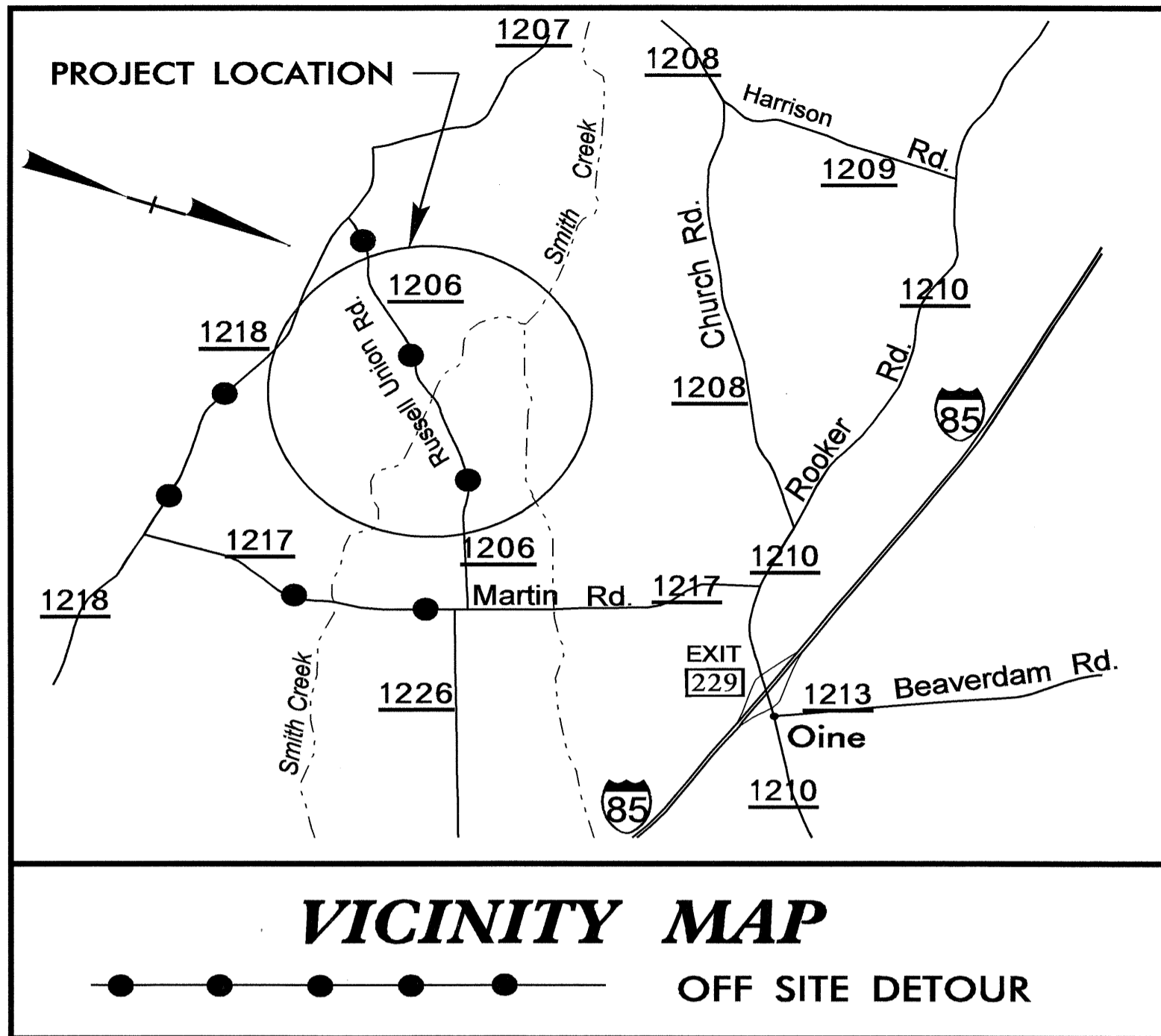


**CONTRACT: C202030 TIP PROJECT: B-4664**



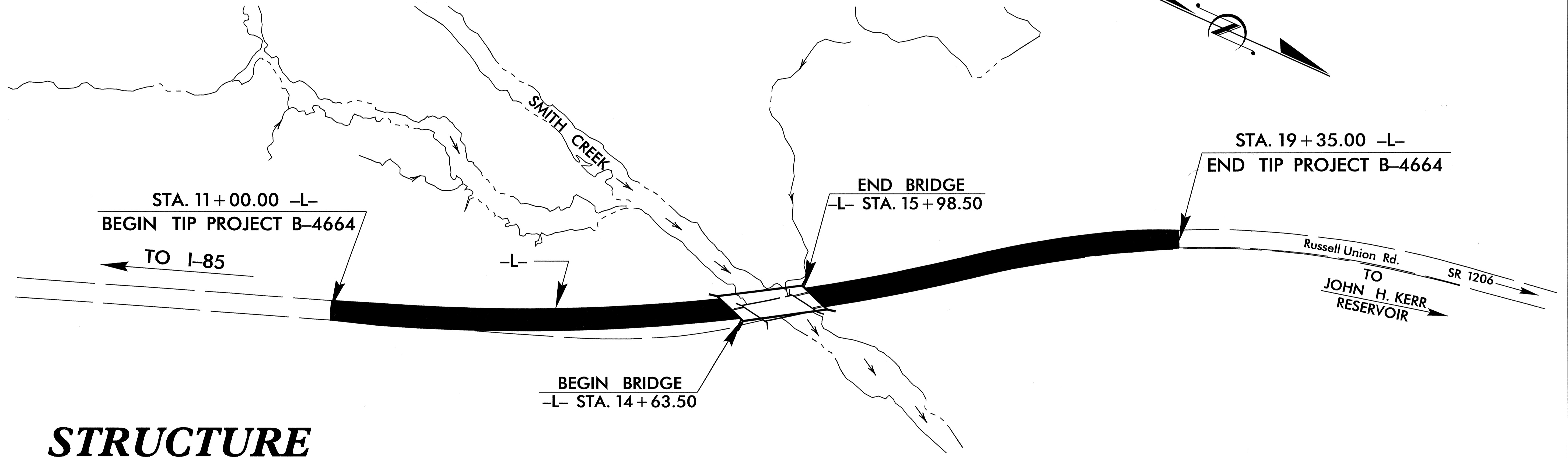
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# WARREN COUNTY

**LOCATION: BRIDGE NO. 25 OVER SMITH CREEK  
ON SR 1206, RUSSELL UNION ROAD**

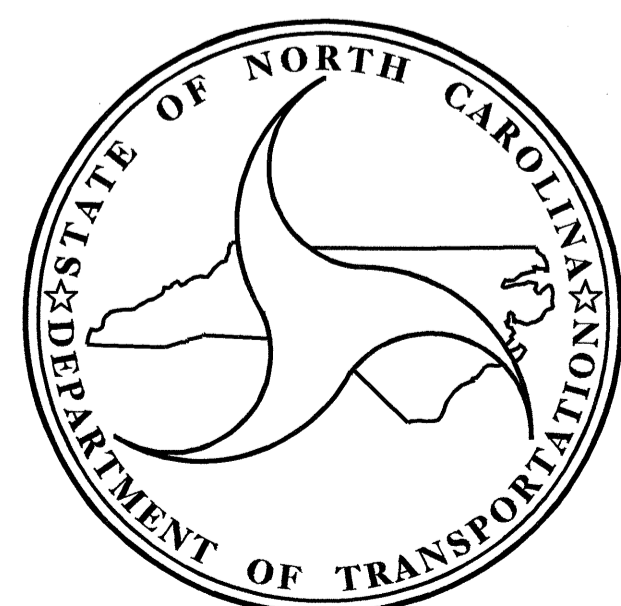
**TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4664		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33824.1.1	BRZ-1206(5)	P. E.	
33824.2.1	BRZ-1206(5)	R / W, UTIL.	
33824.3.1	BRZ-1206(5)	CONST.	



## STRUCTURE

\*\* DESIGN SPEED EXCEPTION REQUIRED



**DESIGN DATA**

ADT 2003 =	200 VPD
ADT 2030 =	600 VPD
DHV =	13 %
D =	60 %
T =	3 % *
**V =	45 MPH
(* TTST 1% & DUAL 2%)	

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT B-4664	= 0.132 MI.
LENGTH STRUCTURE TIP PROJECT B-4664	= 0.026 MI.
TOTAL LENGTH TIP PROJECT B-4664	= 0.158 MI.

Prepared In the Office of:

**DIVISION OF HIGHWAYS**

2006 STANDARD SPECIFICATIONS

**B. C. HUNT, P. E.**  
PROJECT ENGINEER

**W. K. FISCHER, P. E.**  
PROJECT DESIGN ENGINEER

LETTING DATE:  
**DECEMBER 16, 2008**

STRUCTURE DESIGN UNIT  
1000 BIRCH RIDGE DR.  
RALEIGH, N.C. 27610

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER \_\_\_\_\_ P.E.  
DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION

APPROVED \_\_\_\_\_  
DIVISION ADMINISTRATOR DATE \_\_\_\_\_

**GRADE DATA**

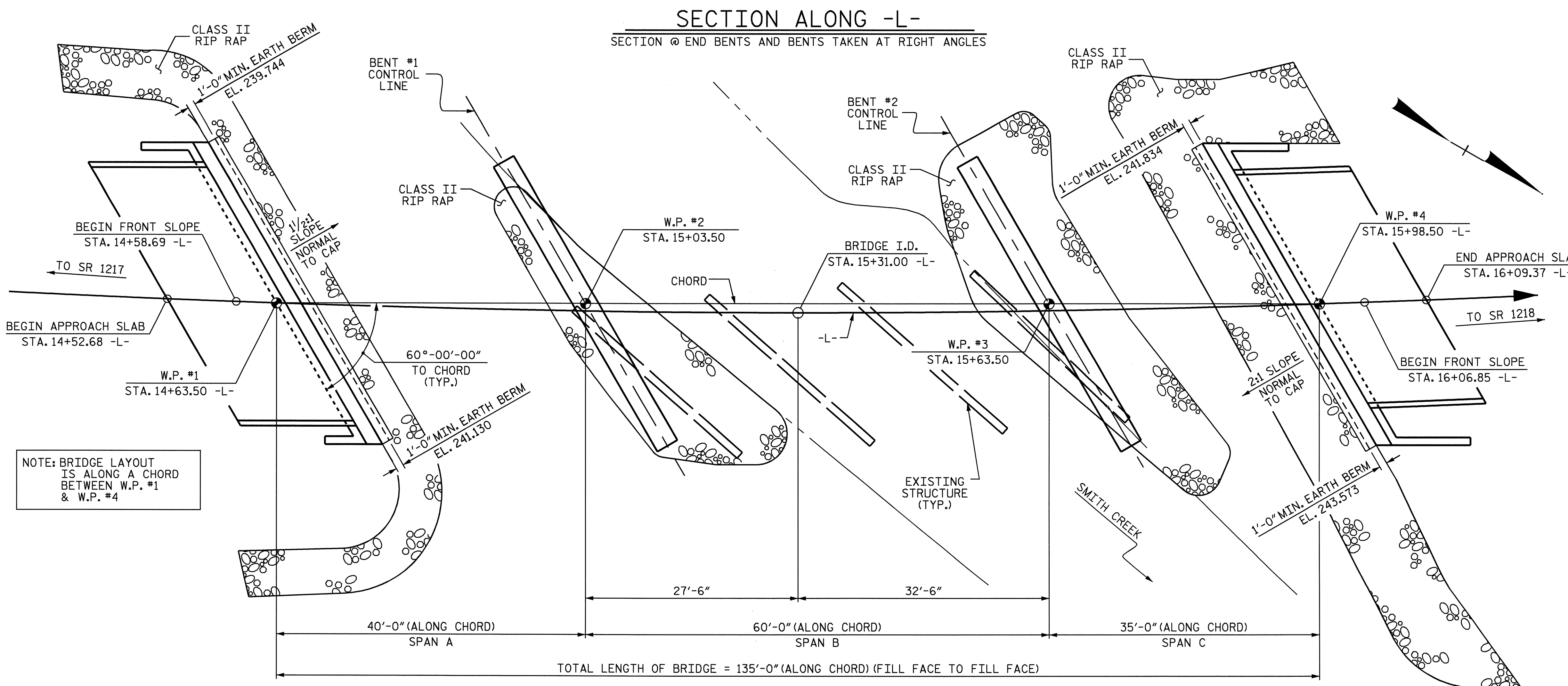
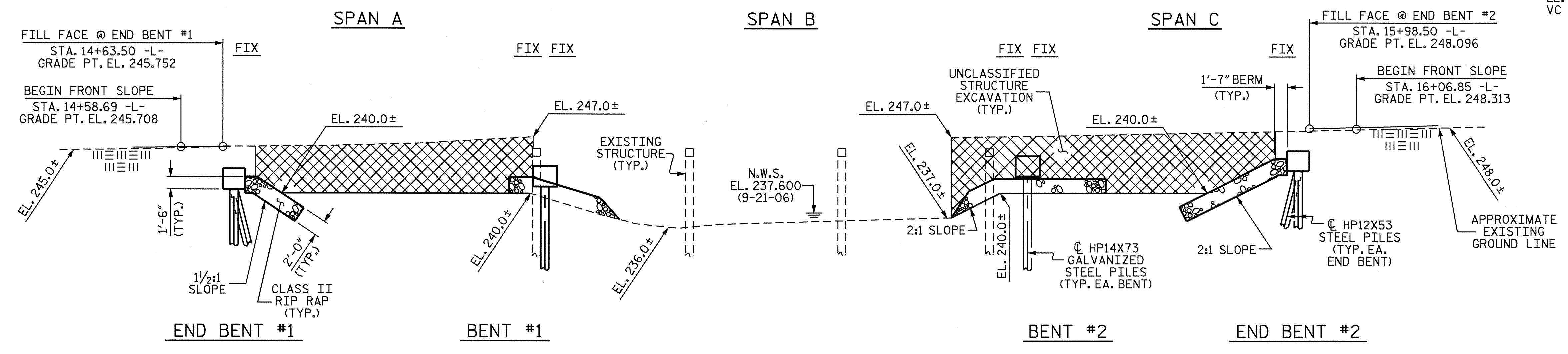
-0.6950 % Δ +0.9373 %  
 PI = 13+00.00 -L-  
 EL. = 244.220  
 VC = 330'

**GRADE DATA**

+0.9373 % Δ +6.6170 %  
 PI = 17+00.00 -L-  
 EL. = 247.970  
 VC = 470'

**HORIZONTAL CURVE DATA**

PI STA. = 14+12.21 -L-  
 Δ = 16°-07'-26" (LT)  
 D = 2°-51'-53"  
 L = 562.83'  
 T = 283.29'  
 R = 2,000.00'  
 SE = 0.03



NOTE: BRIDGE LAYOUT IS ALONG A CHORD BETWEEN W.P. #1 & W.P. #4

PROJECT NO. B-4664  
 WARREN COUNTY  
 STATION: 15+31.00 -L-  
 SHEET 1 OF 3 REPLACES BRIDGE #25

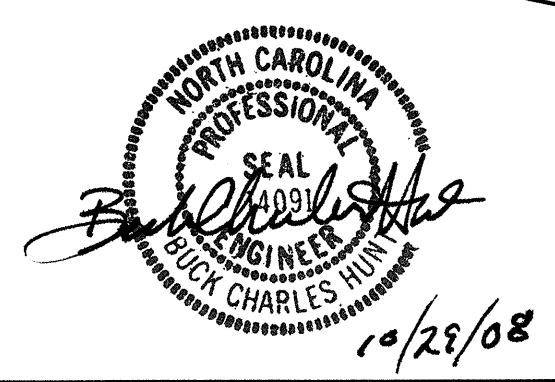
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE OVER SMITH CREEK ON SR 1206 (RUSSELL UNION RD) BETWEEN SR 1218 AND SR 1217

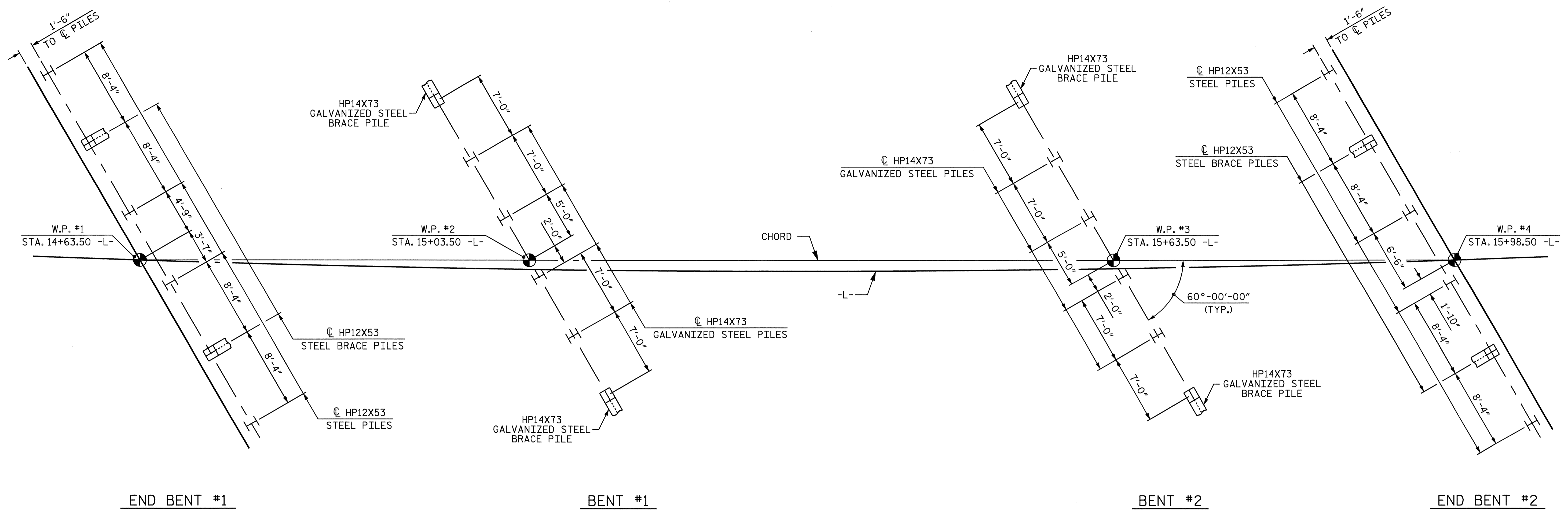
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS **22**

DRAWN BY : S. DOMBROWSKI DATE : 07/08  
 CHECKED BY : K.D. LAYNE DATE : 07/08

26-AUG-2008 10:47  
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 Klayne





**FOUNDATION LAYOUT**

DIMENSIONS LOCATING PILES ARE TO THE CENTERLINE OF THE PILE.  
 END BENT BRACE PILES ARE BATTERED 3:12.  
 BENT BRACE PILES ARE BATTERED 1/2:12.

**NOTES**

- DRIVE PILES AT END BENT #1 AND END BENT #2 TO A REQUIRED BEARING CAPACITY OF 120 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.
- DRIVE PILES AT BENT #1 AND BENT #2 TO A REQUIRED BEARING CAPACITY OF 170 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO PLUS ANY ADDITIONAL CAPACITY TO ACCOUNT FOR DOWN DRAG OR NEGATIVE SKIN FRICTION AND SCOUR.
- THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENT #1 AND END BENT #2 IS 60 TONS PER PILE.
- THE ALLOWABLE BEARING CAPACITY FOR PILES AT BENT #1 AND BENT #2 IS 75 TONS PER PILE.
- DRIVE PILES AT BENT #1 TO A TIP ELEVATION NO HIGHER THAN EL. 198.000.
- DRIVE PILES AT BENT #2 TO A TIP ELEVATION NO HIGHER THAN EL. 204.000.
- THE SCOUR CRITICAL ELEVATION FOR BENT #1 IS ELEVATION 225.000. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
- THE SCOUR CRITICAL ELEVATION FOR BENT #2 IS EL. 227.000. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
- NO WAITING PERIOD IS REQUIRED FOR END BENT CONSTRUCTION AFTER COMPLETION OF EMBANKMENT.
- FOR THE HP14X73 STEEL PILES AT BENTS 1 AND 2, GALVANIZE THE TOP 20 FEET MINIMUM OF EACH PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. B-4664  
WARREN COUNTY  
 STATION: 15+31.00 -L-

SHEET 2 OF 3

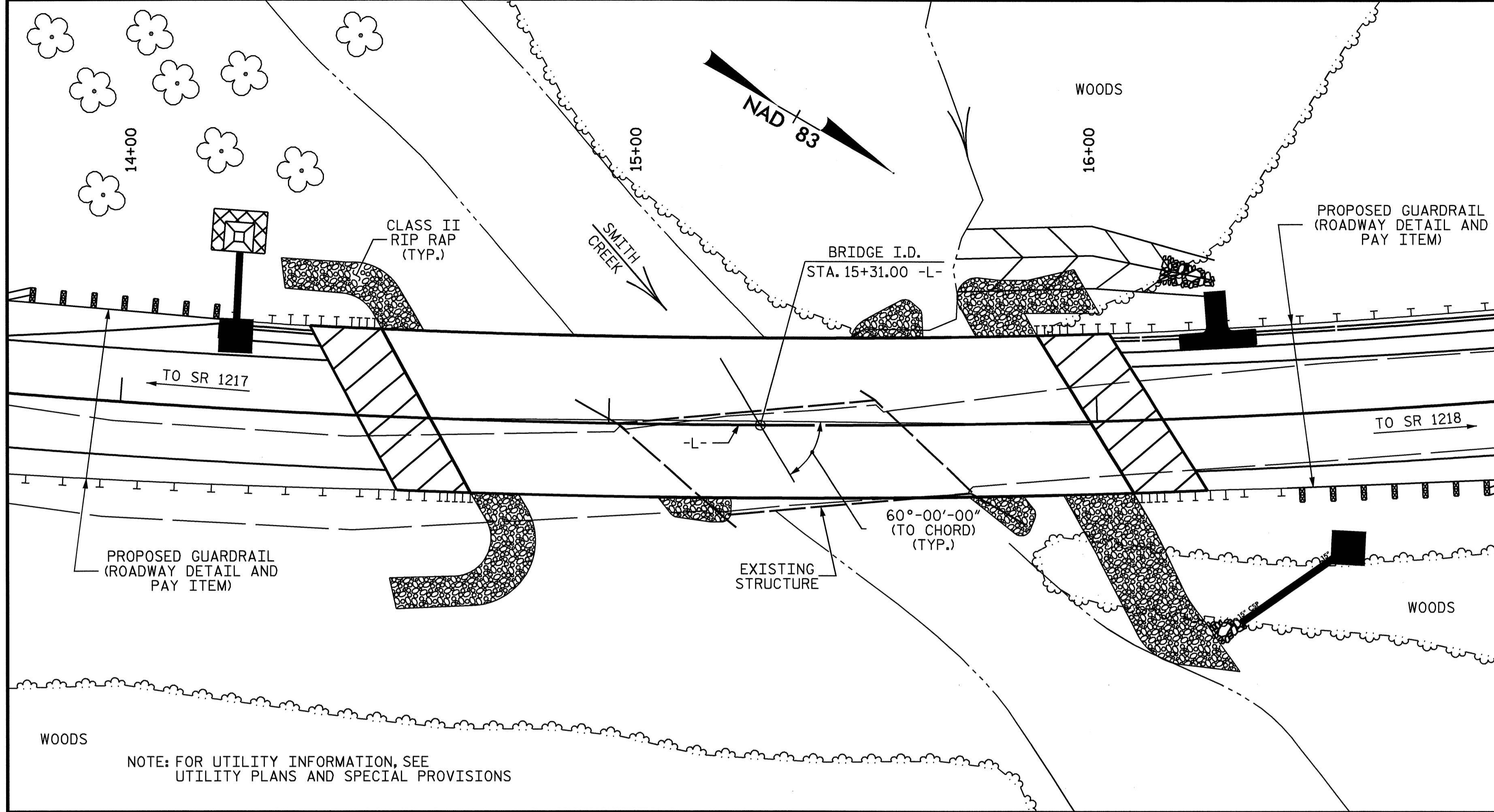
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**  
 FOR BRIDGE OVER SMITH  
 CREEK ON SR 1206  
 (RUSSELL UNION RD) BETWEEN  
 SR 1218 AND SR 1217



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

DRAWN BY : S. DOMBROWSKI DATE : 07/08  
 CHECKED BY : K.D. LAYNE DATE : 07/08



LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HS20 OR ALTERNATE LOADING, EXCEPT THAT CORED SLAB UNITS 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.

THE EXISTING STRUCTURE CONSISTING OF 3 SPANS (1 @ 17'-9", 1 @ 16'-10", 1 @ 18'-0") WITH A TIMBER DECK ON 10 LINES OF TIMBER JOISTS WITH A CLEAR ROADWAY WIDTH OF 19'-2" ON TIMBER CAPS AND TIMBER PILES 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 THE STANDARD SPECIFICATIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET 1 OF 3 SHALL BE EXCAVATED FOR A DISTANCE OF 15 FT. LEFT AND 60 FT. RIGHT OF CENTERLINE AT END BENT #1, AND 20 FT. LEFT AND 60 FT. RIGHT OF CENTERLINE AT END BENT #2, 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.

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

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

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

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

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.

HYDRAULIC DATA

DESIGN DISCHARGE	= 2600 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 25 YR.
DESIGN HIGH WATER ELEVATION	= 243.900
DRAINAGE AREA	= 13.2 SQ.MI.
BASIC DISCHARGE (Q100)	= 3821 C.F.S.
BASIC HIGH WATER ELEVATION	= 245.500

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 4000± C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	= 100 YR.
OVERTOPPING FLOOD ELEVATION	= 245.700

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 12X53 STEEL PILES	HP 14X73 GALVANIZED 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	CU.YDS.	CU.YDS.	LUMP SUM	LBS.	NO.	LIN.FT.	NO.	LIN.FT.	LIN.FT.	TONS	SQ.YDS.	LUMP SUM	NO.	LIN.FT.
SUPERSTRUCTURE				LUMP SUM						264.80			LUMP SUM	33	1453.31
END BENT #1			14.2		2159	6	300				95	105			
BENT #1			12.0		1891			6	330						
BENT #2			12.0		1891			6	345						
END BENT #2			15.7		2362	6	330				165	185			
TOTAL	LUMP SUM	750	53.9	LUMP SUM	8303	12	630	12	675	264.80	260	290	LUMP SUM	33	1453.31

PROJECT NO. B-4664  
 WARREN COUNTY  
 STATION: 15+31.00 -L-

SHEET 3 OF 3

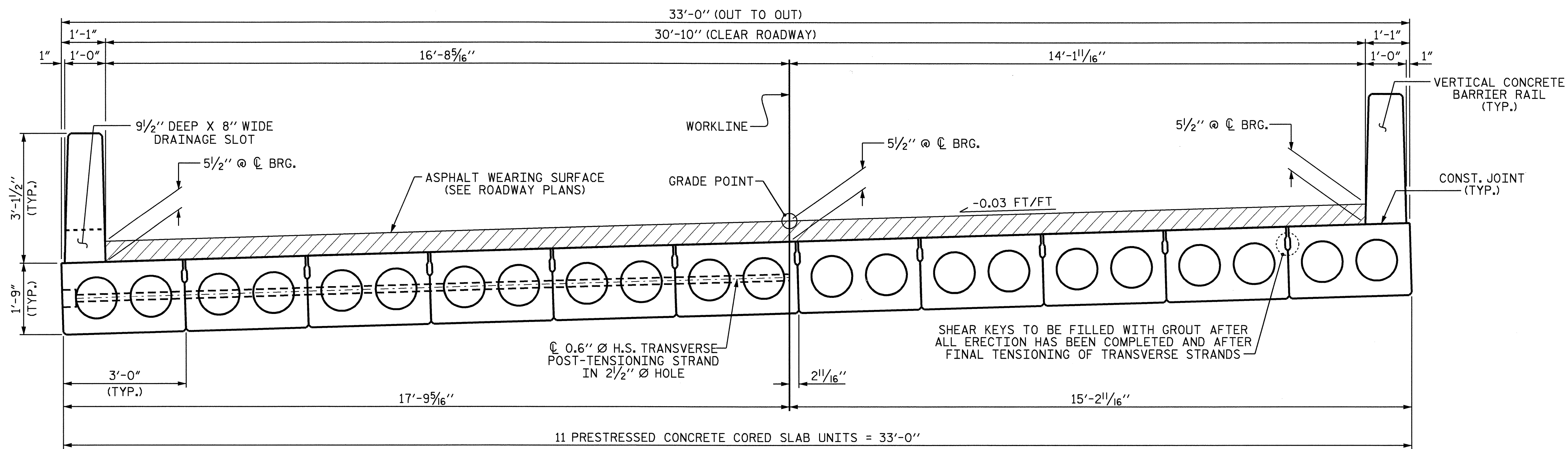
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

GENERAL DRAWING  
 FOR BRIDGE OVER SMITH  
 CREEK ON SR 1206  
 (RUSSELL UNION RD) BETWEEN  
 SR 1218 AND SR 1217

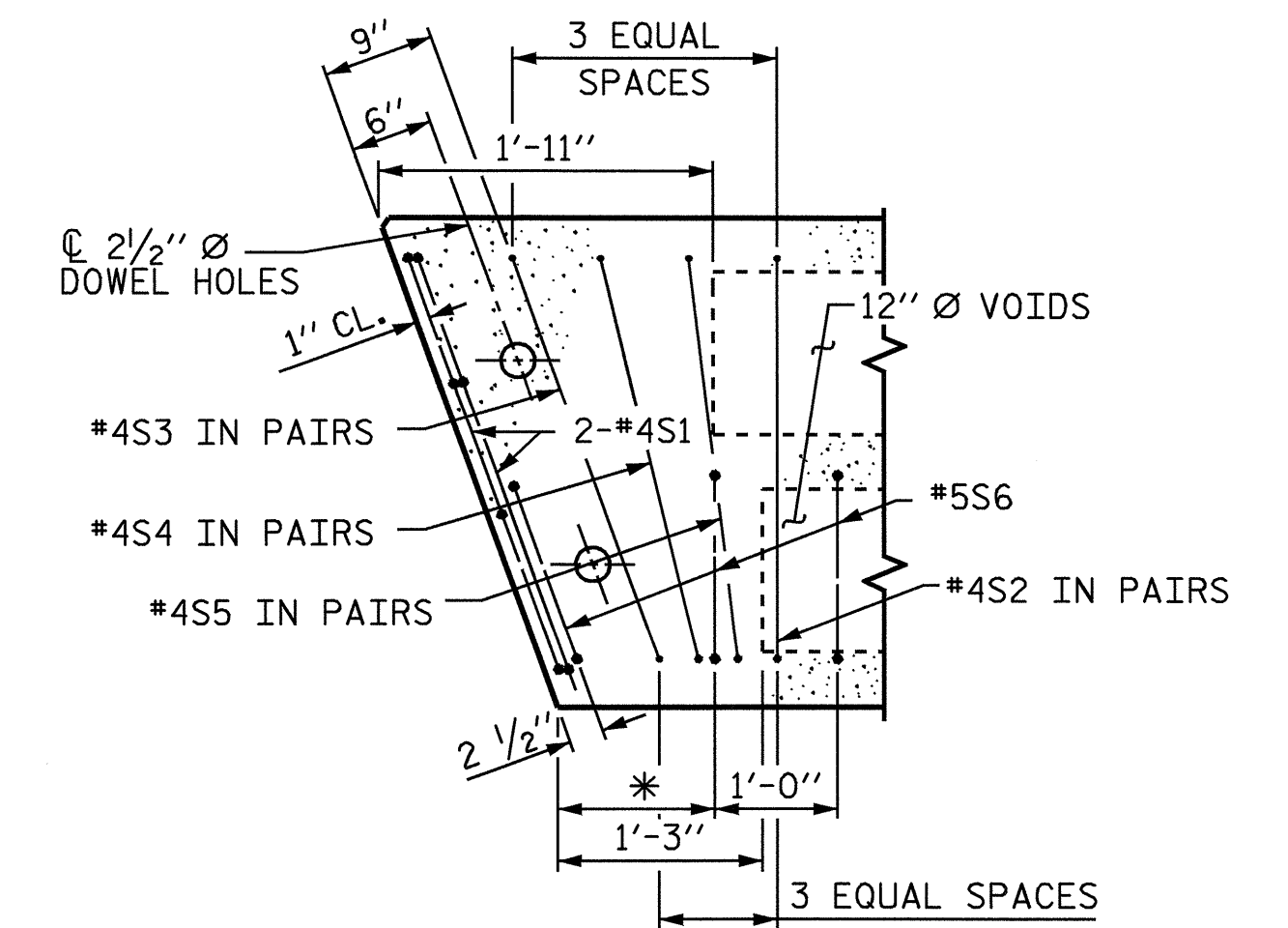


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS 22
2			4			

DRAWN BY : S. DOMBROWSKI DATE : 7/08  
 CHECKED BY : K.D. LAYNE DATE : 7/08

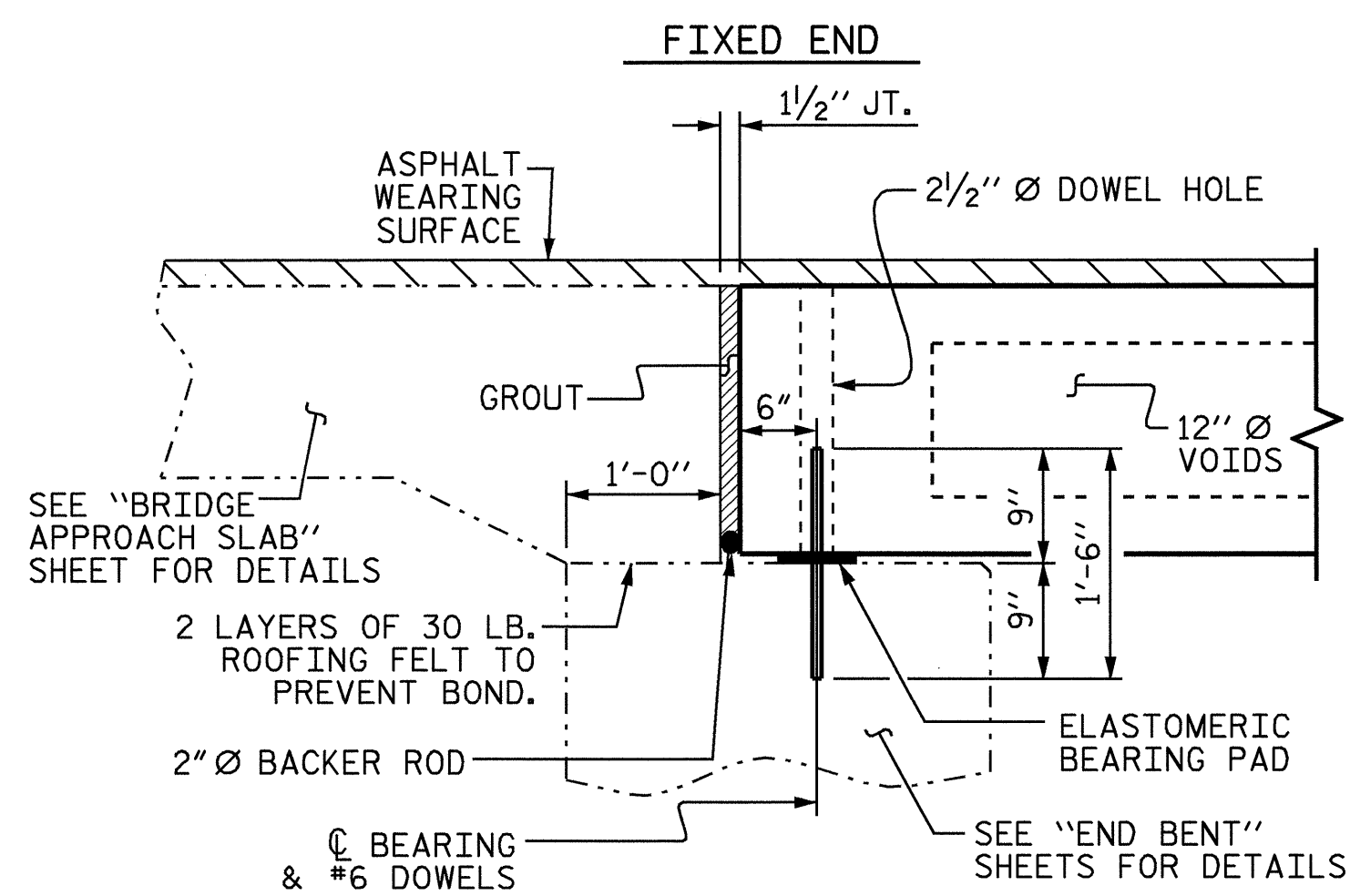


TYPICAL SECTION

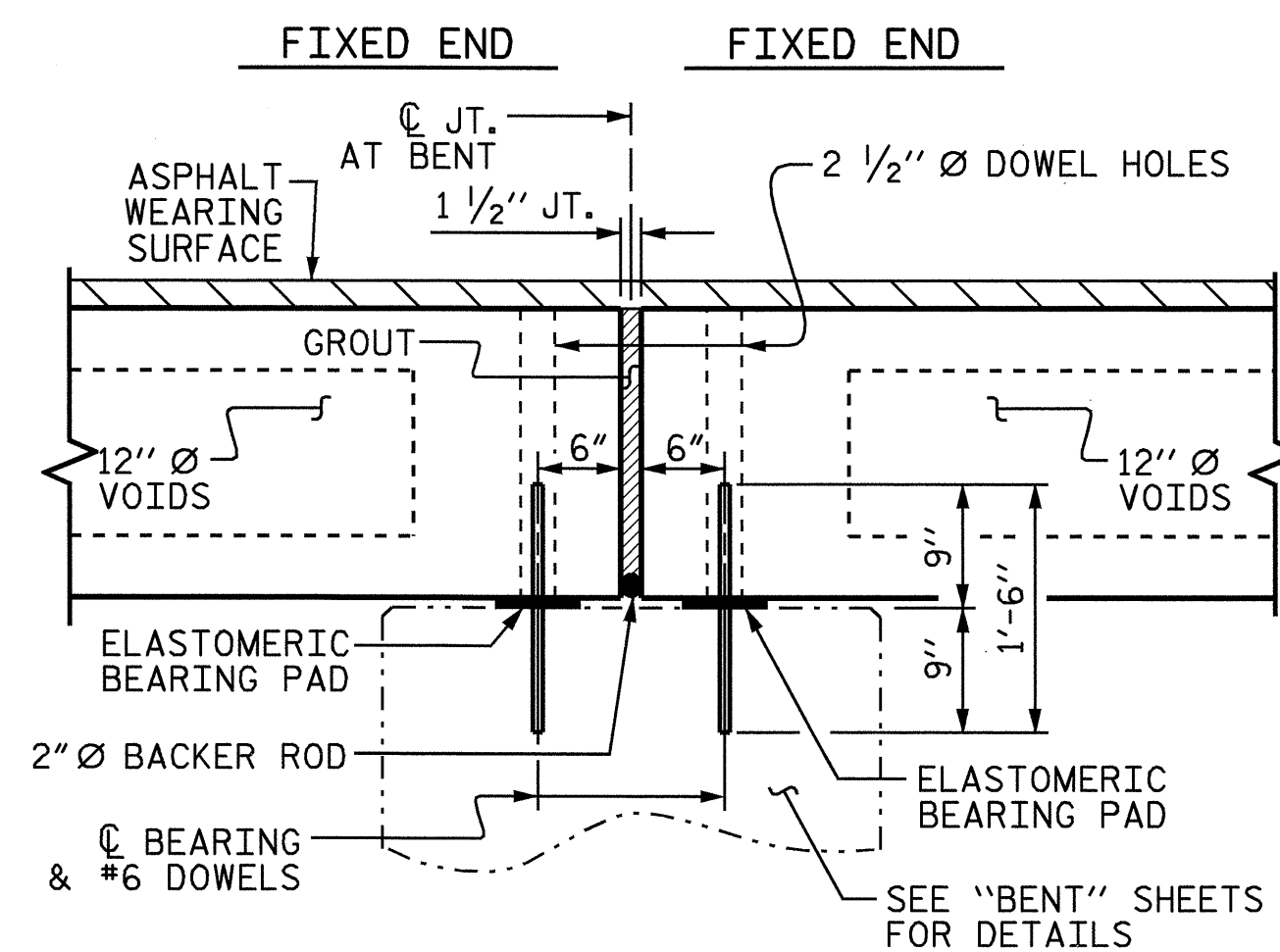


PART PLAN-EXTERIOR SECTION

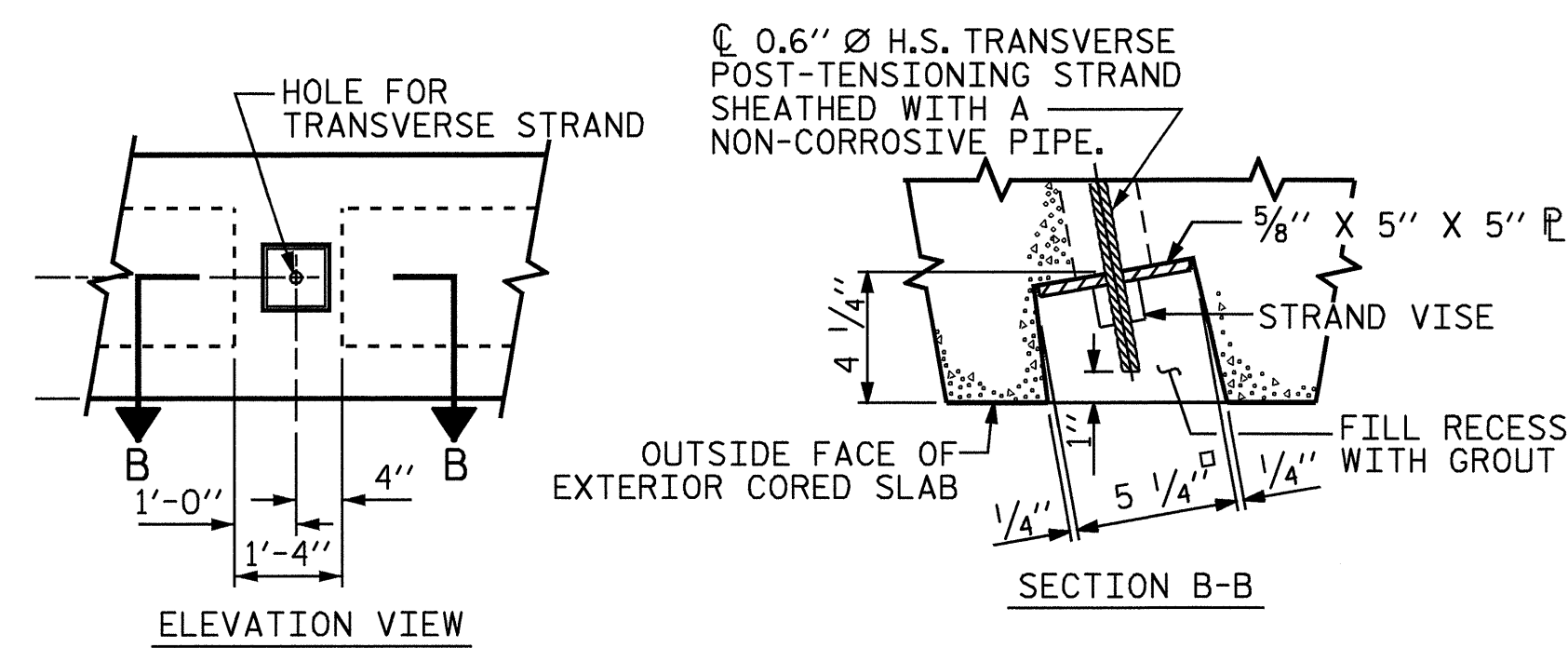
NOTE: EXTERIOR SECTION SHOWN-INTERIOR SECTION SIMILAR EXCEPT OMIT S6 BARS.  
\* SEE PLAN OF SPANS FOR DIMENSION.



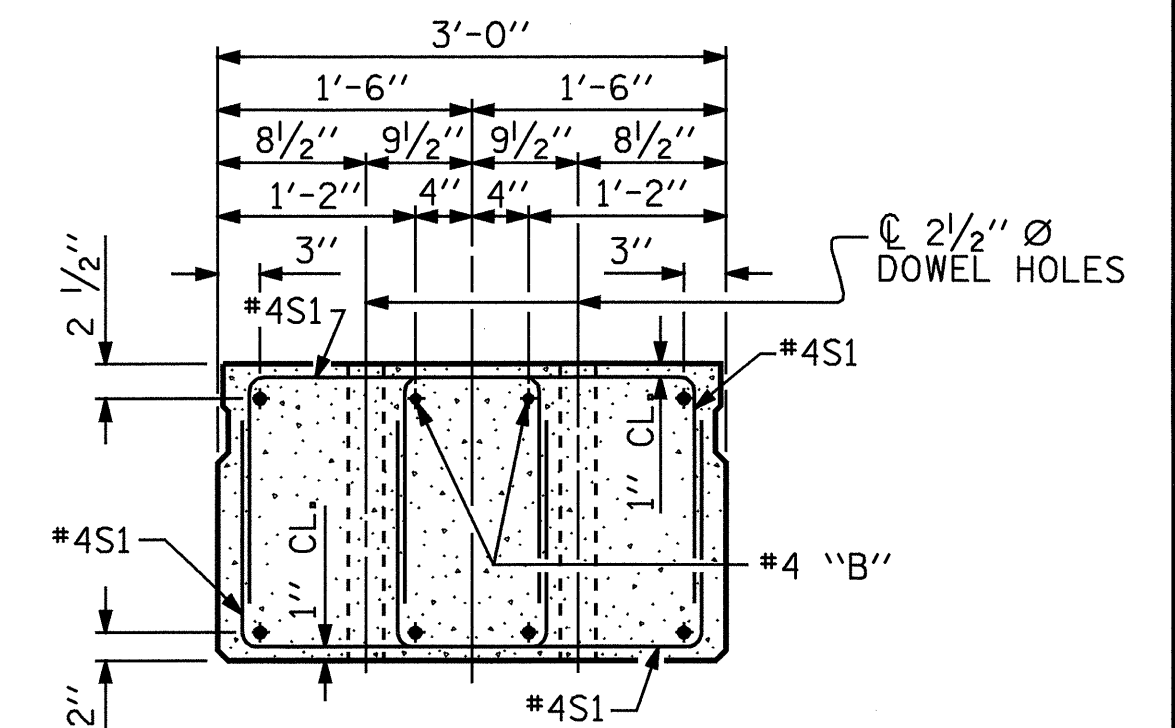
SECTION AT END BENT



SECTION AT BENT

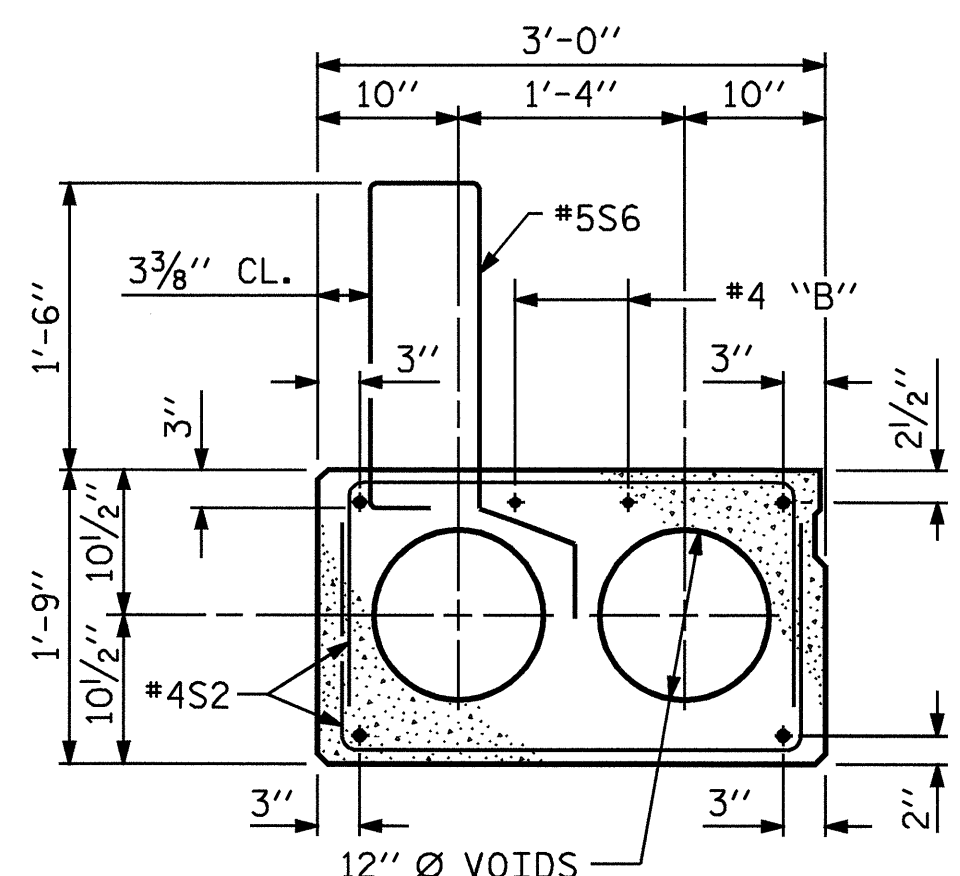


GROUTED RECESS AT END OF POST-TENSIONED STRAND CORED SLABS



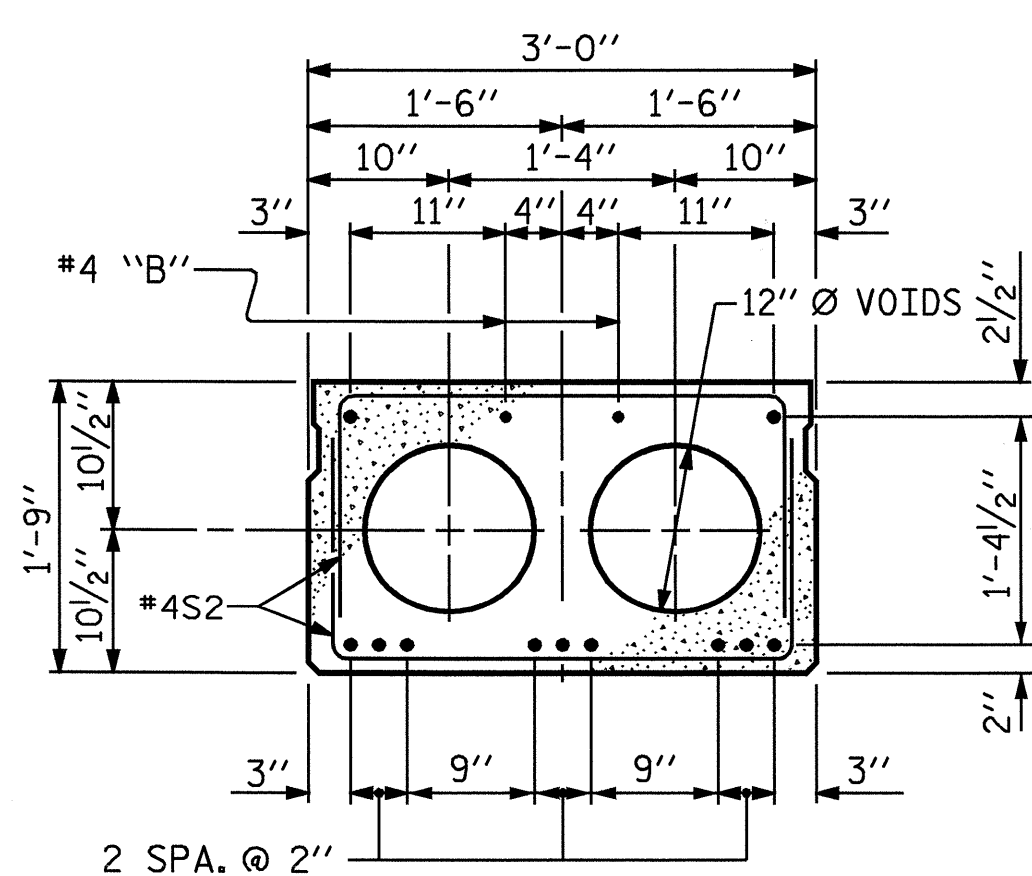
END ELEVATION

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



EXTERIOR SLAB SECTION

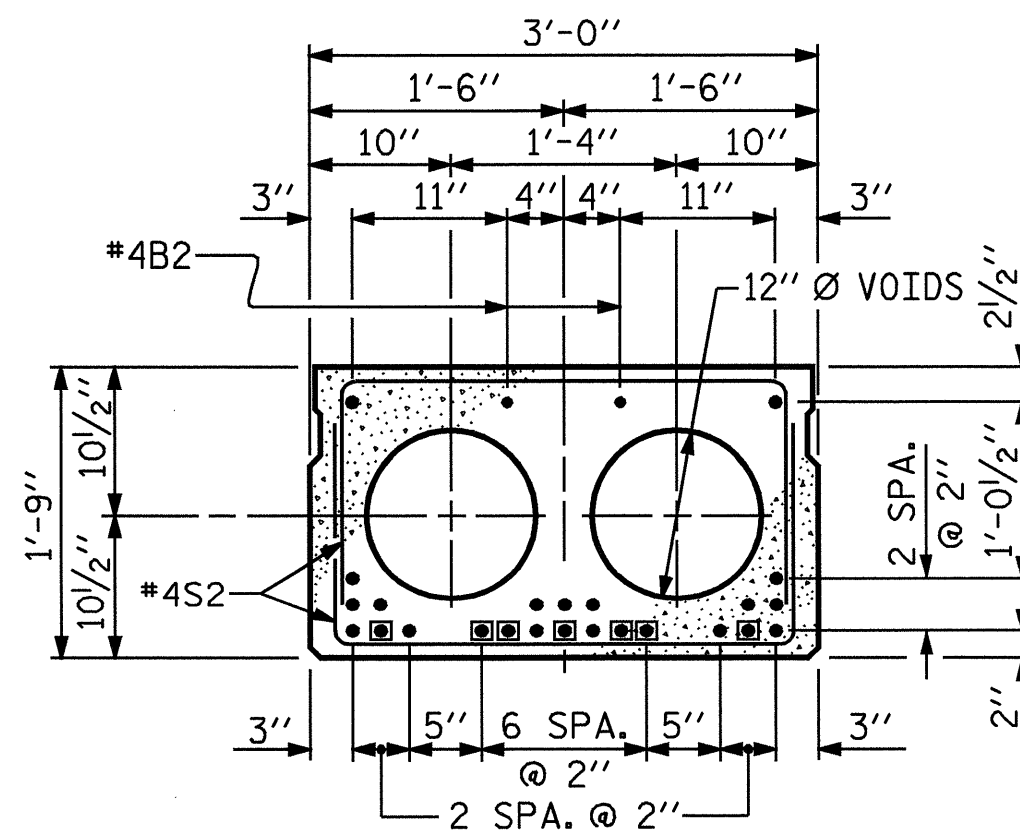
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



INTERIOR SLAB SECTION (11 STRANDS)

0.6" Ø LOW RELAXATION STRAND LAYOUT

SPAN A & SPAN C

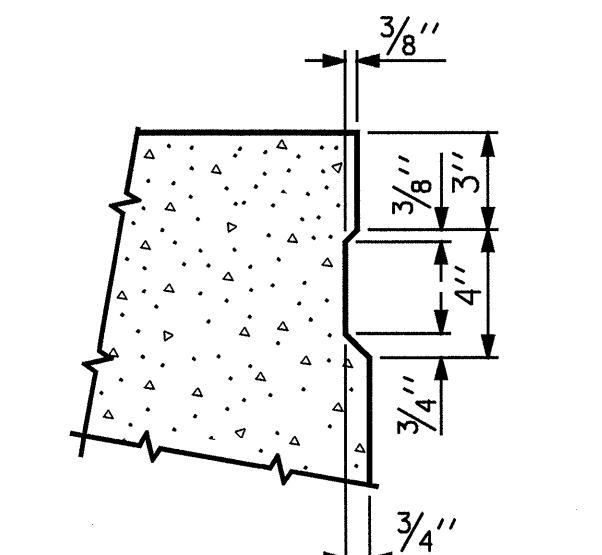


INTERIOR SLAB SECTION (24 STRANDS)

0.6" Ø LOW RELAXATION STRAND LAYOUT

SPAN B

■ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-2" FROM END OF CORED SLAB UNIT, SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.



SHEAR KEY DETAIL

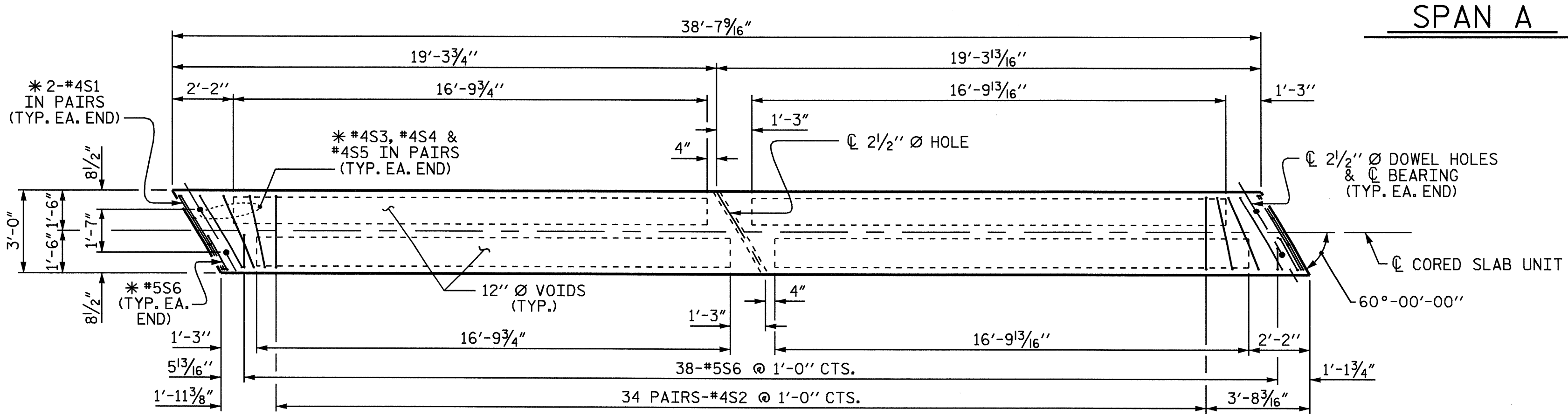
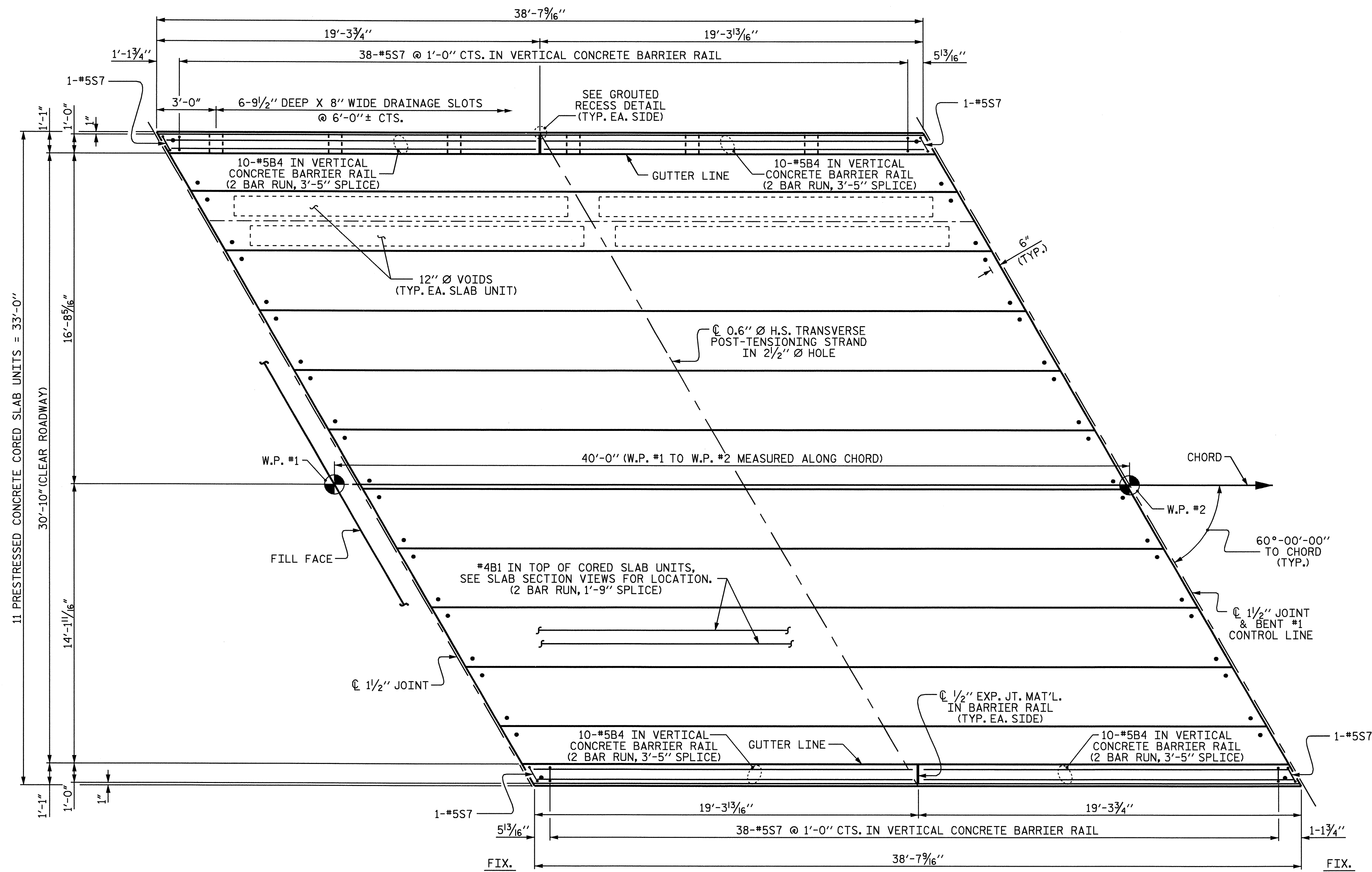
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

PROJECT NO. B-4664  
WARREN COUNTY  
STATION: 15+31.00 -L-

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: J.P. ADAMS	DATE: 7/14/08
CHECKED BY: M.K. BEARD	DATE: 7/30/08
DRAWN BY: WJH 4/89	REV. 10/17/00 RWW/LES
CHECKED BY: FCJ 5/89	REV. 7/10/01RR RWW/LES
	REV. 5/1/06 TLA/GM





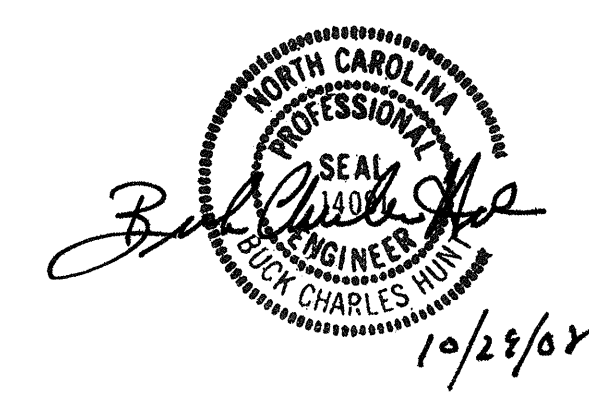
**PARTIAL PLAN OF SLAB**

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5S6 BARS.  
\* SEE "PART PLAN-EXTERIOR SECTION".

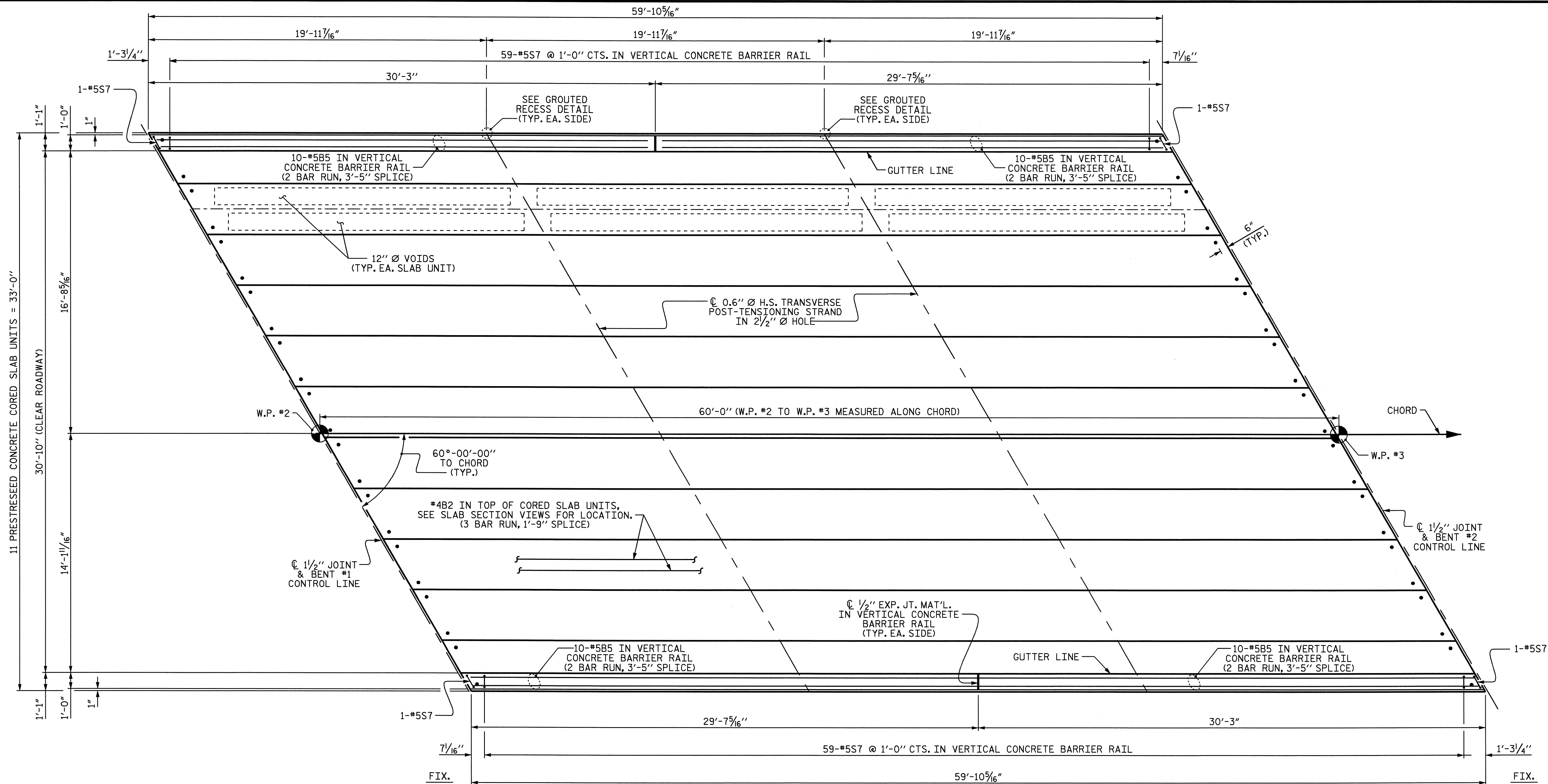
**SPAN A**

PROJECT NO. B-4664  
WARREN COUNTY  
 STATION: 15+31.00 -L-

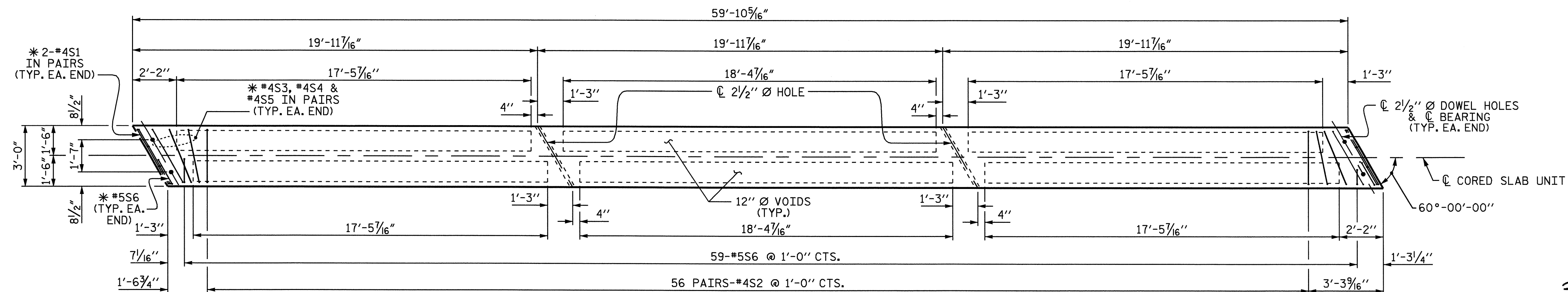
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPAN A					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					TOTAL SHEETS
S-5					22



DRAWN BY : J.P. ADAMS DATE : 7/15/08  
 CHECKED BY : M.K. BEARD DATE : 7/30/08



**SPAN B**

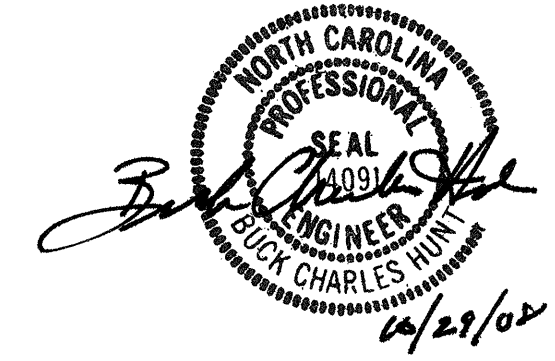


**PARTIAL PLAN OF SLAB**

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5S6 BARS.  
 \* SEE "PART PLAN-EXTERIOR SECTION".

PROJECT NO. B-4664  
WARREN COUNTY  
 STATION: 15+31.00 -L-

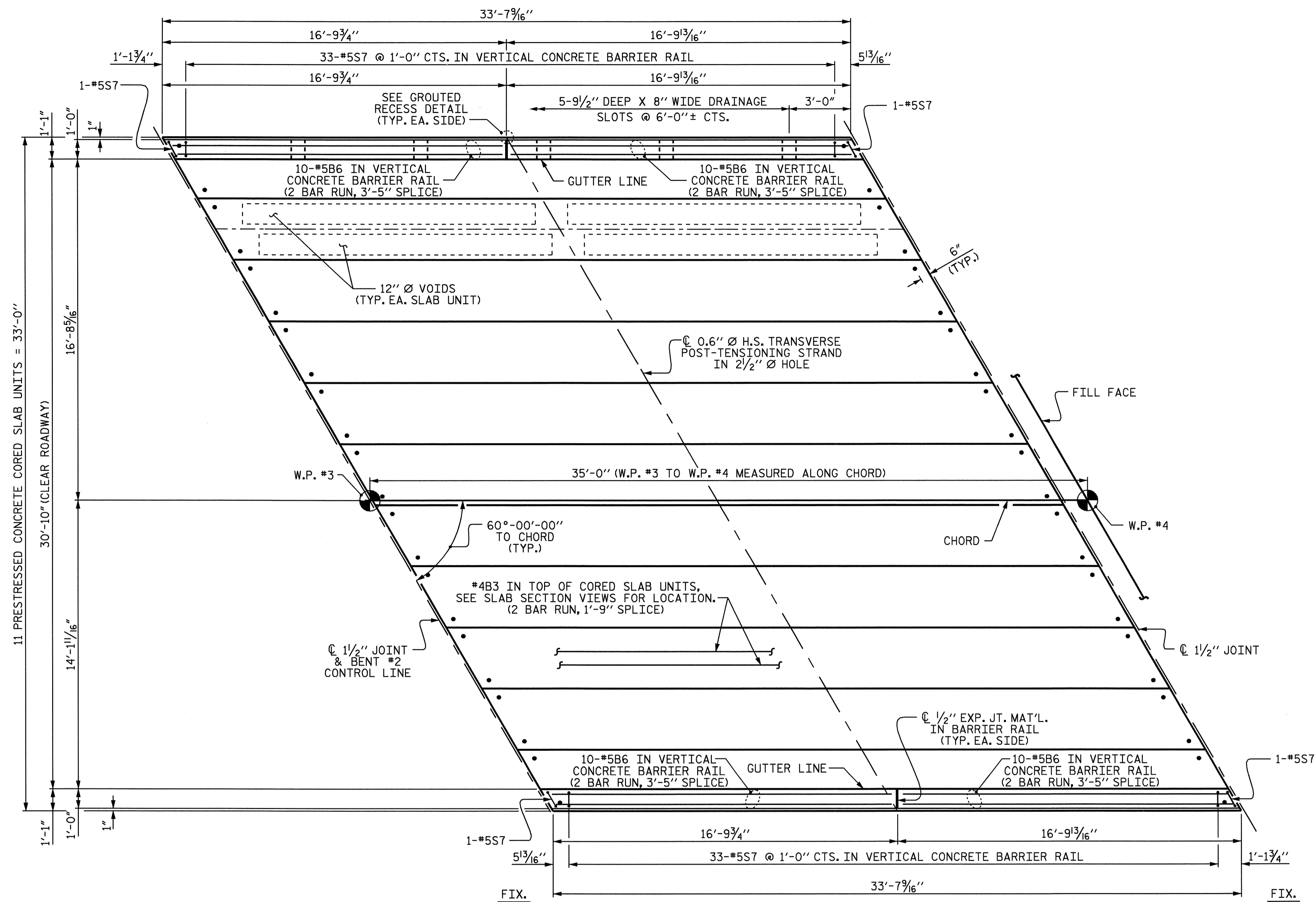
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 PLAN OF SPAN B



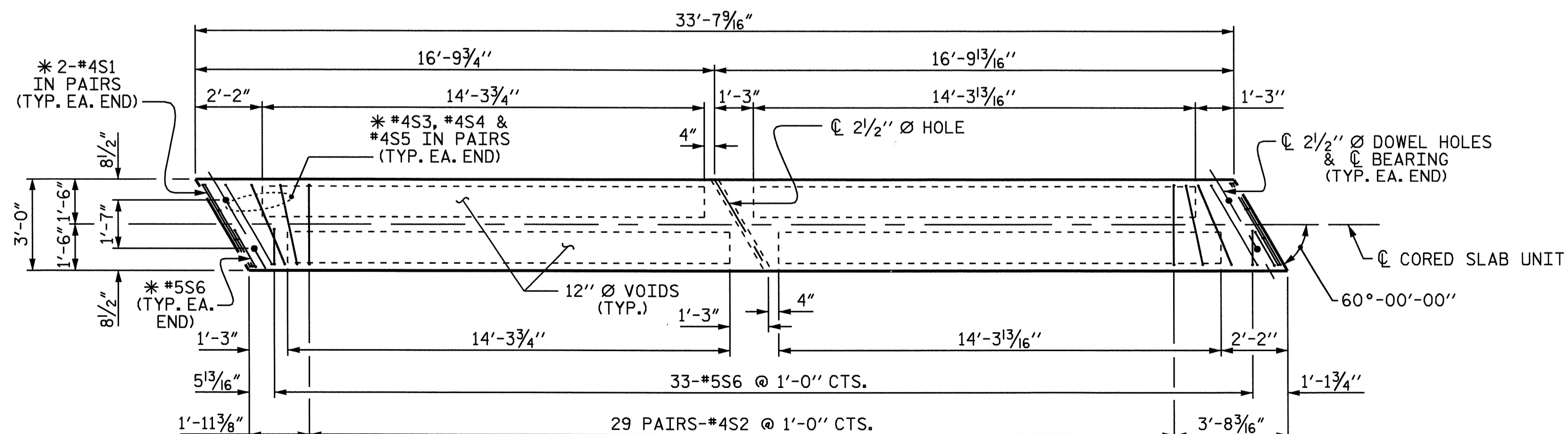
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			22
2			4			

DRAWN BY: J.P. ADAMS DATE: 7/15/08  
 CHECKED BY: M.K. BEARD DATE: 7/30/08

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 jpadams



SPAN C

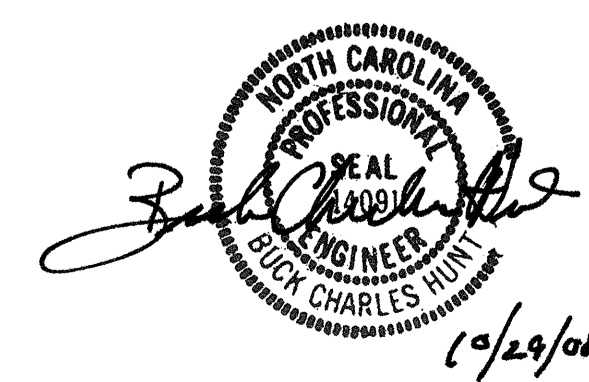


PARTIAL PLAN OF SLAB

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5S6 BARS.  
\*SEE "PART PLAN-EXTERIOR SECTION"

PROJECT NO. B-4664  
WARREN COUNTY  
STATION: 15+31.00 -L-

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



DRAWN BY: J.P. ADAMS DATE: 7/15/08  
CHECKED BY: M.K. BEARD DATE: 7/30/08



NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" 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.

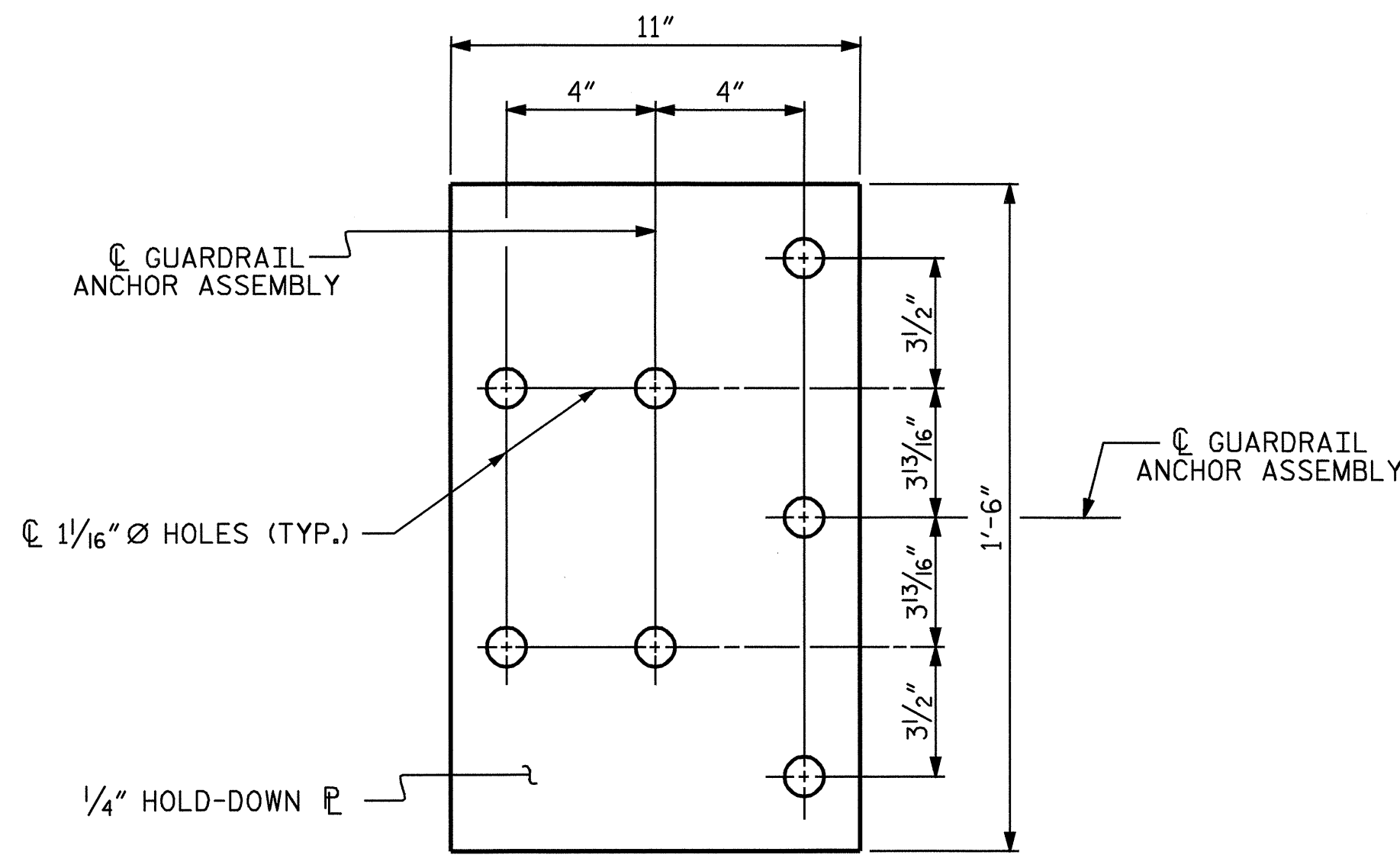
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS.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

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.

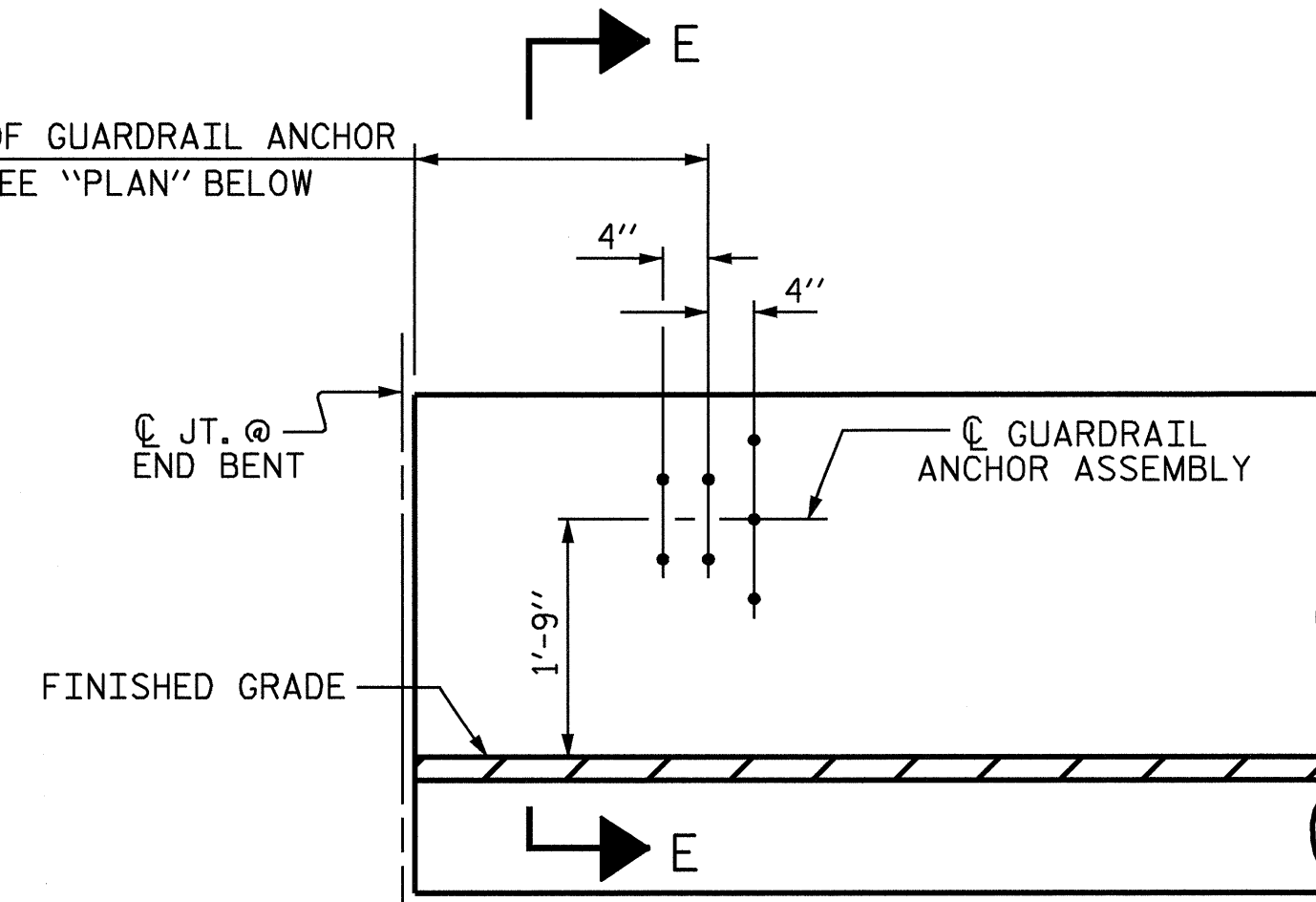
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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.

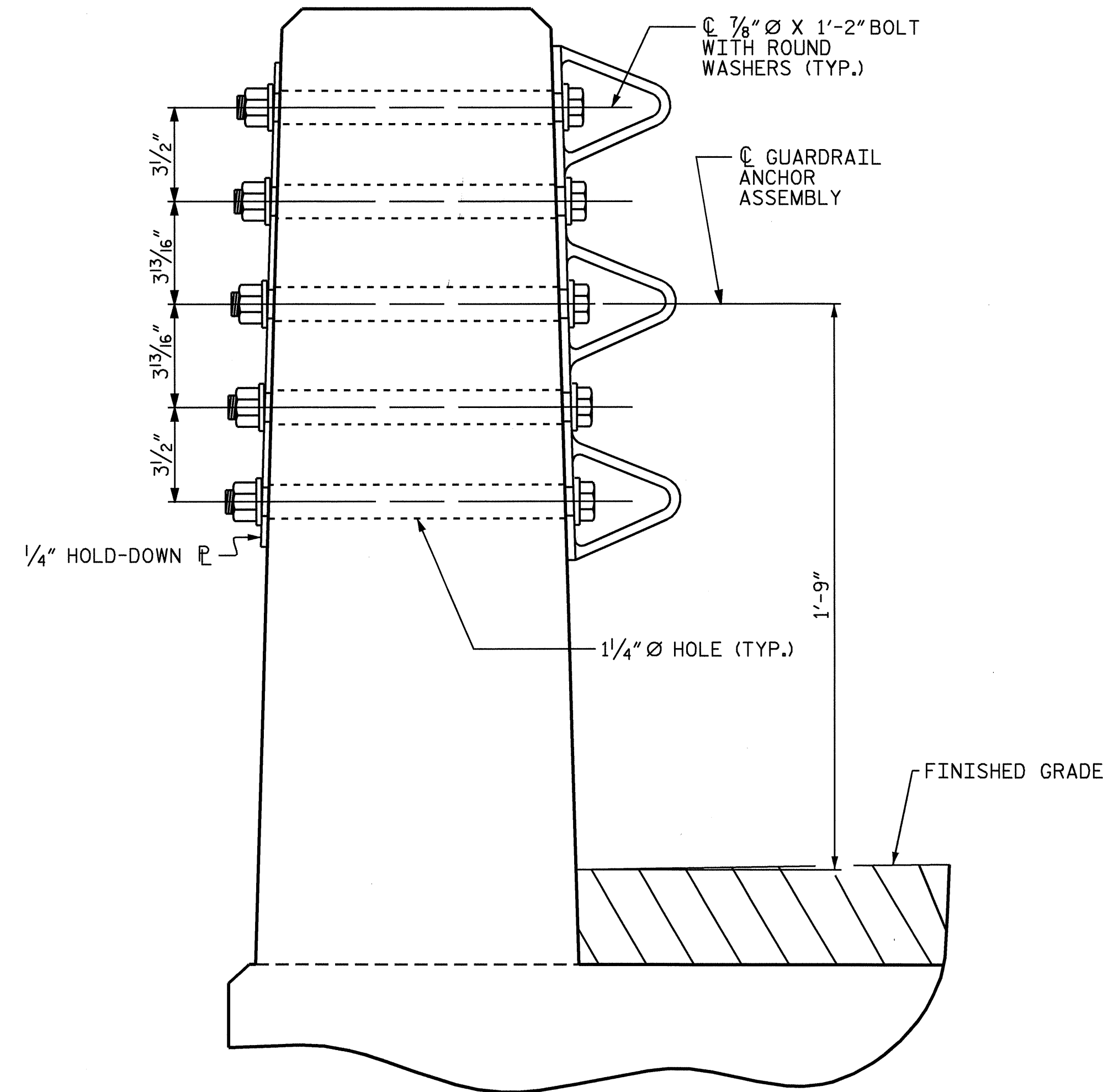


PLAN

FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW

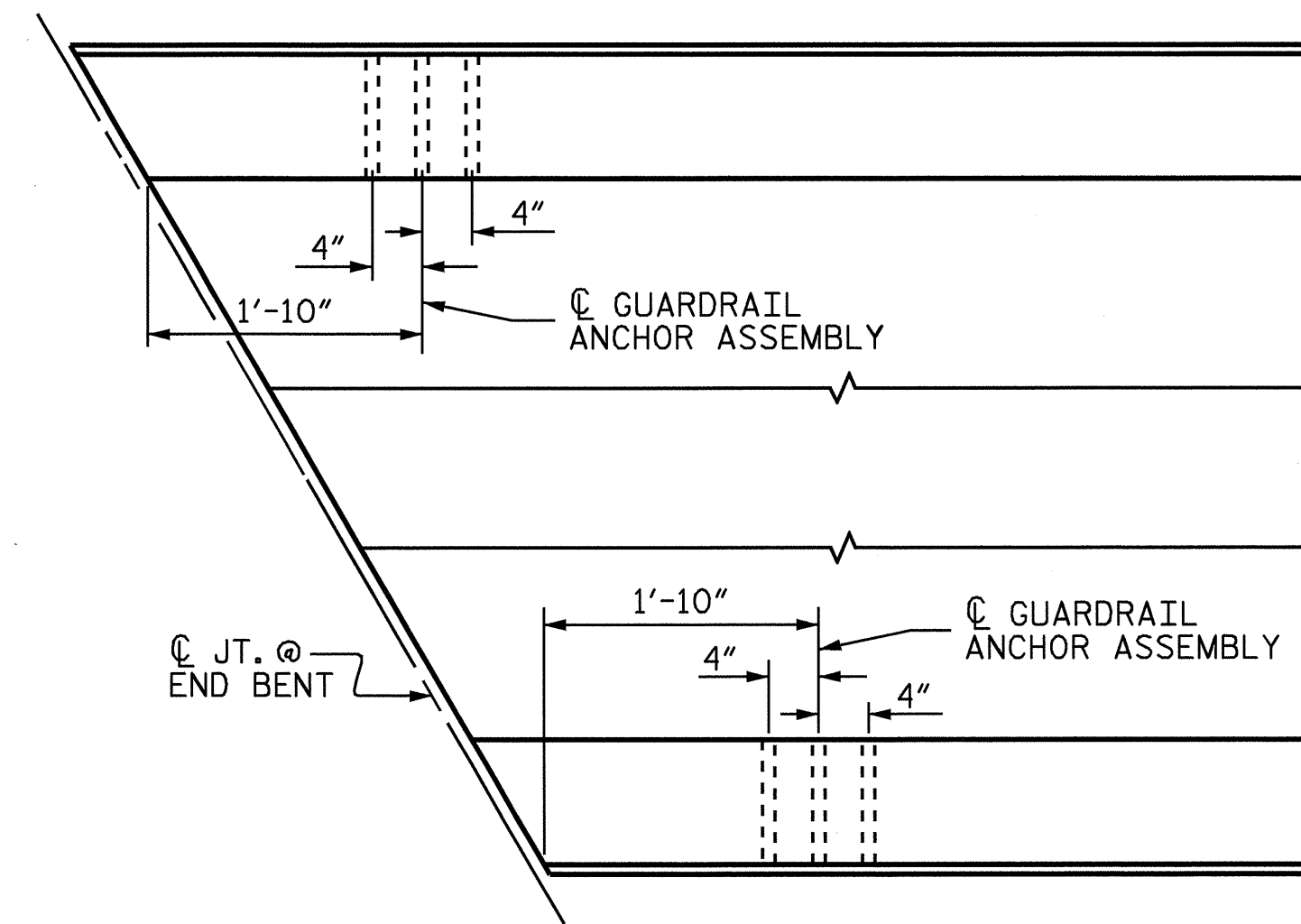


ELEVATION



SECTION E-E

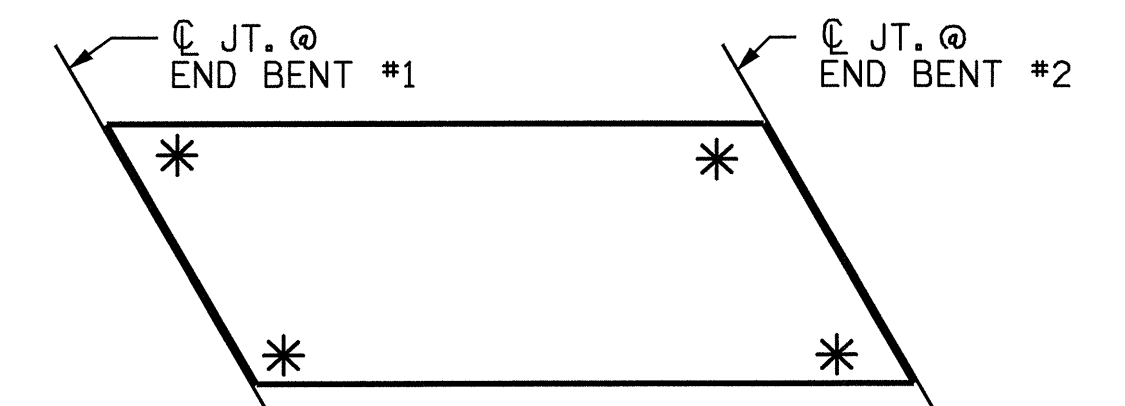
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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

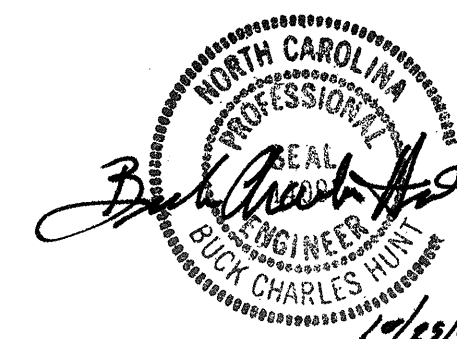


SKETCH SHOWING POINTS OF ATTACHMENTS

\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4664  
WARREN COUNTY  
 STATION: 15+31.00 -L-

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



REVISIONS						SHEET NO. S-8
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 22
2			4			

ASSEMBLED BY : J.P. ADAMS	DATE : 7/14/08
CHECKED BY : M.K. BEARD	DATE : 7/30/08
DRAWN BY : MAA 12/06	ADDED 12/15/06
CHECKED BY : GM 12/06	

**NOTES**

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

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

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

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

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

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

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 (SPAN A AND SPAN C) AND 5100 PSI (SPAN B).

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.

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

FOR VERTICAL CONCRETE BARRIER RAIL, SEE SPECIAL PROVISIONS.

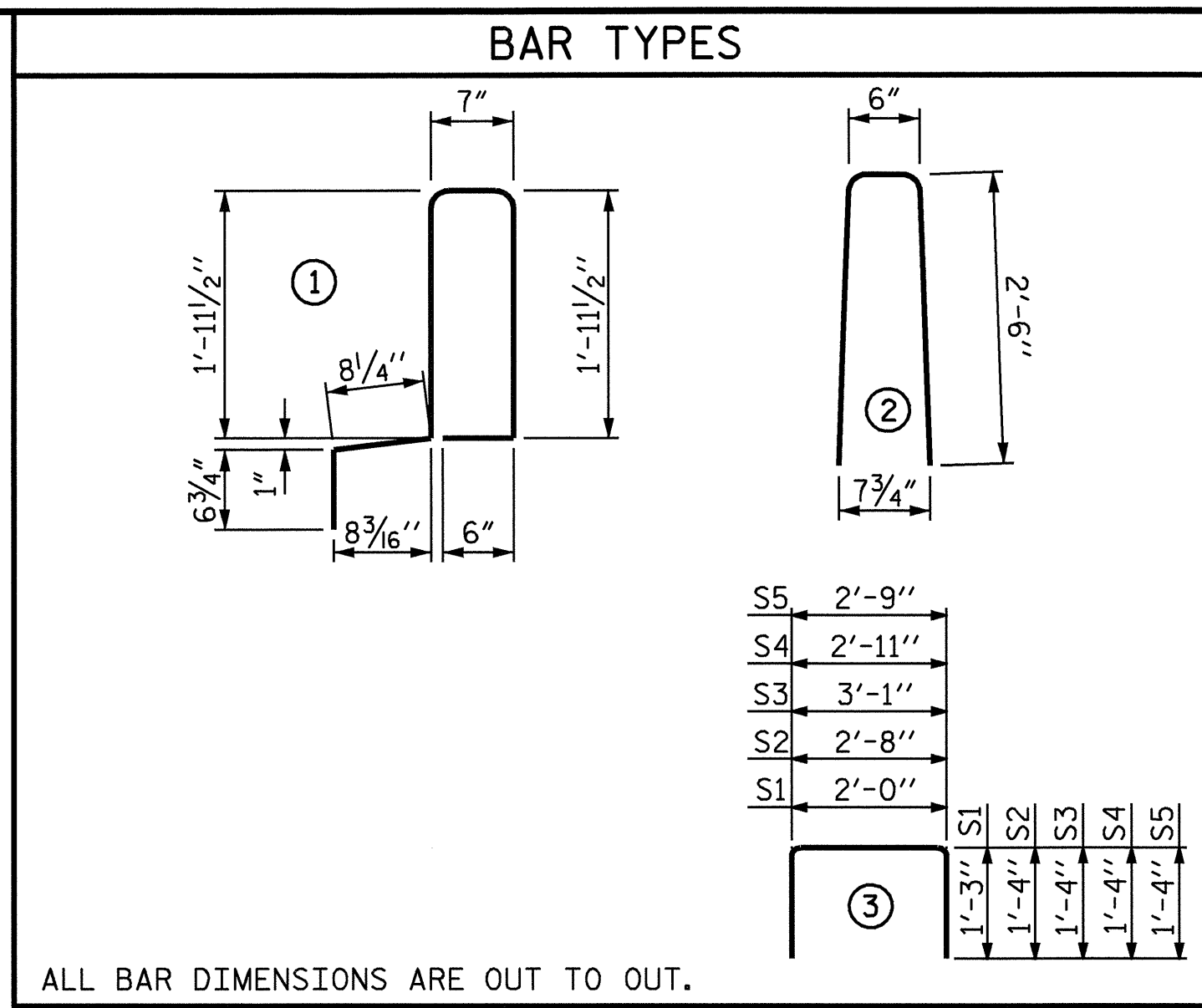
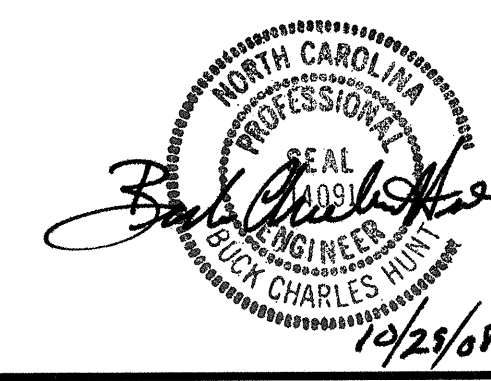
**CORED SLABS REQUIRED**

SPAN	NUMBER	LENGTH	TOTAL LENGTH
<b>SPAN A</b>			
EXTERIOR C.S.	2	38'-7 1/16"	77.26
INTERIOR C.S.	9	38'-7 1/16"	347.67
TOTAL	11		424.93
<b>SPAN B</b>			
EXTERIOR C.S.	2	59'-10 5/16"	119.72
INTERIOR C.S.	9	59'-10 5/16"	538.73
TOTAL	11		658.45
<b>SPAN C</b>			
EXTERIOR C.S.	2	33'-7 7/16"	67.26
INTERIOR C.S.	9	33'-7 7/16"	302.67
TOTAL	11		369.93
TOTAL LENGTH (SPANS A, B & C)			1453.31

PROJECT NO. B-4664  
 WARREN COUNTY  
 STATION: 15+31.00 -L-

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

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



ALL BAR DIMENSIONS ARE OUT TO OUT.

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

SPAN A				EXTERIOR UNIT		INTERIOR UNIT	
BAR NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	
B1	#4	STR	20'-1"	54	20'-1"	54	
S1	#4	3	4'-6"	24	4'-6"	24	
S2	#4	3	5'-4"	242	5'-4"	242	
S3	#4	3	5'-9"	15	5'-9"	15	
S4	#4	3	5'-7"	15	5'-7"	15	
S5	#4	3	5'-5"	14	5'-5"	14	
* S6	#5	1	6'-3"	261	----	----	
REINFORCING STEEL				364 LBS.	364 LBS.		
* EPOXY COATED REINFORCING STEEL				261 LBS.	----		
5000 P.S.I. CONCRETE				5.6 CU. YDS.	5.6 CU. YDS.		
0.6" Ø L.R. STRANDS				No. 11	No. 11		

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

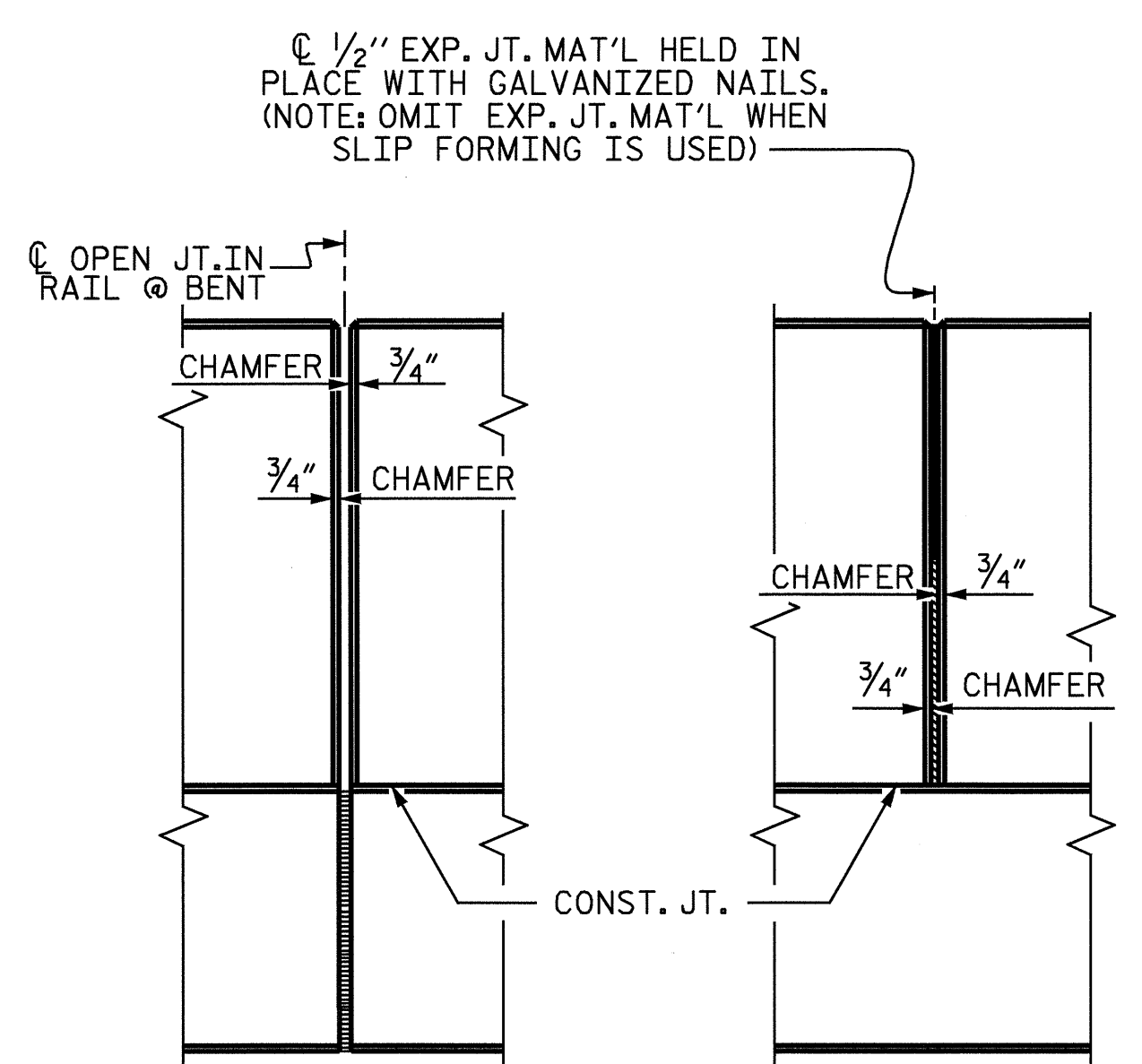
SPAN B				EXTERIOR UNIT		INTERIOR UNIT	
BAR NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	
B2	#4	STR	21'-1"	85	21'-1"	85	
S1	#4	3	4'-6"	24	4'-6"	24	
S2	#4	3	5'-4"	399	5'-4"	399	
S3	#4	3	5'-9"	15	5'-9"	15	
S4	#4	3	5'-7"	15	5'-7"	15	
S5	#4	3	5'-5"	14	5'-5"	14	
* S6	#5	1	6'-3"	398	----	----	
REINFORCING STEEL				552 LBS.	552 LBS.		
* EPOXY COATED REINFORCING STEEL				398 LBS.	----		
6400 P.S.I. CONCRETE				8.5 CU. YDS.	8.5 CU. YDS.		
0.6" Ø L.R. STRANDS				No. 24	No. 24		

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

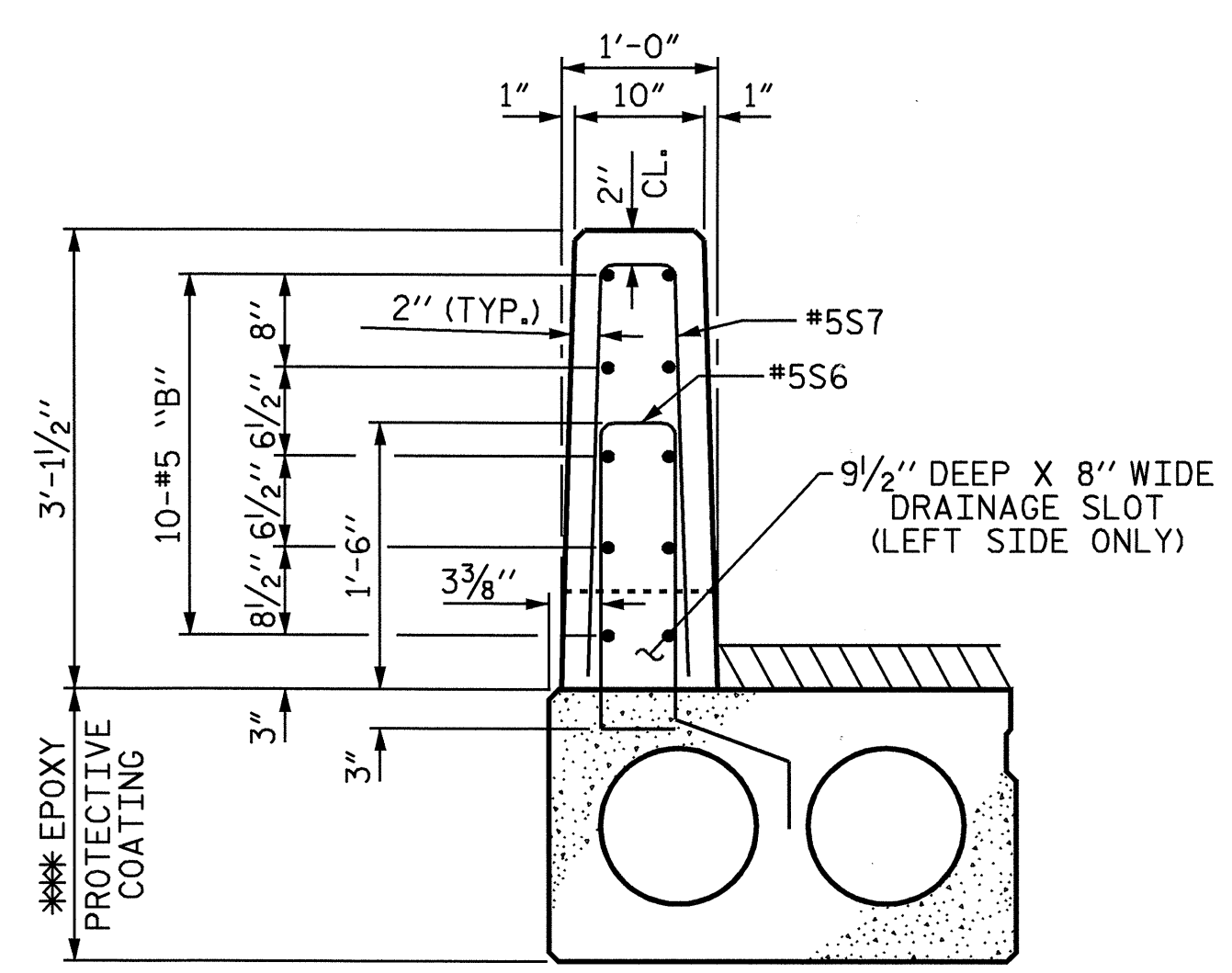
SPAN C				EXTERIOR UNIT		INTERIOR UNIT	
BAR NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	
B3	#4	STR	17'-7"	47	17'-7"	47	
S1	#4	3	4'-6"	24	4'-6"	24	
S2	#4	3	5'-4"	207	5'-4"	207	
S3	#4	3	5'-9"	15	5'-9"	15	
S4	#4	3	5'-7"	15	5'-7"	15	
S5	#4	3	5'-5"	14	5'-5"	14	
* S6	#5	1	6'-3"	228	----	----	
REINFORCING STEEL				322 LBS.	322 LBS.		
* EPOXY COATED REINFORCING STEEL				228 LBS.	----		
5000 P.S.I. CONCRETE				4.9 CU. YDS.	4.9 CU. YDS.		
0.6" Ø L.R. STRANDS				No. 11	No. 11		

**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



ELEVATION AT EXPANSION JOINTS



SECTION THRU RAIL

FIELD CUT BOTTOM "B" BARS TO CLEAR DRAINAGE SLOTS

\*\* APPLY EPOXY PROTECTIVE COATING TO EXTERIOR FACE OF CORED SLAB UNITS ON LEFT SIDE ONLY.

**VERTICAL CONCRETE BARRIER RAIL DETAILS**

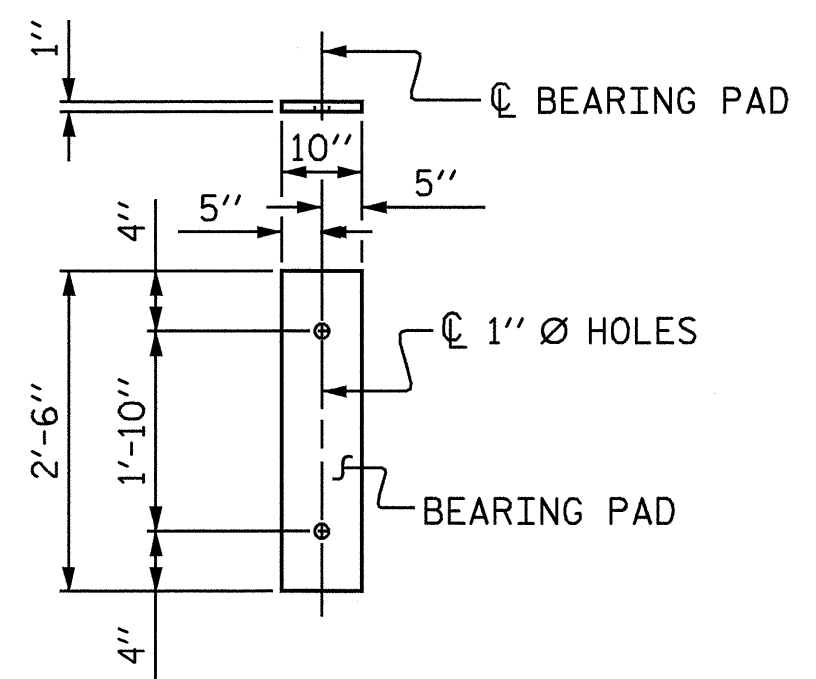
**DEAD LOAD DEFLECTION AND CAMBER**

	SPAN A 0.6" Ø L.R. STRANDS	SPAN B 0.6" Ø L.R. STRANDS	SPAN C 0.6" Ø L.R. STRANDS
CAMBER (SLAB ALONE IN PLACE)	1 3/16" ↑	4 1/8" ↑	3/4" ↑
* DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD	1/8" ↓	1 1/16" ↓	1/16" ↓
FINAL CAMBER	1 1/16" ↑	3 7/16" ↑	1 1/16" ↑

\*\* INCLUDES FUTURE WEARING SURFACE

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

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
* B4	80	#5	STR	11'-3"	939
* B5	80	#5	STR	16'-6"	1377
* B6	80	#5	STR	10'-0"	834
* S7	272	#5	2	5'-6"	1560
* EPOXY COATED REINFORCING STEEL				4710 LBS.	
CLASS AA CONCRETE				28.1 CU. YDS.	
TOTAL LIN. FT. OF VERTICAL CONCRETE BARRIER RAIL				264.80 LIN. FT.	



FIXED (66 REQ'D.)

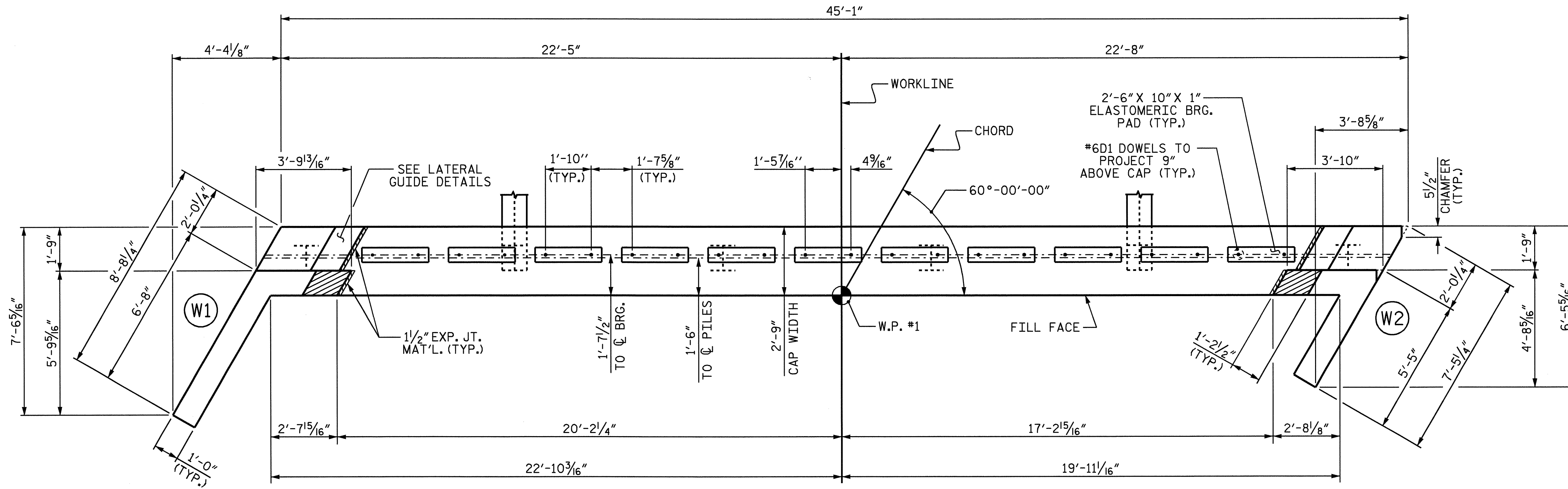
**ELASTOMERIC BEARING PADS**

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER

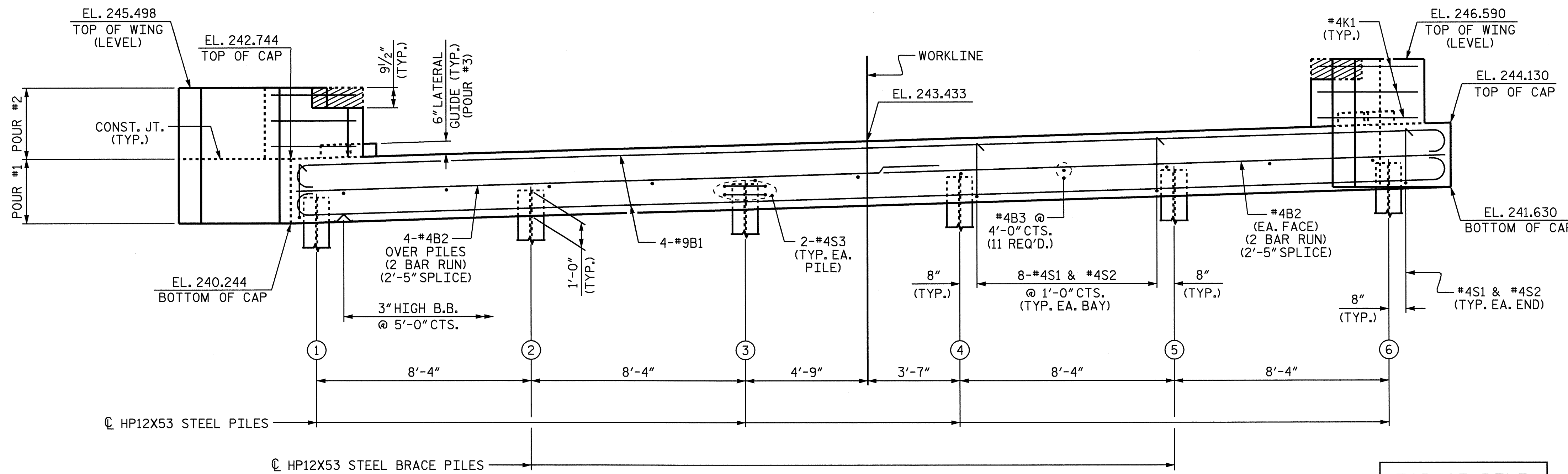
ASSEMBLED BY : J.P. ADAMS DATE : 7/15/08  
 CHECKED BY : M.K. BEARD DATE : 7/30/08  
 DRAWN BY : WJH 4/89 REV. 7/10/01 RWW/LES  
 CHECKED BY : FCJ 5/89 REV. 5/7/03RRR RWW/JTE  
 REV. 5/1/06 TLA/GM

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.  
 THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST.  
 THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

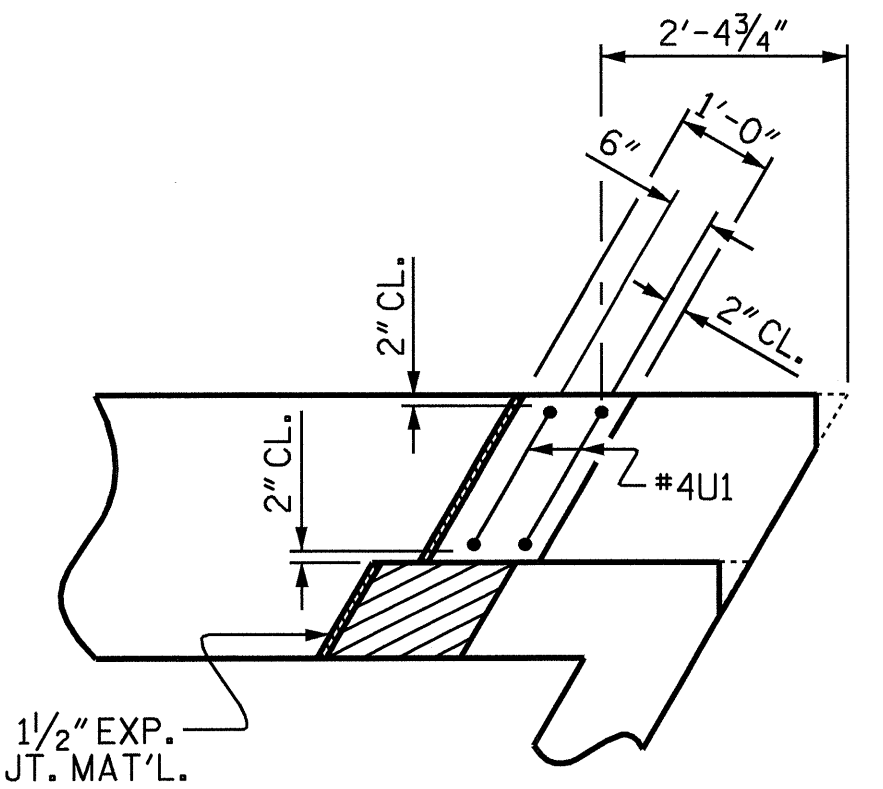


PLAN

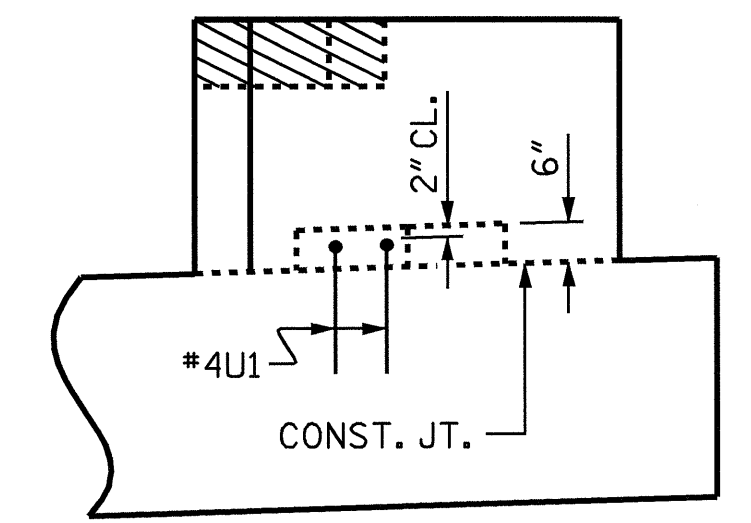


ELEVATION

TOP OF PILE ELEVATIONS	
PILE No.	ELEVATION
1	241.310
2	241.566
3	241.823
4	242.079
5	242.335
6	242.591



PLAN



ELEVATION

LATERAL GUIDE DETAILS

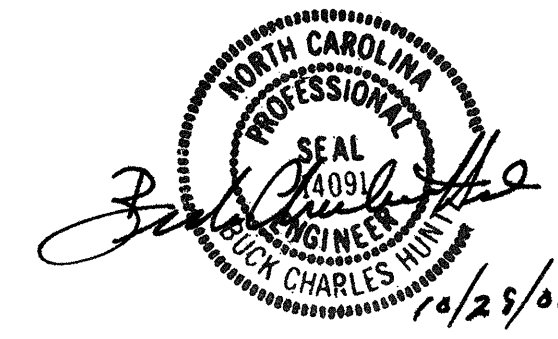
(SIMILAR EACH END)

PROJECT NO. B-4664  
 WARREN COUNTY  
 STATION: 15+31.00 -L-

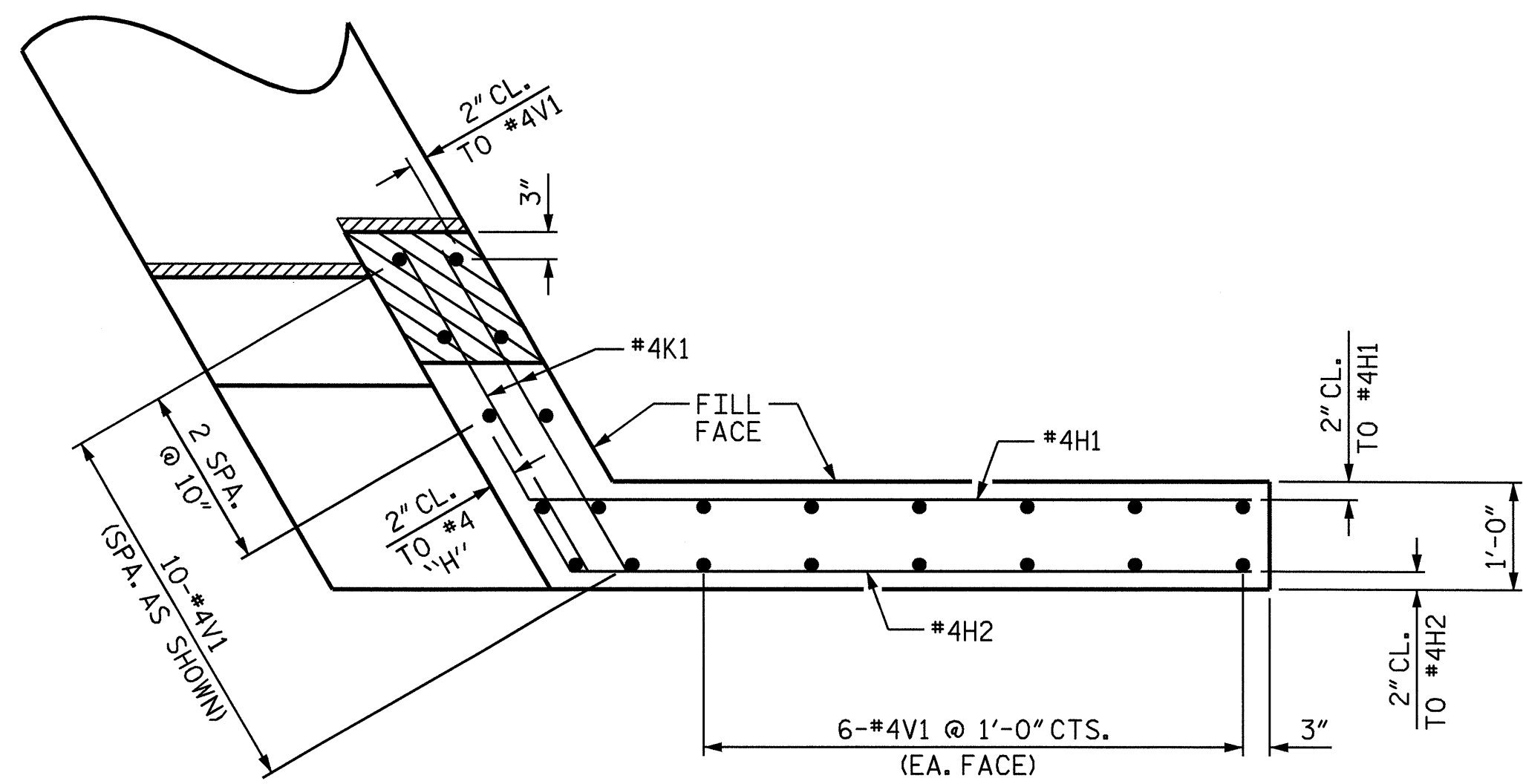
SHEET 1 OF 3

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

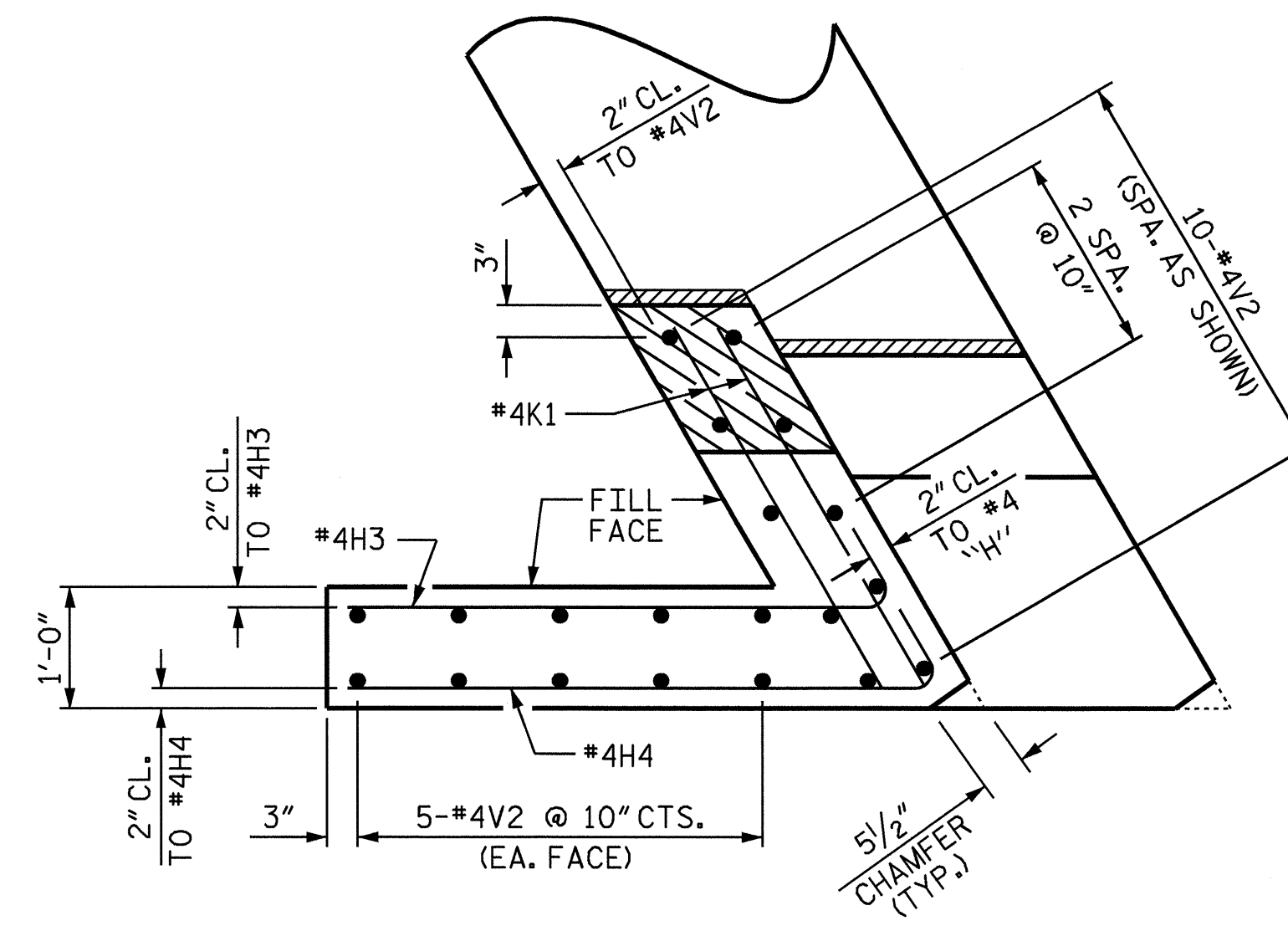
REVISIONS						SHEET NO. S-10 TOTAL SHEETS 22
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



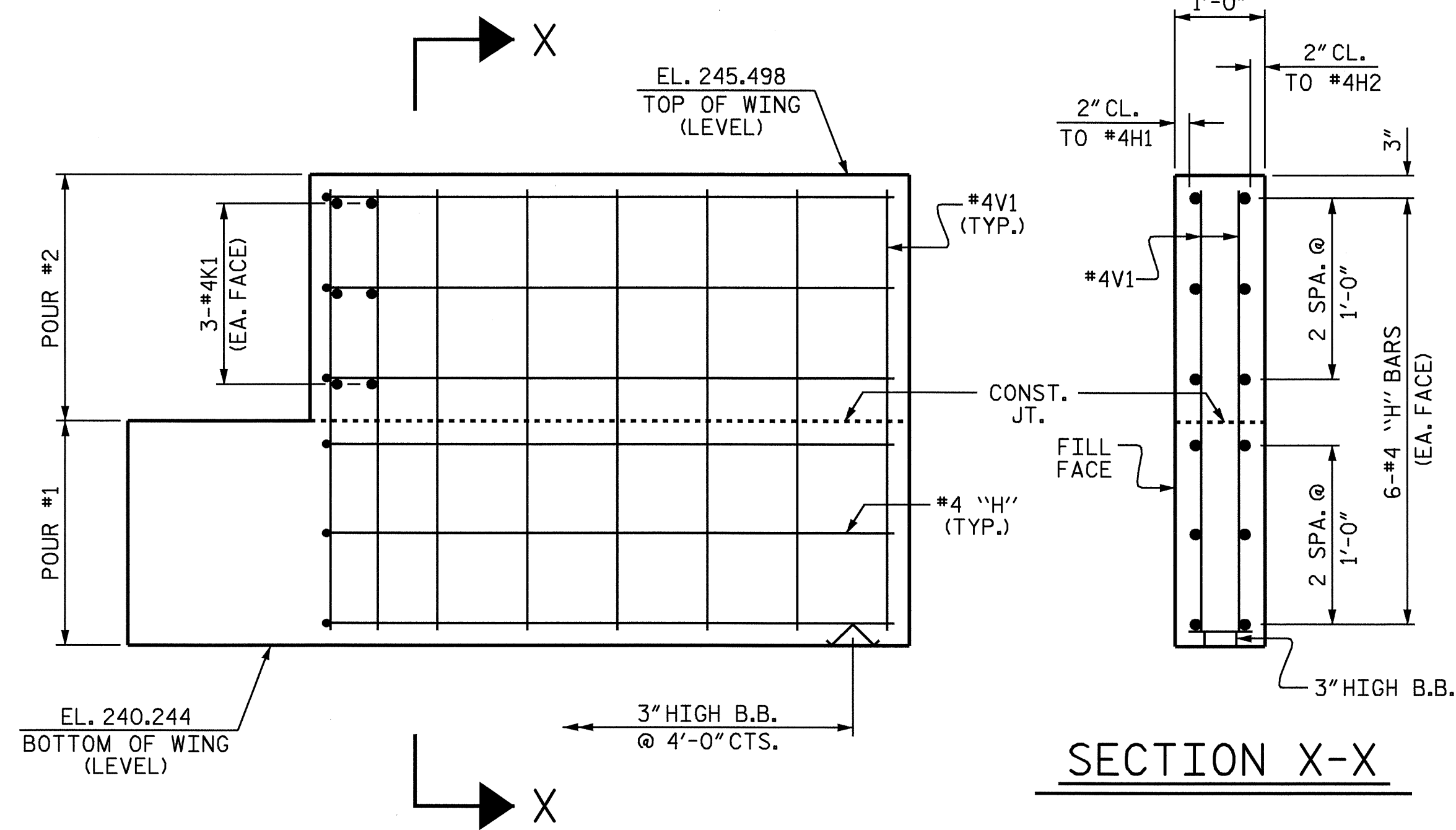
DRAWN BY: M.K. BEARD DATE: 6/19/08  
 CHECKED BY: J.P. ADAMS DATE: 7/22/08



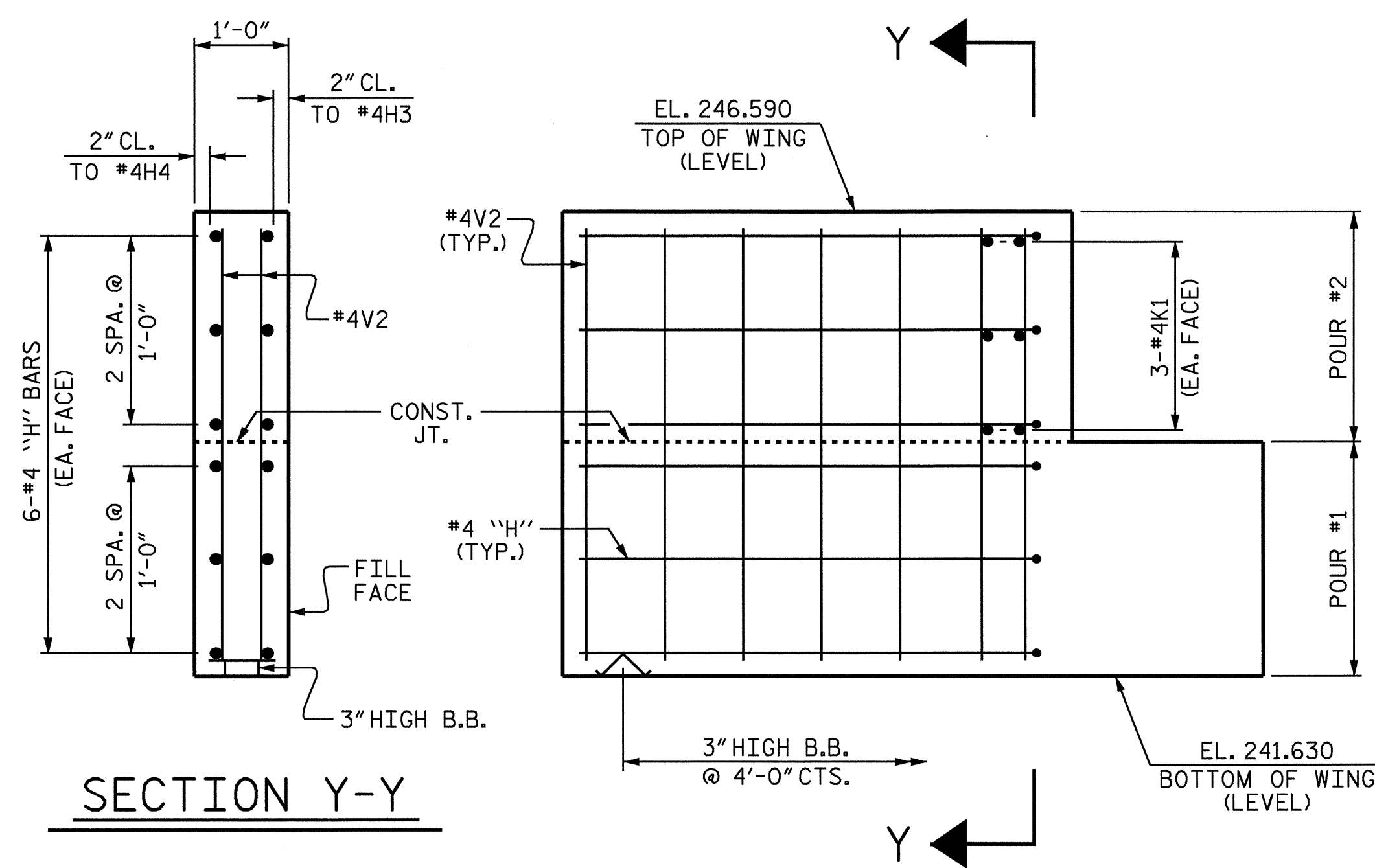
PLAN OF WING - W1



PLAN OF WING - W2



ELEVATION OF WING - W1



ELEVATION OF WING - W2

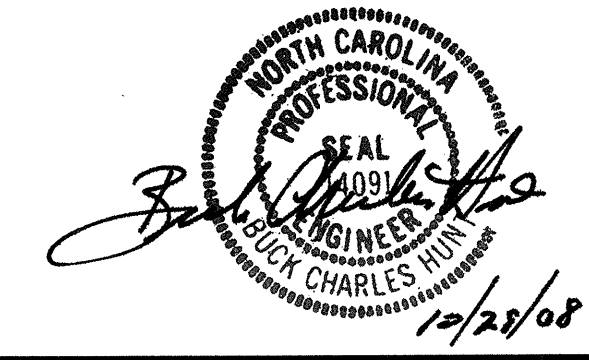
PROJECT NO. B-4664  
WARREN COUNTY  
 STATION: 15+31.00 -L-

SHEET 2 OF 3

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

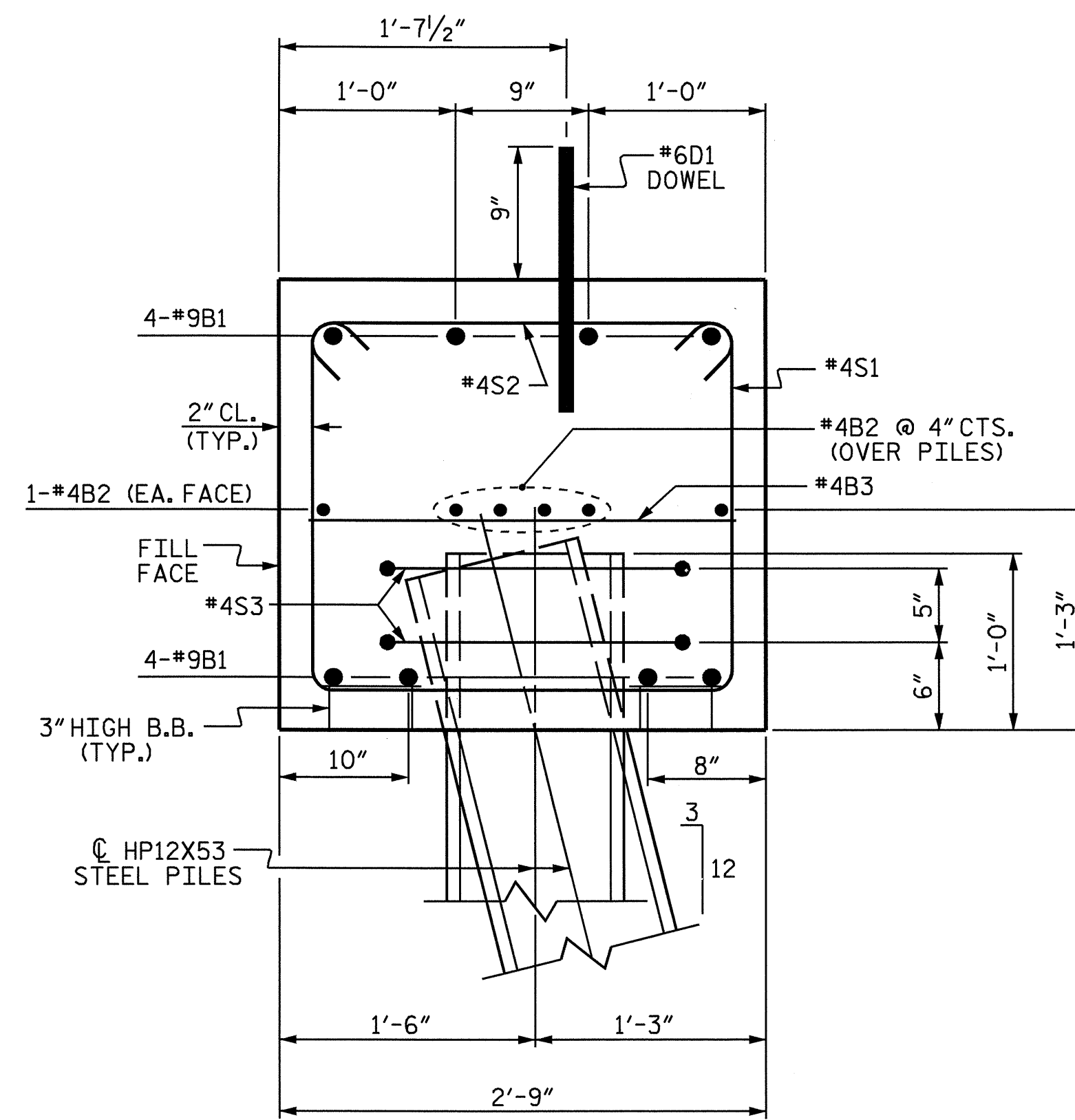
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-11  
 TOTAL SHEETS 22

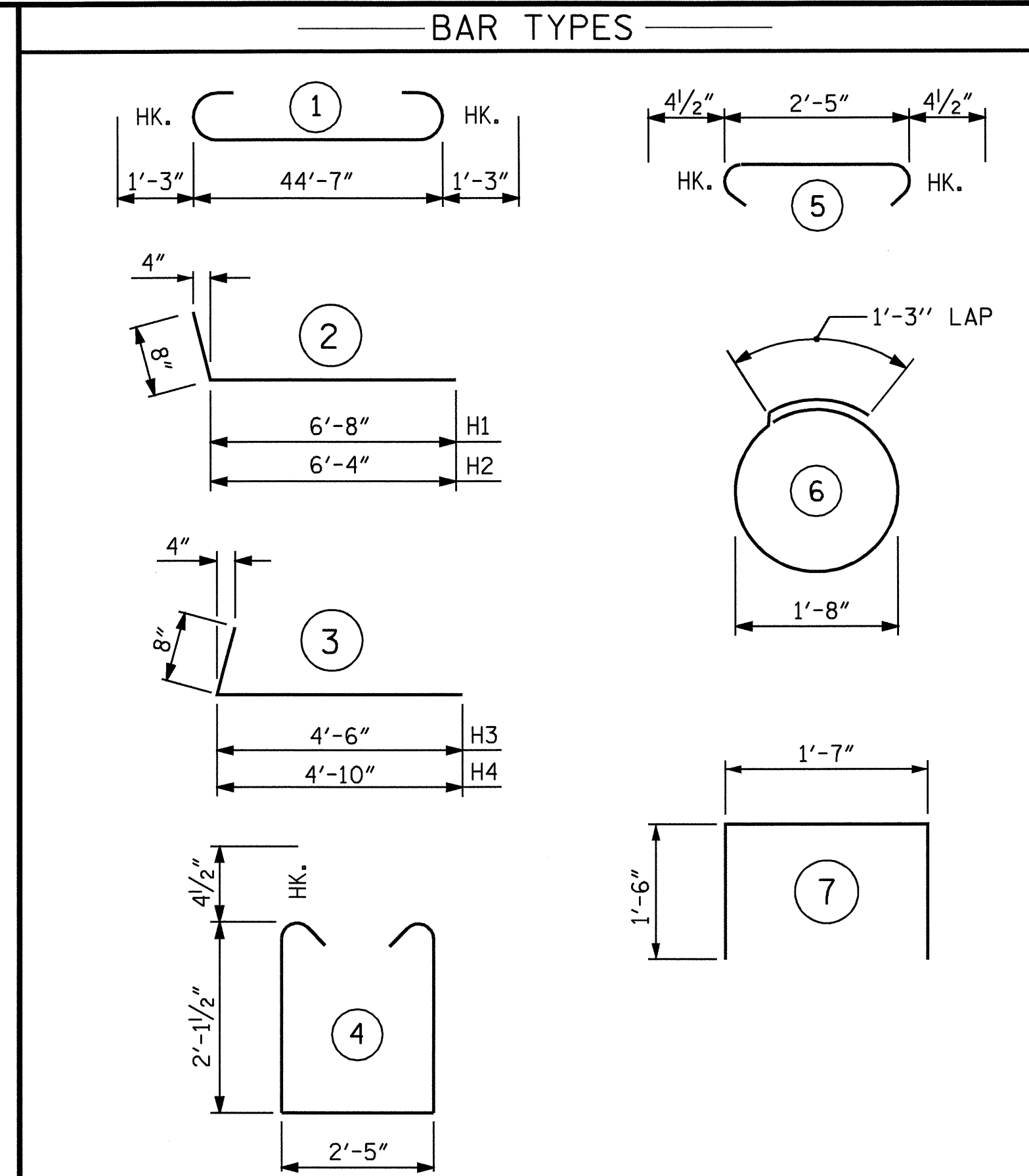


DRAWN BY: M.K. BEARD DATE: 6/20/08  
 CHECKED BY: J.P. ADAMS DATE: 7/22/08

26-AUG-2008 10:47  
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 Klayne

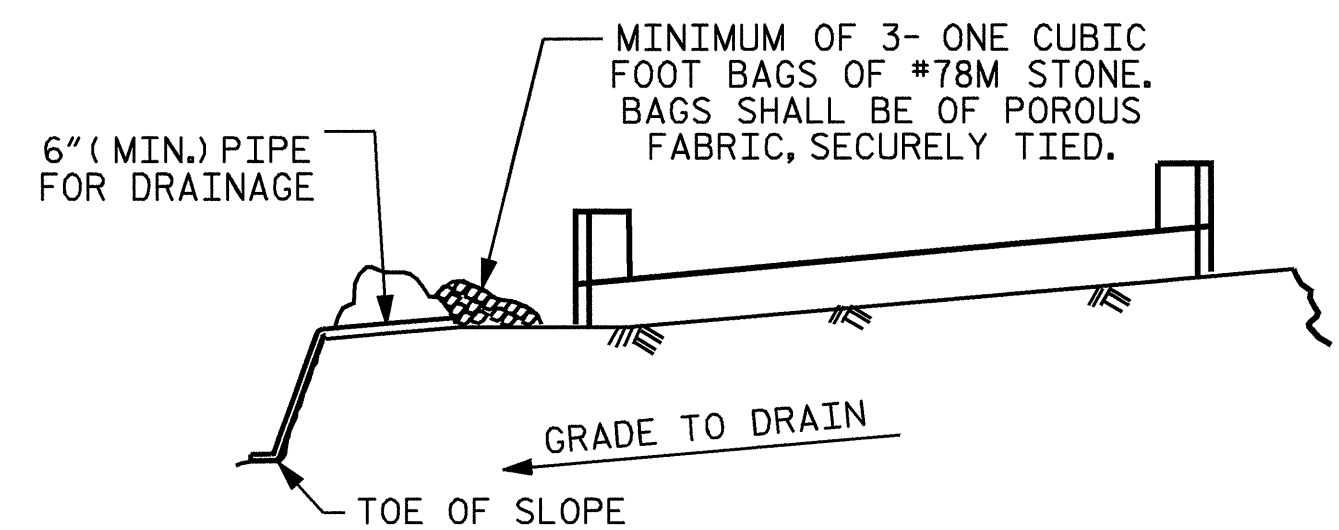


**SECTION THRU CAP**



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	47'-1"	1281
B2	12	#4	STR	23'-7"	189
B3	11	#4	STR	2'-5"	18
D1	22	#6	STR	1'-6"	50
H1	6	#4	2	7'-4"	29
H2	6	#4	2	7'-0"	28
H3	6	#4	3	5'-2"	21
H4	6	#4	3	5'-6"	22
K1	12	#4	STR	3'-5"	27
S1	42	#4	4	7'-5"	208
S2	42	#4	5	3'-2"	89
S3	12	#4	6	6'-6"	52
U1	4	#4	7	4'-7"	12
V1	22	#4	STR	4'-11"	72
V2	20	#4	STR	4'-7"	61
REINFORCING STEEL					Lbs. 2159
CLASS "A" CONCRETE					
POUR #1 CAP & LOWER PART OF WINGS					CU.YDS. 12.4
POUR #2 UPPER WINGS					CU.YDS. 1.7
POUR #3 LATERAL GUIDES					CU.YDS. 0.1
TOTAL					CU.YDS. 14.2
HP12x53 STEEL PILES					LIN. FT. 300
No. 6					



MINIMUM OF 3- ONE CUBIC FOOT BAGS OF #78M STONE. BAGS SHALL BE OF POROUS FABRIC, SECURELY TIED.

6" (MIN.) PIPE FOR DRAINAGE

GRADE TO DRAIN

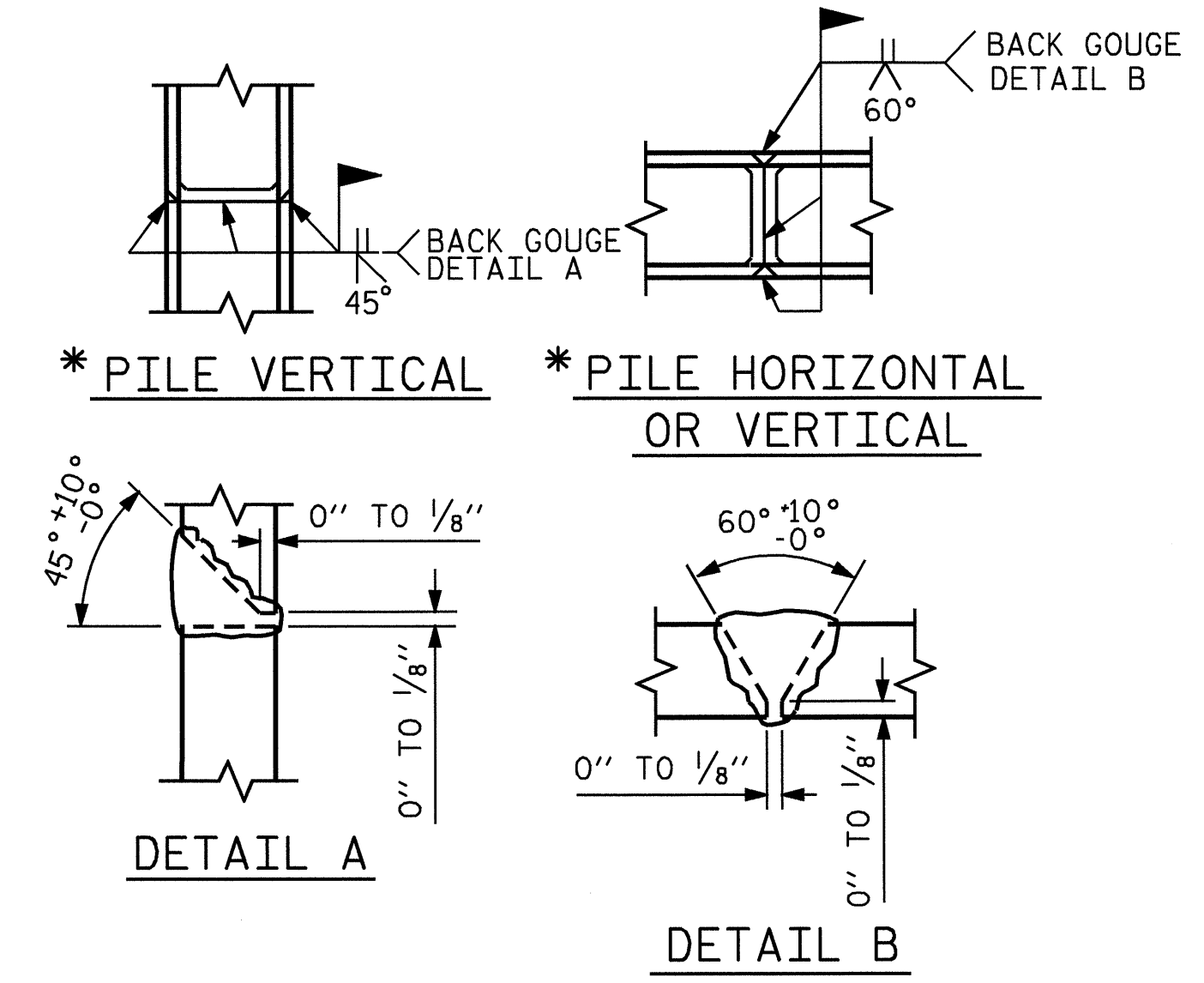
TOE OF SLOPE

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**



\* POSITION OF PILE DURING WELDING.

**PILE SPLICE DETAILS**

PROJECT NO. B-4664

WARREN COUNTY

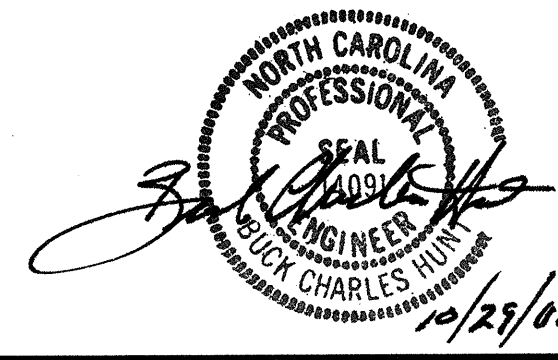
STATION: 15+31.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

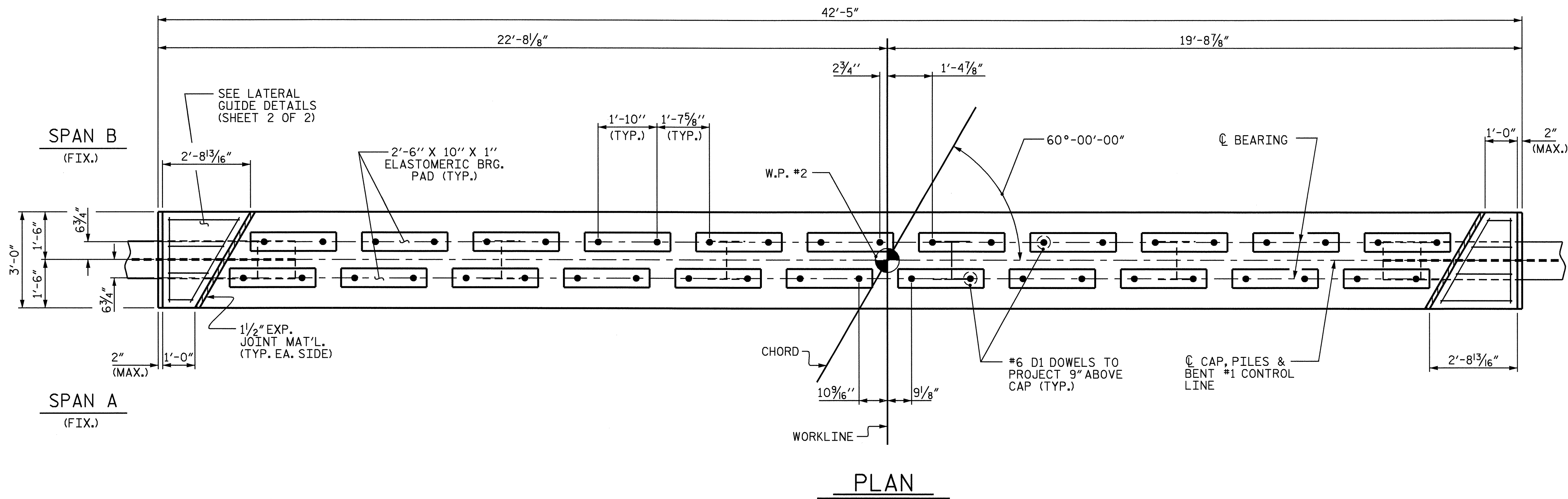
SUBSTRUCTURE  
END BENT #1

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



DRAWN BY: M.K. BEARD DATE: 6/20/08

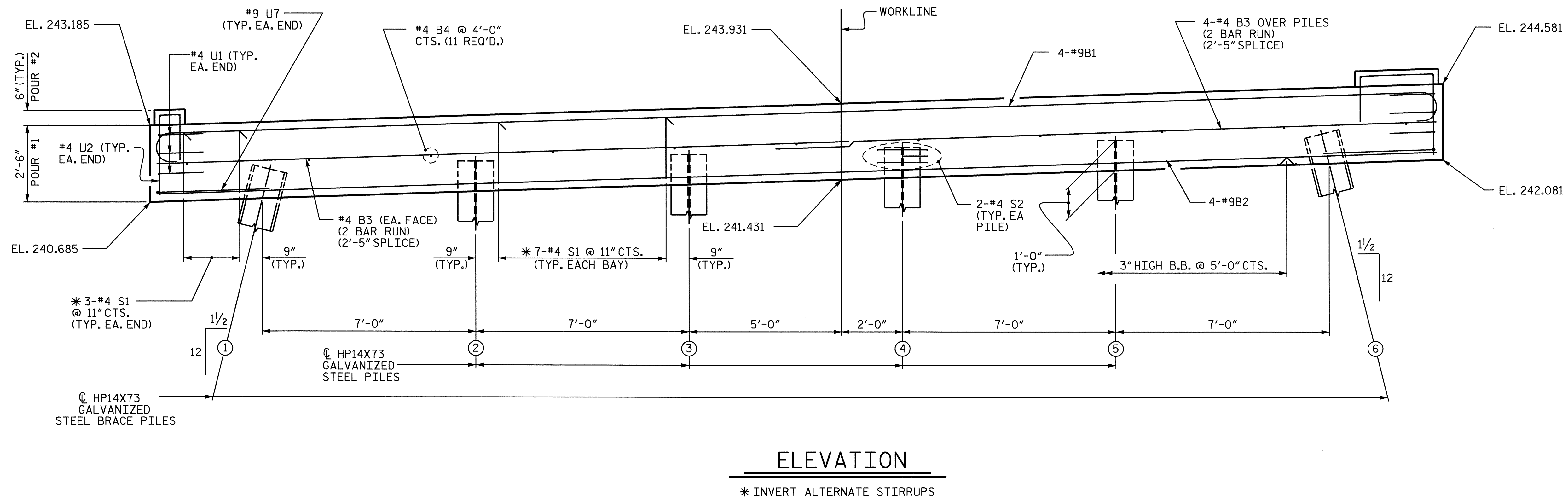
CHECKED BY: J.P. ADAMS DATE: 7/22/08



NOTES

STIRRUPS IN CAP MAYBE SHIFTED AS NECESSARY TO CLEAR #6 DOWELS.

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



TOP OF PILE ELEVATIONS	
PILE NO.	ELEVATION
1	241.806
2	242.036
3	242.267
4	242.497
5	242.728
6	242.958

PROJECT NO. B-4664  
 WARREN COUNTY  
 STATION: 15+31.00 -L-

SHEET 1 OF 2

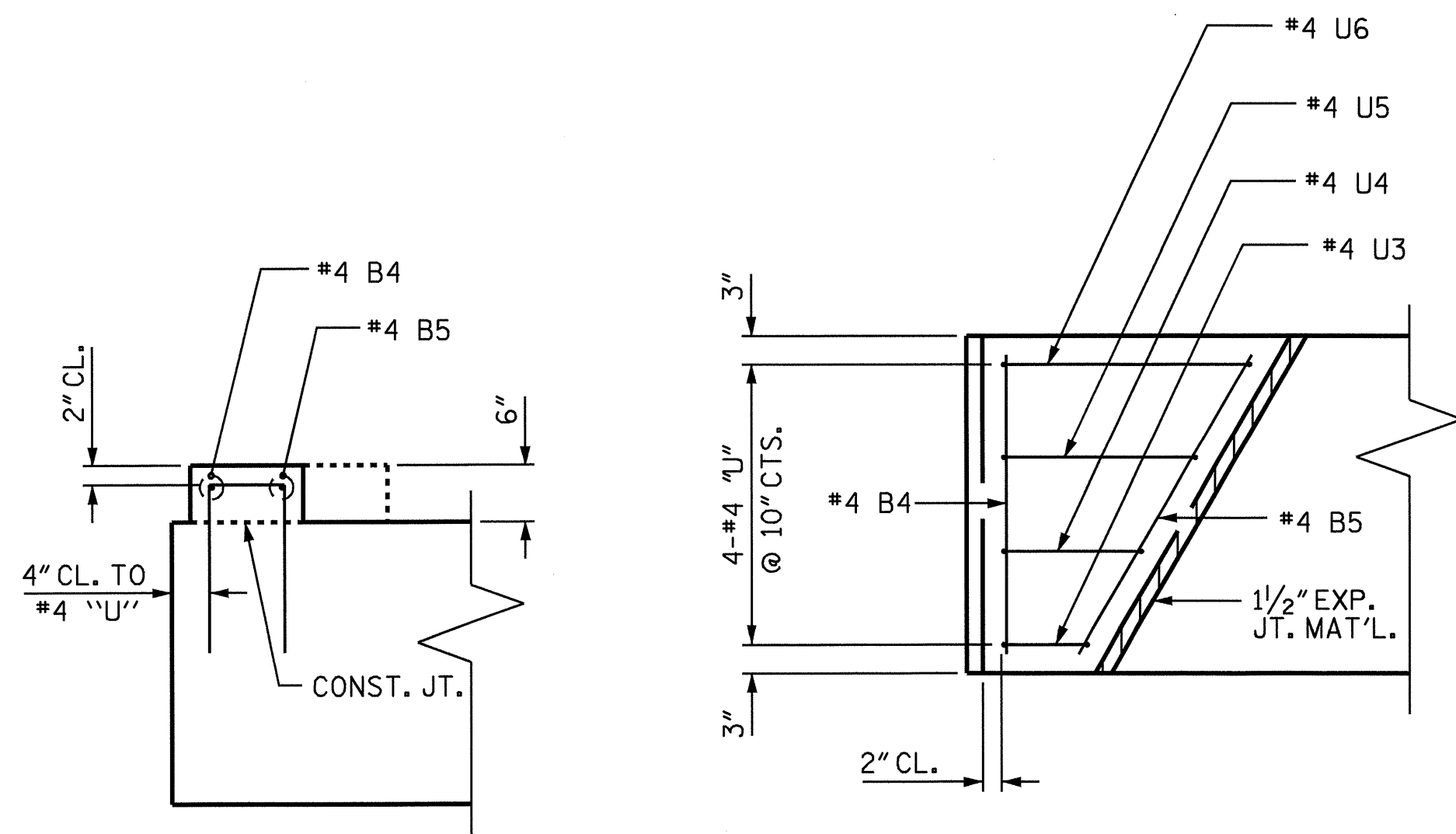
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT #1



DRAWN BY: H.A. LOCKLEAR DATE: 6-11-08  
 CHECKED BY: J.P. ADAMS DATE: 6-16-08

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

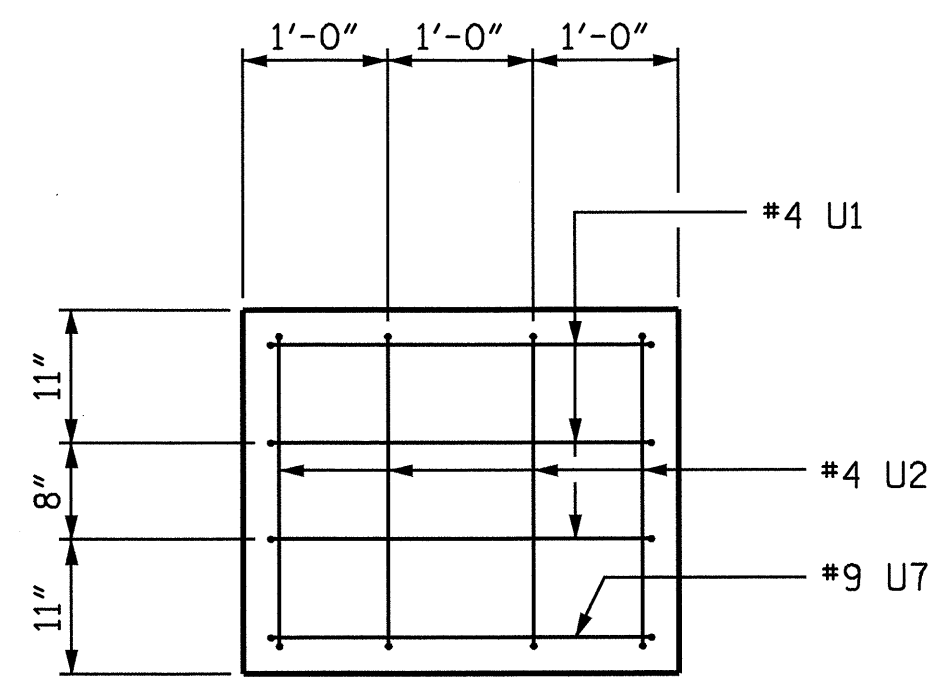


ELEVATION

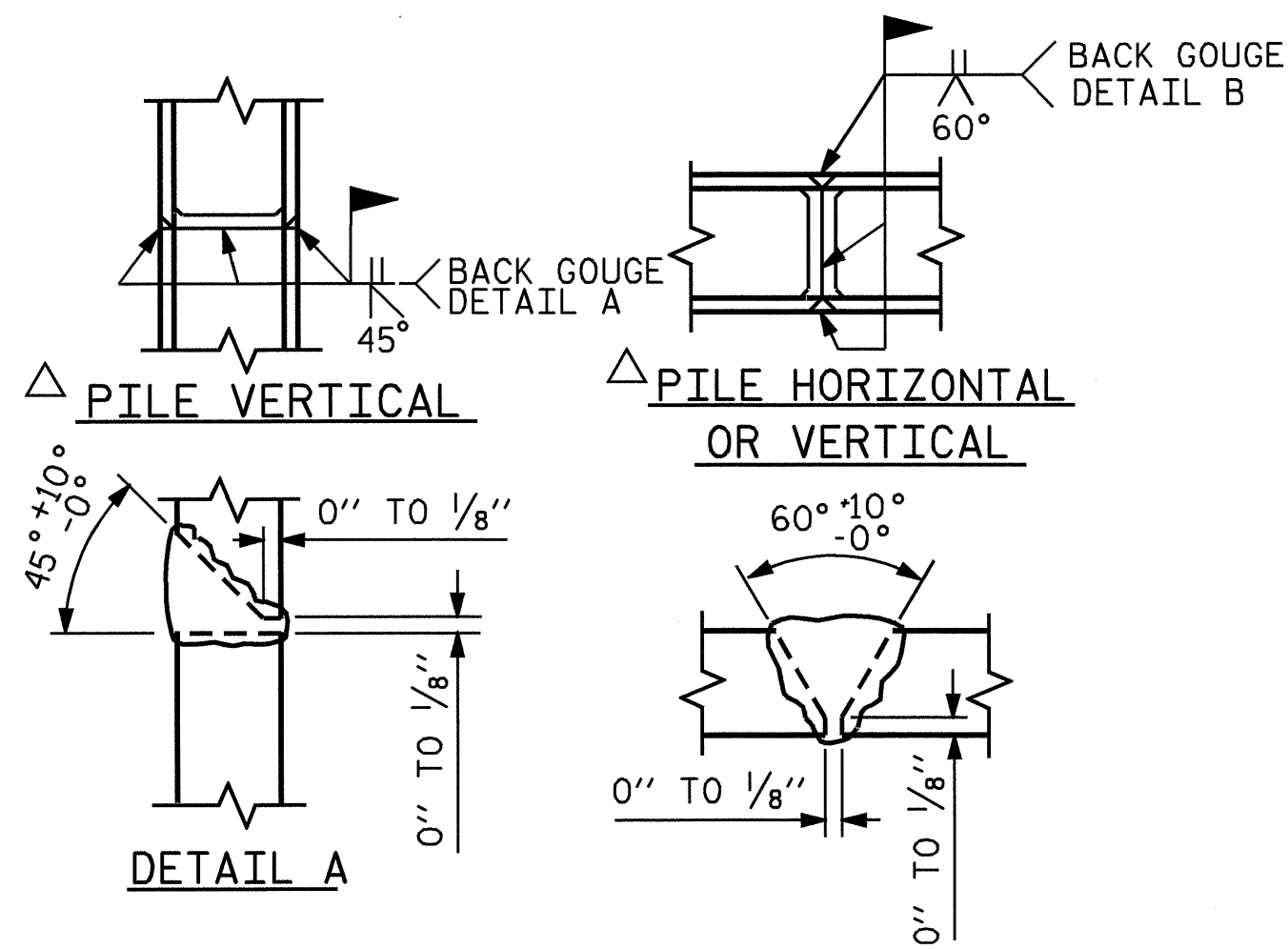
PLAN

LATERAL GUIDE DETAILS

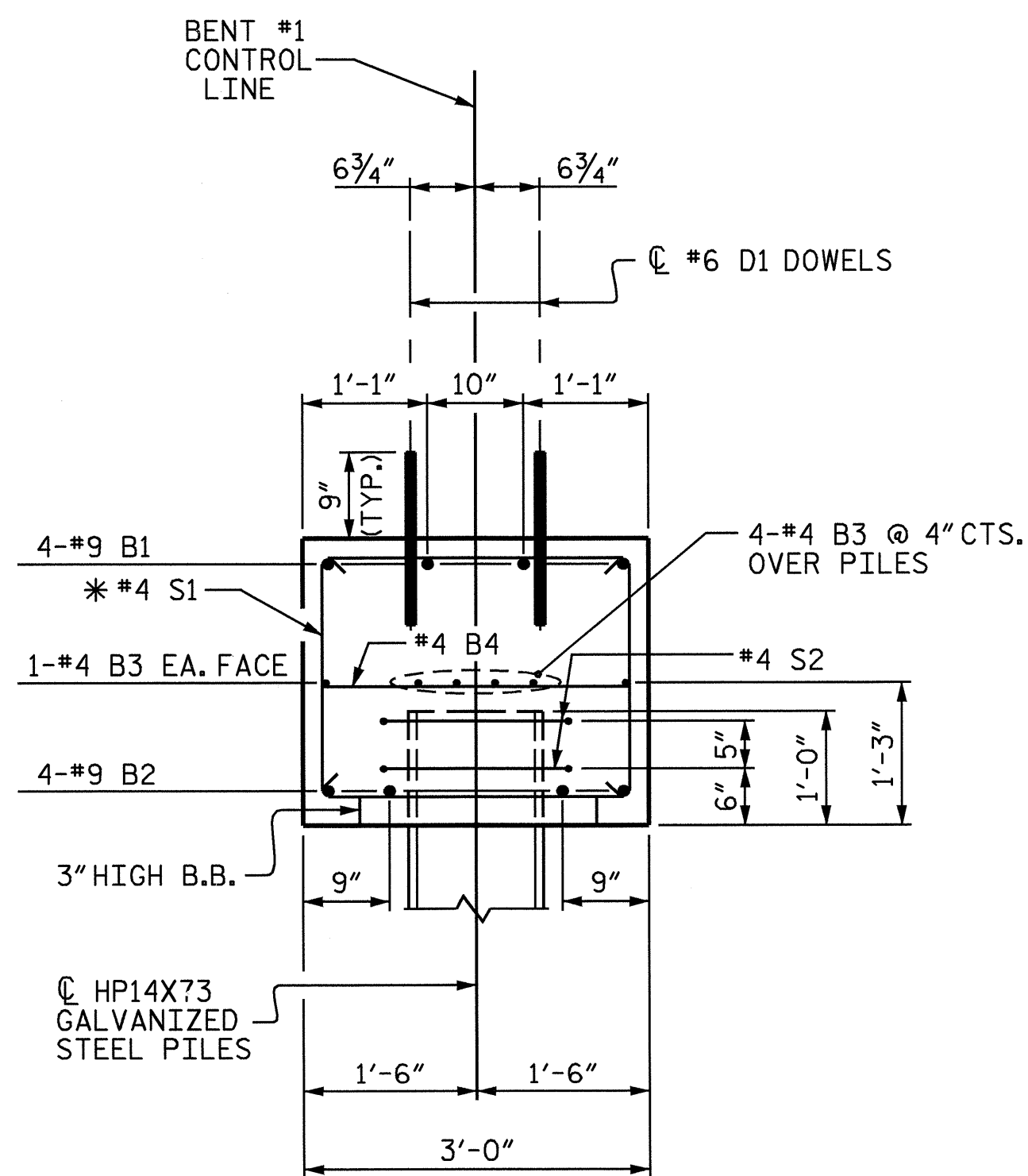
(EACH END SIMILAR)



END VIEW

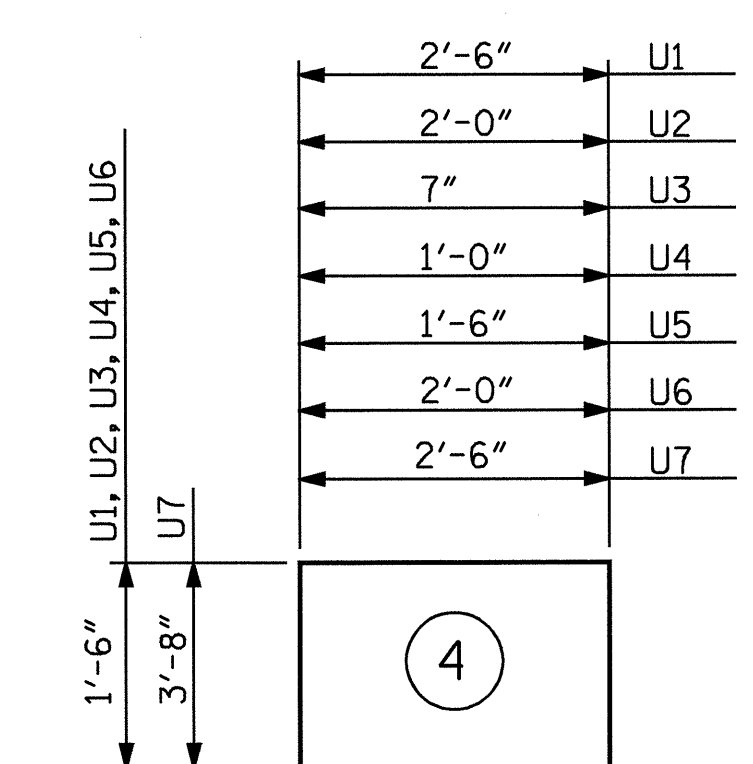
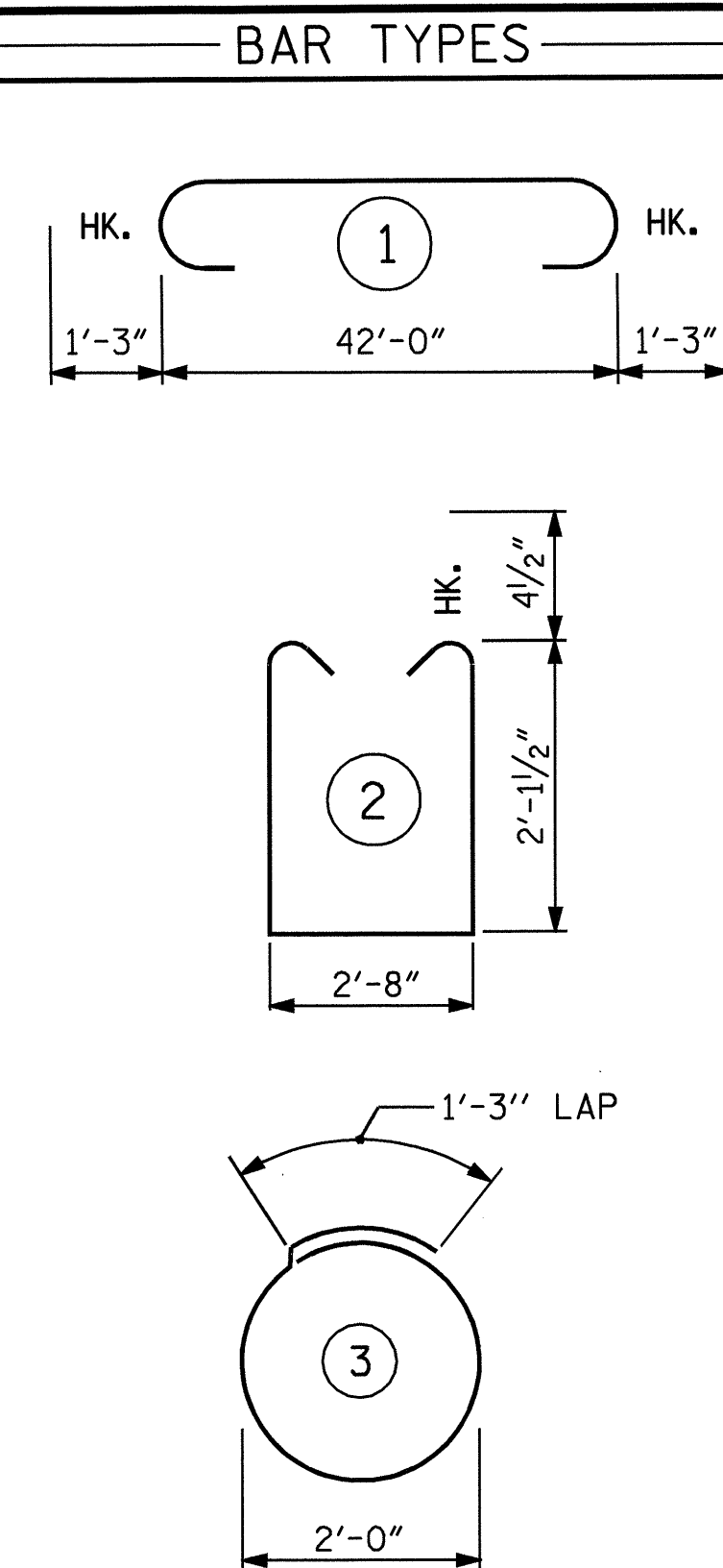


PILE SPLICING DETAILS  
POSITION OF PILE DURING WELDING.



SECTION THRU CAP

\* INVERT ALTERNATE STIRRUPS



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL BENT #1

BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#9	1	44'-6"	605
B2	4	#9	STR	42'-1"	572
B3	12	#4	STR	22'-3"	178
B4	13	#4	STR	2'-8"	23
B5	2	#4	STR	3'-0"	4
D1	44	#6	STR	1'-6"	99
S1	41	#4	2	7'-8"	210
S2	12	#4	3	7'-7"	61
U1	6	#4	4	5'-6"	22
U2	8	#4	4	5'-0"	27
U3	2	#4	4	3'-7"	5
U4	2	#4	4	4'-0"	5
U5	2	#4	4	4'-6"	6
U6	2	#4	4	5'-0"	7
U7	2	#9	4	9'-10"	67

REINFORCING STEEL 1891 LBS.

CLASS "A" CONCRETE BREAKDOWN

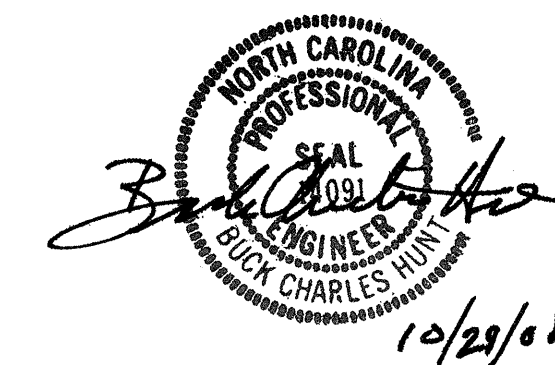
POUR #1 CAP	11.8 CU. YDS.
POUR #2 LATERAL GUIDES	0.2 CU. YDS.
TOTAL	12.0 CU. YDS.

HP14X73 GALVANIZED STEEL PILES  
No. 6 330 LIN. FT.

PROJECT NO. B-4664  
WARREN COUNTY  
STATION: 15+31.00 -L-

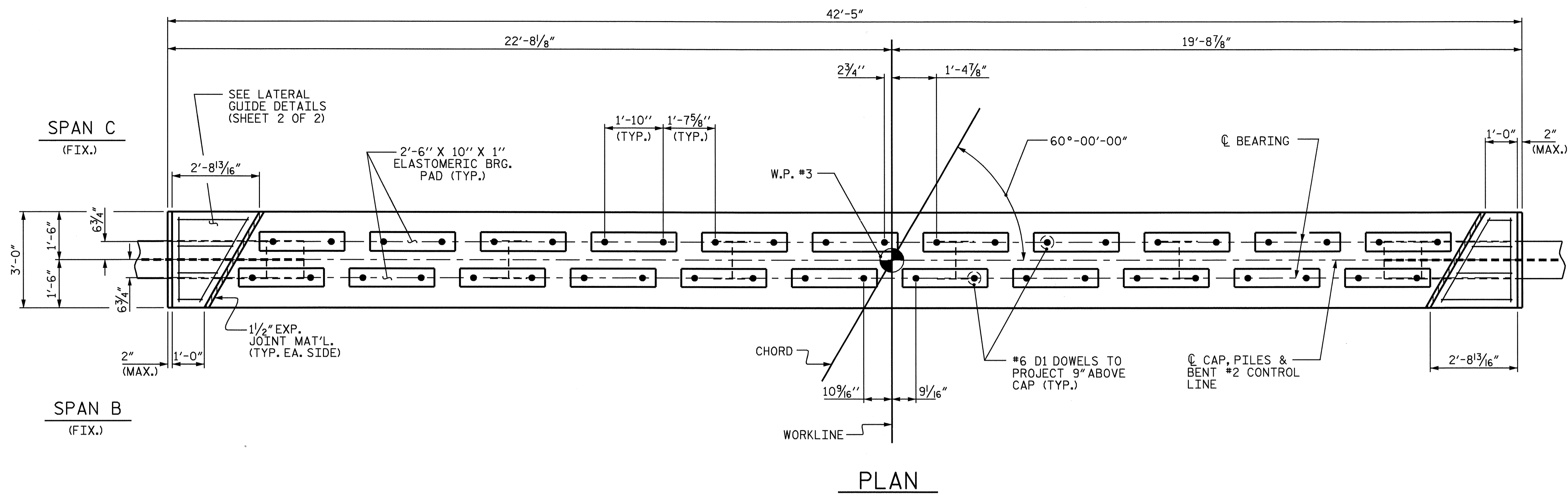
SHEET 2 OF 2

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



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			22

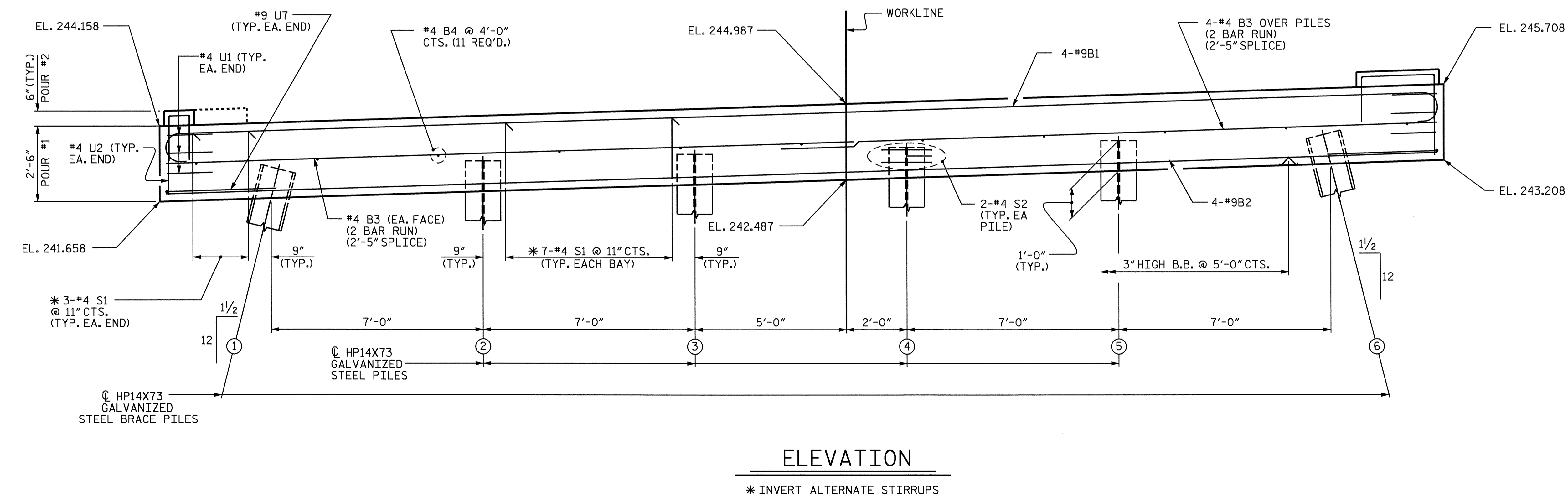
DRAWN BY: H.A. LOCKLEAR DATE: 6-11-08  
CHECKED BY: J.P. ADAMS DATE: 6-16-08



NOTES

STIRRUPS IN CAP MAYBE SHIFTED AS NECESSARY TO CLEAR #6 DOWELS.

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



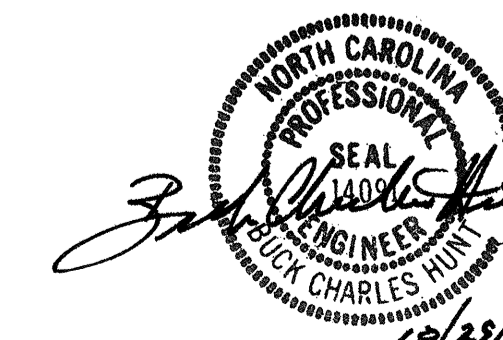
TOP OF PILE ELEVATIONS	
PILE NO.	ELEVATION
1	242.792
2	243.048
3	243.304
4	243.560
5	243.816
6	244.071

PROJECT NO. B-4664  
 WARREN COUNTY  
 STATION: 15+31.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

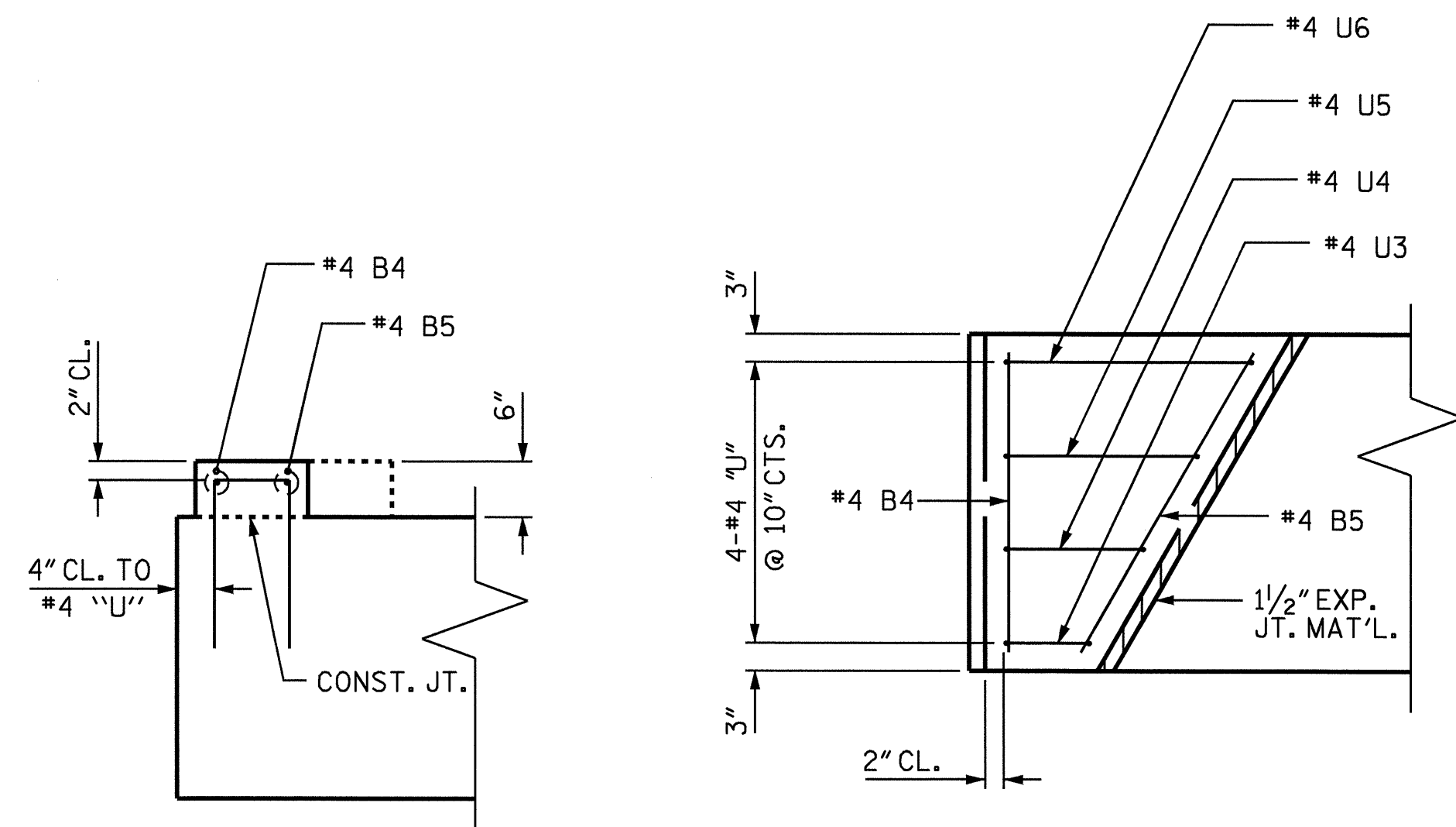
SUBSTRUCTURE  
 BENT #2



DRAWN BY: H.A. LOCKLEAR DATE: 6-11-08  
 CHECKED BY: J.P. ADAMS DATE: 6-16-08

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



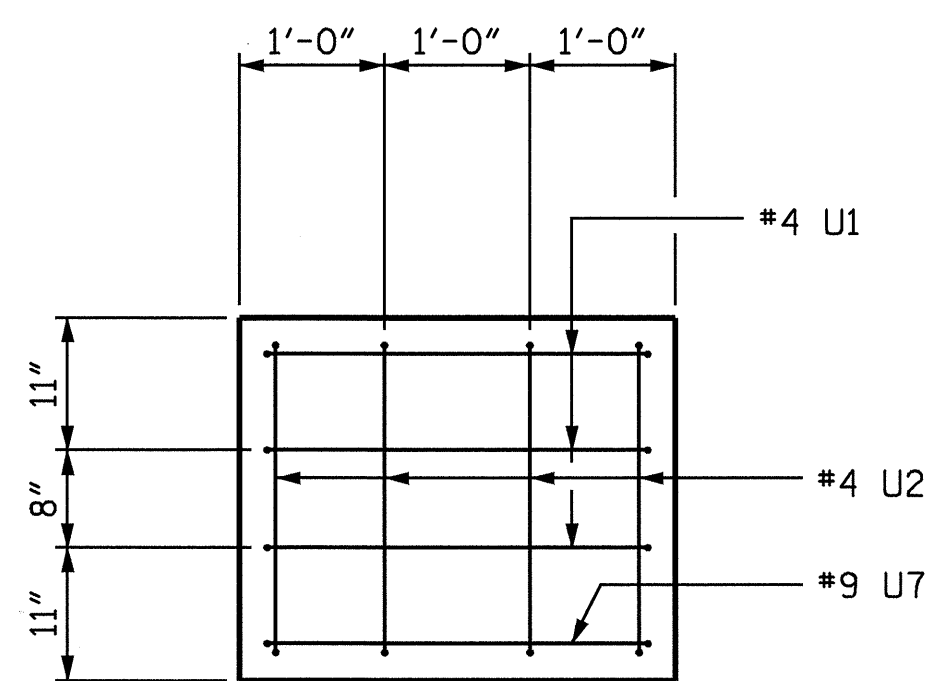


ELEVATION

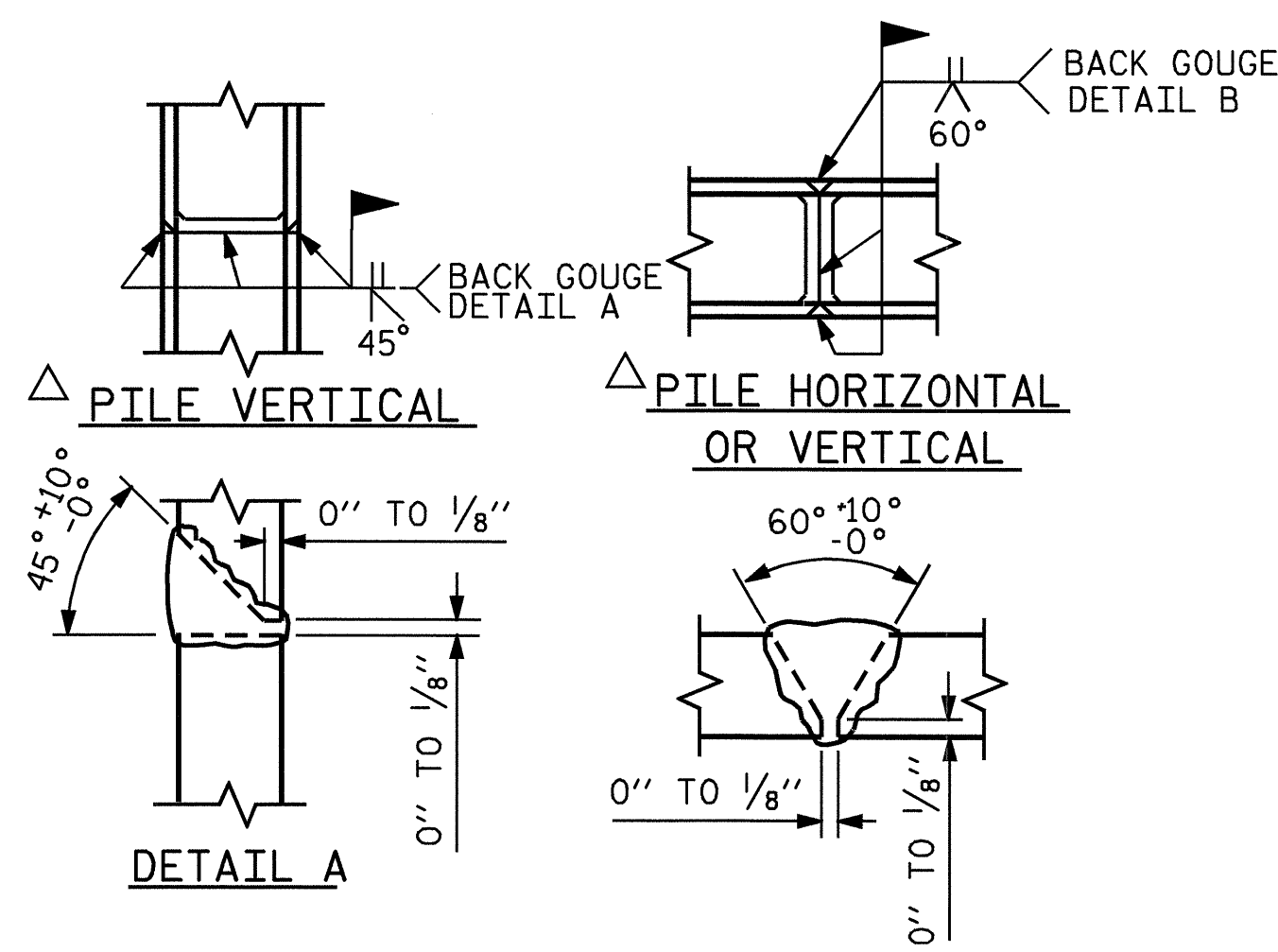
PLAN

LATERAL GUIDE DETAILS

(EACH END SIMILAR)

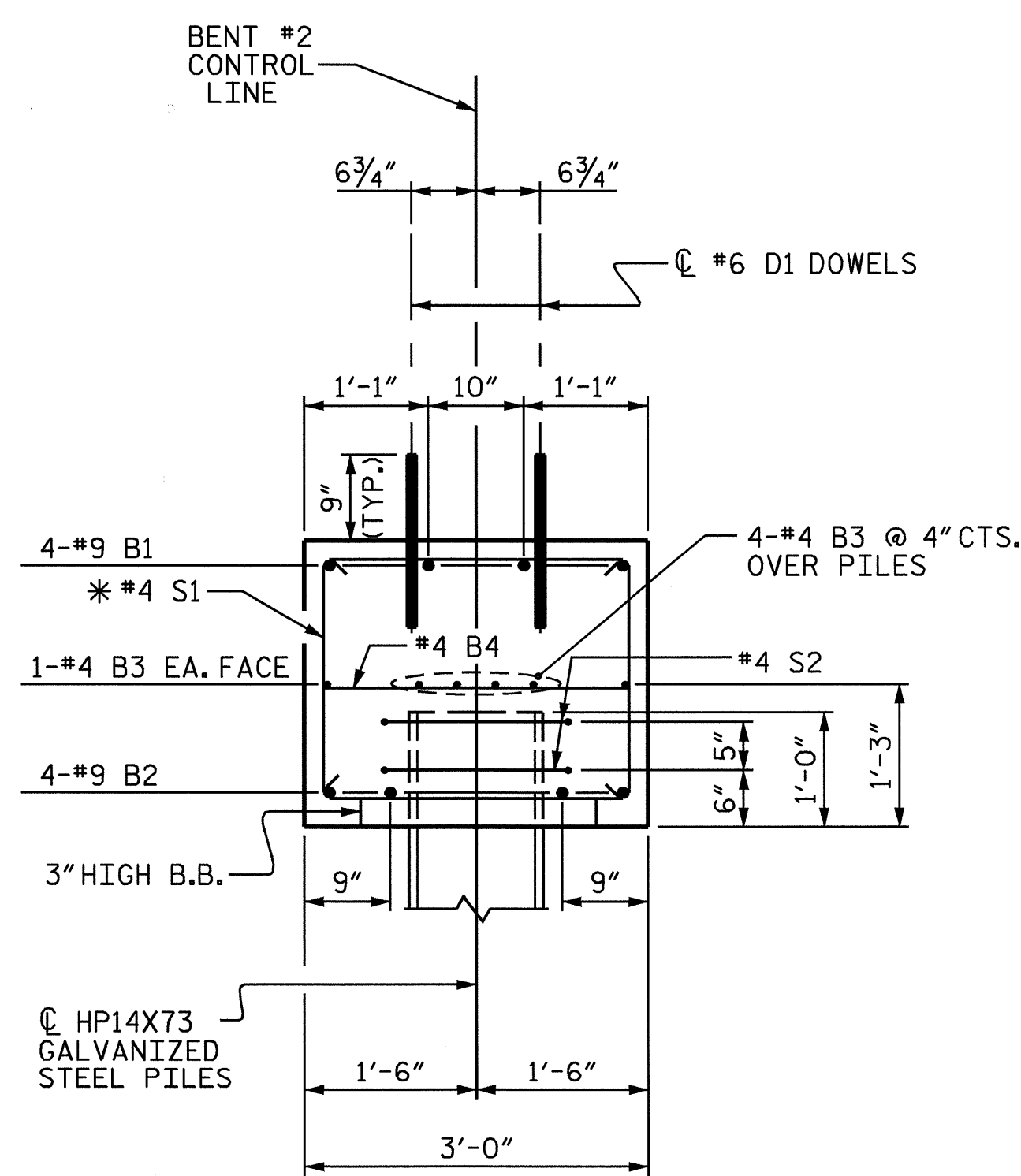


END VIEW



POSITION OF PILE DURING WELDING. DETAIL B

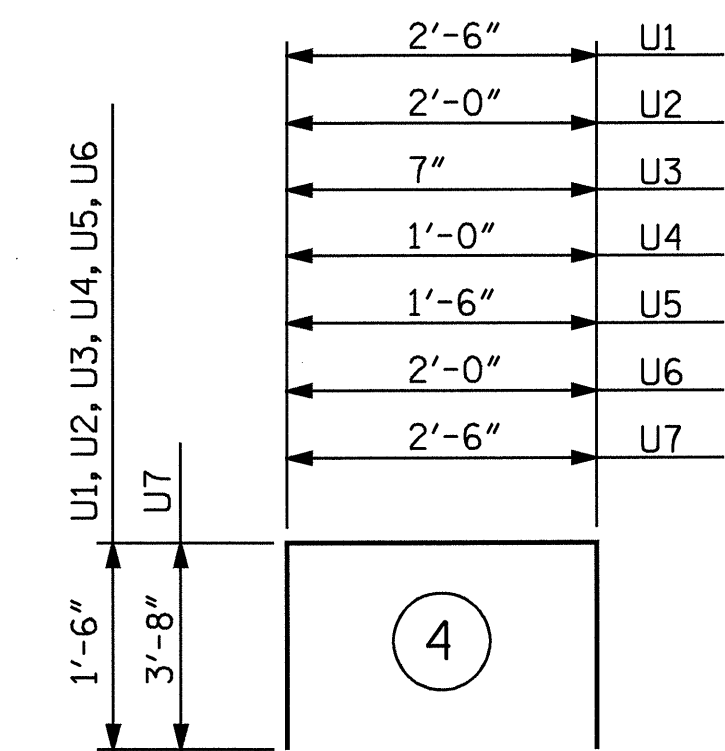
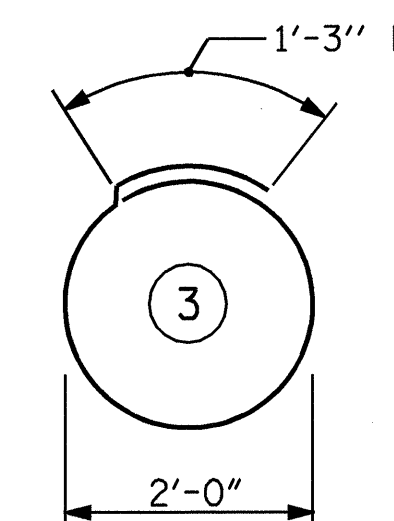
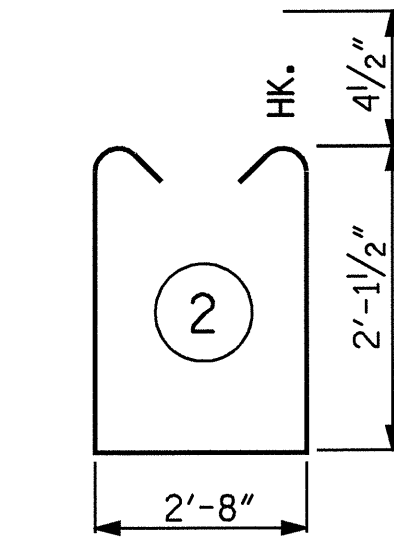
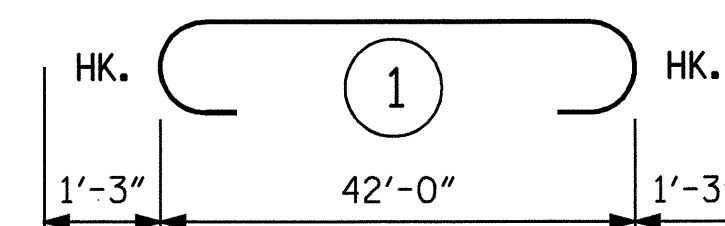
PILE SPLICE DETAILS



SECTION THRU CAP

\* INVERT ALTERNATE STIRRUPS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL BENT #2

BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#9	1	44'-6"	605
B2	4	#9	STR	42'-1"	572
B3	12	#4	STR	22'-3"	178
B4	13	#4	STR	2'-8"	23
B5	2	#4	STR	3'-0"	4
D1	44	#6	STR	1'-6"	99
S1	41	#4	2	7'-8"	210
S2	12	#4	3	7'-7"	61
U1	6	#4	4	5'-6"	22
U2	8	#4	4	5'-0"	27
U3	2	#4	4	3'-7"	5
U4	2	#4	4	4'-0"	5
U5	2	#4	4	4'-6"	6
U6	2	#4	4	5'-0"	7
U7	2	#9	4	9'-10"	67

REINFORCING STEEL 1891 LBS.

CLASS "A" CONCRETE BREAKDOWN

POUR #1 CAP	11.8 CU. YDS.
POUR #2 LATERAL GUIDES	0.2 CU. YDS.
TOTAL	12.0 CU. YDS.

HP14X73 GALVANIZED STEEL PILES  
No. 6 345 LIN. FT.

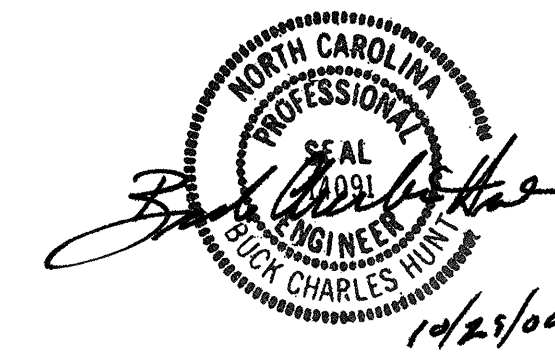
PROJECT NO. B-4664  
WARREN COUNTY  
STATION: 15+31.00 -L-

SHEET 2 OF 2

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

REVISIONS

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



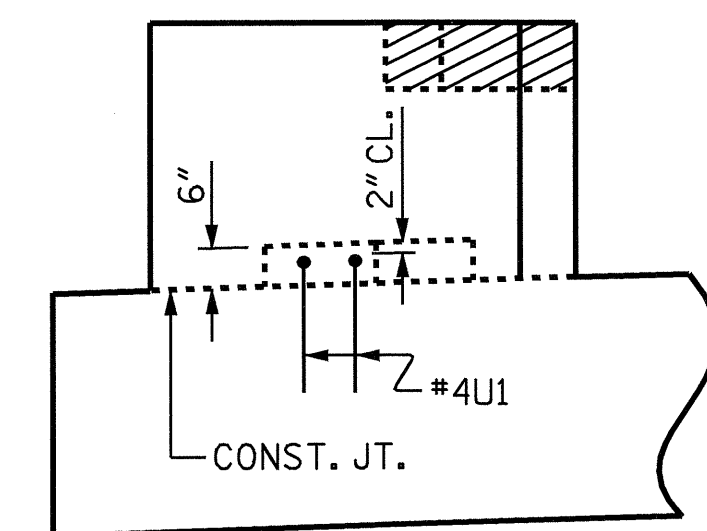
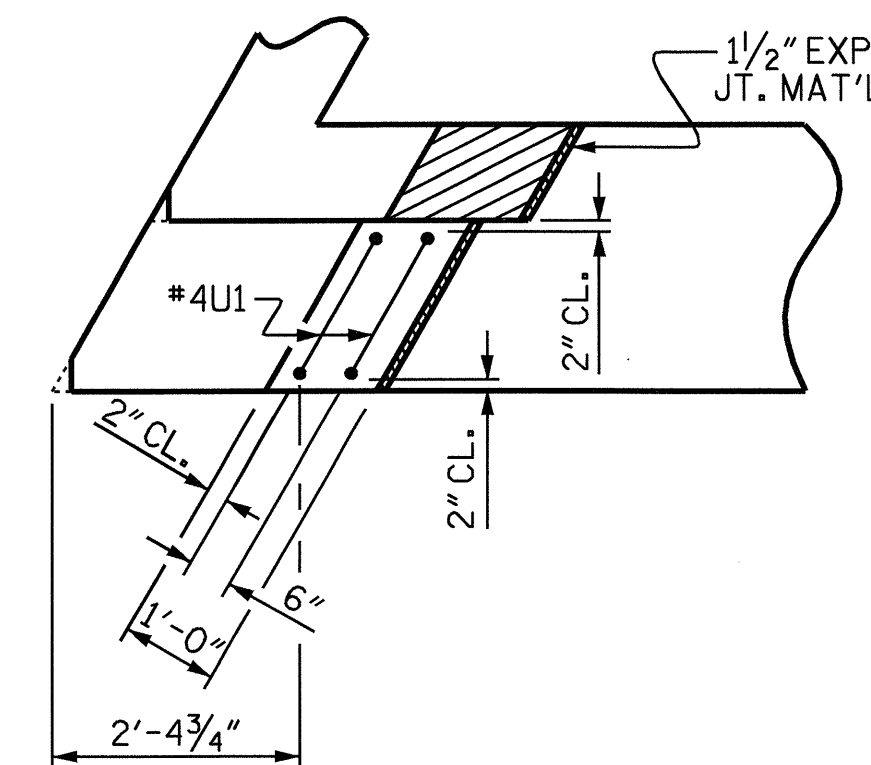
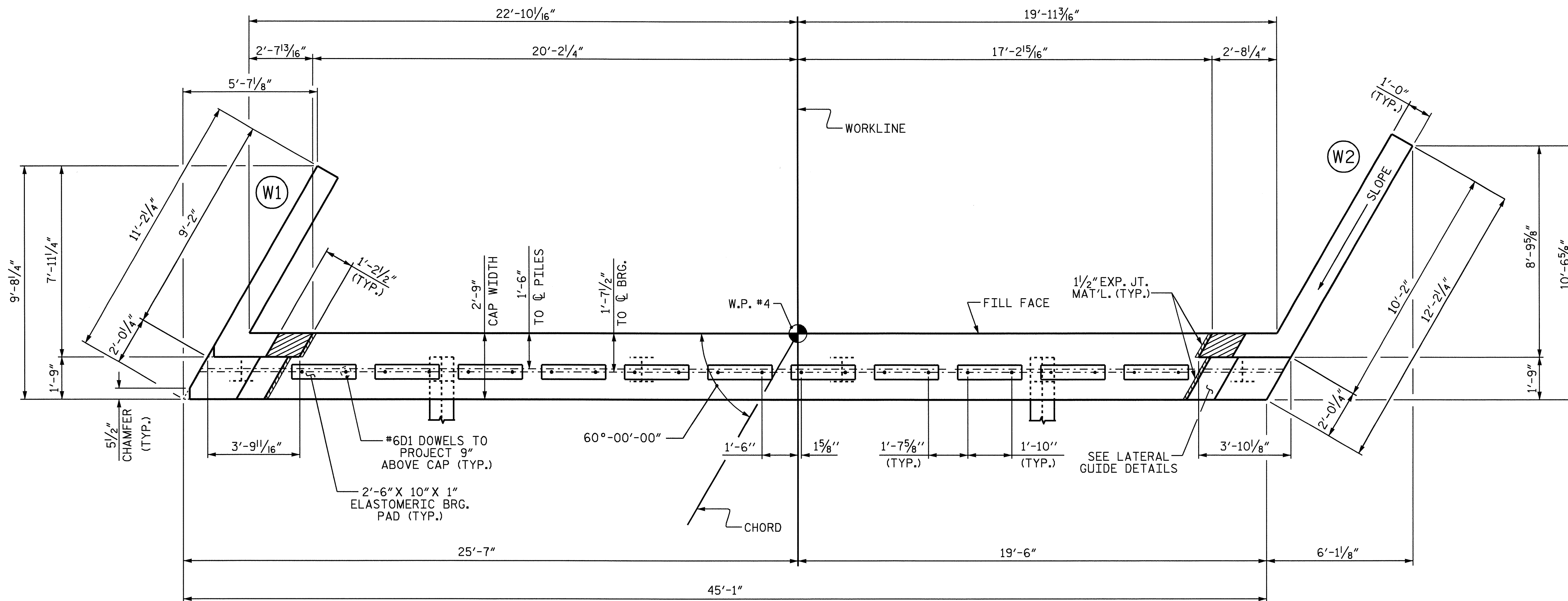
DRAWN BY: H.A. LOCKLEAR DATE: 6-11-08  
CHECKED BY: J.P. ADAMS DATE: 6-16-08

**NOTES**

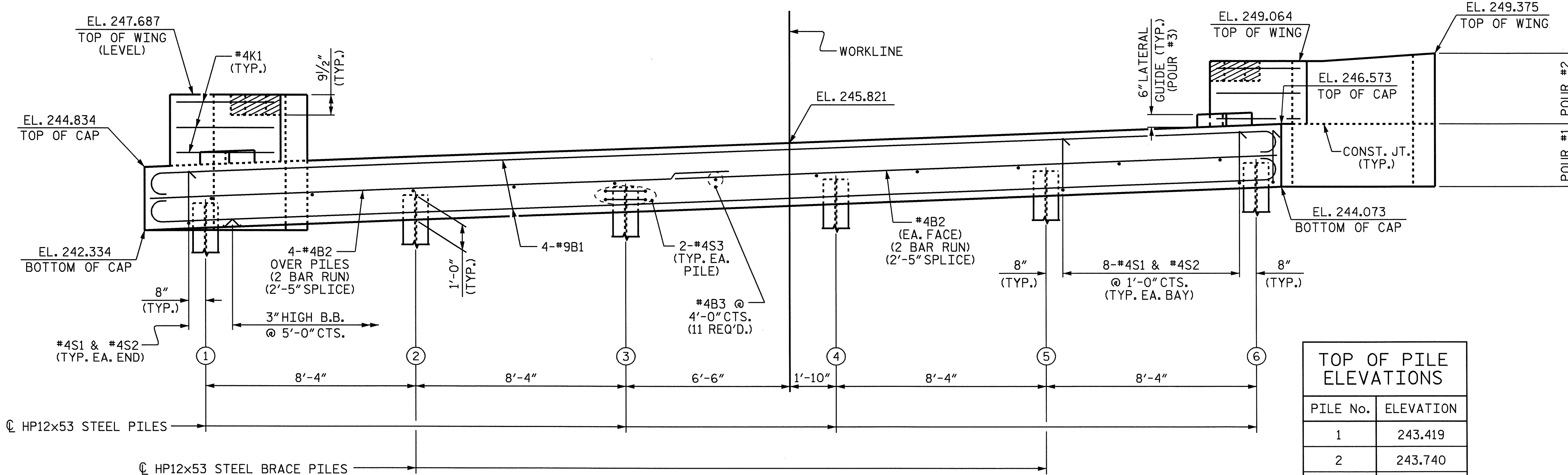
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST.

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



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

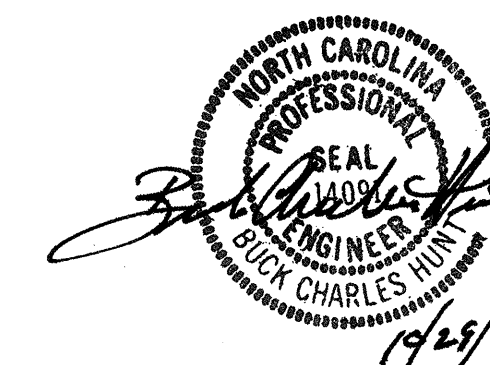


TOP OF PILE ELEVATIONS	
PILE No.	ELEVATION
1	243.419
2	243.740
3	244.061
4	244.383
5	244.704
6	245.026

PROJECT NO. B-4664  
WARREN COUNTY  
 STATION: 15+31.00 -L-

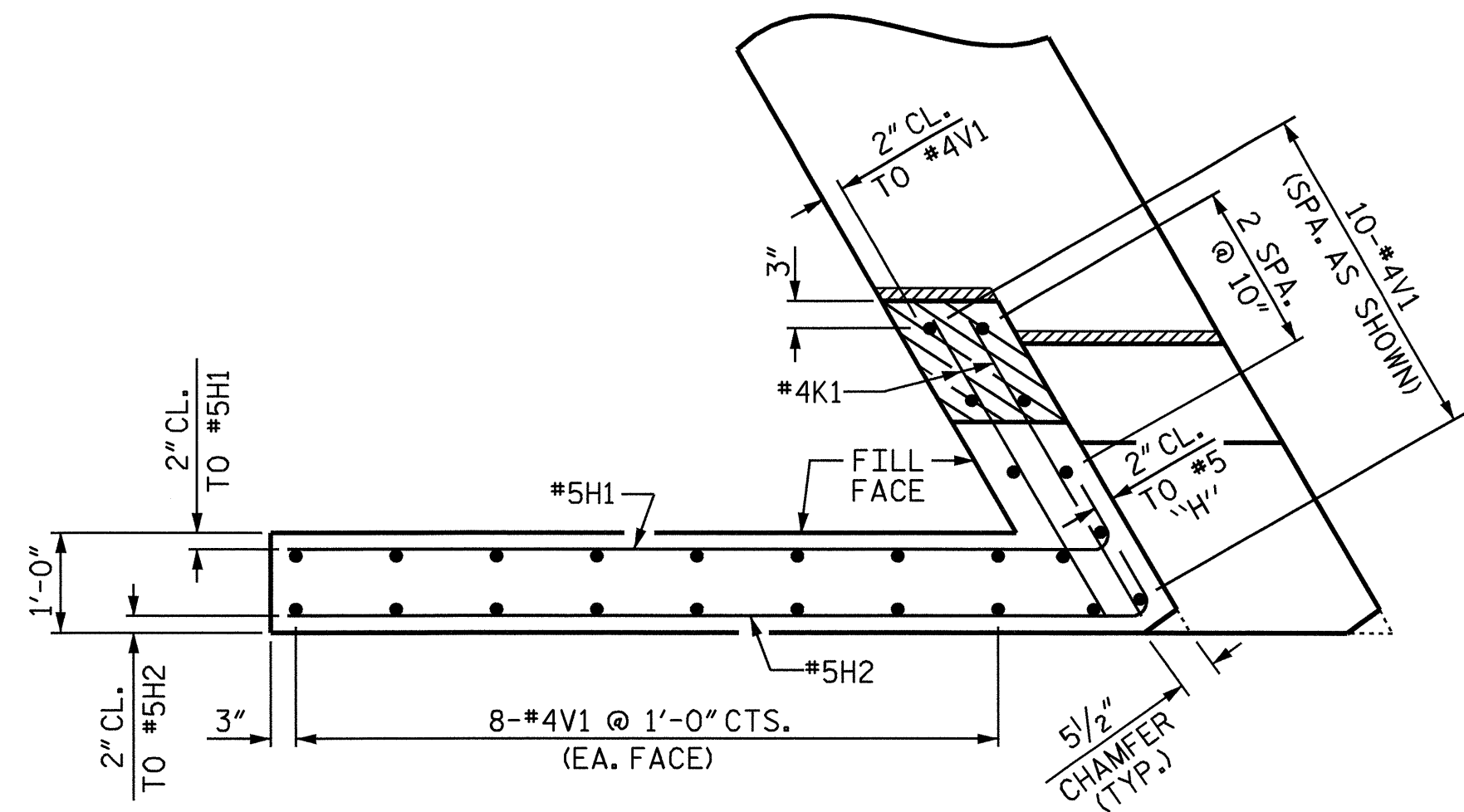
SHEET 1 OF 3

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

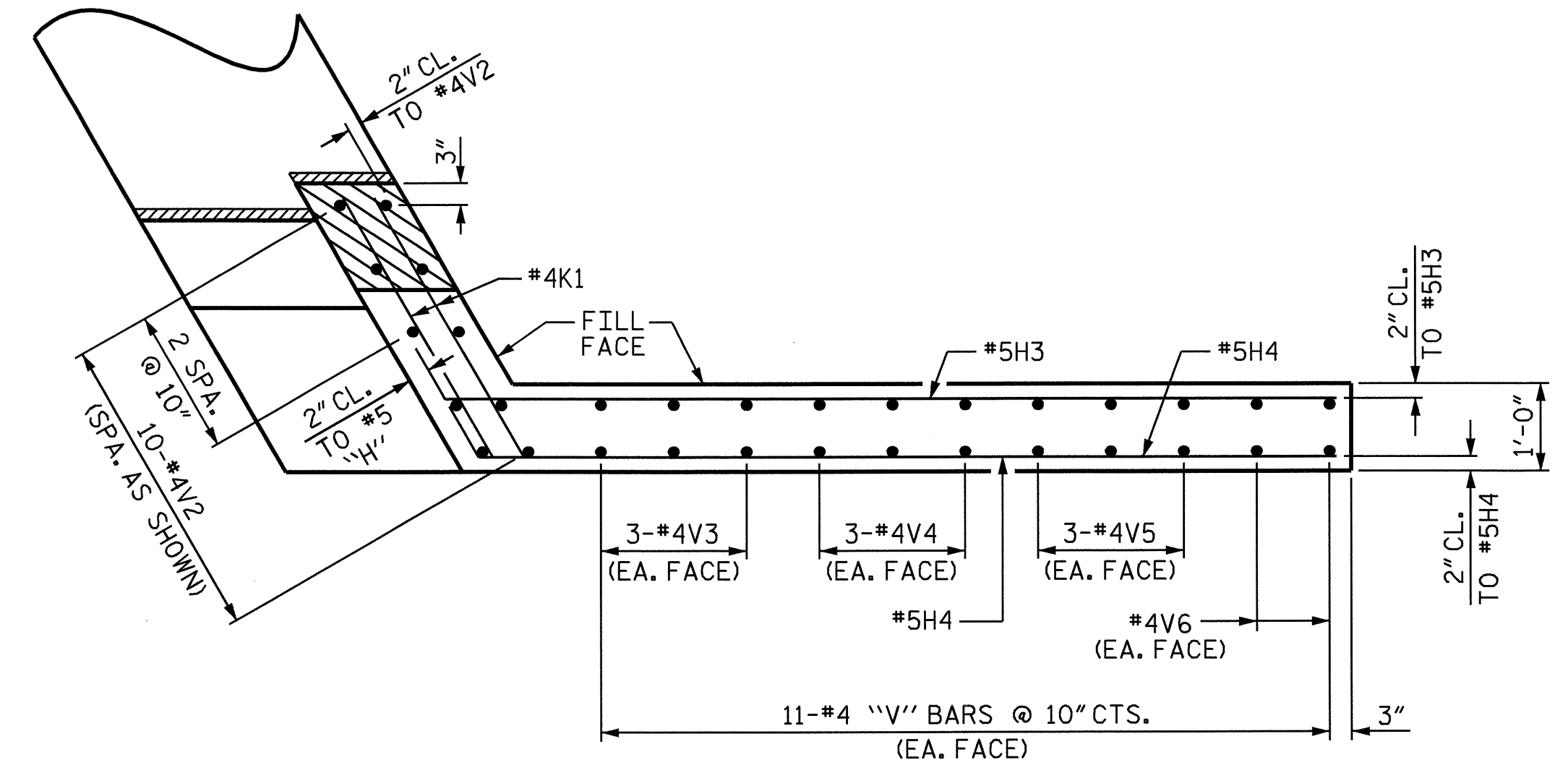


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			22
2			4			

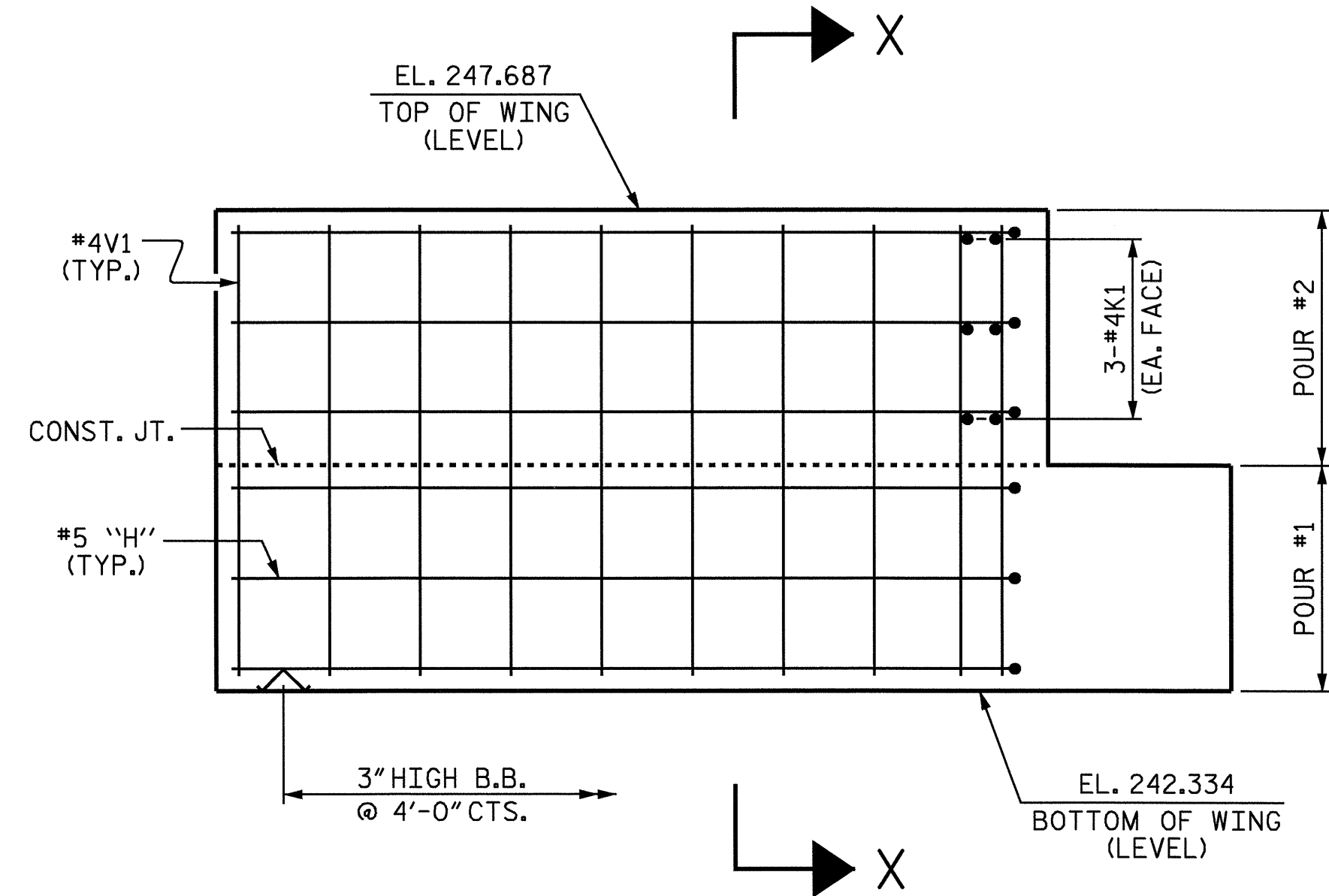
DRAWN BY: M.K. BEARD DATE: 6/25/08  
 CHECKED BY: J.P. ADAMS DATE: 7/23/08



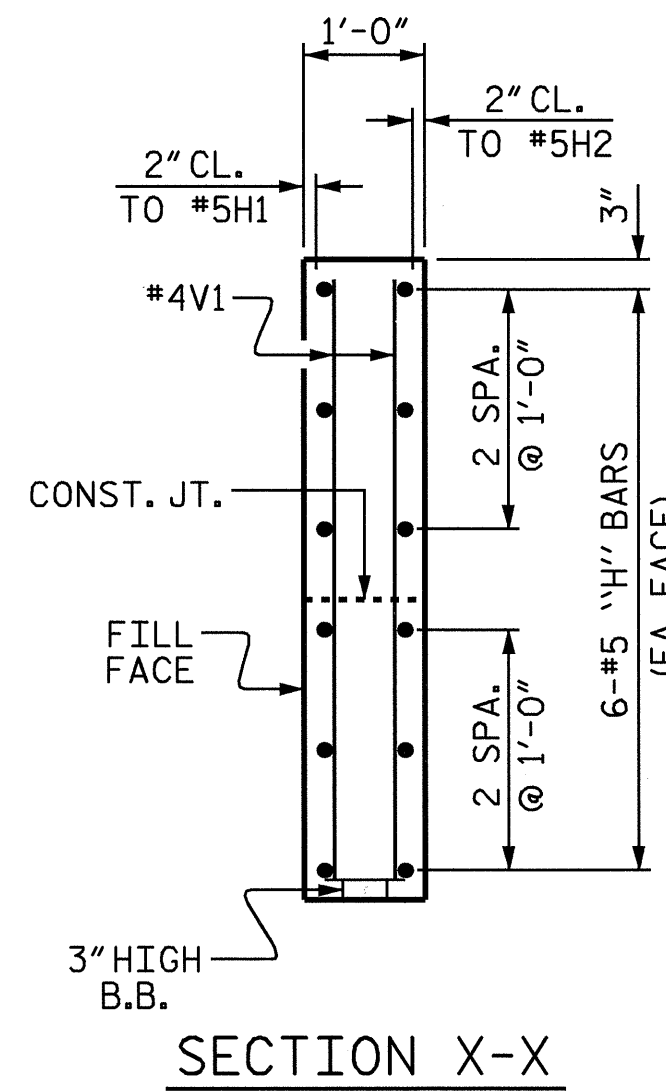
PLAN OF WING - W1



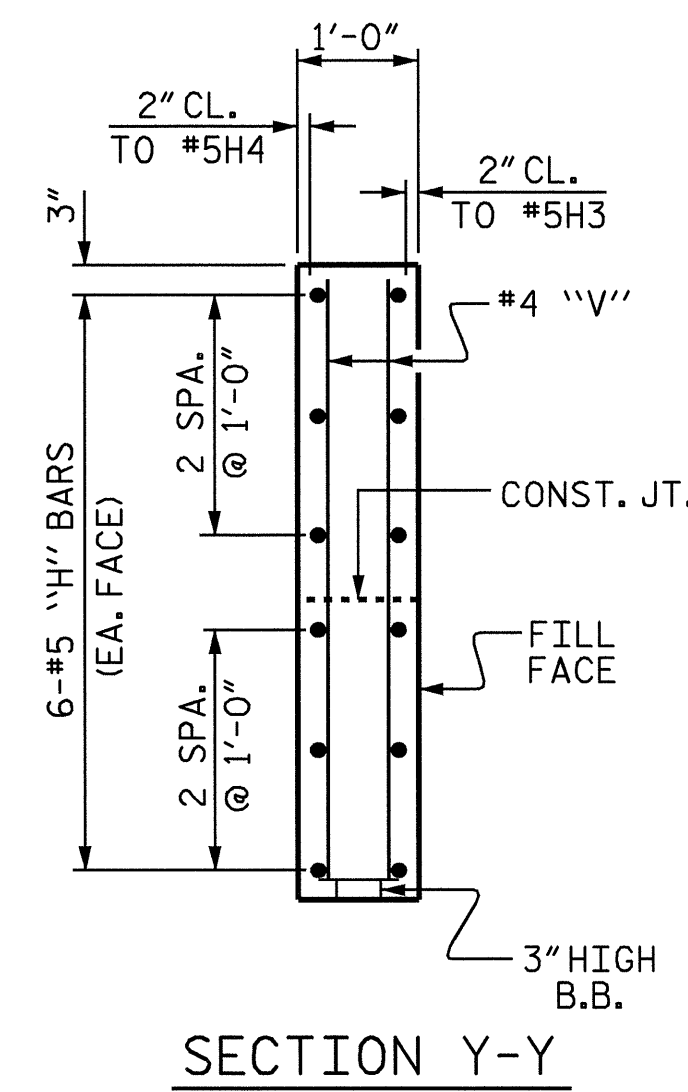
PLAN OF WING - W2



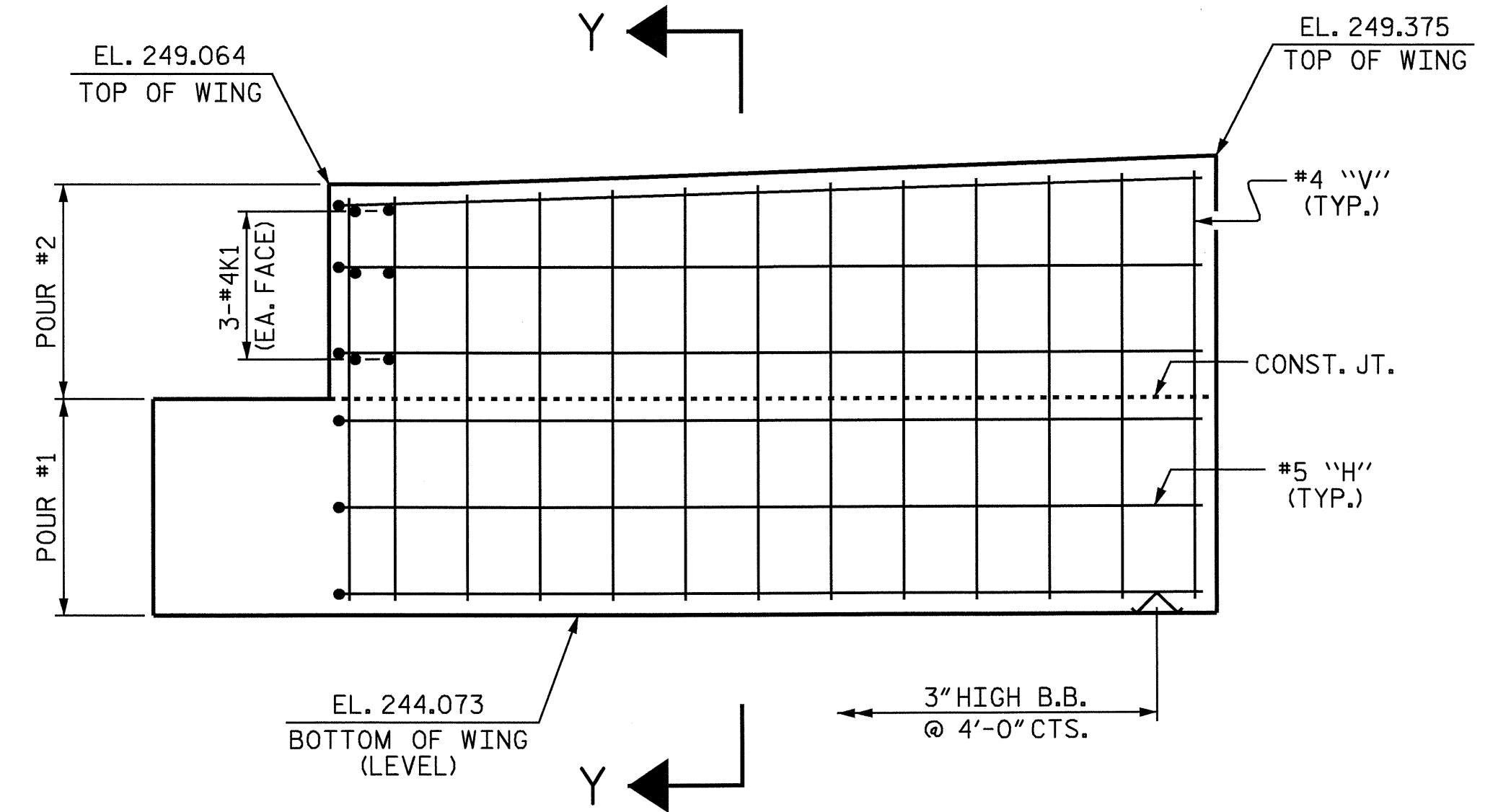
ELEVATION OF WING - W1



SECTION X-X



SECTION Y-Y



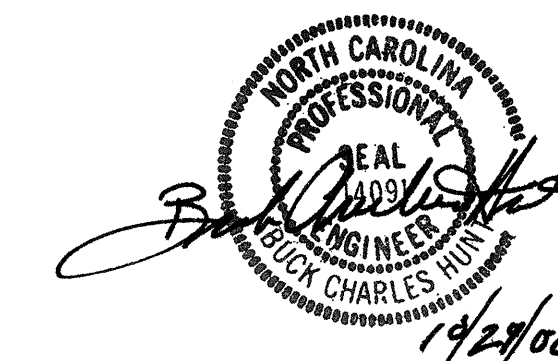
ELEVATION OF WING - W2

PROJECT NO. B-4664  
WARREN COUNTY  
 STATION: 15+31.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

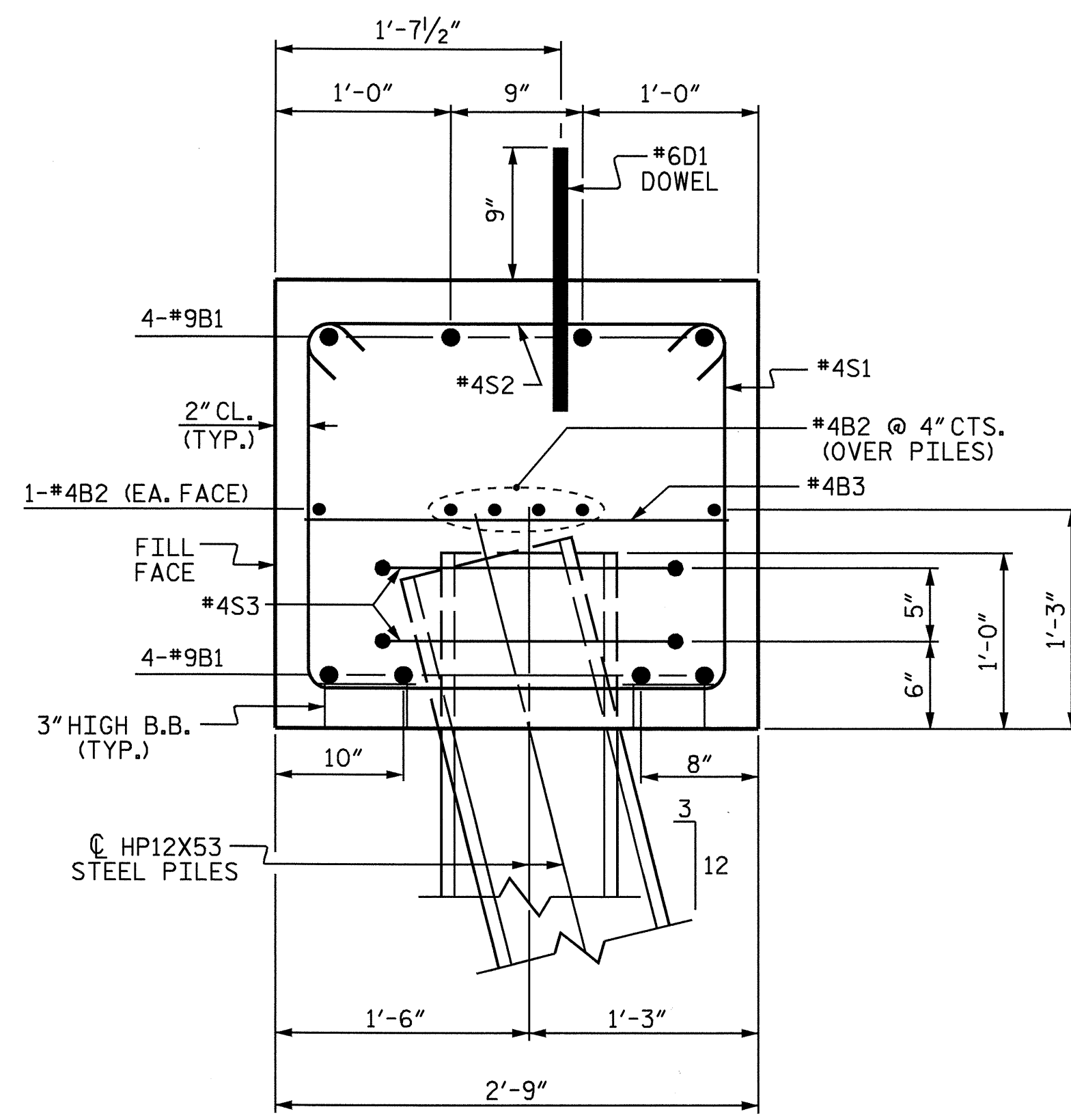
SUBSTRUCTURE  
 END BENT #2



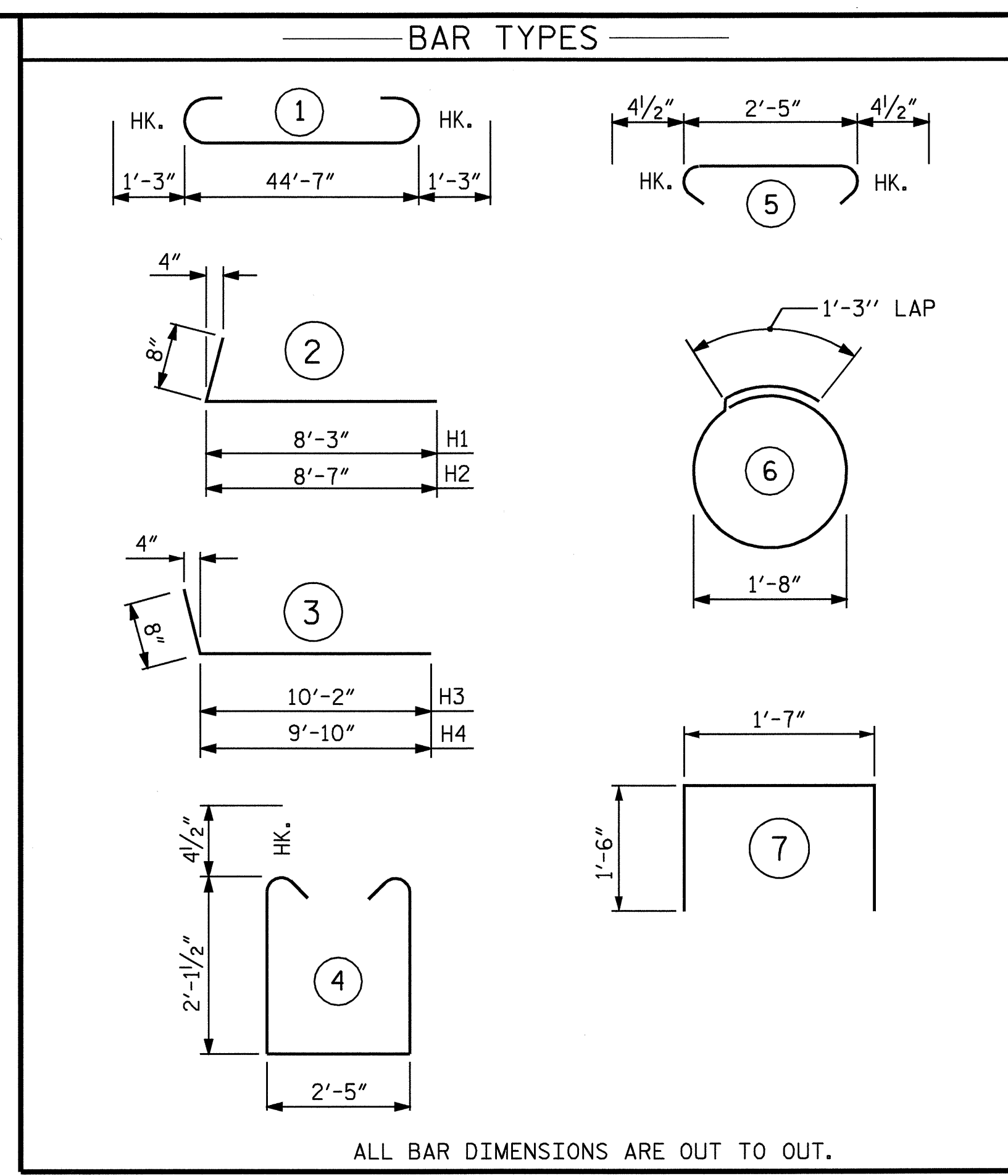
DRAWN BY: M.K. BEARD DATE: 6/26/08  
 CHECKED BY: J.P. ADAMS DATE: 7/23/08

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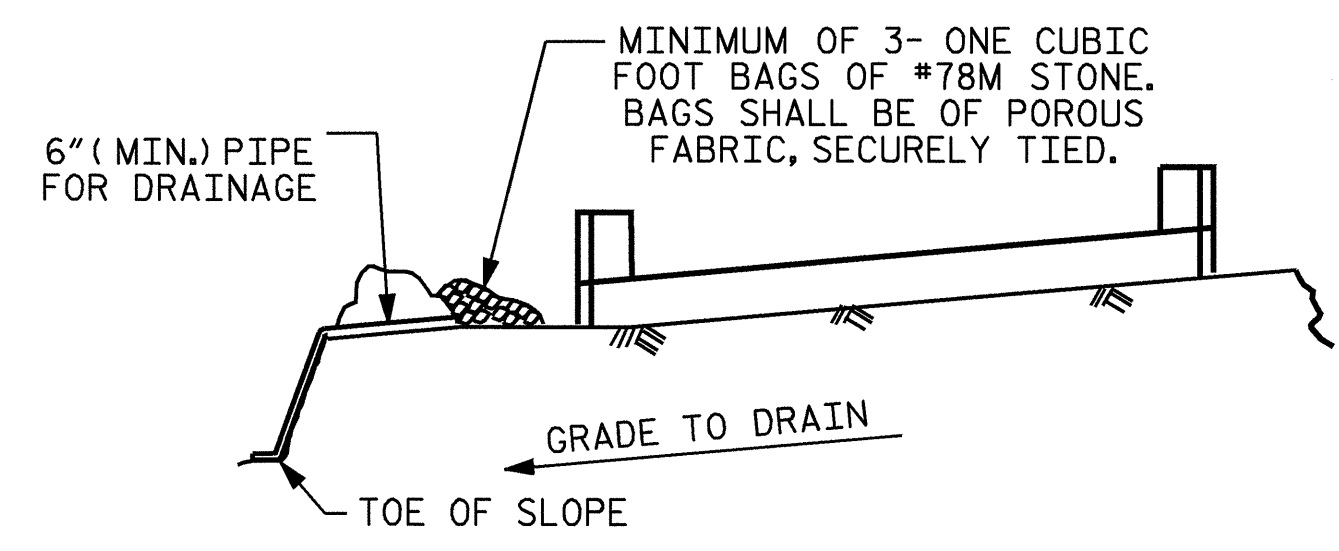
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			22



SECTION THRU CAP



BILL OF MATERIAL					
END BENT #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		47'-1"	1281
B2	12	#4	STR	23'-7"	189
B3	11	#4	STR	2'-5"	18
D1	22	#6	STR	1'-6"	50
H1	6	#5	2	8'-11"	56
H2	6	#5	2	9'-3"	58
H3	6	#5	3	10'-10"	68
H4	6	#5	3	10'-6"	66
K1	12	#4	STR	3'-5"	27
S1	42	#4	4	7'-5"	208
S2	42	#4	5	3'-2"	89
S3	12	#4	6	6'-6"	52
U1	4	#4	7	4'-7"	12
V1	26	#4	STR	5'-0"	87
V2	10	#4	STR	4'-7"	31
V3	6	#4	STR	4'-8"	19
V4	6	#4	STR	4'-9"	19
V5	6	#4	STR	4'-10"	19
V6	4	#4	STR	4'-11"	13
REINFORCING STEEL					Lbs. 2362
CLASS "A" CONCRETE					
POUR #1 CAP & LOWER PART OF WINGS					
					CU.YDS. 13.1
POUR #2 UPPER WINGS					
					CU.YDS. 2.5
POUR #3 LATERAL GUIDES					
					CU.YDS. 0.1
TOTAL					
					CU.YDS. 15.7
HP12x53 STEEL PILES					
					No. 6
					LIN. FT. 330

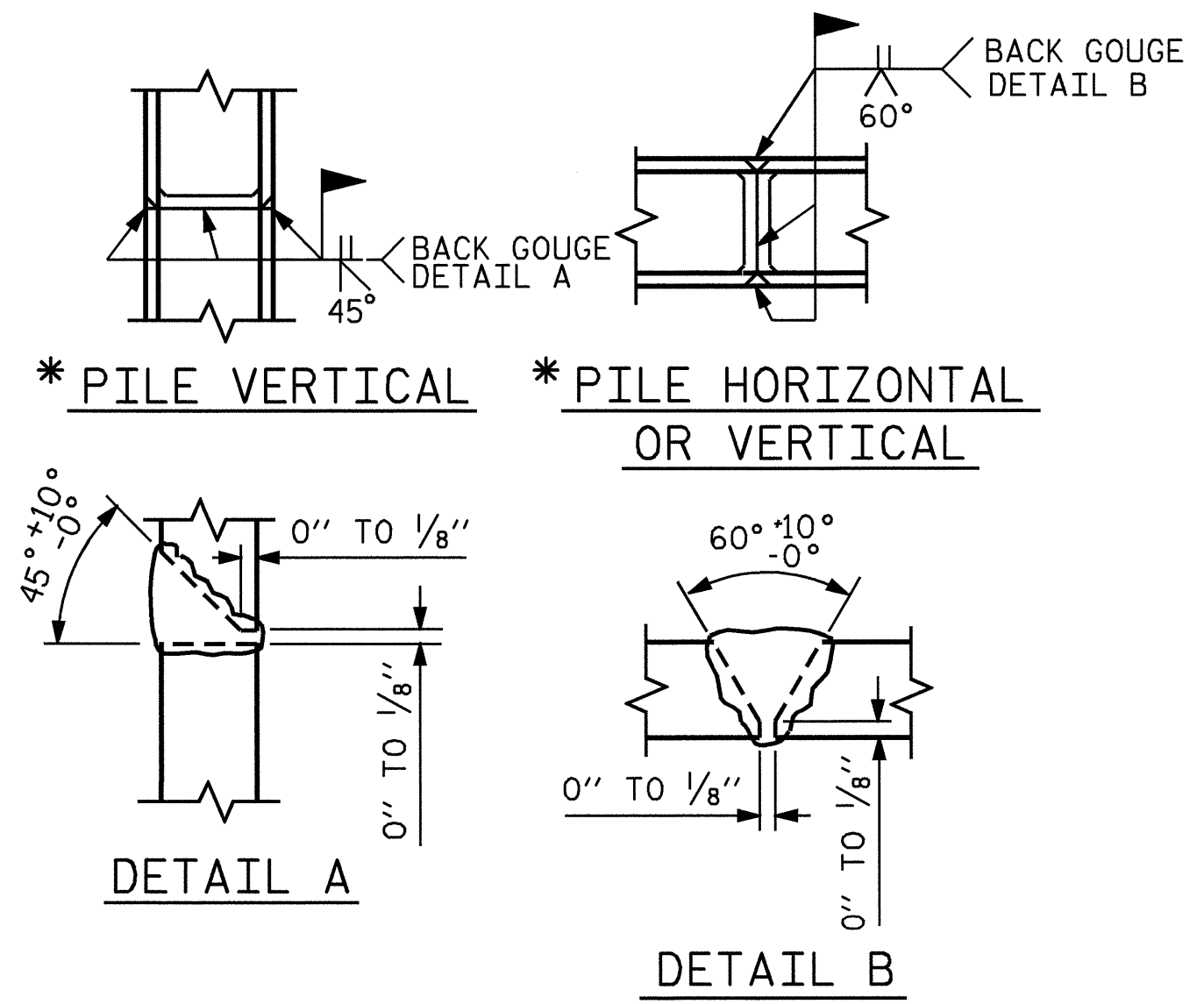


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

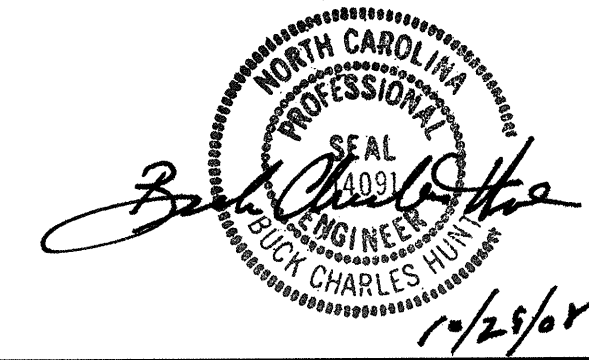
PROJECT NO. B-4664  
WARREN COUNTY  
 STATION: 15+31.00 -L-

SHEET 3 OF 3

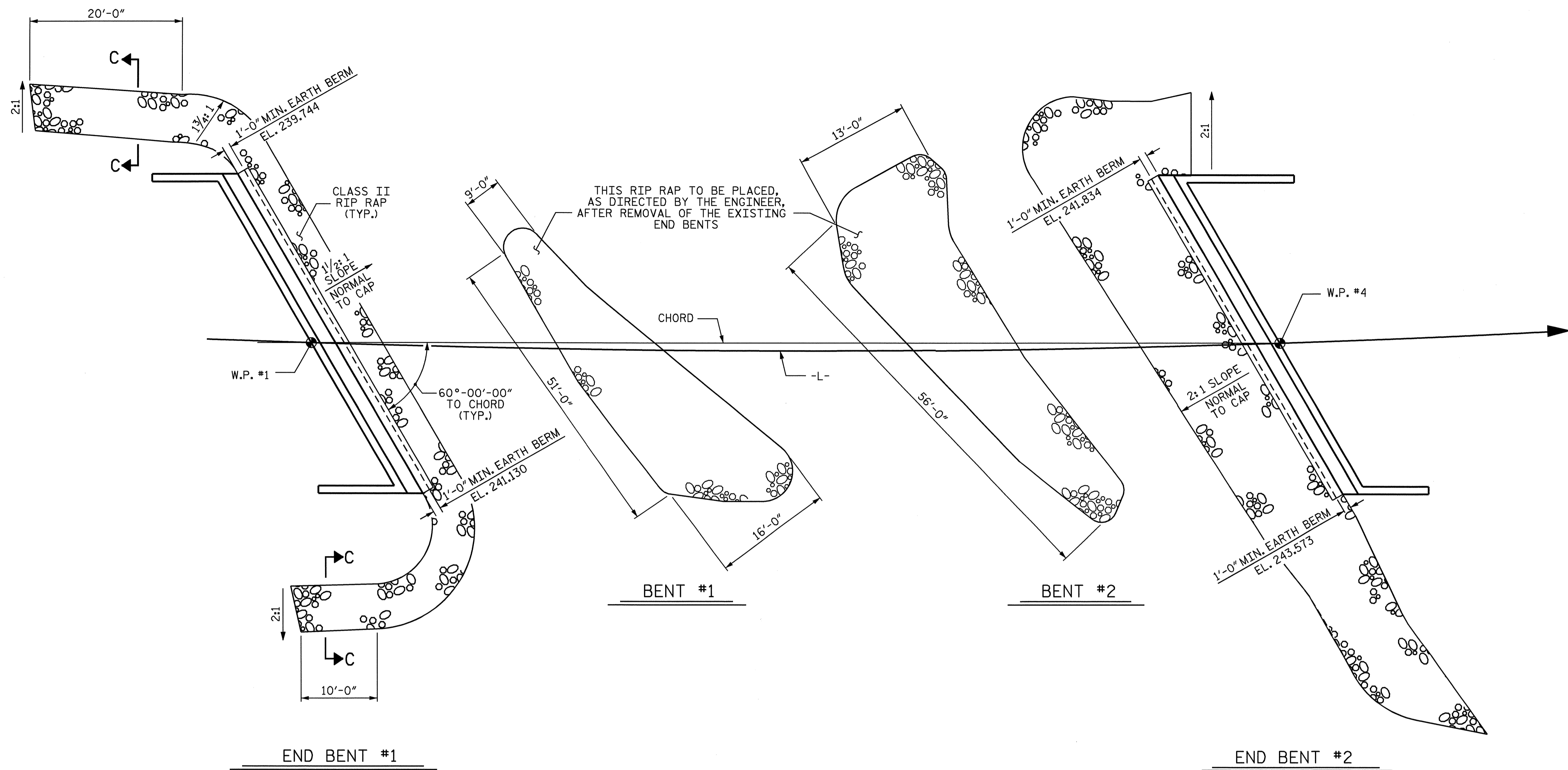
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT #2

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

SHEET NO. S-19  
 TOTAL SHEETS 22



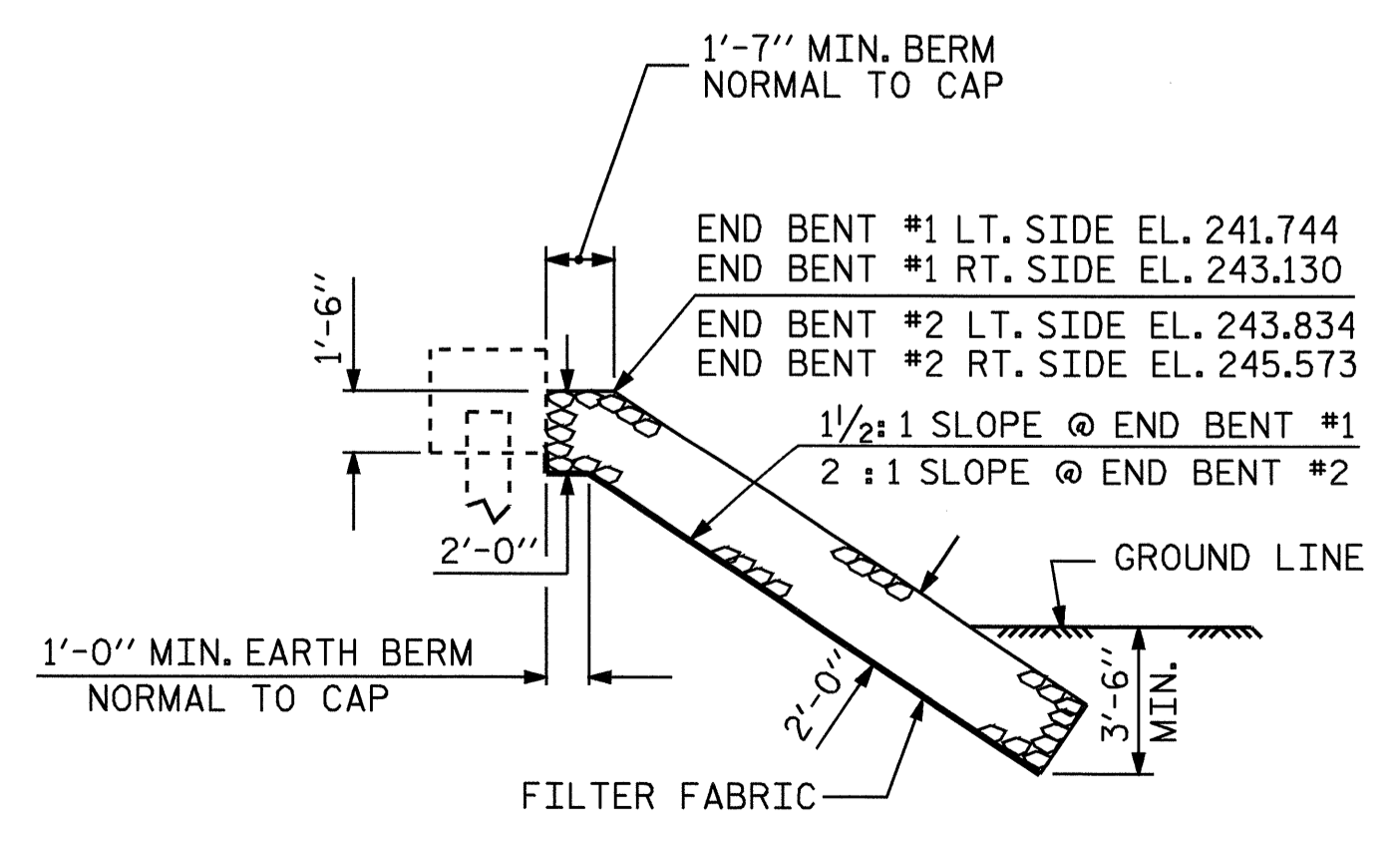
DRAWN BY: M.K. BEARD DATE: 6/20/08  
 CHECKED BY: J.P. ADAMS DATE: 7/22/08



PLAN

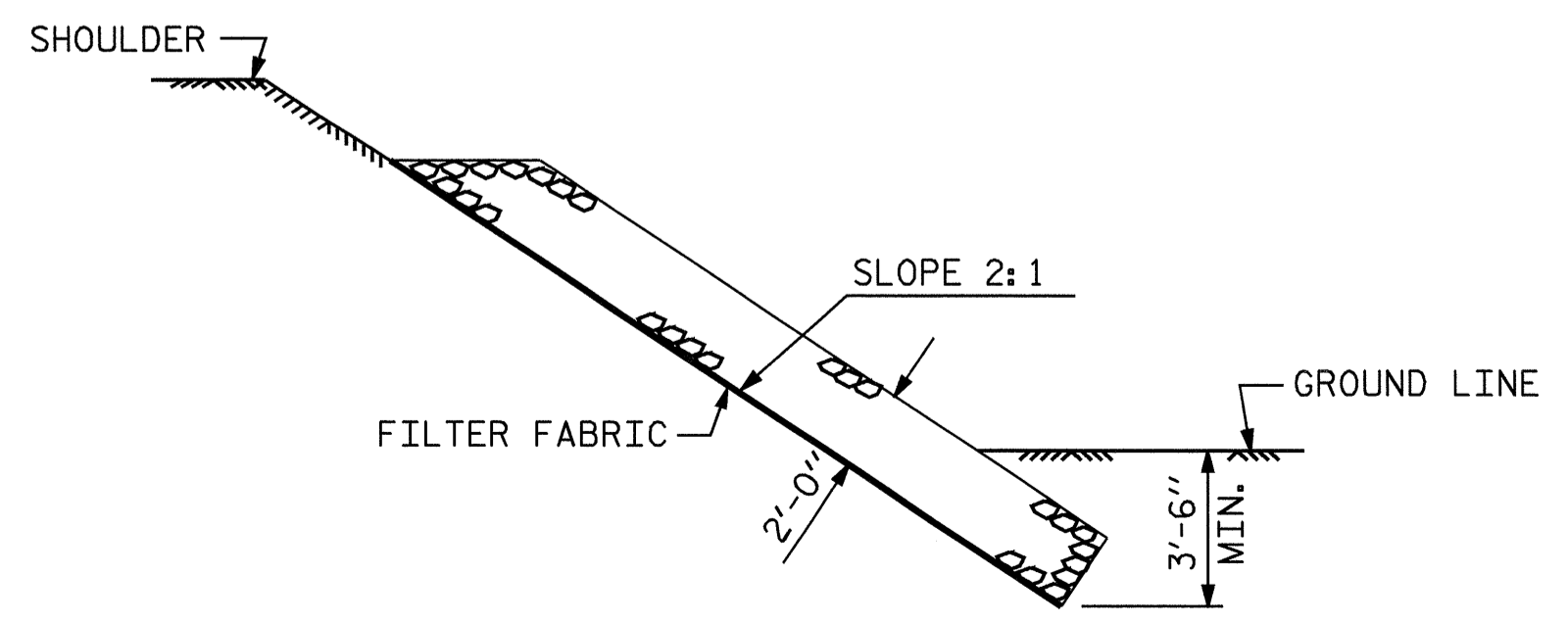
BRIDGE @ STA. 15+31.00 -L-	ESTIMATED QUANTITIES	
	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT #1	95	105
END BENT #2	165	185

PROJECT NO. B-4664  
WARREN COUNTY  
 STATION: 15+31.00 -L-



SECTION

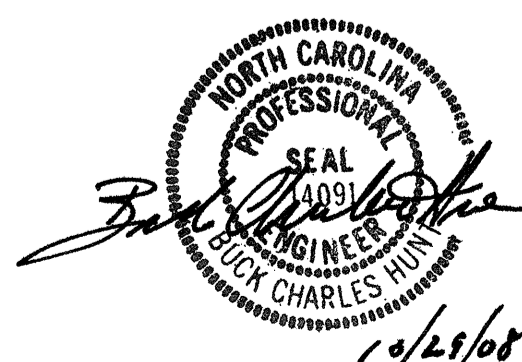
BERM RIP RAPPED



SECTION C-C

ASSEMBLED BY : R. G. EMERSON	DATE : 05/08
CHECKED BY : M. K. BEARD	DATE : 05/08
DRAWN BY : REK 1/84	REV. 8/16/99 RWW/LES
CHECKED BY : RDU 1/84	REV. 10/17/00 RWW/LES
	REV. 5/1/06 TLA/GM

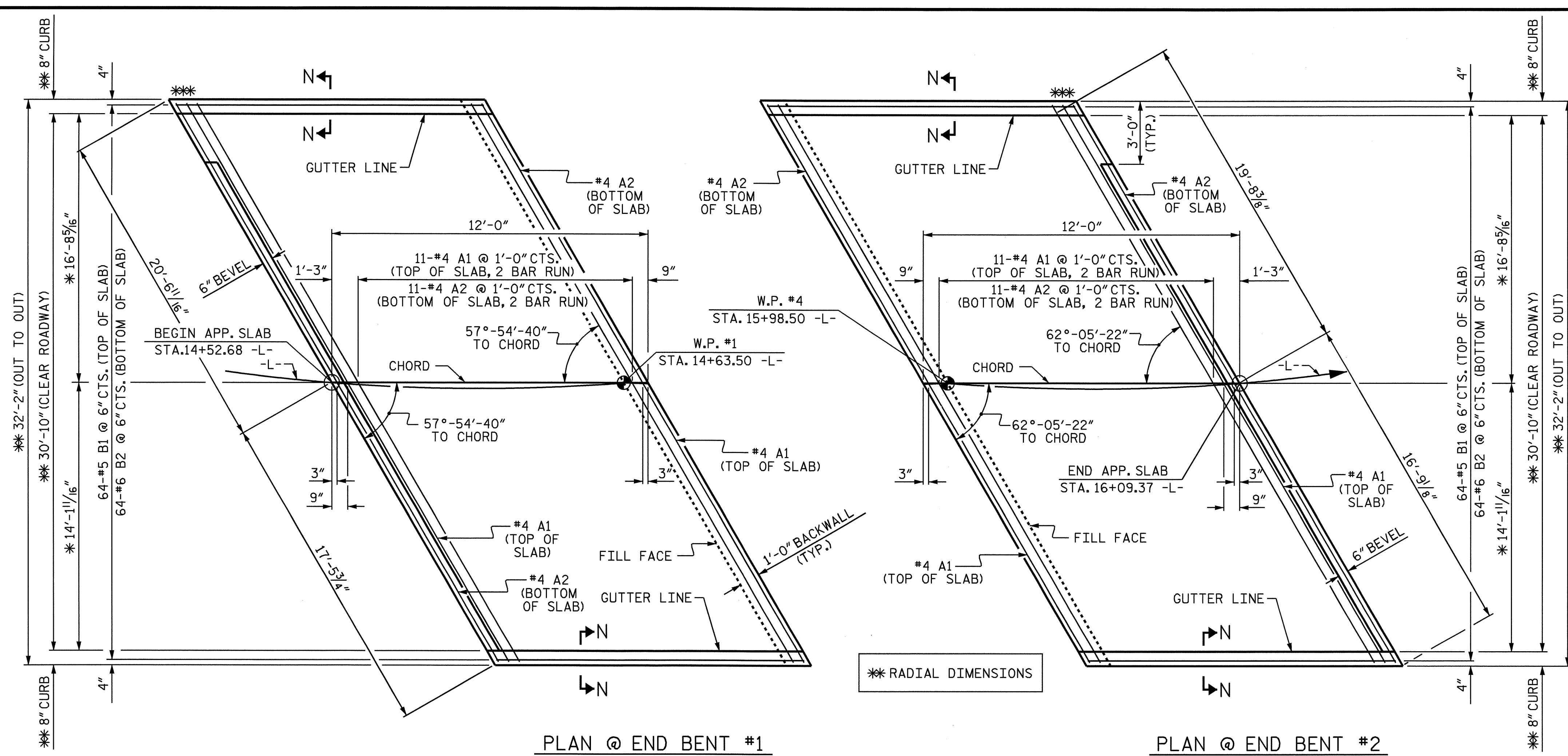
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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

— RIP RAP DETAILS —

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



BILL OF MATERIAL													
APPROACH SLAB AT EB #1							APPROACH SLAB AT EB #2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT		BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	26	#4	STR	19'-10"	344		*A1	26	#4	STR	19'-1"	331	
A2	26	#4	STR	19'-8"	342		A2	26	#4	STR	18'-11"	329	
*B1	64	#5	STR	11'-0"	734		*B1	64	#5	STR	11'-0"	734	
B2	64	#6	STR	11'-7"	1113		B2	64	#6	STR	11'-7"	1113	
REINFORCING STEEL					LBS.	1455	REINFORCING STEEL					LBS.	1442
*EPOXY COATED REINFORCING STEEL					LBS.	1078	*EPOXY COATED REINFORCING STEEL					LBS.	1065
CLASS AA CONCRETE					C. Y.	16.1	CLASS AA CONCRETE					C. Y.	16.0

**NOTES**

FOR BRIDGE APPROACH FILL INCLUDING FABRIC, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

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

FABRIC SHALL BE TYPE 1 ENGINEERING FABRIC IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

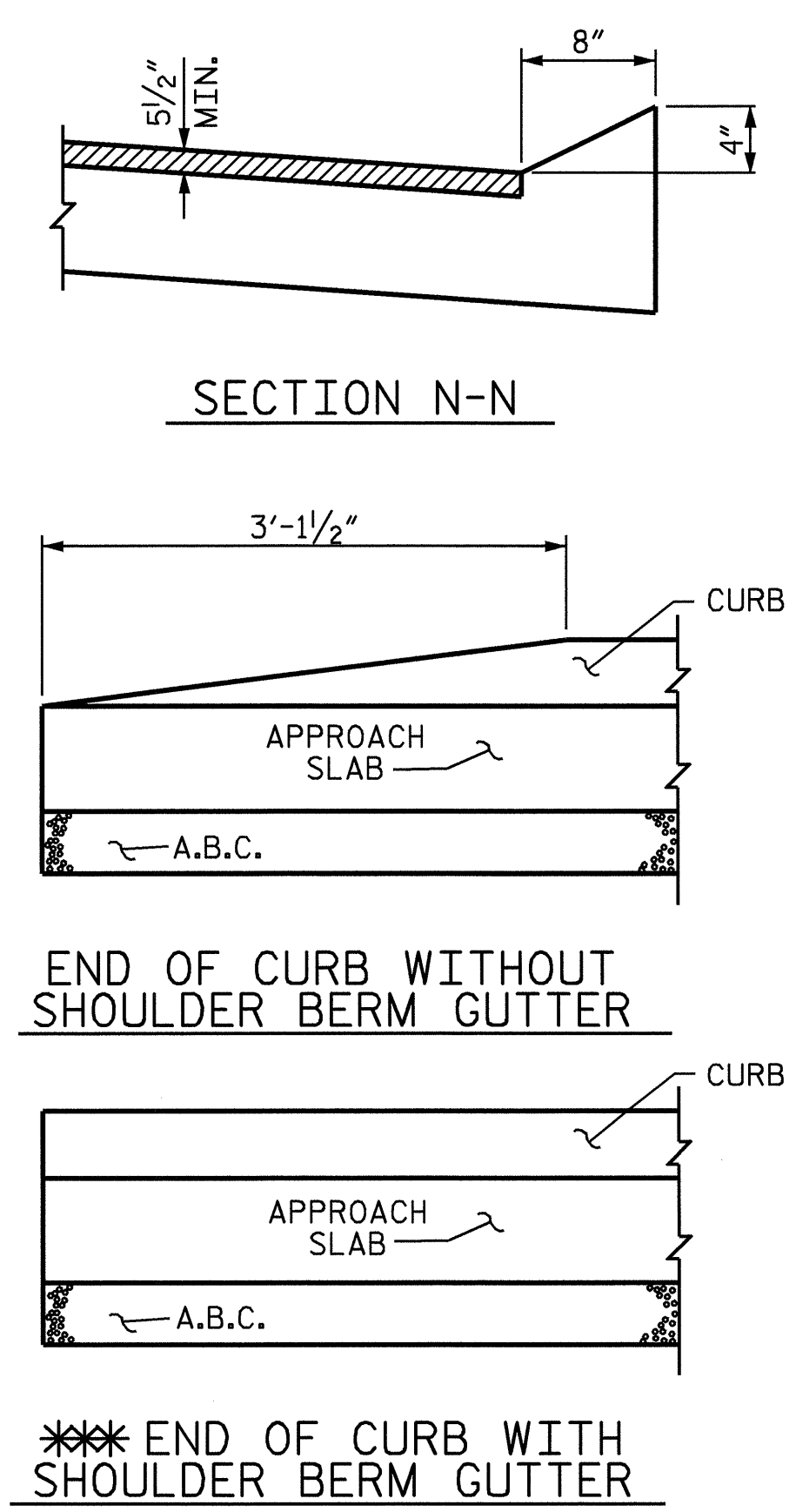
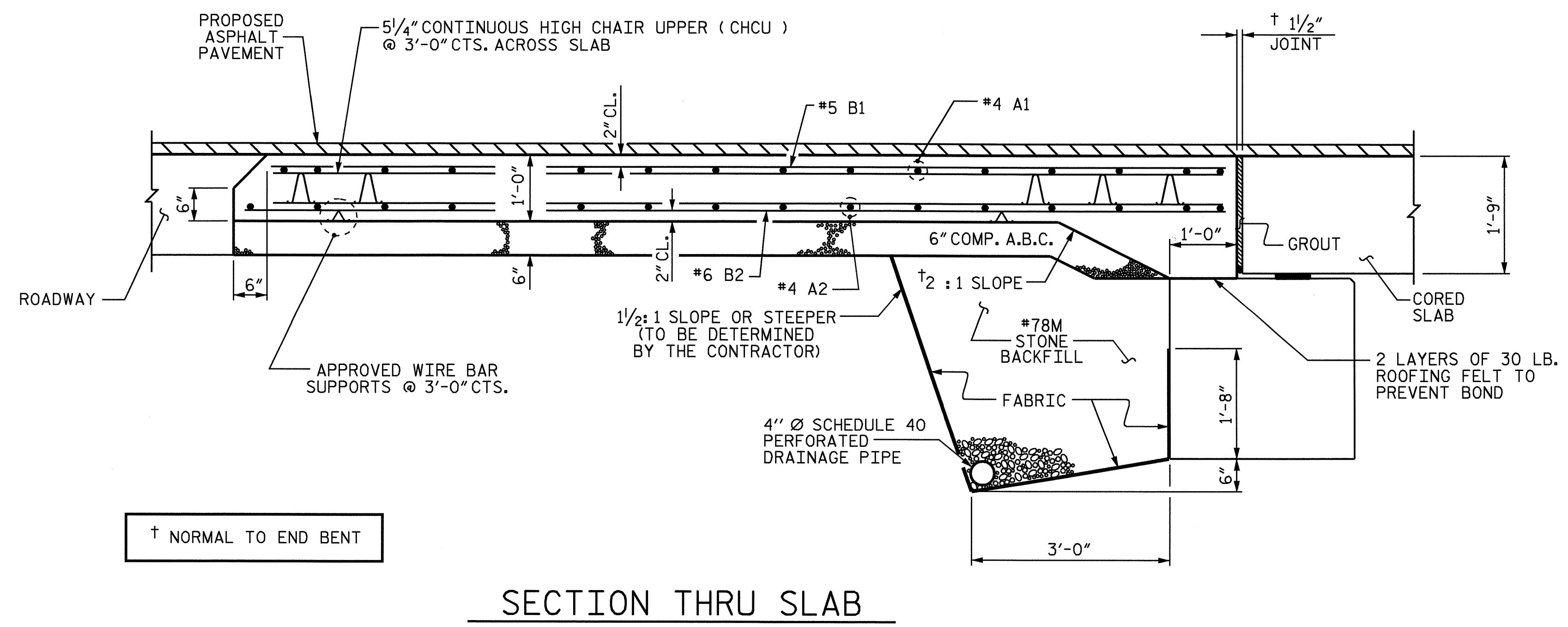
FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

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

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

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

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



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

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

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

APPROACH SLAB GROOVING IS NOT REQUIRED.

PROJECT NO. B-4664  
 WARREN COUNTY  
 STATION: 15+31.00 -L-

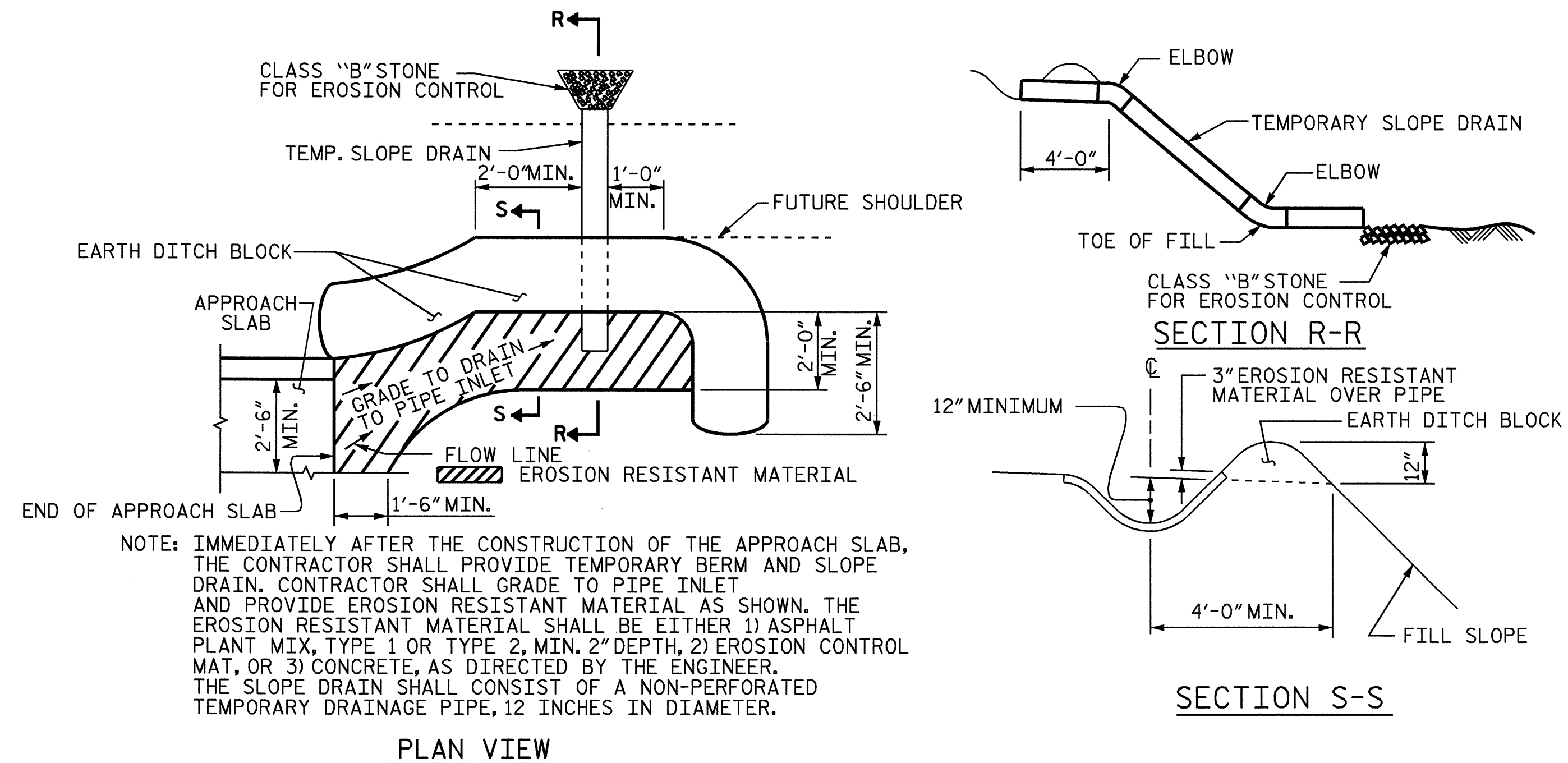
SHEET 1 OF 2

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

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

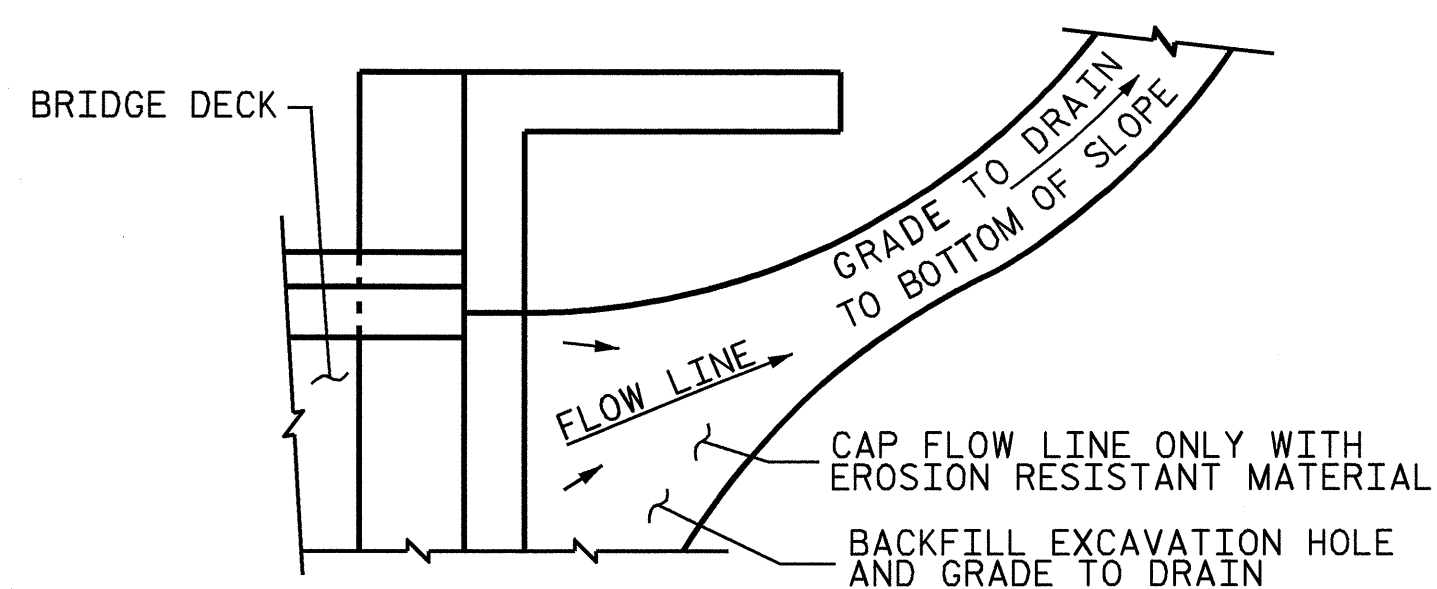


ASSEMBLED BY: R. G. EMERSON DATE: 05/08  
 CHECKED BY: M. K. BEARD DATE: 08/08  
 DRAWN BY: KMM 3-08  
 CHECKED BY: GM 3-08



**TEMPORARY BERM AND SLOPE DRAIN DETAILS**

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

**TEMPORARY DRAINAGE DETAIL**

PROJECT NO. B-4664  
WARREN COUNTY  
 STATION: 15+31.00 -L-

SHEET 2 OF 2

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



ASSEMBLED BY: R. G. EMERSON	DATE: 05/08
CHECKED BY: M. K. BEARD	DATE: 07/08
DRAWN BY: FCJ 11/88	REV. 10/17/00 RWW/LES
CHECKED BY: ARB 11/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06R MAA/KMM

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

## 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. FINISHES 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

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