

**CONTRACT: C201831 TIP PROJECT B-4276**

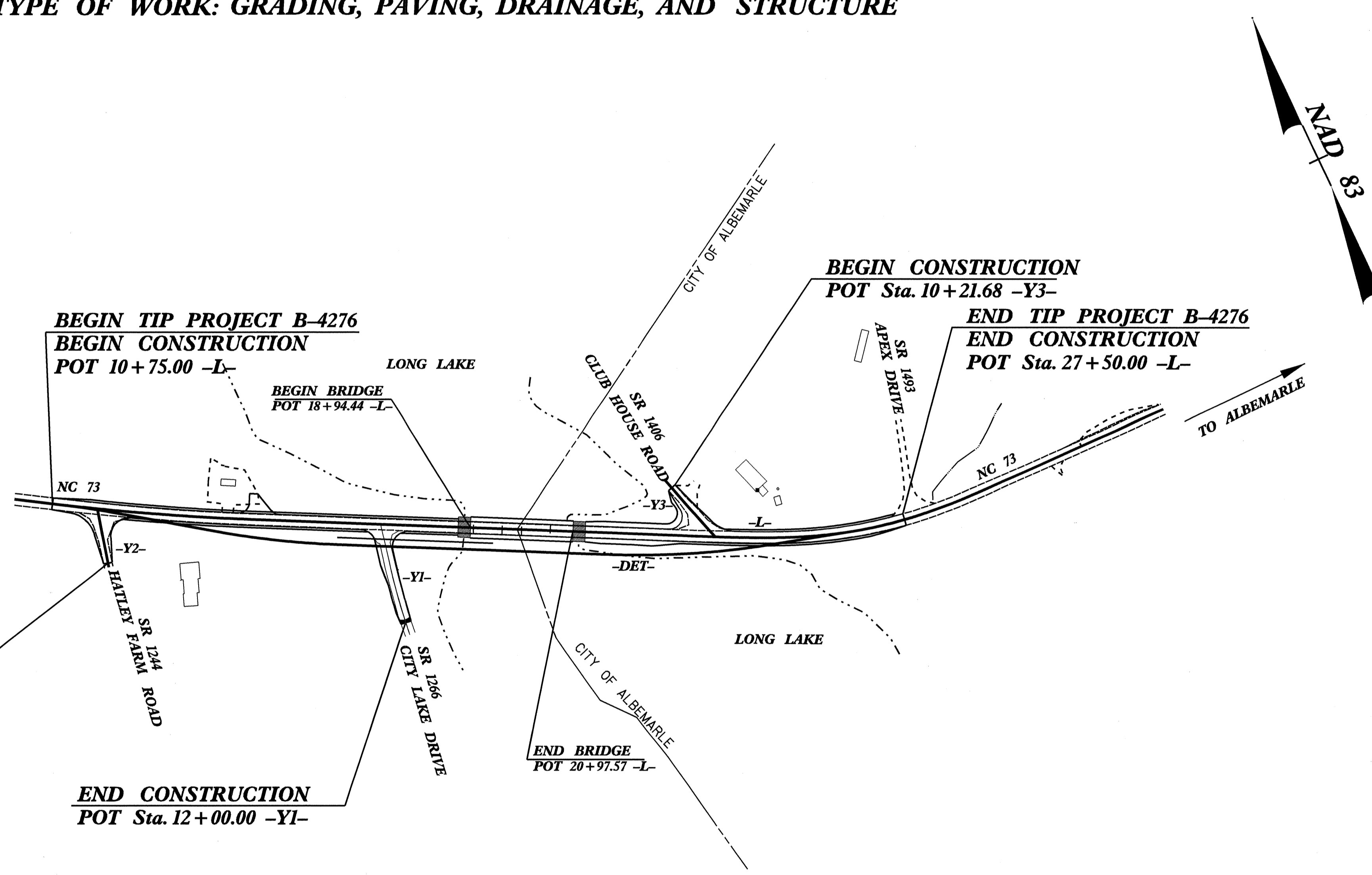
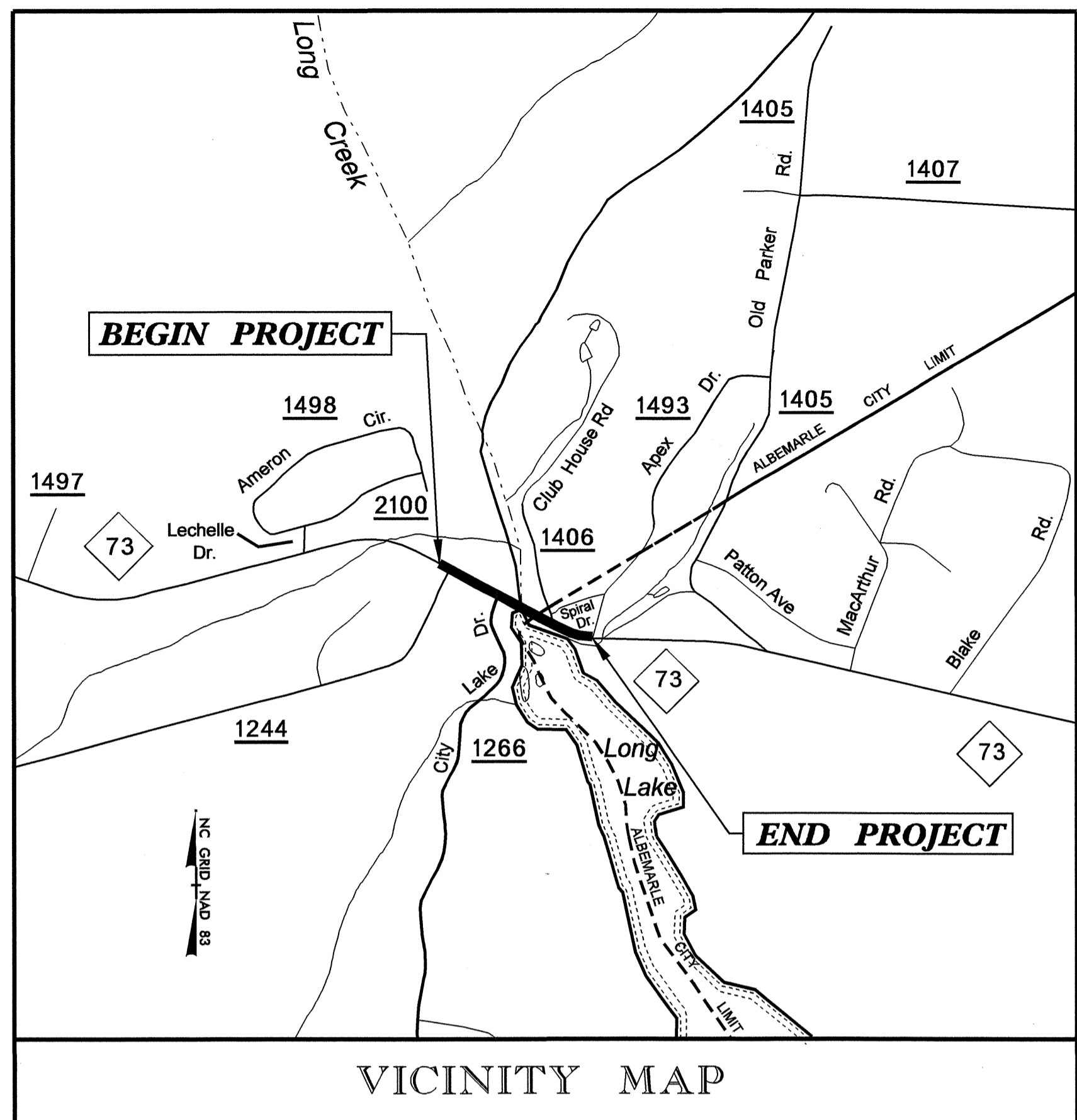
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**STANLY COUNTY**

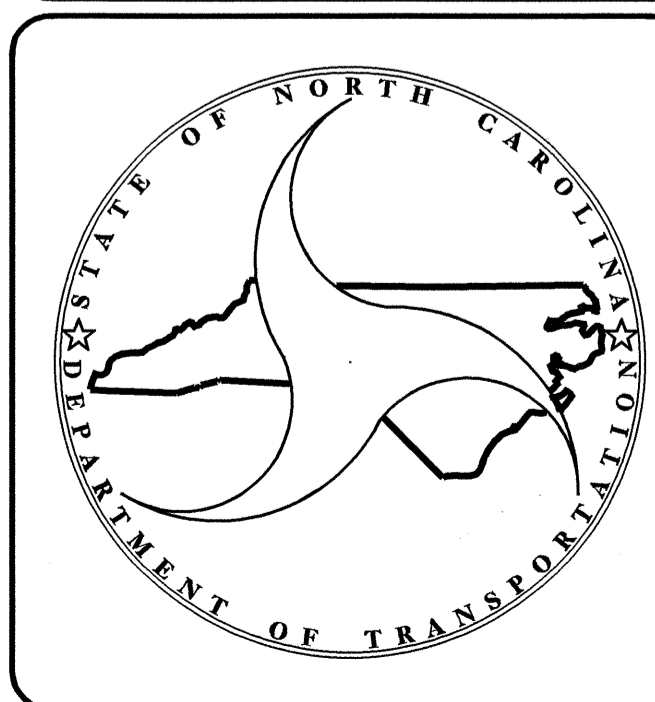
**LOCATION: BRIDGE NO. 33 ON NC 73 OVER LONG CREEK**

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4276		
WB NO.	P.A. PROJ. NO.	DESCRIPTION	
33617.1.1	BRSTP-73(5)	P.E.	
33617.2.2	BRSTP-73(5)	ROW & UTILITIES	
33617.3.1 ST1	BRSTP-73(5)	CONSTR.	



**STRUCTURE**



**DESIGN DATA**

ADT 2008 = 11,500  
ADT 2030 = 20,000  
DHV = 10 %  
D = 60 %  
T = 7 % \*  
V = 60 MPH \*\*  
\* TTST 3% & DUAL 4%  
FUNCTIONAL CLASSIFICATION = URBAN MINOR ARTERIAL  
\*\*DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED (40 MPH)

**PROJECT LENGTH**

LENGTH OF ROADWAY	TIP PROJECT B-4276 =	0.279 MILES
LENGTH OF STRUCTURE	TIP PROJECT B-4276 =	0.038 MILES
TOTAL LENGTH OF	TIP PROJECT B-4276 =	0.317 MILES

Prepared In the Office of:

**DIVISION OF HIGHWAYS**

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2006 STANDARD SPECIFICATIONS

**LETTING DATE:**  
**March 17, 2009**

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

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**B. C. Hunt, PE**  
PROJECT ENGINEER

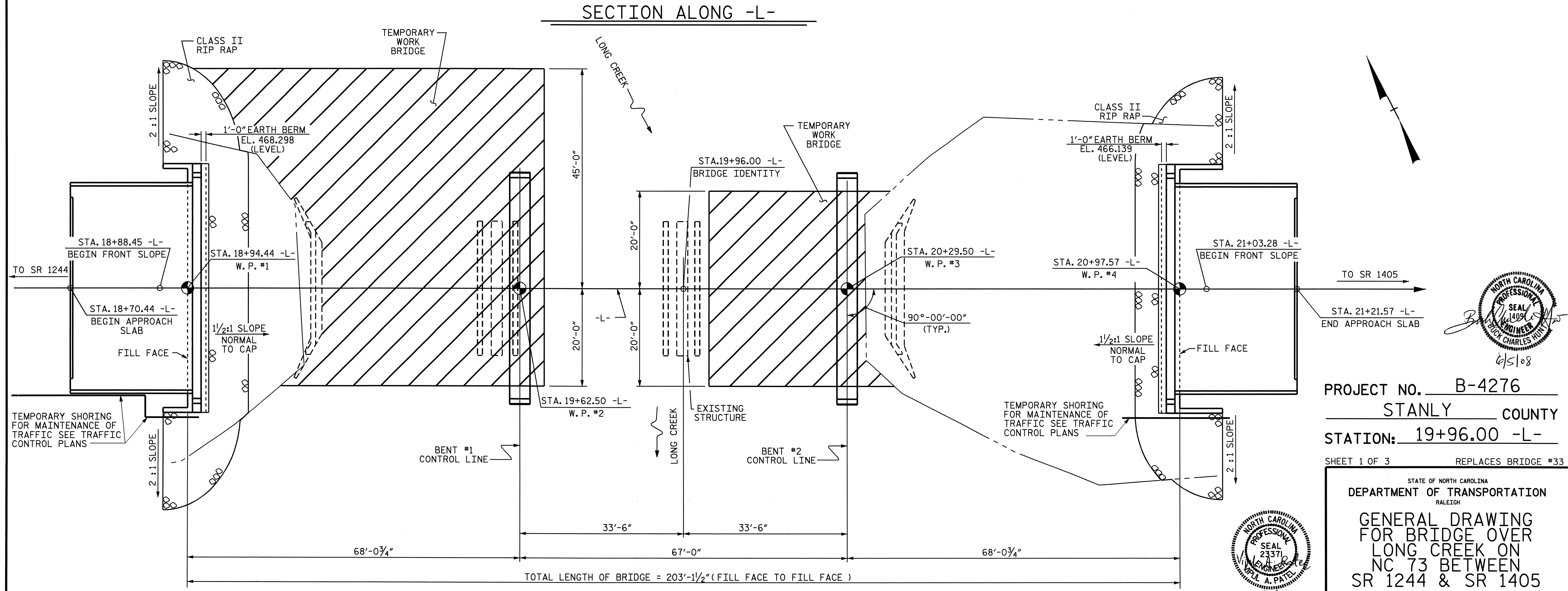
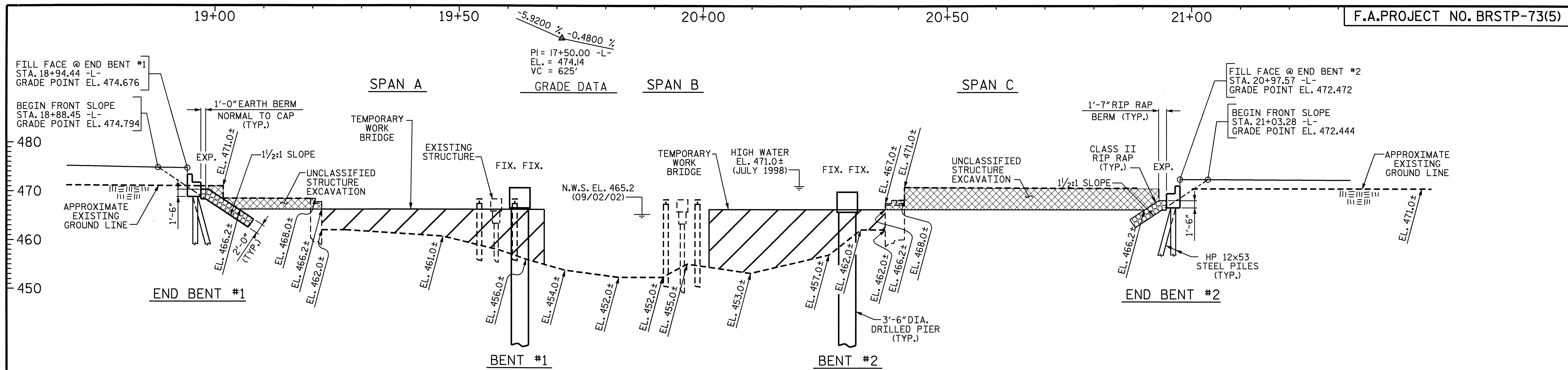
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**V. A. Patel, PE**  
PROJECT DESIGN ENGINEER

**DIVISION OF HIGHWAYS**  
STATE OF NORTH CAROLINA

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P.E.  
STATE HIGHWAY DESIGN ENGINEER



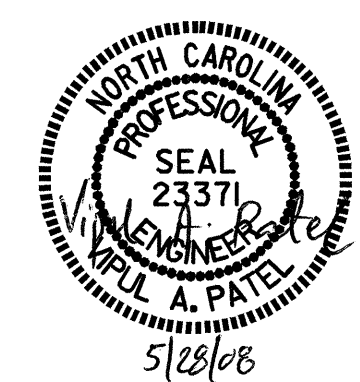
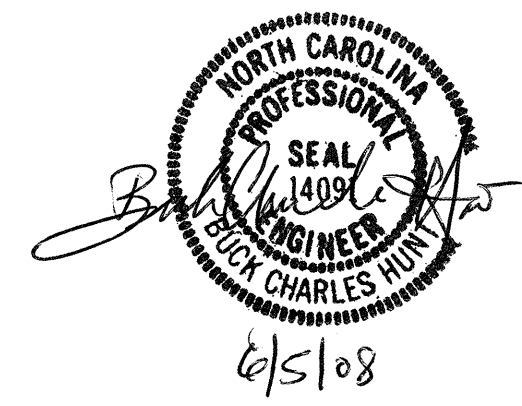
DRAWN BY : KEITH D. LAYNE DATE : 01-10-08  
 CHECKED BY : H. A. LOCKLEAR DATE : 1/24/08

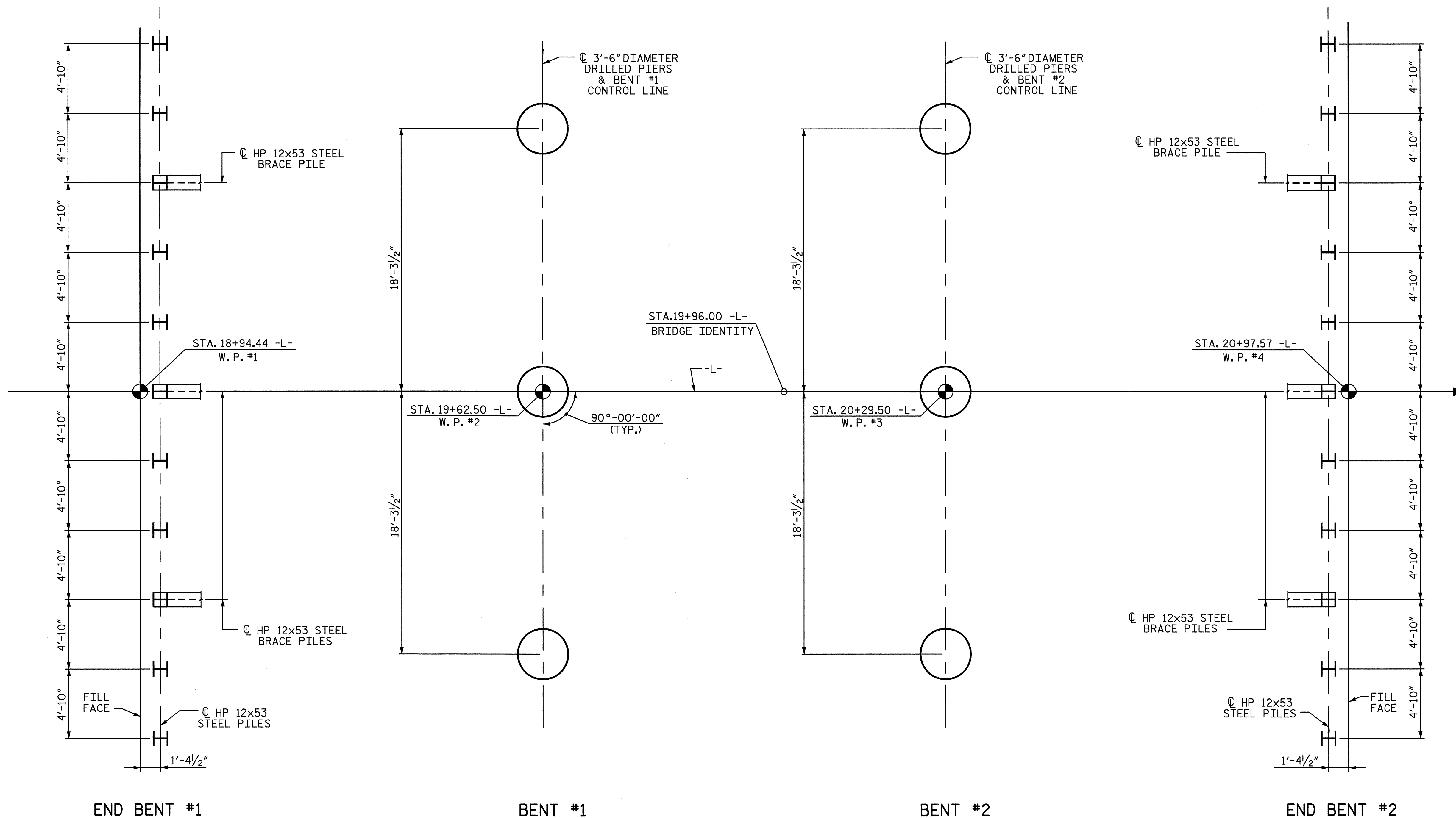
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 sdombrowski

PROJECT NO. B-4276  
 STANLY COUNTY  
 STATION: 19+96.00 -L-  
 SHEET 1 OF 3 REPLACES BRIDGE #33

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 GENERAL DRAWING  
 FOR BRIDGE OVER  
 LONG CREEK ON  
 NC 73 BETWEEN  
 SR 1244 & SR 1405

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





**FOUNDATION LAYOUT**

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE.

BRACE PILES AT END BENTS ARE BATTERED 3 : 12

**FOUNDATION NOTES**

THE DRILLED PIERS FOR BENTS #1 AND #2 HAVE BEEN DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 10 TSF FOR BENT #1 AND 35 TSF FOR BENT #2.

DRILLED PIERS AT BENT #1 AND #2 HAVE BEEN DESIGNED FOR AN APPLIED LOAD OF 330 TONS EACH AT THE TOP OF THE DRILLED PIER.

DRILLED PIERS FOR BENT #1 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 441.000, AND BENT #2 NO HIGHER THAN 445.000 AND SATISFY THE REQUIRED END BEARING CAPACITY.

PERMANENT STEEL CASING IS REQUIRED FOR DRILLED PIERS AT BENTS #1 AND #2. DO NOT EXTEND THE CASING BELOW ELEVATION 451.000 WITHOUT PRIOR APPROVAL FROM THE ENGINEER. SEE DRILLED PIERS SPECIAL PROVISION.

FOR DRILLED PIERS, SEE DRILLED PIERS SPECIAL PROVISION.

THE SCOUR CRITICAL ELEVATION FOR BENT #1 AND #2 IS ELEVATION 450.000. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

SPT TESTING IS NOT REQUIRED TO DETERMINE THE END BEARING CAPACITY OF THE DRILLED PIERS AT BENTS #1 AND #2.

DO NOT USE SLURRY CONSTRUCTION FOR DRILLED PIERS AT BENTS #1 AND #2.

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.

DRIVE PILES FOR END BENTS #1 AND #2 TO A REQUIRED MINIMUM 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.

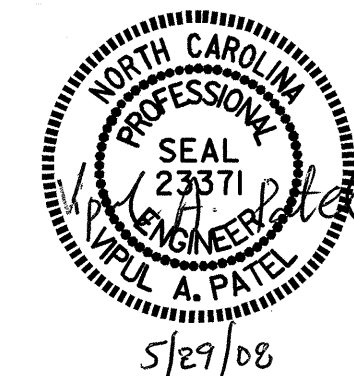
THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENTS #1 AND #2 IS 50 TONS PER PILE.

PROJECT NO. B-4276  
STANLY COUNTY  
 STATION: 19+96.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**FOUNDATION LAYOUT**

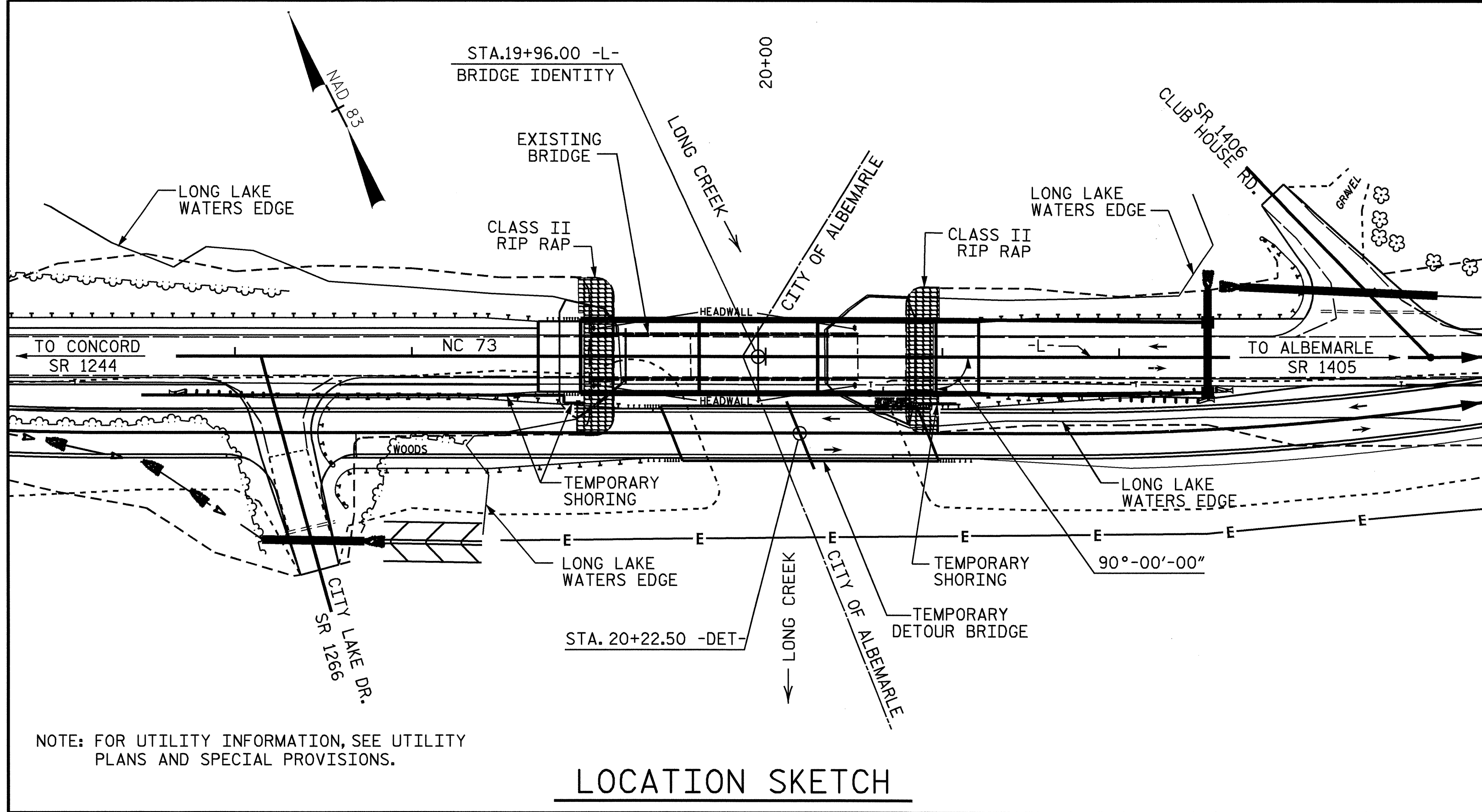


DRAWN BY : KEITH D. LAYNE DATE : 01-10-08  
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			21





ASSUMED LIVE LOAD = HS20 OR ALTERNATE LOADING, EXCEPT THAT THE BOX BEAMS HAVE BEEN DESIGNED FOR HS 25.

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

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

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

THE EXISTING STRUCTURE CONSISTING OF 3 SPANS @ 38'-0 1/2" WITH A REINFORCED CONCRETE DECK ON 6 LINES OF W24x80 I-BEAMS; AND A CLEAR ROADWAY WIDTH OF 25.8 FT.; ON REINFORCED CONCRETE ABUTMENTS AT THE END BENTS AND REINFORCED CONCRETE CAP ON STEEL PILES AT THE INTERIOR BENTS (HP12x53 CRUTCH BENTS WERE ADDED EACH SIDE OF INTERIOR BENTS) AND LOCATED AT THE PROPOSED SITE SHALL BE REMOVED.

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 CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY STRUCTURE AT STATION 19+96.00 -L- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 35 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE PER CUBIC YARD 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.

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

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS.

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 19+96.00 -L-."

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS, SEE SPECIAL PROVISIONS.

PRIOR TO FORMING THE BENT CAPS THE CONTRACTOR SHALL VERIFY THE WATER ELEVATION. IF THE BOTTOM OF THE CAP IS BELOW THE WATER ELEVATION, WATER TIGHT FORMS WILL BE REQUIRED. COST OF WATERTIGHT FORMS SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

NOTE: FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

HYDRAULIC DATA

DESIGN DISCHARGE \_\_\_\_\_ 5,109 CFS  
 FREQUENCY OF DESIGN FLOOD \_\_\_\_\_ 50 YR  
 DESIGN HIGH WATER ELEVATION \_\_\_\_\_ 469.300  
 DRAINAGE AREA \_\_\_\_\_ 30.3 SQ.MI.  
 BASIC DISCHARGE (Q100) \_\_\_\_\_ 5,791 CFS  
 BASIC HIGH WATER ELEVATION \_\_\_\_\_ 469.700

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE \_\_\_\_\_ 8,062 CFS  
 FREQUENCY OF OVERTOPPING FLOOD \_\_\_\_\_ 500 YR  
 OVERTOPPING FLOOD ELEVATION \_\_\_\_\_ 471.000

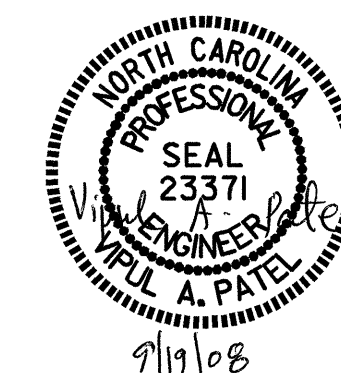
TOTAL BILL OF MATERIAL

	CONSTRUCTION MAINTENANCE & REMOVAL OF TEMPORARY STRUCTURE	CONSTRUCTION MAINTENANCE & REMOVAL OF TEMPORARY ACCESS	REMOVAL OF EXISTING STRUCTURE	3'-6" DIA. DRILLED PIERS IN SOIL	3'-6" DIA. DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-6" DIA. DRILLED PIER	SID INSPECTION	CROSSHOLE SONIC LOGGING	UNCLASSIFIED STRUCTURE EXCAVATION	CONCRETE WEARING SURFACE
	LUMP SUM	LUMP SUM	LUMP SUM	LIN FT.	LIN FT.	LIN FT.	EACH	EACH	CU. YDS.	SQ. FT.
SUPERSTRUCTURE										8365
END BENT #1									130	
BENT #1				43.5	33.0	46.5	1	1		
BENT #2				41.5	21.0	44.4	1	1		
END BENT #2									800	
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	85.0	54.0	90.9	1	2	930	8365

	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	HP 12x53 STEEL PILES	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS	3'-0" X 2'-3" PRESTRESSED CONCRETE BOX BEAMS
	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE	9601		LUMP SUM				401.75				LUMP SUM	LUMP SUM
END BENT #1		20.2		3279		11	220		160	180		
BENT #1		29.4		8543	1725							
BENT #2		29.4		7876	1423							
END BENT #2		20.2		3279		11	165		110	120		
TOTAL	9601	99.2	LUMP SUM	22977	3148	22	385	401.75	270	300	LUMP SUM	LUMP SUM

PROJECT NO. B-4276  
STANLY COUNTY  
 STATION: 19+96.00 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 GENERAL DRAWING  
 FOR BRIDGE OVER  
 LONG CREEK ON  
 NC 73 BETWEEN  
 SR 1244 & SR 1405

DRAWN BY : KEITH D. LAYNE DATE : 01-10-08  
 CHECKED BY : H. A. LOCKLEAR DATE : 1/24/08

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



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 BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

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

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT. THE 2 1/2" Ø DOWEL HOLES AT EXPANSION ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH JOINT SEALER MATERIAL TO 1/2" ABOVE THE TOP OF DOWELS AND THEN FILLED WITH GROUT.

THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE SL LOW MODULUS SILICONE SEALANT. THE 2" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4800 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS AND CONCRETE WEARING SURFACE SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

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

FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE CONCRETE RAIL. THE COST OF THE REINFORCING STEEL CAST WITH THE CONCRETE WEARING SURFACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE WEARING SURFACE. FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

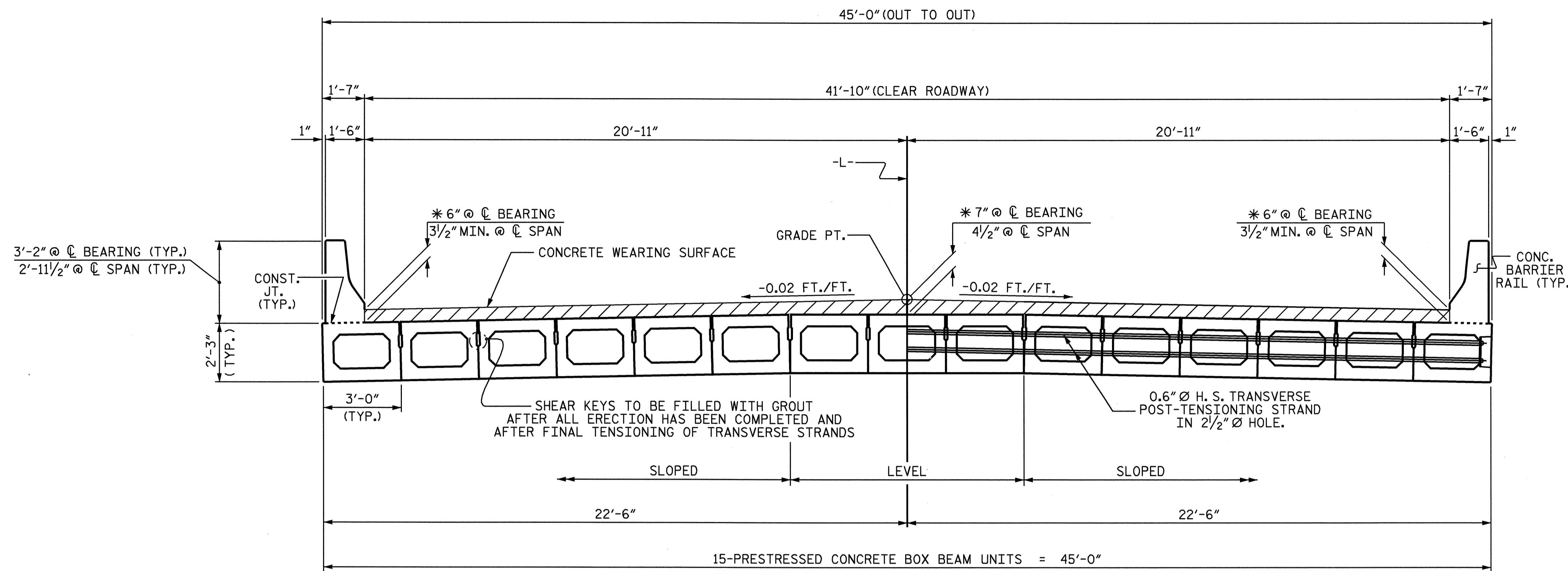
FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

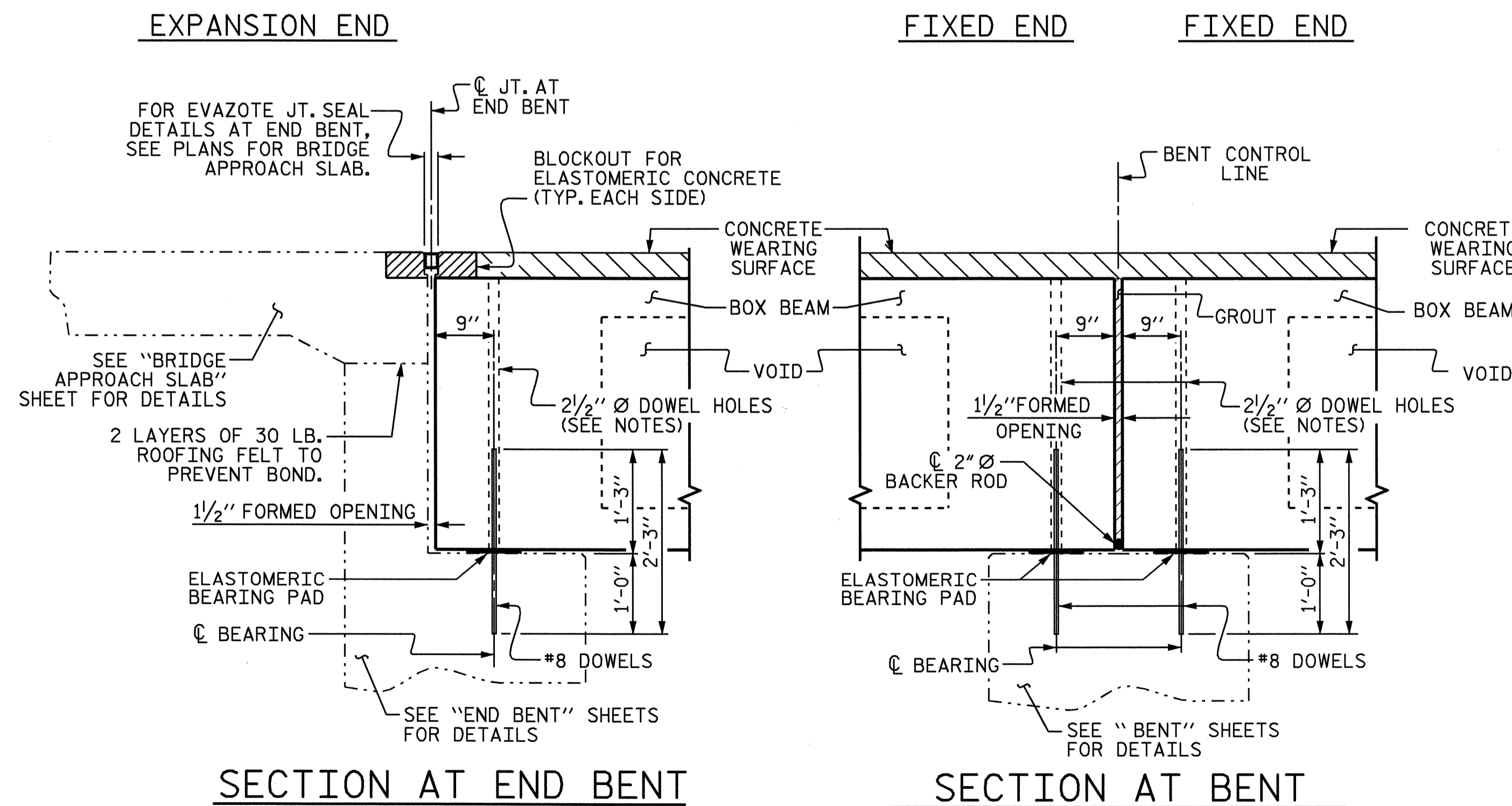
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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



TYPICAL SECTION

\* BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS



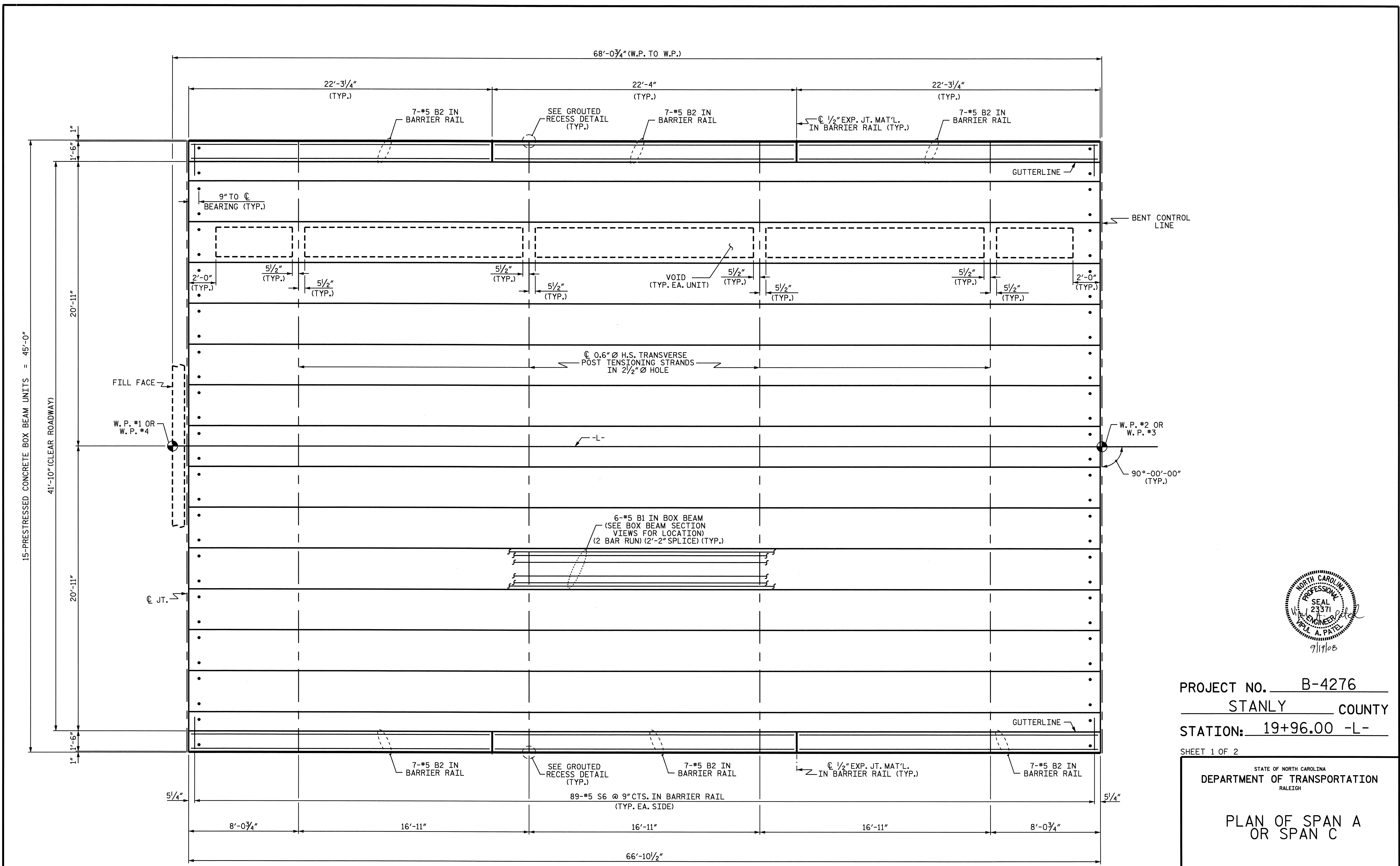
PROJECT NO. B-4276  
STANLY COUNTY  
 STATION: 19+96.00 -L-



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 3'-0" X 2'-3"  
 PRESTRESSED CONCRETE  
 BOX BEAM UNIT

ASSEMBLED BY : R. G. EMERSON	DATE : 10/07
CHECKED BY : S. DOMBROWSKI	DATE : 10/07
DRAWN BY : TLA 5/05	ADDED 7/11/05R
CHECKED BY : GM 6/05	REV. 5/1/06R KMM/GM

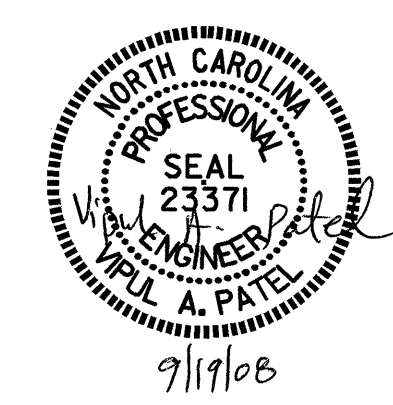
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			21



DRAWN BY : R. G. EMERSON DATE : 10/07  
 CHECKED BY : S. DOMBROWSKI DATE : 10/07

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 Klayne

PLAN OF SPAN A OR SPAN C



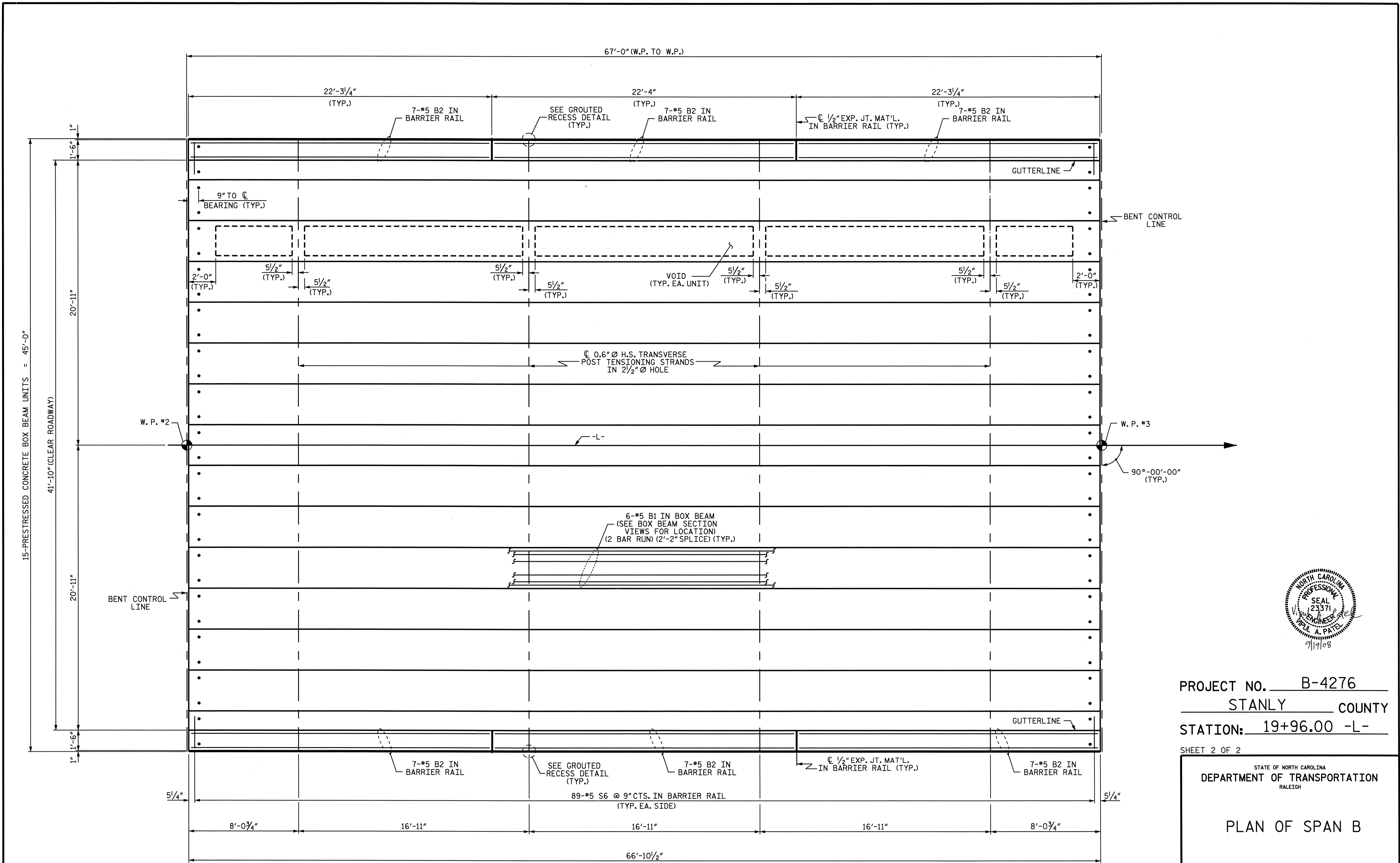
PROJECT NO. B-4276  
STANLY COUNTY  
 STATION: 19+96.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO.
PLAN OF SPAN A OR SPAN C						S-5
REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	21
1			3			
2			4			

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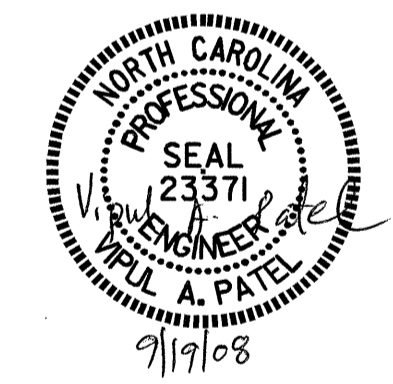




**PLAN OF SPAN B**

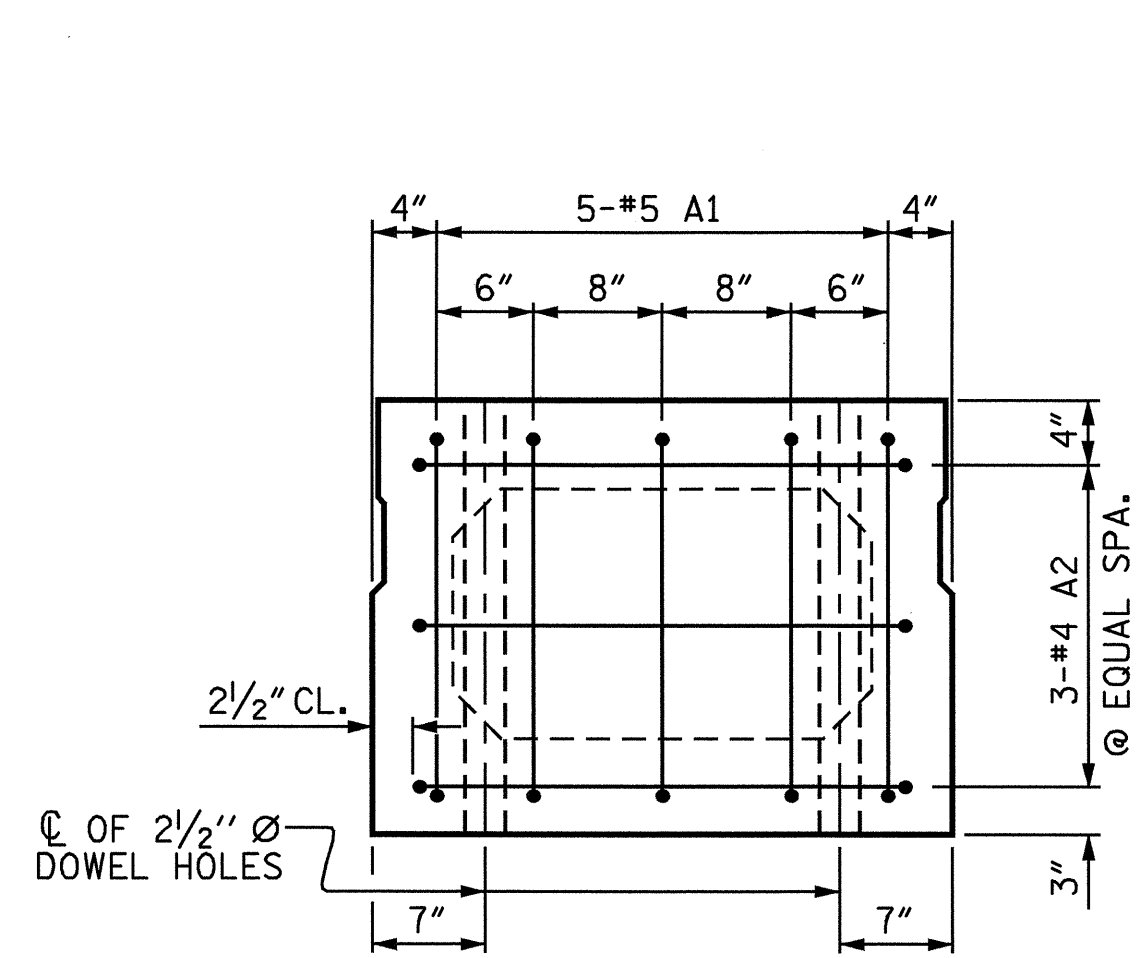
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 CHECKED BY : S. DOMBROWSKI DATE : 10/07

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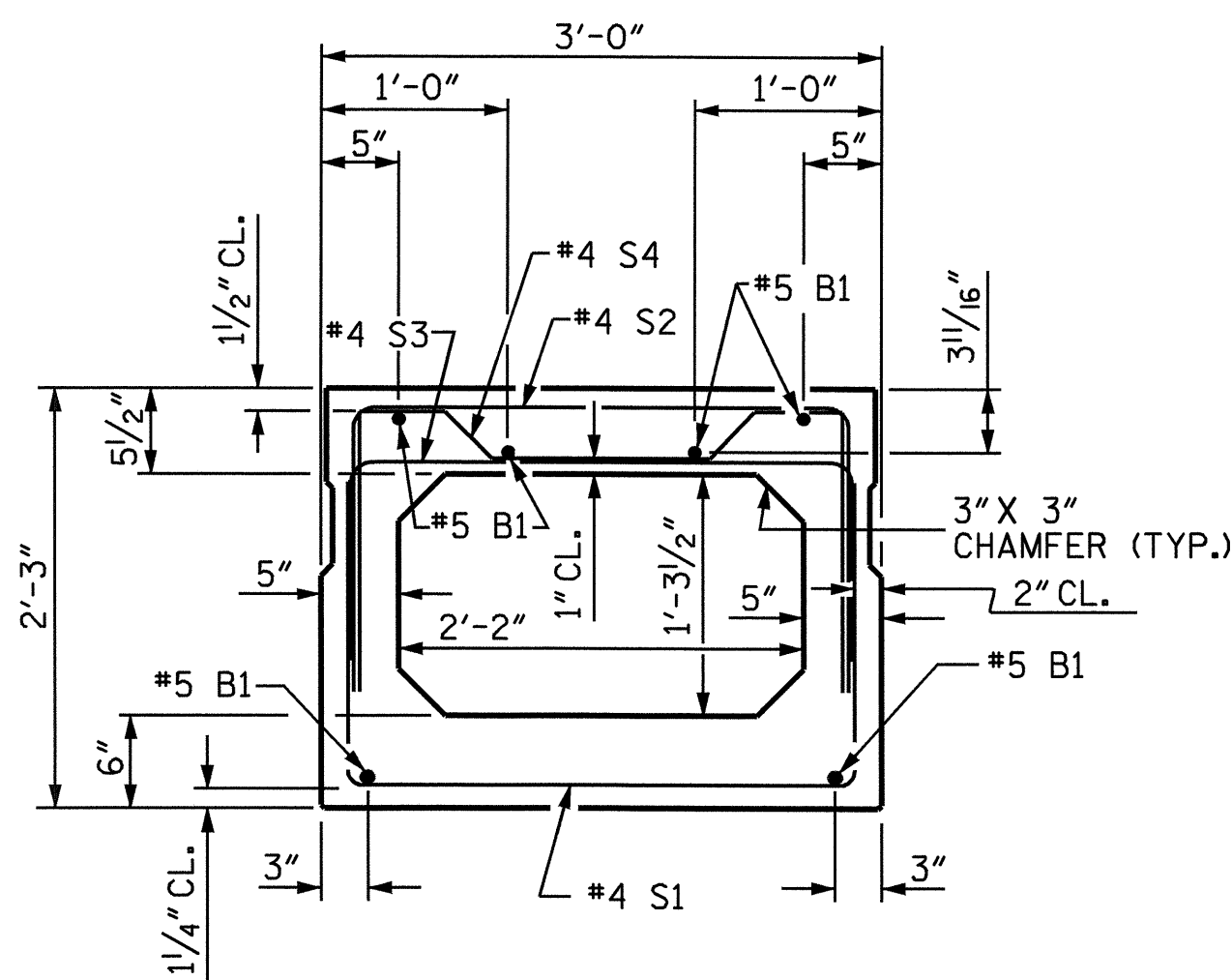
PROJECT NO. B-4276  
STANLY COUNTY  
 STATION: 19+96.00 -L-  
 SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO.
PLAN OF SPAN B						S-6
REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	21
1			3			
2			4			



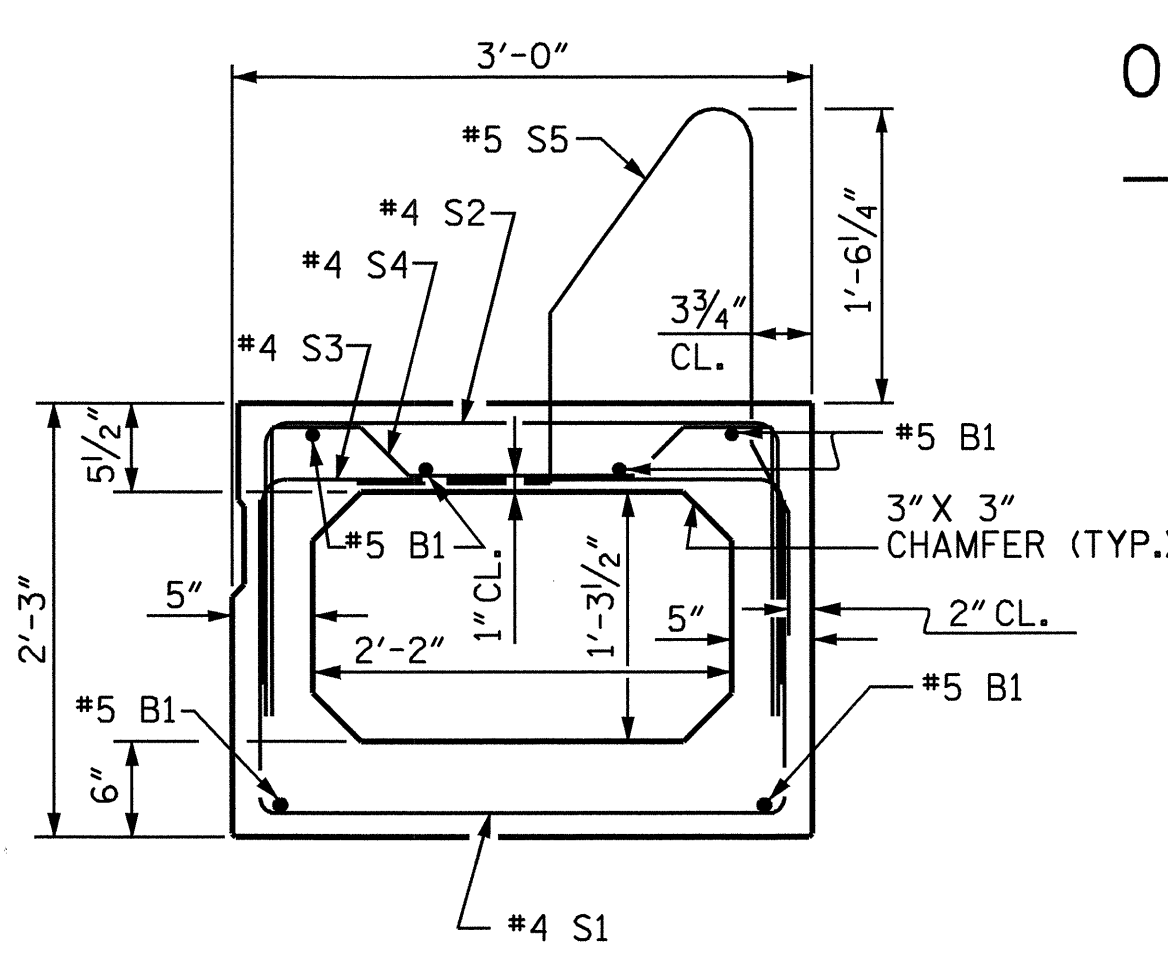
**END ELEVATION**

SHOWING PLACEMENT OF #5 & #4 "A" BARS AND LOCATION OF DOWEL HOLES. (INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION. STRAND LAYOUT NOT SHOWN.)



**INTERIOR BOX BEAM SECTION**

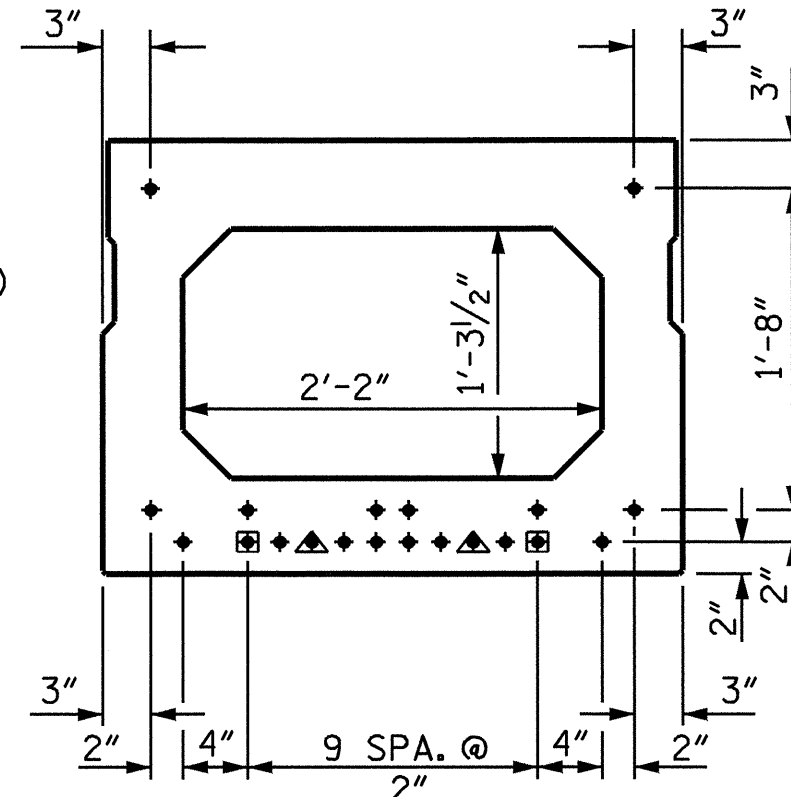
(STRAND LAYOUT NOT SHOWN)



**EXTERIOR BOX BEAM SECTION**

(STRAND LAYOUT NOT SHOWN)

**0.6" Ø LOW RELAXATION STRAND LAYOUT**



**TYPICAL STRAND LOCATION**

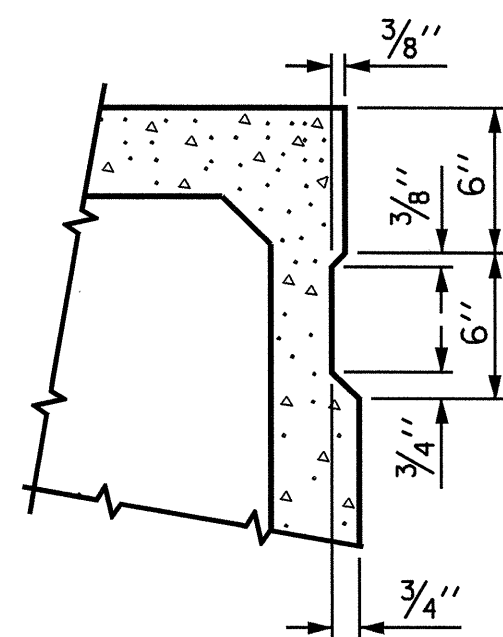
(20 STRANDS REQUIRED)  
(INTERIOR BOX BEAM SECTION SHOWN, EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION)

**DEBONDING LEGEND**

- FULLY BONDED STRANDS
- ◐ STRANDS DEBONDED FOR 2'-0" FROM END OF GIRDER
- ◑ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER

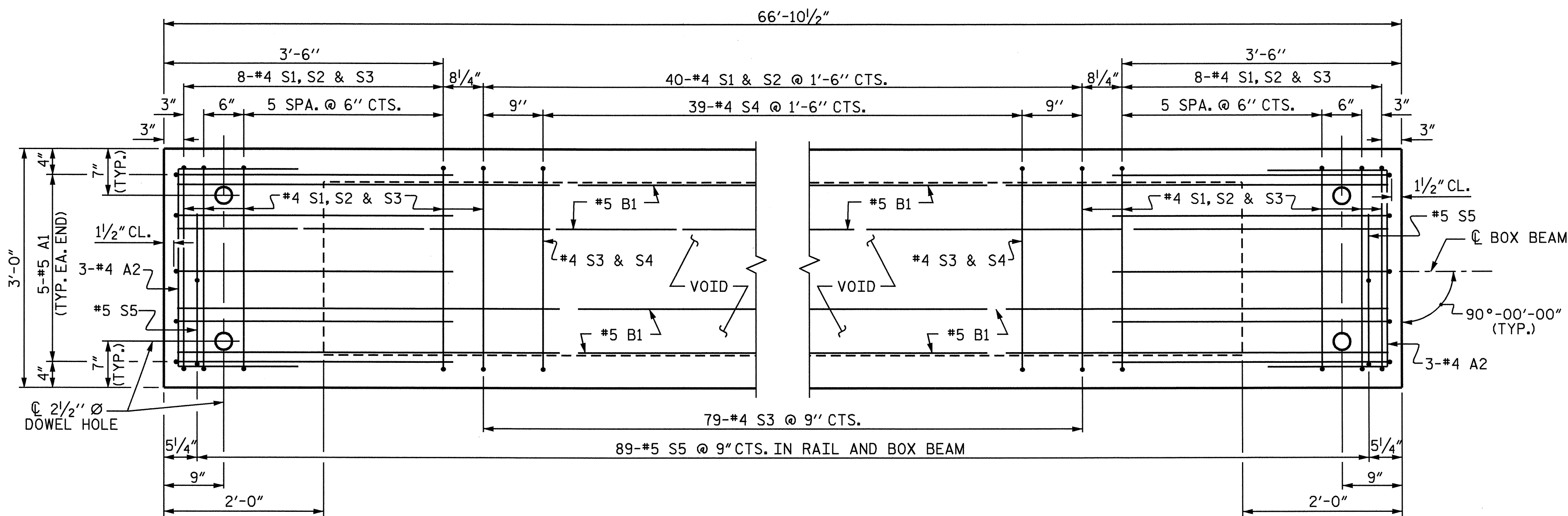
**GRADE 270 STRANDS**

	0.6" Ø L.R.
AREA ( SQUARE INCHES )	0.217
ULTIMATE STRENGTH ( LBS. PER STRAND )	58,600
APPLIED PRESTRESS ( LBS. PER STRAND )	43,950



**SHEAR KEY DETAIL**

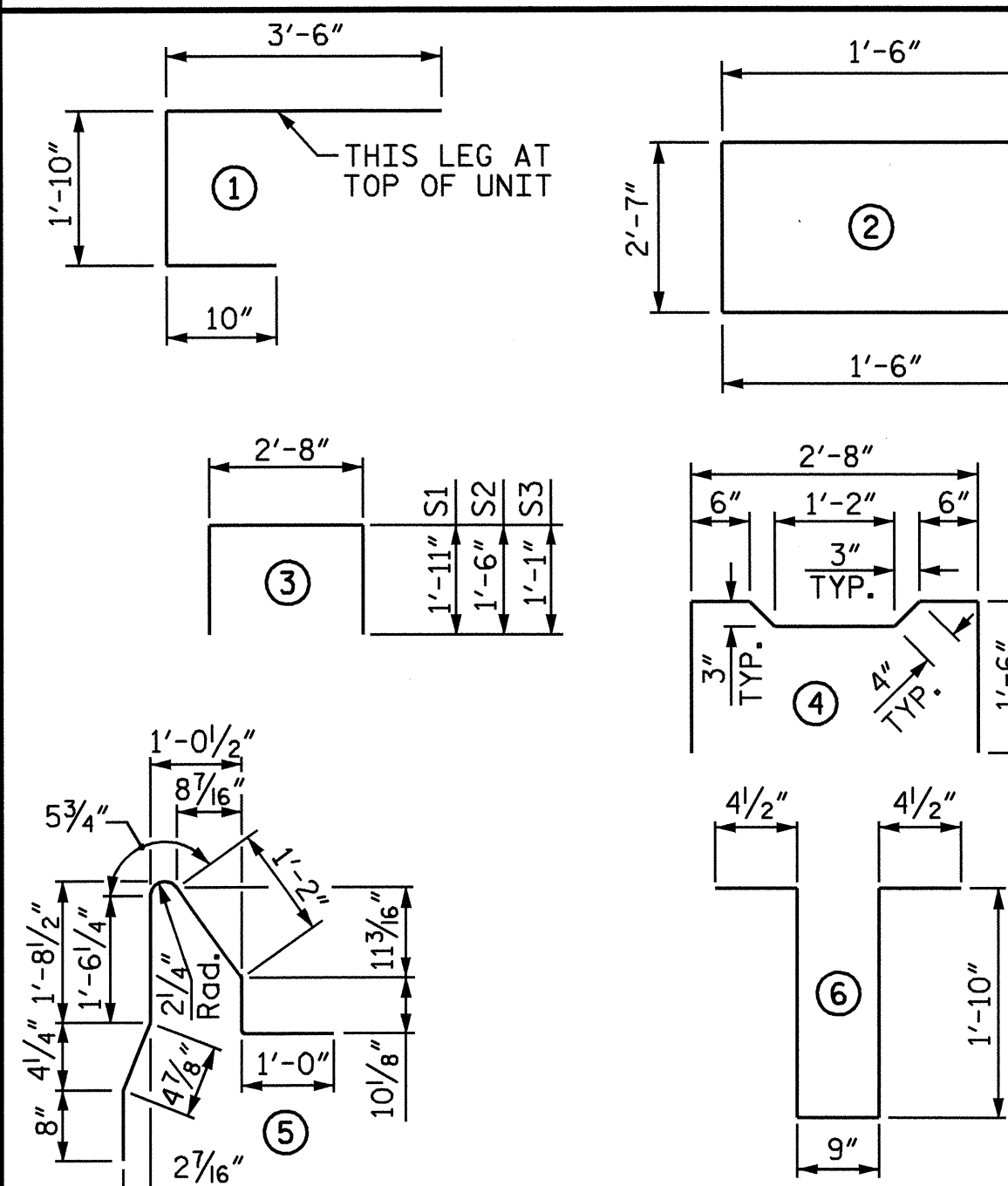
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.



**PLAN OF BOX BEAM**

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. FOR LOCATION OF DIAPHRAGMS, SEE PLAN OF SPANS. FOR REINFORCING STEEL IN DIAPHRAGMS, SEE DIAPHRAGM DETAILS.

**BAR TYPES**



ALL BAR DIMENSIONS ARE OUT TO OUT

**BILL OF MATERIAL FOR ONE BOX BEAM UNIT**

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	6'-2"	64	6'-2"	64
A2	22	#4	2	5'-7"	82	5'-7"	82
B1	12	#5	STR	34'-5"	431	34'-5"	431
K1	12	#4	6	5'-2"	41	5'-2"	41
K2	8	#4	STR	2'-7"	14	2'-7"	14
S1	56	#4	3	6'-6"	243	6'-6"	243
S2	56	#4	3	5'-8"	212	5'-8"	212
S3	95	#4	3	4'-10"	307	4'-10"	307
S4	39	#4	4	5'-10"	152	5'-10"	152
* S5	89	#5	5	6'-1"	565		
REINFORCING STEEL					1546 LBS.		1546 LBS.
* EPOXY COATED REINF. STEEL					565 LBS.		
6,500 P.S.I. CONCRETE					10.9 CU. YDS.		10.9 CU. YDS.
0.6" Ø L.R. STRANDS				No. 20		No. 20	

PROJECT NO. B-4276  
STANLY COUNTY  
 STATION: 19+96.00 -L-

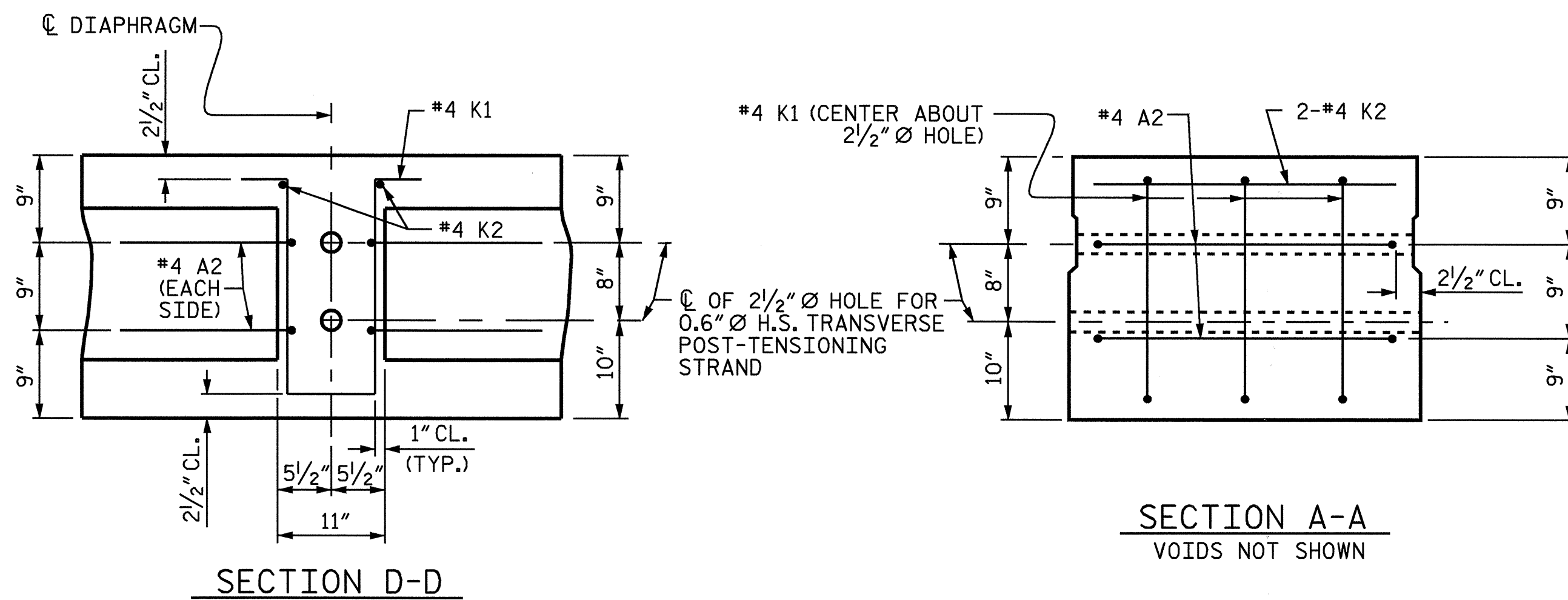
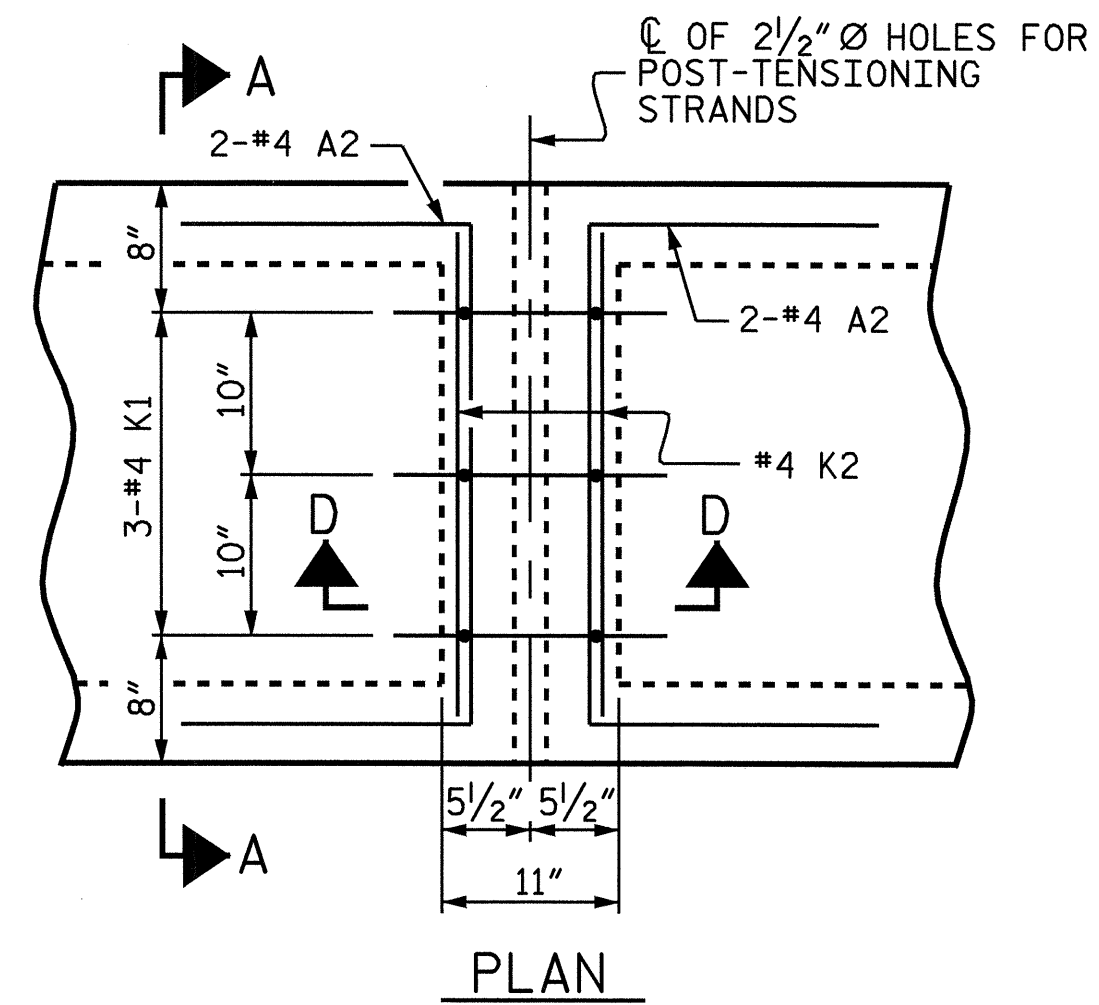


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 3'-0" X 2'-3"  
 PRESTRESSED CONCRETE  
 BOX BEAM UNIT  
 SPANS A, B, & C

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			21

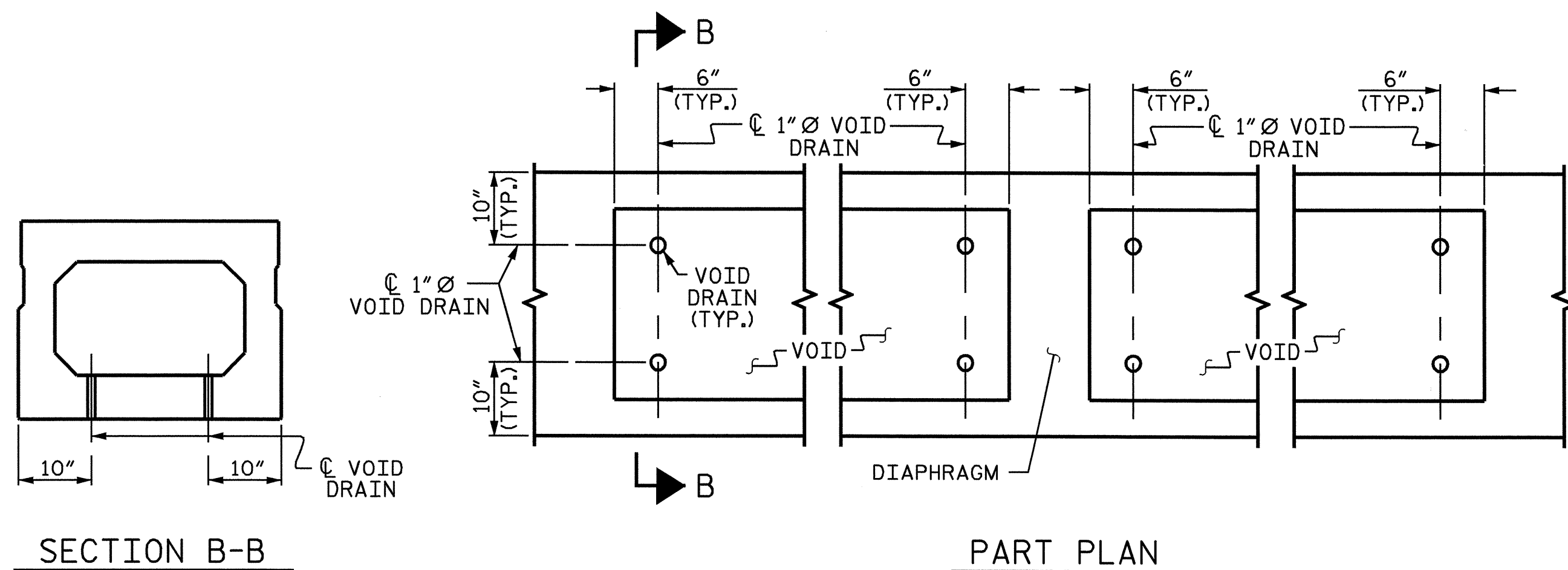
ASSEMBLED BY : R. G. EMERSON	DATE : 10/07
CHECKED BY : S. DOMBROWSKI	DATE : 10/07
DRAWN BY : TLA 5/05	ADDED 7/11/05
CHECKED BY : GM 6/05	REV. 5/1/06 TLA/GM





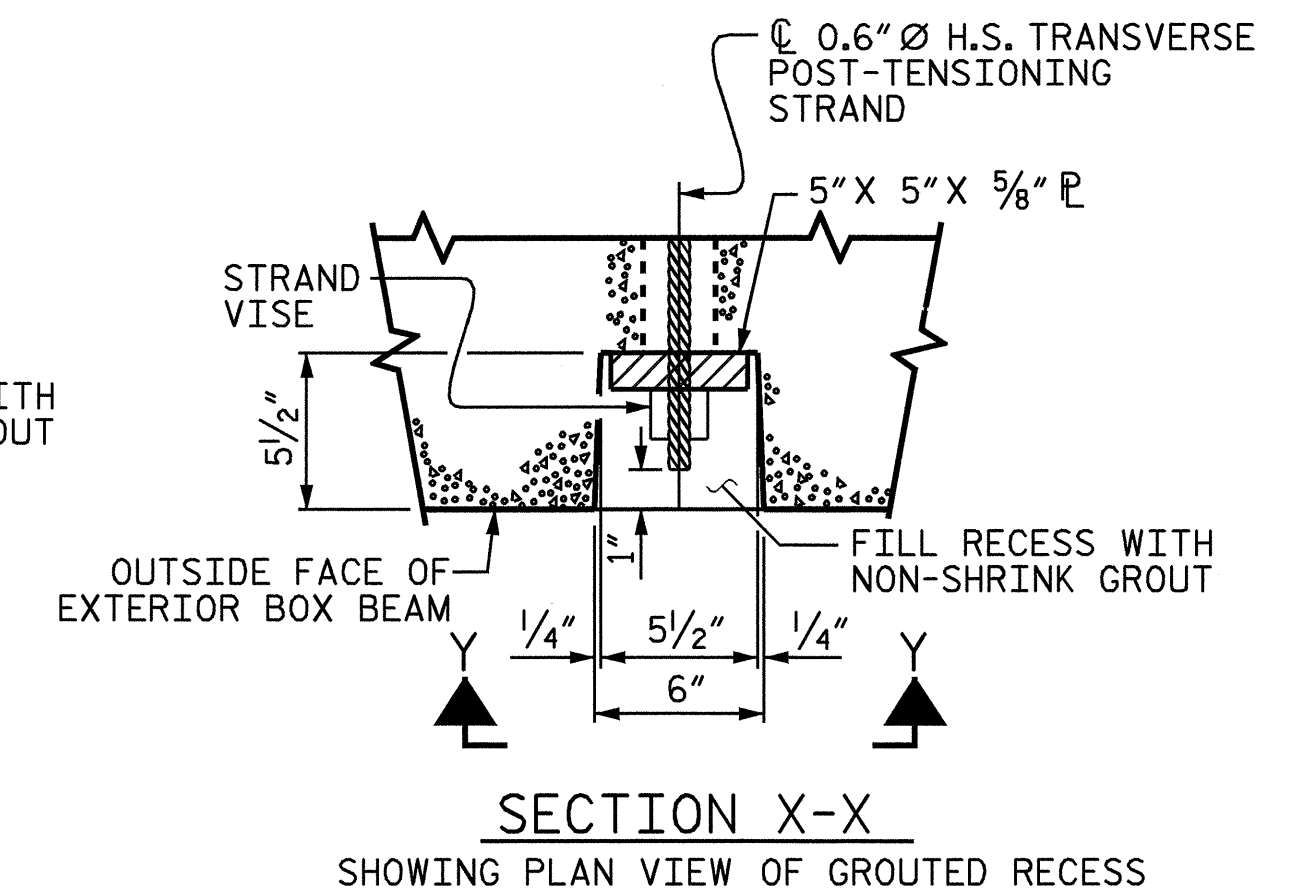
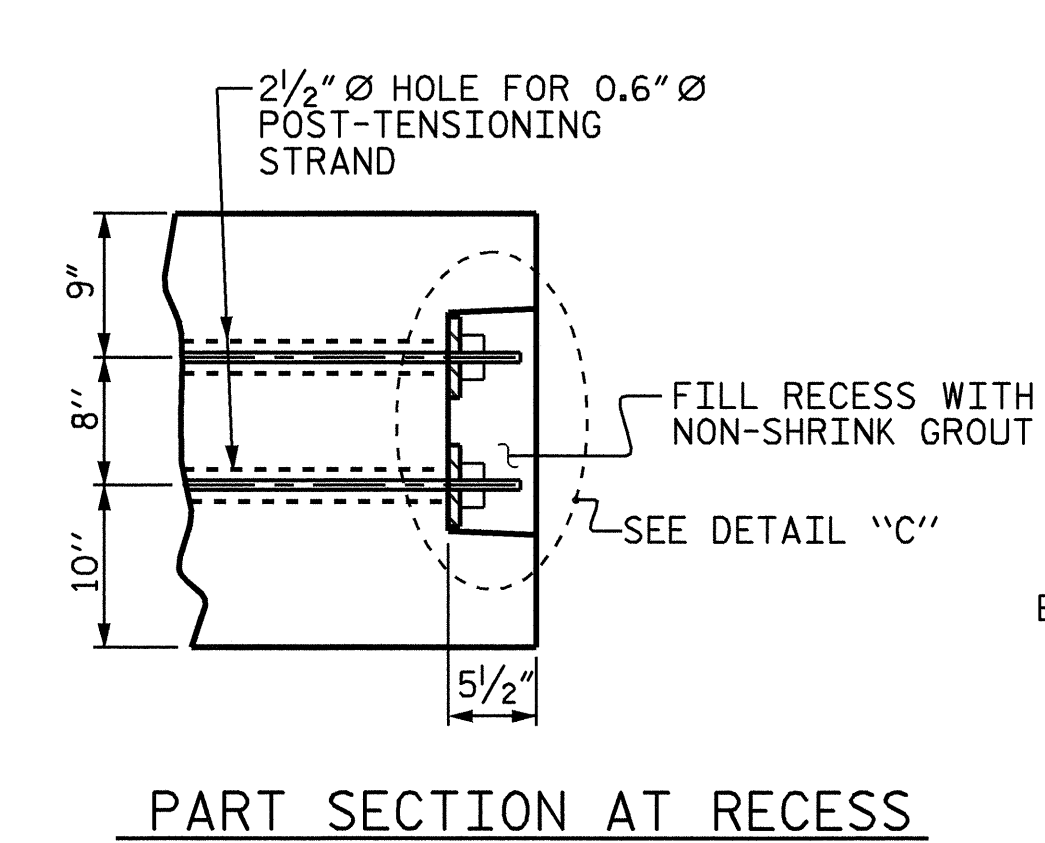
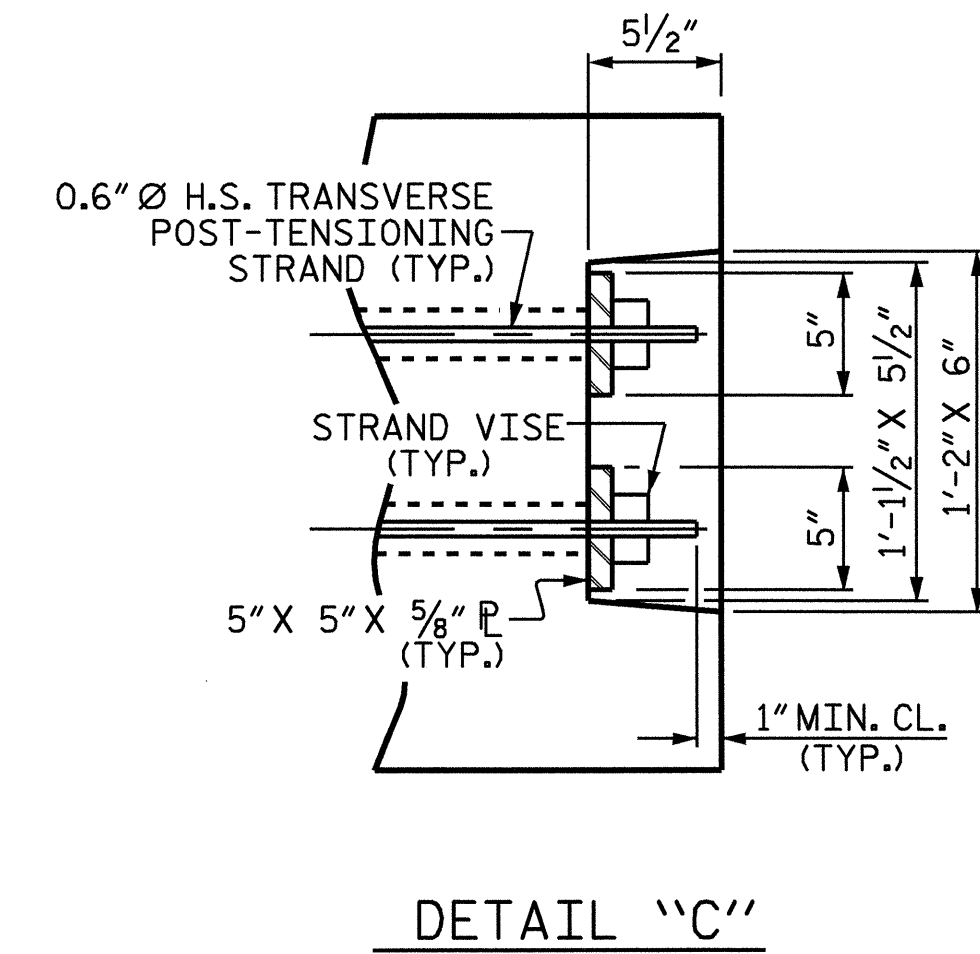
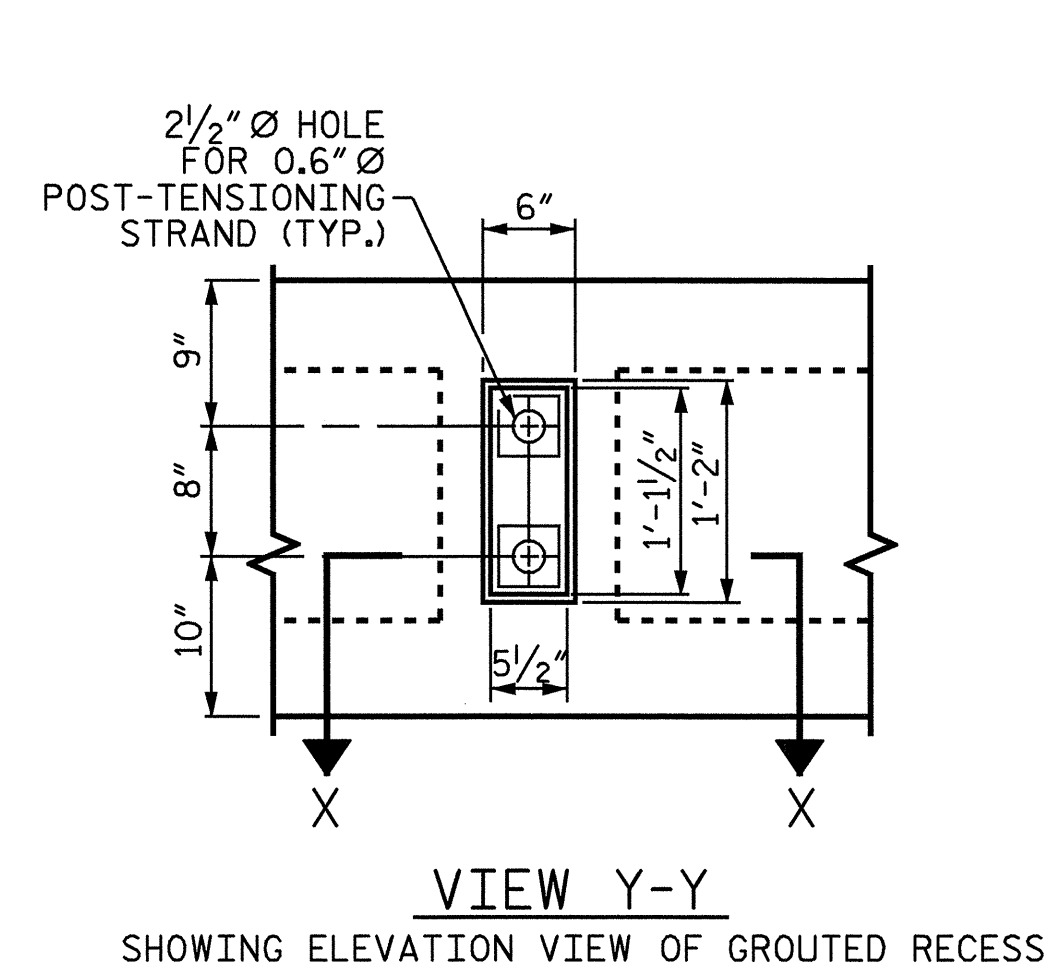
**DOUBLE DIAPHRAGM DETAILS**

\*#4 "S" BARS NOT SHOWN. #4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2" Ø HOLE.



**VOID DRAIN DETAILS**

(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

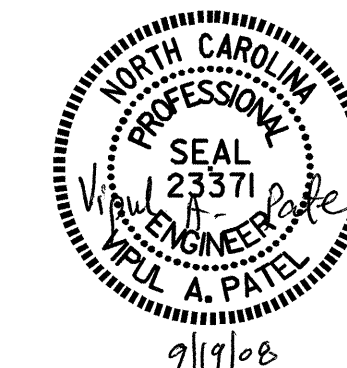


**GROUDED RECESS DETAIL AT  
END OF POST-TENSIONED STRANDS  
OF EXTERIOR BOX BEAM**

DEAD LOAD DEFLECTION AND CAMBER			
3'-0" X 2'-3"			
0.6" Ø L.R. STRAND			
	SPAN "A"	SPAN "B"	SPAN "C"
CAMBER (BEAM ALONE IN PLACE) ↑	3/16"	3/16"	3/16"
DEFLECTION DUE TO CONCRETE WEARING SURFACE ↓	3/8"	3/8"	3/8"
FINAL CAMBER *	2 11/16"	2 11/16"	2 11/16"

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

PROJECT NO. B-4276  
STANLY COUNTY  
 STATION: 19+96.00 -L-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-8
STANDARD 3'-0" X 2'-3" PRESTRESSED CONCRETE BOX BEAM UNIT						
REVISIONS						TOTAL SHEETS 21
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

ASSEMBLED BY : R. G. EMERSON	DATE : 10/07
CHECKED BY : S. DOMBROWSKI	DATE : 10/07
DRAWN BY : TLA 5/05	ADDED 7/11/05
CHECKED BY : GM 6/05	REV. 5/1/06 TLA/GM

NOTES

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

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

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

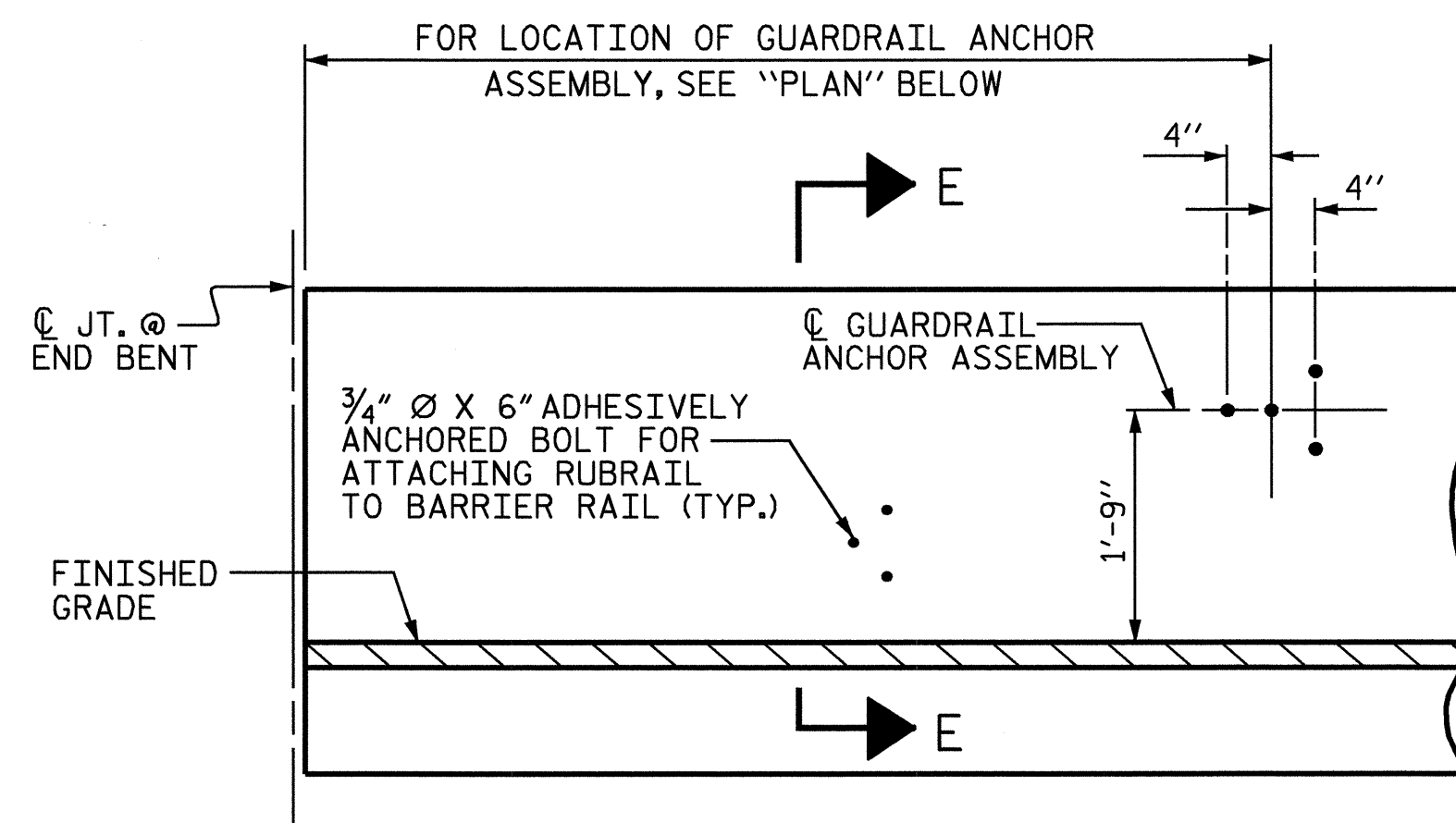
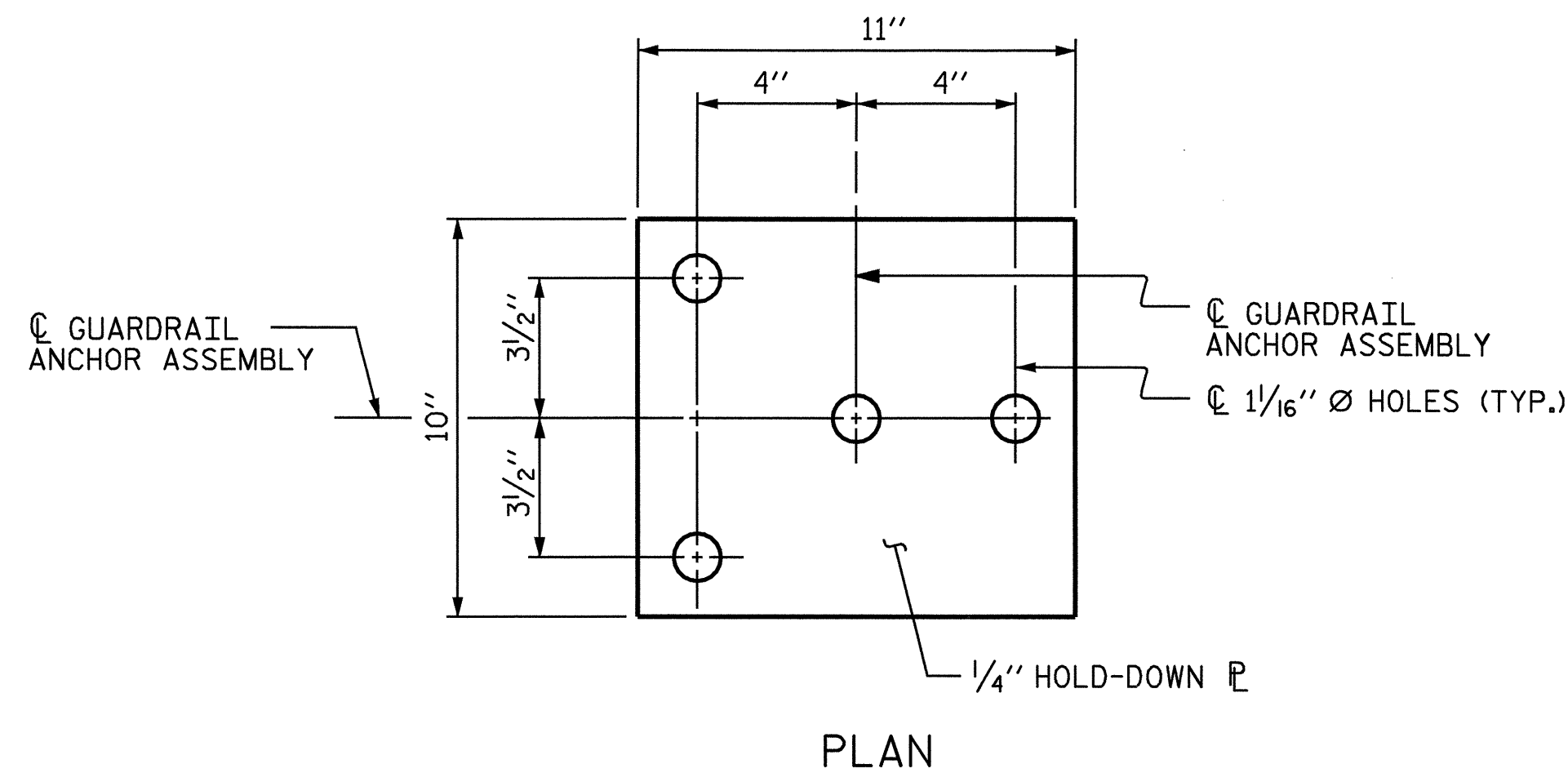
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

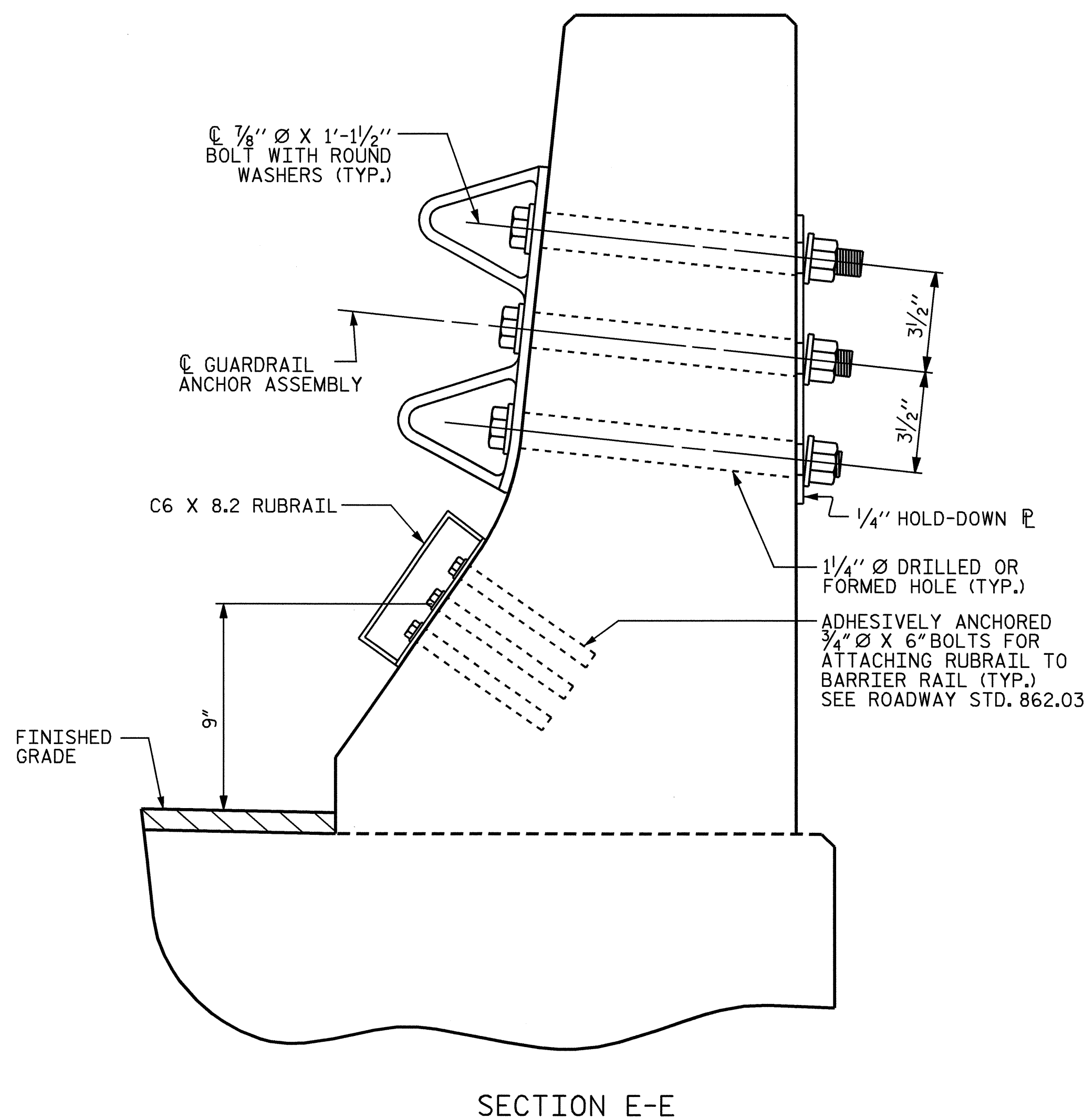
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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

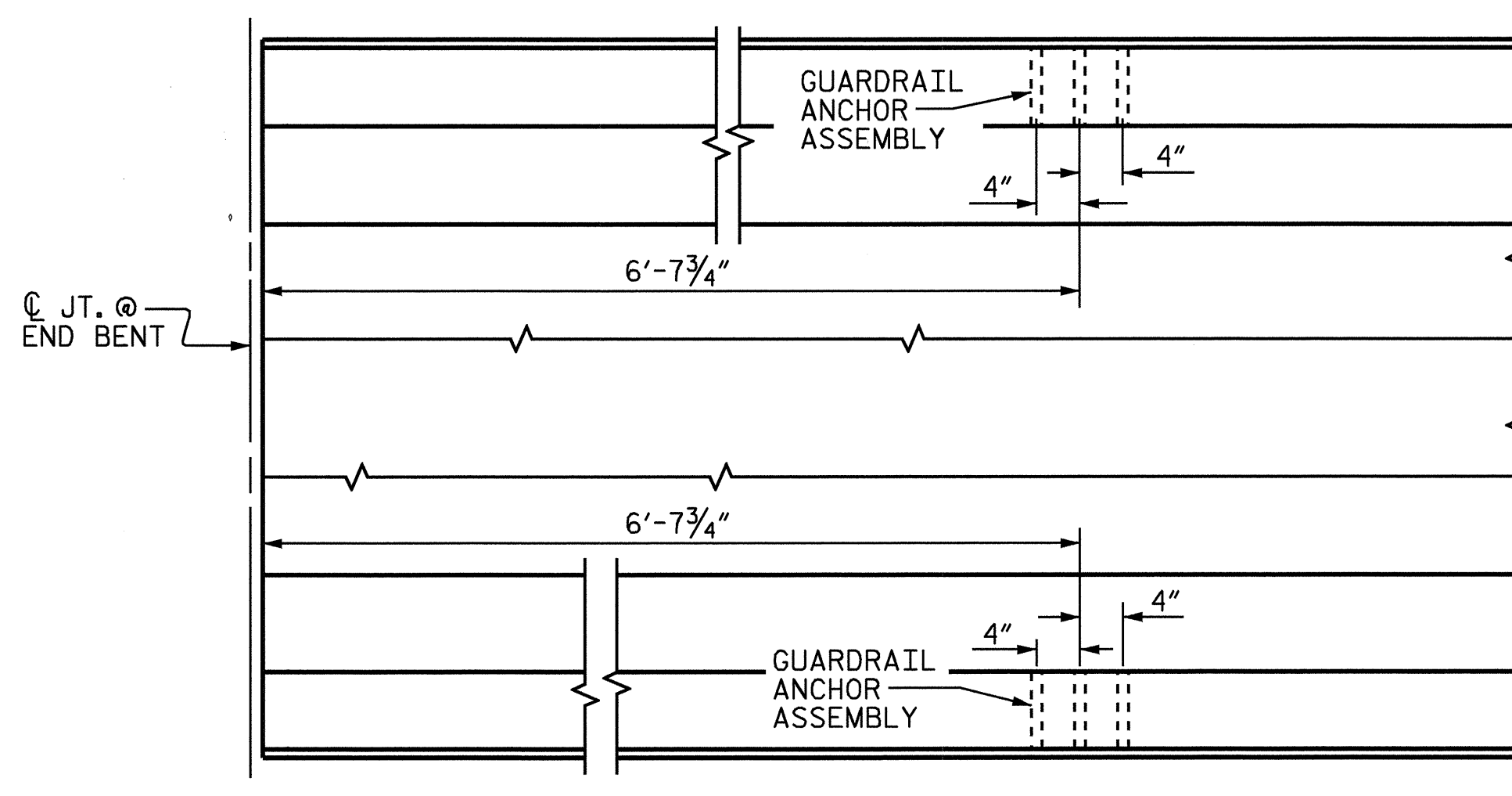
THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS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



FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03

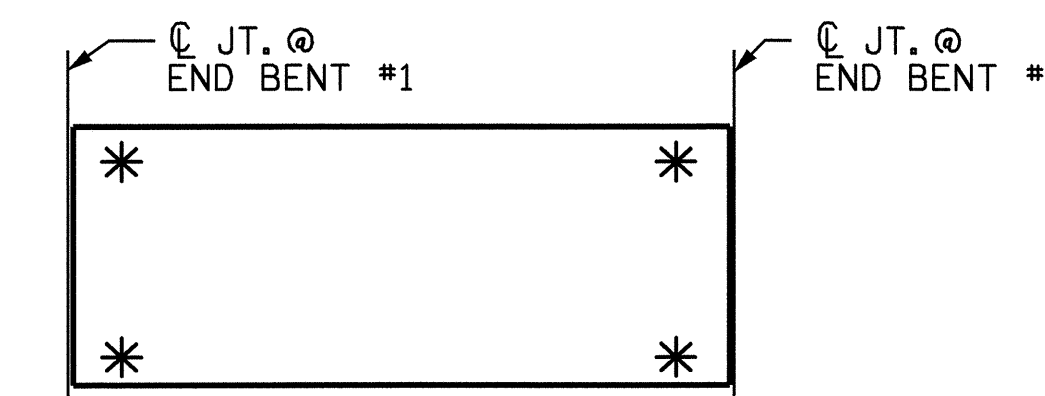


GUARDRAIL ANCHOR ASSEMBLY DETAILS



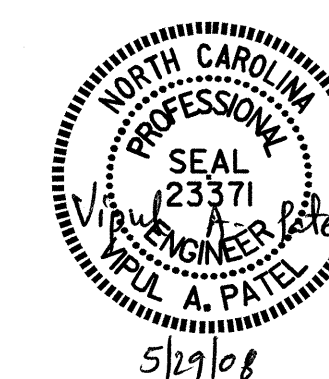
LOCATION OF ANCHORS FOR GUARDRAIL

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



\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4276  
STANLY COUNTY  
 STATION: 19+96.00 -L-

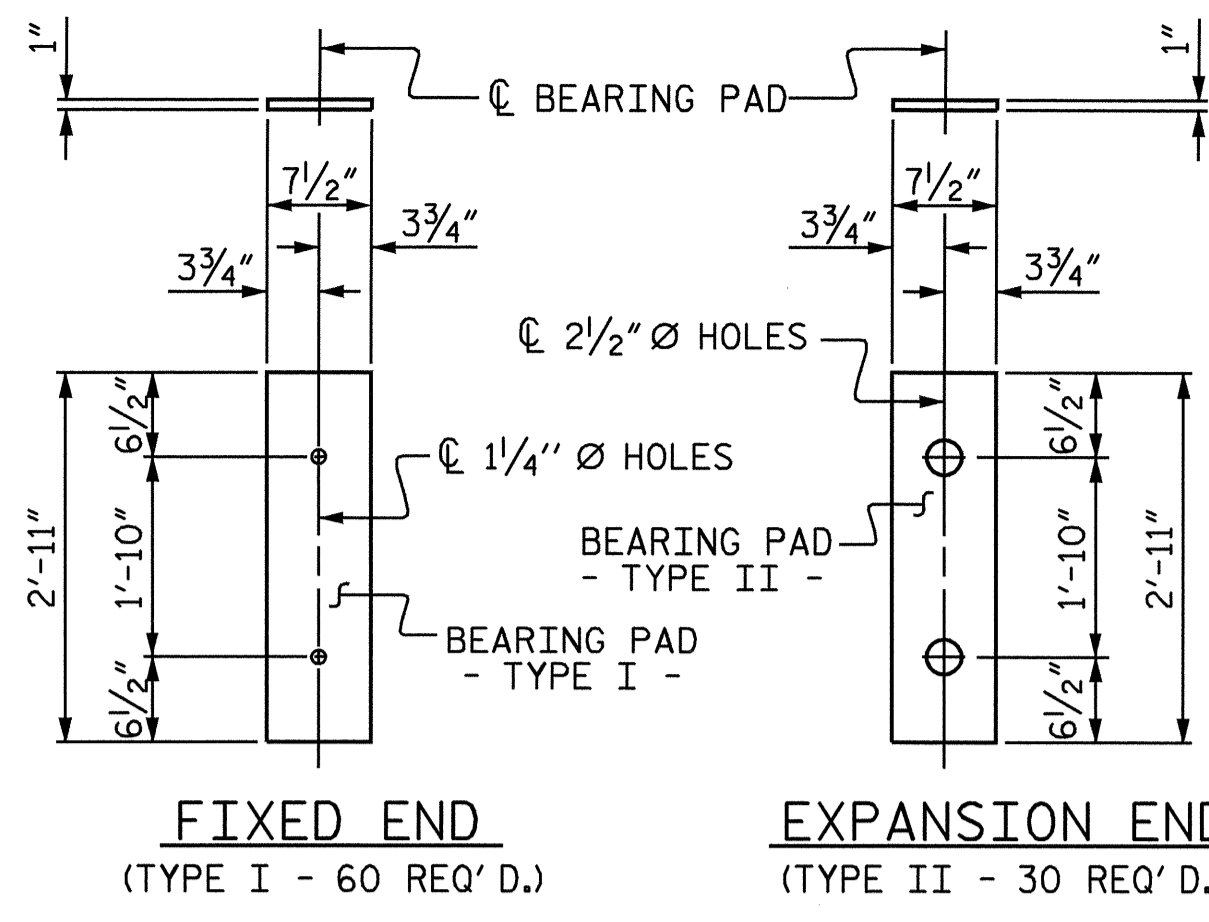


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 GUARDRAIL ANCHORAGE  
 FOR BARRIER RAIL

ASSEMBLED BY : S. DOMBROWSKI	DATE : 5/8/08
CHECKED BY : V. PATEL	DATE : 5/8/08
DRAWN BY : TLA 5/06	ADDED 5/1/06R KMM/GM
CHECKED BY : GM 5/06	

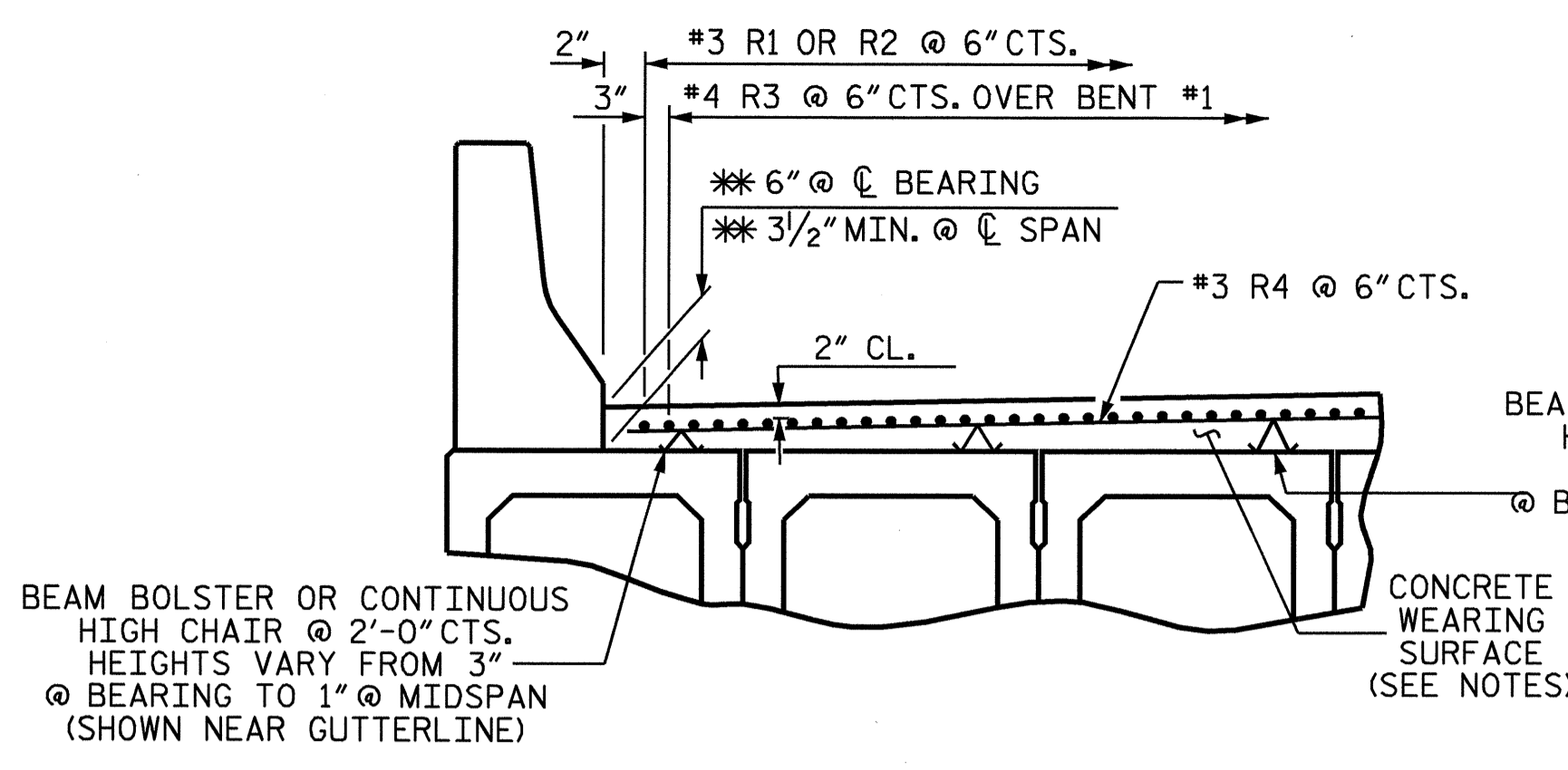
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			21





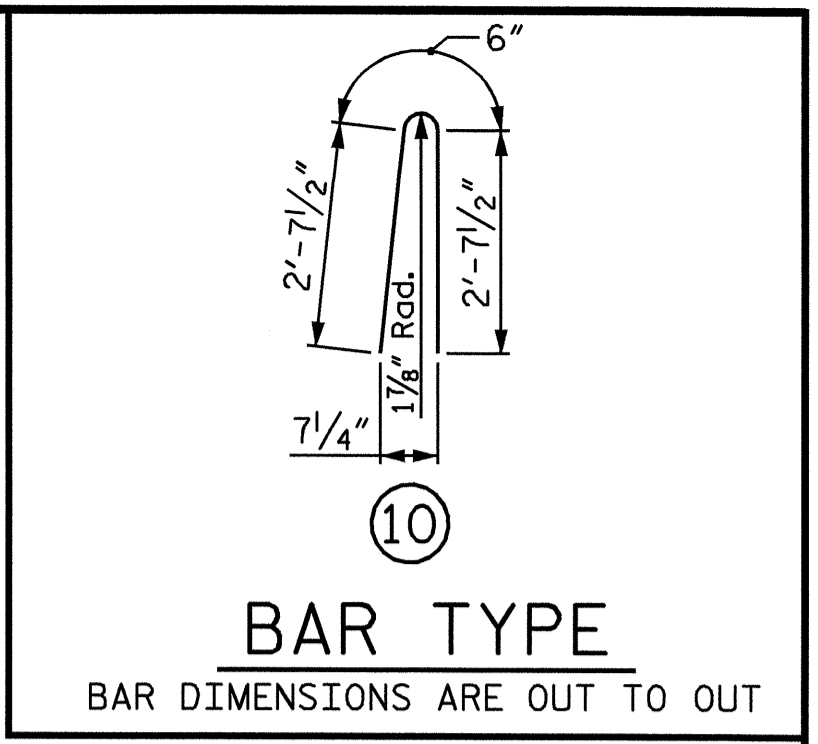
**ELASTOMERIC BEARING DETAILS**

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS

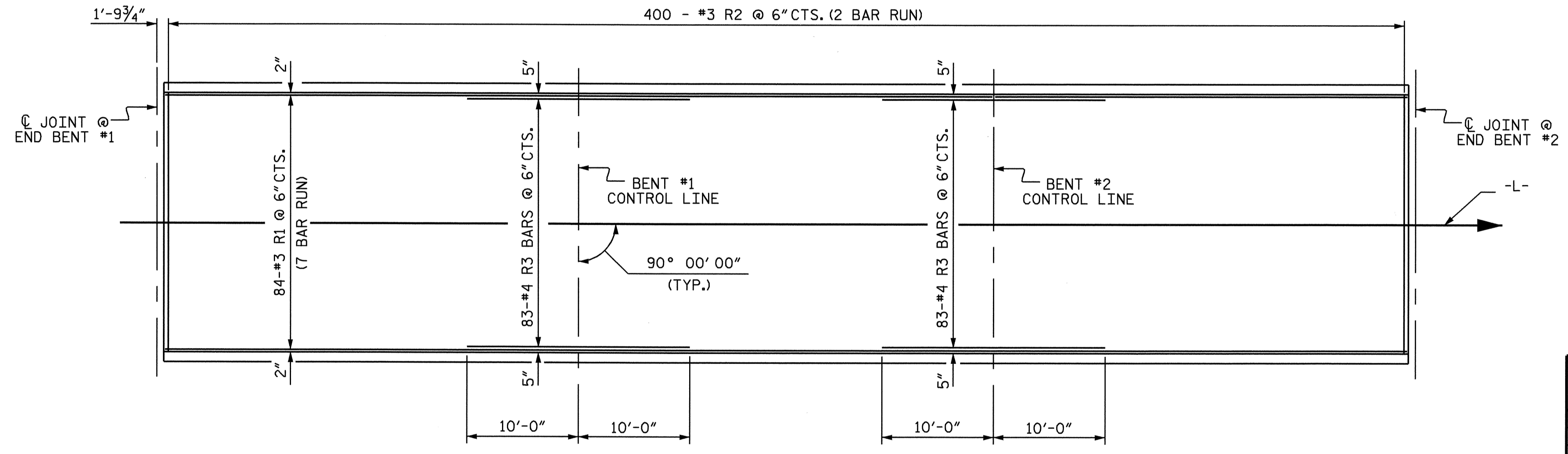


**REINFORCING FOR CONCRETE WEARING SURFACE**  
 \*BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS

BOX BEAM UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
<b>SPAN A</b>			
EXTERIOR B. B.	2	66'-10 1/2"	133.75
INTERIOR B. B.	13	66'-10 1/2"	869.38
<b>SPAN B</b>			
EXTERIOR B. B.	2	66'-10 1/2"	133.75
INTERIOR B. B.	13	66'-10 1/2"	869.38
<b>SPAN C</b>			
EXTERIOR B. B.	2	66'-10 1/2"	133.75
INTERIOR B. B.	13	66'-10 1/2"	869.39
<b>TOTAL</b>	<b>45</b>	<b>-----</b>	<b>3009.39</b>



BILL OF MATERIAL FOR CONCRETE BARRIER RAIL						
BAR	BARS PER SPAN	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	SPAN A   SPAN B   SPAN C					
*B2	42   42   42	126	#5	STR	21'-11"	2880
*S6	178   178   178	534	#5	10	5'-9"	3203
*EPOXY COATED REINFORCING STEEL LBS.						6083
CLASS AA CONCRETE CU. YDS.						51.4
<b>TOTAL LIN. FT. OF CONCRETE BARRIER RAIL</b>						<b>401.75</b>

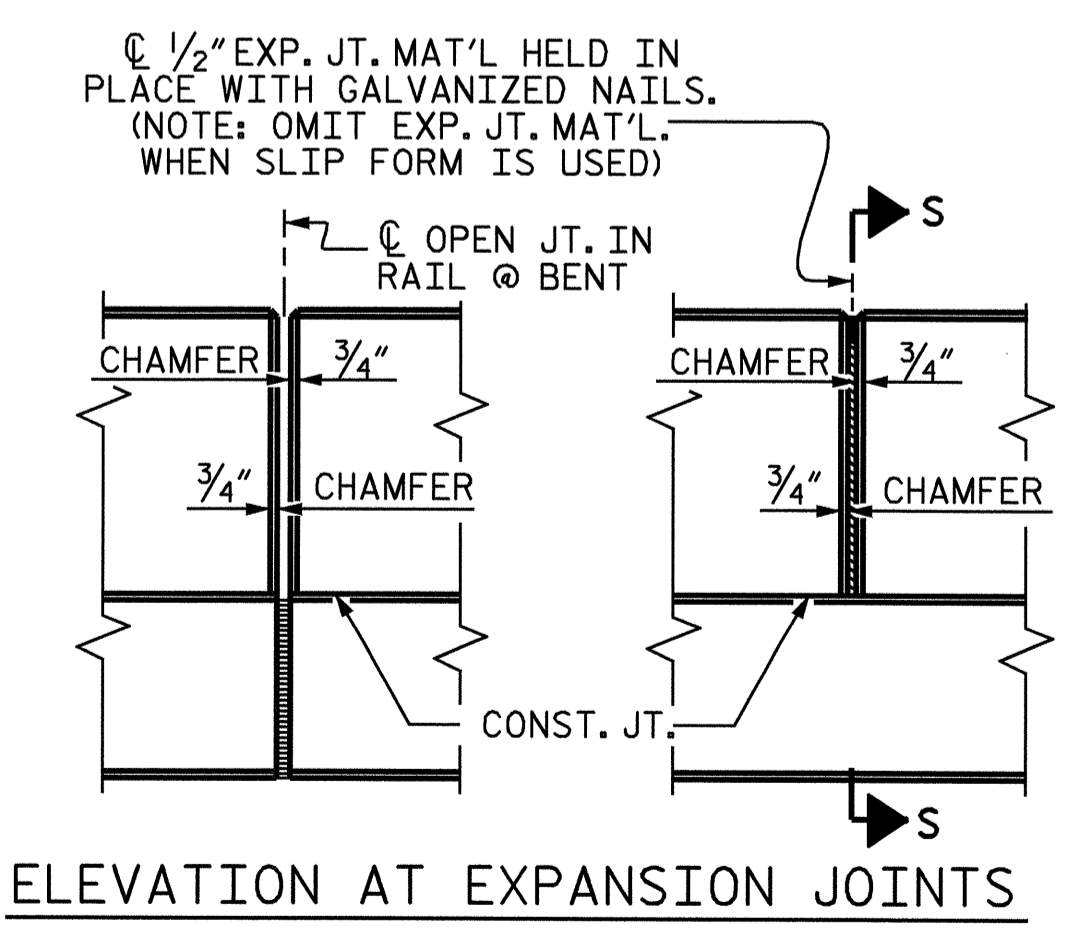


PLAN SHOWING CONCRETE WEARING SURFACE REINFORCING STEEL

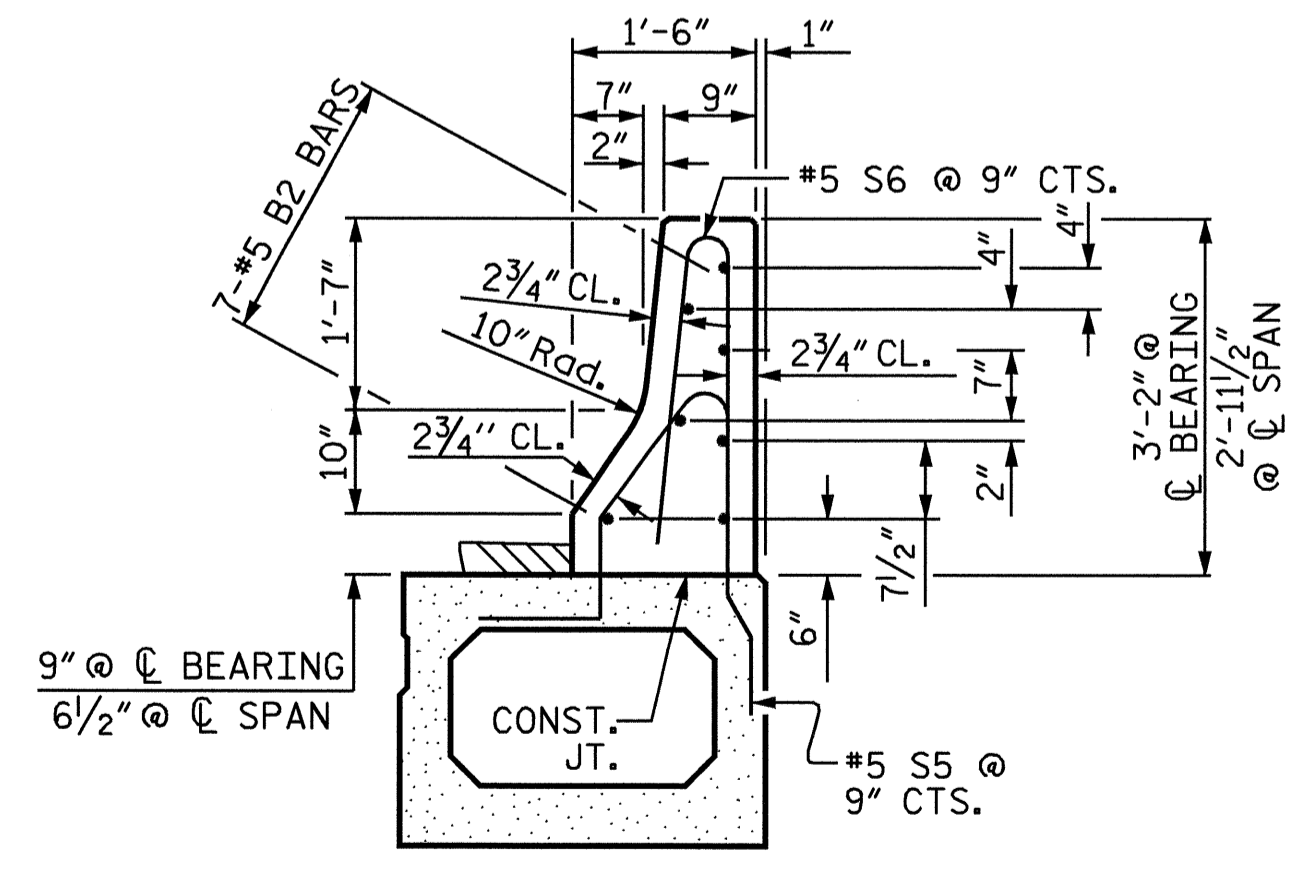
GROOVING BRIDGE FLOORS		
APPROACH SLABS	1849	SQ.FT.
BRIDGE DECK	7752	SQ.FT.
<b>TOTAL</b>	<b>9601</b>	<b>SQ.FT.</b>

SPLICE LENGTH CHART	
BAR SIZE	EPOXY COATED
#3	1'-3"
#4	1'-8"

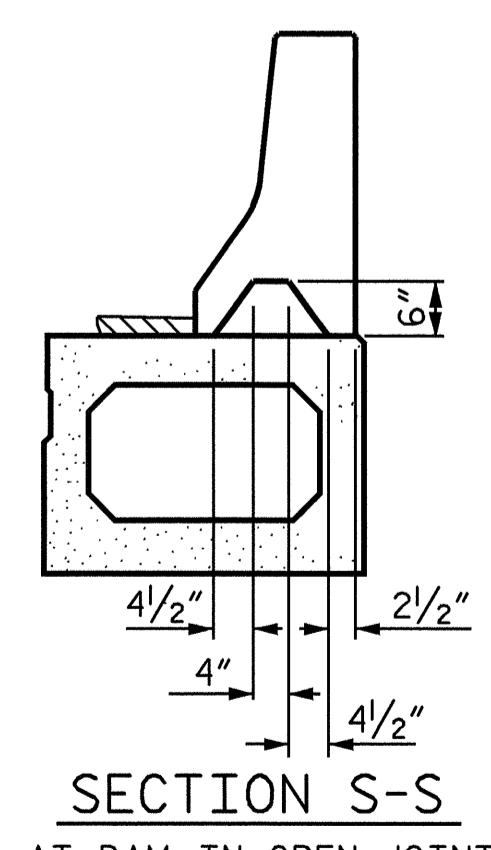
BILL OF MATERIAL FOR CONCRETE WEARING SURFACE					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*R1	588	#3	STR	29'-8"	6559
*R2	800	#3	STR	21'-5"	6442
*R3	166	#4	STR	20'-0"	2218
*EPOXY COATED REINFORCING STEEL LBS.					15,219
CONCRETE WEARING SURFACE SQ. FT.					8365



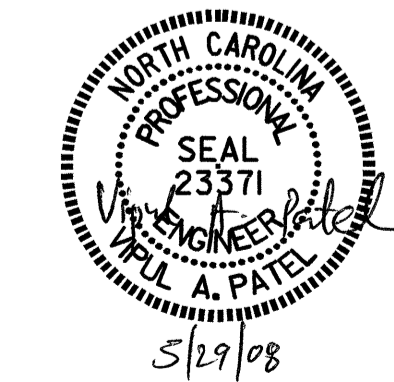
ELEVATION AT EXPANSION JOINTS



SECTION THRU RAIL  
**BARRIER RAIL DETAILS**



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



PROJECT NO. B-4276  
 STANLY COUNTY  
 STATION: 19+96.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD 3'-0" X 2'-3" PRESTRESSED CONCRETE BOX BEAM UNIT DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-10
					TOTAL SHEETS 21

ASSEMBLED BY : R. G. EMERSON	DATE : 10/07
CHECKED BY : S. DOMBROWSKI	DATE : 10/07
DRAWN BY : TLA 5/05	ADDED 7/11/05R
CHECKED BY : GM 6/05	REV. 5/1/06 TLA/GM

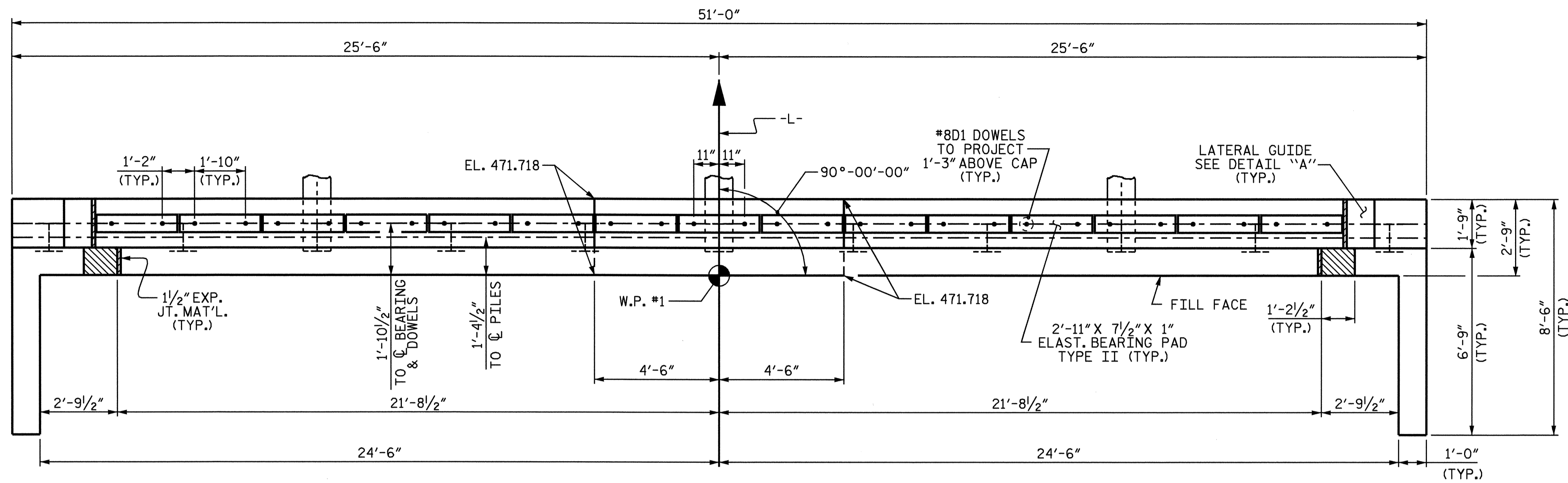
# NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #8D1 DOWELS.

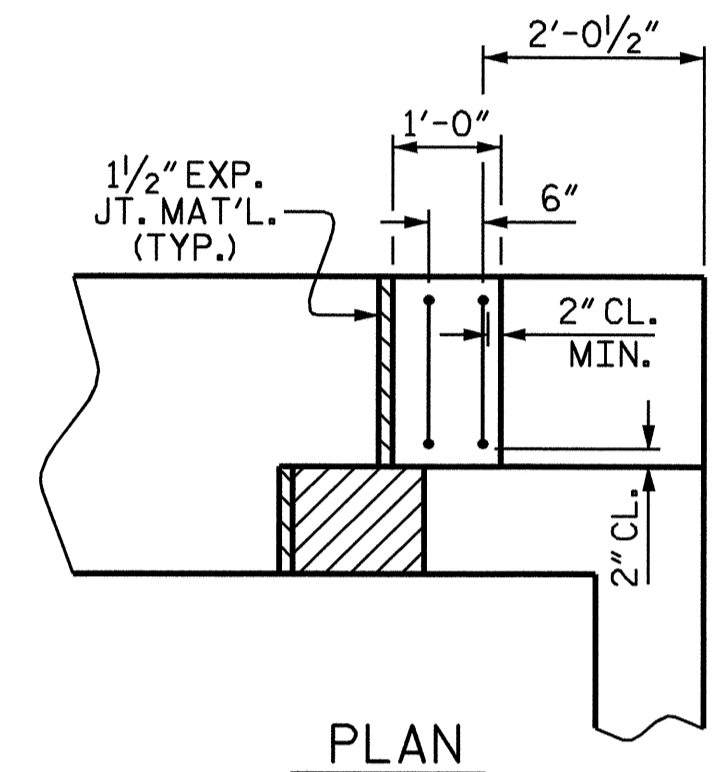
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

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

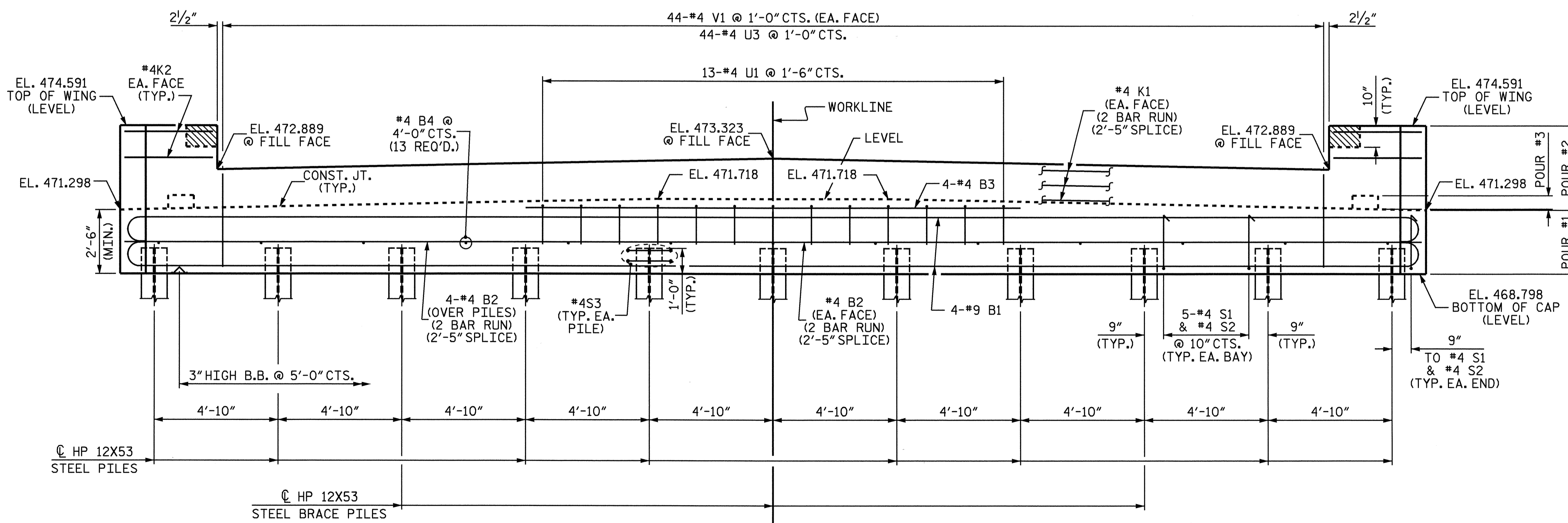
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER CORED SLAB UNITS ARE IN PLACE.



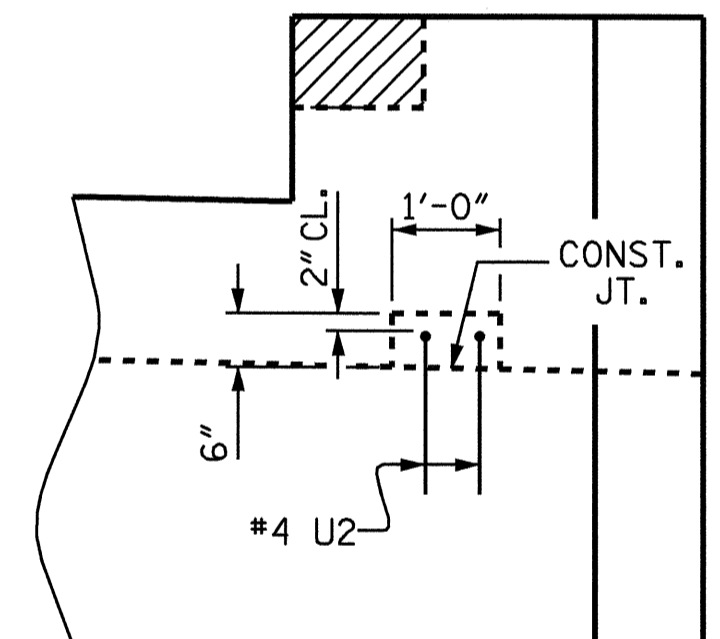
**PLAN**



**PLAN**



**ELEVATION**



**ELEVATION  
DETAIL "A"**

PROJECT NO. B-4276  
STANLY COUNTY  
 STATION: 19+96.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT #1

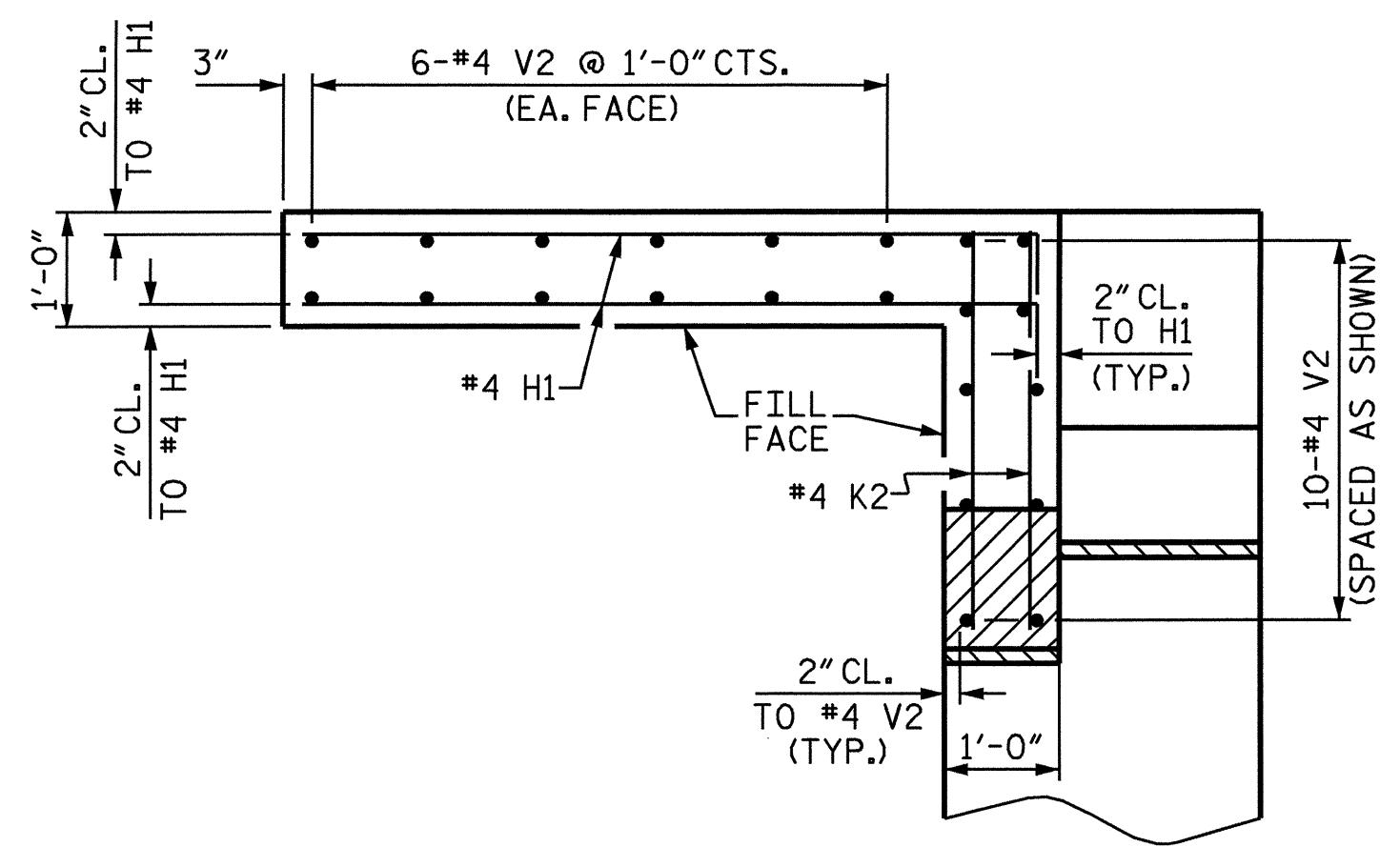


DRAWN BY : S. DOMBROWSKI DATE : 10/07  
 CHECKED BY : R.G. EMERSON DATE : 12/07

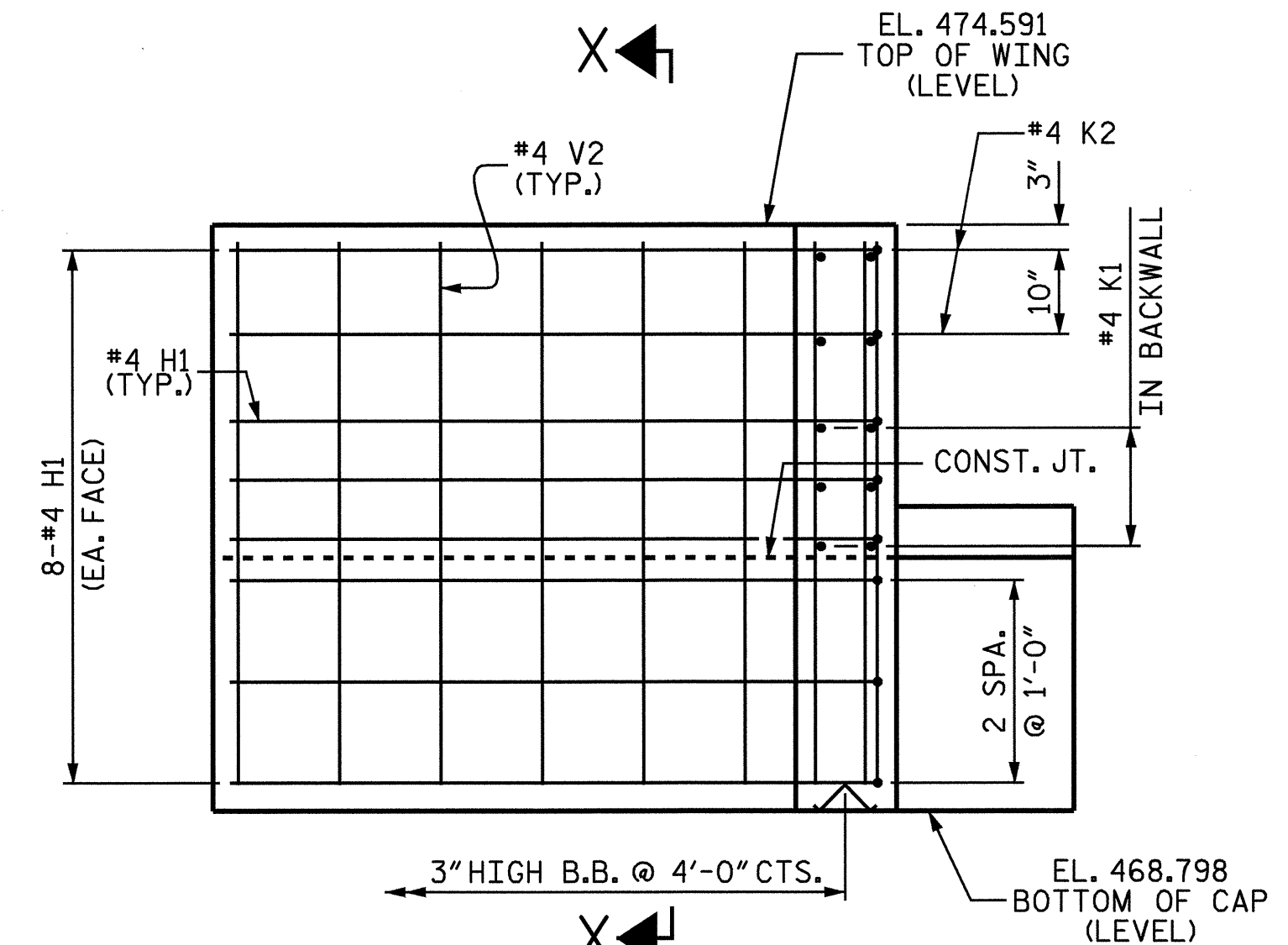
28-MAY-2008 08:48  
 I:\Structures\B4276\plans\B-4276\_sd.Ebts.dgn  
 Klayne

REVISIONS						SHEET NO. S-11
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 21
2			4			

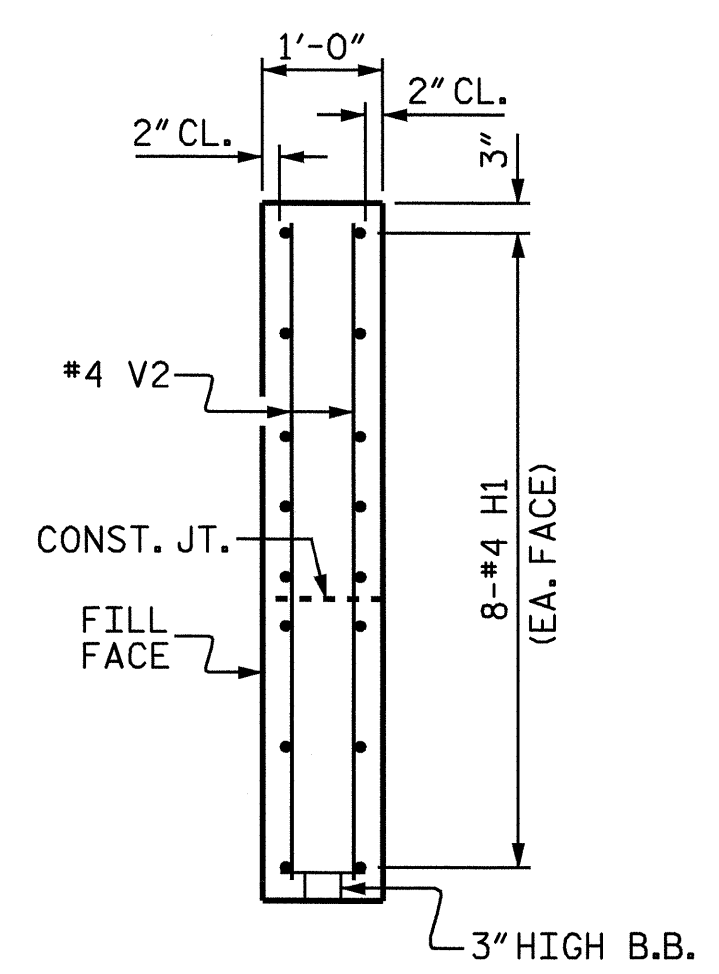




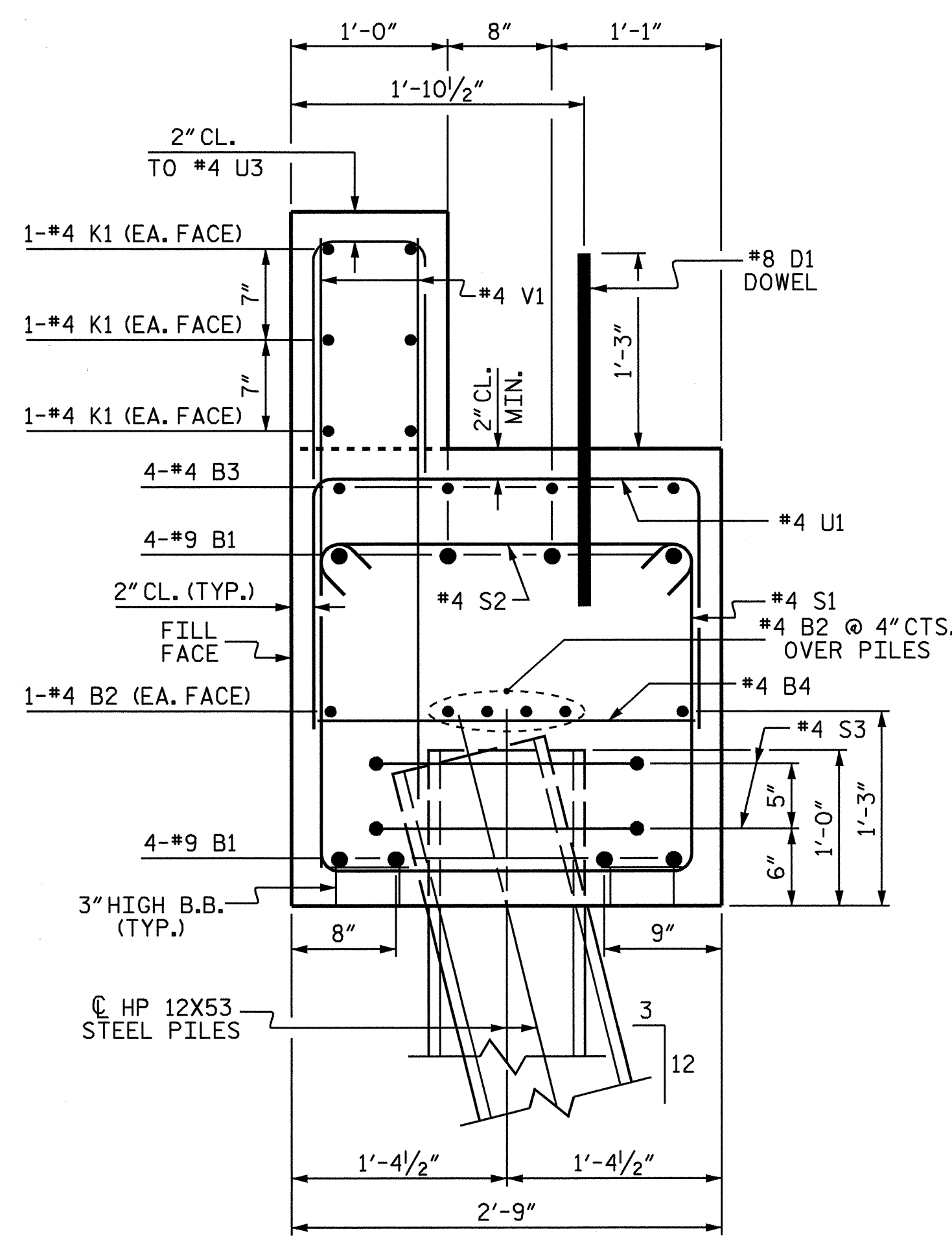
**PLAN OF WING**  
 LEFT WING SHOWN, RIGHT WING SIMILAR



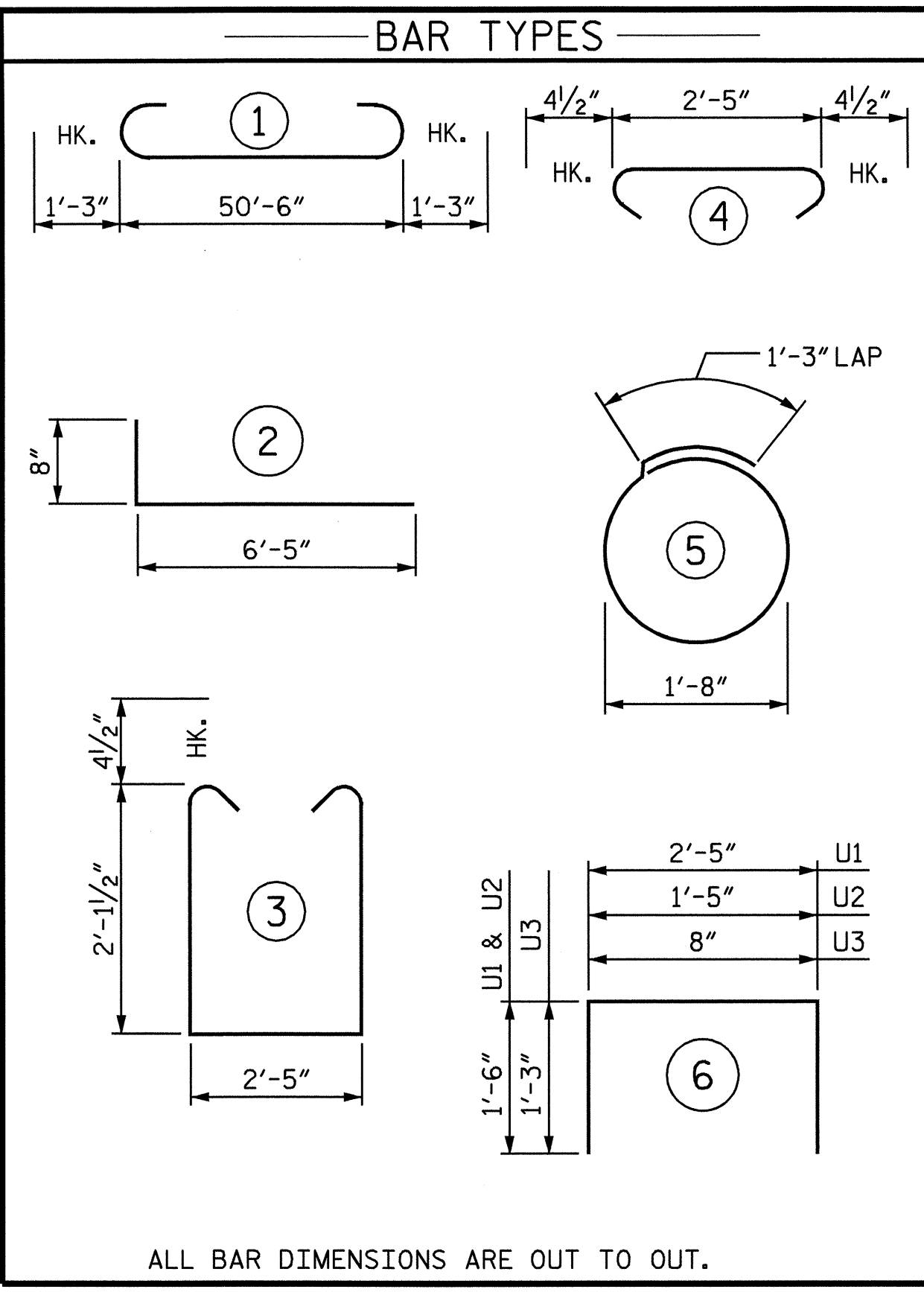
**ELEVATION OF WING**



**SECTION X-X**

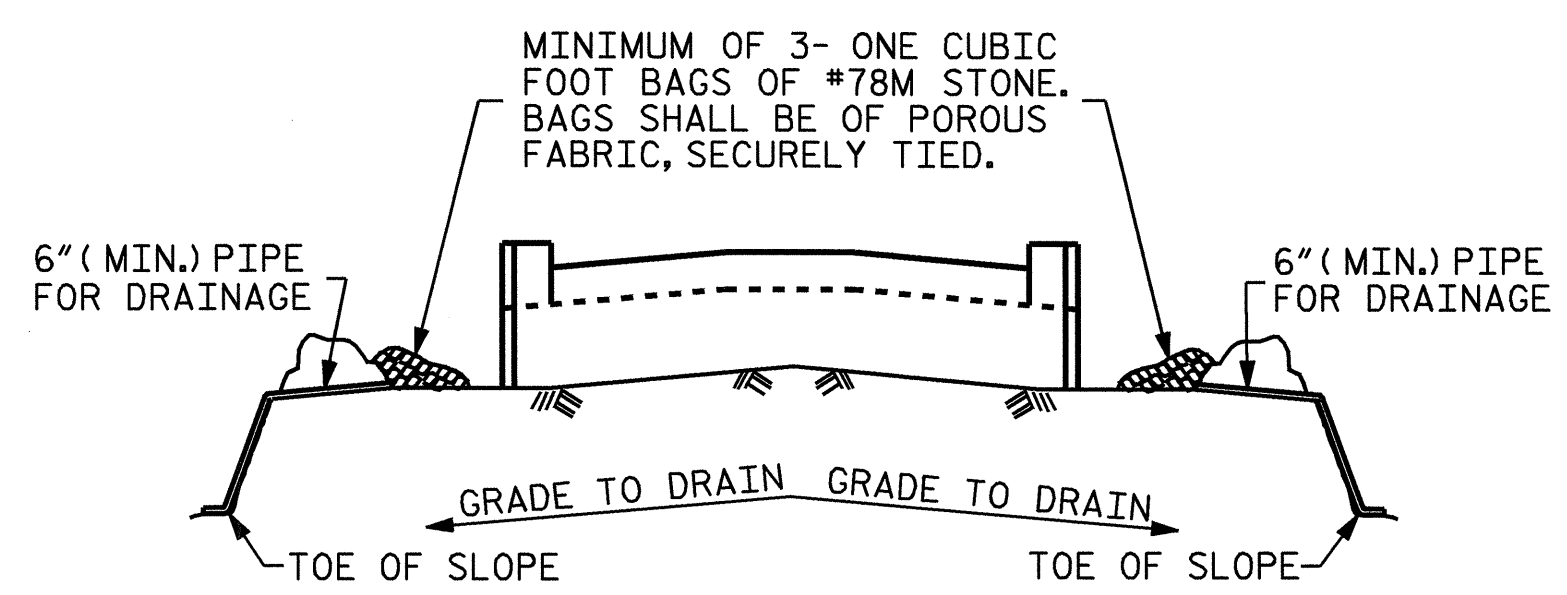


**CAP SECTION**



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	53'-0"	1442
B2	12	#4	STR.	26'-7"	213
B3	4	#4	STR.	19'-4"	52
B4	13	#4	STR.	2'-5"	21
D1	30	8	STR.	2'-3"	180
H1	32	#4	2	7'-1"	151
K1	12	#4	STR.	26'-7"	213
K2	8	#4	STR.	3'-5"	18
S1	52	#4	3	7'-5"	258
S2	52	#4	4	3'-2"	110
S3	22	#4	5	6'-6"	96
U1	13	#4	6	5'-5"	47
U2	4	#4	6	4'-5"	12
U3	44	#4	6	3'-2"	93
V1	88	#4	STR.	3'-8"	216
V2	44	#4	STR.	5'-4"	157
REINFORCING STEEL				Lbs.	3279
CLASS "A" CONCRETE					
POUR #1 CAP & LOWER WINGS				Cu. Yds.	15.3
POUR #2 UPPER WINGS				Cu. Yds.	4.8
POUR #3 LATERAL GUIDES				Cu. Yds.	0.1
TOTAL				Cu. Yds.	20.2
HP 12x53 STEEL PILES				No. 11	Lin. Ft. 220

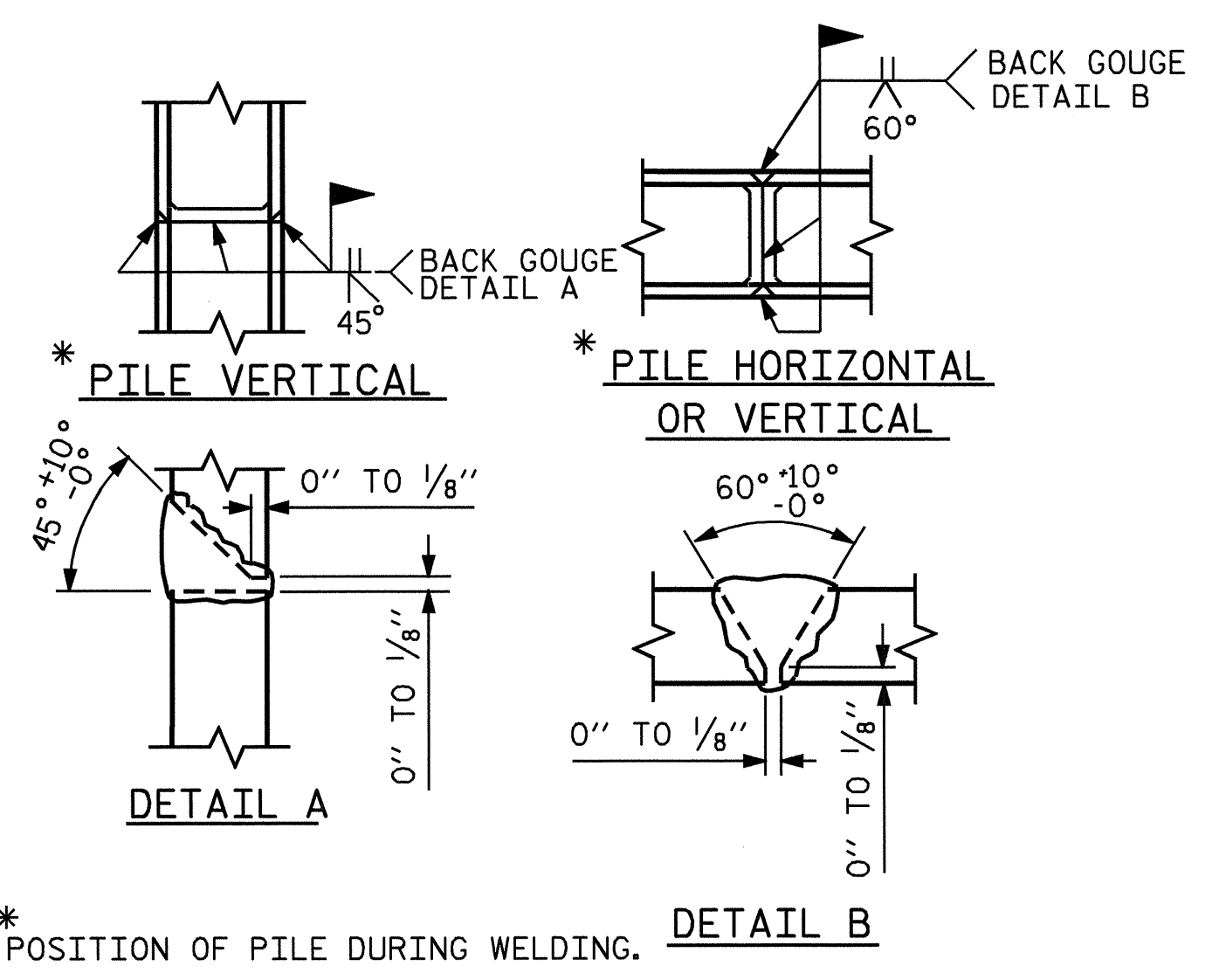


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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**

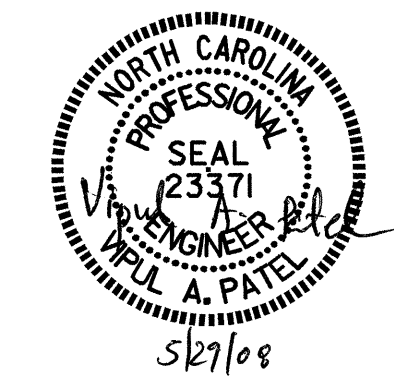


**PILE SPLICE DETAILS**

PROJECT NO. B-4276  
STANLY COUNTY  
 STATION: 19+96.00 -L-

SHEET 2 OF 2

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



DRAWN BY: S. DOMBROWSKI DATE: 10/07  
 CHECKED BY: R.G. EMERSON DATE: 12/07

NOTES

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

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

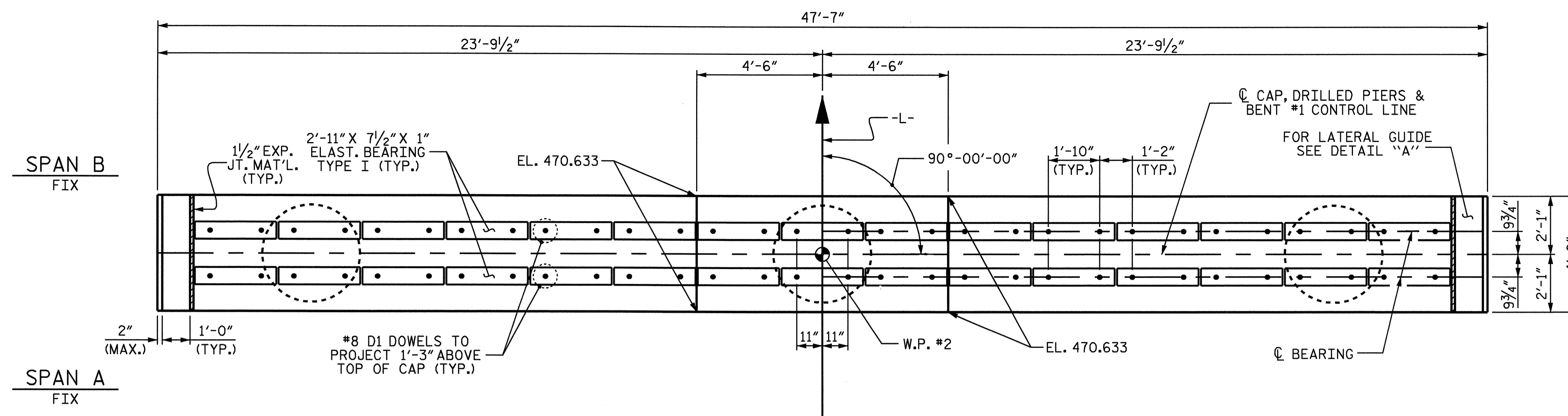
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

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

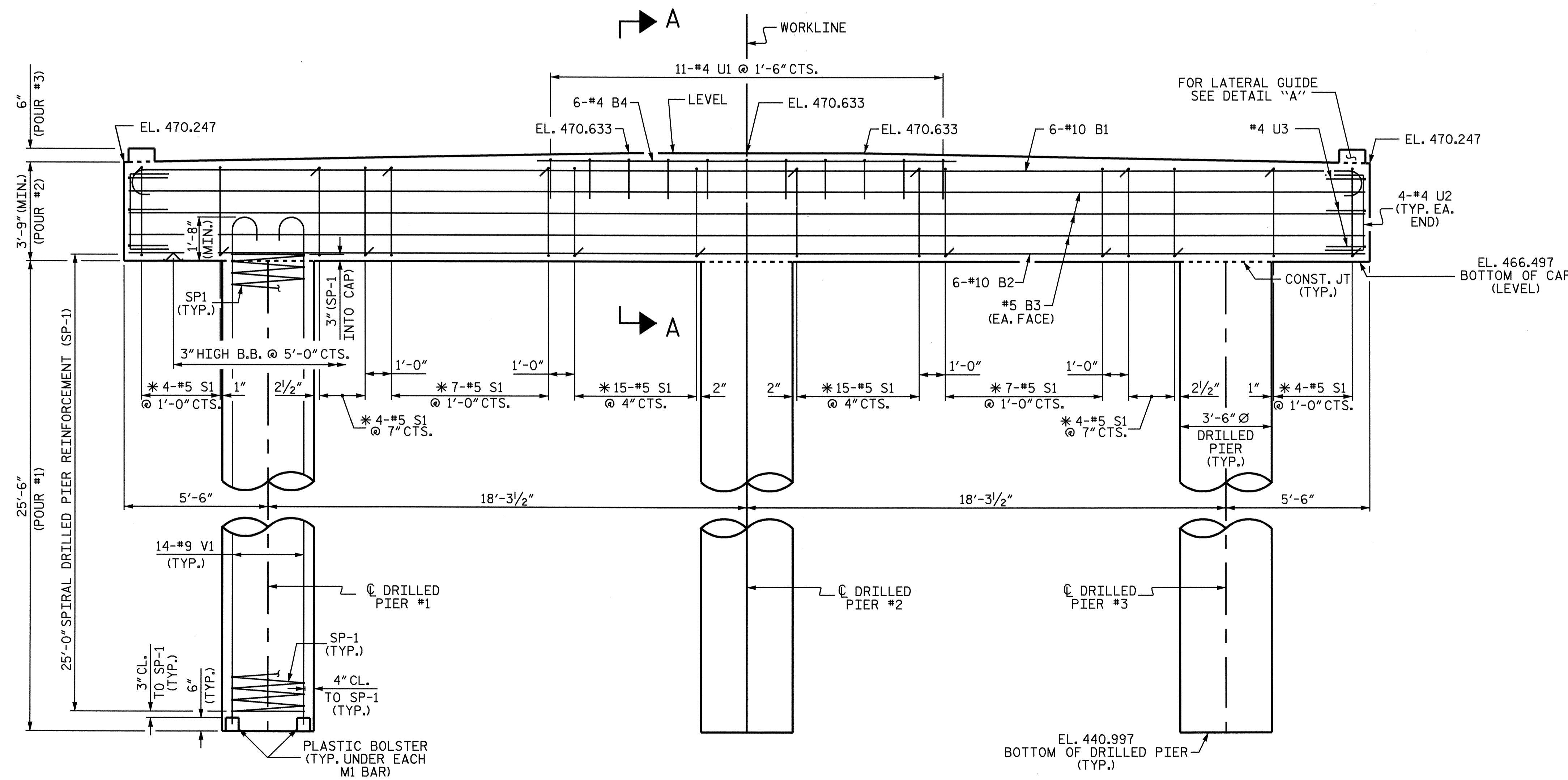
SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

PRIOR TO FORMING THE BENT CAPS THE CONTRACTOR SHALL VERIFY THE WATER ELEVATION. IF THE BOTTOM OF CAP IS BELOW THE WATER ELEVATION, WATERTIGHT FORMS WILL BE REQUIRED. COST OF WATERTIGHT FORMS SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

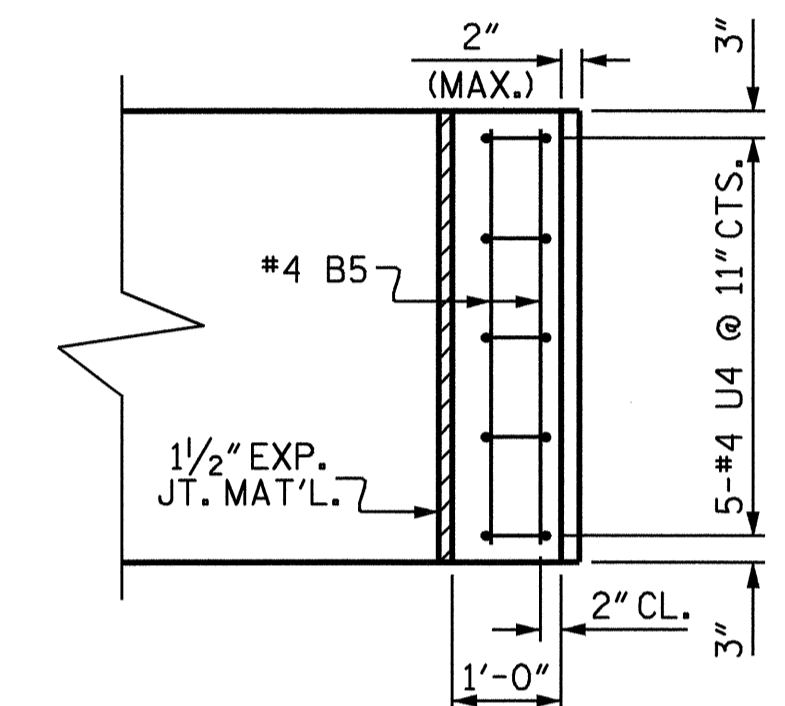


PLAN

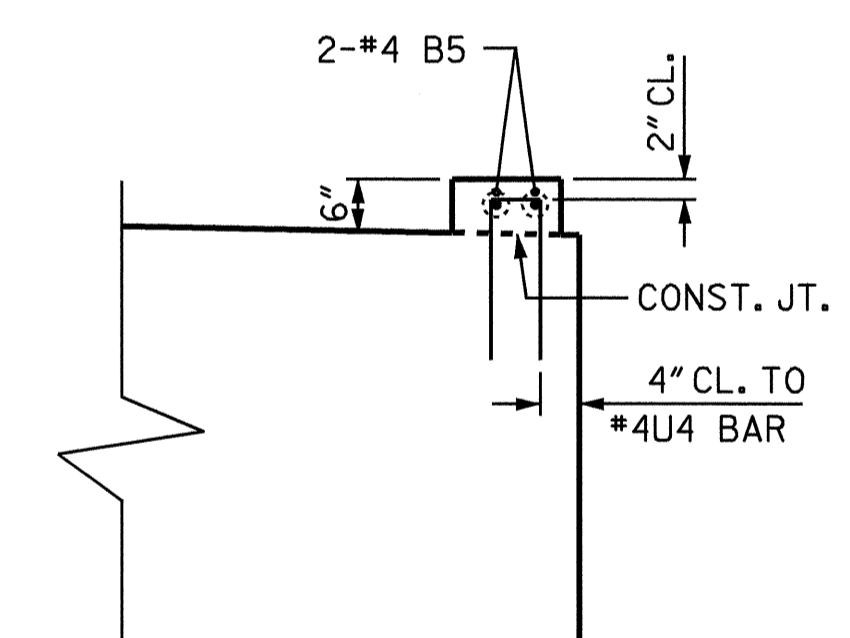


ELEVATION

\* INVERT ALTERNATE STIRRUPS



PLAN



ELEVATION

DETAIL "A"

PROJECT NO. B-4276  
STANLY COUNTY  
 STATION: 19+96.00 -L-

SHEET 1 OF 2

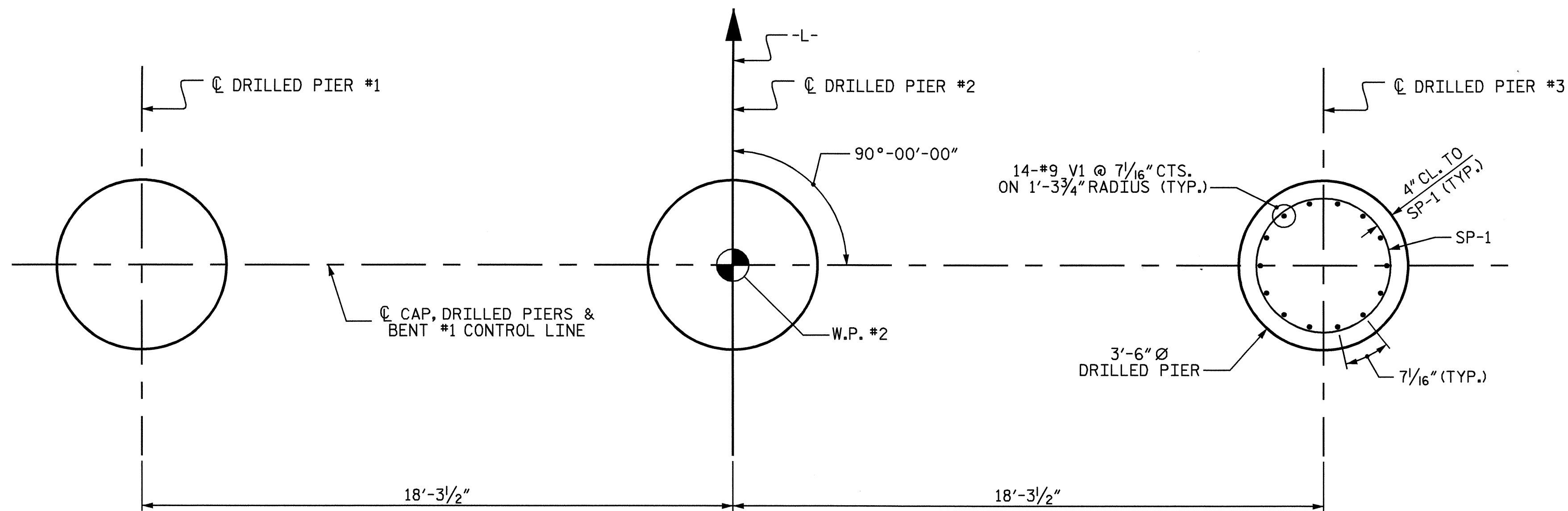
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT #1

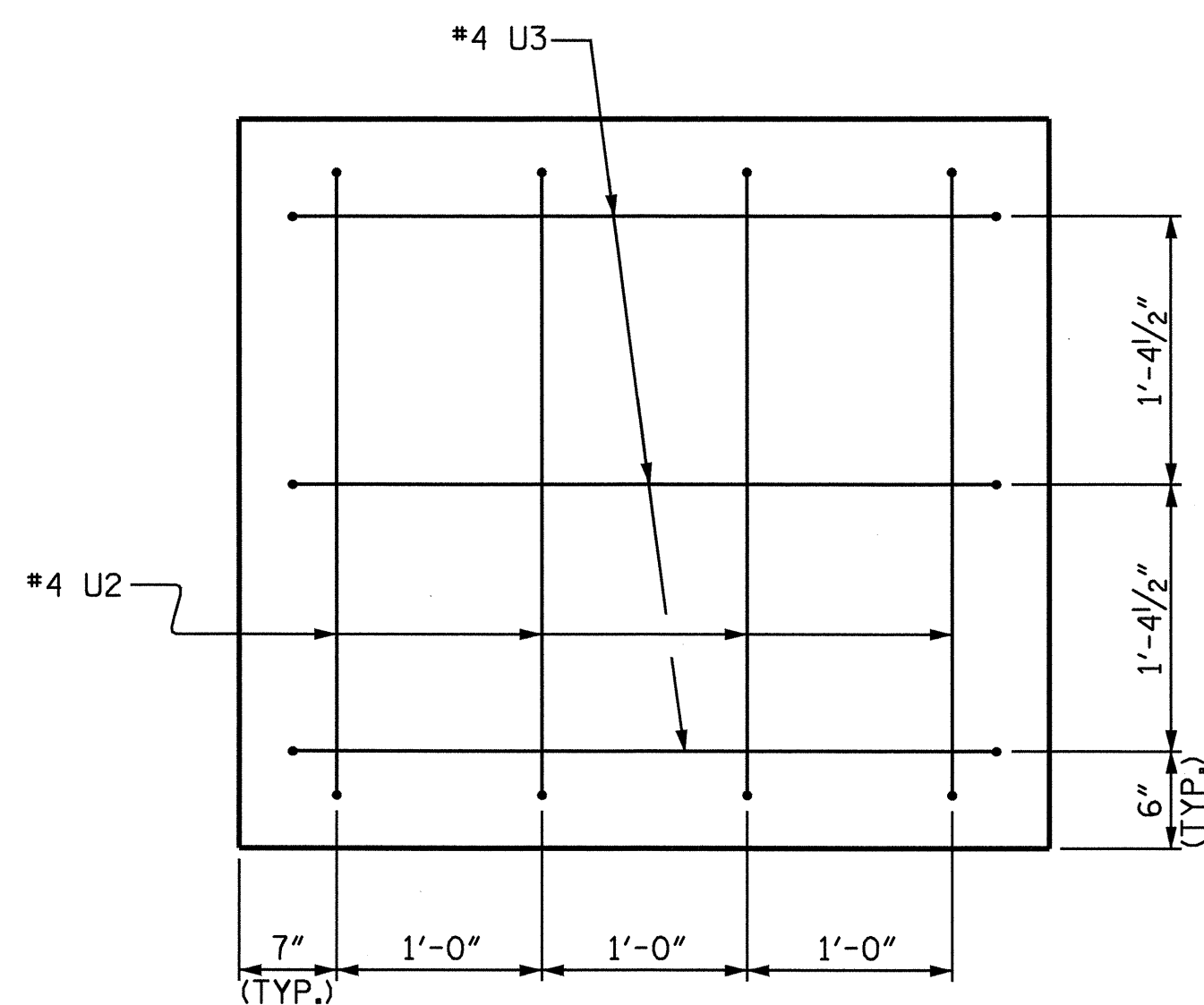


REVISIONS						SHEET NO. S-13
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 21
2			4			

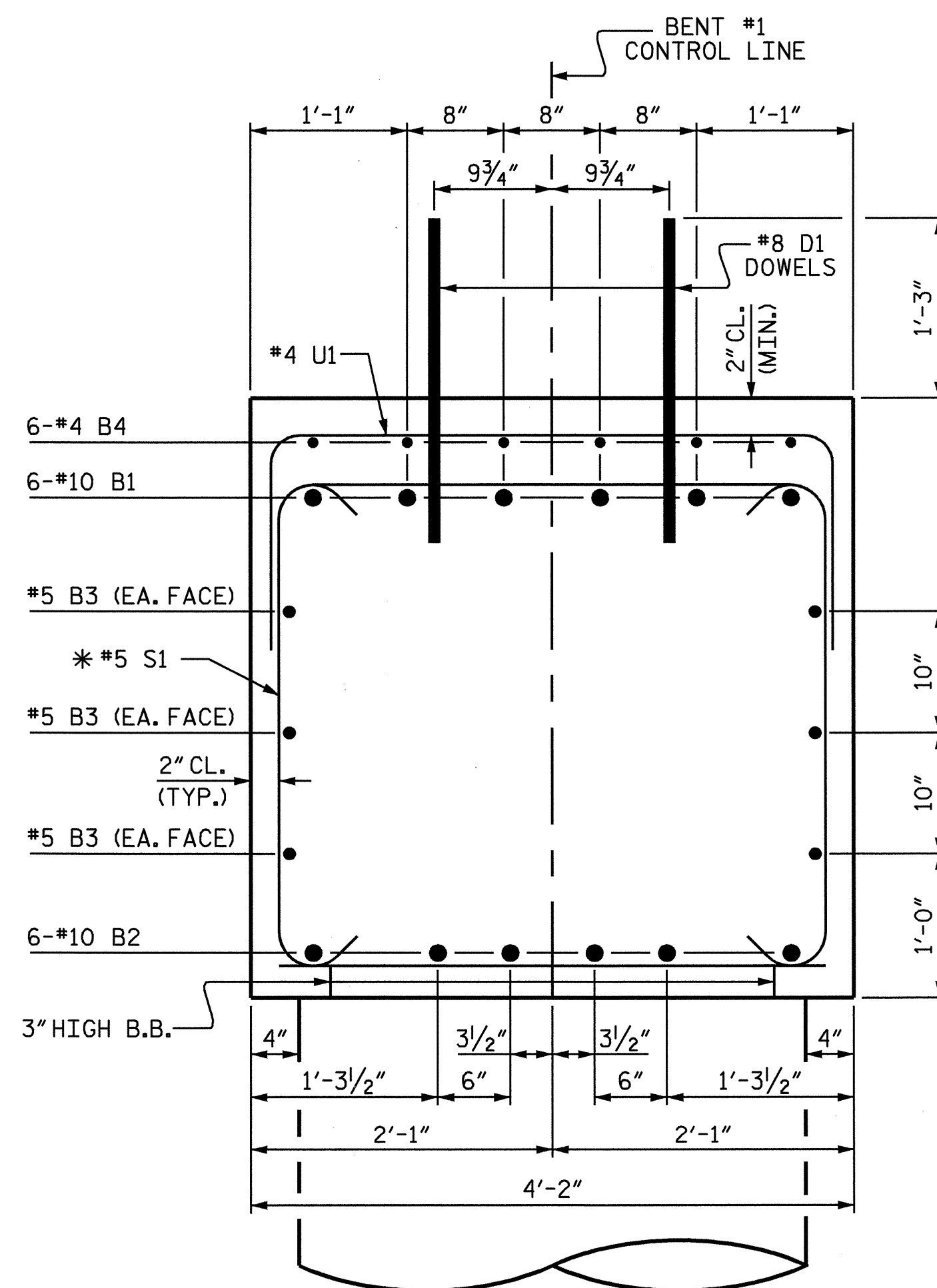
DRAWN BY: S. DOMBROWSKI DATE: 12/07  
 CHECKED BY: K.D. LAYNE DATE: 12/07



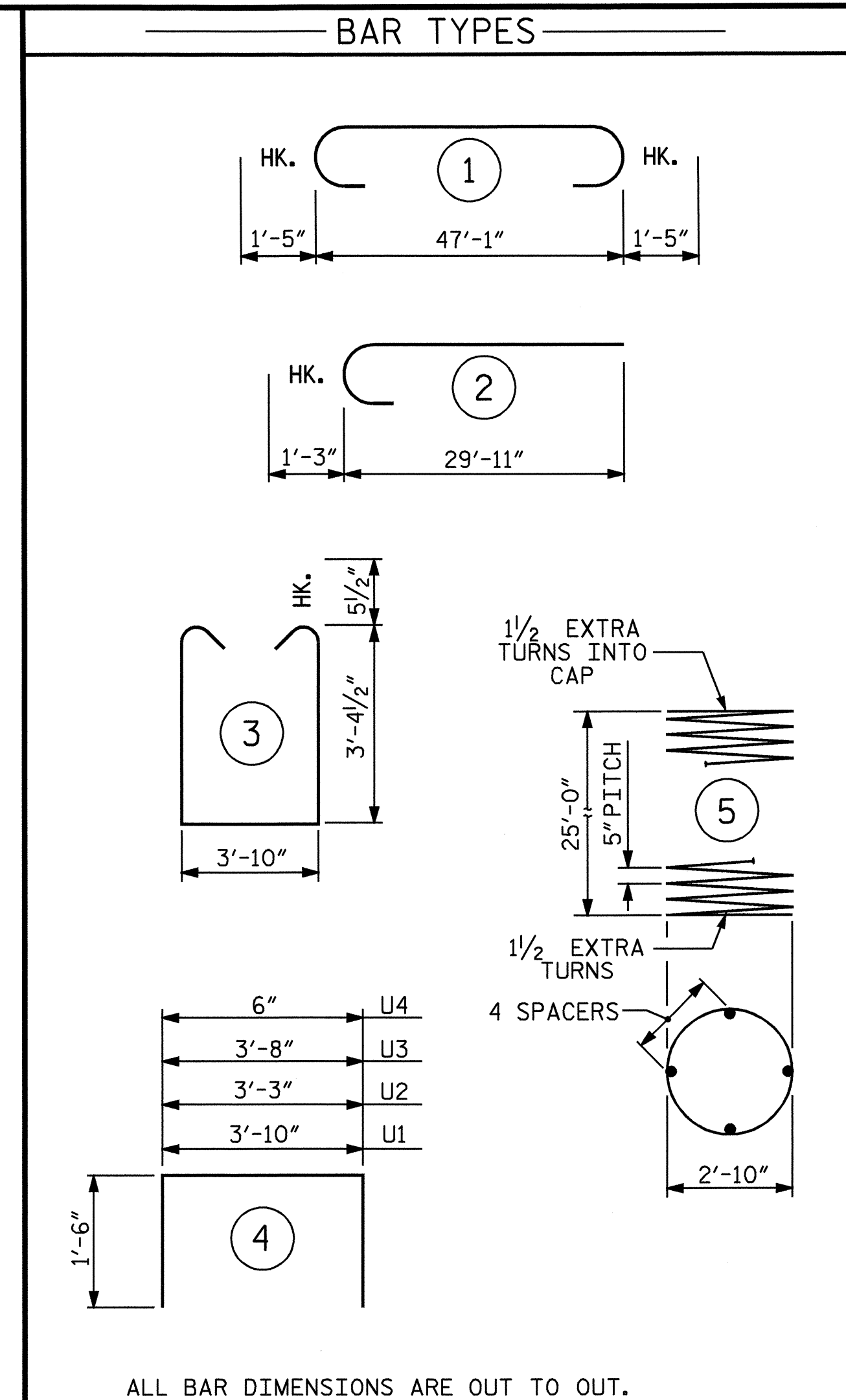
**PLAN OF DRILLED PIERS**



**END VIEW**



**SECTION A-A**  
\* INVERT ALTERNATE STIRRUPS



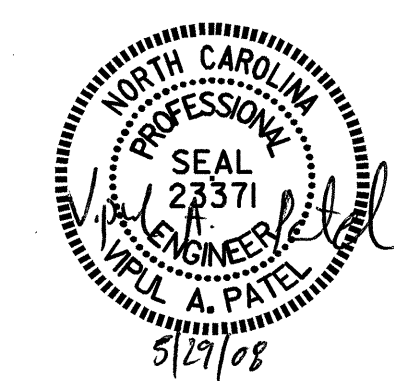
\*\*\* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

BILL OF MATERIAL BENT #1					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	#10	1	49'-11"	1289	
B2	#10	STR	47'-3"	1220	
B3	#5	STR	47'-3"	296	
B4	#4	STR	16'-0"	64	
B5	#4	STR	3'-10"	10	
D1	#8	STR	2'-3"	360	
S1	#5	3	11'-6"	720	
U1	#4	4	6'-10"	50	
U2	#4	4	6'-3"	33	
U3	#4	4	6'-8"	27	
U4	#4	4	3'-6"	23	
V1	#9	2	31'-2"	4451	
TOTAL REINFORCING STEEL LBS.			8543		
SP-1	3	***	5	551'-2"	1725
TOTAL SPIRAL COLUMN REINFORCING STEEL LBS.			1725		
CLASS A CONCRETE BREAKDOWN					
POUR #2 (BENT CAP)			29.2	C.Y.	
POUR #3 (LAT. GUIDE)			0.2	C.Y.	
TOTAL			29.4	C.Y.	
DRILLED PIER QUANTITIES					
DRILLED PIER CONCRETE					
POUR #1 (DRILLED PIERS)			27.3	C.Y.	
3'-6" Ø DRILLED PIERS IN SOIL			43.5	LIN. FT.	
3'-6" Ø DRILLED PIERS NOT IN SOIL			33.0	LIN. FT.	
PERMANENT STEEL CASING FOR 3'-6" DIA. DRILLED PIER					
			46.5	LIN. FT.	
CROSSHOLE SONIC LOGGING :			1	EACH	
CSL TUBES :			336.0	LIN. FT.	

PROJECT NO. B-4276  
STANLY COUNTY  
 STATION: 19+96.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT #1					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-14
					TOTAL SHEETS 21



DRAWN BY: S. DOMBROWSKI DATE: 12/07  
 CHECKED BY: K.D. LAYNE DATE: 12/07



NOTES

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

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

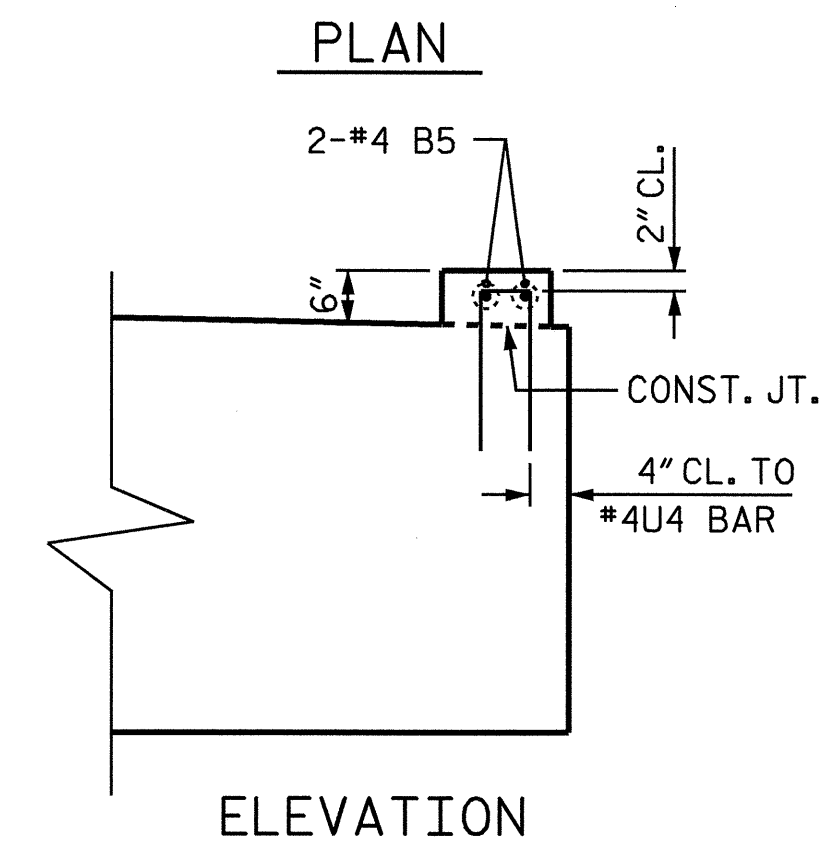
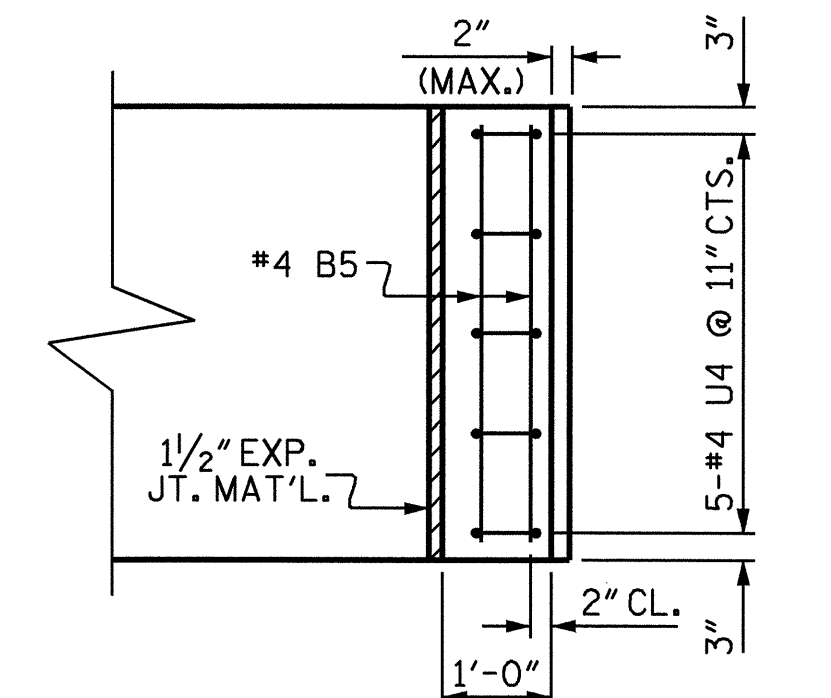
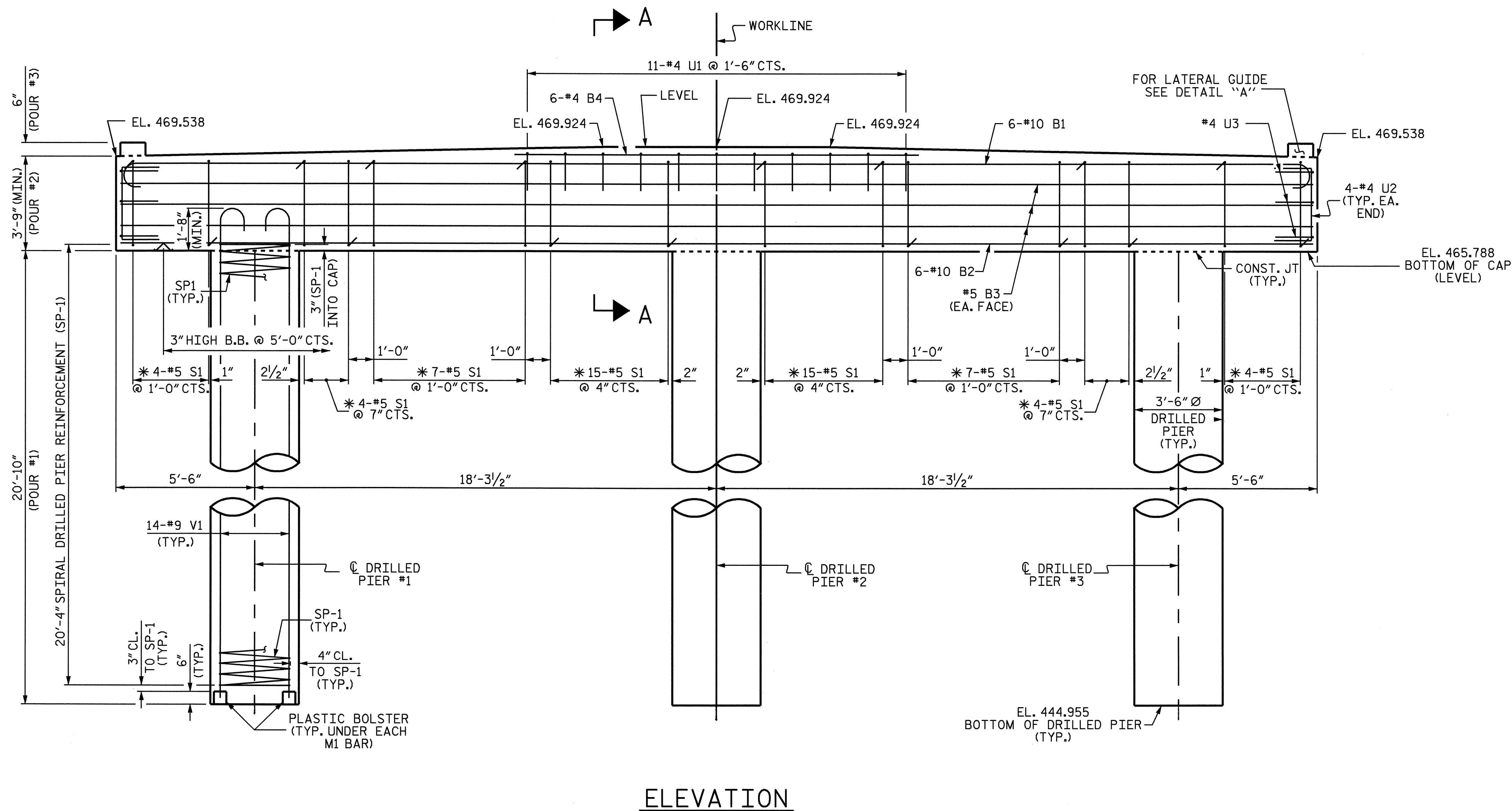
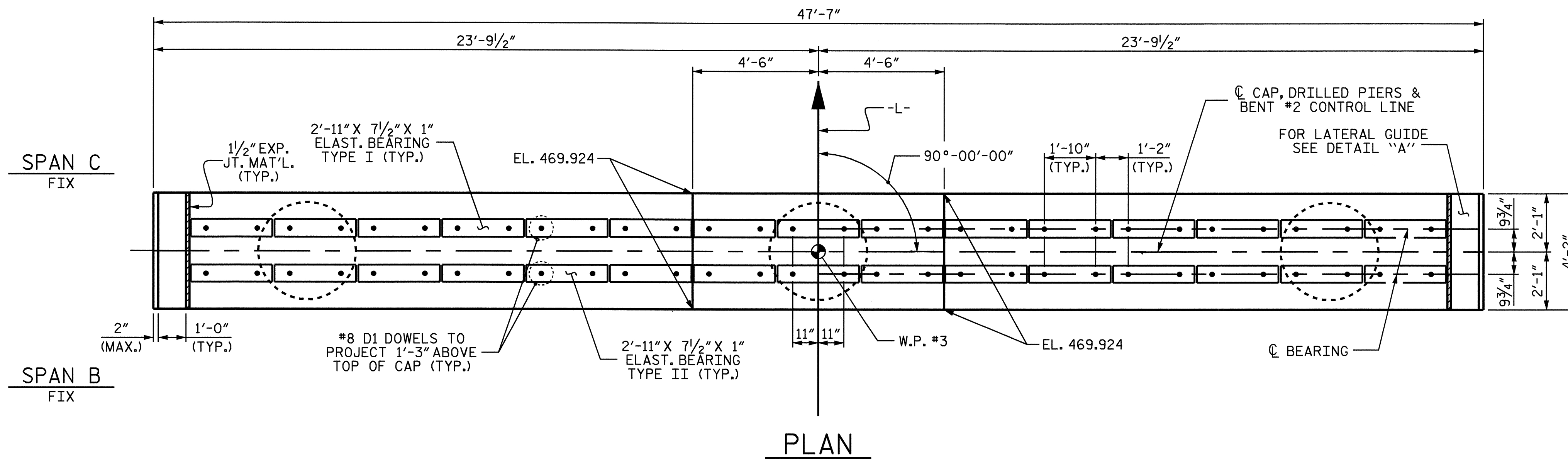
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

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

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

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

PRIOR TO FORMING THE BENT CAPS THE CONTRACTOR SHALL VERIFY THE WATER ELEVATION. IF THE BOTTOM OF CAP IS BELOW THE WATER ELEVATION, WATERTIGHT FORMS WILL BE REQUIRED. COST OF WATERTIGHT FORMS SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

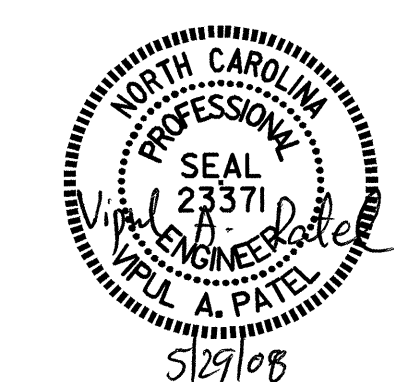


DETAIL "A"

PROJECT NO. B-4276  
 STANLY COUNTY  
 STATION: 19+96.00 -L-

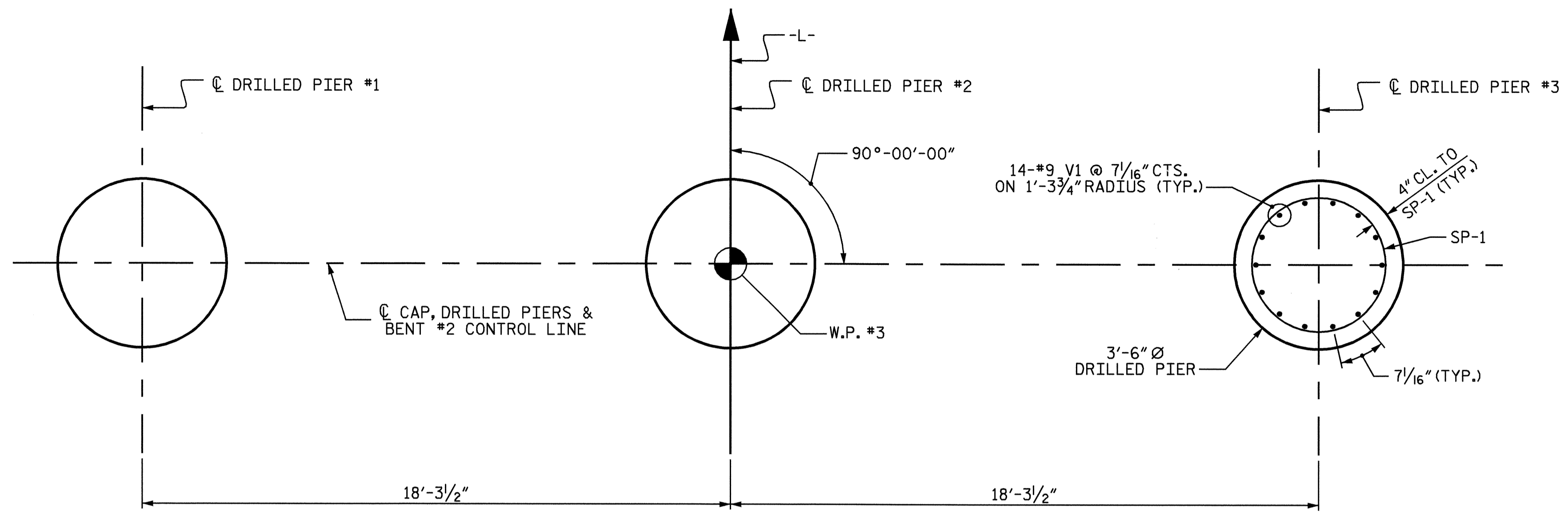
SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-15
SUBSTRUCTURE BENT #2						TOTAL SHEETS 21
REVISIONS						
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			

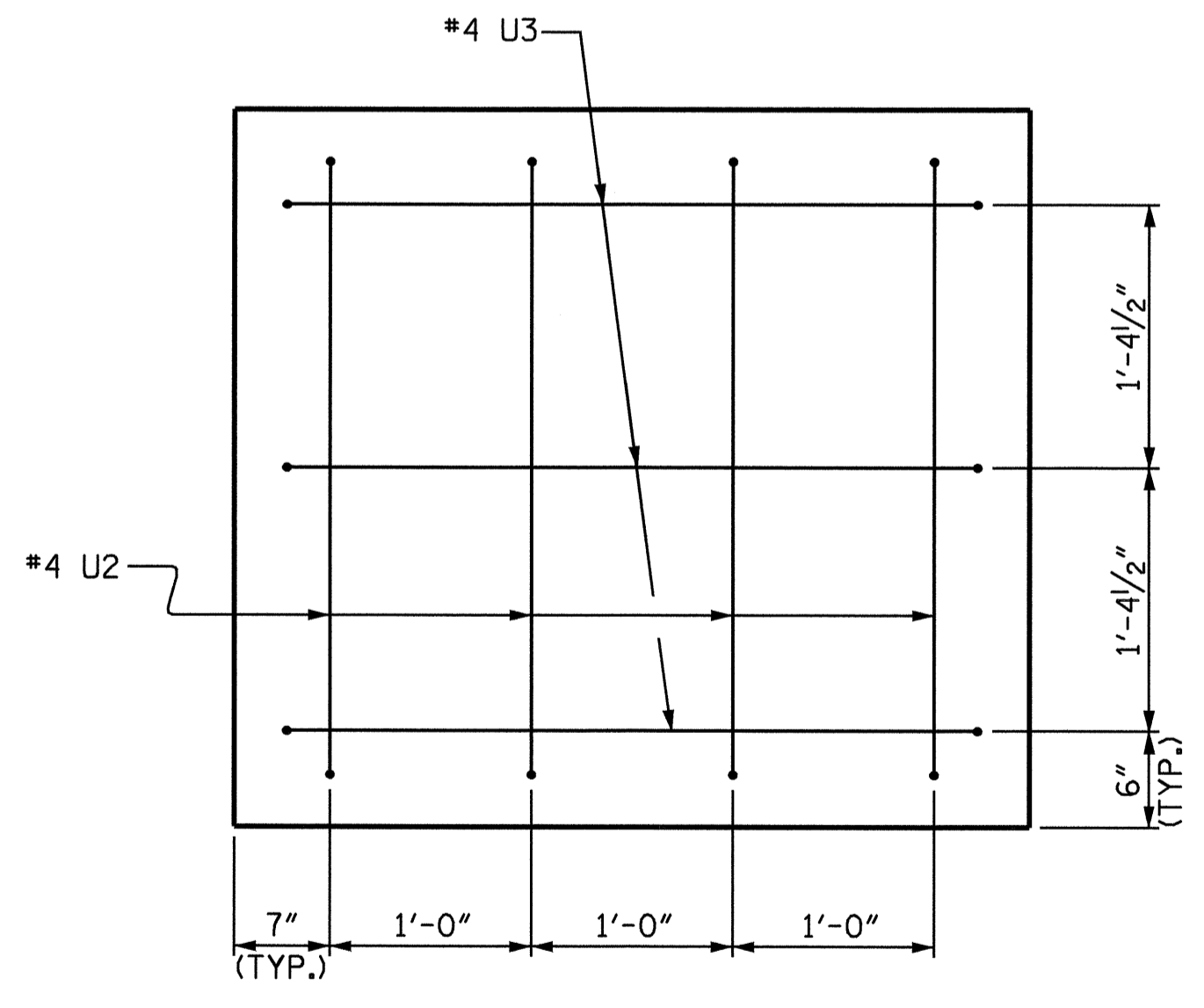


DRAWN BY: S. DOMBROWSKI DATE: 12/07  
 CHECKED BY: K.D. LAYNE DATE: 12/07

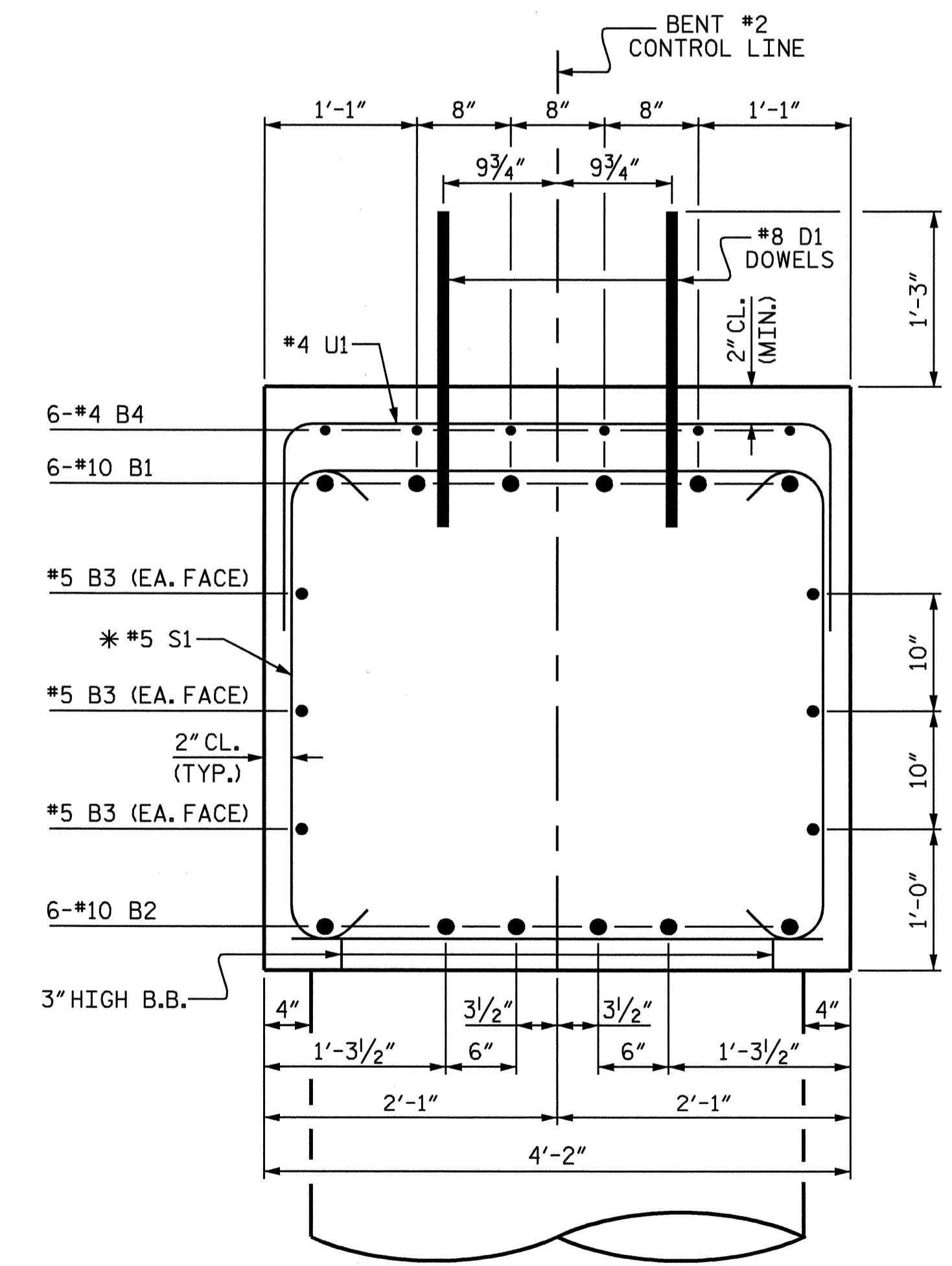
\* INVERT ALTERNATE STIRRUPS



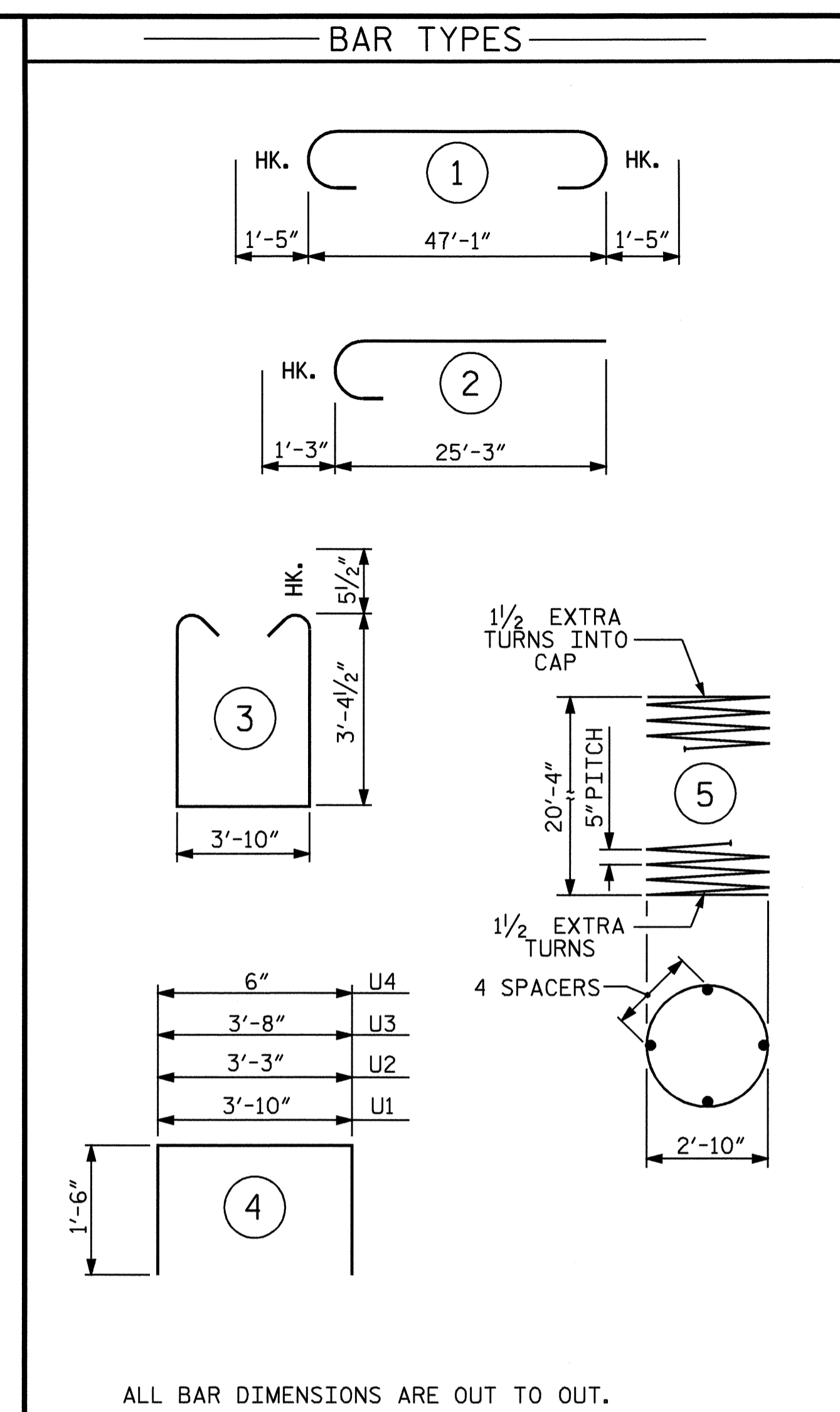
**PLAN OF DRILLED PIERS**



**END VIEW**



**SECTION A-A**  
\* INVERT ALTERNATE STIRRUPS



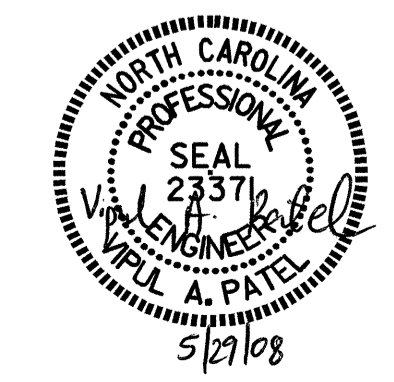
ALL BAR DIMENSIONS ARE OUT TO OUT.  
\*\*\* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

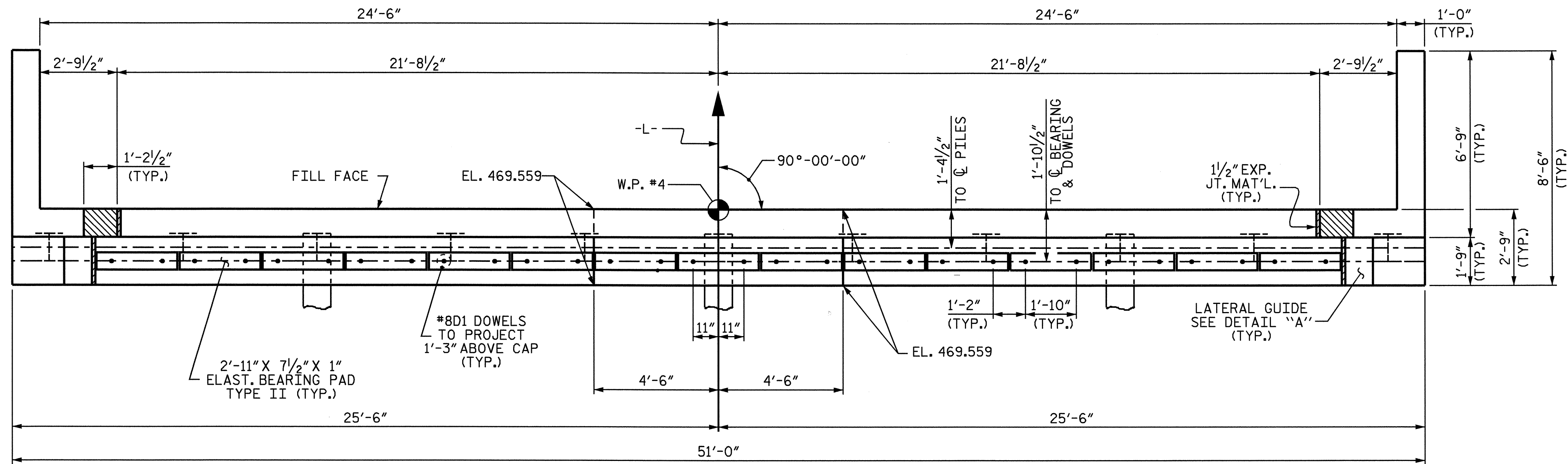
BILL OF MATERIAL BENT #2					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	#10	1	49'-11"	1289	
B2	#10	STR	47'-3"	1220	
B3	#5	STR	47'-3"	296	
B4	#4	STR	16'-0"	64	
B5	#4	STR	3'-10"	10	
D1	#8	STR	2'-3"	360	
S1	#5	3	11'-6"	720	
U1	#4	4	6'-10"	50	
U2	#4	4	6'-3"	33	
U3	#4	4	6'-8"	27	
U4	#4	4	3'-6"	23	
V1	#9	2	26'-6"	3784	
TOTAL REINFORCING STEEL LBS.			7876		
SP-1	3	***	5	454'-11"	1423
TOTAL SPIRAL COLUMN REINFORCING STEEL LBS.			1423		
CLASS A CONCRETE BREAKDOWN					
POUR #2 (BENT CAP)				29.2	C.Y.
POUR #3 (LAT. GUIDE)				0.2	C.Y.
TOTAL				29.4	C.Y.
DRILLED PIER QUANTITIES					
DRILLED PIER CONCRETE					
POUR #1 (DRILLED PIERS)				22.3	C.Y.
3'-6" Ø DRILLED PIERS IN SOIL				41.5	LIN. FT.
3'-6" Ø DRILLED PIERS NOT IN SOIL				21.0	LIN. FT.
PERMANENT STEEL CASING FOR 3'-6" DIA. DRILLED PIER				44.4	LIN. FT.
SID INSPECTION :				1	EACH
CROSSHOLE SONIC LOGGING :				1	EACH
CSL TUBES :				280.0	LIN. FT.

PROJECT NO. B-4276  
STANLY COUNTY  
 STATION: 19+96.00 -L-  
 SHEET 2 OF 2

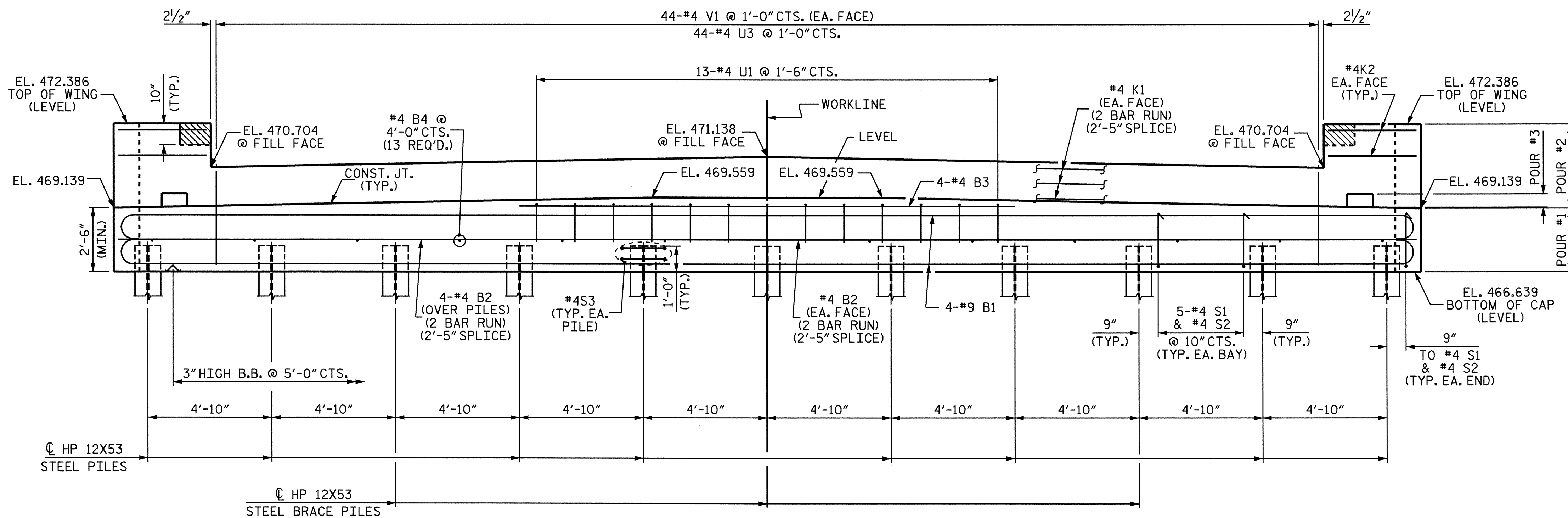
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT #2					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					21

DRAWN BY : S. DOMBROWSKI DATE : 12/07  
 CHECKED BY : K.D. LAYNE DATE : 12/07





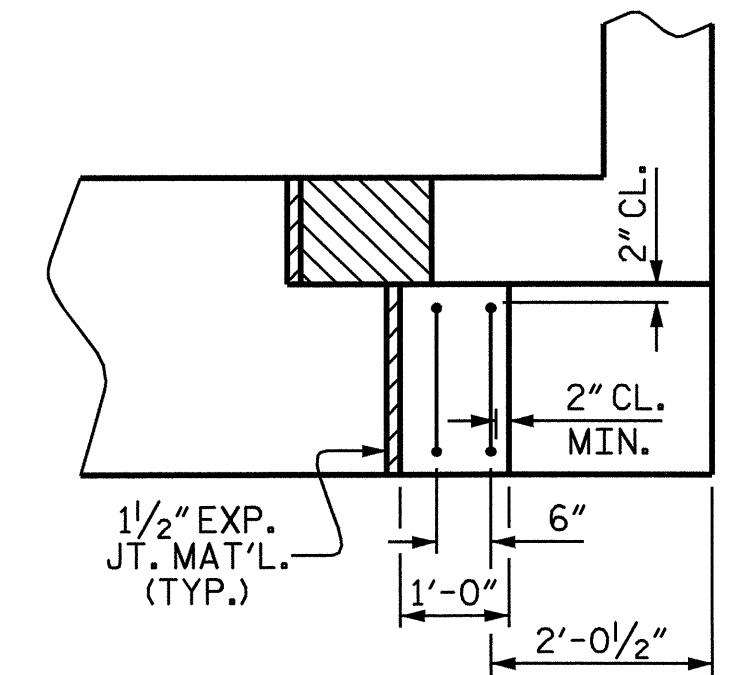
**PLAN**



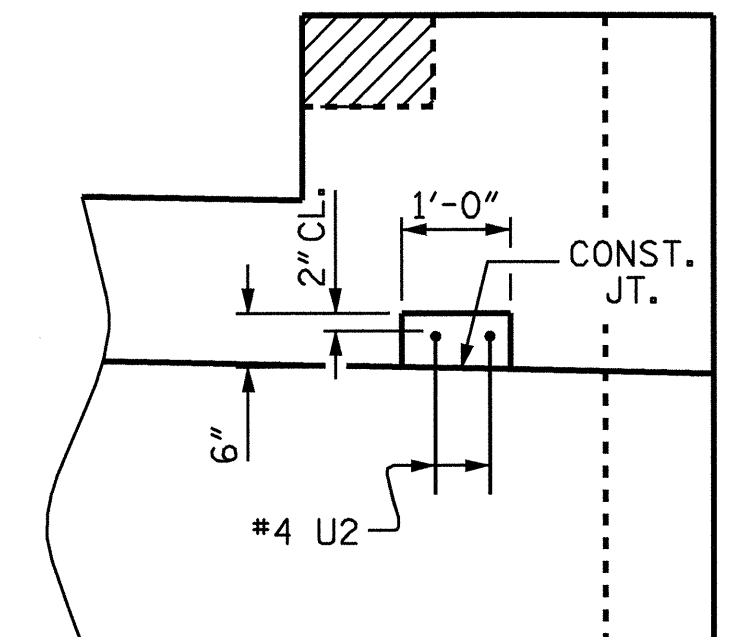
**ELEVATION**

**NOTES**

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #8D1 DOWELS.
- THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
- THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.
- THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER CORED SLAB UNITS ARE IN PLACE.



**PLAN**



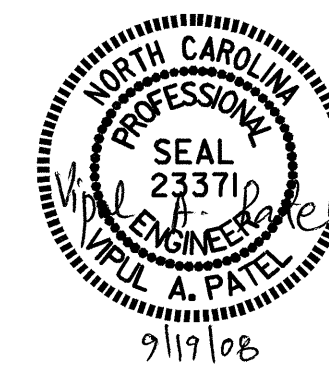
**ELEVATION  
DETAIL "A"**

PROJECT NO. B-4276  
STANLY COUNTY  
 STATION: 19+96.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

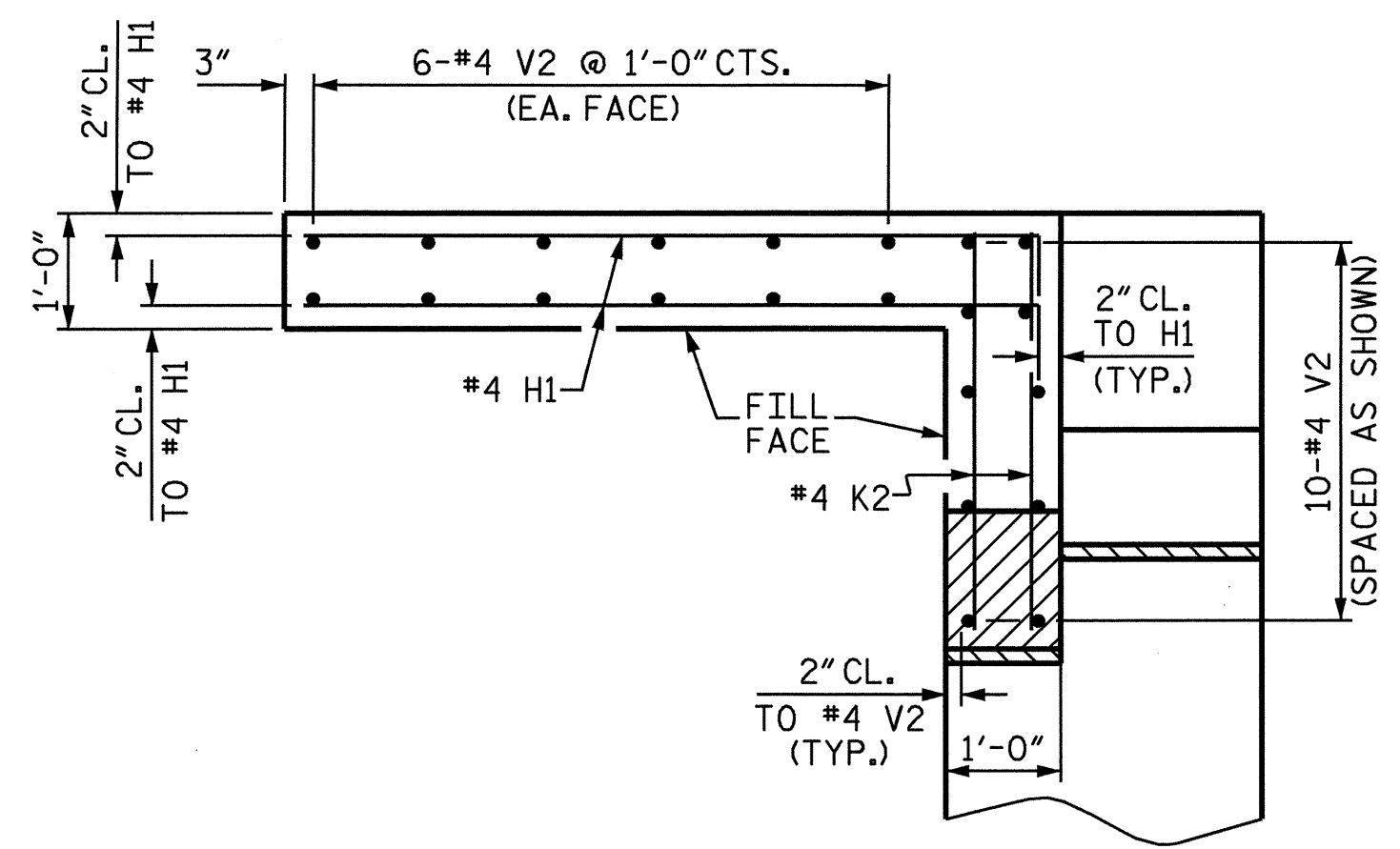
SUBSTRUCTURE  
 END BENT #2



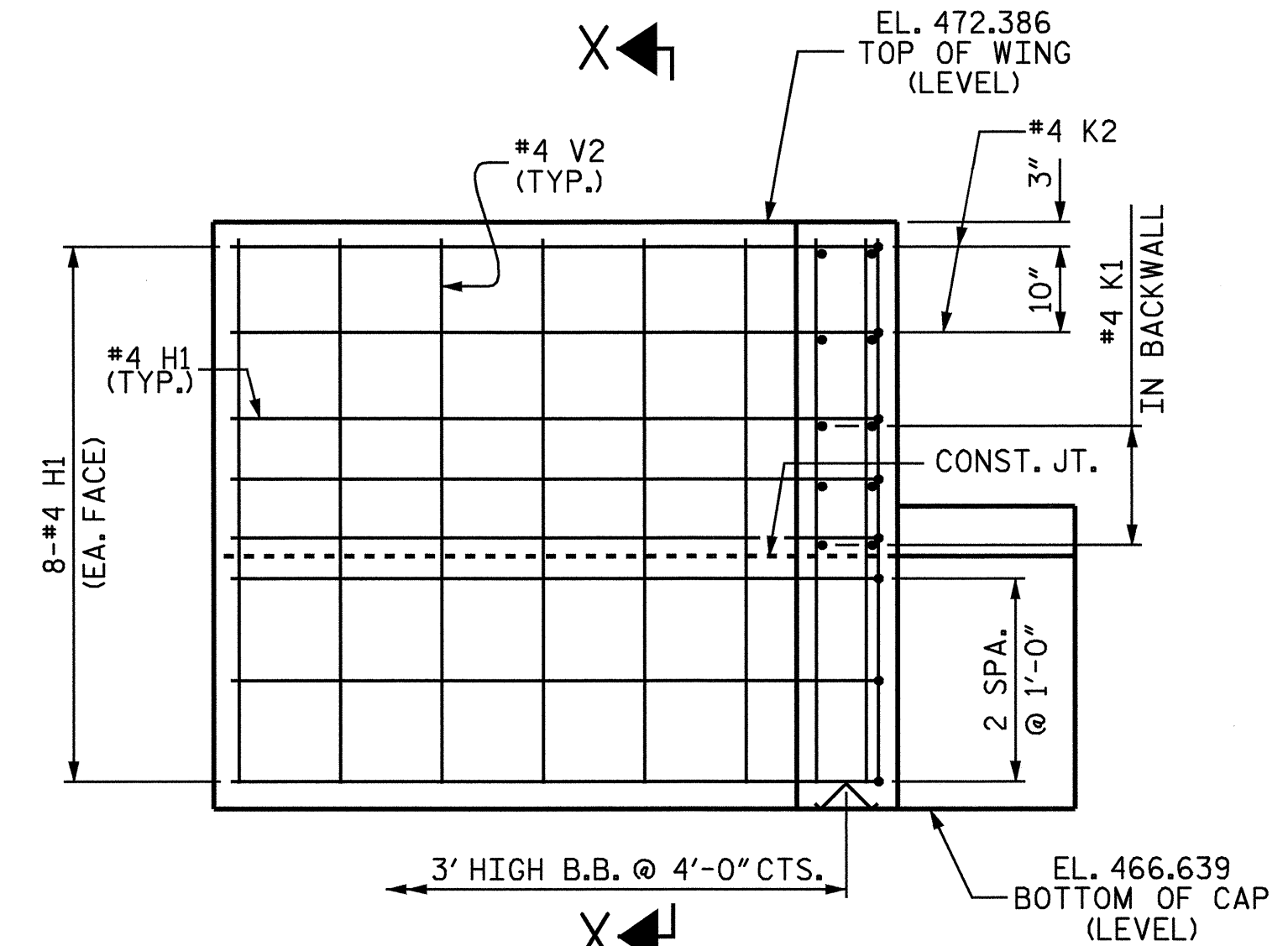
DRAWN BY: S. DOMBROWSKI DATE: 10/07  
 CHECKED BY: R.G. EMERSON DATE: 12/07

REVISIONS						SHEET NO. S-17
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 21
2			4			

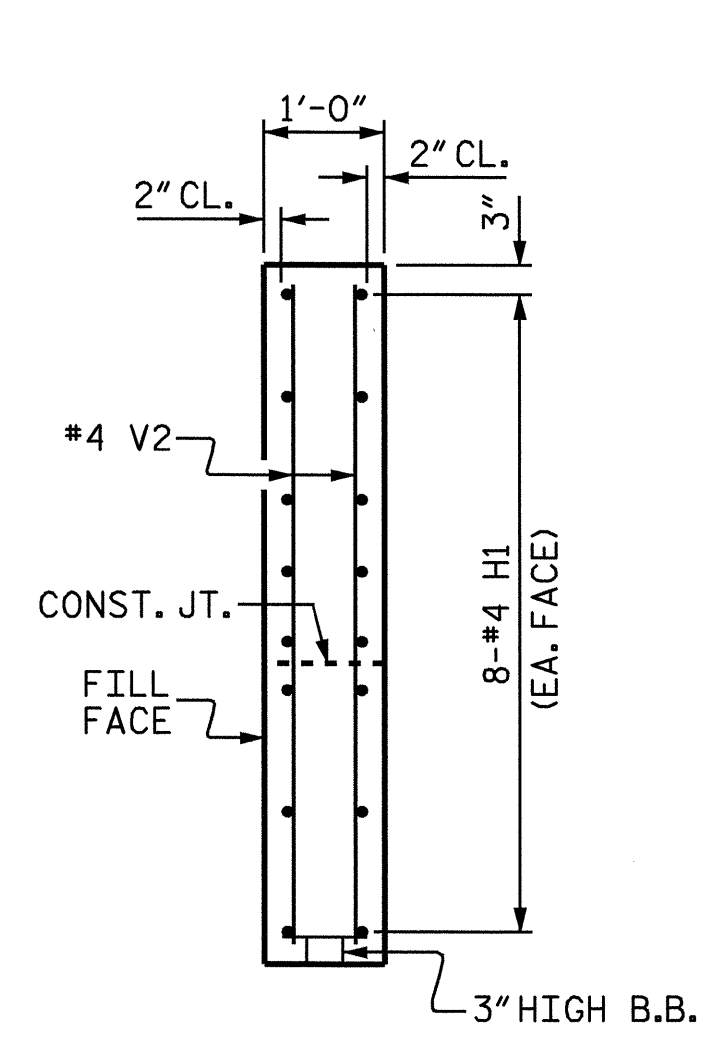




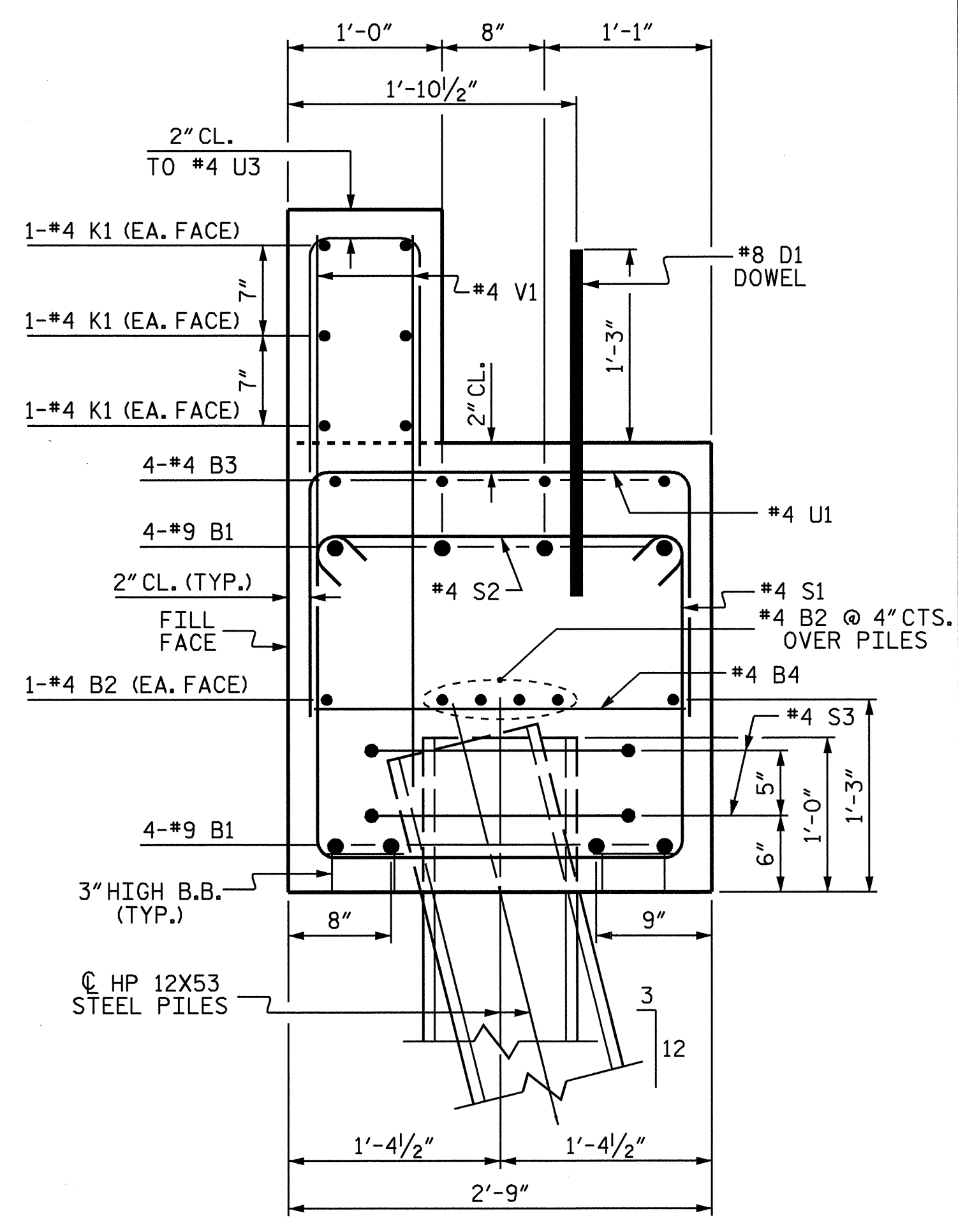
**PLAN OF WING**  
RIGHT WING SHOWN, LEFT WING SIMILAR



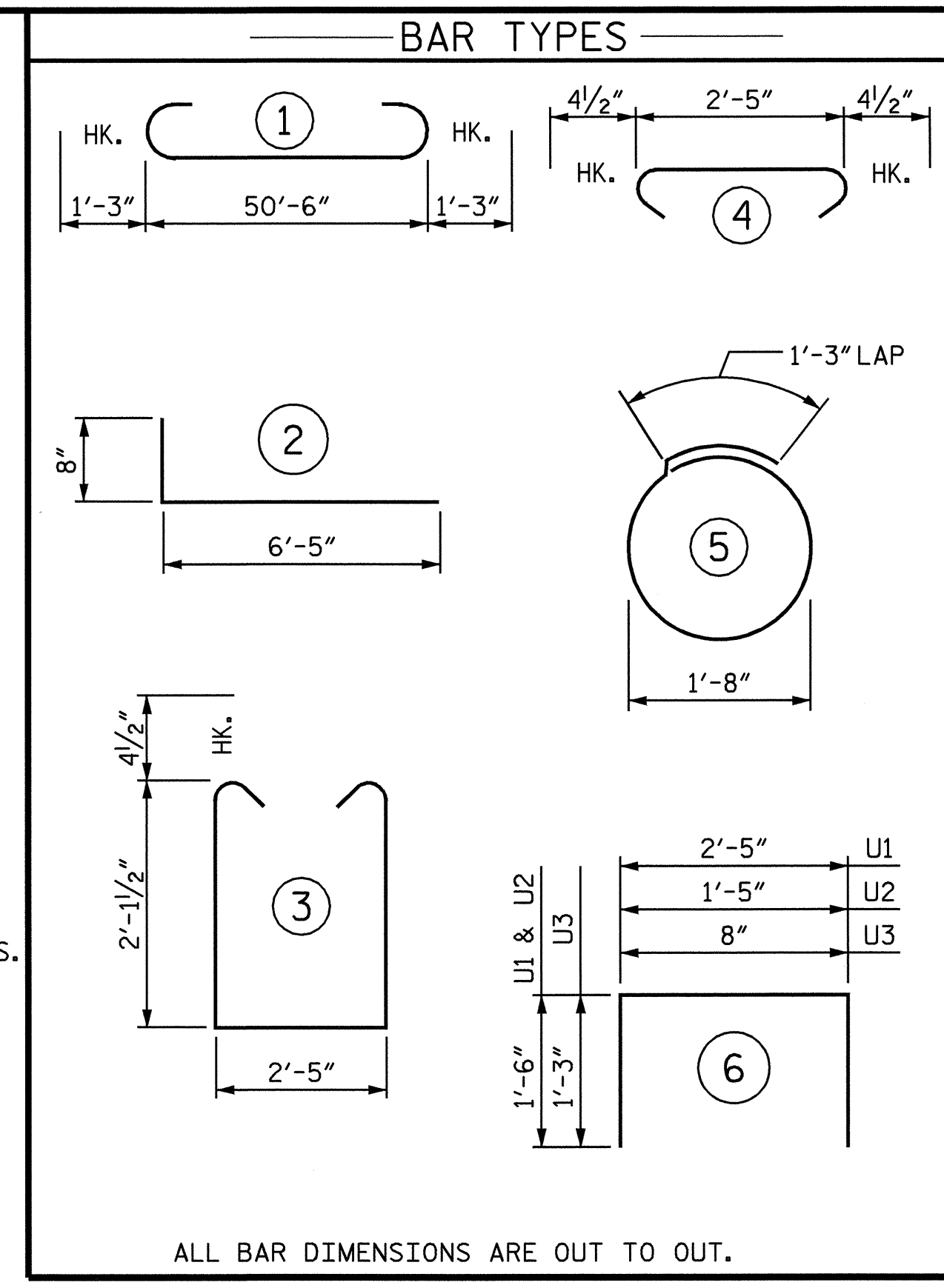
**ELEVATION OF WING**



**SECTION X-X**

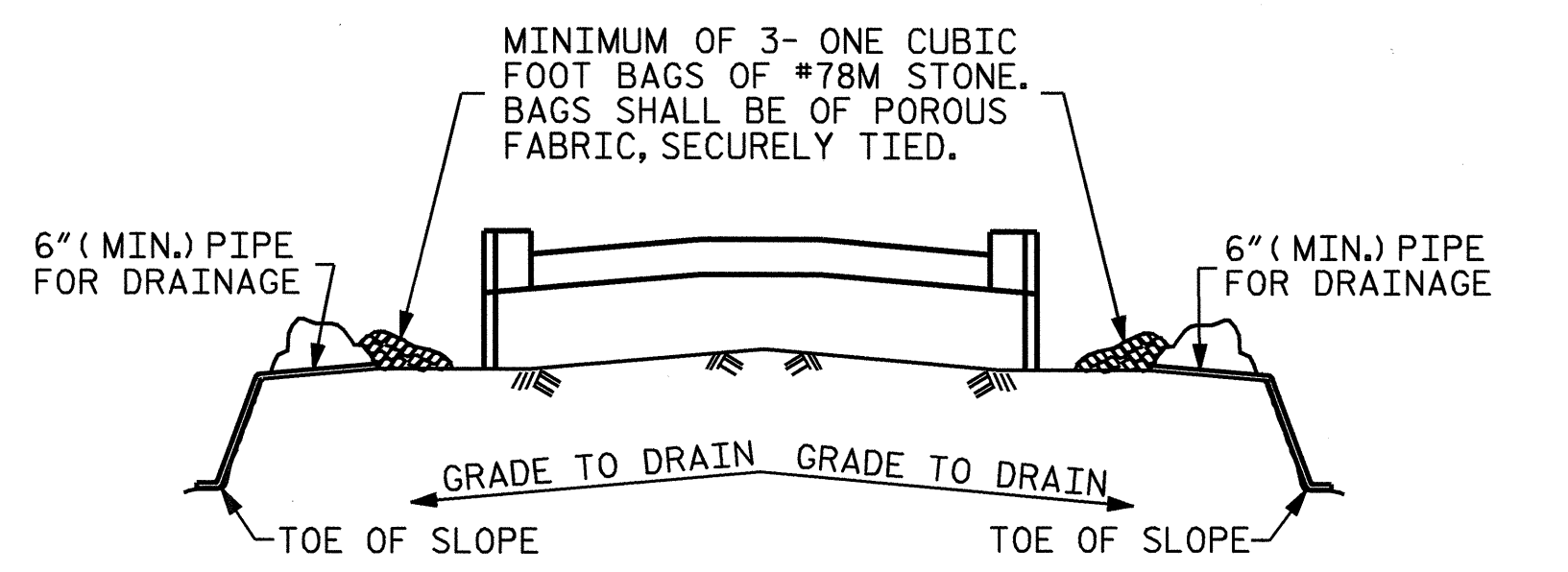


**CAP SECTION**



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	53'-0"	1442
B2	12	#4	STR.	26'-7"	213
B3	4	#4	STR.	19'-4"	52
B4	13	#4	STR.	2'-5"	21
D1	30	8	STR.	2'-3"	180
H1	32	#4	2	7'-1"	151
K1	12	#4	STR.	26'-7"	213
K2	8	#4	STR.	3'-5"	18
S1	52	#4	3	7'-5"	258
S2	52	#4	4	3'-2"	110
S3	22	#4	5	6'-6"	96
U1	13	#4	6	5'-5"	47
U2	4	#4	6	4'-5"	12
U3	44	#4	6	3'-2"	93
V1	88	#4	STR.	3'-8"	216
V2	44	#4	STR.	5'-4"	157
REINFORCING STEEL				Lbs.	3279
CLASS "A" CONCRETE					
POUR #1 CAP & LOWER WINGS				Cu. Yds.	15.3
POUR #2 UPPER WINGS				Cu. Yds.	4.8
POUR #3 LATERAL GUIDES				Cu. Yds.	0.1
TOTAL				Cu. Yds.	20.2
HP 12x53 STEEL PILES				No. 11	Ln. Ft. 165

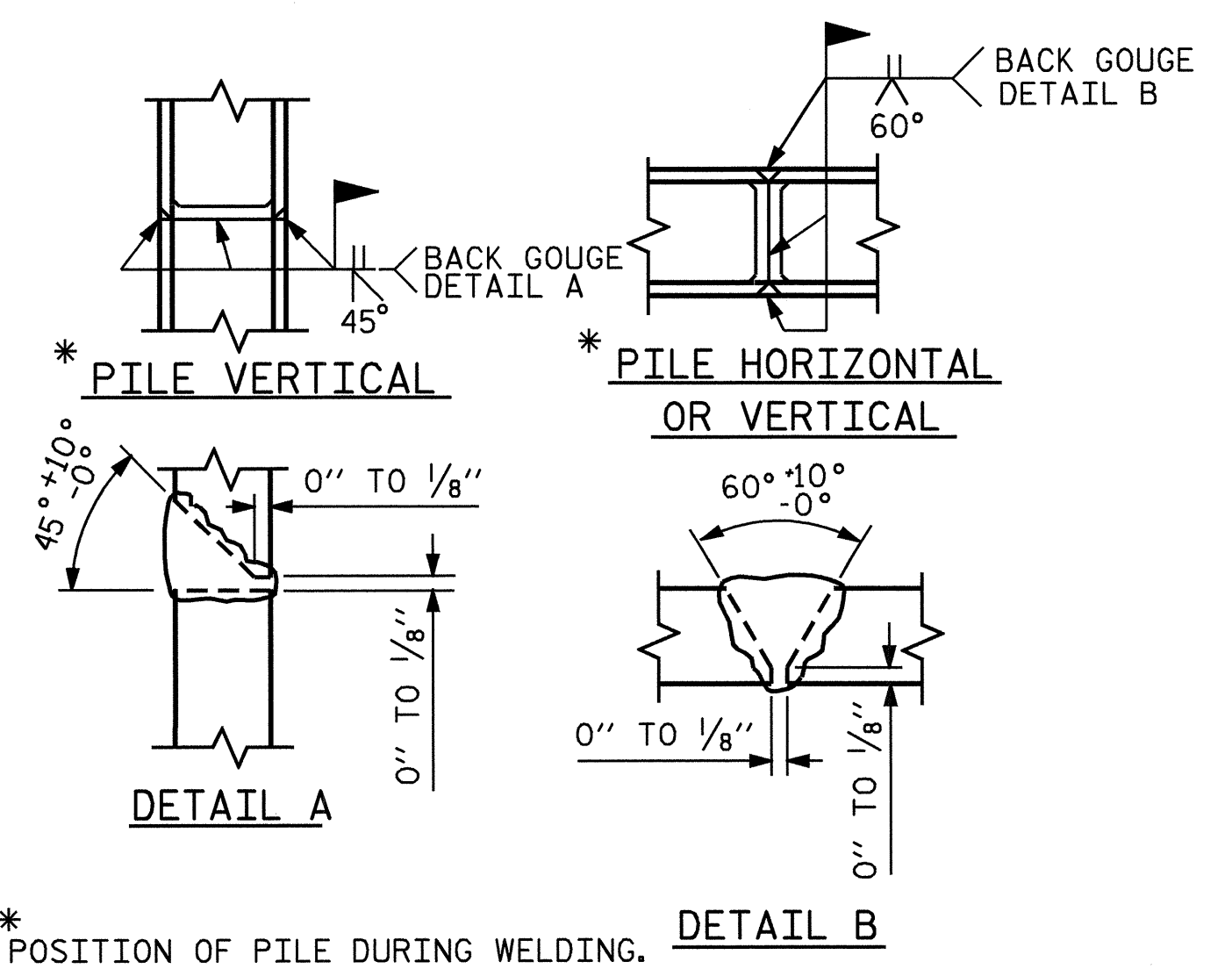


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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**



**PILE SPLICE DETAILS**

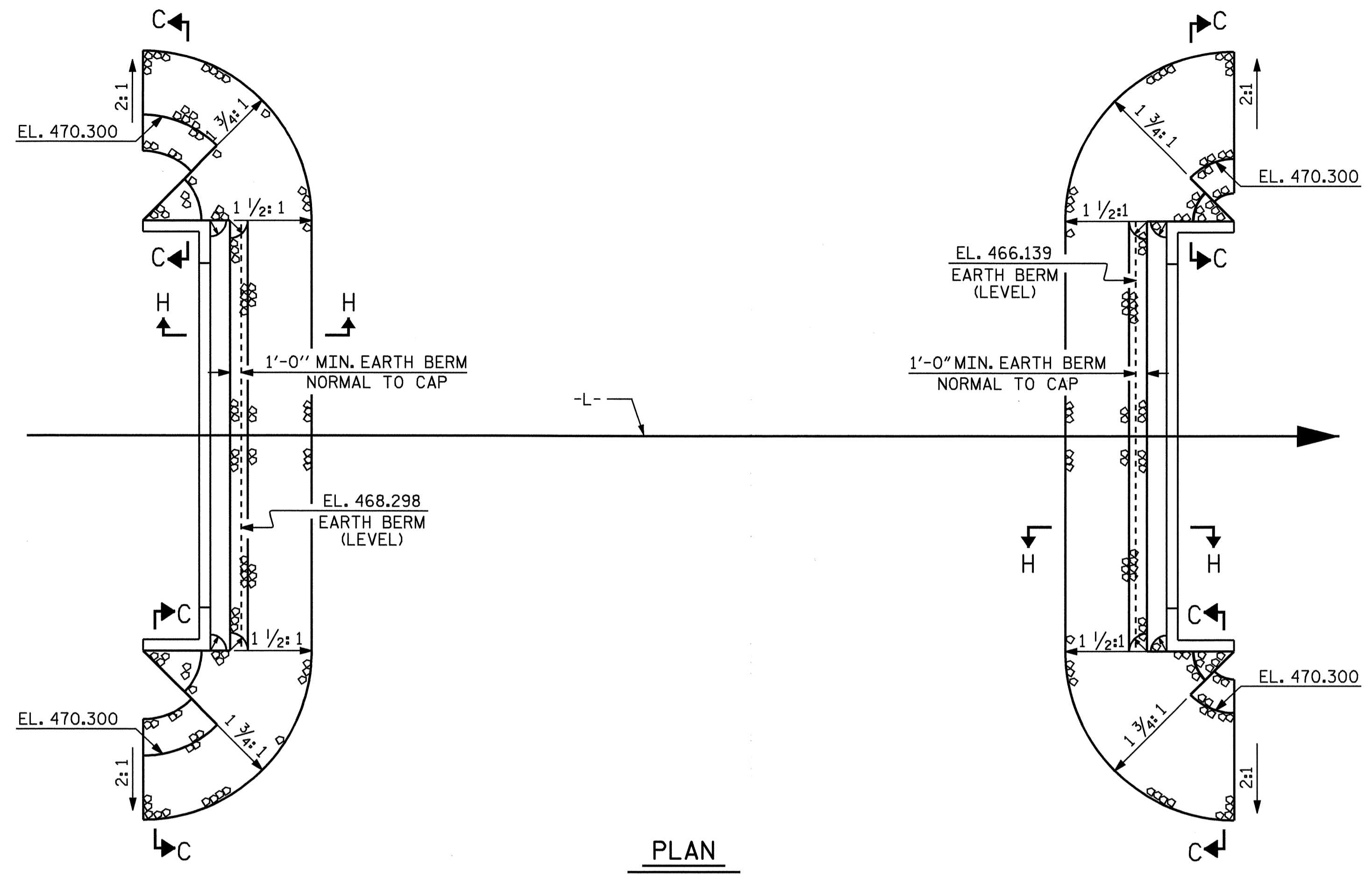
PROJECT NO. B-4276  
STANLY COUNTY  
STATION: 19+96.00 -L-

SHEET 2 OF 2

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

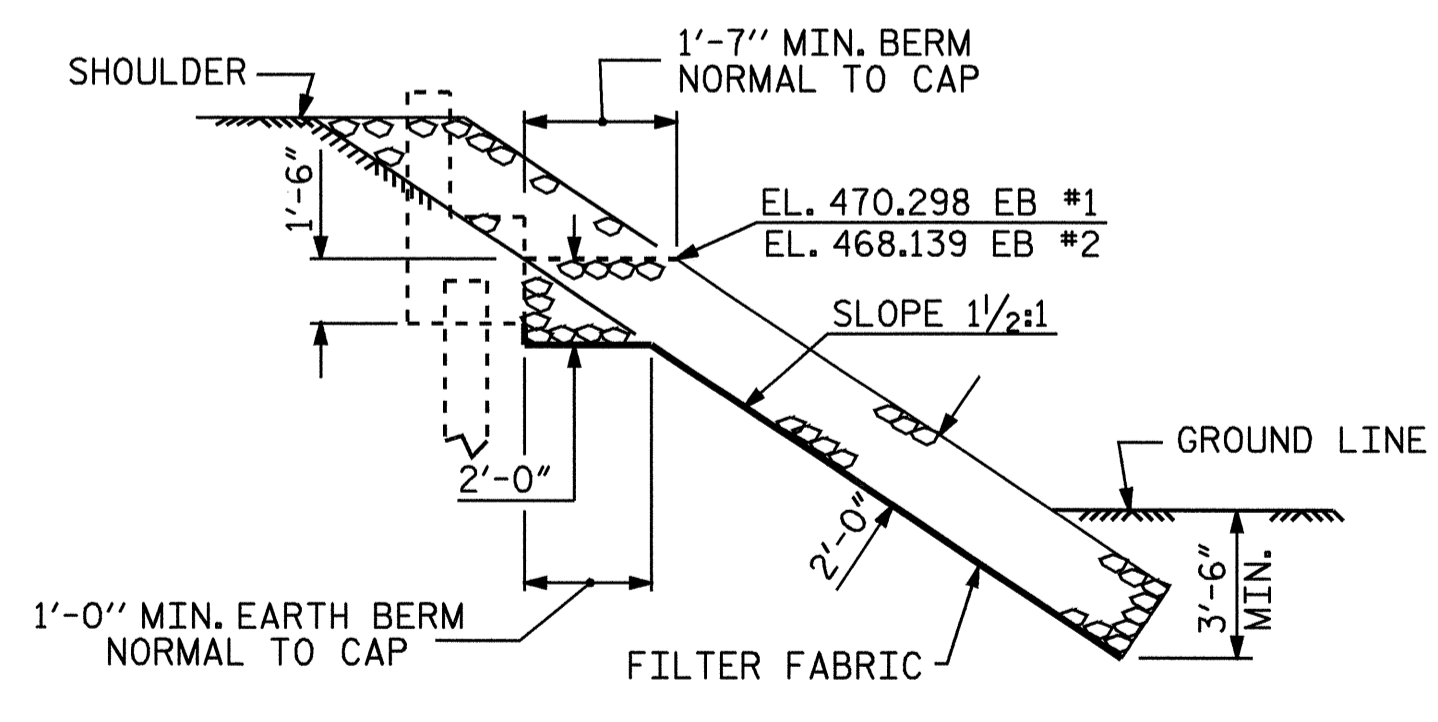


DRAWN BY: S. DOMBROWSKI DATE: 10/07  
CHECKED BY: R.G. EMERSON DATE: 12/07

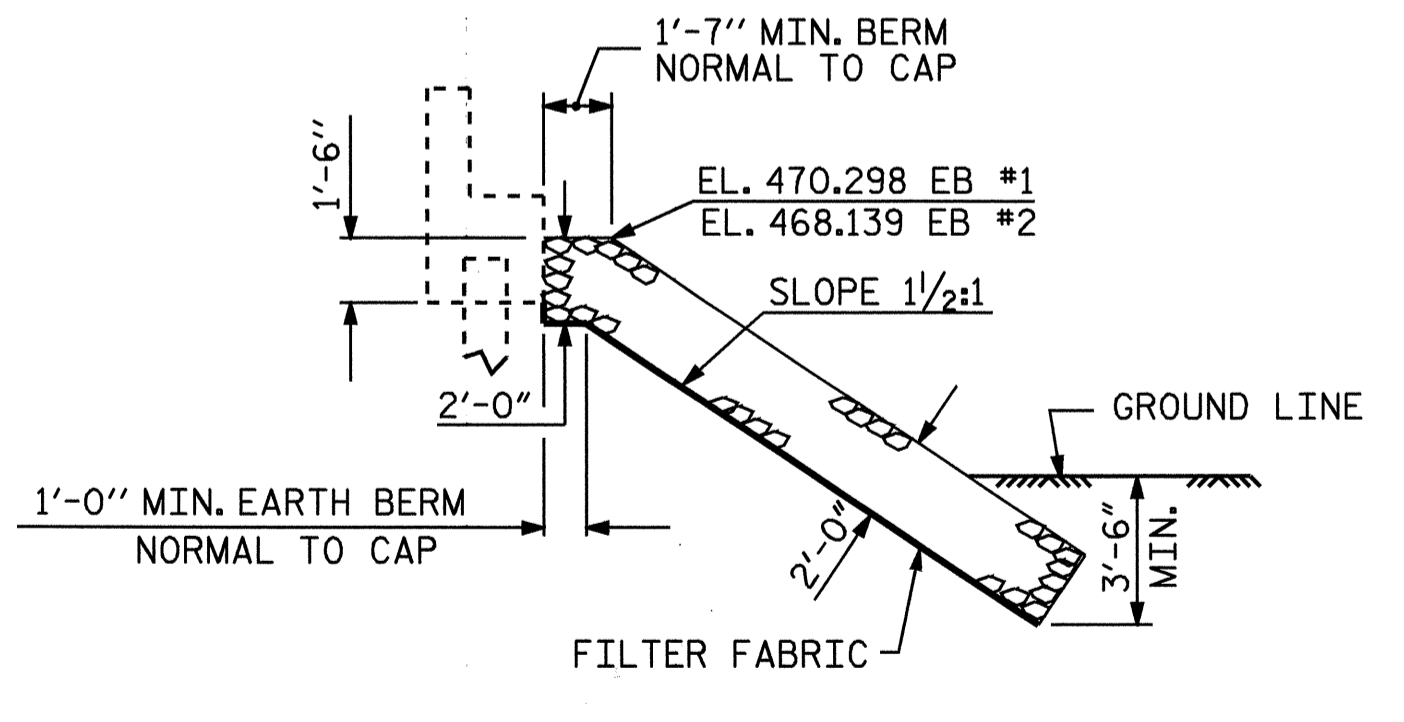


PLAN

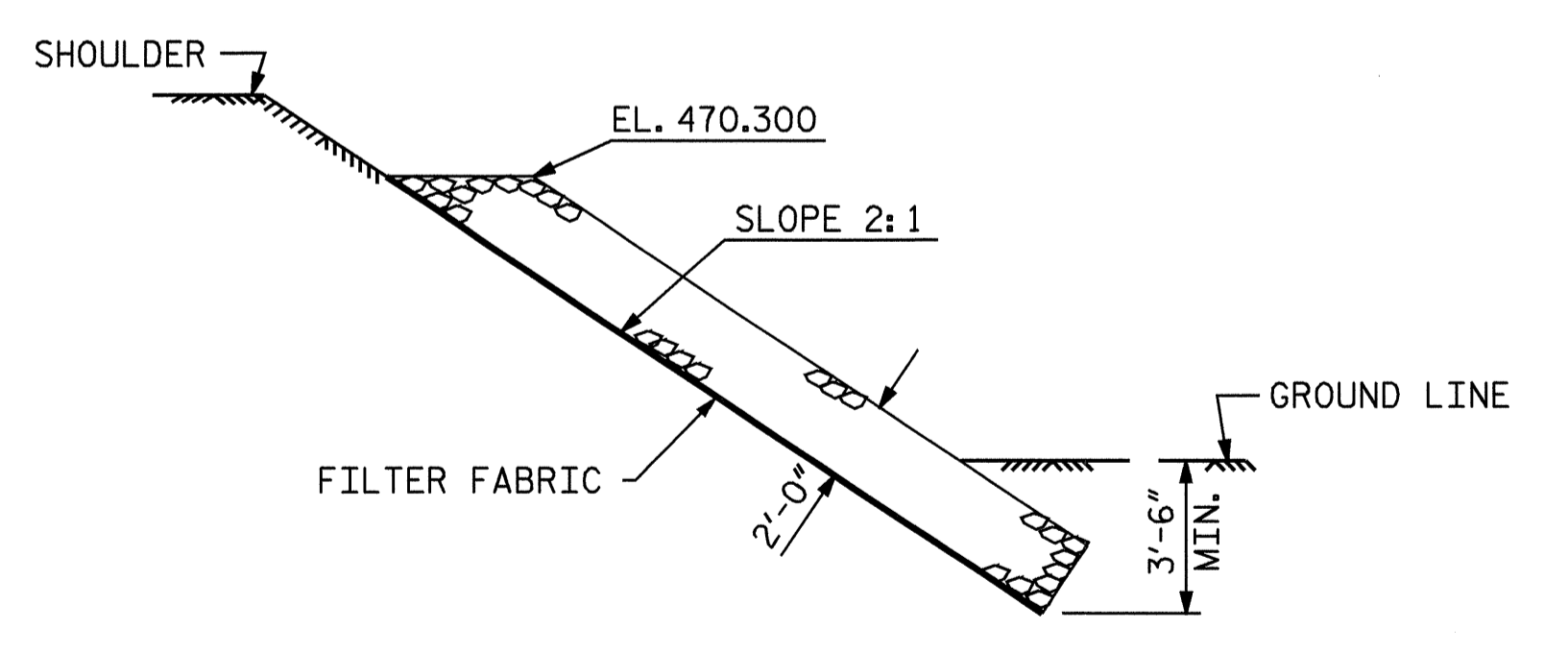
ESTIMATED QUANTITIES		
	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT #1	160	180
END BENT #2	110	120



SECTION H-H



SECTION C-C



SECTION C-C

PROJECT NO. B-4276  
STANLY COUNTY  
 STATION: 19+96.00 -L-

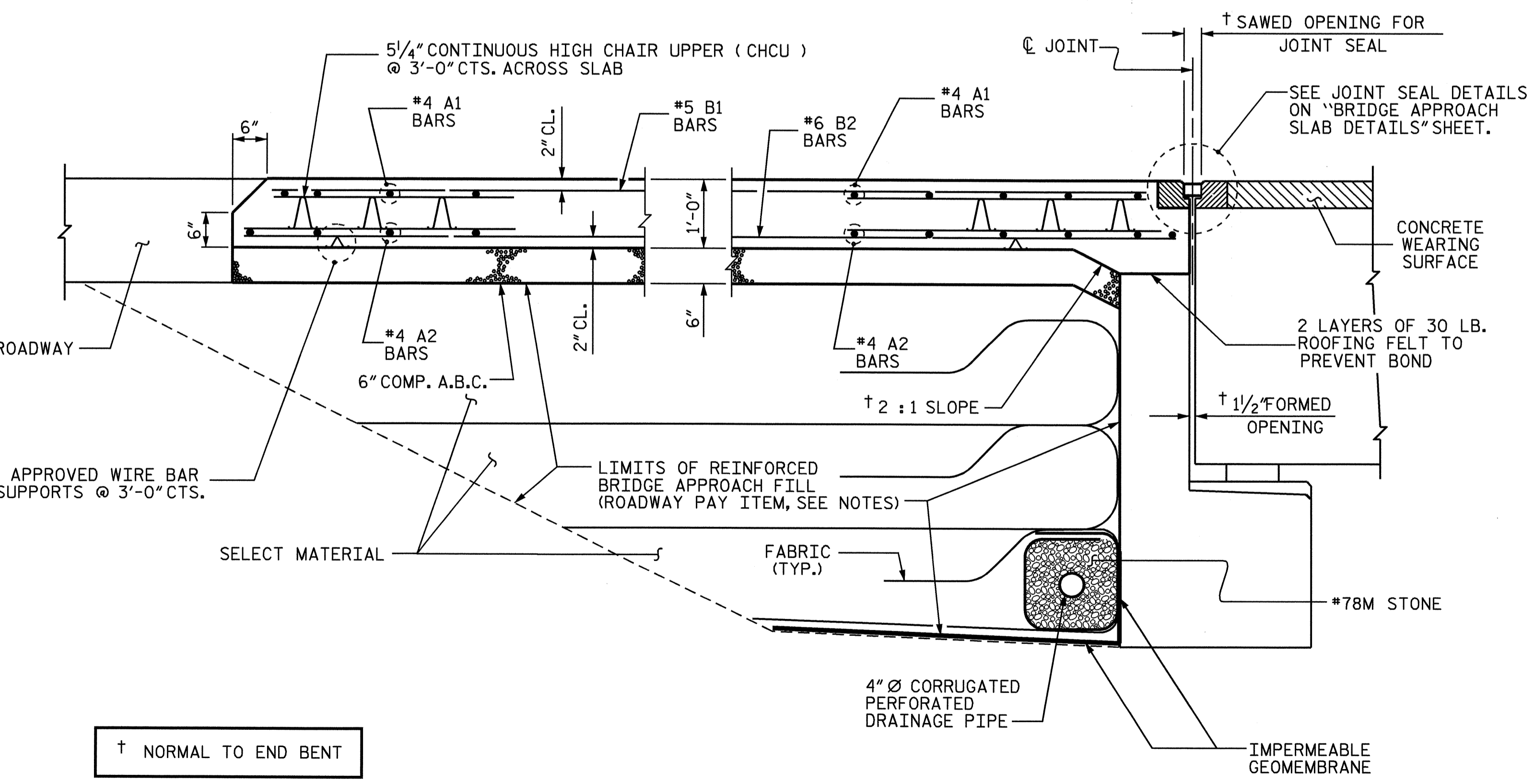
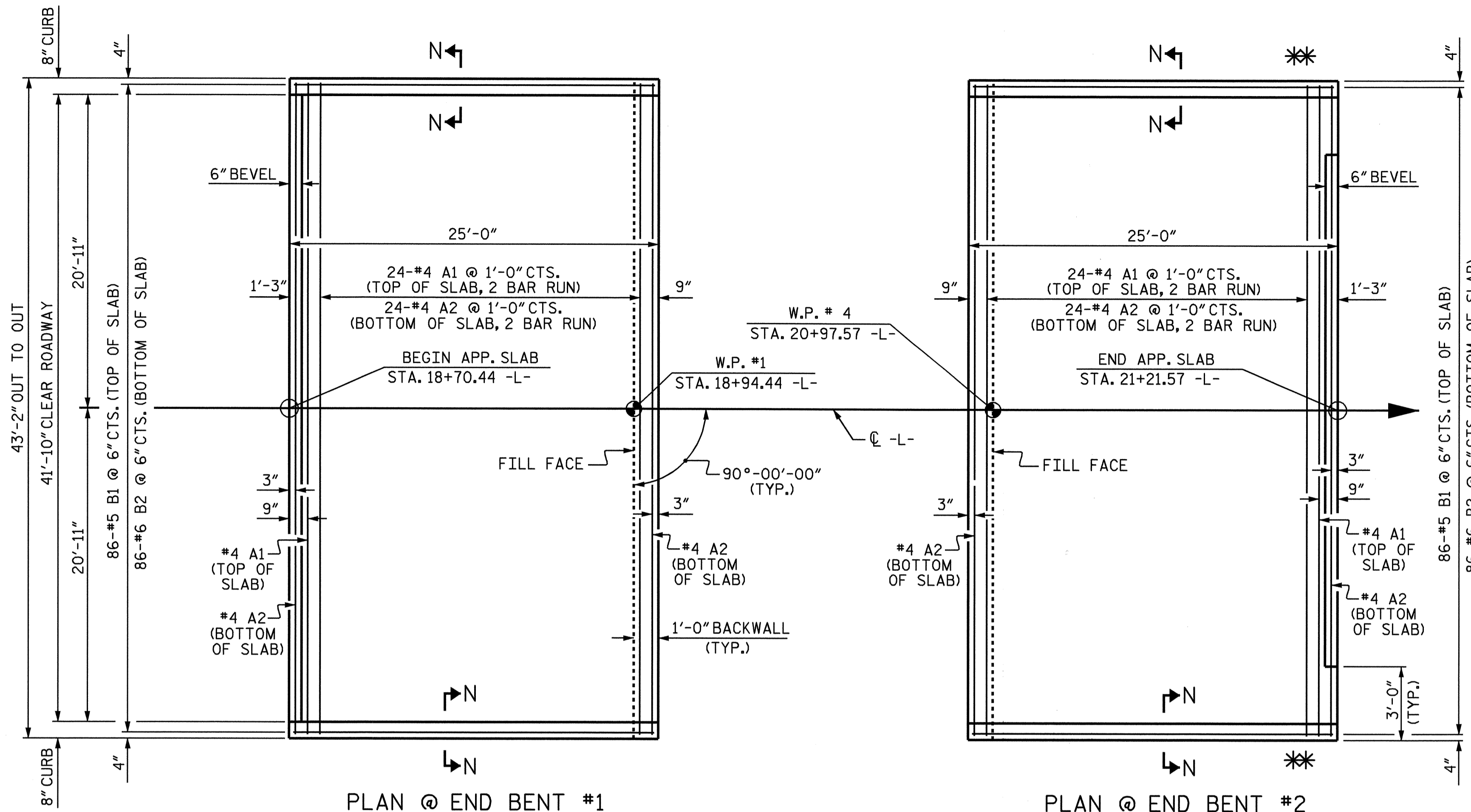
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD  
 = RIP RAP DETAILS =

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			21



ASSEMBLED BY : S. DOMBROWSKI DATE : 1/08  
 CHECKED BY : K.D. LAYNE DATE : 1/08  
 DRAWN BY : FCJ 2/88 REV. 8/16/99 RWW/LES  
 CHECKED BY : ARB 8/88 REV. 10/17/00 RWW/LES  
 REV. 5/1/06 TLA/GM



**NOTES**

APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

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

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

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

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

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

**WITH EVAZOTE JOINT SEAL**

FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2 1/2".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

**WITH CONCRETE WEARING SURFACE**

APPROACH SLABS SHALL BE POURED AFTER CONCRETE OVERLAY IS POURED.

THE JOINT SHALL BE SAWED AFTER THE CASTING OF THE CONCRETE BARRIER RAIL

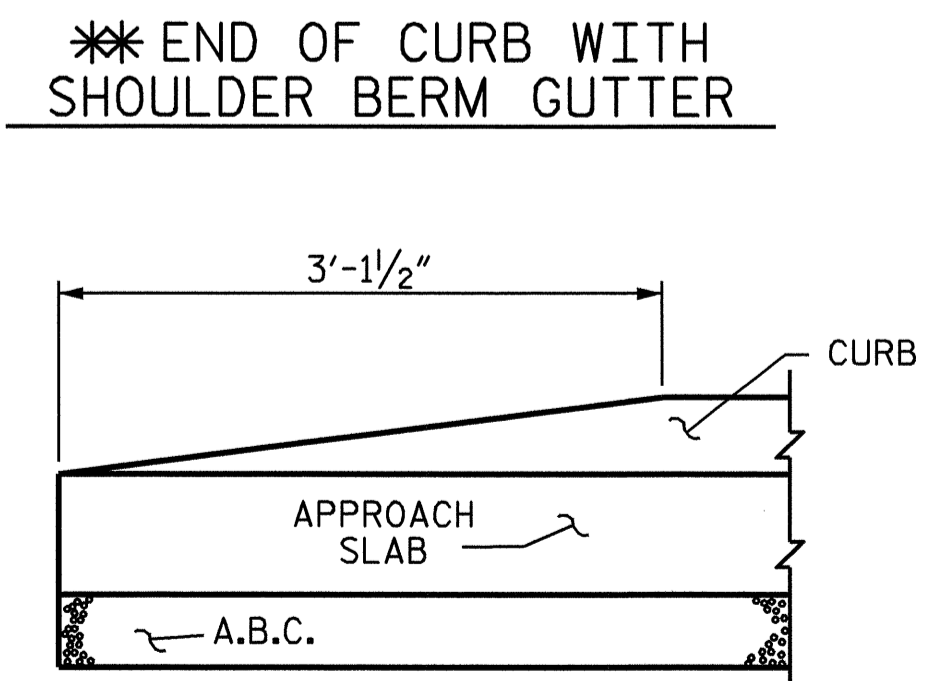
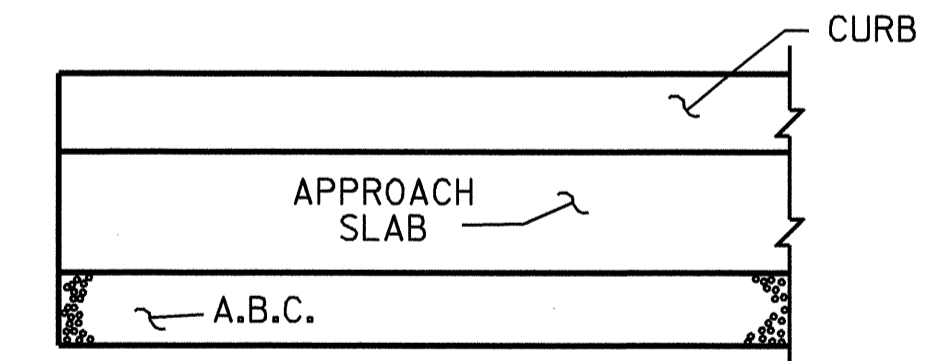
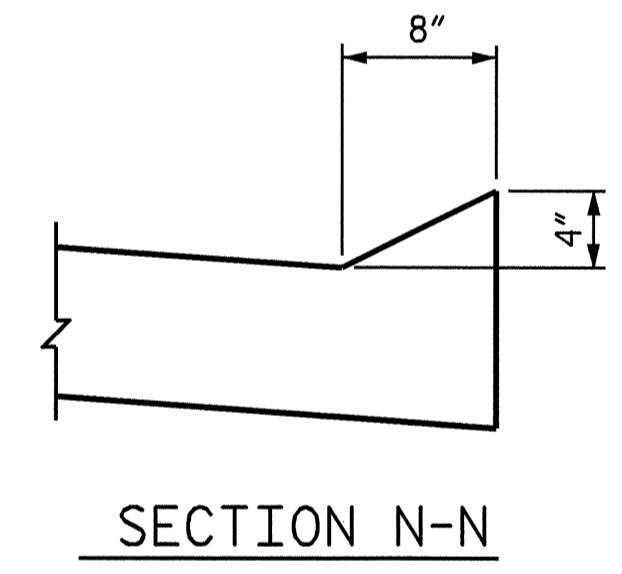
**BILL OF MATERIAL**

FOR ONE APPROACH SLAB (2 REQUIRED)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	50	#4	STR	22'-5"	749
A2	52	#4	STR	22'-4"	776
* B1	86	#5	STR	23'-9"	2130
B2	86	#6	STR	24'-8"	3186
REINFORCING STEEL				LBS.	3962
* EPOXY COATED REINFORCING STEEL				LBS.	2879
CLASS AA CONCRETE				C. Y.	40.5

**SPLICE CHART**

* #4 A1	2'-0"
#4 A2	1'-9"



**CURB DETAILS**

PROJECT NO. B-4276

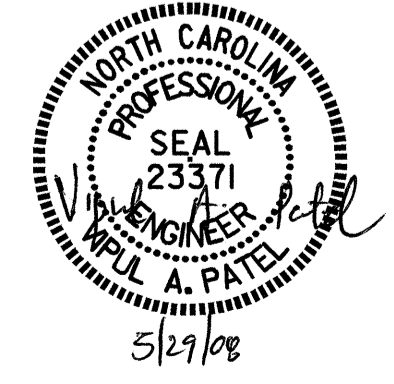
STANLY COUNTY

STATION: 19+96.00 -L

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

STANDARD  
BRIDGE APPROACH SLAB  
FOR FLEXIBLE PAVEMENT



REVISIONS

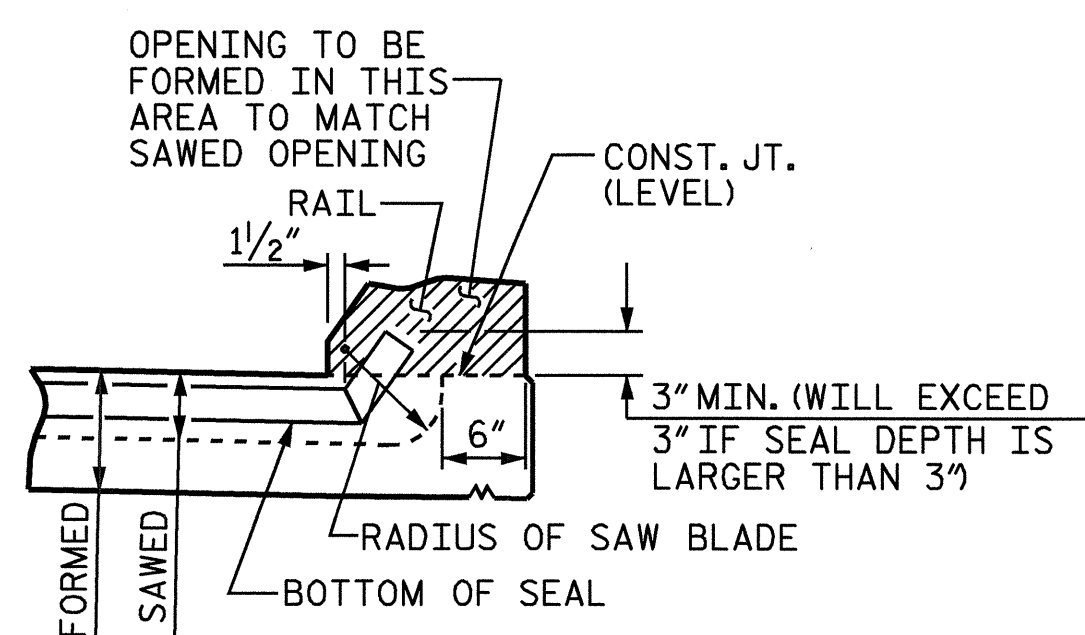
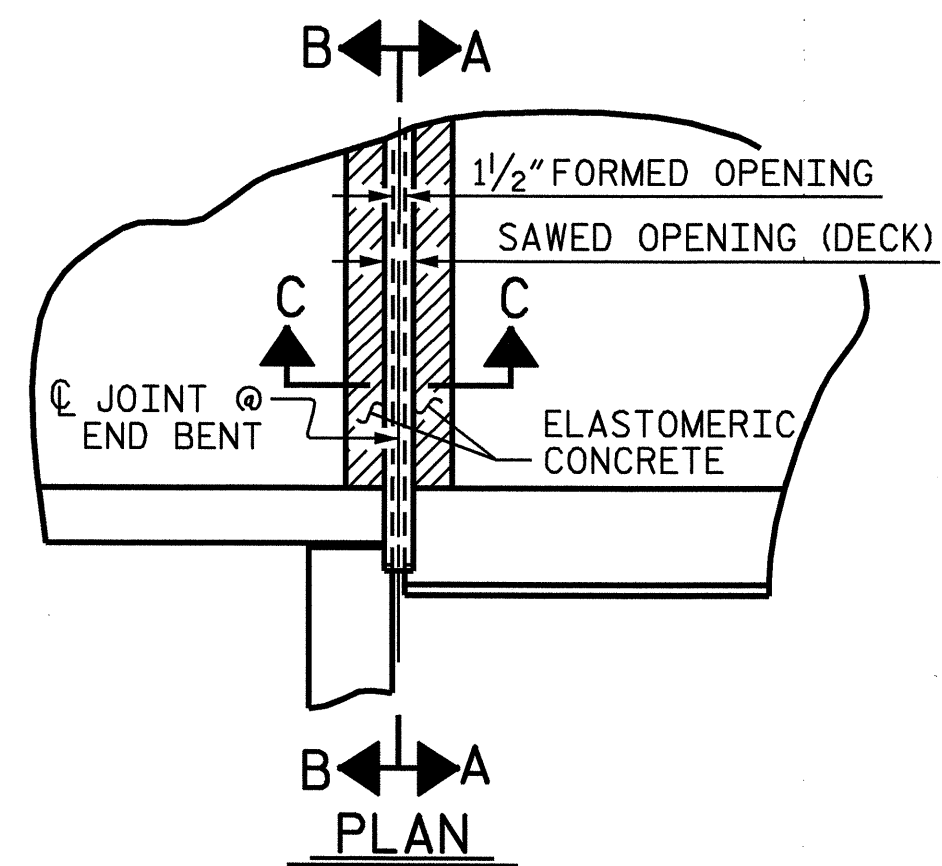
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-20  
TOTAL SHEETS 21

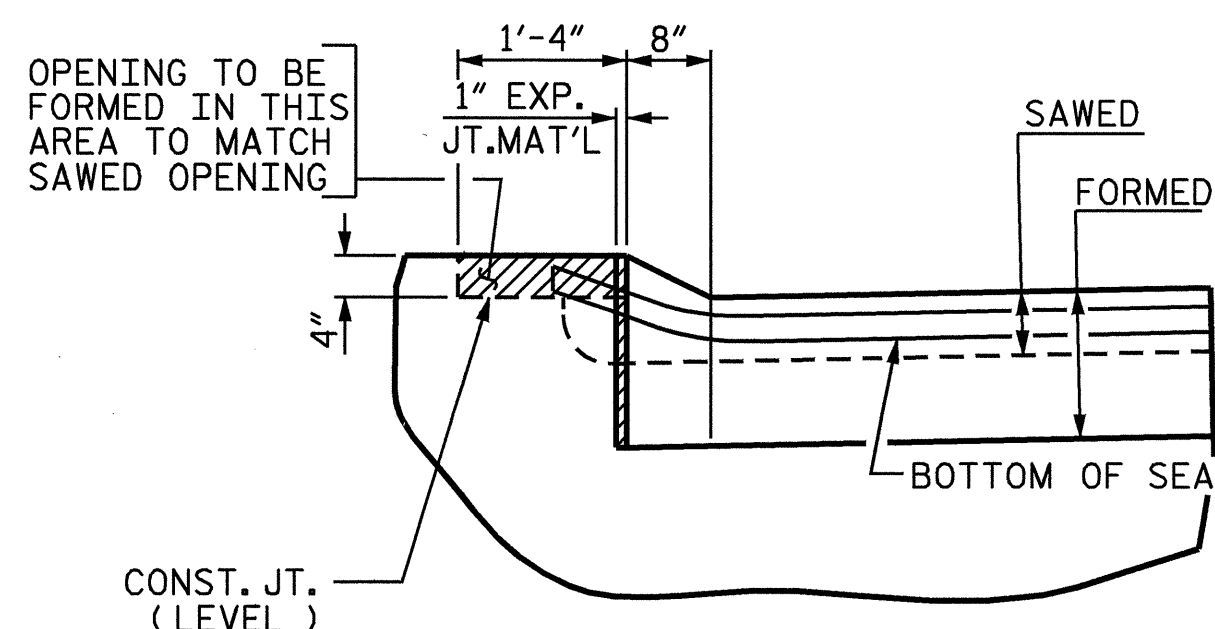
ASSEMBLED BY : T.R. PETERSON DATE : 7/3/07  
CHECKED BY : K.D. LAYNE DATE : 7/13/07

DRAWN BY : EEM 3/95 REV. 7/10/01 LES/RDR  
CHECKED BY : VAP 3/95 REV. 5/7/03R RWW/JTE  
REV. 5/1/06 TLA/GM

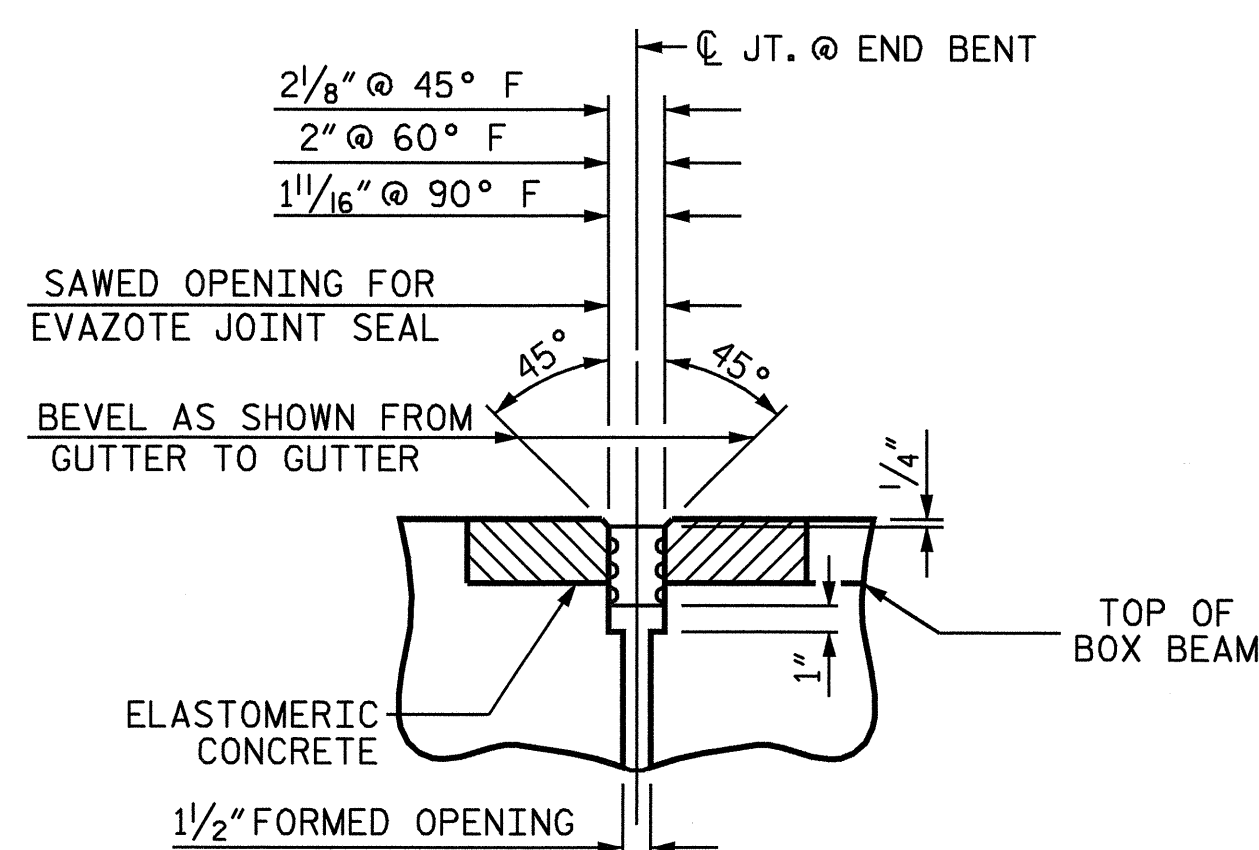




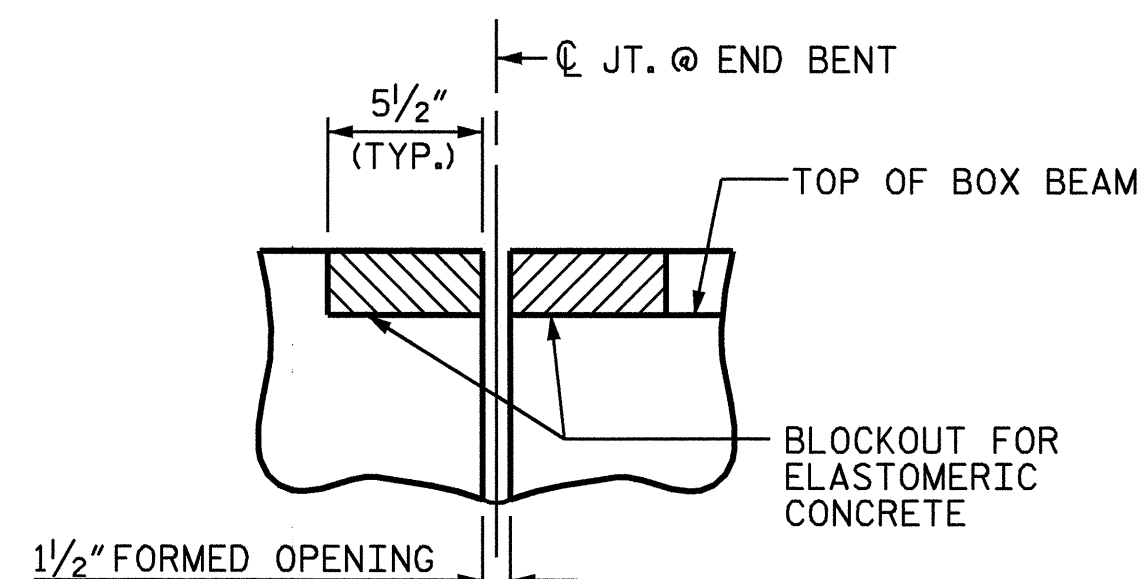
SECTION A-A



SECTION B-B



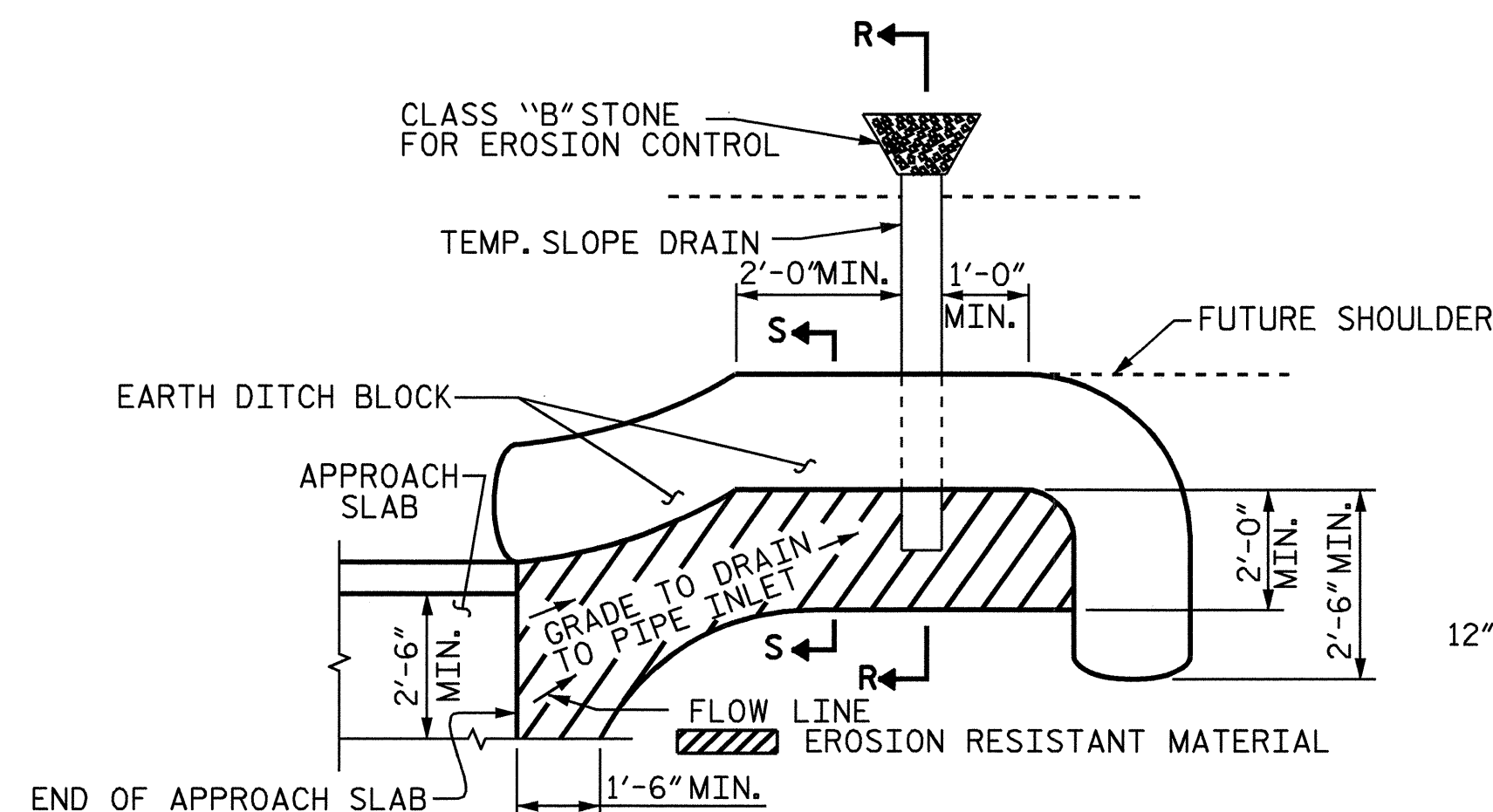
SECTION C-C AT END BENT #1  
EVAZOTE JOINT SEAL (EXPANSION)



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

**JOINT SEAL DETAILS @ END BENT**

EVAZOTE JOINT SEAL TO BE CUT, HEAT WELDED AND TURNED UP PARALLEL TO SLOPED FACE OF THE BARRIER RAIL.

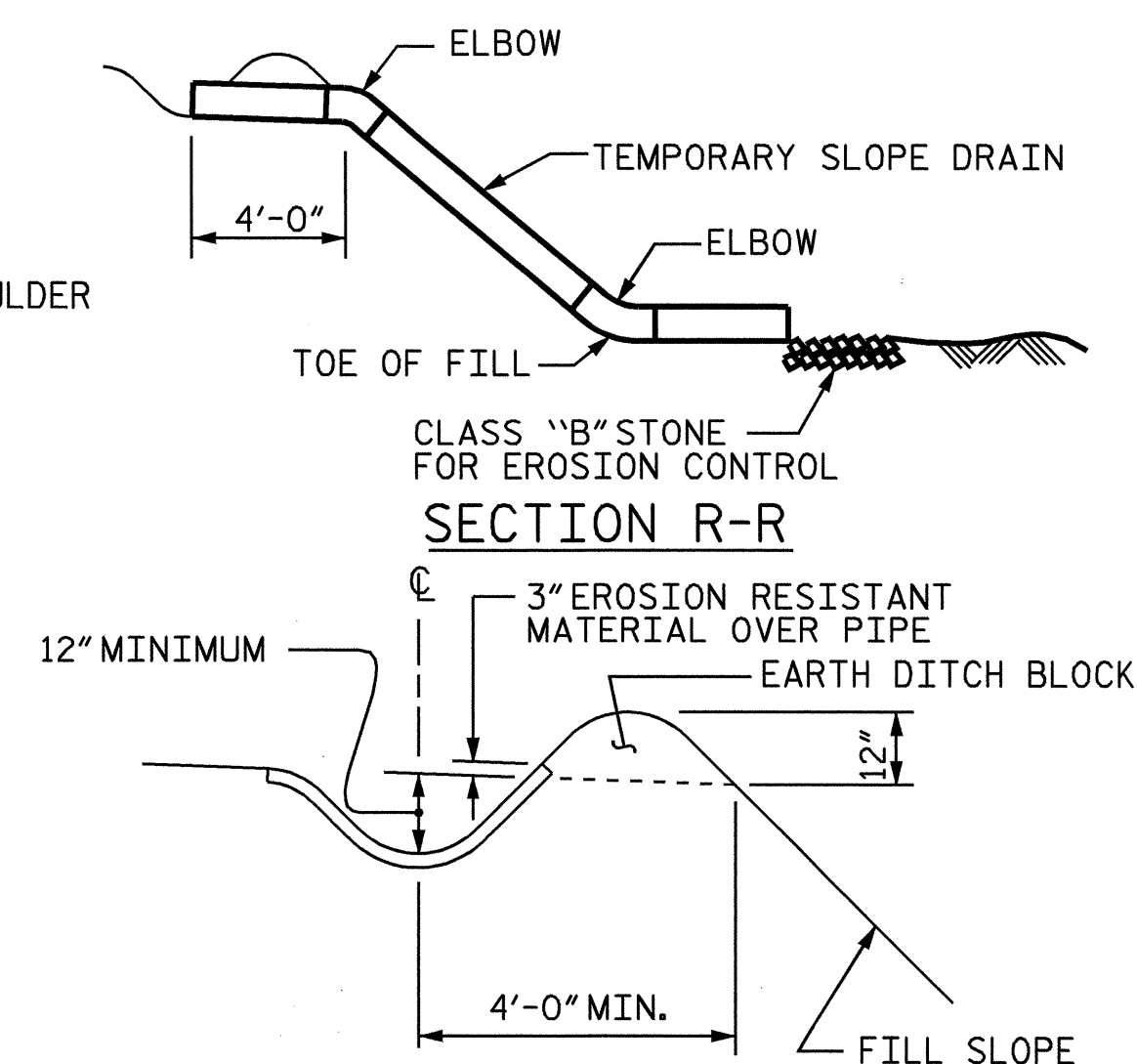


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

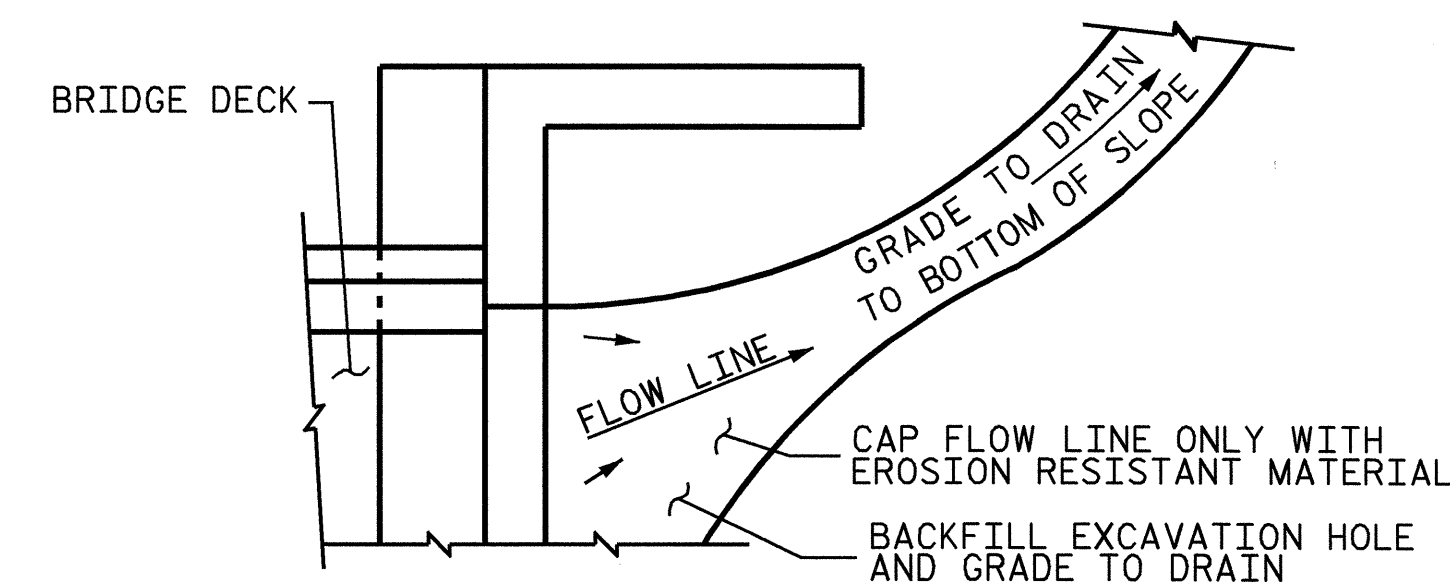
PLAN VIEW

**TEMPORARY BERM AND SLOPE DRAIN DETAILS**

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION S-S



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

TEMPORARY DRAINAGE DETAIL

ELASTOMERIC CONCRETE	
END BENT #	ELASTOMERIC CONCRETE (CU. FT.)
1	19.2
2	19.2
TOTAL	38.4

PROJECT NO. B-4276  
 STANLY COUNTY  
 STATION: 19+96.00-L-

SHEET 2 OF 2

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



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

ASSEMBLED BY : T.R. PETERSON	DATE : 7/3/07
CHECKED BY : K.D. LAYNE	DATE : 7/13/07
DRAWN BY : FCJ 11/88	REV. 10/17/00 RWW/LES
CHECKED BY : ARB 11/88	REV. 5/1/03 RWW/JTE
	REV. 5/1/06 TLA/GM

## 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 2006 "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; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

### 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. 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.

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. FINISH 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