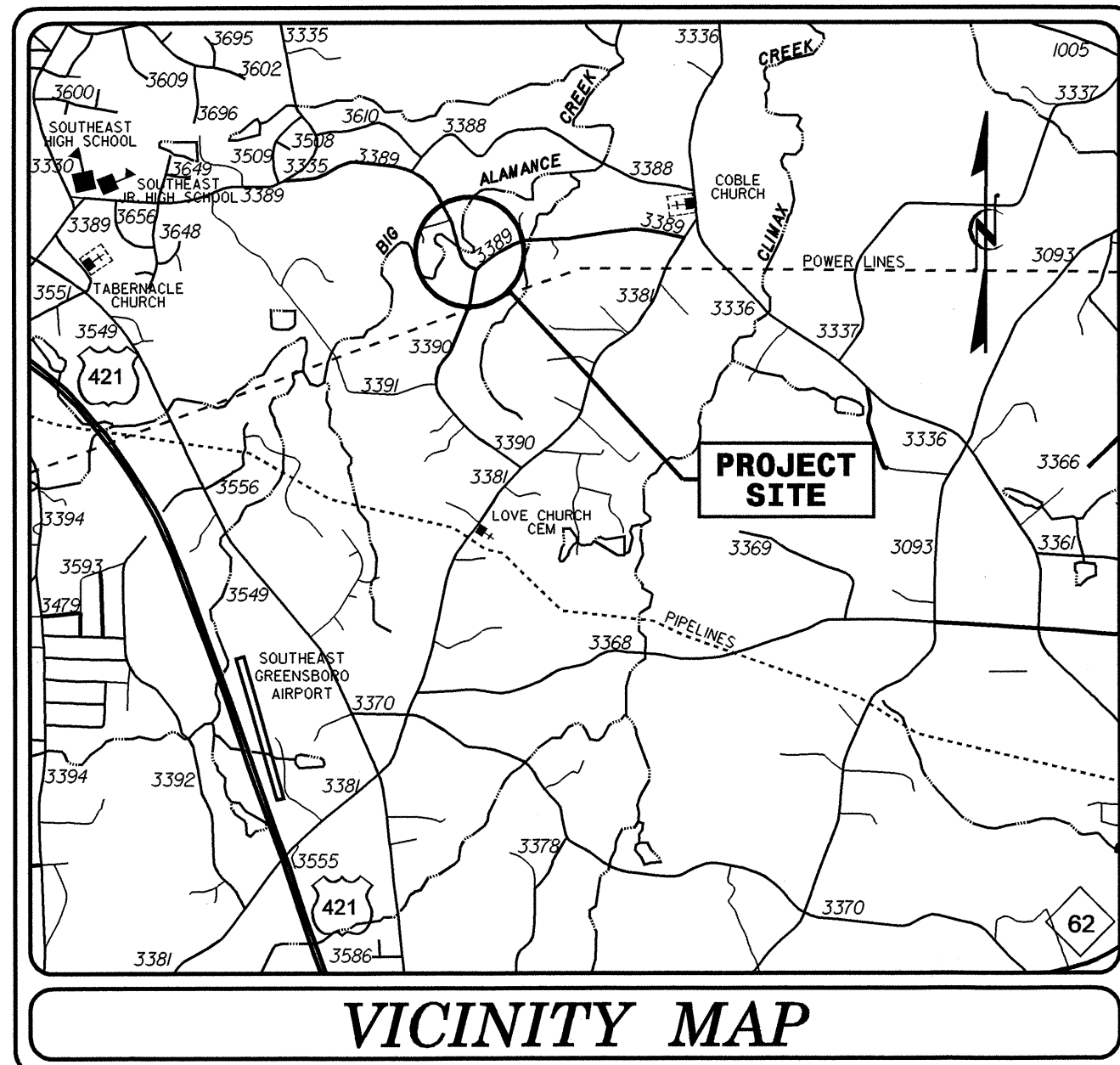


TIP PROJECT: B-3852

CONTRACT: C201398

STRUCTURE



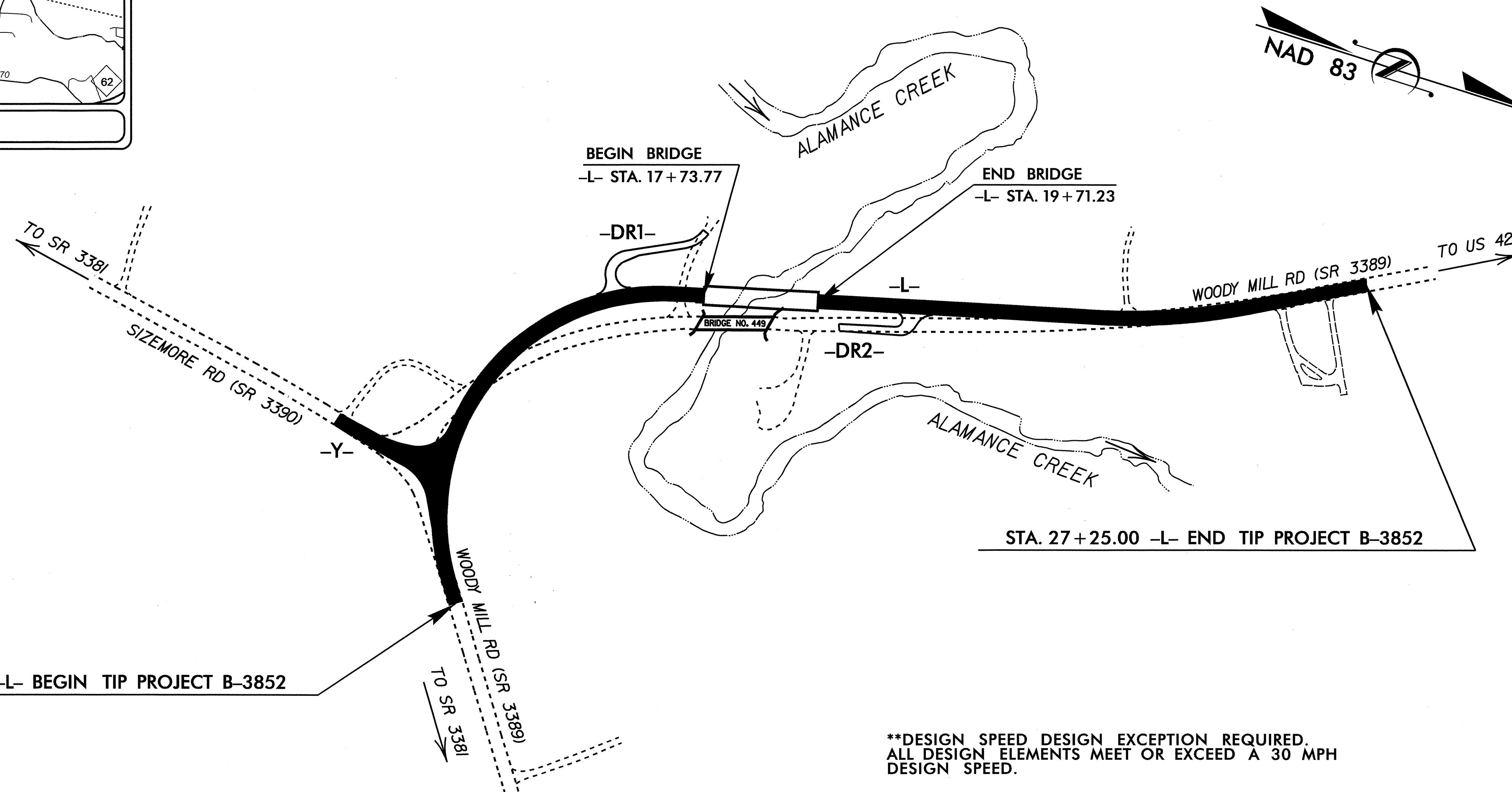
VICINITY MAP

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**GUILFORD COUNTY**

LOCATION: BRIDGE NO. 449 OVER ALAMANCE CREEK AND APPROACHES ON SR 3389 (WOODY MILL ROAD)  
TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	
N.C.	B-3852	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33299.1.1	BRZ-3389(1)	P.E. & UTIL.
33299.2.2	BRZ-3389(1)	R/W & UTIL.
33299.3.1	BRZ-3389(1)	CONST.



\*\*DESIGN SPEED DESIGN EXCEPTION REQUIRED.  
ALL DESIGN ELEMENTS MEET OR EXCEED A 30 MPH  
DESIGN SPEED.



**DESIGN DATA**

ADT 2004 =	1075
ADT 2025 =	1600
DHV =	11 %
D =	63 %
* T =	3 %
** V =	60 MPH
* TTST 1% +	DUAL 2%
FUNC. CLASS =	LOCAL RURAL

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT B-3852 =	0.279 MI
LENGTH STRUCTURE TIP PROJECT B-3852 =	0.037 MI
TOTAL LENGTH TIP PROJECT B-3852 =	0.316 MI

2006 STANDARDS SPECIFICATION

LETTING DATE:  
DECEMBER 18, 2007

Prepared In the Office of:  
**DEPARTMENT OF TRANSPORTATION**  
**DIVISION OF HIGHWAYS**  
1000 Birch Ridge Drive Raleigh, N.C. 27610

**B. S. COX, P. E.**  
PROJECT ENGINEER

**T.J. BEACH, P. E.**  
PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT

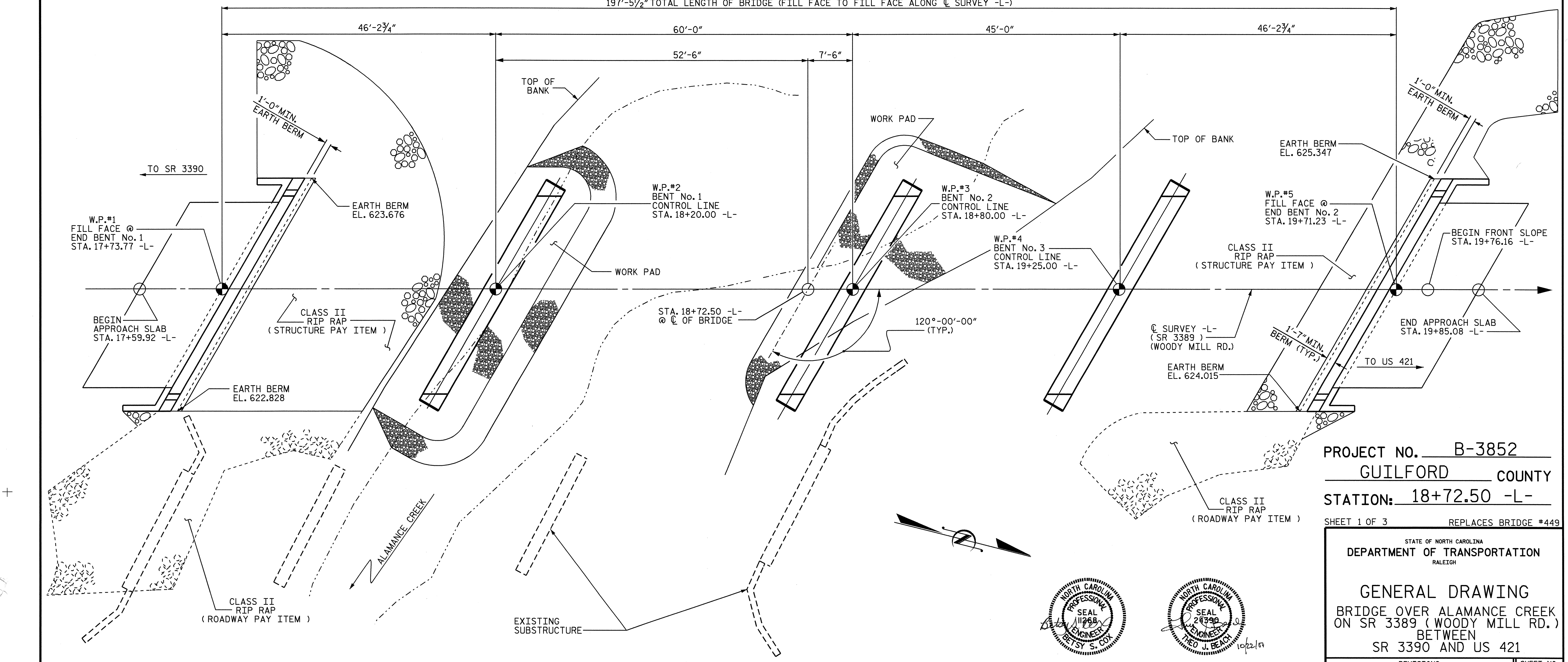
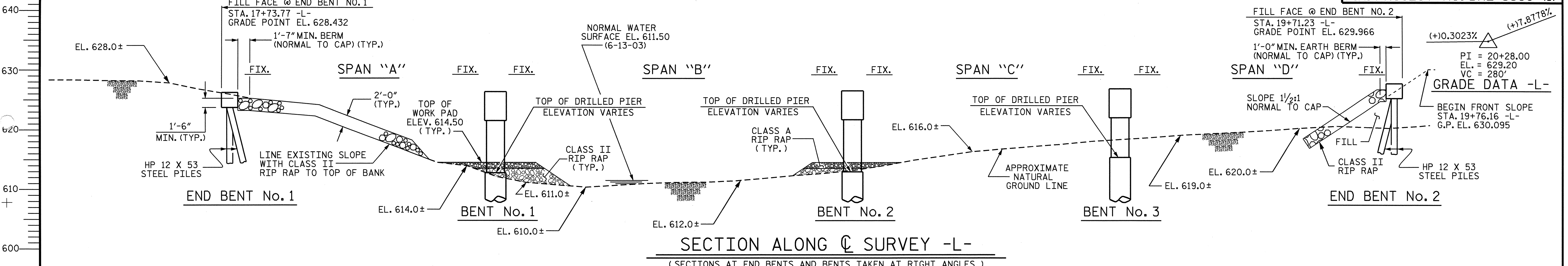
DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

P.E.  
STATE HIGHWAY ENGINEER - DESIGN

DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION

APPROVED FOR  
DIVISION ADMINISTRATOR

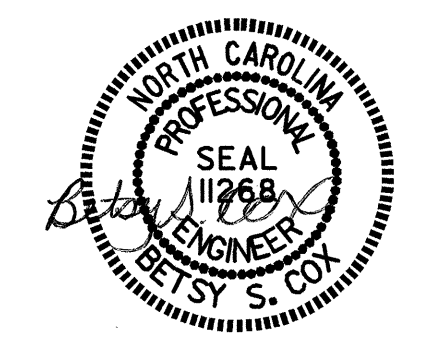
DATE



PROJECT NO. B-3852  
 GUILFORD COUNTY  
 STATION: 18+72.50 -L-  
 SHEET 1 OF 3 REPLACES BRIDGE #449

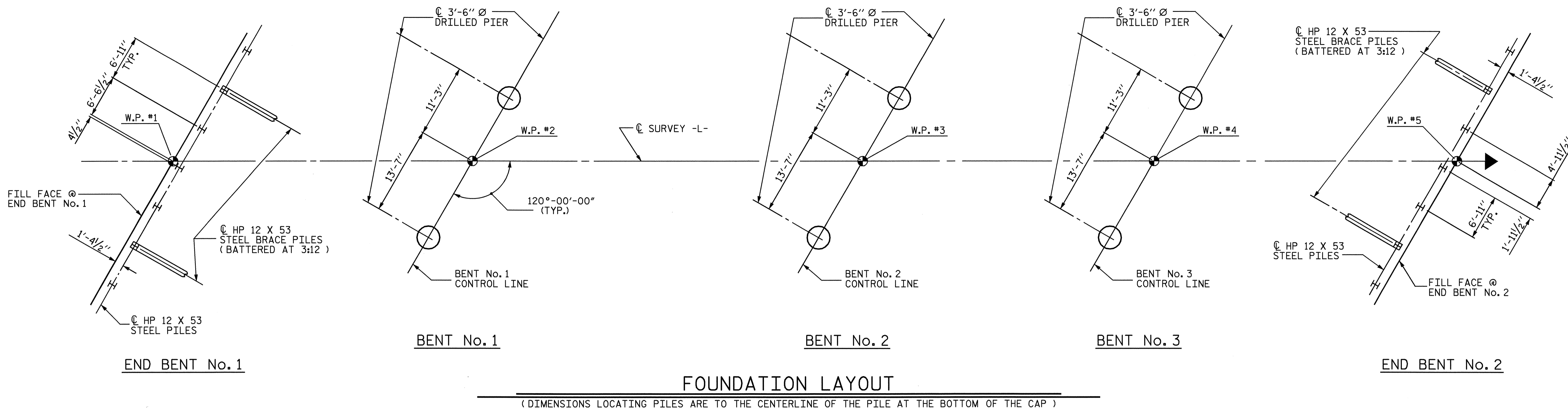
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**  
 BRIDGE OVER ALAMANCE CREEK  
 ON SR 3389 (WOODY MILL RD.)  
 BETWEEN  
 SR 3390 AND US 421



DRAWN BY: S.B.W. \ J.M.B. DATE: 3-27-06  
 CHECKED BY: B.S. COX DATE: 4-4-06

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



**NOTES :**

DRILLED PIERS AT BENT No. 1, BENT No. 2 AND BENT No. 3 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 75 TSF.

DRILLED PIERS AT BENT No. 1, BENT No. 2 AND BENT No. 3 ARE DESIGNED FOR AN APPLIED LOAD OF 200 TONS EACH AT THE TOP OF THE COLUMN.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT No. 1. IF REQUIRED, DO NOT EXTEND THE CASING BELOW ELEVATION 611 FT. WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING. SEE DRILLED PIERS SPECIAL PROVISION.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT No. 2. IF REQUIRED, DO NOT EXTEND THE CASING BELOW ELEVATION 609 FT. WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING. SEE DRILLED PIERS SPECIAL PROVISION.

PERMANENT STEEL CASING IS NOT REQUIRED FOR DRILLED PIERS AT BENT No. 3.

DRILLED PIERS AT BENT No. 1 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 604 FT. AND SATISFY THE REQUIRED END BEARING CAPACITY.

DRILLED PIERS AT BENT No. 2 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 602 FT. AND SATISFY THE REQUIRED END BEARING CAPACITY.

DRILLED PIERS AT BENT No. 3 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 606 FT. AND SATISFY THE REQUIRED END BEARING CAPACITY.

FOR DRILLED PIERS, SEE DRILLED PIERS SPECIAL PROVISION.

SPT TESTING IS NOT REQUIRED TO DETERMINE THE END BEARING CAPACITY OF THE DRILLED PIERS AT BENT No. 1, BENT No. 2 AND BENT No. 3.

DO NOT USE SLURRY CONSTRUCTION FOR DRILLED PIERS AT BENT No. 1, BENT No. 2 AND BENT No. 3.

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

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

THE SCOUR CRITICAL ELEVATION FOR BENT No. 1 IS ELEVATION 609 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SCOUR CRITICAL ELEVATION FOR BENT No. 2 IS ELEVATION 607 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SCOUR CRITICAL ELEVATION FOR BENT No. 3 IS ELEVATION 611 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

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

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

STEEL PILE POINTS ARE REQUIRED FOR STEEL PILES AT END BENT No. 1 AND END BENT No. 2. SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING, EXCEPT THAT CORED SLAB UNITS IN SPANS A, C, AND D HAVE BEEN DESIGNED FOR HS 25. CORED SLAB UNITS IN SPAN B HAVE BEEN DESIGNED FOR HS 20.

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 LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS FOR BENT No. 3 IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF 3 SPANS OF 1 @ 40'-1", 1 @ 40'-8" AND 1 @ 25'-2 1/2"; WITH A CLEAR ROADWAY WIDTH OF 18'-6"; TIMBER DECK ON I-BEAMS WITH A SUBSTRUCTURE OF TIMBER CAPS & PILES, BENT 1 CONCRETE ENCASED PILES, TIMBER BULKHEAD END BENTS AND LOCATED 40'± DOWNSTREAM FROM PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

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

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 18+72.50 -L-".

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE WORK PAD, THE CLASS II RIP RAP USED IN THE WORK PAD MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 18+72.50 -L-.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE ASPHALT WEARING SURFACE ON THE APPROACH SLAB AT END BENT No. 2 HAS A VARIABLE SUPERELEVATION. SEE ROADWAY PLANS FOR SUPERELEVATION REQUIRED.

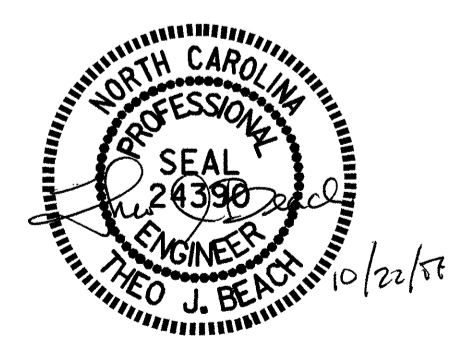
FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

DRAWN BY : MIKE BRITT      DATE : 3-23-06  
 CHECKED BY : B.S. COX      DATE : 4-4-06

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PROJECT NO. B-3852  
GUILFORD COUNTY  
 STATION: 18+72.50 -L-

SHEET 2 OF 3

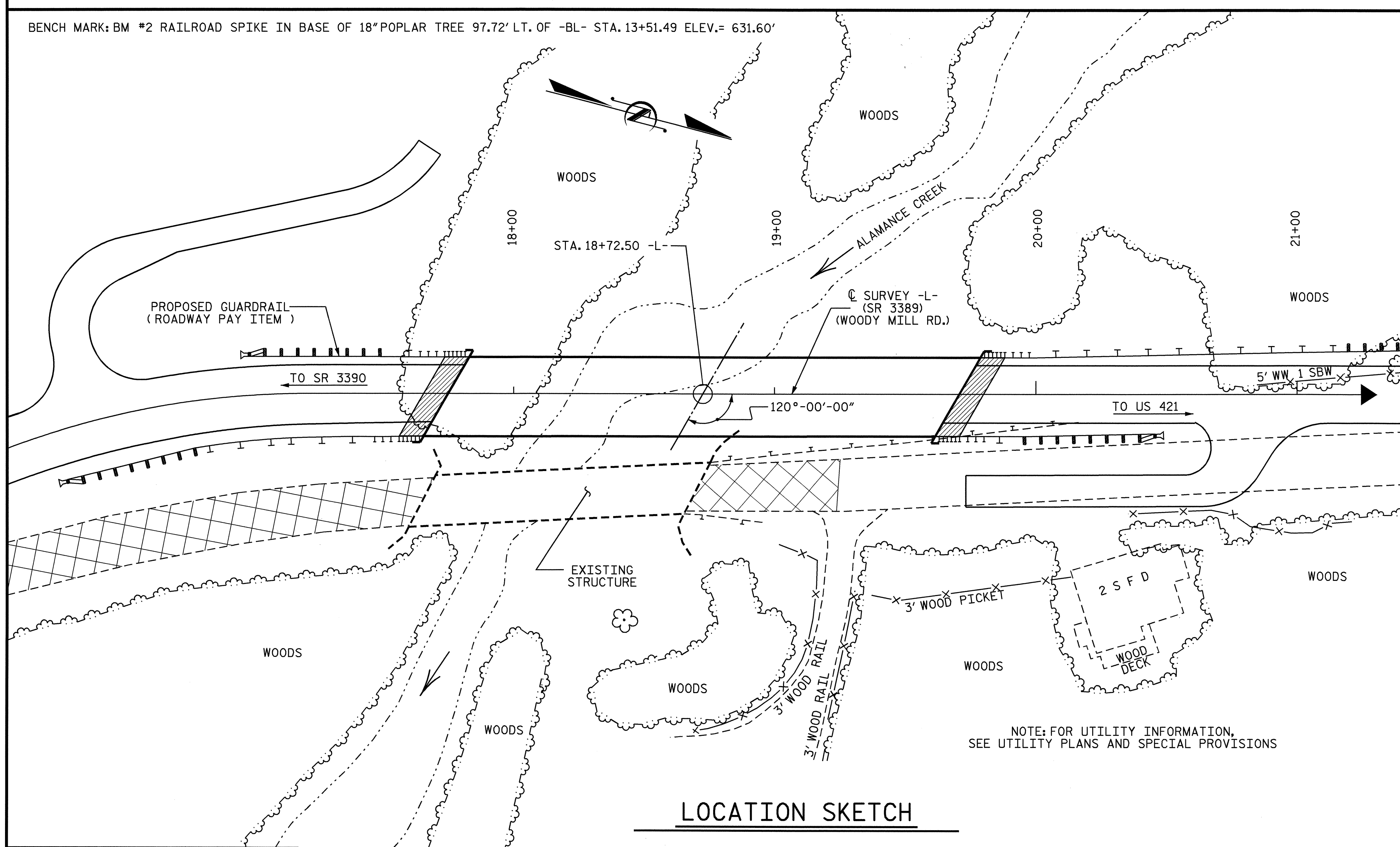
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**  
 BRIDGE OVER ALAMANCE CREEK  
 ON SR 3389 (WOODY MILL RD.)  
 BETWEEN  
 SR 3390 AND US 421

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

## TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE & REMOVAL OF TEMPORARY ACCESS	REMOVAL OF EXISTING STRUCTURE	3'-6" Ø DRILLED PIERS IN SOIL	3'-6" Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIER	SID INSPECTION	CROSSHOLE SONIC LOGGING	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	HP 12 X 53 STEEL PILES	STEEL PILE POINTS	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	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN.FT.	EACH	LIN.FT.	TONS	SQ.YDS.	LUMP SUM	NO.	LIN.FT.
SUPERSTRUCTURE														388.83					44	2,138.58
END BENT No. 1								14.2		2,257		7	70	7		236	262			
BENT No. 1			4.0	14.0	3.6			33.1		6,324	797									
BENT No. 2			8.0	14.0	7.9			33.1		6,487	882									
BENT No. 3			5.0	14.0				32.0		6,194	737									
END BENT No. 2								14.3		2,258		7	70	7		153	170			
<b>TOTAL</b>	<b>LUMP SUM</b>	<b>LUMP SUM</b>	<b>17.0</b>	<b>42.0</b>	<b>11.5</b>	<b>3</b>	<b>1</b>	<b>126.7</b>	<b>LUMP SUM</b>	<b>23,520</b>	<b>2,416</b>	<b>14</b>	<b>140</b>	<b>14</b>	<b>388.83</b>	<b>389</b>	<b>432</b>	<b>LUMP SUM</b>	<b>44</b>	<b>2,138.58</b>



### HYDROGRAPHIC DATA

DESIGN DISCHARGE----- 3400 CFS  
 FREQUENCY OF DESIGN FLOOD----- 25 YR.  
 DESIGN HIGH WATER ELEVATION---- 625.7'  
 DRAINAGE AREA----- 16.8 SQ.MI.  
 BASIC DISCHARGE (Q100)----- 6300 CFS  
 BASIC HIGH WATER ELEVATION---- 630.4'

OVERTOPPING FLOOD DATA  
 OVERTOPPING DISCHARGE----- 4900 CFS  
 FREQUENCY OF OVERTOPPING FLOOD-- 50 YRS  
 OVERTOPPING FLOOD ELEVATION---- 628.3

PROJECT NO. B-3852  
GUILFORD COUNTY  
 STATION: 18+72.50 -L-

SHEET 3 OF 3

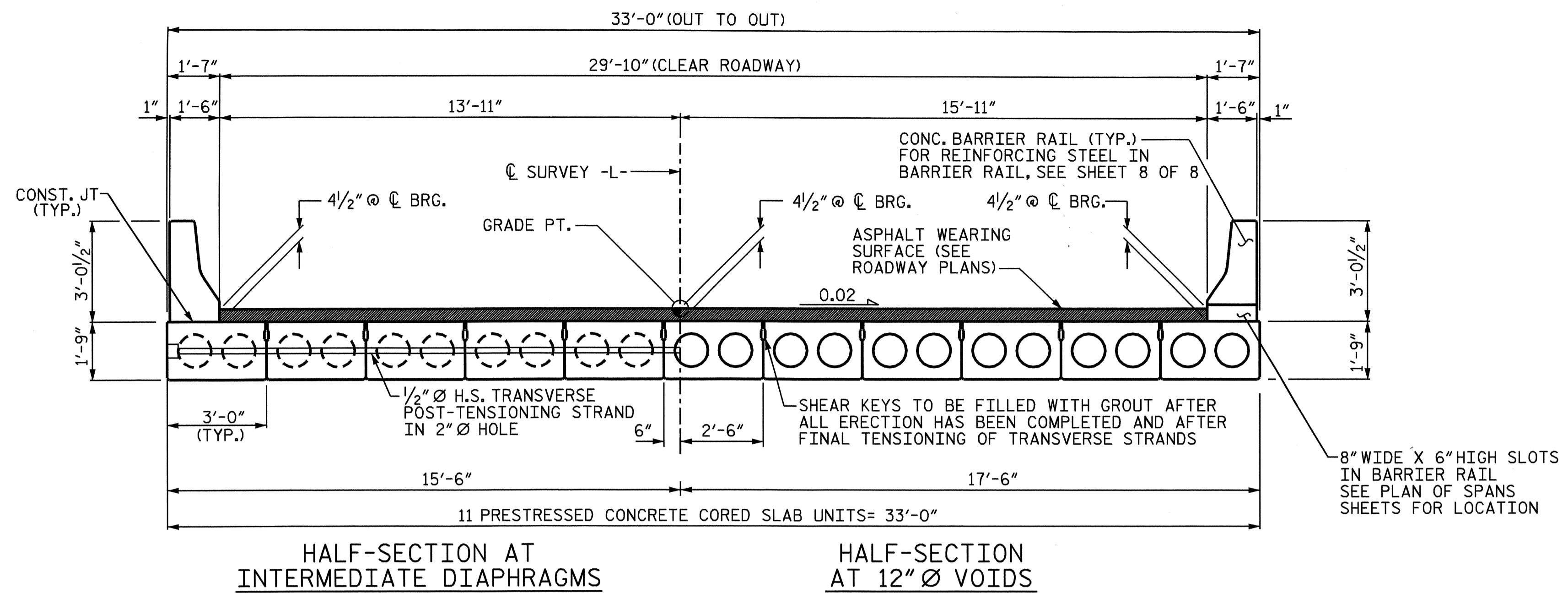


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**  
 BRIDGE OVER ALAMANCE CREEK  
 ON SR 3389 (WOODY MILL RD.)  
 BETWEEN  
 SR 3390 AND US 421

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

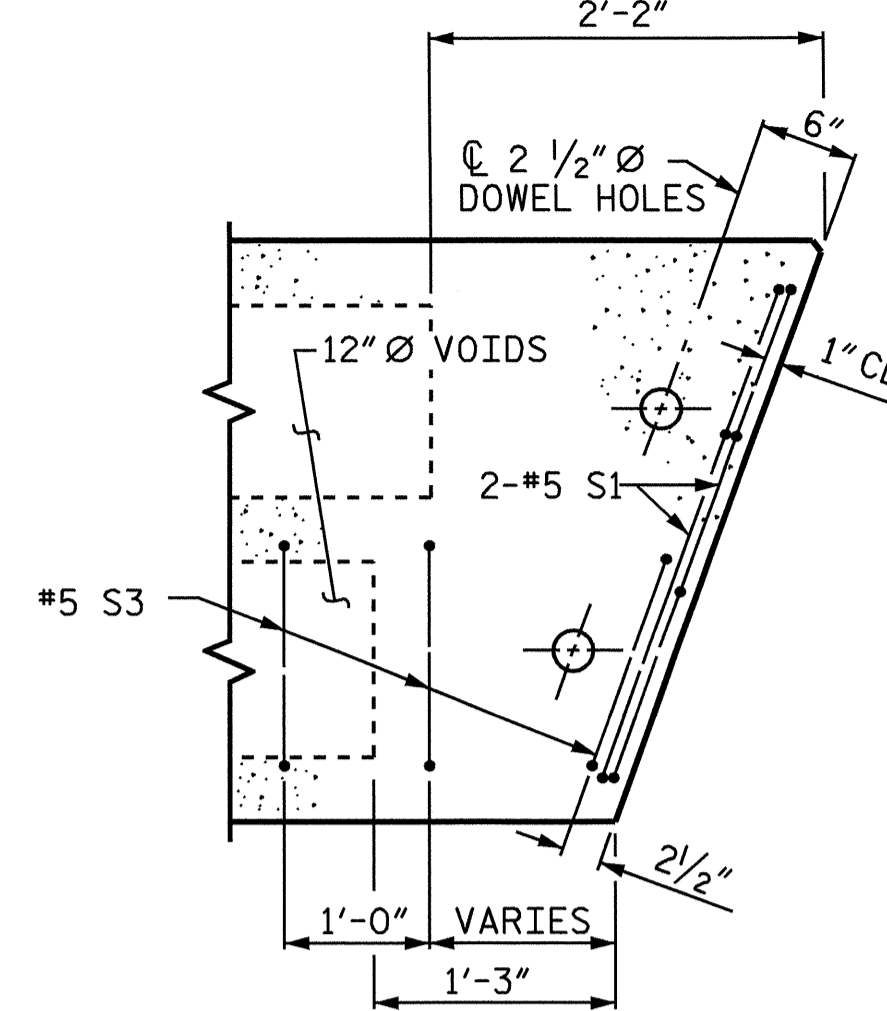
DRAWN BY : S.B.W. \ J.M.B. DATE : 3-28-06  
 CHECKED BY : B.S. COX DATE : 4-4-06



HALF-SECTION AT INTERMEDIATE DIAPHRAGMS

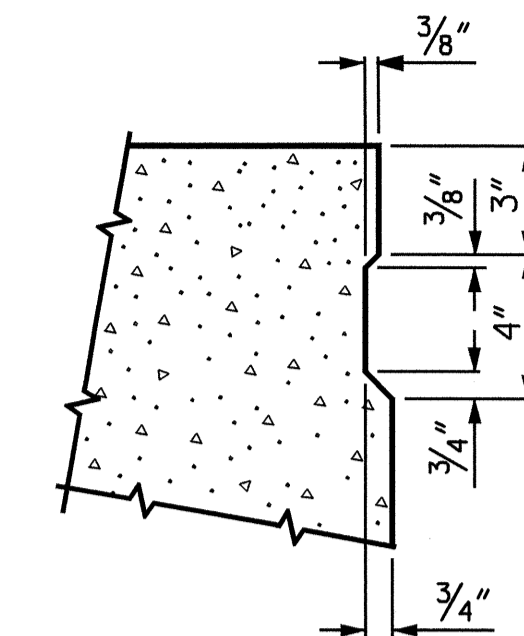
HALF-SECTION AT 12" Ø VOIDS

TYPICAL SECTION

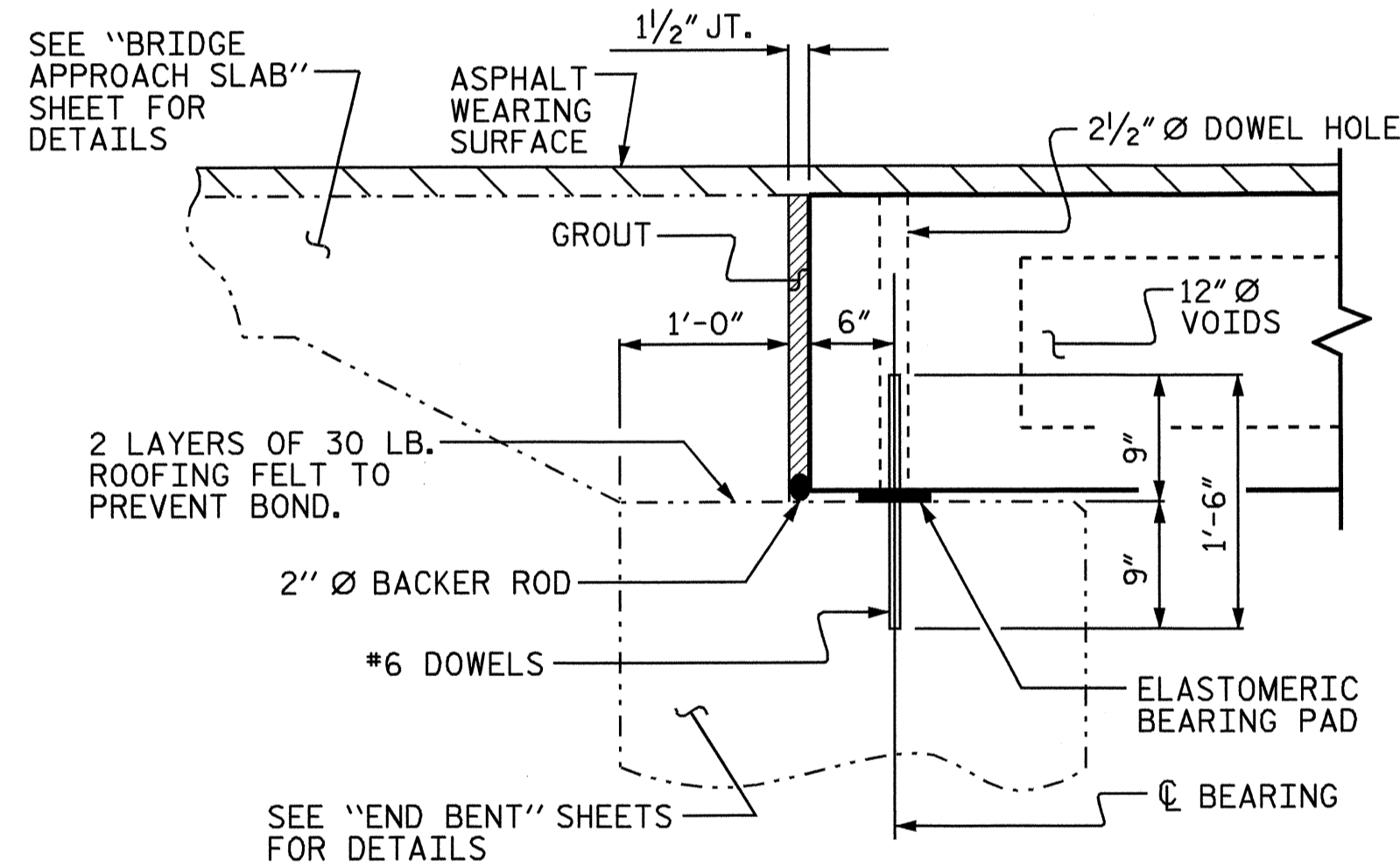


PART PLAN-EXTERIOR SECTION

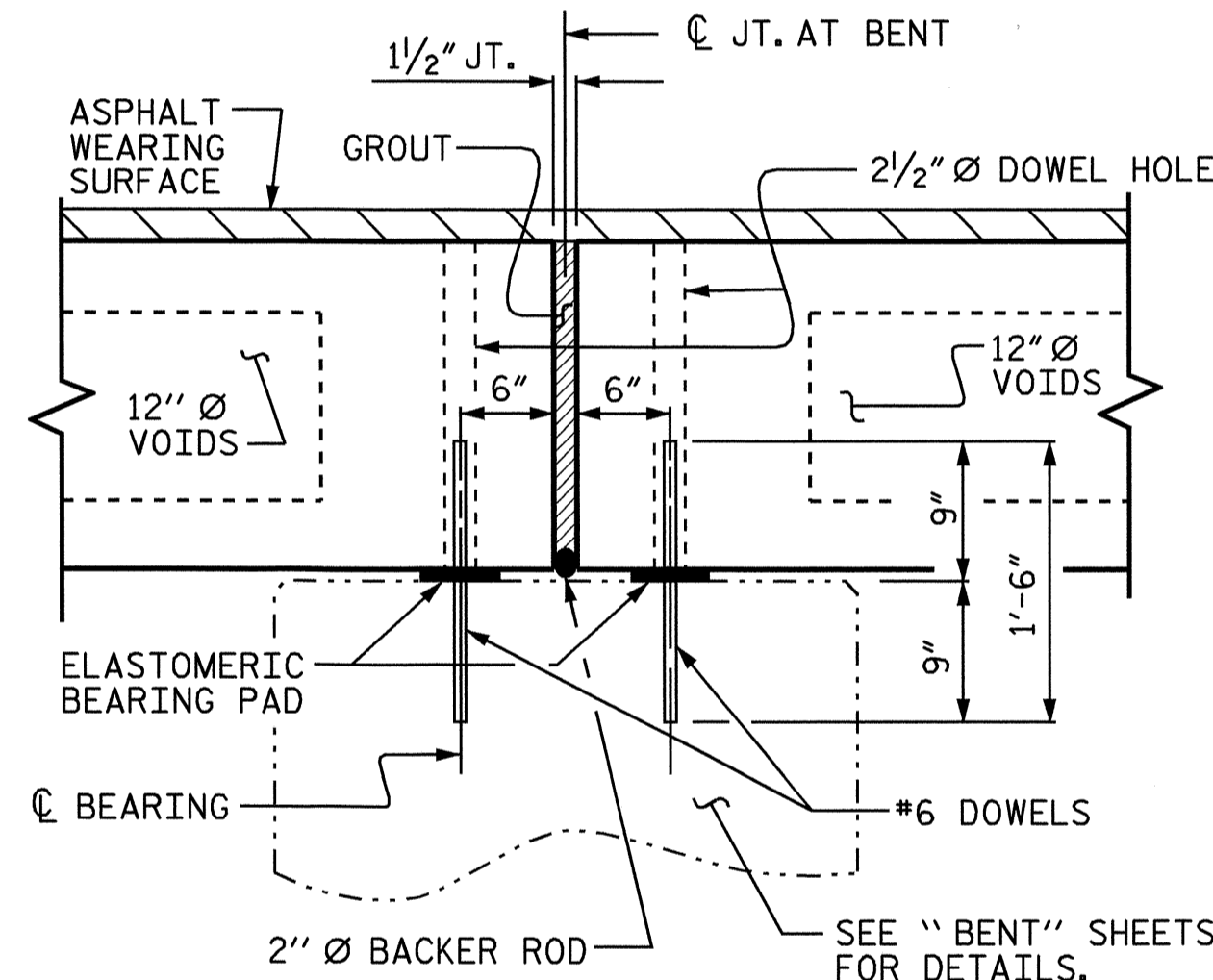
NOTE: EXTERIOR SECTION SHOWN-INTERIOR SECTION SIMILAR EXCEPT OMIT S3 BARS. SEE PLAN OF CORED SLAB UNITS SHEETS FOR DIM. TO #5 S3



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

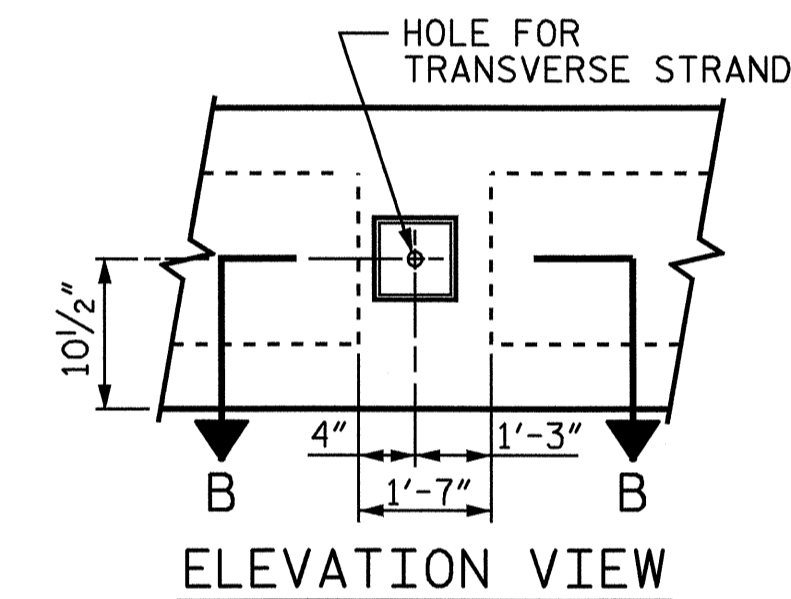


SECTION AT END BENT

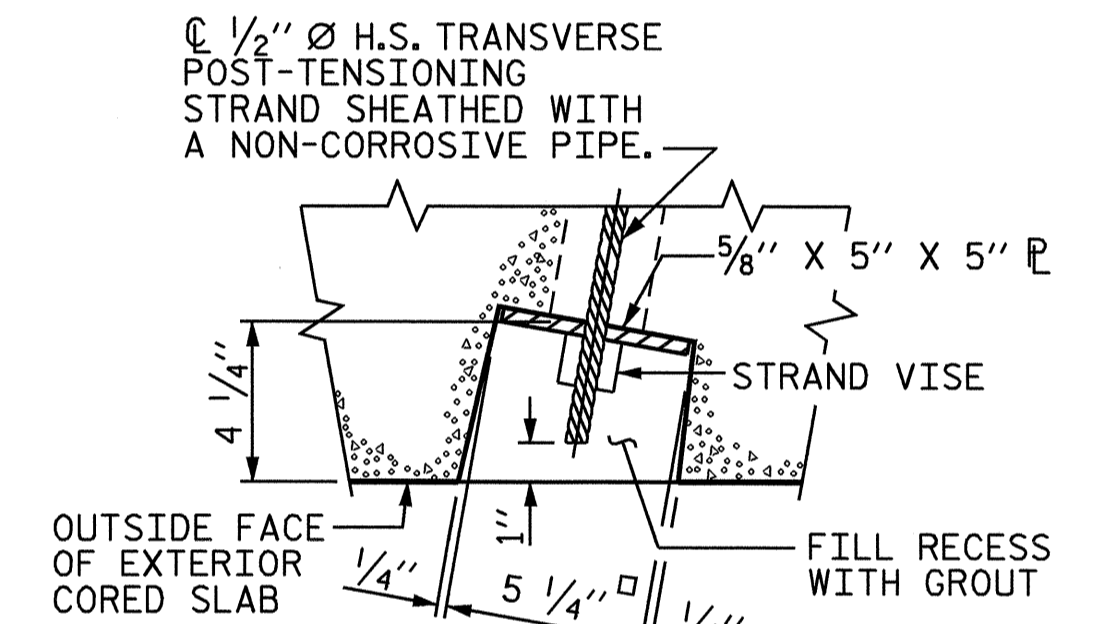


SECTION AT BENT

■ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF, 4'-0" FOR SPANS "A", "C" & "D" AND 5'-2" FOR SPAN "B", FROM END OF CORED SLAB UNIT, SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.

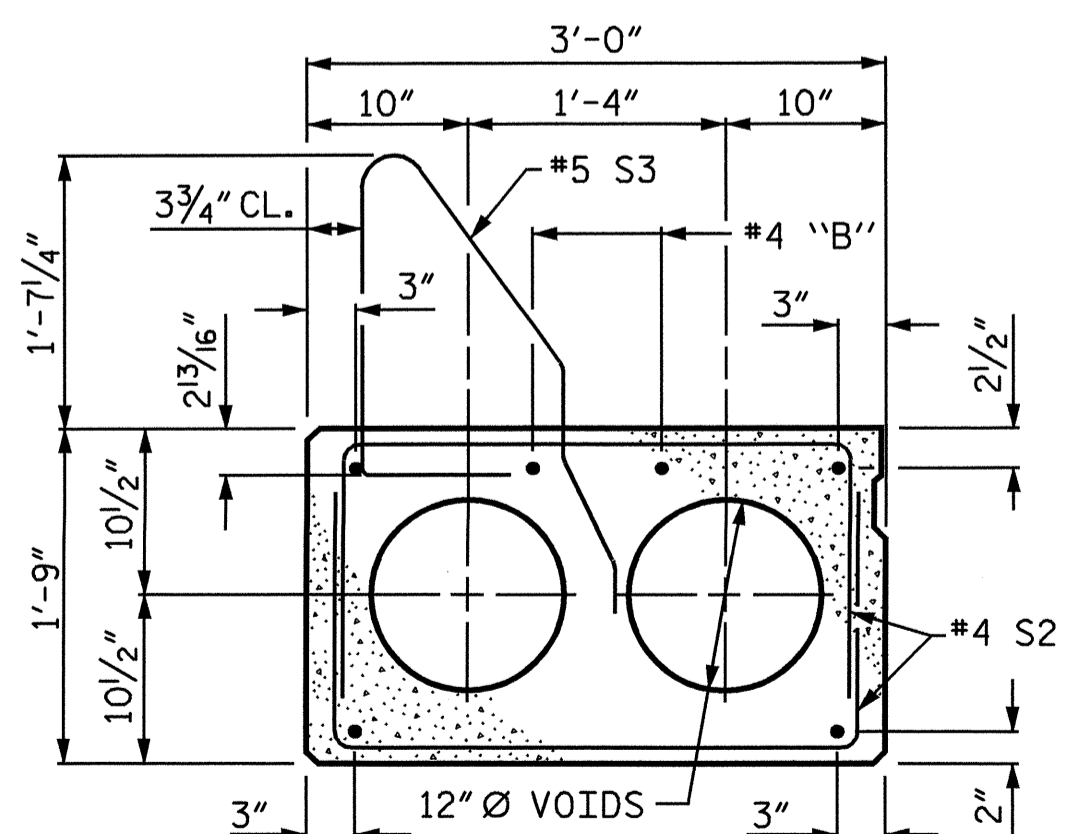


ELEVATION VIEW



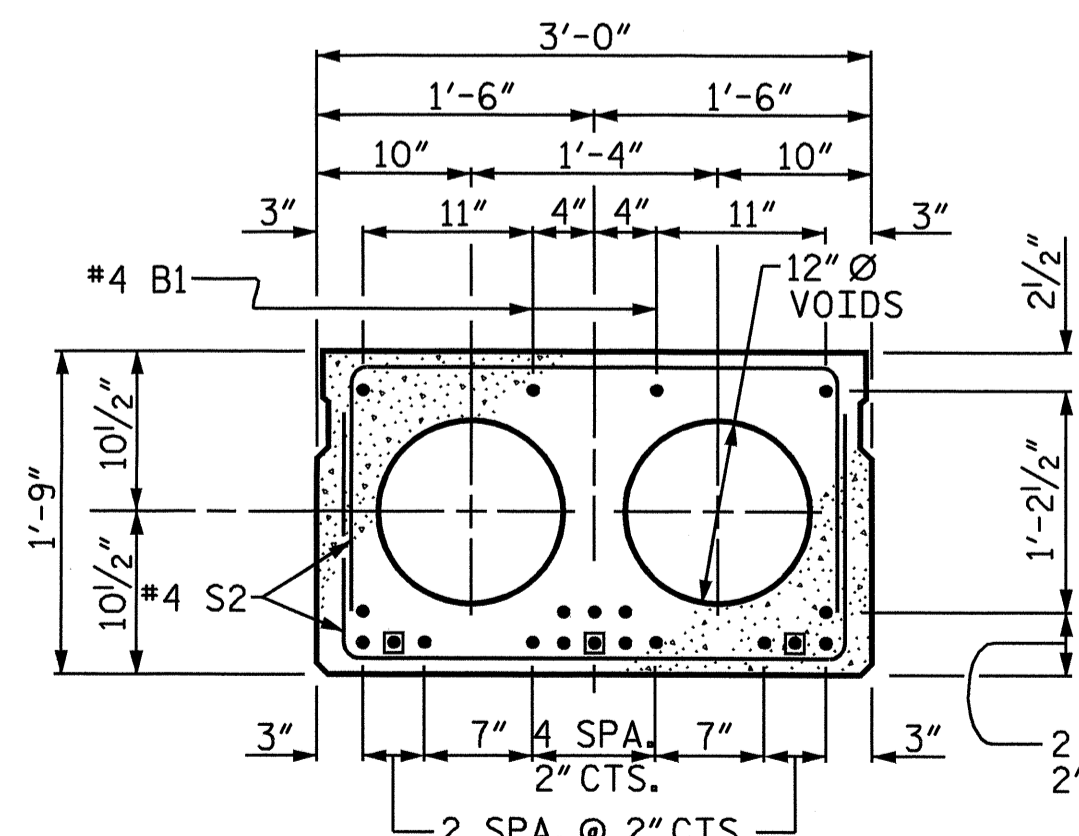
SECTION B-B

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



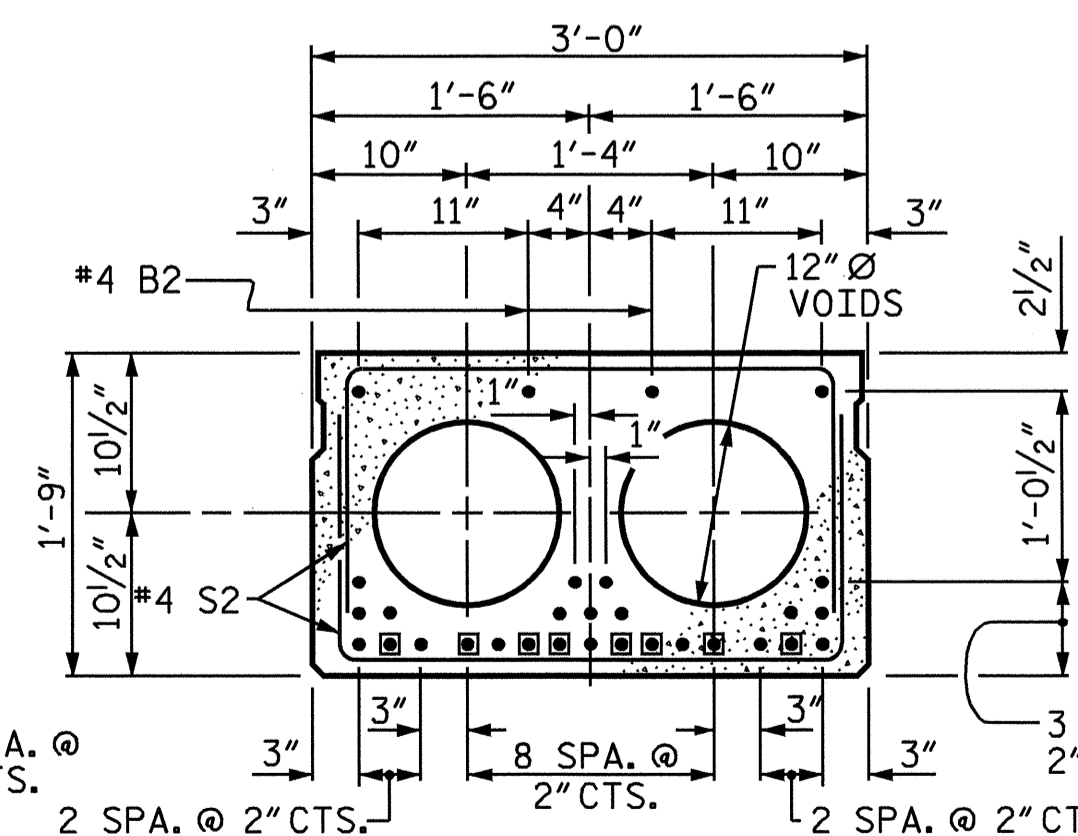
EXTERIOR SLAB SECTION

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



INTERIOR SLAB SECTION

1/2" Ø LOW RELAXATION STRAND LAYOUT

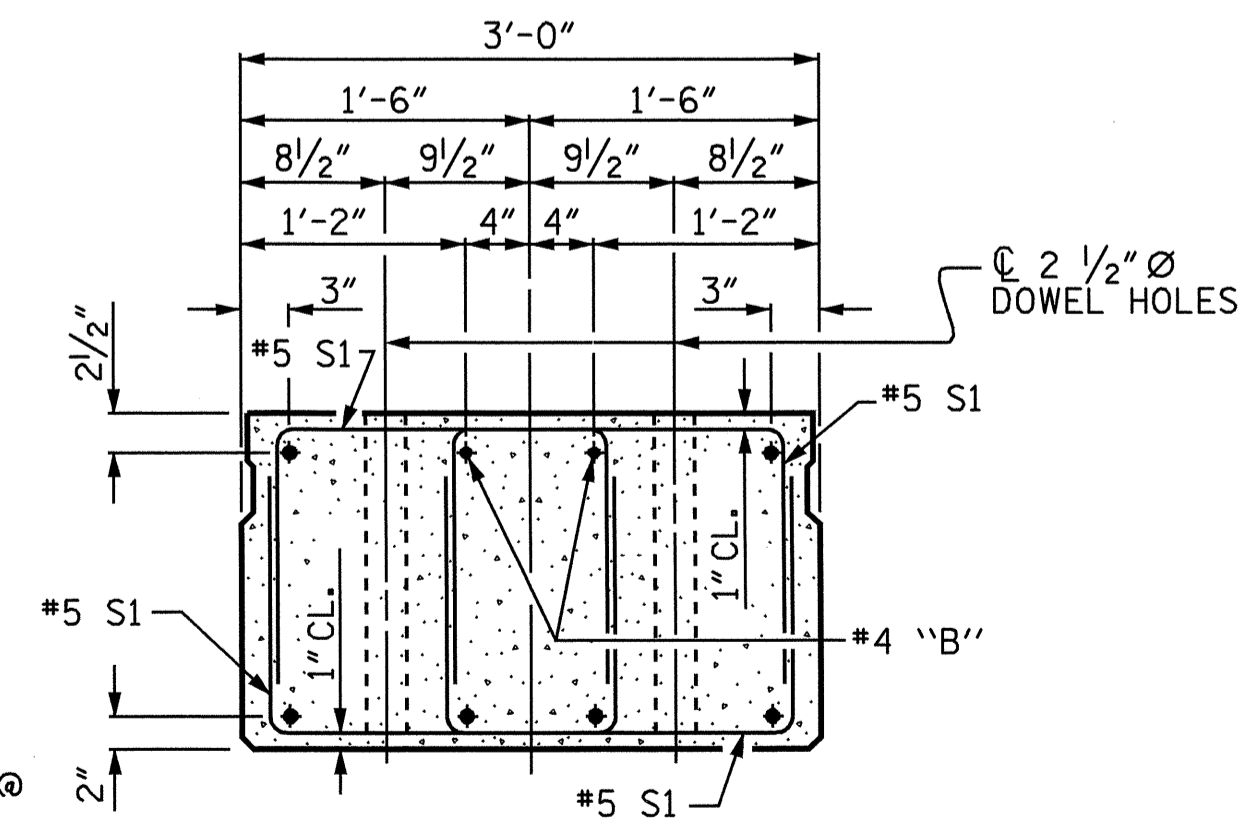


INTERIOR SLAB SECTION

1/2" Ø LOW RELAXATION STRAND LAYOUT

TYPICAL SPANS "A", "C", & "D" (18 STRANDS)

TYPICAL SPAN "B" ONLY (28 STRANDS)



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.



PROJECT NO. B-3852  
GUILFORD COUNTY  
STATION: 18+72.50 -L-

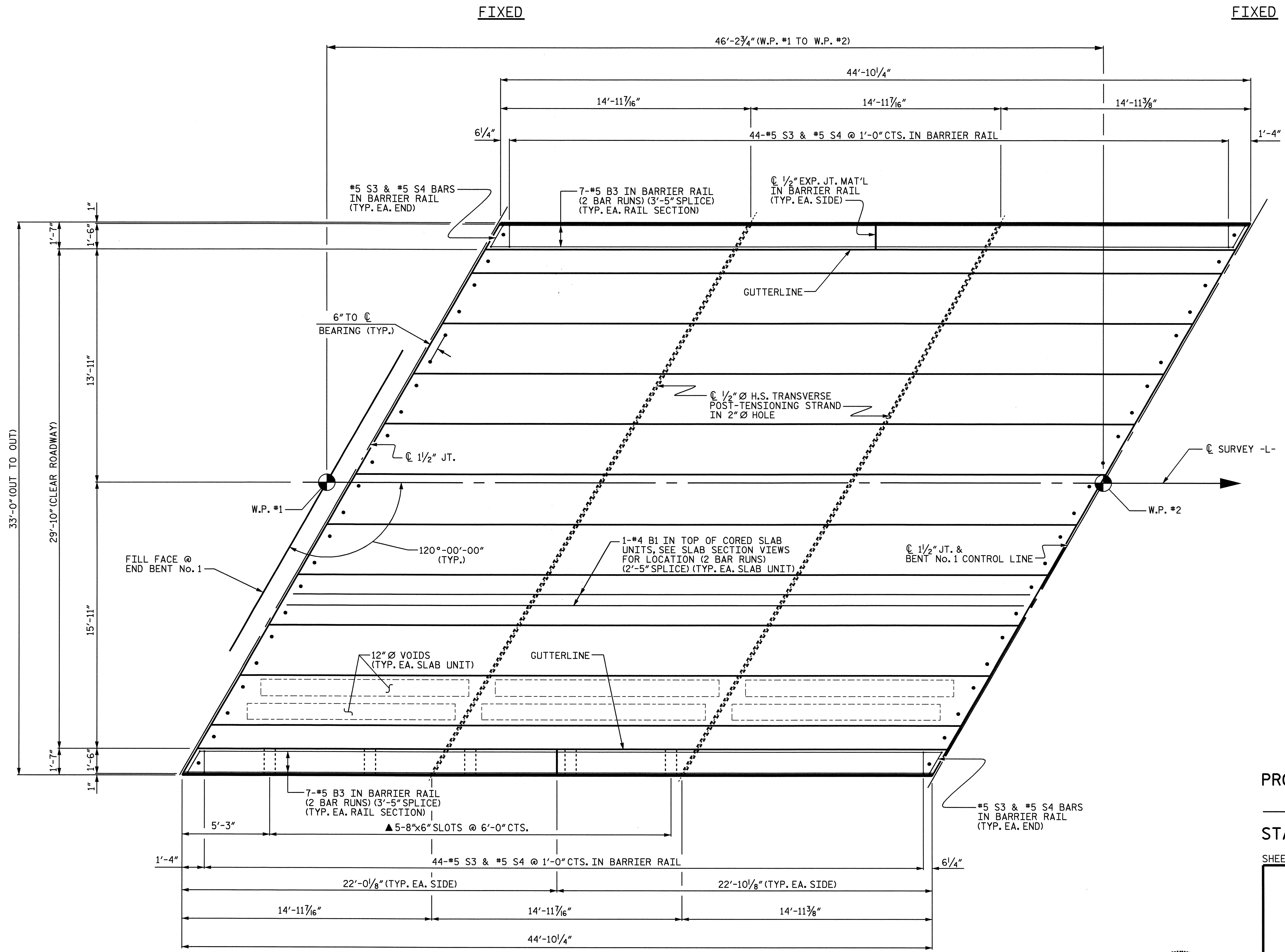
SHEET 1 OF 9

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

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

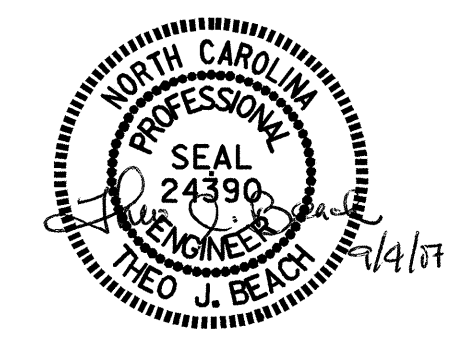
REVISIONS						SHEET NO. S-4
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 27
2			4			

DRAWN BY: S.B. WILLIAMS DATE: 1/4/05  
CHECKED BY: P.C. BREWER DATE: 1/26/05



**SPAN "A"**

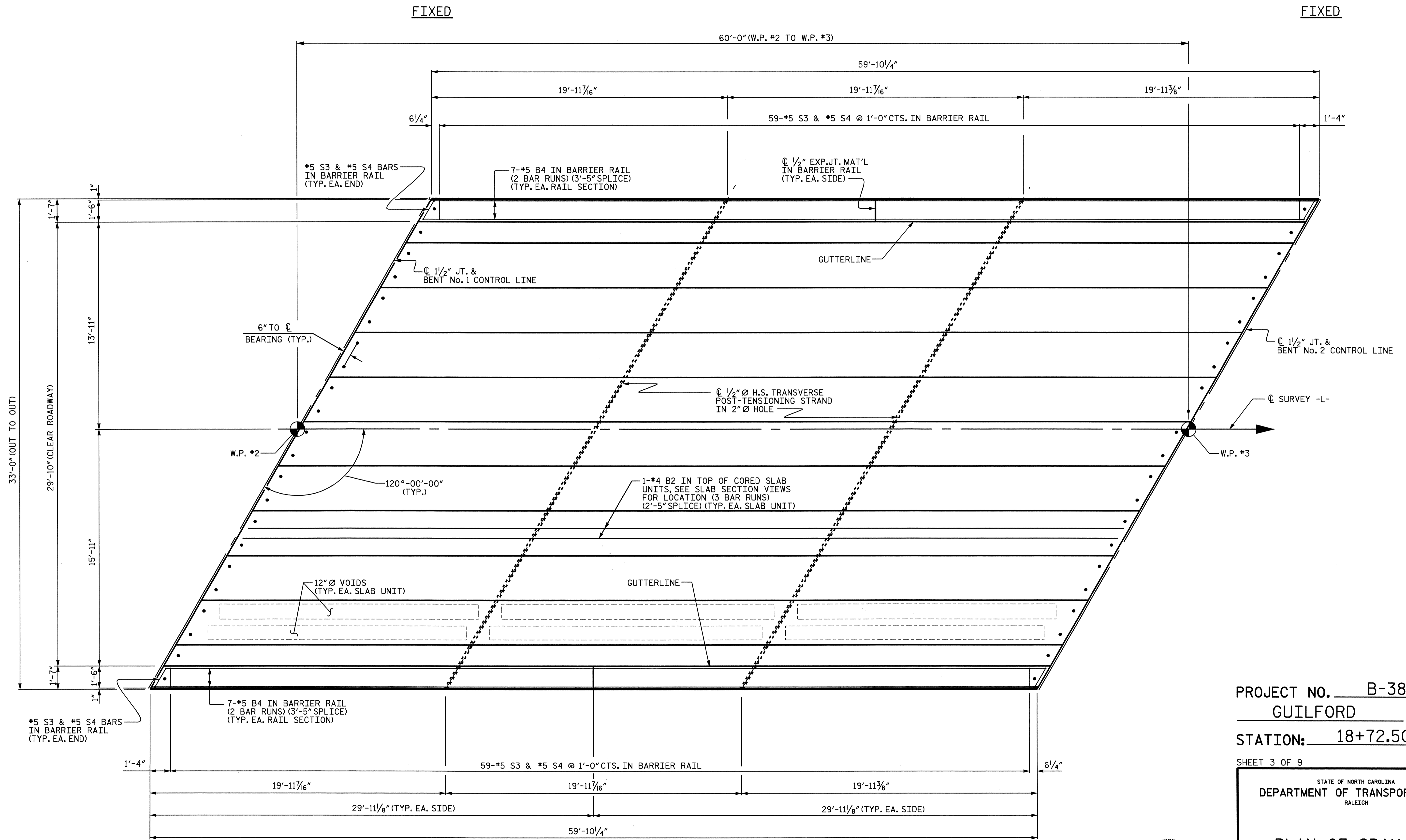
**NOTE:**  
 ▲ DISTANCE TO FIRST DRAIN SLOT TO BE SHIFTED SLIGHTLY AS NECESSARY TO CENTER DRAIN SLOT BETWEEN THE #5 S3 BARS IN CORED SLAB.



PROJECT NO. B-3852  
GUILFORD COUNTY  
 STATION: 18+72.50 -L-  
 SHEET 2 OF 9

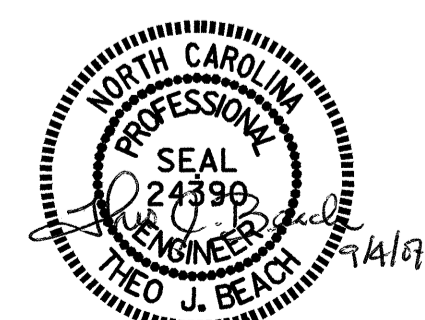
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-5	
PLAN OF SPAN "A"						TOTAL SHEETS 27	
REVISIONS							
NO.	BY:	DATE:	NO.	BY:	DATE:		
1			3				
2			4				

DRAWN BY : S.B. WILLIAMS DATE : 1-4-05  
 CHECKED BY : P.C. BREWER DATE : 1-26-05



**SPAN "B"**

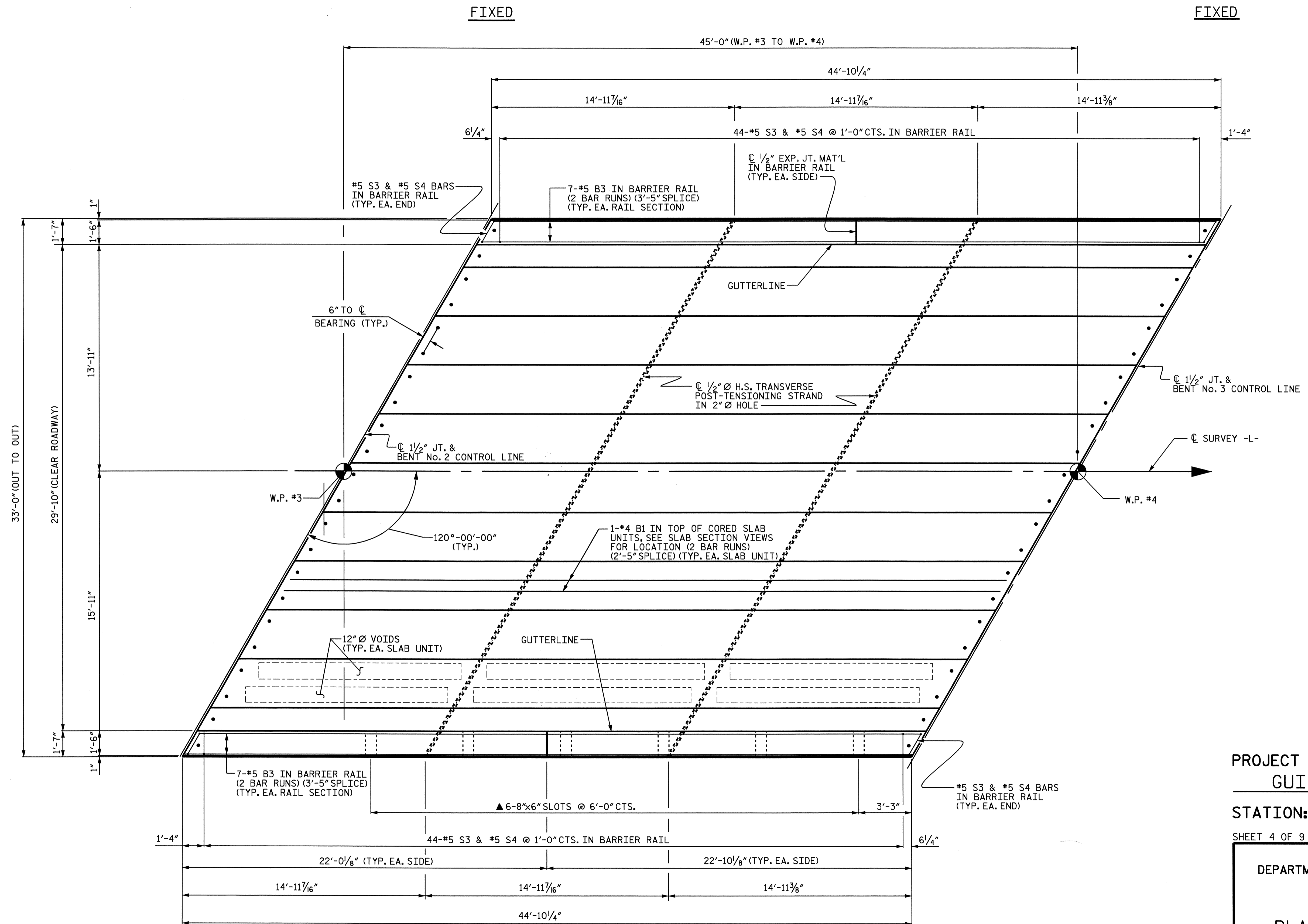
PROJECT NO. B-3852  
GUILFORD COUNTY  
 STATION: 18+72.50 -L-  
 SHEET 3 OF 9



STATE OF NORTH CAROLINA					
DEPARTMENT OF TRANSPORTATION					
RALEIGH					
PLAN OF SPAN "B"					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					27

DRAWN BY: S.B. WILLIAMS DATE: 1-3-05  
 CHECKED BY: P.C. BREWER DATE: 1-26-05

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 tbeach

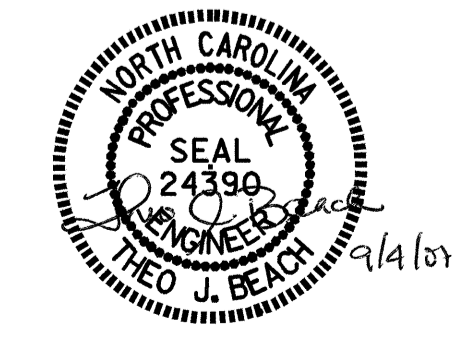


FIXED

FIXED

SPAN "C"

**NOTE:**  
 ▲ DISTANCE TO FIRST DRAIN SLOT TO BE SHIFED SLIGHTLY AS NECESSARY TO CENTER DRAIN SLOT BETWEEN THE #5 S3 BARS IN CORED SLAB.

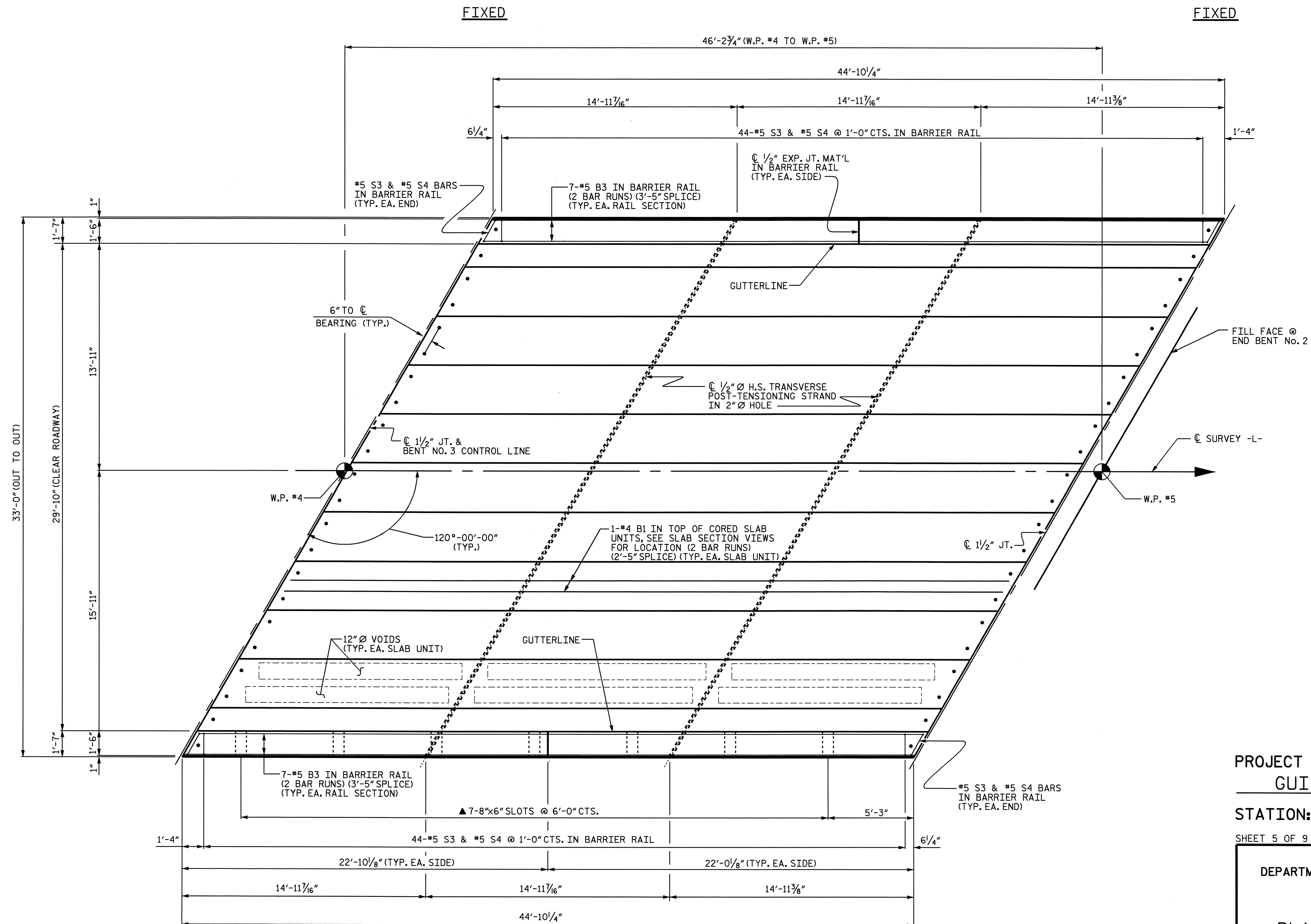


PROJECT NO. B-3852  
GUILFORD COUNTY  
 STATION: 18+72.50 -L-  
 SHEET 4 OF 9

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
PLAN OF SPAN "C"					
SHEET NO. S-7					
TOTAL SHEETS 27					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

DRAWN BY : S.B. WILLIAMS DATE : 1-4-05  
 CHECKED BY : P.C. BREWER DATE : 1-26-05





**SPAN "D"**

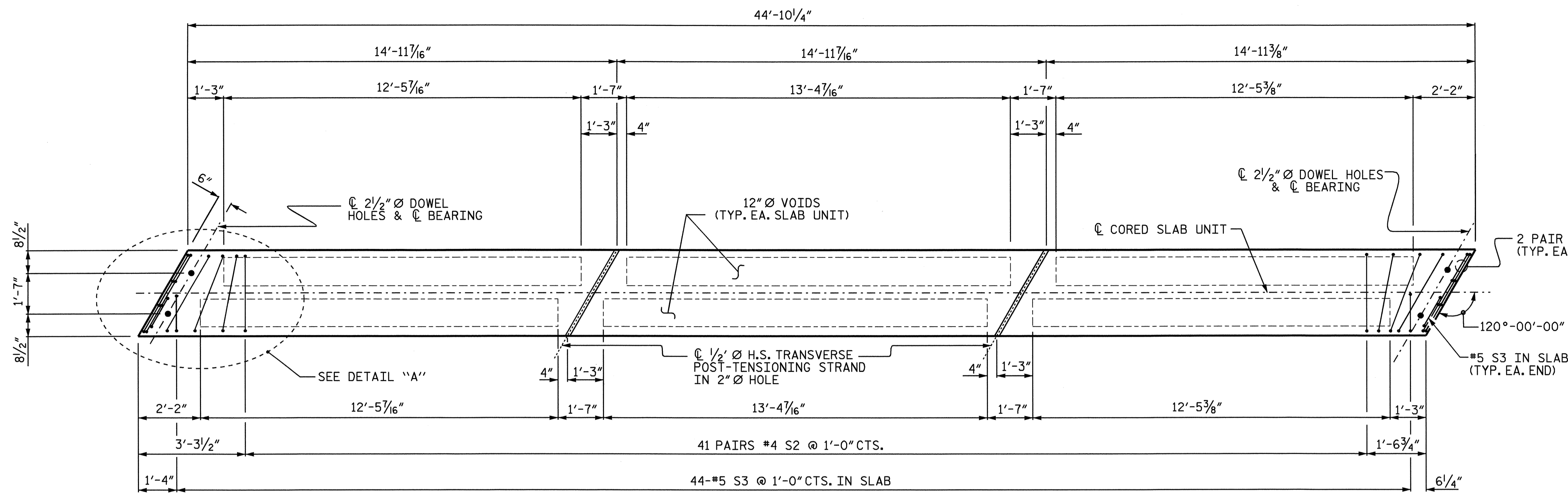
**NOTE:**  
 ▲ DISTANCE TO FIRST DRAIN SLOT TO BE SHIFTED SLIGHTLY AS NECESSARY TO CENTER DRAIN SLOT BETWEEN THE #5 S3 BARS IN CORED SLAB.



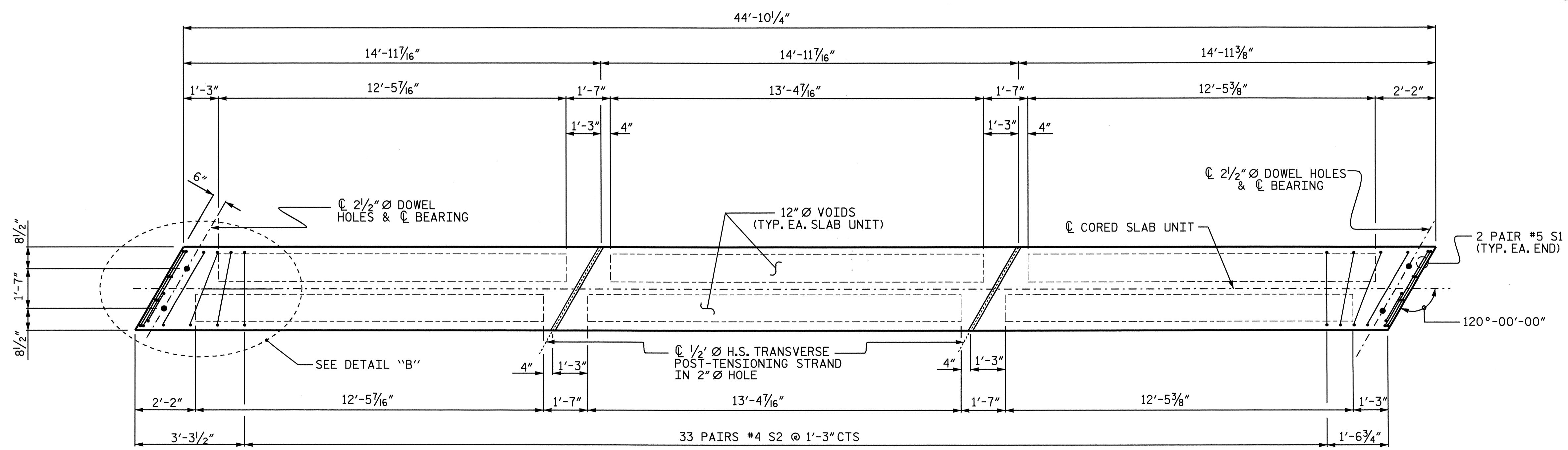
PROJECT NO. B-3852  
GUILFORD COUNTY  
 STATION: 18+72.50 -L-  
 SHEET 5 OF 9

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-8
PLAN OF SPAN "D"						TOTAL SHEETS 27
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

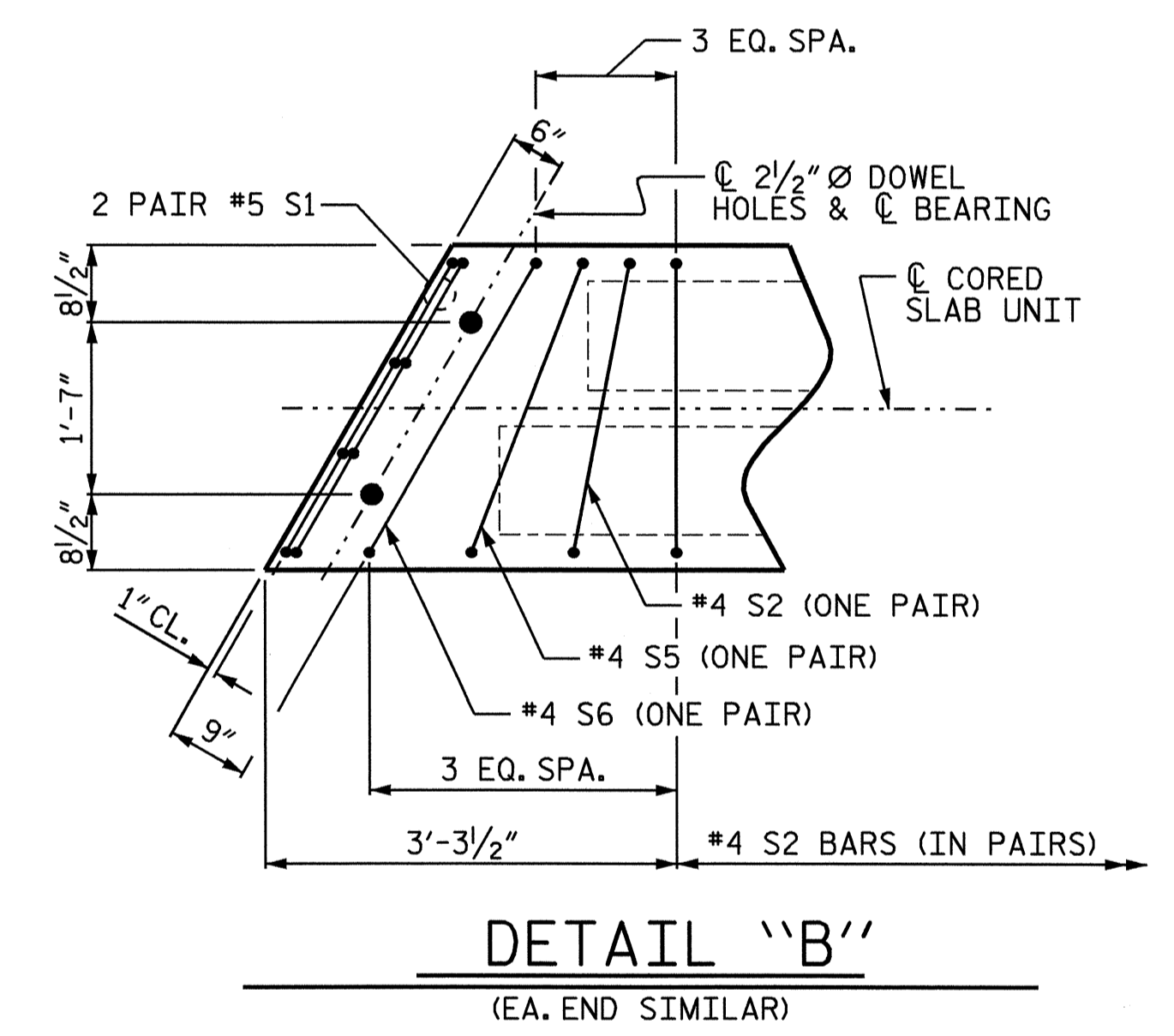
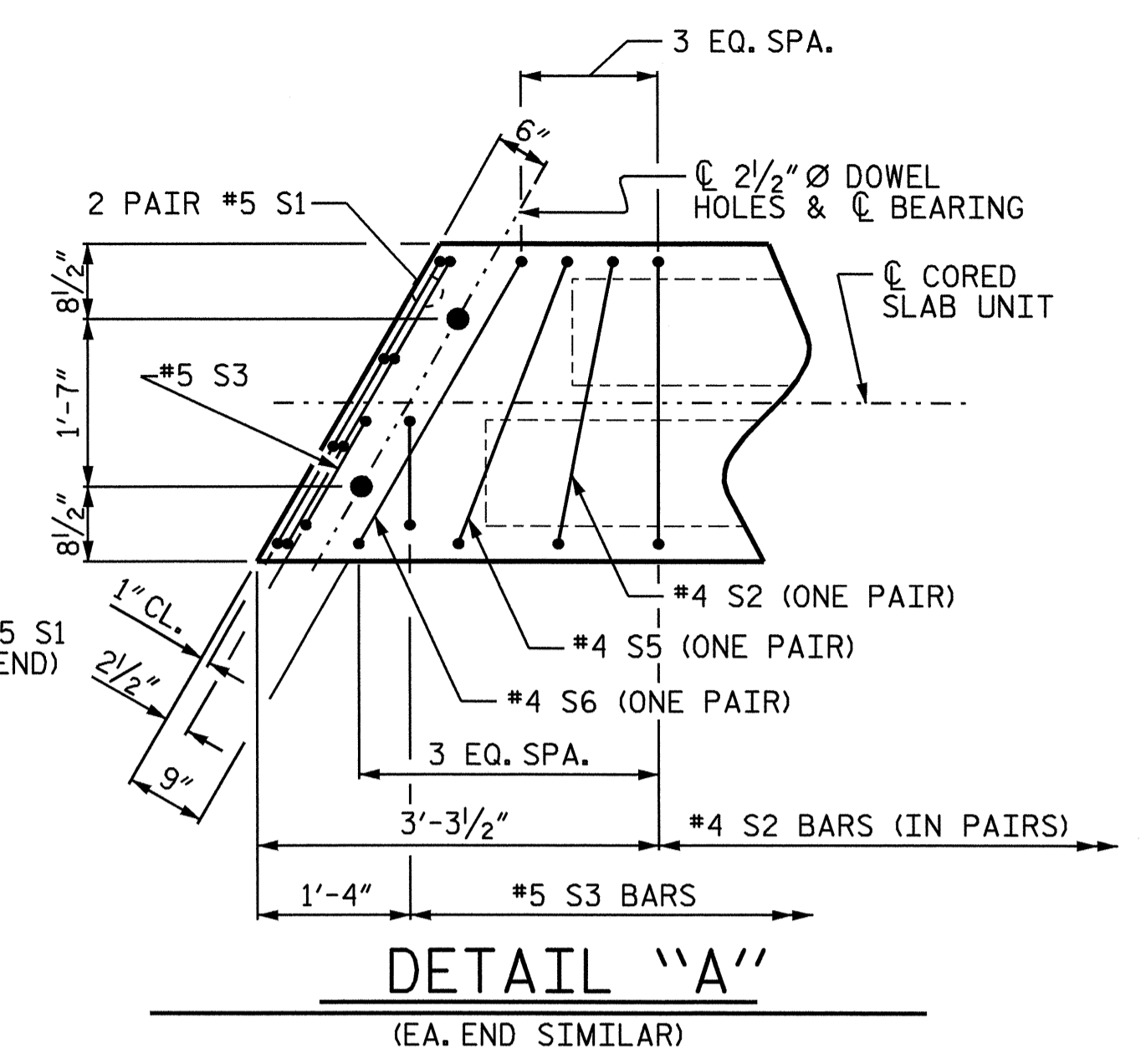
DRAWN BY : S.B. WILLIAMS DATE : 1-4-05  
 CHECKED BY : P.C. BREWER DATE : 1-26-05



**PLAN OF EXTERIOR CORED SLAB UNIT**  
(SPANS "A", "C" & "D")



**PLAN OF INTERIOR CORED SLAB UNIT**  
(SPANS "A", "C" & "D")



PROJECT NO. B-3852  
GUILFORD COUNTY  
 STATION: 18+72.50 -L-  
 SHEET 6 OF 9

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

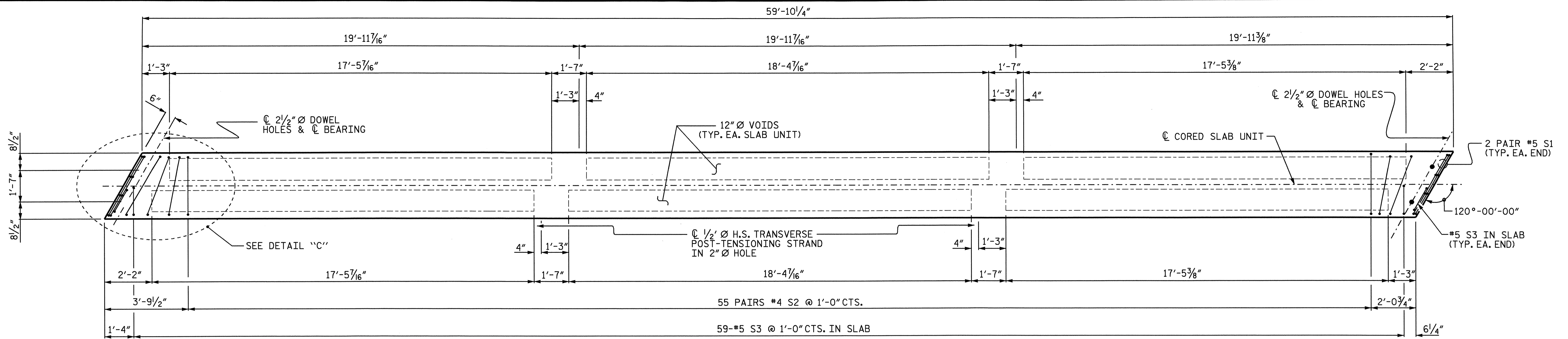
**PLAN OF  
 3'-0" X 1'-9"  
 CORED SLAB UNIT  
 SPANS "A", "C" & "D"**



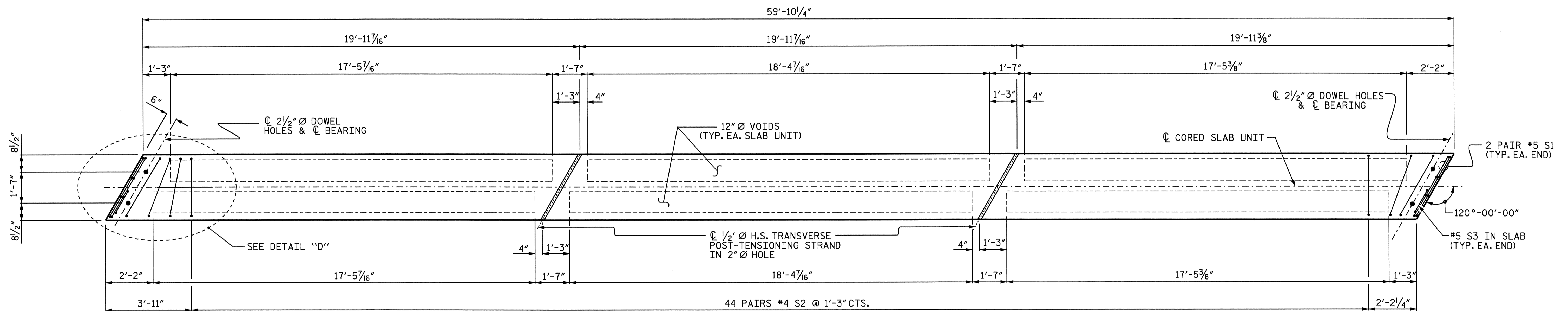
NOTE:  
 THE #5 S3 BARS AND #4 S2 PAIRS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MIN. CL. TO THE 2" Ø HOLE AT THE TRANSVERSE POST-TENSIONING STRANDS.

DRAWN BY: S.B. WILLIAMS DATE: 1/10/05  
 CHECKED BY: P.C. BREWER DATE: 1/26/05

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



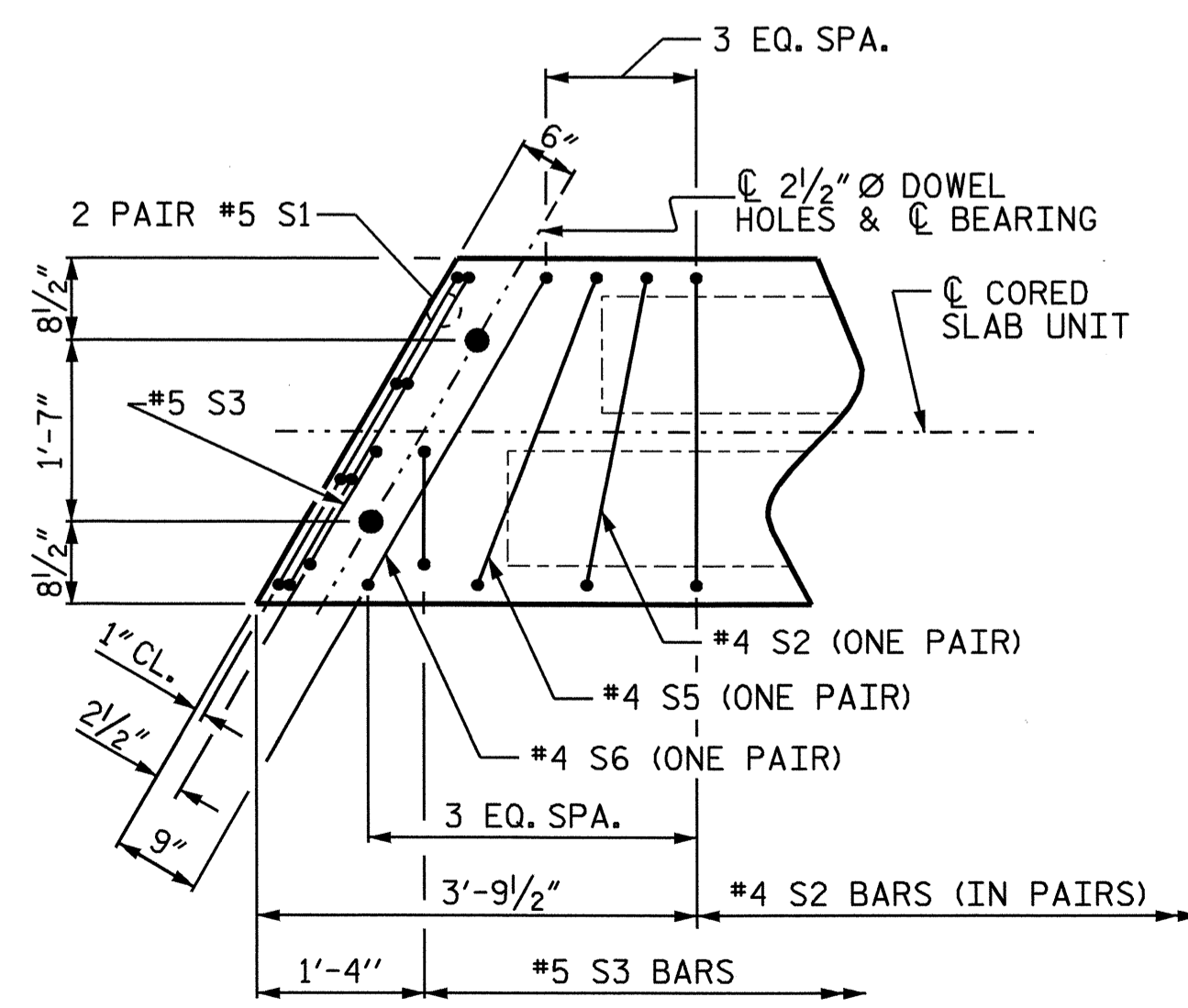
PLAN OF EXTERIOR CORED SLAB UNIT



PLAN OF INTERIOR CORED SLAB UNIT

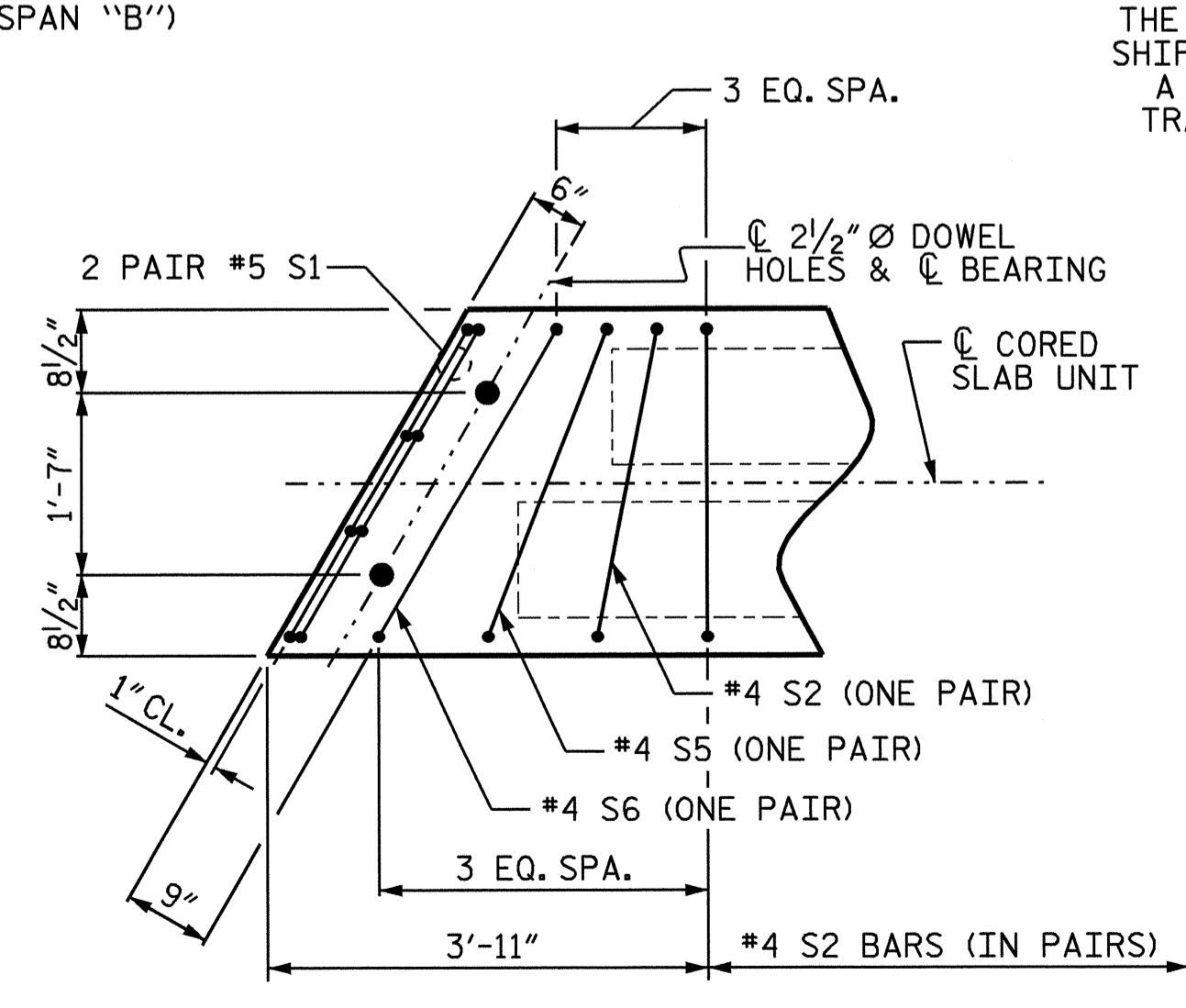
(SPAN "B")

NOTE:  
THE #5 S3 BARS AND #4 S2 PAIRS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MIN. CL. TO THE 2" Ø HOLE AT THE TRANSVERSE POST-TENSIONING STRANDS.



DETAIL "C"

(EA. END SIMILAR)



DETAIL "D"

(EA. END SIMILAR)

PROJECT NO. B-3852  
GUILFORD COUNTY  
STATION: 18+72.50 -L-

SHEET 7 OF 9

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

PLAN OF  
3'-0" X 1'-9"  
CORED SLAB UNIT  
SPAN "B"



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

DRAWN BY: S.B. WILLIAMS DATE: 1/10/05  
CHECKED BY: P.C. BREWER DATE: 1/26/05

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tbeach

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.)

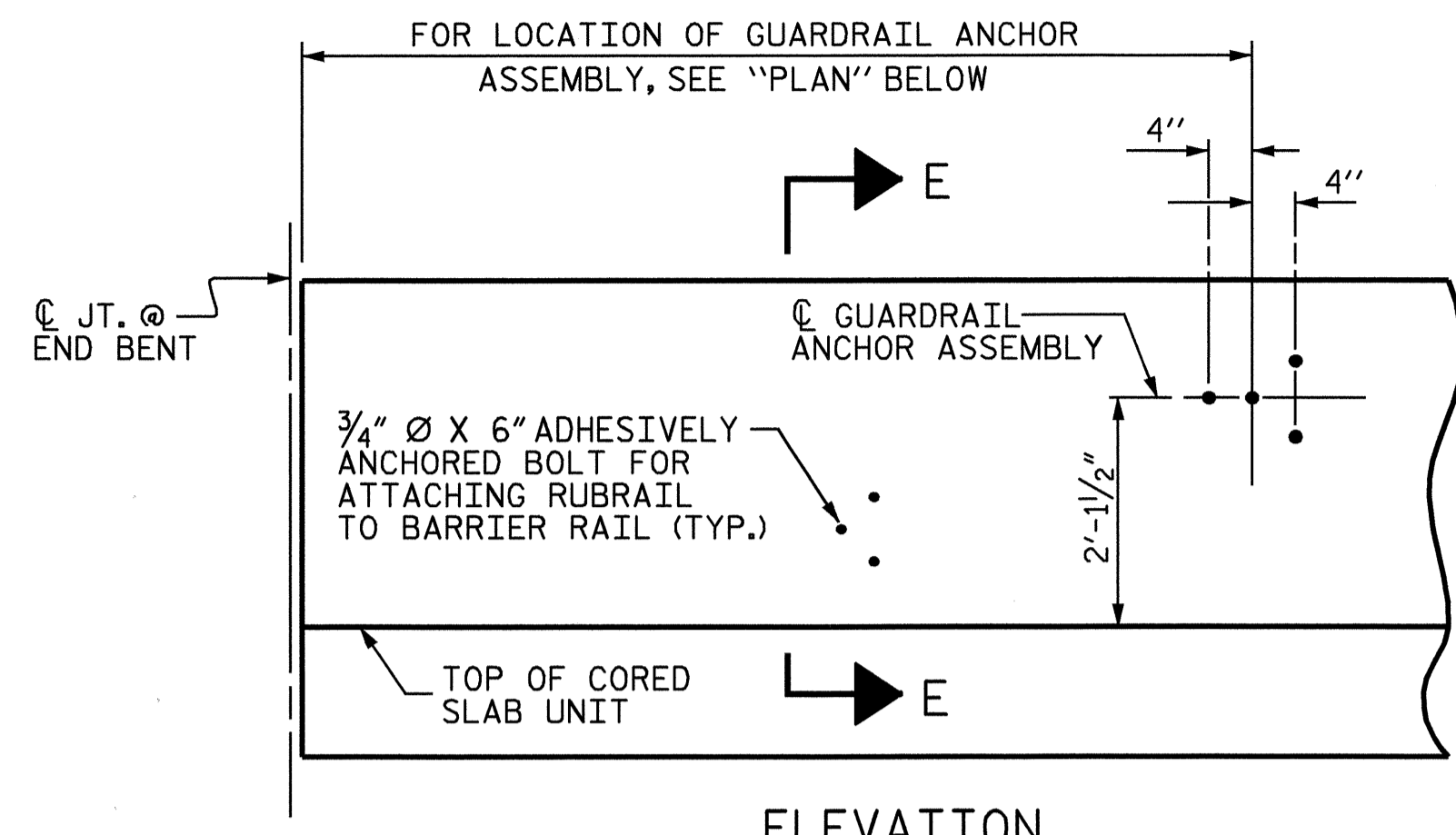
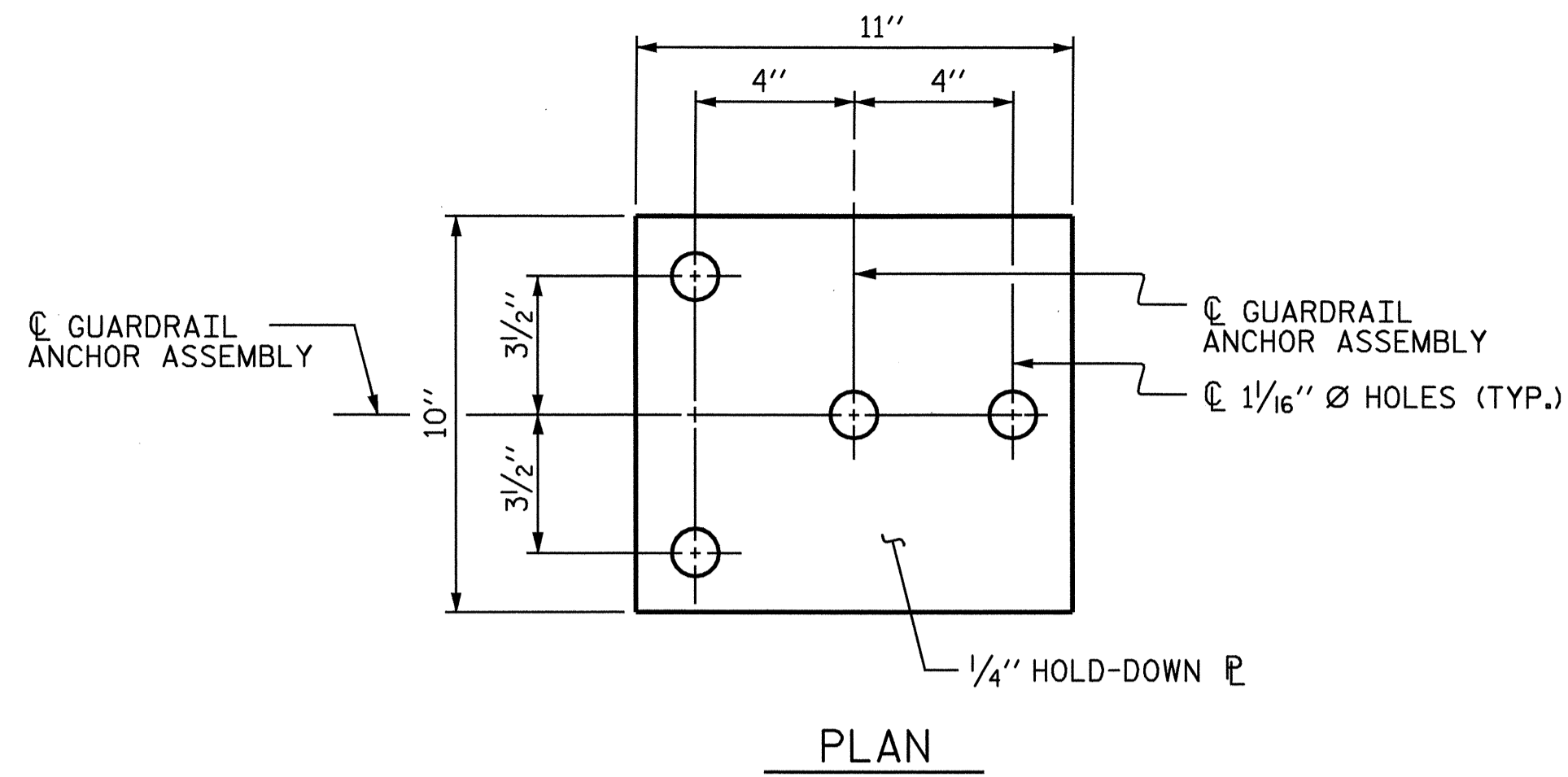
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

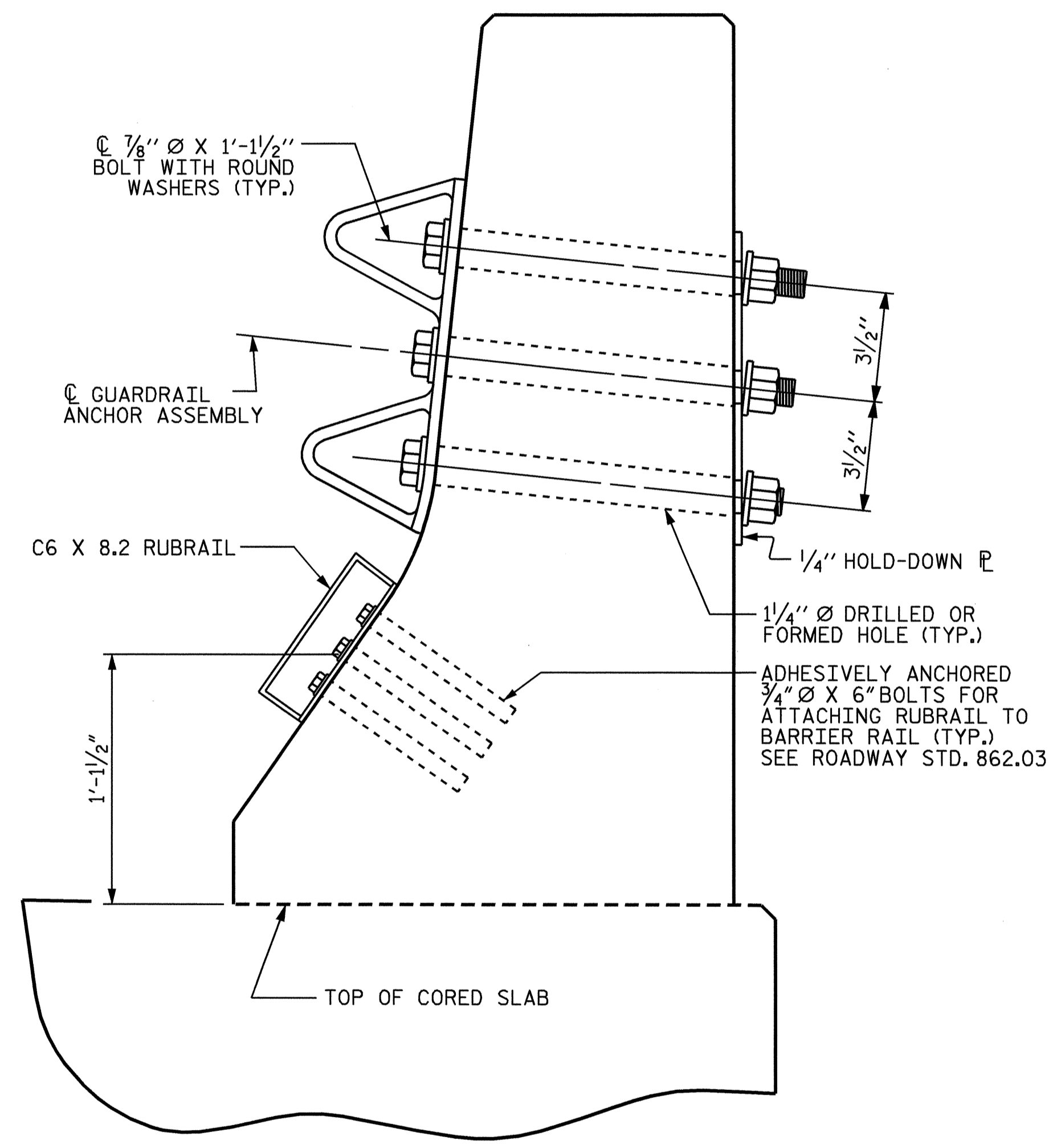
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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.

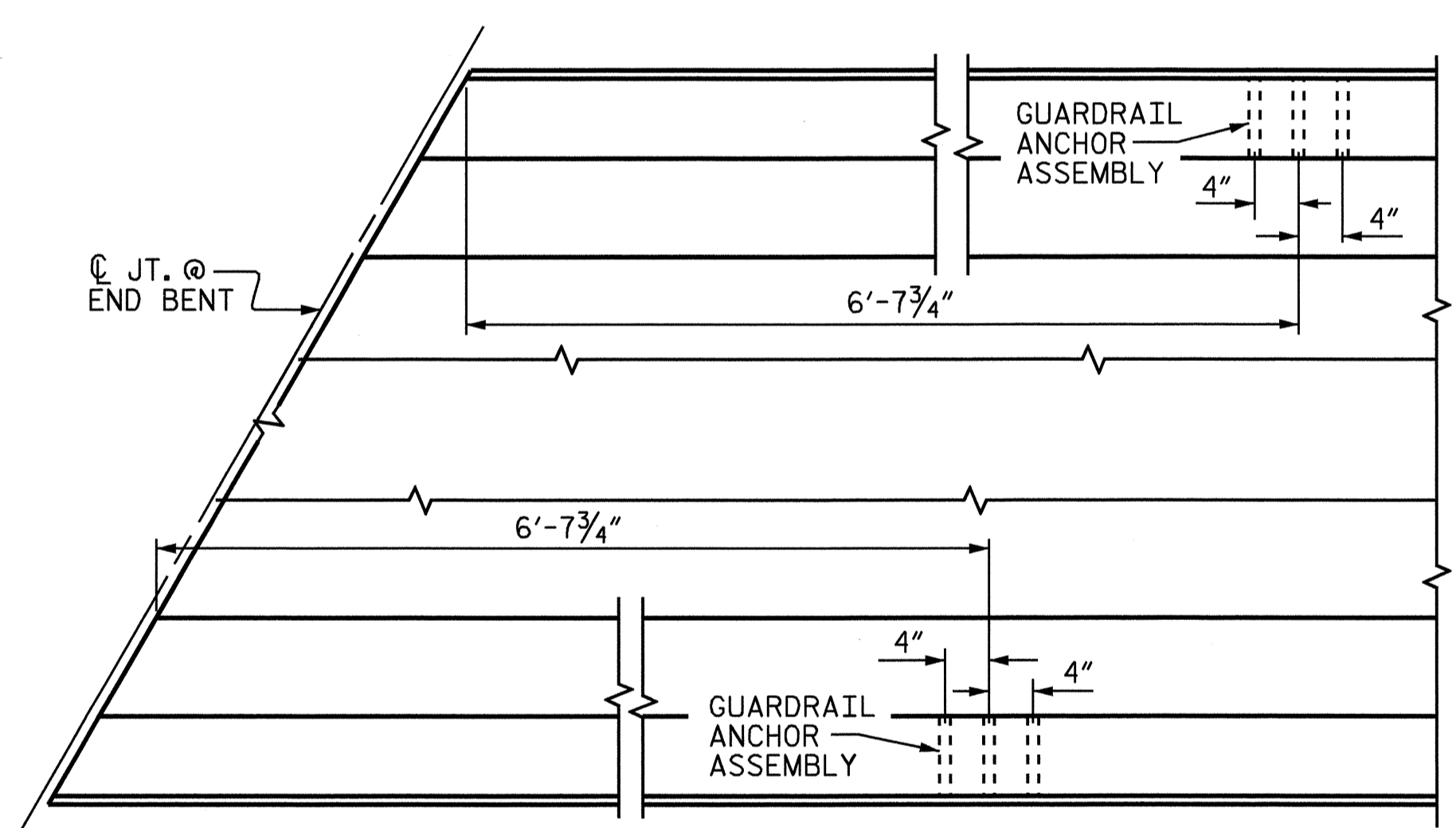
THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.



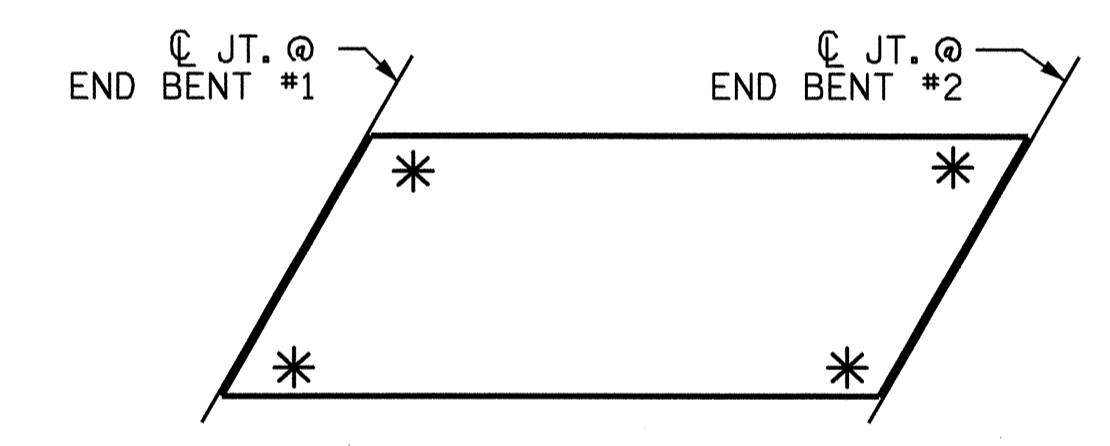
ELEVATION  
FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03



SECTION E-E  
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN  
LOCATION OF ANCHORS FOR GUARDRAIL  
END BENT #1 SHOWN, END BENT #2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENTS  
\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-3852  
GUILFORD COUNTY  
STATION: 18+72.50 -L-

SHEET 8 OF 9

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-11
STANDARD GUARDRAIL ANCHORAGE FOR BARRIER RAIL						
REVISIONS						TOTAL SHEETS 27
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



ASSEMBLED BY : M.L. BROWN	DATE : 7/13/07
CHECKED BY : T.J. BEACH	DATE : 7/13/07
DRAWN BY : TLA 5/06	ADDED 5/1/06
CHECKED BY : GM 5/06	

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

THE 2" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS. THE JOINT SHALL BE FILLED WITH NON-SHRINK GROUT.

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.

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

ALL REINFORCING STEEL IN 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.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

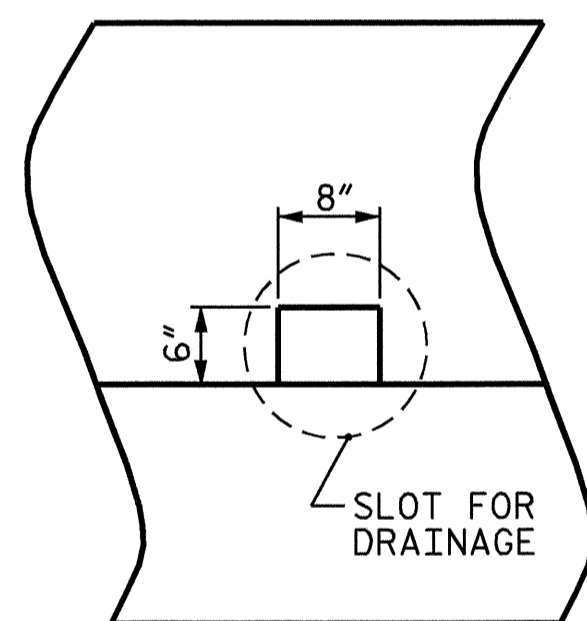
FOR DETAILS OF GUARDRAIL ANCHOR ASSEMBLIES, SEE "GUARDRAIL ANCHORAGE FOR BARRIER RAIL" SHEET 8 OF 9.

BILL OF MATERIAL FOR CONCRETE BARRIER RAIL									
BAR	BARS PER SPAN				TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	SPAN "A"	SPAN "B"	SPAN "C"	SPAN "D"					
* B3	56		56	56	168	#5	STR	13'-4"	2336
* B4		56			56	#5	STR	16'-10"	983
* S4	92	122	92	92	398	#5	2	5'-11"	2456
* EPOXY COATED REINFORCING STEEL								5,775 LBS.	
CLASS AA CONCRETE								47.1 CU. YDS.	
TOTAL LIN. FT. OF CONCRETE BARRIER RAIL								388.83	

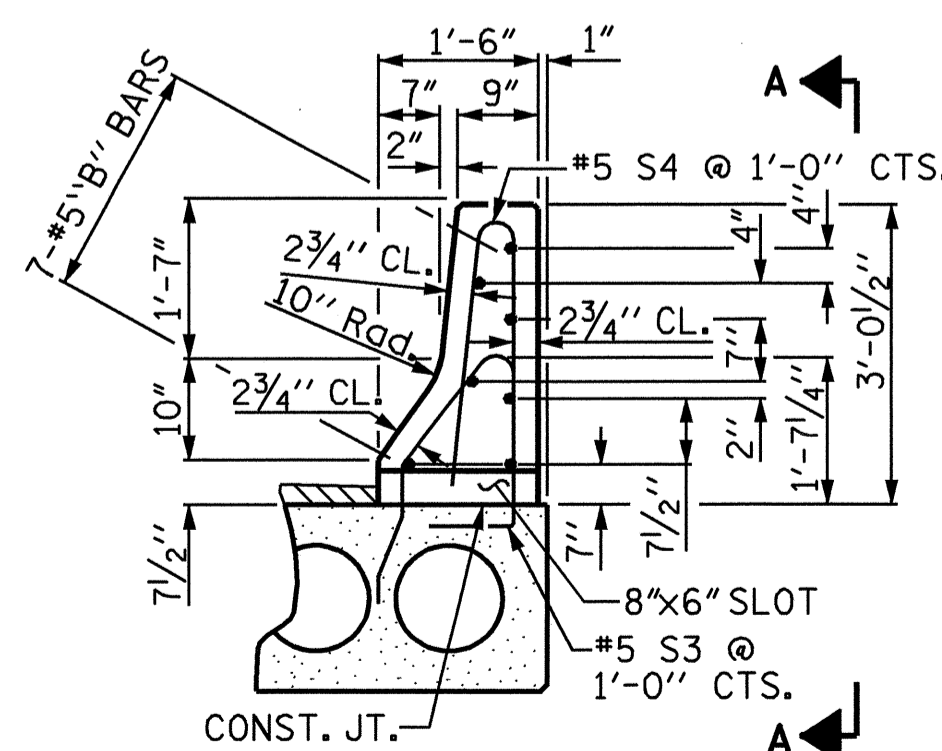
DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 1'-9"
SPAN "A", "C", & "D"	1/2" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1/8" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD **	3/16" ↓
FINAL CAMBER	15/16" ↑
SPAN "B"	1/2" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	3/8" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD **	1/16" ↓
FINAL CAMBER	2 1/16" ↑

\*\* INCLUDES FUTURE WEARING SURFACE

CORED SLABS REQUIRED			
SPAN "A", "C" & "D"	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	6	44'-10 1/4"	269'-1 1/2"
INTERIOR C.S.	27	44'-10 1/4"	1211'-0 3/4"
SPAN "B"	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	59'-10 1/4"	119'-8 1/2"
INTERIOR C.S.	9	59'-10 1/4"	538'-8 1/4"
TOTAL	44		2138.58'

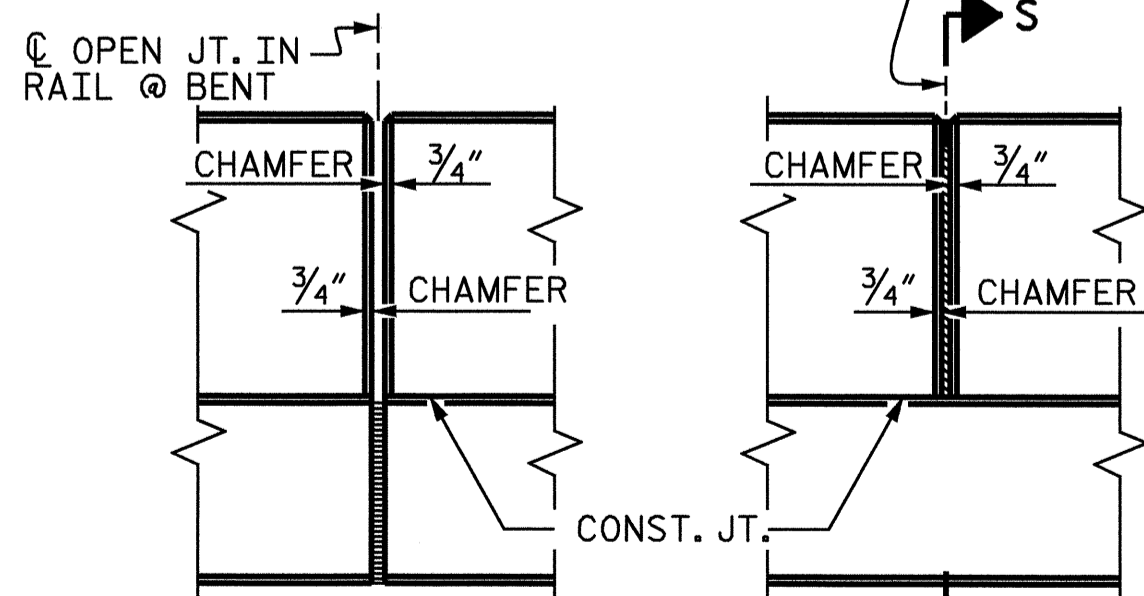


VIEW A-A  
SEE PLAN OF SPANS  
FOR LOCATION OF SLOTS



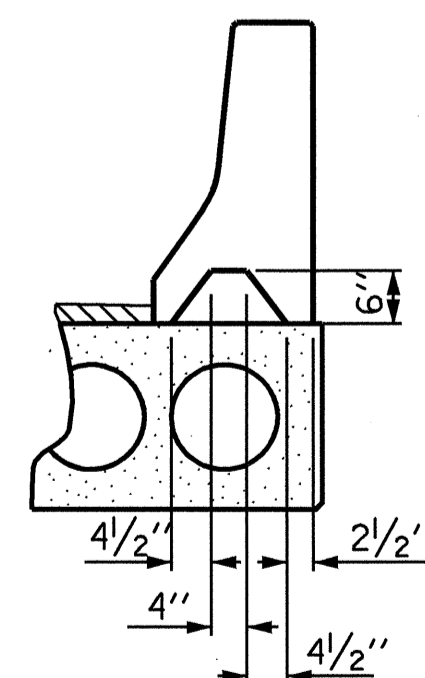
SECTION THRU RAIL

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



ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS

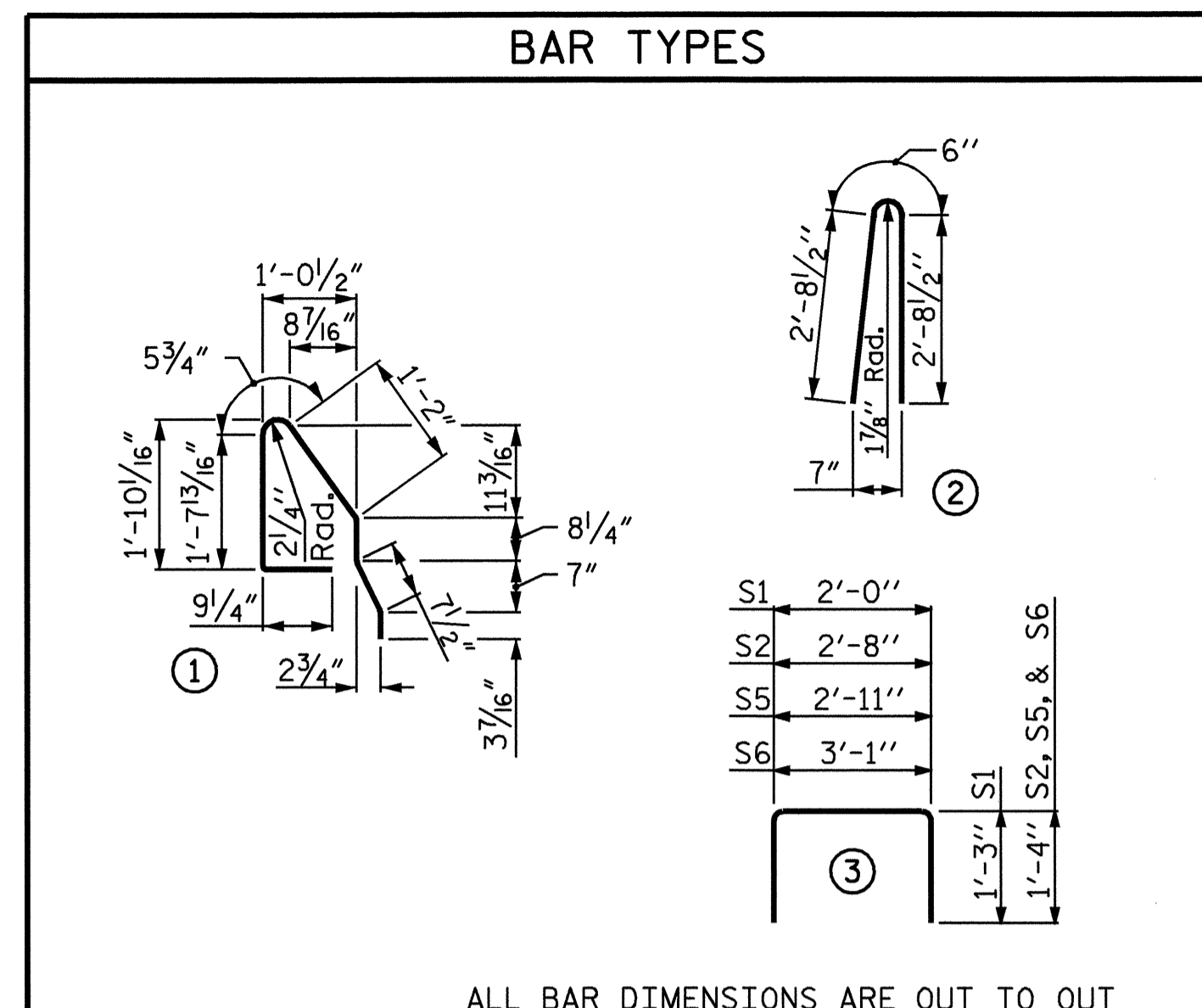


SECTION S-S

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

FIXED END  
(TYPE I - 88 REQ'D)

ELASTOMERIC BEARING DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE CORED SLAB SECTION							
SPAN "A", "C", OR "D"				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B1	4	#4	STR	23'-6"	63	23'-6"	63
S1	8	#5	3	4'-6"	38	4'-6"	38
S2	86	#4	3	5'-4"	306		
S2	70	#4	3			5'-4"	249
* S3	46	#5	1	5'-8"	272		
S5	4	#4	3	5'-7"	15	5'-7"	15
S6	4	#4	3	5'-9"	15	5'-9"	15

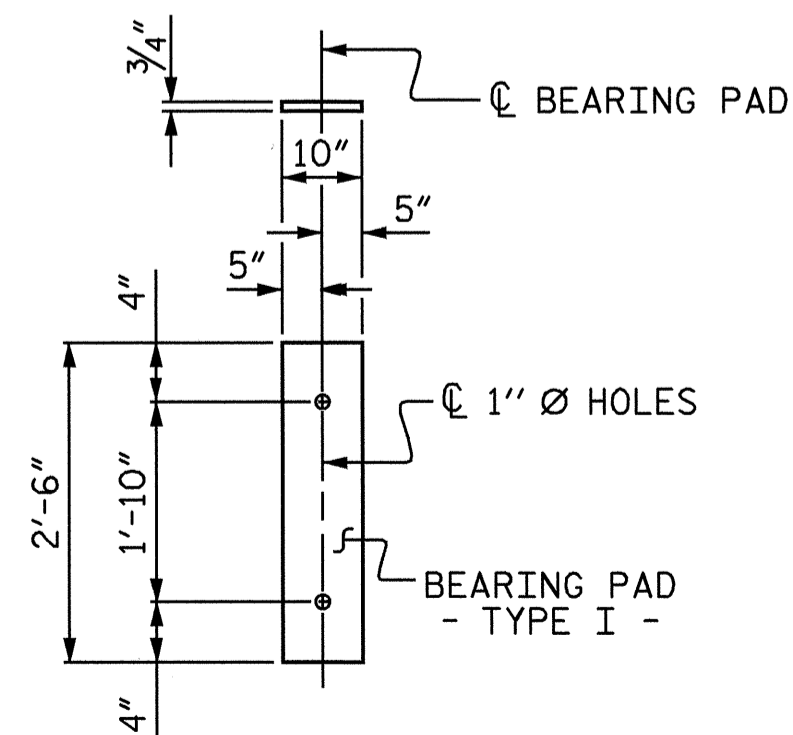
REINFORCING STEEL	437 LBS.	380 LBS.
* EPOXY COATED REINFORCING STEEL	272 LBS.	
5,000 P.S.I. CONCRETE	6.5 CU. YDS.	6.4 CU. YDS.

1/2" Ø L.R. STRANDS	No.	18	18
---------------------	-----	----	----

BILL OF MATERIAL FOR ONE CORED SLAB SECTION							
SPAN "B"				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B2	6	#4	STR	21'-6"	86	21'-6"	86
S1	8	#5	3	4'-6"	38	4'-6"	38
S2	114	#4	3	5'-4"	406		
S2	92	#4	3			5'-4"	328
* S3	61	#5	1	5'-8"	361		
S5	4	#4	3	5'-7"	15	5'-7"	15
S6	4	#4	3	5'-9"	15	5'-9"	15

REINFORCING STEEL	560 LBS.	482 LBS.
* EPOXY COATED REINFORCING STEEL	361 LBS.	
5,000 P.S.I. CONCRETE	8.5 CU. YDS.	8.4 CU. YDS.

1/2" Ø L.R. STRANDS	No.	28	28
---------------------	-----	----	----



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

PROJECT NO. B-3852  
GUILFORD COUNTY  
STATION: 18+72.50 -L-

SHEET 9 OF 9

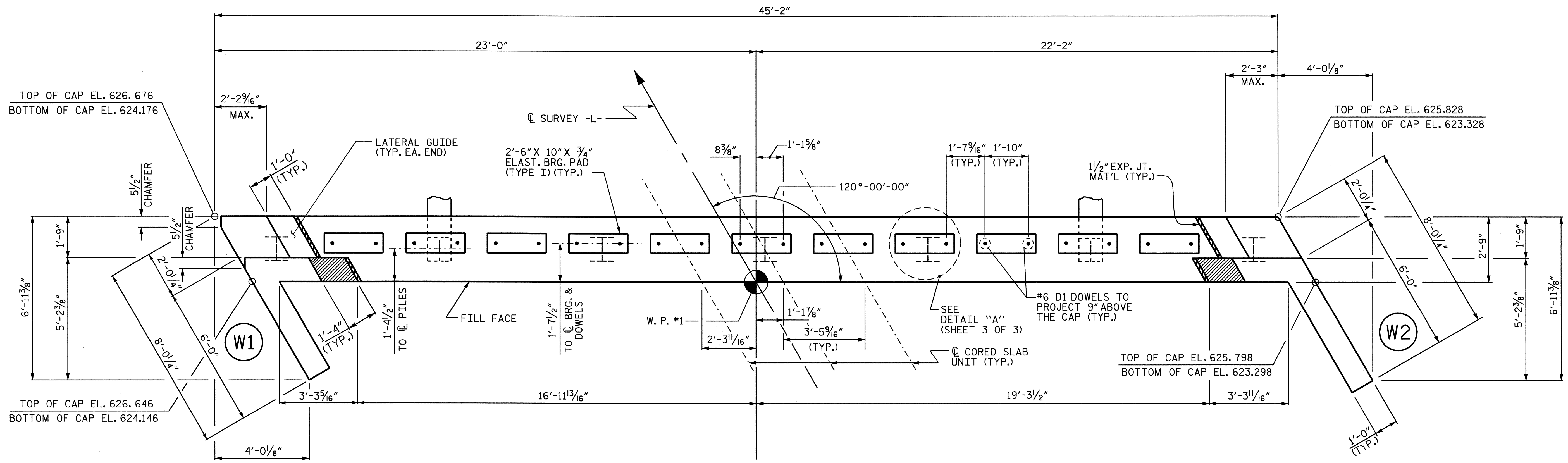
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
3'-0" X 1'-9"  
PRESTRESSED  
CONCRETE CORED  
SLAB UNIT

OCTOBER 1981

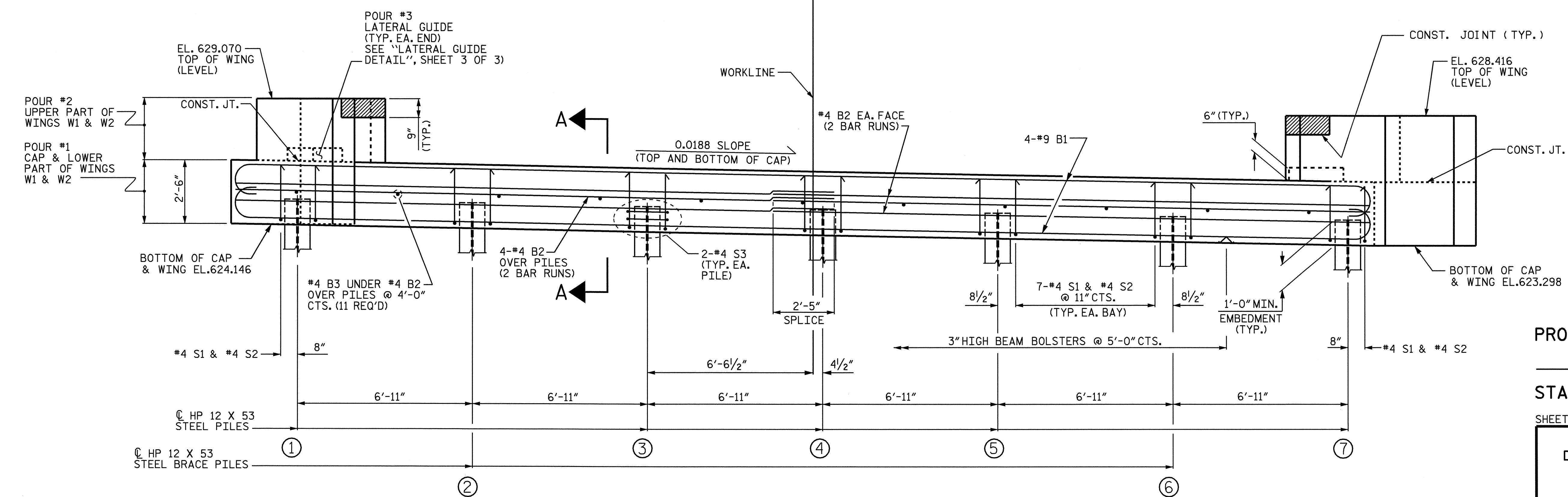
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		



ASSEMBLED BY : S.B. WILLIAMS DATE : 1/13/05  
CHECKED BY : P. C. BREWER DATE : 1/26/05  
DRAWN BY : WJH 4/89 REV. 10/17/00 RWW/LES  
CHECKED BY : FCJ 5/89 REV. 7/10/01 RWW/LES  
REV. 5/7/03 RWW/JTE



PLAN



ELEVATION

TOP OF PILE ELEVATIONS	
①	625.136
②	625.006
③	624.876
④	624.746
⑤	624.616
⑥	624.486
⑦	624.356

PROJECT NO. B-3852  
GUILFORD COUNTY  
 STATION: 18+72.50 -L-  
 SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

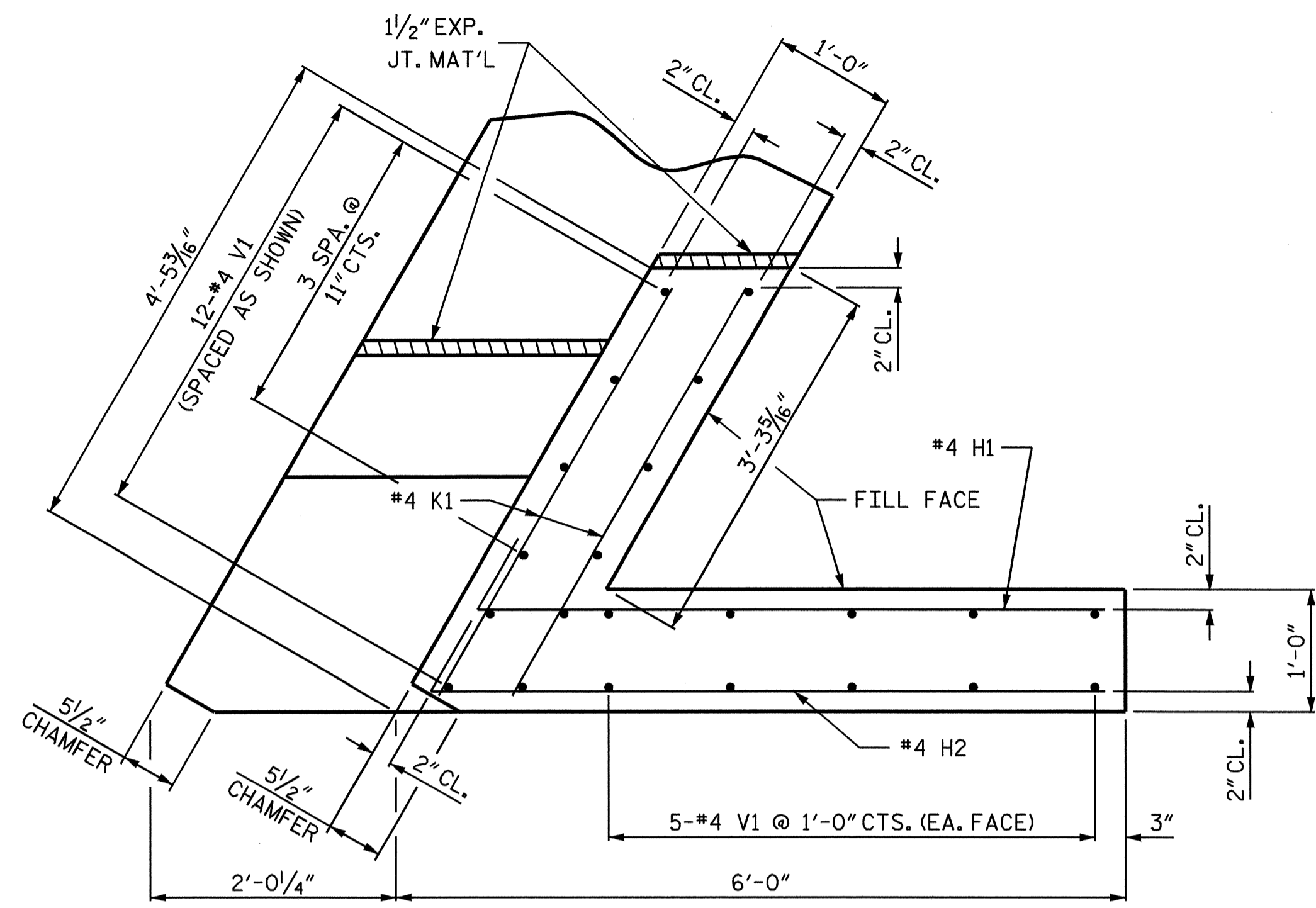
SUBSTRUCTURE  
 END BENT No. 1

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

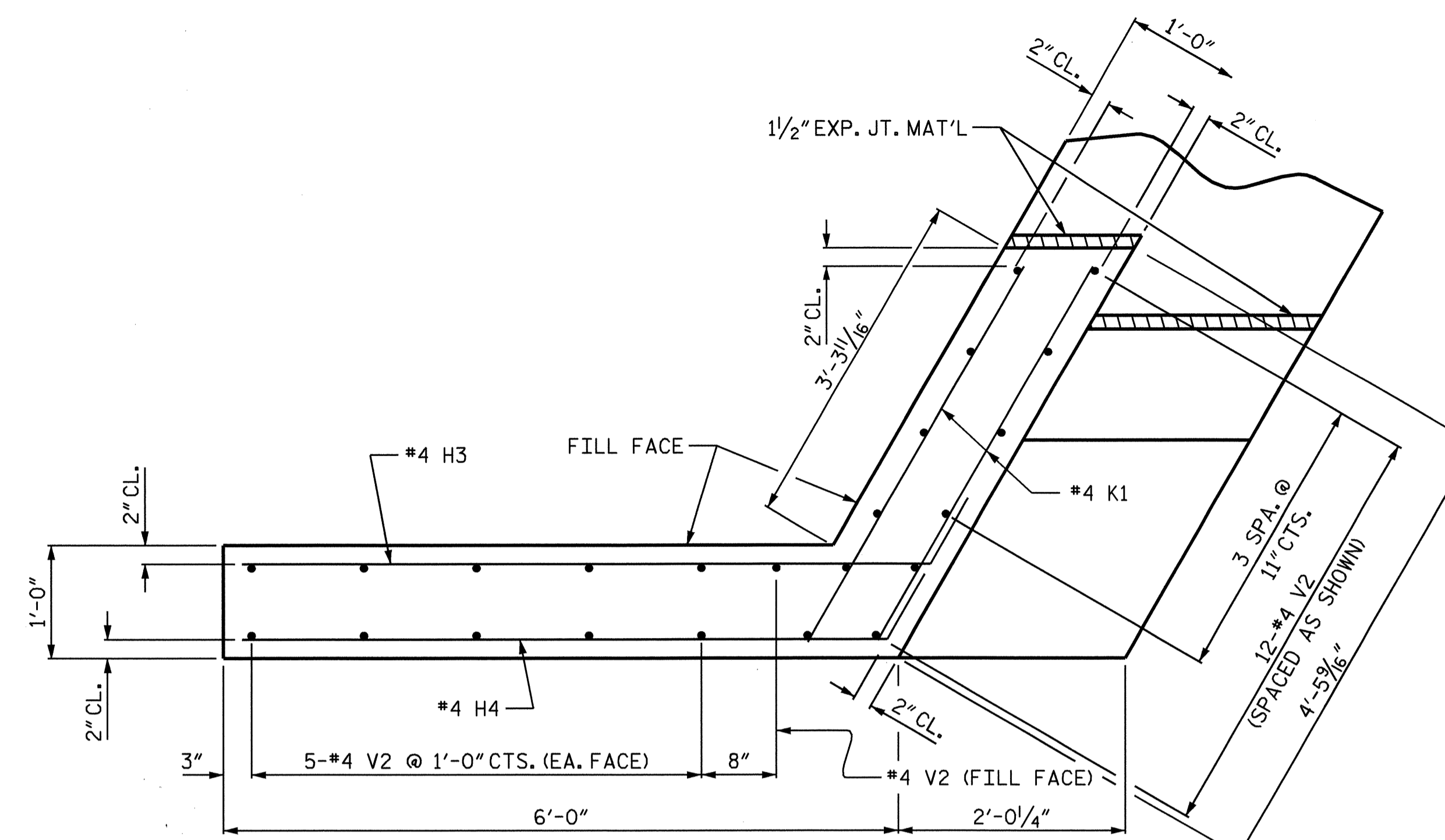
TOTAL SHEETS: 27



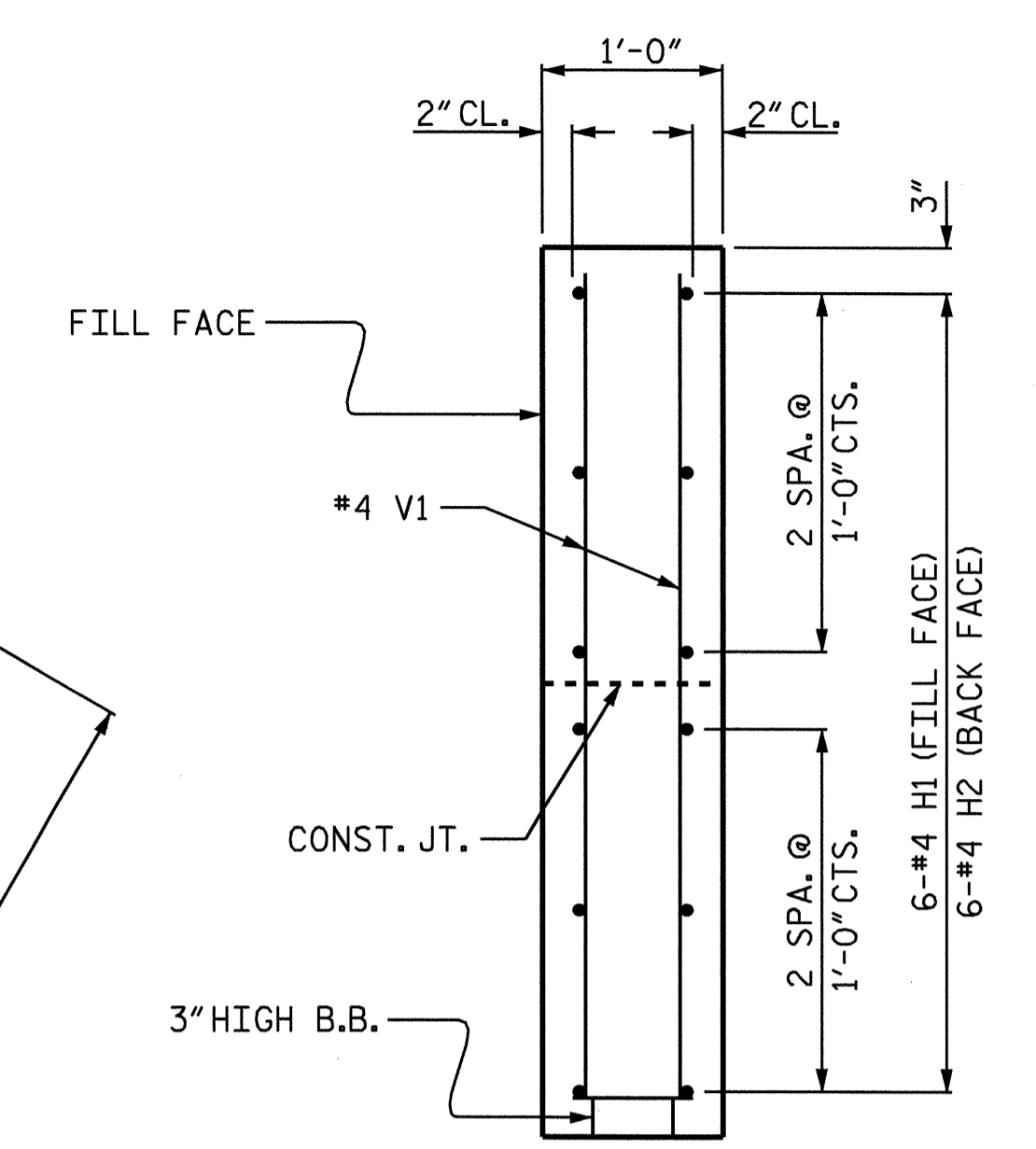
DRAWN BY: S.B. WILLIAMS DATE: 3-05  
 CHECKED BY: M. BRITT, TB DATE: 8-07



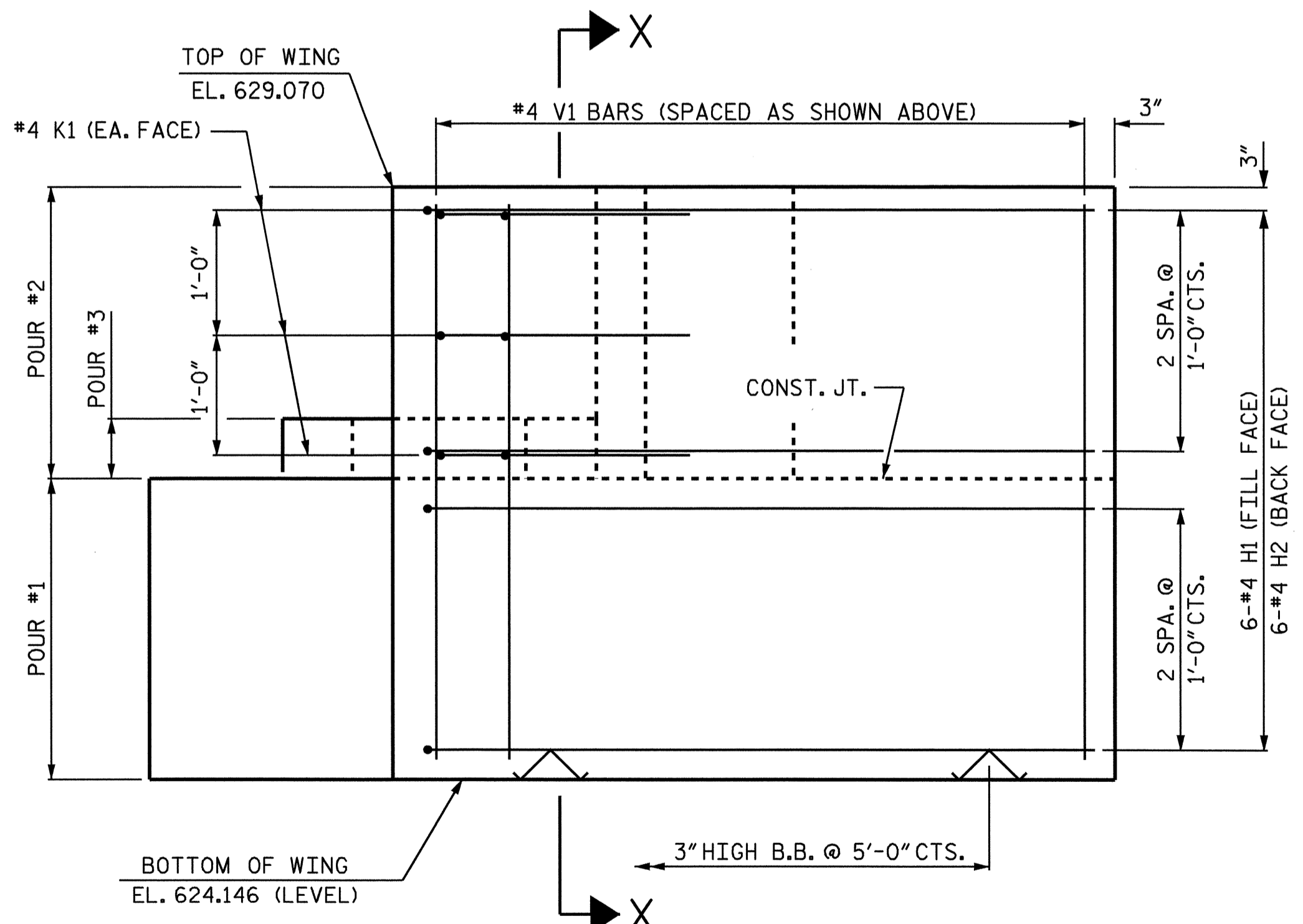
PLAN OF WING (W1)



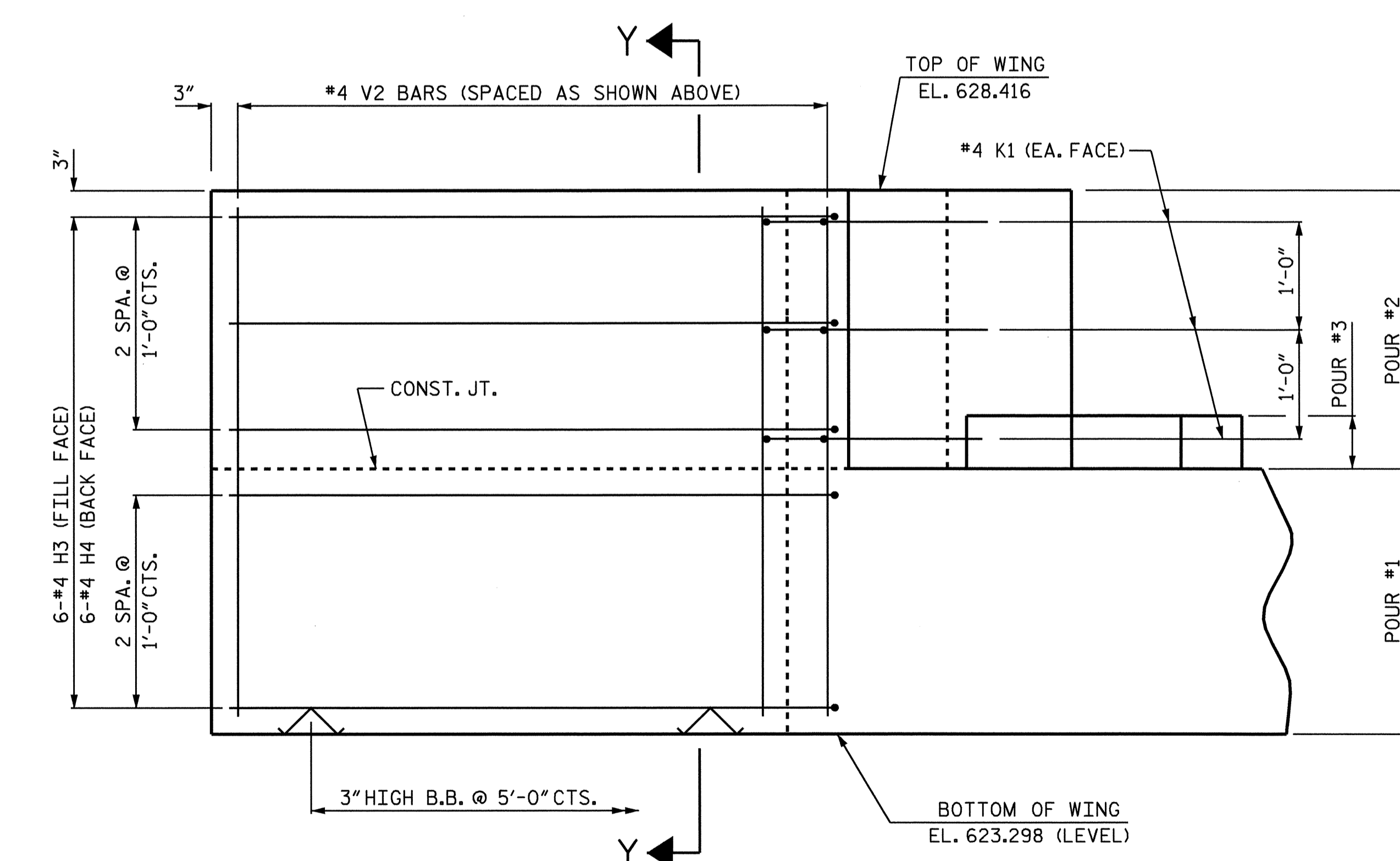
PLAN OF WING (W2)



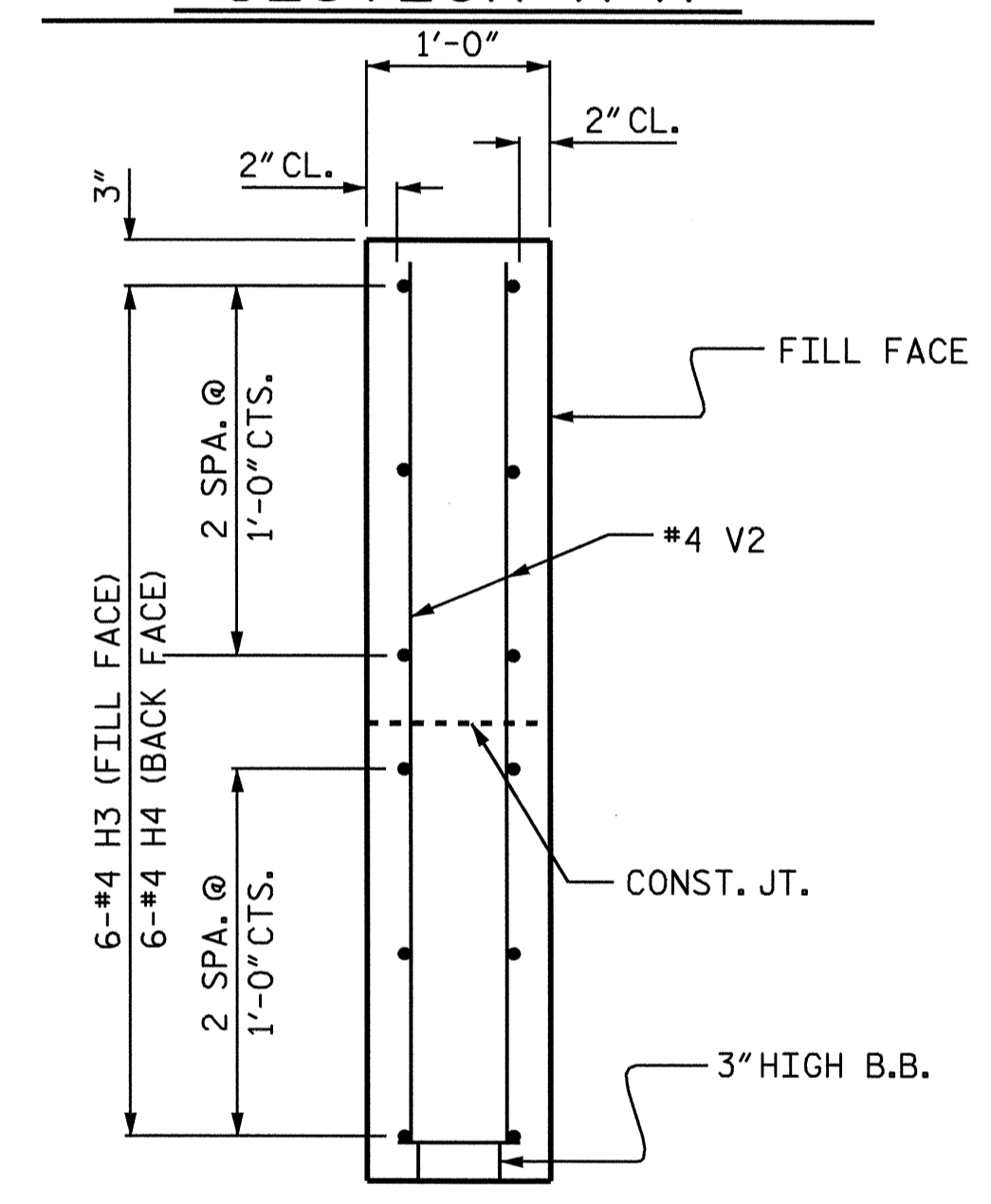
SECTION X-X



ELEVATION OF WING (W1)



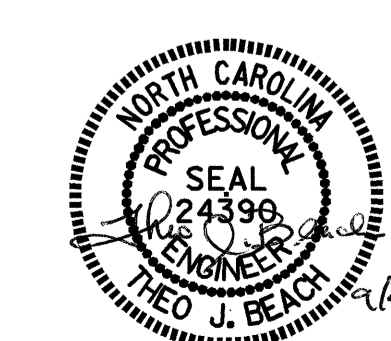
ELEVATION OF WING (W2)



SECTION Y-Y

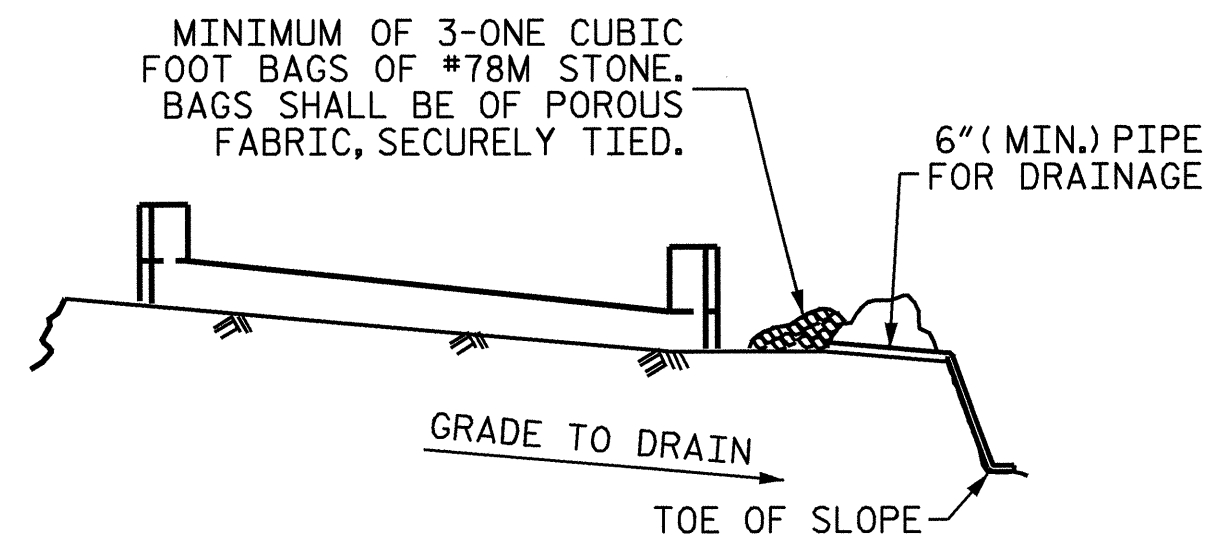
PROJECT NO. B-3852  
GUILFORD COUNTY  
 STATION: 18+72.50 -L-  
 SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT No. 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-14
					TOTAL SHEETS 27



DRAWN BY: S.B. WILLIAMS DATE: 3-05  
 CHECKED BY: M. BRITT, TB DATE: 8-07

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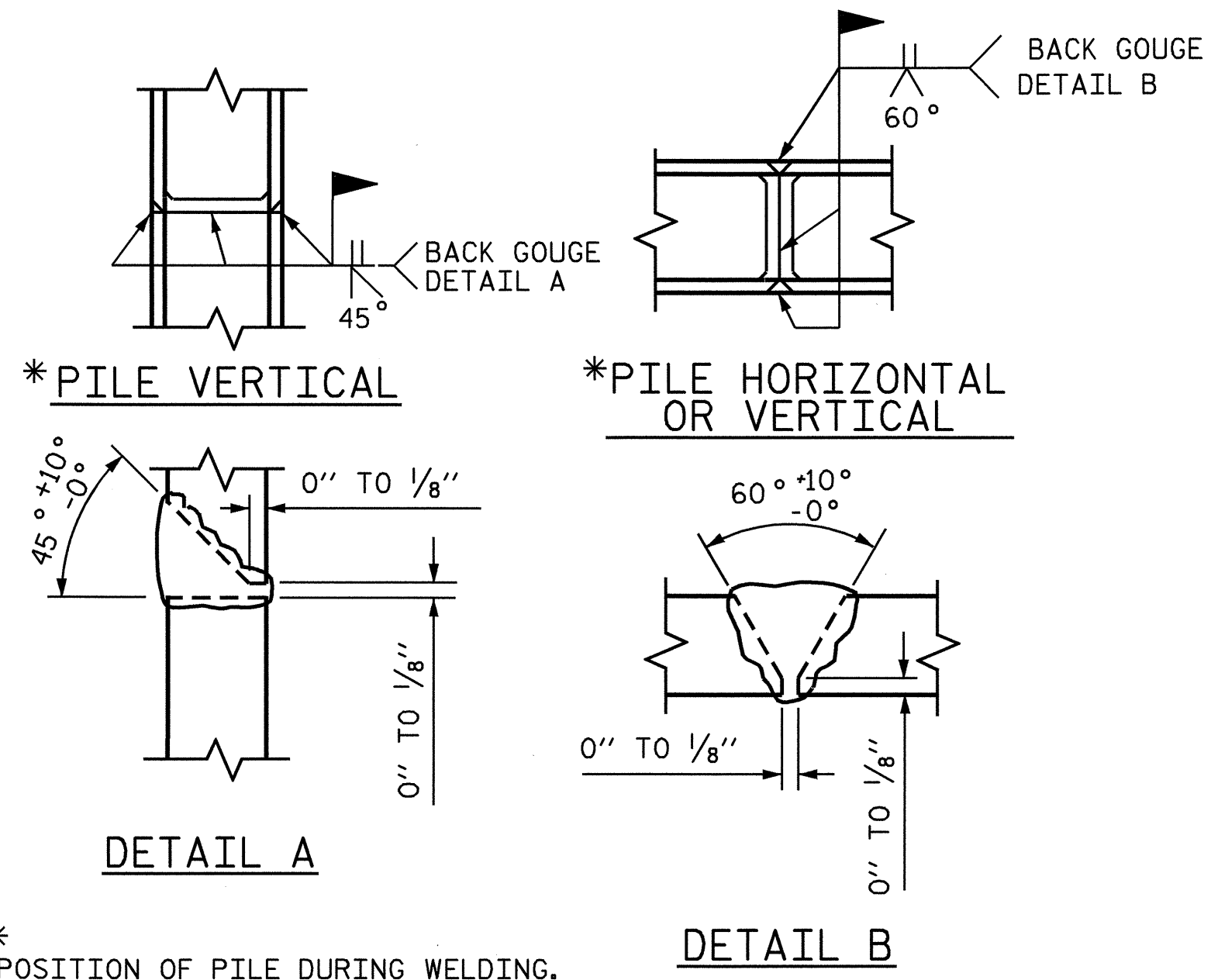


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

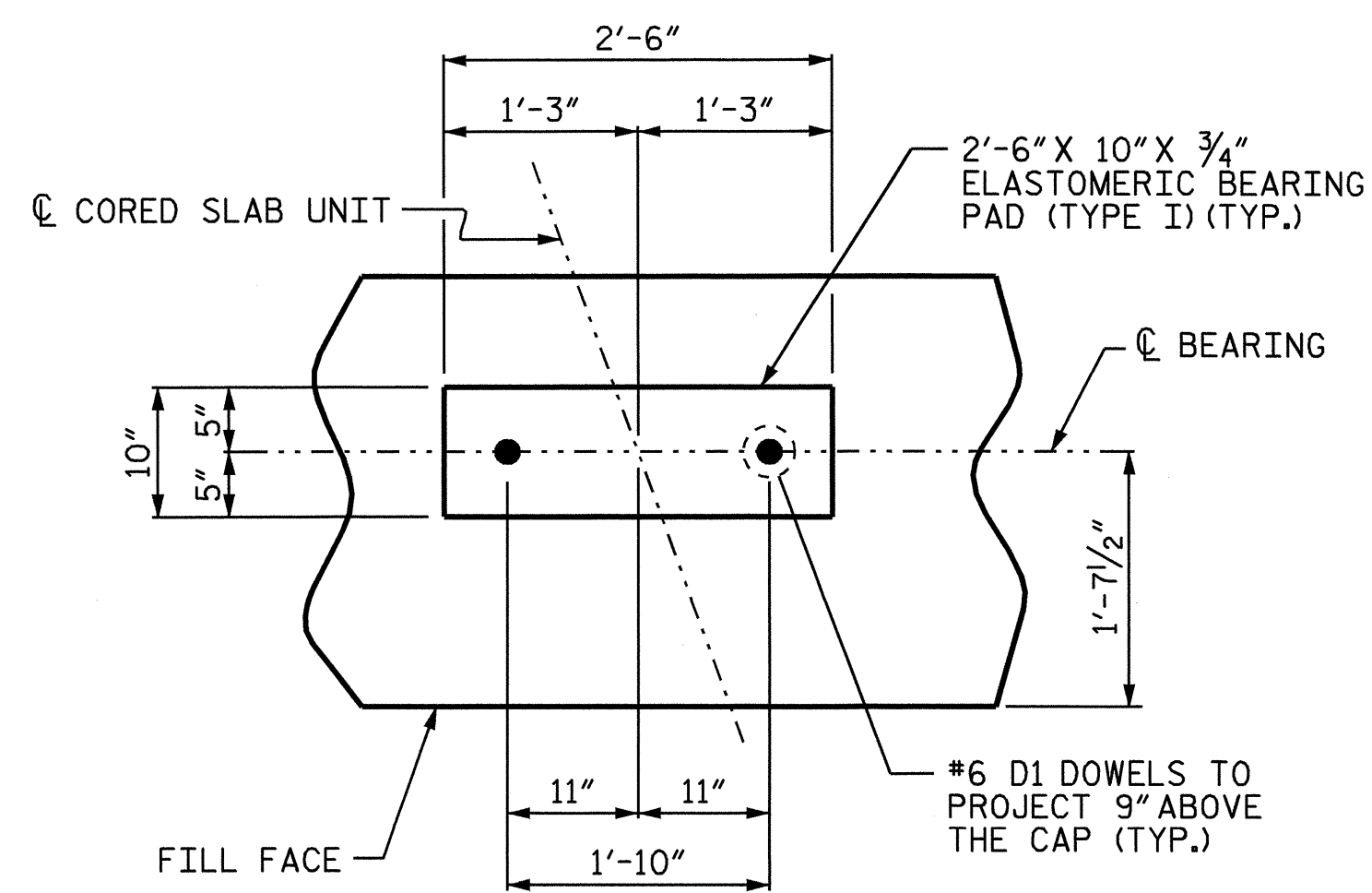
### TEMPORARY DRAINAGE AT END BENT No. 1



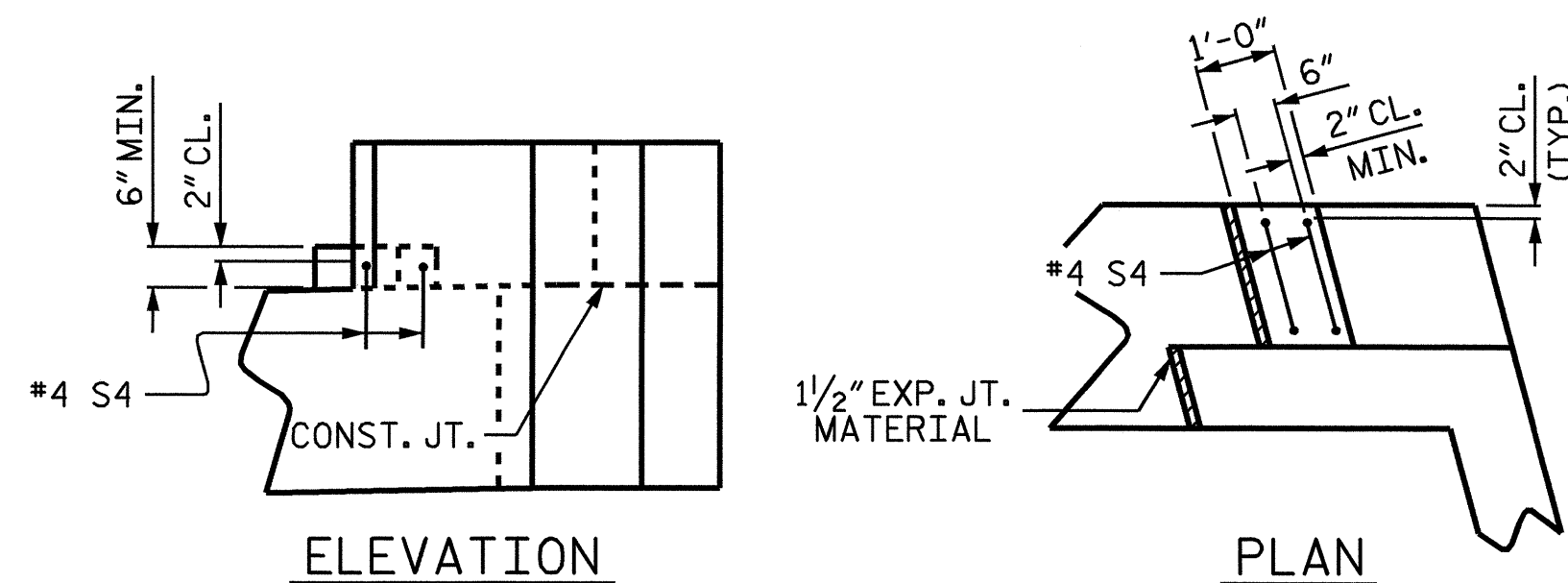
### PILE SPLICE DETAILS

BAR TYPES				BILL OF MATERIAL	
				END BENT No. 1	
BAR No.	SIZE	TYPE	LENGTH	WEIGHT	
B1	8	9	1	47'-2"	1283
B2	16	4	STR	23'-8"	253
B3	11	4	STR	2'-5"	18
D1	22	6	STR	1'-6"	50
H1	6	4	4	5'-9"	23
H2	6	4	4	6'-2"	25
H3	6	4	5	6'-9"	27
H4	6	4	5	6'-4"	25
K1	12	4	STR	3'-11"	31
S1	44	4	2	7'-5"	218
S2	44	4	6	3'-2"	93
S3	14	4	3	6'-6"	61
S4	4	4	7	4'-7"	12
V1	22	4	STR	4'-6"	66
V2	23	4	STR	4'-8"	72
REINFORCING STEEL				2,257 LBS.	
CLASS A CONCRETE BREAKDOWN					
POUR #1 CAP & LOWER WINGS				12.4 C.Y.	
POUR #2 UPPER WINGS				1.7 C.Y.	
POUR #3 LATERAL GUIDES				0.1 C.Y.	
TOTAL CLASS A CONCRETE				14.2 C.Y.	
HP 12 x 53 STEEL PILES				No. = 7 LIN. FT. = 70	
STEEL PILE POINTS				No. = 7	

ALL BAR DIMENSIONS ARE OUT TO OUT.

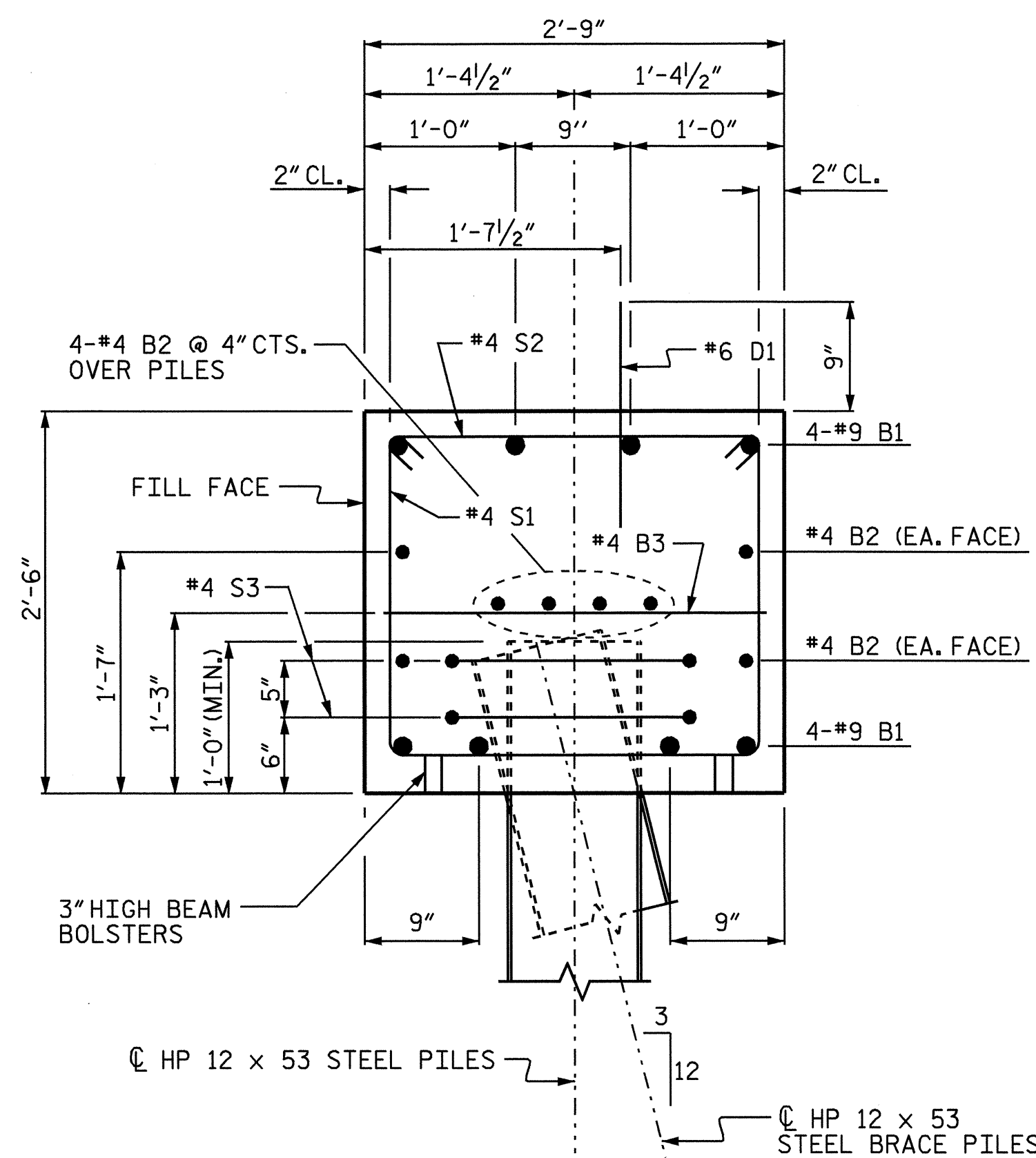


DETAIL "A"



### LATERAL GUIDE DETAIL

(RIGHT LATERAL GUIDE SHOWN, LEFT LATERAL GUIDE SIMILAR)



SECTION A-A

### 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 CORED SLAB UNITS ARE IN PLACE.

THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER PIPE DRAIN THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE 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.

PROJECT NO. B-3852  
GUILFORD COUNTY  
 STATION: 18+72.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT No. 1

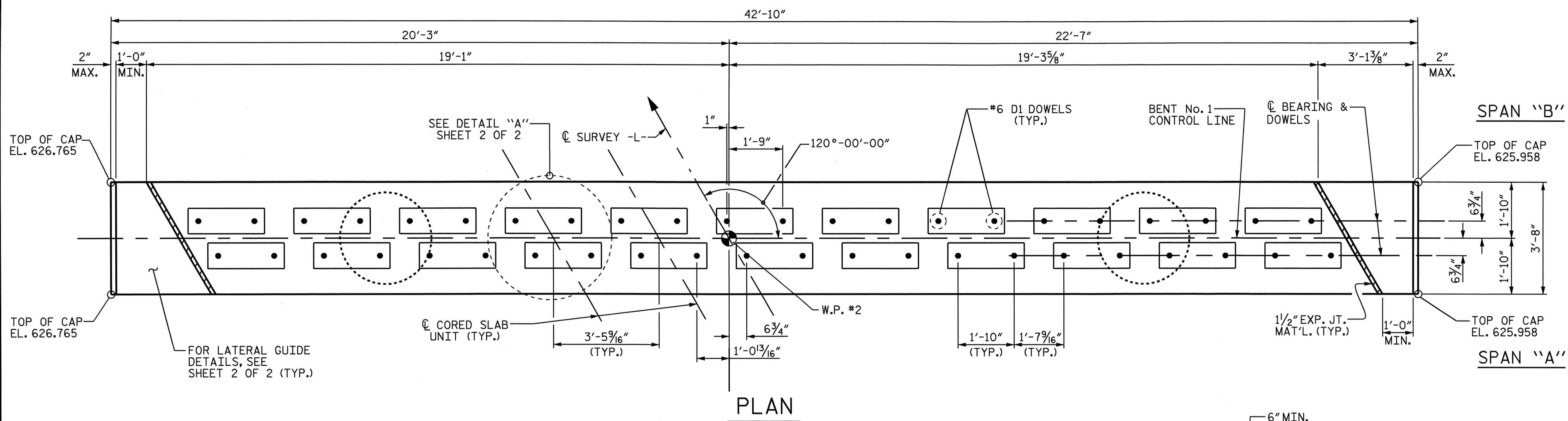


DRAWN BY: S.B. WILLIAMS DATE: 3-05  
 CHECKED BY: M. BRITT, TB DATE: 8-07

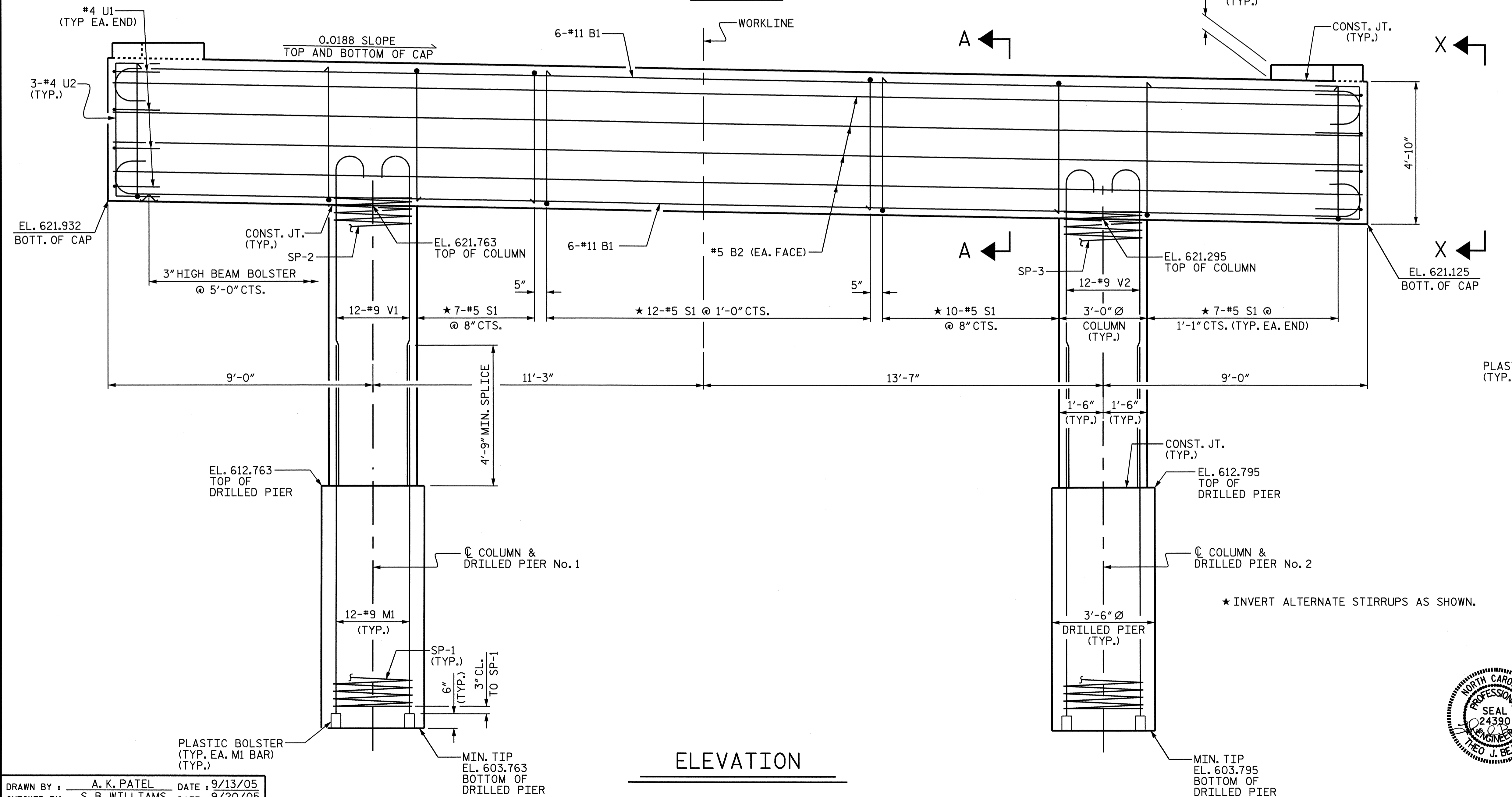
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 27

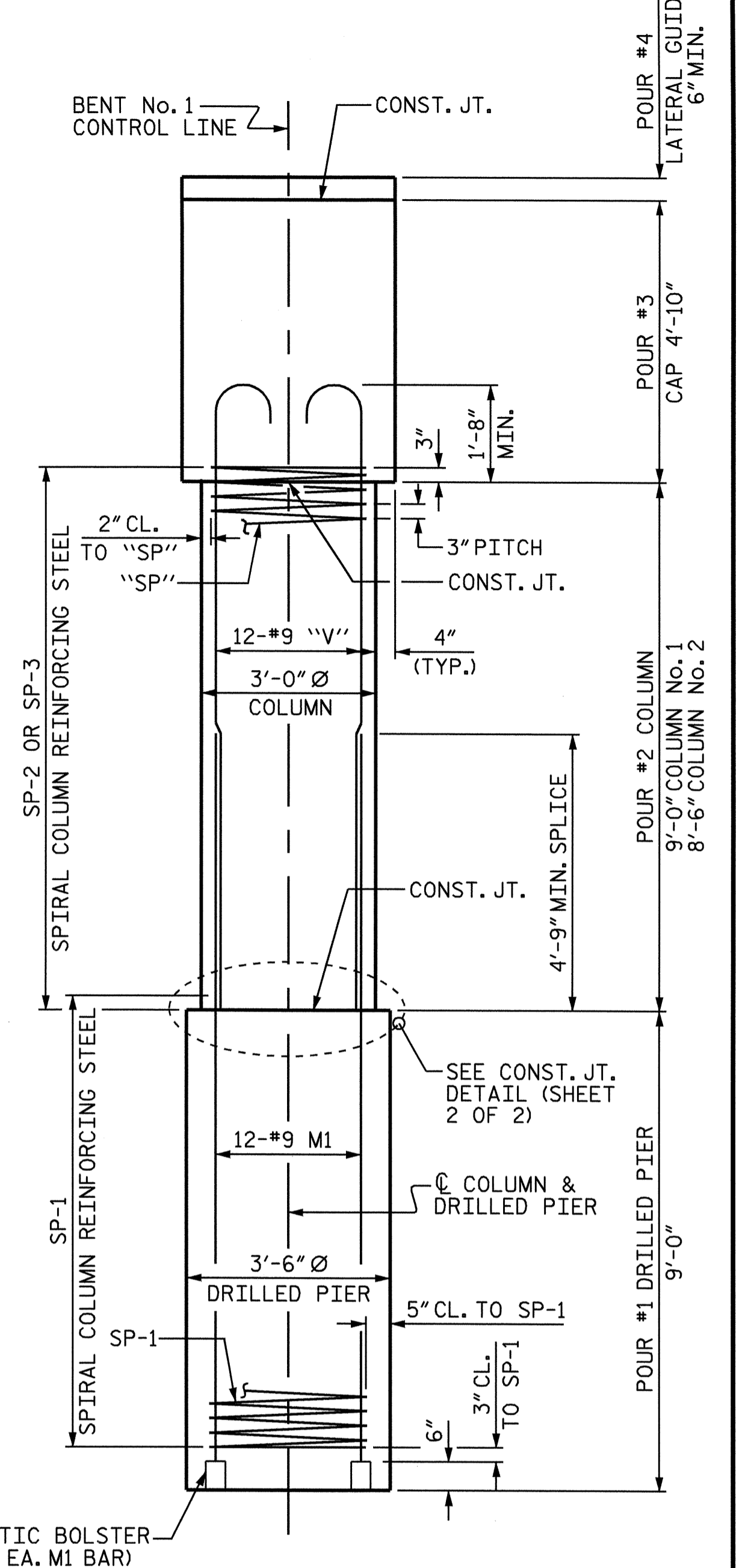




PLAN



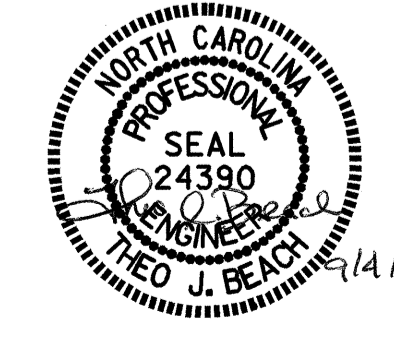
ELEVATION



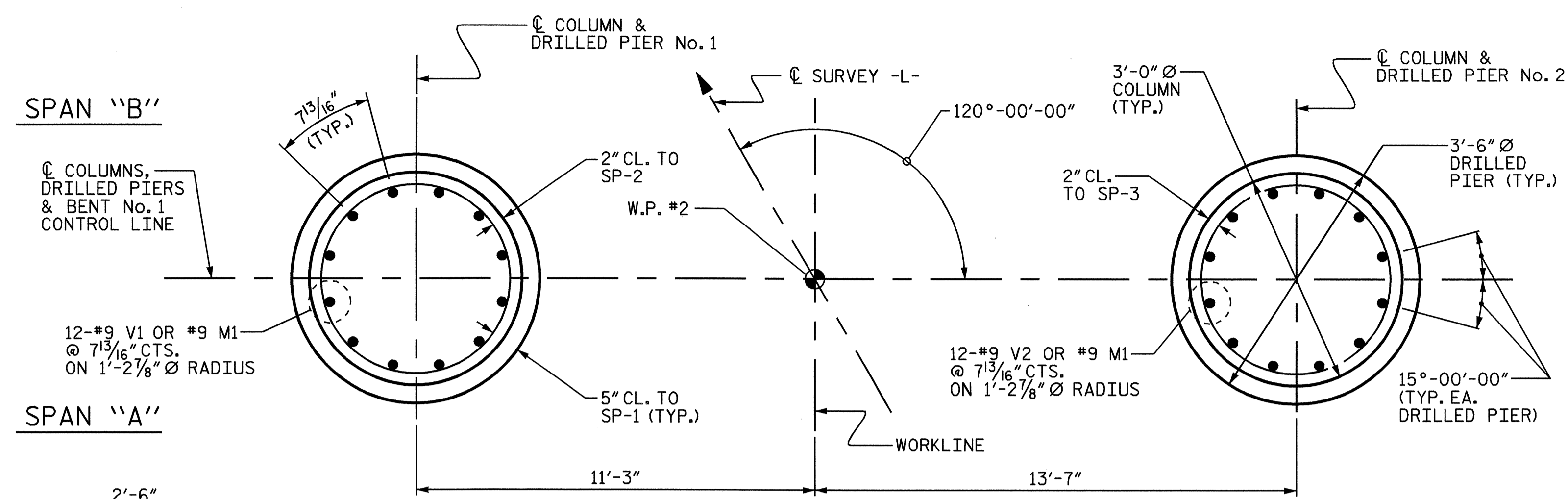
END ELEVATION

PROJECT NO. B-3852  
 GUILFORD COUNTY  
 STATION: 18+72.50 -L-  
 SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT No. 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-16					TOTAL SHEETS 27

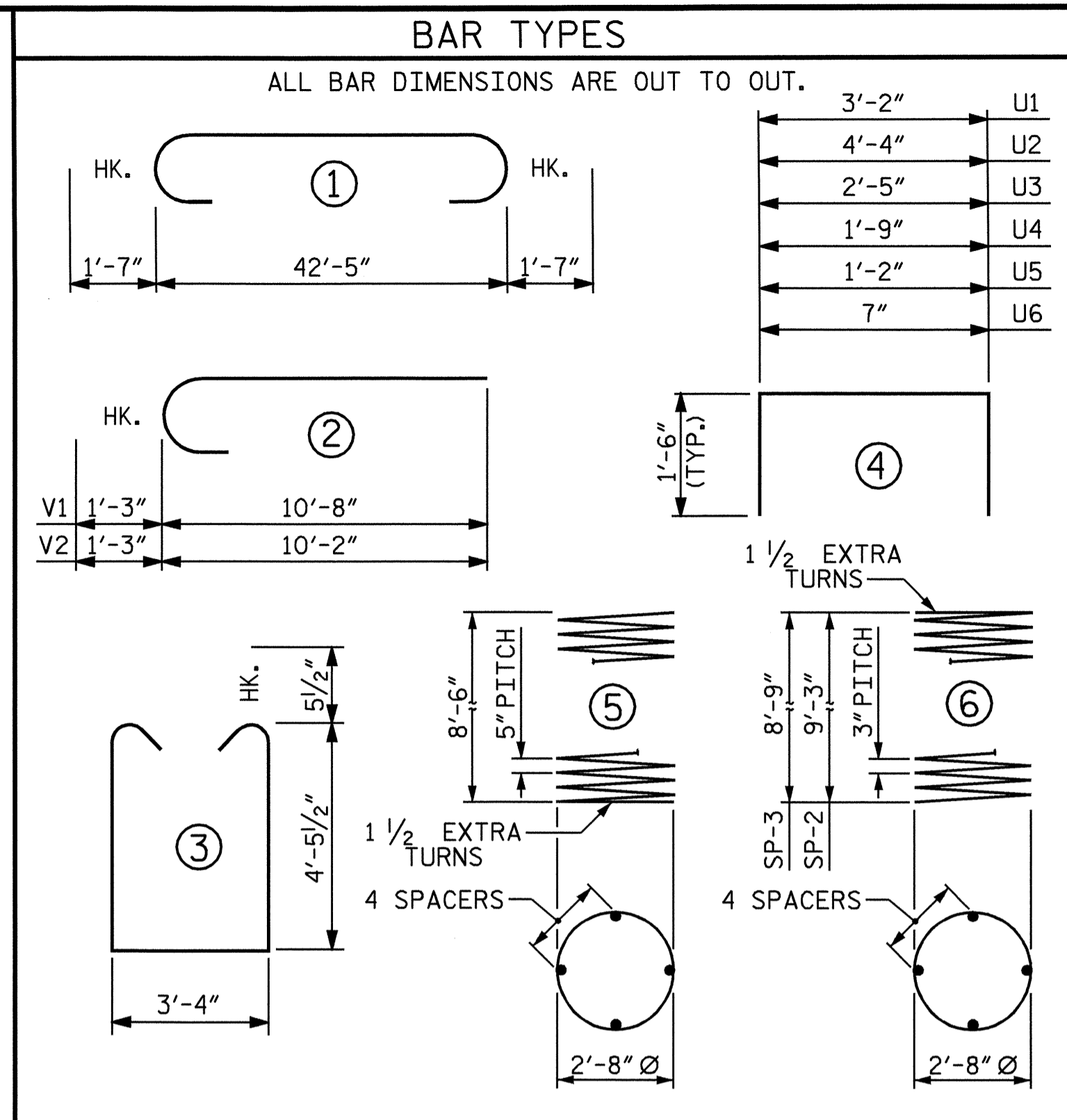


DRAWN BY: A. K. PATEL DATE: 9/13/05  
 CHECKED BY: S. B. WILLIAMS DATE: 9/20/05

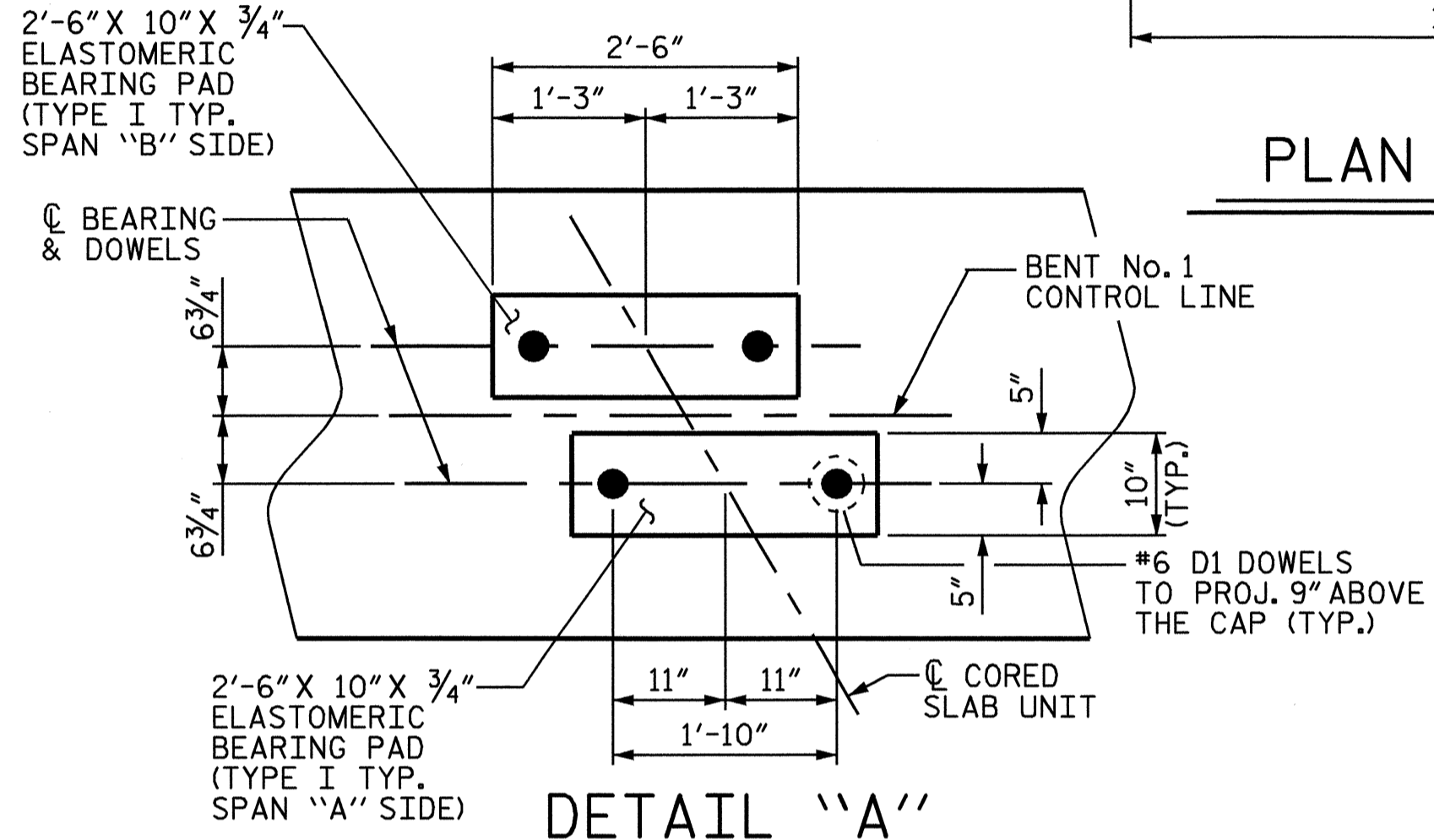


PLAN OF DRILLED PIERS & COLUMNS

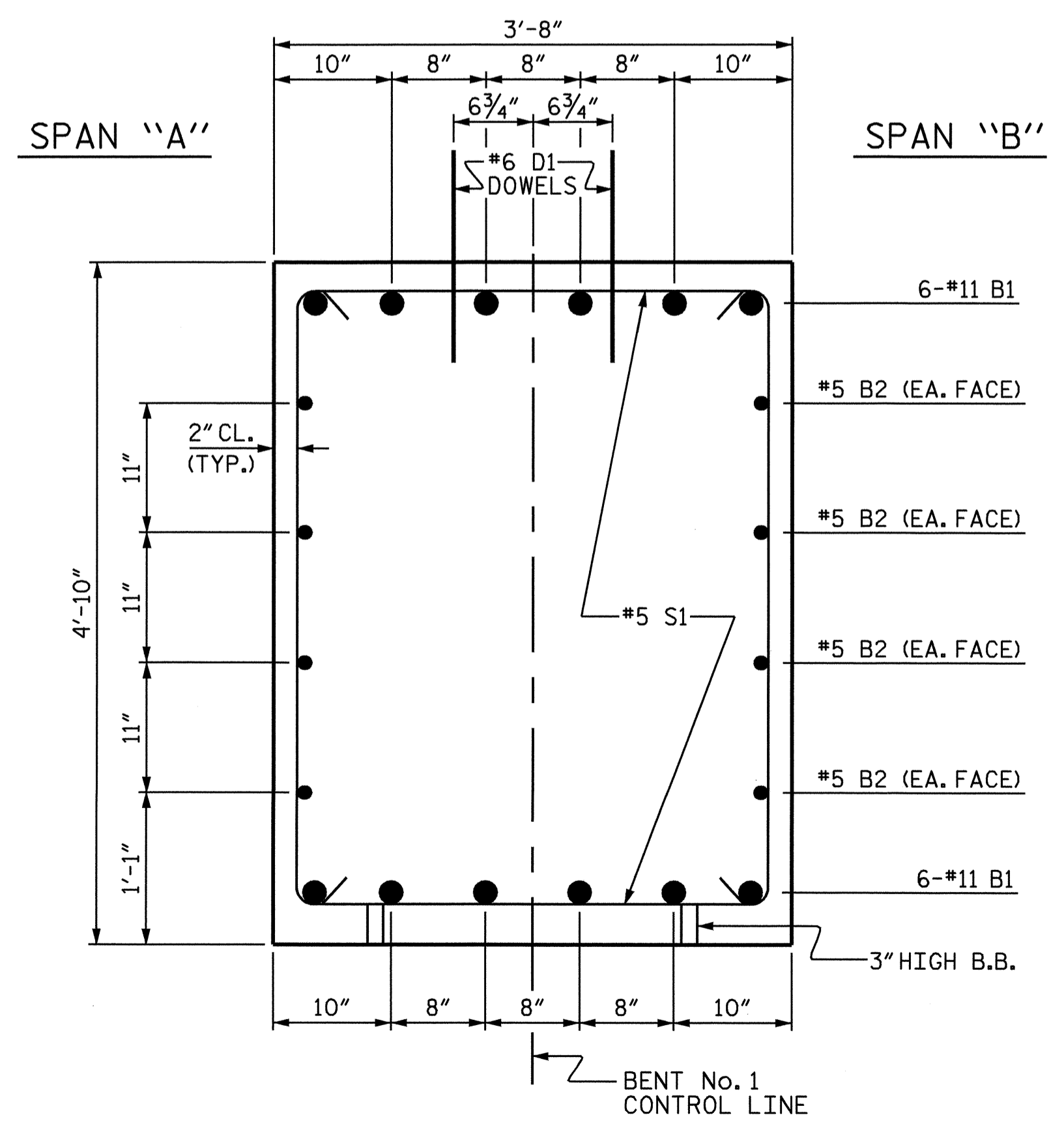
**NOTES**  
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.  
 FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.  
 HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.  
 THE LATERAL GUIDES ARE NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.  
 ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".  
 THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.



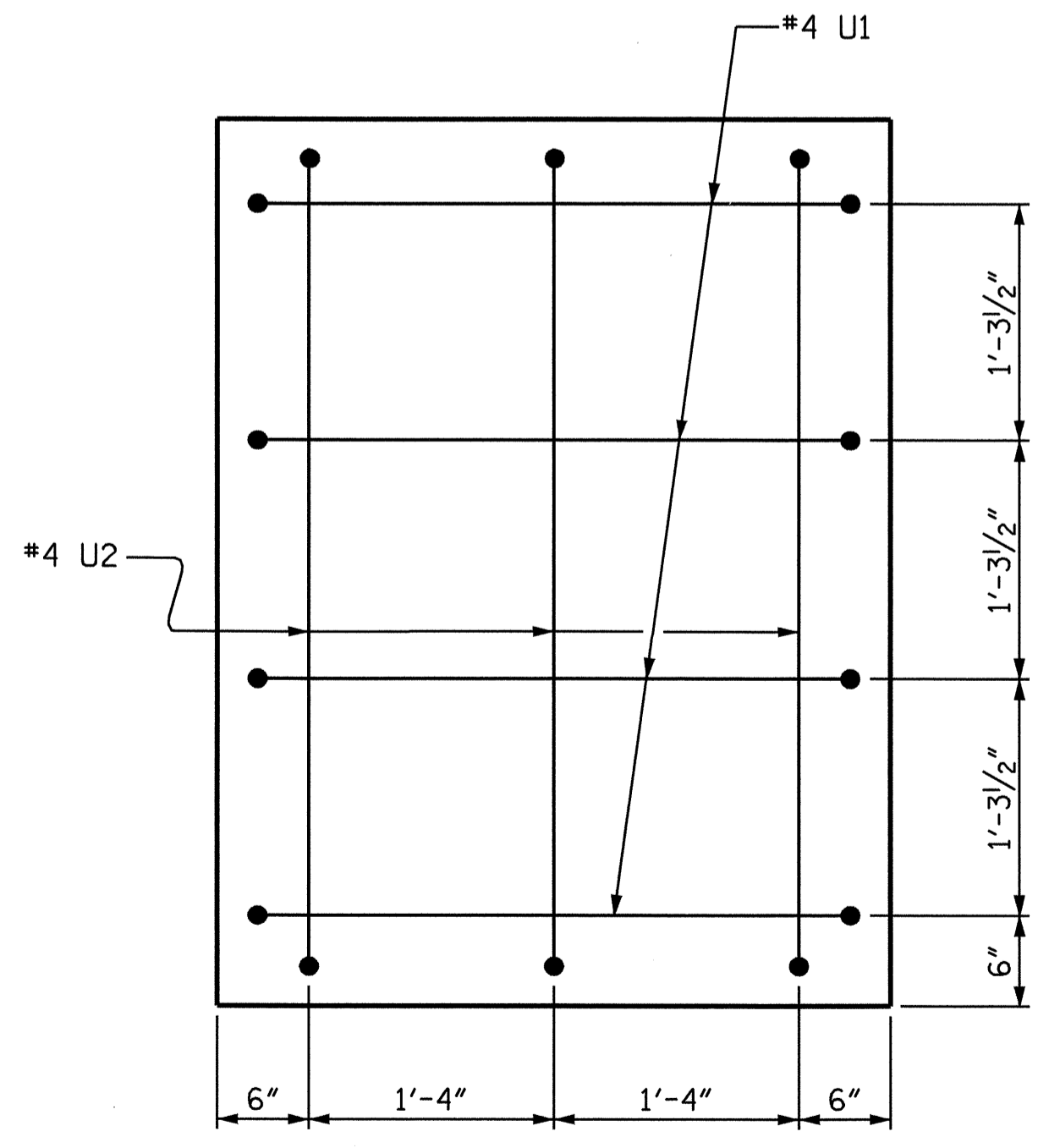
BILL OF MATERIAL					
BENT No. 1					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	#11	1	45'-7"	2906
B2	8	#5	STR	42'-6"	355
B3	2	#4	STR	3'-4"	4
B4	2	#4	STR	3'-10"	5
D1	44	#6	STR	1'-6"	99
M1	24	#9	STR	16'-3"	1326
S1	43	#5	3	13'-2"	591
U1	8	#4	4	6'-2"	33
U2	6	#4	4	7'-4"	29
U3	2	#4	4	5'-5"	7
U4	2	#4	4	4'-9"	6
U5	2	#4	4	4'-2"	6
U6	2	#4	4	3'-7"	5
V1	12	#9	2	11'-11"	486
V2	12	#9	2	11'-5"	466
REINFORCING STEEL					6324 LBS
SPIRAL REINFORCING STEEL					
SP-1	2	*	5	181'-0"	378
SP-2	1	**	6	321'-9"	215
SP-3	1	**	6	305'-3"	204
SPIRAL REINFORCING STEEL					797 LBS.
CLASS A CONCRETE BREAKDOWN					
POUR #2 (COLUMNS)					4.6 C.Y.
POUR #3 (CAP)					28.2 C.Y.
POUR #4 (LATERAL GUIDE)					0.3 C.Y.
TOTAL CLASS A CONCRETE					33.1 C.Y.
DRILLED PIERS					
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)					= 6.4 C.Y.
3'-6" Ø DRILLED PIERS NOT IN SOIL, LIN. FT.					= 14.0
3'-6" Ø DRILLED PIERS IN SOIL, LIN. FT.					= 4.0
PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIERS					= 3.6 FT.
CSL TUBES					LIN. FT. = 92.0



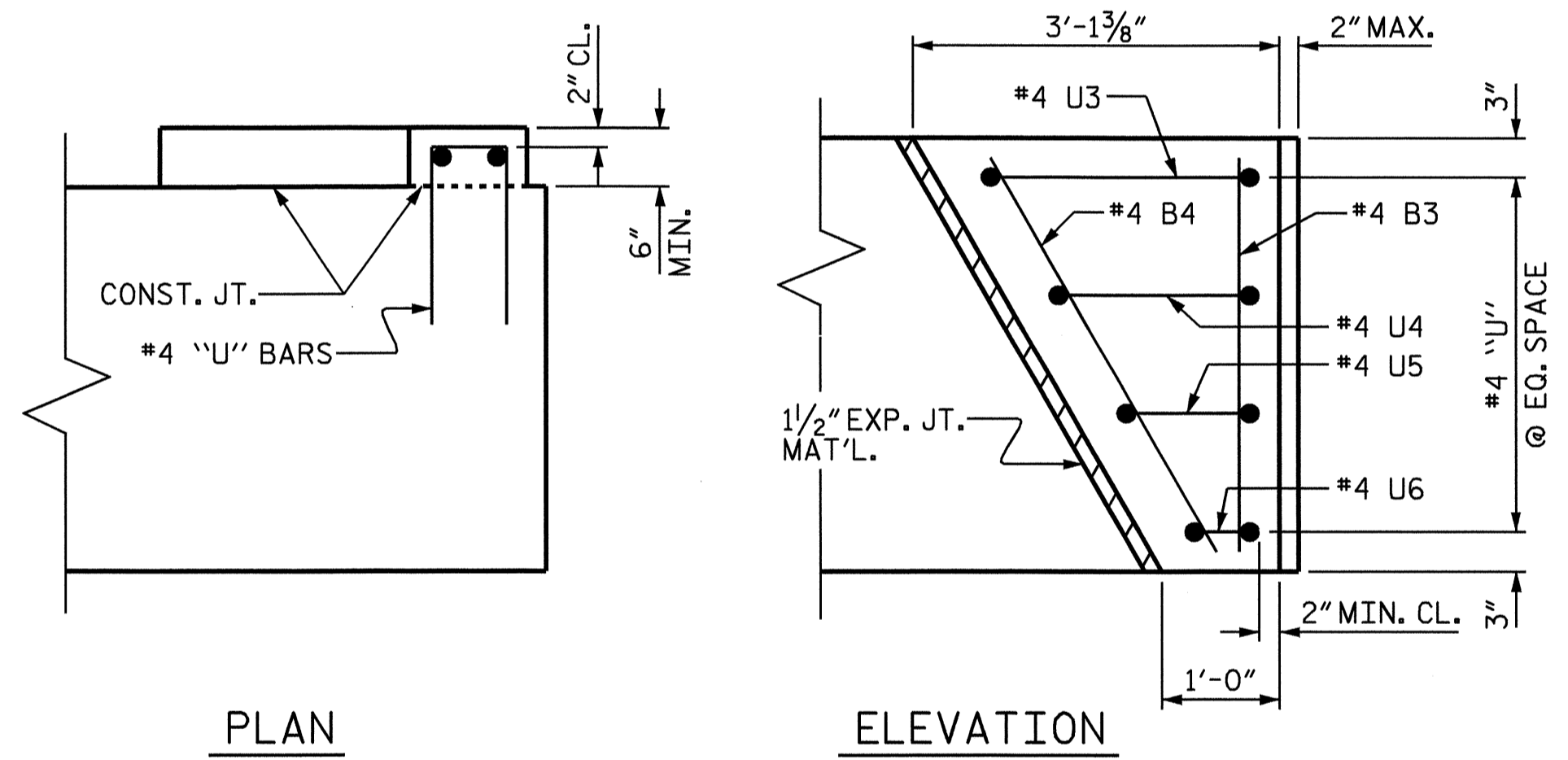
DETAIL "A"



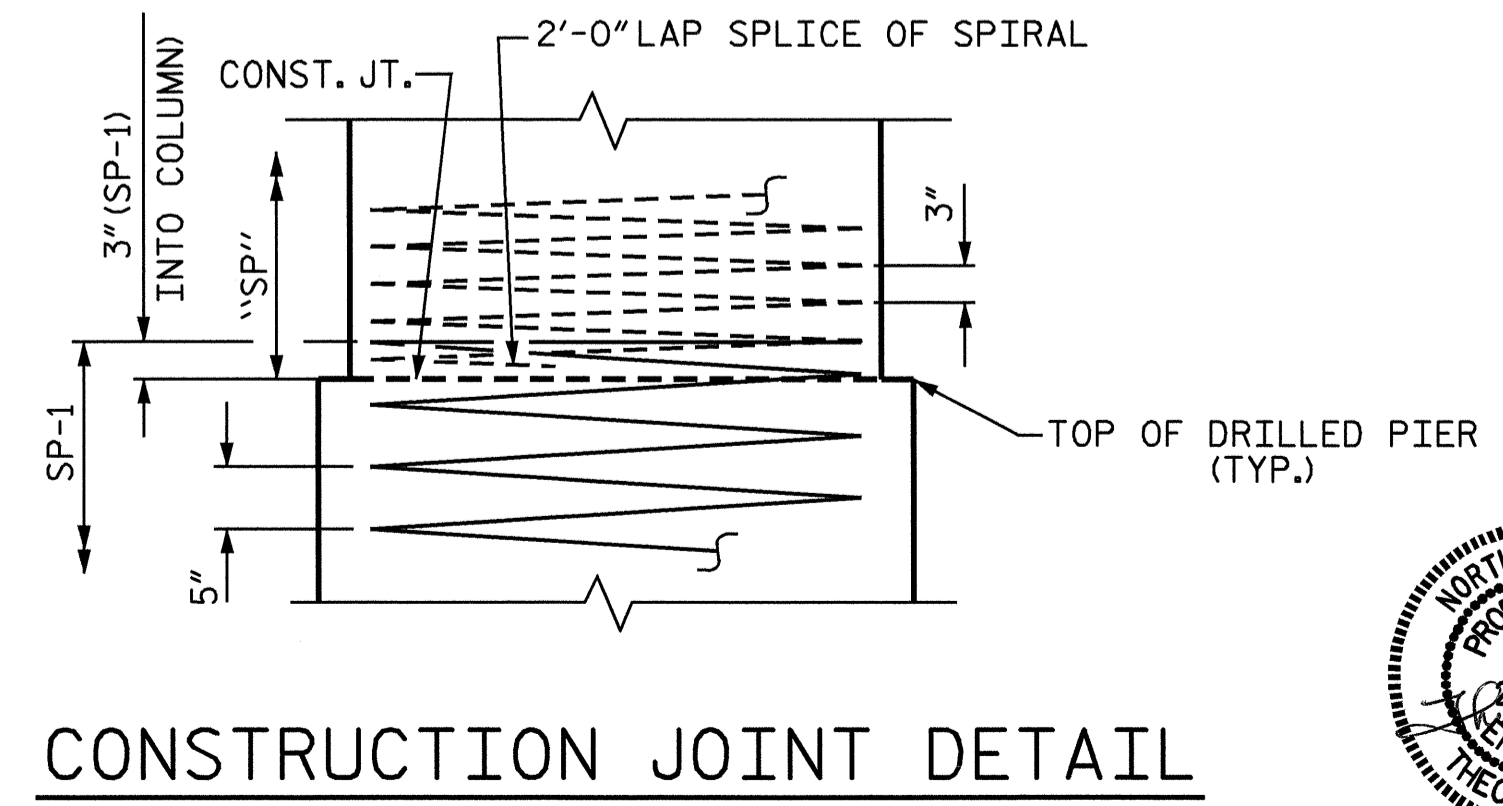
SECTION A-A



VIEW X-X (TYP. EACH END)



LATERAL GUIDE DETAIL (RIGHT LATERAL GUIDE SHOWN, LEFT SIDE SIMILAR)



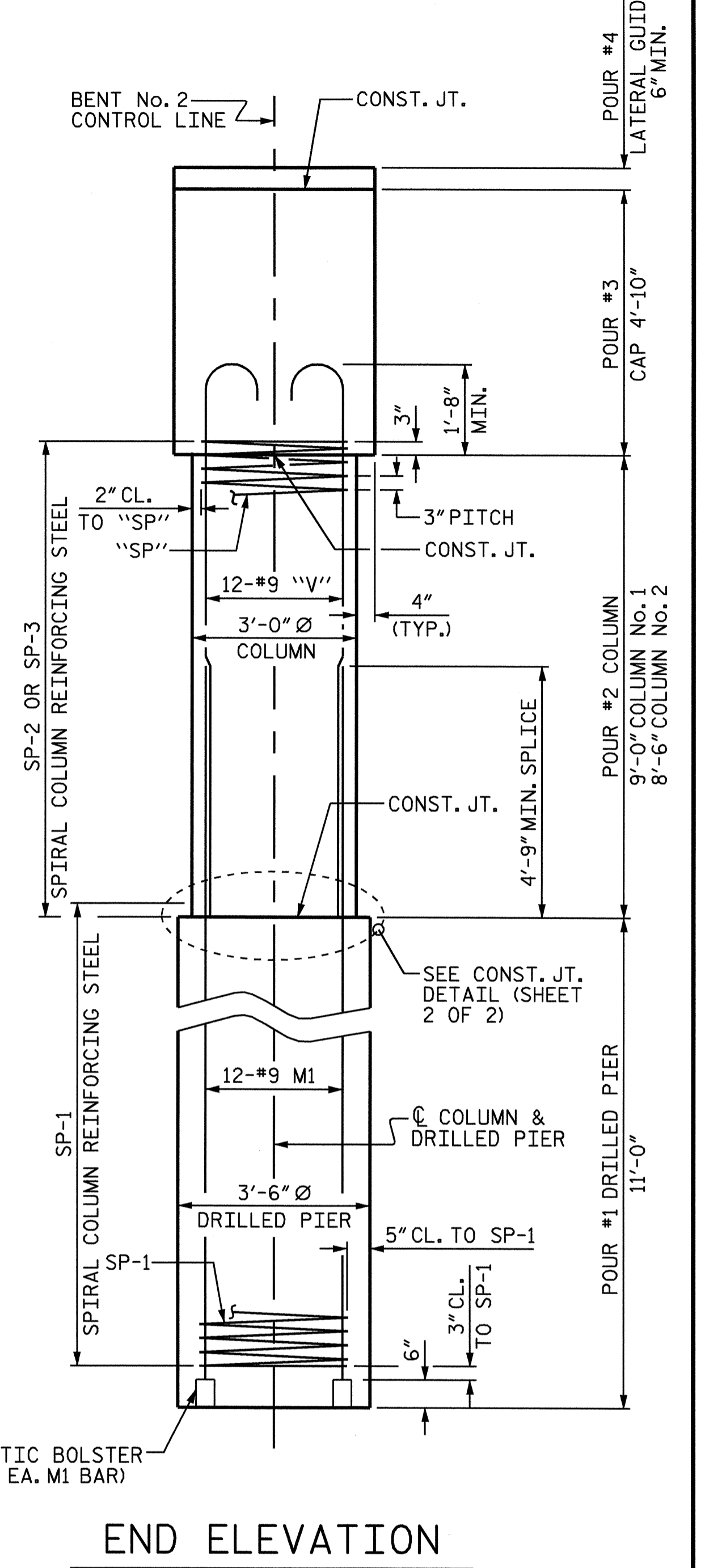
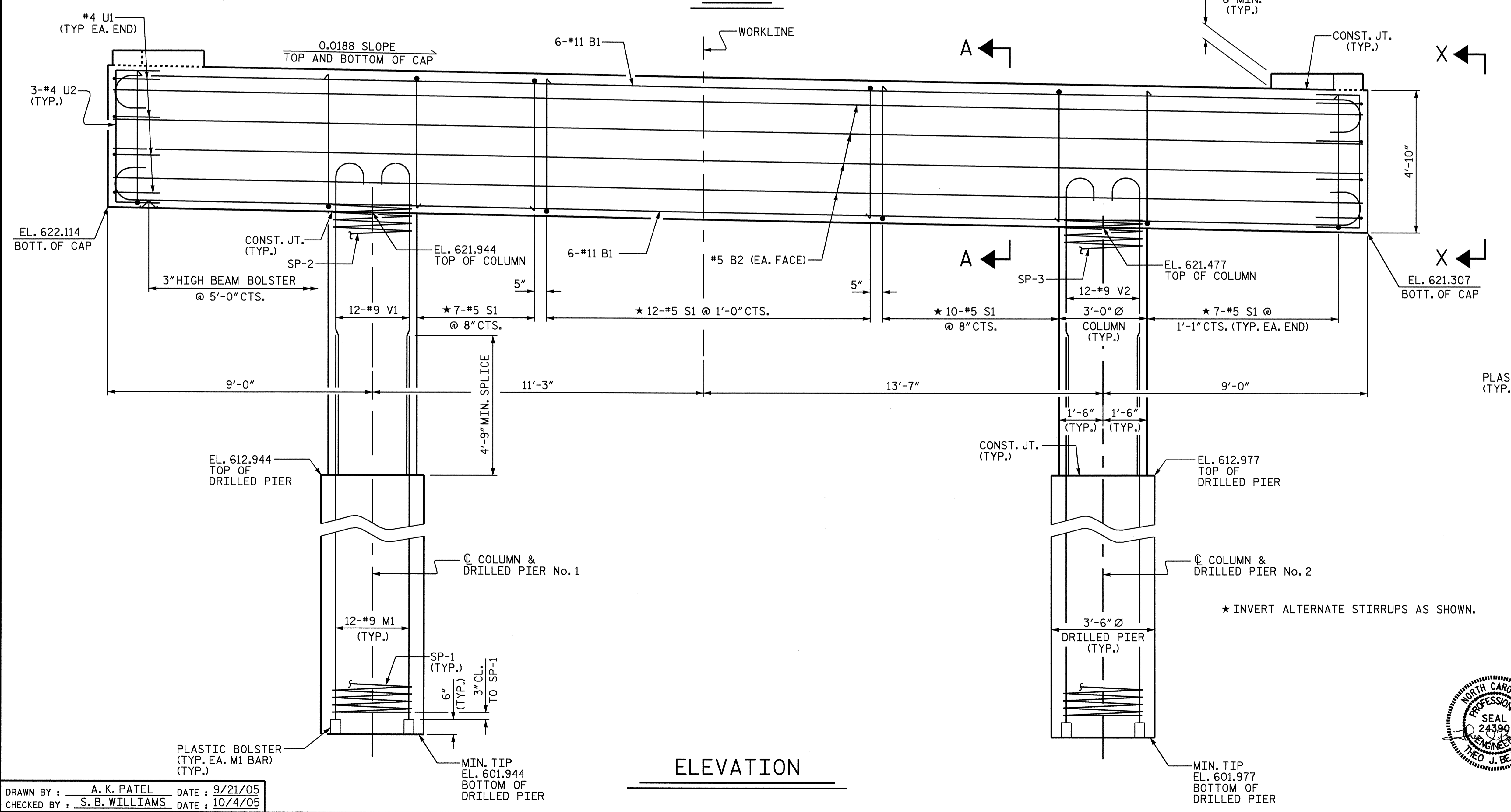
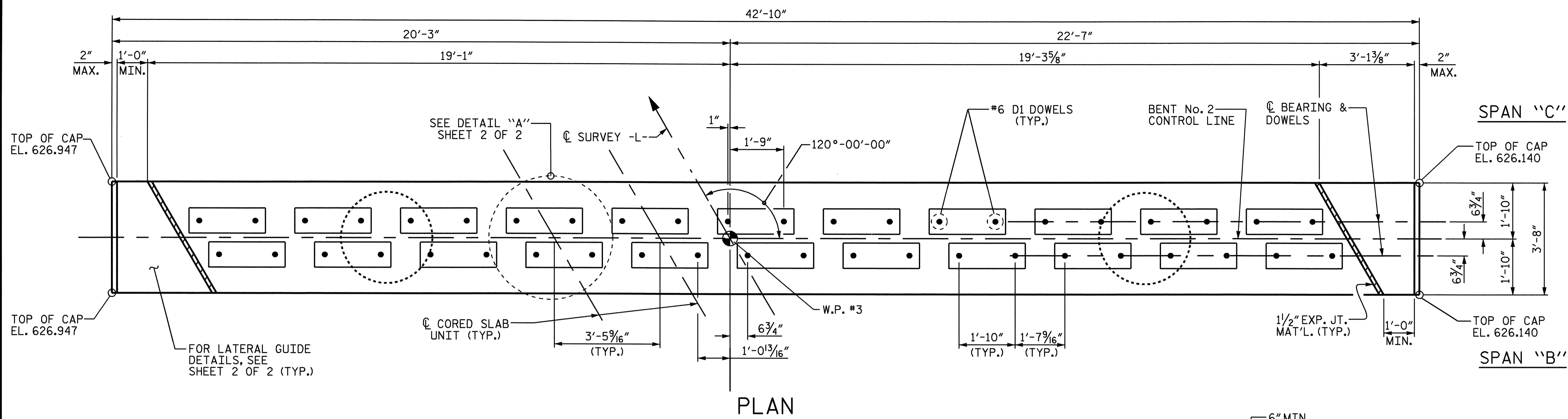
CONSTRUCTION JOINT DETAIL



PROJECT NO. B-3852  
 GUILFORD COUNTY  
 STATION: 18+72.50 -L-  
 SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT No. 1					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-17
					TOTAL SHEETS 27

DRAWN BY: A. K. PATEL DATE: 9/13/05  
 CHECKED BY: S. B. WILLIAMS DATE: 9/20/05



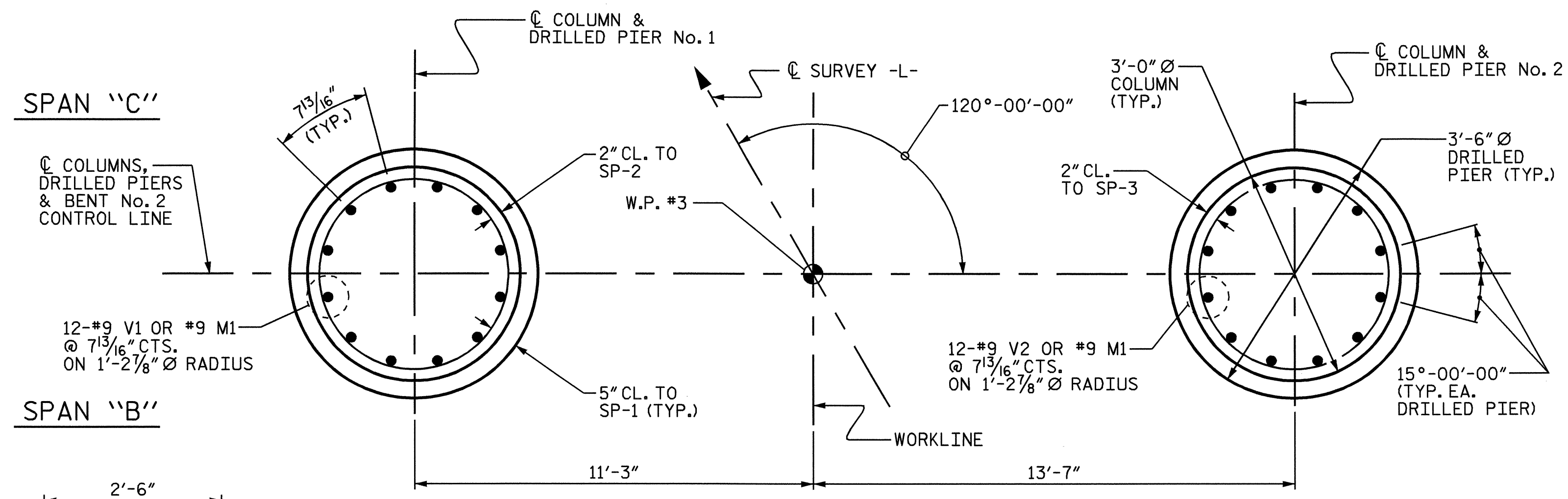
PROJECT NO. B-3852  
GUILFORD COUNTY  
 STATION: 18+72.50 -L-  
 SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT No. 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

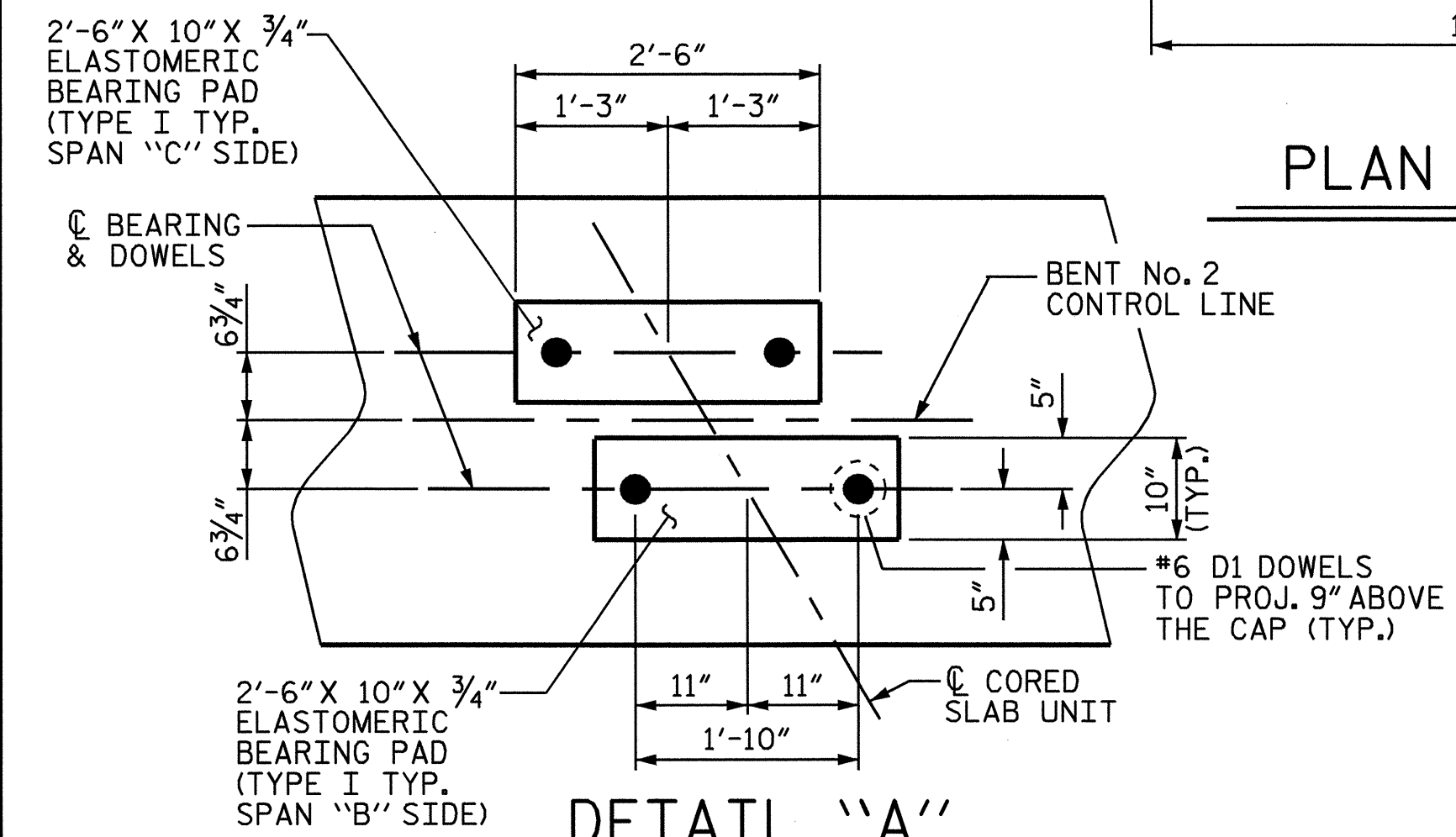
SHEET NO. **S-18**  
TOTAL SHEETS **27**



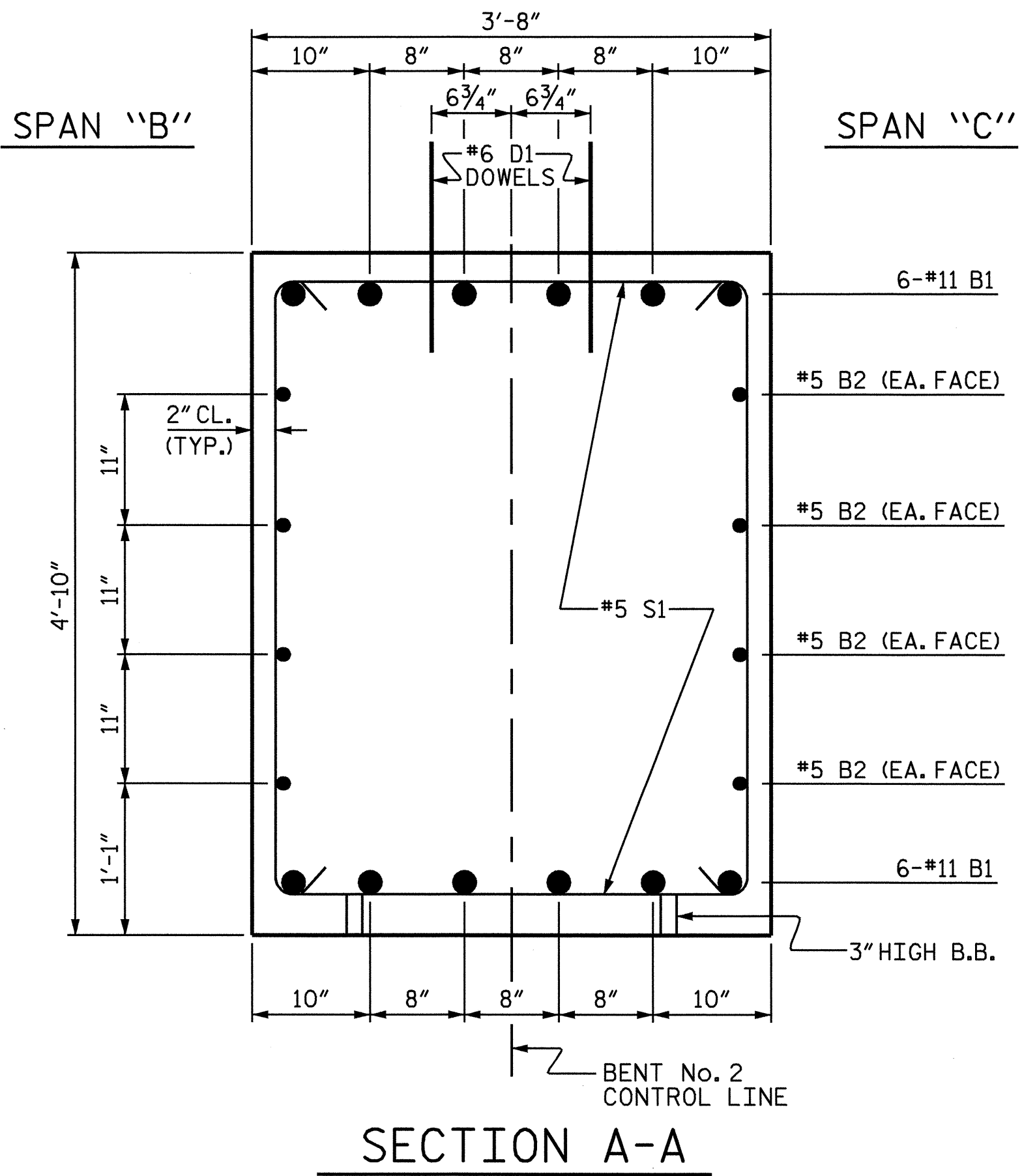
DRAWN BY: A. K. PATEL DATE: 9/21/05  
 CHECKED BY: S. B. WILLIAMS DATE: 10/4/05



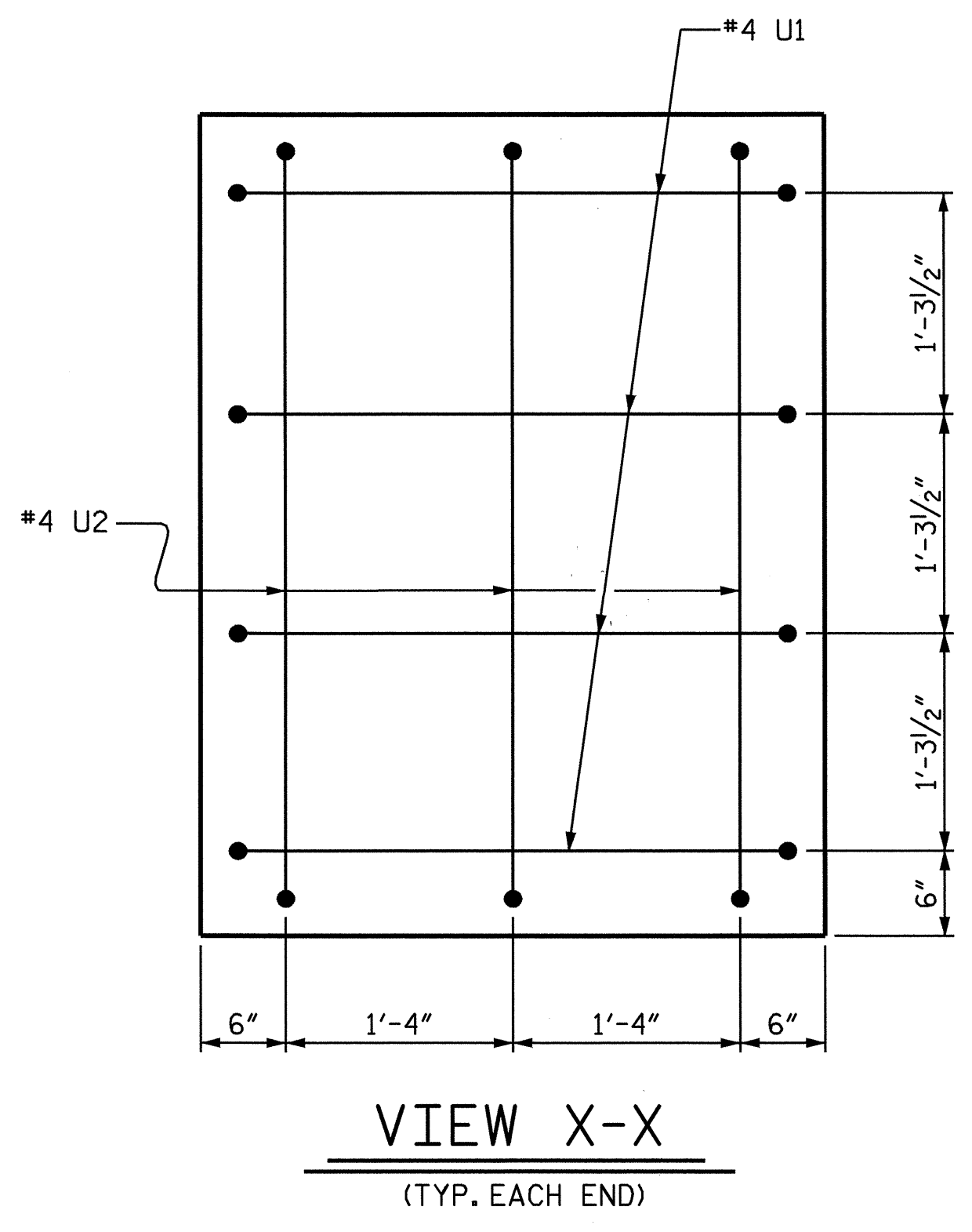
PLAN OF DRILLED PIERS & COLUMNS



DETAIL "A"



SECTION A-A



VIEW X-X  
(TYP. EACH END)

**NOTES**

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

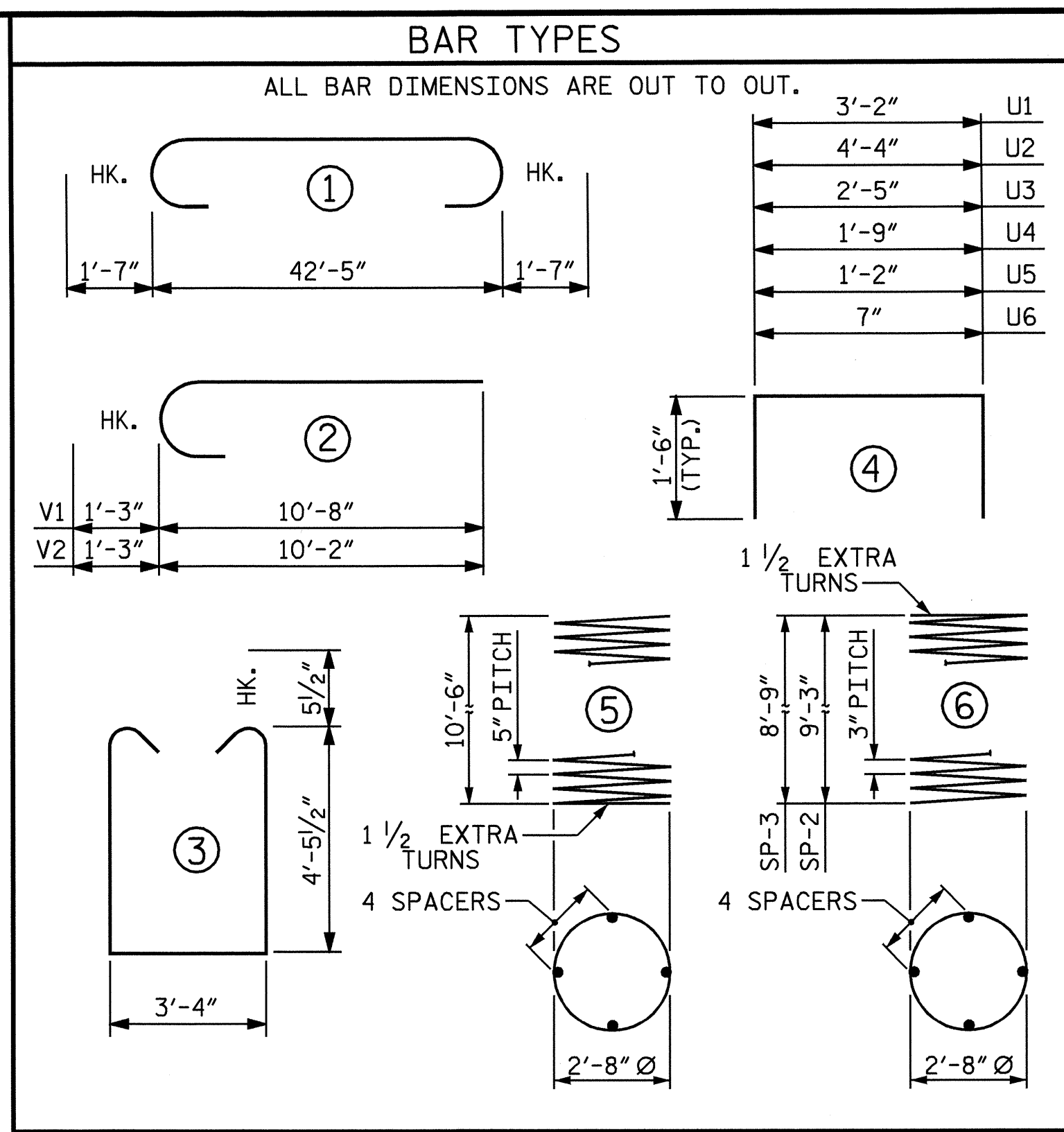
FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

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

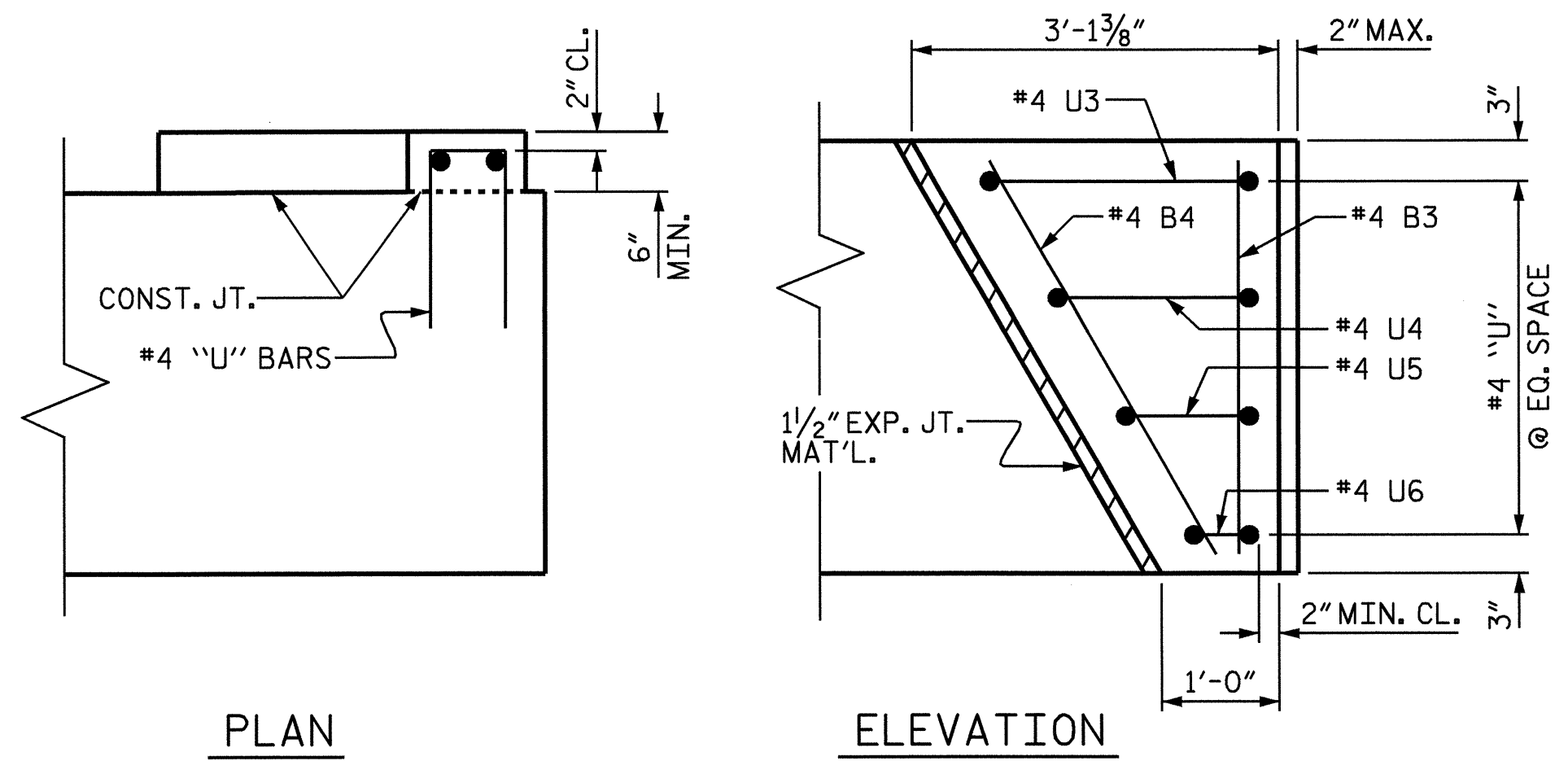
THE LATERAL GUIDES ARE NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

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

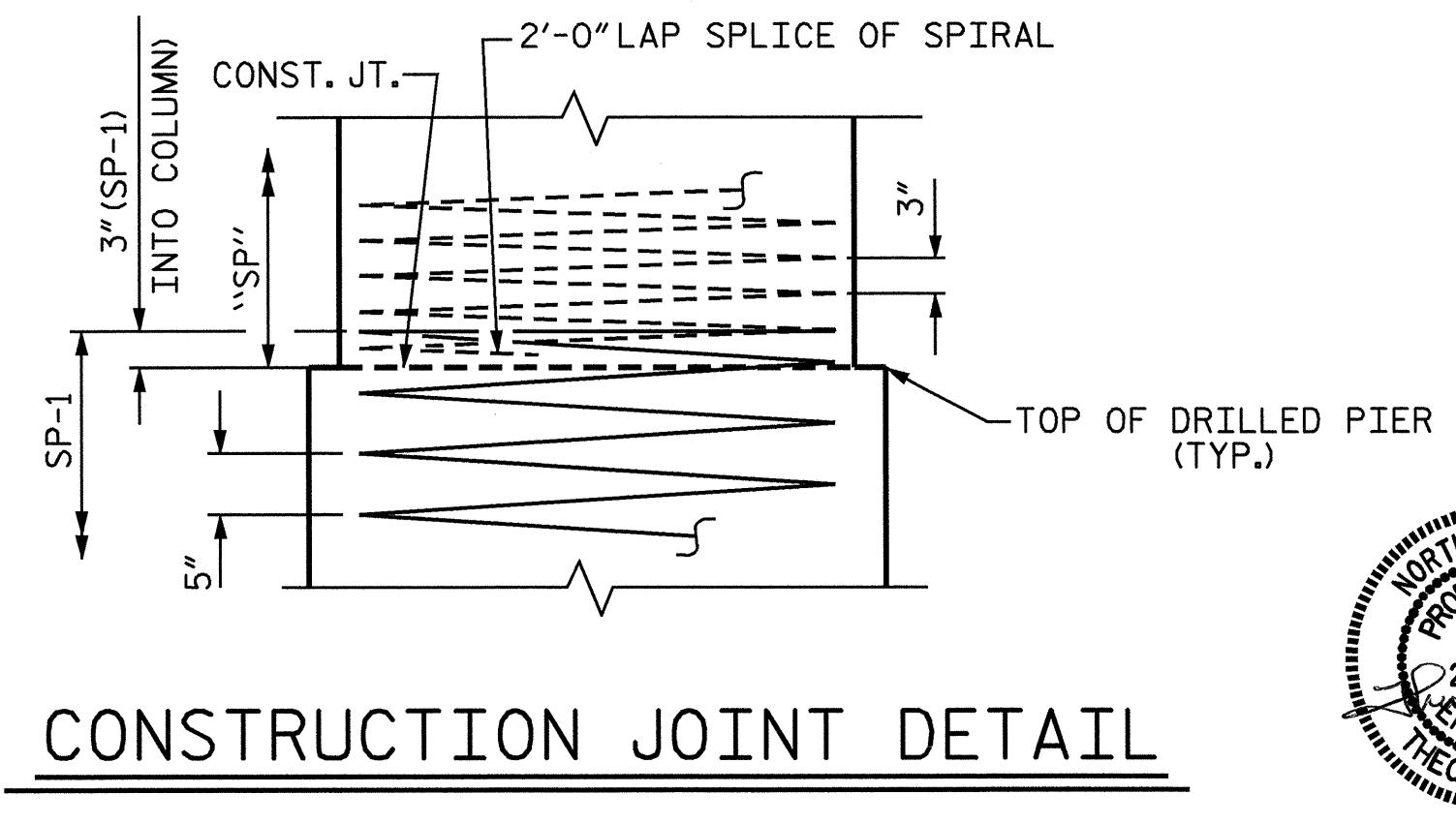
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.



BAR TYPES



PLAN  
ELEVATION  
LATERAL GUIDE DETAIL  
(RIGHT LATERAL GUIDE SHOWN, LEFT SIDE SIMILAR)



CONSTRUCTION JOINT DETAIL

BILL OF MATERIAL					
BENT No. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	#11	1	45'-7"	2906
B2	8	#5	STR	42'-6"	355
B3	2	#4	STR	3'-4"	4
B4	2	#4	STR	3'-10"	5
D1	44	#6	STR	1'-6"	99
M1	24	#9	STR	18'-3"	1489
S1	43	#5	3	13'-2"	591
U1	8	#4	4	6'-2"	33
U2	6	#4	4	7'-4"	29
U3	2	#4	4	5'-5"	7
U4	2	#4	4	4'-9"	6
U5	2	#4	4	4'-2"	6
U6	2	#4	4	3'-7"	5
V1	12	#9	2	11'-11"	486
V2	12	#9	2	11'-5"	466
REINFORCING STEEL					6487 LBS
SPIRAL REINFORCING STEEL					
SP-1	2	*	5	222'-1"	463
SP-2	1	**	6	321'-10"	215
SP-3	1	**	6	305'-4"	204
SPIRAL REINFORCING STEEL					882 LBS.
CLASS A CONCRETE BREAKDOWN					
POUR #2 (COLUMNS)					4.6 C.Y.
POUR #3 (CAP)					28.2 C.Y.
POUR #4 (LATERAL GUIDE)					0.3 C.Y.
TOTAL CLASS A CONCRETE					33.1 C.Y.
DRILLED PIERS					
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)					= 7.8 C.Y.
3'-6" Ø DRILLED PIERS NOT IN SOIL, LIN. FT.					= 14.0
3'-6" Ø DRILLED PIERS IN SOIL, LIN. FT.					= 8.0
PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIERS					= 7.9 FT.
CSL TUBES					LIN. FT. = 108.0

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

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

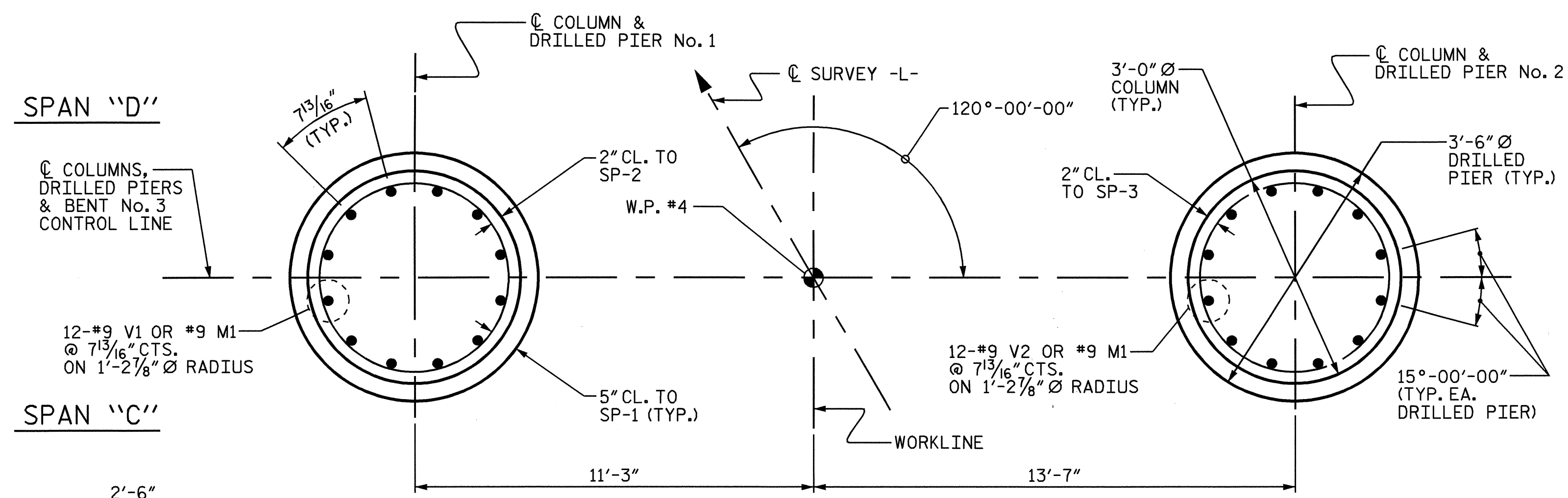
PROJECT NO. B-3852  
GUILFORD COUNTY  
 STATION: 18+72.50 -L-  
 SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH			
SUBSTRUCTURE BENT No. 2			
REVISIONS			SHEET NO.
NO.	BY:	DATE:	S-19
1			TOTAL SHEETS
2			27

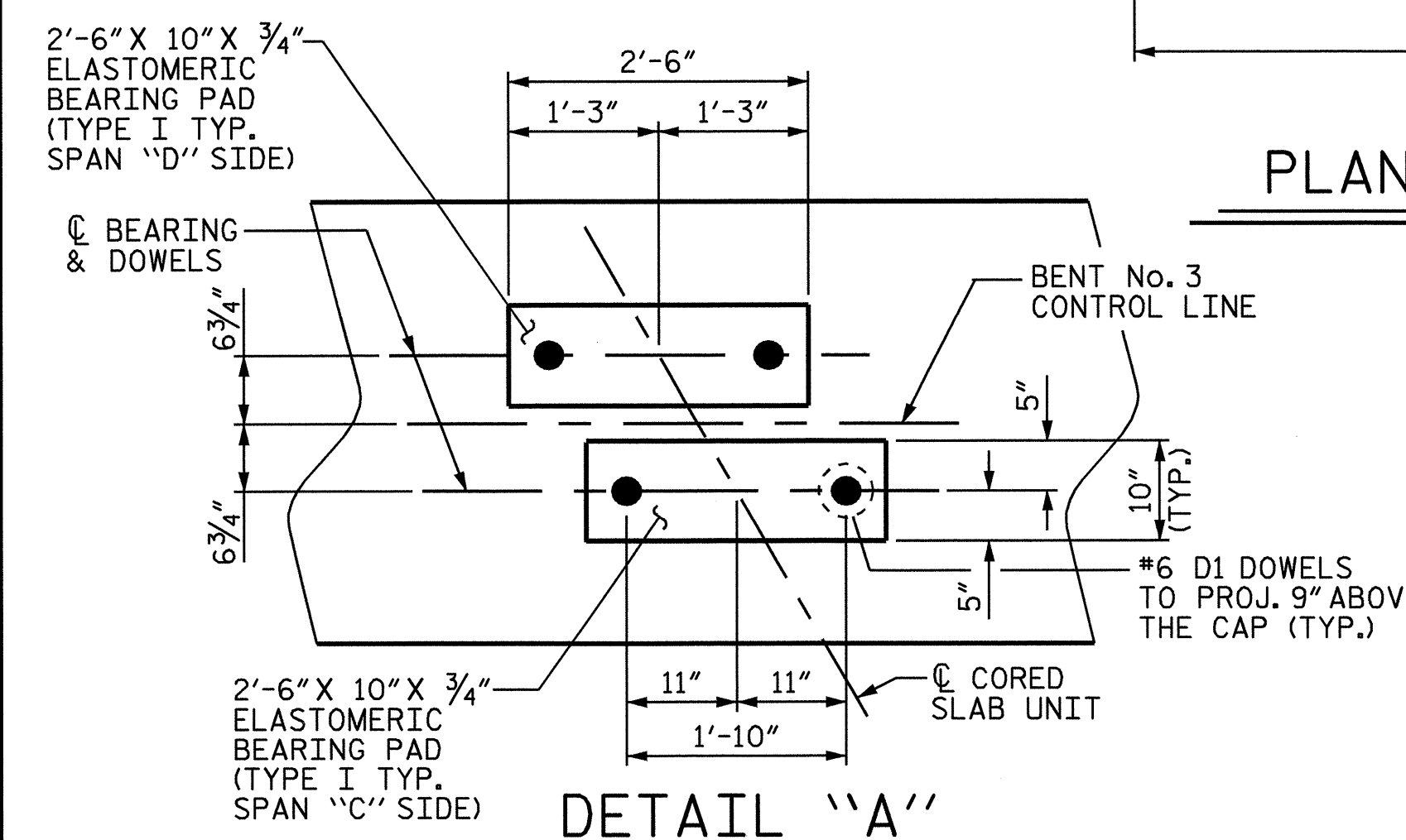
DRAWN BY: A. K. PATEL DATE: 9/21/05  
 CHECKED BY: S. B. WILLIAMS DATE: 10/4/05



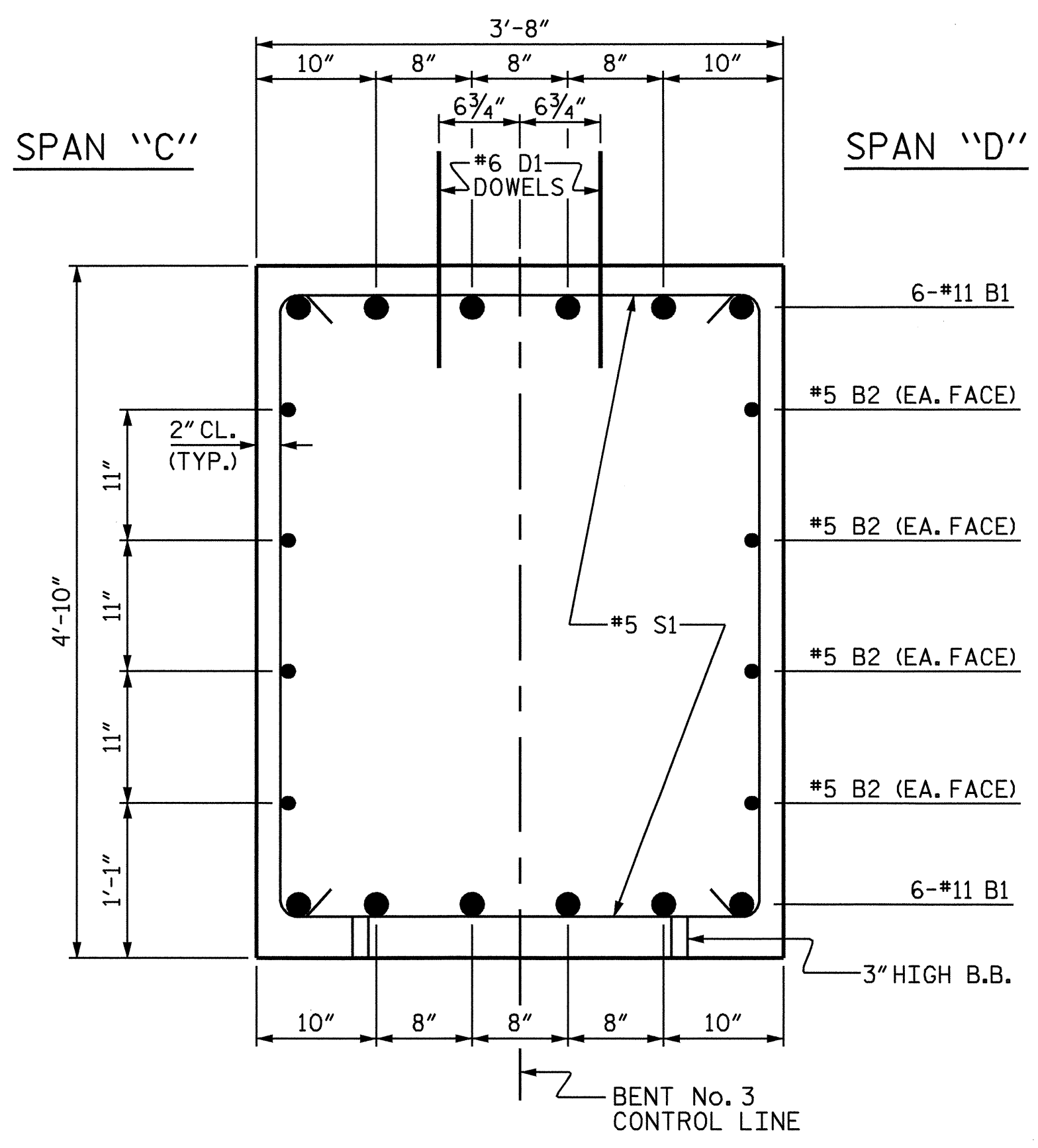




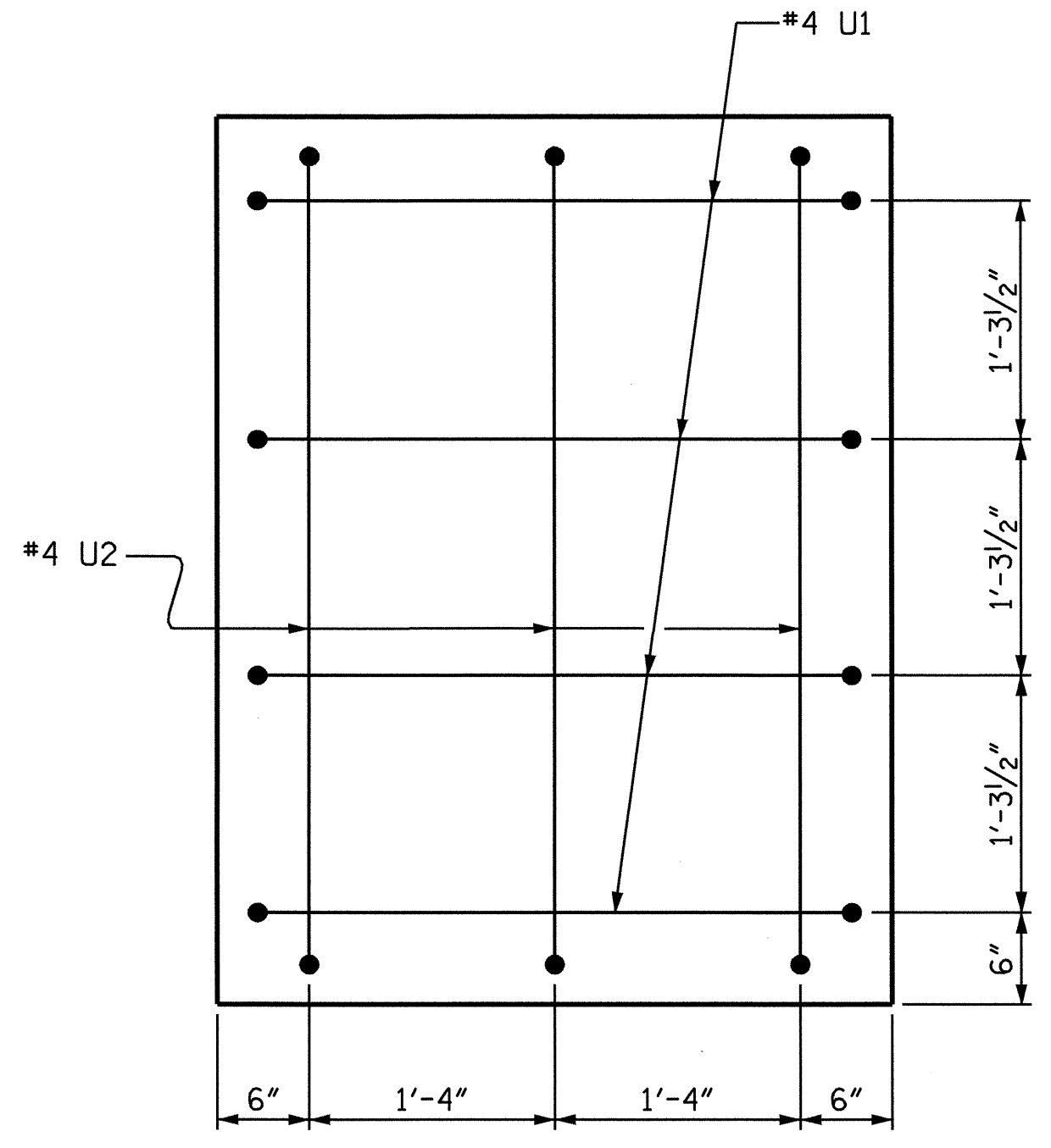
PLAN OF DRILLED PIERS & COLUMNS



DETAIL 'A'



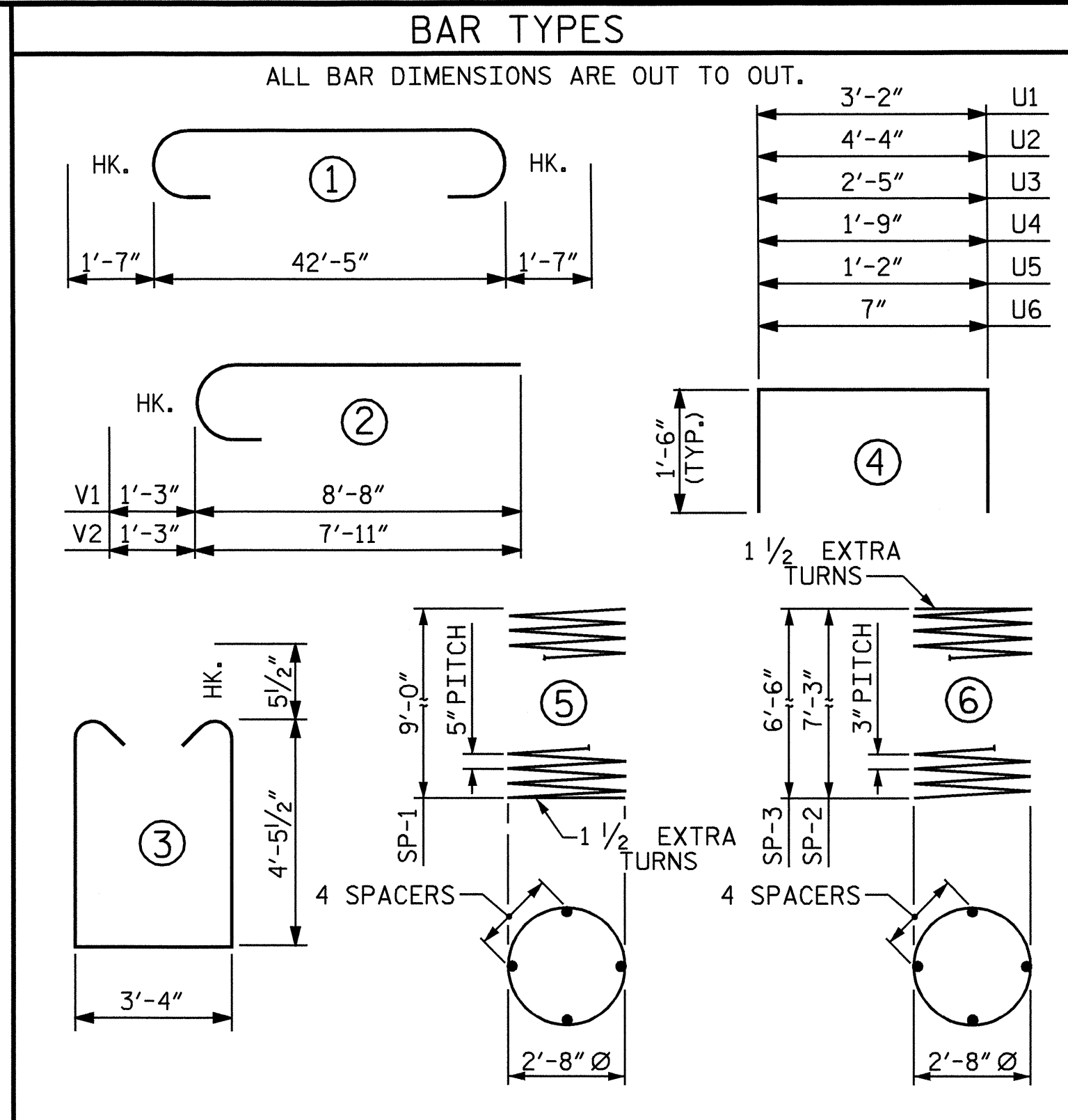
SECTION A-A



VIEW X-X

(TYP. EACH END)

**NOTES**  
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.  
 FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.  
 HOOKS ON V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.  
 THE LATERAL GUIDES ARE NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.  
 ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".  
 THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

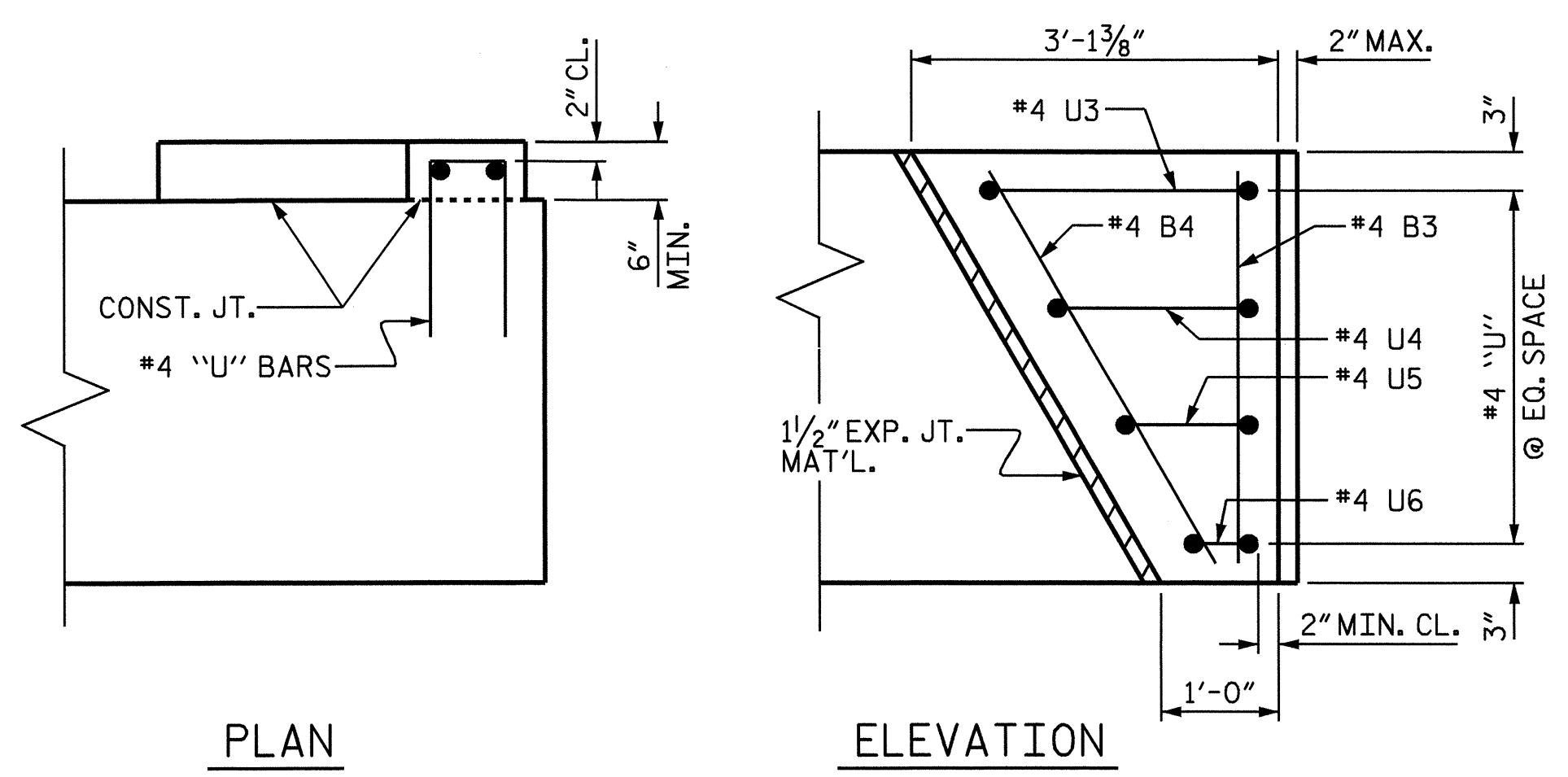


BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.

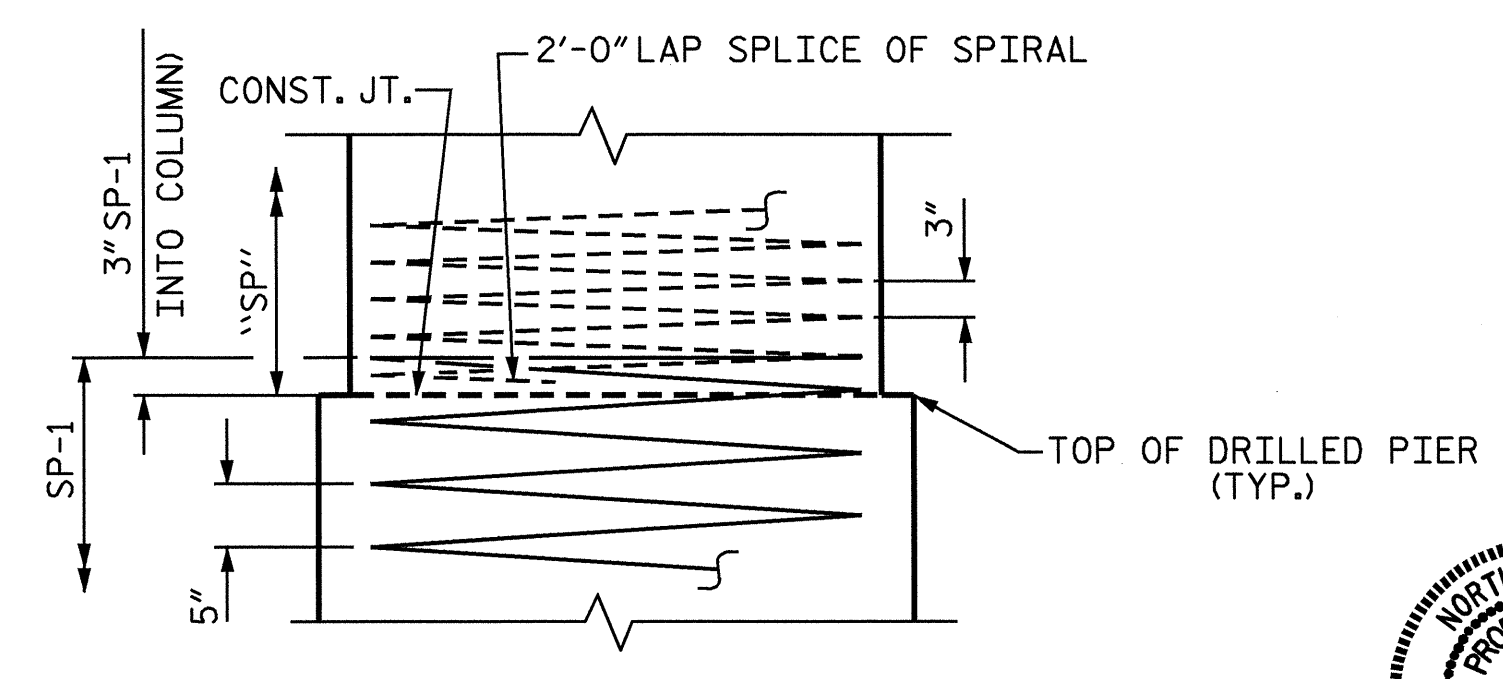
BILL OF MATERIAL

BENT No. 3					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	#11	1	45'-7"	2906
B2	8	#5	STR	42'-6"	355
B3	2	#4	STR	3'-4"	4
B4	2	#4	STR	3'-10"	5
D1	44	#6	STR	1'-6"	99
M1	24	#9	STR	16'-9"	1369
S1	43	#5	3	13'-2"	591
U1	8	#4	4	6'-2"	33
U2	6	#4	4	7'-4"	29
U3	2	#4	4	5'-5"	7
U4	2	#4	4	4'-9"	6
U5	2	#4	4	4'-2"	6
U6	2	#4	4	3'-7"	5
V1	12	#9	2	9'-11"	405
V2	12	#9	2	9'-2"	374
REINFORCING STEEL					6194 LBS
SPIRAL REINFORCING STEEL					
SP-1	2	*	5	197'-5"	412
SP-2	1	**	6	255'-9"	171
SP-3	1	**	6	231'-0"	154
SPIRAL REINFORCING STEEL					737 LBS.
CLASS A CONCRETE BREAKDOWN					
POUR #2 (COLUMNS)					3.5 C.Y.
POUR #3 (CAP)					28.2 C.Y.
POUR #4 (LATERAL GUIDE)					0.3 C.Y.
TOTAL CLASS A CONCRETE					32.0 C.Y.
DRILLED PIERS					
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)					= 6.8 C.Y.
3'-6" Ø DRILLED PIERS NOT IN SOIL, LIN. FT.					= 14.0
3'-6" Ø DRILLED PIERS IN SOIL, LIN. FT.					= 5.0
CSL TUBES LIN. FT.					= 96.0



LATERAL GUIDE DETAIL

(RIGHT LATERAL GUIDE SHOWN, LEFT SIDE SIMILAR)



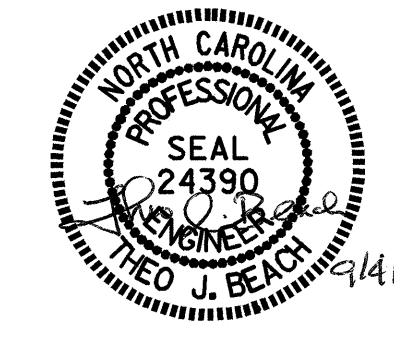
CONSTRUCTION JOINT DETAIL

PROJECT NO. B-3852  
GUILFORD COUNTY  
 STATION: 18+72.50 -L-

SHEET 2 OF 2

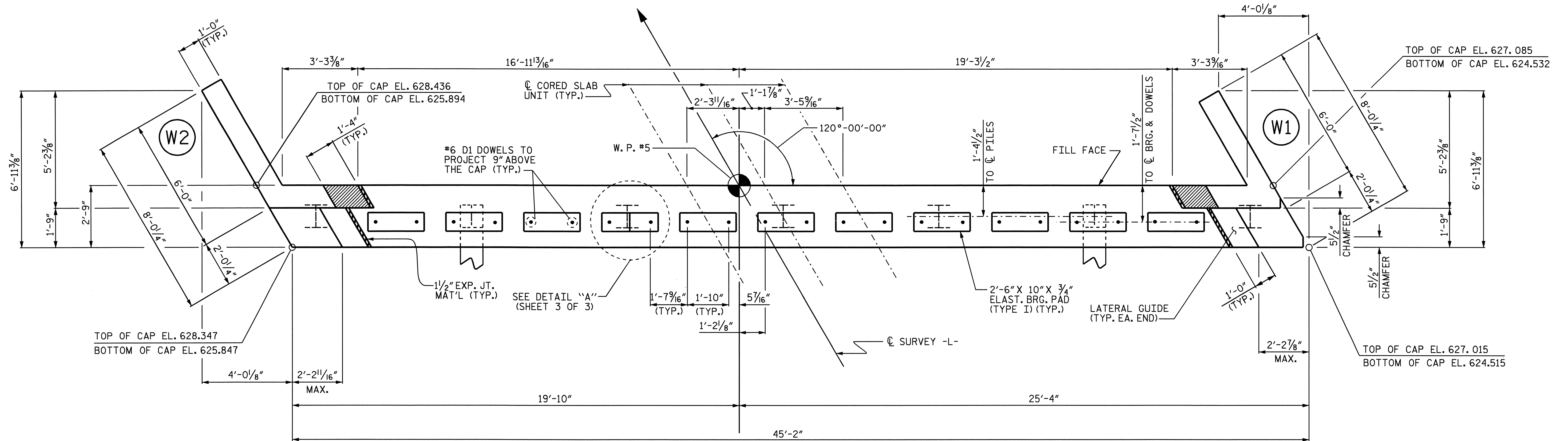
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT No. 3

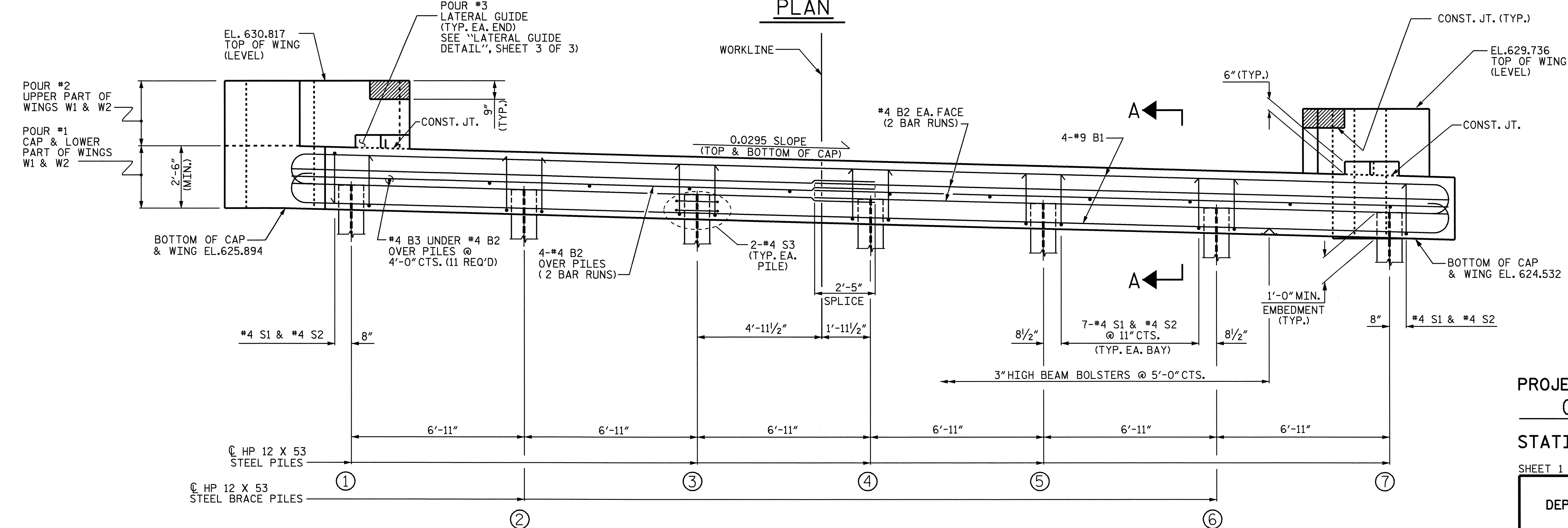


DRAWN BY: A. K. PATEL DATE: 9/21/05  
 CHECKED BY: S. B. WILLIAMS DATE: 10/4/05

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



PLAN



ELEVATION

TOP OF PILE ELEVATIONS	
①	626.831
②	626.627
③	626.423
④	626.219
⑤	626.015
⑥	625.811
⑦	625.607

PROJECT NO. B-3852  
GUILFORD COUNTY  
 STATION: 18+72.50 -L-  
 SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

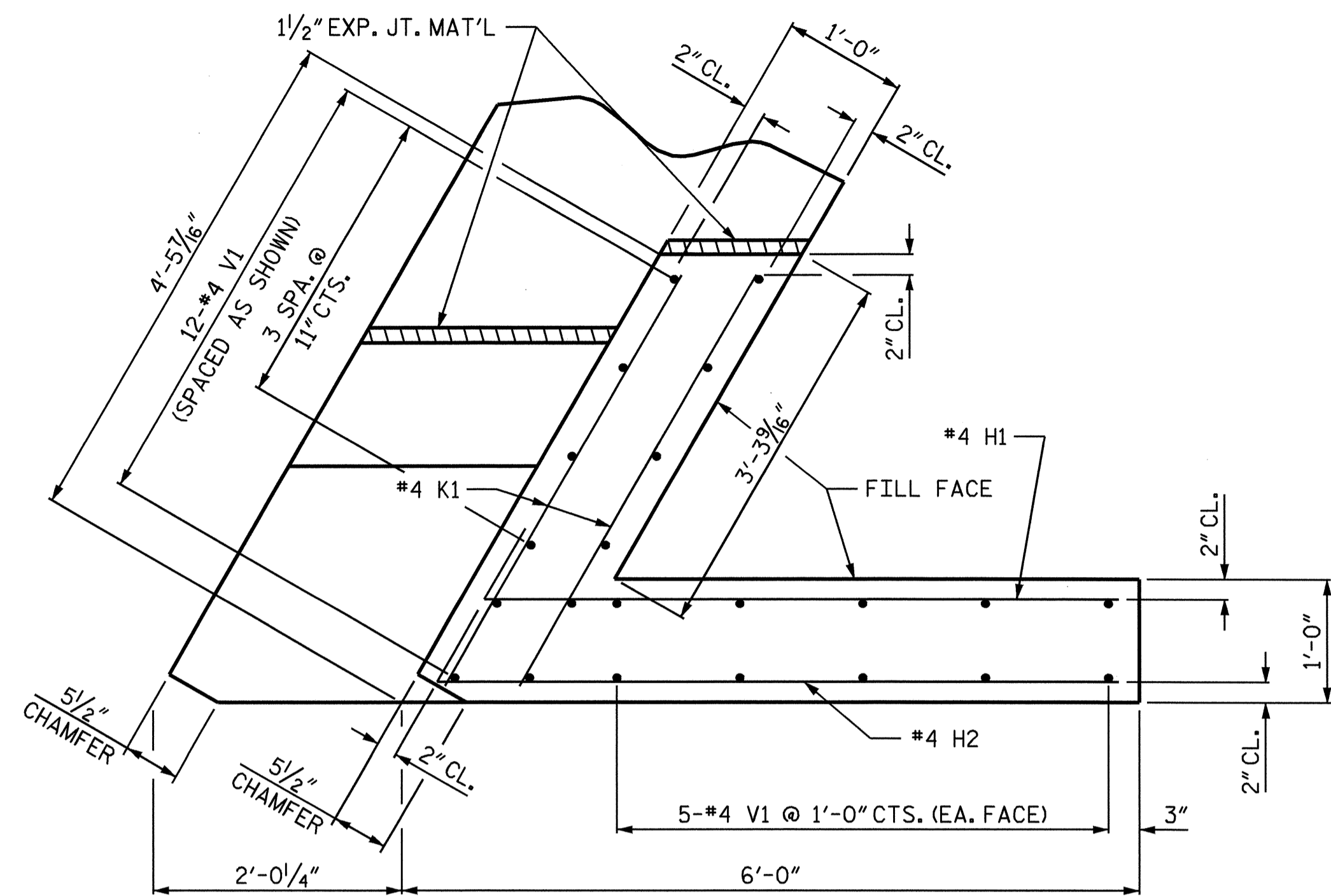
SUBSTRUCTURE  
 END BENT No. 2

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

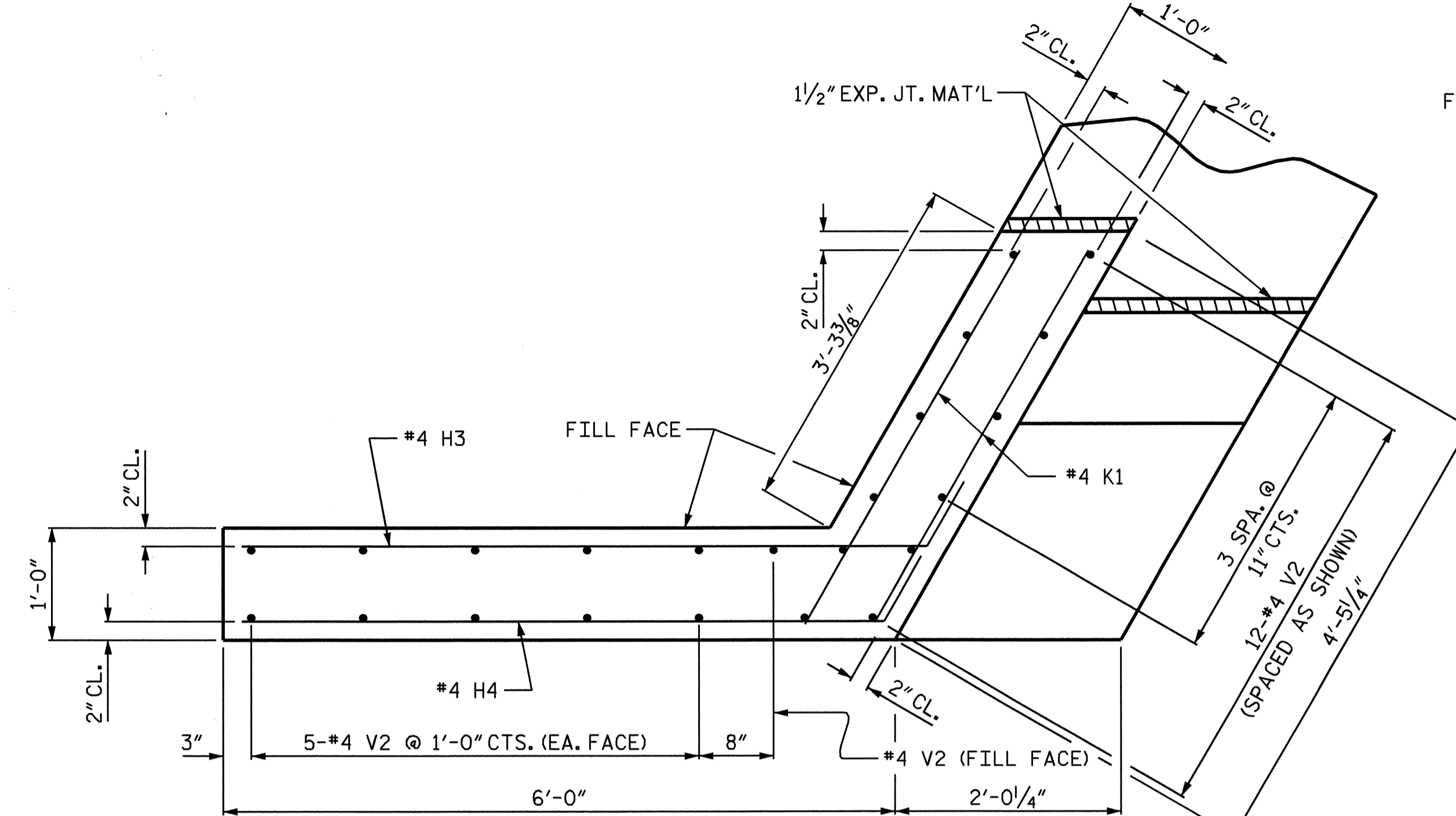
TOTAL SHEETS: 27



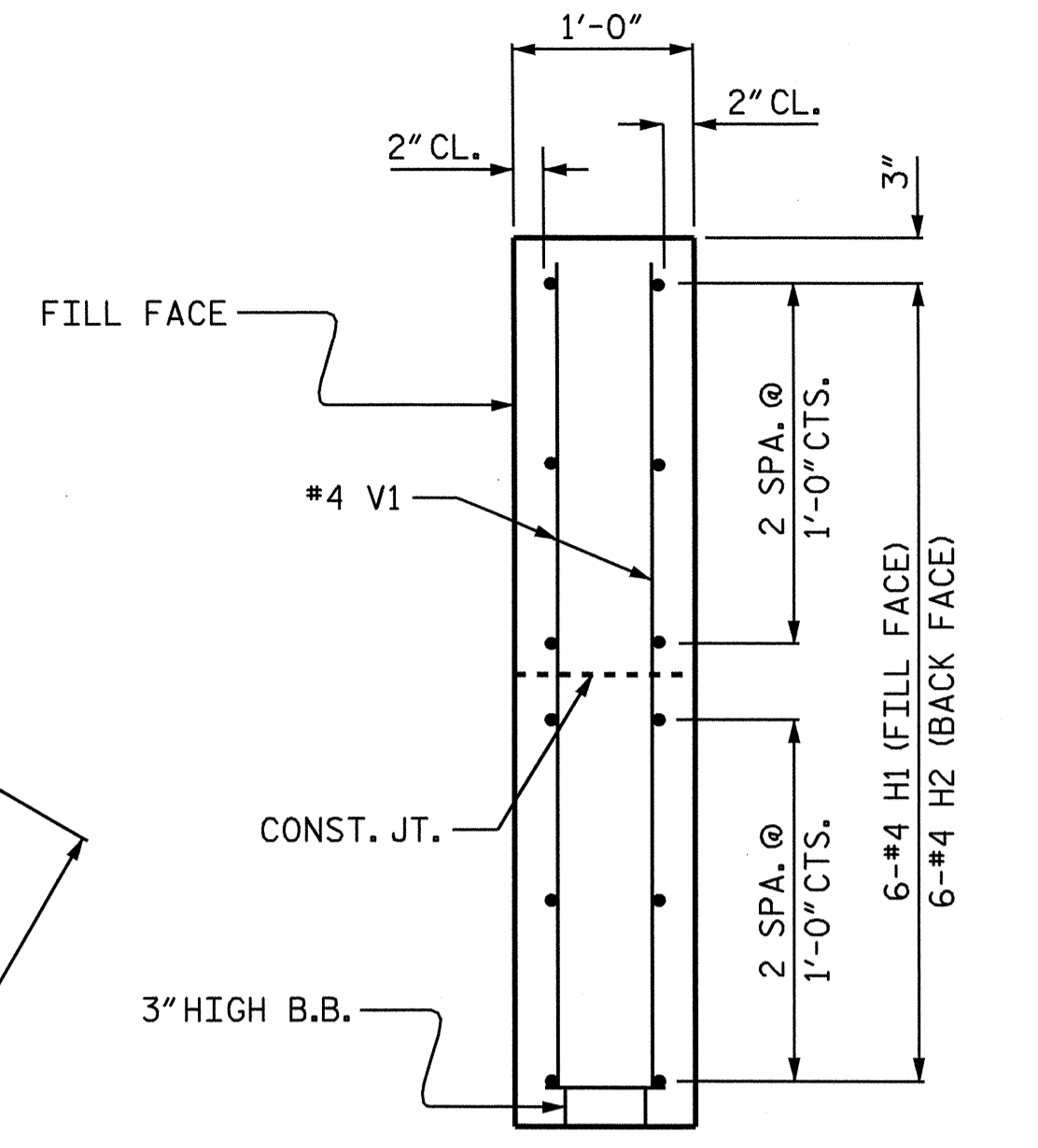
DRAWN BY: S.B. WILLIAMS DATE: 3-05  
 CHECKED BY: M. BRITT, TB DATE: 8-07



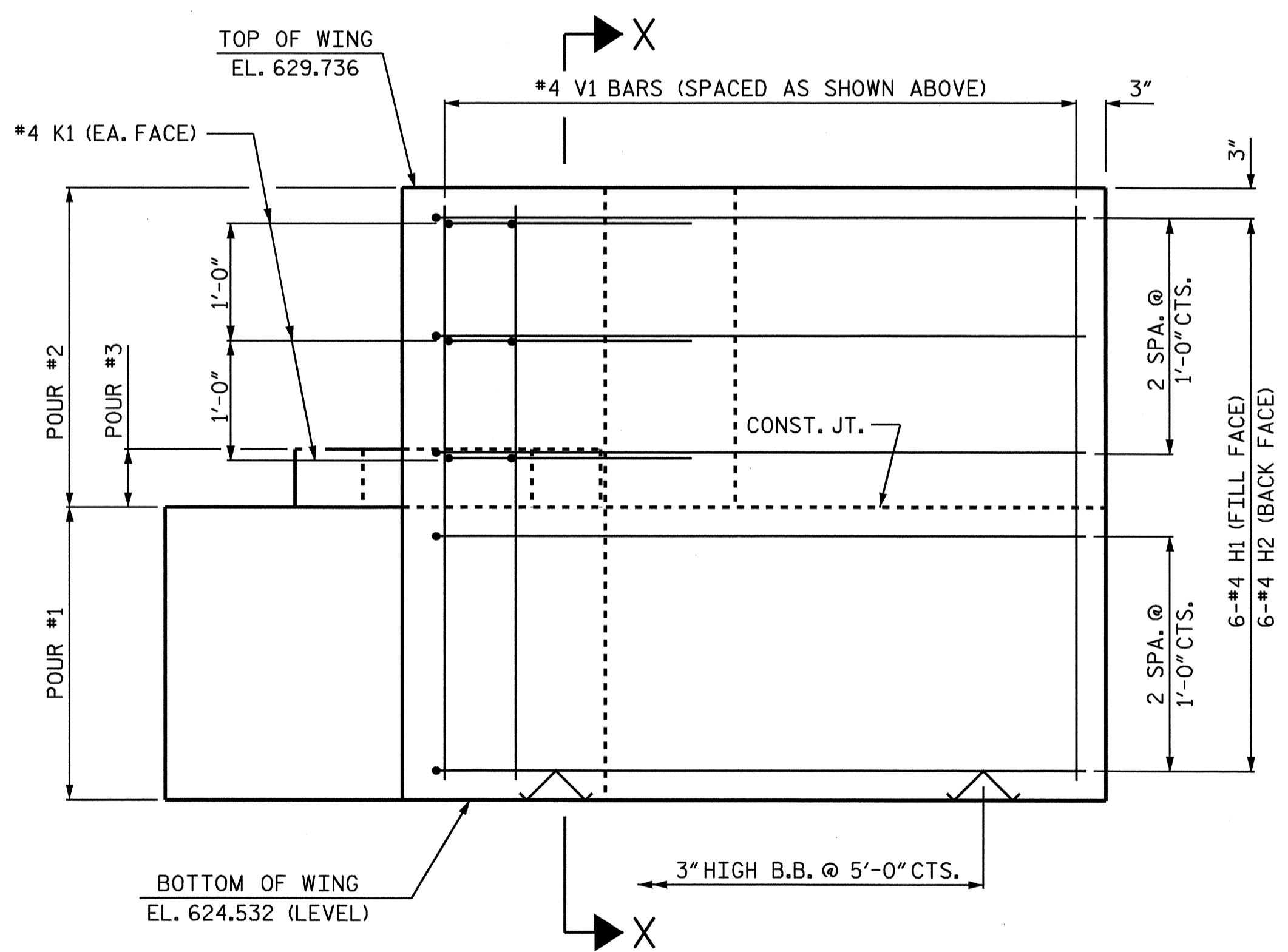
PLAN OF WING (W1)



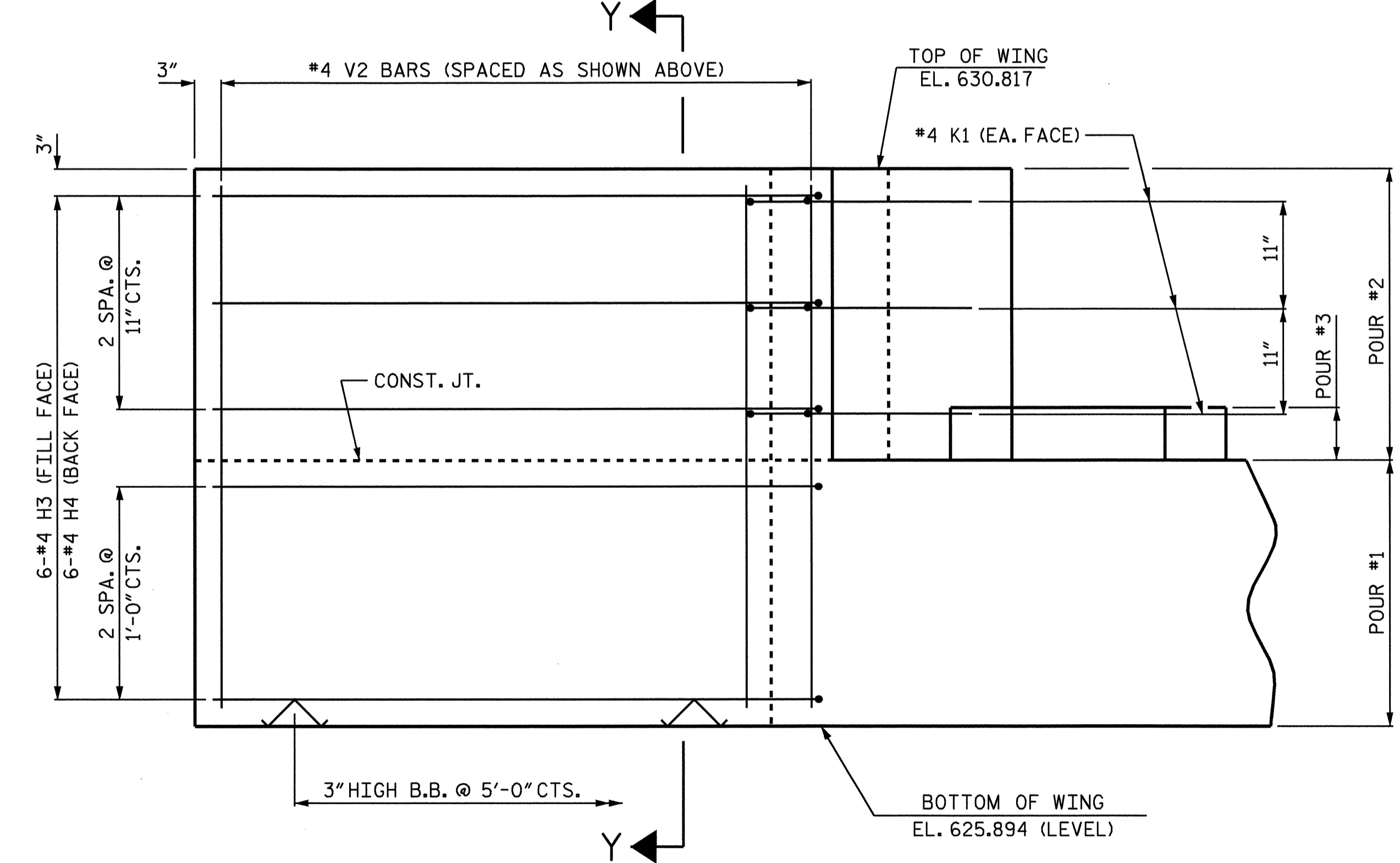
PLAN OF WING (W2)



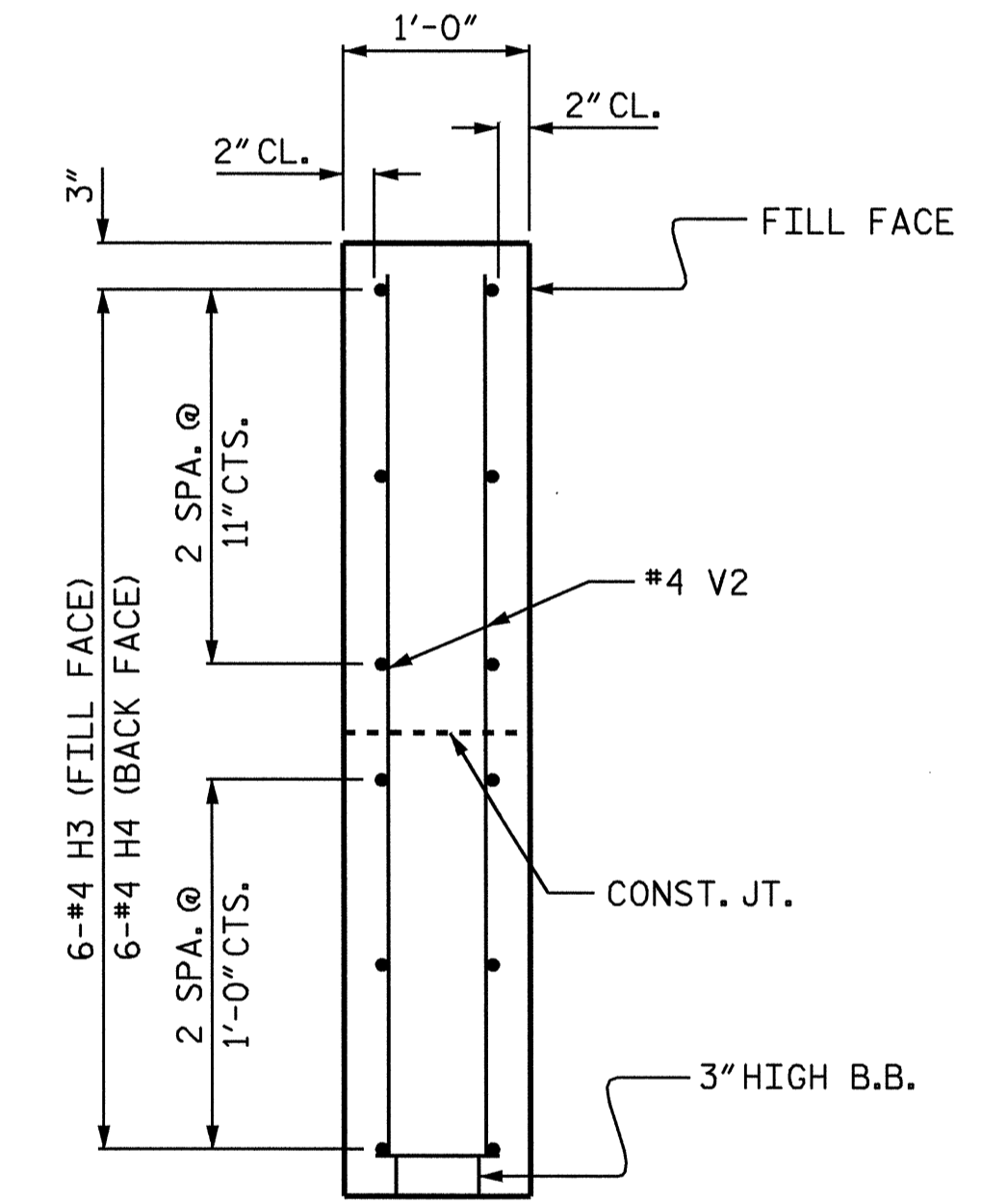
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION Y-Y

PROJECT NO. B-3852  
 GUILFORD COUNTY  
 STATION: 18+72.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT No. 2

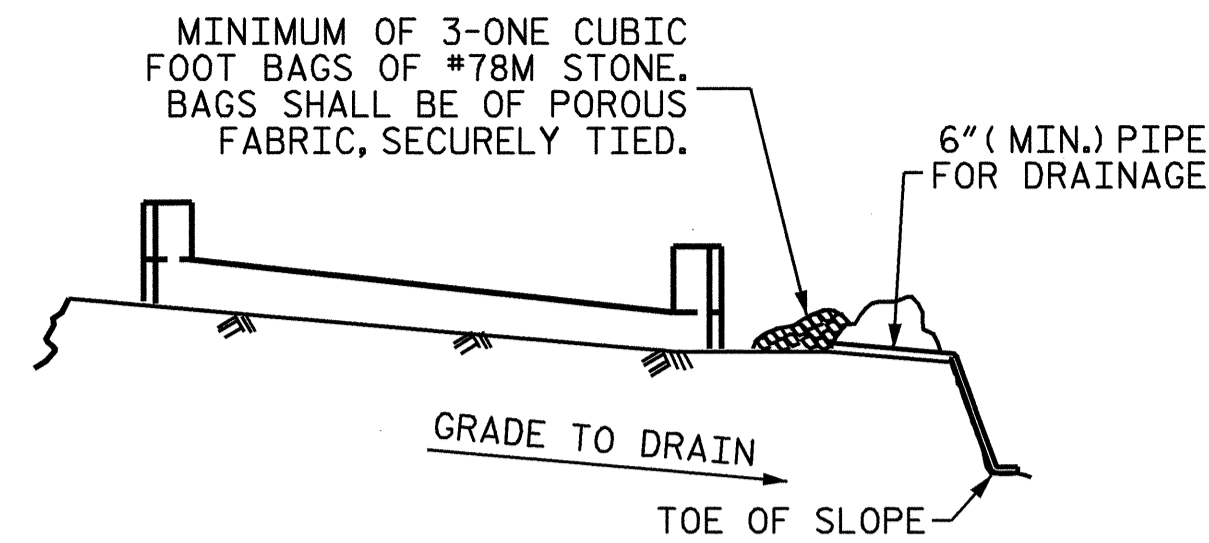


DRAWN BY: S.B. WILLIAMS DATE: 3-05  
 CHECKED BY: M. BRITT, IB DATE: 8-07

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REVISIONS						SHEET NO. S-23
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 27
2			4			



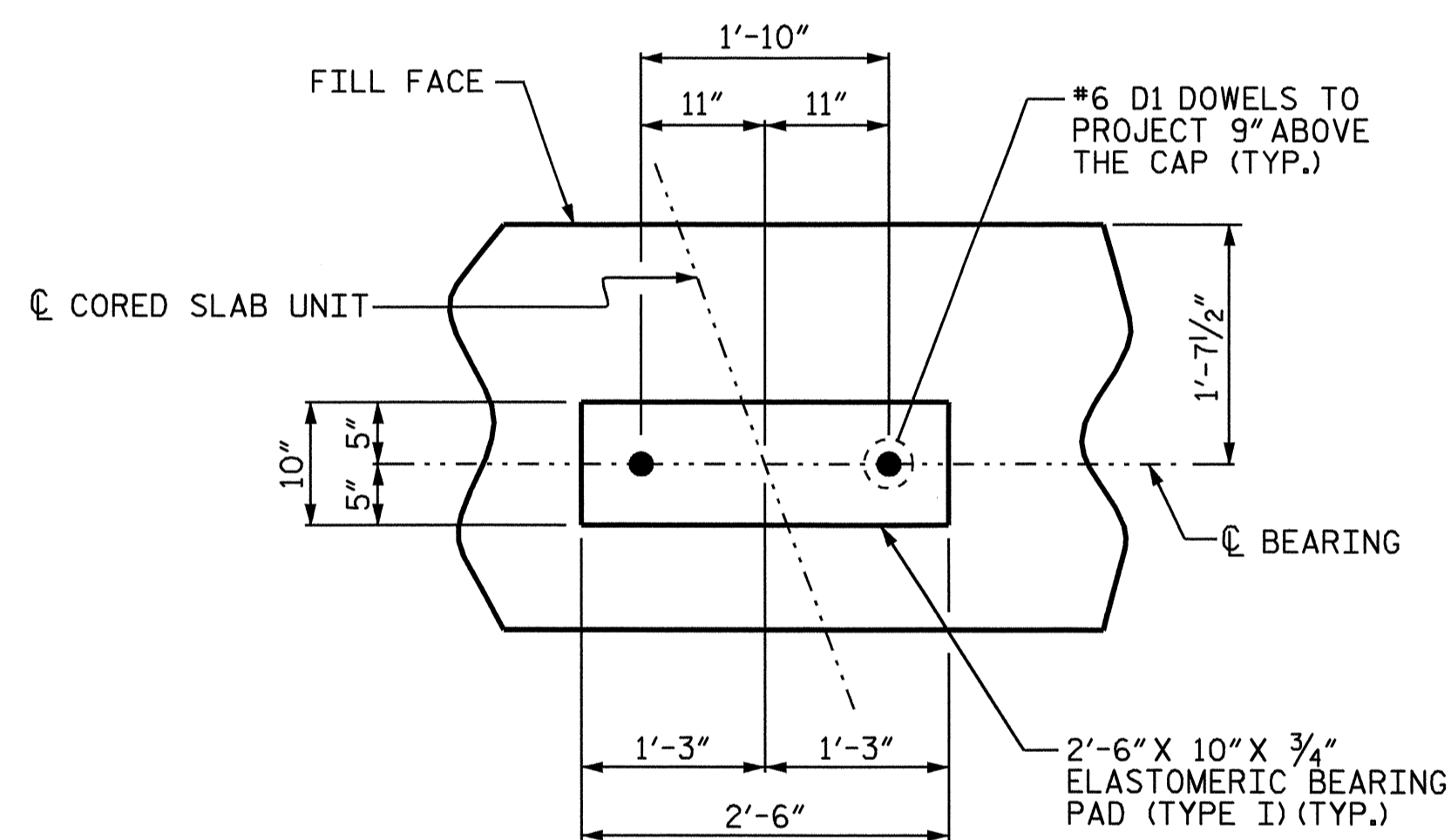


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

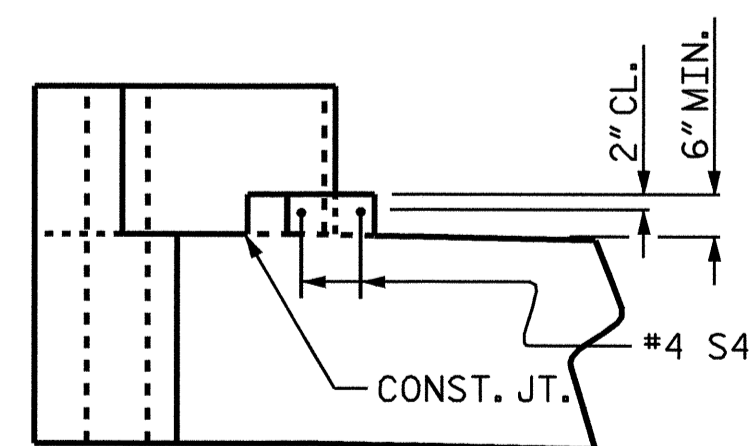
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

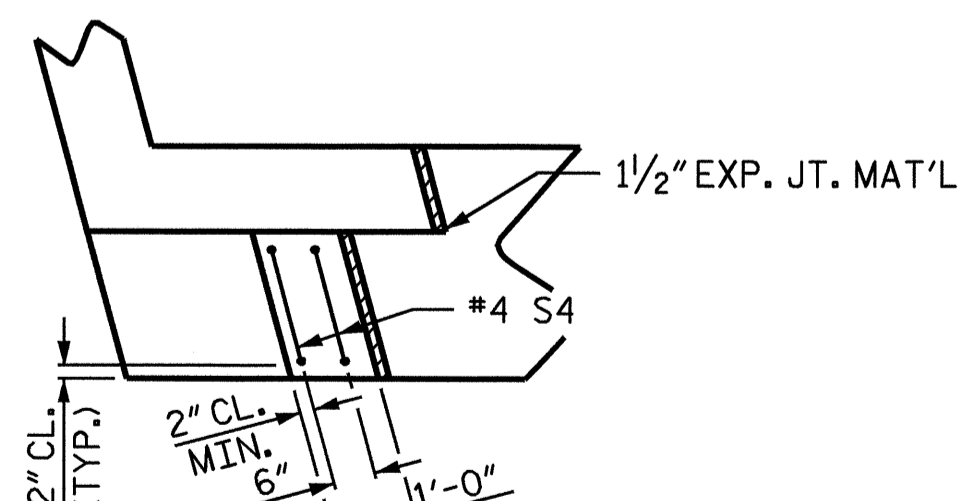
### TEMPORARY DRAINAGE AT END BENT No. 2



DETAIL "A"



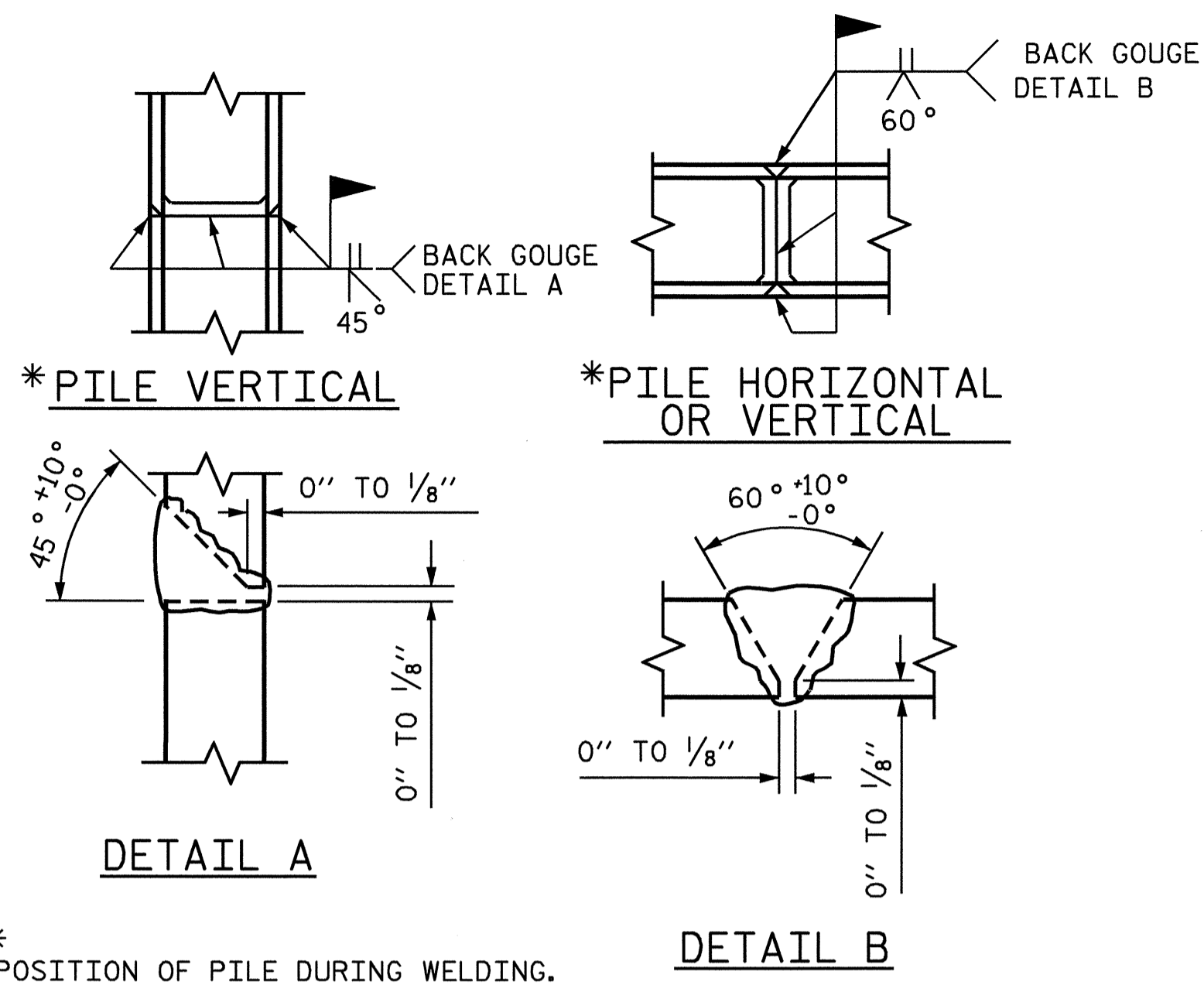
ELEVATION



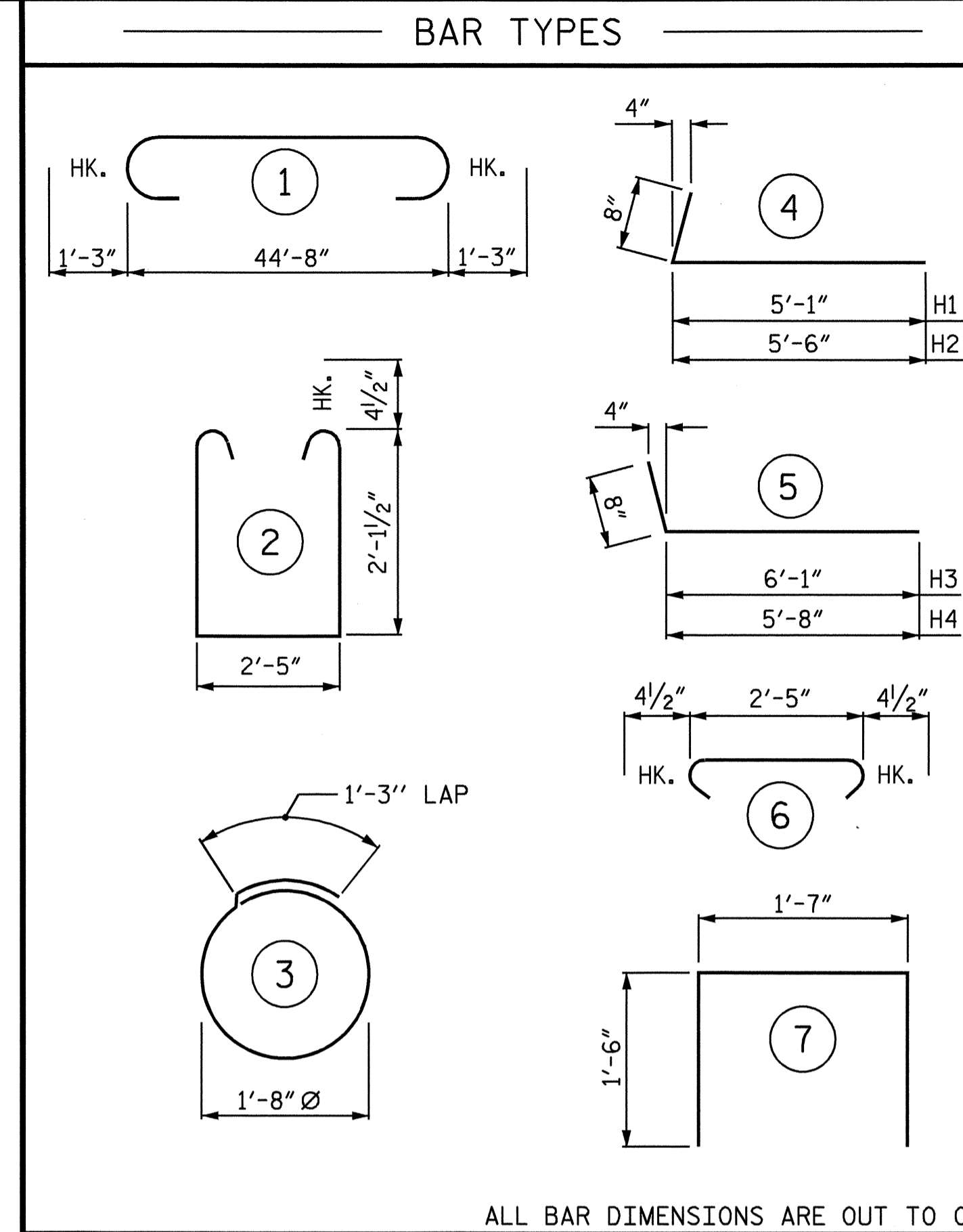
PLAN

### LATERAL GUIDE DETAIL

(LEFT LATERAL GUIDE SHOWN, RIGHT LATERAL GUIDE SIMILAR)



### PILE SPLICE DETAILS



### BILL OF MATERIAL

#### END BENT No. 2

BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	9	1	47'-2"	1283
B2	16	4	STR	23'-8"	253
B3	11	4	STR	2'-5"	18
D1	22	6	STR	1'-6"	50
H1	6	4	4	5'-9"	23
H2	6	4	4	6'-2"	25
H3	6	4	5	6'-9"	27
H4	6	4	5	6'-4"	25
K1	12	4	STR	3'-11"	31
S1	44	4	2	7'-5"	218
S2	44	4	6	3'-2"	93
S3	14	4	3	6'-6"	61
S4	4	4	7	4'-7"	12
V1	22	4	STR	4'-9"	70
V2	23	4	STR	4'-6"	69

REINFORCING STEEL 2,258 LBS.

#### CLASS A CONCRETE BREAKDOWN

POUR #1	CAP & LOWER WINGS	12.5 C.Y.
POUR #2	UPPER WINGS	1.7 C.Y.
POUR #3	LATERAL GUIDES	0.1 C.Y.
TOTAL CLASS A CONCRETE		14.3 C.Y.

HP 12 x 53 STEEL PILES  
No. = 7 LIN. FT. = 70

STEEL PILE POINTS No. = 7

### NOTES:

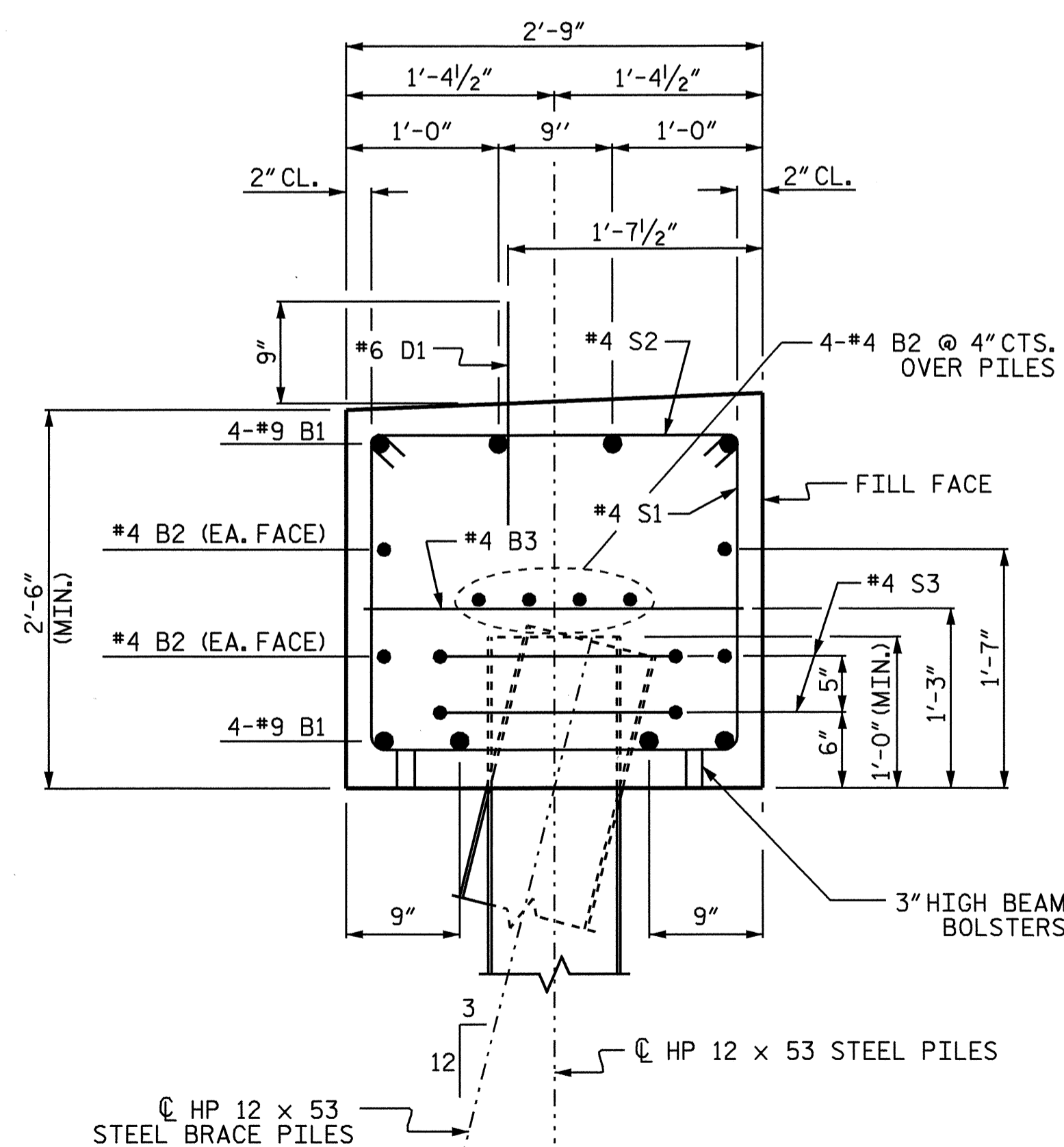
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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

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

THE TOP SURFACE OF THE END BENT CAP IS SLOPED LONGITUDINALLY ALONG CENTER LINE OF THE CORED SLAB UNIT TO MATCH GRADE.

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



### SECTION A-A



PROJECT NO. B-3852  
GUILFORD COUNTY  
STATION: 18+72.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
END BENT No. 2

#### REVISIONS

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

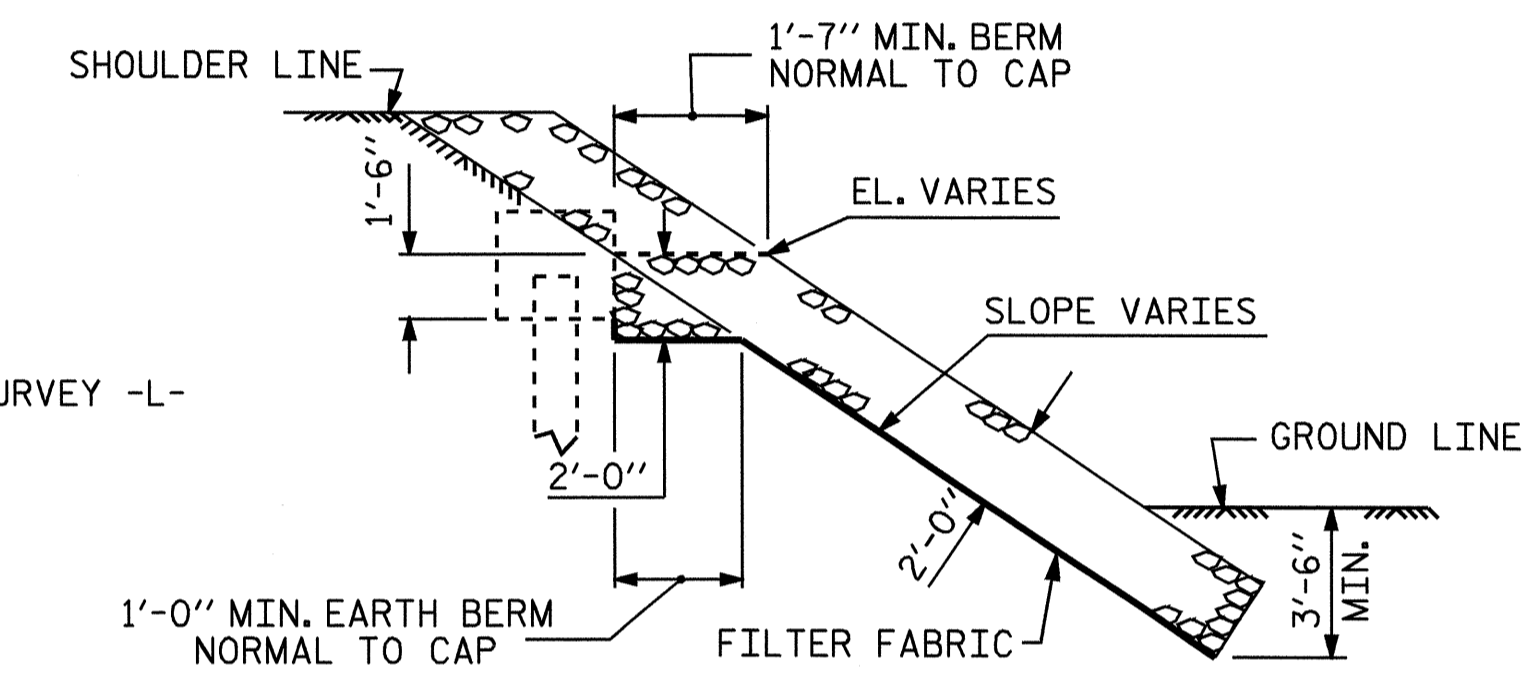
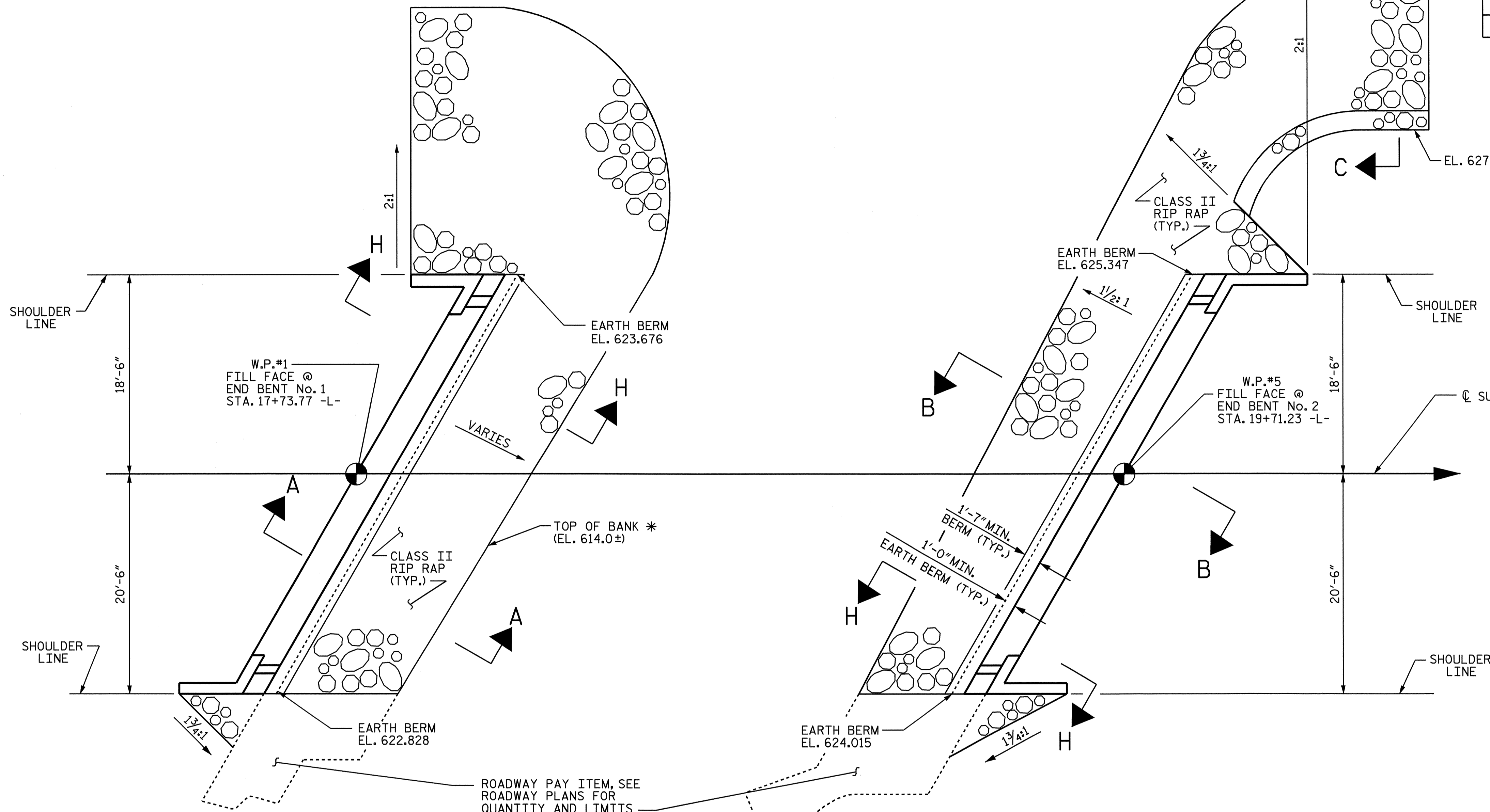
SHEET NO.  
S-24

TOTAL SHEETS  
27

DRAWN BY: S.B. WILLIAMS DATE: 3-05  
CHECKED BY: M. BRITT, TB DATE: 8-07

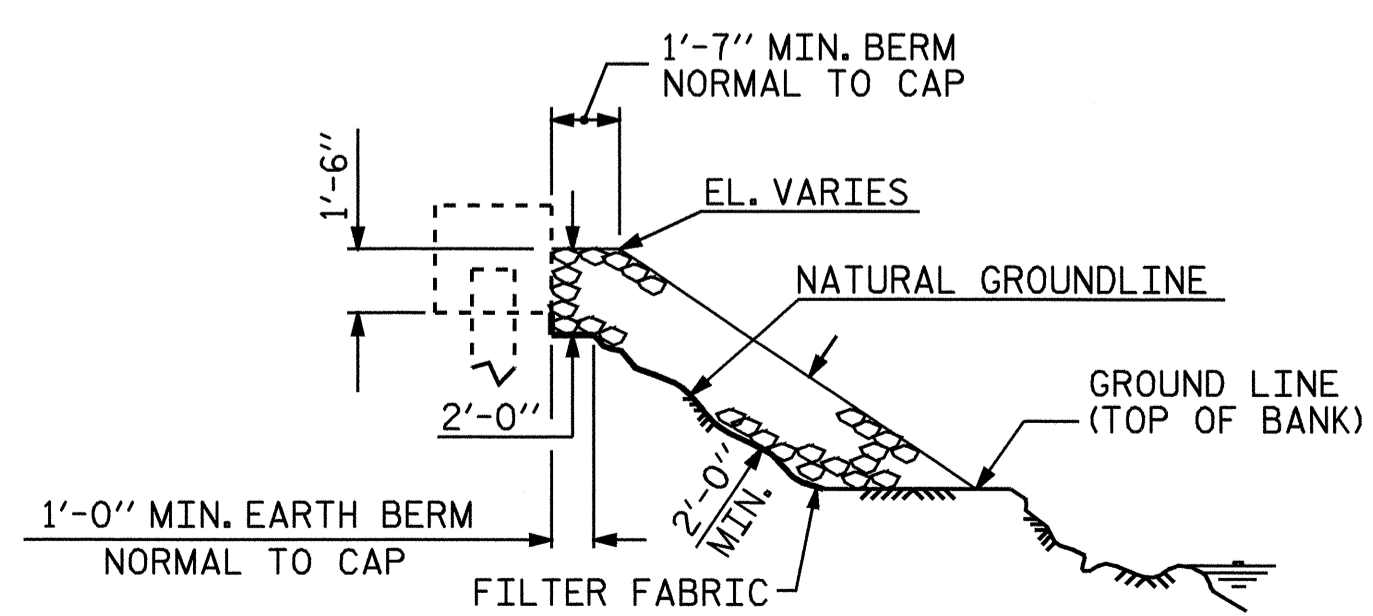
\* PLACE CLASS II RIP RAP ON EXISTING SLOPE AT END BENT No. 1 TO TOP OF BANK. SEE SECTION A-A.

ESTIMATED QUANTITIES		
BRIDGE @ STA. 18+72.50 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	236	262
END BENT 2	153	170

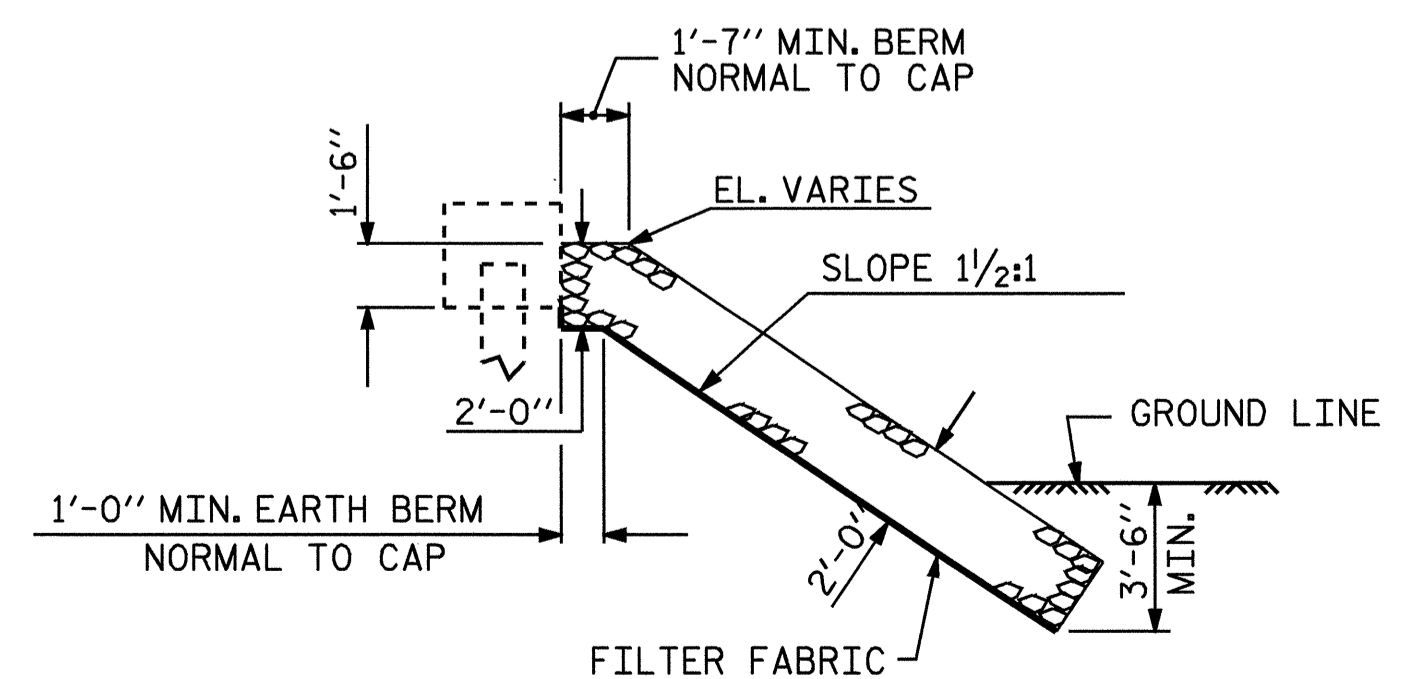


PLAN OF RIP RAP AT END BENT No. 1

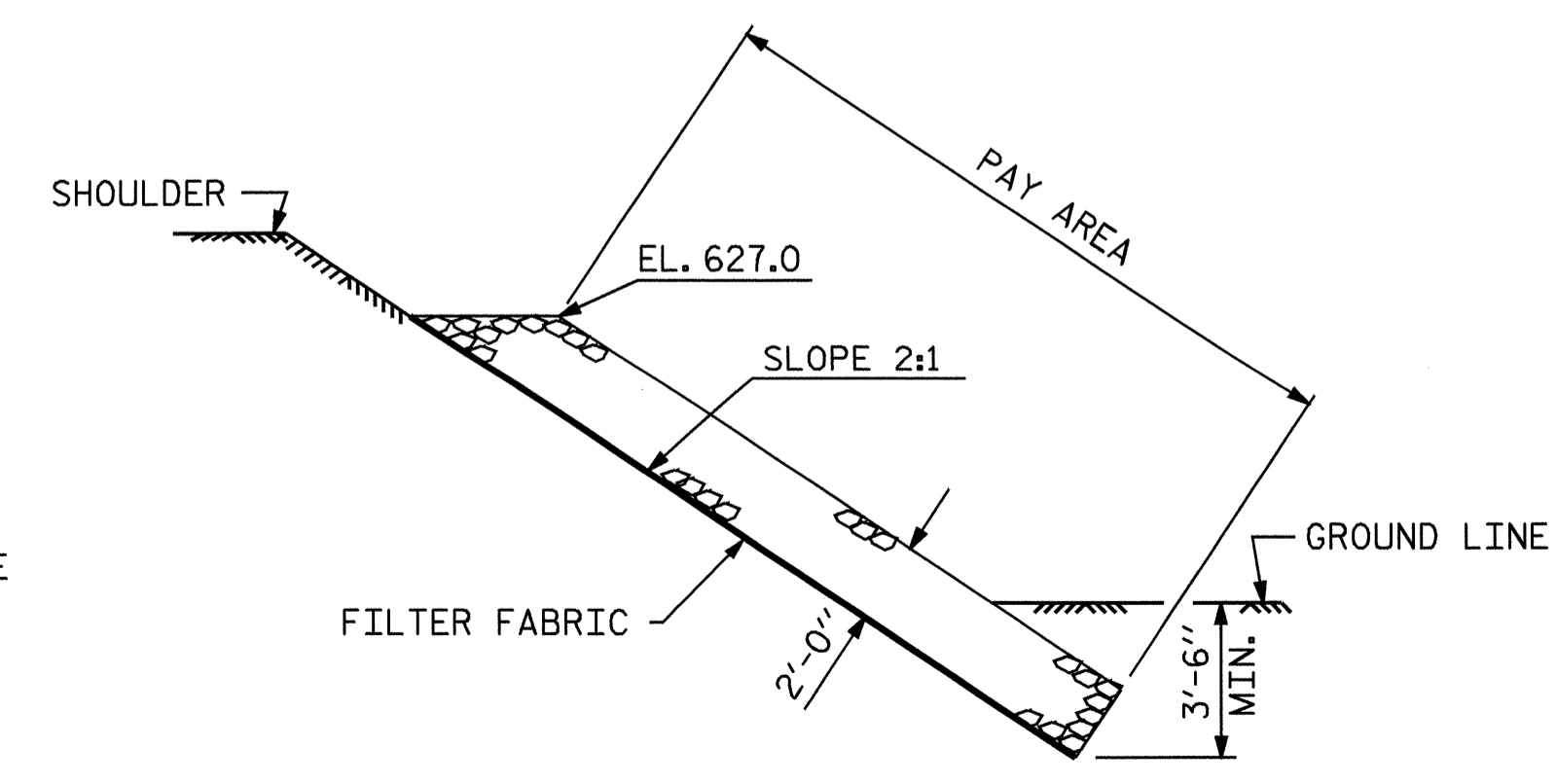
PLAN OF RIP RAP AT END BENT No. 2



SECTION A-A



SECTION B-B



SECTION C-C



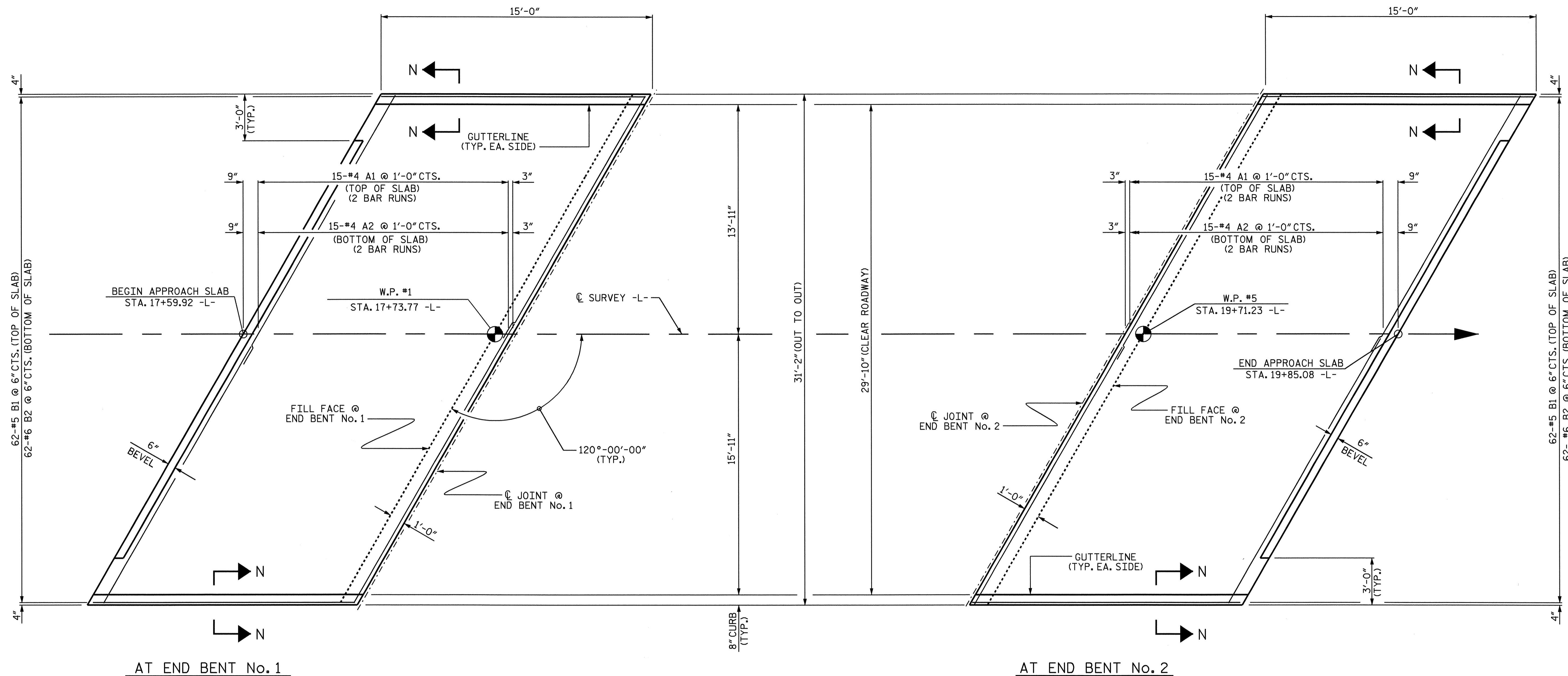
PROJECT NO. B-3852  
GUILFORD COUNTY  
 STATION: 18+72.50 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD = RIP RAP DETAILS =					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-25
					TOTALS 27

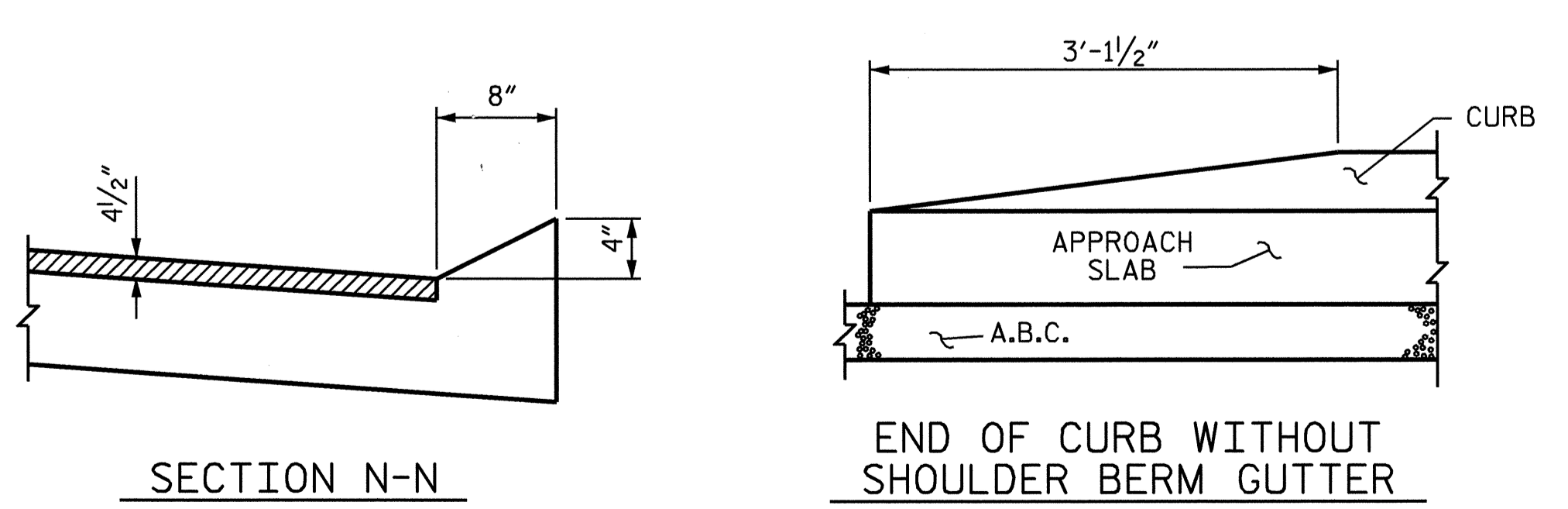
ASSEMBLED BY : N. PIERCE	DATE : 7/05
CHECKED BY : T.J. BEACH	DATE : 8/05
DRAWN BY : FCJ 2/88	REV. 7/17/98 REK/RWW
CHECKED BY : ARB 8/88	REV. 8/16/99 RWW/LES
	REV. 10/17/00 RWW/LES

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 tbeach

STD. NO. RR2



PLAN OF APPROACH SLAB



CURB DETAILS

PROJECT NO. B-3852  
GUILFORD COUNTY  
 STATION: 18+72.50 -L-

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



DRAWN BY: S.B. WILLIAMS DATE: 10-06  
 CHECKED BY: A. ROYAL DATE: 3-25-07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			27

**NOTES**

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

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

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

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

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

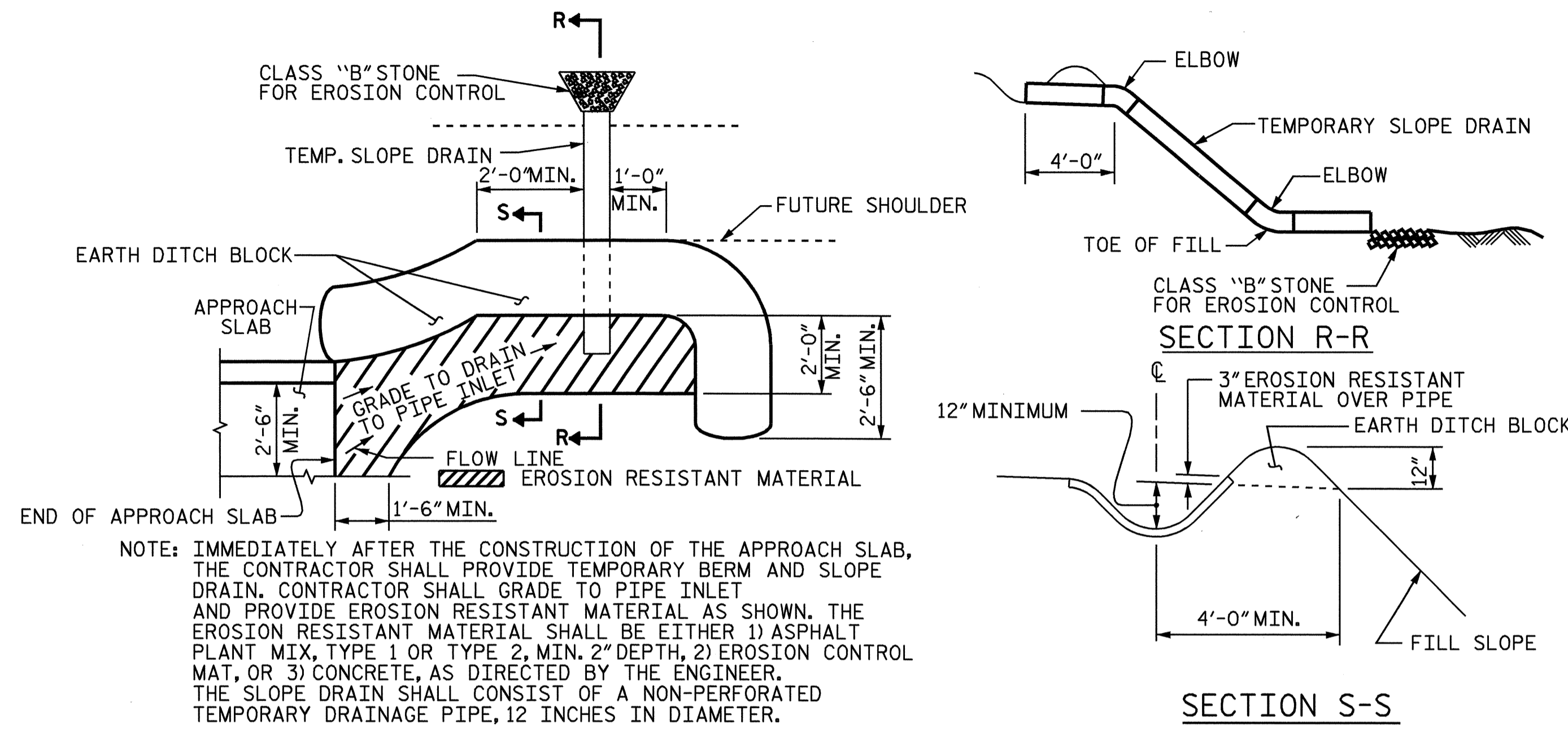
FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE CORED SLAB UNIT" SHEETS.

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

APPROACH SLAB GROOVING IS NOT REQUIRED.

**BILL OF MATERIAL**

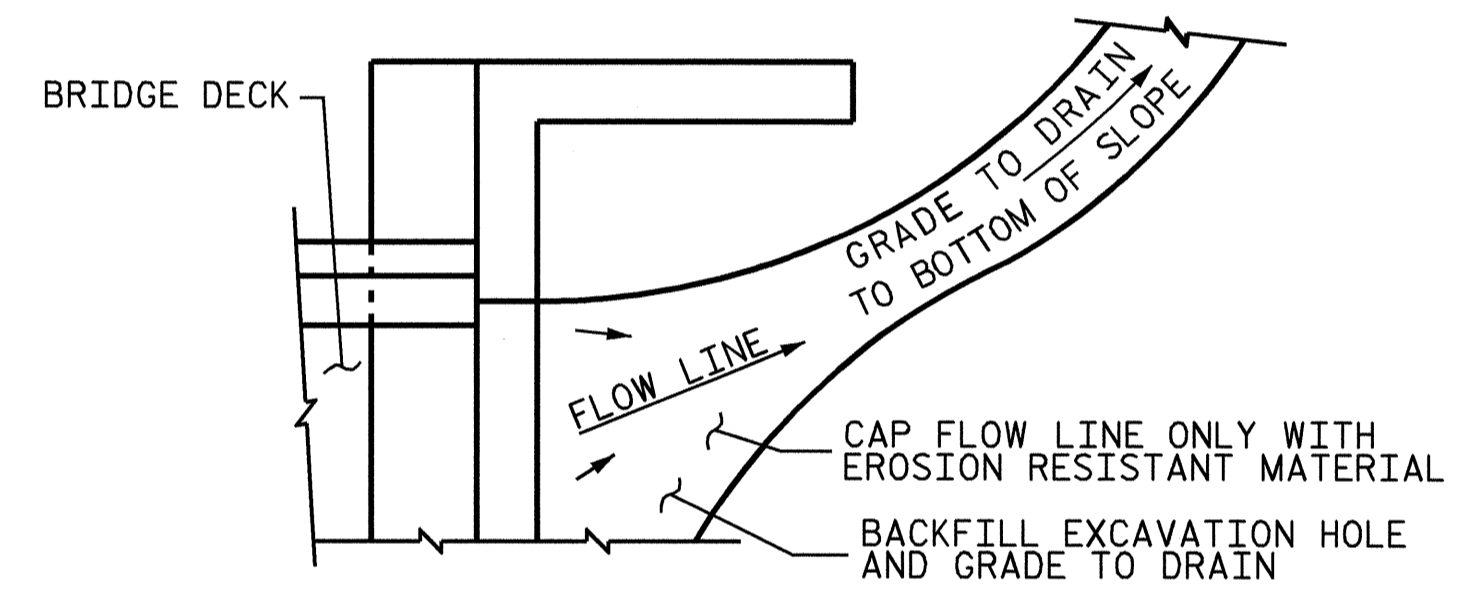
APPROACH SLAB AT EB #1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	30	#4	STR	18'-10"	377	
A2	30	#4	STR	18'-9"	376	
*B1	62	#5	STR	14'-1"	911	
B2	62	#6	STR	14'-7"	1358	
REINFORCING STEEL					LBS.	1734
*EPOXY COATED REINFORCING STEEL					LBS.	1288
CLASS AA CONCRETE					C. Y.	19.6
APPROACH SLAB AT EB #2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	30	#4	STR	18'-10"	377	
A2	30	#4	STR	18'-9"	376	
*B1	62	#5	STR	14'-1"	911	
B2	62	#6	STR	14'-7"	1358	
REINFORCING STEEL					LBS.	1734
*EPOXY COATED REINFORCING STEEL					LBS.	1288
CLASS AA CONCRETE					C. Y.	19.6



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

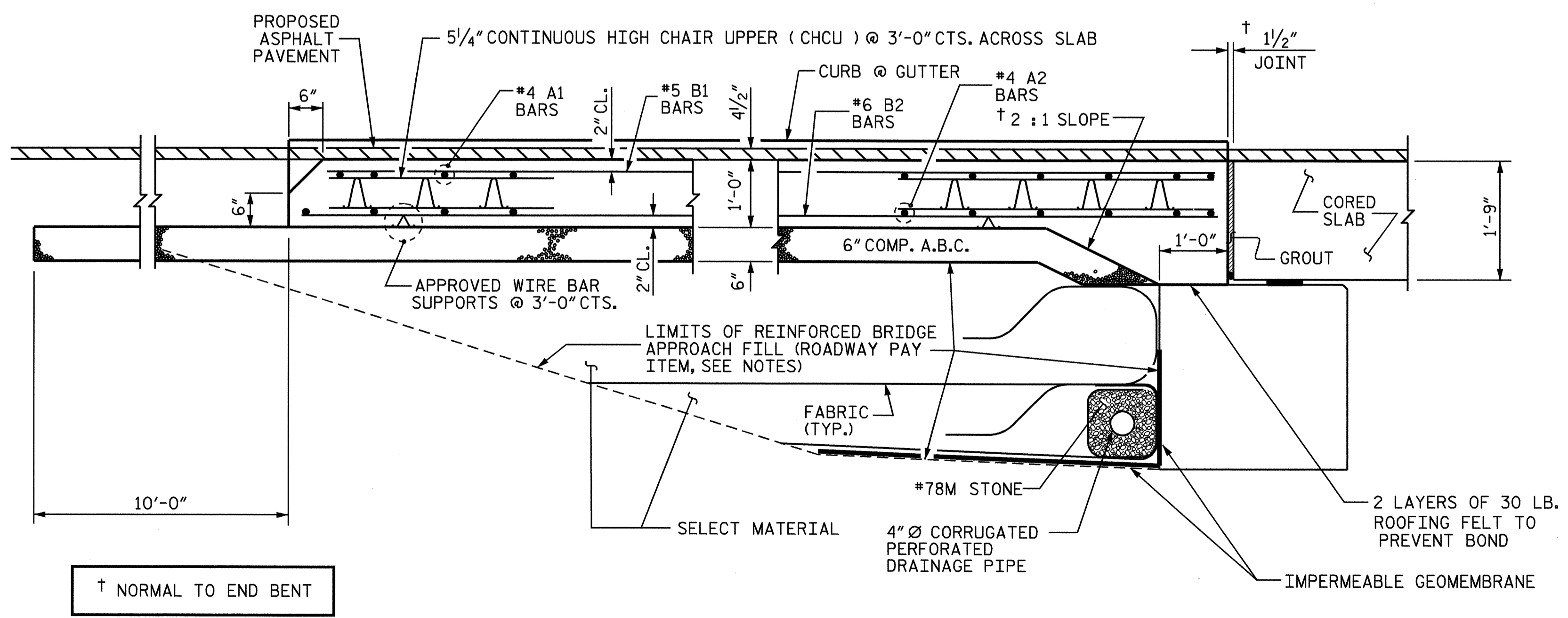
**TEMPORARY BERM AND SLOPE DRAIN DETAILS**

(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**



**SECTION THRU SLAB**

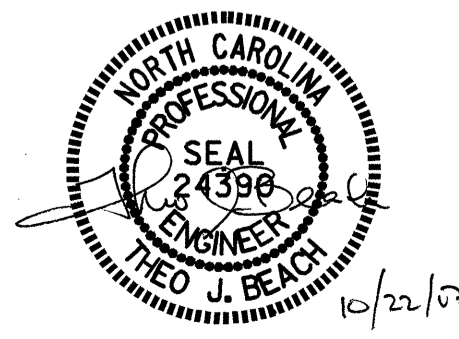
ASSEMBLED BY : S. B. WILLIAMS DATE : 10-06  
 CHECKED BY : A. ROYAL DATE : 3-25-07  
 DRAWN BY : FCJ 6/87 REV. 7/10/01 LES/RDR  
 CHECKED BY : EGA 6/87 REV. 5/7/03R RWW/JTE  
 REV. 5/1/06 REV. 5/1/06 TLA/GM

PROJECT NO. B-3852  
GUILFORD COUNTY  
 STATION: 18+72.50 -L-

SHEET 2 OF 2

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

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



## 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