

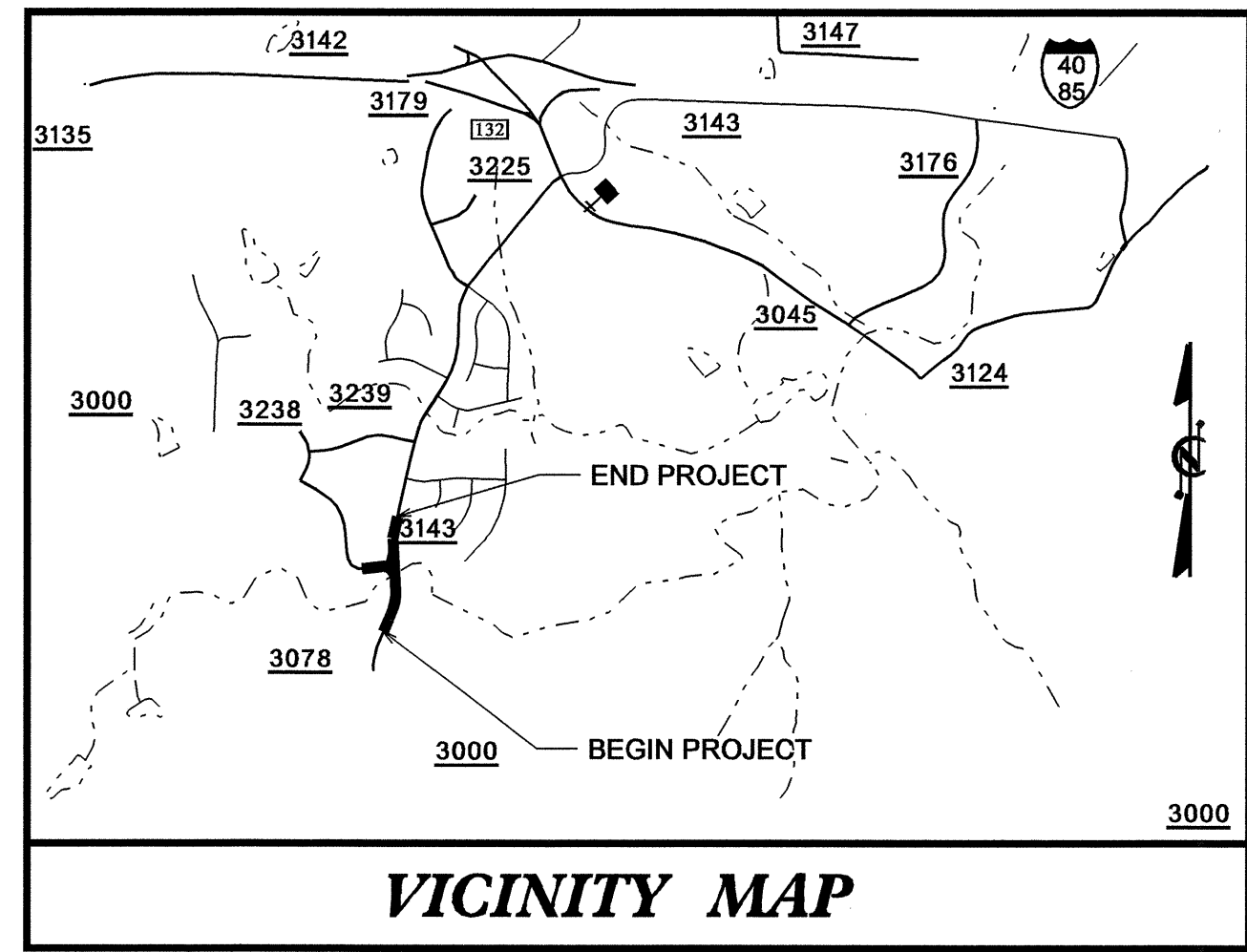
09/08/09

CONTRACT: C201768 **TIP PROJECT: B-4129**

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

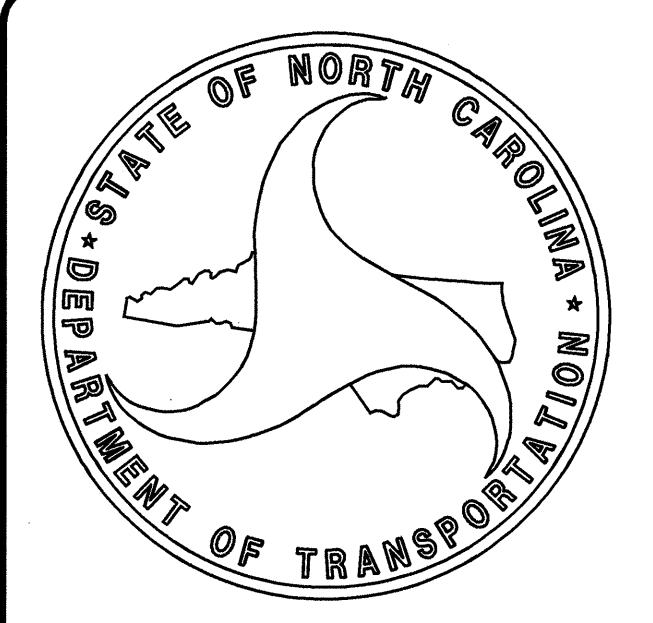
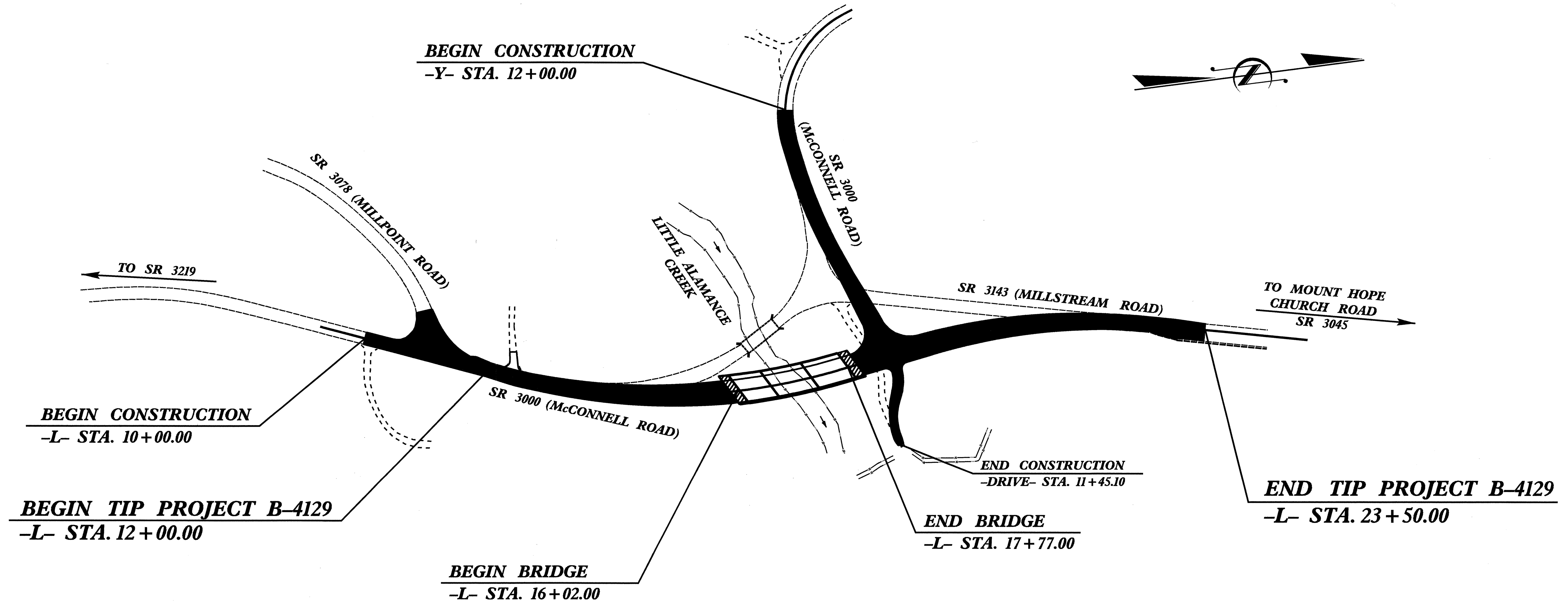
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4129		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33482.1.1	BRZ-3000(3)	P.E.	
33482.2.1	BRZ-3000(3)	RW & UTL.	
33482.3.1	BRZ-3000(3)	CONSTR.	



LOCATION: BRIDGE NO. 226 OVER LITTLE ALAMANCE CREEK ON SR 3000

TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE

STRUCTURE



DESIGN DATA

ADT 2007 =	3550
ADT 2027 =	6050
DHV =	10 %
D =	65 %
T =	4 % *
V =	50 MPH
* TTST 1% DUAL 3% (RURAL MINOR COLLECTOR)	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4129	=	0.185 MI.
LENGTH STRUCTURE TIP PROJECT B-4129	=	0.033 MI.
TOTAL LENGTH OF TIP PROJECT B-4129	=	0.218 MI.

Prepared In the Office of:

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

2006 STANDARD SPECIFICATIONS

LETTING DATE:
September 16, 2008

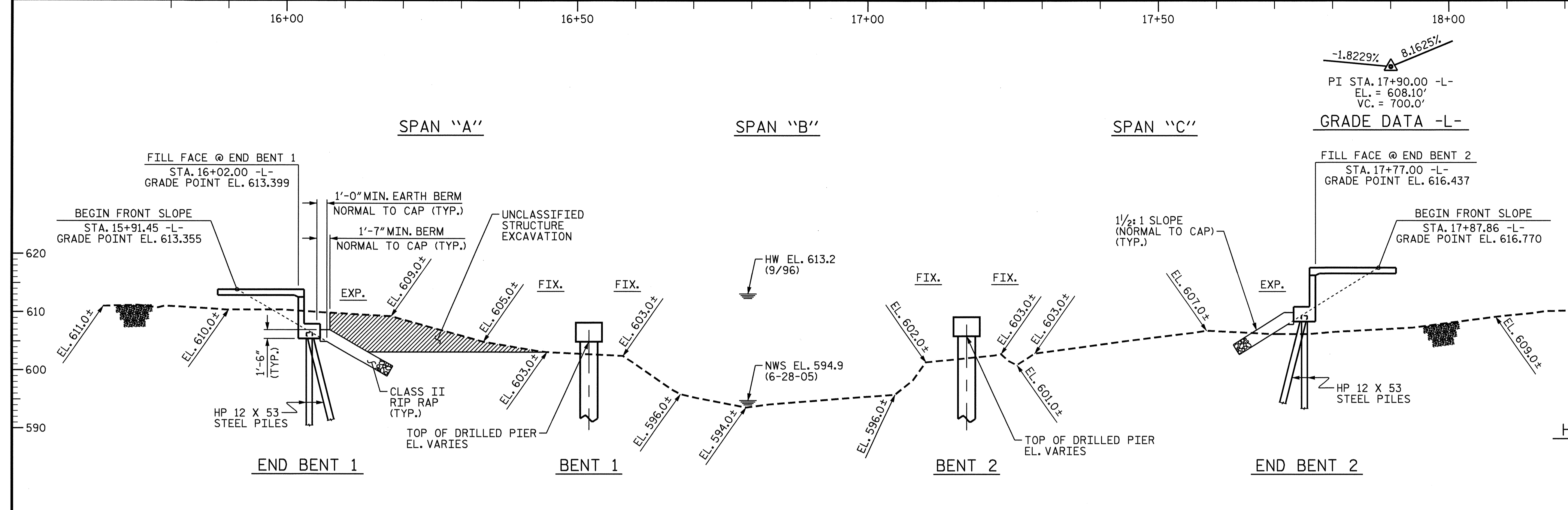
ROY GIROLAMI, P.E.
PROJECT ENGINEER

DAVID ANDERSON, P.E.
PROJECT DESIGN ENGINEER

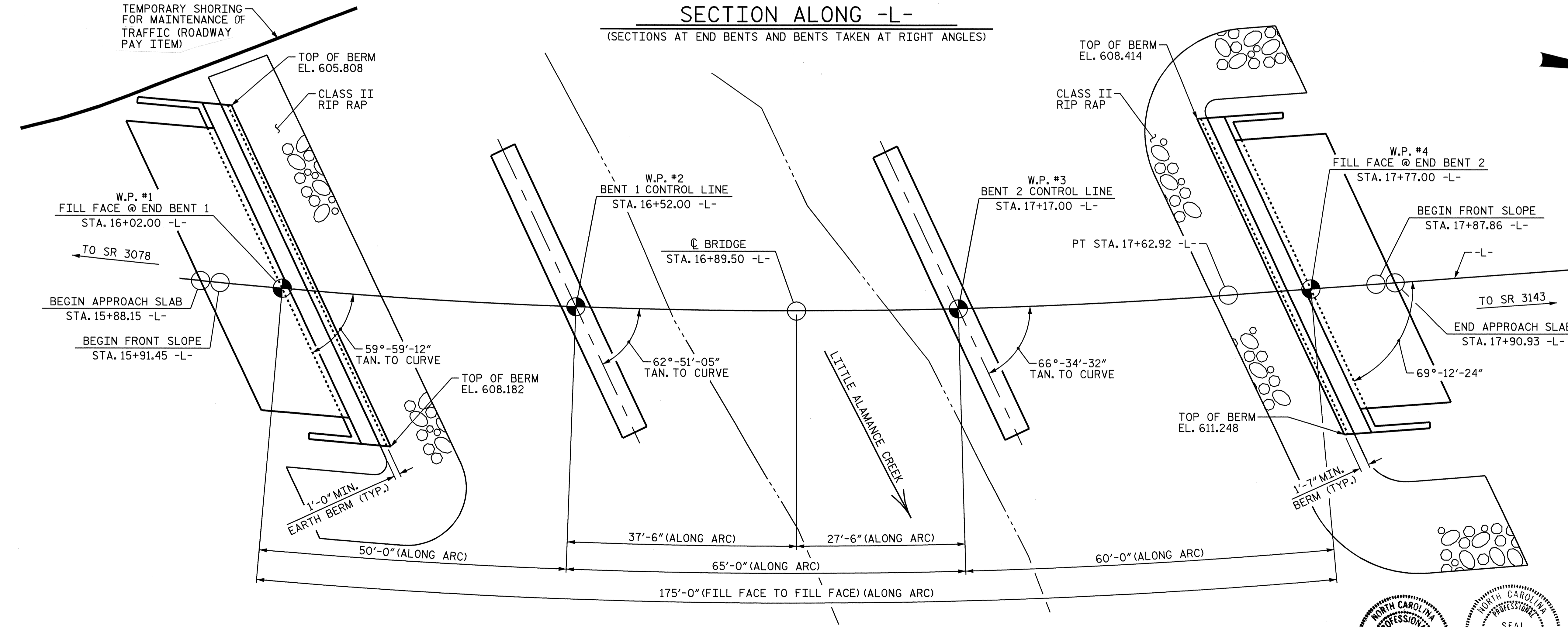
STRUCTURE DESIGN UNIT

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER



SECTION ALONG -L-
(SECTIONS AT END BENTS AND BENTS TAKEN AT RIGHT ANGLES)



PLAN

(FOR CLARITY, PILES ARE NOT SHOWN IN PLAN VIEW)

PROJECT NO. B-4129
GUILFORD COUNTY
STATION: 16+89.50 -L-

SHEET 1 OF 4 REPLACES BRIDGE No. 226

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

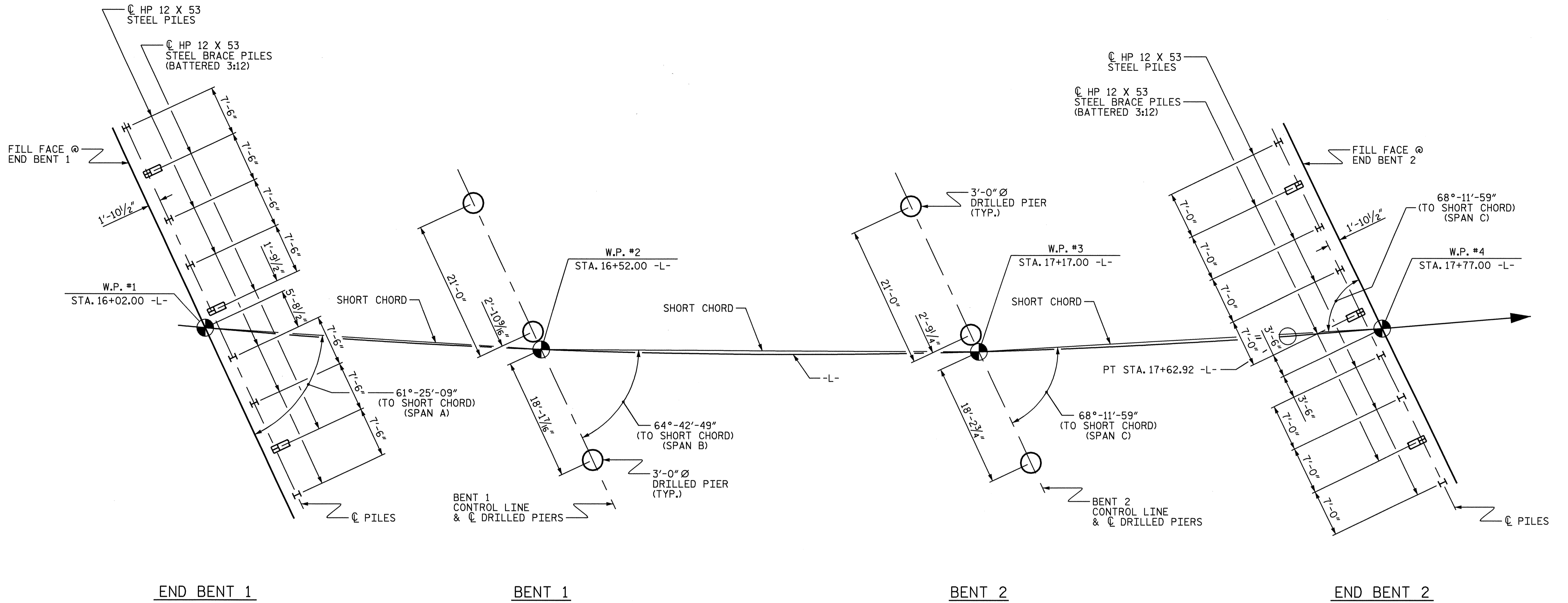
GENERAL DRAWING
BRIDGE OVER LITTLE ALAMANCE
CREEK ON SR 3000 BETWEEN
SR 3078 AND SR 3143

DRAWN BY: E.C. LOCKLEAR DATE: 7-24-07
CHECKED BY: A.S. CALLAWAY DATE: 9-20-07

PROFESSIONAL SEAL
11259
11/27/07

PROFESSIONAL SEAL
9804
11/27/07

REVISIONS						SHEET NO. 5-1
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 38
2			4			



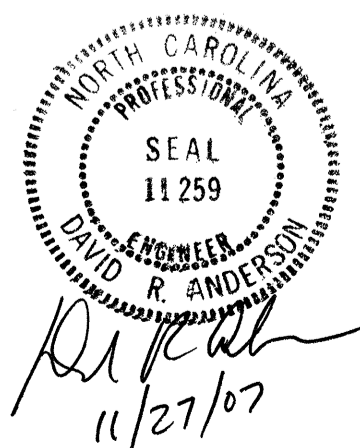
FOUNDATION LAYOUT

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

PROJECT NO. B-4129
GUILFORD COUNTY
 STATION: 16+89.50 -L-

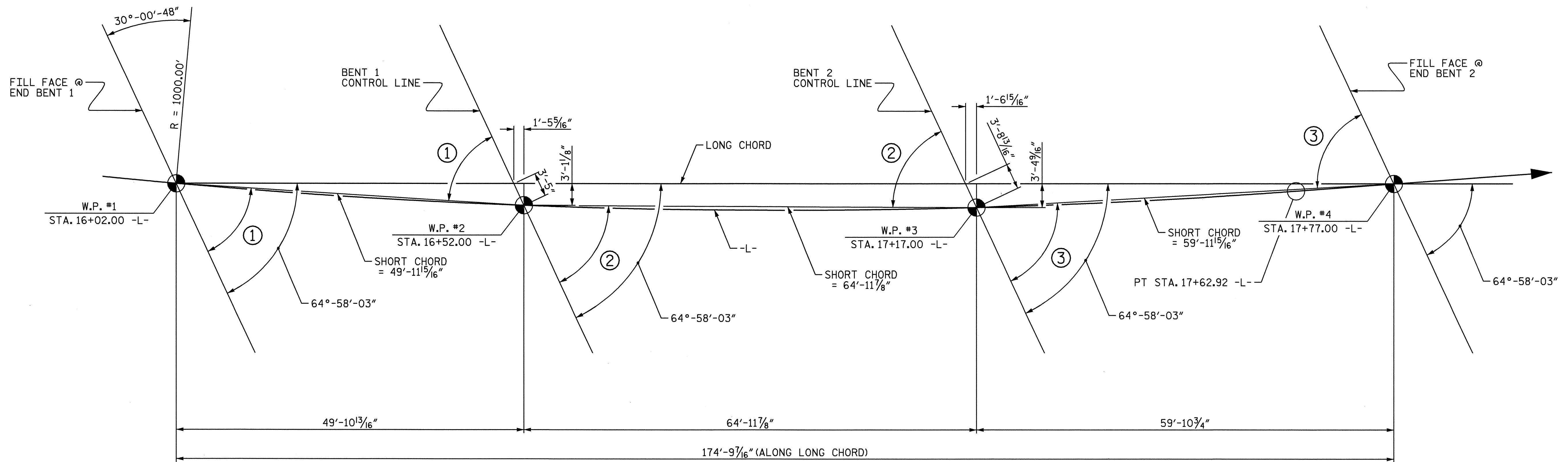
SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE OVER LITTLE ALAMANCE
 CREEK ON SR 3000 BETWEEN
 SR 3078 AND SR 3143



DRAWN BY: E.C. LOCKLEAR DATE: 4-19-07
 CHECKED BY: A.S. CALLAWAY DATE: 9-27-07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-2
1			3			TOTAL SHEETS
2			4			38



LONG CHORD LAYOUT

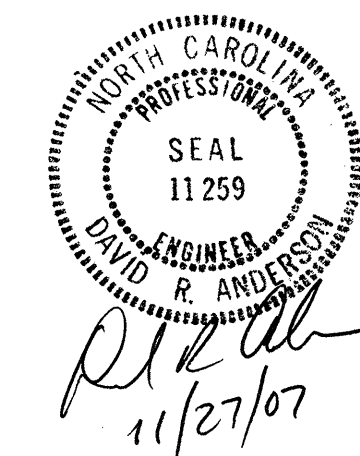
ALL BENTS ARE PARALLEL

ANGLES

- ① 61°-25'-09"
- ② 64°-42'-49"
- ③ 68°-11'-59"

PROJECT NO. B-4129
GUILFORD COUNTY
 STATION: 16+89.50 -L-

SHEET 3 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE OVER LITTLE ALAMANCE
 CREEK ON SR 3000 BETWEEN
 SR 3078 AND SR 3143

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			5-3
2			4			TOTAL SHEETS 38

DRAWN BY: E.C. LOCKLEAR DATE: 7-24-07
 CHECKED BY: A.S. CALLAWAY DATE: 9-20-07

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	3'-0" Ø DRILLED PIERS IN SOIL	3'-0" Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER	SID INSPECTION	SPT TESTING	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	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS	CONCRETE POST & BEAM RAIL		
	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	NO.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM	LIN. FT.
SUPERSTRUCTURE									8,519	8,790					15	847.96							345.67
END BENT 1											37.9		5,751			9	130	155	175				
BENT 1		40.6	19.0	40.6							31.1		7,905	1,041									
BENT 2		47.6	24.0	38.6		3					31.4		8,721	1,243									
END BENT 2											35.9		5,410			9	160	305	340				
TOTAL	LUMP SUM	88.2	43.0	79.2	1	3	1	LUMP SUM	8,519	8,790	136.3	LUMP SUM	27,787	2,284	15	847.96	18	290	460	515	LUMP SUM	LUMP SUM	345.67

NOTES:

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

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

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

THIS BRIDGE HAS BEEN DESIGNED BY THE STRENGTH DESIGN METHOD AS SPECIFIED IN AASHTO 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 DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA (SHEET 1 OF 4) SHALL BE EXCAVATED FOR A DISTANCE OF APPROX. 30 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION.

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

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

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

DRIVE PILES AT END BENT 1 AND END BENT 2 TO A REQUIRED BEARING CAPACITY OF 120 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENT 1 AND END BENT 2 IS 60 TONS PER PILE.

DRILLED PIERS AT BENT 1 AND BENT 2 ARE DESIGNED FOR BOTH SKIN FRICTION AND END BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 50 TSF.

DRILLED PIERS AT BENT 1 AND BENT 2 ARE DESIGNED FOR AN APPLIED LOAD OF 254 TONS EACH AT THE TOP OF THE COLUMN.

PERMANENT STEEL CASING IS REQUIRED FOR DRILLED PIERS AT BENT 1. DO NOT EXTEND THE CASING BELOW ELEVATION 590 FT. (LEFT AND CENTER), OR ELEVATION 594 FT. (RIGHT) WITHOUT PRIOR APPROVAL FROM THE ENGINEER. SEE DRILLED PIERS SPECIAL PROVISION.

PERMANENT STEEL CASING IS REQUIRED FOR DRILLED PIERS AT BENT 2. DO NOT EXTEND THE CASING BELOW ELEVATION 592 FT. (LEFT AND CENTER), OR ELEVATION 595 FT. (RIGHT) WITHOUT PRIOR APPROVAL FROM THE ENGINEER. SEE DRILLED PIERS SPECIAL PROVISION.

INSTALL PERMANENT STEEL CASING AT BENT 1 AND BENT 2 BY VIBRATING, SCREWING OR DRIVING THE CASING BEFORE EXCAVATION OR DISTURBING ANY MATERIAL BELOW ELEVATION 598 FT. (BENT 1), OR 597 FT. (BENT 2).

DRILLED PIERS SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 585 FT. (BENT 1), OR 582 FT. (BENT 2) AND SATISFY THE REQUIRED END BEARING CAPACITY.

THE SCOUR CRITICAL ELEVATION FOR BENT 1 IS ELEVATION 594 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF 2 SPANS (1 @ 42.0' & 1 @ 21.0'), TIMBER DECK ON I-BEAMS & DOUBLE CHANNELS, WITH A CLEAR ROADWAY WIDTH OF 19.0', ON MASS CONCRETE ABUTMENTS & INTERIOR BENTS, LOCATED 90'± UPSTREAM FROM THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 16+89.50 -L-".

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

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

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

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

NO WAITING PERIOD IS REQUIRED AT END BENTS 1 AND 2.

FOR CONCRETE POST & BEAM RAIL, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

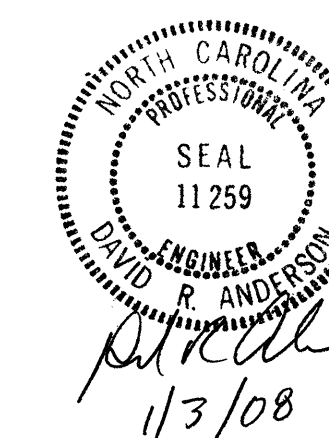
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

PROJECT NO. B-4129
GUILFORD COUNTY
 STATION: 16+89.50 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 BRIDGE OVER LITTLE ALAMANCE CREEK ON SR 3000 BETWEEN SR 3078 AND SR 3143



REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			5-4
2			4			TOTAL SHEETS 38

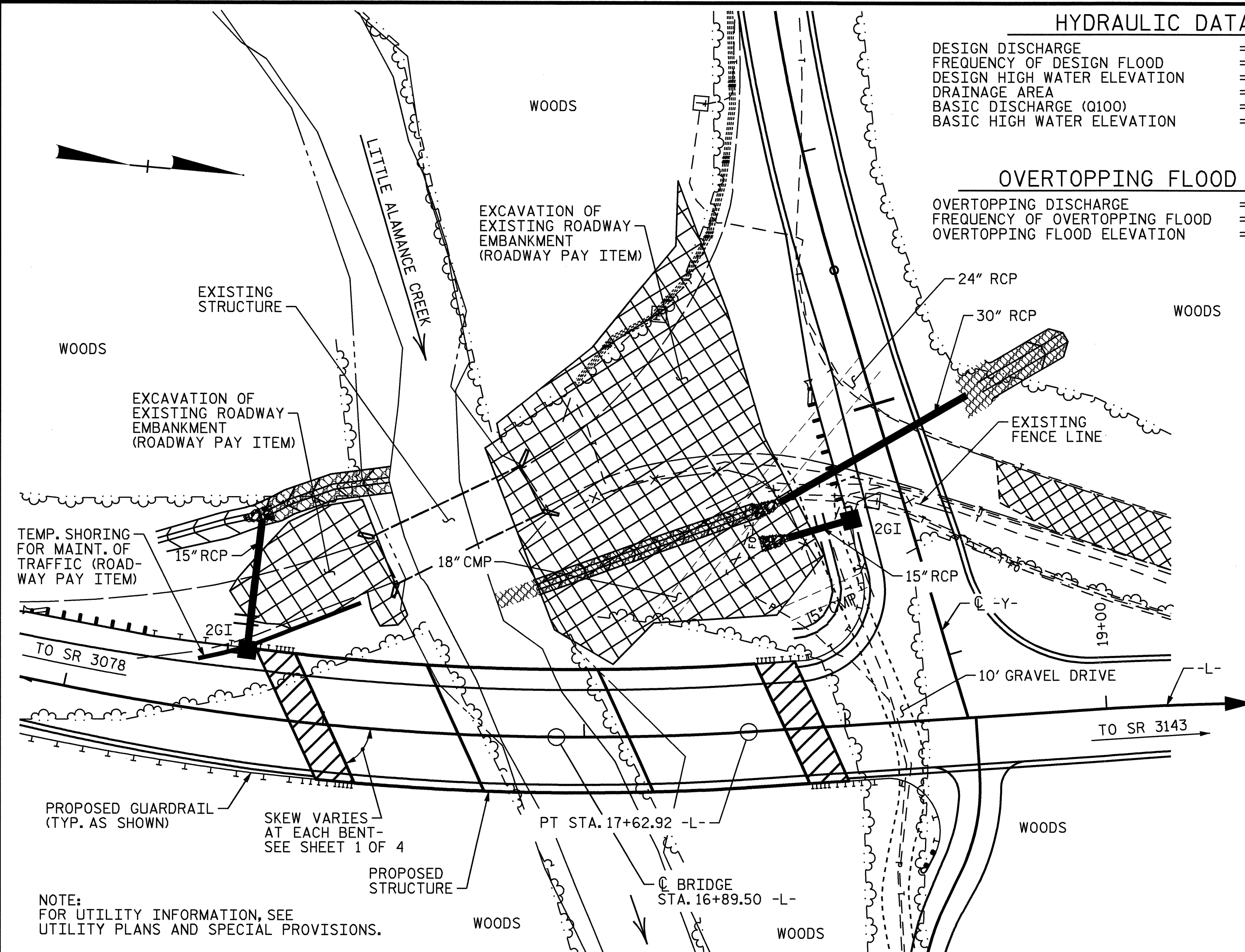
BM #1: RR SPIKE IN BASE OF 21' BEECH TREE, 80' RIGHT OF STA. 14+72.82 -BL-, EL. 623.90'.

HYDRAULIC DATA

DESIGN DISCHARGE = 4350 CFS
 FREQUENCY OF DESIGN FLOOD = 25 YEARS
 DESIGN HIGH WATER ELEVATION = 612.2
 DRAINAGE AREA = 19.7 SQ. MI.
 BASIC DISCHARGE (Q100) = 7000 CFS
 BASIC HIGH WATER ELEVATION = 616.0

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 6000 CFS
 FREQUENCY OF OVERTOPPING FLOOD = 50 YRS +
 OVERTOPPING FLOOD ELEVATION = 614.1



LOCATION SKETCH

THE SCOUR CRITICAL ELEVATION FOR BENT 2 IS ELEVATION 592 FT. (LEFT AND CENTER), AND 595 FT. (RIGHT). SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

FOR DRILLED PIERS, SEE DRILLED PIERS SPECIAL PROVISION.

SPT TESTING IS NOT REQUIRED TO DETERMINE THE END BEARING CAPACITY OF THE DRILLED PIERS AT BENT 1.

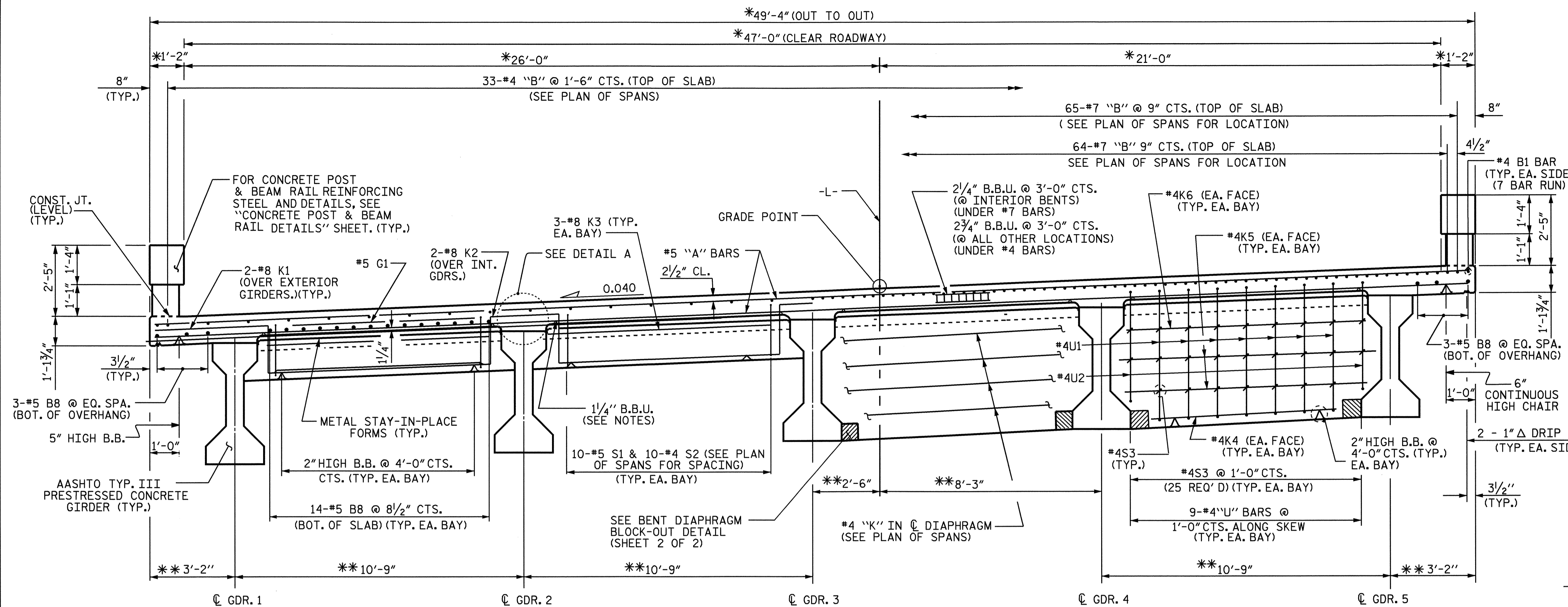
SPT TESTING IS REQUIRED TO DETERMINE THE END BEARING CAPACITY OF THE DRILLED PIERS AT BENT 2. SEE DRILLED PIERS SPECIAL PROVISION.

SID INSPECTIONS MAY BE REQUIRED TO INSPECT THE BOTTOM CLEANLINESS OF THE DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. SEE DRILLED PIERS SPECIAL PROVISION.

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

THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE 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 THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.

DRAWN BY: E.C. LOCKLEAR DATE: 7-24-07
 CHECKED BY: A.S. CALLAWAY DATE: 9-27-07



AT END BENT DIAPHRAGMS

TYPICAL SECTION

AT CONTINUOUS BENT DIAPHRAGMS

*RADIAL DIMENSIONS
**RADIAL THRU WORKPOINT

NOTES

PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. 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.

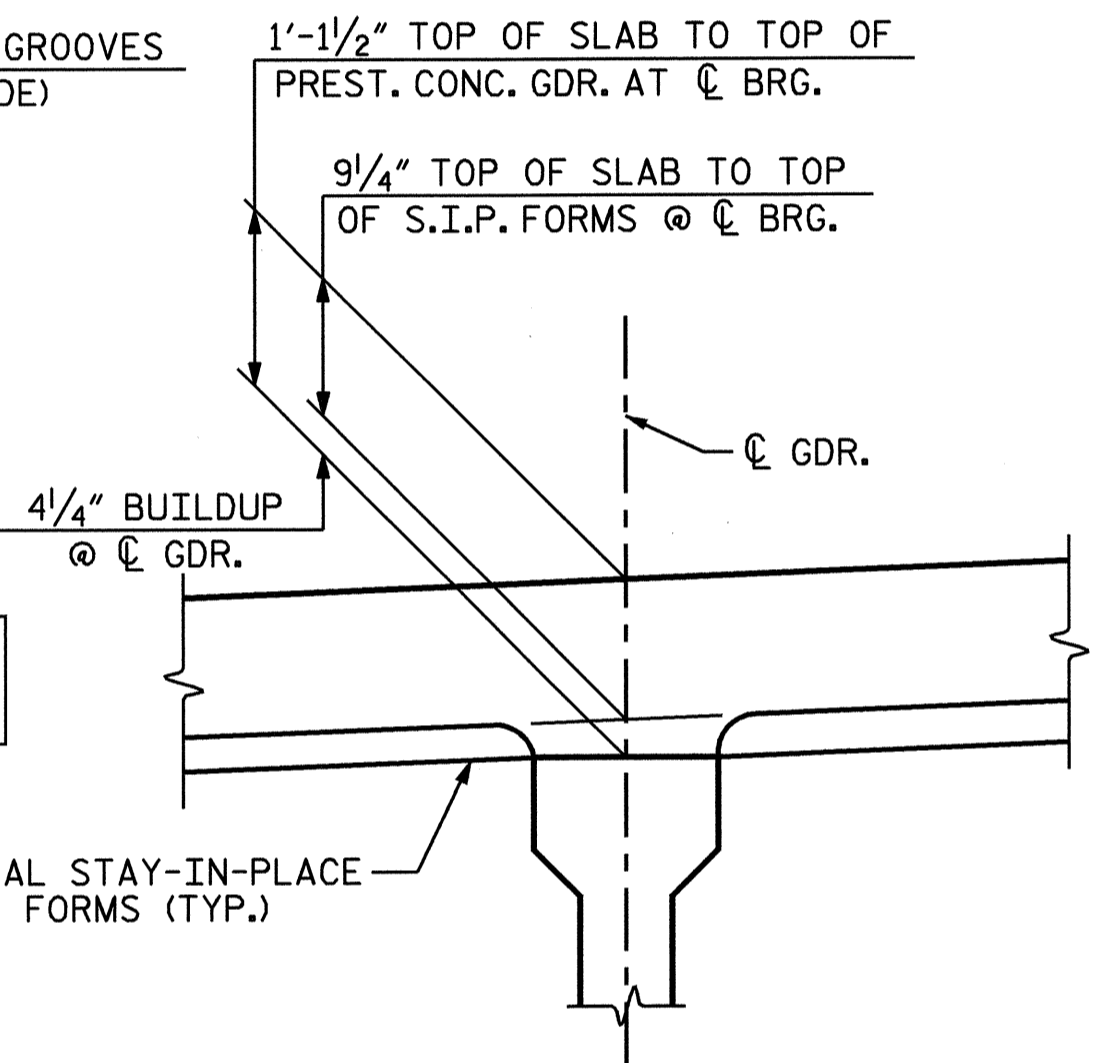
LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

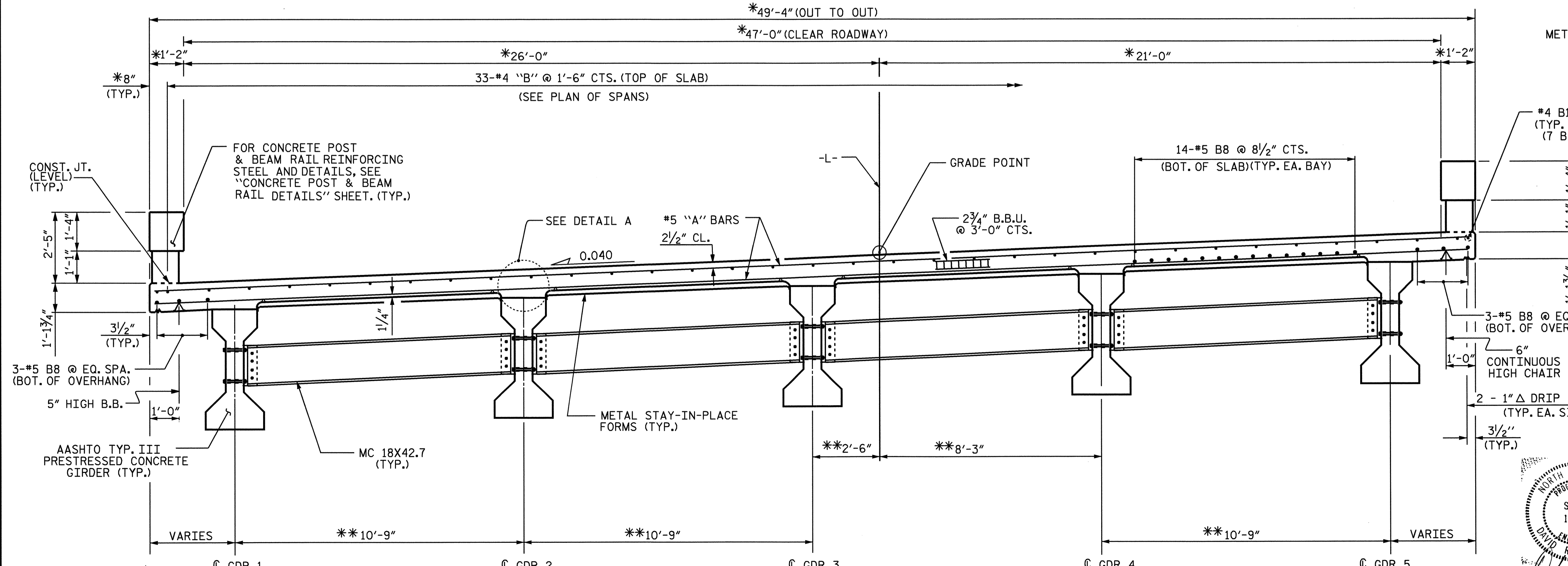
FOR INTERMEDIATE DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE III PRESTRESSED CONCRETE GIRDERS" SHEET.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2 1/2" AT END BENTS. FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

CONCRETE POST & BEAM RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.



DETAIL A



TYPICAL SECTION AT INTERMEDIATE DIAPHRAGMS

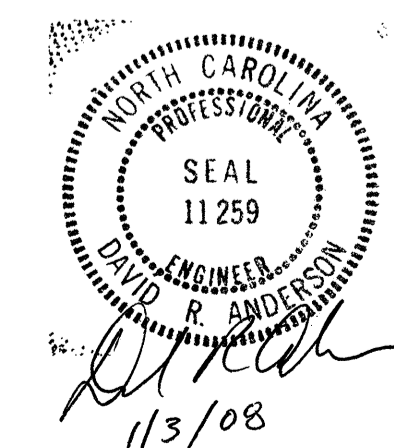
PROJECT NO. B-4129
GUILFORD COUNTY
 STATION: 16+89.50 -L
 SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

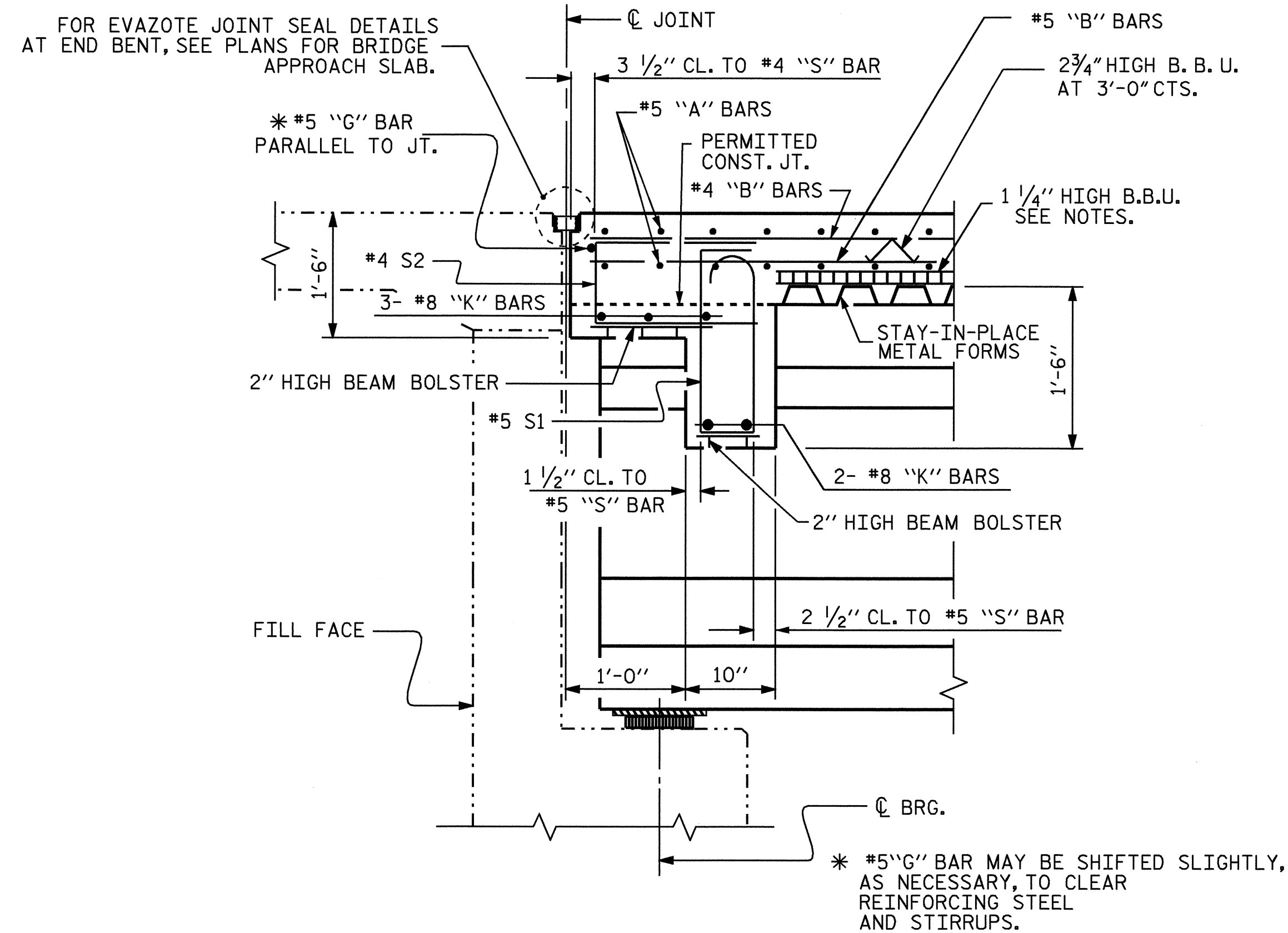
SUPERSTRUCTURE
 TYPICAL SECTION

REVISIONS						SHEET NO. S-5
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 38
2			4			

DRAWN BY: S. M. RASHIDI DATE: 5/07
 CHECKED BY: A.S. CALLAWAY DATE: 5/07

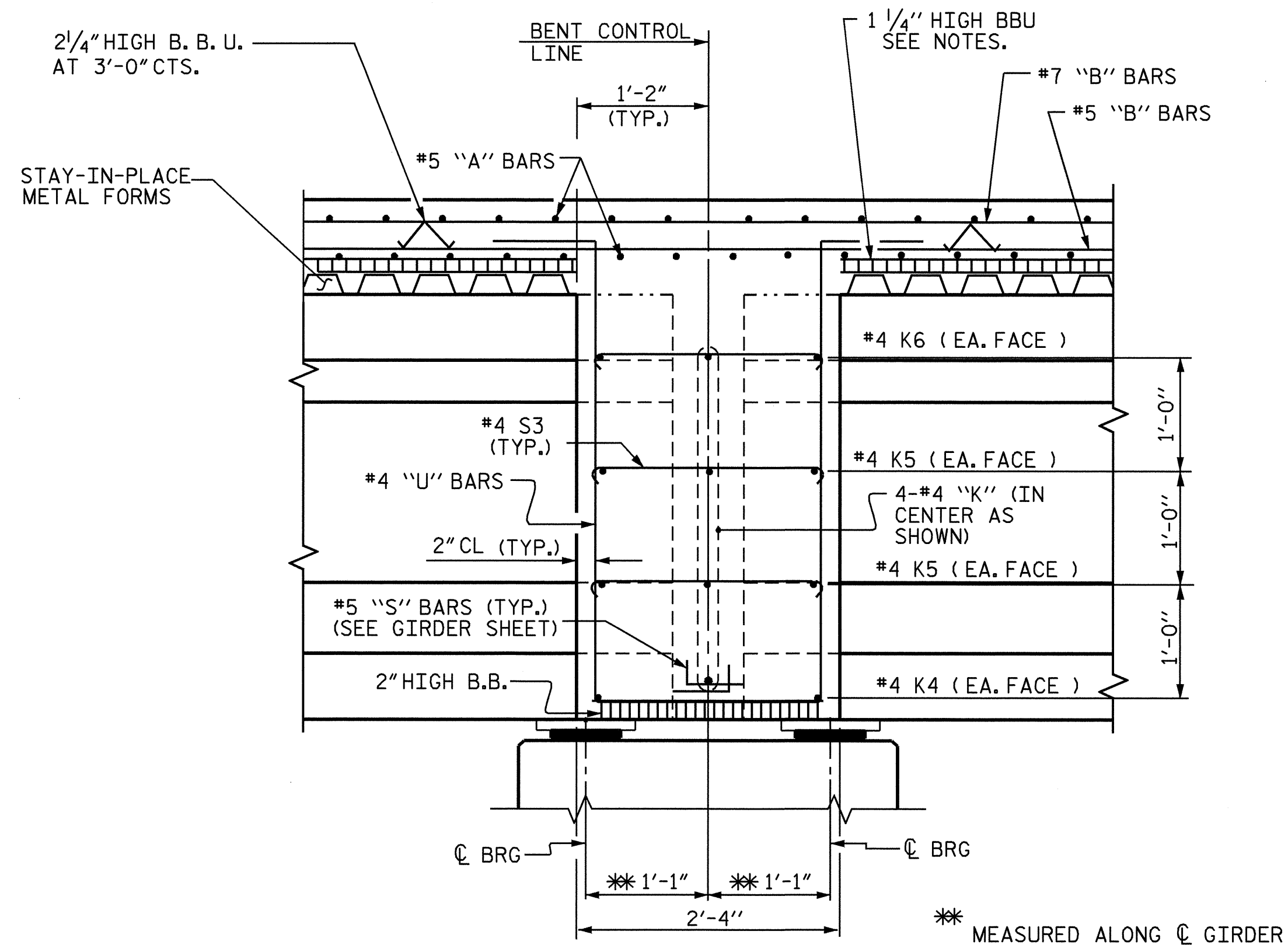


NOTE:
FOR LOCATION OF SECTIONS
SEE "PLAN OF SPANS" SHEETS.

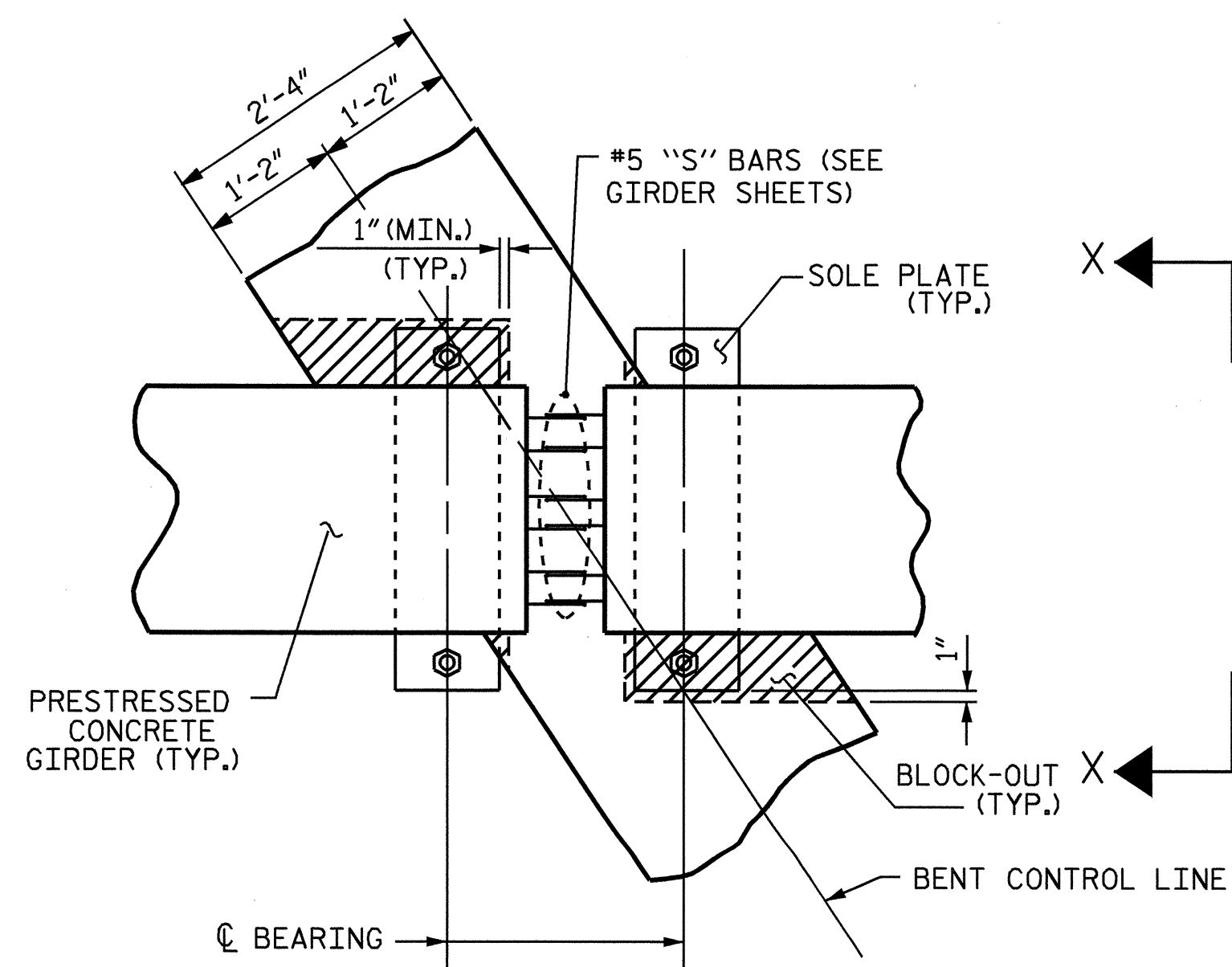


SECTION A-A

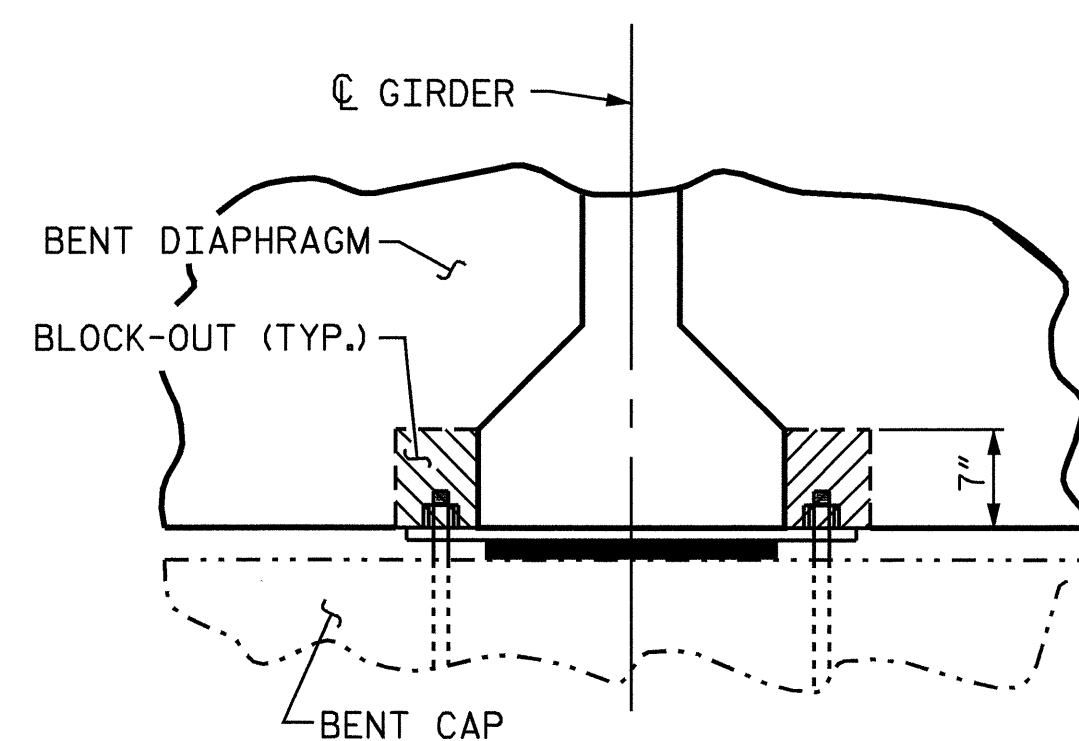
(END BENT 1 SHOWN, END BENT 2 SIMILAR)



SECTION B-B



PLAN



SECTION X-X

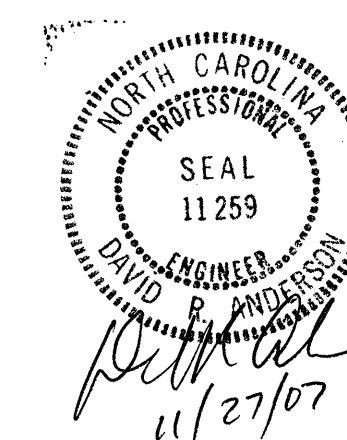
BENT DIAPHRAGM BLOCK-OUT DETAIL

PROJECT NO. B-4129
GUILFORD COUNTY
STATION: 16+89.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

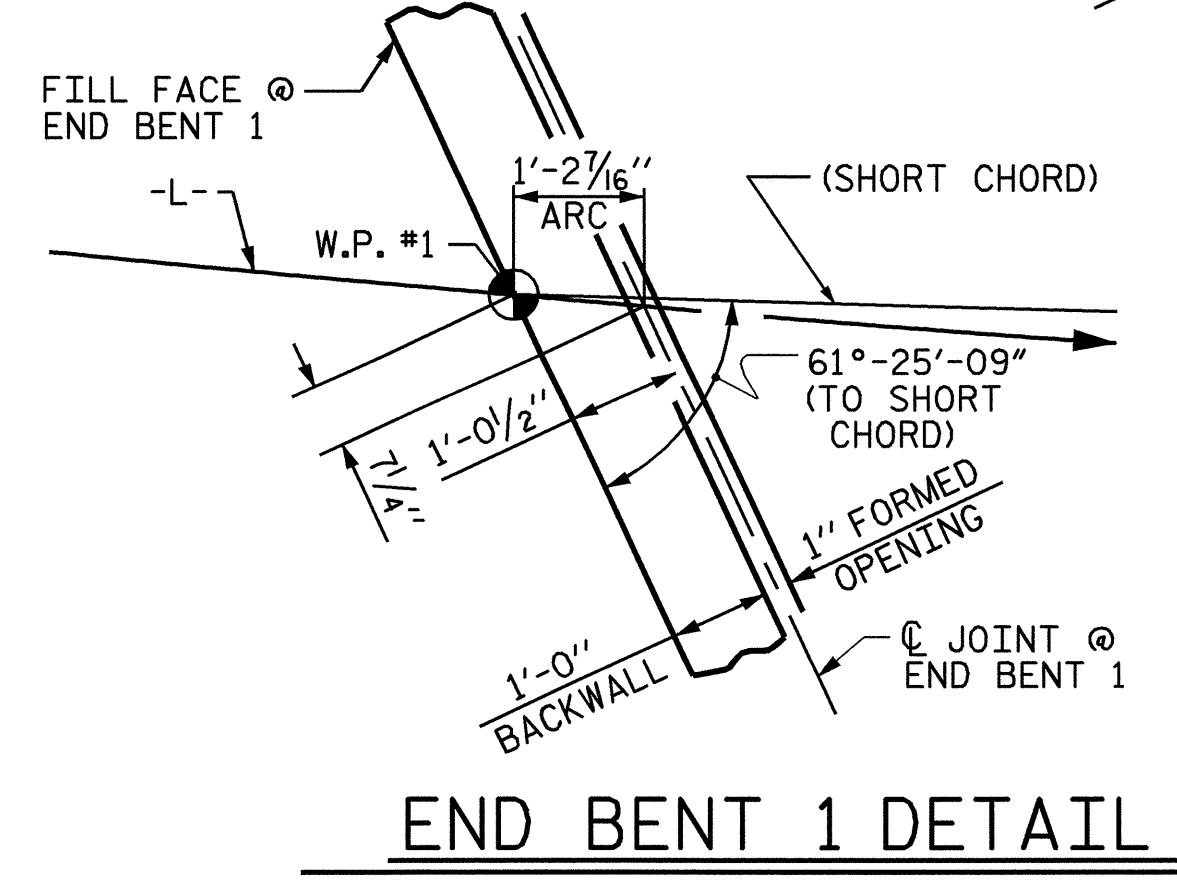
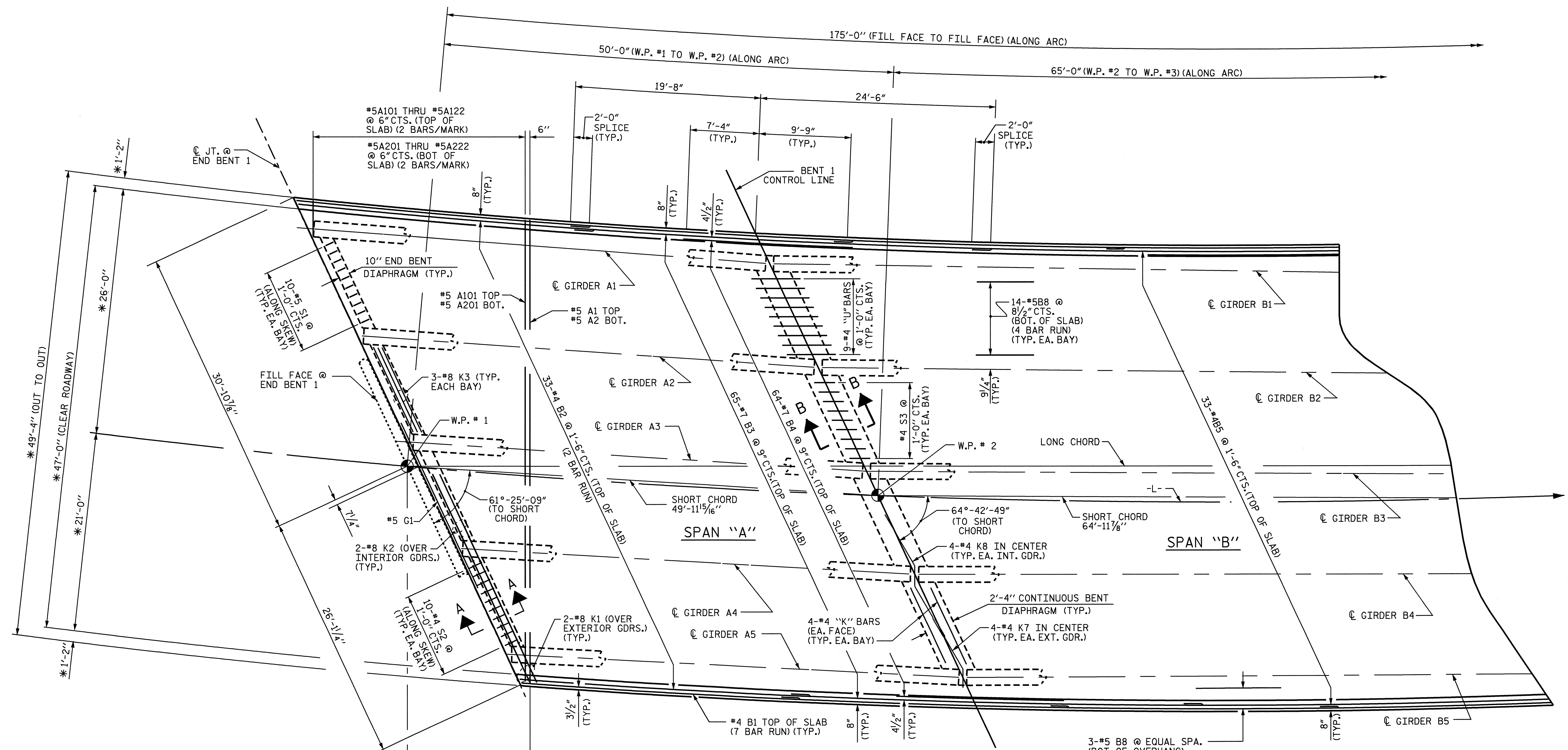
SUPERSTRUCTURE
TYPICAL SECTION



DRAWN BY: S. M. RASHIDI DATE: 5/07
CHECKED BY: A. S. CALLAWAY DATE: 7/30/07

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

TOTAL SHEETS: 38



PARTIAL PLAN OF SPAN

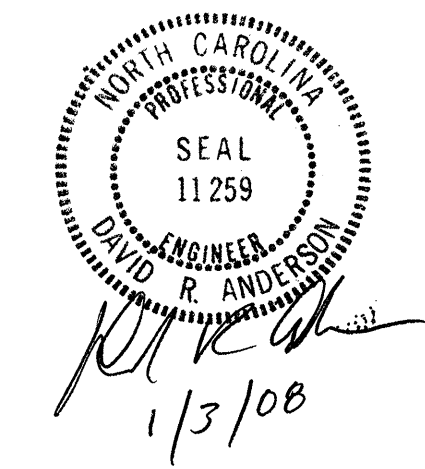
* RADIAL DIMENSIONS TO -L-
 FOR POUR SEQUENCE AND TRANSVERSE CONST. JOINT, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.
 A-BARS ARE TO PLACED PERPENDICULAR TO LONG CHORD
 FOR REINFORCING STEEL AND DETAILS FOR CONCRETE POST & BEAM RAIL, SEE "CONCRETE POST & BEAM RAIL DETAIL" SHEETS.

PROJECT NO. B-4129
GUILFORD COUNTY
 STATION: 16+89.50 -L-

SHEET 1 OF 3

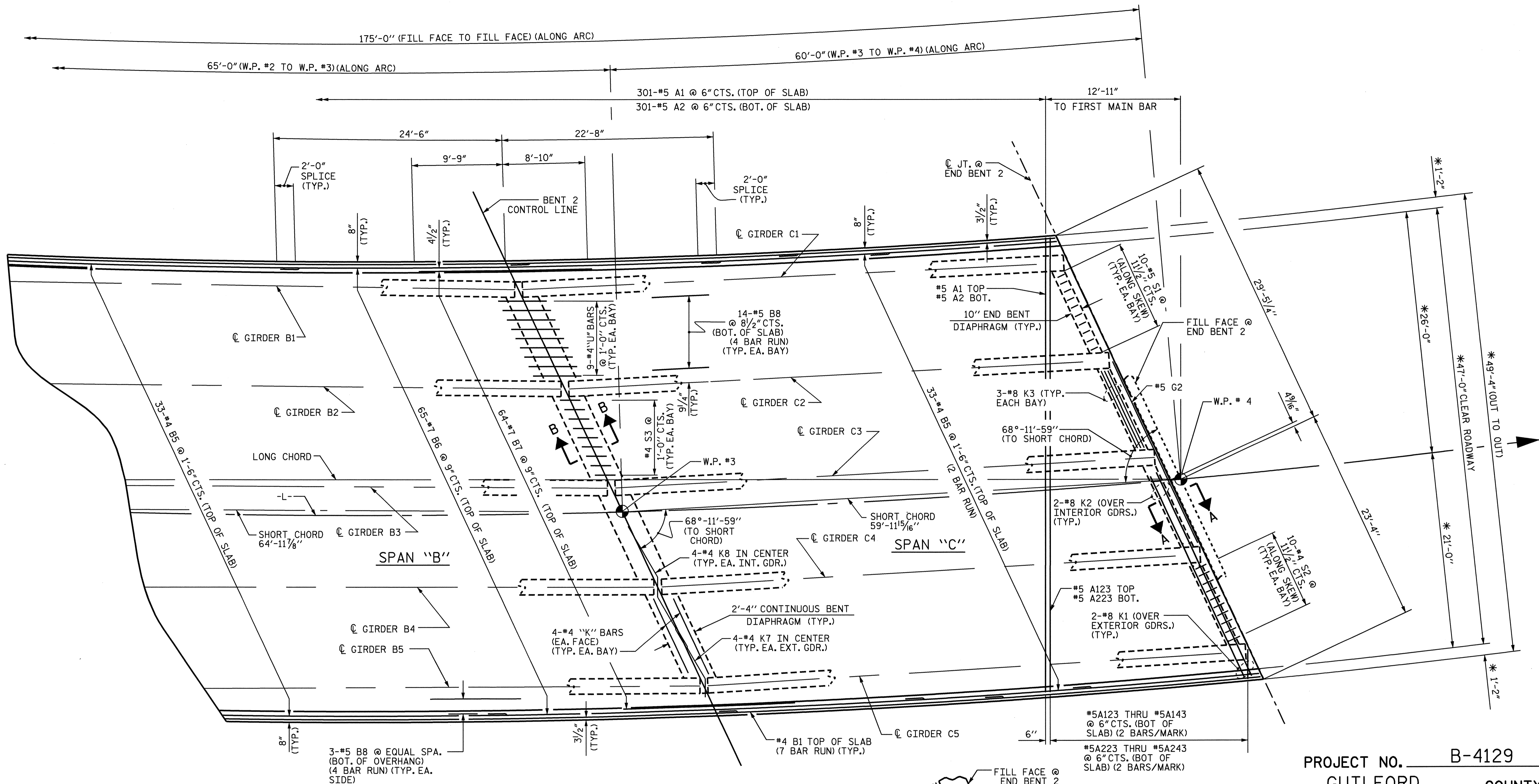
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPANS



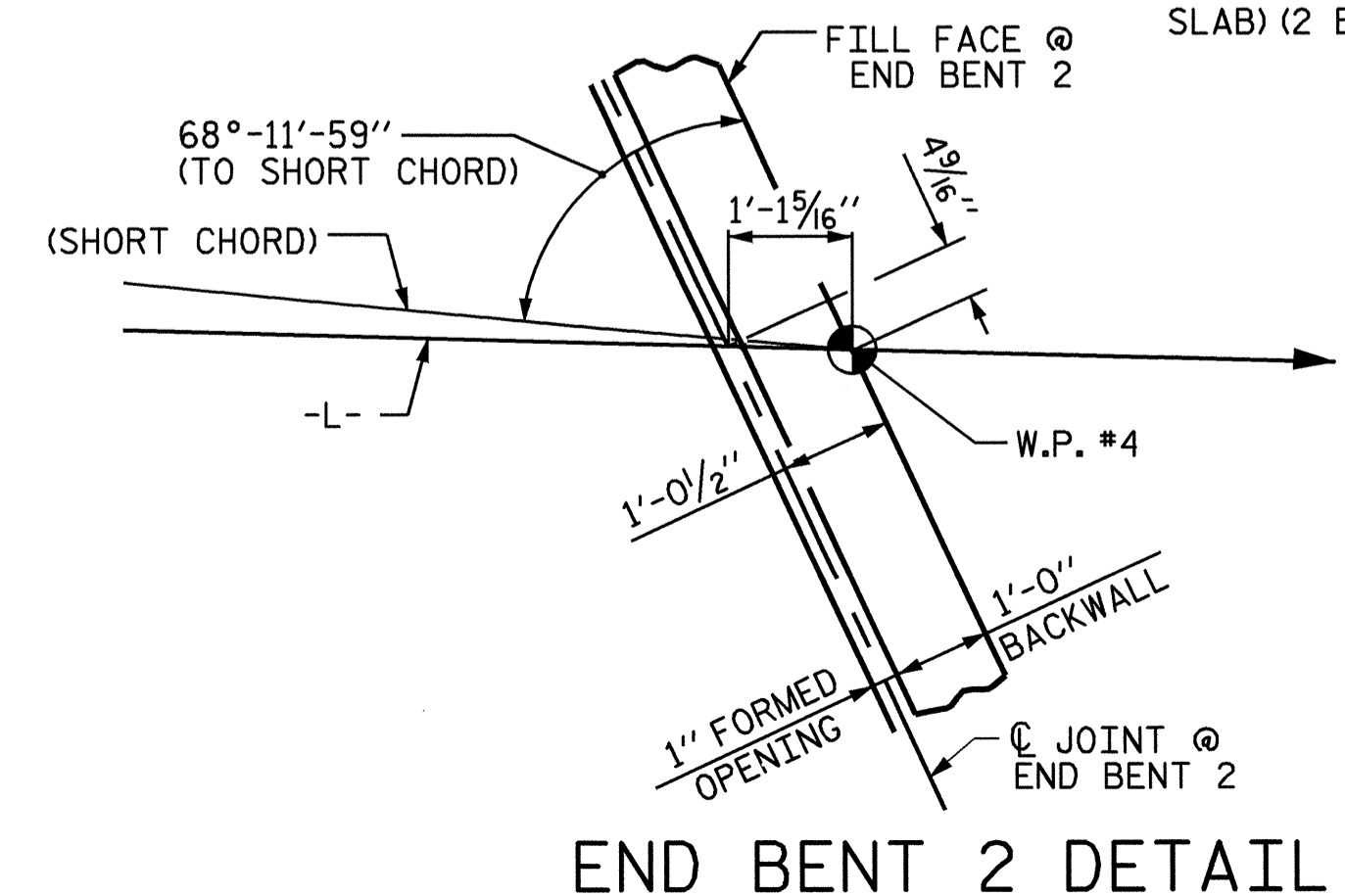
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	5-7	
1			3			TOTAL SHEETS	
2			4			38	

DRAWN BY : S. M. RASHIDI DATE : 5/07
 CHECKED BY : A.S. CALLAWAY DATE : 7/30/07



PARTIAL PLAN OF SPAN

*RADIAL DIMENSIONS TO -L-
 FOR FOUR SEQUENCE AND TRANSVERSE CONST. JOINT, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.
 A-BARS ARE TO PLACED PERPENDICULAR TO LONG CHORD
 FOR REINFORCING STEEL AND DETAILS FOR CONCRETE POST & BEAM RAIL, SEE "CONCRETE POST & BEAM RAIL DETAIL" SHEETS.



END BENT 2 DETAIL

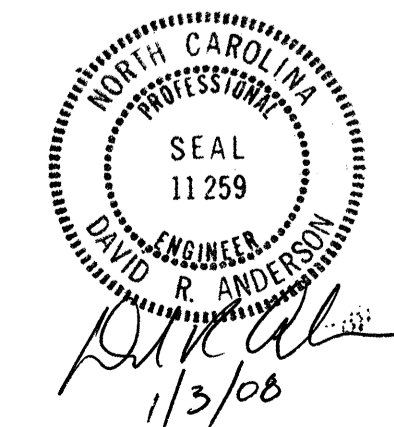
PROJECT NO. B-4129
GUILFORD COUNTY
 STATION: 16+89.50 -L-

SHEET 2 OF 3

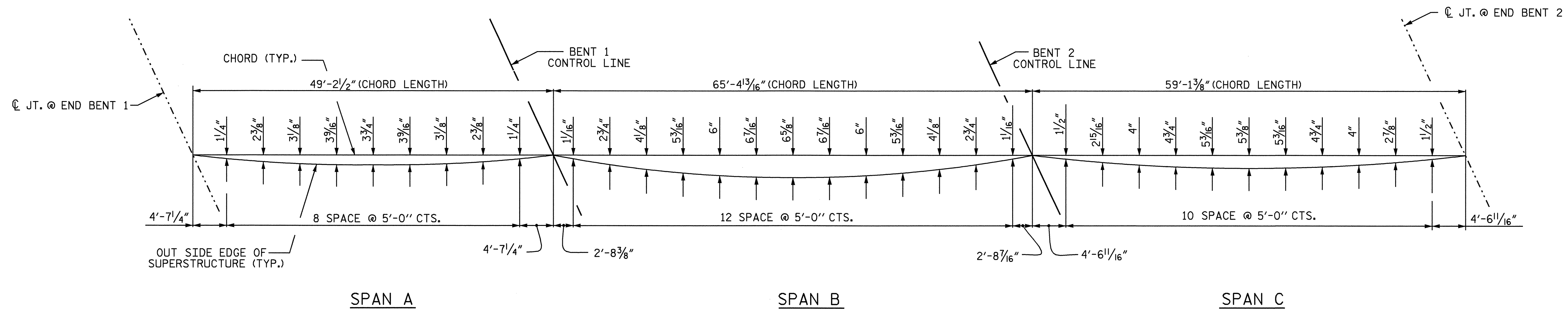
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPANS

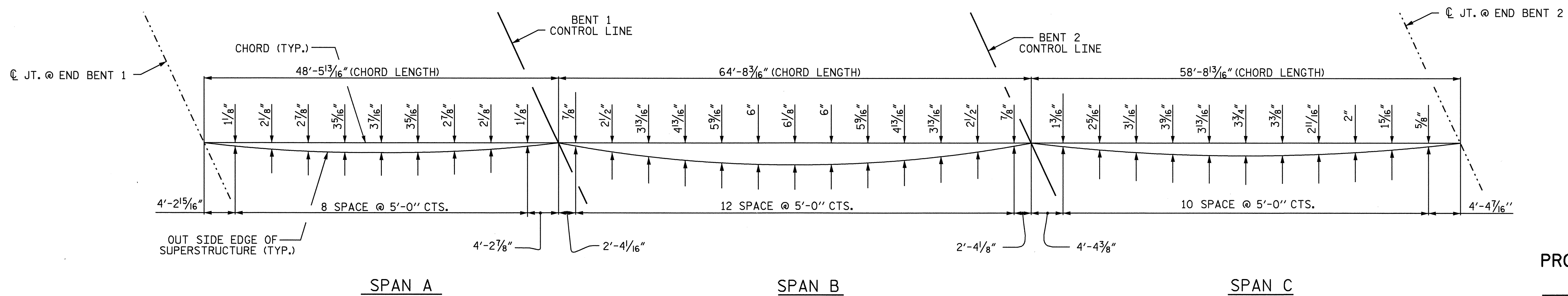
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	5-8	
1			3			TOTAL SHEETS	
2			4			38	



DRAWN BY : S. M. RASHIDI DATE : 5/07
 CHECKED BY : A.S. CALLAWAY DATE : 7/30/07



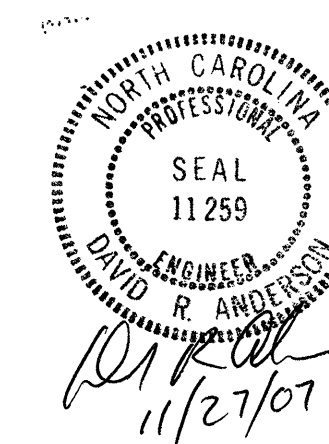
ARC OFFSETS
(LEFT SIDE)



ARC OFFSETS
(RIGHT SIDE)

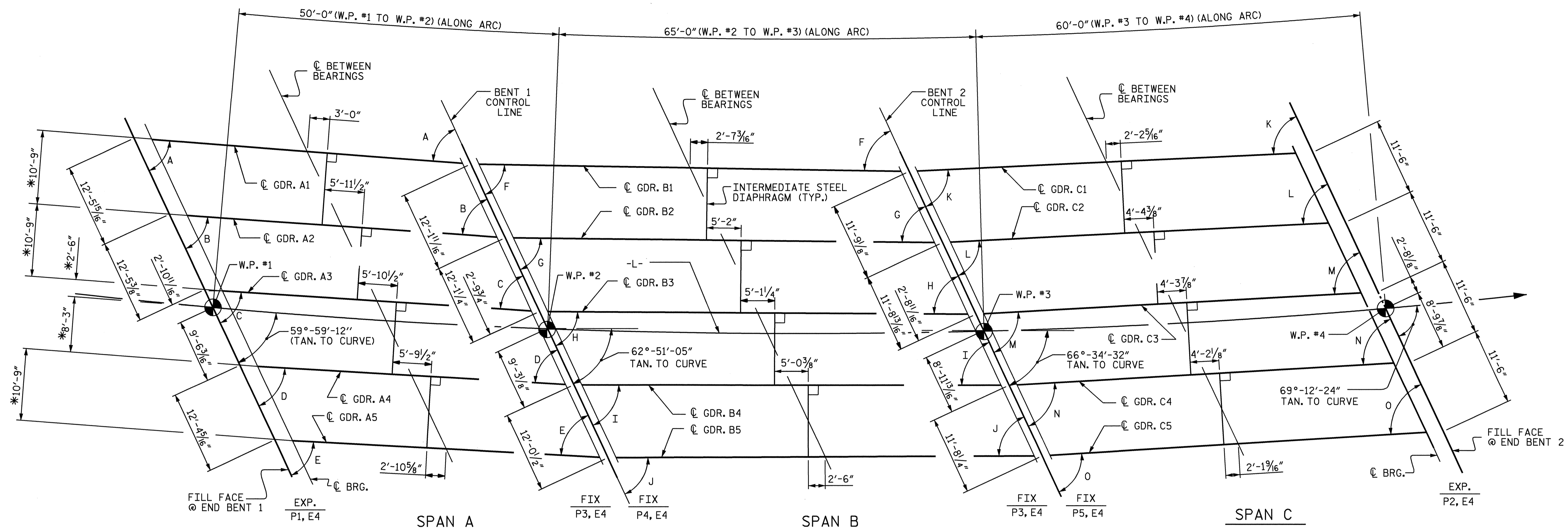
PROJECT NO. B-4129
GUILFORD COUNTY
 STATION: 16+89.50 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE ARC OFFSETS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. 5-9
					TOTAL SHEETS 38

DRAWN BY: S. M. RASHIDI DATE: 5/07
 CHECKED BY: A.S. CALLAWAY DATE: 7/30/07

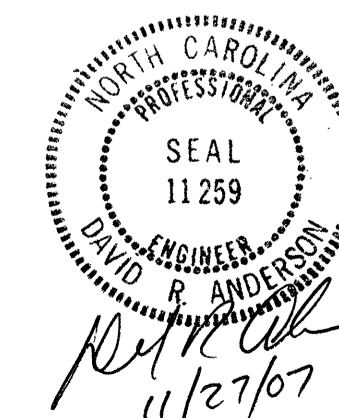


GIRDER LAYOUT

* RADIAL THRU WORKPOINT

GIRDER ANGLES					
SPAN A		SPAN B		SPAN C	
A	60°-38'-53"	F	64°-02'-43"	K	67°-43'-08"
B	60°-59'-55"	G	64°-20'-56"	L	67°-56'-51"
C	61°-20'-27"	H	64°-38'-44"	M	68°-09'-17"
D	61°-40'-28"	I	64°-56'-06"	N	68°-20'-28"
E	62°-00'-00"	J	65°-13'-04"	O	68°-30'-28"

PROJECT NO. B-4129
GUILFORD COUNTY
 STATION: 16+89.50 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 GIRDER LAYOUT**

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	5-10	
1			3			TOTAL SHEETS	
2			4			38	

DRAWN BY: S. M. RASHIDI DATE: 5/07
 CHECKED BY: A. S. CALLAWAY DATE: 7/30/07

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, BOLTS, WASHERS, PLATE WASHERS AND DIRECT TENSION INDICATORS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, OR METALLIZED. FOR METALLIZATION, SEE SPECIAL PROVISIONS.

USE A MINIMUM 3/16" 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 ACCOMMODATE 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.

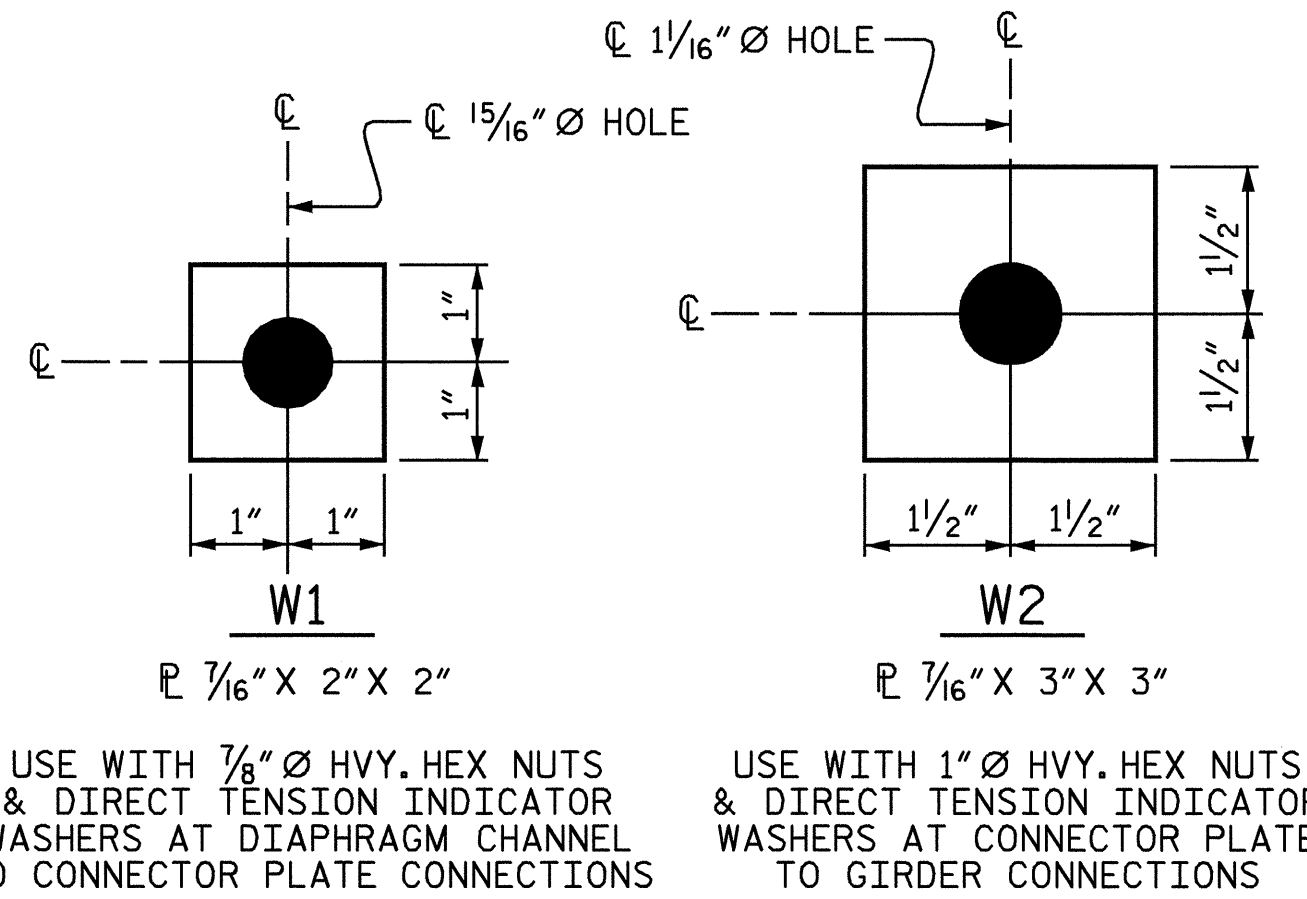
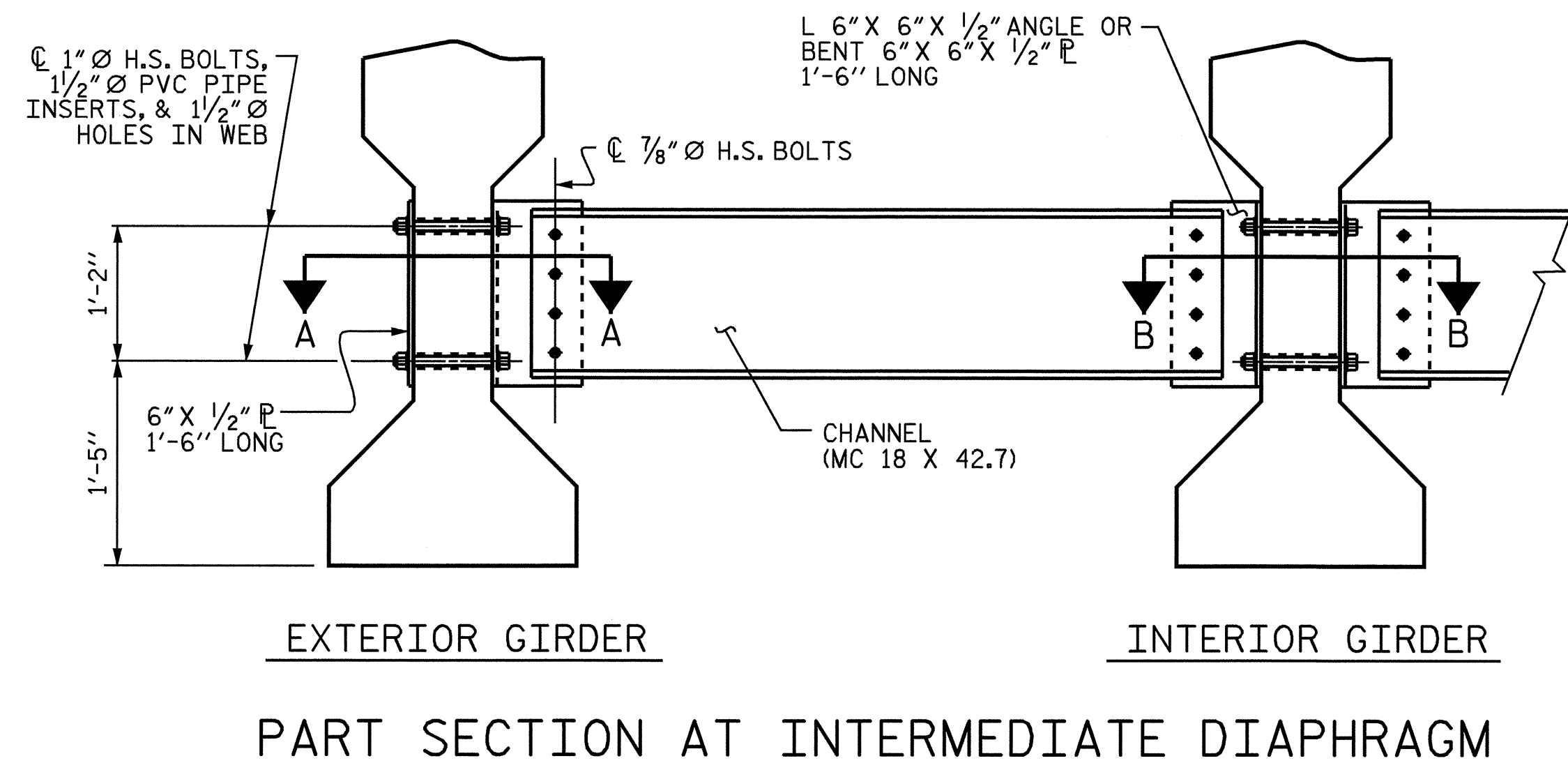
CONTRACTOR SHALL SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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.

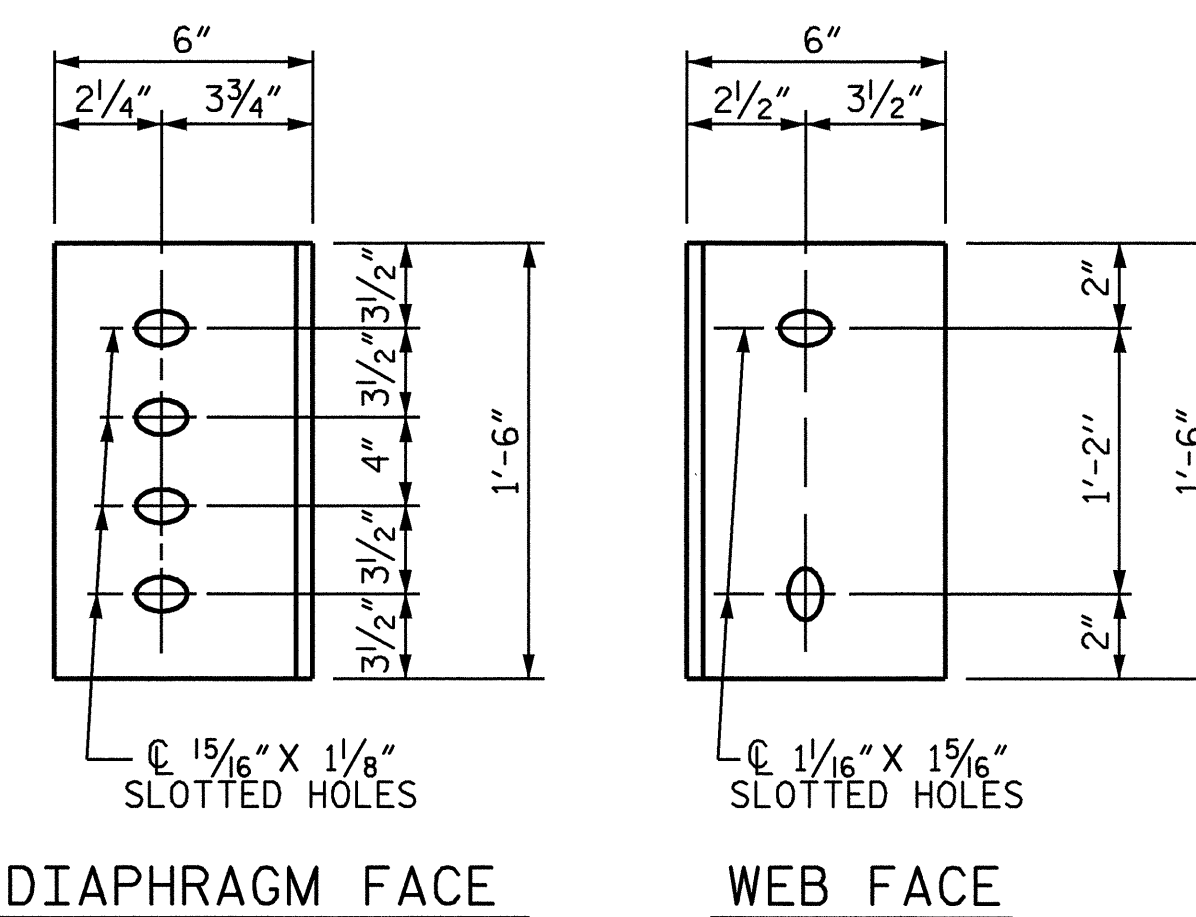
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.

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 THE CHANNELS, ANGLES, WASHERS, PLATE WASHERS, AND DIRECT TENSION INDICATORS IN ACCORDANCE WITH THE THERMAL SPRAYED COATINGS SPECIAL PROVISIONS AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

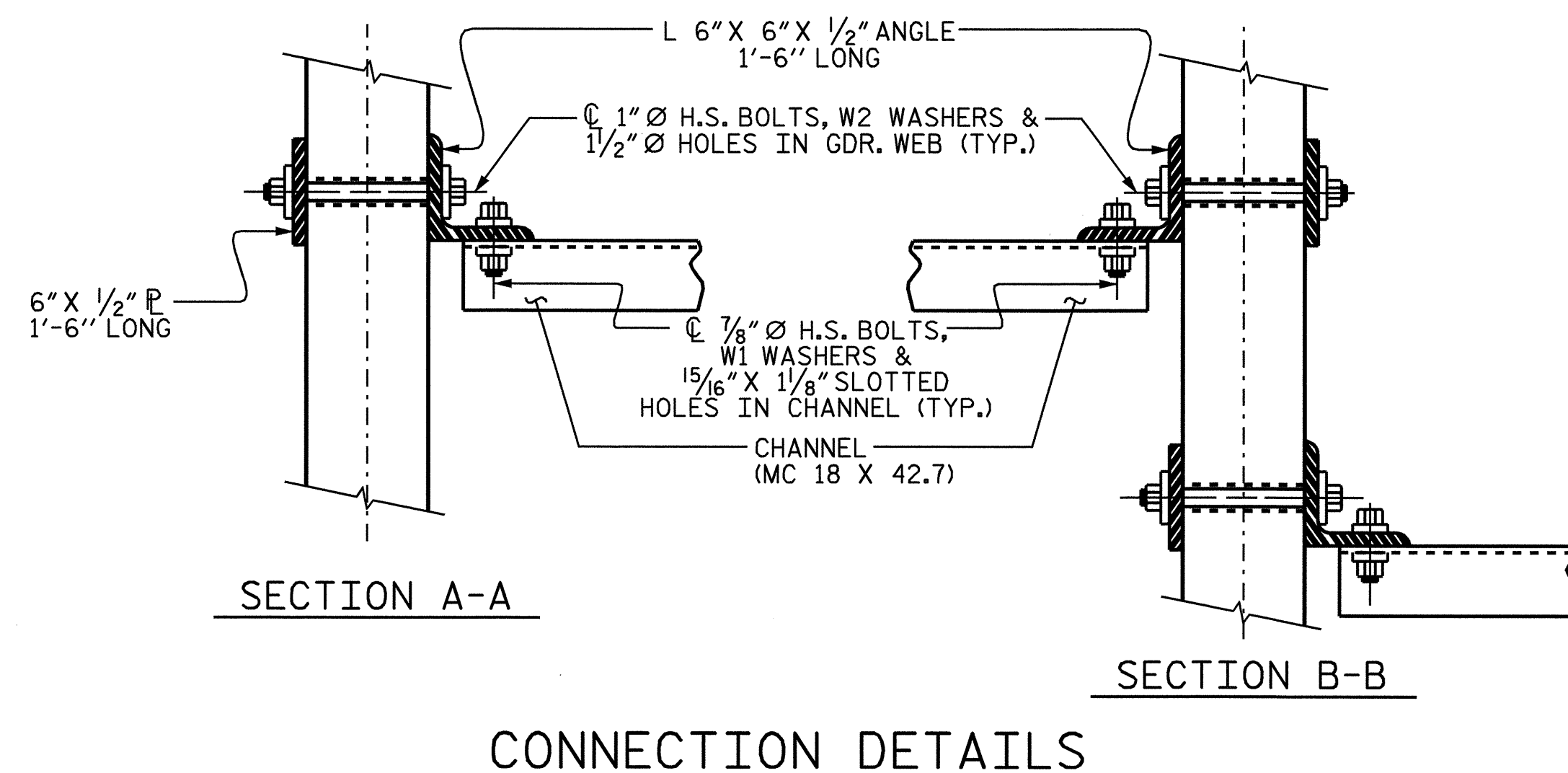
GALVANIZE THE HIGH STRENGTH BOLTS, NUTS, AND WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.



WASHER DETAILS



DIAPHRAGM FACE WEB FACE
CONNECTOR PLATE DETAILS



CONNECTION DETAILS

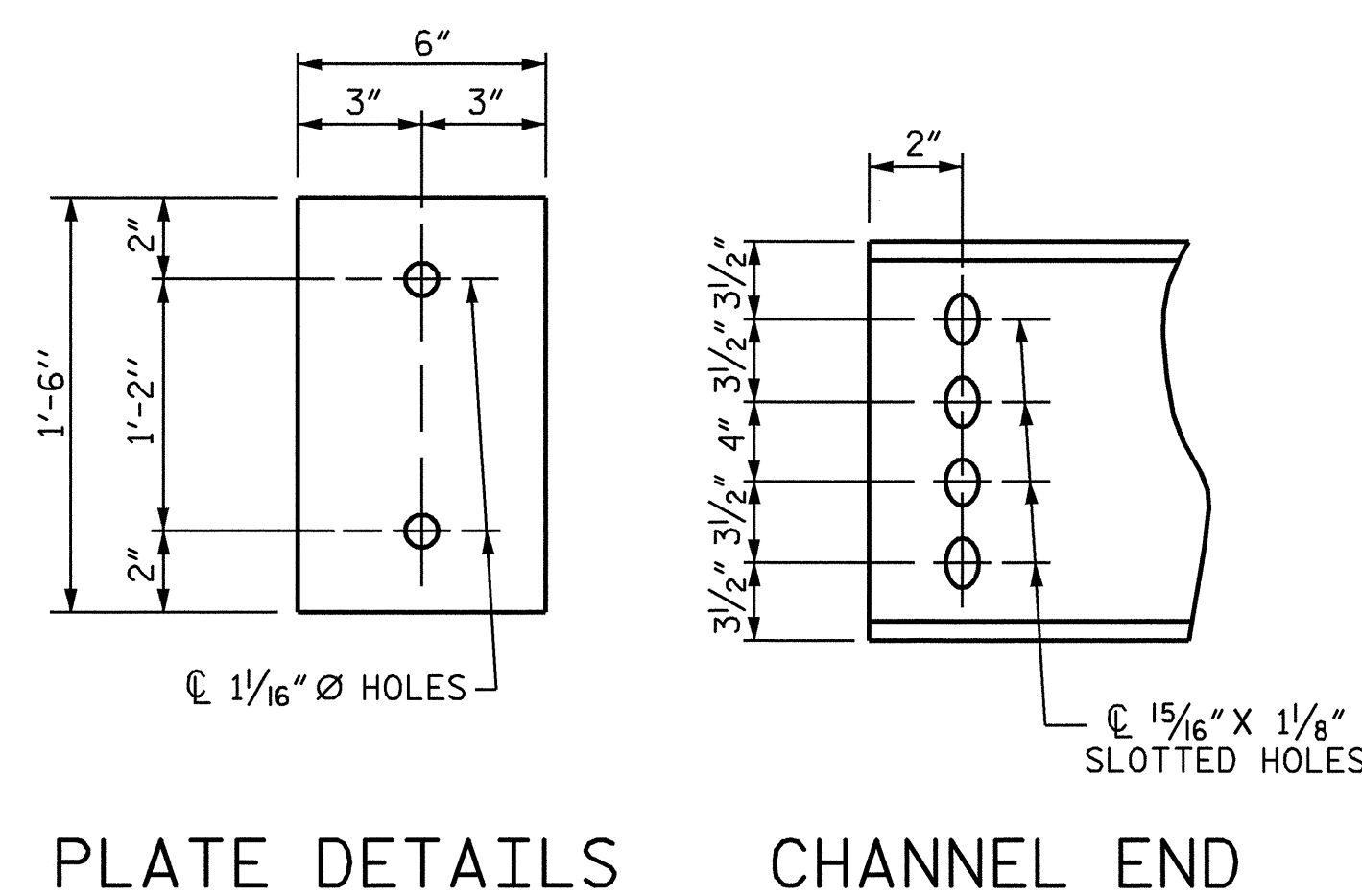
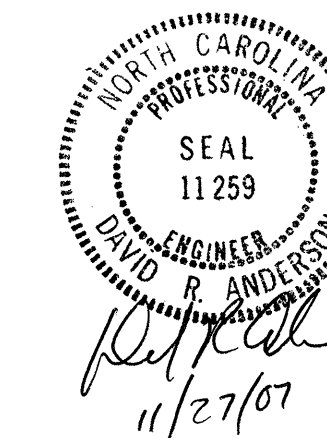


PLATE DETAILS CHANNEL END

PROJECT NO. B-4129
GUILFORD COUNTY
STATION: 16+89.50 -L

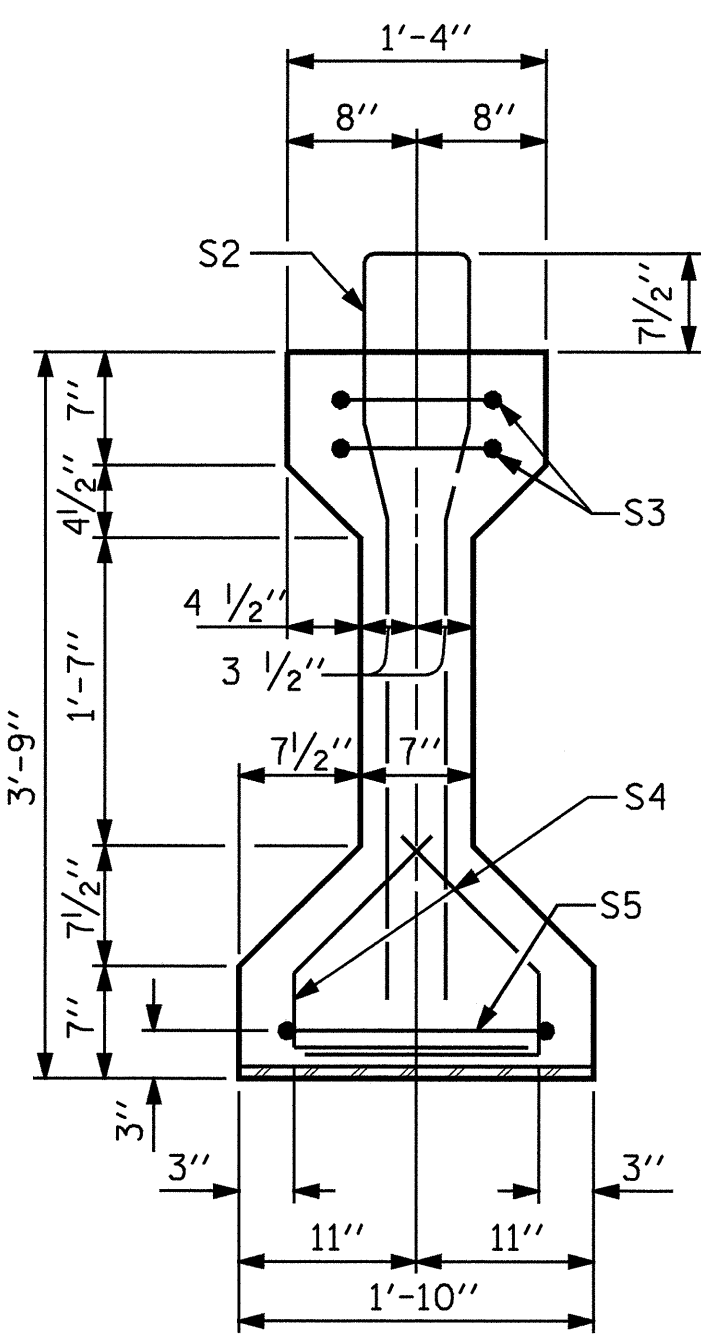
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
INTERMEDIATE
STEEL DIAPHRAGMS
FOR TYPE III
PRESTRESSED CONCRETE
GIRDERS



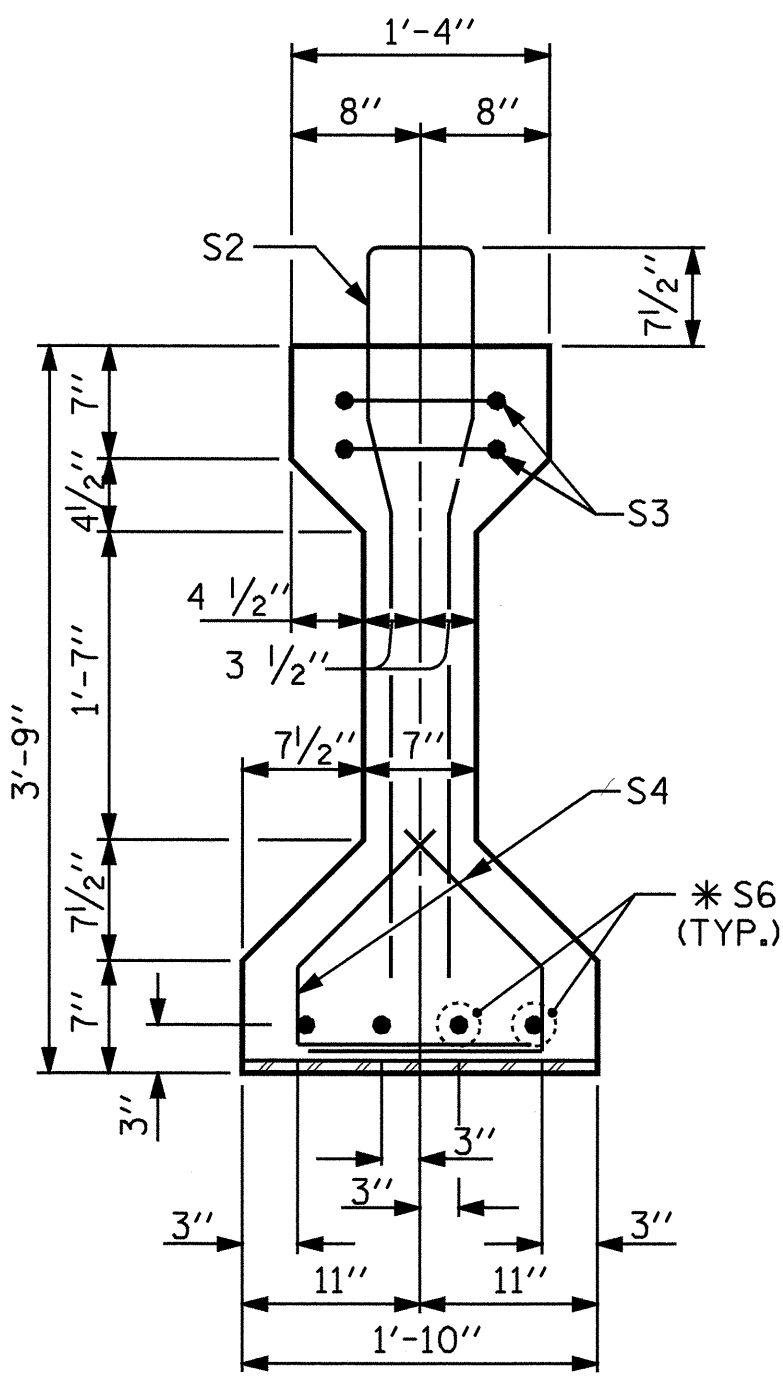
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS 38

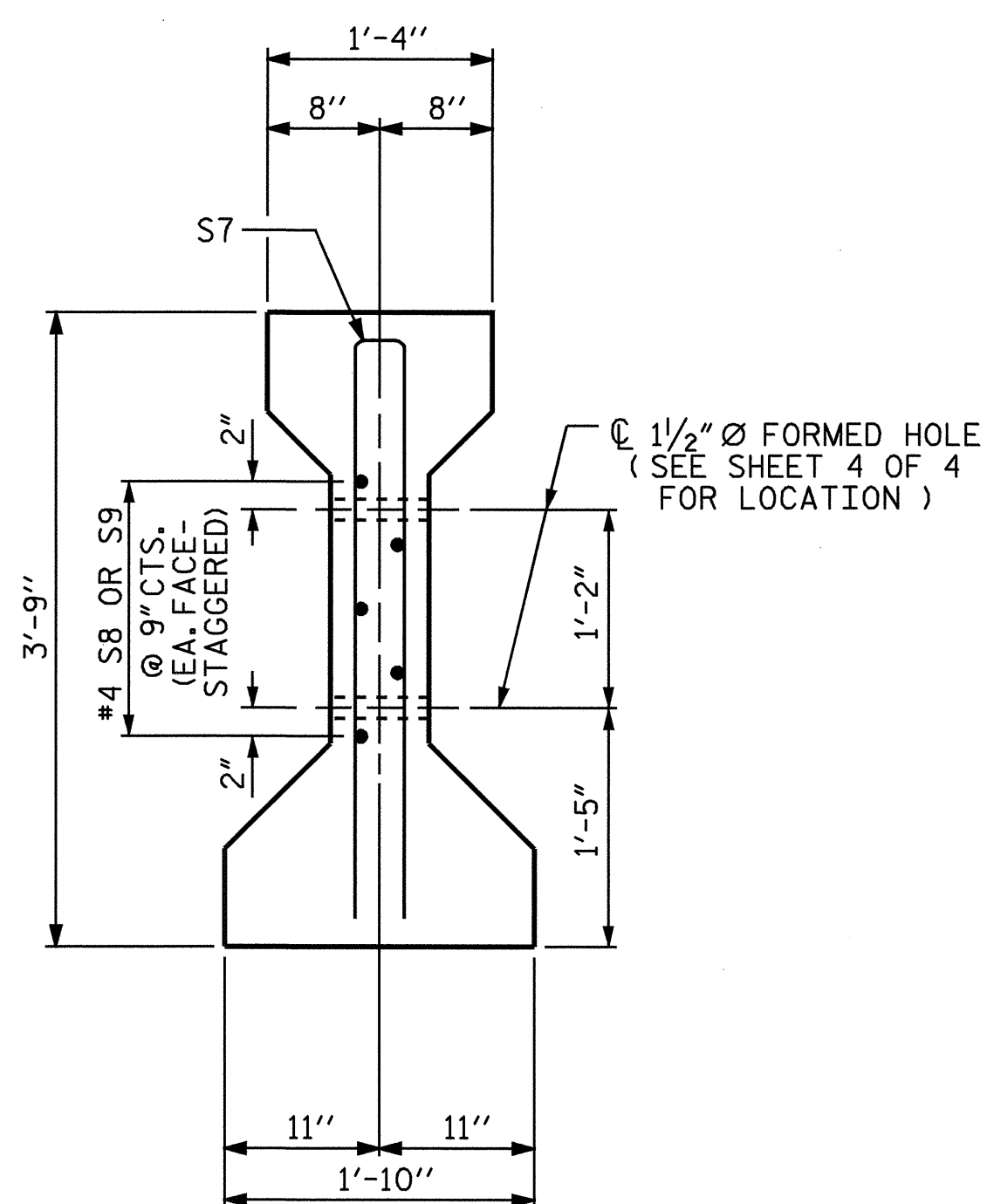
ASSEMBLED BY : S. M. RASHIDI DATE : 5/07
CHECKED BY : A.S. CALLAWAY DATE : 7/30/07
DRAWN BY : TLA 6/05 ADDED 10/21/05
CHECKED BY : VC 6/05 REV. 5/1/06R KMM/GM



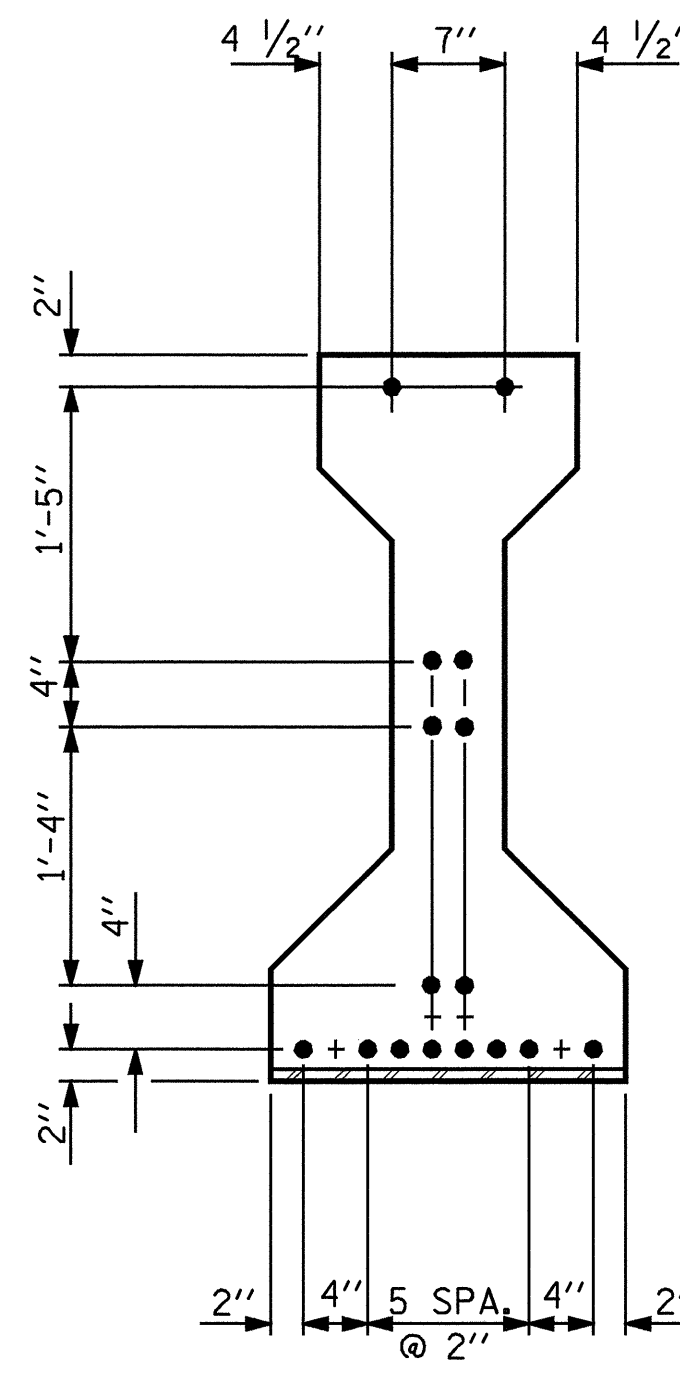
SECTION A-A



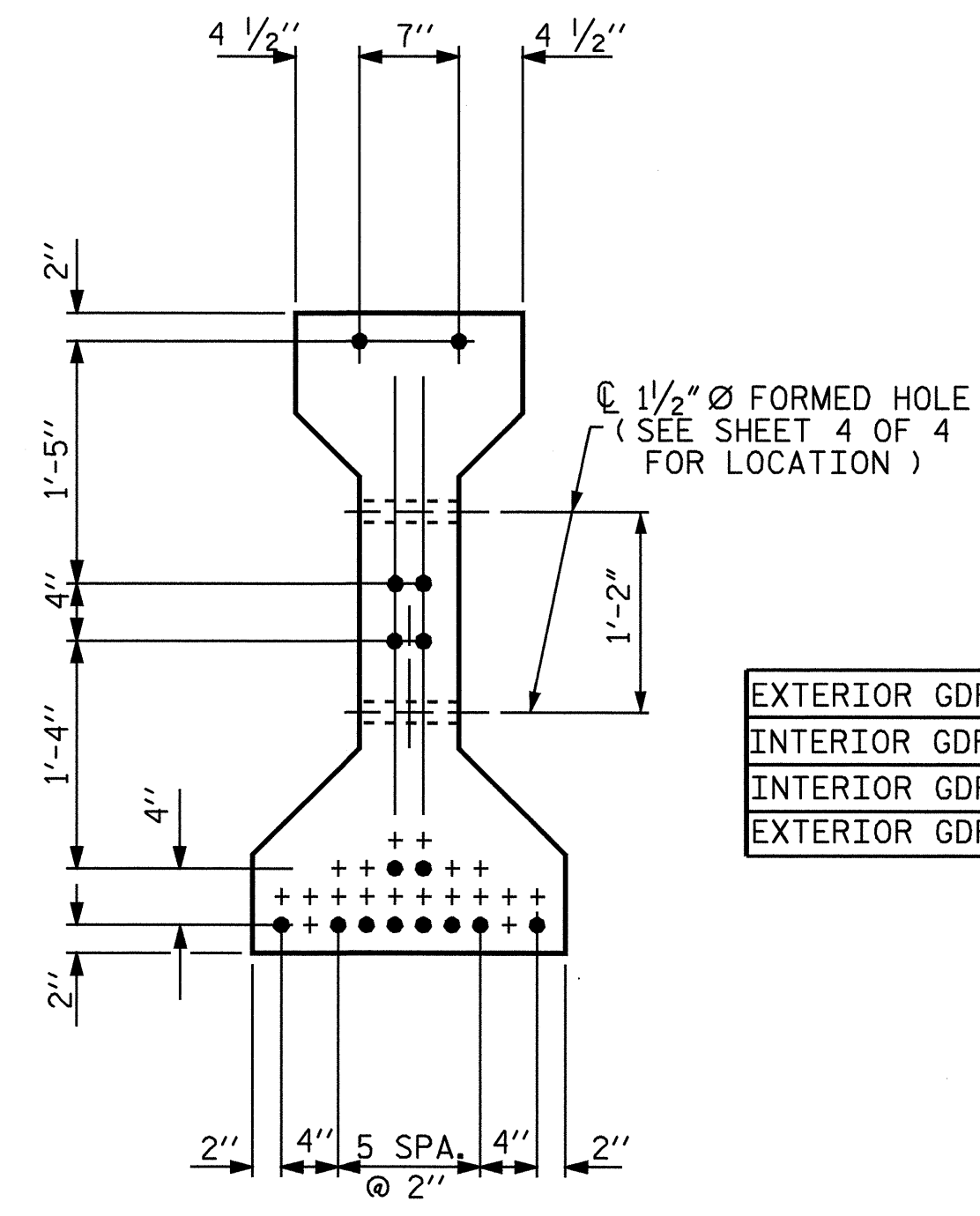
SECTION B-B



SECTION C-C
(S1 BARS NOT SHOWN)

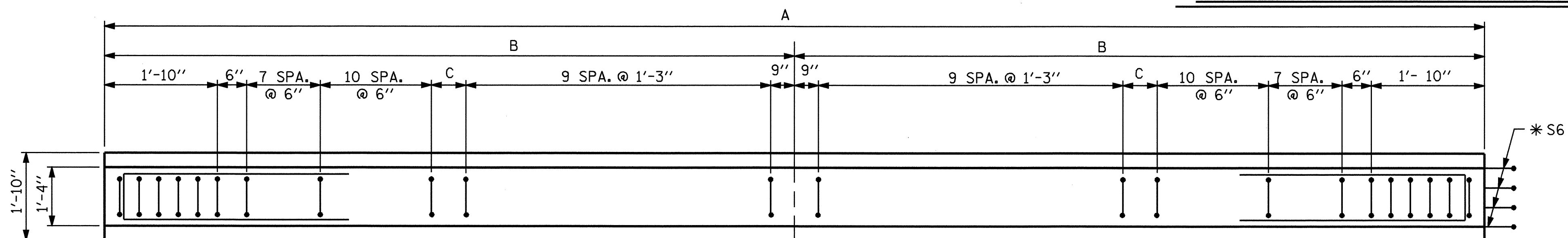


AT END OF GIRDER

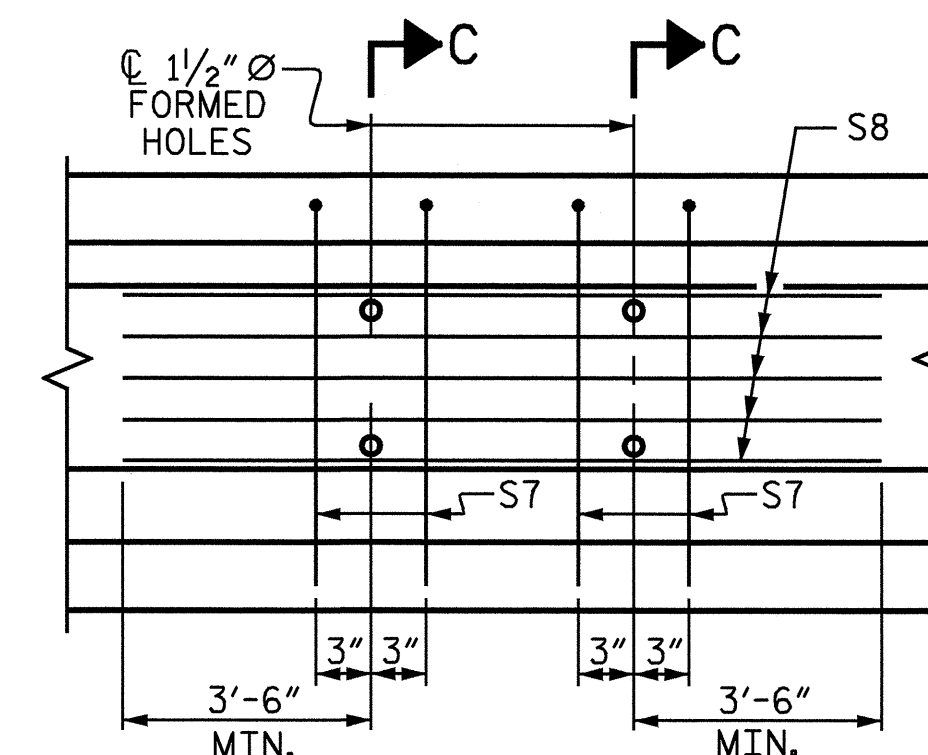


AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

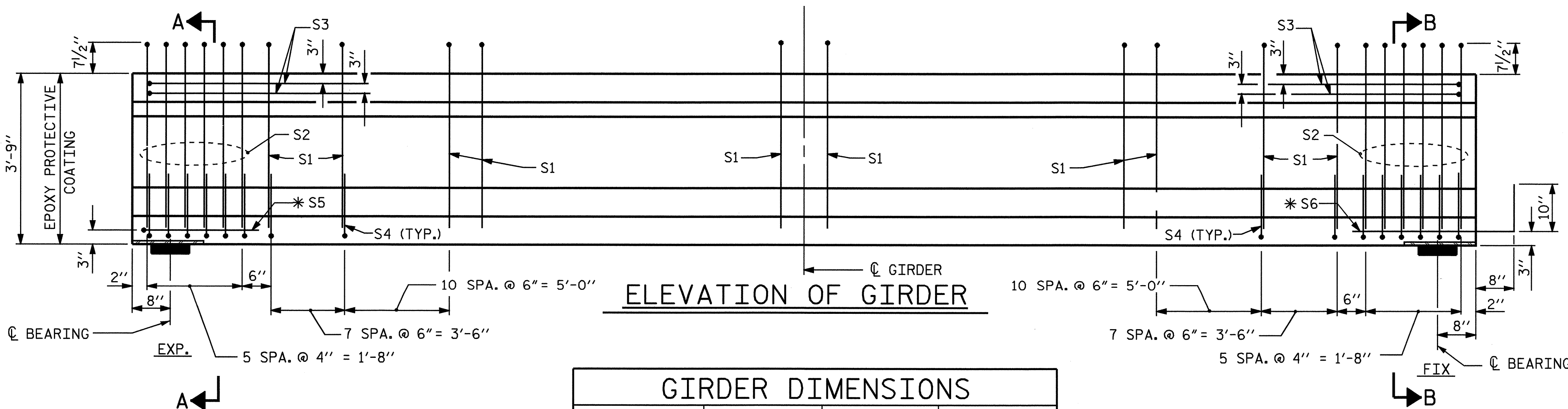


PLAN OF GIRDER



PARTIAL ELEVATION

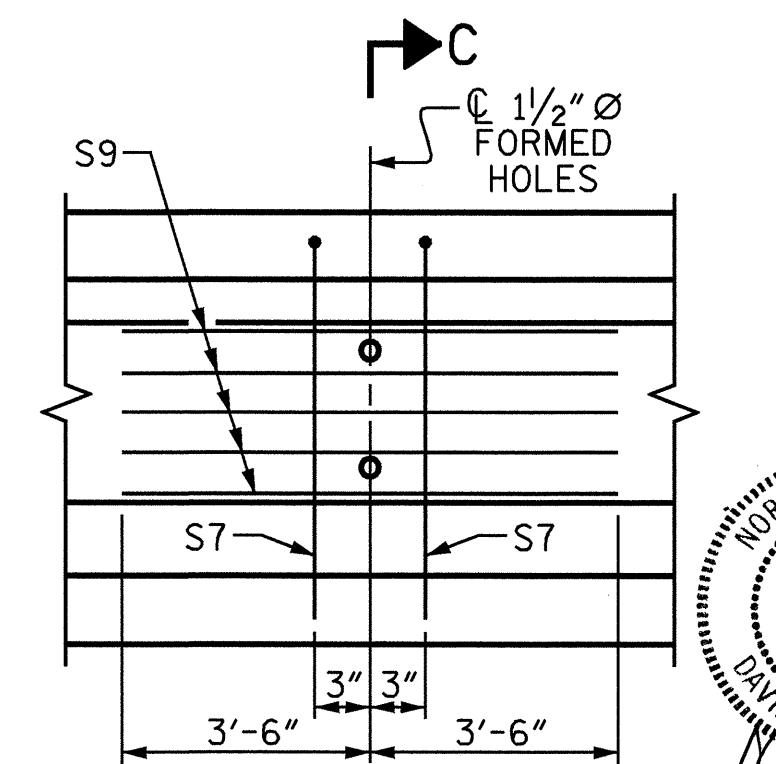
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR INTERIOR GIRDER Nos. 2, 3, & 4



ELEVATION OF GIRDER

GIRDER DIMENSIONS			
GIRDER	A	B	C
A1	47'-11 1/4"	23'-11 5/8"	1'-1 5/8"
A2	47'-9 3/8"	23'-10 11/16"	1'-0 11/16"
A3	47'-7 1/2"	23'-9 3/4"	11 3/4"
A4	47'-5 3/4"	23'-8 7/8"	10 7/8"
A5	47'-4"	23'-8"	10"

THE CONTRACTORS' ATTENTION IS CALLED TO THE FACT THAT THE CONCRETE STRENGTH REQUIRED IS 7,000 PSI.



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR EXTERIOR GIRDER Nos. 1 & 5

0.6" Ø L. R. GRADE 270 STRANDS

AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

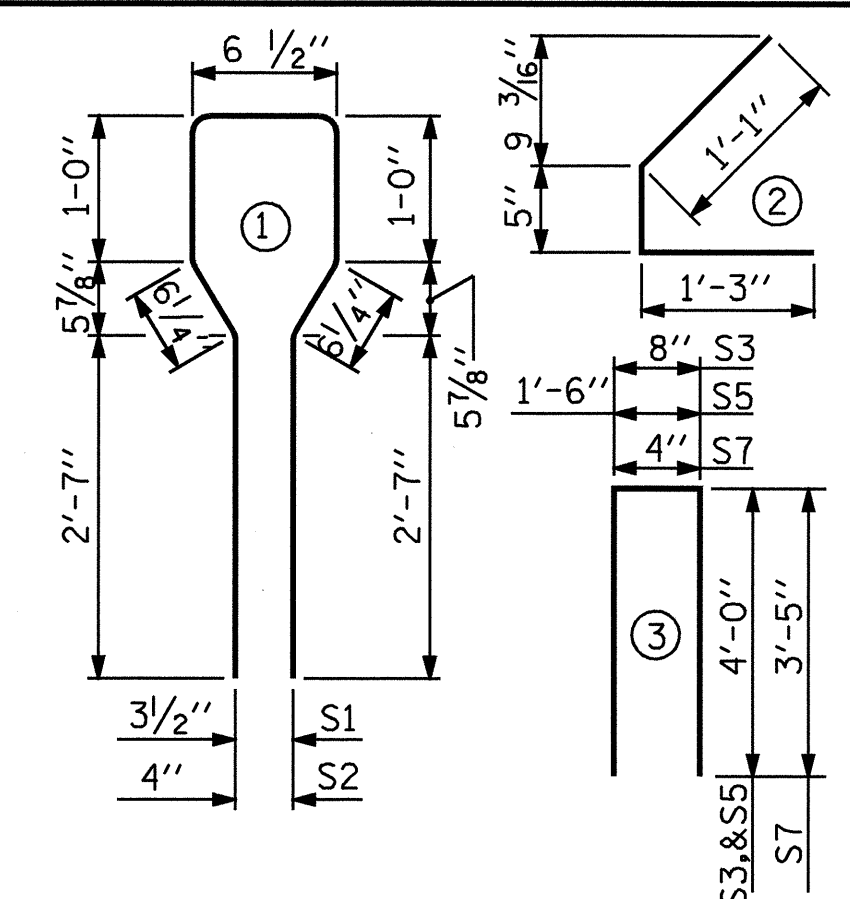
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	
S1	56	#4	1	8'-9"	327	
S2	12	#6	1	8'-9"	158	
S3	4	#4	3	8'-8"	23	
S4	56	#4	2	2'-9"	103	
S5	1	#4	3	9'-6"	6	
*S6	4	#5	STR	3'-8"	15	
EXTERIOR GDR.	S7	2	#5	3	7'-2"	15
INTERIOR GDR.	S7	4	#5	3	7'-2"	30
INTERIOR GDR.	S8	5	#4	STR	13'-0"	43
EXTERIOR GDR.	S9	5	#4	STR	7'-0"	23

* 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		7,000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.		No.
INTERIOR GIRDERS	705	6.9		16
EXTERIOR GIRDERS	670	6.9		16

GIRDERS REQUIRED PER SPAN

NUMBER	LENGTH	TOTAL LENGTH
5	SEE CHART	238'-2"

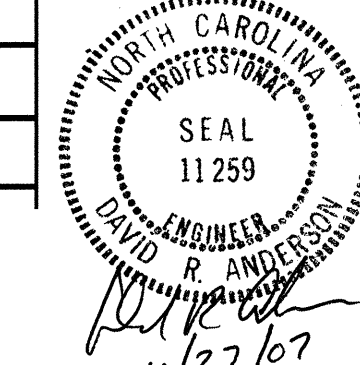
PROJECT NO. B-4129

GUILFORD COUNTY

STATION: 16+89.50 -L

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
AASHTO TYPE III
PRESTRESSED CONCRETE
GIRDER CONTINUOUS
FOR LIVE LOAD
SPAN A



ASSEMBLED BY: S. M. RASHIDI DATE: 5/07
CHECKED BY: A.S. CALLAWAY DATE: 7/30/07
DRAWN BY: ELR 8/91 REV. 7/17/98 RWW/LES
CHECKED BY: GRP 8/91 REV. 10/17/00R RWW/LES
REV. 5/1/06 TLA/GM

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

5-12
TOTAL SHEETS
38

0.6" Ø L. R. GRADE 270 STRANDS

AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

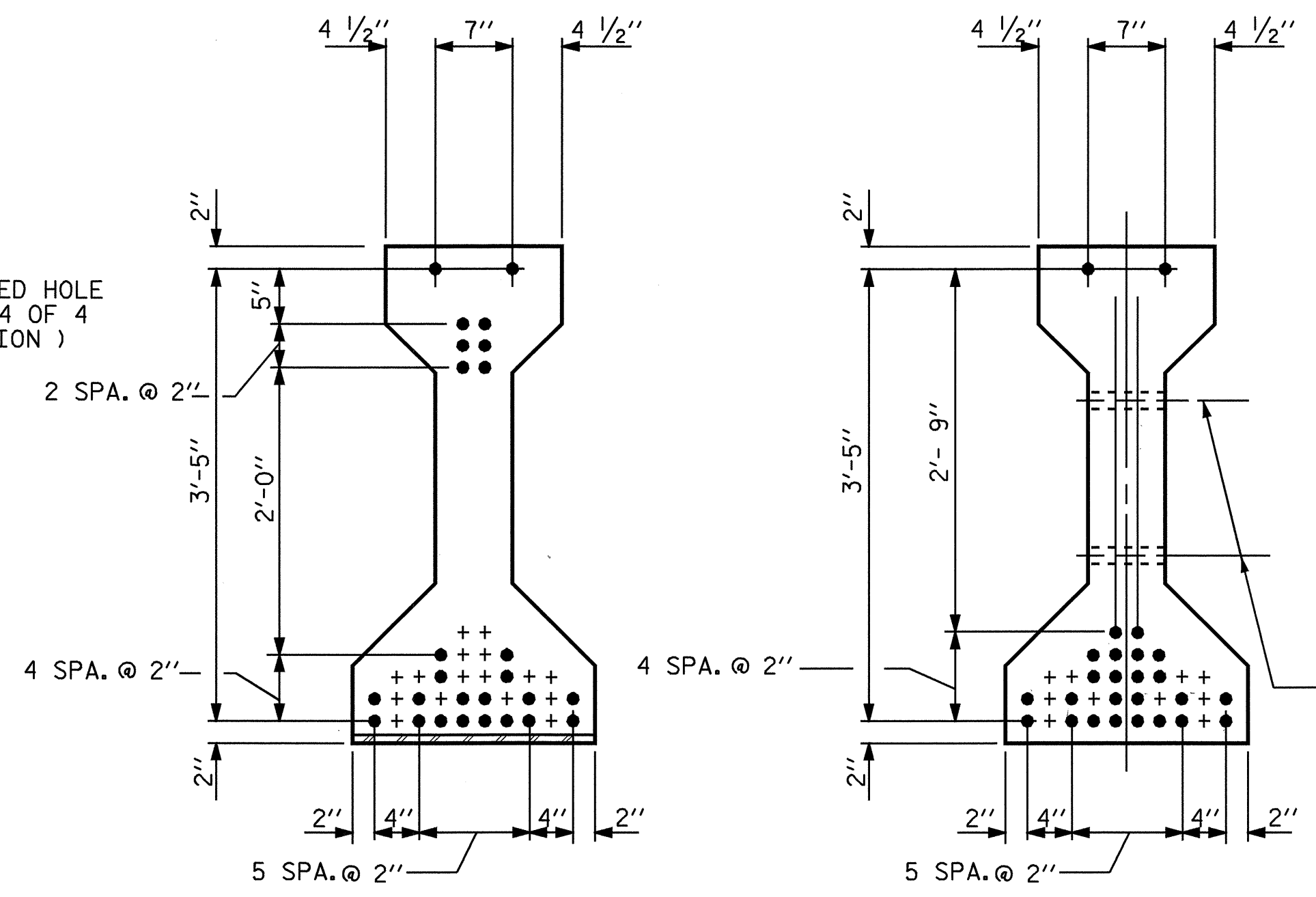
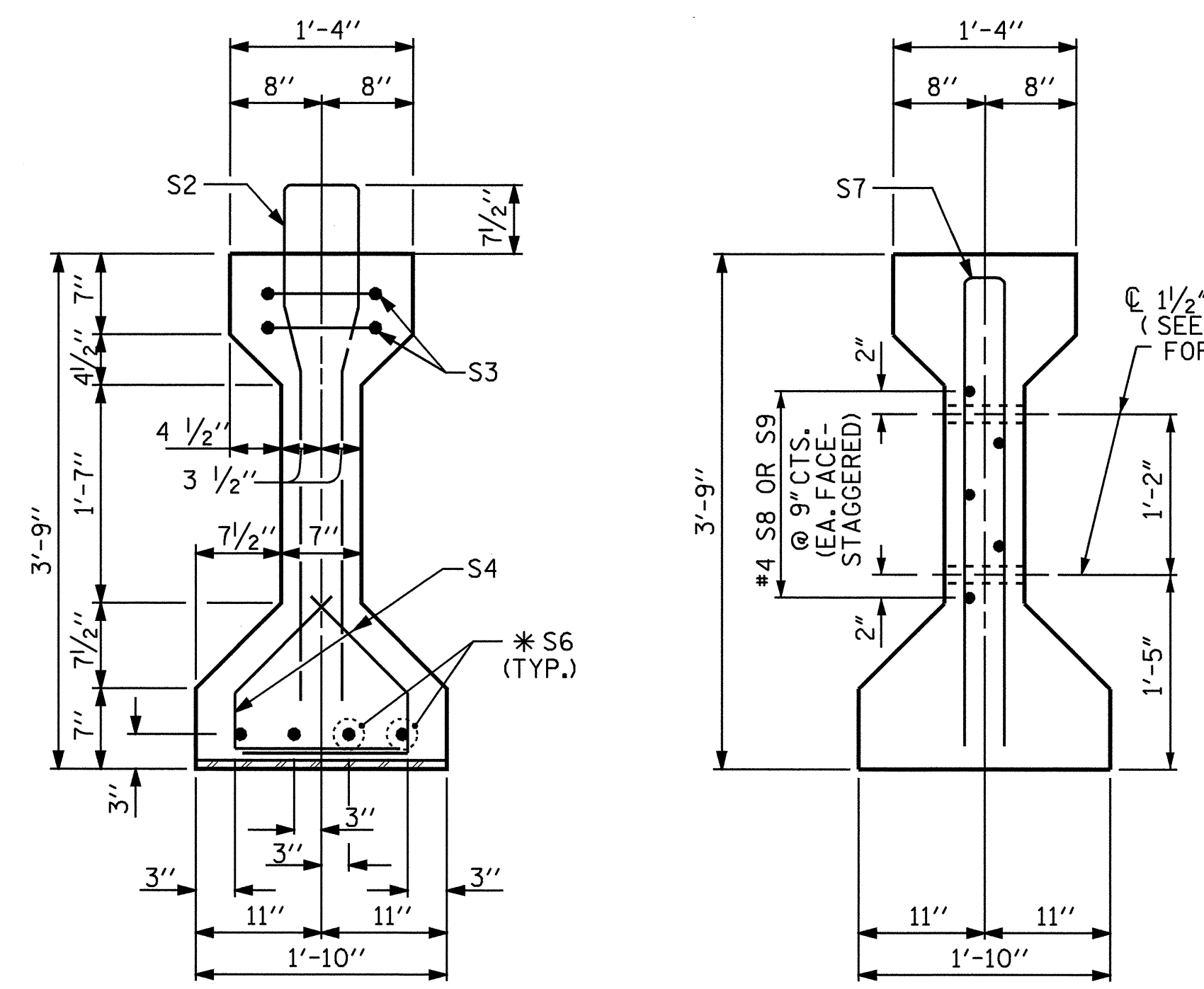
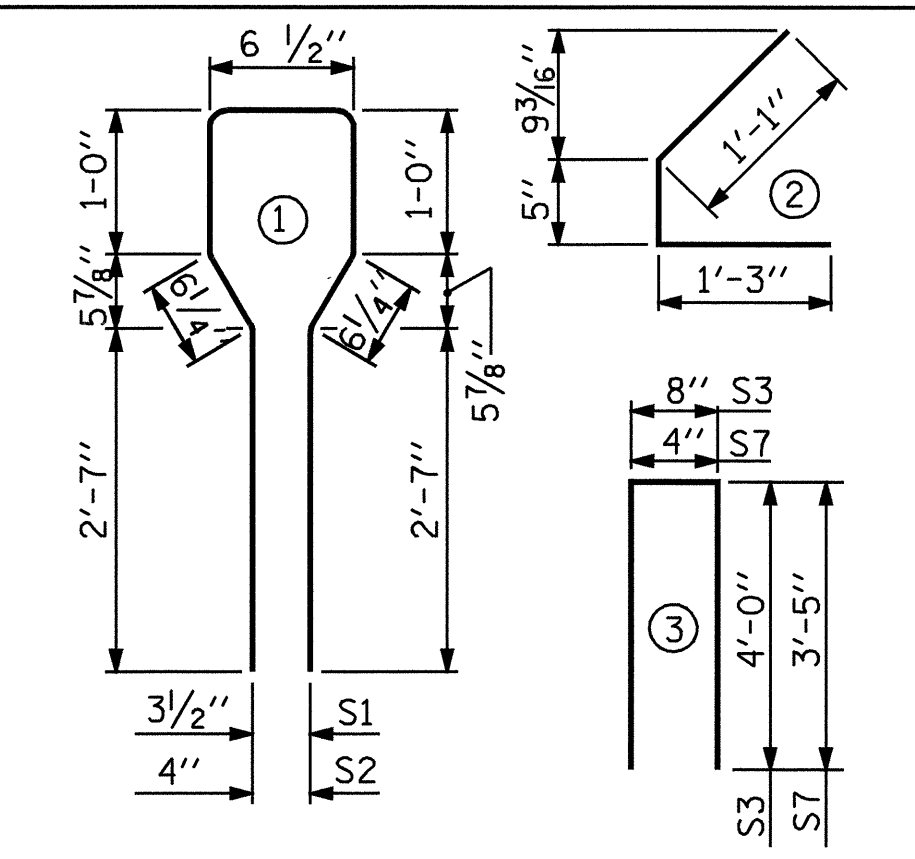
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	
S1	88	#4	1	8'-9"	514	
S2	12	#6	1	8'-9"	158	
S3	4	#4	3	8'-8"	23	
S4	56	#4	2	2'-9"	103	
*S6	8	#5	STR	3'-8"	31	
EXTERIOR GDR.	S7	2	#5	3	7'-2"	15
INTERIOR GDR.	S7	4	#5	3	7'-2"	30
INTERIOR GDR.	S8	5	#4	STR	12'-2"	41
EXTERIOR GDR.	S9	5	#4	STR	7'-0"	23

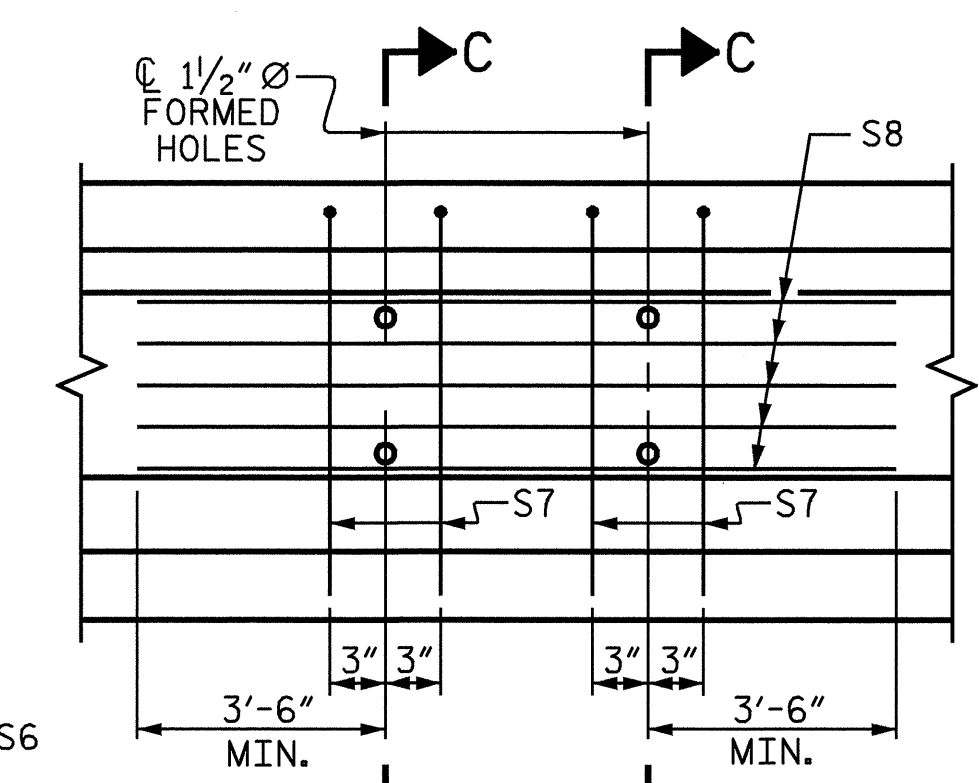
*NOTE: S6 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT

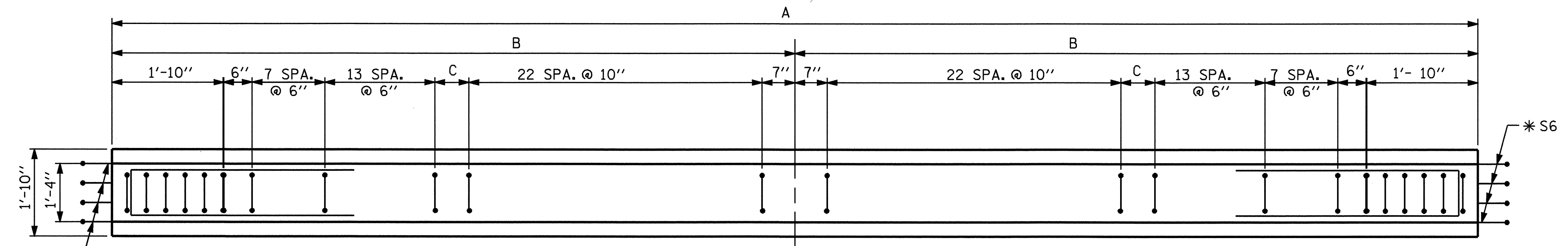


AT END OF GIRDER AT C OF GIRDER
0.6" Ø LOW RELAXATION STRAND LAYOUT

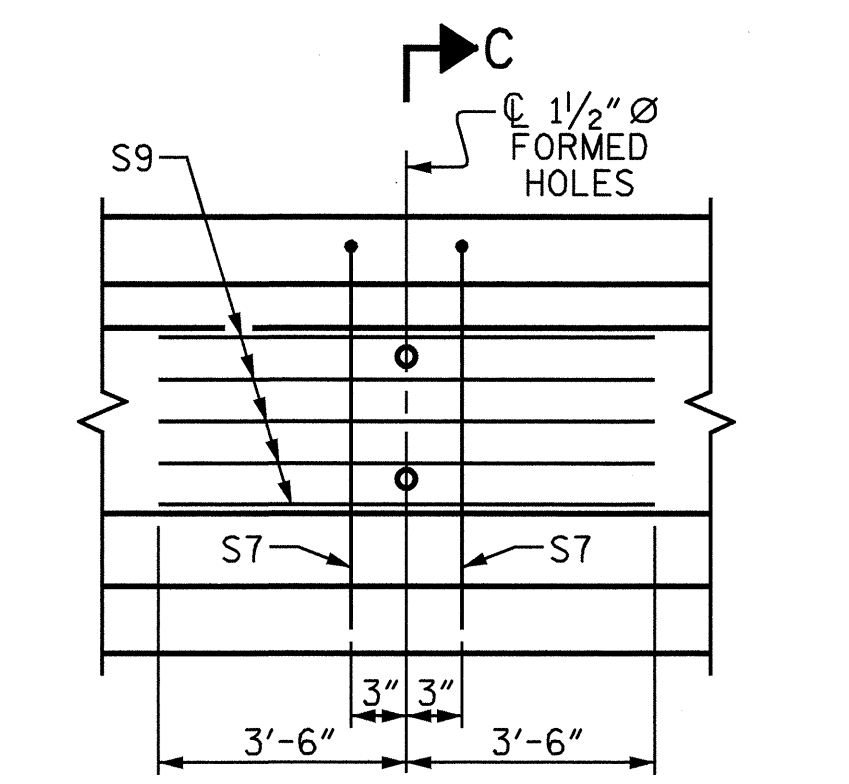


PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR INTERIOR GIRDER Nos. 2, 3, & 4



ELEVATION OF GIRDER

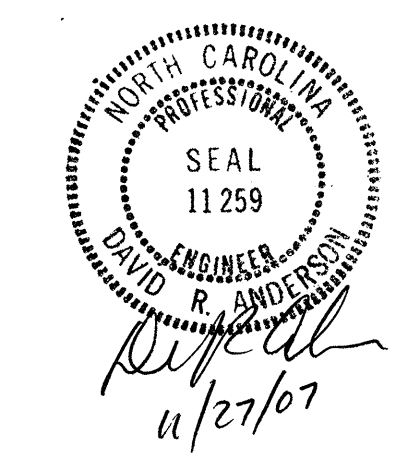


PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR EXTERIOR GIRDER Nos. 1 & 5

GIRDER DIMENSIONS			
GIRDER	A	B	C
B1	64'-6 1/4"	32'-3 3/8"	1'-0 1/8"
B2	64'-4 1/4"	32'-2 1/8"	11 1/8"
B3	64'-2 3/8"	32'-1 3/16"	10 3/16"
B4	64'-0 1/2"	32'-0 1/4"	9 1/4"
B5	63'-10 5/8"	31'-11 5/16"	8 5/16"

THE CONTRACTORS' ATTENTION IS CALLED TO THE FACT THAT THE CONCRETE STRENGTH REQUIRED IS 7,000 PSI.
THE UPLIFT FORCE DUE TO DRAPED STRANDS IS 22.5 KIPS



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL LB.	7,000 PSI CONCRETE C.Y.	0.6" Ø L.R. STRANDS No.
INTERIOR GDR.	900	9.2	26
EXTERIOR GDR.	867	9.2	26

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
5	SEE CHART	321'-0"

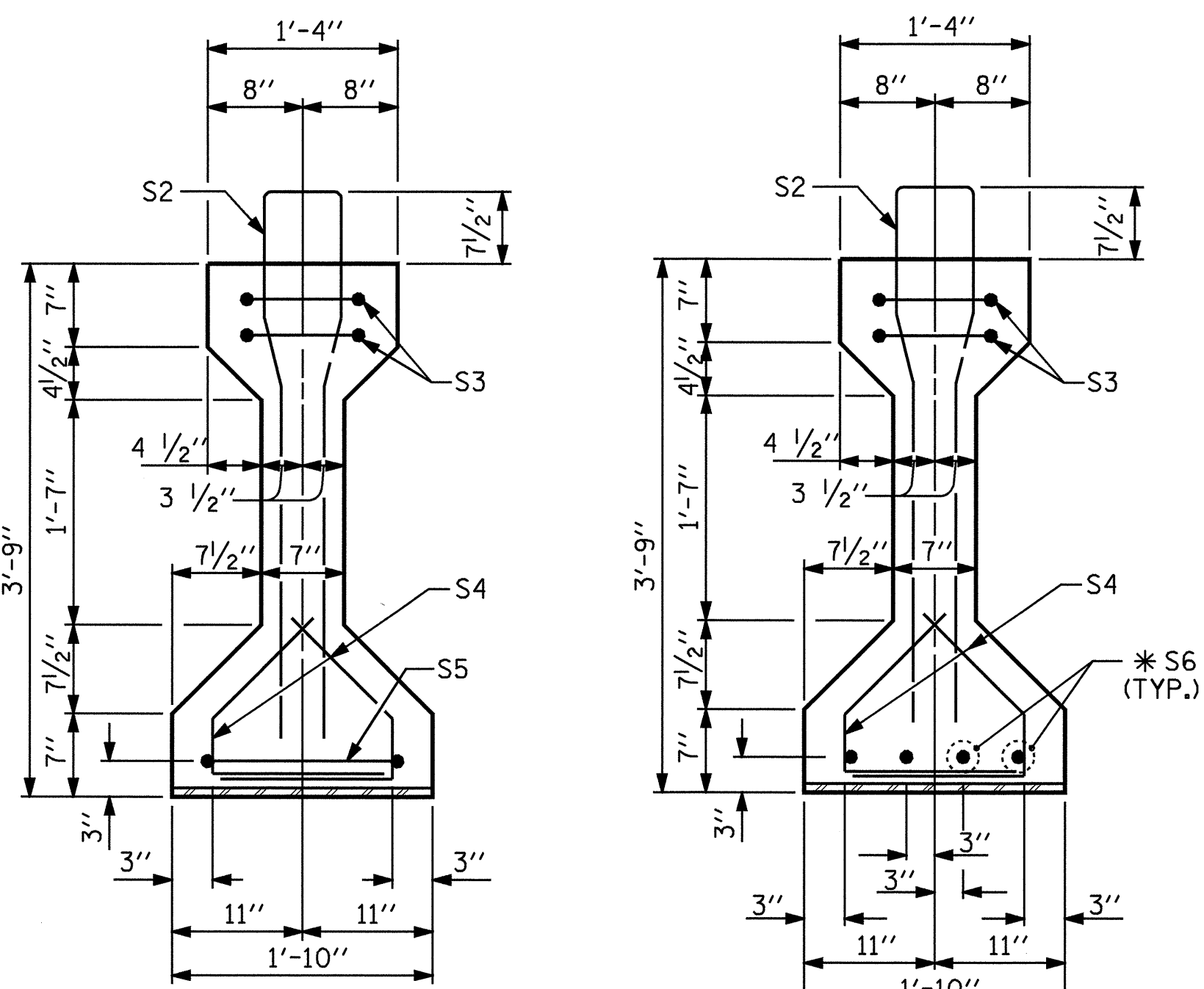
PROJECT NO. B-4129
GUILFORD COUNTY
STATION: 16+89.50 -L

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
AASHTO TYPE III
PRESTRESSED CONCRETE
GIRDER CONTINUOUS
FOR LIVE LOAD
SPAN B

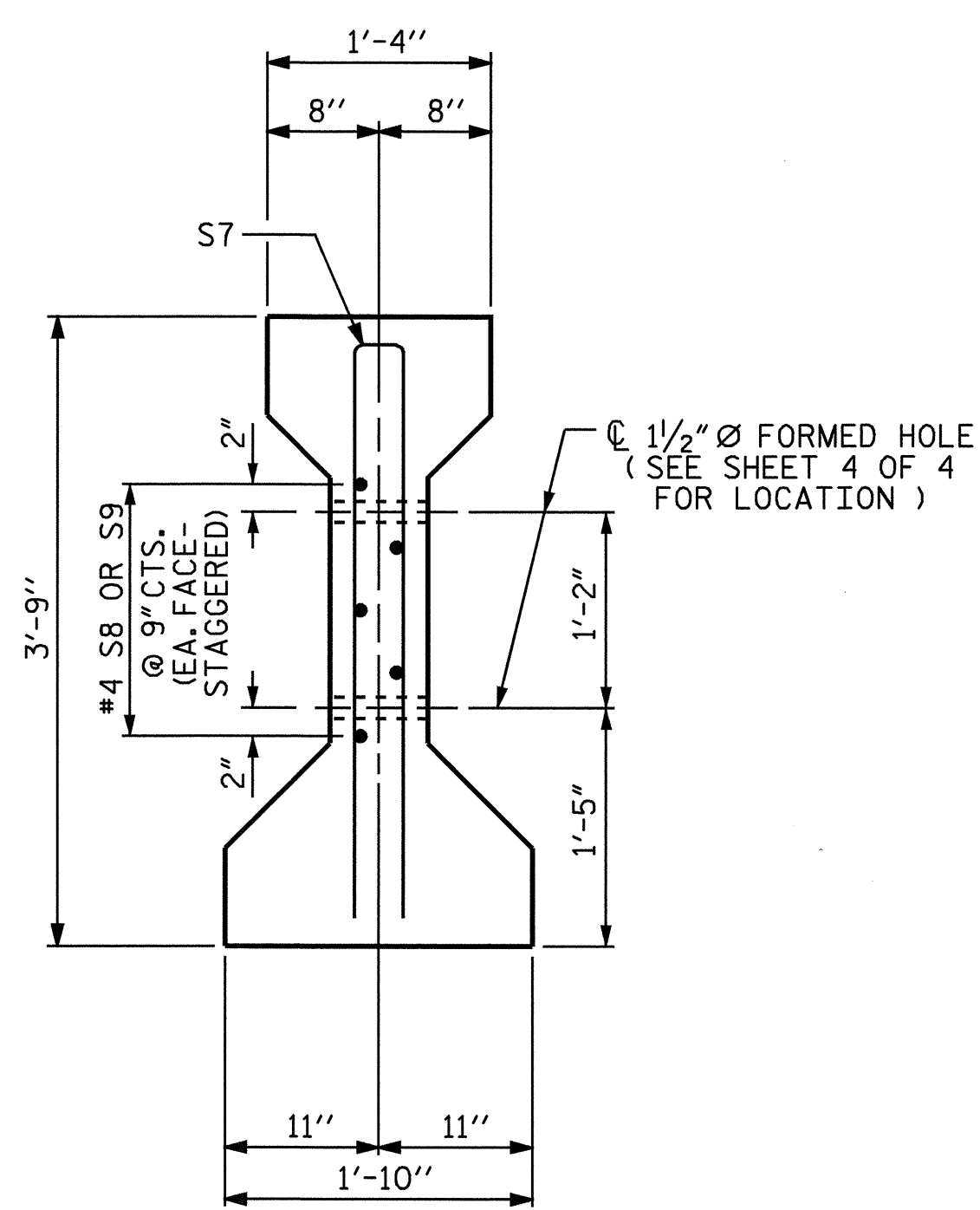
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

ASSEMBLED BY : S. M. RASHIDI DATE : 5/07
CHECKED BY : A.S. CALLAWAY DATE : 7/30/07
DRAWN BY : ELR 8/91 REV. 7/17/98 RWW/LES
CHECKED BY : GRP 8/91 REV. 10/17/00 RWW/LES
REV. 5/1/06 TLA/GM



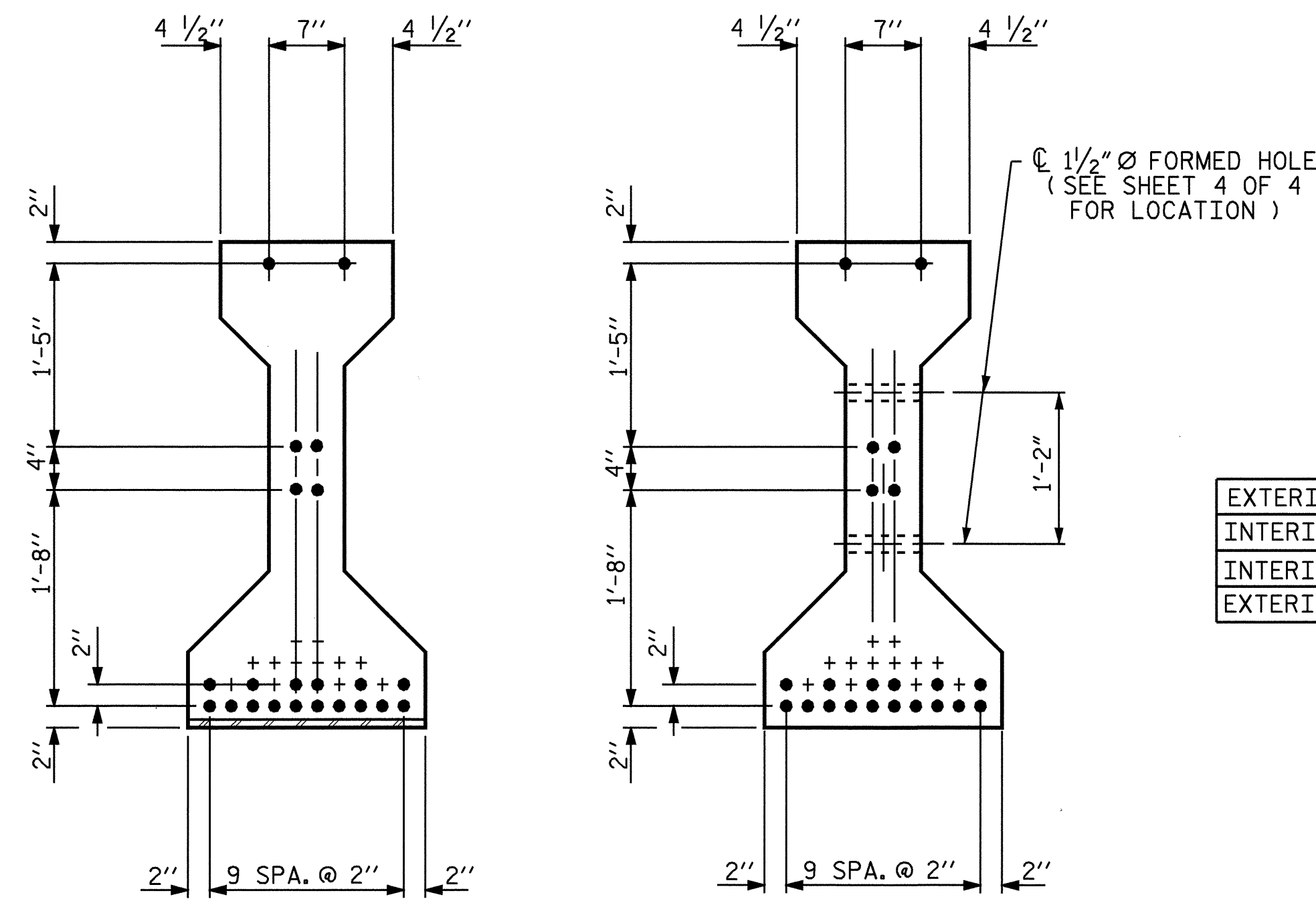
SECTION A-A

SECTION B-B



SECTION C-C

(S1 BARS NOT SHOWN)



AT END OF GIRDER

AT C OF GIRDER

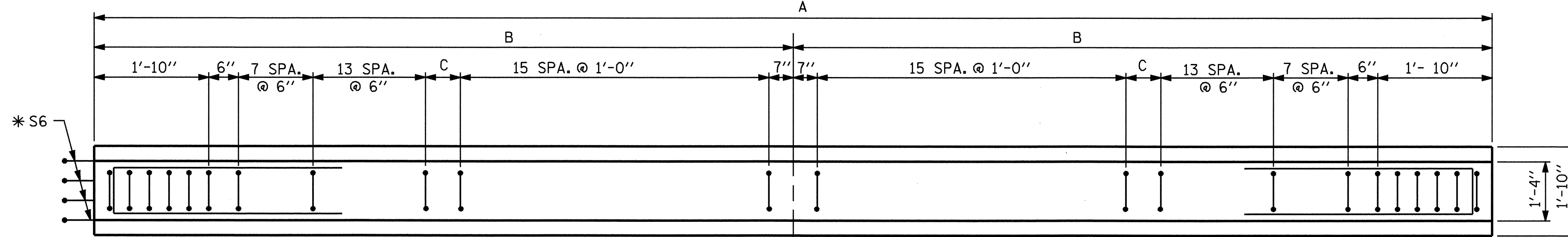
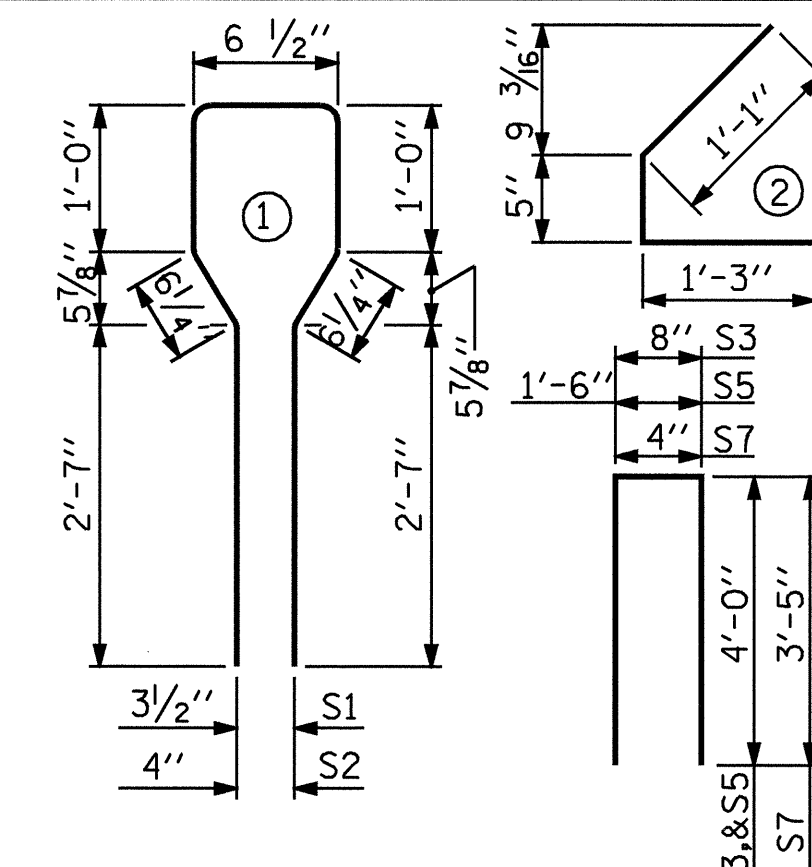
0.6" Ø LOW RELAXATION STRAND LAYOUT

EXTERIOR GDR.	S7	2	#5	3	7'-2"	15
INTERIOR GDR.	S7	4	#5	3	7'-2"	30
INTERIOR GDR.	S8	5	#4	STR	11'-5"	38
EXTERIOR GDR.	S9	5	#4	STR	7'-0"	23

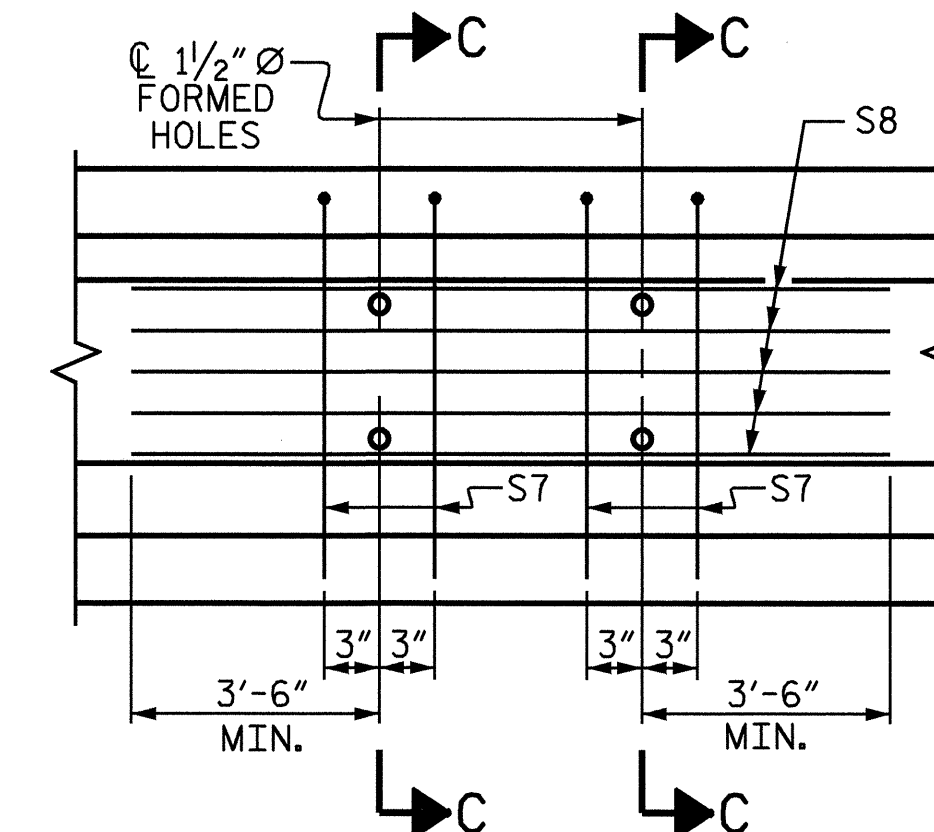
* NOTE: S6 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT

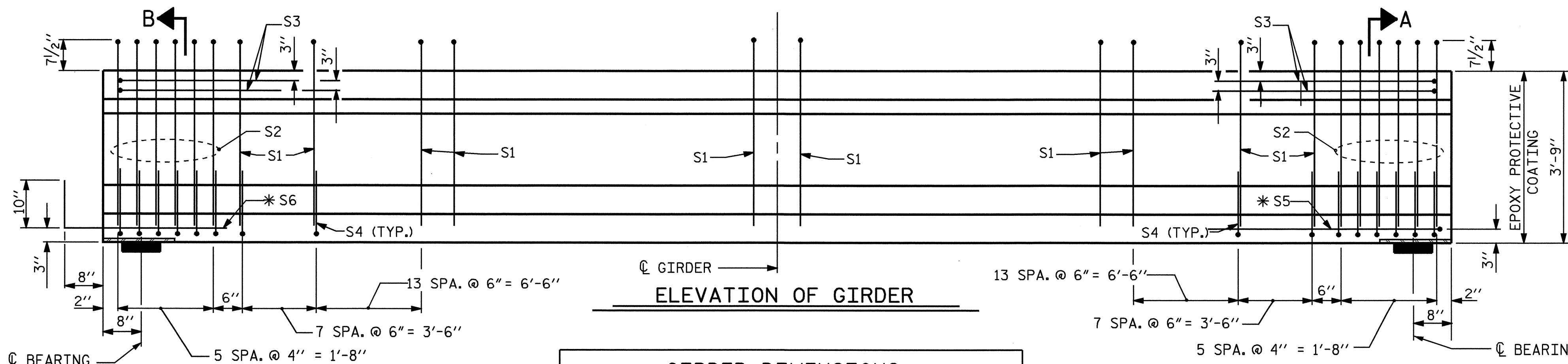


PLAN OF GIRDER



PARTIAL ELEVATION

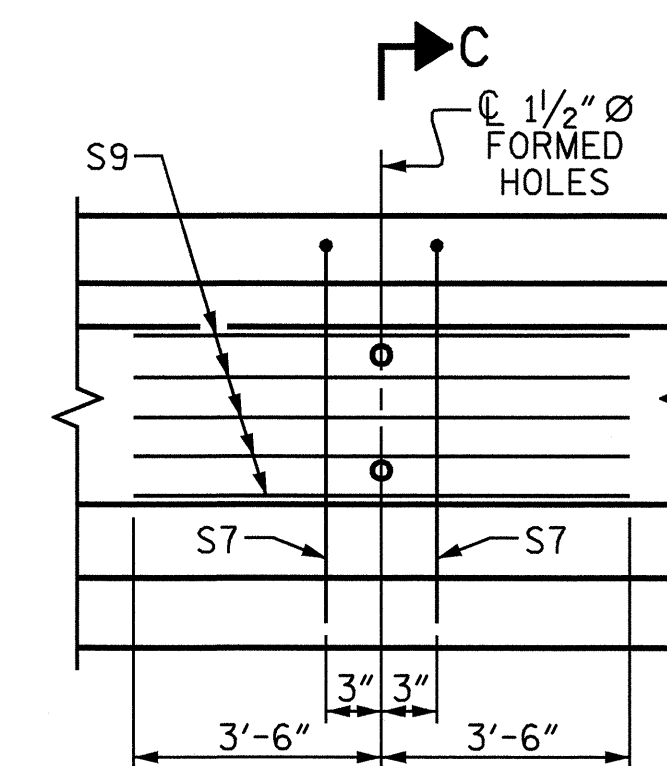
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR INTERIOR GIRDER Nos. 2, 3, & 4



ELEVATION OF GIRDER

GIRDER DIMENSIONS			
GIRDER	A	B	C
C1	57'-11 ¹ / ₈ "	28'-11 ⁹ / ₁₆ "	1'-0 ⁹ / ₁₆ "
C2	57'-10"	28'-11"	1'-0"
C3	57'-9"	28'-10 ¹ / ₂ "	11 ¹ / ₂ "
C4	57'-8 ¹ / ₈ "	28'-10 ¹ / ₁₆ "	11 ¹ / ₁₆ "
C5	57'-7 ¹ / ₄ "	28'-9 ⁵ / ₈ "	10 ³ / ₄ "

THE CONTRACTORS' ATTENTION IS CALLED TO THE FACT THAT THE CONCRETE STRENGTH REQUIRED IS 7,000 PSI.



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR EXTERIOR GIRDER Nos. 1 & 5

0.6" Ø L. R. GRADE 270 STRANDS

AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	
S1	74	#4	1	8'-9"	433	
S2	12	#6	1	8'-9"	158	
S3	4	#4	3	8'-8"	23	
S4	56	#4	2	2'-9"	103	
S5	1	#4	3	9'-6"	6	
*S6	4	#5	STR	3'-8"	15	
EXTERIOR GDR.	S7	2	#5	3	7'-2"	15
INTERIOR GDR.	S7	4	#5	3	7'-2"	30
INTERIOR GDR.	S8	5	#4	STR	11'-5"	38
EXTERIOR GDR.	S9	5	#4	STR	7'-0"	23

QUANTITIES FOR ONE GIRDER

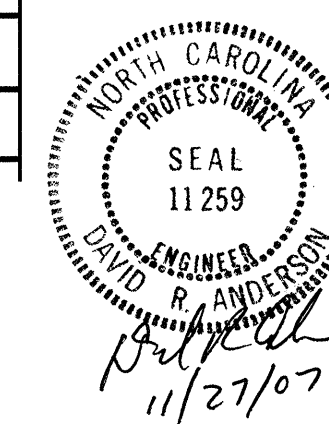
	REINFORCING STEEL LB.	7,000 PSI CONCRETE C.Y.	0.6" Ø L.R. STRANDS No.
INTERIOR GIRDER	806	8.3	22
EXTERIOR GIRDER	776	8.3	22

GIRDERS REQUIRED PER SPAN

NUMBER	LENGTH	TOTAL LENGTH
5	SEE CHART	288'-9 ¹ / ₂ "

PROJECT NO. B-4129
GUILFORD COUNTY
STATION: 16+89.50 -L

SHEET 3 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
AASHTO TYPE III
PRESTRESSED CONCRETE
GIRDER CONTINUOUS
FOR LIVE LOAD
SPAN C

REVISIONS						SHEET NO. 5-14
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 38
2			4			

ASSEMBLED BY : S. M. RASHIDI DATE : 5/07
CHECKED BY : A.S. CALLAWAY DATE : 7/30/07
DRAWN BY : ELR 8/91 REV. 7/17/98 RWW/LES
CHECKED BY : GRP 8/91 REV. 10/17/00R RWW/LES
REV. 5/1/06 TLA/GM

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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.

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.

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 SPAN A, 5700 PSI FOR SPAN B AND 5100 PSI FOR SPAN C.

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

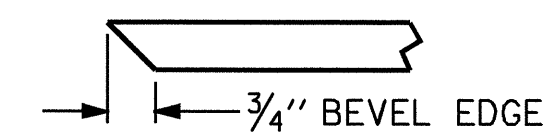
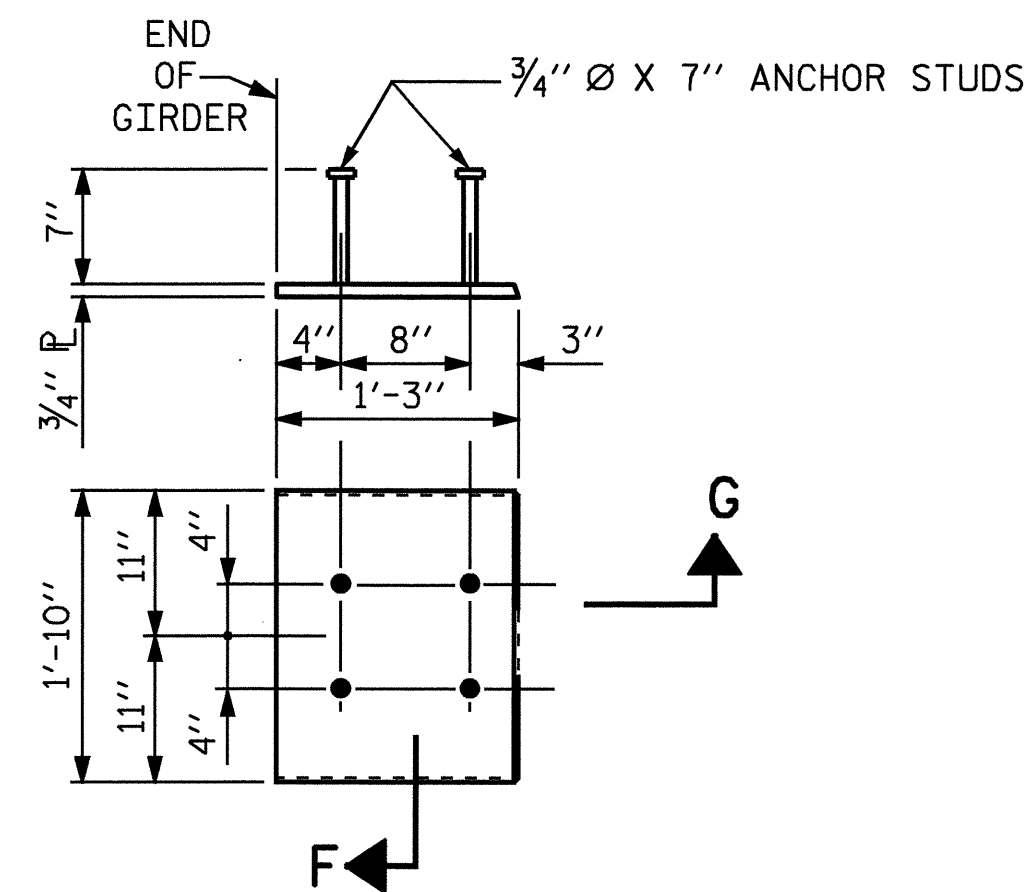
THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

WHEN DRAPED STRANDS ARE DETAILED, THE LONGITUDINAL LOCATION OF THE HOLD DOWN DEVICES SHALL BE WITHIN 6" OF THE LOCATION SHOWN AND THE CENTER OF GRAVITY OF THE GROUP OF DRAPED STRANDS SHALL BE LOCATED WITHIN 1/2" OF THE THEORETICAL LOCATION SHOWN.

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

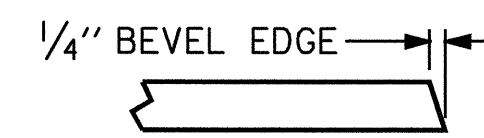
APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES INDICATED IN ELEVATION VIEW.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.



SECTION "F"

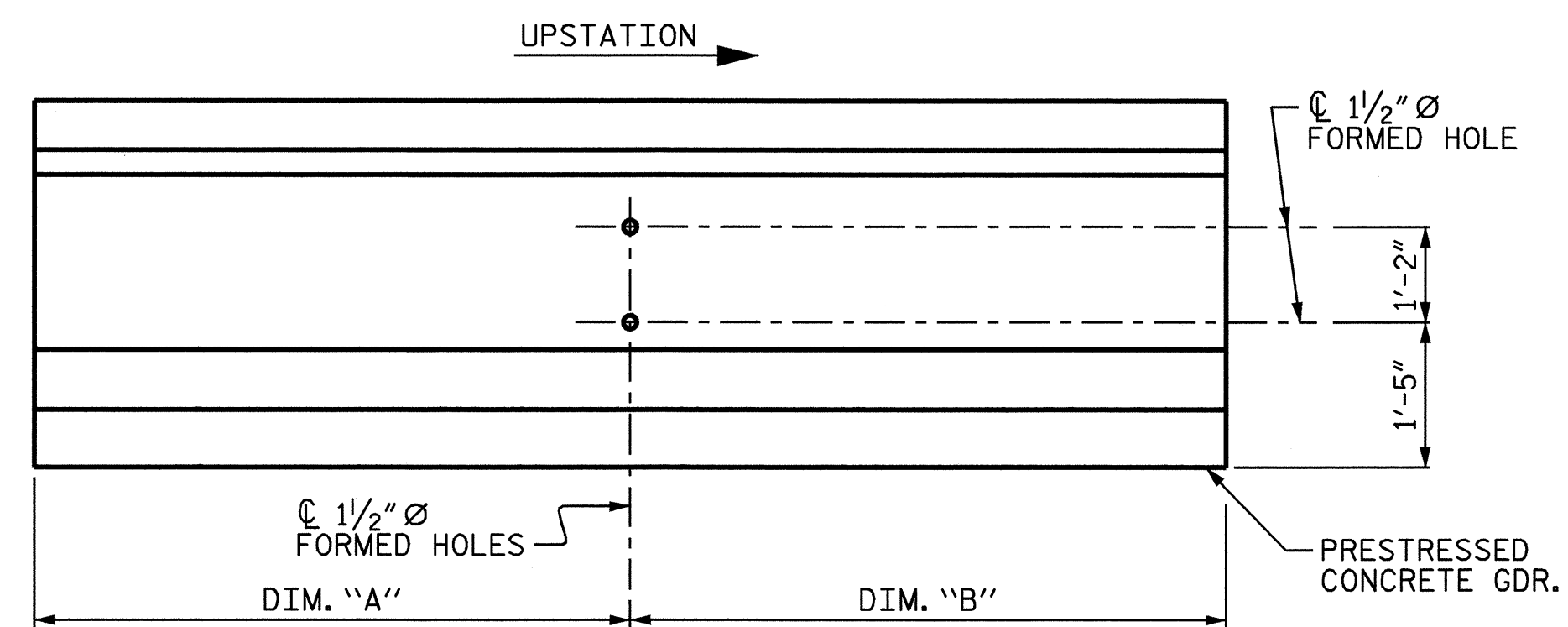
(SEE NOTES)



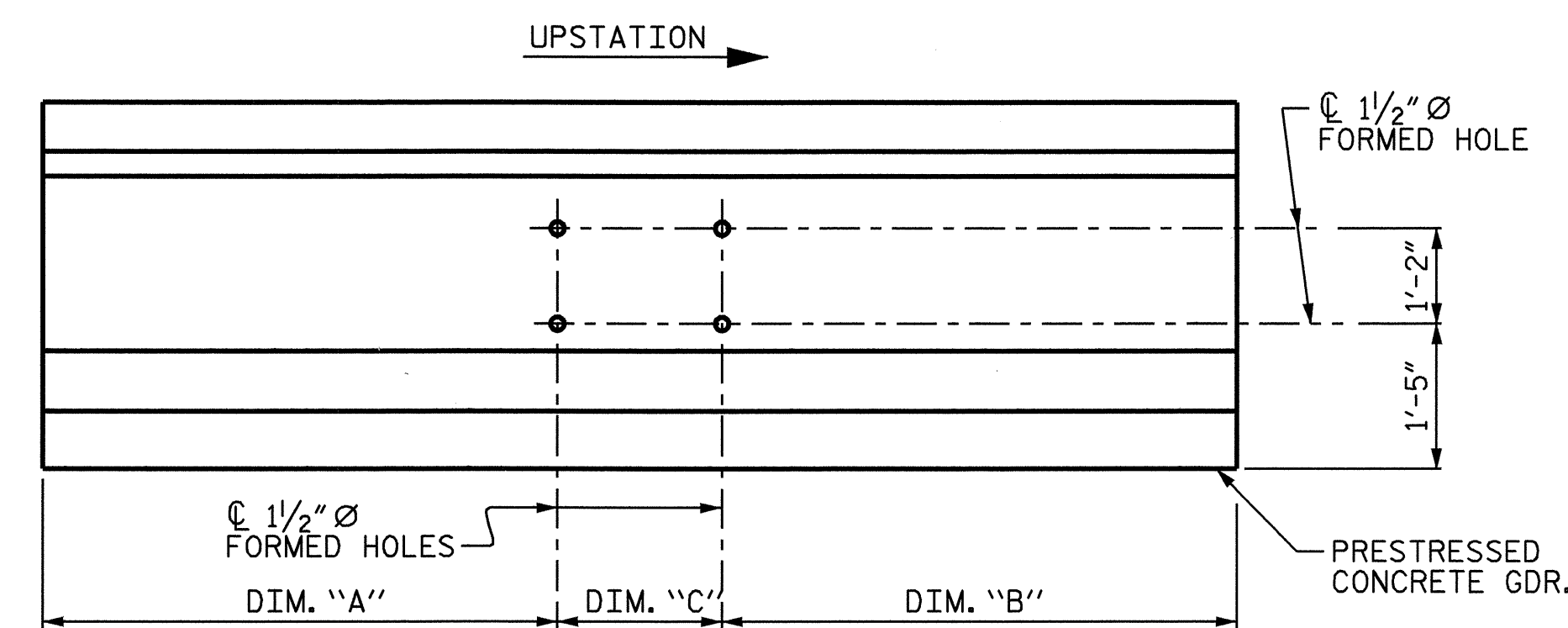
SECTION "G"

EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE III GIRDER

(2 REQUIRED PER GIRDER.)



ELEVATION OF EXTERIOR GIRDER



ELEVATION OF INTERIOR GIRDER

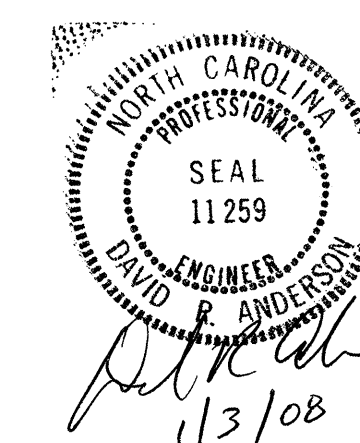
BOLT HOLE PLACEMENT DETAILS

GIRDER NO.	SPAN "A"		SPAN "B"		SPAN "C"	
	DIM. "A"	DIM. "B"	DIM. "A"	DIM. "B"	DIM. "A"	DIM. "B"
1	26'-11 5/8"	20'-11 5/8"	34'-10 5/16"	29'-7 5/16"	31'-1 7/8"	26'-9 1/4"
5	20'-9 3/8"	26'-6 3/8"	29'-5 5/16"	34'-5 5/16"	26'-8 1/16"	30'-11 3/16"

GIRDER NO.	SPAN "A"			SPAN "B"			SPAN "C"		
	DIM. "A"	DIM. "B"	DIM. "C"	DIM. "A"	DIM. "B"	DIM. "C"	DIM. "A"	DIM. "B"	DIM. "C"
2	20'-10 5/16"	20'-10 5/16"	5'-11 1/2"	29'-7 7/8"	29'-7 7/8"	5'-2"	26'-8 13/16"	26'-8 13/16"	4'-4 3/8"
3	20'-10 1/2"	20'-10 1/2"	5'-10 1/2"	29'-6 9/16"	29'-6 9/16"	5'-1 1/4"	26'-8 9/16"	26'-8 9/16"	4'-3 7/8"
4	20'-10 1/8"	20'-10 1/8"	5'-9 1/2"	29'-6 1/16"	29'-6 1/16"	5'-0 3/8"	26'-9"	26'-9"	4'-2 1/8"

PROJECT NO. B-4129
GUILFORD COUNTY
 STATION: 16+89.50 -L

SHEET 4 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**AASHTO TYPE III
 PRESTRESSED CONCRETE
 GIRDER CONTINUOUS
 FOR LIVE LOAD
 DETAILS**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-15
2			4			TOTAL SHEETS 38

DRAWN BY: S. M. RASHIDI DATE: 5/07
 CHECKED BY: A.S. CALLAWAY DATE: 7/30/07

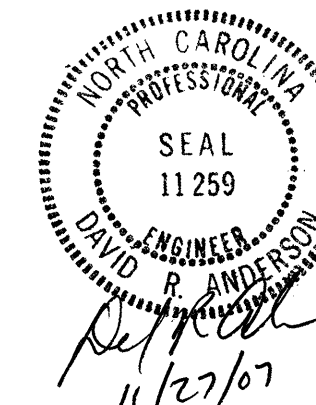
DEAD LOAD DEFLECTION TABLE FOR GIRDERS																																		
SPAN A																																		
GIRDER 1										GIRDERS 2 THRU 4										GIRDER 5														
TENTH POINTS	BRG.	.1	.2	.3	.4	.5	.6	.7	.8	.9	BRG.	BRG.	.1	.2	.3	.4	.5	.6	.7	.8	.9	BRG.	BRG.	.1	.2	.3	.4	.5	.6	.7	.8	.9	BRG.	
CAMBER (GIRDER ALONE IN PLACE)	↑	0	.016	.031	.042	.049	.052	.049	.042	.031	.016	0	0	.016	.031	.042	.049	.052	.049	.042	.031	.016	0	0	.016	.030	.042	.049	.051	.049	.042	.030	.016	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	.007	.013	.017	.020	.021	.020	.017	.013	.007	0	0	.008	.015	.021	.024	.025	.024	.021	.015	.008	0	0	.007	.013	.017	.020	.021	.020	.017	.013	.007	0
FINAL CAMBER	↑	0	1/8"	3/16"	1/4"	3/8"	3/8"	3/8"	1/4"	3/16"	1/8"	0	0	1/8"	3/16"	1/4"	5/16"	5/16"	5/16"	1/4"	3/16"	1/8"	0	0	1/8"	3/16"	5/16"	5/16"	3/8"	5/16"	5/16"	3/16"	1/8"	0

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																																		
SPAN B																																		
GIRDER 1										GIRDERS 2 THRU 4										GIRDER 5														
TENTH POINTS	BRG.	.1	.2	.3	.4	.5	.6	.7	.8	.9	BRG.	BRG.	.1	.2	.3	.4	.5	.6	.7	.8	.9	BRG.	BRG.	.1	.2	.3	.4	.5	.6	.7	.8	.9	BRG.	
CAMBER (GIRDER ALONE IN PLACE)	↑	0	.068	.128	.175	.205	.215	.205	.175	.128	.068	0	0	.067	.127	.174	.204	.214	.204	.174	.127	.067	0	0	.067	.126	.173	.202	.212	.202	.173	.126	.067	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	.022	.041	.056	.066	.069	.066	.056	.041	.022	0	0	.027	.051	.069	.081	.085	.081	.069	.051	.027	0	0	.023	.044	.060	.070	.074	.070	.060	.044	.023	0
FINAL CAMBER	↑	0	9/16"	1 1/16"	1 7/16"	1 11/16"	1 3/4"	1 11/16"	1 7/16"	1 1/16"	9/16"	0	0	1/2"	15/16"	1 1/4"	1 1/2"	1 9/16"	1 1/2"	1 1/4"	15/16"	1/2"	0	0	9/16"	1"	1 3/8"	1 9/16"	1 11/16"	1 9/16"	1 3/8"	1"	9/16"	0

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																																		
SPAN C																																		
GIRDER 1										GIRDERS 2 THRU 4										GIRDER 5														
TENTH POINTS	BRG.	.1	.2	.3	.4	.5	.6	.7	.8	.9	BRG.	BRG.	.1	.2	.3	.4	.5	.6	.7	.8	.9	BRG.	BRG.	.1	.2	.3	.4	.5	.6	.7	.8	.9	BRG.	
CAMBER (GIRDER ALONE IN PLACE)	↑	0	.045	.085	.116	.135	.142	.135	.116	.085	.045	0	0	.045	.084	.115	.135	.142	.135	.115	.084	.045	0	0	.044	.084	.115	.135	.141	.135	.115	.084	.044	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	.014	.027	.037	.043	.045	.043	.037	.027	.014	0	0	.017	.033	.045	.053	.055	.053	.045	.033	.017	0	0	.015	.028	.039	.045	.048	.045	.039	.028	.015	0
FINAL CAMBER	↑	0	3/8"	1 1/16"	1 5/16"	1 1/8"	1 3/16"	1 1/8"	1 5/16"	1 1/16"	3/8"	0	0	5/16"	3/8"	7/8"	1"	1 1/16"	1"	7/8"	3/8"	5/16"	0	0	3/8"	1 1/16"	1 5/16"	1 1/16"	1 1/8"	1 1/16"	1 5/16"	1 1/16"	3/8"	0

* INCLUDES FUTURE WEARING SURFACE
 ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. B-4129
GUILFORD COUNTY
 STATION: 16+89.50 -L



STATE OF NORTH CAROLINA					
DEPARTMENT OF TRANSPORTATION					
RALEIGH					
SUPERSTRUCTURE					
DEAD LOAD DEFLECTION					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					5-16
					TOTAL SHEETS
					38

DRAWN BY: S. M. RASHIDI DATE: 5/07
 CHECKED BY: A. S. CALLAWAY DATE: 7/30/07

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.

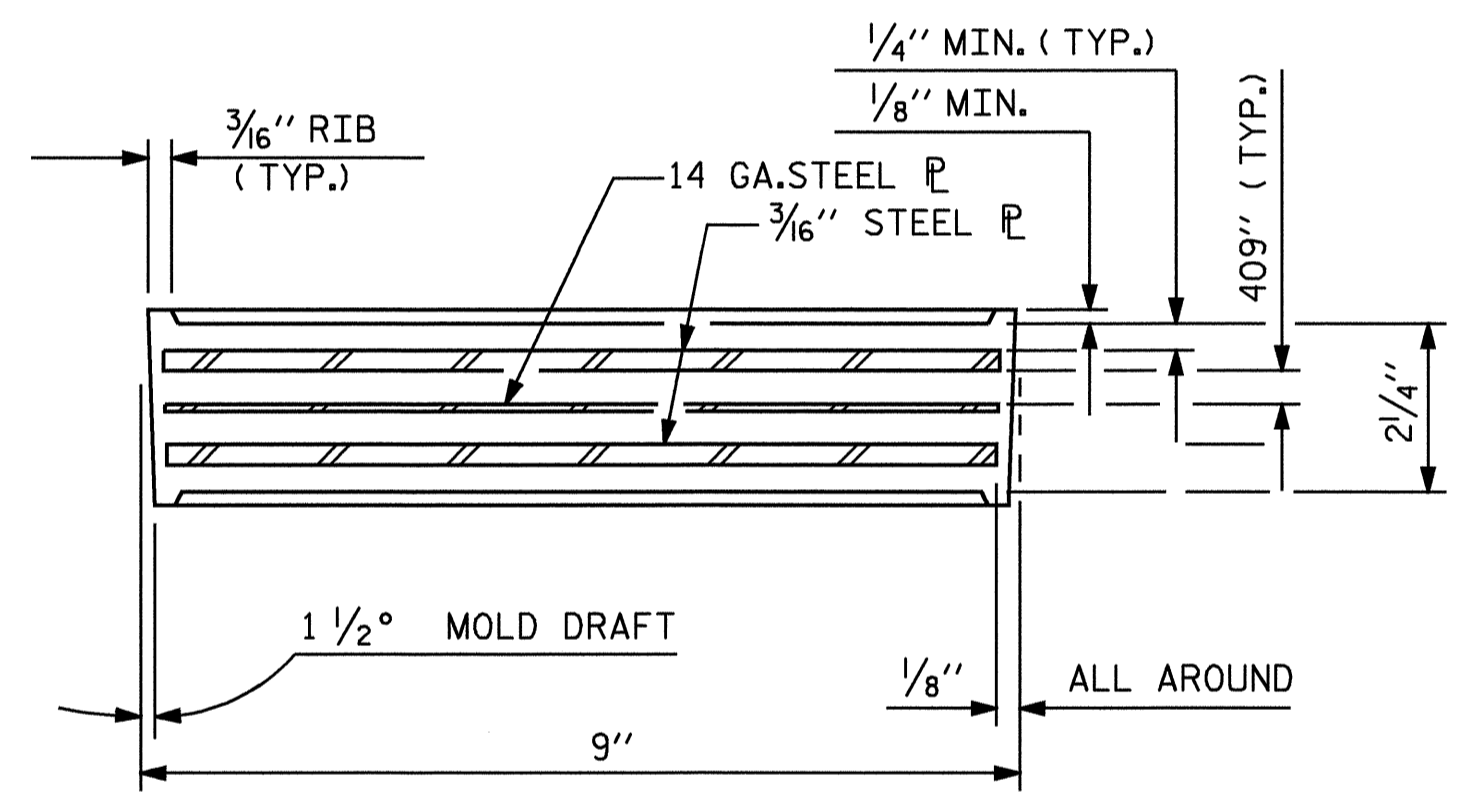
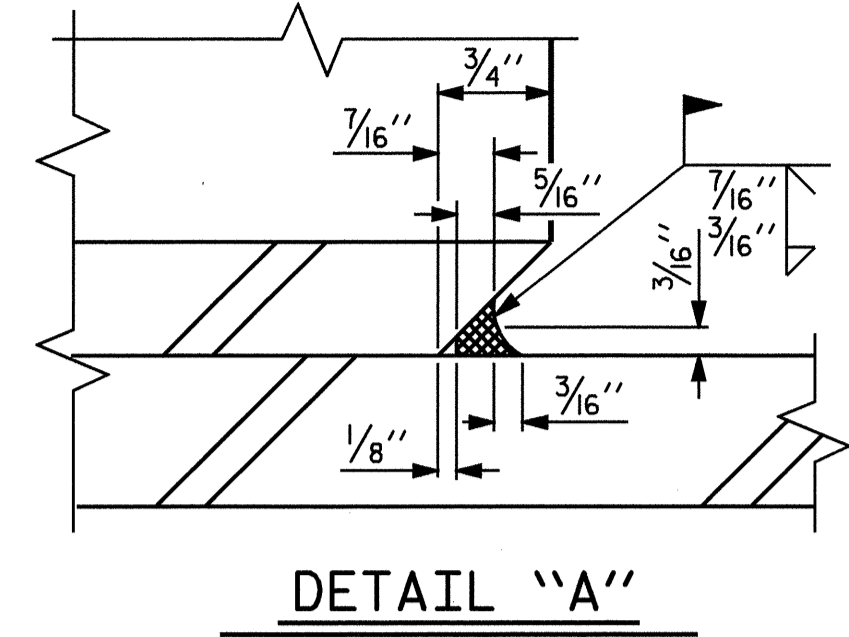
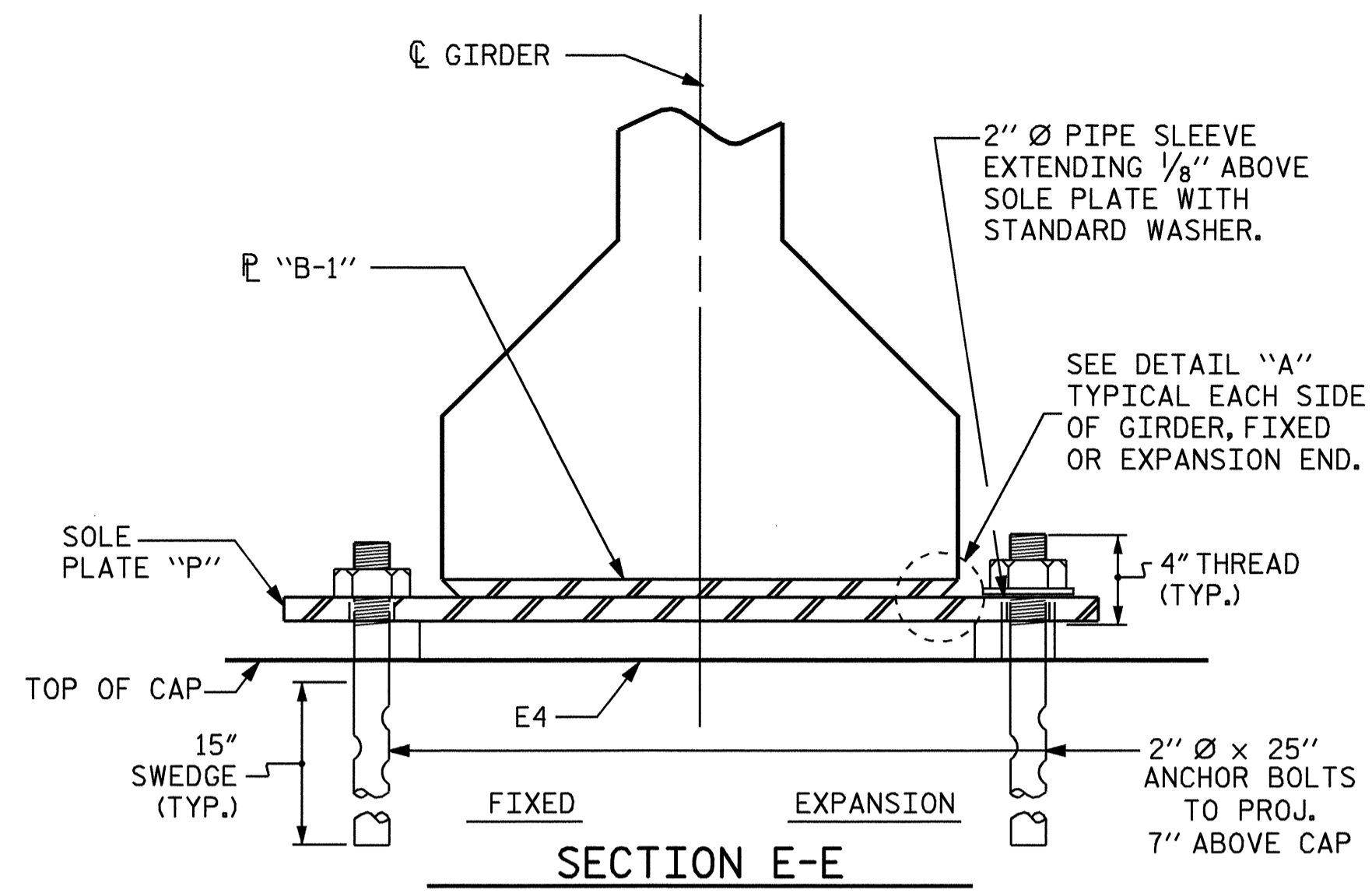
PRIOR TO WELDING, GRIND THE GALVANIZED SURFACE OF THE PORTION OF THE EMBEDDED PLATE AND SOLE PLATE THAT ARE TO BE WELDED. AFTER WELDING, DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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.

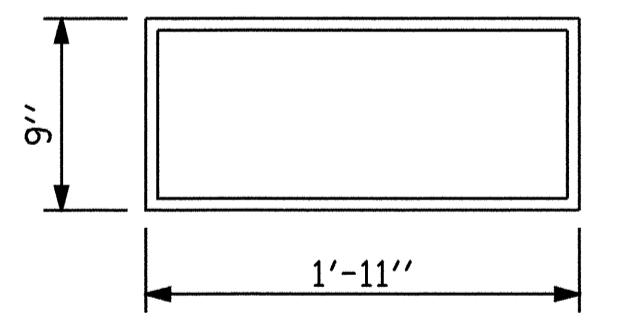
SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

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.

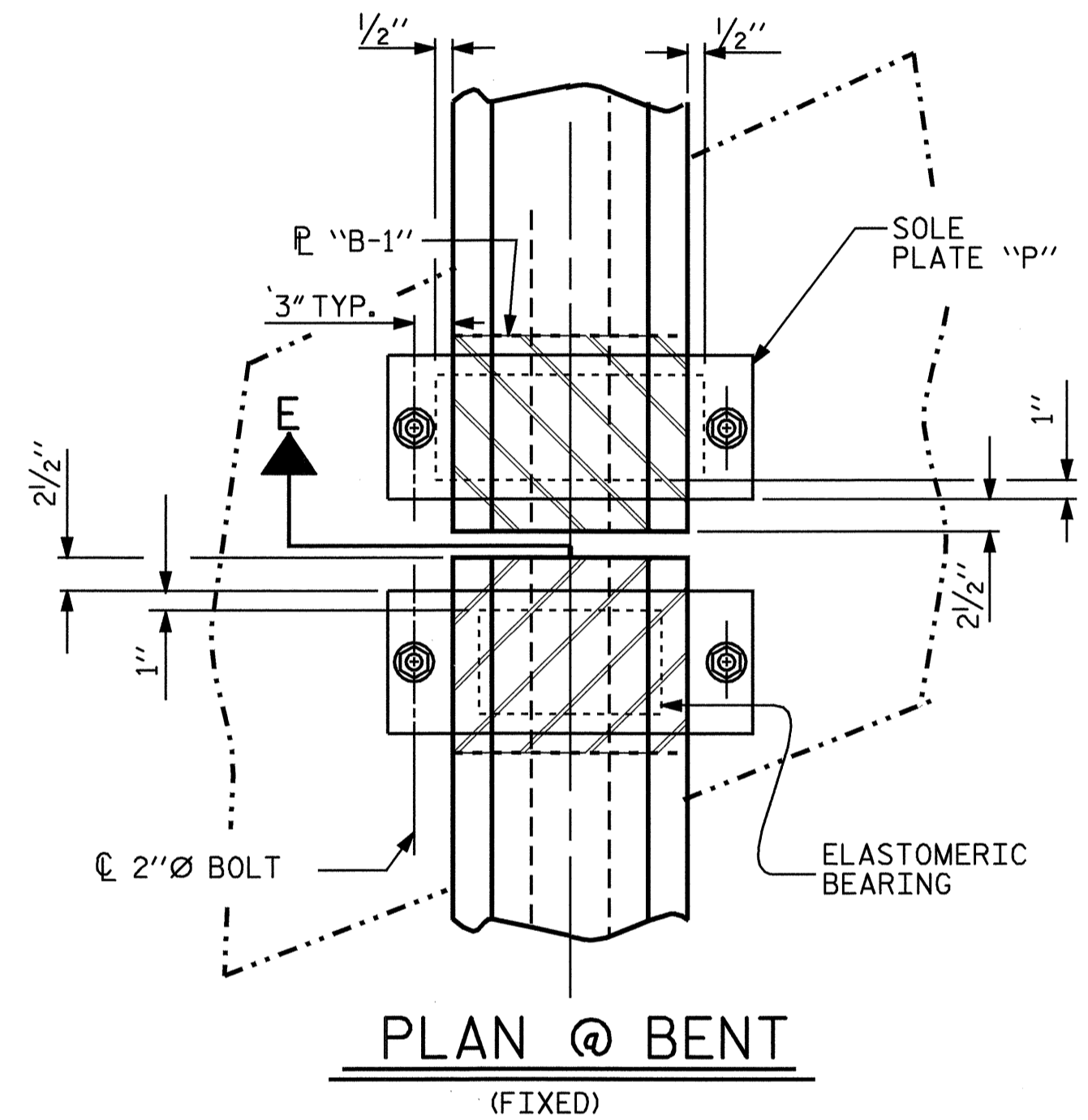
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.



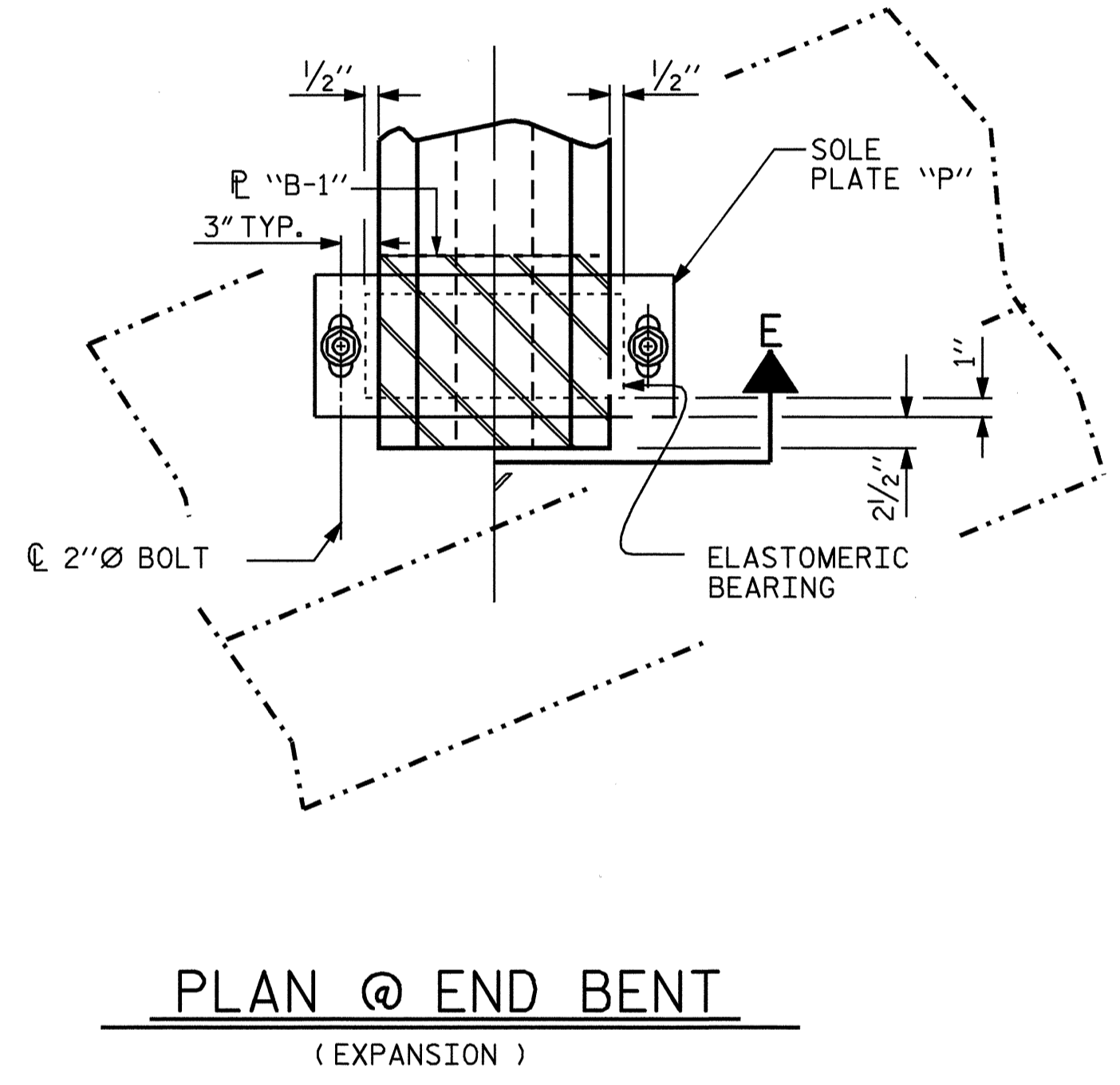
TYPICAL SECTION OF ELASTOMERIC BEARINGS



E4 (30 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE V

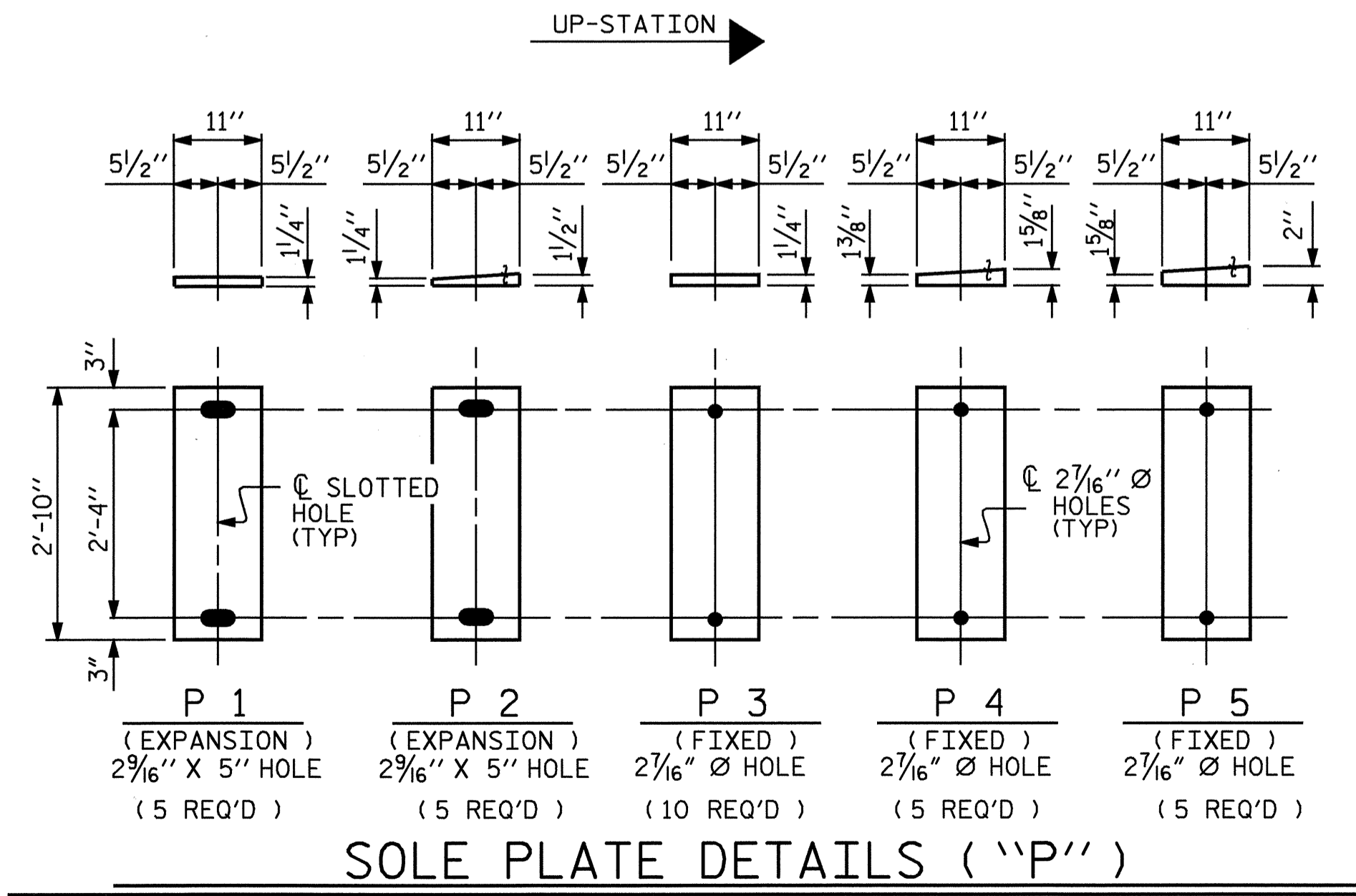


PLAN @ BENT
(FIXED)



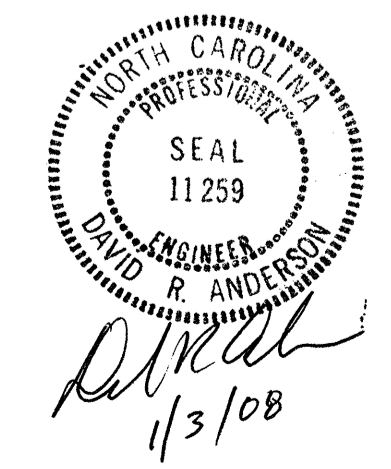
PLAN @ END BENT
(EXPANSION)

— LOAD RATINGS —	
TYPE V	MAX. D.L.+L.L.
	180 K



SOLE PLATE DETAILS ("P")

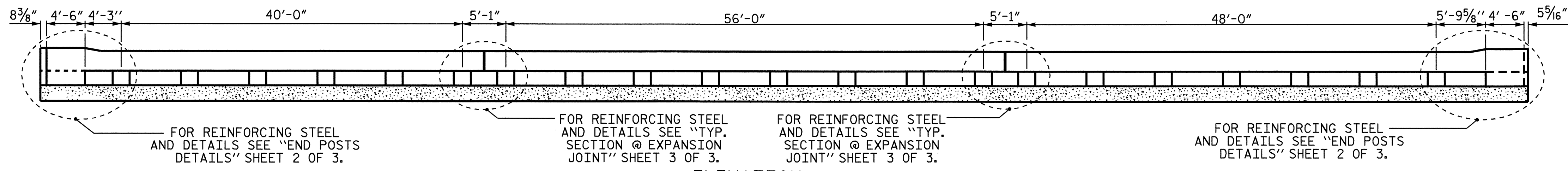
PROJECT NO. B-4129
GUILFORD COUNTY
STATION: 16+89.50 -L-



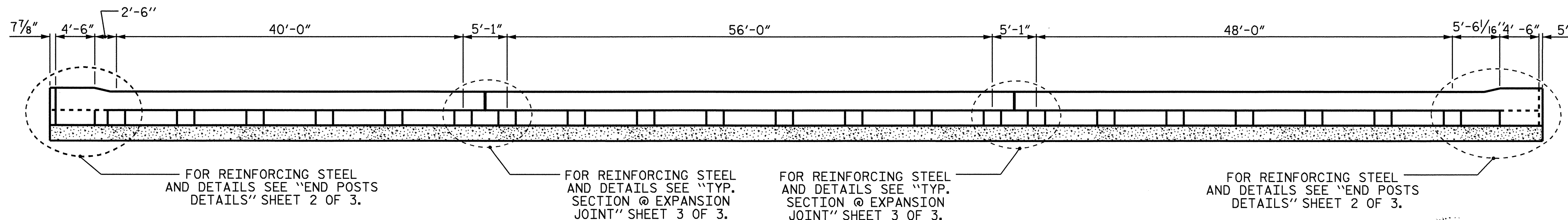
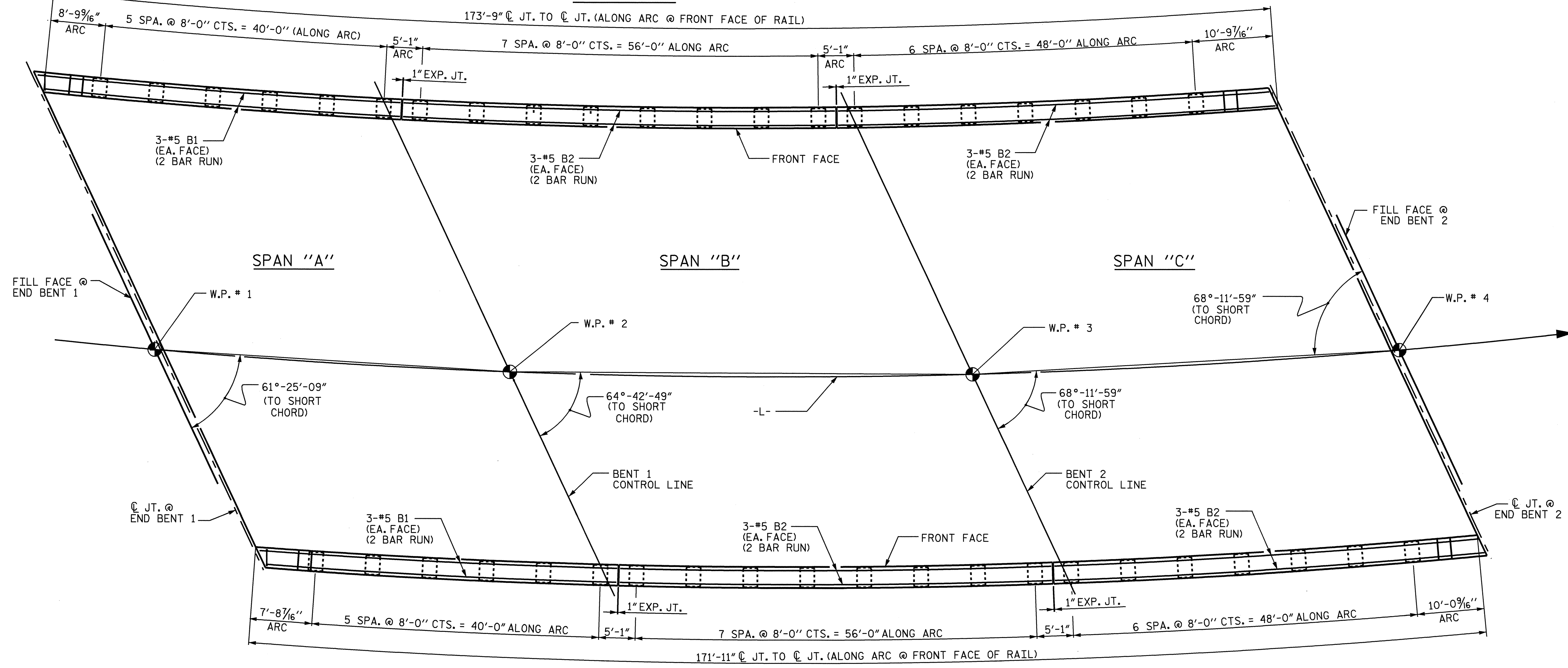
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
ELASTOMERIC BEARING
DETAILS
PRESTRESSED CONCRETE GIRDER
SUPERSTRUCTURE

ASSEMBLED BY: S. M. RASHIDI DATE: 5/07
CHECKED BY: A.S. CALLAWAY DATE: 7/30/07
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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-17
1			3			TOTAL SHEETS
2			4			38



ELEVATION



ELEVATION

CONCRETE POST & BEAM RAIL

PROJECT NO. B-4129
 GUILFORD COUNTY
 STATION: 16+89.50 -L-

SHEET 1 OF 3

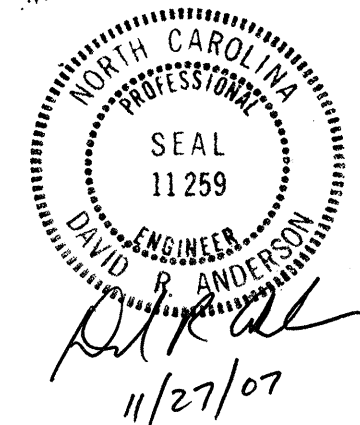
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

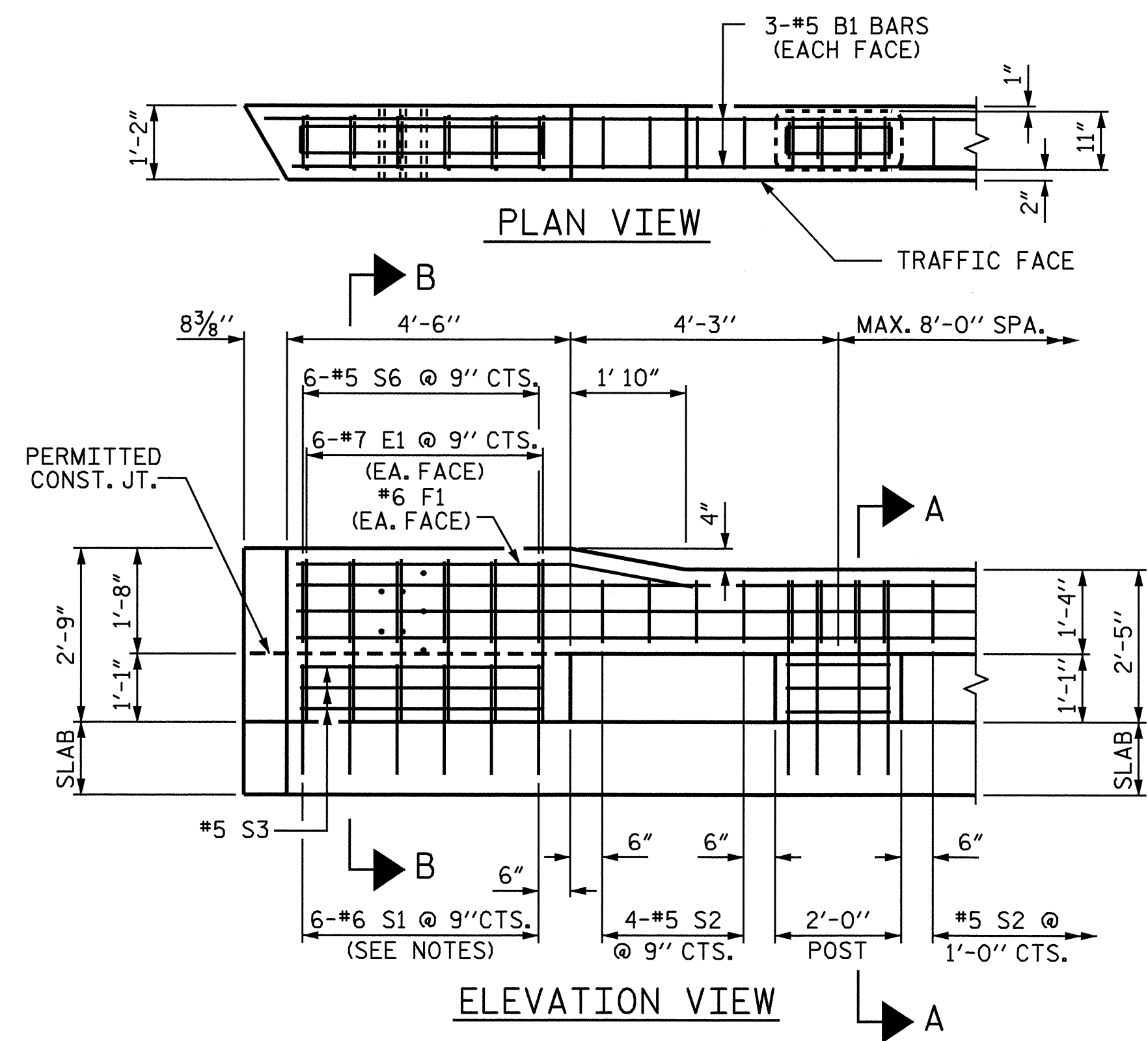
SUPERSTRUCTURE
 CONCRETE
 POST & BEAM RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-18
1			3			TOTAL SHEETS
2			4			38

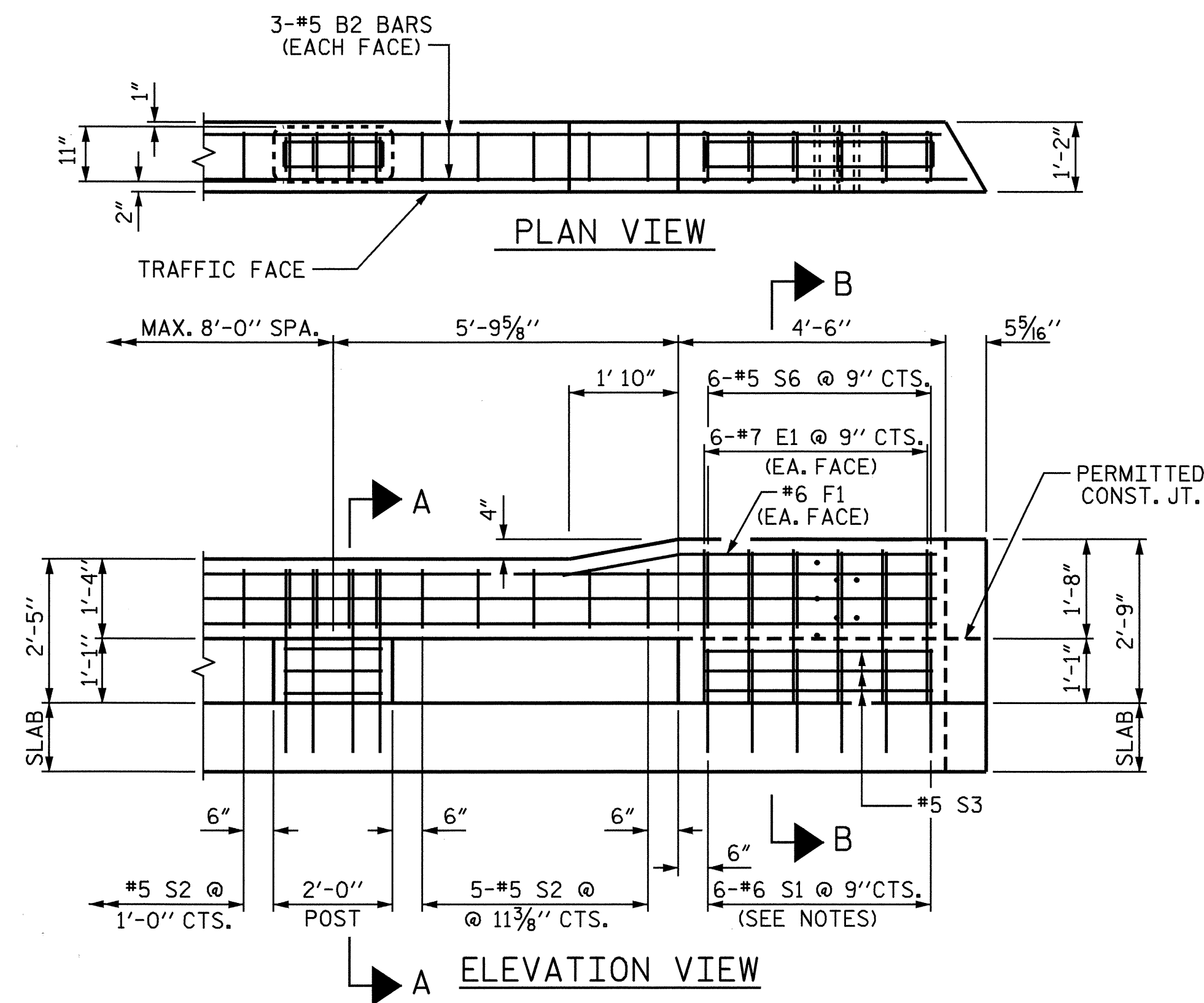
DRAWN BY: S.M. RASHIDI DATE: 6/07
 CHECKED BY: A.S. CALLAWAY DATE: 9/6/07

27-NOV-2007 09:53
 c:\structures\final plans\b4129.sd.01.cbr.dgn
 arashidi

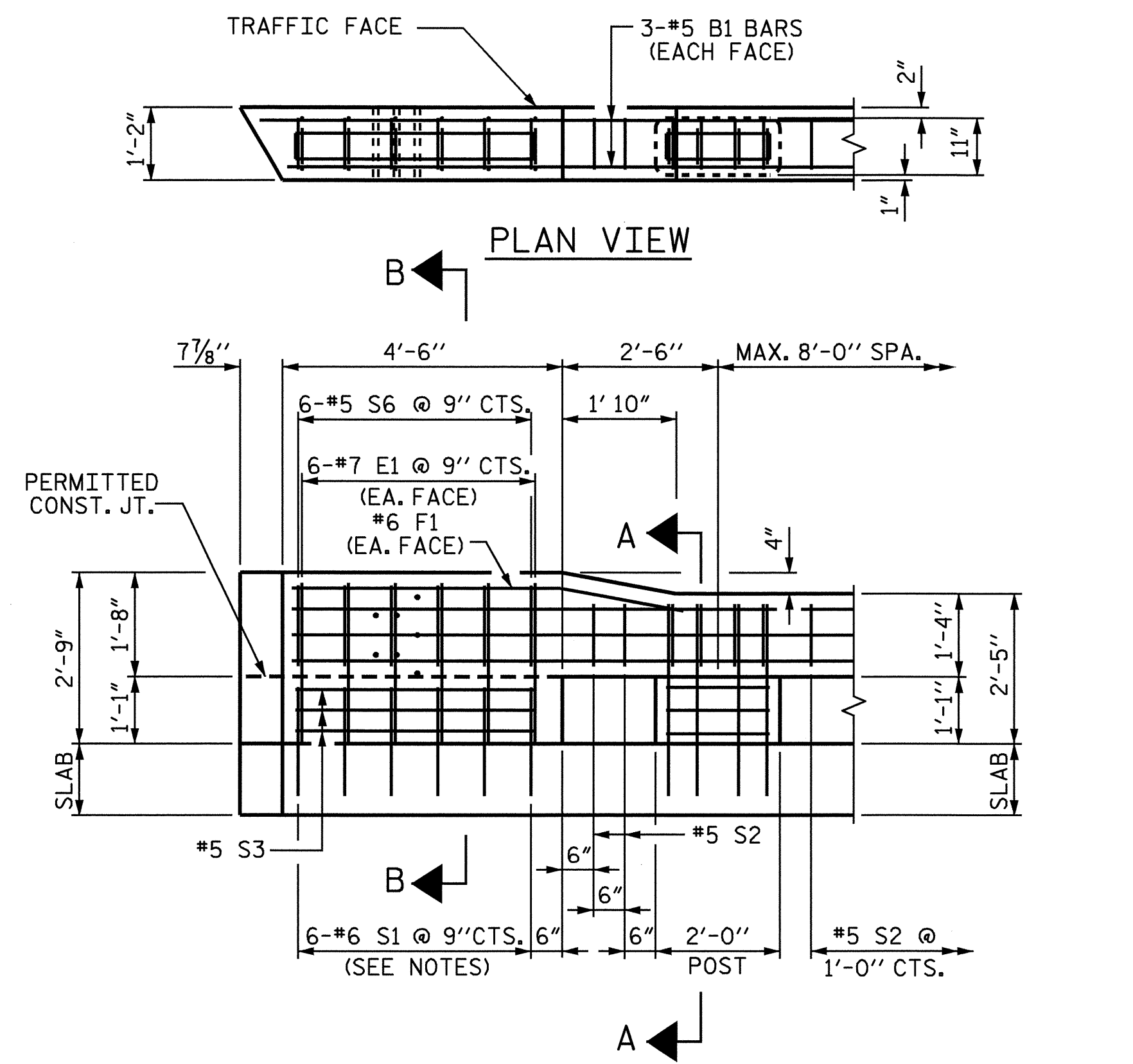




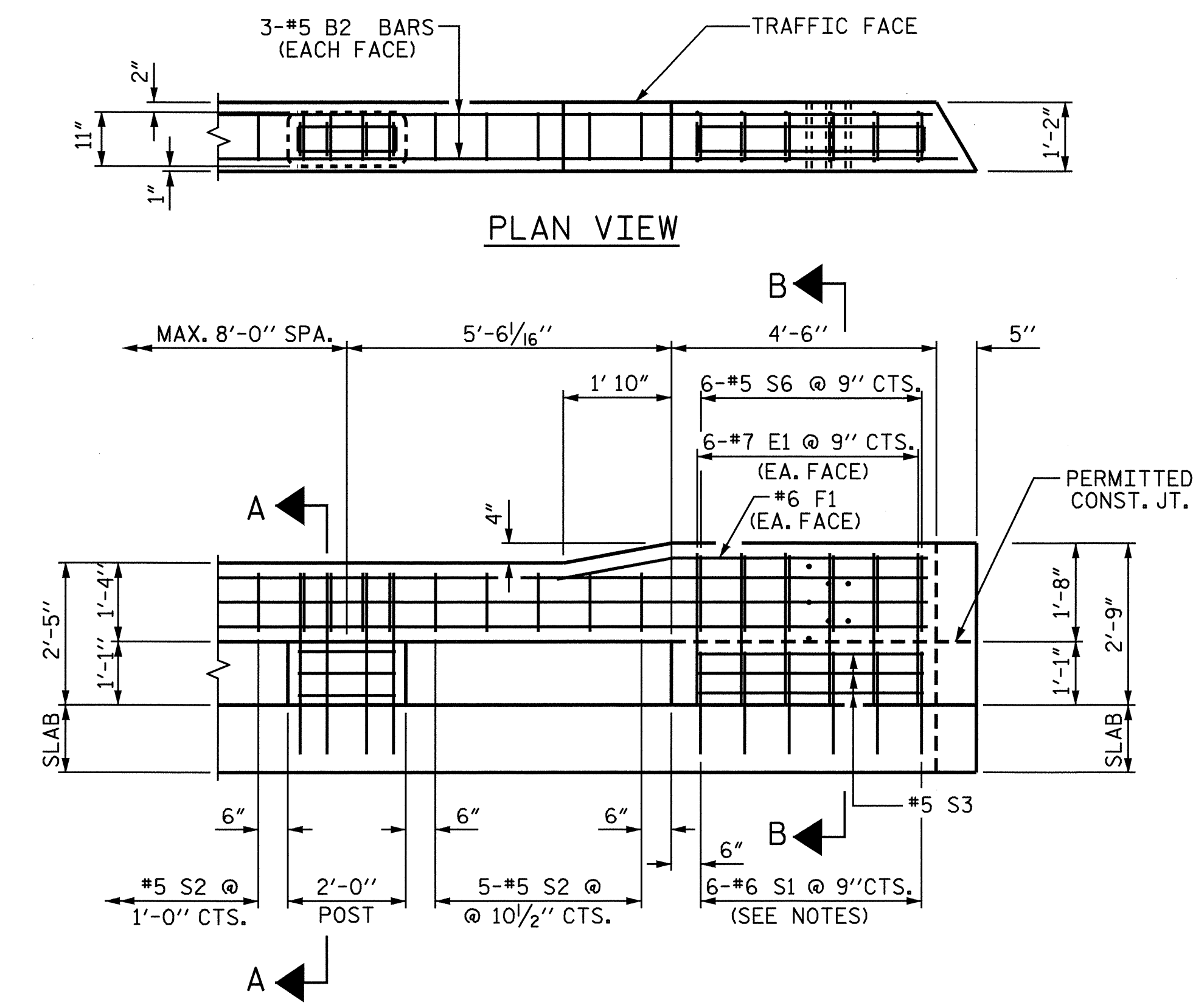
LEFT SIDE - END BENT 1



LEFT SIDE - END BENT 2



RIGHT SIDE - END BENT 1



RIGHT SIDE - END BENT 2

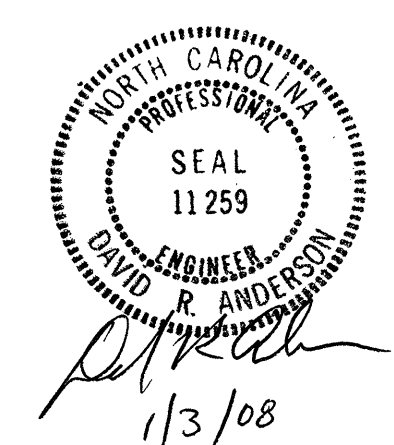
END POSTS DETAILS

NOTES

ALL REINFORCING STEEL IN CONCRETE RAIL SHALL BE EPOXY COATED.
 FOR LOCATION OF GUARDRAIL ATTACHMENT AND NOTES, SEE "GUARDRAIL ANCHORAGE DETAILS FOR CONCRETE POST & BEAM RAIL" SHEET.
 SEE SHEET 3 OF 3 FOR ADDITIONAL DETAILS AND BILL OF MATERIAL.
 THE #6 S1 BARS SHALL BE INSTALLED, WHERE NOTED ON THE PLANS, USING AN ADHESIVE ANCHORING SYSTEM AFTER SAWING THE JOINT. THE YIELD LOAD FOR THE #6 S1 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

PROJECT NO. B-4129
 GUILFORD COUNTY
 STATION: 16+89.50 -L-

SHEET 2 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 CONCRETE
 POST & BEAM RAIL
 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-19
1			3			TOTAL SHEETS
2			4			38

DRAWN BY: S.M. RASHIDI DATE: 6/07
 CHECKED BY: A.S. CALLAWAY DATE: 9/6/07

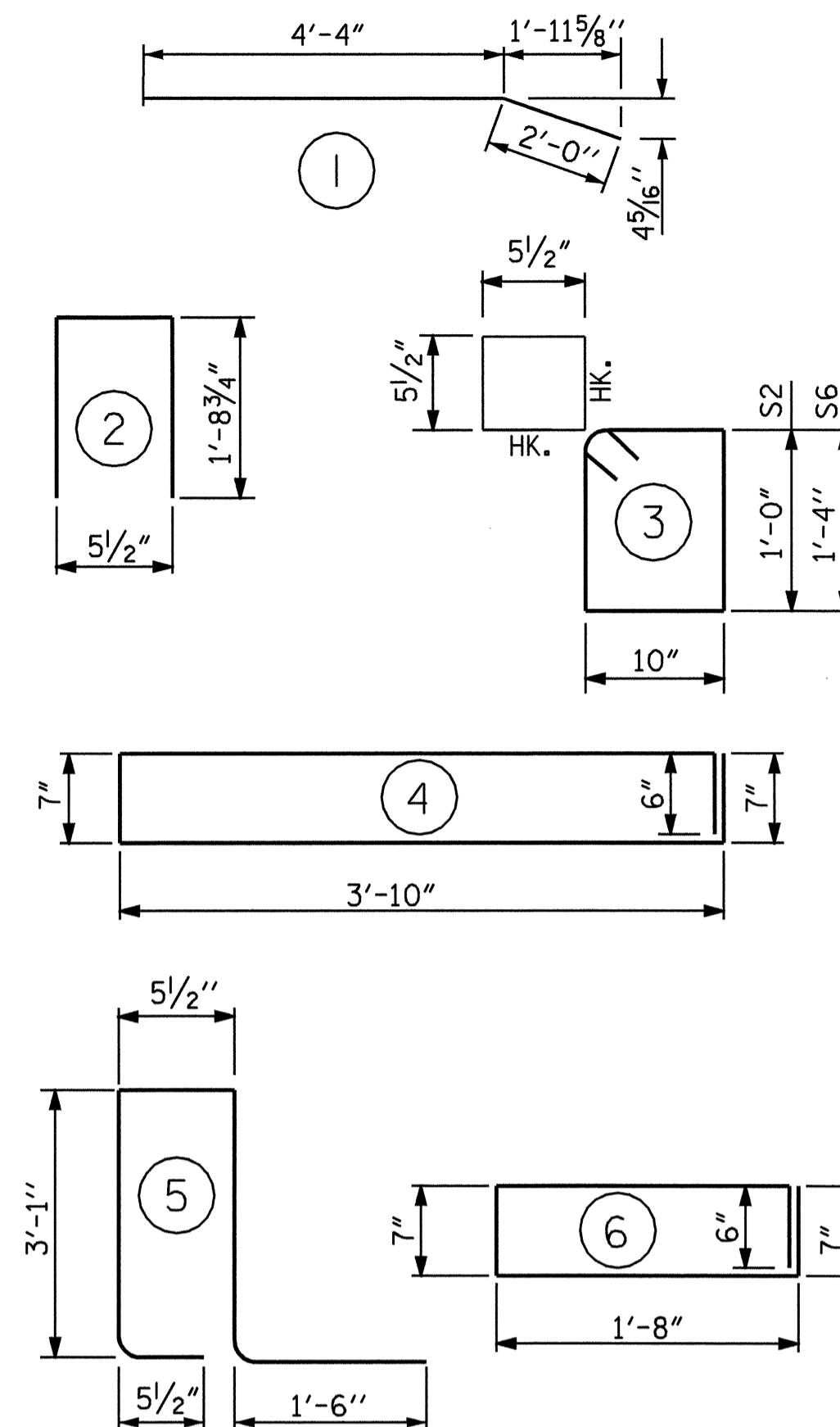
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 etoclear

BILL OF MATERIAL FOR CONCRETE POST & BEAM RAIL

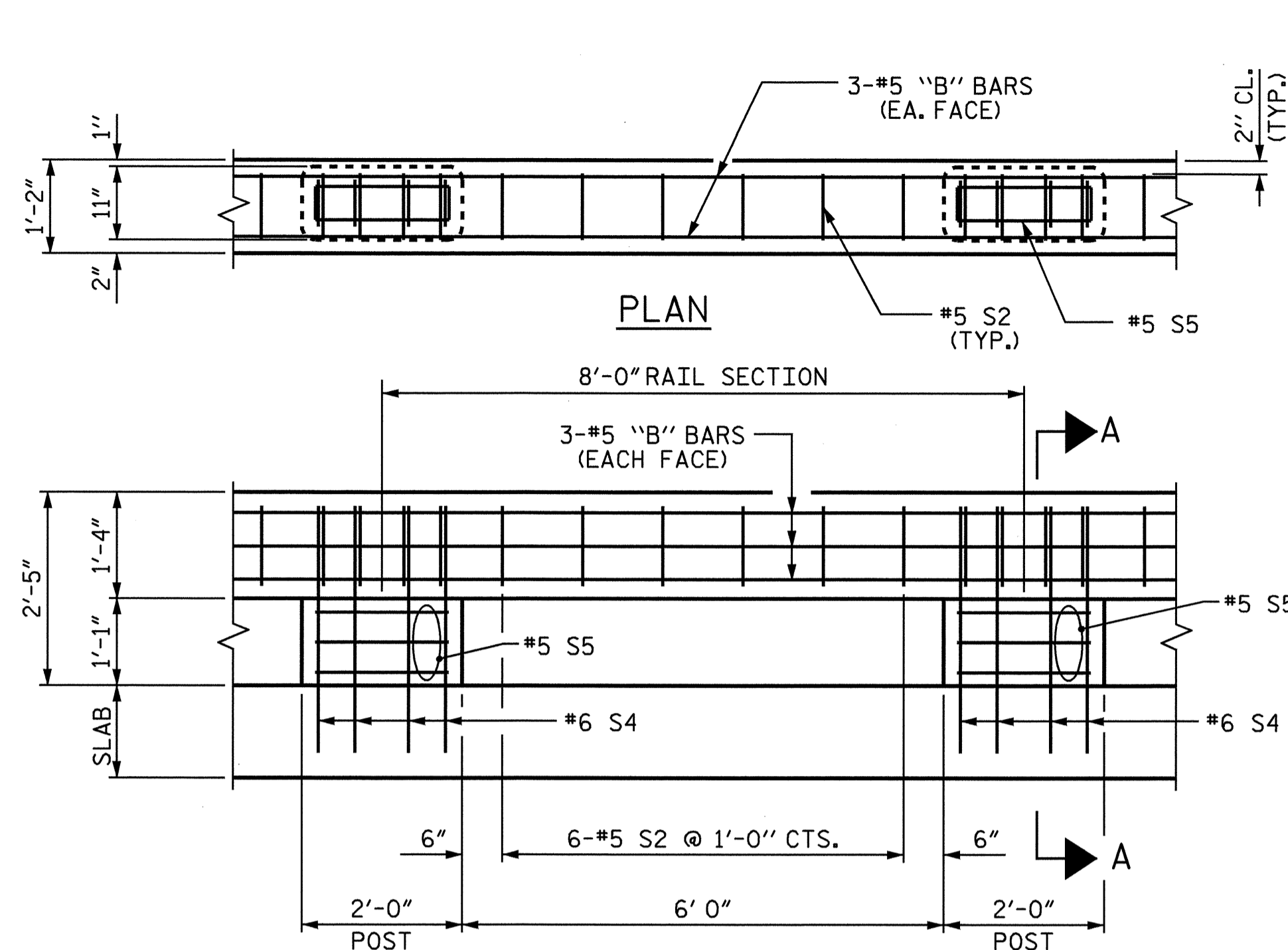
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	24	5	STR	27'-3"	682
*B2	48	5	STR	31'-11"	1598
*E1	48	7	STR	2'-7"	253
*F1	8	6	1	6'-4"	76
*S1	24	6	2	3'-11"	141
*S2	416	5	3	4'-7"	1989
*S3	12	5	4	9'-4"	117
*S4	168	6	5	8'-7"	2166
*S5	126	5	6	5'-0"	657
*S6	24	5	3	5'-3"	131

*EPOXY COATED REINFORCING STEEL LBS. 7,810
 CLASS AA CONCRETE CU. YDS. 22.2
 CONCRETE POST & BEAM RAIL LIN. FT. 345'-8"

BAR TYPES

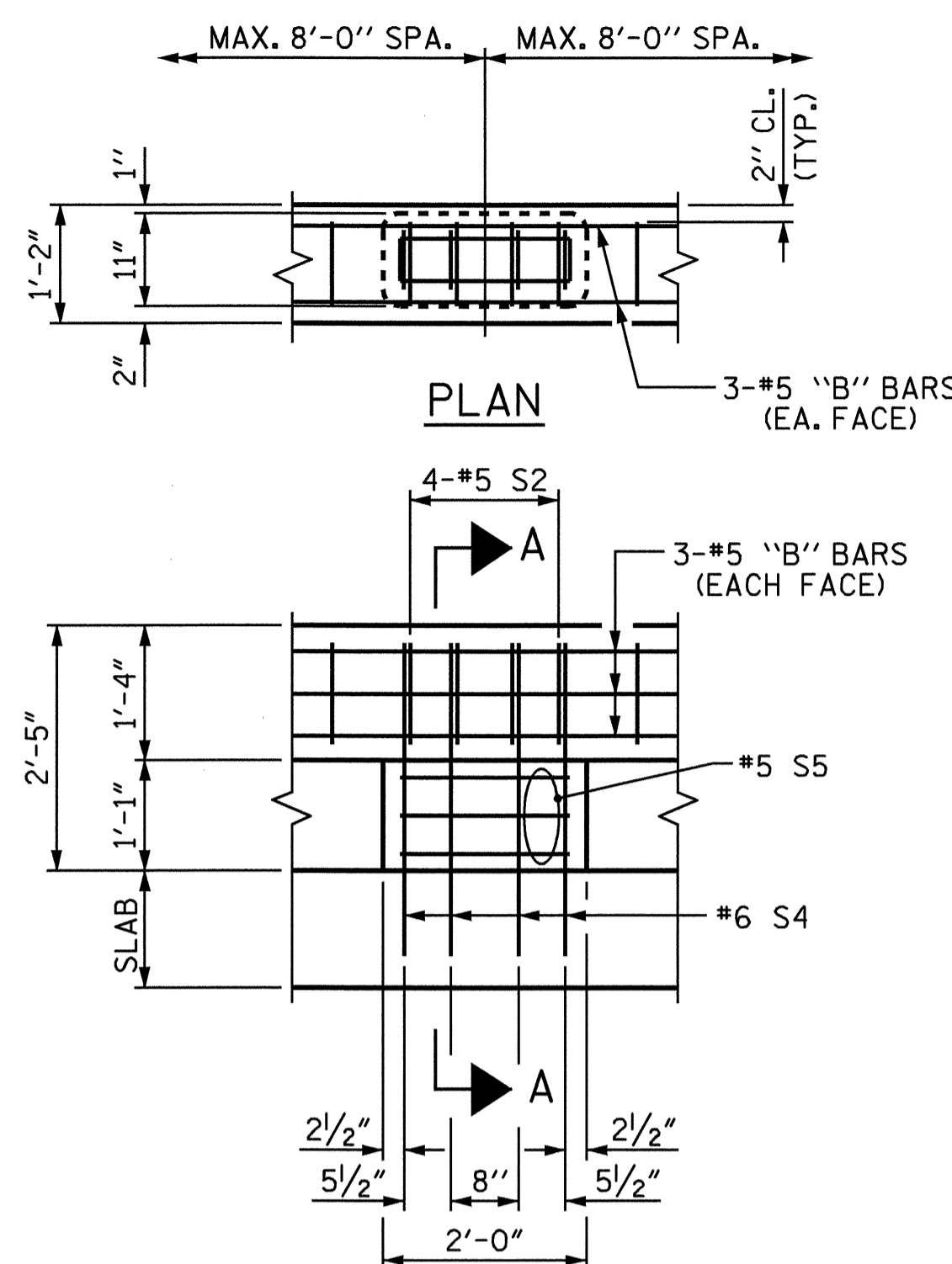


ALL BAR DIMENSIONS ARE OUT TO OUT.



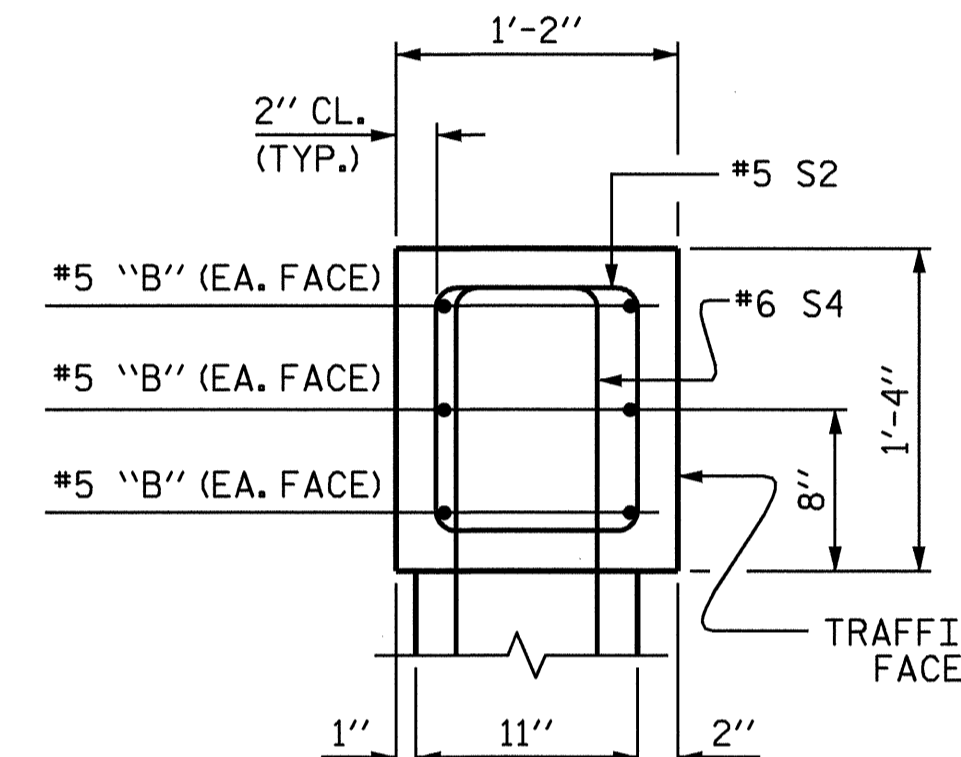
ELEVATION

TYP. 8'-0" RAIL SECTION

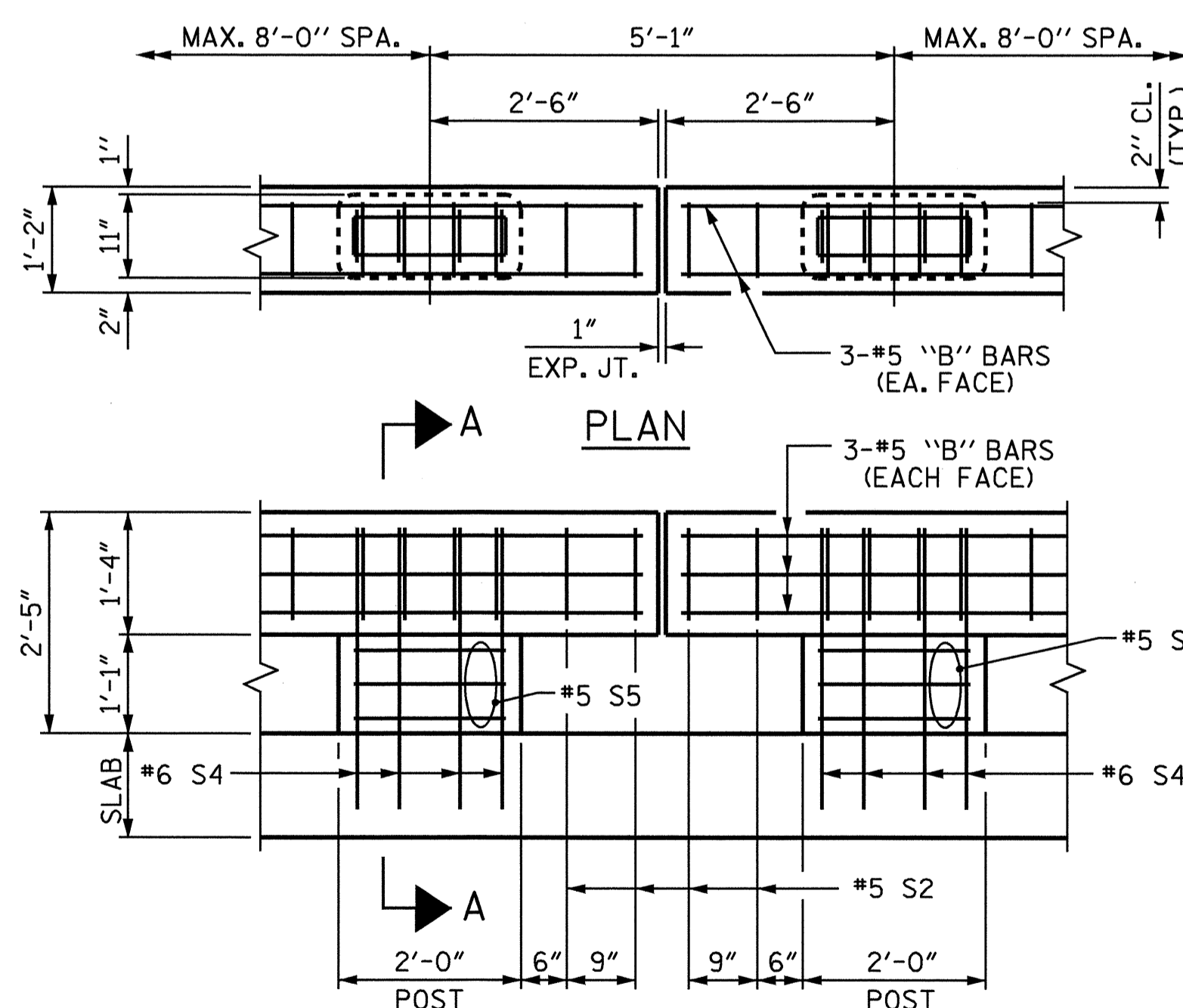


ELEVATION

TYP. 2'-0" POST

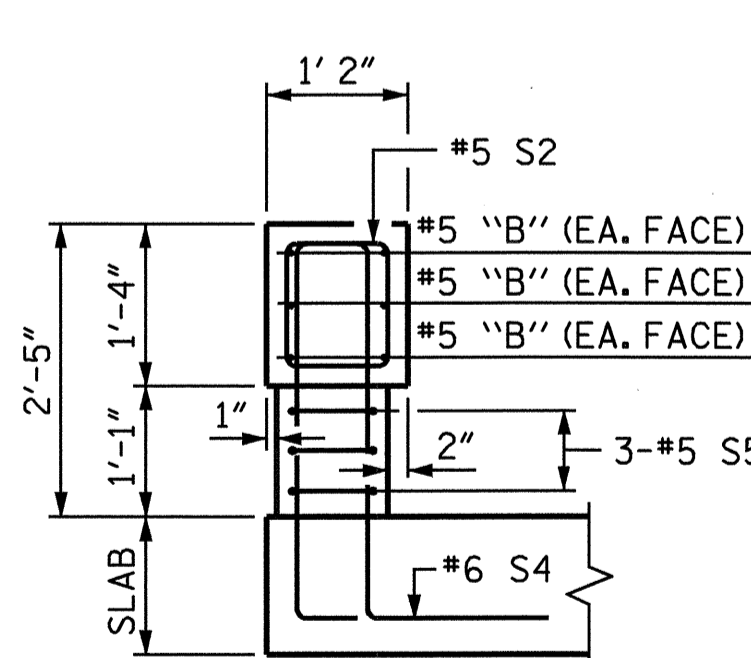


RAIL SECTION

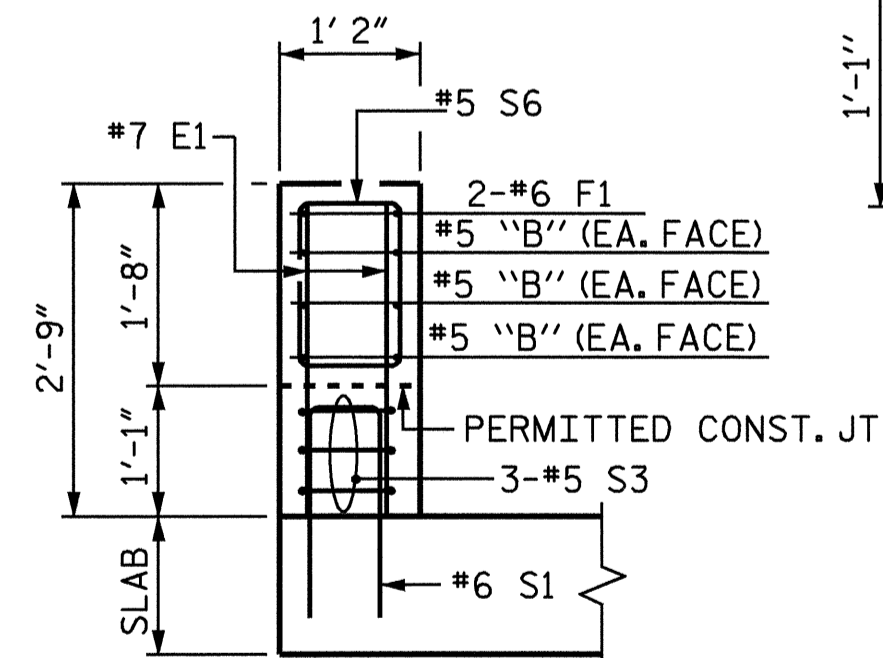


ELEVATION

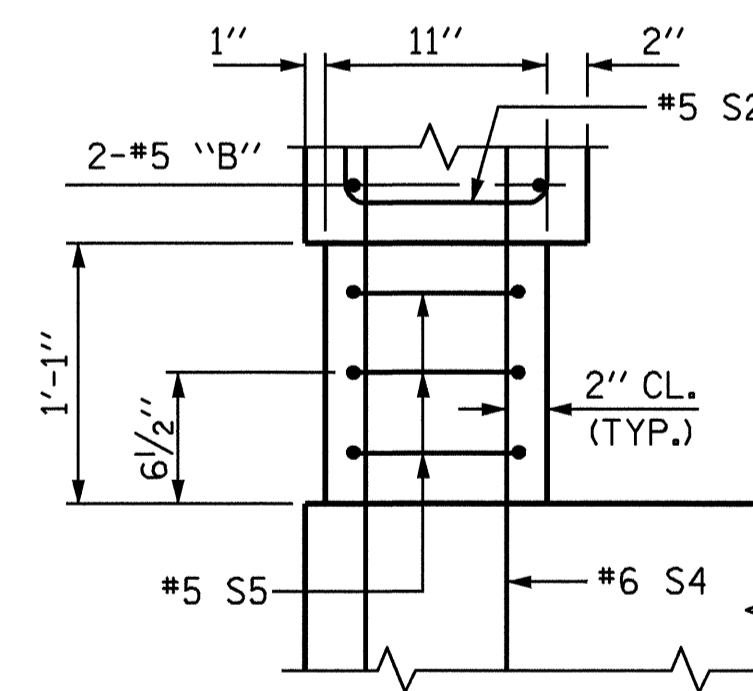
TYP. SECTION @ EXPANSION JOINT



SECTION A-A



SECTION B-B



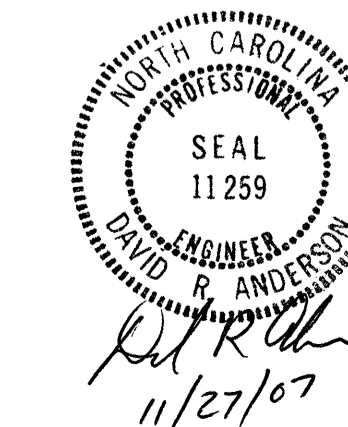
POST SECTION

PROJECT NO. B-4129
 GUILFORD COUNTY
 STATION: 16+89.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 CONCRETE
 POST & BEAM RAIL
 DETAILS



DRAWN BY: S.M. RASHIDI DATE: 5/07
 CHECKED BY: A.S. CALLAWAY DATE: 9/6/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-20
1			3			TOTAL SHEETS
2			4			38

NOTES

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

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

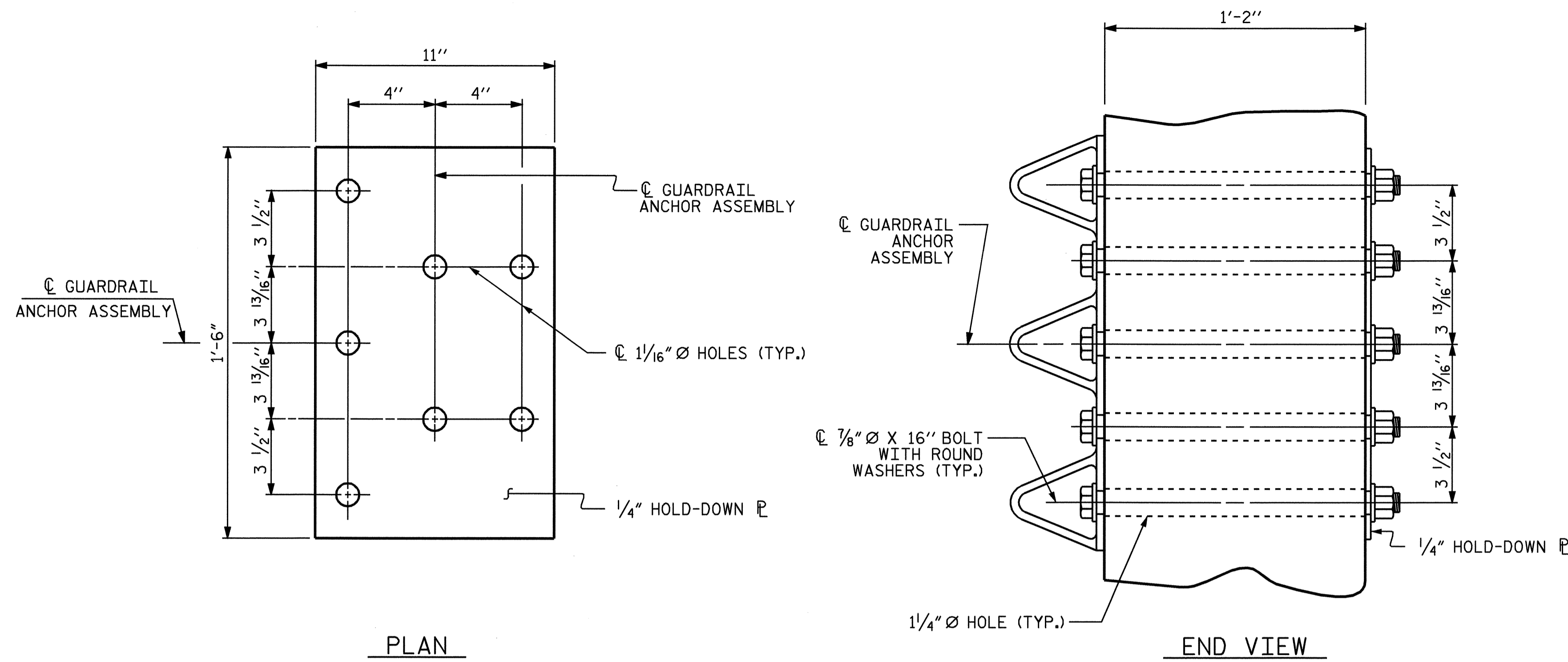
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS.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

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

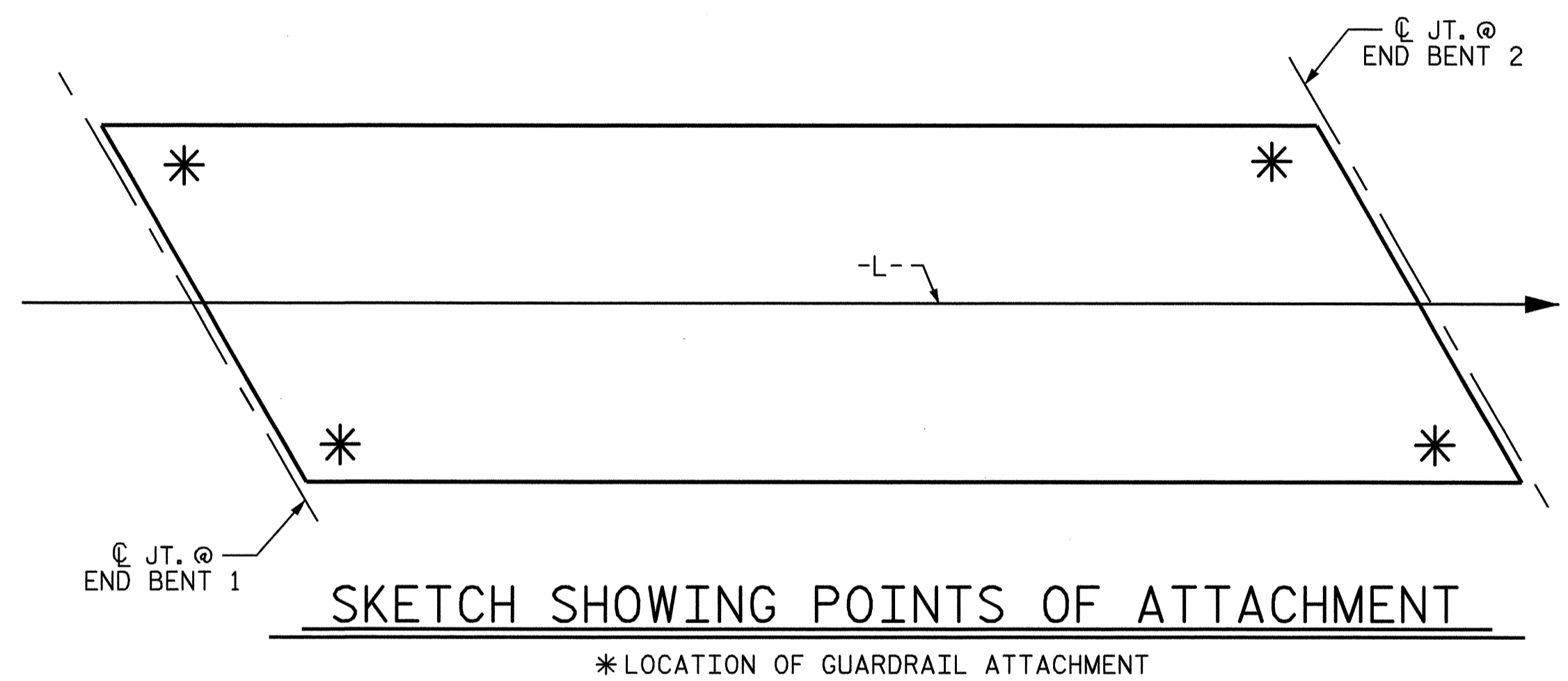
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

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

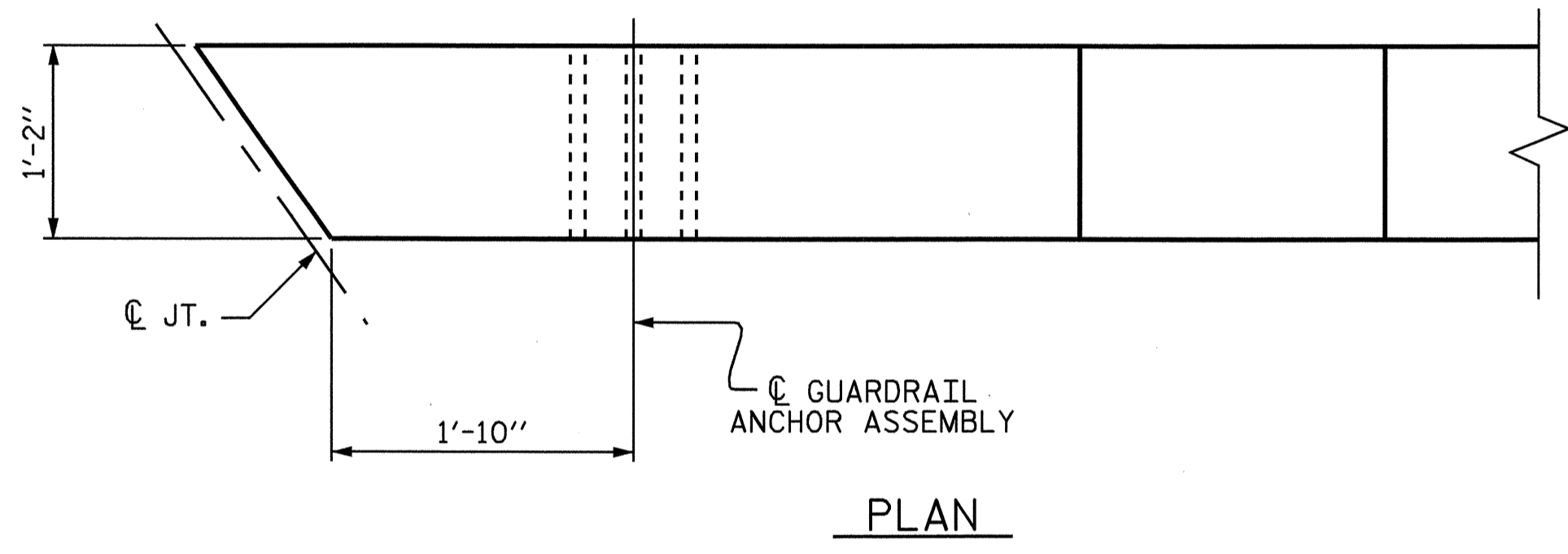


GUARDRAIL ANCHOR ASSEMBLY DETAILS

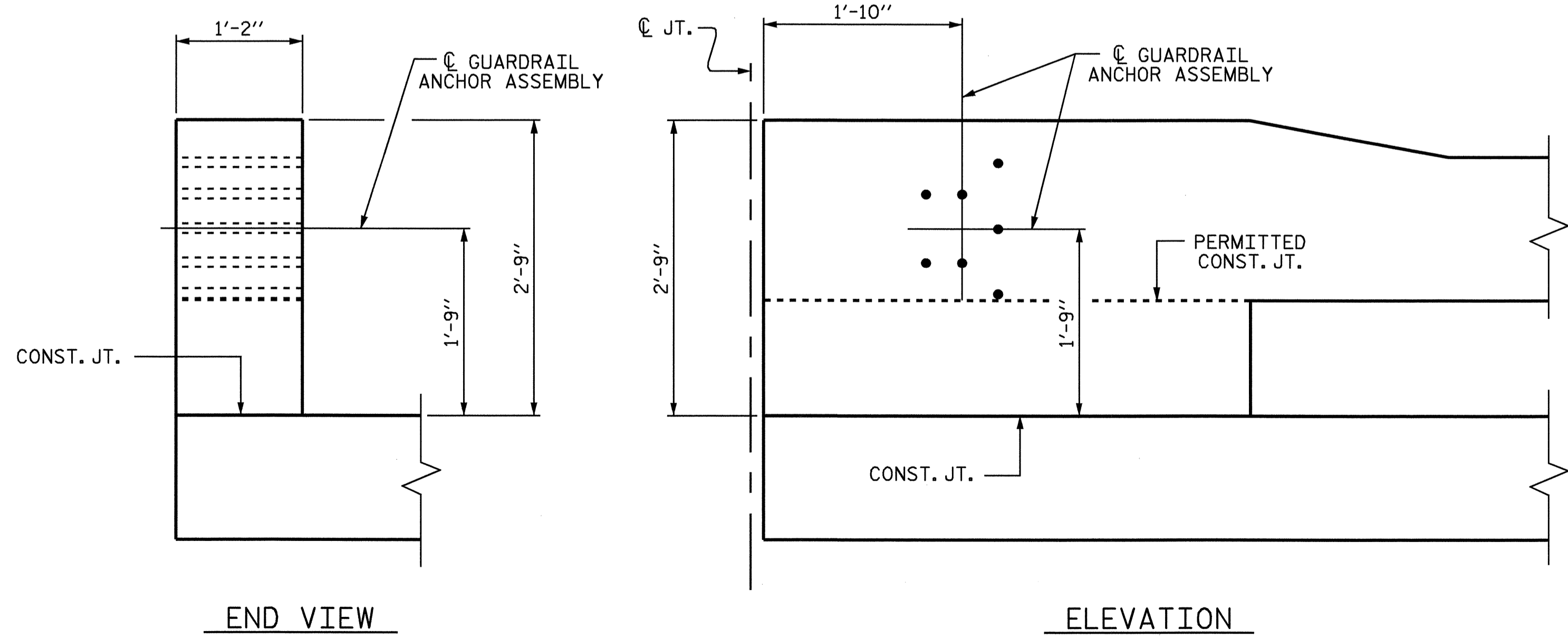


SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



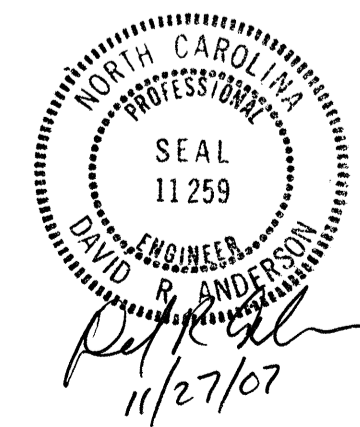
PLAN



ELEVATION

LOCATION OF GUARDRAIL ANCHOR AT END POST

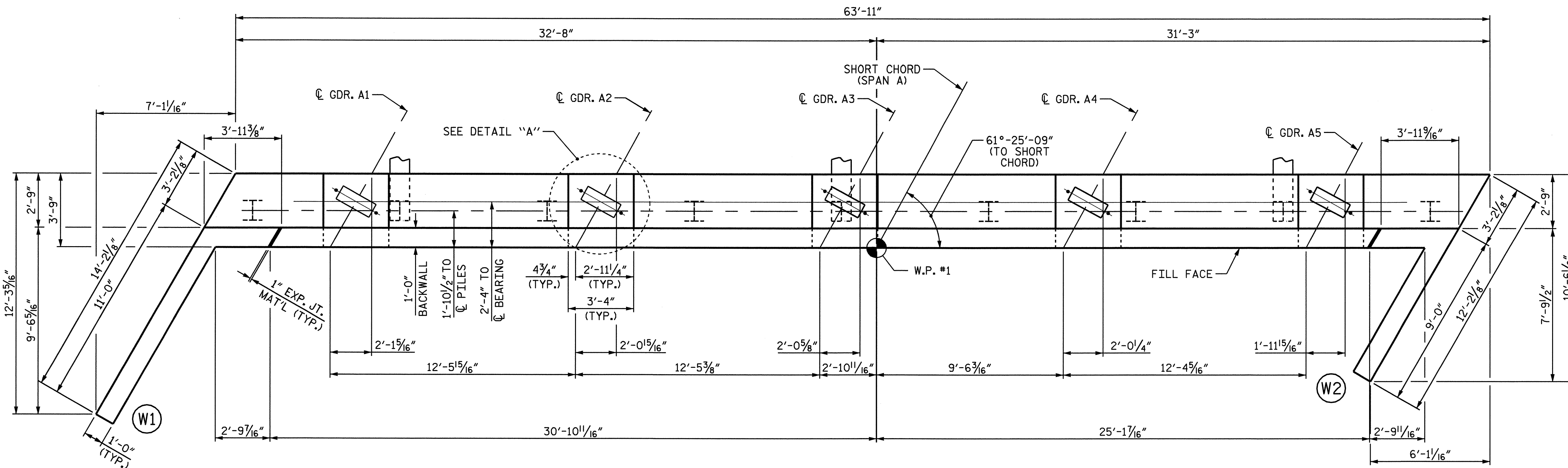
PROJECT NO. B-4129
 GUILFORD COUNTY
 STATION: 16+89.50 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GUARDRAIL ANCHORAGE
 DETAILS
 FOR CONCRETE
 POST & BEAM RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-21
1			3			TOTALS
2			4			38

DRAWN BY : S.M. RASHIDI DATE : 6/07
 CHECKED BY : A.S. CALLAWAY DATE : 9/5/07



NOTES:

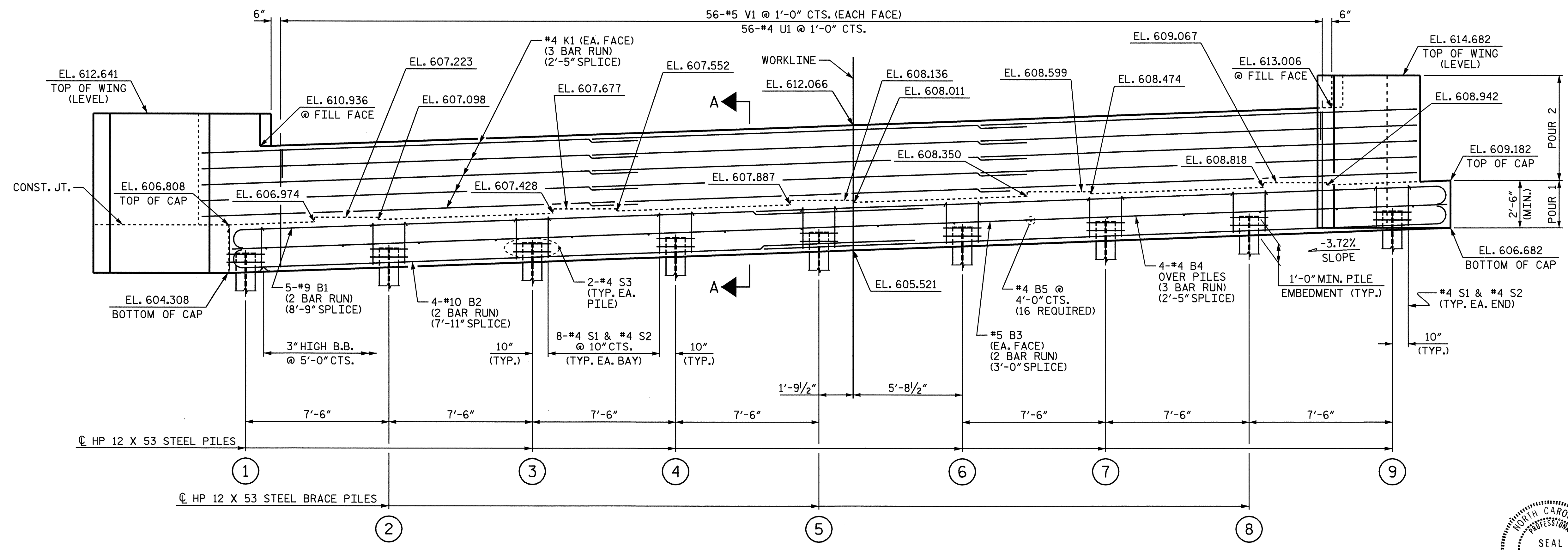
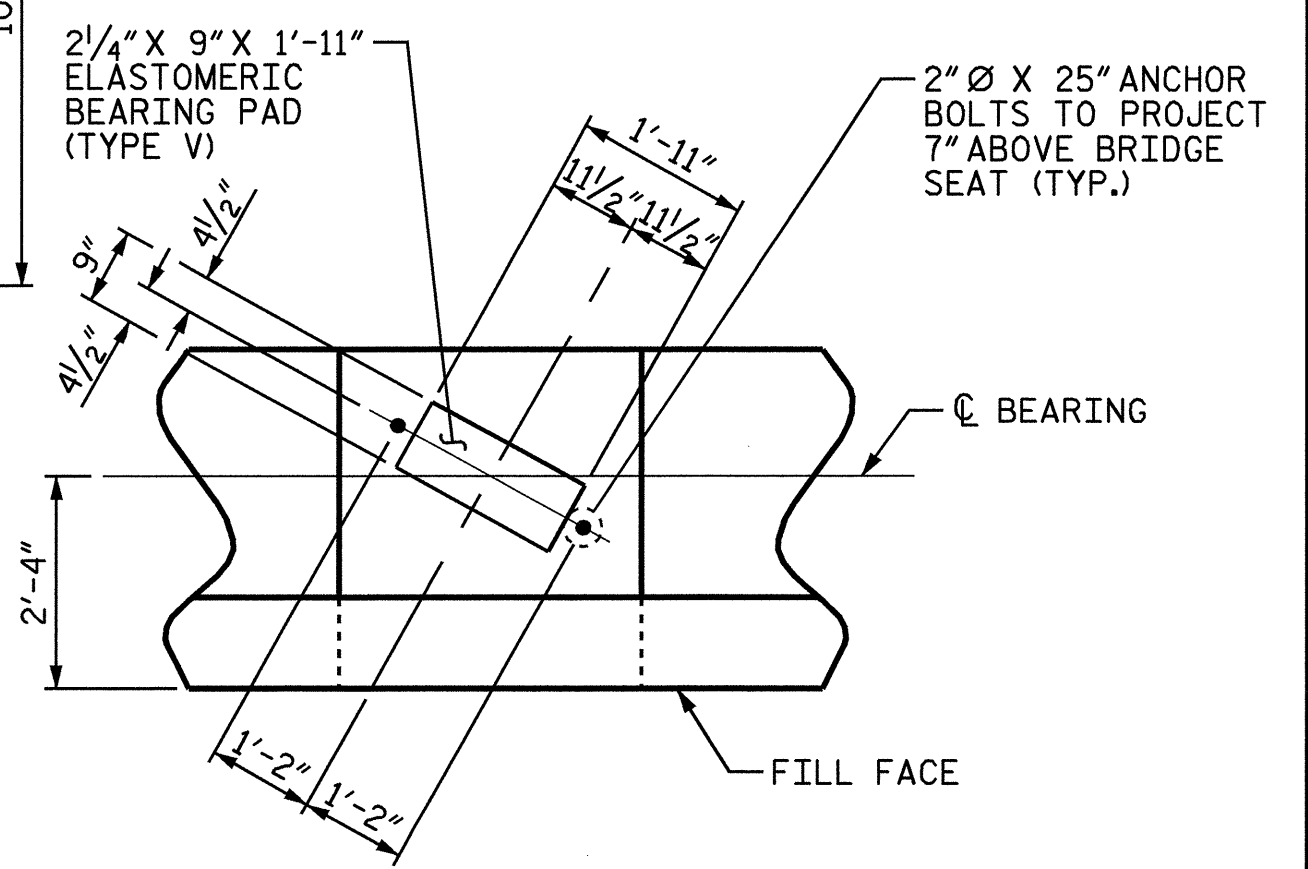
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

#5 V1 BARS IN BACKWALL SHALL BE PLACED 2" CLEAR FROM TOP OF BACKWALL.



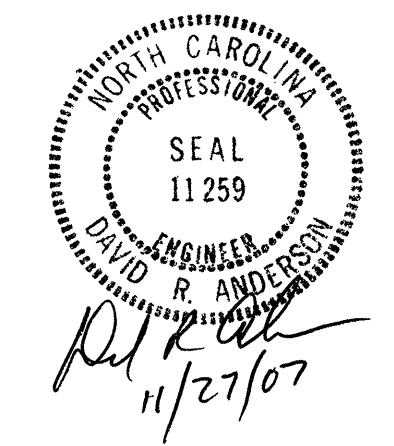
TOP OF PILE ELEVATIONS	
PILE NO.	ELEVATION
1	605.359
2	605.638
3	605.916
4	606.195
5	606.473
6	606.752
7	607.031
8	607.309
9	607.588

PROJECT NO. B-4129
GUILFORD COUNTY
 STATION: 16+89.50 -L-

SHEET 1 OF 3

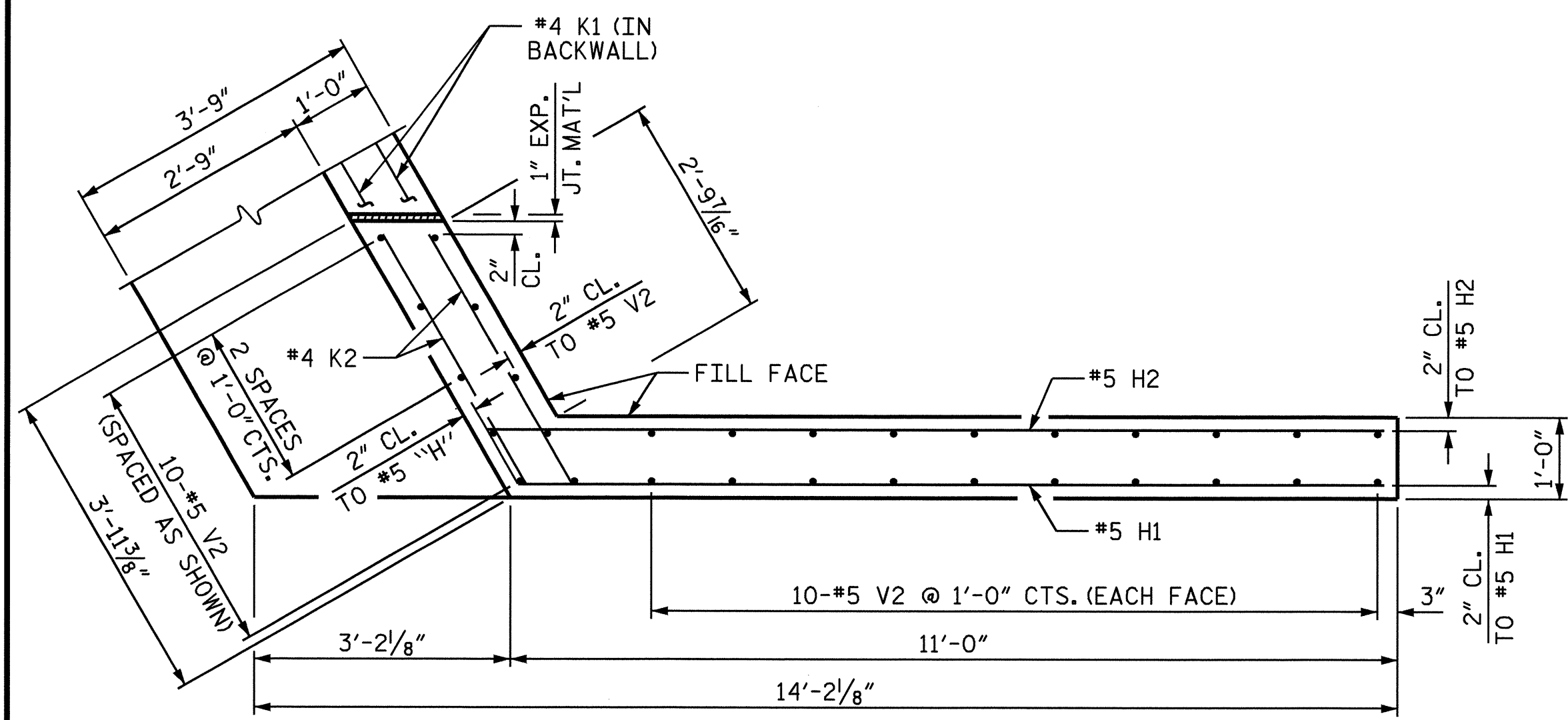
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1

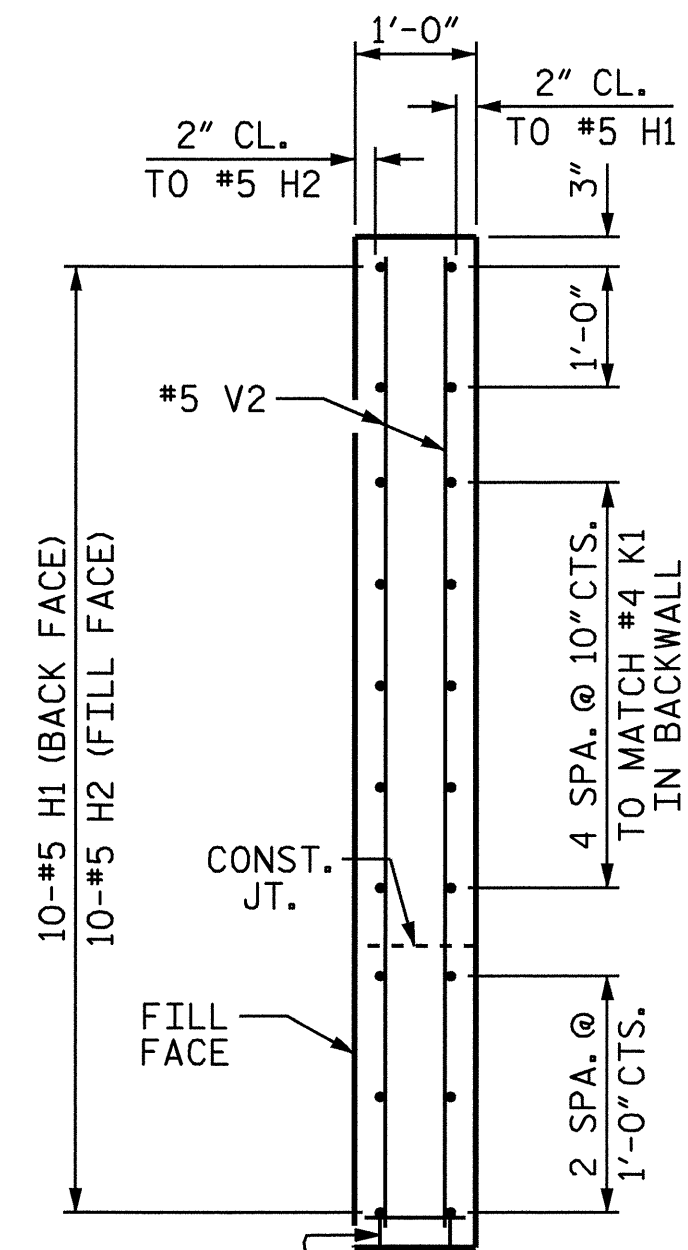


DRAWN BY: E.C. LOCKLEAR DATE: 1-19-07
 CHECKED BY: J.A. TILLMAN DATE: 2-28-07

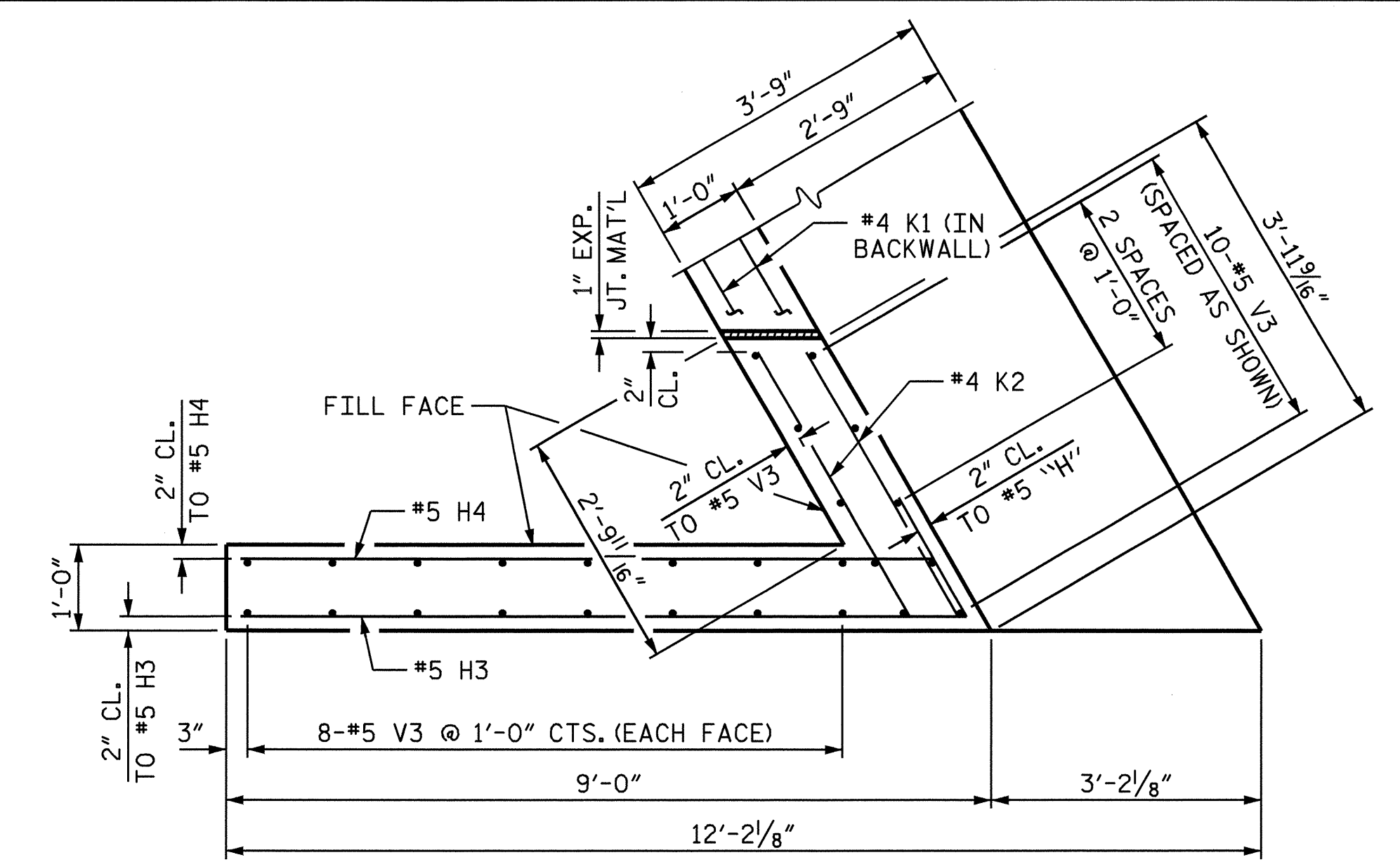
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			38



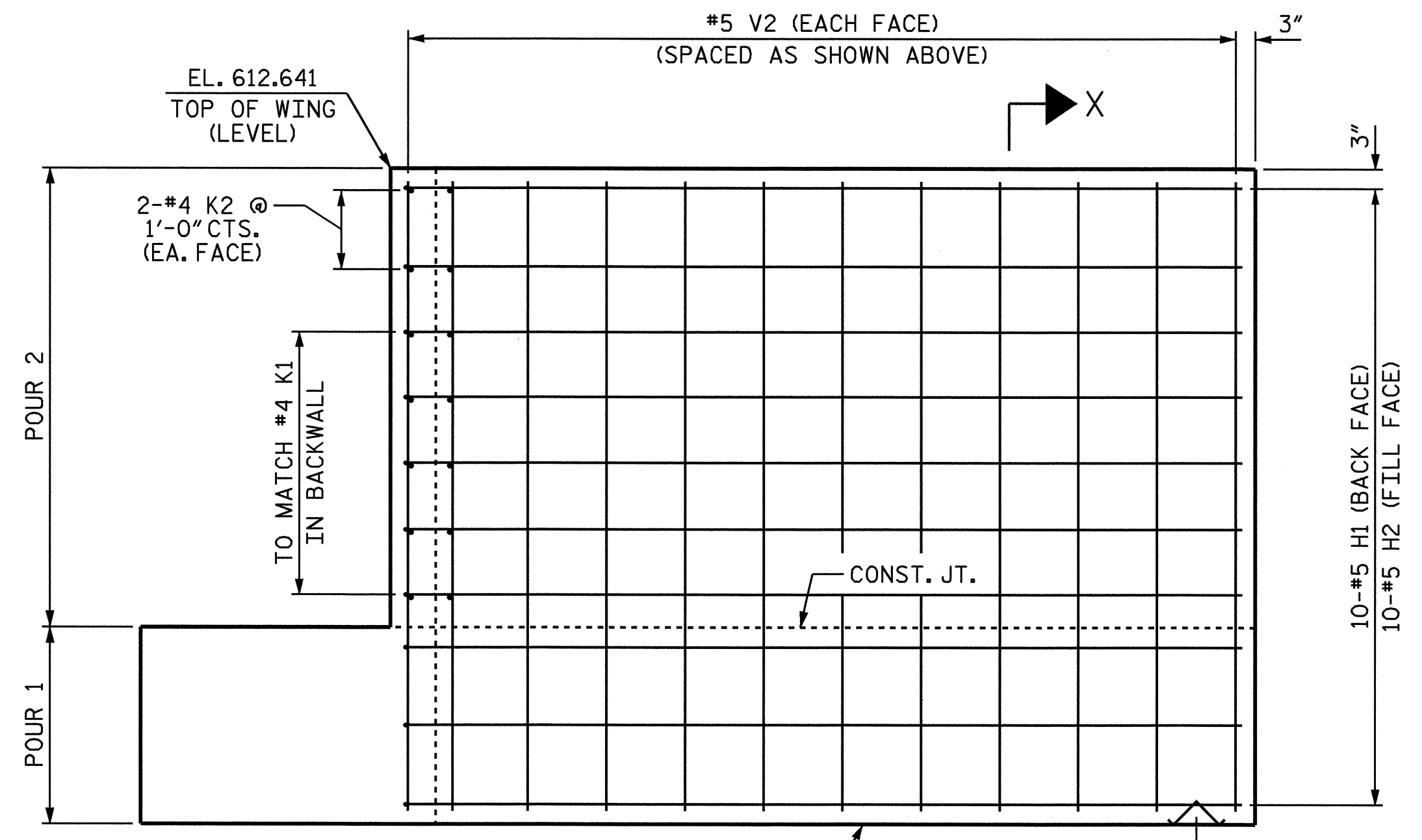
PLAN OF WING (W1)



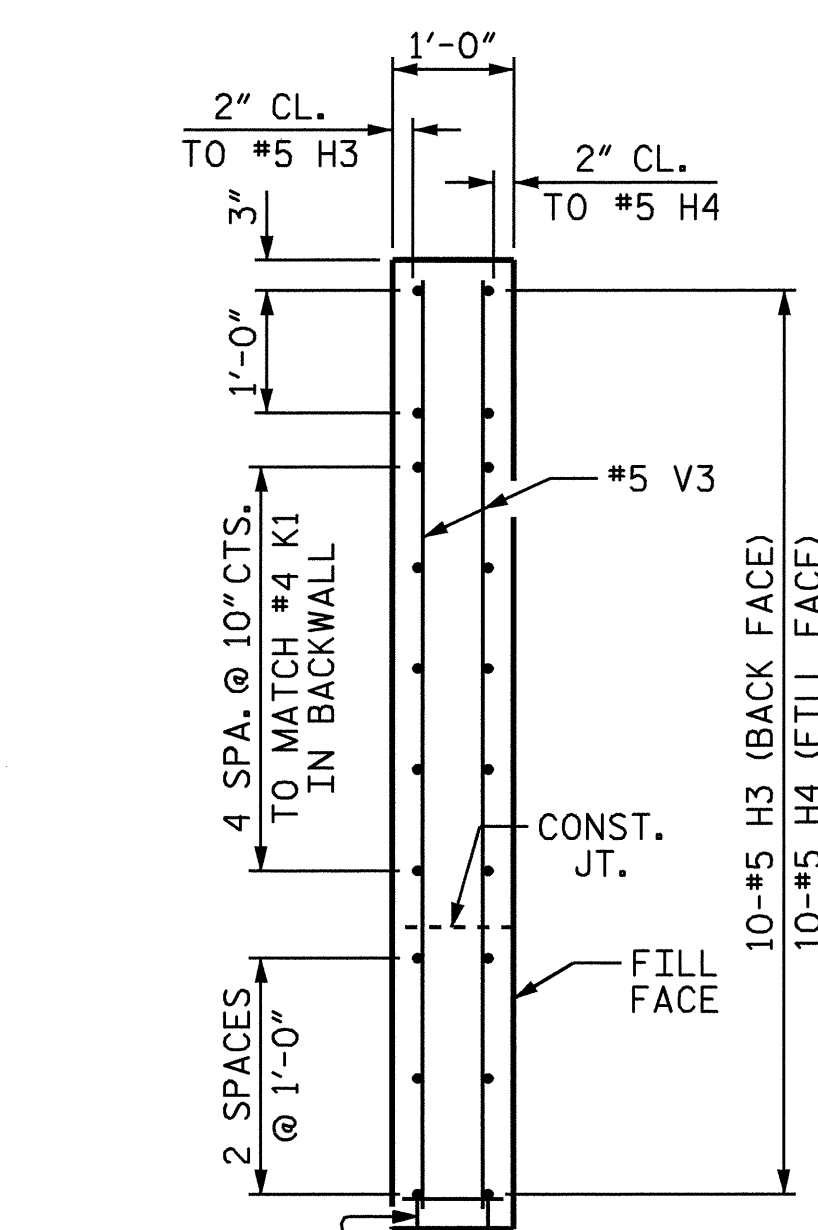
SECTION X-X



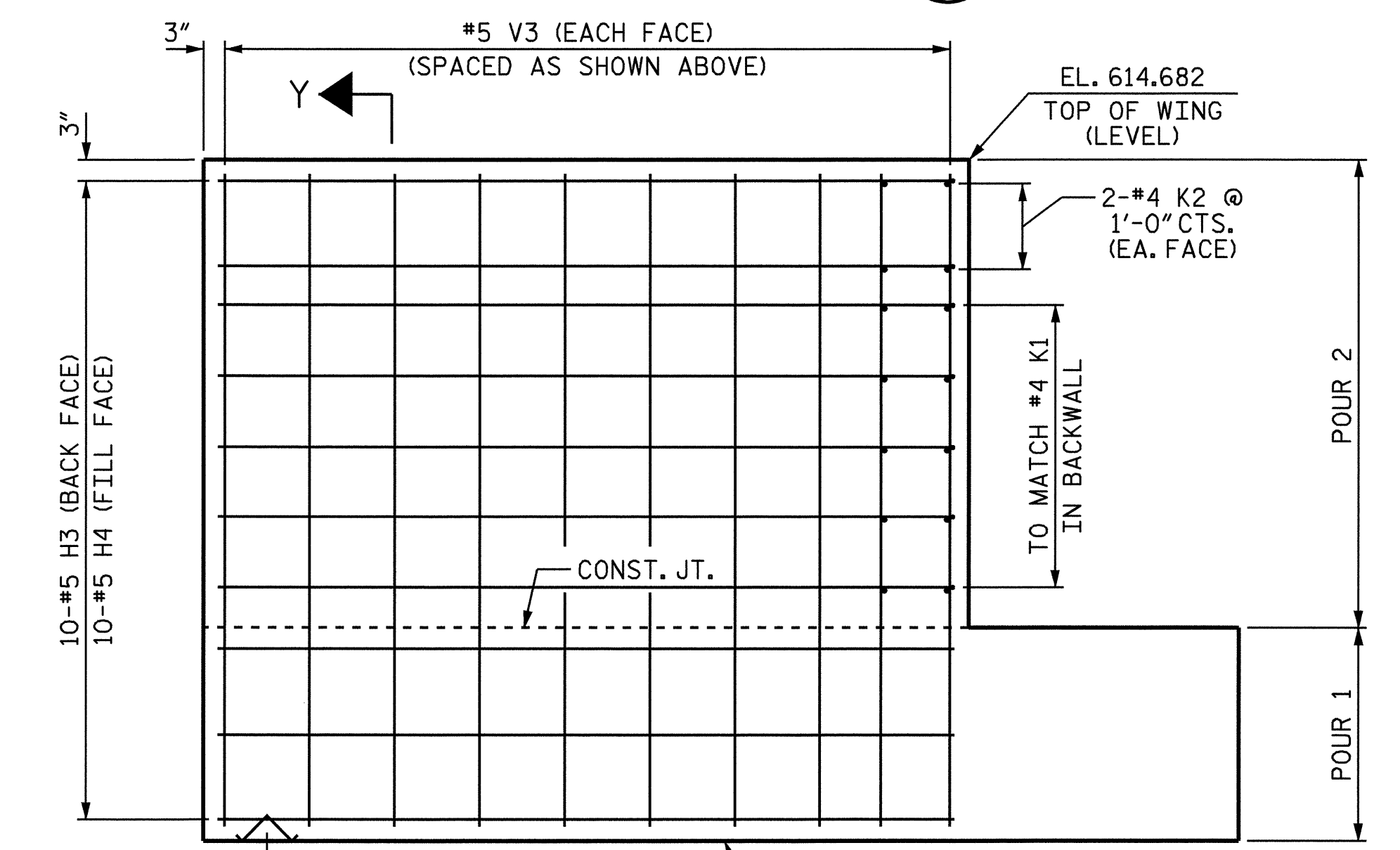
PLAN OF WING (W2)



ELEVATION OF WING (W1)



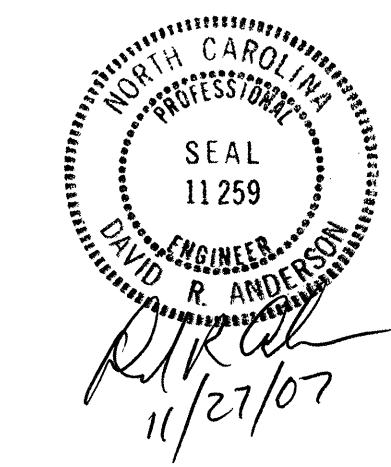
SECTION Y-Y



ELEVATION OF WING (W2)

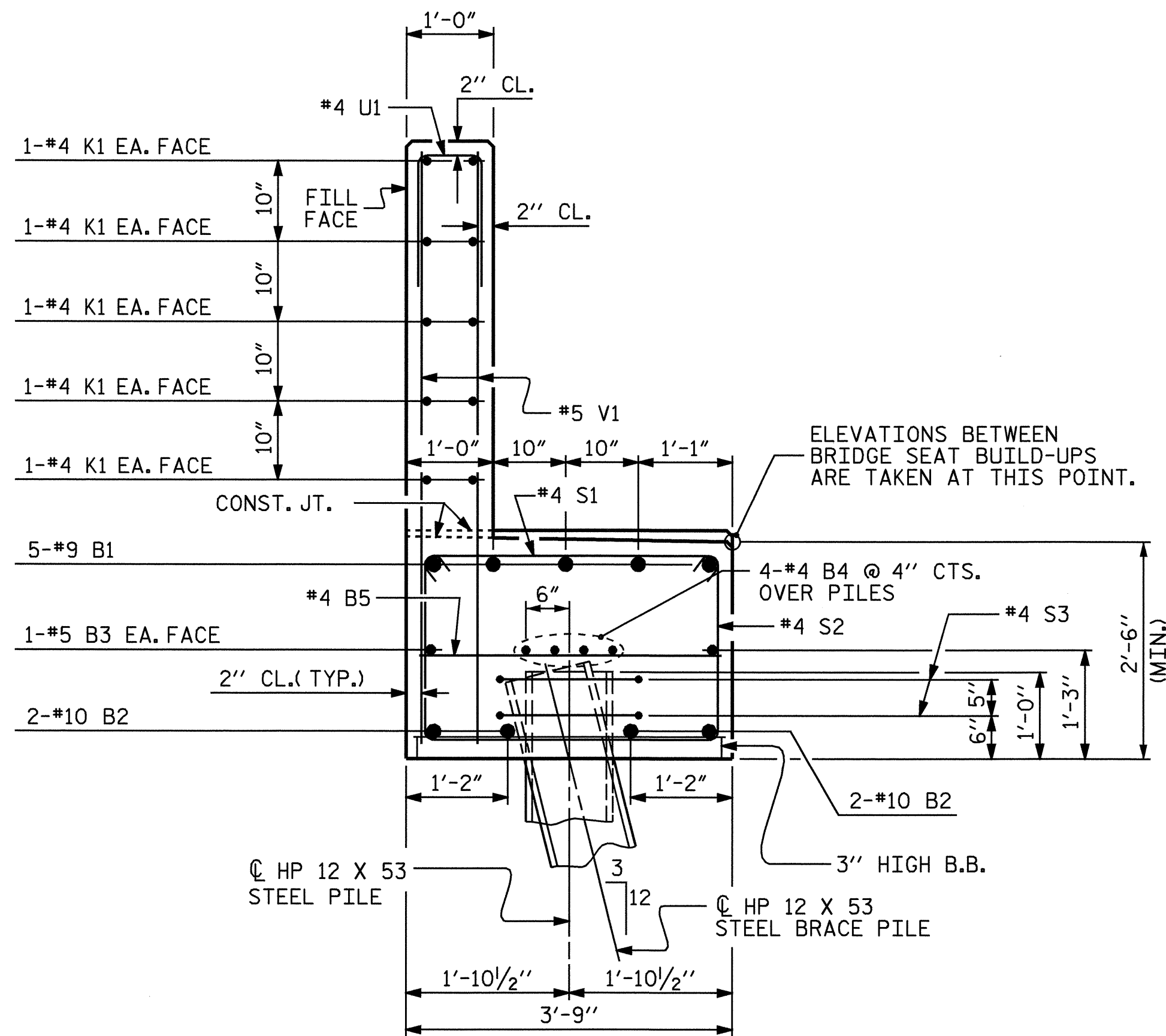
PROJECT NO. B-4129
GUILFORD COUNTY
 STATION: 16+89.50 -L-

SHEET 2 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1

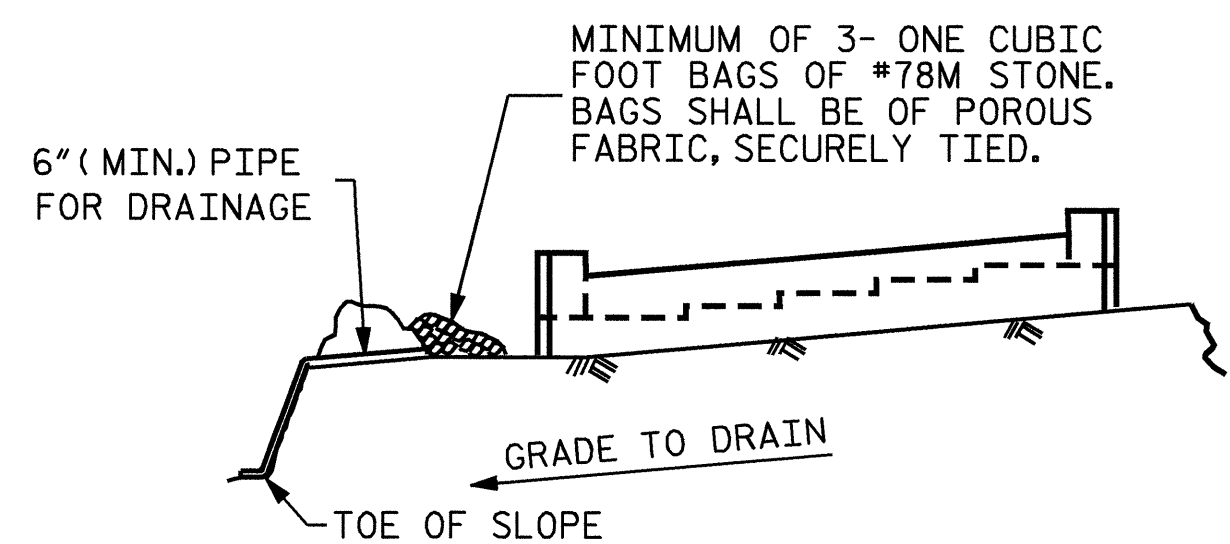


DRAWN BY: E.C. LOCKLEAR DATE: 1-19-07
 CHECKED BY: J.A. TILLMAN DATE: 8-28-07

REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	
TOTAL SHEETS				38



SECTION A-A



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.

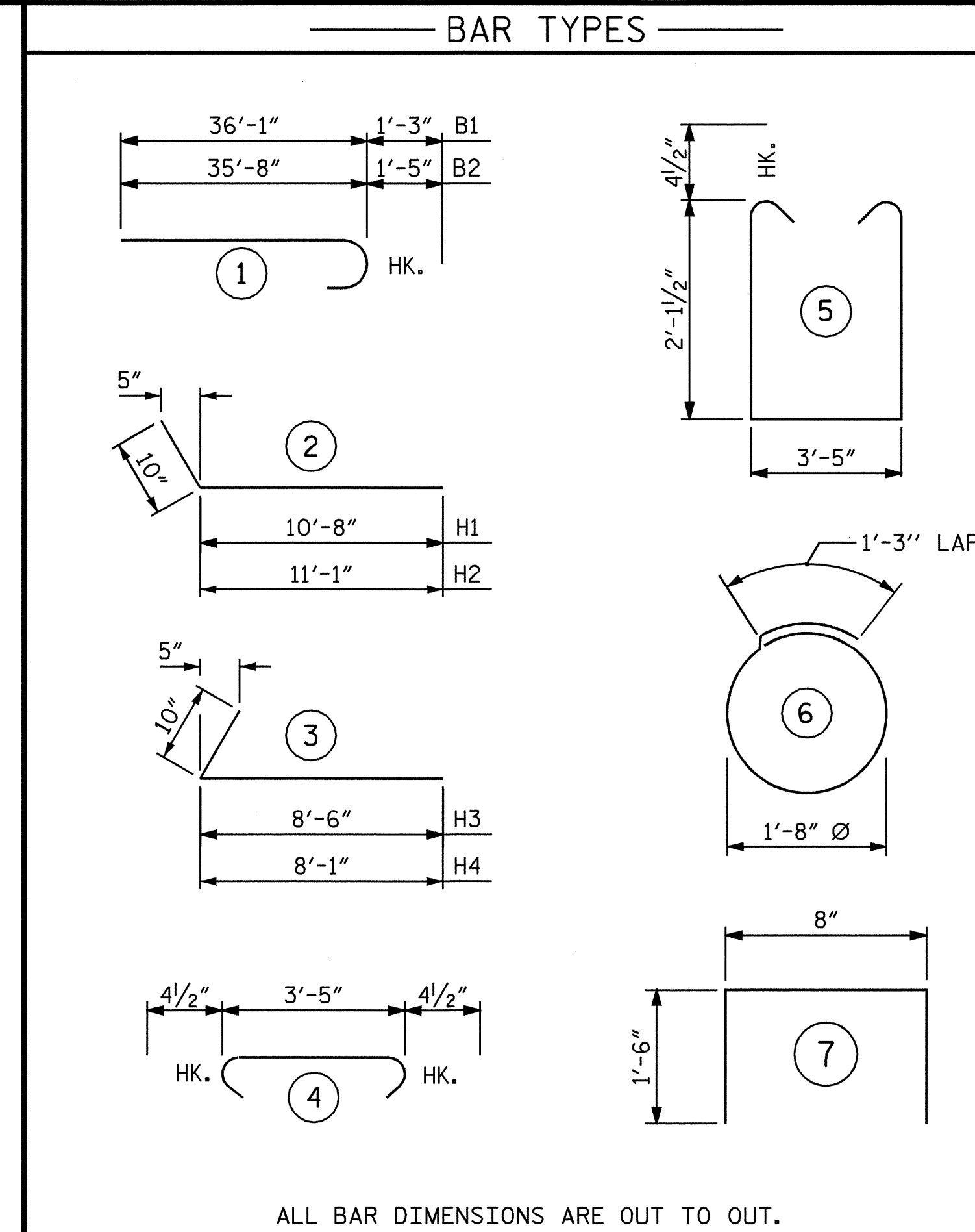
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

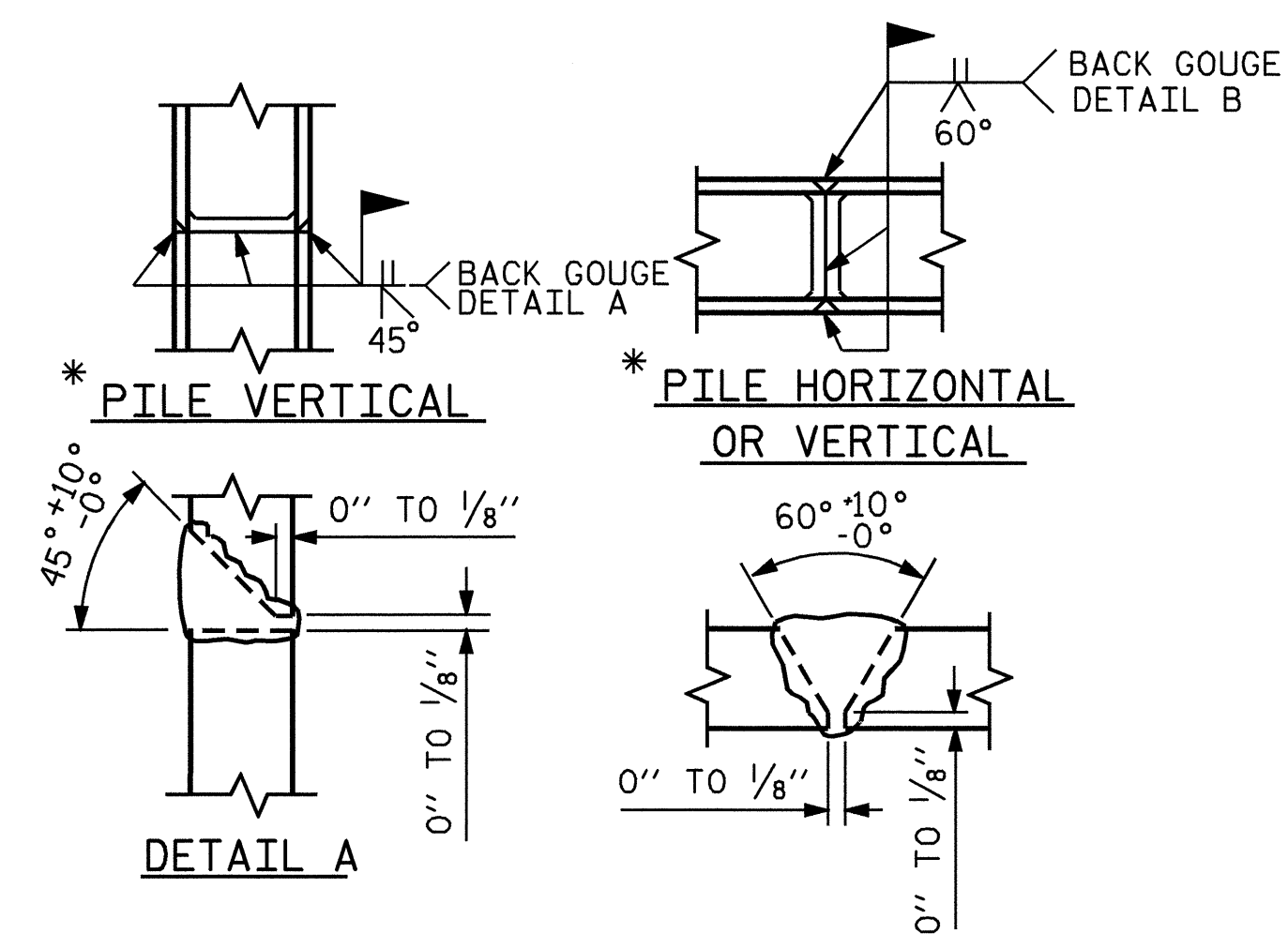
DRAWN BY: E.C. LOCKLEAR DATE: 1-19-07
 CHECKED BY: J.A. TILLMAN DATE: 8-28-07

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ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#9	1	37'-4"	1269
B2	8	#10	1	37'-1"	1277
B3	4	#5	STR	33'-4"	139
B4	12	#4	STR	22'-10"	183
B5	16	#4	STR	3'-5"	37
H1	10	#5	2	11'-6"	120
H2	10	#5	2	11'-11"	124
H3	10	#5	3	9'-4"	97
H4	10	#5	3	8'-11"	93
K1	30	#4	STR	22'-10"	458
K2	8	#4	STR	3'-6"	19
S1	66	#4	4	4'-2"	184
S2	66	#4	5	8'-5"	371
S3	18	#4	6	6'-6"	78
U1	56	#4	7	3'-8"	137
V1	112	#5	STR	6'-1"	711
V2	30	#5	STR	7'-11"	248
V3	26	#5	STR	7'-7"	206
REINFORCING STEEL				LBS.	5751
CLASS A CONCRETE BREAKDOWN:					
POUR 1 (CAP & LOWER PART OF WINGS)				C.Y.	24.3
POUR 2 (BACKWALL & UPPER WINGS)				C.Y.	13.6
TOTAL CLASS A CONCRETE				C.Y.	37.9
HP 12 X 53 STEEL PILES NO. = 9 LIN. FT. = 130.0					

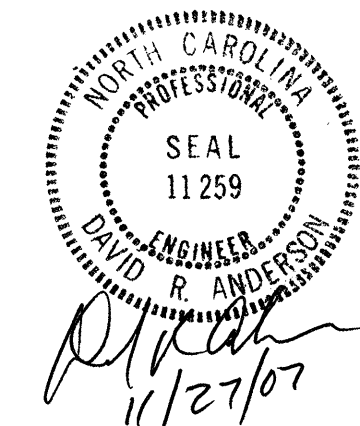


* POSITION OF PILE DURING WELDING. PILE SPLICE DETAILS

PROJECT NO. B-4129
 GUILFORD COUNTY
 STATION: 16+89.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-25
					TOTAL SHEETS 38



NOTES:

STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

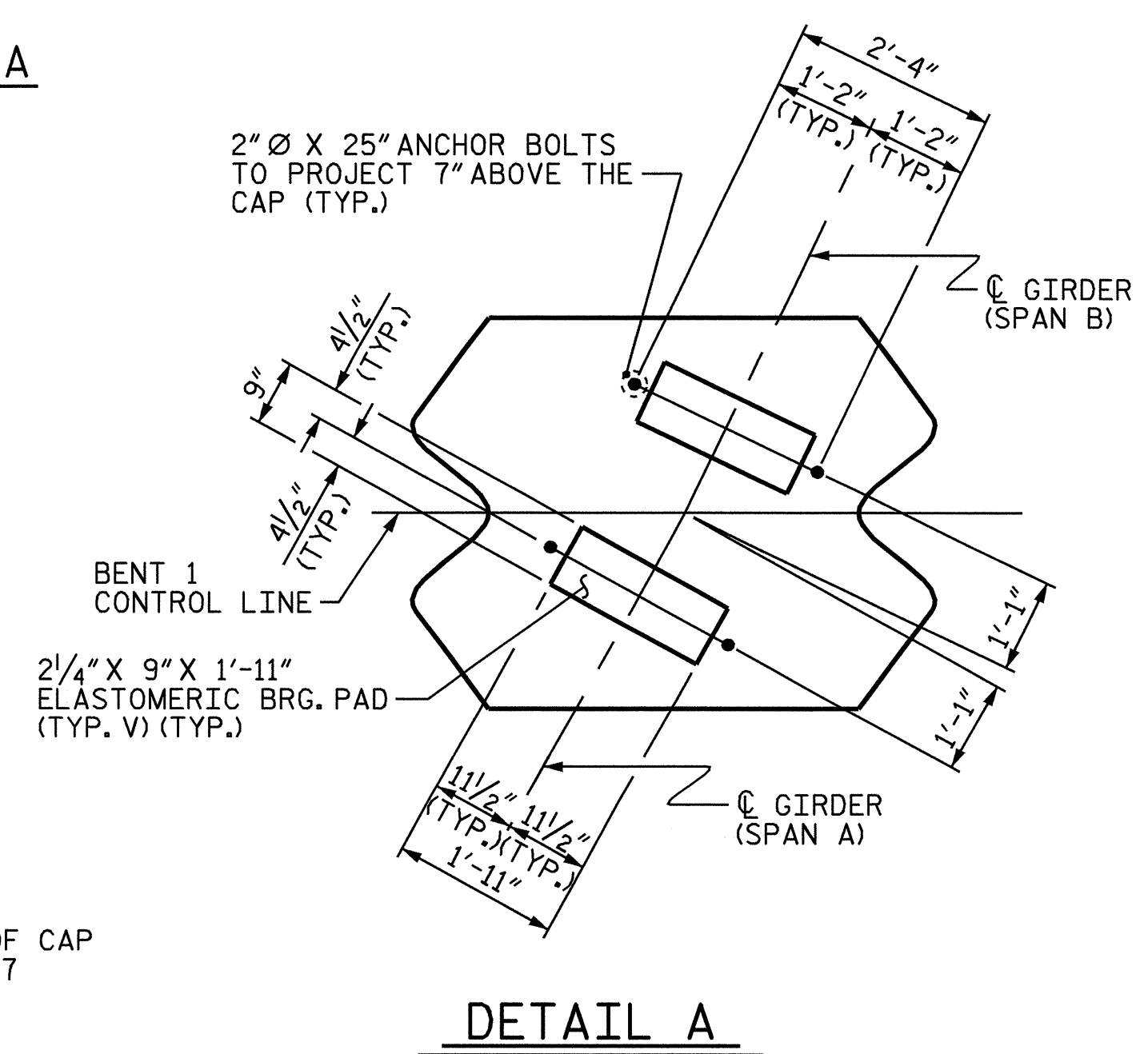
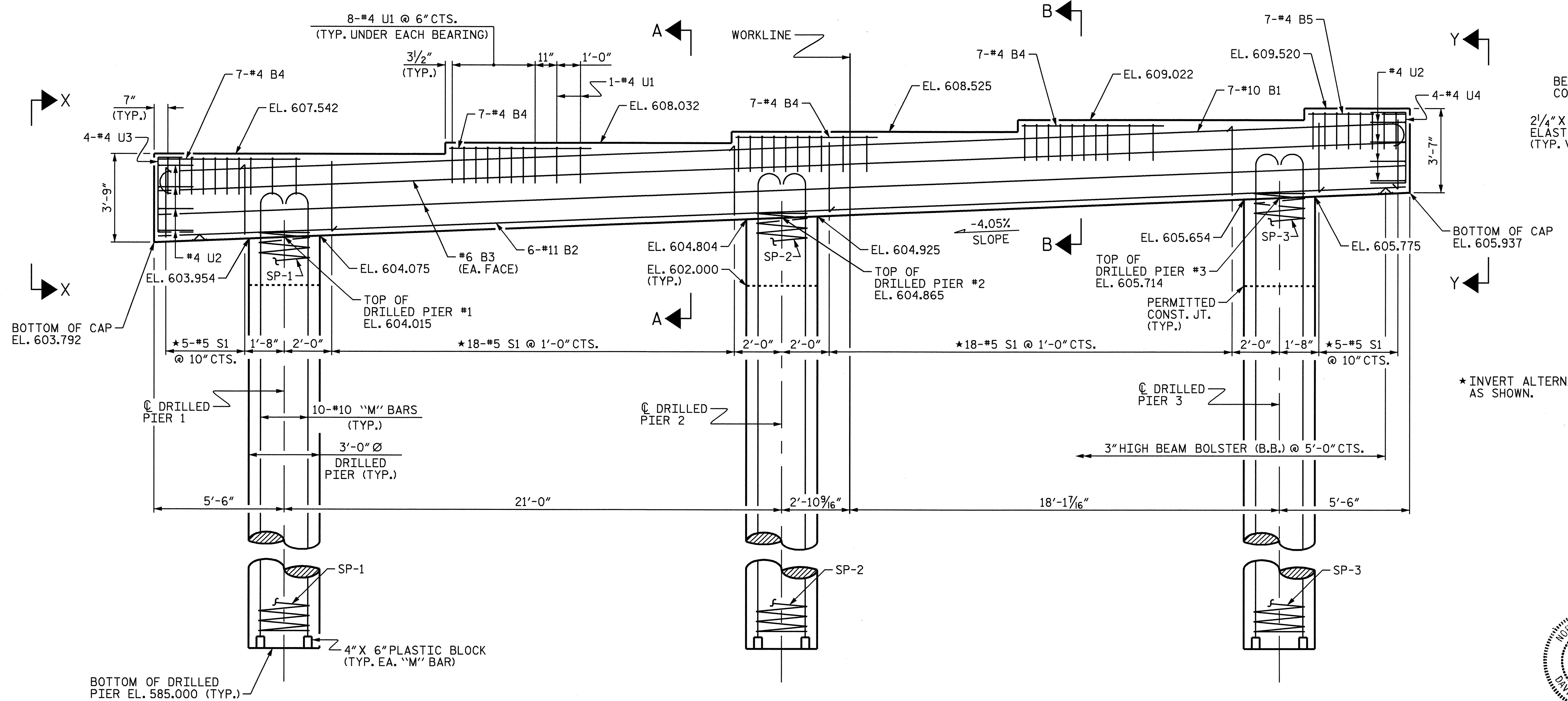
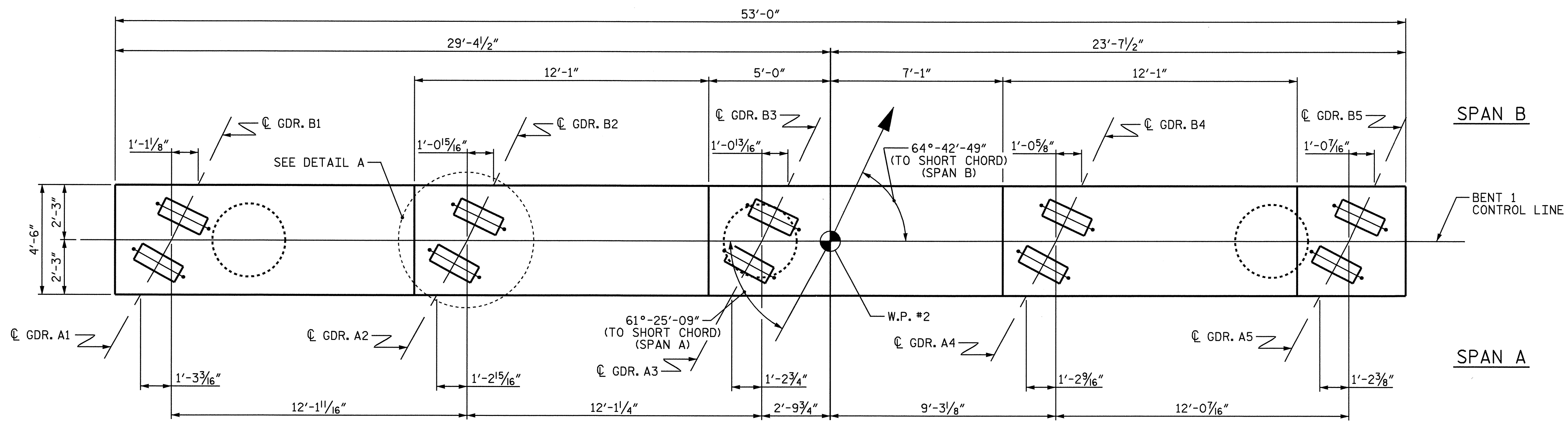
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

THE LOCATION OF THE PERMITTED CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1'-0" BELOW THE GROUND LINE.

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

THE CONTRACTOR SHALL ALIGN THE "M" BARS AS SHOWN IN THE PLAN OF DRILLED PIERS. HOOKS ON "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

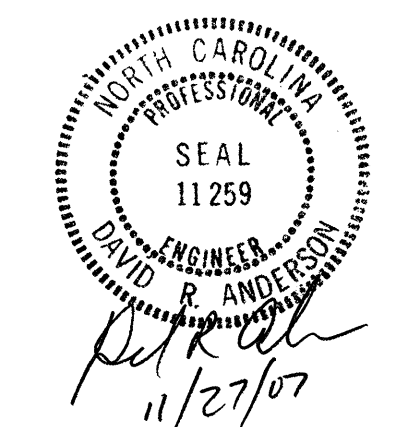


* INVERT ALTERNATE STIRRUPS AS SHOWN.

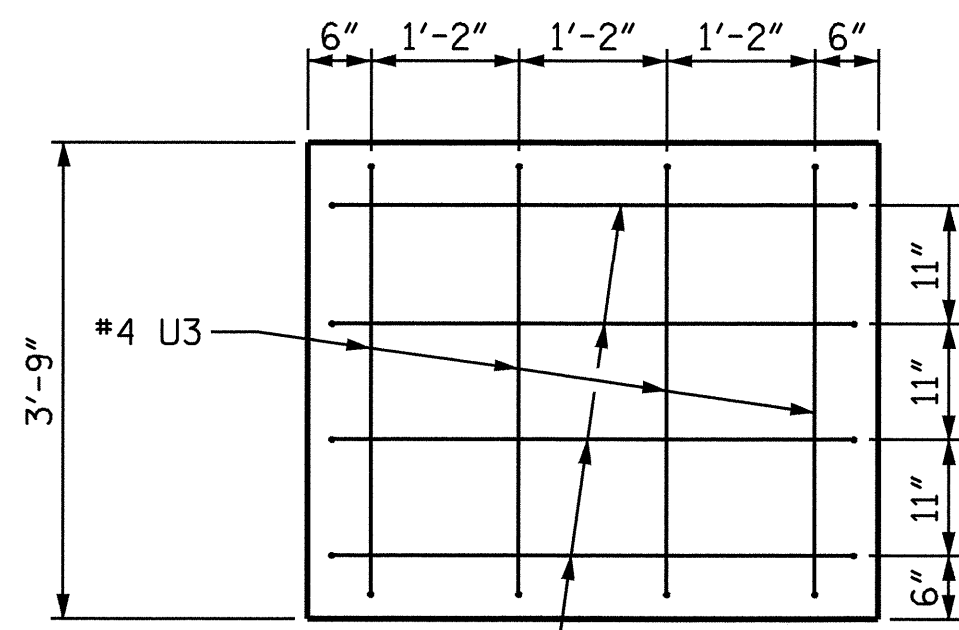
PROJECT NO. B-4129
 GUILFORD COUNTY
 STATION: 16+89.50 -L-

SHEET 1 OF 2

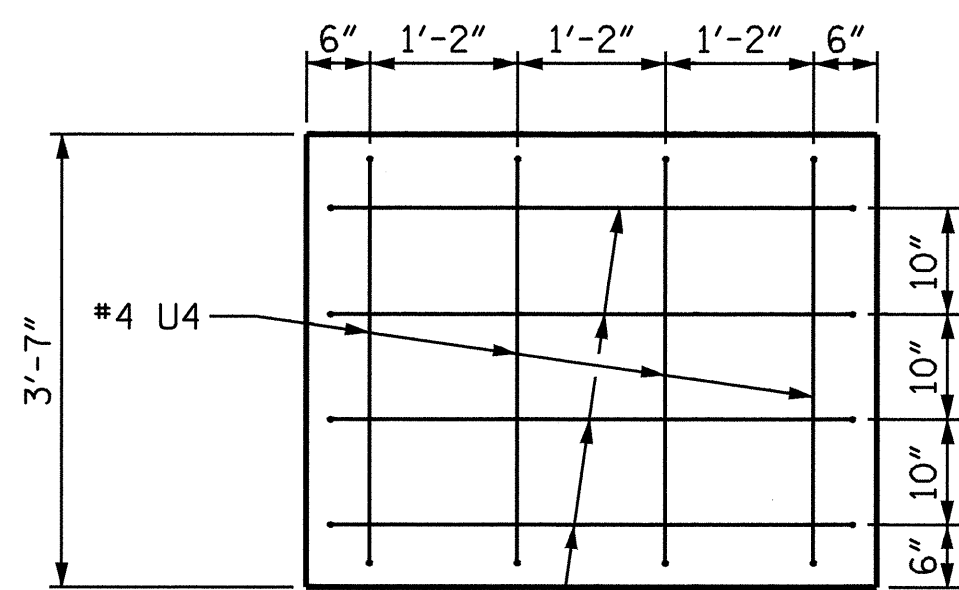
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT 1					
SHEET NO. <u>5-26</u>					
TOTAL SHEETS <u>38</u>					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		



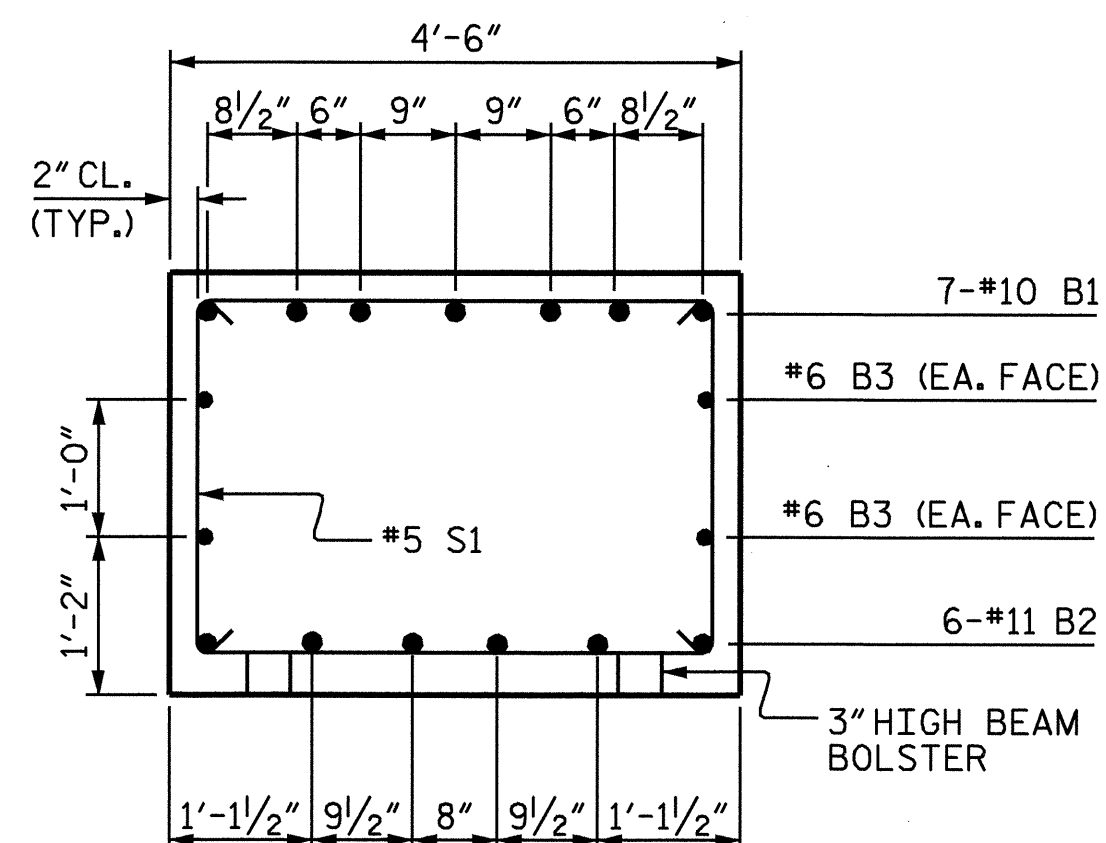
DRAWN BY: E.C. LOCKLEAR DATE: 5-11-07
 CHECKED BY: N.Q. TRAN DATE: 6-20-07



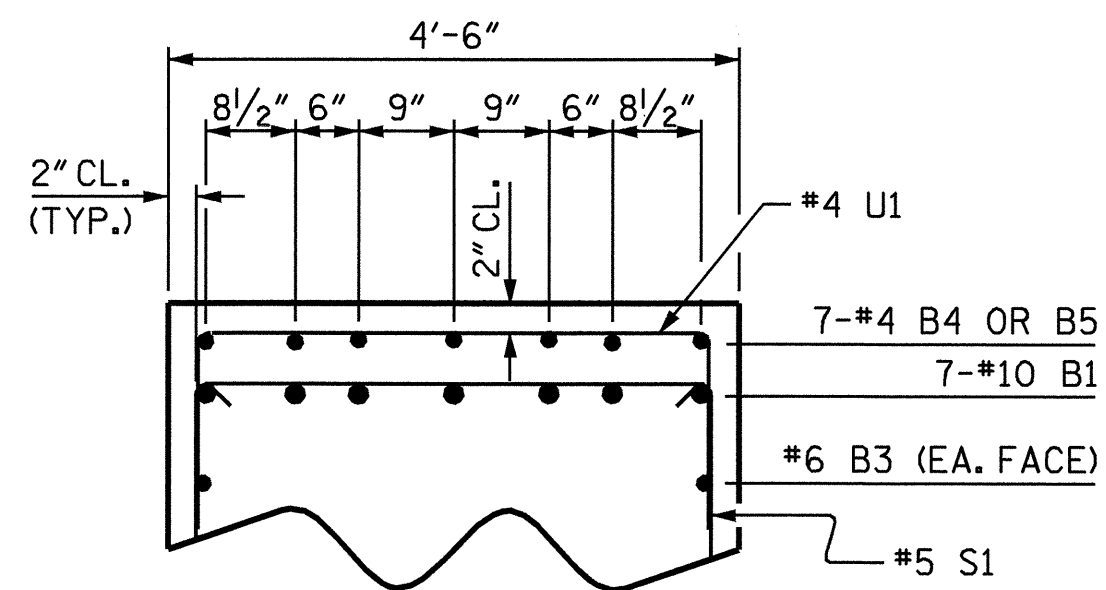
VIEW X-X



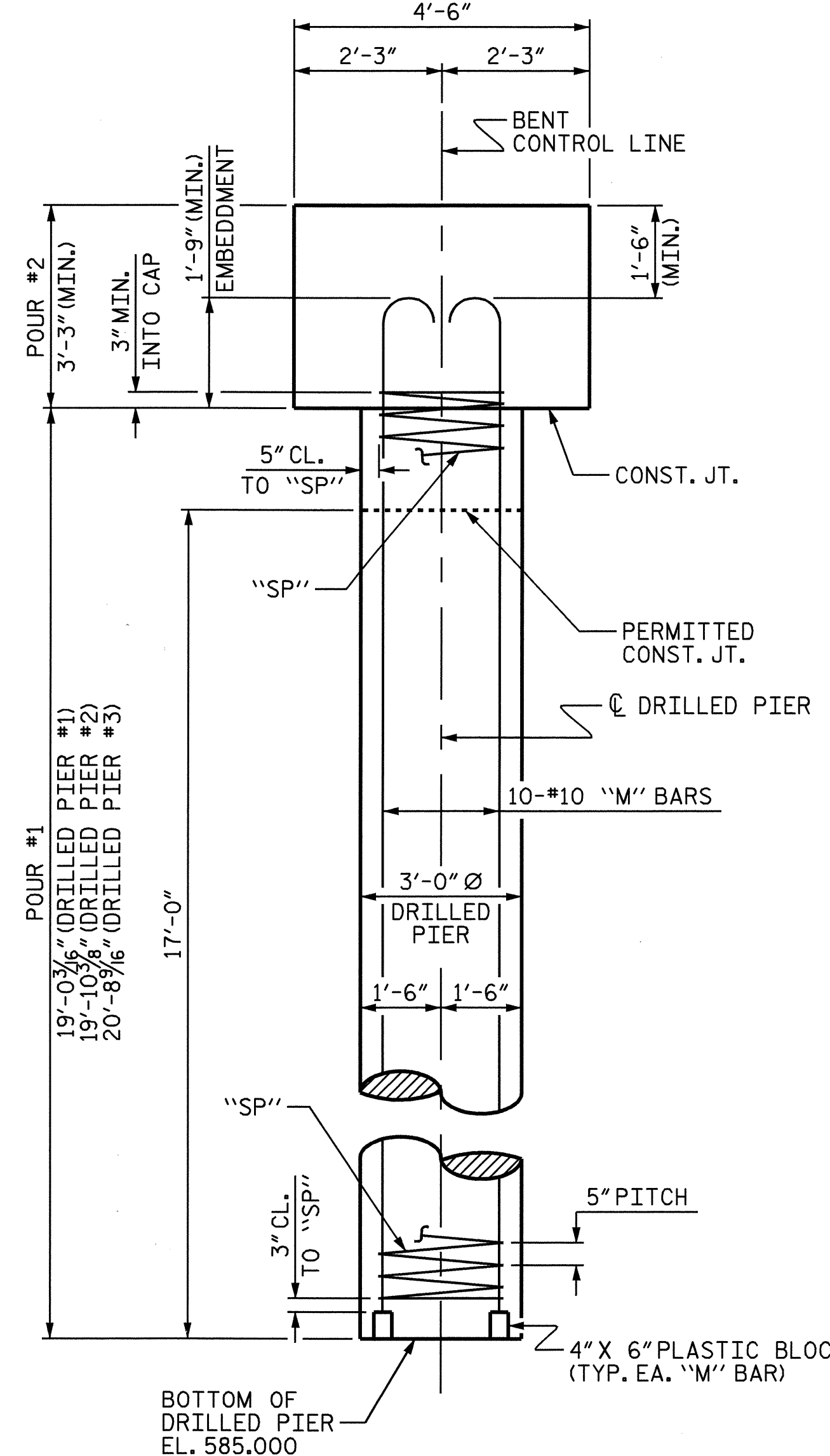
VIEW Y-Y



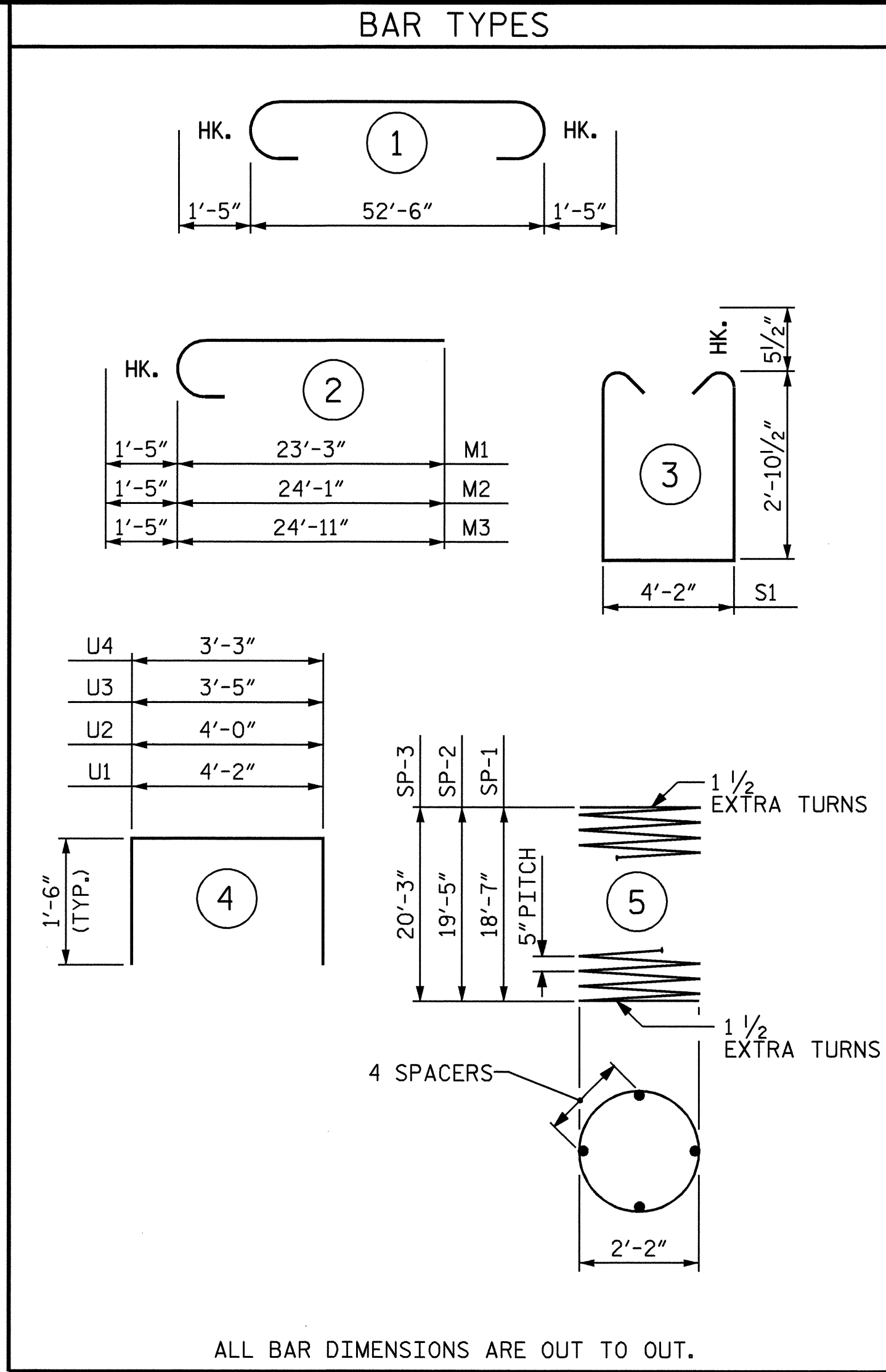
SECTION A-A



PARTIAL SECTION B-B



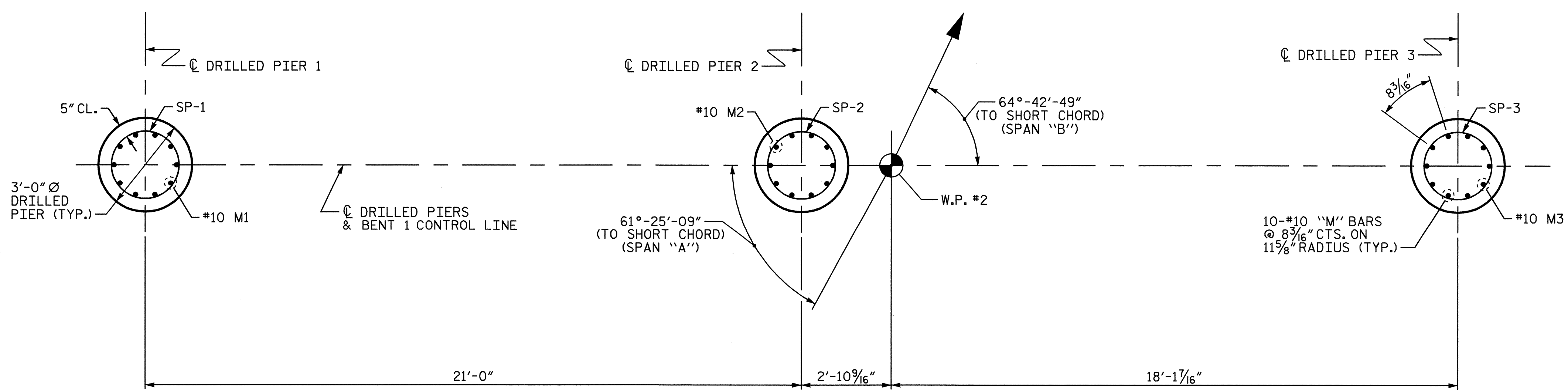
END ELEVATION



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL						
BENT 1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	7	#10		55'-4"	1667	
B2	6	#11	STR	52'-8"	1679	
B3	4	#6	STR	52'-8"	316	
B4	28	#4	STR	6'-0"	112	
B5	7	#4	STR	4'-1"	19	
M1	10	#10		24'-8"	1061	
M2	10	#10		25'-6"	1097	
M3	10	#10		26'-4"	1133	
S1	46	#5		10'-10"	520	
U1	48	#4		7'-2"	230	
U2	8	#4		7'-0"	37	
U3	4	#4		6'-5"	17	
U4	4	#4		6'-3"	17	
REINFORCING STEEL =				LBS 7905		
SP-1	1	*	5	319'-6"	333	
SP-2	1	*	5	332'-10"	347	
SP-3	1	*	5	346'-2"	361	
SPIRAL COLUMN REINFORCING STEEL =				LBS 1041		
CLASS A CONCRETE (C.Y.)						
POUR #2 (CAP) =				C.Y. 31.1		
DRILLED PIERS:						
DRILLED PIER CONCRETE (C.Y.)						
POUR #1 (3-DRILLED PIERS) =				C.Y. 15.7		
PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER				= LIN. FT. 40.6		
3'-0" Ø DRILLED PIERS IN SOIL				= LIN. FT. 40.6		
3'-0" Ø DRILLED PIERS NOT IN SOIL				= LIN. FT. 19.0		
CSL TUBES				= LIN. FT. 268.4		

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

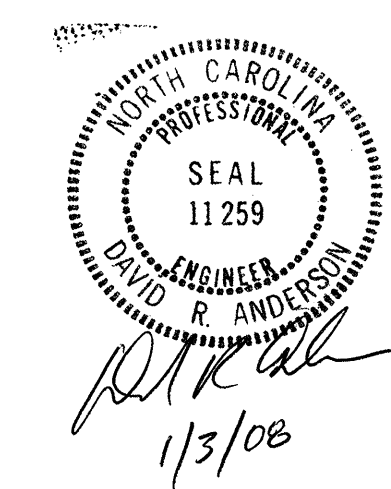


PLAN OF DRILLED PIERS

(REINFORCING STEEL IS TYPICAL FOR EACH DRILLED PIER)

DRAWN BY: E.C. LOCKLEAR DATE: 5-11-07
 CHECKED BY: N.O. TRAN DATE: 6-20-07

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PROJECT NO. B-4129
 GUILFORD COUNTY
 STATION: 16+89.50 -L-

SHEET 2 OF 2

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

SHEET NO. S-27
 TOTAL SHEETS 38

NOTES:

STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

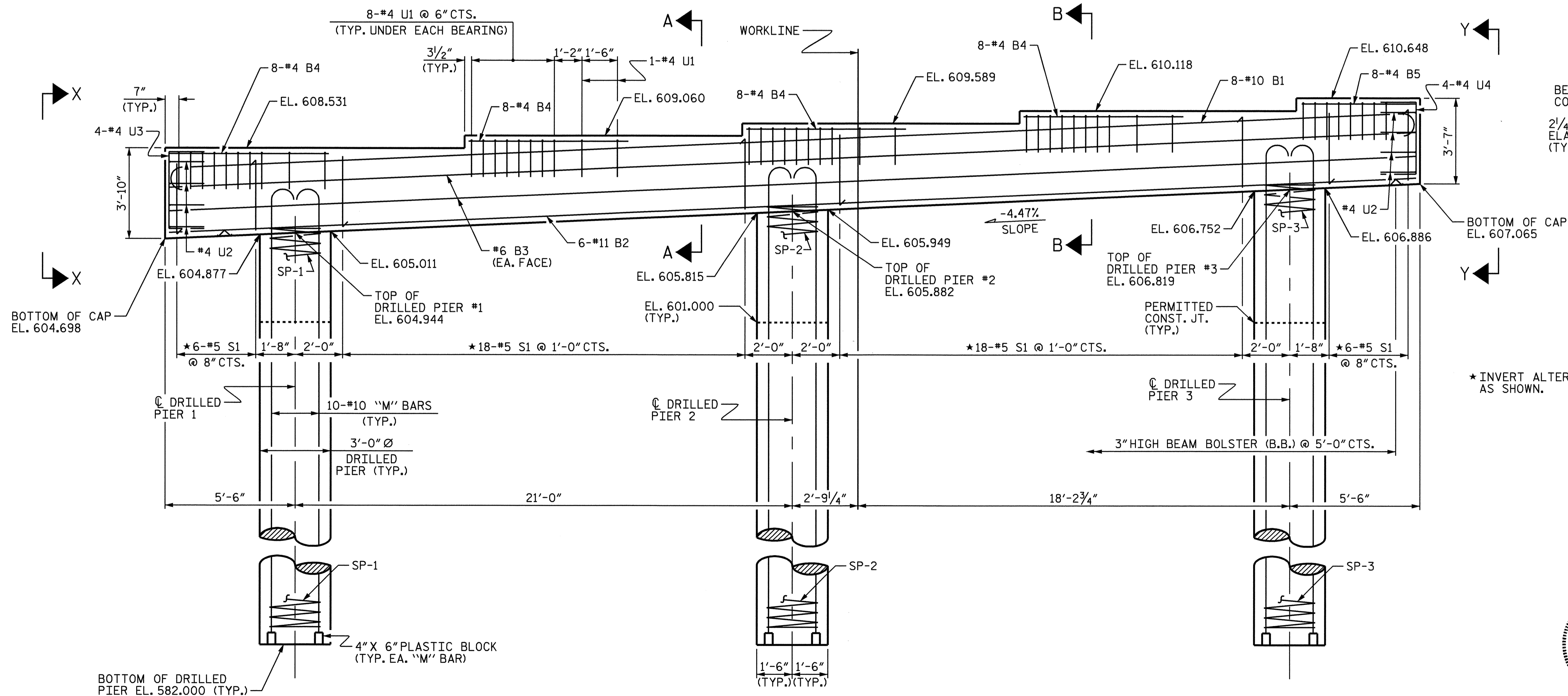
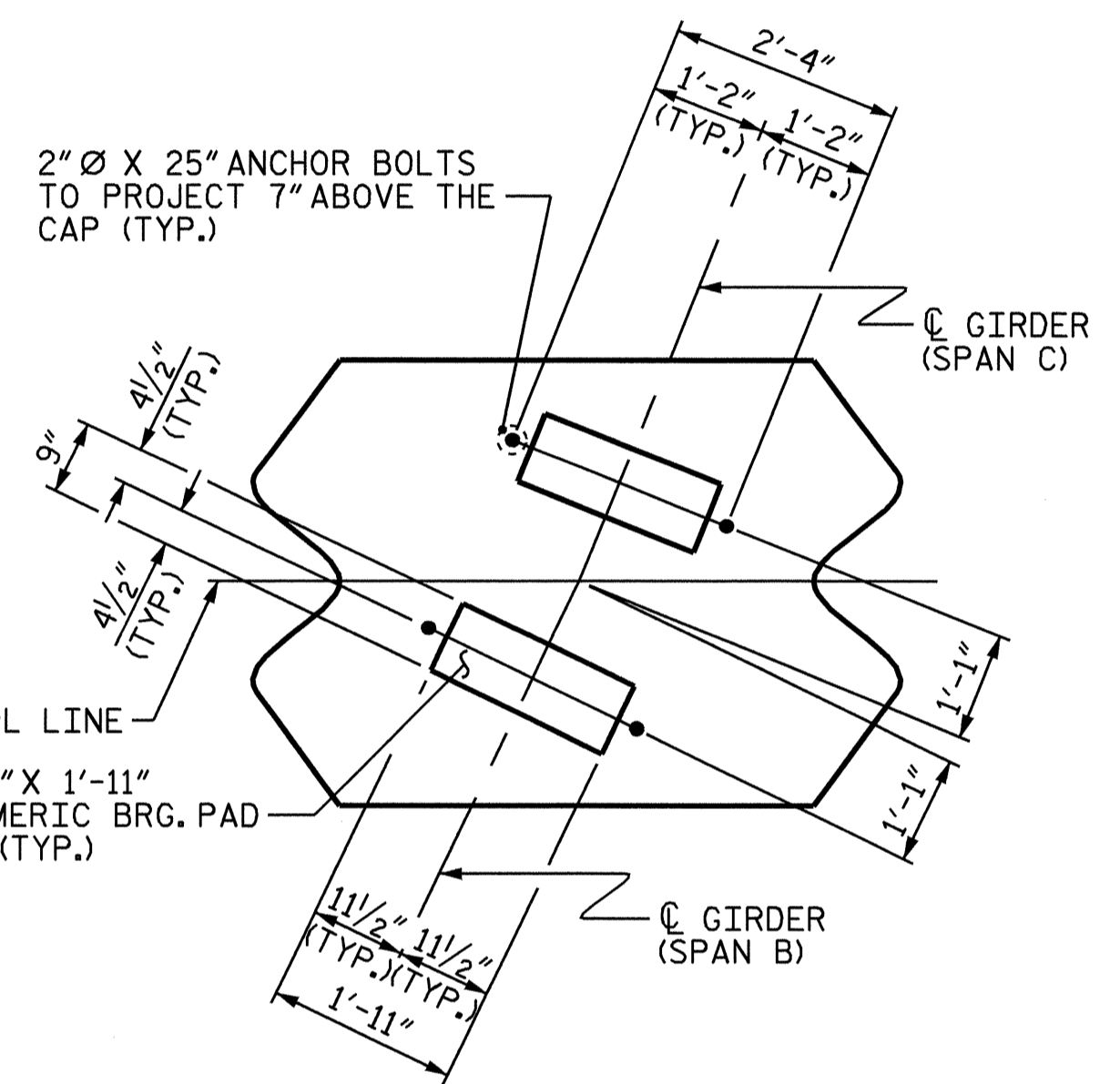
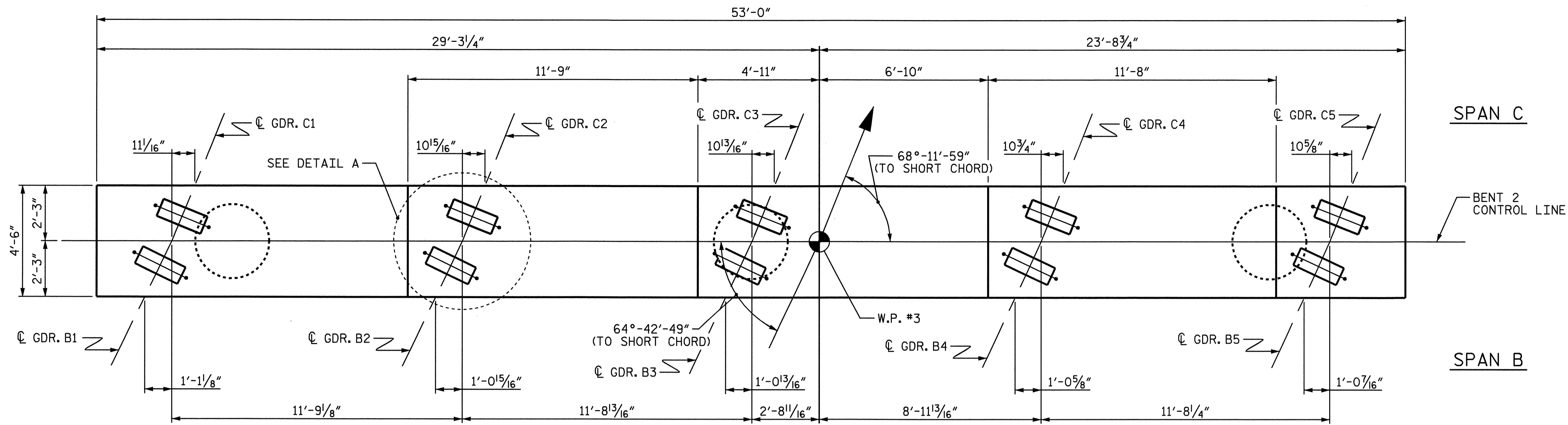
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

THE LOCATION OF THE PERMITTED CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1'-0" BELOW THE GROUND LINE.

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

THE CONTRACTOR SHALL ALIGN THE "M" BARS AS SHOWN IN THE PLAN OF DRILLED PIERS. HOOKS ON "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.



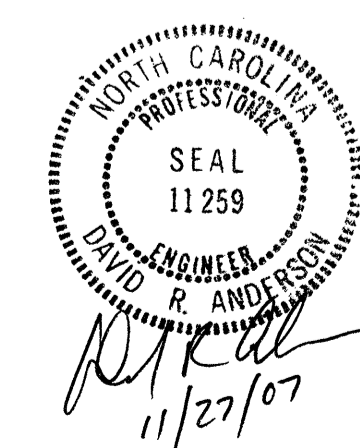
* INVERT ALTERNATE STIRRUPS AS SHOWN.

PROJECT NO. B-4129
GUILFORD COUNTY
 STATION: 16+89.50 -L-

SHEET 1 OF 2

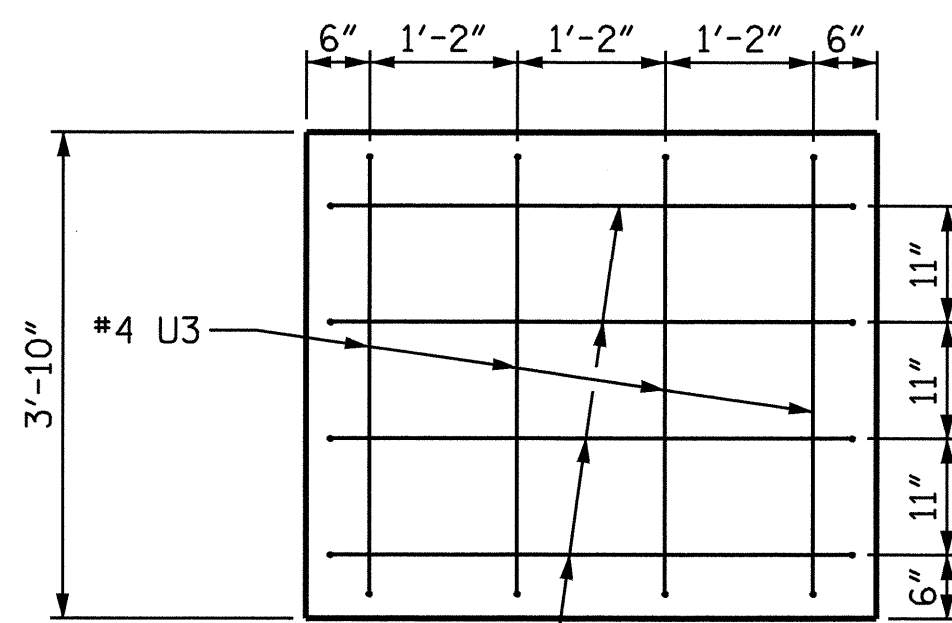
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 BENT 2**

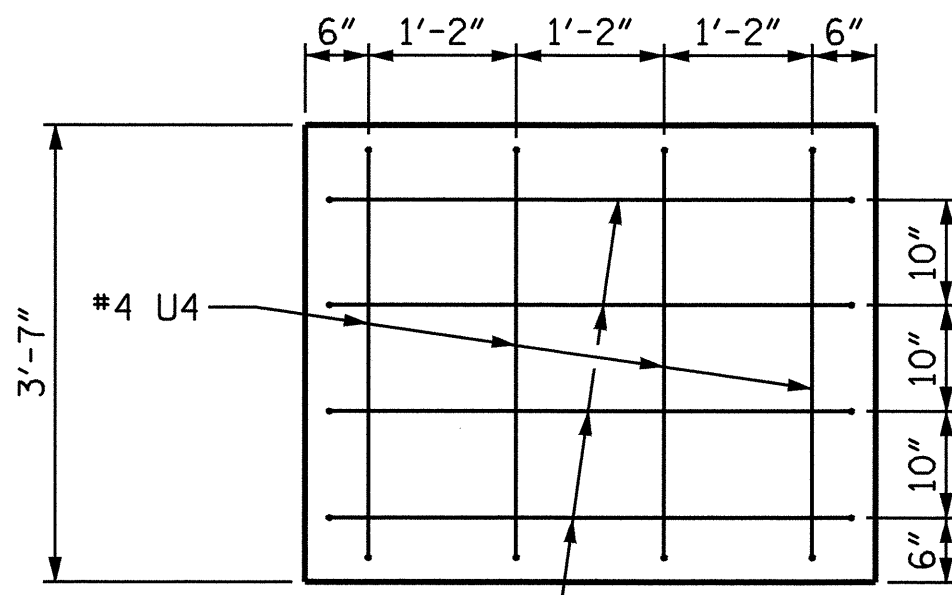


REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	5-28	
1			3			TOTAL SHEETS 38	
2			4				

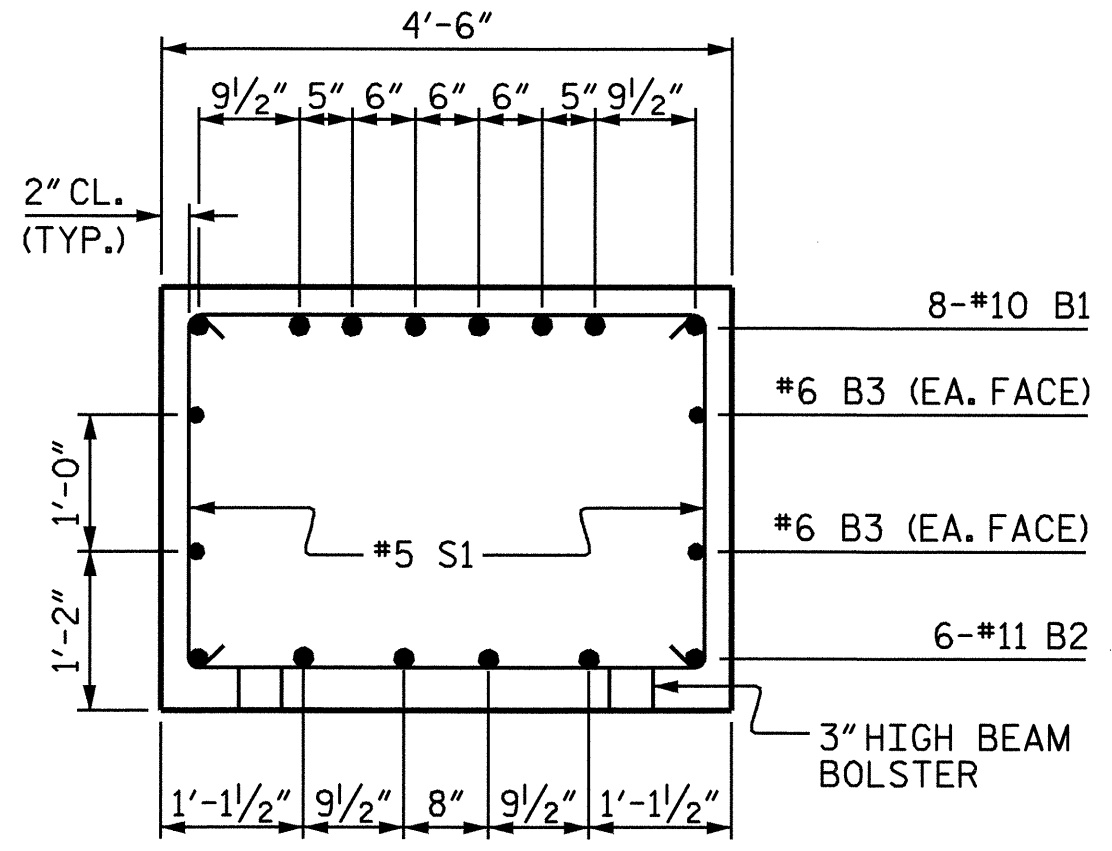
DRAWN BY: E.C. LOCKLEAR DATE: 5-11-07
 CHECKED BY: N.Q. TRAN DATE: 6-20-07



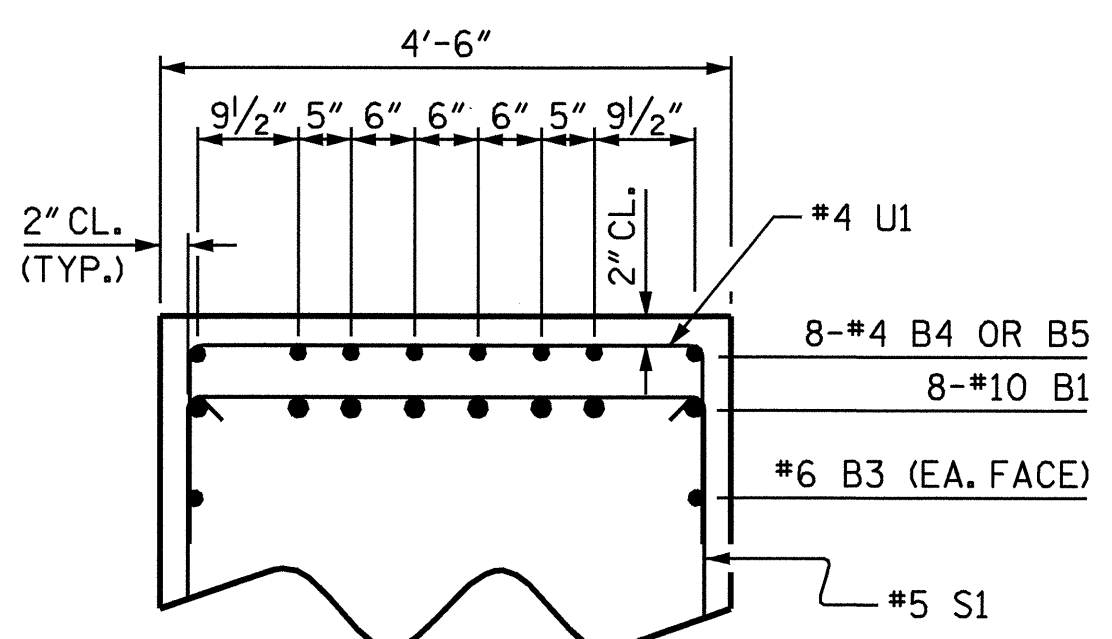
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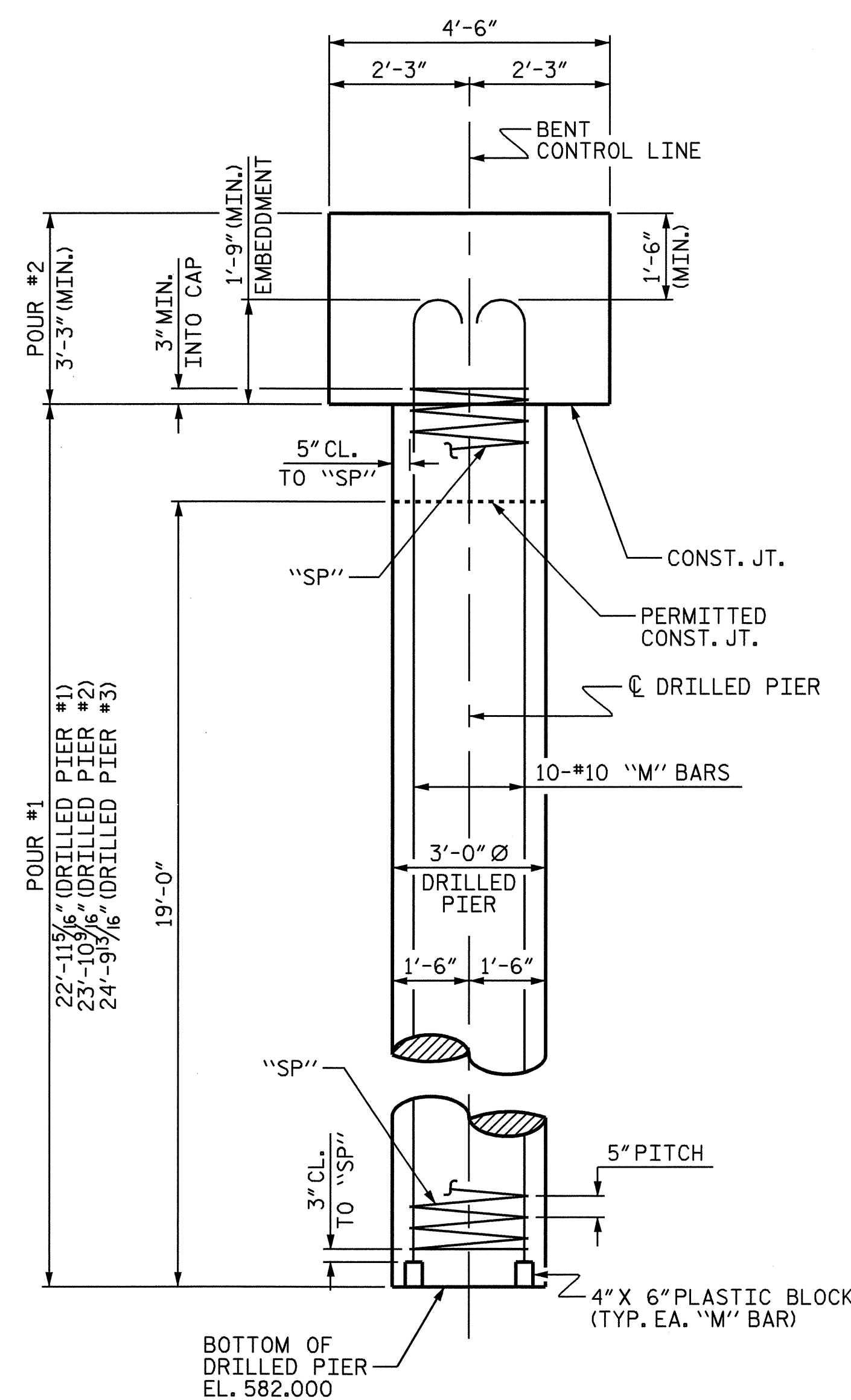
VIEW Y-Y



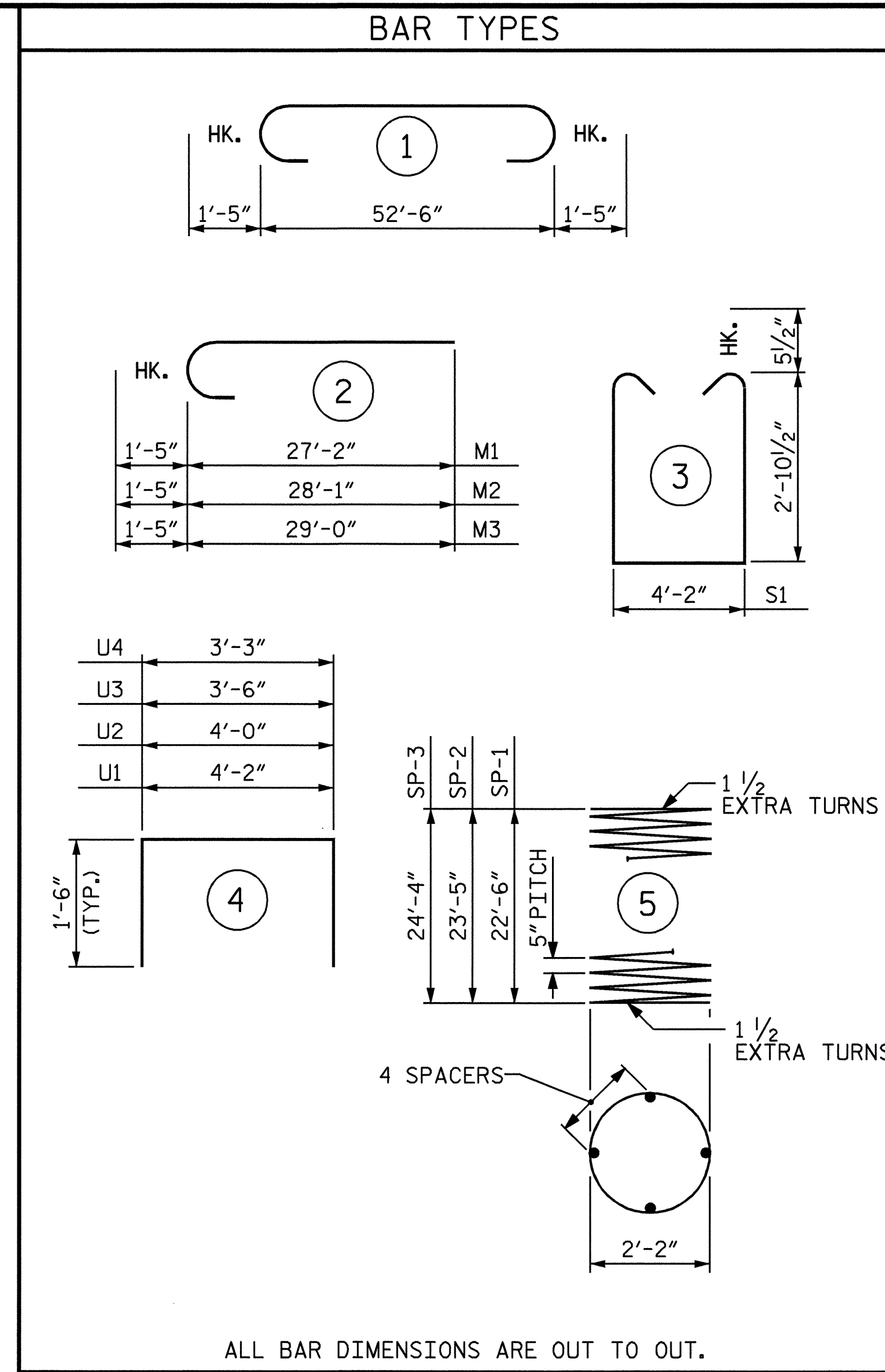
SECTION A-A



SECTION B-B

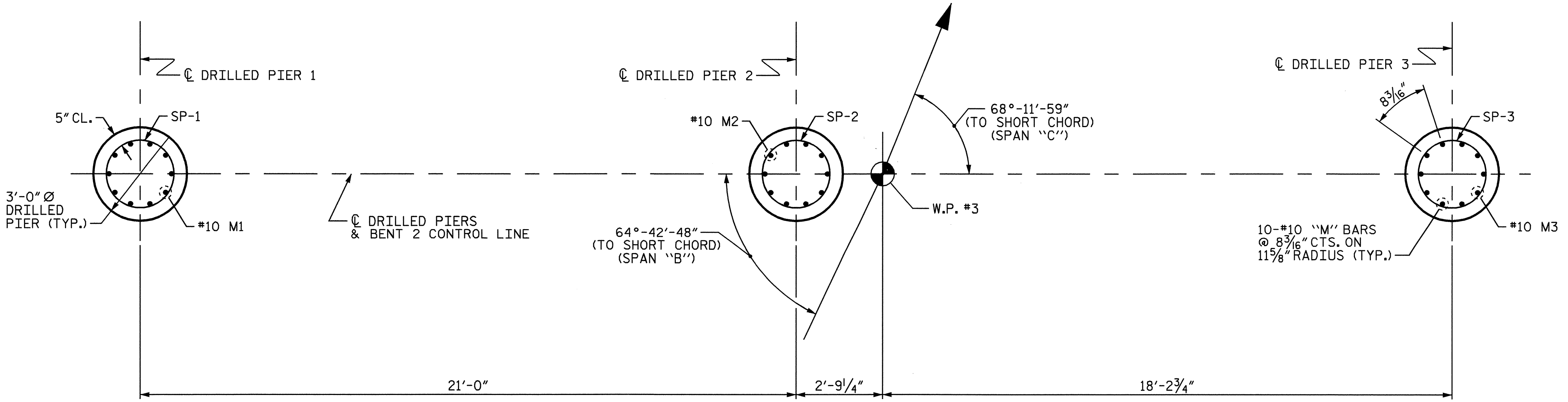


END ELEVATION



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10		55'-4"	1905
B2	6	#11	STR	52'-8"	1679
B3	4	#6	STR	52'-8"	316
B4	32	#4	STR	6'-9"	144
B5	8	#4	STR	4'-10"	26
M1	10	#10		28'-7"	1230
M2	10	#10		29'-6"	1269
M3	10	#10		30'-5"	1309
S1	48	#5		10'-10"	542
U1	48	#4		7'-2"	230
U2	8	#4		7'-0"	37
U3	4	#4		6'-6"	17
U4	4	#4		6'-3"	17
REINFORCING STEEL =					LBS 8721
SP-1	1	*	5	379'-5"	396
SP-2	1	*	5	399'-5"	417
SP-3	1	*	5	412'-9"	430
SPIRAL COLUMN REINFORCING STEEL =					LBS 1243
CLASS A CONCRETE (C.Y.)					
POUR #2 (CAP) =					C.Y. 31.4
DRILLED PIERS:					
DRILLED PIER CONCRETE (C.Y.)					
POUR #1 (DRILLED PIER) =					C.Y. 18.7
PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER					= LIN. FT. 38.6
3'-0" Ø DRILLED PIERS IN SOIL					= LIN. FT. 47.6
3'-0" Ø DRILLED PIERS NOT IN SOIL					= LIN. FT. 24.0
CSL TUBES					= LIN. FT. 316.4
* THE SP-1, SP-2 & SP-3 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.					

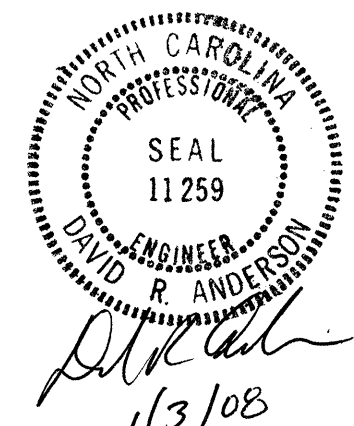


PLAN OF DRILLED PIERS

(REINFORCING STEEL IS TYPICAL FOR EACH DRILLED PIER)

DRAWN BY: E.C. LOCKLEAR DATE: 5-11-07
 CHECKED BY: N.O. TRAN DATE: 6-20-07

03-JAN-2008 08:35
 H:\Structures\Final Plans\B4129.sd_01.bt.dgn
 elocklear

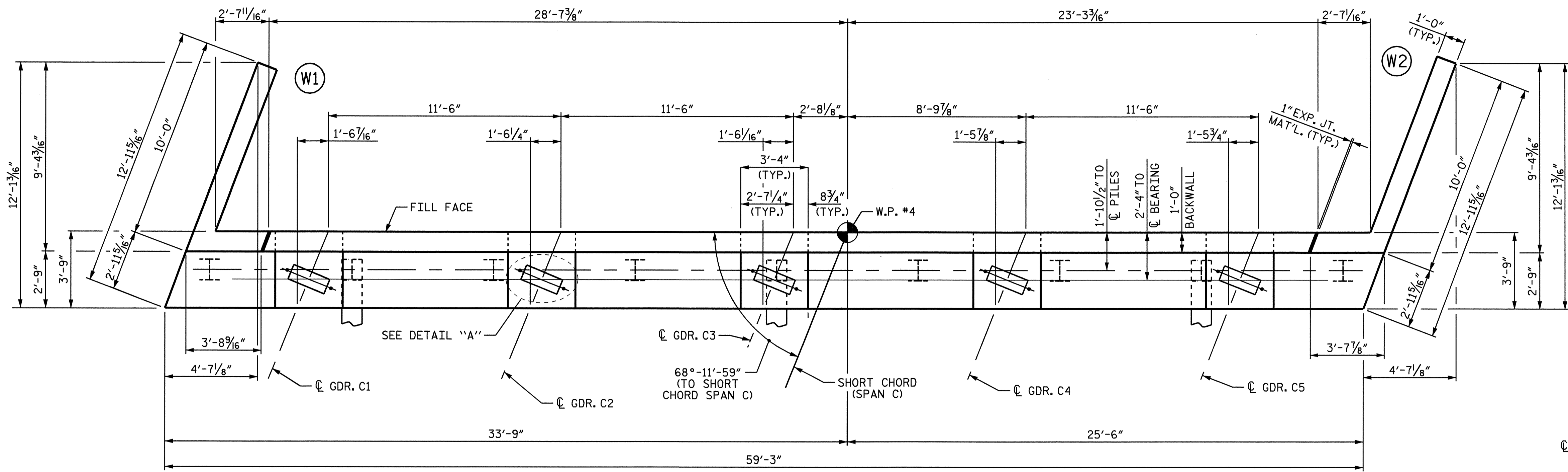


PROJECT NO. B-4129
 GUILFORD COUNTY
 STATION: 16+89.50 -L-

SHEET 2 OF 2

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

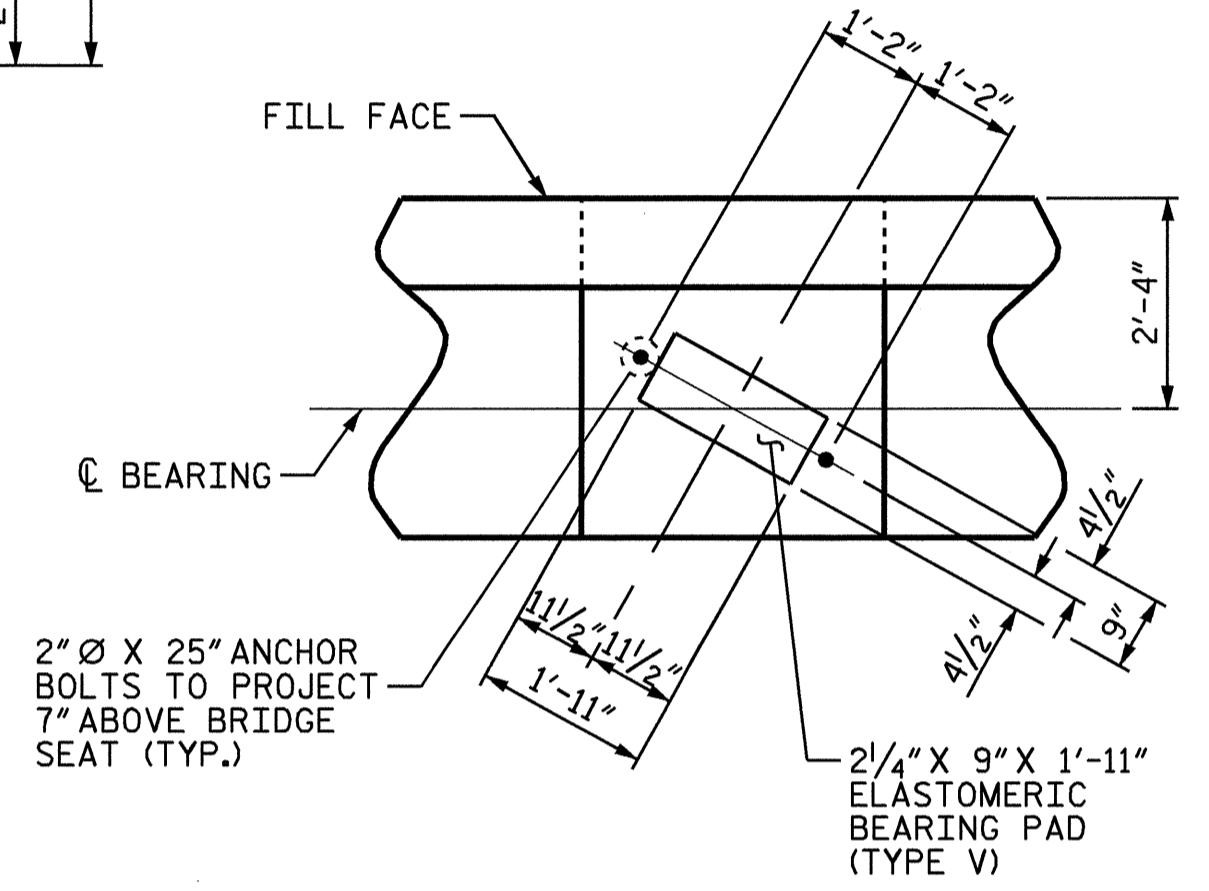
SHEET NO.
5-29
TOTAL SHEETS
32



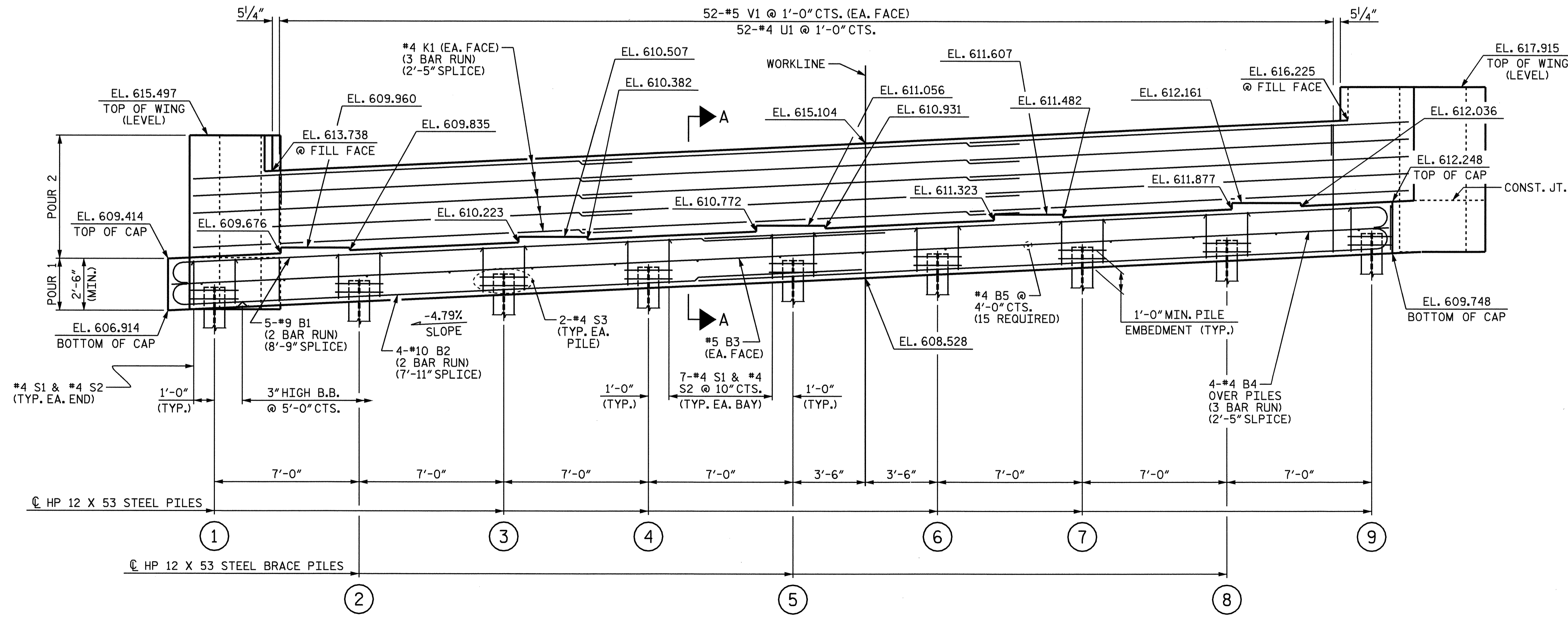
PLAN

NOTES:

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
- THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
- THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.
- #5 V1 BARS IN BACKWALL SHALL BE PLACED 2" CLEAR FROM TOP OF BACKWALL.



DETAIL "A"
(TYP. EA. BRIDGE SEAT)



ELEVATION

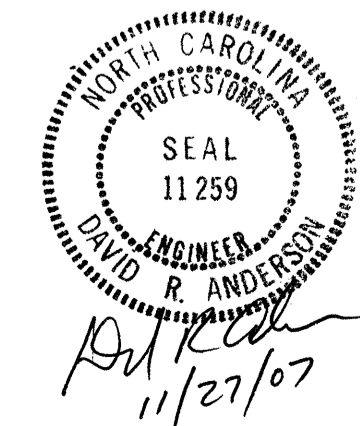
TOP OF PILE ELEVATIONS	
PILE NO.	ELEVATION
1	608.046
2	608.380
3	608.715
4	609.050
5	609.385
6	609.720
7	610.054
8	610.389
9	610.724

PROJECT NO. B-4129
GUILFORD COUNTY
 STATION: 16+89.50 -L-

SHEET 1 OF 3

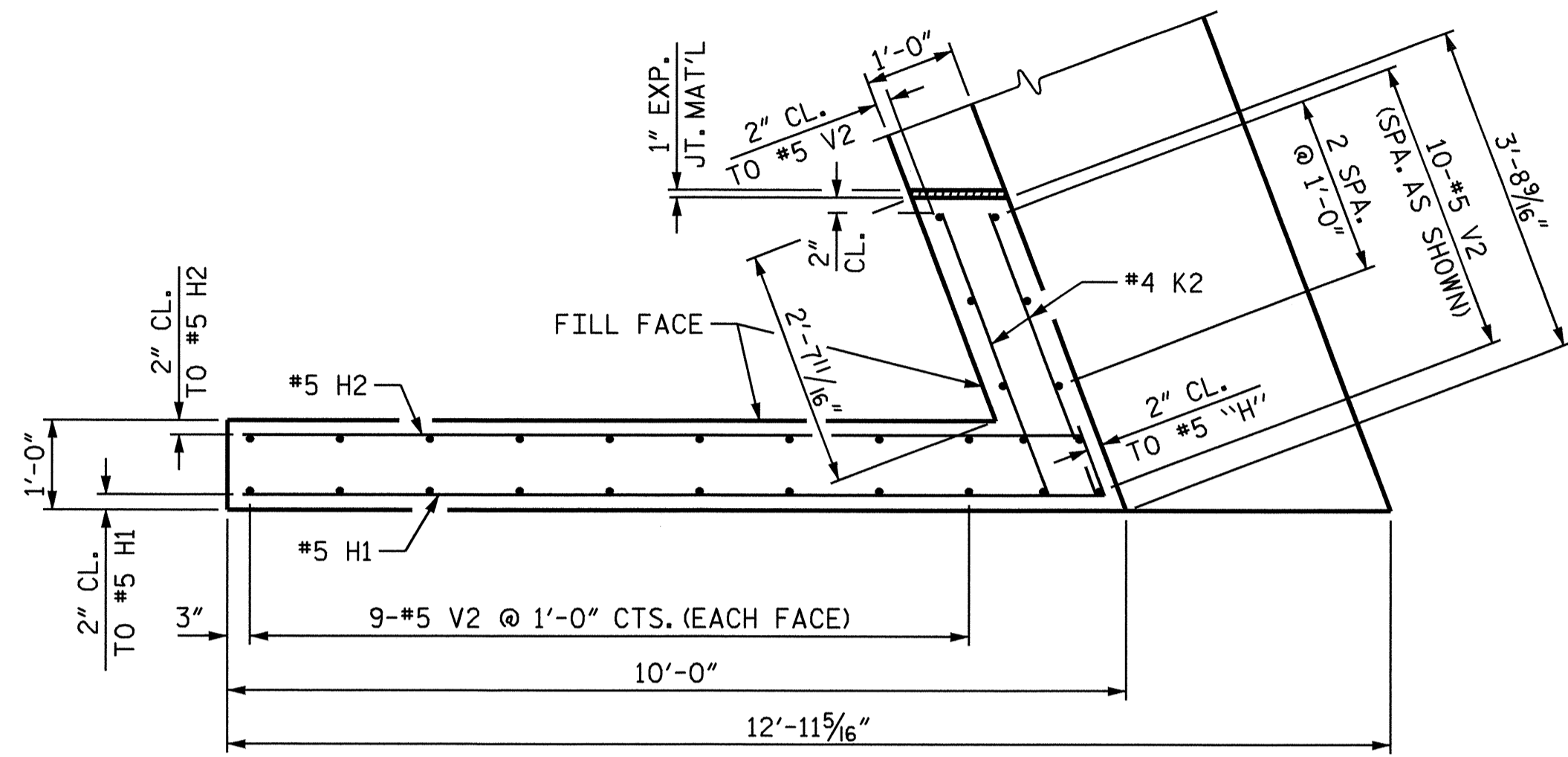
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2

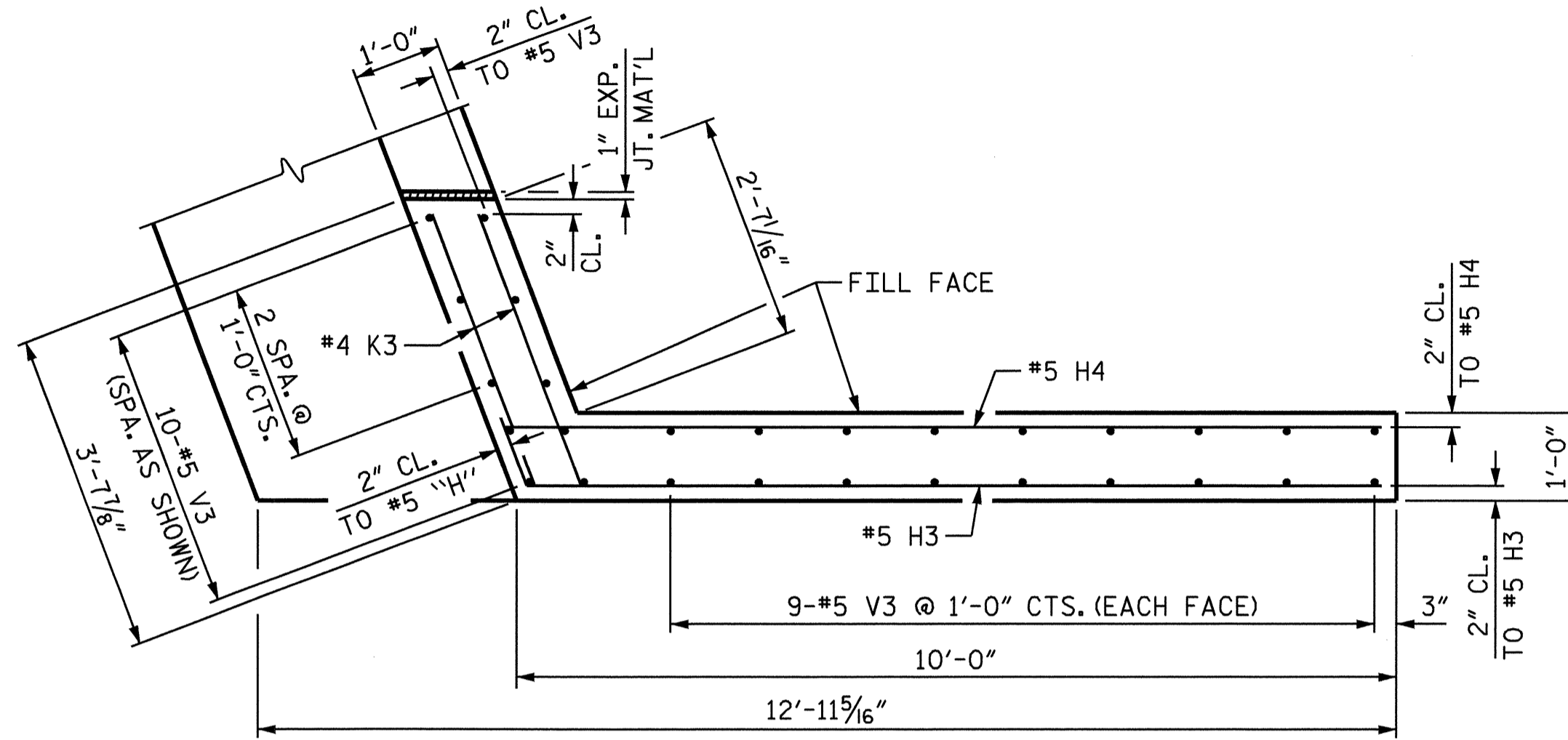


DRAWN BY: E.C. LOCKLEAR DATE: 6-20-07
 CHECKED BY: J.A. TILLMAN DATE: 8-27-07

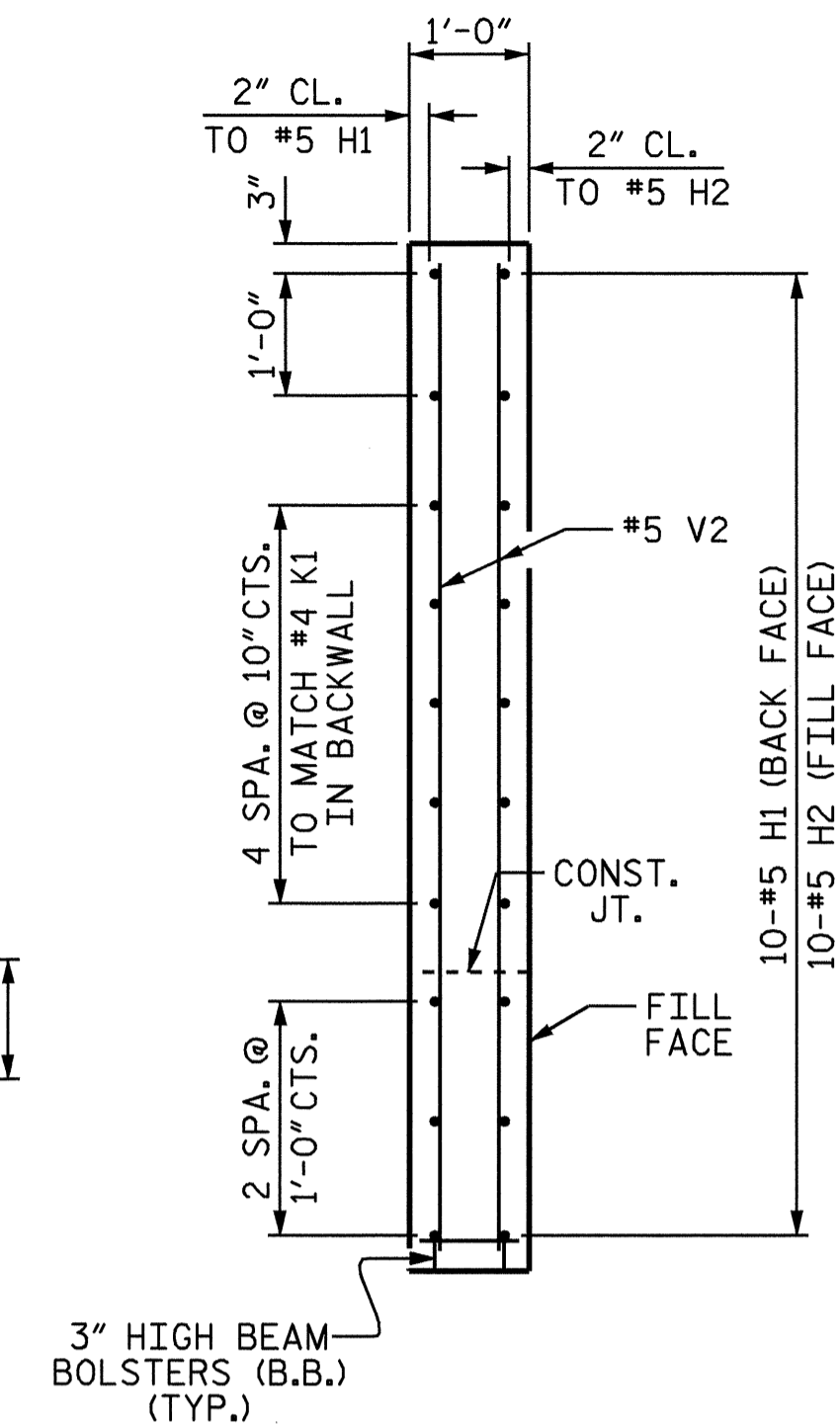
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	5-30	
1			3			TOTAL SHEETS 38	
2			4				



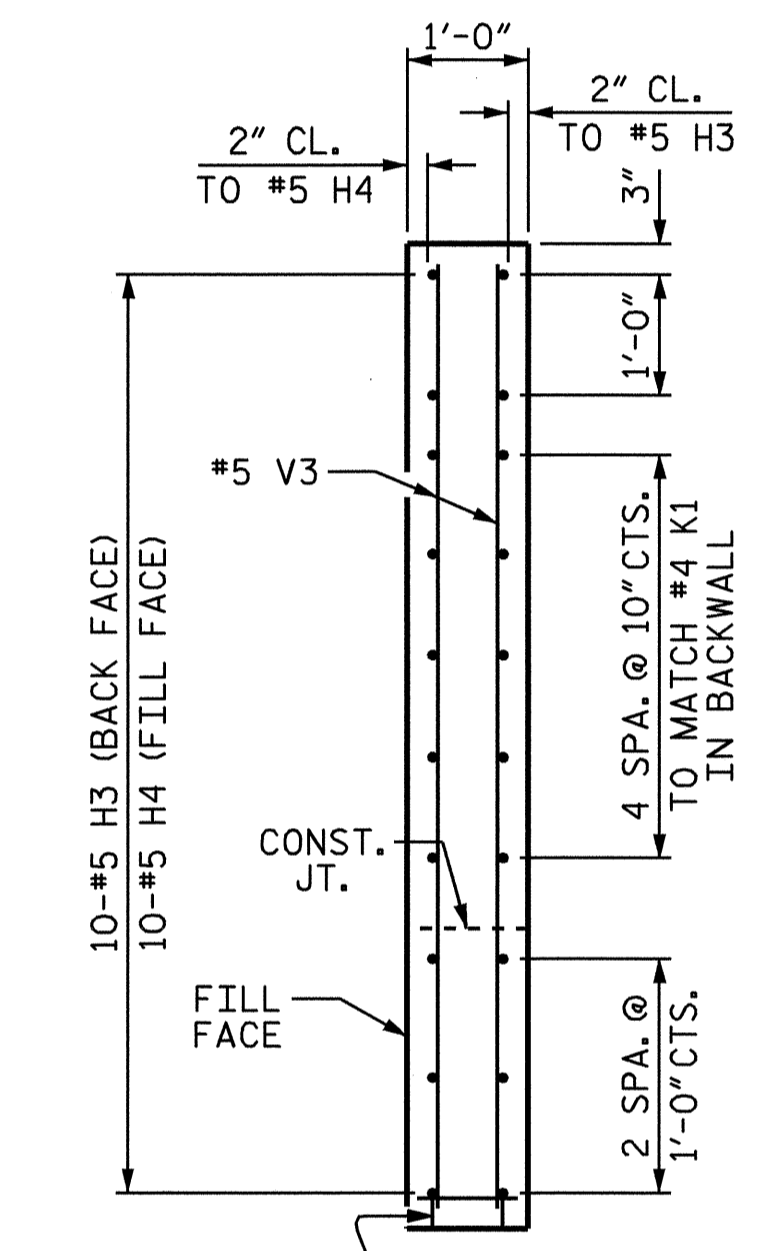
PLAN OF WING (W1)



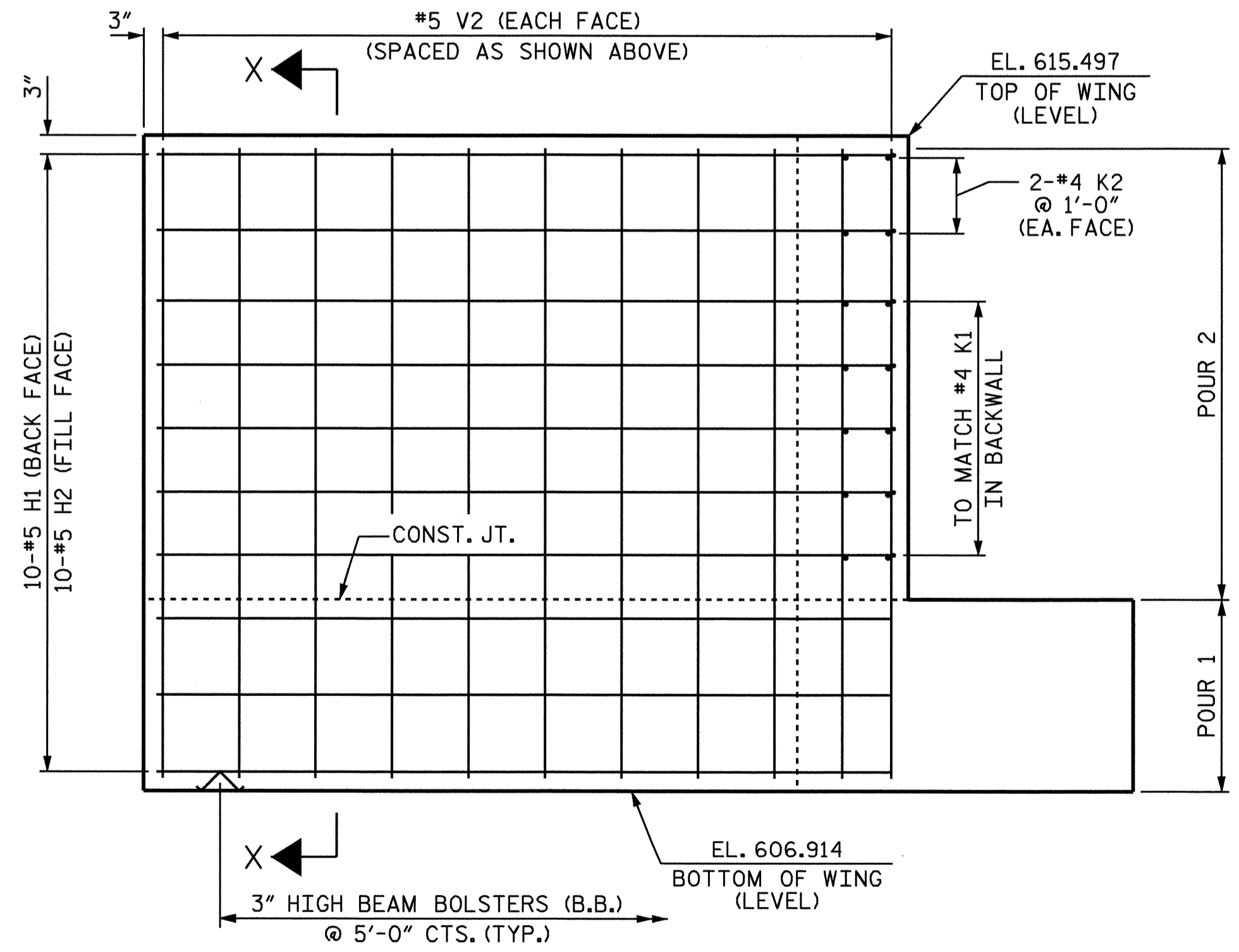
PLAN OF WING (W2)



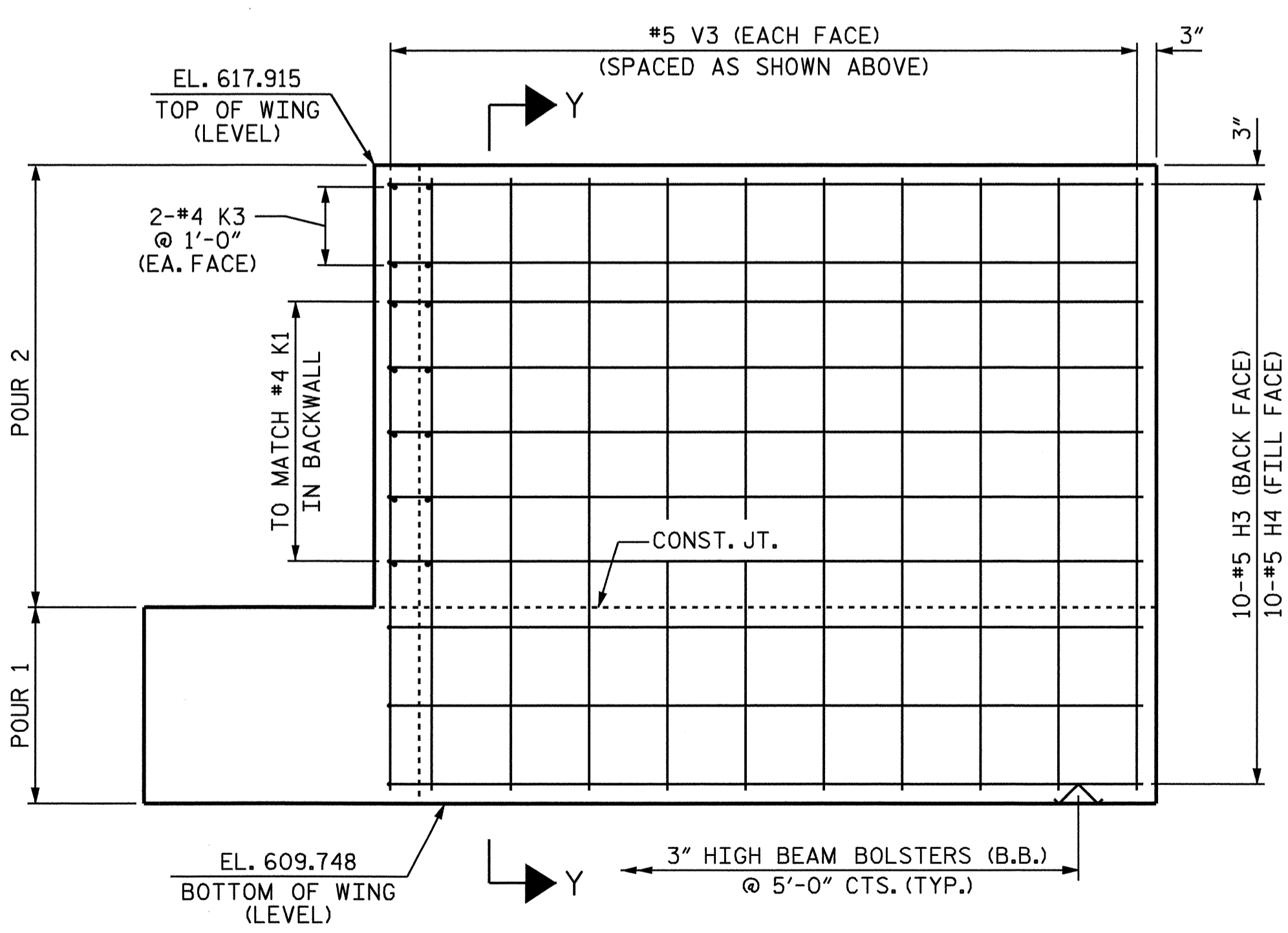
SECTION X-X



SECTION Y-Y



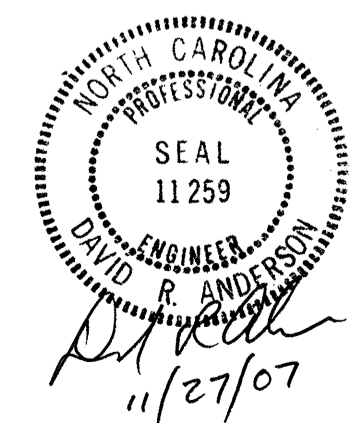
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

PROJECT NO. B-4129
 GUILFORD COUNTY
 STATION: 16+89.50 -L-

SHEET 2 OF 3



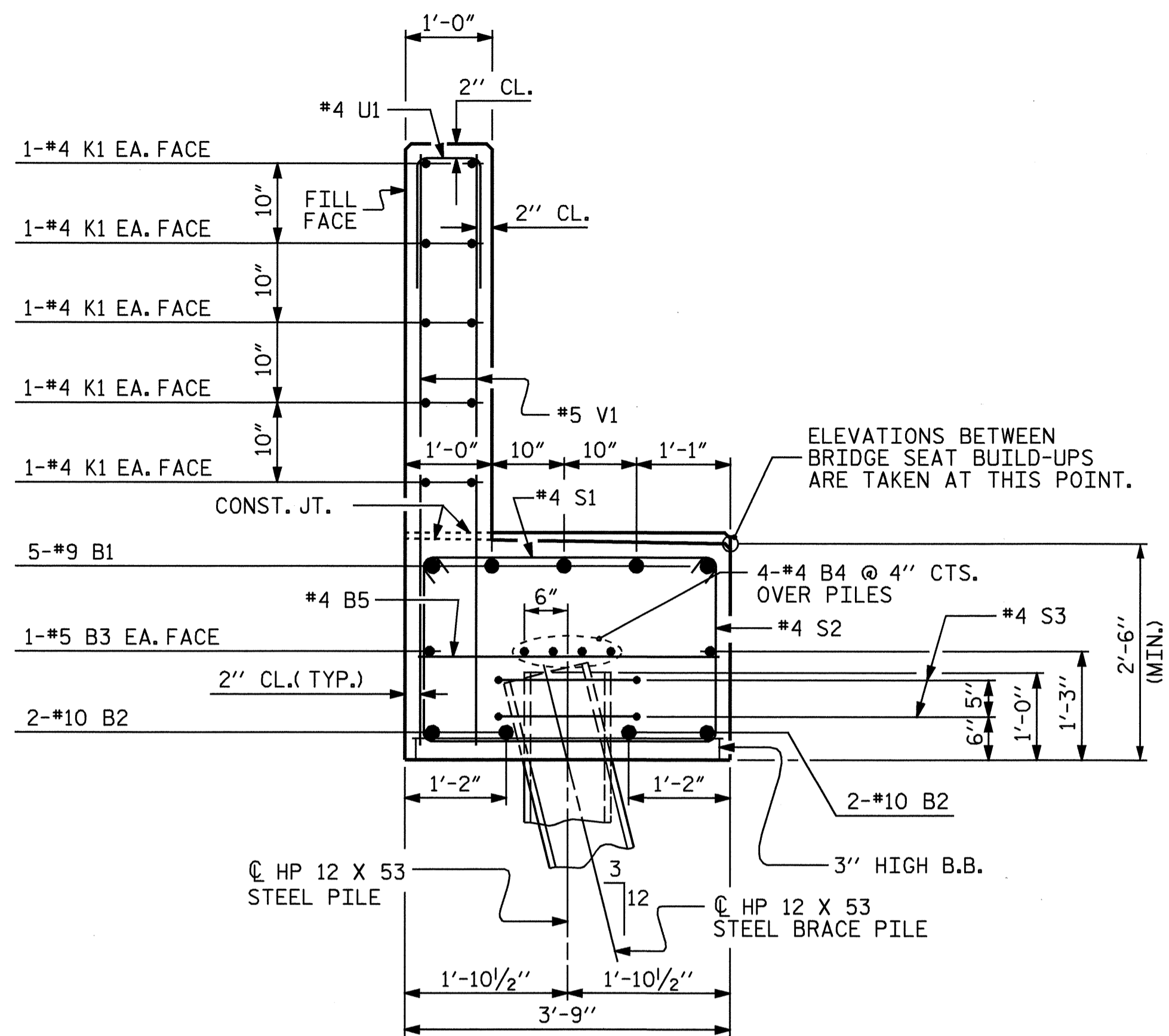
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2

DRAWN BY: E.C. LOCKLEAR DATE: 6-20-07
 CHECKED BY: J.A. TILLMAN DATE: 7-27-07

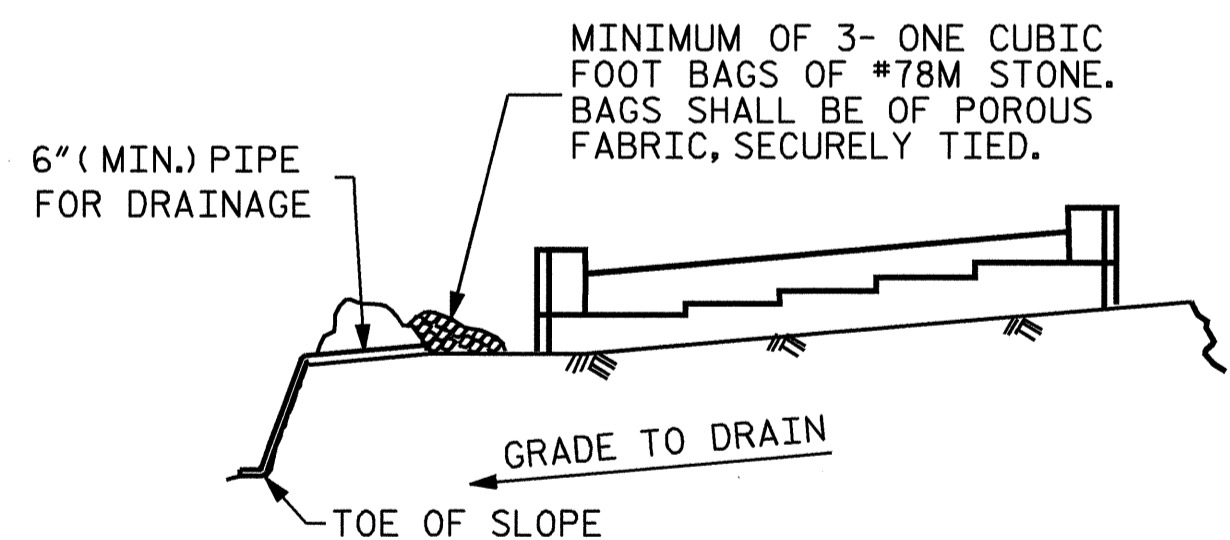
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 38



SECTION A-A

BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#9	1	35'-0"	1190
B2	8	#10	1	34'-9"	1196
B3	2	#5	STR	58'-11"	123
B4	12	#4	STR	21'-3"	170
B5	15	#4	STR	3'-5"	34
H1	10	#5	2	10'-5"	109
H2	10	#5	2	10'-2"	106
H3	10	#5	3	10'-6"	110
H4	10	#5	3	10'-9"	112
K1	30	#4	STR	21'-3"	426
K2	4	#4	STR	3'-4"	9
K3	4	#4	STR	3'-3"	9
S1	58	#4	4	4'-2"	161
S2	58	#4	5	8'-5"	326
S3	18	#4	6	6'-6"	78
U1	52	#4	7	3'-8"	127
V1	104	#5	STR	6'-1"	660
V2	28	#5	STR	8'-2"	238
V3	28	#5	STR	7'-9"	226
REINFORCING STEEL				LBS.	5410
CLASS A CONCRETE BREAKDOWN:					
POUR 1 (CAP & LOWER PART OF WINGS)				C.Y.	22.7
POUR 2 (BACKWALL & UPPER WINGS)				C.Y.	13.2
TOTAL CLASS A CONCRETE				C.Y.	35.9
HP 12 X 53 STEEL PILES NO. = 9 LIN. FT. = 160.0					

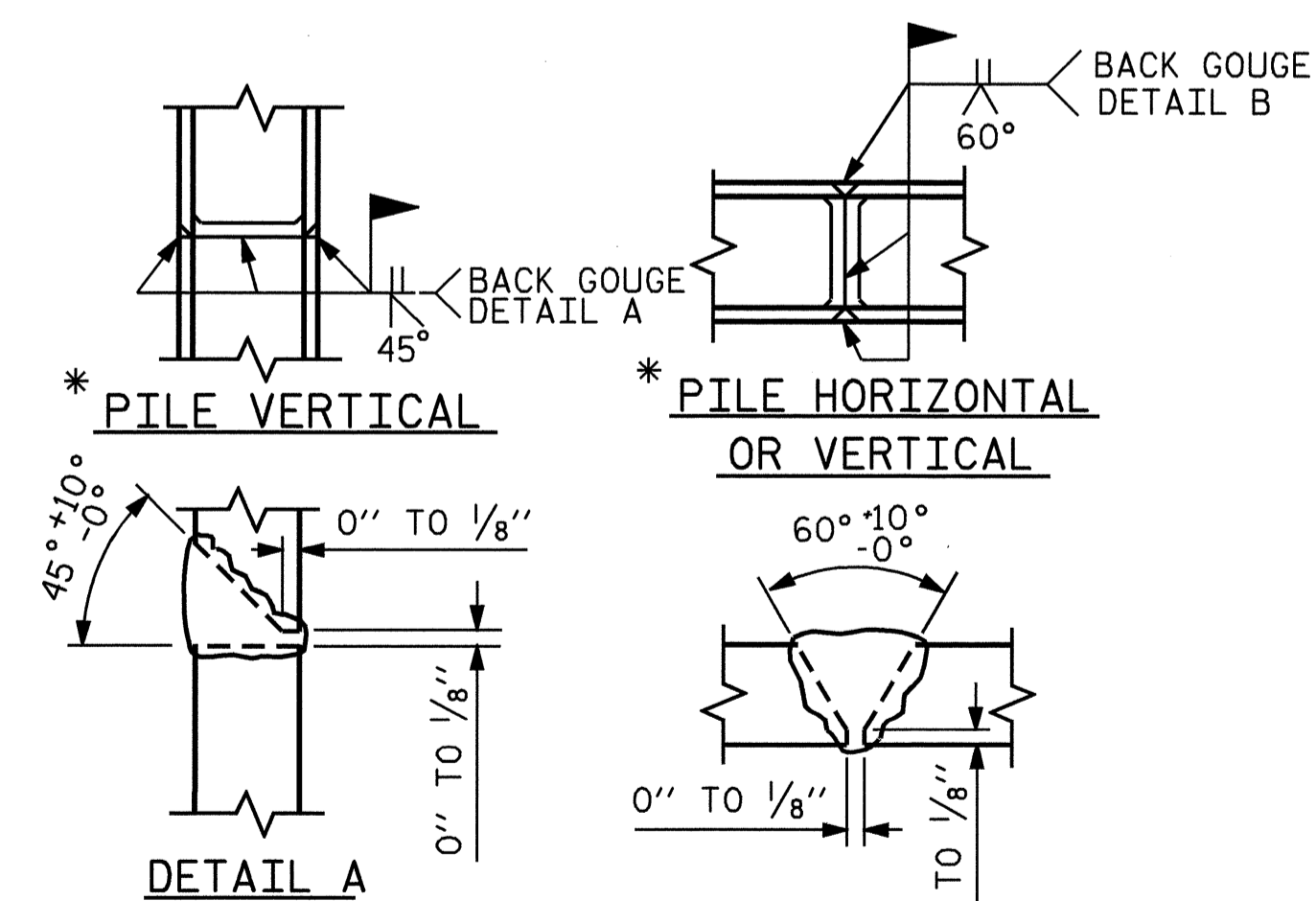


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

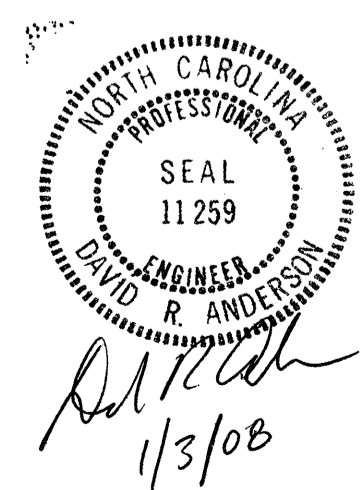
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

TEMPORARY DRAINAGE AT END BENT



POSITION OF PILE DURING WELDING. PILE SPLICE DETAILS



PROJECT NO. B-4129
GUILFORD COUNTY
STATION: 16+89.50 -L-

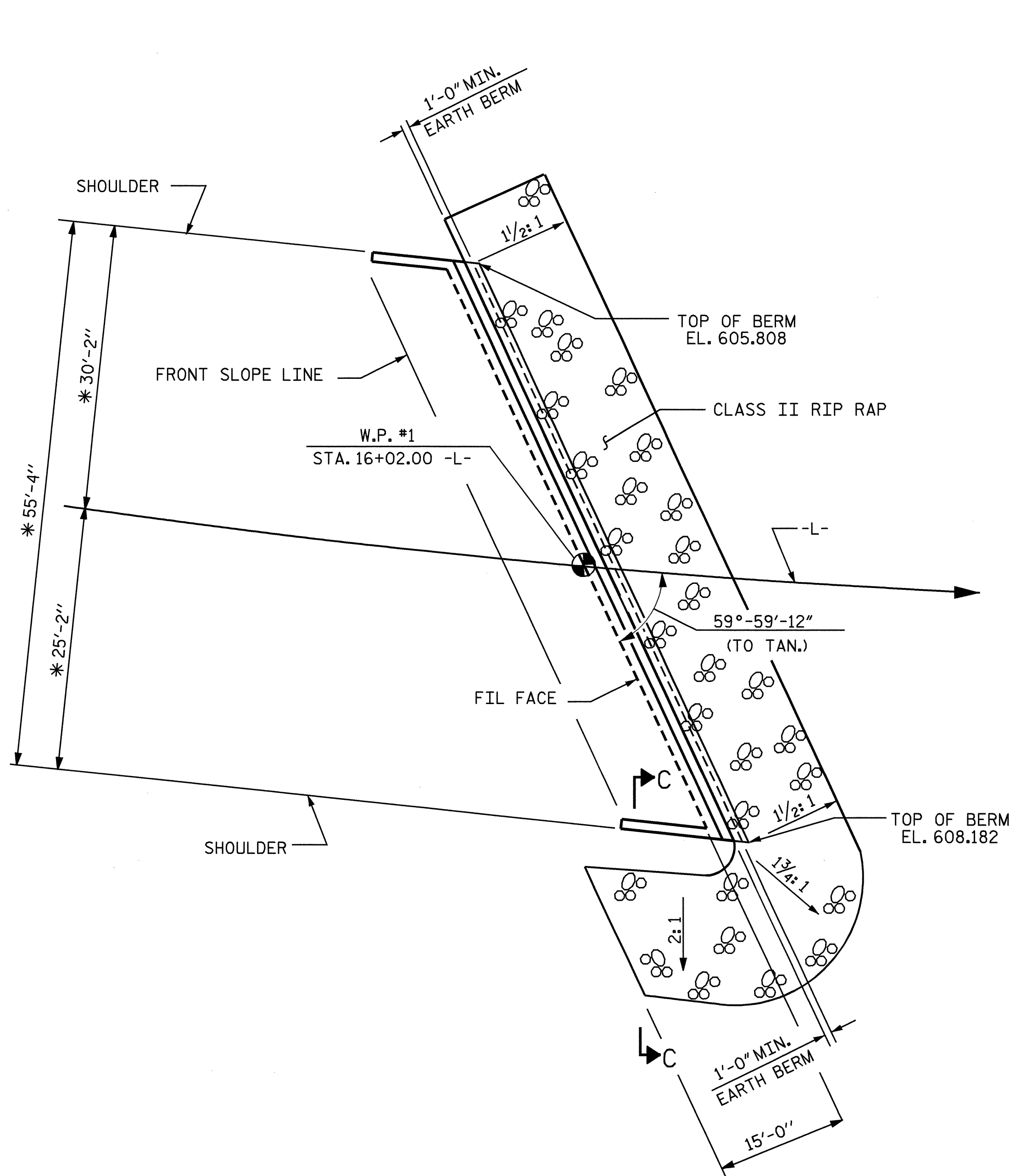
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

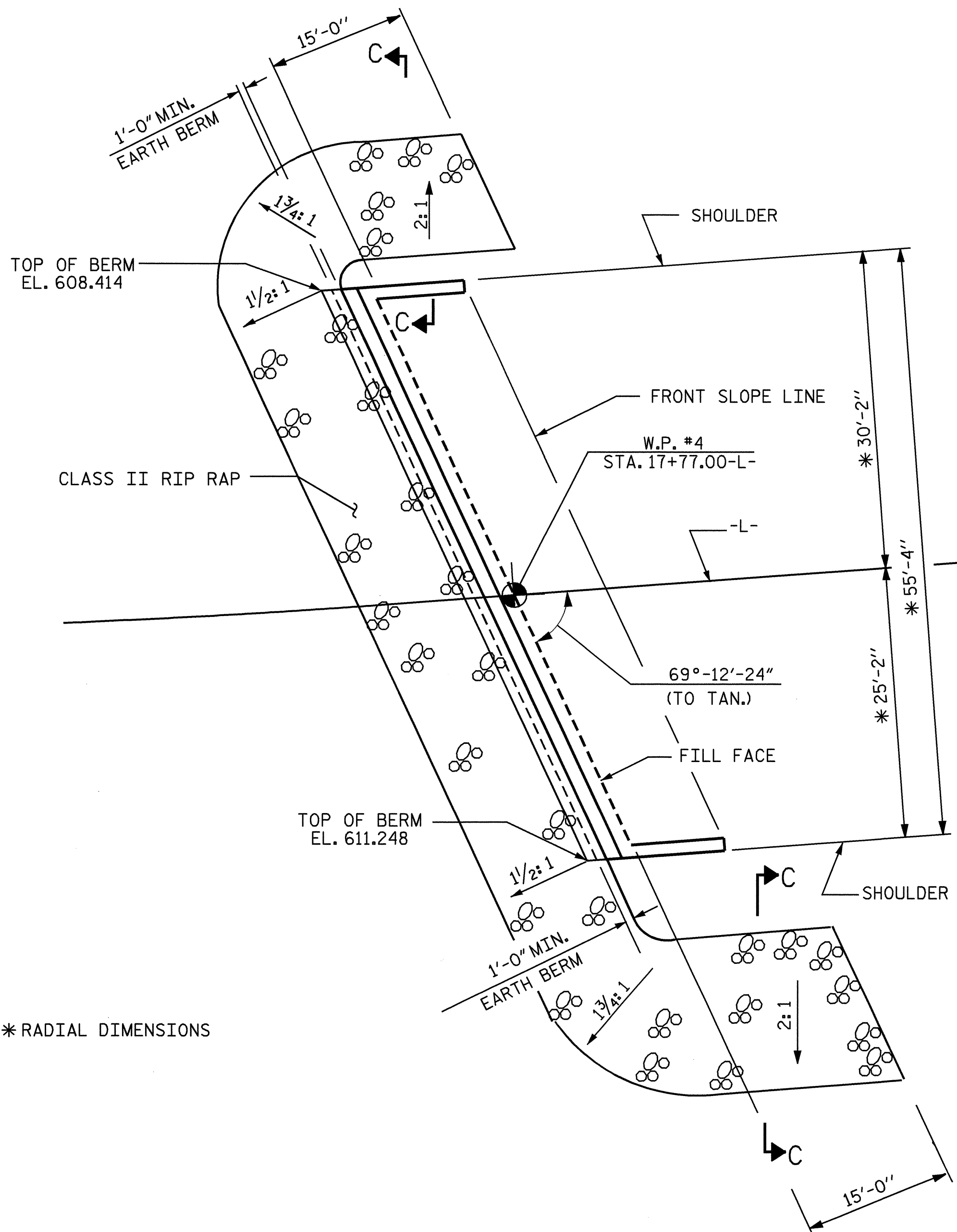
SUBSTRUCTURE
END BENT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			5-32
2			4			TOTAL SHEETS 38

DRAWN BY: E.C. LOCKLEAR DATE: 6-20-07
CHECKED BY: J.A. TILLMAN DATE: 8-28-07



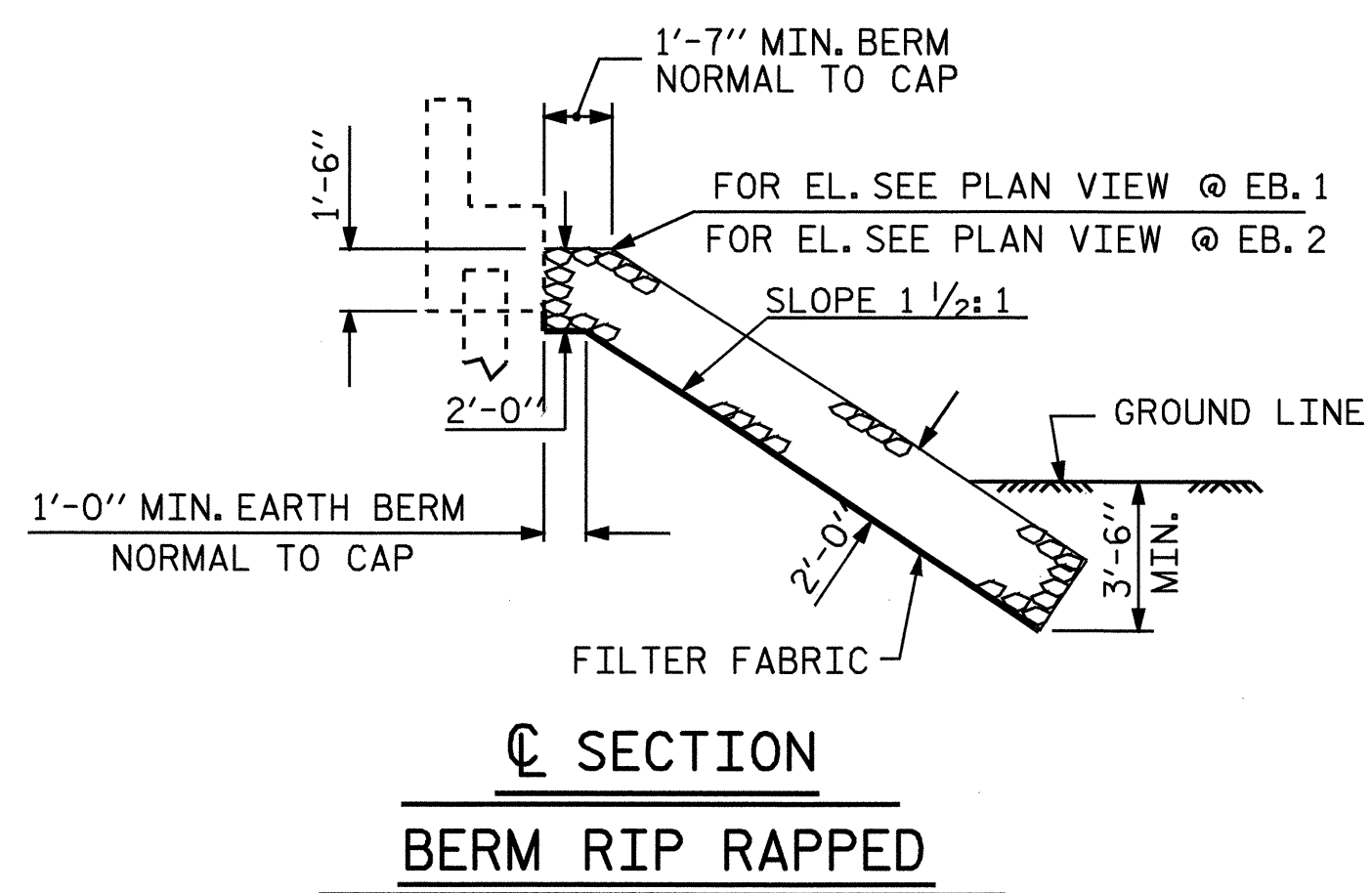
AT END BENT 1



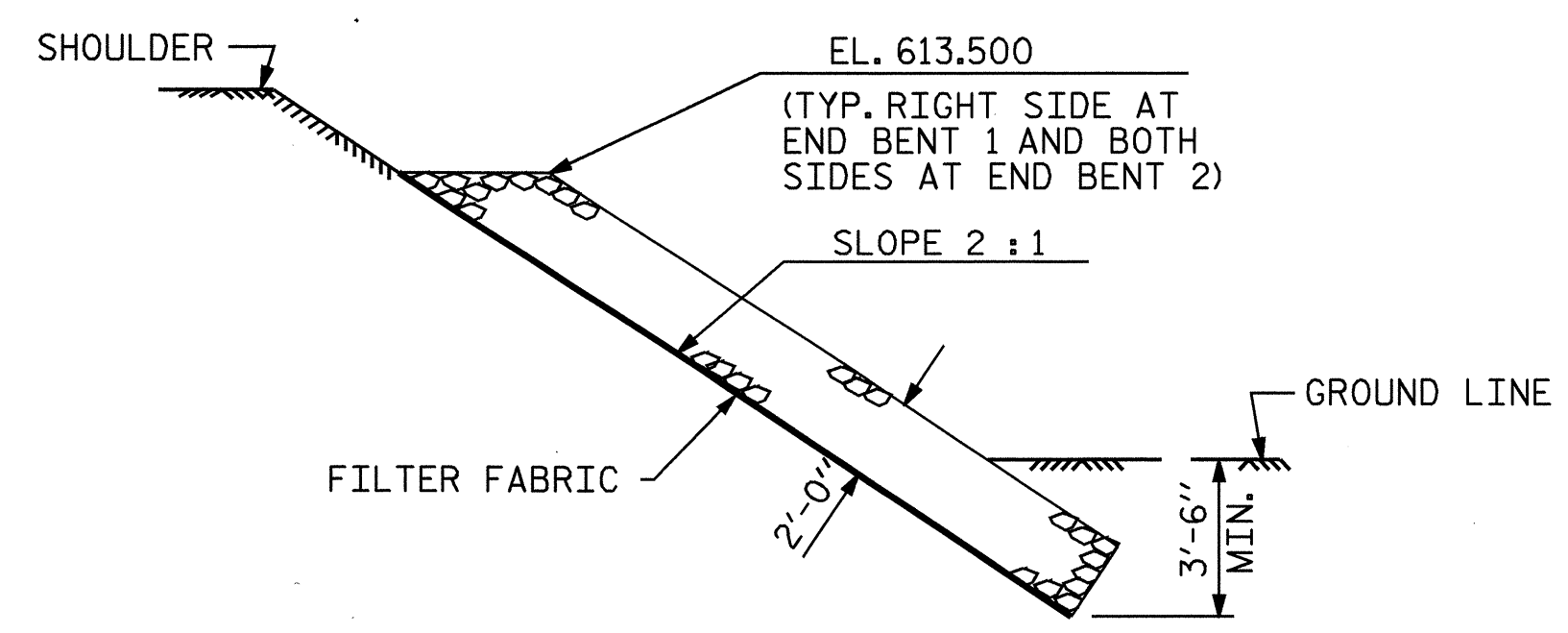
AT END BENT 2

* RADIAL DIMENSIONS

PLAN



SECTION C-C
BERM RIP RAPPED



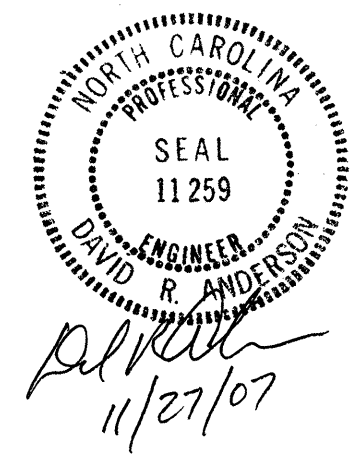
SECTION C-C

ESTIMATED QUANTITIES		
BRIDGE @ STA. 16+89.50 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	155	175
END BENT 2	305	340

NOTE: FILTER FABRIC SHALL BE PLACED UNDER ENTIRE AREA OF RIP RAP

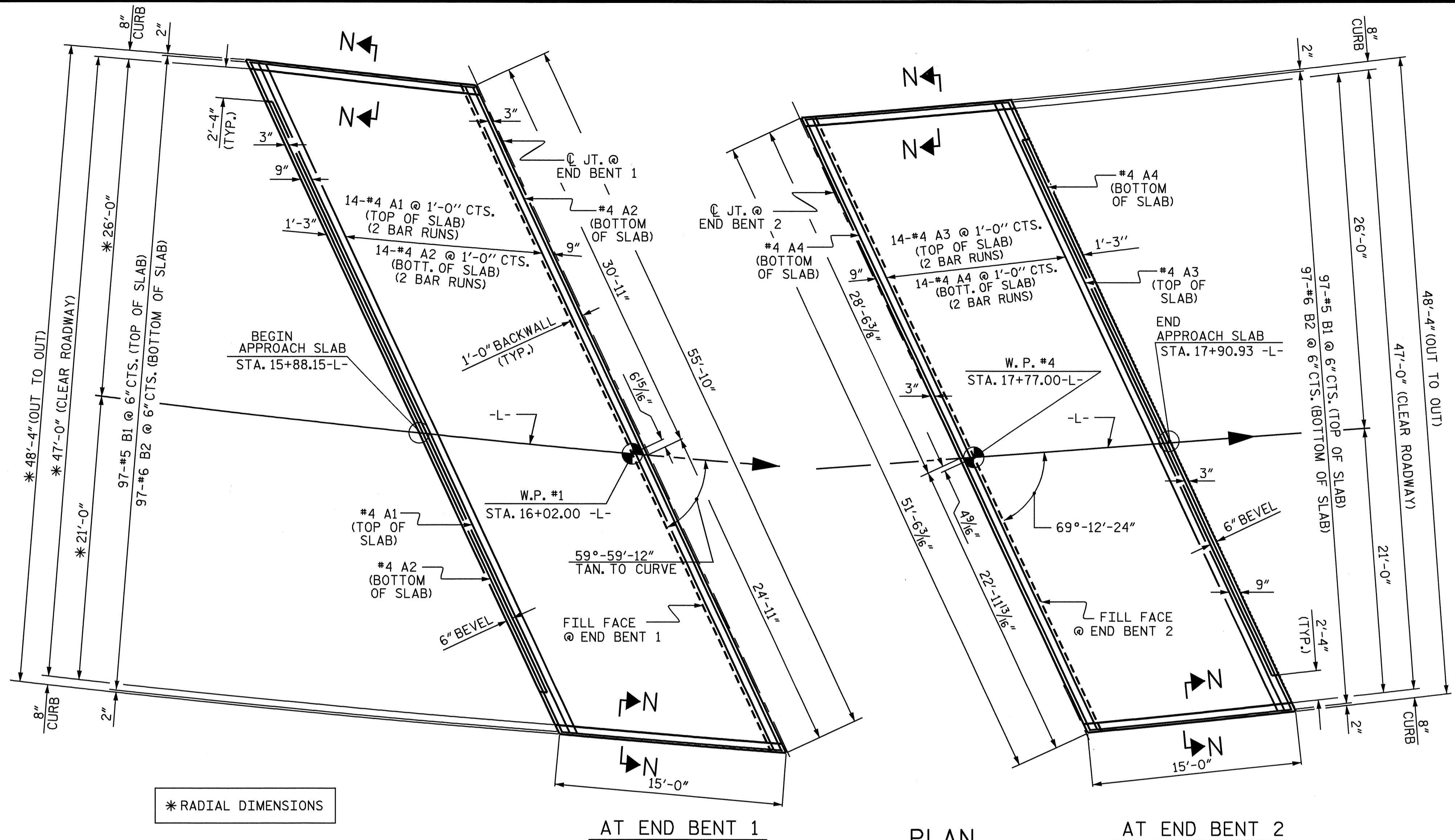
PROJECT NO. B-4129
GUILFORD COUNTY
 STATION: 16+89.50 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
RIP RAP DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		



DRAWN BY: N. O. TRAN DATE: 3-30-06
 CHECKED BY: S. M. RASHIDI DATE: 6-26-06

SHEET NO.
5-33
 TOTAL SHEETS
38

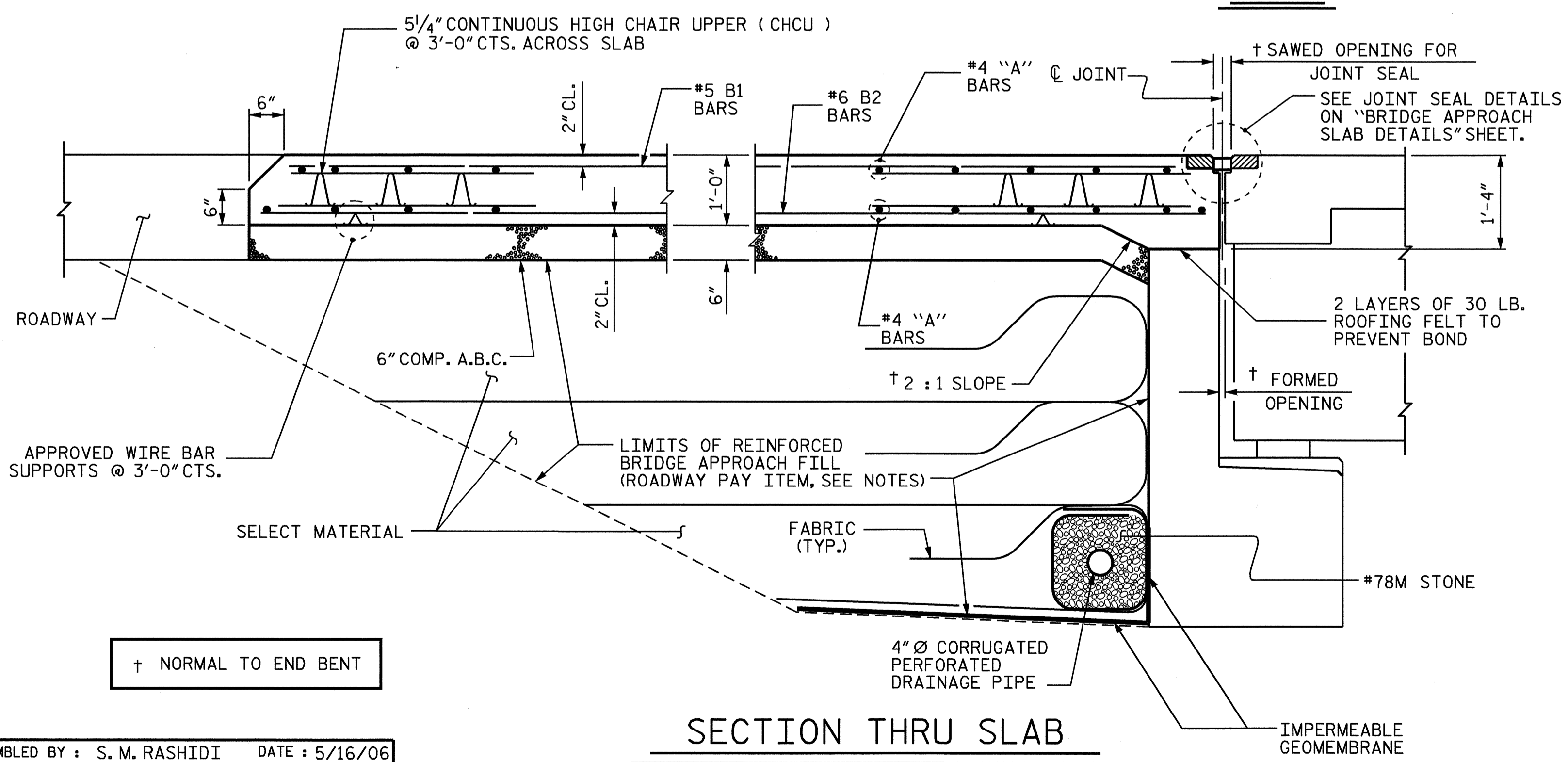


* RADIAL DIMENSIONS

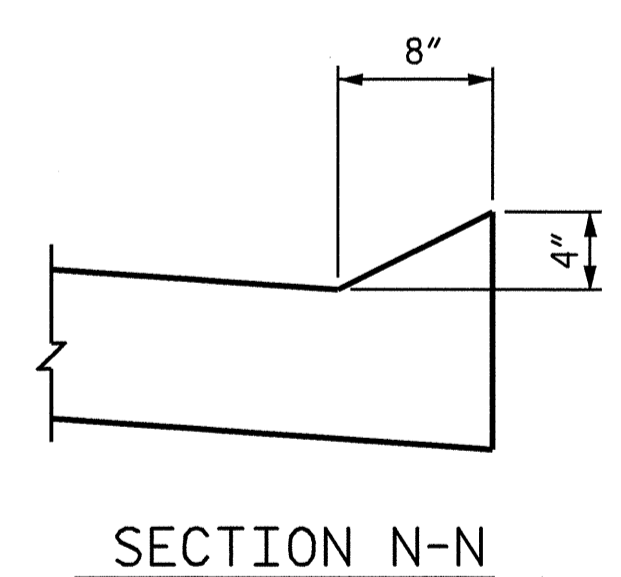
AT END BENT 1

PLAN

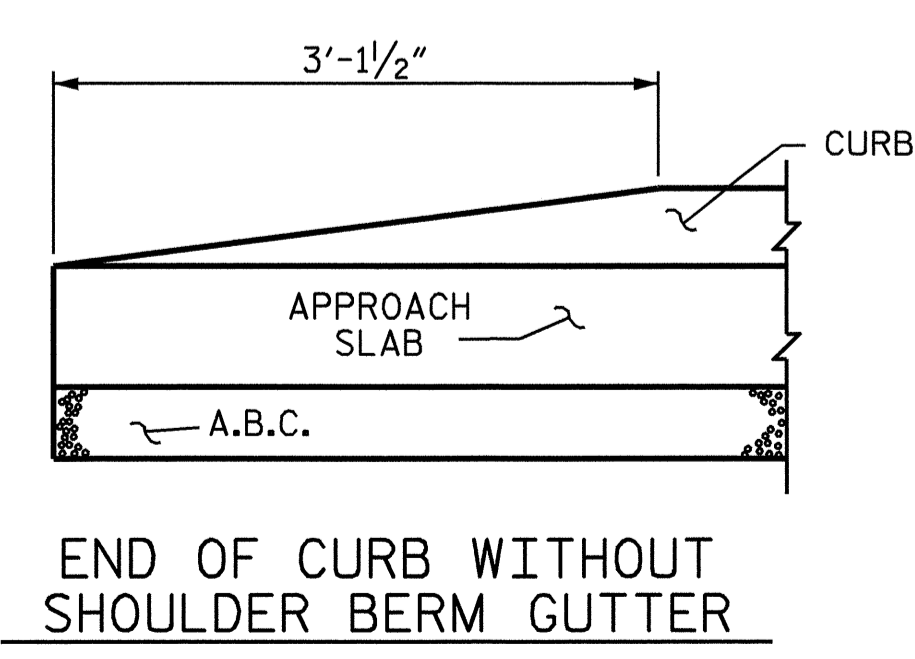
AT END BENT 2



SECTION THRU SLAB



SECTION N-N



CURB DETAILS

BILL OF MATERIAL													
APPROACH SLAB @ END BENT 1							APPROACH SLAB @ END BENT 2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT		BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	30	#4	STR	28'-8"	574		*A3	30	#4	STR	26'-8"	534	
A2	32	#4	STR	28'-7"	611		A4	32	#4	STR	26'-6"	566	
*B1	97	#5	STR	13'-8"	1383		*B1	97	#5	STR	13'-8"	1383	
B2	97	#6	STR	14'-6"	2113		B2	97	#6	STR	14'-6"	2113	
REINFORCING STEEL					LBS.	2724	REINFORCING STEEL					LBS.	2679
* EPOXY COATED REINFORCING STEEL					LBS.	1957	* EPOXY COATED REINFORCING STEEL					LBS.	1917
CLASS AA CONCRETE					C. Y.	27.6	CLASS AA CONCRETE					C. Y.	27.6

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, #78M STONE, AND SELECT MATERIAL, SEE ROADWAY PLANS.

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

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

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

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

THE JOINT SHALL BE SAWS PRIOR TO THE CASTING OF THE END POST. ARC OFFSETS ARE NEGLIGIBLE.

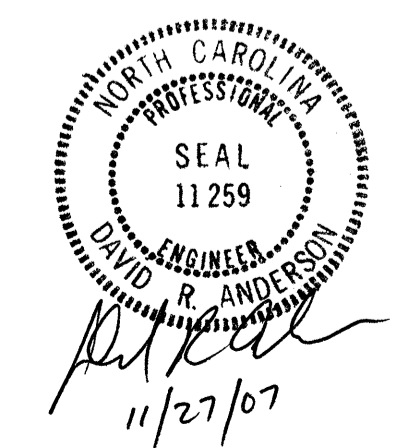
WITH EVAZOTE JOINT SEAL

FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

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

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

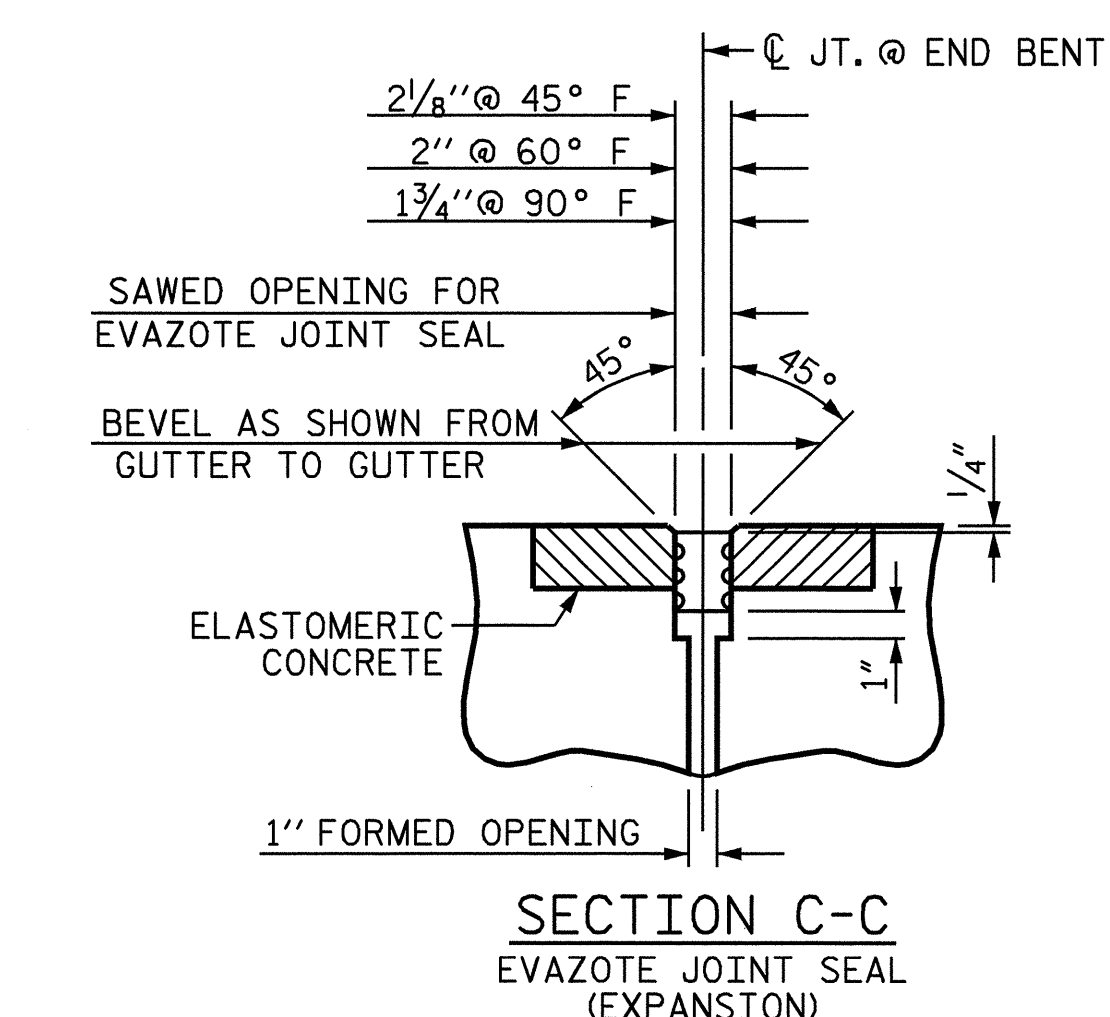
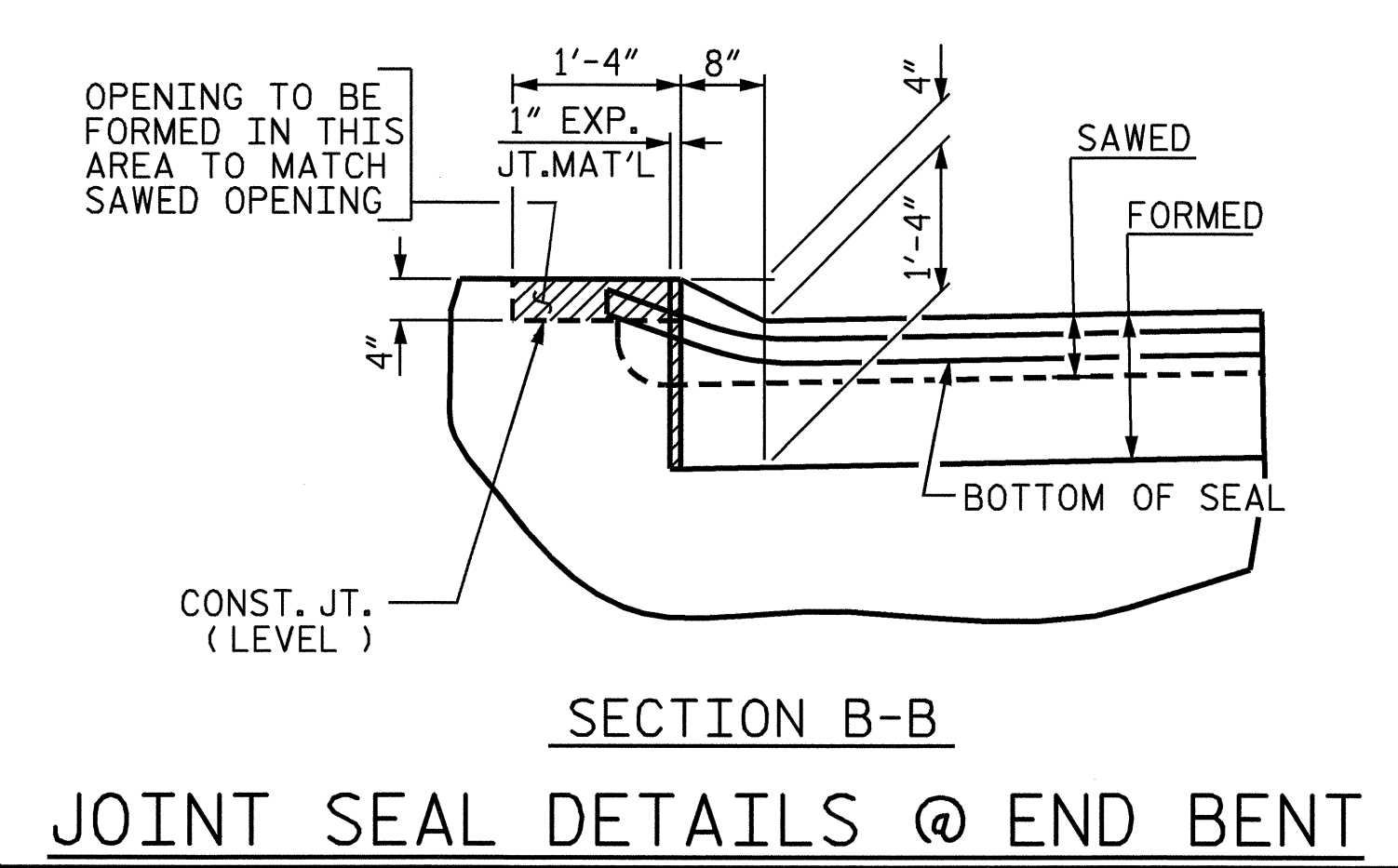
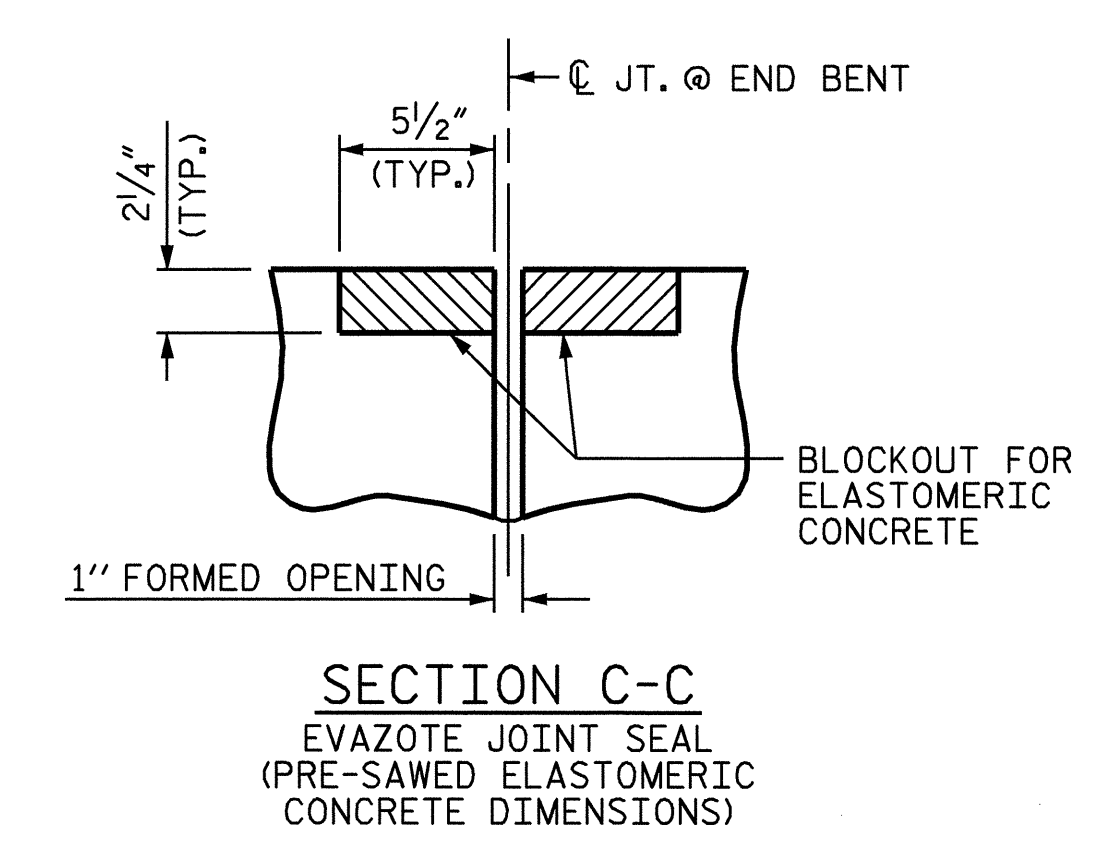
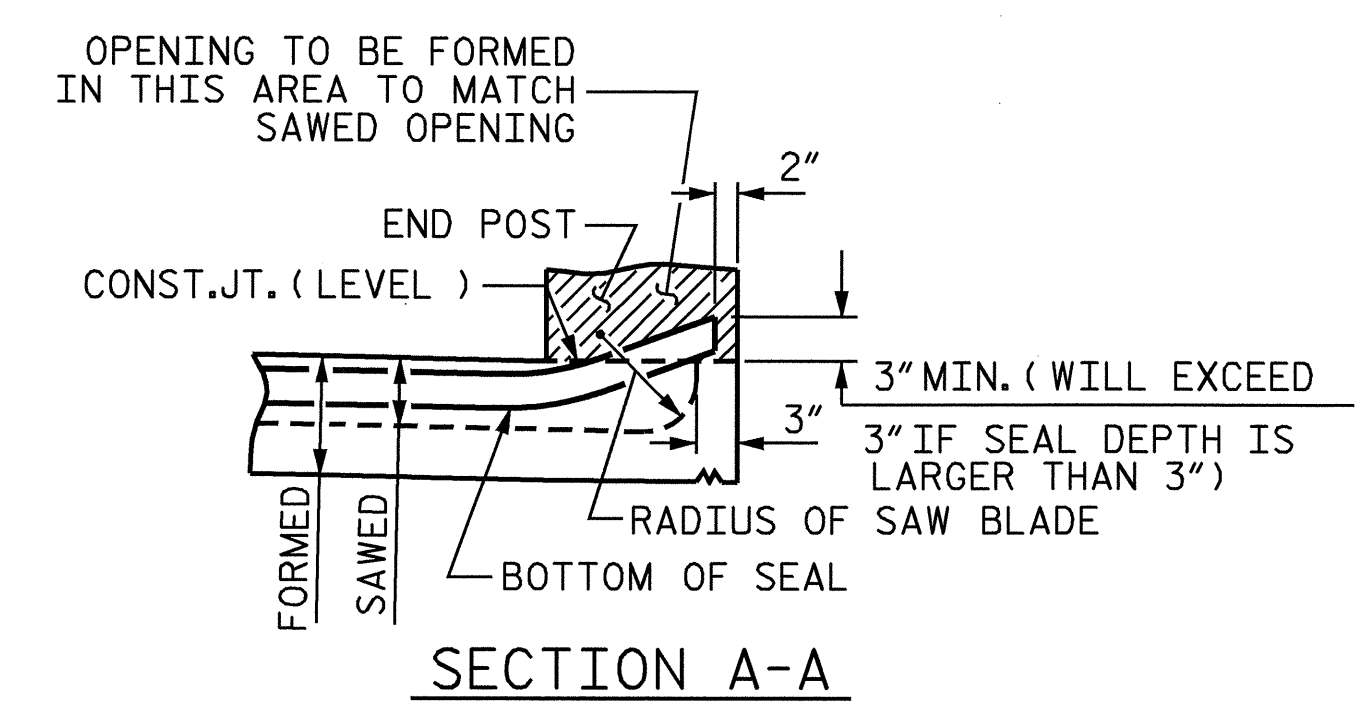
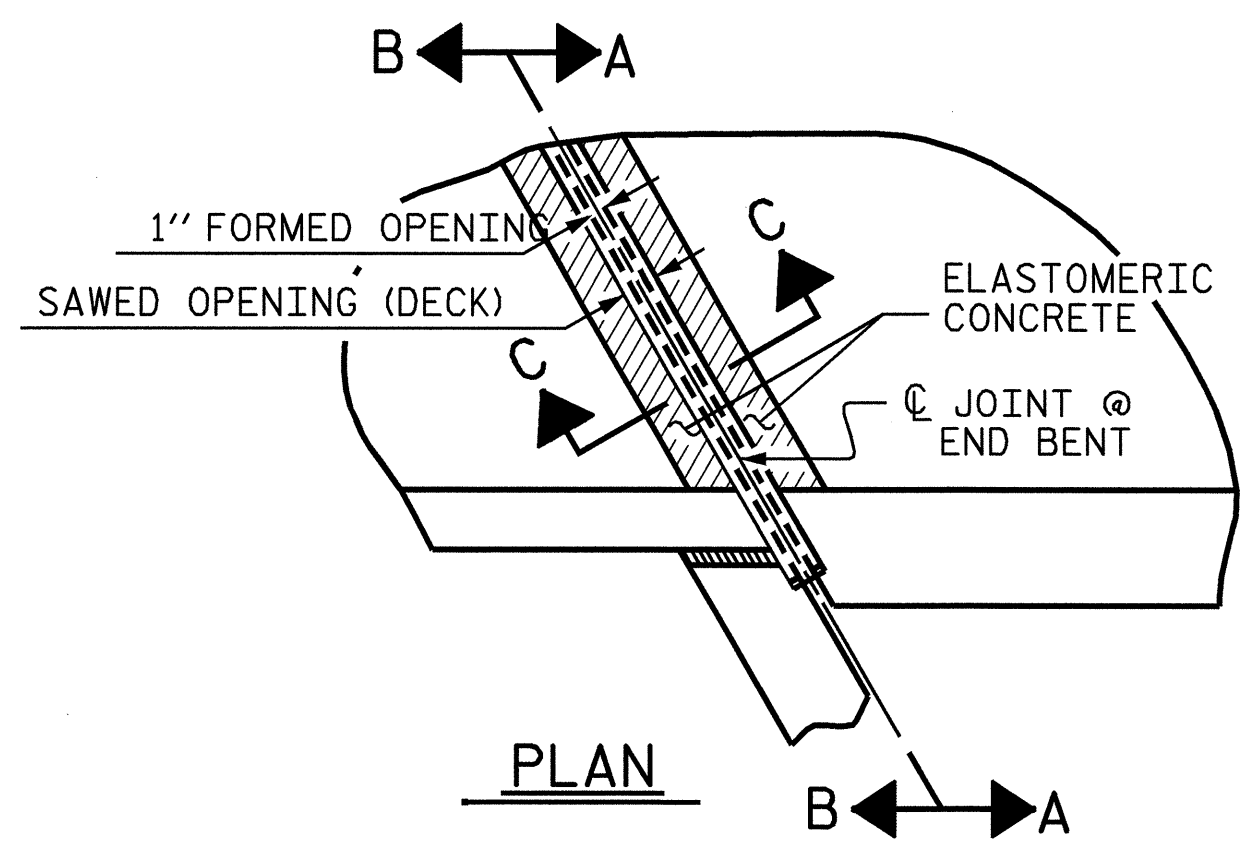
ASSEMBLED BY : S. M. RASHIDI	DATE : 5/16/06
CHECKED BY : N. TRAN/A. CALLAWAY	DATE : 6/28/06
DRAWN BY : RH 3/95	REV. 7/10/01 LES/RDR
CHECKED BY : RDR 3/95	REV. 5/7/03R RWW/JTE
	REV. 5/1/06R KMM/GM



PROJECT NO. B-4129
GUILFORD COUNTY
STATION: 16+89.50 -L-

SHEET 1 OF 2
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BRIDGE APPROACH
SLAB FOR
FLEXIBLE PAVEMENT

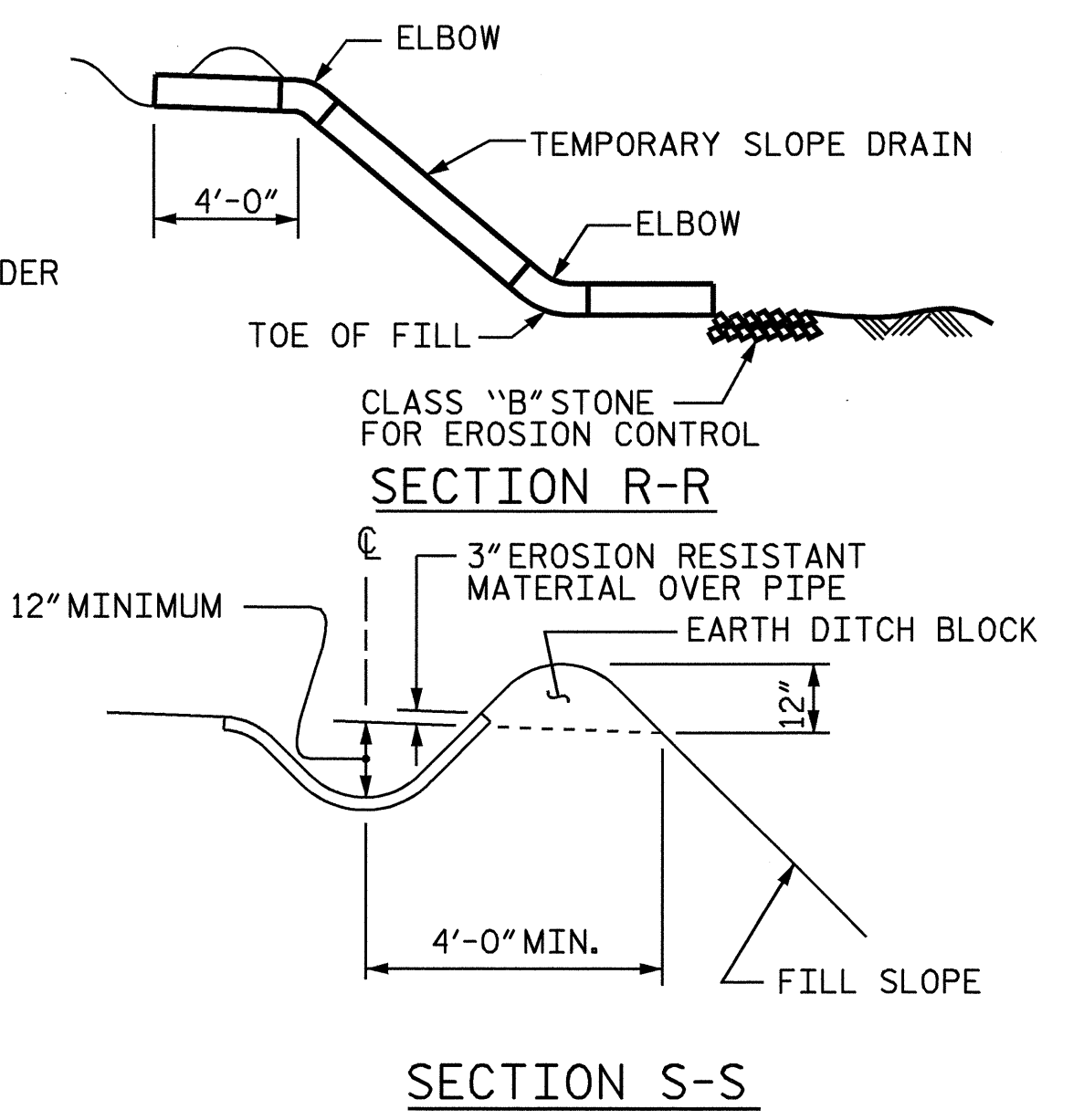
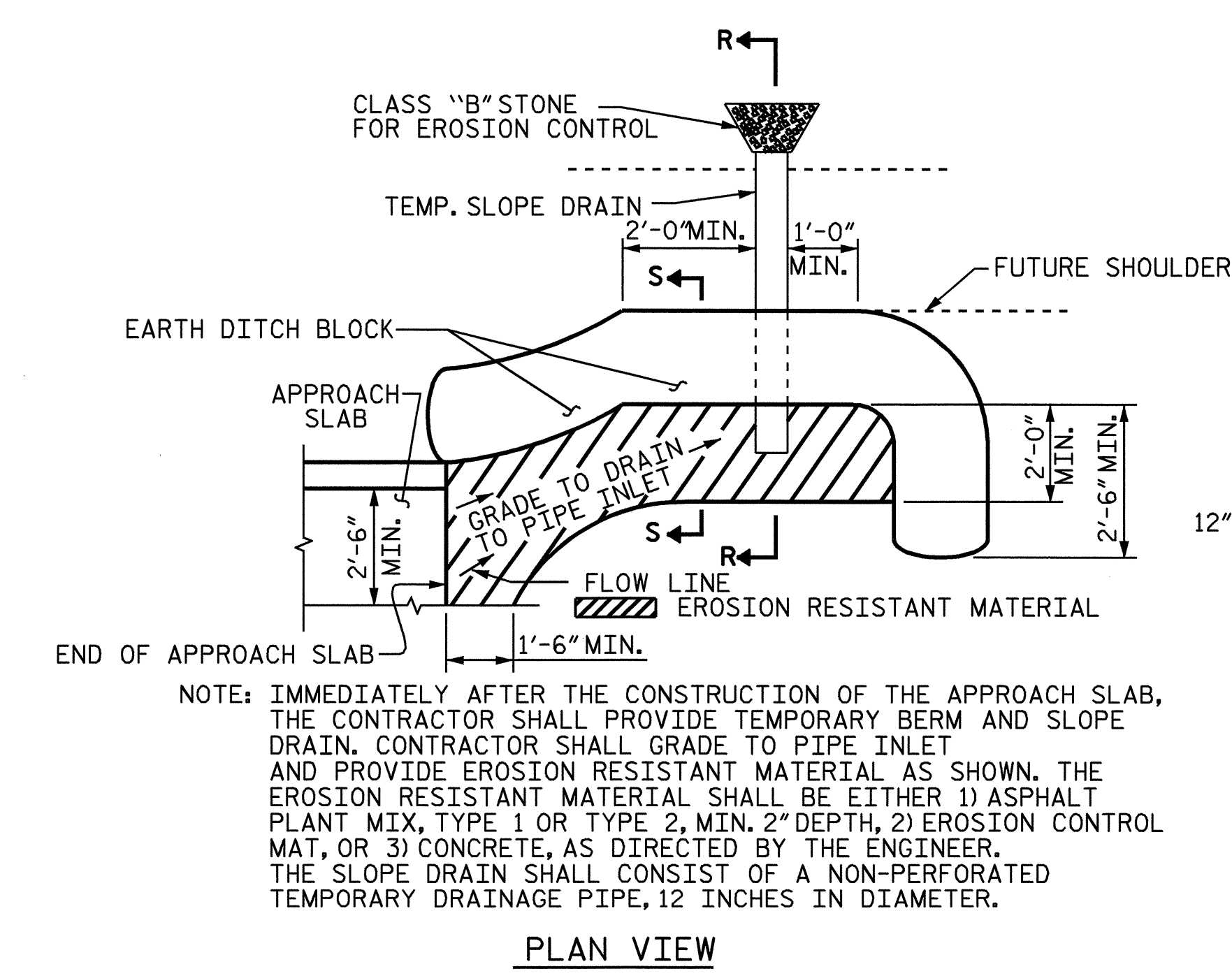
REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	38
1			3			
2			4			



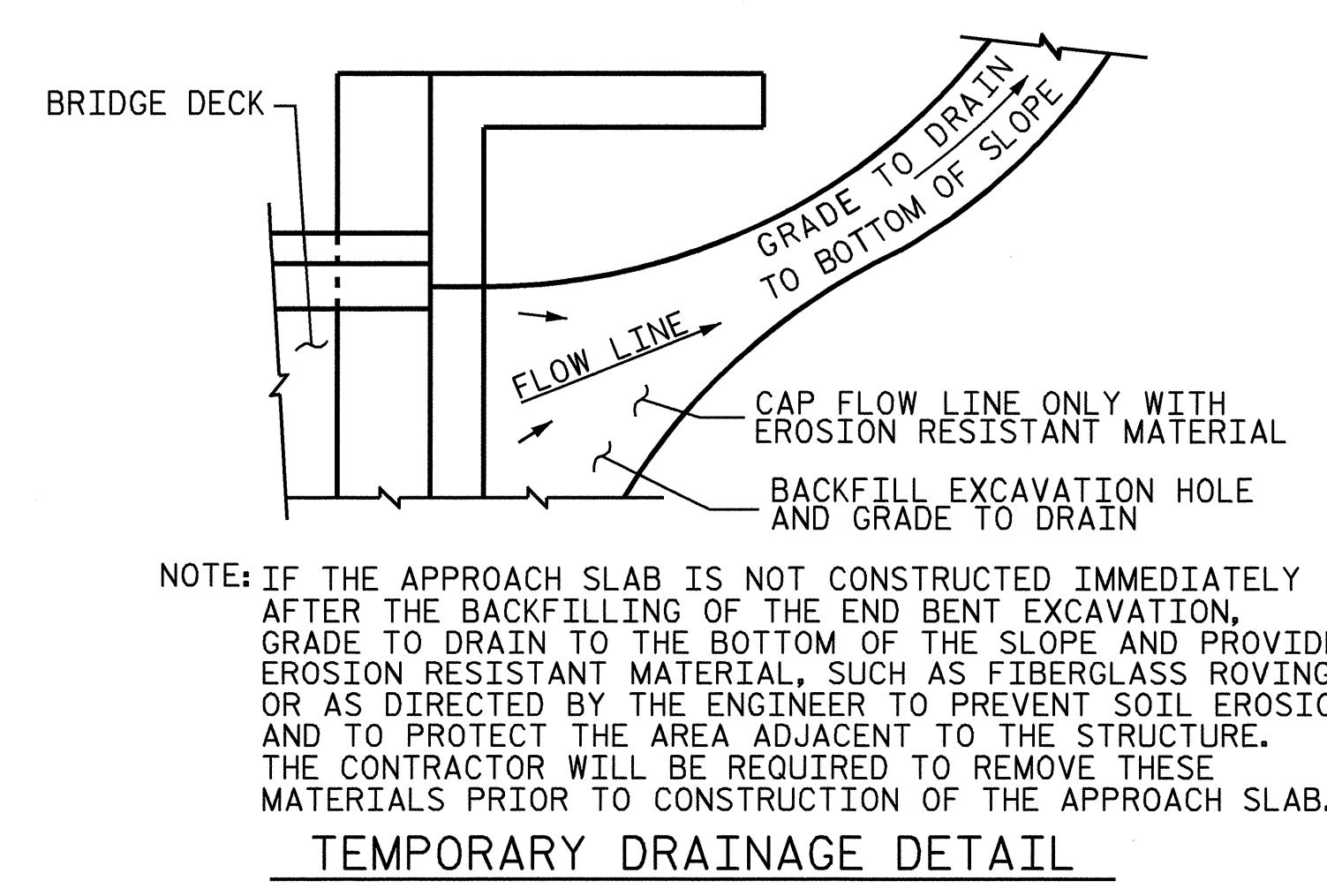
ELASTOMERIC CONCRETE	
END BENT	ELASTOMERIC CONCRETE * (CU. FT.)
1	9.4
2	8.7
TOTAL	18.1

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

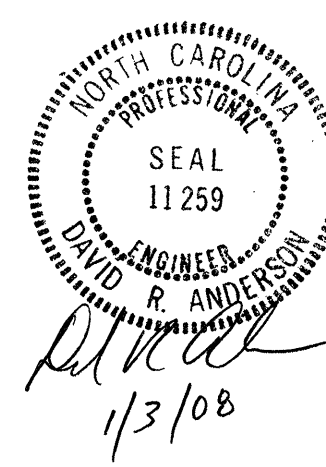
JOINT SEAL DETAILS @ END BENT



TEMPORARY BERM AND SLOPE DRAIN DETAILS
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



PROJECT NO. B-4129
GUILFORD COUNTY
 STATION: 16+89.50 -L-
 SHEET 2 OF 2



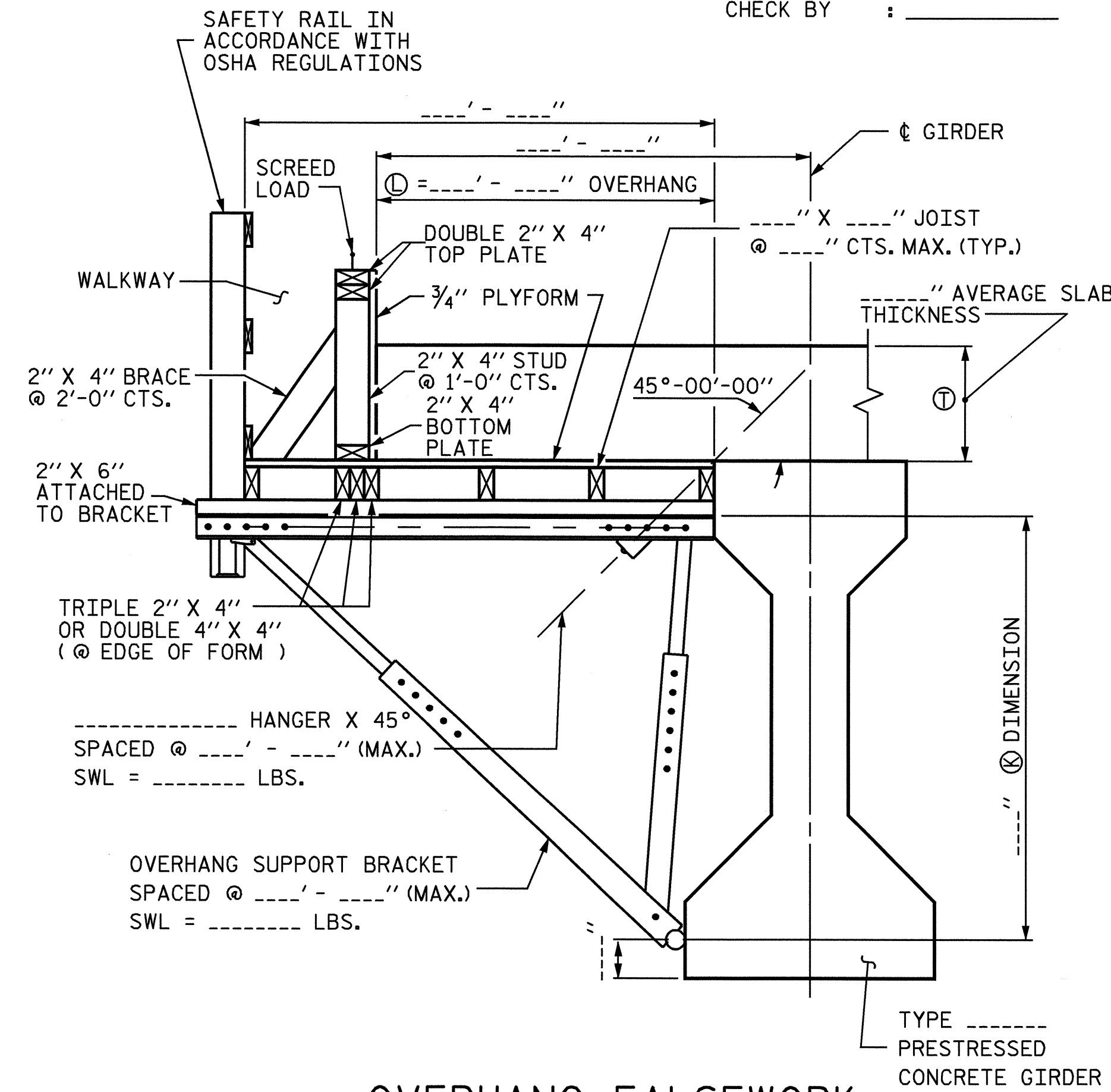
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD					
BRIDGE APPROACH SLAB DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					5-35
					TOTAL SHEETS 38

ASSEMBLED BY : S.M. RASHIDI	DATE : 5/16/06
CHECKED BY : N. TRAN/A. CALLAWAY	DATE : 6/28/06
DRAWN BY : FCJ 11/88	REV. 10/17/00 RWW/LES
CHECKED BY : ARB 11/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06R MAA/KMM

BRIDGE OVERHANG BRACKET SUMMARY

TOTAL SCREED WEIGHT = _____ LBS. PROJECT No. : _____
 NUMBER OF SCREED WHEELS = _____ COUNTY : _____
 SCREED WHEEL LOAD (W) = _____ LBS. STATION : _____
 SCREED LOAD PER BRACKET = _____ LBS. DESCRIPTION : _____

DATE : _____
 DESIGN BY : _____
 CHECK BY : _____



OVERHANG FALSEWORK

NOTES

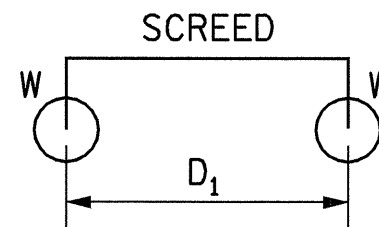
DESIGN INCLUDES CONSTRUCTION LIVE LOAD 20 PSF ON THE AREA SUPPORTED AND 75 PLF AT THE OUTSIDE DECK OF OVERHANGS.

REQUIRED MINIMUM DIAGONAL LEG CAPACITY: 3600 LB WORKING LOAD

THE CONTRACTOR HAS THE OPTION OF SUBMITTING HIS OWN DESIGN FOR OVERHANG FALSEWORK IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

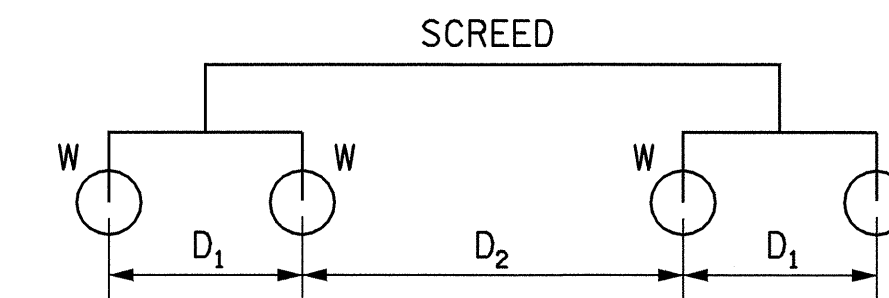
SUBMITTALS UTILIZING THE INSTRUCTIONS AND PROCEDURES DESCRIBED ON SHEET 1 OF 3 SHALL BE IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE SPECIFICATIONS AND SPECIAL PROVISIONS, EXCEPT THAT CALCULATIONS FOR OVERHANG FALSEWORK NEED NOT BE SEALED BY A REGISTERED ENGINEER.

FOR OVERHANG FALSEWORK BRACING DESIGN, SEE SHEET 3 OF 3.



4-WHEEL MACHINE

4 WHEEL MACHINE	
S/D1	R
<= 1.0	1.00
1.1	1.09
1.2	1.17
1.3	1.23
1.4	1.29
1.5	1.33
1.6	1.38
1.7	1.41
1.8	1.44
1.9	1.47
2.0	1.50
2.2	1.55
2.4	1.58
2.6	1.62
2.8	1.64
3.0	1.67
3.5	1.71
4.0	1.75



8-WHEEL MACHINE

TABLE 2: SCREED LOAD FACTOR "R"

		THE SCREED LOAD FACTOR R (FOR 8 WHEEL MACHINE)																	
		S/D ₂																	
S/D ₁		<= 1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.2	2.4	2.6	2.8	3.0	3.5	4.0
	<= 1.0	<= 1.0	1.00	1.09	1.17	1.23	1.29	1.33	1.38	1.41	1.44	1.47	1.50	1.55	1.58	1.62	1.64	1.67	1.71
1.1	1.1	1.09	1.18	1.26	1.32	1.38	1.42	1.47	1.50	1.54	1.56	1.59	1.64	1.67	1.71	1.73	1.76	1.81	1.84
1.2	1.2	1.17	1.26	1.33	1.40	1.45	1.50	1.54	1.58	1.61	1.64	1.67	1.71	1.75	1.78	1.81	1.83	1.88	1.92
1.3	1.3	1.23	1.32	1.40	1.46	1.52	1.56	1.61	1.64	1.68	1.70	1.73	1.78	1.81	1.85	1.87	1.90	1.95	1.98
1.4	1.4	1.29	1.38	1.45	1.52	1.57	1.62	1.66	1.70	1.73	1.76	1.79	1.83	1.87	1.90	1.93	1.95	2.00	2.07
1.5	1.5	1.33	1.42	1.50	1.56	1.62	1.67	1.71	1.75	1.78	1.81	1.83	1.88	1.92	1.95	1.98	2.00	2.10	2.17
1.6	1.6	1.38	1.47	1.54	1.61	1.66	1.71	1.75	1.79	1.82	1.85	1.88	1.92	1.96	1.99	2.04	2.08	2.18	2.25
1.7	1.7	1.41	1.50	1.58	1.64	1.70	1.75	1.79	1.82	1.86	1.89	1.91	1.96	2.00	2.05	2.11	2.16	2.25	2.32
1.8	1.8	1.44	1.54	1.61	1.68	1.73	1.78	1.82	1.86	1.89	1.92	1.94	1.99	2.06	2.12	2.17	2.22	2.32	2.39
1.9	1.9	1.47	1.56	1.64	1.70	1.76	1.81	1.85	1.89	1.92	1.95	1.97	2.04	2.11	2.18	2.23	2.28	2.38	2.45
2.0	2.0	1.50	1.59	1.67	1.73	1.79	1.83	1.88	1.91	1.94	1.97	2.00	2.09	2.17	2.23	2.29	2.33	2.43	2.50
2.2	2.2	1.55	1.64	1.71	1.78	1.83	1.88	1.92	1.96	1.99	2.04	2.09	2.18	2.26	2.32	2.38	2.42	2.52	2.59
2.4	2.4	1.58	1.67	1.75	1.81	1.87	1.92	1.96	2.00	2.06	2.11	2.17	2.26	2.33	2.40	2.45	2.50	2.60	2.67
2.6	2.6	1.62	1.71	1.78	1.85	1.90	1.95	1.99	2.05	2.12	2.18	2.23	2.32	2.40	2.46	2.52	2.56	2.66	2.73
2.8	2.8	1.64	1.73	1.81	1.87	1.93	1.98	2.04	2.11	2.17	2.23	2.29	2.38	2.45	2.52	2.57	2.62	2.71	2.79
3.0	3.0	1.67	1.76	1.83	1.90	1.95	2.00	2.08	2.16	2.22	2.28	2.33	2.42	2.50	2.56	2.62	2.67	2.76	2.83
3.5	3.5	1.71	1.81	1.88	1.95	2.00	2.10	2.18	2.25	2.32	2.38	2.43	2.52	2.60	2.66	2.71	2.76	2.86	2.93
4.0	4.0	1.75	1.84	1.92	1.98	2.07	2.17	2.25	2.32	2.39	2.45	2.50	2.59	2.67	2.73	2.79	2.83	2.93	3.00

TABLE 3: ALLOWABLE SPAN LENGTH OF JOISTS AND JOIST SPACINGS

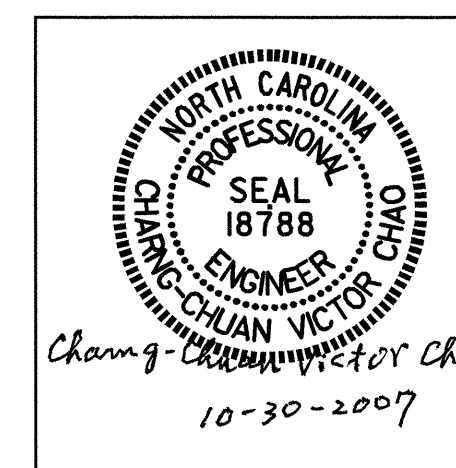
AVG. SLAB THICKNESS (IN)	LUMBER JOIST SIZE (IN X IN)	JOIST SPACINGS			
		15 IN	12 IN	10 IN	8 IN
THE ALLOWABLE SPAN LENGTH OF JOISTS					
10	2 X 4	—	4' - 6"	4' - 9"	5' - 0"
	4 X 4	5' - 9"	6' - 3"	6' - 6"	6' - 7"
12	2 X 4	—	4' - 3"	4' - 9"	5' - 0"
	4 X 4	5' - 3"	6' - 0"	6' - 3"	6' - 5"
14	2 X 4	—	4' - 0"	4' - 6"	5' - 0"
	4 X 4	—	5' - 6"	6' - 0"	6' - 4"
16	2 X 4	—	4' - 0"	4' - 3"	4' - 9"
	4 X 4	—	5' - 3"	5' - 9"	6' - 3"

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 GUILFORD COUNTY
 STATION: 16+89.50 -L-

SHEET 2 OF 3

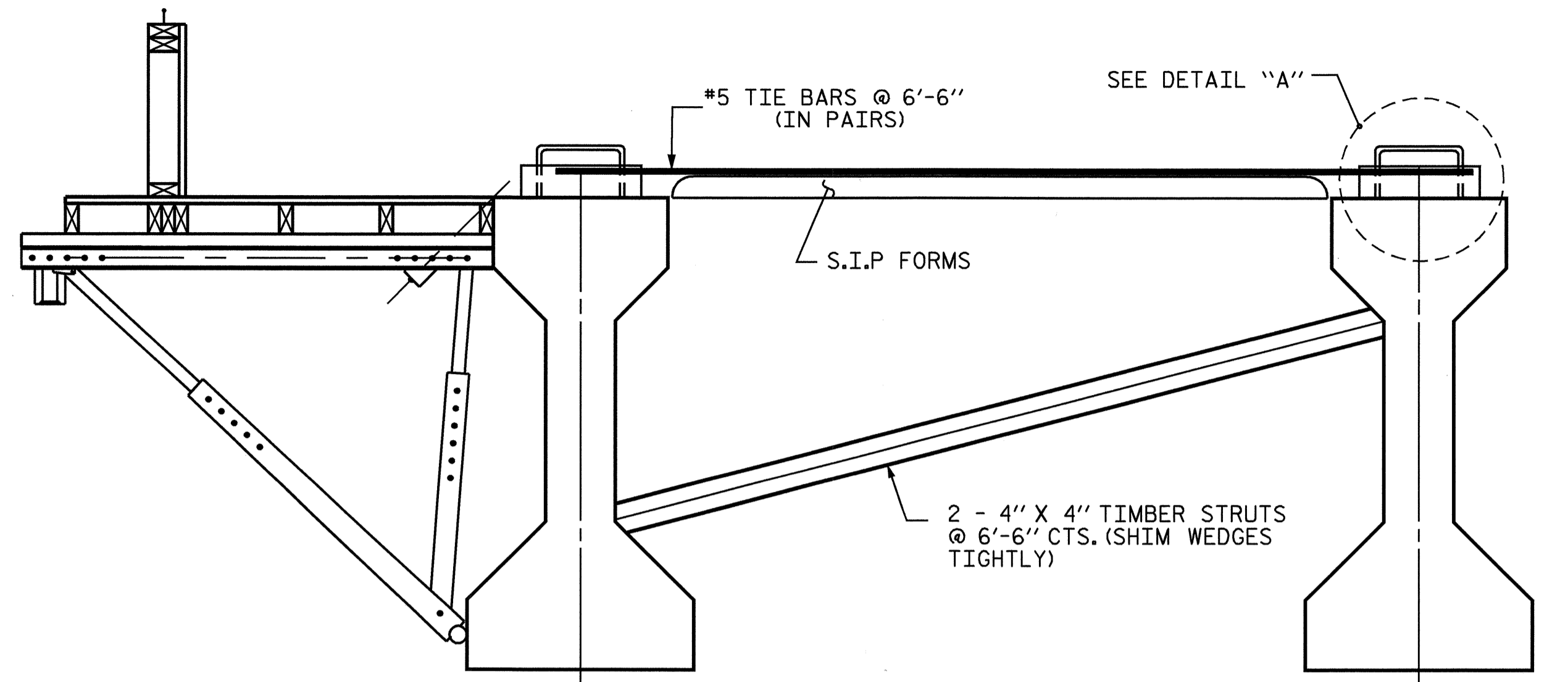
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD OVERHANG FALSEWORK
 AASHTO TYPES III, IV, V, AND VI



REVISIONS						SHEET NO. 5-37
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 38
2			4			

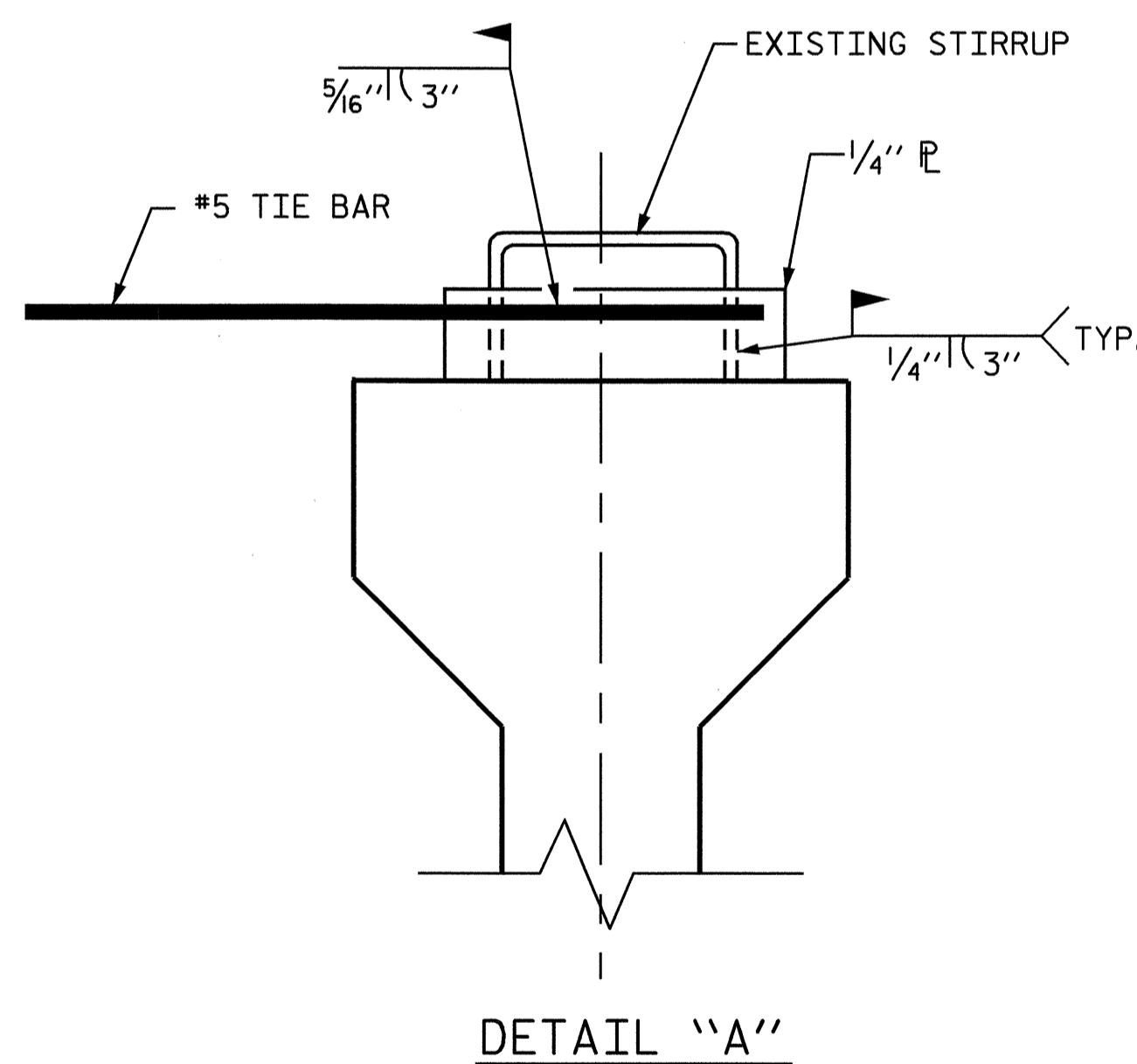
ASSEMBLED BY:	DATE:
CHECKED BY:	DATE:
DRAWN BY: R. WRIGHT 06/04	REV.
CHECKED BY: C. V. CHAO 06/04	



EXTERIOR GIRDER

INTERIOR GIRDER

DETAIL OF REQUIRED OVERHANG FALSEWORK BRACING SYSTEM



NOTES:

EACH #5 TIE BAR SHALL BE WELDED TO ONE STIRRUP LOOP AS SHOWN IN DETAIL "A". #5 TIE BARS SHALL BE WELDED TO TWO ADJACENT STIRRUPS OF THE EXTERIOR GIRDER AND THE ADJACENT INTERIOR GIRDER BETWEEN PERMANENT DIAPHRAGMS. WELD STEEL PLATES IN BETWEEN THE TIE BARS AND THE STIRRUP LOOP. WELDING TWO TIE BARS TO THE SAME STIRRUP LOOP SHALL NOT BE PERMITTED.

MAXIMUM SPACING BETWEEN THE BRACING (TIE BARS-TIMBER STRUT) IS 6'-6" CTS. #5 TIE BARS SHALL BE LOCATED OVER A TIMBER STRUT.

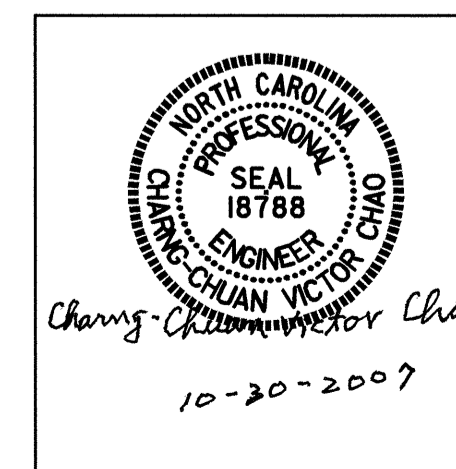
INSTALL TIE BARS AND TIMBER STRUTS PRIOR TO PLACEMENT OF CONCRETE OR SCREED WEIGHT ONTO THE OVERHANG FALSEWORK.

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 GUILFORD COUNTY
 STATION: 16+89.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD OVERHANG FALSEWORK
 AASHTO TYPES
 III, IV, V, AND VI



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-38
1			3			TOTAL SHEETS
2			4			38

DRAWN BY: R. WRIGHT 06/04 DATE : _____
 CHECKED BY: C. V. CHAO 06/04 DATE : _____

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	-----	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	-----	SEE PLANS
IMPACT ALLOWANCE	-----	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF		
STRUCTURAL STEEL - AASHTO M270 GRADE 36	-	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	-	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	-	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION		
GRADE 60	--	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	-----	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	-----	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR		
UNTREATED - EXTREME FIBER STRESS	-----	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	-----	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	-----	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2002 STANDARD SPECIFICATIONS "FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP; AND CLASS S SHALL BE USED FOR UNDERWATER FOOTING SEALS.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE. ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER. DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED WITH THE EXCEPTION OF #2 BARS WHICH MAY BE FABRICATED FROM COLD DRAWN STEEL WIRE. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

PLACEMENT OF BEAM OR GIRDER MEMBERS ON TRUCKS FOR HAULING SHALL BE DONE IN COMPLIANCE WITH LIMITS SHOWN ON SKETCHES PROVIDED TO THE MATERIALS AND TEST UNIT APPROVED BY THE STRUCTURE DESIGN UNIT DATED MAY 8, 1991. THESE SKETCHES PRIMARILY LIMIT THE UNSUPPORTED CANTILEVER LENGTH OF MEMBERS. WHEN THE CONTRACTOR WISHES TO PLACE MEMBERS ON TRUCKS NOT IN ACCORDANCE WITH THESE LIMITS, TO SHIP BY RAIL, TO ATTACH SHIPPING RESTRAINTS TO THE MEMBERS OR TO INVERT MEMBERS, HE SHALL SUBMIT A SKETCH FOR APPROVAL PRIOR TO SHIPPING. SEE ALSO ARTICLE 1072-11.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB. METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN