

09/08/09

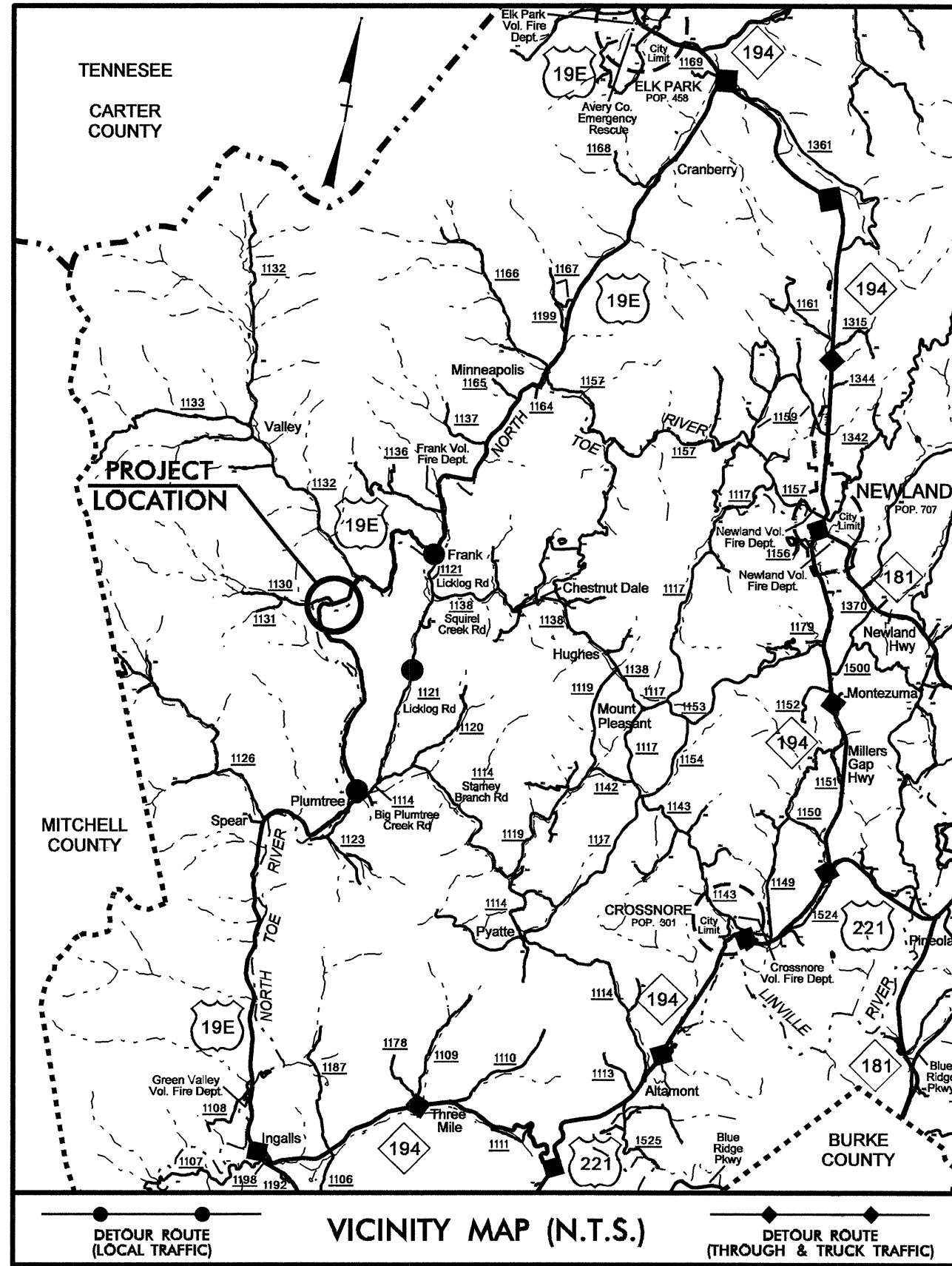
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

AVERY COUNTY

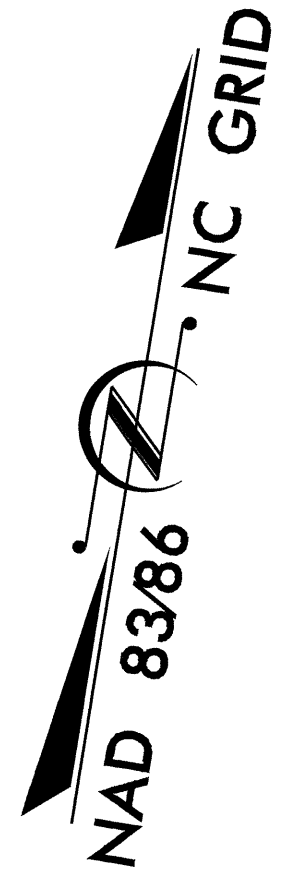
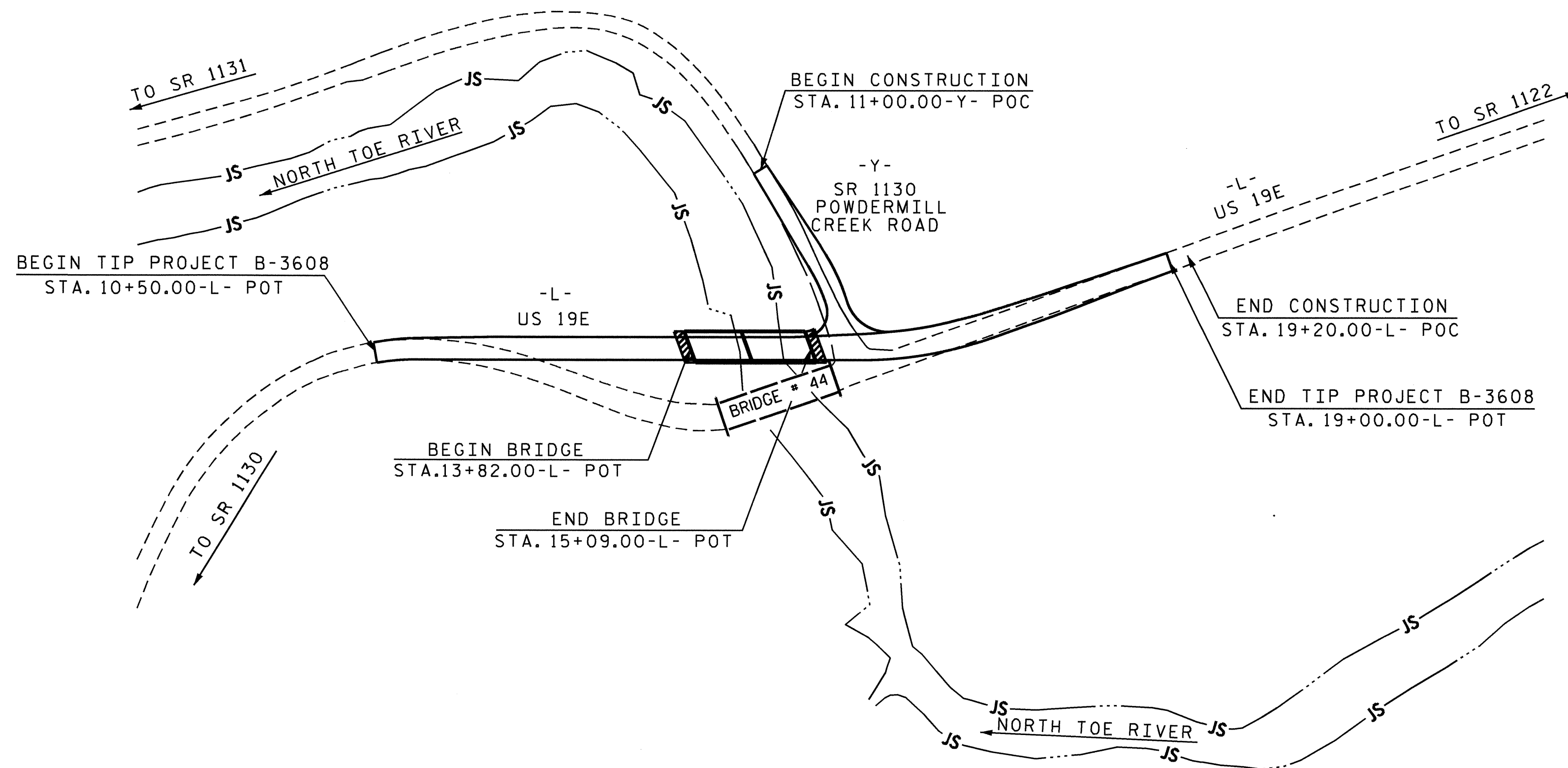
LOCATION: BRIDGE NO. 44 OVER NORTH TOE RIVER ON US 19E
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3608		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33161.1.1	BRSTP-19E (3)	PE	
33161.2.1	BRSTP-19E (3)	R/W, UTILITIES	
33161.3.1	BRSTP-19E (3)	CONSTRUCTION	

TIP PROJECT: B-3608

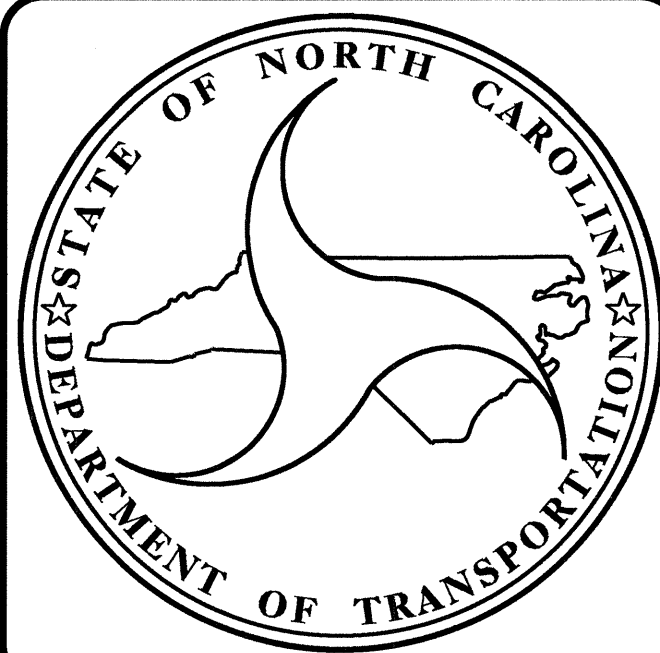


NEAREST SHIPPING POINT: SPRUCE PINE, N.C., ON THE CLINCHFIELD RAILROAD 10.0 MILES FROM BRIDGE



STRUCTURE

CONTRACT: C202324



DESIGN DATA

ADT 2010	=	2,070
ADT 2030	=	3,985
DHV	=	9 %
D	=	55 %
T	=	8 % *
V	=	55 MPH **

* (TTST 2% + DUAL 6%)
** DESIGN EXCEPTION
FUNC. CLASS = RURAL MAJOR COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3608	=	0.137 mile
LENGTH STRUCTURES TIP PROJECT B-3608	=	0.024 mile
TOTAL LENGTH TIP PROJECT B-3608	=	0.161 mile

Prepared For:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2006 STANDARD SPECIFICATIONS

LETTING DATE:
FEBRUARY 16, 2010

J. M. BAILEY, PE
PROJECT ENGINEER

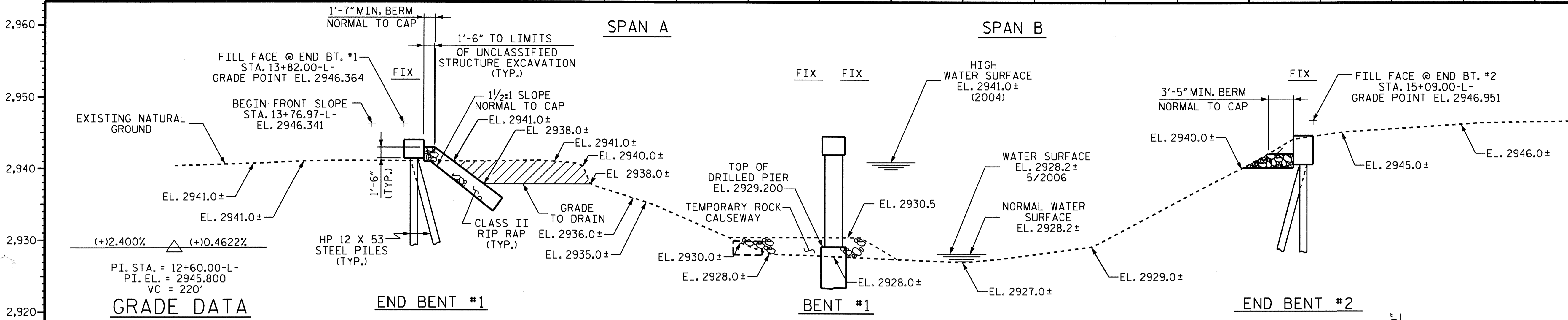
B. D. KLAPPENBACH, P.E.
PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT
1000 Birch Ridge Dr.
Raleigh NC, 27610

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

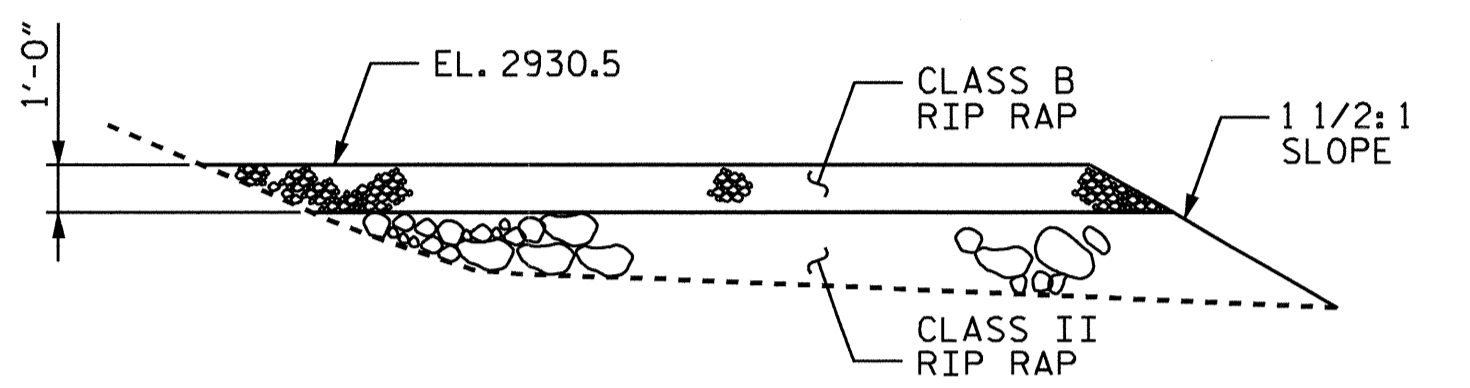
P.E.
STATE HIGHWAY DESIGN ENGINEER

29-DEC-2009 11:54
\$\$\$\$\$DGN\$\$\$\$\$
tbarbour

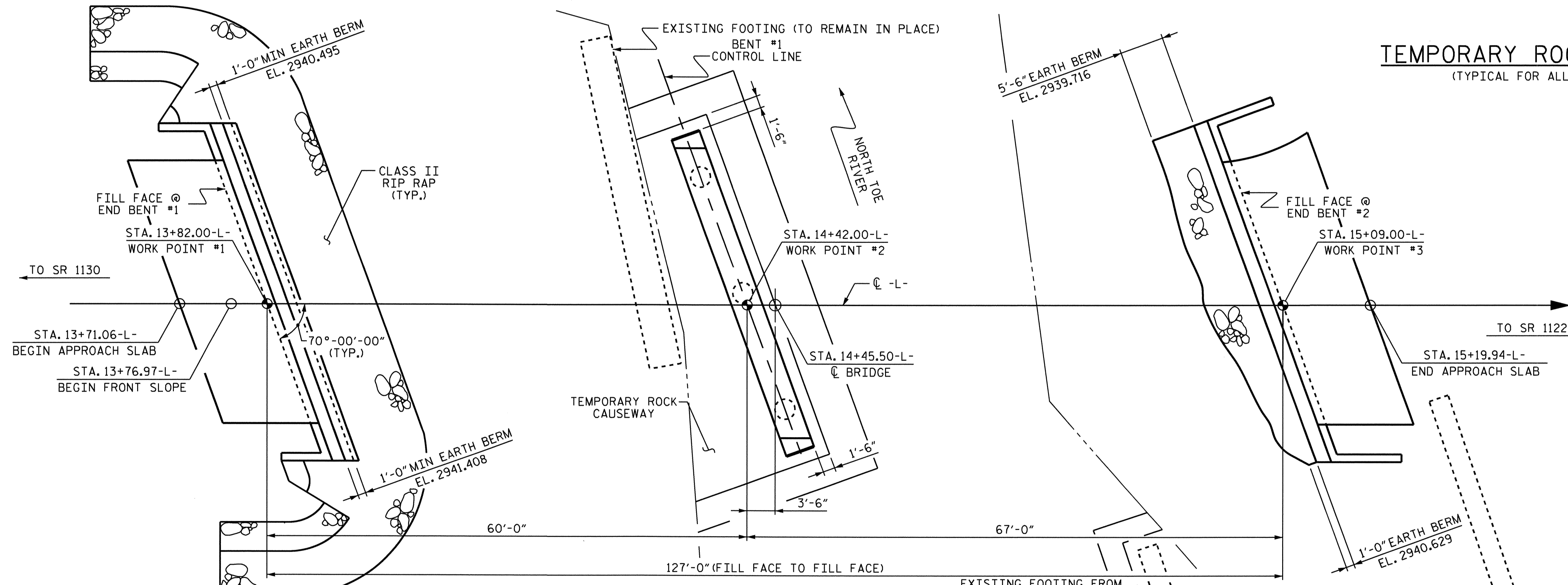


GRADE DATA
 PI. STA. = 12+60.00-L-
 P.I. EL. = 2945.800
 VC = 220'

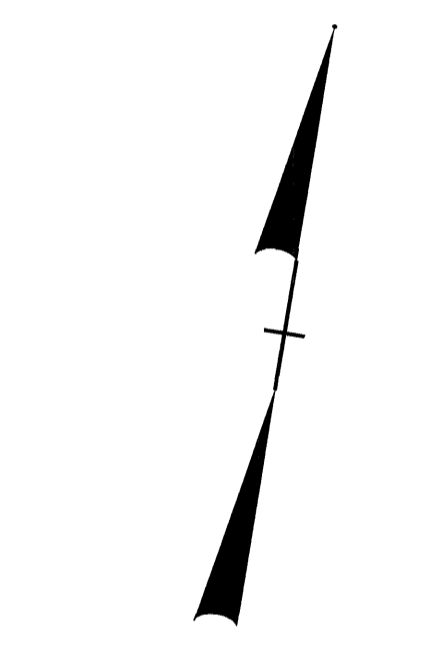
SECTION ALONG C-L-
 (BENTS ON SECTION AT RIGHT ANGLES TO BENTS)



TEMPORARY ROCK CAUSEWAY DETAIL
 (TYPICAL FOR ALL TEMPORARY ROCK CAUSEWAYS)



PLAN
 (PILES NOT SHOWN FOR CLARITY.)



James Bailey
 12/30/09



PROJECT NO. B-3608
AVERY COUNTY
 STATION: 14+45.50-L-

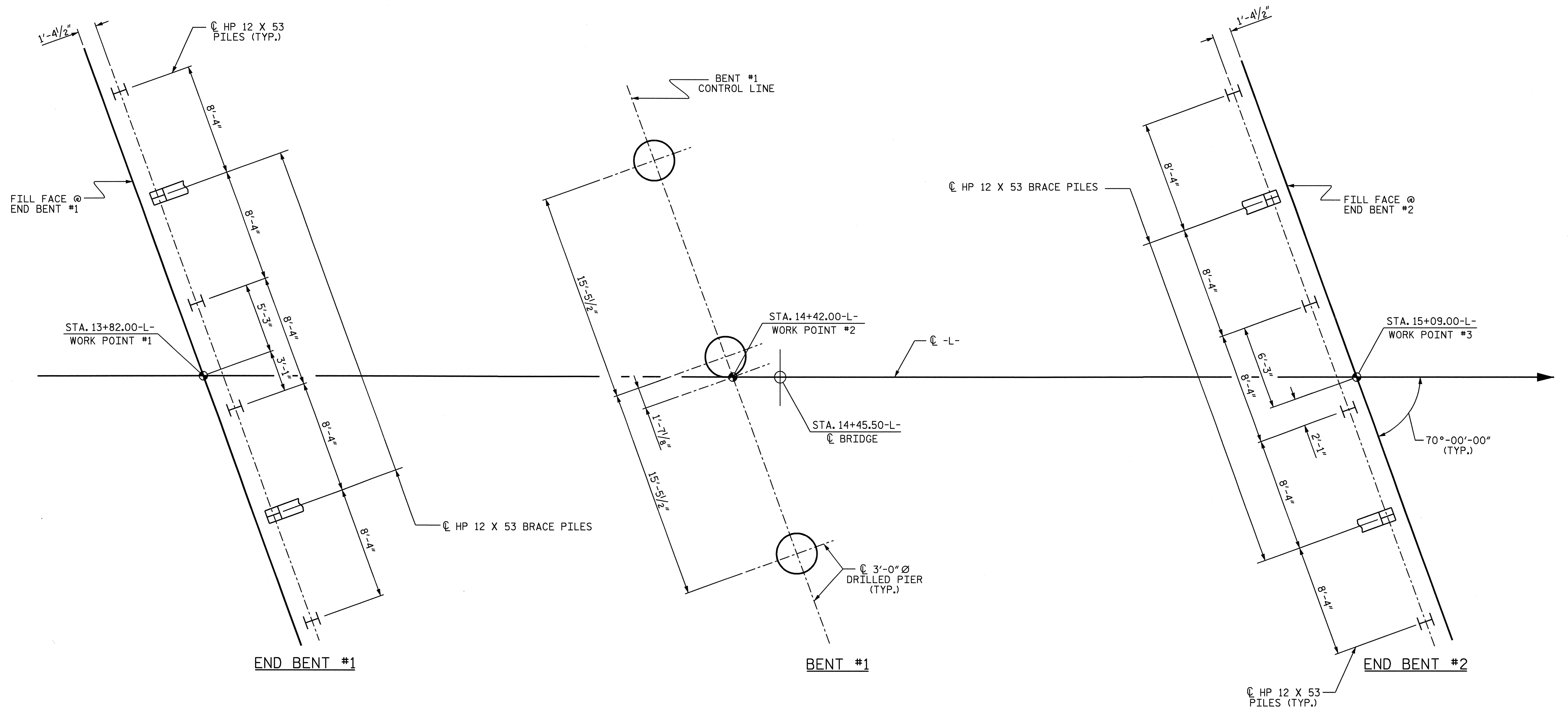
SHEET 1 OF 3 REPLACES BRIDGE #44

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER NORTH
 TOE RIVER ON US 19E BETWEEN
 SR 1130 AND SR 1122

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

DRAWN BY: H.T. BARBOUR DATE: 10-27-09
 CHECKED BY: B.D. KLAPPENBACH DATE: 11-09

30-DEC-2009 15:07
 w:\structures\tbarbour\microstation\b3608.sd.gd.dgn
 Tbarbour



FOUNDATION LAYOUT

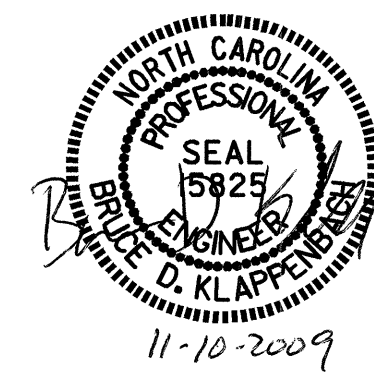
ALL PILES IN END BENTS ARE HP 12 X 53 STEEL PILES.
 ALL END BENT BRACE PILES ARE BATTERED AT 3:12.
 DIMENSIONS LOCATING PILES AND DRILLED PIERS ARE SHOWN TO THE PILE AND DRILLED PIER CENTERLINES.

PROJECT NO. B-3608
AVERY COUNTY
 STATION: 14+45.50-L

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER NORTH
 TOE RIVER ON US 19E BETWEEN
 SR 1130 AND SR 1122



DRAWN BY : H. T. BARBOUR DATE : 10-28-09
 CHECKED BY : B. D. KLAPPENBACH DATE : 11-09

10-NOV-2009 09:01
 R:\Structures\7barbour\Microstation\B3608.sd.gdn
 bklappenbach

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

BENCHMARK #1: 8" SPIKE IN ROOT OF 8" Ø MAPLE STA. 15+06.39-L-, 181.84' RIGHT ELEV. 2,935.97'

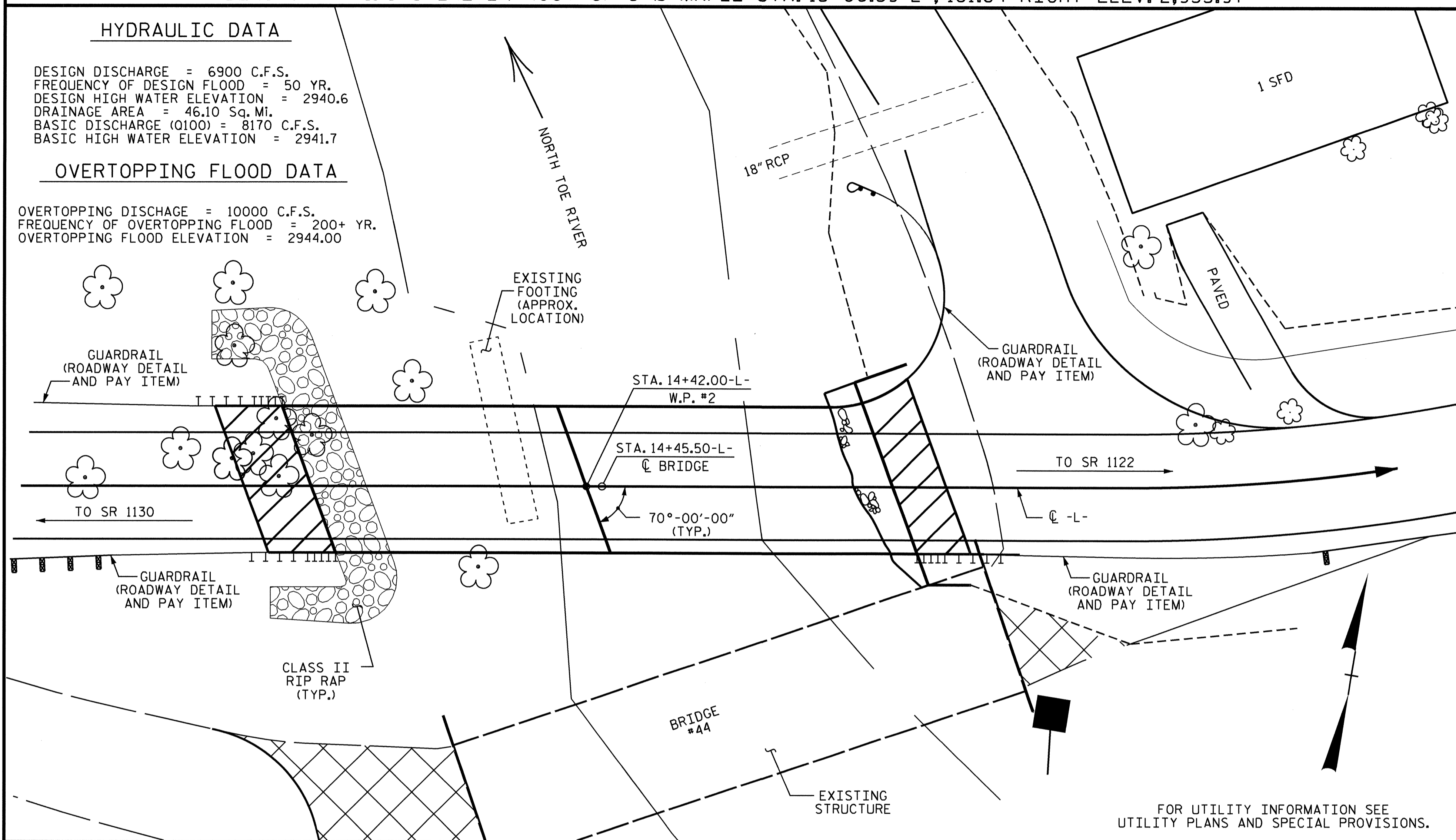
NOTES

HYDRAULIC DATA

DESIGN DISCHARGE = 6900 C.F.S.
 FREQUENCY OF DESIGN FLOOD = 50 YR.
 DESIGN HIGH WATER ELEVATION = 2940.6
 DRAINAGE AREA = 46.10 SQ. MI.
 BASIC DISCHARGE (Q100) = 8170 C.F.S.
 BASIC HIGH WATER ELEVATION = 2941.7

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 10000 C.F.S.
 FREQUENCY OF OVERTOPPING FLOOD = 200+ YR.
 OVERTOPPING FLOOD ELEVATION = 2944.00



LOCATION SKETCH

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.

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

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THE EXISTING STRUCTURE CONSISTING OF 3 SPANS (1 @ 40'-3", 1 @ 45'-0" AND 1 @ 40'-3"), WITH A 6" ASPHALT WEARING SURFACE ON 11 PRESTRESSED CONCRETE CORED SLABS AND A CLEAR ROADWAY WIDTH OF 29.3' ON CONCRETE CAPS AND STEEL PILES AT BOTH END BENTS AND CONCRETE CAPS ON STEEL PILES ENCASED IN CONCRETE AT BOTH INTERIOR BENTS. LOCATED 60 FEET UPSTREAM FROM PROPOSED STRUCTURE, SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

THE EXPOSED CONCRETE FROM THE EXISTING ABUTMENTS OF A PREVIOUS BRIDGE LOCATED UNDER THE EXISTING BRIDGE SHALL BE BROKEN AND BLENDED WITH RIP RAP IN THAT AREA AS DIRECTED BY THE ENGINEER. ALSO, ANY EXPOSED REINFORCING STEEL SHALL BE REMOVED. PAYMENT FOR THIS WORK, WHICH INCLUDES ALL MATERIALS, LABOR, TOOLS AND EQUIPMENT NECESSARY, SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE BID FOR "REMOVAL OF EXISTING STRUCTURE".

THE EXISTING CONCRETE FOOTING FROM A PREVIOUS BRIDGE LOCATED IN THE STREAM, UNDER THE EXISTING BRIDGE SHALL BE REMOVED AS DIRECTED BY THE ENGINEER. PAYMENT FOR THIS WORK, WHICH INCLUDES ALL MATERIALS, LABOR, TOOLS AND EQUIPMENT NECESSARY, SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE BID FOR "REMOVAL OF EXISTING STRUCTURE".

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 30 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

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

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

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR SEISMIC DESIGN FOR SEISMIC PERFORMANCE ZONE 1.

CONSTRUCTION PHASING:

STAGE I

1. CONSTRUCT END BENT #1, BENT #1 AND SLOPE PROTECTION.
2. CONSTRUCT SPAN A OF THE SUPERSTRUCTURE AND APPROACH SLAB AT END BENT #1.

STAGE II

1. REMOVE SPAN C AND END BENT #2 OF THE EXISTING BRIDGE.
2. CONSTRUCT END BENT #2.
3. CONSTRUCT SPAN B OF THE SUPERSTRUCTURE
4. CONSTRUCT BARRIER RAILS.
5. CONSTRUCT SLOPE PROTECTION AT END BENT #2.

STAGE III

1. REMOVE REMAINING PORTIONS OF THE EXISTING BRIDGE.

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.

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 14+45.50-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 PILES, SEE SPECIAL PROVISIONS.

PILES AT END BENT NO.1 AND END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 95 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 160 TONS PER PILE.

STEEL H-PILE POINTS ARE REQUIRED FOR H-PILES AT END BENT NO.1 AND END BENT NO.2. FOR STEEL PILE POINTS, SEE PILES SPECIAL PROVISION.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

DRILLED PIERS AT BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 415 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 70 TSF.

PERMANENT STEEL CASING IS REQUIRED FOR DRILLED PIERS AT BENT NO.1. DO NOT EXTEND CASING BELOW ELEVATION 2919 FT WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

INSTALL DRILLED PIERS AT BENT NO.1 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 2890 FT, SATISFY THE REQUIRED TIP RESISTANCE AND HAVE A MINIMUM PENETRATION OF 6 FT INTO ROCK AS DEFINED BY THE DRILLED PIERS PROVISION.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.1 IS ELEVATION 2911 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

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

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

FOR CURING CONCRETE, SEE SPECIAL PROVISIONS.

FOR TRAFFIC PHASING, SEE TRAFFIC CONTROL PLANS.

PROJECT NO. B-3608

AVERY COUNTY

STATION: 14+45.50-L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER NORTH
 TOE RIVER ON US 19E BETWEEN
 SR 1130 AND SR 1122

REVISIONS

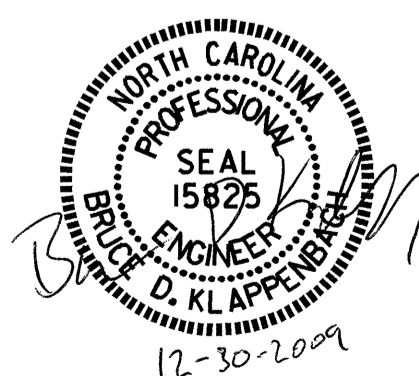
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-3
2			4			TOTAL SHEETS 22

TOTAL BILL OF MATERIAL

	CONST. MAINT. AND REMOVAL OF TEMP. ACCESS	REMOVAL OF EXISTING STRUCTURE	3'- 0" DIA DRILLED PIERS IN SOIL	3'- 0" DIA DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'- 0" Ø DRILLED PIERS	SID INSPECTION	CROSSHOLE SONIC LOGGING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EA.	EA.	LUMP SUM	CU. YDS.
SUPERSTRUCTURE									
END BENT NO. 1									15.3
BENT NO. 1			93.6	24.0	30.6				21.6
END BENT NO. 2									23.6
TOTAL	LUMP SUM	LUMP SUM	93.6	24.0	30.6	1	1	LUMP SUM	60.5

TOTAL BILL OF MATERIAL

	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	HP 12 X 53 STEEL PILES	STEEL PILE POINTS	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'- 0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS	
	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	EACH	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	LIN. FT.
SUPERSTRUCTURE	LUMP SUM						248.94			LUMP SUM	1493.63
END BENT NO. 1		2410		6	90	6		135	150		
BENT NO. 1		13069	2661								
END BENT NO. 2		3108		6	240	6		45	50		
TOTAL	LUMP SUM	18587	2661	12	330	12	248.94	180	200	LUMP SUM	1493.63



DRAWN BY : H.T. BARBOUR DATE : 10-27-09
 CHECKED BY : B.D. KLAPPENBACH DATE : 11-09

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER		
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.180	--	1.75	0.269	1.43	B	ER	32.336	0.502	1.18	B	ER	3.234	0.80	0.269	1.250	B	ER	32.336		
	HL-93 (OPERATING)	N/A		1.530	--	1.35	0.269	1.86	B	ER	32.336	0.502	1.53	B	ER	3.234	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.430	51.470	1.80	0.269	1.79	B	ER	32.336	0.502	1.43	B	ER	3.234	1.00	0.269	1.288	B	ER	32.336		
	HS-20 (OPERATING)	36.000		1.906	68.627	1.35	0.269	2.39	B	ER	32.336	0.502	1.91	B	ER	3.234	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		4.277	57.736	1.40	0.269	4.99	B	ER	32.336	0.502	4.28	B	ER	3.234	0.80	0.269	2.838	B	ER	32.336	
		SNGARBS2	20.000		3.052	61.037	1.40	0.269	3.77	B	ER	32.336	0.502	3.05	B	ER	3.234	0.80	0.269	2.150	B	ER	32.336	
		SNAGRIS2	22.000		2.837	62.411	1.40	0.269	3.60	B	ER	32.336	0.502	2.84	B	ER	3.234	0.80	0.269	2.050	B	ER	32.336	
		SNCOTTS3	27.250		2.136	58.212	1.40	0.269	2.49	B	ER	32.336	0.502	2.14	B	ER	3.234	0.80	0.269	1.413	B	ER	32.336	
		SNAGGRS4	34.925		1.780	62.179	1.40	0.269	2.10	B	ER	32.336	0.502	1.78	B	ER	3.234	0.80	0.269	1.188	B	ER	32.336	
		SNS5A	35.550		1.807	64.243	1.40	0.269	2.05	B	ER	32.336	0.502	1.81	B	ER	3.234	0.80	0.269	1.163	B	ER	32.336	
		SNS6A	39.950		1.652	65.991	1.40	0.269	1.89	B	ER	32.336	0.502	1.65	B	ER	3.234	0.80	0.269	1.075	B	ER	32.336	
		SNS7B	42.000		1.627	68.334	1.40	0.269	1.80	B	ER	32.336	0.502	1.63	B	ER	3.234	0.80	0.269	1.025	B	ER	32.336	
	TRUCK TRACTOR SEMI-TRAILER (TTS1)	TNAGRIT3	33.000		1.963	64.791	1.40	0.269	2.31	B	ER	32.336	0.502	1.96	B	ER	3.234	0.80	0.269	1.313	B	ER	32.336	
		TNT4A	33.075		1.910	63.179	1.40	0.269	2.32	B	ER	32.336	0.502	1.91	B	ER	3.234	0.80	0.269	1.325	B	ER	32.336	
		TNT6A	41.600		1.740	72.394	1.40	0.269	1.90	B	ER	32.336	0.502	1.74	B	ER	3.234	0.80	0.269	1.088	B	ER	32.336	
		TNT7A	42.000		1.697	71.286	1.40	0.269	1.92	B	ER	32.336	0.502	1.70	B	ER	3.234	0.80	0.269	1.088	B	ER	32.336	
		TNT7B	42.000		1.586	66.596	1.40	0.269	2.00	B	ER	32.336	0.502	1.59	B	ER	3.234	0.80	0.269	1.138	B	ER	32.336	
		TNAGRIT4	43.000		1.534	65.961	1.40	0.269	1.89	B	ER	32.336	0.502	1.53	B	ER	3.234	0.80	0.269	1.075	B	ER	32.336	
TNAGT5A	45.000		1.529	68.815	1.40	0.269	1.78	B	ER	32.336	0.502	1.53	B	ER	3.234	0.80	0.269	1.013	B	ER	32.336			
TNAGT5B	45.000		③	1.458	65.625	1.40	0.269	1.75	B	ER	32.336	0.502	1.46	B	ER	3.234	0.80	0.269	1.000	B	ER	32.336		

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ _{DC}	γ _{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

	YEAR	ADTT
CURRENT	2010	91
FUTURE	2030	175

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

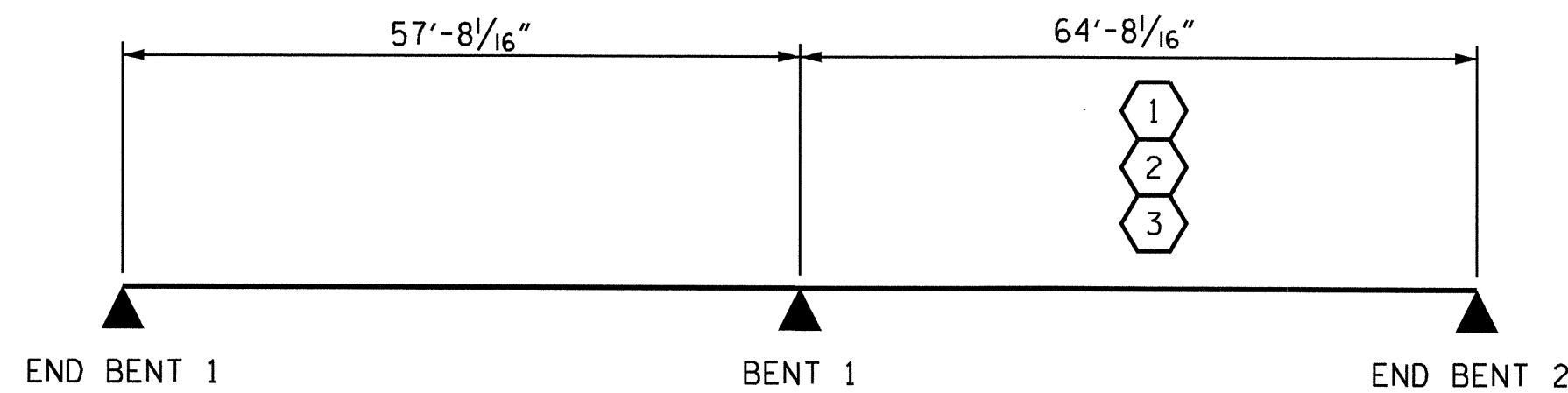
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

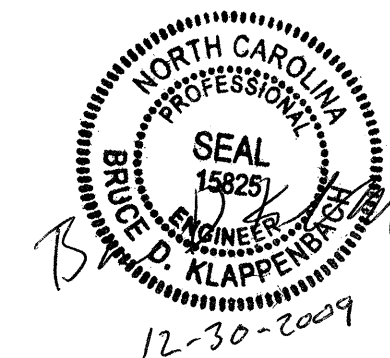
GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

PROJECT NO. B-3608
AVERY COUNTY
 STATION: 14+45.50

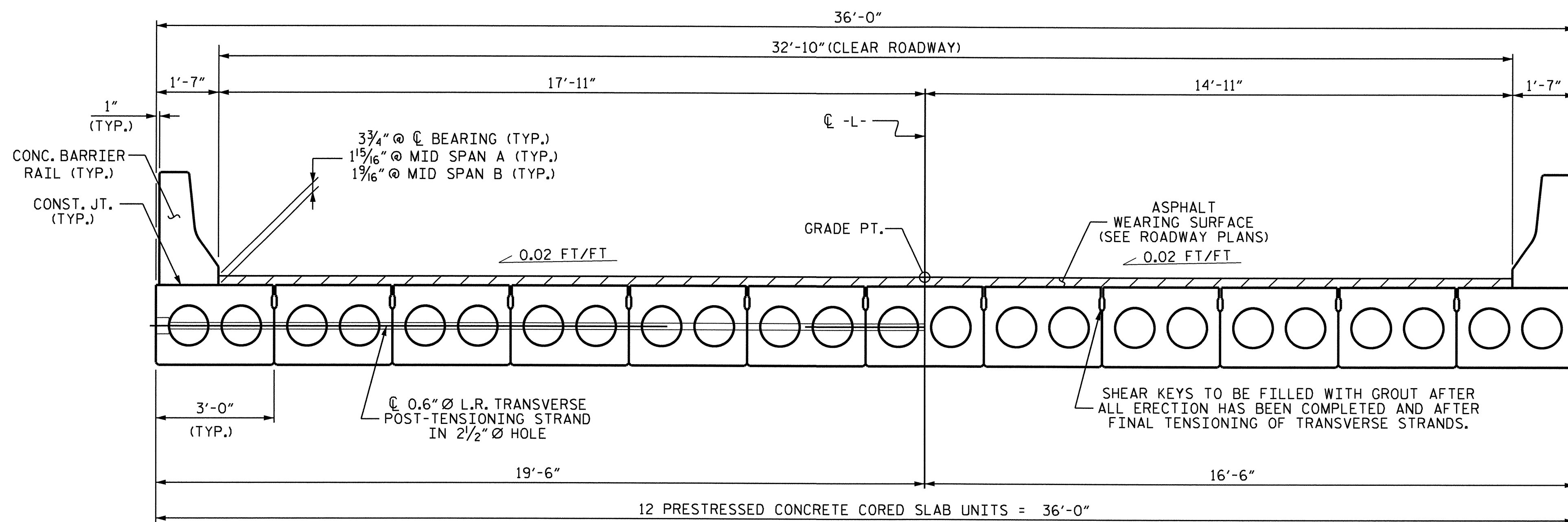


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

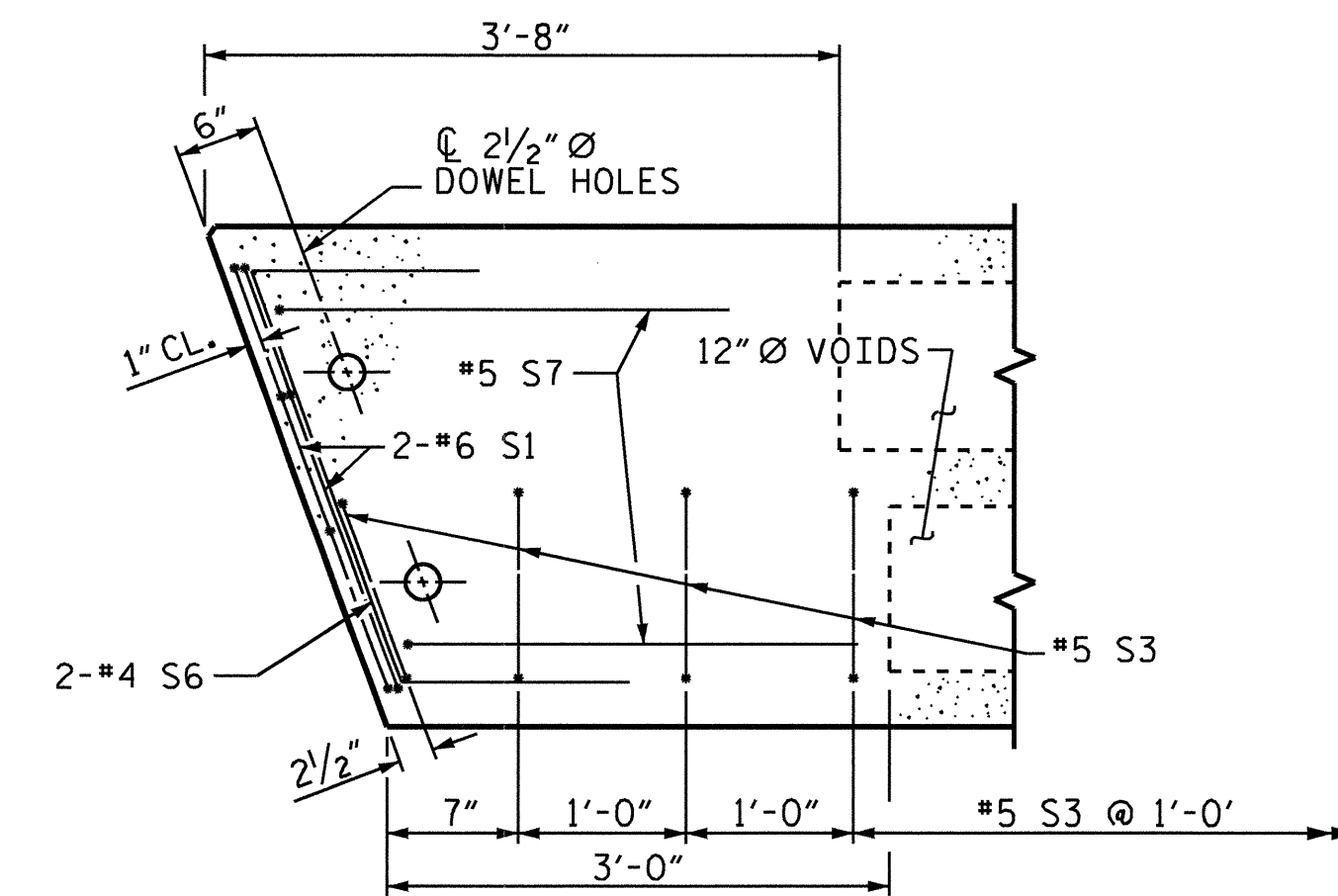
STANDARD
LRFR SUMMARY FOR
PRESTRESSED
CONCRETE GIRDERS
(NON-INTERSTATE TRAFFIC)

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

ASSEMBLED BY : G. W. DICKEY DATE : 11-9-2009
 CHECKED BY : A. A. COLE DATE : 11-9-2009
 DRAWN BY : MAA 1/08 REV. 11/2/08RR MAA/GM
 CHECKED BY : GM/DI 2/08



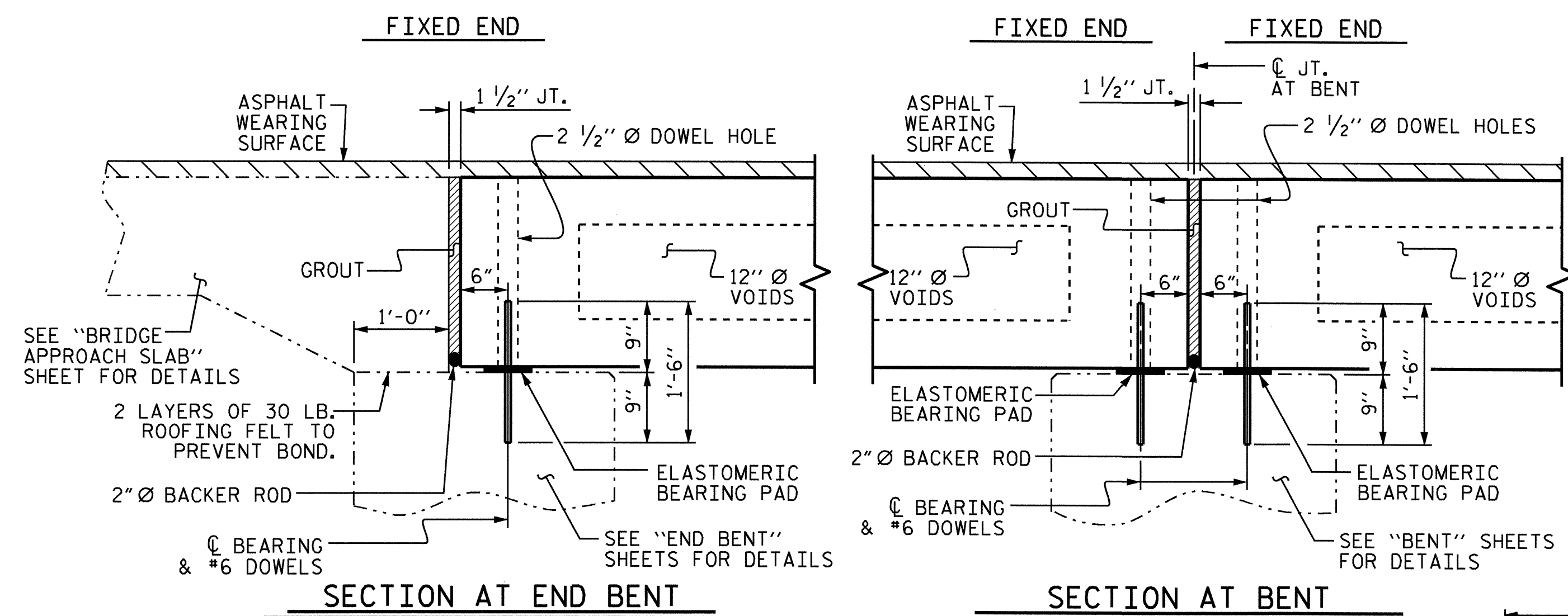
TYPICAL SECTION



PART PLAN-EXTERIOR SECTION

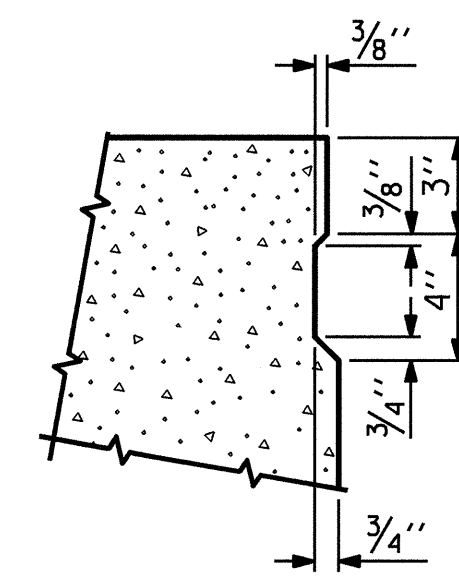
NOTE: EXTERIOR SECTION SHOWN-INTERIOR SECTION SIMILAR EXCEPT OMIT S3 BARS.

THE MIN. HEIGHT OF THE BARRIER RAIL IS SHOWN. THE HEIGHT OF THE BARRIER RAIL VARIES WHILE THE TOP OF THE RAIL FOLLOWS THE PROFILE OF THE GUTTER LINE.



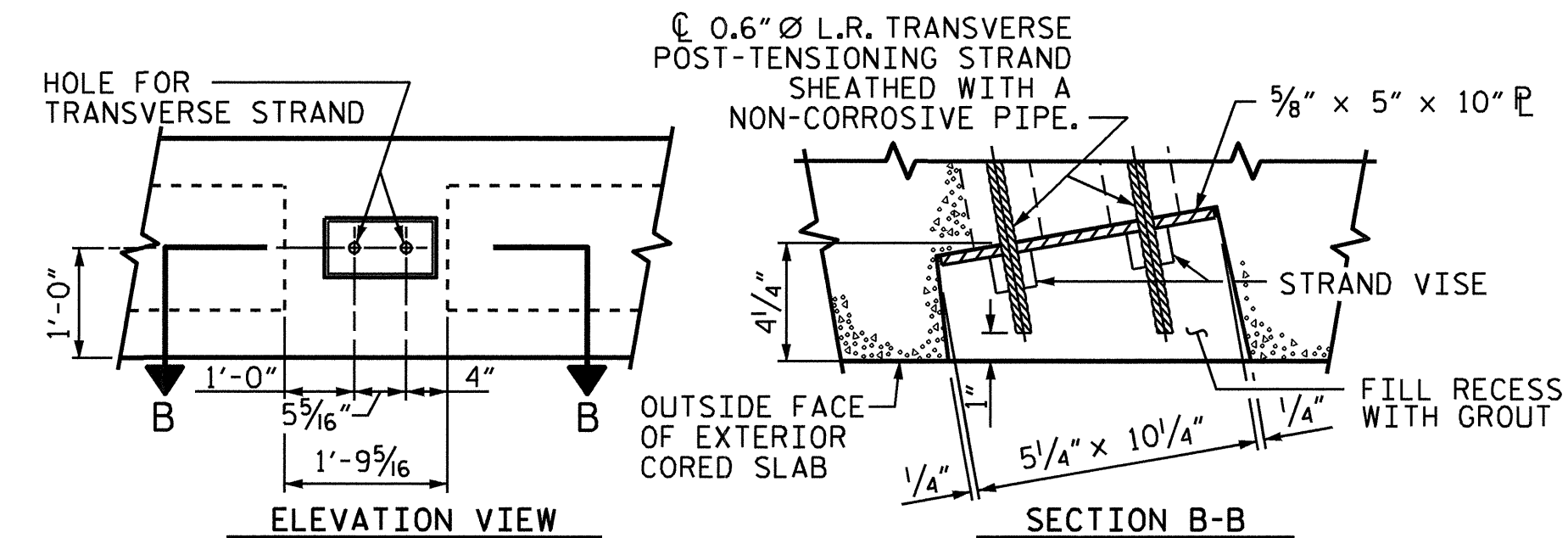
SECTION AT END BENT

SECTION AT BENT

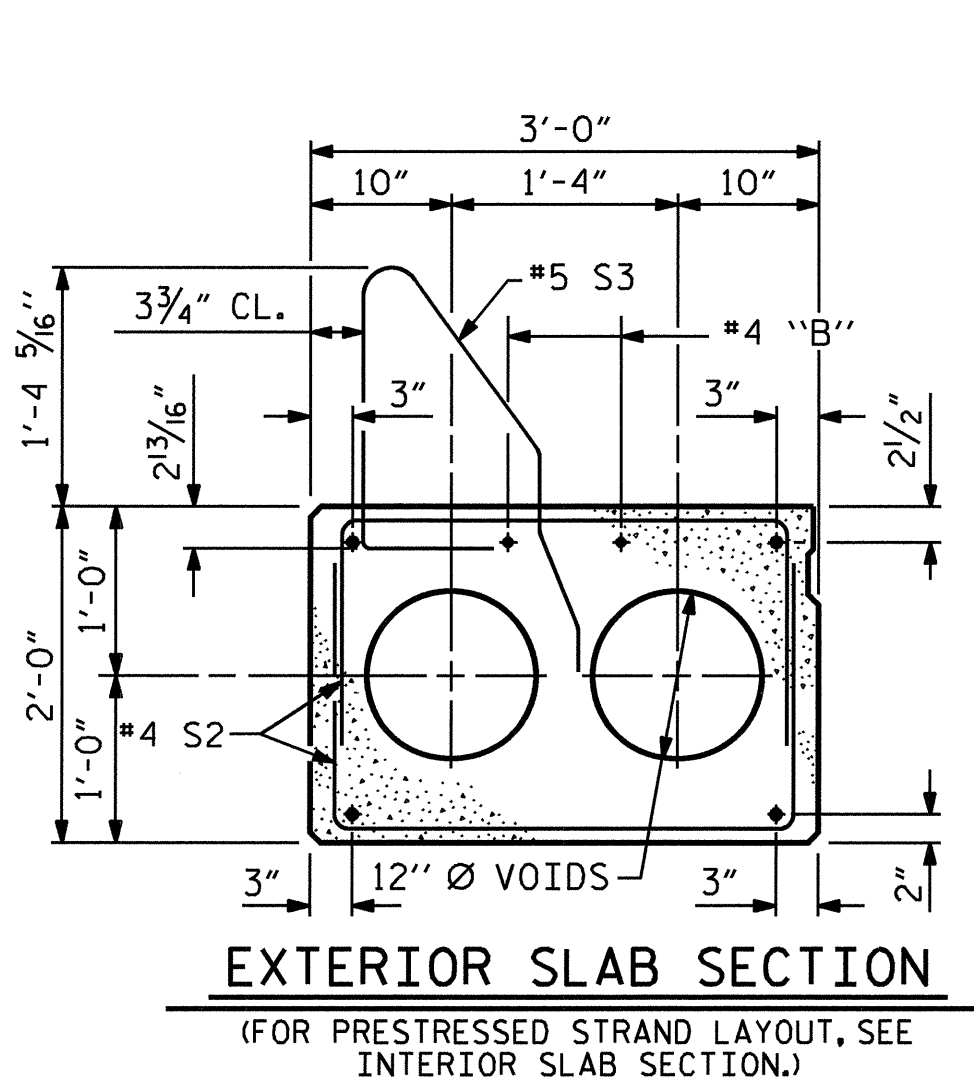


SHEAR KEY DETAIL

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

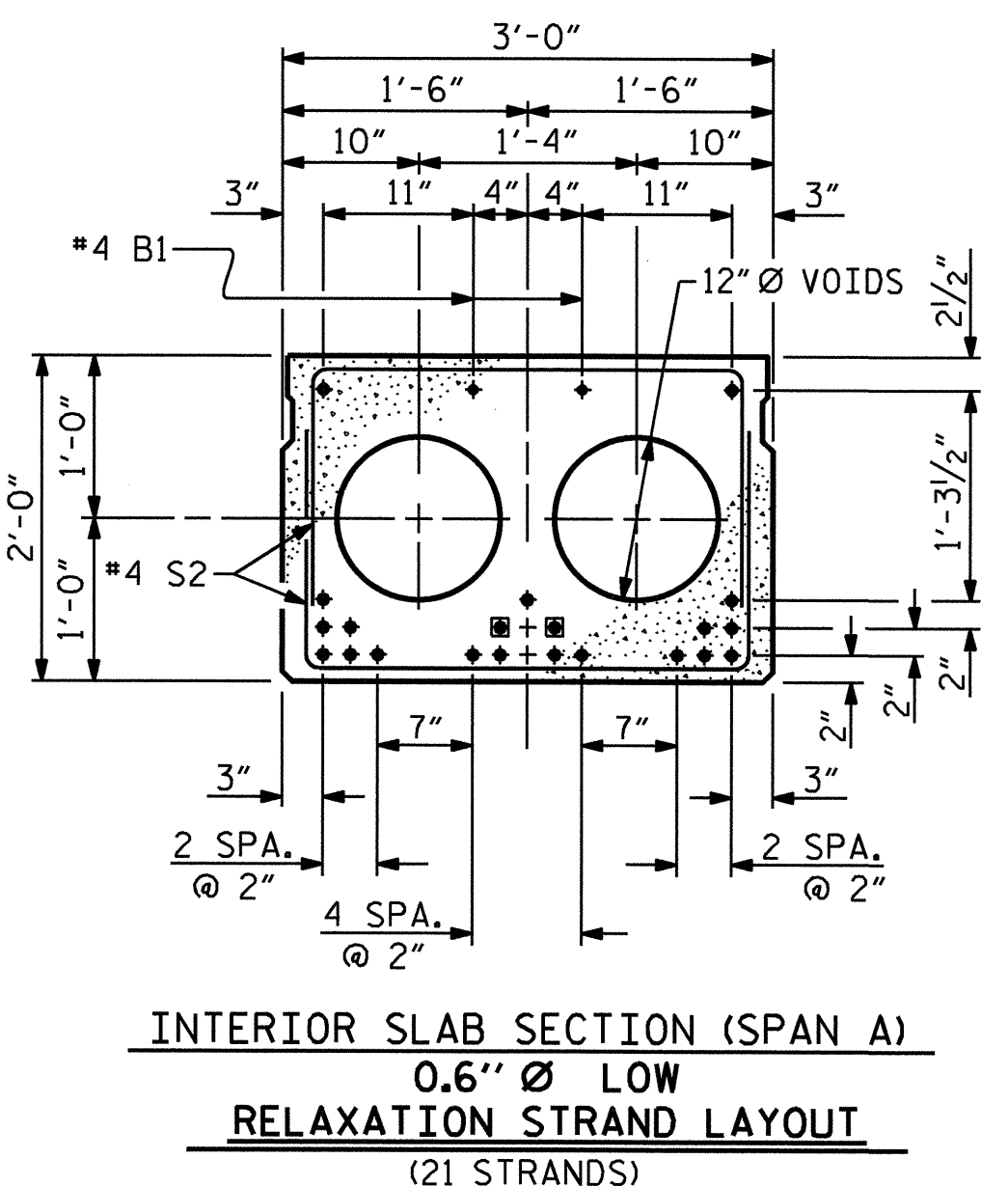


GROUTED RECESS AT END OF POST-TENSIONED STRAND-CORED SLABS

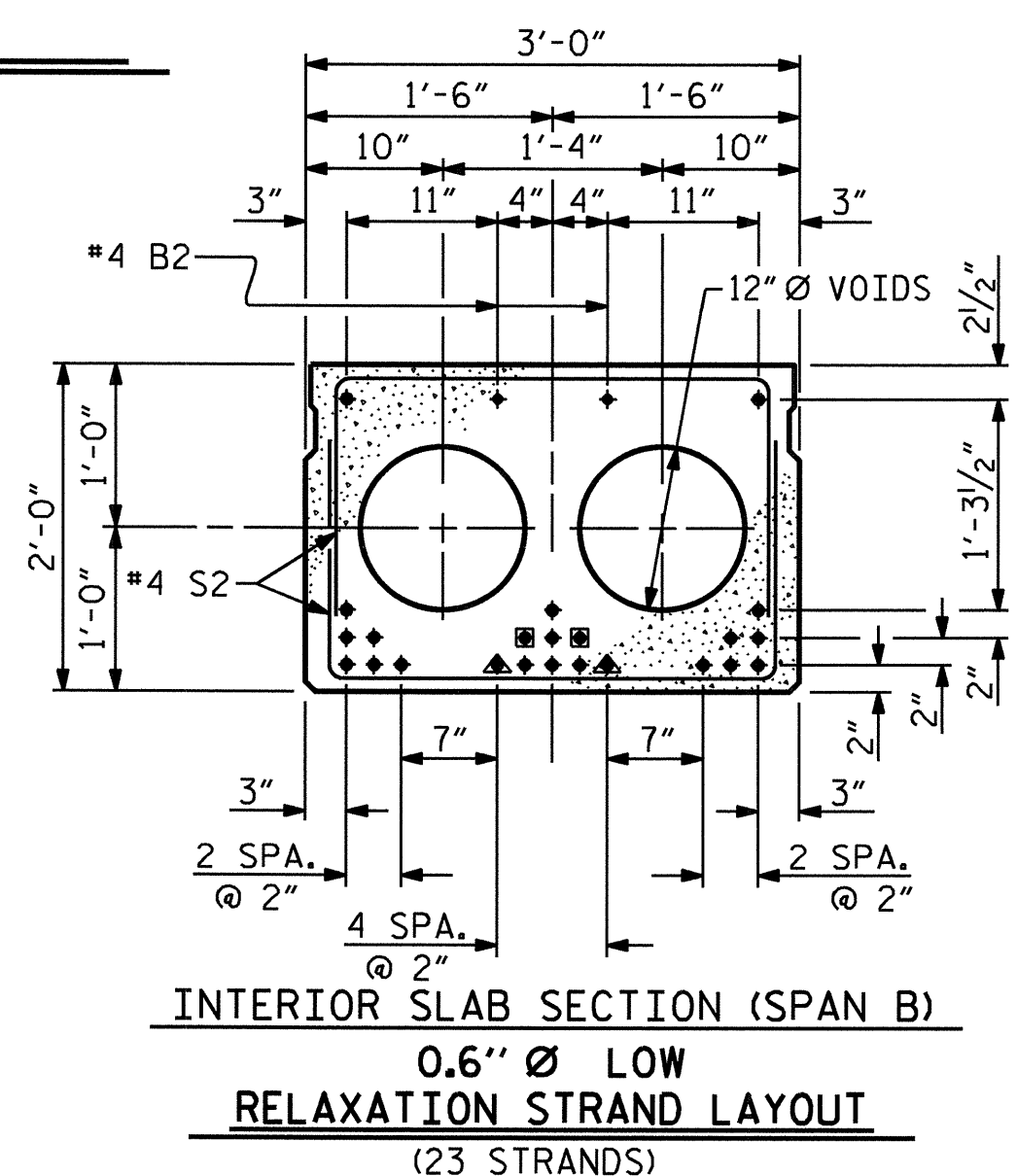


EXTERIOR SLAB SECTION

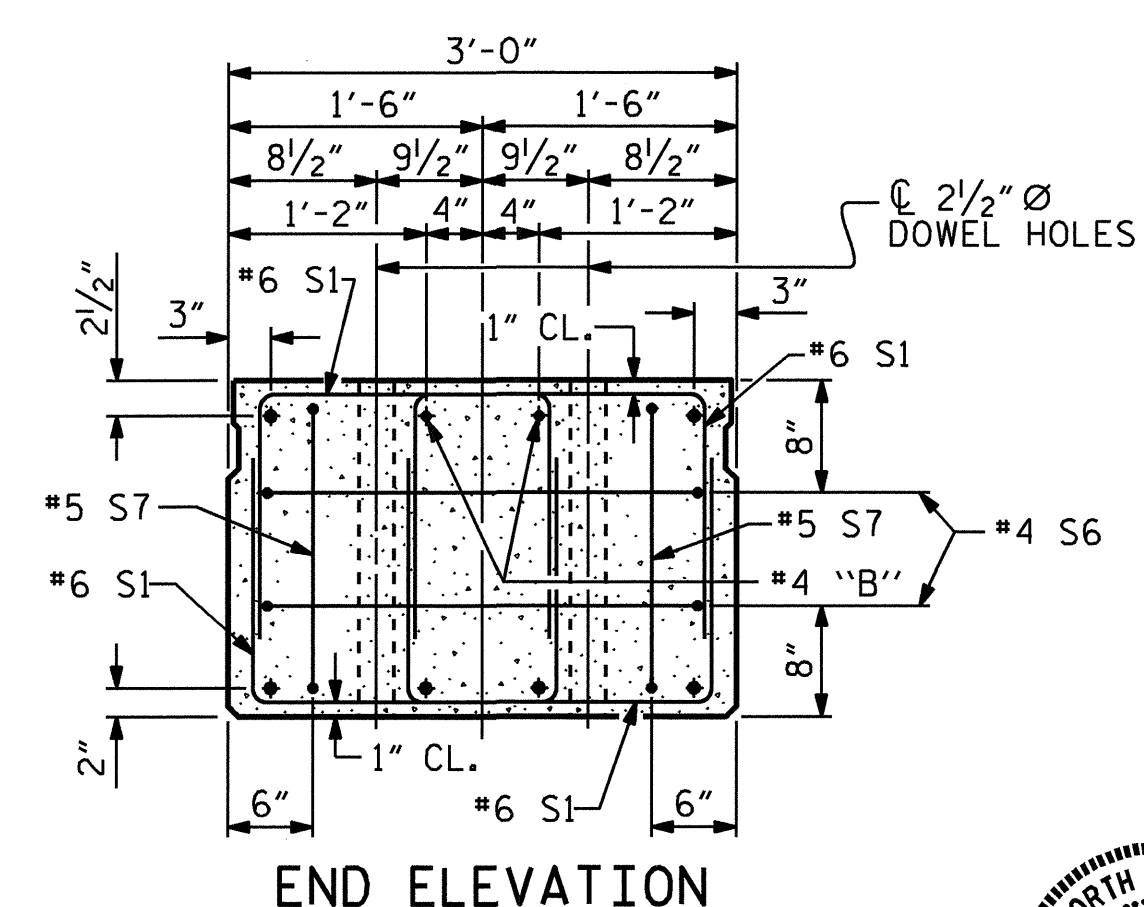
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



INTERIOR SLAB SECTION (SPAN A)
0.6" Ø LOW RELAXATION STRAND LAYOUT
(21 STRANDS)

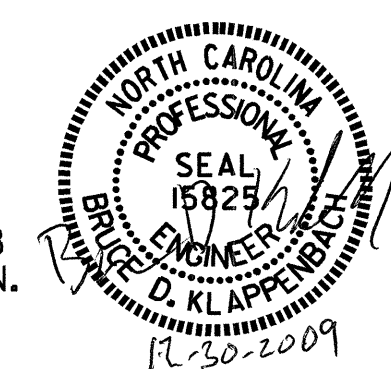


INTERIOR SLAB SECTION (SPAN B)
0.6" Ø LOW RELAXATION STRAND LAYOUT
(23 STRANDS)



END ELEVATION

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



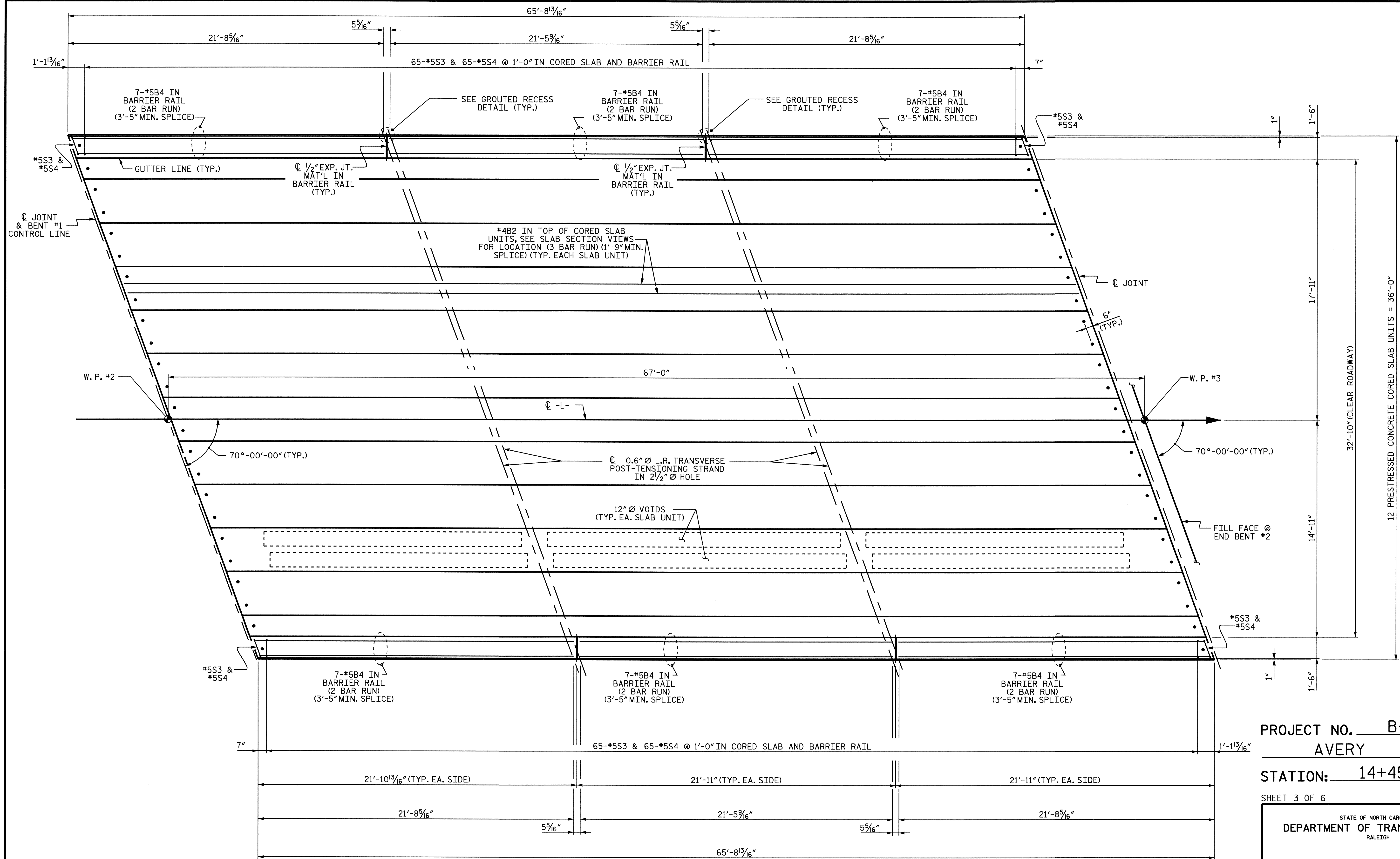
PROJECT NO. B-3608
AVERY COUNTY
STATION: 14+45.50-L-
SHEET 1 OF 6

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

ASSEMBLED BY: H. T. BARBOUR DATE: 12-04-08
CHECKED BY: C. R. YARBROUGH DATE: 9-09
DRAWN BY: MAA 3/09
CHECKED BY: GM 3/09

BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

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

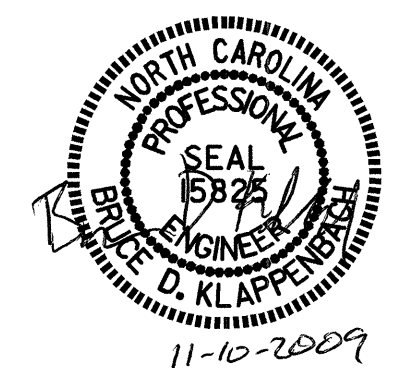


PLAN OF SPAN B

PROJECT NO. B-3608
AVERY COUNTY
 STATION: 14+45.50-L-
 SHEET 3 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

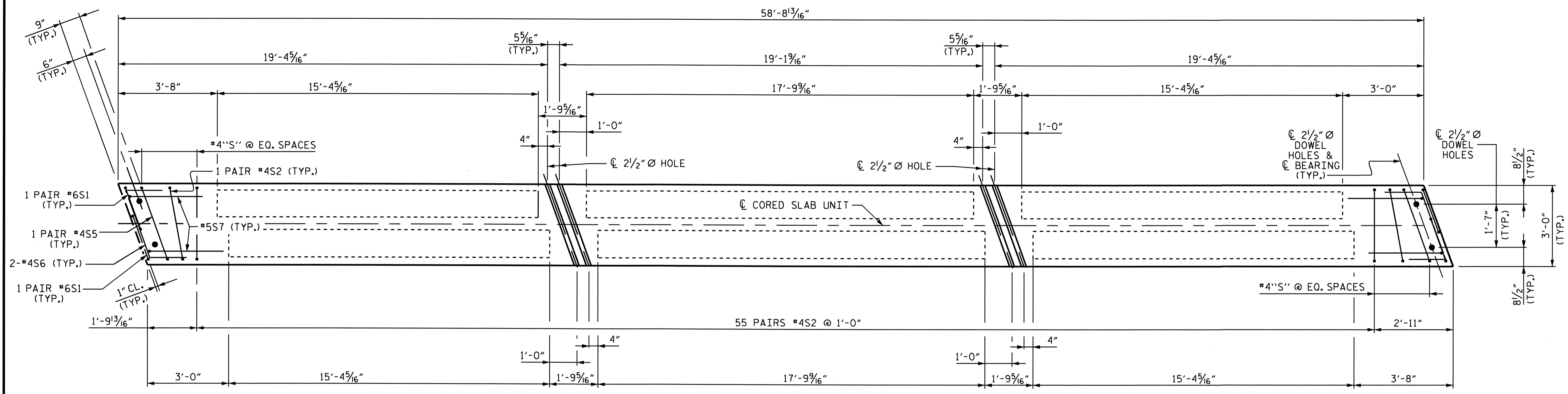
SUPERSTRUCTURE
 PLAN OF SPAN B



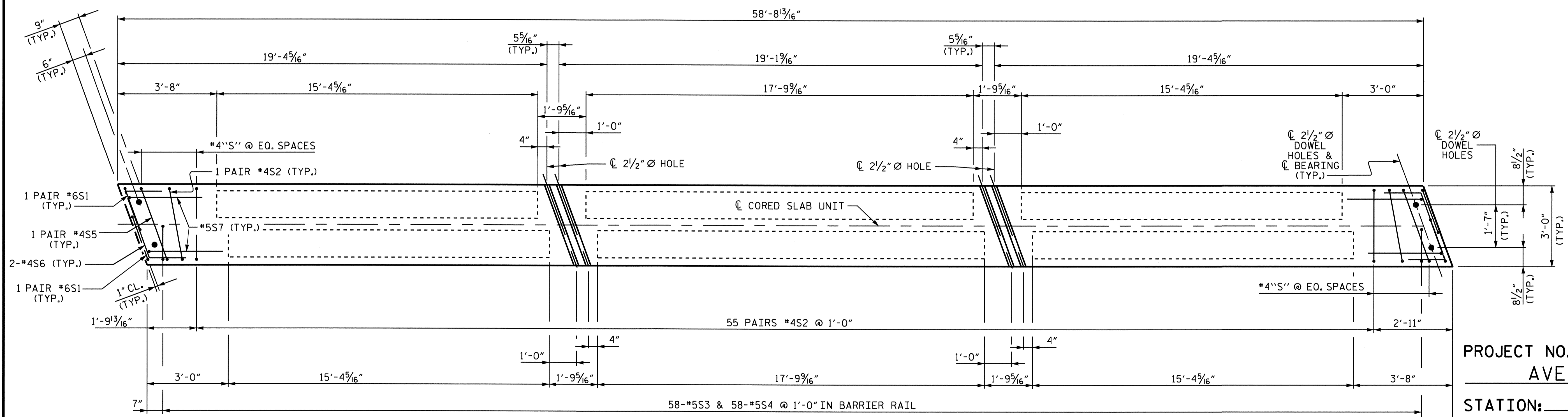
DRAWN BY : H. T. BARBOUR DATE : 6-02-09
 CHECKED BY : C. R. YARBROUGH DATE : 9-09

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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7	
1			3			TOTAL SHEETS	22
2			4				



PLAN OF INTERIOR CORED SLAB UNIT

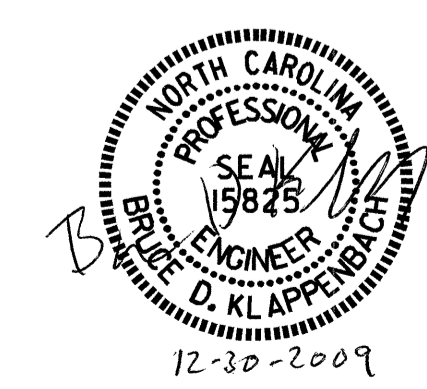


PLAN OF EXTERIOR CORED SLAB UNIT

PROJECT NO. B-3608
AVERY COUNTY
 STATION: 14+45.50-L

SHEET 4 OF 6

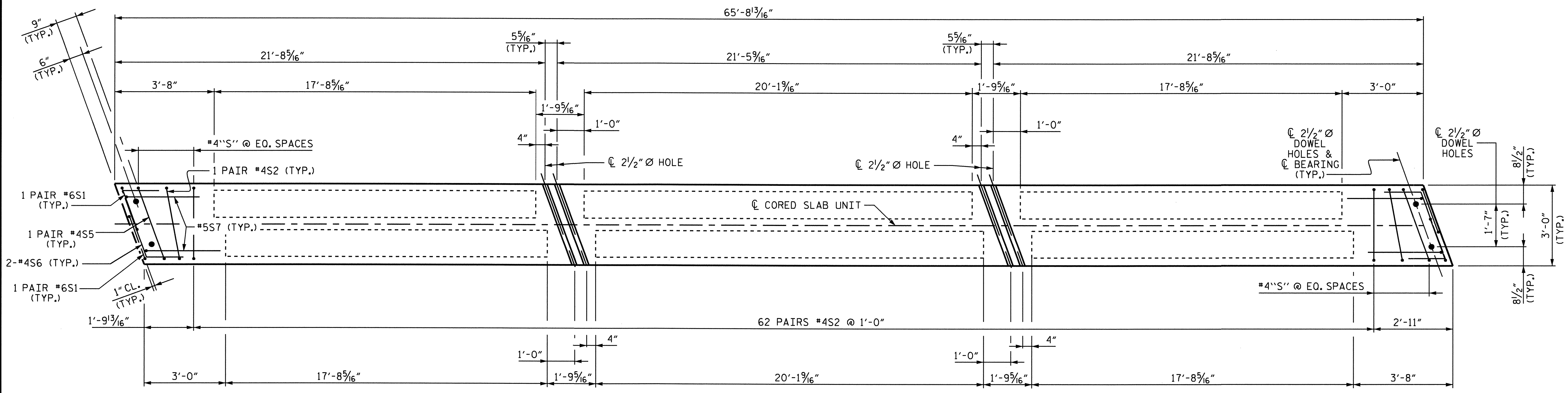
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 3'-0" X 2'-0"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT
 SPAN A



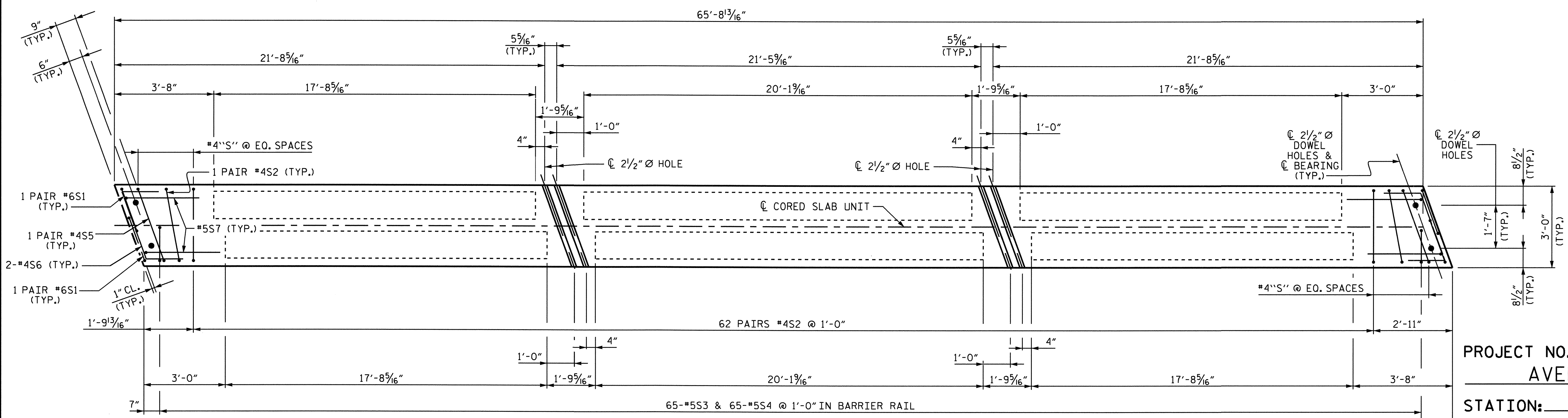
DRAWN BY : H. T. BARBOUR DATE : 5-28-09
 CHECKED BY : C. R. YARBROUGH DATE : 9-09

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

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PLAN OF INTERIOR CORED SLAB UNIT

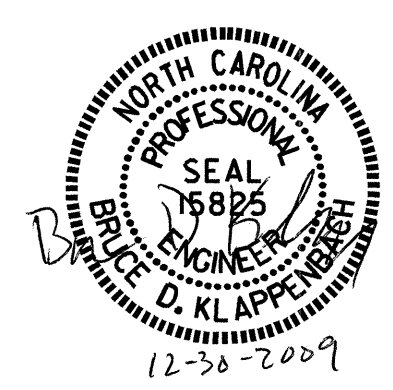


PLAN OF EXTERIOR CORED SLAB UNIT

PROJECT NO. B-3608
AVERY COUNTY
 STATION: 14+45.50-L-

SHEET 5 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 3'-0" X 2'-0"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT
 SPAN B



DRAWN BY : H. T. BARBOUR DATE : 5-28-09
 CHECKED BY : C. R. YARBROUGH DATE : 9-09

29-DEC-2009 12:44
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 hbarbour

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	5-9	
1			3			TOTAL SHEETS 22	
2			4				

NOTES

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

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

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

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

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

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

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 5900 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

THE #4 S2 STIRRUPS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO THE GROUTED RECESS.

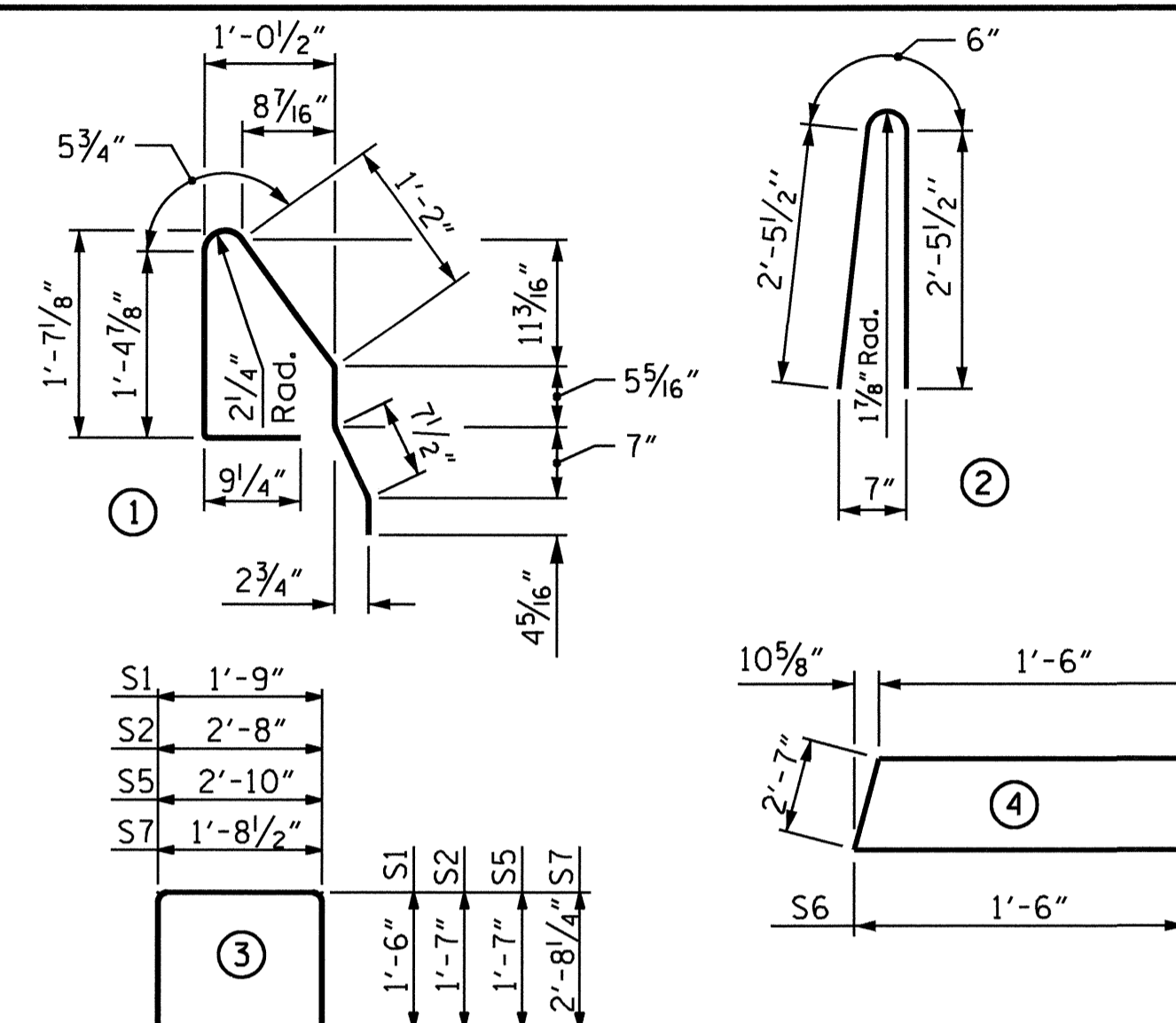
TRANSVERSE POST TENSIONING OF THE CORED SLAB UNITS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, EXCEPT THAT THE STRANDS SHALL BE 0.6" Ø AND TENSIONED TO 43,950 POUNDS.

MAINTAIN A SYMMETRIC TENSION FORCE BETWEEN EACH PAIR OF TRANSVERSE POST TENSIONING STRANDS IN THE DIAPHRAGM.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISION.

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE CORED SLAB SECTION

BAR NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
			LENGTH	WEIGHT	LENGTH	WEIGHT
B1	#4	STR	20'-8"	83	20'-8"	83
S1	#6	3	4'-9"	57	4'-9"	57
S2	#4	3	5'-10"	444	5'-10"	444
*S3	#5	1	5'-3"	329		
S5	#4	3	6'-0"	16	6'-0"	16
S6	#4	4	5'-7"	15	5'-7"	15
S7	#5	3	7'-1"	30	7'-1"	30
REINFORCING STEEL			LBS. 645		645	
* EPOXY COATED REINFORCING STEEL			LBS. 329		329	
7400 P.S.I. CONCRETE			CU. YDS. 10.3		10.2	
0.6" Ø L.R. STRANDS			No.	21		21

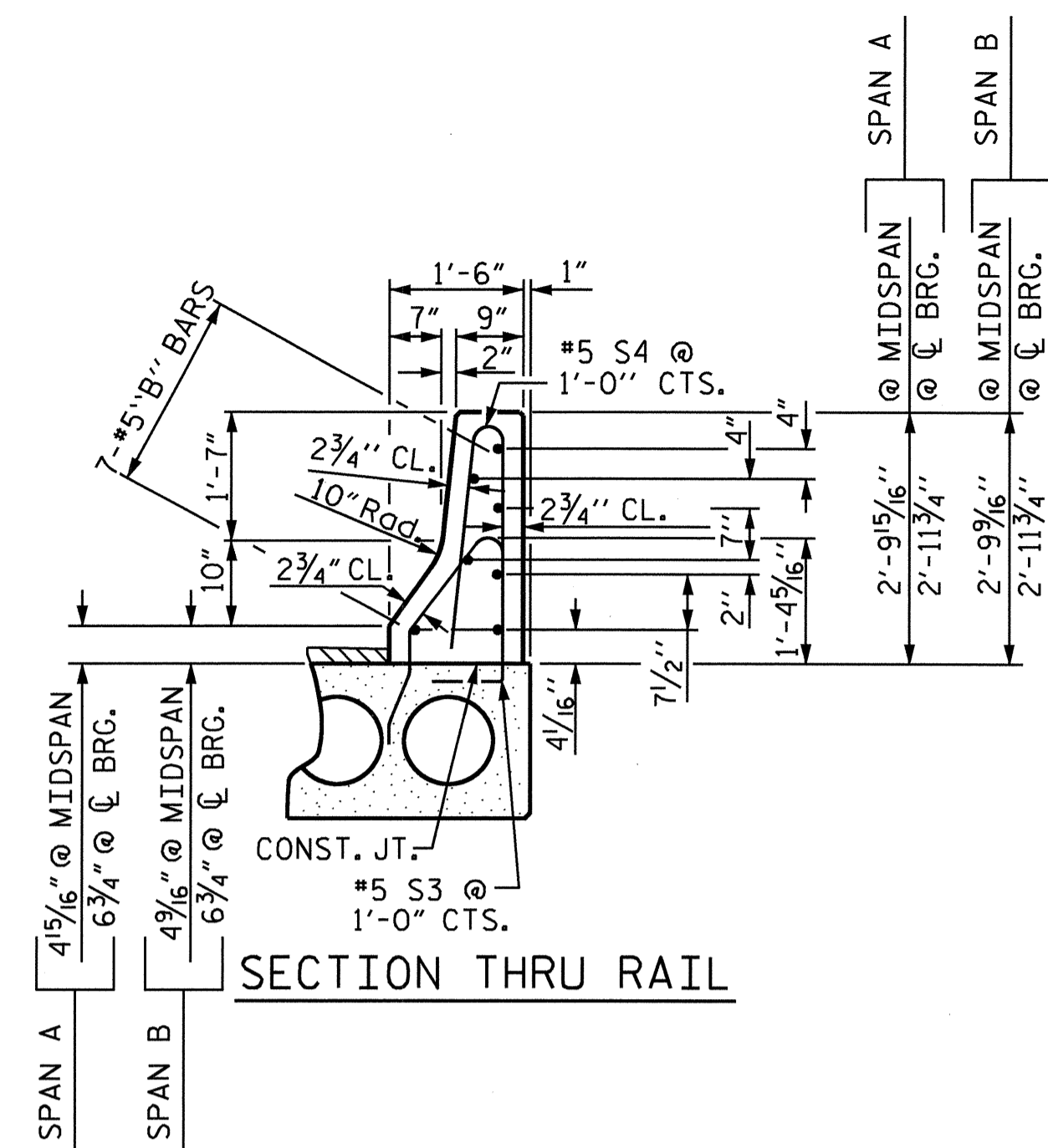
BILL OF MATERIAL FOR ONE CORED SLAB SECTION

BAR NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
			LENGTH	WEIGHT	LENGTH	WEIGHT
B2	#4	STR	23'-0"	92	23'-0"	92
S1	#6	3	4'-9"	57	4'-9"	57
S2	#4	3	5'-10"	499	5'-10"	499
*S3	#5	1	5'-3"	367		
S5	#4	3	6'-0"	16	6'-0"	16
S6	#4	4	5'-7"	15	5'-7"	15
S7	#5	3	7'-1"	30	7'-1"	30
REINFORCING STEEL			LBS. 709		709	
* EPOXY COATED REINFORCING STEEL			LBS. 367		367	
7400 P.S.I. CONCRETE			CU. YDS. 11.4		11.4	
0.6" Ø L.R. STRANDS			No.	23		23

DEAD LOAD DEFLECTION AND CAMBER

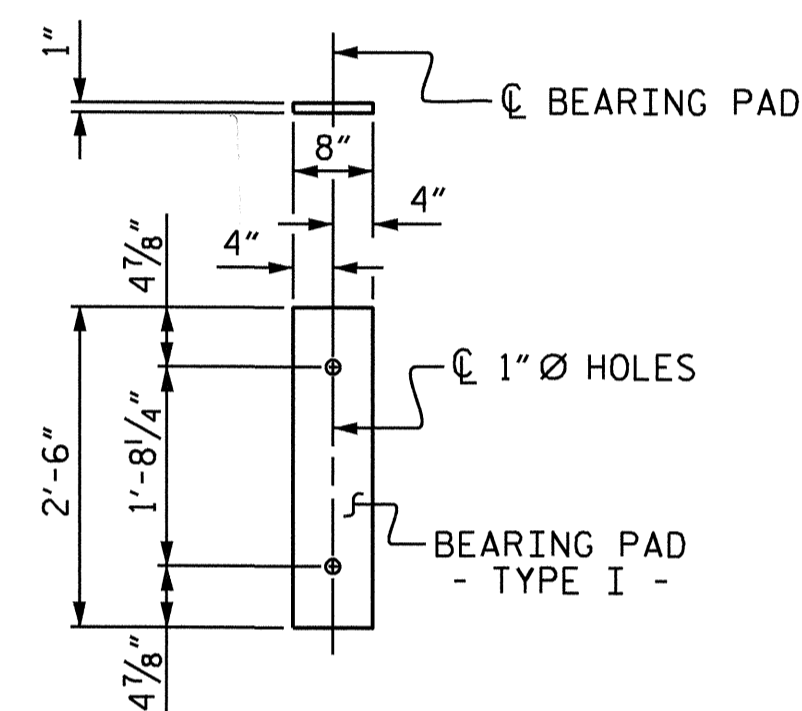
	SPAN A		SPAN B	
	EXT. UNITS	INT. UNITS	EXT. UNITS	INT. UNITS
	3'-0" x 2'-0"	3'-0" x 2'-0"	3'-0" x 2'-0"	3'-0" x 2'-0"
	0.6" Ø L.R. STRAND	0.6" Ø L.R. STRAND	0.6" Ø L.R. STRAND	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2 3/16" ↑	2 3/16" ↑	2 1/16" ↑	2 1/16" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD **	3/8" ↓	3/8" ↓	1/2" ↓	1/2" ↓
FINAL CAMBER	1 13/16" ↑	1 13/16" ↑	2 3/16" ↑	2 3/16" ↑

** INCLUDES FUTURE WEARING SURFACE



SECTION THRU RAIL

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

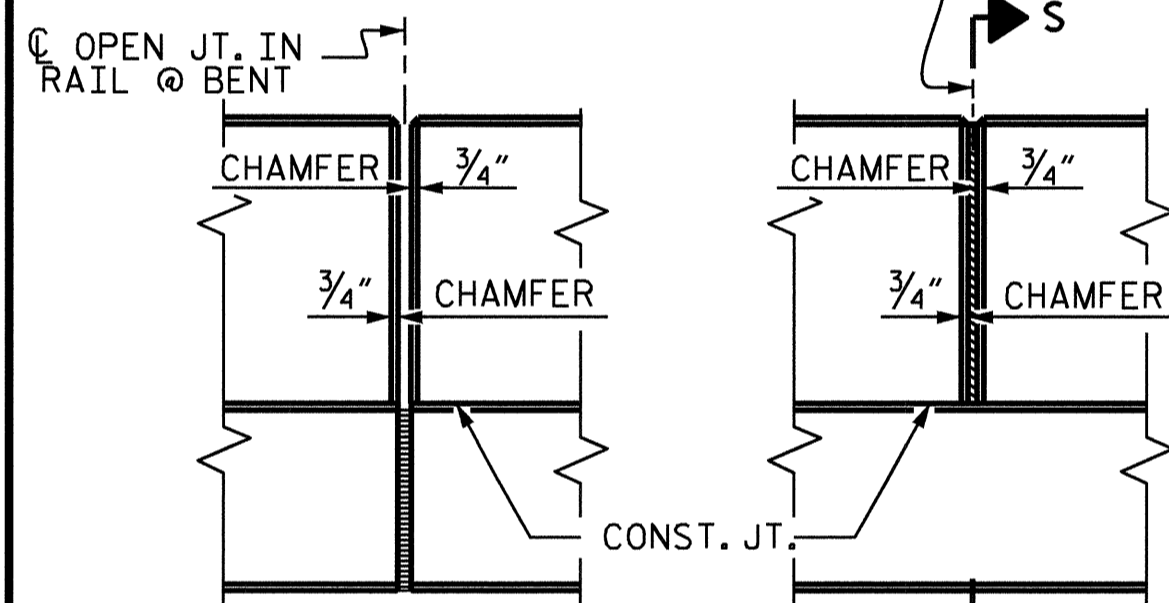


FIXED END
(TYPE I - 48 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

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



ELEVATION AT EXPANSION JOINTS
BARRIER RAIL DETAILS

BILL OF MATERIAL FOR CONCRETE BARRIER RAIL					
BAR NUMBER	SIZE	TYPE	LENGTH	WEIGHT	
*B3	#5	STR	16'-6"	964	
*B4	#5	STR	12'-9"	1117	
*S4	#5	2	5'-5"	1435	
* EPOXY COATED REINFORCING STEEL			LBS. 3516		
CLASS AA CONCRETE			CU. YDS. 29.0		
TOTAL LIN. FT. OF CONCRETE BARRIER RAIL			248.94		

CORED SLABS REQUIRED			
SPAN A			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	58'-8 13/16"	117'-5 5/8"
INTERIOR C.S.	10	58'-8 13/16"	587'-4 1/8"
SUB TOTAL	12	58'-8 13/16"	704'-9 3/4"
SPAN B			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	65'-8 13/16"	131'-5 5/8"
INTERIOR C.S.	10	65'-8 13/16"	657'-4 1/8"
SUB TOTAL	12	65'-8 13/16"	788'-9 3/4"
TOTAL			1493'-7 1/2"

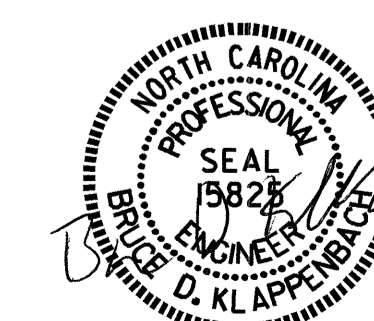
ASSEMBLED BY : H. T. BARBOUR DATE : 9-09-09
 CHECKED BY : C. R. YARBROUGH DATE : 9-09
 DRAWN BY : WJH 4/89 REV. 7/10/01 RWW/LES
 CHECKED BY : FCJ 5/89 REV. 5/7/03RRR RWW/JTE
 REV. 5/1/06R TLG/GM

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PROJECT NO. B-3608
 AVERY COUNTY
 STATION: 14+45.50-L-

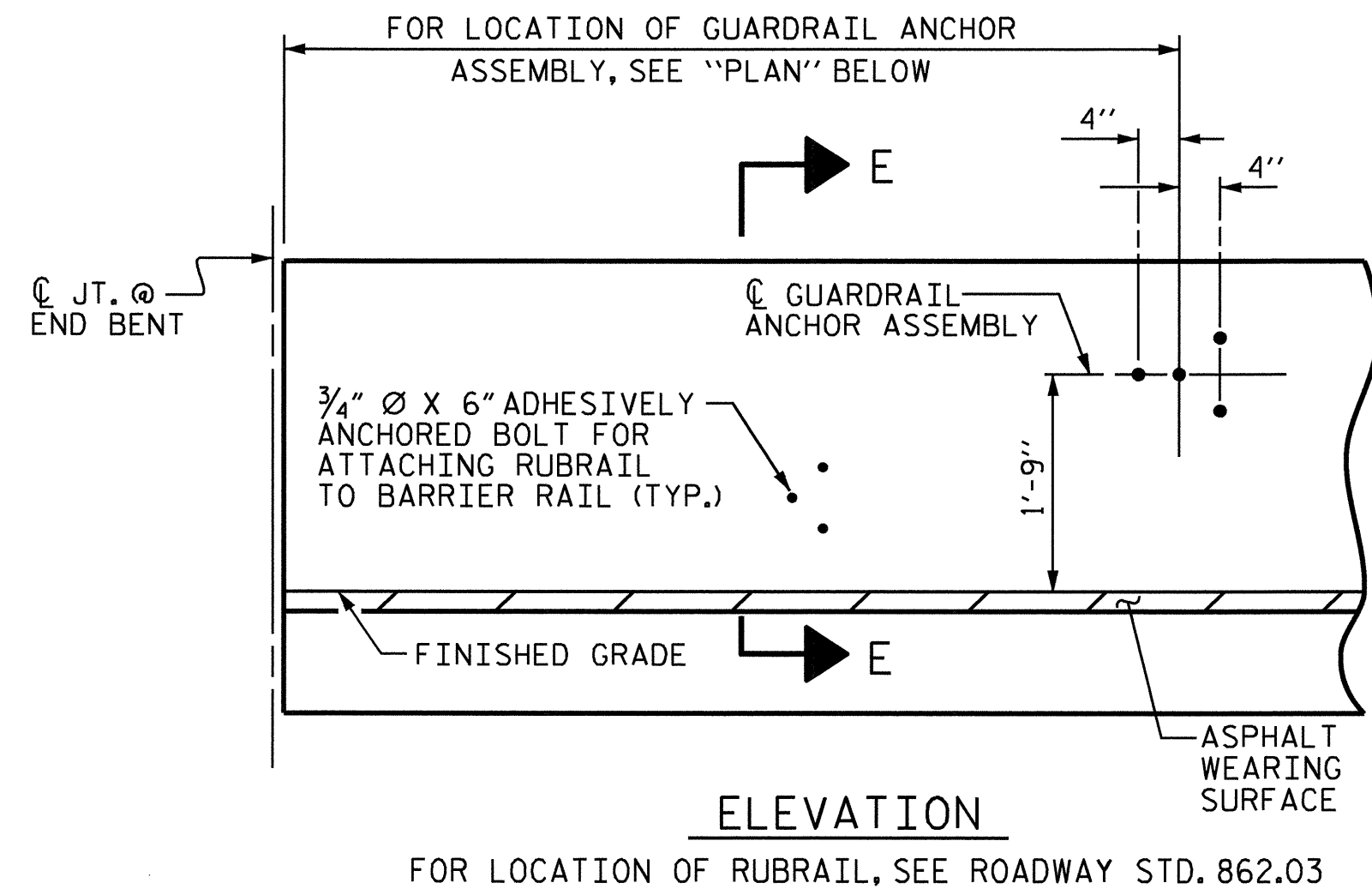
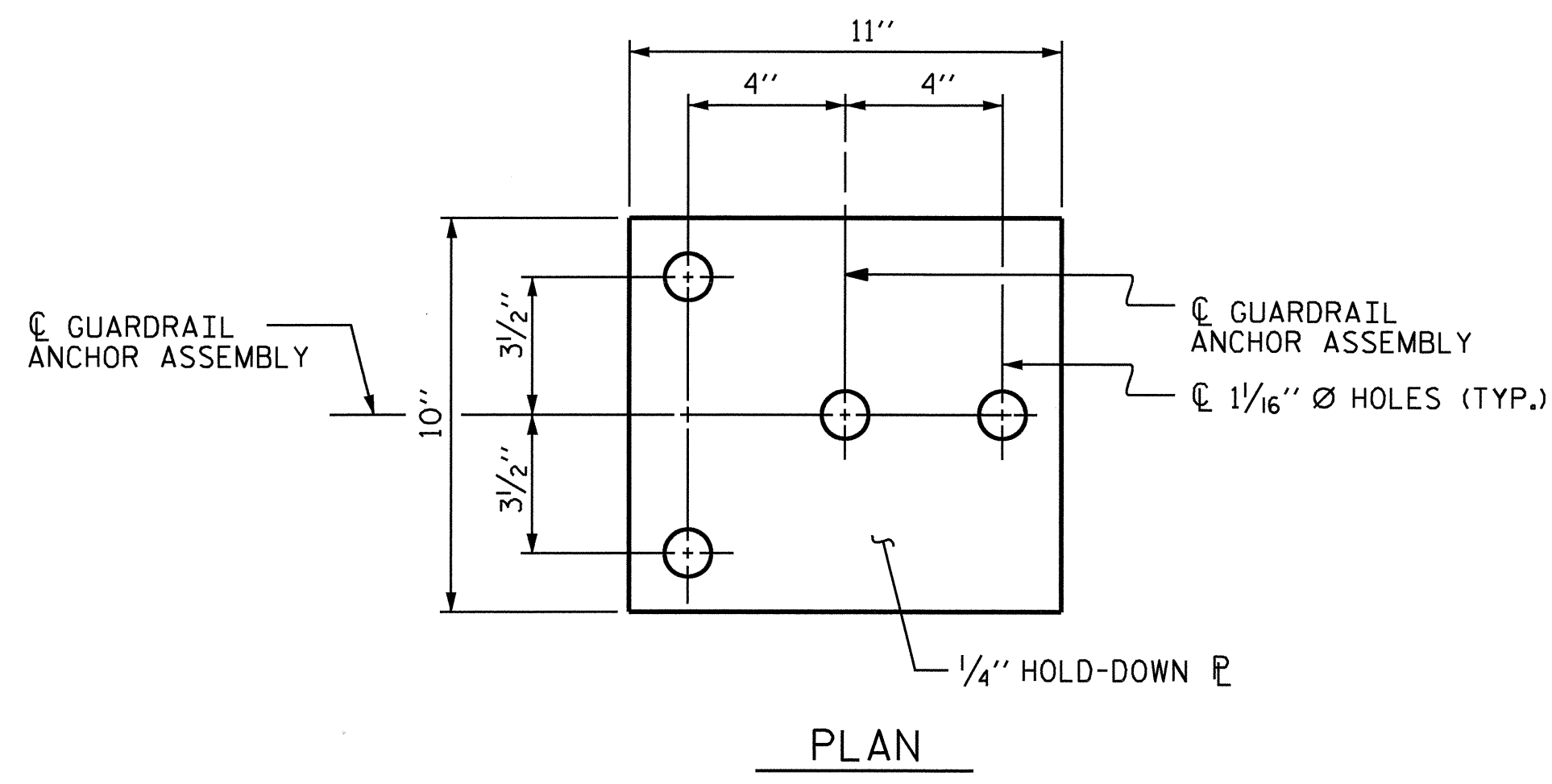
SHEET 6 OF 6

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



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

SHEET NO. S-10
 TOTAL SHEETS 22



NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 4 - 3/8" 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 3/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

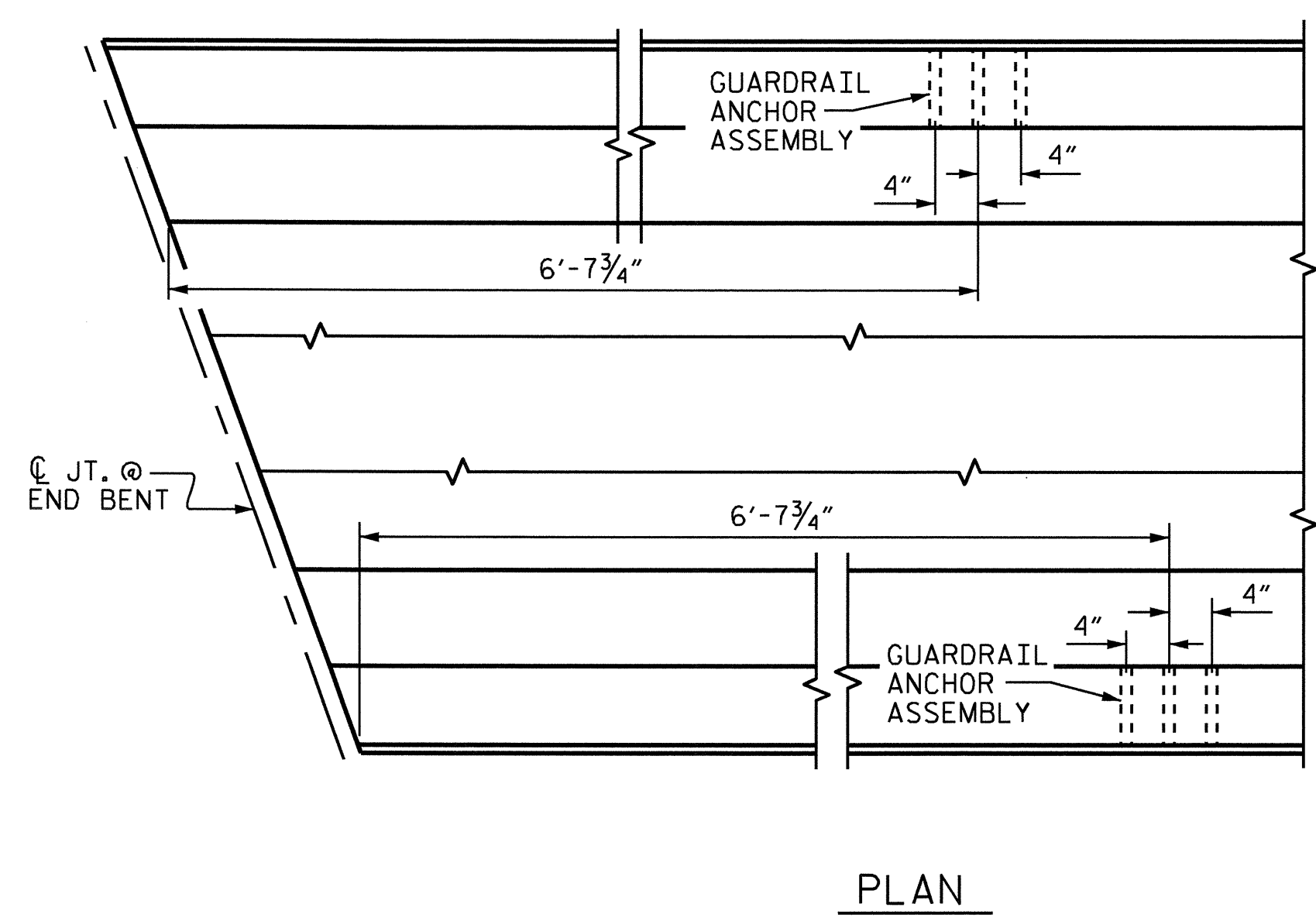
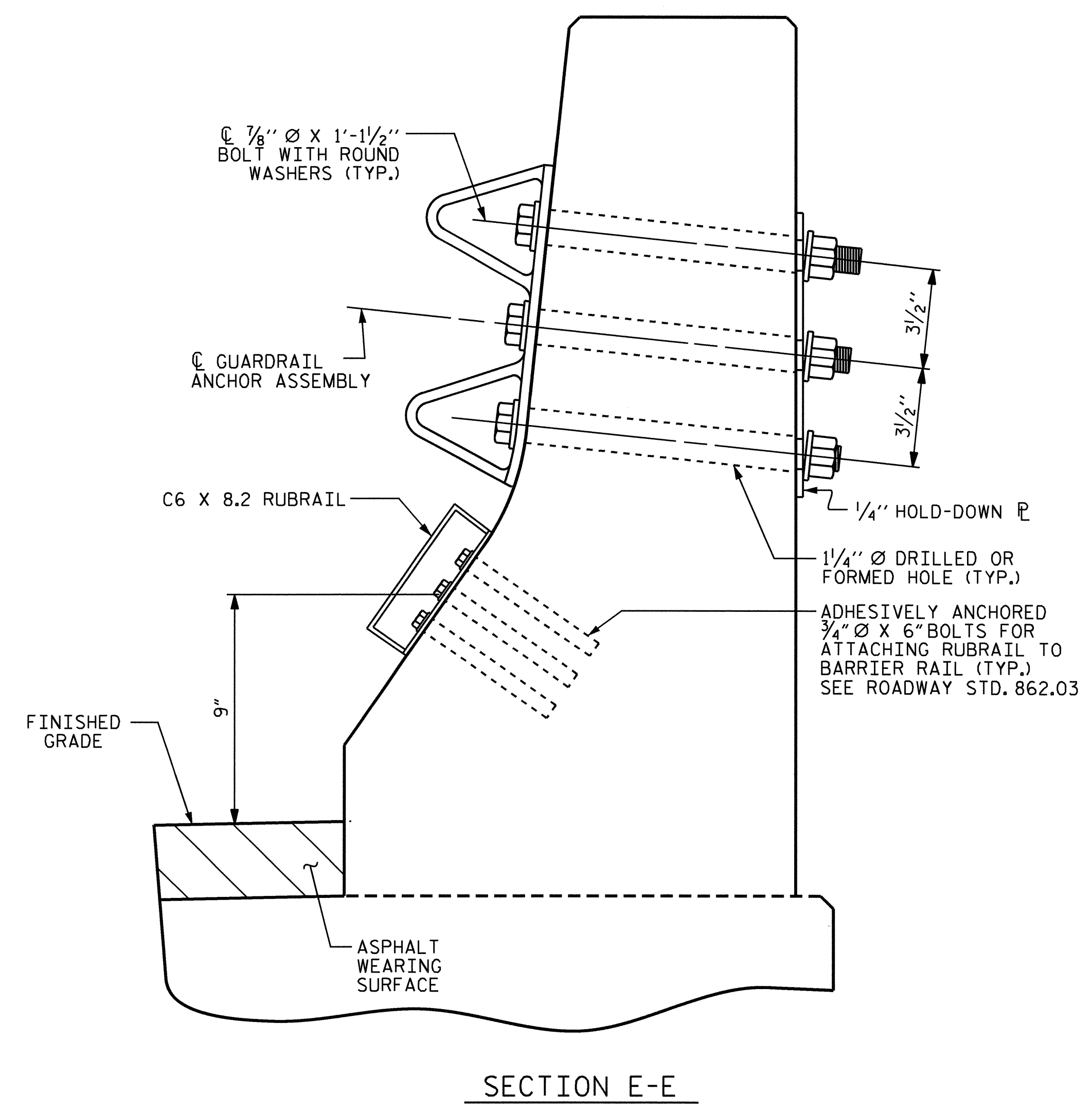
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

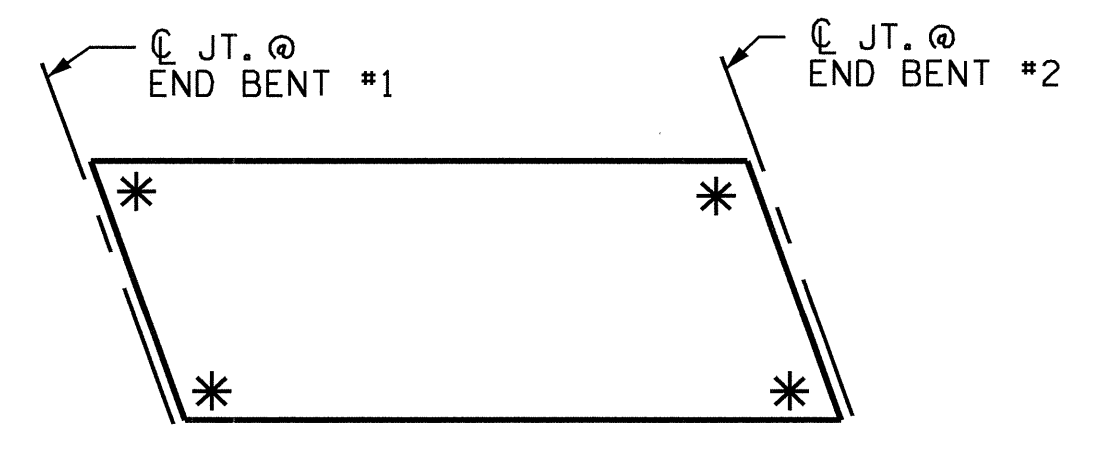
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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

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

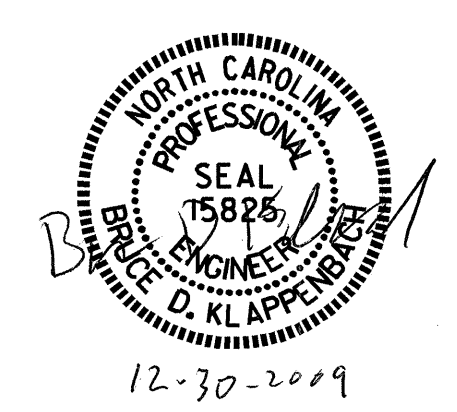


LOCATION OF ANCHORS FOR GUARDRAIL
END BENT #1 SHOWN, END BENT #2 SIMILAR.



GUARDRAIL ANCHOR ASSEMBLY DETAILS

PROJECT NO. B-3608
AVERY COUNTY
 STATION: 14+45.50-L-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD GUARDRAIL ANCHORAGE FOR BARRIER RAIL					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-11
					TOTAL SHEETS 22

ASSEMBLED BY : H. T. BARBOUR	DATE : 6-02-09
CHECKED BY : C. R. YARBROUGH	DATE : 9-09
DRAWN BY : TLA 5/06	ADDED 5/1/06
CHECKED BY : GM 5/06	

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STD. NO. GRA2

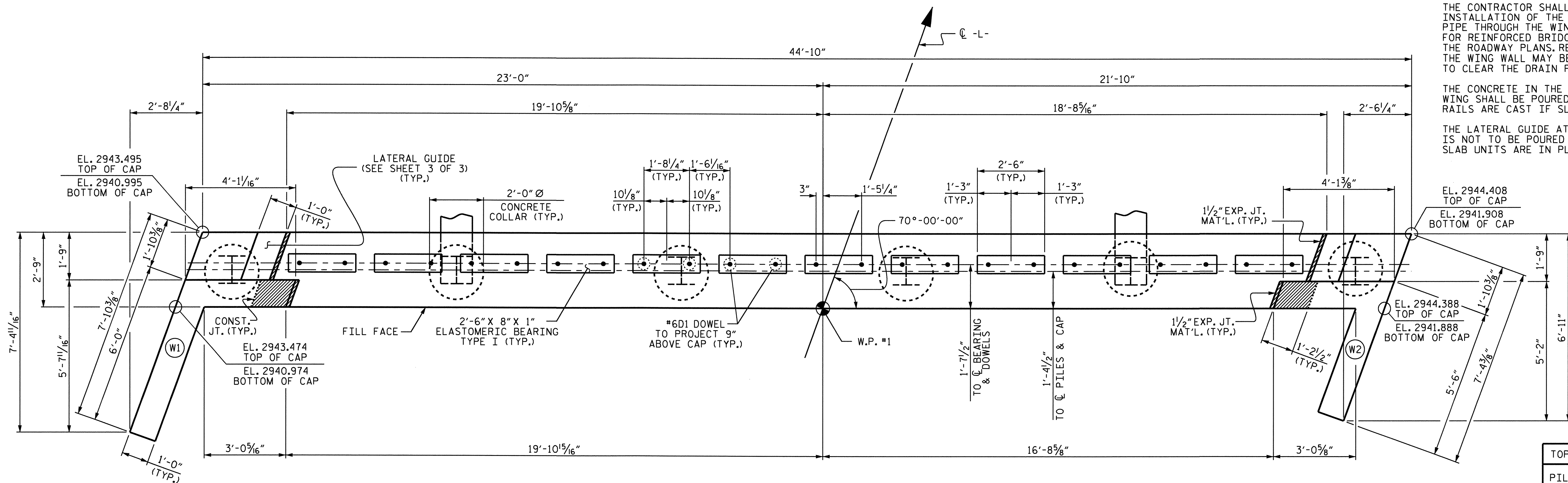
NOTES

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

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

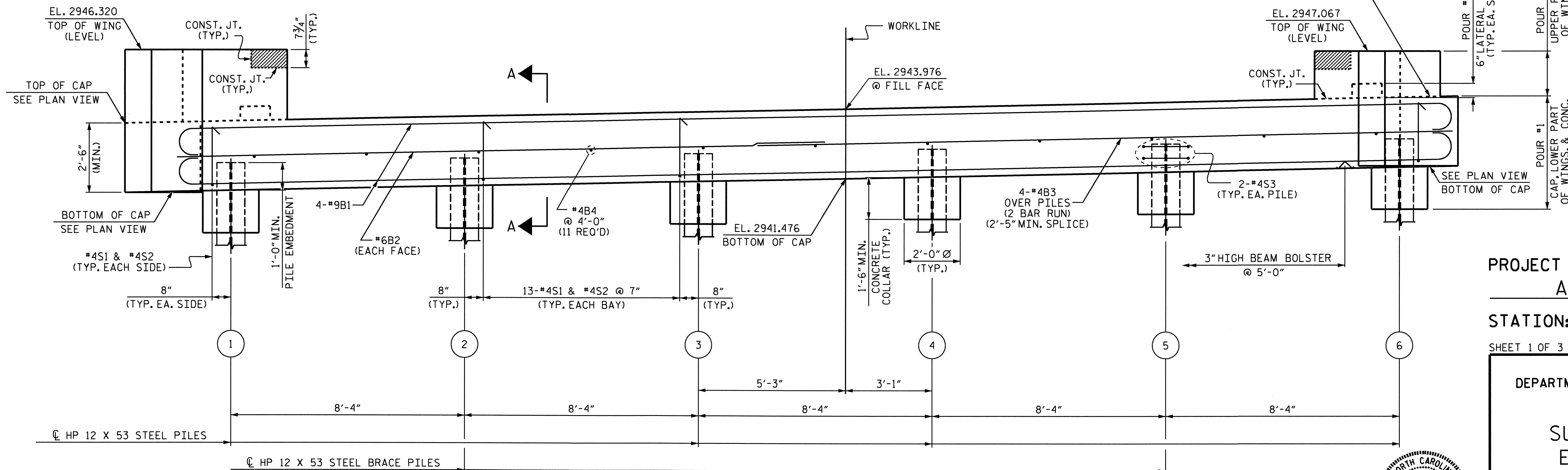
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAILS ARE CAST IF SLIP FORMING IS USED.

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



PLAN

TOP OF PILE ELEVATION	
PILE	ELEVATION
1	2942.040
2	2942.210
3	2942.379
4	2942.549
5	2942.719
6	2942.888



ELEVATION

PROJECT NO. B-3608
AVERY COUNTY
 STATION: 14+45.50-L

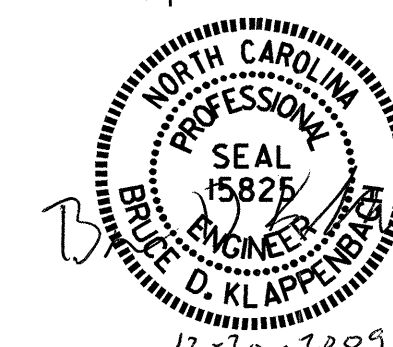
SHEET 1 OF 3

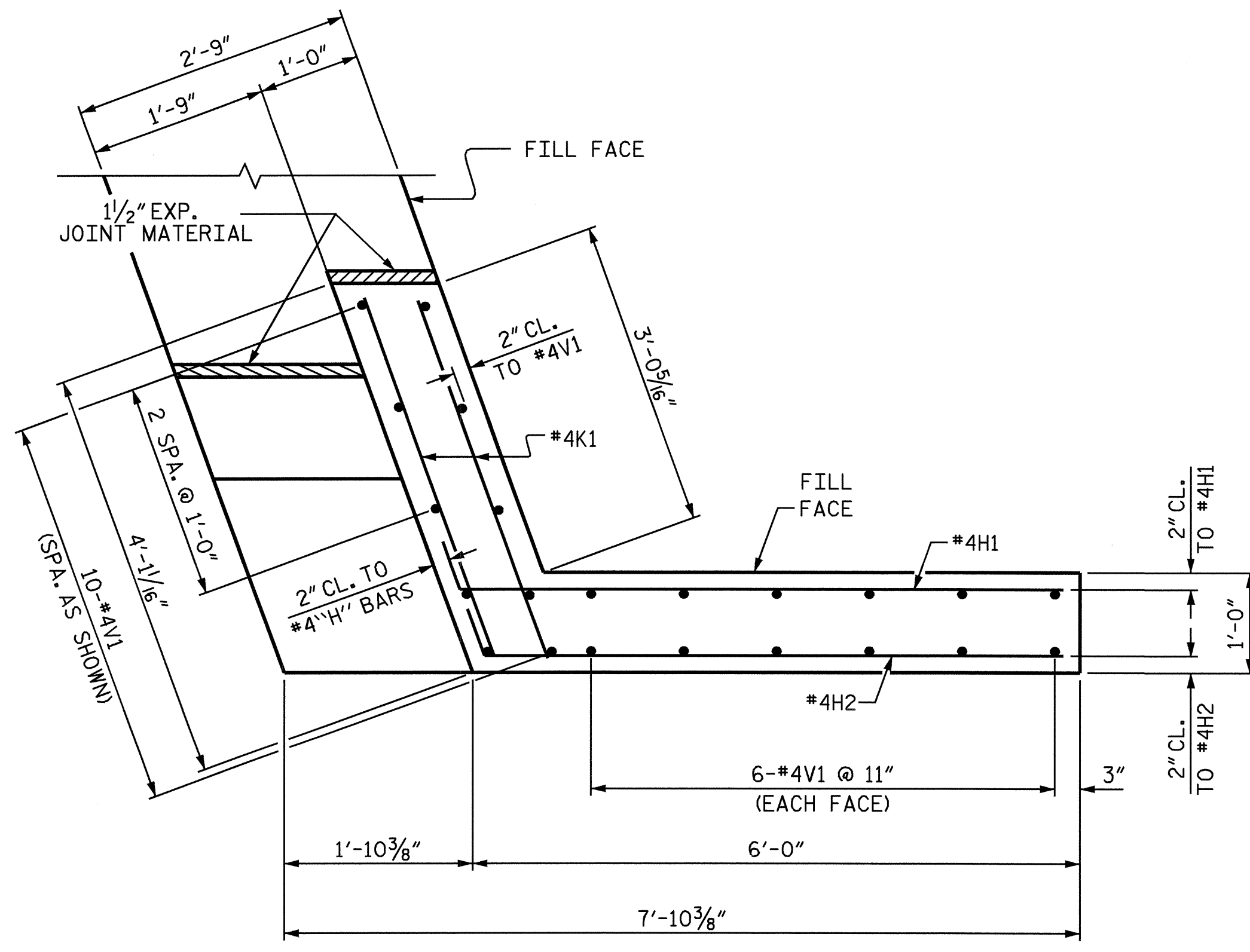
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT #1

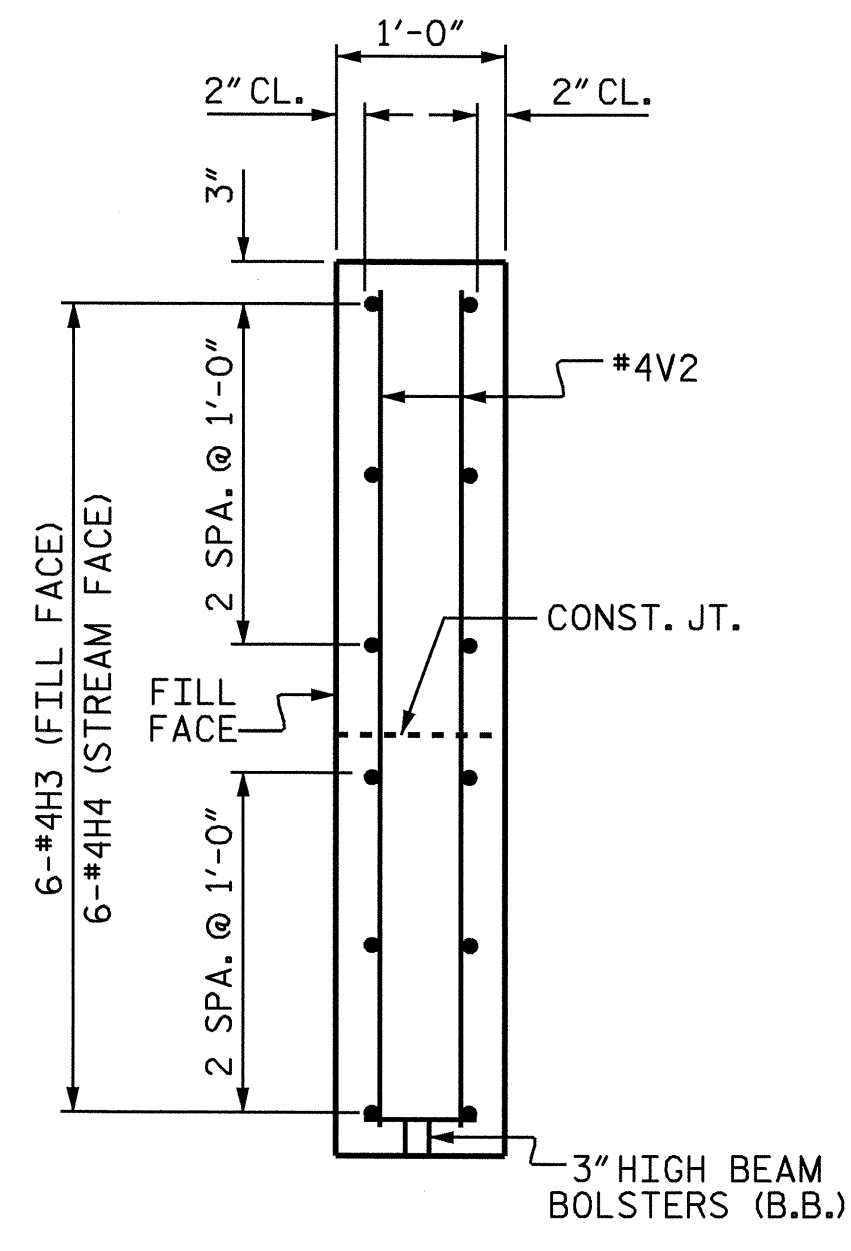
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12	
1			3			TOTAL SHEETS	22
2			4				

DRAWN BY : S.H. SOCKWELL DATE : 10/10/09
 CHECKED BY : D.A. GLADDEN DATE : 10/29/09

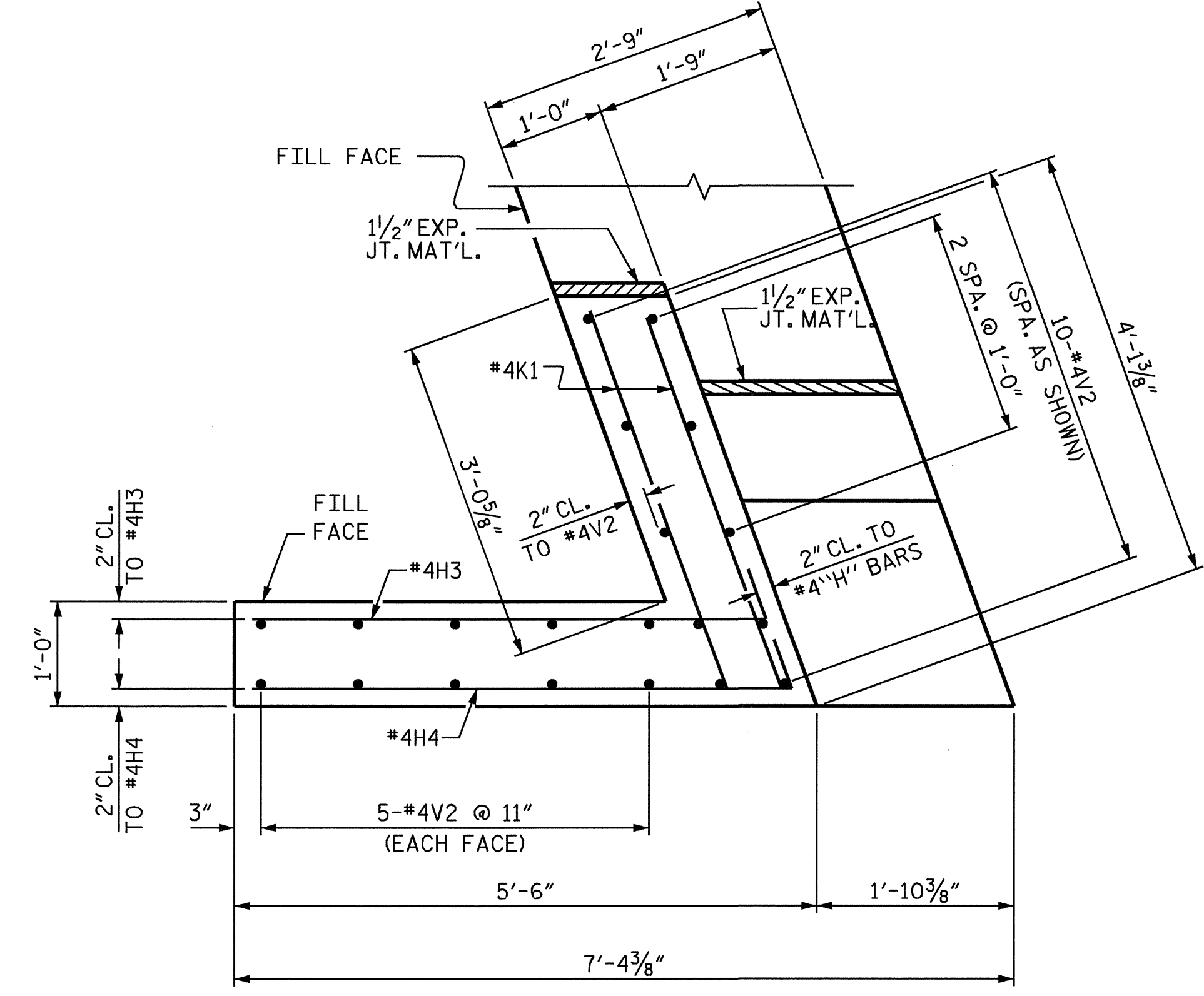




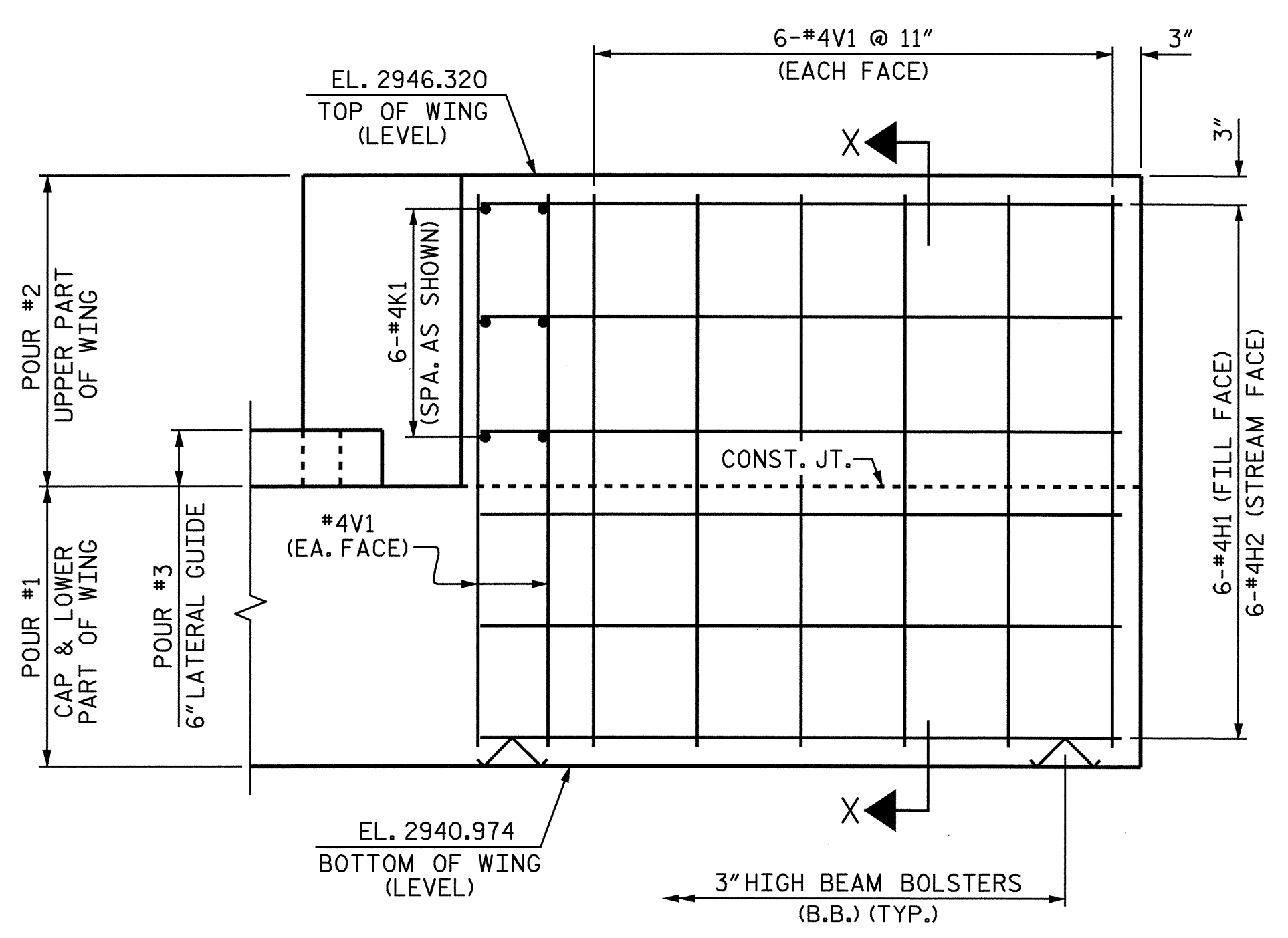
PLAN OF LEFT WING (W1)



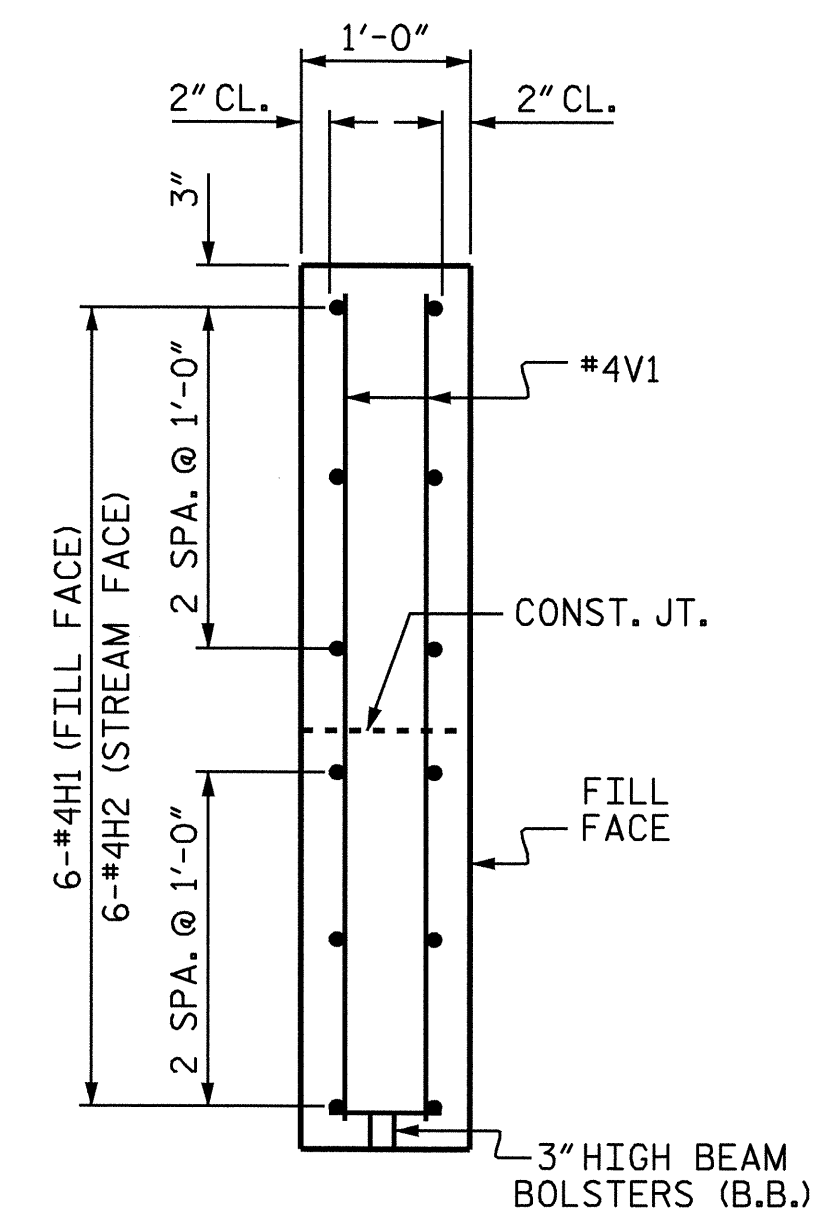
SECTION Y-Y



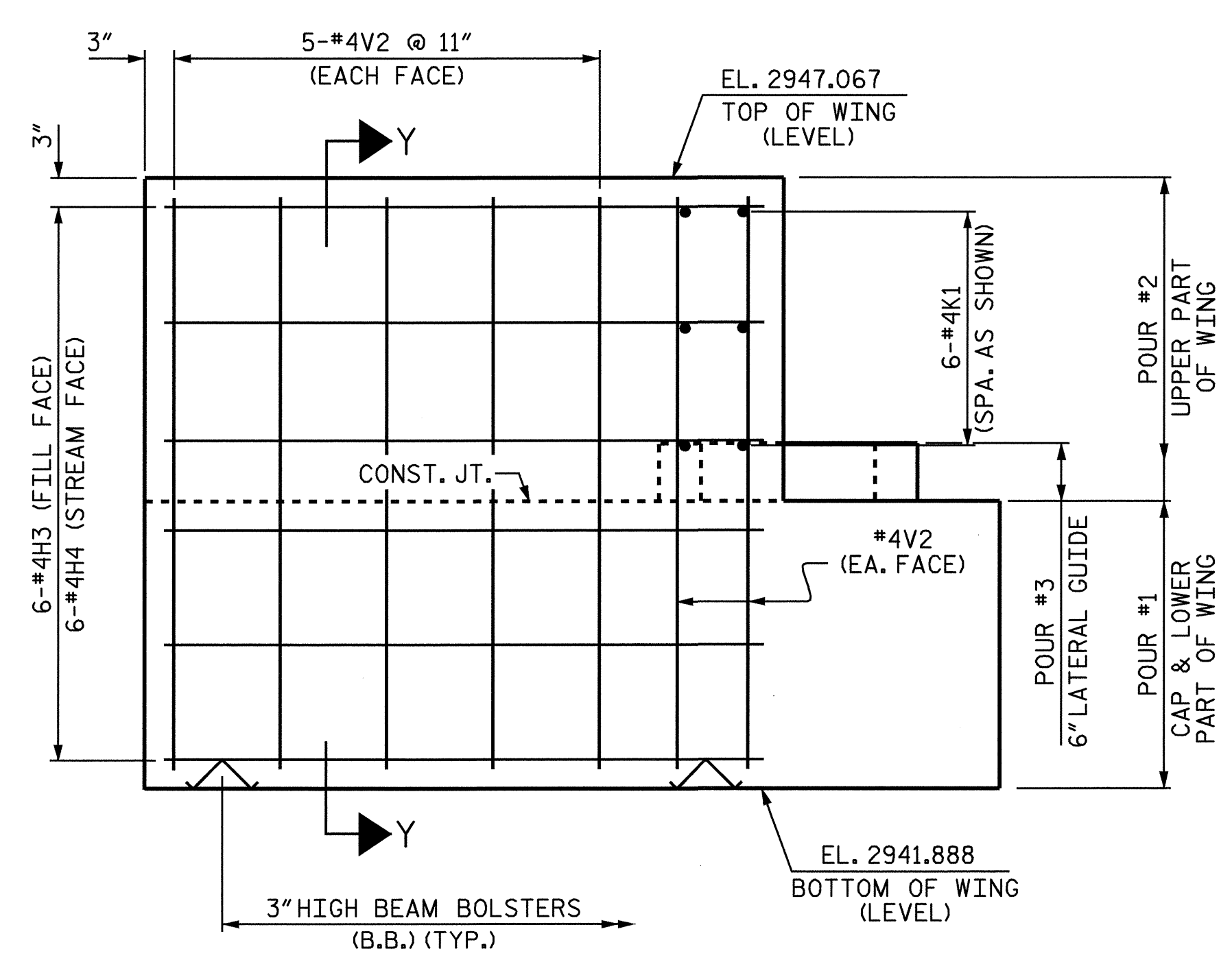
PLAN OF RIGHT WING (W2)



ELEVATION OF LEFT WING (W1)



SECTION X-X



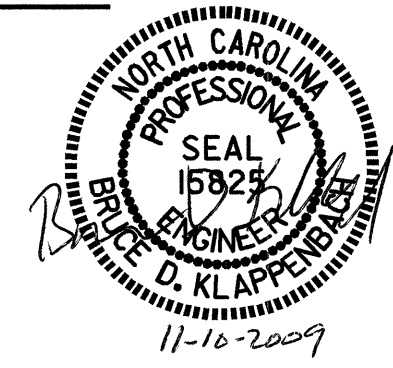
ELEVATION OF RIGHT WING (W2)

PROJECT NO. B-3608
 AVERY COUNTY
 STATION: 14+45.50-L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT #1



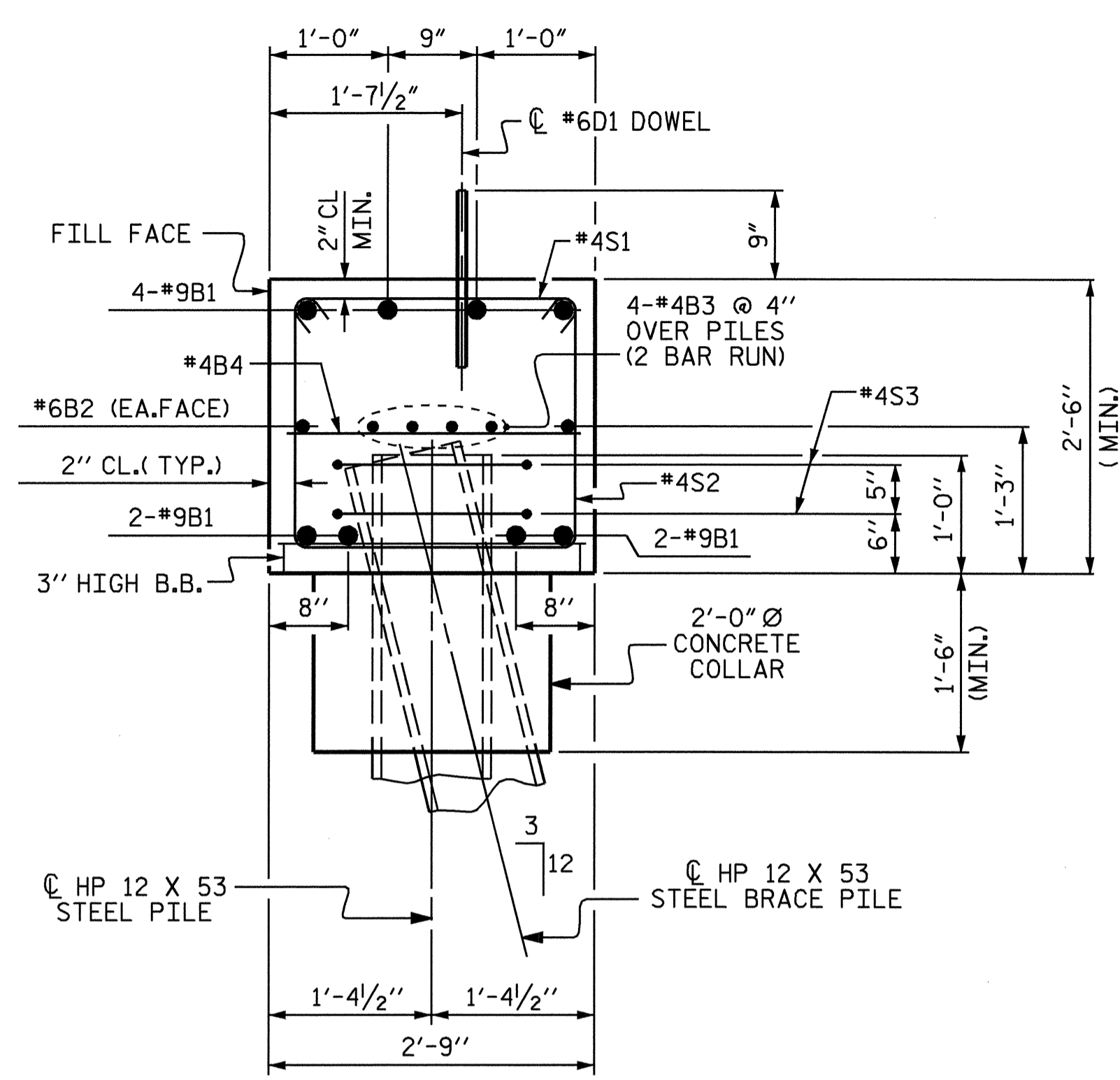
DRAWN BY: S.H. SOCKWELL DATE: 10/10/09
 CHECKED BY: D.A. GLADDEN DATE: 10/29/09

10-NOV-2009 19:23
 R:\Structures\sockwell\B-3608.sd.e*.dgn
 bklappenbach

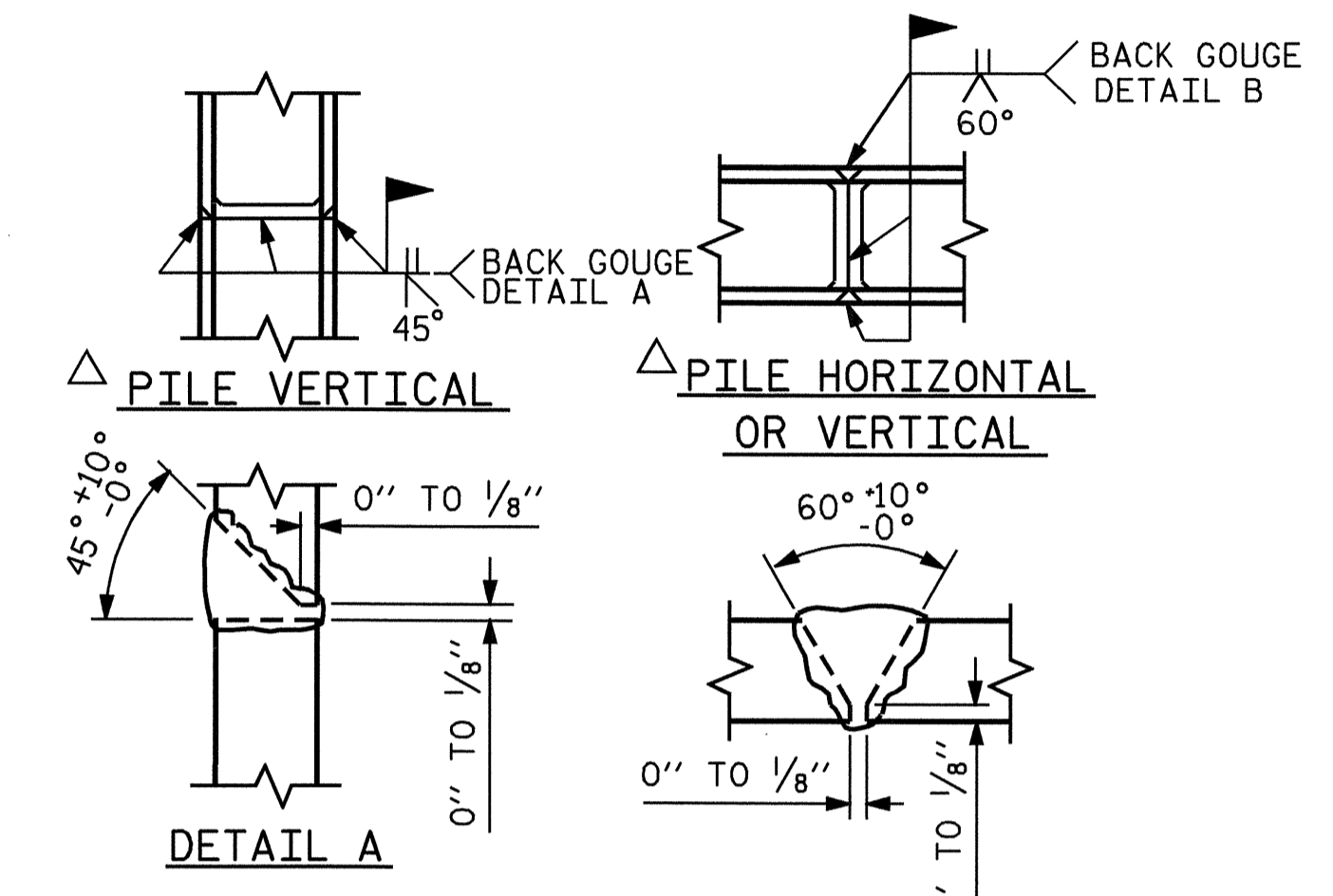
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13	
1			3			TOTAL SHEETS	
2			4			22	

BAR TYPES

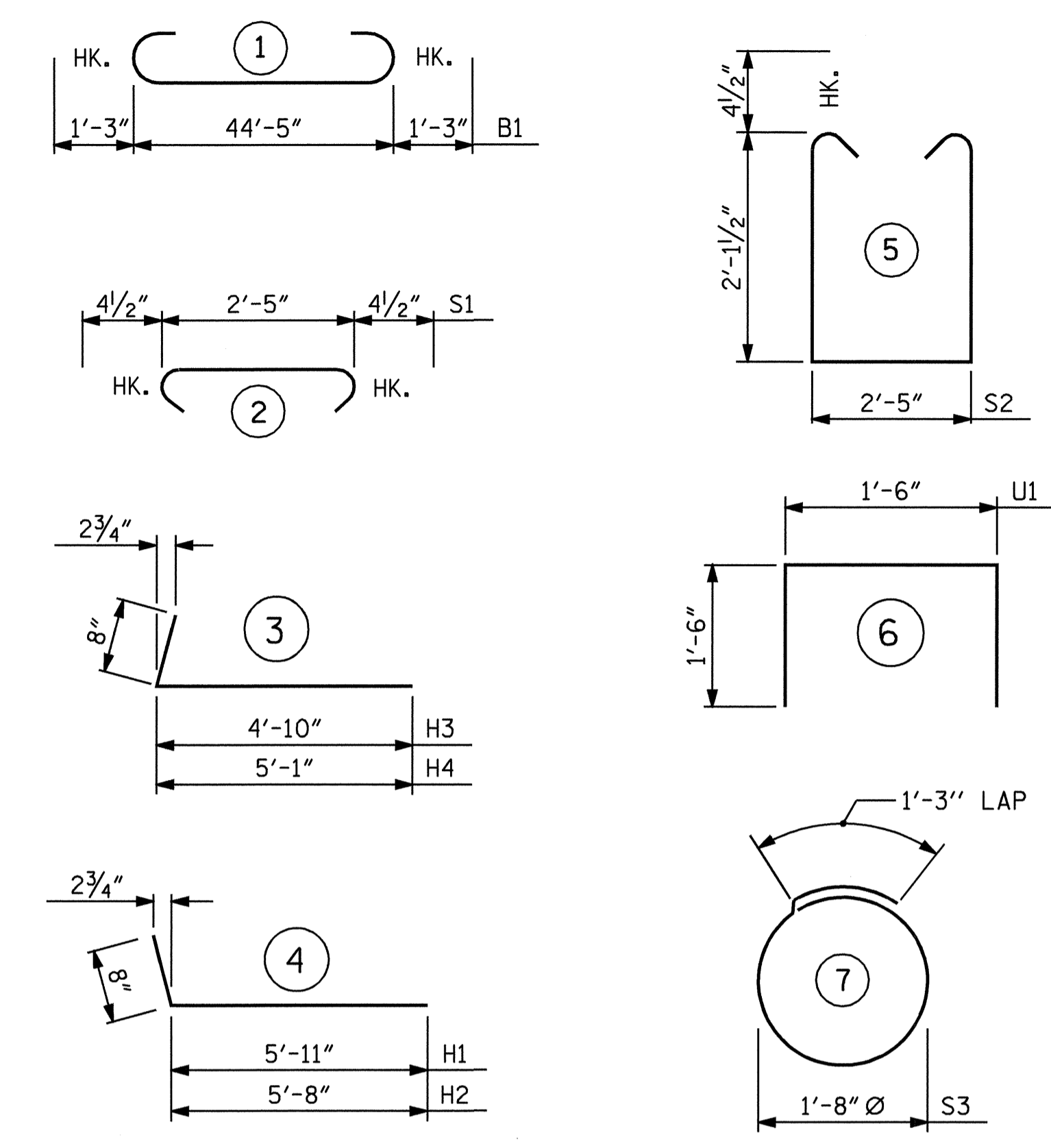
BILL OF MATERIAL



SECTION A-A



PILE SPLICE DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	46'-11"	1276
B2	2	#6	STR	44'-6"	134
B3	8	#4	STR	23'-6"	126
B4	11	#4	STR	2'-5"	18
D1	24	#6	STR	1'-6"	54
H1	6	#4	4	6'-7"	26
H2	6	#4	4	6'-4"	25
H3	6	#4	3	5'-6"	22
H4	6	#4	3	5'-9"	23
K1	12	#4	STR	3'-9"	30
S1	67	#4	2	3'-2"	142
S2	67	#4	5	7'-5"	332
S3	12	#4	7	6'-6"	52
U1	4	#4	6	4'-6"	12
V1	22	#4	STR	5'-0"	73
V2	20	#4	STR	4'-10"	65

REINFORCING STEEL = 2410 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #1 CAP, CONC. COLLAR & LOWER PART OF WINGS 13.4 C.Y.

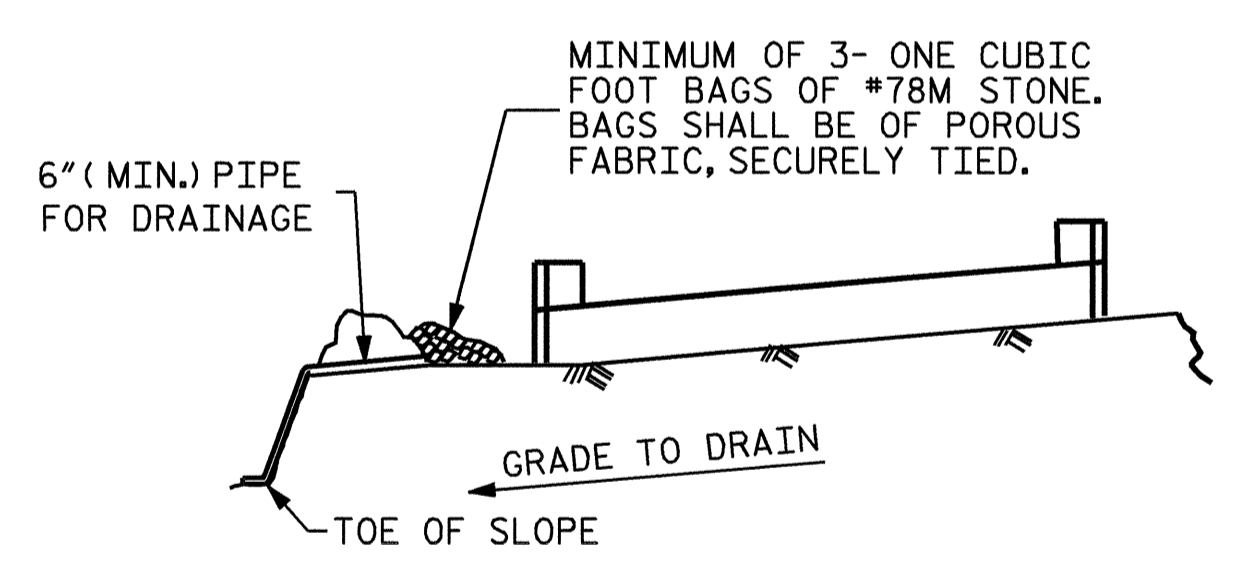
POUR #2 UPPER PART OF WINGS 1.8 C.Y.

POUR #3 LATERAL GUIDE 0.1 C.Y.

TOTAL CLASS A CONCRETE 15.3 C.Y.

HP 12 X 53 STEEL PILES NO. 6 90 LIN. FT.

STEEL PILE POINTS EACH 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

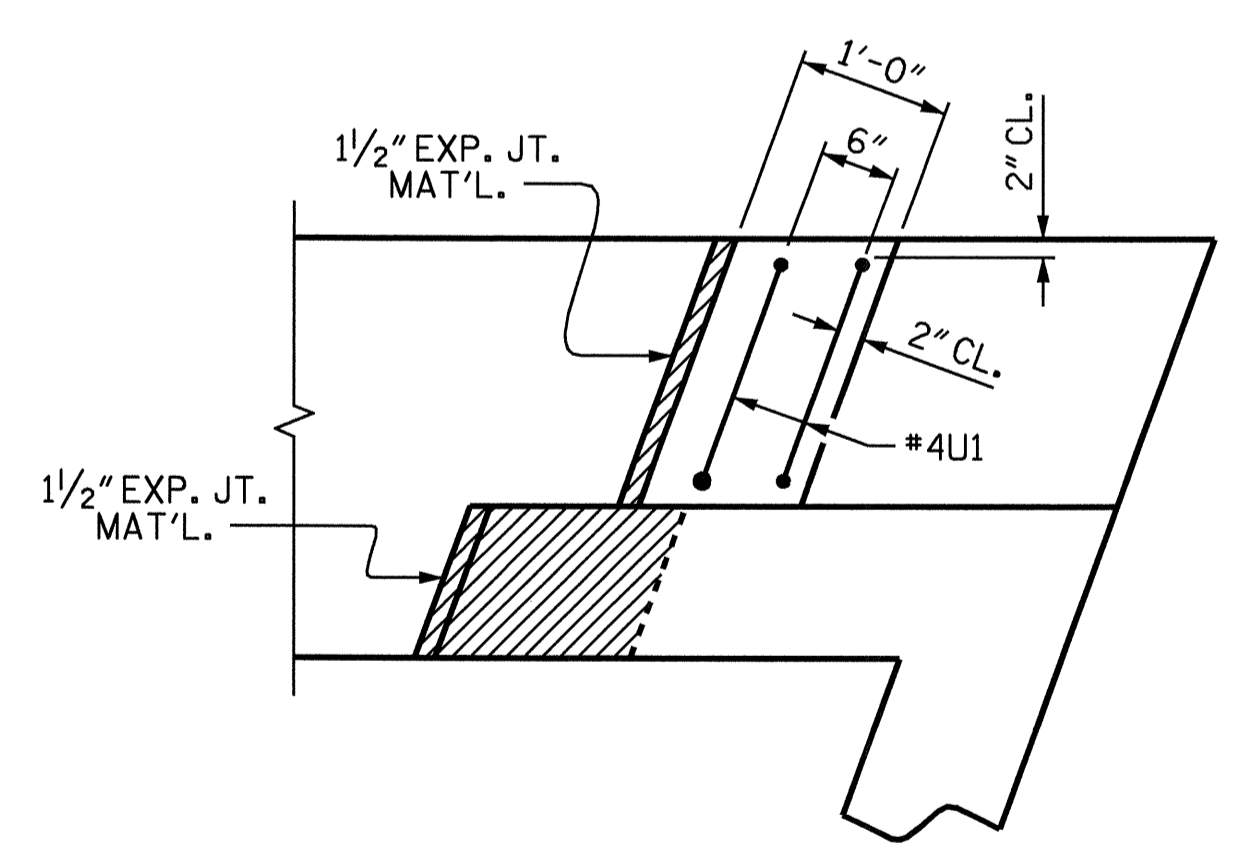
TOE OF SLOPE

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.

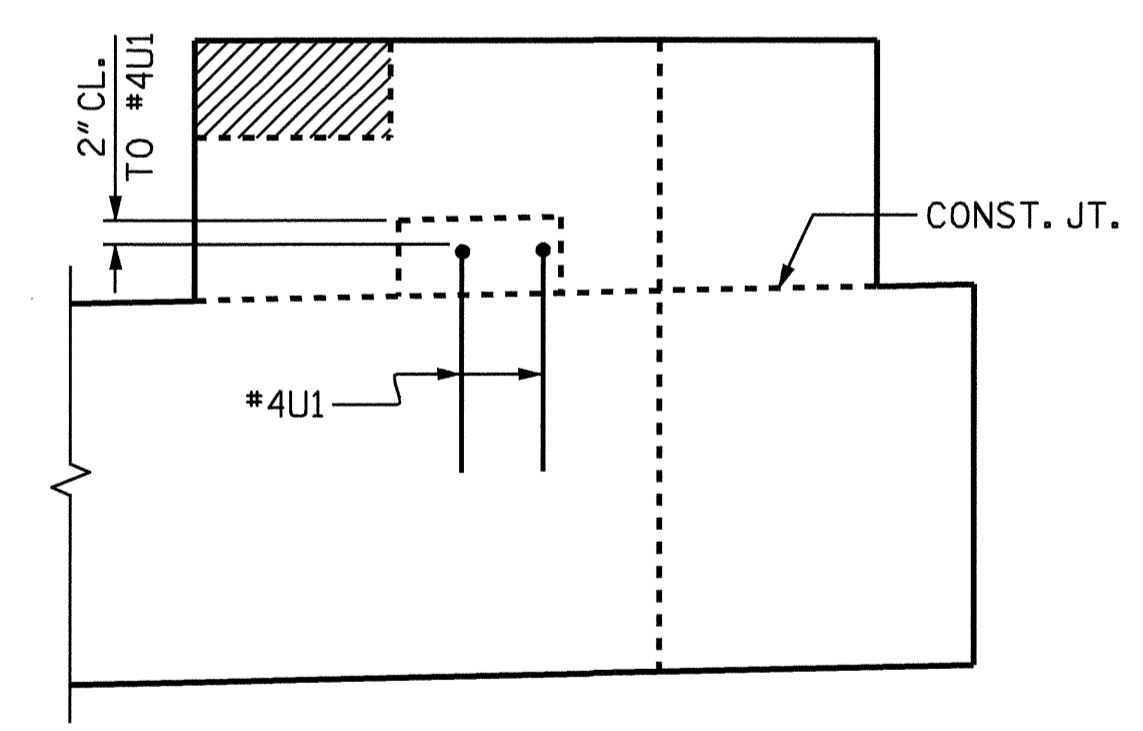
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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



PLAN



ELEVATION

LATERAL GUIDE (TYPICAL EACH SIDE)

PROJECT NO. B-3608

AVERY COUNTY

STATION: 14+45.50-L-

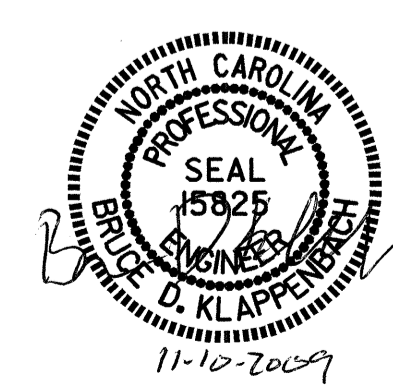
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #1

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

TOTAL SHEETS 22



DRAWN BY: S.H. SOCKWELL DATE: 10/10/09
CHECKED BY: D.A. GLADDEN DATE: 10/29/09

NOTES

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

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

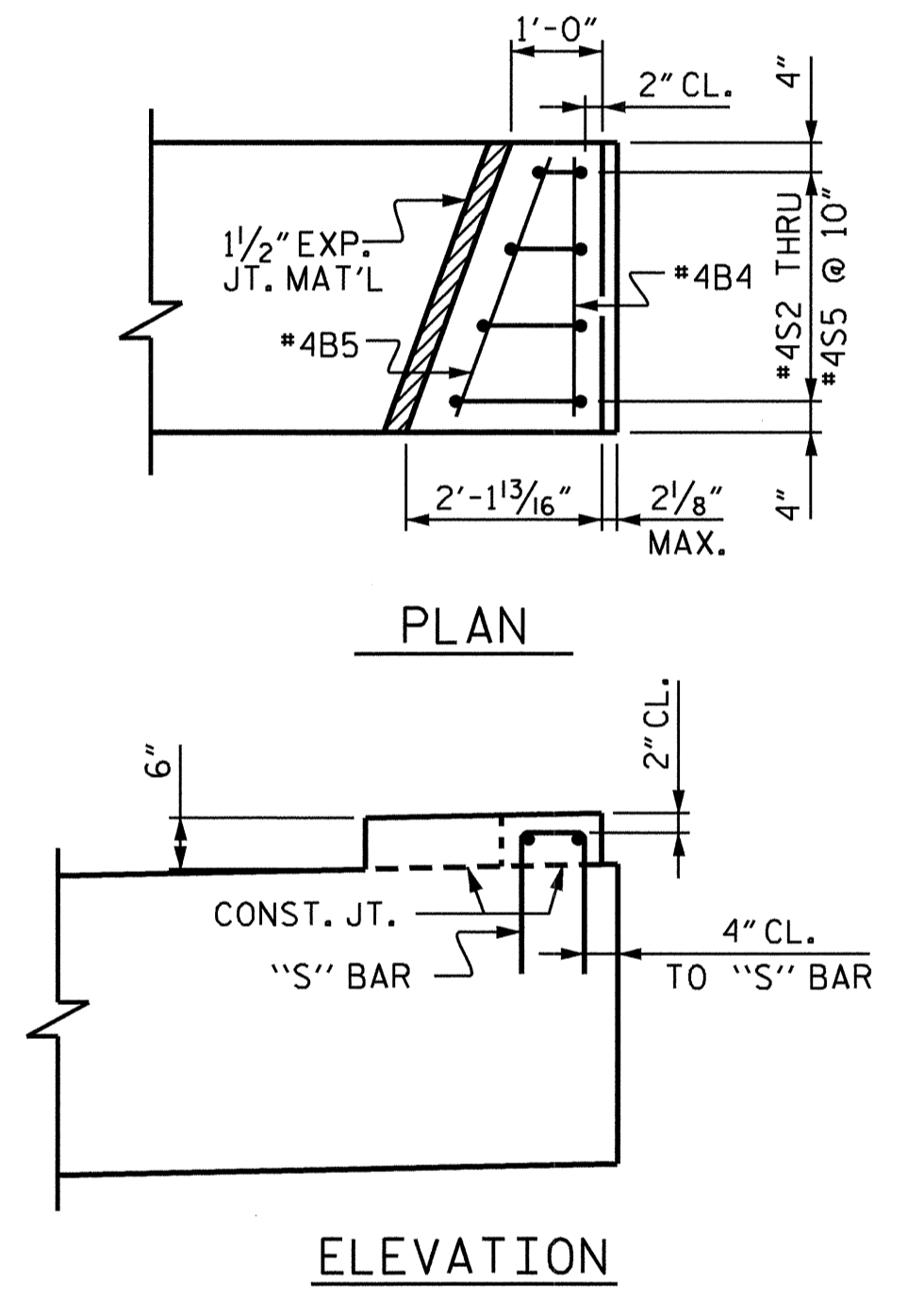
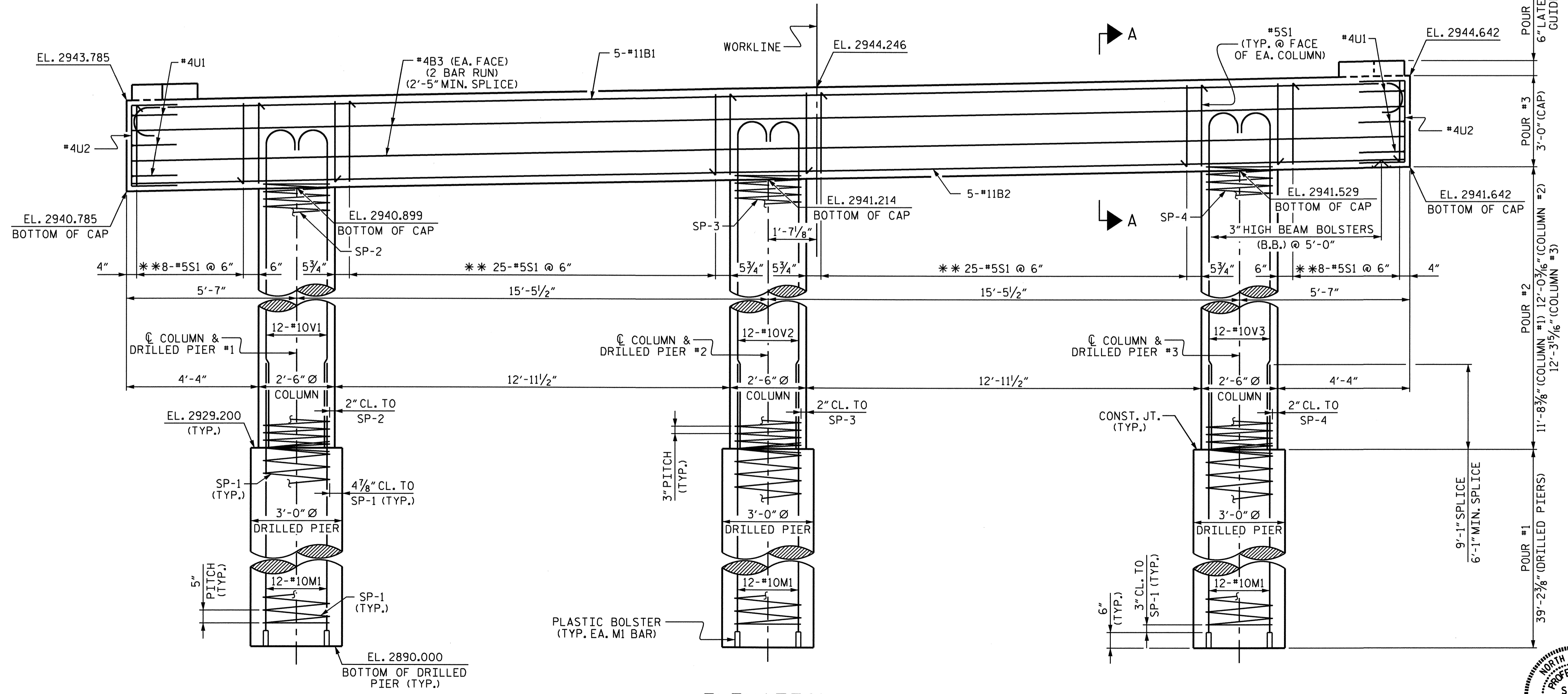
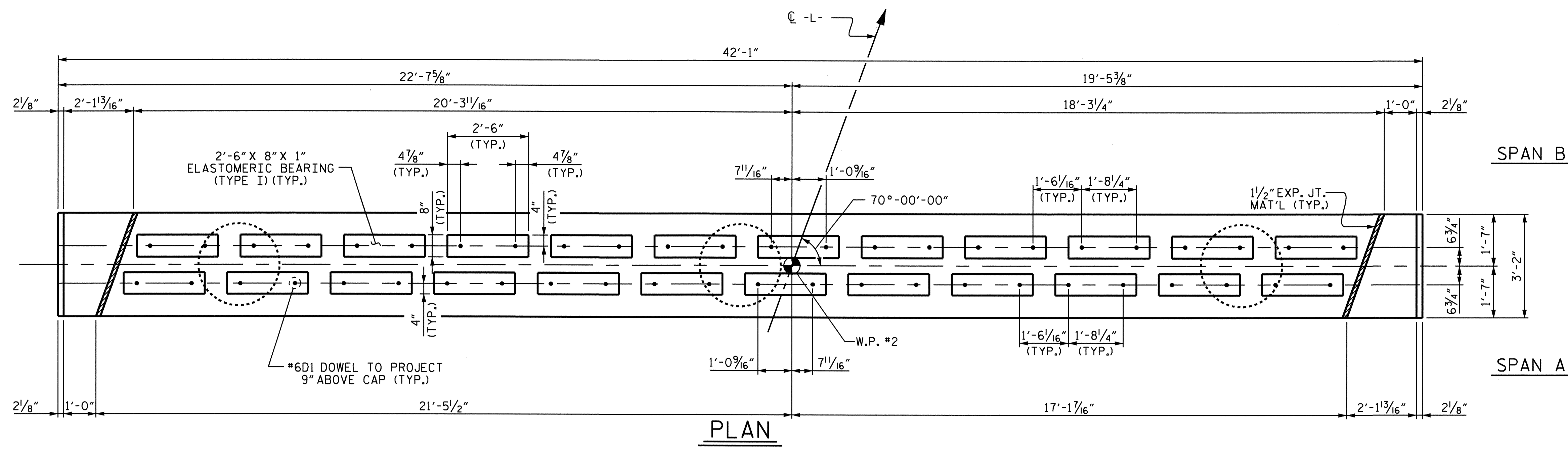
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

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.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

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

SPlicing OF THE LONGITUDINAL BARS IN THE DRILLED PIERS WILL NOT BE PERMITTED.



PROJECT NO. B-3608

AVERY COUNTY

STATION: 14+45.50 -L-

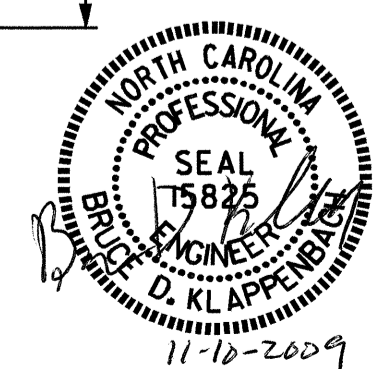
SHEET 1 OF 2

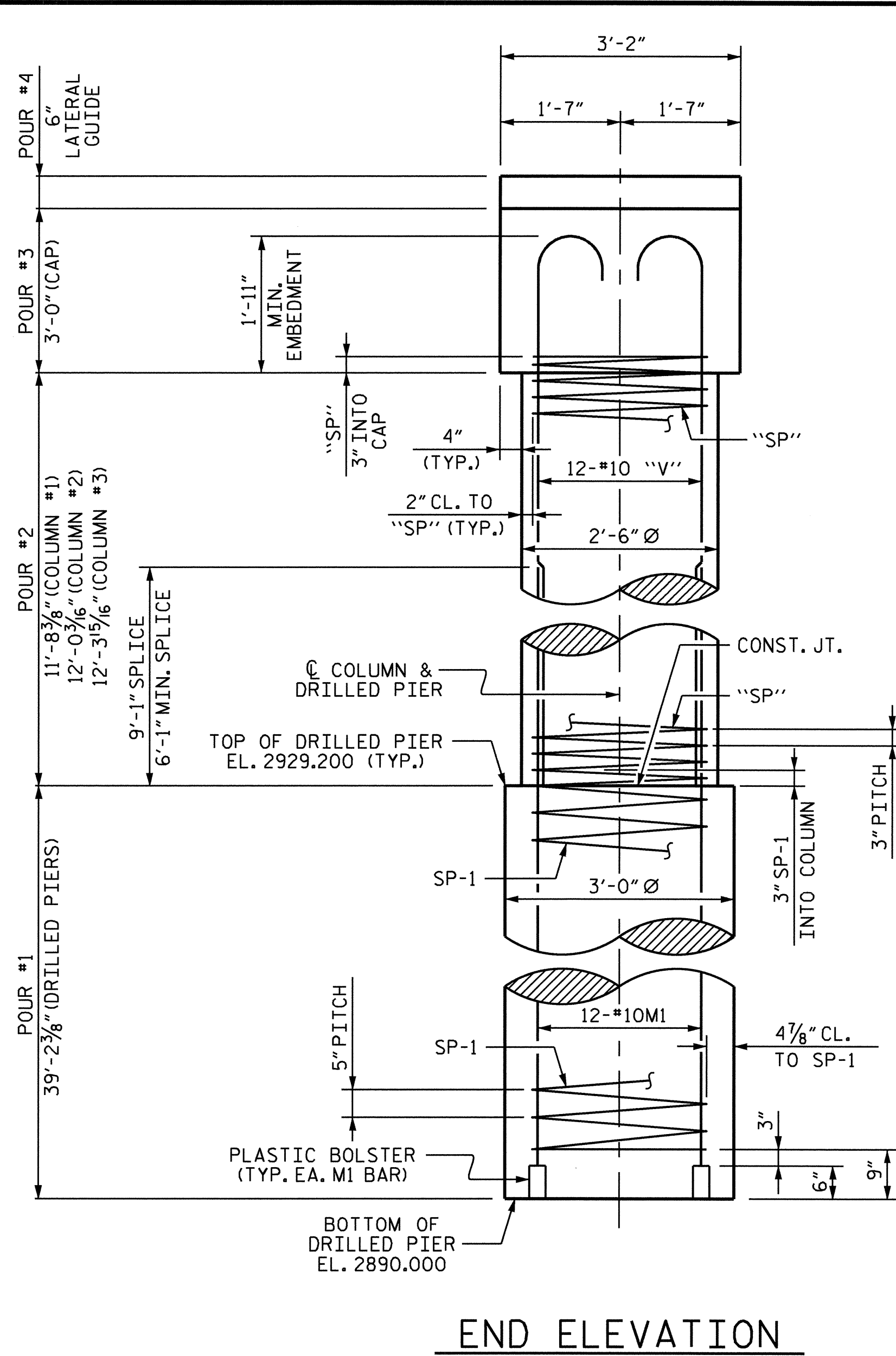
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT #1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-15 TOTAL SHEETS 22

DRAWN BY : W.B. HILL/CRY DATE : 10/09

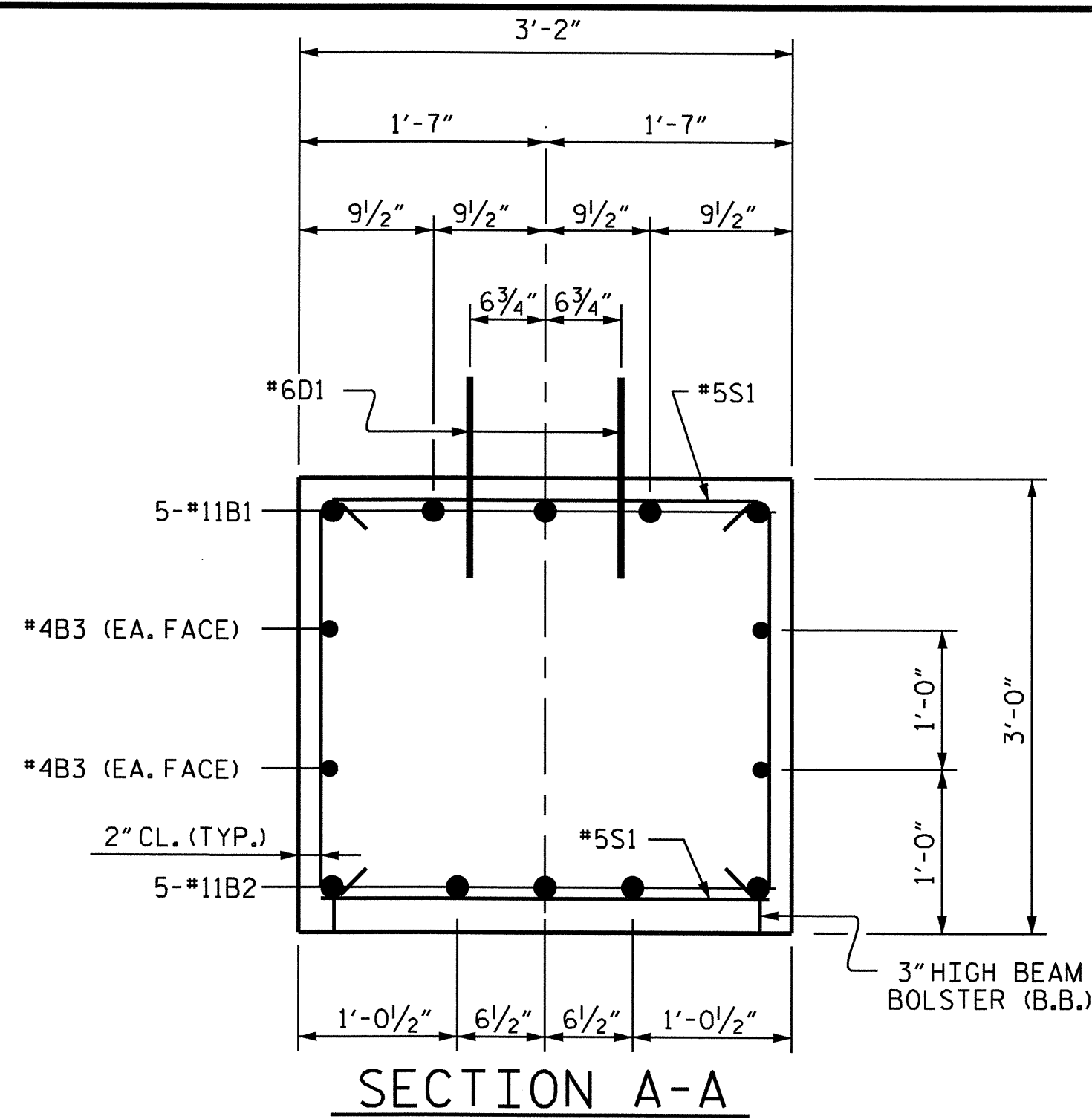
CHECKED BY : D.A. GLADDEN DATE : 10/09

** STIRRUPS IN CAP ARE INVERT ALTERNATE AS SHOWN

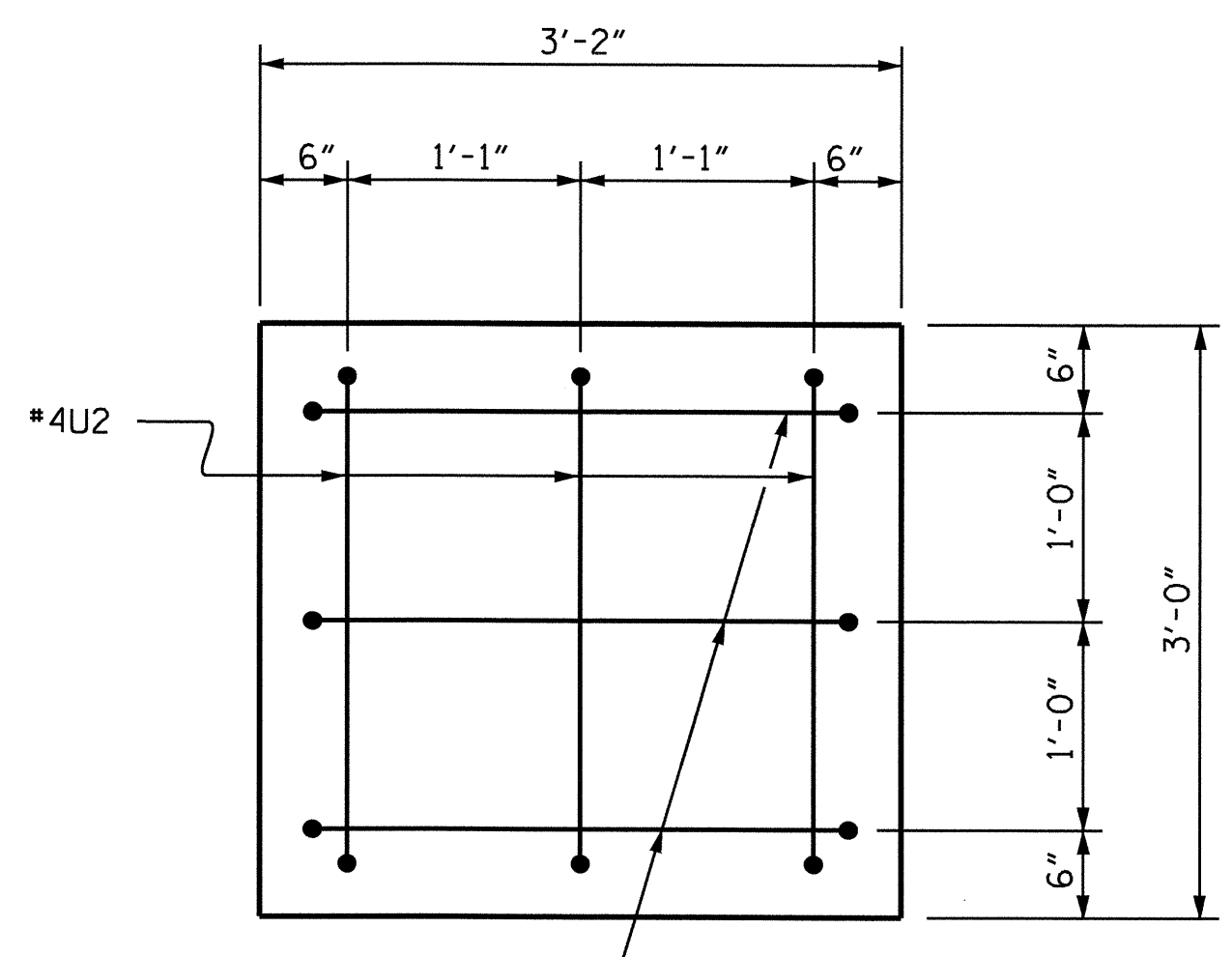




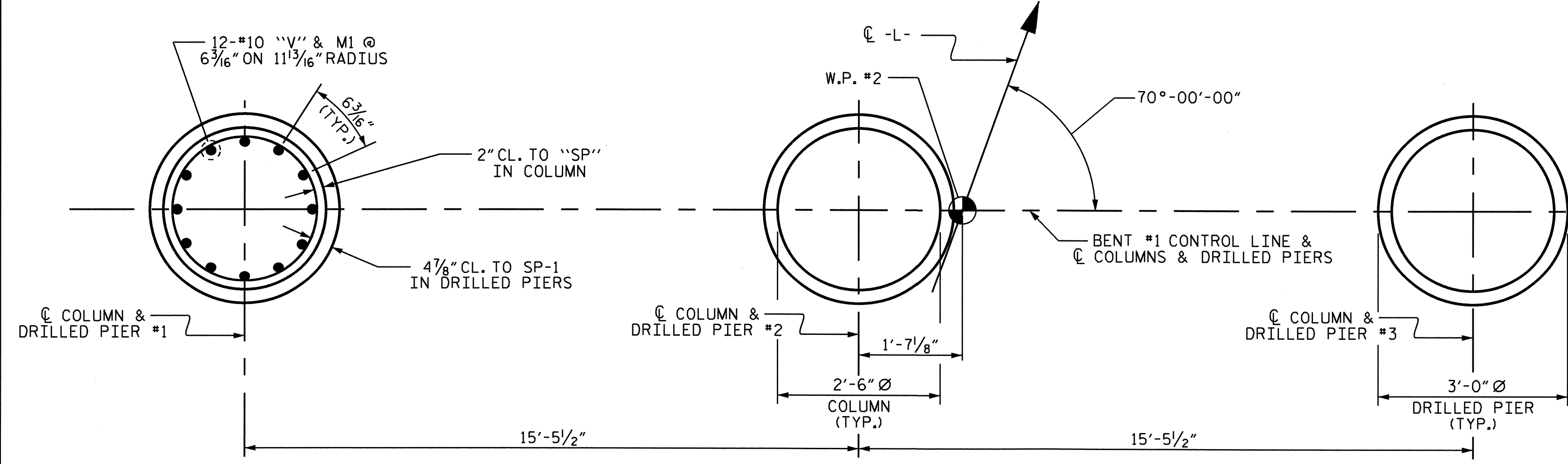
END ELEVATION



SECTION A-A

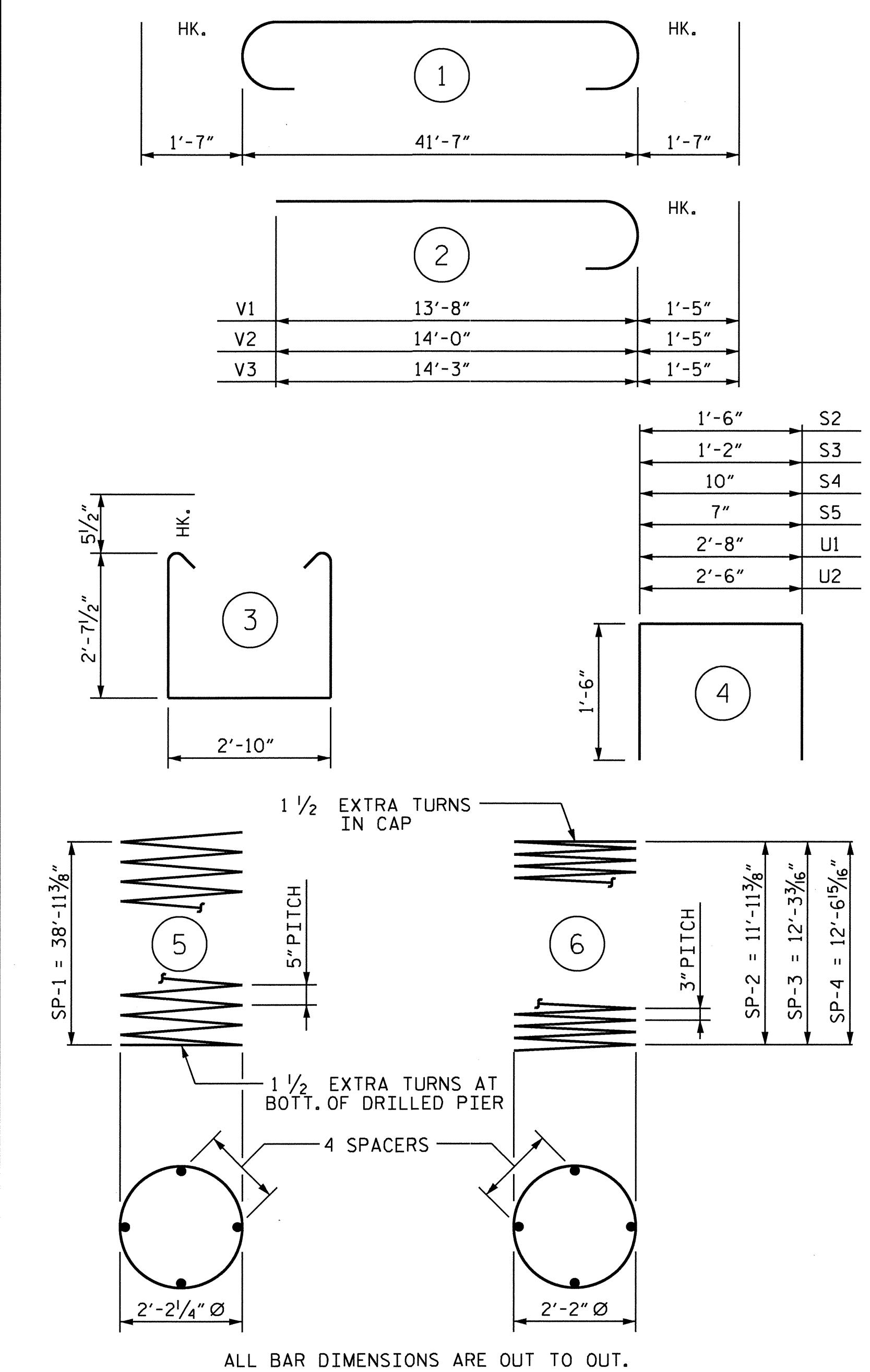


END VIEW OF CAP



PLAN OF COLUMNS AND DRILLED PIERS

BAR TYPES

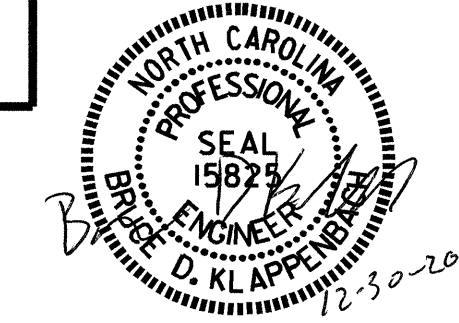


ALL BAR DIMENSIONS ARE OUT TO OUT.

- * THE SP-2, SP-3 & SP-4 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BARS.
- ** THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BARS.

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	5	#11	1	44'-9"	1189
B2	5	#11	STR	41'-9"	1109
B3	8	#4	STR	22'-1"	118
B4	2	#4	STR	2'-10"	4
B5	2	#4	STR	3'-0"	4
D1	48	#6	STR	1'-6"	108
M1	36	#10	STR	47'-10"	7410
S1	72	#5	3	9'-0"	676
S2	2	#4	4	4'-6"	6
S3	2	#4	4	4'-2"	6
S4	2	#4	4	3'-10"	5
S5	2	#4	4	3'-7"	5
U1	6	#4	4	5'-8"	23
U2	6	#4	4	5'-6"	22
V1	12	#10	2	15'-1"	779
V2	12	#10	2	15'-5"	796
V3	12	#10	2	15'-8"	809
REINFORCING STEEL = 13069					
SP-1	3	**	5	633'-8"	1983
SP-2	1	*	6	329'-11"	220
SP-3	1	*	6	338'-3"	226
SP-4	1	*	6	346'-7"	232
SPIRAL COLUMN REINFORCING STEEL = 2661 LBS					
CLASS A CONCRETE BREAKDOWN					
POUR #2 (COLUMNS)					6.6 C.Y.
POUR #3 (CAP)					14.8 C.Y.
POUR #4 (LATERAL GUIDE)					0.2 C.Y.
TOTAL					21.6 C.Y.
DRILLED PIERS					
DRILLED PIER CONCRETE					
POUR #1 (DRILLED PIERS)					30.8 C.Y.
3'-0" Ø DRILLED PIERS NOT IN SOIL					24.00 LIN. FT.
3'-0" Ø DRILLED PIERS IN SOIL					93.6 LIN. FT.
3'-0" Ø PERMANENT STEEL CASING					30.6 LIN. FT.
CSL TUBES					500.4 FT.

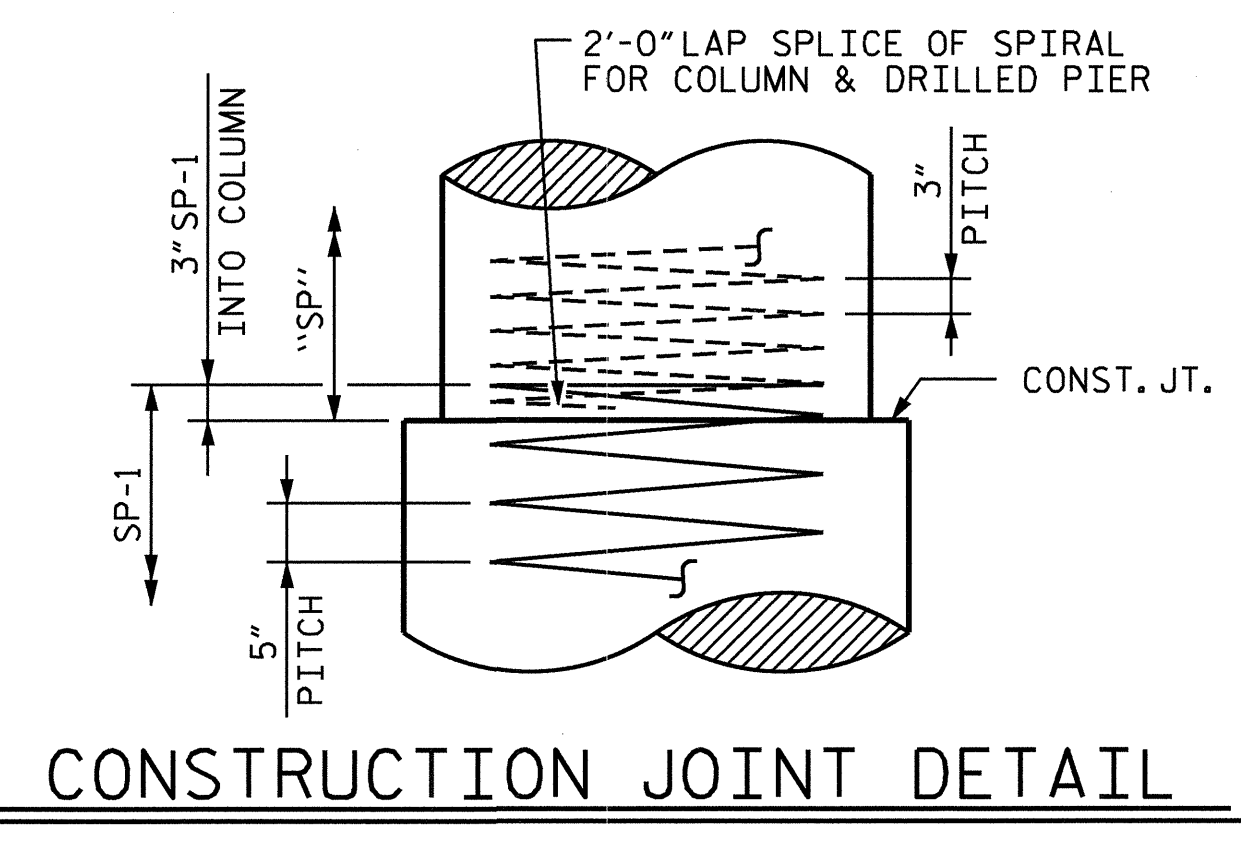


PROJECT NO. B-3608
AVERY COUNTY
 STATION: 14+45.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT #1



CONSTRUCTION JOINT DETAIL

DRAWN BY: W. B. HILL/CRY DATE: 09/09
 CHECKED BY: D. A. GLADDEN DATE: 10/09

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

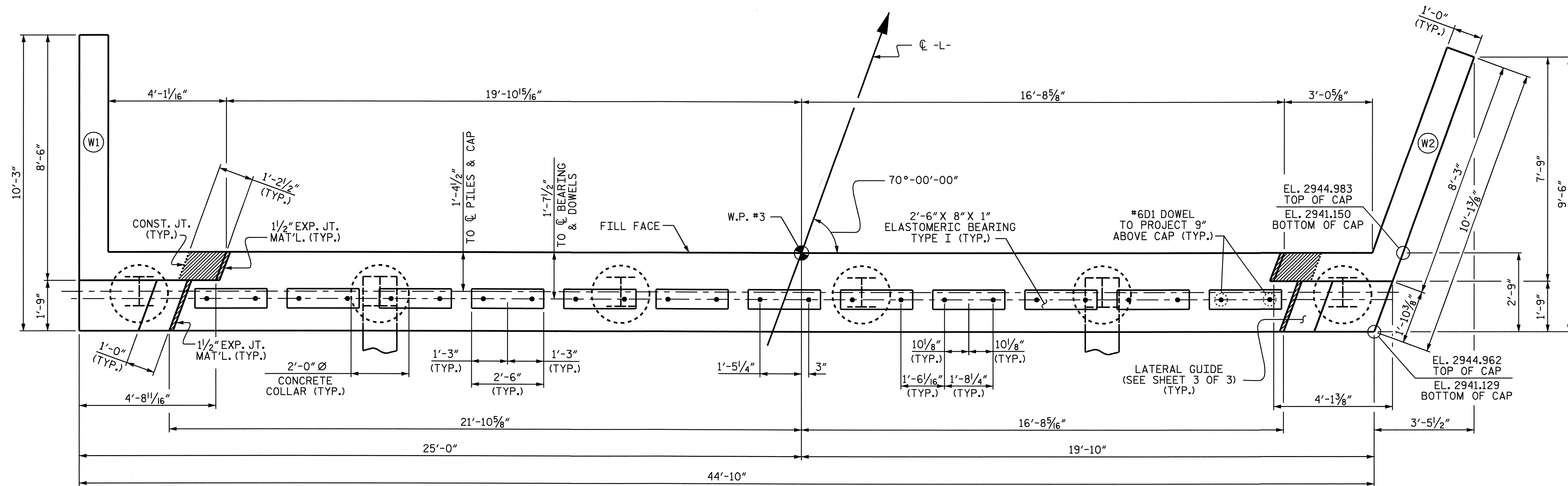
NOTES

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

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

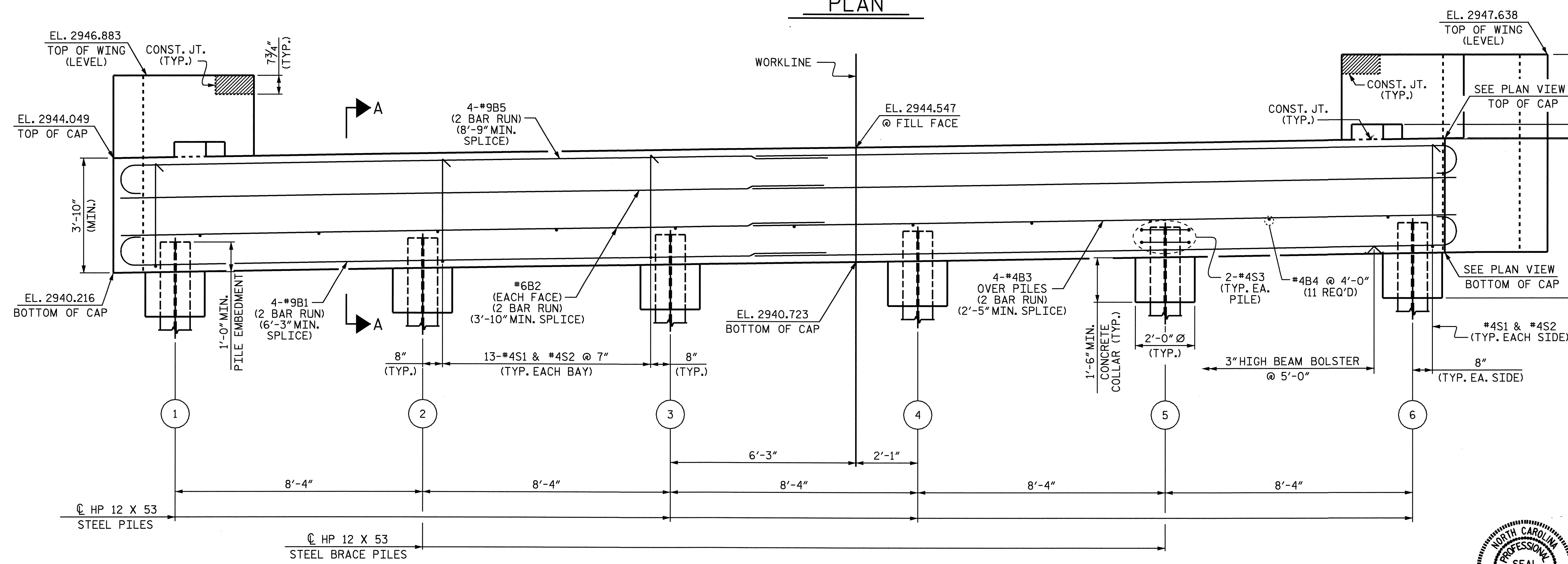
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAILS ARE CAST IF SLIP FORMING IS USED.

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



PLAN

PILE	ELEVATION
1	2941.260
2	2941.427
3	2941.596
4	2941.766
5	2941.936
6	2942.105



ELEVATION

PROJECT NO. B-3608
AVERY COUNTY
 STATION: 14+45.50-L-

SHEET 1 OF 3

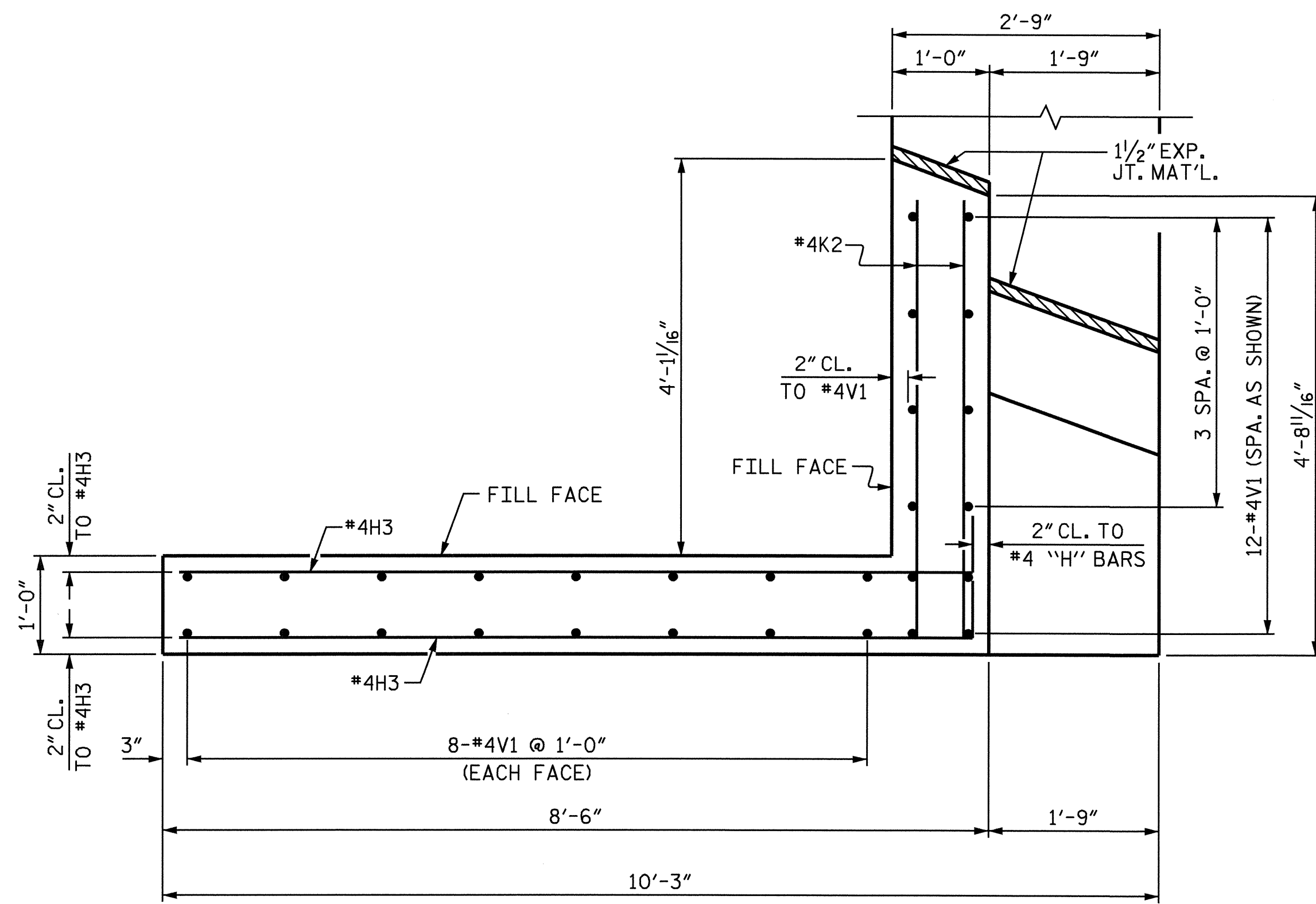
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT #2**

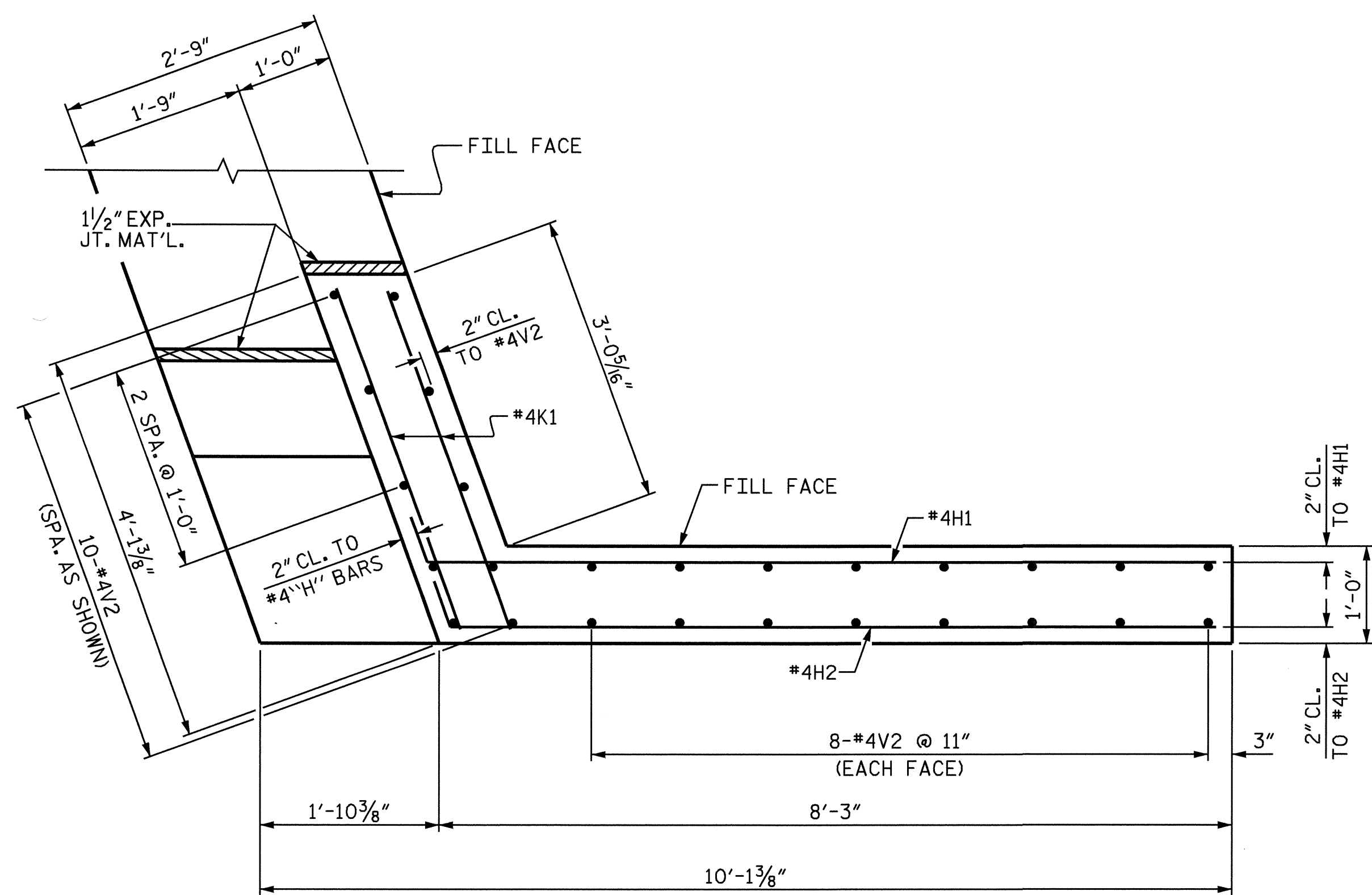


DRAWN BY: S.H. SOCKWELL DATE: 10/10/09
 CHECKED BY: D.A. GLADDEN DATE: 10/29/09

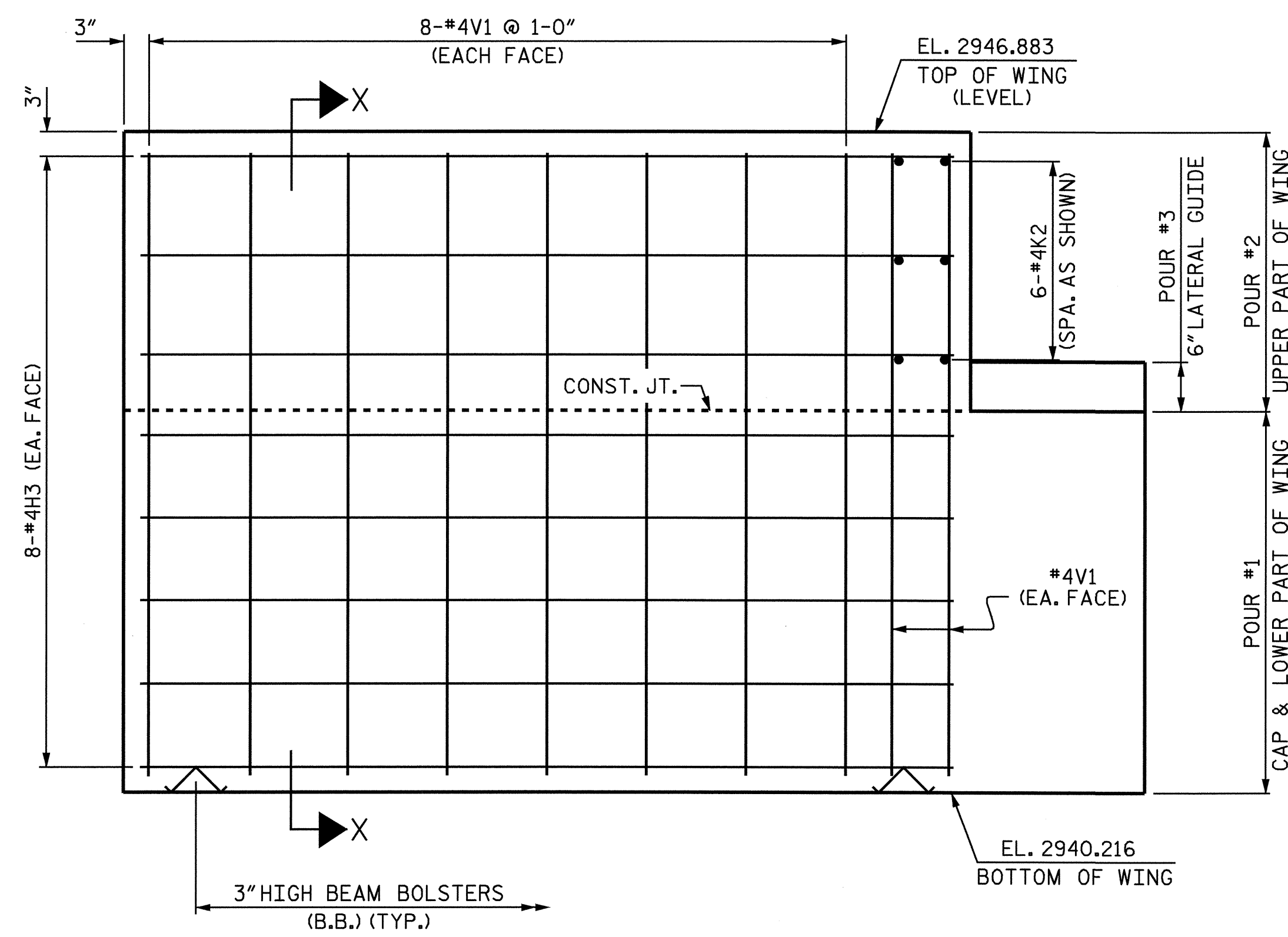
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			22



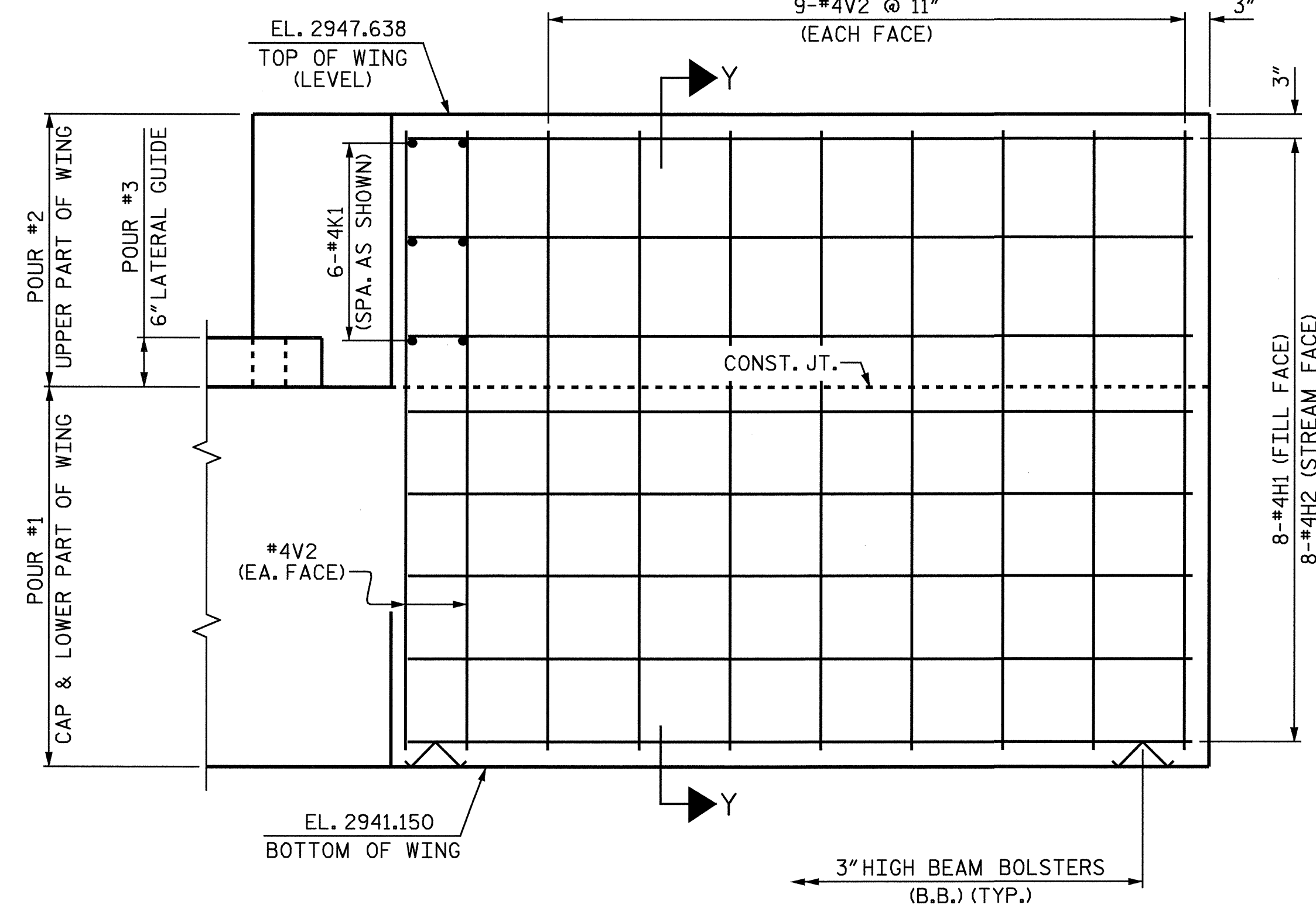
PLAN OF LEFT WING (W1)



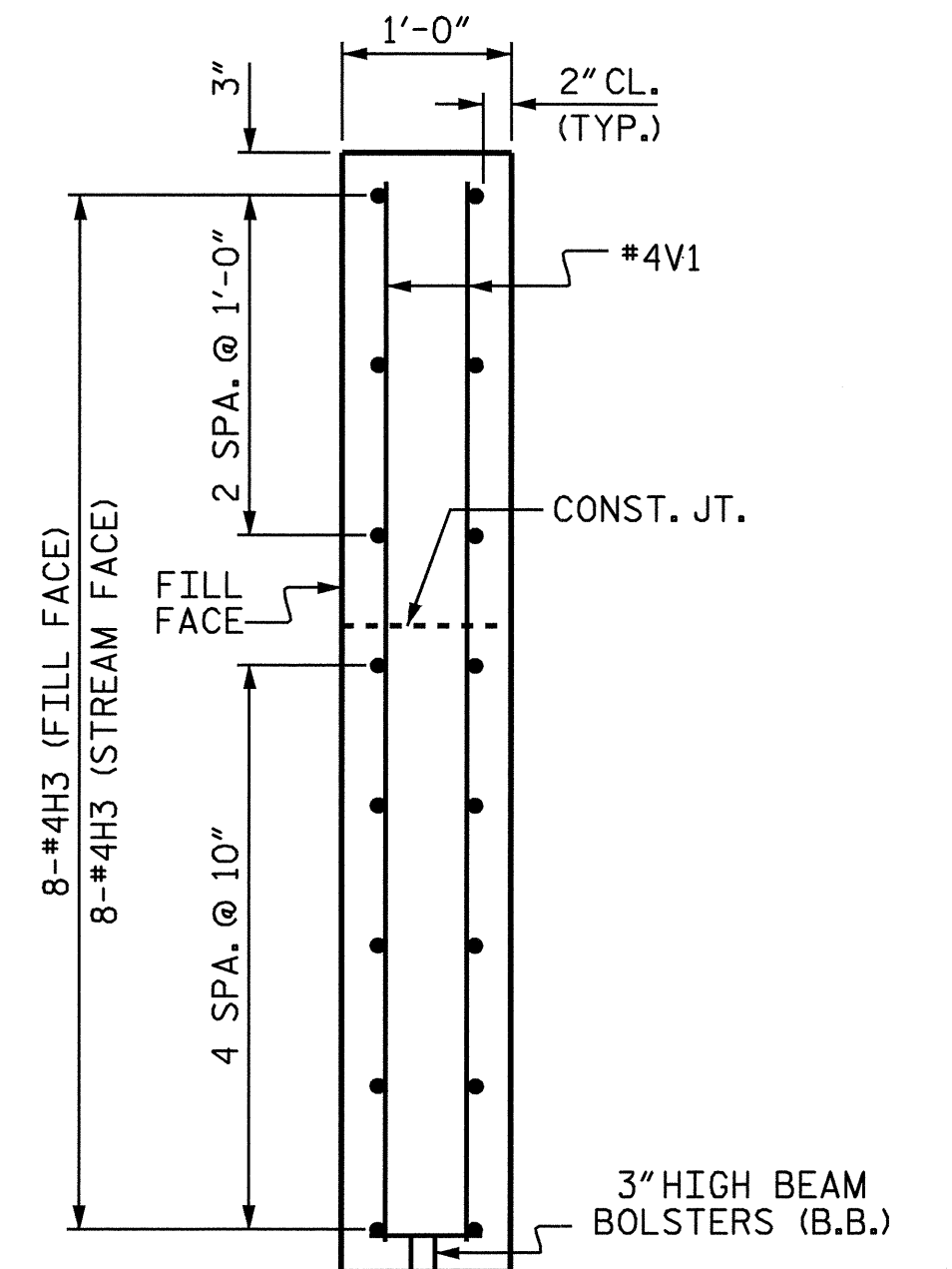
PLAN OF RIGHT WING (W2)



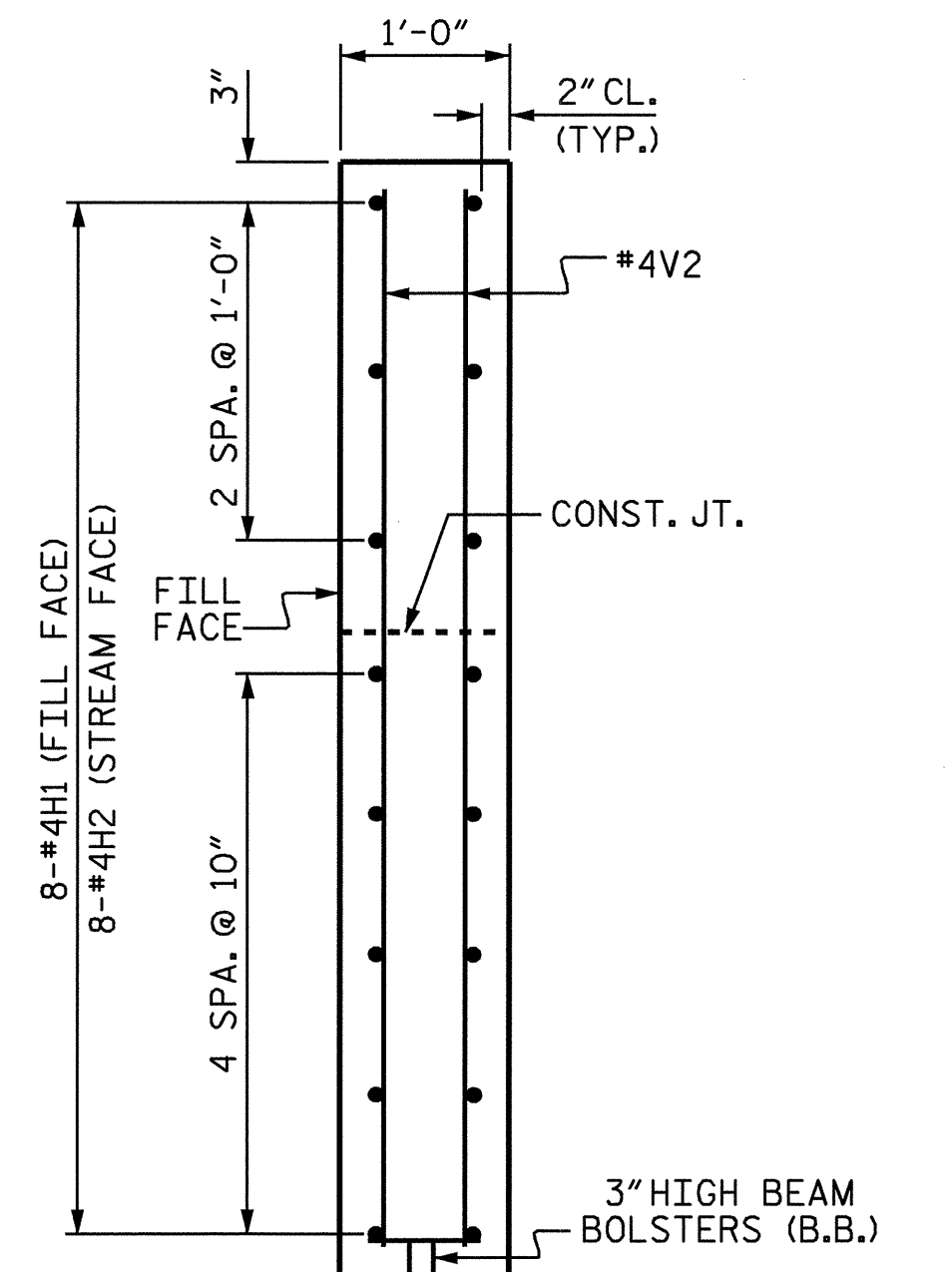
ELEVATION OF LEFT WING (W1)



ELEVATION OF RIGHT WING (W2)



SECTION X-X



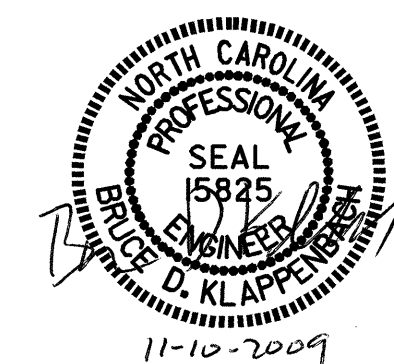
SECTION Y-Y

PROJECT NO. B-3608
 AVERY COUNTY
 STATION: 14+45.50-L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT #2



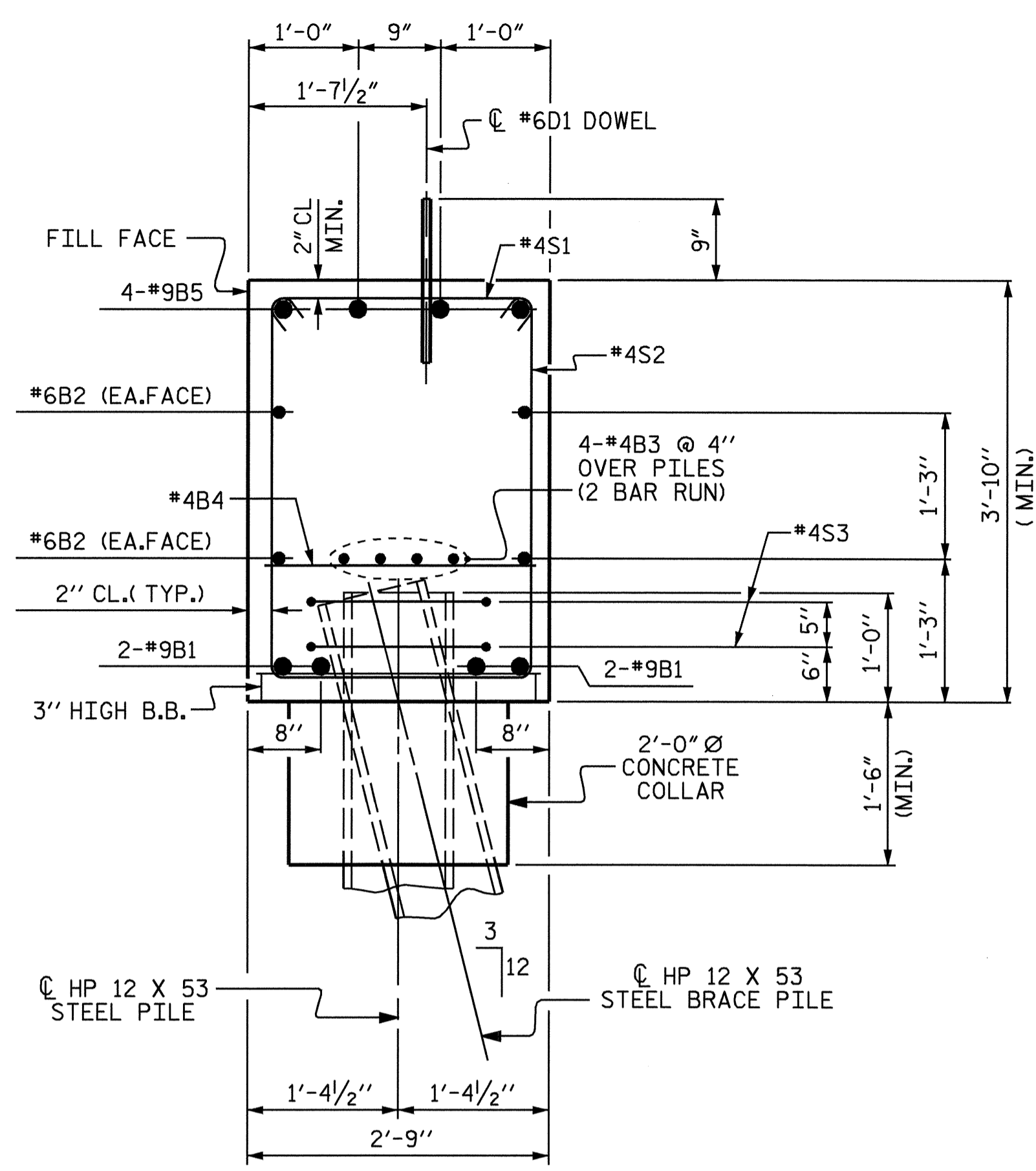
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10-NOV-2009 19:26
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 bklappenbach

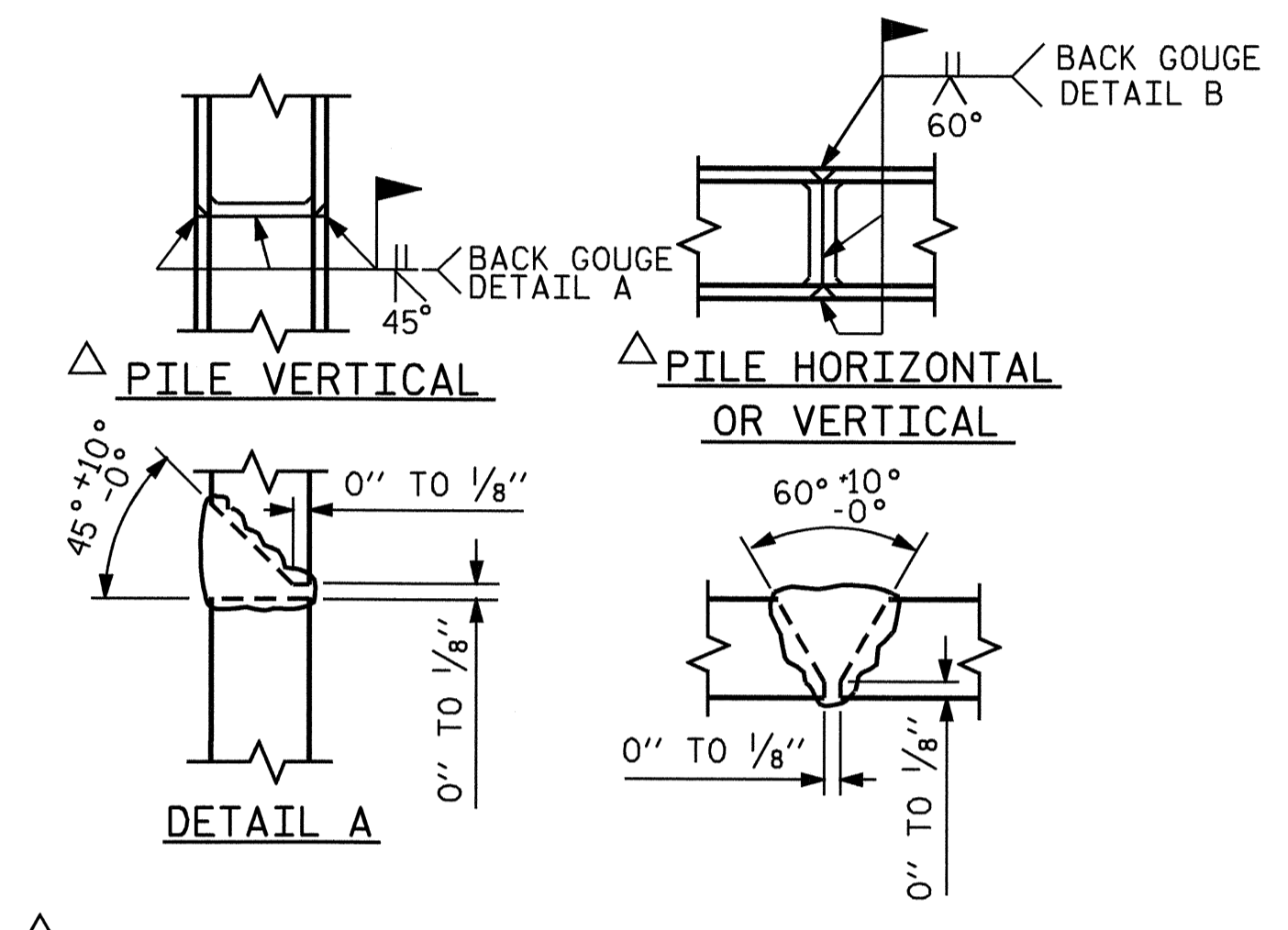
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			22

BAR TYPES

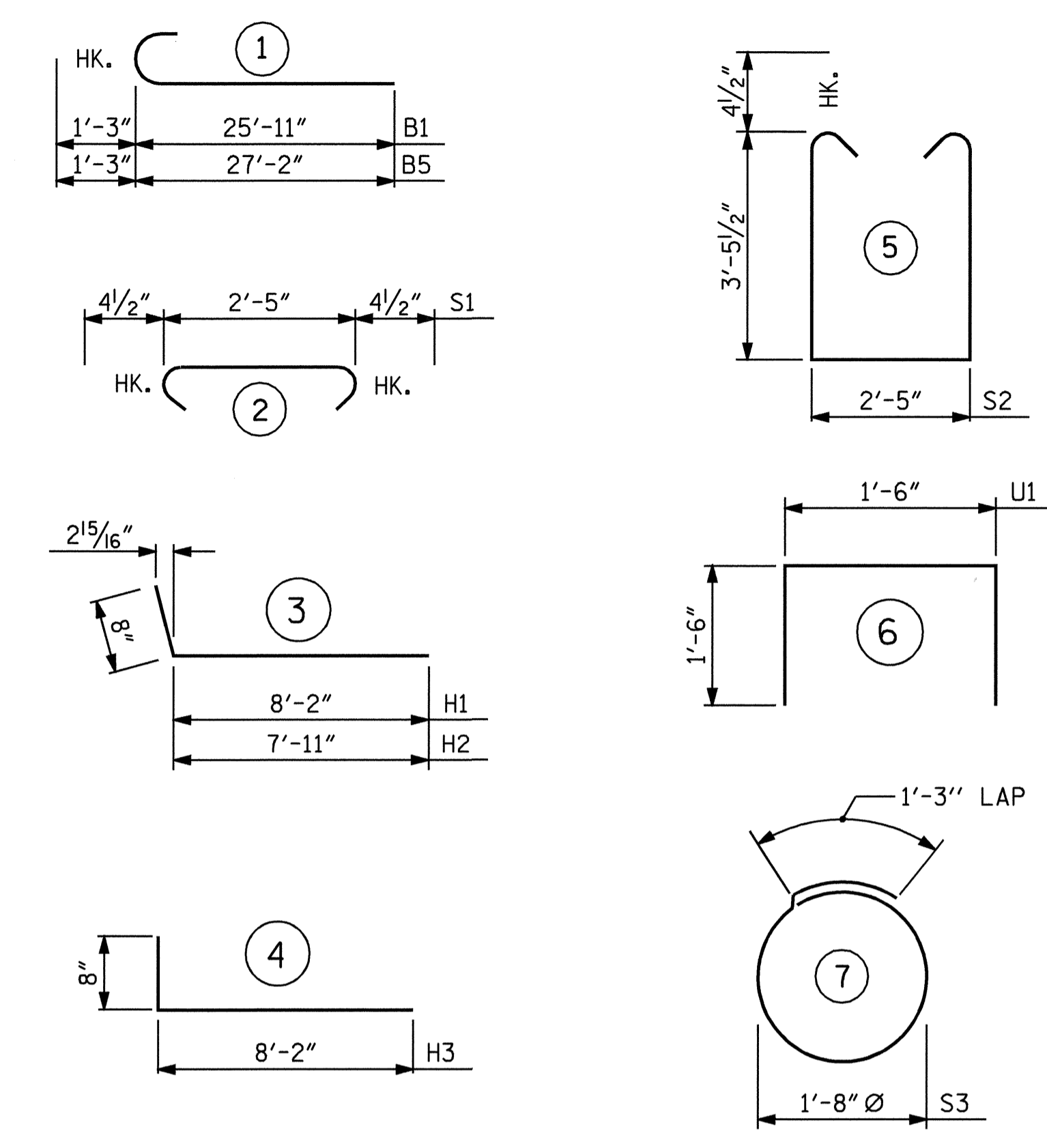
BILL OF MATERIAL



SECTION A-A



PILE SPLICE DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	27'-2"	739
B2	8	#6	STR	24'-8"	296
B3	8	#4	STR	23'-10"	127
B4	11	#4	STR	2'-5"	18
B5	8	#9	1	28'-5"	773
D1	24	#6	STR	1'-6"	54
H1	8	#4	3	8'-10"	47
H2	8	#4	3	8'-7"	46
H3	16	#4	4	8'-10"	94
K1	6	#4	STR	3'-9"	15
K2	6	#4	STR	4'-5"	18
S1	67	#4	2	3'-2"	142
S2	67	#4	5	10'-1"	451
S3	12	#4	7	6'-6"	52
U1	4	#4	6	4'-6"	12
V1	28	#4	STR	6'-4"	118
V2	26	#4	STR	6'-1"	106

REINFORCING STEEL = 3108 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #1 CAP, CONC. COLLAR & LOWER PART OF WINGS 20.9 C.Y.

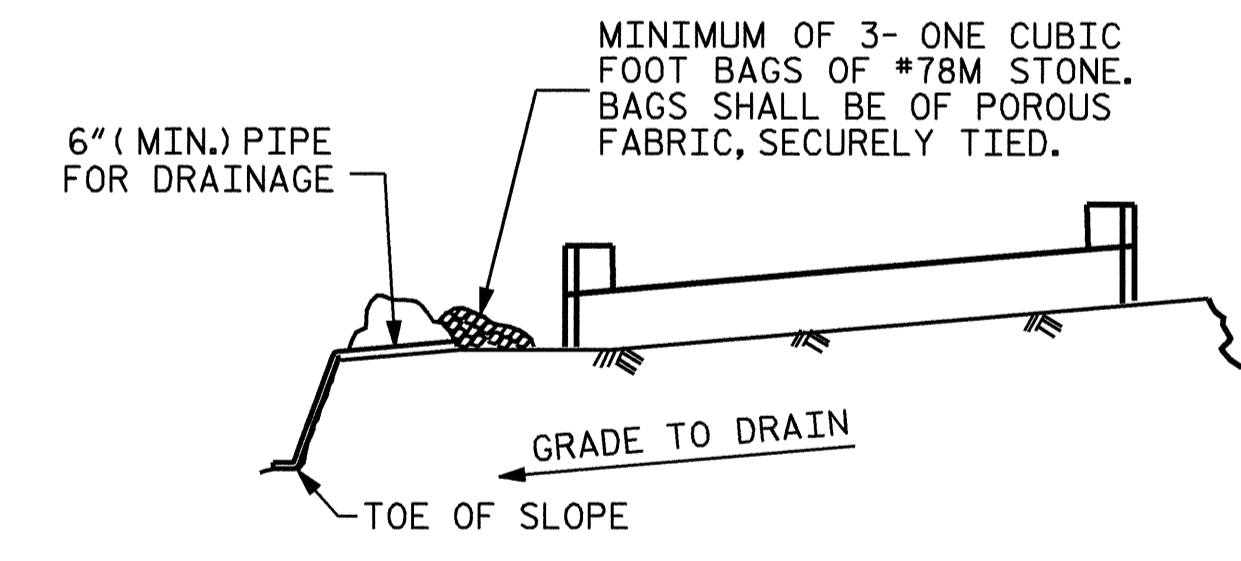
POUR #2 UPPER PART OF WINGS 2.6 C.Y.

POUR #3 LATERAL GUIDE 0.1 C.Y.

TOTAL CLASS A CONCRETE 23.6 C.Y.

HP 12 X 53 STEEL PILES NO. 6 240 LIN. FT.

STEEL PILE POINTS EACH 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

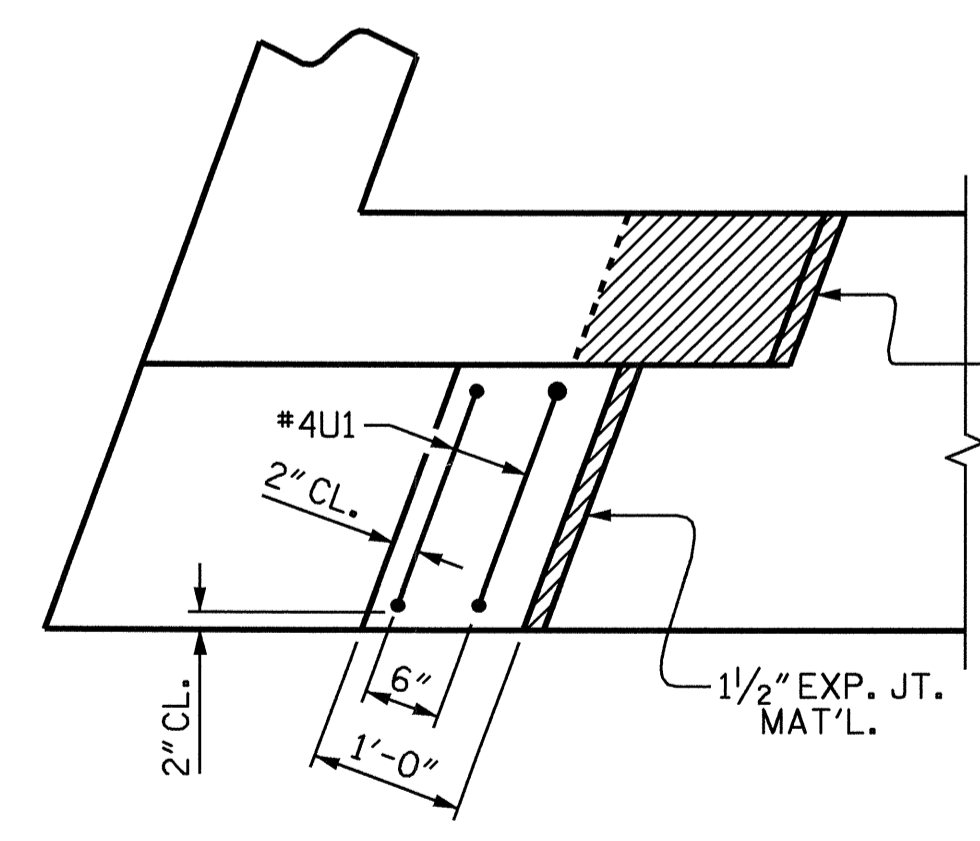
TOE OF SLOPE

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.

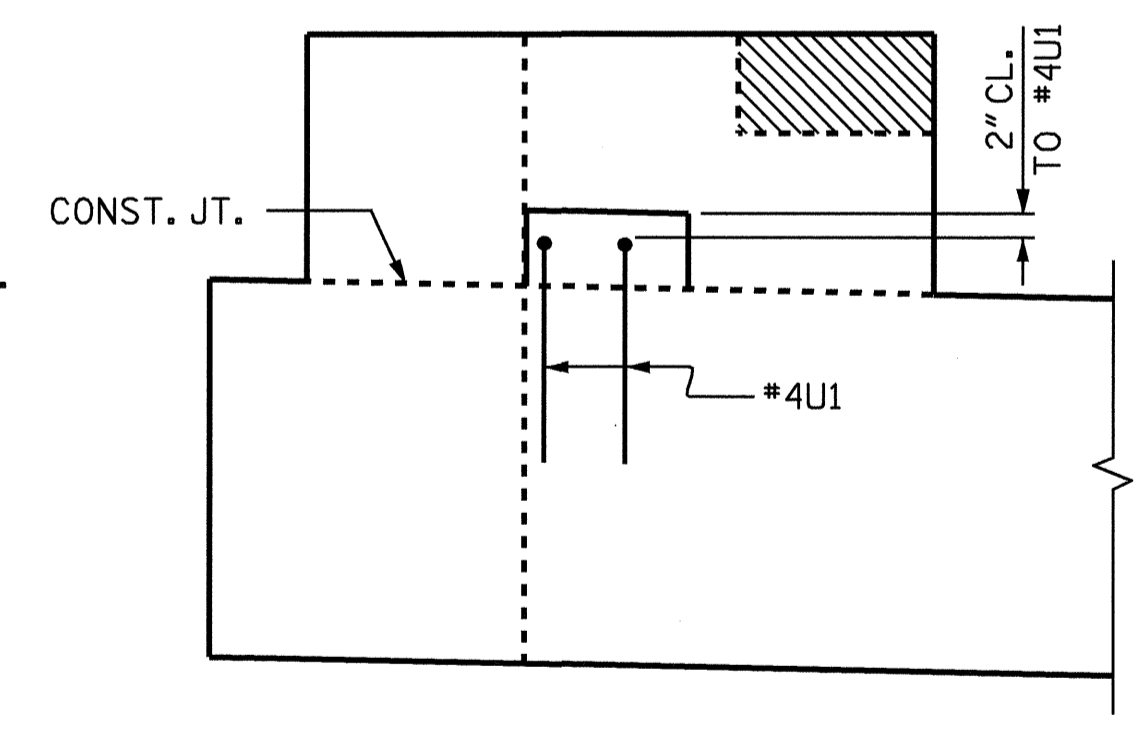
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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



PLAN



ELEVATION

LATERAL GUIDE (TYPICAL EACH SIDE)

PROJECT NO. B-3608

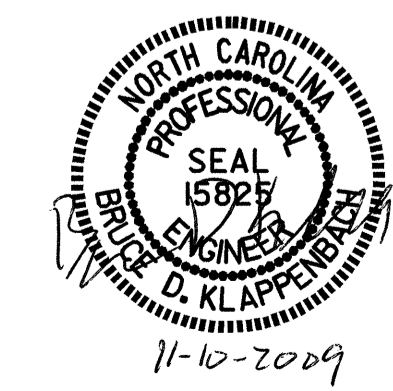
AVERY COUNTY

STATION: 14+45.50-L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

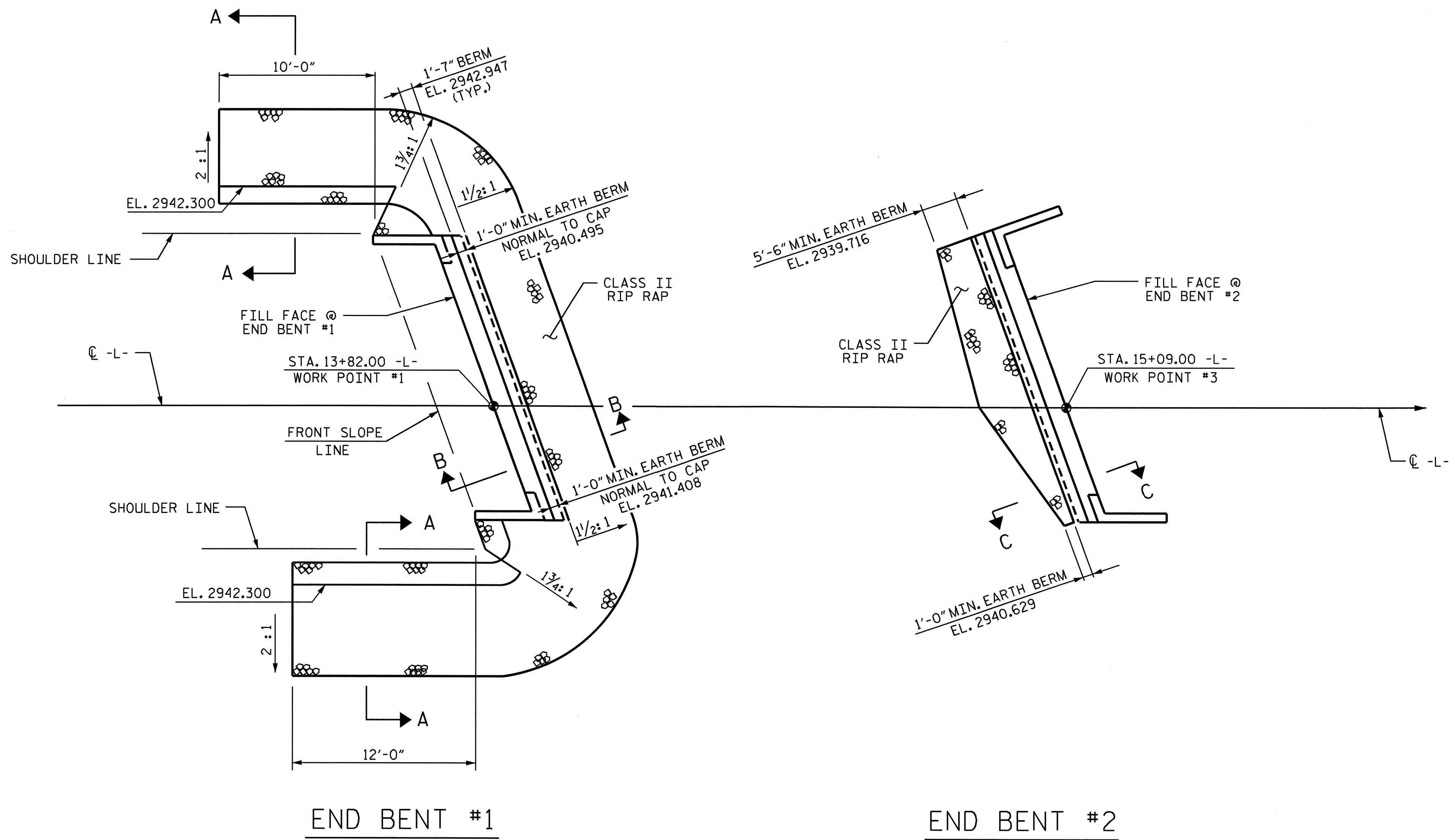
SUBSTRUCTURE
END BENT #2



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

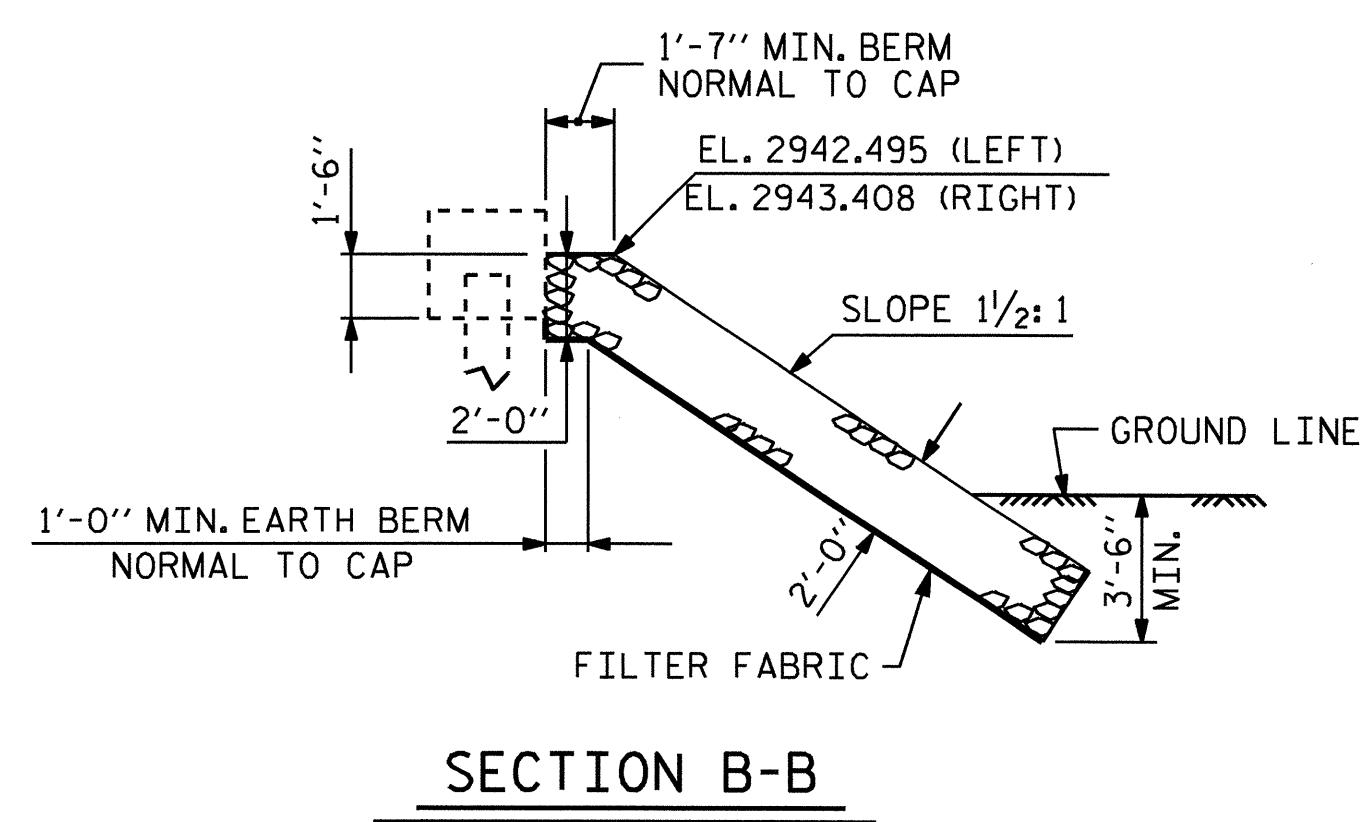
DRAWN BY: S.H. SOCKWELL DATE: 10/10/09
CHECKED BY: D.A. GLADDEN DATE: 10/29/09

SHEET NO. S-19
TOTAL SHEETS 22

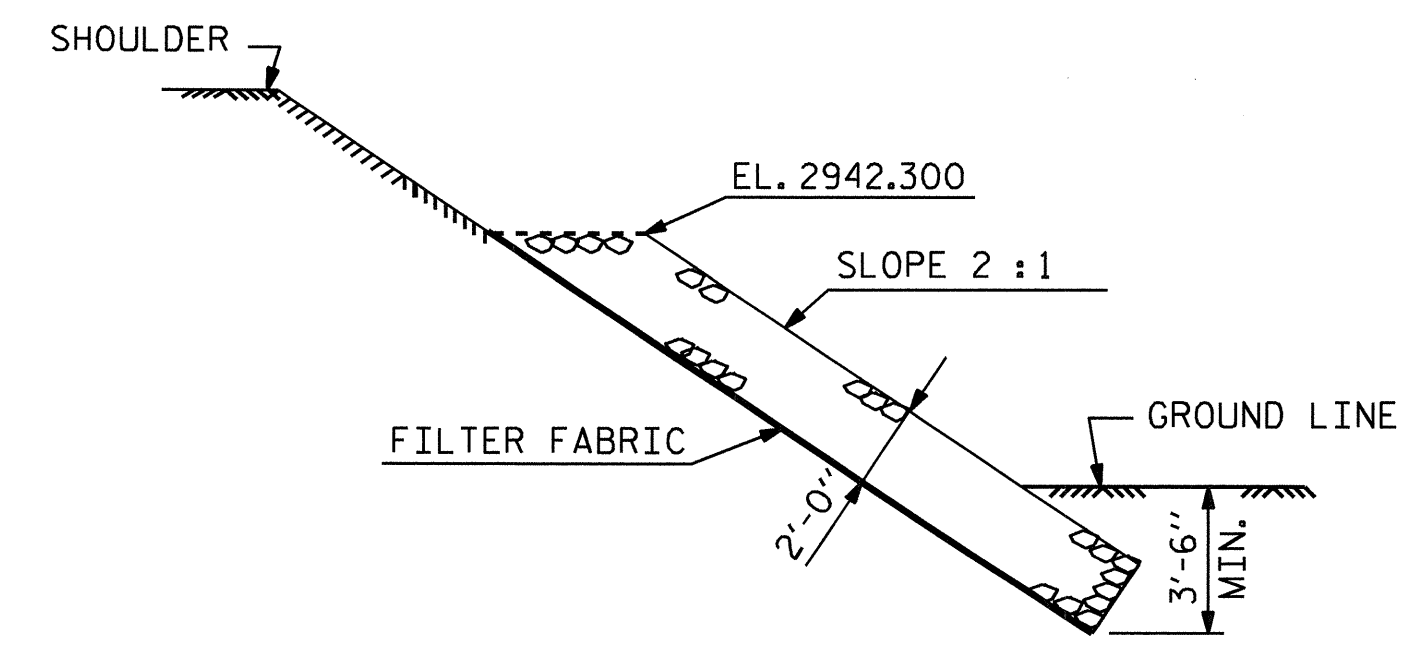


ESTIMATED QUANTITIES		
BRIDGE @ STA. 14+45.50 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	135	150
END BENT 2	45	50
TOTAL	180	200

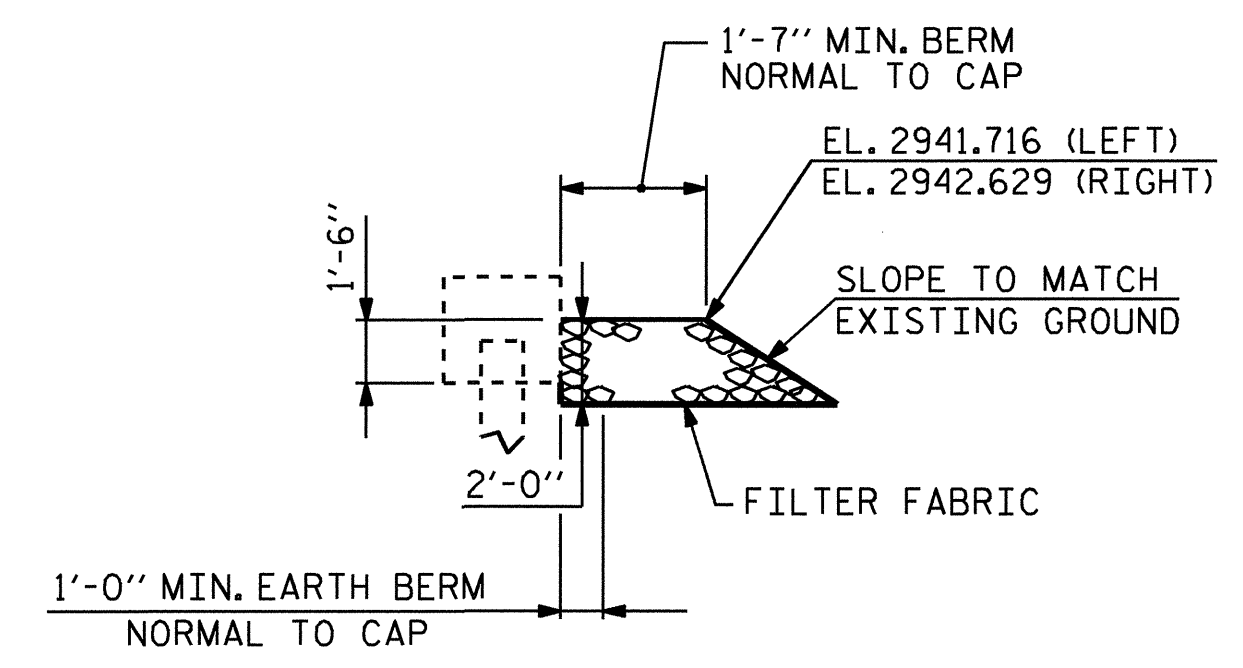
PLAN



SECTION B-B



SECTION A-A

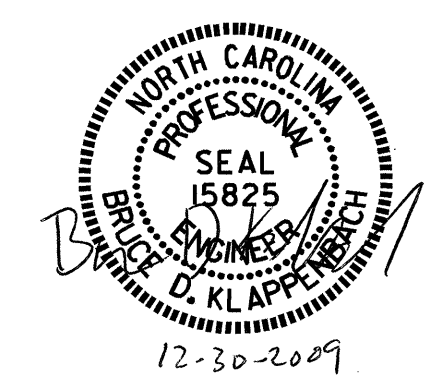


SECTION C-C

PROJECT NO. B-3608
AVERY COUNTY
 STATION: 14+45.50 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

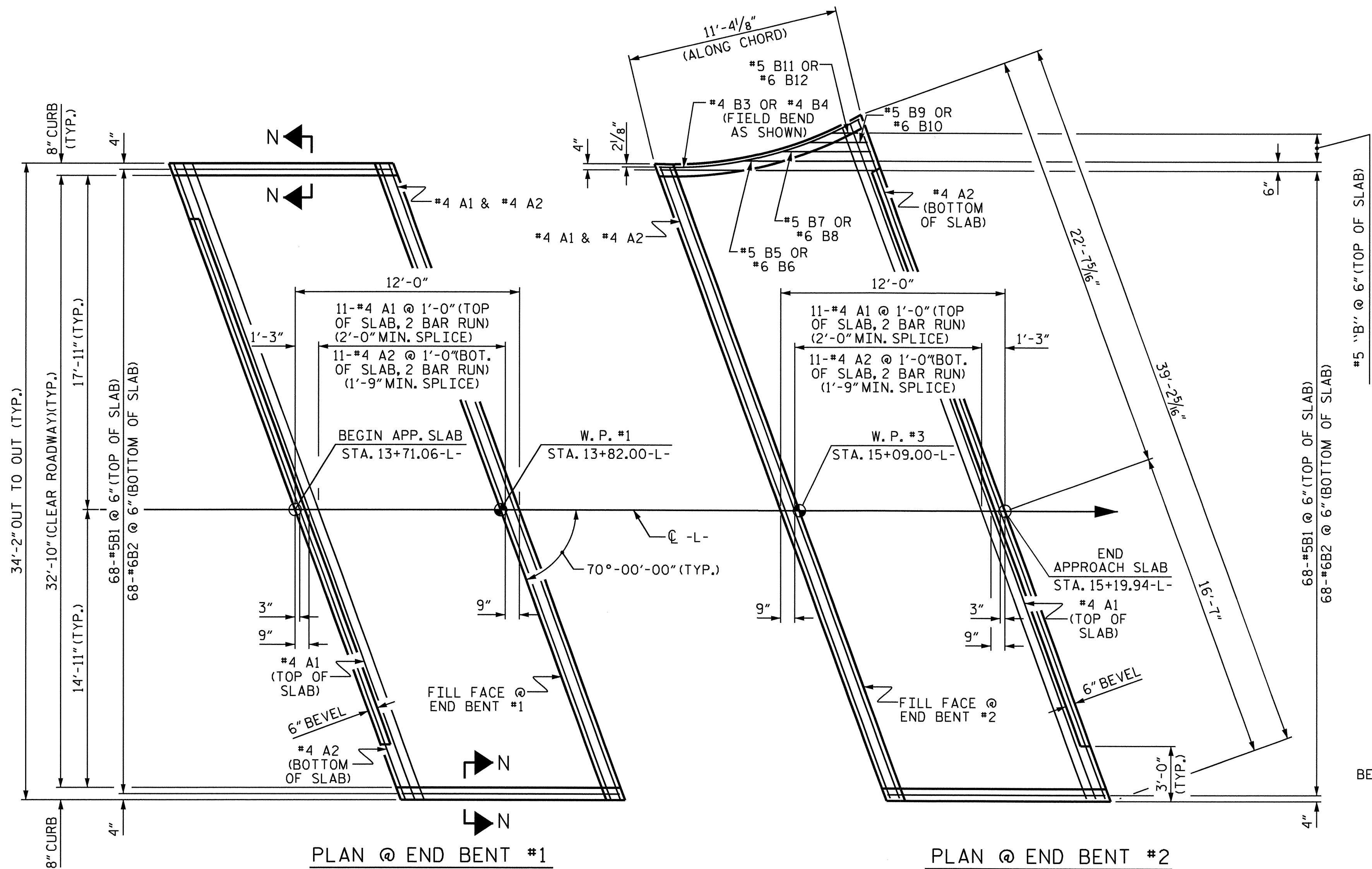
—RIP RAP DETAILS—



ASSEMBLED BY : M. G. SHAIKH DATE : 09-02-09
 CHECKED BY : B. D. KLAPPENBACH DATE : 11-09-09
 DRAWN BY : REK 1/84 REV. 7/17/98 REK/RWW
 CHECKED BY : RDU 1/84 REV. 8/16/99 RWW/LES
 REV. 10/17/00 RWW/LES

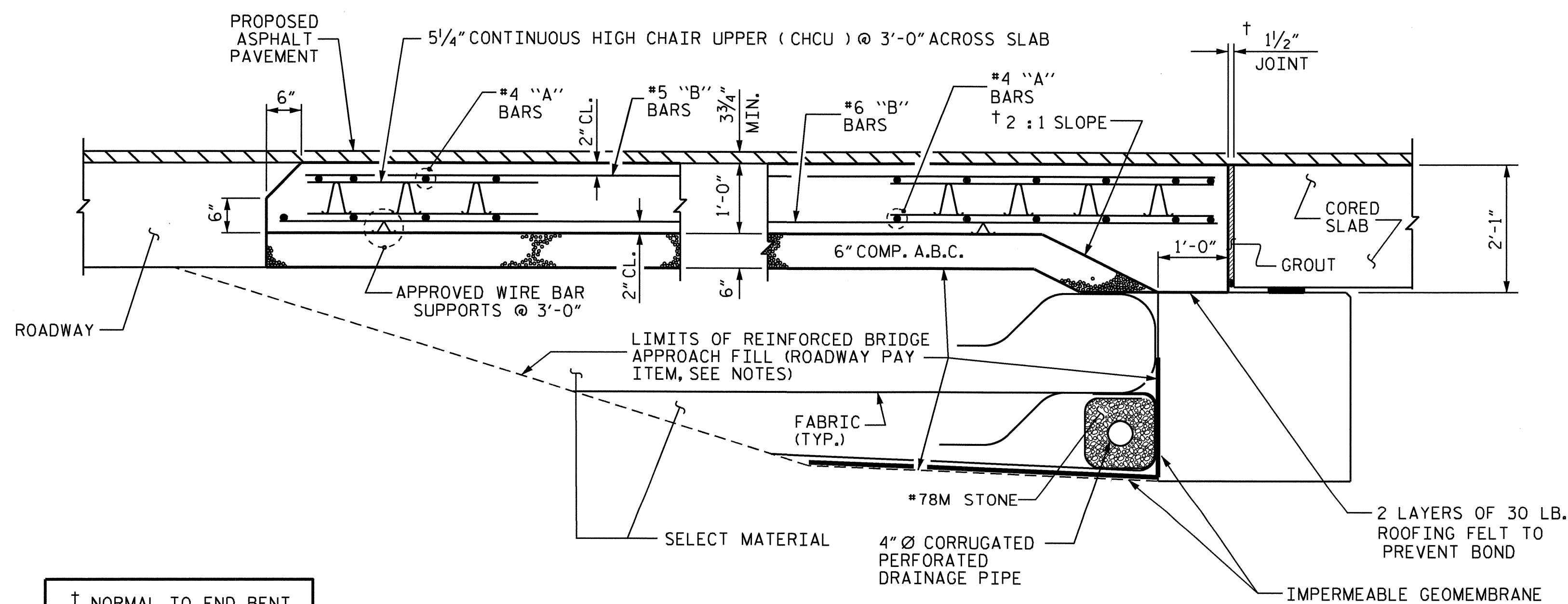
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			22

29-DEC-2009 15:26
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 mshaikh



PLAN @ END BENT #1

PLAN @ END BENT #2



SECTION THRU SLAB

NOTES

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

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

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

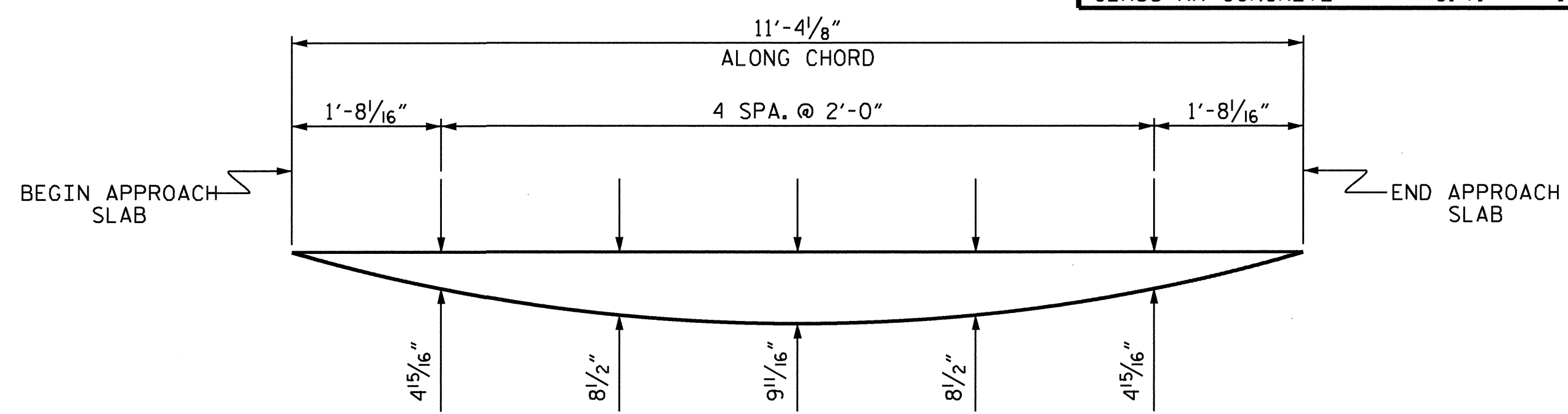
THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

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

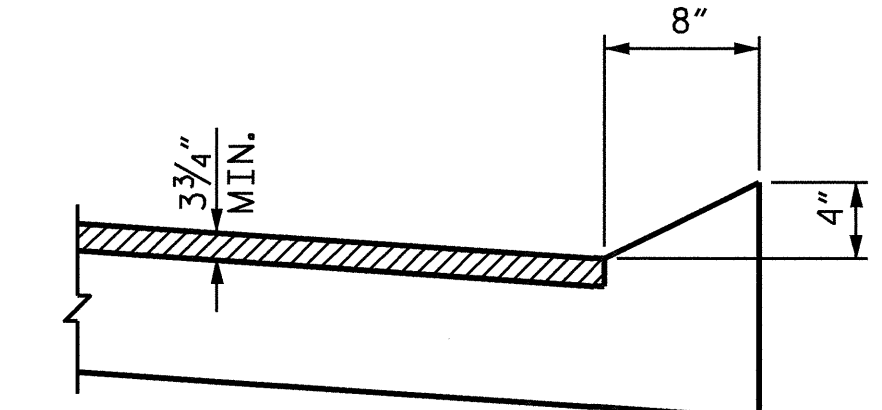
FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE CORED SLAB UNIT" SHEETS.

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

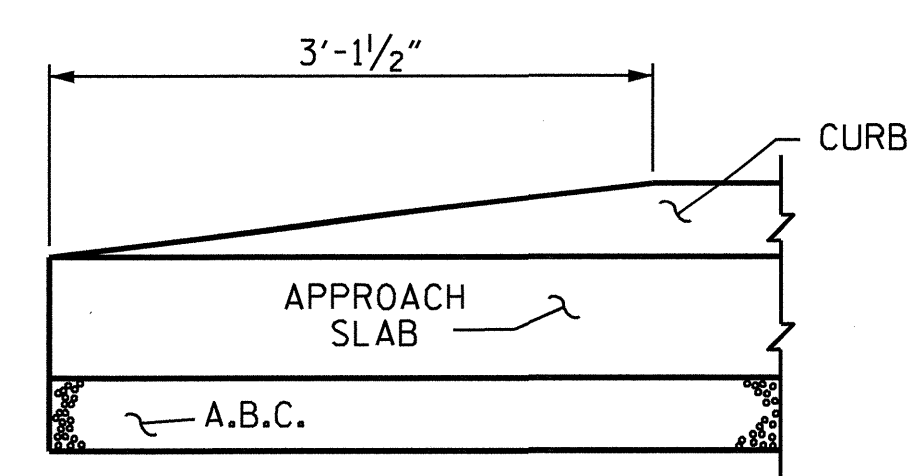
APPROACH SLAB GROOVING IS NOT REQUIRED.



ARC OFFSETS @ APPROACH SLAB #2



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

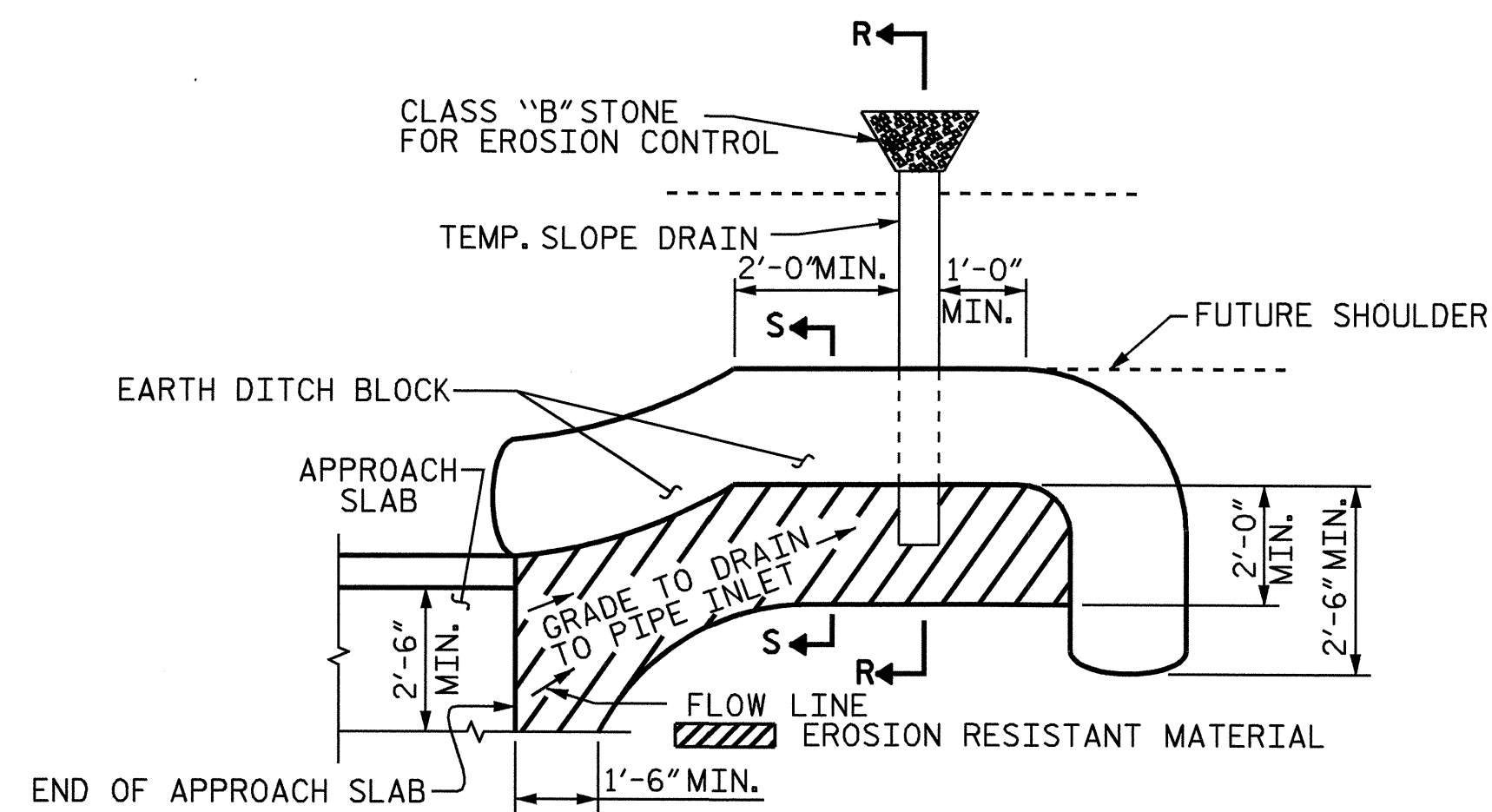
BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	20'-7"	357
A2	26	#4	STR	20'-5"	355
*B1	68	#5	STR	11'-1"	786
B2	68	#6	STR	11'-7"	1183
REINFORCING STEEL				LBS.	1538
*EPOXY COATED REINFORCING STEEL				LBS.	1143
CLASS AA CONCRETE				C. Y.	18.4
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	20'-7"	357
A2	26	#4	STR	20'-5"	355
*B1	68	#5	STR	11'-1"	786
B2	68	#6	STR	11'-7"	1183
*B3	1	#4	STR	11'-1"	7
B4	1	#4	STR	11'-1"	7
*B5	1	#5	STR	7'-0"	7
B6	1	#6	STR	7'-0"	11
*B7	1	#5	STR	4'-9"	5
B8	1	#6	STR	4'-9"	7
*B9	1	#5	STR	3'-1"	3
B10	1	#6	STR	3'-1"	5
*B11	1	#5	STR	1'-9"	2
B12	1	#6	STR	1'-9"	3
REINFORCING STEEL				LBS.	1571
*EPOXY COATED REINFORCING STEEL				LBS.	1167
CLASS AA CONCRETE				C. Y.	18.8

PROJECT NO. B-3608
AVERY COUNTY
 STATION: 14+45.50-L-
 SHEET 1 OF 2

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

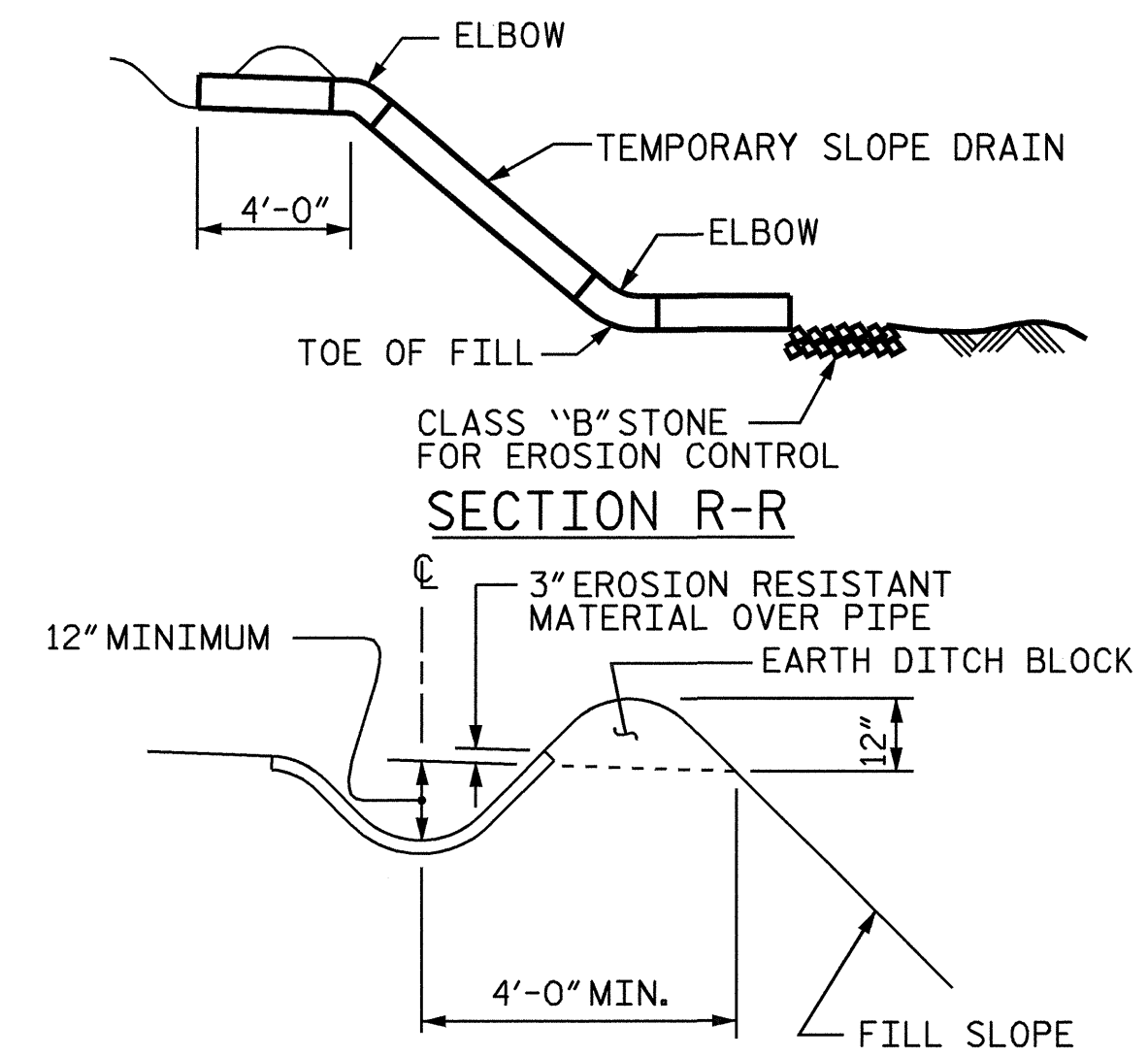
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS 22
2			4			

DRAWN BY: H. T. BARBOUR DATE: 8-04-09
 CHECKED BY: M. G. SHAIKH DATE: 8-09



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.

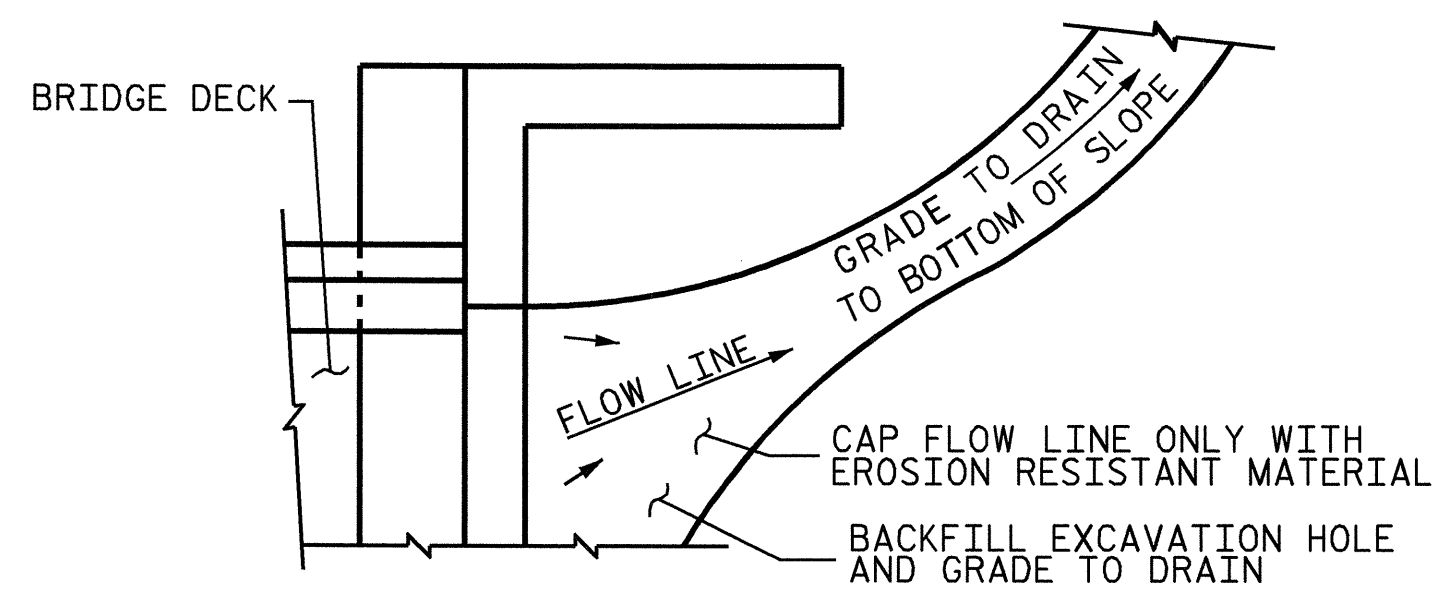
PLAN VIEW



SECTION S-S

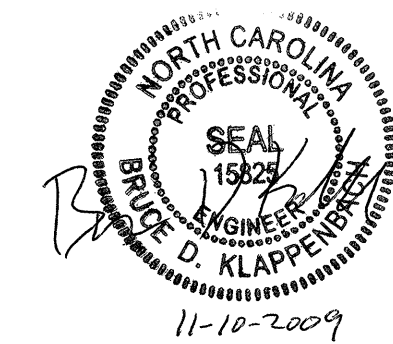
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(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-3608
AVERY COUNTY
 STATION: 14+45.50-L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE APPROACH SLAB DETAILS

ASSEMBLED BY :	H. T. BARBOUR	DATE :	8-04-09
CHECKED BY :	M. G. SHAIKH	DATE :	8-09
DRAWN BY :	FCJ	11/88	REV. 10/17/00 RWW/JES
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
2			4			22

STD. NO. BAS10

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. 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

STD. NO. SN