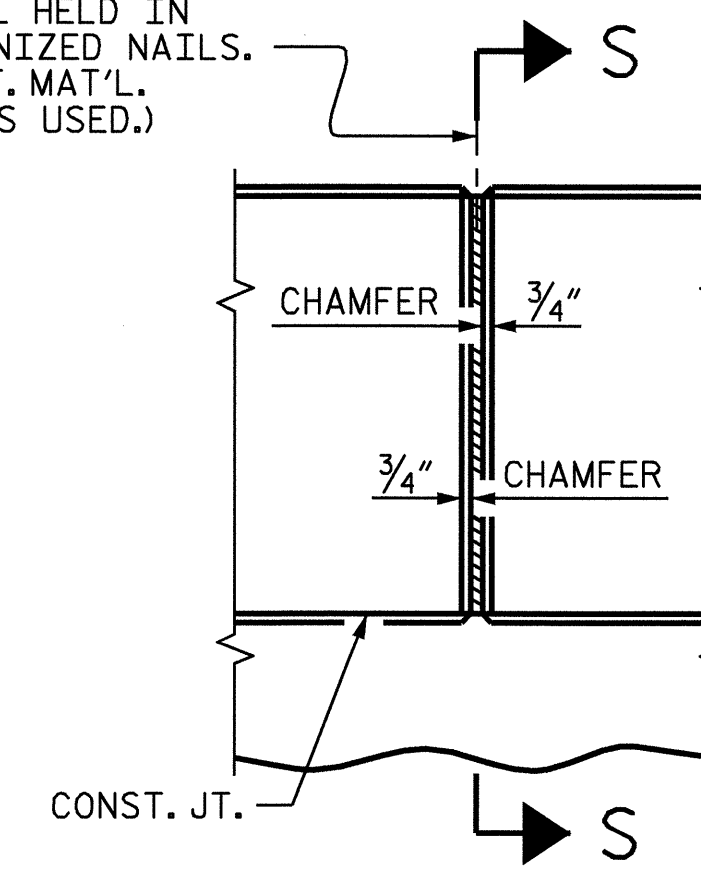


SECTION THRU RAIL

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



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

TOTAL BILL OF MATERIAL				
	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL	CONCRETE BARRIER RAIL
	CU. YDS.	LBS.	LBS.	LIN. FT.
SPECIAL APPROACH PAVEMENT	75.9	9,884	1,088	32.63

PROJECT NO. B-4082  
COLUMBUS COUNTY  
STATION: 15+99.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SPECIAL APPROACH PAVEMENT

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

DRAWN BY: P.C. BREWER DATE: 2/4/08  
CHECKED BY: W.F. PARKER DATE: 2/13/08

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STR. #3



## 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