

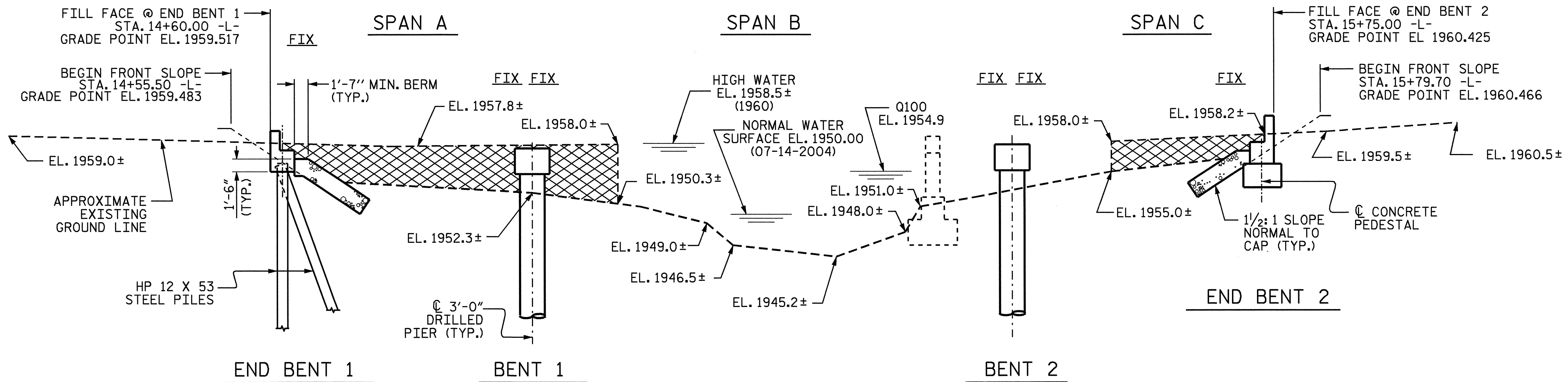


-4.1574% +0.7895%

PI STA. = 14+32.00 -L-  
EL. = 1959.296  
VC = 50.00

GRADE DATA

1960  
1950  
1940

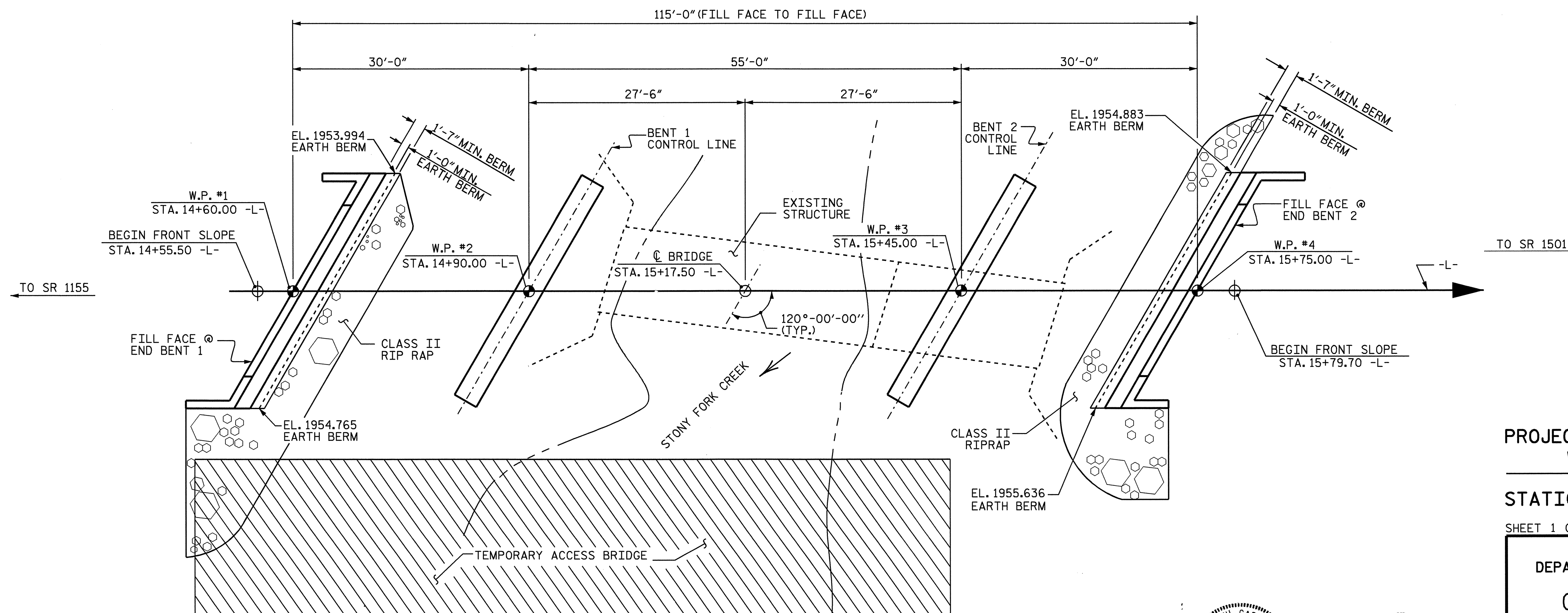
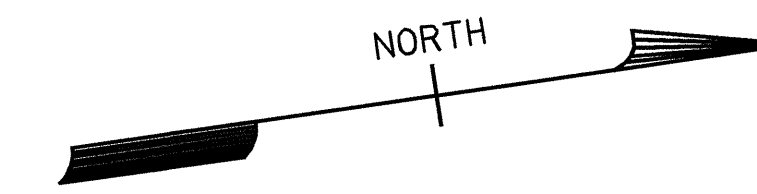


+0.7895% +13.0552%

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EL. = 1960.954  
VC = 130.00

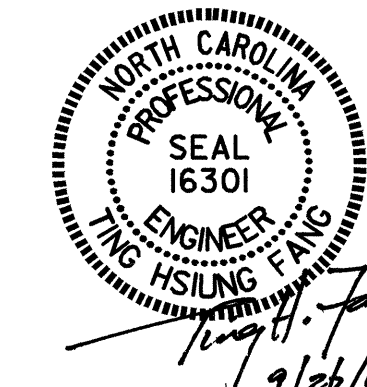
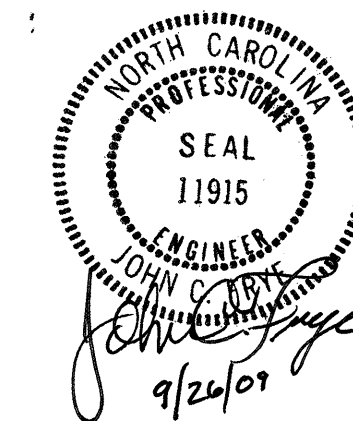
GRADE DATA

DENOTES UNCLASSIFIED  
STRUCTURE EXCAVATION



PLAN

FOUNDATIONS NOT SHOWN IN PLAN VIEW FOR CLARITY.



PROJECT NO. B-4322  
WILKES COUNTY  
STATION: 15+17.50 -L-

SHEET 1 OF 3 REPLACES BRIDGE NO. 71

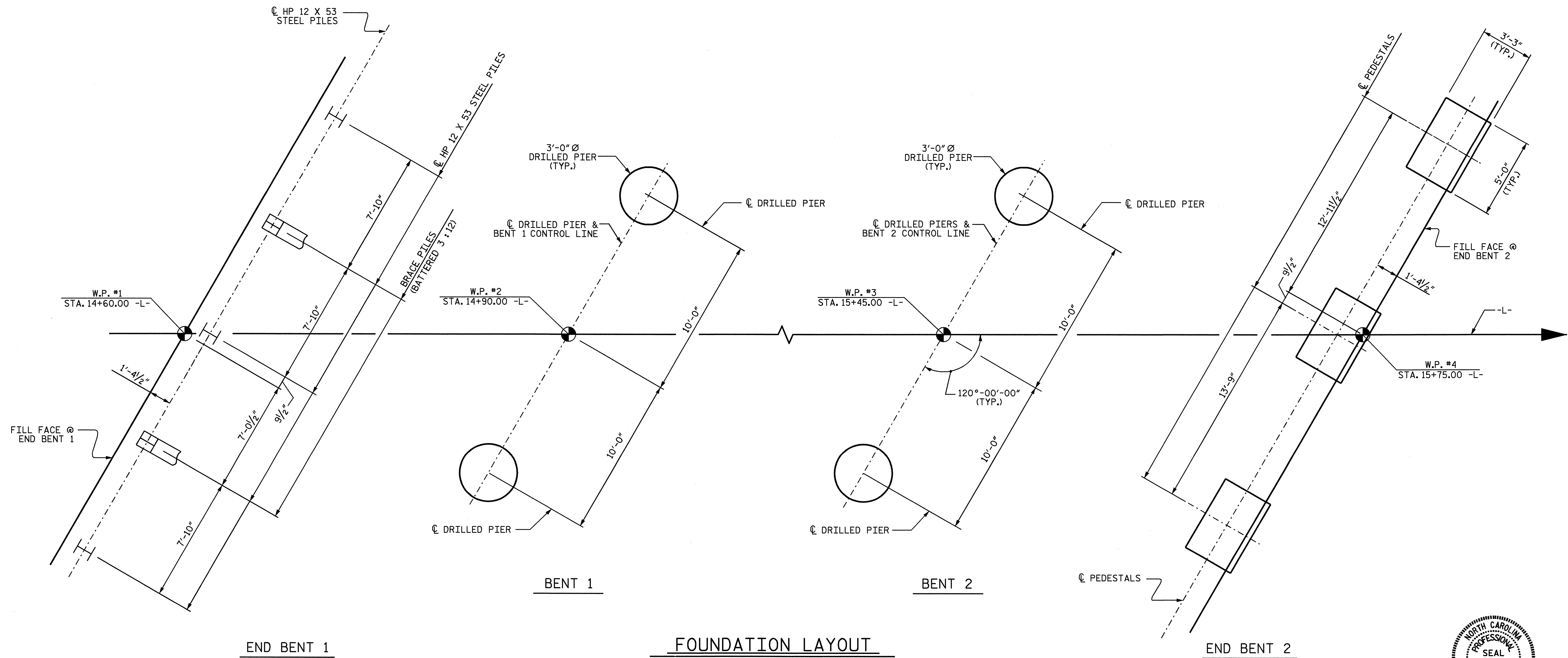
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

GENERAL DRAWING

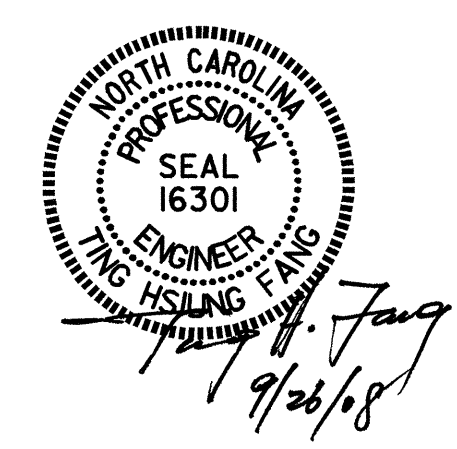
FOR BRIDGE OVER STONY FORK  
CREEK ON SR 1167 BETWEEN  
SR 1155 AND SR 1501

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

DRAWN BY: Q. T. NGUYEN DATE: 5-06  
CHECKED BY: T. H. FANG DATE: 5-08



**FOUNDATION LAYOUT**



**NOTES:**

DRIVE PILES AT END BENT 1 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 1 IS 50 TONS PER PILE.

DRILLED PIERS AT BENT 1 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 15 TSF. (LT), 25 TSF. (RT).

DRILLED PIERS AT BENTS 1 AND 2 ARE DESIGNED FOR AN APPLIED LOAD OF 155 TONS EACH AT THE TOP OF THE COLUMN.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT 1. IF REQUIRED, DO NOT EXTEND THE CASING BELOW ELEVATION 1953 FT. (LT), 1950 FT. (RT) WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING.

INSTALL DRILLED PIERS AT BENT 1 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 1945 FT. (LT), 1944 FT. (RT) AND SATISFY THE REQUIRED END BEARING CAPACITY.

THE SCOUR CRITICAL ELEVATION FOR BENT 1 IS ELEVATION 1950 FT. (LT), 1948 FT. (RT). SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

DRILLED PIERS AT BENT 2 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 10 TSF.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT 2. IF REQUIRED, DO NOT EXTEND THE CASING BELOW ELEVATION 1952 FT. (LT), 1949 FT. (RT) WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING.

INSTALL DRILLED PIERS AT BENT 2 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 1946 FT. (LT), 1943 FT. (RT) AND SATISFY THE REQUIRED END BEARING CAPACITY.

THE SCOUR CRITICAL ELEVATION FOR BENT 2 IS ELEVATION 1950.5 FT. (LT), 1947.5 FT. (RT). SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

FOR DRILLED PIERS, SEE DRILLED PIERS SPECIAL PROVISION.

SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS.

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 REQUIRED BEARING CAPACITY FOR PEDESTALS AT END BENT 2 IS 20 TSF. CHECK FIELD CONDITION FOR THE REQUIRED BEARING CAPACITY JUST BEFORE PLACING CONCRETE.

THE ALLOWABLE BEARING CAPACITY FOR PEDESTALS AT END BENT 2 IS 10 TSF.

CARRY PEDESTALS AT END BENT 2 AT LEAST 12" INTO ROCK WITH MINIMUM THICKNESS AS SHOWN ON THE PLANS.

DRAWN BY: HARISH SHAH DATE: 5-06  
 CHECKED BY: T. H. FANG DATE: 5-08

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 hshah

PROJECT NO. B-4322  
WILKES COUNTY  
 STATION: 15+17.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**

FOR BRIDGE OVER STONY FORK  
 CREEK ON SR 1167 BETWEEN  
 SR 1155 AND SR 1501

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

**TOTAL BILL OF MATERIAL**

	CONST. MAINT. & REMOVAL OF TEMP. ACCESS	REMOVAL OF EXISTING STRUCTURE	FOUNDATION EXCAVATION	3'-0" Ø DRILLED PIERS IN SOIL	3'-0" Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIERS	SID INSPECTION	CROSSHOLE SONIC LOGGING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	HP 12 X 53 STEEL PILES	VERTICAL 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	CU. YDS.	LIN. FT.	LIN. FT.	LIN. FT.	EA.	EA.	LUMP SUM	CU. YDS.	LBS.	LBS.	NO.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE														224.8				LUMP SUM	24	896.917
END BENT 1										13.0	1,949		5	75		45	50			
BENT 1				7.5	13	6.2				13.5	3,732	395								
BENT 2				9.5	12	9.1				13.5	3,772	413								
END BENT 2			18.2							18.9	2,267				41	45				
TOTAL	LUMP SUM	LUMP SUM	18.2	17.0	25	15.3	2	1	LUMP SUM	58.9	11,720	808	5	75	224.8	86	95	LUMP SUM	24	896.917

**NOTES:**

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING, EXCEPT THAT THE CORED SLABS HAVE BEEN DESIGNED FOR HS25.

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

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

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

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

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

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

IN AS MUCH 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+17.50 -L-".

THE EXISTING STRUCTURE CONSISTING OF 2 SPANS: 1 @ 36'-8", 1 @ 20'-0"; 11'-1" CLEAR ROADWAY WIDTH AND A TIMBER FLOOR ON STEEL I-BEAMS AND CHANNELS; SUBSTRUCTURE CONSISTING OF TIMBER CAPS ON TIMBER POSTS AND SILLS ON CONCRETE FOOTINGS AND LOCATED AT THE PROPOSED STRUCTURE SITE 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 STANDARD SPECIFICATIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 25 FT. EACH SIDE AT END BENT 1, 40 FT. EACH SIDE AT END BENT 2 OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE MEASURED AND PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION.

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.

FOR CONSTRUCTION MAINTENANCE & REMOVAL OF TEMPORARY ACCESS, SEE SPECIAL PROVISION.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

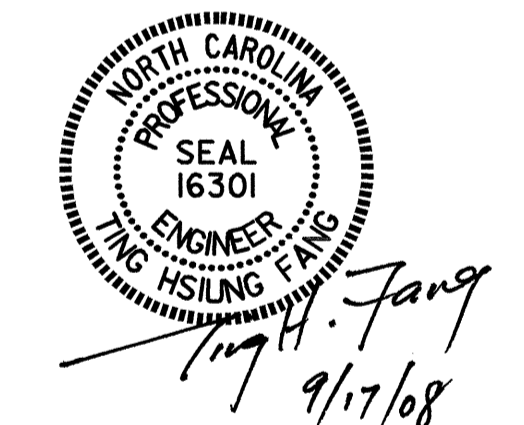
FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

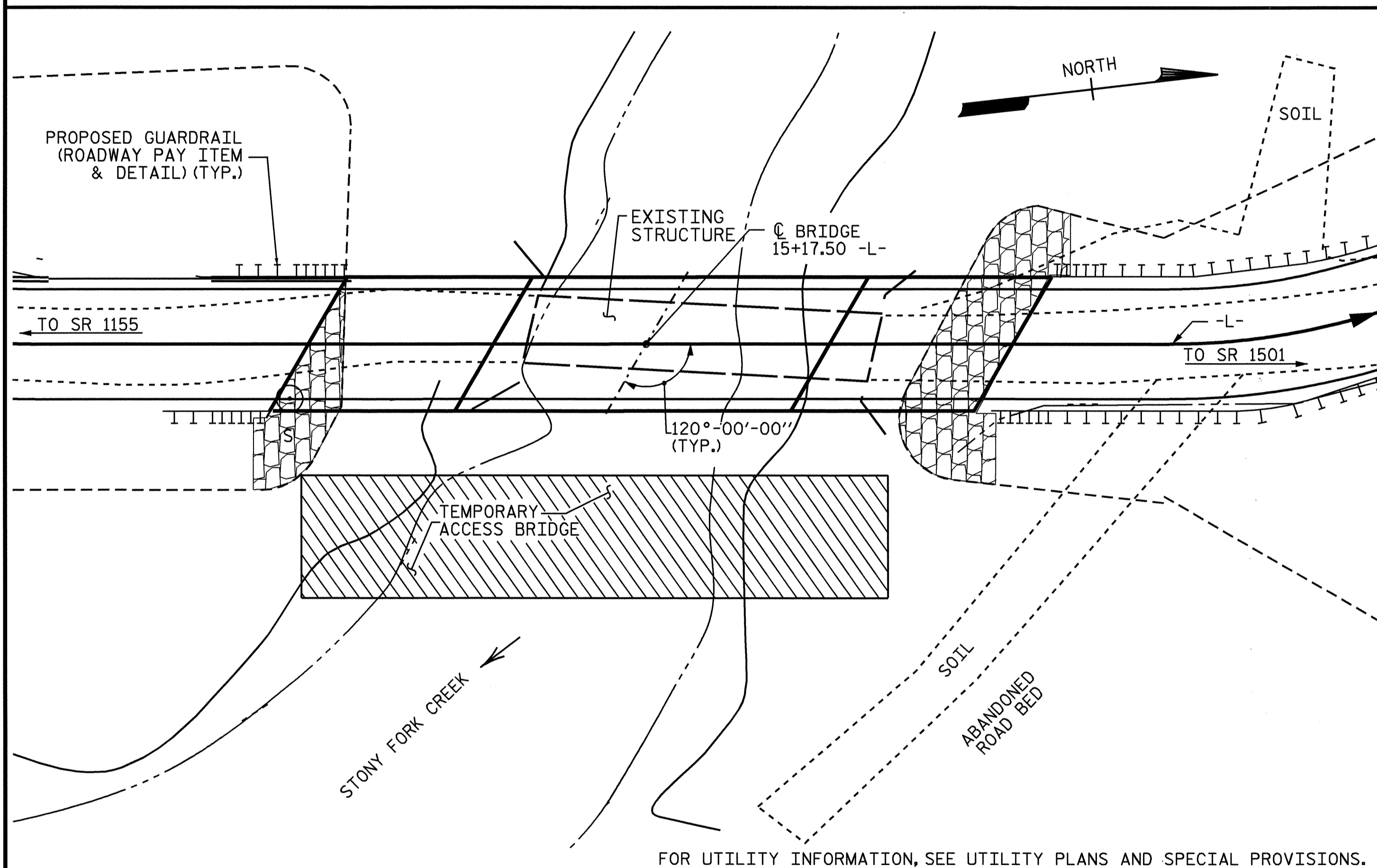
FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

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



BM #2: RAILROAD SPIKE SET IN 19" WHITE PINE, -L- STA. 15+67.03, 28.13' RT., EL. 1957.51



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

**LOCATION SKETCH**

**HYDRAULIC DATA**

DESIGN DISCHARGE ..... = 1500 c.f.s.  
 FREQUENCY OF DESIGN FLOOD ..... = 25 yr.  
 DESIGN HIGH WATER ELEVATION ..... = 1953.4  
 DRAINAGE AREA ..... = 5.8 sq. ml.  
 BASIC DISCHARGE (Q 100) ..... = 2200 c.f.s.  
 BASIC HIGH WATER ELEVATION ..... = 1954.9

**OVERTOPPING FLOOD DATA**

OVERTOPPING DISCHARGE ..... = 3400+ c.f.s.  
 FREQUENCY OF OVERTOPPING FLOOD ..... = 500+ yr.  
 OVERTOPPING FLOOD ELEVATION ..... = 1959.8

DRAWN BY : Q. T. NGUYEN DATE : 5-06  
 CHECKED BY : T. H. FANG DATE : 5-08

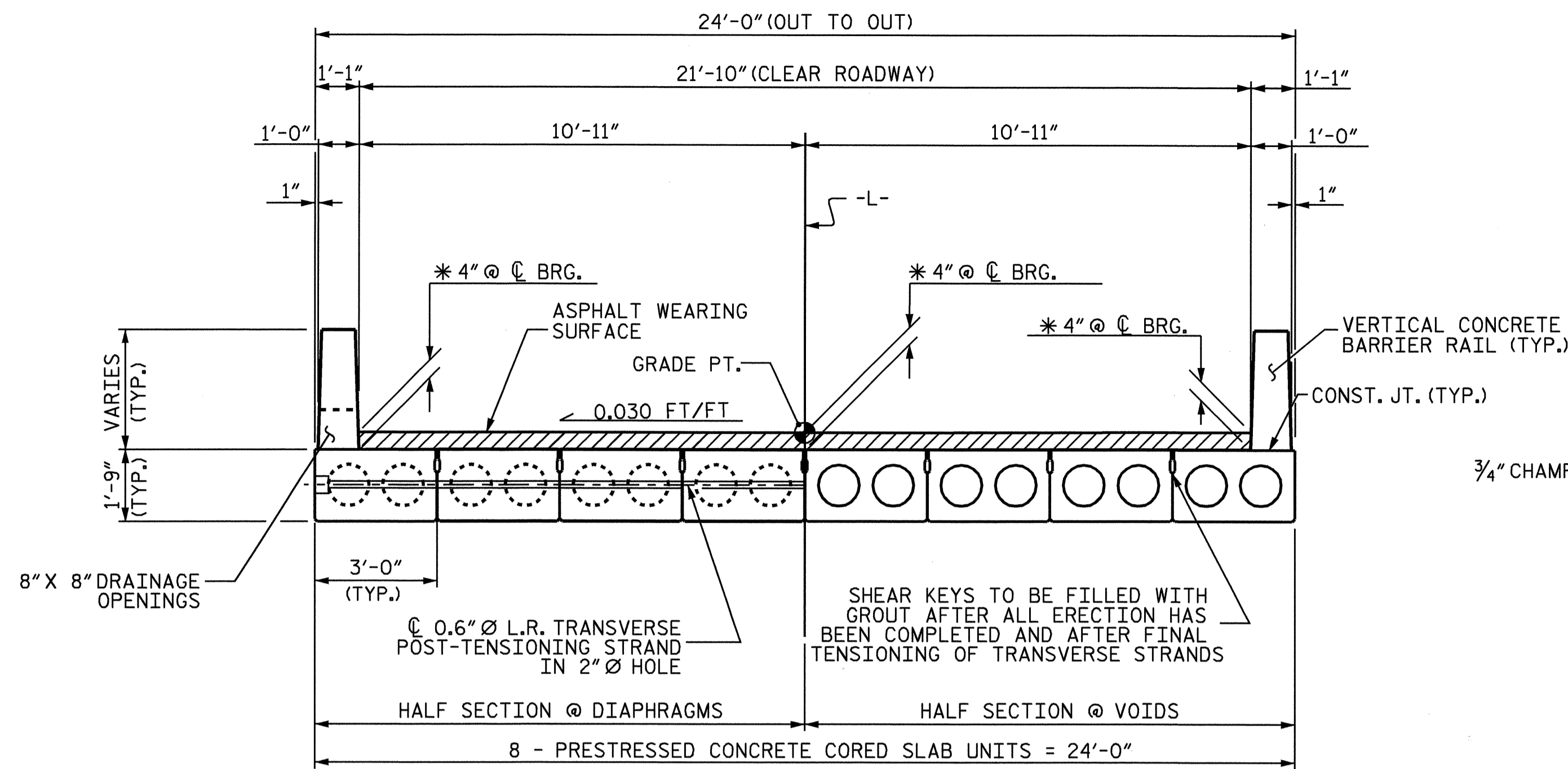
PROJECT NO. B-4322  
WILKES COUNTY  
 STATION: 15+17.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

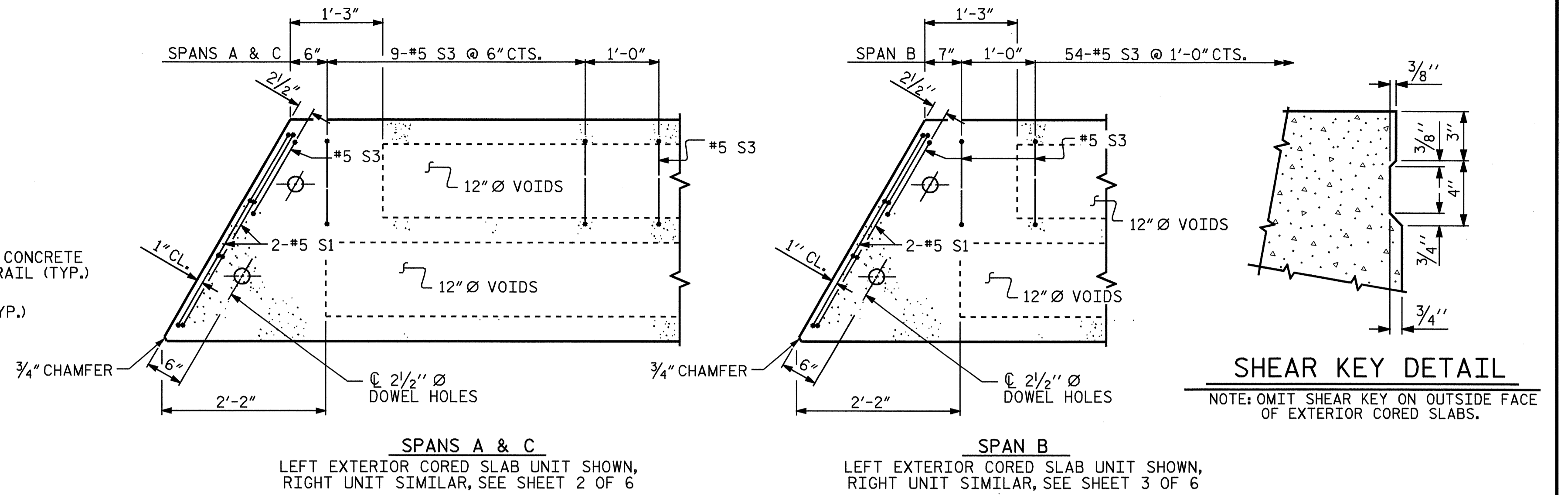
**GENERAL DRAWING**  
 FOR BRIDGE OVER STONY FORK  
 CREEK ON SR 1155 AND SR 1501

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



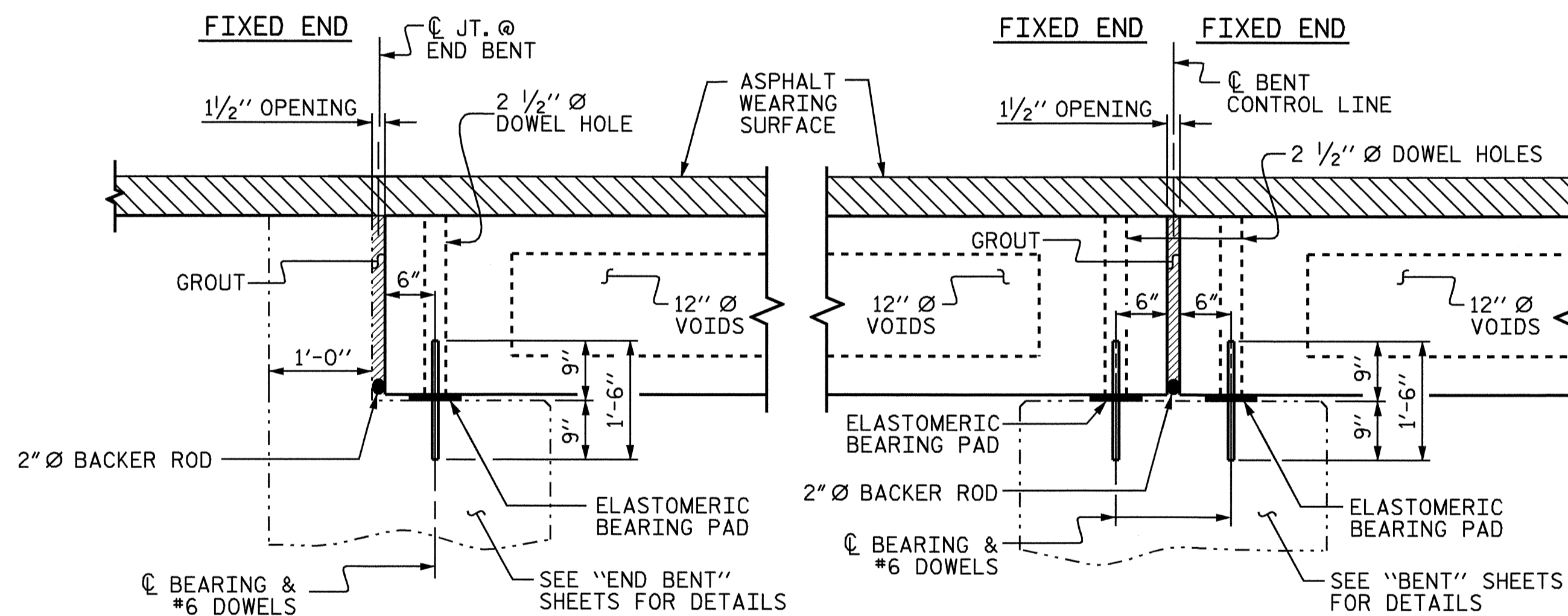
**TYPICAL SECTION**

\* SHOWING MAX. THICKNESS @ BOTH BEARINGS ON EACH SPAN; THICKNESS VARIES LONGITUDINALLY ON EACH SPAN.



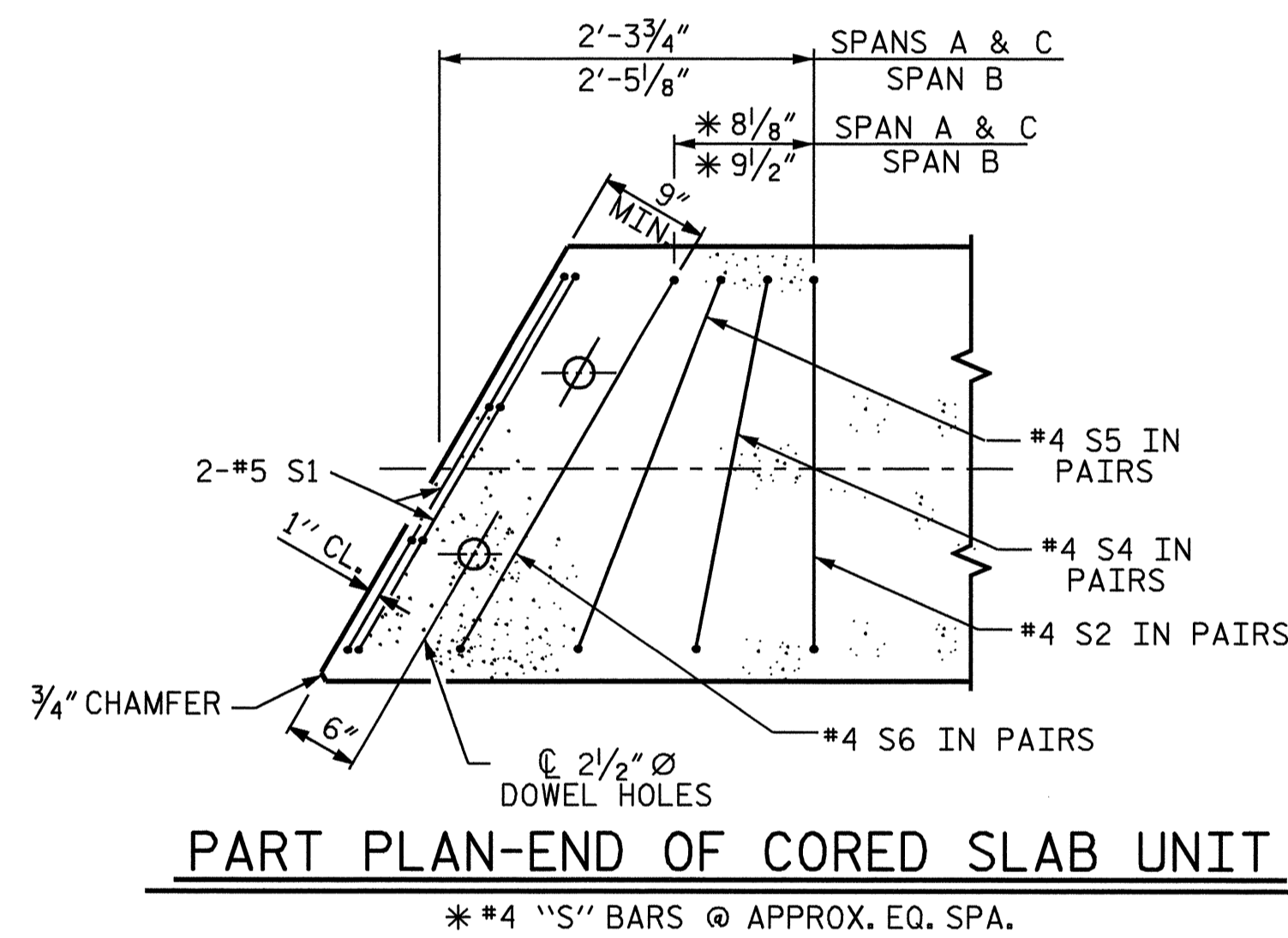
**PART PLAN-EXTERIOR SECTION**

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



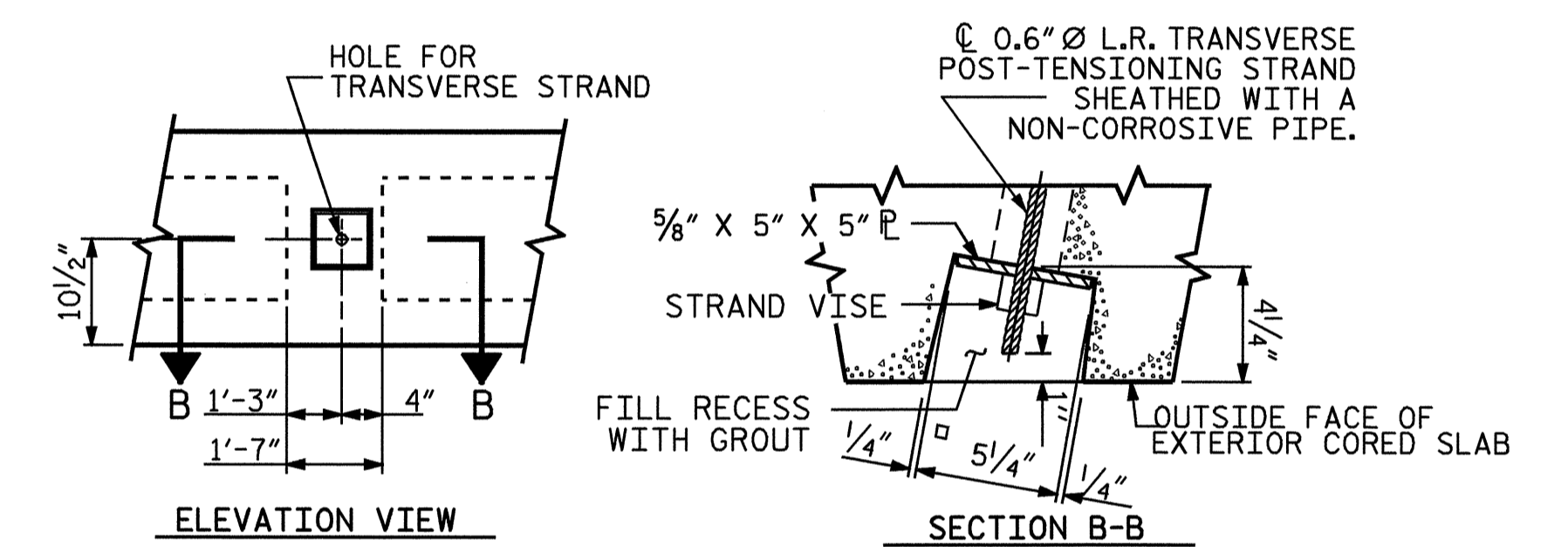
**SECTION AT END BENTS**

**SECTION AT BENTS 1 & 2**



**PART PLAN-END OF CORED SLAB UNIT**

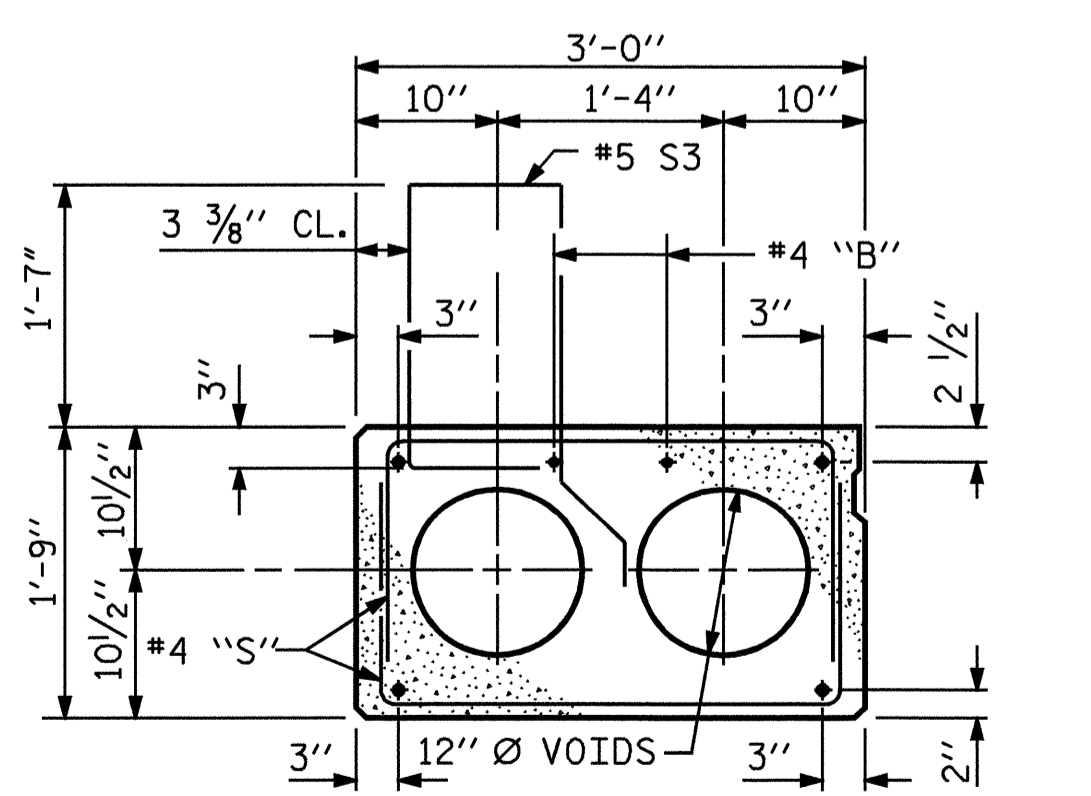
\* #4 "S" BARS @ APPROX. EQ. SPA.



**GROUTED RECESS @ END OF POST-TENSIONED STRAND**

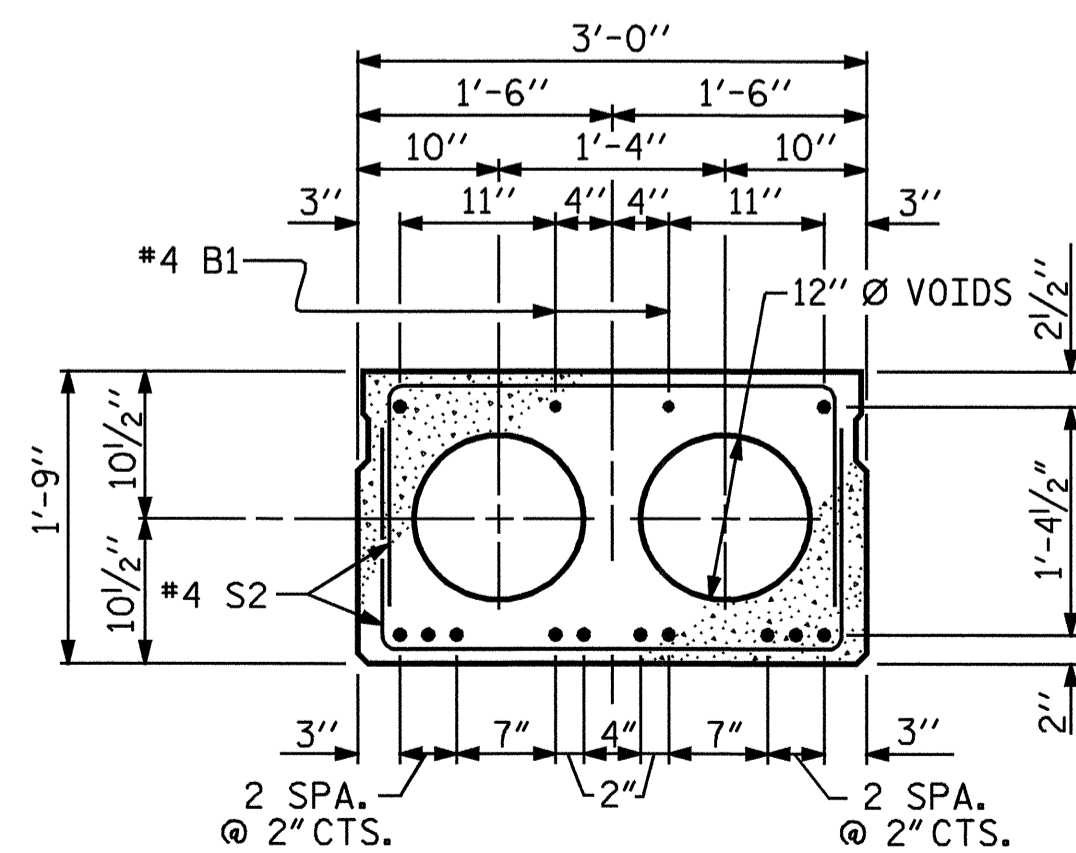


*Hsing Fang*  
9/26/08



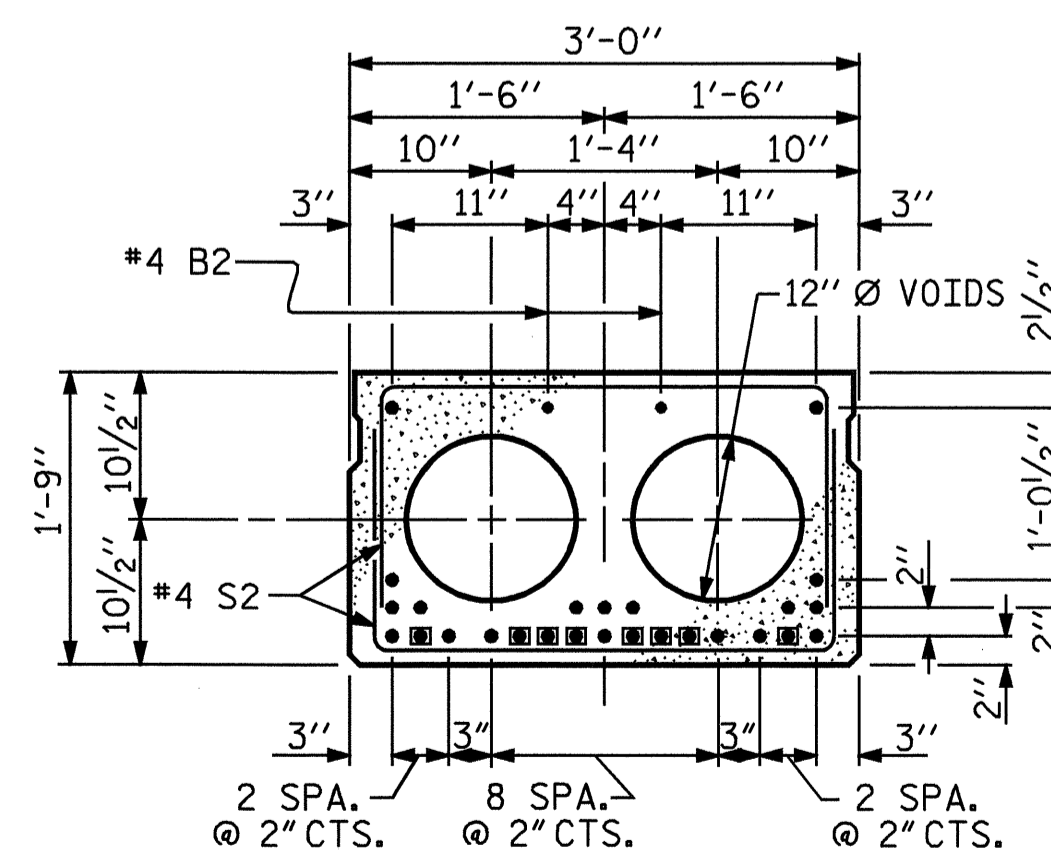
**EXTERIOR SLAB SECTION**

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



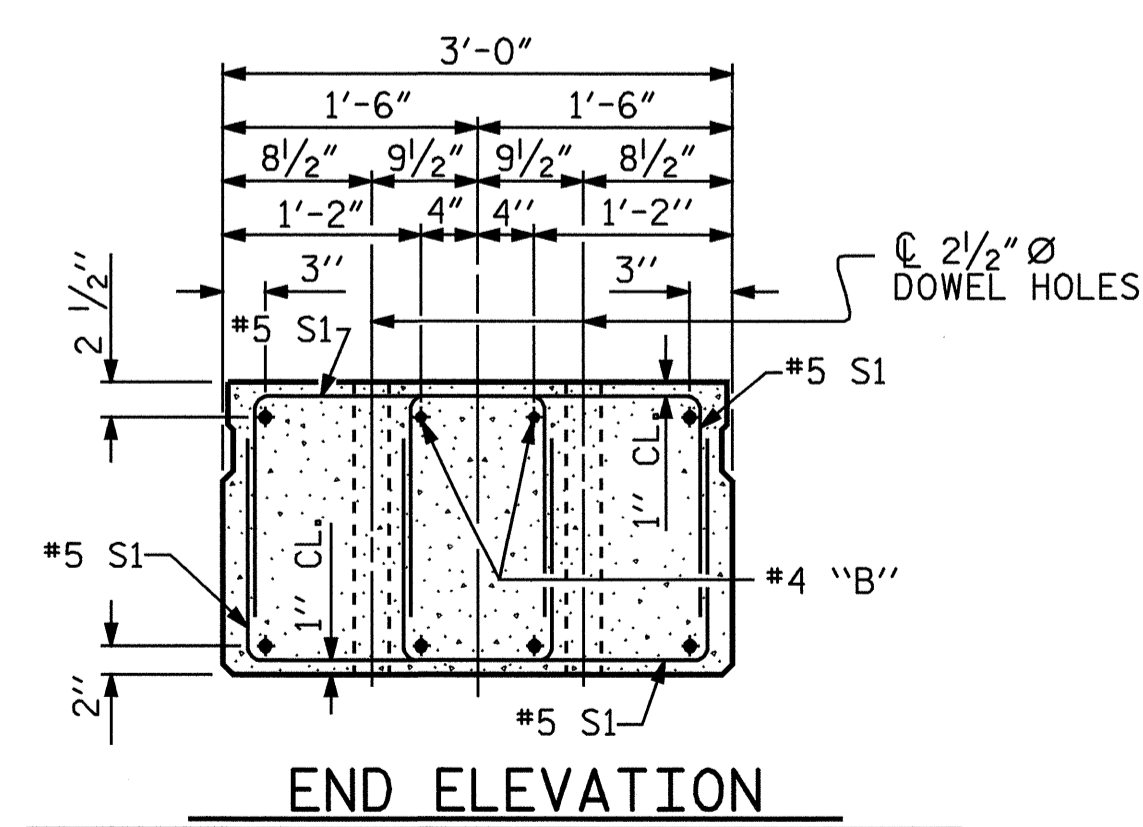
**INTERIOR SLAB SECTION SPANS A & C**

(12 STRANDS)



**INTERIOR SLAB SECTION SPAN B**

(26 STRANDS, 8 SHEATHED)



**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.

**1/2" Ø LOW RELAXATION STRAND LAYOUT**

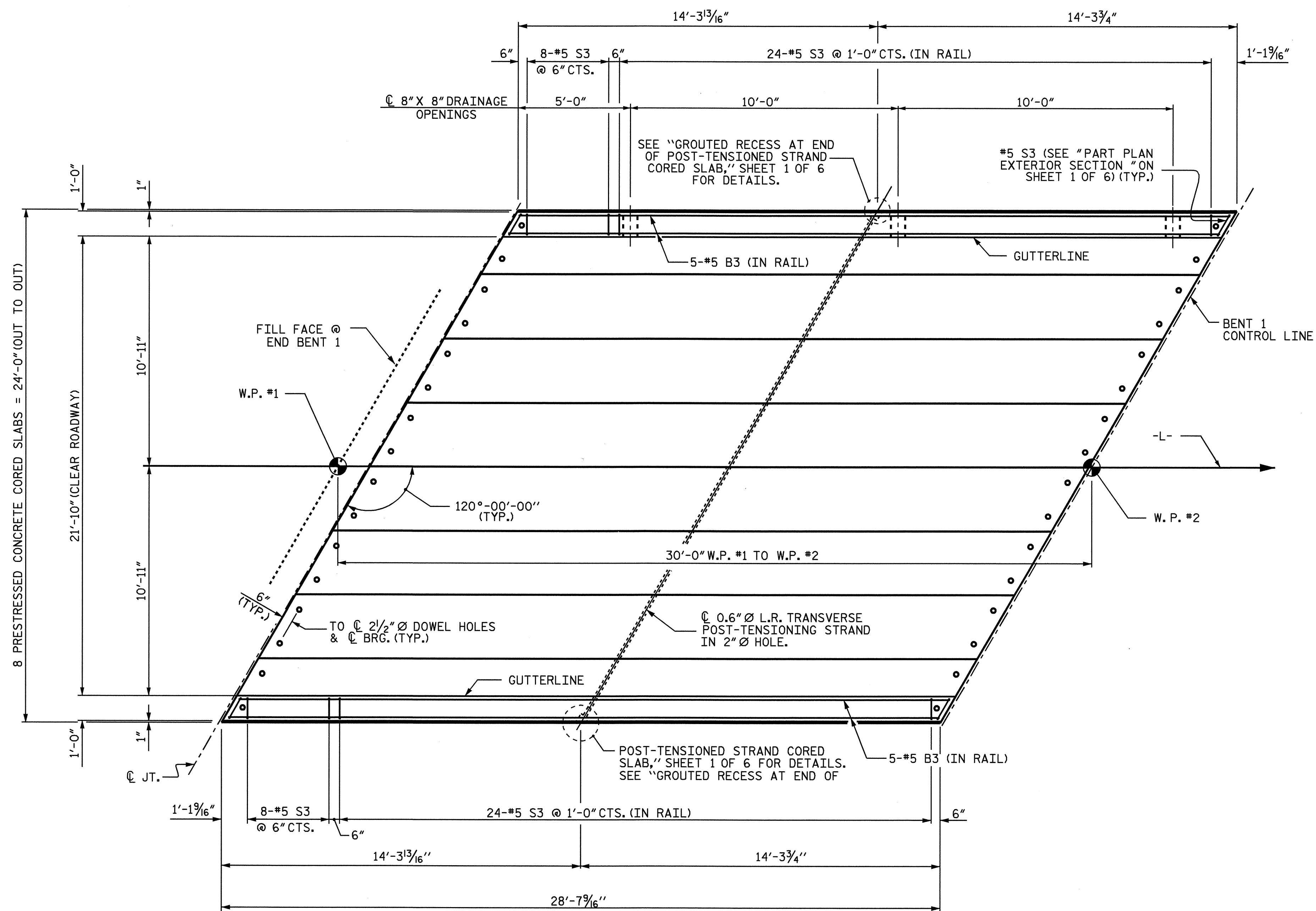
■ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 5'-7" FROM END OF CORED SLAB UNIT, SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.

PROJECT NO. B-4322  
WILKES COUNTY  
 STATION: 15+17.50 -L-

SHEET 1 OF 6

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD					
3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-4
					TOTAL SHEETS 22

ASSEMBLED BY :	HARISH SHAH	DATE :	6-08
CHECKED BY :	T.H. FANG	DATE :	08/12/08
DRAWN BY :	WJH	4/89	RWW/LES
CHECKED BY :	FCJ	5/89	RWW/LES
		REV. 10/17/00	RWW/LES
		REV. 7/10/01RR	RWW/LES
		REV. 5/1/06	TLA/GM



**SPAN A**

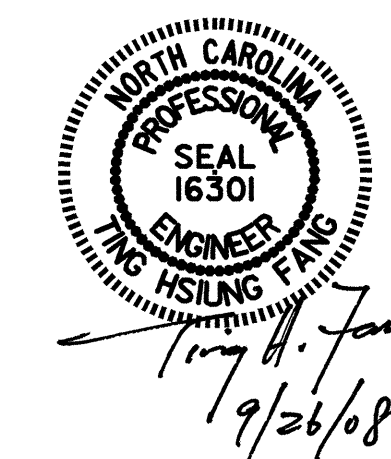
FOR ADDITIONAL CORED SLAB UNIT DETAILS, SEE SHEET 5 OF 6

PROJECT NO. B-4322  
WILKES COUNTY  
 STATION: 15+17.50 -L-

SHEET 2 OF 6

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

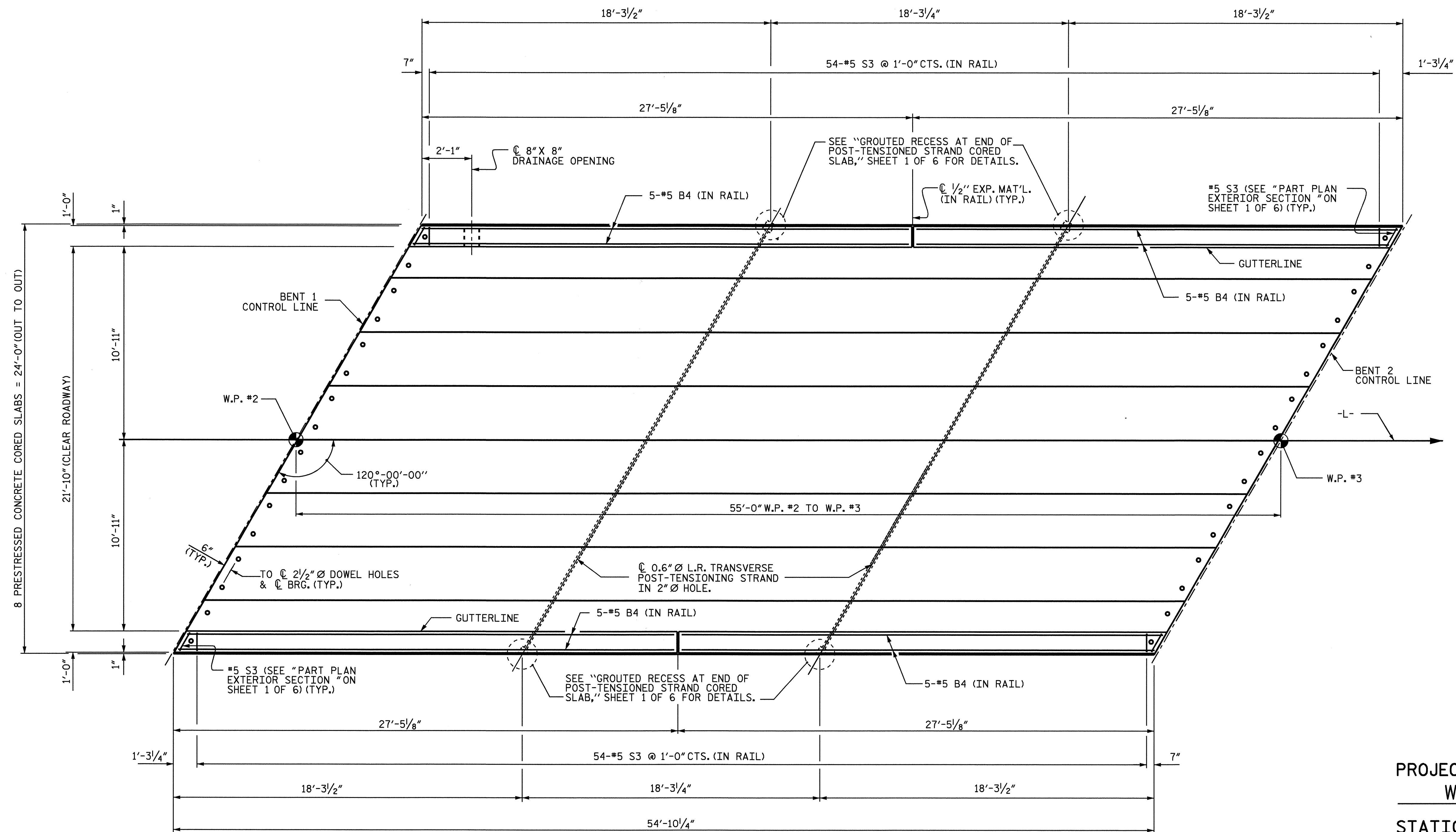
SUPERSTRUCTURE  
 PLAN OF SPAN  
 SPAN A



DRAWN BY : H. B. SHAH DATE : 4/22/08  
 CHECKED BY : T. H. FANG DATE : 7/15/08

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			22



**SPAN B**  
 FOR ADDITIONAL CORED SLAB UNIT DETAILS, SEE SHEET 6 OF 6

PROJECT NO. B-4322  
WILKES COUNTY  
 STATION: 15+17.50 -L-

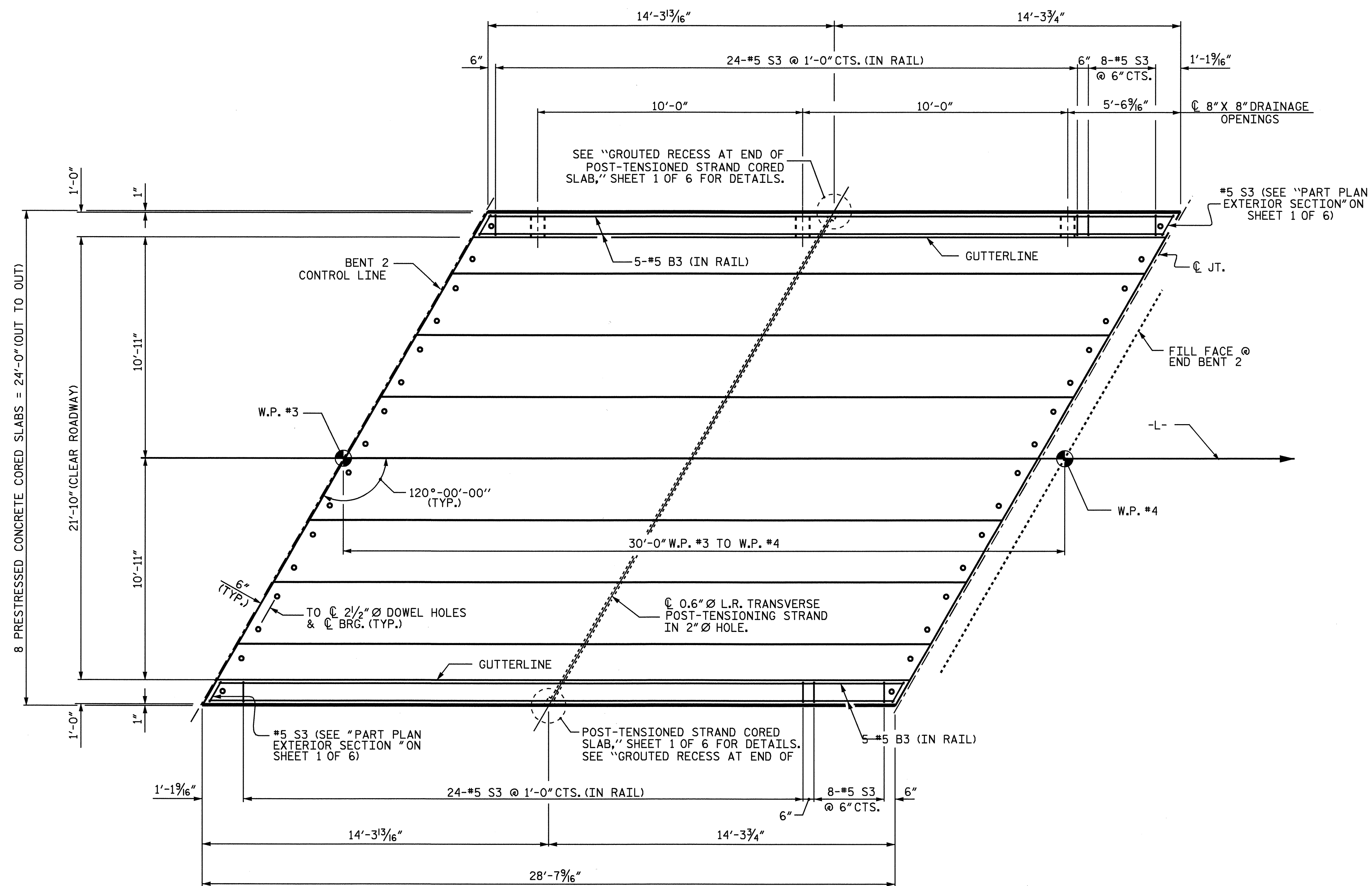
SHEET 3 OF 6



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 PLAN OF SPAN  
 SPAN B

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			22

DRAWN BY: H. B. SHAH DATE: 4/22/08  
 CHECKED BY: T. H. FANG DATE: 7/15/08

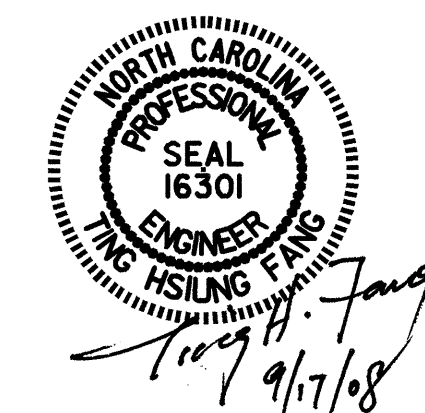


**SPAN C**

FOR ADDITIONAL CORED SLAB UNIT DETAILS, SEE SHEET 5 OF 6

PROJECT NO. B-4322  
WILKES COUNTY  
 STATION: 15+17.50 -L-

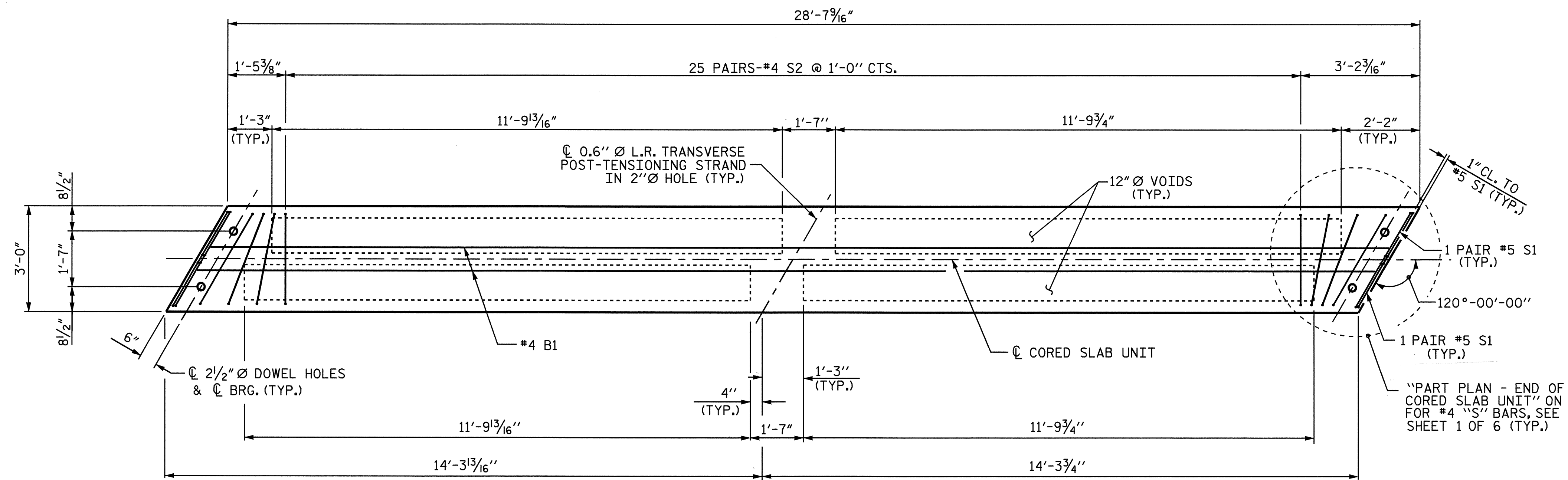
SHEET 4 OF 6



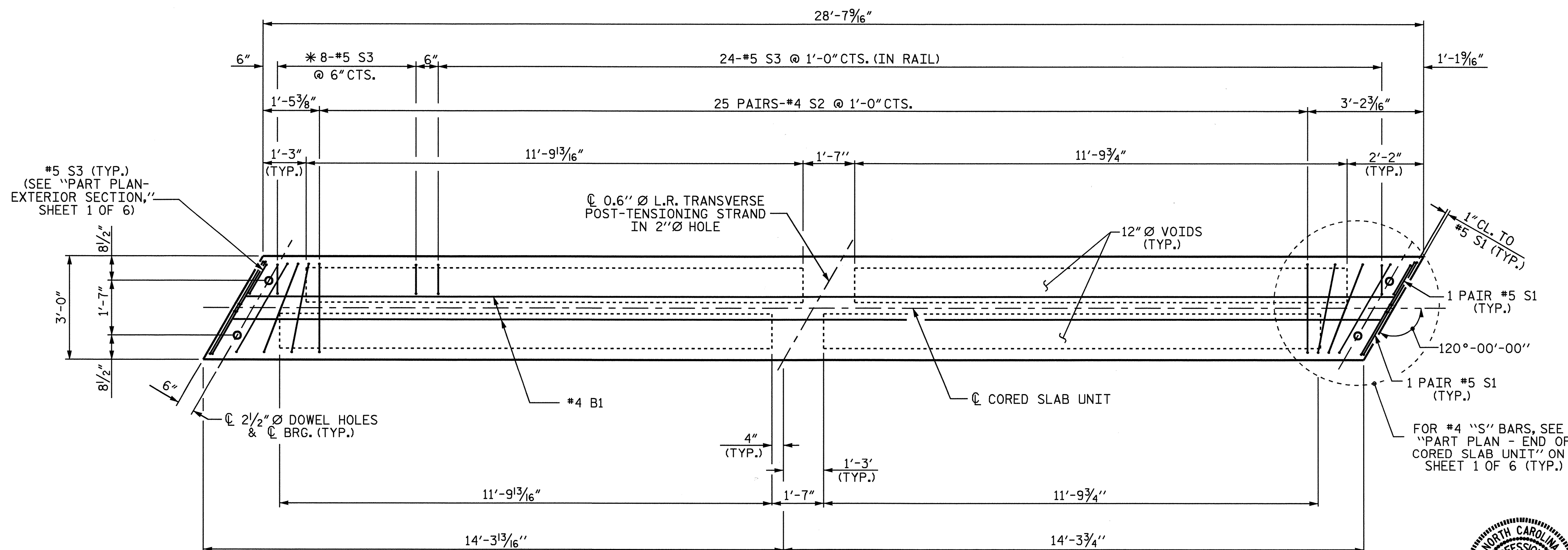
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPAN SPAN C					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-7
TOTAL SHEETS					22

DRAWN BY : H. B. SHAH DATE : 4/22/08  
 CHECKED BY : T. H. FANG DATE : 7/15/08





PLAN OF INTERIOR CORED SLAB UNIT

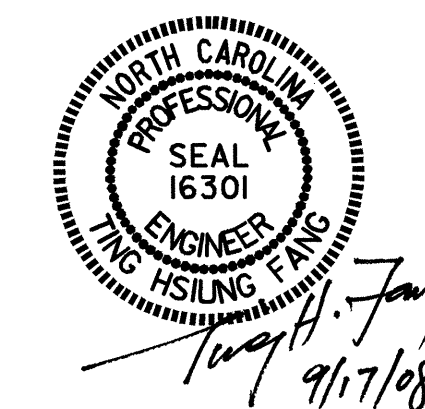


PLAN OF EXTERIOR CORED SLAB UNIT

\*LEFT END ON SPAN A SHOWN, RIGHT END ON SPAN C SIMILAR

PROJECT NO. B-4322  
 WILKES COUNTY  
 STATION: 15+17.50 -L-

SHEET 5 OF 6

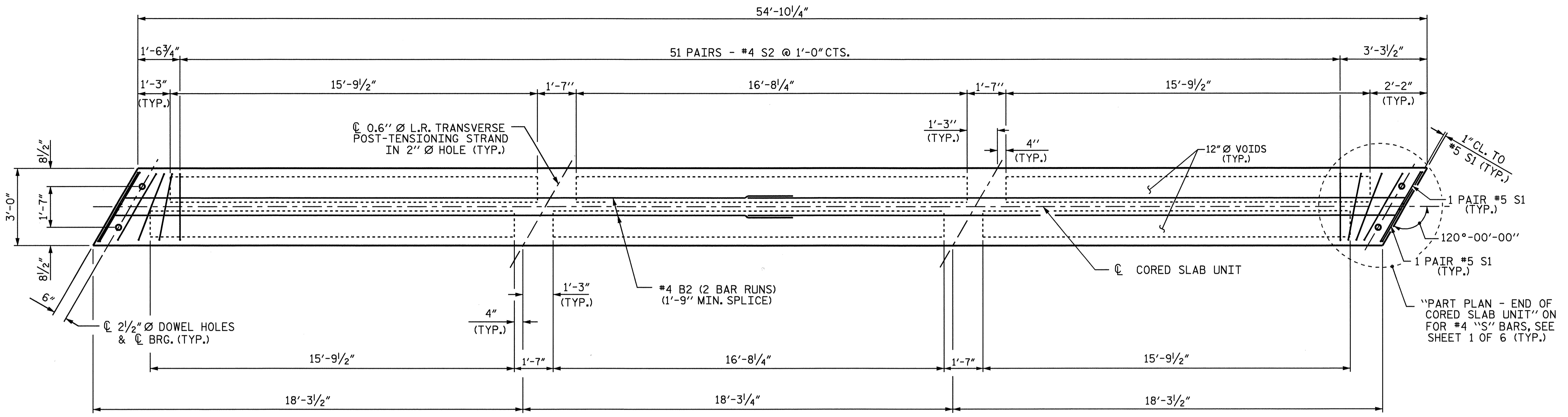


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 PLAN OF SPAN  
 CORED SLAB UNIT  
 DETAILS  
 SPAN A & C

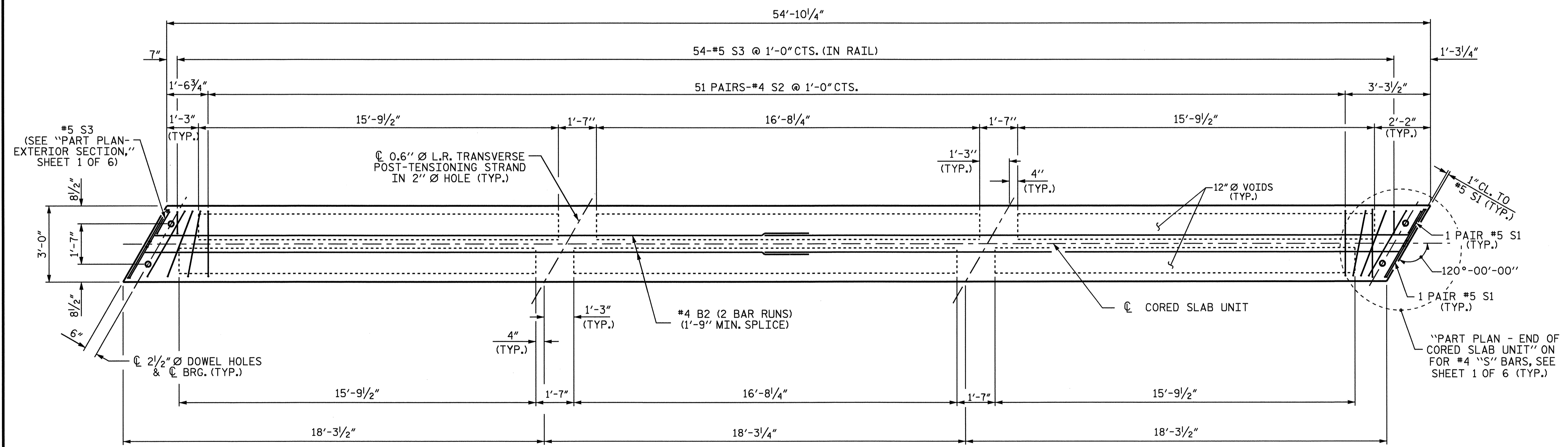
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

TOTAL SHEETS: 22

DRAWN BY: H. B. SHAH DATE: 5/12/08  
 CHECKED BY: T. H. FANG DATE: 7/14/08



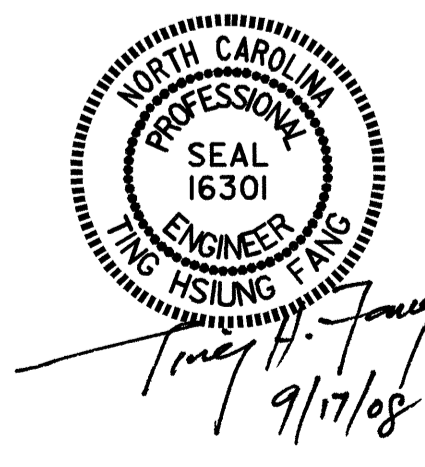
PLAN OF INTERIOR CORED SLAB UNIT



PLAN OF EXTERIOR CORED SLAB UNIT

PROJECT NO. B-4322  
 WILKES COUNTY  
 STATION: 15+17.50 -L-

SHEET 6 OF 6



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 PLAN OF SPAN  
 CORED SLAB UNIT  
 DETAILS  
 SPAN B

DRAWN BY: H. B. SHAH DATE: 4/22/08  
 CHECKED BY: T. H. FANG DATE: 7/14/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			22

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 sdbrowski

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 1/8" Ø BOLTS WITH NUTS AND WASHERS.  
 THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

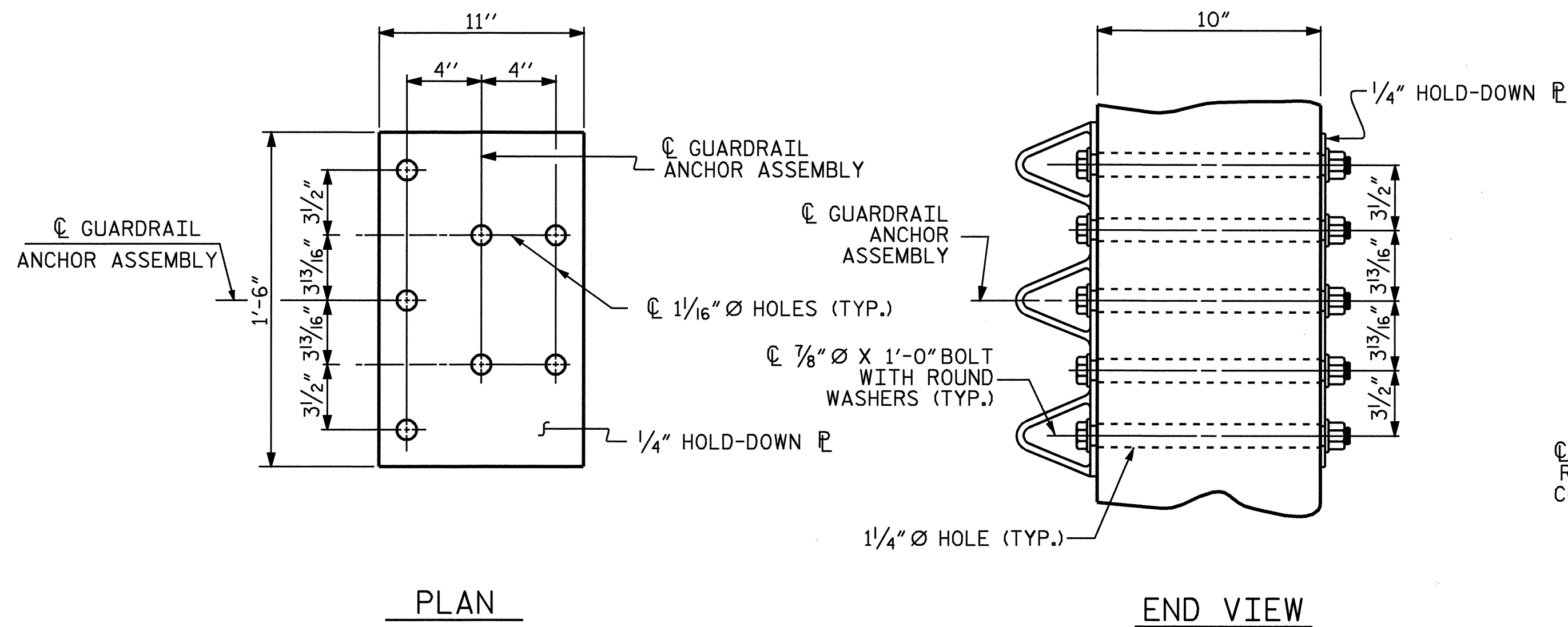
AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

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

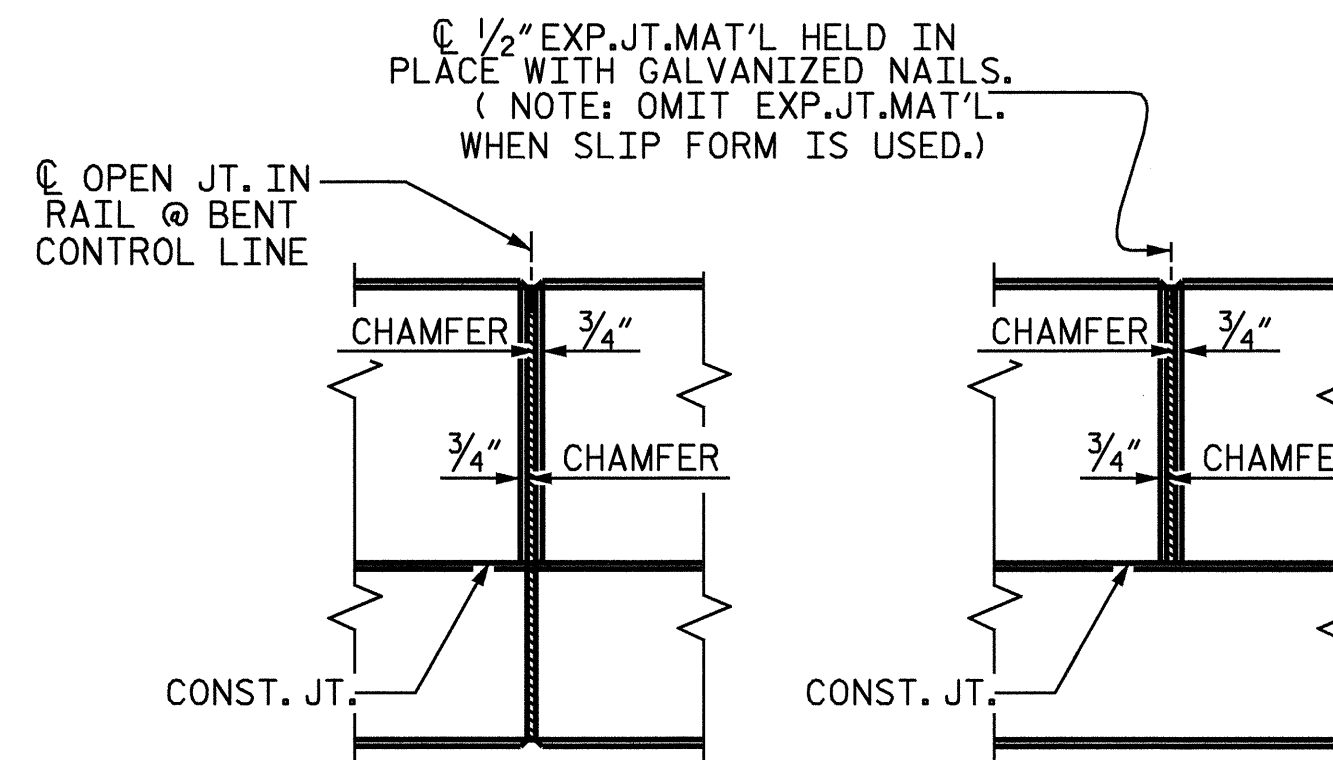
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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

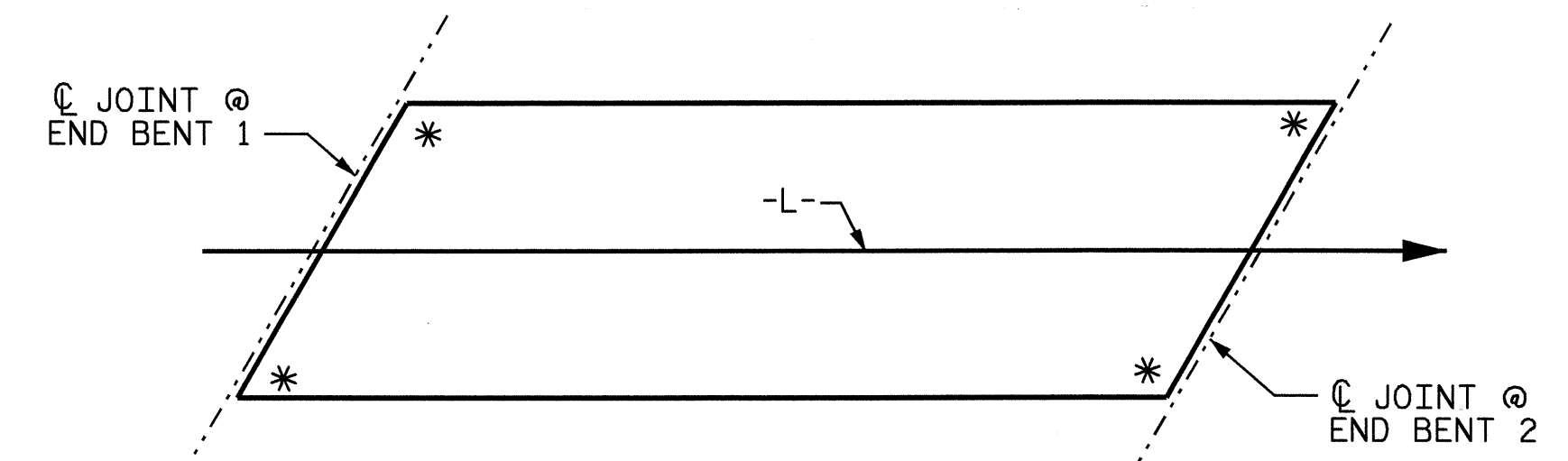
FOR VERTICAL CONCRETE BARRIER RAIL, SEE SPECIAL PROVISIONS.



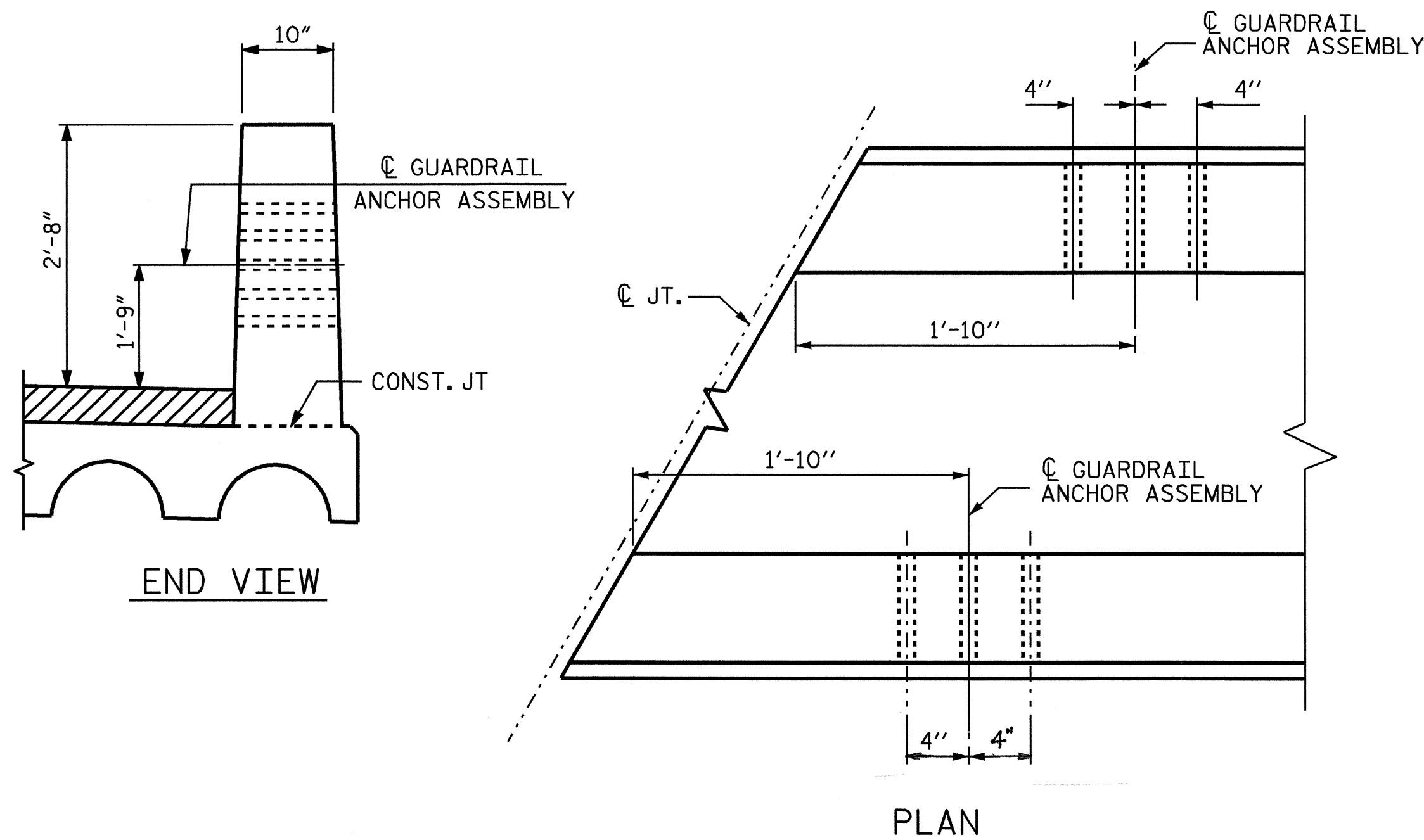
GUARDRAIL ANCHOR ASSEMBLY DETAILS



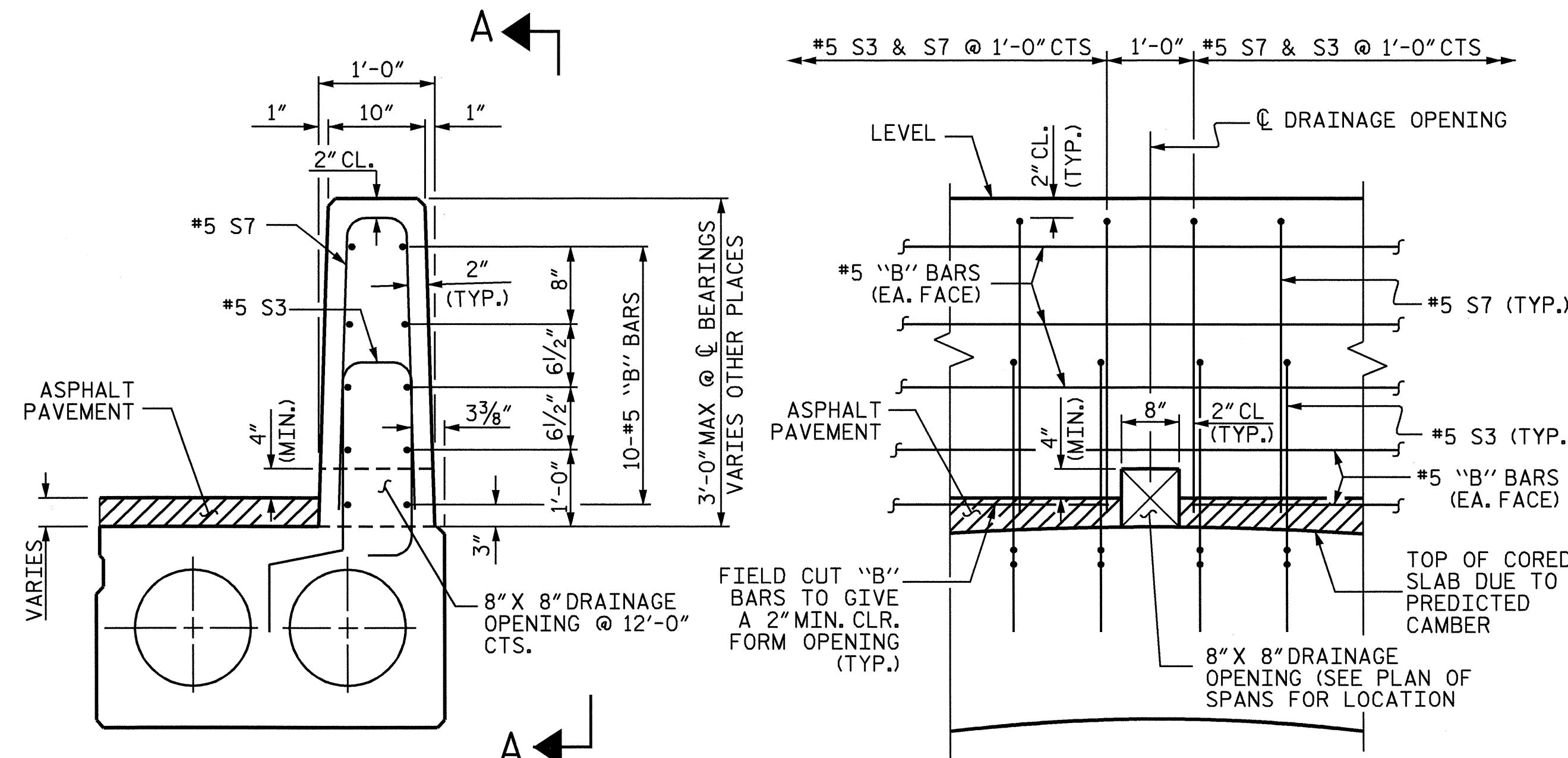
ELEVATION AT EXPANSION JOINTS



SKETCH SHOWING POINTS OF ATTACHMENT  
 \* LOCATION OF GUARDRAIL ATTACHMENT



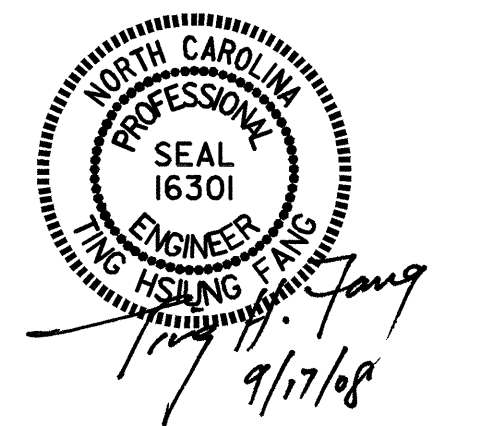
LOCATION OF GUARDRAIL ANCHOR



SECTION THRU RAIL

VERTICAL CONCRETE BARRIER RAIL DETAILS

FOR PLAN VIEW OF VERTICAL CONCRETE BARRIER RAIL, SEE "PLAN OF SPAN" SHEETS.



PROJECT NO. B-4322  
WILKES COUNTY  
 STATION: 15+17.50 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 VERTICAL CONCRETE  
 BARRIER RAIL

DETAILS

ASSEMBLED BY : H. B. SHAH	DATE: 8-08
CHECKED BY : T. H. FANG	DATE: 8-08
DRAWN BY : EEM 6/94	REV. 8/16/99 RWW/LES
CHECKED BY : RGW 6/94	REV. 10/17/00 RWW/LES
	REV. 5/17/03 RWW/JTE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			22

**BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL**

BAR	NUMBER PER SPAN			SIZE	TYPE	LENGTH	WEIGHT	
	SPAN A	SPAN B	SPAN C					
*B3	20		20	#5	STR	28'-3"	1,178	
*B4		40		#5	STR	27'-1"	1,130	
*S7	68	112	68	#5	3	5'-6"	1423	
* EPOXY COATED REINFORCING STEEL							3,731	LBS.
CLASS AA CONCRETE							22.90	CU. YDS.
TOTAL LN. FT. OF VERTICAL CONCRETE BARRIER RAIL							224.804	LIN. FT.

**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

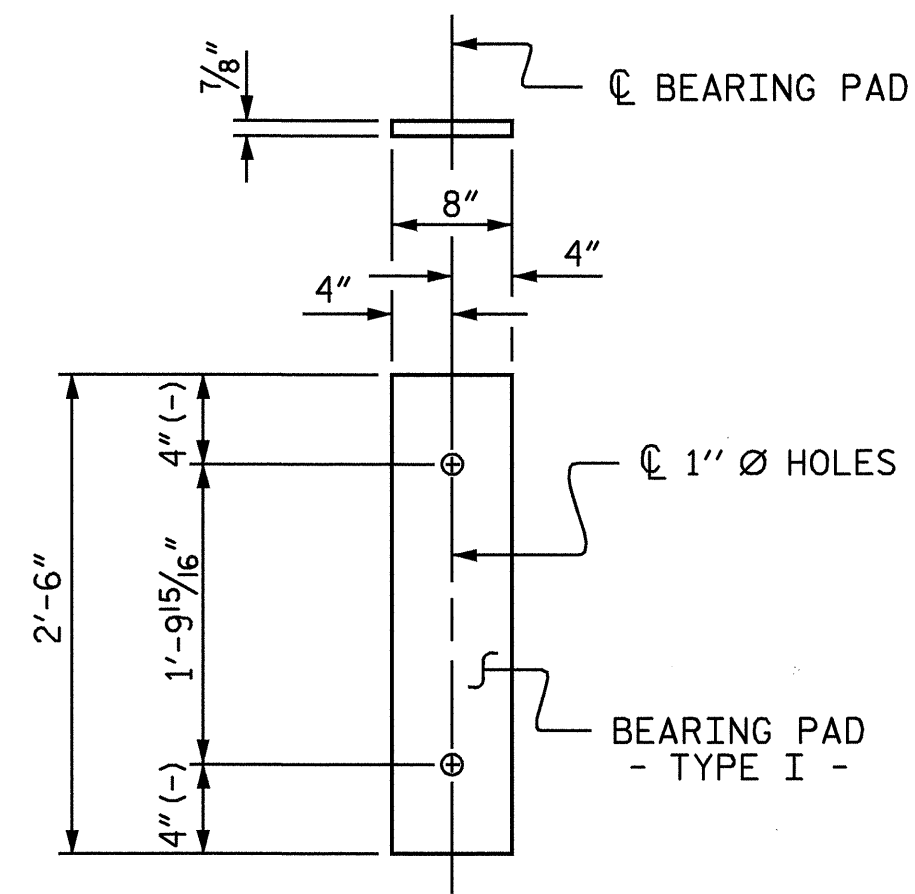
**DEAD LOAD DEFLECTION AND CAMBER**

	SPAN A	SPAN B	SPAN C
CAMBER (SLAB ALONE IN PLACE)	7/16" ↑	2 15/16" ↑	7/16" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/16" ↓	3/8" ↓	1/16" ↓
FINAL CAMBER	3/8" ↑	2 9/16" ↑	3/8" ↑

\*\* INCLUDES FUTURE WEARING SURFACE

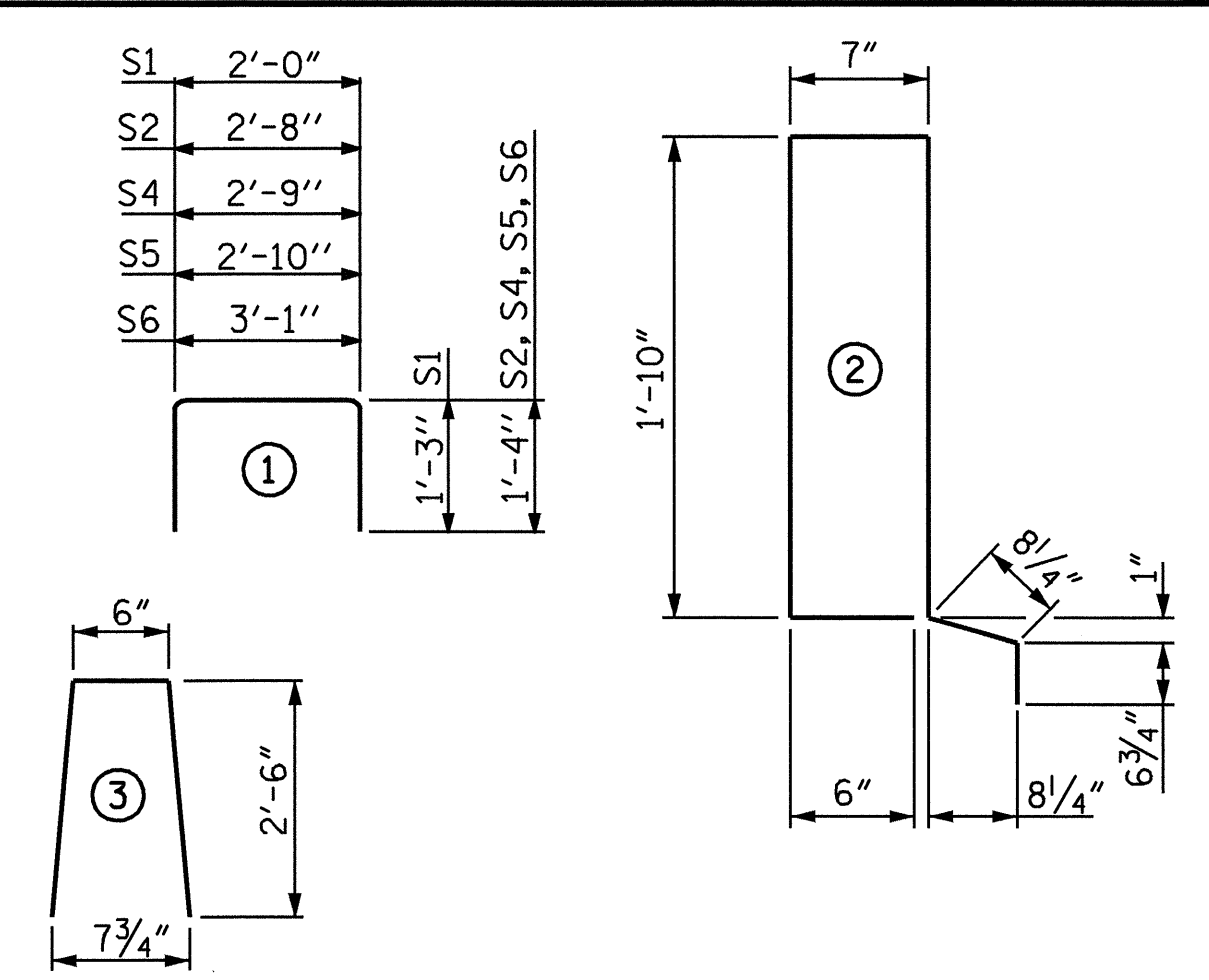
**CORED SLABS REQUIRED**

SPAN A			
UNIT TYPE	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR	2	28'-7 7/16"	57'-3 3/8"
INTERIOR	6	28'-7 7/16"	171'-9 3/8"
TOTAL	8	28'-7 7/16"	229'-0 1/2"
SPAN B			
UNIT TYPE	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR	2	54'-10 1/4"	109'-8 1/2"
INTERIOR	6	54'-10 1/4"	329'-1 1/2"
TOTAL	8	54'-10 1/4"	438'-10"
SPAN C			
UNIT TYPE	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR	2	28'-7 7/16"	57'-3 3/8"
INTERIOR	6	28'-7 7/16"	171'-9 3/8"
TOTAL	8	28'-7 7/16"	229'-0 1/2"
TOTAL CORED SLAB UNITS NO. 24 896'-11" LIN. FT.			



**FIXED END ELASTOMERIC BEARING DETAILS**  
(TYPE I - 48 REQ'D)

**BAR TYPES**



ALL BAR DIMENSIONS ARE OUT TO OUT

**BILL OF MATERIAL FOR ONE CORED SLAB UNIT**

SPAN A							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B1	2	#4	STR	28'-3"	38	28'-3"	38
S1	8	#5	1	4'-6"	38	4'-6"	38
S2	50	#4	1	5'-4"	178	5'-4"	178
* S3	34	#5	2	6'-0"	188		
S4	4	#4	1	5'-5"	15	5'-5"	15
S5	4	#4	1	5'-6"	15	5'-6"	15
S6	4	#4	1	5'-9"	15	5'-9"	15
REINFORCING STEEL				299 LBS.		299 LBS.	
* EPOXY COATED REINFORCING STEEL				213 LBS.			
5000 P.S.I. CONCRETE				4.8 CU. YDS.		4.8 CU. YDS.	
1/2" Ø L.R. STRANDS				No. 12			
SPAN B							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B2	4	#4	STR	28'-2"	75	28'-2"	75
S1	8	#5	1	4'-6"	38	4'-6"	38
S2	102	#4	1	5'-4"	363	5'-4"	363
* S3	56	#5	2	6'-0"	350		
S4	4	#4	1	5'-5"	15	5'-5"	15
S5	4	#4	1	5'-6"	15	5'-6"	15
S6	4	#4	1	5'-9"	15	5'-9"	15
REINFORCING STEEL				522 LBS.		522 LBS.	
* EPOXY COATED REINFORCING STEEL				350 LBS.			
5000 P.S.I. CONCRETE				7.1 CU. YDS.		7.1 CU. YDS.	
1/2" Ø L.R. STRANDS				No. 26			
SPAN C							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B1	2	#4	STR	28'-3"	38	28'-3"	38
S1	8	#5	1	4'-6"	38	4'-6"	38
S2	50	#4	1	5'-4"	178	5'-4"	178
* S3	34	#5	2	6'-0"	188		
S4	4	#4	1	5'-5"	15	5'-5"	15
S5	4	#4	1	5'-6"	15	5'-6"	15
S6	4	#4	1	5'-9"	15	5'-9"	15
REINFORCING STEEL				299 LBS.		299 LBS.	
* EPOXY COATED REINFORCING STEEL				213 LBS.			
5000 P.S.I. CONCRETE				4.8 CU. YDS.		4.8 CU. YDS.	
1/2" Ø L.R. STRANDS				No. 12			

**NOTES**

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

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

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

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

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.

TRANSVERSE POST TENSIONING OF THE CORED SLAB SECTIONS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, EXCEPT THAT THE 0.6" Ø STRANDS SHALL BE TENSIONED TO 43,950 POUNDS.

ALL REINFORCING STEEL IN VERTICAL CONCRETE BARRIER RAILS SHALL BE EPOXY COATED.

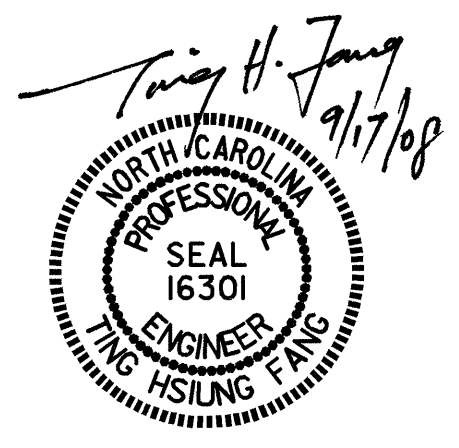
PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

APPLY EPOXY PROTECTIVE COATING TO THE EXTERIOR FACE OF EXTERIOR CORED SLAB UNITS.

PROJECT NO. B-4322  
WILKES COUNTY  
 STATION: 15+17.50 -L-



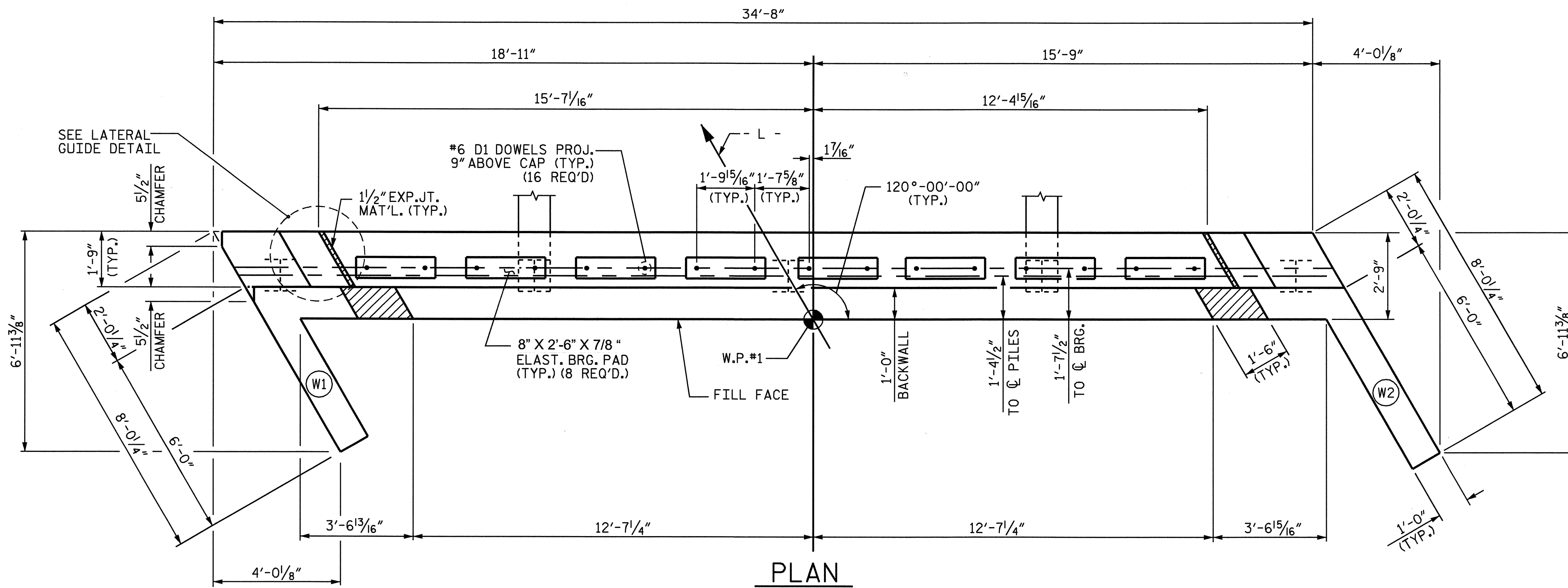
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
**BILL OF MATERIAL**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			22

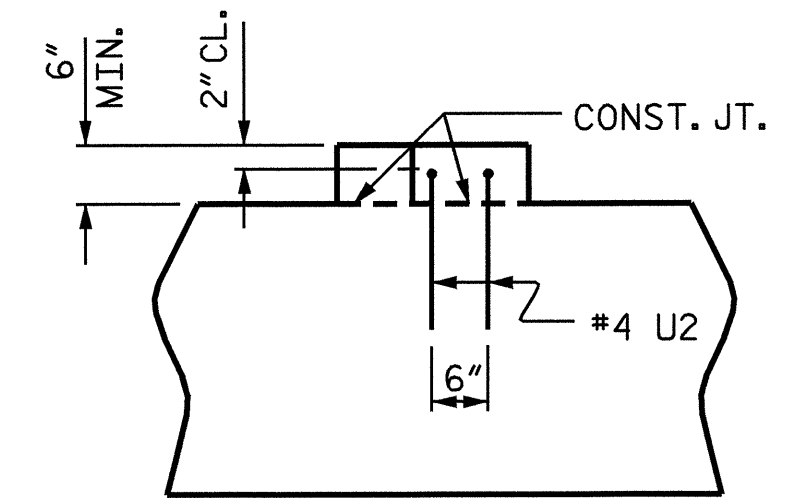
ASSEMBLED BY : HARISH SHAH DATE : 8/14/08  
 CHECKED BY : T.H. FANG DATE : 08/15/08  
 DRAWN BY : WJH 4/89 REV. 7/10/01 RWW/LES  
 CHECKED BY : FCJ 5/89 REV. 5/7/03RRR RWW/JTE  
 REV. 5/1/06 TLA/GM

**NOTES**

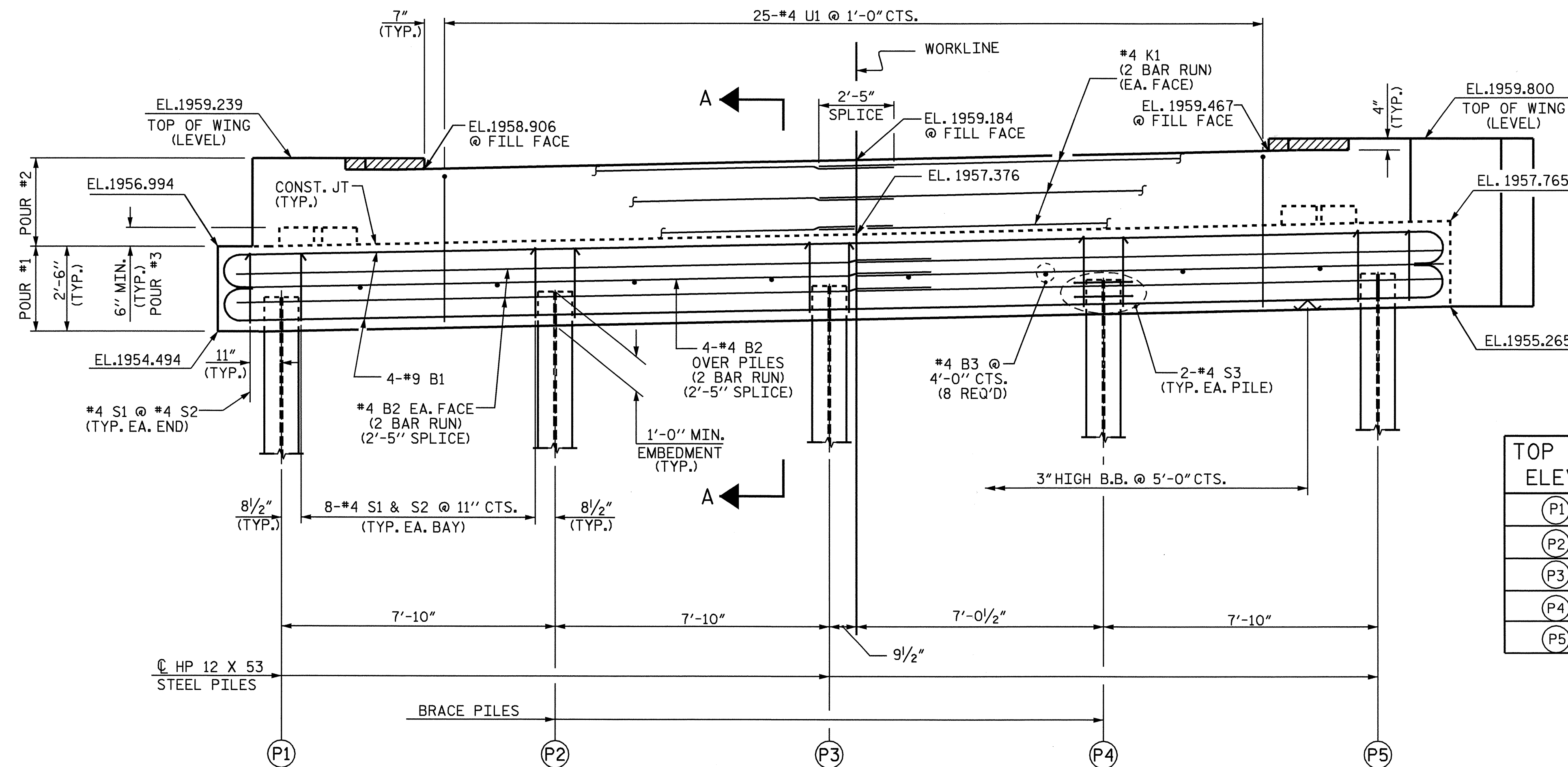
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.  
 THE LATERAL GUIDE AT EACH END OF CAP IS NOT TO BE POURED UNTIL AFTER CORED SLAB UNITS ARE IN PLACE.  
 FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.  
 FOR TEMPORARY DRAINAGE DETAIL, SEE SHEET 3 OF 3.  
 FOR REINFORCING STEEL IN WINGS, SEE SHEET 2 OF 3.  
 FOR SECTION A-A, SEE SHEET 3 OF 3.



**PLAN**

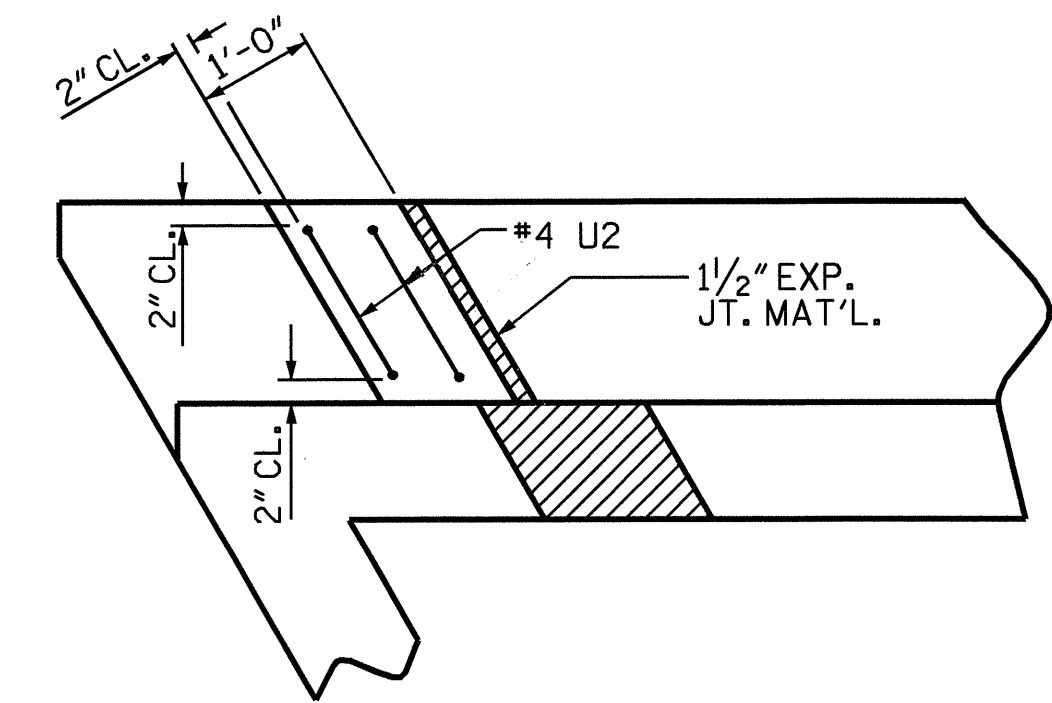


**ELEVATION**



**ELEVATION**

(WING WALL DETAILS & LEFT WING NOT SHOWN FOR CLARITY)



**PLAN**

**LATERAL GUIDE DETAILS**

EACH END SIMILAR

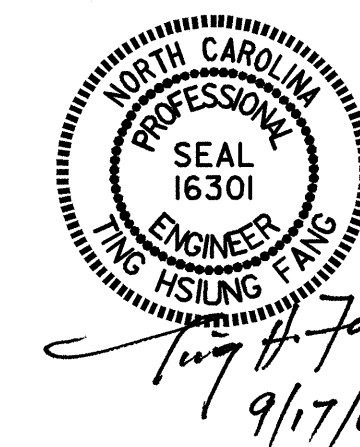
TOP OF PILES ELEVATIONS	
(P1)	1955.538
(P2)	1955.712
(P3)	1955.886
(P4)	1956.060
(P5)	1956.234

PROJECT NO. B-4322  
WILKES COUNTY  
 STATION: 15+17.50 -L-

SHEET 1 OF 3

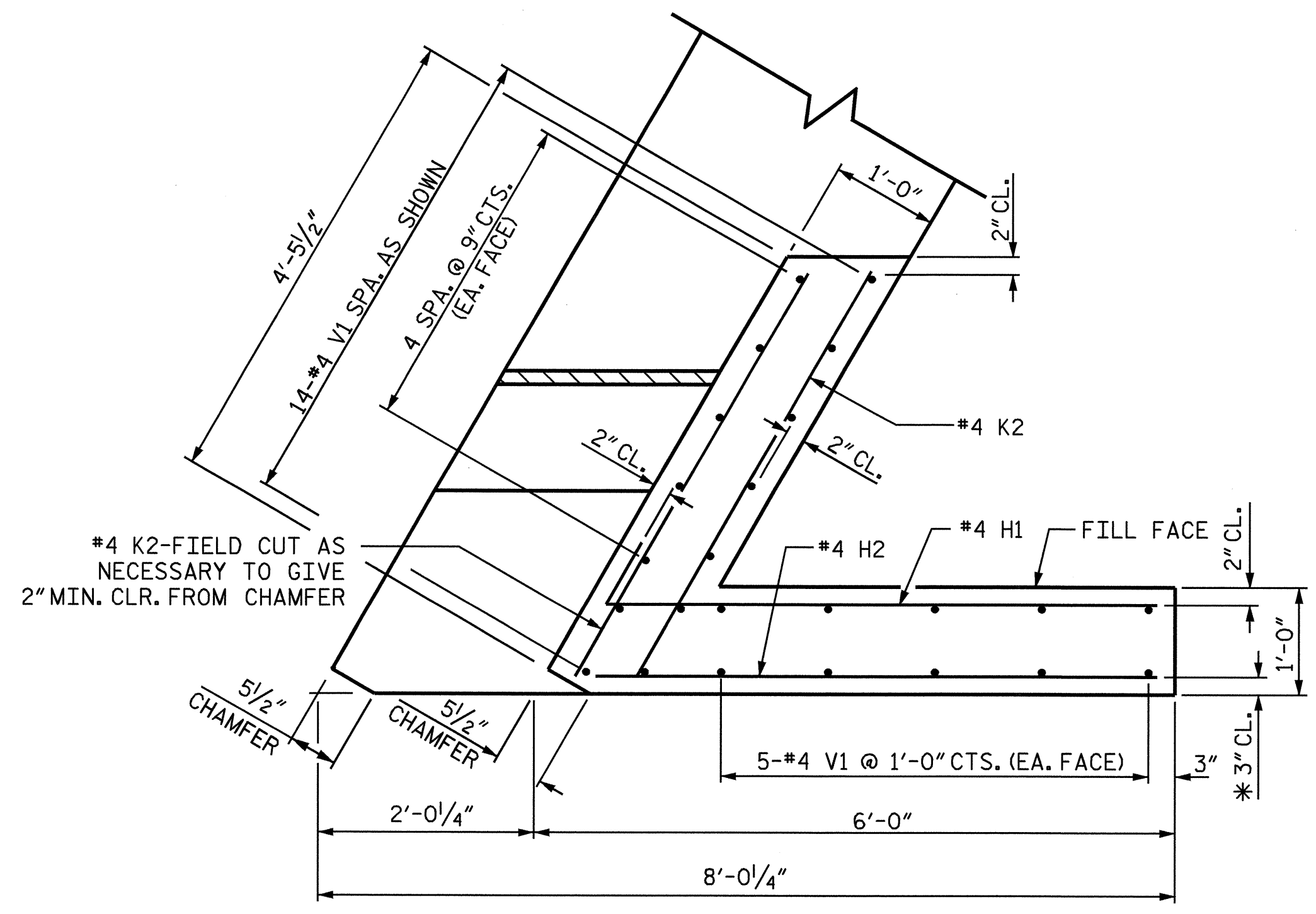
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT 1

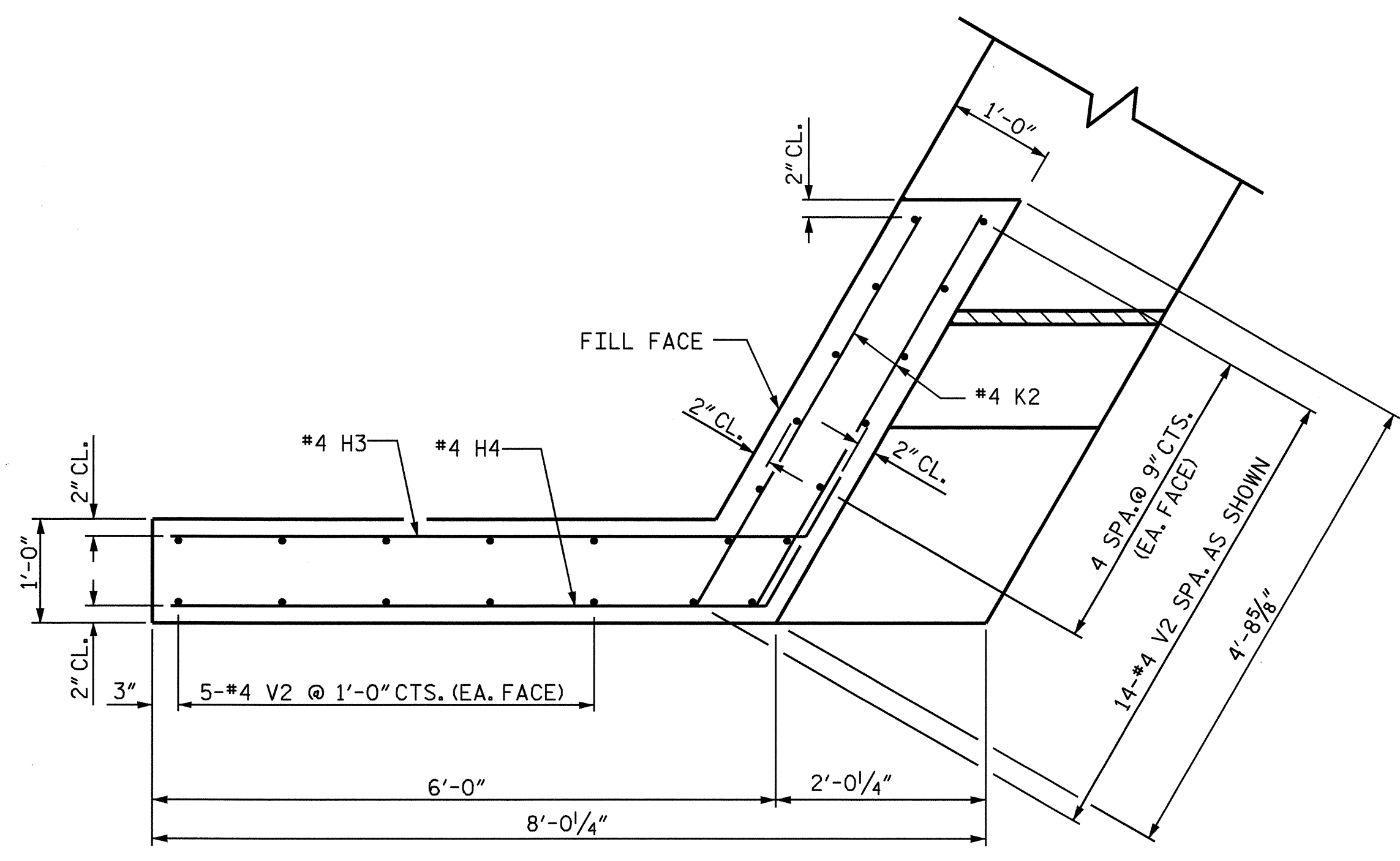


DRAWN BY: HARISH SHAH DATE: 8-08  
 CHECKED BY: T.H. FANG DATE: 8-08

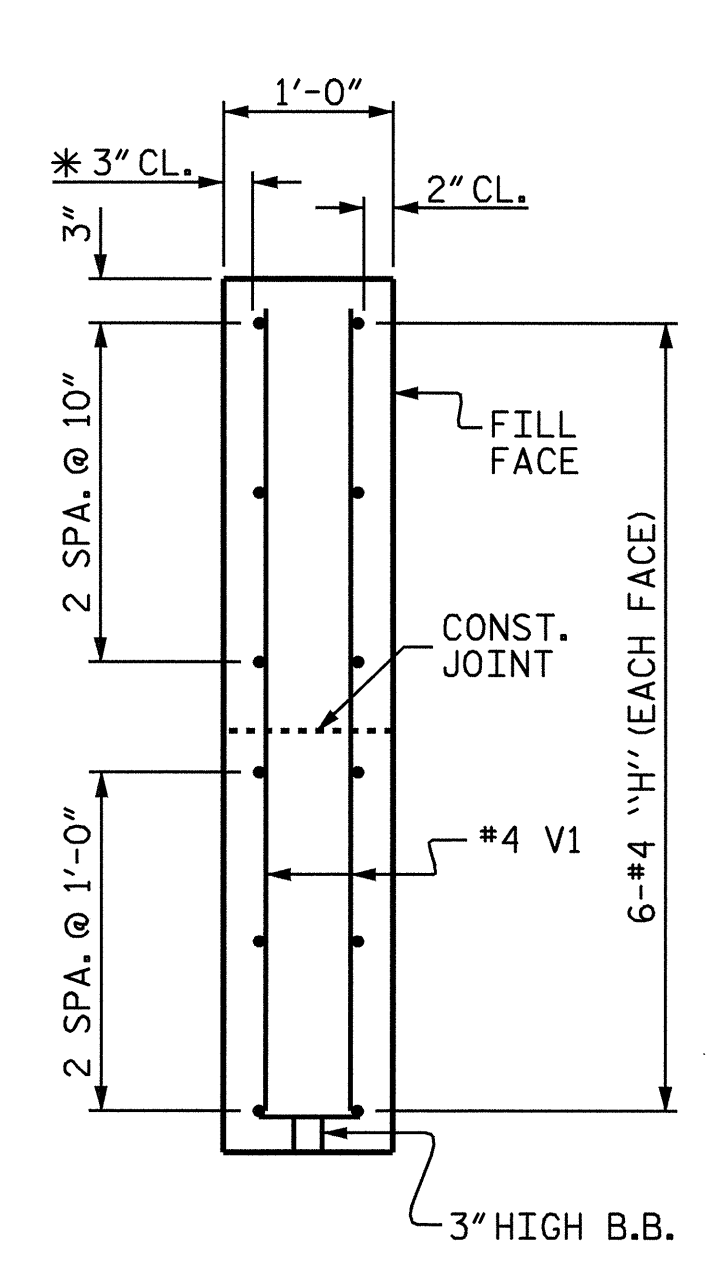
REVISIONS						SHEET NO. S-12
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 22
2			4			



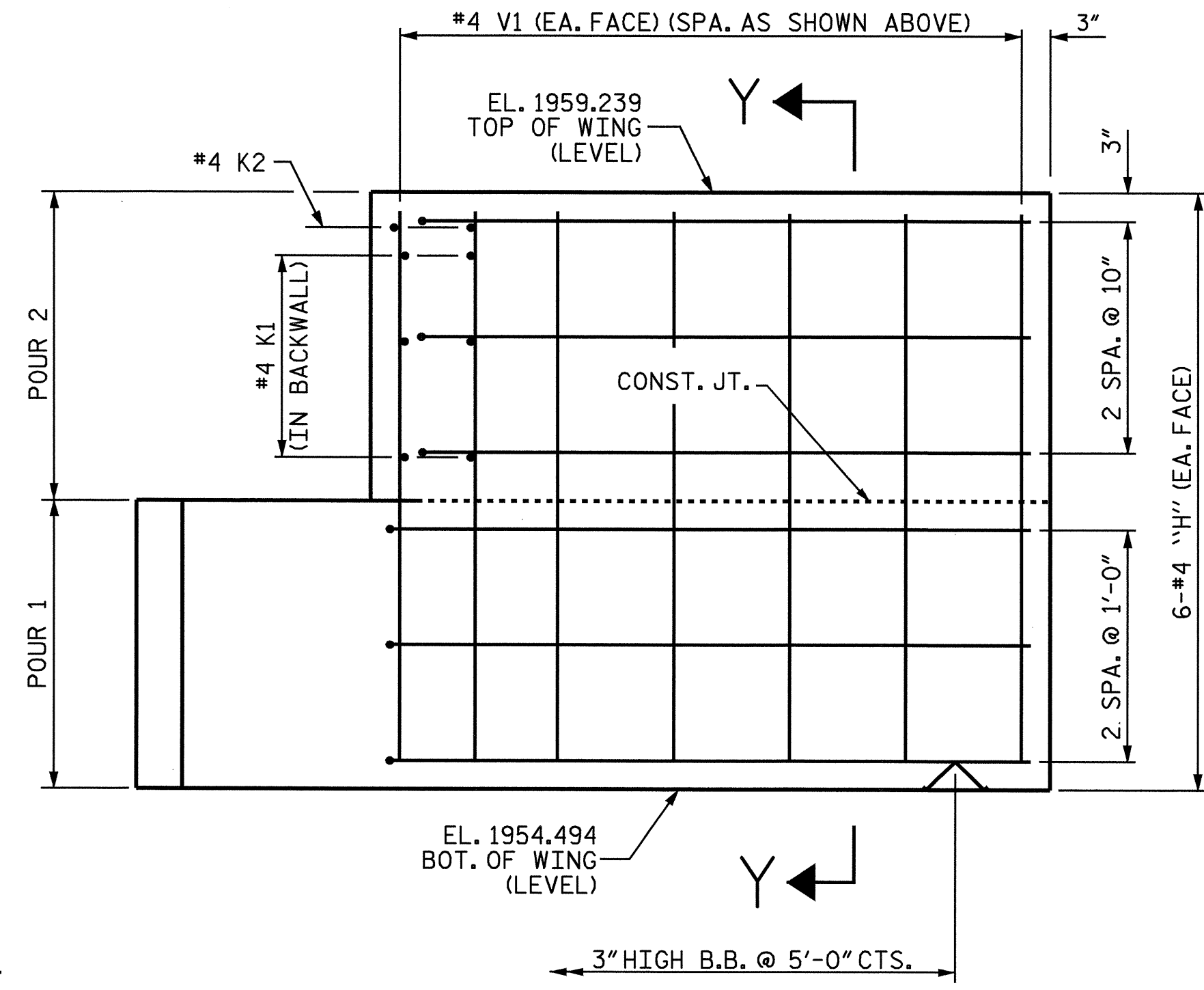
**PLAN OF WING (W1)**  
\* NON-TYPICAL CLEARANCE



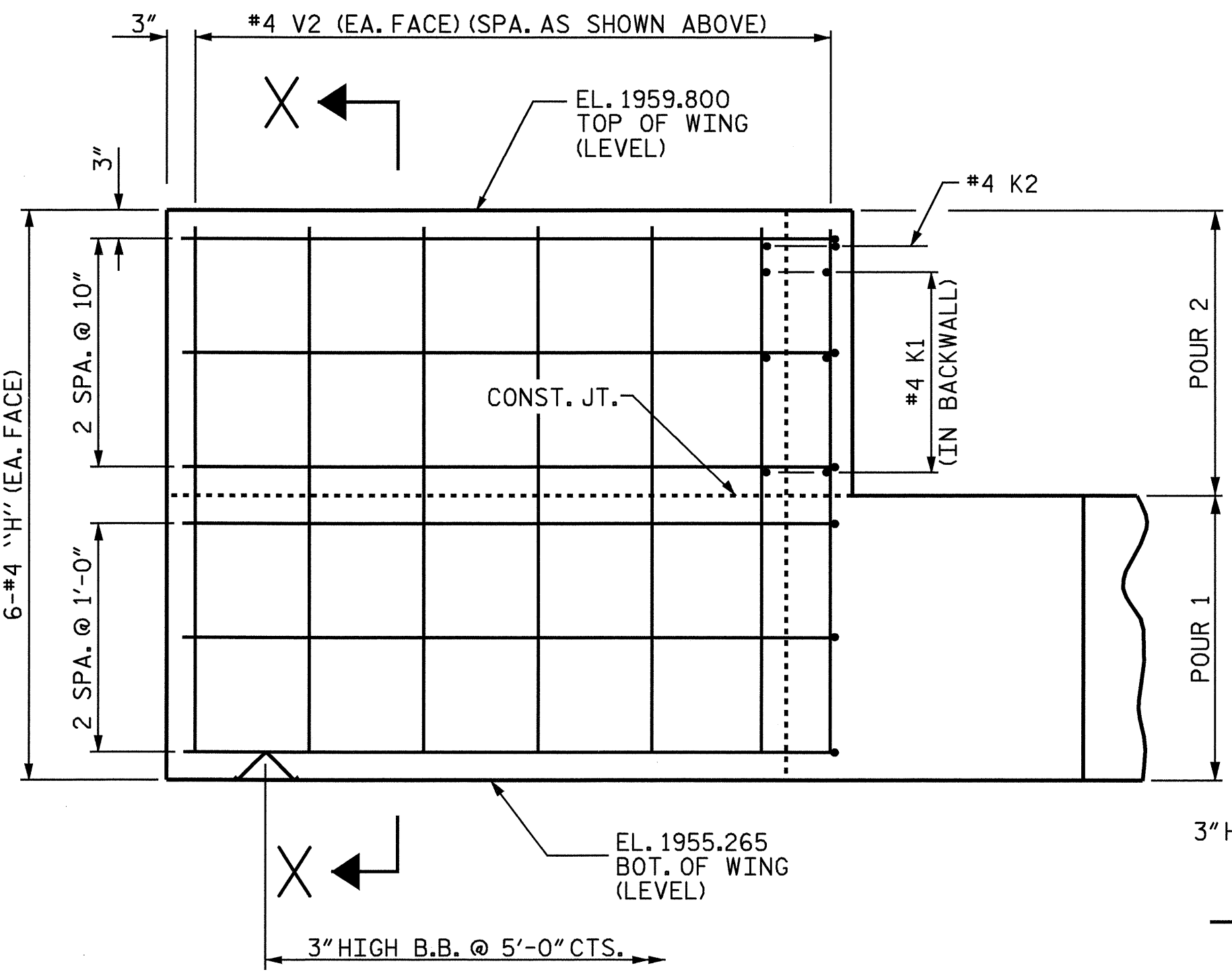
**PLAN OF WING (W2)**



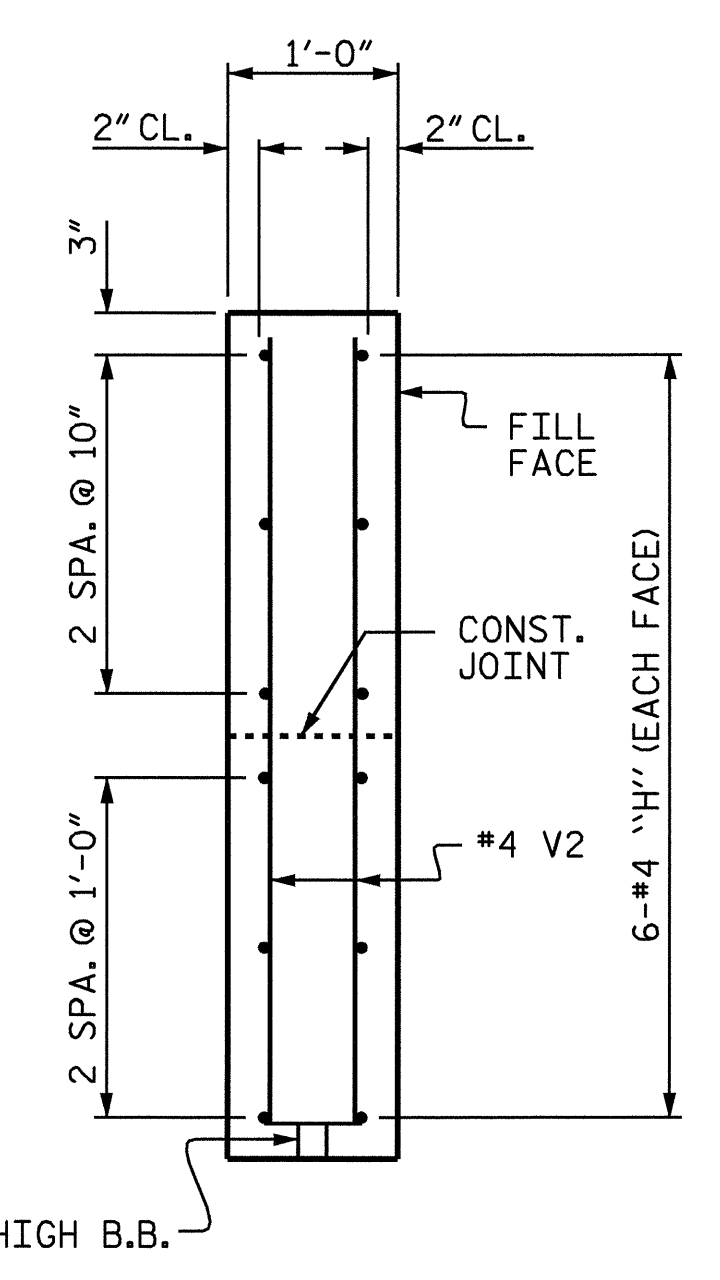
**SECTION Y-Y**  
\* NON-TYPICAL CLEARANCE



**ELEVATION OF WING (W1)**



**ELEVATION OF WING (W2)**

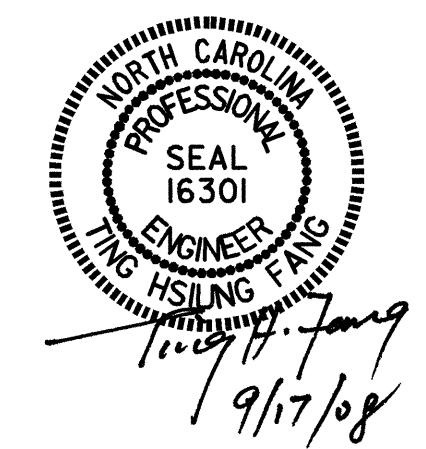


**SECTION X-X**

PROJECT NO. B-4322  
WILKES COUNTY  
 STATION: 15+17.50 -L-

SHEET 2 OF 3

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

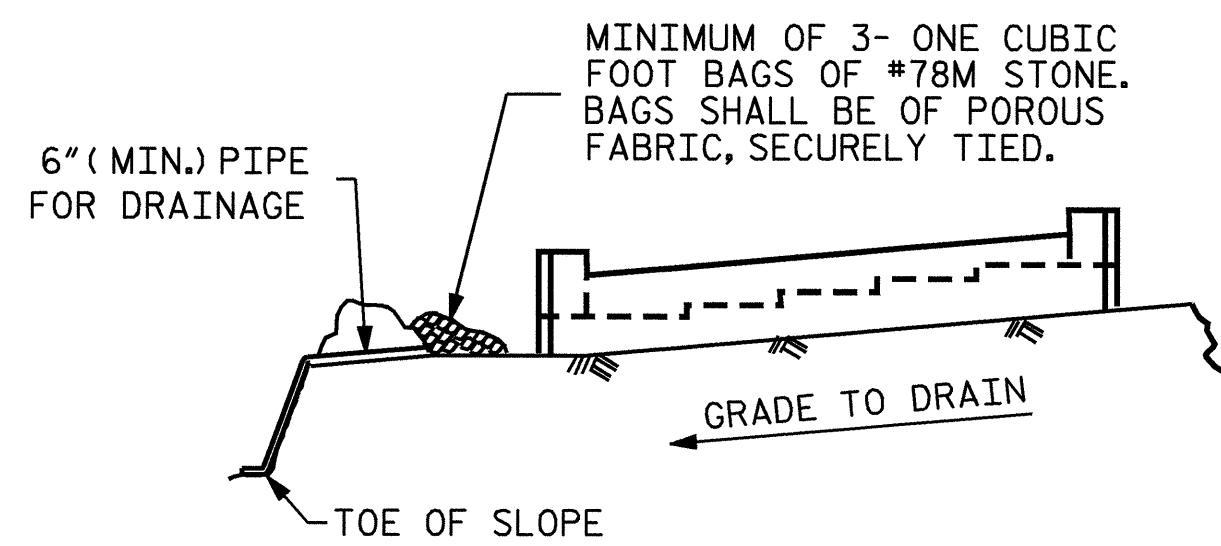


DRAWN BY: HARISH SHAH DATE: 8/08  
 CHECKED BY: T. H. FANG DATE: 8/08

17-SEP-2008 07:49  
 R:\Structures\Final Plans\B4322.sd...e\*.dgn  
 sdombrowski

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13	
1			3			TOTAL SHEETS	
2			4			22	

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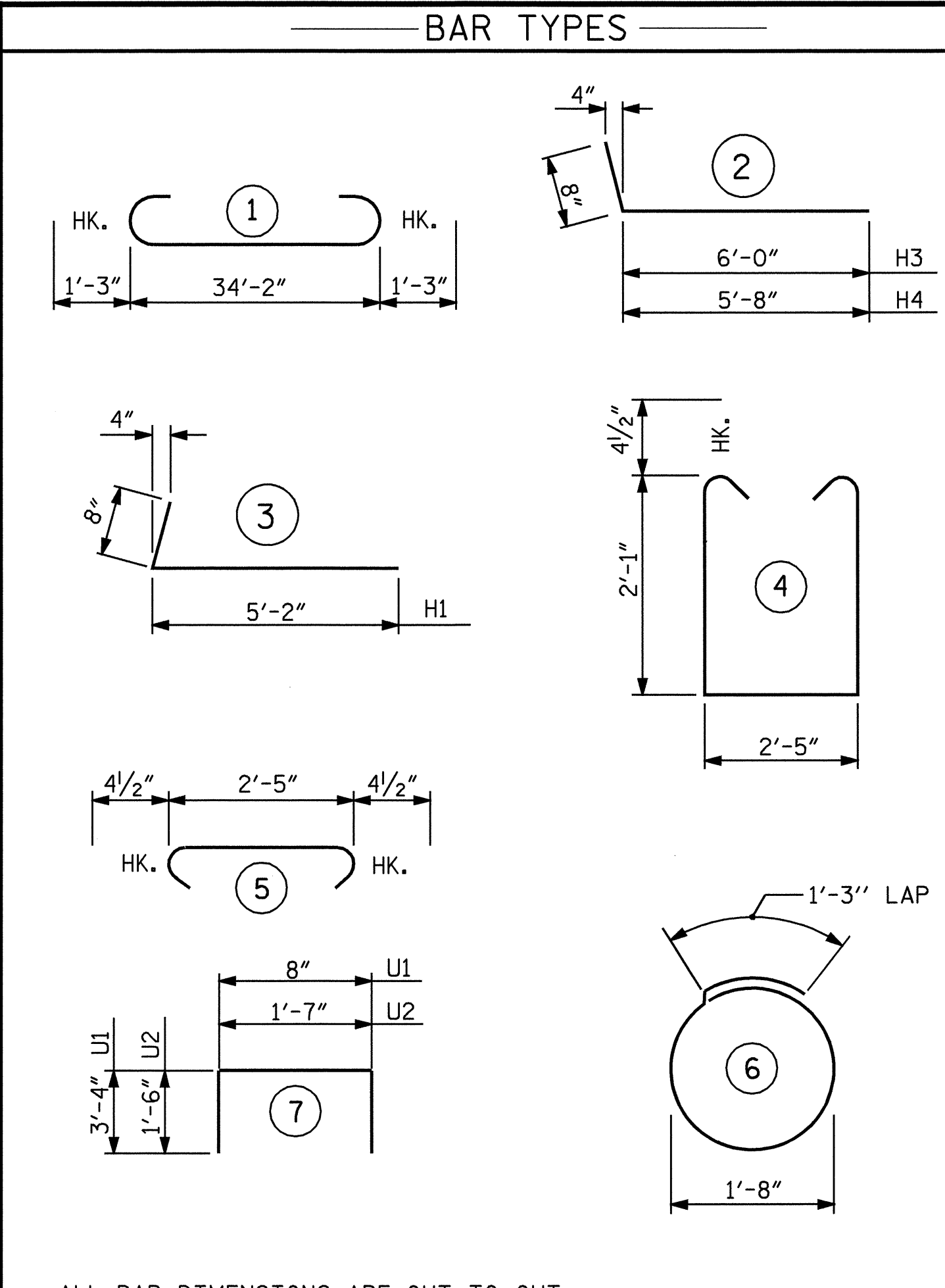
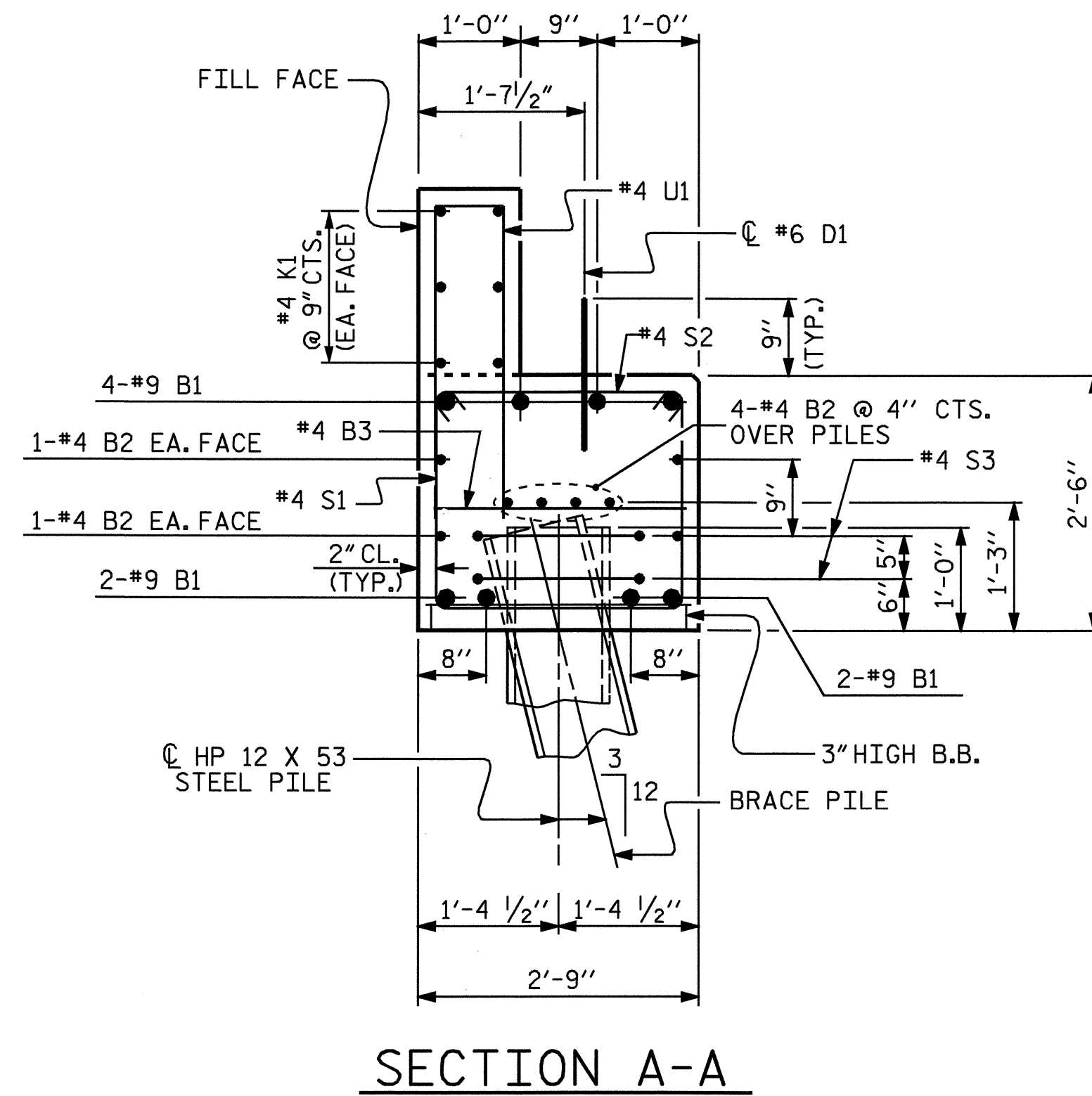


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

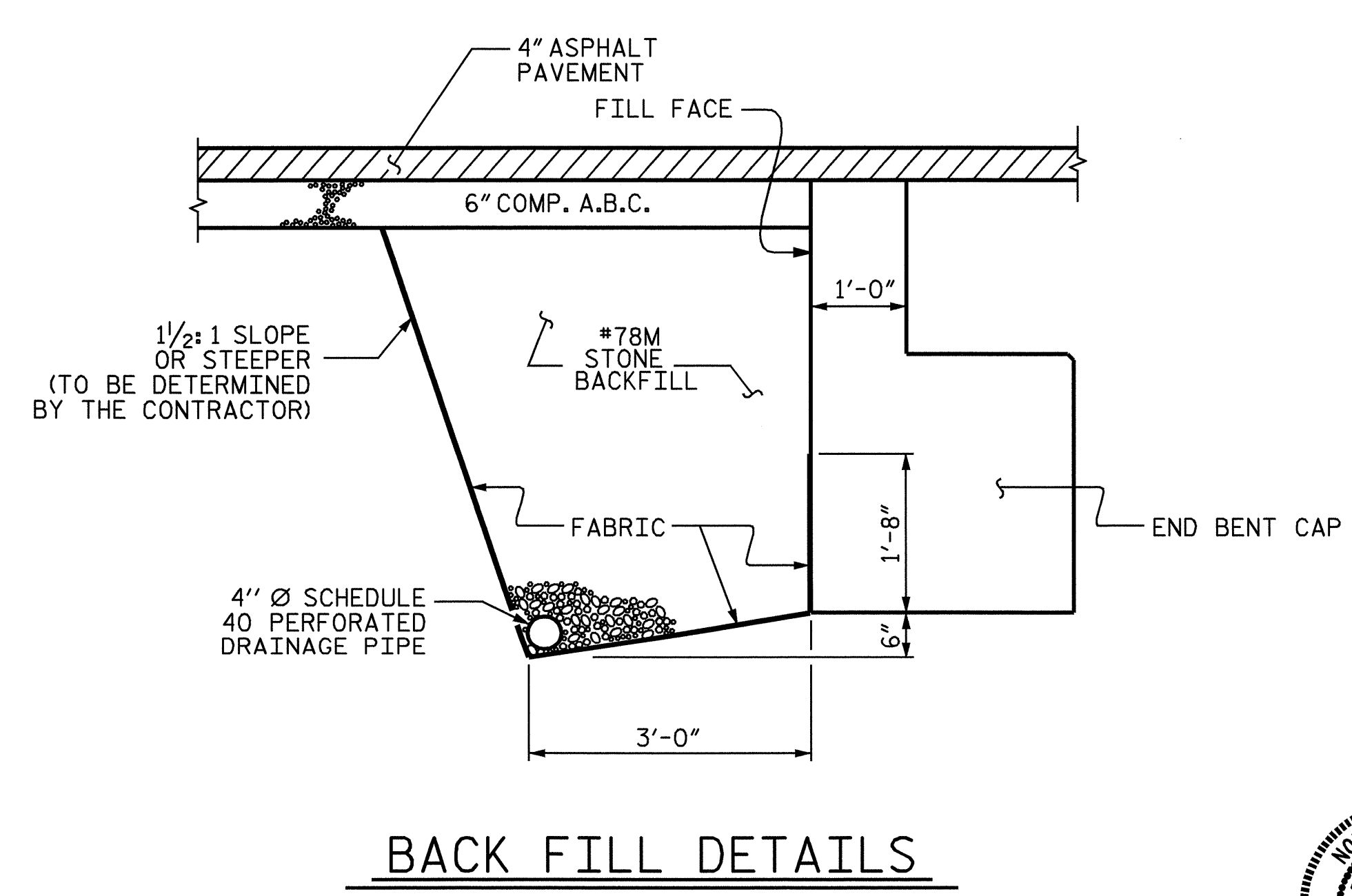
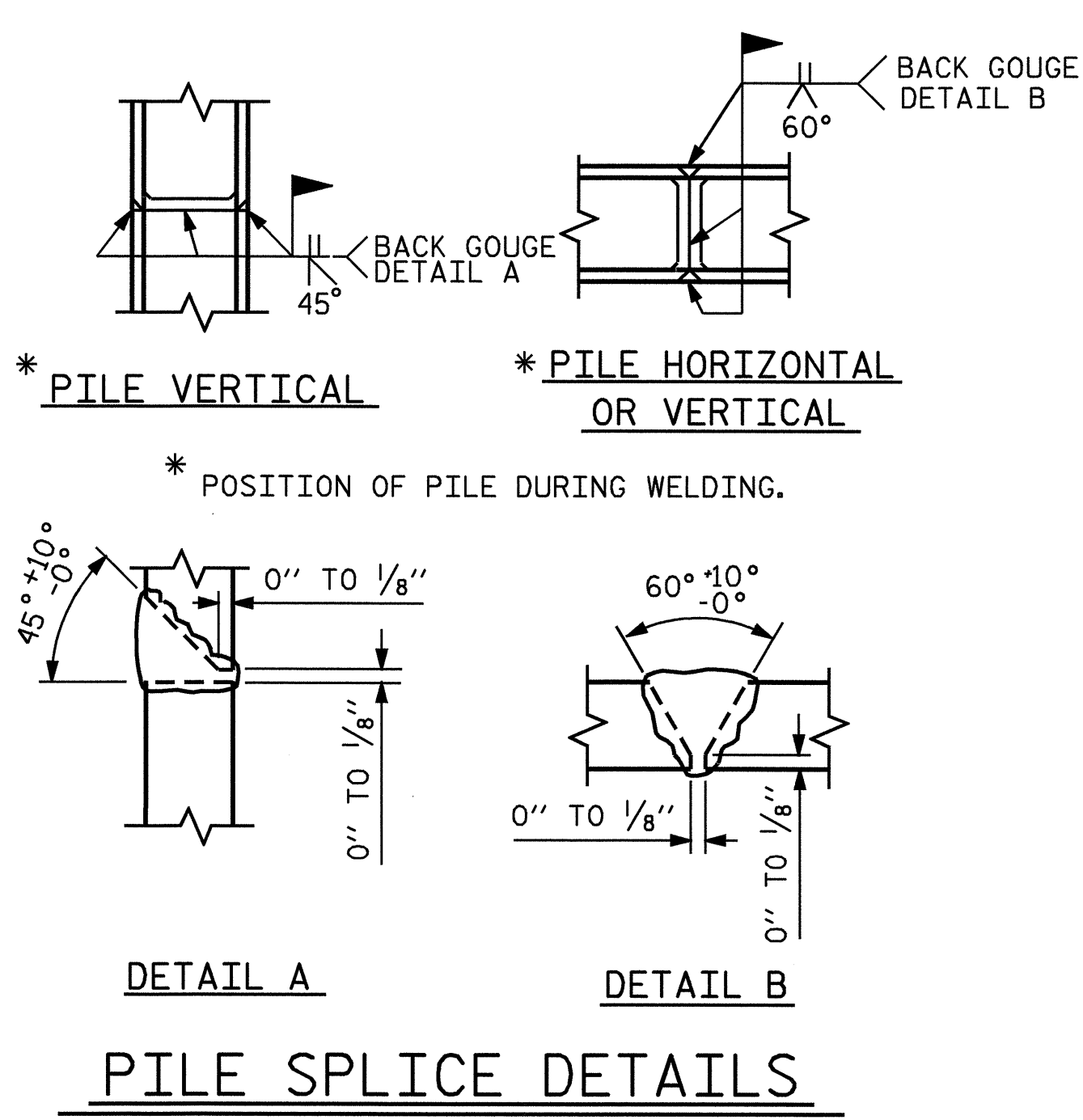
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

**TEMPORARY DRAINAGE AT END BENT**



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		36'-8"	997
B2	8	#4	STR	18'-3"	98
B3	8	#4	STR	2'-5"	13
D1	16	#6	STR	1'-6"	36
H1	6	#4		5'-10"	24
H2	6	#4	STR	5'-4"	21
H3	6	#4		6'-8"	27
H4	6	#4		6'-4"	25
K1	12	#4	STR	18'-3"	146
K2	4	#4	STR	4'-4"	12
S1	34	#4		7'-4"	167
S2	34	#4		3'-2"	72
S3	10	#4		6'-6"	43
U1	25	#4		7'-4"	122
U2	4	#4		4'-7"	12
V1	24	#4	STR	4'-3"	68
V2	24	#4	STR	4'-1"	65
REINFORCING STEEL					= 1949 LBS
CLASS A CONC. BREAKDOWN					
POUR 1 (CAP & LOWER WINGS)				9.7 C.Y.	
POUR 2 (UPPER WINGS)				3.2 C.Y.	
POUR 3 (LATERAL GUIDES)				0.1 C.Y.	
TOTAL				13.0 C.Y.	
HP 12 X 53 STEEL PILES					
NUMBER = 5		LIN. FT. = 75			



PROJECT NO. B-4322  
WILKES COUNTY  
 STATION: 15+17.50 -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:
1			3		
2			4		
					S-14
					TOTAL SHEETS 22



DRAWN BY: HARISH SHAH DATE: 8/08  
 CHECKED BY: T.H. FANG DATE: 8/08

**NOTES**

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

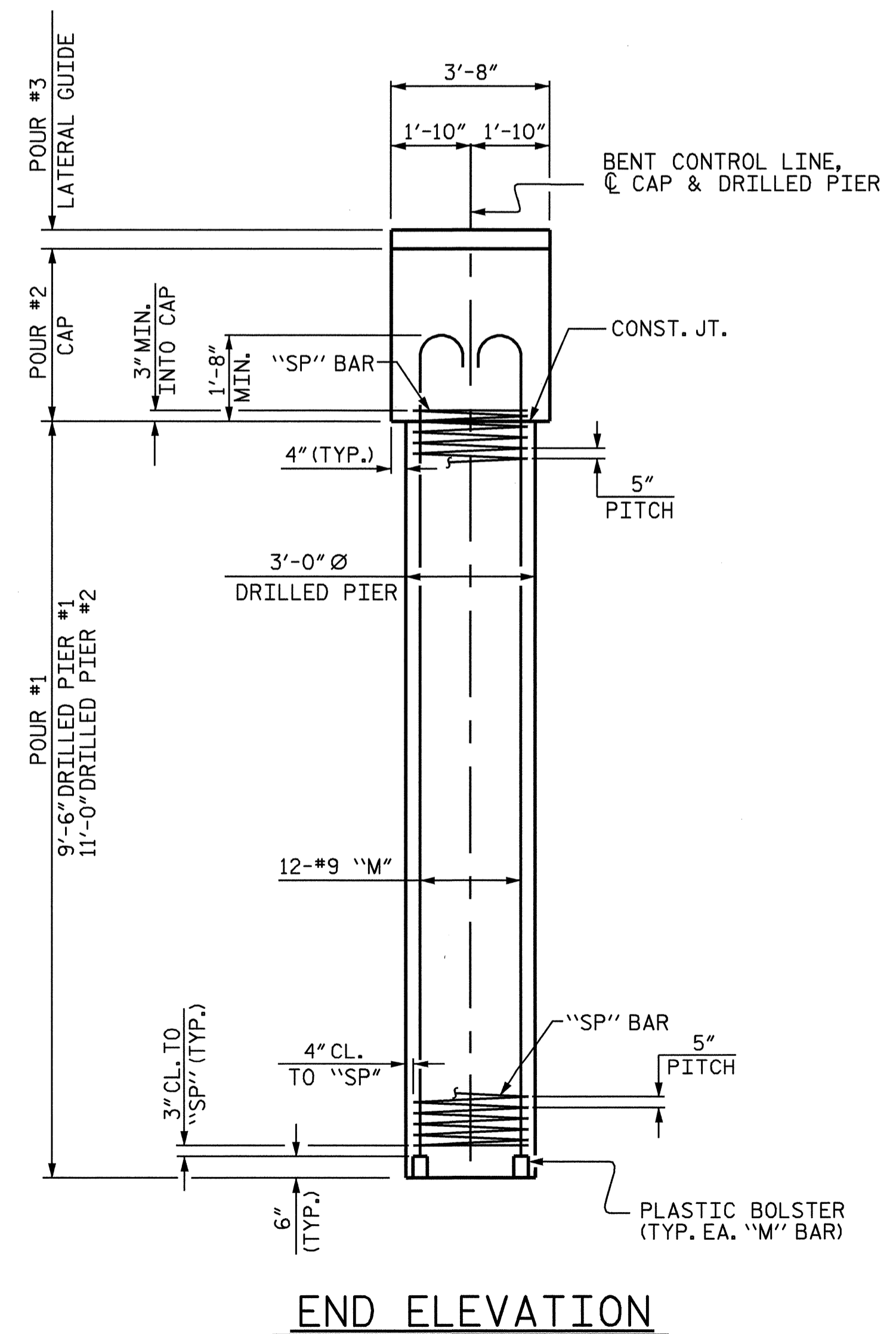
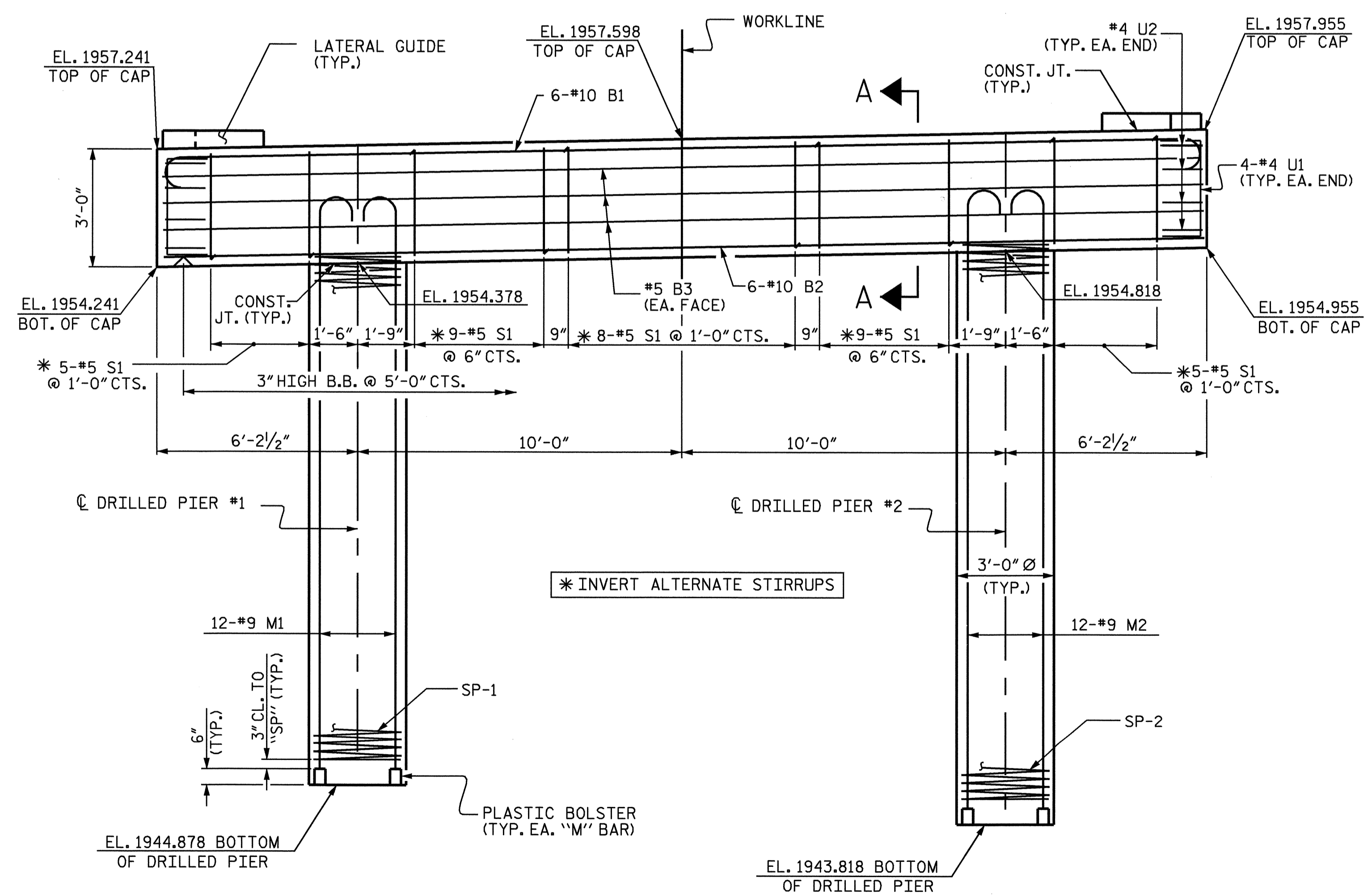
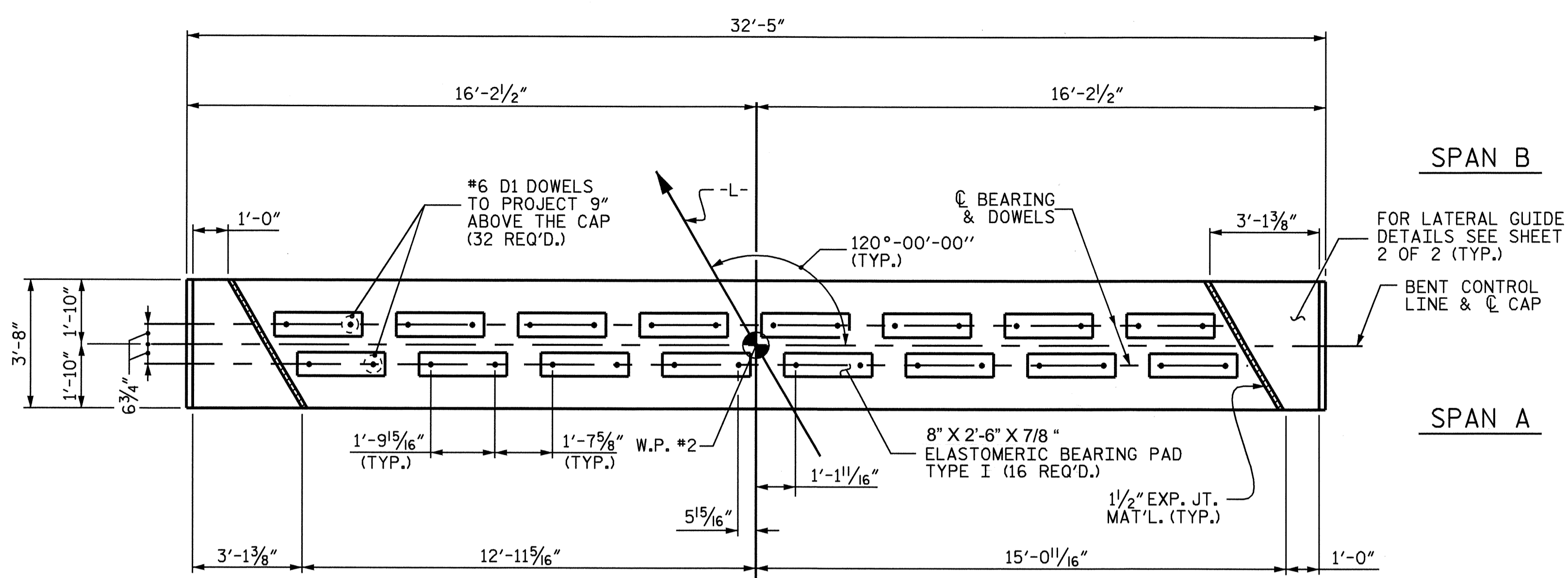
HOOKS ON "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

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

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

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

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



*John A. Yannaccone*  
 9/17/08

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WILKES COUNTY  
 STATION: 15+17.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

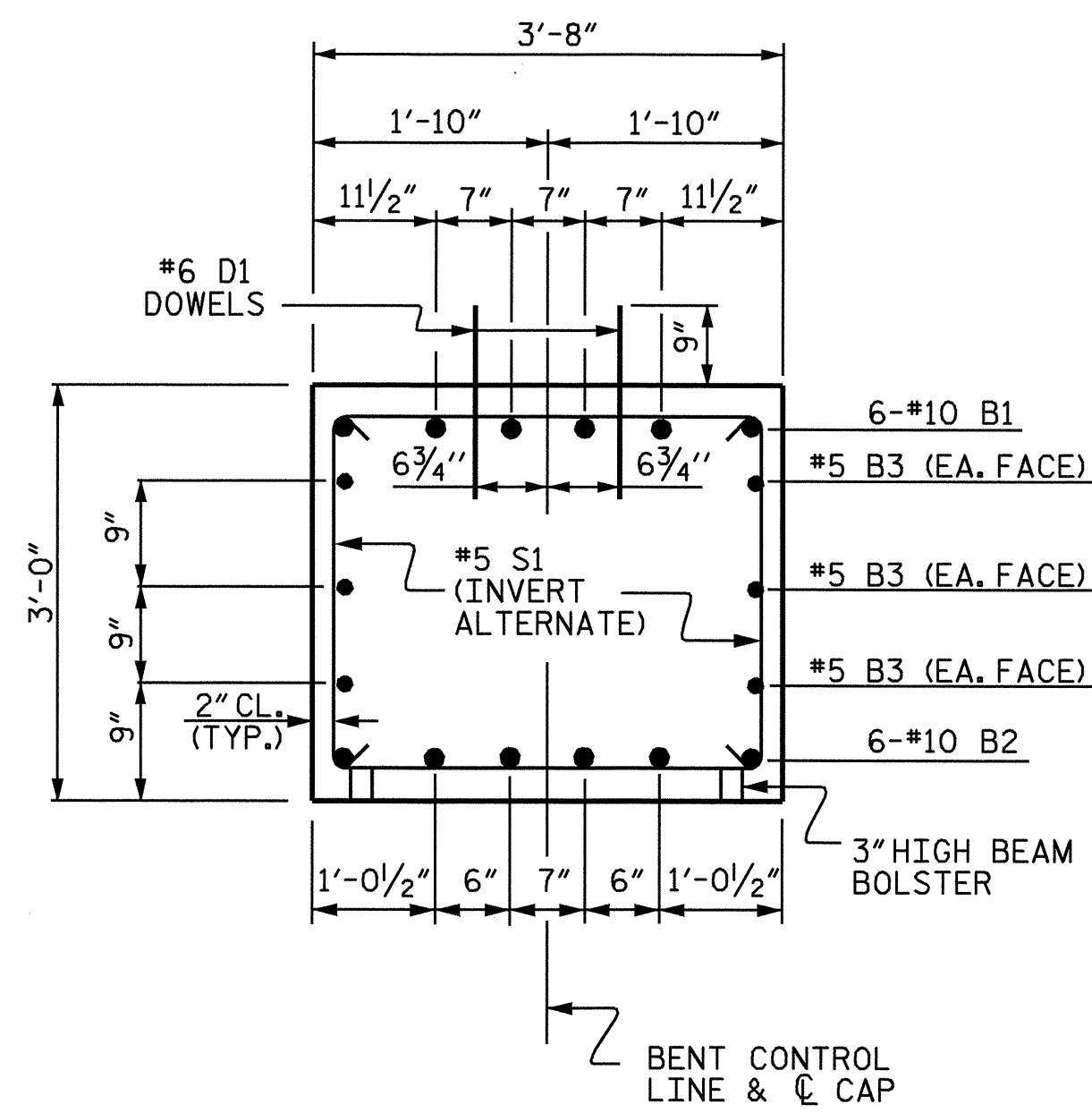
**SUBSTRUCTURE**

**BENT 1**

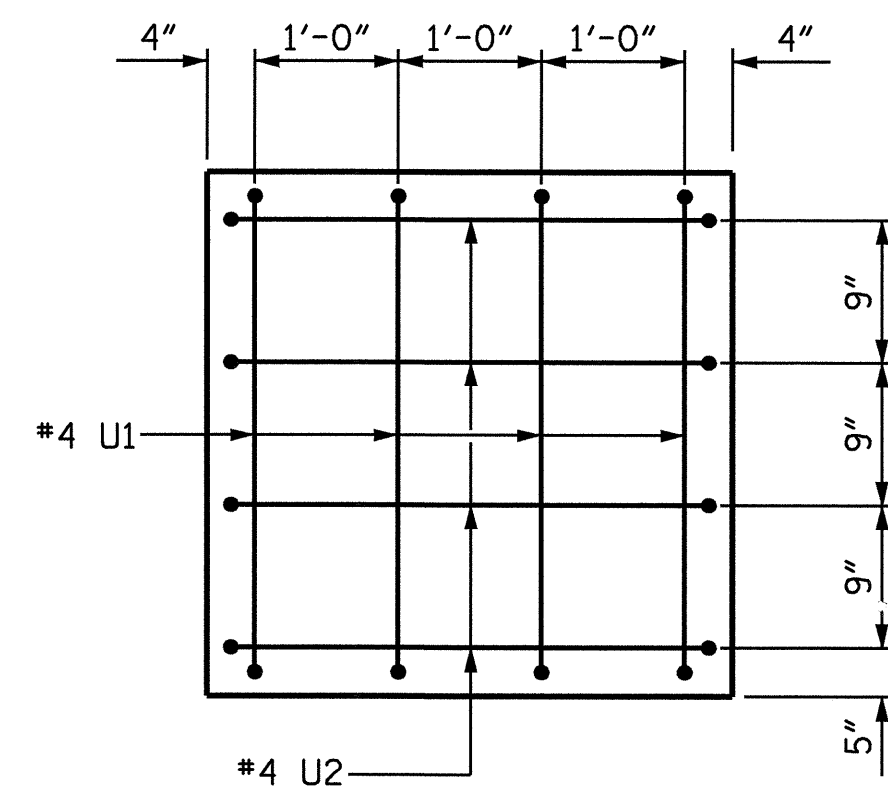
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15	
1			3			TOTAL SHEETS	
2			4			22	

DRAWN BY: HARISH SHAH DATE: 4/23/08  
 CHECKED BY: J.A. YANNAKONE DATE: 8/08

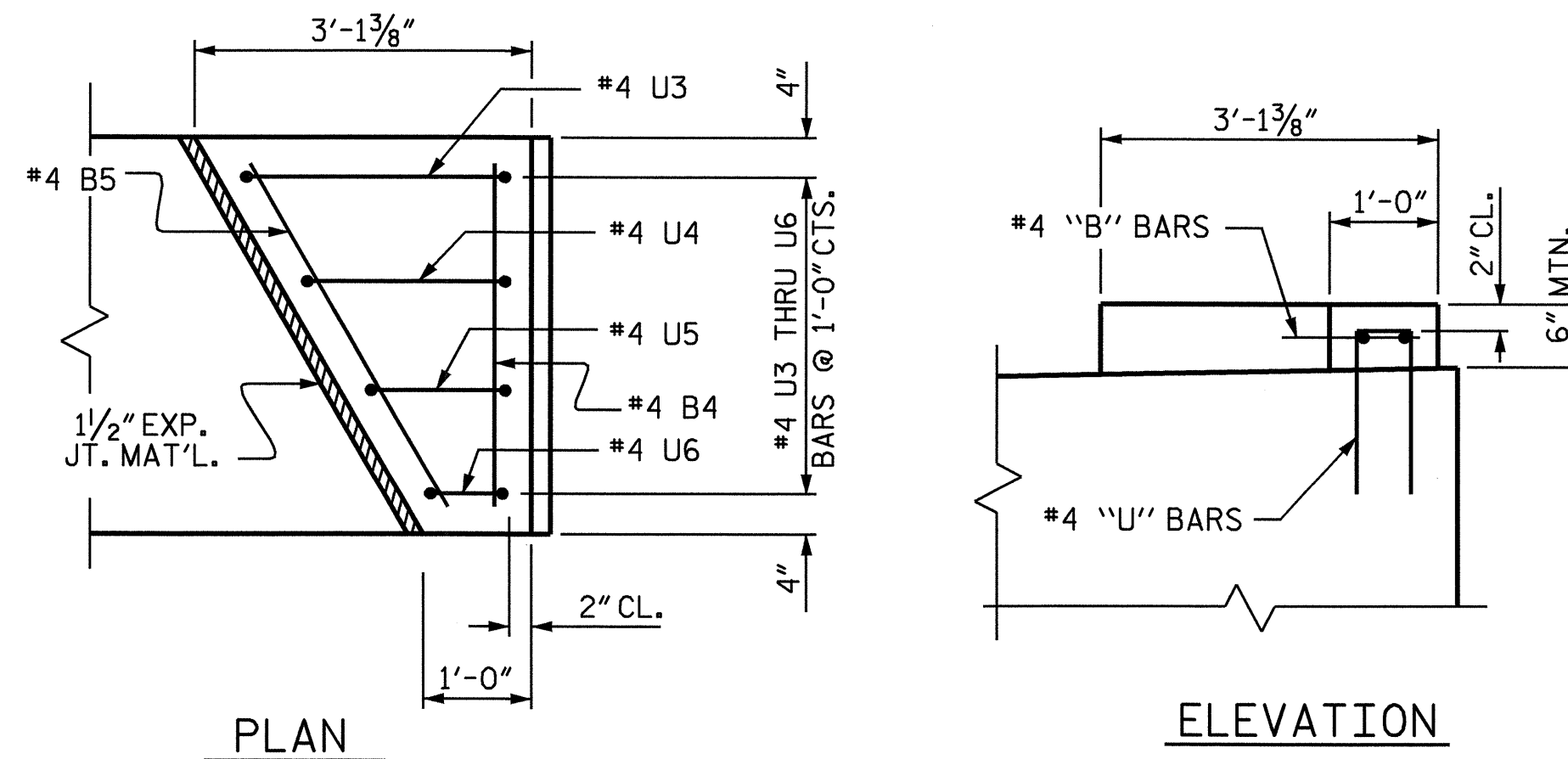




SECTION A-A

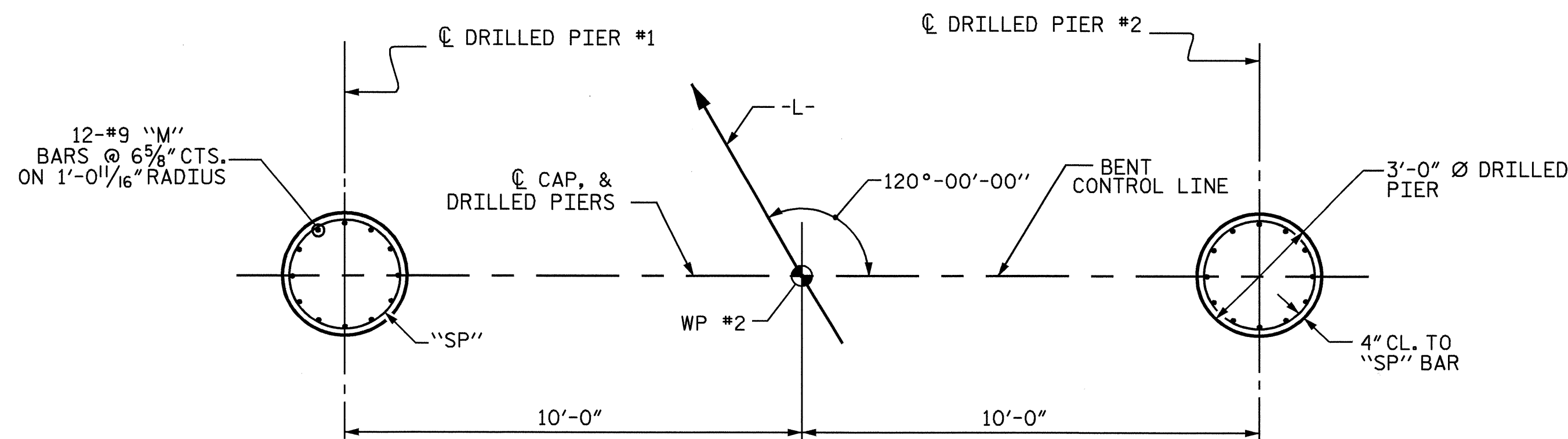


END VIEW  
(TYP. EACH END)



LATERAL GUIDE DETAILS

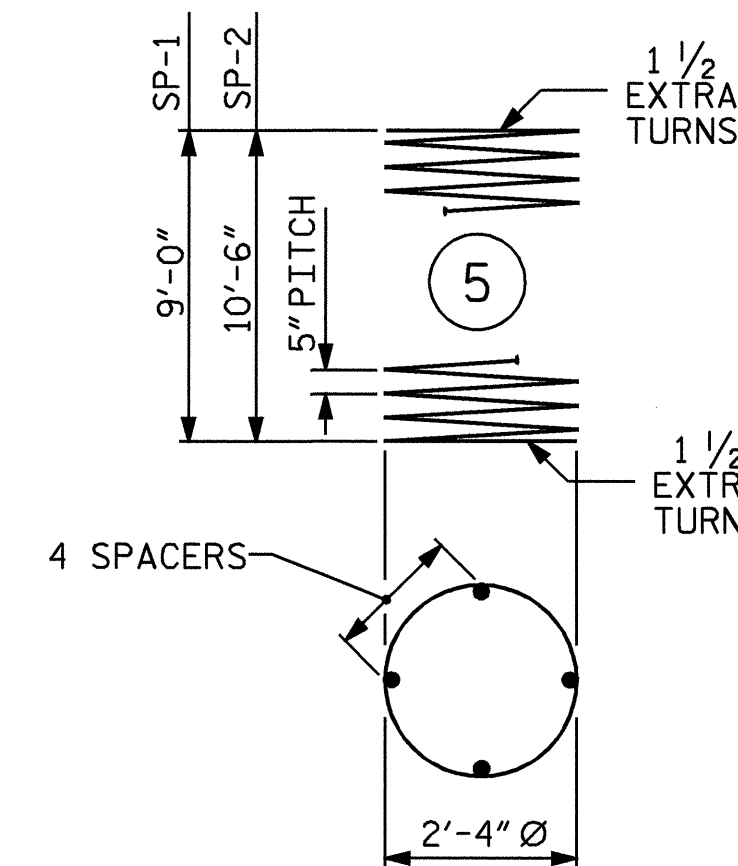
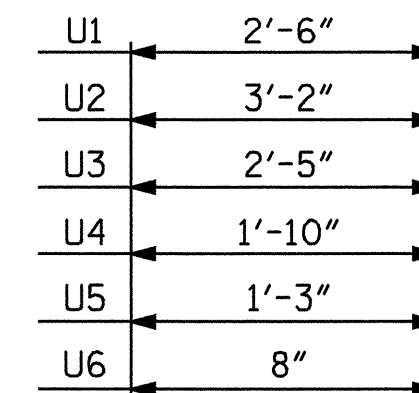
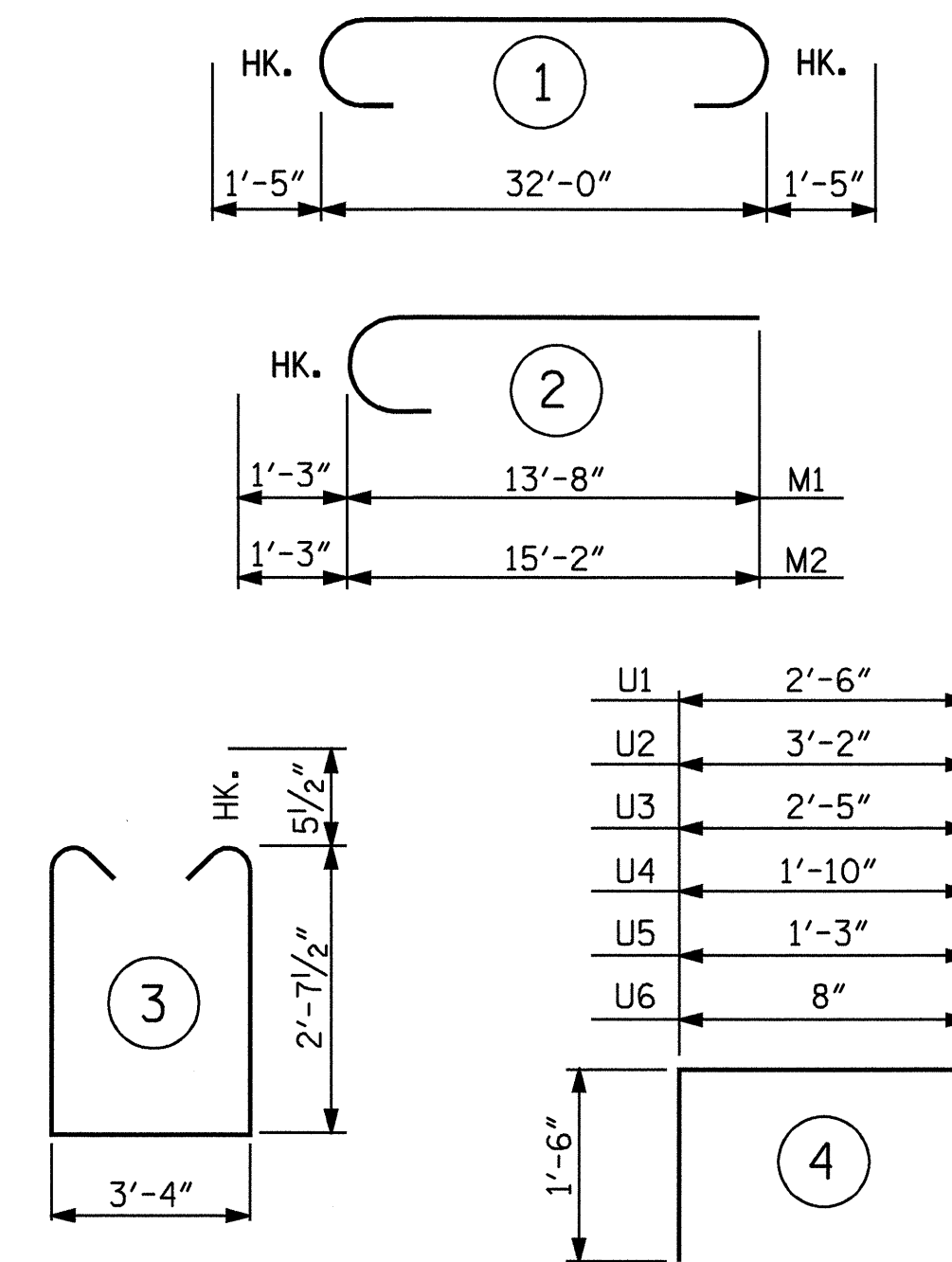
RIGHT END OF CAP SHOWN, LEFT END SIMILAR BY ROTATION



PLAN OF DRILLED PIERS

DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH DRILLED PIER

BAR TYPES



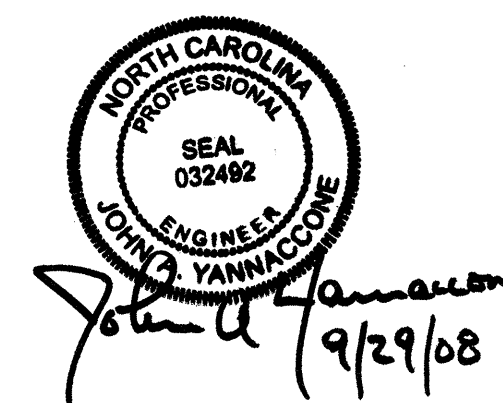
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	1	34'-10"	899
B2	6	#10	STR	32'-1"	828
B3	6	#5	STR	32'-1"	201
B4	2	#4	STR	3'-4"	4
B5	2	#4	STR	3'-10"	5
D1	32	#6	STR	1'-6"	72
M1	12	#9	2	14'-11"	609
M2	12	#9	2	16'-5"	670
S1	36	#5	3	9'-6"	357
U1	8	#4	4	5'-6"	29
U2	8	#4	4	6'-2"	33
U3	2	#4	4	5'-5"	7
U4	2	#4	4	4'-10"	7
U5	2	#4	4	4'-3"	6
U6	2	#4	4	3'-8"	5
REINFORCING STEEL				=	3732 LBS
SPIRAL REINFORCING STEEL					
SP-1	1	**	5	176'-3"	184
SP-2	1	**	5	202'-0"	211
TOTAL SPIRAL COLUMN REINFORCING STEEL					395 LBS.
CLASS A CONCRETE BREAKDOWN					
POUR #2 CAP					13.2 CY
POUR #3 LATERAL GUIDES					0.3 CY
TOTAL					13.5 CY
3'-0" Ø DRILLED PIER QUANTITIES					
DRILLED PIER CONCRETE					
POUR #1 DRILLED PIERS					5.4 CY
PERMANENT STEEL CASING					6.2 FT.
DRILLED PIERS IN SOIL					7.5 FT.
DRILLED PIERS NOT IN SOIL					13.0 FT.
CSL TUBES					102 LIN. FT.
**THE SP-1 AND SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BARS.					

PROJECT NO. B-4322  
 WILKES COUNTY  
 STATION: 15+17.50 -L-

SHEET 2 OF 2



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE

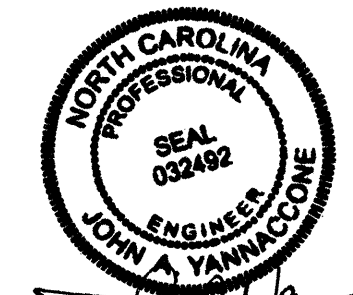
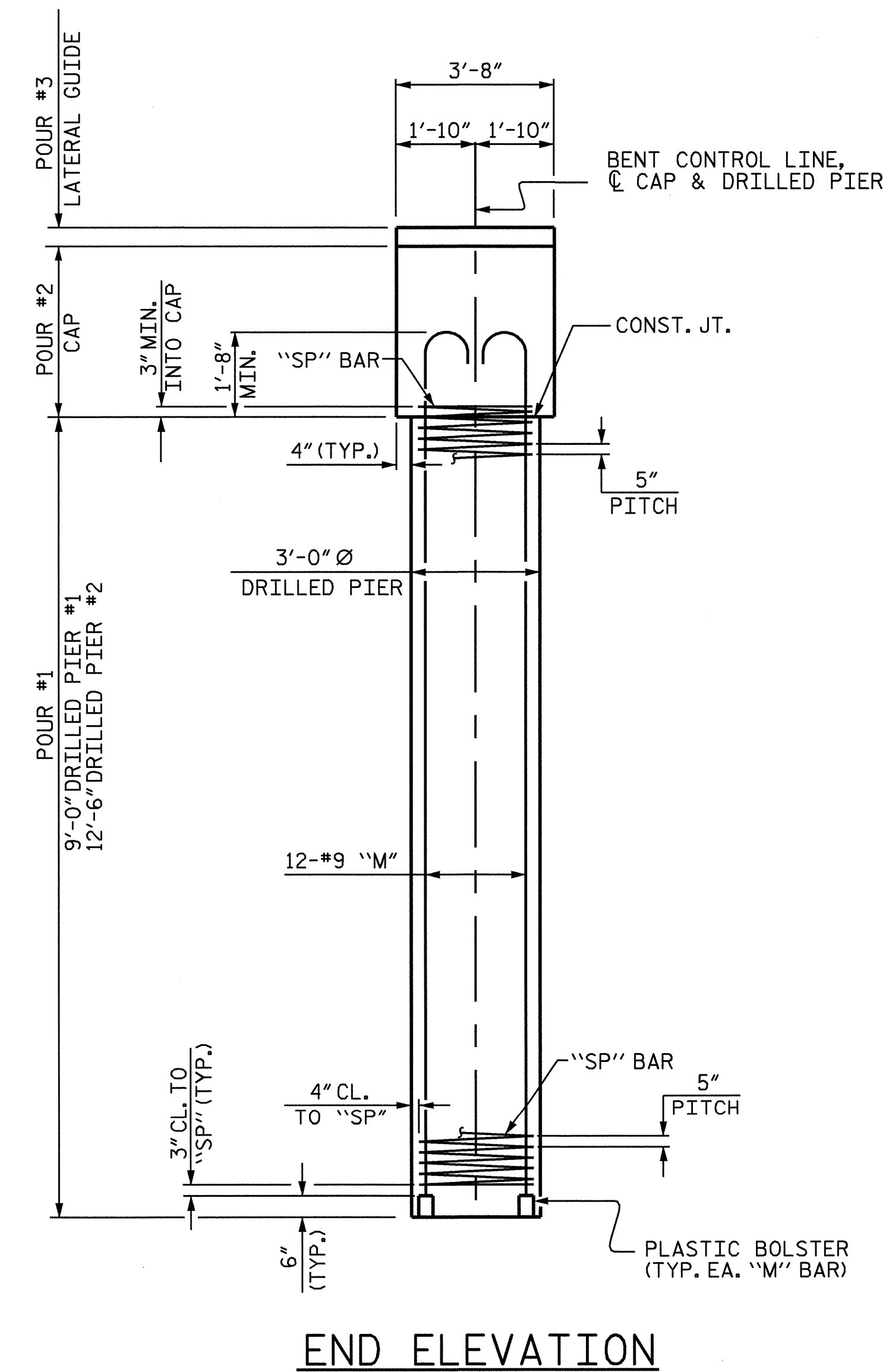
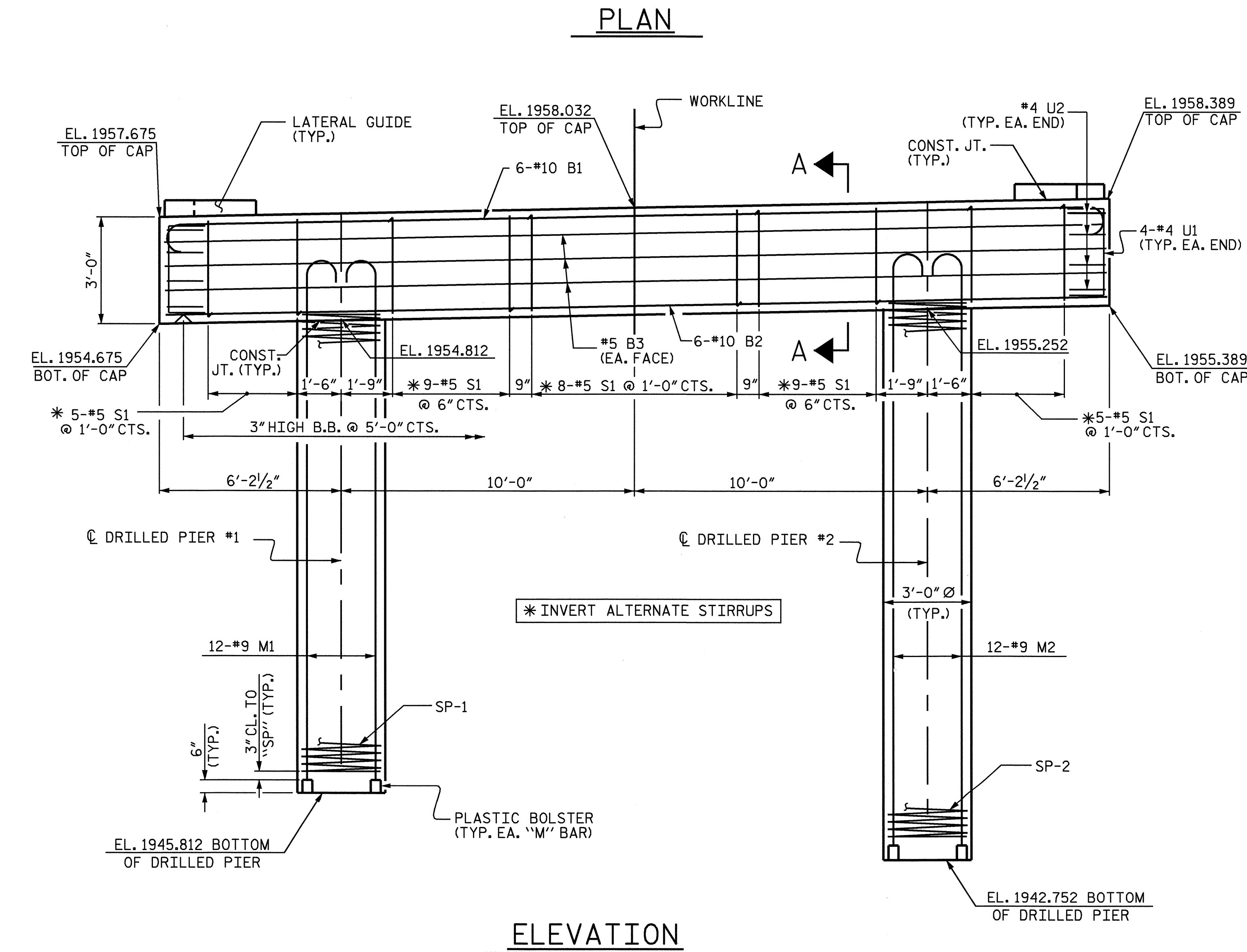
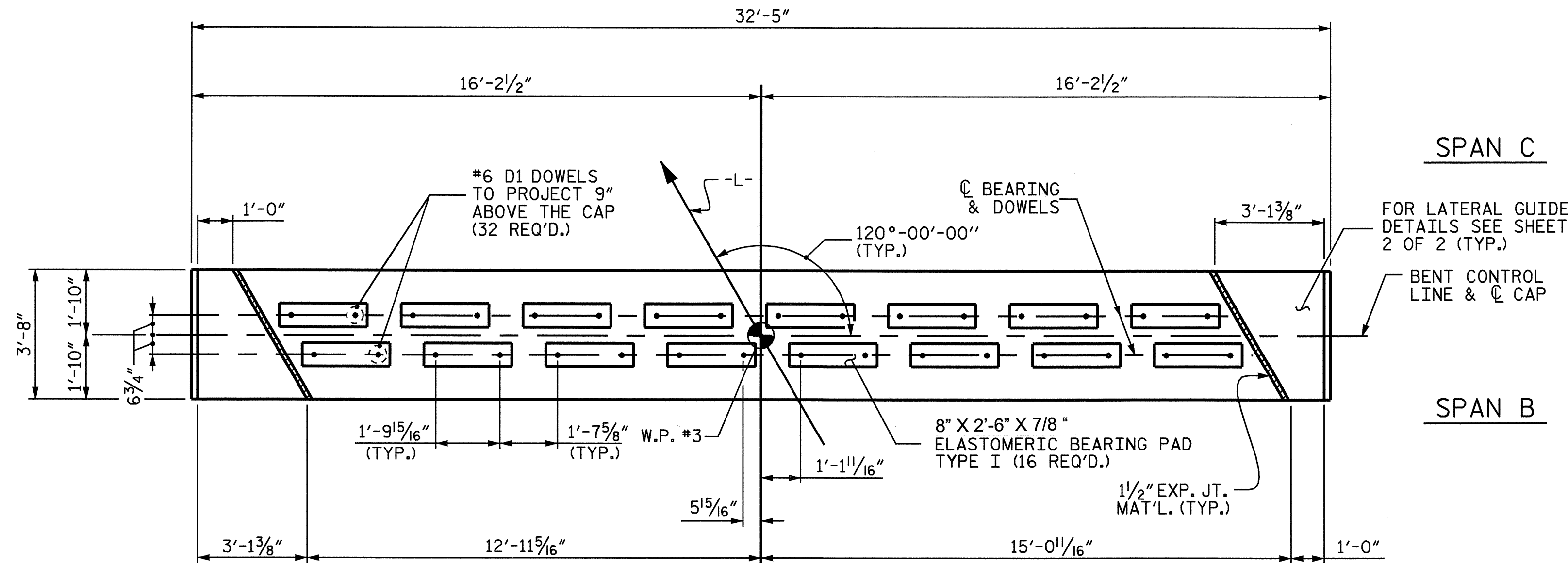
BENT 1

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-16
2			4			TOTAL SHEETS 22

NOTES

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



John A. Yannaccone  
 9/17/08

PROJECT NO. B-4322  
 WILKES COUNTY  
 STATION: 15+17.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE

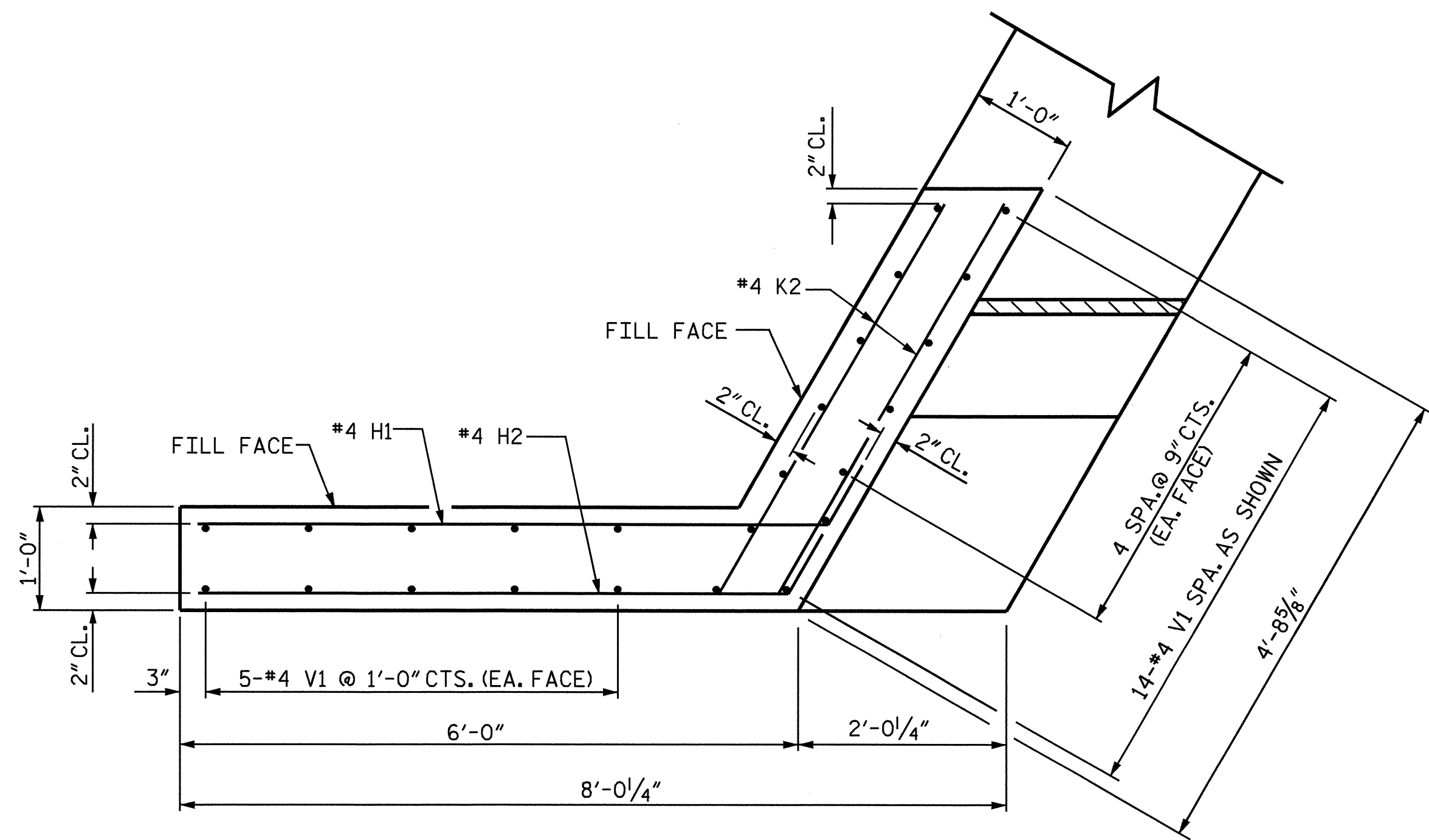
BENT 2

REVISIONS						SHEET NO. S-17
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

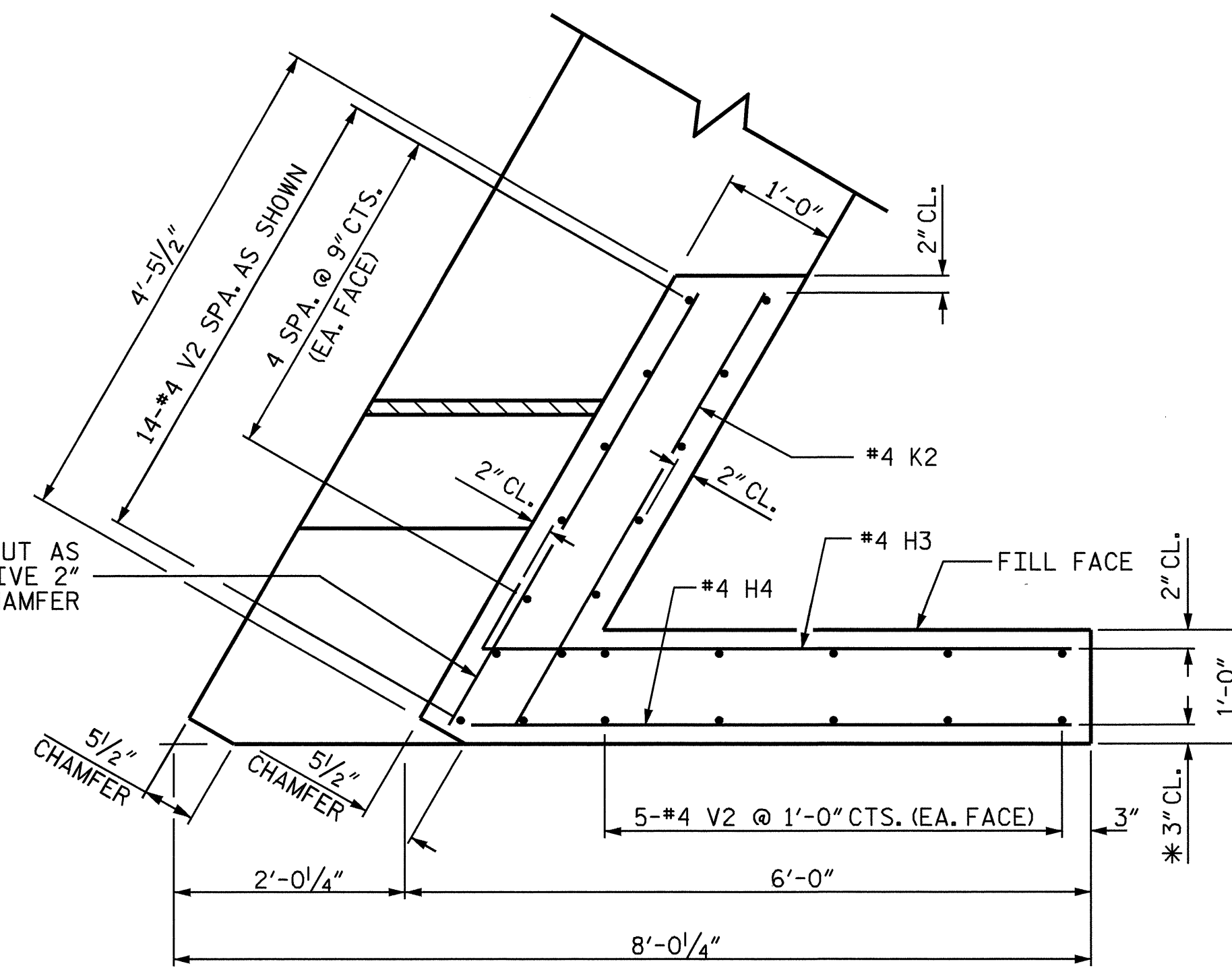
DRAWN BY: HARISH SHAH DATE: 4/23/08  
 CHECKED BY: J.A. YANNAKONE DATE: 8/08





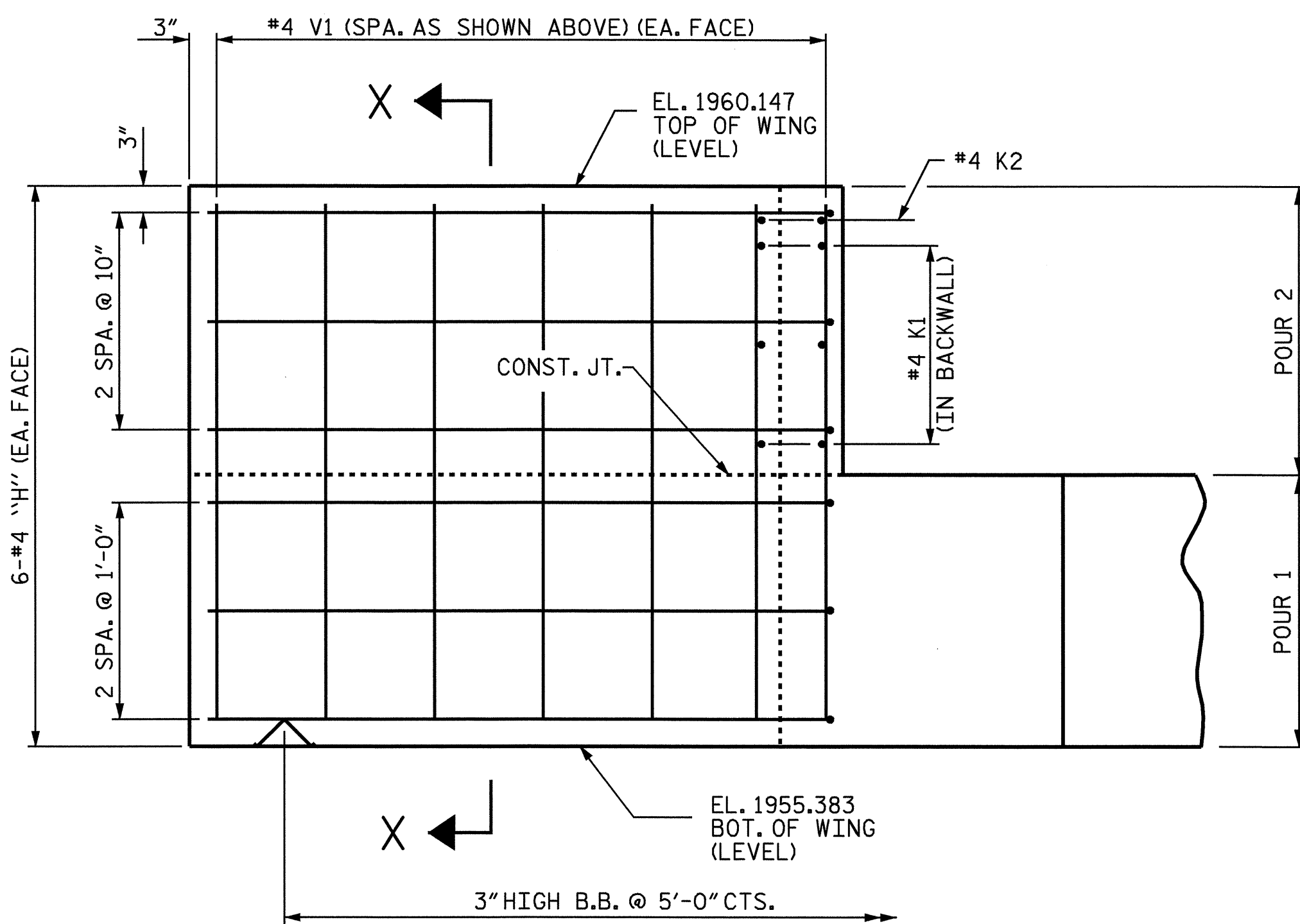


PLAN OF WING (W1)

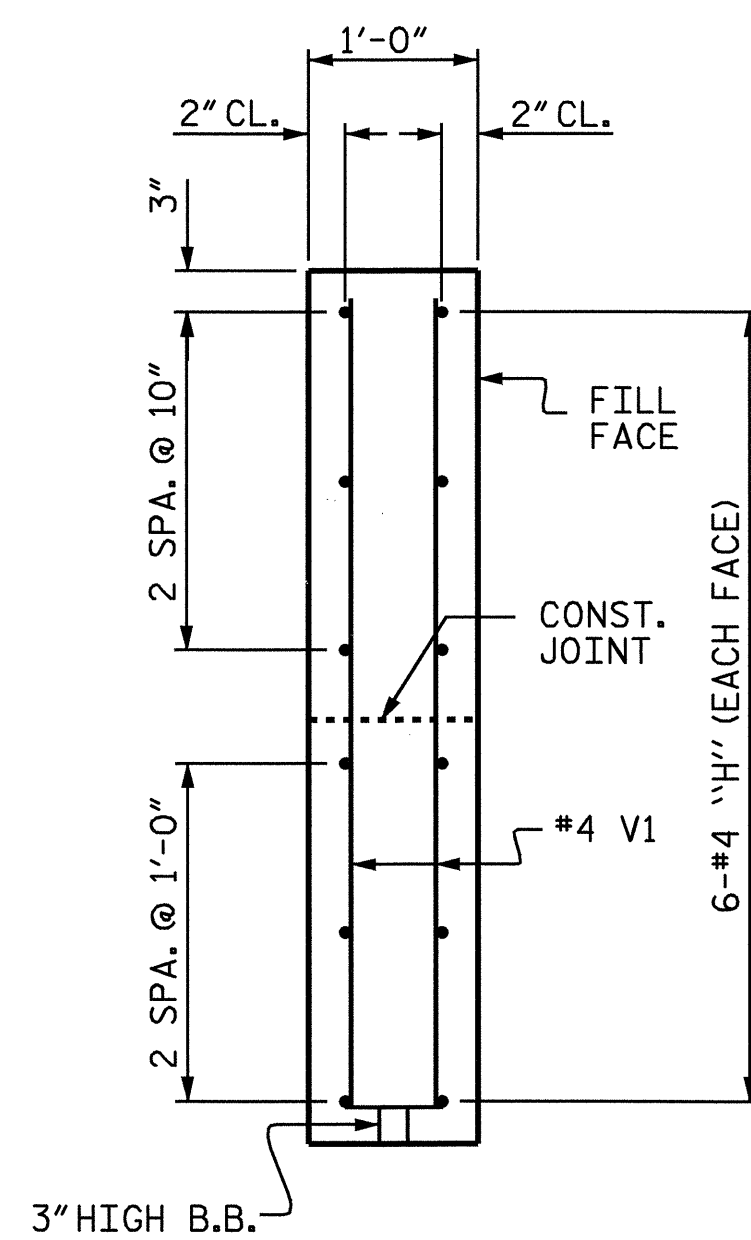


PLAN OF WING (W2)

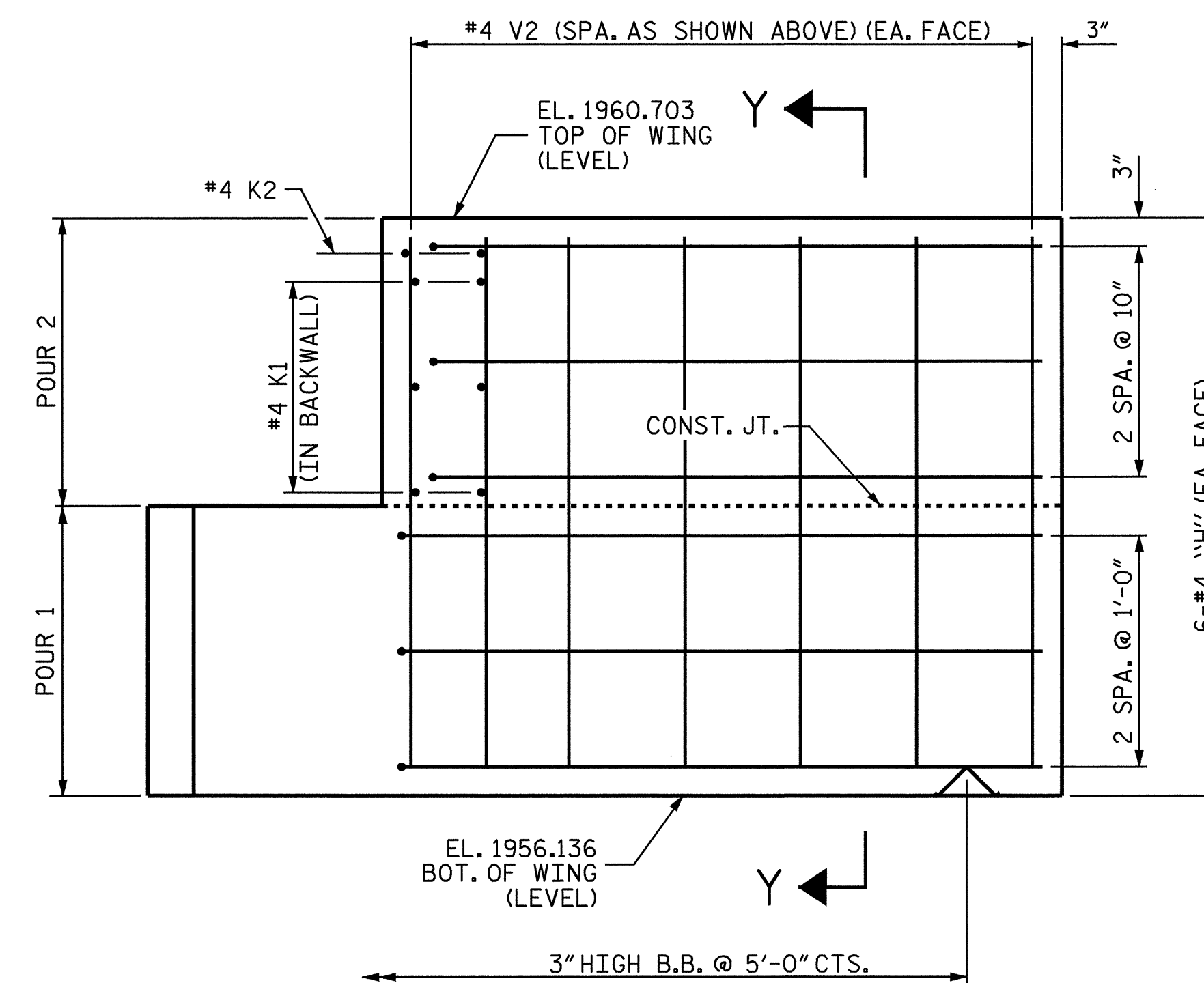
\* NON-TYPICAL CLEARANCE



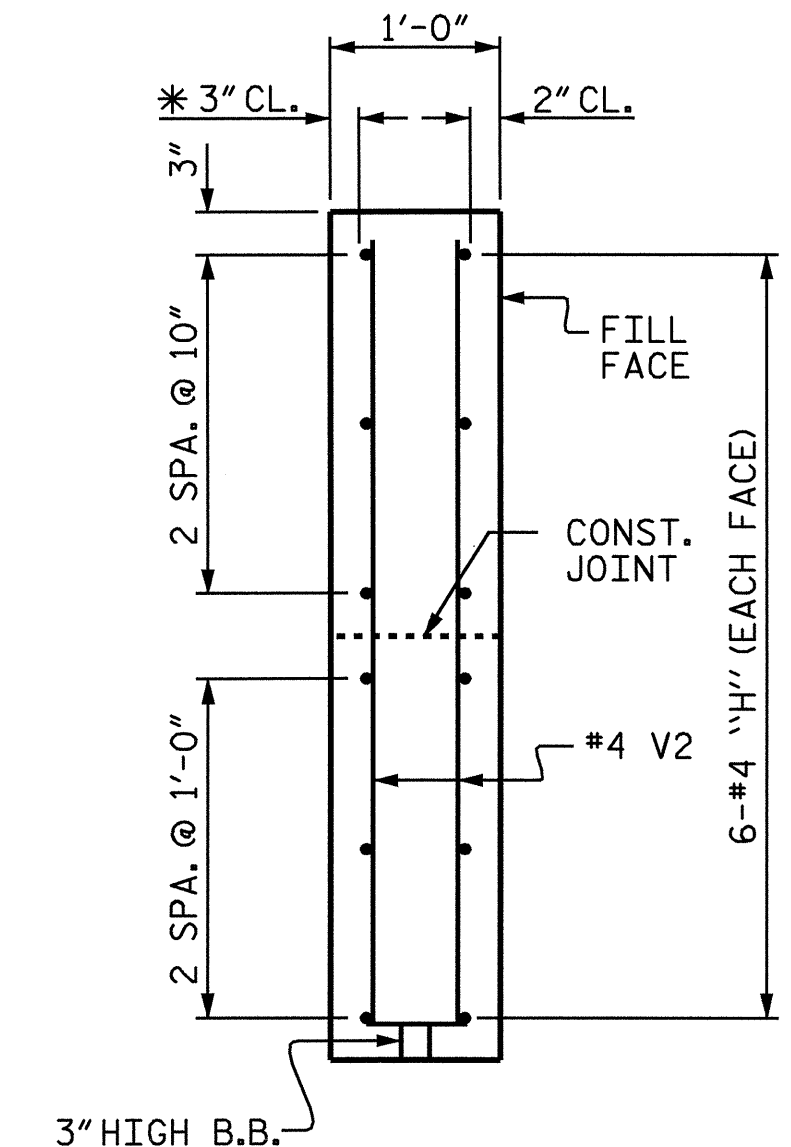
ELEVATION OF WING (W1)



SECTION X-X



ELEVATION OF WING (W2)

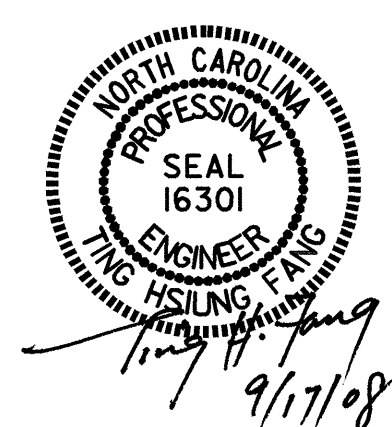


SECTION Y-Y

PROJECT NO. B-4322  
WILKES COUNTY  
 STATION: 15+17.50 -L-

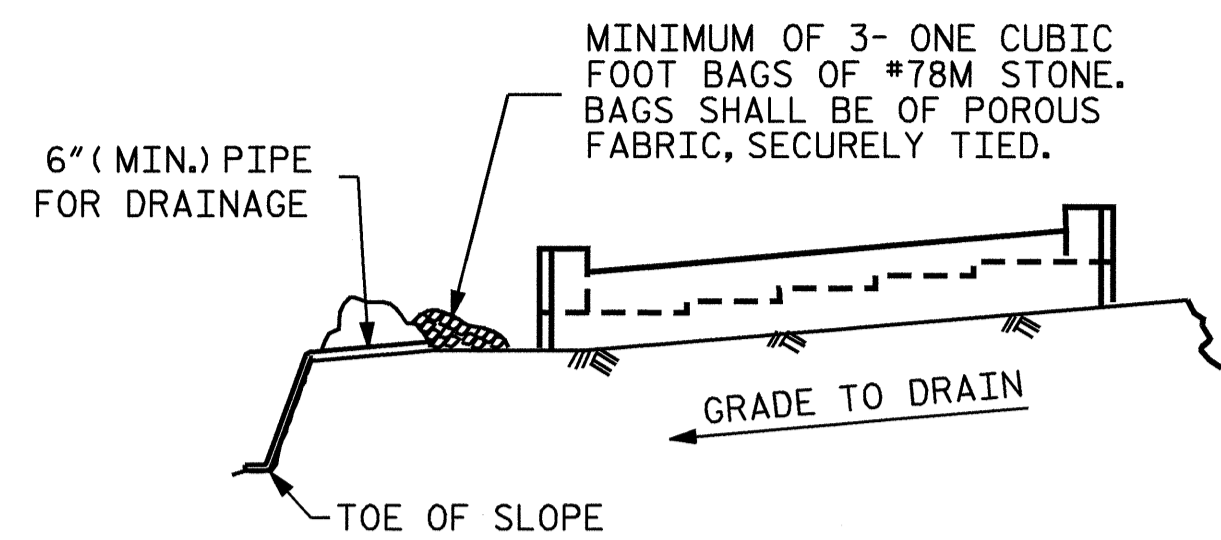
SHEET 2 OF 3

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



DRAWN BY: HARISH SHAH DATE: 05-08  
 CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20	
1			3			TOTAL SHEETS	
2			4			22	

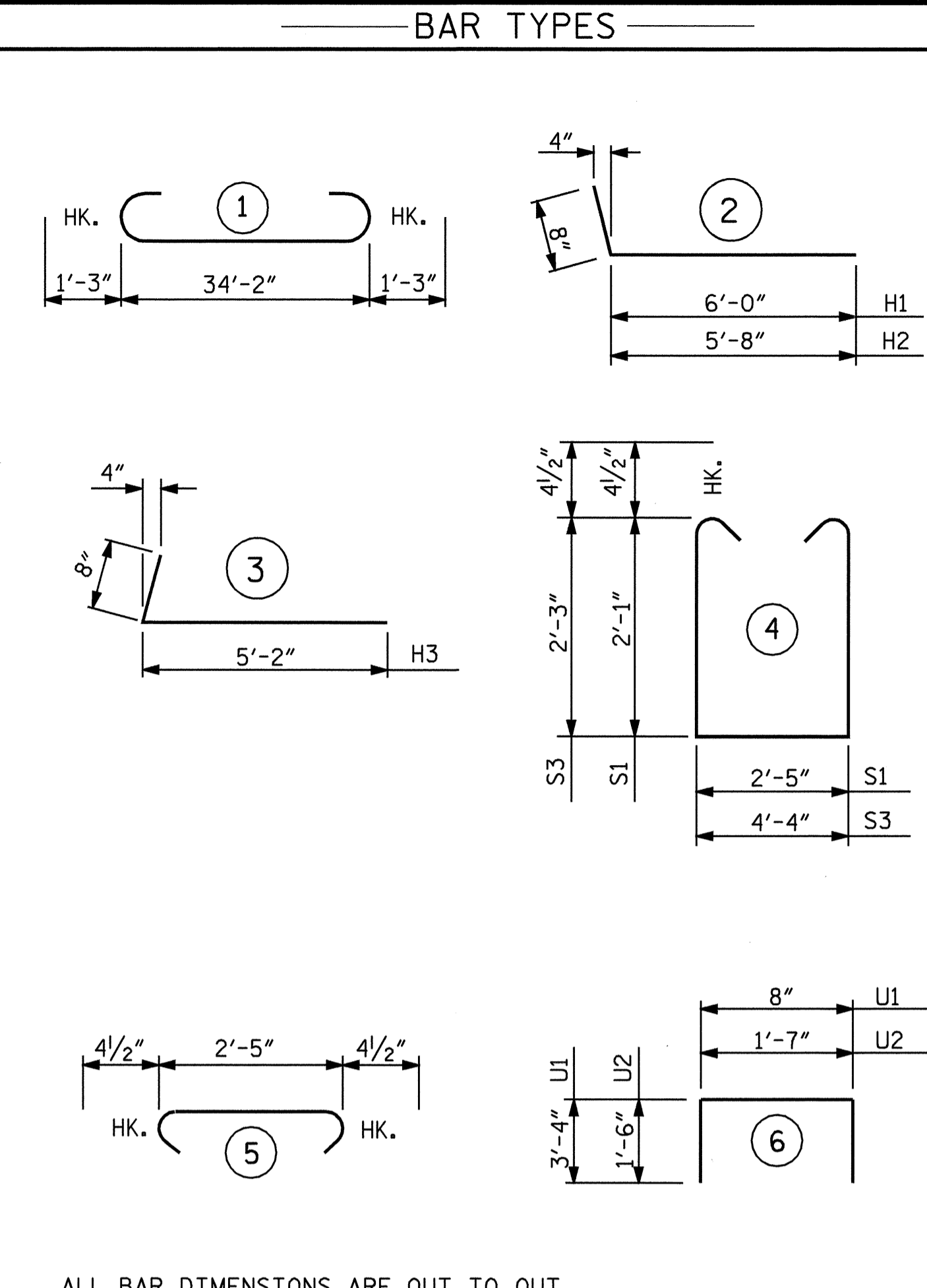
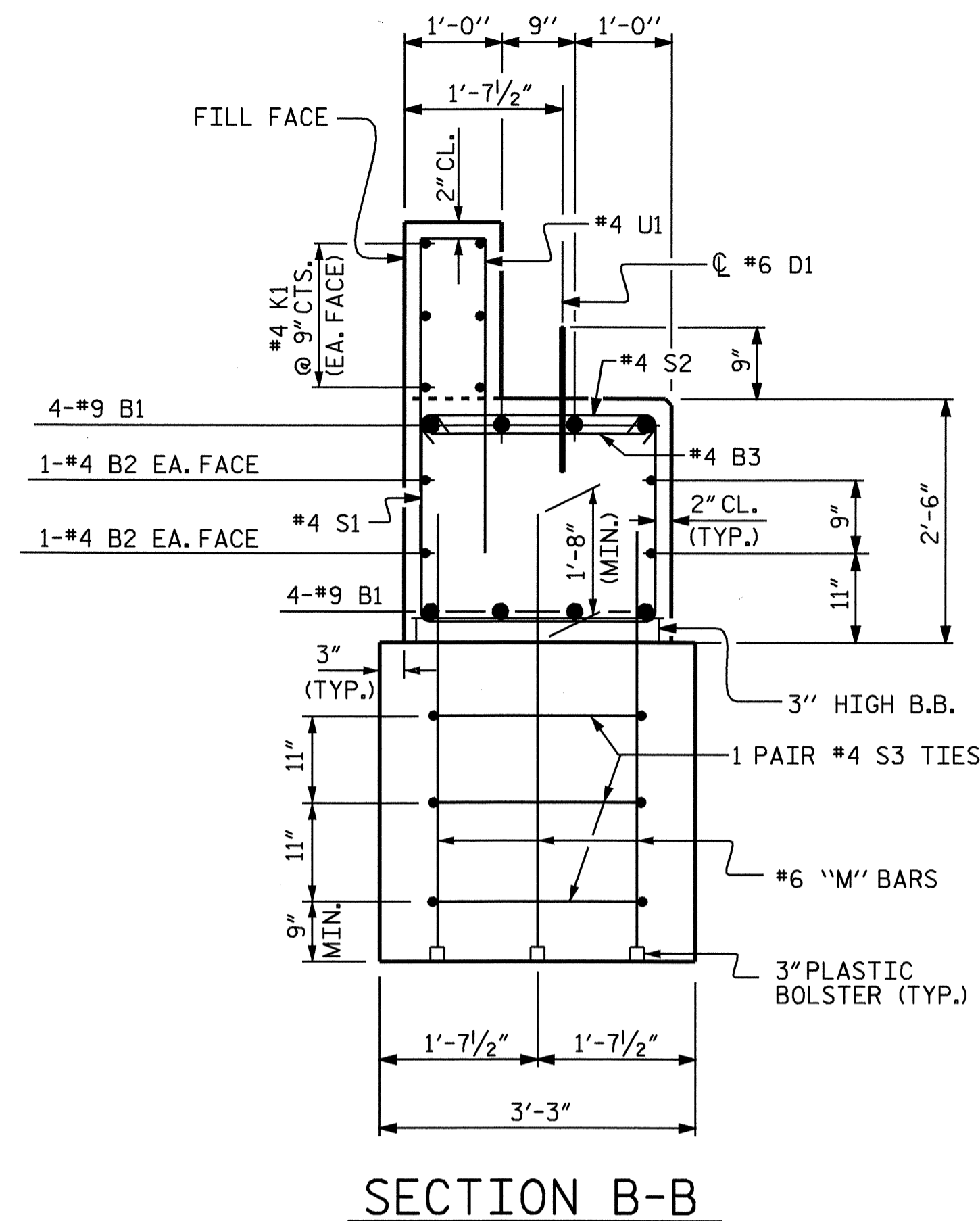


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

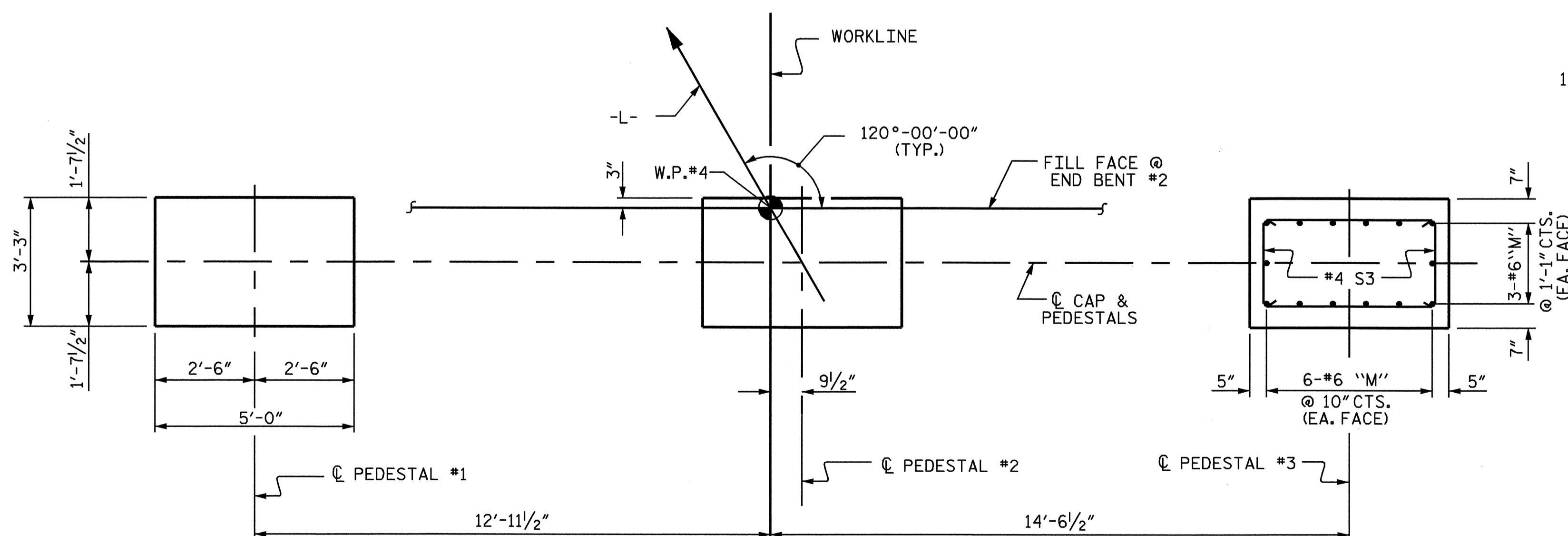
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

**TEMPORARY DRAINAGE AT END BENT**

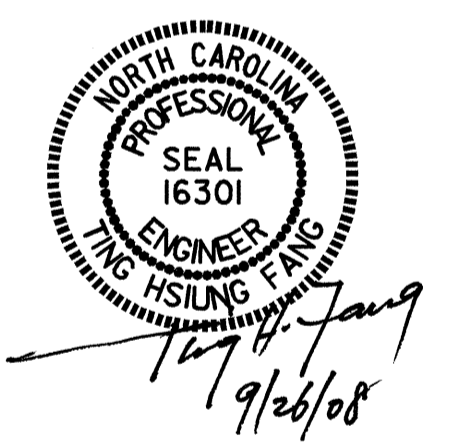
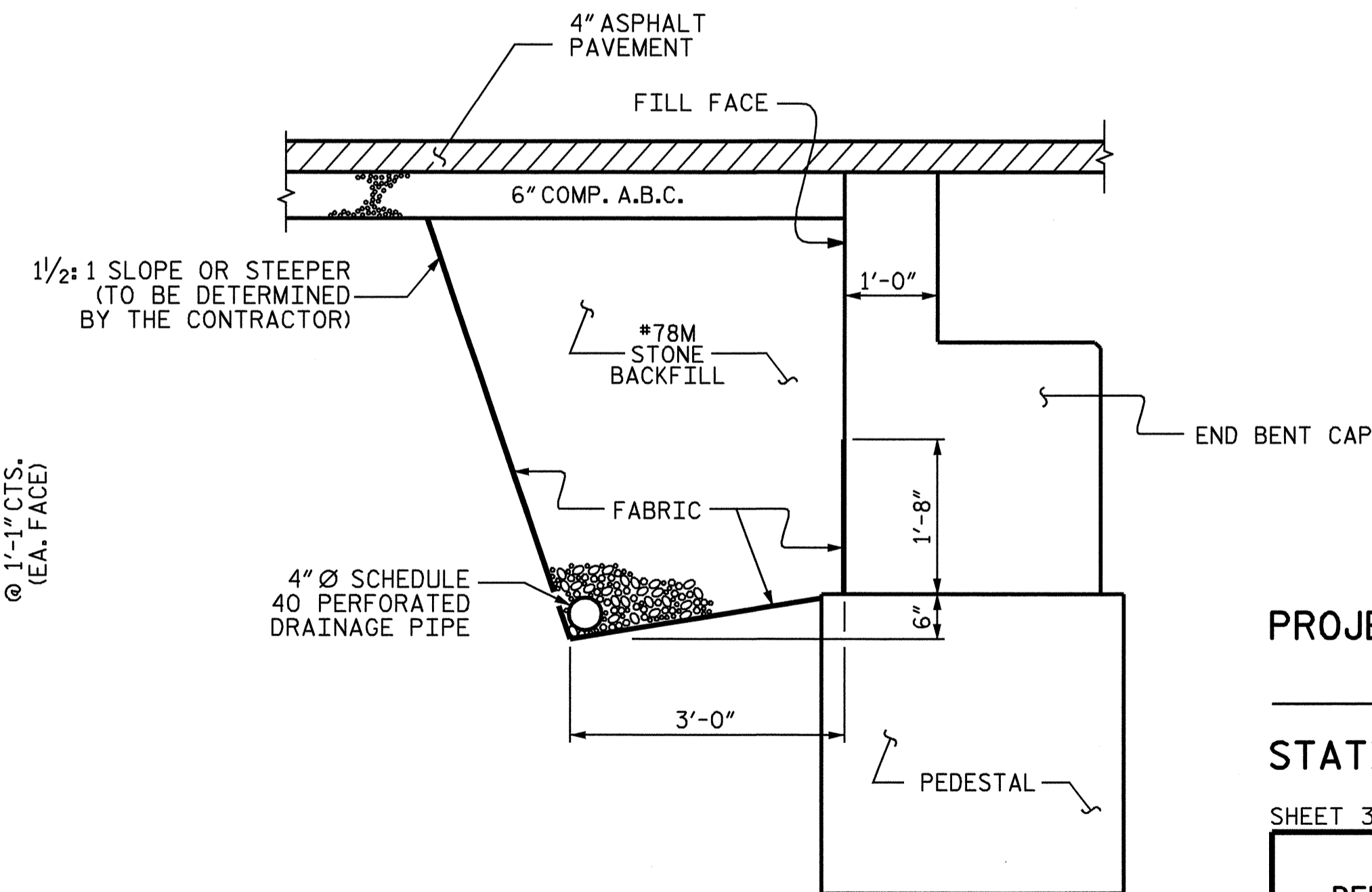


**BILL OF MATERIAL**

END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	36'-8"	997
B2	8	#4	STR	18'-3"	98
B3	5	#4	STR	2'-5"	8
D1	16	#6	STR	1'-6"	36
H1	6	#4	2	6'-8"	27
H2	6	#4	2	6'-4"	25
H3	6	#4	3	5'-10"	23
H4	6	#4	STR	5'-4"	21
K1	12	#4	STR	18'-3"	146
K2	4	#4	STR	4'-4"	12
M1	14	#6	STR	5'-5"	114
M2	14	#6	STR	5'-9"	121
M3	14	#6	STR	6'-0"	126
S1	18	#4	4	7'-4"	88
S2	18	#4	5	3'-2"	38
S3	18	#4	4	9'-7"	115
U1	25	#4	6	7'-4"	122
U2	4	#4	6	4'-7"	12
V1	24	#4	STR	4'-4"	69
V2	24	#4	STR	4'-2"	67
REINFORCING STEEL					= 2267 LBS
CLASS A CONC. BREAKDOWN					
POUR 1 (PEDESTALS)					5.9 C.Y.
POUR 2 (CAP & LOWER WINGS)					9.7 C.Y.
POUR 3 (UPPER WINGS)					3.2 C.Y.
POUR 4 (LATERAL GUIDES)					0.1 C.Y.
TOTAL					18.9 C.Y.



**PLAN OF PEDESTALS**  
DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH PEDESTAL.



PROJECT NO. B-4322  
WILKES COUNTY  
 STATION: 15+17.50 -L-  
 SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

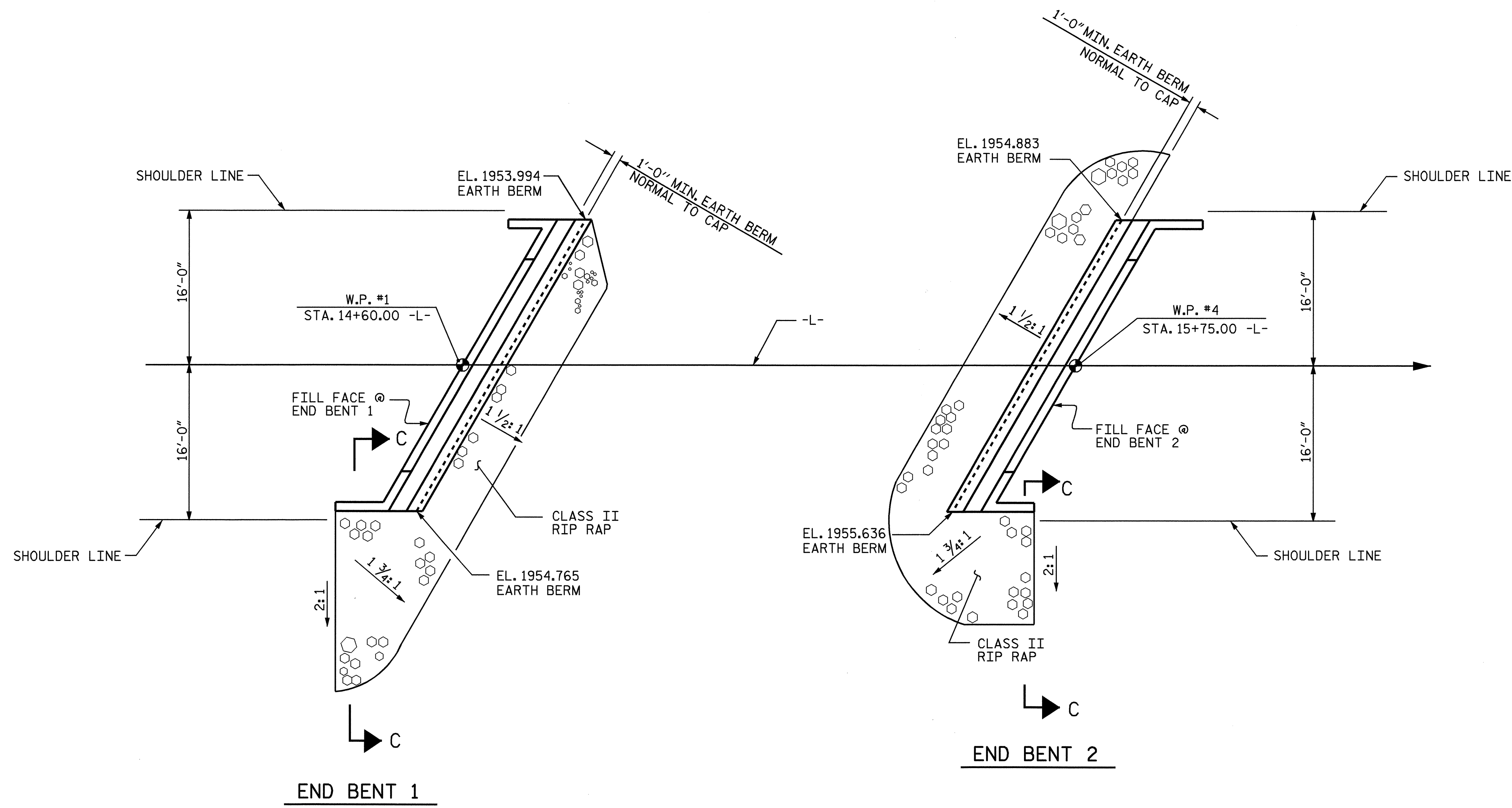
**SUBSTRUCTURE**

**END BENT 2**

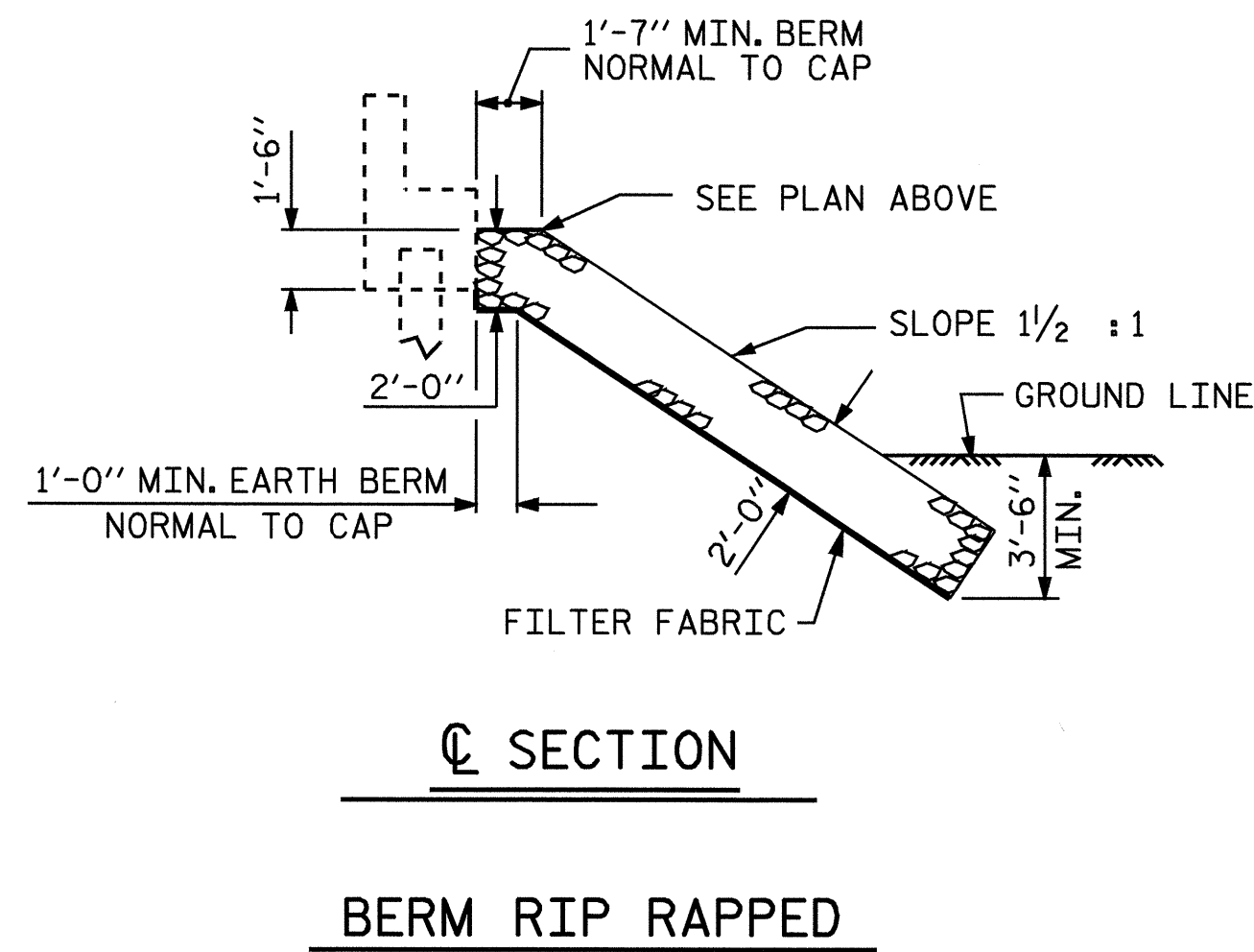
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS 22
2			4			

DRAWN BY : HARISH SHAH DATE : 8/15/08  
 CHECKED BY : T.H. FANG DATE : 8/17/08

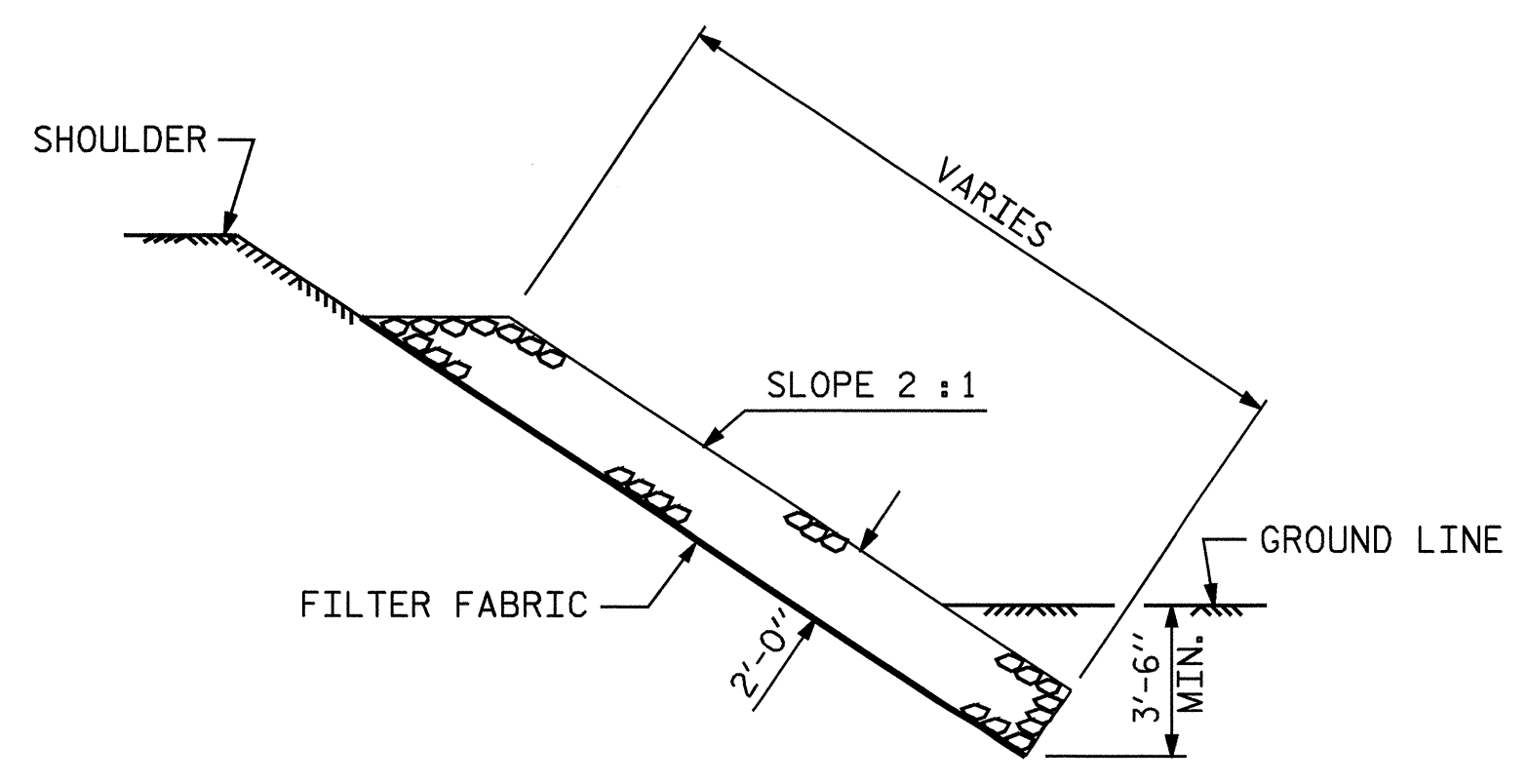
ESTIMATED QUANTITIES		
BRIDGE @ STA. 15+17.50 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	45	50
END BENT 2	41	45



PLAN

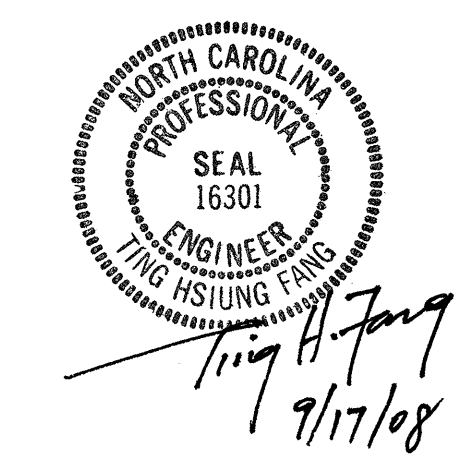


SECTION C-C



SECTION C-C

PROJECT NO. B-4322  
WILKES COUNTY  
 STATION: 15+17.50 -L-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
— RIP RAP DETAILS —					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					S-22

ASSEMBLED BY : Q. T. NGUYEN	DATE : 7-06
CHECKED BY : T. H. FANG	DATE : 8-08
DRAWN BY : REK 1/84	REV. 7/17/98 REK/RWW
CHECKED BY : RDU 1/84	REV. 8/16/99 RWW/LES
	REV. 10/17/00 RWW/LES

## 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