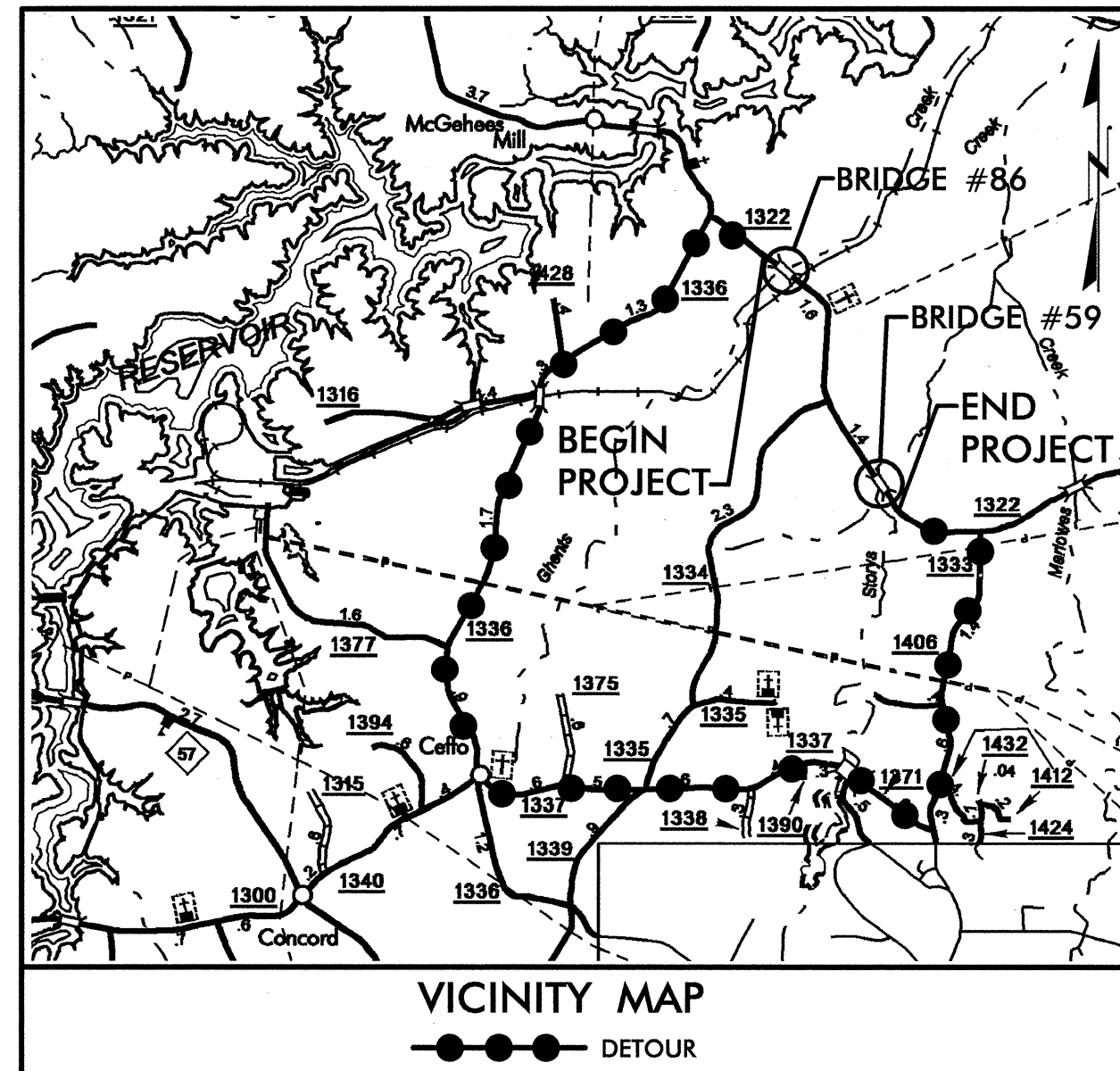


STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-4906		
STATE PROJECT NO.	F.A. PROJ. NO.	DESCRIPTION	
40547.1.1		P.E.	
40547.2.1		R /W, UTIL.	
40547.3.1		CONST.	

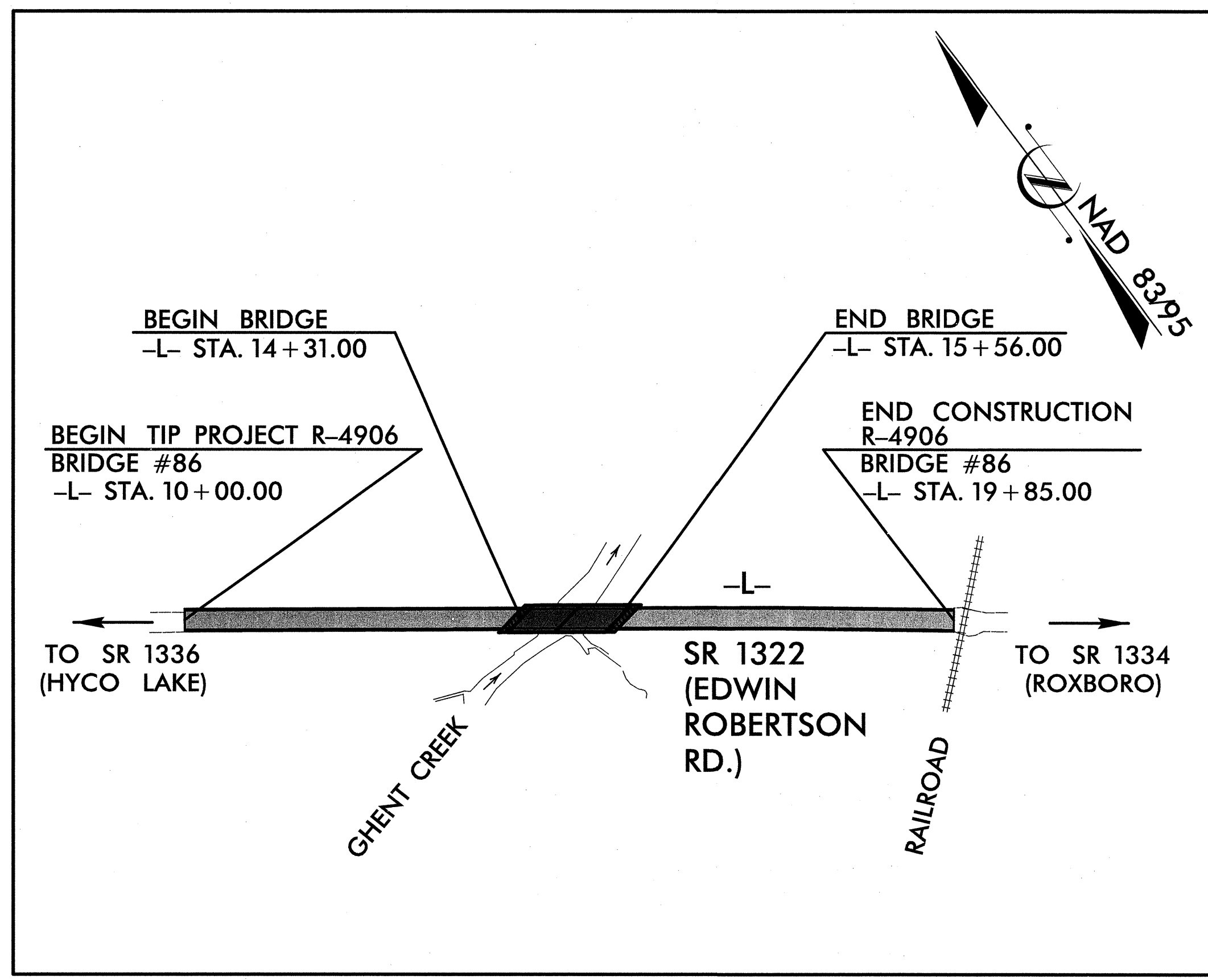
STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
PERSON COUNTY

LOCATION: BRIDGE NO. 59 OVER STORY'S CREEK AND BRIDGE NO. 86 OVER GHENT CREEK
 ON SR 1322 (EDWIN ROBERTSON ROAD)

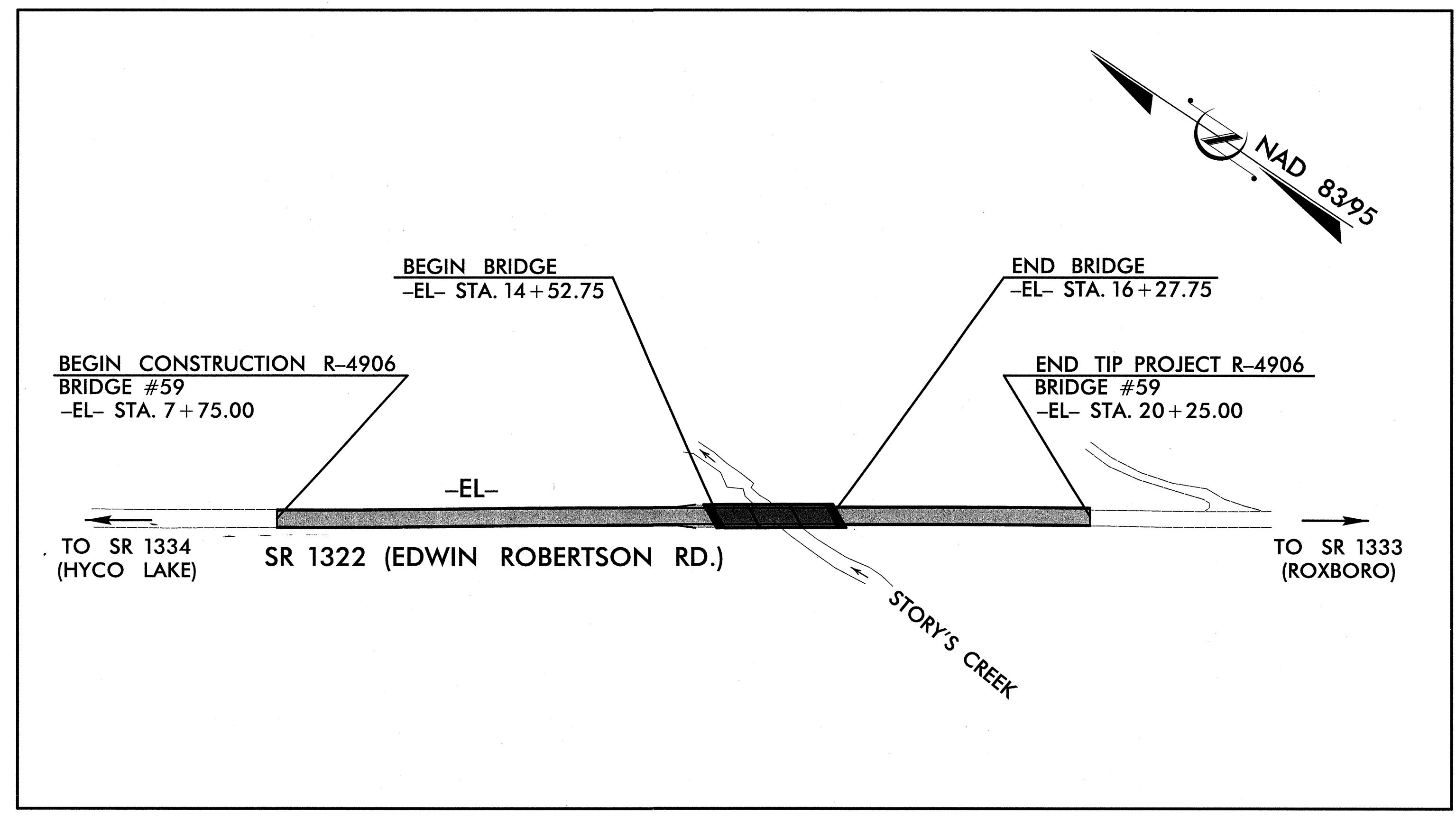
TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURES.



STRUCTURES

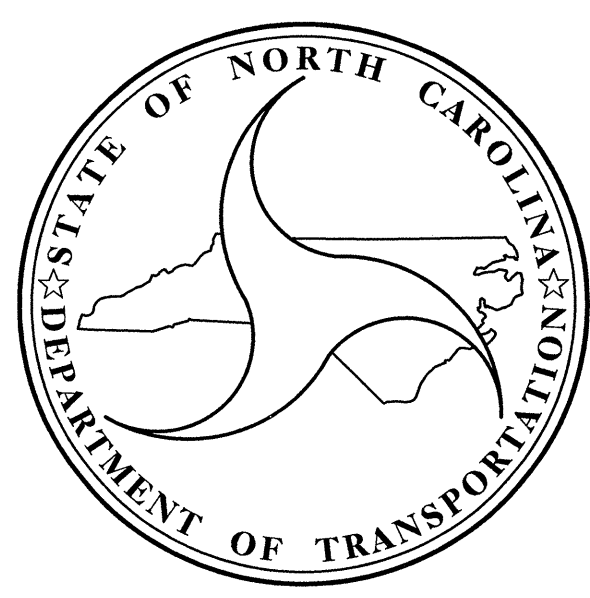


LOCATION SKETCH BRIDGE # 86



LOCATION SKETCH BRIDGE # 59

CONTRACT: C202147 TIP PROJECT: R-4906



DESIGN DATA

ADT 2009 =	850
ADT 2029 =	1660
T =	48 % *
V =	60 MPH
* TTST 44 % DUAL 2 %	
FUNC CLASS =	LR /NONFA

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-4906	=	0.366 MILE
LENGTH STRUCTURE TIP PROJECT R-4906	=	0.057 MILE
TOTAL LENGTH TIP PROJECT R-4906	=	0.423 MILE

Prepared In the Office of:
MULKEY
 ENGINEERS & CONSULTANTS
 FOR
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2006 STANDARD SPECIFICATIONS	
LETTING DATE: SEPTEMBER 15, 2009	L. KEVIN AUSTIN, PE PROJECT ENGINEER
NCDOT CONTACT:	MIKE SUMMERS BRIDGE MANAGEMENT PROJECT MANAGER

STRUCTURE DESIGN ENGINEER

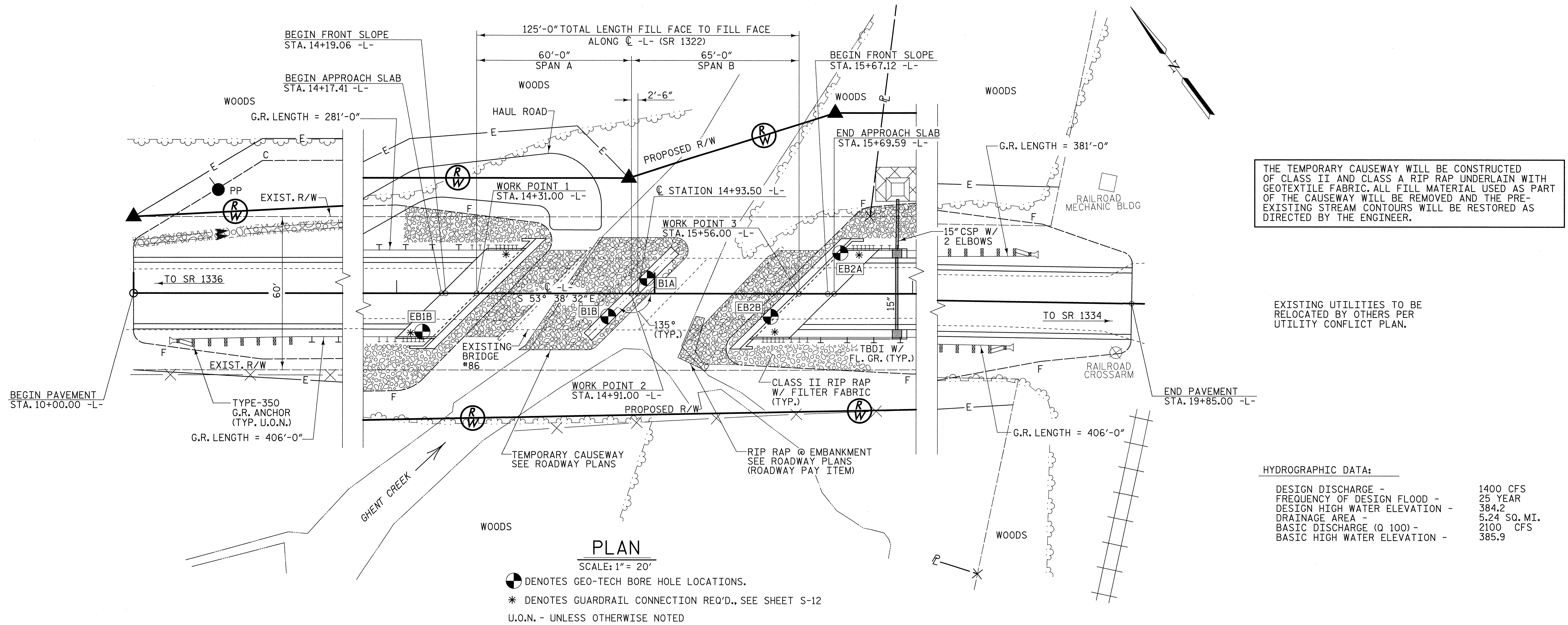
L. Kevin Austin P.E.
 SIGNATURE: DATE: 7/1/09

DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA

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

APPROVED DIVISION ADMINISTRATOR DATE

6/30/2009 9:43:54 AM
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THE TEMPORARY CAUSEWAY WILL BE CONSTRUCTED OF CLASS II AND CLASS A RIP RAP UNDERLAIN WITH GEOTEXTILE FABRIC. ALL FILL MATERIAL USED AS PART OF THE CAUSEWAY WILL BE REMOVED AND THE PRE-EXISTING STREAM CONTOURS WILL BE RESTORED AS DIRECTED BY THE ENGINEER.

EXISTING UTILITIES TO BE RELOCATED BY OTHERS PER UTILITY CONFLICT PLAN.

HYDROGRAPHIC DATA:

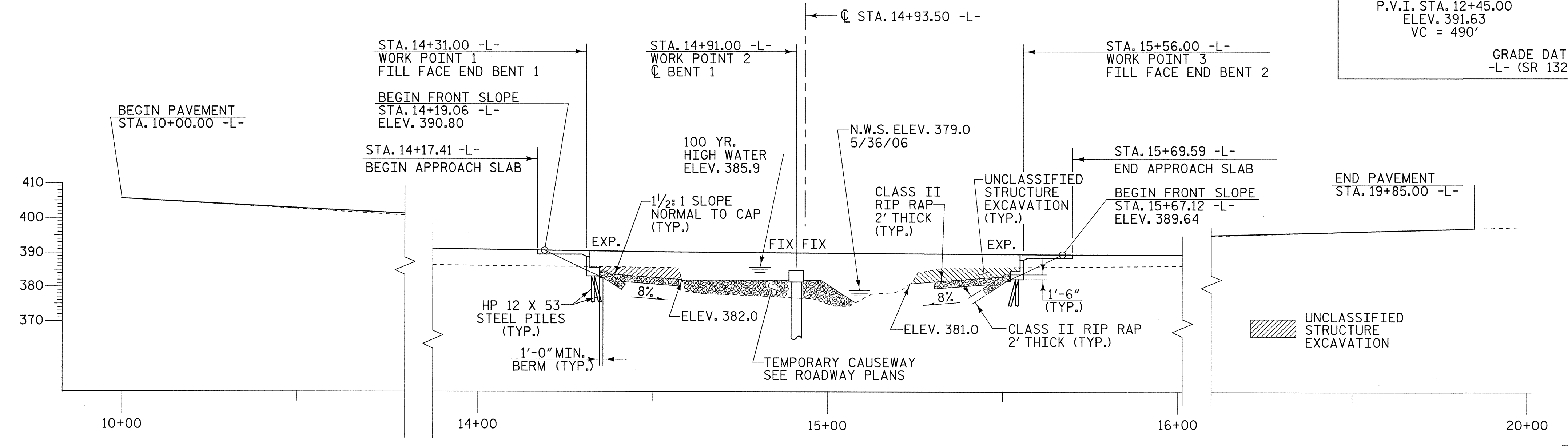
DESIGN DISCHARGE -	1400 CFS
FREQUENCY OF DESIGN FLOOD -	25 YEAR
DESIGN HIGH WATER ELEVATION -	384.2
DRAINAGE AREA -	5.24 SQ. MI.
BASIC DISCHARGE (Q 100) -	2100 CFS
BASIC HIGH WATER ELEVATION -	385.9

PLAN
SCALE: 1" = 20'
● DENOTES GEO-TECH BORE HOLE LOCATIONS.
* DENOTES GUARDRAIL CONNECTION REQ'D., SEE SHEET S-12
U.O.N. - UNLESS OTHERWISE NOTED

GRADE DATA -L- (SR 1322)

P.V.I. STA. 12+45.00 ELEV. 391.63 VC = 490'	P.V.I. STA. 16+75.00 ELEV. 388.93 VC = 260'
---	---

(-) 5.7306% (-) 0.6279% (+) 2.6613%



PROFILE ALONG C SURVEY
SCALE: 1" = 20'

PROJECT NO. R-4906
PERSON COUNTY
STATION: 14+93.50 -L-

REPLACES BRIDGE NO. 86

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE ON SR 1322 OVER
GHENT CREEK BETWEEN
SR 1336 & SR 1334
34'-0" CLEAR ROADWAY - 135° SKEW

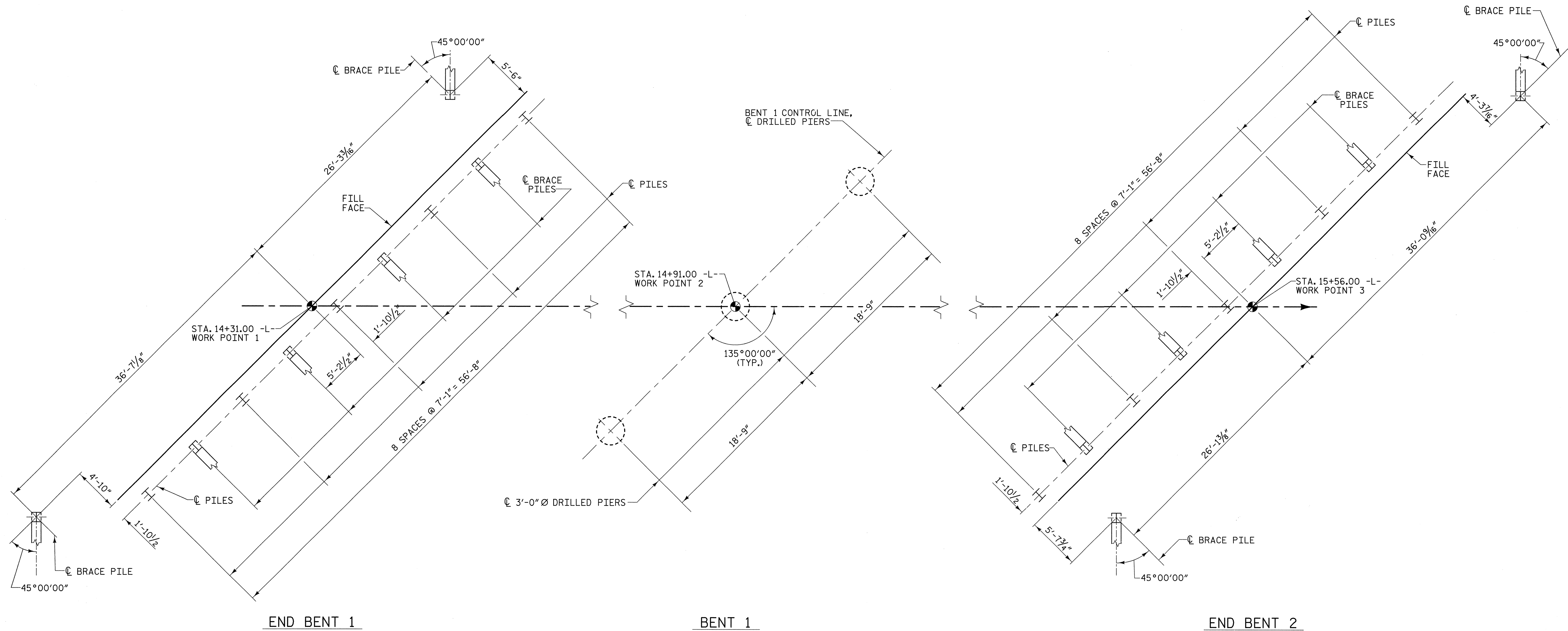


PLANS PREPARED BY:
MULKEY ENGINEERS & CONSULTANTS
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RALEIGH, NC 27636
(919) 851-1912
(919) 851-1912 (FAX)
WWW.MULKEYINC.COM

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					50

DRAWN BY: J. A. CAVER DATE: 02/07
CHECKED BY: H. S. ELLIOTT DATE: 03/07

6/22/2009 8:07:47 AM R:\Structures\94906(86).SD.DWG



FOUNDATION LAYOUT

NOTES

- ALL PILES ARE HP 12 x 53 STEEL PILES.
- ALL END BENT BRACE PILES ARE BATTERED AT 3:12.
- DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE AT THE BOTTOM OF THE CAP.
- DRIVE PILES AT END BENTS No.1 AND 2 TO A REQUIRED BEARING CAPACITY OF 90 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO. THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENTS No.1 AND 2 IS 45 TONS PER PILE.
- DRILLED PIERS AT BENT No.1 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 20 TSF. DRILLED PIERS AT BENT No.1 ARE DESIGNED FOR AN APPLIED LOAD OF 185 TONS AT THE TOP OF COLUMN.
- PERMANENT STEEL CASING IS REQUIRED FOR DRILLED PIERS AT BENT No.1. DO NOT EXTEND THE CASING BELOW ELEVATION 354 FEET (LEFT SIDE) AND 365 FEET (RIGHT SIDE) WITHOUT PRIOR APPROVAL FROM THE ENGINEER. SEE DRILLED PIER SPECIAL PROVISION.

- DRILLED PIERS AT BENT No.1 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 349 FEET (LEFT SIDE) AND 354 FEET (RIGHT SIDE), SATISFY THE REQUIRED END BEARING CAPACITY, AND HAVE A MINIMUM PENETRATION OF 5 FEET INTO ROCK (LEFT SIDE) AND 11 FEET INTO WEATHERED ROCK (RIGHT SIDE) AS DEFINED BY THE DRILLED PIERS SPECIAL PROVISIONS.
- SPT TESTING IS NOT REQUIRED TO DETERMINE THE END BEARING CAPACITY OF THE DRILLED PIERS AT BENT No.1.
- THE SCOUR CRITICAL ELEVATION FOR BENT No.1 IS ELEVATION 366 FEET. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
- DO NOT USE SLURRY CONSTRUCTION FOR DRILLED PIERS AT BENT No.1.
- DO NOT USE POLYMER SLURRY FOR DRILLED PIERS AT BENT No.1.
- CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR THE DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. SEE CROSSHOLE SONIC LOGGING SPECIAL PROVISIONS.

PROJECT NO. R-4906
 PERSON _____ COUNTY _____
 STATION: 14+93.50 -L-

REPLACES BRIDGE NO. 86



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

FOUNDATION LAYOUT

34'-0" CLEAR ROADWAY - 135° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			50
2			4			

DRAWN BY : W. B. ALLEN DATE : 03/08
 CHECKED BY : R. V. KEITH DATE : 03/08

6/22/2009 8:05:16 AM R:\Structures\R4906\866_5D_FL_01.dgn

TOTAL BILL OF MATERIAL

	CONSTRUCTION MAINTENANCE & REMOVAL OF TEMPORARY 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" DIA. DRILLED PIER	CROSSHOLE SONIC LOGGING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS "A" CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	45" PRESTRESSED CONCRETE GIRDERS	HP 12 X 53 STEEL PILES	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS		
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	LUMP SUM	SQ. FEET	SQ. FEET	CU. YARDS	LUMP SUM	LBS.	LBS.	NO.	FEET	NO.	LIN. FT.	LIN. FT.	TONS	SQ. YARDS	LUMP SUM	LUMP SUM
SUPERSTRUCTURE								4546	4507					8	475.17		244				LUMP SUM	LUMP SUM
END BENT 1										40.4		6547				11	275		275	305		
BENT 1			60.8	30.0	66.6	1				23.3		8553	2169									
END BENT 2										39.0		6475			11	165			245	275		
TOTAL	LUMP SUM	LUMP SUM	60.8	30.0	66.6	1	LUMP SUM	4546	4507	102.7	LUMP SUM	21,575	2169	8	475.17	22	440	244	520	580	LUMP SUM	LUMP SUM

GENERAL NOTES

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING, EXCEPT THAT GIRDERS HAVE BEEN DESIGNED FOR HS 25.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

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 THE 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 35 FT. LEFT AND RIGHT OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION.

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

THE EXISTING STRUCTURE CONSISTING OF 3 SPANS @ 25'-0" OF STEEL PLANK FLOOR ON I-BEAMS WITH CLEAR ROADWAY WIDTH OF 28' ON STEEL H-CAPS WITH STEEL H-PILES AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS NOT PRESENTLY POSTED FOR LOAD LIMIT.

CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNANCE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THE SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.

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 CATEGORY A.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE".

NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

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

ALL GRADING REQUIRED FOR ACCESS TO THE TEMPORARY ACCESS SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR "CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS."

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

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 BERM ELEVATIONS, SEE "RIP RAP DETAILS" SHEET.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

PROJECT NO. R-4906
 _____ PERSON _____ COUNTY
 STATION: 14+93.50 -L-

REPLACES BRIDGE NO. 86

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

TOTAL BILL OF MATERIAL & GENERAL NOTES

34'-0" CLEAR ROADWAY - 135° SKEW



PLANS PREPARED BY:



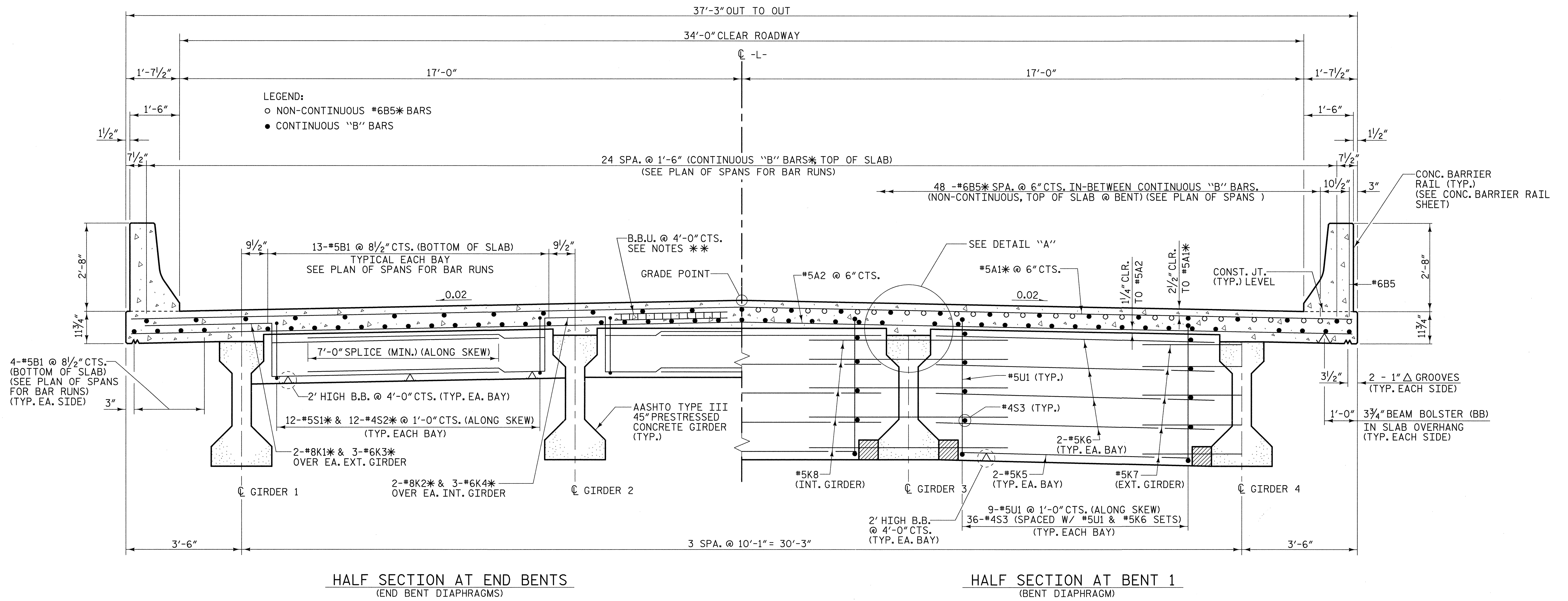
REVISIONS

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

SHEET NO.
 S-3
 TOTALS
 50

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DRAWN BY : W. B. ALLEN DATE : 03/08
 CHECKED BY : R. V. KEITH DATE : 03/08



HALF SECTION AT END BENTS
(END BENT DIAPHRAGMS)

HALF SECTION AT BENT 1
(BENT DIAPHRAGM)

TYPICAL SECTION

NOTES:

PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER (BBU) AT 4'-0" CENTERS ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS.

WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.

FOR REINFORCING STEEL BARS INDICATED, BUT NO MARK SHOWN SEE PLAN OF SPANS.

BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI.

LONGITUDINAL STEEL MAY BE SHIFTED AS NECESSARY TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

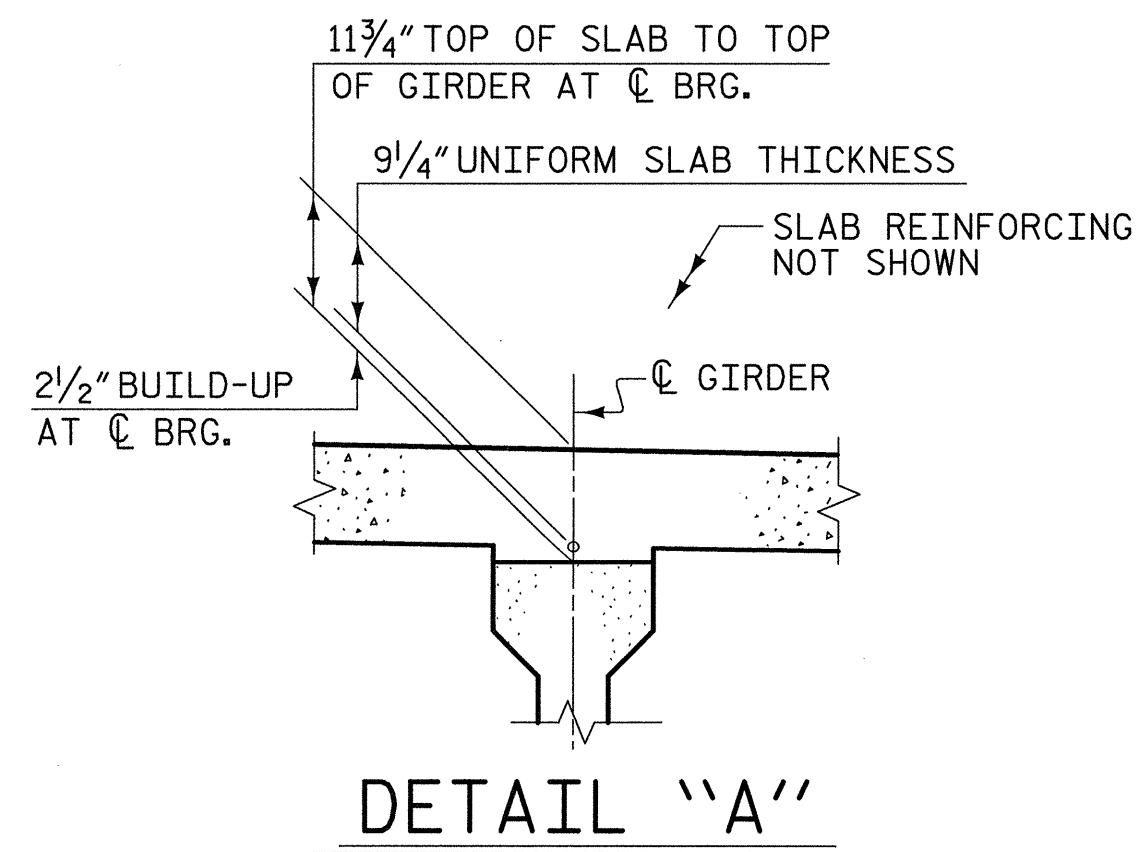
FOR STEEL INTERMEDIATE DIAPHRAGM DETAILS, SEE INTERMEDIATE STEEL DIAPHRAGM SHEET.

* INDICATES EPOXY COATED REINFORCING STEEL.

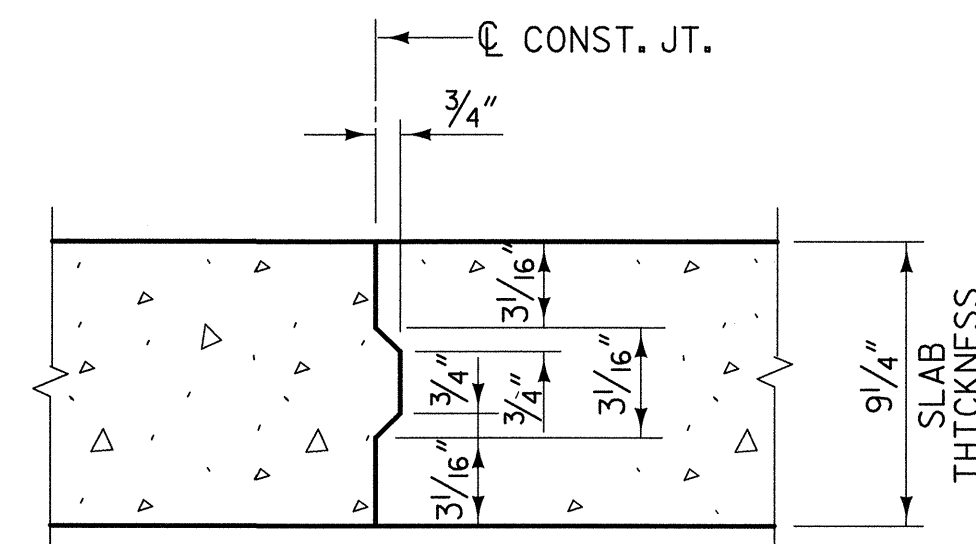
PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

** 2 3/4" B.B.U. LOCATED BETWEEN TOP & BOTTOM MATS OF REINFORCING STEEL AT THE #4 "B" BAR (TOP BAR) LOCATION ONLY, SEE PLAN OF SPANS.

** 2 1/2" B.B.U. LOCATED BETWEEN TOP & BOTTOM MATS OF REINFORCING STEEL AT THE #6 "B" BAR (TOP BAR) LOCATION ONLY, SEE PLAN OF SPANS.



DETAIL "A"



NOTE:
REINFORCING STEEL NOT SHOWN FOR CLARITY.
LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT.

TRANSVERSE CONSTRUCTION
JOINT IN DECK SLAB

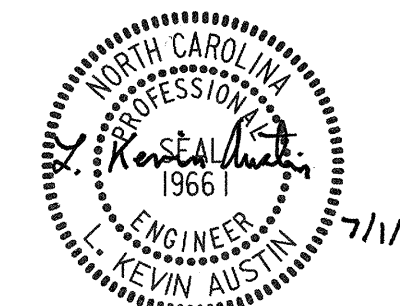
PROJECT NO. R-4906
PERSON COUNTY
STATION: 14+93.50 -L-

REPLACES BRIDGE NO. 86

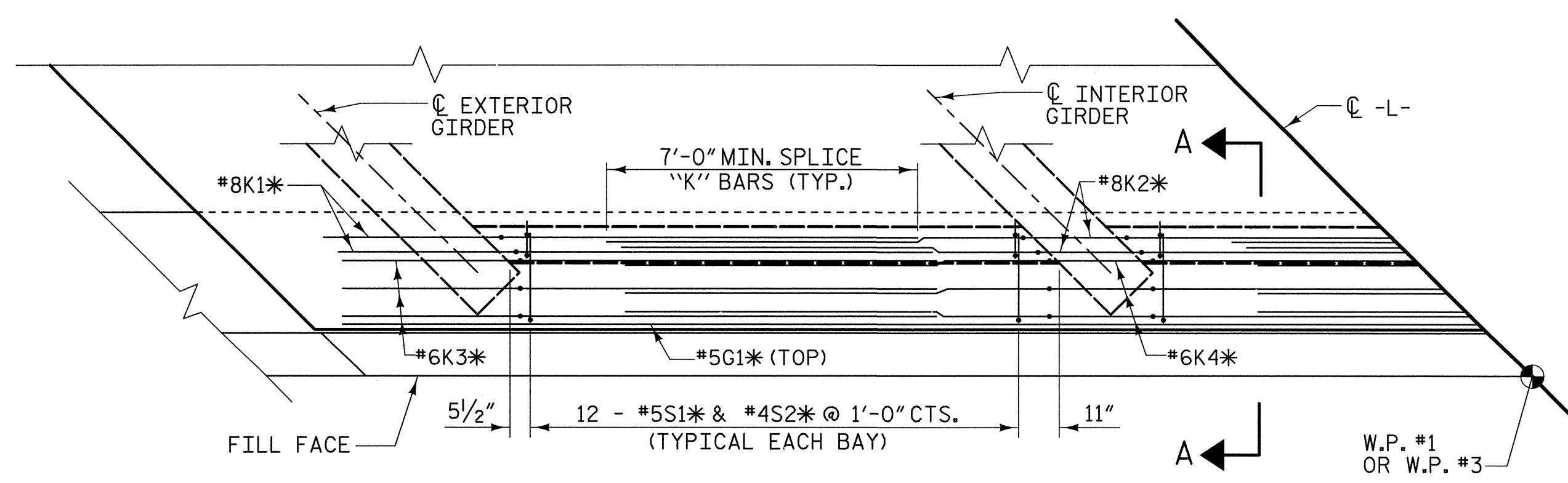
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTION

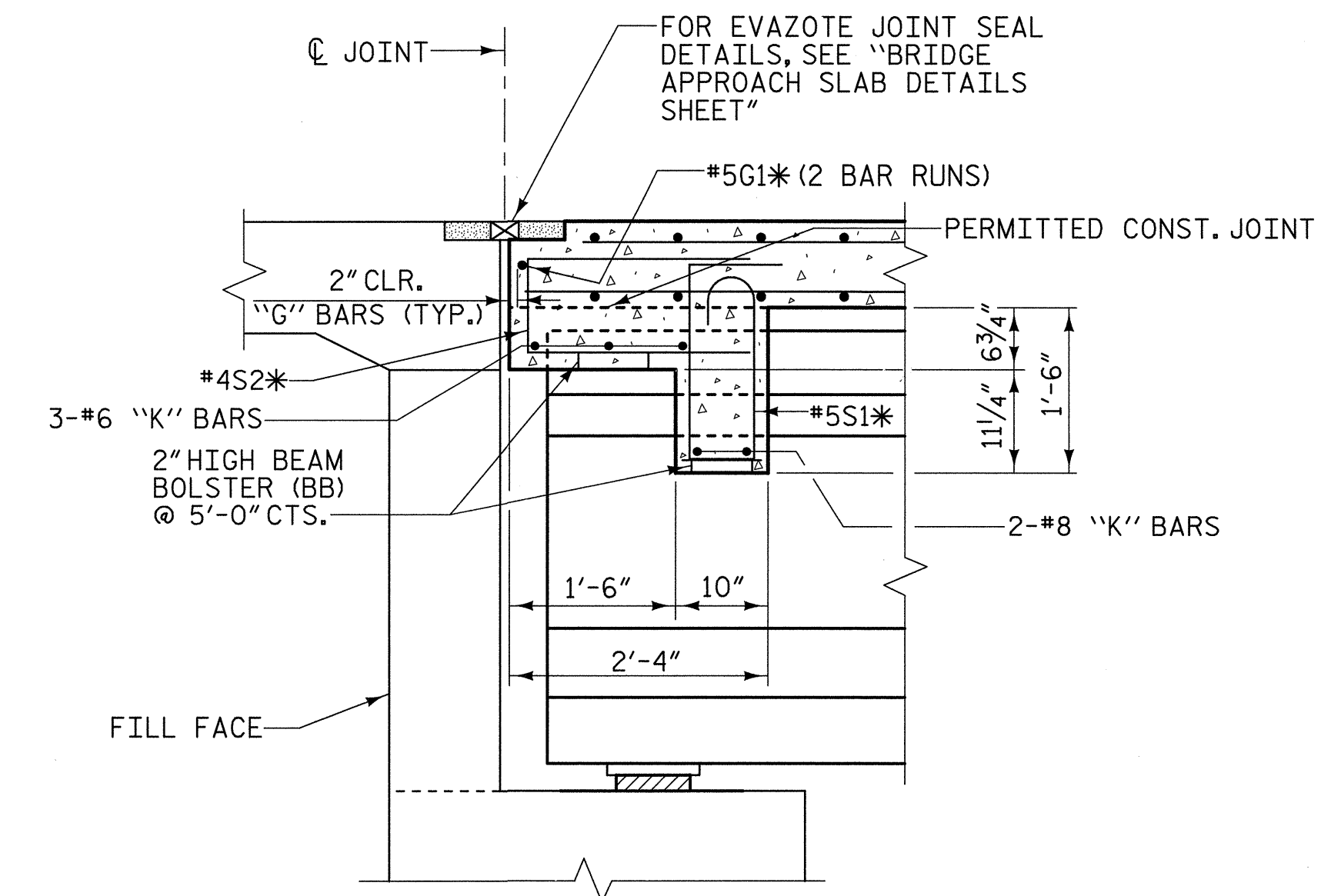
34'-0" CLEAR ROADWAY - 135° SKEW



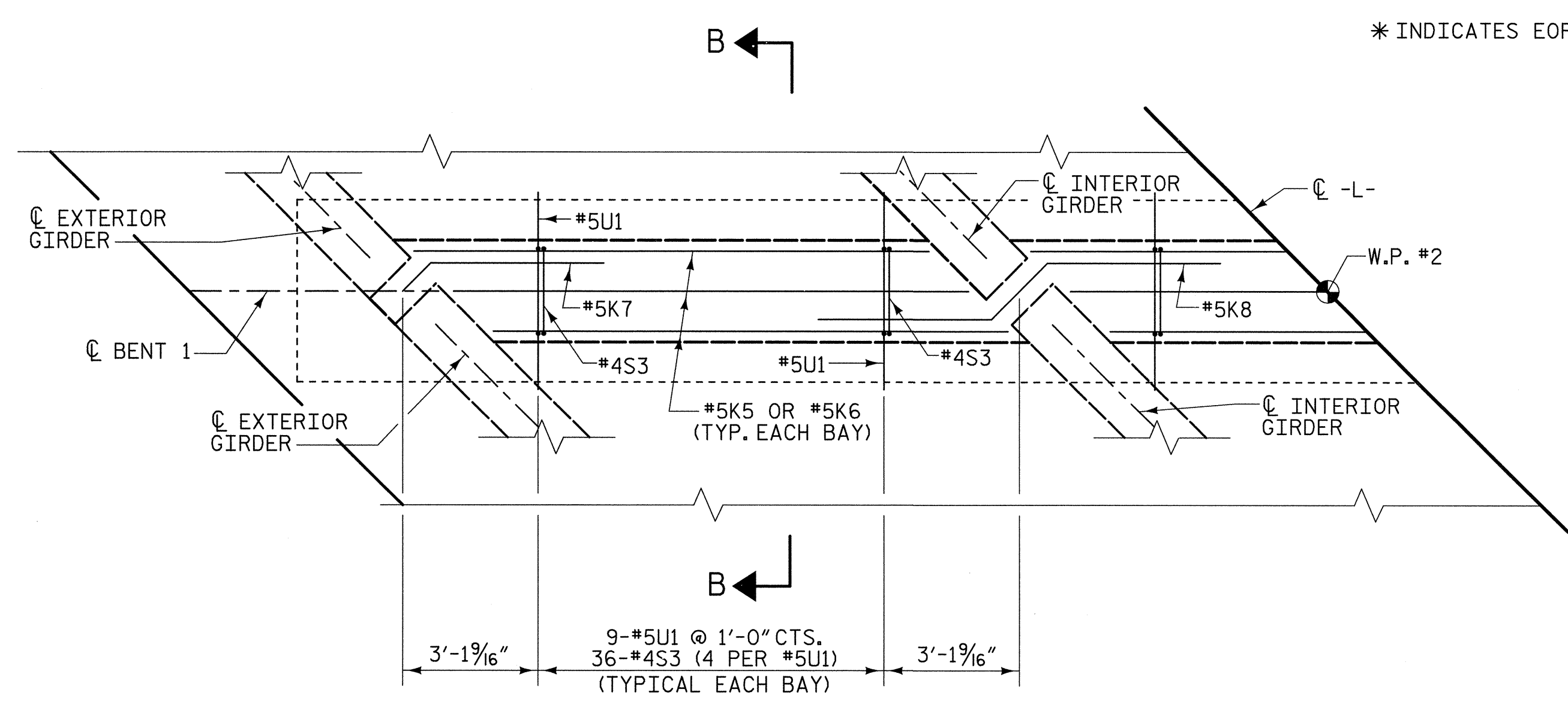
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-4
2			4			TOTAL SHEETS 50



HALF PLAN AT END BENTS
(SHOWING END BENT DIAPHRAGM STEEL)

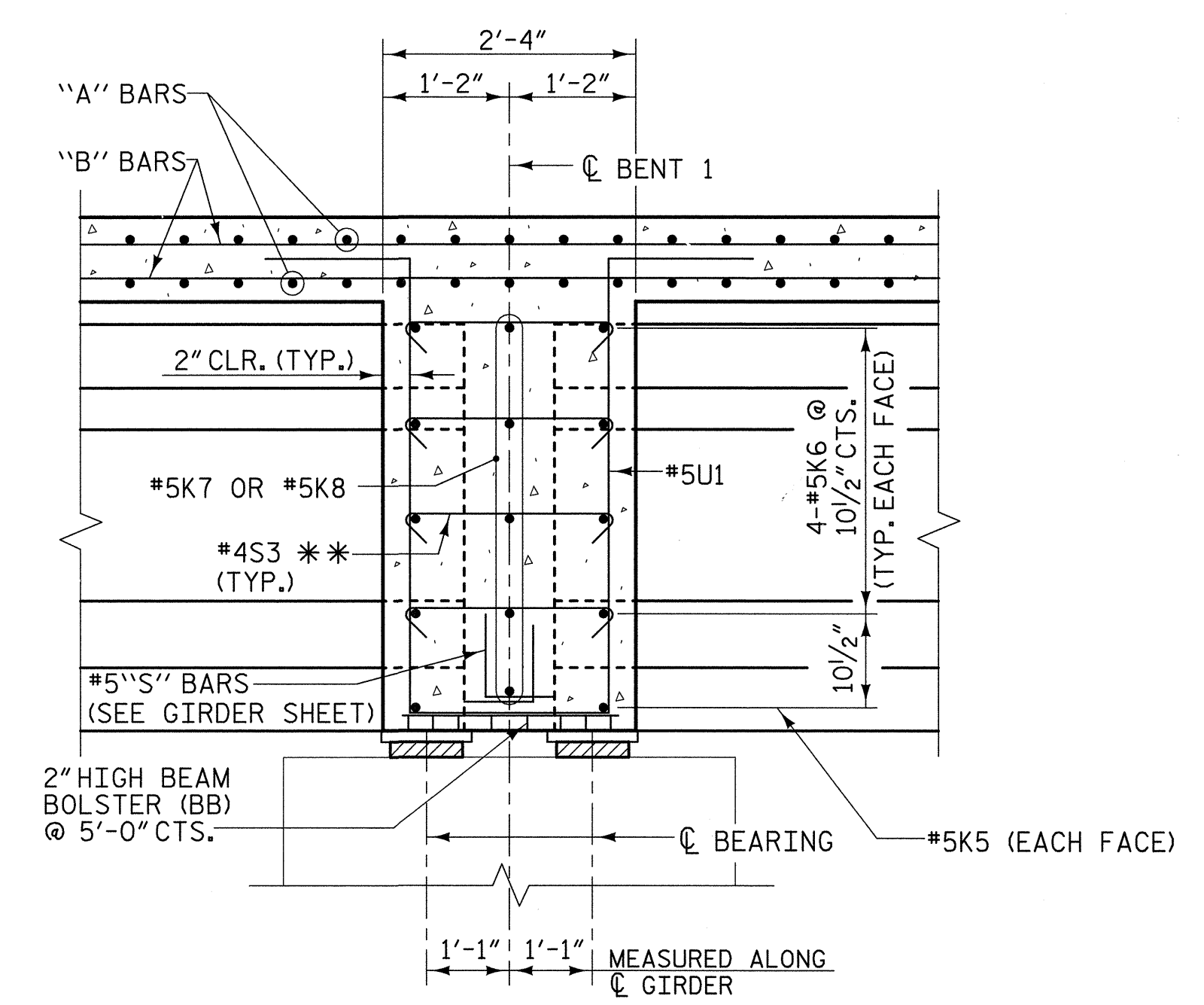


SECTION A-A
THRU END BENT DIAPHRAGM

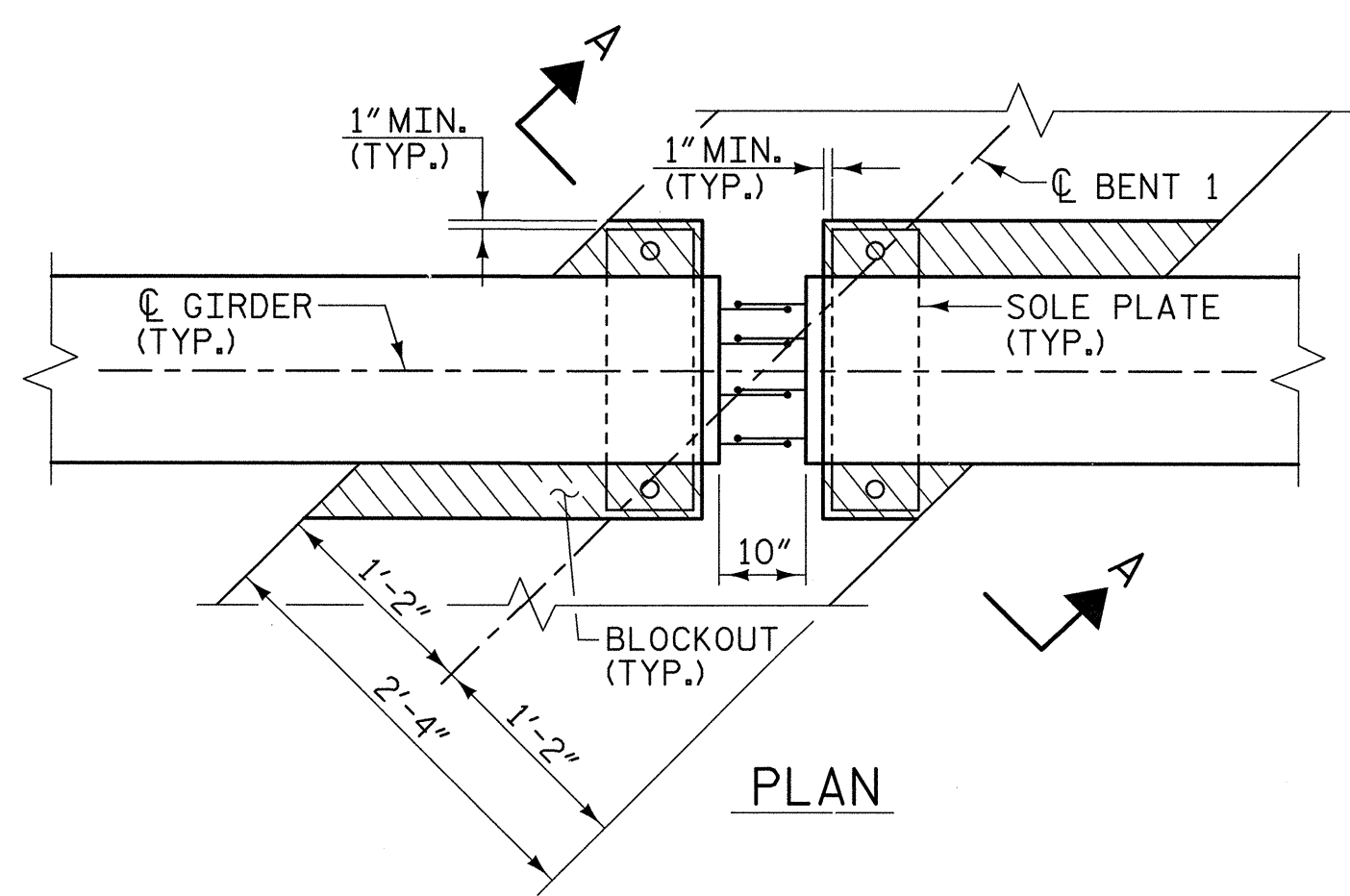


HALF PLAN AT BENT 1
(SHOWING BENT DIAPHRAGM STEEL)

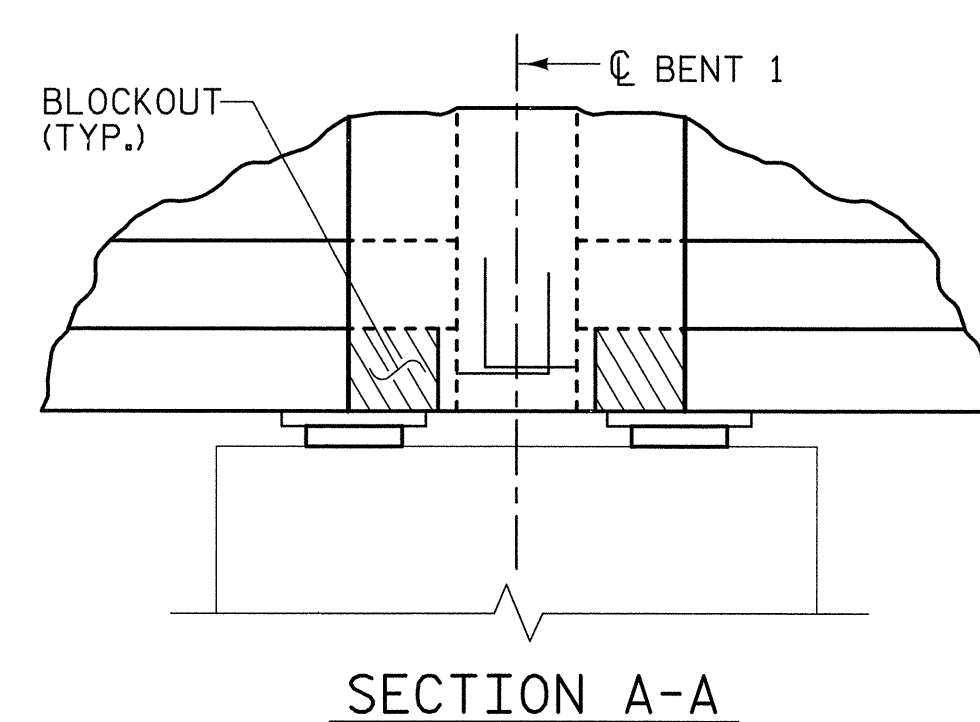
* INDICATES EPOXY COATED REINFORCING STEEL



SECTION B-B
THROUGH BENT DIAPHRAGM



BENT DIAPHRAGM BLOCKOUT DETAIL



SECTION A-A

PROJECT NO. R-4906
PERSON _____ COUNTY _____
STATION: 14+93.50 -L-

REPLACES BRIDGE NO. 86

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
**SUPERSTRUCTURE
TYPICAL SECTION
DETAILS**
34'-0" CLEAR ROADWAY - 135° SKEW

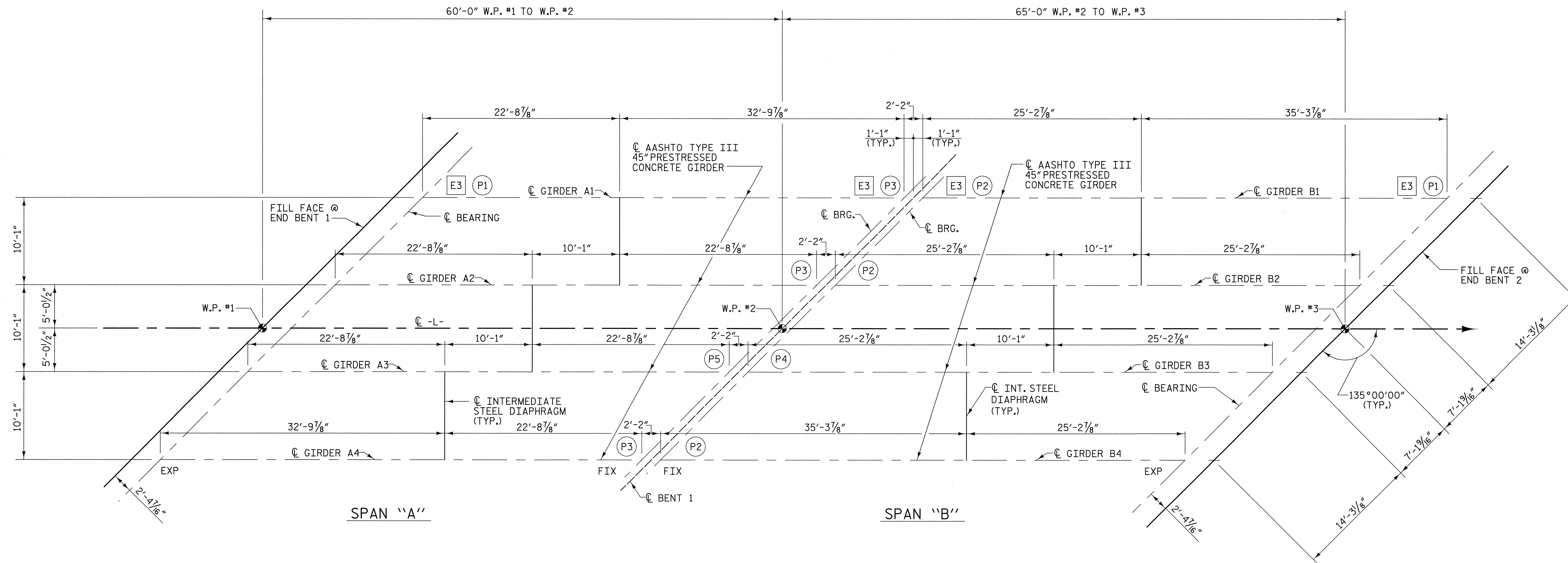


PLANS PREPARED BY:
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			50

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DRAWN BY: J. A. CAVER DATE: 02/07
CHECKED BY: H. S. ELLIOTT DATE: 02/07



FRAMING PLAN AND INTERMEDIATE DIAPHRAGM LOCATIONS

- NOTES:**
- ELASTOMERIC BEARINGS INDICATED THUS EN (N=NUMBER)
 - SOLE PLATES INDICATED THUS: PN (N=NUMBER)

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	SPAN A											SPAN B											
	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
1/2" Ø L.R. STRANDS																							
GIRDER 1 AND GIRDER 4	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.048	0.085	0.110	0.124	0.129	0.124	0.110	0.085	0.050	0.000	0.000	0.056	0.093	0.121	0.136	0.142	0.136	0.121	0.093	0.056	0.000	
DEFLEC. DUE TO SUPERIMPOSED DEAD LOAD *	↓ 0.000	0.011	0.022	0.031	0.036	0.037	0.035	0.030	0.021	0.010	0.000	0.000	0.015	0.030	0.042	0.050	0.053	0.051	0.043	0.031	0.016	0.000	
FINAL CAMBER	↑ 0"	7/16"	3/4"	15/16"	1 1/16"	1 1/8"	1 1/16"	15/16"	3/4"	7/16"	0"	0"	1/2"	3/4"	15/16"	1 1/16"	1 1/16"	1"	15/16"	3/4"	1/2"	0"	
GIRDER 2 AND GIRDER 3	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.048	0.085	0.110	0.124	0.129	0.124	0.110	0.085	0.048	0.000	0.000	0.056	0.093	0.121	0.136	0.142	0.136	0.121	0.093	0.056	0.000	
DEFLEC. DUE TO SUPERIMPOSED DEAD LOAD *	↓ 0.000	0.013	0.025	0.035	0.041	0.043	0.040	0.034	0.024	0.012	0.000	0.000	0.017	0.035	0.049	0.058	0.061	0.059	0.050	0.036	0.018	0.000	
FINAL CAMBER	↑ 0"	7/16"	1 1/16"	7/8"	1"	1 1/16"	1"	15/16"	3/4"	7/16"	0"	0"	7/16"	1 1/16"	7/8"	15/16"	15/16"	15/16"	7/8"	1 1/16"	7/16"	0"	

DEFLECTION AND GIRDER CAMBER ARE IN FEET.
 FINAL CAMBER IS IN INCHES.
 VALUES ARE SHOWN AT TENTH POINTS BETWEEN BEARINGS.
 * FUTURE WEARING SURFACE INCLUDED.

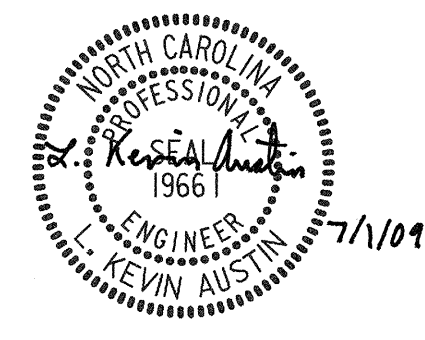
PROJECT NO. R-4906
 PERSON _____ COUNTY _____
 STATION: 14+93.50 -L-

REPLACES BRIDGE NO. 86

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

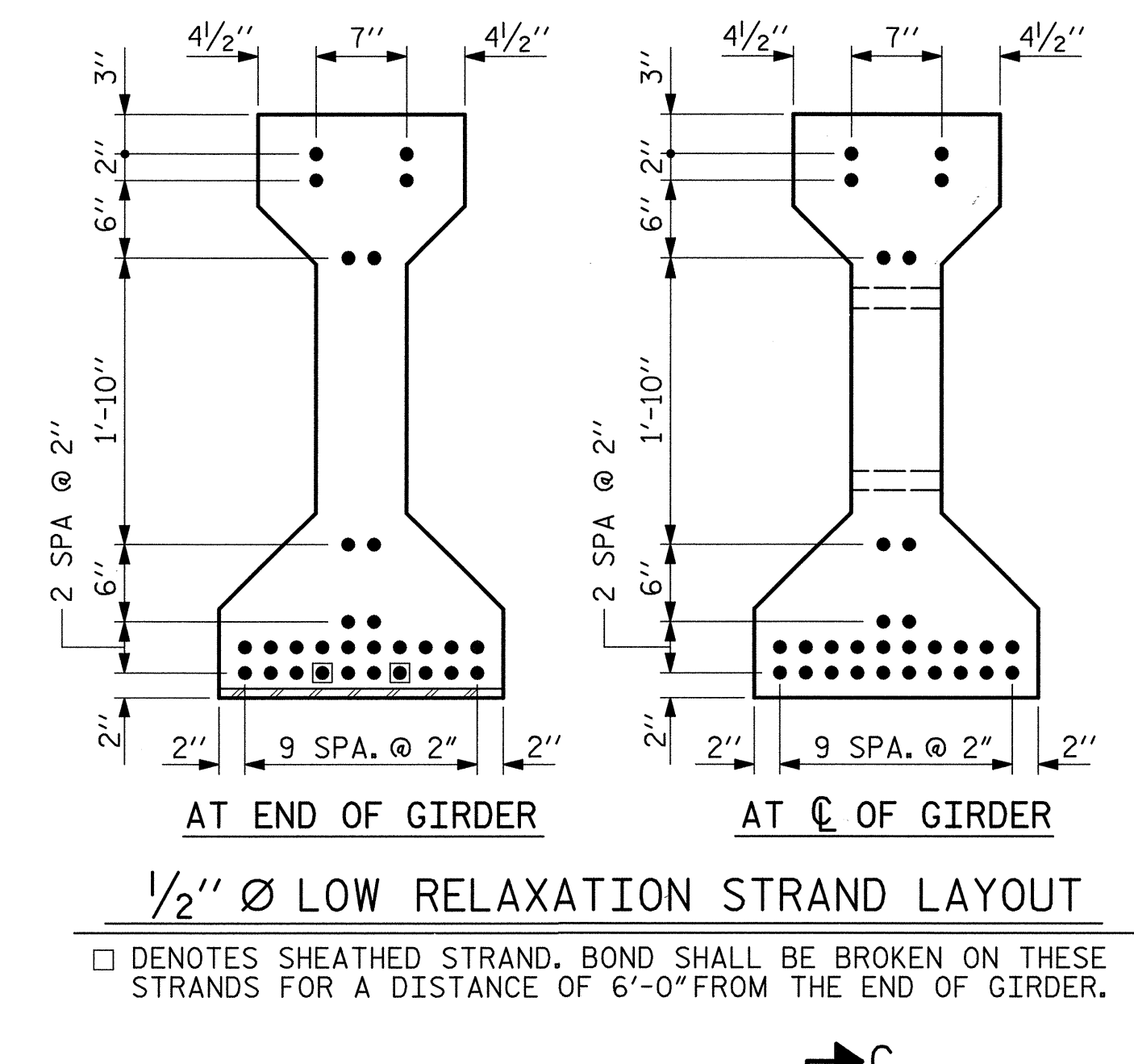
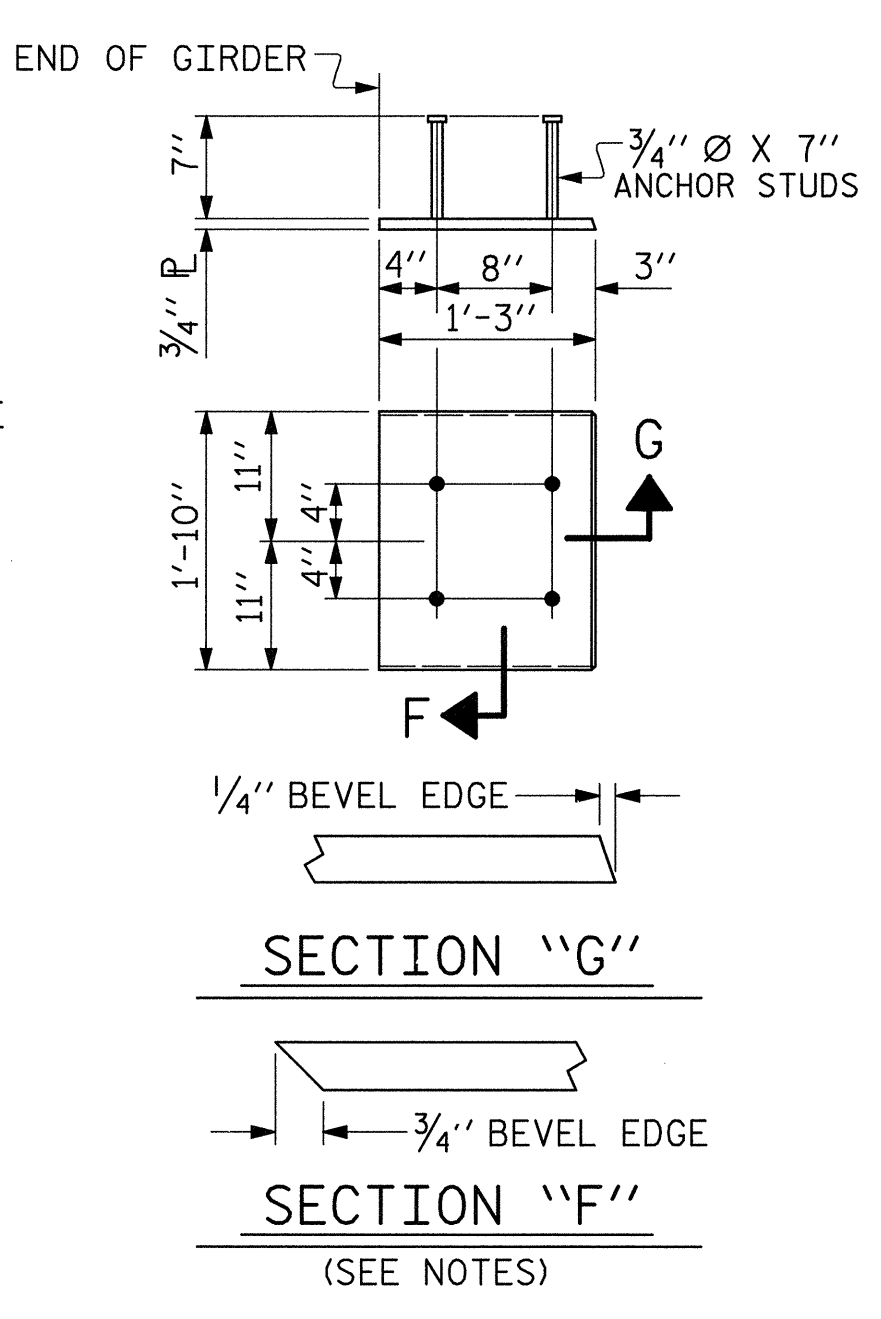
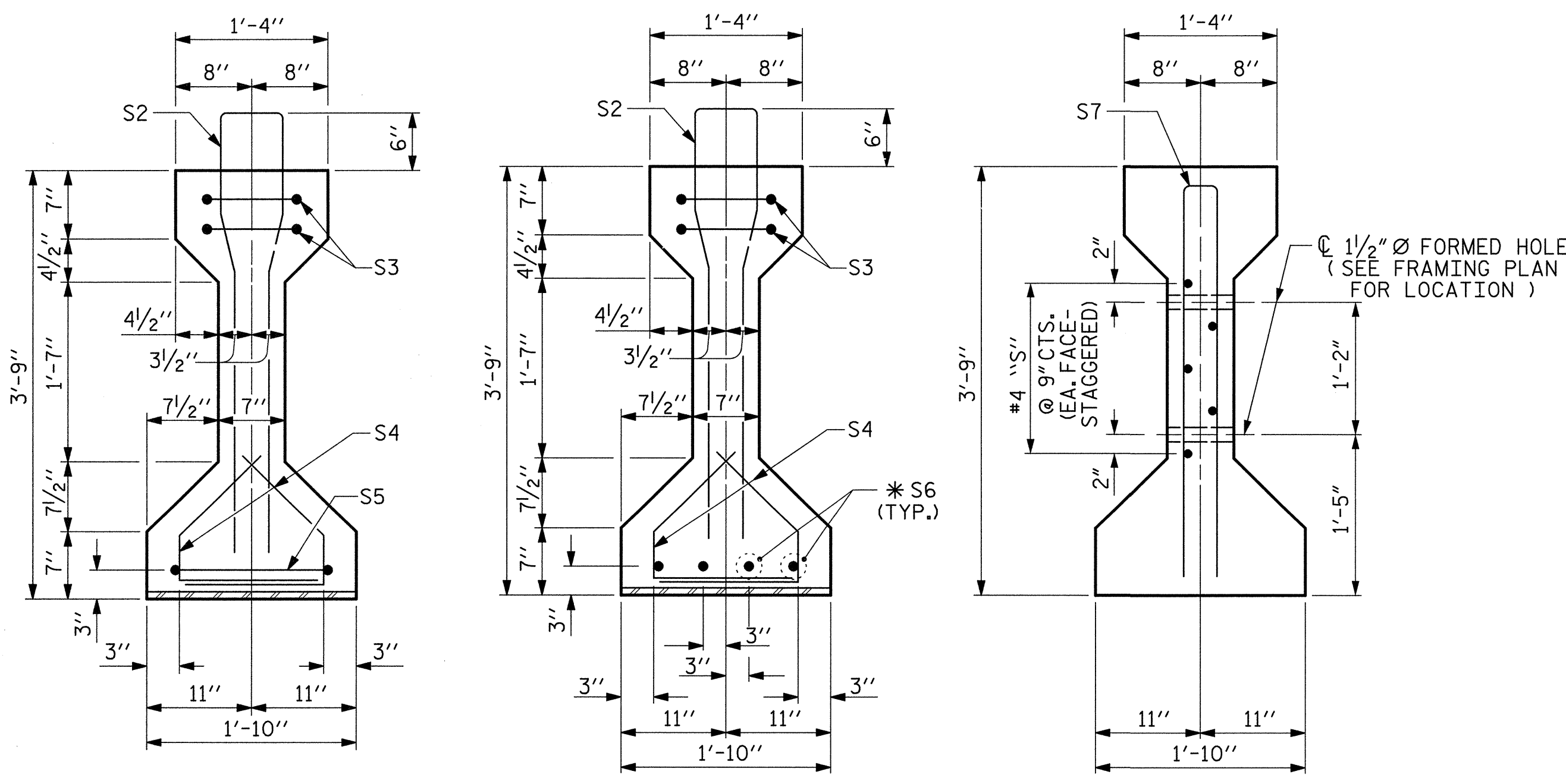
FRAMING PLAN AND DEAD LOAD DEFLECTION TABLE

34'-0" CLEAR ROADWAY - 135° SKEW



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			50

6/22/2009 8:00:17 AM R:\Structures\94906861_SD_FP_01.dgn
 DRAWN BY: J. A. CAVER DATE: 02/07
 CHECKED BY: H. S. ELLIOTT DATE: 02/07

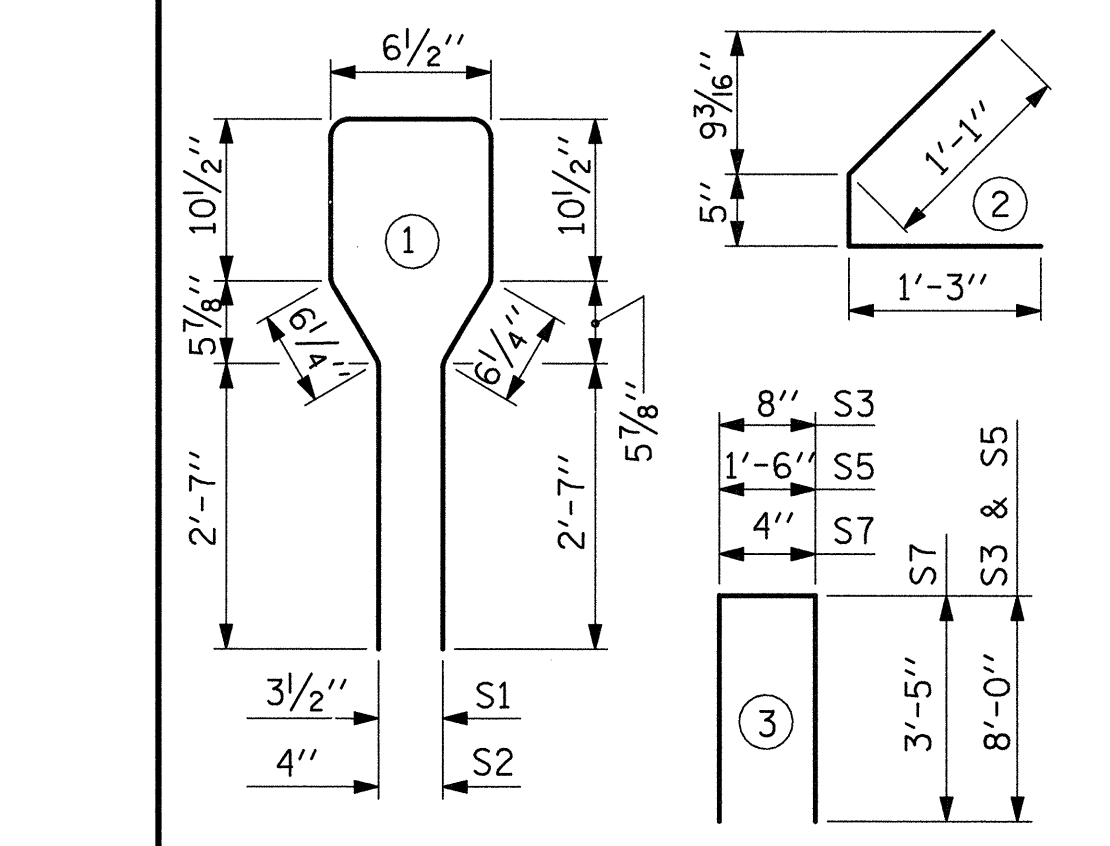


1/2" Ø L. R. GRADE 270 STRANDS		
AREA (SQ. INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.153	41,300	30,980

REINFORCING STEEL FOR ONE GIRDER						
SPAN	BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
SPAN A	S1	87	#4	1	8'-6"	494
	S1	94	#4	1	8'-6"	534
SPAN B	S2	14	#6	1	8'-6"	179
	S3	4	#4	3	16'-8"	45
	S4	96	#4	2	2'-9"	176
	S5	1	#4	3	17'-6"	12
	*S6	4	#5	STR	4'-10"	20
EXT. GDR.	S7	2	#5	3	7'-2"	15
INT. GDR.	S7	4	#5	3	7'-2"	30
EXT. GDR.	S8	5	#4	STR	7'-0"	23
INT. GDR.	S9	5	#4	STR	17'-2"	57

* NOTE: S6 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES
ALL BAR DIMENSIONS ARE OUT-TO-OUT



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.

APPLY EPOXY PROTECTIVE COATING TO THE EXPANSION END OF GIRDER SURFACES.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE SPECIFICATIONS, BEVEL EDGES OF PLATE "B-1" TO GIVE CLOSE FIT BUT NOT TIGHT FIT TO STEEL CASING FORM. ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

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

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

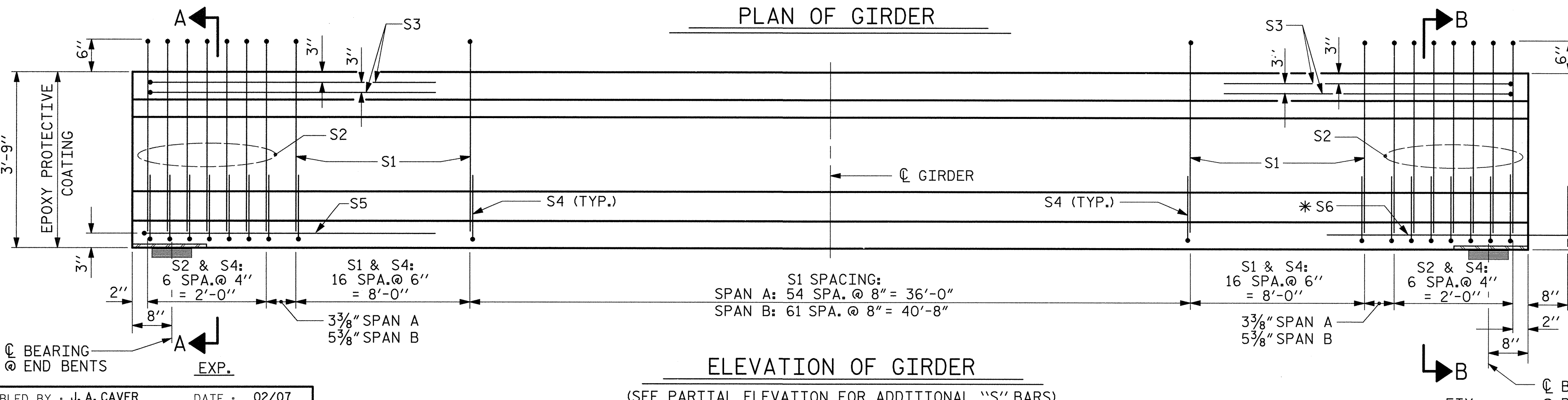
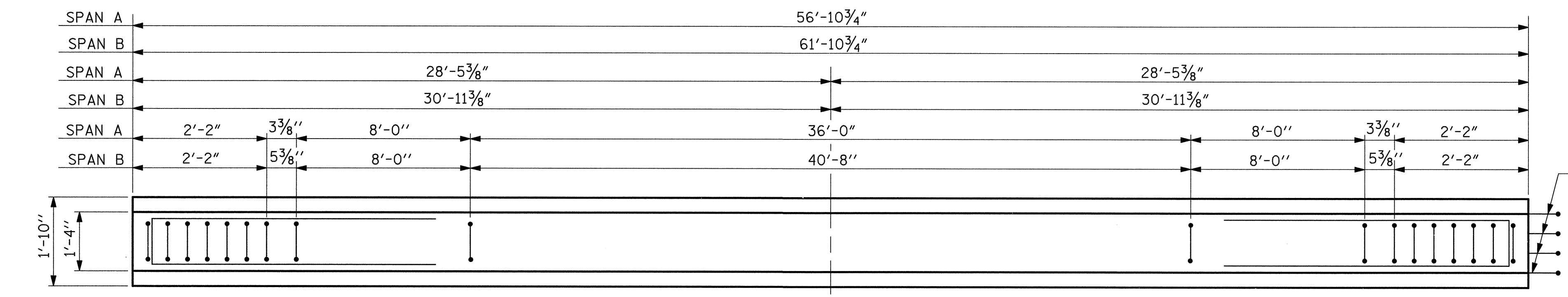
ALL REINFORCING STEEL SHALL BE GRADE 60.

AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

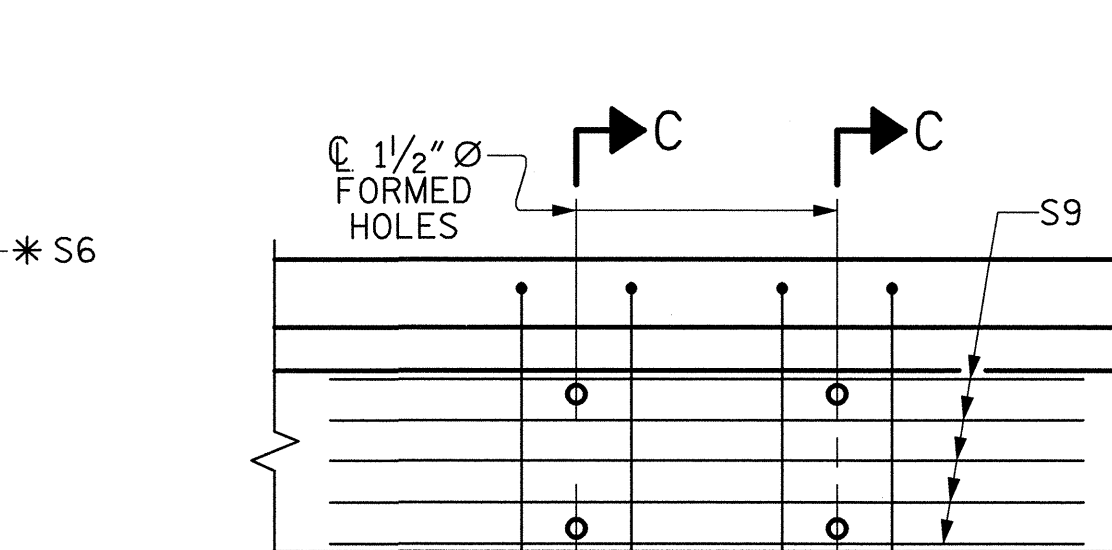
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

FOR CRACK REPAIR OF PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.



PARTIAL ELEVATION
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1 & 4



PARTIAL ELEVATION
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 2 & 3

QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL (LB.)	6000 PSI CONCRETE (C.Y.)	1/2" Ø L.R. STRANDS (No.)
SPAN A, EXTERIOR	964	8.2	30
SPAN A, INTERIOR	1013	8.2	30
SPAN B, EXTERIOR	1004	8.9	30
SPAN B, INTERIOR	1053	8.9	30

GIRDERS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
SPAN A	4	56'-10 3/4"	227'-7"
SPAN B	4	61'-10 3/4"	247'-7"

PROJECT NO. R-4906
PERSON COUNTY
STATION: 14+93.50 -L-
REPLACES BRIDGE NO. 86

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

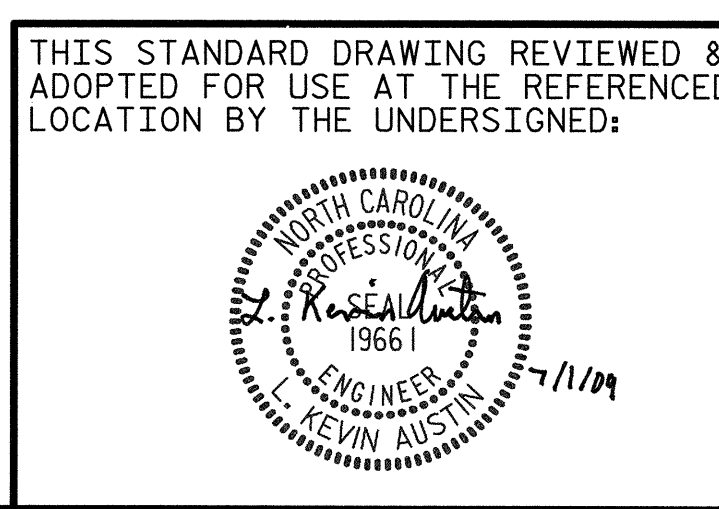
STANDARD
AASHTO TYPE III
PRESTRESSED CONCRETE GIRDER
34'-0" CLEAR ROADWAY - 135° SKEW

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

SHEET NO. S-8
TOTAL SHEETS 50
STD. NO. PCG2

6/22/2009 1:59:57 AM R:\Structure\Area\4906\686\SD_PCG.dwg

ASSEMBLED BY: J. A. CAVER DATE: 02/07
CHECKED BY: H. S. ELLIOTT DATE: 02/07
DRAWN BY: JMB 12/87
CHECKED BY: ARB 12/87
REV. 7/17/98 RWW/LES
REV. 8/16/99RR RWW/LES
REV. 5/1/06 TLA/GM



STRUCTURAL STEEL NOTES

ALL INTERMEDIATE DIAPHRAGM STEEL, CONNECTOR PLATES AND PLATE WASHERS SHALL BE AASHTO M270 GRADE 50 OR APPROVED EQUAL.

TENSION ON THE AASHTO M164 BOLTS THROUGH THE CHANNEL MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-8 OF THE STANDARD SPECIFICATIONS.

TENSION ON THE AASHTO M164 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL 1/4 TURN.

THE CHANNELS, ANGLES, WASHERS AND DIRECT TENSION INDICATORS SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

FOR METALLIZATION, APPLY AN 8 MIL THICK 99.99 PERCENT ZINC (W-ZN-1) THERMAL SPRAYED COATING WITH A 0.5 MIL THICK SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE THERMAL SPRAYED COATINGS SPECIAL PROVISIONS AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

GALVANIZE THE HIGH STRENGTH BOLTS, NUTS, AND WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.

USE A MINIMUM 7/16" THICK PLATE WASHER WITH STANDARD HOLES UNDER EACH BOLT HEAD AND NUT. THE PLATE WASHERS SHALL HAVE SUFFICIENT SIZE TO COVER THE HOLES AFTER INSTALLATION. DIRECT TENSION INDICATORS ARE TO BE USED IN CONJUNCTION WITH THE PLATE WASHERS.

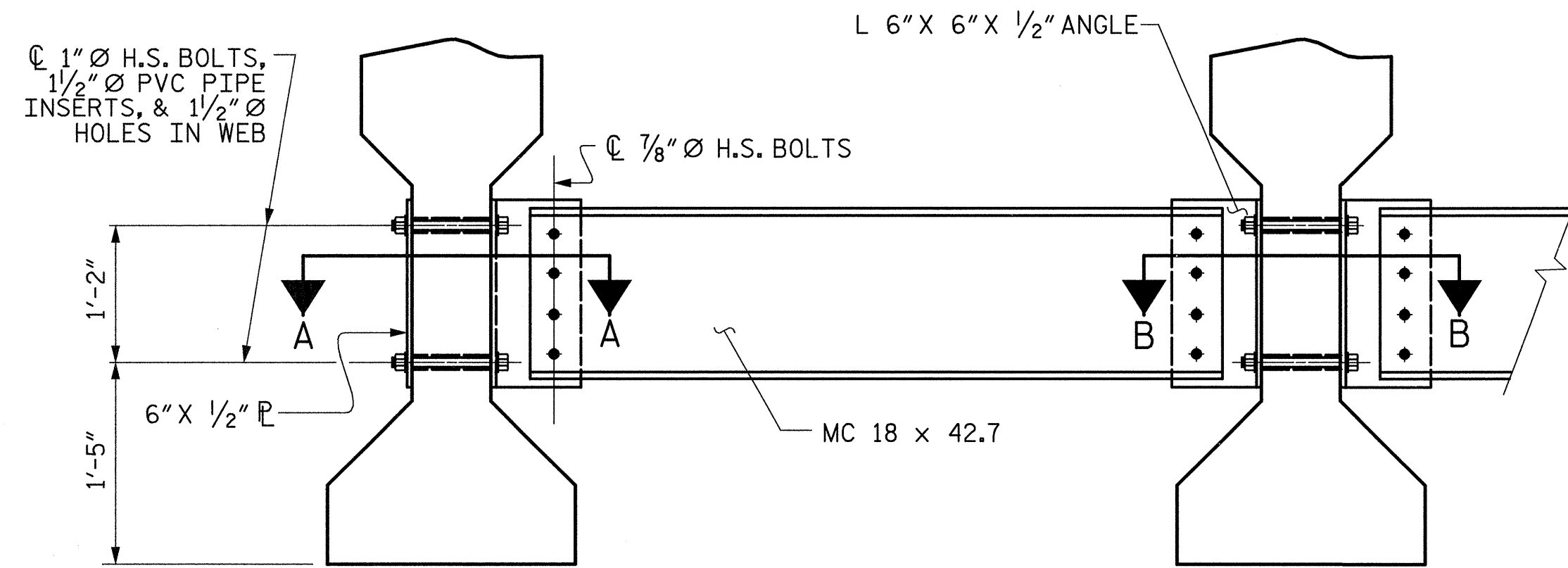
PROVIDE SUFFICIENT LENGTH OF ALL BOLTS TO ACCOMODATE WASHERS, DIRECT TENSION INDICATORS, THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

INTERMEDIATE DIAPHRAGM ASSEMBLY SHALL COMPLY WITH SECTION 1072 OF THE STANDARD SPECIFICATIONS.

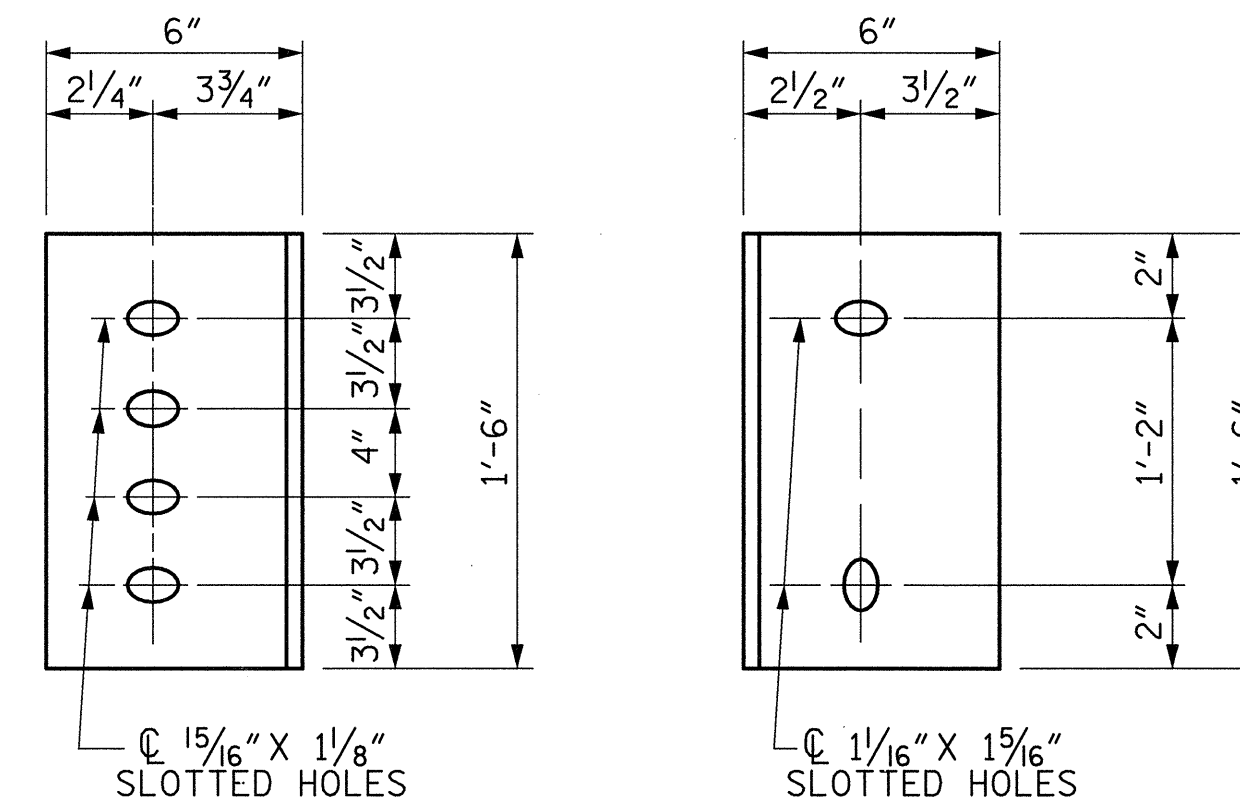
CONTRACTOR SHALL SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

IN THE EXTERIOR BAYS, TEMPORARY STRUTS SHALL BE PLACED BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED. ALL AASHTO M164 H.S. BOLTS SHALL BE FULLY TIGHTENED AFTER THE STRUTS HAVE BEEN REMOVED.

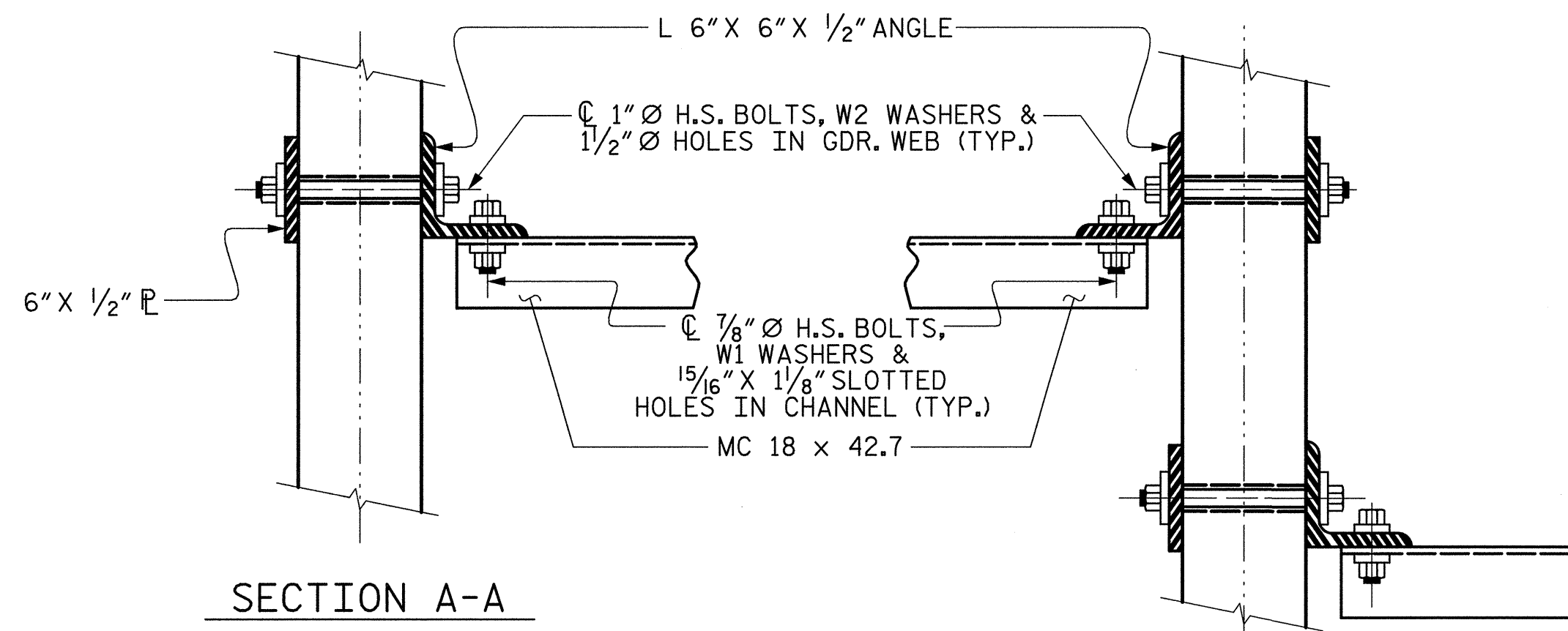
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.



EXTERIOR GIRDER **INTERIOR GIRDER**
PART SECTION AT INTERMEDIATE DIAPHRAGM



DIAPHRAGM FACE **WEB FACE**
CONNECTOR PLATE DETAILS



SECTION A-A **SECTION B-B**
CONNECTION DETAILS

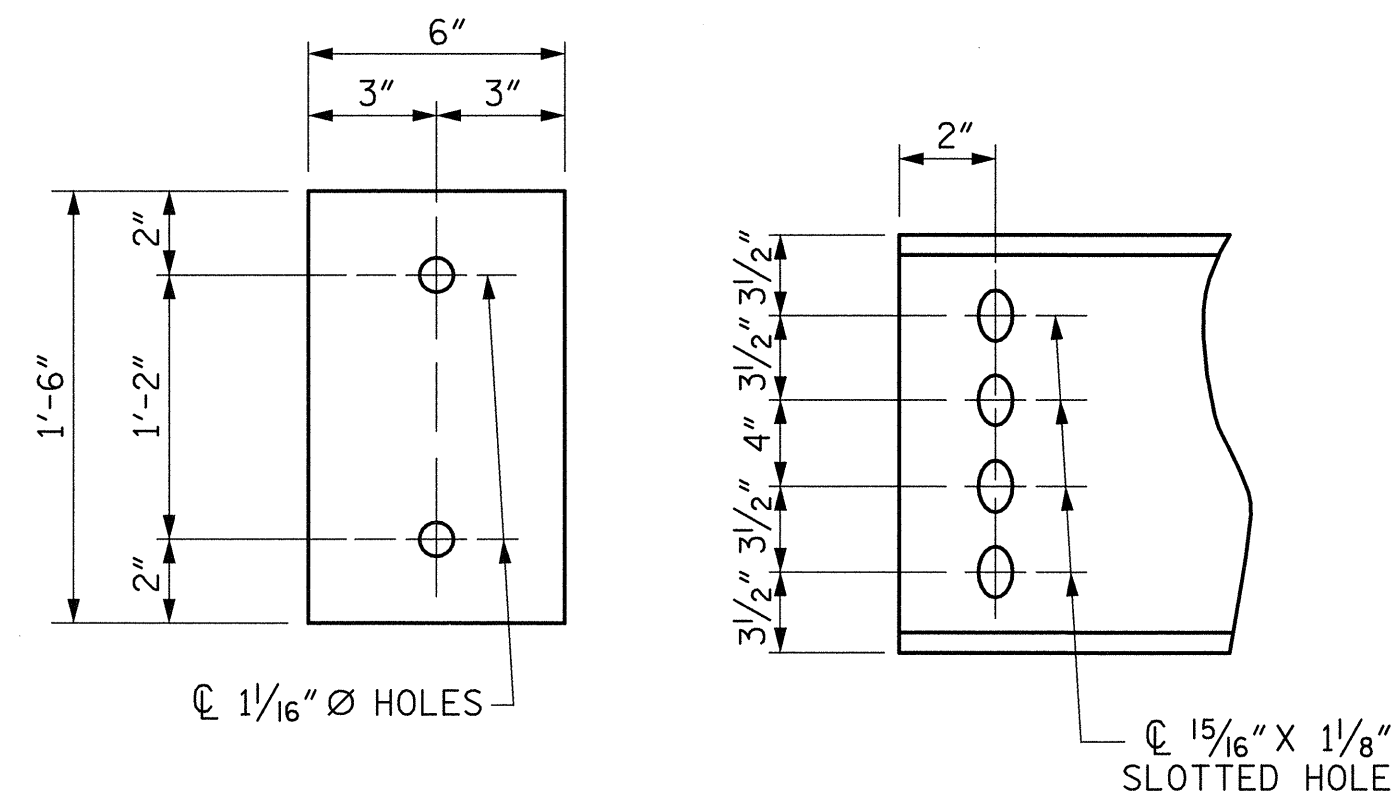
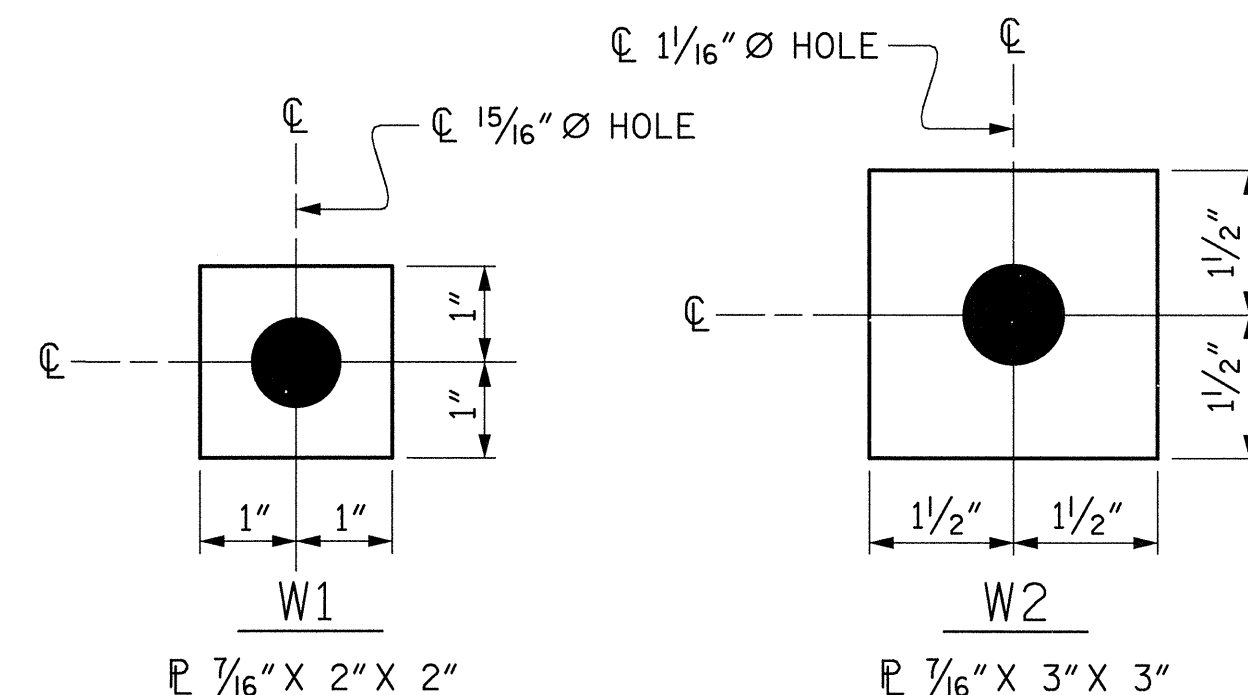


PLATE DETAILS **CHANNEL END**

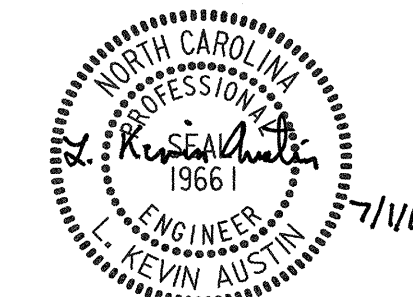


USE WITH 7/8" HVY. HEX NUTS & DIRECT TENSION INDICATOR WASHERS AT DIAPHRAGM CHANNEL TO CONNECTOR PLATE CONNECTIONS

USE WITH 1" HVY. HEX NUTS & DIRECT TENSION INDICATOR WASHERS AT CONNECTOR PLATE TO GIRDER CONNECTIONS

WASHER DETAILS

THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:



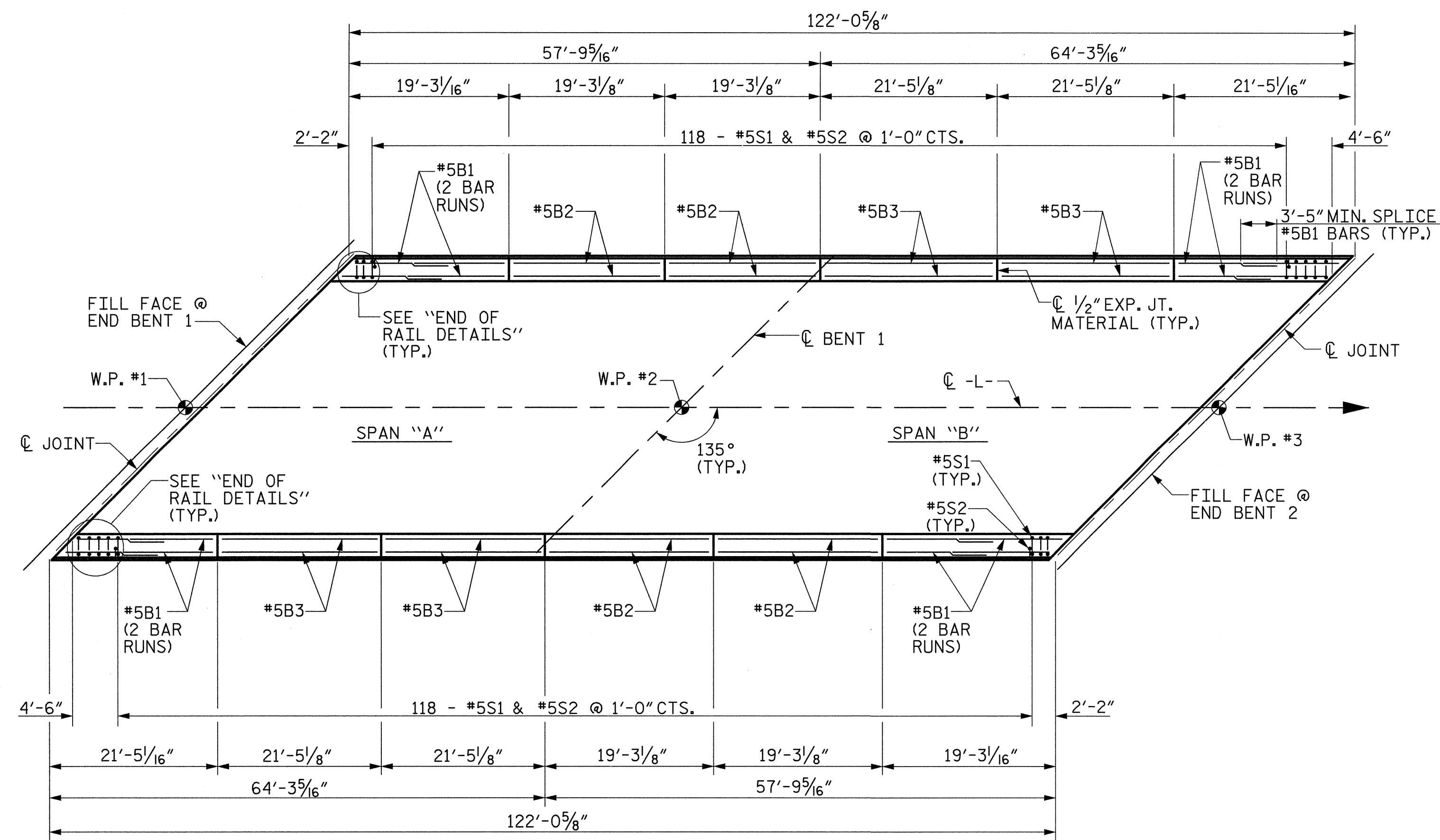
PLANS PREPARED BY:

MULKEY
ENGINEERS & CONSULTANTS
PO BOX 33127
RALEIGH, N.C. 27635
(919) 851-1912 FAX
(919) 851-1912 FAX
WWW.MULKEYINC.COM

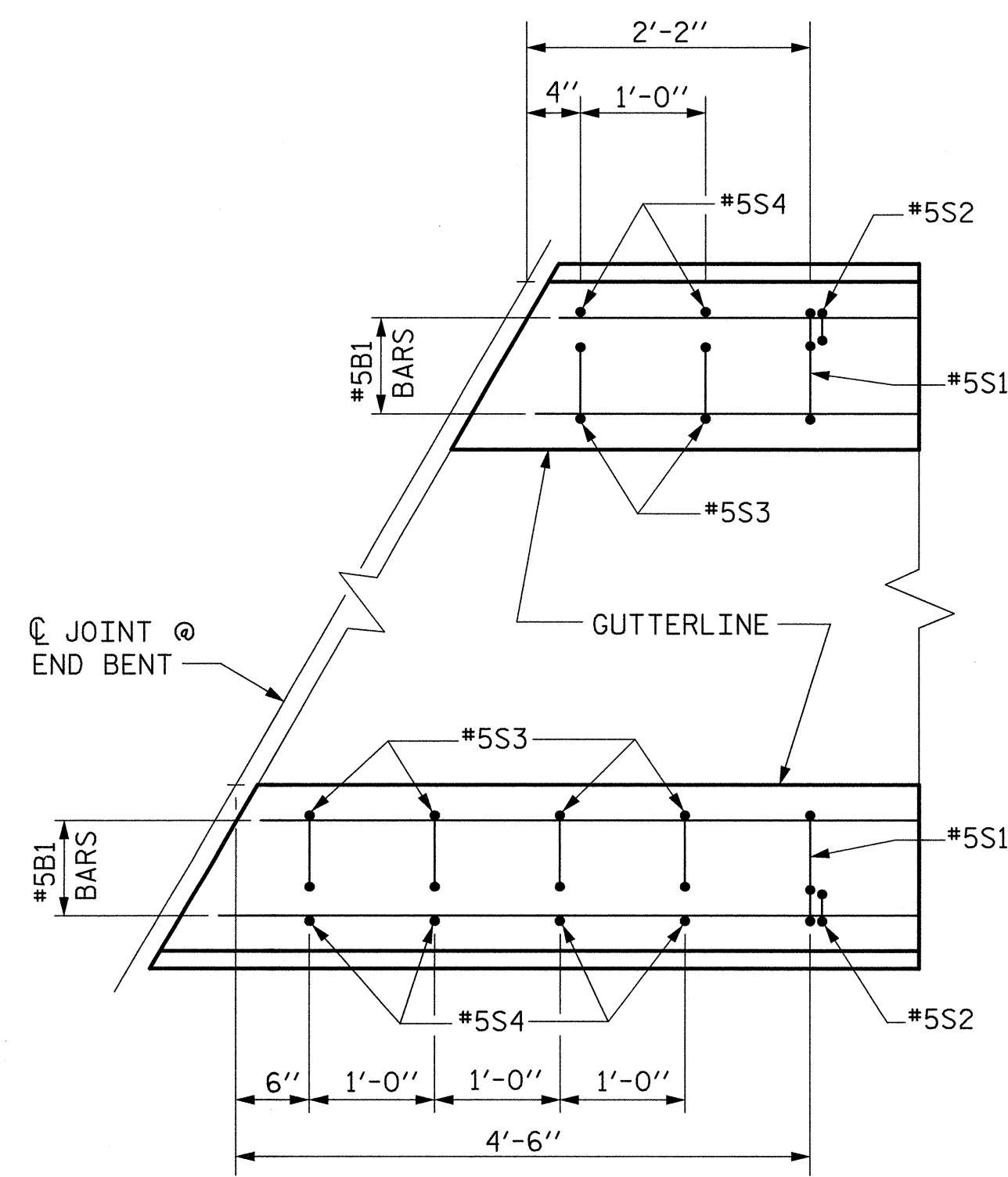
PROJECT NO. R-4906
PERSON _____ COUNTY _____
STATION: 14+93.50 -L-
REPLACES BRIDGE NO. 86

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
INTERMEDIATE
STEEL DIAPHRAGMS
FOR TYPE III
PRESTRESSED CONCRETE
GIRDERS

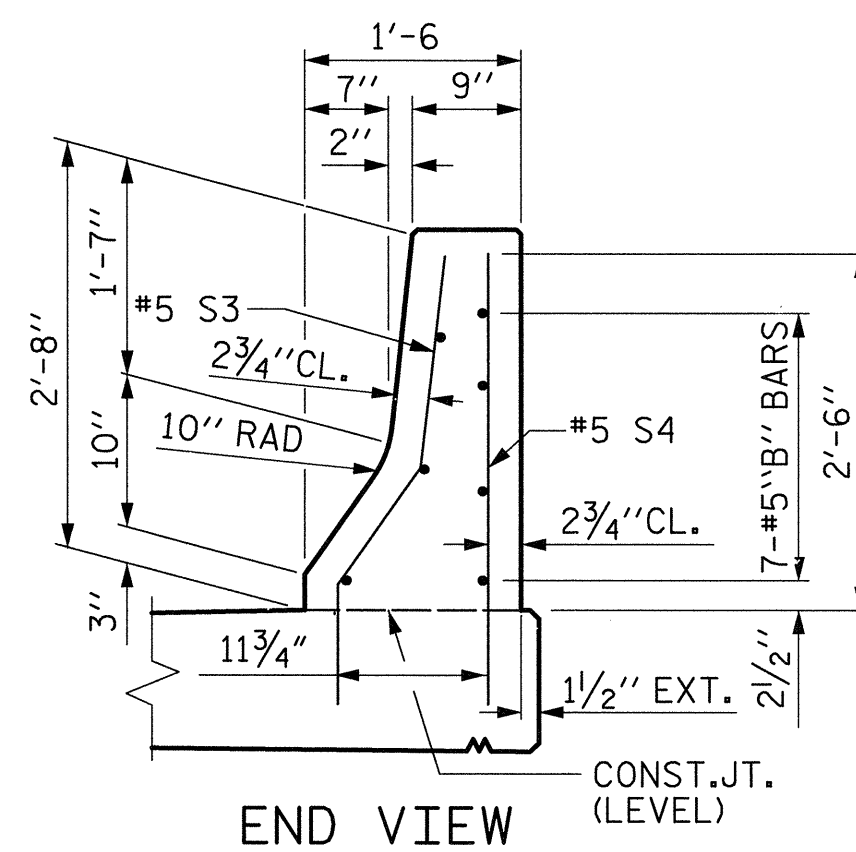
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			50



PLAN



PLAN



END VIEW

END OF RAIL DETAILS

FOR ADHESIVE ANCHORING AT SAWED JOINTS

NOTES

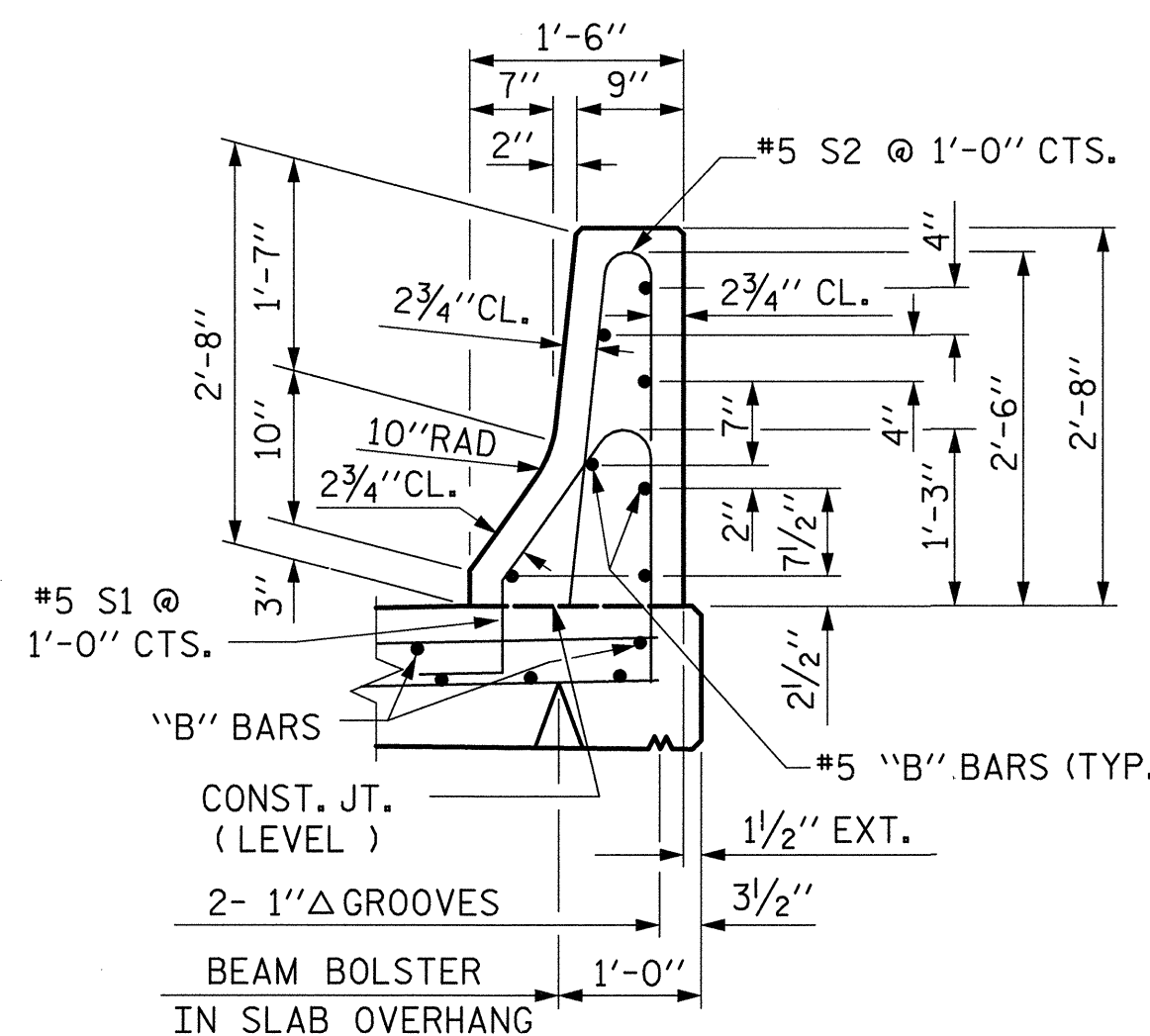
THE BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

WHEN EVAZOTE JOINT SEAL IS REQUIRED, THE JOINT IN THE DECK SHALL BE SAWED PRIOR TO THE CASTING OF BARRIER RAIL.

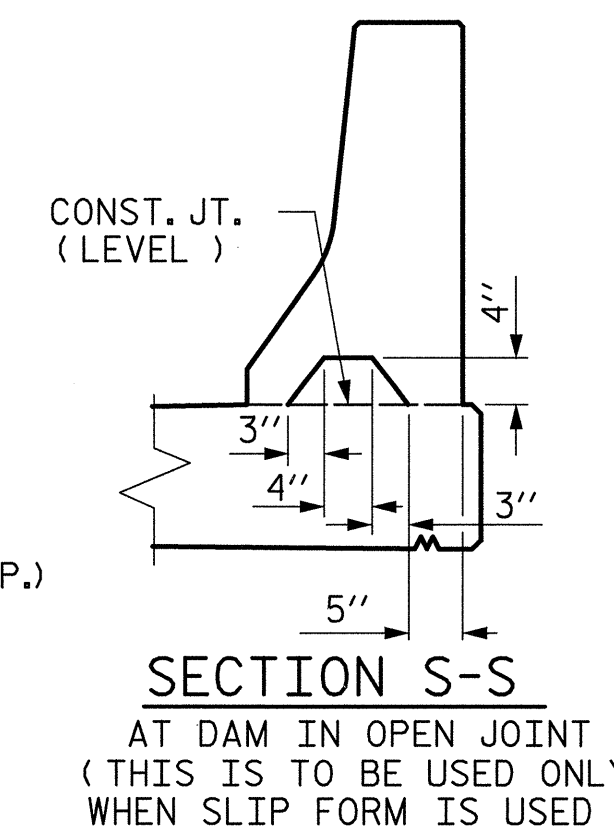
ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

THE #5 S3 AND #5 S4 BARS SHALL BE INSTALLED, USING AN ADHESIVE ANCHORING SYSTEM, AFTER SAWING THE JOINT. THE YIELD LOAD FOR THE #5 S3 AND #5 S4 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

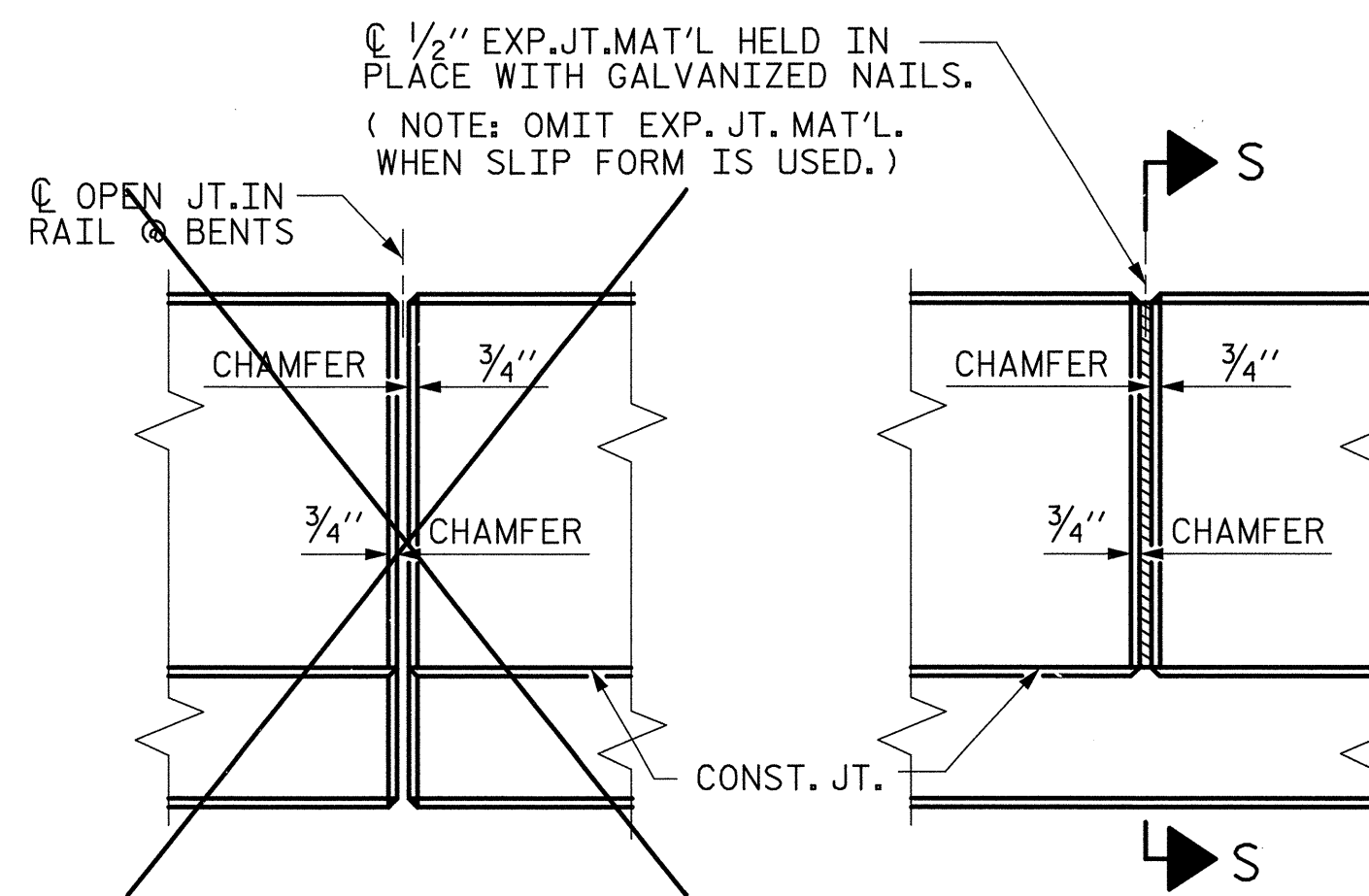
VERTICAL GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION 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.



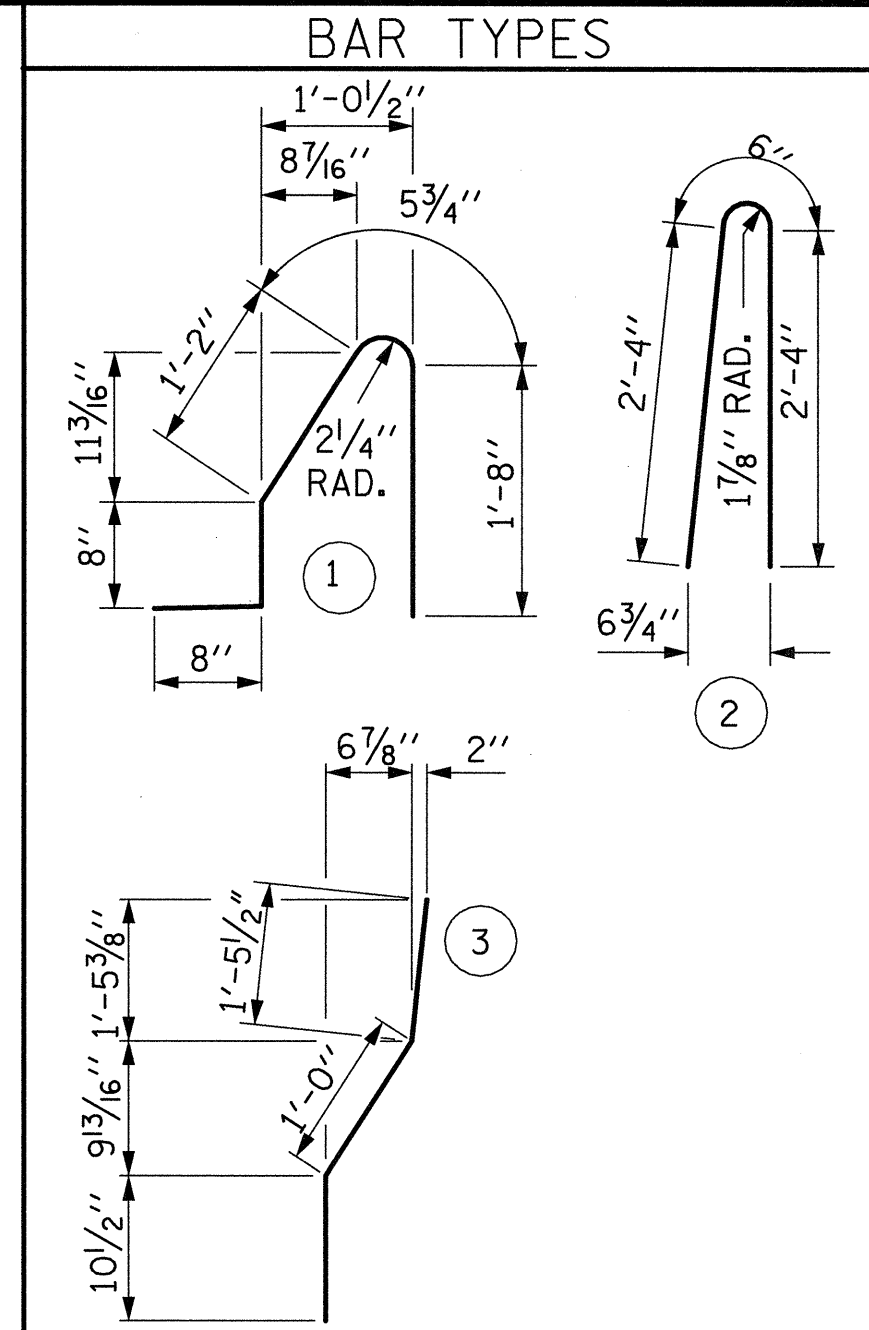
SECTION THRU RAIL



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



ELEVATION AT EXPANSION JOINTS
BARRIER RAIL DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* S1	236	#5	1	4'-8"	1149
* S2	236	#5	2	5'-2"	1272
* S3	12	#5	3	3'-4"	42
* S4	12	#5	STR	3'-2"	40
* B1	56	#5	STR	12'-1"	706
* B2	28	#5	STR	18'-10"	550
* B3	28	#5	STR	21'-0"	613

* EPOXY COATED REINFORCING STEEL	4372 LBS.
CLASS AA CONCRETE	24.4 CU. YDS.
CONCRETE BARRIER RAIL	244 LIN. FT.

PROJECT NO. R-4906
PERSON COUNTY
STATION: 14+93.50 -L-

REPLACES BRIDGE NO. 86

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

CONCRETE BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			50

STD. NO. CBR1

PLANS PREPARED BY:



THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:



ASSEMBLED BY: J. A. CAVER DATE: 02/07
CHECKED BY: H. S. ELLIOTT DATE: 02/07
DRAWN BY: ARB 5/87 REV. 10/17/00 RWW/LES
CHECKED BY: SJD 9/87 REV. 5/7/03R RWW/JTE
REV. 5/1/06 TLA/GM

NOTES

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

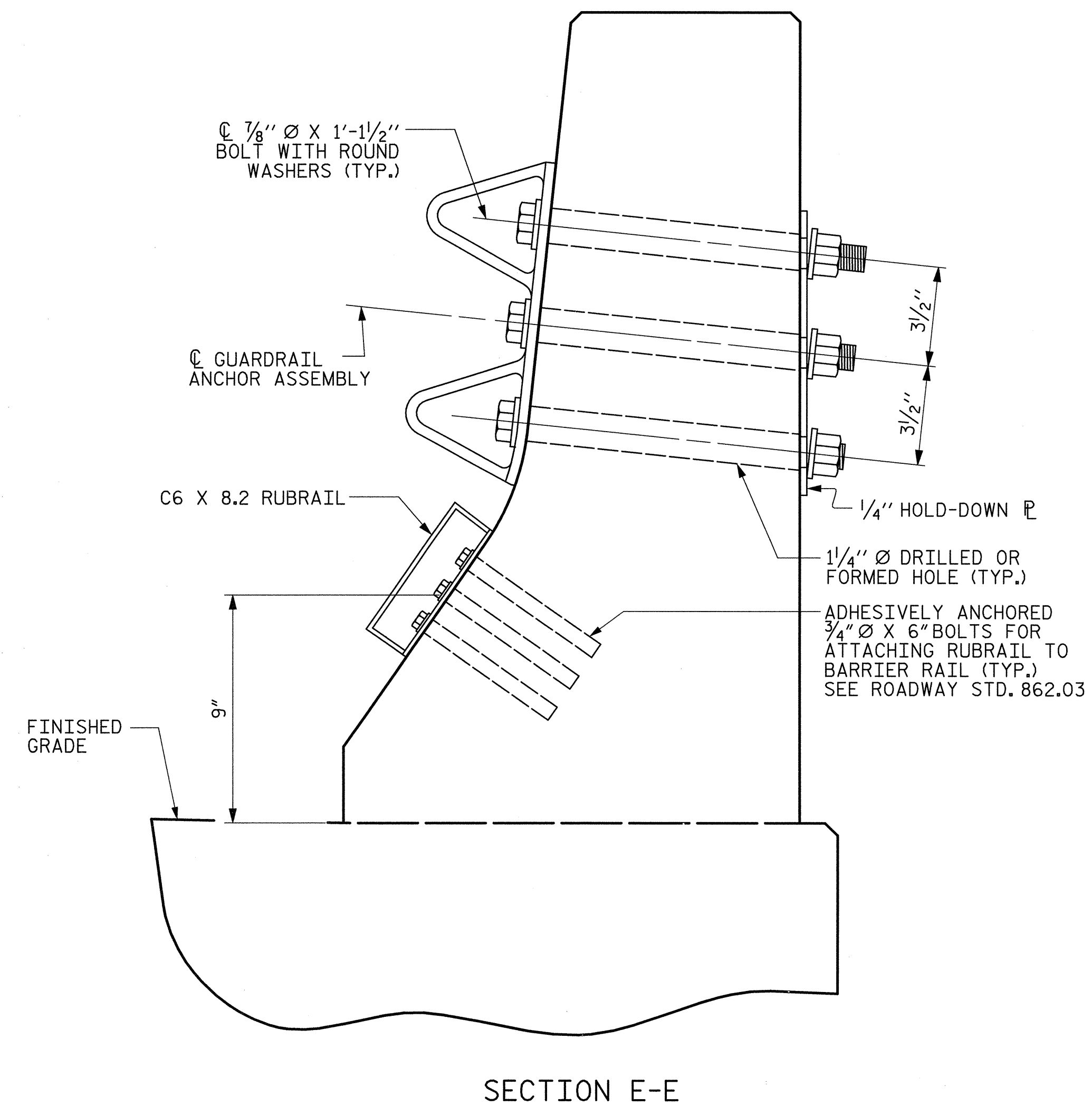
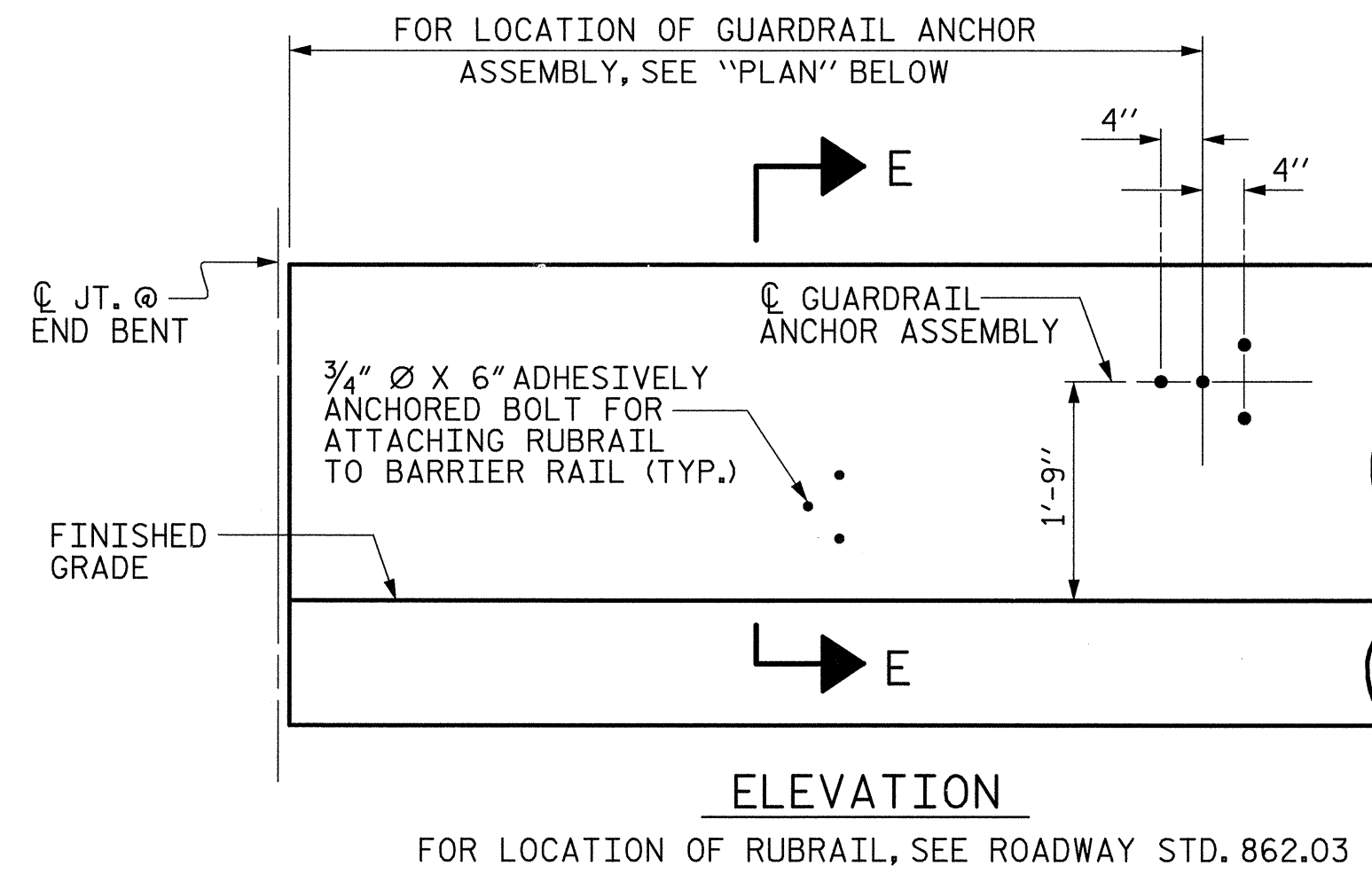
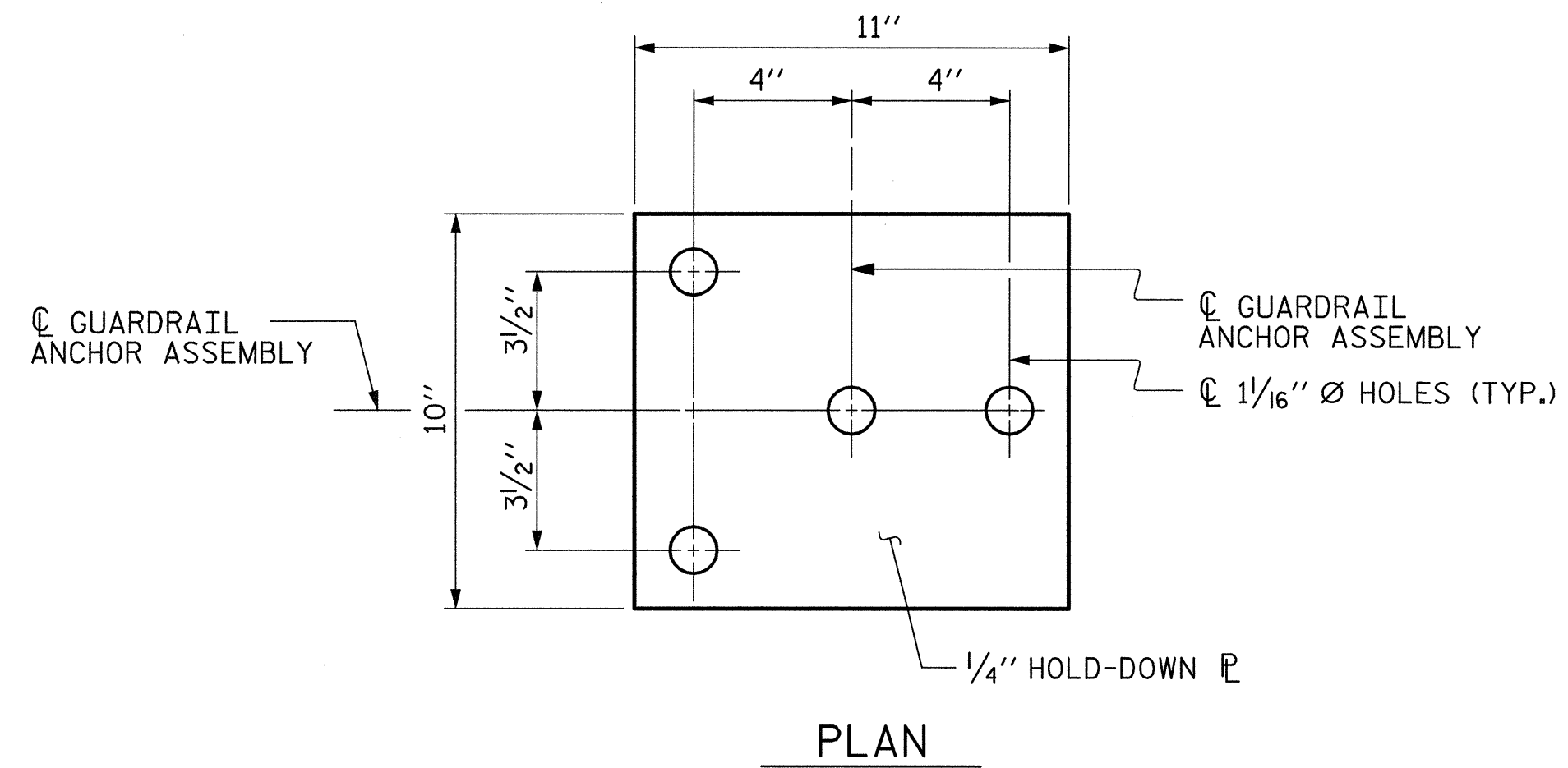
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

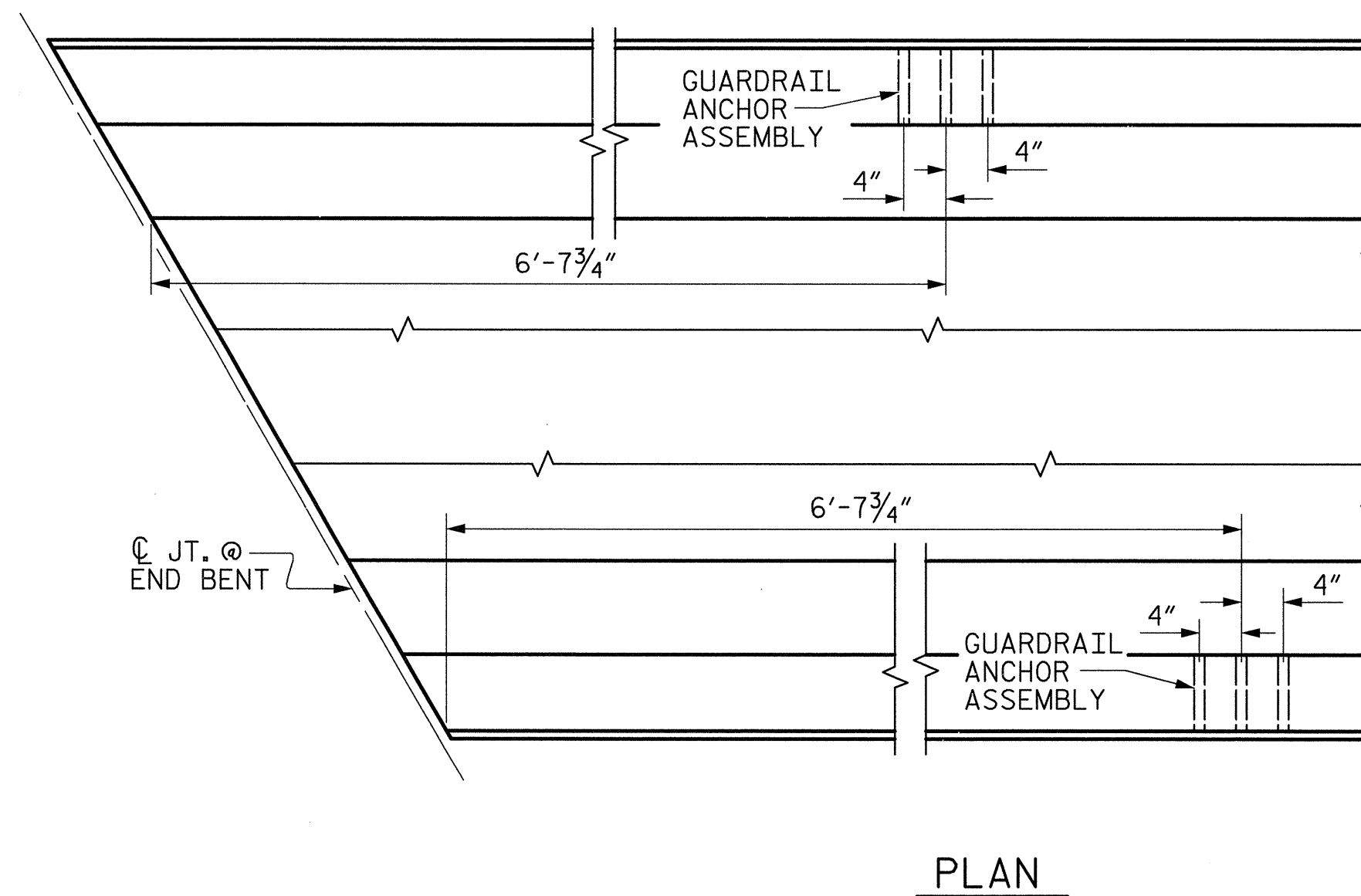
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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.

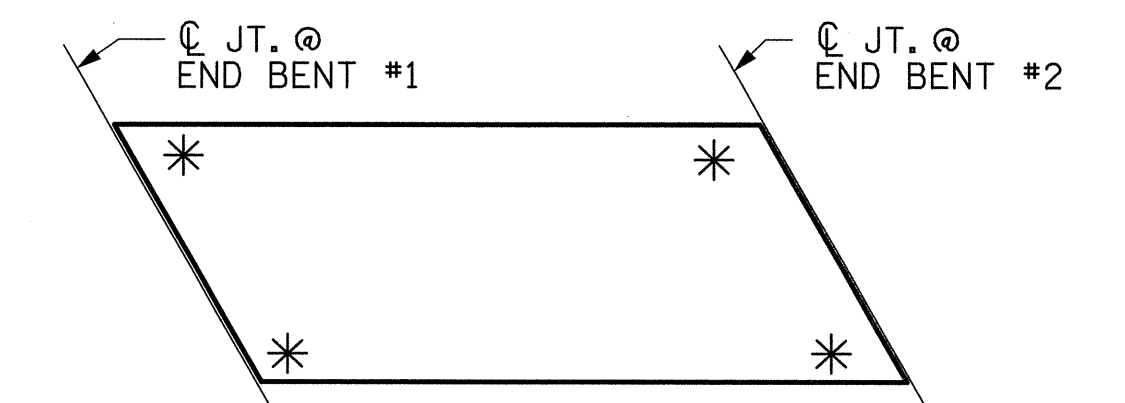


GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL

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



SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. R-4906

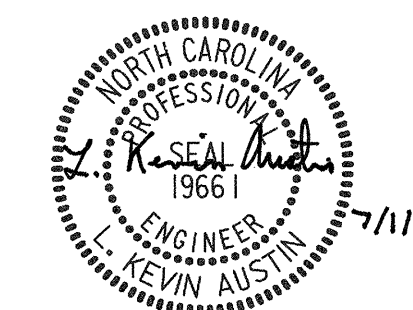
PERSON COUNTY

STATION: 14+93.50 -L-

REPLACES BRIDGE NO. 86

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-12					TOTAL SHEETS 50

THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:



6/22/2009 1:58:30 AM R:\SHT\Structure\4906\861_S1_CR_01.dgn

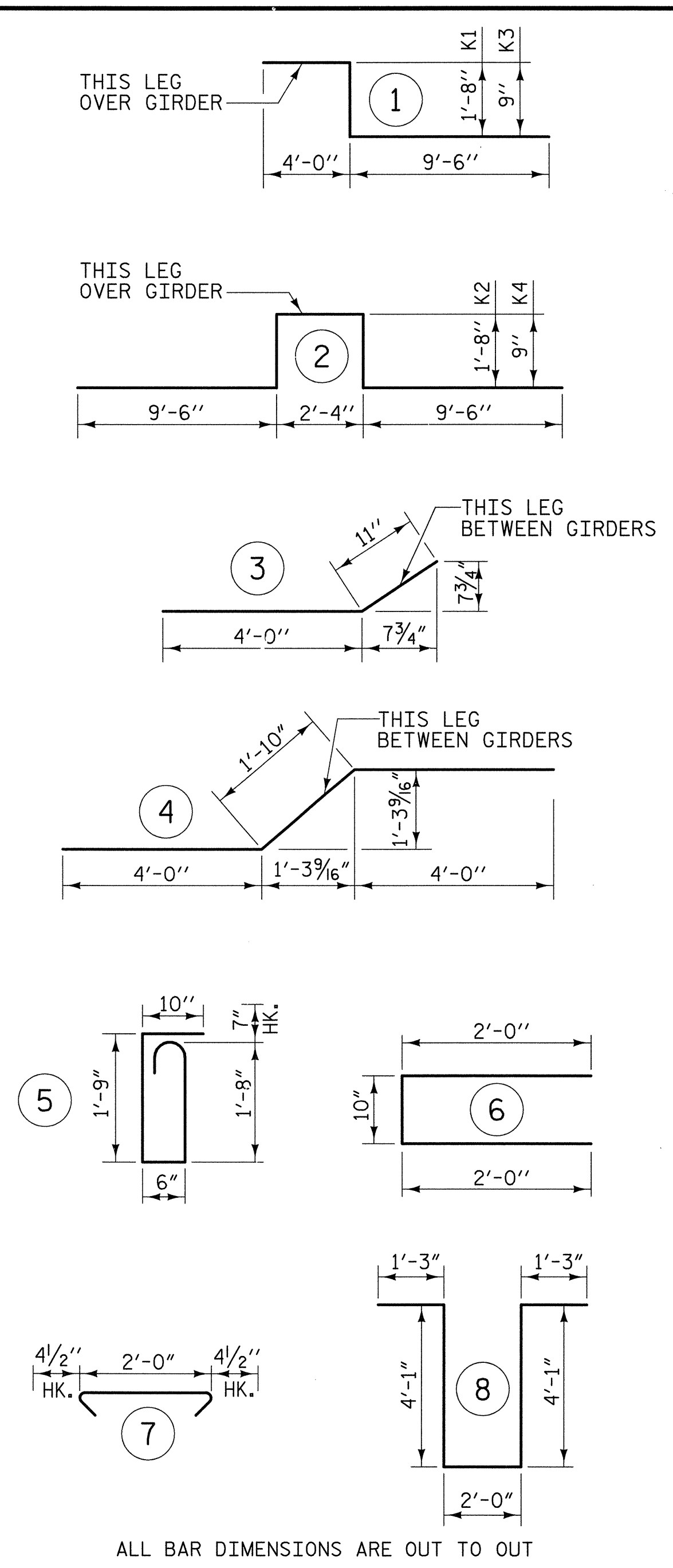
ASSEMBLED BY : J. A. CAVER	DATE : 07/07
CHECKED BY : H. S. ELLIOTT	DATE : 07/07
DRAWN BY : TLA 5/06	ADDED 5/1/06R KMM/GM
CHECKED BY : GM 5/06	

REINFORCING BAR SCHEDULE

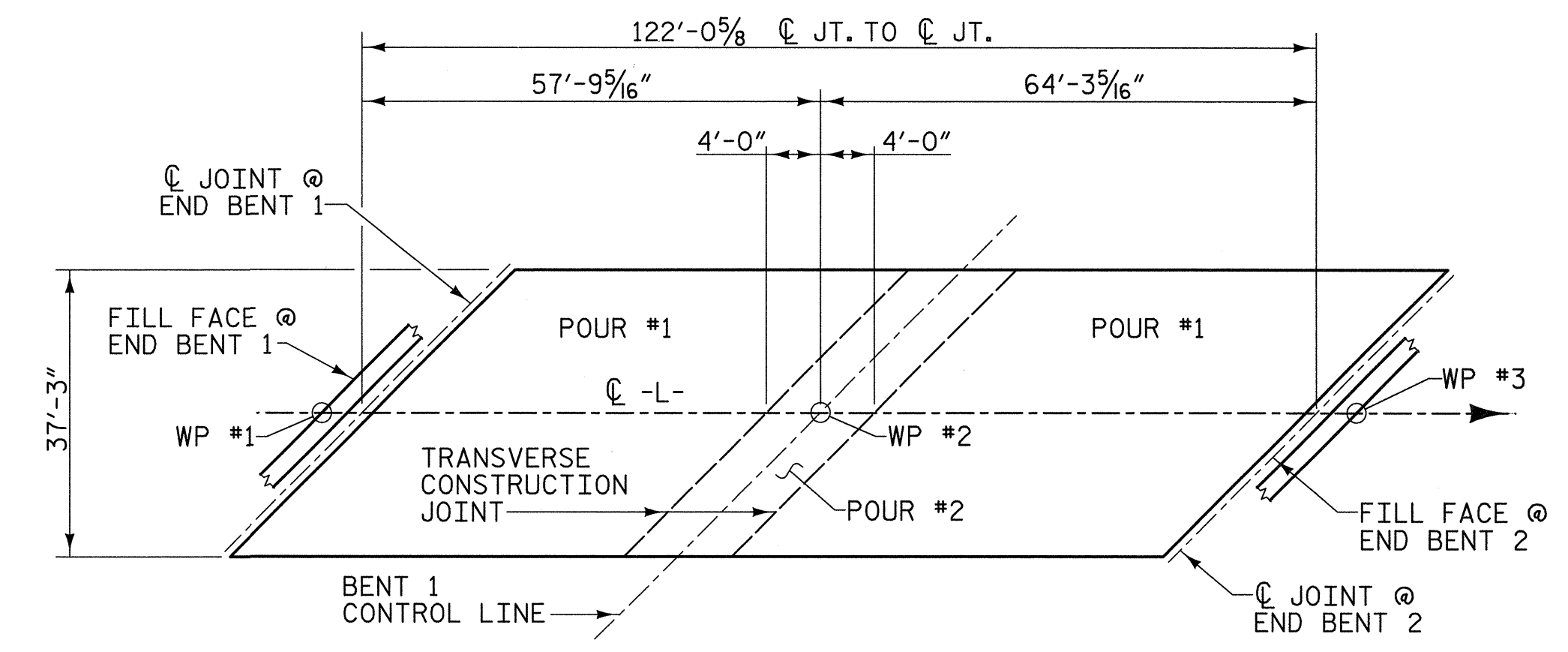
REINFORCING STEEL					REINFORCING STEEL					REINFORCING STEEL							
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1*	170	#5	STR	36'-11"	6546	A68*	2	#5	STR	36'-5"	76	B1	141	#5	STR	42'-0"	6177
A2	170	#5	STR	36'-11"	6546	A69	16	#5	STR	3'-11"	65	B2*	25	#4	STR	38'-3"	639
A3*	16	#5	STR	3'-11"	65	A70	2	#5	STR	4'-5"	9	B3*	25	#6	STR	47'-6"	1784
A4*	2	#5	STR	4'-5"	9	A71	2	#5	STR	4'-11"	10	B4*	25	#4	STR	41'-9"	697
A5*	2	#5	STR	4'-11"	10	A72	2	#5	STR	5'-5"	11	B5*	50	#6	STR	18'-9"	1408
A6*	2	#5	STR	5'-5"	11	A73	2	#5	STR	5'-11"	12	G1*	4	#5	STR	27'-3"	114
A7*	2	#5	STR	5'-11"	12	A74	2	#5	STR	6'-5"	13	K1*	8	#8	1	15'-2"	324
A8*	2	#5	STR	6'-5"	13	A75	2	#5	STR	6'-11"	14	K2*	8	#8	2	24'-8"	527
A9*	2	#5	STR	6'-11"	14	A76	2	#5	STR	7'-5"	15	K3*	12	#6	1	14'-3"	257
A10*	2	#5	STR	7'-5"	15	A77	2	#5	STR	7'-11"	17	K4*	12	#6	2	22'-10"	412
A11*	2	#5	STR	7'-11"	17	A78	2	#5	STR	8'-5"	18	K5	6	#5	STR	10'-6"	66
A12*	2	#5	STR	8'-5"	18	A79	2	#5	STR	8'-11"	19	K6	24	#5	STR	11'-10"	296
A13*	2	#5	STR	8'-11"	19	A80	2	#5	STR	9'-5"	20	K7	10	#5	3	4'-11"	51
A14*	2	#5	STR	9'-5"	20	A81	2	#5	STR	9'-11"	21	K8	10	#5	4	9'-10"	103
A15*	2	#5	STR	9'-11"	21	A82	2	#5	STR	10'-5"	22	S1*	72	#5	5	5'-4"	401
A16*	2	#5	STR	10'-5"	22	A83	2	#5	STR	10'-11"	23	S2*	72	#4	6	4'-10"	232
A17*	2	#5	STR	10'-11"	23	A84	2	#5	STR	11'-5"	24	S3	108	#4	7	2'-9"	198
A18*	2	#5	STR	11'-5"	24	A85	2	#5	STR	11'-11"	25	U1	27	#5	8	12'-8"	357
A19*	2	#5	STR	11'-11"	25	A86	2	#5	STR	12'-5"	26						
A20*	2	#5	STR	12'-5"	26	A87	2	#5	STR	12'-11"	27						
A21*	2	#5	STR	12'-11"	27	A88	2	#5	STR	13'-5"	28						
A22*	2	#5	STR	13'-5"	28	A89	2	#5	STR	13'-11"	29						
A23*	2	#5	STR	13'-11"	29	A90	2	#5	STR	14'-5"	30						
A24*	2	#5	STR	14'-5"	30	A91	2	#5	STR	14'-11"	31						
A25*	2	#5	STR	14'-11"	31	A92	2	#5	STR	15'-5"	32						
A26*	2	#5	STR	15'-5"	32	A93	2	#5	STR	15'-11"	33						
A27*	2	#5	STR	15'-11"	33	A94	2	#5	STR	16'-5"	34						
A28*	2	#5	STR	16'-5"	34	A95	2	#5	STR	16'-11"	35						
A29*	2	#5	STR	16'-11"	35	A96	2	#5	STR	17'-5"	36						
A30*	2	#5	STR	17'-5"	36	A97	2	#5	STR	17'-11"	37						
A31*	2	#5	STR	17'-11"	37	A98	2	#5	STR	18'-5"	38						
A32*	2	#5	STR	18'-5"	38	A99	2	#5	STR	18'-11"	39						
A33*	2	#5	STR	18'-11"	39	A100	2	#5	STR	19'-5"	41						
A34*	2	#5	STR	19'-5"	41	A101	2	#5	STR	19'-11"	42						
A35*	2	#5	STR	19'-11"	42	A102	2	#5	STR	20'-5"	43						
A36*	2	#5	STR	20'-5"	43	A103	2	#5	STR	20'-11"	44						
A37*	2	#5	STR	20'-11"	44	A104	2	#5	STR	21'-5"	45						
A38*	2	#5	STR	21'-5"	45	A105	2	#5	STR	21'-11"	46						
A39*	2	#5	STR	21'-11"	46	A106	2	#5	STR	22'-5"	47						
A40*	2	#5	STR	22'-5"	47	A107	2	#5	STR	22'-11"	48						
A41*	2	#5	STR	22'-11"	48	A108	2	#5	STR	23'-5"	49						
A42*	2	#5	STR	23'-5"	49	A109	2	#5	STR	23'-11"	50						
A43*	2	#5	STR	23'-11"	50	A110	2	#5	STR	24'-5"	51						
A44*	2	#5	STR	24'-5"	51	A111	2	#5	STR	24'-11"	52						
A45*	2	#5	STR	24'-11"	52	A112	2	#5	STR	25'-5"	53						
A46*	2	#5	STR	25'-5"	53	A113	2	#5	STR	25'-11"	54						
A47*	2	#5	STR	25'-11"	54	A114	2	#5	STR	26'-5"	55						
A48*	2	#5	STR	26'-5"	55	A115	2	#5	STR	26'-11"	56						
A49*	2	#5	STR	26'-11"	56	A116	2	#5	STR	27'-5"	57						
A50*	2	#5	STR	27'-5"	57	A117	2	#5	STR	27'-11"	58						
A51*	2	#5	STR	27'-11"	58	A118	2	#5	STR	28'-5"	59						
A52*	2	#5	STR	28'-5"	59	A119	2	#5	STR	28'-11"	60						
A53*	2	#5	STR	28'-11"	60	A120	2	#5	STR	29'-5"	61						
A54*	2	#5	STR	29'-5"	61	A121	2	#5	STR	29'-11"	62						
A55*	2	#5	STR	29'-11"	62	A122	2	#5	STR	30'-5"	63						
A56*	2	#5	STR	30'-5"	63	A123	2	#5	STR	30'-11"	64						
A57*	2	#5	STR	30'-11"	64	A124	2	#5	STR	31'-5"	66						
A58*	2	#5	STR	31'-5"	66	A125	2	#5	STR	31'-11"	67						
A59*	2	#5	STR	31'-11"	67	A126	2	#5	STR	32'-5"	68						
A60*	2	#5	STR	32'-5"	68	A127	2	#5	STR	32'-11"	69						
A61*	2	#5	STR	32'-11"	69	A128	2	#5	STR	33'-5"	70						
A62*	2	#5	STR	33'-5"	70	A129	2	#5	STR	33'-11"	71						
A63*	2	#5	STR	33'-11"	71	A130	2	#5	STR	34'-5"	72						
A64*	2	#5	STR	34'-5"	72	A131	2	#5	STR	34'-11"	73						
A65*	2	#5	STR	34'-11"	73	A132	2	#5	STR	35'-5"	74						
A66*	2	#5	STR	35'-5"	74	A133	2	#5	STR	35'-11"	75						
A67*	2	#5	STR	35'-11"	75	A134	2	#5	STR	36'-5"	76						
												REINFORCING STEEL		LBS.	16628		
												EPOXY COATED REINFORCING STEEL		LBS.	16175		
												CLASS AA CONCRETE					
												POUR #1		C.Y.	59.0		
												POUR #2		C.Y.	101.6		
												TOTAL **		C.Y.	160.6		

* INDICATES EPOXY COATED REINFORCING STEEL
 ** QUANTITIES FOR BARRIER ARE NOT INCLUDED

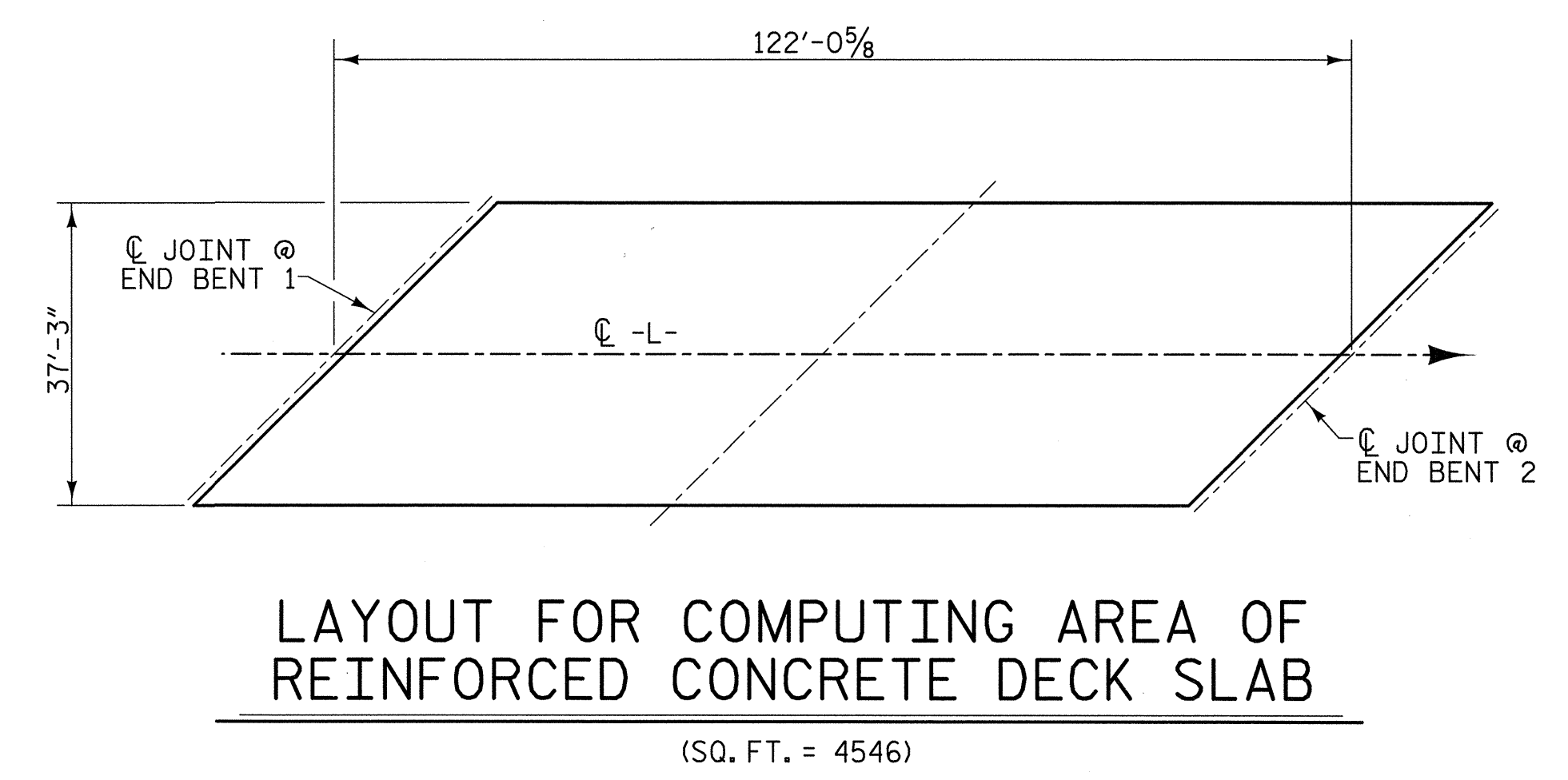
BAR TYPES



FOR POURING SEQUENCE SEE PLAN OF SPANS



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB



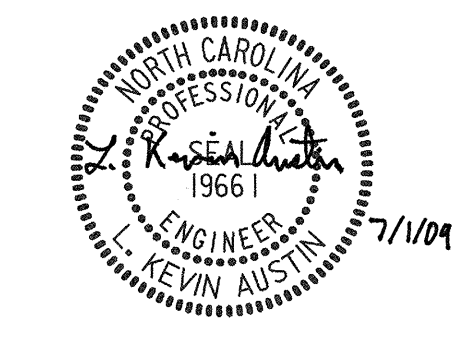
SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			

GROOVING BRIDGE FLOORS

APPROACH SLABS	782	SQ. FT.
BRIDGE DECK	3725	SQ. FT.
TOTAL	4507	SQ. FT.

PROJECT NO. R-4906
 PERSON COUNTY
 STATION: 14+93.50 -L-



REPLACES BRIDGE NO. 86

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 BILL OF MATERIAL

34'-0" CLEAR ROADWAY - 135° SKEW

REVISIONS

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

SHEET NO. S-13
 TOTAL SHEETS 50

DRAWN BY: J. A. CAVER DATE: 02/07
 CHECKED BY: H. S. ELLIOTT DATE: 02/07

6/22/2009 10:50:50 AM R:\S\Structure\9496R865.DW.Gldg

NOTES:

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

FOR PILE SPLICE DETAILS, SEE END BENT 1, SHEET 3 OF 3.

FOR BLOCKOUT IN WINGWALL DETAILS, SEE END BENT 1, SHEET 3 OF 3.

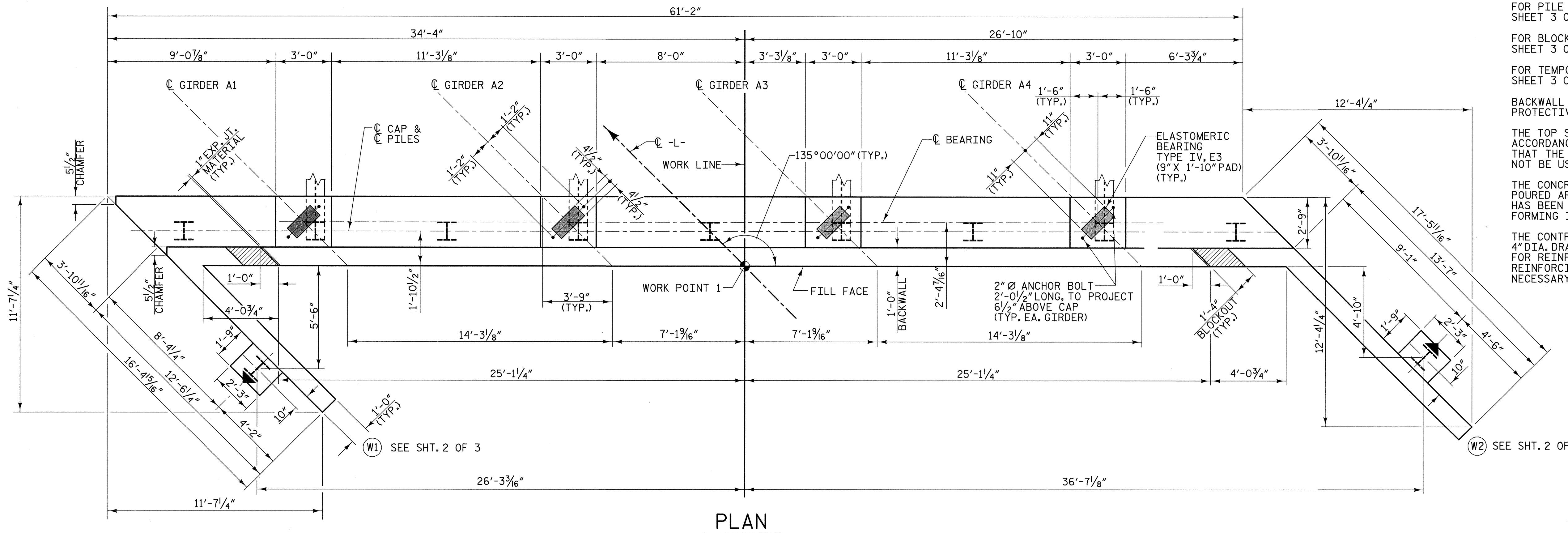
FOR TEMPORARY DRAINAGE AT END BENT, SEE END BENT 2, SHEET 3 OF 3.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT IN THE DECK AND APPROACH SLAB HAS BEEN SAWED AND THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

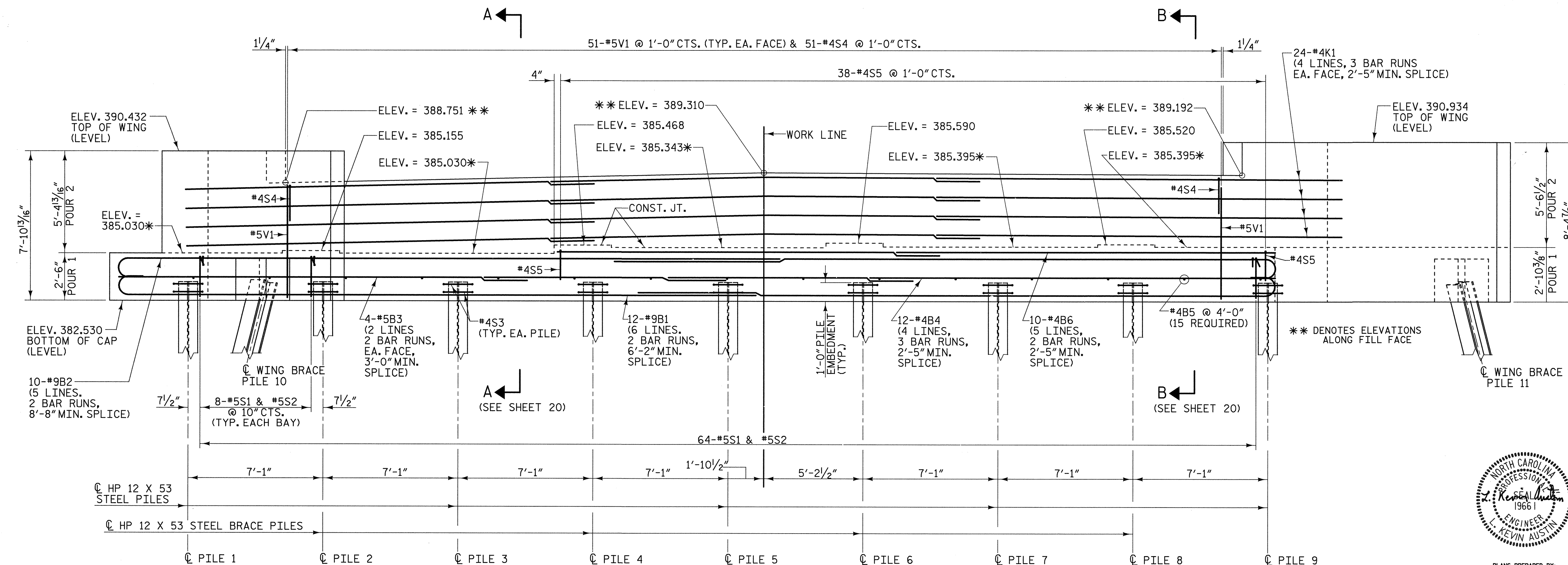
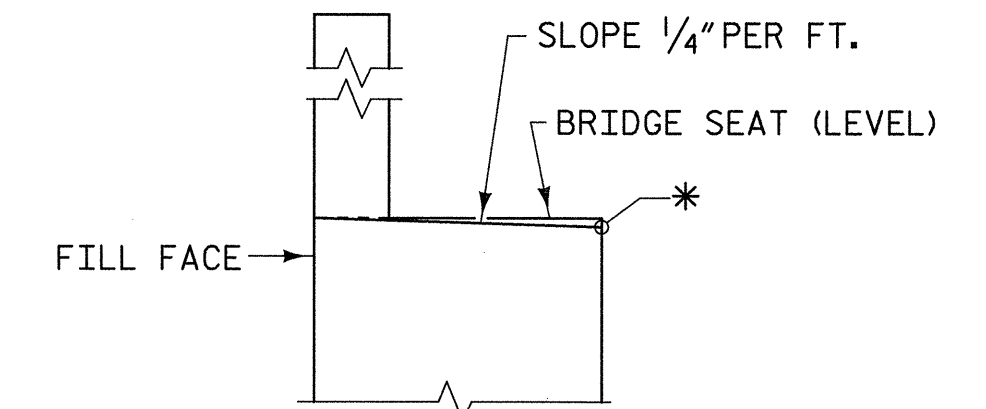
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIA. DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.



PLAN

NOTE:

THE TOP SURFACE OF THE CAP, EXCEPT THE BRIDGE SEAT BUILDUPS, SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE FRONT FACE AT THE RATE OF 2%. ELEVATIONS BETWEEN BRIDGE SEAT BUILDUPS ARE SHOWN AS NOTED THUS * IN THE SKETCH BELOW.

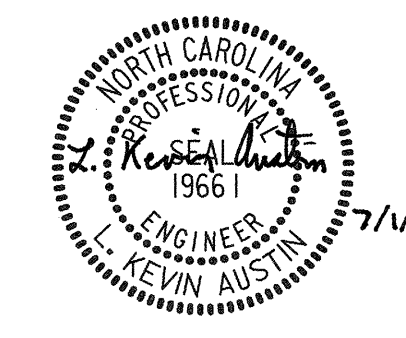


ELEVATION

PROJECT NO. R-4906
 PERSON _____ COUNTY _____
 STATION: 14+93.50 -L-

REPLACES BRIDGE NO. 86 SHEET 1 OF 3

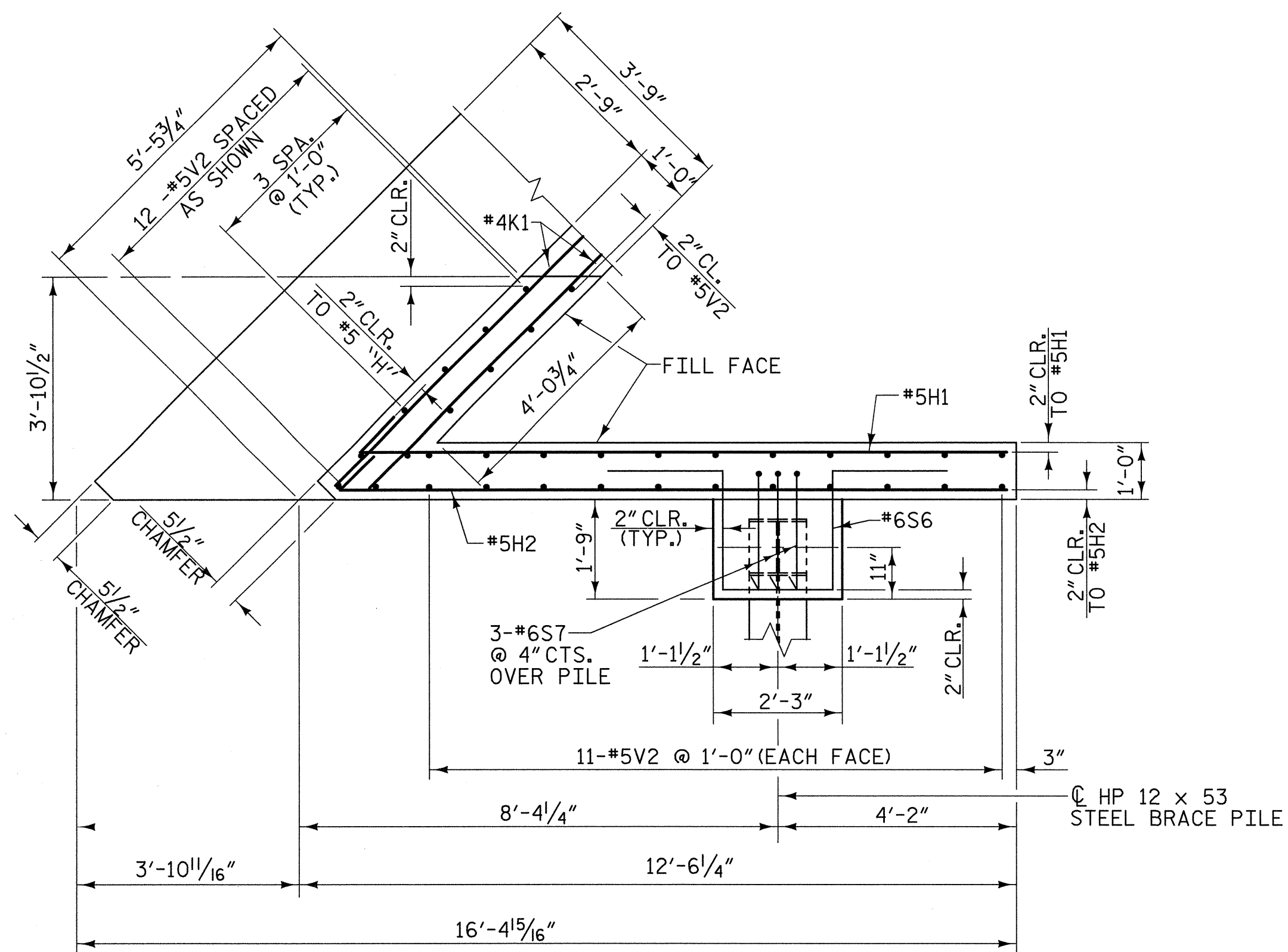
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**SUBSTRUCTURE
 END BENT 1**
 34'-0" CLEAR ROADWAY - 135° SKEW



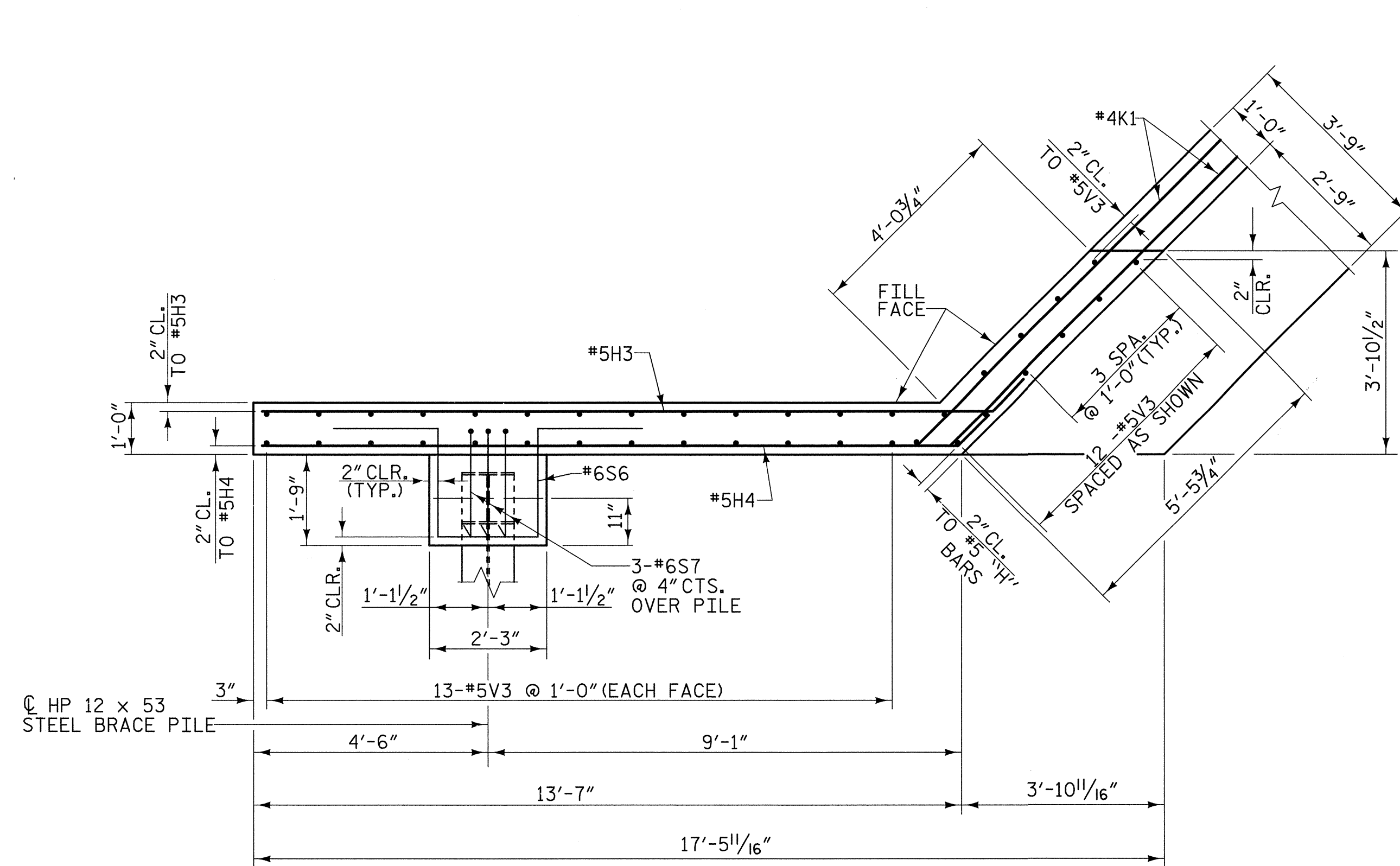
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14	
1			3			TOTAL SHEETS 50	
2			4				

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DRAWN BY : J. A. CAVER DATE : 06/07
 CHECKED BY : H. S. ELLIOTT DATE : 06/07

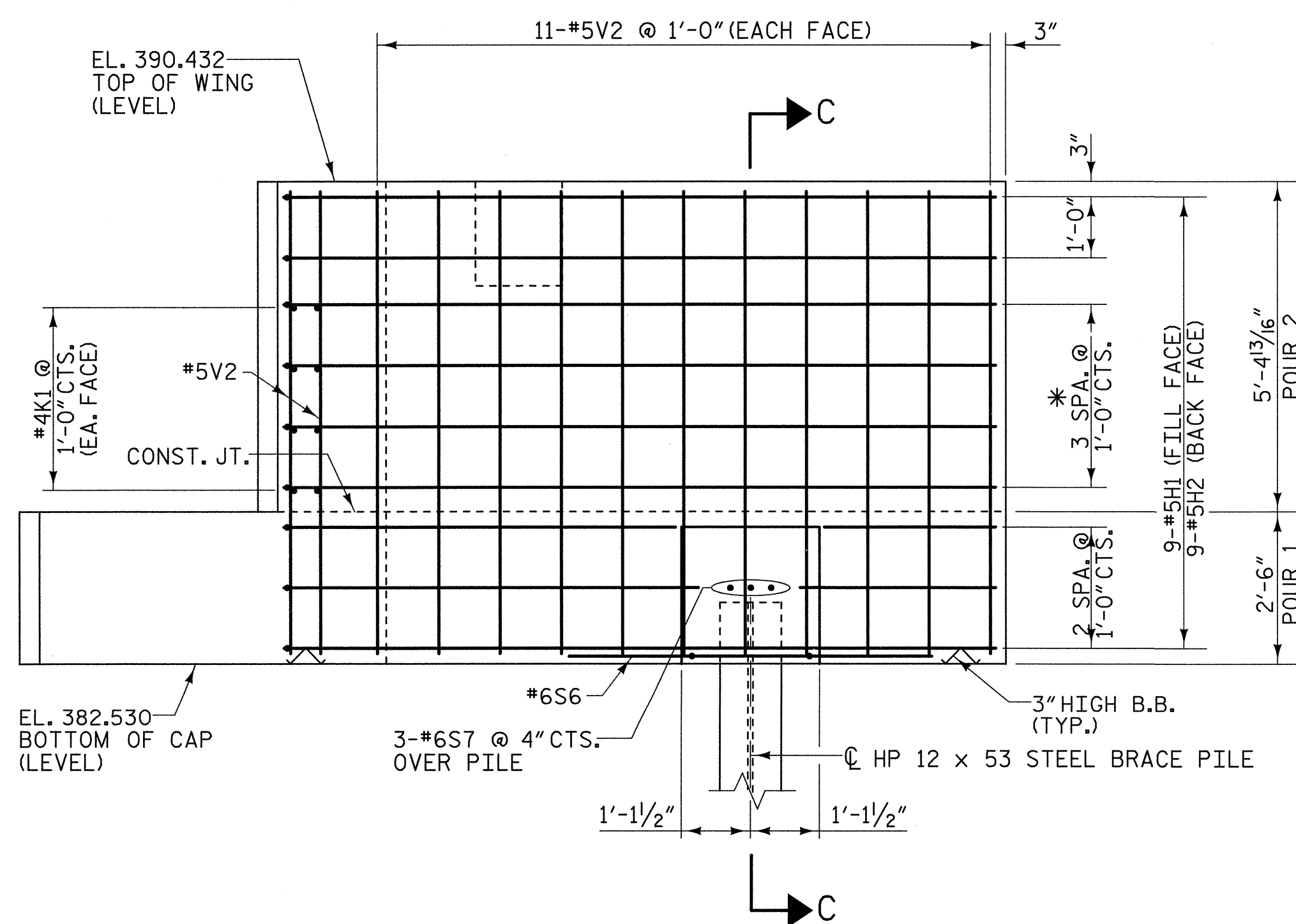


W1 PLAN OF LEFT WING

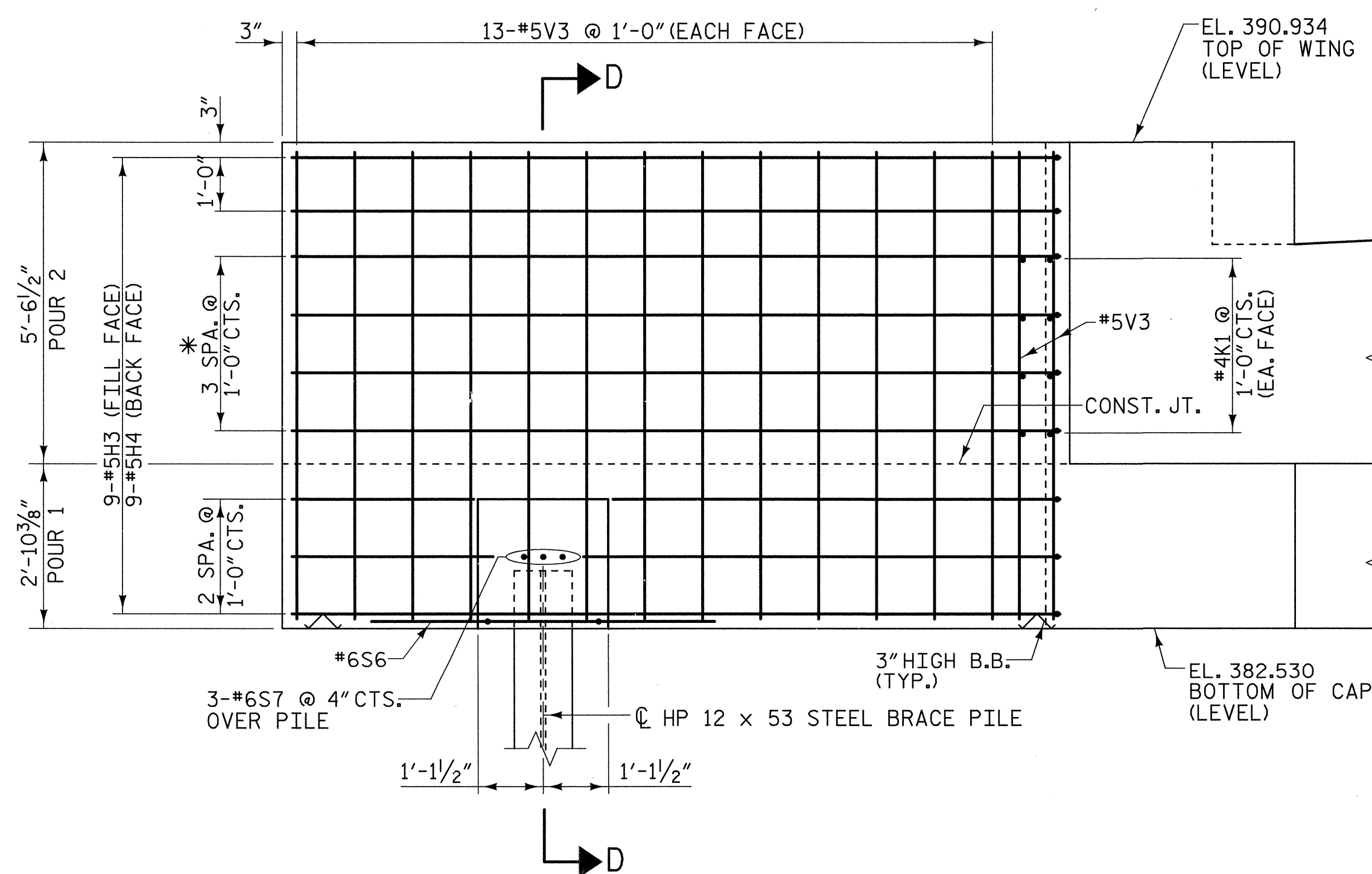


W2 PLAN OF RIGHT WING

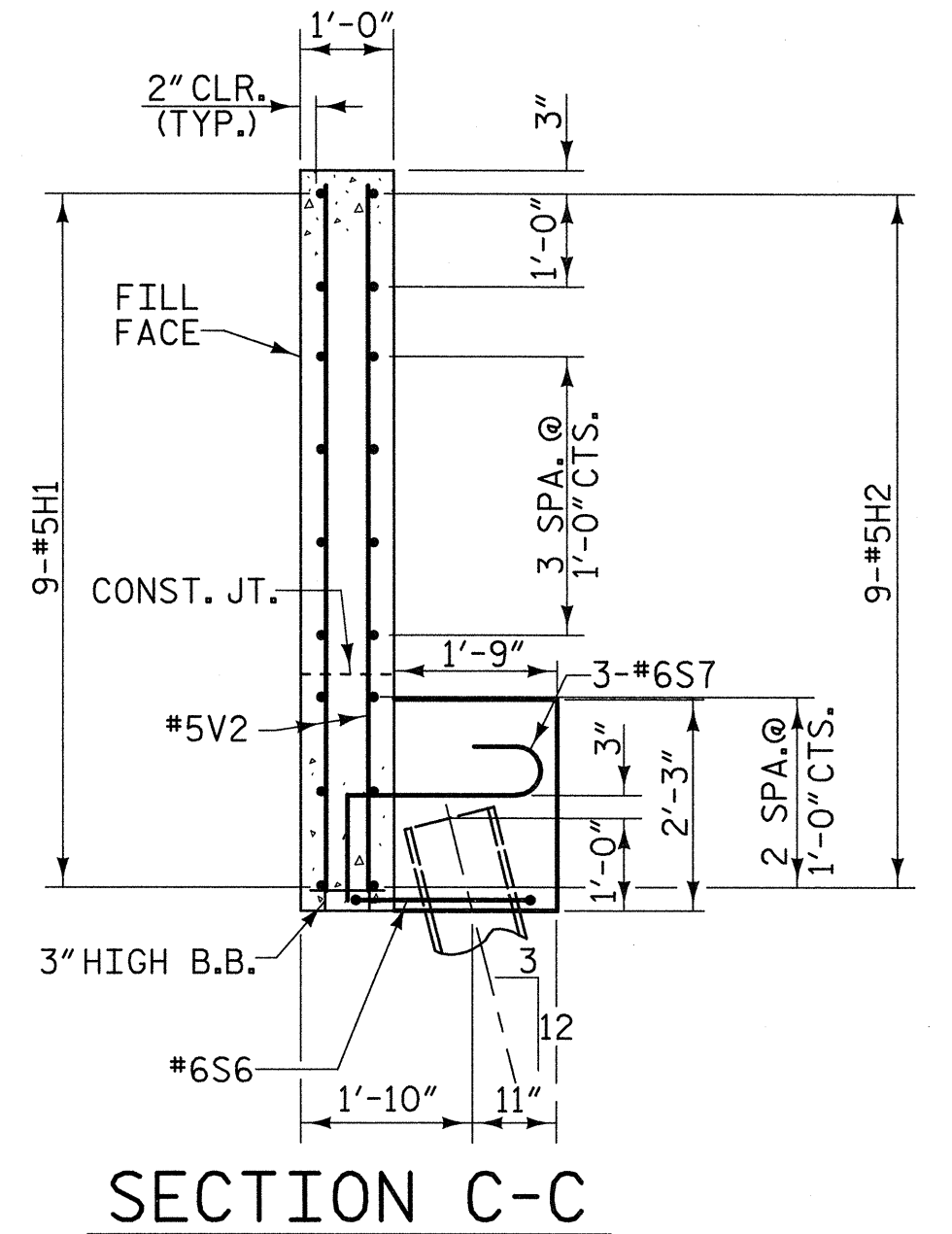
* MATCH "H" BARS TO "K" BARS
IN BACKWALL AS SHOWN



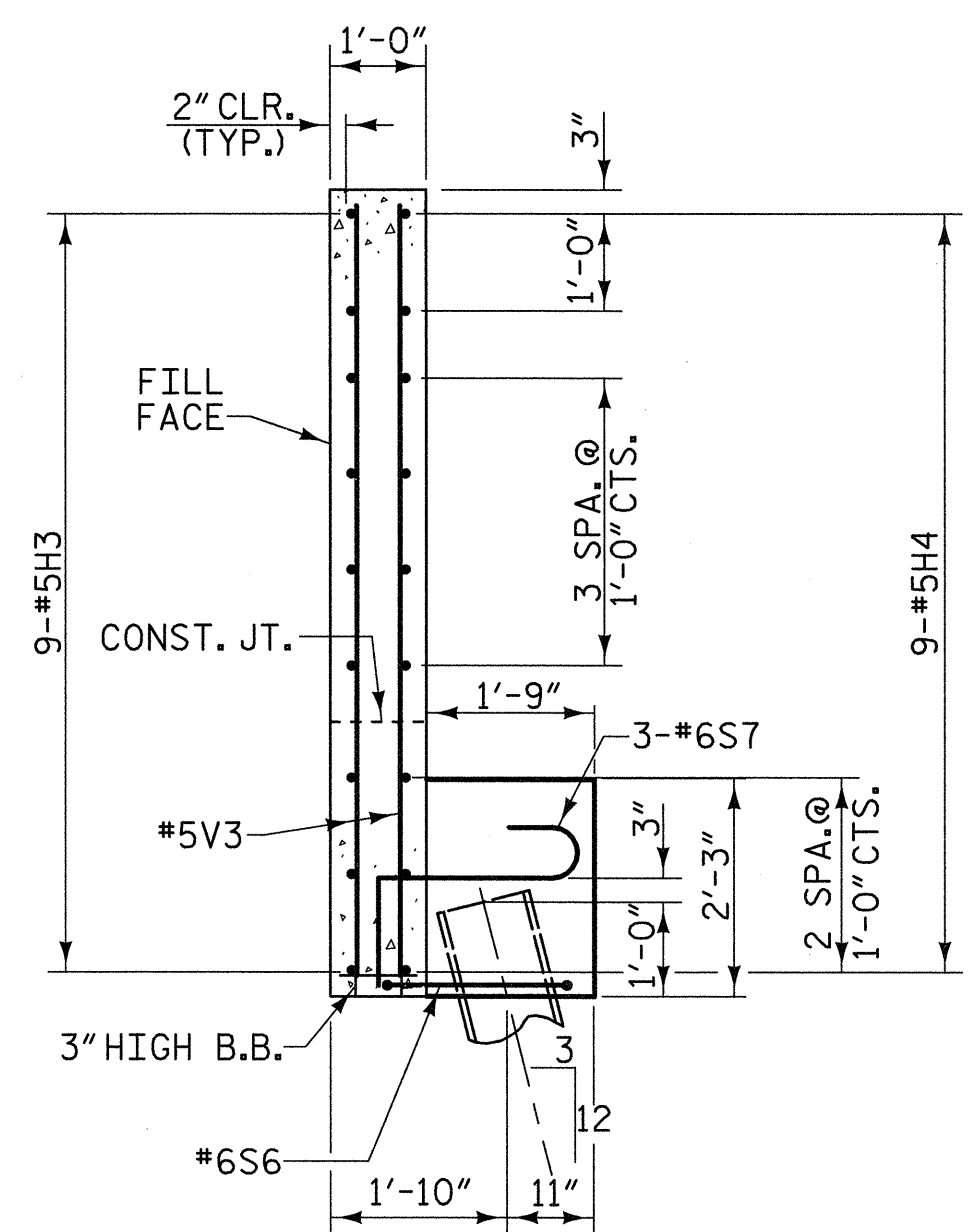
W1 ELEVATION OF LEFT WING



W2 ELEVATION OF RIGHT WING



SECTION C-C



SECTION D-D

PROJECT NO. R-4906
PERSON COUNTY
STATION: 14+93.50 -L-

REPLACES BRIDGE NO. 86 SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1

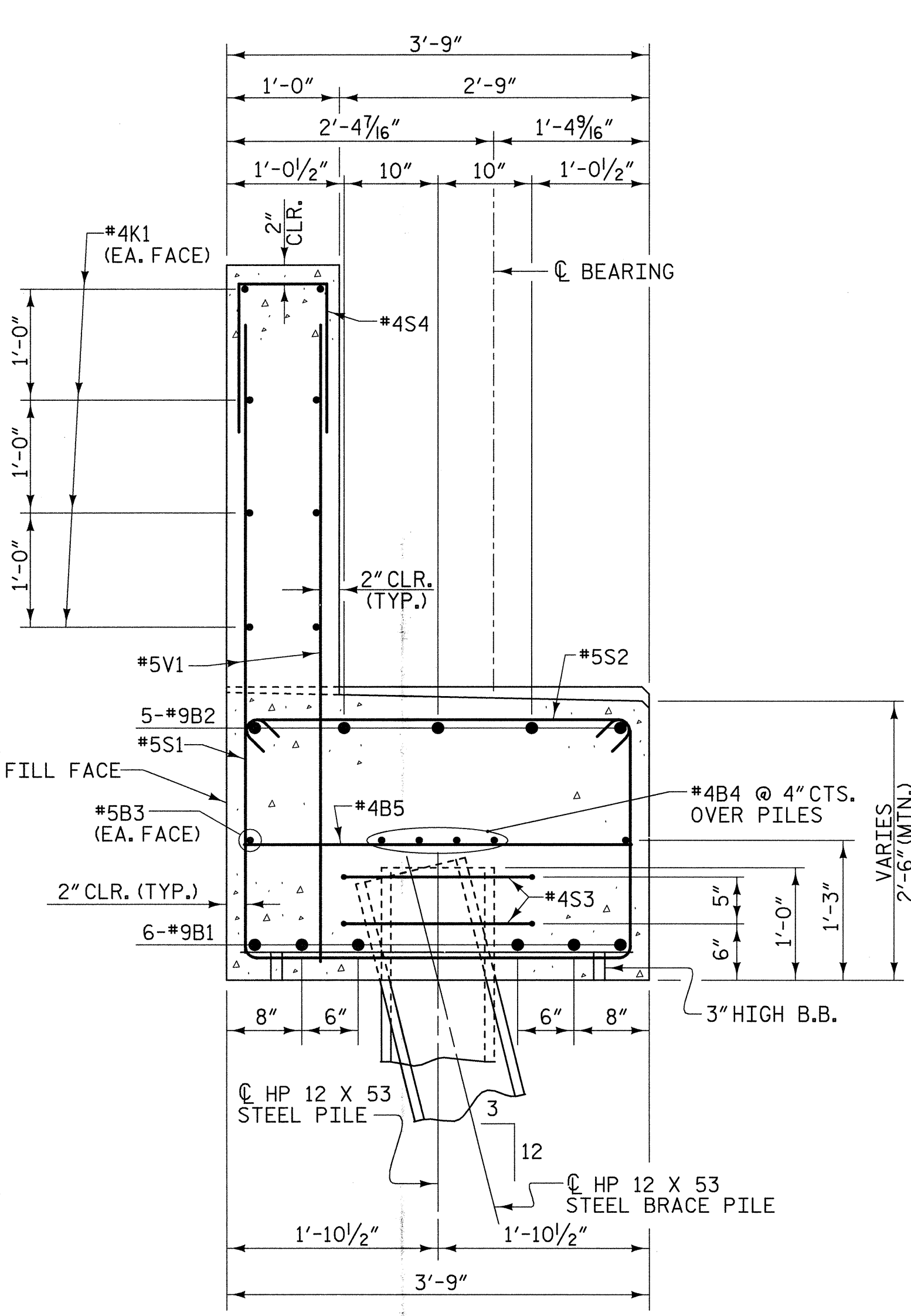
34'-0\"/>



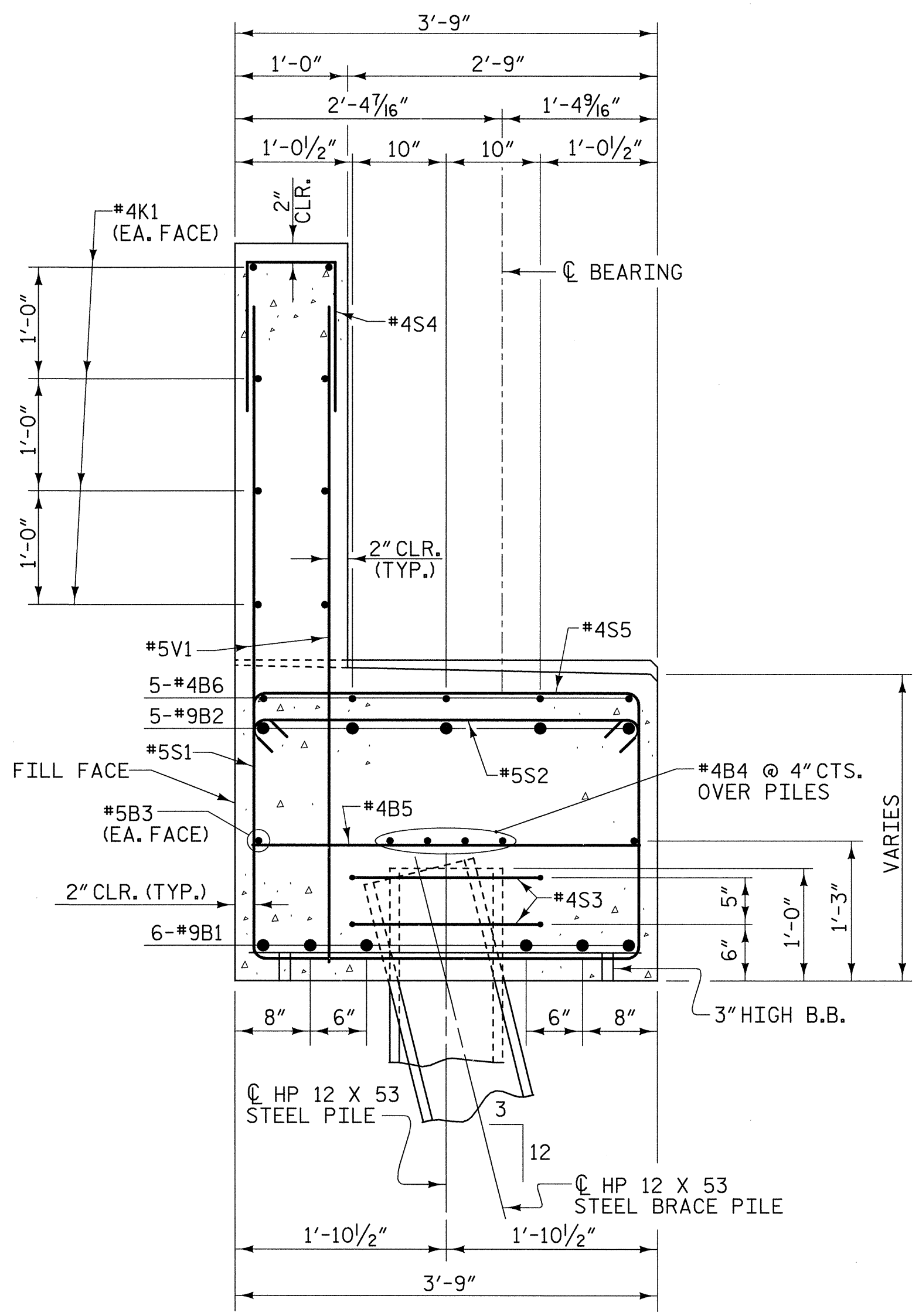
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15	
1			3			TOTAL SHEETS 50	
2			4				

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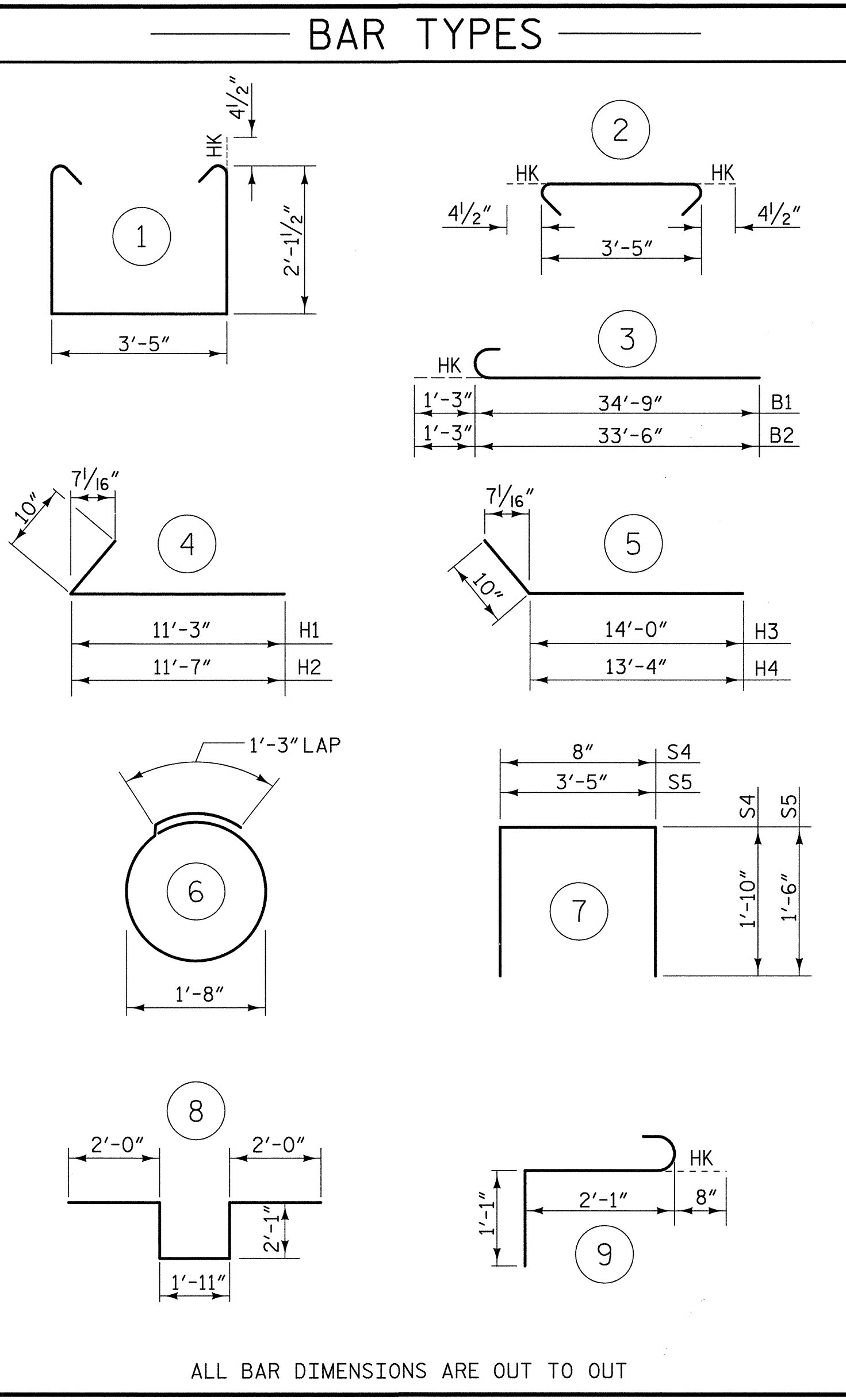
DRAWN BY: J. A. CAVER DATE: 06/07
CHECKED BY: H. S. ELLIOTT DATE: 06/07



SECTION A-A



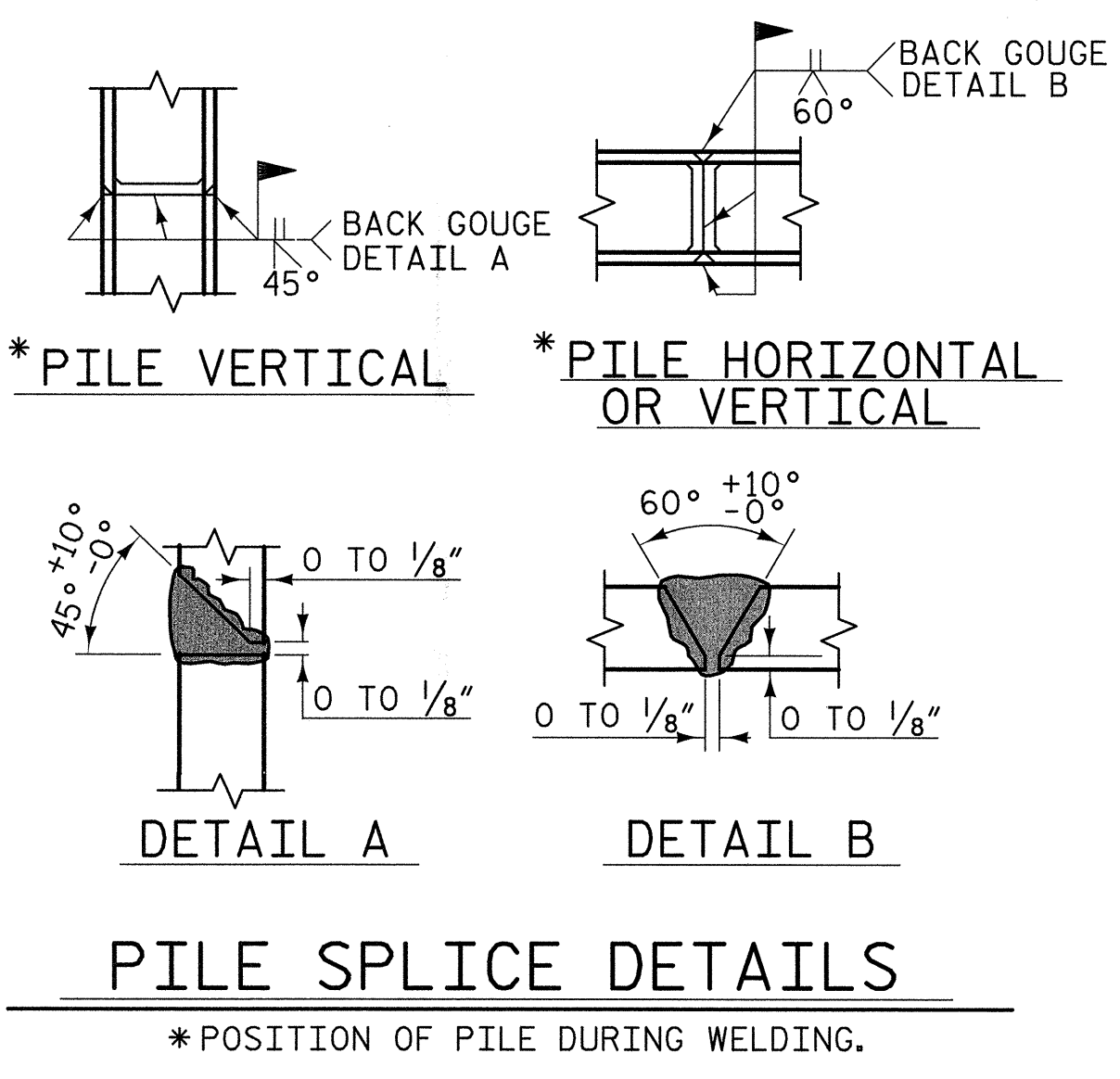
SECTION B-B



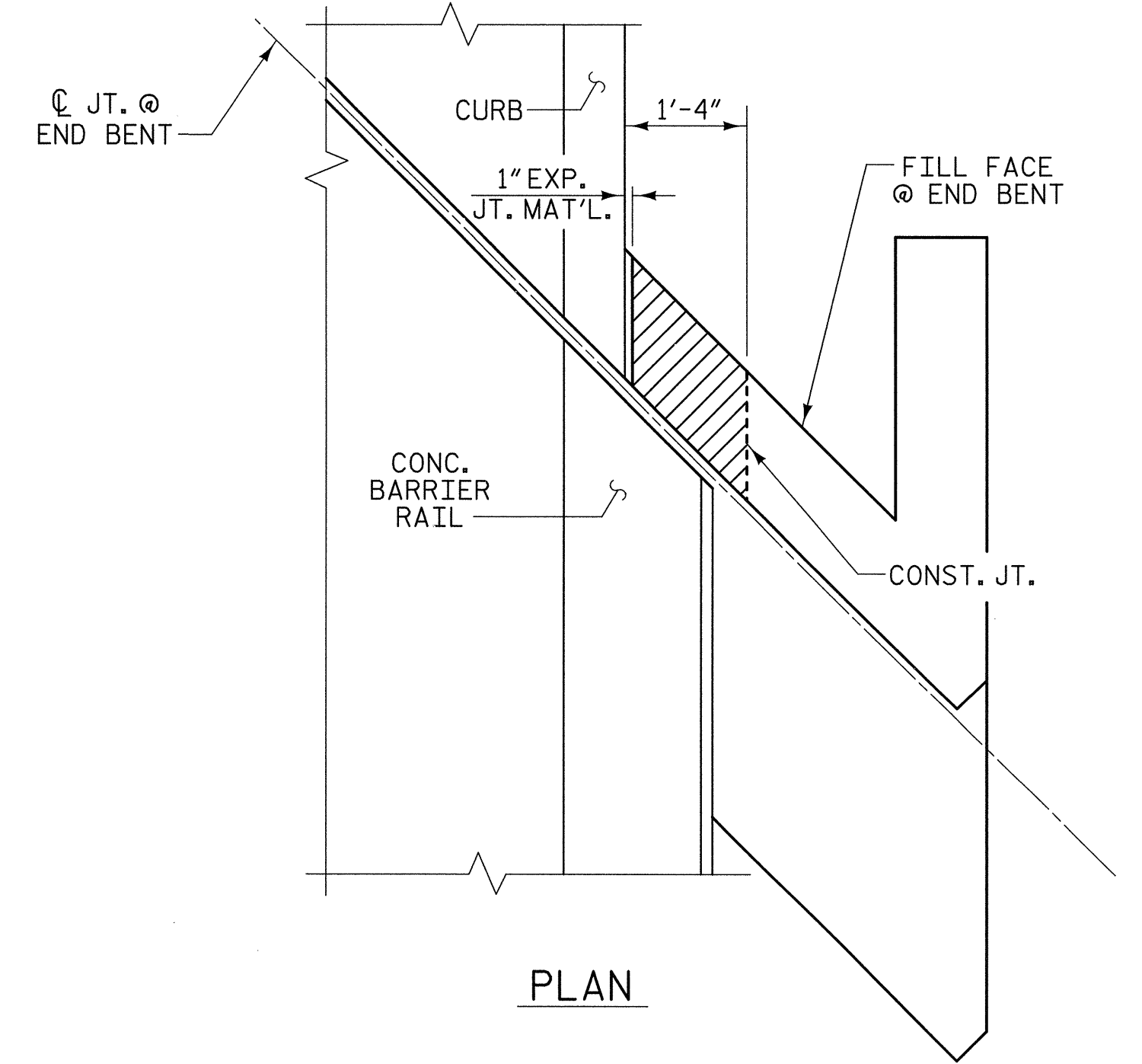
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR END BENT 1					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	#9	3	36'-0"	1469
B2	10	#9	3	34'-9"	1182
B3	4	#5	STR	31'-11"	133
B4	12	#4	STR	21'-11"	176
B5	15	#4	STR	3'-5"	34
B6	10	#4	STR	20'-0"	134
H1	9	#5	4	12'-1"	113
H2	9	#5	4	12'-5"	117
H3	9	#5	5	14'-10"	139
H4	9	#5	5	14'-2"	133
K1	24	#4	STR	21'-11"	351
S1	64	#5	1	8'-5"	562
S2	64	#5	2	4'-2"	278
S3	18	#4	6	6'-6"	78
S4	51	#5	7	4'-4"	231
S5	38	#4	7	6'-5"	163
S6	2	#6	8	10'-1"	30
S7	6	#6	9	3'-10"	35
V1	102	#5	STR	5'-9"	612
V2	34	#5	STR	7'-5"	263
V3	38	#5	STR	7'-11"	314
TOTAL REINFORCING STEEL =					6547 lbs.
CLASS "A" CONCRETE - CU. YARDS					
POUR 1				26.4	cu. yds.
POUR 2				14.0	cu. yds.
TOTAL				40.4	cu. yds.
HP 12 X 53 STEEL PILES					275
11 PILES REQUIRED - LIN. FEET					275

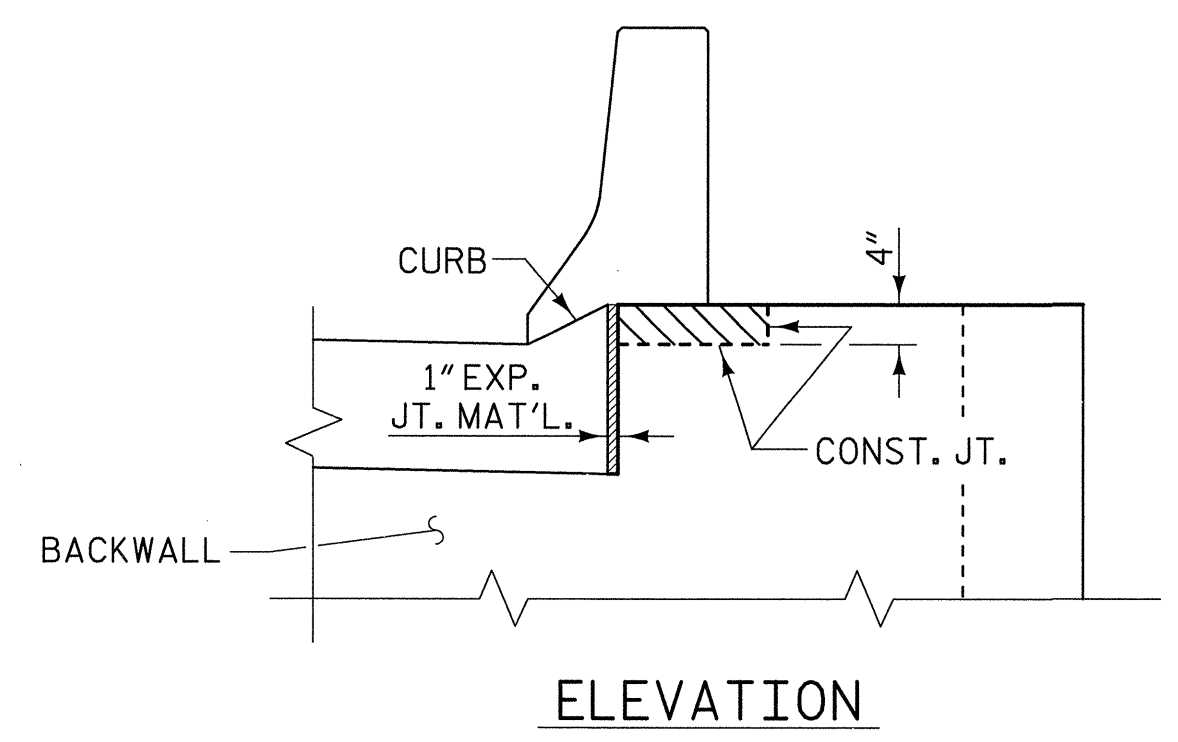


PILE SPLICE DETAILS
* POSITION OF PILE DURING WELDING.



BLOCKOUT IN WING WALL
LEFT WING SHOWN, RIGHT WING SIMILAR

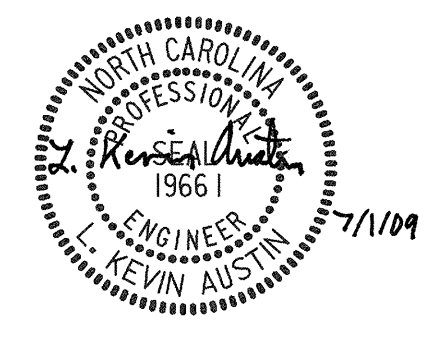
NOTE:
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND APPROACH SLAB HAS BEEN SAWED AND THE PARAPET IS CAST IF SLIP FORMING IS USED.



ELEVATION

PROJECT NO. R-4906
PERSON COUNTY
STATION: 14+93.50 -L-

REPLACES BRIDGE NO. 86 SHEET 3 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUBSTRUCTURE
END BENT 1**

34'-0" CLEAR ROADWAY - 135° SKEW

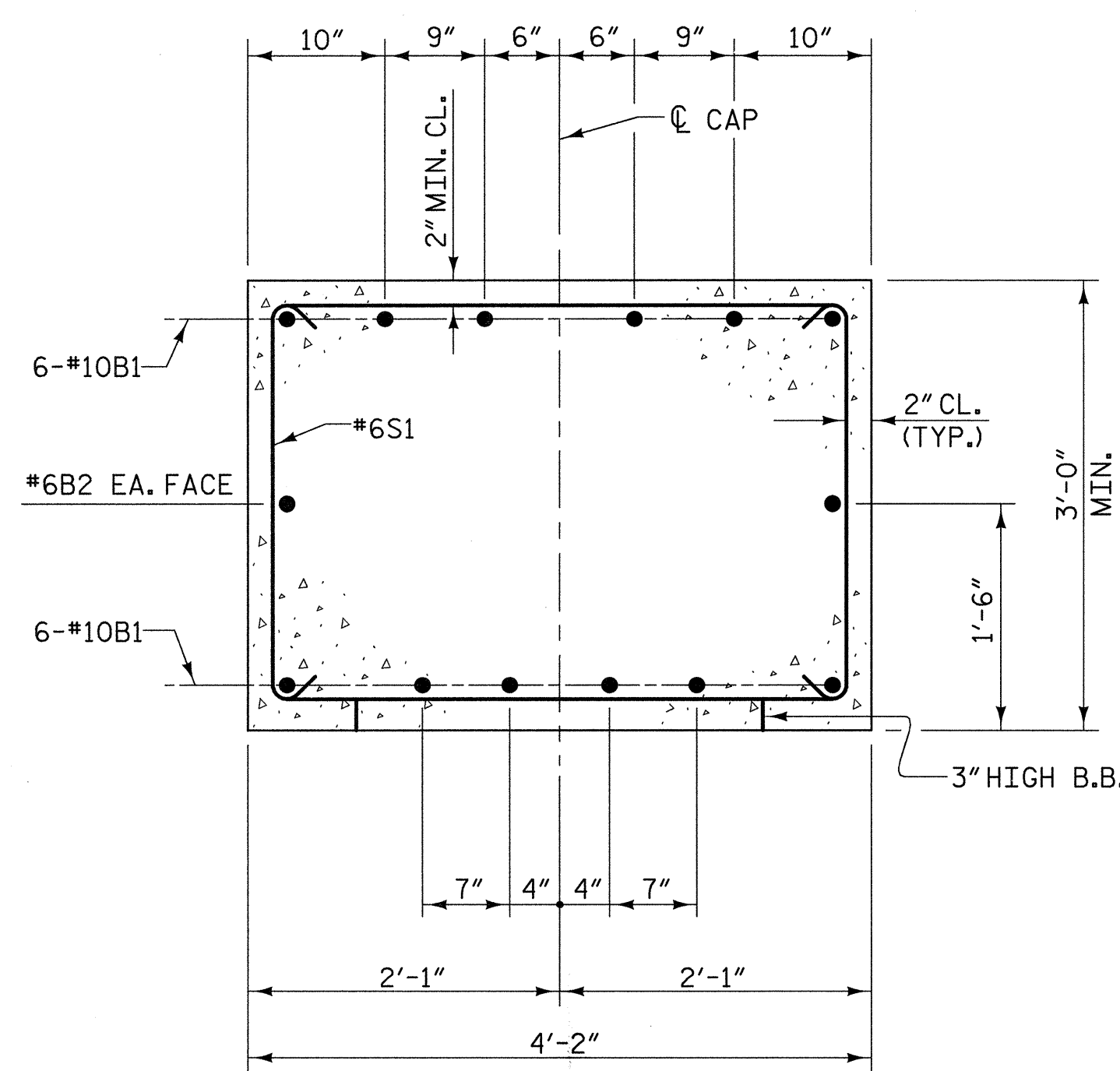
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-16
TOTAL SHEETS 50

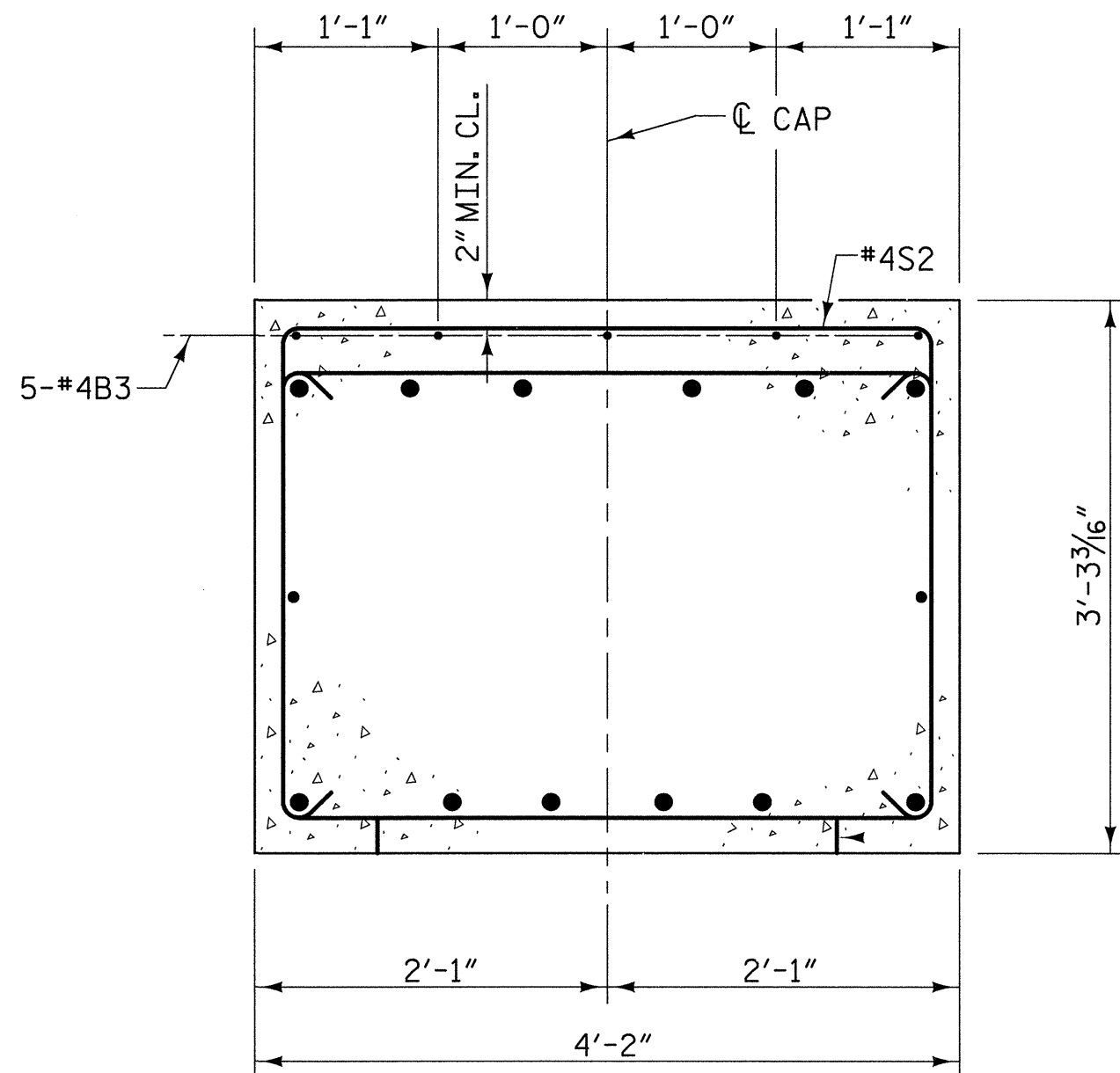
DRAWN BY: J. A. CAVER DATE: 06/07
CHECKED BY: H. S. ELLIOTT DATE: 06/07

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NOTE:
ANCHOR BOLTS NOT SHOWN



SECTION A-A



SECTION B-B

SHOWING #4B3 BAR SPACING

NOTES:

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

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

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE "M" BARS IN THE DRILLED PIERS ARE DETAILED WITH 3'-0" OF EXTRA LENGTH.

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

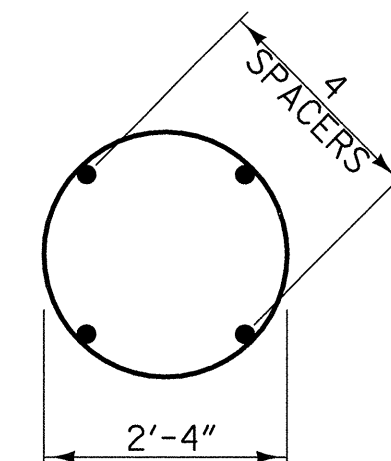
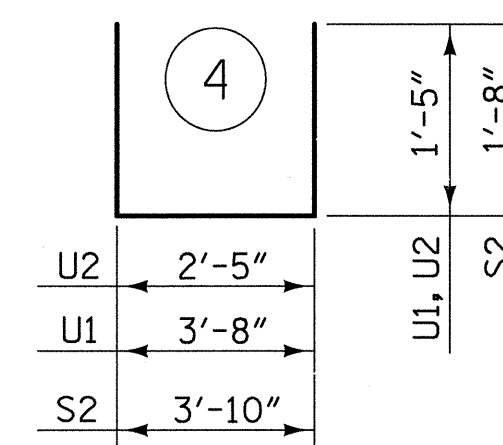
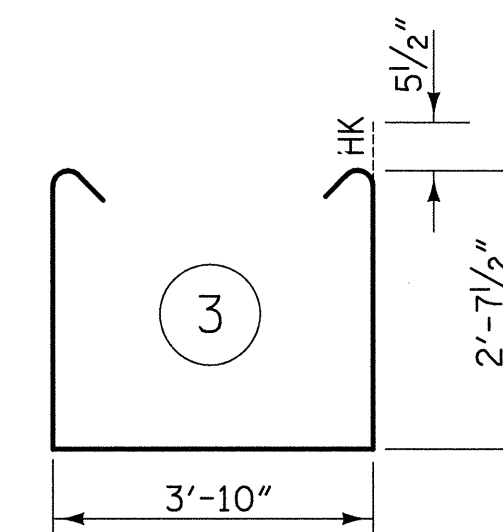
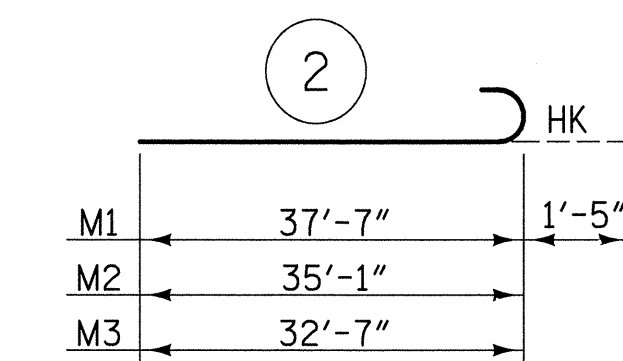
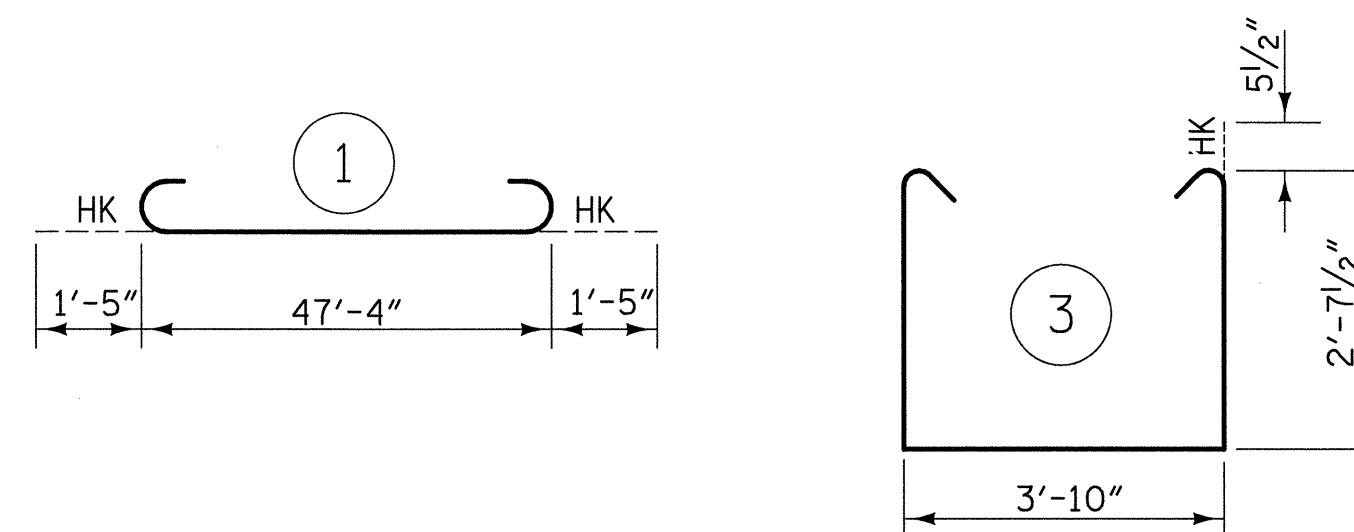
FOR DRILLED PIER NOTES, SEE FOUNDATION LAYOUT SHEET.

* THE SP1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

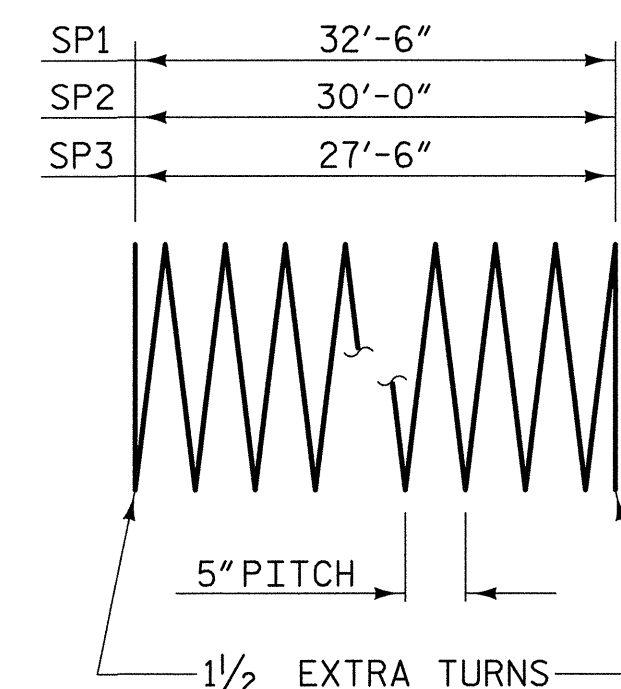
SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIERS WILL NOT BE PERMITTED.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

BAR TYPES



5



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	#10	1	50'-2"	2590
B2	2	#6	STR	47'-4"	142
B3	5	#4	STR	18'-2"	61
M1	10	#10	2	39'-0"	1678
M2	10	#10	2	36'-6"	1571
M3	10	#10	2	34'-0"	1463
S1	56	#6	3	10'-0"	841
S2	32	#4	4	7'-2"	153
U1	6	#4	4	6'-6"	26
U2	8	#4	4	5'-3"	28

TOTAL REINFORCING STEEL = 8553 lbs.

SP1	1	*	5	748'-10"	781
SP2	1	*	5	693'-4"	723
SP3	1	*	5	637'-11"	665

SPIRAL COLUMN REINFORCING STEEL = 2169 lbs.

CLASS "A" CONCRETE -
CU. YARDS POUR 2 (CAP) 23.3

3'-0" DIA. DRILLED PIERS (3 REQ'D)

3'-0" DIA. DRILLED PIERS, NOT IN SOIL 30.0 L.F.

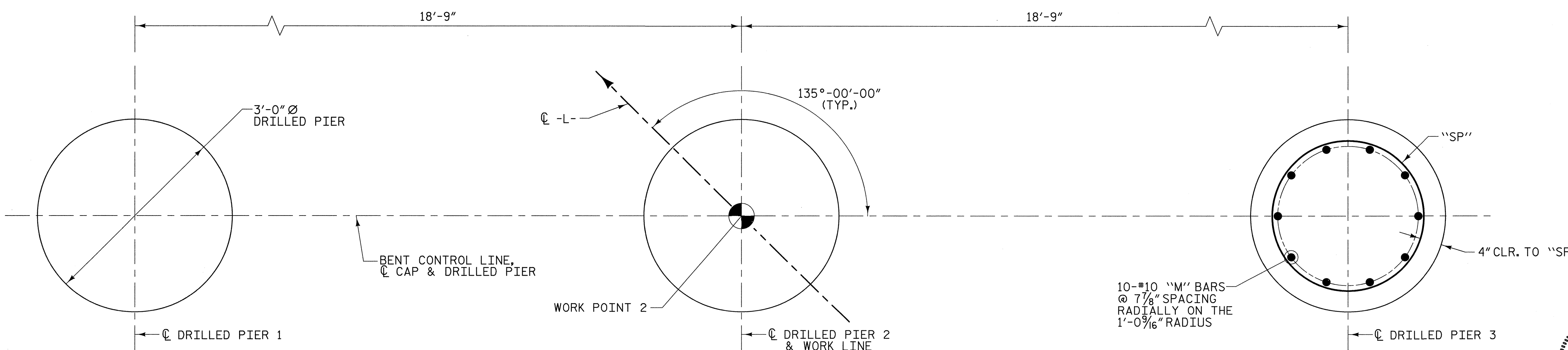
3'-0" DIA. DRILLED PIERS, IN SOIL 60.8 L.F.

PERMANENT STEEL CASING FOR
3'-0" DIA. DRILLED PIERS 66.6 L.F.

DRILLED PIER CONCRETE - CU. YARDS
POUR 1 (FOR INFORMATION ONLY) 23.8

CROSSHOLE SONIC LOGGING 1 EACH

CSL TUBES 393 FT.



PLAN OF DRILLED PIERS

DIMENSIONS ARE TYPICAL FOR EACH DRILLED PIER

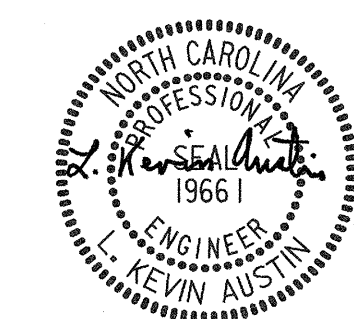
PROJECT NO. R-4906
PERSON COUNTY
STATION: 14+93.50 -L-

REPLACES BRIDGE NO. 86 SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 1

34'-0" CLEAR ROADWAY - 135° SKEW



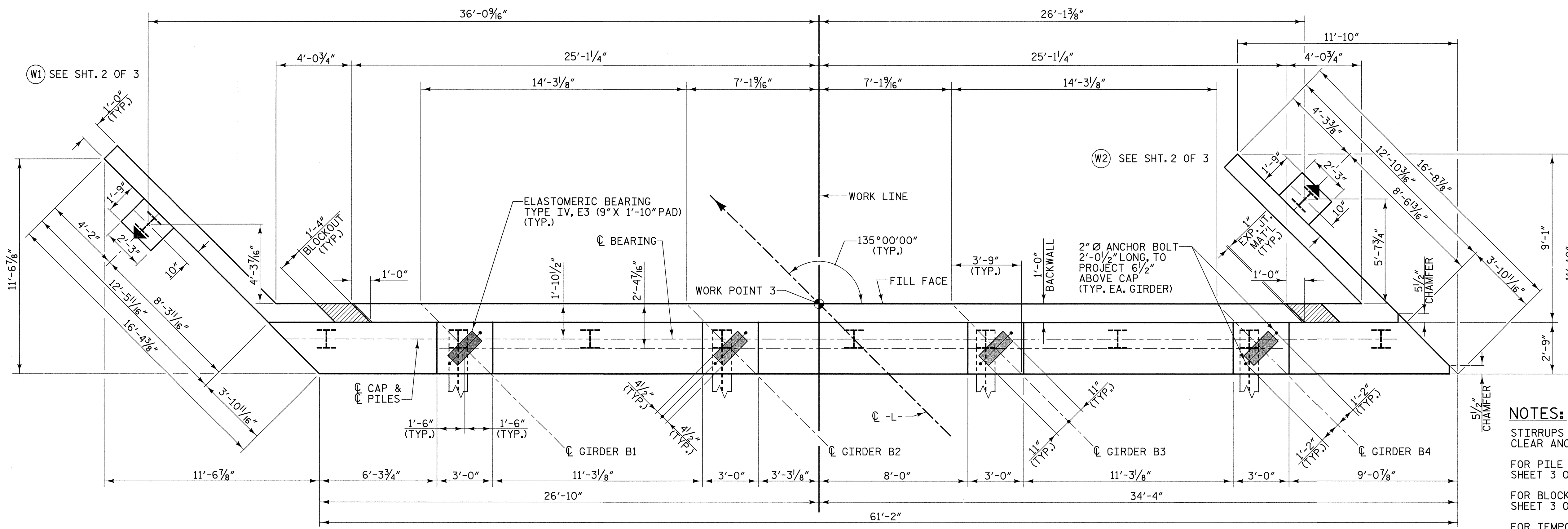
PLANS PREPARED BY:



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS 50
2			4			

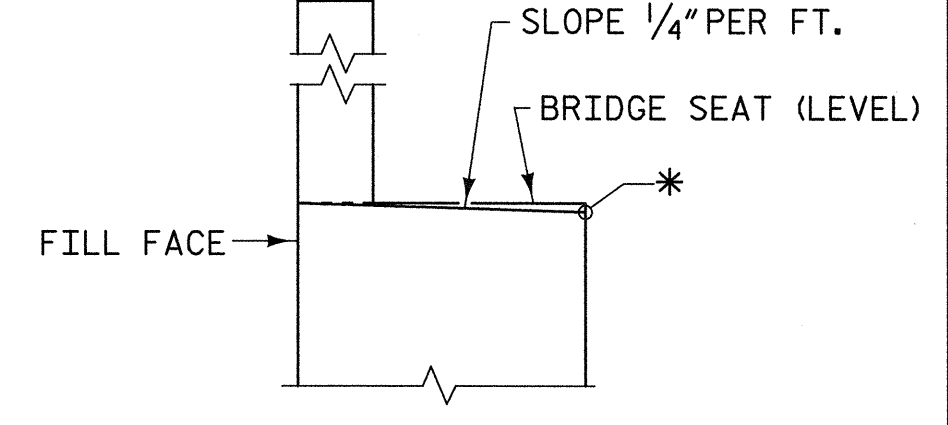
DRAWN BY: J. A. CAVER DATE: 05/07
CHECKED BY: H. S. ELLIOTT DATE: 06/07

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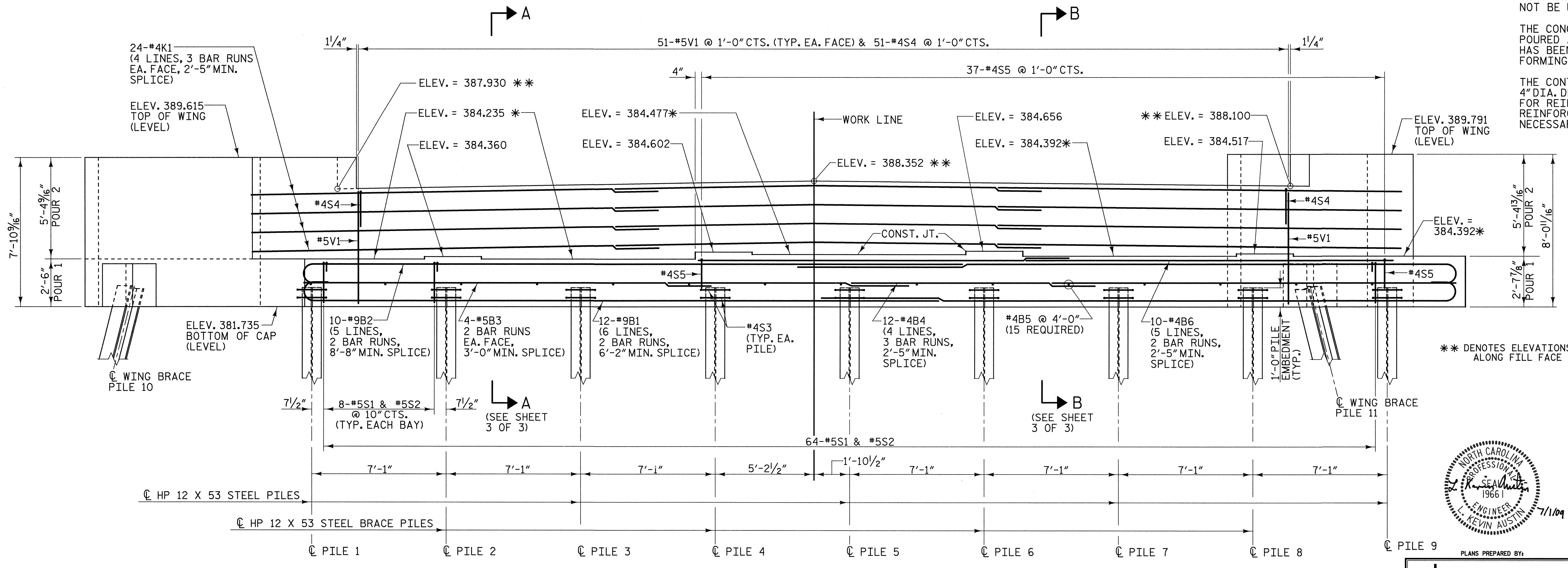
PLAN

NOTE:
 THE TOP SURFACE OF THE CAP, EXCEPT THE BRIDGE SEAT BUILDUPS, SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE FRONT FACE AT THE RATE OF 2%. ELEVATIONS BETWEEN BRIDGE SEAT BUILDUPS ARE SHOWN AS NOTED THUS * IN THE SKETCH BELOW.



NOTES:

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- FOR PILE SPLICE DETAILS, SEE END BENT 1, SHEET 3 OF 3.
- FOR BLOCKOUT IN WINGWALL DETAILS, SEE END BENT 1, SHEET 3 OF 3.
- FOR TEMPORARY DRAINAGE AT END BENT, SEE END BENT 2, SHEET 3 OF 3.
- BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
- THE TOP SURFACE OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
- THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT IN THE DECK AND APPROACH SLAB HAS BEEN SAWED AND THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

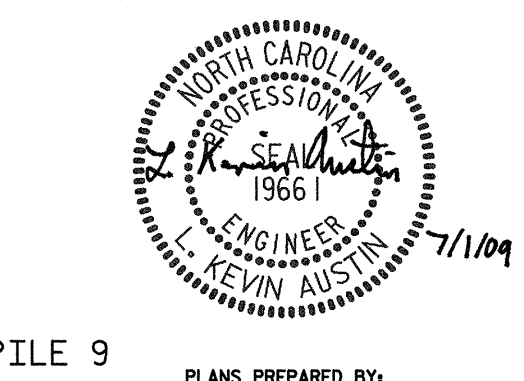


ELEVATION

PROJECT NO. R-4906
 PERSON COUNTY
 STATION: 14+93.50 -L-

REPLACES BRIDGE NO. 86 SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 2
 34'-0" CLEAR ROADWAY - 135° SKEW

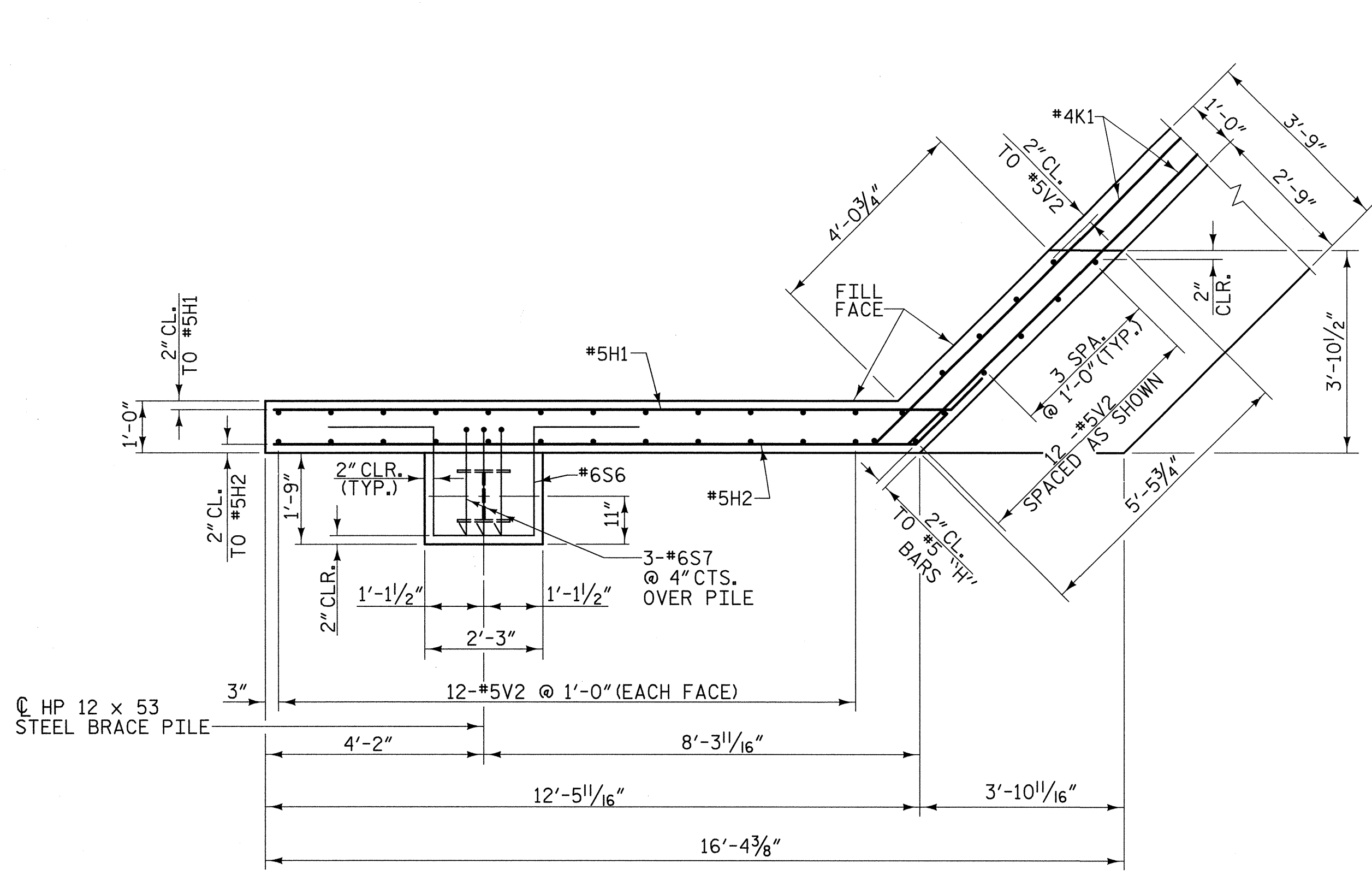


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 100 BOX 38157
 RALEIGH, N.C. 27636
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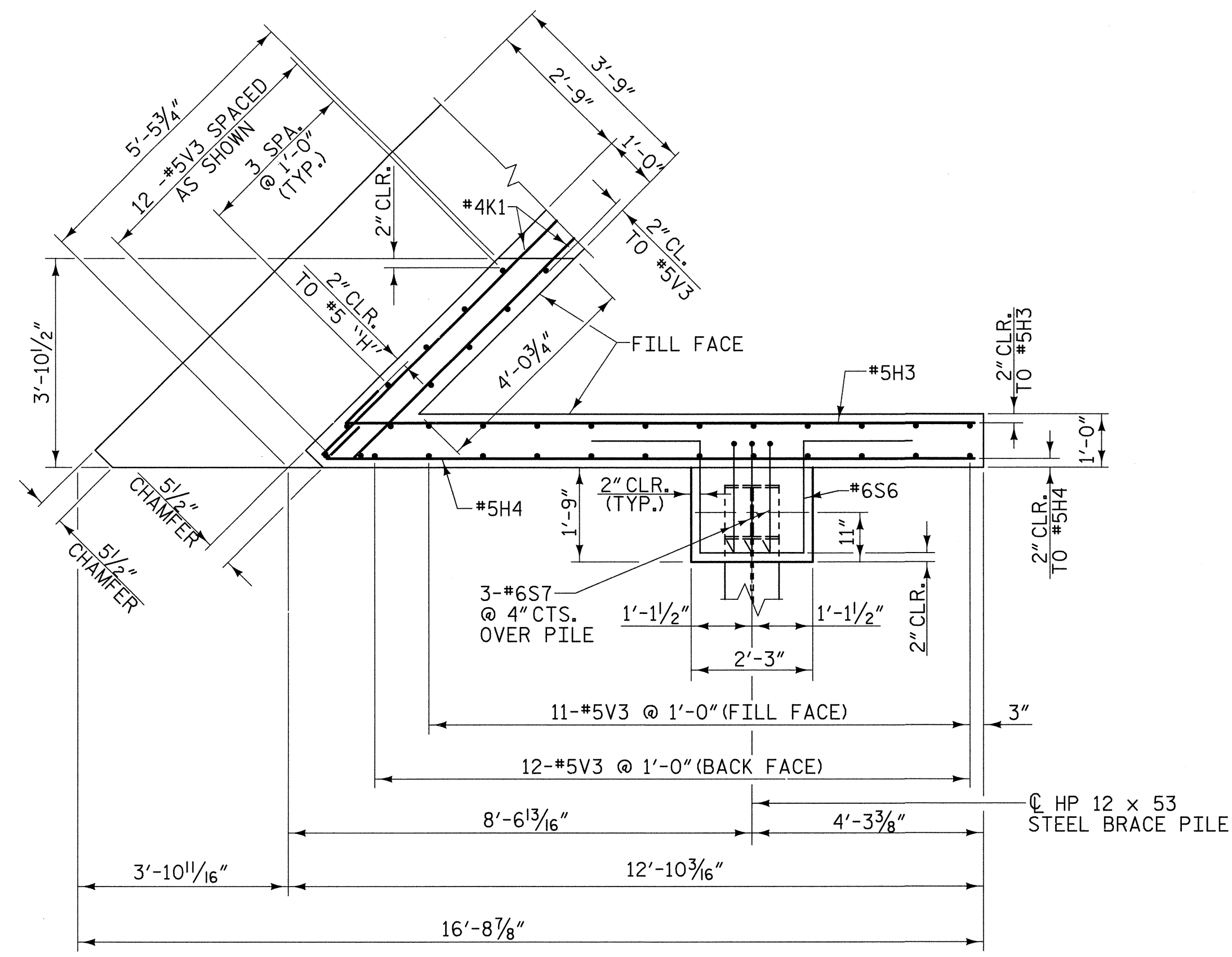
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19	
1			3			TOTAL SHEETS	
2			4			50	

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DRAWN BY: J. A. CAVER DATE: 06/07
 CHECKED BY: H. S. ELLIOTT DATE: 06/07

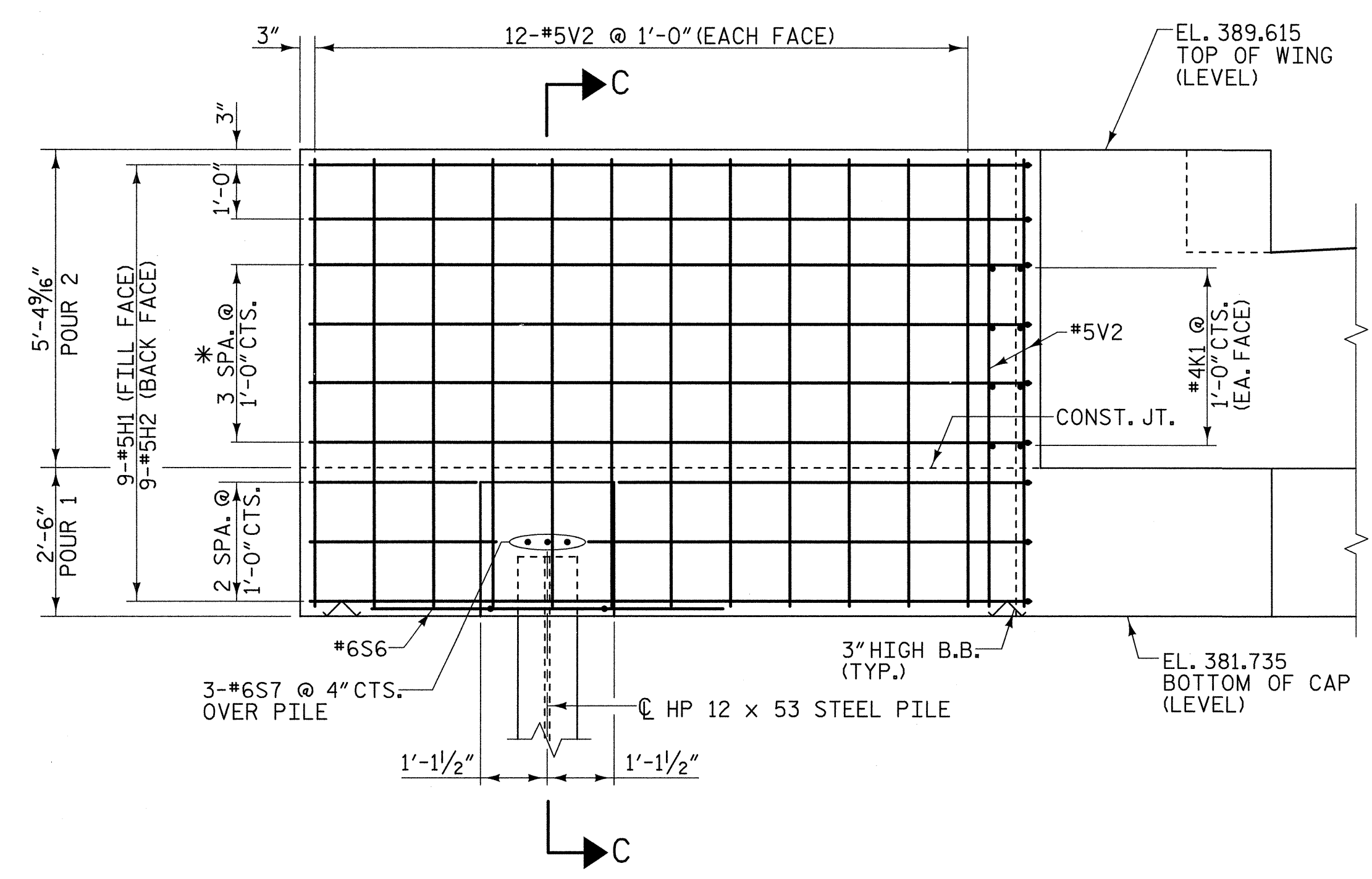


W1 PLAN OF LEFT WING

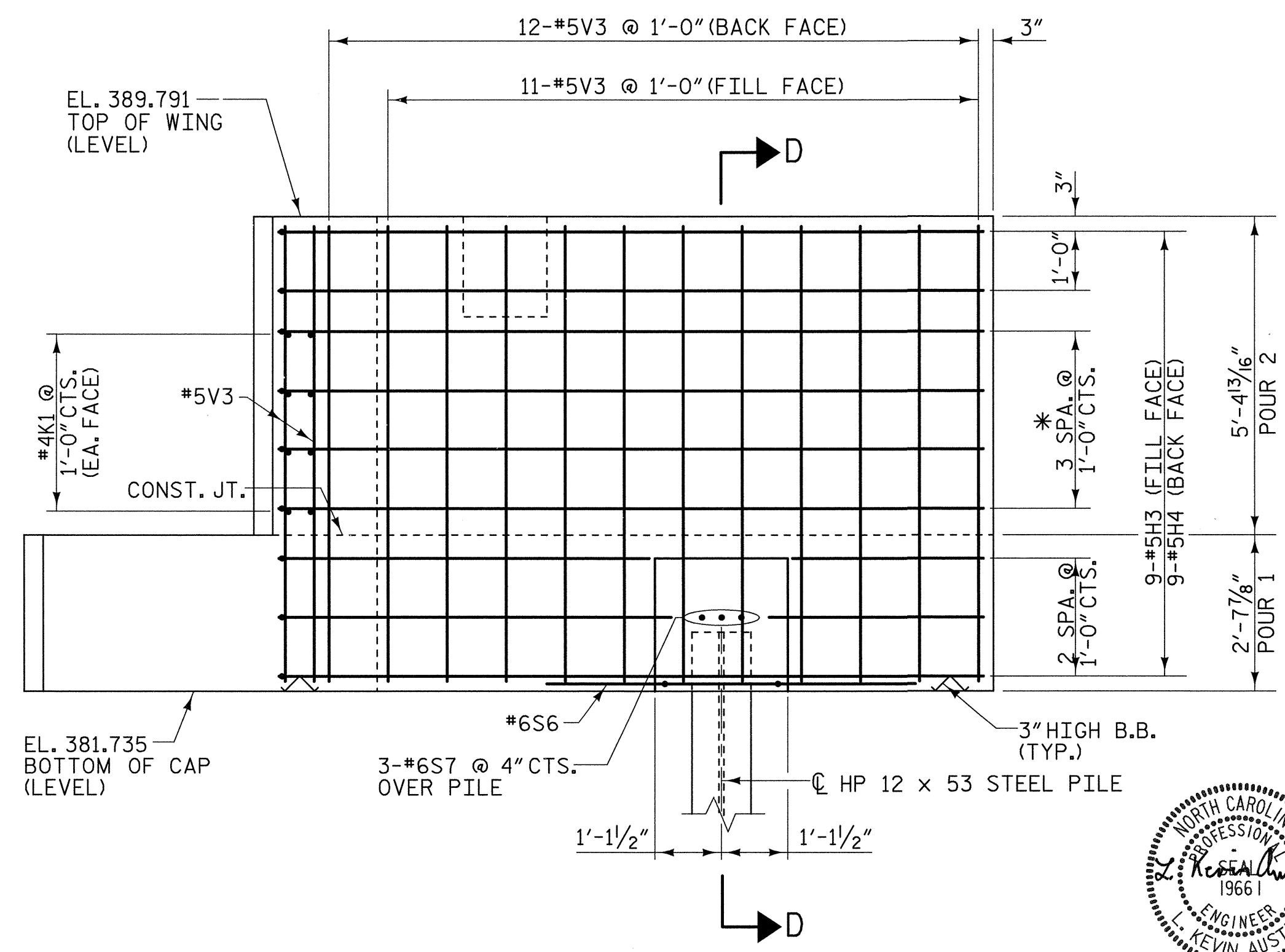


W2 PLAN OF RIGHT WING

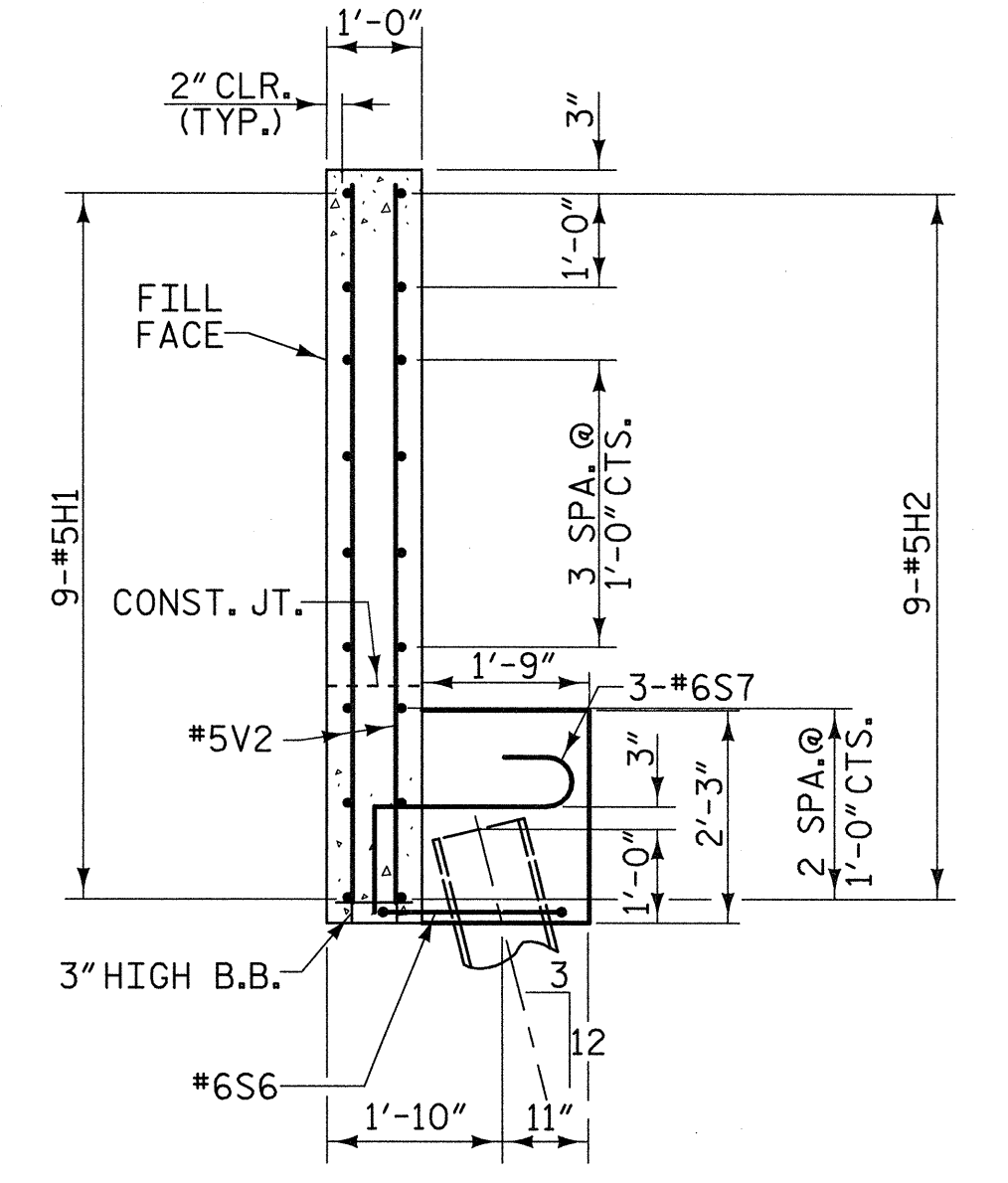
* MATCH "H" BARS TO "K" BARS IN BACKWALL AS SHOWN



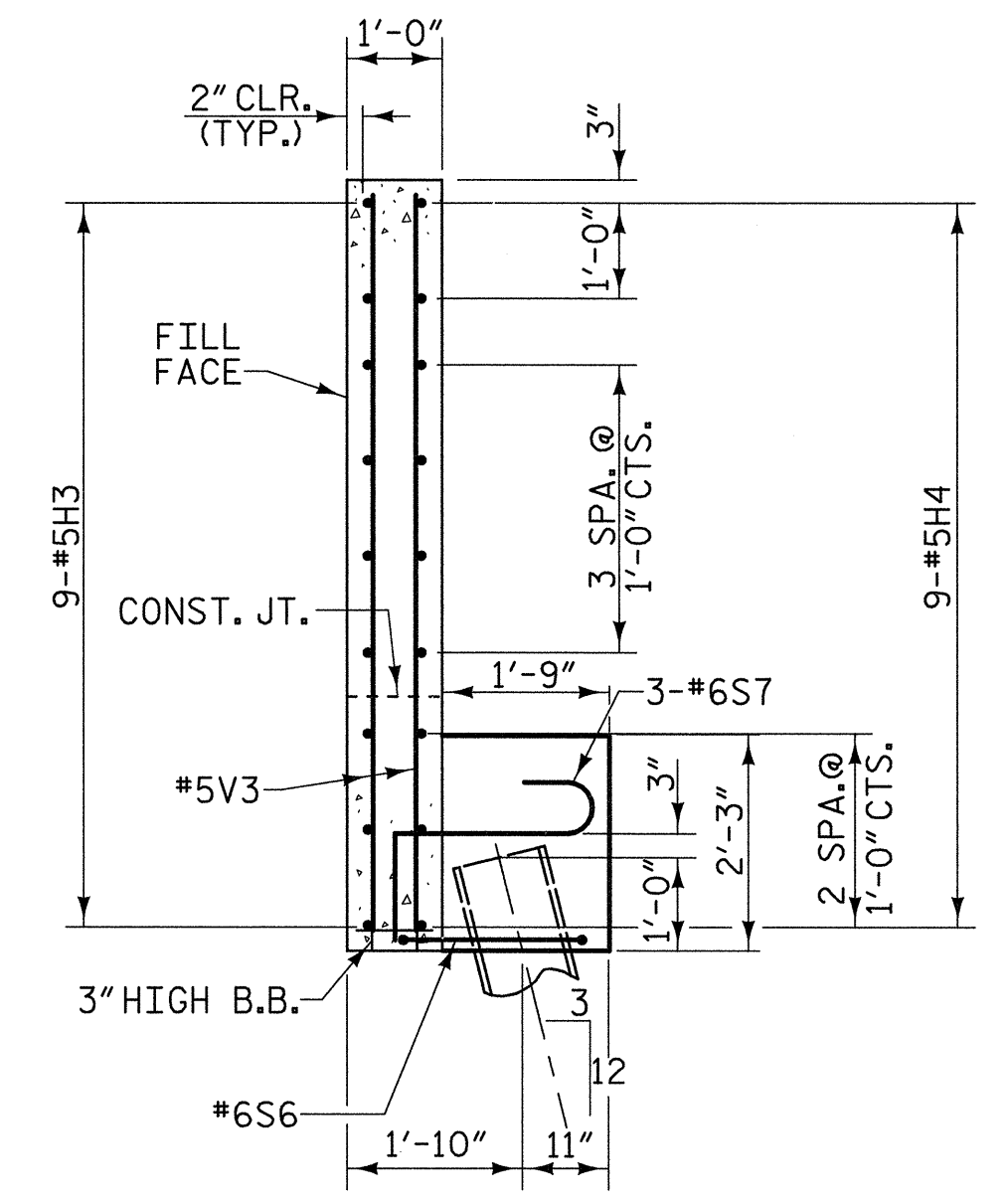
W1 ELEVATION OF LEFT WING



W2 ELEVATION OF RIGHT WING



SECTION C-C



SECTION D-D

PROJECT NO. R-4906
 PERSON COUNTY
 STATION: 14+93.50 -L-

REPLACES BRIDGE NO. 86 SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2

34'-0" CLEAR ROADWAY - 135° SKEW

PLANS PREPARED BY:

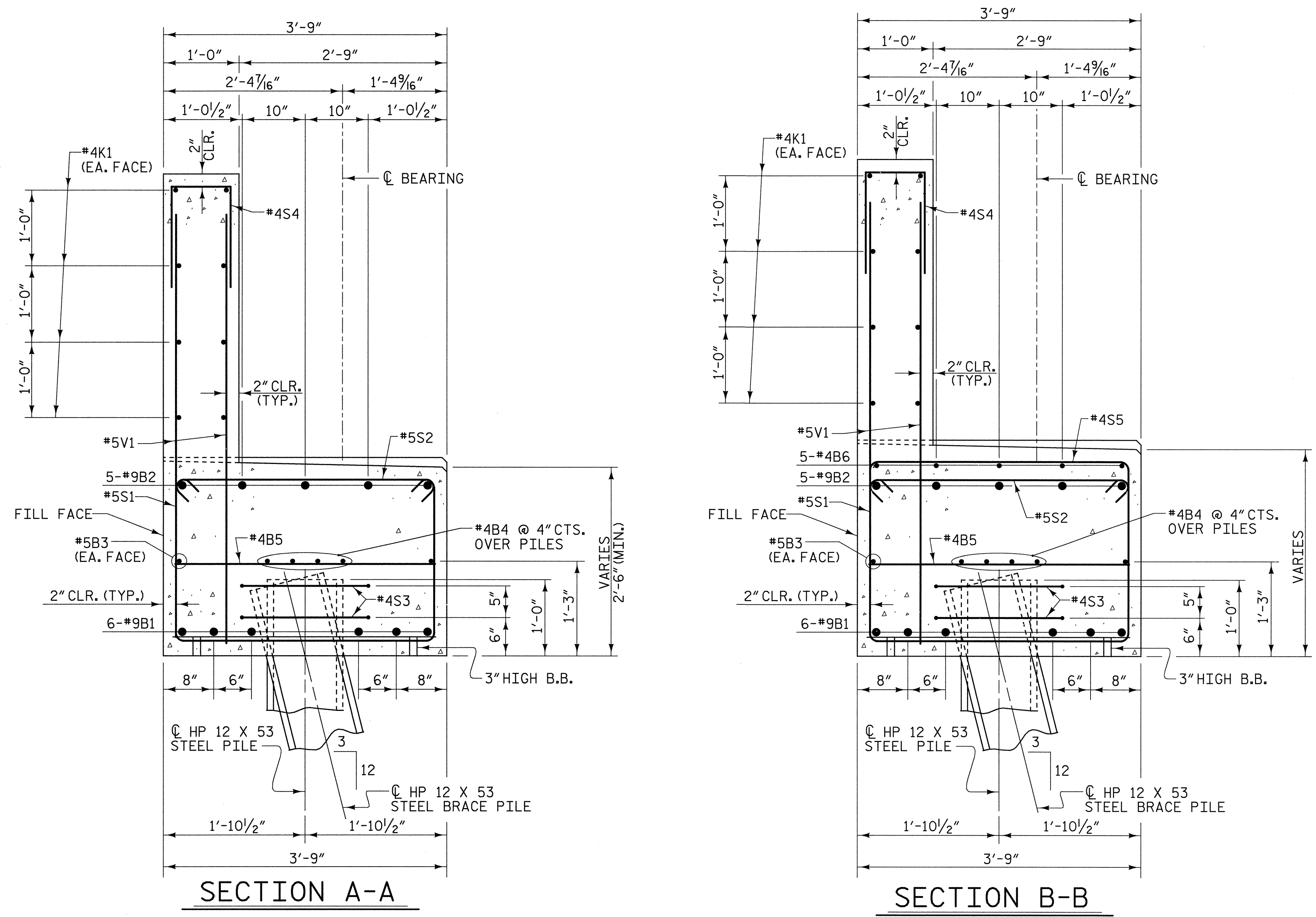
MULKEY
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 Raleigh, N.C. 27636
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
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2			4			50

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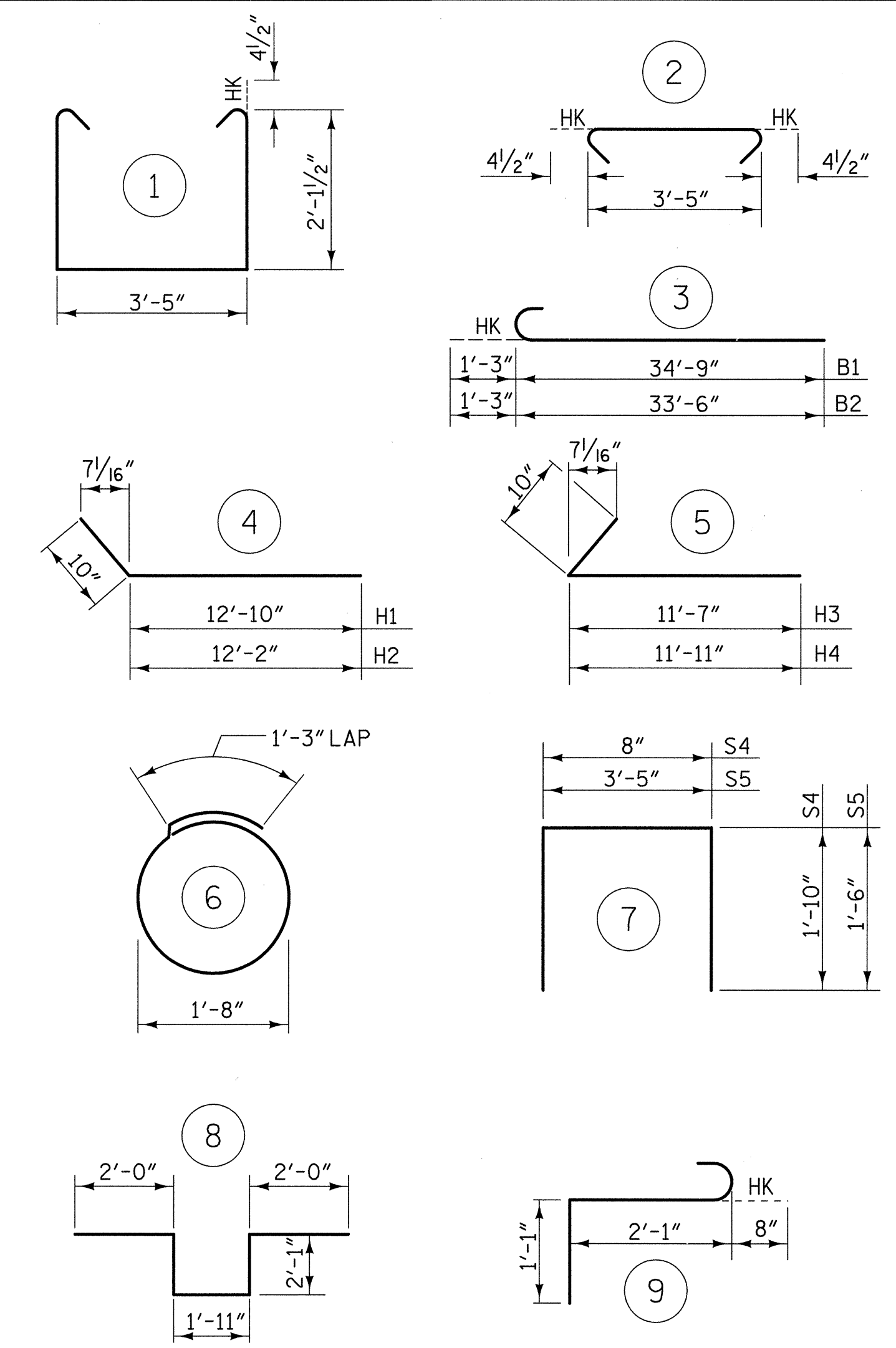
DRAWN BY: J. A. CAVER DATE: 06/07
 CHECKED BY: H. S. ELLIOTT DATE: 06/07



SECTION A-A

SECTION B-B

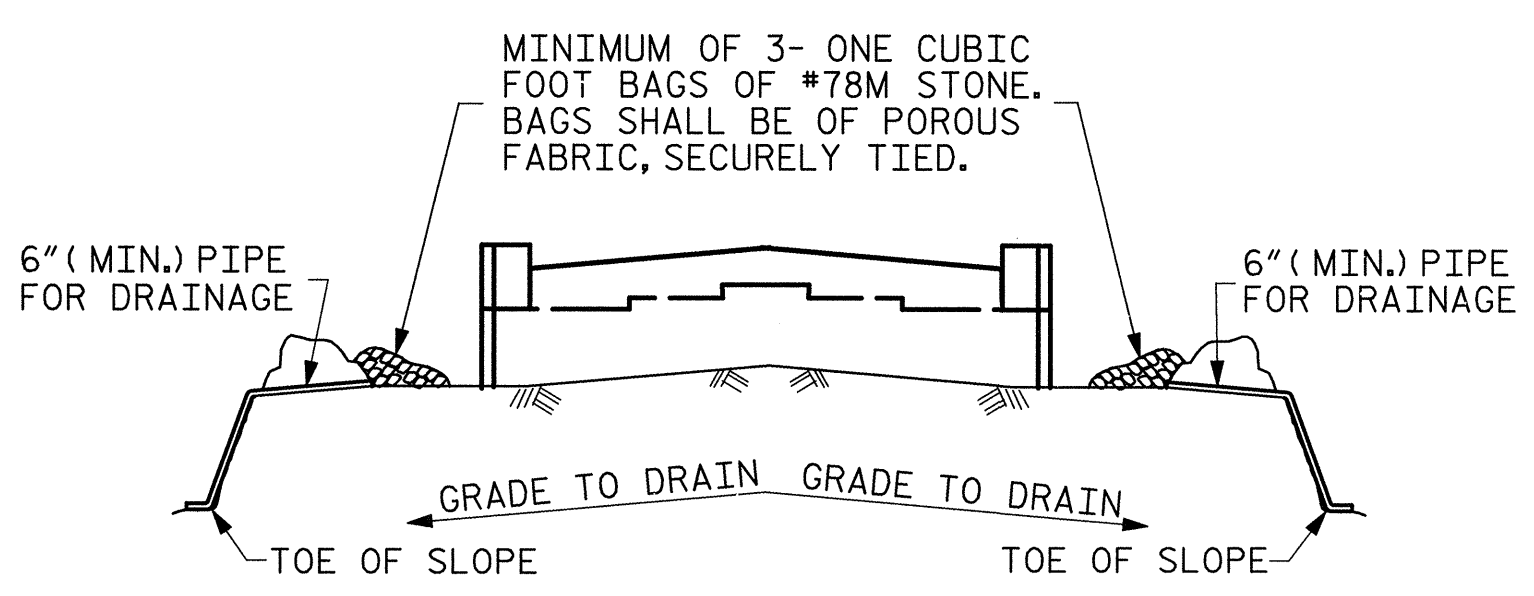
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR END BENT 2					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	12	#9	3	36'-0"	1469
B2	10	#9	3	34'-9"	1182
B3	4	#5	STR	31'-11"	133
B4	12	#4	STR	21'-11"	176
B5	15	#4	STR	3'-5"	34
B6	10	#4	STR	21'-0"	140
H1	9	#5	4	13'-8"	128
H2	9	#5	4	13'-0"	122
H3	9	#5	5	12'-5"	117
H4	9	#5	5	12'-9"	120
K1	24	#4	STR	21'-11"	351
S1	64	#5	1	8'-5"	562
S2	64	#5	2	4'-2"	278
S3	18	#4	6	6'-6"	78
S4	51	#5	7	4'-4"	231
S5	37	#4	7	6'-5"	159
S6	2	#4	8	10'-1"	13
S7	6	#4	9	3'-10"	15
V1	102	#5	STR	5'-9"	612
V2	36	#5	STR	7'-5"	278
V3	35	#5	STR	7'-7"	277
TOTAL REINFORCING STEEL =					6475 lbs.
CLASS "A" CONCRETE - CU. YARDS					
POUR 1				25.3	cu. yds.
POUR 2				13.7	cu. yds.
TOTAL				39.0	cu. yds.
HP 12 X 53 STEEL PILES					
11 PILES REQUIRED - LIN. FEET					165



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

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

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

TEMPORARY DRAINAGE AT END BENT

PROJECT NO. R-4906
 PERSON COUNTY
 STATION: 14+93.50 -L-

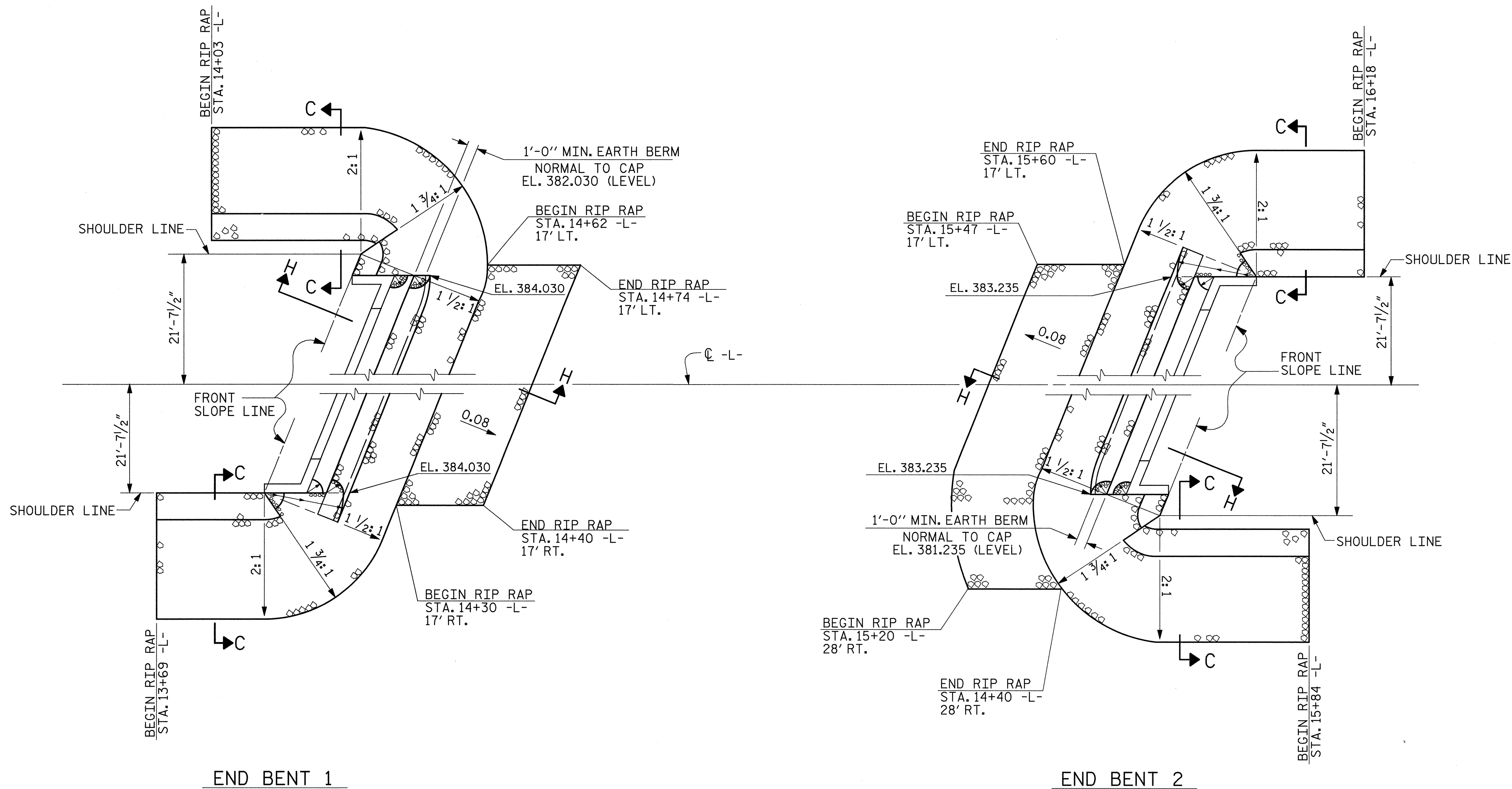
REPLACES BRIDGE NO. 86 SHEET 3 OF 3



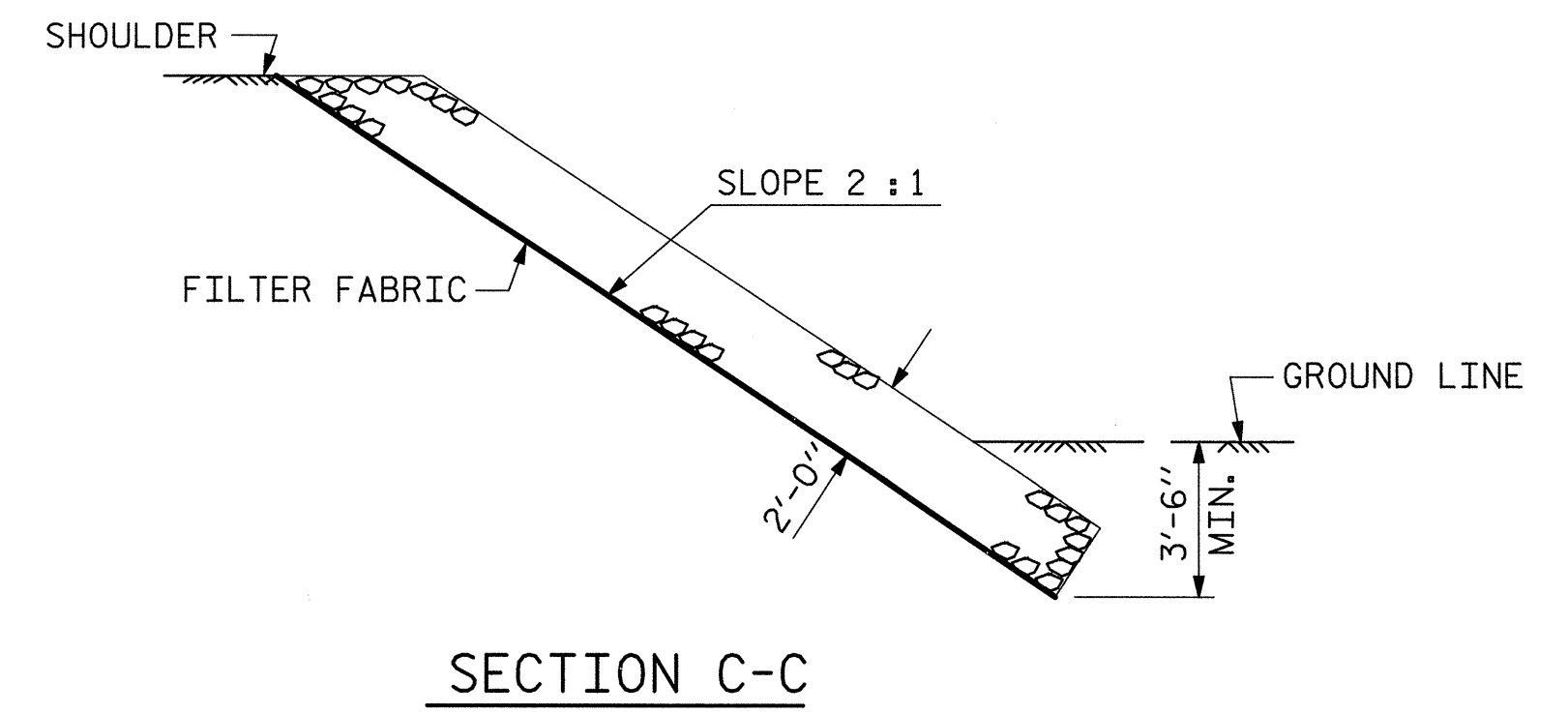
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 2					
34'-0" CLEAR ROADWAY - 135° SKEW					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-21
					TOTAL SHEETS 50

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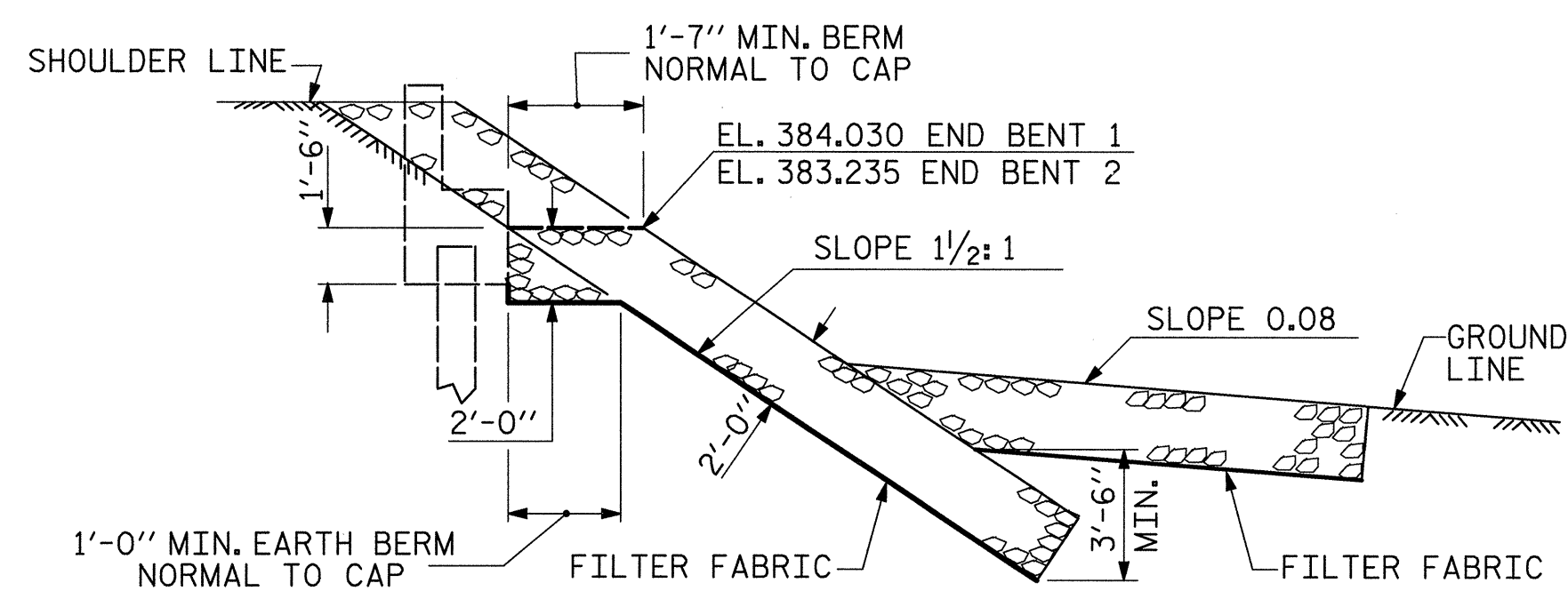
DRAWN BY: J. A. CAVER DATE: 06/07
 CHECKED BY: H. S. ELLIOTT DATE: 06/07



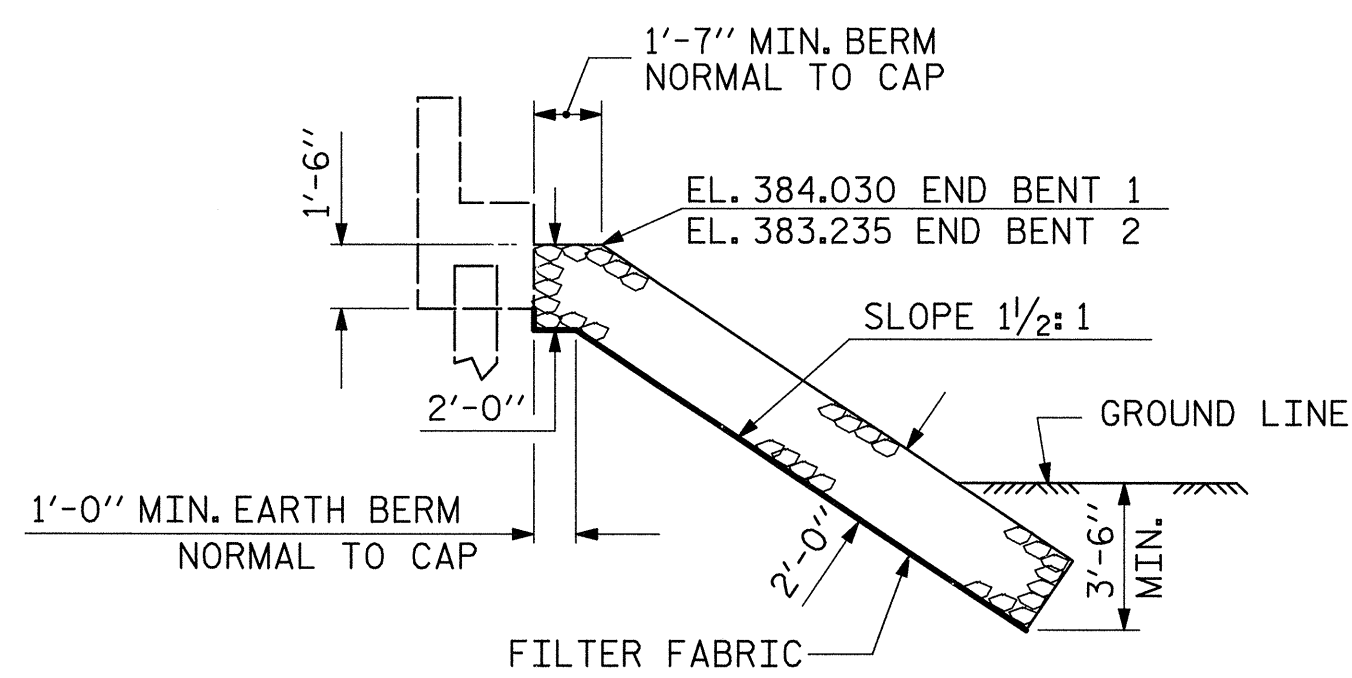
PLAN



SECTION C-C



SECTION H-H



SECTION Q
BERM RIP RAPPED

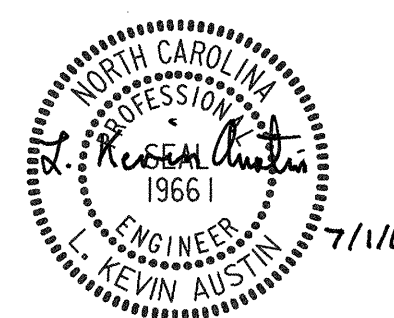
ESTIMATED QUANTITIES		
BRIDGE @ STA. 14+93.50 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	275	305
END BENT 2	245	275

PROJECT NO. R-4906
 PERSON _____ COUNTY _____
 STATION: 14+93.50 -L-

REPLACES BRIDGE NO. 86

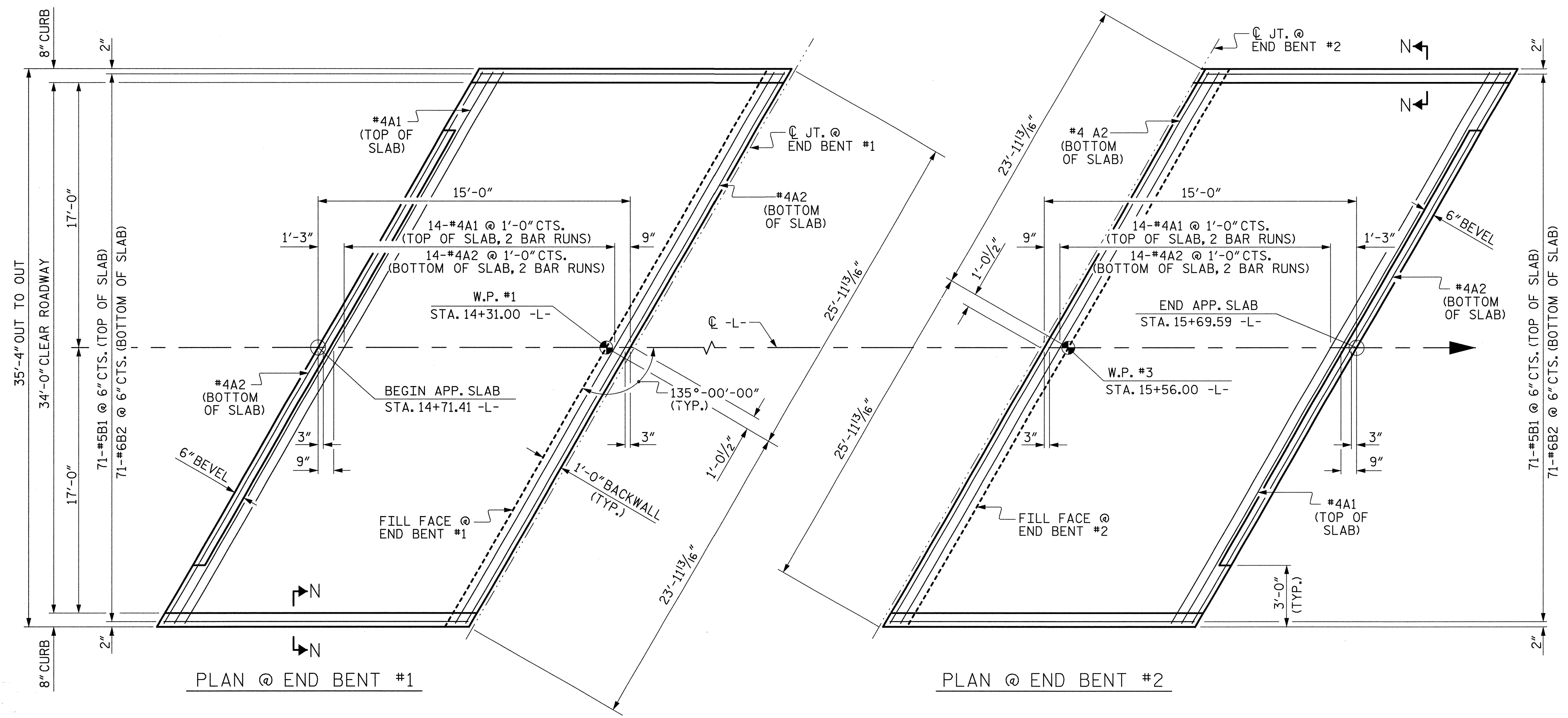
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 —RIP RAP DETAILS—

THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:



ASSEMBLED BY : W. B. ALLEN	DATE : 3/08
CHECKED BY : R. V. KEITH	DATE : 3/08
DRAWN BY : REK 1/84	REV. 8/16/99 RWN/LES
CHECKED BY : RDU 1/84	REV. 10/17/00 RWN/LES
	REV. 5/1/06 TLA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			50



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

BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	30	#4	STR	25'-9"	516
A2	32	#4	STR	25'-8"	549
*B1	71	#5	STR	13'-10"	1024
B2	71	#6	STR	14'-6"	1546
REINFORCING STEEL				LBS.	2095
* EPOXY COATED REINFORCING STEEL				LBS.	1540
CLASS AA CONCRETE				C. Y.	20.6
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	30	#4	STR	25'-9"	516
A2	32	#4	STR	25'-8"	549
*B1	71	#5	STR	13'-10"	1024
B2	71	#6	STR	14'-6"	1546
REINFORCING STEEL				LBS.	2095
* EPOXY COATED REINFORCING STEEL				LBS.	1540
CLASS AA CONCRETE				C. Y.	20.6

NOTES

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

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

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

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

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

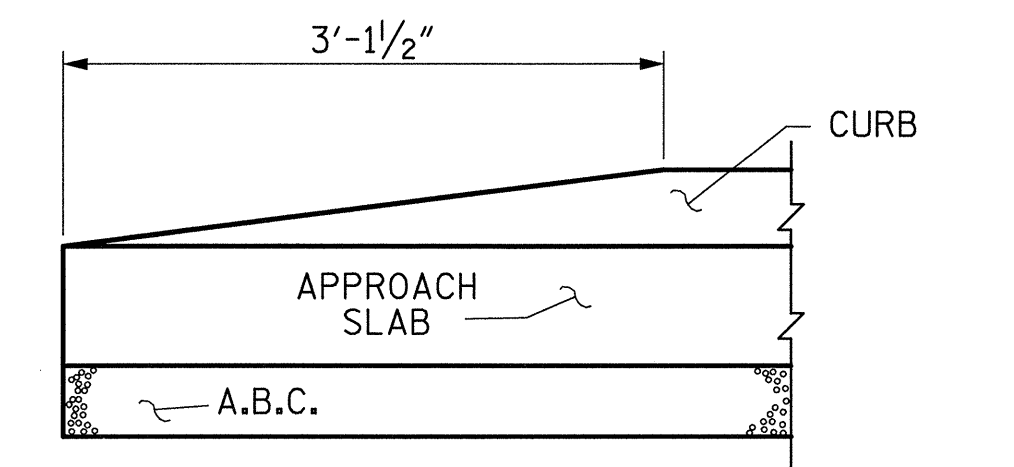
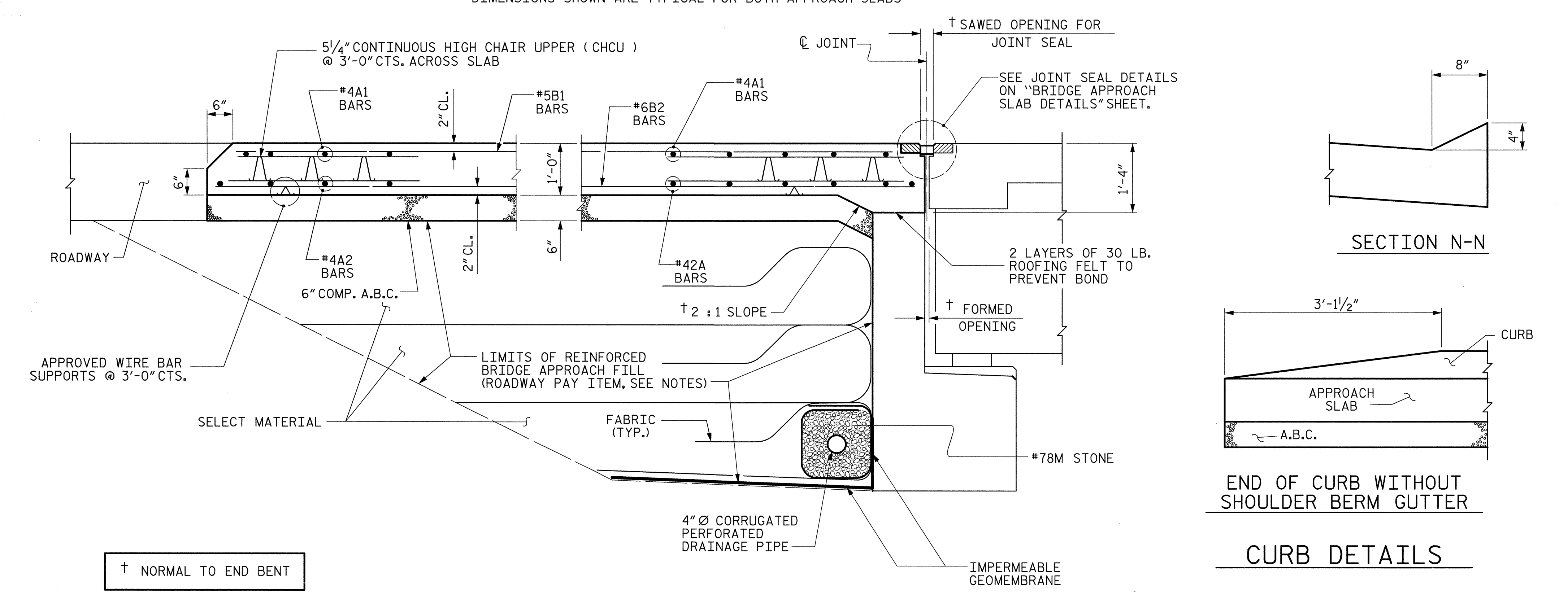
THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER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

THE JOINT SHALL BE SAWS PRIOR TO THE CASTING OF THE BARRIER RAIL.

FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

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

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

SECTION THRU SLAB

ASSEMBLED BY :	W. B. ALLEN	DATE :	02/08
CHECKED BY :	R. V. KEITH	DATE :	02/08
DRAWN BY :	EEM 3/95	REV. 7/10/01	LES/RDR
CHECKED BY :	VAP 3/95	REV. 5/7/03R	RWW/JTE
		REV. 5/1/06R	KMM/GM

PLANS PREPARED BY:

MULKEY
ENGINEERS & CONSULTANTS

PO BOX 33127
RALEIGH, N.C. 27636
(919) 851-1918 (FAX)
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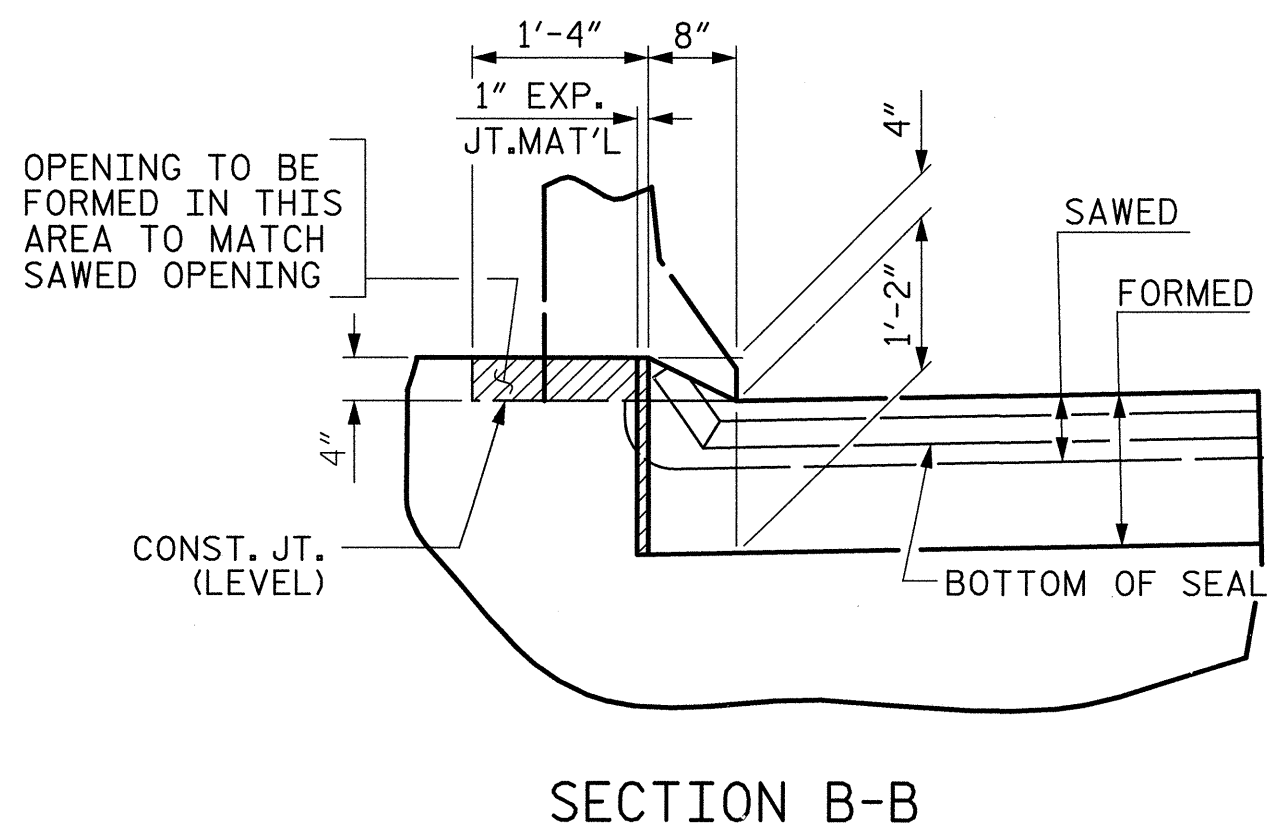
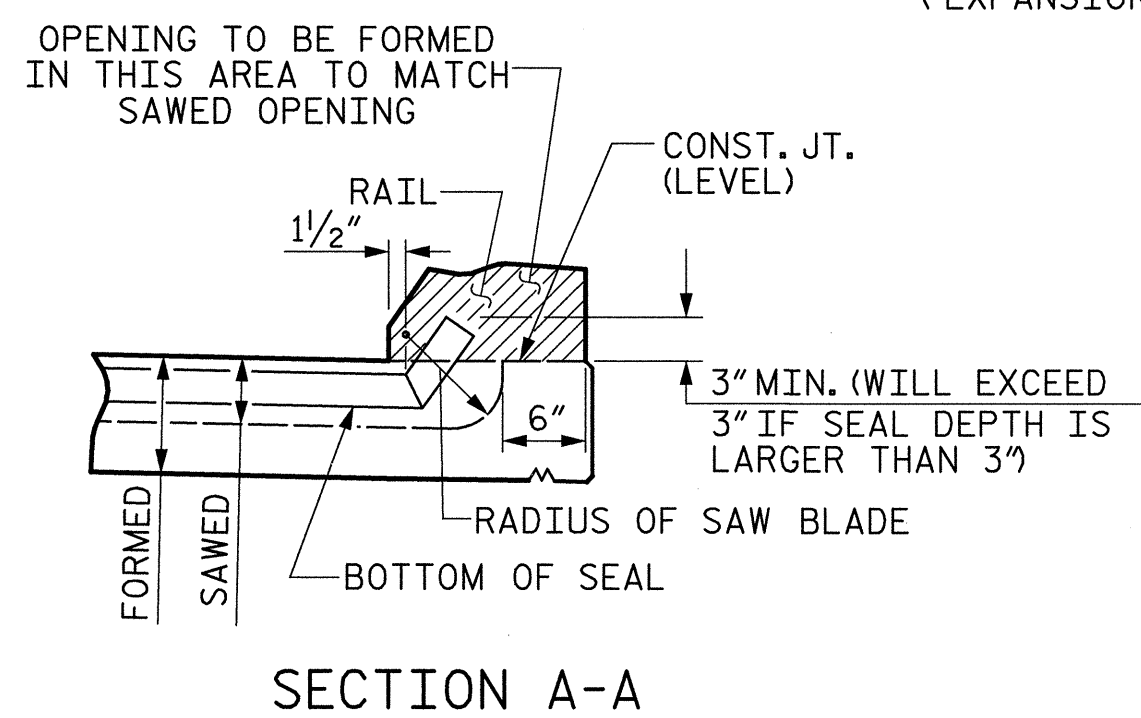
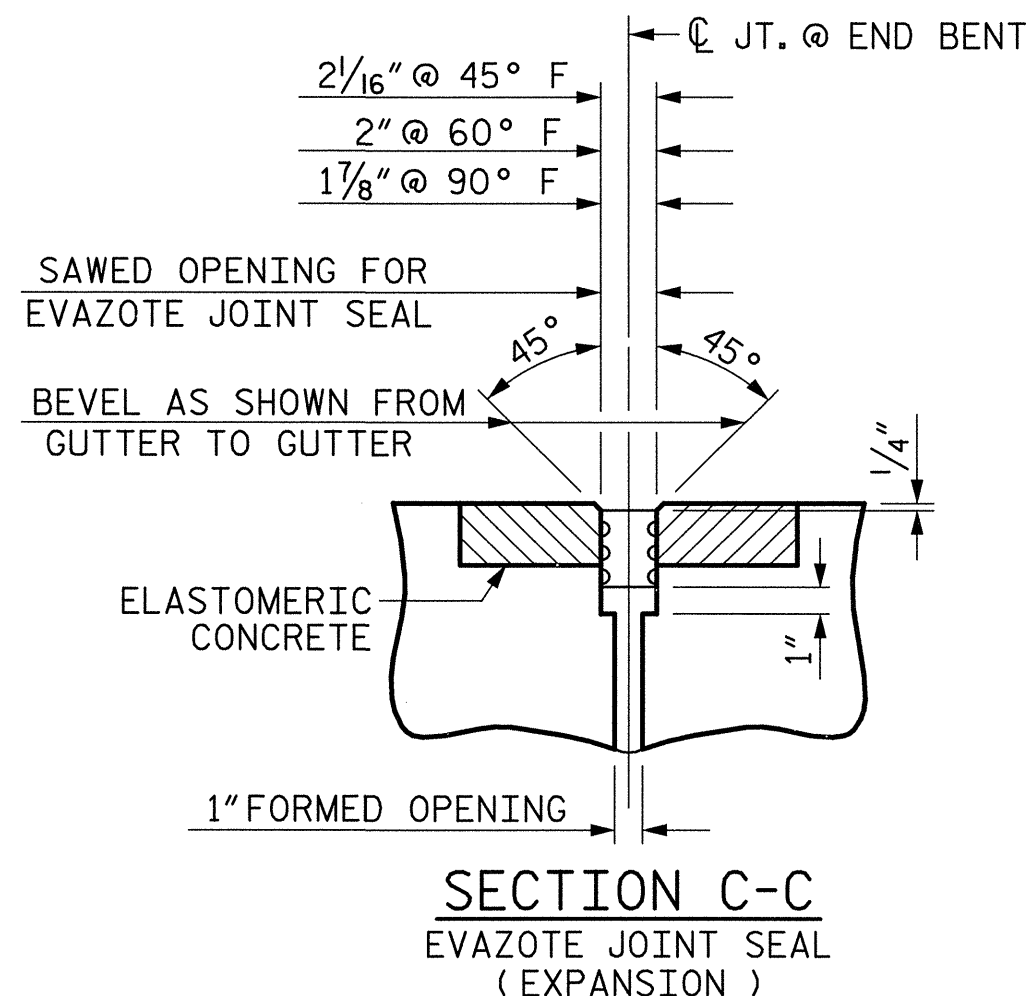
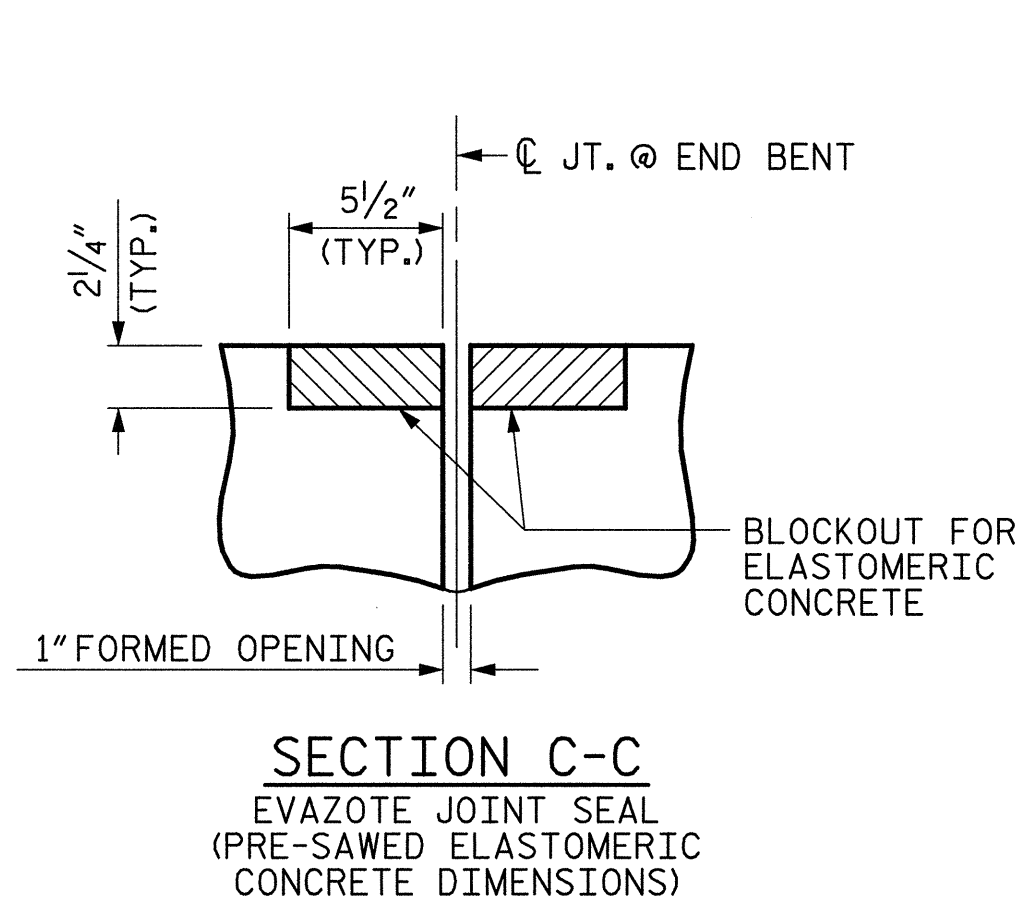
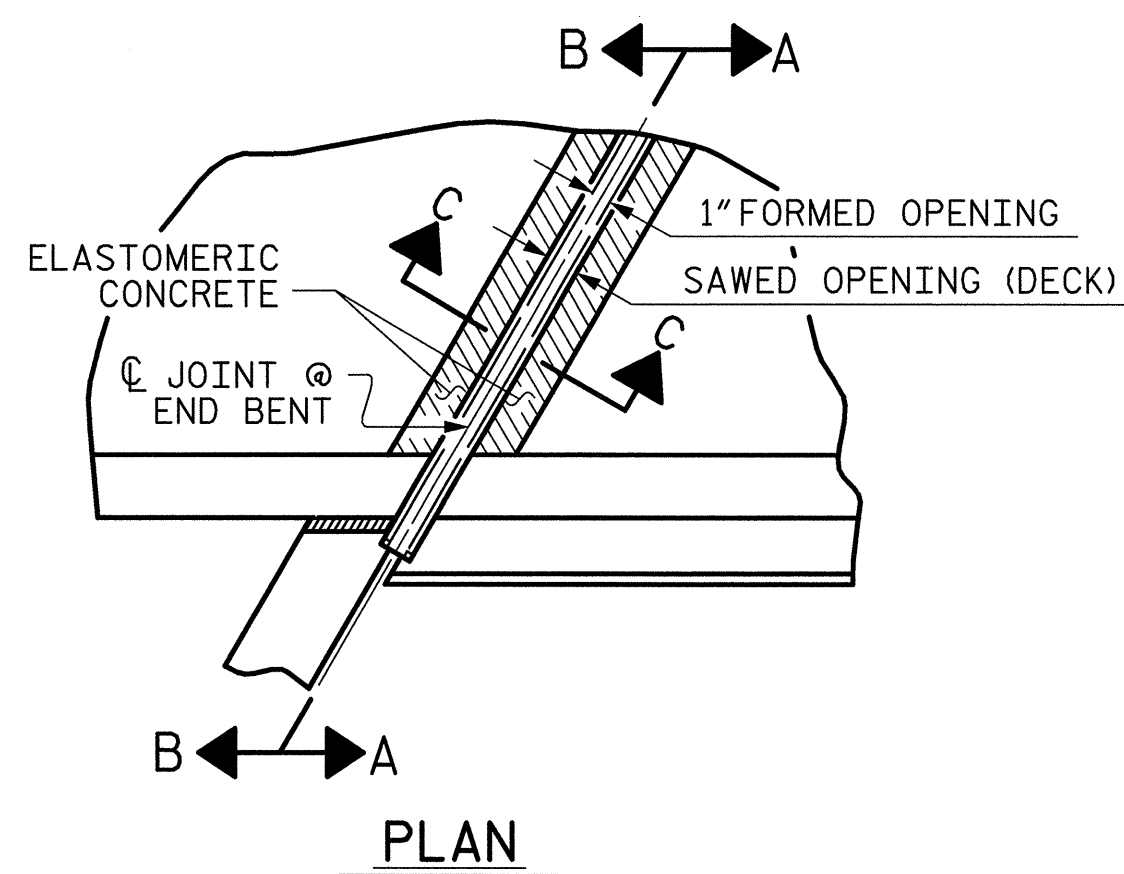
PROJECT NO. R-4906

PERSON _____ COUNTY _____

STATION: 14+93.50 -L-

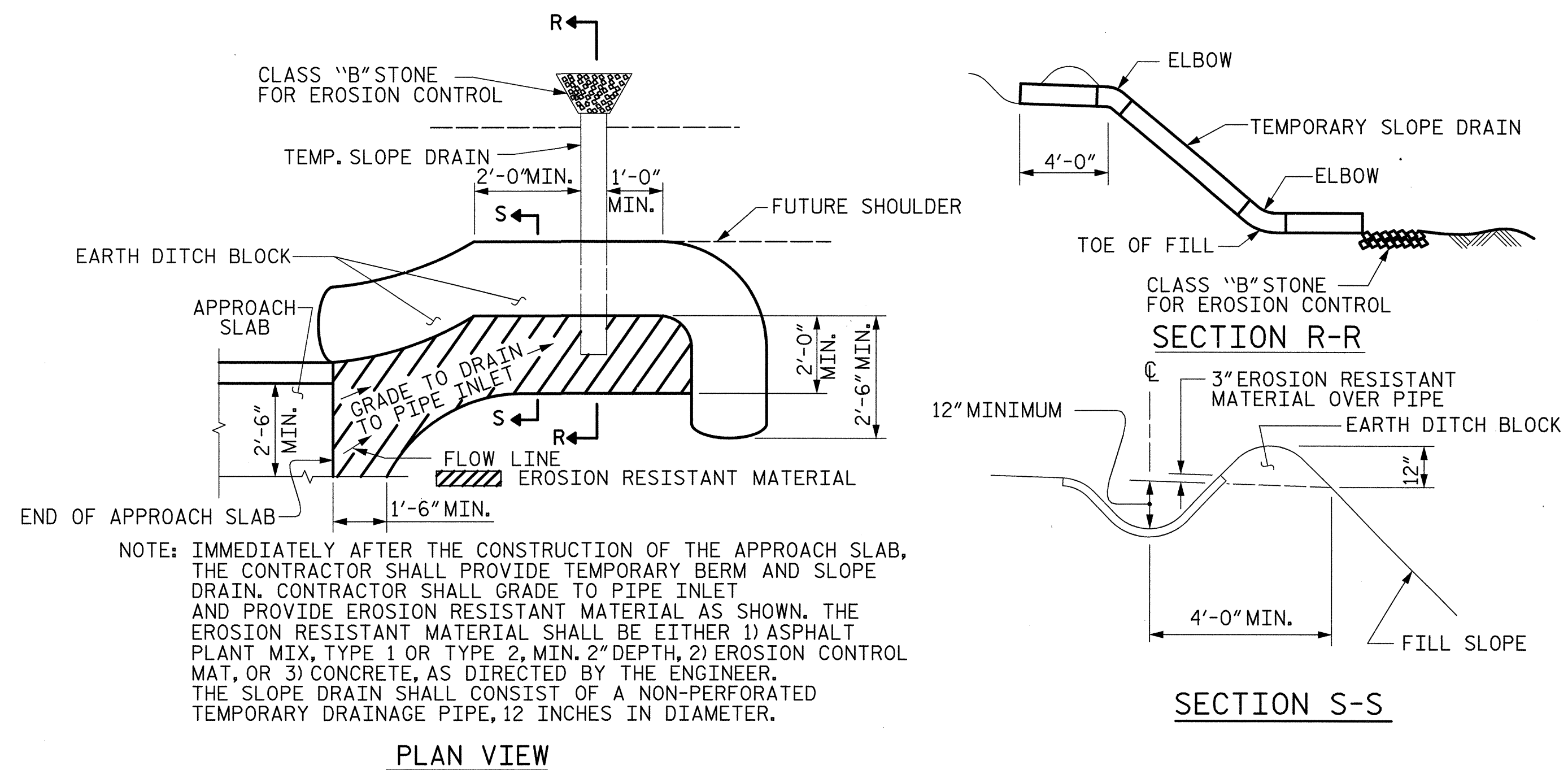
REPLACES BRIDGE NO. 86 SHEET 1 OF 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			50



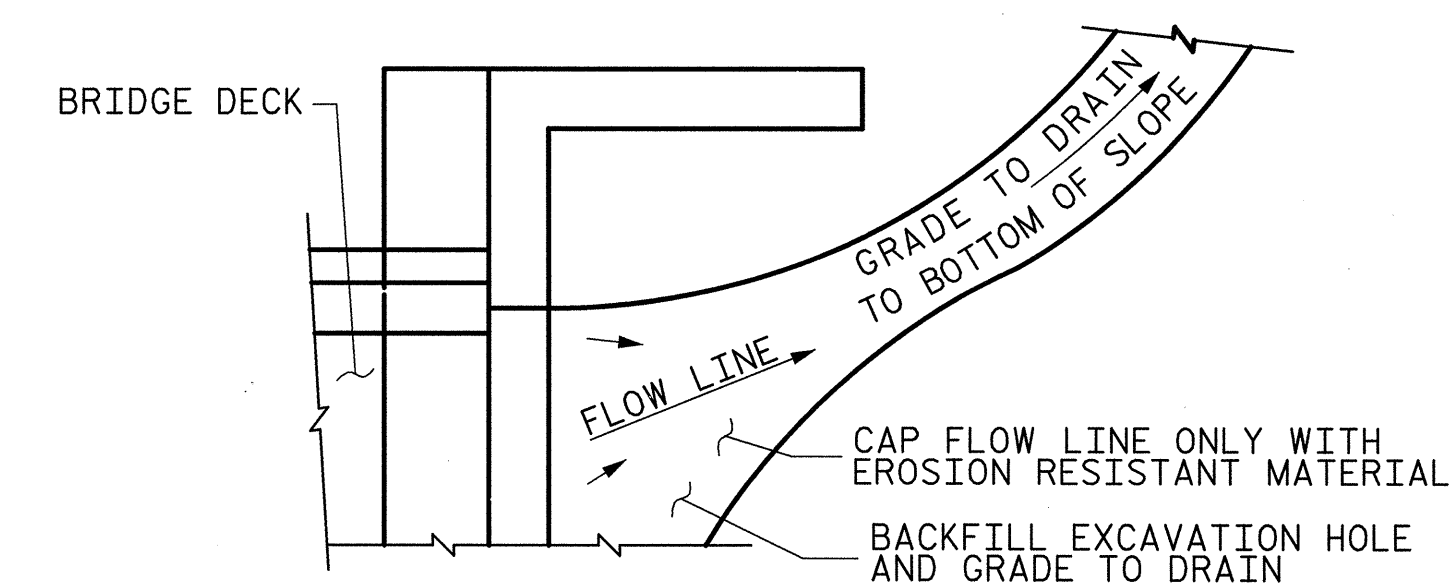
JOINT SEAL DETAILS @ END BENT

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



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

TEMPORARY BERM AND SLOPE DRAIN DETAILS



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

TEMPORARY DRAINAGE DETAIL

ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	8.5
2	8.5
TOTAL	17.0

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

PROJECT NO. R-4906
PERSON _____ COUNTY _____
STATION: 14+93.50 -L-

REPLACES BRIDGE NO. 86 SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

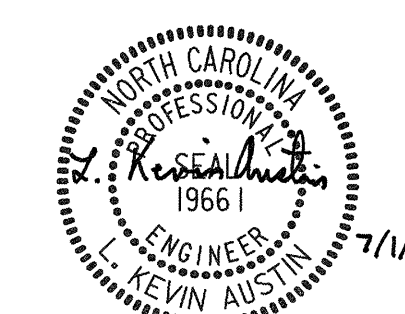
STANDARD
BRIDGE APPROACH
SLAB DETAILS

34'-0" CLEAR ROADWAY - 135° SKEW

1988

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS 50
2			4			

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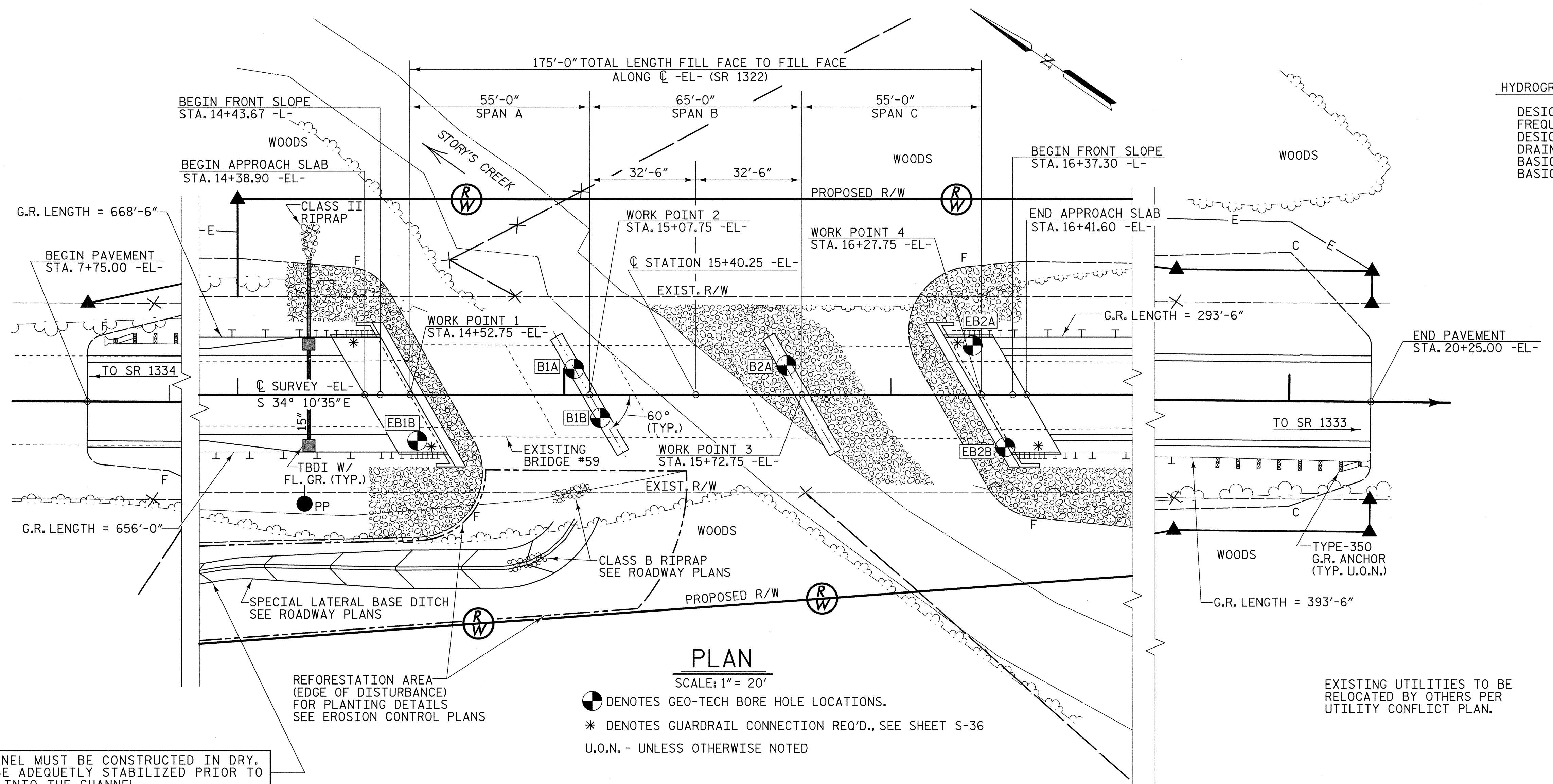
PLANS PREPARED BY:

MULKEY
ENGINEERS & CONSULTANTS

PO BOX 32137
RALEIGH, N.C. 27636
(919) 851-1512
(919) 851-1518 (FAX)
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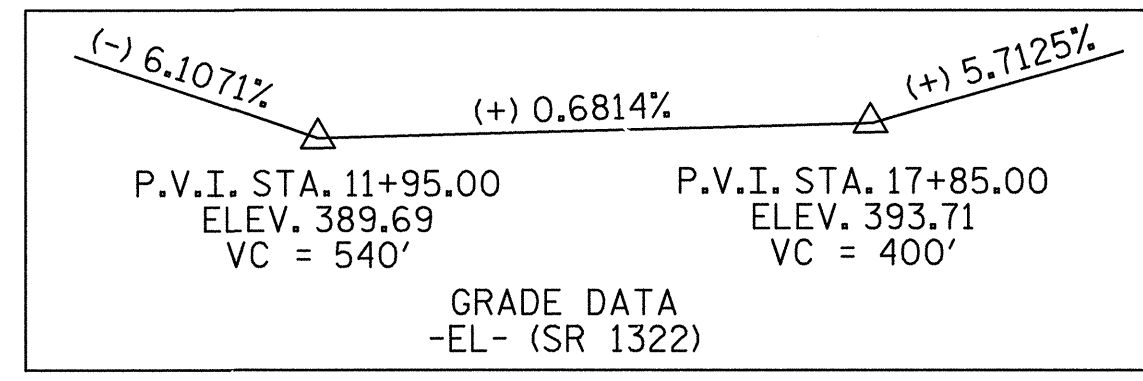
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ASSEMBLED BY : J. A. CAVER DATE : 07/07
CHECKED BY : H. S. ELLIOTT DATE : 07/07
DRAWN BY : FCJ 11/88 REV. 10/17/00 RWW/LES
CHECKED BY : ARB 11/88 REV. 5/7/03 RWW/JTE
REV. 5/1/06 TLA/GM

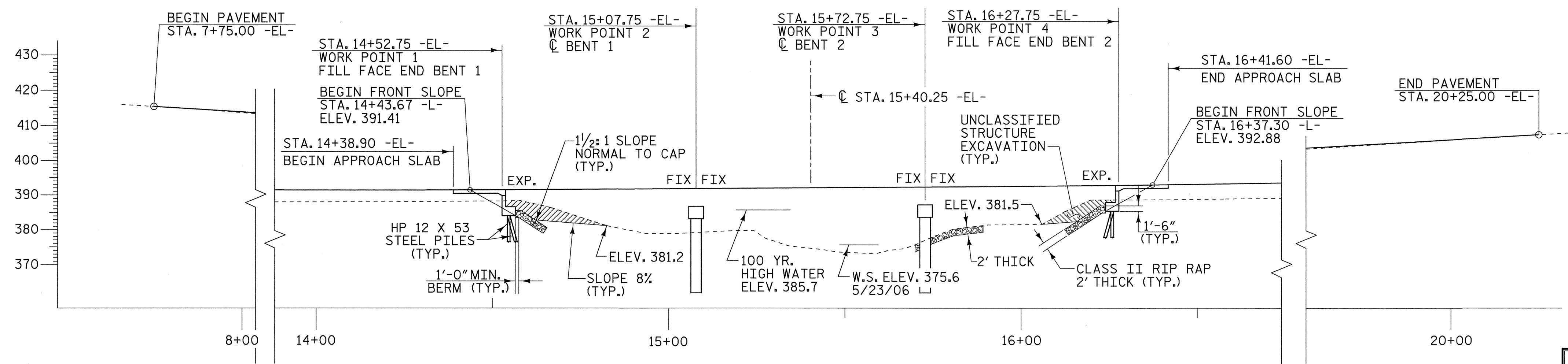


HYDROGRAPHIC DATA:

DESIGN DISCHARGE -	2900 CFS
FREQUENCY OF DESIGN FLOOD -	25 YEAR
DESIGN HIGH WATER ELEVATION -	384.4
DRAINAGE AREA -	16.9 SQ. MI.
BASIC DISCHARGE (Q 100) -	4400 CFS
BASIC HIGH WATER ELEVATION -	385.7



RELOCATED CHANNEL MUST BE CONSTRUCTED IN DRY. CHANNEL MUST BE ADEQUETLY STABILIZED PRIOR TO TURNING WATER INTO THE CHANNEL



PROJECT NO. R-4906

PERSON COUNTY

STATION: 15+40.25 -EL-

REPLACES BRIDGE NO. 59

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE ON SR 1322 OVER STORY'S CREEK BETWEEN SR 1334 & SR 1333

35'-0" CLEAR ROADWAY - 60° SKEW



PLANS PREPARED BY:

MULKEY
ENGINEERS & CONSULTANTS

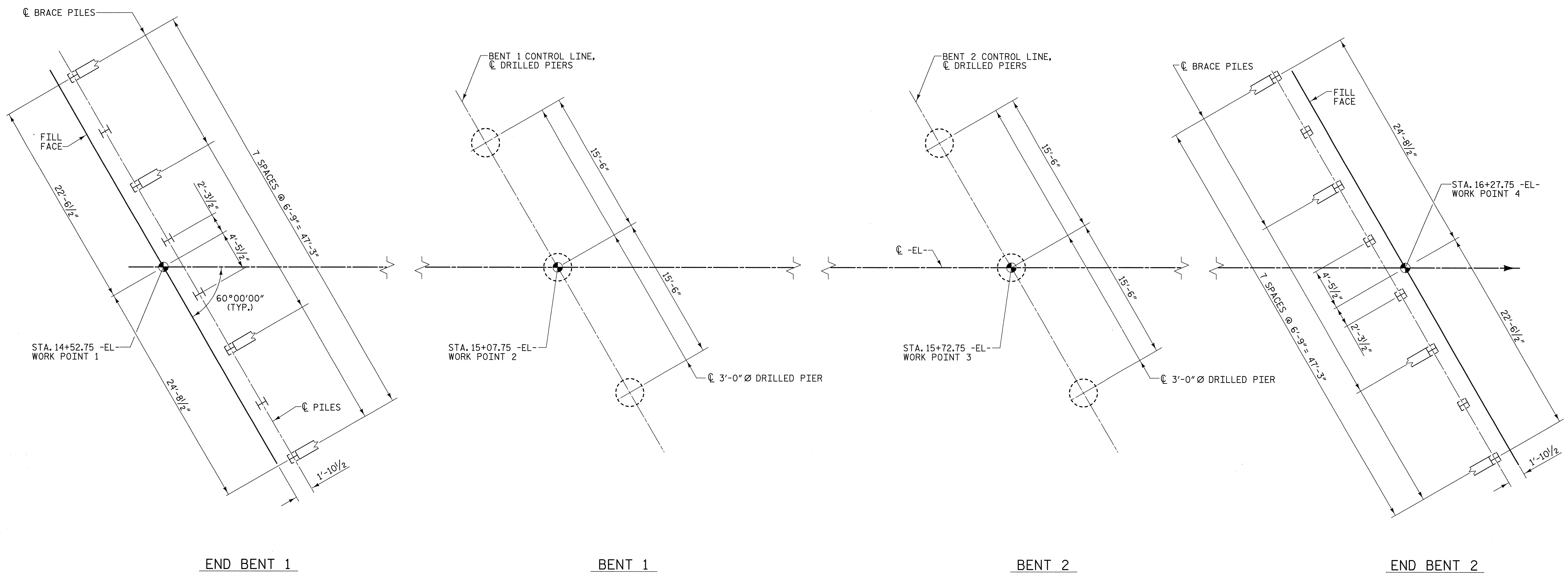
PO BOX 33127
RALEIGH, N.C. 27636
(919) 851-1918 (FAX)
WWW.MULKEYINC.COM

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25	
1			3			TOTAL SHEETS	50
2			4				

DRAWN BY: J. A. CAVER DATE: 04/07

CHECKED BY: H. S. ELLIOTT DATE: 05/07

6/22/2009 8:33:01 AM R:\S\Structure\Draws\14906\59\SR_1322.dwg



FOUNDATION LAYOUT

NOTES

ALL PILES ARE HP 12 x 53.

ALL END BENT BRACE PILES ARE BATTERED AT 3:12.

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE AT THE BOTTOM OF THE CAP.

DRIVE PILES AT END BENTS No.1 AND 2 TO A REQUIRED BEARING CAPACITY OF 90 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO. THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENTS No.1 AND 2 IS 45 TONS PER PILE.

DRILLED PIERS AT BENTS No.1 AND 2 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 25 TSF. DRILLED PIERS AT BENTS No.1 AND 2 ARE DESIGNED FOR AN APPLIED LOAD OF 190 TONS AT THE TOP OF COLUMN.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENTS No.1 AND 2. IF REQUIRED, DO NOT EXTEND THE CASING BELOW ELEVATION 371 FEET AND 368.5 FEET, RESPECTIVELY WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING. SEE DRILLED PIER SPECIAL PROVISION.

DRILLED PIERS AT BENTS No.1 AND 2 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 362 FEET AND SATISFY THE REQUIRED END BEARING CAPACITY. THE SCOUR CRITICAL ELEVATION FOR BENTS No.1 AND 2. IS ELEVATION 369 FEET AND 366.5 FEET RESPECTIVELY. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

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

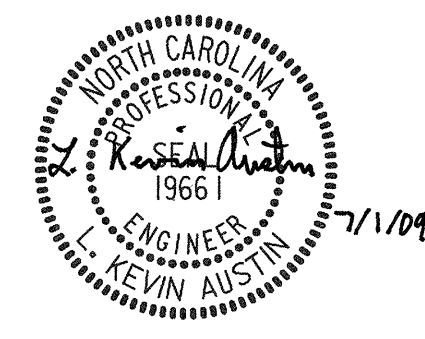
DO NOT USE SLURRY CONSTRUCTION FOR DRILLED PIERS AT BENTS No.1 AND 2.

DO NOT USE POLYMER SLURRY FOR DRILLED PIERS AT BENTS No.1 AND 2.

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

PROJECT NO. R-4906
 PERSON _____ COUNTY _____
 STATION: 15+40.25 -EL-

REPLACES BRIDGE NO. 59



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

FOUNDATION LAYOUT

35'-0" CLEAR ROADWAY - 60°SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			50

6/22/2009 8:32:37 AM R:\Structure\4906\591_SD_FL_01.dgn

DRAWN BY: W. B. ALLEN DATE: 03/08
 CHECKED BY: R. V. KEITH DATE: 03/08

TOTAL BILL OF MATERIAL

	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" DIA. DRILLED PIER	CROSSHOLE SONIC LOGGING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS "A" CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	45" PRESTRESSED CONCRETE GIRDERS	HP 12 X 53 STEEL PILES	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS		
	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	LUMP SUM	SQ. FEET	SQ. FEET	CU. YARDS	LUMP SUM	LBS.	LBS.	NO. FEET	NO. LIN. FT.	LIN. FT.	TONS	SQ. YARDS	LUMP SUM	LUMP SUM		
SUPERSTRUCTURE							6602	6338		LUMP SUM			12	677.58		345			LUMP SUM	LUMP SUM	
END BENT 1									31.9		4873			8	160		155	172			
BENT 1		37.5	27.0	37.4	1				19.0		6228	1197									
BENT 2		44.8	21.0	46.2	1				19.0		6282	1219					190	208			
END BENT 2									33.0		5079			8	160		220	240			
TOTAL	LUMP SUM	82.3	48.0	83.6	2	LUMP SUM	6602	6338	102.9	LUMP SUM	22,462	2416	12	677.58	16	320	345	565	620	LUMP SUM	LUMP SUM

GENERAL NOTES

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING, EXCEPT THAT GIRDERS HAVE BEEN DESIGNED FOR HS 25.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

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 THE 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 35 FT. LEFT AND RIGHT OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION.

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

THE EXISTING STRUCTURE CONSISTING OF 5 SPANS (32'-3", 31'-1", 25'-1", 31'-1", 32'-3") OF STEEL PLANK FLOOR ON I-BEAMS WITH CLEAR ROADWAY WIDTH OF 28' ON REINFORCED CONCRETE CAPS WITH STEEL PILES AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT.

CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNANCE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THE SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.

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 CATEGORY A.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE".

NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

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.

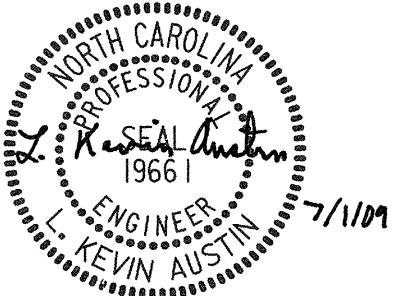
FOR BERM ELEVATIONS, SEE "RIP RAP DETAILS" SHEET.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

ADT = 530 FOR YEAR 2001.

PROJECT NO. R-4906
 _____ PERSON _____ COUNTY
 STATION: 15+40.25 -EL-

REPLACES BRIDGE NO. 59

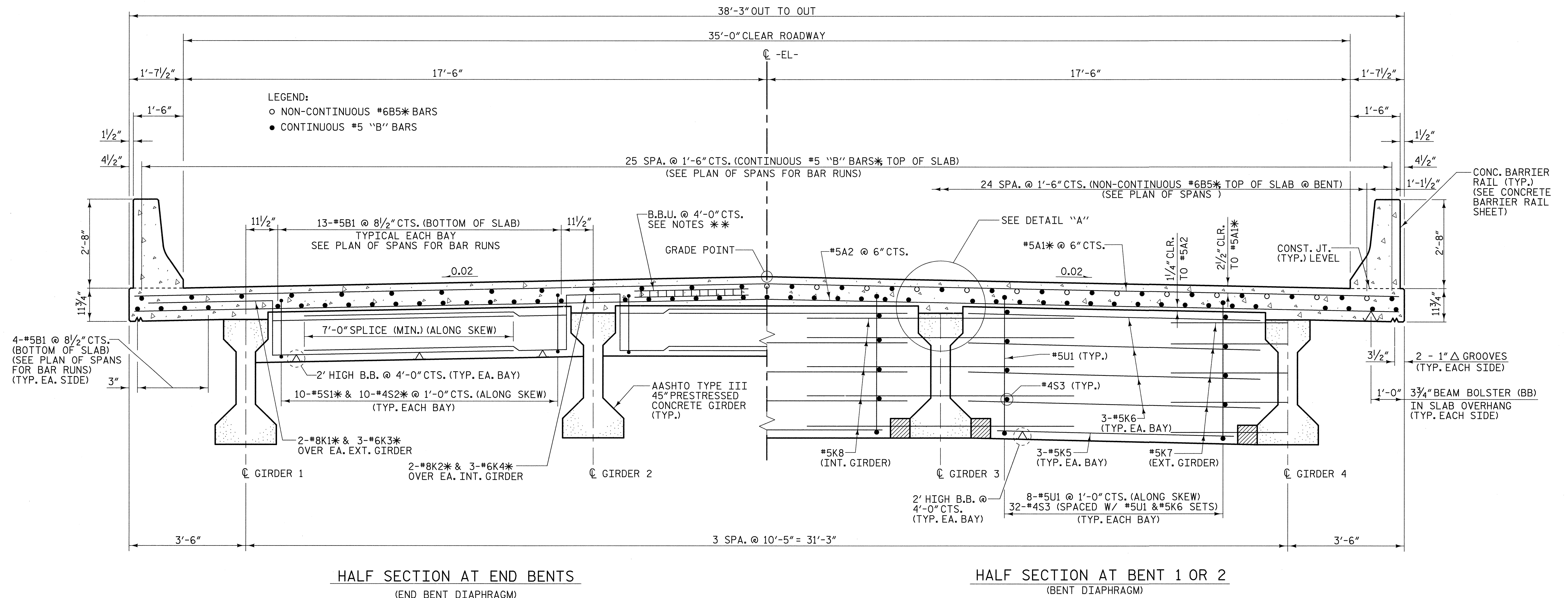


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
TOTAL BILL OF MATERIAL & GENERAL NOTES
 35'-0" CLEAR ROADWAY - 60° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			50

DRAWN BY : W. B. ALLEN DATE : 03/08
 CHECKED BY : R. V. KEITH DATE : 03/08

6/23/2009 7:30:46 AM R:\Structure\4906\59\SD_GD_02.dgn



LEGEND:
 ○ NON-CONTINUOUS #6B5* BARS
 ● CONTINUOUS #5 "B" BARS

25 SPA. @ 1'-6" CTS. (CONTINUOUS #5 "B" BARS* TOP OF SLAB)
 (SEE PLAN OF SPANS FOR BAR RUNS)

24 SPA. @ 1'-6" CTS. (NON-CONTINUOUS #6B5* TOP OF SLAB @ BENT)
 (SEE PLAN OF SPANS)

13-#5B1 @ 8 1/2" CTS. (BOTTOM OF SLAB)
 TYPICAL EACH BAY
 SEE PLAN OF SPANS FOR BAR RUNS

B.B.U. @ 4'-0" CTS.
 SEE NOTES **

SEE DETAIL "A"
 #5A1* @ 6" CTS.

CONST. JT.
 (TYP.) LEVEL

4-#5B1 @ 8 1/2" CTS.
 (BOTTOM OF SLAB)
 (SEE PLAN OF SPANS
 FOR BAR RUNS)
 (TYP. EA. SIDE)

2' HIGH B.B. @ 4'-0" CTS. (TYP. EA. BAY)

10-#5S1* & 10-#4S2* @ 1'-0" CTS. (ALONG SKEW)
 (TYP. EACH BAY)

AASHTO TYPE III
 45" PRESTRESSED
 CONCRETE GIRDER
 (TYP.)

#5U1 (TYP.)

#4S3 (TYP.)

3-#5K6
 (TYP. EA. BAY)

GIRDER 1

2-#8K2* & 3-#6K4*
 OVER EA. INT. GIRDER

GIRDER 2

2' HIGH B.B. @
 4'-0" CTS.
 (TYP. EA. BAY)

8-#5U1 @ 1'-0" CTS. (ALONG SKEW)
 32-#4S3 (SPACED W/ #5U1 & #5K6 SETS)
 (TYP. EACH BAY)

#5K8
 (INT. GIRDER)

GIRDER 3

3-#5K5
 (TYP. EA. BAY)

#5K7
 (EXT. GIRDER)

GIRDER 4

2 - 1" Δ GROOVES
 (TYP. EACH SIDE)

3 3/4" BEAM BOLSTER (BB)
 IN SLAB OVERHANG
 (TYP. EACH SIDE)

HALF SECTION AT END BENTS
 (END BENT DIAPHRAGM)

HALF SECTION AT BENT 1 OR 2
 (BENT DIAPHRAGM)

TYPICAL SECTION

NOTES:

PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER (BBU) AT 4'-0" CENTERS ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS.

WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.

FOR REINFORCING STEEL BARS INDICATED, BUT NO MARK SHOWN SEE PLAN OF SPANS.

BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI.

LONGITUDINAL STEEL MAY BE SHIFTED AS NECESSARY TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

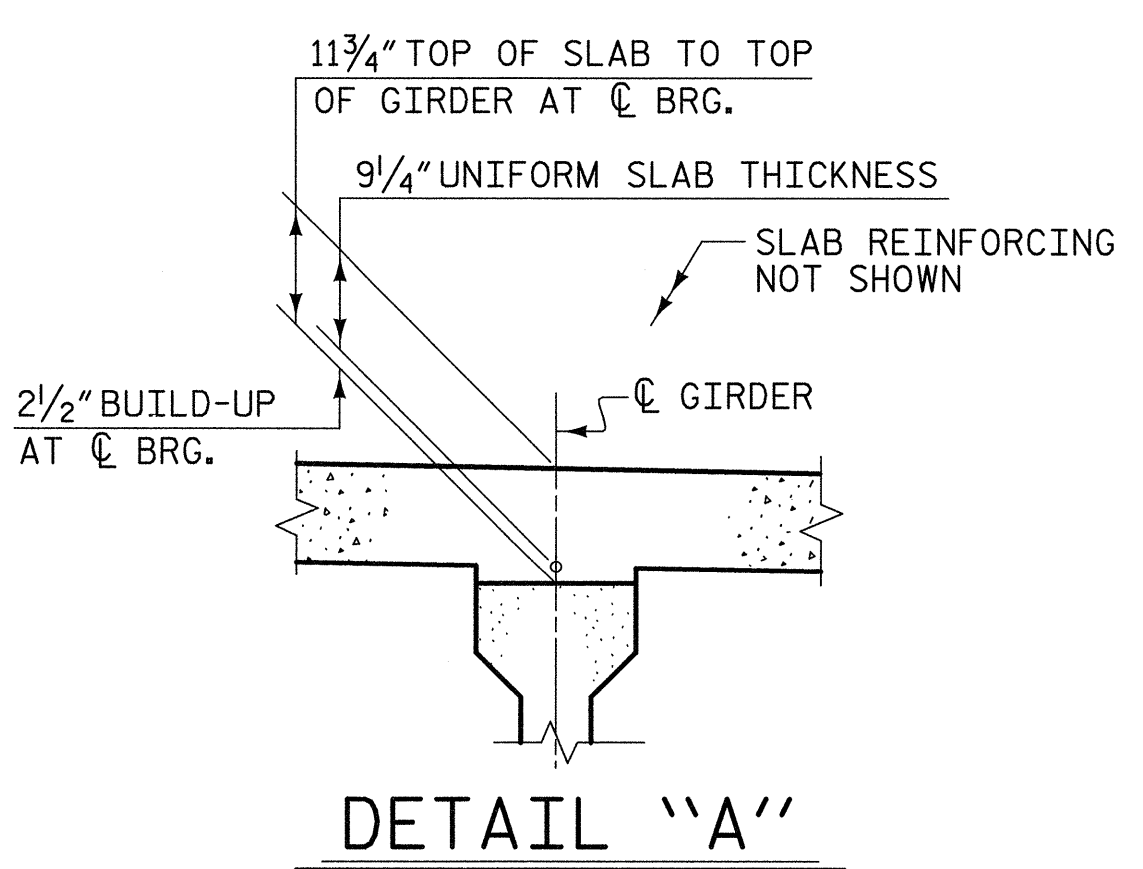
FOR STEEL INTERMEDIATE DIAPHRAGM DETAILS, SEE INTERMEDIATE STEEL DIAPHRAGM SHEET.

* INDICATES EPOXY COATED REINFORCING STEEL.

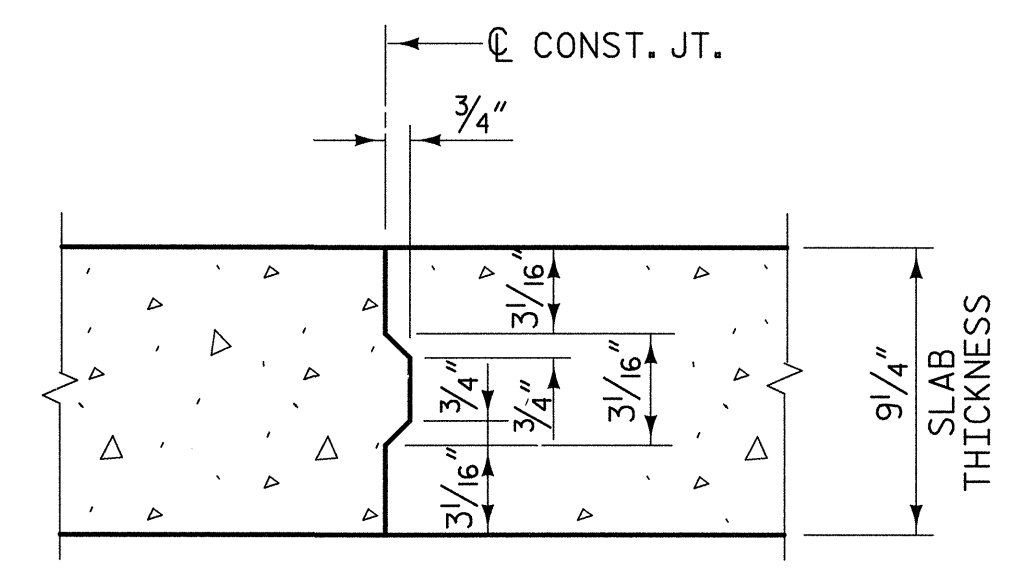
PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

* 2 3/4" B.B.U. LOCATED BETWEEN TOP & BOTTOM MATS OF REINFORCING STEEL AT THE #5 "B" BAR (TOP BAR) LOCATION ONLY, SEE PLAN OF SPANS.

* 2 1/2" B.B.U. LOCATED BETWEEN TOP & BOTTOM MATS OF REINFORCING STEEL AT THE #6 "B" BAR (TOP BAR) LOCATION ONLY, SEE PLAN OF SPANS.



DETAIL "A"



NOTE:
 REINFORCING STEEL NOT SHOWN FOR CLARITY.
 LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT.

TRANSVERSE CONSTRUCTION
 JOINT IN DECK SLAB

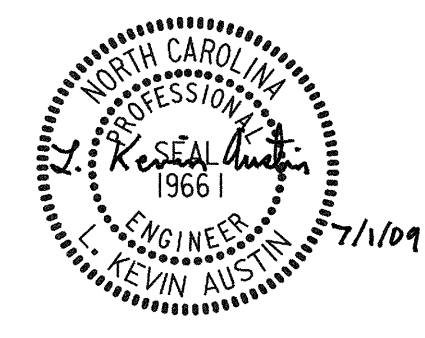
PROJECT NO. R-4906
 PERSON COUNTY
 STATION: 15+40.25 -EL-

REPLACES BRIDGE NO. 59

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 TYPICAL SECTION

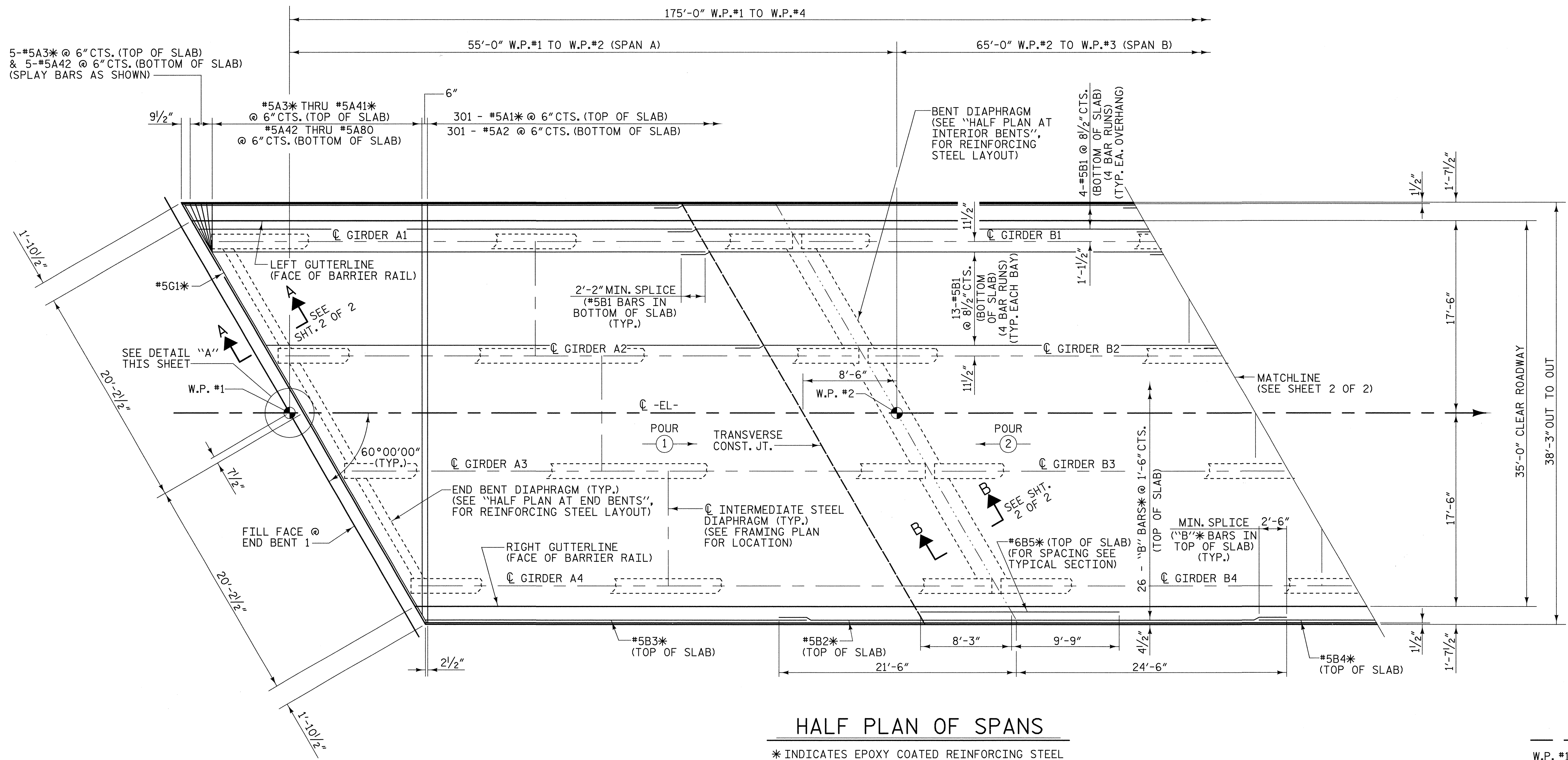
35'-0" CLEAR ROADWAY - 60° SKEW



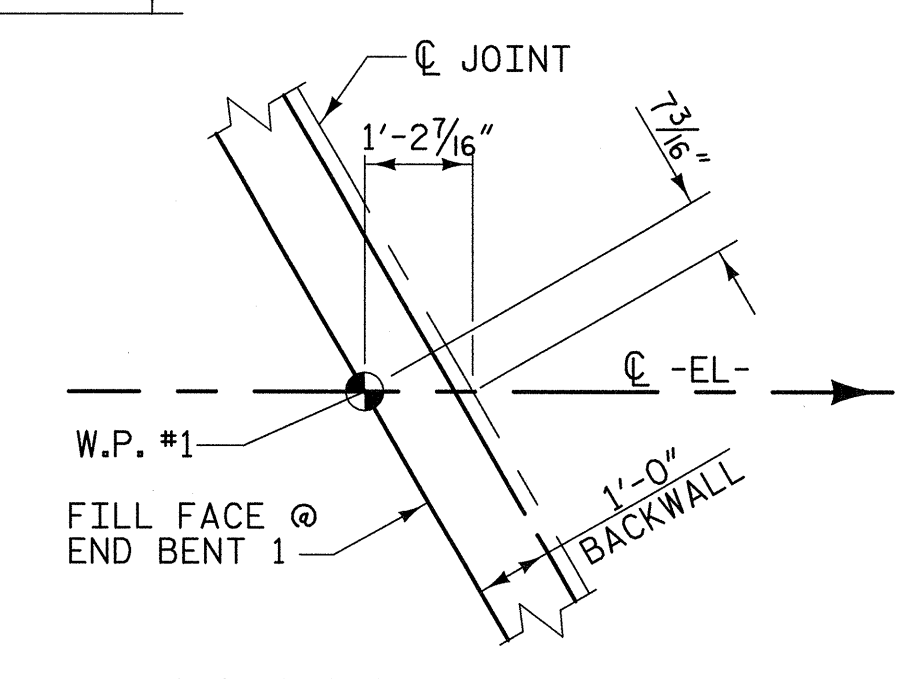
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28	
1			3			TOTAL SHEETS 50	
2			4				

DRAWN BY: J. A. CAVER DATE: 03/07
 CHECKED BY: H. S. ELLIOTT DATE: 03/07

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HALF PLAN OF SPANS
* INDICATES EPOXY COATED REINFORCING STEEL



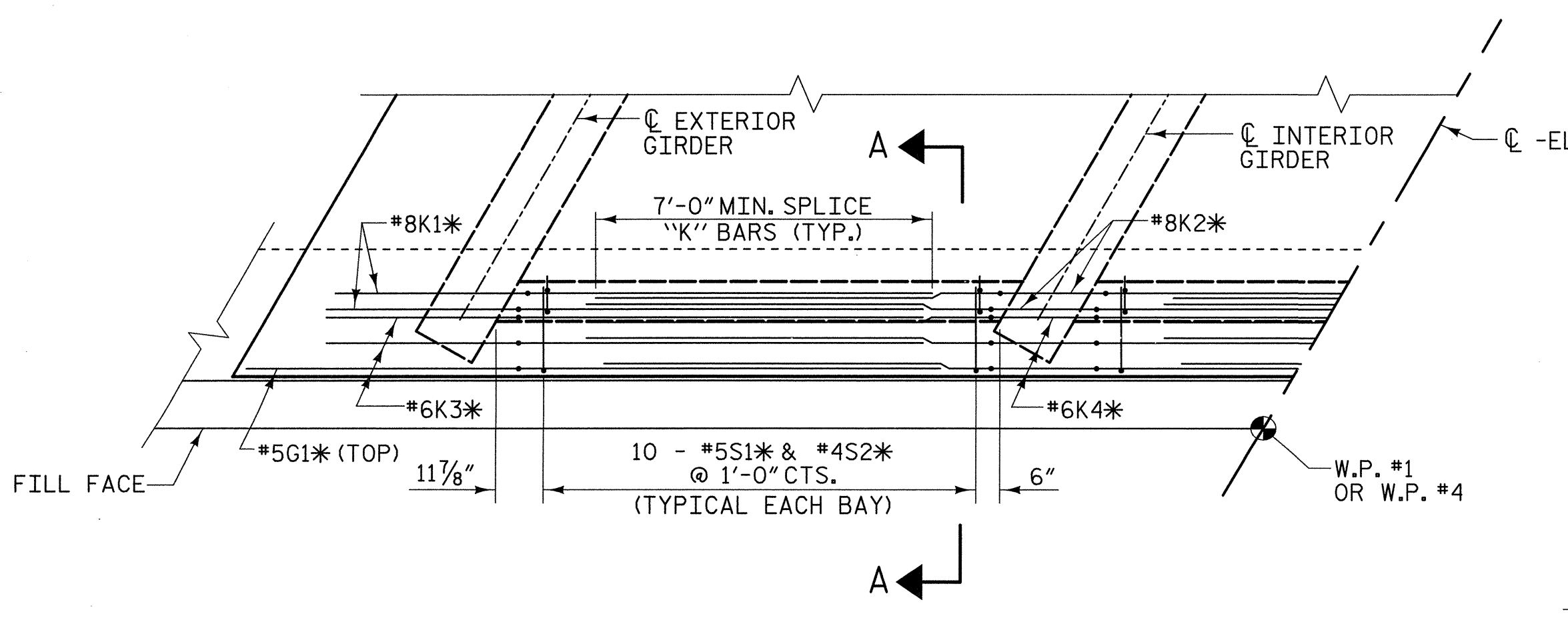
DETAIL "A"

PROJECT NO. R-4906

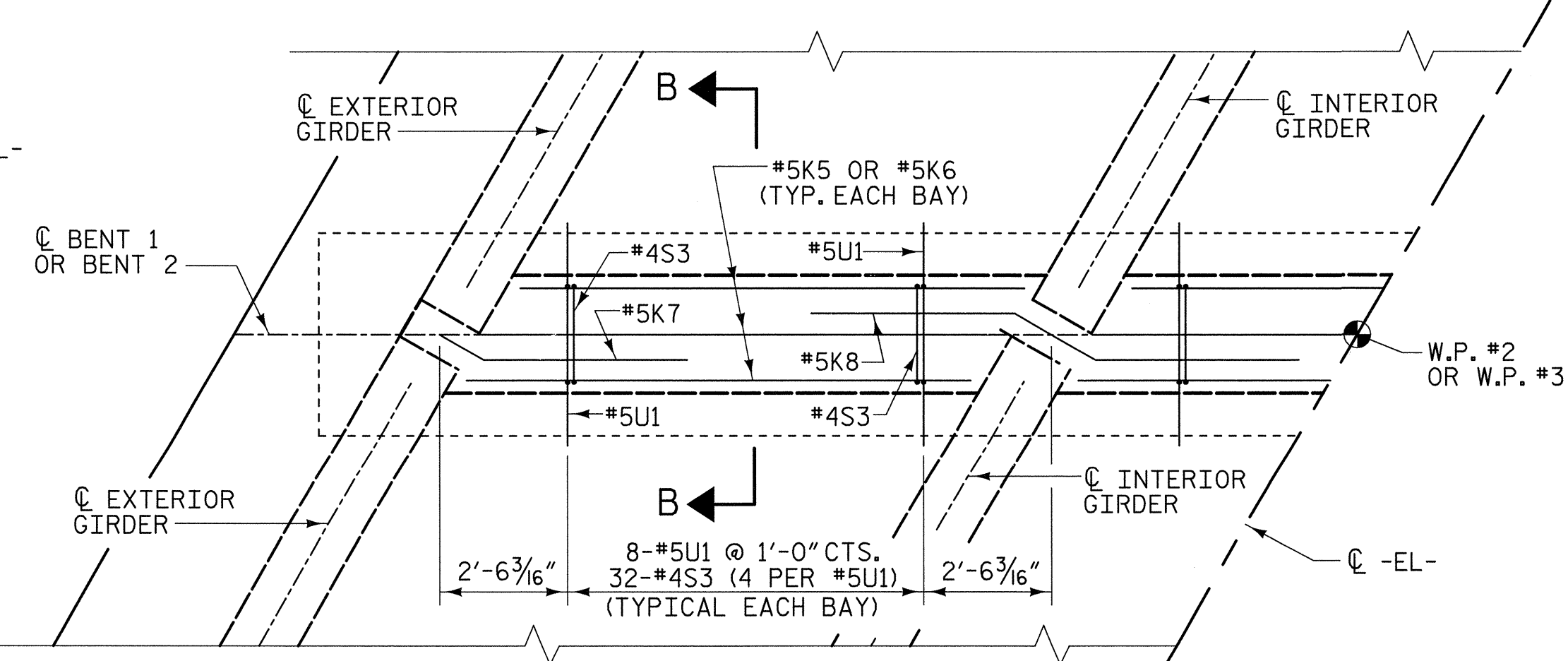
PERSON COUNTY

STATION: 15+40.25 -EL-

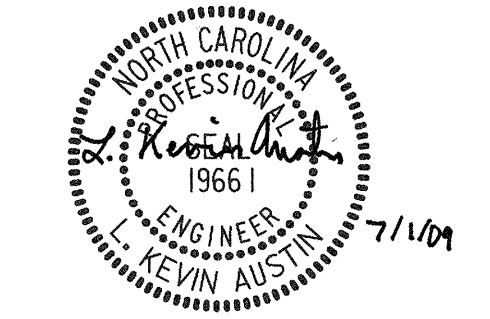
REPLACES BRIDGE NO. 59 SHEET 1 OF 2



HALF PLAN AT END BENTS
(SHOWING END BENT DIAPHRAGM STEEL)



HALF PLAN AT INTERIOR BENTS
(SHOWING BENT DIAPHRAGM STEEL)



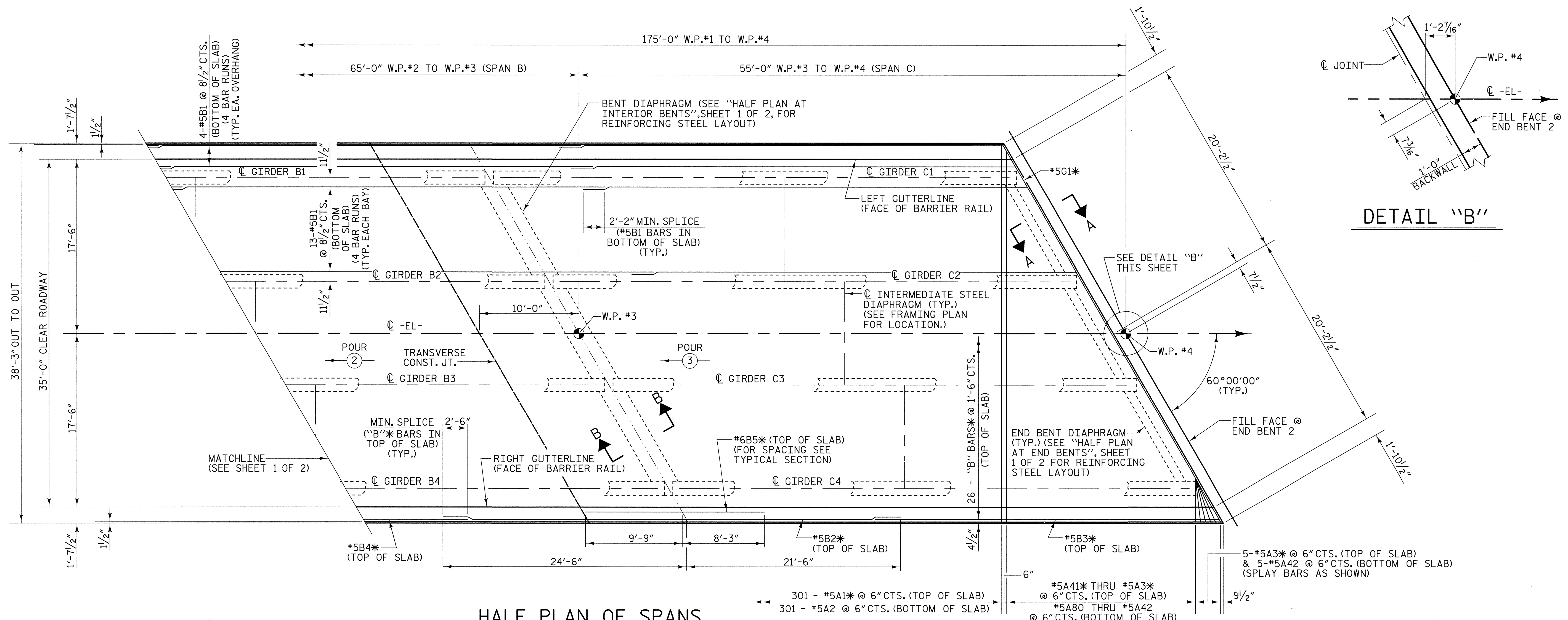
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUPERSTRUCTURE
PLAN OF SPANS
3 SPAN UNIT**

35'-0" CLEAR ROADWAY - 60° SKEW

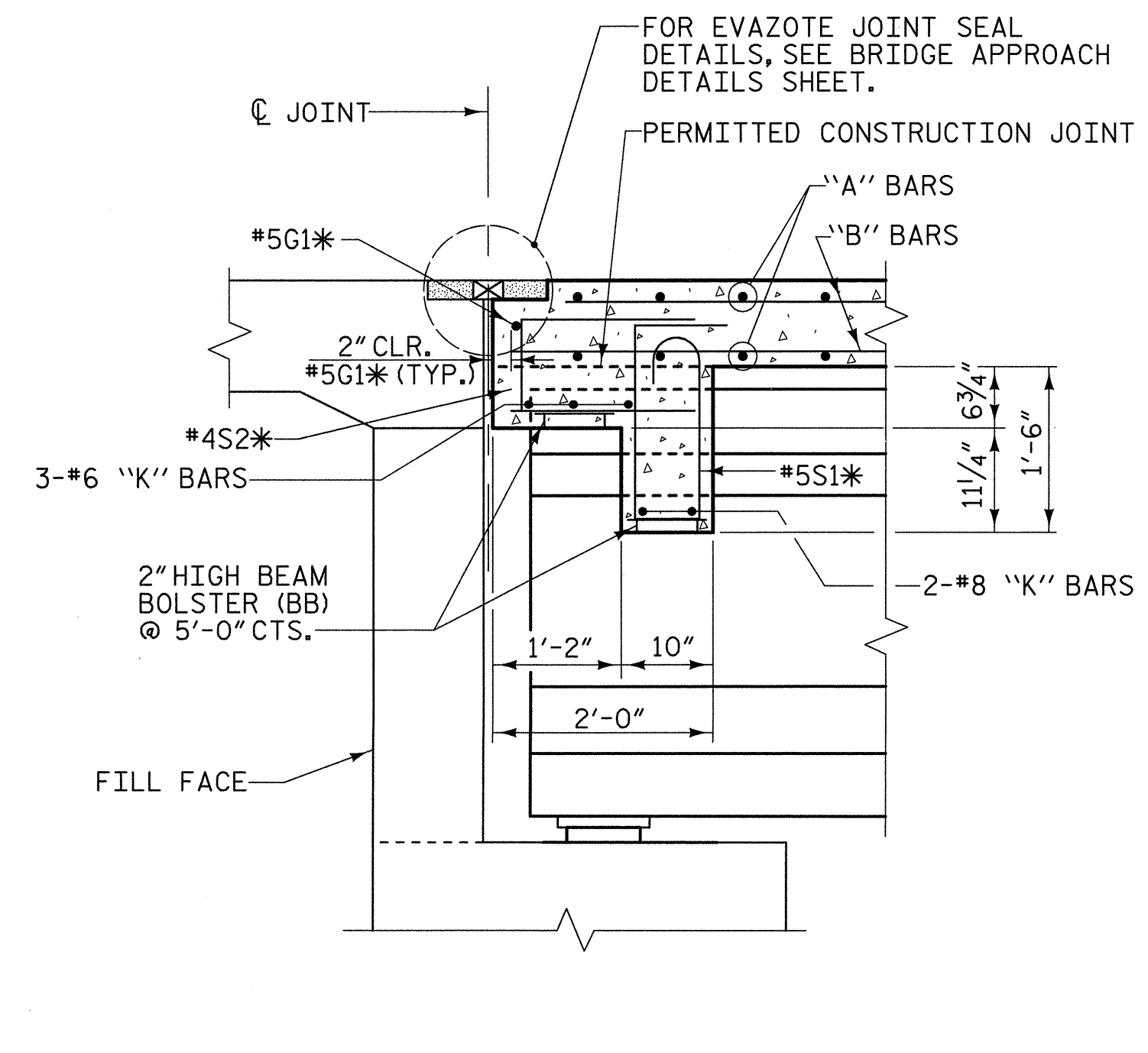
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS 50
2			4			

DRAWN BY: J. A. CAVER DATE: 03/07
CHECKED BY: H. S. ELLIOTT DATE: 06/07

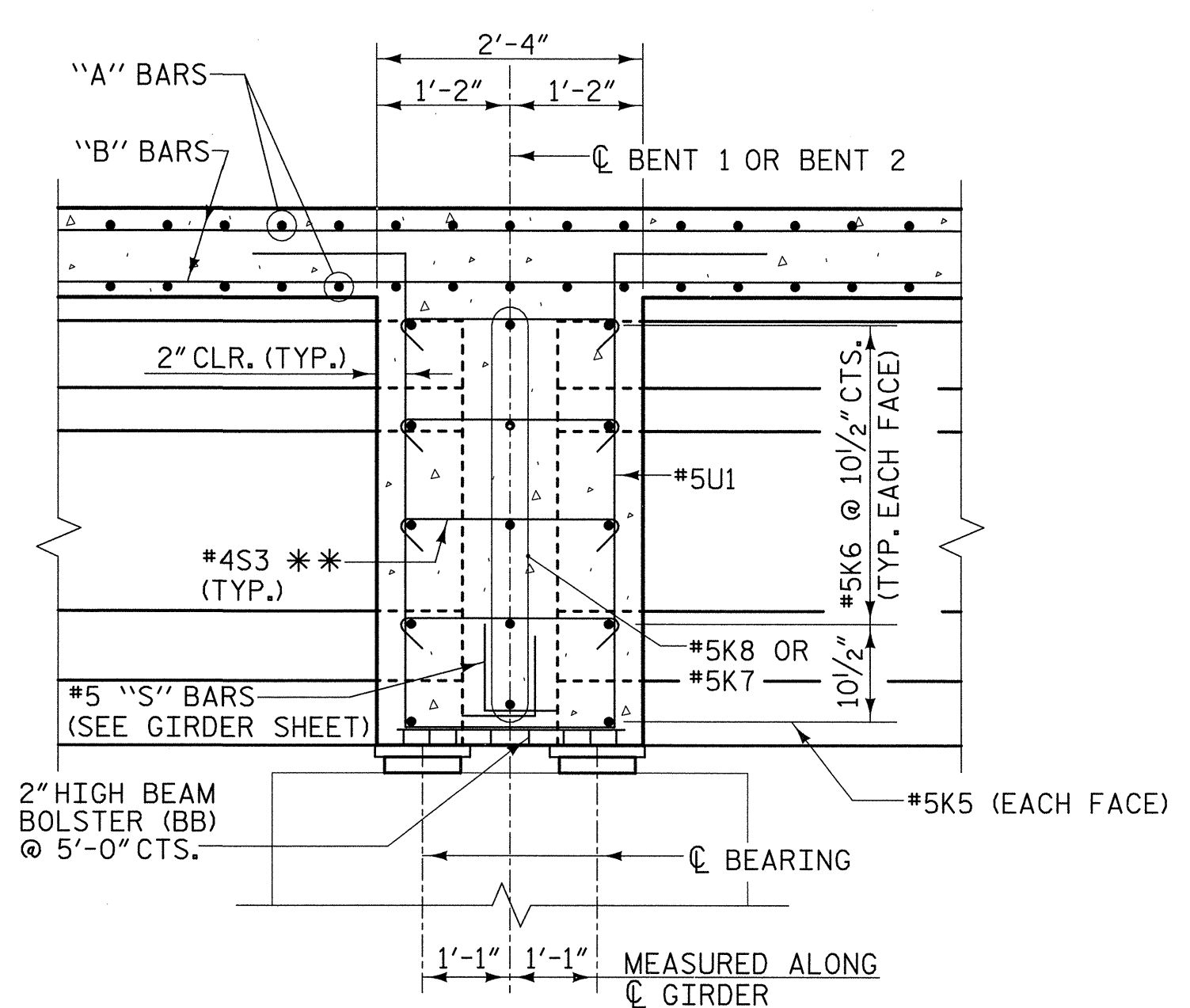


HALF PLAN OF SPANS

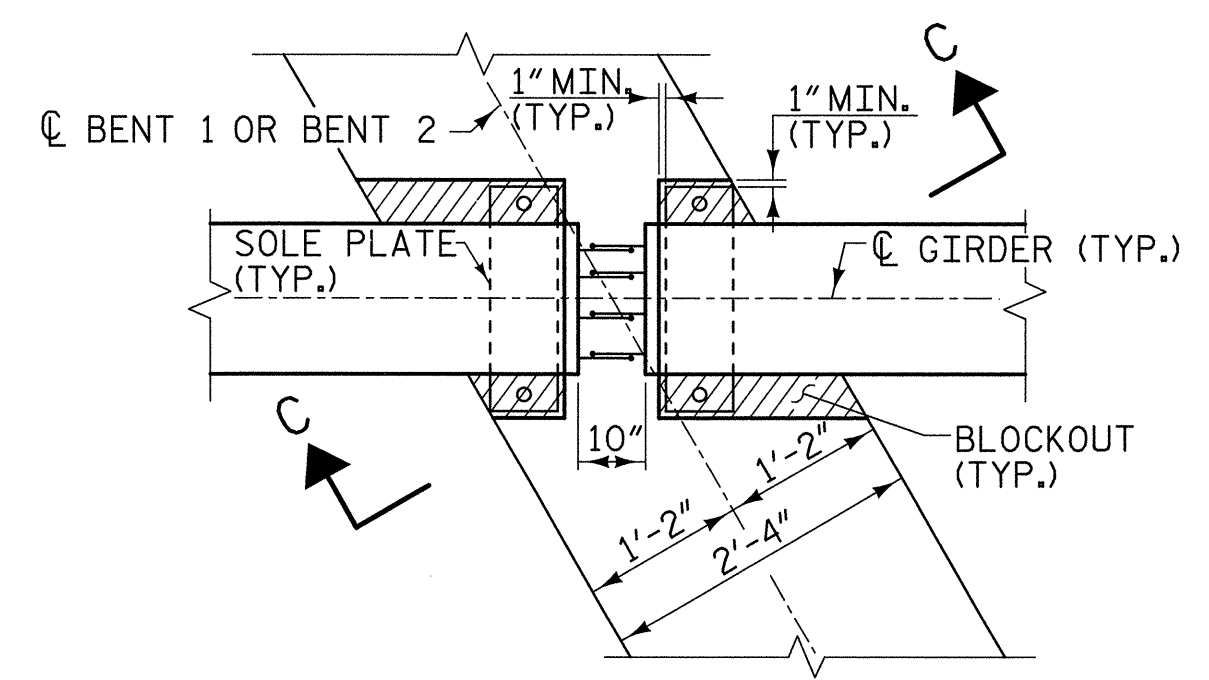
* INDICATES EPOXY COATED REINFORCING STEEL



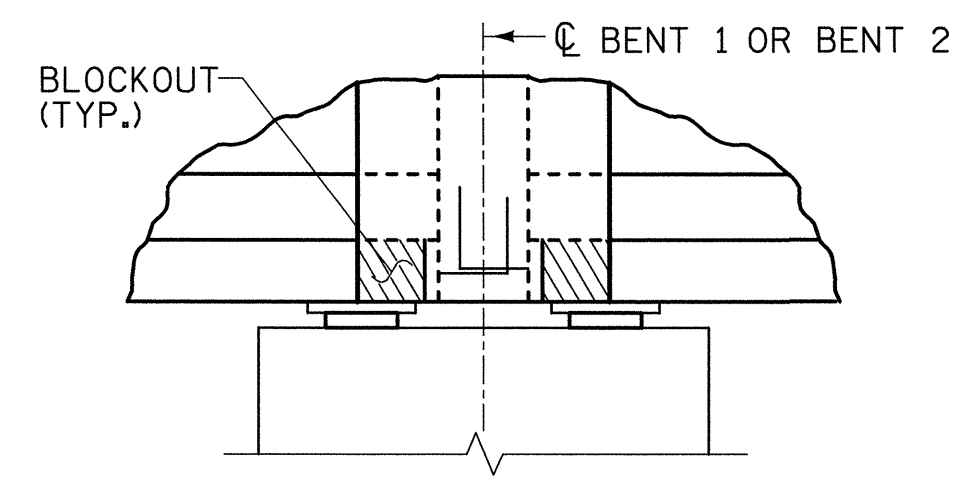
SECTION A-A



SECTION B-B

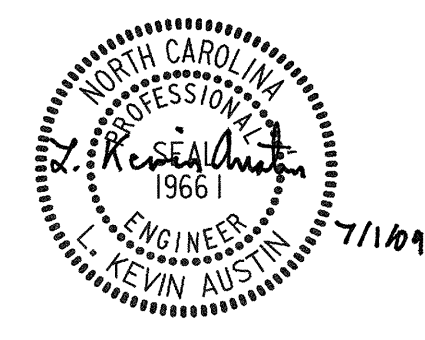


PLAN



SECTION C-C

BENT DIAPHRAGM BLOCKOUT DETAIL



PLANS PREPARED BY:
MULKEY
 ENGINEERS & CONSULTANTS
 101 S. 11th St., Suite 200
 Raleigh, NC 27601
 WWW.MULKEYINC.COM

PROJECT NO. R-4906
 PERSON _____ COUNTY _____
 STATION: 15+40.25 -EL-

REPLACES BRIDGE NO. 59 SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
SUPERSTRUCTURE PLAN OF SPANS
3 SPAN UNIT
 35'-0" CLEAR ROADWAY - 60° SKEW

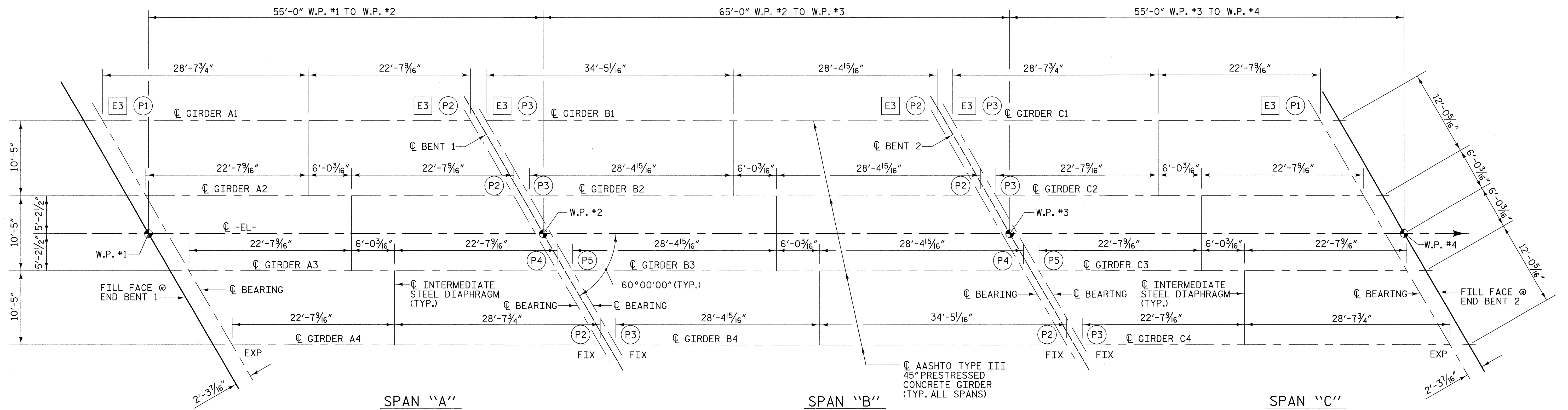
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30	
1			3			TOTAL SHEETS	
2			4			50	

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DRAWN BY: J. A. CAVER DATE: 03/07
 CHECKED BY: H. S. ELLIOTT DATE: 06/07

NOTES:

1. ELASTOMERIC BEARINGS INDICATED THUS EN (N=NUMBER)
2. SOLE PLATES INDICATED THUS: PN (N=NUMBER)



FRAMING PLAN AND INTERMEDIATE DIAPHRAGM LOCATIONS

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	SPAN A & SPAN C											SPAN B										
	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
1/2" Ø L.R. STRANDS																						
GIRDER 1 AND GIRDER 4	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.047	0.081	0.107	0.121	0.126	0.121	0.107	0.081	0.047	0.000	0.000	0.063	0.106	0.137	0.156	0.162	0.156	0.137	0.106	0.063	0.000
DEFLEC. DUE TO SUPERIMPOSED DEAD LOAD *	↓ 0.000	0.008	0.015	0.021	0.025	0.026	0.025	0.021	0.015	0.007	0.000	0.000	0.016	0.033	0.046	0.054	0.057	0.054	0.046	0.033	0.016	0.000
FINAL CAMBER	↑ 0"	1/2"	13/16"	1"	13/16"	13/16"	13/16"	1"	13/16"	1/2"	0"	0"	9/16"	7/8"	13/16"	13/16"	13/16"	13/16"	13/16"	13/16"	13/16"	0"
GIRDER 2 AND GIRDER 3	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE)	↑ 0.000	0.047	0.081	0.107	0.121	0.126	0.121	0.107	0.081	0.047	0.000	0.000	0.063	0.106	0.137	0.156	0.162	0.156	0.137	0.106	0.063	0.000
DEFLEC. DUE TO SUPERIMPOSED DEAD LOAD *	↓ 0.000	0.009	0.018	0.024	0.029	0.030	0.028	0.024	0.017	0.008	0.000	0.000	0.019	0.038	0.053	0.063	0.066	0.063	0.053	0.038	0.019	0.000
FINAL CAMBER	↑ 0"	1/16"	3/4"	1"	1 1/8"	1 1/8"	1 1/8"	1"	3/4"	1/16"	0"	0"	1/2"	13/16"	1"	1 1/8"	1 1/8"	1 1/8"	1"	13/16"	1/2"	0"

DEFLECTION AND GIRDER CAMBER ARE IN FEET.
 FINAL CAMBER IS IN INCHES.
 VALUES ARE SHOWN AT TENTH POINTS BETWEEN BEARINGS.
 * FUTURE WEARING SURFACE INCLUDED.

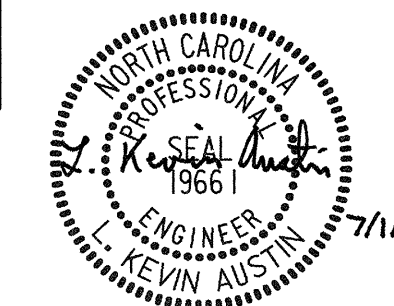
PROJECT NO. R-4906
 PERSON _____ COUNTY _____
 STATION: 15+40.25 -EL-

REPLACES BRIDGE NO. 59

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

FRAMING PLAN AND DEAD LOAD DEFLECTION TABLE

35'-0" CLEAR ROADWAY - 60° SKEW



PLANS PREPARED BY:

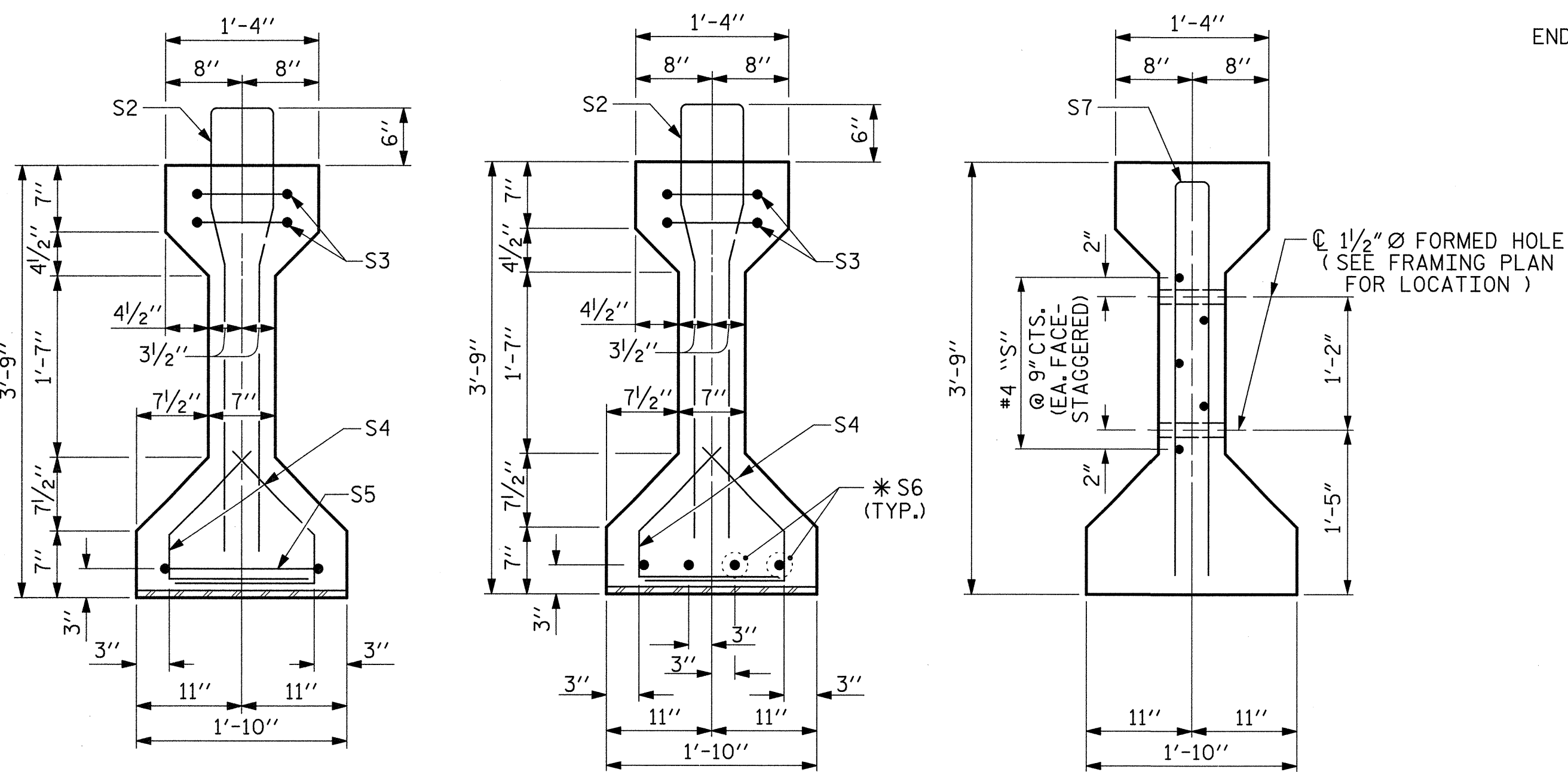


REVISIONS

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

SHEET NO.
 S-31
 TOTAL SHEETS
 50

DRAWN BY: J. A. CAVER DATE: 05/07
 CHECKED BY: H. S. ELLIOTT DATE: 06/07



SECTION A-A

SECTION B-B

SECTION C-C

EMBEDDED PLATE "B-1" DETAILS

TWO EMBEDDED PLATES "B-1" ARE REQUIRED FOR EACH GIRDER.

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.

APPLY EPOXY PROTECTIVE COATING TO THE EXPANSION END OF GIRDER SURFACES.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE SPECIFICATIONS. BEVEL EDGES OF PLATE "B-1" TO GIVE CLOSE FIT BUT NOT TIGHT FIT TO STEEL CASING FORM. ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

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

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

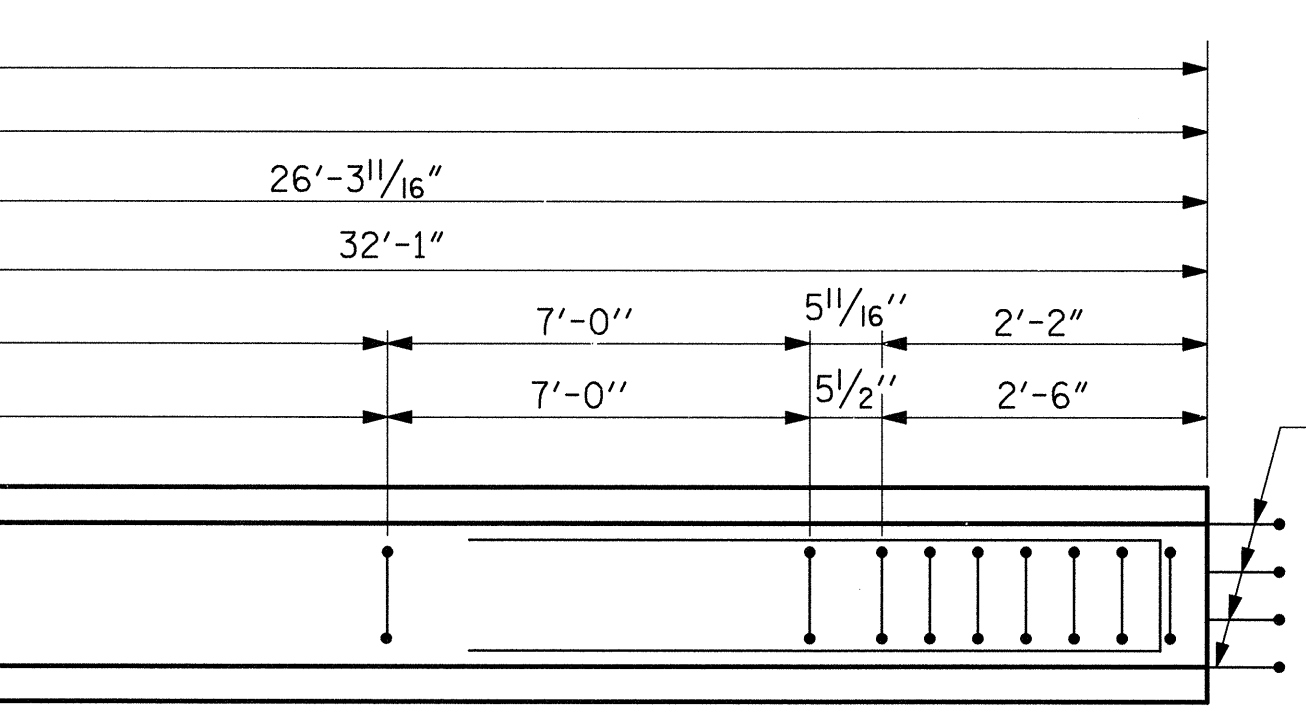
ALL REINFORCING STEEL SHALL BE GRADE 60.

AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

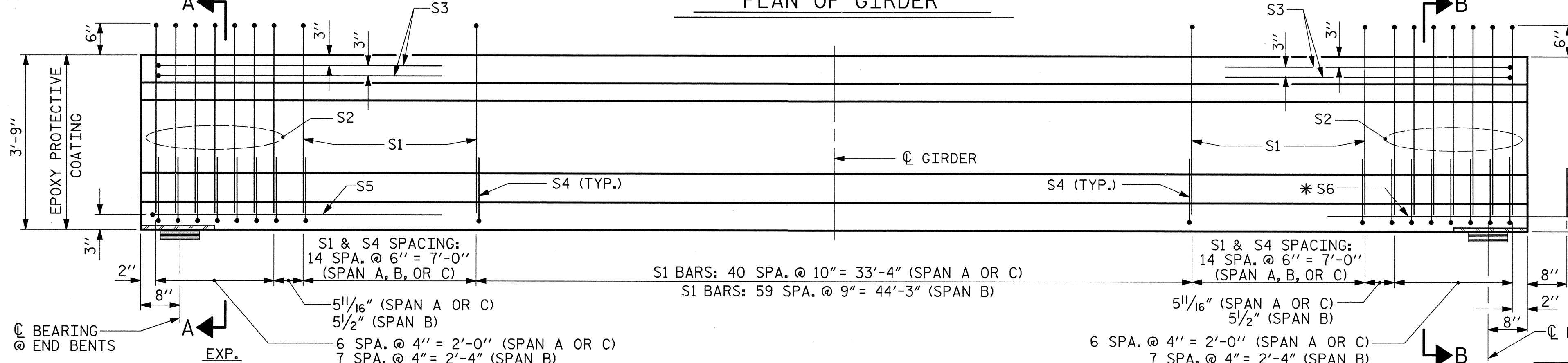
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

FOR CRACK REPAIR OF PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.



PLAN OF GIRDER

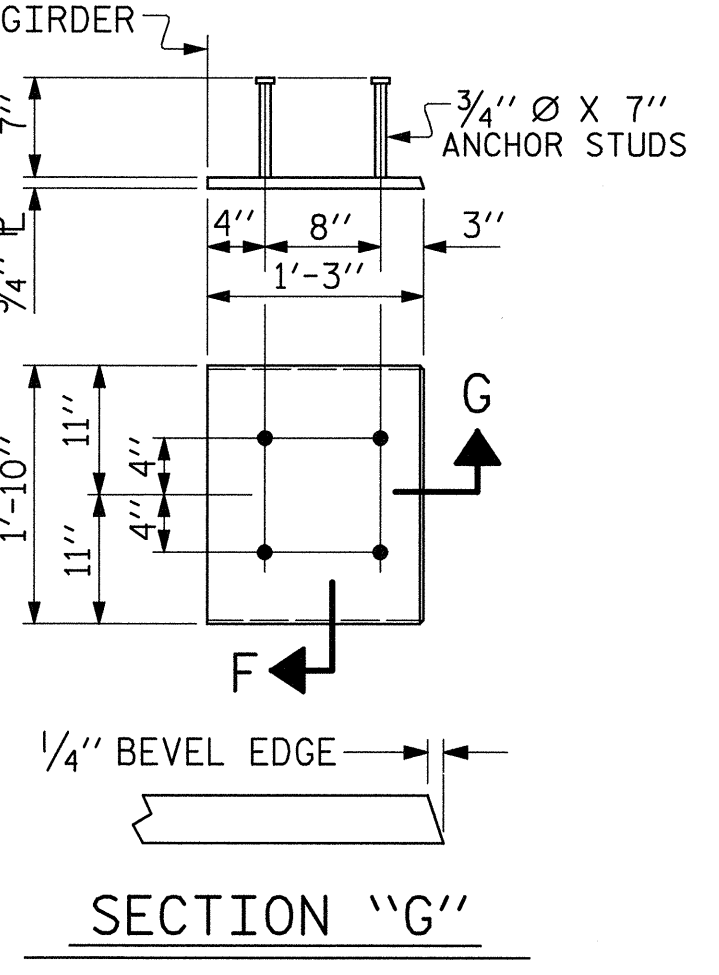


ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

ASSEMBLED BY : J. A. CAVER DATE : 03/07
 CHECKED BY : H. S. ELLIOTT DATE : 06/07

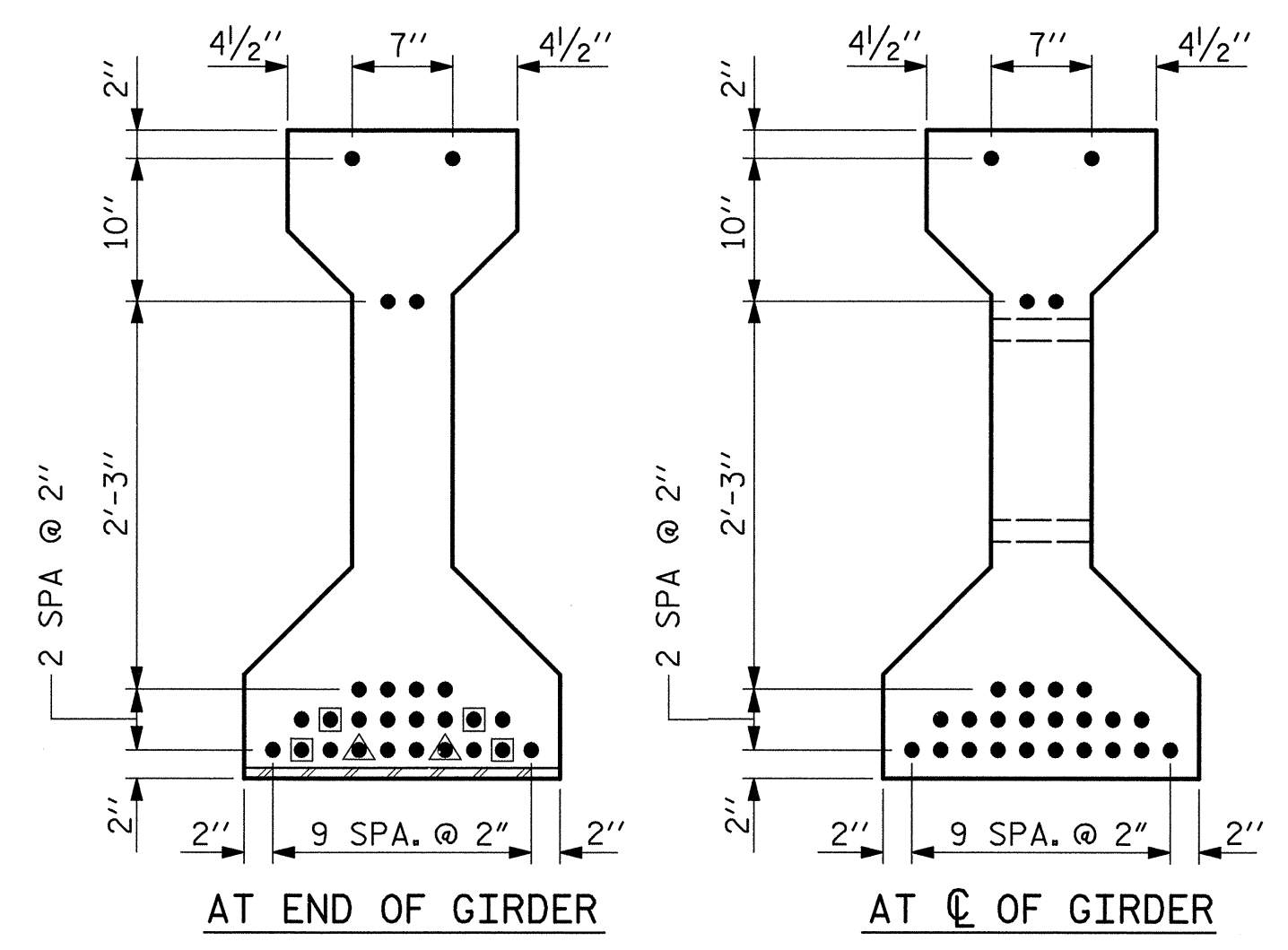
DRAWN BY : JMB 12/87 REV. 7/17/98 RWW/LES
 CHECKED BY : ARB 12/87 REV. 8/16/99RR RWW/LES
 REV. 5/1/06 TLA/GM



SECTION "G"

SECTION "F"

(SEE NOTES)

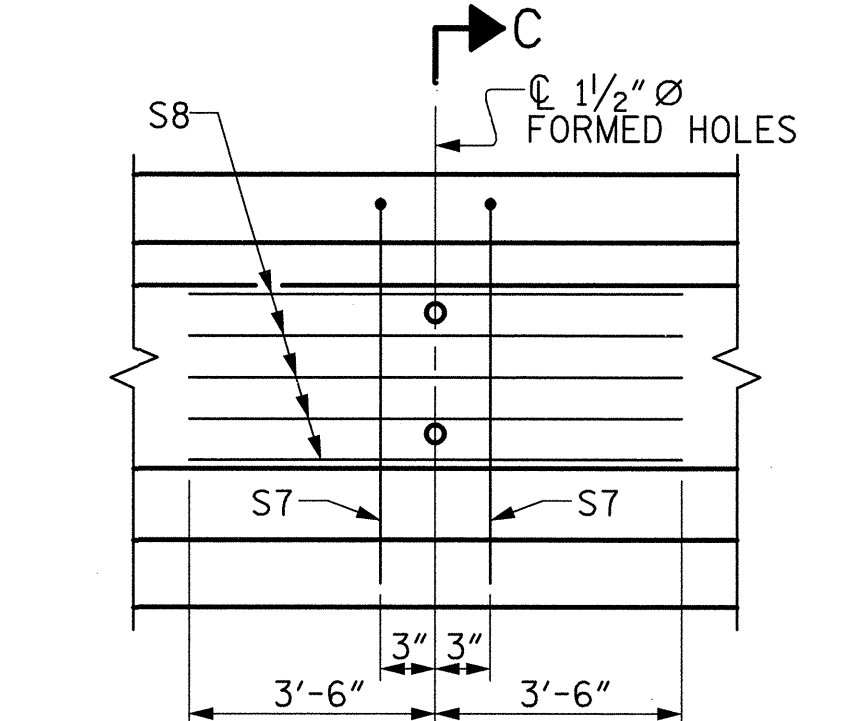


AT END OF GIRDER AT C OF GIRDER

1/2" Ø LOW RELAXATION STRAND LAYOUT

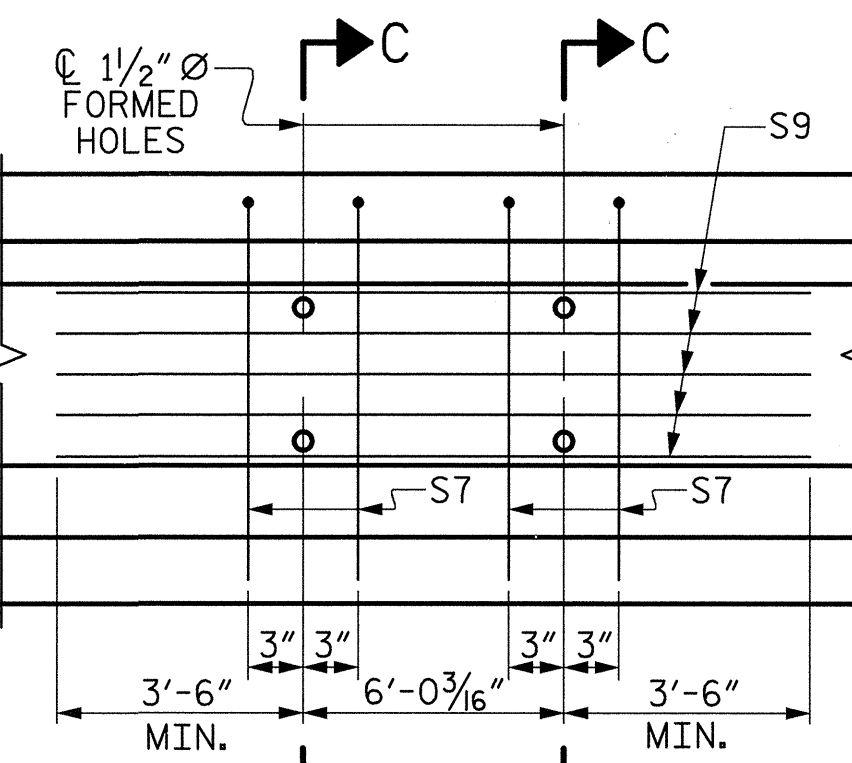
□ DENOTES SHEATHED STRAND. BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 4'-0" FROM THE END OF GIRDER.

△ DENOTES SHEATHED STRAND. BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM THE END OF GIRDER.



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1 & 4



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 2 & 3

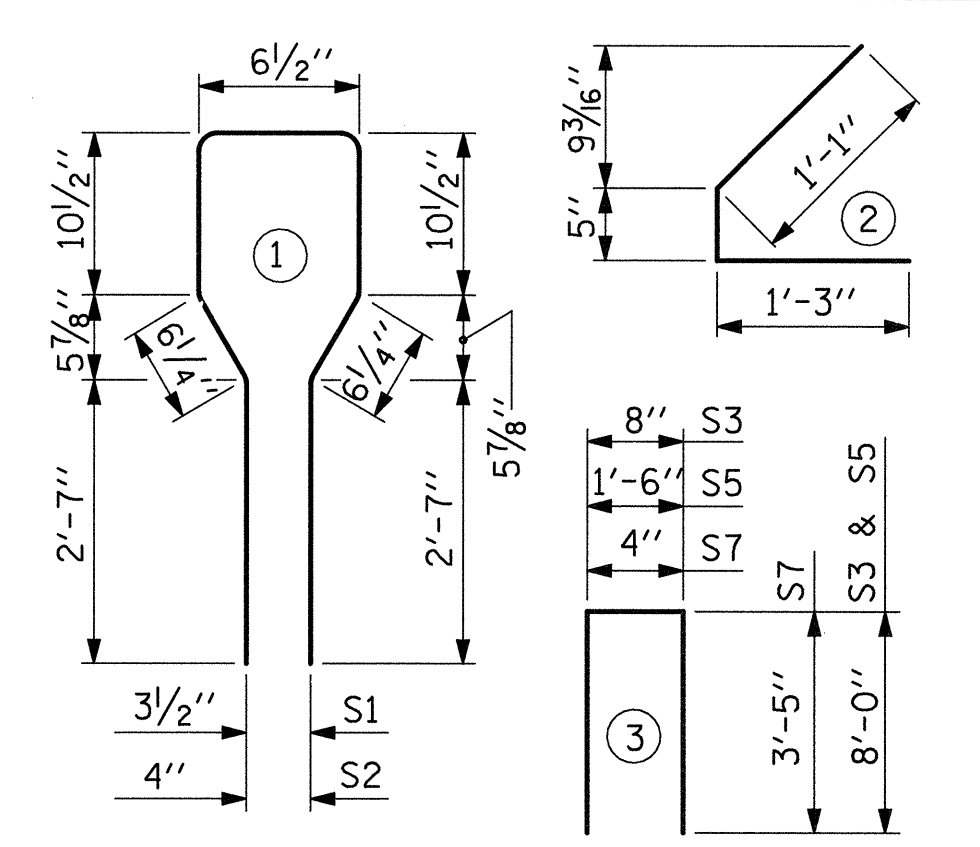
1/2" Ø L. R. GRADE 270 STRANDS			
AREA (SQ. INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)	
0.153	41,300	30,980	

REINFORCING STEEL FOR ONE GIRDER								
BAR	NUMBER		SIZE	TYPE	LENGTH	WEIGHT		
	A OR C	B				A OR C	B	
S1	69	88	#4	1	8'-6"	392	500	
S2	14	16	#6	1	8'-6"	179	204	
S3	4	4	#4	3	16'-8"	45	45	
S4	88	92	#4	2	2'-9"	162	169	
S5	1	0	#4	3	17'-6"	12	0	
*S6	4	8	#5	STR	4'-10"	20	40	
EXT. GDR.	S7	2	2	#5	3	7'-2"	15	15
INT. GDR.	S7	4	4	#5	3	7'-2"	30	30
EXT. GDR.	S8	5	5	#4	STR	7'-0"	23	23
INT. GDR.	S9	5	5	#4	STR	13'-1"	44	44

* NOTE: S6 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL LB.	7000 PSI CONCRETE	1/2" Ø L.R. STRANDS
		C.Y.	No.
SPAN A OR C, EXTERIOR	848	7.6	26
SPAN A OR C, INTERIOR	884	7.6	26
SPAN B, EXTERIOR	996	9.2	26
SPAN B, INTERIOR	1032	9.2	26

GIRDERS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
SPAN A	4	52'-7 3/8"	210'-5 1/2"
SPAN B	4	64'-2"	256'-8"
SPAN C	4	52'-7 3/8"	210'-5 1/2"

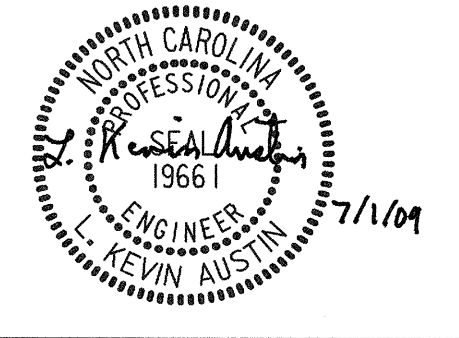
PROJECT NO. R-4906
 PERSON COUNTY
 STATION: 15+40.25 -EL-

REPLACES BRIDGE NO. 59

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 AASHTO TYPE III
 PRESTRESSED CONCRETE GIRDER

THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			50

STRUCTURAL STEEL NOTES

ALL INTERMEDIATE DIAPHRAGM STEEL, CONNECTOR PLATES AND PLATE WASHERS SHALL BE AASHTO M270 GRADE 50 OR APPROVED EQUAL.

TENSION ON THE AASHTO M164 BOLTS THROUGH THE CHANNEL MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-8 OF THE STANDARD SPECIFICATIONS.

TENSION ON THE AASHTO M164 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL 1/4 TURN.

THE CHANNELS, ANGLES, WASHERS AND DIRECT TENSION INDICATORS SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

FOR METALLIZATION, APPLY AN 8 MIL THICK 99.99 PERCENT ZINC (W-ZN-1) THERMAL SPRAYED COATING WITH A 0.5 MIL THICK SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE THERMAL SPRAYED COATINGS SPECIAL PROVISIONS AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

GALVANIZE THE HIGH STRENGTH BOLTS, NUTS, AND WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.

USE A MINIMUM 7/16" THICK PLATE WASHER WITH STANDARD HOLES UNDER EACH BOLT HEAD AND NUT. THE PLATE WASHERS SHALL HAVE SUFFICIENT SIZE TO COVER THE HOLES AFTER INSTALLATION. DIRECT TENSION INDICATORS ARE TO BE USED IN CONJUNCTION WITH THE PLATE WASHERS.

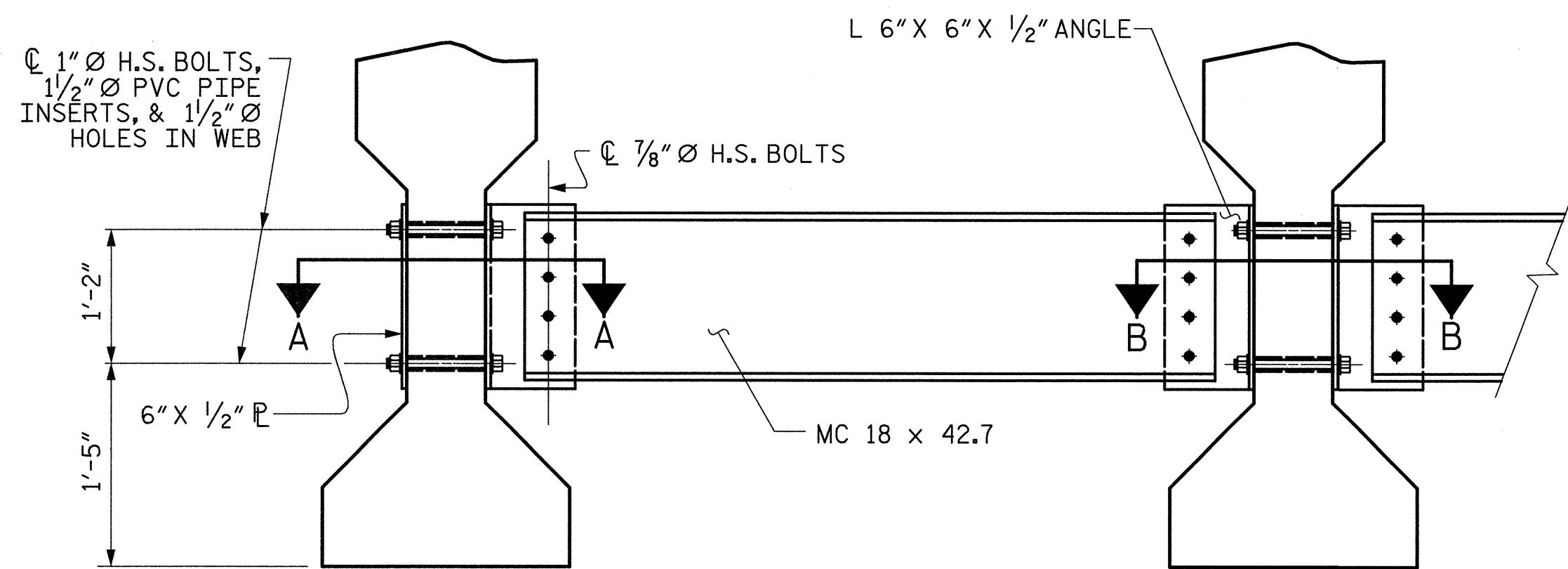
PROVIDE SUFFICIENT LENGTH OF ALL BOLTS TO ACCOMODATE WASHERS, DIRECT TENSION INDICATORS, THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

INTERMEDIATE DIAPHRAGM ASSEMBLY SHALL COMPLY WITH SECTION 1072 OF THE STANDARD SPECIFICATIONS.

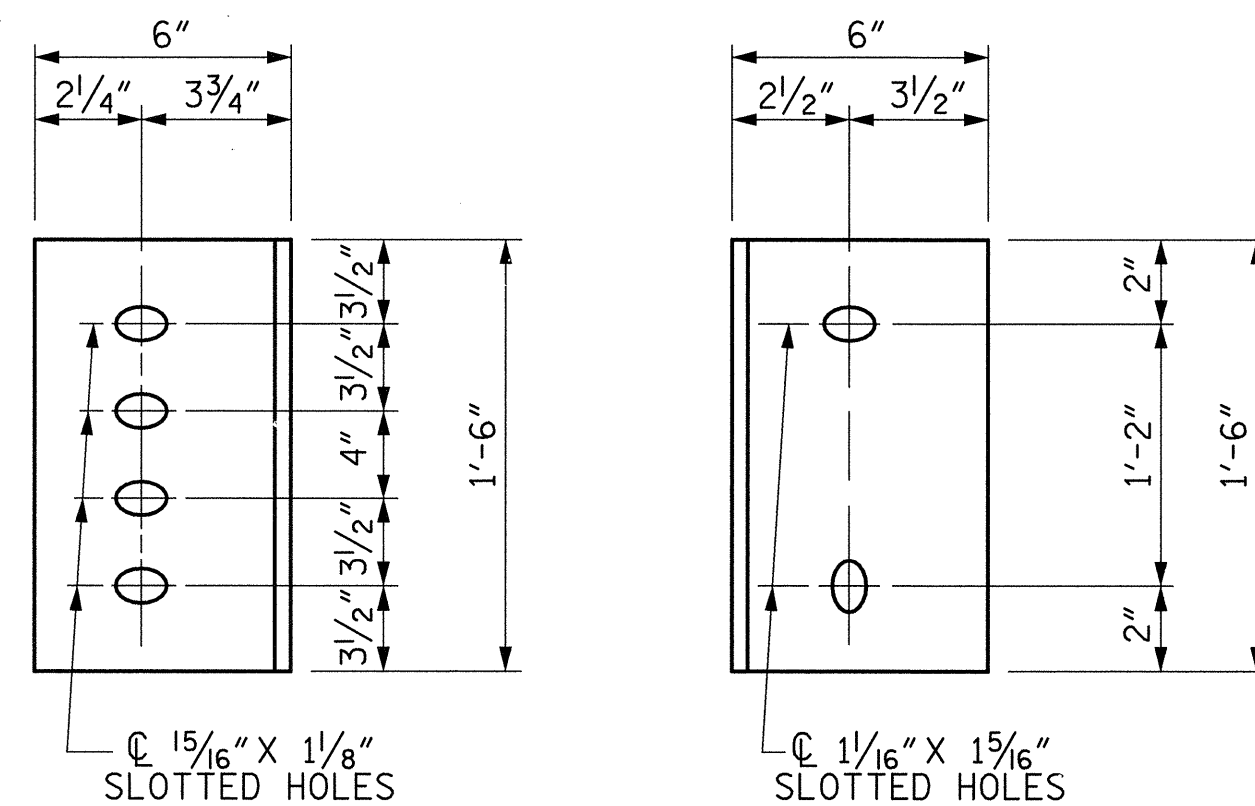
CONTRACTOR SHALL SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

IN THE EXTERIOR BAYS, TEMPORARY STRUTS SHALL BE PLACED BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED. ALL AASHTO M164 H.S. BOLTS SHALL BE FULLY TIGHTENED AFTER THE STRUTS HAVE BEEN REMOVED.

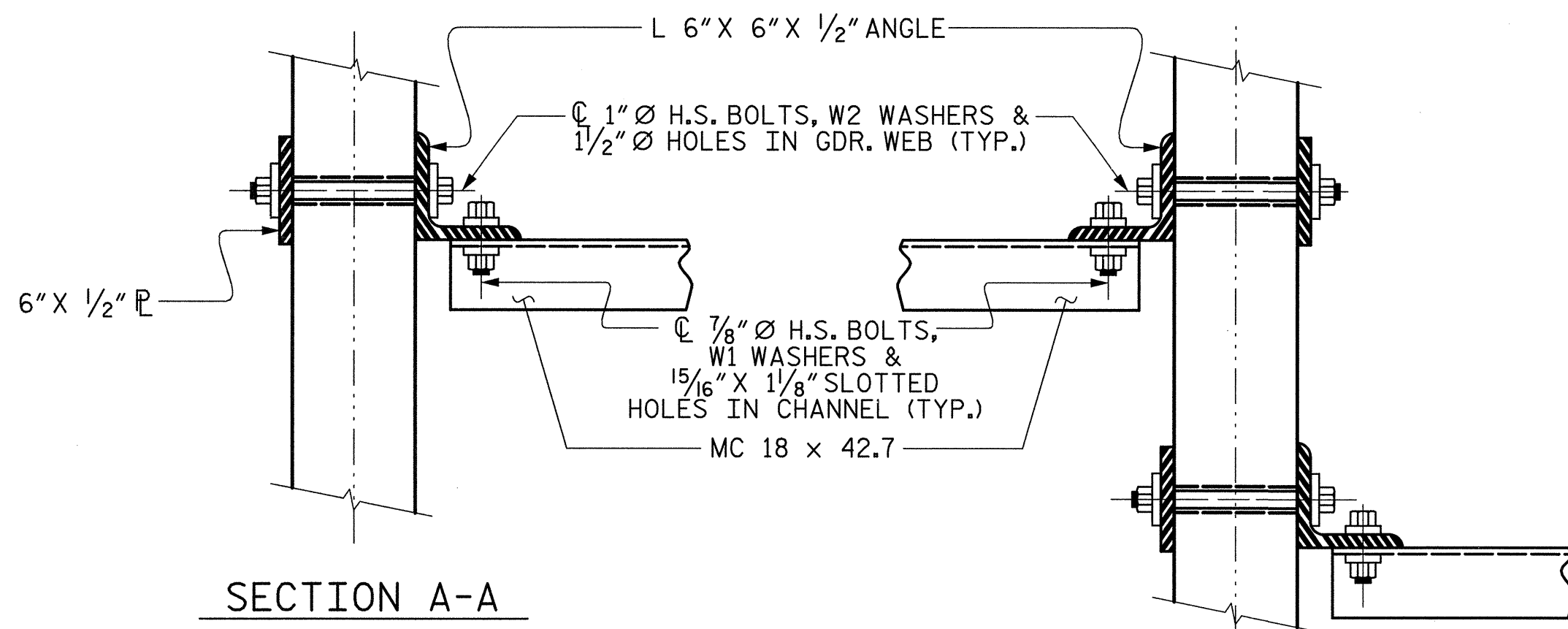
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.



EXTERIOR GIRDER INTERIOR GIRDER
PART SECTION AT INTERMEDIATE DIAPHRAGM



DIAPHRAGM FACE WEB FACE
CONNECTOR PLATE DETAILS



SECTION A-A SECTION B-B
CONNECTION DETAILS

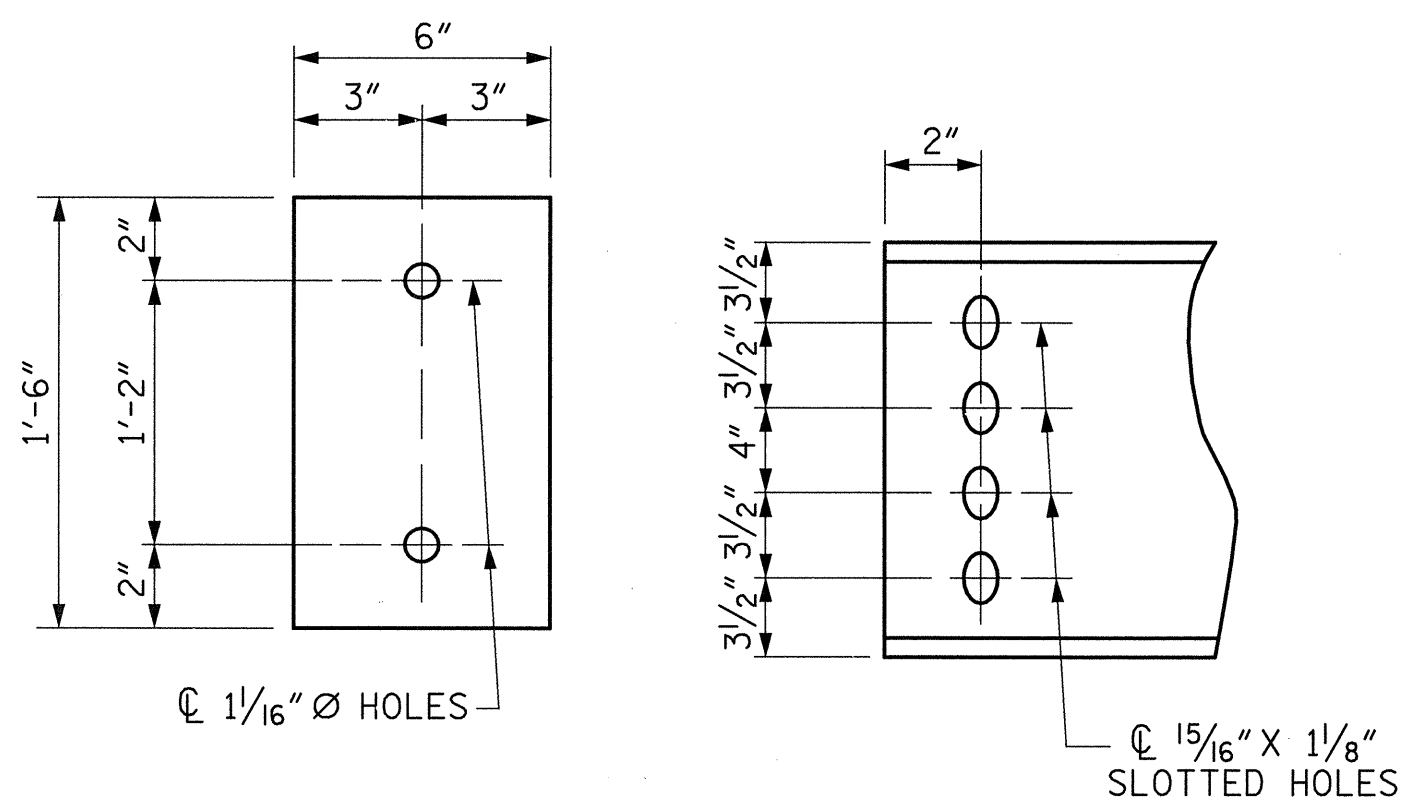
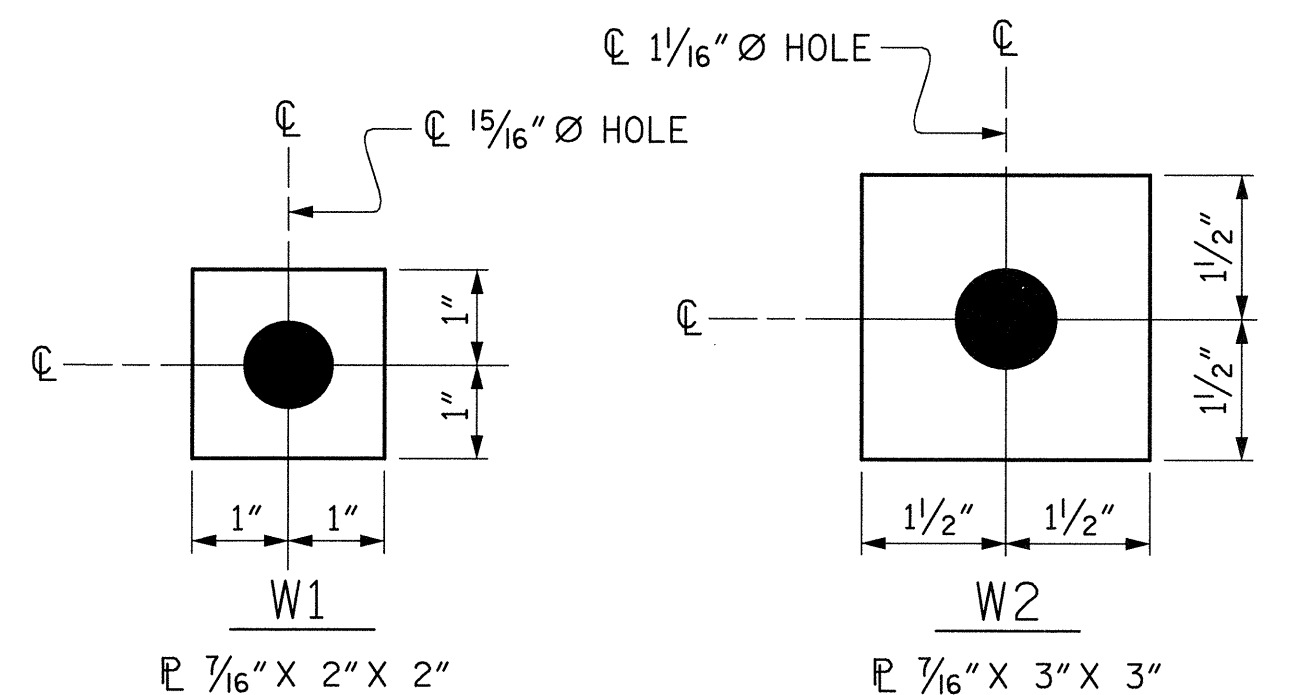


PLATE DETAILS CHANNEL END



W1 W2
Washer dimensions and usage instructions.

WASHER DETAILS

MULKEY ENGINEERS & CONSULTANTS
20 BOX 33127 RALEIGH, N.C. 27636
(919) 851-1113 (919) 851-1918 (FAX) WWW.MULKEYINC.COM

THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:



PROJECT NO. R-4906
PERSON COUNTY
STATION: 15+40.25 -EL-
REPLACES BRIDGE NO. 59

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
INTERMEDIATE
STEEL DIAPHRAGMS
FOR TYPE III
PRESTRESSED CONCRETE
GIRDERS

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33	
1			3			TOTAL SHEETS	
2			4			50	

6/22/2009 8:28:09 AM R:\S\Structures\4906(59)_SD_PC_02.dgn

ASSEMBLED BY : J. A. CAVER	DATE : 05/07
CHECKED BY : H. S. ELLIOTT	DATE : 06/07
DRAWN BY : TLA 6/05	ADDED 10/21/05
CHECKED BY : VC 6/05	REV. 5/1/06 TLA/GM

NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

THE 2" Ø PIPE SLEEVE SHALL BE CUT FROM SCHEDULE 40 PVC PLASTIC PIPE. THE PVC PLASTIC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D1785.

STEEL SOLE PLATES, ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

PRIOR TO WELDING, GRIND THE GALVANIZED SURFACE OF THE PORTION OF THE EMBEDDED PLATE AND SOLE PLATE THAT ARE TO BE WELDED. AFTER WELDING, DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

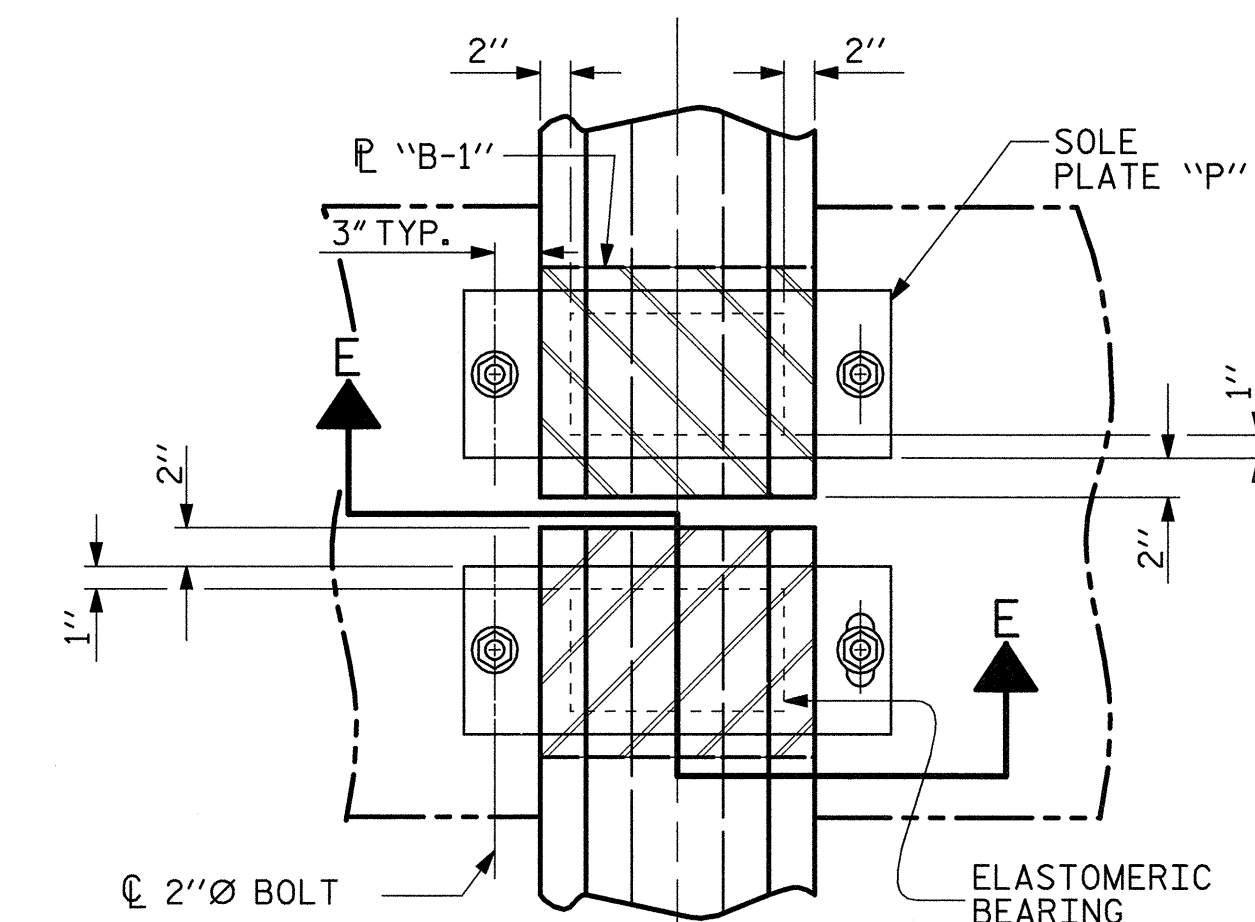
WHEN WELDING THE SOLE PLATE TO THE EMBEDDED PLATE IN THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

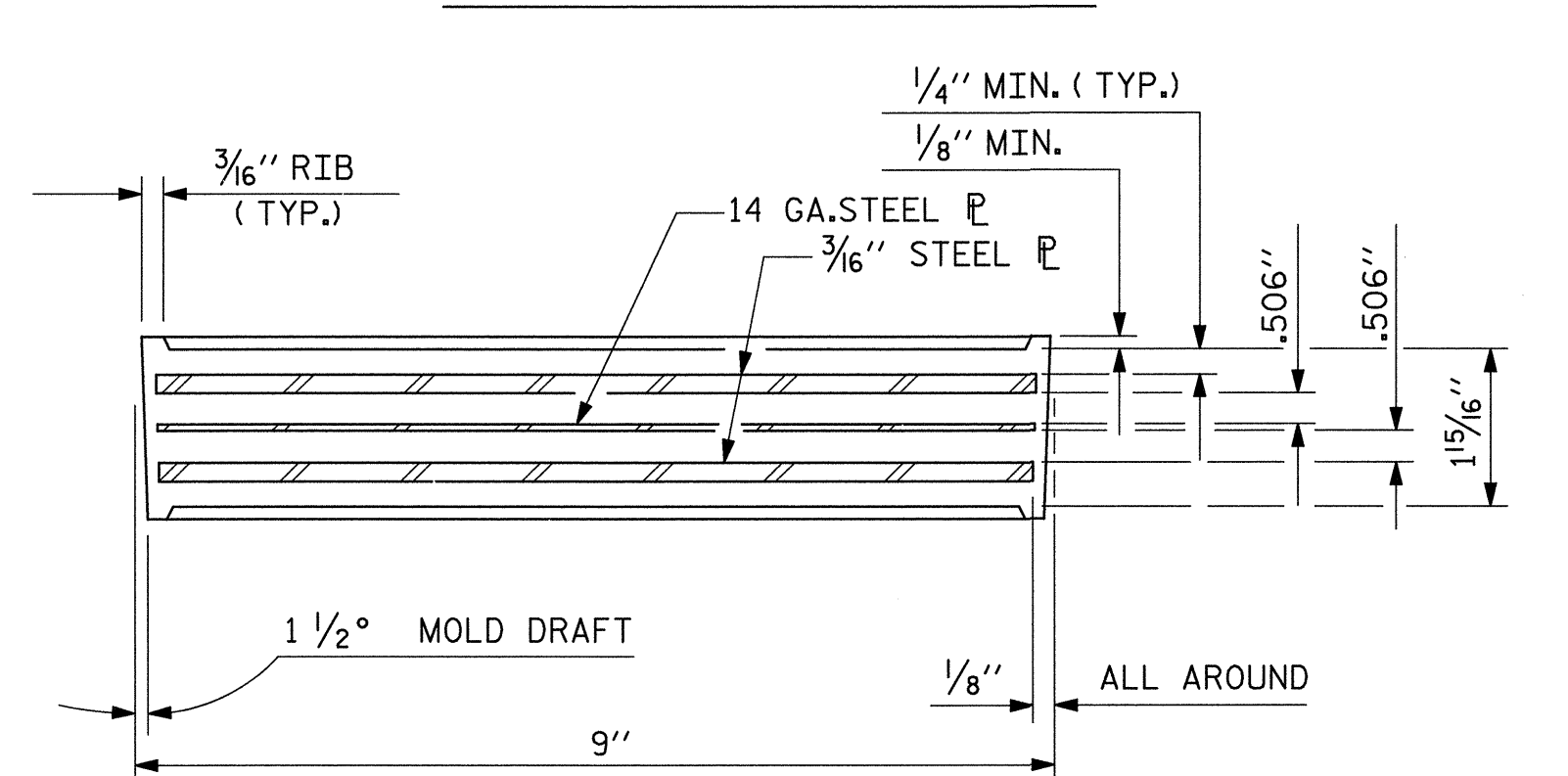
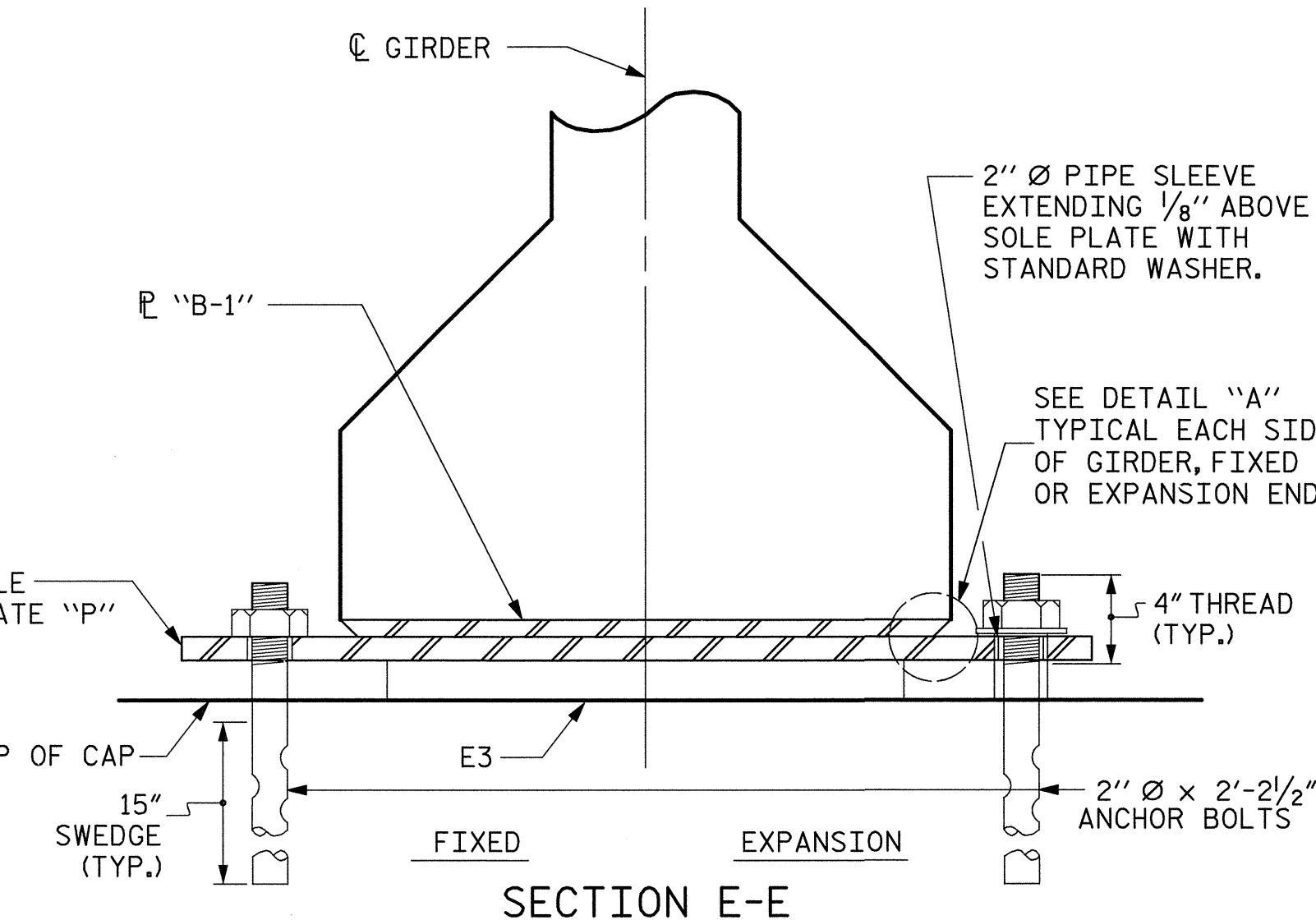
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

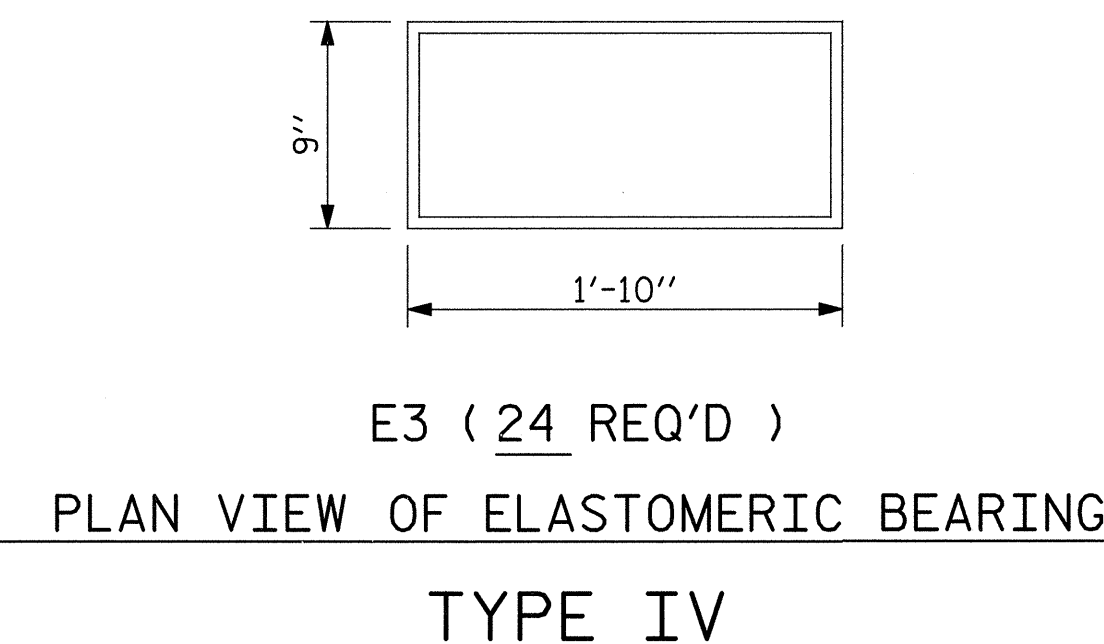
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



TYPICAL HALF-PLAN (SHOWING CONTINUOUS BENT) TYPICAL HALF-PLAN (SHOWING SIMPLE SPAN BENT)

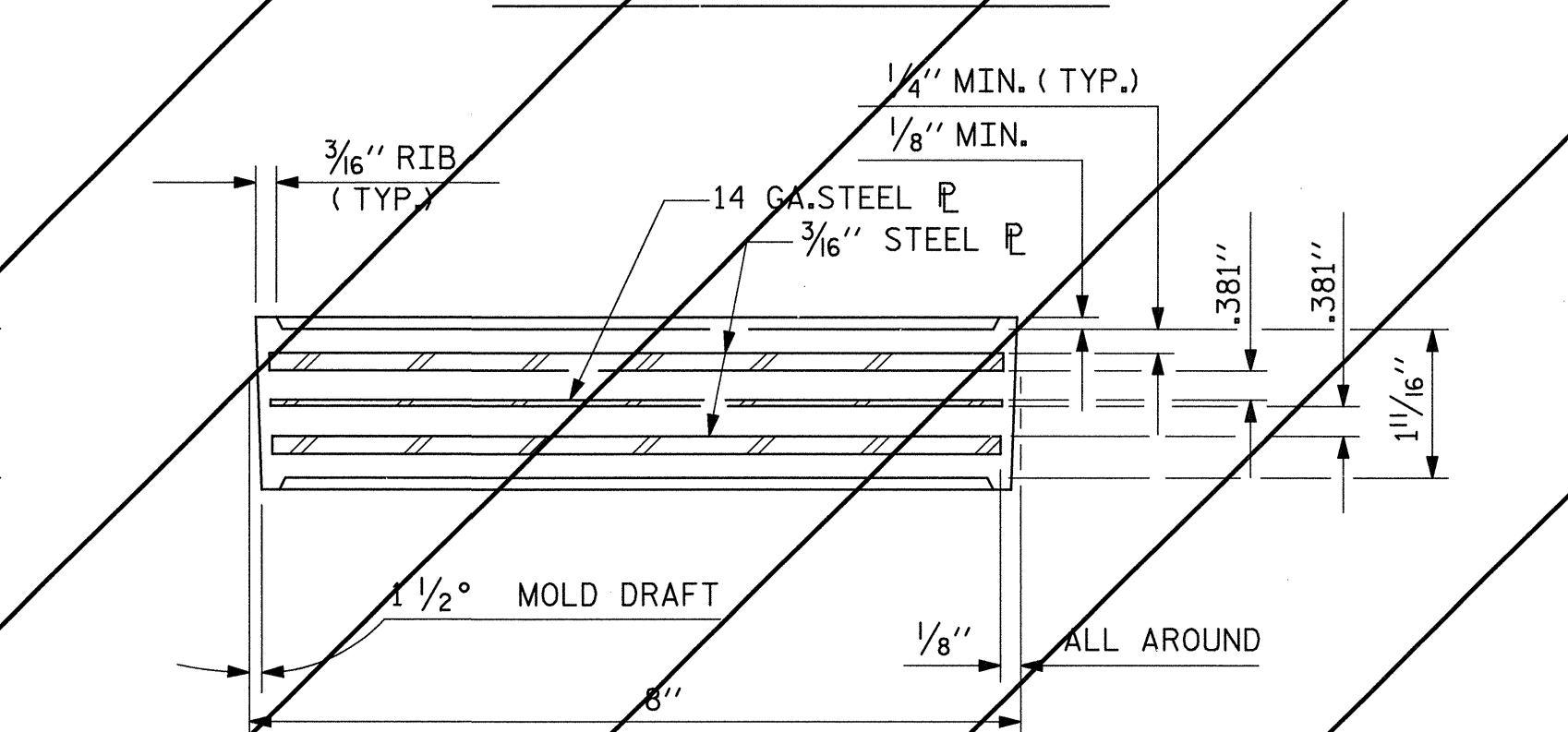
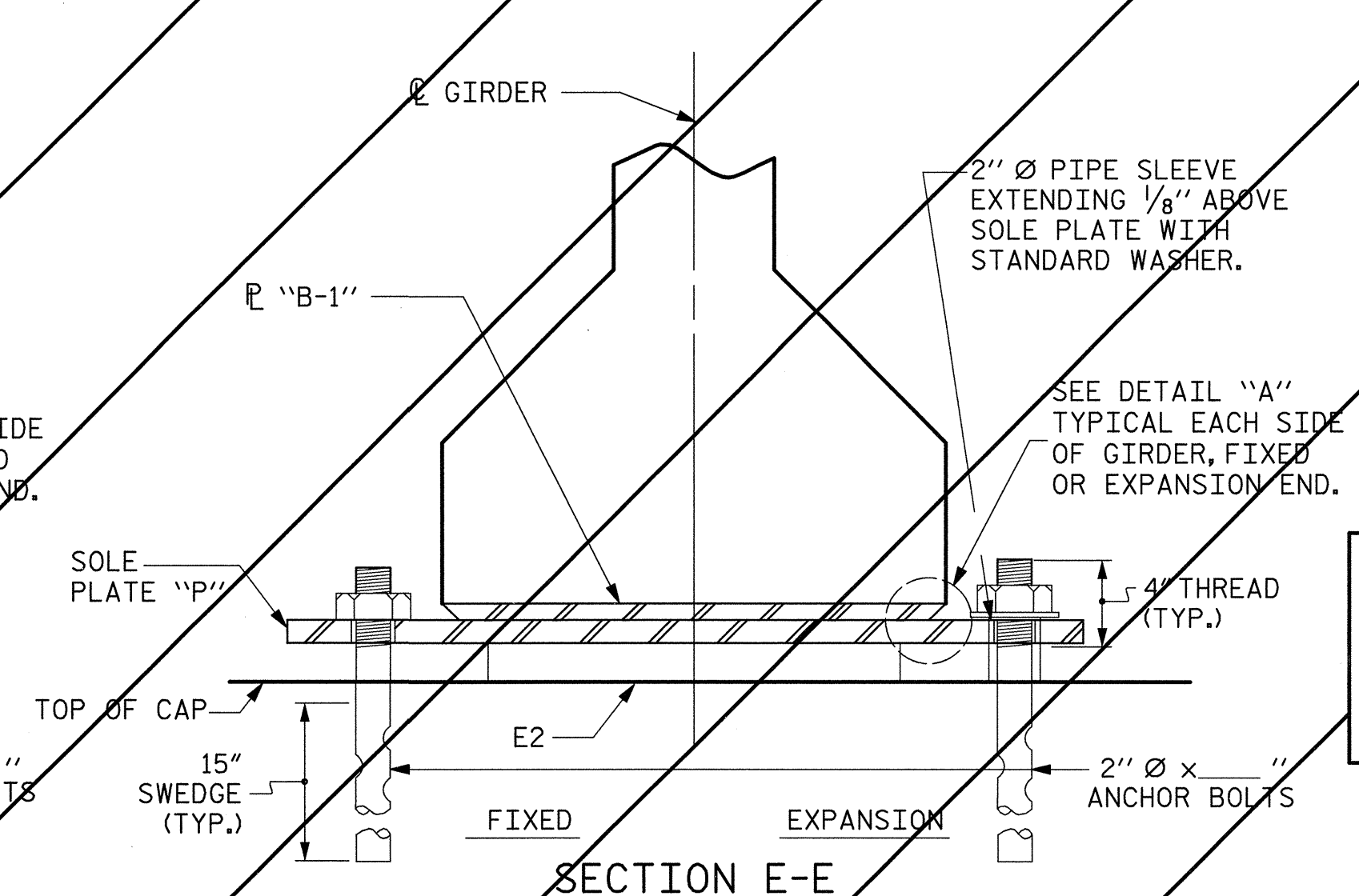


TYPICAL SECTION OF ELASTOMERIC BEARINGS

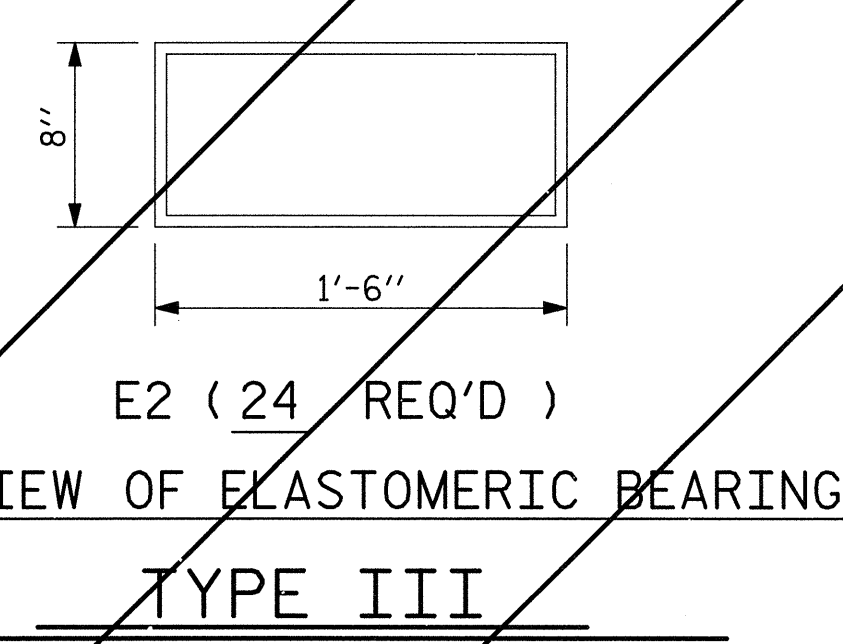


PLAN VIEW OF ELASTOMERIC BEARING

TYPE IV

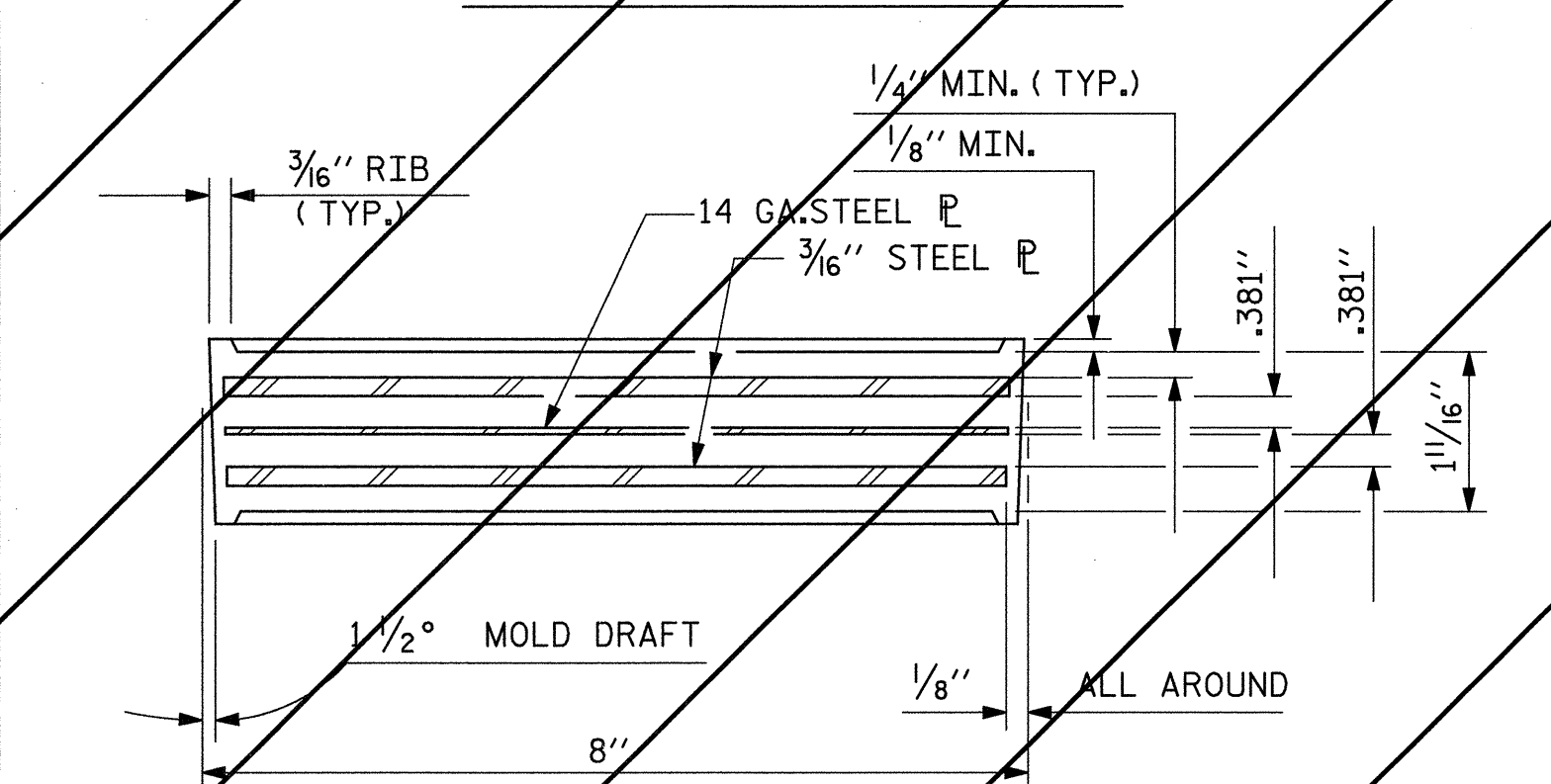
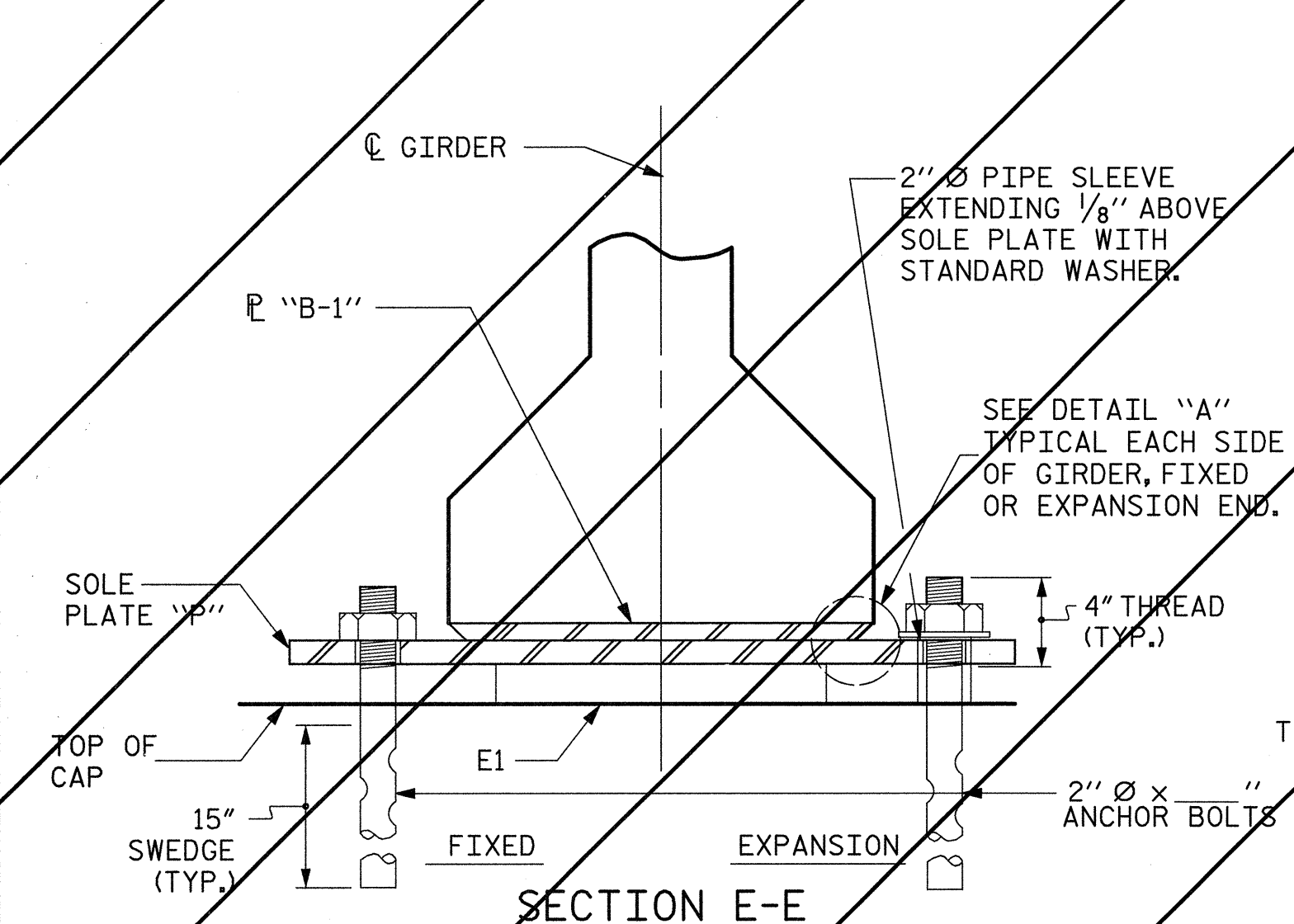


TYPICAL SECTION OF ELASTOMERIC BEARINGS

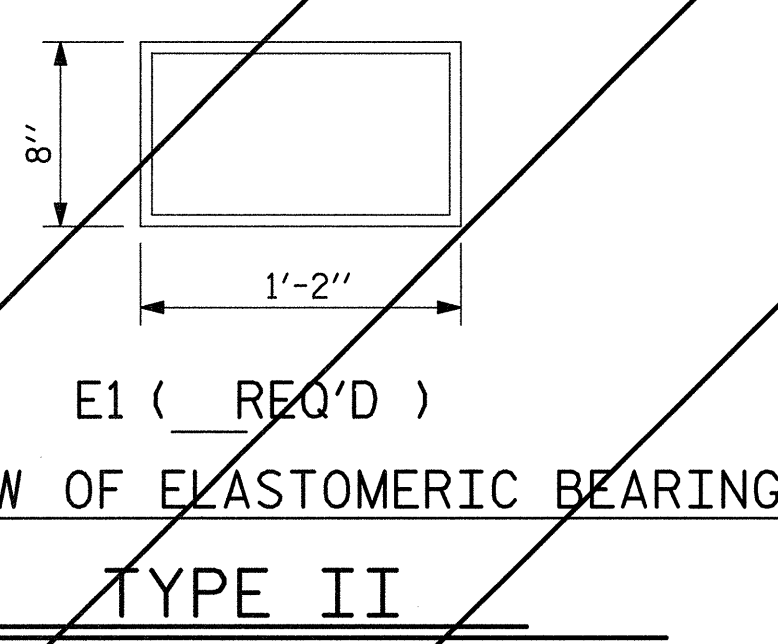


PLAN VIEW OF ELASTOMERIC BEARING

TYPE III



TYPICAL SECTION OF ELASTOMERIC BEARINGS



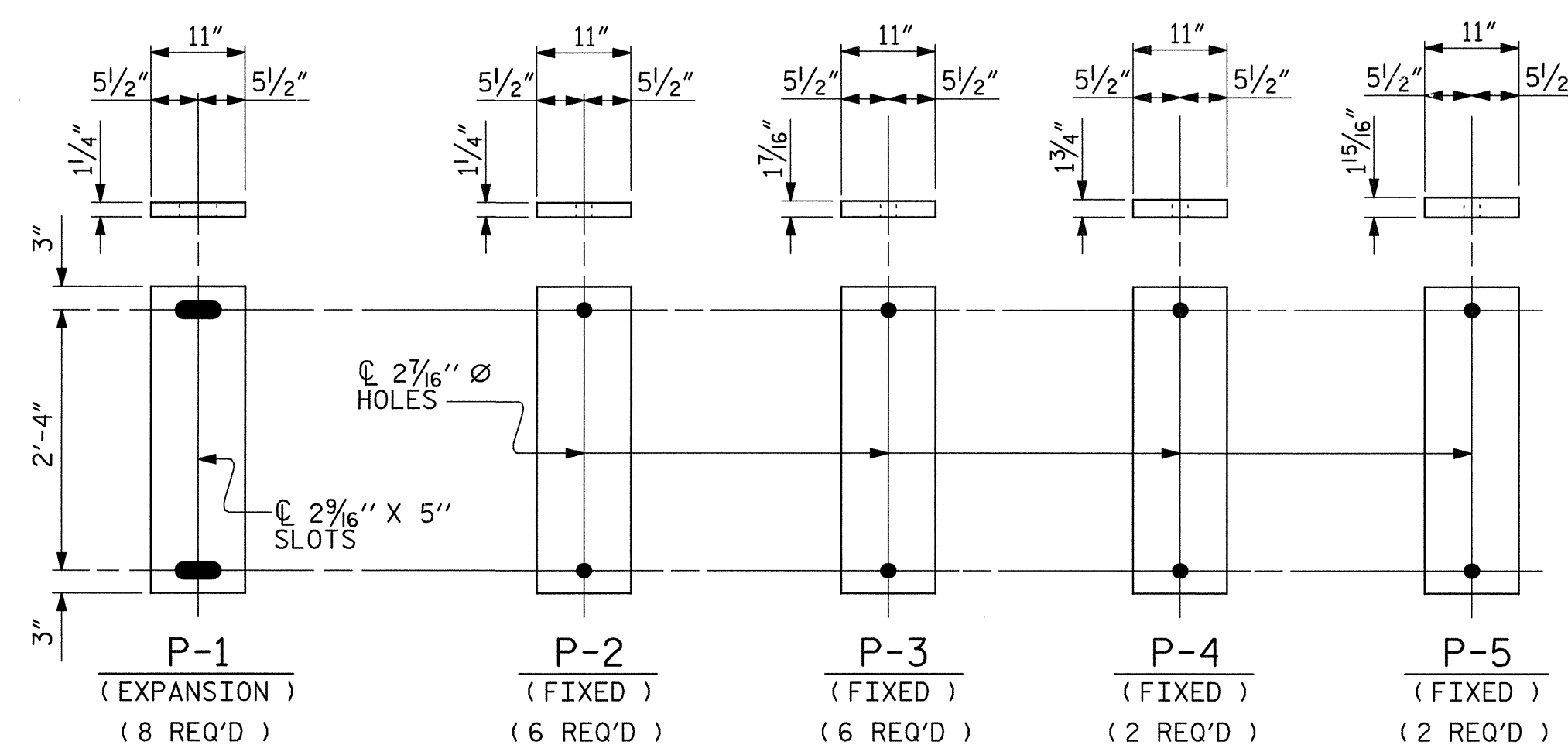
PLAN VIEW OF ELASTOMERIC BEARING

TYPE II

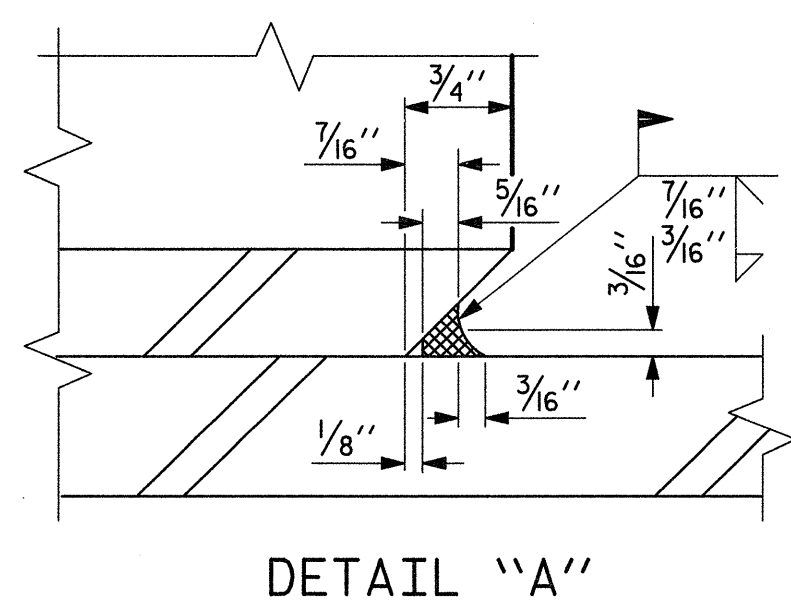
— LOAD RATINGS —

	MAX. D.L. + L.L.
36" PCG - TYPE II	82 K
45" PCG - TYPE III	115 K
45" PCG - TYPE IV	137 K

THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:



SOLE PLATE DETAILS ("P")



DETAIL "A"

ASSEMBLED BY : J. A. CAVER	DATE : 05/07
CHECKED BY : H. S. ELLIOTT	DATE : 06/07
DRAWN BY : WJH 8/89	REV. 10/17/00 RWW/LES
CHECKED BY : CRK 8/89	REV. 7/10/01 RWW/LES
	REV. 5/1/06 TLA/GM

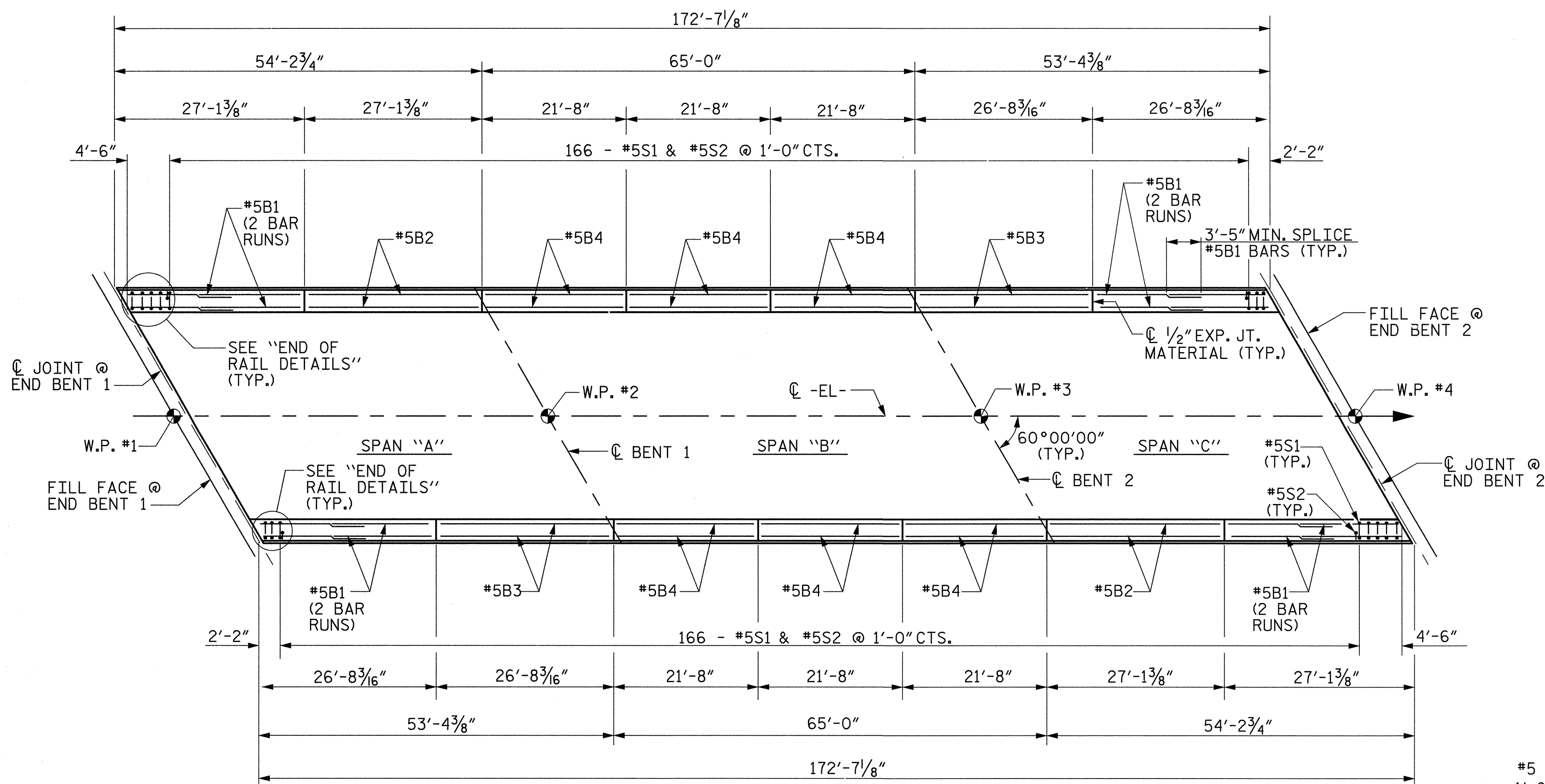
PROJECT NO. R-4906
PERSON COUNTY
STATION: 15+40.25 -EL-

REPLACES BRIDGE NO. 59

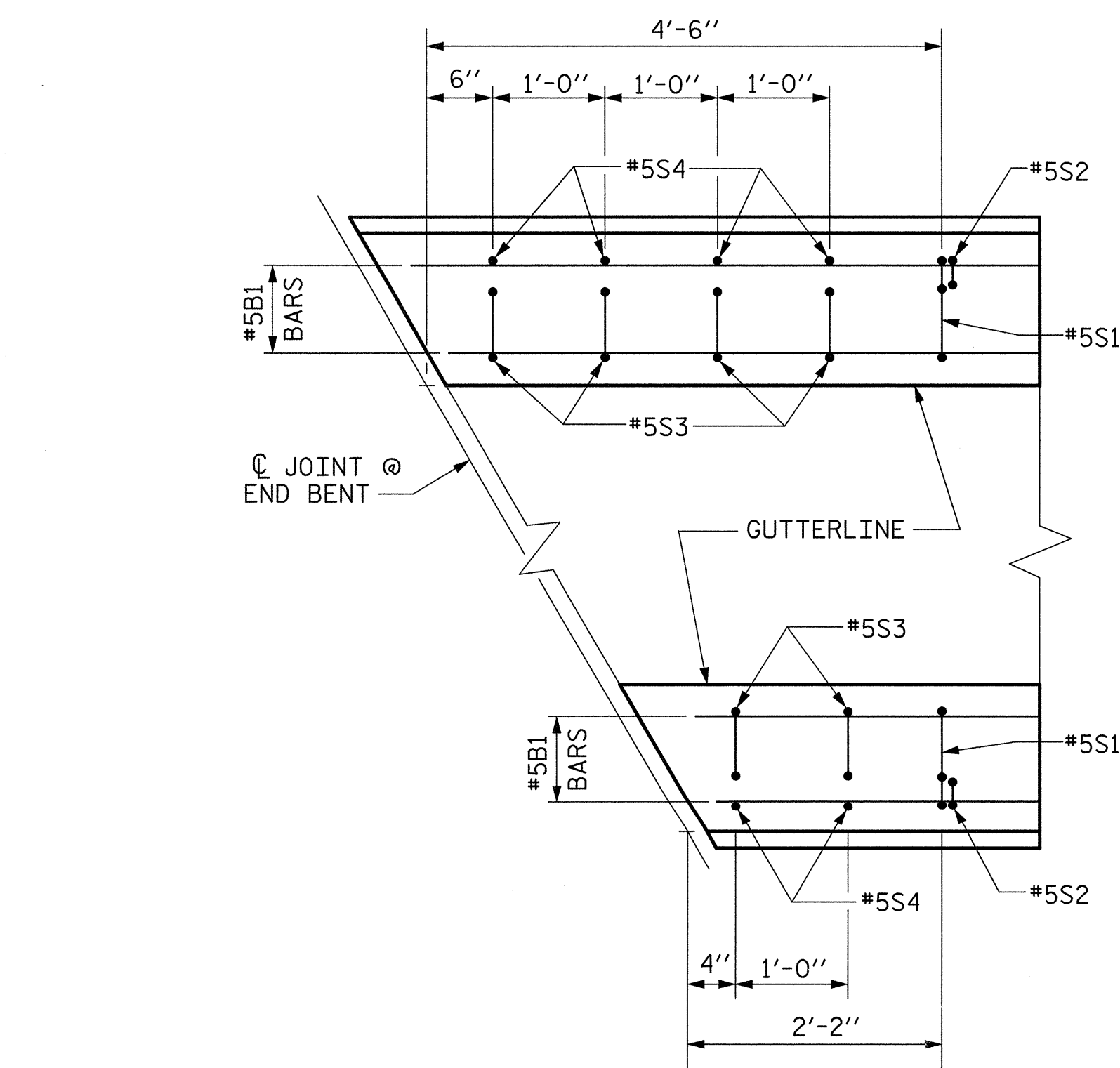
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
ELASTOMERIC BEARING
DETAILS
PRESTRESSED CONCRETE GIRDER
SUPERSTRUCTURE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-34
1			3			TOTAL SHEETS
2			4			50

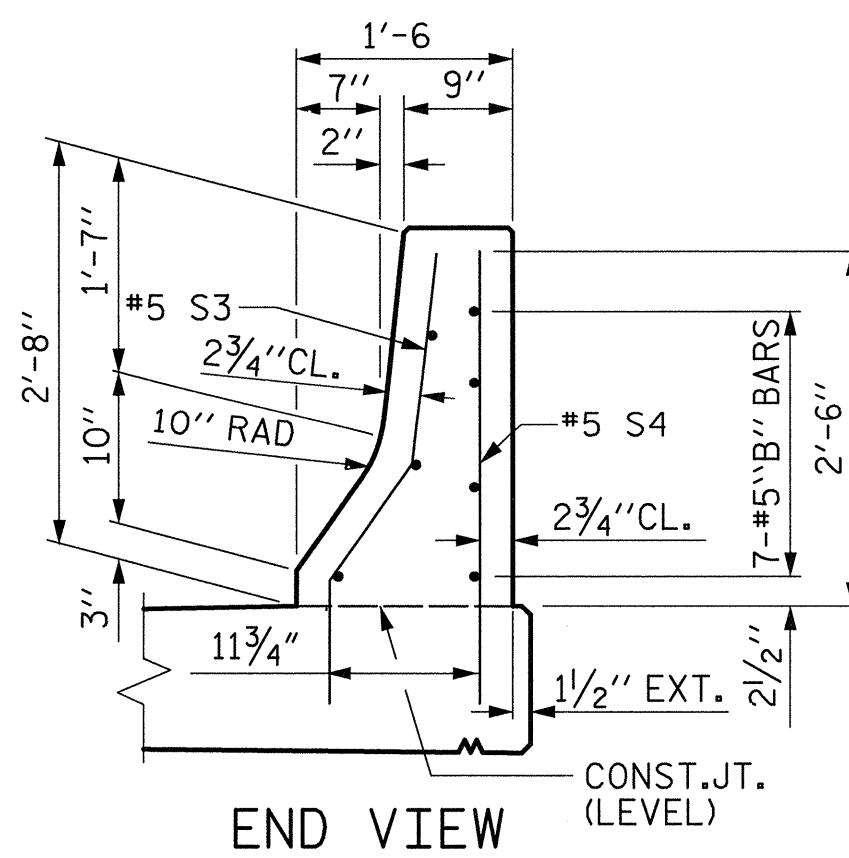
STD. NO. EB3



PLAN



PLAN



END VIEW

END OF RAIL DETAILS

FOR ADHESIVE ANCHORING AT SAWED JOINTS

NOTES

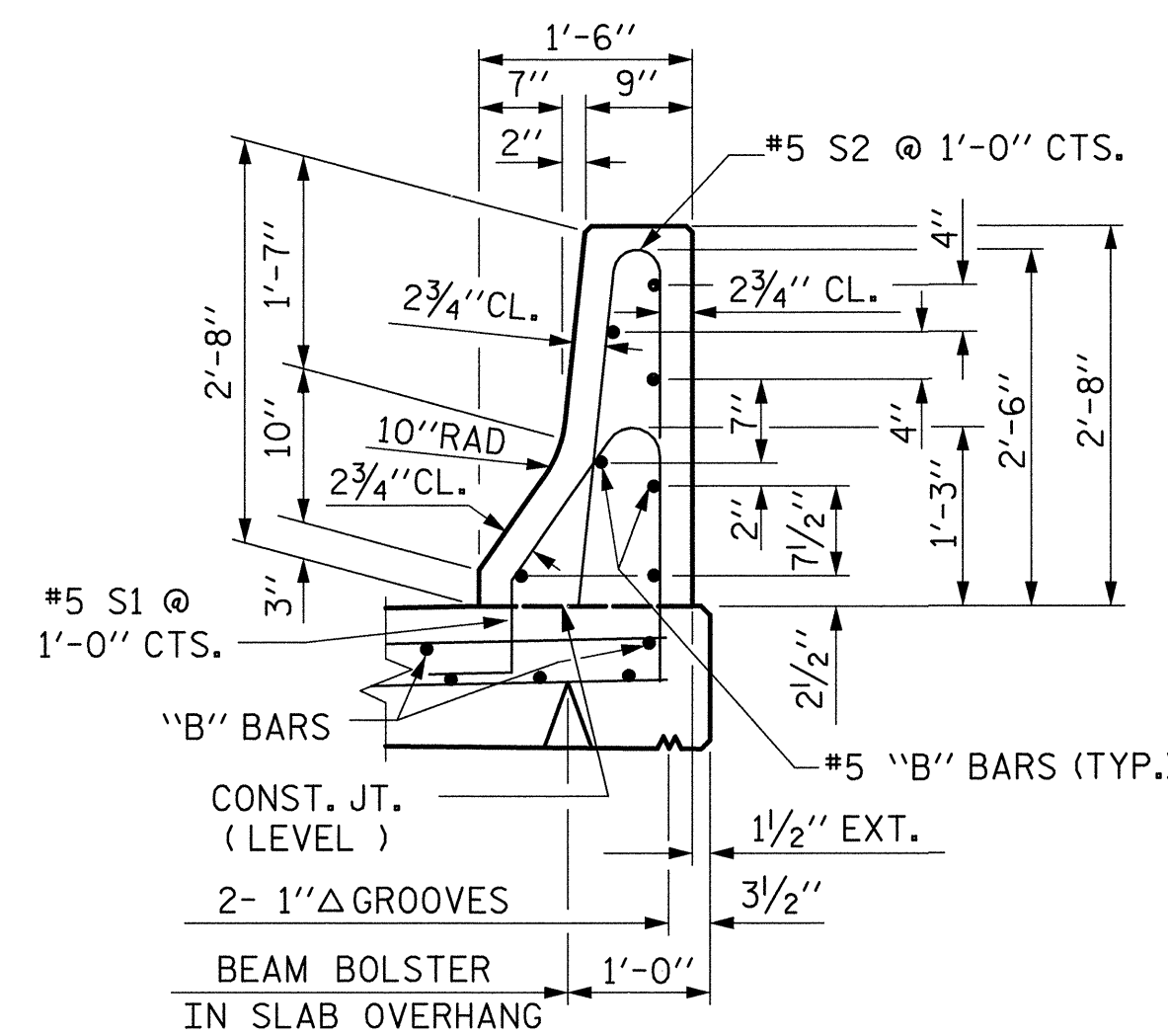
THE BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

WHEN EVAZOTE JOINT SEAL IS REQUIRED, THE JOINT IN THE DECK SHALL BE SAWED PRIOR TO THE CASTING OF BARRIER RAIL.

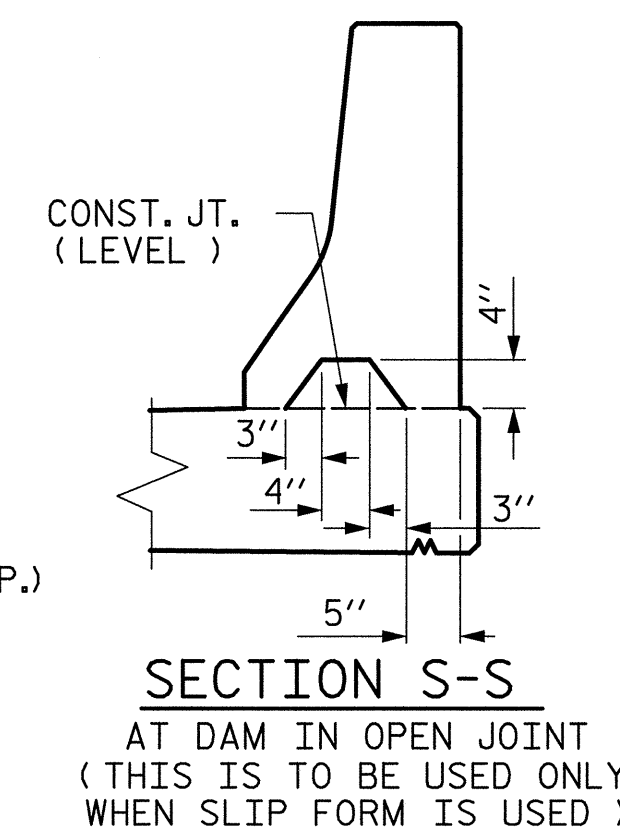
ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

THE #5 S3 AND #5 S4 BARS SHALL BE INSTALLED, USING AN ADHESIVE ANCHORING SYSTEM, AFTER SAWING THE JOINT. THE YIELD LOAD FOR THE #5 S3 AND #5 S4 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

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. THE 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.

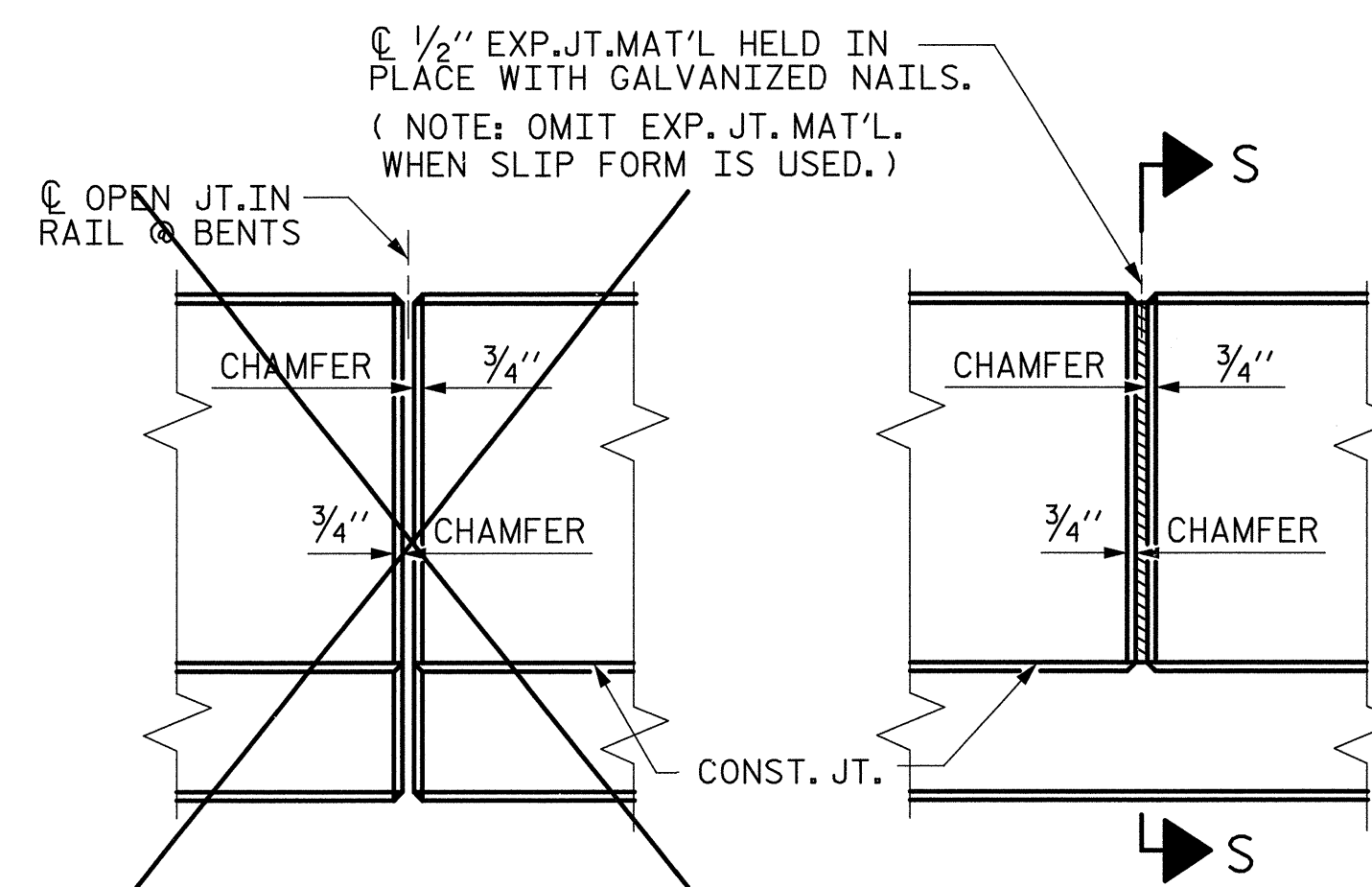


SECTION THRU RAIL

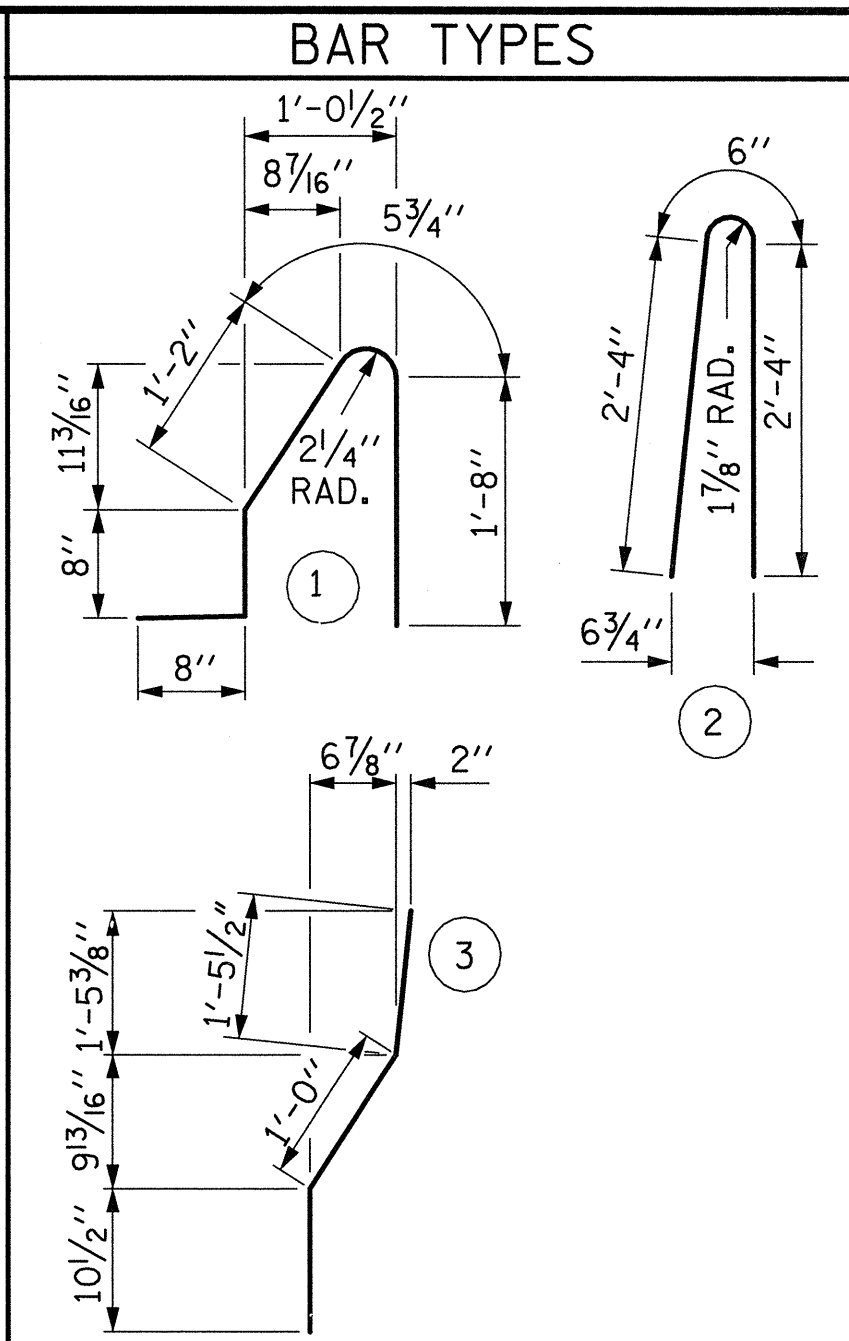


SECTION S-S

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



ELEVATION AT EXPANSION JOINTS
BARRIER RAIL DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* S1	332	#5	1	4'-8"	1616
* S2	332	#5	2	5'-2"	1789
* S3	12	#5	3	3'-4"	42
* S4	12	#5	STR	3'-2"	40
* B1	56	#5	STR	15'-3"	891
* B2	14	#5	STR	26'-8"	389
* B3	14	#5	STR	26'-3"	383
* B4	42	#5	STR	21'-3"	931

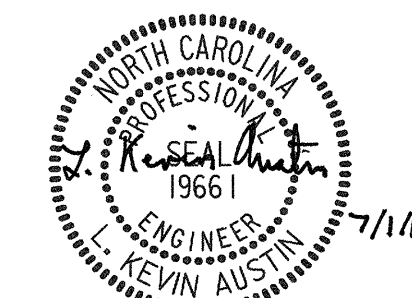
* EPOXY COATED REINFORCING STEEL	6081 LBS.
CLASS AA CONCRETE	34.5 CU. YDS.
CONCRETE BARRIER RAIL	345 LIN. FT.

PROJECT NO. R-4906
PERSON COUNTY
STATION: 15+40.25 -EL-

REPLACES BRIDGE NO. 59

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

THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-35	
1			3			TOTAL SHEETS 50	
2			4				

STD. NO. CBR1

NOTES

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

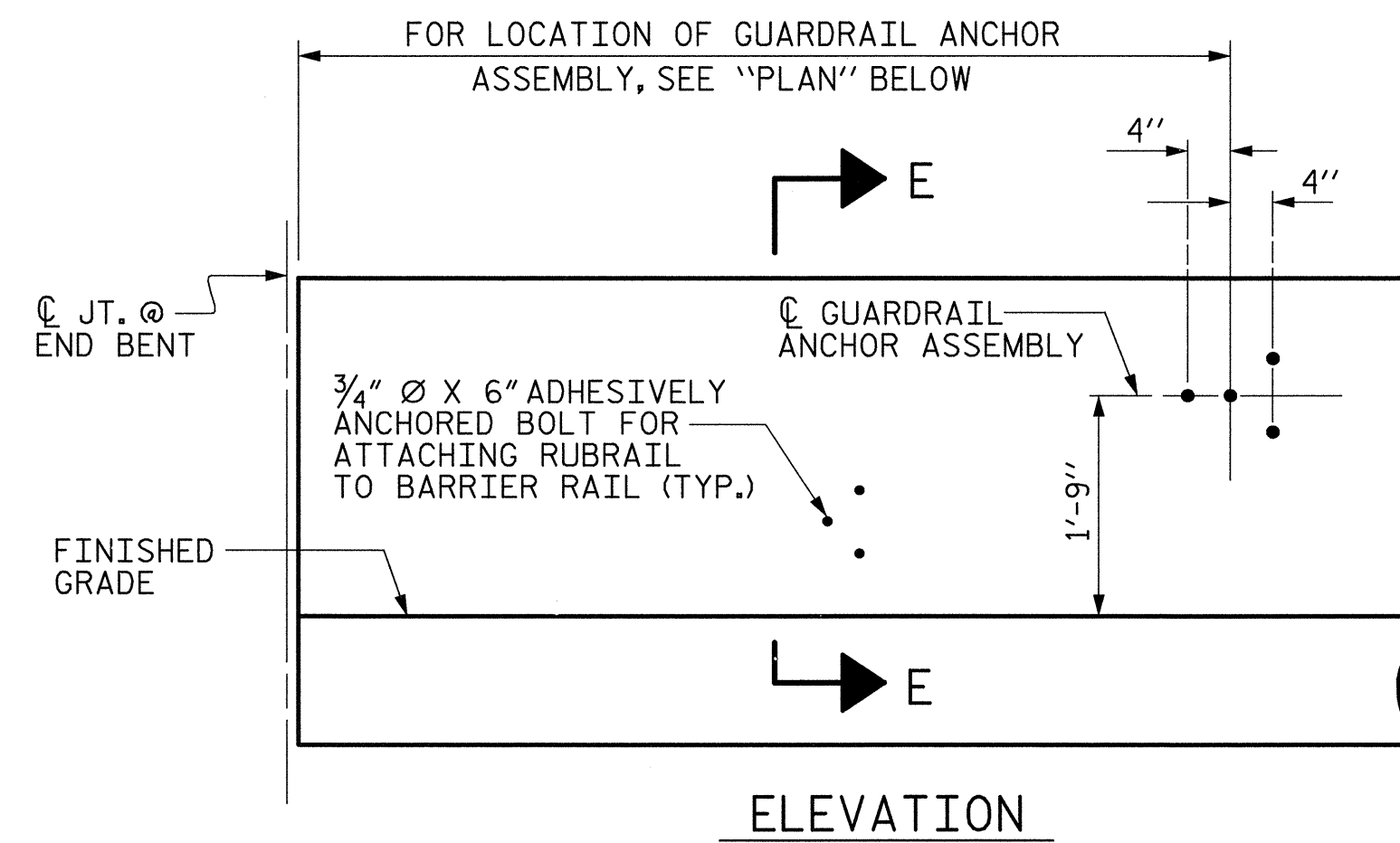
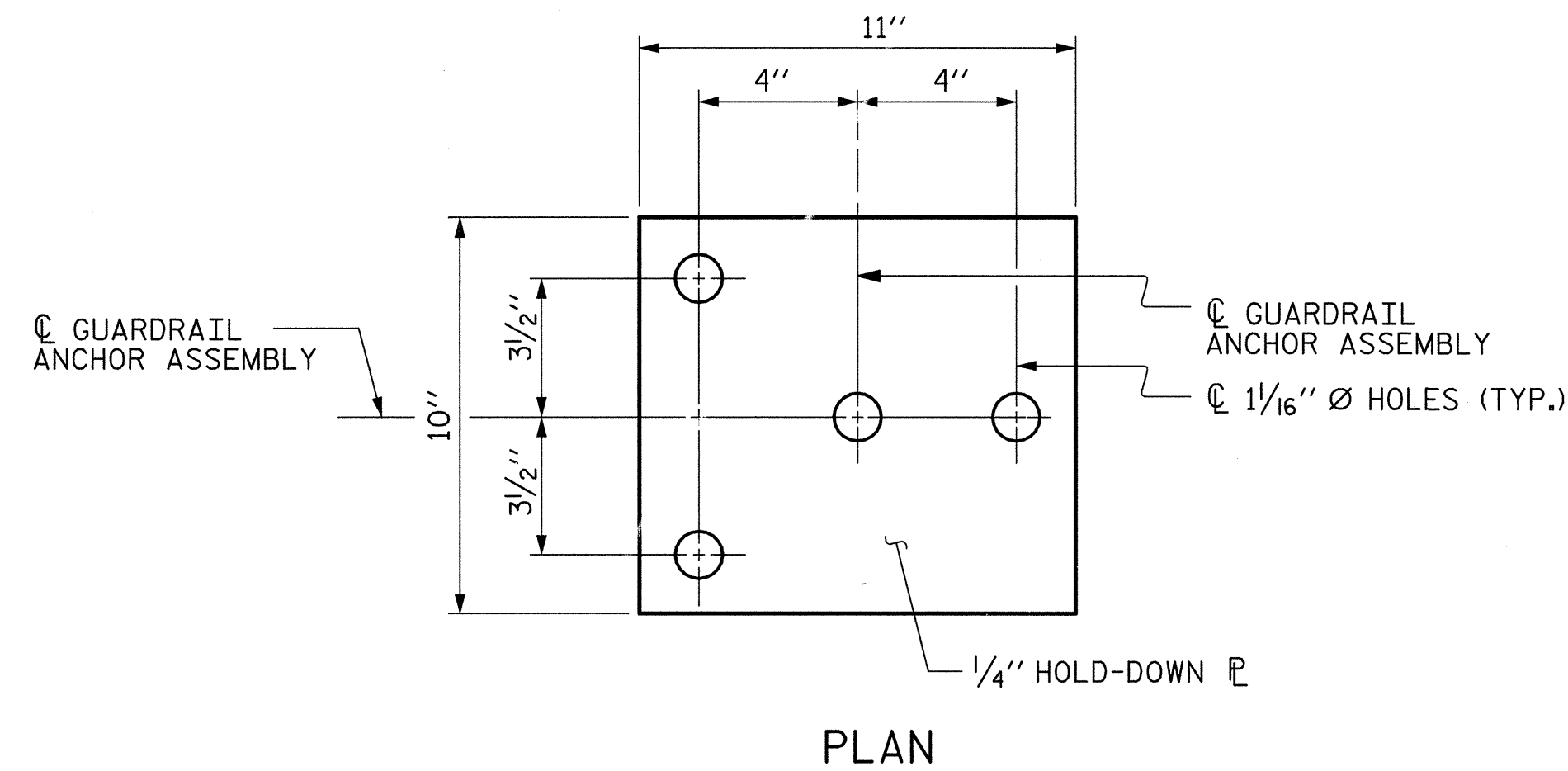
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

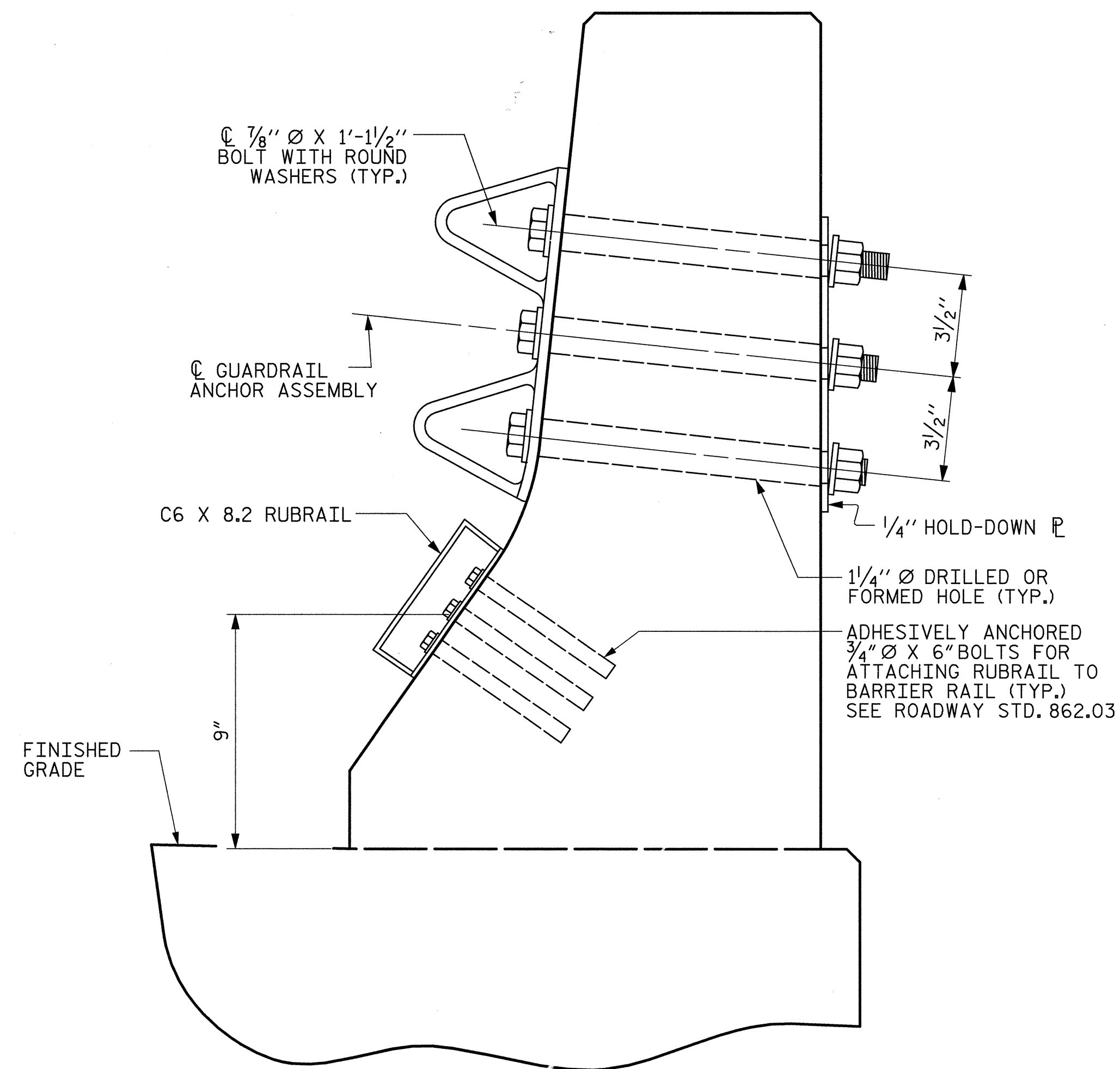
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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

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

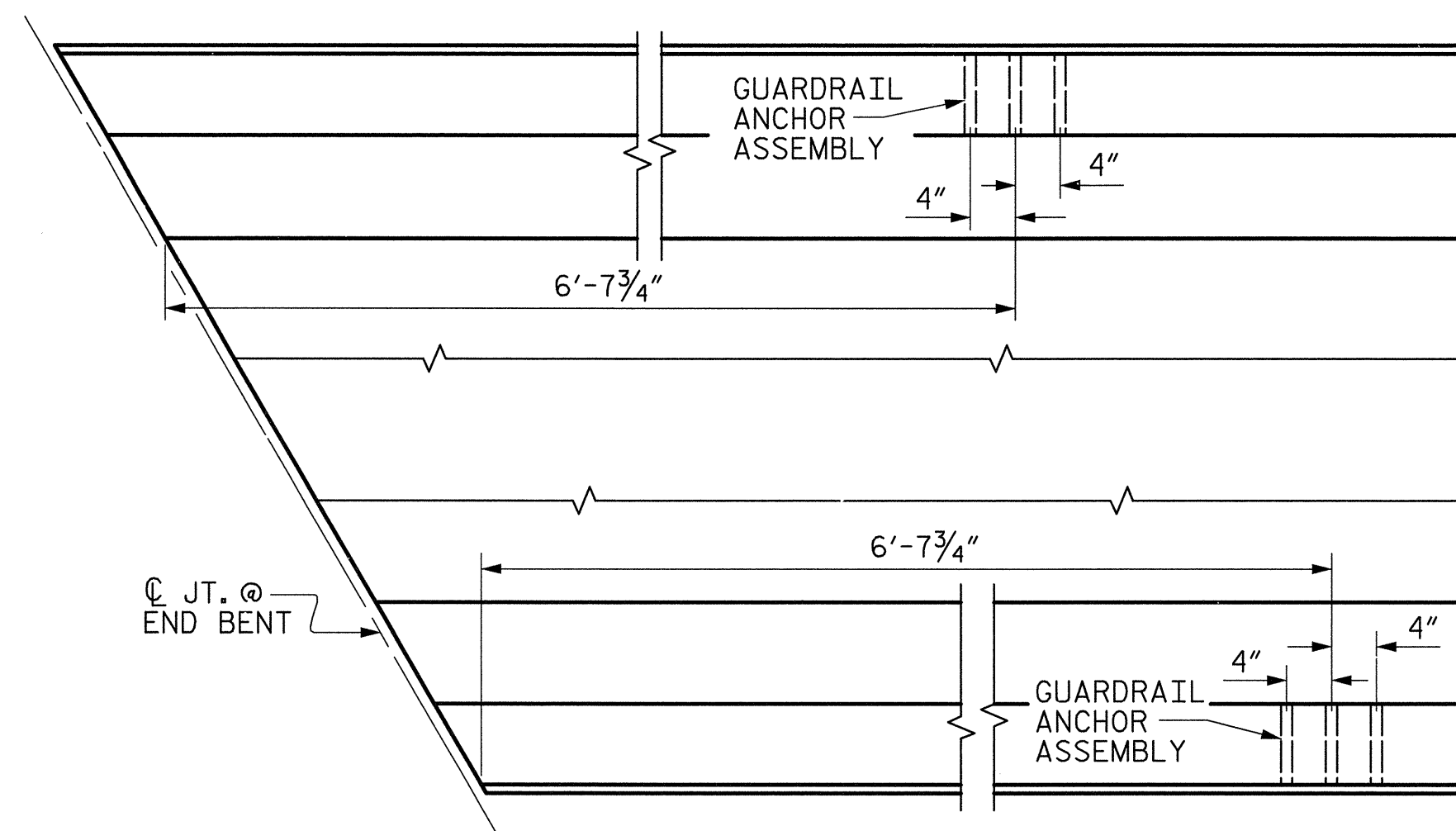


FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03



SECTION E-E

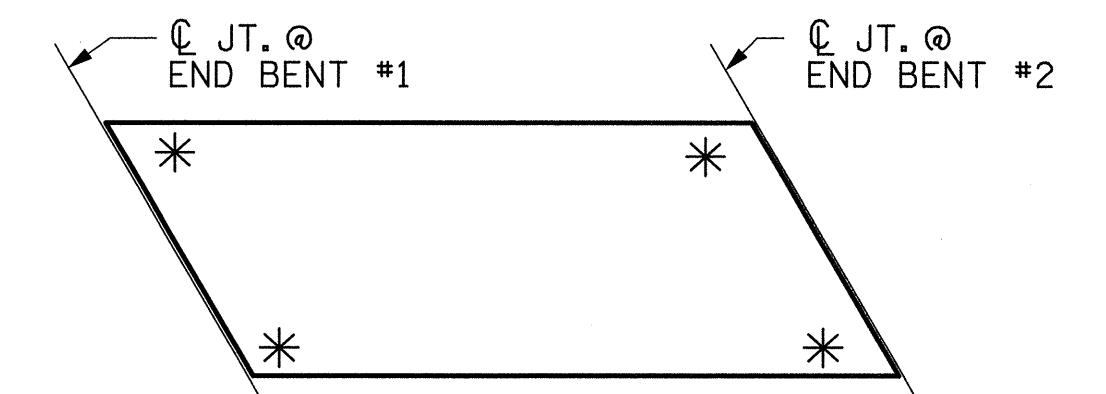
GUARDRAIL ANCHOR ASSEMBLY DETAILS



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. R-4906

PERSON COUNTY

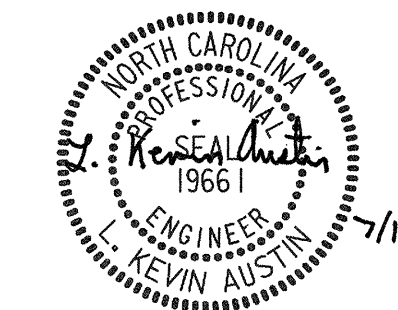
STATION: 15+40.25 -EL-

REPLACES BRIDGE NO. 59

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
GUARDRAIL ANCHORAGE
FOR BARRIER RAIL

THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:



PLANS PREPARED BY:



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-36	
1			3			TOTAL SHEETS	
2			4			50	

STD. NO. GRA2

ASSEMBLED BY : J. A. CAVER	DATE : 07/07
CHECKED BY : H. S. ELLIOTT	DATE : 07/07
DRAWN BY : TLA 5/06	ADDED 5/1/06R KMM/GM
CHECKED BY : GM 5/06	

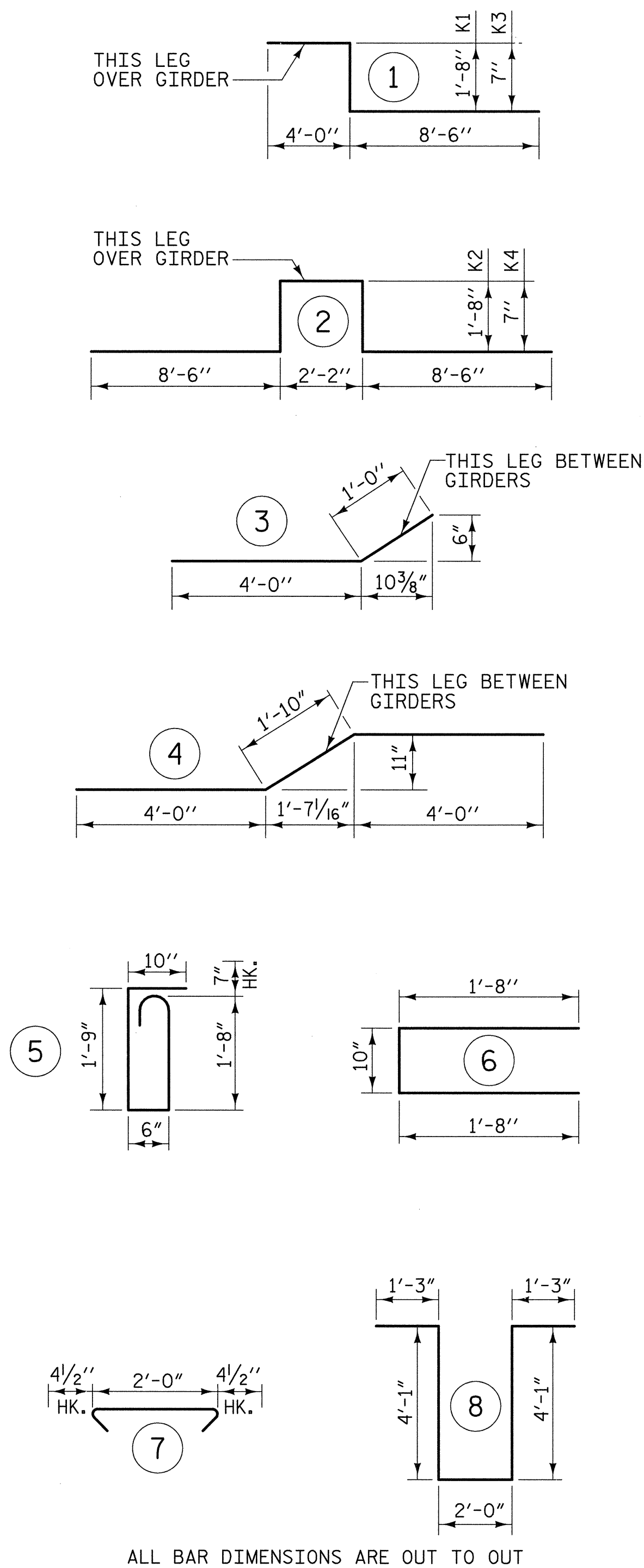
REINFORCING BAR SCHEDULE

REINFORCING STEEL					REINFORCING STEEL						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1*	301	#5	STR	37'-11"	11904	A58	2	#5	STR	18'-2"	38
A2	301	#5	STR	37'-11"	11904	A59	2	#5	STR	19'-0"	40
A3*	10	#5	STR	4'-4"	45	A60	2	#5	STR	19'-11"	42
A4*	2	#5	STR	5'-2"	11	A61	2	#5	STR	20'-9"	43
A5*	2	#5	STR	6'-1"	13	A62	2	#5	STR	21'-7"	45
A6*	2	#5	STR	6'-11"	14	A63	2	#5	STR	22'-6"	47
A7*	2	#5	STR	7'-10"	16	A64	2	#5	STR	23'-4"	49
A8*	2	#5	STR	8'-8"	18	A65	2	#5	STR	24'-3"	51
A9*	2	#5	STR	9'-6"	20	A66	2	#5	STR	25'-1"	52
A10*	2	#5	STR	10'-5"	22	A67	2	#5	STR	25'-11"	54
A11*	2	#5	STR	11'-3"	23	A68	2	#5	STR	26'-10"	56
A12*	2	#5	STR	12'-1"	25	A69	2	#5	STR	27'-8"	58
A13*	2	#5	STR	13'-0"	27	A70	2	#5	STR	28'-6"	59
A14*	2	#5	STR	13'-10"	29	A71	2	#5	STR	29'-5"	61
A15*	2	#5	STR	14'-8"	31	A72	2	#5	STR	30'-3"	63
A16*	2	#5	STR	15'-7"	33	A73	2	#5	STR	31'-2"	65
A17*	2	#5	STR	16'-5"	34	A74	2	#5	STR	32'-0"	67
A18*	2	#5	STR	17'-4"	36	A75	2	#5	STR	32'-10"	68
A19*	2	#5	STR	18'-2"	38	A76	2	#5	STR	33'-9"	70
A20*	2	#5	STR	19'-0"	40	A77	2	#5	STR	34'-7"	72
A21*	2	#5	STR	19'-11"	42	A78	2	#5	STR	35'-5"	74
A22*	2	#5	STR	20'-9"	43	A79	2	#5	STR	36'-4"	76
A23*	2	#5	STR	21'-7"	45	A80	2	#5	STR	37'-2"	78
A24*	2	#5	STR	22'-6"	47						
A25*	2	#5	STR	23'-4"	49	B1	188	#5	STR	44'-8"	8758
A26*	2	#5	STR	24'-3"	51	B2*	52	#5	STR	46'-0"	2495
A27*	2	#5	STR	25'-1"	52	B3*	52	#5	STR	34'-7"	1876
A28*	2	#5	STR	25'-11"	54	B4*	26	#5	STR	21'-0"	569
A29*	2	#5	STR	26'-10"	56	B5*	50	#6	STR	18'-0"	1352
A30*	2	#5	STR	27'-8"	58						
A31*	2	#5	STR	28'-6"	59	G1	2	#5	STR	43'-9"	91
A32*	2	#5	STR	29'-5"	61						
A33*	2	#5	STR	30'-3"	63	K1	8	#8	1	14'-2"	303
A34*	2	#5	STR	31'-2"	65	K2*	8	#8	2	22'-6"	481
A35*	2	#5	STR	32'-0"	67	K3*	12	#6	1	13'-1"	236
A36*	2	#5	STR	32'-10"	68	K4*	12	#6	2	20'-4"	366
A37*	2	#5	STR	33'-9"	70	K5	12	#5	STR	8'-4"	104
A38*	2	#5	STR	34'-7"	72	K6	48	#5	STR	10'-0"	501
A39*	2	#5	STR	35'-5"	74	K7	20	#5	3	5'-0"	104
A40*	2	#5	STR	36'-4"	76	K8	20	#5	4	9'-10"	205
A41*	2	#5	STR	37'-2"	78						
A42	10	#5	STR	4'-4"	45	S1*	60	#5	5	5'-4"	334
A43	2	#5	STR	5'-2"	11	S2*	60	#4	6	4'-2"	167
A44	2	#5	STR	6'-1"	13	S3	192	#4	7	2'-9"	353
A45	2	#5	STR	6'-11"	14						
A46	2	#5	STR	7'-10"	16	U1	48	#5	8	12'-8"	634
A47	2	#5	STR	8'-8"	18						
A48	2	#5	STR	9'-6"	20						
A49	2	#5	STR	10'-5"	22						
A50	2	#5	STR	11'-3"	23						
A51	2	#5	STR	12'-1"	25						
A52	2	#5	STR	13'-0"	27						
A53	2	#5	STR	13'-10"	29						
A54	2	#5	STR	14'-8"	31						
A55	2	#5	STR	15'-7"	33						
A56	2	#5	STR	16'-5"	34						
A57	2	#5	STR	17'-4"	36						

REINFORCING STEEL	LBS.	24288
* EPOXY COATED REINFORCING STEEL	LBS.	21899
CLASS AA CONCRETE		
POUR #1	C.Y.	59.3
POUR #2	C.Y.	90.9
POUR #3	C.Y.	93.4
TOTAL **	C.Y.	243.6

* INDICATES EPOXY COATED REINFORCING STEEL
 ** QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

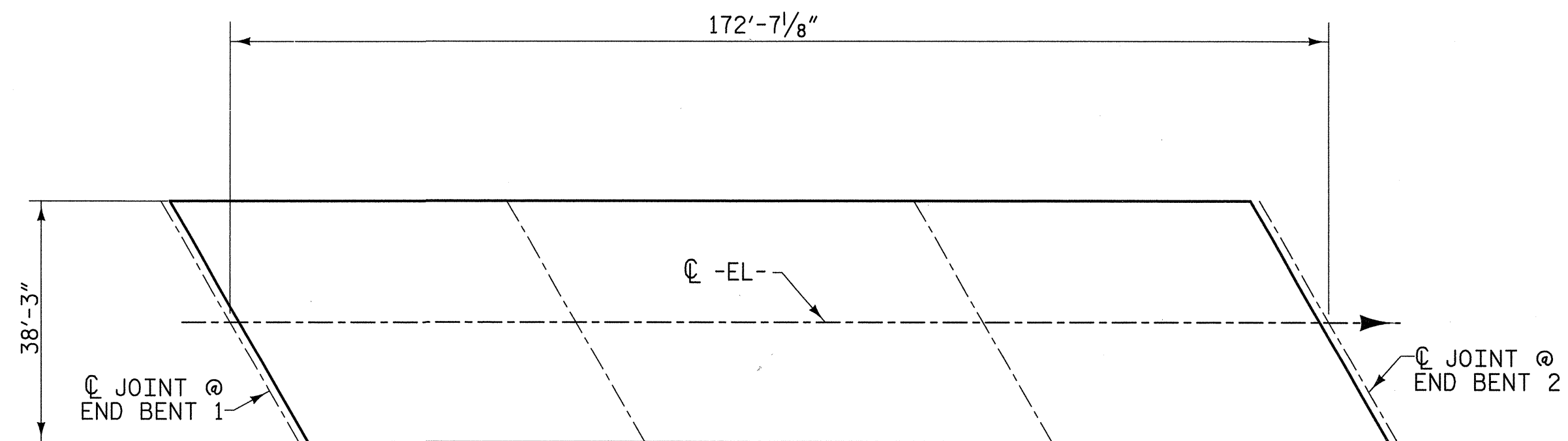
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

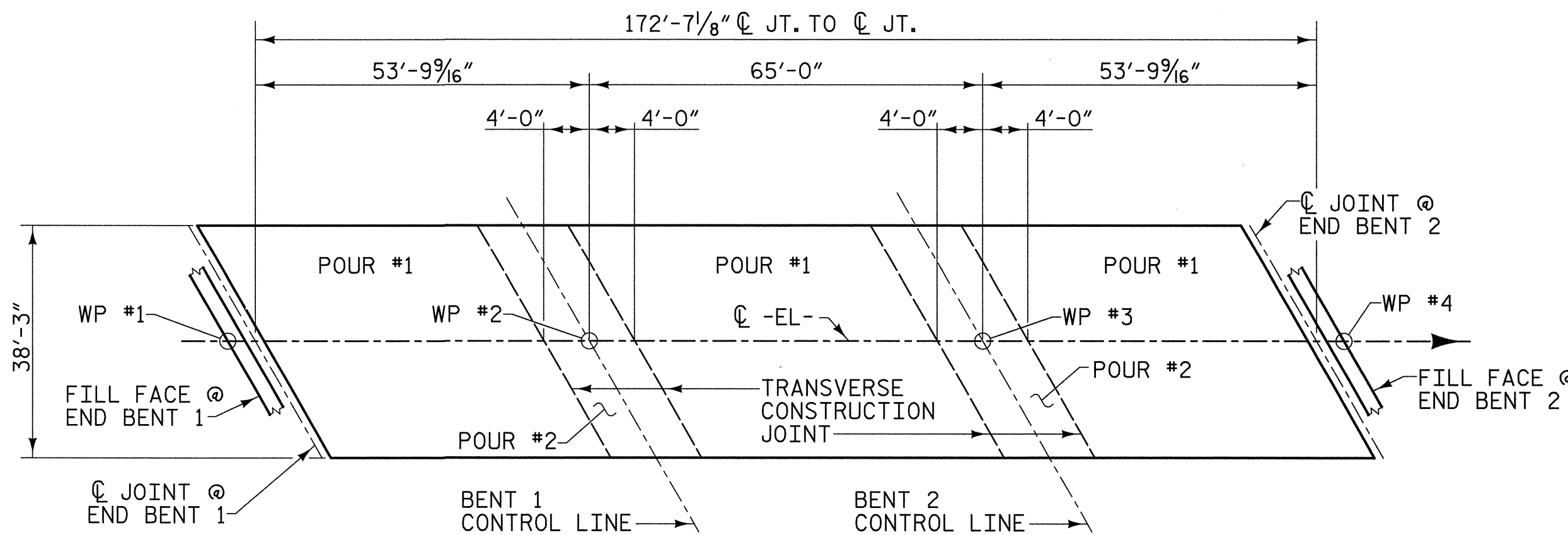
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB

(SQ. FT. = 6602)

FOR POURING SEQUENCE SEE PLAN OF SPANS



OPTIONAL POURING SEQUENCE SKETCH

NOTE: POUR 2 CANNOT BE STARTED UNTIL BOTH ADJACENT POURS REACH MINIMUM OF 3000 PSI

GROOVING BRIDGE FLOORS

APPROACH SLABS	864	SQ. FT.
BRIDGE DECK	5474	SQ. FT.
TOTAL	6338	SQ. FT.

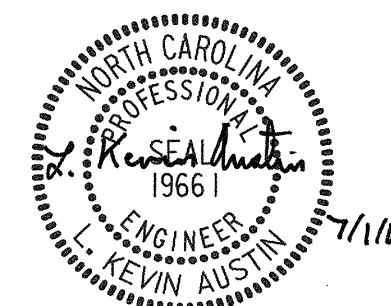
PROJECT NO. R-4906
 PERSON _____ COUNTY _____
 STATION: 15+40.25 -EL-

REPLACES BRIDGE NO. 59

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE BILL OF MATERIAL

35'-0" CLEAR ROADWAY - 60° SKEW



PLANS PREPARED BY:



REVISIONS

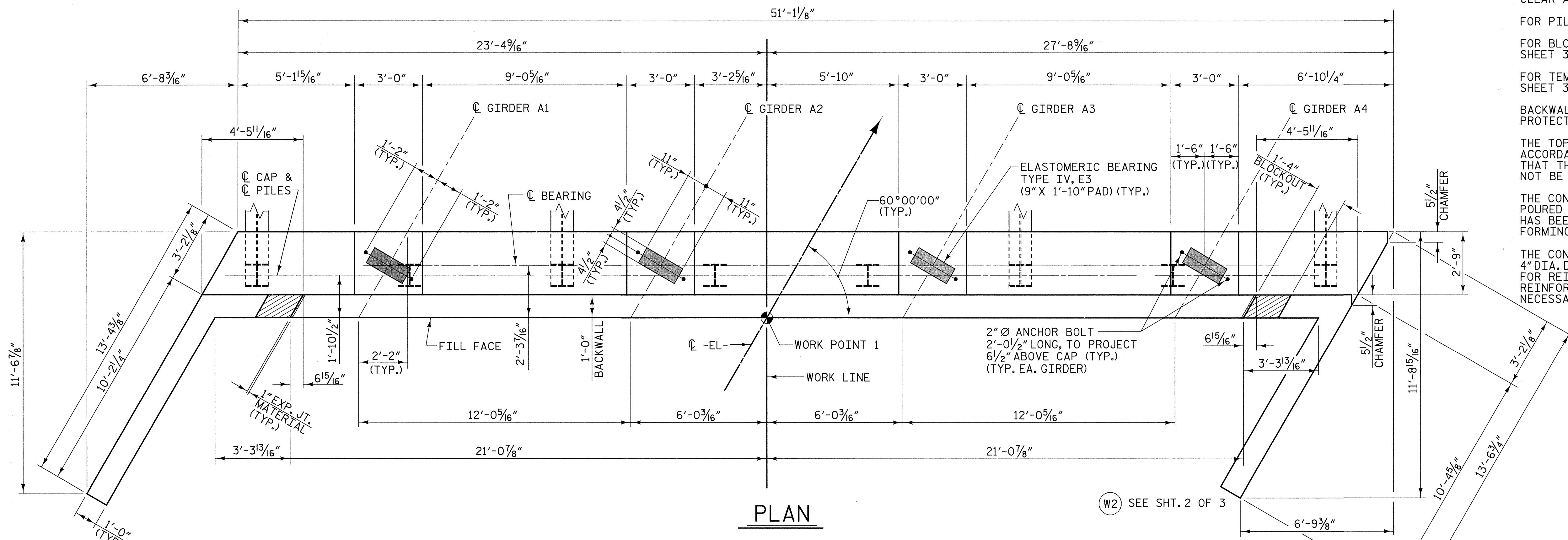
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1			3		
2			4		

SHEET NO.

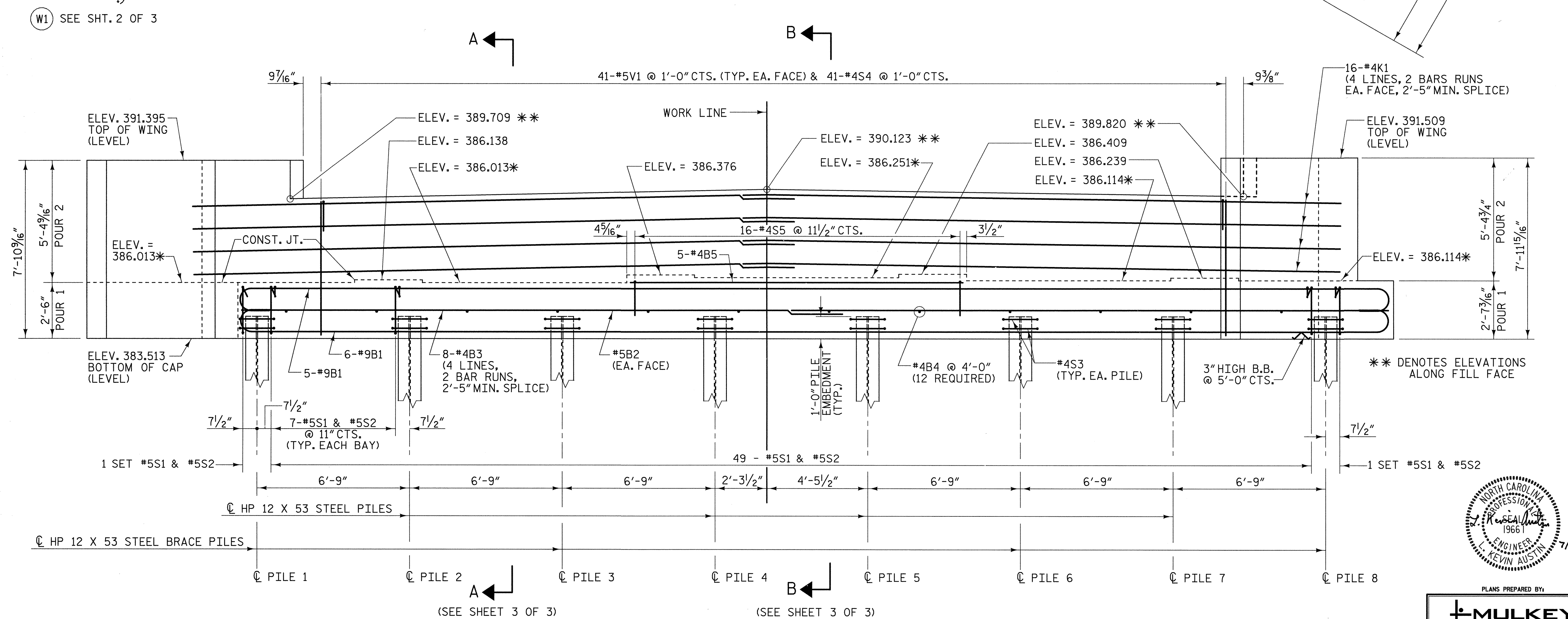
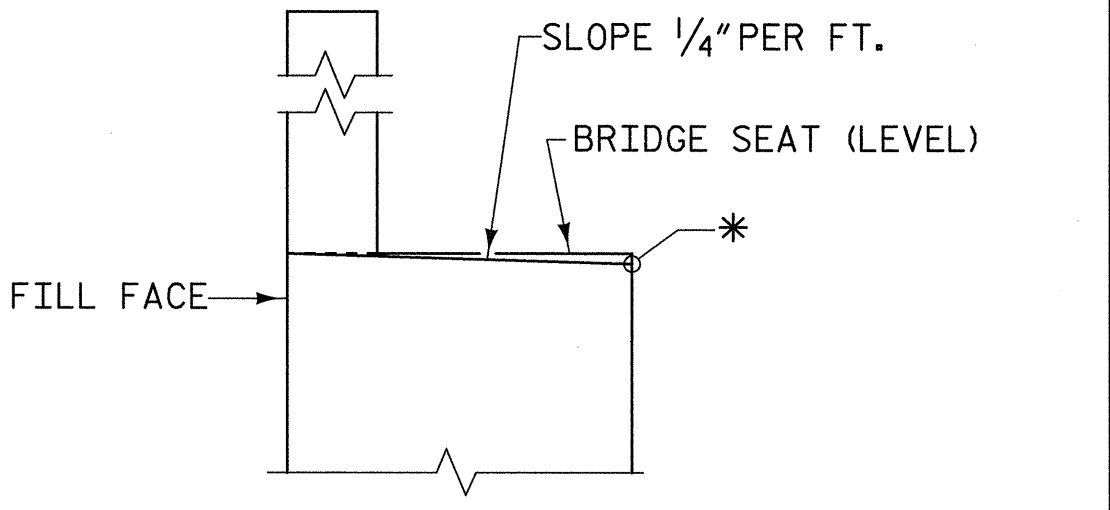
S-37
 TOTAL SHEETS 50

NOTES:

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- FOR PILE SPLICE DETAILS, SEE END BENT 1, SHEET 3 OF 3.
- FOR BLOCKOUT IN WINGWALL DETAILS, SEE END BENT 1, SHEET 3 OF 3.
- FOR TEMPORARY DRAINAGE AT END BENT, SEE END BENT 2, SHEET 3 OF 3.
- BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
- THE TOP SURFACE OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
- THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT IN THE DECK AND APPROACH SLAB HAS BEEN SAWED AND THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
- THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIA. DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.



NOTE:
THE TOP SURFACE OF THE CAP, EXCEPT THE GIRDER SEAT BUILDUPS, SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE FRONT FACE AT THE RATE OF 2%. ELEVATIONS BETWEEN BRIDGE SEAT BUILDUPS ARE SHOWN AS NOTED THUS * IN THE SKETCH BELOW.



FILL FACE

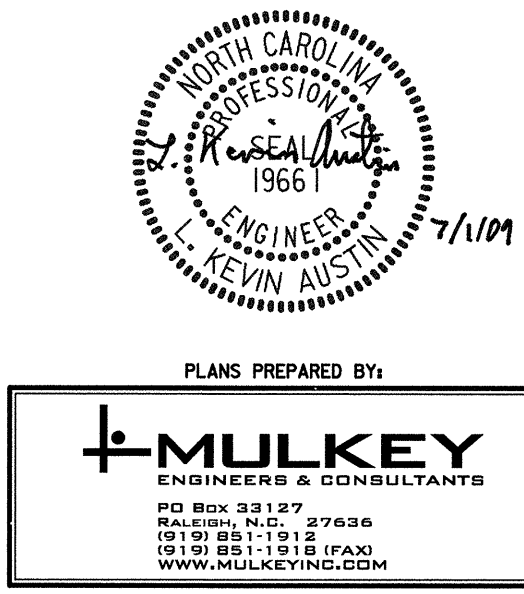
PROJECT NO. R-4906
PERSON _____ COUNTY _____
STATION: 15+40.25 -EL-

REPLACES BRIDGE NO. 59 SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUBSTRUCTURE
END BENT 1**

35'-0" CLEAR ROADWAY - 60° SKEW

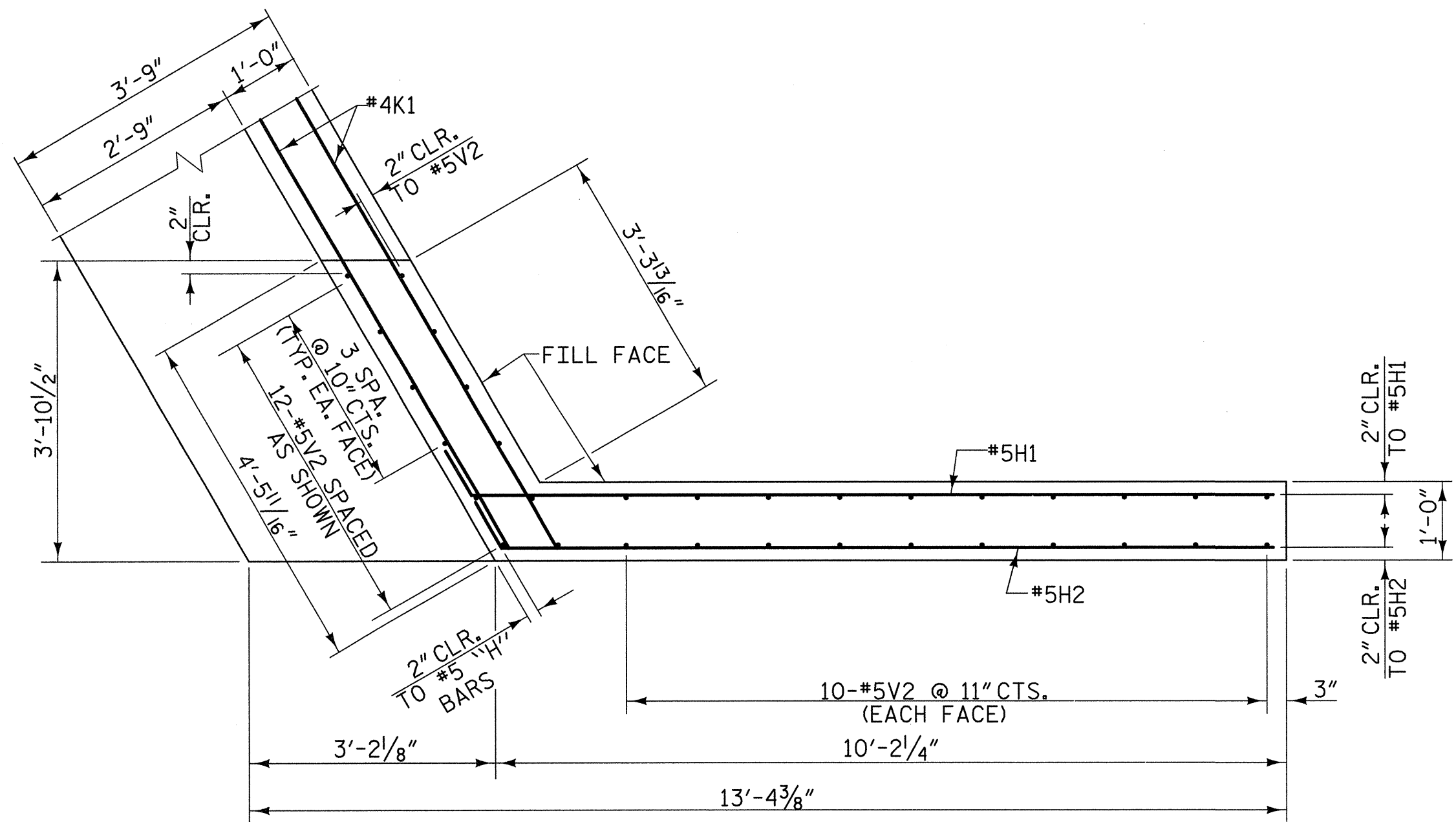


PLANS PREPARED BY:
MULKEY
ENGINEERS & CONSULTANTS

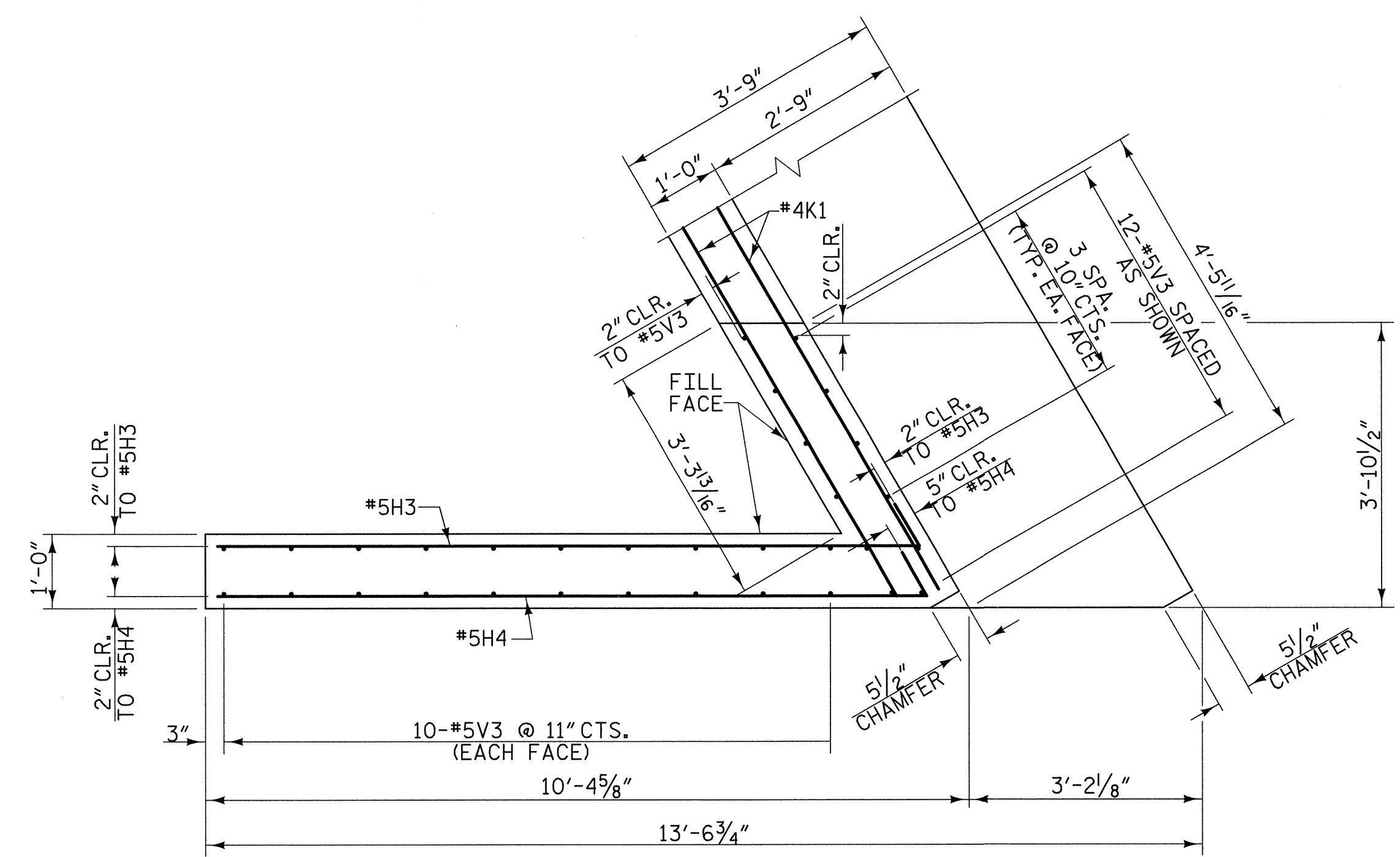
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1			3			TOTAL SHEETS 50	
2			4				

DRAWN BY: J. A. CAVER DATE: 05/07
CHECKED BY: H. S. ELLIOTT DATE: 06/07

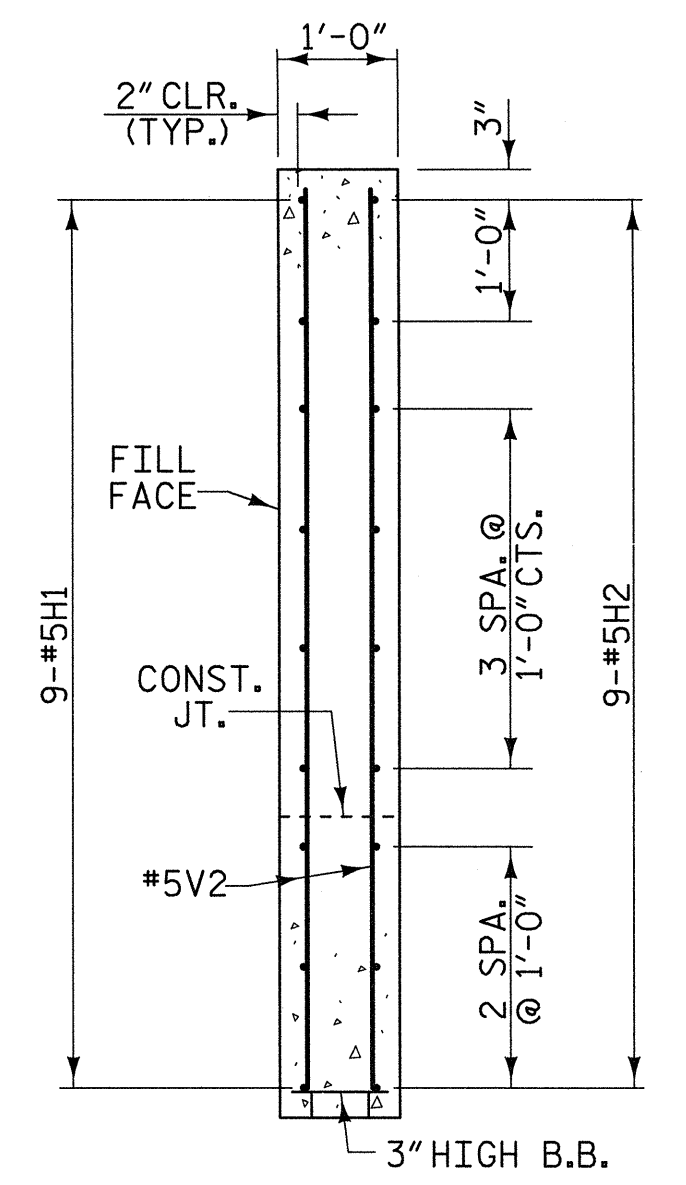
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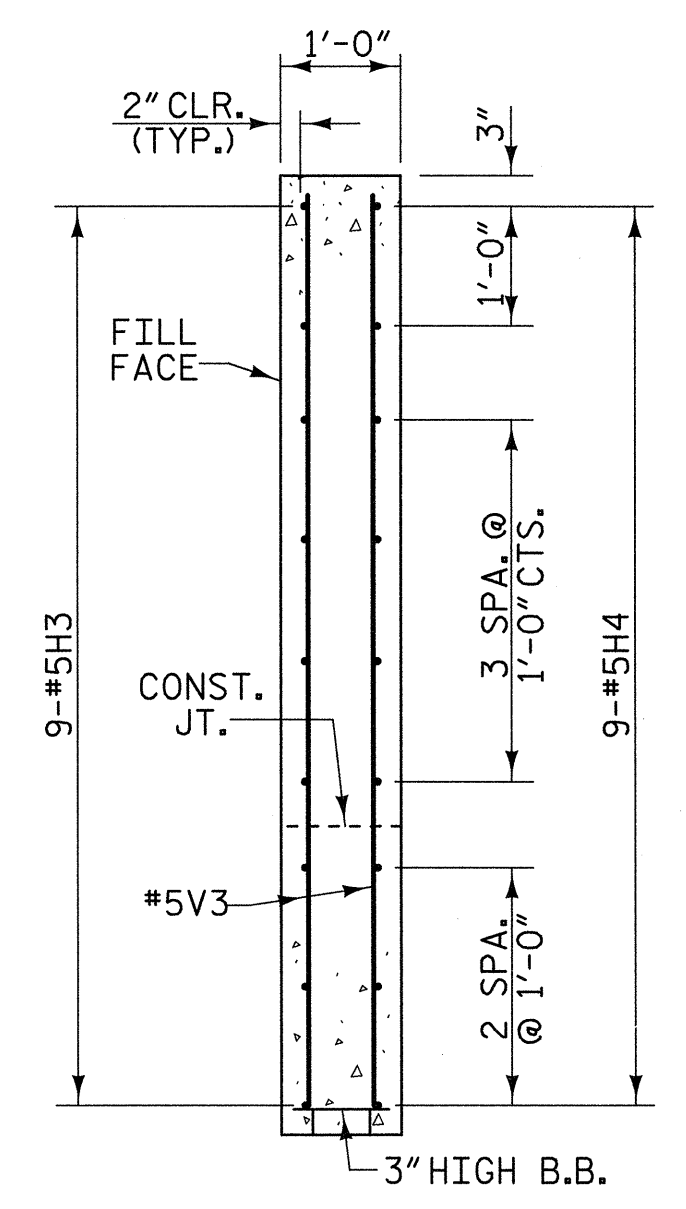
W1 PLAN OF LEFT WING



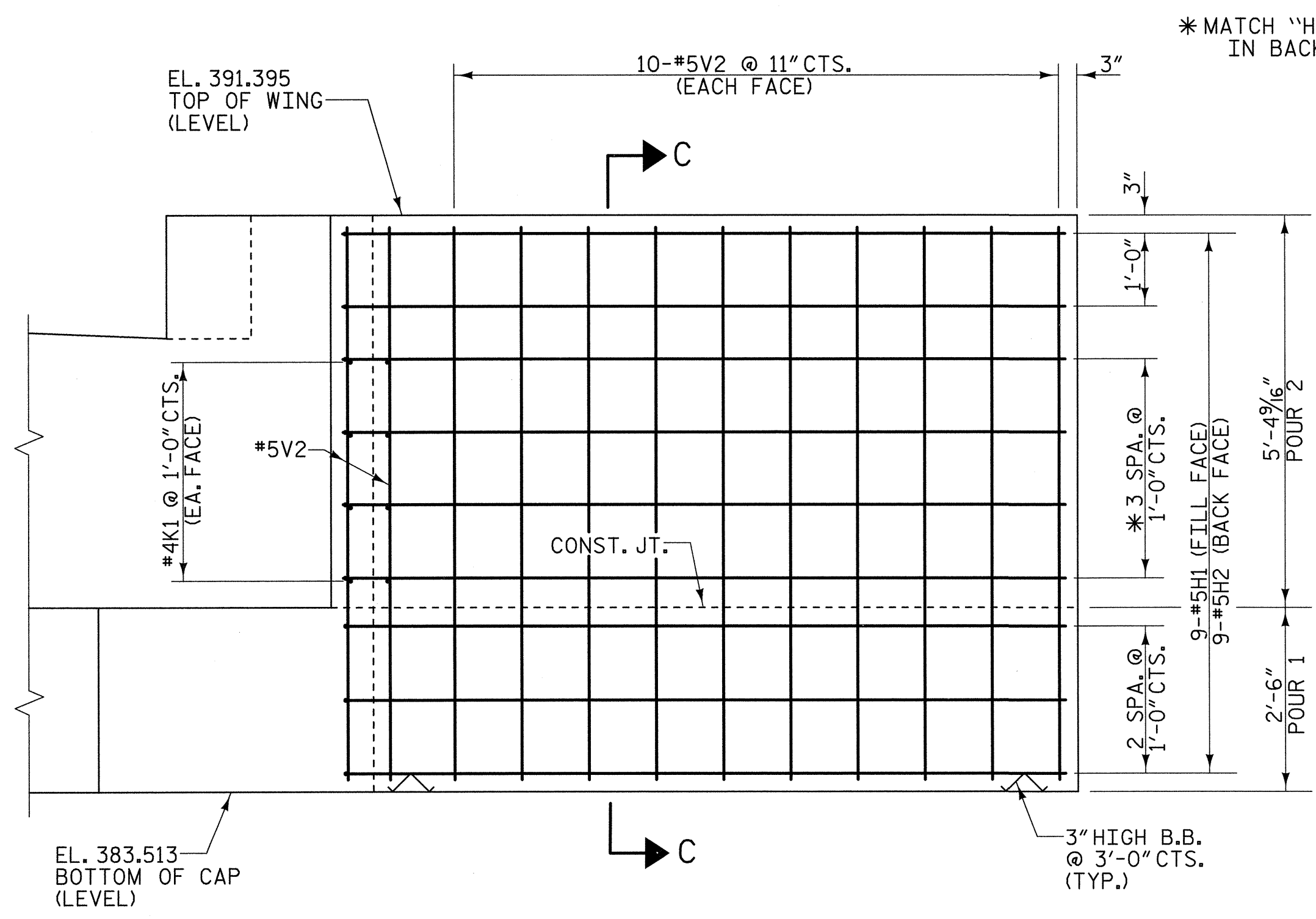
W2 PLAN OF RIGHT WING



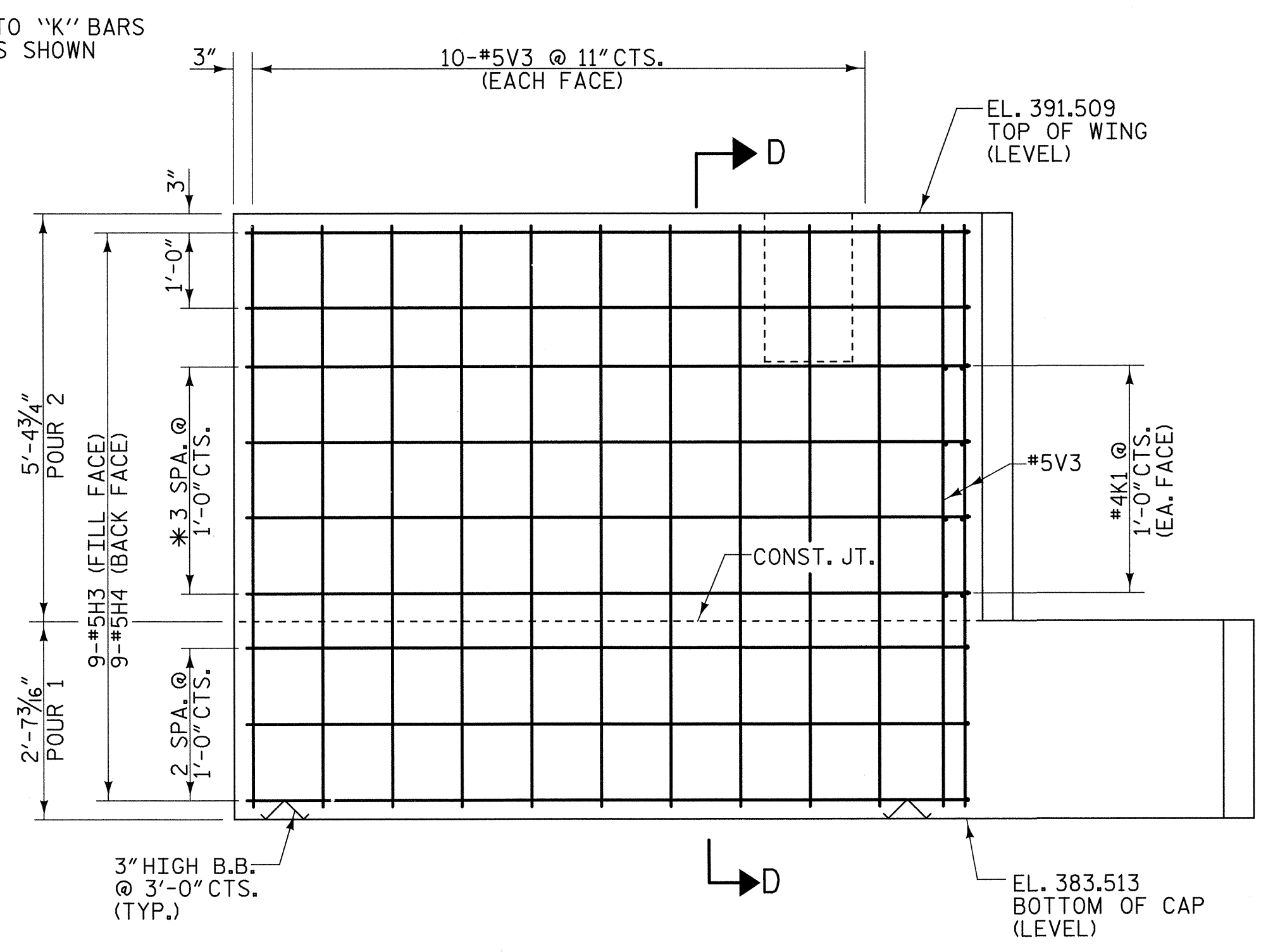
SECTION C-C



SECTION D-D



W1 ELEVATION OF LEFT WING



W2 ELEVATION OF RIGHT WING

* MATCH "H" BARS TO "K" BARS IN BACKWALL AS SHOWN

PROJECT NO. R-4906
 PERSON COUNTY
 STATION: 15+40.25 -EL-

REPLACES BRIDGE NO. 59 SHEET 2 OF 3

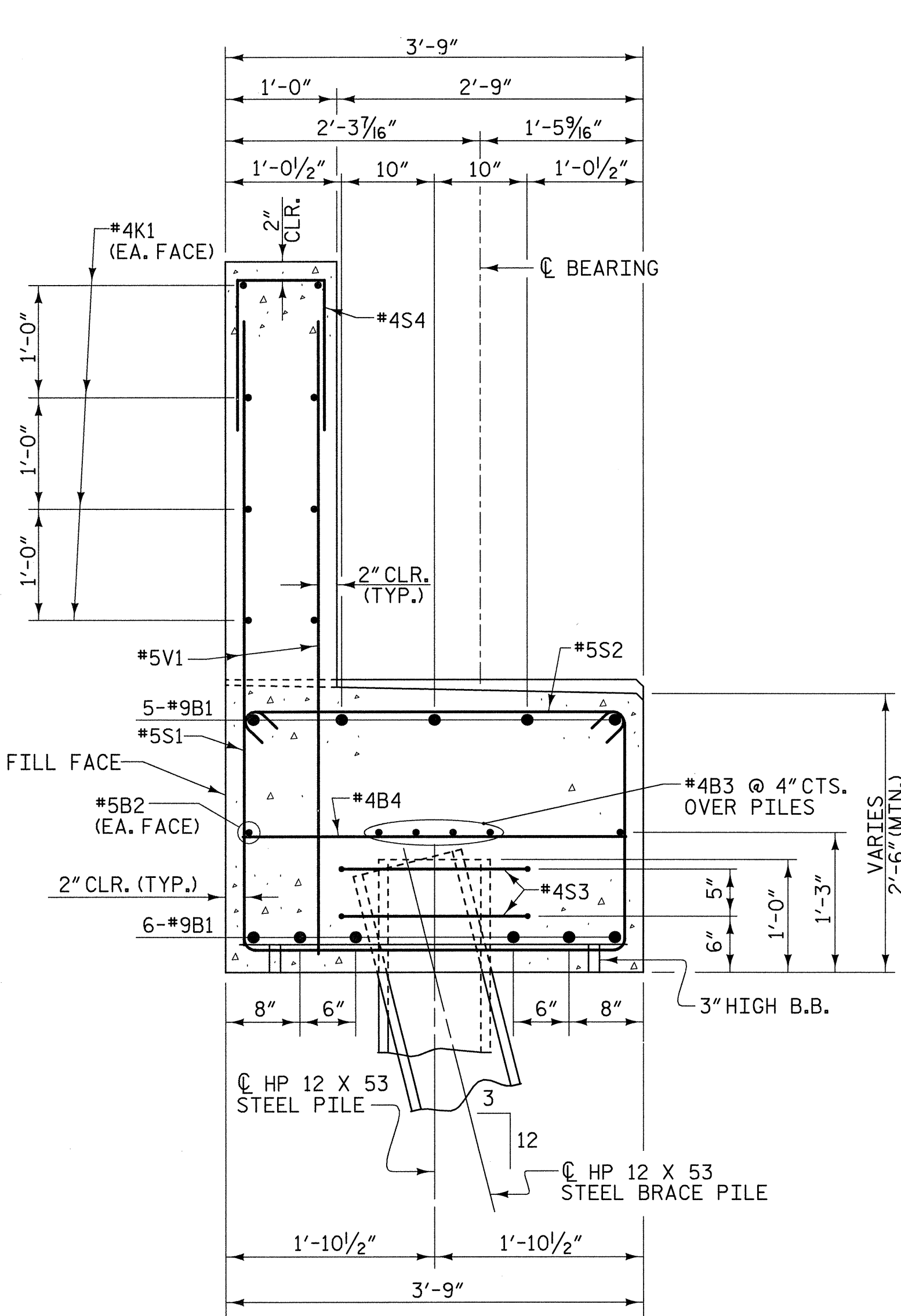
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1
 35'-0" CLEAR ROADWAY - 60° SKEW



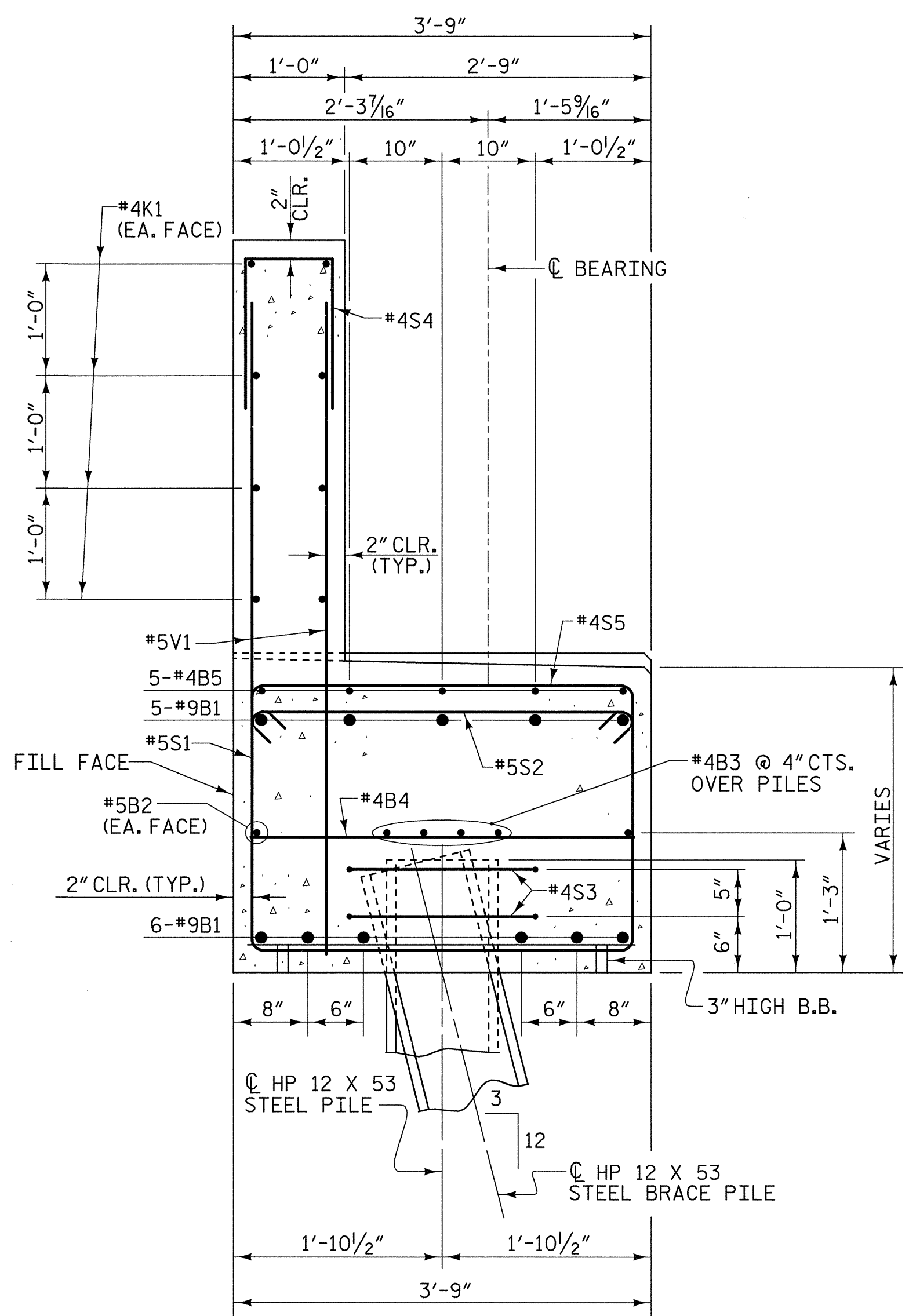
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-39
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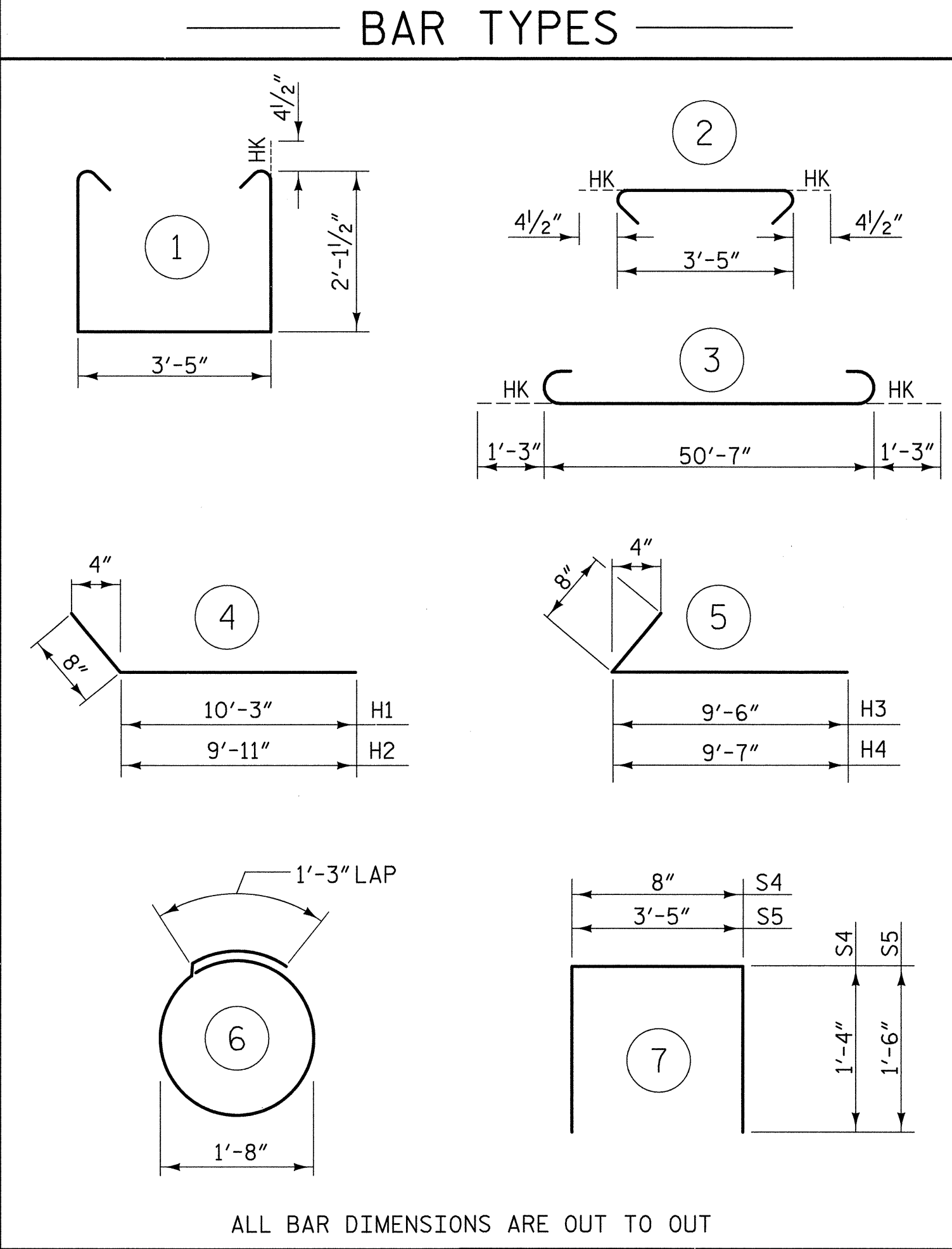
DRAWN BY: J. A. CAVER DATE: 05/07
 CHECKED BY: H. S. ELLIOTT DATE: 06/07



SECTION A-A



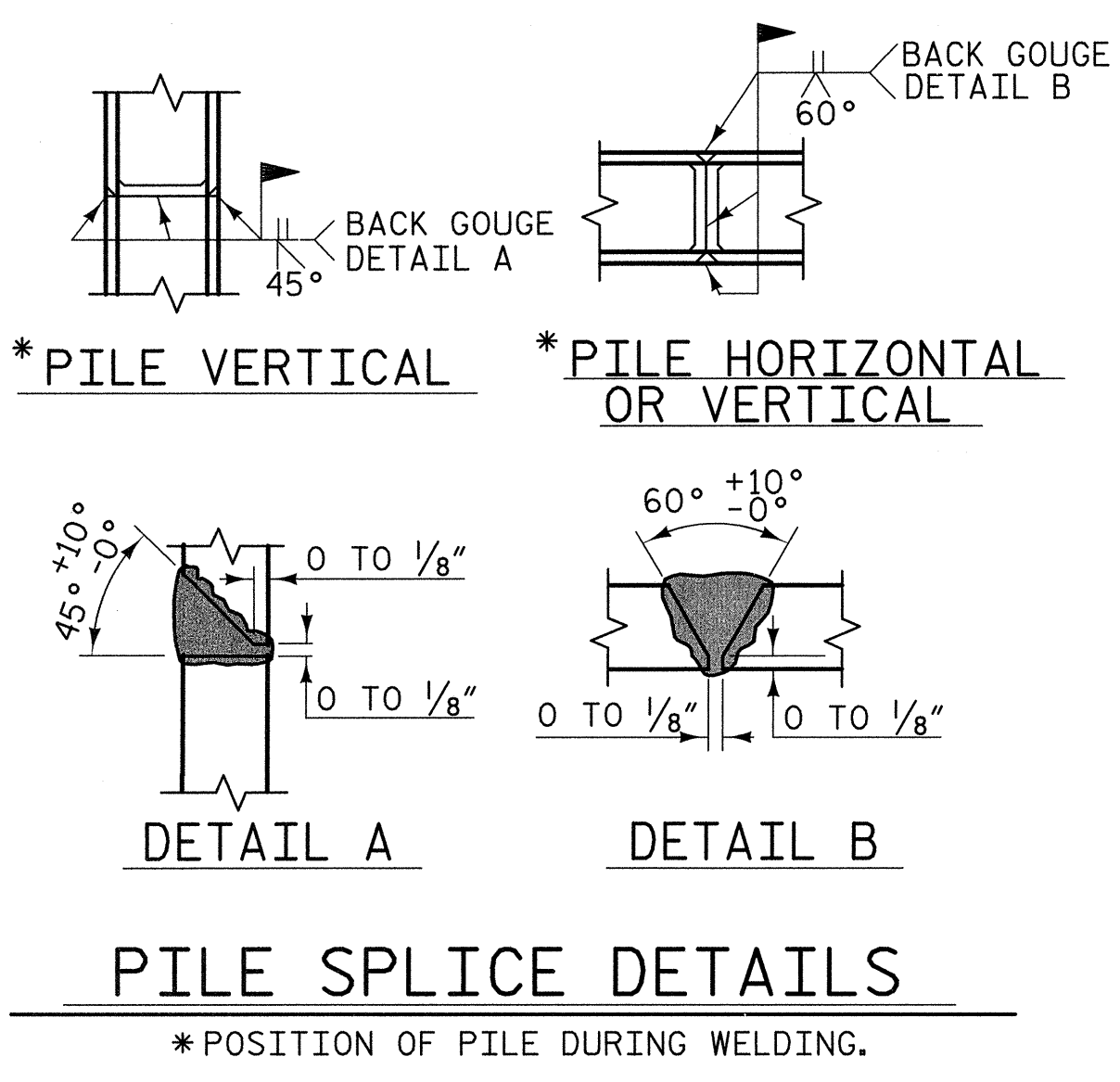
SECTION B-B



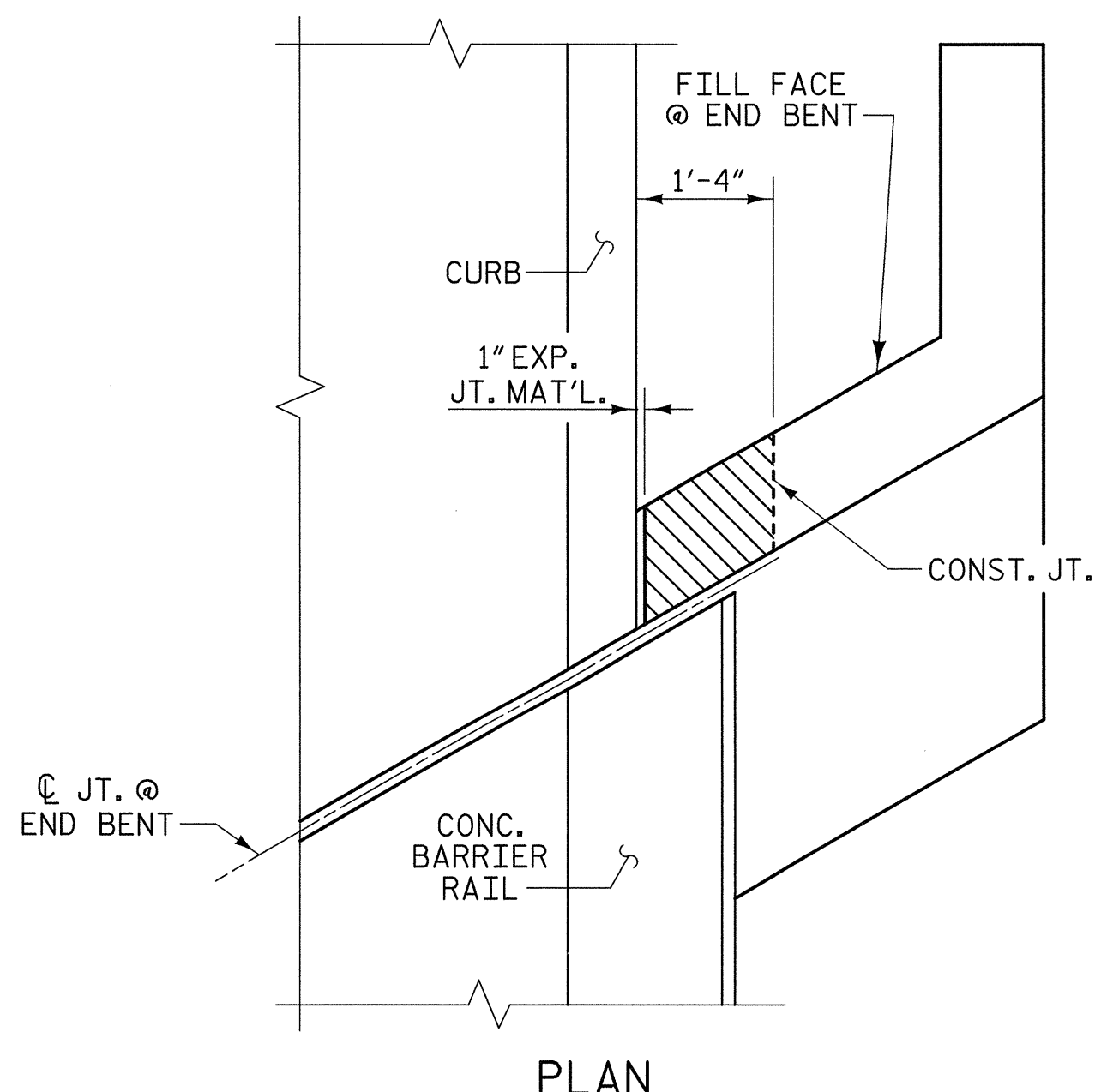
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR END BENT 1					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	11	#9	3	53'-1"	1985
B2	2	#5	STR	50'-7"	106
B3	8	#4	STR	26'-6"	142
B4	12	#4	STR	3'-5"	27
B5	5	#4	STR	14'-6"	48
H1	9	#5	4	10'-11"	102
H2	9	#5	4	10'-7"	99
H3	9	#5	5	10'-2"	95
H4	9	#5	5	10'-3"	96
K1	16	#4	STR	26'-7"	284
S1	51	#5	1	8'-5"	448
S2	51	#5	2	4'-2"	222
S3	16	#4	6	6'-6"	69
S4	41	#4	7	3'-4"	91
S5	16	#4	7	6'-5"	69
V1	82	#5	STR	5'-9"	492
V2	32	#5	STR	7'-5"	248
V3	32	#5	STR	7'-6"	250
TOTAL REINFORCING STEEL =					4873 lbs.
CLASS "A" CONCRETE - CU. YARDS					
				POUR 1	20.6 cu. yds.
				POUR 2	11.3 cu. yds.
				TOTAL	31.9 cu. yds.
8 PILES REQUIRED - LIN. FEET					
HP 12 X 53 STEEL PILES					160

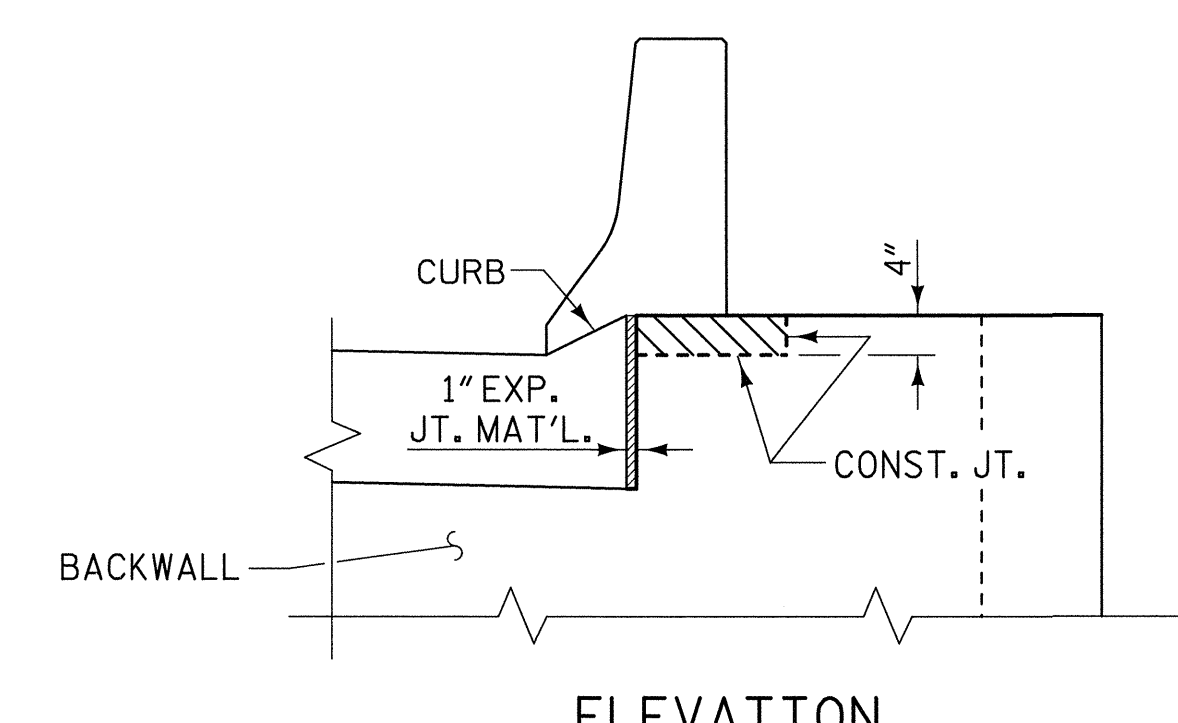


PILE SPLICE DETAILS
* POSITION OF PILE DURING WELDING.



PLAN

NOTE:
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND APPROACH SLAB HAS BEEN SAWED AND THE PARAPET IS CAST IF SLIP FORMING IS USED.



ELEVATION

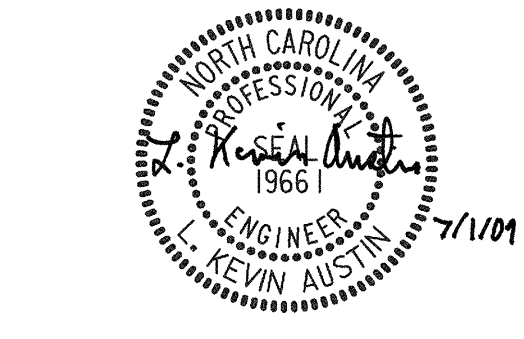
BLOCKOUT IN WING WALL

LEFT WING SHOWN, RIGHT WING SIMILAR

PROJECT NO. R-4906
PERSON COUNTY
STATION: 15+40.25 -EL-

REPLACES BRIDGE NO. 59 SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT 1
35'-0" CLEAR ROADWAY - 60° SKEW

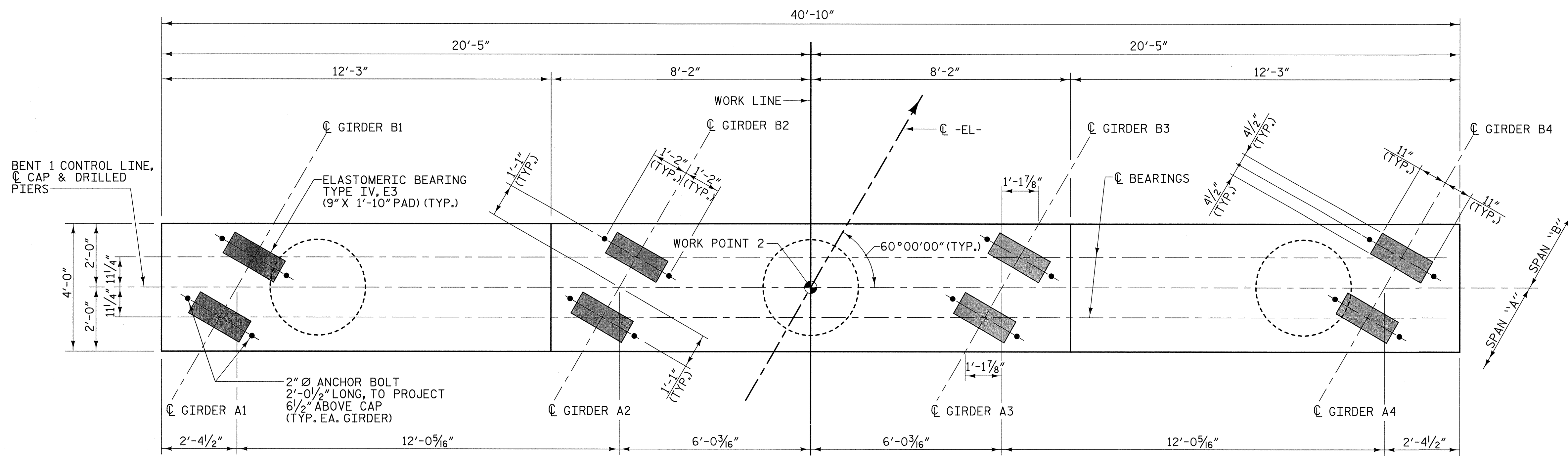


REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

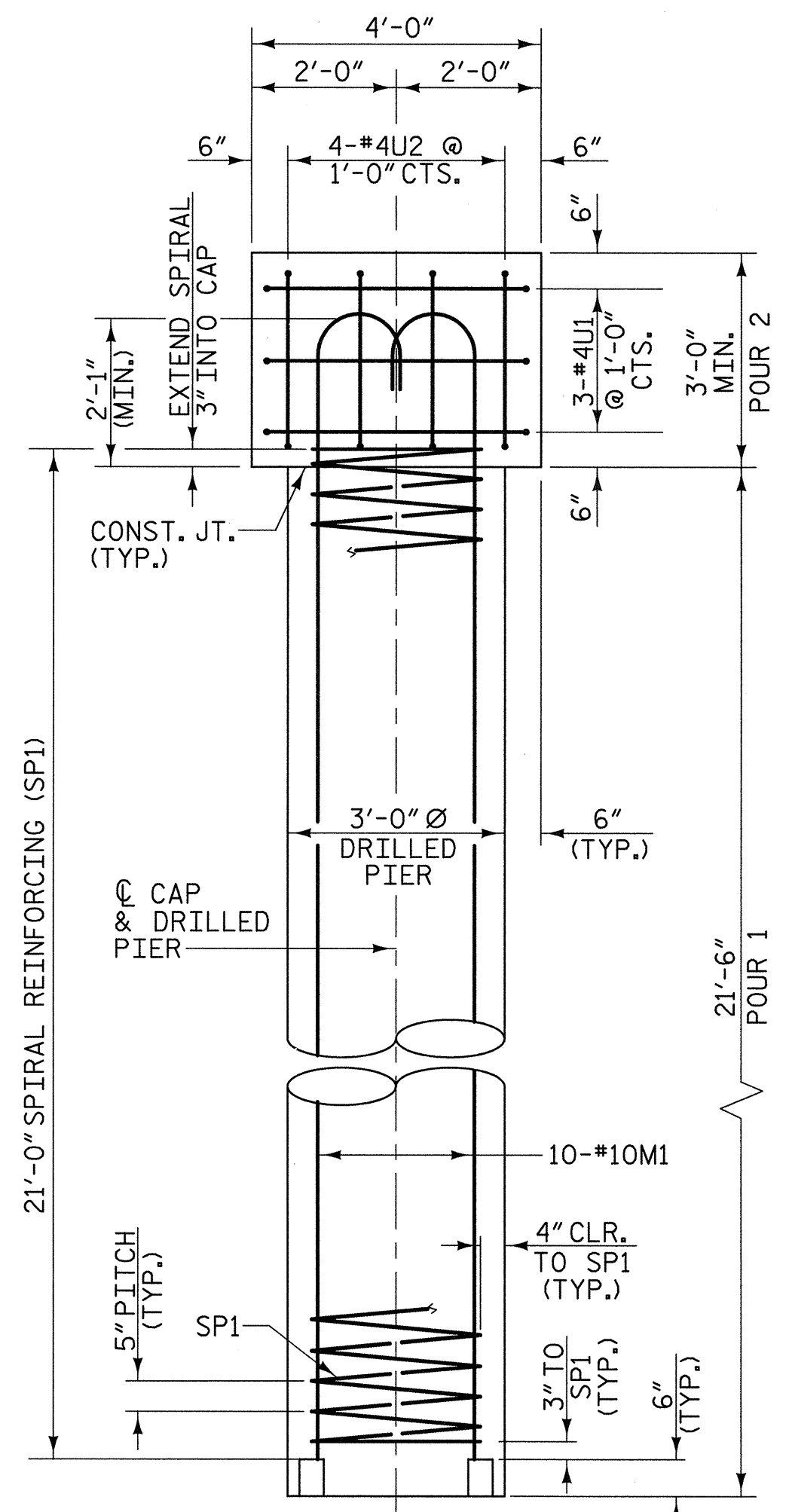
SHEET NO.	
S-40	TOTAL SHEETS 50

DRAWN BY: J. A. CAVER DATE: 05/07
CHECKED BY: H. S. ELLIOTT DATE: 06/07

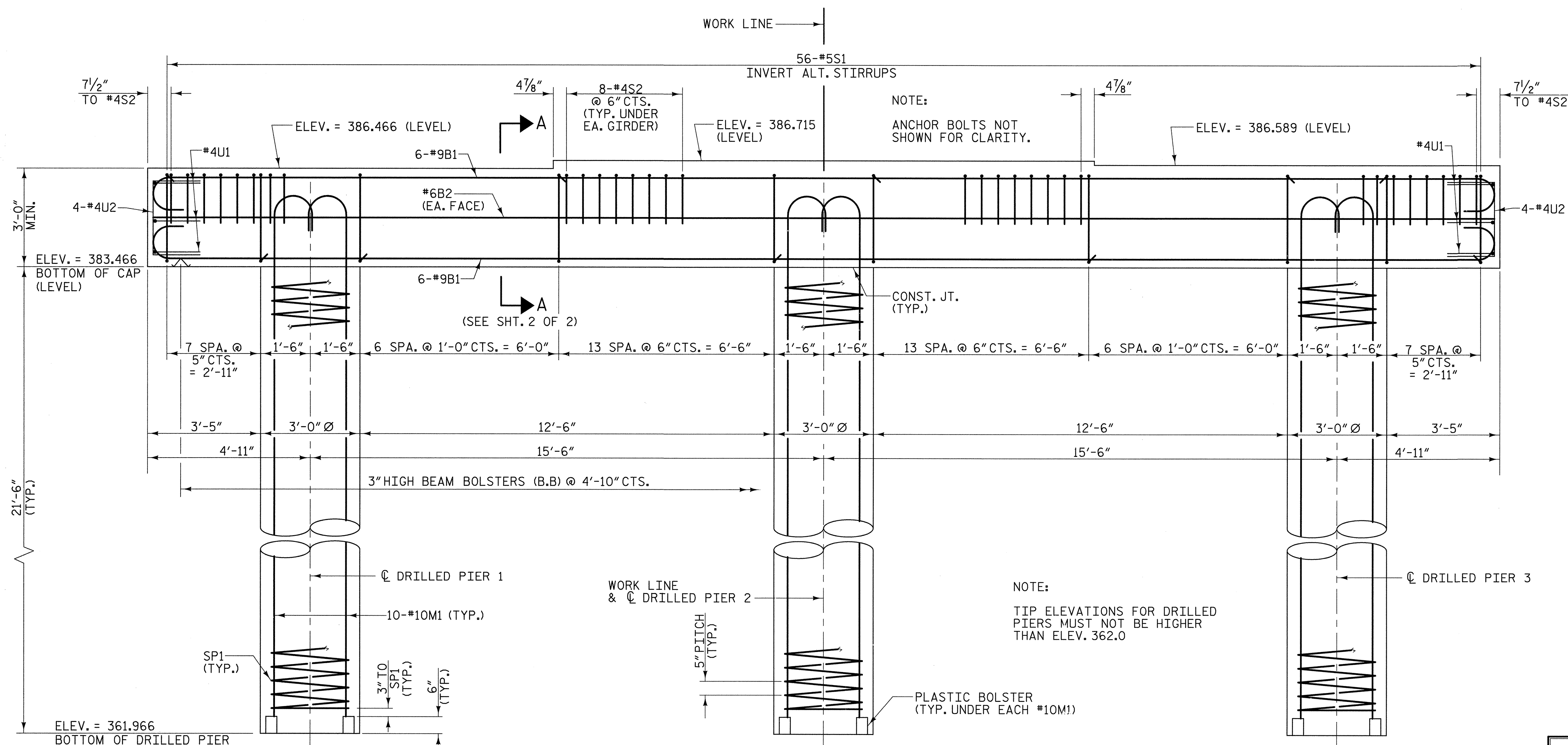
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PLAN



END ELEVATION



ELEVATION

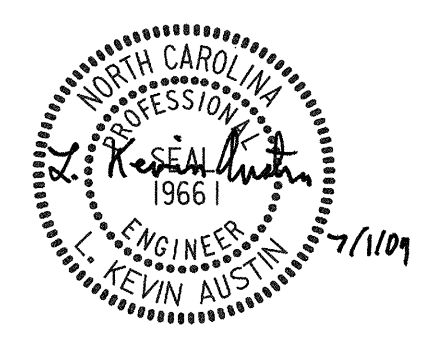
PROJECT NO. R-4906
 PERSON COUNTY
 STATION: 15+40.25 -EL-

REPLACES BRIDGE NO. 59 SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE BENT 1

35'-0" CLEAR ROADWAY - 60° SKEW



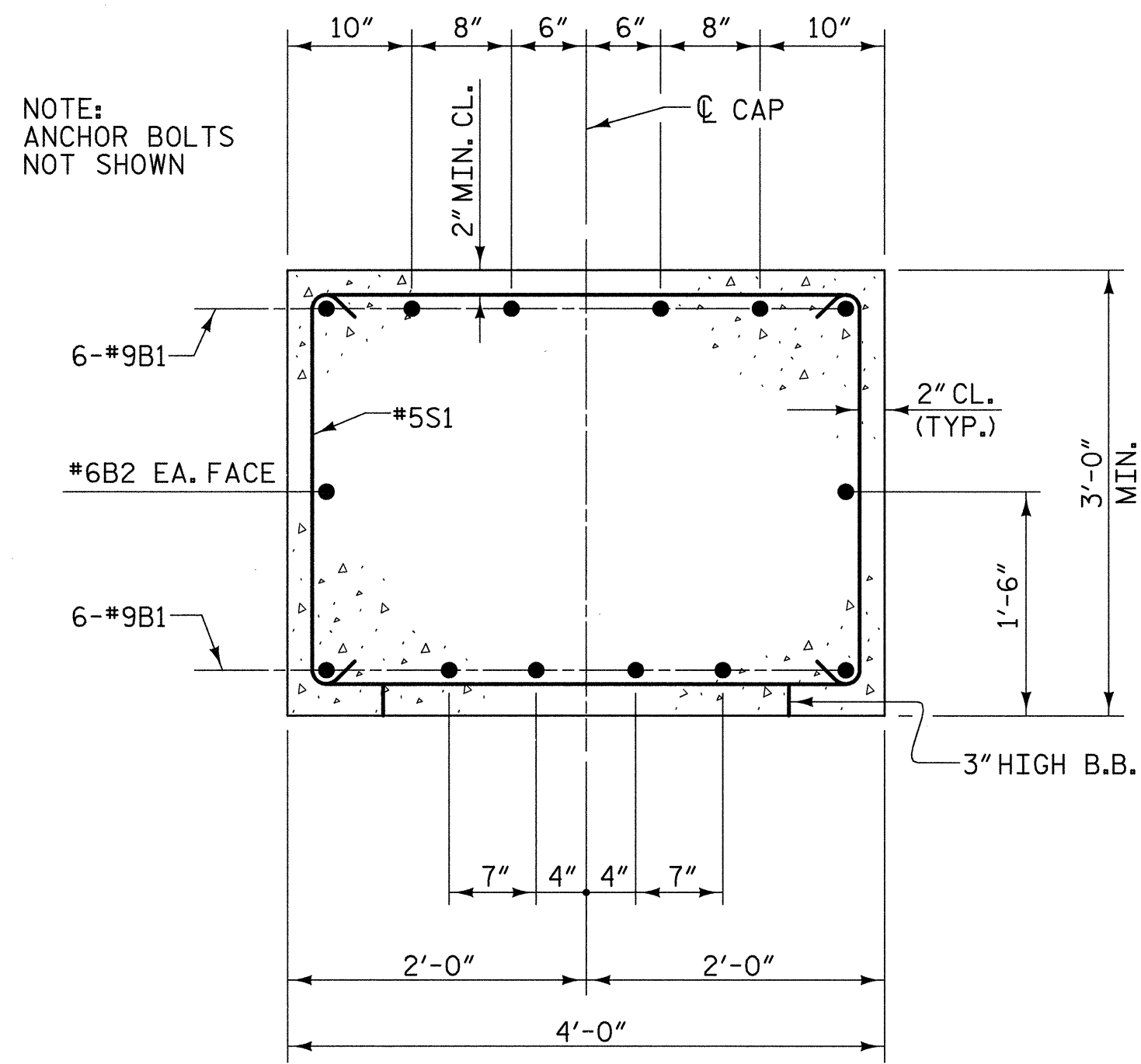
PLANS PREPARED BY:

MULKEY
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 RD Box 33127
 Raleigh, N.C. 27636
 (919) 851-1912
 (919) 851-1918 (FAX)
 WWW.MULKEY.COM

REVISIONS						SHEET NO. S-41
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 50
2			4			

DRAWN BY: J. A. CAVER DATE: 05/07
 CHECKED BY: H. S. ELLIOTT DATE: 06/07

6/22/2009 8:46:56 AM R:\Structures\14906\591_SD_B1.dwg



SECTION A-A

NOTES:

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

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

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE "M" BARS IN THE DRILLED PIERS ARE DETAILED WITH 3'-0" OF EXTRA LENGTH.

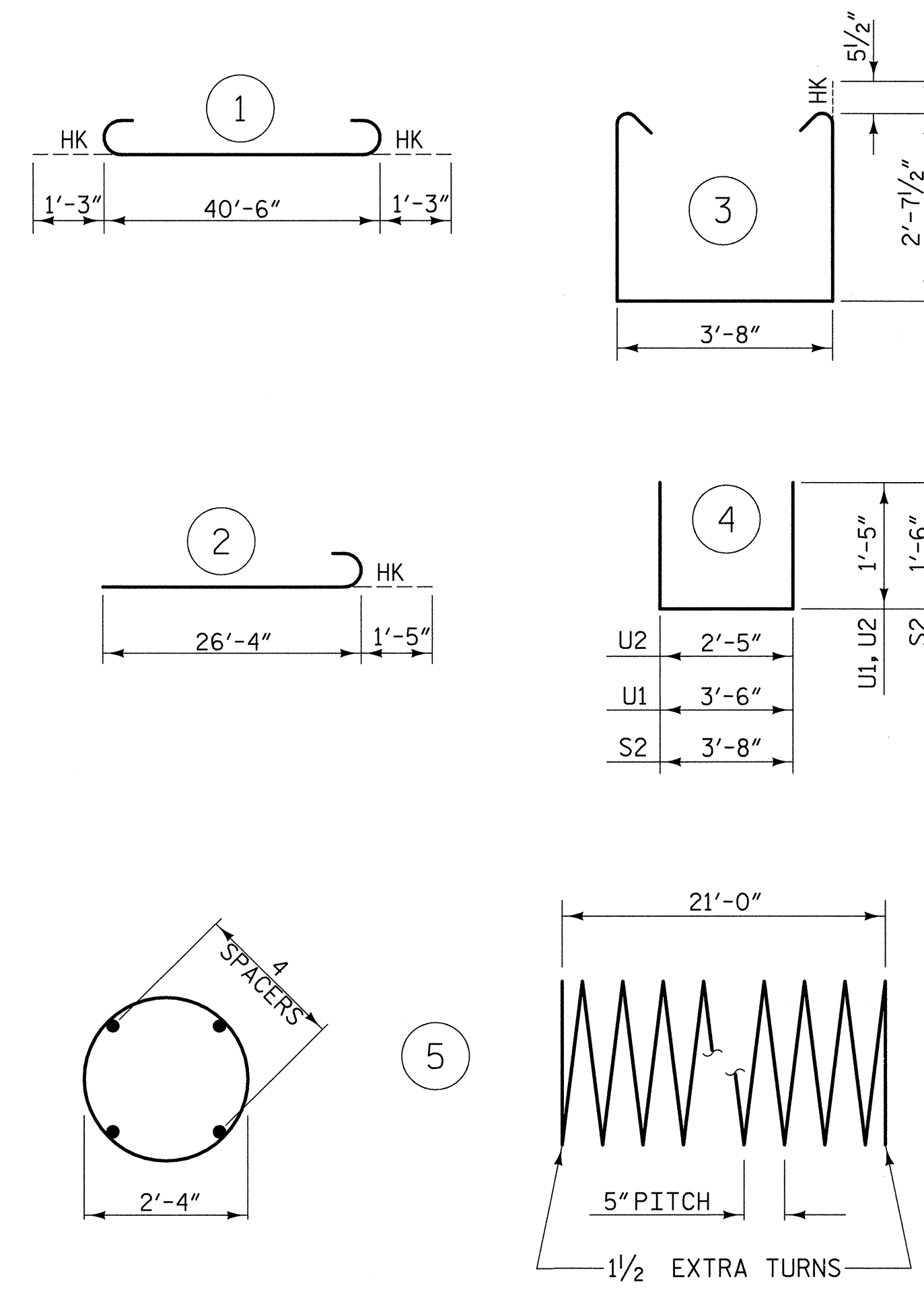
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

FOR DRILLED PIER NOTES, FOUNDATION LAYOUT SHEET.

* THE SP1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

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

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	#9	1	43'-0"	1754
B2	2	#6	STR	40'-6"	122
M1	30	#10	2	27'-9"	3582
S1	56	#5	3	9'-10"	574
S2	32	#4	4	6'-8"	143
U1	6	#4	4	6'-4"	25
U2	8	#4	4	5'-3"	28

TOTAL REINFORCING STEEL = 6228 lbs.

SP1 3 * 5 382'-6" 1197

SPIRAL COLUMN REINFORCING STEEL = 1197 lbs.

CLASS "A" CONCRETE -
CU. YARDS POUR 2 (CAP) 19.0

3'-0" DIA. DRILLED PIERS (3 REQ'D)

3'-0" DIA. DRILLED PIERS, NOT IN SOIL 27.0 L.F.

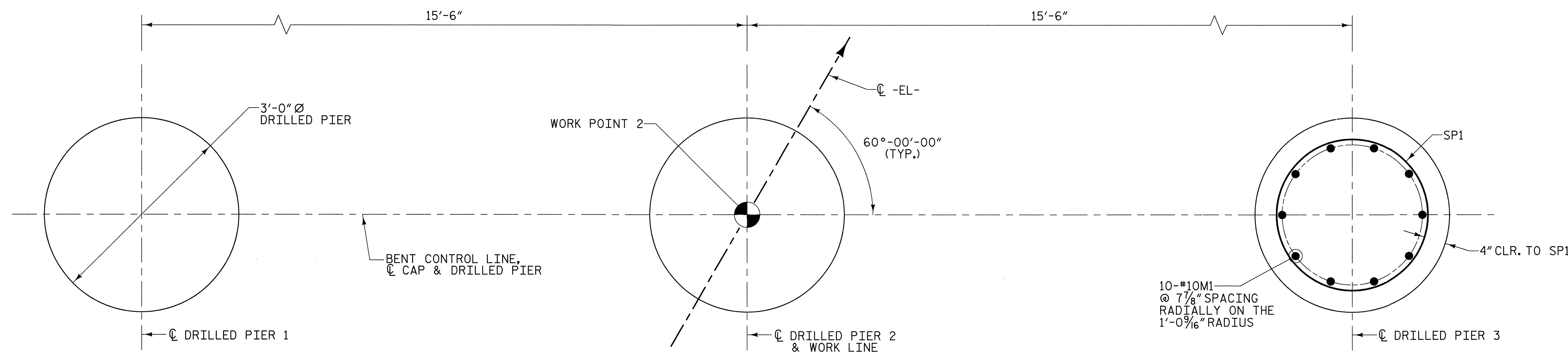
3'-0" DIA. DRILLED PIERS, IN SOIL 37.5 L.F.

PERMANENT STEEL CASING FOR
3'-0" DIA. DRILLED PIERS 37.4 L.F.

DRILLED PIER CONCRETE - CU. YARDS
POUR 1 (FOR INFORMATION ONLY) 16.9

CROSSHOLE SONIC LOGGING 1 EACH

CSL TUBES 288 FT.



PLAN OF DRILLED PIERS

DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH DRILLED PIER

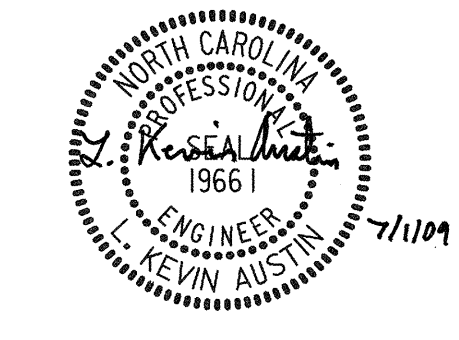
PROJECT NO. R-4906
PERSON COUNTY
STATION: 15+40.25 -EL-

REPLACES BRIDGE NO. 59 SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 1

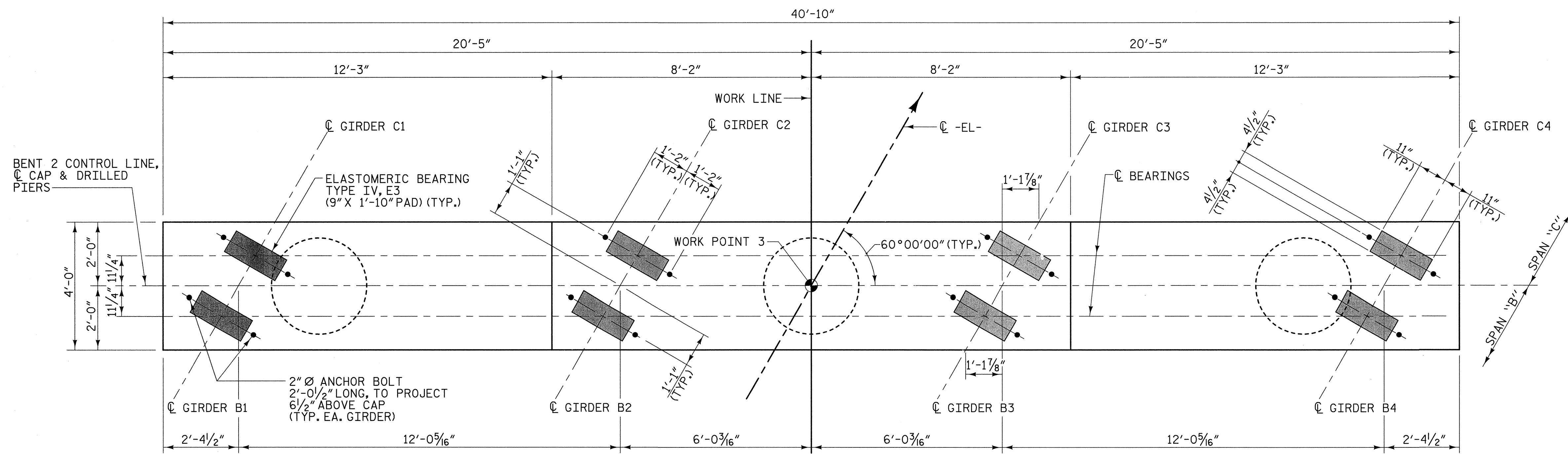
35'-0" CLEAR ROADWAY - 60° SKEW



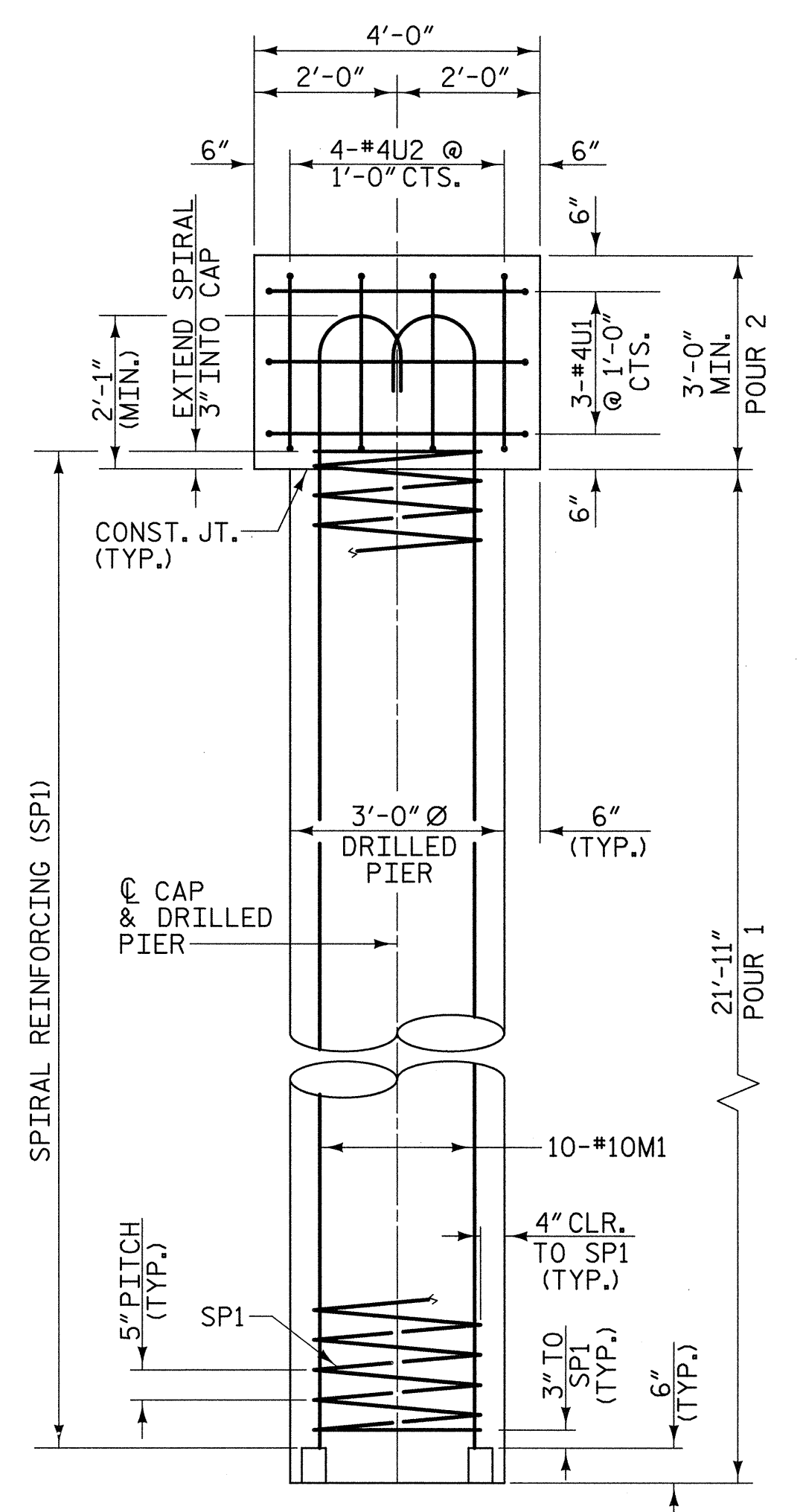
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-42
1			3			TOTAL SHEETS
2			4			50

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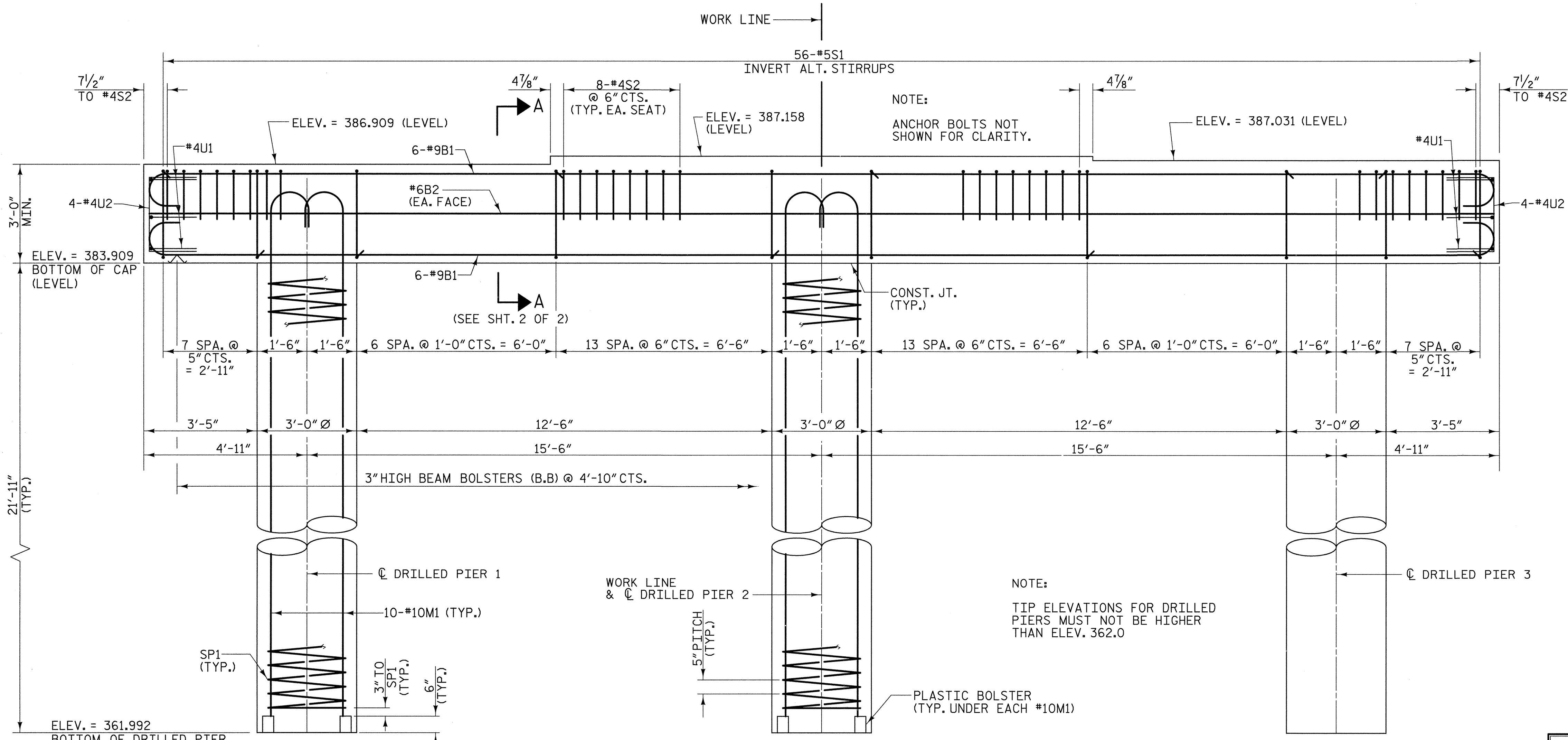
DRAWN BY: J. A. CAVER DATE: 05/07
CHECKED BY: H. S. ELLIOTT DATE: 06/07



PLAN



END ELEVATION

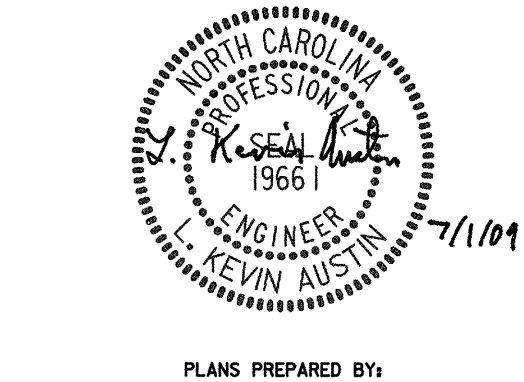


ELEVATION

PROJECT NO. R-4906
 PERSON COUNTY
 STATION: 15+40.25 -EL-

REPLACES BRIDGE NO. 59 SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 2
 35'-0" CLEAR ROADWAY - 60°SKEW

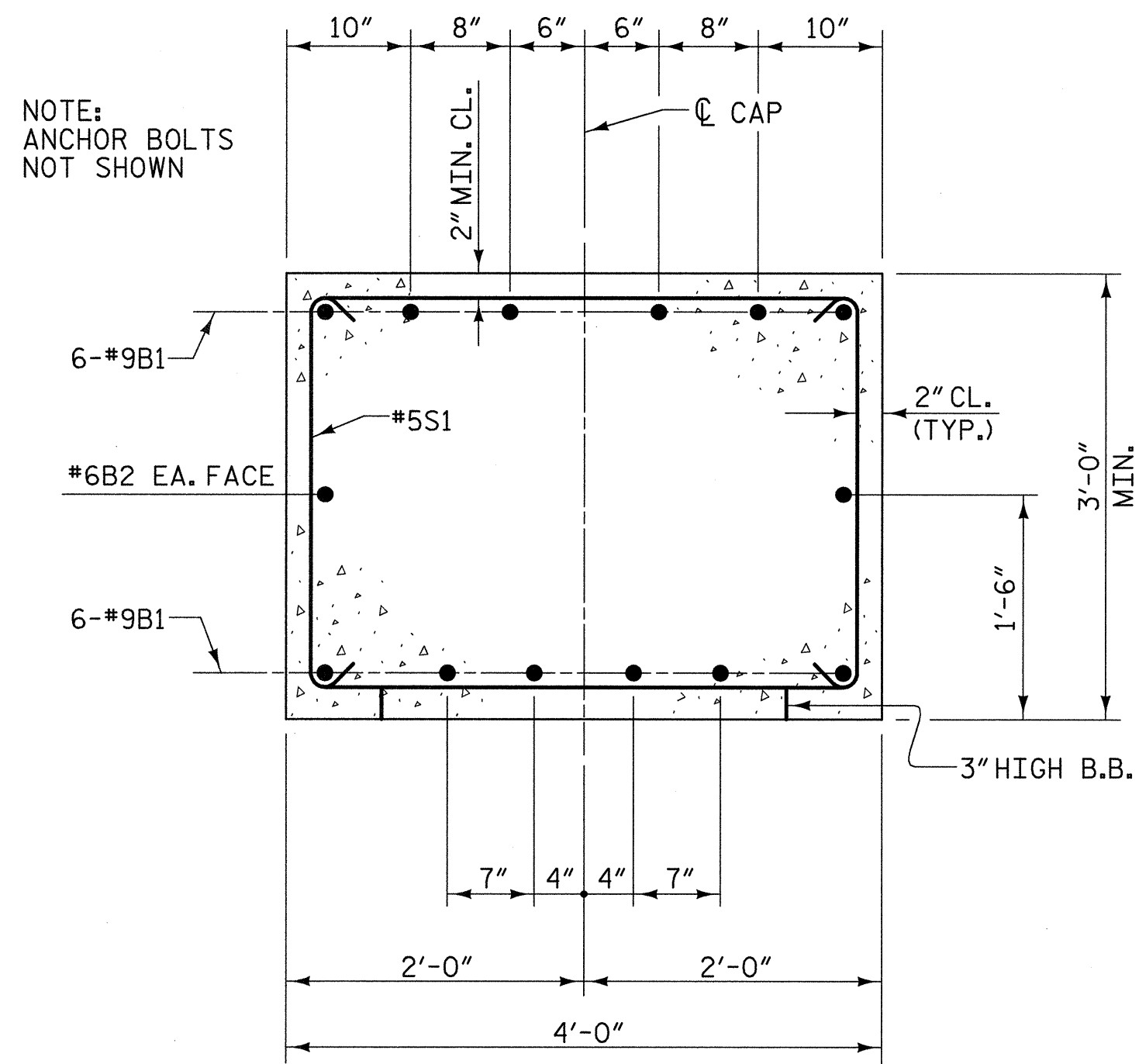


PLANS PREPARED BY:
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 (919) 851-1513 (FAX)
 WWW.MULKEYINC.COM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-43
1			3			TOTAL SHEETS 50
2			4			

6/22/2009 8:55:55 AM R:\Structure\94906\94906(99)_SI_B2_01.dgn

DRAWN BY: J. A. CAVER DATE: 05/07
 CHECKED BY: H. S. ELLIOTT DATE: 06/07



SECTION A-A

NOTES:

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

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

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE "M" BARS IN THE DRILLED PIERS ARE DETAILED WITH 3'-0" OF EXTRA LENGTH.

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

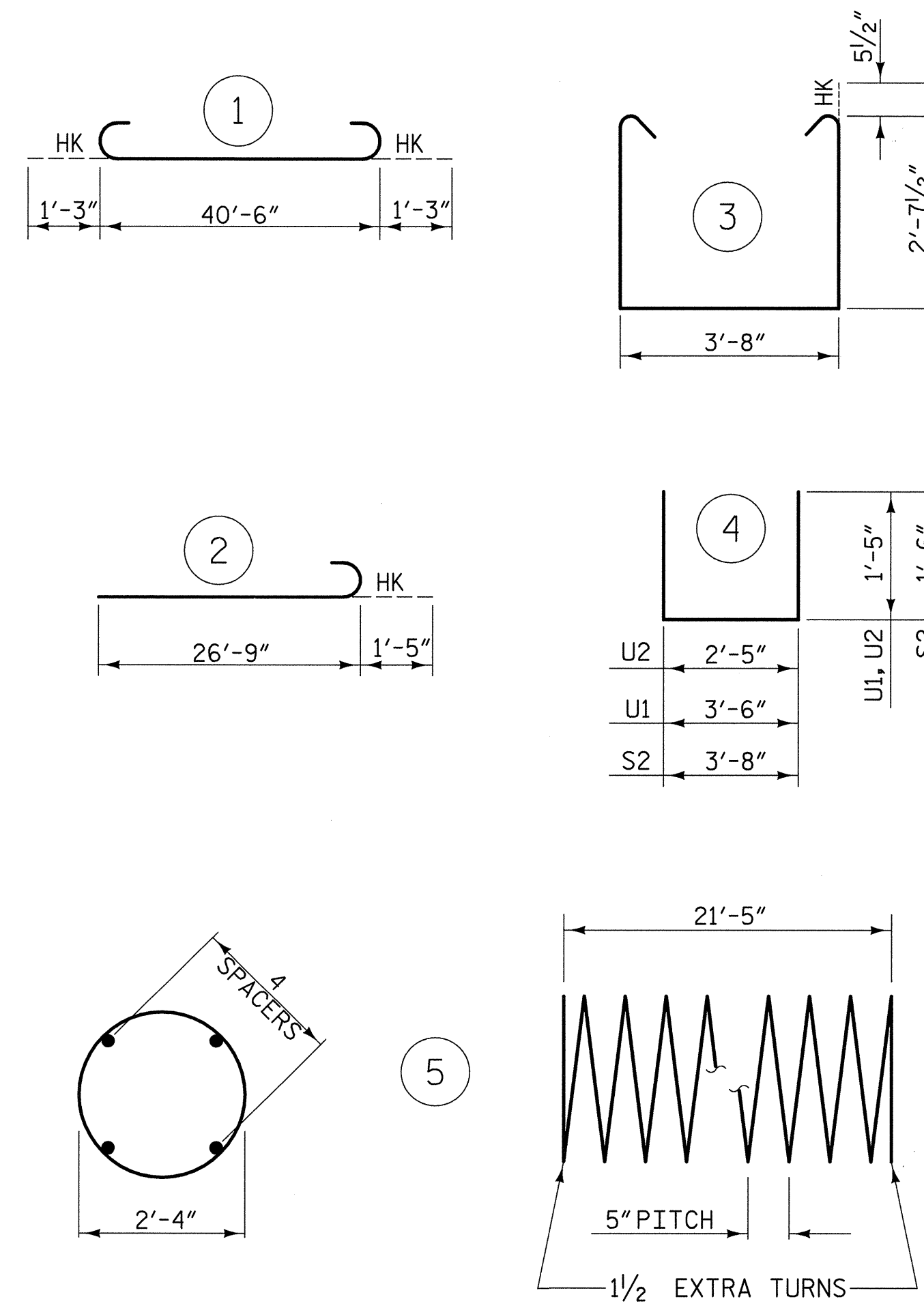
FOR DRILLED PIER NOTES, SEE FOUNDATION LAYOUT SHEET.

* THE SP1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

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

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

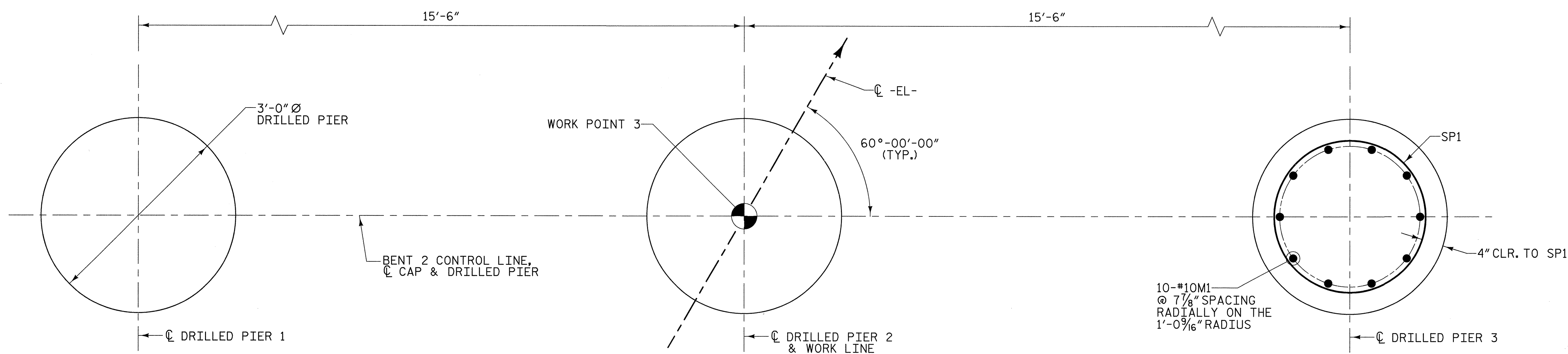
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	#9	1	43'-0"	1754
B2	2	#6	STR	40'-6"	122
M1	30	#10	2	28'-2"	3636
S1	56	#5	3	9'-10"	574
S2	32	#4	4	6'-8"	143
U1	6	#4	4	6'-4"	25
U2	8	#4	4	5'-3"	28
TOTAL REINFORCING STEEL =					6282 lbs.
SP1	3	*	5	389'-8"	1219
SPIRAL COLUMN REINFORCING STEEL =					1219 lbs.
CLASS "A" CONCRETE -					
CU. YARDS POUR 2 (CAP)					19.0
3'-0" DIA. DRILLED PIERS (3 REQ'D)					
3'-0" DIA. DRILLED PIERS, NOT IN SOIL					21.0 L.F.
3'-0" DIA. DRILLED PIERS, IN SOIL					44.8 L.F.
PERMANENT STEEL CASING FOR 3'-0" DIA. DRILLED PIERS					46.2 L.F.
DRILLED PIER CONCRETE - CU. YARDS					
POUR 1 (FOR INFORMATION ONLY)					17.2
CROSSHOLE SONIC LOGGING					1 EACH
CSL TUBES					293 FT.



PLAN OF DRILLED PIERS

DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH DRILLED PIER

PROJECT NO. R-4906
 PERSON COUNTY
 STATION: 15+40.25 -EL-

REPLACES BRIDGE NO. 59 SHEET 2 OF 2

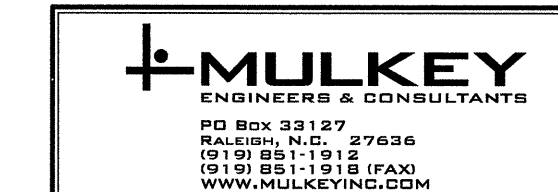
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT 2

35'-0" CLEAR ROADWAY - 60° SKEW



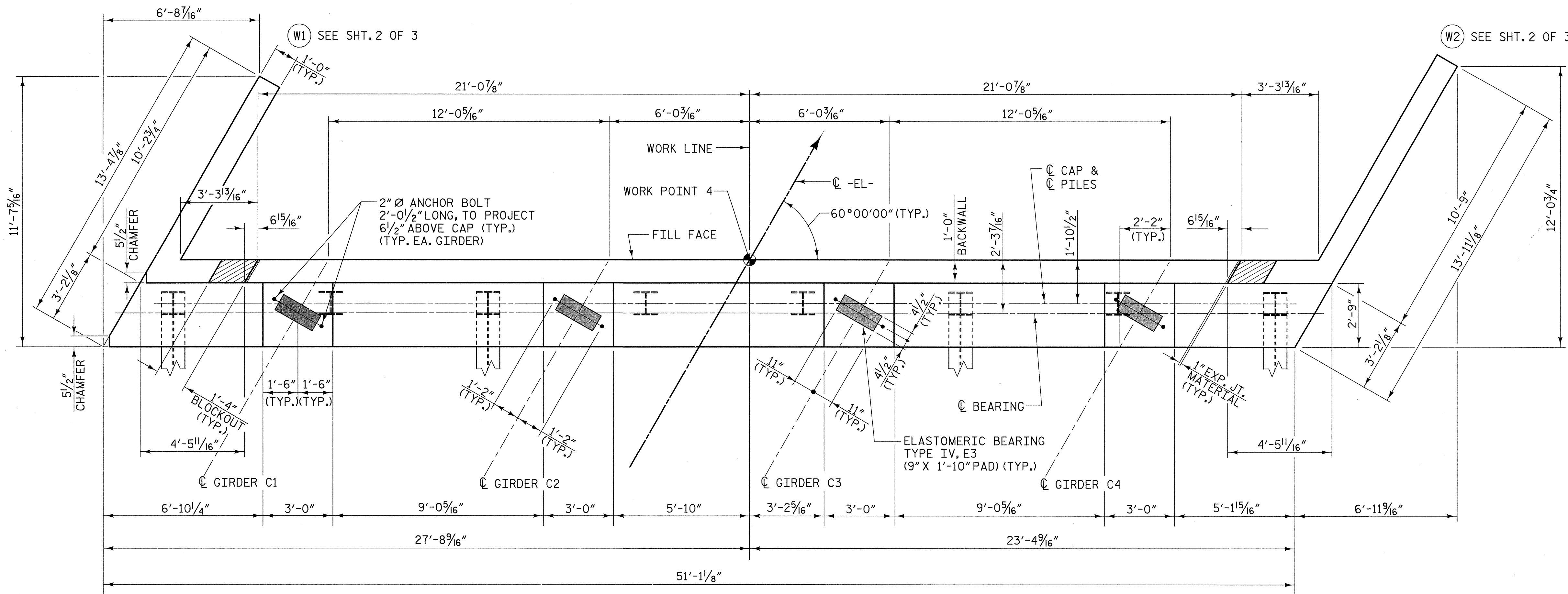
PLANS PREPARED BY:



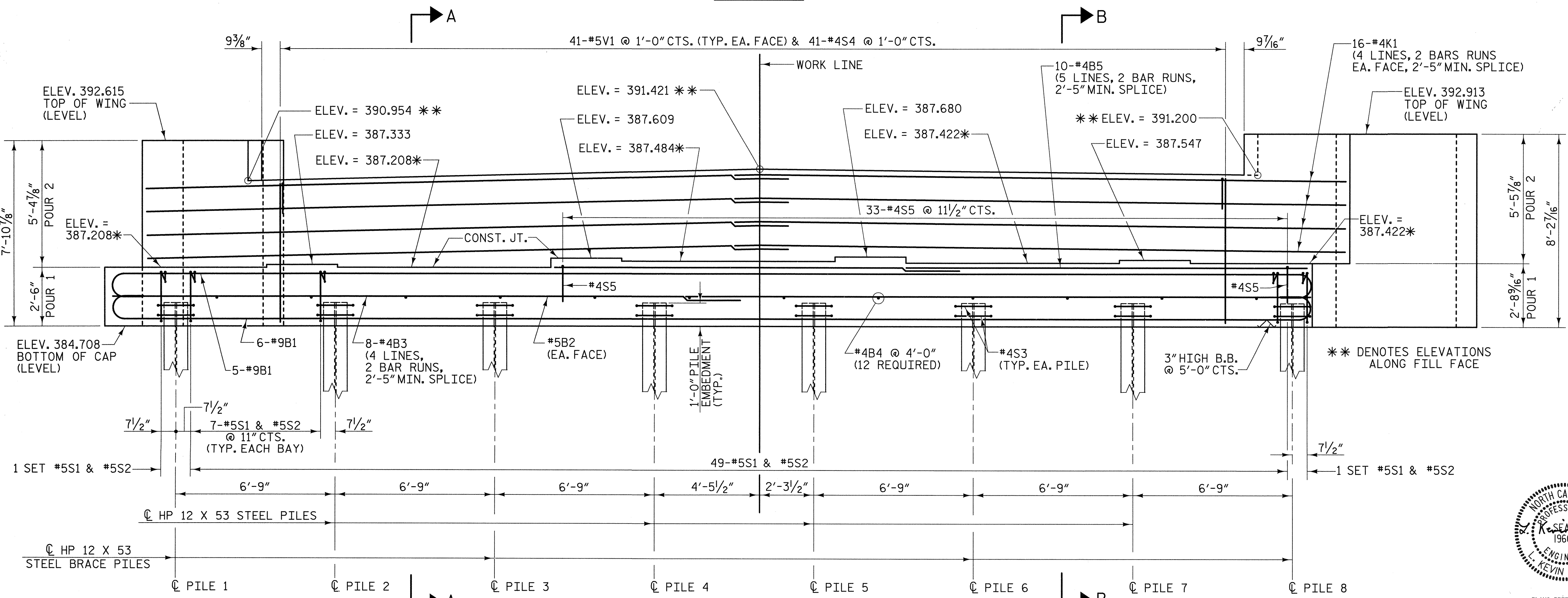
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.	
S-44	TOTAL SHEETS 50

DRAWN BY: J. A. CAVER DATE: 05/07
 CHECKED BY: H. S. ELLIOTT DATE: 06/07



PLAN



ELEVATION

NOTES:

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

FOR PILE SPLICE DETAILS, SEE END BENT 1, SHEET 3 OF 3.

FOR BLOCKOUT IN WINGWALL DETAILS, SEE END BENT 1, SHEET 3 OF 3.

FOR TEMPORARY DRAINAGE AT END BENT, SEE END BENT 2, SHEET 3 OF 3.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

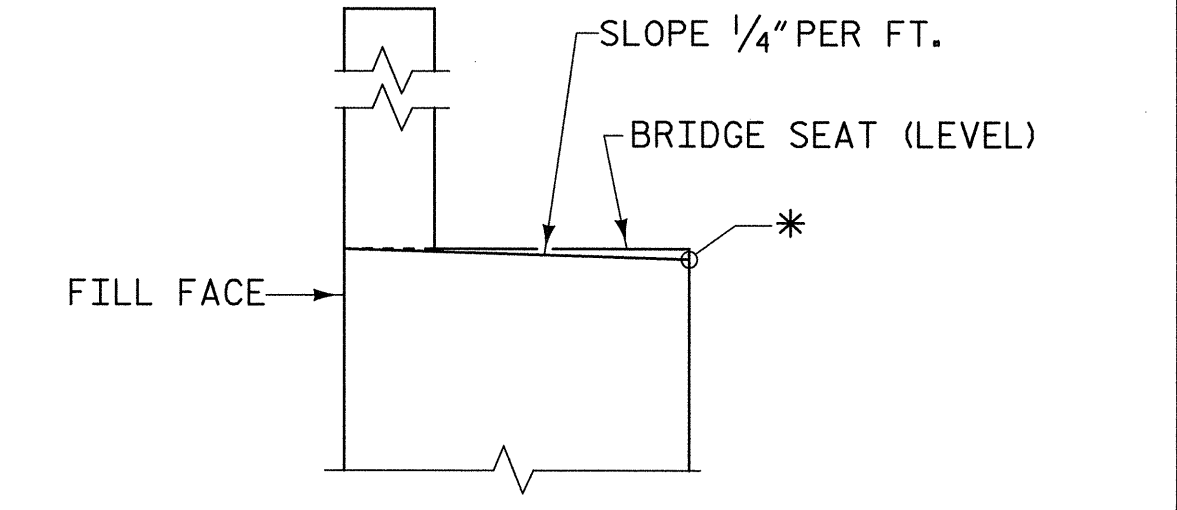
THE TOP SURFACE OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT IN THE DECK AND APPROACH SLAB HAS BEEN SAWS AND THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

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

NOTE:

THE TOP SURFACE OF THE CAP, EXCEPT THE GIRDER SEAT BUILDUPS, SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE FRONT FACE AT THE RATE OF 2%. ELEVATIONS BETWEEN BRIDGE SEAT BUILDUPS ARE SHOWN AS NOTED THUS * IN THE SKETCH BELOW.



PROJECT NO. R-4906

PERSON COUNTY

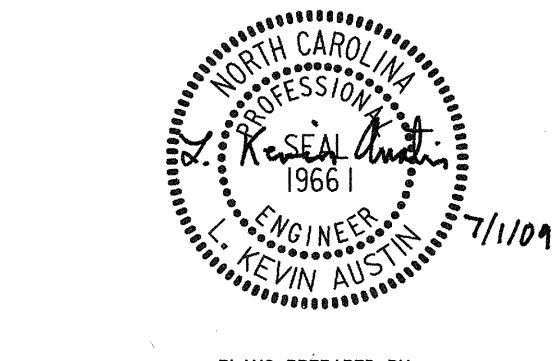
STATION: 15+40.25 -EL-

REPLACES BRIDGE NO. 59 SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUBSTRUCTURE
END BENT 2**

35'-0" CLEAR ROADWAY - 60° SKEW

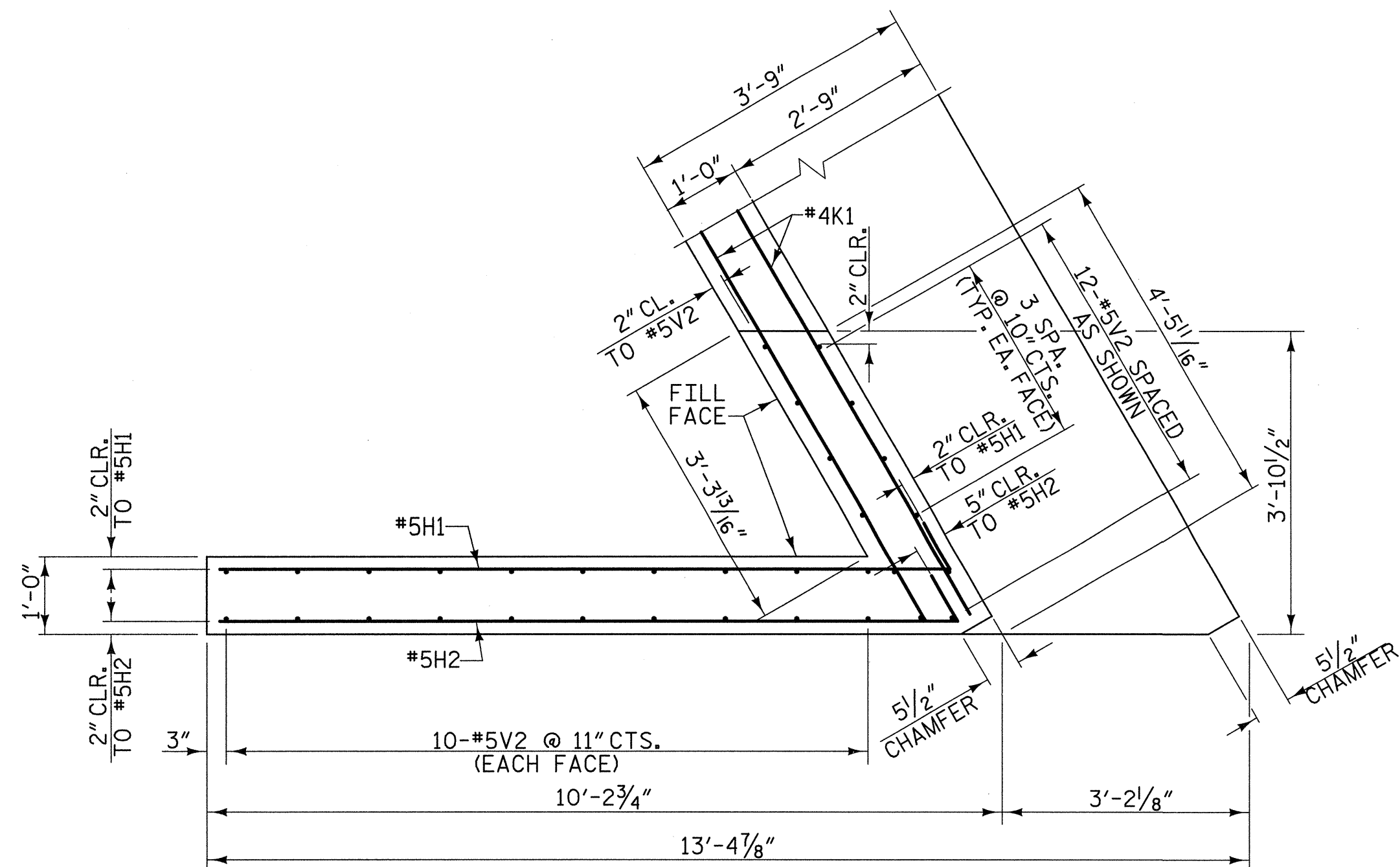


PLANS PREPARED BY:
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(919) 851-1918 (FAX)
WWW.MULKEYINC.COM

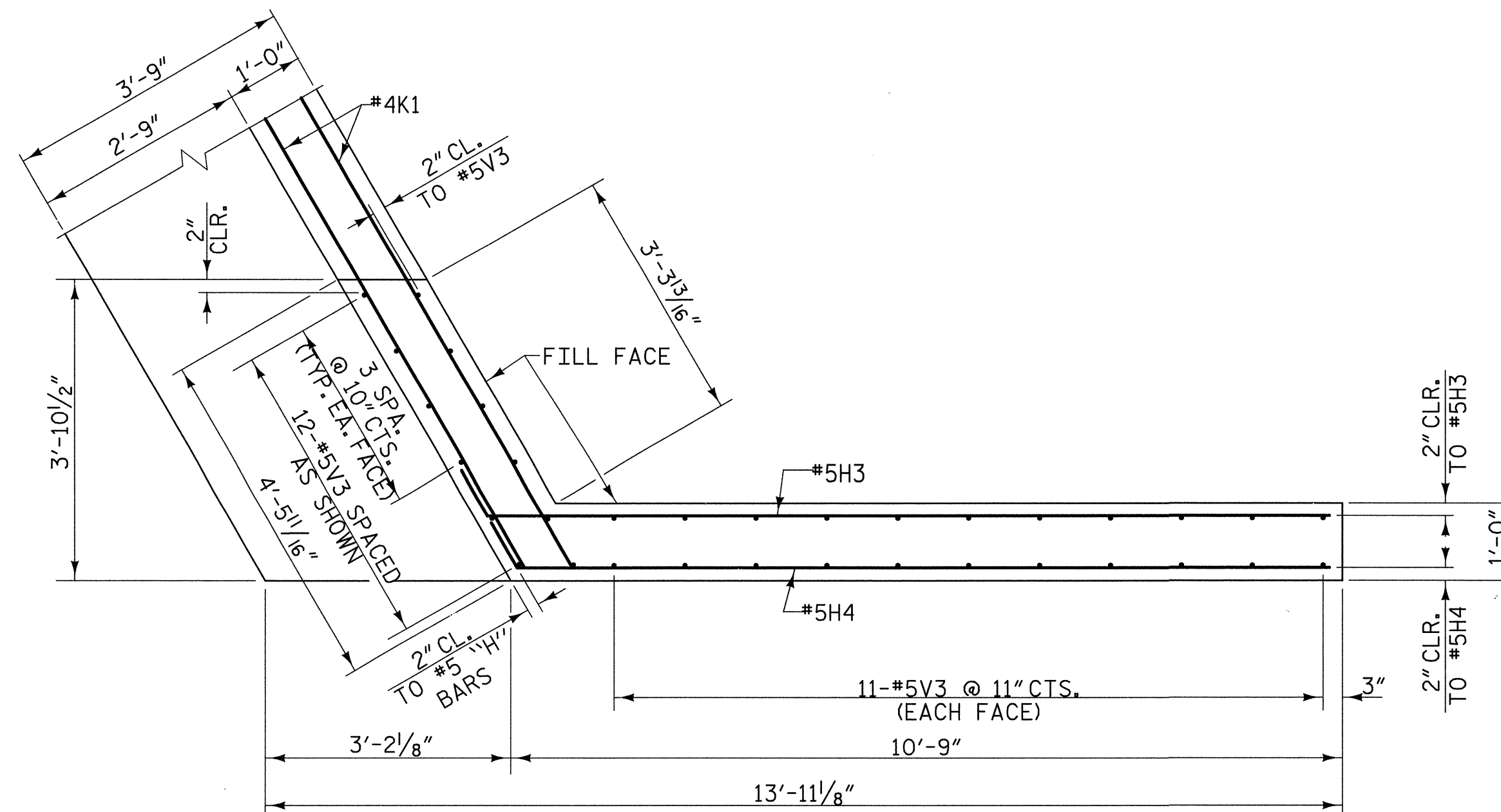
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-45
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2			4			50

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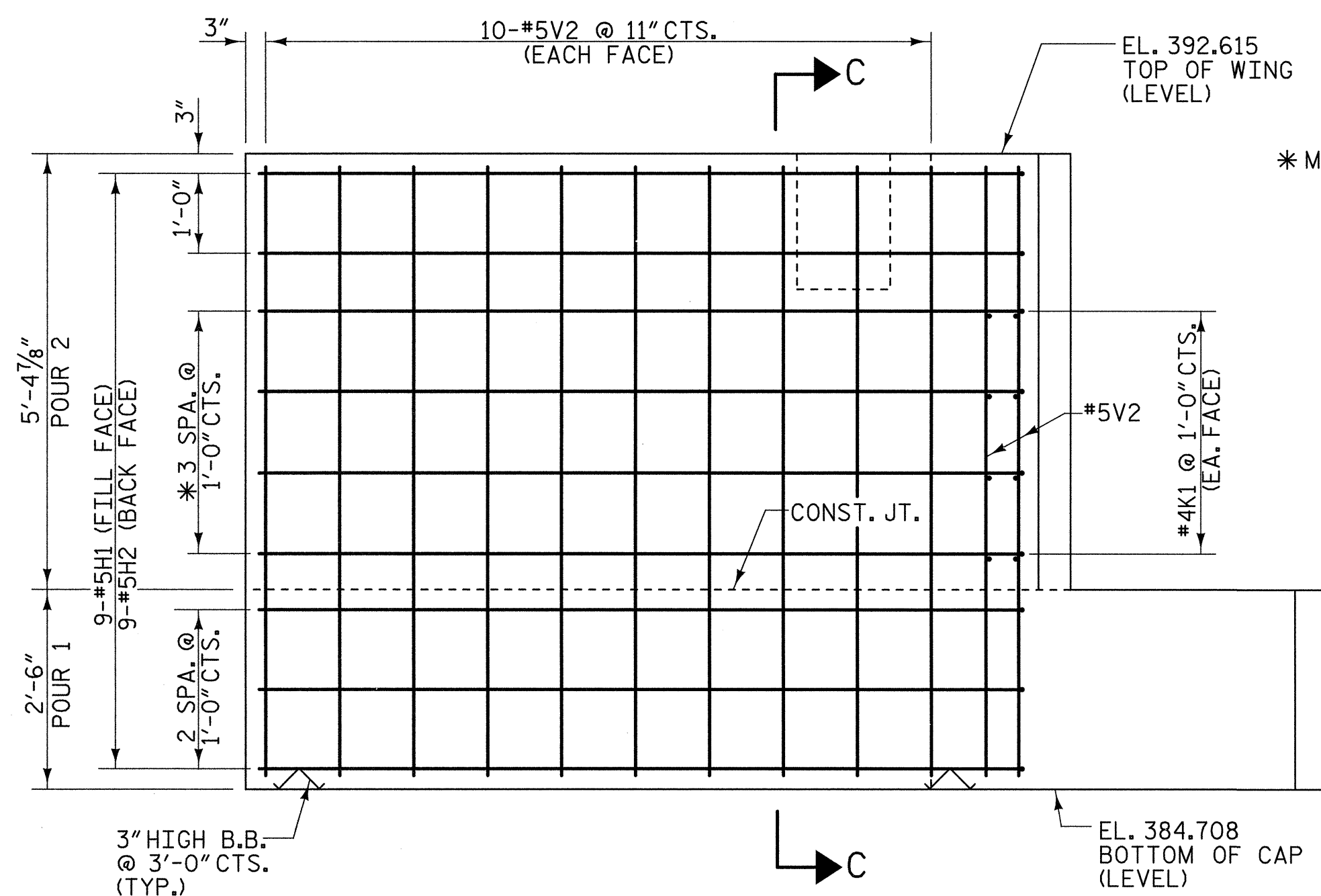
DRAWN BY: J. A. CAVER DATE: 05/07
CHECKED BY: H. S. ELLIOTT DATE: 06/07



W1 PLAN OF LEFT WING

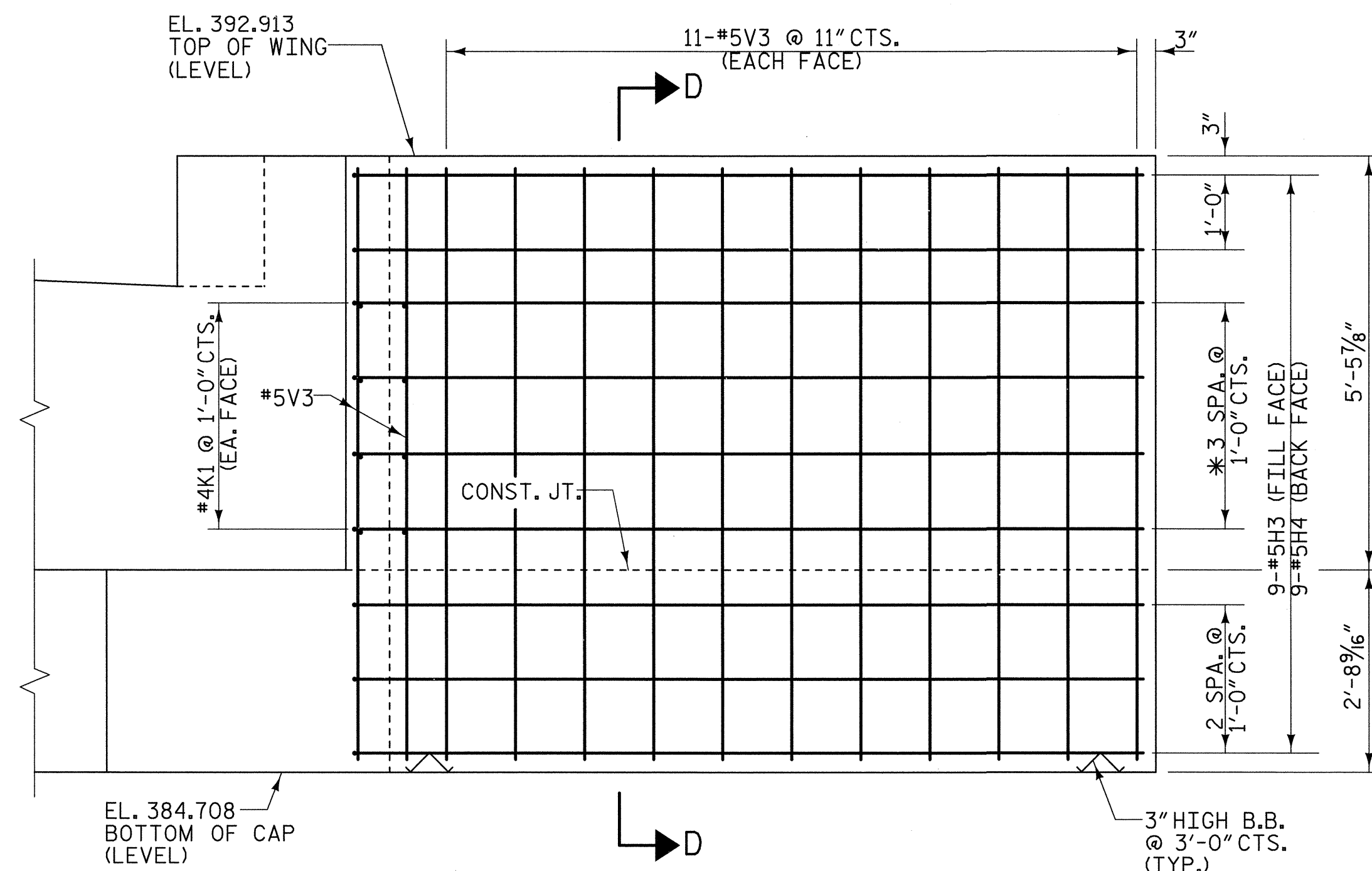


W2 PLAN OF RIGHT WING

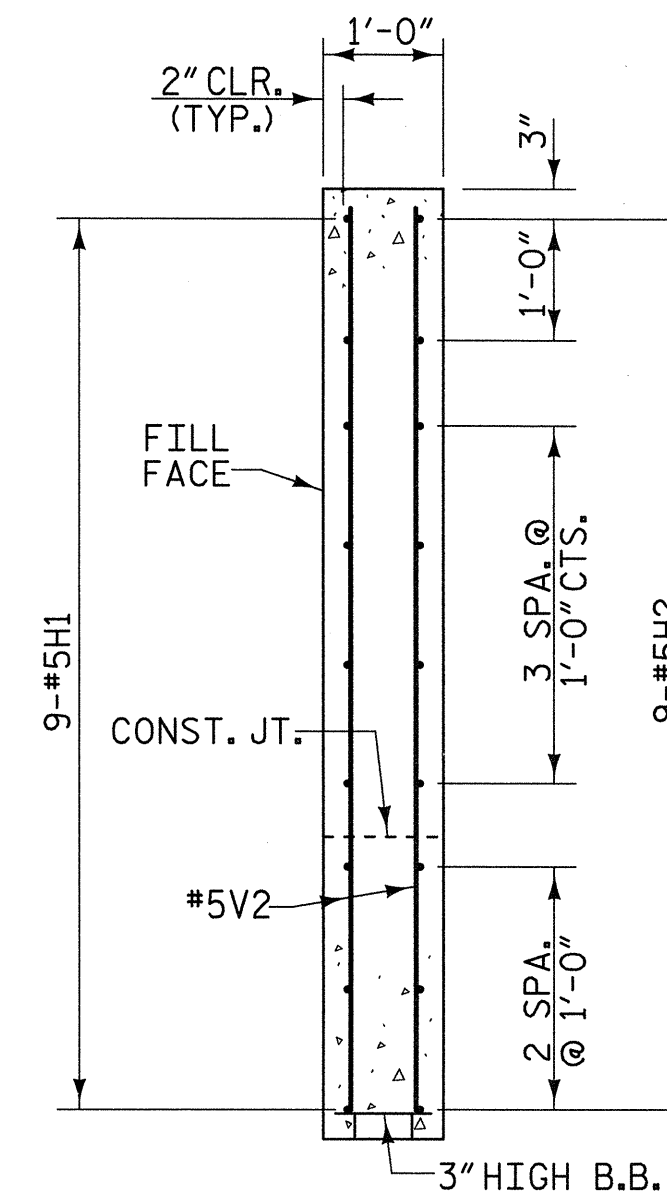


W1 ELEVATION OF LEFT WING

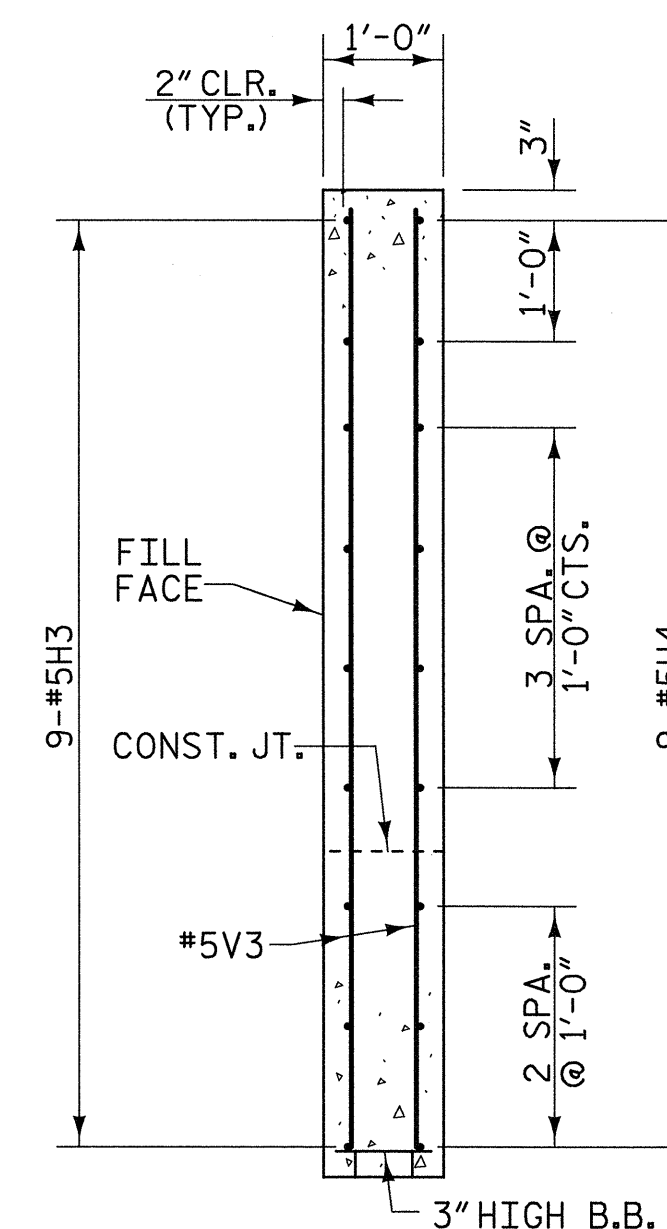
* MATCH "H" BARS TO "K" BARS IN BACKWALL AS SHOWN



W2 ELEVATION OF RIGHT WING



SECTION C-C



SECTION D-D

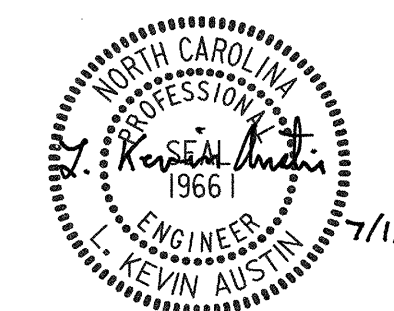
PROJECT NO. R-4906
 PERSON COUNTY
 STATION: 15+40.25 -EL-

REPLACES BRIDGE NO. 59 SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

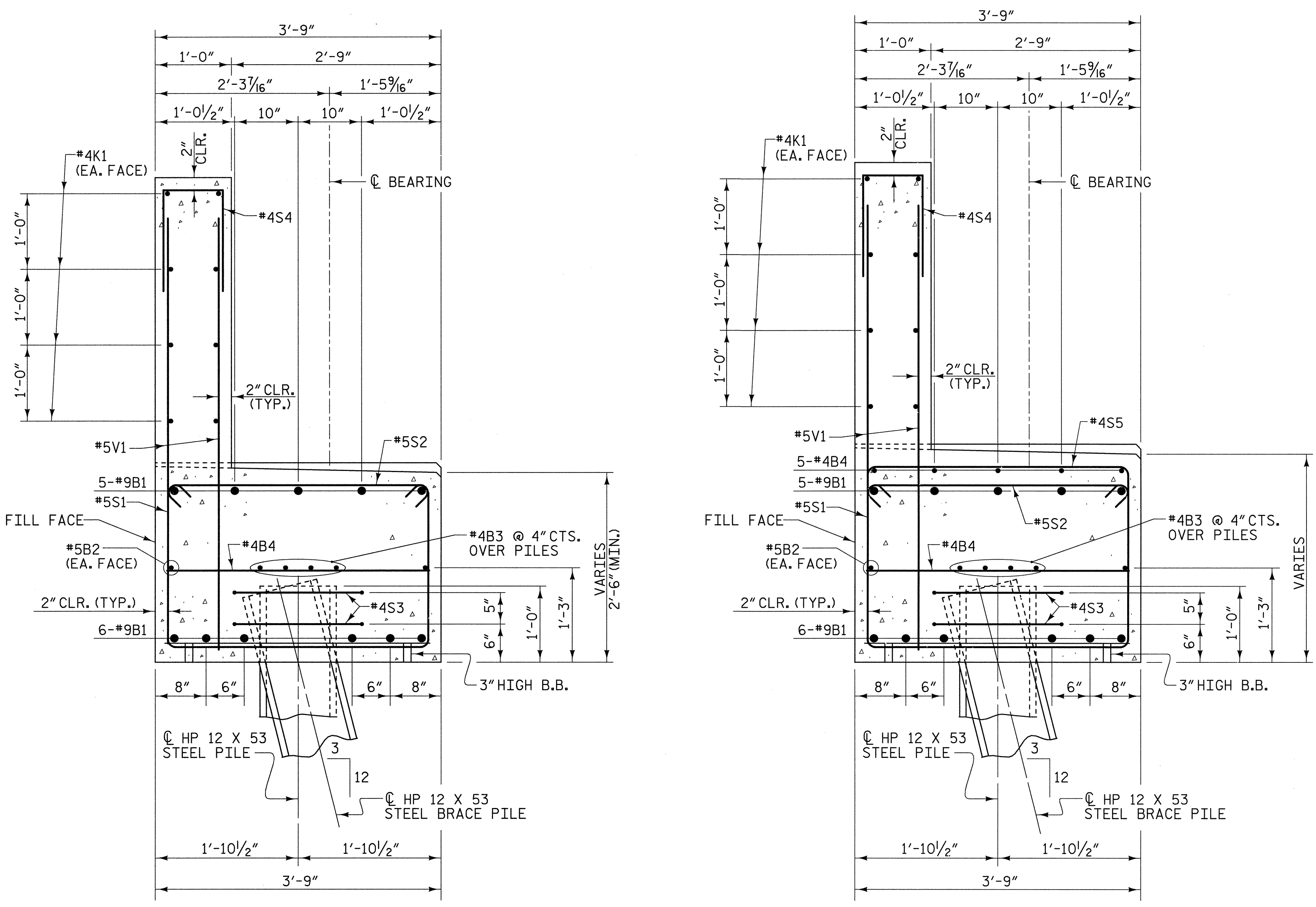
SUBSTRUCTURE
 END BENT 2

35'-0" CLEAR ROADWAY - 60° SKEW



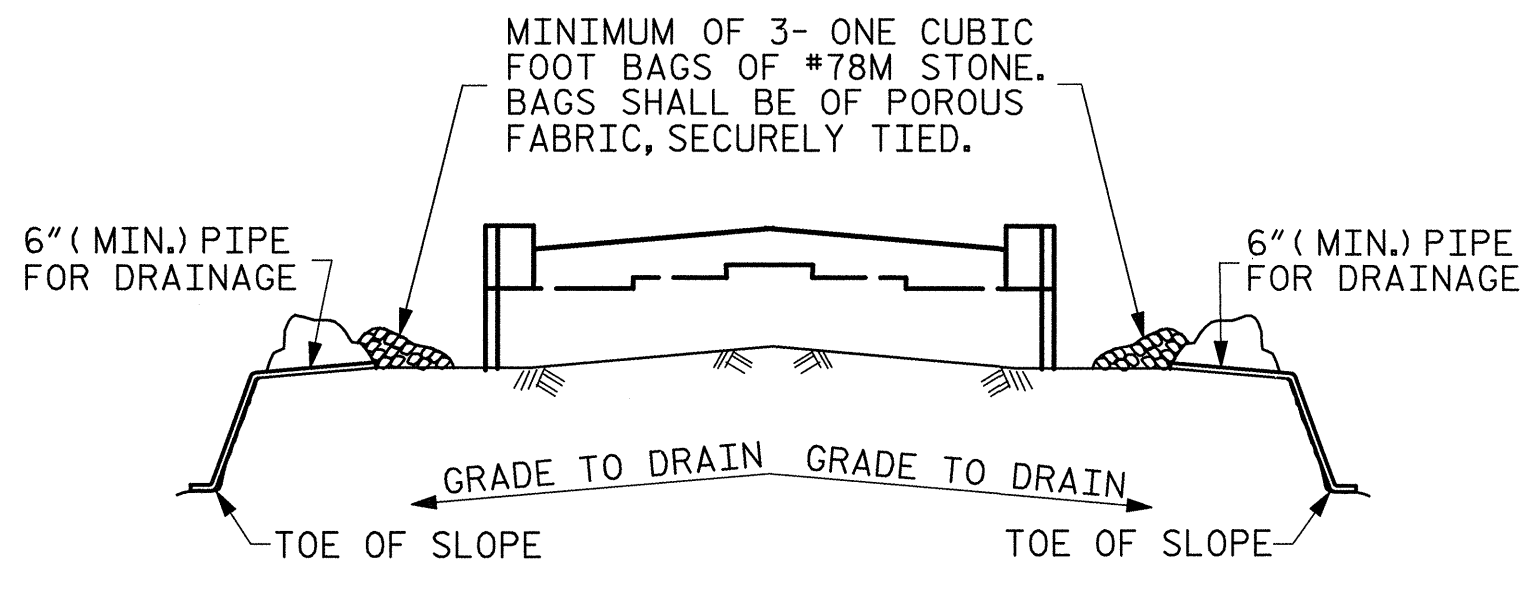
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NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

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 DRAWN BY: J. A. CAVER DATE: 05/07
 CHECKED BY: H. S. ELLIOTT DATE: 06/07



SECTION A-A

SECTION B-B



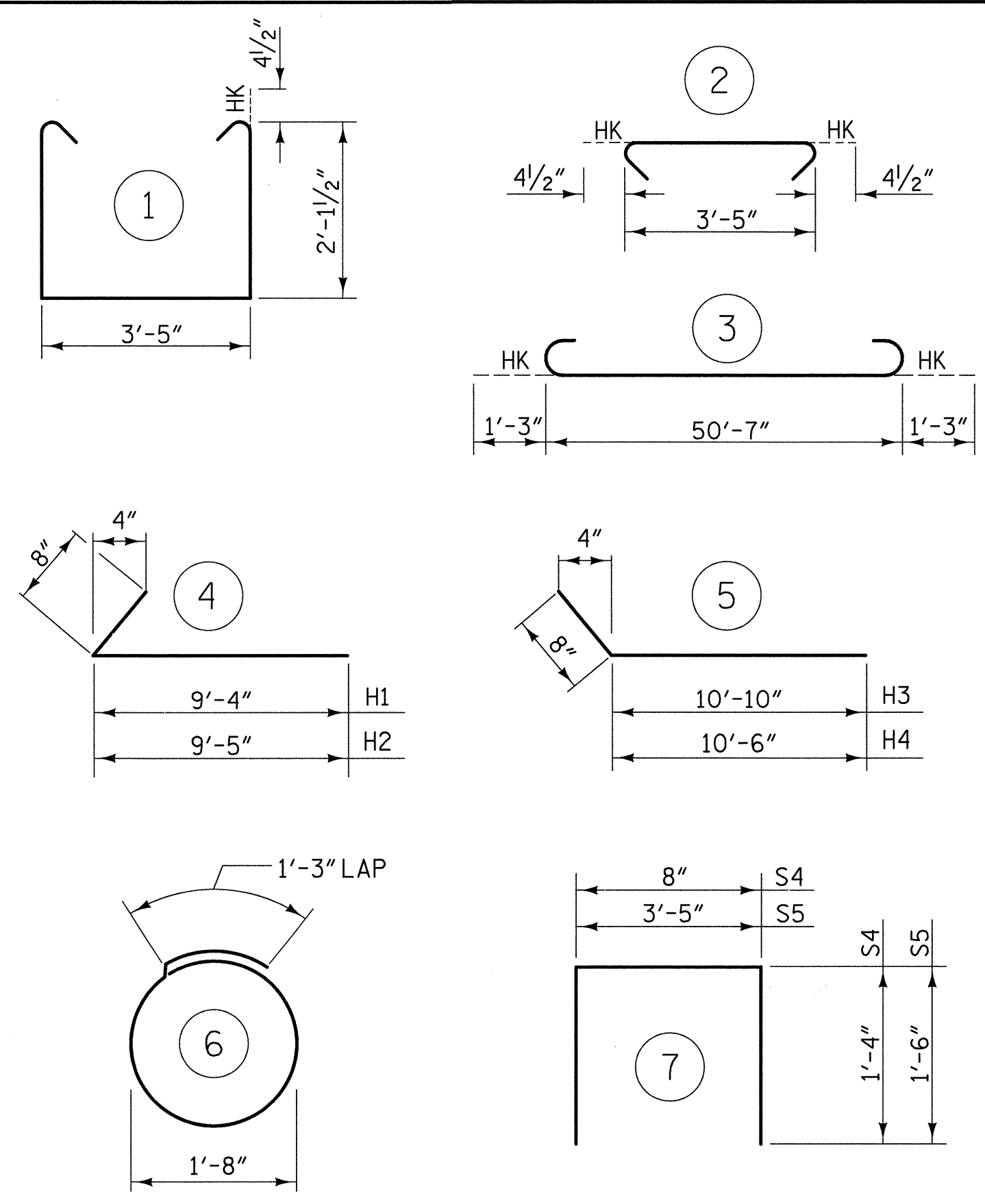
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

BAR TYPES



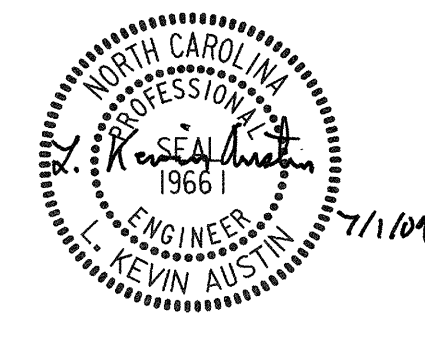
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR END BENT 2					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	11	#9	3	53'-1"	1985
B2	2	#5	STR	50'-7"	106
B3	8	#4	STR	26'-6"	142
B4	12	#4	STR	3'-5"	27
B5	10	#4	STR	17'-2"	115
H1	9	#5	4	10'-0"	94
H2	9	#5	4	10'-1"	95
H3	9	#5	5	11'-6"	108
H4	9	#5	5	11'-2"	105
K1	16	#4	STR	26'-7"	284
S1	51	#5	1	8'-5"	448
S2	51	#5	2	4'-2"	222
S3	16	#5	6	6'-6"	108
S4	41	#4	7	3'-4"	91
S5	33	#4	7	6'-5"	141
V1	82	#5	STR	5'-8"	485
V2	32	#5	STR	7'-5"	248
V3	34	#5	STR	7'-9"	275
TOTAL REINFORCING STEEL =					5079 lbs.
CLASS "A" CONCRETE - CU. YARDS					
				POUR 1	21.3 cu. yds.
				POUR 2	11.7 cu. yds.
				TOTAL	33.0 cu. yds.
HP 12 X 53 STEEL PILES					
8 PILES REQUIRED - LIN. FEET					160

PROJECT NO. R-4906
 PERSON COUNTY
 STATION: 15+40.25 -EL-

REPLACES BRIDGE NO. 59 SHEET 3 OF 3



PLANS PREPARED BY:
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 WWW.MULKEYINC.COM

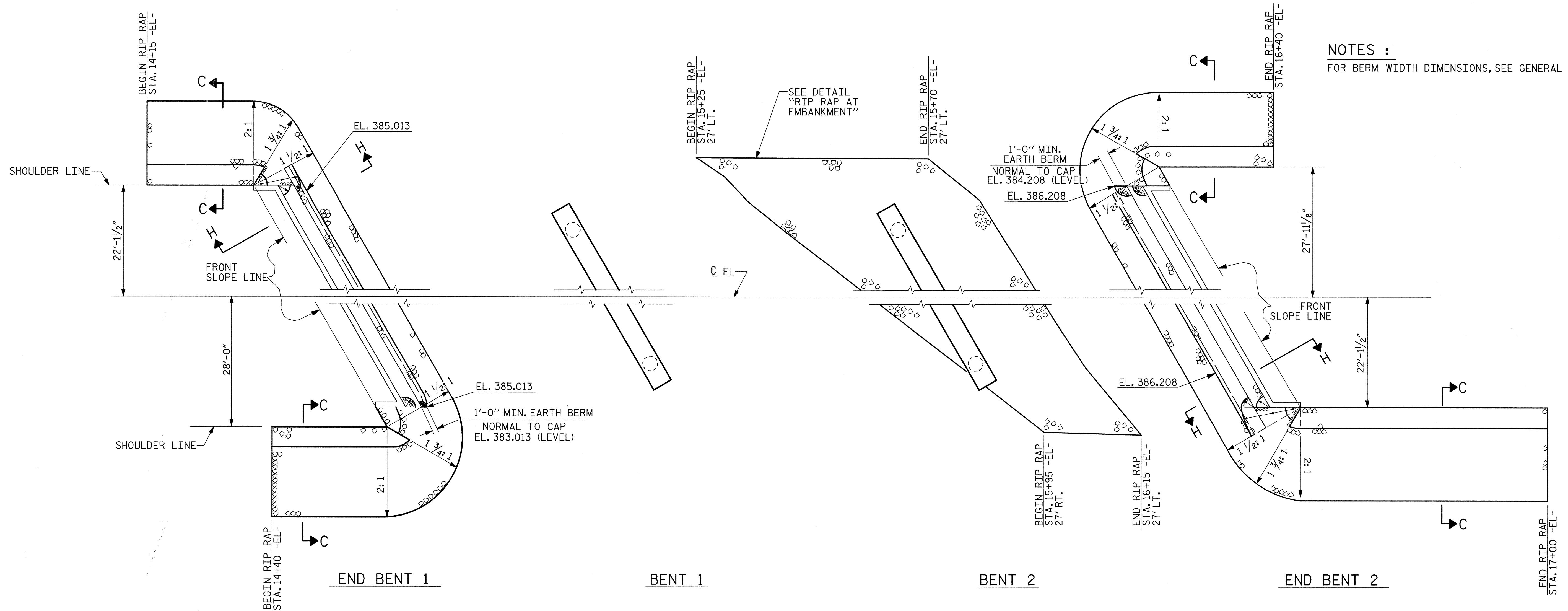
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**SUBSTRUCTURE
 END BENT 2**
 35'-0" CLEAR ROADWAY - 60° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-47
1			3			TOTAL SHEETS 50
2			4			

DRAWN BY: J. A. CAVER DATE: 05/07
 CHECKED BY: H. S. ELLIOTT DATE: 06/07

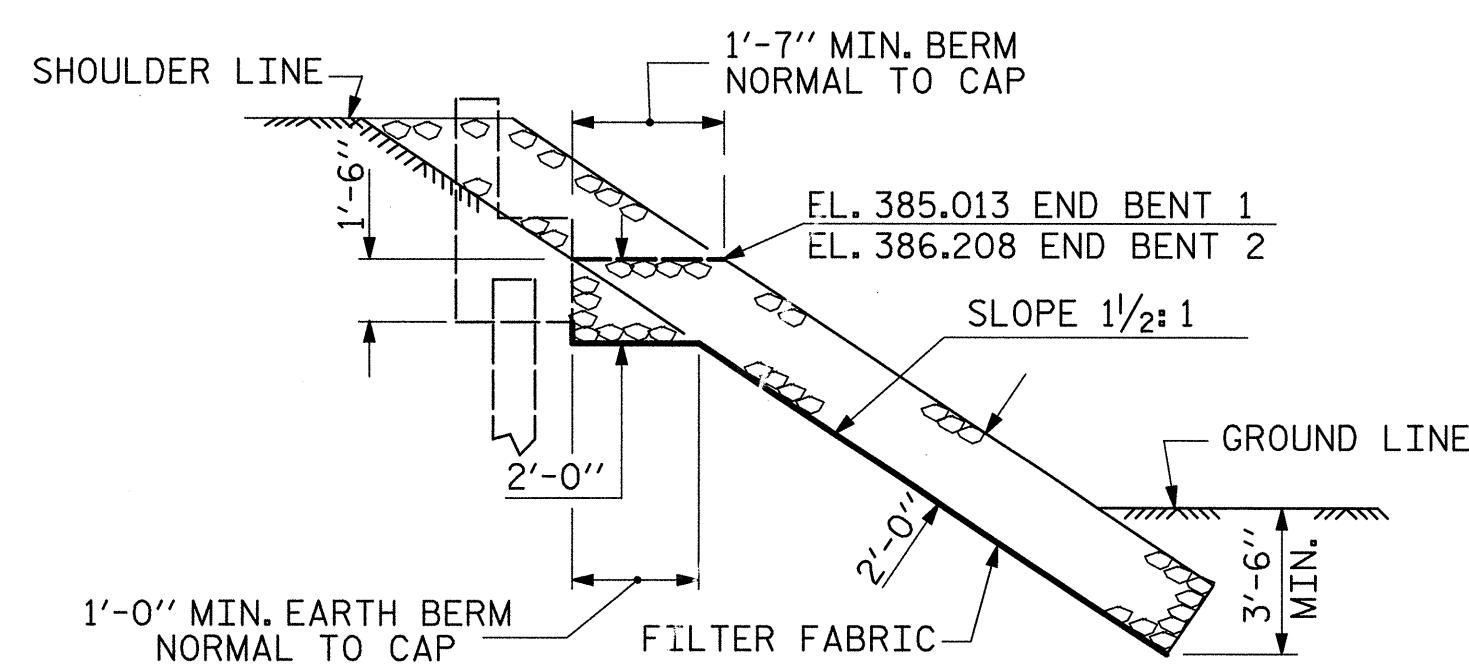
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NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

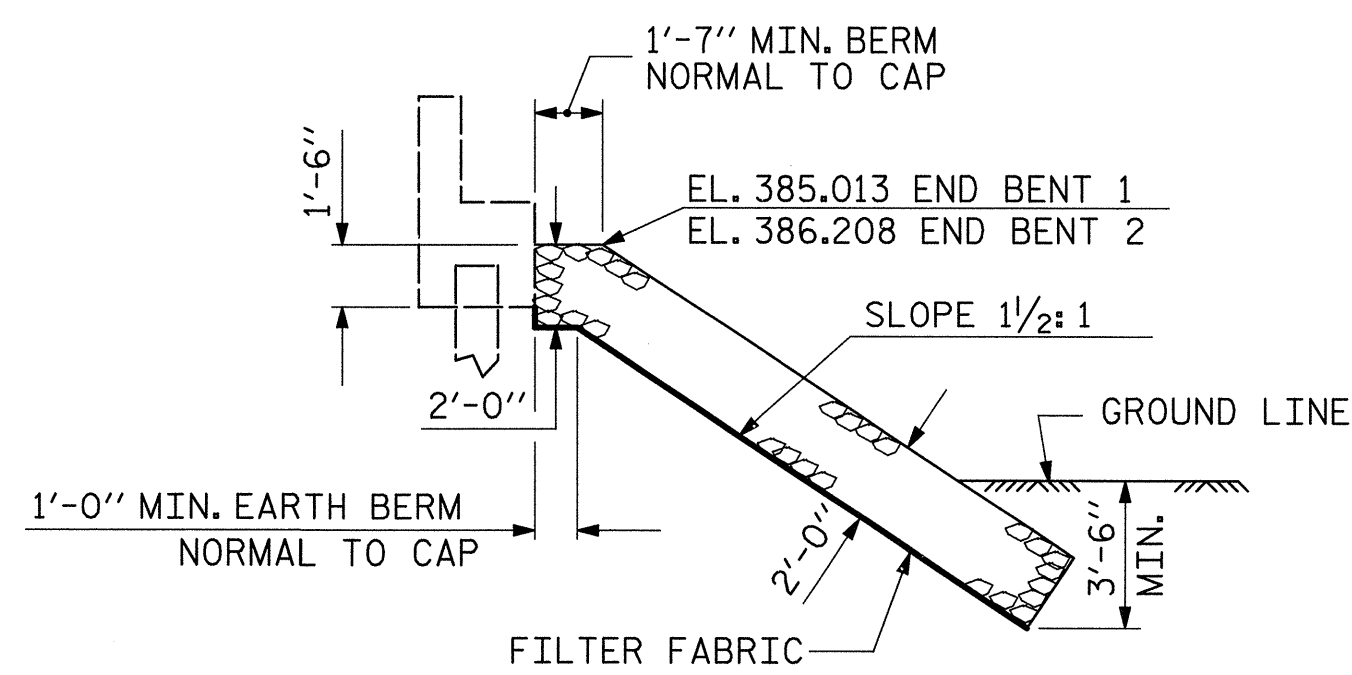


PLAN

ESTIMATED QUANTITIES		
BRIDGE @ STA. 15+40.25 -EL-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	155	172
BENT 2	190	208
END BENT 2	220	240

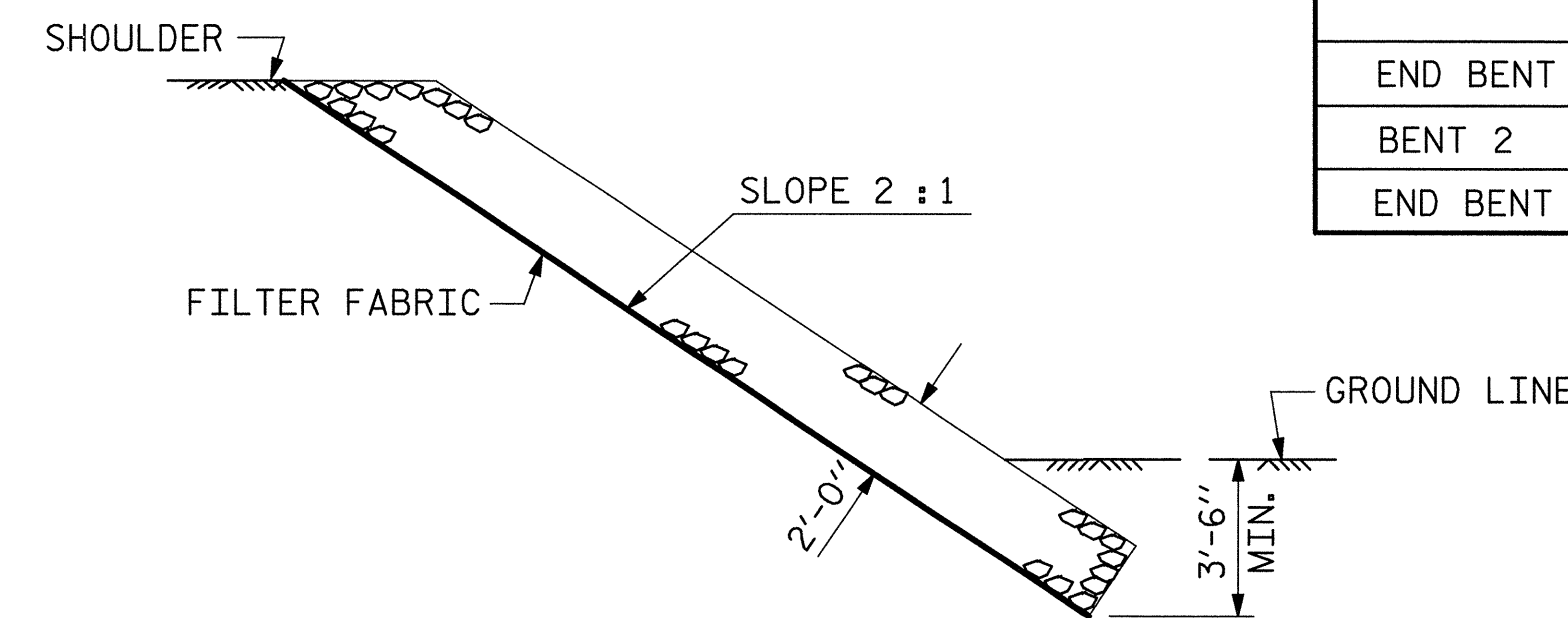


SECTION H-H

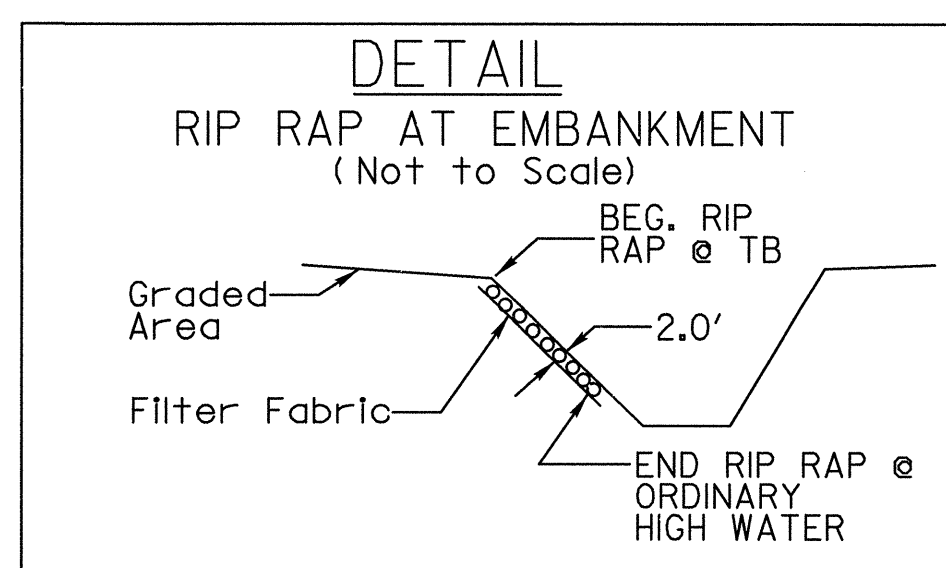


SECTION C-C

BERM RIP RAPPED



SECTION C-C



DETAIL
RIP RAP AT EMBANKMENT
(Not to Scale)

THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:



PROJECT NO. R-4906
PERSON COUNTY
STATION: 15+40.25 -EL-

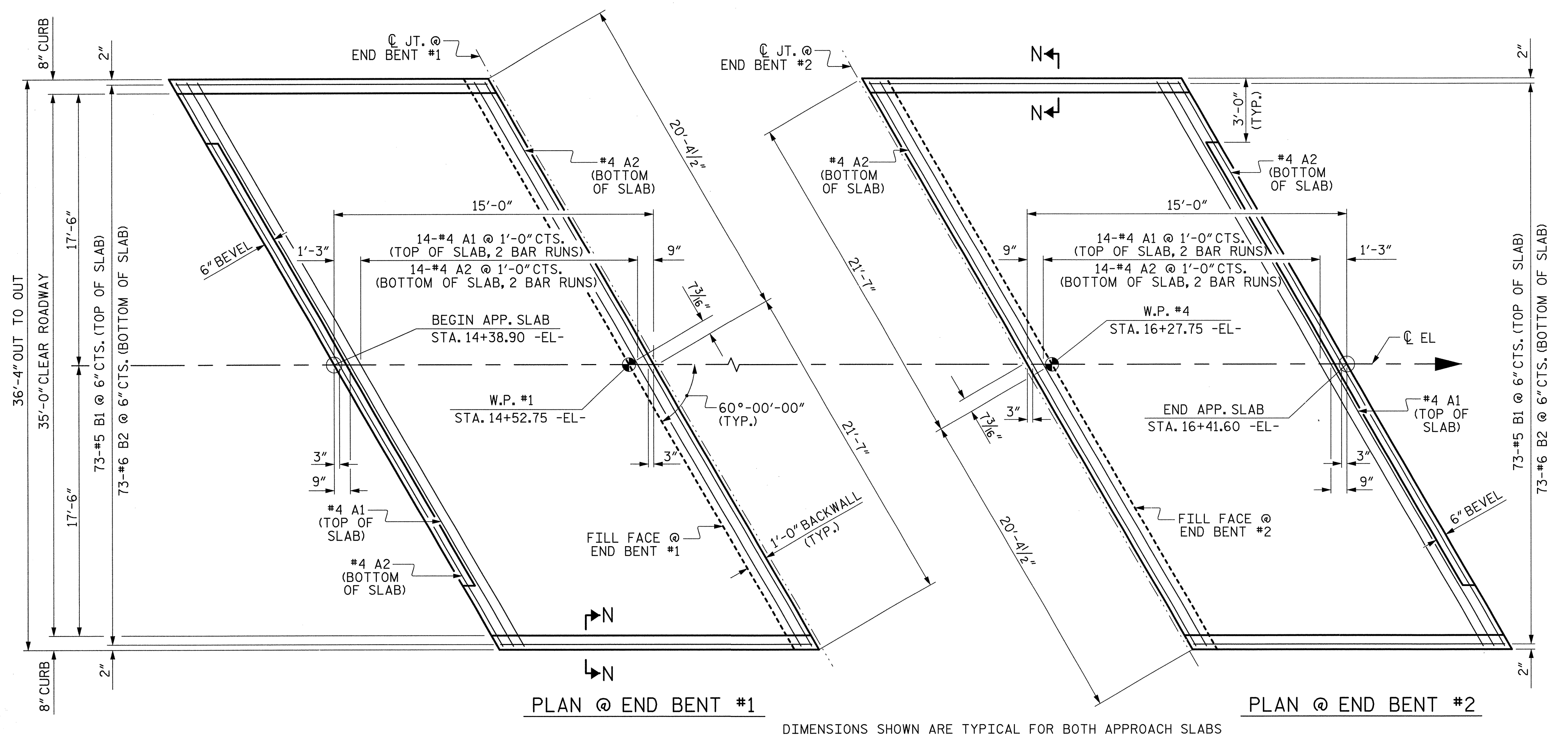
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

==RIP RAP DETAILS==

ASSEMBLED BY : W. B. ALLEN	DATE : 3/09
CHECKED BY : R. V. KEITH	DATE : 3/C8
DRAWN BY : REK 1/84	REV. 8/16/99 R.W./LES
CHECKED BY : RDU 1/84	REV. 10/17/00 R.W./LES
	REV. 5/1/06 TLA/GM



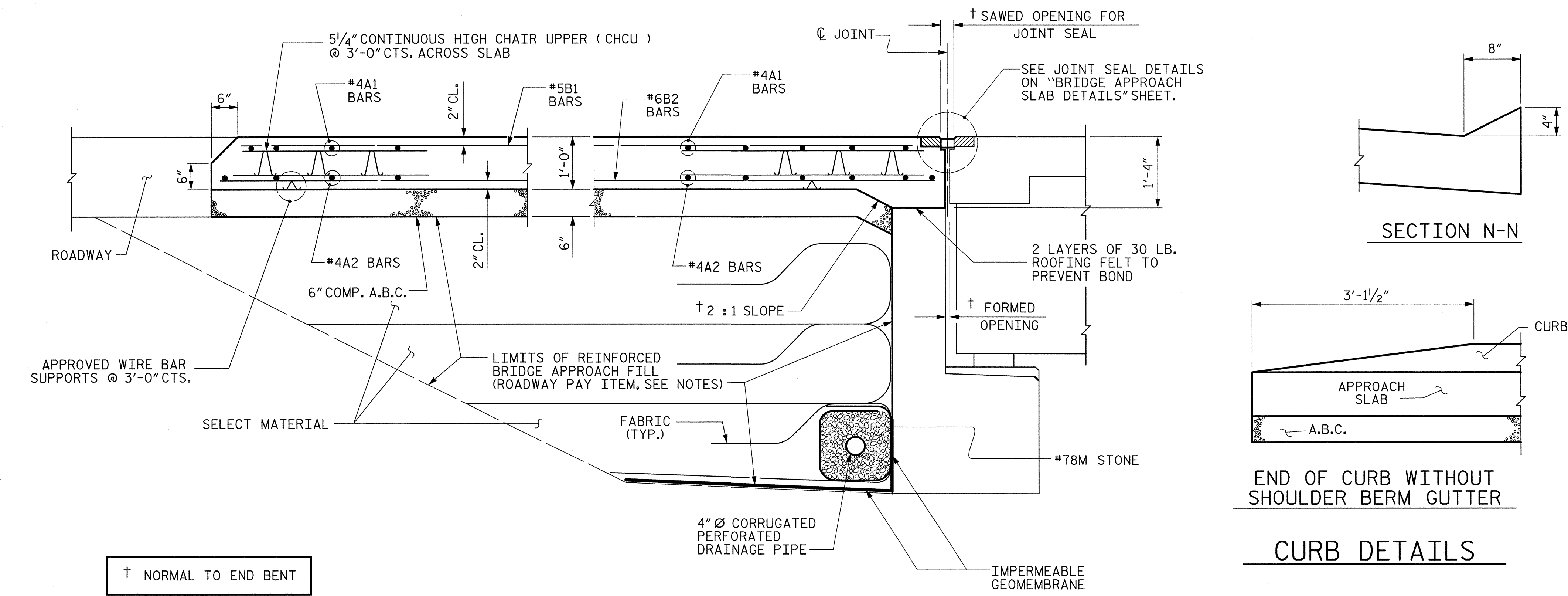
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-48
1			3			TOTAL SHEETS 50
2			4			



PLAN @ END BENT #1

PLAN @ END BENT #2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB

SECTION N-N

END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

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

BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	30	#4	STR	21'-10"	438
A2	32	#4	STR	21'-8"	436
*B1	73	#5	STR	13'-10"	1053
B2	73	#6	STR	14'-7"	1599
REINFORCING STEEL					LBS. 2062
*EPOXY COATED REINFORCING STEEL					LBS. 1491
CLASS AA CONCRETE					C. Y. 20.5
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	30	#4	STR	21'-10"	438
A2	32	#4	STR	21'-8"	436
*B1	73	#5	STR	13'-10"	1053
B2	73	#6	STR	14'-7"	1599
REINFORCING STEEL					LBS. 2062
*EPOXY COATED REINFORCING STEEL					LBS. 1491
CLASS AA CONCRETE					C. Y. 20.5

NOTES

- APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
- FOR REINFORCED BRIDGE APPROACH FILL INCLUDING FABRIC, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78 STONE, AND SELECT MATERIAL, SEE ROADWAY PLANS.
- AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.
- THE 6" COMP. A.B.C. SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB AND SHALL EXTEND 1'-0" OUTSIDE EACH EDGE OF THE APPROACH SLAB.
- THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.
- THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.
- THE JOINT SHALL BE SAWS PRIOR TO THE CASTING OF THE BARRIER RAIL.
- FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.
- THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2 1/2".
- FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

PROJECT NO. R-4906
 PERSON _____ COUNTY _____
 STATION: 15+40.25 -EL-
 REPLACES BRIDGE NO. 59 SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR FLEXIBLE PAVEMENT

THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:

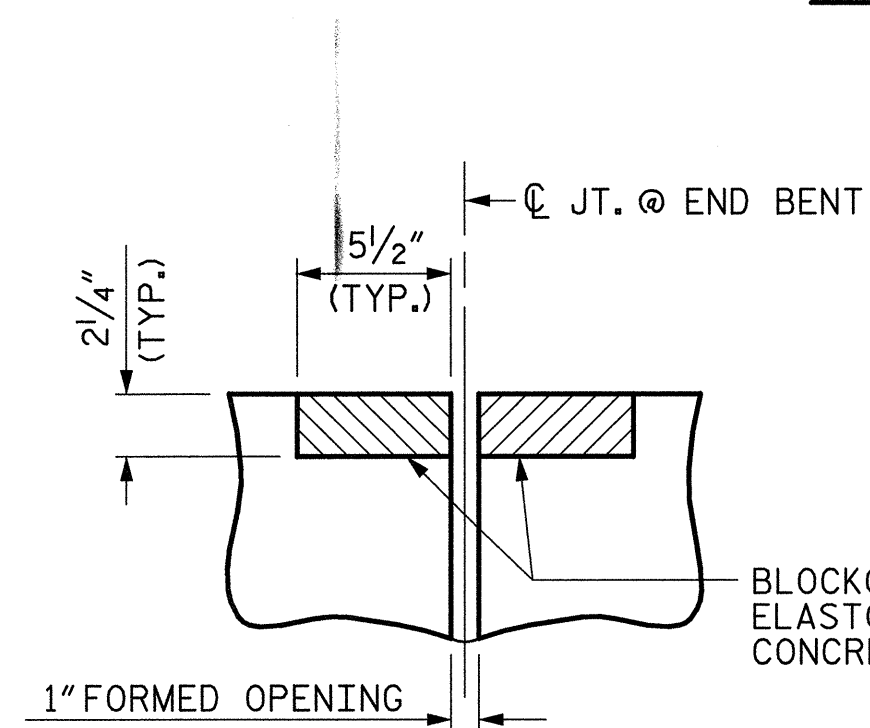
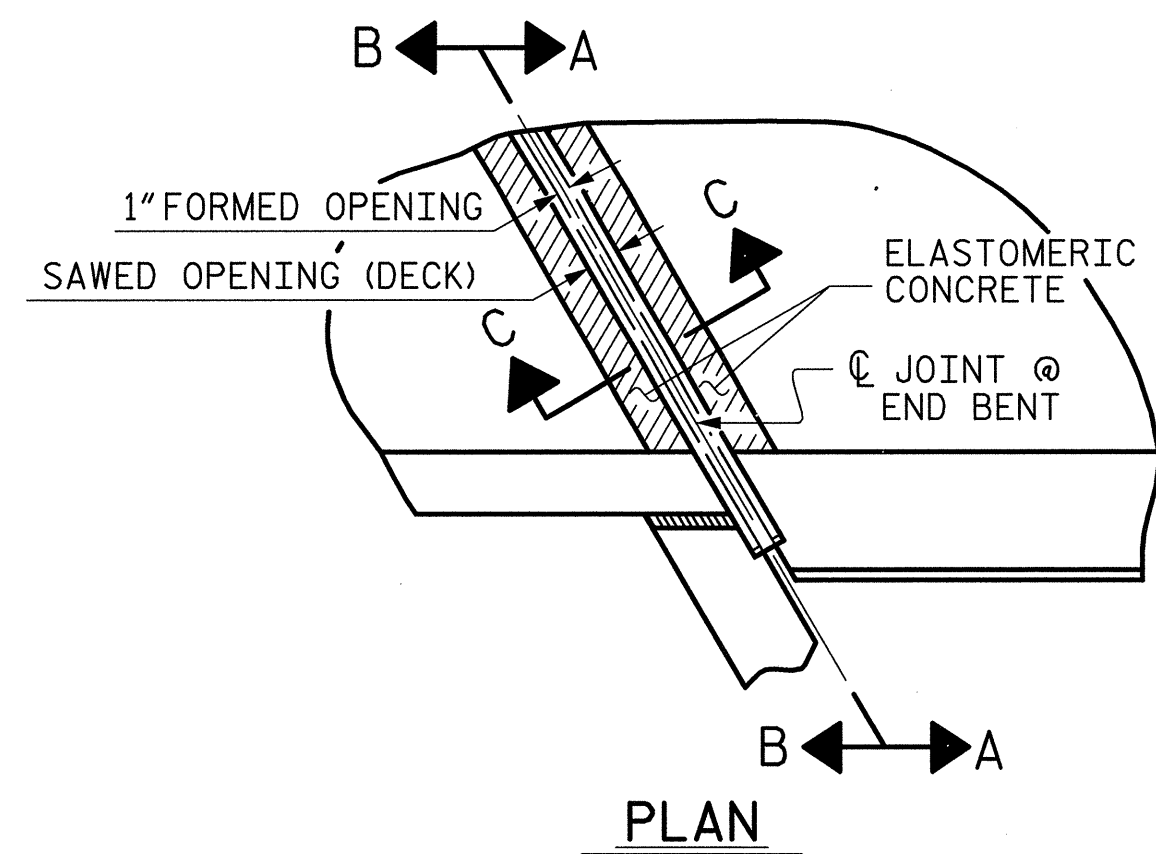
PLANS PREPARED BY:
MULKEY
 ENGINEERS & CONSULTANTS
 P.O. BOX 33127
 RALEIGH, N.C. 27636
 (919) 851-1111
 (919) 851-1918 (FAX)
 WWW.MULKEYINC.COM

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

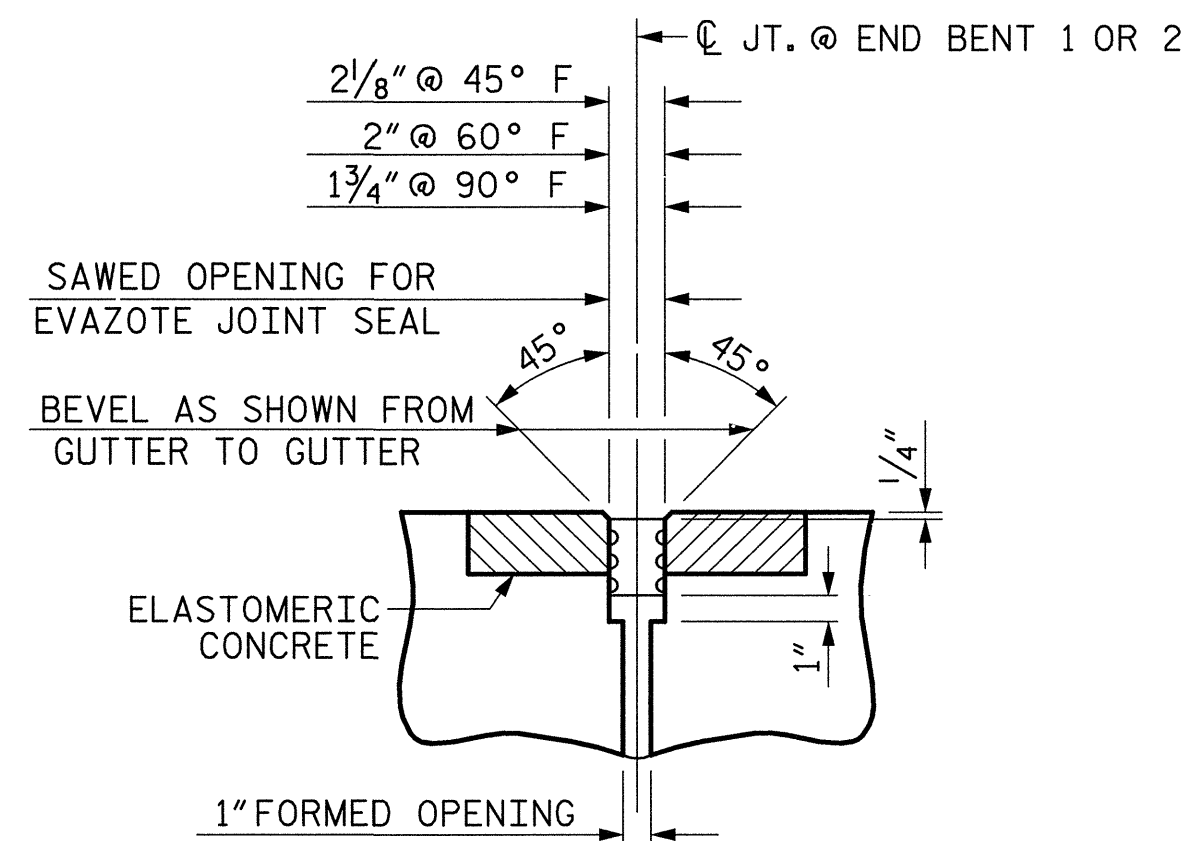
SHEET NO.
S-49
 TOTAL SHEETS
50

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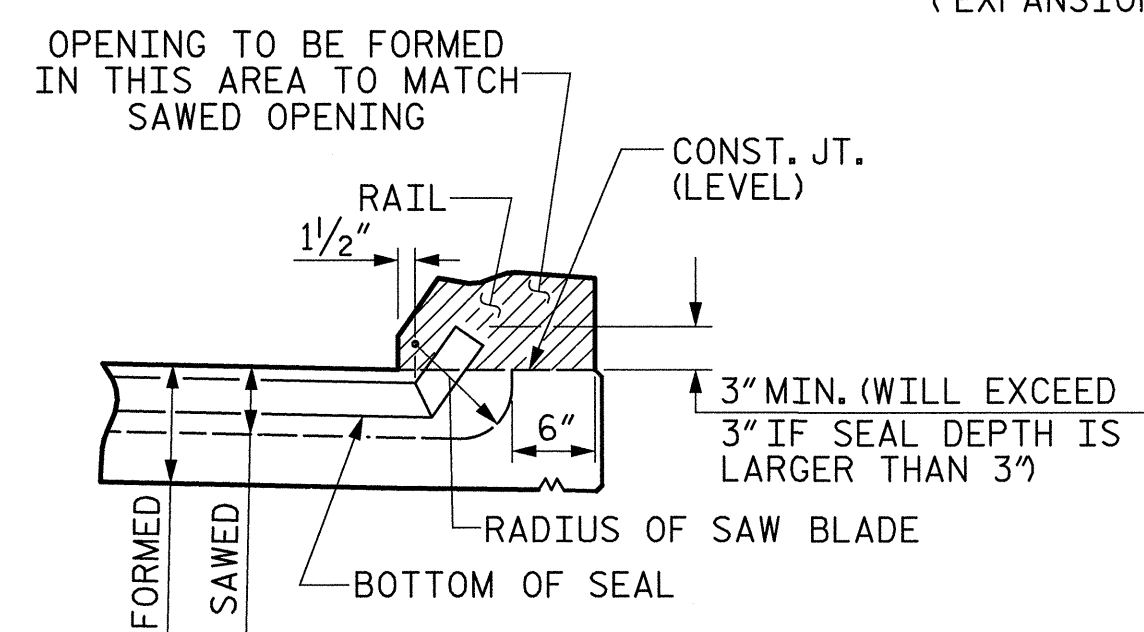
ASSEMBLED BY: <u>W. B. ALLEN</u>	DATE: <u>02/08</u>
CHECKED BY: <u>R. V. KEITH</u>	DATE: <u>02/08</u>
DRAWN BY: <u>EEM 3/95</u>	REV. <u>7/10/01</u> LES/RDR
CHECKED BY: <u>VAP 3/95</u>	REV. <u>5/1/03R</u> RWW/JTE
	REV. <u>5/1/06R</u> KMM/GM



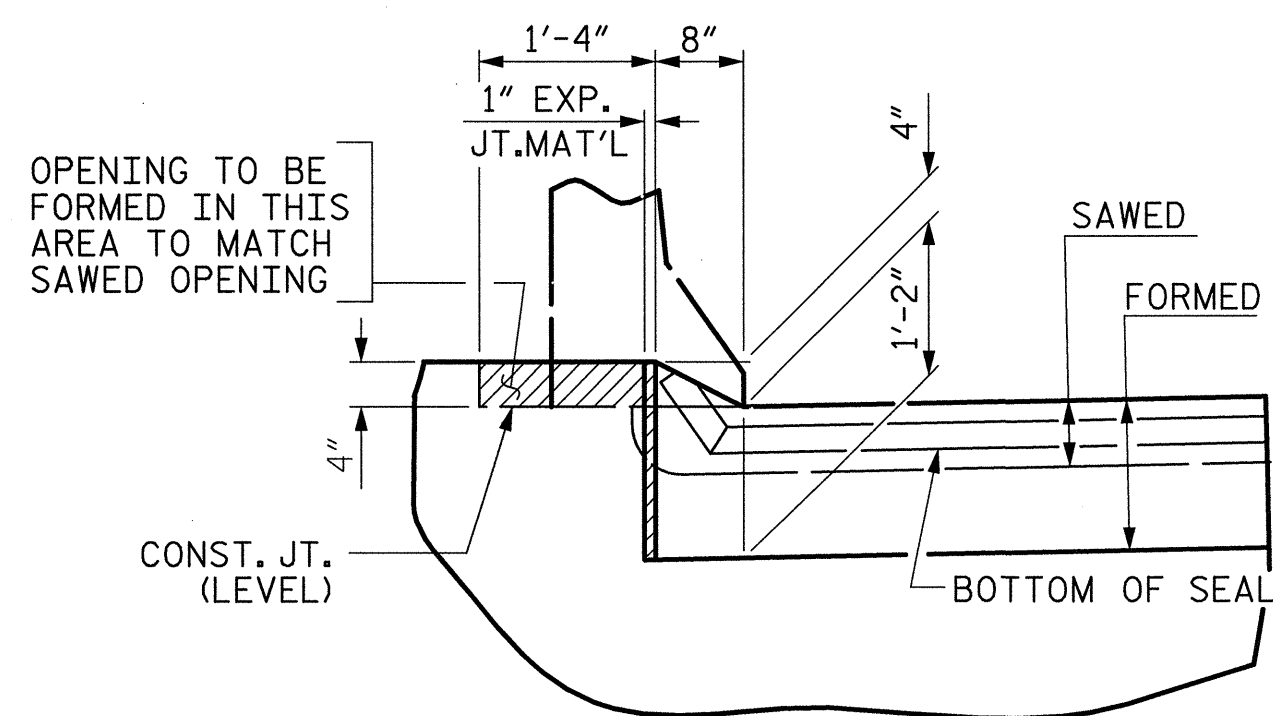
SECTION C-C
EVAZOTE JOINT SEAL
(PRE-SAWED ELASTOMERIC
CONCRETE DIMENSIONS)



SECTION C-C
EVAZOTE JOINT SEAL
(EXPANSION)



SECTION A-A

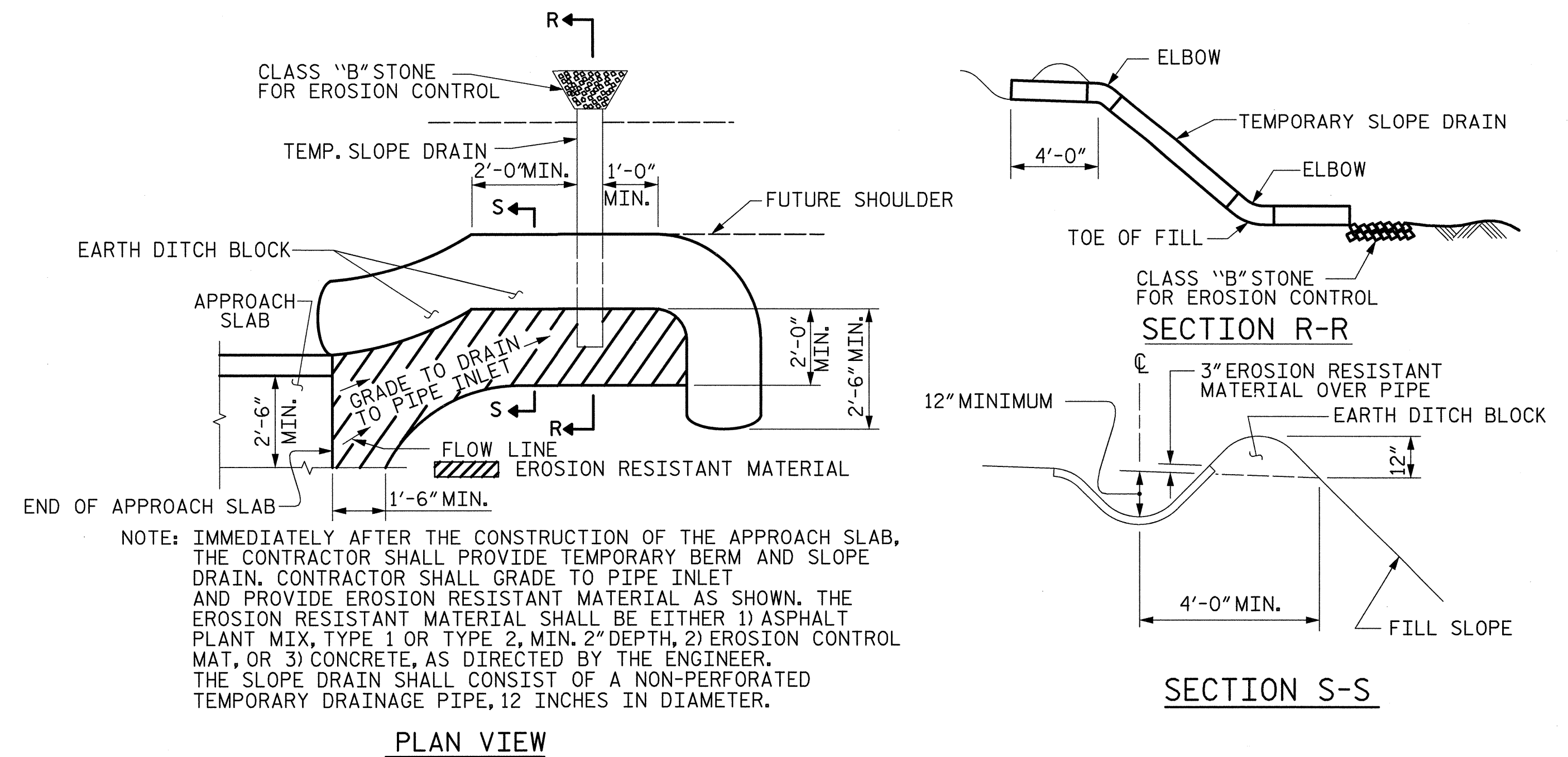


SECTION B-B

JOINT SEAL DETAILS @ END BENT

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

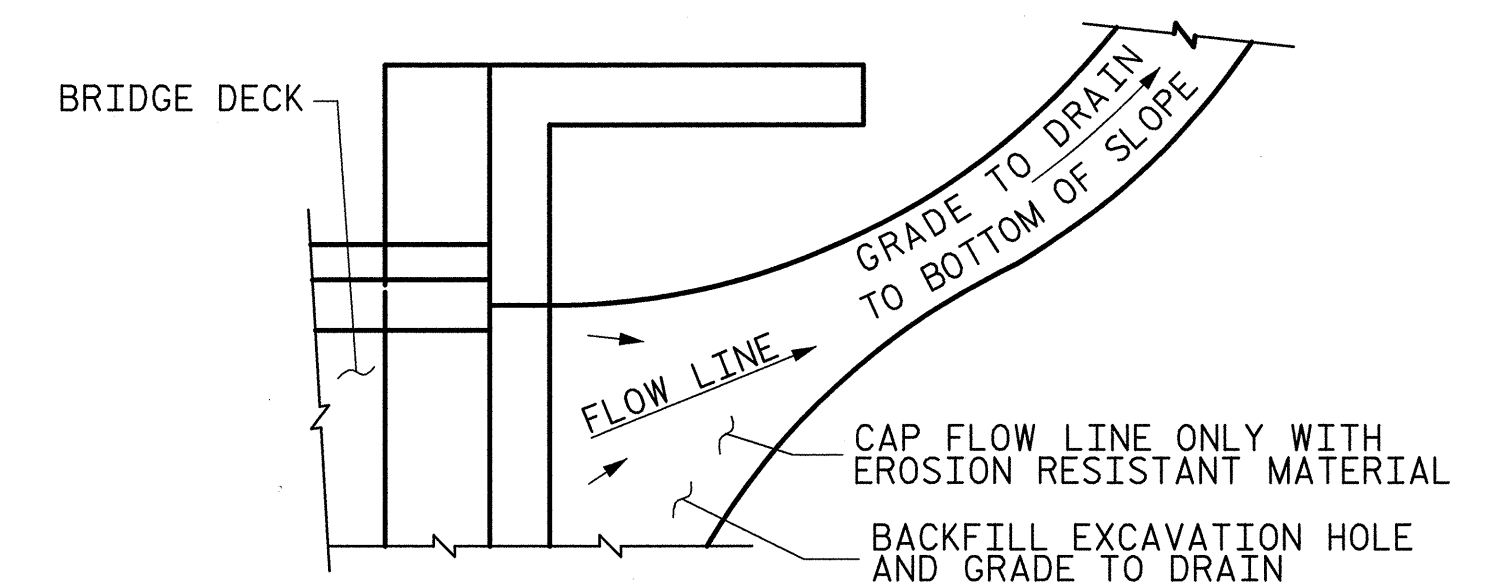
THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE BARRIER RAIL.



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

PLAN VIEW

TEMPORARY BERM AND SLOPE DRAIN DETAILS



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

TEMPORARY DRAINAGE DETAIL

ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	6.9
2	6.9
TOTAL	13.8

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

PROJECT NO. R-4906
PERSON _____ COUNTY _____
STATION: 15+40.25 -EL-

REPLACES BRIDGE NO. 59 SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH
SLAB DETAILS

35'-0" CLEAR ROADWAY - 60° SKEW

REVISIONS						1988
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-50
2			4			TOTAL SHEETS 50

THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:



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ASSEMBLED BY : J. A. CAVER	DATE : 05/07
CHECKED BY : H. S. ELLIOTT	DATE : 06/07
DRAWN BY : FCJ 11/88	REV. 10/17/00 RWW/LES
CHECKED BY : ARB 11/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

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. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

JANUARY, 1990

STD. NO. SN