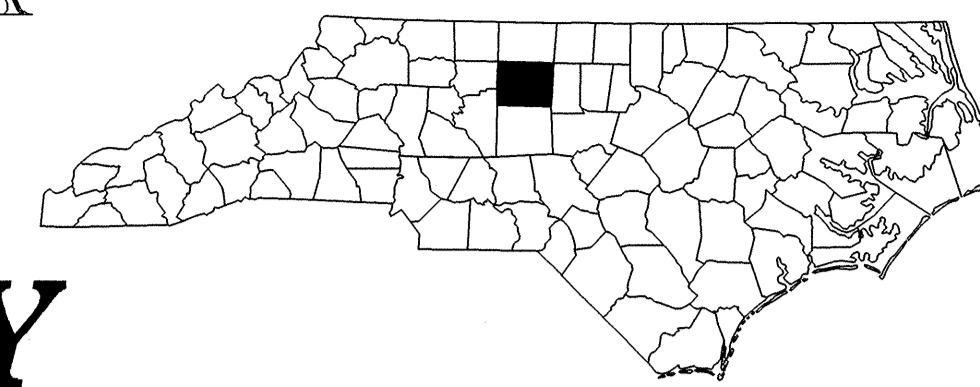


**TIP PROJECT: R-2612A**

**CONTRACT: C202440**

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

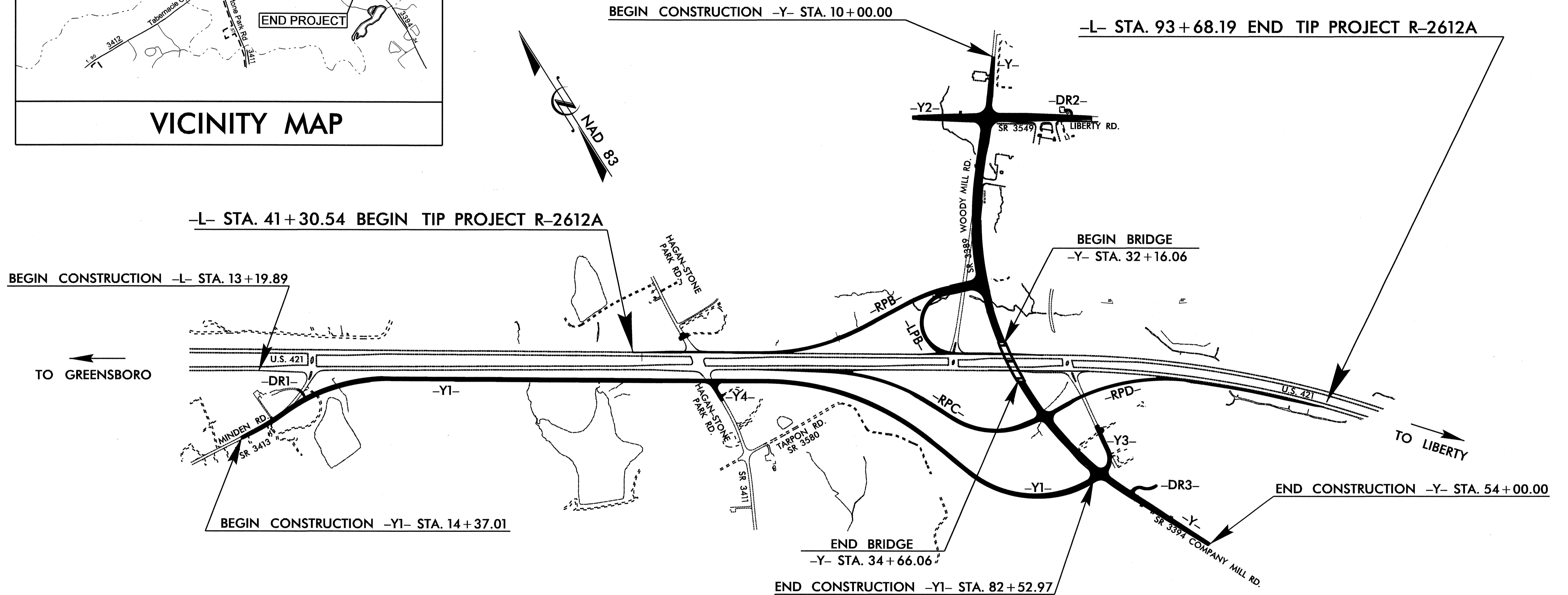
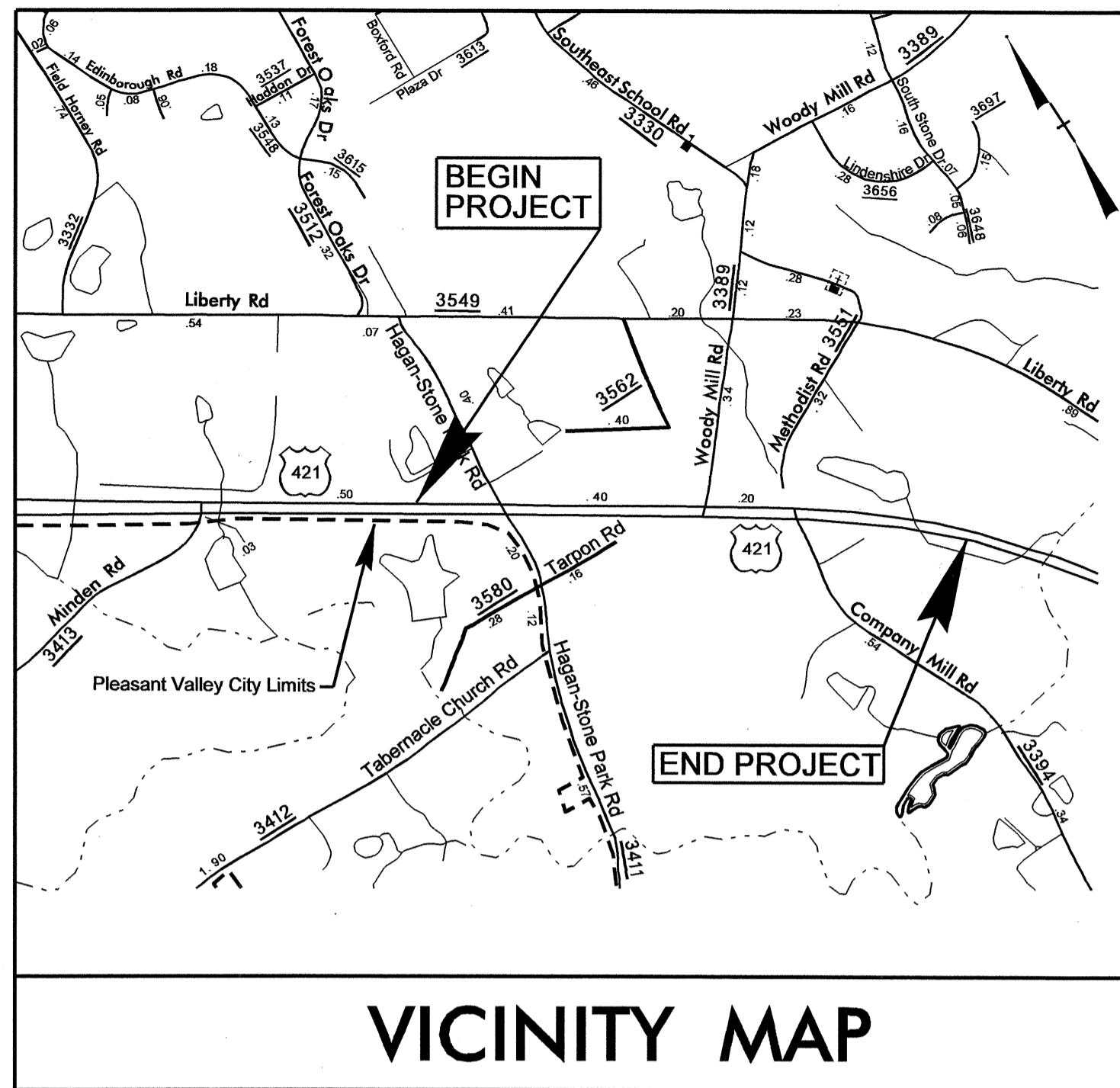


**GUILFORD COUNTY**

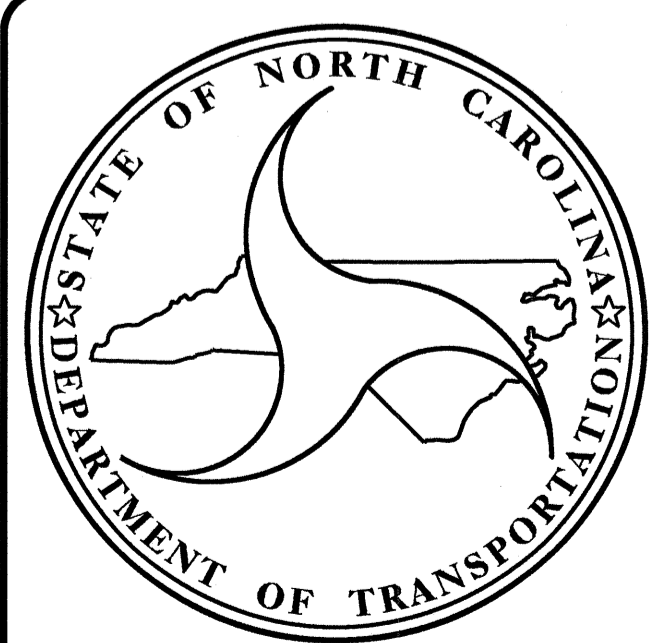
**LOCATION: US 421 AT SR 3389 (WOODY MILL ROAD)  
SOUTH OF GREENSBORO**

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2612A		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33483.1.1	NHF-421(11)	P.E.	
34483.2.2	CMNHS-0421(43)	RW & UTIL.	
34483.3.1	CMNHS-0421(51)	CONST.	



**STRUCTURES**



**DESIGN DATA**

ADT 2010	=	25,900
ADT 2030	=	41,200
DHV	=	11 %
D	=	70 %
T	=	14 % *
V	=	60 MPH
* (TTST 9% + DUAL 5%)		
FUNCTIONAL CLASS = FREEWAY		
STATEWIDE TIER		

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT R-2612A	=	0.992 MI
TOTAL LENGTH TIP PROJECT R-2612A	=	0.992 MI

Prepared in the Office of:  
**DIVISION OF HIGHWAYS**  
1000 Birch Ridge Dr., Raleigh NC, 27610

2006 STANDARD SPECIFICATIONS

LETTING DATE:  
NOVEMBER 16, 2010

R. M. GIROLAMI, PE  
PROJECT ENGINEER

L. E. SUTTON, PE  
PROJECT DESIGN ENGINEER

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

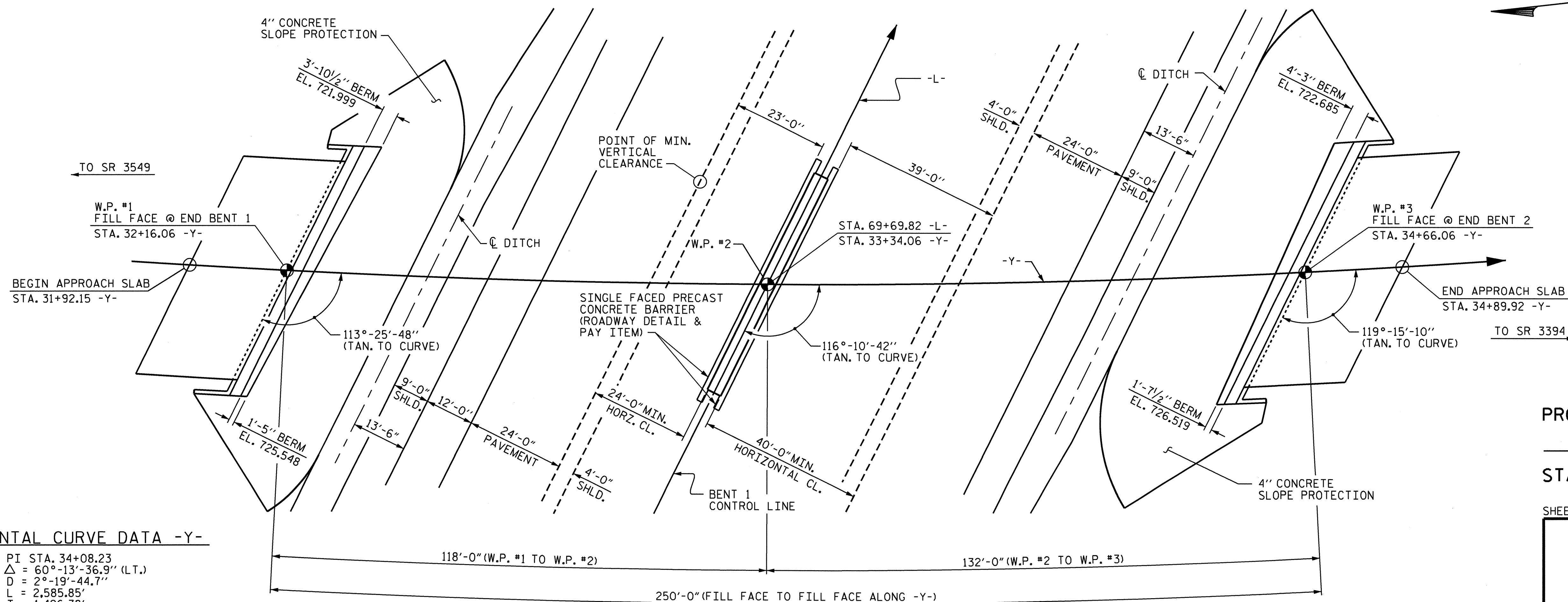
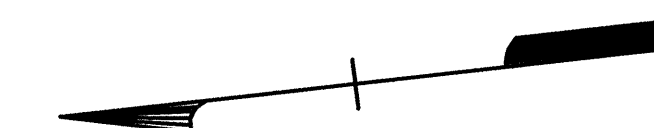
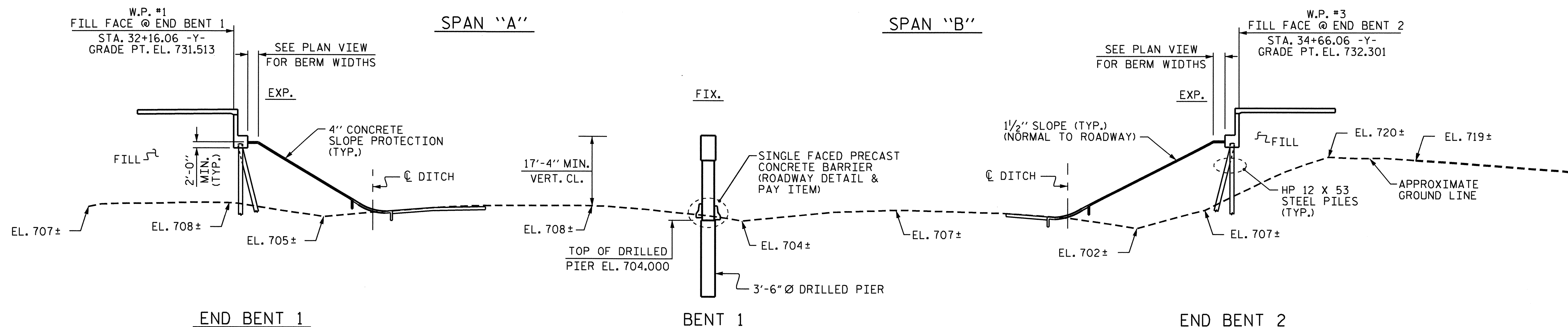
DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

31+50 32+00 32+50 33+00 33+50 34+00 34+50 35+00

(+) 2.8908% Δ (-) 1.0747%

PI STA. 31+94.00  
EL. = 736.20  
VC = 984'

GRADE DATA -Y-



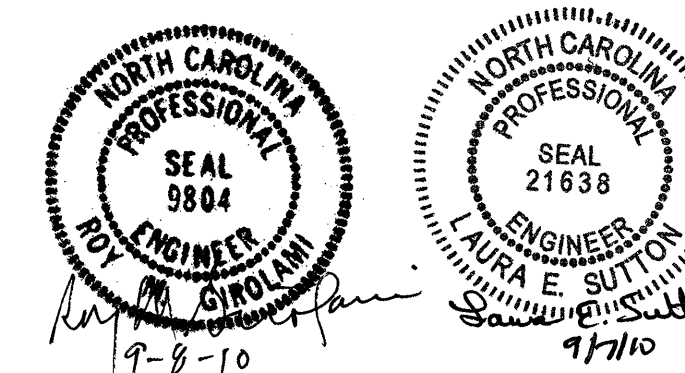
PLAN

(PILES, COLUMNS & DRILLED PIERS NOT SHOWN FOR CLARITY)

PROJECT NO. R-2612A  
GUILFORD COUNTY  
STATION: 69+69.82 -L-  
33+34.06 -Y-  
SHEET 1 OF 4 BRIDGE NO. 1102

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

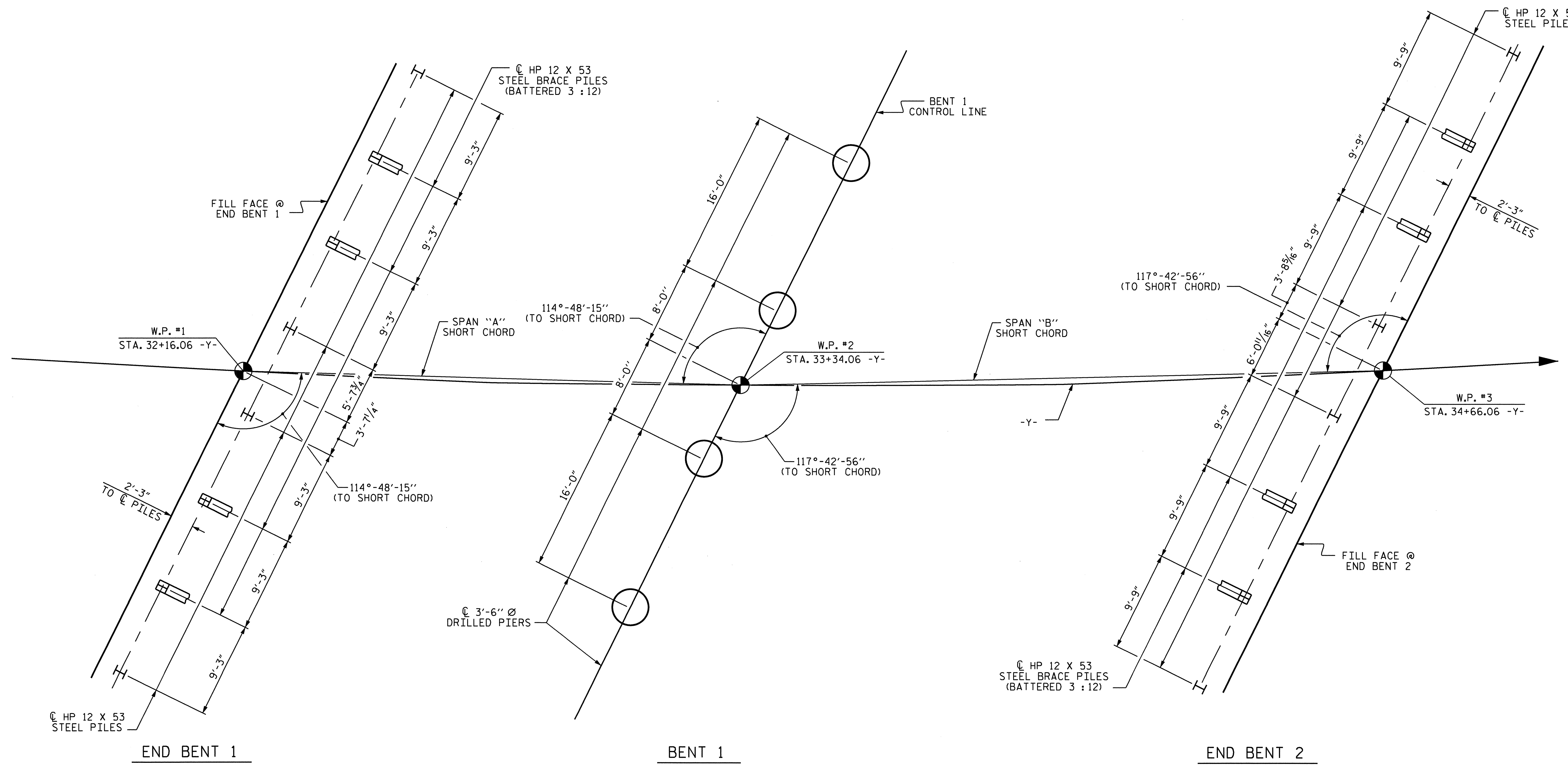
GENERAL DRAWING  
FOR BRIDGE ON SR 3389  
OVER US 421 BETWEEN  
SR 3549 AND SR 3394



DRAWN BY: A.S. CALLAWAY DATE: 6/2/10  
CHECKED BY: L.E. SUTTON DATE: 6/17/10

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

S-1  
TOTAL SHEETS: 39



**FOUNDATION LAYOUT**

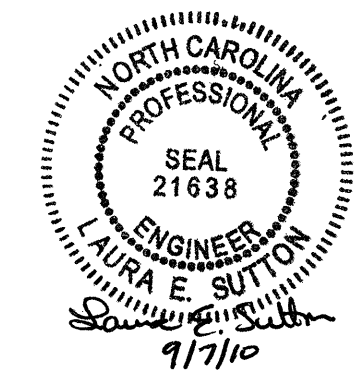
DIMENSIONS LOCATING PILES OR DRILLED PIERS ARE SHOWN TO THE PILE OR DRILLED PIER CENTERLINE AT THE BOTTOM OF THE CAP.

**NOTES** (CONTINUED ON SHEET 4 OF 4)

- FOR PILES, SEE SPECIAL PROVISIONS.
- PILES AT END BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 100 TONS PER PILES. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 170 TONS PER PILE.
- PILES AT END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 115 TONS PER PILES. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 195 TONS PER PILE.
- FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.
- DRILLED PIERS AT BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 580 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 80 TSF.
- INSTALL DRILLED PIERS AT BENT 1 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 685 FEET, SATISFY THE REQUIRED TIP RESISTANCE AND HAVE A MINIMUM PENETRATION OF 2 FEET INTO ROCK AS DEFINED BY THE DRILLED PIERS PROVISION.
- DO NOT USE SLURRY CONSTRUCTION FOR DRILLED PIERS AT BENT 1.
- SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS AT BENT 1. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS.
- CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CROSSHOLE SONIC LOGGING, SEE SPECIAL PROVISIONS.

PROJECT NO. R-2612A  
GUILFORD COUNTY  
 STATION: 69+69.82 -L-

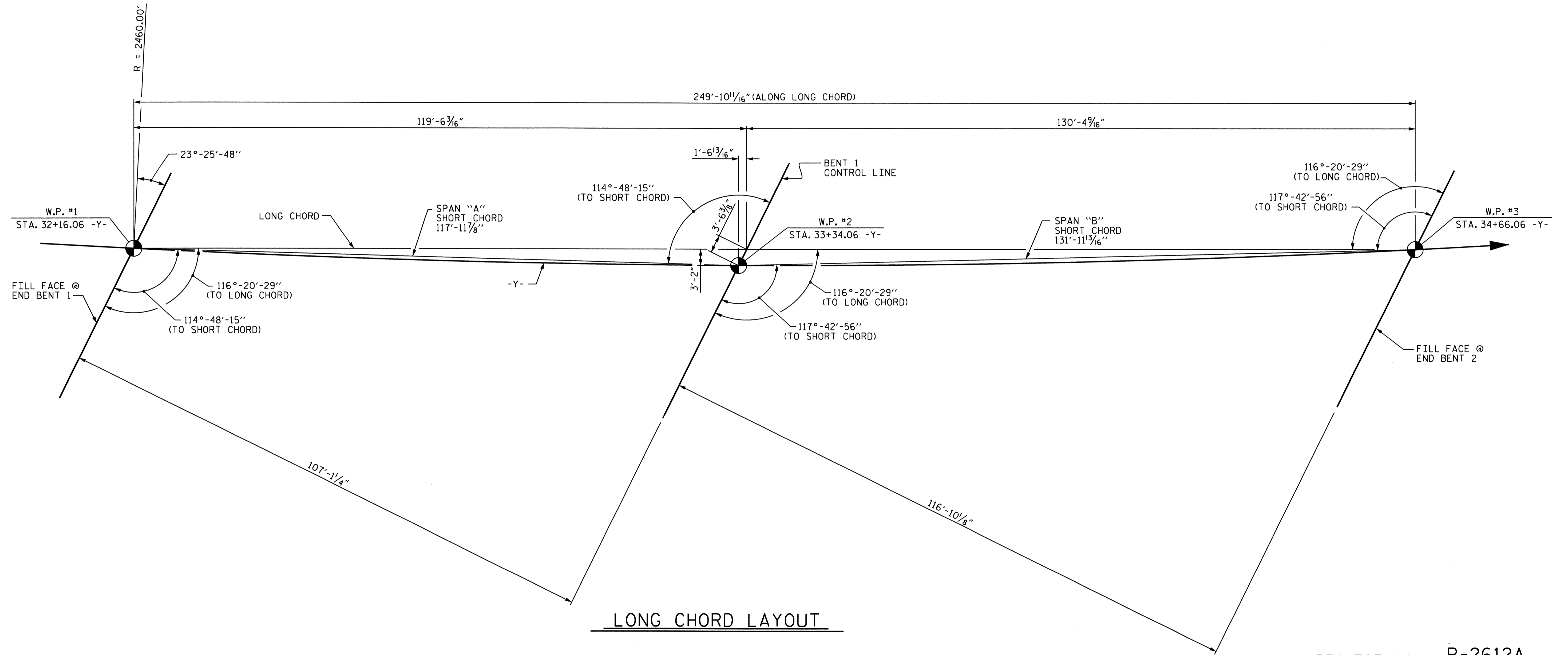
SHEET 2 OF 4  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE ON SR 3389  
 OVER US 421 BETWEEN  
 SR 3549 AND SR 3394



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			39

DRAWN BY : A.S. CALLAWAY DATE : 6/2/10  
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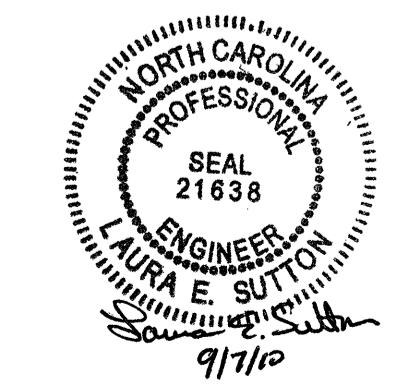




PROJECT NO. R-2612A  
 GUILFORD COUNTY  
 STATION: 69+69.82 -L-  
 SHEET 3 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**  
 FOR BRIDGE ON SR 3389  
 OVER US 421 BETWEEN  
 SR 3549 AND SR 3394



DRAWN BY: A.S. CALLAWAY DATE: 6/2/10  
 CHECKED BY: L.E. SUTTON DATE: 6/16/10

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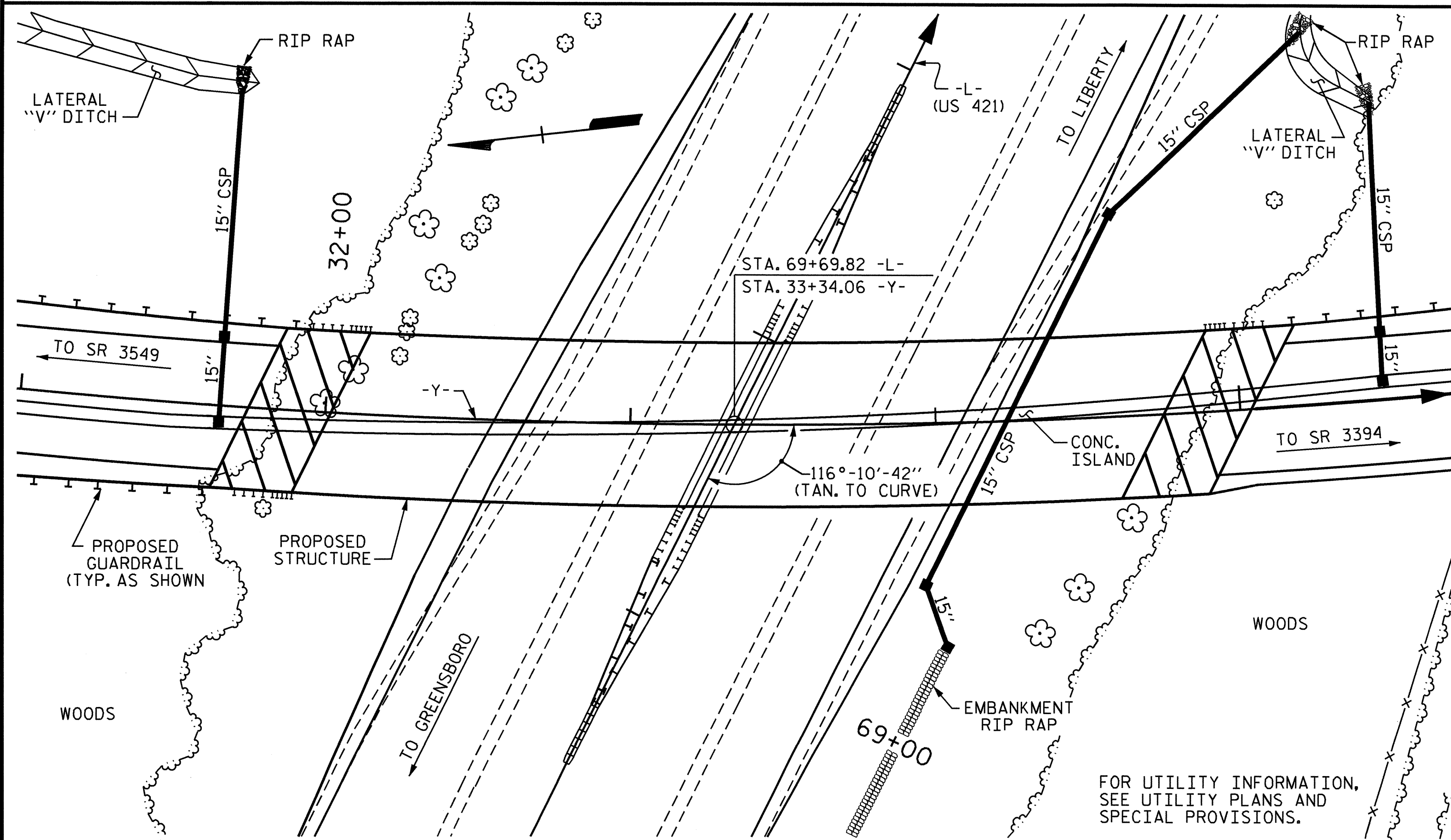
TOTAL SHEETS: 39

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STR. #1



BM #4: RR SPIKE IN 20" OAK, 119.90' LEFT, STA. 47+05.50 -Y-, EL. 709.48.



LOCATION SKETCH

NOTES (CONTINUED FROM SHEET 2 OF 4)

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.  
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.  
 FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.  
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.  
 ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 4 OF ARTICLE 442-7 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.  
 REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.  
 THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.  
 FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.  
 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.

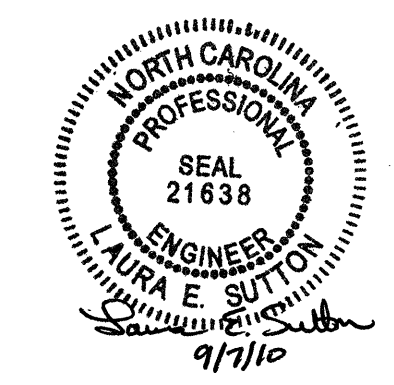
THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE 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.  
 NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.  
 FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.  
 FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.  
 FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.  
 FOR SHIPPING STEEL STRUCTURAL MEMBERS, SEE SPECIAL PROVISIONS.  
 FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.  
 FOR CURING CONCRETE, SEE SPECIAL PROVISIONS.  
 FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	3'-6" DIA. DRILLED PIERS IN SOIL	3'-6" DIA. DRILLED PIERS NOT IN SOIL	SID INSPECTION	CROSSHOLE SONIC LOGGING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	STRUCTURAL STEEL	HP 12 X 53 STEEL PILES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	POT BEARINGS	EVAZOTE JOINT SEALS	
	LIN. FT.	LIN. FT.	EACH	EACH	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	APPROX. LBS.	NO.	LIN. FT.	LIN. FT.	SO. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE					14,056	14,812		LUMP SUM			552,900		495.38		LUMP SUM	LUMP SUM	
END BENT 1							45.6		7,046			8	280	331			
BENT 1	47.00	29.00					52.5		18,488	3,154							
END BENT 2							47.8		7,637			8	120	446			
TOTAL	47.00	29.00	1	1	14,056	14,812	145.9	LUMP SUM	33,171	3,154	552,900	16	400	495.38	777	LUMP SUM	LUMP SUM

PROJECT NO. R-2612A  
GUILFORD COUNTY  
 STATION: 69+69.82 -L-

SHEET 4 OF 4



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

GENERAL DRAWING  
 FOR BRIDGE ON SR 3389  
 OVER US 421 BETWEEN  
 SR 3549 AND SR 3394

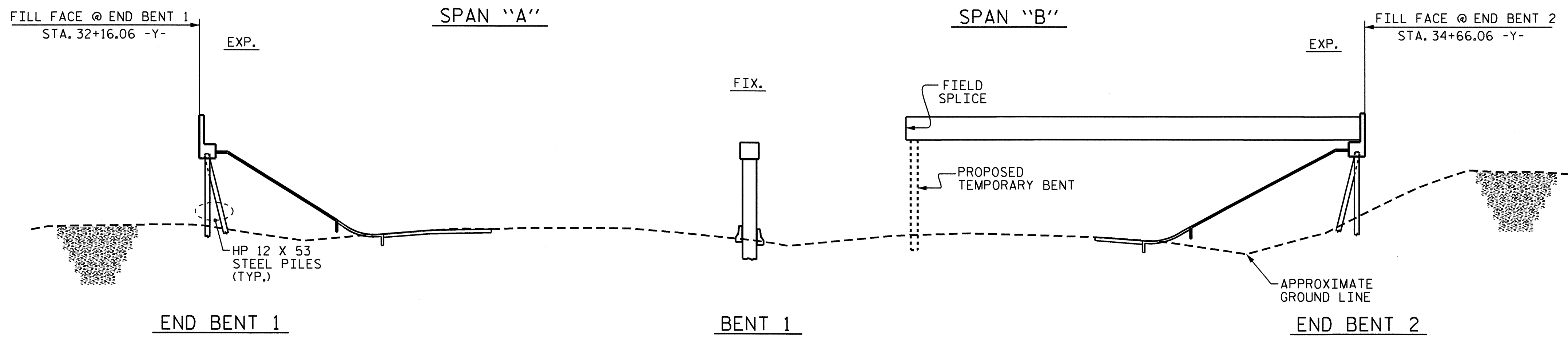
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2			4			39

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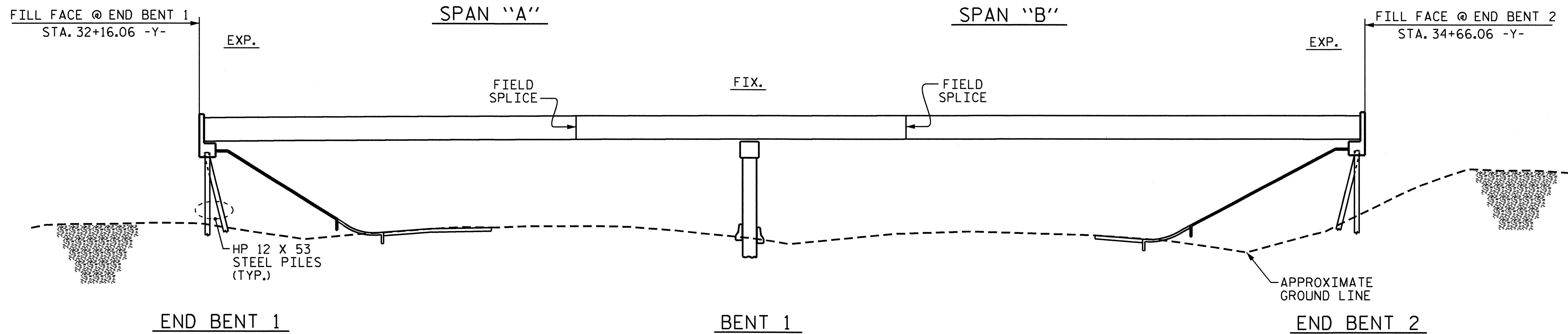
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STR. #1





**STAGE I GIRDER ERECTION**  
(SECTIONS AT END BENTS AND BENT ARE AT RIGHT ANGLES)



**STAGE II GIRDER ERECTION**  
(SECTIONS AT END BENTS AND BENT ARE AT RIGHT ANGLES)

**NOTES**

PLACEMENT OF TEMPORARY BENTS SHALL BE COORDINATED WITH TRAFFIC PHASING REQUIREMENTS. SEE TRAFFIC CONTROL PLANS.

PLANS FOR TEMPORARY BENT ERECTION AND REMOVAL SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

TEMPORARY BENTS SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER WHO IS REGISTERED IN THE STATE OF NORTH CAROLINA. THE CONTRACTOR SHALL SUBMIT SIGNED AND SEALED WORKING DRAWINGS AND CALCULATIONS FOR APPROVAL BY THE ENGINEER.

DURING THE GIRDER ERECTION PROCEDURE, THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TEMPORARY LATERAL BRACING AND OTHER MEANS OF SUPPORT AS REQUIRED, TO ENSURE STABILITY OF THE GIRDERS, AVOID UPLIFT OF THE GIRDERS AT THE TEMPORARY BENTS AND TO ENSURE PLUMBNESS OF THE GIRDERS IN THE FINAL CONDITION.

THE CONTRACTOR MAY SUBMIT AN ALTERNATE ERECTION METHOD TO THE ENGINEER FOR REVIEW AND APPROVAL.

THE CONTRACTOR'S ERECTION PLAN SHALL INCLUDE A METHOD OF TEMPORARY BENT REMOVAL THAT TRANSFERS THE STRUCTURAL STEEL WEIGHT UNIFORMLY TO THE DIAPHRAGMS WHILE THE GIRDERS REMAIN IN THE CAMBERED POSITION.

THE STRUCTURAL STEEL SHALL BE SUPPORTED DURING ERECTION IN ITS CAMBERED POSITION. A MINIMUM OF ONE TEMPORARY BENT SHALL BE USED. TEMPORARY BENTS SHALL REMAIN IN PLACE UNTIL ALL DIAPHRAGMS ARE IN PLACE AND HIGH STRENGTH BOLTS ARE TIGHTENED.

LOCATE TEMPORARY BENTS AT CONNECTOR PLATES. IF CONNECTOR PLATES ARE USED AS TEMPORARY BEARING STIFFENERS, DIAPHRAGMS MUST BE ATTACHED.

THE FIRST TWO GIRDERS SHALL BE ERECTED SIMULTANEOUSLY WITH ALL DIAPHRAGMS BETWEEN THE GIRDERS IN PLACE AND THE BOLTS TIGHTENED PRIOR TO RELEASING THE GIRDERS. CONNECT ADDITIONAL GIRDERS ADJACENT TO THE PREVIOUSLY ERECTED GIRDERS AND TIGHTEN ALL BOLTS PRIOR TO RELEASING ADDITIONAL GIRDERS.

NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE FOR PROVIDING THE TEMPORARY BENT. THE COST FOR ALL MATERIALS, EQUIPMENT, TOOLS, LABOR AND ANY INCIDENTALS NECESSARY TO PROVIDE THE TEMPORARY BENT SHALL BE CONSIDERED INCIDENTAL TO THE LUMP SUM BID PRICE FOR STRUCTURAL STEEL.

PROJECT NO. R-2612A  
GUILFORD COUNTY  
STATION: 69+69.82 -L-

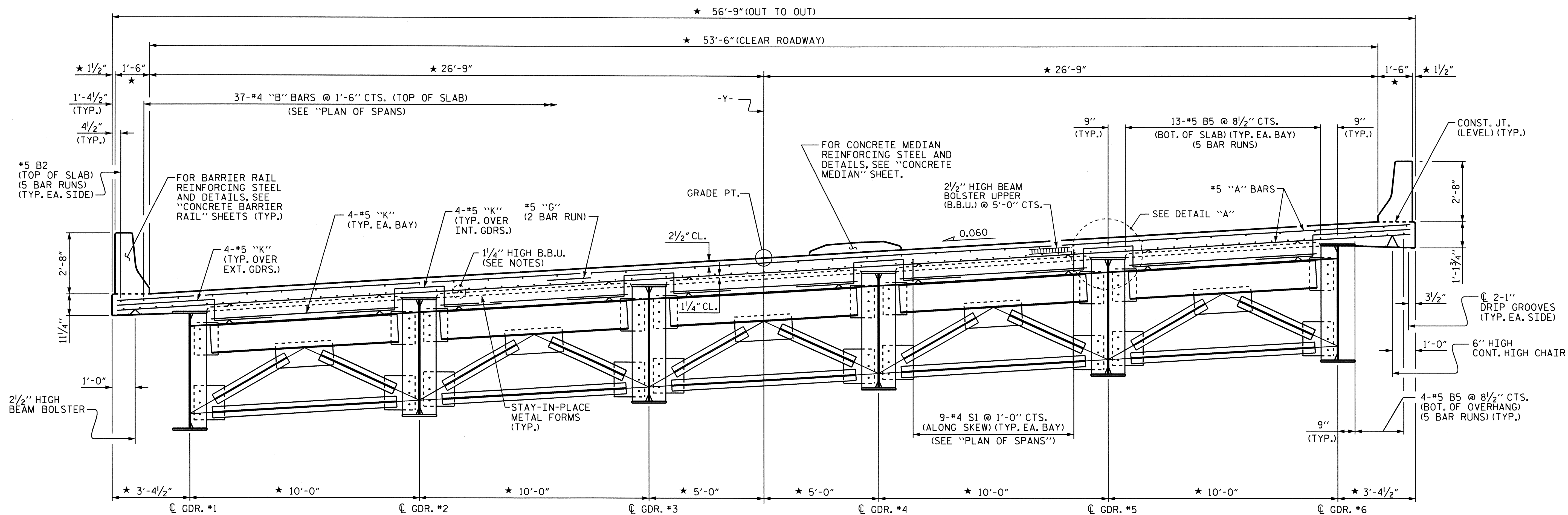
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DEPARTMENT OF TRANSPORTATION					
RALEIGH					
GIRDER ERECTION					
DETAILS					
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1			3		
2			4		
TOTAL SHEETS					39

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STR. #1



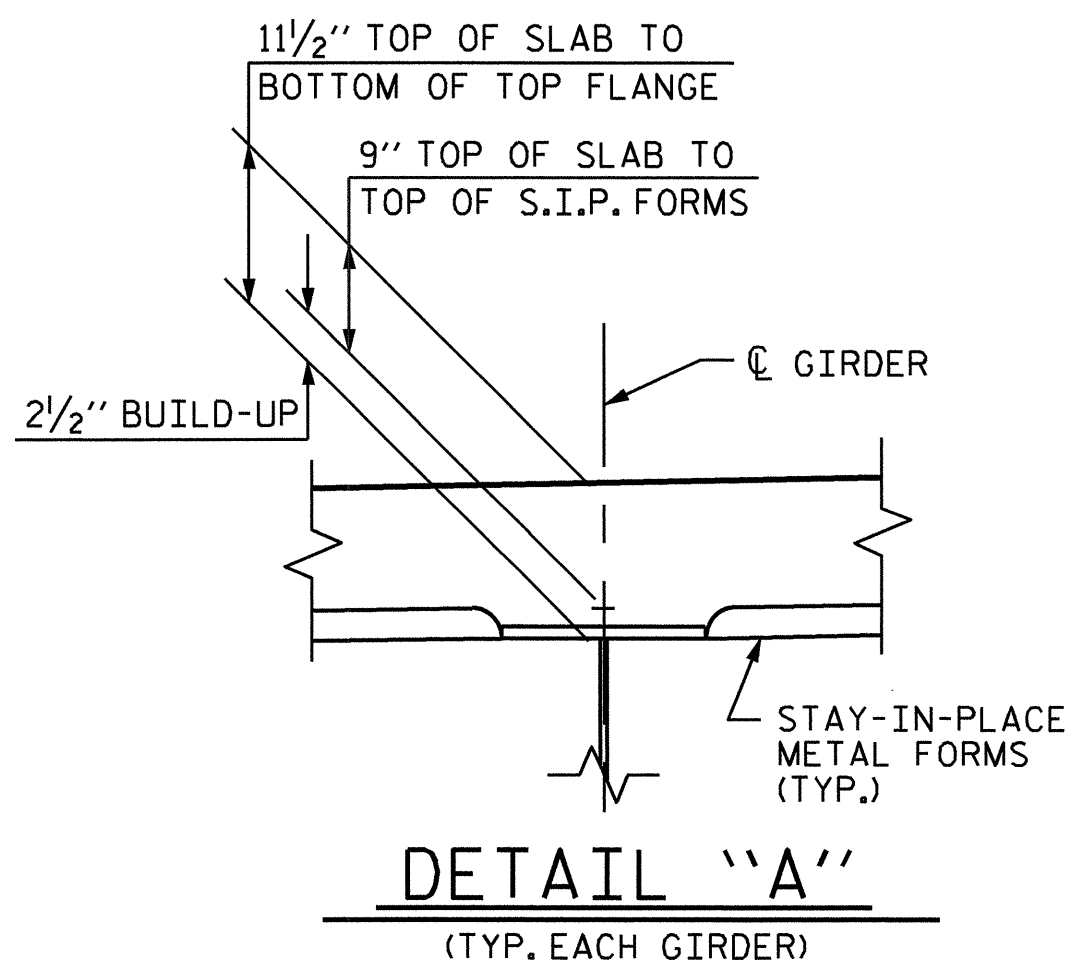


★ RADIAL DIMENSIONS

AT END BENT DIAPHRAGMS

TYPICAL SECTION

(END BENT 1 SHOWN, END BENT 2 SIMILAR.)



DETAIL "A"  
(TYP. EACH GIRDER)

NOTES

PROVIDE 1 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.

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.

BARRIER 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.

CONCRETE MEDIAN 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.

STRUCTURAL STEEL ERECTION IN A CONTINUOUS UNIT SHALL BE COMPLETE BEFORE FALSEWORK OR FORMS ARE PLACED ON THE UNIT.

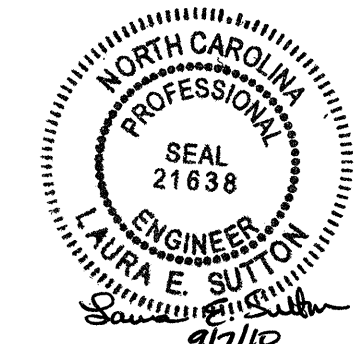
METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO GIRDER FLANGES IN THE ZONES REQUIRING CHARPY V-NOTCH TEST. SEE STRUCTURAL STEEL DETAIL SHEETS. THE CONTRACTOR MAY, WHEN NECESSARY, PROPOSE A SCHEME FOR AVOIDING INTERFERENCE BETWEEN METAL STAY-IN-PLACE FORM SUPPORTS OR FORMS AND GIRDER STIFFENERS OR CONNECTOR PLATES. THE PROPOSAL SHALL BE INDICATED, AS APPROPRIATE, ON EITHER THE STEEL WORKING DRAWINGS OR THE METAL STAY-IN-PLACE FORM WORKING DRAWINGS.

THE CONTRACTOR SHALL ADJUST THE GIRDER BUILDSUPS AS NECESSARY TO INCORPORATE A MAXIMUM PERMISSIBLE VARIATION IN POT BEARING DEPTH OF 1/2". SEE SPECIAL PROVISION FOR POT BEARINGS.

PROJECT NO. R-2612A  
GUILFORD COUNTY  
 STATION: 69+69.82 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 TYPICAL SECTIONS

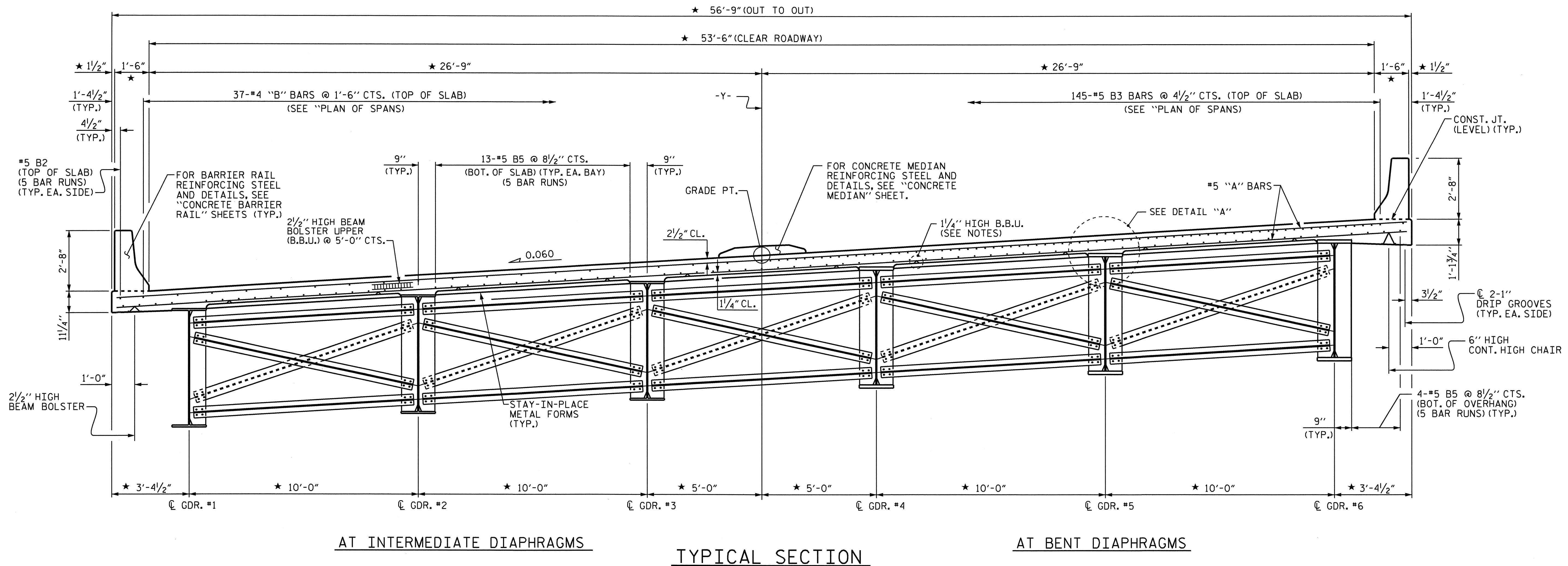


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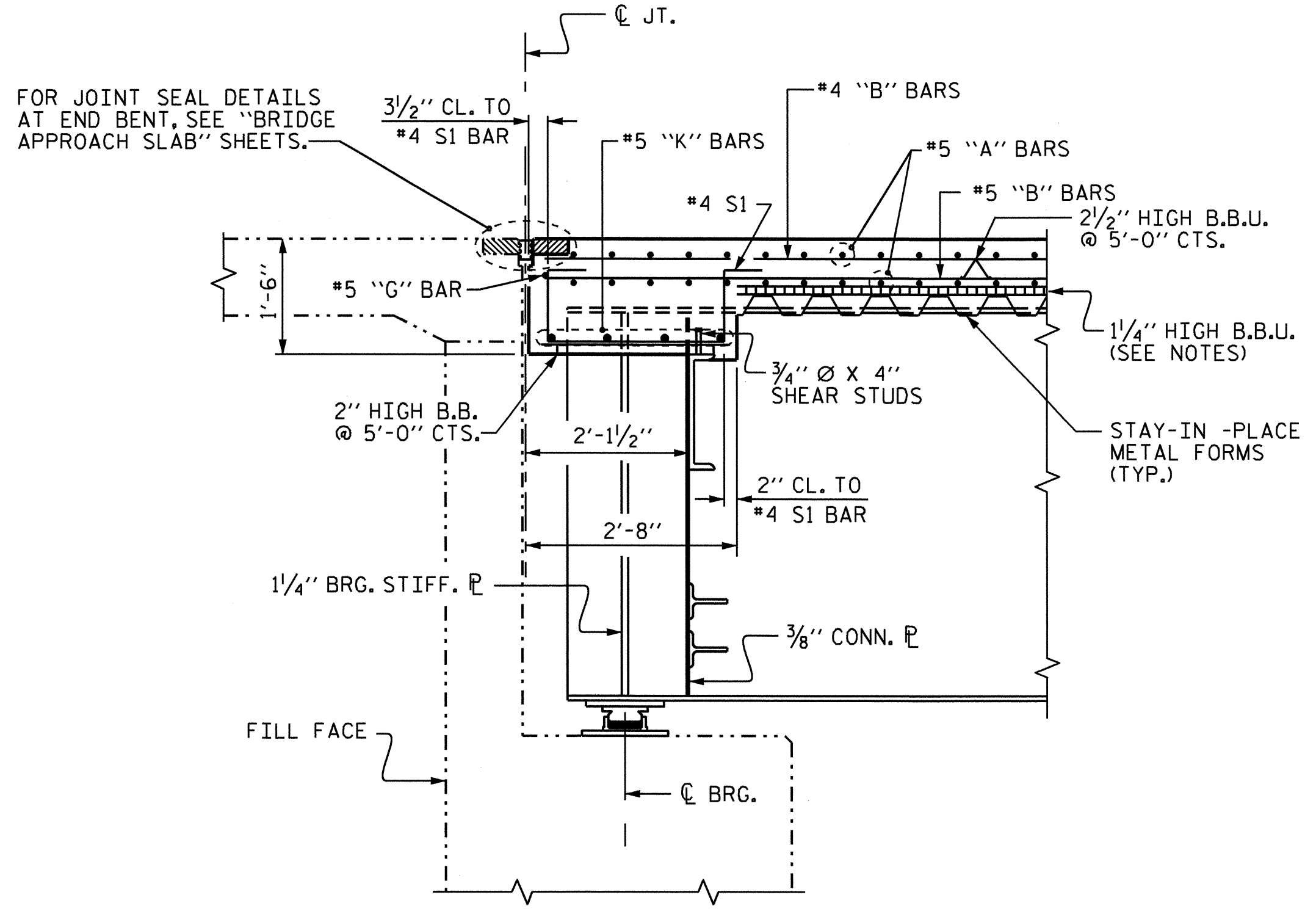
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STR. #1

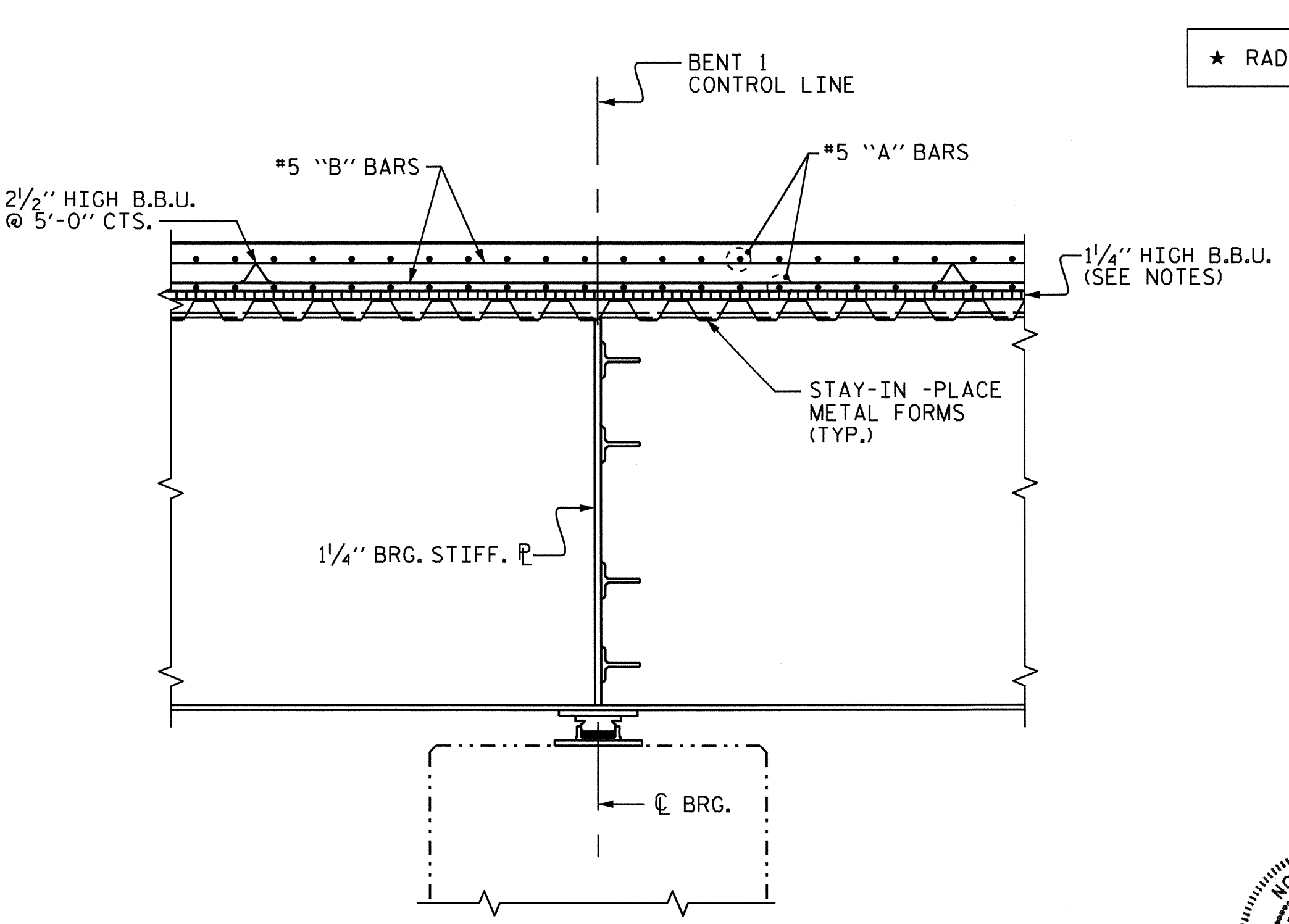


AT INTERMEDIATE DIAPHRAGMS TYPICAL SECTION AT BENT DIAPHRAGMS



SECTION AT END BENT

#5 "G" BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.

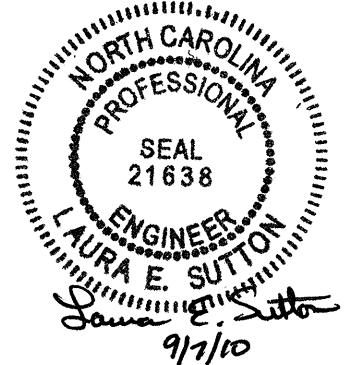


SECTION AT BENT

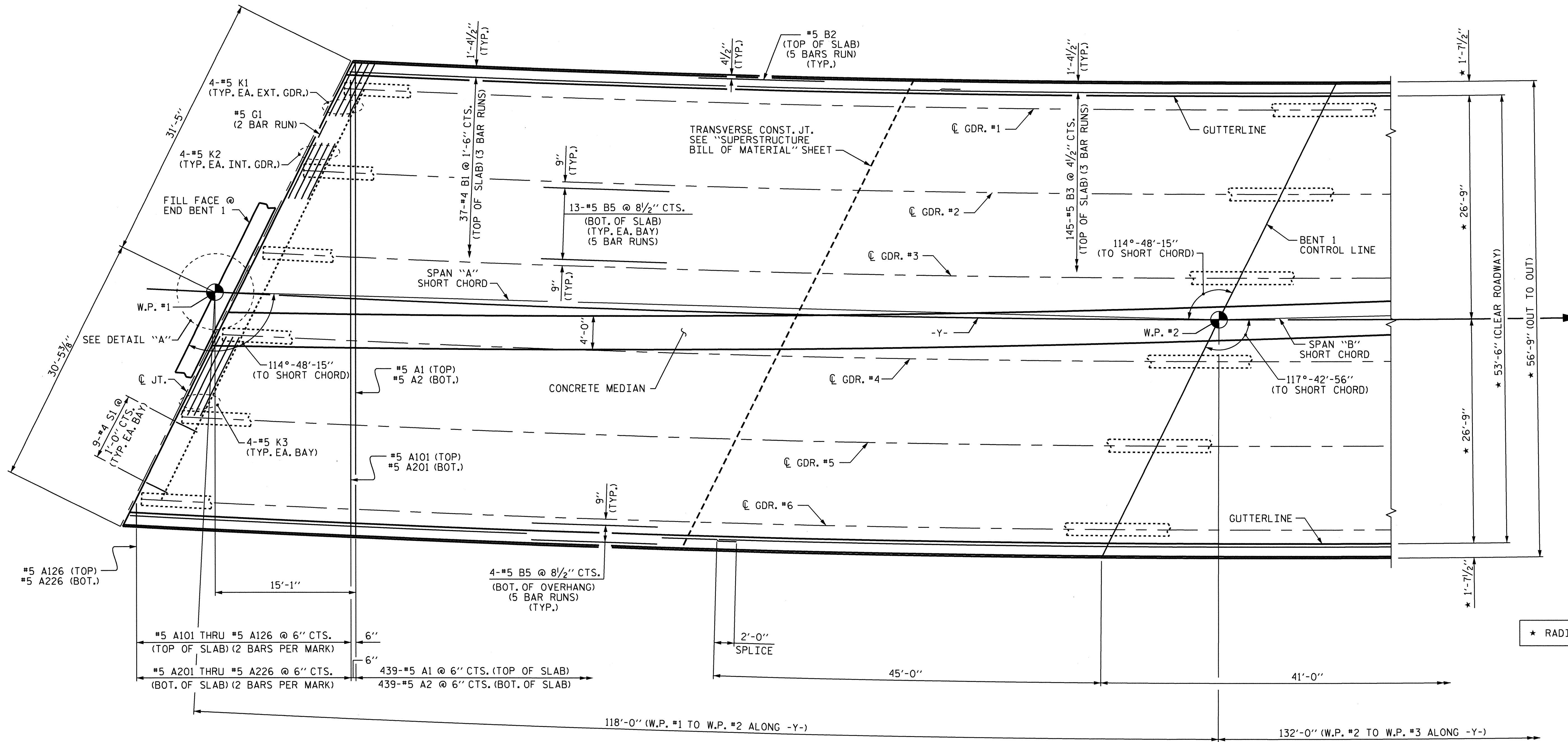
★ RADIAL DIMENSIONS

PROJECT NO. R-2612A  
GUILFORD COUNTY  
 STATION: 69+69.82 -L-  
 SHEET 2 OF 2

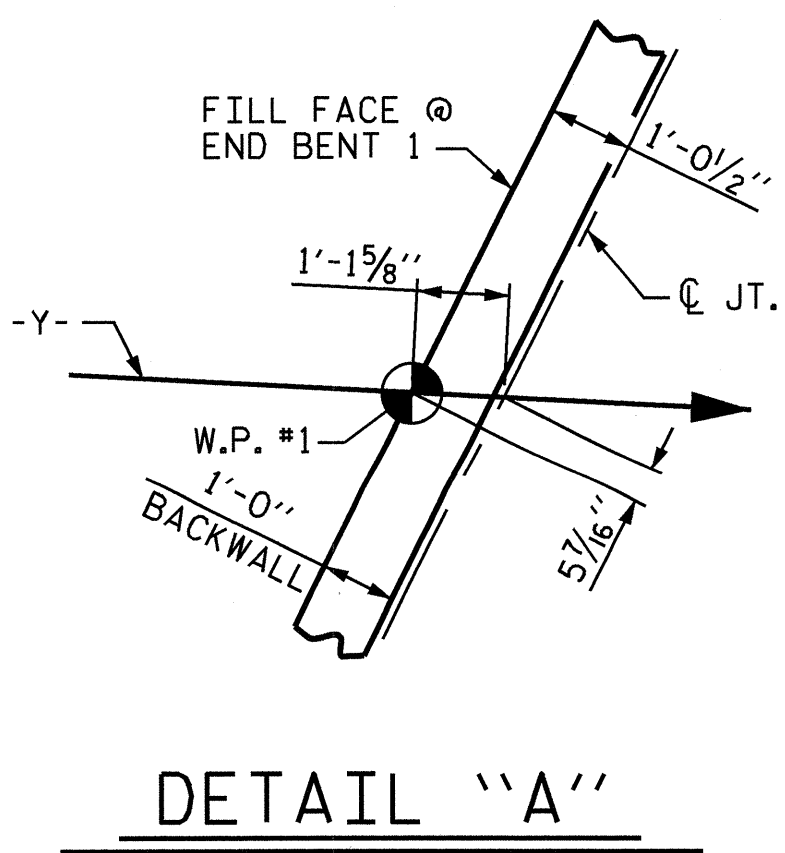
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TOTAL SHEETS 39					
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1			3		
2			4		



DRAWN BY: A.S. CALLAWAY DATE: 7/27/09  
 CHECKED BY: W.F. PARKER DATE: 5/4/10



\* RADIAL DIMENSIONS



DETAIL "A"

PLAN - SPAN "A"

TOP AND BOTTOM #5 "A" BARS ARE PLACED PERPENDICULAR TO LONG CHORD.  
 FOR BARRIER RAIL REINFORCING STEEL AND DETAILS, SEE "CONCRETE BARRIER RAIL" SHEETS.  
 FOR CONCRETE MEDIAN REINFORCING STEEL AND DETAILS, SEE "CONCRETE MEDIAN" SHEET.

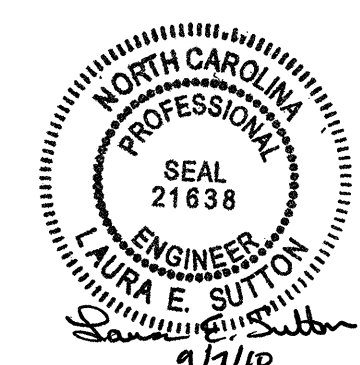
PROJECT NO. R-2612A  
GUILFORD COUNTY  
 STATION: 69+69.82 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 PLAN OF SPANS

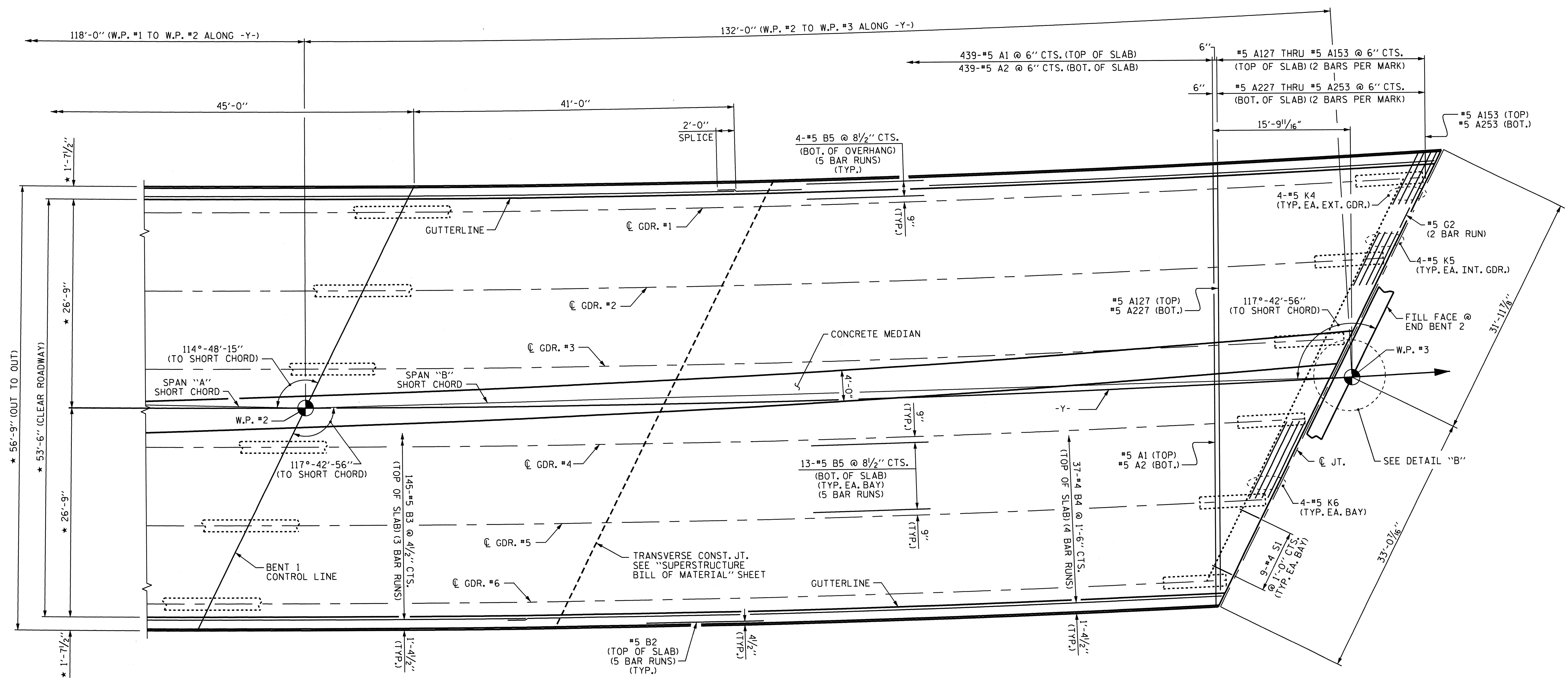
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STR. #1

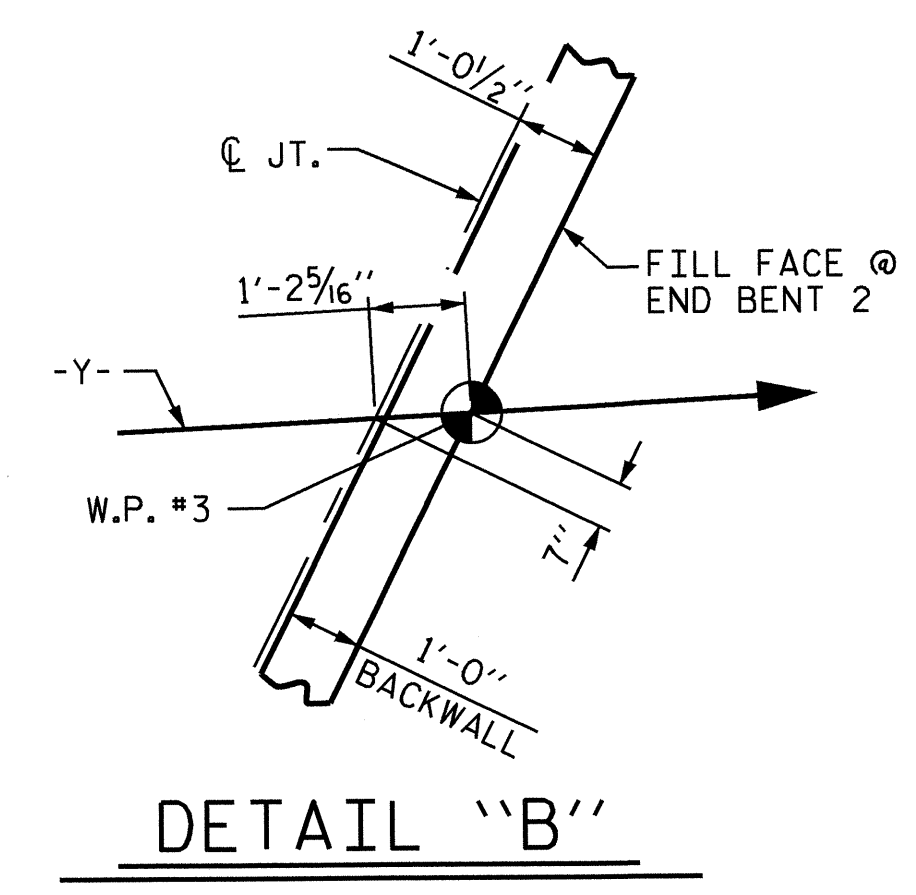




★ RADIAL DIMENSIONS

### PLAN - SPAN "B"

TOP AND BOTTOM #5 "A" BARS ARE PLACED PERPENDICULAR TO LONG CHORD.  
 FOR BARRIER RAIL REINFORCING STEEL AND DETAILS, SEE "CONCRETE BARRIER RAIL" SHEETS.  
 FOR CONCRETE MEDIAN REINFORCING STEEL AND DETAILS, SEE "CONCRETE MEDIAN" SHEET.

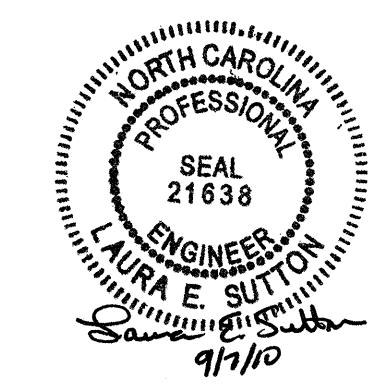


DETAIL "B"

PROJECT NO. R-2612A  
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 STATION: 69+69.82 -L-

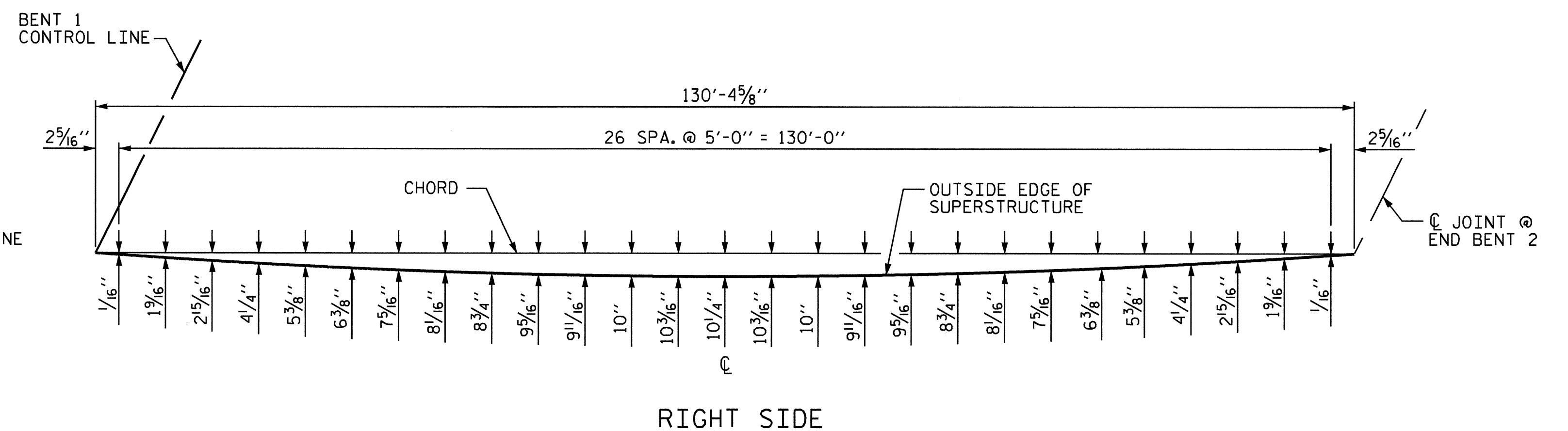
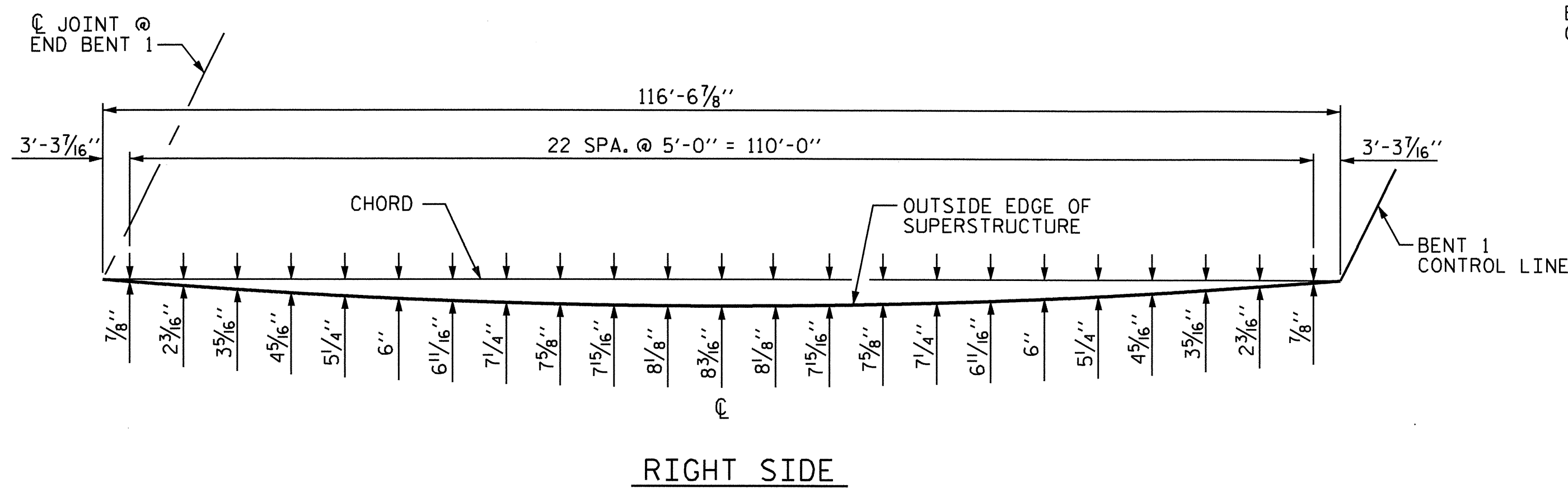
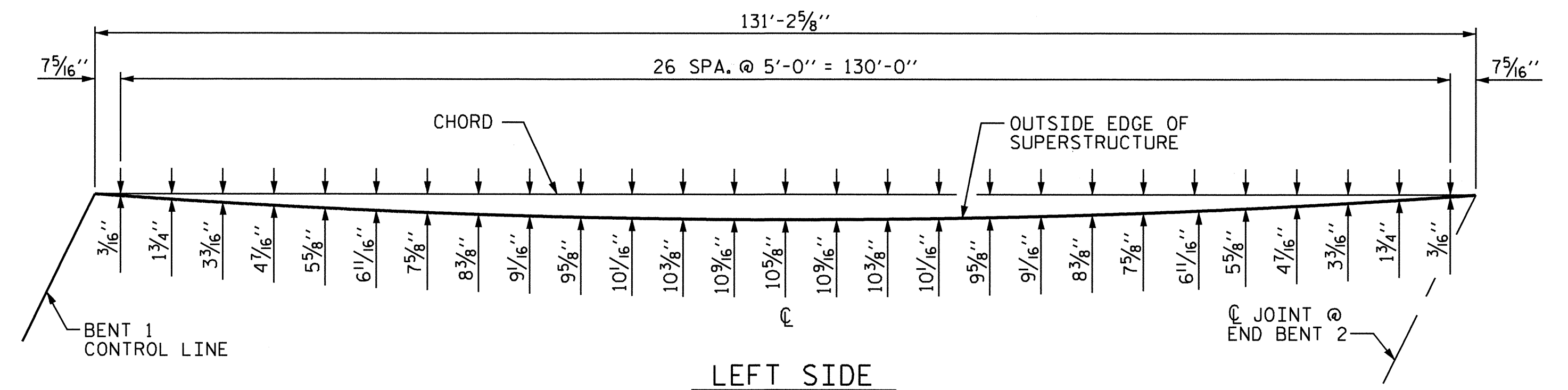
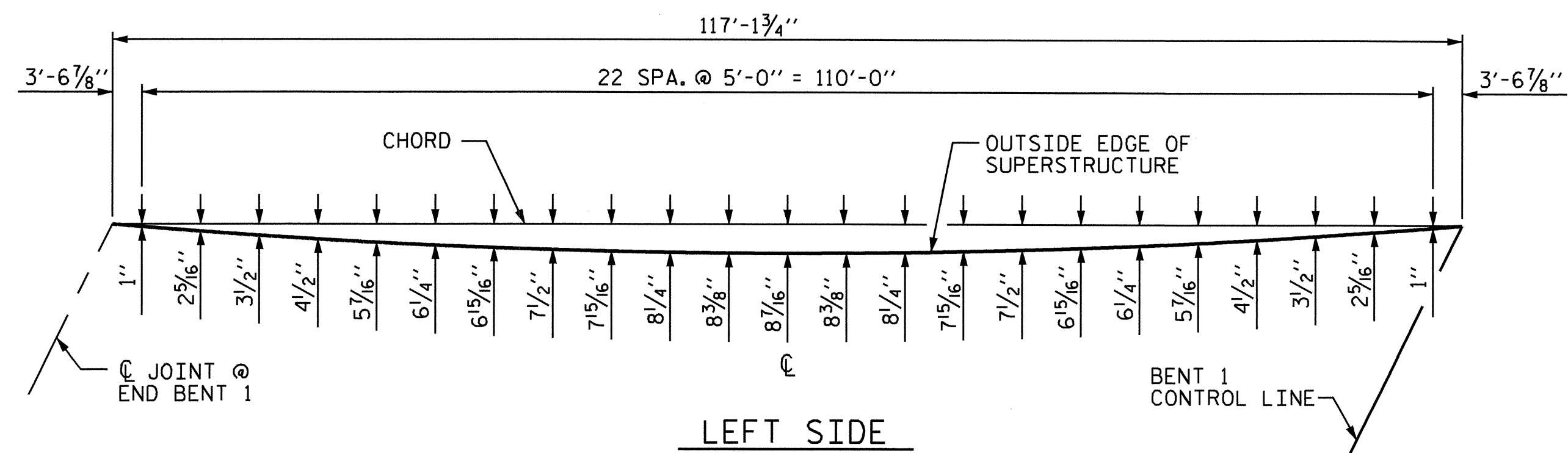
SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO.
SUPERSTRUCTURE PLAN OF SPANS						S-10
REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	39
1			3			
2			4			



DRAWN BY: A.S. CALLAWAY DATE: 6/25/09  
 CHECKED BY: W.F. PARKER DATE: 5/4/10

STR. #1



SPAN "A" ARC OFFSETS

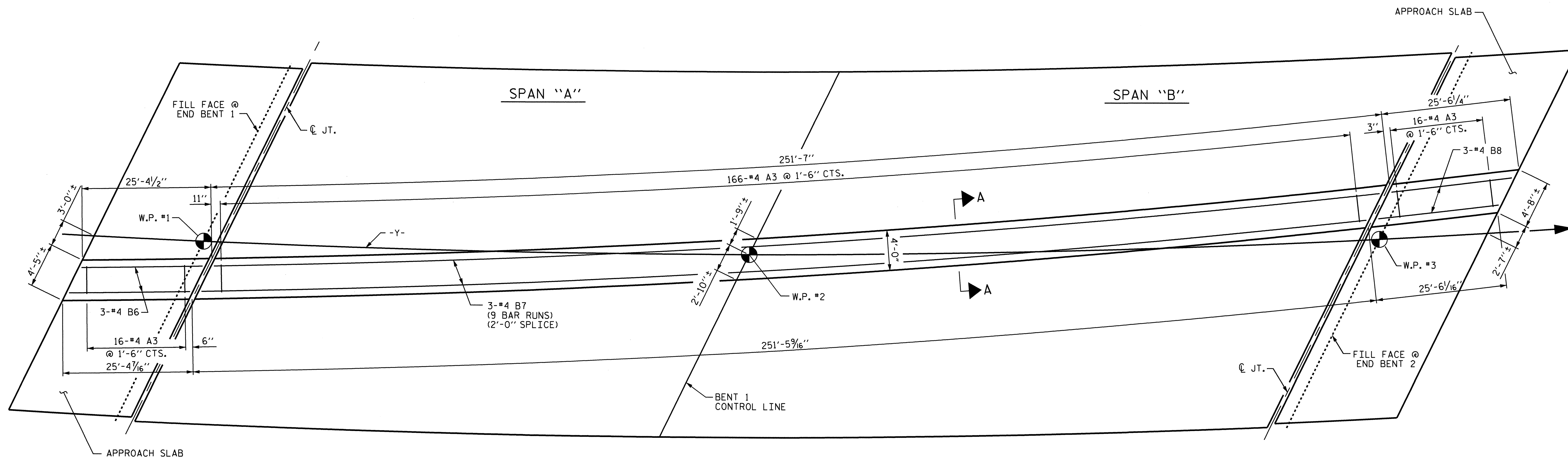
SPAN "B" ARC OFFSETS

PROJECT NO. R-2612A  
GUILFORD COUNTY  
 STATION: 69+69.82 -L-

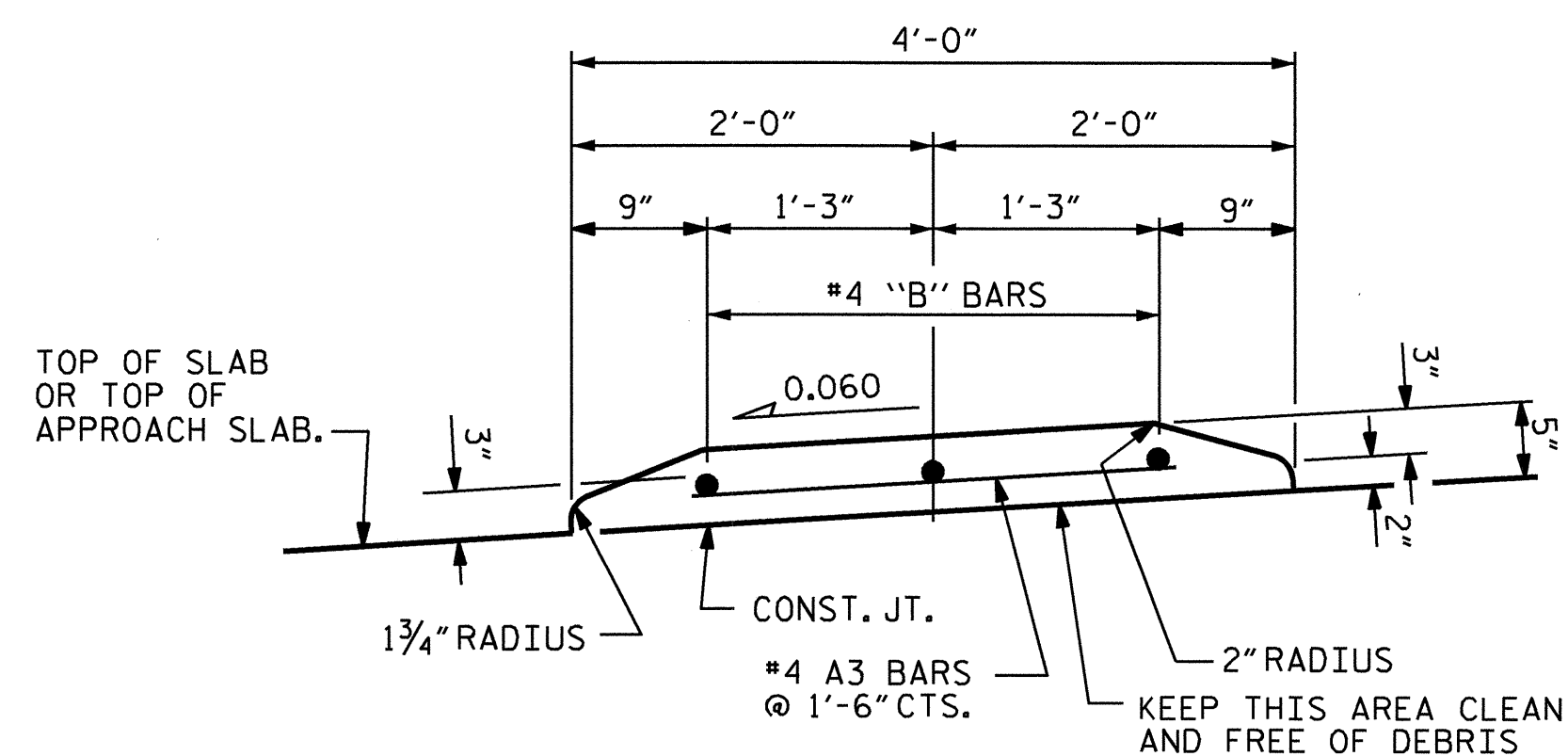


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE ARC OFFSETS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 39

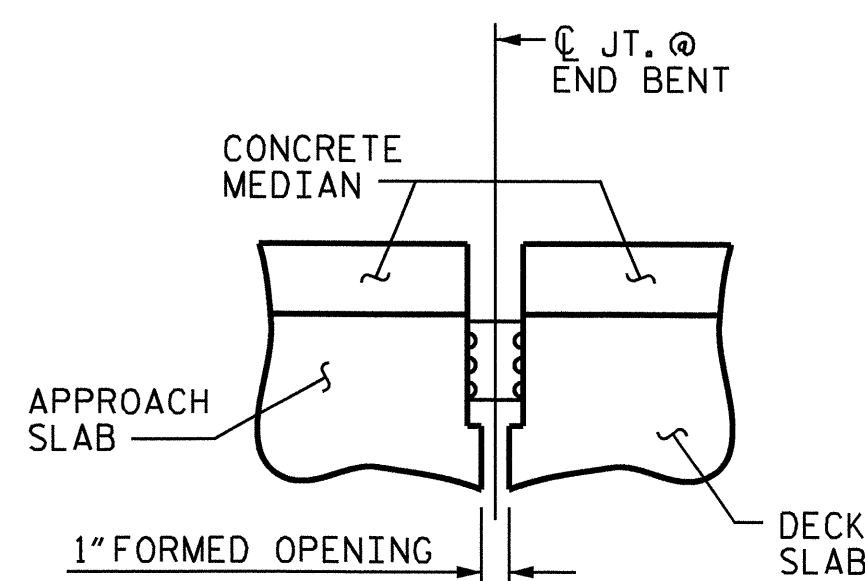
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 CHECKED BY : W.F. PARKER DATE : 5/4/10



PLAN



SECTION A-A



SECTION @ JT.

NOTES

DO NOT CAST CONCRETE MEDIAN ON THE BRIDGE DECK OR APPROACH SLABS UNTIL GROOVING IS COMPLETED AND THE ROADWAY LANE TRANSITIONS HAVE BEEN STAKED OUT. FOR LANE TRANSITION END POINTS, SEE ROADWAY PLANS.

ALL REINFORCING STEEL IN THE CONCRETE MEDIAN SHALL BE EPOXY COATED.

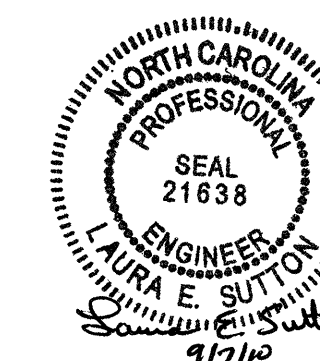
FOR CONCRETE MEDIAN QUANTITIES, SEE "SUPERSTRUCTURE BILL OF MATERIAL". PAYMENT FOR THE CONCRETE MEDIAN, INCLUDING APPROACH SLAB SECTIONS, SHALL BE INCLUDED IN THE SQUARE FOOT PRICE BID FOR REINFORCED CONCRETE DECK SLAB.

THE JOINT IN THE DECK SHALL BE SAWS PRIOR TO CASTING THE CONCRETE MEDIAN.

GROOVED CONTRACTION JOINTS 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF CONCRETE MEDIAN IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FEET TO 10 FEET BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

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STATE OF NORTH CAROLINA  
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 RALEIGH  
 SUPERSTRUCTURE  
 CONCRETE MEDIAN



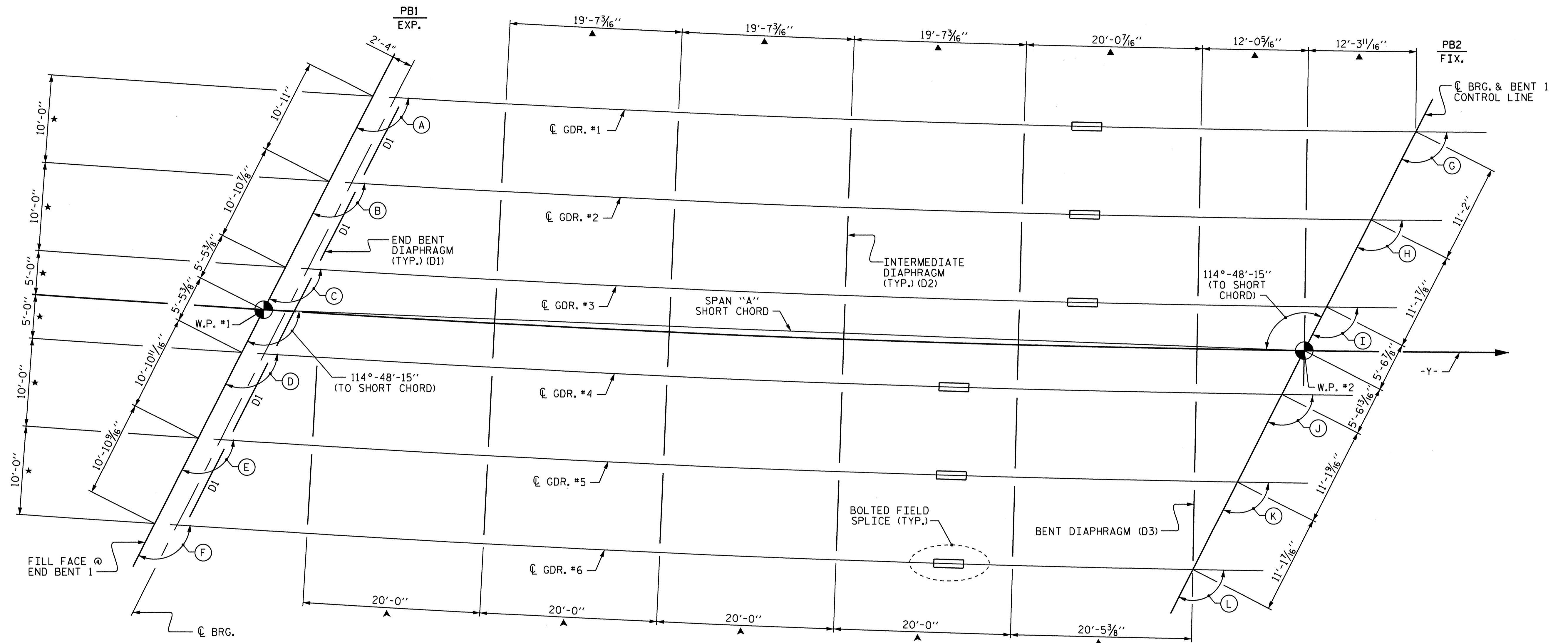
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			39

STR. #1





ANGLES				
GDR. #1	A	113°-41'-07"	G	116°-28'-04"
GDR. #2	B	113°-34'-57"	H	116°-21'-05"
GDR. #3	C	113°-28'-50"	I	116°-14'-09"
GDR. #4	D	113°-22'-47"	J	116°-07'-16"
GDR. #5	E	113°-16'-47"	K	116°-00'-28"
GDR. #6	F	113°-10'-50"	L	115°-53'-43"

GIRDER ANGLES ARE TANGENT TO CURVE AT FILL FACE AND BENT CONTROL LINE.

### SPAN "A"

### FRAMING PLAN

ALL INTERMEDIATE (D2) AND BENT DIAPHRAGMS (D3) ARE PLACED RADIAL TO -Y- LINE.

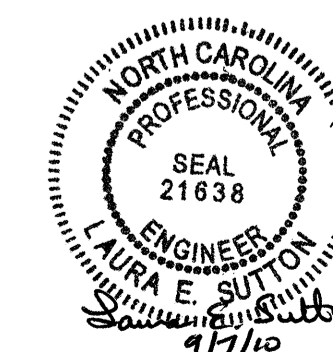
- ★ RADIAL DIMENSION
- ▲ MEASURED ALONG  $\bar{C}$  GIRDER #1
- ▲ MEASURED ALONG  $\bar{C}$  GIRDER #6

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SHEET 1 OF 2

STATE OF NORTH CAROLINA  
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### SUPERSTRUCTURE FRAMING PLAN

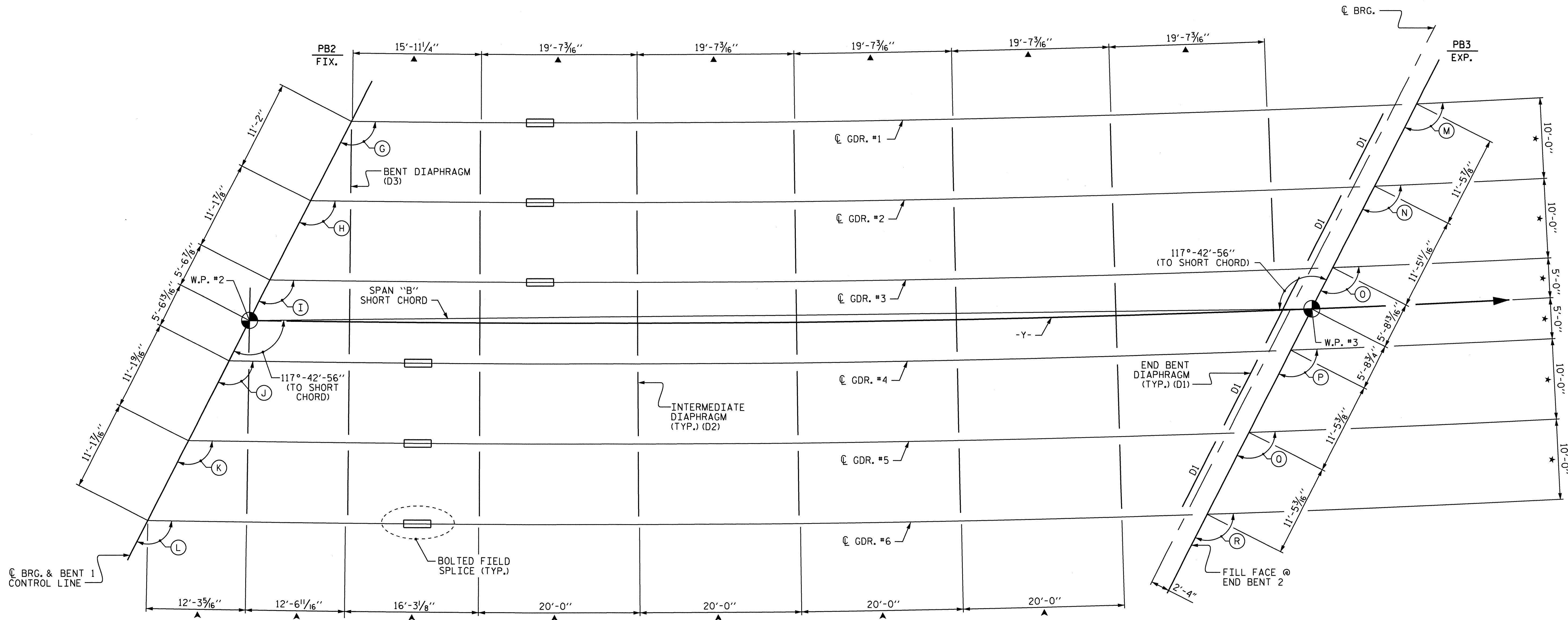


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			39

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 CHECKED BY: W.F. PARKER DATE: 5/4/10

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STR. #1



ANGLES				
GDR. #1	G	116°-28'-04"	M	119°-34'-58"
GDR. #2	H	116°-21'-05"	N	119°-26'-59"
GDR. #3	I	116°-14'-09"	O	119°-19'-05"
GDR. #4	J	116°-07'-16"	P	119°-11'-16"
GDR. #5	K	116°-00'-28"	Q	119°-03'-30"
GDR. #6	L	115°-53'-43"	R	118°-55'-50"

GIRDER ANGLES ARE TANGENT TO CURVE AT FILL FACE AND BENT CONTROL LINE.

### SPAN "B"

### FRAMING PLAN-SPAN "B"

ALL INTERMEDIATE (D2) AND BENT DIAPHRAGMS (D3) ARE PLACED RADIAL TO -Y- LINE.

- ★ RADIAL DIMENSION
- ▲ MEASURED ALONG  $\bar{C}$  GIRDER #1
- ▲ MEASURED ALONG  $\bar{C}$  GIRDER #6

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SHEET 2 OF 2

STATE OF NORTH CAROLINA  
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 RALEIGH

SUPERSTRUCTURE  
 FRAMING PLAN

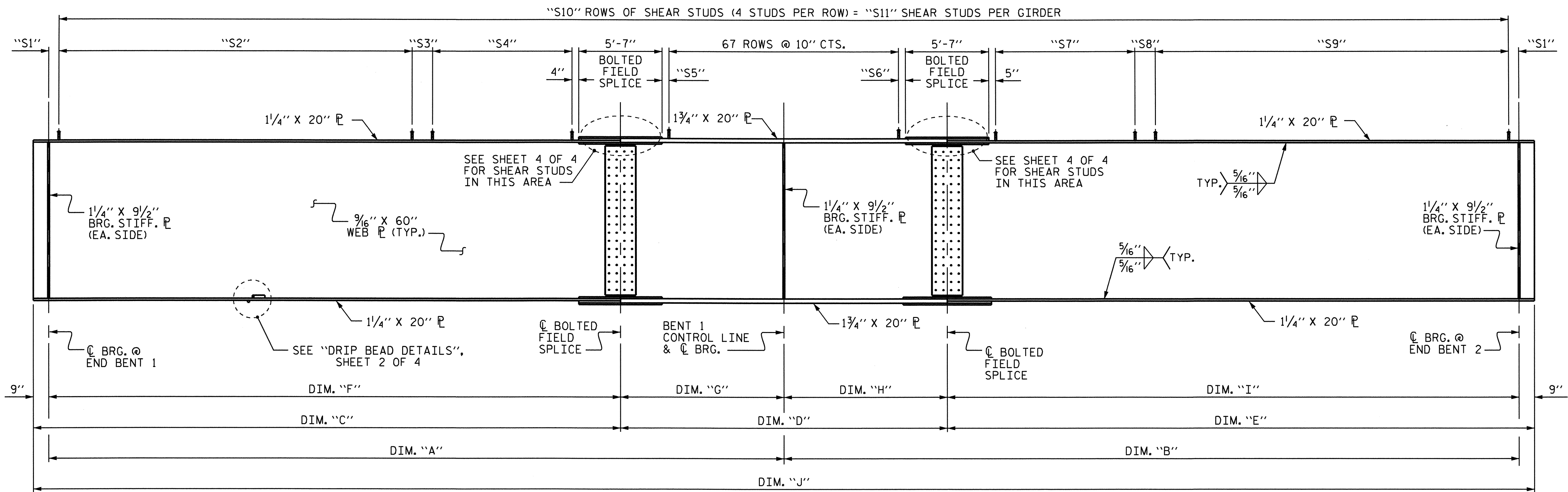
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NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

S-14  
 TOTAL SHEETS  
 39

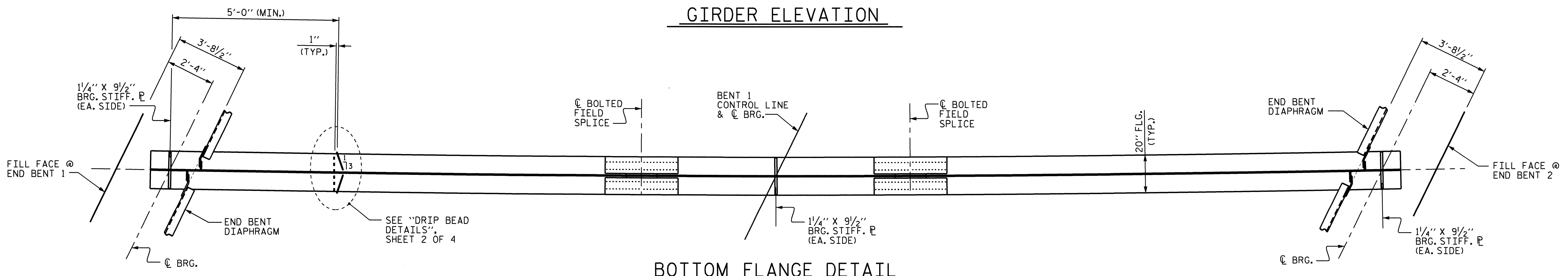


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STR. #1



**GIRDER ELEVATION**



**BOTTOM FLANGE DETAIL**

GIRDER DIMENSIONS											
GIRDER	RADIUS	A	B	C	D	E	F	G	H	I	J
1	2435'-0"	115'-8 <sup>9</sup> / <sub>16</sub> "	129'-8 <sup>3</sup> / <sub>8</sub> "	79'-2 <sup>7</sup> / <sub>8</sub> "	60'-8 <sup>7</sup> / <sub>16</sub> "	107'-0 <sup>3</sup> / <sub>8</sub> "	78'-5 <sup>3</sup> / <sub>16</sub> "	37'-3 <sup>3</sup> / <sub>8</sub> "	23'-5 <sup>1</sup> / <sub>16</sub> "	106'-3 <sup>5</sup> / <sub>16</sub> "	246'-10 <sup>5</sup> / <sub>16</sub> "
2	2445'-0"	115'-7 <sup>5</sup> / <sub>16</sub> "	129'-6 <sup>3</sup> / <sub>16</sub> "	83'-10 <sup>3</sup> / <sub>4</sub> "	60'-11 <sup>3</sup> / <sub>8</sub> "	101'-9 <sup>11</sup> / <sub>16</sub> "	83'-1 <sup>13</sup> / <sub>16</sub> "	32'-5 <sup>1</sup> / <sub>2</sub> "	28'-5 <sup>7</sup> / <sub>8</sub> "	101'-0 <sup>11</sup> / <sub>16</sub> "	246'-7 <sup>7</sup> / <sub>8</sub> "
3	2455'-0"	115'-6 <sup>1</sup> / <sub>16</sub> "	129'-4 <sup>13</sup> / <sub>16</sub> "	88'-7 <sup>5</sup> / <sub>16</sub> "	61'-2 <sup>7</sup> / <sub>16</sub> "	96'-7 <sup>7</sup> / <sub>8</sub> "	87'-10 <sup>3</sup> / <sub>8</sub> "	27'-7 <sup>11</sup> / <sub>16</sub> "	33'-6 <sup>3</sup> / <sub>4</sub> "	95'-10 <sup>1</sup> / <sub>16</sub> "	246'-4 <sup>7</sup> / <sub>8</sub> "
4	2465'-0"	115'-4 <sup>7</sup> / <sub>8</sub> "	129'-3 <sup>1</sup> / <sub>16</sub> "	78'-11 <sup>3</sup> / <sub>4</sub> "	60'-7 <sup>3</sup> / <sub>4</sub> "	106'-6 <sup>1</sup> / <sub>16</sub> "	78'-2 <sup>3</sup> / <sub>4</sub> "	37'-2 <sup>1</sup> / <sub>8</sub> "	23'-5 <sup>5</sup> / <sub>8</sub> "	105'-9 <sup>7</sup> / <sub>16</sub> "	246'-1 <sup>5</sup> / <sub>16</sub> "
5	2475'-0"	115'-3 <sup>11</sup> / <sub>16</sub> "	129'-1 <sup>5</sup> / <sub>16</sub> "	83'-7 <sup>1</sup> / <sub>2</sub> "	60'-10 <sup>11</sup> / <sub>16</sub> "	101'-4 <sup>3</sup> / <sub>4</sub> "	82'-10 <sup>9</sup> / <sub>16</sub> "	32'-5 <sup>1</sup> / <sub>8</sub> "	28'-5 <sup>3</sup> / <sub>16</sub> "	104'-3 <sup>3</sup> / <sub>4</sub> "	245'-11"
6	2485'-0"	115'-2 <sup>1</sup> / <sub>2</sub> "	128'-11 <sup>5</sup> / <sub>8</sub> "	88'-3 <sup>5</sup> / <sub>16</sub> "	61'-1 <sup>1</sup> / <sub>16</sub> "	96'-3 <sup>3</sup> / <sub>16</sub> "	87'-6 <sup>5</sup> / <sub>16</sub> "	27'-8 <sup>3</sup> / <sub>16</sub> "	33'-5 <sup>1</sup> / <sub>2</sub> "	95'-6 <sup>1</sup> / <sub>8</sub> "	245'-8 <sup>1</sup> / <sub>8</sub> "

ALL GIRDER DIMENSIONS IN THE ABOVE TABLE ARE MEASURED ALONG C OF GIRDER.

STUD DIMENSIONS											
GIRDER	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11
1	8"	50 ROWS @ 1'-0" CTS.	7 <sup>11</sup> / <sub>16</sub> "	31 ROWS @ 10" CTS.	0 <sup>3</sup> / <sub>4</sub> "	0 <sup>11</sup> / <sub>16</sub> "	49 ROWS @ 11" CTS.	11 <sup>13</sup> / <sub>16</sub> "	54 ROWS @ 1'-1" CTS.	251	1004
2	6"	50 ROWS @ 1'-0" CTS.	6 <sup>5</sup> / <sub>16</sub> "	37 ROWS @ 10" CTS.	2 <sup>3</sup> / <sub>16</sub> "	2 <sup>3</sup> / <sub>16</sub> "	44 ROWS @ 11" CTS.	6 <sup>3</sup> / <sub>16</sub> "	54 ROWS @ 1'-1" CTS.	252	1008
3	6"	50 ROWS @ 1'-0" CTS.	1'-0 <sup>7</sup> / <sub>8</sub> "	42 ROWS @ 10" CTS.	3 <sup>3</sup> / <sub>4</sub> "	3 <sup>11</sup> / <sub>16</sub> "	39 ROWS @ 11" CTS.	1 <sup>1</sup> / <sub>16</sub> "	53 ROWS @ 1'-1" CTS.	251	1004
4	6"	51 ROWS @ 1'-0" CTS.	5 <sup>1</sup> / <sub>4</sub> "	30 ROWS @ 10" CTS.	0 <sup>3</sup> / <sub>8</sub> "	0 <sup>3</sup> / <sub>8</sub> "	52 ROWS @ 10" CTS.	1'-1 <sup>5</sup> / <sub>16</sub> "	51 ROWS @ 1'-1" CTS.	251	1004
5	6"	52 ROWS @ 1'-0" CTS.	9 <sup>1</sup> / <sub>16</sub> "	34 ROWS @ 10" CTS.	1 <sup>7</sup> / <sub>8</sub> "	1 <sup>13</sup> / <sub>16</sub> "	46 ROWS @ 11" CTS.	5 <sup>1</sup> / <sub>4</sub> "	52 ROWS @ 1'-1" CTS.	251	1004
6	8"	52 ROWS @ 1'-0" CTS.	1'-0 <sup>13</sup> / <sub>16</sub> "	39 ROWS @ 10" CTS.	3 <sup>3</sup> / <sub>8</sub> "	3 <sup>5</sup> / <sub>16</sub> "	28 ROWS @ 11" CTS.	6 <sup>3</sup> / <sub>8</sub> "	53 ROWS @ 1'-1" CTS.	239	956

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STATE OF NORTH CAROLINA  
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SUPERSTRUCTURE  
 STRUCTURAL STEEL  
 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			39

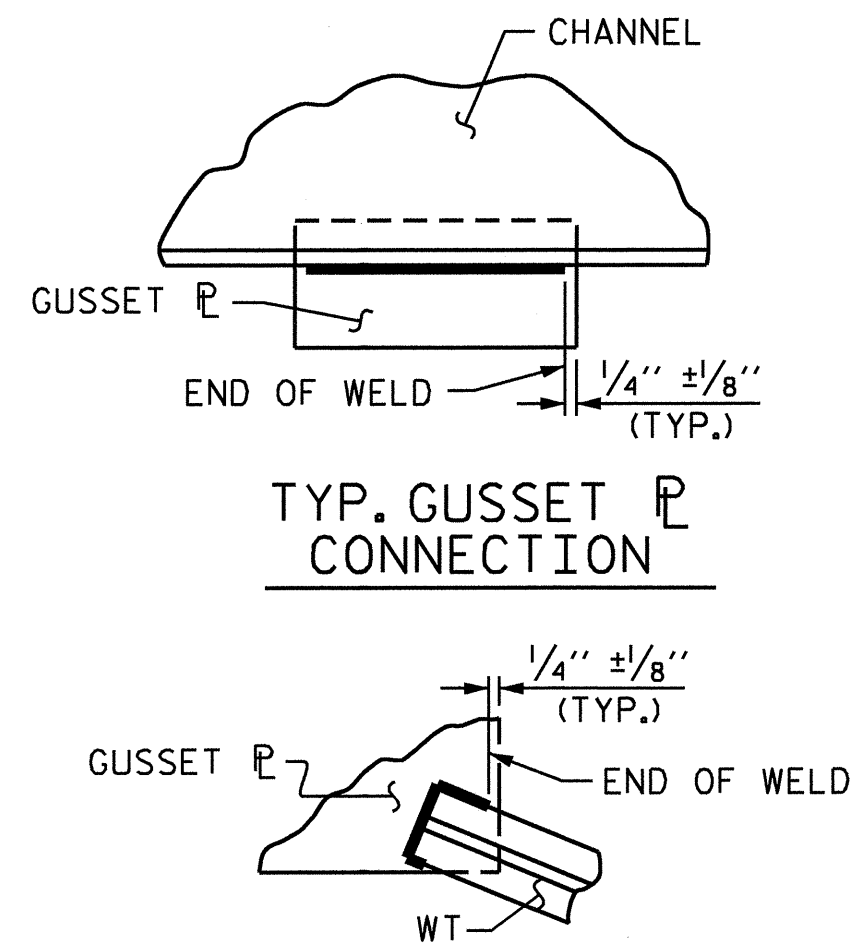


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 CHECKED BY: W.F. PARKER DATE: 5/4/10

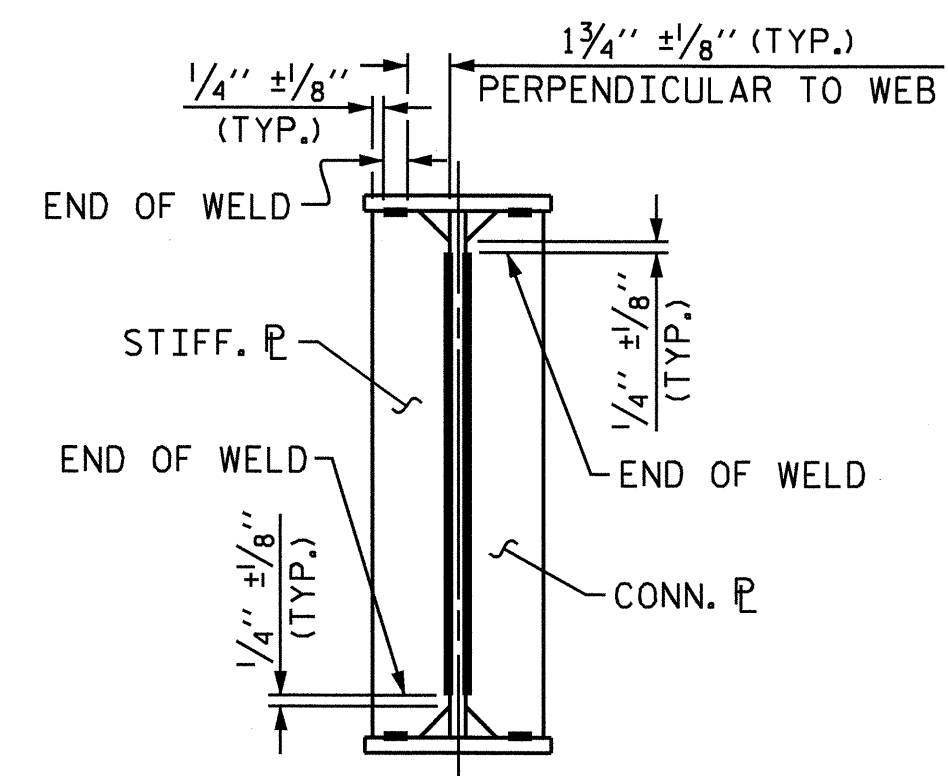
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STR. #1

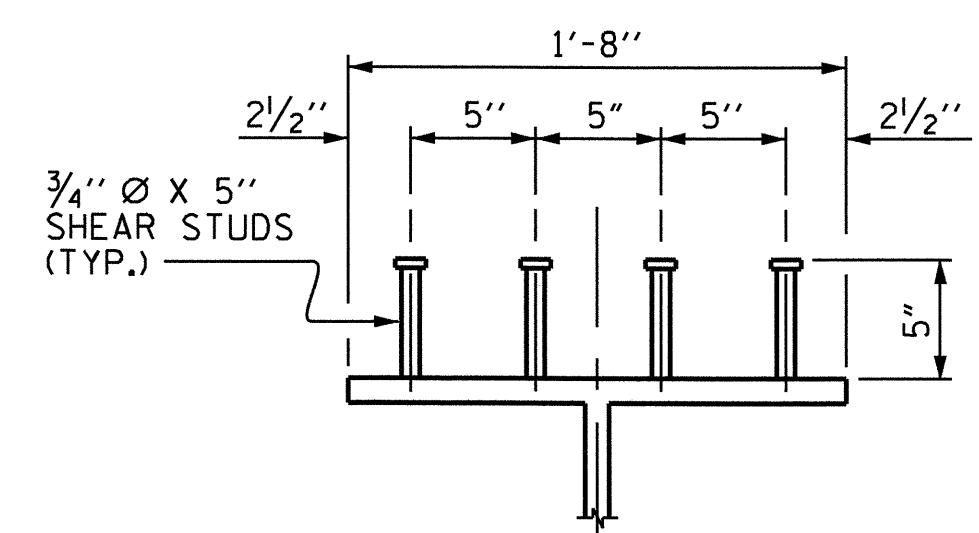




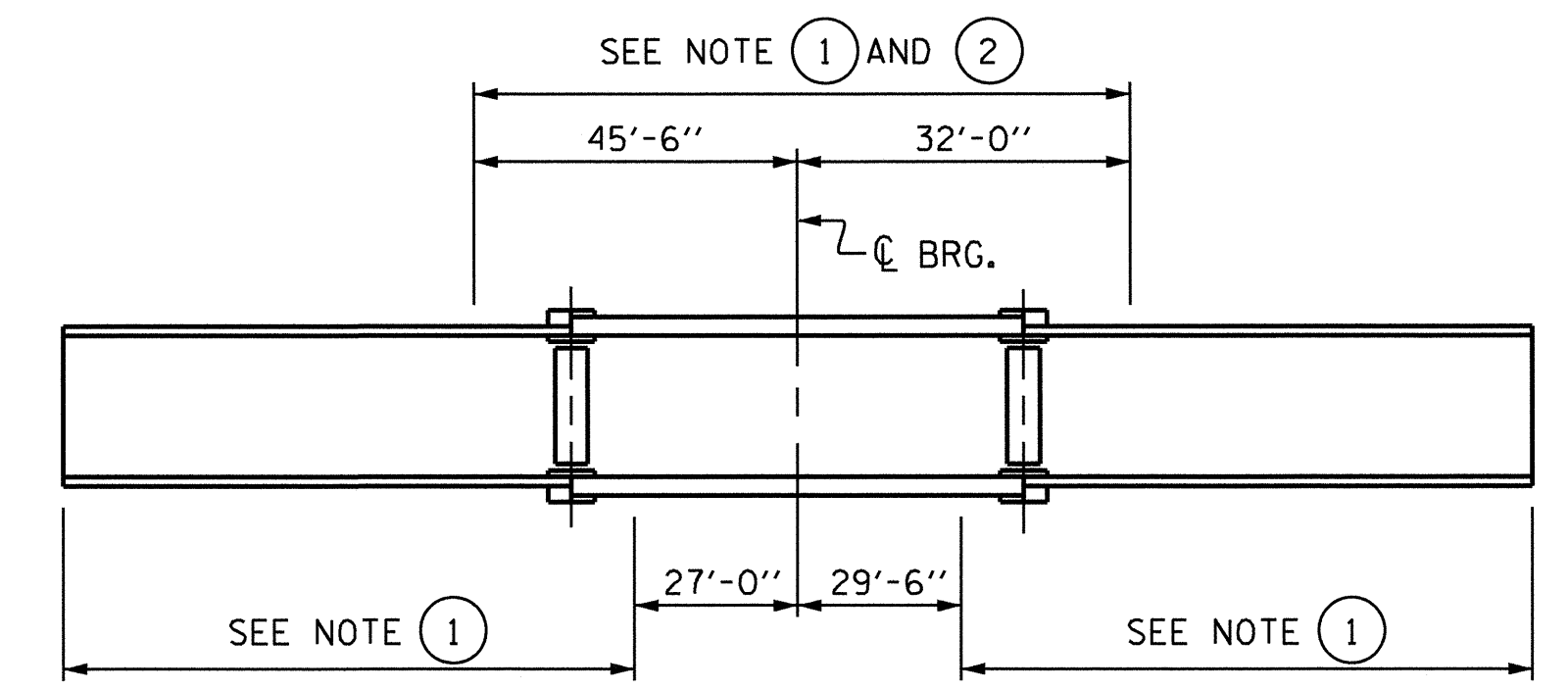
TYPICAL "TEE" TO GUSSET PLATE CONNECTION



TYPICAL STIFFENER OR CONNECTOR PLATE CONNECTION



SHEAR STUD DETAIL



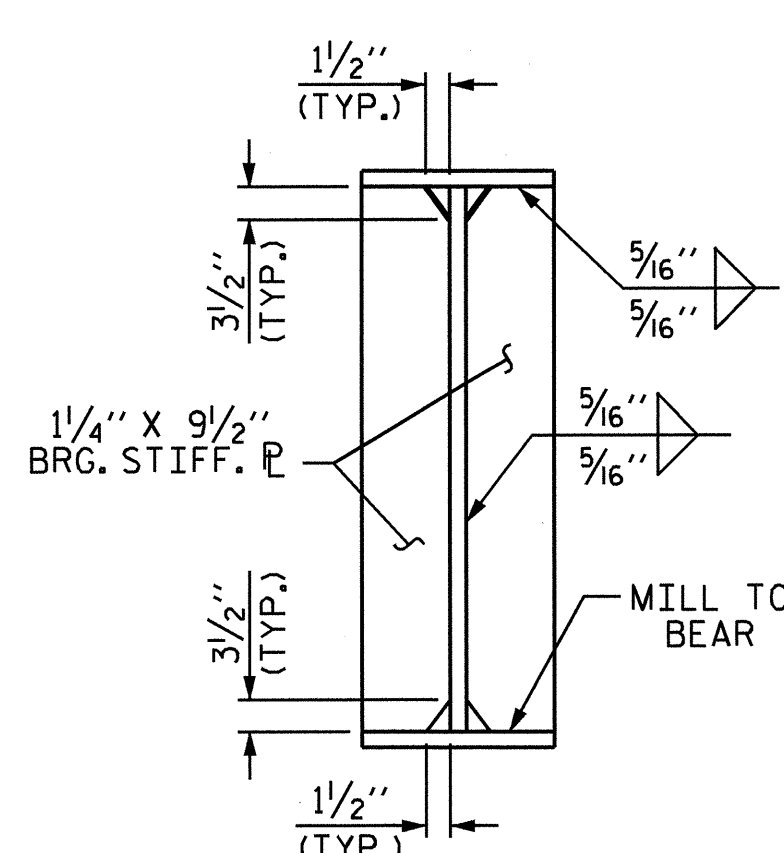
GIRDER MAKE UP

NOTE 1: CHARPY V-NOTCH TESTS ARE REQUIRED FOR ALL TOP OR BOTTOM FLANGE PLATES WHICH FALL WITHIN THESE LIMITS. ALL WEB PLATES AND ALL SPLICE PLATES. IF A PERMITTED SHOP FLANGE SPLICE IS NOT USED, CHARPY V-NOTCH TESTS WILL BE REQUIRED FOR THE ENTIRE FLANGE PLATE. FOR CHARPY V-NOTCH TESTS, SEE ARTICLE 1072-9 OF STANDARD SPECIFICATIONS.

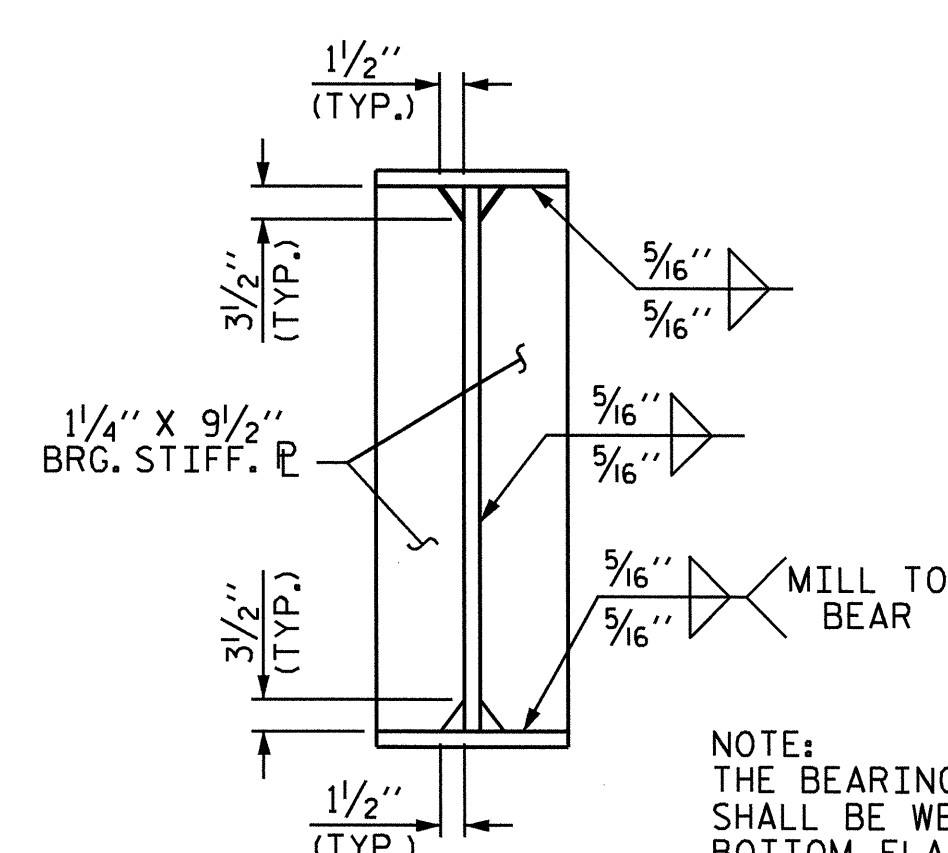
NOTE 2: NO WELDING OF FORMS OR FALSEWORK TO THE TOP FLANGE WILL BE PERMITTED IN THIS REGION.

CHARPY V-NOTCH TESTS FOR CONTINUOUS PLATE GIRDERS

WELD TERMINATION DETAILS

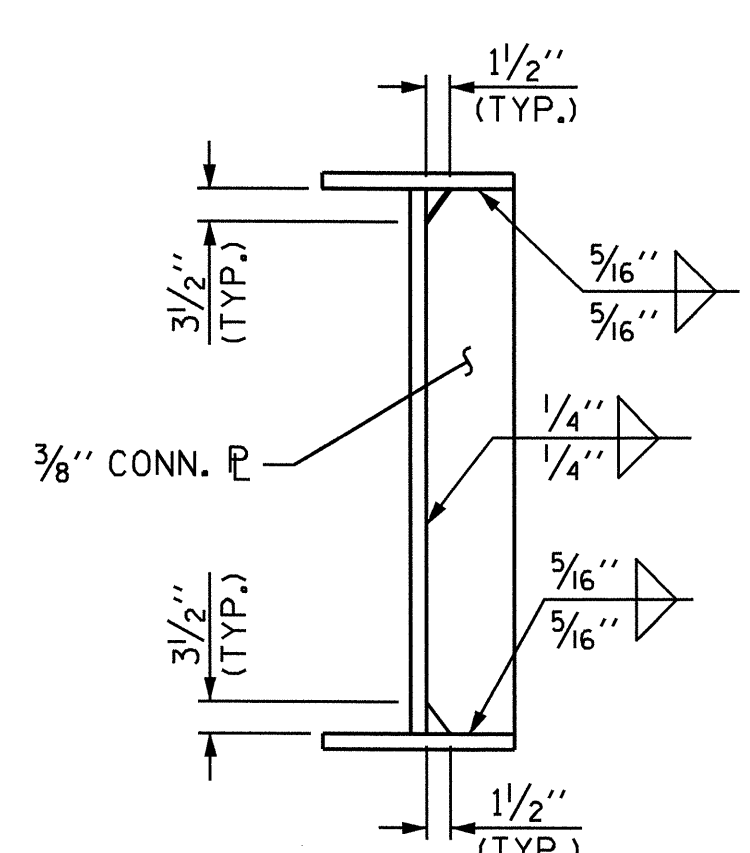


BEARING STIFFENER (AT END BENTS)

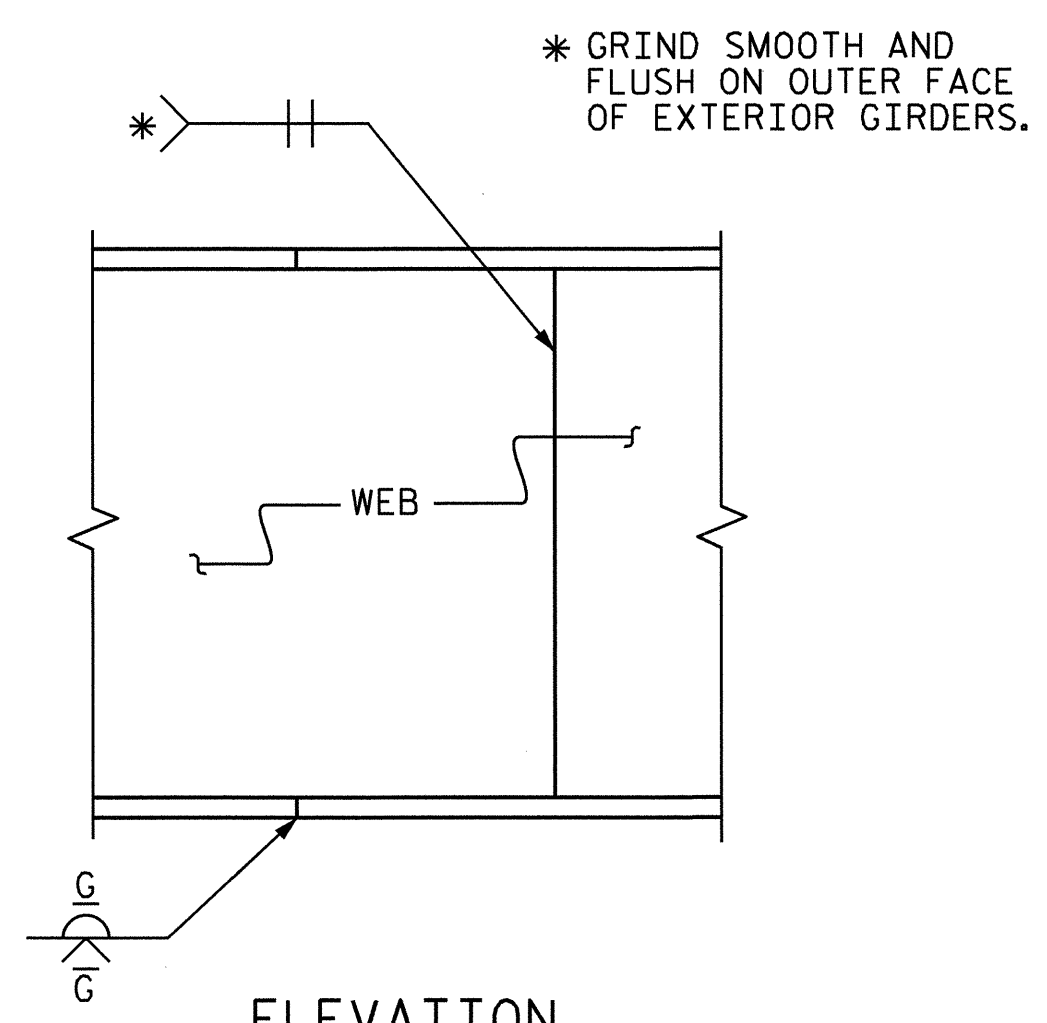


BEARING STIFFENER (AT BENT)

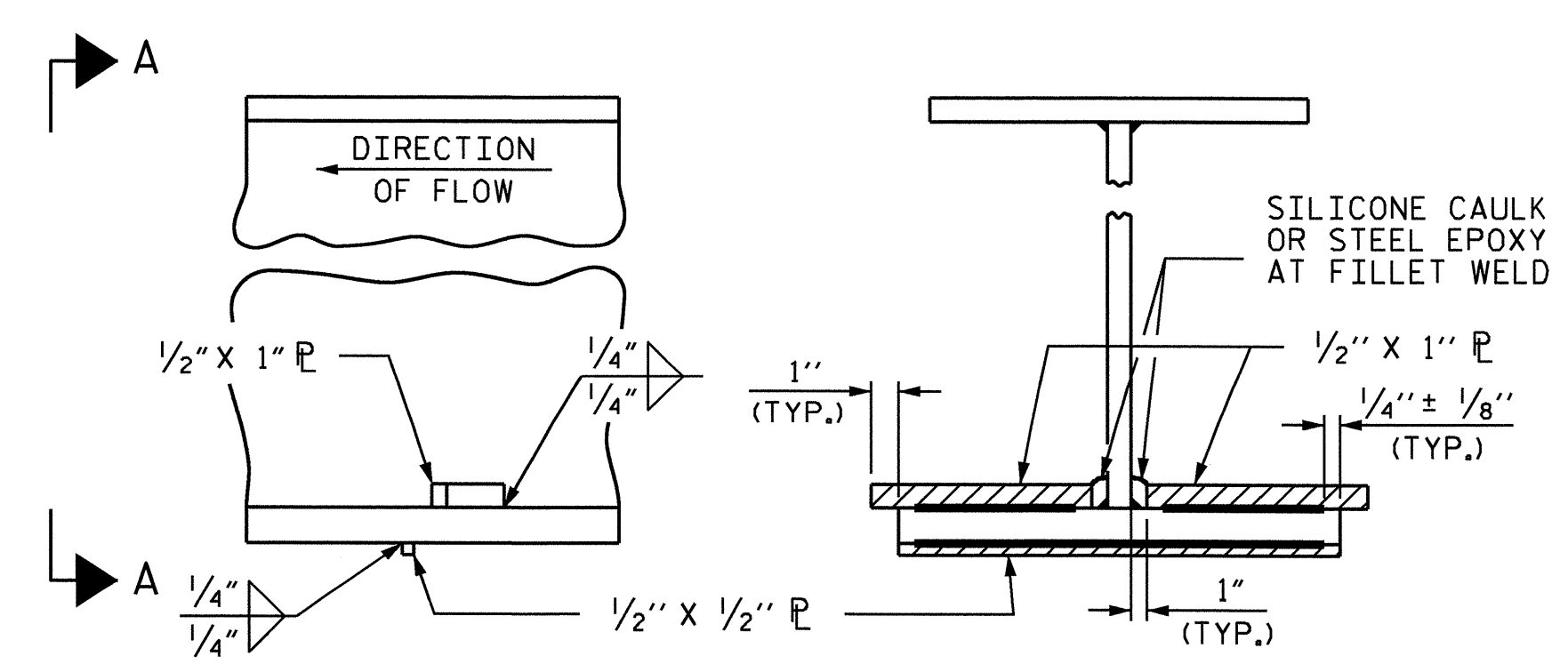
NOTE: THE BEARING STIFFENER SHALL BE WELDED TO THE BOTTOM FLANGE ONLY WHEN USED AS A CONNECTOR PLATE



CONNECTOR PLATE



TYPICAL FLANGE & WEB BUTT JOINT

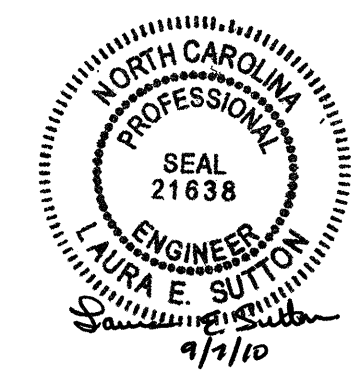


SECTION VIEW A-A DRIP BEAD DETAILS

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STATION: 69+69.82 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE STRUCTURAL STEEL DETAILS					
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-16
					TOTAL SHEETS 39



DRAWN BY: A.S. CALLAWAY DATE: 7/22/09  
CHECKED BY: W.F. PARKER DATE: 5/4/10

**NOTES**

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 4 OF ARTICLE 442-7 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.

ALL FIELD CONNECTIONS TO BE 7/8" DIA. HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED. FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.

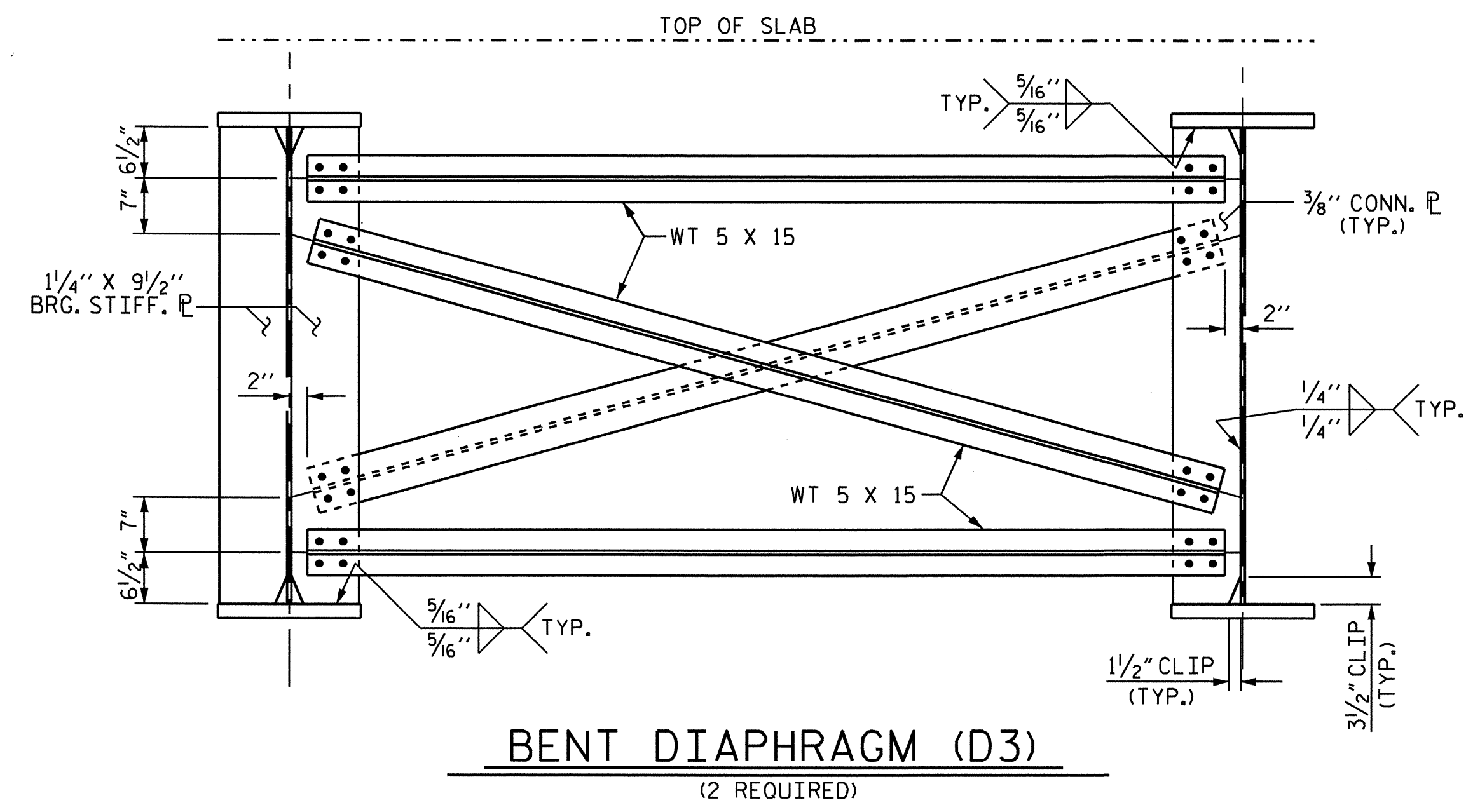
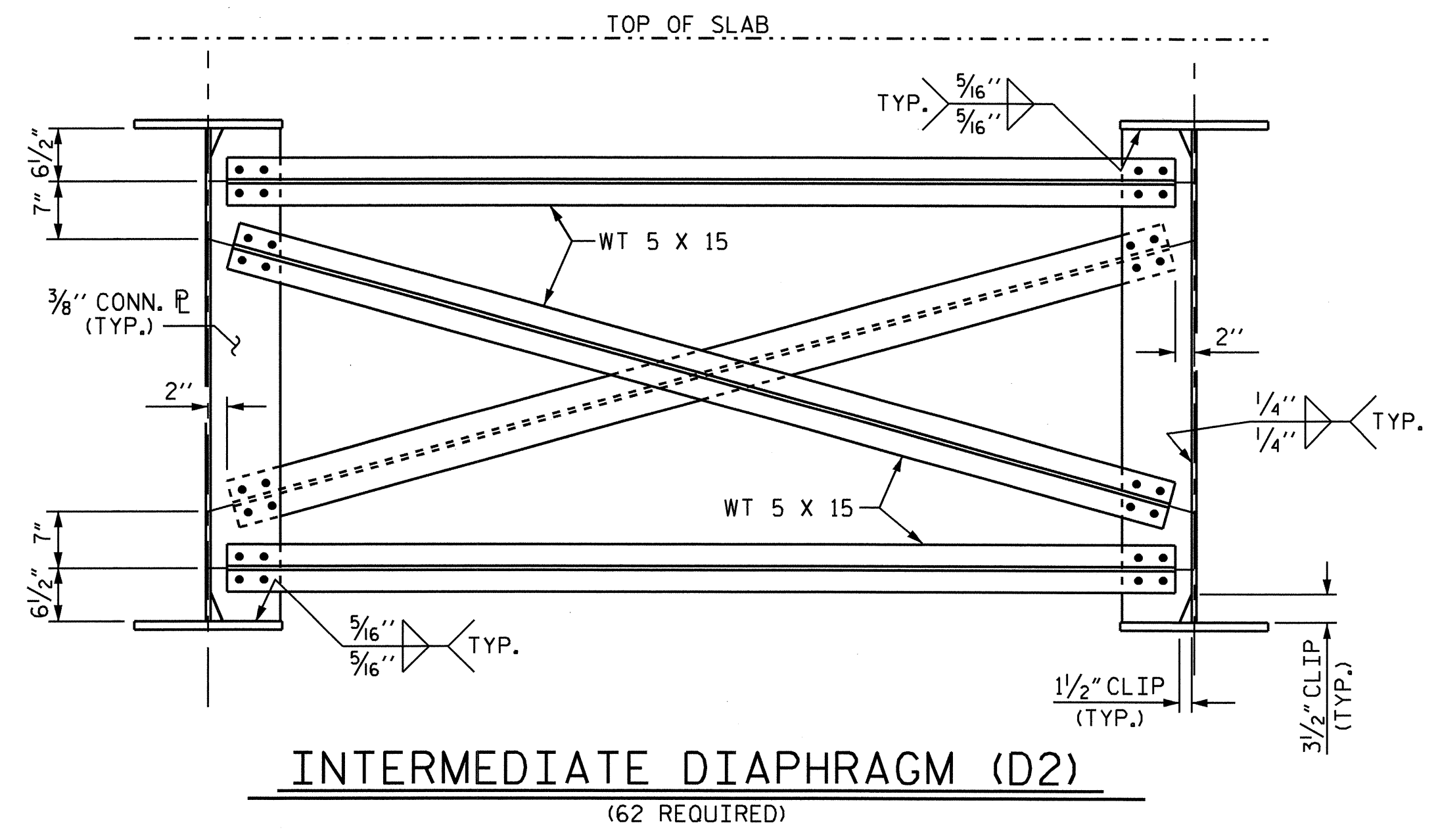
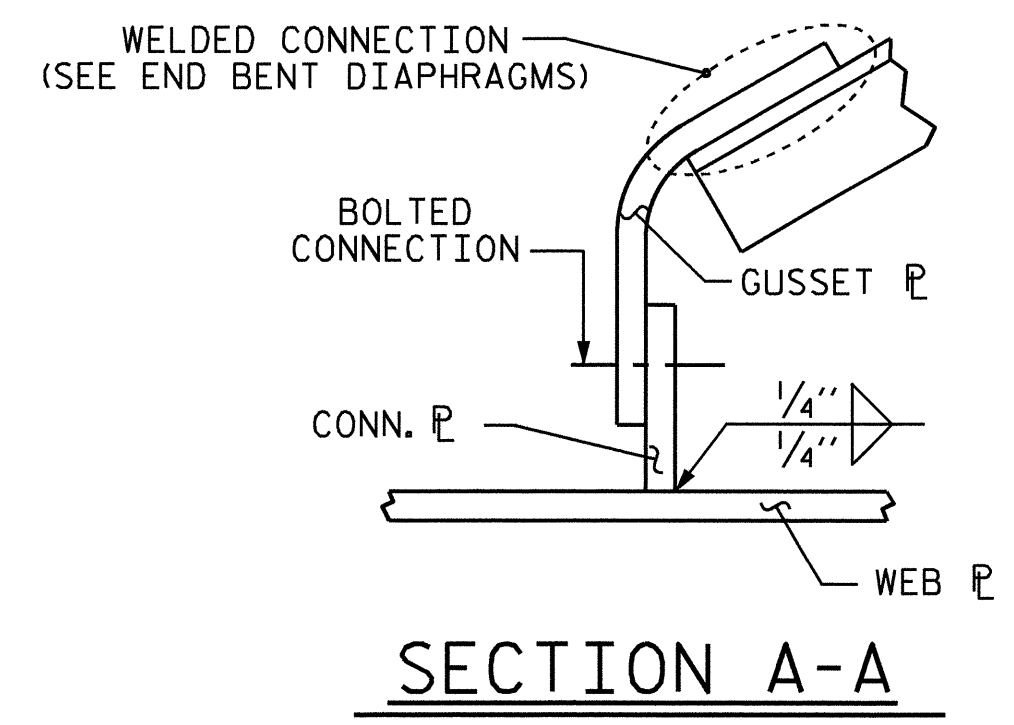
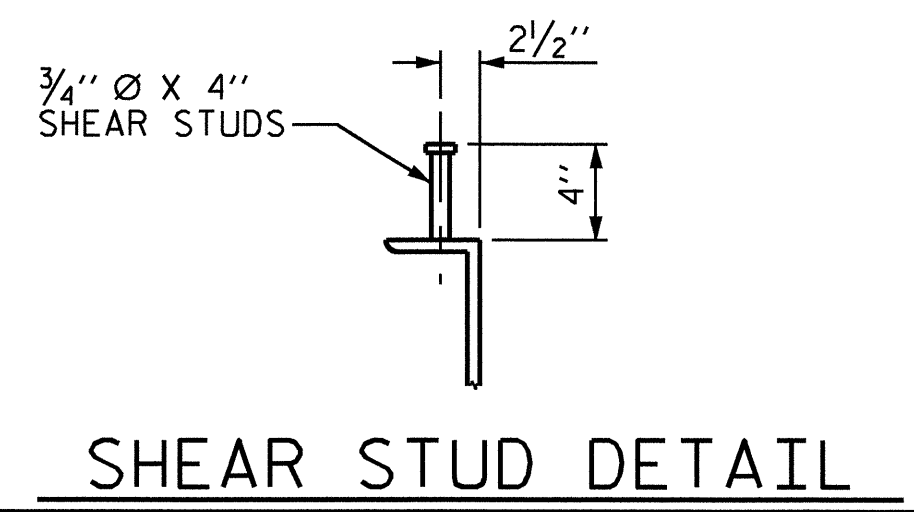
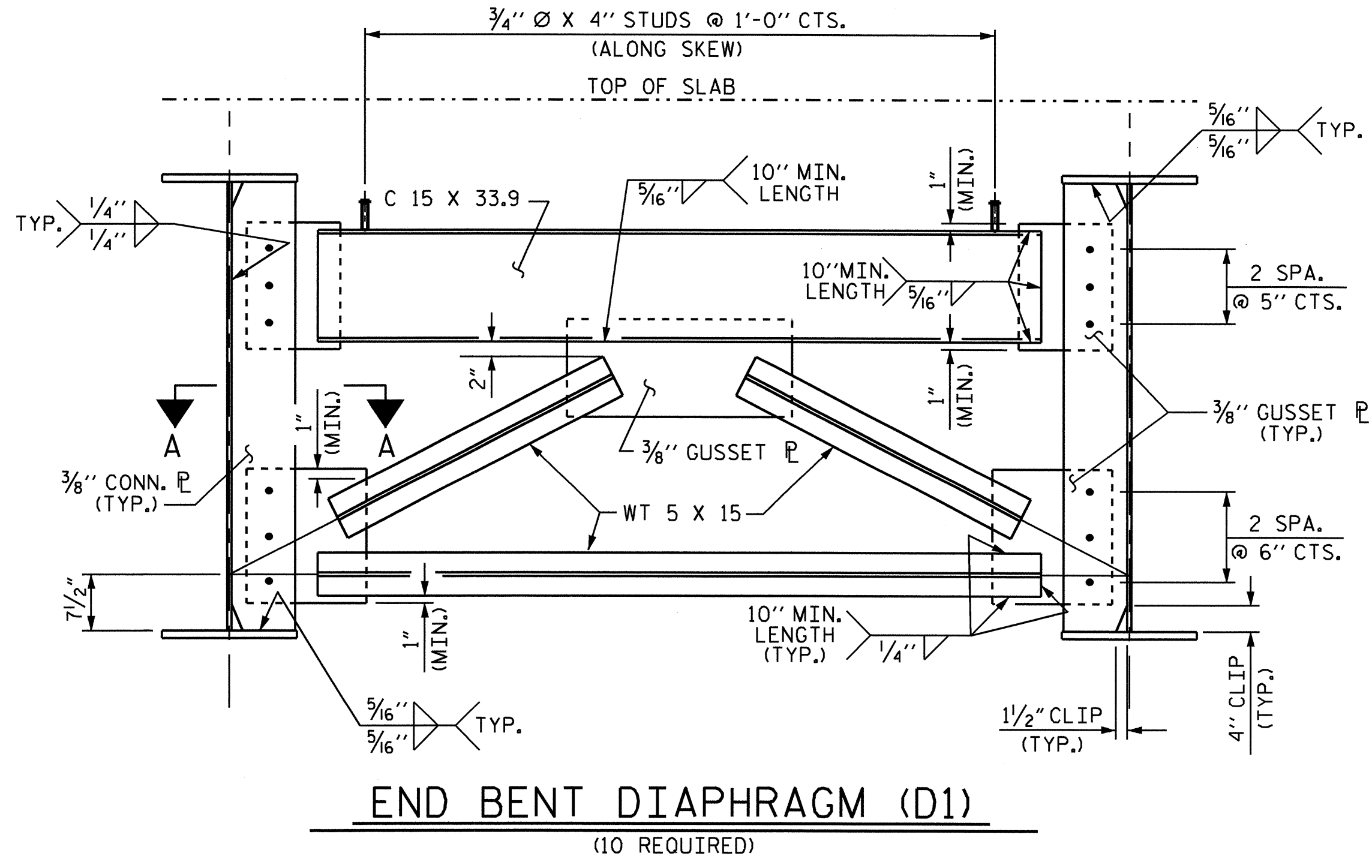
BEARING STIFFENERS ARE TO BE PLACED NORMAL TO THE WEB OF THE GIRDER AND SHALL BE PLUMB.

SHOP SPLICES ARE PERMITTED TO LIMIT THE MAXIMUM REQUIRED FLANGE PIECE LENGTHS TO 60 FEET AND WEB PIECE LENGTHS TO 45 FEET. PERMITTED FLANGE AND WEB SHOP SPLICES SHALL NOT BE LOCATED WITHIN 15 FEET OF MAXIMUM DEAD LOAD DEFLECTION (NOR WITHIN 15 FEET OF INTERMEDIATE BEARINGS OF CONTINUOUS UNITS). KEEP 2 FEET MINIMUM BETWEEN WEB AND FLANGE SHOP SPLICES. KEEP 6" MINIMUM BETWEEN CONNECTOR PLATE OR TRANSVERSE STIFFENER WELDS AND WEB OR FLANGE SHOP SPLICES.

STUDS ON GIRDERS MAY BE SHIFTED UP TO 1" IF NECESSARY TO CLEAR FLANGE SPLICE WELD.

TENSION ON THE AASHTO M164 BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS. FOR DIRECT TENSION INDICATORS, SEE SPECIAL PROVISIONS.

END OF GIRDERS SHALL BE PLUMB.



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SHEET 3 OF 4

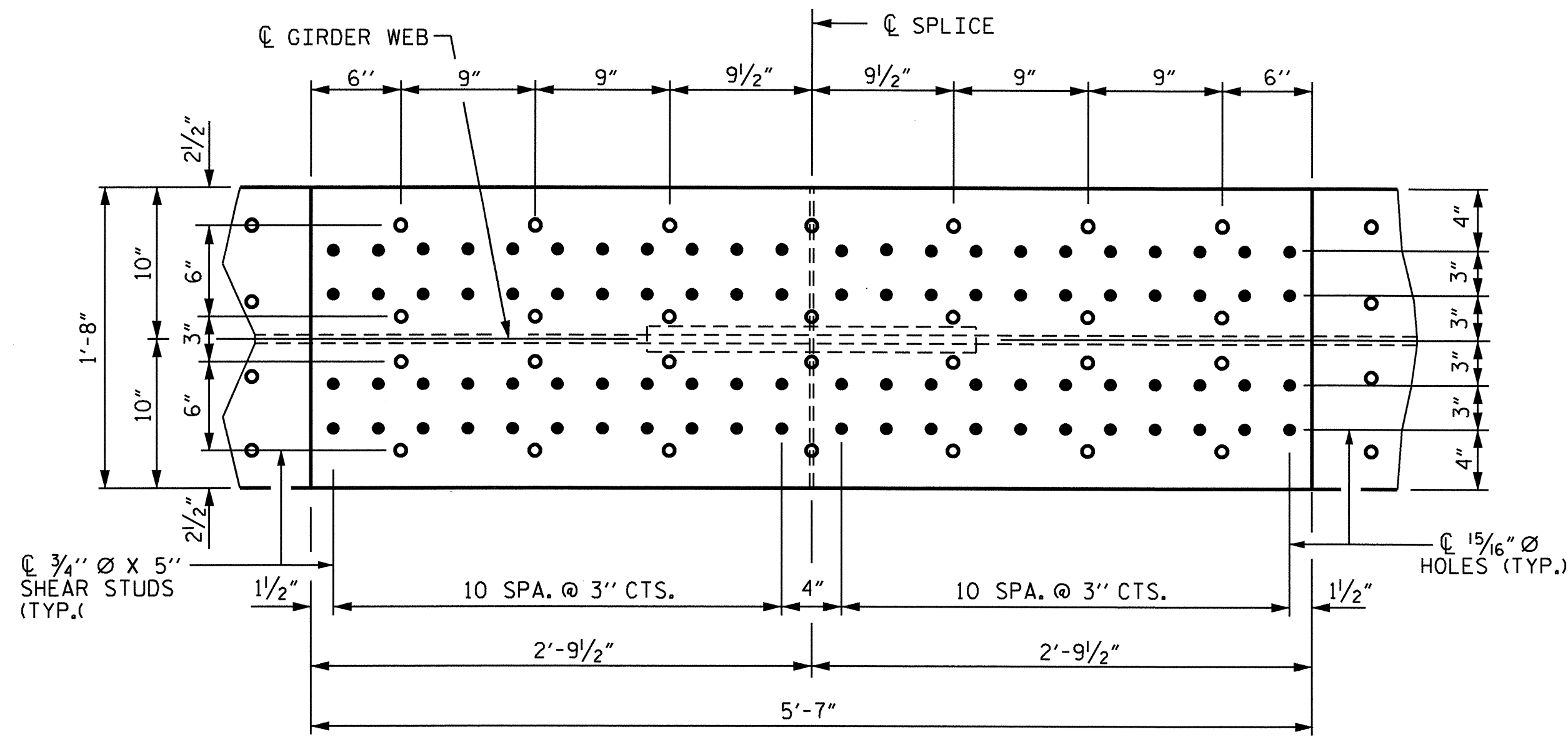
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE STRUCTURAL STEEL DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					39



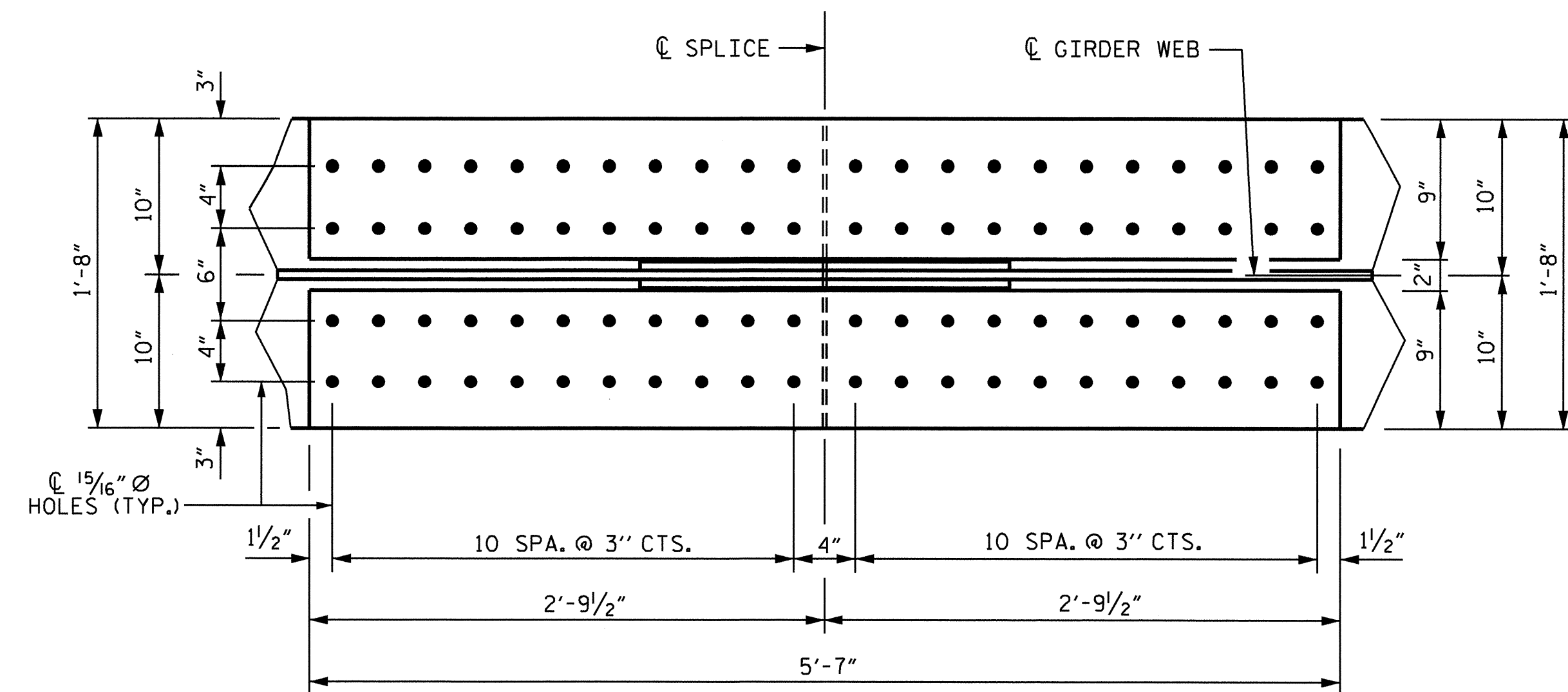
DRAWN BY: A.S. CALLAWAY DATE: 7/22/09  
 CHECKED BY: W.F. PARKER DATE: 5/4/10

07-SEP-2010 09:01  
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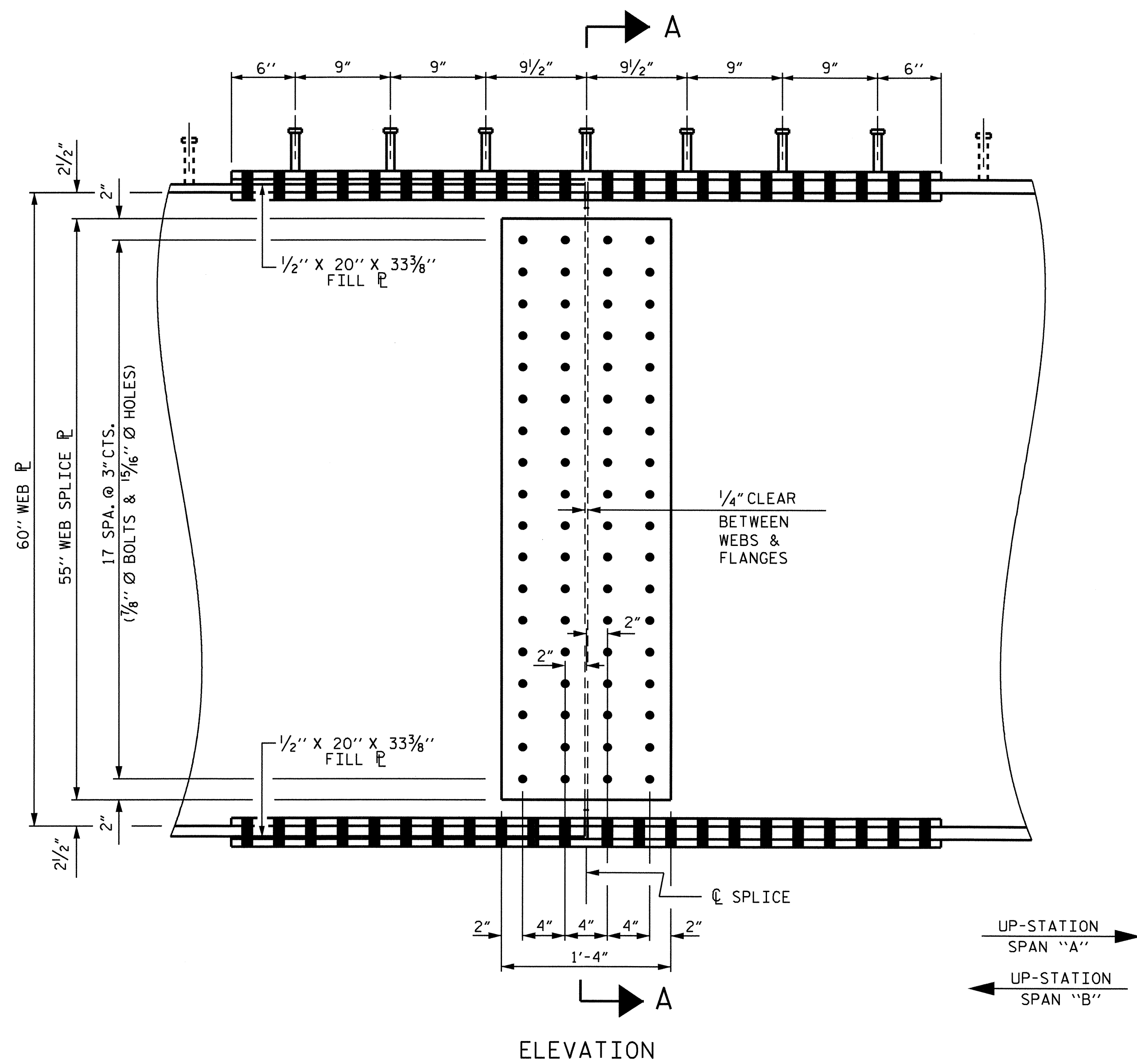
STR. #1



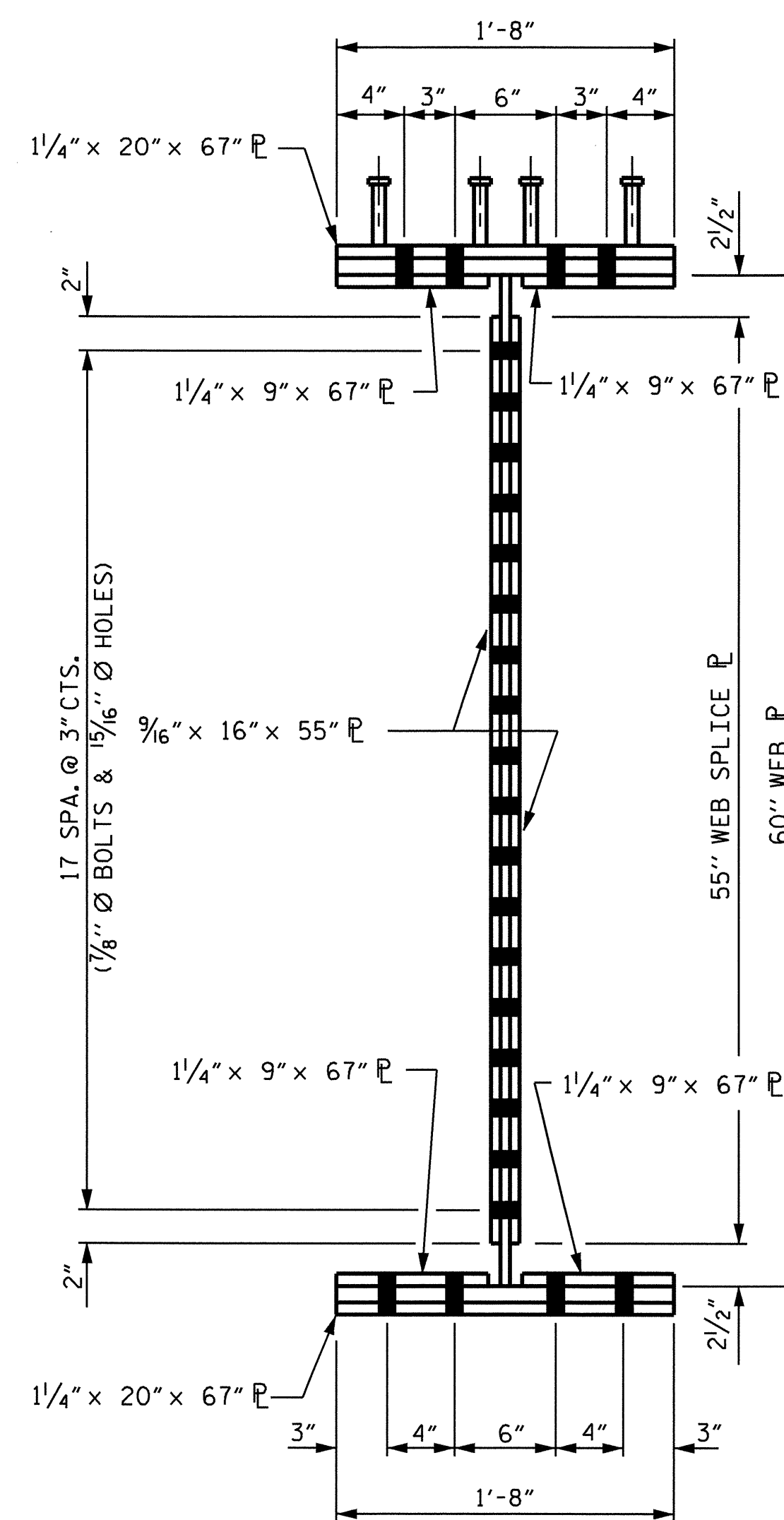
PLAN (TOP OF TOP FLANGE)



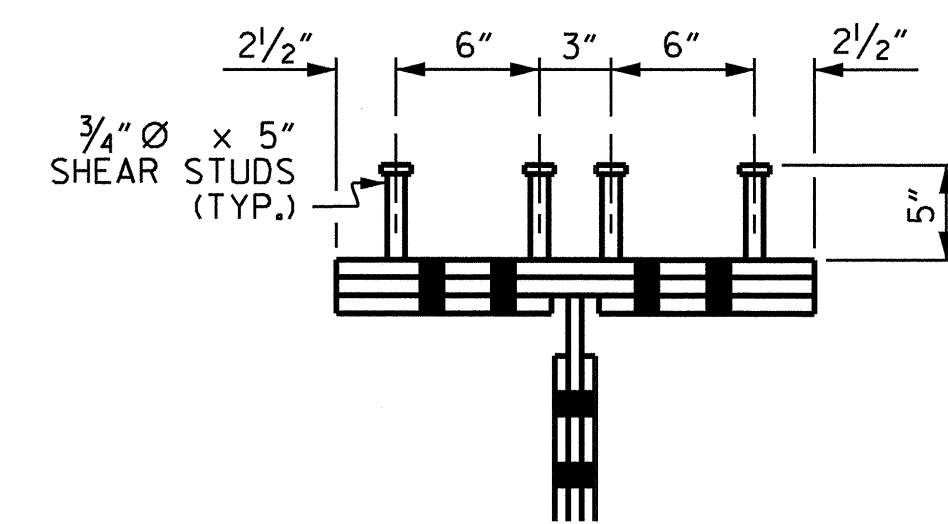
PLAN (TOP OF BOT. FLANGE)



ELEVATION



SECTION A-A



SHEAR STUD DETAIL FOR TOP FLANGE SPLICE PLATE

SHEAR STUDS ARE TO BE SHOP WELDED ON TOP OF PLATE BEFORE FIELD ASSEMBLY.

DESCRIPTION	SIZE	NO. REQ'D FOR ONE FIELD SPLICE	TOTAL REQ'D
WEB SPLICE PL	9/16" x 16" x 55"	2	24
TOP FLANGE SPLICE PL (TOP OF FLANGE)	1/4" x 20" x 67"	1	12
TOP FLANGE SPLICE PL (BOTTOM OF FLANGE)	1/4" x 9" x 67"	2	24
TOP FLANGE FILL PL	1/2" x 20" x 33 3/8"	1	12
BOTTOM FLANGE SPLICE PL (TOP OF FLANGE)	1/4" x 9" x 67"	2	24
BOTTOM FLANGE SPLICE PL (BOTTOM OF FLANGE)	1/4" x 20" x 67"	1	12
BOTTOM FLANGE FILL PL	1/2" x 20" x 33 3/8"	1	12



PROJECT NO. R-2612A  
GUILFORD COUNTY  
 STATION: 69+69.82 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 STRUCTURAL STEEL  
 DETAILS

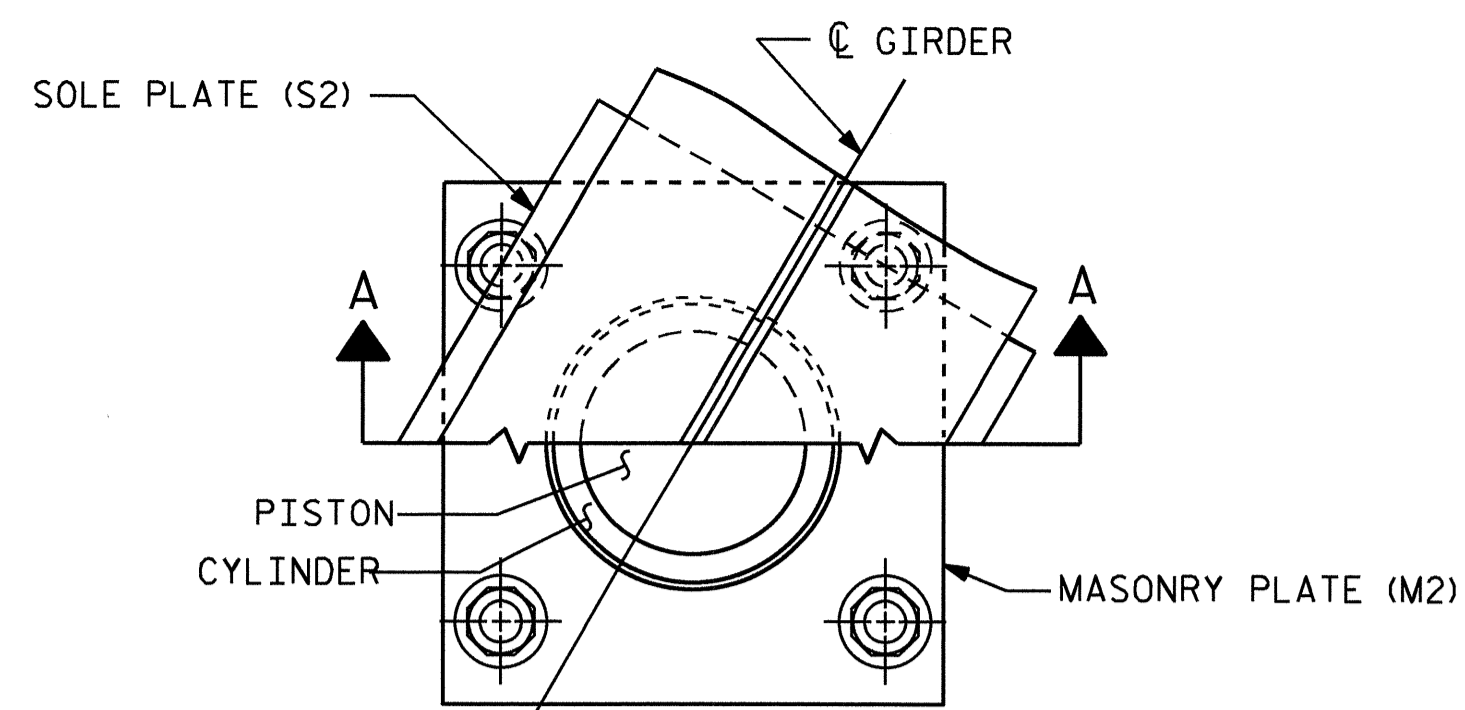
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

S-18  
TOTAL SHEETS  
39

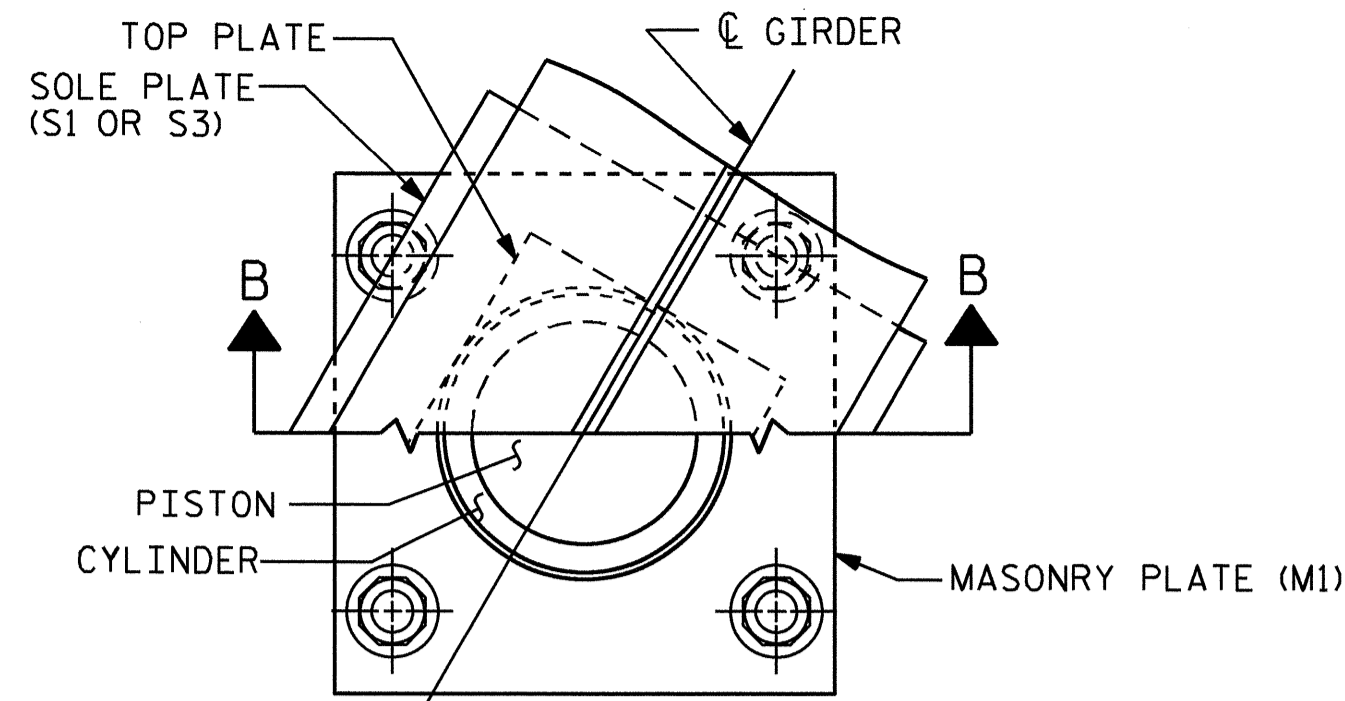
DRAWN BY: A.S. CALLAWAY DATE: 7/20/09  
 CHECKED BY: W.F. PARKER DATE: 5/4/10

BOLTED FIELD SPLICE DETAILS

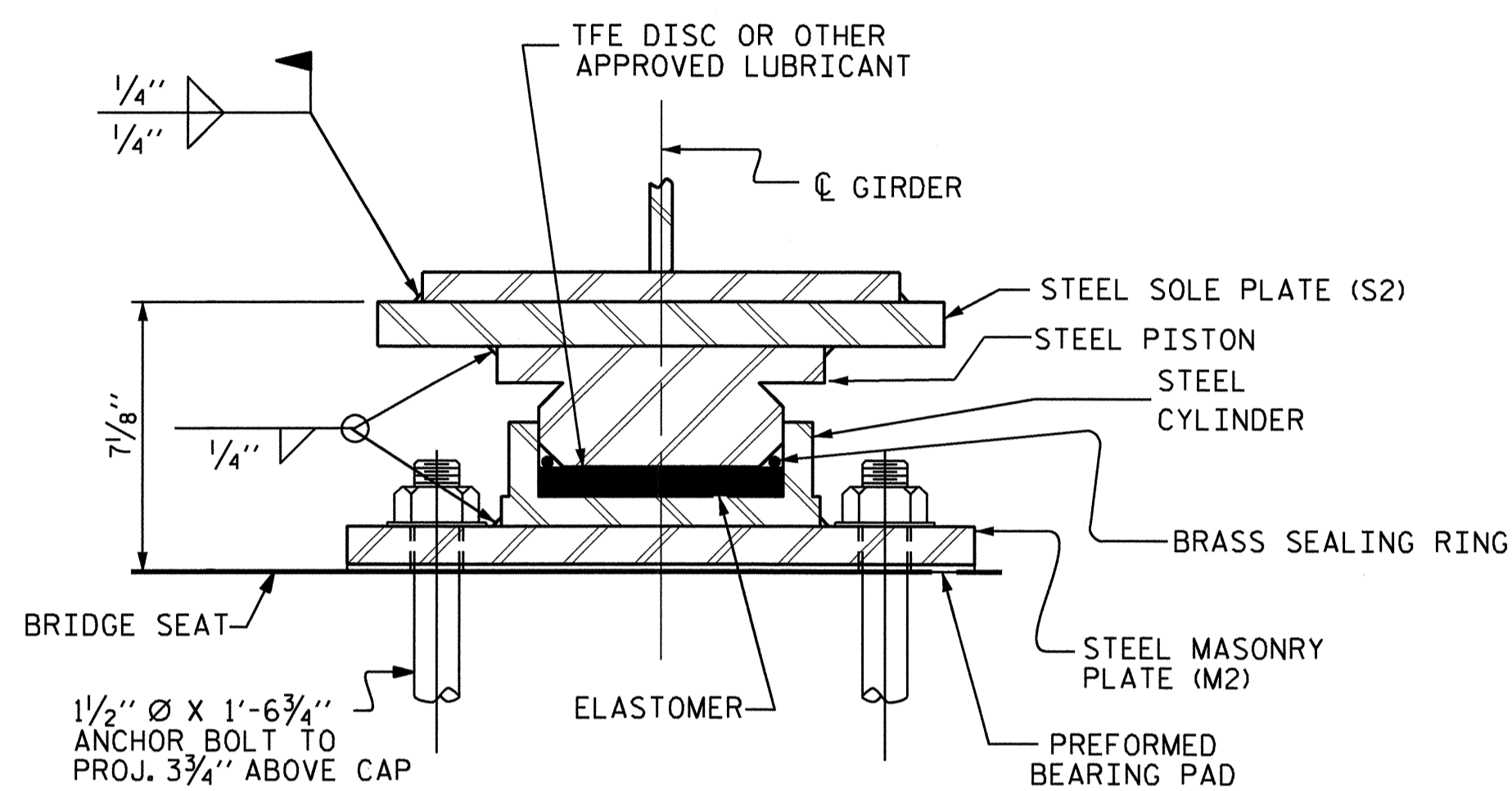




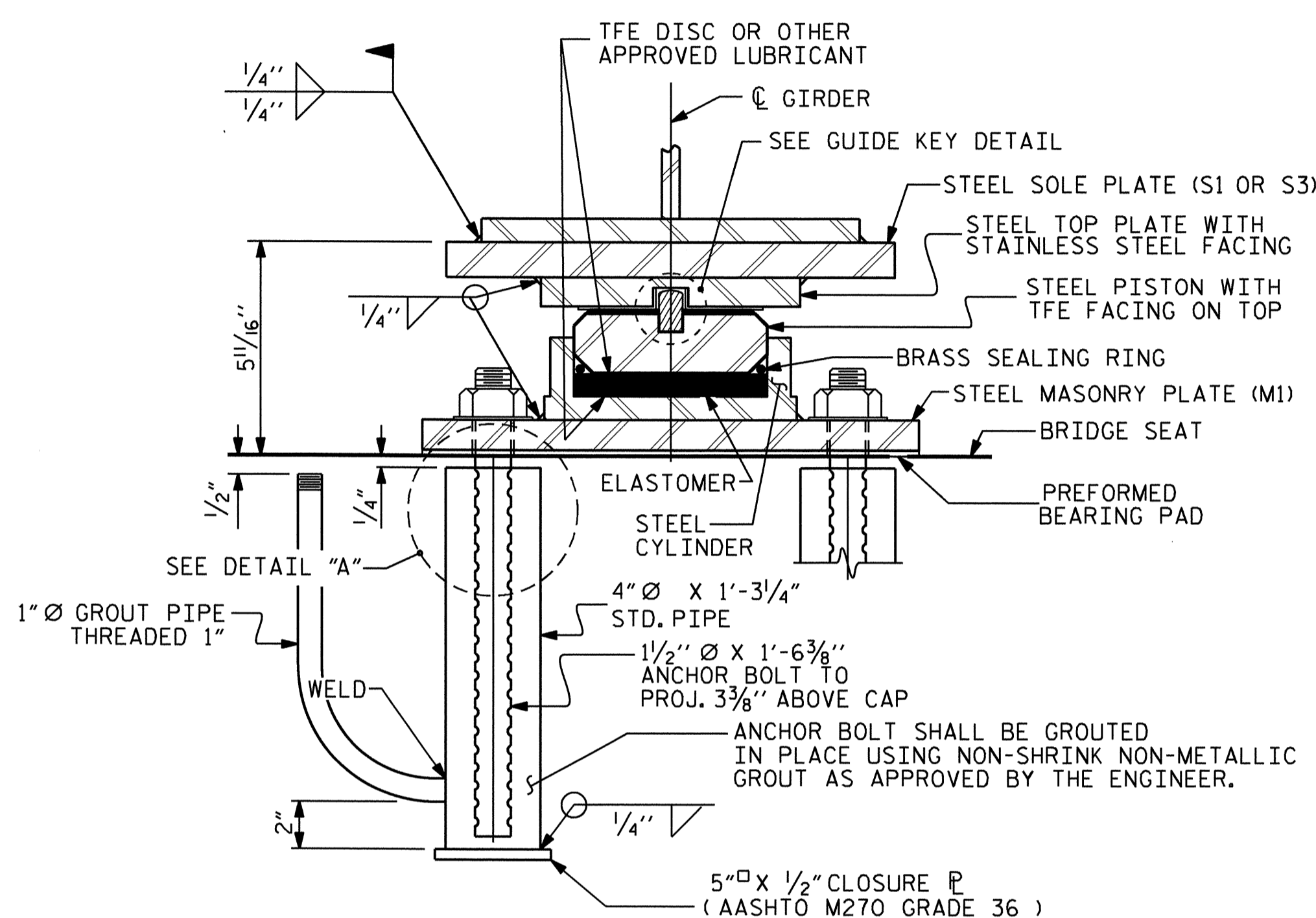
CUT-AWAY PLAN



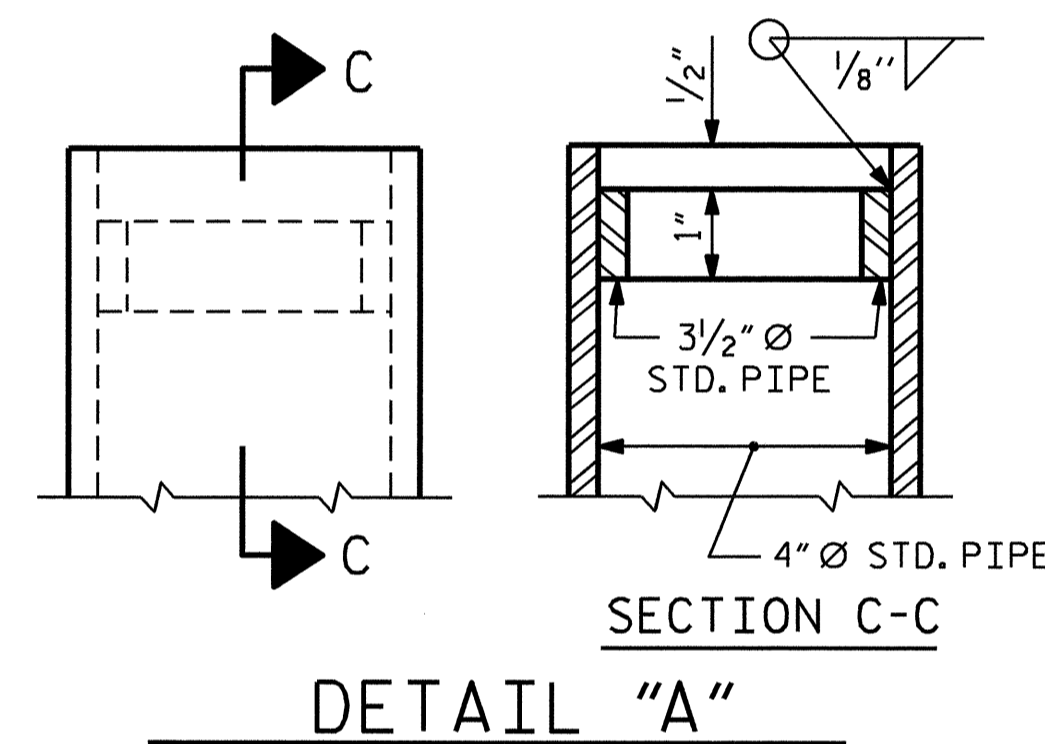
CUT-AWAY PLAN



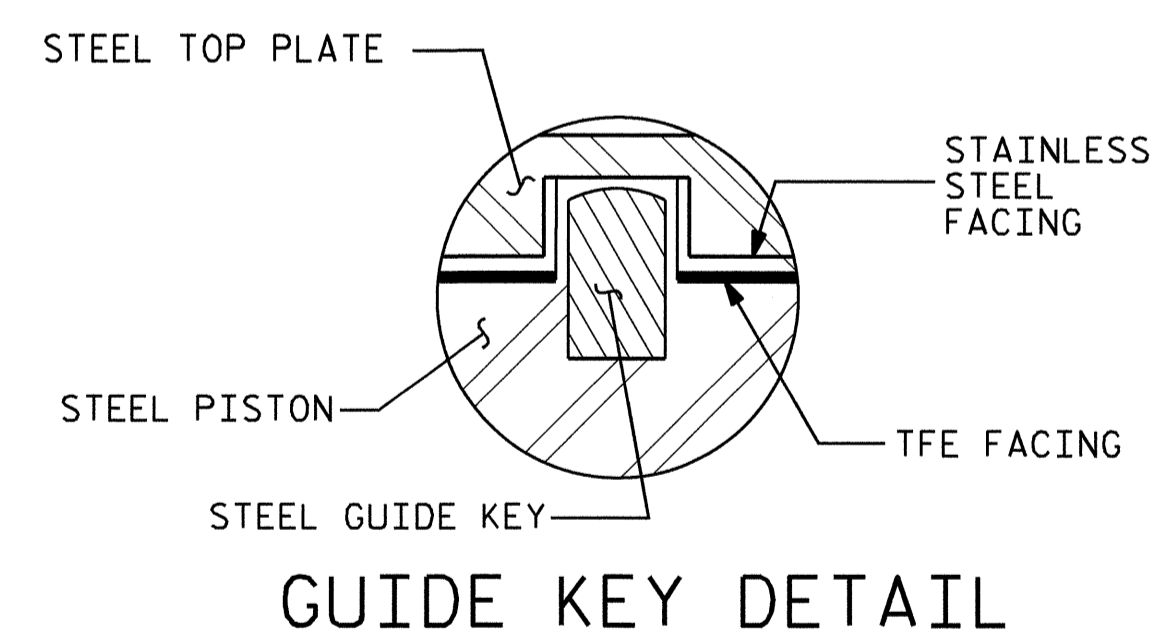
SECTION A-A  
PB2, FIXED  
(6 REQ'D.)



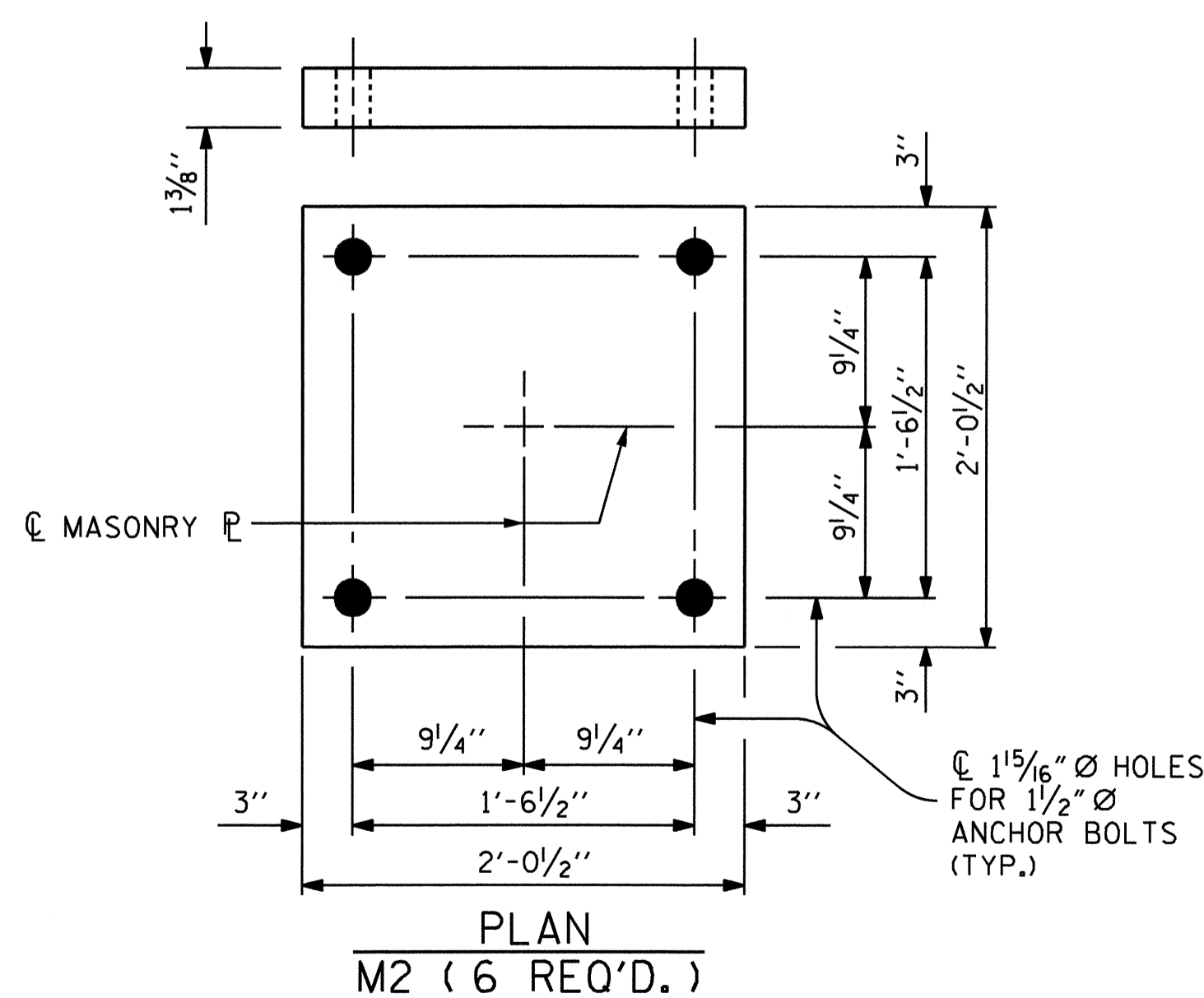
SECTION B-B  
PB1, EXP. (6 REQ'D.)  
PB3, EXP. (6 REQ'D.)



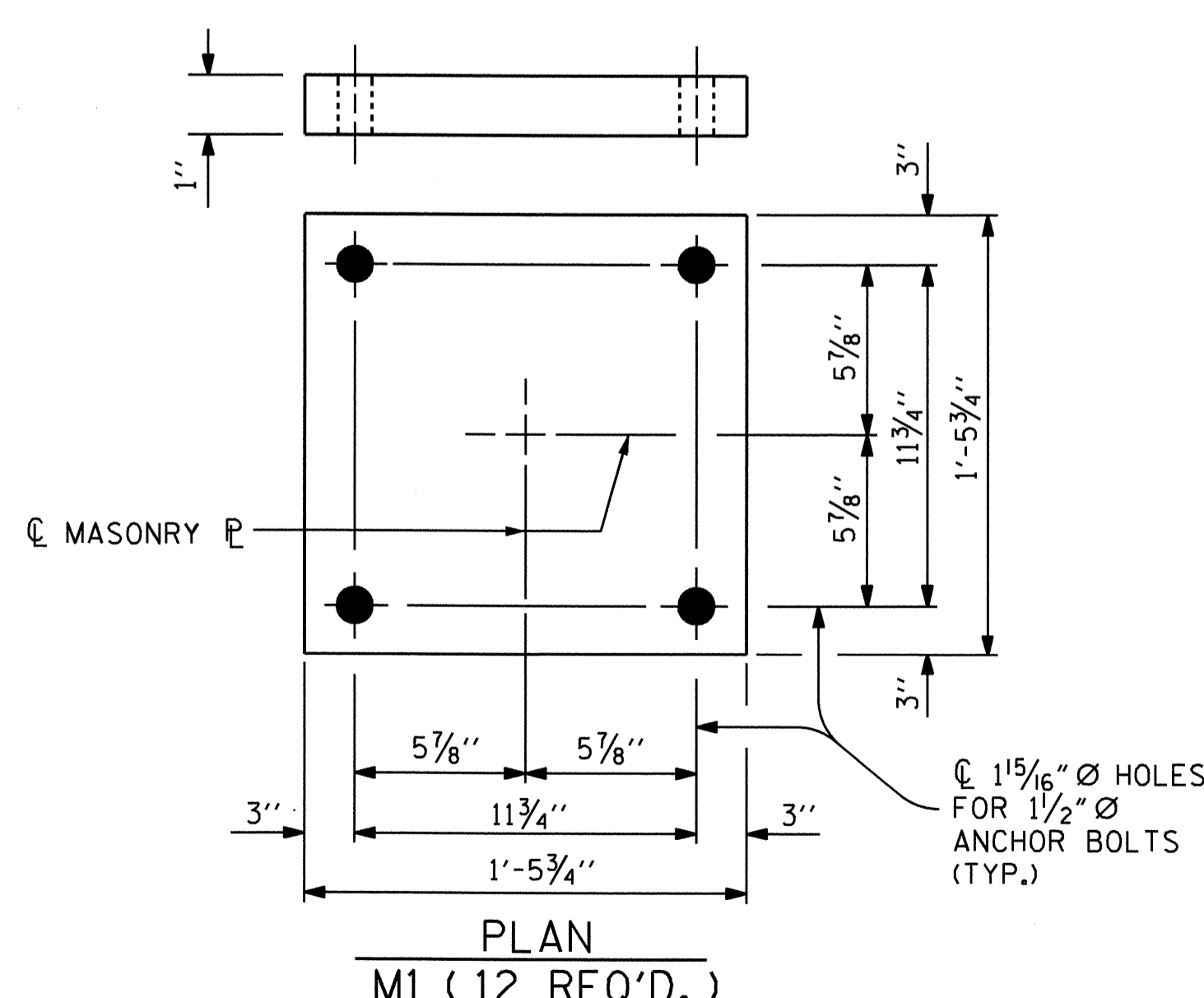
DETAIL "A"



GUIDE KEY DETAIL



PLAN  
M2 (6 REQ'D.)



PLAN  
M1 (12 REQ'D.)

MASONRY PLATE DETAILS

NOTES

FOR POT BEARINGS, SEE SPECIAL PROVISIONS.  
AT ALL POINTS OF SUPPORT IN SPANS A & B, NUTS FOR ANCHOR BOLTS SHALL BE TIGHTENED FINGER TIGHT AND GIVEN AN ADDITIONAL 1/4 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.  
WHEN WELDING THE SOLE PLATE TO THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE BEARING DOES NOT EXCEED 250°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE TFE OR ELASTOMER.

AFTER BEARING ASSEMBLY IS IN PLACE AND ANCHOR BOLTS HAVE BEEN FINALLY POSITIONED. THEY SHALL BE GROUTED IN PLACE AS SHOWN.

THE CLOSURE PLATE, GROUT PIPE AND STANDARD PIPE FOR THIS ASSEMBLY NEED NOT BE GALVANIZED.

SOLE PLATES SHOULD BE WELDED TO BEAM FLANGES AND ANCHOR BOLTS SHOULD BE GROUTED BEFORE FALSEWORK IS PLACED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

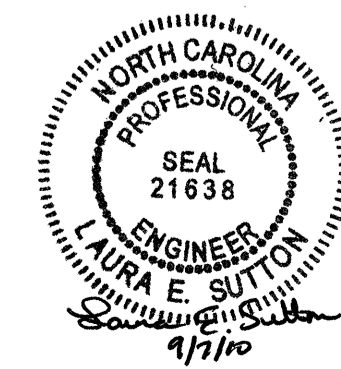
FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

THE CONTRACTOR MAY SUBSTITUTE DISC BEARINGS FOR THE POT BEARINGS SHOWN. FOR OPTIONAL DISC BEARINGS, SEE SPECIAL PROVISIONS.

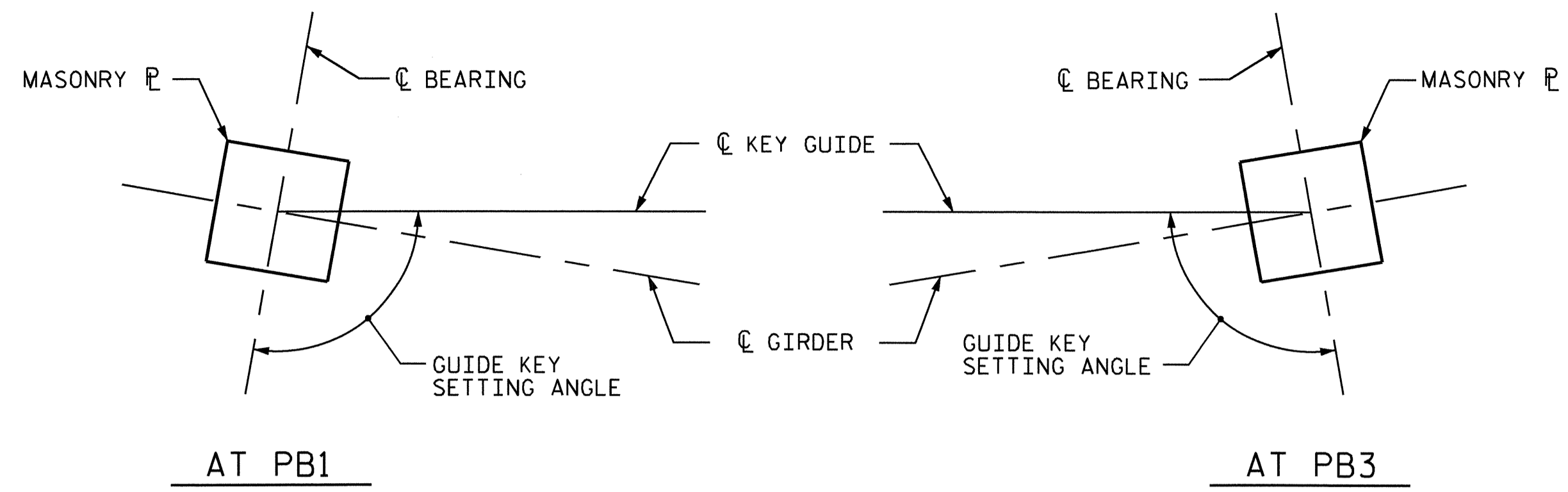
PROJECT NO. R-2612A  
GUILFORD COUNTY  
STATION: 69+69.82 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO.
STANDARD POT BEARING DETAILS						S-19
REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	39
1			3			
2			4			



ASSEMBLED BY : A.S. CALLAWAY DATE : 6/17/09  
CHECKED BY : W.F. PARKER DATE : 5/4/10  
DRAWN BY : RWW 8/99 REV. 7/10/01 LES/RDR  
CHECKED BY : LES 8/99 REV. 5/7/03 RWW/JTE  
REV. 5/1/06 TLA/GM



GUIDE KEY SETTING ANGLES		
GIRDER	POT BEARING PB1	POT BEARING PB3
#1	115°-06'-23"	117°-59'-38"
#2	114°-59'-48"	117°-52'-09"
#3	114°-53'-16"	117°-44'-45"
#4	114°-46'-48"	117°-37'-24"
#5	114°-40'-23"	117°-30'-08"
#6	114°-34'-02"	117°-22'-56"

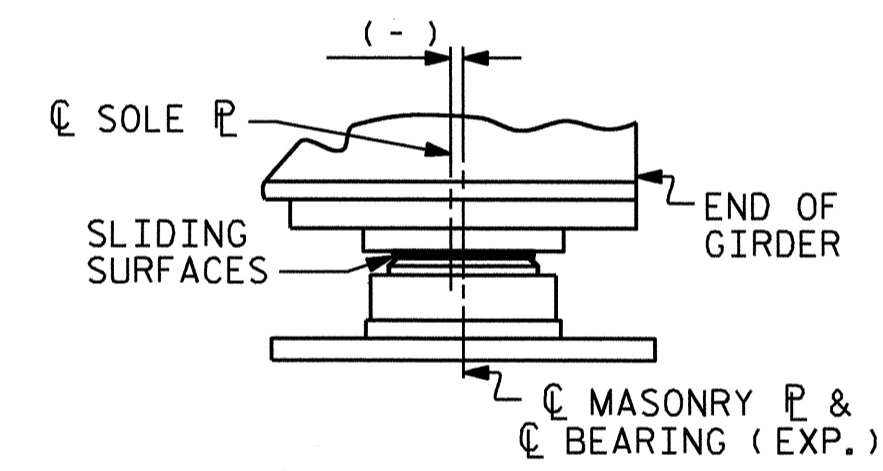


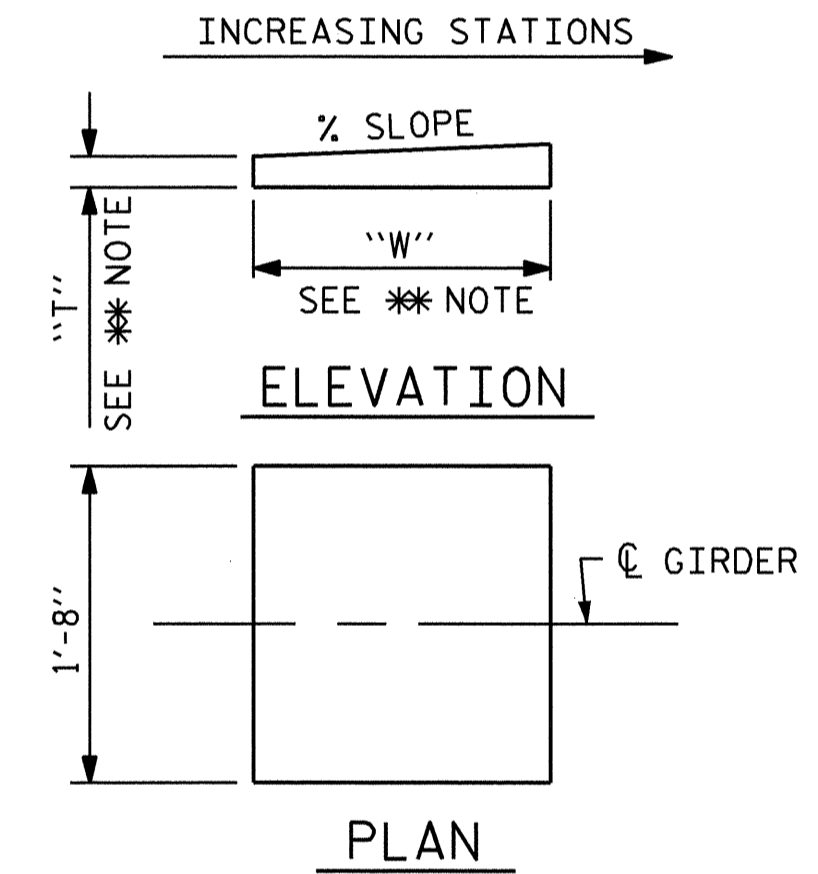
TABLE FOR PLATE SETTING DATA (EXPANSION POT BEARINGS)				
TEMPERATURE AT TIME OF SETTING	30° F	60° F	90° F	*
END BENT 1	-3/8"	0	3/8"	-1/8"
END BENT 2	-3/8"	0	3/8"	-5/16"

\* CORRECTION FOR END ROTATION DUE TO WEIGHT OF SLAB AND COMPOSITE DEAD LOAD.

TEMPERATURE SETTING DETAIL

TABLE FOR UNFACTORED LOADS AND MOVEMENTS							
BEARING	LOCATION	VERTICAL LOAD (KIPS)				LATERAL LOAD (KIPS)	TOTAL MOVEMENT (INCHES)
		DEAD (DC)	DEAD (DW)	LIVE (LL)	TOTAL		
PB1 (EXP.)	END BENT 1	75	12	81	168	26	1
PB2 (FIX.)	BENT 1	303	42	208	553	83	0
PB3 (EXP.)	END BENT 2	97	15	84	196	30	1

SOLE PLATE DIMENSIONS		
MARK	NO.	% SLOPE
S1	6	0.500
S2	6	0.500
S3	6	0.500



\*\* NOTE: DIMENSIONS "W" AND "T" ARE TO BE DETERMINED BY THE MANUFACTURER.

SOLE PLATE DETAILS

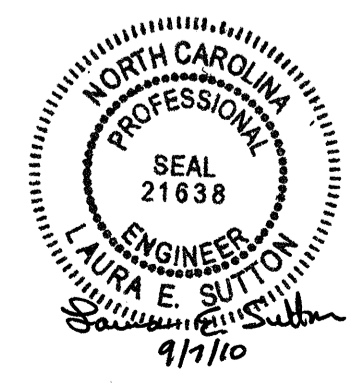
PROJECT NO. R-2612A  
GUILFORD COUNTY  
 STATION: 69+69.82 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

POT BEARING  
 DETAILS

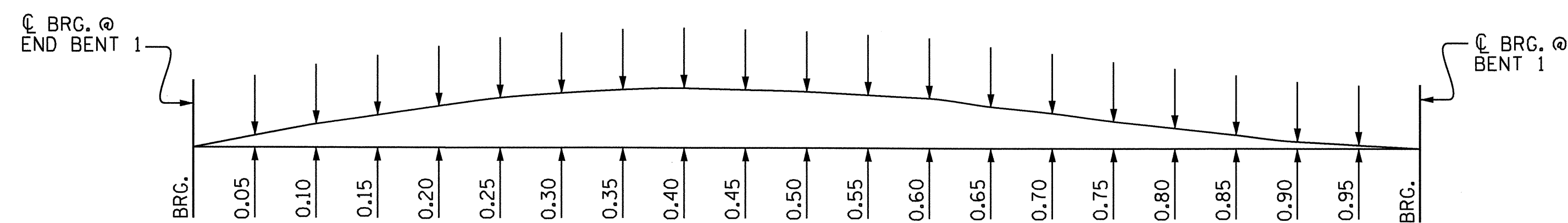
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			39



DRAWN BY: A.S. CALLAWAY DATE: 6/17/09  
 CHECKED BY: W.F. PARKER DATE: 5/4/10

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
		SPAN "A"																			
		GIRDER #1																			
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.004	0.008	0.012	0.015	0.018	0.019	0.020	0.021	0.020	0.019	0.017	0.015	0.012	0.009	0.007	0.004	0.002	0.000	0.000	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.015	0.028	0.041	0.051	0.059	0.064	0.067	0.068	0.066	0.063	0.056	0.048	0.038	0.029	0.019	0.010	0.004	-0.001	-0.002	0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	0.002	0.003	0.004	0.005	0.006	0.007	0.007	0.008	0.008	0.007	0.007	0.006	0.005	0.004	0.003	0.002	0.001	0.000	0.000	0
TOTAL DEAD LOAD DEFLECTION	0	0.021	0.039	0.057	0.071	0.083	0.090	0.094	0.097	0.094	0.089	0.080	0.069	0.055	0.042	0.029	0.016	0.007	-0.001	-0.002	0
VERTICAL CURVE ORDINATE	0	0.013	0.025	0.035	0.044	0.052	0.058	0.063	0.066	0.068	0.069	0.068	0.066	0.063	0.058	0.052	0.044	0.035	0.025	0.013	0
ORDINATE DUE TO SUPERELEVATION	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
REQUIRED CAMBER	0	7/16"	3/4"	1/8"	13/16"	15/8"	13/4"	17/8"	15/16"	15/16"	17/8"	13/4"	15/8"	17/16"	13/16"	1"	3/4"	1/2"	5/16"	1/8"	0
		GIRDER #2																			
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.004	0.008	0.012	0.015	0.018	0.019	0.020	0.021	0.020	0.019	0.017	0.015	0.012	0.010	0.007	0.004	0.002	0.000	-0.001	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.016	0.031	0.043	0.055	0.064	0.070	0.073	0.074	0.072	0.068	0.062	0.053	0.043	0.032	0.022	0.013	0.005	0.000	-0.002	0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	0.002	0.003	0.004	0.005	0.006	0.007	0.007	0.008	0.008	0.007	0.007	0.006	0.005	0.004	0.003	0.002	0.001	0.000	0.000	0
TOTAL DEAD LOAD DEFLECTION	0	0.022	0.042	0.059	0.075	0.088	0.096	0.100	0.103	0.100	0.094	0.086	0.074	0.060	0.046	0.032	0.019	0.008	0.000	-0.003	0
VERTICAL CURVE ORDINATE	0	0.013	0.025	0.035	0.044	0.051	0.058	0.062	0.066	0.068	0.068	0.066	0.062	0.058	0.051	0.044	0.035	0.025	0.013	0	
ORDINATE DUE TO SUPERELEVATION	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
REQUIRED CAMBER	0	7/16"	13/16"	1/8"	17/16"	11/16"	17/8"	15/16"	2"	2"	15/16"	17/8"	11/16"	17/16"	1/4"	1"	3/4"	1/2"	5/16"	1/8"	0
		GIRDER #3																			
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.005	0.009	0.012	0.015	0.018	0.019	0.020	0.021	0.020	0.019	0.017	0.015	0.013	0.009	0.007	0.004	0.002	0.000	0.000	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.017	0.033	0.046	0.057	0.067	0.073	0.077	0.078	0.077	0.072	0.065	0.057	0.047	0.035	0.024	0.014	0.006	0.000	-0.002	0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	0.002	0.003	0.004	0.005	0.006	0.007	0.007	0.008	0.008	0.007	0.007	0.006	0.005	0.004	0.003	0.002	0.001	0.000	0.000	0
TOTAL DEAD LOAD DEFLECTION	0	0.024	0.045	0.062	0.077	0.091	0.099	0.104	0.107	0.105	0.098	0.089	0.078	0.065	0.048	0.034	0.020	0.009	0.000	-0.002	0
VERTICAL CURVE ORDINATE	0	0.013	0.024	0.035	0.043	0.051	0.057	0.062	0.065	0.067	0.068	0.067	0.065	0.062	0.057	0.051	0.043	0.035	0.024	0.013	0
ORDINATE DUE TO SUPERELEVATION	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
REQUIRED CAMBER	0	7/16"	13/16"	13/16"	17/16"	11/16"	17/8"	2"	2 1/16"	2 1/16"	2"	17/8"	11/16"	1 1/2"	1 1/4"	1"	3/4"	1/2"	5/16"	1/8"	0

\* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.  
 ALL VALUES ARE SHOWN IN FEET ( DECIMAL FORM ), EXCEPT " FINAL CAMBER ", WHICH IS GIVEN IN INCHES ( FRACTION FORM ).



Schematic Camber Ordinates

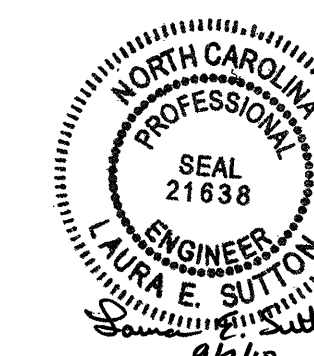
SLOPE FOR ZERO CAMBER BASE LINE VARIES.

PROJECT NO. R-2612A  
GUILFORD COUNTY  
 STATION: 69+69.82 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 DEAD LOAD  
 DEFLECTIONS



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			39

DRAWN BY: A.S. CALLAWAY DATE: 7/22/09  
 CHECKED BY: W.F. PARKER DATE: 5/4/10

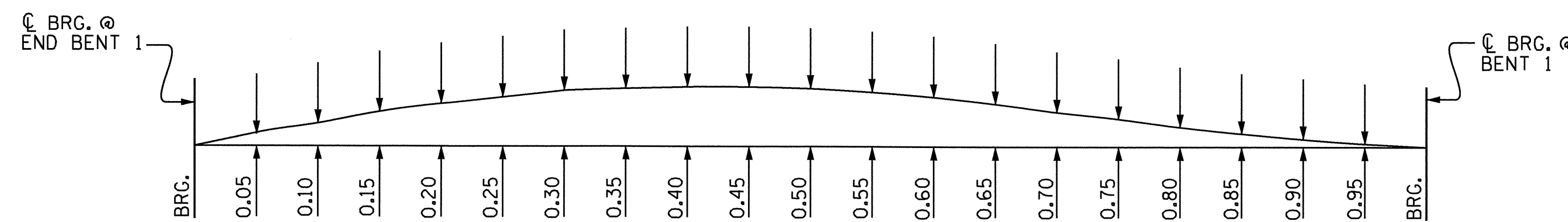
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 lsutton

STR. #1



DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
		SPAN "A"																			
		GIRDER #4																			
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.004	0.008	0.012	0.015	0.018	0.019	0.020	0.021	0.020	0.019	0.018	0.015	0.013	0.010	0.007	0.004	0.002	0.000	0.000	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.016	0.033	0.047	0.058	0.067	0.074	0.078	0.080	0.078	0.074	0.067	0.058	0.047	0.036	0.025	0.016	0.008	0.001	-0.002	0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.008	0.008	0.007	0.007	0.006	0.005	0.004	0.003	0.002	0.001	0.000	0.000	0
TOTAL DEAD LOAD DEFLECTION	0	0.022	0.044	0.063	0.078	0.091	0.100	0.106	0.109	0.106	0.100	0.092	0.079	0.065	0.050	0.035	0.022	0.011	0.001	-0.002	0
VERTICAL CURVE ORDINATE	0	0.013	0.024	0.034	0.043	0.050	0.056	0.061	0.064	0.066	0.067	0.066	0.064	0.061	0.056	0.050	0.043	0.034	0.024	0.013	0
ORDINATE DUE TO SUPERELEVATION	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
REQUIRED CAMBER	0	7/16"	13/16"	13/16"	17/16"	11/16"	17/8"	2"	21/16"	21/16"	2"	17/8"	11/16"	1/2"	1/4"	1"	3/4"	9/16"	5/16"	1/8"	0
		GIRDER #5																			
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.004	0.008	0.012	0.015	0.018	0.020	0.021	0.021	0.021	0.020	0.018	0.015	0.013	0.010	0.007	0.004	0.002	0.001	0.000	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.016	0.032	0.046	0.058	0.067	0.074	0.078	0.079	0.078	0.073	0.067	0.057	0.048	0.036	0.025	0.015	0.008	0.002	-0.002	0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	0.002	0.003	0.004	0.006	0.007	0.007	0.008	0.008	0.008	0.008	0.007	0.006	0.005	0.004	0.003	0.002	0.001	0.000	0.000	0
TOTAL DEAD LOAD DEFLECTION	0	0.022	0.043	0.062	0.079	0.092	0.101	0.107	0.108	0.107	0.101	0.092	0.078	0.066	0.050	0.035	0.021	0.011	0.003	-0.002	0
VERTICAL CURVE ORDINATE	0	0.013	0.024	0.034	0.043	0.050	0.056	0.060	0.064	0.066	0.066	0.066	0.064	0.060	0.056	0.050	0.043	0.034	0.024	0.013	0
ORDINATE DUE TO SUPERELEVATION	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
REQUIRED CAMBER	0	7/16"	13/16"	1/8"	17/16"	11/16"	17/8"	2"	21/16"	21/16"	2"	17/8"	11/16"	1/2"	1/4"	1"	3/4"	9/16"	5/16"	1/8"	0
		GIRDER #6																			
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.005	0.009	0.013	0.016	0.018	0.020	0.021	0.021	0.021	0.020	0.018	0.016	0.013	0.010	0.007	0.004	0.002	0.000	0.000	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.017	0.032	0.046	0.058	0.067	0.074	0.077	0.078	0.077	0.073	0.066	0.057	0.046	0.036	0.025	0.015	0.007	0.002	-0.001	0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	0.002	0.003	0.005	0.006	0.007	0.008	0.008	0.008	0.008	0.008	0.007	0.007	0.006	0.005	0.003	0.002	0.001	0.000	0.000	0
TOTAL DEAD LOAD DEFLECTION	0	0.024	0.044	0.064	0.080	0.092	0.102	0.106	0.107	0.106	0.101	0.091	0.080	0.065	0.051	0.035	0.021	0.010	0.002	-0.001	0
VERTICAL CURVE ORDINATE	0	0.013	0.024	0.034	0.042	0.049	0.055	0.060	0.063	0.065	0.066	0.065	0.063	0.060	0.055	0.049	0.042	0.034	0.024	0.013	0
ORDINATE DUE TO SUPERELEVATION	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
REQUIRED CAMBER	0	7/16"	13/16"	13/16"	17/16"	11/16"	17/8"	2"	21/16"	21/16"	2"	17/8"	11/16"	1/2"	1/4"	1"	3/4"	1/2"	5/16"	1/8"	0

\* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.  
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).



**SCHMATIC CAMBER ORDINATES**

SLOPE FOR ZERO CAMBER BASE LINE VARIES.

PROJECT NO. R-2612A  
GUILFORD COUNTY  
STATION: 69+69.82 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUPERSTRUCTURE  
DEAD LOAD DEFLECTIONS



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

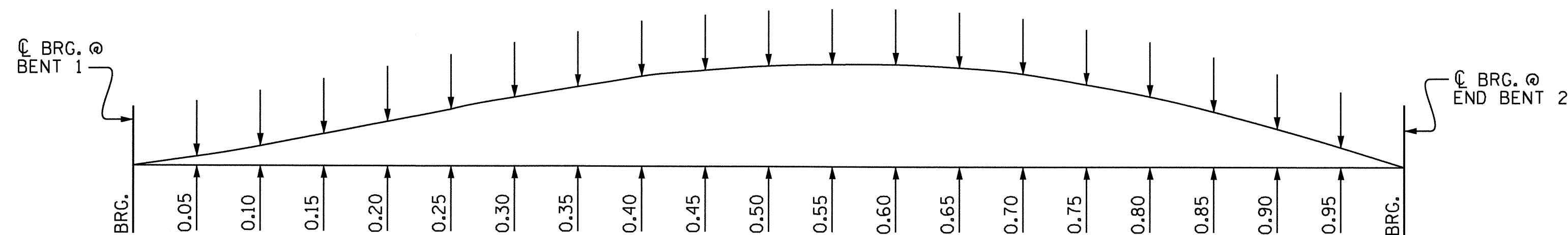
TOTAL SHEETS: 39

DRAWN BY: A.S. CALLAWAY DATE: 7/22/09  
CHECKED BY: W.F. PARKER DATE: 5/4/10

## DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	SPAN "B"																					
	GIRDER #1																					
	TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.003	0.006	0.011	0.017	0.023	0.029	0.034	0.038	0.042	0.044	0.046	0.046	0.044	0.041	0.037	0.031	0.025	0.017	0.009	0	
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.010	0.024	0.041	0.061	0.082	0.104	0.123	0.139	0.151	0.160	0.165	0.165	0.159	0.149	0.133	0.113	0.089	0.061	0.032	0	
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	0.001	0.003	0.005	0.007	0.009	0.011	0.013	0.014	0.015	0.016	0.017	0.016	0.016	0.015	0.013	0.011	0.009	0.006	0.003	0	
TOTAL DEAD LOAD DEFLECTION	0	0.014	0.033	0.057	0.085	0.114	0.144	0.170	0.191	0.208	0.220	0.228	0.227	0.219	0.205	0.183	0.155	0.123	0.084	0.044	0	
VERTICAL CURVE ORDINATE	0	0.017	0.031	0.044	0.056	0.065	0.073	0.079	0.084	0.086	0.087	0.086	0.084	0.079	0.073	0.065	0.056	0.044	0.031	0.017	0	
ORDINATE DUE TO SUPERELEVATION	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	
REQUIRED CAMBER	0	3/8"	3/4"	13/16"	11/16"	21/8"	25/8"	3"	35/16"	31/2"	31/16"	33/4"	33/4"	33/4"	33/8"	35/16"	3"	23/16"	2"	13/8"	3/4"	0
		GIRDER #2																				
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.	
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.002	0.006	0.011	0.016	0.022	0.028	0.033	0.038	0.042	0.044	0.045	0.045	0.044	0.041	0.036	0.031	0.024	0.017	0.009	0	
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.010	0.024	0.042	0.062	0.084	0.105	0.126	0.143	0.156	0.164	0.169	0.168	0.163	0.152	0.136	0.116	0.091	0.063	0.032	0	
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	0.001	0.003	0.004	0.006	0.009	0.011	0.013	0.014	0.015	0.016	0.016	0.016	0.015	0.014	0.013	0.011	0.009	0.006	0.003	0	
TOTAL DEAD LOAD DEFLECTION	0	0.013	0.033	0.057	0.084	0.115	0.144	0.172	0.195	0.213	0.224	0.230	0.229	0.222	0.207	0.185	0.158	0.124	0.086	0.044	0	
VERTICAL CURVE ORDINATE	0	0.016	0.031	0.044	0.055	0.065	0.072	0.078	0.083	0.085	0.086	0.085	0.083	0.078	0.072	0.065	0.055	0.044	0.031	0.016	0	
ORDINATE DUE TO SUPERELEVATION	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	
REQUIRED CAMBER	0	3/8"	3/4"	13/16"	11/16"	23/16"	29/16"	3"	35/16"	33/16"	33/4"	33/4"	33/4"	35/8"	33/8"	3"	23/16"	2"	13/8"	3/4"	0	
		GIRDER #3																				
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.	
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.002	0.006	0.011	0.016	0.022	0.028	0.033	0.037	0.041	0.044	0.045	0.045	0.043	0.040	0.036	0.031	0.024	0.017	0.009	0	
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.009	0.024	0.042	0.062	0.084	0.106	0.126	0.143	0.156	0.167	0.171	0.171	0.165	0.155	0.138	0.117	0.092	0.065	0.033	0	
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	0.001	0.002	0.004	0.006	0.008	0.011	0.012	0.014	0.015	0.016	0.016	0.016	0.015	0.014	0.013	0.011	0.008	0.006	0.003	0	
TOTAL DEAD LOAD DEFLECTION	0	0.012	0.032	0.057	0.084	0.114	0.145	0.171	0.194	0.212	0.227	0.232	0.232	0.223	0.209	0.187	0.159	0.124	0.088	0.045	0	
VERTICAL CURVE ORDINATE	0	0.016	0.031	0.043	0.055	0.064	0.072	0.078	0.082	0.084	0.085	0.084	0.082	0.078	0.072	0.064	0.055	0.043	0.031	0.016	0	
ORDINATE DUE TO SUPERELEVATION	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	
REQUIRED CAMBER	0	5/16"	3/4"	13/16"	11/16"	21/8"	25/8"	3"	35/16"	33/16"	33/4"	33/4"	33/4"	35/8"	33/8"	3"	23/16"	2"	13/8"	3/4"	0	

\* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.  
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).



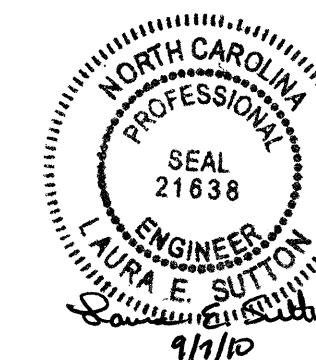
### SCHEMATIC CAMBER ORDINATES

SLOPE FOR ZERO CAMBER BASE LINE VARIES.

PROJECT NO. R-2612A  
GUILFORD COUNTY  
 STATION: 69+69.82 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 DEAD LOAD  
 DEFLECTIONS



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

S-23  
TOTAL SHEETS  
39

DRAWN BY : A.S. CALLAWAY DATE : 7/22/09  
 CHECKED BY : W.F. PARKER DATE : 5/4/10

07-SEP-2010 09:01  
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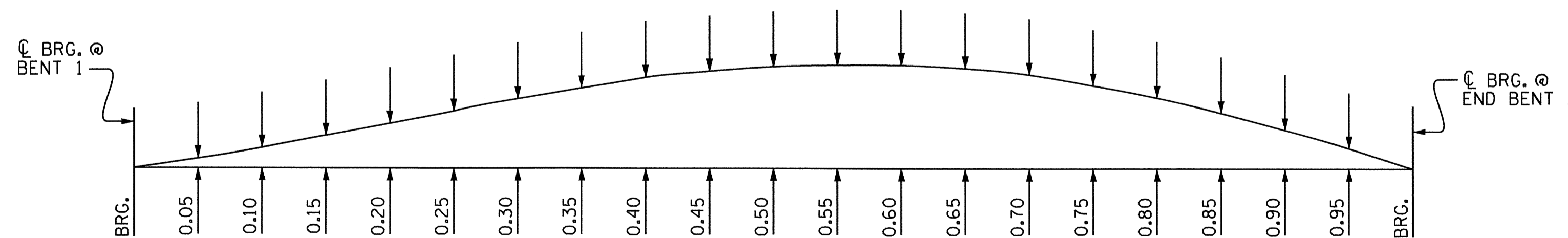
STR. #1



## DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	SPAN "B"																				
	GIRDER #4																				
	TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.002	0.006	0.011	0.016	0.022	0.028	0.033	0.038	0.041	0.043	0.045	0.045	0.043	0.041	0.036	0.031	0.024	0.017	0.009	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.009	0.023	0.041	0.062	0.084	0.107	0.127	0.143	0.156	0.166	0.172	0.172	0.166	0.155	0.140	0.119	0.093	0.065	0.034	0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	0.001	0.002	0.004	0.006	0.008	0.011	0.012	0.014	0.015	0.016	0.016	0.016	0.015	0.014	0.013	0.011	0.008	0.006	0.003	0
TOTAL DEAD LOAD DEFLECTION	0	0.012	0.031	0.056	0.084	0.114	0.146	0.172	0.195	0.212	0.225	0.233	0.233	0.224	0.210	0.189	0.161	0.125	0.088	0.046	0
VERTICAL CURVE ORDINATE	0	0.016	0.030	0.043	0.054	0.063	0.071	0.077	0.081	0.083	0.084	0.083	0.081	0.077	0.071	0.063	0.054	0.043	0.030	0.016	0
ORDINATE DUE TO SUPERELEVATION	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
REQUIRED CAMBER	0	5/16"	3/4"	13/16"	15/8"	21/8"	25/8"	3"	35/16"	39/16"	311/16"	313/16"	33/4"	35/8"	33/8"	3"	29/16"	2"	17/16"	3/4"	0
	GIRDER #5																				
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.002	0.006	0.011	0.017	0.023	0.028	0.034	0.038	0.042	0.044	0.046	0.046	0.044	0.041	0.037	0.031	0.025	0.017	0.009	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.009	0.023	0.041	0.062	0.083	0.105	0.126	0.143	0.156	0.165	0.171	0.171	0.166	0.155	0.139	0.118	0.093	0.064	0.033	0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	0.001	0.002	0.004	0.006	0.009	0.011	0.012	0.014	0.015	0.016	0.016	0.016	0.015	0.014	0.013	0.011	0.009	0.006	0.003	0
TOTAL DEAD LOAD DEFLECTION	0	0.012	0.031	0.056	0.085	0.115	0.144	0.172	0.195	0.213	0.225	0.233	0.233	0.225	0.210	0.189	0.160	0.127	0.087	0.045	0
VERTICAL CURVE ORDINATE	0	0.016	0.030	0.043	0.053	0.063	0.070	0.076	0.080	0.083	0.083	0.083	0.080	0.076	0.070	0.063	0.053	0.043	0.030	0.016	0
ORDINATE DUE TO SUPERELEVATION	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
REQUIRED CAMBER	0	5/16"	3/4"	13/16"	15/8"	21/8"	29/16"	3"	35/16"	39/16"	311/16"	313/16"	33/4"	35/8"	33/8"	3"	29/16"	21/16"	13/8"	3/4"	0
	GIRDER #6																				
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.003	0.006	0.011	0.017	0.023	0.029	0.035	0.040	0.043	0.046	0.047	0.047	0.046	0.043	0.038	0.033	0.026	0.018	0.009	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.009	0.022	0.041	0.060	0.082	0.104	0.125	0.143	0.157	0.166	0.171	0.171	0.167	0.156	0.140	0.119	0.094	0.065	0.033	0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	0.001	0.002	0.004	0.006	0.009	0.011	0.013	0.014	0.016	0.016	0.017	0.017	0.016	0.015	0.013	0.011	0.009	0.006	0.003	0
TOTAL DEAD LOAD DEFLECTION	0	0.013	0.030	0.056	0.083	0.114	0.144	0.173	0.197	0.216	0.228	0.235	0.235	0.229	0.214	0.191	0.163	0.129	0.089	0.045	0
VERTICAL CURVE ORDINATE	0	0.016	0.030	0.042	0.053	0.062	0.069	0.075	0.079	0.082	0.083	0.082	0.079	0.075	0.069	0.062	0.053	0.042	0.030	0.016	0
ORDINATE DUE TO SUPERELEVATION	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
REQUIRED CAMBER	0	3/8"	3/4"	13/16"	15/8"	21/8"	29/16"	3"	35/16"	39/16"	33/4"	313/16"	33/4"	35/8"	33/8"	31/16"	29/16"	21/16"	17/16"	3/4"	0

\* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.  
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).



### SCHEMATIC CAMBER ORDINATES

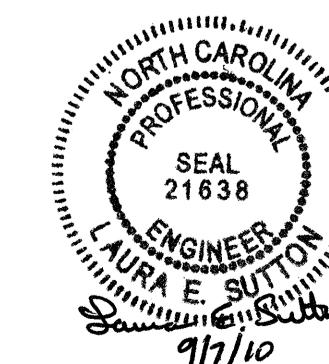
SLOPE FOR ZERO CAMBER BASE LINE VARIES.

PROJECT NO. R-2612A  
GUILFORD COUNTY  
 STATION: 69+69.82 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

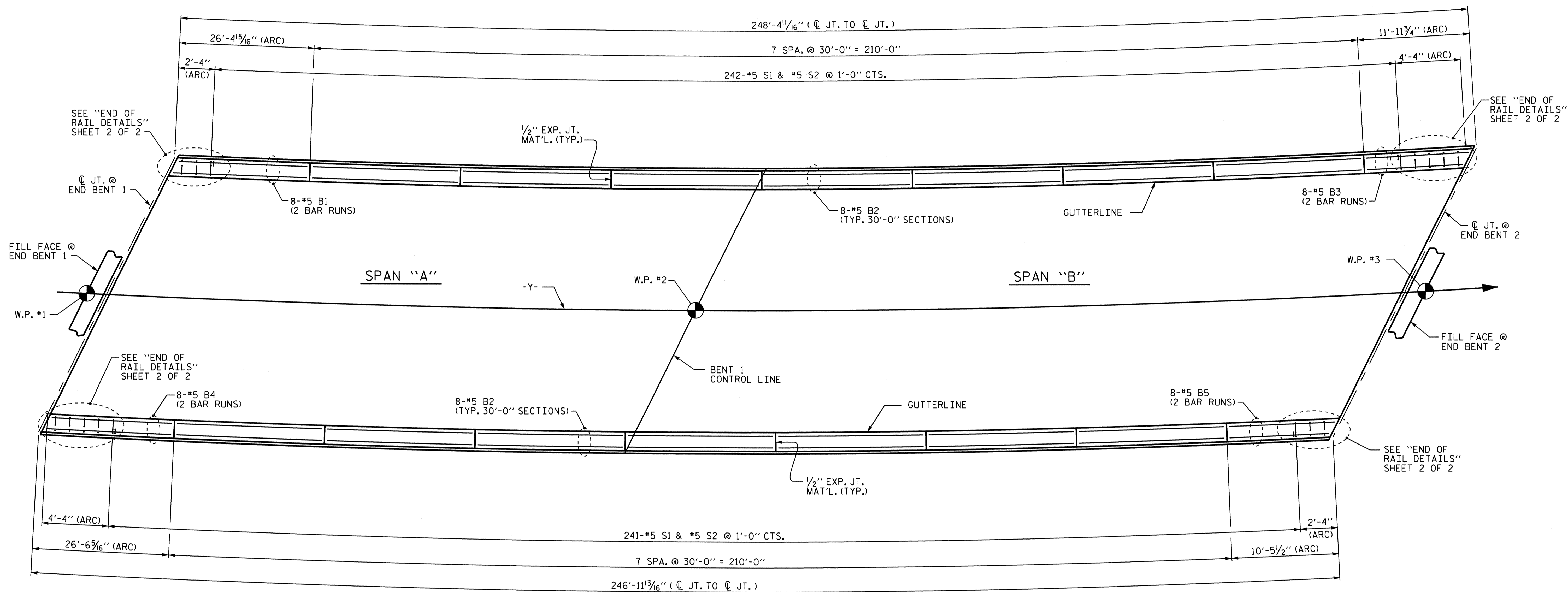
SUPERSTRUCTURE  
 DEAD LOAD  
 DEFLECTIONS



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			39

DRAWN BY: A.S. CALLAWAY DATE: 7/22/09  
 CHECKED BY: W.F. PARKER DATE: 5/4/10





**PLAN**

ALL DIMENSIONS ARE TAKEN ALONG THE BACK FACE OF BARRIER RAIL

PROJECT NO. R-2612A  
GUILFORD COUNTY  
 STATION: 69+69.82 -L-

SHEET 1 OF 2  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 CONCRETE  
 BARRIER RAIL



DRAWN BY: A.S. CALLAWAY DATE: 6/19/09  
 CHECKED BY: W.F. PARKER DATE: 5/4/10

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			39

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STR. #1



NOTES

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

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

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

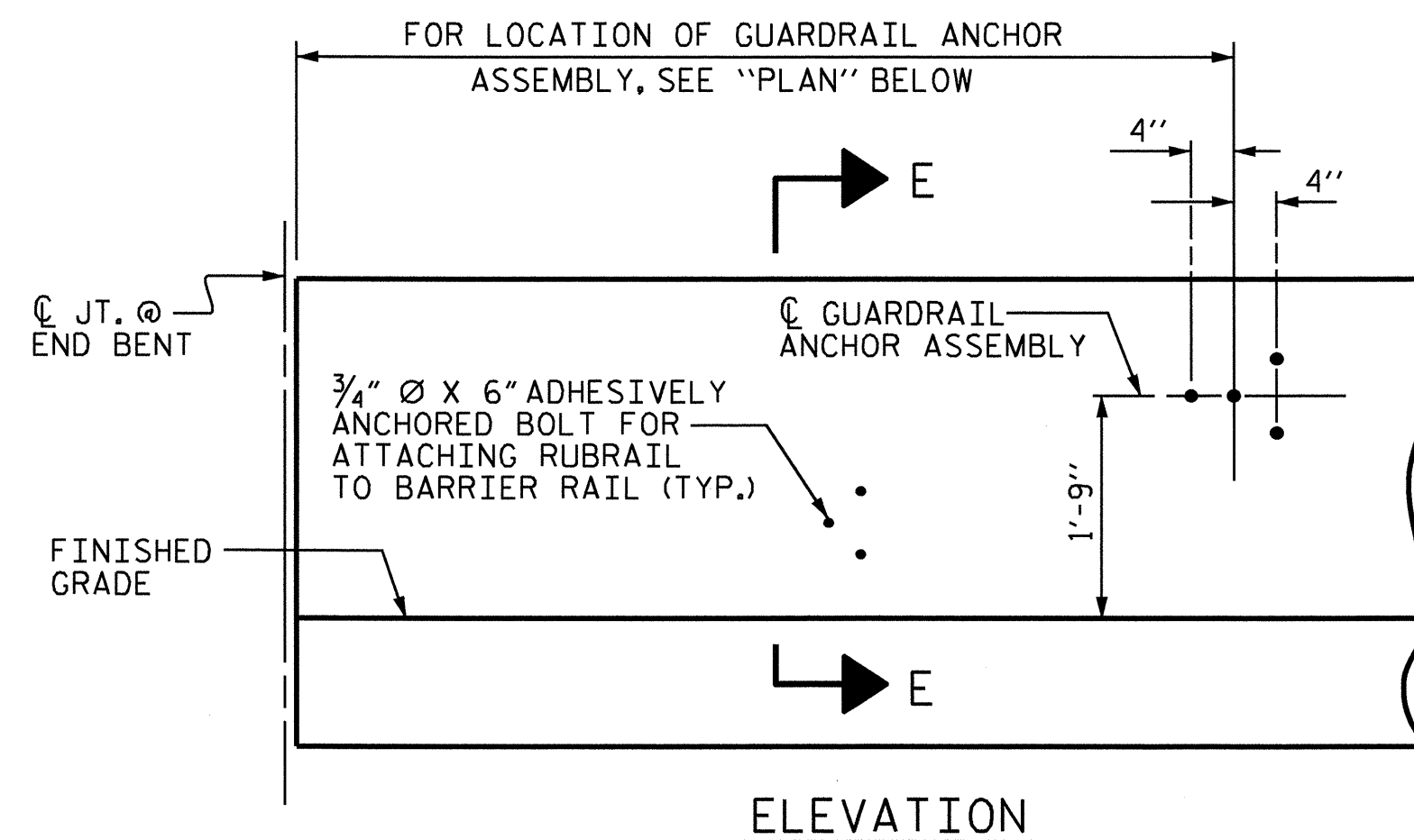
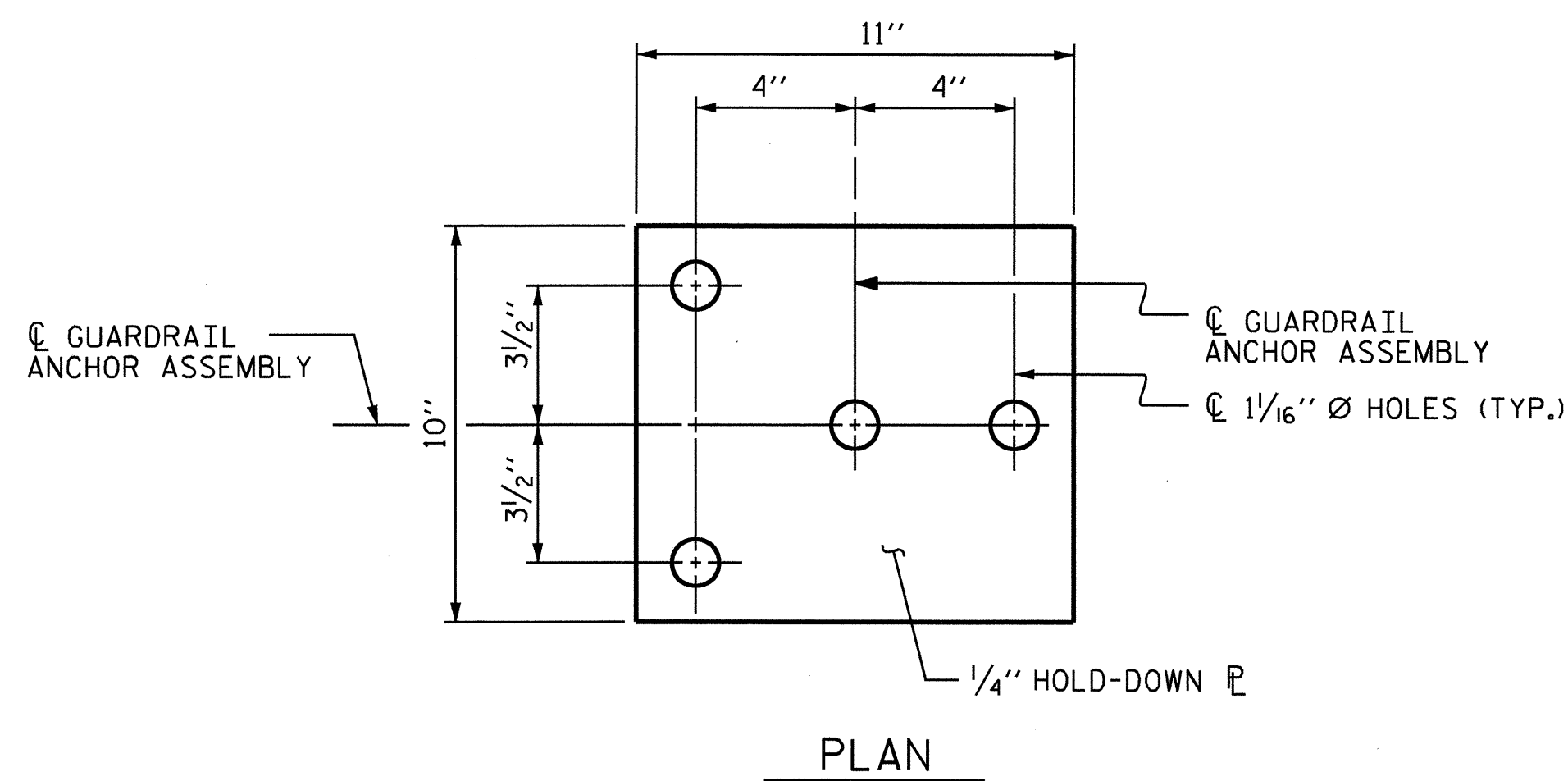
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

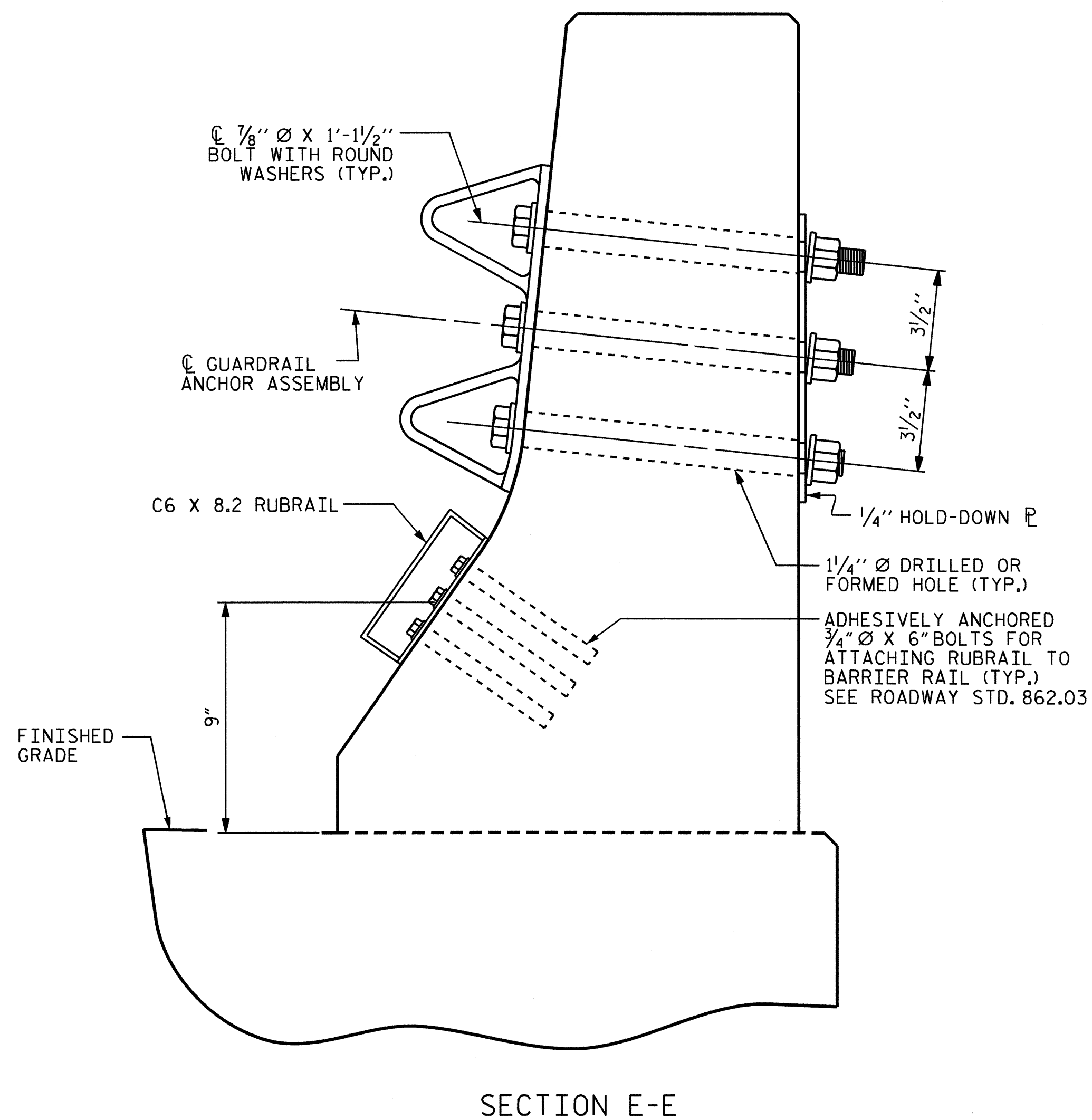
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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

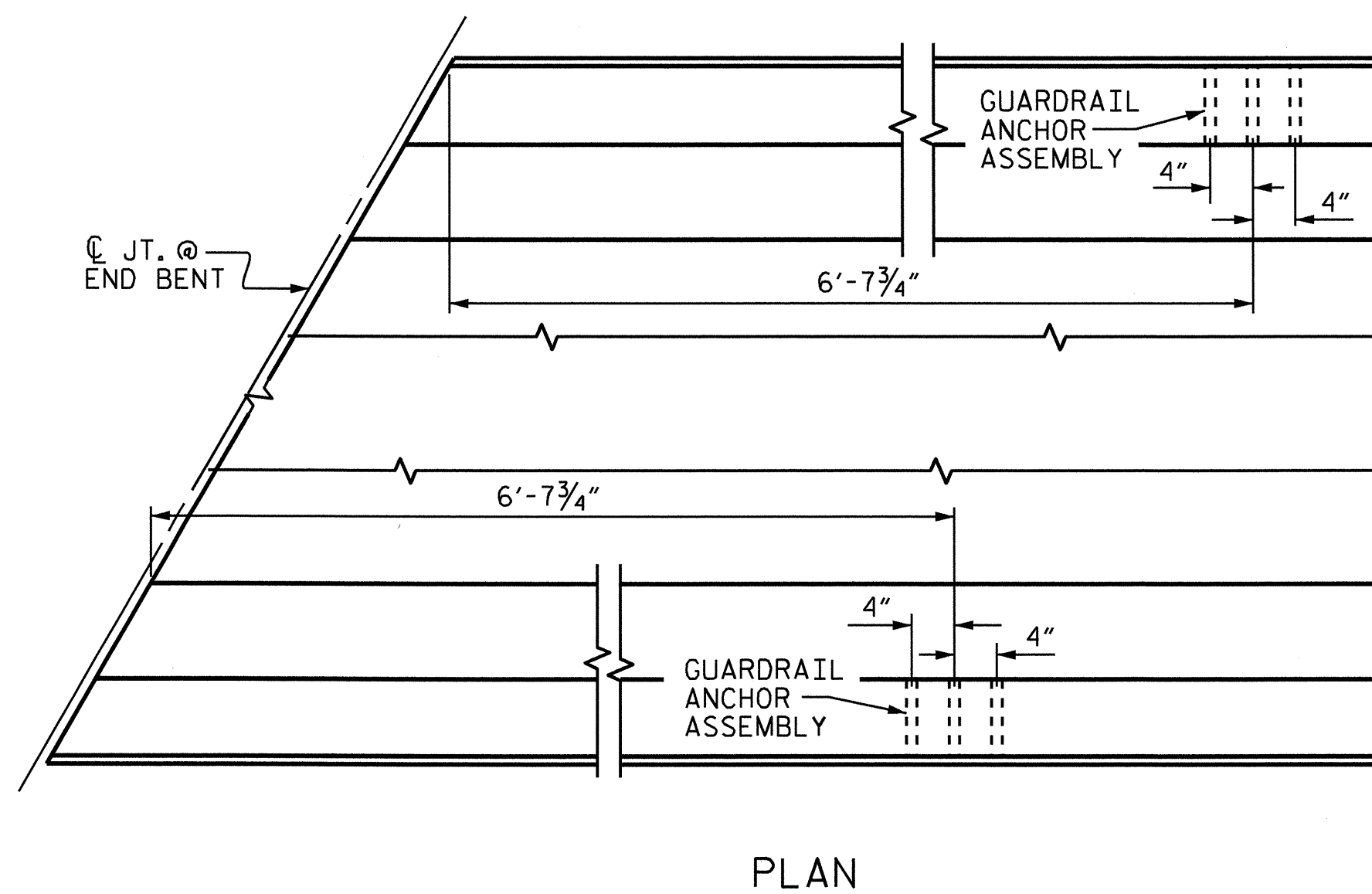
THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS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



FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03

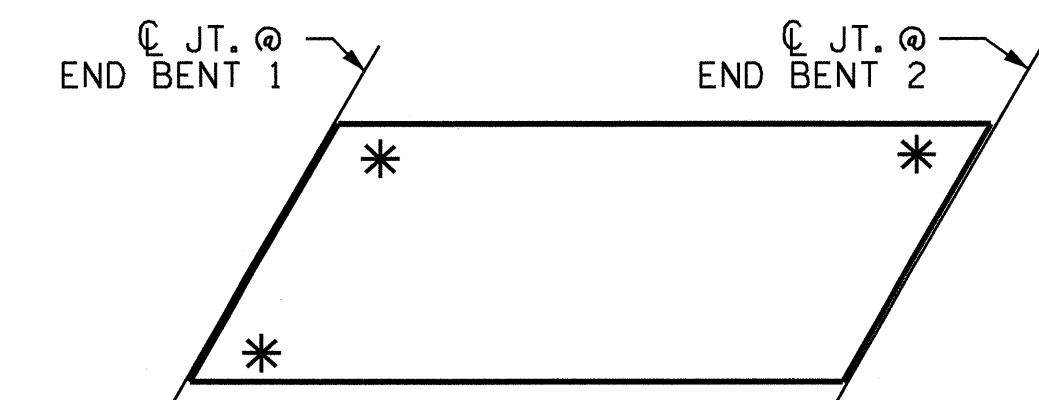


GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR.

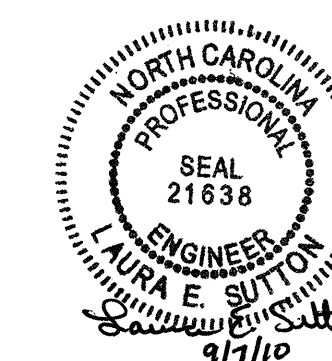


SKETCH SHOWING POINTS OF ATTACHMENTS

\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. R-2612A  
GUILFORD COUNTY  
 STATION: 69+69.82 -L-

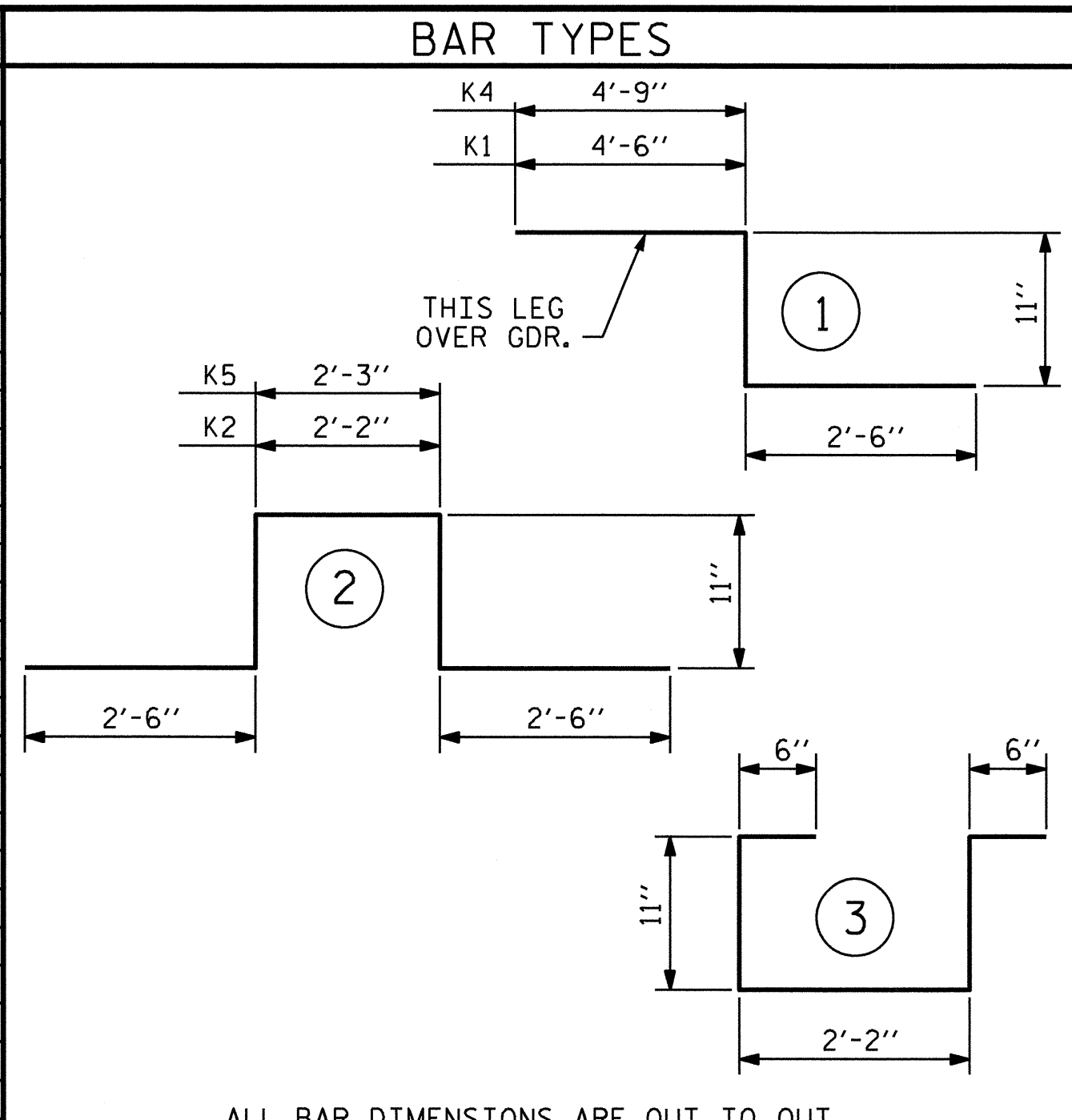
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD GUARDRAIL ANCHORAGE FOR BARRIER RAIL					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					39



ASSEMBLED BY : A.S. CALLAWAY DATE : 6/16/09  
 CHECKED BY : W.F. PARKER DATE : 5/4/10  
 DRAWN BY : TLA 5/06  
 CHECKED BY : GM 5/06  
 ADDED 5/1/06R KMM/GM

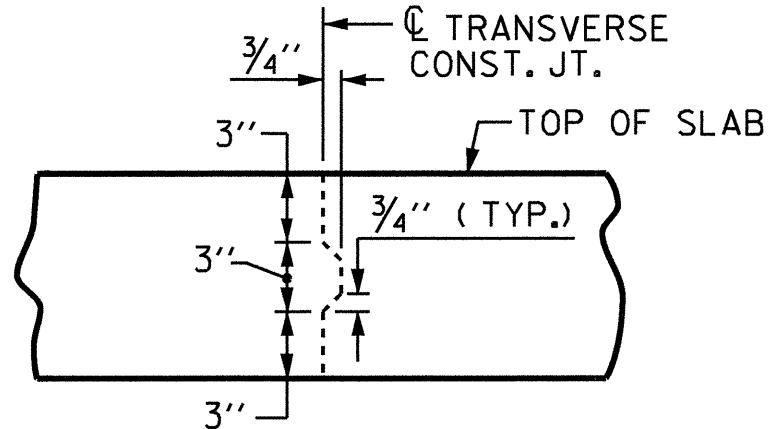


BILL OF MATERIAL																							
SPANS "A" & "B"																							
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	439	#5	STR	56'-5"	25832	*A134	2	#5	STR	40'-8"	85	A216	2	#5	STR	23'-5"	49	A252	2	#5	STR	5'-4"	11
A2	439	#5	STR	56'-5"	25832	*A135	2	#5	STR	38'-9"	81	A217	2	#5	STR	21'-4"	45	A253	2	#5	STR	3'-4"	7
						*A136	2	#5	STR	36'-9"	77	A218	2	#5	STR	19'-4"	40						
*A101	2	#5	STR	54'-5"	114	*A137	2	#5	STR	34'-9"	72	A219	2	#5	STR	17'-3"	36	*A3	198	#4	STR	2'-8"	353
*A102	2	#5	STR	52'-4"	109	*A138	2	#5	STR	32'-10"	68	A220	2	#5	STR	15'-2"	32						
*A103	2	#5	STR	50'-3"	105	*A139	2	#5	STR	30'-10"	64	A221	2	#5	STR	13'-1"	27	*B1	111	#4	STR	25'-11"	1922
*A104	2	#5	STR	48'-3"	101	*A140	2	#5	STR	28'-11"	60	A222	2	#5	STR	11'-0"	23	*B2	10	#5	STR	51'-4"	535
*A105	2	#5	STR	46'-2"	96	*A141	2	#5	STR	26'-11"	56	A223	2	#5	STR	8'-11"	19	*B3	435	#5	STR	30'-3"	13725
*A106	2	#5	STR	44'-1"	92	*A142	2	#5	STR	24'-11"	52	A224	2	#5	STR	6'-11"	14	*B4	148	#4	STR	24'-4"	2406
*A107	2	#5	STR	42'-0"	88	*A143	2	#5	STR	23'-0"	48	A225	2	#5	STR	4'-10"	10	B5	365	#5	STR	51'-1"	19447
*A108	2	#5	STR	40'-0"	83	*A144	2	#5	STR	21'-0"	44	A226	2	#5	STR	2'-9"	6	*B6	3	#4	STR	24'-9"	50
*A109	2	#5	STR	37'-11"	79	*A145	2	#5	STR	19'-1"	40	A227	2	#5	STR	54'-6"	114	*B7	27	#4	STR	29'-9"	537
*A110	2	#5	STR	35'-10"	75	*A146	2	#5	STR	17'-1"	36	A228	2	#5	STR	52'-6"	110	*B8	3	#4	STR	24'-11"	50
*A111	2	#5	STR	33'-9"	70	*A147	2	#5	STR	15'-2"	32	A229	2	#5	STR	50'-7"	106						
*A112	2	#5	STR	31'-8"	66	*A148	2	#5	STR	13'-2"	27	A230	2	#5	STR	48'-7"	101	*G1	2	#5	STR	31'-11"	67
*A113	2	#5	STR	29'-8"	62	*A149	2	#5	STR	11'-2"	23	A231	2	#5	STR	46'-7"	97	*G2	2	#5	STR	33'-6"	70
*A114	2	#5	STR	27'-7"	58	*A150	2	#5	STR	9'-3"	19	A232	2	#5	STR	44'-8"	93						
*A115	2	#5	STR	25'-6"	53	*A151	2	#5	STR	7'-3"	15	A233	2	#5	STR	42'-8"	89	*K1	8	#5	1	7'-11"	66
*A116	2	#5	STR	23'-5"	49	*A152	2	#5	STR	5'-4"	11	A234	2	#5	STR	40'-8"	85	*K2	16	#5	2	9'-0"	150
*A117	2	#5	STR	21'-4"	45	*A153	2	#5	STR	3'-4"	7	A235	2	#5	STR	38'-9"	81	*K3	20	#5	STR	10'-5"	217
*A118	2	#5	STR	19'-4"	40							A236	2	#5	STR	36'-9"	77	*K4	8	#5	1	8'-2"	68
*A119	2	#5	STR	17'-3"	36	A201	2	#5	STR	54'-5"	114	A237	2	#5	STR	34'-9"	72	*K5	16	#5	2	9'-1"	152
*A120	2	#5	STR	15'-2"	32	A202	2	#5	STR	52'-4"	109	A238	2	#5	STR	32'-10"	68	*K6	20	#5	STR	10'-11"	228
*A121	2	#5	STR	13'-1"	27	A203	2	#5	STR	50'-3"	105	A239	2	#5	STR	30'-10"	64						
*A122	2	#5	STR	11'-0"	23	A204	2	#5	STR	48'-3"	101	A240	2	#5	STR	28'-11"	60	*S1	90	#4	3	5'-0"	301
*A123	2	#5	STR	8'-11"	19	A205	2	#5	STR	46'-2"	96	A241	2	#5	STR	26'-11"	56						
*A124	2	#5	STR	6'-11"	14	A206	2	#5	STR	44'-1"	92	A242	2	#5	STR	24'-11"	52						
*A125	2	#5	STR	4'-10"	10	A207	2	#5	STR	42'-0"	88	A243	2	#5	STR	23'-0"	48						
*A126	2	#5	STR	2'-9"	6	A208	2	#5	STR	40'-0"	83	A244	2	#5	STR	21'-0"	44						
*A127	2	#5	STR	54'-6"	114	A209	2	#5	STR	37'-11"	79	A245	2	#5	STR	19'-1"	40						
*A128	2	#5	STR	52'-6"	110	A210	2	#5	STR	35'-10"	75	A246	2	#5	STR	17'-1"	36						
*A129	2	#5	STR	50'-7"	106	A211	2	#5	STR	33'-9"	70	A247	2	#5	STR	15'-2"	32						
*A130	2	#5	STR	48'-7"	101	A212	2	#5	STR	31'-8"	66	A248	2	#5	STR	13'-2"	27						
*A131	2	#5	STR	46'-7"	97	A213	2	#5	STR	29'-8"	62	A249	2	#5	STR	11'-2"	23						
*A132	2	#5	STR	44'-8"	93	A214	2	#5	STR	27'-7"	58	A250	2	#5	STR	9'-3"	19						
*A133	2	#5	STR	42'-8"	89	A215	2	#5	STR	25'-6"	53	A251	2	#5	STR	7'-3"	15						



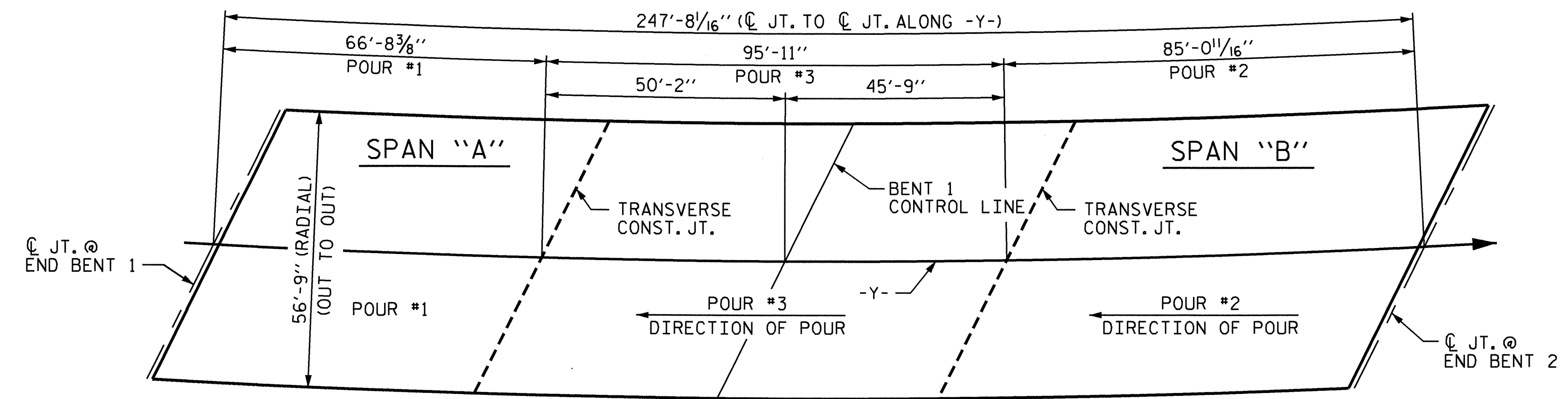
SUPERSTRUCTURE BILL OF MATERIAL			
SPANS "A" & "B"	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
POUR #1	126.4	—	—
POUR #2	160.4	—	—
POUR #3	177.6	—	—
MEDIAN	16.9	—	—
TOTALS **	481.3	48,458	49,908

\*\* QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED.

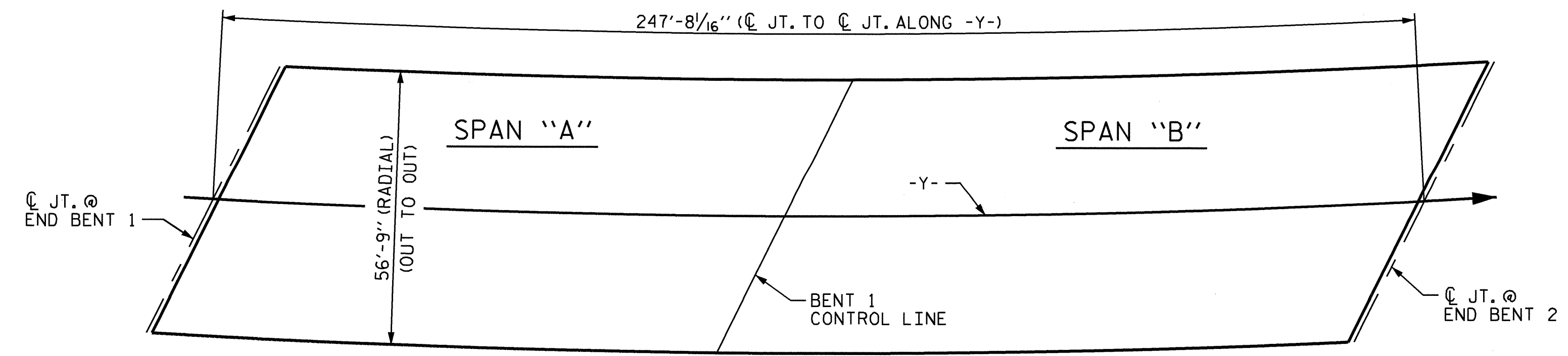


**TRANSVERSE CONSTRUCTION JOINT DETAIL**

NOTE: REINFORCING STEEL IN SLAB NOT SHOWN. LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT.



**POURING SEQUENCE**



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB (SQ. FT. = 14,056)

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

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

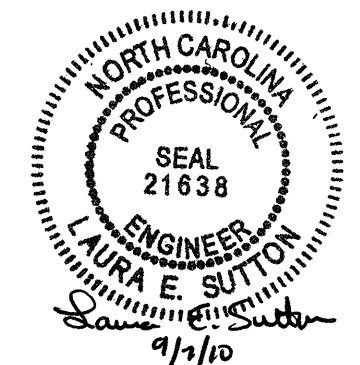
GROOVING BRIDGE FLOORS	
APPROACH SLABS	2,380 SQ.FT.
BRIDGE DECK	12,432 SQ.FT.
TOTAL	14,812 SQ.FT.

PROJECT NO. R-2612A  
GUILFORD COUNTY  
 STATION: 69+69.82 -L-

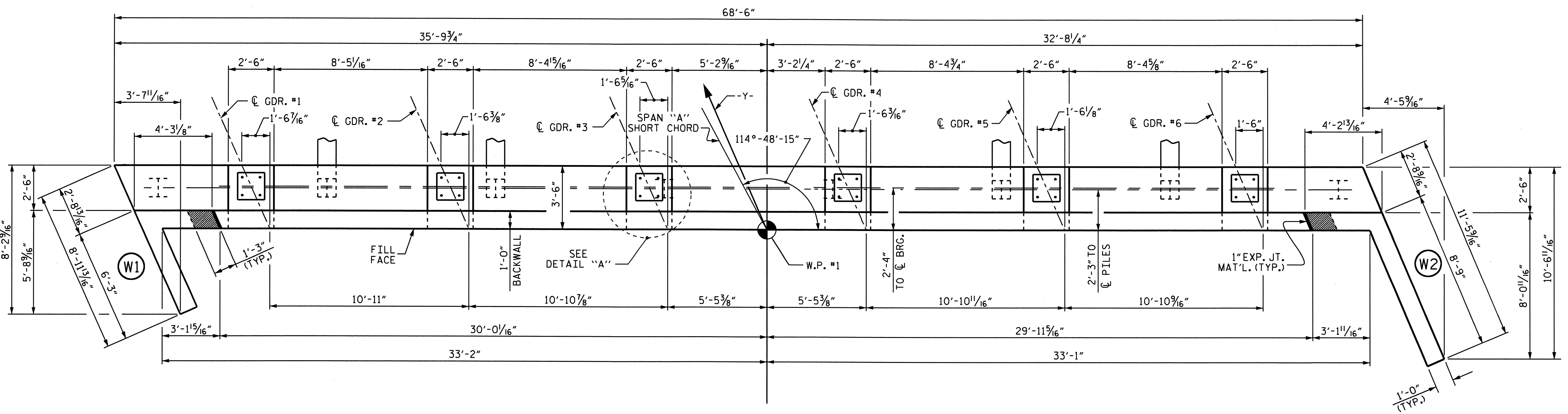
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD  
 SUPERSTRUCTURE  
 BILL OF MATERIAL

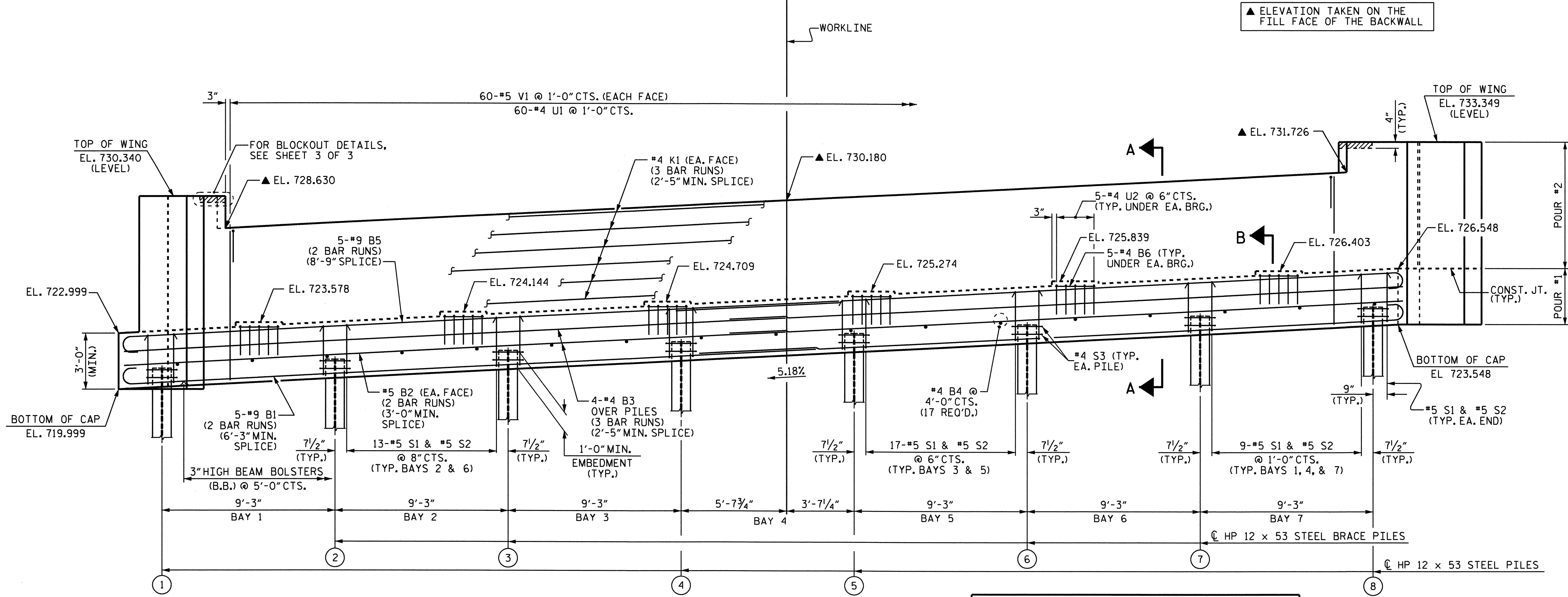
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-28
2			4			TOTAL SHEETS 39



ASSEMBLED BY : A.S. CALLAWAY DATE : 6/18/09  
 CHECKED BY : W.F. PARKER DATE : 5/4/10  
 DRAWN BY : JMB 5/87 REV. 6/1/94 EEM/GRP  
 CHECKED BY : SJD 9/87 REV. 8/16/99 RWW/LRS  
 REV. 5/1/06 TLA/GM



PLAN

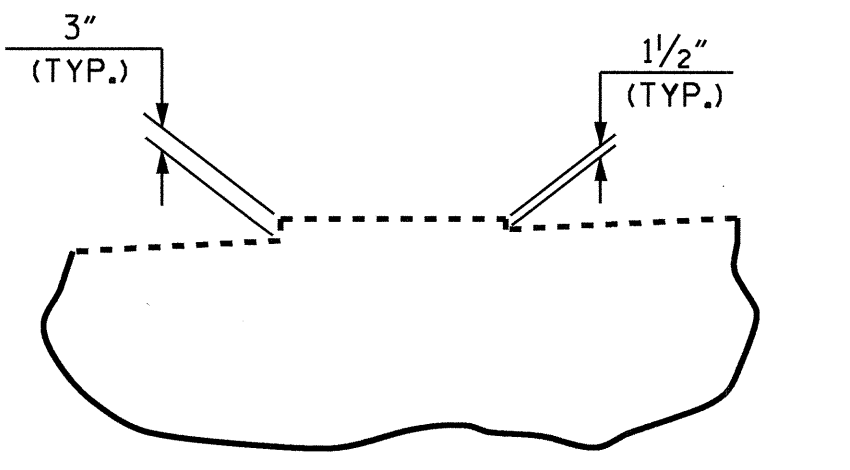


ELEVATION

TOP OF PILE ELEVATIONS			
1	EL. 721.122	5	EL. 723.038
2	EL. 721.601	6	EL. 723.518
3	EL. 722.080	7	EL. 723.997
4	EL. 722.559	8	EL. 724.476

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 CAP 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%.
- THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND THE APPROACH SLAB HAS BEEN SAWED AND AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
- THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.
- FOR PIPE INSERT DETAILS, SEE "POT BEARING DETAILS" SHEET.
- FOR TEMPORARY DRAINAGE AT END BENT, SEE END BENT 2.
- THE #5 V1 BARS SHALL BE PLACED 2" CLEAR FROM THE TOP OF THE BACKWALL.



BRIDGE SEAT DETAIL  
(TYP. AT EA. LOCATION)

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GUILFORD COUNTY  
 STATION: 69+69.82 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
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 RALEIGH

SUBSTRUCTURE  
 END BENT 1

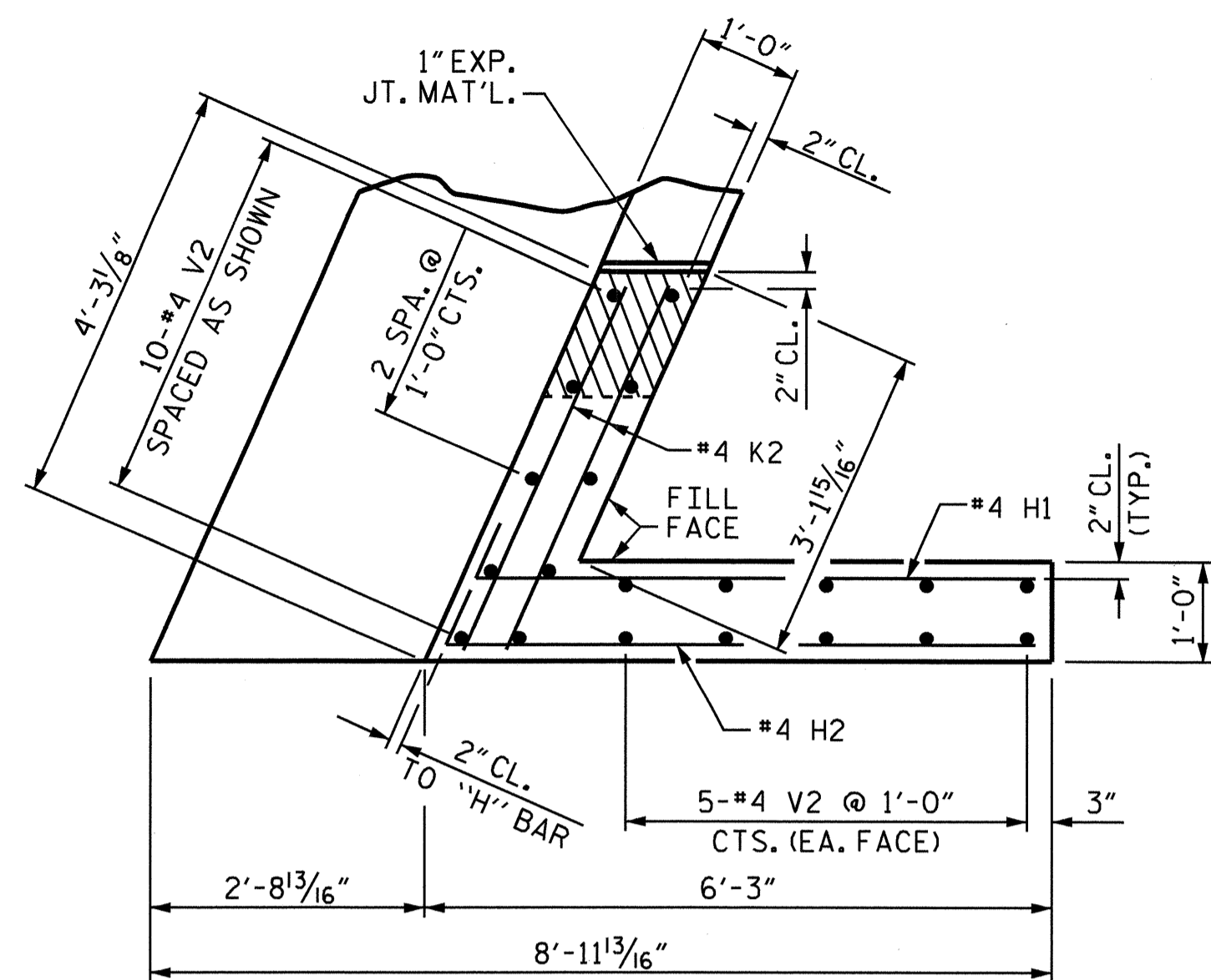
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NO.	BY:	DATE:	NO.	DATE:
1			3	
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TOTAL SHEETS: 39

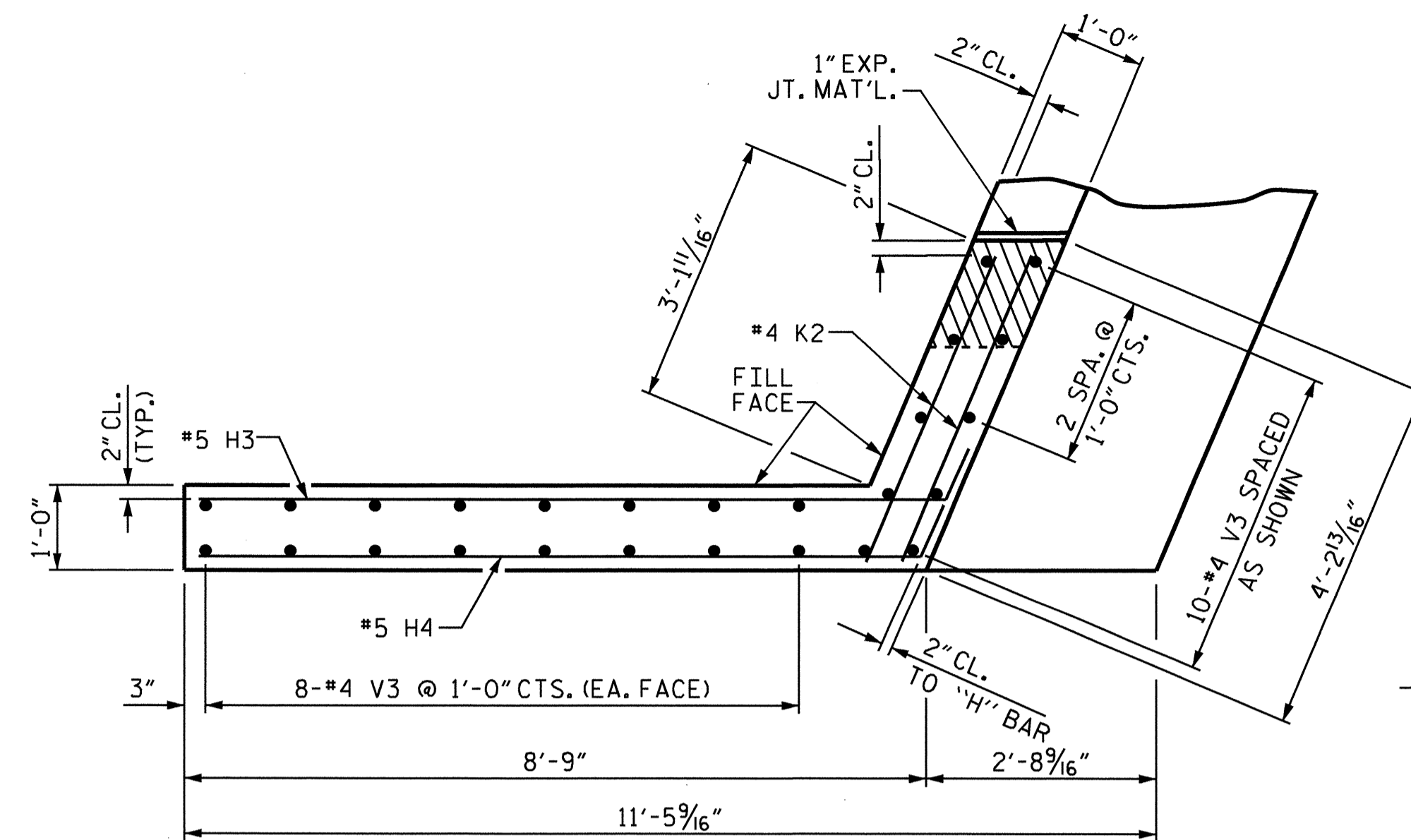


DRAWN BY: W.D. CRUTCHER DATE: 06/10  
 CHECKED BY: A.S. CALLAWAY DATE: 6-15-10

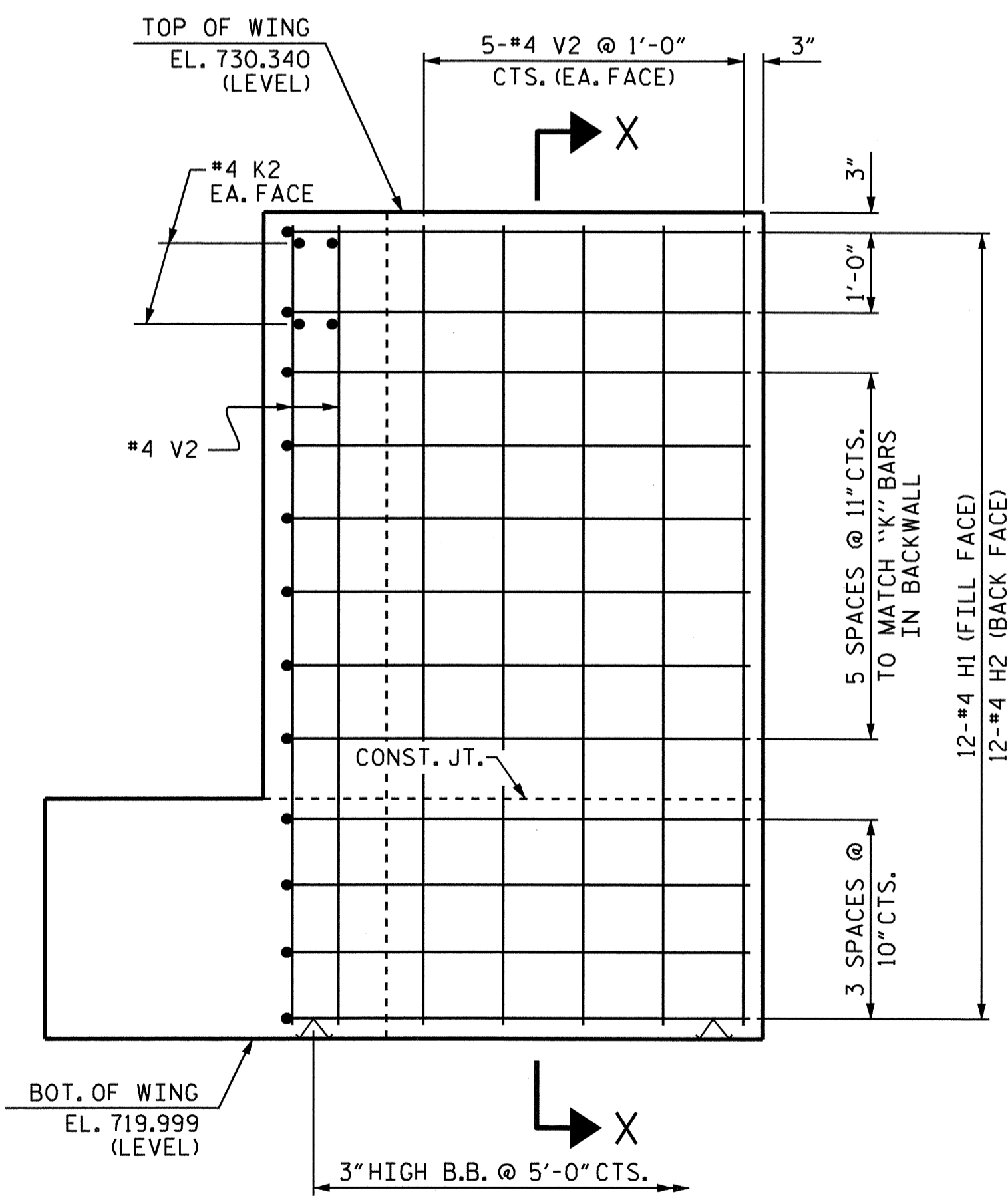




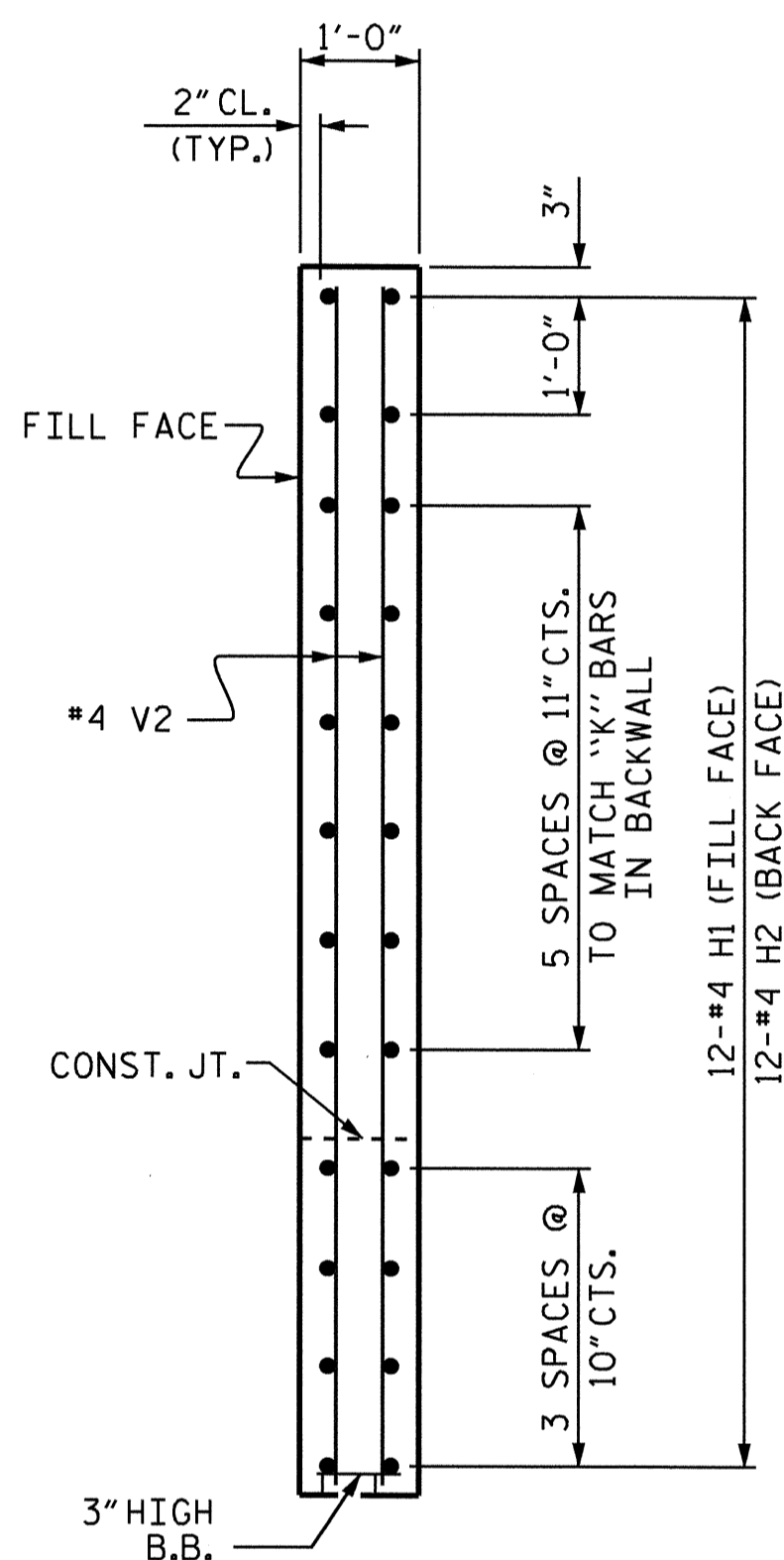
PLAN OF WING - W1



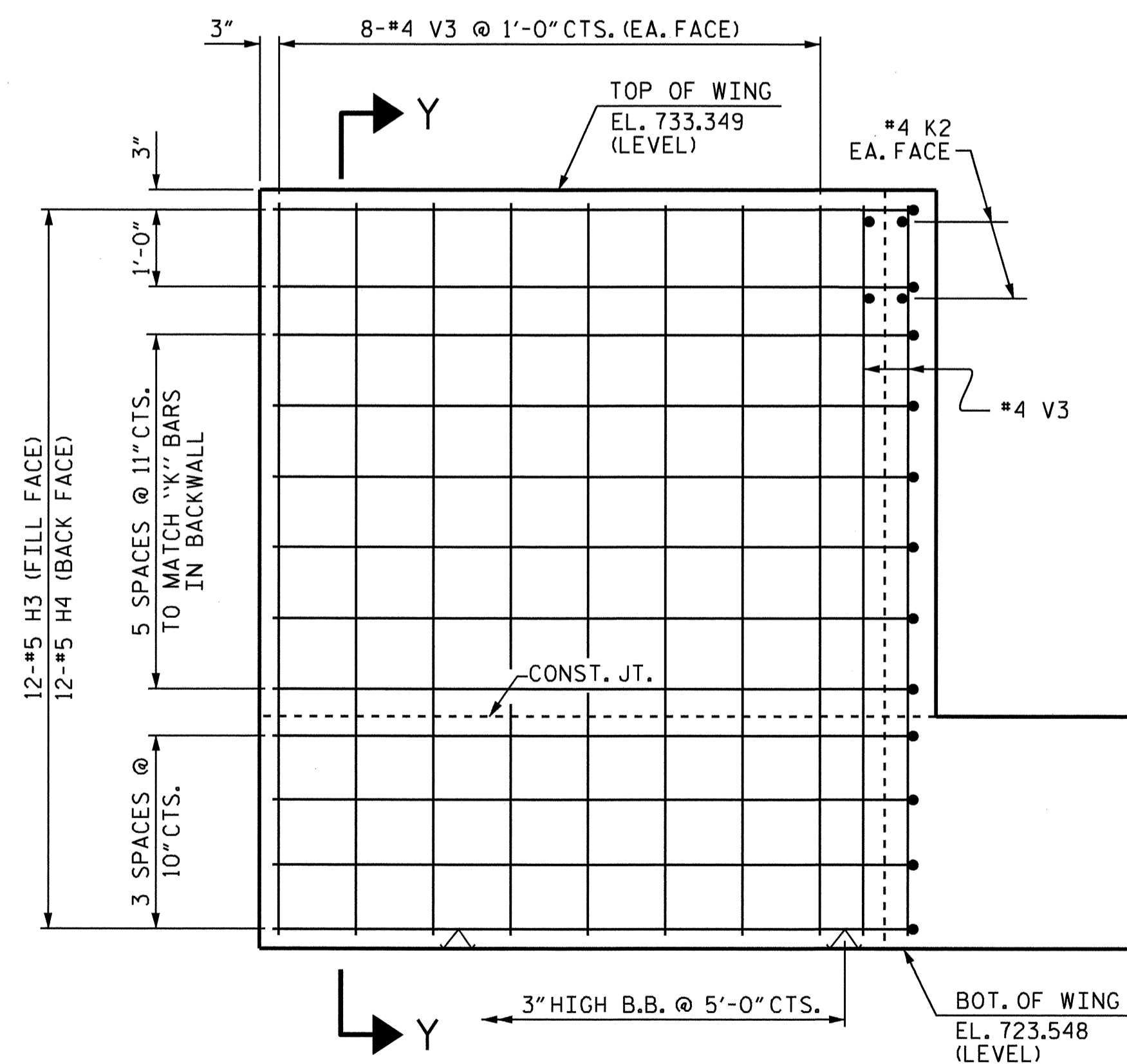
PLAN OF WING - W2



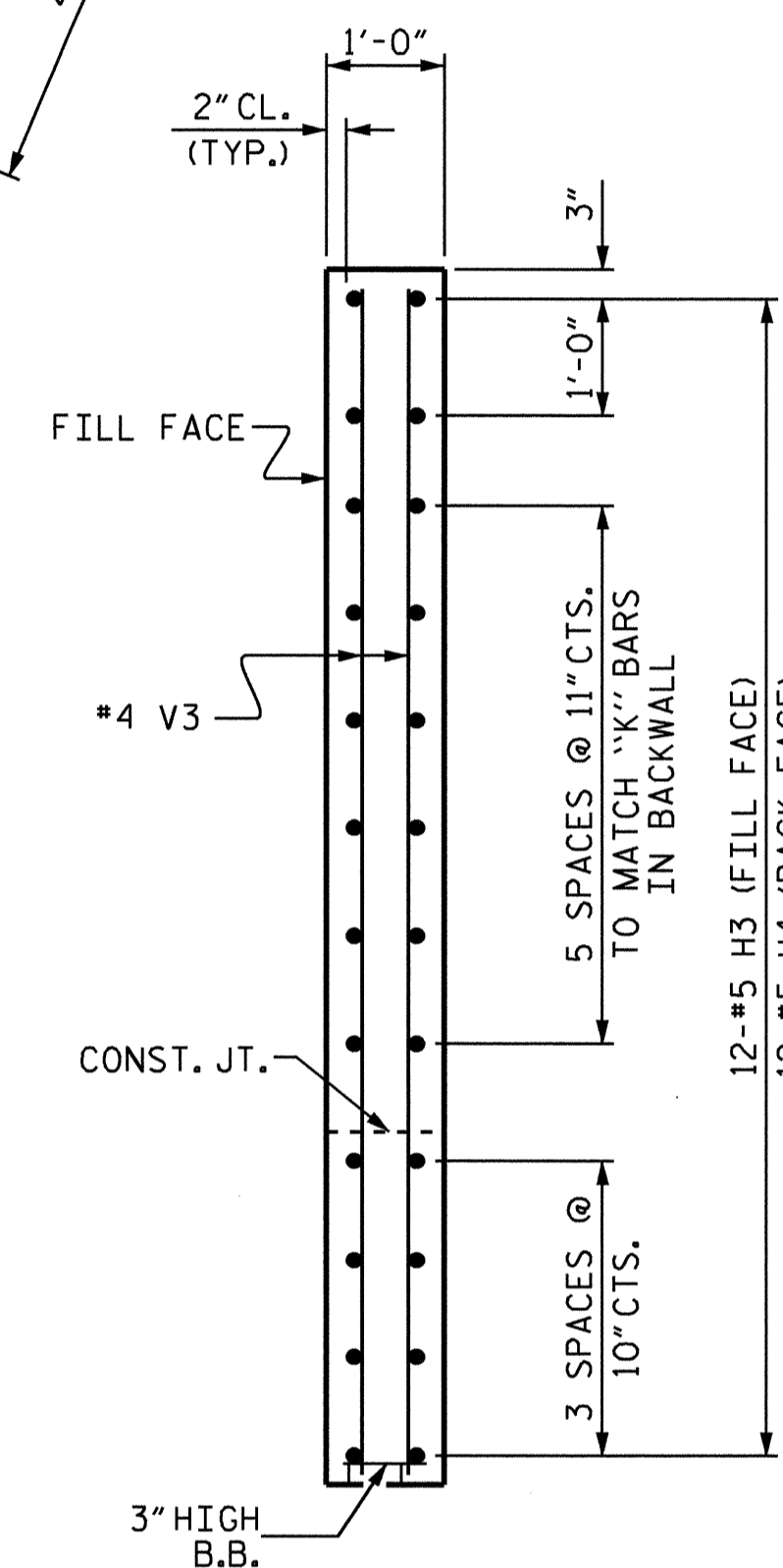
ELEVATION OF WING - W1



SECTION X-X



ELEVATION OF WING - W2

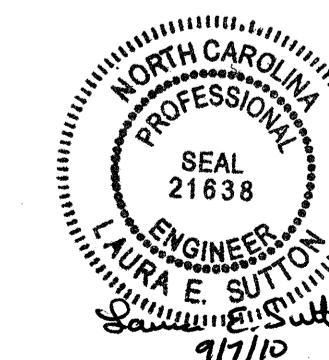


SECTION Y-Y

PROJECT NO. R-2612A  
 GUILFORD COUNTY  
 STATION: 69+69.82 -L-

SHEET 2 OF 3

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



DRAWN BY: W.D. CRUTCHER DATE: 06/10  
 CHECKED BY: A.S. CALLAWAY DATE: 6-15-10

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS
2			4			39

STR. #1





**NOTES**

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

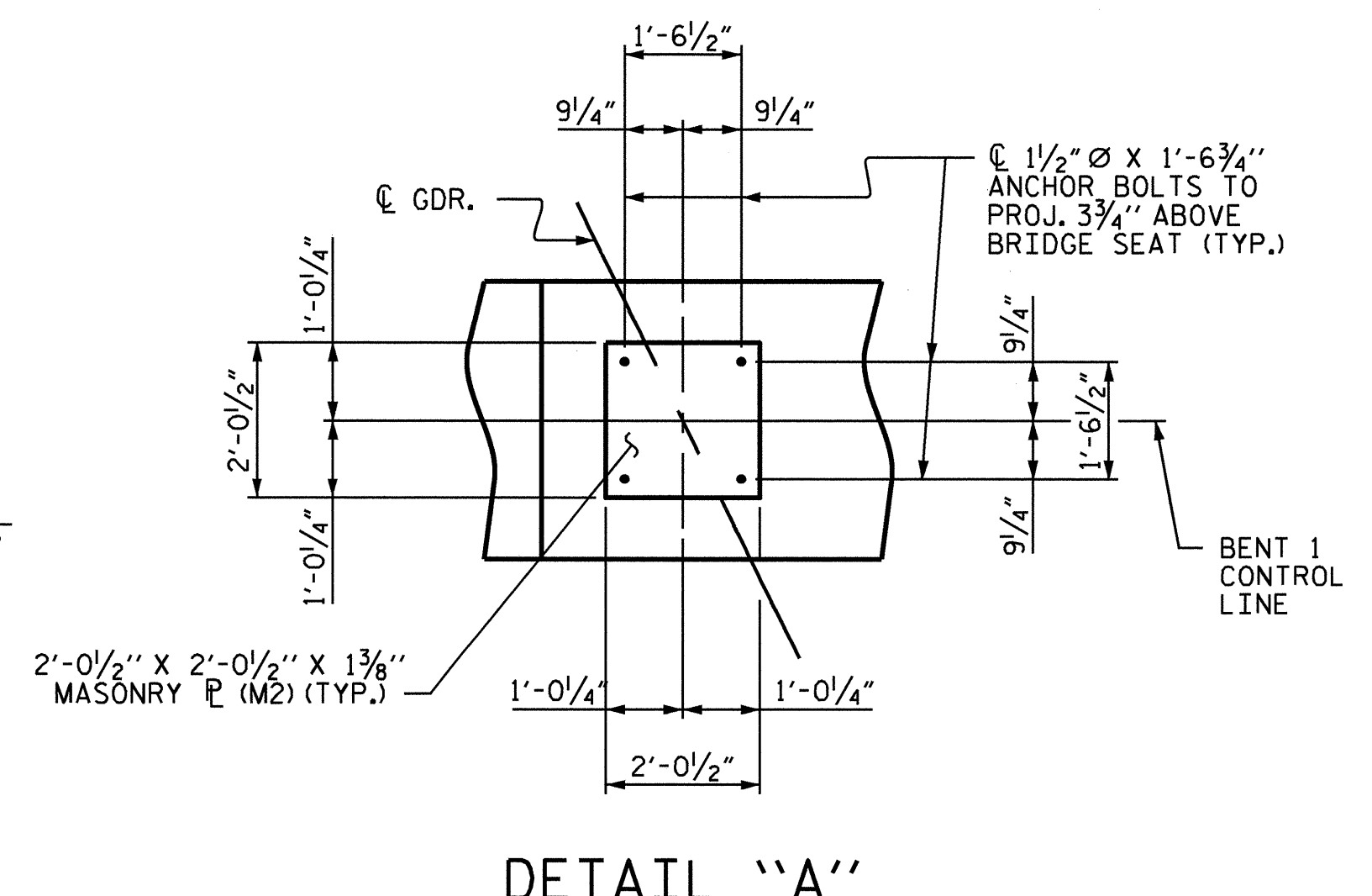
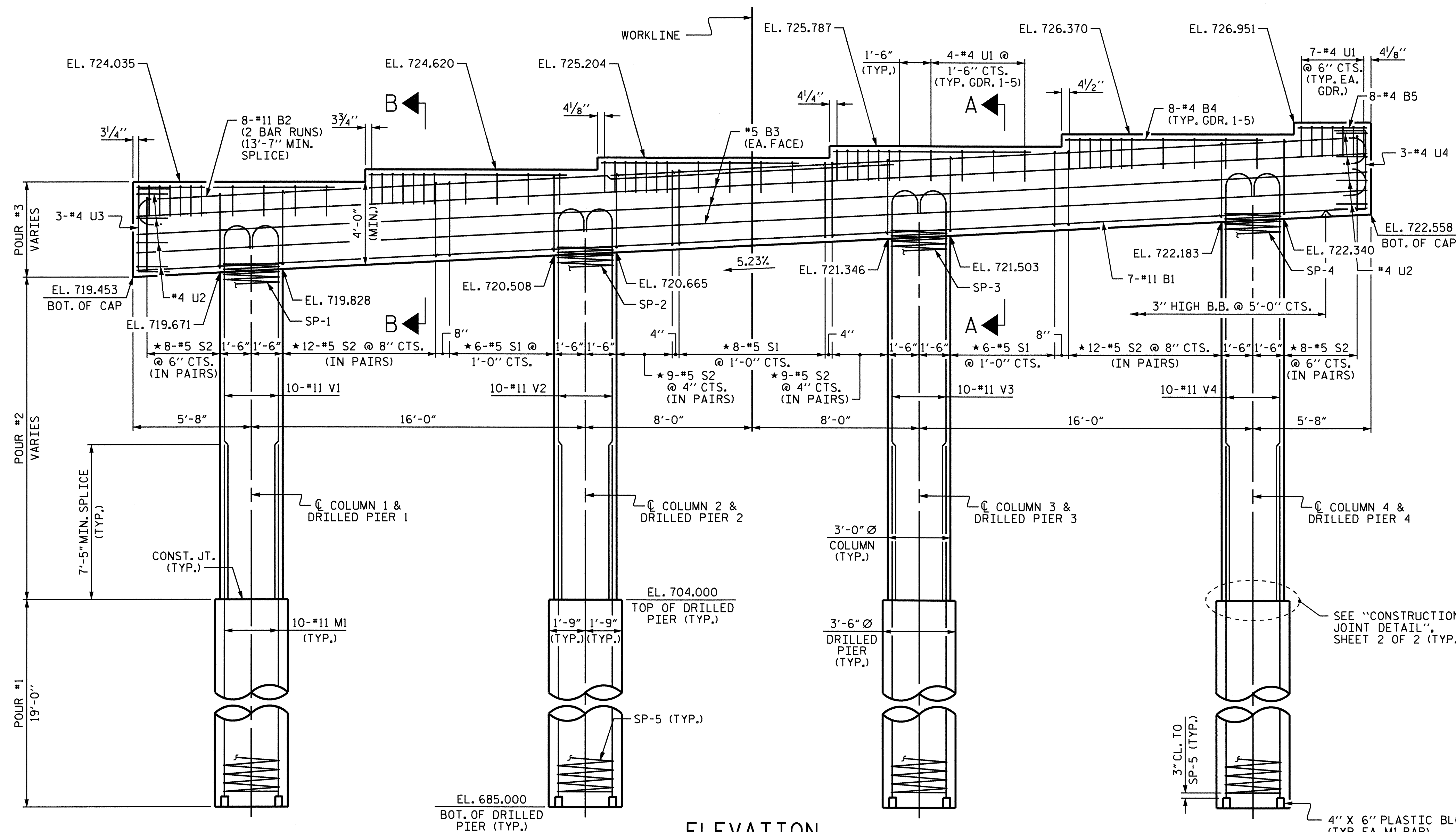
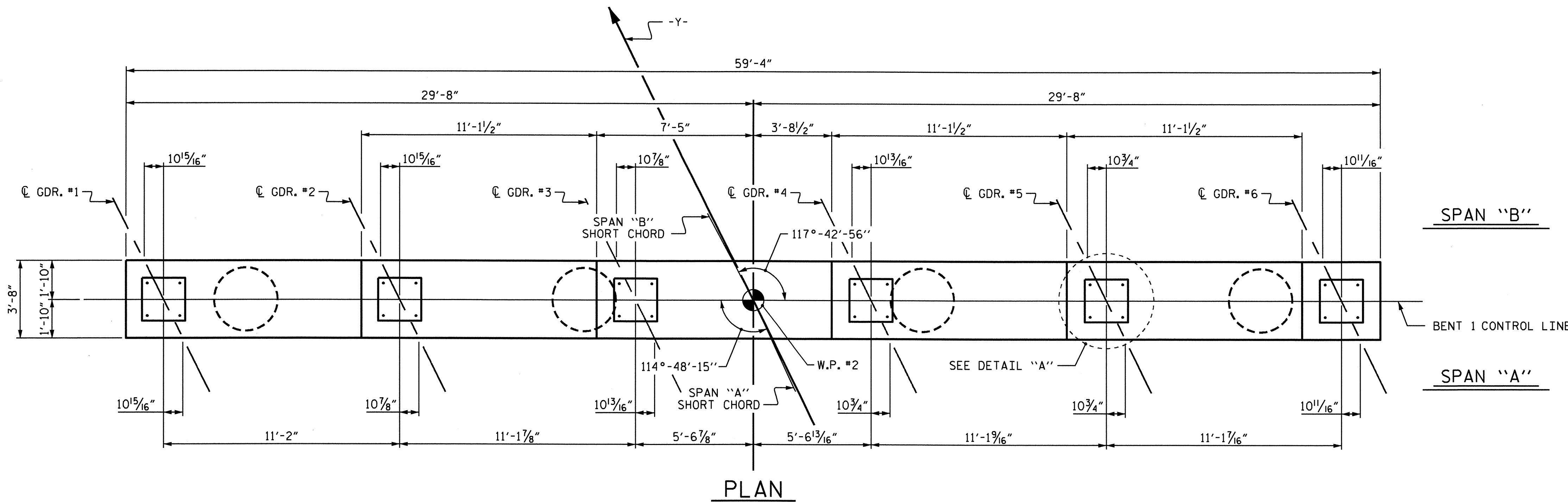
HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

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

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

THE LOCATION OF THE 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 FOOT BELOW THE GROUND LINE.



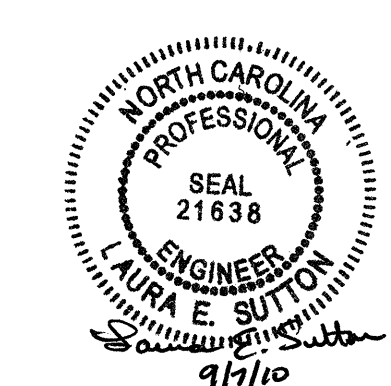
PROJECT NO. R-2612A  
 GUILFORD COUNTY  
 STATION: 69+69.82 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 BENT 1

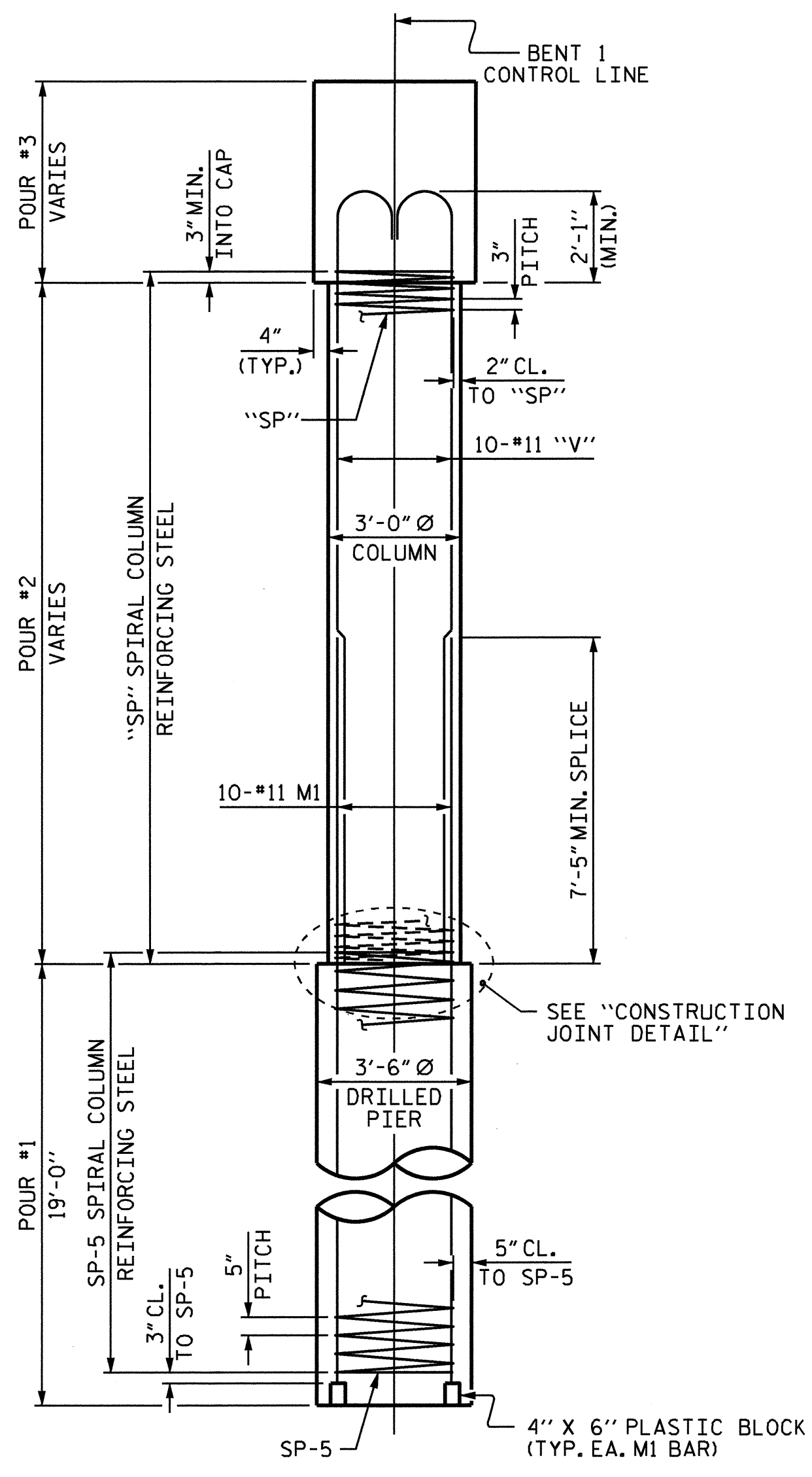
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S-32  
 TOTAL SHEETS  
 39

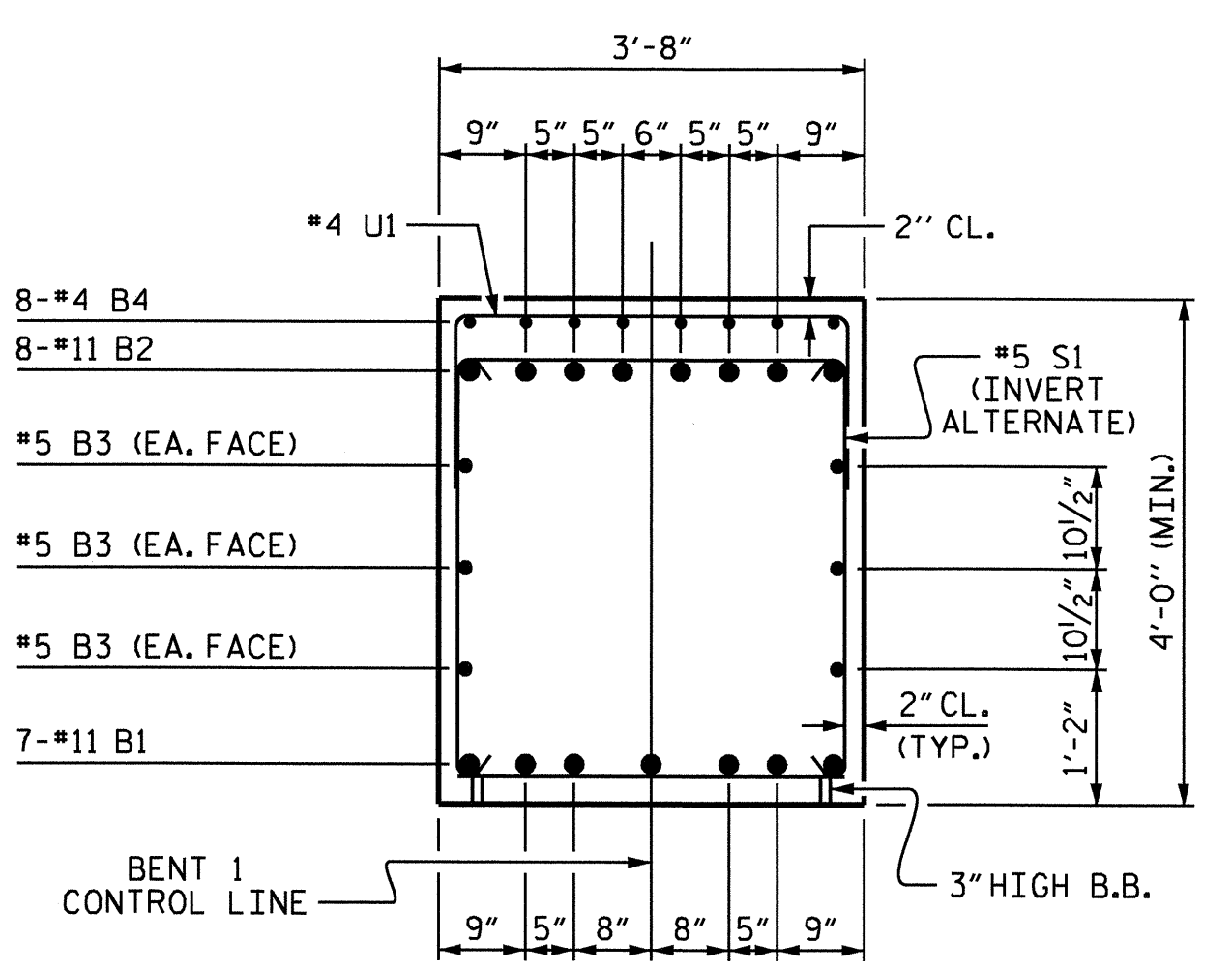


DRAWN BY: L.E. SUTTON DATE: 7/15/10  
 CHECKED BY: J.L. WALTON DATE: 7/20/10

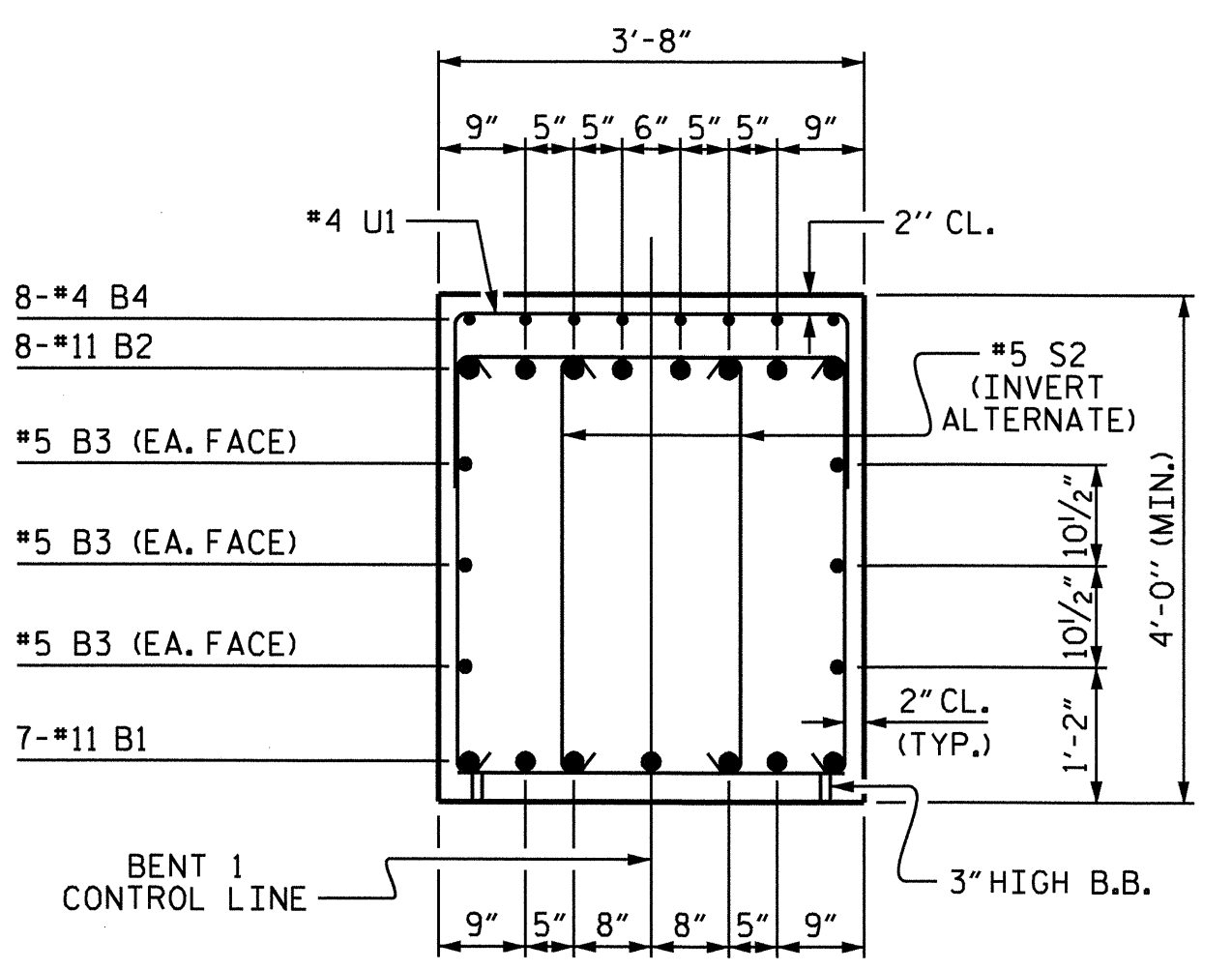




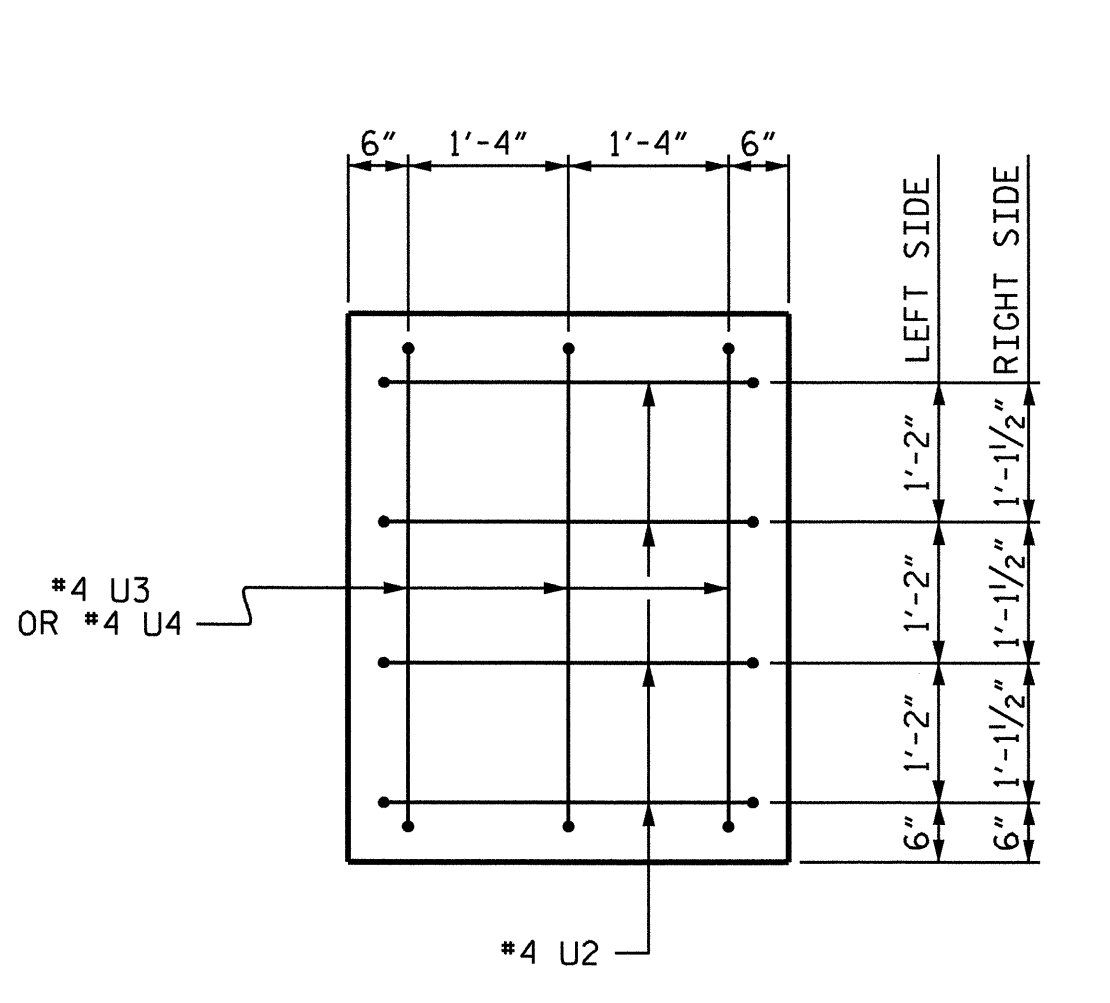
END ELEVATION



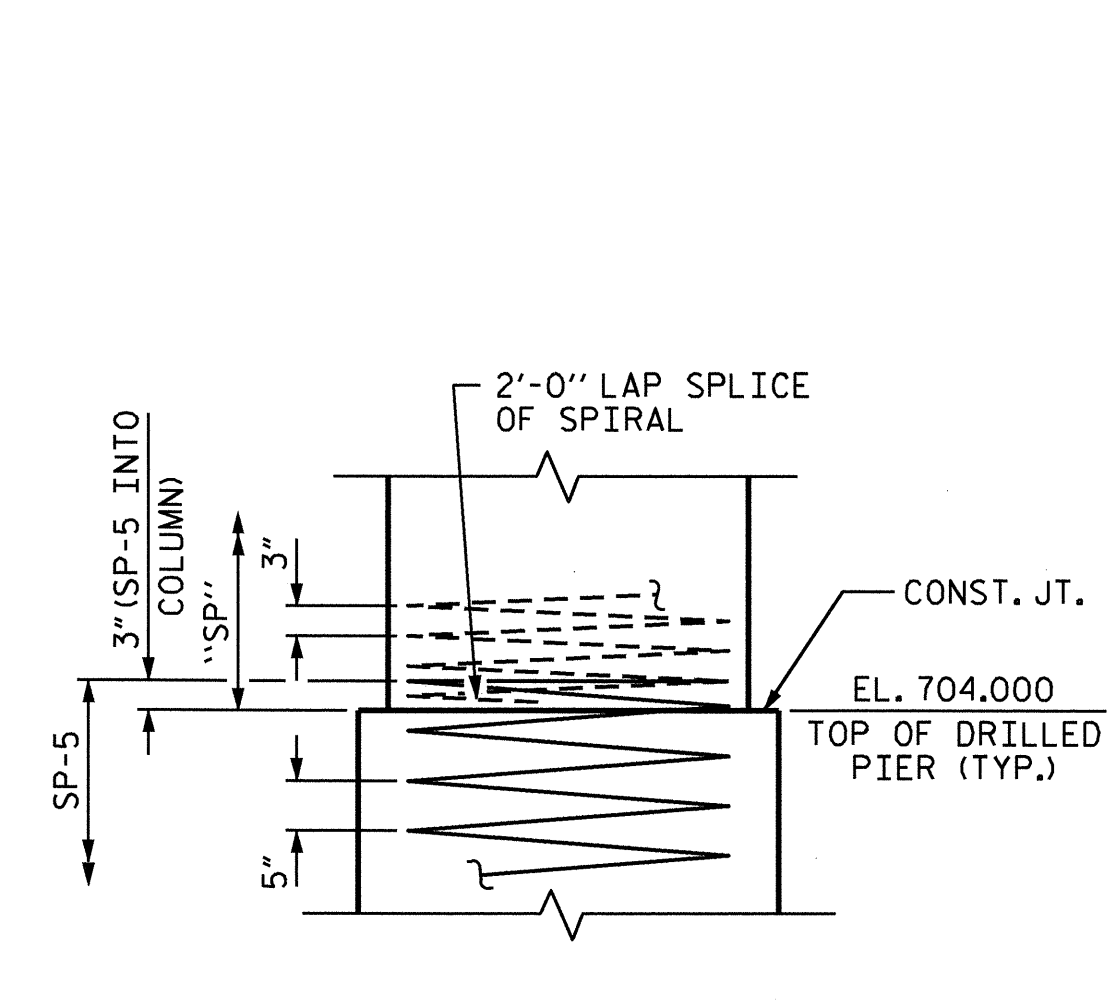
SECTION A-A



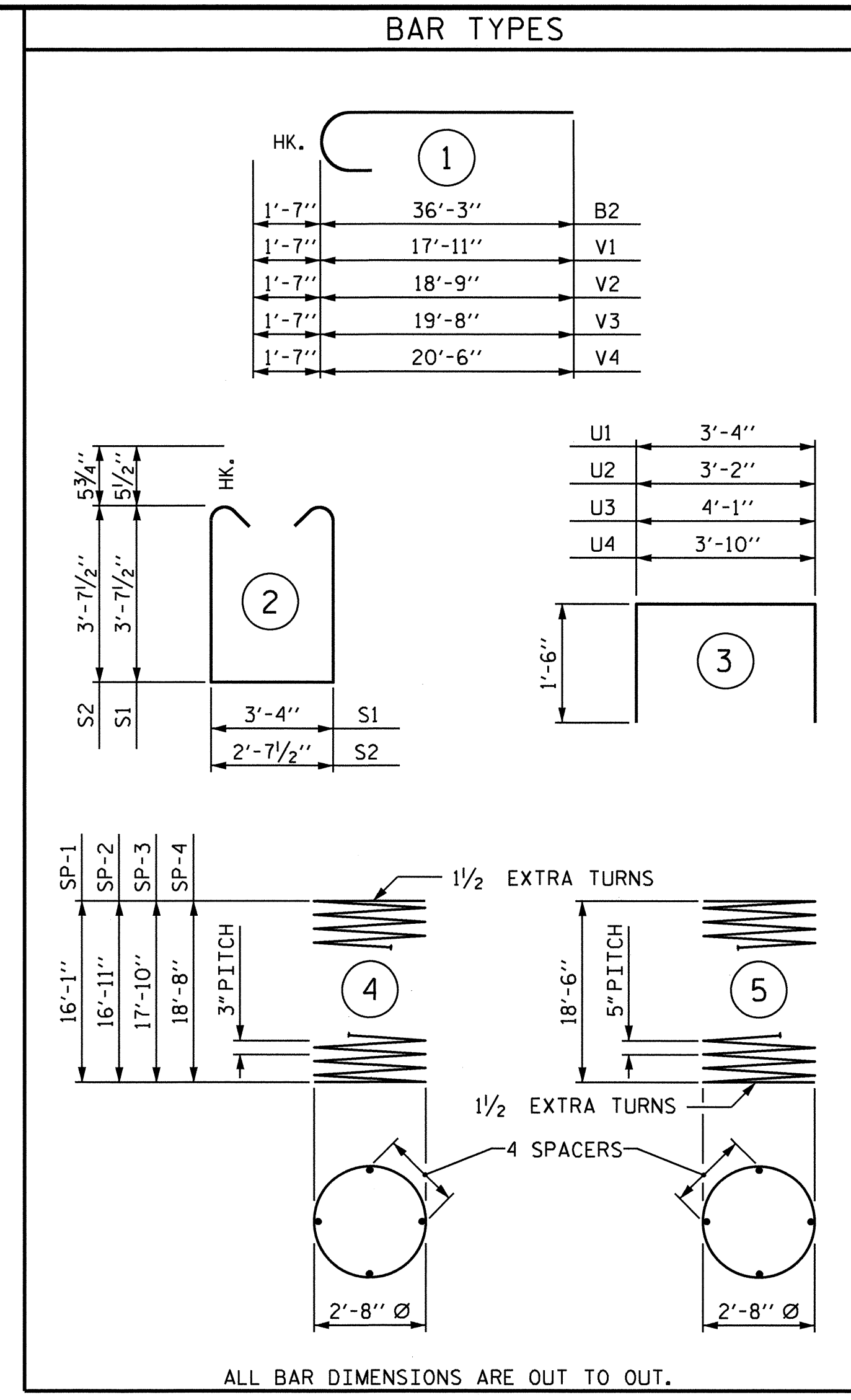
SECTION B-B



END VIEW

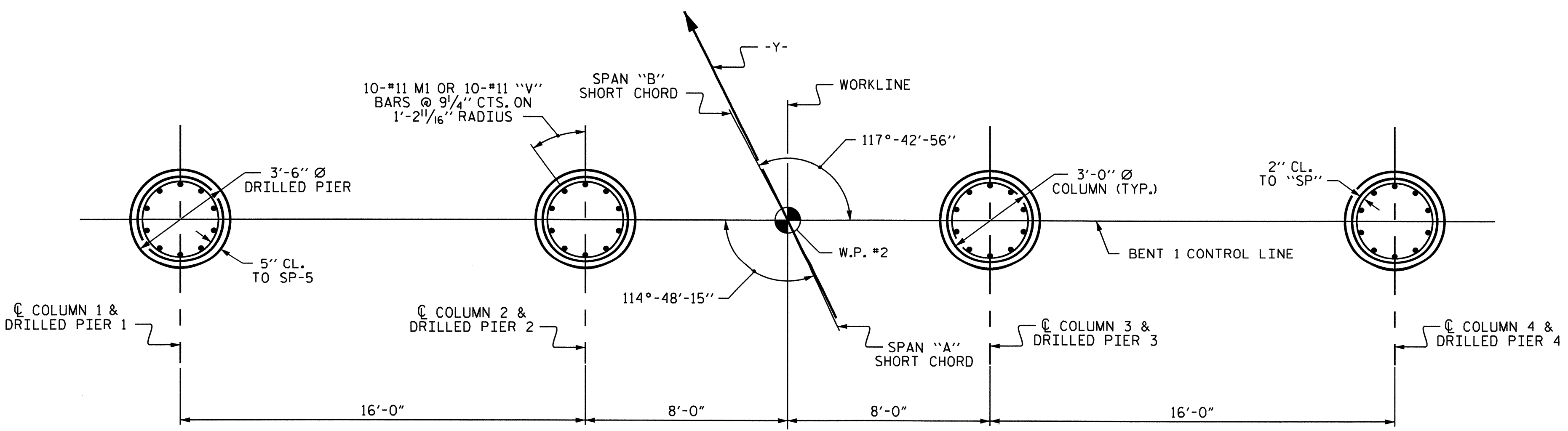


CONSTRUCTION JOINT DETAIL



BAR TYPES

BILL OF MATERIAL					
BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	#11	STR	59'-0"	2194
B2	16	#11	1	37'-10"	3216
B3	6	#5	STR	59'-0"	369
B4	40	#4	STR	9'-6"	254
B5	8	#4	STR	3'-4"	18
M1	40	#11	STR	28'-11"	6145
S1	20	#5	2	11'-6"	240
S2	116	#5	2	10'-10"	1311
U1	62	#4	3	6'-4"	262
U2	8	#4	3	6'-2"	33
U3	3	#4	3	7'-1"	14
U4	3	#4	3	6'-10"	14
V1	10	#11	1	19'-6"	1036
V2	10	#11	1	20'-4"	1080
V3	10	#11	1	21'-3"	1129
V4	10	#11	1	22'-1"	1173
REINFORCING STEEL					LBS. 18,488
SP-1	1	*	4	544'-7"	364
SP-2	1	*	4	577'-7"	386
SP-3	1	*	4	602'-4"	402
SP-4	1	*	4	635'-4"	424
SP-5	4	**	5	378'-4"	1578
SPIRAL COLUMN REINFORCING STEEL					LBS. 3,154
CLASS A CONCRETE BREAKDOWN:					
POUR #2 - COLUMNS				CU. YDS.	17.8
POUR #3 - CAP				CU. YDS.	34.7
TOTAL				CU. YDS.	52.5
DRILLED PIER QUANTITIES:					
DRILLED PIER CONCRETE					
POUR #1 - DRILLED PIERS				CU. YDS.	27.1
3'-6" Ø DRILLED PIERS IN SOIL				LIN. FT.	47.00
3'-6" Ø DRILLED PIERS NOT IN SOIL				LIN. FT.	29.00
CSL TUBES				LIN. FT.	344.00

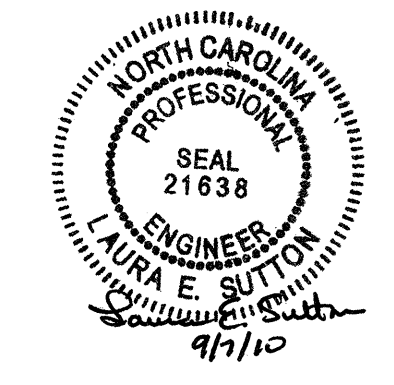


PLAN OF COLUMNS & DRILLED PIERS

DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER.

DRAWN BY: L.E. SUTTON DATE: 7/16/10  
 CHECKED BY: J.L. WALTON DATE: 7/20/10

09-AUG-2010 13:06  
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 lsutton

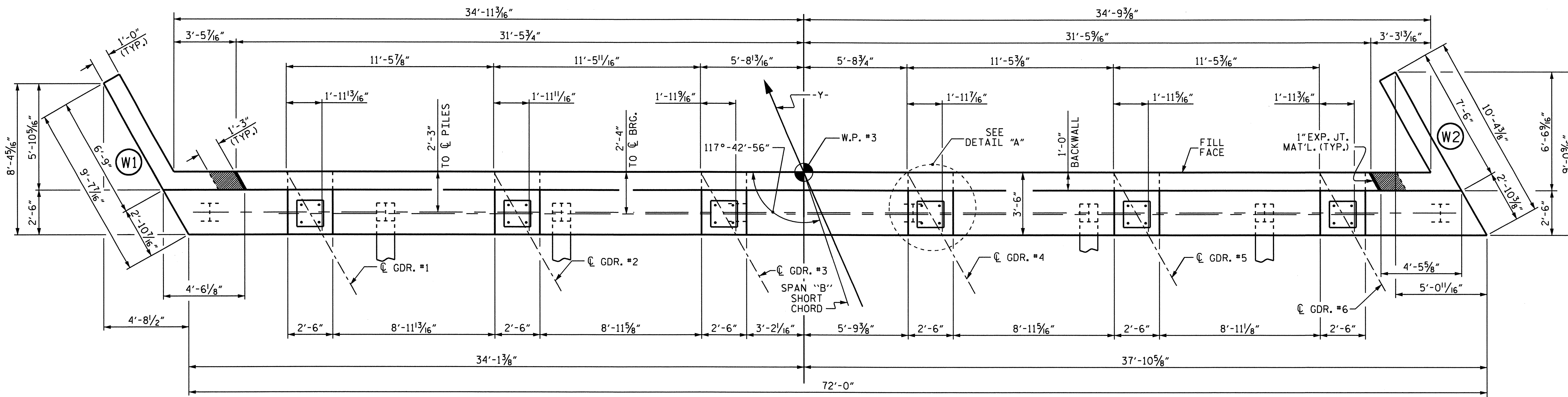


PROJECT NO. R-2612A  
 GUILFORD COUNTY  
 STATION: 69+69.82 -L-  
 SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
BENT 1					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-33
					TOTAL SHEETS 39

STR. #1

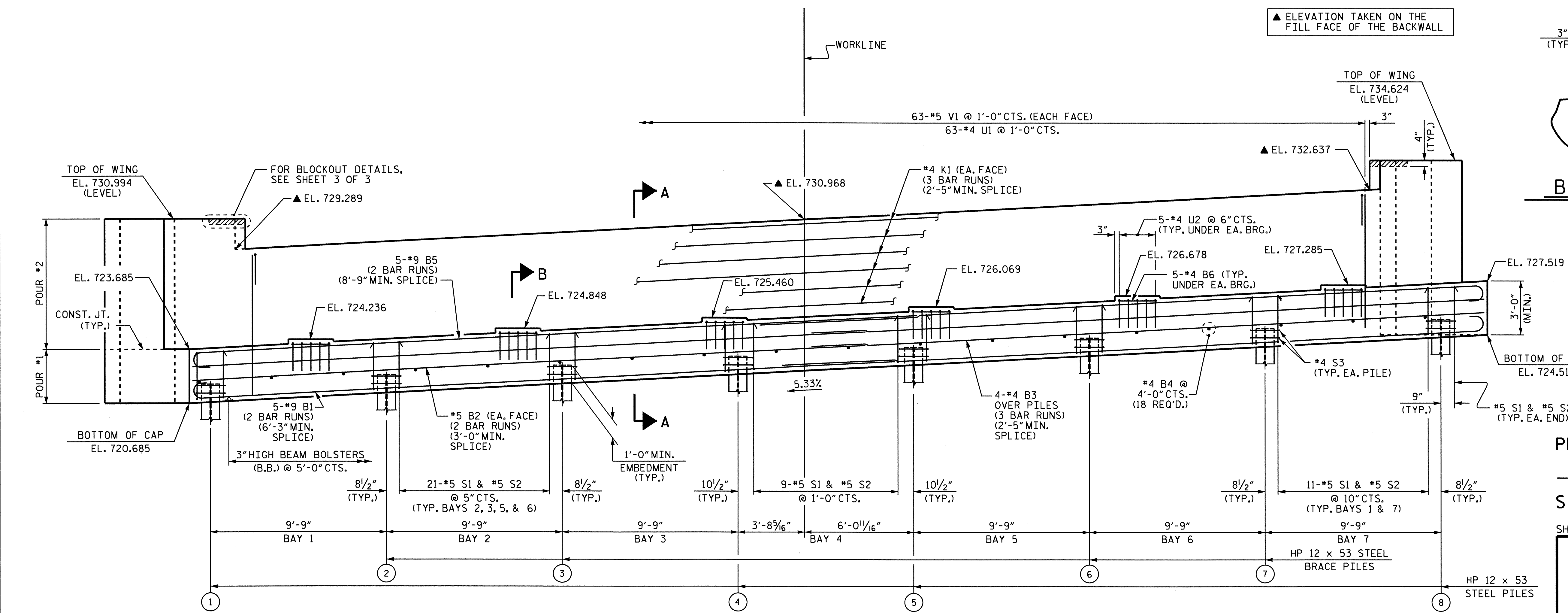




PLAN

NOTES

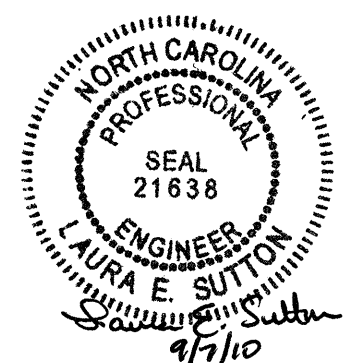
- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
- THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT 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%.
- THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND THE APPROACH SLAB HAS BEEN SAWED AND AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
- THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.
- FOR PIPE INSERT DETAILS, SEE "POT BEARING DETAILS" SHEET.
- FOR PILE SPLICE DETAILS, SEE END BENT 1.
- THE #5 V1 BARS SHALL BE PLACED 2" CLEAR FROM THE TOP OF THE BACKWALL.



ELEVATION

BRIDGE SEAT DETAIL  
(TYP. AT EA. LOCATION)

TOP OF PILE ELEVATIONS			
1	EL. 721.811	5	EL. 723.888
2	EL. 722.331	6	EL. 724.407
3	EL. 722.850	7	EL. 724.927
4	EL. 723.369	8	EL. 725.446



PROJECT NO. R-2612A  
GUILFORD COUNTY  
 STATION: 69+69.82 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT 2

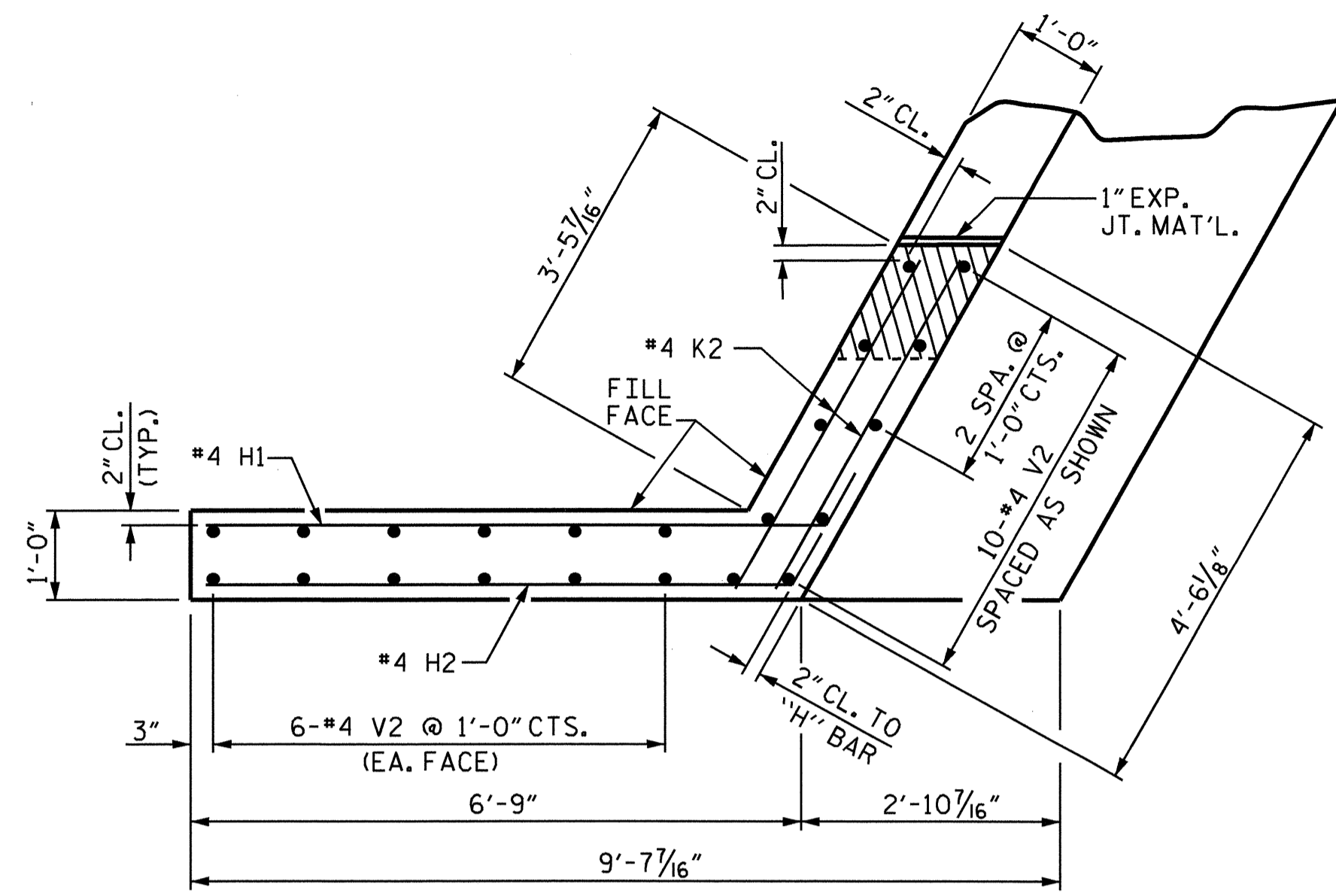
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

S-34  
 TOTAL SHEETS  
 39

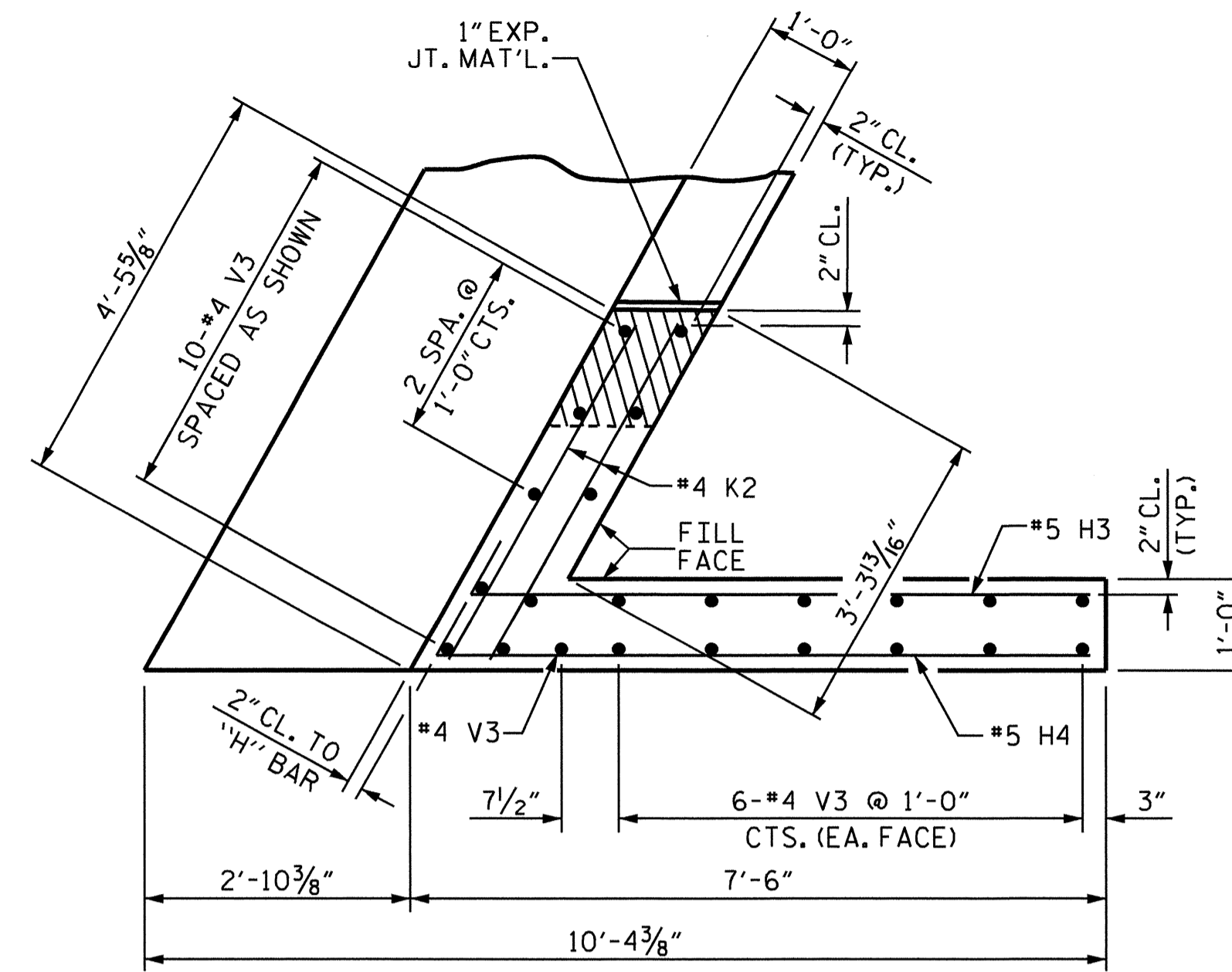
DRAWN BY: W.D. CRUTCHER DATE: 06/10  
 CHECKED BY: A.S. CALLAWAY DATE: 6-15-10

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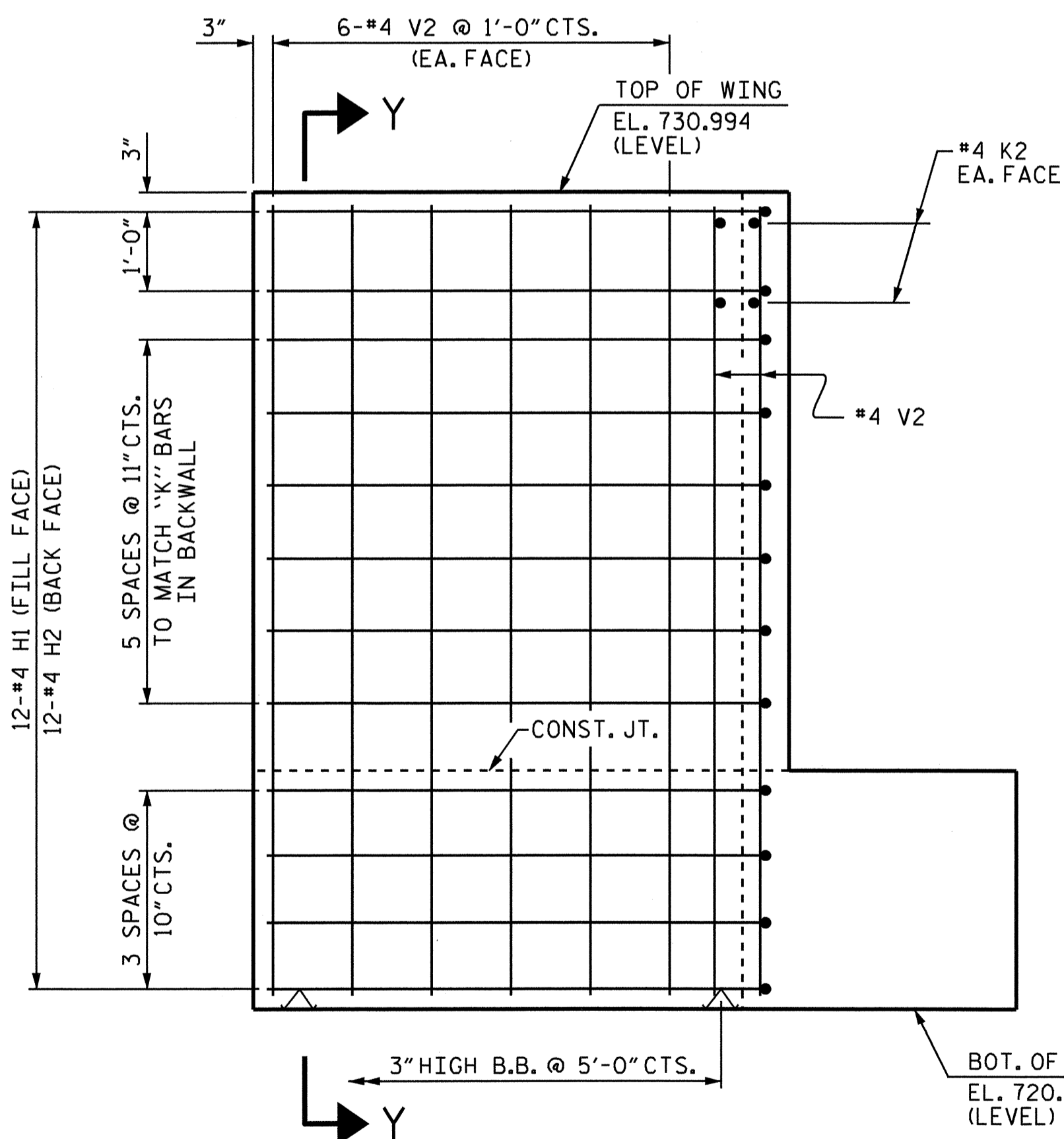
STR. #1



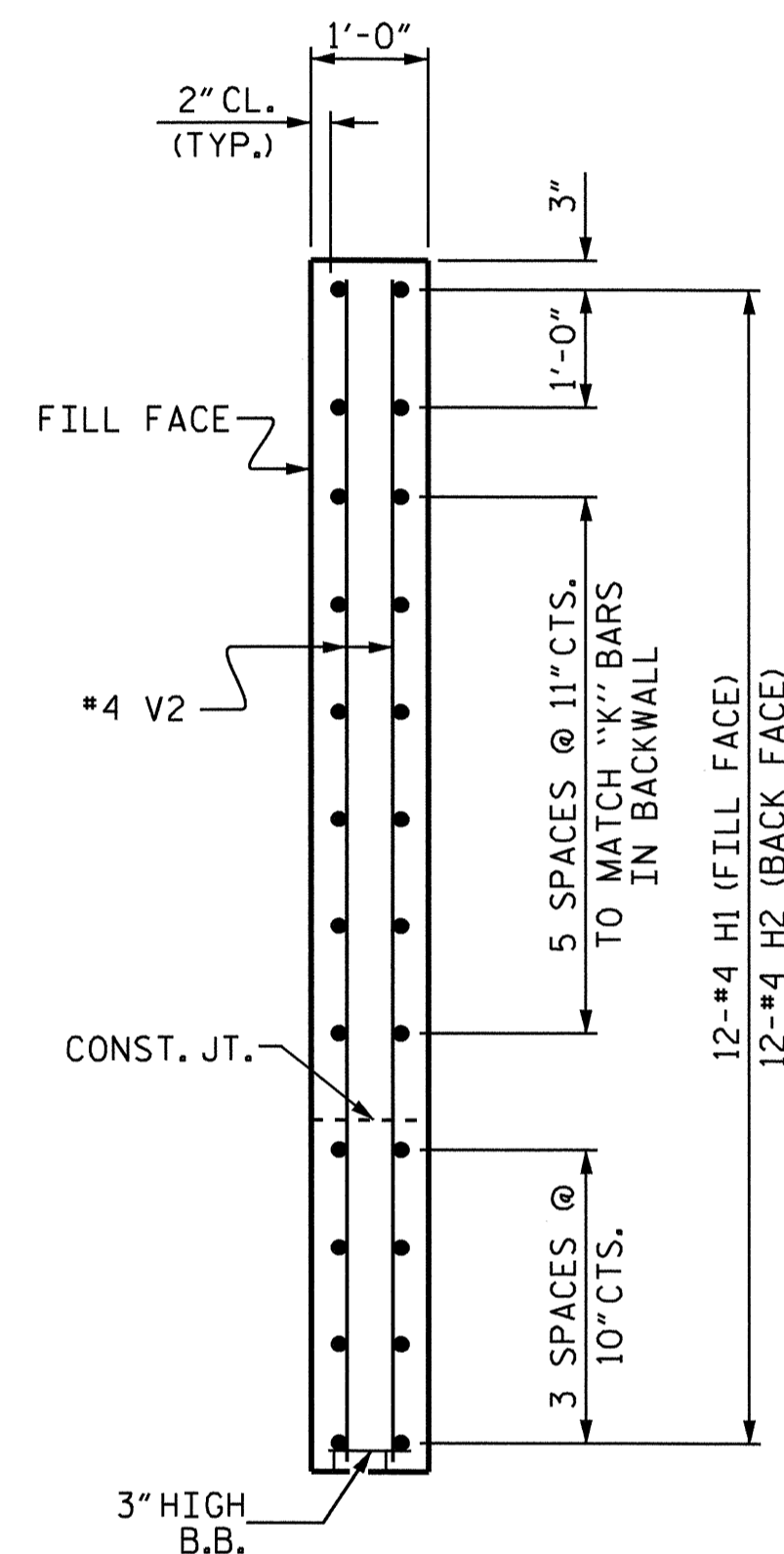
PLAN OF WING - W1



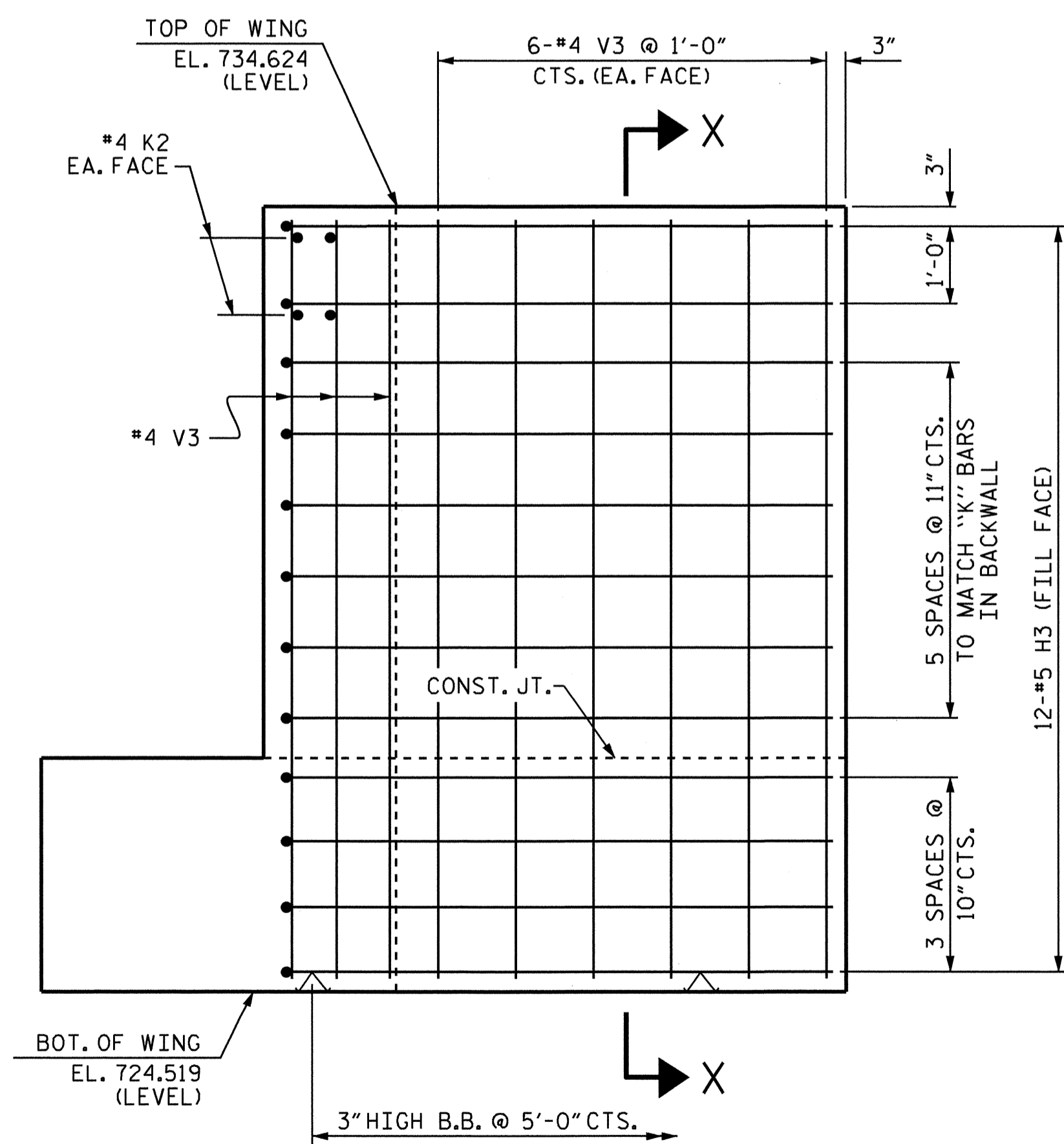
PLAN OF WING - W2



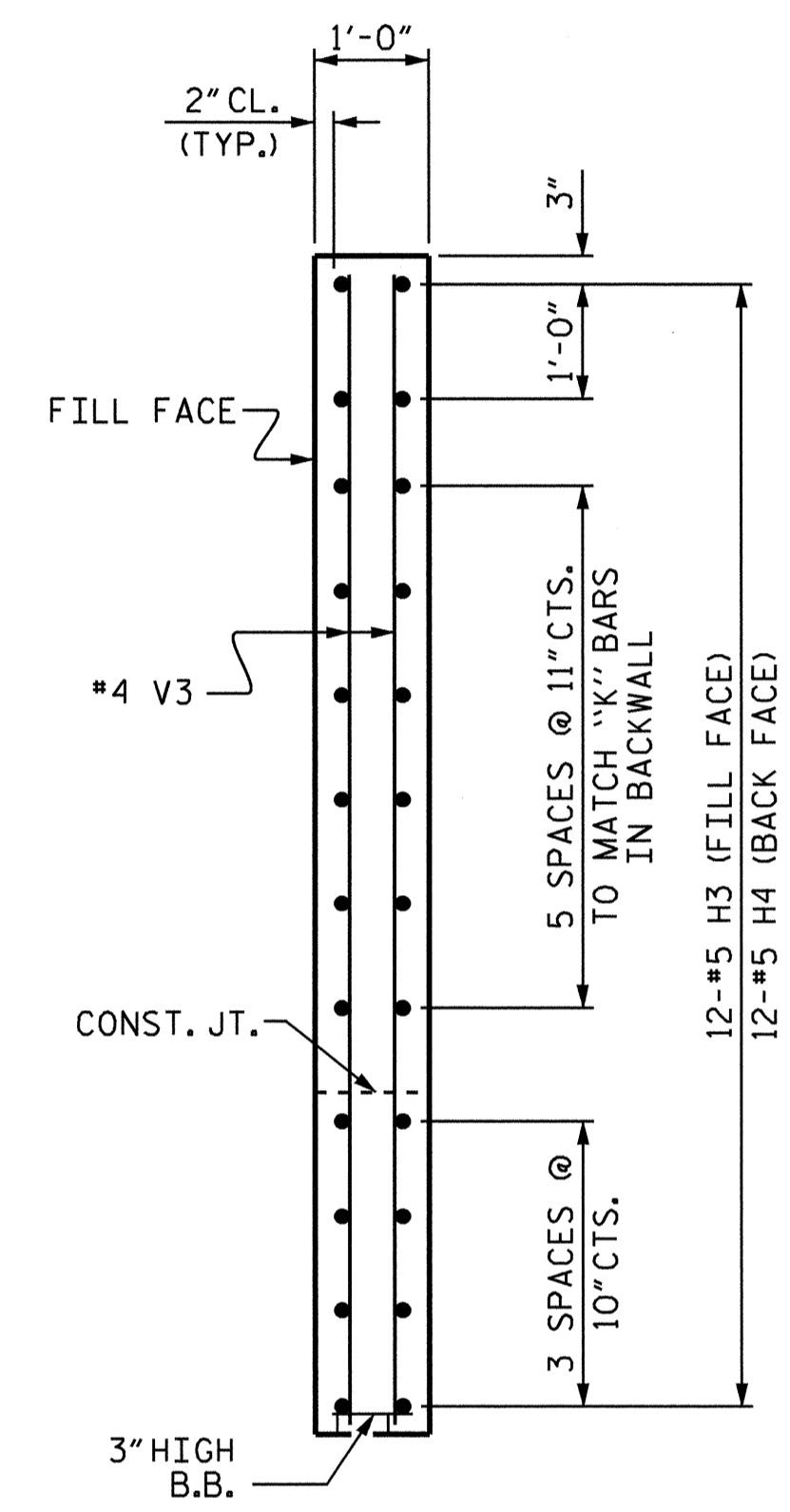
ELEVATION OF WING - W1



SECTION Y-Y



ELEVATION OF WING - W2

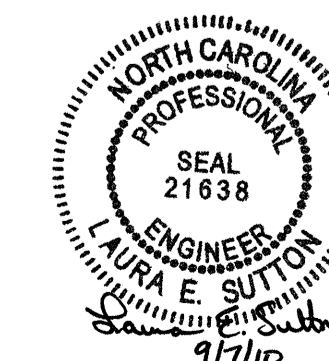


SECTION X-X

PROJECT NO. R-2612A  
 GUILFORD COUNTY  
 STATION: 69+69.82 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 Raleigh  
 SUBSTRUCTURE  
 END BENT 2



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-35
1			3			TOTAL SHEETS
2			4			39

DRAWN BY: W.D. CRUTCHER DATE: 06/10  
 CHECKED BY: A.S. CALLAWAY DATE: 6-15-10

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STR. #1

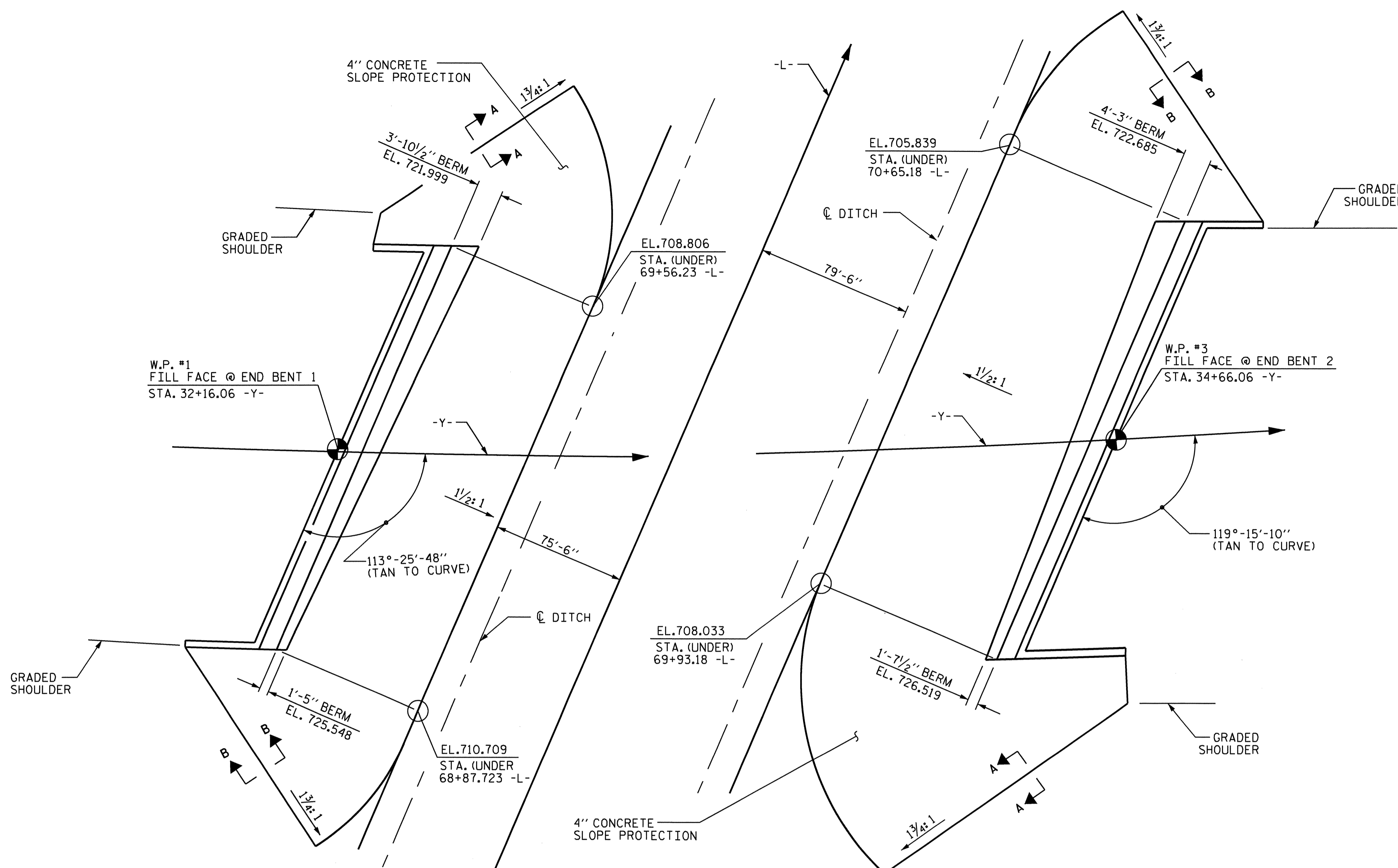




**NOTES**

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS.

SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60" WIDE. SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6". THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.

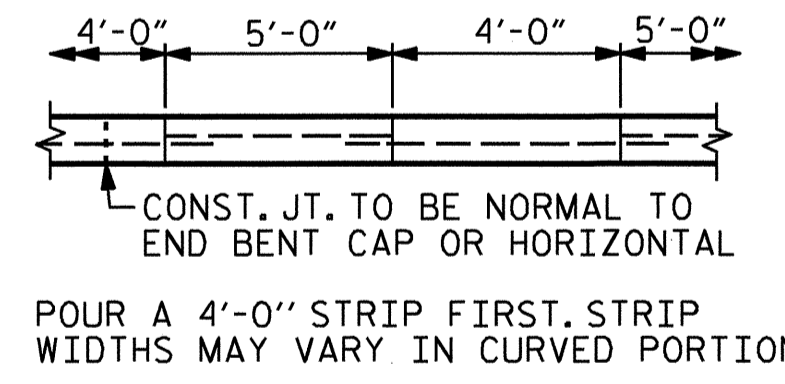
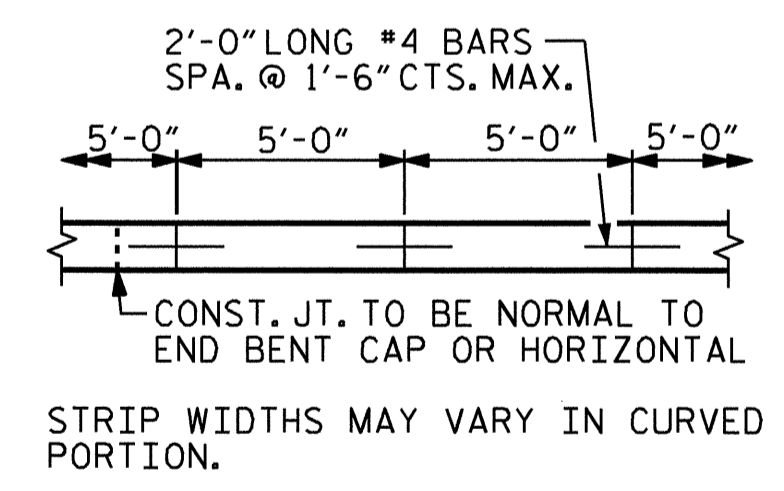
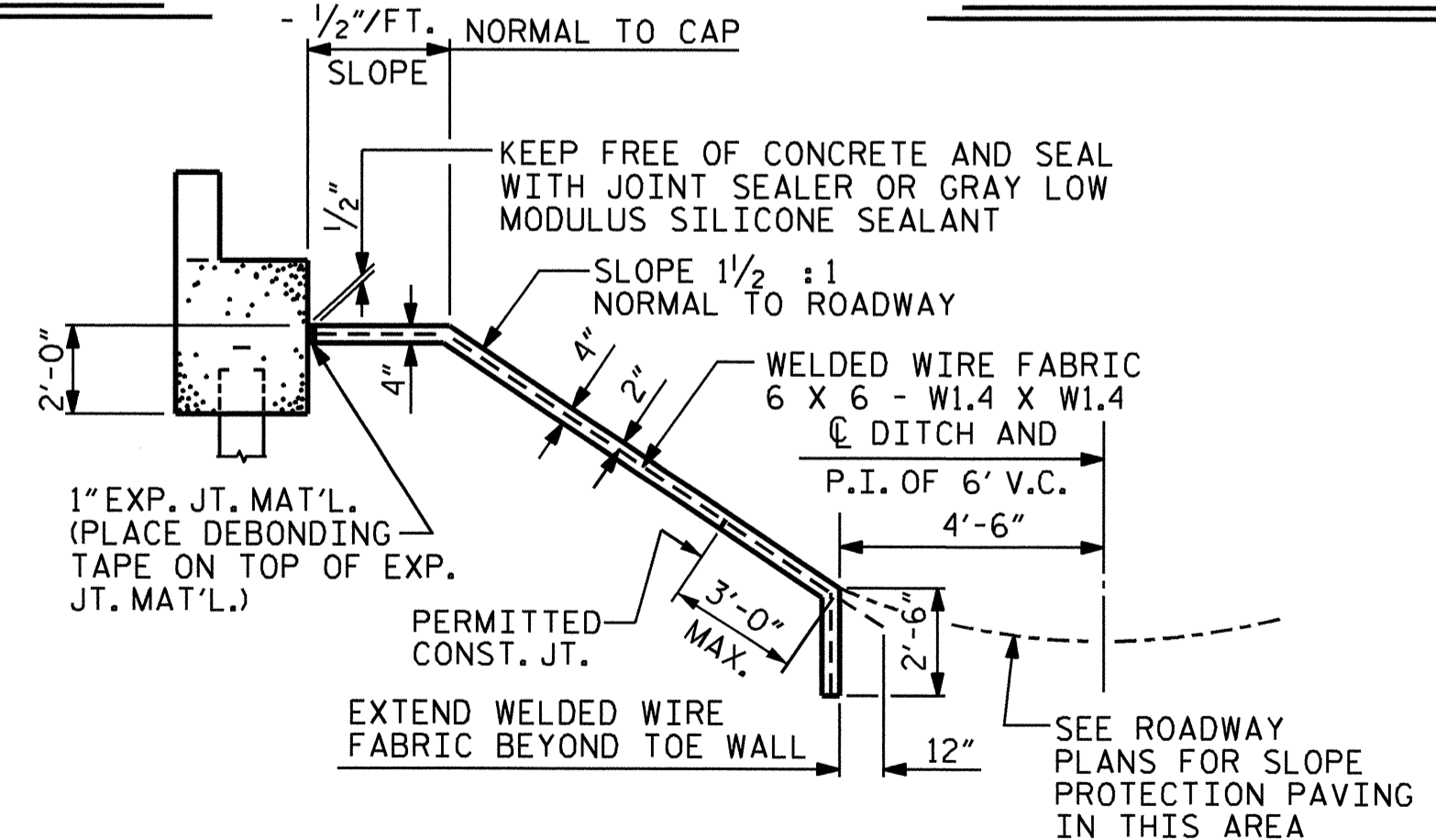


BRIDGE @ STA. 69+69.82 -L-	4" SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	331	662
END BENT 2	446	891

\* QUANTITY SHOWN IS BASED ON 5' POURS.

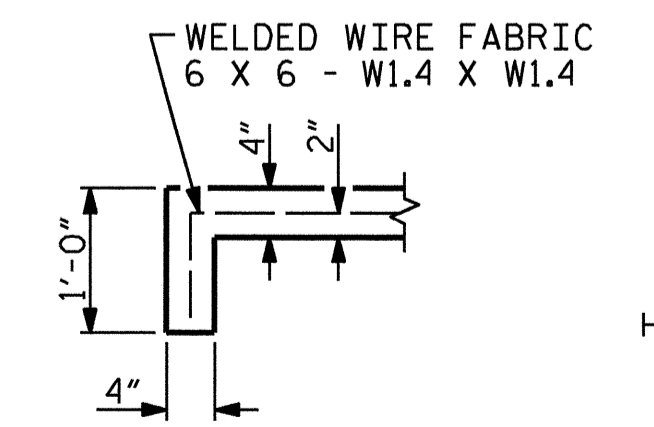
**AT END BENT 1**

**AT END BENT 2**

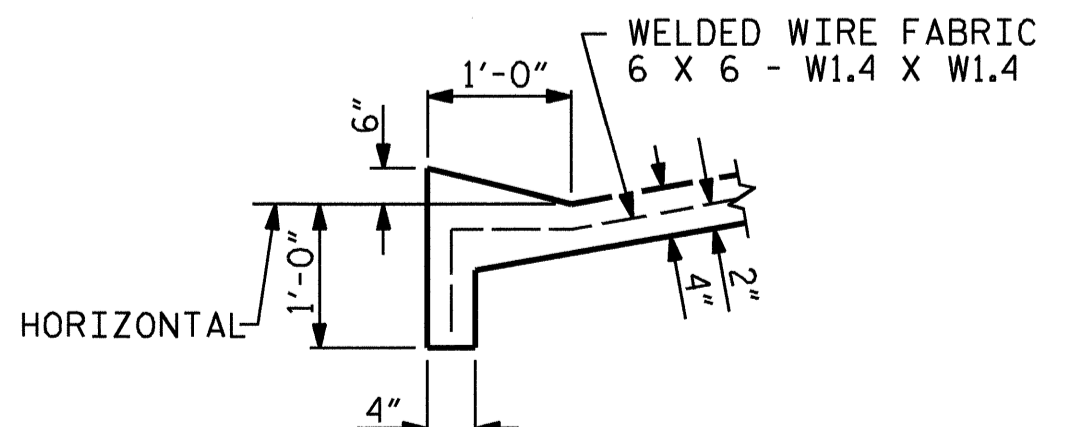


**POURING DETAIL**

**OPTIONAL POURING DETAIL**



**SECTION A-A**



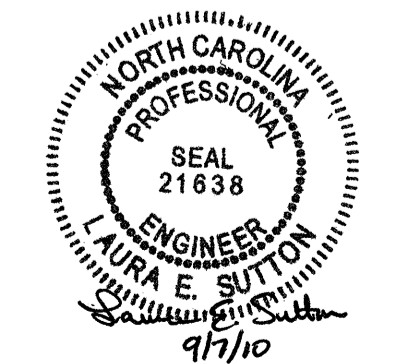
**SECTION B-B**

PROJECT NO. R-2612A  
GUILFORD COUNTY  
 STATION: 69+69.82 -L-

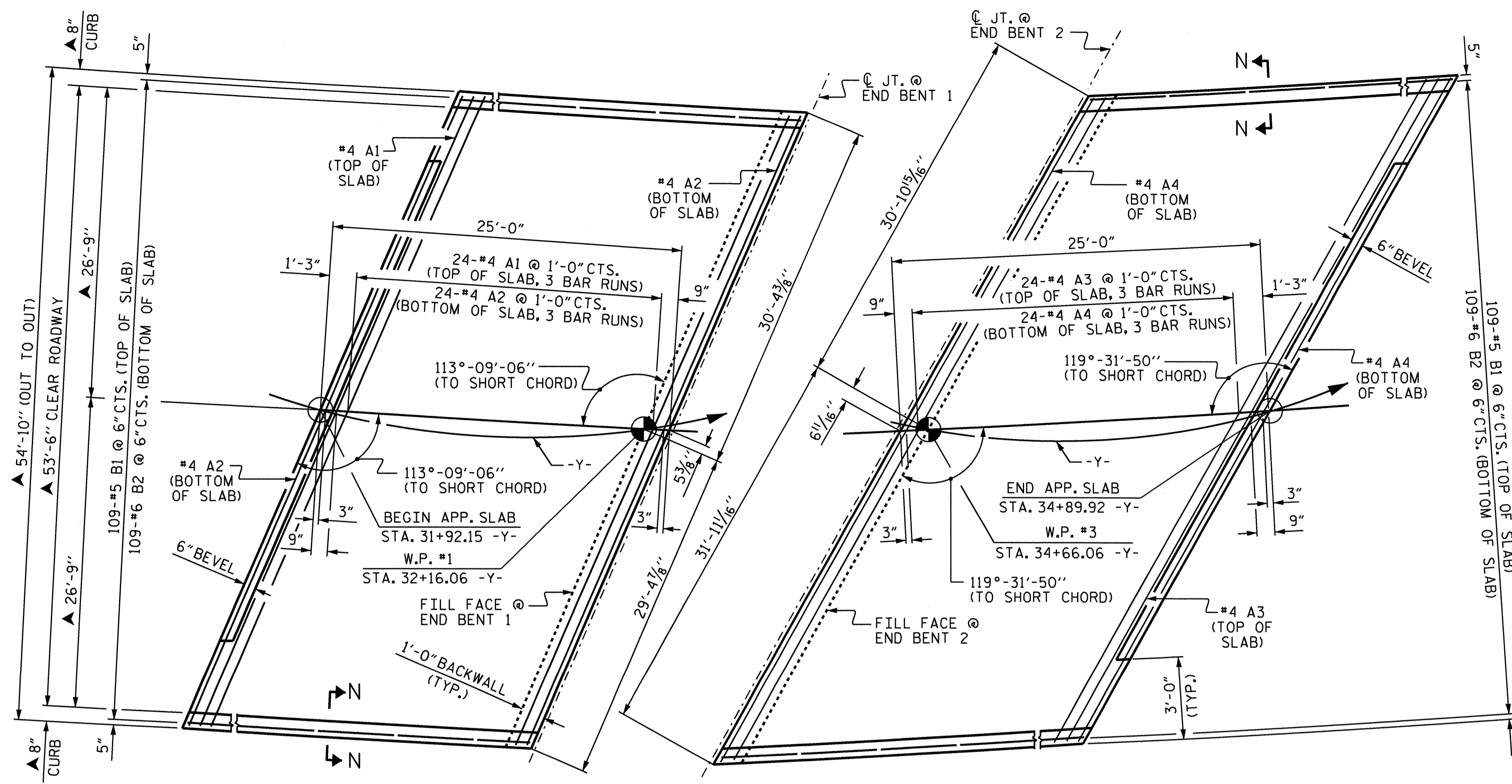
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**STANDARD  
 SLOPE PROTECTION  
 DETAILS**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-37
1			3			TOTAL SHEETS
2			4			39



ASSEMBLED BY : S. M. RASHIDI DATE : 8/28/09  
 CHECKED BY : A. S. CALLAWAY DATE : 10/21/09  
 DRAWN BY : ELR 5/92 REV. 7/10/01 LES/RDR  
 CHECKED BY : GRP 6/92 REV. 5/7/03 RWW/JTE  
 REV. 5/1/06 TLA/GM

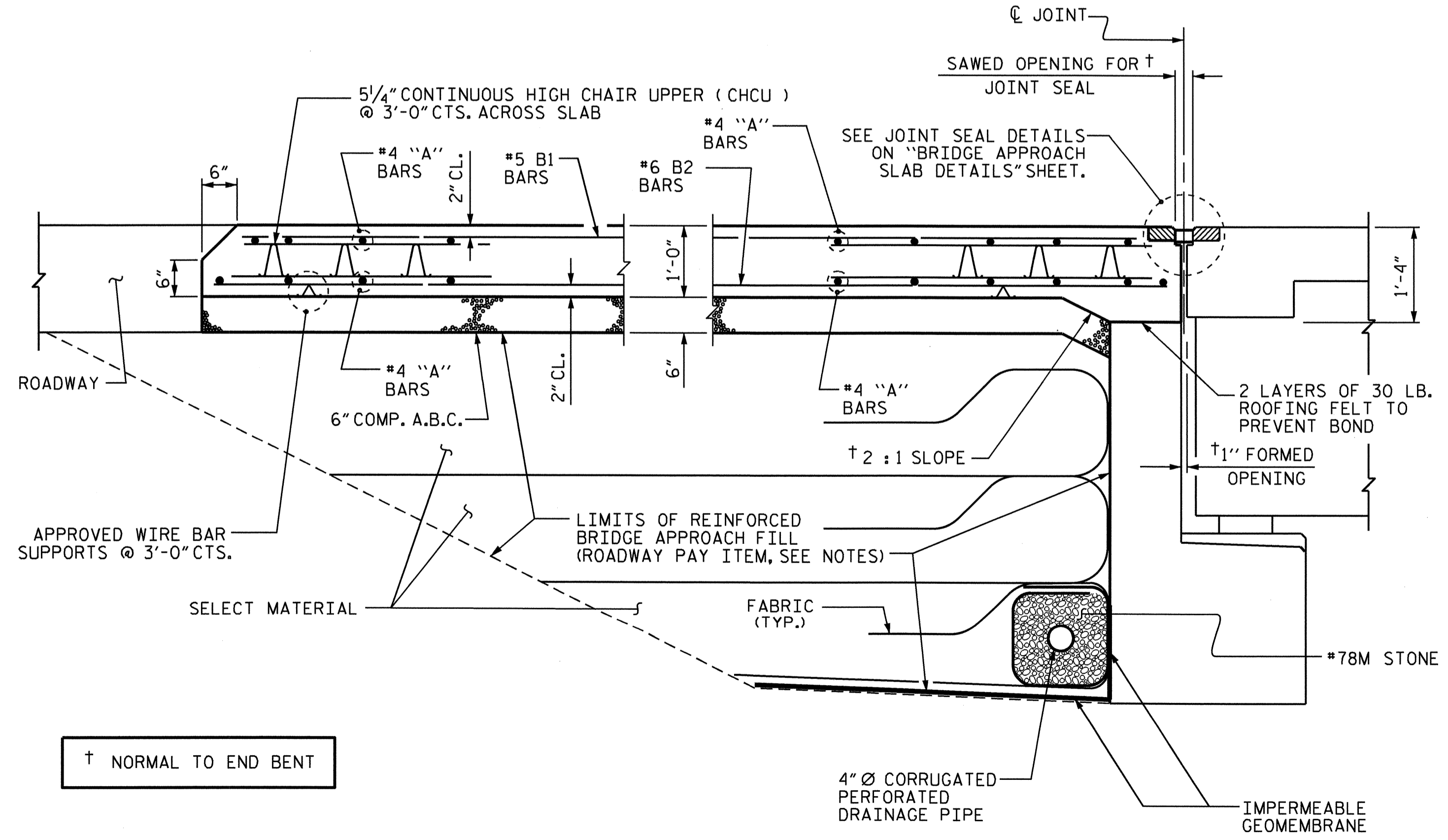


PLAN @ END BENT 1

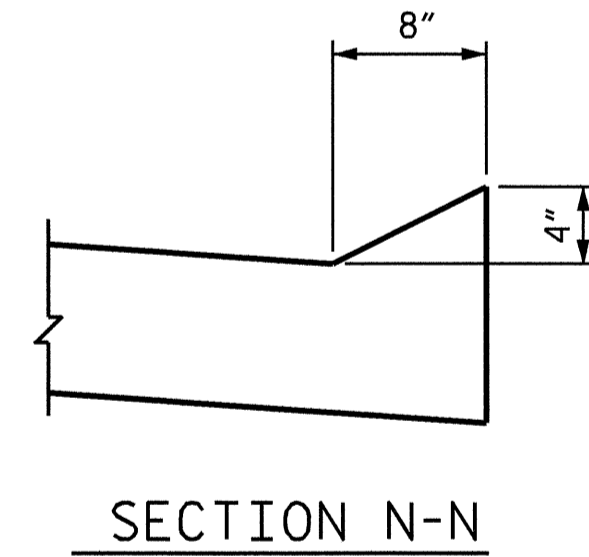
PLAN @ END BENT 2

▲ RADIAL DIMENSIONS

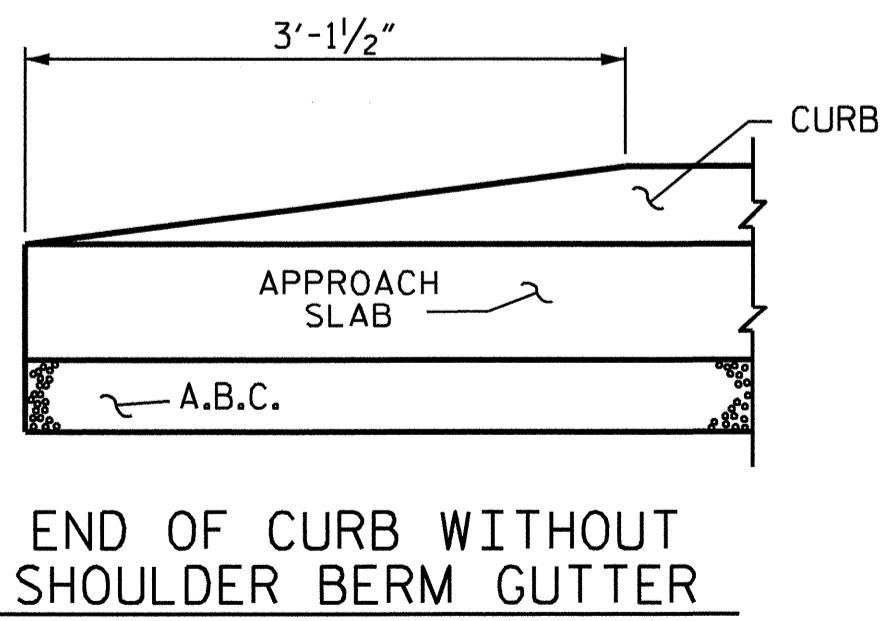
NOTE:  
FOR ARC OFFSETS  
(SEE SHEET 2 OF 2)



SECTION THRU SLAB



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

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 CONCRETE BARRIER RAIL.

FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

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

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

FOR DETAILS OF CONCRETE MEDIAN ON APPROACH SLABS, SEE "CONCRETE MEDIAN" SHEET.

BILL OF MATERIAL

APPROACH SLAB AT EB 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	75	#4	STR	21'-1"	1056
A2	78	#4	STR	20'-11"	1090
*B1	109	#5	STR	23'-10"	2710
B2	109	#6	STR	24'-7"	4025

REINFORCING STEEL	LBS.	5115
*EPOXY COATED REINFORCING STEEL	LBS.	3766

CLASS AA CONCRETE SLAB & CURB	C. Y.	56.0
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APPROACH SLAB AT EB 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A3	75	#4	STR	22'-2"	1111
A4	78	#4	STR	22'-0"	1146
*B1	109	#5	STR	23'-10"	2710
B2	109	#6	STR	24'-7"	4025

REINFORCING STEEL	LBS.	5171
*EPOXY COATED REINFORCING STEEL	LBS.	3821

CLASS AA CONCRETE SLAB & CURB	C. Y.	59.1
-------------------------------	-------	------

ASSEMBLED BY : S. M. RASHIDI DATE : 8/21/09  
 CHECKED BY : A. S. CALLAWAY DATE : 9/10/09  
 DRAWN BY : EEM 3/95  
 CHECKED BY : VAP 3/95

REV. 7/10/01 LES/RDR  
 REV. 5/7/03R RWW/JTE  
 REV. 5/1/06R KMM/GM

07-SEP-2010 11:53  
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PROJECT NO. R-2612A  
 GUILFORD COUNTY  
 STATION: 69+69.82 -L-

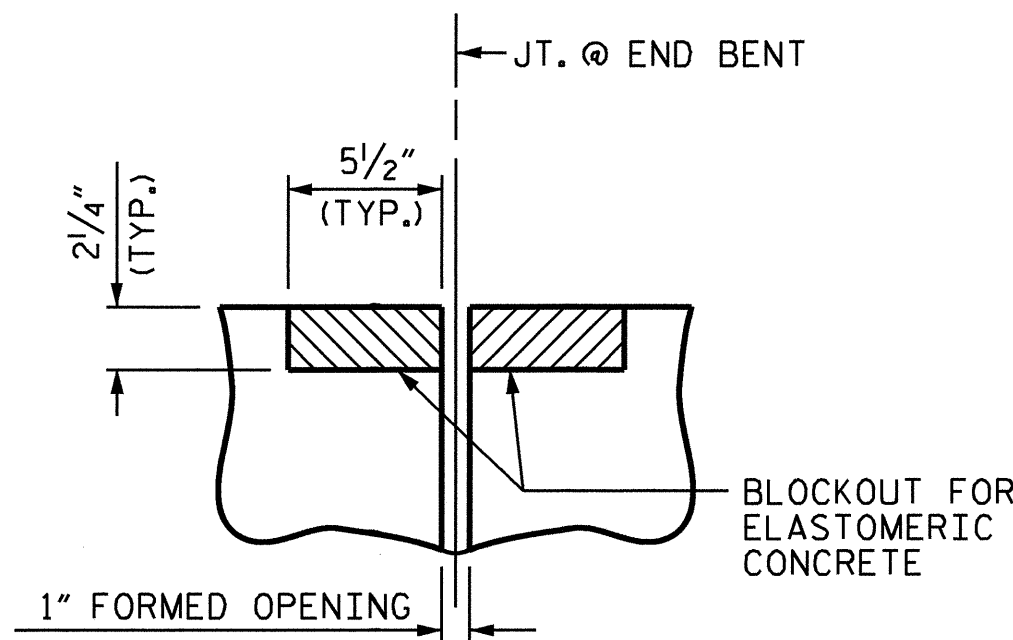
SHEET 1 OF 2  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 BRIDGE APPROACH  
 SLAB FOR  
 FLEXIBLE PAVEMENT

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

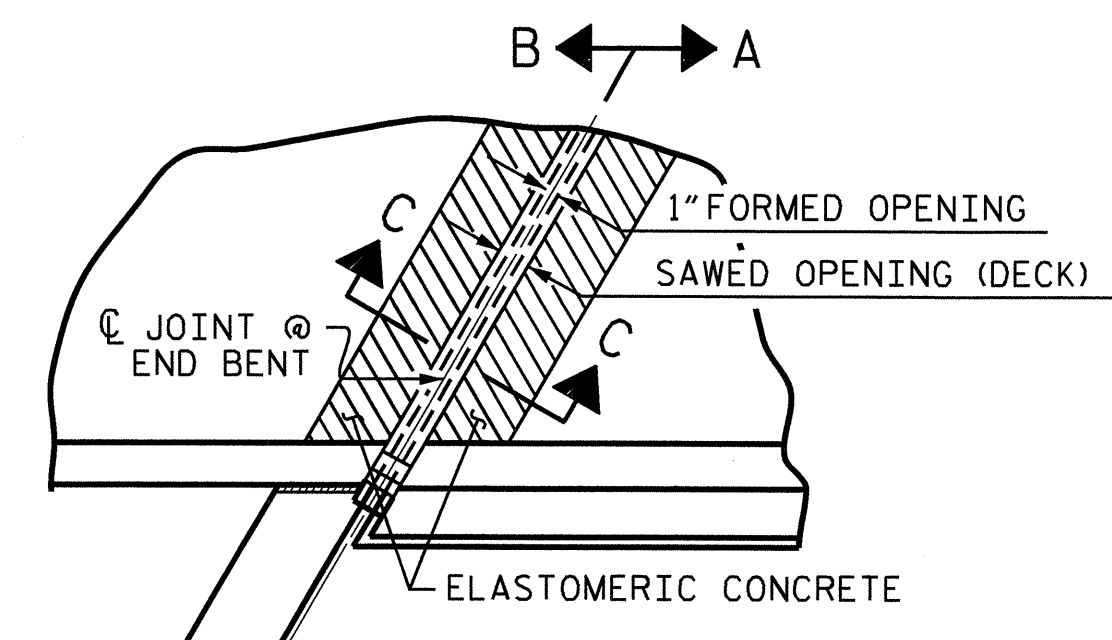
TOTAL SHEETS: 39

STR. #1 STD. NO. BAS4

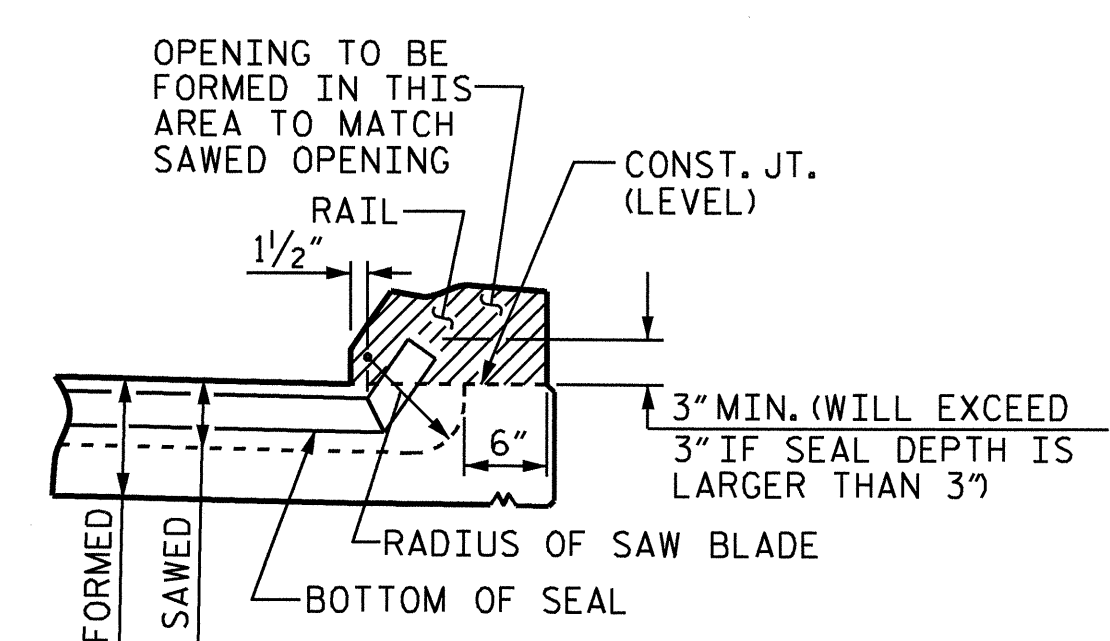




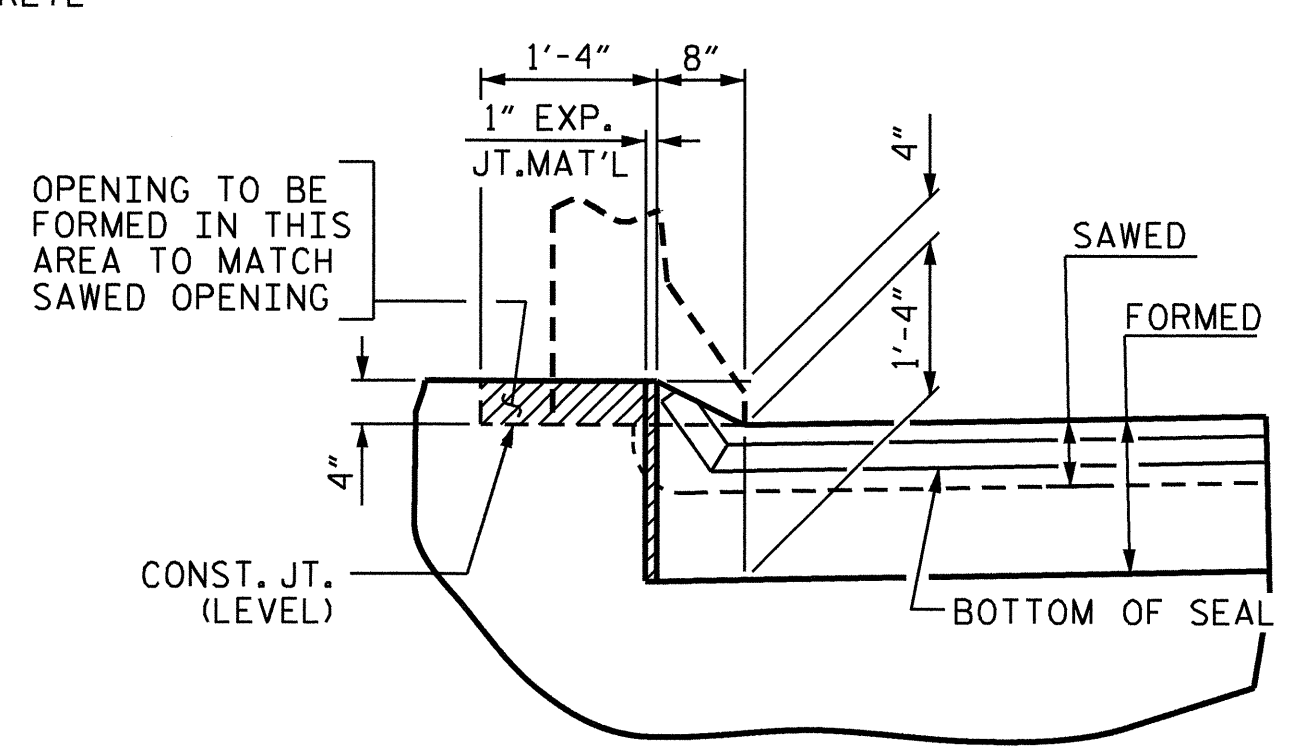
**SECTION C-C**  
EVAZOTE JOINT SEAL  
(PRE-SAWED ELASTOMERIC  
CONCRETE DIMENSIONS)



**PLAN**



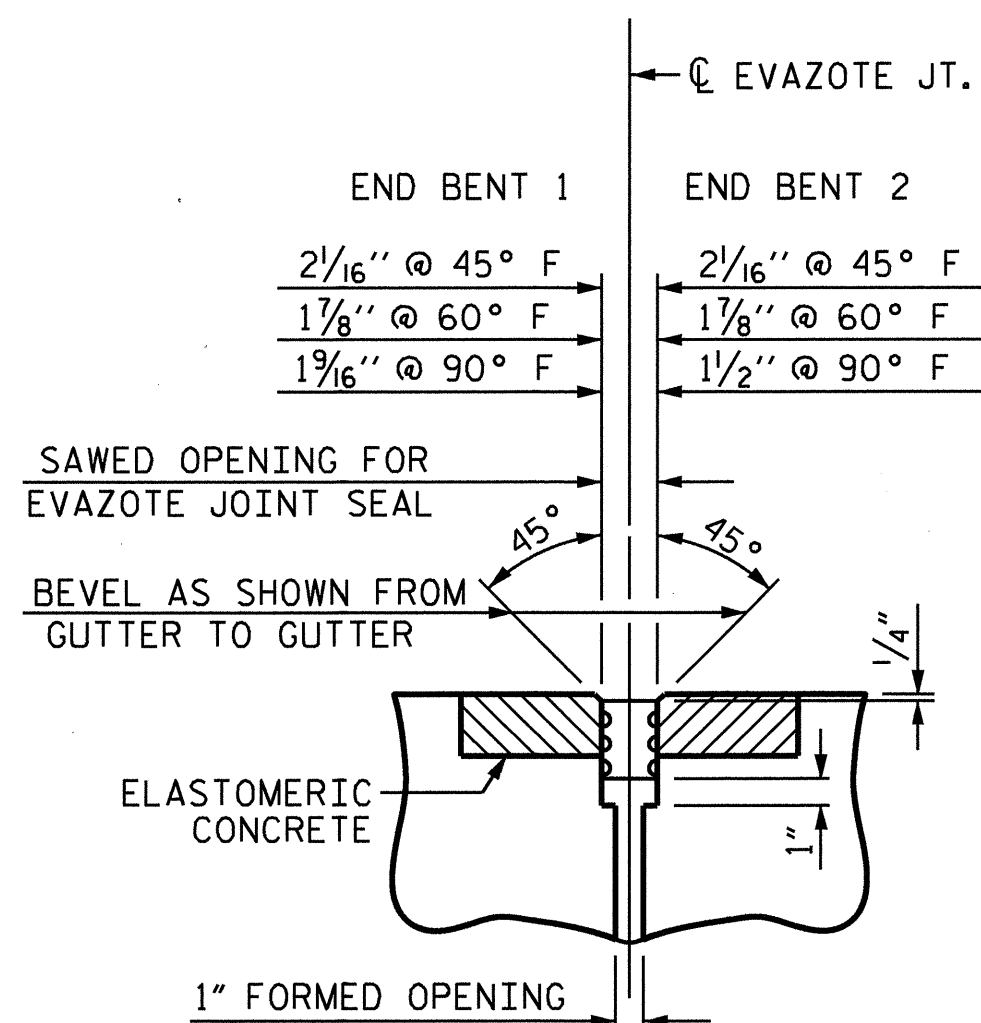
**SECTION A-A**



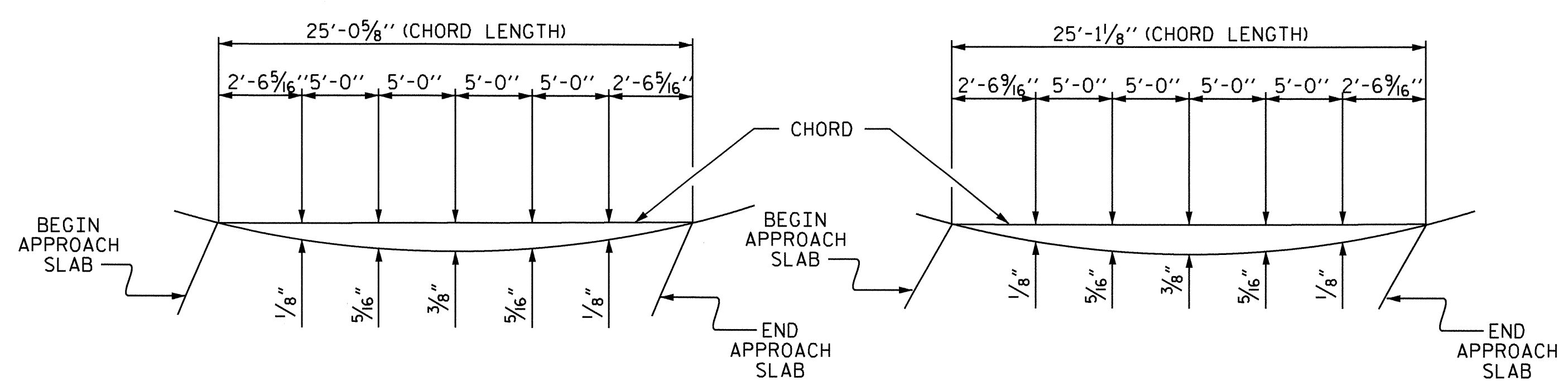
**SECTION B-B**

**JOINT SEAL DETAILS @ END BENT**

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

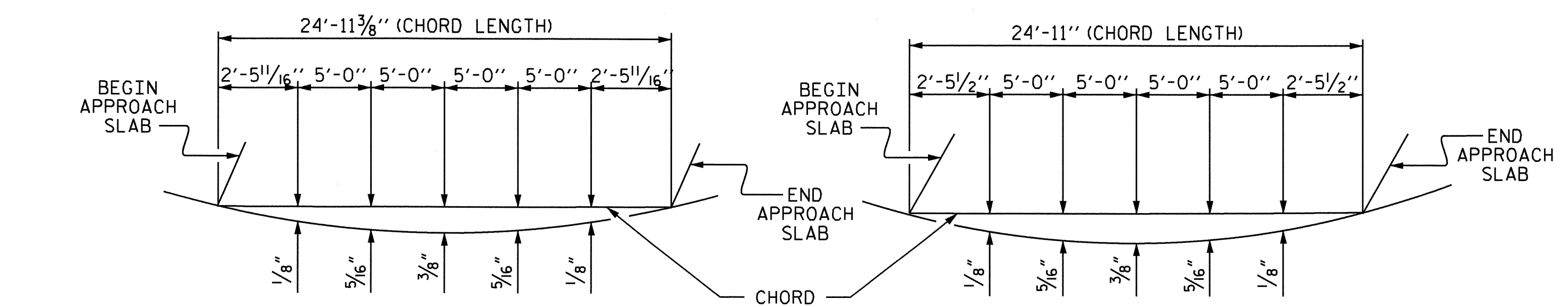


**SECTION C-C**  
EVAZOTE JOINT SEAL  
(EXPANSION)



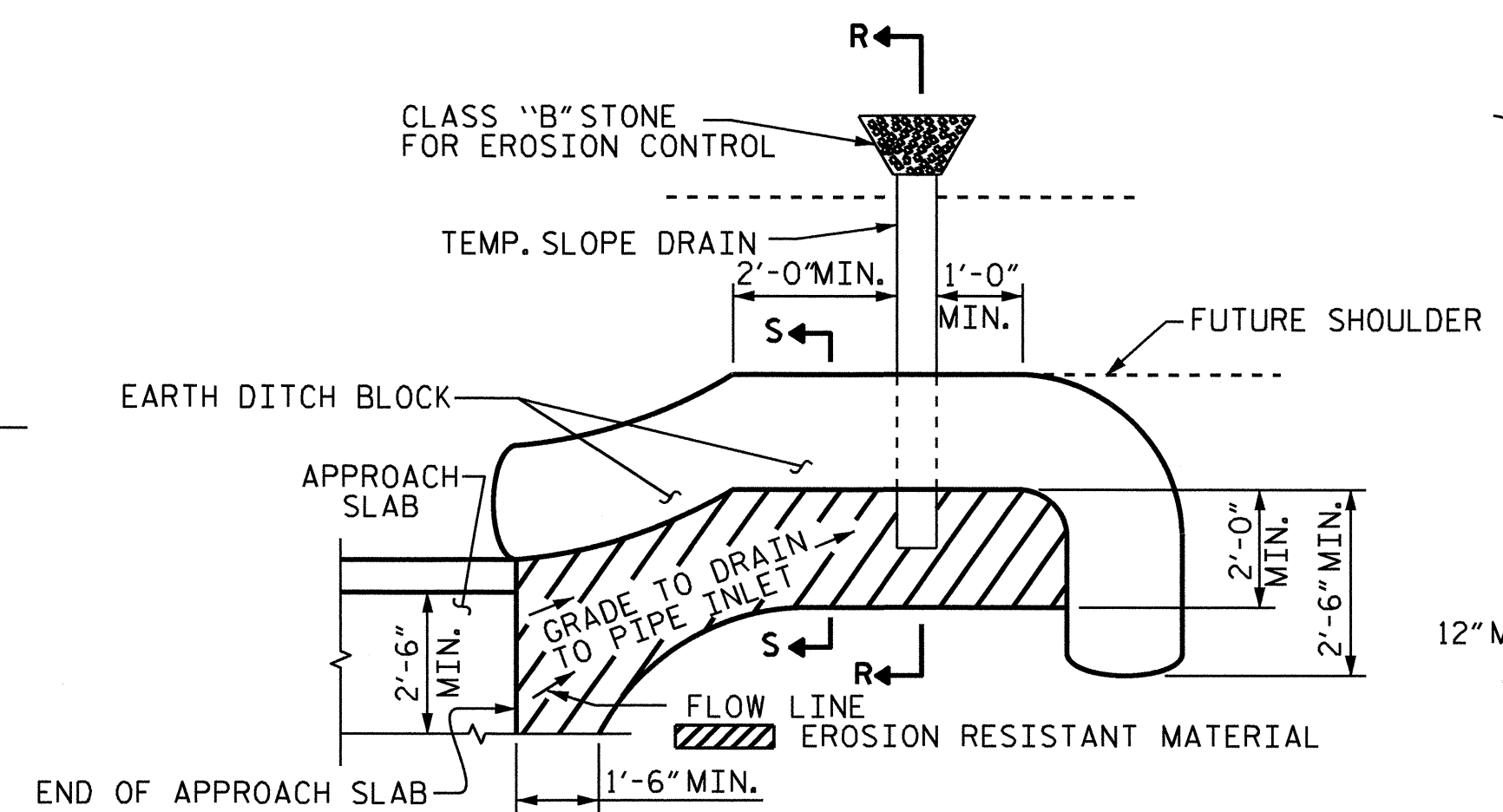
**LEFT SIDE ARC OFFSET**  
(AT END BENT 1)

**LEFT SIDE ARC OFFSET**  
(AT END BENT 2)



**RIGHT SIDE ARC OFFSET**  
(AT END BENT 1)

**RIGHT SIDE ARC OFFSET**  
(AT END BENT 2)

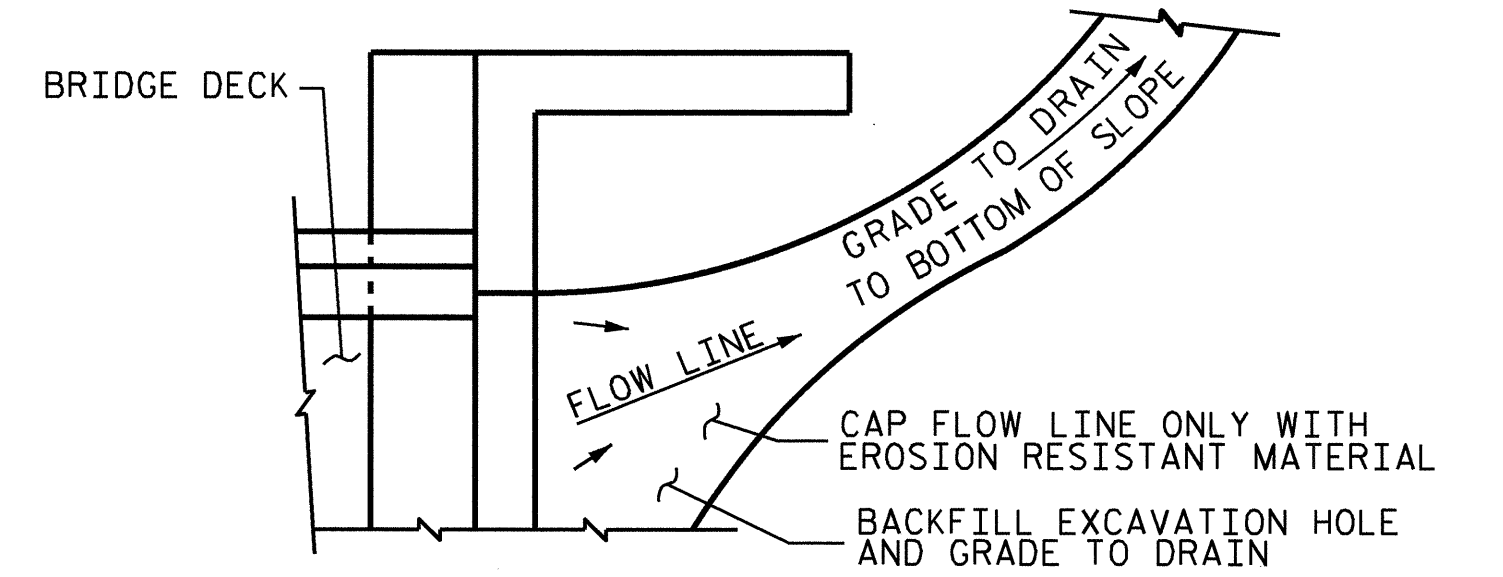
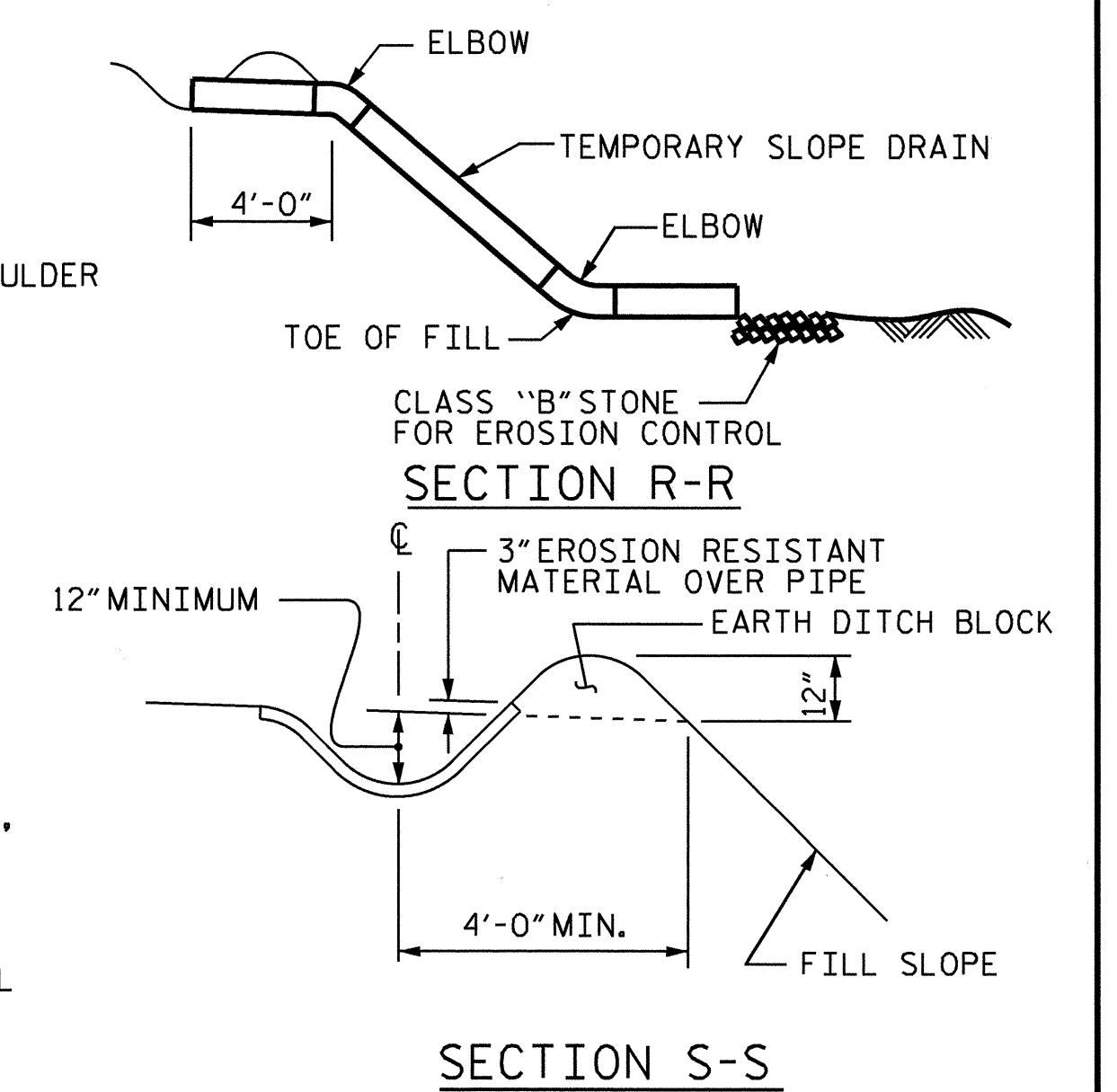


**PLAN VIEW**

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

**TEMPORARY BERM AND SLOPE DRAIN DETAILS**

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

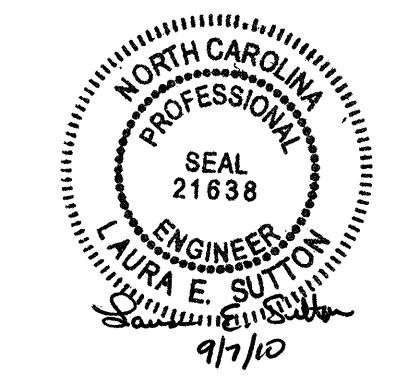
**TEMPORARY DRAINAGE DETAIL**

ELASTOMERIC CONCRETE	
END BENT	ELASTOMERIC CONCRETE * (CU. FT.)
1	10.0
2	10.5
TOTAL	20.5

\* BASED ON THE MINIMUM BLOCKOUT SHOWN.

ASSEMBLED BY : S. M. RASHIDI DATE : 8/21/09  
CHECKED BY : A. S. CALLAWAY DATE : 9/10/09  
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

07-SEP-2010 09:01  
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lsutton



PROJECT NO. R-2612A  
GUILFORD COUNTY  
STATION: 69+69.82 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					SHEET NO.
STANDARD BRIDGE APPROACH SLAB DETAILS					S-39
REVISIONS					TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					39

STR. #1 **STD. NO. BAS10**

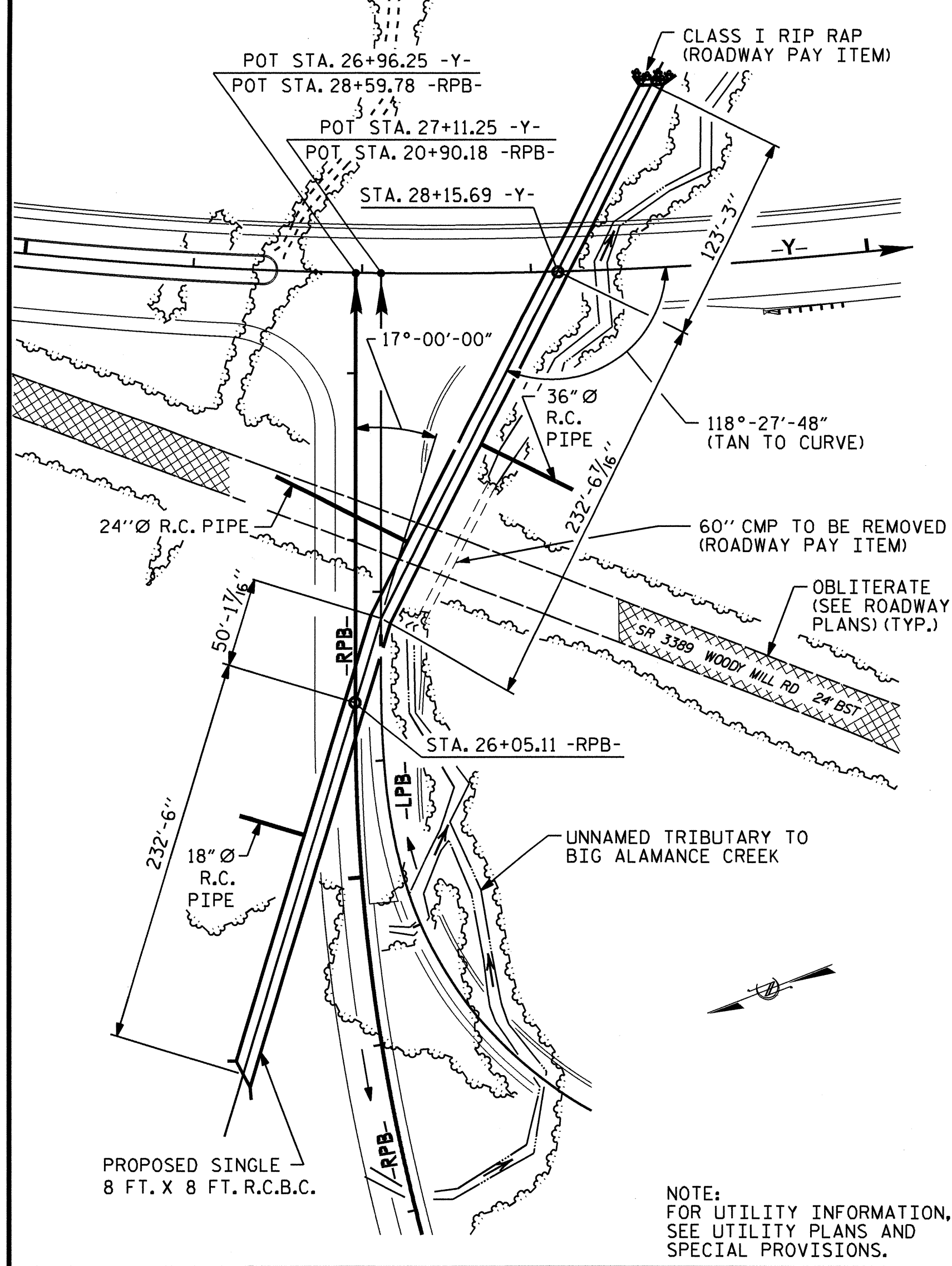


HYDRAULIC DATA	
DESIGN DISCHARGE	= 440 CFS
FREQUENCY OF DESIGN FLOOD	= 50 YEARS
DESIGN HIGH WATER ELEVATION	= 702.18
DRAINAGE AREA	= 0.28 SQ. MI..
BASIC DISCHARGE (Q100)	= 500 CFS
BASIC HIGH WATER ELEVATION	= 702.86
OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE	= 3500 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 500+ YEARS
OVERTOPPING FLOOD ELEVATION	= 732.13
ROADWAY DATA	
GRADE POINT ELEV. @ STATION 26+05.11 -RPB-	= 730.38
BED ELEV. @ STATION 26+05.11 -RPB-	= 688.20
ROADWAY SLOPES	= 2 : 1

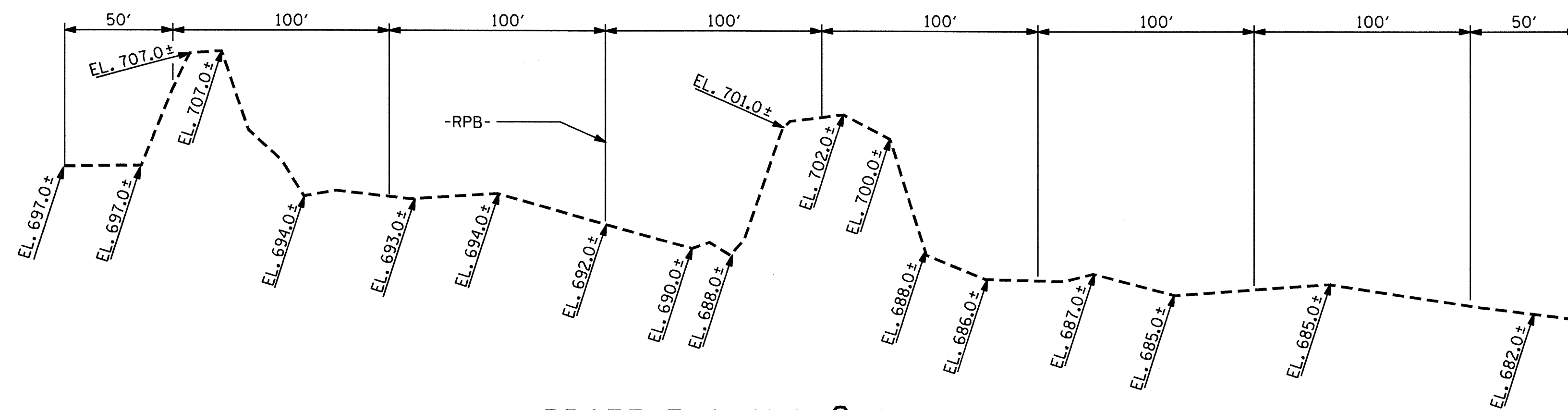
STRUCTURE QUANTITIES		
CLASS A CONCRETE		
BARREL @ 1.220 CY/FT	CU. YDS.	778.9
SILLS	CU. YDS.	11.1
INLET WINGS, ETC.	CU. YDS.	15.8
OUTLET WINGS, ETC.	CU. YDS.	13.2
TOTAL	CU. YDS.	819.0
REINFORCING STEEL		
BARREL & SILLS	LBS.	125,323
INLET WINGS, ETC.	LBS.	941
OUTLET WINGS, ETC.	LBS.	833
TOTAL	LBS.	127,097
FOUNDATION COND. MAT'L.	TONS	420
CULVERT EXCAVATION	LUMP SUM	

NOTES

- ASSUMED LIVE LOAD HS20-44 OR ALTERNATE LOADING.
- DESIGN FILL = 36.5'.
- FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.
- 3" Ø WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.
- CONCRETE IN CULVERTS TO BE POURED IN THE FOLLOWING ORDER:
  1. WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.
  2. THE REMAINING PORTIONS OF THE WALLS AND WINGS FULL HEIGHT FOLLOWED BY ROOF SLAB AND HEADWALLS.
- THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.
- DIMENSIONS FOR WING LAYOUT AS WELL AS ADDITIONAL REINFORCING STEEL EMBEDDED IN BARREL ARE SHOWN ON WING SHEET.
- TRANSVERSE CONSTRUCTION JOINTS SHALL BE USED IN THE BARREL, SPACED TO LIMIT THE POURS TO A MAXIMUM OF 70 FT. LOCATION OF JOINTS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER.
- AT THE CONTRACTOR'S OPTION, HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF EXTERIOR WALL ABOVE LOWER WALL CONSTRUCTION JOINT. THE SPLICE LENGTH SHALL BE AS PROVIDED IN THE SPLICE LENGTH CHART SHOWN ON THE PLANS. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.
- FOR CULVERT DIVERSION DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.
- A 3 FOOT STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- 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.
- NO PRECAST REINFORCED BOX CULVERT OPTION WILL BE ALLOWED.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

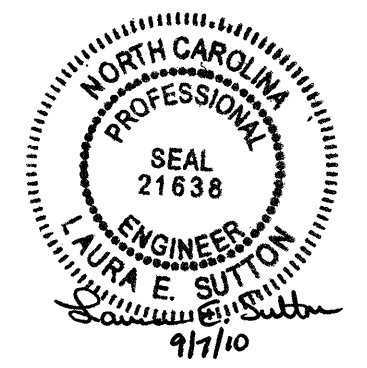


LOCATION SKETCH



DRAWN BY : D.R. WITHROW DATE : 03/04/10  
 CHECKED BY : T.L. CLELLAND DATE : 6/28/10

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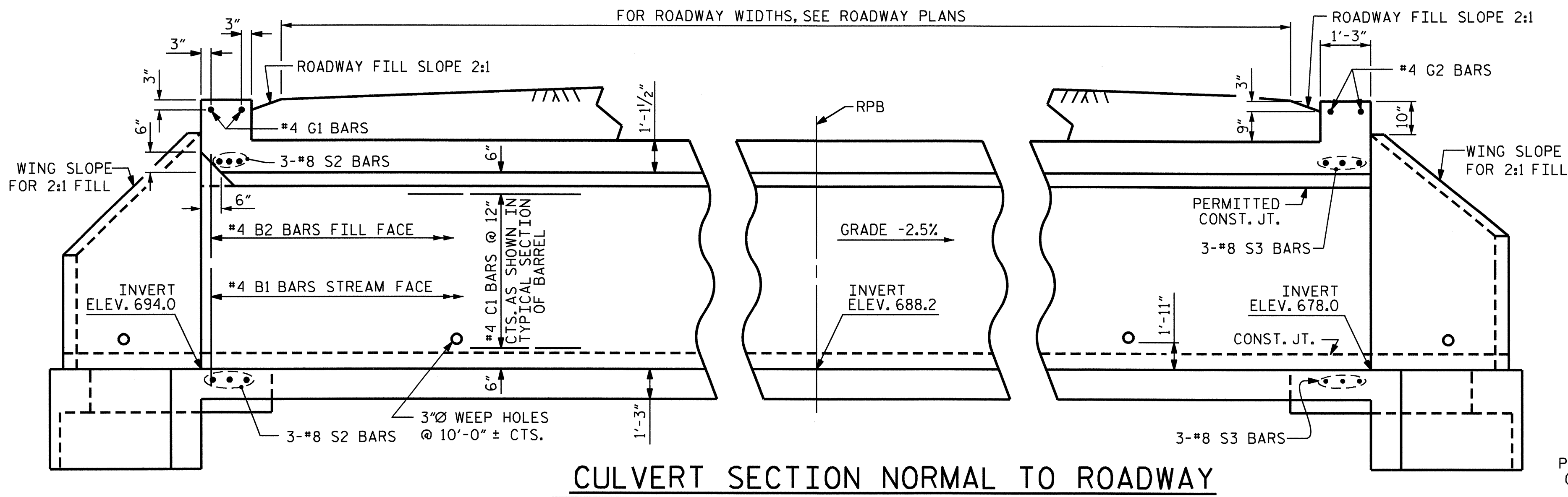
PROJECT NO. R-2612A  
 GUILFORD COUNTY  
 STATION: 26+05.11 -RPB-

SHEET 1 OF 6

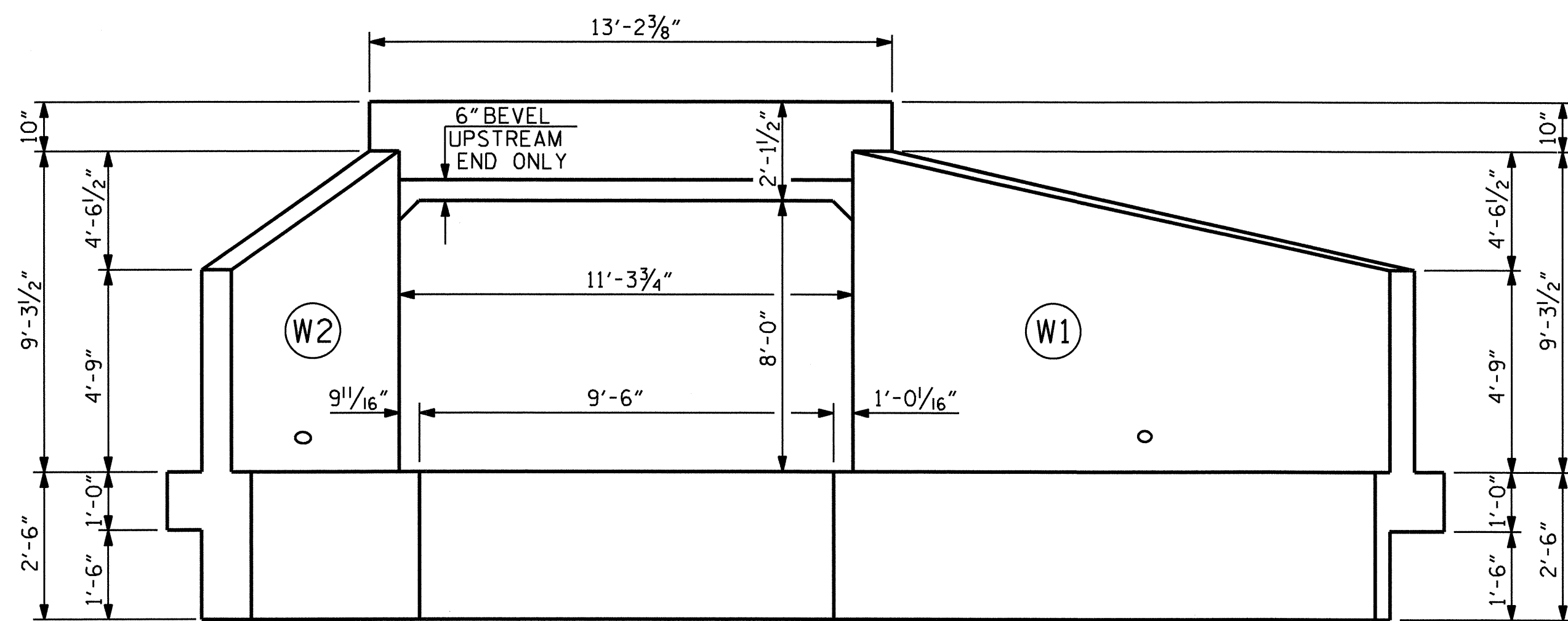
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BARREL STANDARD  
 SINGLE 8 FT. X 8 FT.  
 CONCRETE BOX CULVERT  
 17° SKEW

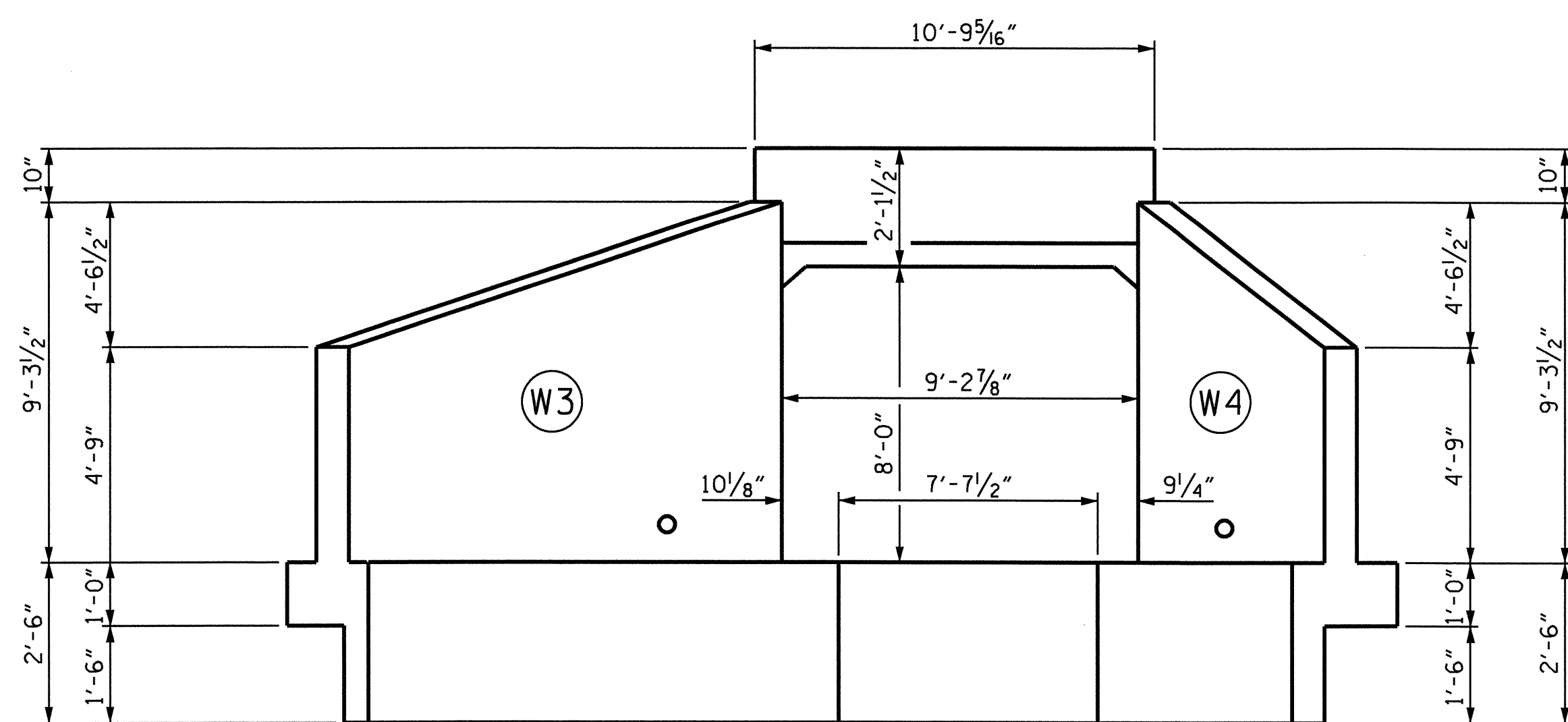
REVISIONS				SHEET NO.		
NO.	BY:	DATE:	NO.	BY:	DATE:	C-1
1			3			TOTAL SHEETS
2			4			6



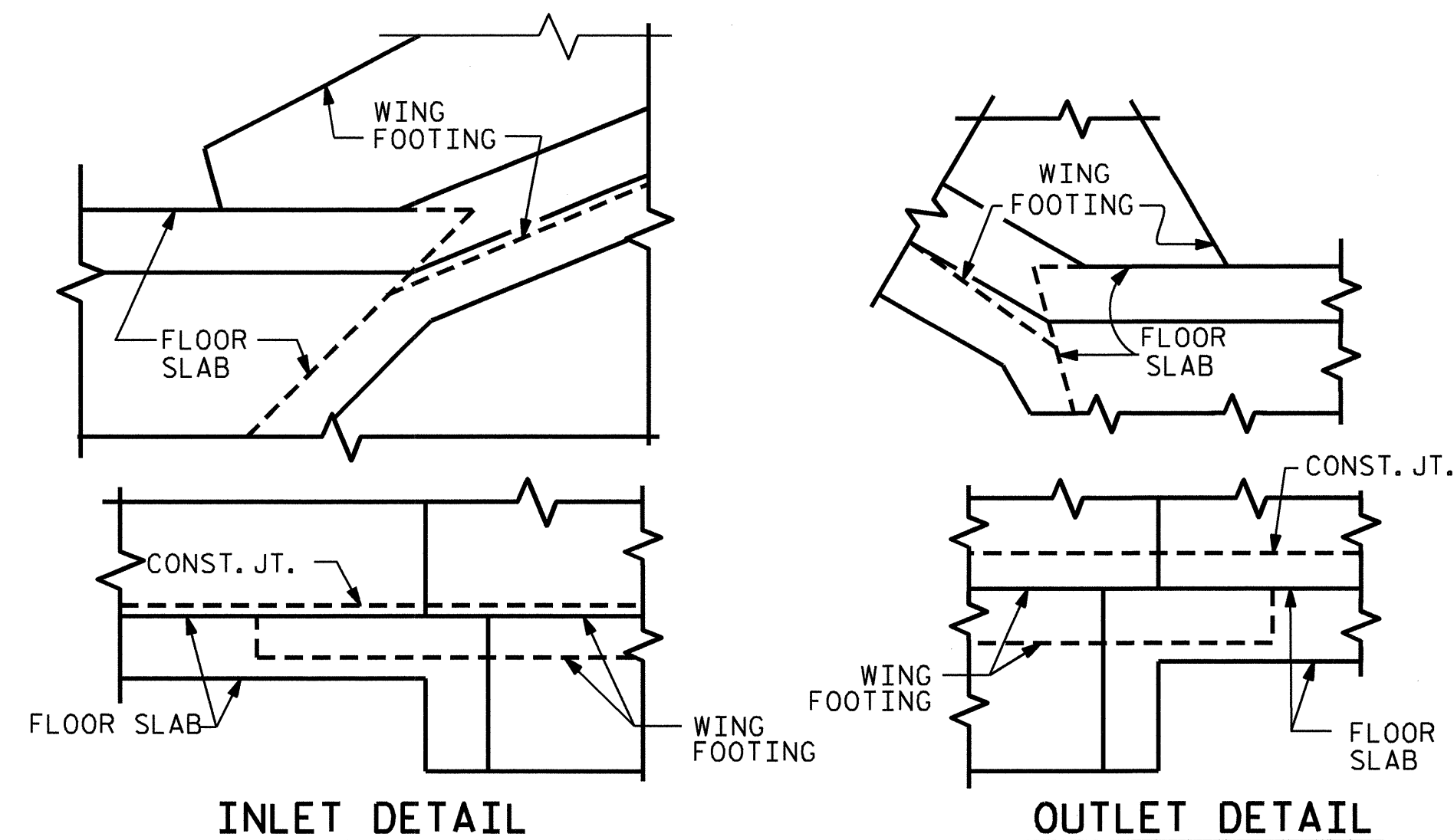
**CULVERT SECTION NORMAL TO ROADWAY**



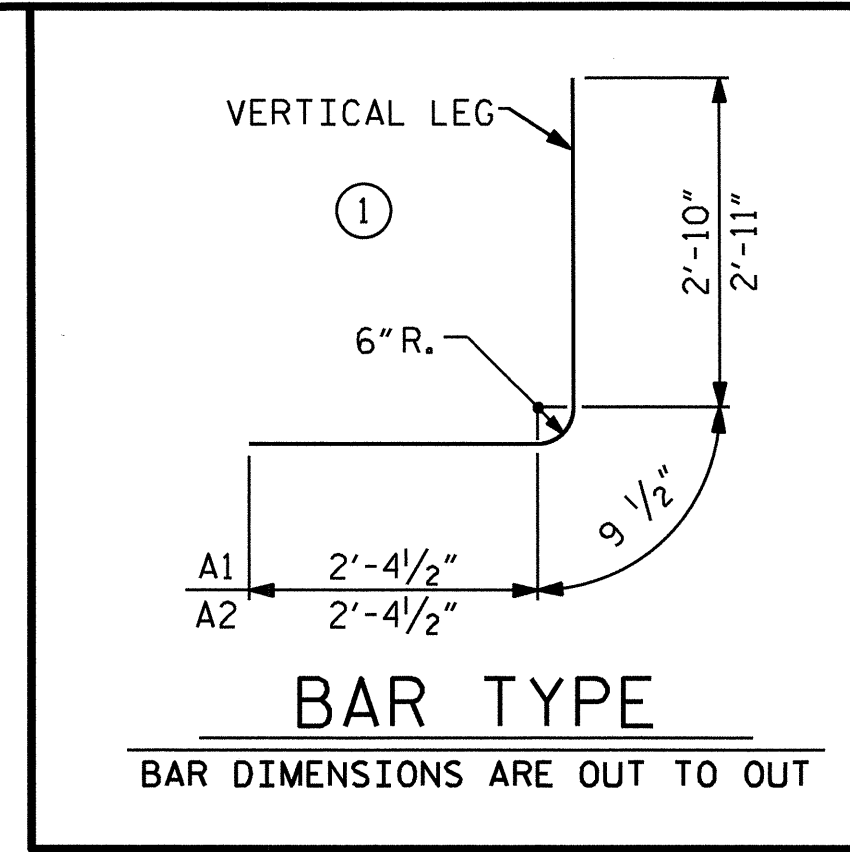
**INLET END ELEVATION NORMAL TO SKEW**



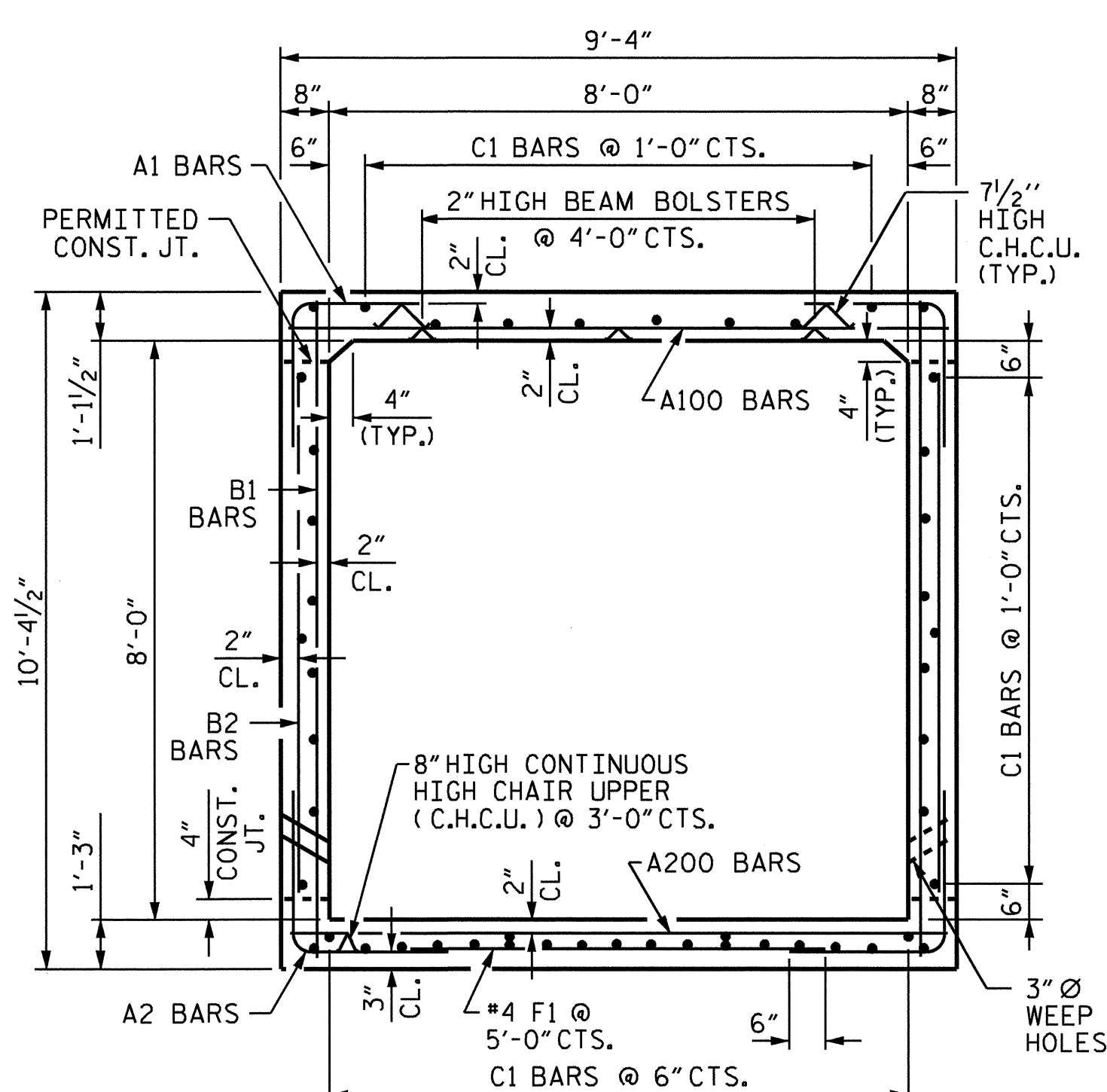
**OUTLET END ELEVATION NORMAL TO SKEW**



**CONNECTION OF WING FOOTING & FLOOR SLAB WHEN SLAB IS THICKER THAN FOOTING**



**BAR TYPE**  
BAR DIMENSIONS ARE OUT TO OUT



**RIGHT ANGLE SECTION OF BARREL**  
THERE ARE 49 "C" BARS IN SECTION OF BARREL

BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	2176	#6	1	6'-0"	19610
A2	2176	#6	1	6'-1"	19882
A100	1167	#7	STR.	8'-11"	21269
A101	3	#7	STR.	7'-3"	44
A102	3	#7	STR.	5'-7"	34
A103	3	#7	STR.	4'-0"	25
A104	3	#7	STR.	2'-4"	14
A151	2	#7	STR.	6'-10"	28
A152	2	#7	STR.	5'-0"	20
A153	2	#7	STR.	3'-1"	13
A200	1167	#7	STR.	8'-11"	21269
A201	3	#7	STR.	7'-3"	44
A202	3	#7	STR.	5'-7"	34
A203	3	#7	STR.	4'-0"	25
A204	3	#7	STR.	2'-4"	14
A251	2	#7	STR.	6'-10"	28
A252	2	#7	STR.	5'-0"	20
A253	2	#7	STR.	3'-1"	13
B1	1277	#4	STR.	9'-10"	8388
B2	2188	#4	STR.	7'-4"	10718
C1	1127	#4	STR.	29'-10"	22460
D1	86	#6	STR.	1'-10"	237
D2	86	#6	STR.	1'-4"	172
F1	127	#4	STR.	5'-3"	445
G1	2	#4	STR.	12'-8"	17
G2	2	#4	STR.	10'-4"	14
S2	6	#8	STR.	12'-8"	203
S3	6	#8	STR.	10'-4"	166
T1	16	#4	STR.	3'-0"	32
T2	16	#4	STR.	3'-6"	37
T3	16	#4	STR.	4'-6"	48
REINFORCING STEEL					= 125323 LBS

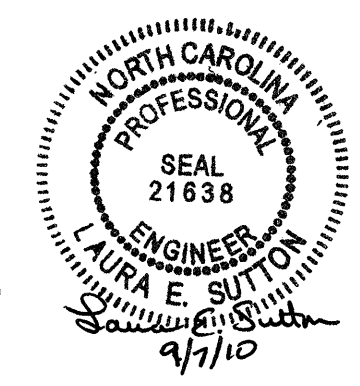
SPLICE CHART		
BAR	SIZE	MINIMUM SPLICE LENGTH
B1	#4	1'-9"
C1	#4	1'-11"

PROJECT NO. R-2612A  
GUILFORD COUNTY  
 STATION: 26+05.11 -RPB-  
 SHEET 2 OF 6

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SINGLE 8 FT. X 8 FT.  
 CONCRETE BOX CULVERT  
 17° SKEW

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

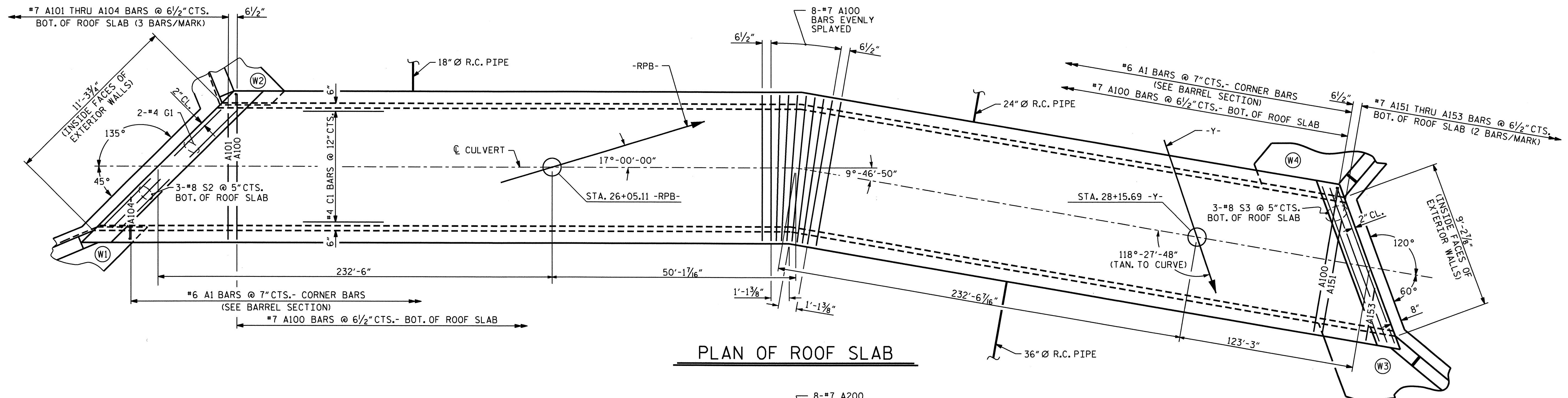
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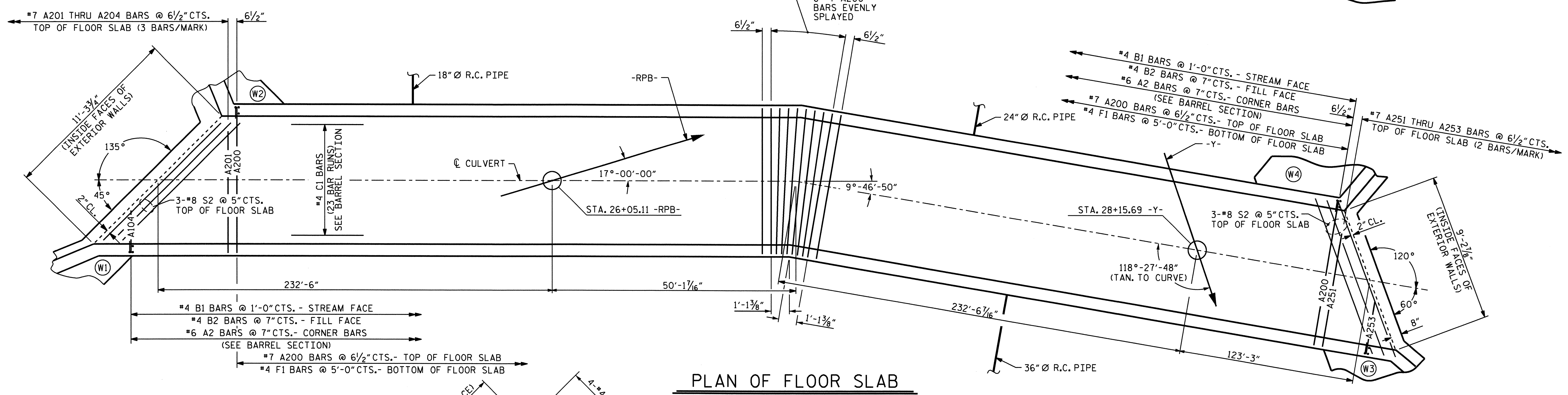
REVISED 8-28-92 BY E.L.R. CHECKED BY G.R.P.  
 REVISED 8-22-89 BY A.R.B. CHECKED BY C.R.K.  
 REDRAWN 8-22-89  
 REVISED 11-19-99 BY M.M. CHECKED BY R.W.W.

ASSEMBLED BY : <u>D.R. WITHROW</u>	DATE : <u>03/04/10</u>	<b>SPECIAL</b>
CHECKED BY : <u>T. CLELLAND</u>	DATE : <u>6/28/10</u>	
DRAWN BY : <u>J.W. ROUSE</u>	DATE : <u>SEPT. 1989</u>	<b>STANDARD</b>
CHECKED BY : <u>A.R. BISSETTE</u>	DATE : <u>AUG. 1989</u>	





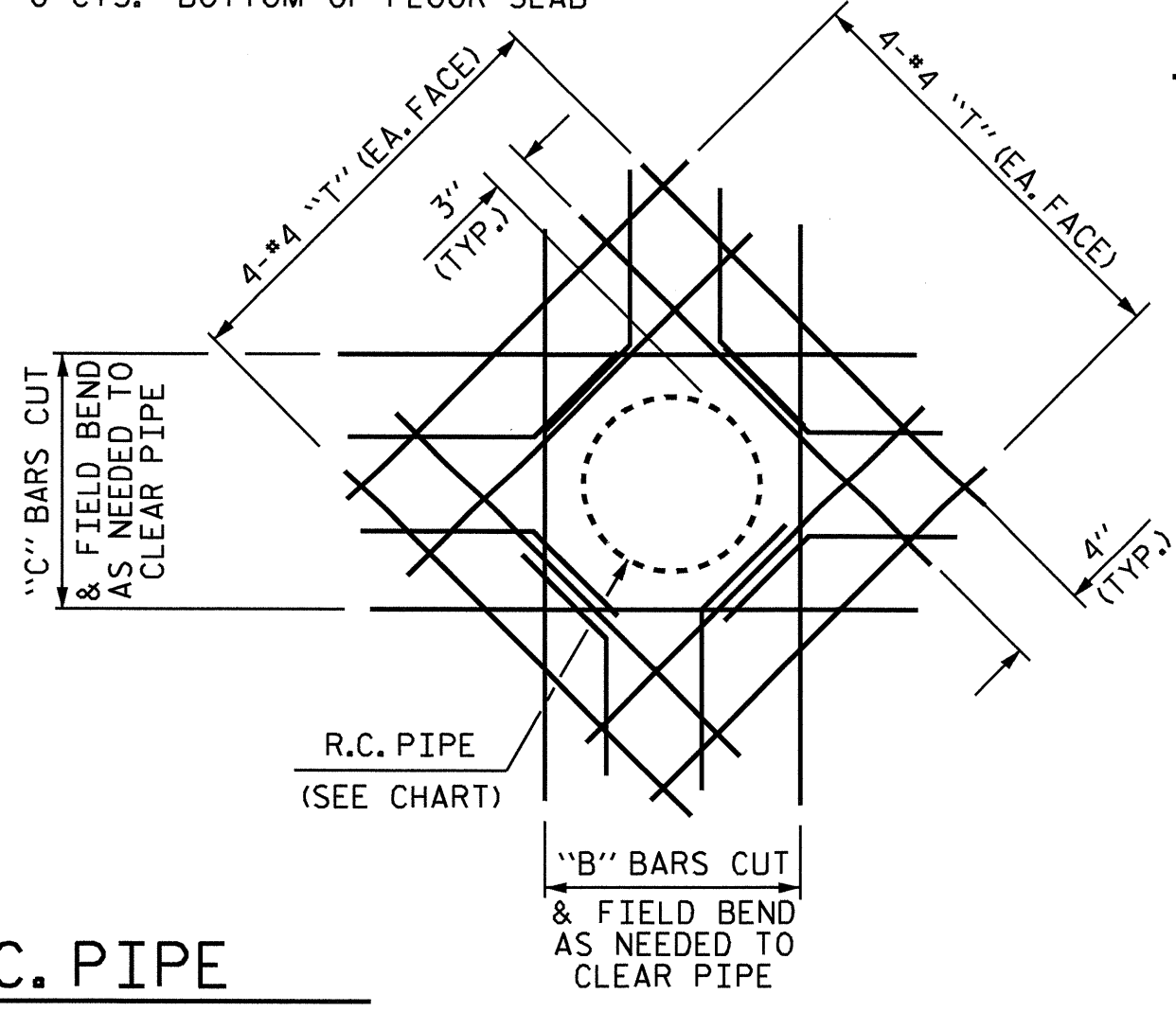
PLAN OF ROOF SLAB



PLAN OF FLOOR SLAB

PIPE CHART	
PIPE Ø	"T" BAR
18"	T1
24"	T2
36"	T3

FIELD BEND "B" & "C" BARS AS REQUIRED  
 THE R.C. PIPES THROUGH THE SIDEWALLS OF THE CULVERT SHALL BE LOCATED BY THE ENGINEER. THE REINFORCING STEEL SHALL BE FIELD BENT AS NECESSARY TO CLEAR PIPES.



R.C. PIPE  
(THRU EXTERIOR WALL)

PROJECT NO. R-2612A  
 GUILFORD COUNTY  
 STATION: 26+05.11 -RPB-

SHEET 3 OF 6

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SINGLE 8 FT. X 8 FT.  
 CONCRETE BOX CULVERT  
 17° SKEW

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

TOTAL SHEETS: 6

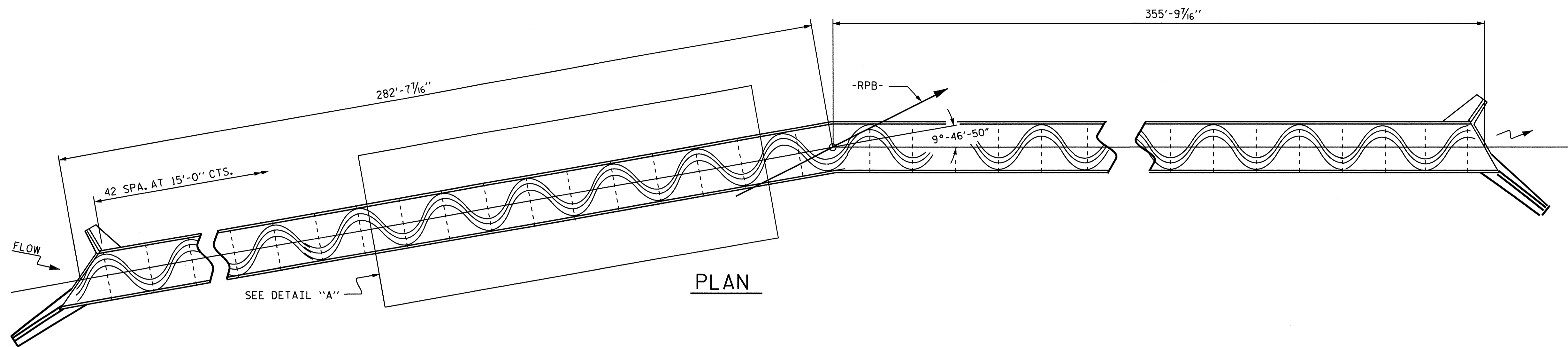


DRAWN BY: D.R. WITHROW DATE: 03/04/10  
 CHECKED BY: T.L. CLELLAND DATE: 6/25/10

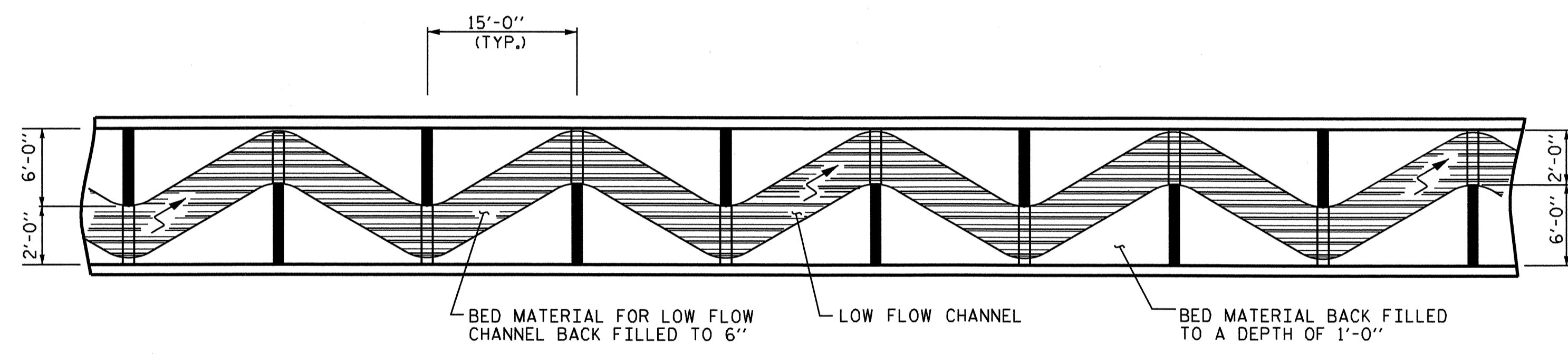
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STR. #2





PLAN

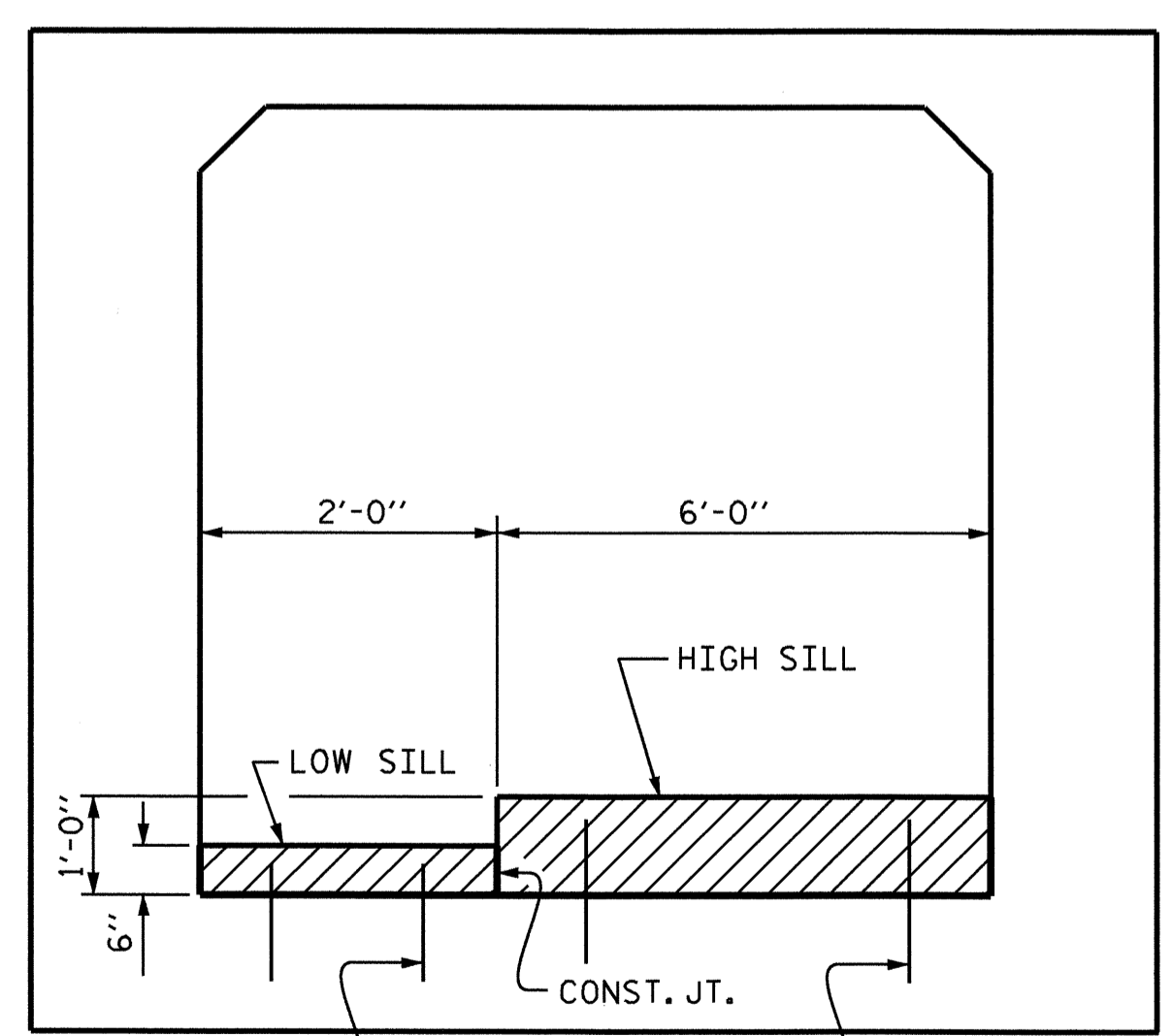


DETAIL "A"

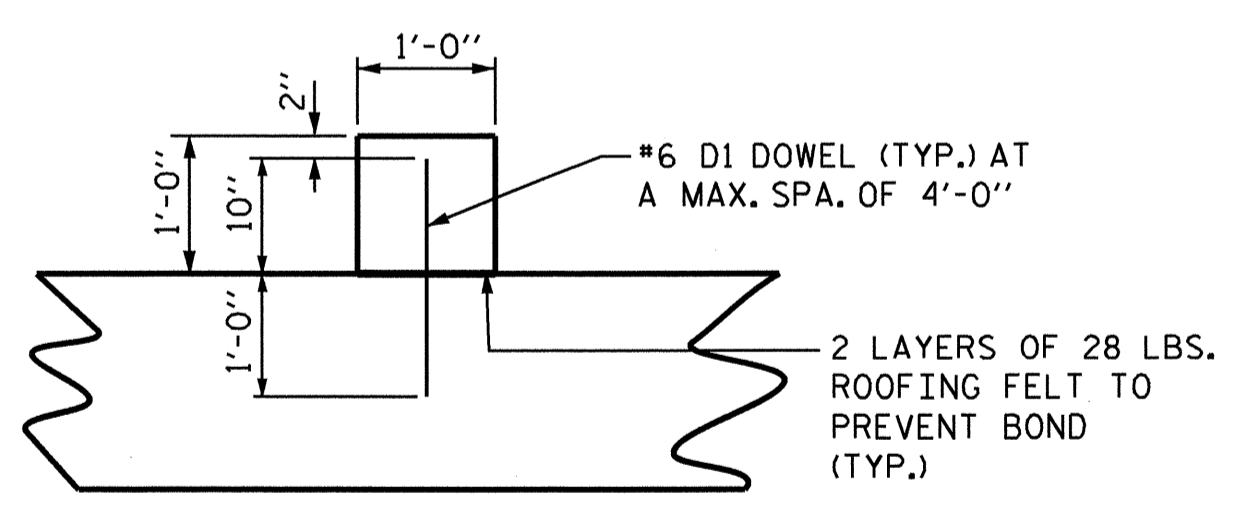
□ LOW SILL  
 ■ HIGH SILL

NOTES

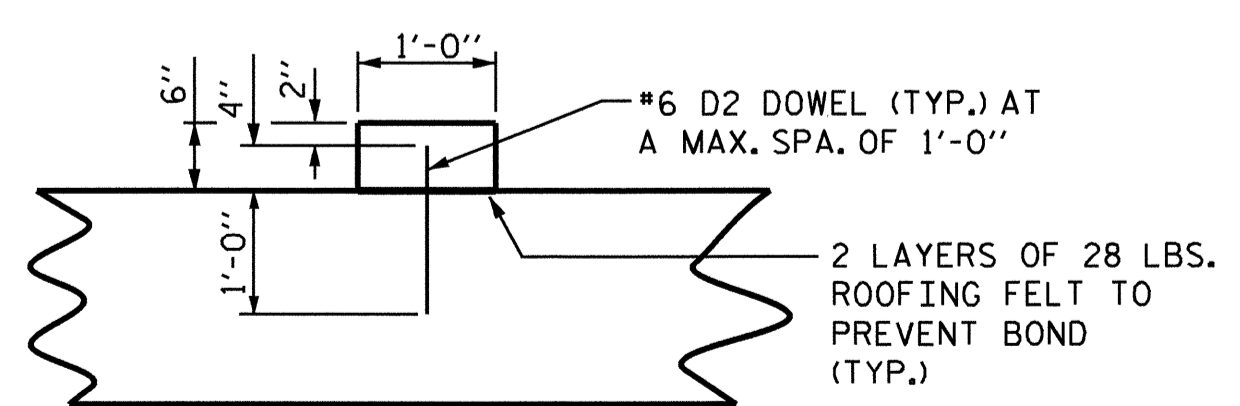
- BED MATERIAL EXCAVATED FROM THE SITE FOR BOX CULVERT CONSTRUCTION IS TO BE STOCKPILED AND LATER PLACED ON THE FLOOR OF THE COMPLETED CULVERT.
- BED MATERIAL PLACED BETWEEN SILLS IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL BETWEEN THE LOWER SILLS. BED MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER.
- MATERIAL SHALL NOT BE REMOVED UNTIL STREAM FLOW HAS BEEN PERMANENTLY CUT OFF FROM THAT PORTION OF THE STREAM.
- ALL WORK INVOLVING EXCAVATION, STOCKPILED AND PLACING OF BED MATERIAL SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR "CULVERT EXCAVATION".
- THE CONTRACTOR SHALL SUBMIT A PLAN FOR SILL INSTALLATION TO THE ENGINEER.
- FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.
- HIGH SILLS AND LOW SILLS ARE TO BE CAST SEPARATELY.



ELEVATION



SECTION THRU HIGH SILL



SECTION THRU LOW SILL

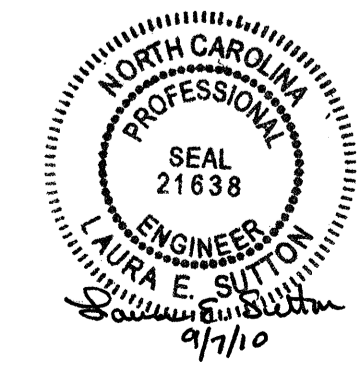
SILL DETAILS

\* DOWELS MAY BE PUSHED INTO GREEN CONCRETE AFTER SLAB HAS BEEN FLOAT FINISHED.

PROJECT NO. R-2612A  
GUILFORD COUNTY  
 STATION: 26+05.11 -RPB-

SHEET 4 OF 6

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SINGLE 8 FT. X 8 FT.  
 CONCRETE BOX CULVERT  
 17° SKEW



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-4
1			3			TOTAL SHEETS
2			4			6

DRAWN BY : N.O. TRAN DATE : 7/20/09  
 CHECKED BY : W.F. PARKER DATE : 8/04/09







