

### FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE.  
 BRACE PILES AT THE END BENTS ARE TO BE BATTERED @ 3:12.  
 BRACE PILES AT THE INTERIOR BENTS ARE LOCATED AS SHOWN AND ARE TO BE BATTERED @ 1 1/2:12.

### NOTES:

FOR PILES, SEE SPECIAL PROVISIONS.

PILES AT END BENT NO. 1, BENT NO. 1 AND END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 120 TONS PER PILE.

PILES AT BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 130 TONS PER PILE.

DRIVE PILES AT END BENT NO. 1, BENT NO. 1 AND END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 200 TONS PER PILE.

DRIVE PILES AT BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 220 TONS PER PILE.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 50-75 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO. 1, BENT NO. 1, BENT NO. 2 AND END BENT NO. 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH THE PILES PROVISIONS.

OBSERVE A FOUR MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO FINAL GRADE PLUS THREE FOOT SURCHARGE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT NO. 1.

OBSERVE A THREE MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO FINAL GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT NO. 2.

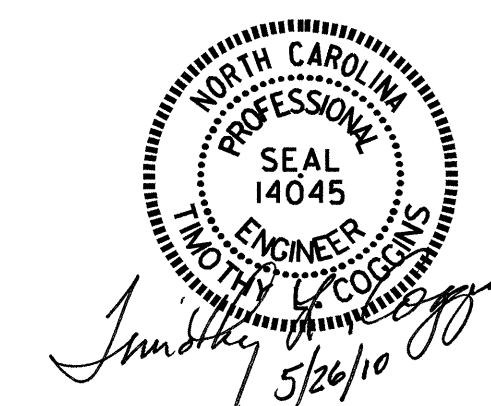
SETTLEMENT PLATES ARE REQUIRED AT BOTH END BENTS. SEE EMBANKMENT MONITORING DETAIL IN ROADWAY PLANS.

PROJECT NO. R-4900  
COLUMBUS COUNTY  
 STATION: 42+58.19 -L-  
30+25.79 -Y-

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

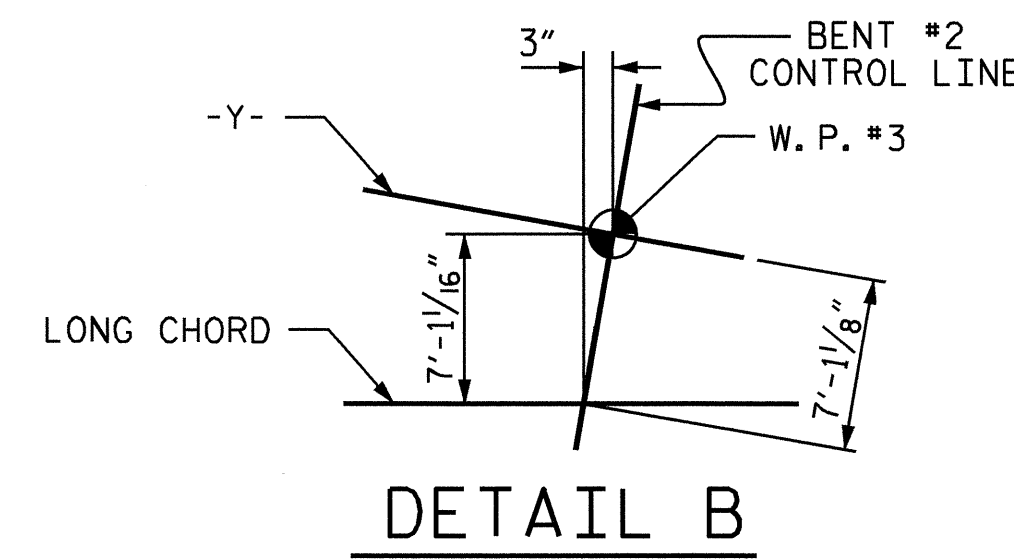
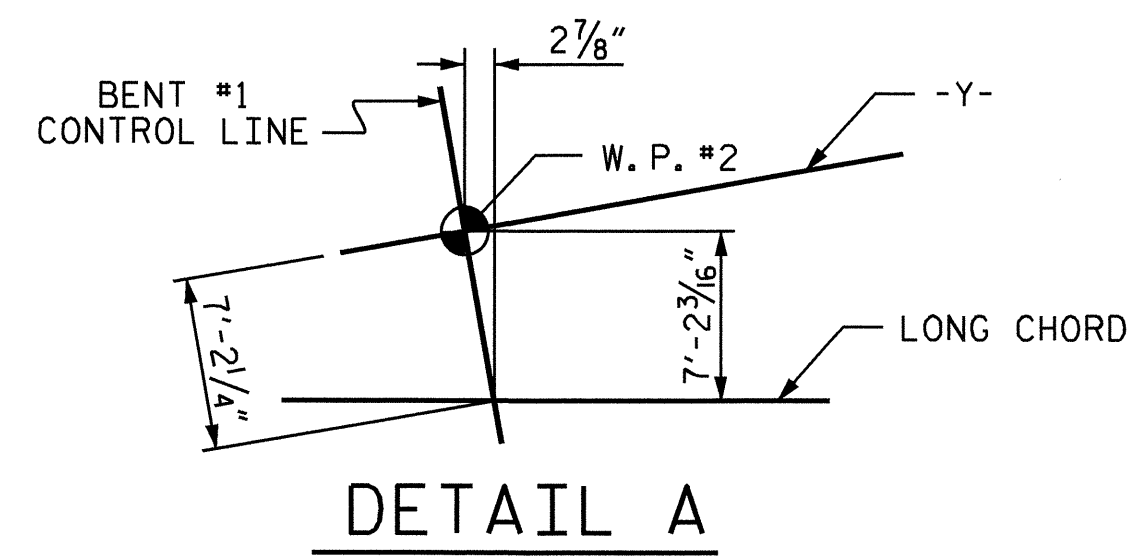
GENERAL DRAWING  
 FOR BRIDGE ON NC 242  
 OVER (US74/NC130  
 BETWEEN SR 1574 AND SR 1504



DRAWN BY: B.N. BARODAWALA DATE: 2-16-10  
 CHECKED BY: PEGGY PARISI DATE: 3-17-10

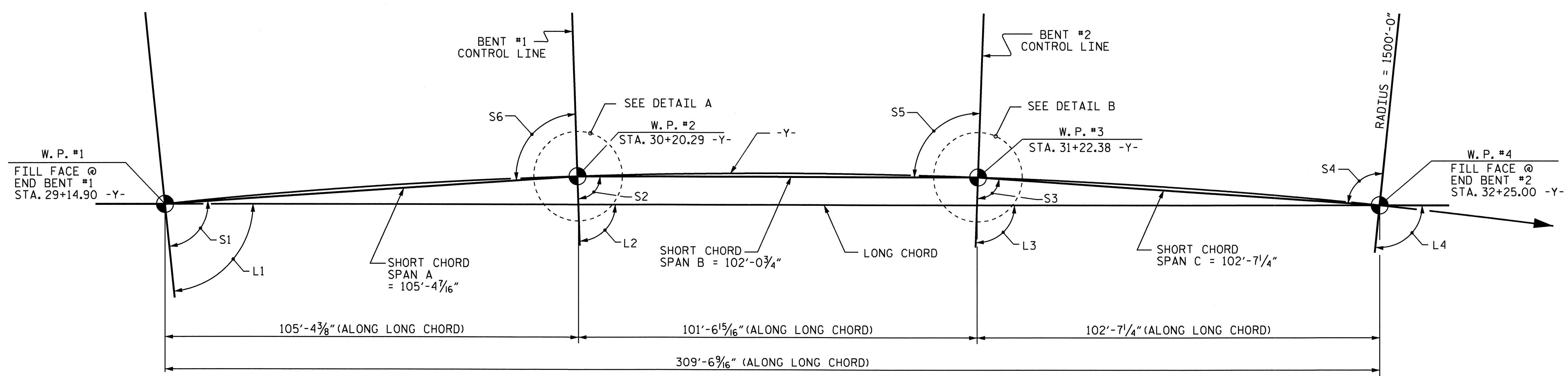
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			35



**HORIZONTAL CURVE DATA -Y-**

PI STA. 29+83.32  
 $\Delta = 50^\circ-35'-13.7''$  (RT)  
 $D = 3^\circ-49'-11.0''$   
 $L = 1,324.37'$   
 $T = 708.84'$   
 $R = 1500.00'$   
 $SE = 0.06$



**LONG CHORD LAYOUT**

NOTE: BENTS ARE NOT PARALLEL

ANGLES			
LONG CHORD		SHORT CHORD	
L1	84°-04'-39"	S1	87°-59'-14"
L2	88°-06'-12"	S2	88°-03'-01"
L3	92°-00'-09"	S3	88°-02'-24"
L4	95°-55'-21"	S4	91°-57'-36"
		S5	91°-56'-59"
		S6	92°-00'-46"

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 SHEET 3 OF 4

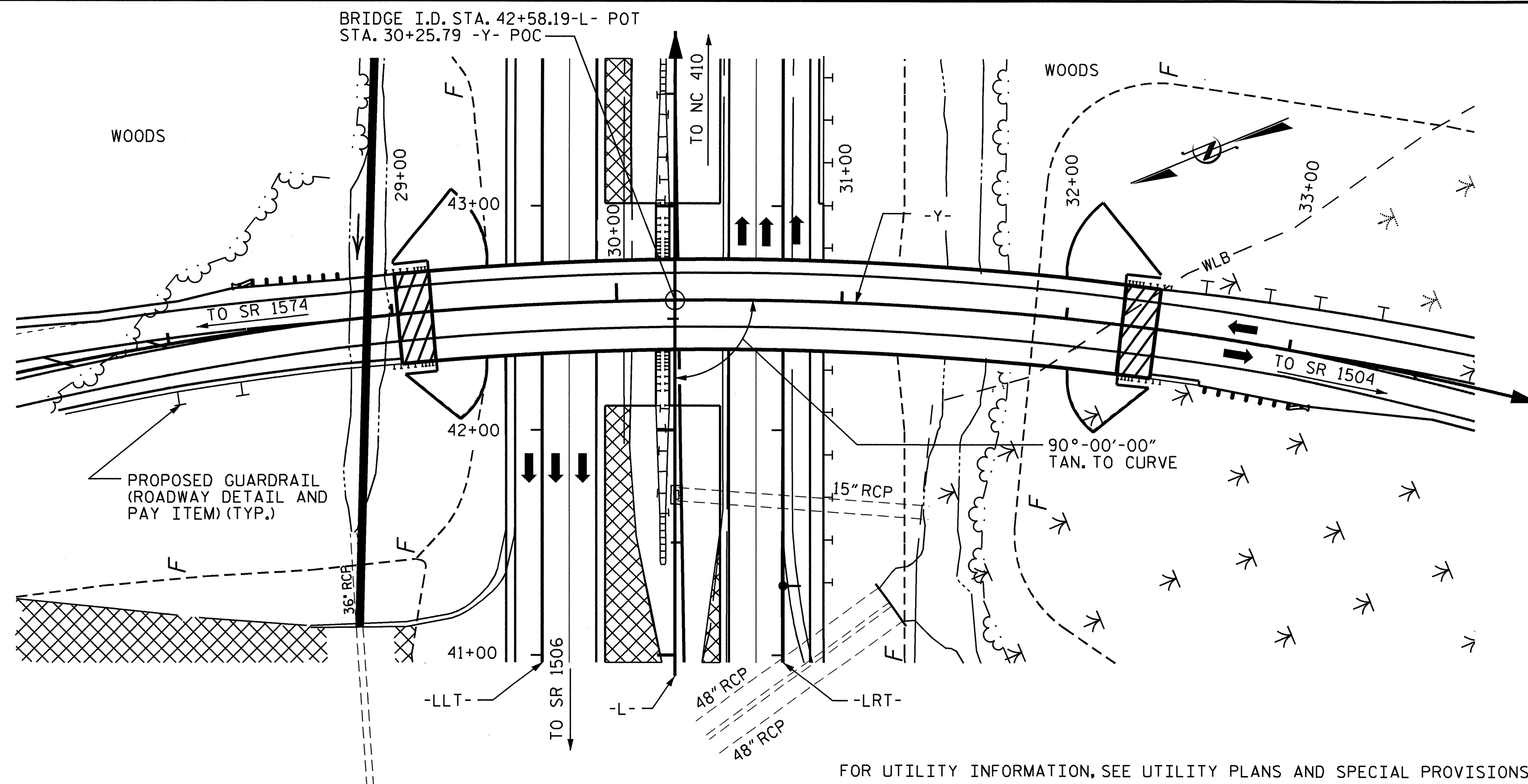
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE ON NC 242  
 OVER US74/NC130  
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			35

BM 82 - RR SPIKE IN BASE OF 12" GUM TREE @ STA. 33+14-L- (109' LT), EL.= 92.76



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

NOTES:

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.
- 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.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.
- FOR CURING CONCRETE, SEE SPECIAL PROVISIONS.
- FOR FORMS FOR CONCRETE BRIDGE DECKS, SEE SPECIAL PROVISIONS.

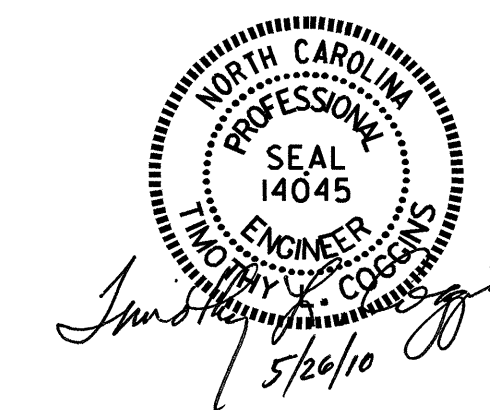
TOTAL BILL OF MATERIAL

	FOUNDATION EXCAVATION FOR BENTS	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	72" MODIFIED PRESTRESSED CONCRETE GIRDERS		HP 12 X 53 STEEL PILES		PILE REDRIVES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS
	LUMP SUM	SQ.FT.	SQ.FT.	CU.YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN.FT.	NO.	LIN.FT.	EACH	LIN.FT.	SQ.YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE		13302	12357		LUMP SUM			12	1220.52				615.14		LUMP SUM	LUMP SUM
END BENT NO. 1				39.3		6233				8	560	4		325		
BENT NO. 1	LUMP SUM			80.4		13318	885			18	810	5				
BENT NO. 2	LUMP SUM			84.0		14006	1148			18	900	5				
END BENT NO. 2				39.4		6228				8	560	4		597		
TOTAL	LUMP SUM	13302	12357	243.1	LUMP SUM	39785	2033	12	1220.52	52	2830	18	615.14	922	LUMP SUM	LUMP SUM

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 SHEET 4 OF 4

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 RALEIGH

GENERAL DRAWING  
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 CHECKED BY : PEGGY PARISI DATE : 3-17-10

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2			4			35

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER		
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (%LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (%LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.00	--	1.75	1.009	1.50	B	ER	49.266	1.009	1.00	C	ER	9.802	0.80	0.888	1.34	A	I	51.185	1	
	HL-93 (OPERATING)	N/A		1.30	--	1.35	1.009	1.94	B	ER	49.266	1.009	1.30	C	ER	9.802	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.30	46.800	1.75	1.009	2.07	B	ER	49.266	0.948	1.30	C	EL	10.038	0.80	0.888	1.50	A	I	51.185	1	
	HS-20 (OPERATING)	36.000		1.74	62.640	1.35	1.009	2.76	B	ER	49.266	0.948	1.74	C	EL	10.038	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.56	48.060	1.40	1.009	6.32	B	ER	49.266	1.009	4.12	C	ER	9.802	0.80	0.888	3.56	A	I	51.185	
		SNGARBS2	20.000		2.58	51.600	1.40	1.009	4.57	B	ER	49.266	1.009	2.89	C	ER	9.802	0.80	0.888	2.58	A	I	51.185	
		SNAGRIS2	22.000		2.41	53.020	1.40	1.009	4.28	B	ER	49.266	1.009	2.66	C	ER	9.802	0.80	0.888	2.41	A	I	51.185	
		SNCOTTS3	27.250		1.78	48.505	1.40	1.009	3.14	B	ER	49.266	1.009	2.05	C	ER	9.802	0.80	0.888	1.78	A	I	51.185	
		SNAGGRS4	34.925		1.45	50.641	1.40	1.009	2.57	B	ER	49.266	1.009	1.67	C	ER	9.802	0.80	0.888	1.45	A	I	51.185	
		SNS5A	35.550		1.43	50.837	1.40	1.009	2.52	B	ER	49.266	0.948	1.68	C	EL	10.038	0.80	0.888	1.43	A	I	51.185	
		SNS6A	39.950		1.29	51.536	1.40	1.009	2.29	B	ER	49.266	0.948	1.52	C	EL	10.038	0.80	0.888	1.29	A	I	51.185	
	SNS7B	42.000		1.23	51.660	1.40	1.009	2.18	B	ER	49.266	0.948	1.48	C	EL	10.038	0.80	0.888	1.23	A	I	51.185		
	TRUCK TRACTOR SEMI-TRAILER (TST)	TNAGRIT3	33.000		1.58	52.140	1.40	1.009	2.79	B	ER	49.266	0.948	1.82	C	EL	10.038	0.80	0.888	1.58	A	I	51.185	
		TNT4A	33.075		1.58	52.259	1.40	1.009	2.79	B	ER	49.266	0.948	1.79	C	EL	10.038	0.80	0.888	1.58	A	I	51.185	
		TNT6A	41.600		1.28	53.248	1.40	1.009	2.26	B	ER	49.266	0.948	1.55	C	EL	10.038	0.80	0.888	1.28	A	I	51.185	
		TNT7A	42.000		1.28	53.760	1.40	1.009	2.27	B	ER	49.266	0.948	1.52	C	EL	10.038	0.80	0.888	1.28	A	I	51.185	
		TNT7B	42.000		1.30	54.600	1.40	1.009	2.32	B	ER	49.266	0.948	1.46	C	EL	10.038	0.80	0.888	1.30	A	I	51.185	
		TNAGRIT4	43.000		1.25	53.750	1.40	1.009	2.22	B	ER	49.266	0.948	1.41	C	EL	10.038	0.80	0.888	1.25	A	I	51.185	
TNAGT5A		45.000		1.19	53.550	1.40	1.009	2.11	B	ER	49.266	0.948	1.39	C	EL	10.038	0.80	0.888	1.19	A	I	51.185		
TNAGT5B	45.000		③	1.18	53.100	1.40	1.009	2.09	B	ER	49.266	0.948	1.35	C	EL	10.038	0.80	0.888	1.18	A	I	51.185	1	

### LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	$\gamma_{DC}$	$\gamma_{DW}$
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

	YEAR	ADTT
CURRENT	2010	98
FUTURE	2030	147

### NOTES:

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

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

### COMMENTS:

\* 1. AVERAGE GIRDER LENGTH FOR SPAN USED.

- 2.
- 3.
- 4.

# CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

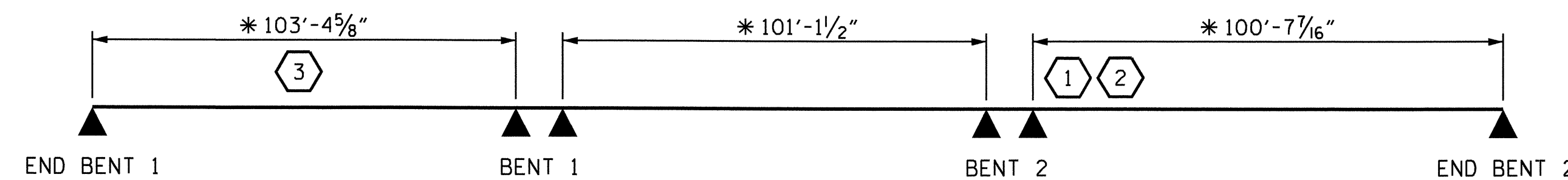
③ LEGAL LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

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GIRDER LOCATION

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

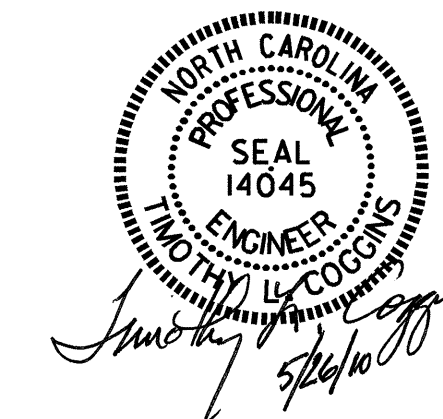


PROJECT NO. R-4900  
COLUMBUS COUNTY  
 STATION: 42+58.19 -L-

## LRFR SUMMARY

ASSEMBLED BY: PEGGY PARISI DATE: 7/29/09  
 CHECKED BY: J. B. WILSON DATE: 1-12-10  
 DRAWN BY: MAA 1/08 REV. 11/2/08RR MAA/GM  
 CHECKED BY: GM/DI 2/08

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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS (NON-INTERSTATE TRAFFIC)					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-5
					TOTAL SHEETS 35

STD. NO. LRFR1

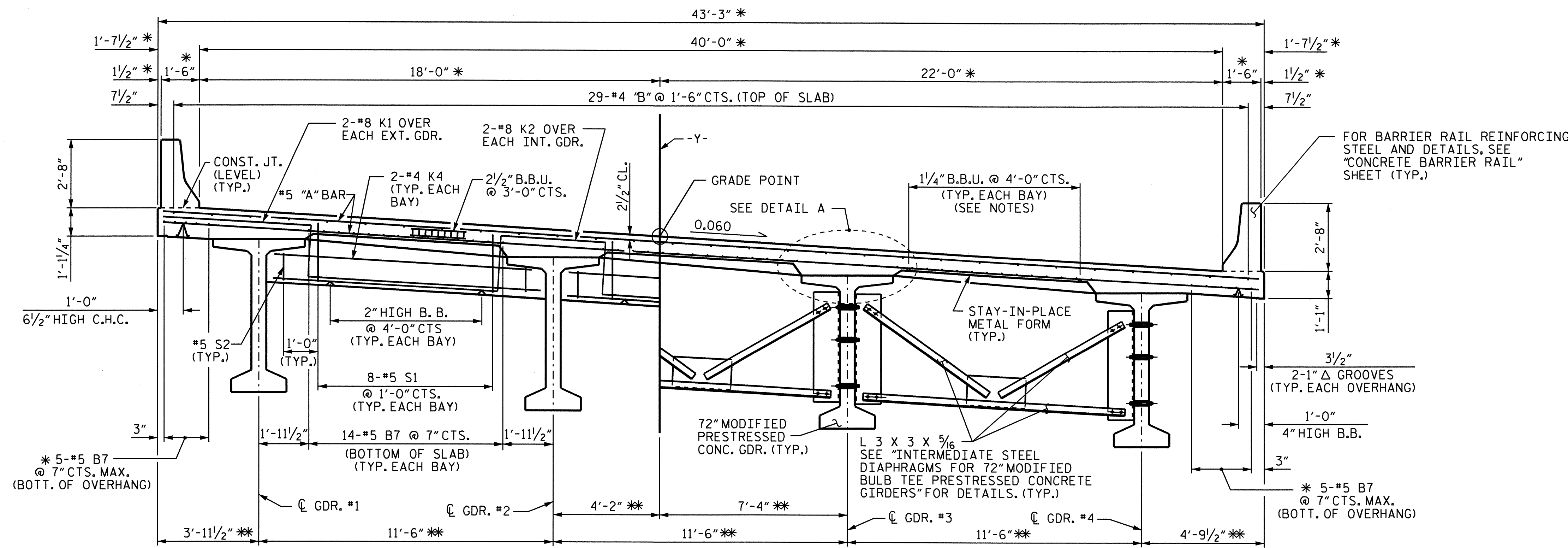
**NOTES:**

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

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

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.

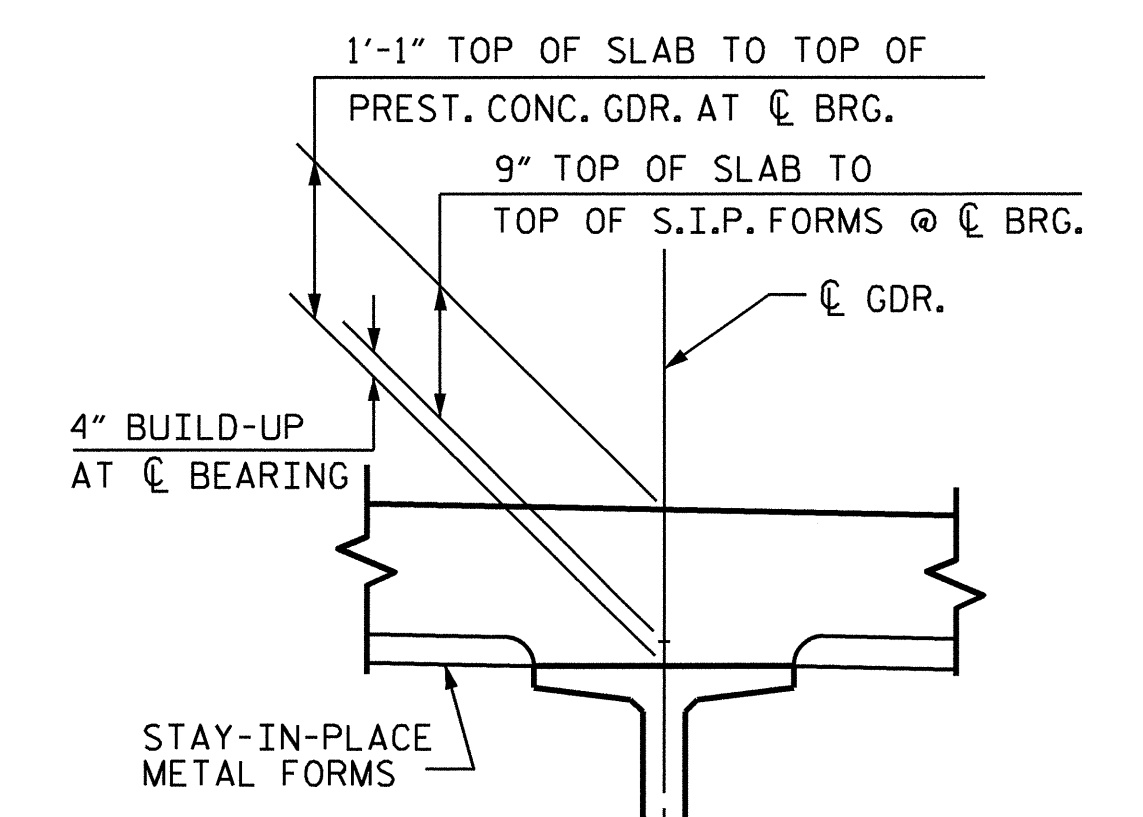
PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.



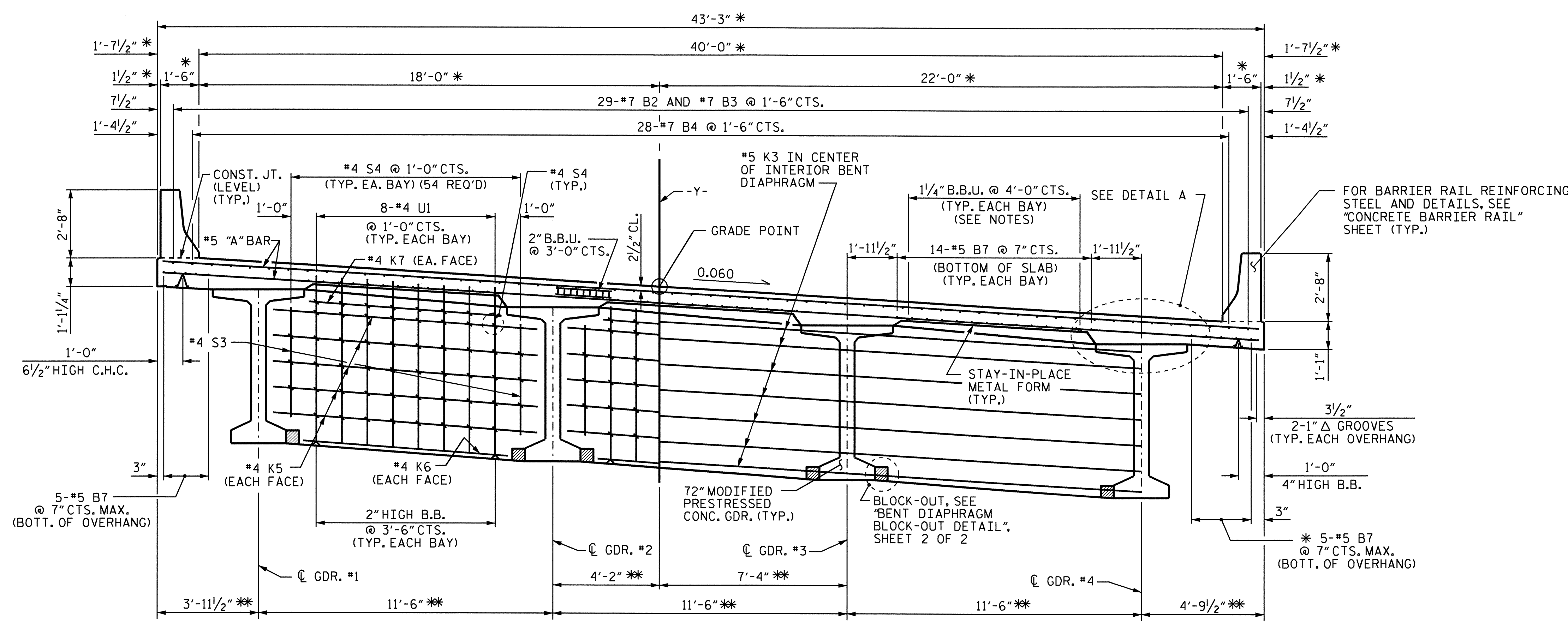
**TYPICAL HALF SECTION**  
SHOWING END BENT DIAPHRAGM

**TYPICAL HALF SECTION**  
SHOWING INTERMEDIATE DIAPHRAGM

\* RADIAL DIMENSION  
\*\* RADIAL DIMENSION THRU WORK POINT



**DETAIL A**

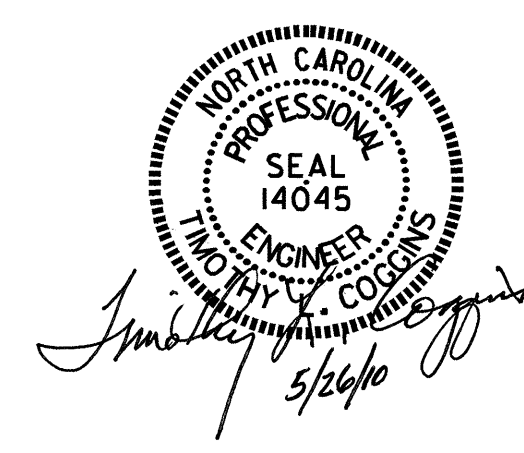


**TYPICAL SECTION**  
SHOWING BENT DIAPHRAGM

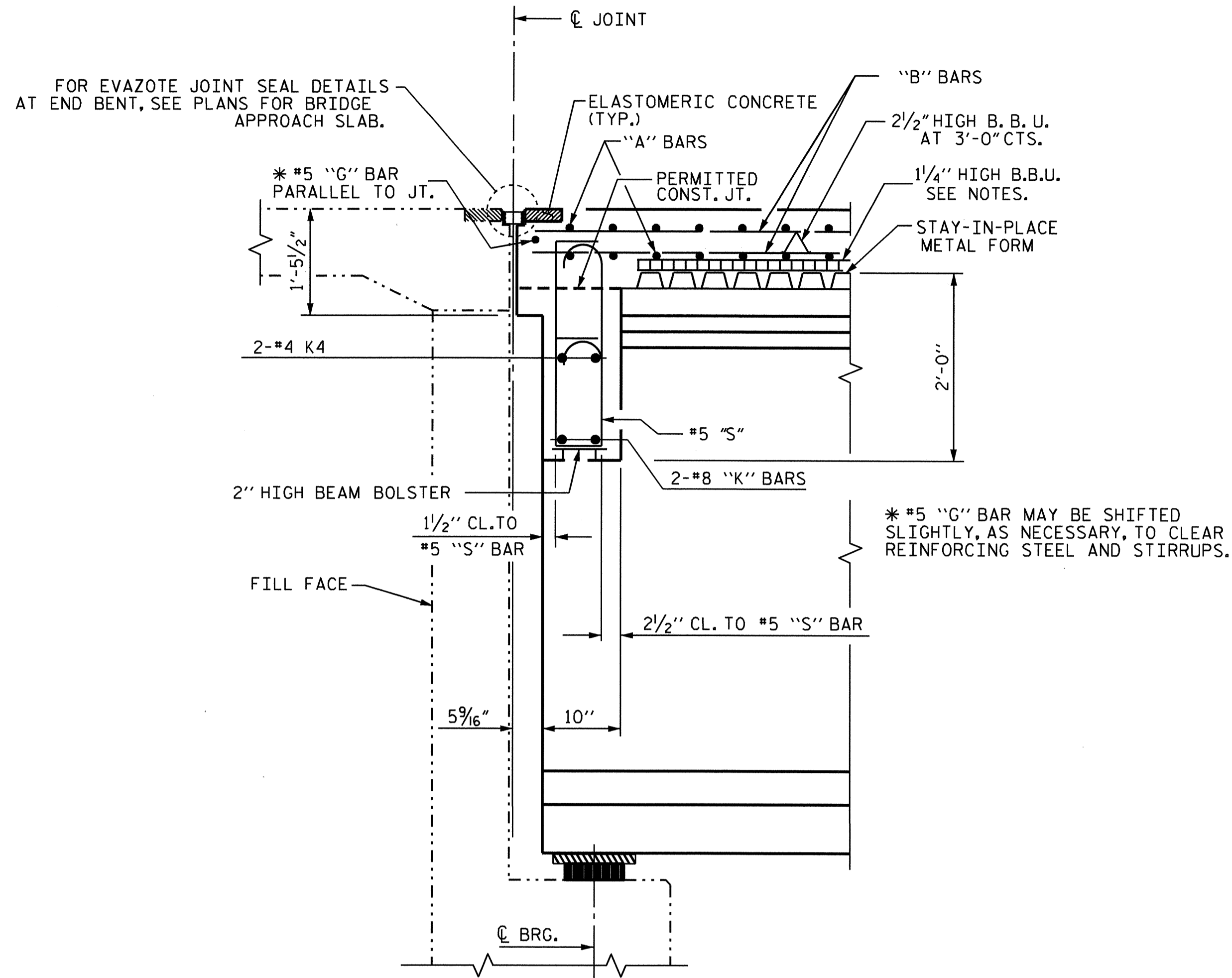
PROJECT NO. R-4900  
COLUMBUS COUNTY  
STATION: 42+58.19 -L-

SHEET 1 OF 2

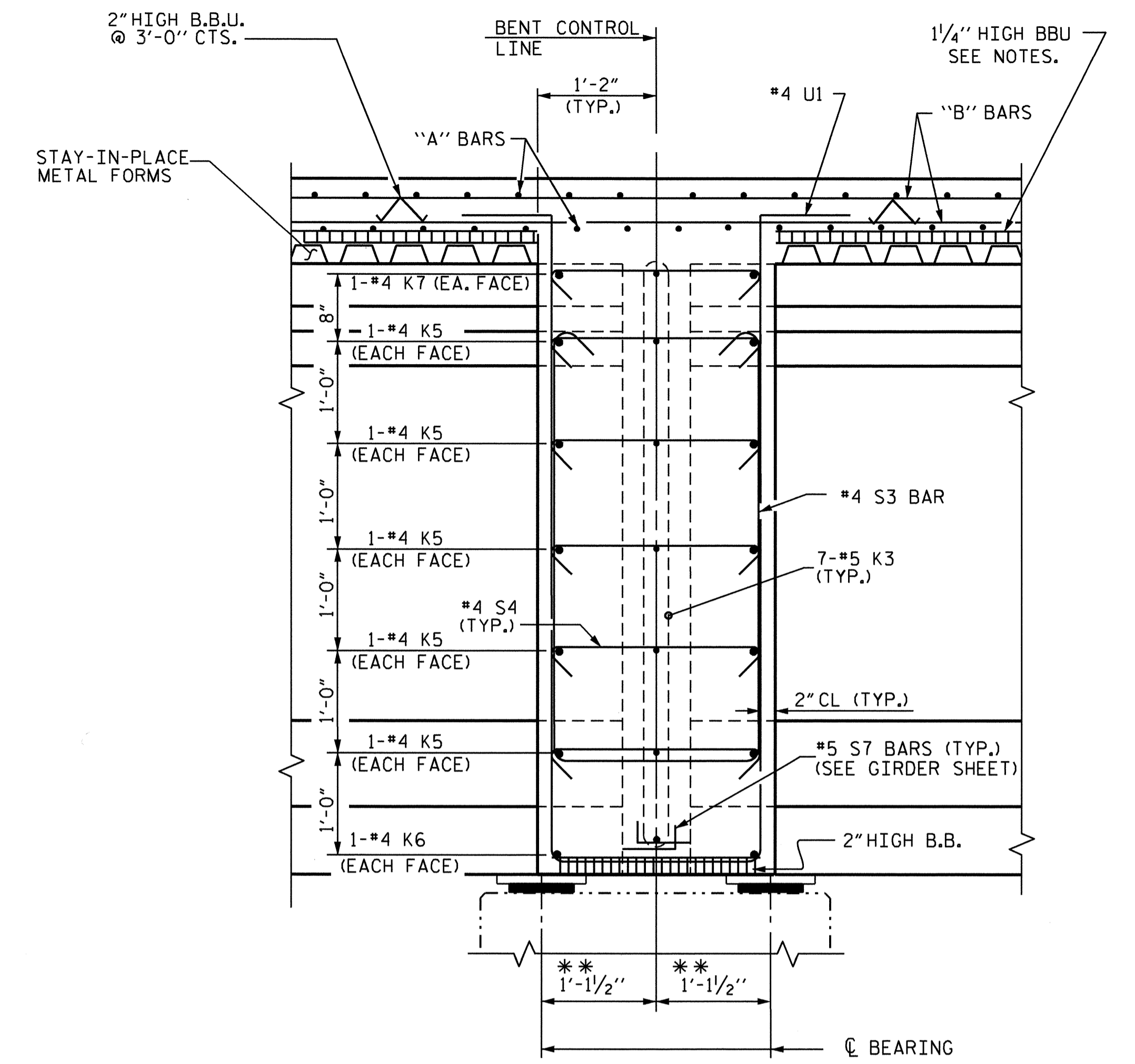
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE TYPICAL SECTION					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
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					TOTAL SHEETS 35



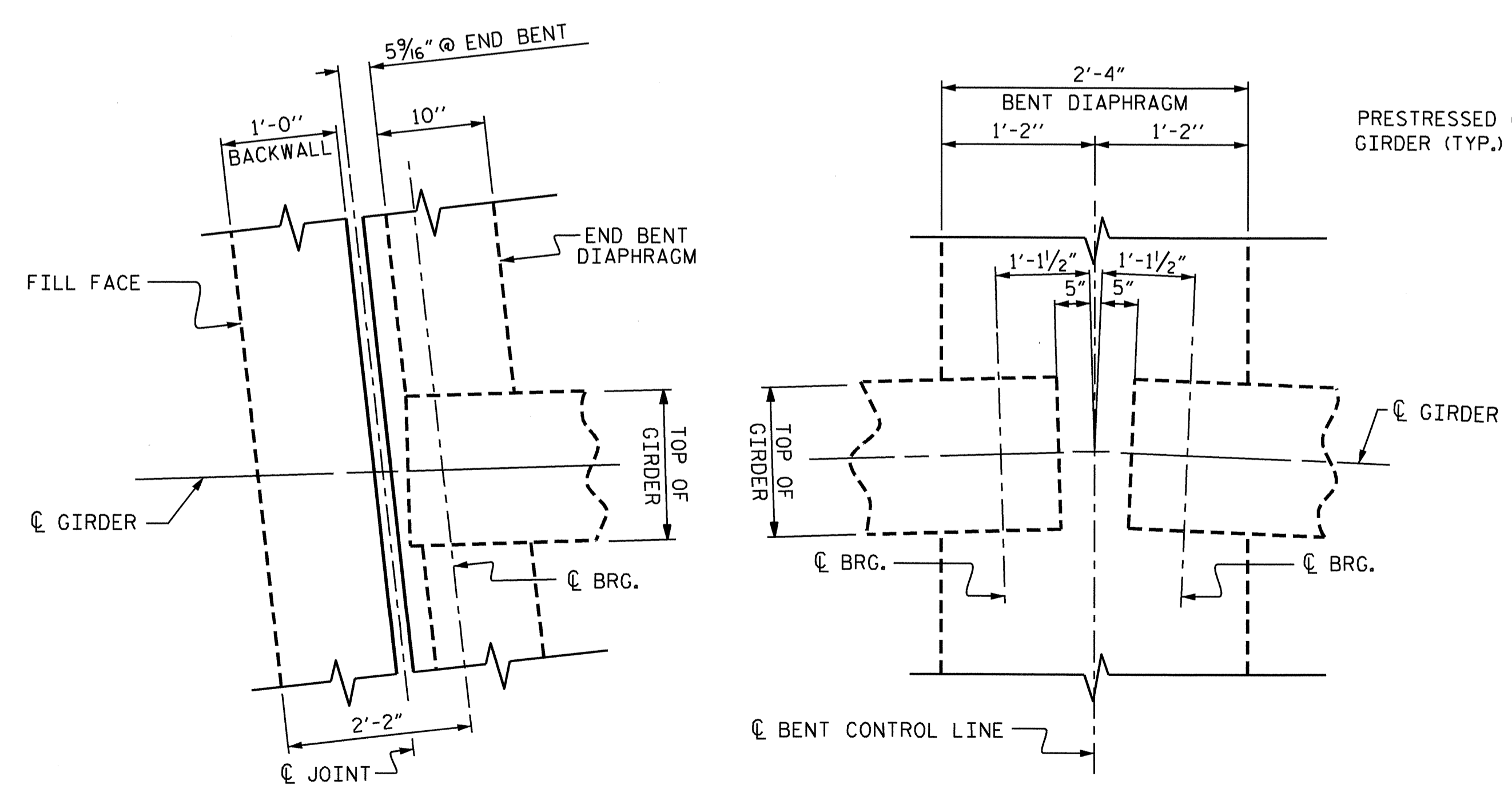
DRAWN BY : PEGGY PARISI DATE : 7-23-09  
CHECKED BY : J. B. WILSON DATE : 1-12-10



**SECTION A-A**



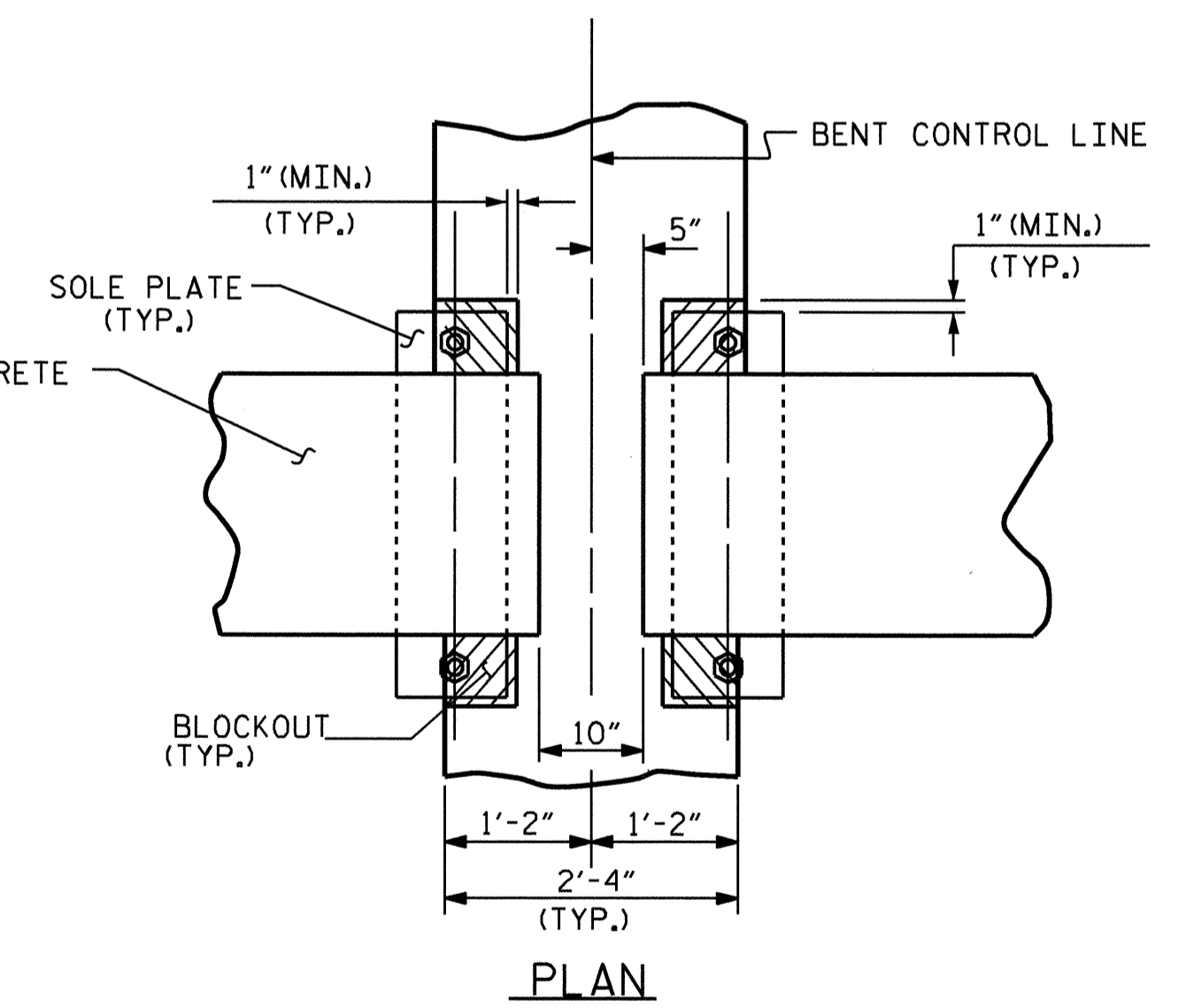
**SECTION B-B**  
\*\* MEASURED ALONG C.G. GDR.



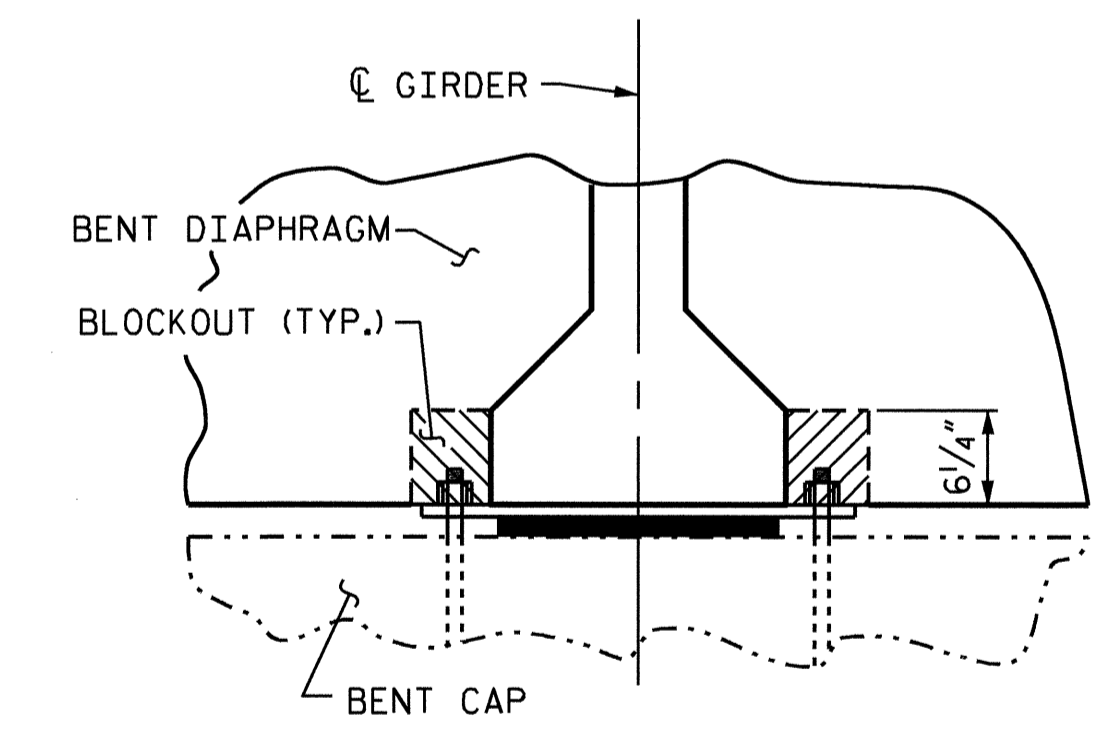
**END BENT DIAPHRAGM**

**BENT DIAPHRAGM  
BENTS #1 AND #2**

**PLAN**



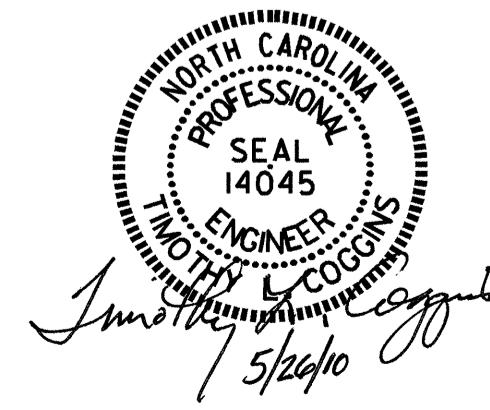
**BENT DIAPHRAGM BLOCKOUT DETAIL**



**SECTION**

DRAWN BY : PEGGY PARISI DATE : 7-23-09  
CHECKED BY : J. B. WILSON DATE : 1-12-10

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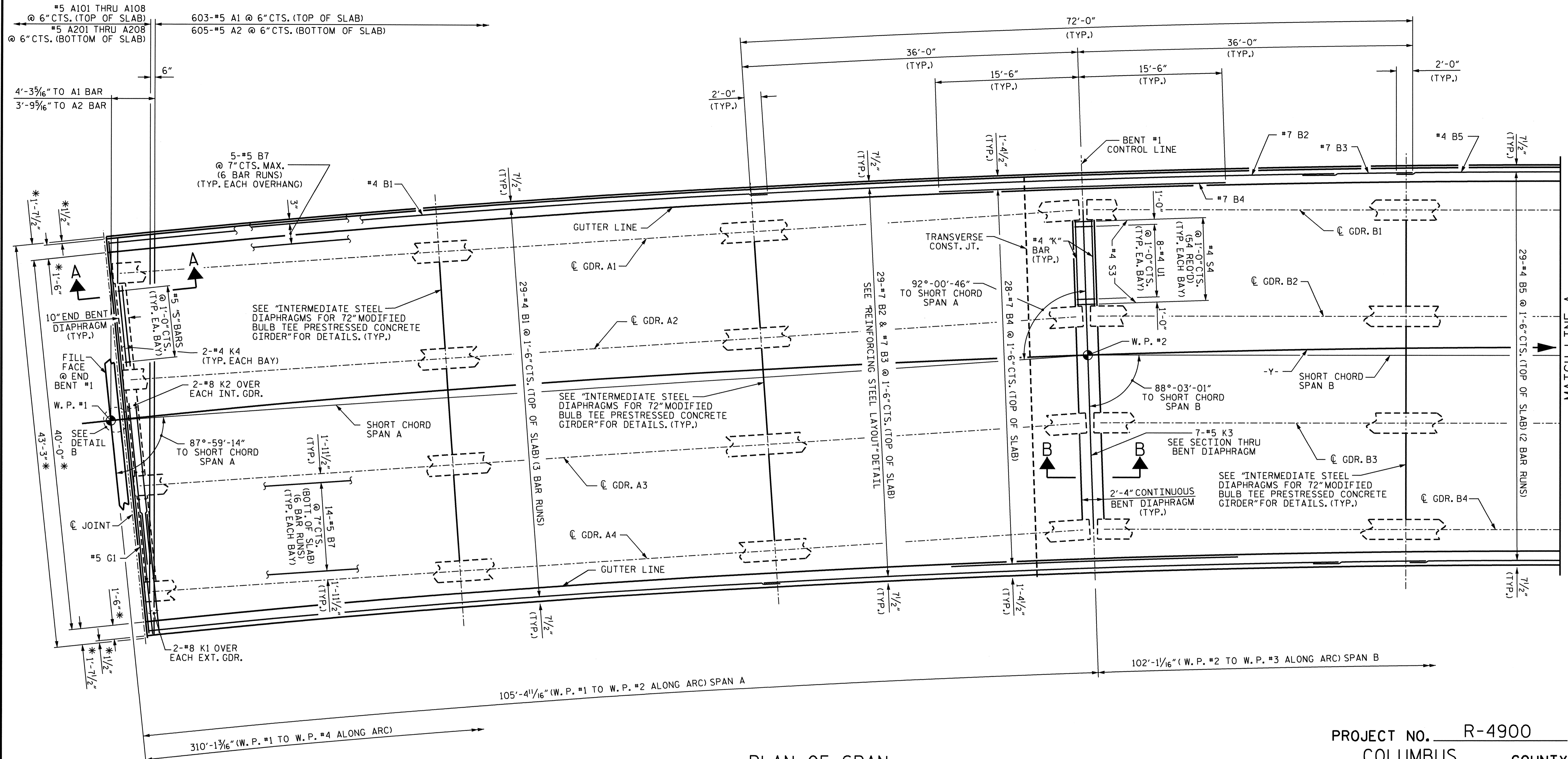


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SHEET 2 OF 2

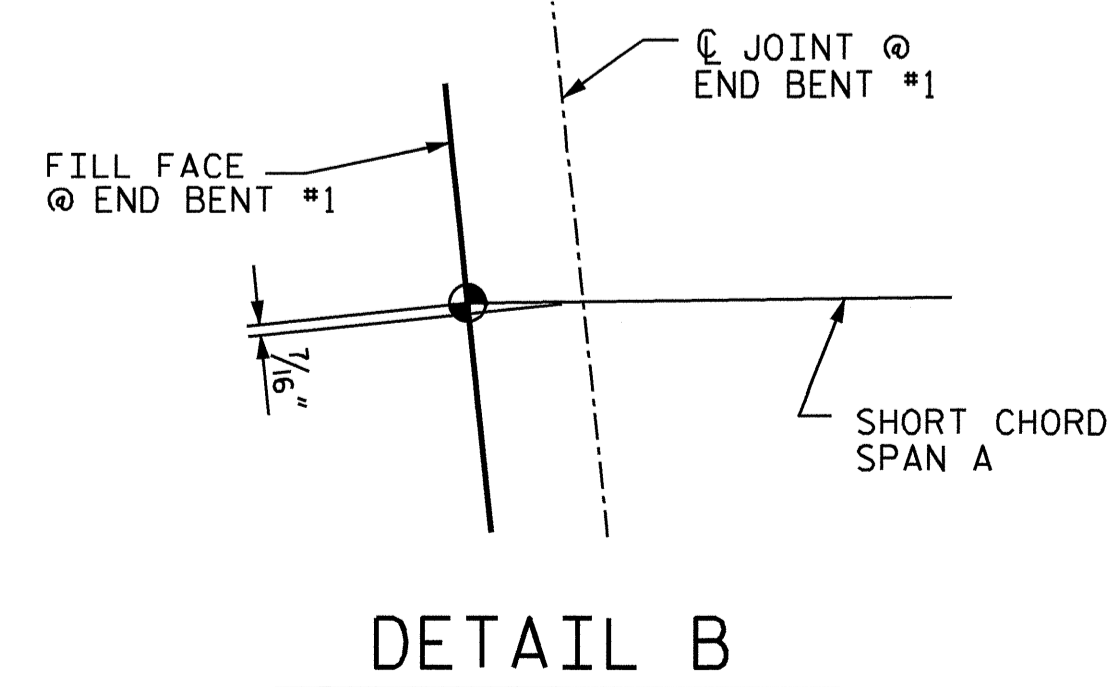
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SUPERSTRUCTURE					
TYPICAL SECTION DETAILS					
REVISIONS					
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					SHEET NO. S-7
					TOTAL SHEETS 35



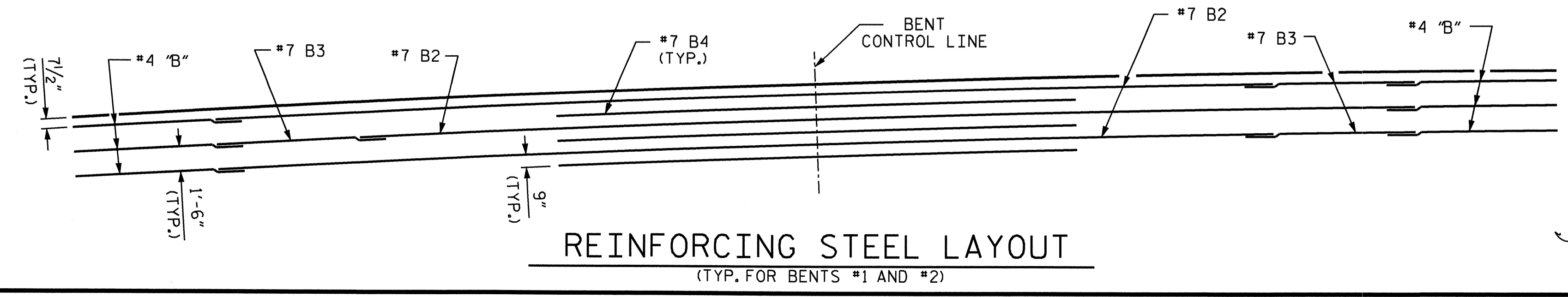


**PLAN OF SPAN**

("A" BARS ARE PLACED PERPENDICULAR TO LONG CHORD)



**DETAIL B**

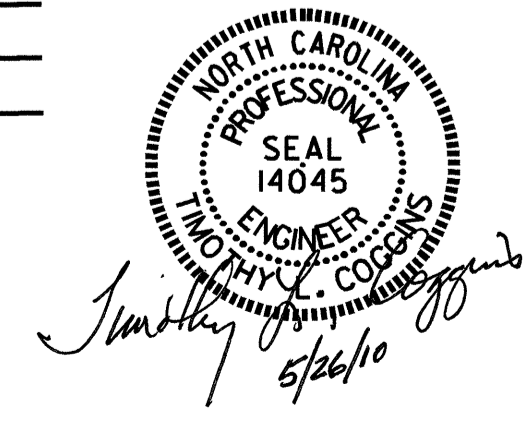


**REINFORCING STEEL LAYOUT**  
(TYP. FOR BENTS #1 AND #2)

PROJECT NO. R-4900  
COLUMBUS COUNTY  
 STATION: 42+58.19 -L-

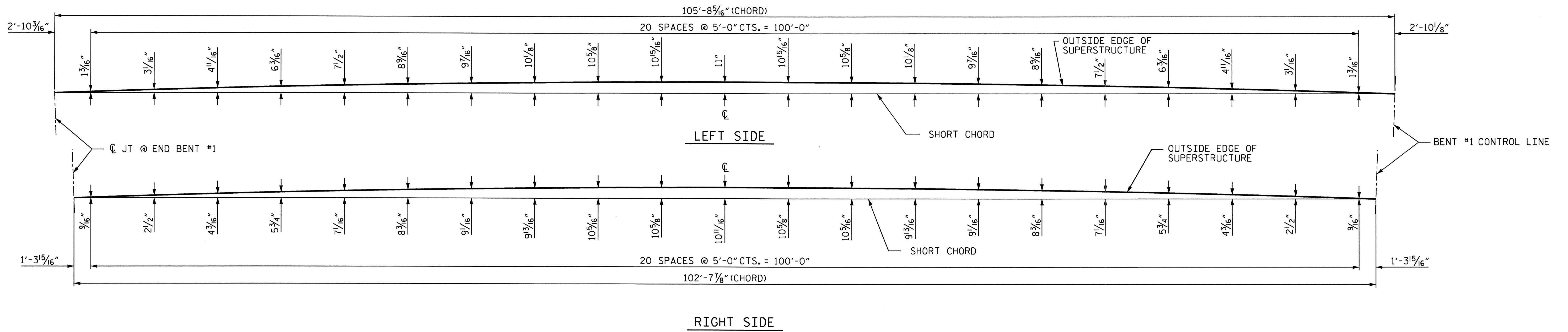
SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE					
PLAN OF SPAN A AND PART PLAN OF SPAN B					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-8					TOTAL SHEETS 35

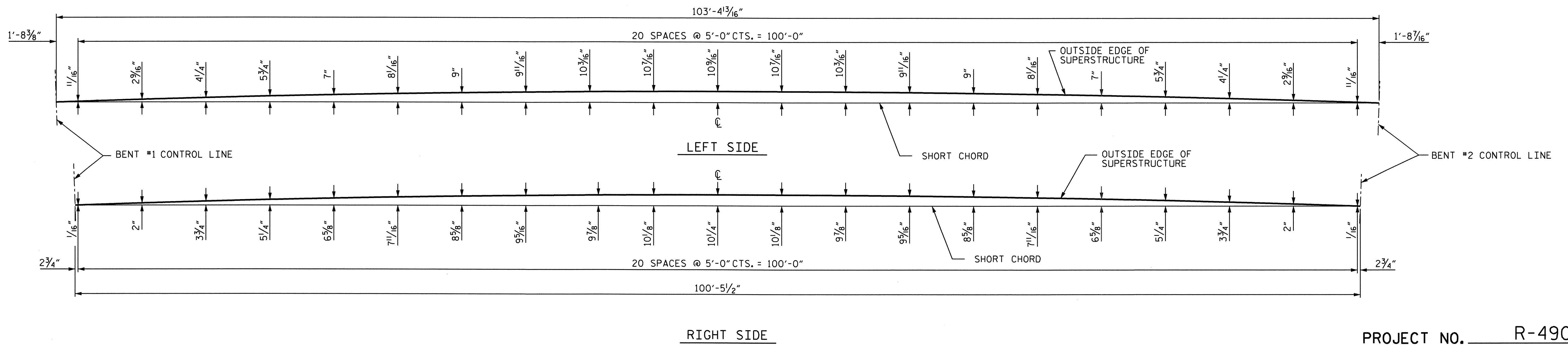


DRAWN BY: PEGGY ADKINS DATE: 8-12-09  
 CHECKED BY: J. B. WILSON DATE: 1-12-10





ARC OFFSETS - SPAN A



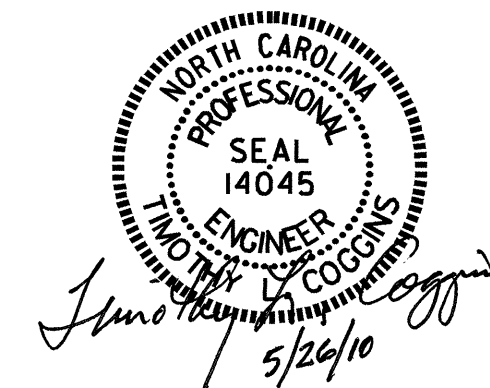
ARC OFFSETS - SPAN B

PROJECT NO. R-4900  
COLUMBUS COUNTY  
 STATION: 42+58.19 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

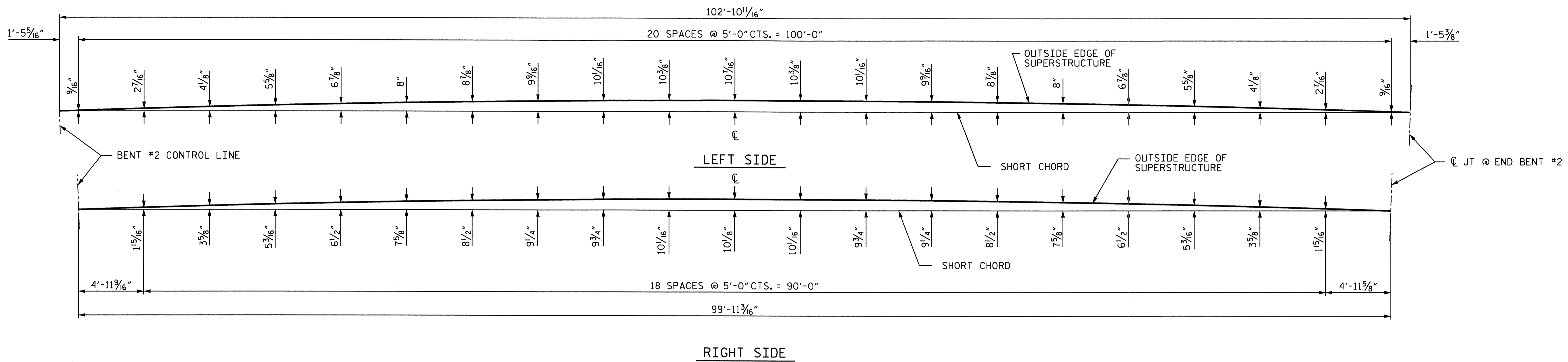
SUPERSTRUCTURE  
 ARC OFFSETS



DRAWN BY : PEGGY PARISI DATE : 8-12-09  
 CHECKED BY : J. B. WILSON DATE : 1-12-10

26-MAY-2010 11:59  
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 tcoggins

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			35



ARC OFFSETS - SPAN C

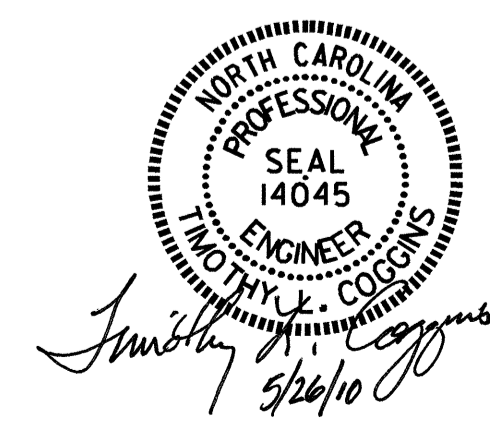
PROJECT NO. R-4900  
COLUMBUS COUNTY  
 STATION: 42+58.19 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

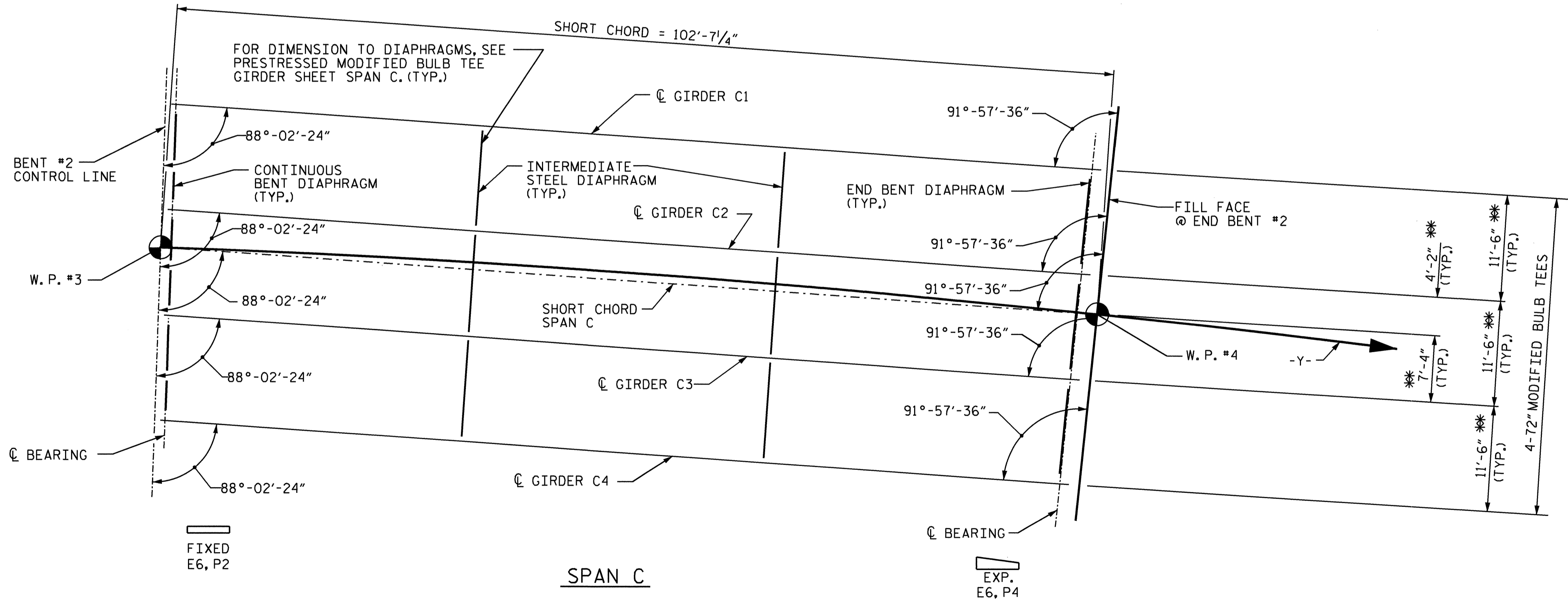
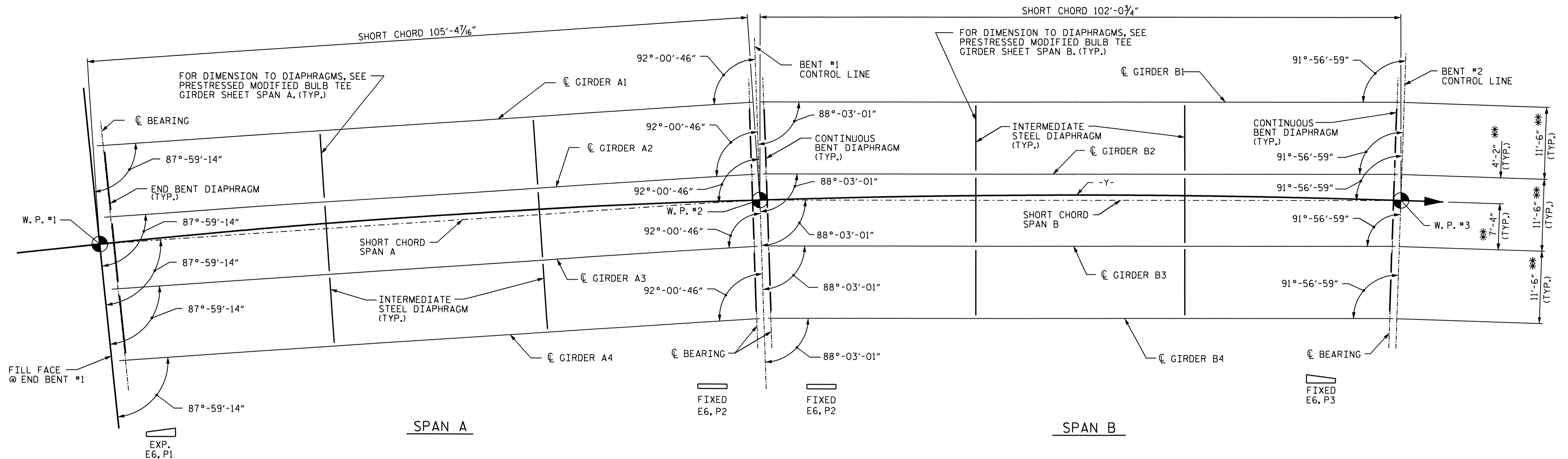
SUPERSTRUCTURE  
 ARC OFFSETS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			35



DRAWN BY : PEGGY PARISI DATE : 8-12-09  
 CHECKED BY : J. B. WILSON DATE : 1-12-10

26-MAY-2010 11:59  
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 tcoggins



**GIRDER LAYOUT**

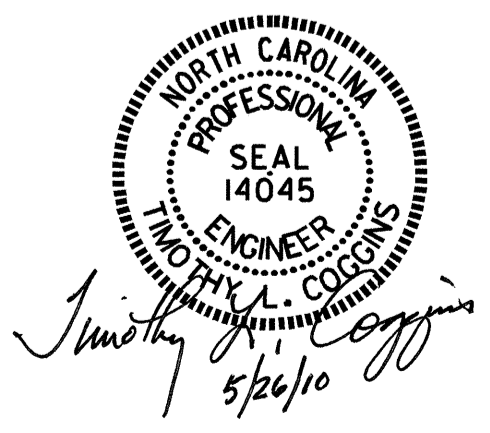
\* RADIAL DIMENSION THRU WORKPOINT

PROJECT NO. R-4900  
COLUMBUS COUNTY  
 STATION: 42+58.19 -L-

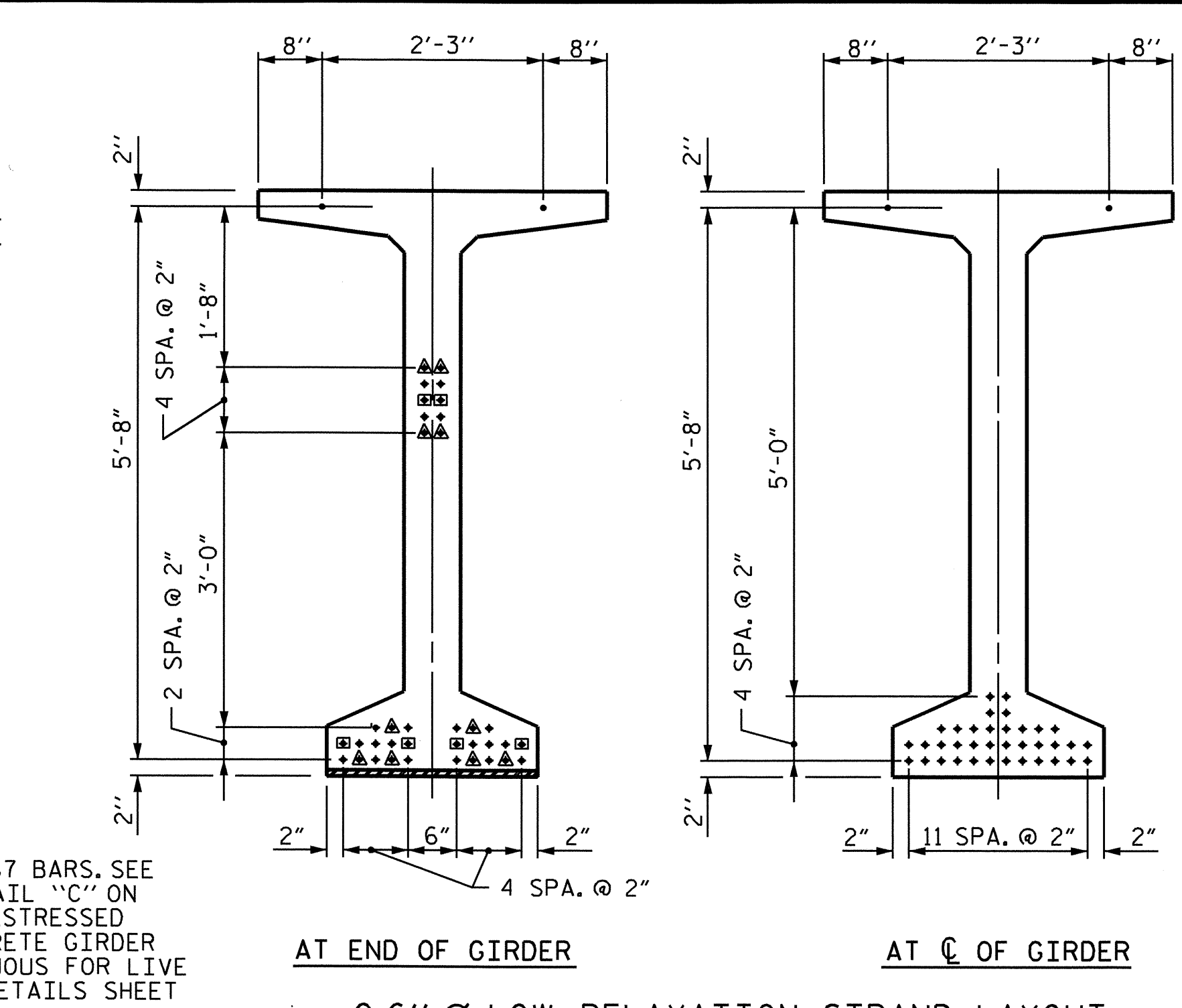
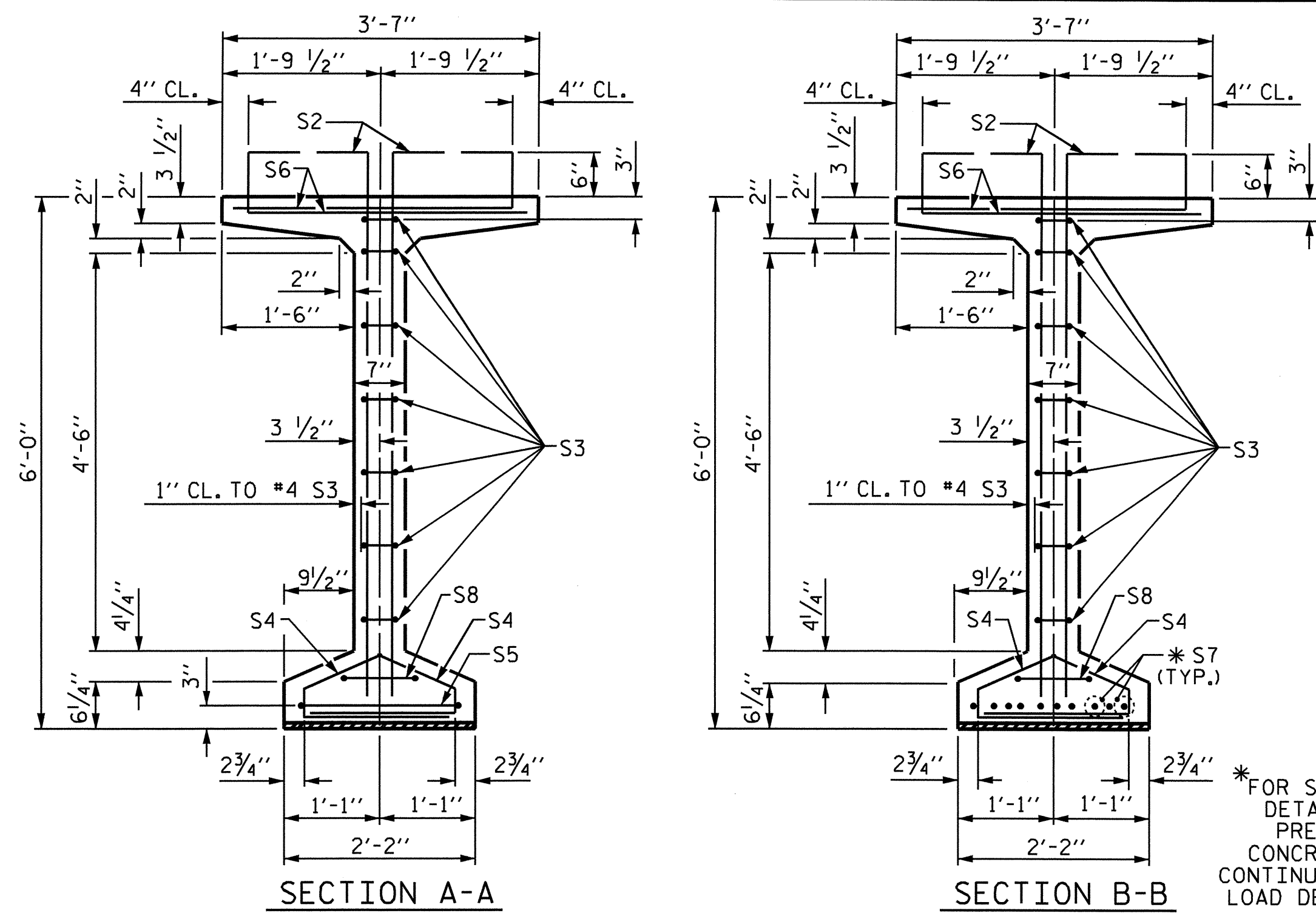
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUPERSTRUCTURE  
 GIRDER LAYOUT**

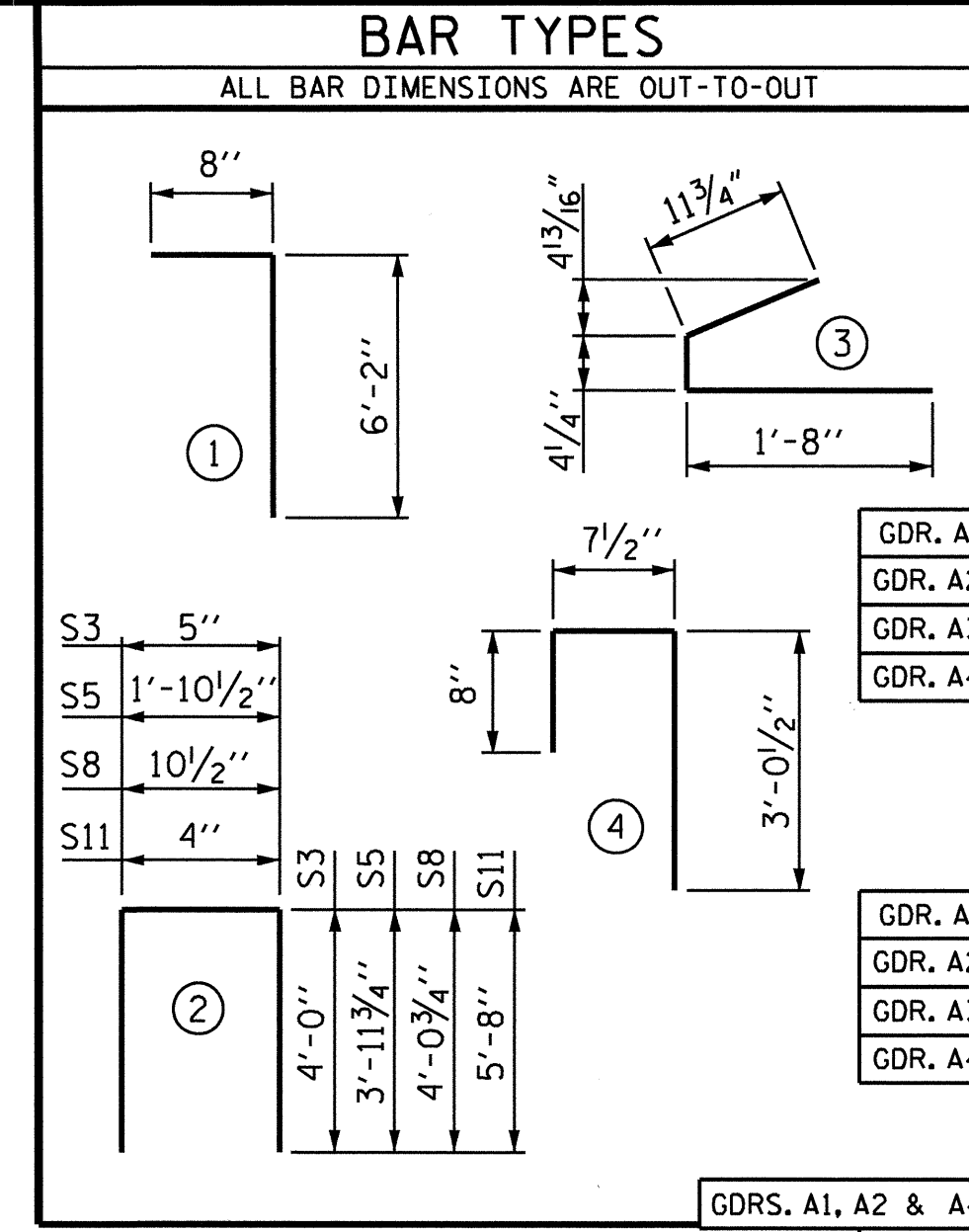
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12	
1			3			TOTAL SHEETS	
2			4			35	



DRAWN BY : PEGGY PARISI DATE : 8-10-09  
 CHECKED BY : J. B. WILSON DATE : 1-12-10



0.6" Ø LOW RELAXATION STRAND LAYOUT



0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQ. INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER						
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	
GDR. A1	S1	182	#4	1	6'-10"	831
GDR. A2	S1	178	#4	1	6'-10"	813
GDR. A3	S1	176	#4	1	6'-10"	803
GDR. A4	S1	174	#4	1	6'-10"	794
	S2	24	#6	1	6'-10"	246
	S3	14	#4	2	8'-5"	79
	S4	84	#4	3	3'-0"	168
	S5	1	#5	2	9'-10"	10
GDR. A1	S6	103	#5	4	4'-4"	466
GDR. A2	S6	101	#5	4	4'-4"	456
GDR. A3	S6	100	#5	4	4'-4"	452
GDR. A4	S6	99	#5	4	4'-4"	447
	* S7	10	#5	STR	3'-8"	38
	S8	2	#5	2	9'-0"	19
GDRS. A1, A2 & A4	S9	30	#5	STR	3'-3"	102
GDR. A3	S9	29	#5	STR	3'-3"	98
	S10	1	#3	STR	1'-10"	1
	S11	8	#5	2	11'-8"	97
	S12	16	#4	STR	8'-0"	86

- DEBONDING LEGEND
- FULLY BONDED STRANDS
  - STRANDS DEBONDED FOR 2'-0" FROM END OF GIRDER
  - STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER

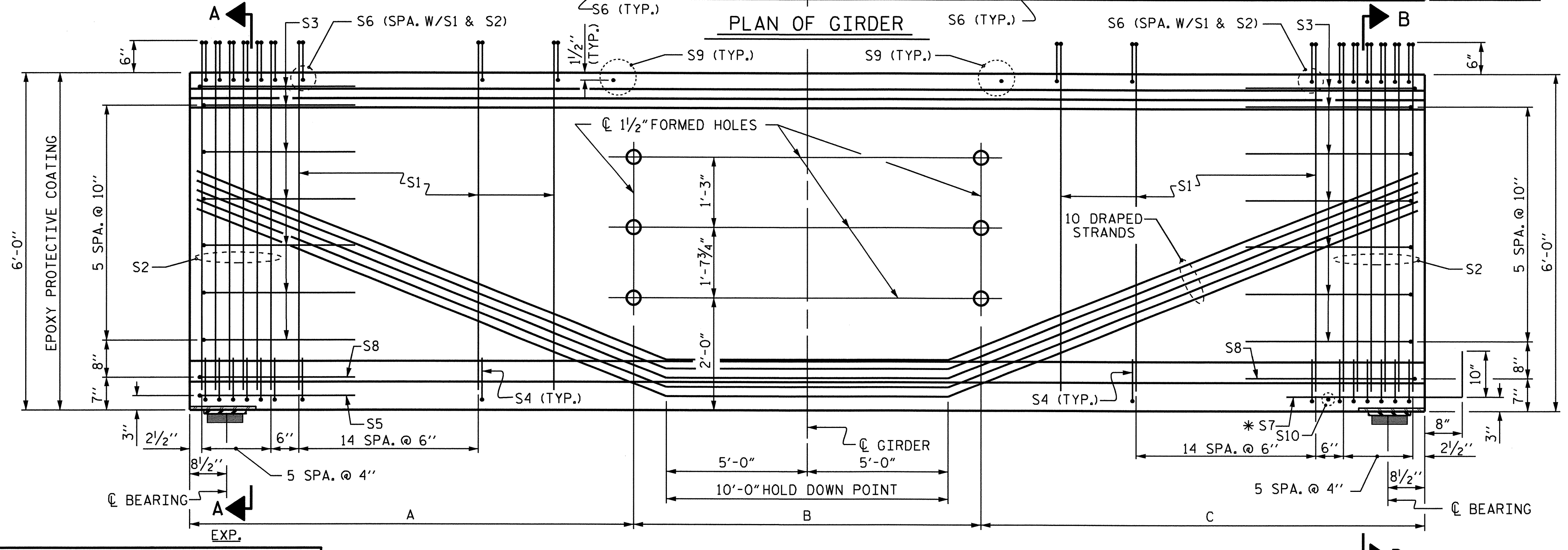
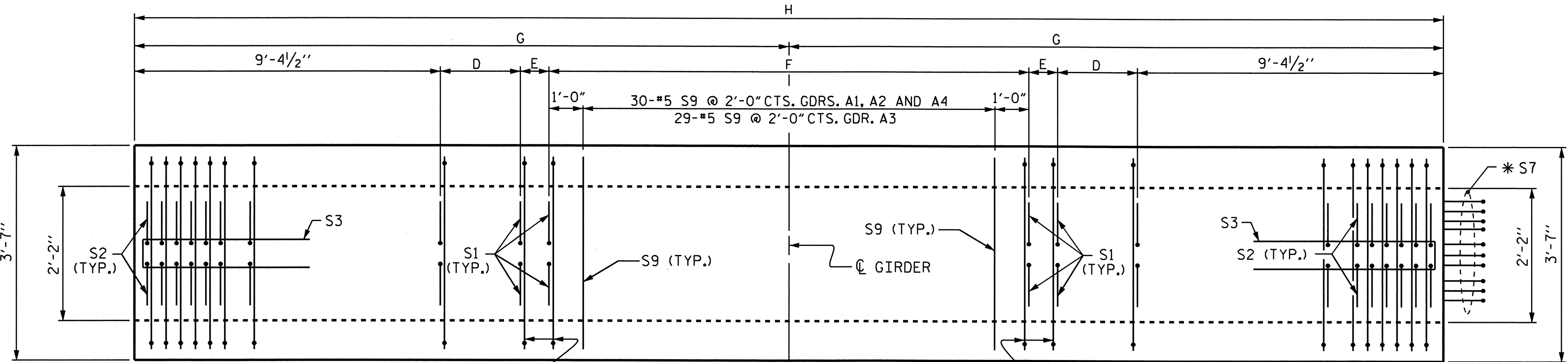
\* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	8000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
GDR. A1	2143	22.4	38
GDR. A2	2115	22.2	38
GDR. A3	2097	22.1	38
GDR. A4	2087	21.9	38

GIRDERS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
GDR. A1	1	104'-7 <sup>1</sup> / <sub>8</sub> "	104'-7 <sup>1</sup> / <sub>8</sub> "
GDR. A2	1	103'-9 <sup>1</sup> / <sub>2</sub> "	103'-9 <sup>1</sup> / <sub>2</sub> "
GDR. A3	1	102'-11 <sup>3</sup> / <sub>4</sub> "	102'-11 <sup>3</sup> / <sub>4</sub> "
GDR. A4	1	102'-2 <sup>1</sup> / <sub>8</sub> "	102'-2 <sup>1</sup> / <sub>8</sub> "

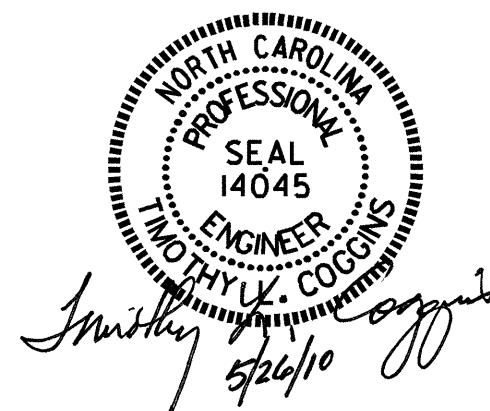
SEE CHART ON "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET FOR DIMENSIONS "A" THRU "H".

FOR PARTIAL ELEVATION AND SECTION VIEW SHOWING S11 AND S12 BARS AT INTERMEDIATE DIAPHRAGMS, SEE "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET.



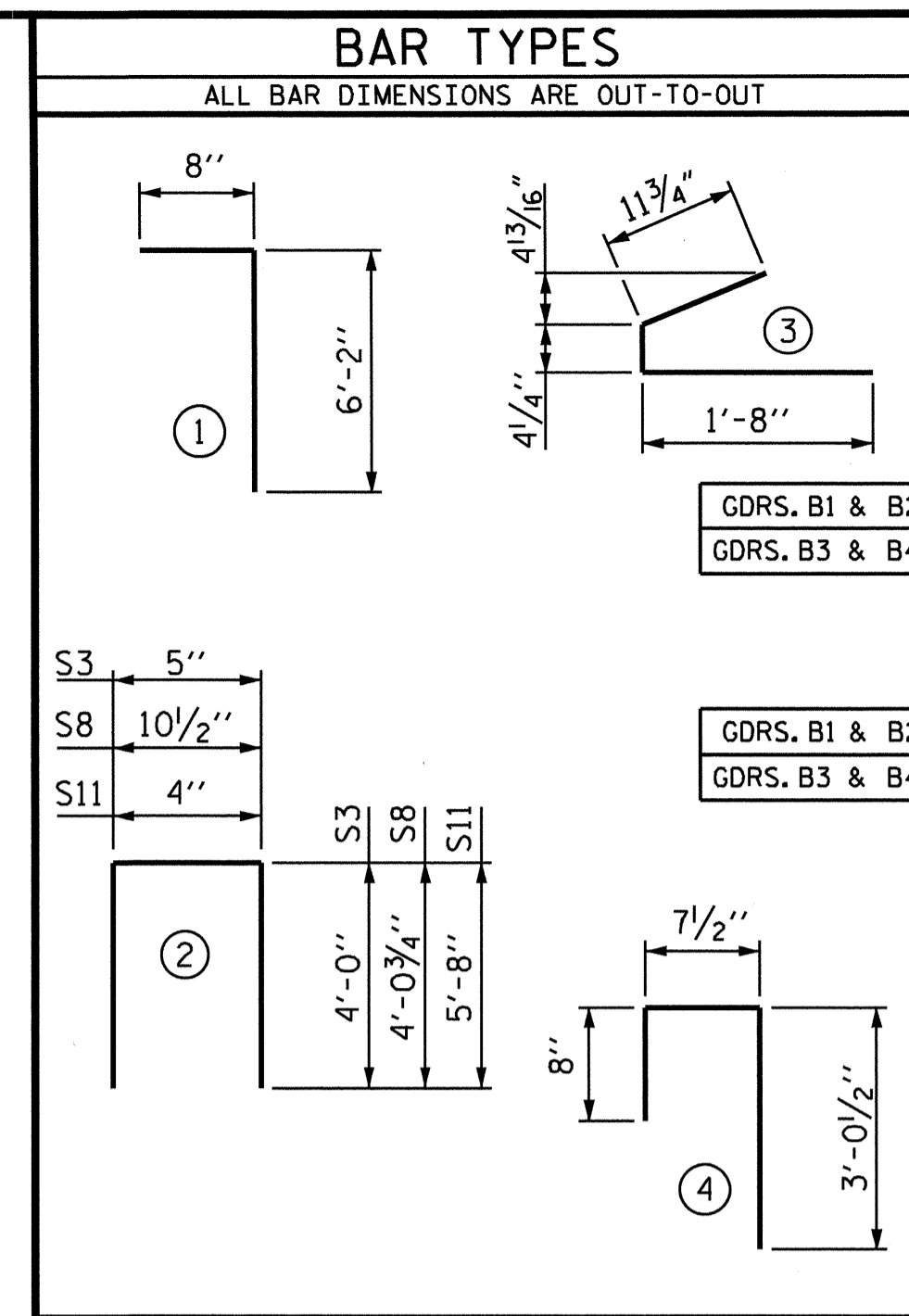
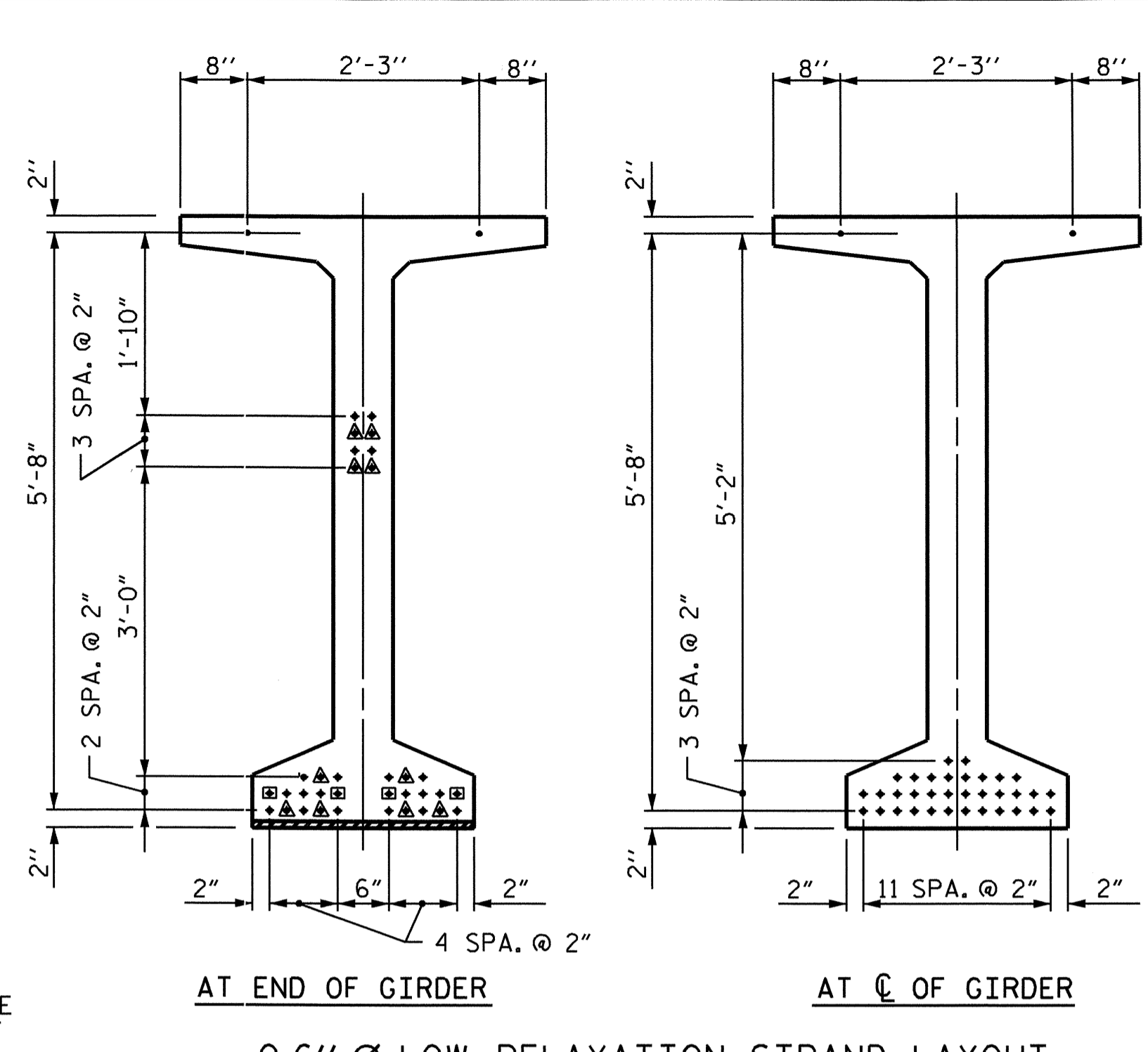
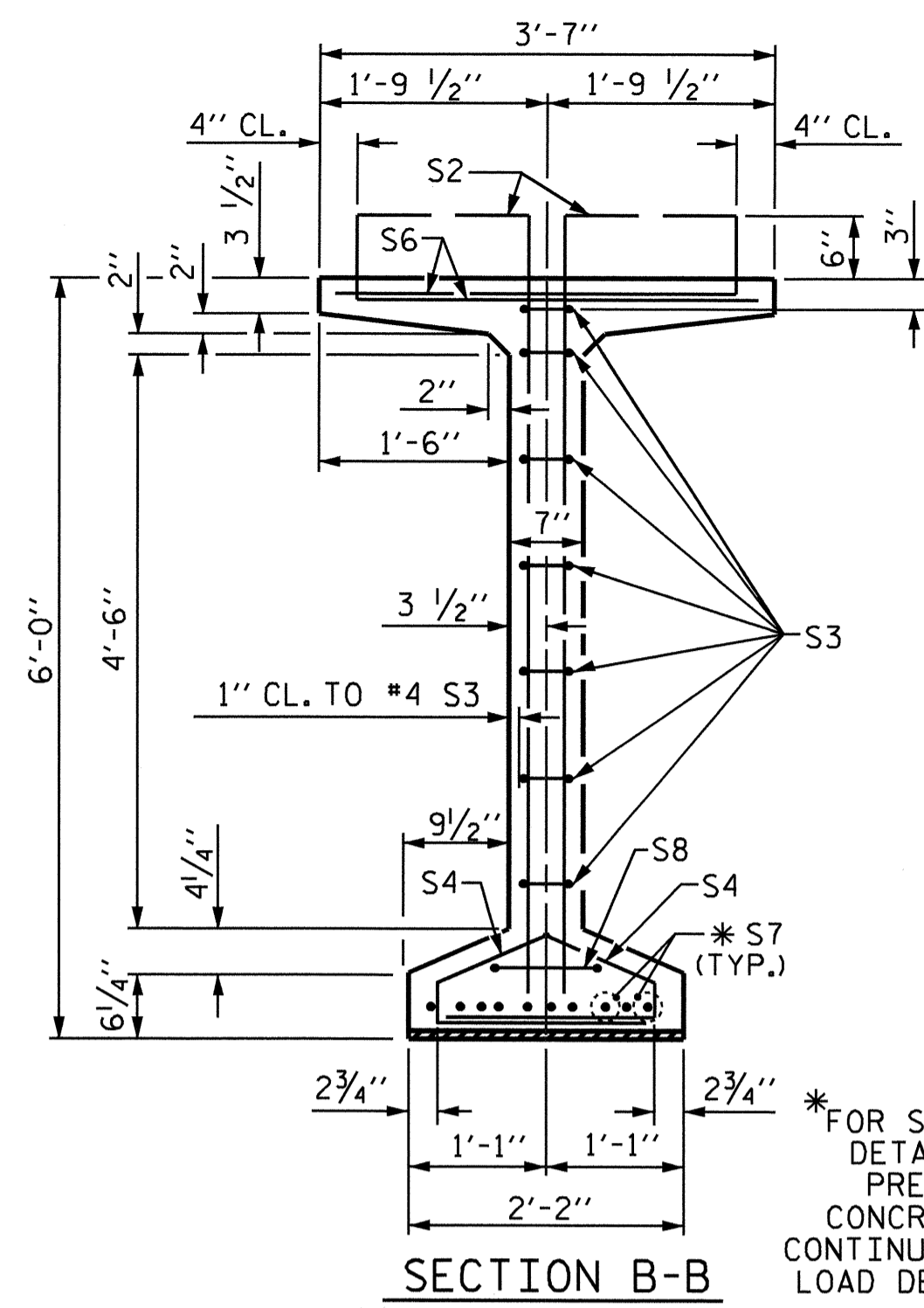
ELEVATION OF GIRDER

ASSEMBLED BY : PEGGY PARTI DATE : 1-5-2010  
 CHECKED BY : J. B. WILSON DATE : 1-12-10  
 DRAWN BY : EEM 2/6/97 REV. 8/16/99 RWW/LES  
 CHECKED BY : VAP 2/6/97 REV. 10/17/00 RWW/LES  
 REV. 5/1/06R TLA/GM



PROJECT NO. R-4900  
 COLUMBUS COUNTY  
 STATION: 42+58.19 -L-

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			35



0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER						
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	
GDRS. B1 & B2	S1	170	#4	1	6'-10"	776
GDRS. B3 & B4	S1	166	#4	1	6'-10"	758
	S2	24	#6	1	6'-10"	246
	S3	14	#4	2	8'-5"	79
	S4	84	#4	3	3'-0"	168
GDRS. B1 & B2	S6	97	#5	4	4'-4"	438
GDRS. B3 & B4	S6	95	#5	4	4'-4"	429
	* S7	20	#5	STR	3'-8"	76
	S8	2	#5	2	9'-0"	19
	S9	28	#5	STR	3'-3"	95
	S10	2	#3	STR	1'-10"	1
	S11	8	#5	2	11'-8"	97
	S12	16	#4	STR	8'-0"	86

\* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	8000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
GDR. B1	2081	21.9	36
GDR. B2	2081	21.8	36
GDR. B3	2054	21.6	36
GDR. B4	2054	21.4	36

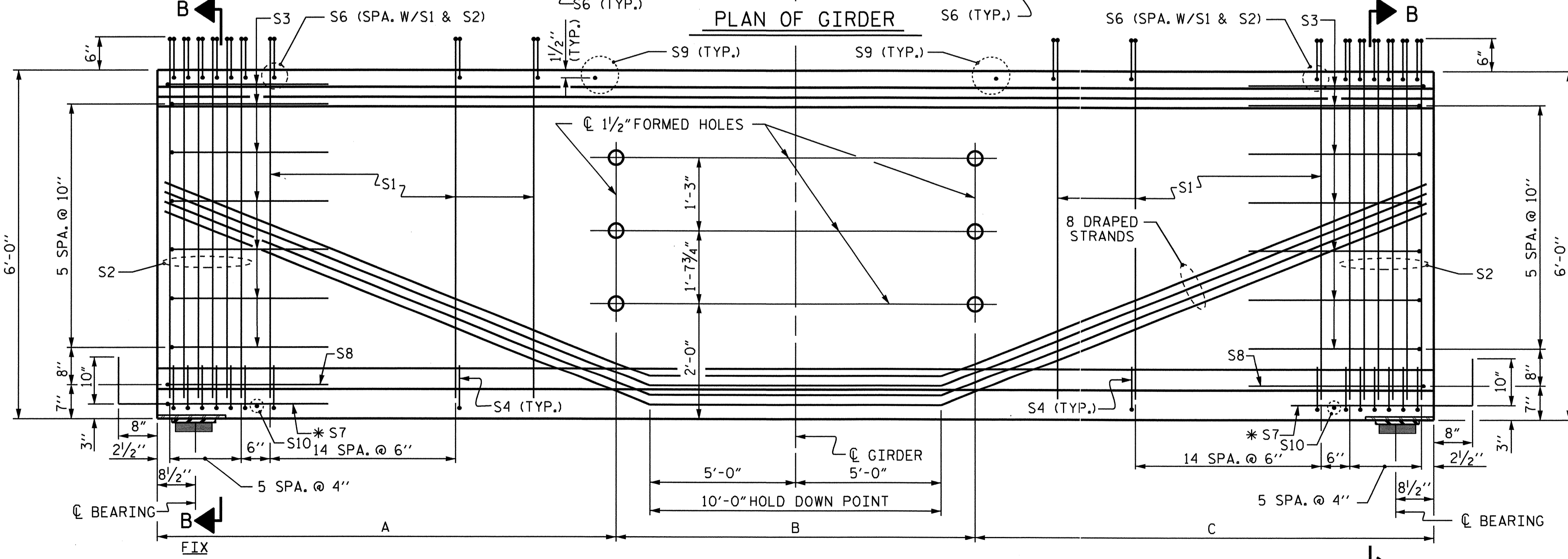
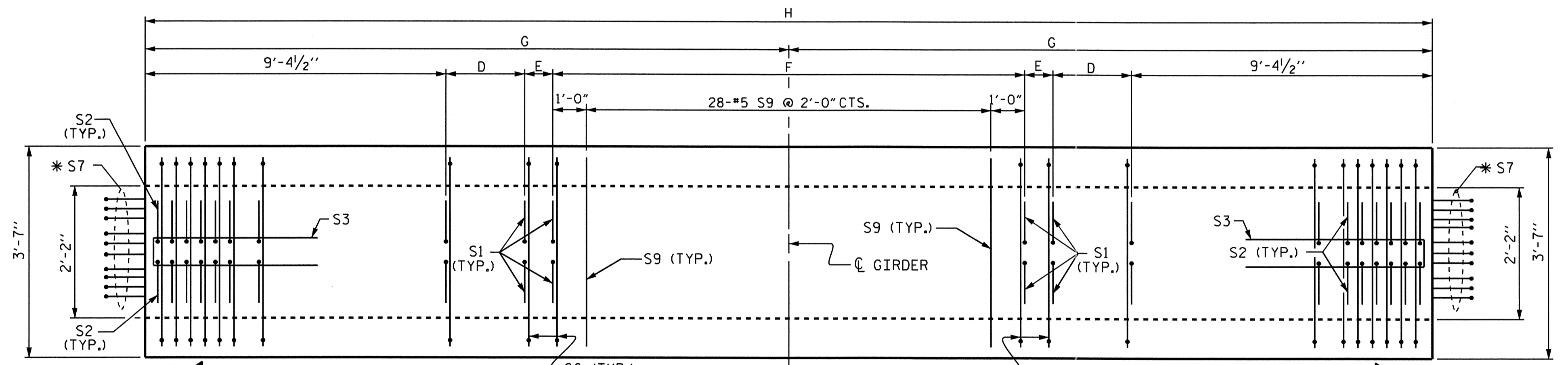
GIRDERS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
GDR. B1	1	102'-3 5/8"	102'-3 5/8"
GDR. B2	1	101'-6 1/4"	101'-6 1/4"
GDR. B3	1	100'-8 3/4"	100'-8 3/4"
GDR. B4	1	99'-11 3/8"	99'-11 3/8"

DEBONDING LEGEND

- FULLY BONDED STRANDS
- ▲ STRANDS DEBONDED FOR 2'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER

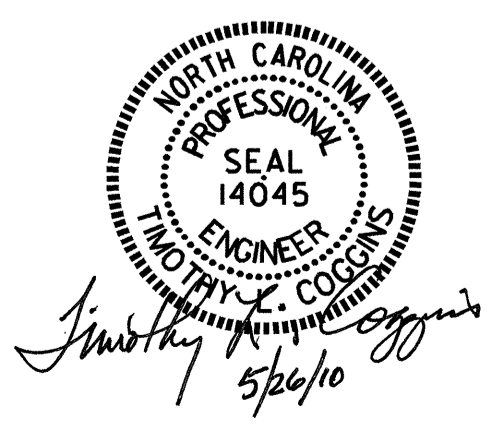
SEE CHART ON "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET FOR DIMENSIONS "A" THRU "H".

FOR PARTIAL ELEVATION AND SECTION VIEW SHOWING S11 AND S12 BARS AT INTERMEDIATE DIAPHRAGMS, SEE "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET.



ASSEMBLED BY: PEGGY PARISI DATE: 1-5-2010  
 CHECKED BY: J. B. WILSON DATE: 1-12-10  
 DRAWN BY: EEM 2/6/97 REV. 8/16/99 RWW/LES  
 CHECKED BY: VAP 2/6/97 REV. 10/17/00 RWW/LES  
 REV. 5/1/06R TLA/GM

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 Tcoppins

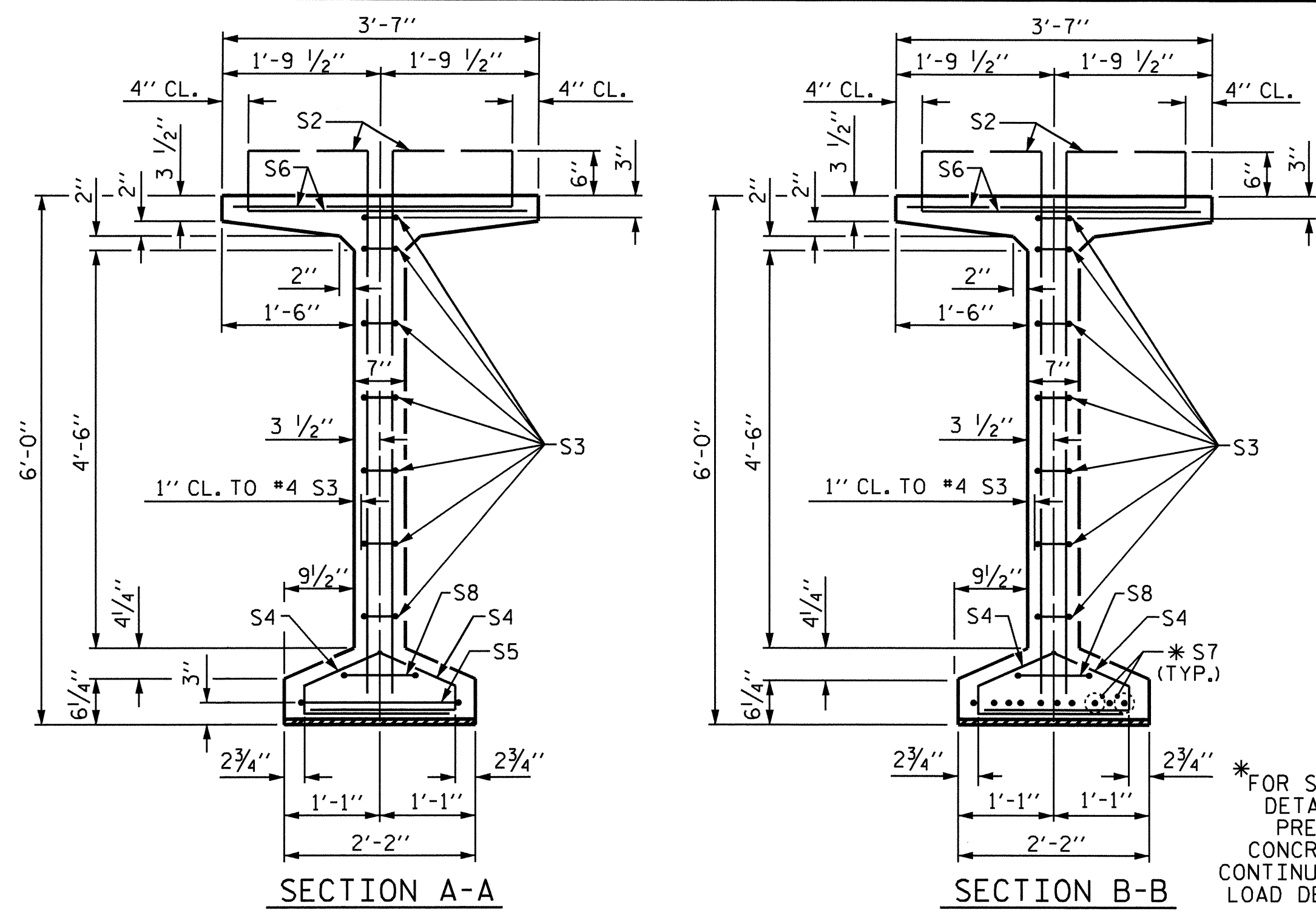


PROJECT NO. R-4900  
 COLUMBUS COUNTY  
 STATION: 42+58.19 -L-

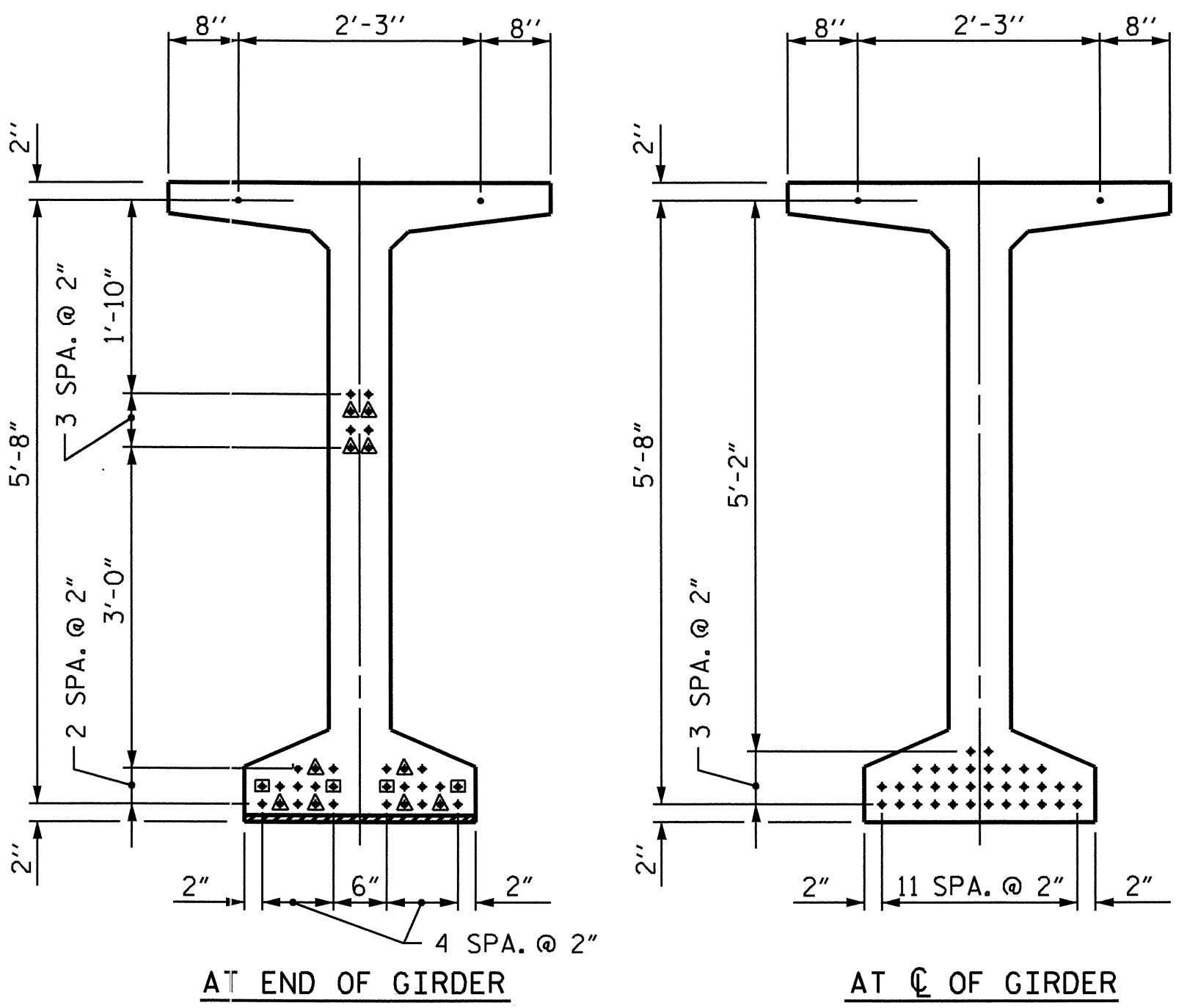
SHEET 2 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD SPAN B					
72" PRESTRESSED CONCRETE MODIFIED BULB TEE CONTINUOUS FOR LIVE LOAD					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 35
					S-14

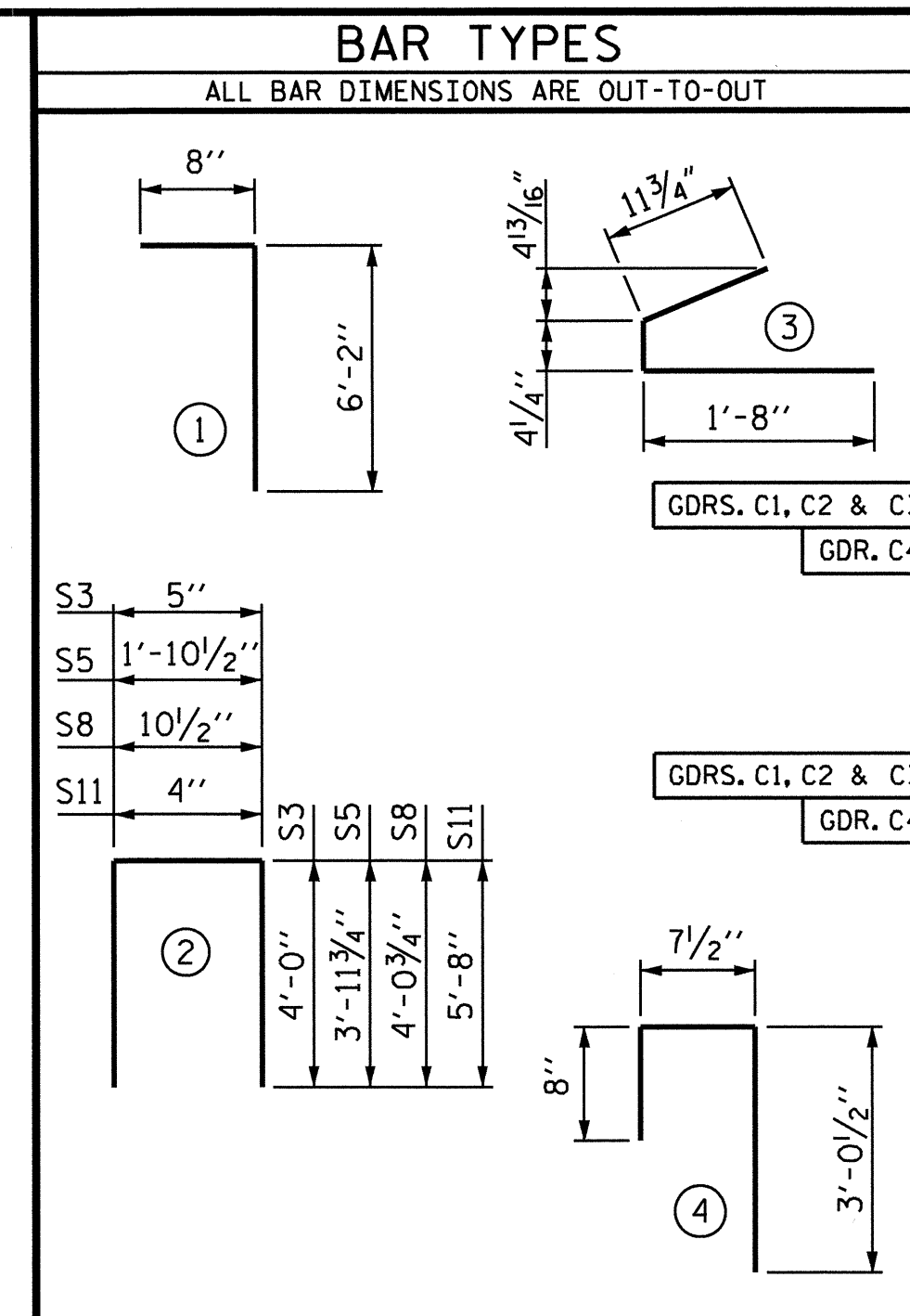
STD. NO. PCG10



\*FOR S7 BARS. SEE  
DETAIL "C" ON  
PRESTRESSED  
CONCRETE GIRDER  
CONTINUOUS FOR LIVE  
LOAD DETAILS SHEET



0.6" Ø LOW RELAXATION STRAND LAYOUT



0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	166	#4	1	6'-10"	758
S1	162	#4	1	6'-10"	739
S2	24	#6	1	6'-10"	246
S3	14	#4	2	8'-5"	79
S4	84	#4	3	3'-0"	168
S5	1	#5	2	9'-10"	10
S6	95	#5	4	4'-4"	429
S6	93	#5	4	4'-4"	420
*S7	10	#5	STR	3'-8"	38
S8	2	#5	2	9'-0"	19
S9	28	#5	STR	3'-3"	95
S10	1	#3	STR	1'-10"	1
S11	8	#5	2	11'-8"	97
S12	16	#4	STR	8'-0"	86

\*NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

QUANTITIES FOR ONE GIRDER

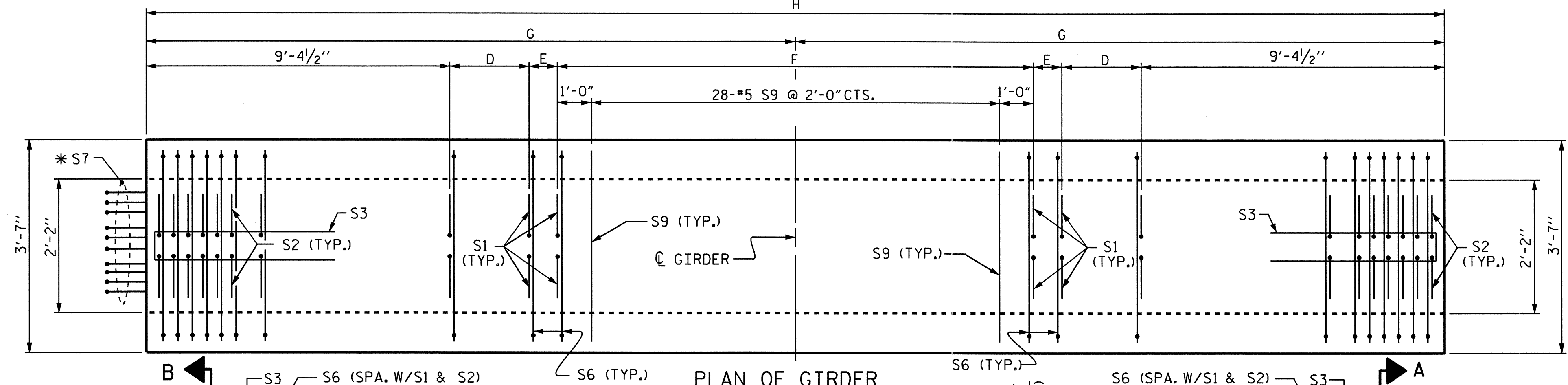
	REINFORCING STEEL		8000 PSI CONCRETE		0.6" Ø L.R. STRANDS	
	LB.	C.Y.		No.		
GDR. C1	2026	21.8		36		
GDR. C2	2026	21.6		36		
GDR. C3	2026	21.5		36		
GDR. C4	1998	21.3		36		

GIRDERS REQUIRED

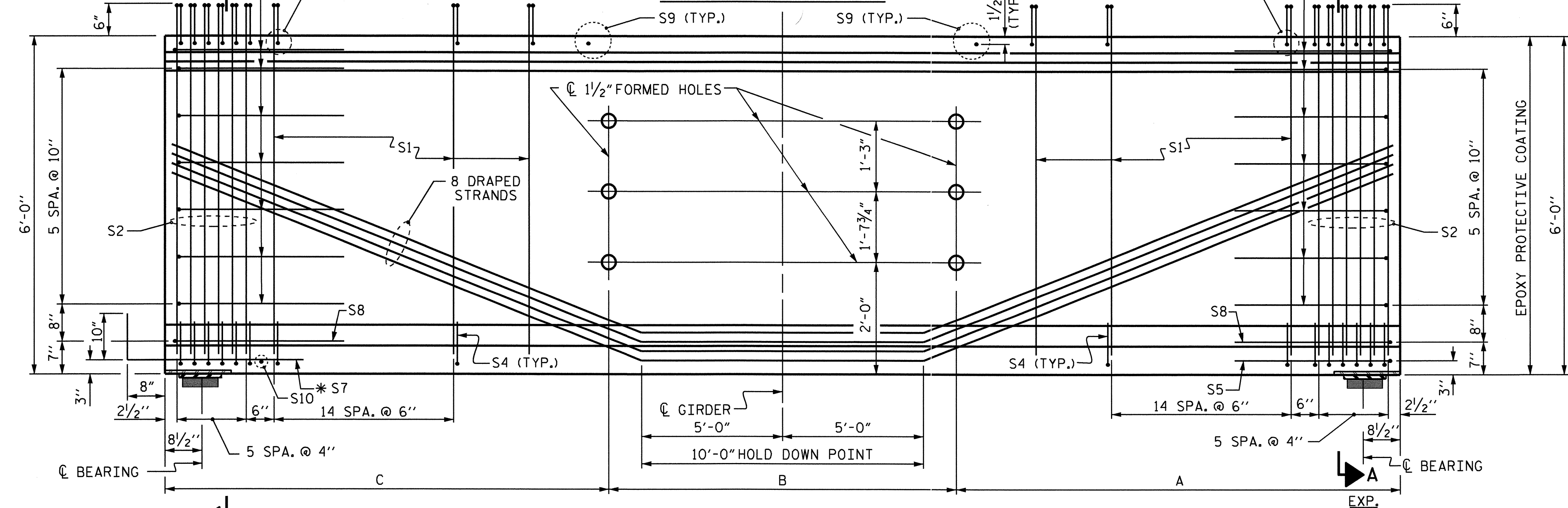
	NUMBER	LENGTH	TOTAL LENGTH
GDR. C1	1	101'-9 5/8"	101'-9 5/8"
GDR. C2	1	101'-0 1/8"	101'-0 1/8"
GDR. C3	1	100'-2 3/4"	100'-2 3/4"
GDR. C4	1	99'-5 1/4"	99'-5 1/4"

- DEBONDING LEGEND
- FULLY BONDED STRANDS
  - ▲ STRANDS DEBONDED FOR 2'-0" FROM END OF GIRDER
  - STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER

SEE CHART ON "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET FOR DIMENSIONS "A" THRU "H".  
FOR PARTIAL ELEVATION AND SECTION VIEW SHOWING S11 AND S12 BARS AT INTERMEDIATE DIAPHRAGMS, SEE "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET.



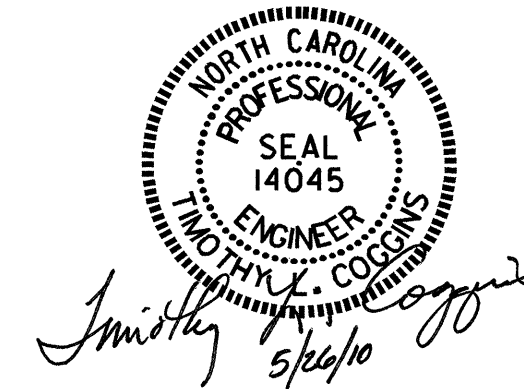
PLAN OF GIRDER



ELEVATION OF GIRDER

ASSEMBLED BY: PEGGY PARISI DATE: 1-5-2010  
CHECKED BY: J. B. WILSON DATE: 1-12-10  
DRAWN BY: EEM 2/6/97 REV. 8/16/99 RWW/LES  
CHECKED BY: VAP 2/6/97 REV. 10/17/00 RWW/LES  
REV. 5/1/06R TLA/GM

FIX



PROJECT NO. R-4900  
COLUMBUS COUNTY  
STATION: 42+58.19 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
SPAN C  
72" PRESTRESSED CONCRETE  
MODIFIED BULB TEE  
CONTINUOUS FOR LIVE LOAD

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

TOTAL SHEETS 35



NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. BEVEL EDGES OF PLATE "B-1" TO GIVE CLOSE FIT BUT NOT TIGHT FIT TO STEEL CASTING FORM.

ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6200 PSI.

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

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

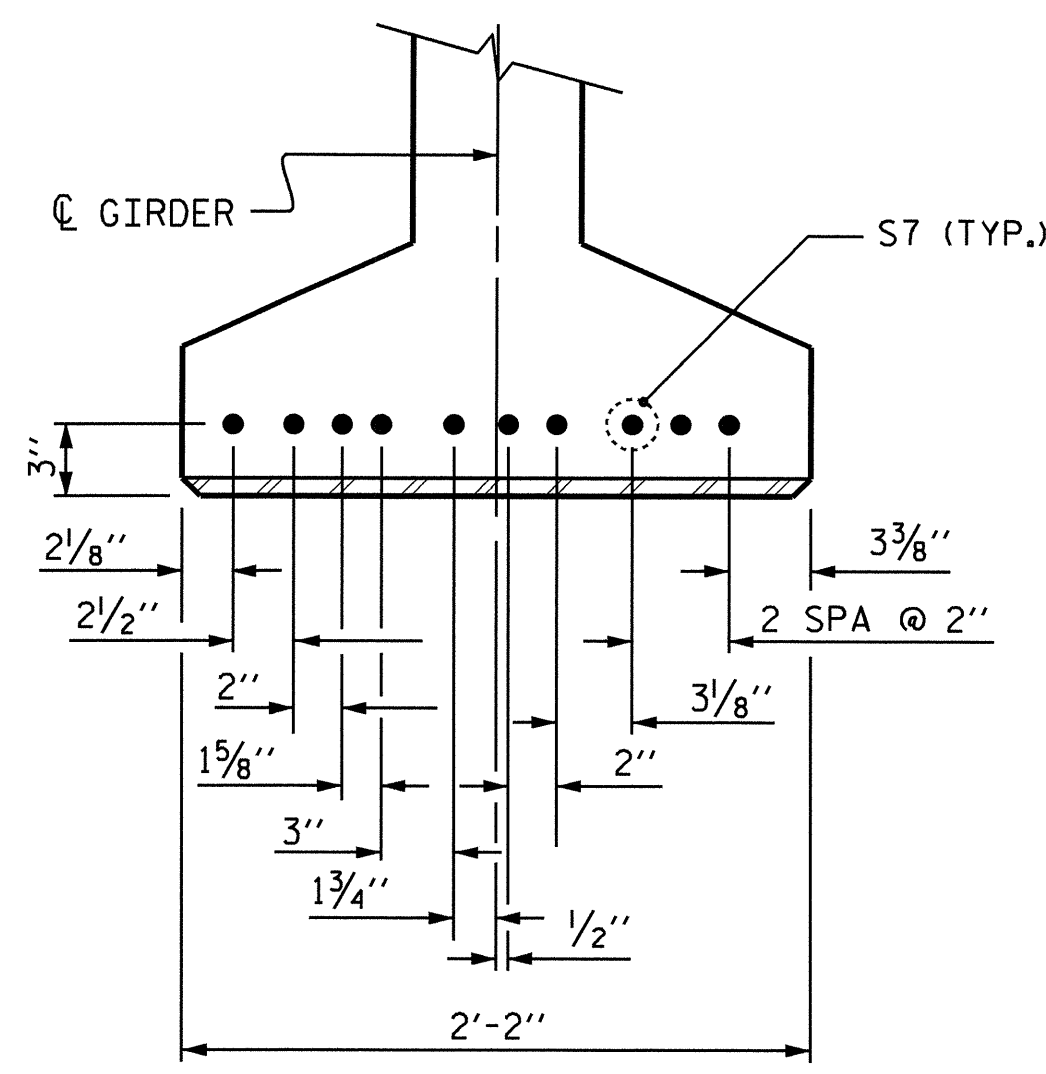
WHEN DRAPED STRANDS ARE DETAILED, THE LONGITUDINAL LOCATION OF THE HOLD DOWN DEVICES SHALL BE WITHIN 6" OF THE LOCATION SHOWN AND THE CENTER OF GRAVITY OF THE GROUP OF DRAPED STRANDS SHALL BE LOCATED WITHIN 1/2" OF THE THEORETICAL LOCATION SHOWN.

A 2" x 2" CHAMFER IS ALLOWED AT THE INTERSECTION OF THE WEB AND THE BOTTOM FLANGE OF THE 72" MODIFIED BULB TEE ONLY.

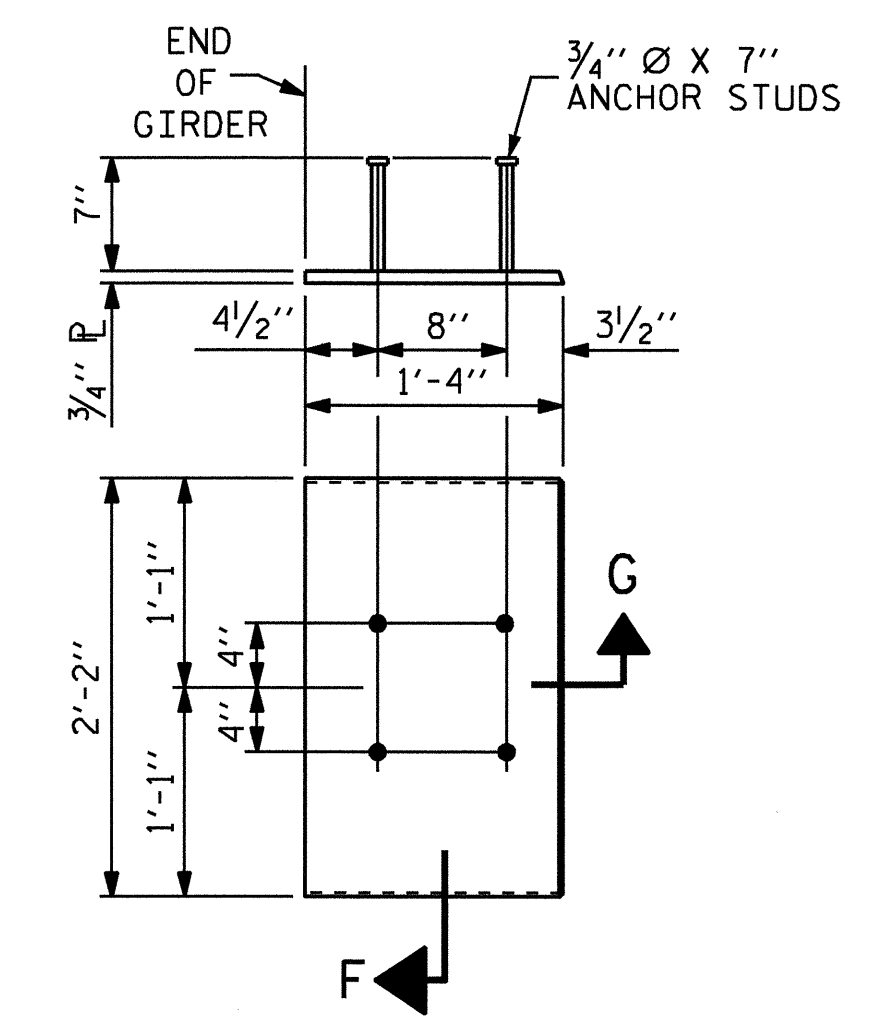
THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4500 lbs.

THE UPLIFT FORCE FOR GIRDERS IN SPAN A DUE TO DRAPED STRANDS IS 31.70 KIPS, SPAN B IS 25.98 KIPS AND SPAN C IS 26.13 KIPS.

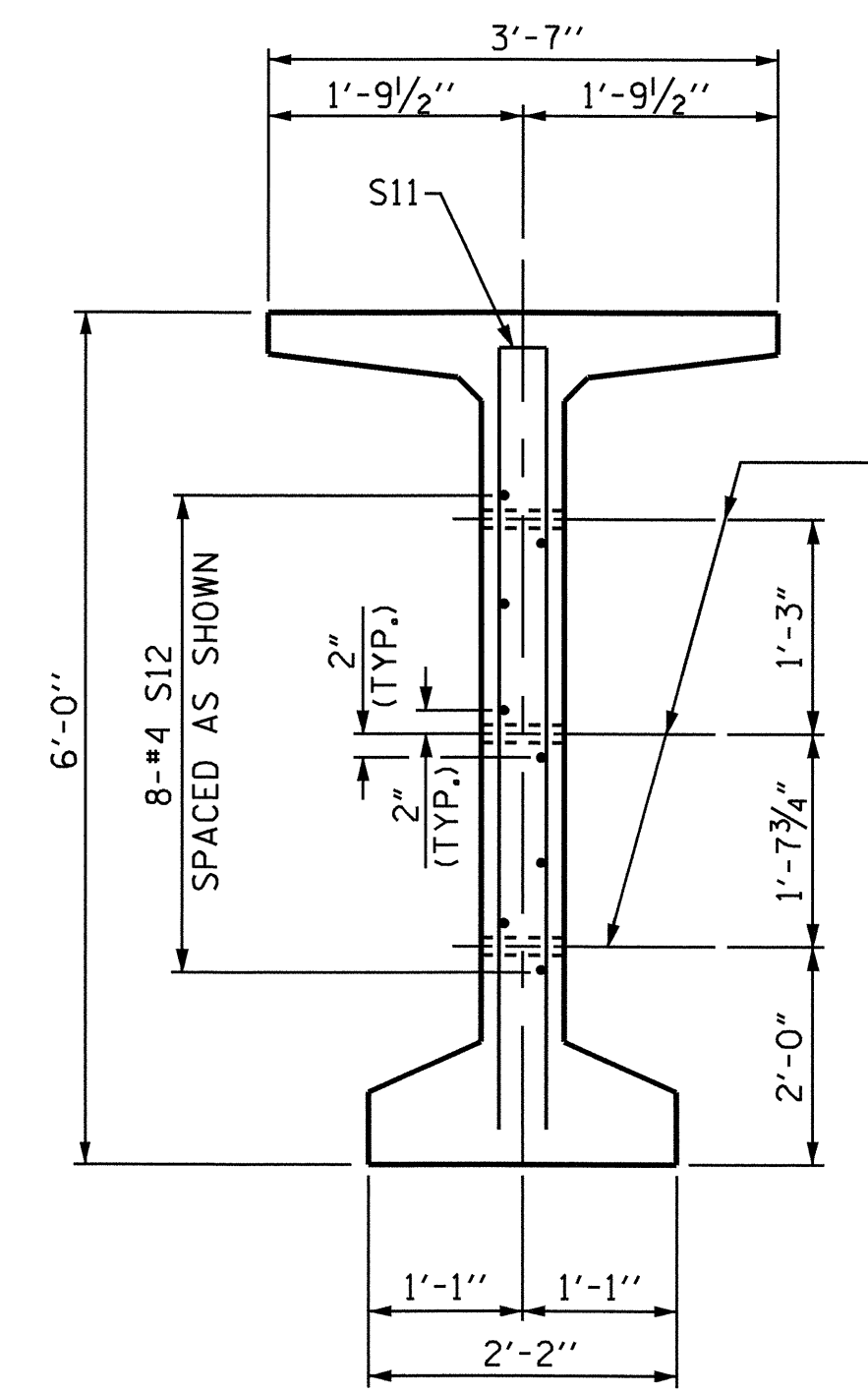
FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.



DETAIL "C"

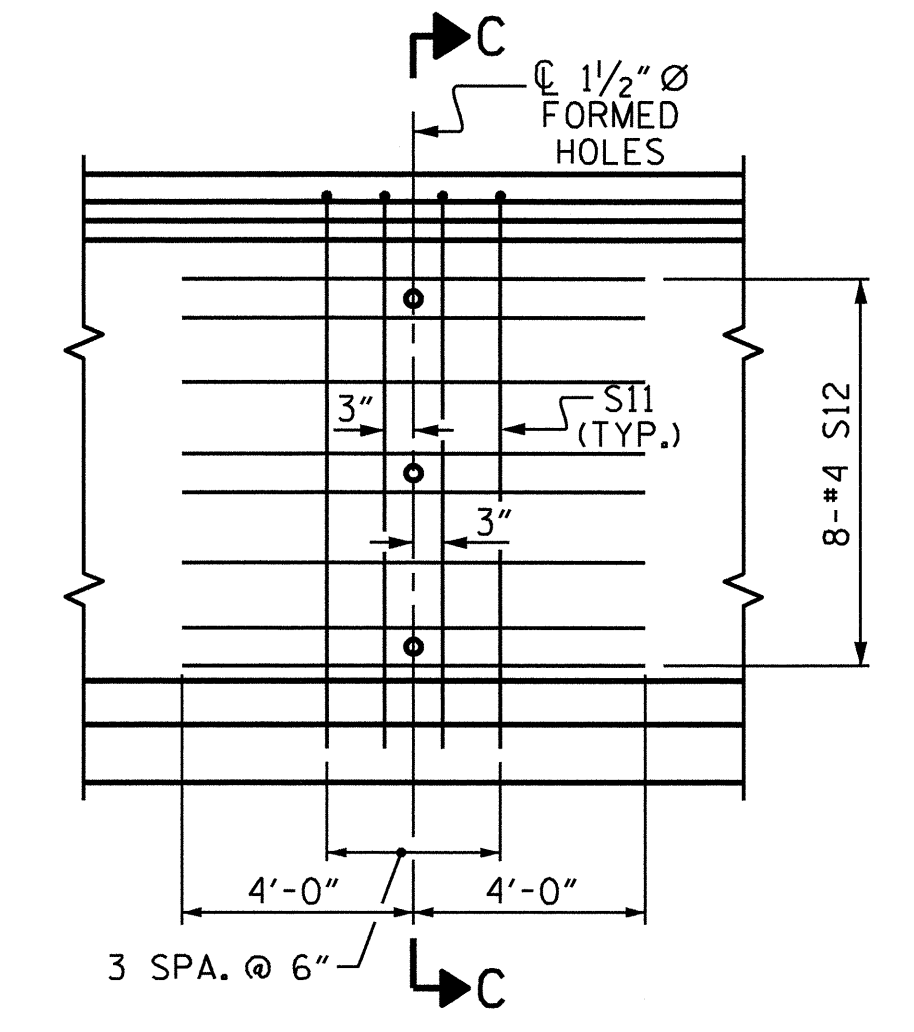


EMBEDDED PLATE "B-1" DETAILS FOR AASHTO 72" MODIFIED BULB TEES  
(2 REQ'D PER GIRDER)

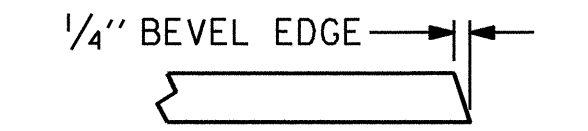


SECTION C-C  
(S1, S6 AND S9 BARS NOT SHOWN)

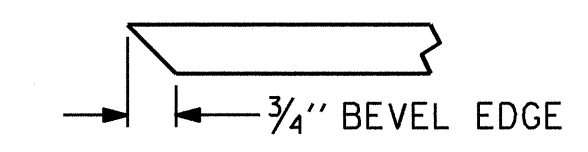
1/2" Ø FORMED HOLE SEE ELEVATION FOR LOCATION.



PARTIAL ELEVATION  
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDERS



SECTION "G"



SECTION "F"

(SEE NOTES)

GIRDER DIMENSIONS

DIM.	SPAN A				SPAN B				SPAN C			
	GIRDER A1	GIRDER A2	GIRDER A3	GIRDER A4	GIRDER B1	GIRDER B2	GIRDER B3	GIRDER B4	GIRDER C1	GIRDER C2	GIRDER C3	GIRDER C4
A	35'-3 9/16"	34'-10 3/4"	34'-5 7/8"	34'-1 1/16"	34'-6 5/16"	34'-1 5/8"	33'-8 7/8"	33'-4 3/16"	34'-4 5/16"	33'-11 9/16"	33'-6 7/8"	33'-2 1/8"
B	34'-0"	34'-0"	34'-0"	34'-0"	33'-3"	33'-3"	33'-3"	33'-3"	33'-1"	33'-1"	33'-1"	33'-1"
C	35'-3 9/16"	34'-10 3/4"	34'-5 7/8"	34'-1 1/16"	34'-6 5/16"	34'-1 5/8"	33'-8 7/8"	33'-4 3/16"	34'-4 5/16"	33'-11 9/16"	33'-6 7/8"	33'-2 1/8"
D	15 SPA. @ 10"	14 SPA. @ 10"	14 SPA. @ 10"	13 SPA. @ 10"	13 SPA. @ 1'-0"	13 SPA. @ 1'-0"	12 SPA. @ 1'-0"	12 SPA. @ 1'-0"	12 SPA. @ 1'-0"	12 SPA. @ 1'-0"	12 SPA. @ 1'-0"	11 SPA. @ 1'-0"
E	5/16"	10 1/4"	1'-5 3/8"	10 9/16"	9 9/16"	4 5/8"	11 1/8"	7 3/16"	1'-6 5/16"	1'-1 1/16"	8 7/8"	1'-4 1/8"
F	30 SPA. @ 2'-0"	30 SPA. @ 2'-0"	29 SPA. @ 2'-0"	30 SPA. @ 2'-0"	28 SPA. @ 2'-0"	28 SPA. @ 2'-0"	28 SPA. @ 2'-0"	28 SPA. @ 2'-0"	28 SPA. @ 2'-0"	28 SPA. @ 2'-0"	28 SPA. @ 2'-0"	28 SPA. @ 2'-0"
G	52'-3 9/16"	51'-10 3/4"	51'-5 7/8"	51'-1 1/16"	51'-1 3/16"	50'-9 1/8"	50'-4 3/8"	49'-11 1/16"	50'-10 13/16"	50'-6 1/16"	50'-1 3/8"	49'-8 5/8"
H	104'-7 1/8"	103'-9 1/2"	102'-11 3/4"	102'-2 1/8"	102'-3 5/8"	101'-6 1/4"	100'-8 3/4"	99'-11 3/8"	101'-9 5/8"	101'-0 1/8"	100'-2 3/4"	99'-5 1/4"

PROJECT NO. R-4900  
COLUMBUS COUNTY  
STATION: 42+58.19 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
PRESTRESSED CONCRETE GIRDER  
CONTINUOUS FOR LIVE LOAD  
DETAILS

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

TOTAL SHEETS 35



ASSEMBLED BY: PEGGY PARISI DATE: 8-18-09  
CHECKED BY: J. B. WILSON DATE: 1-12-10  
DRAWN BY: ELR 11/91 REV. 10/17/00 RWW/LES  
CHECKED BY: GRP 11/91 REV. 7/10/01RR LES/RDR  
REV. 5/1/06 TLA/GM

**STRUCTURAL STEEL NOTES**

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

TENSION ON THE AASHTO M164 BOLTS THROUGH THE ANGLE MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR DIRECT TENSION INDICATORS, SEE SPECIAL PROVISION.

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

THE PLATES, BENT PLATES, ANGLES, AND PLATE WASHERS SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

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

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

USE A MINIMUM 7/16" THICK PLATE WASHER WITH STANDARD HOLES UNDER EACH BOLT HEAD AND NUT. THE PLATE WASHERS SHALL HAVE SUFFICIENT SIZE TO COVER THE HOLES AFTER INSTALLATION. HARDENED WASHERS AND DIRECT TENSION INDICATORS ARE TO BE USED IN CONJUNCTION WITH THE PLATE WASHERS IN THE L 3 X 3 X 5/16 ANGLE MEMBER CONNECTION.

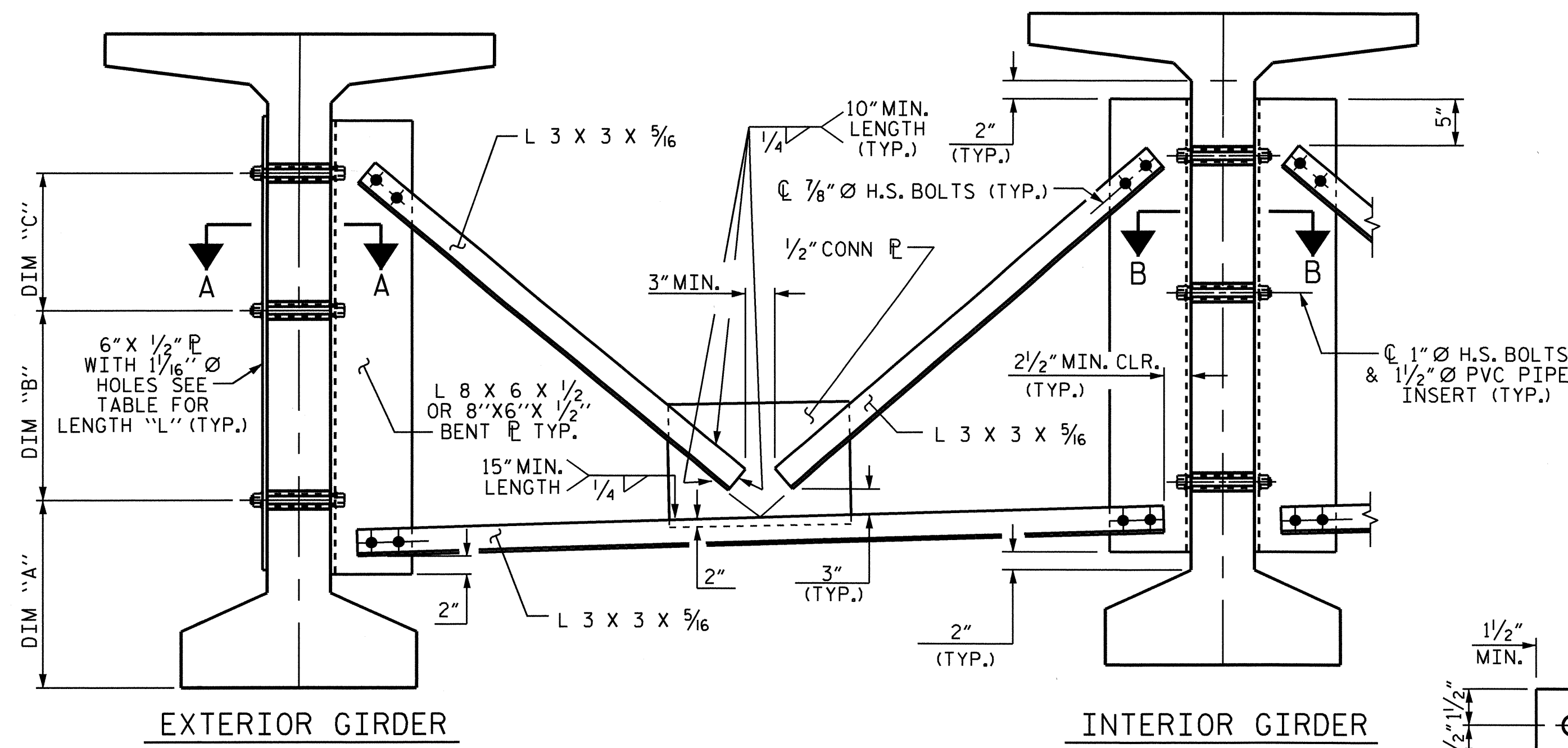
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

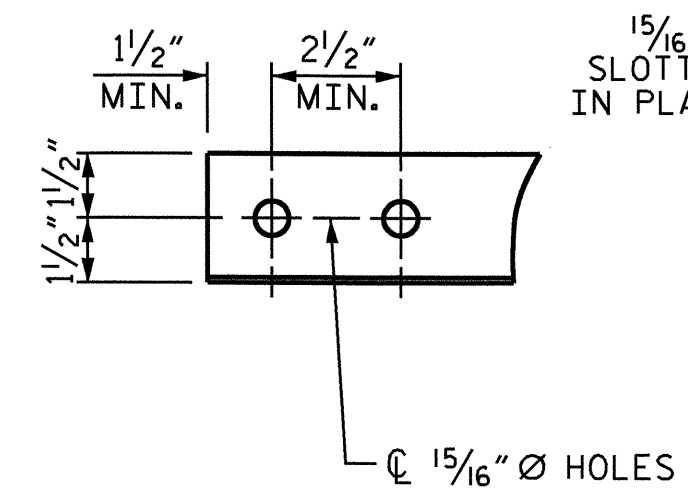
CONTRACTOR SHALL SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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

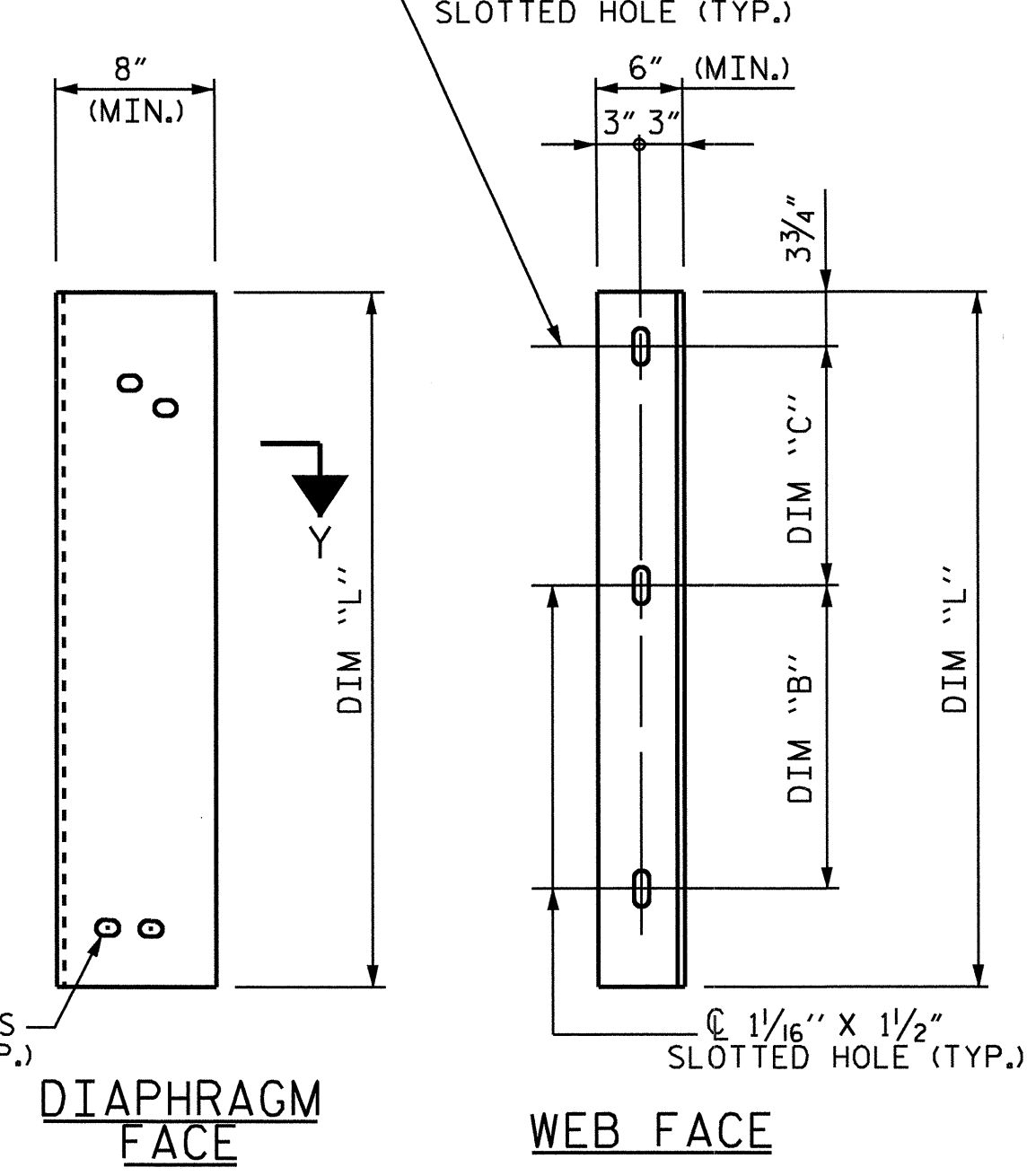
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.



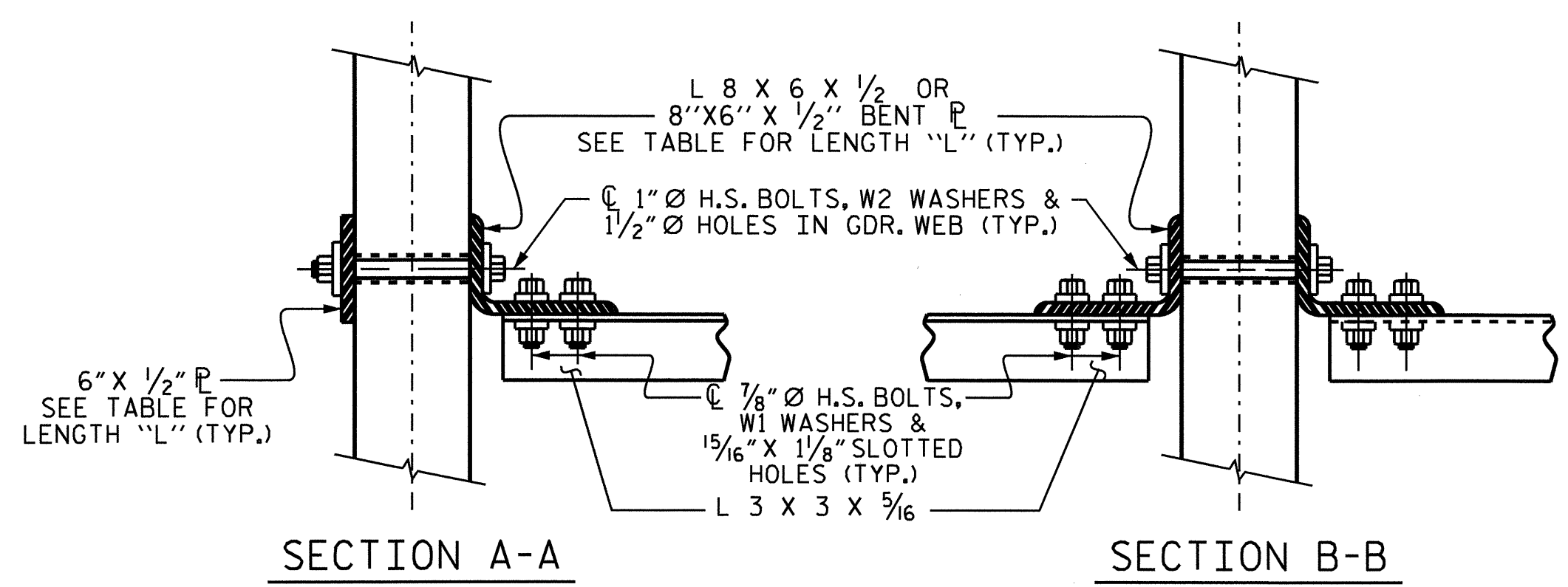
**PART SECTION AT INTERMEDIATE DIAPHRAGM**  
(72" BULB TEE GIRDER SHOWN)



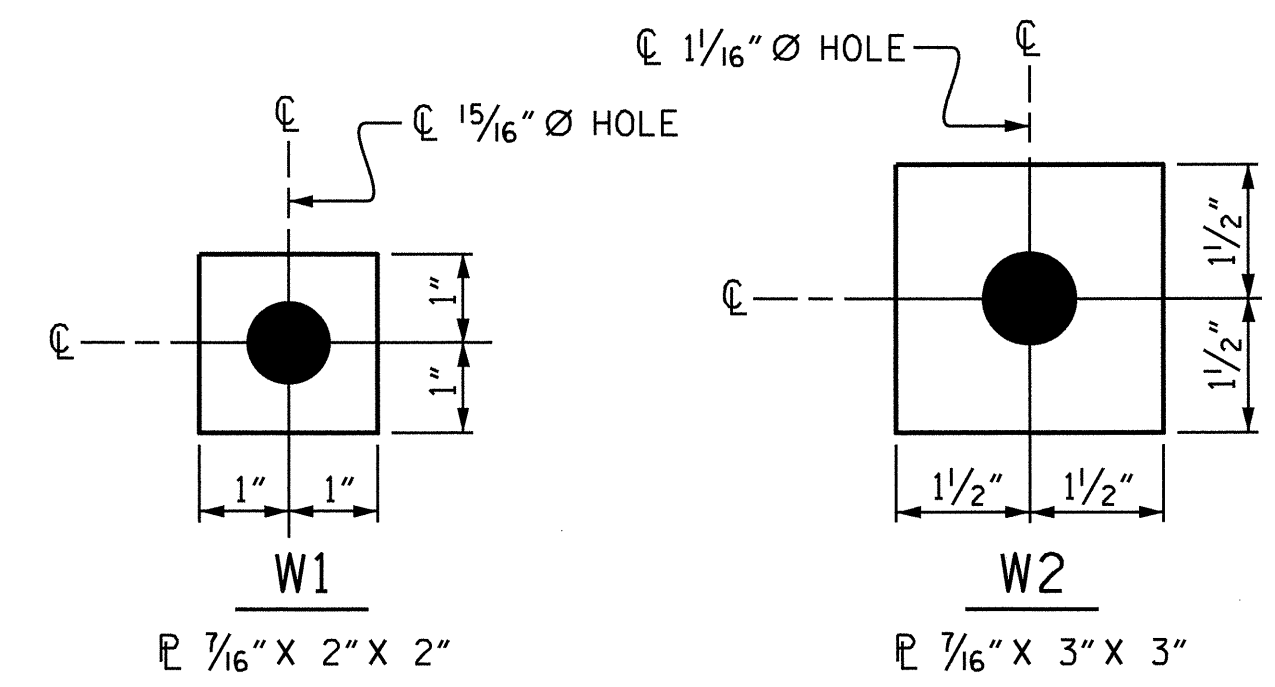
**ANGLE END**  
(L 3 X 3 X 5/16)



**CONNECTOR PLATE DETAILS**



**CONNECTION DETAILS**  
(FOR SKEW = 90°)



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

USE WITH 1" Ø HVY. HEX NUTS AT CONNECTOR PLATE TO GIRDER CONNECTIONS

**WASHER DETAILS**

**TABLE**

GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
72" BULB TEE	2'-0"	1'-7 3/4"	1'-3"	4'-2"

PROJECT NO. R-4900  
COLUMBUS COUNTY  
 STATION: 42+58.19 -L-



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 INTERMEDIATE  
 STEEL DIAPHRAGMS  
 FOR 72"  
 MODIFIED BULB TEE  
 PRESTRESSED CONCRETE  
 GIRDERS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			35

ASSEMBLED BY : PEGGY PARISI DATE : 1-5-10  
 CHECKED BY : J. B. WILSON DATE : 1-12-10  
 DRAWN BY : RWW 11/09  
 CHECKED BY : GM 11/09

**NOTES**

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

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

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

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

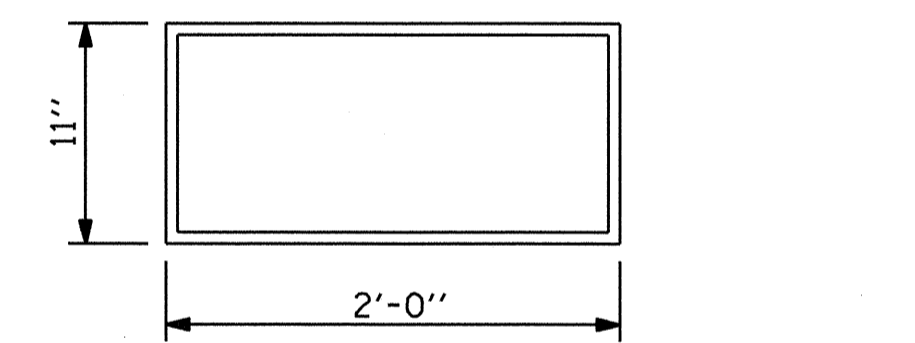
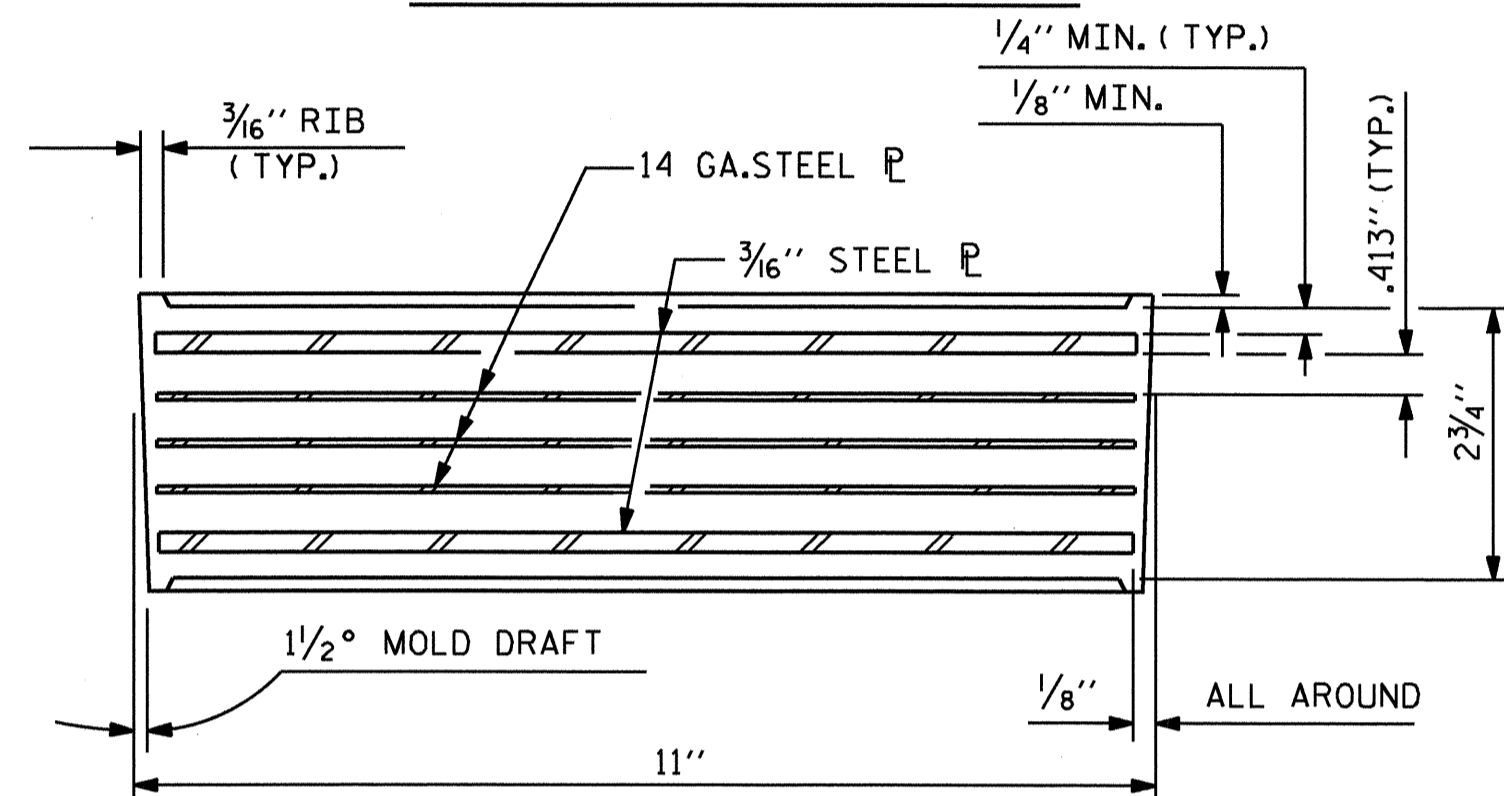
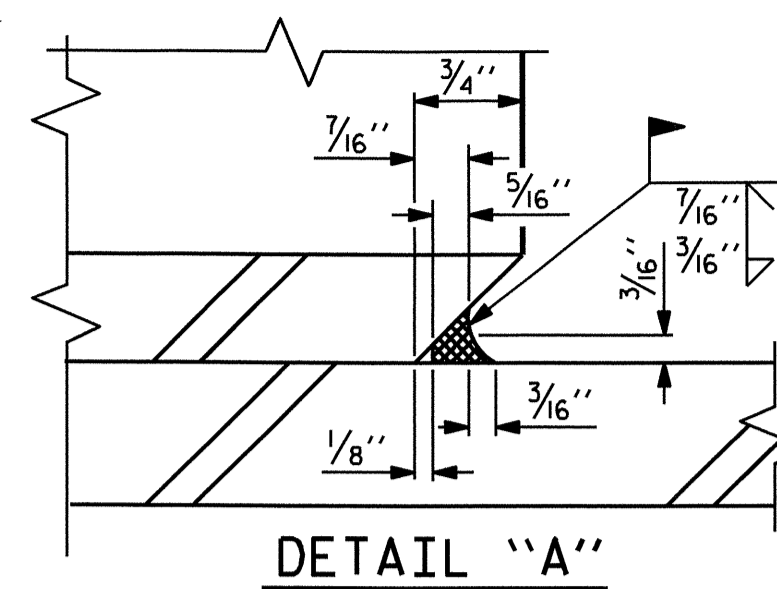
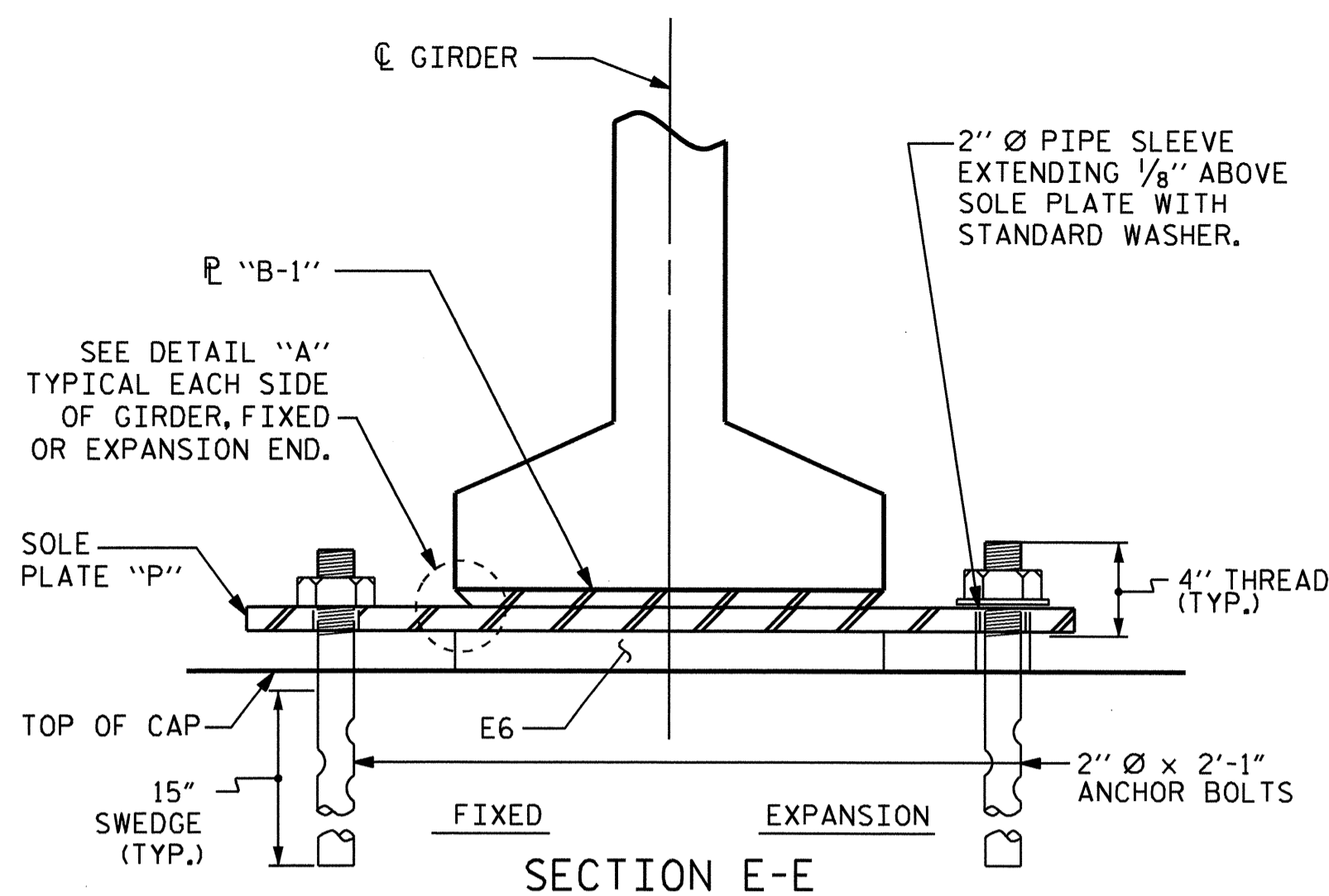
WHEN WELDING THE SOLE PLATE TO THE EMBEDDED PLATE IN THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

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

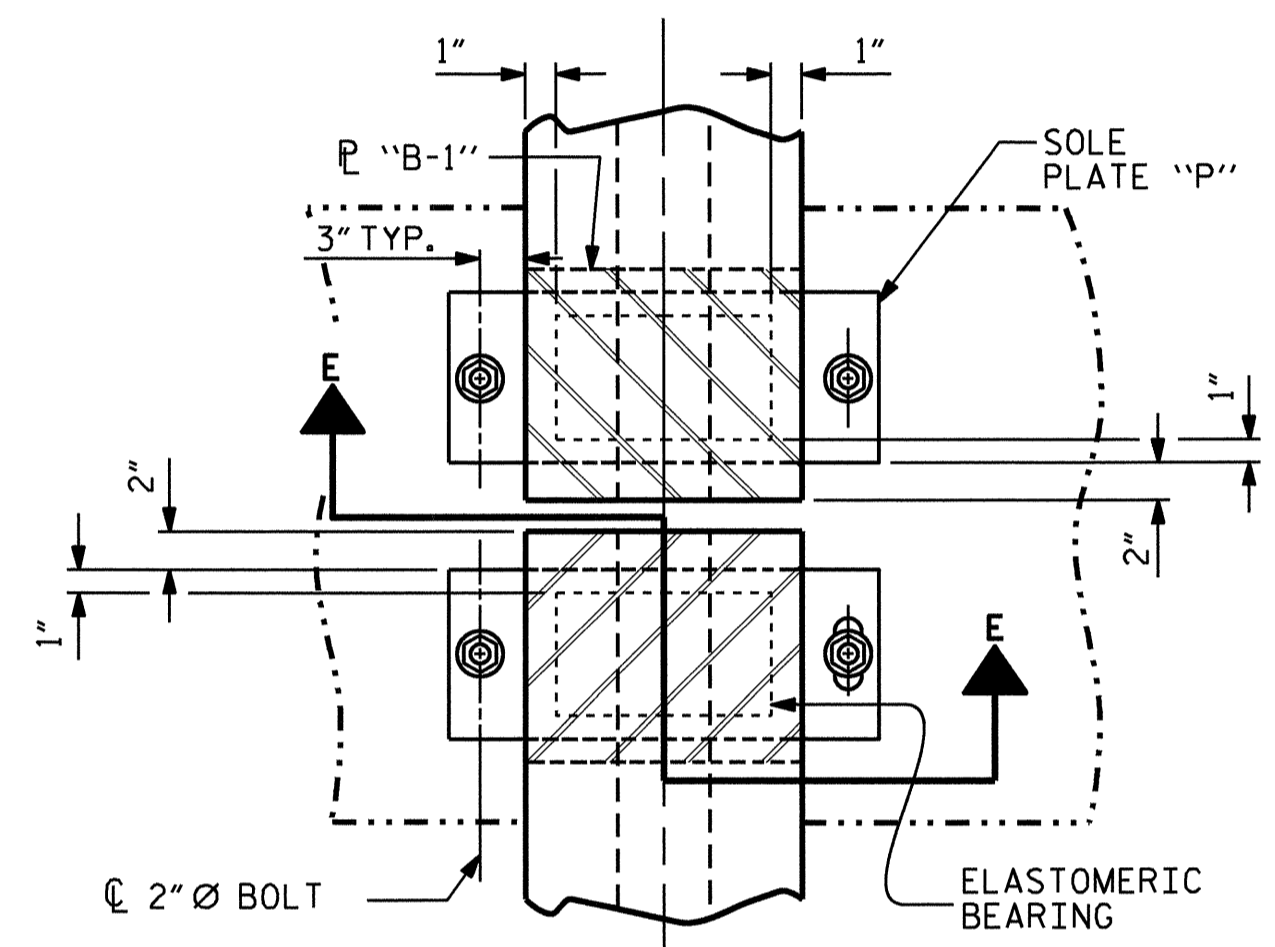
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. NO SHOP DRAWINGS ARE REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

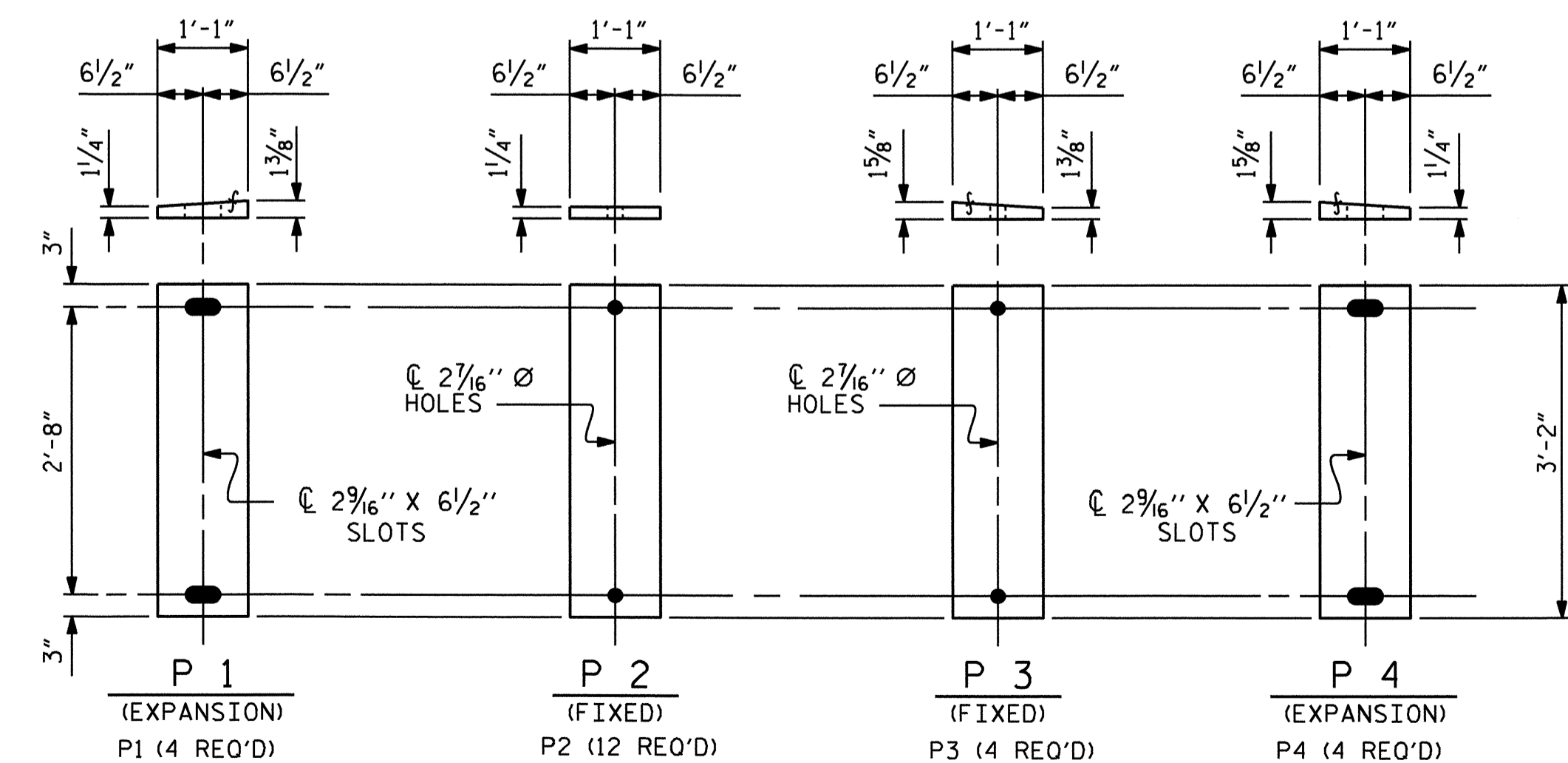
LOAD RATINGS	
	MAX.D.L.+ L.L.
TYPE VII	264 K



E6 (24 REQ'D)  
PLAN VIEW OF ELASTOMERIC BEARING  
**TYPE VII**



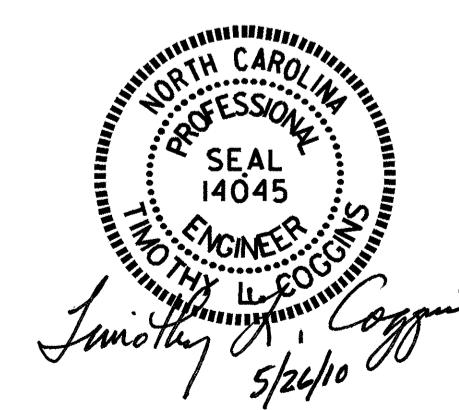
TYPICAL HALF-PLAN (SHOWING CONTINUOUS BENT)  
TYPICAL HALF-PLAN (SHOWING SIMPLE SPAN BENT)



**SOLE PLATE DETAILS ("P")**

ASSEMBLED BY : PEGGY PARISI	DATE : 8-18-09
CHECKED BY : J. B. WILSON	DATE : 1-12-10
DRAWN BY : EEM 2/97	REV. 8/16/99 RWW/LES
CHECKED BY : VAP 2/97	REV. 10/17/00 RWW/LES
	REV. 5/1/06 TLA/GM

26-MAY-2010 11:53  
L:\Structures\Final Plans\R-4900.sd.bg.01.dgn  
tcoggins



PROJECT NO. R-4900  
COLUMBUS COUNTY  
STATION: 42+58.19 -L-

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			35

STD. NO. EB4

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																																	
0.6" Ø LOW RELAXATION	SPAN A																																
	GIRDER 1											GIRDERS 2 AND 3										GIRDER 4											
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER ( GIRDER ALONE IN PLACE ) ↑	0.000	0.104	0.196	0.269	0.315	0.330	0.315	0.269	0.196	0.104	0.000	0.000	0.103	0.194	0.266	0.312	0.327	0.312	0.266	0.194	0.103	0.000	0.000	0.101	0.191	0.261	0.306	0.321	0.306	0.261	0.191	0.101	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.040	0.075	0.103	0.121	0.127	0.121	0.103	0.075	0.040	0.000	0.000	0.042	0.080	0.109	0.128	0.134	0.128	0.109	0.080	0.042	0.000	0.000	0.037	0.070	0.095	0.111	0.117	0.111	0.095	0.070	0.037	0.000
FINAL CAMBER ↑	0	3/4"	1 1/16"	2"	2 5/16"	2 7/16"	2 5/16"	2"	1 7/16"	3/4"	0	0	3/4"	1 3/8"	1 7/8"	2 3/16"	2 5/16"	2 3/16"	1 7/8"	1 3/8"	3/4"	0	0	3/4"	1 1/16"	2"	2 5/16"	2 7/16"	2 5/16"	2"	1 7/16"	3/4"	0

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																																	
0.6" Ø LOW RELAXATION	SPAN B																																
	GIRDER 1											GIRDERS 2 AND 3										GIRDER 4											
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER ( GIRDER ALONE IN PLACE ) ↑	0.000	0.097	0.184	0.252	0.295	0.309	0.295	0.252	0.184	0.097	0.000	0.000	0.096	0.182	0.249	0.292	0.306	0.292	0.249	0.182	0.096	0.000	0.000	0.094	0.178	0.244	0.286	0.300	0.286	0.244	0.178	0.094	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.036	0.069	0.094	0.110	0.116	0.110	0.094	0.069	0.036	0.000	0.000	0.039	0.073	0.100	0.117	0.123	0.117	0.100	0.073	0.039	0.000	0.000	0.034	0.064	0.087	0.102	0.107	0.102	0.087	0.064	0.034	0.000
FINAL CAMBER ↑	0	3/4"	1 3/8"	1 7/8"	2 3/16"	2 5/16"	2 3/16"	1 7/8"	1 3/8"	3/4"	0	0	1 1/16"	1 5/16"	1 13/16"	2 1/8"	2 3/16"	2 1/8"	1 13/16"	1 5/16"	1 1/16"	0	0	3/4"	1 3/8"	1 7/8"	2 3/16"	2 5/16"	2 3/16"	1 7/8"	1 3/8"	3/4"	0

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																																	
0.6" Ø LOW RELAXATION	SPAN C																																
	GIRDER 1											GIRDERS 2 AND 3										GIRDER 4											
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER ( GIRDER ALONE IN PLACE ) ↑	0.000	0.097	0.183	0.250	0.293	0.308	0.293	0.250	0.183	0.097	0.000	0.000	0.096	0.181	0.248	0.290	0.305	0.290	0.248	0.181	0.096	0.000	0.000	0.094	0.177	0.243	0.284	0.298	0.284	0.243	0.177	0.094	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.036	0.068	0.092	0.108	0.114	0.108	0.092	0.068	0.036	0.000	0.000	0.038	0.072	0.098	0.115	0.120	0.115	0.098	0.072	0.038	0.000	0.000	0.033	0.062	0.085	0.100	0.105	0.100	0.085	0.062	0.033	0.000
FINAL CAMBER ↑	0	3/4"	1 3/8"	1 7/8"	2 3/16"	2 5/16"	2 3/16"	1 7/8"	1 3/8"	3/4"	0	0	1 1/16"	1 5/16"	1 13/16"	2 1/8"	2 3/16"	2 1/8"	1 13/16"	1 5/16"	1 1/16"	0	0	3/4"	1 3/8"	1 7/8"	2 3/16"	2 5/16"	2 3/16"	1 7/8"	1 3/8"	3/4"	0

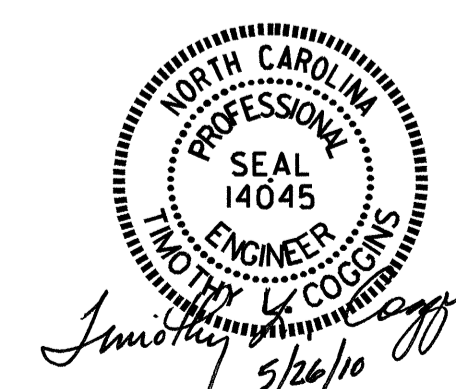
\* INCLUDES FUTURE WEARING SURFACE  
ALL VALUES ARE SHOWN IN FEET ( DECIMAL FORM ), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES ( FRACTION FORM ).

PROJECT NO. R-4900  
COLUMBUS COUNTY  
STATION: 42+58.19 -L-

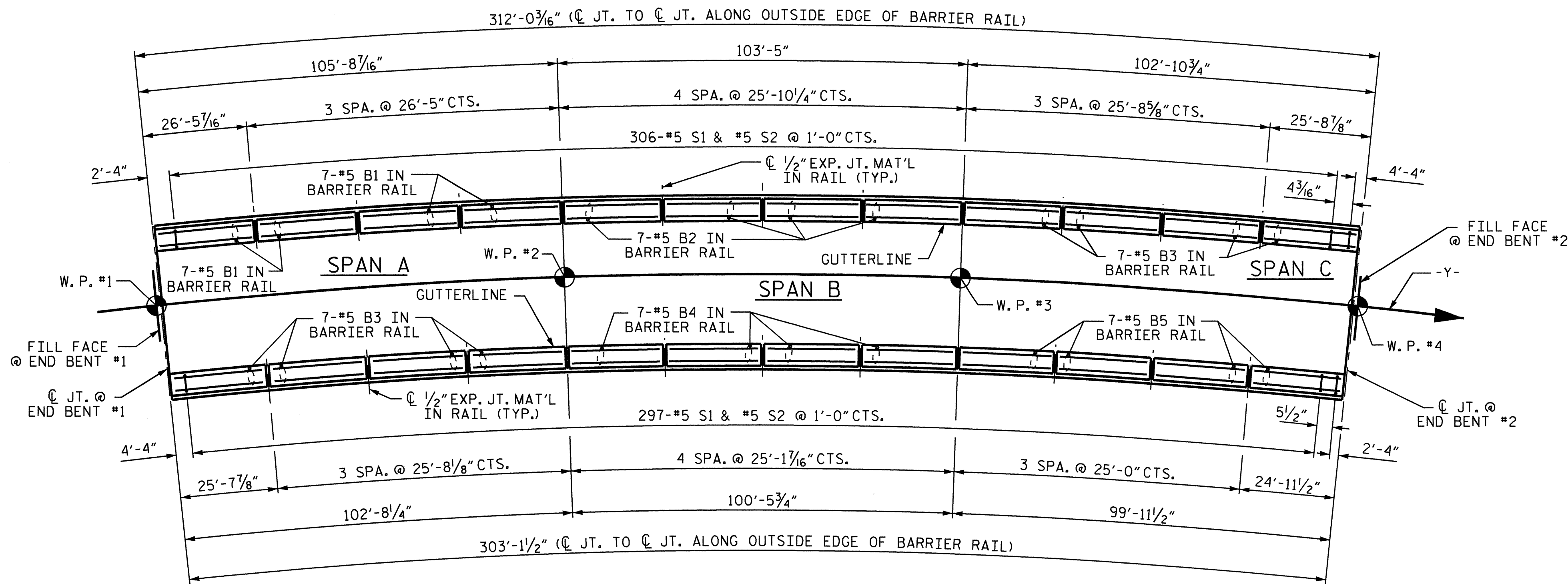
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

DEAD LOAD DEFLECTIONS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			35



DRAWN BY : PEGGY PARISI DATE : 8-18-09  
CHECKED BY : J. B. WILSON DATE : 1-12-10



**NOTES**

THE BARRIER RAIL IN 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.

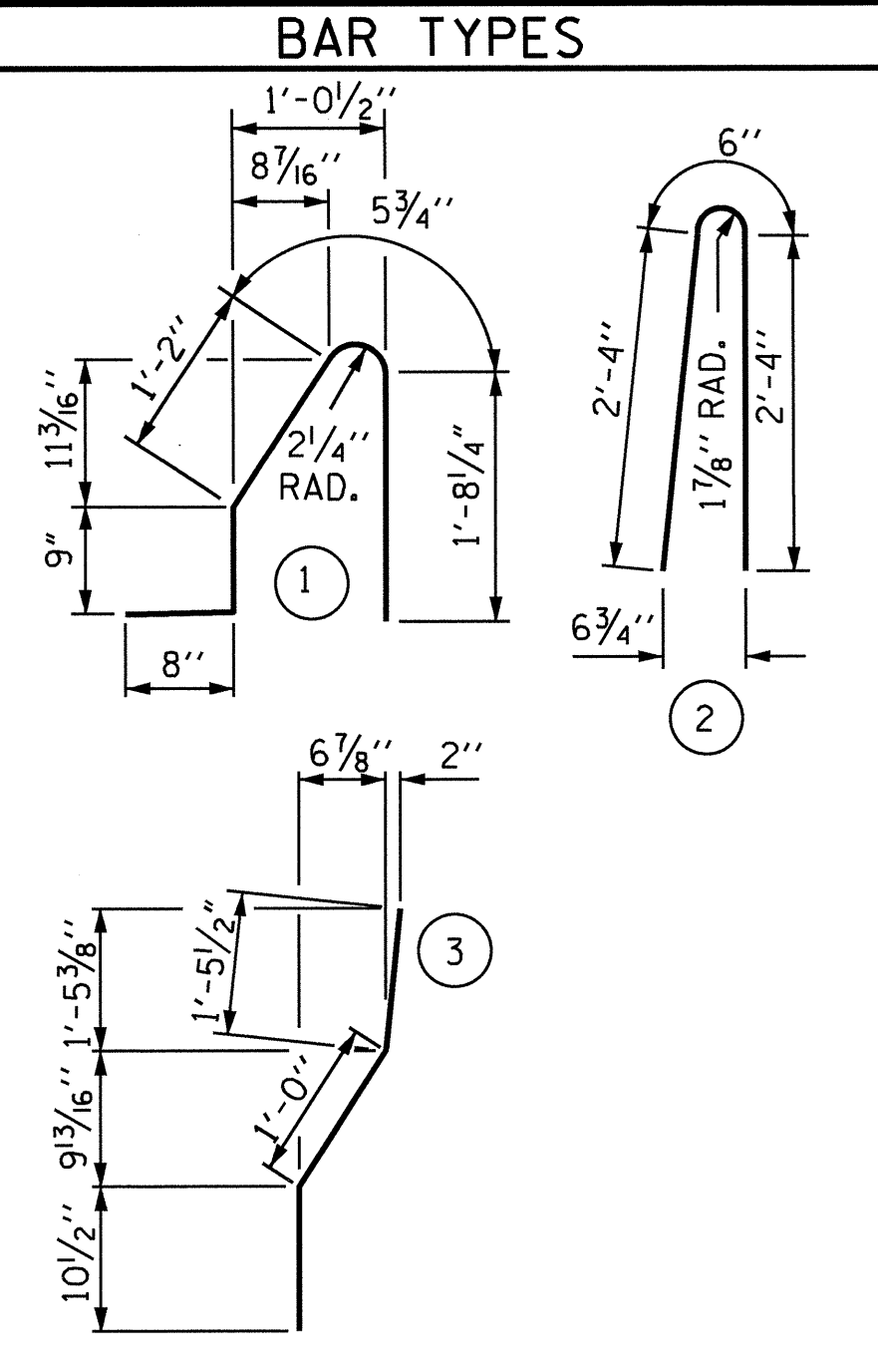
WHEN EVAZOTE JOINT SEAL IS REQUIRED, THE JOINT IN THE DECK SHALL BE SAWS PRIOR TO THE CASTING OF BARRIER RAIL.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

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

THE PLACEMENT OF THE 1/2" EXP. JT. MAT'L MAY BE ADJUSTED SLIGHTLY TO GIVE 2" CL. TO REINFORCING STEEL.

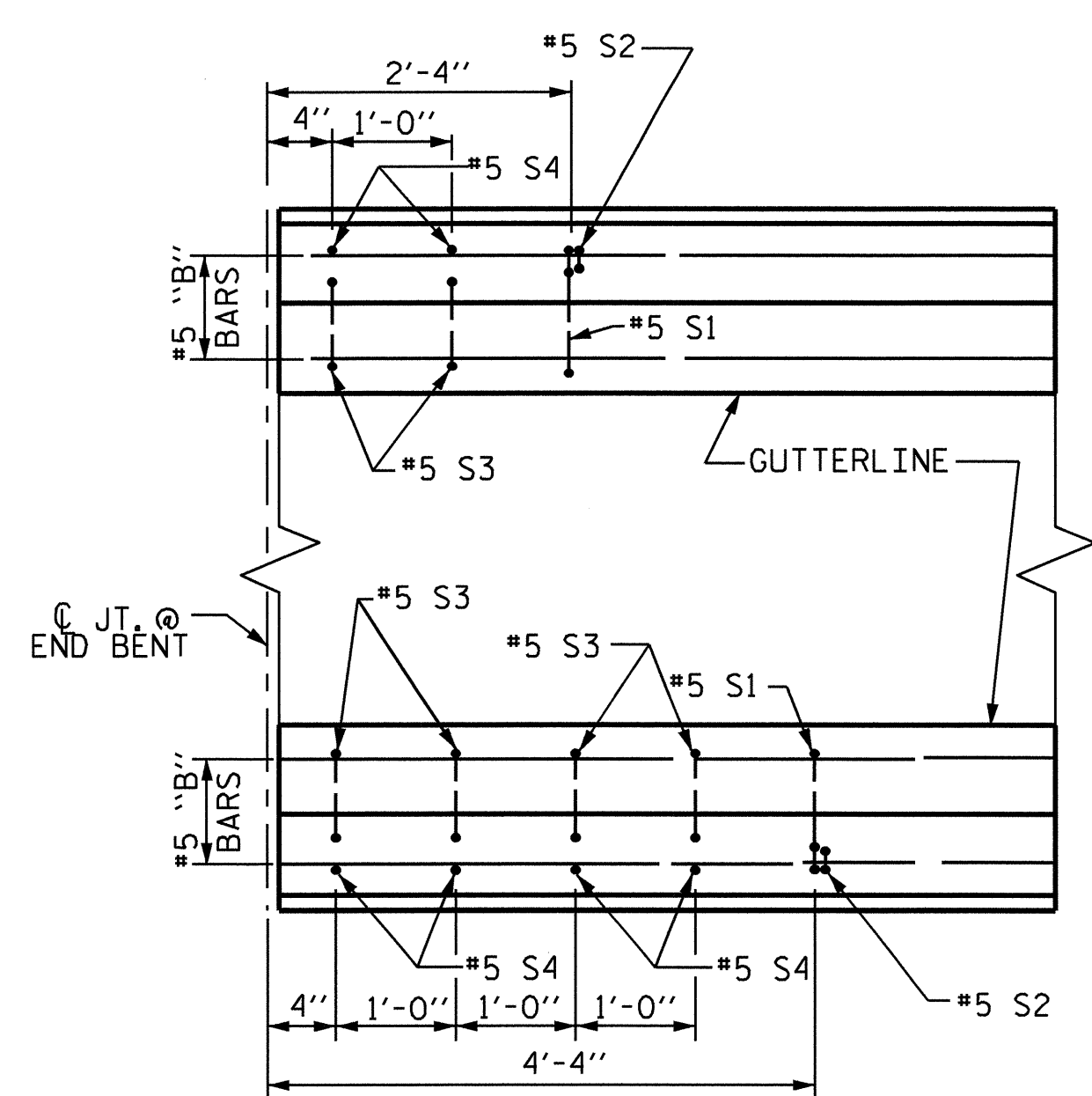


ALL BAR DIMENSIONS ARE OUT TO OUT

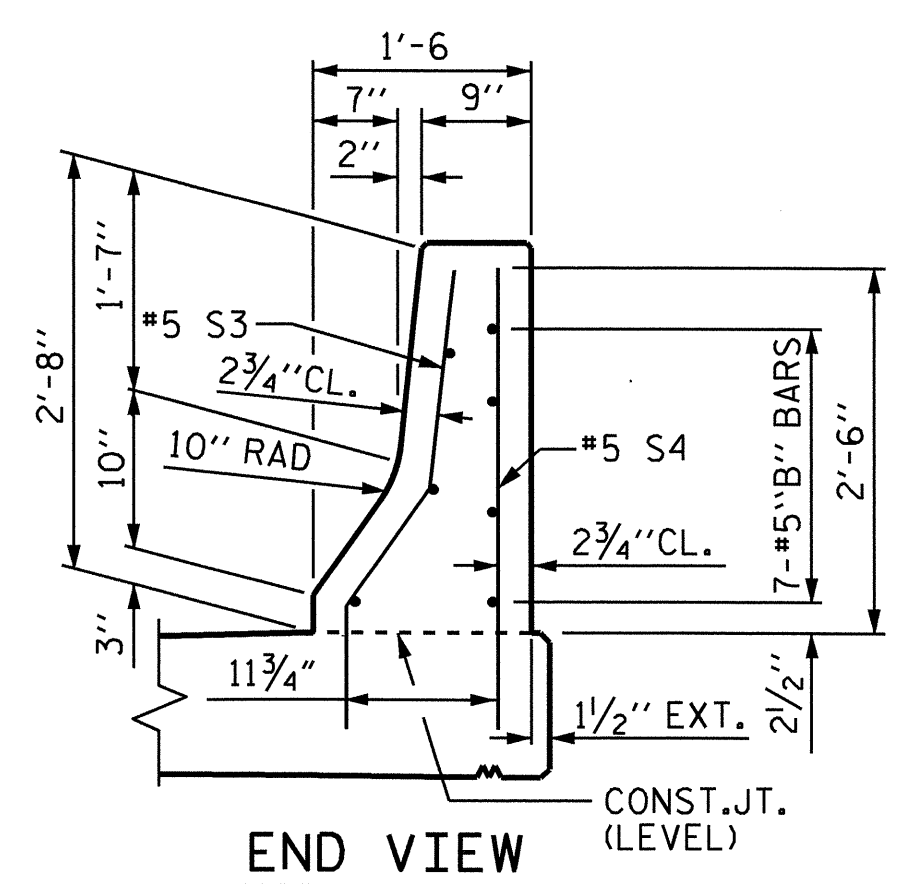
**BILL OF MATERIAL**

FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	28	#5	STR	26'-0"	759
* B2	28	#5	STR	25'-5"	742
* B3	56	#5	STR	25'-3"	1475
* B4	28	#5	STR	24'-9"	723
* B5	28	#5	STR	24'-6"	715
* S1	605	#5	1	4'-9"	2997
* S2	605	#5	2	5'-2"	3260
* S3	12	#5	3	3'-4"	42
* S4	12	#5	STR	3'-2"	40
* EPOXY COATED REINFORCING STEEL					10753 LBS.
CLASS AA CONCRETE				61.6 CU. YDS.	
CONCRETE BARRIER RAIL					615.14 LIN. FT.



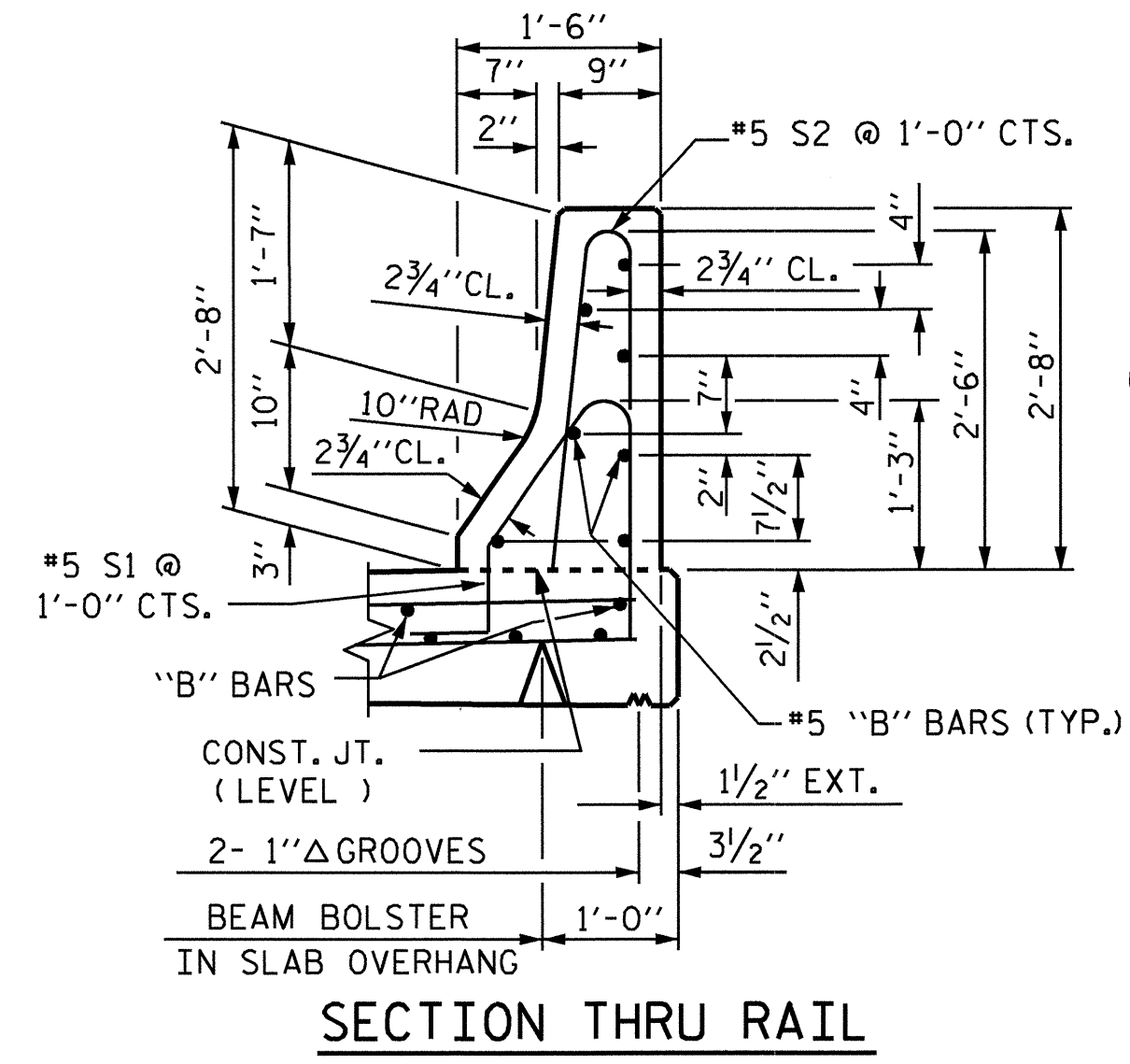
**PLAN**



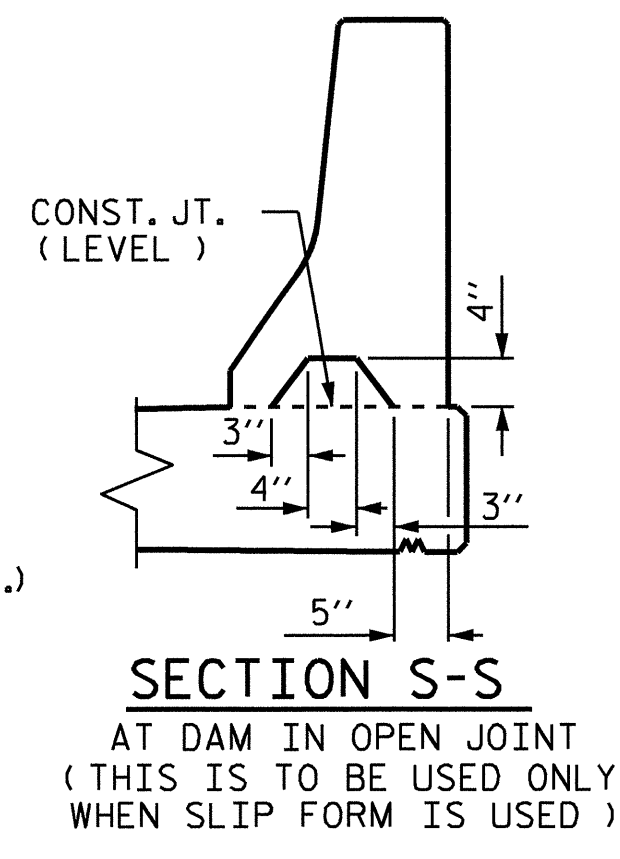
**END VIEW**

**END OF RAIL DETAILS**

FOR ADHESIVE ANCHORING AT SAWS JOINTS



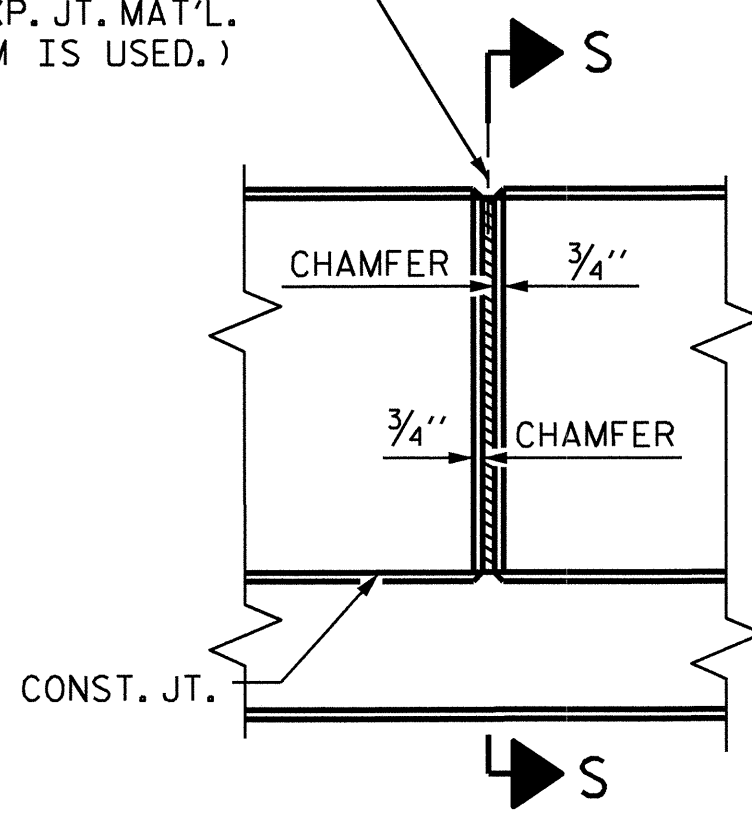
**SECTION THRU RAIL**



**SECTION S-S**

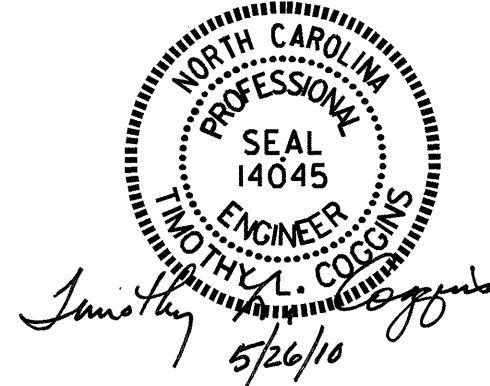
AT DAM IN OPEN JOINT (THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

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



**ELEVATION AT EXPANSION JOINTS**

**BARRIER RAIL DETAILS**



PROJECT NO. R-4900  
COLUMBUS COUNTY  
 STATION: 42+58.19 -L-  
 SHEET 1 OF 2

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			35

ASSEMBLED BY : PEGGY PARISI	DATE : 8-12-09
CHECKED BY : J. B. WILSON	DATE : 1-12-10
DRAWN BY : ARB	5/87
CHECKED BY : SJD	9/87
REV. 10/17/00	RWW/LES
REV. 5/7/03R	RWW/JTE
REV. 5/1/06	TLA/GM

NOTES

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

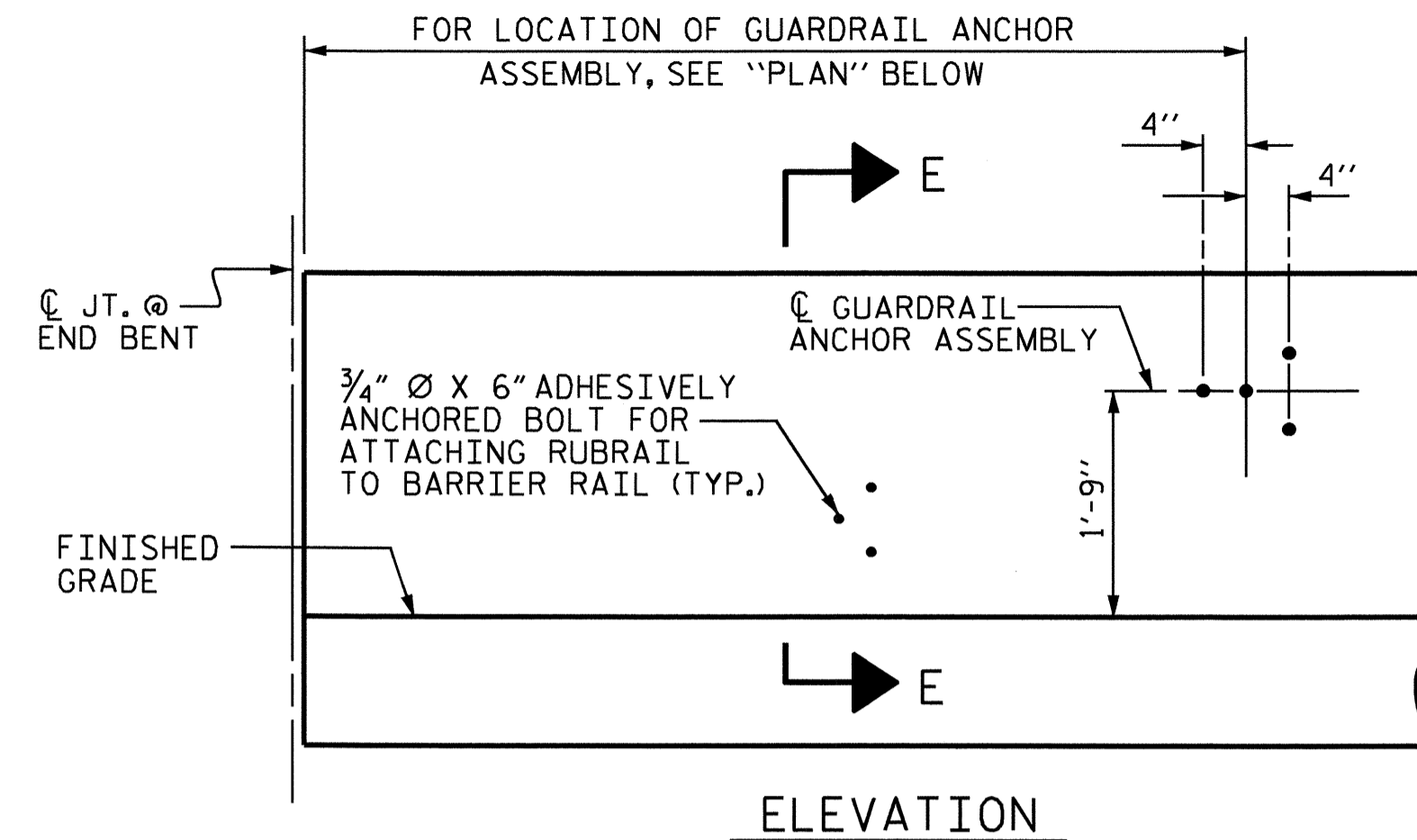
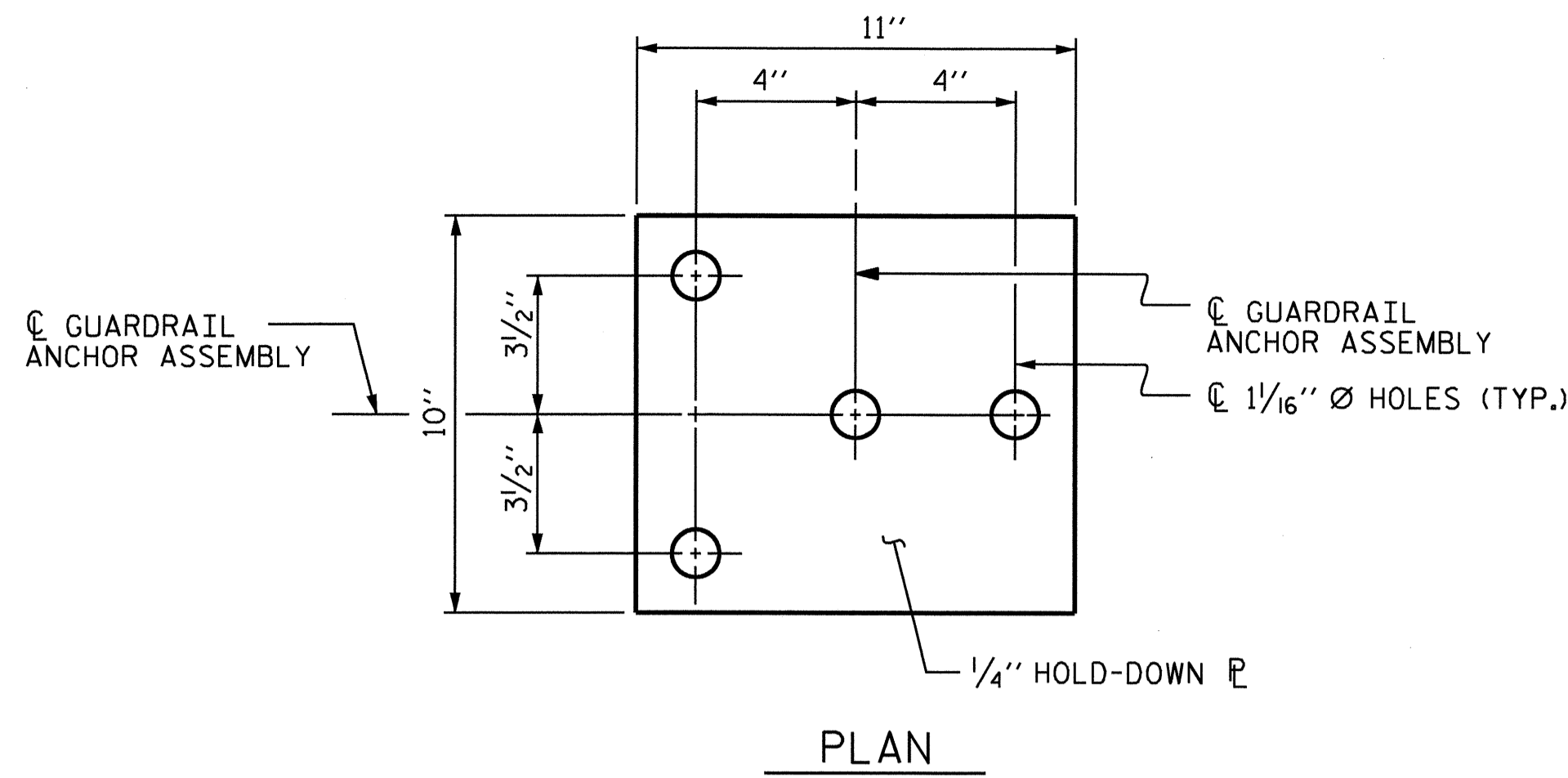
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

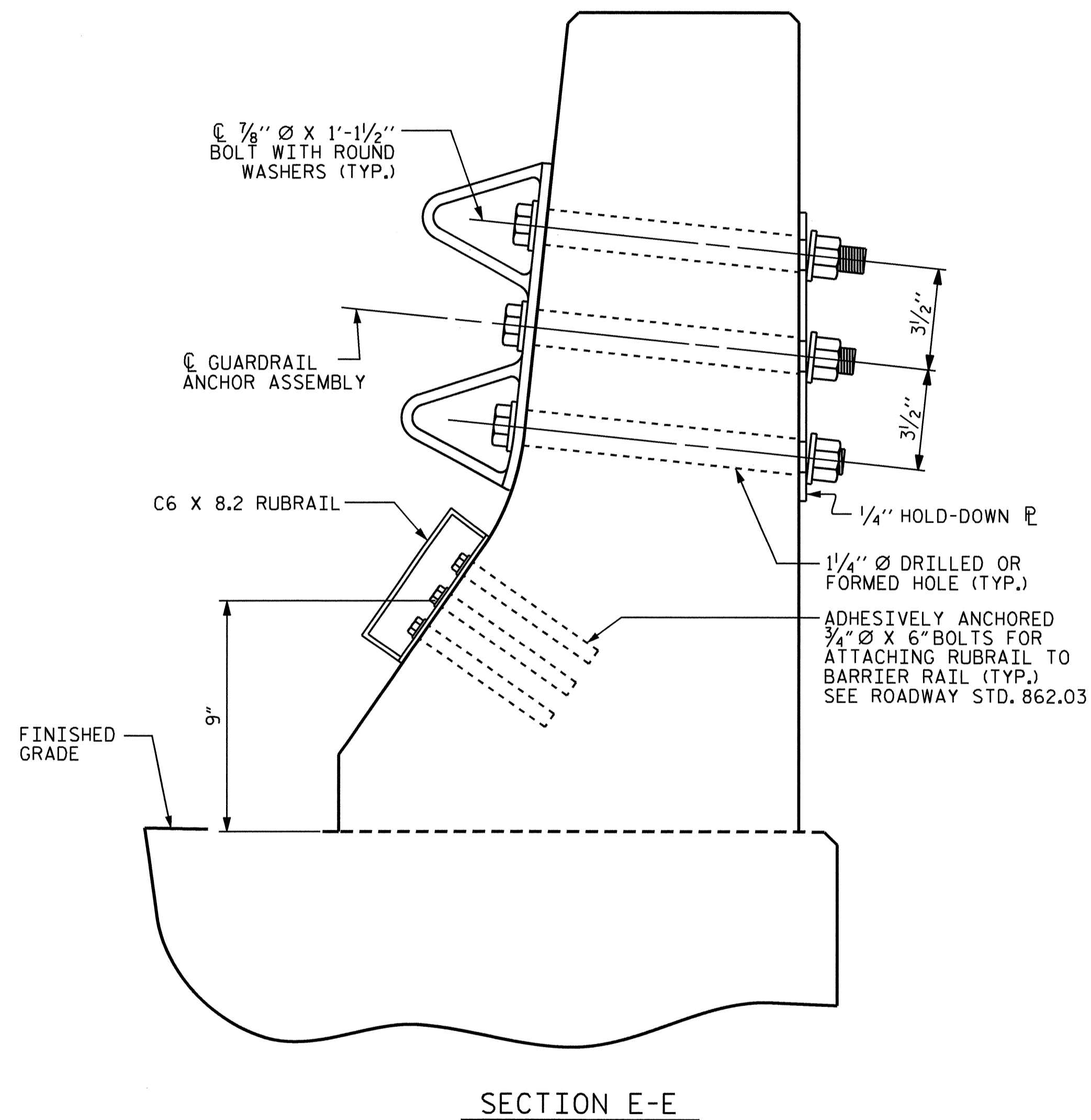
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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.

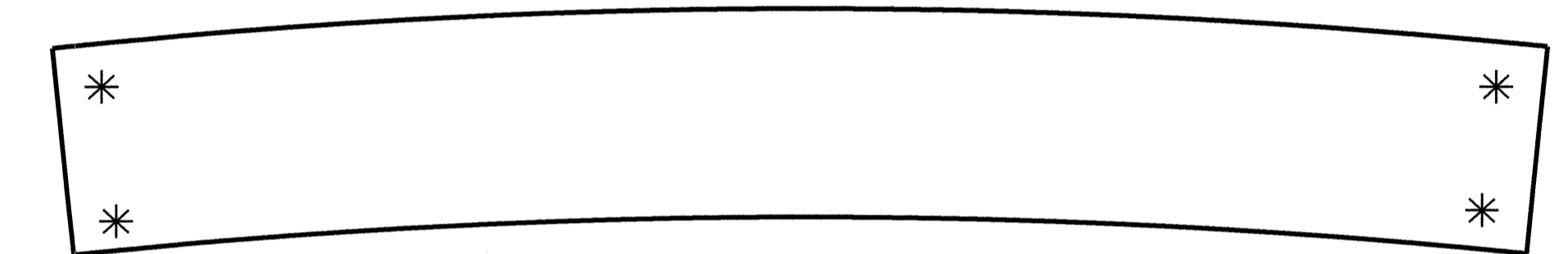
THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS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



FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03

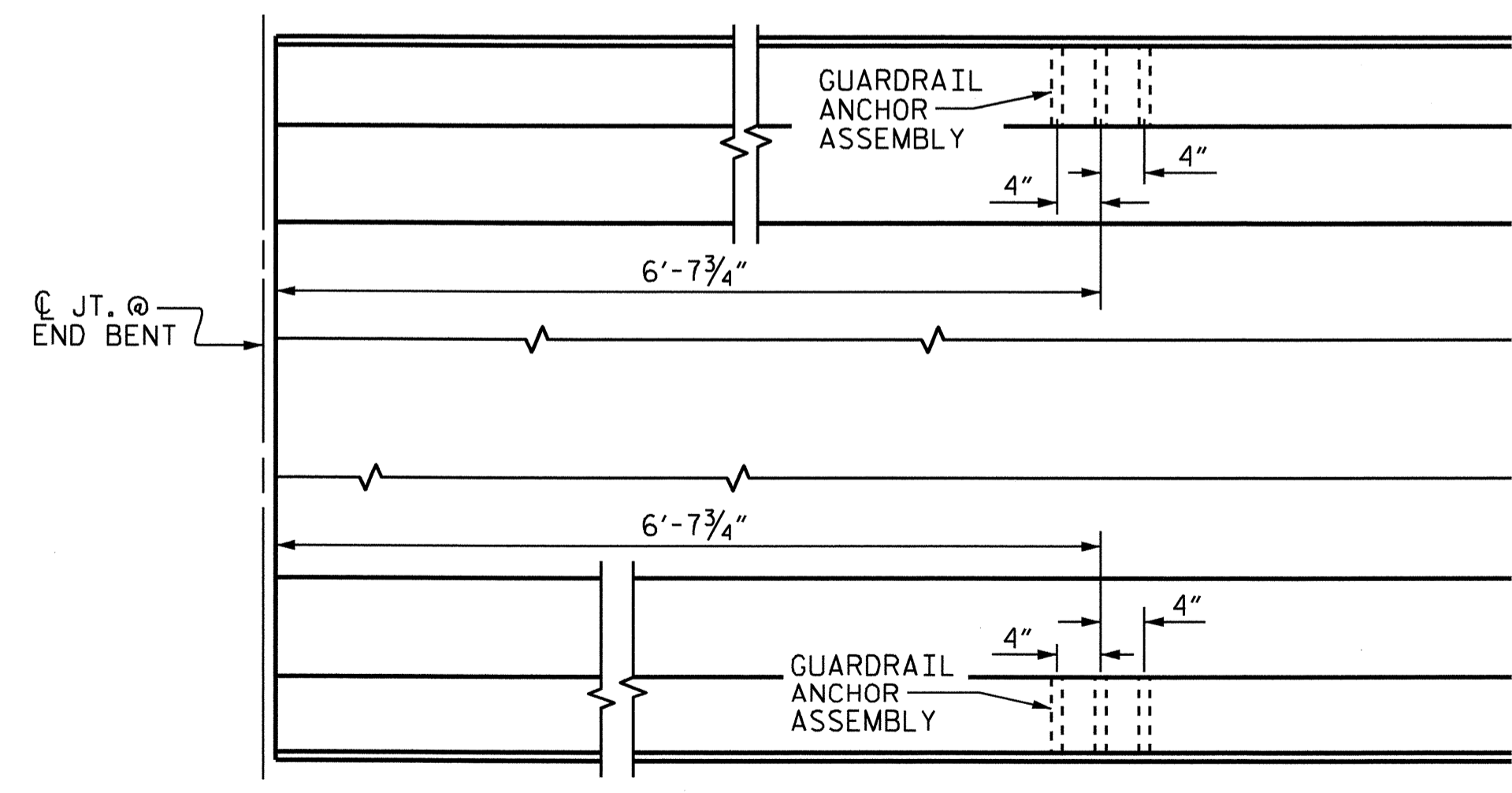


GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENTS

\* DENOTES GUARDRAIL ANCHOR ASSEMBLY



PLAN

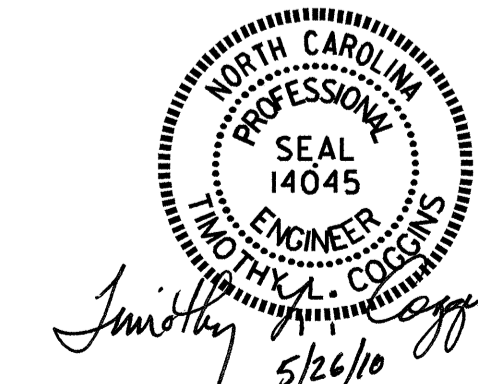
LOCATION OF ANCHORS FOR GUARDRAIL

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

PROJECT NO. R-4900  
COLUMBUS COUNTY  
 STATION: 42+58.19 -L-

SHEET 2 OF 2

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

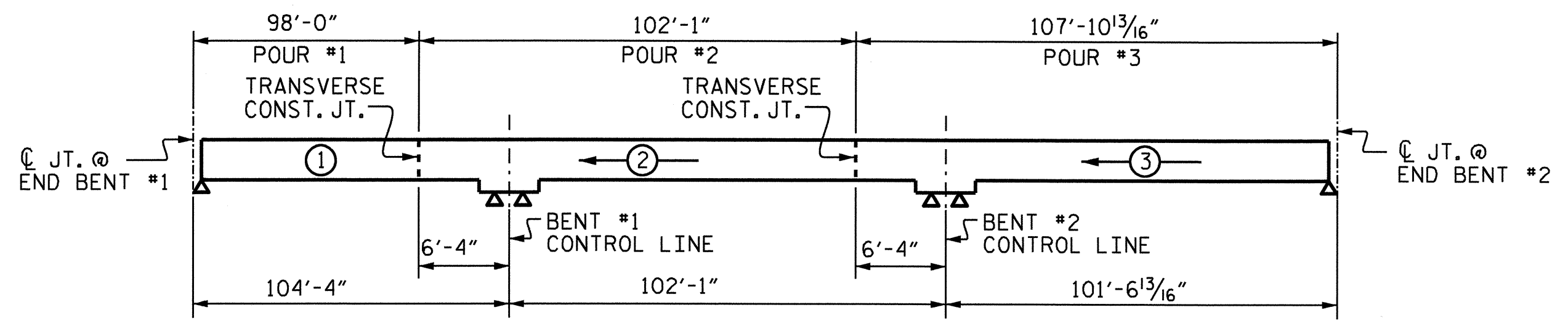


ASSEMBLED BY : PEGGY PARISI DATE : 8-18-09  
 CHECKED BY : J. B. WILSON DATE : 1-12-10  
 DRAWN BY : TLA 5/06  
 CHECKED BY : GM 5/06

ADDED 5/1/06R KMM/GM  
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 tcoggins

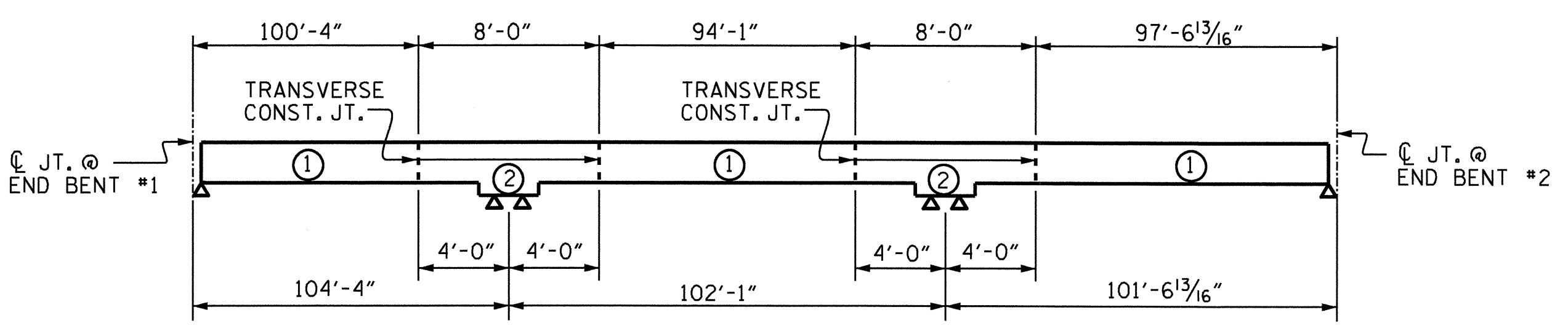
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			35

STD. NO. GRA2



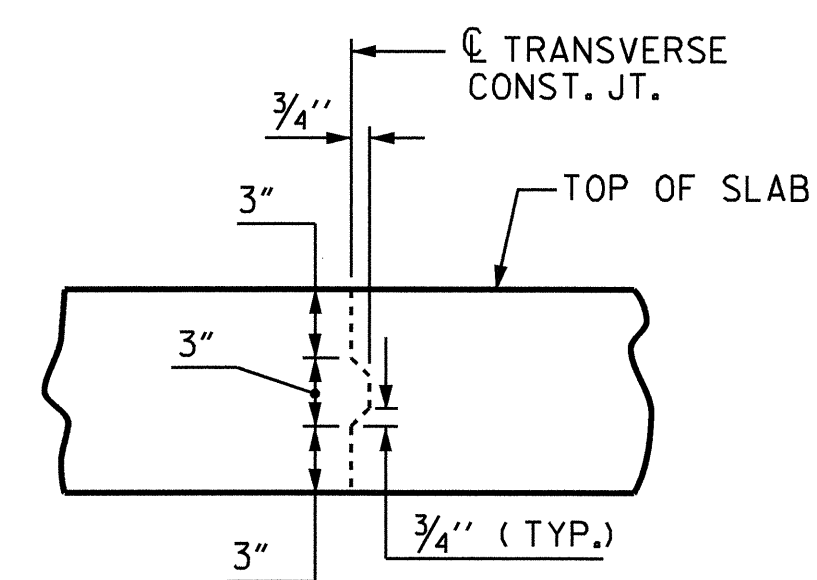
**POURING SEQUENCE**

DIMENSIONS GIVEN ALONG ARC OF -Y-.  
TRANSVERSE CONSTRUCTION JOINTS ARE RADIAL.



**OPTIONAL POURING SEQUENCE**

POUR ② CANNOT BE STARTED UNTIL BOTH ADJACENT ① POURS REACH A MIN. OF 3000 PSI.

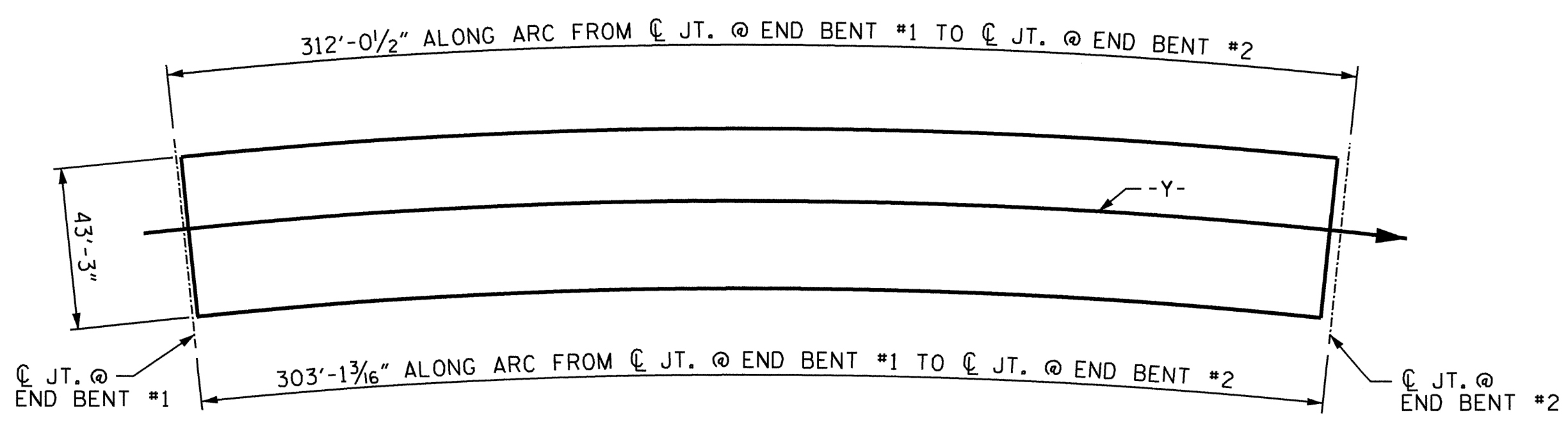


**TRANSVERSE CONSTRUCTION JOINT DETAIL**

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

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

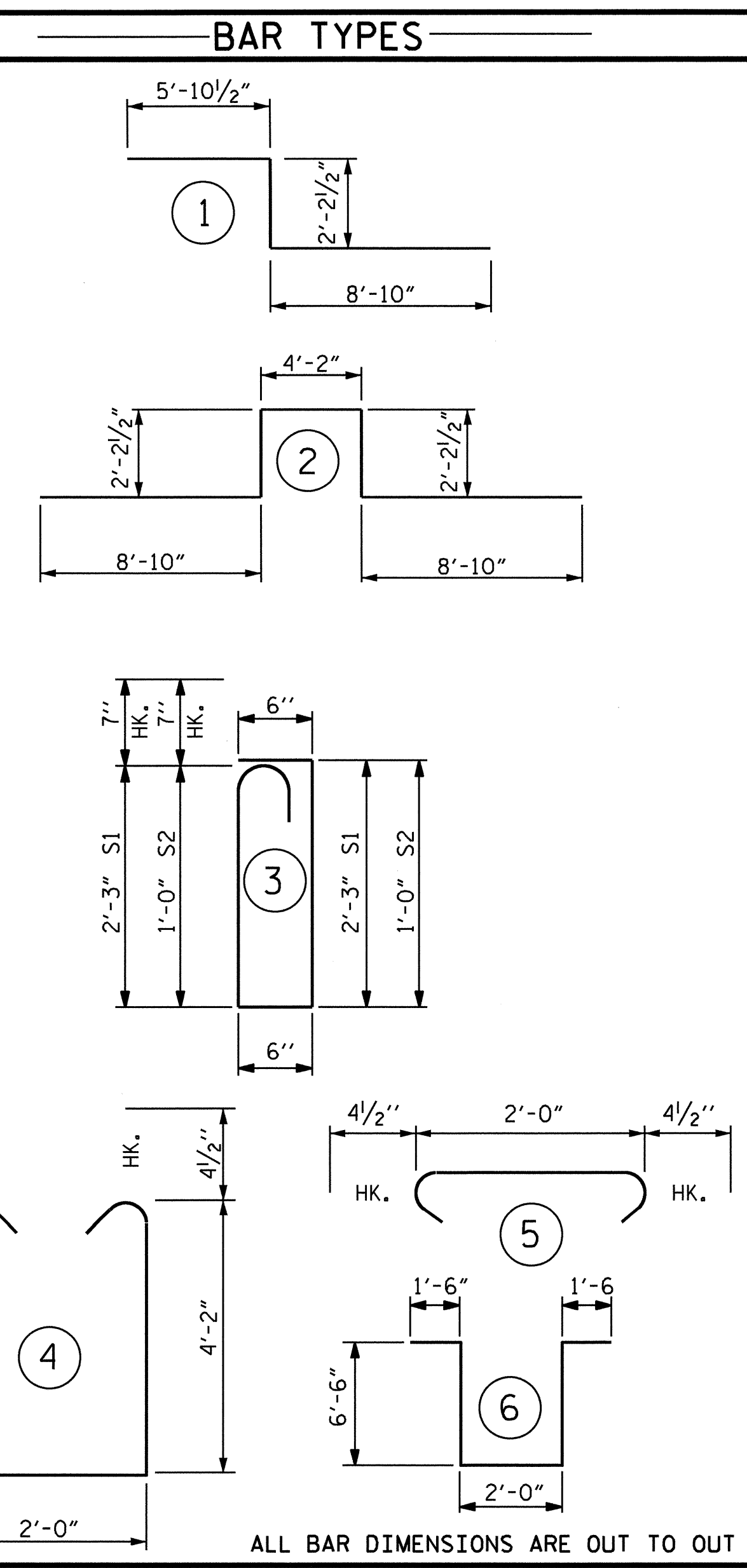
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			



LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 13302)

BILL OF MATERIAL						BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	603	#5	STR	42'-11"	26992	*B1	87	#4	STR	25'-2"	1463
A2	605	#5	STR	42'-11"	27081	*B2	58	#7	STR	60'-0"	7113
*A101	2	#5	STR	39'-5"	82	*B3	58	#7	STR	17'-3"	2045
*A102	2	#5	STR	34'-7"	72	*B4	56	#7	STR	31'-0"	3548
*A103	2	#5	STR	29'-8"	62	*B5	58	#4	STR	18'-9"	726
*A104	2	#5	STR	24'-10"	52	*B6	87	#4	STR	24'-3"	1409
*A105	2	#5	STR	19'-11"	42	B7	312	#5	STR	53'-8"	17464
*A106	2	#5	STR	15'-1"	31	*G1	2	#5	STR	42'-11"	90
*A107	2	#5	STR	10'-2"	21	*K1	8	#8	1	16'-11"	361
*A108	2	#5	STR	5'-4"	11	*K2	8	#8	2	26'-3"	561
A201	2	#5	STR	39'-0"	81	K3	14	#5	STR	34'-6"	504
A202	2	#5	STR	34'-2"	71	K4	12	#4	STR	9'-4"	75
A203	2	#5	STR	29'-3"	61	K5	60	#4	STR	10'-4"	414
A204	2	#5	STR	24'-5"	51	K6	12	#4	STR	7'-10"	63
A205	2	#5	STR	19'-6"	41	K7	12	#4	STR	7'-7"	61
A206	2	#5	STR	14'-8"	31	*S1	48	#5	3	6'-1"	305
A207	2	#5	STR	9'-9"	20	S2	12	#5	3	3'-7"	45
A208	2	#5	STR	4'-11"	10	S3	12	#4	4	11'-1"	89
						S4	324	#4	5	2'-9"	595
						*U1	48	#4	6	18'-0"	577

REINFORCING STEEL	46757 LBS.
*EPOXY COATED REINFORCING STEEL	45563 LBS.



— SUPERSTRUCTURE BILL OF MATERIAL —

	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
POUR #1	150.2		
POUR #2	172.1	46757	45563
POUR #3	182.8		
TOTALS**	505.1		

\*\* QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED  
PROJECT NO. R-4900  
COLUMBUS COUNTY  
STATION: 42+58.19 -L-

ASSEMBLED BY : PEGGY PARISI DATE : 8-18-09  
CHECKED BY : J. B. WILSON DATE : 1-12-10  
DRAWN BY : JMB 5/87 REV. 6/1/94 EEM/GRP  
CHECKED BY : SJD 9/87 REV. 8/16/99 RWW/LES  
REV. 5/1/06 TLA/GM

GROOVING BRIDGE FLOORS

APPROACH SLABS	1,027 SQ.FT.
BRIDGE DECK	11,330 SQ.FT.
TOTAL	12,357 SQ.FT.



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

STANDARD  
SUPERSTRUCTURE  
BILL OF MATERIAL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS 35
2			4			

**NOTES**

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

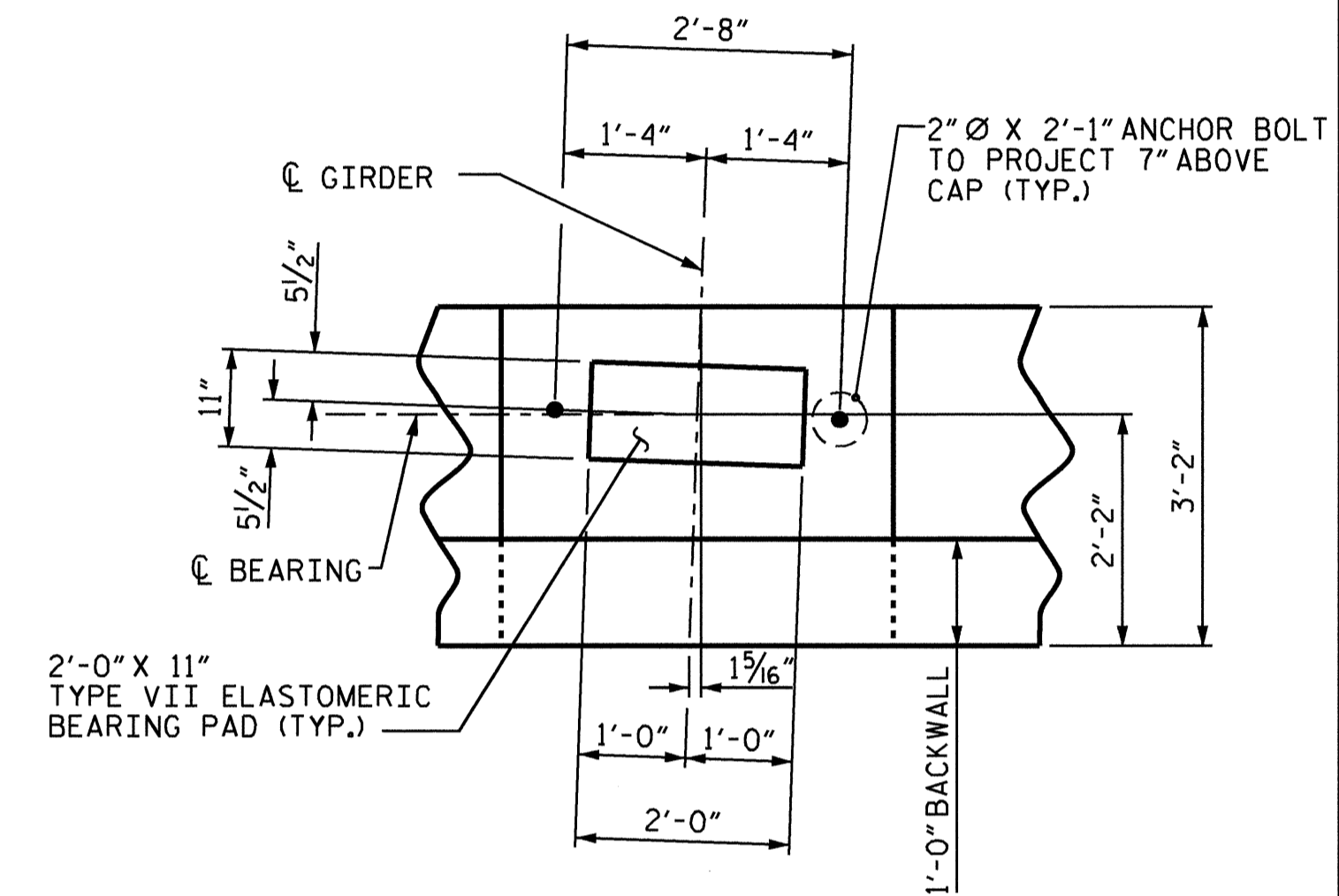
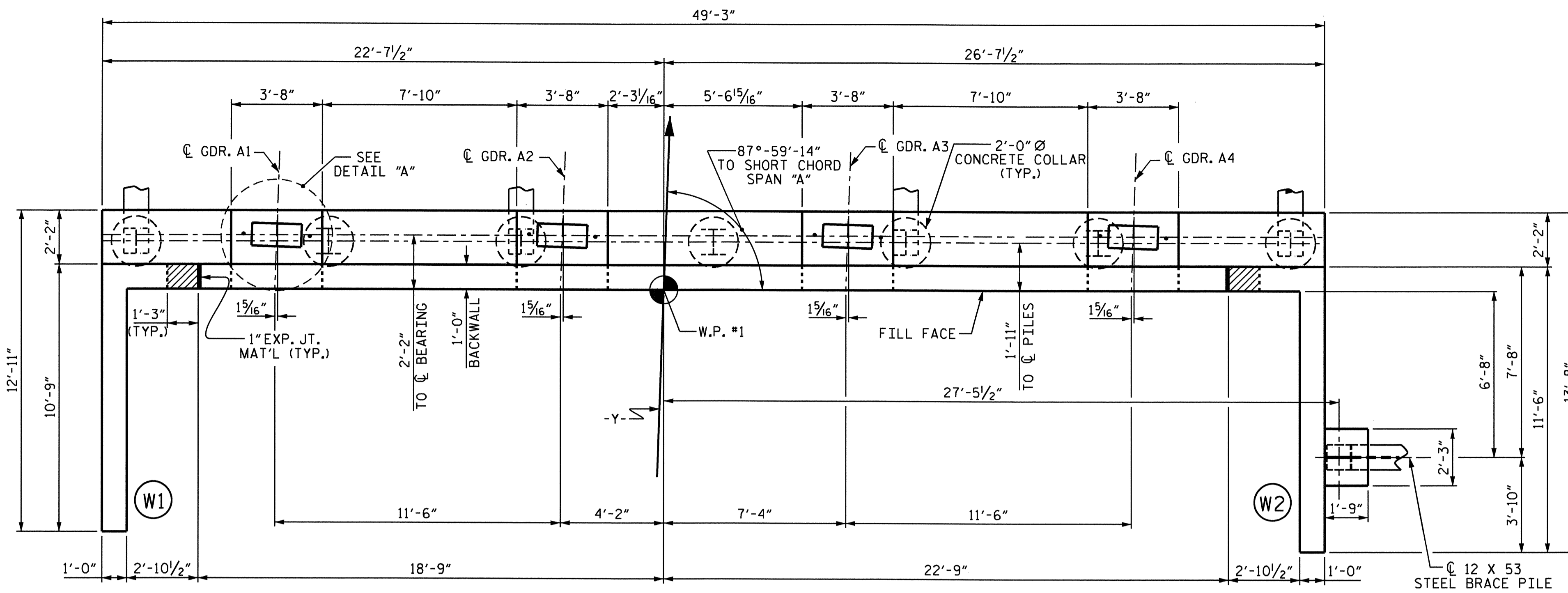
BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

THE TOP SURFACE OF THE END BENT 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 BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

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



**TOP OF PILE ELEVATIONS**

PILE	ELEVATION
1	117.575
2	117.110
3	116.645
4	116.180
5	115.715
6	115.250
7	114.785

PROJECT NO. R-4900  
COLUMBUS COUNTY  
 STATION: 42+58.19 -L-

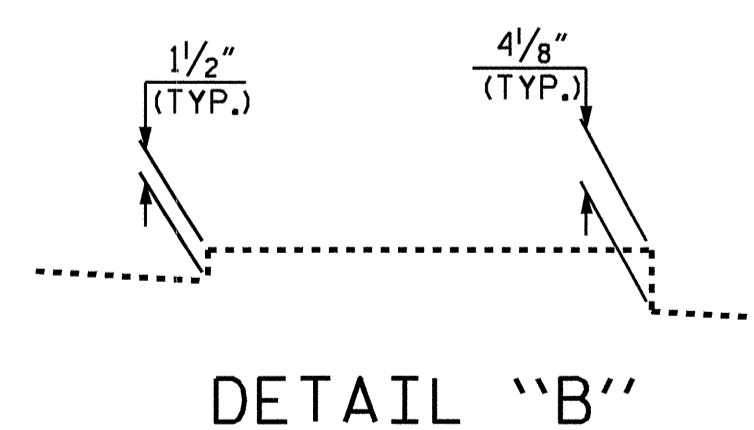
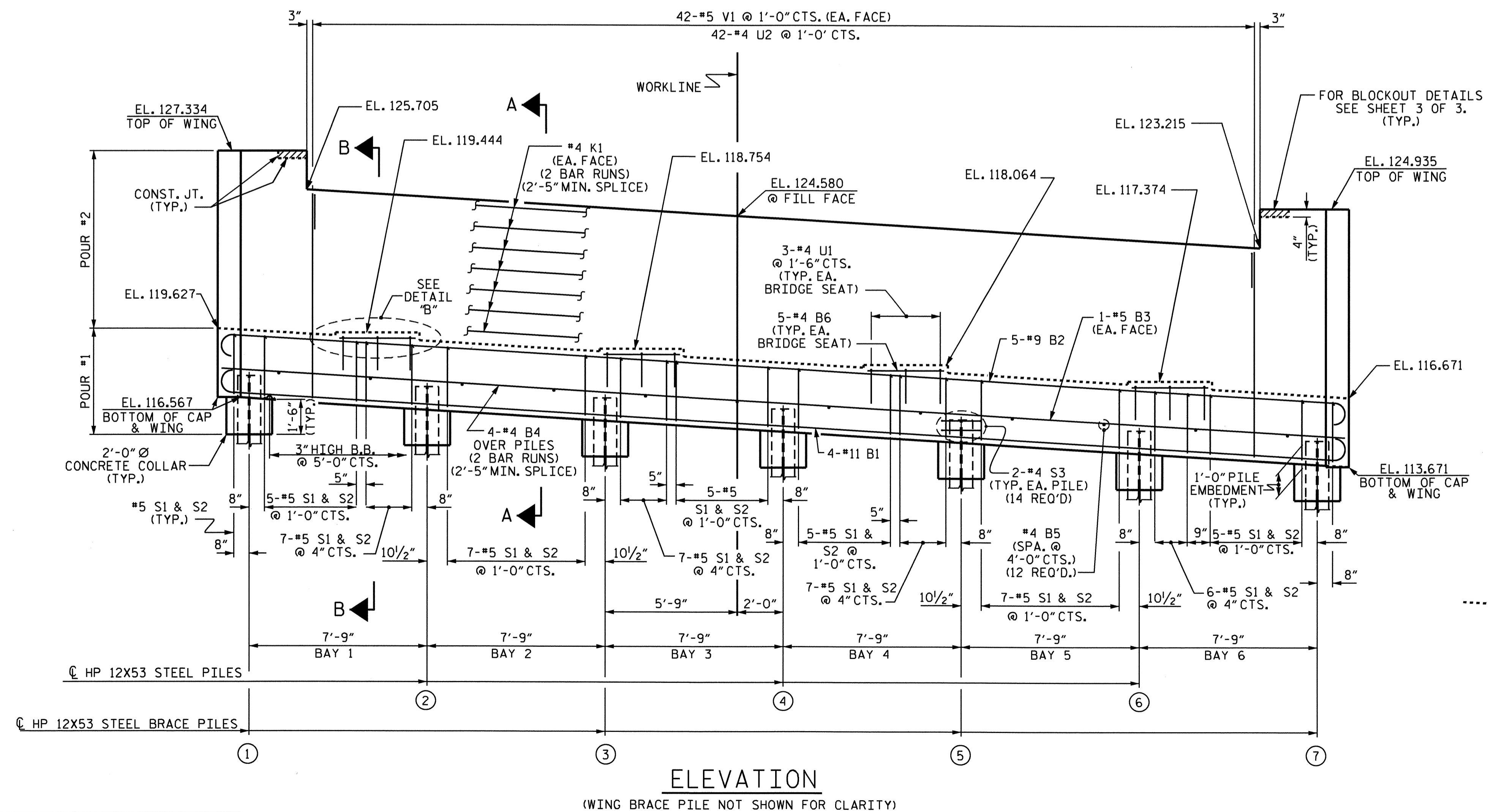
SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

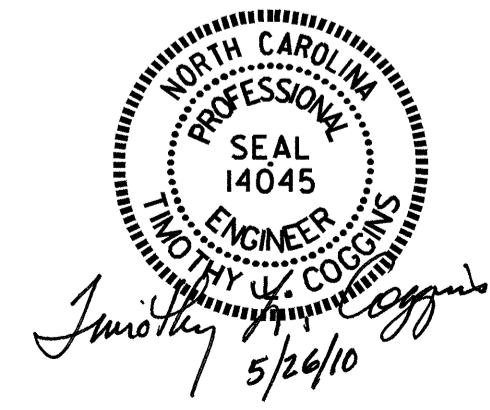
SUBSTRUCTURE  
 END BENT #1

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

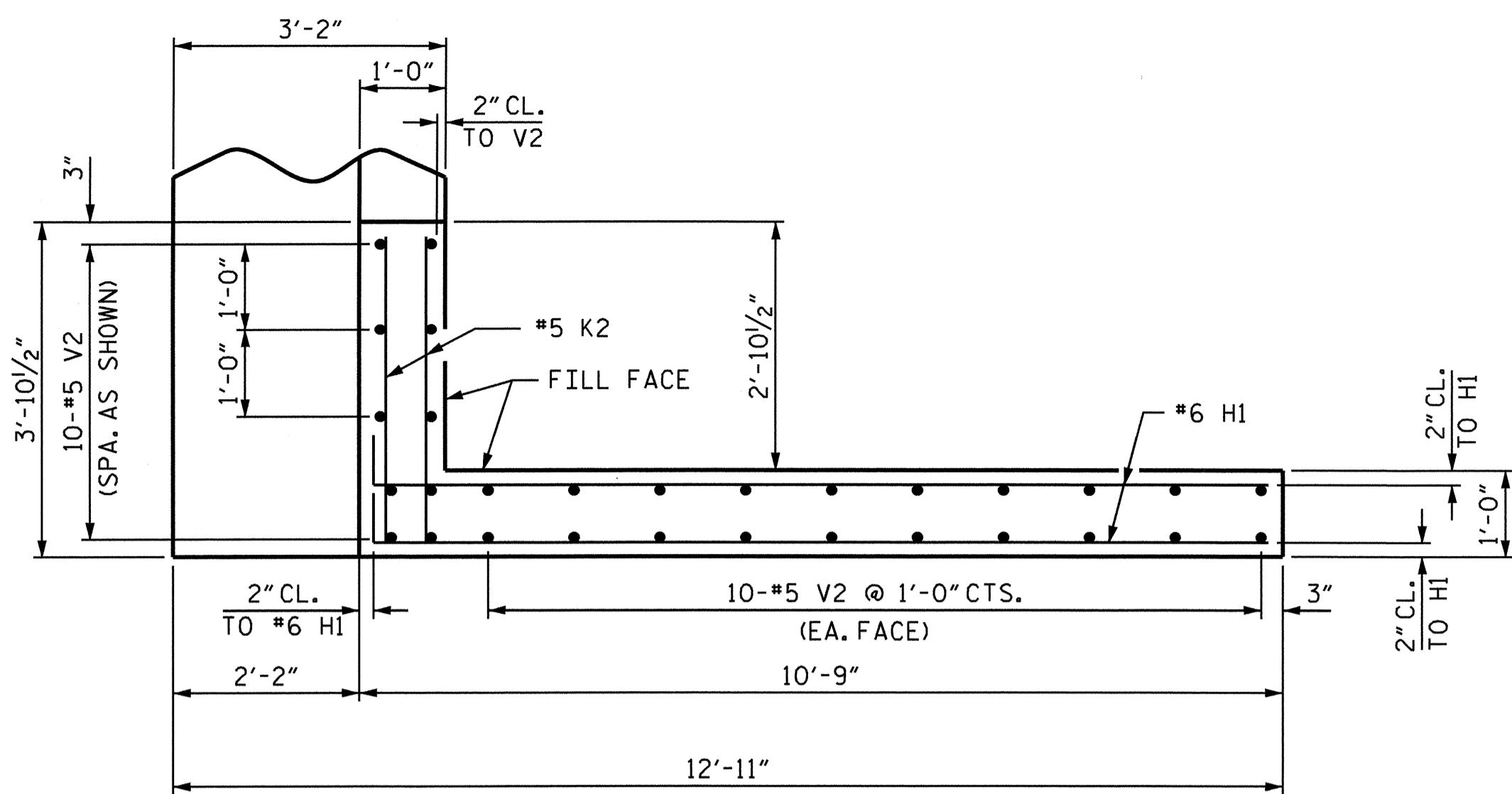
TOTAL SHEETS: 35



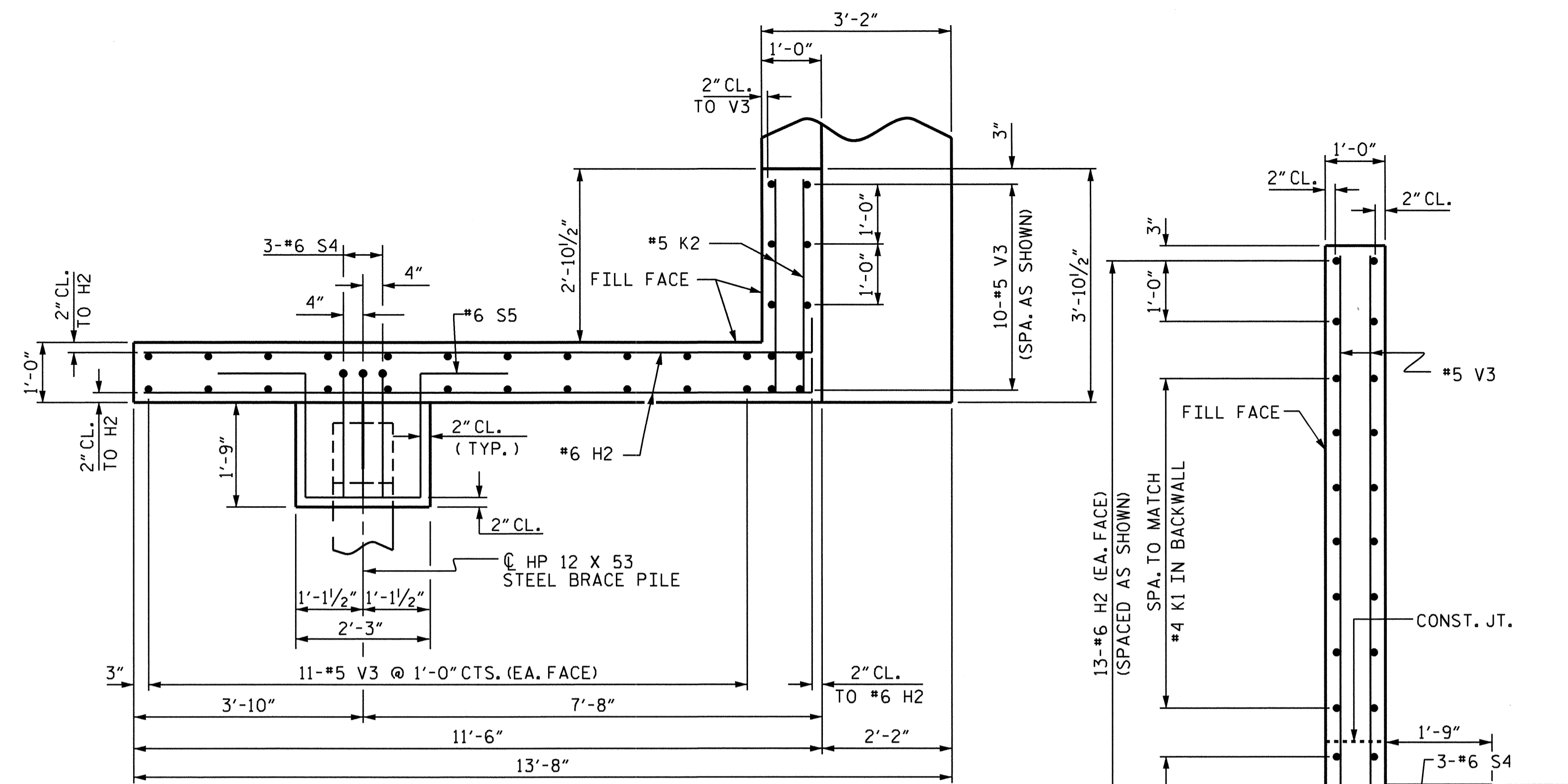
DRAWN BY: M. GUDLAUGSSON DATE: 10/16/09  
 CHECKED BY: J.B. WILSON DATE: 01/18/10



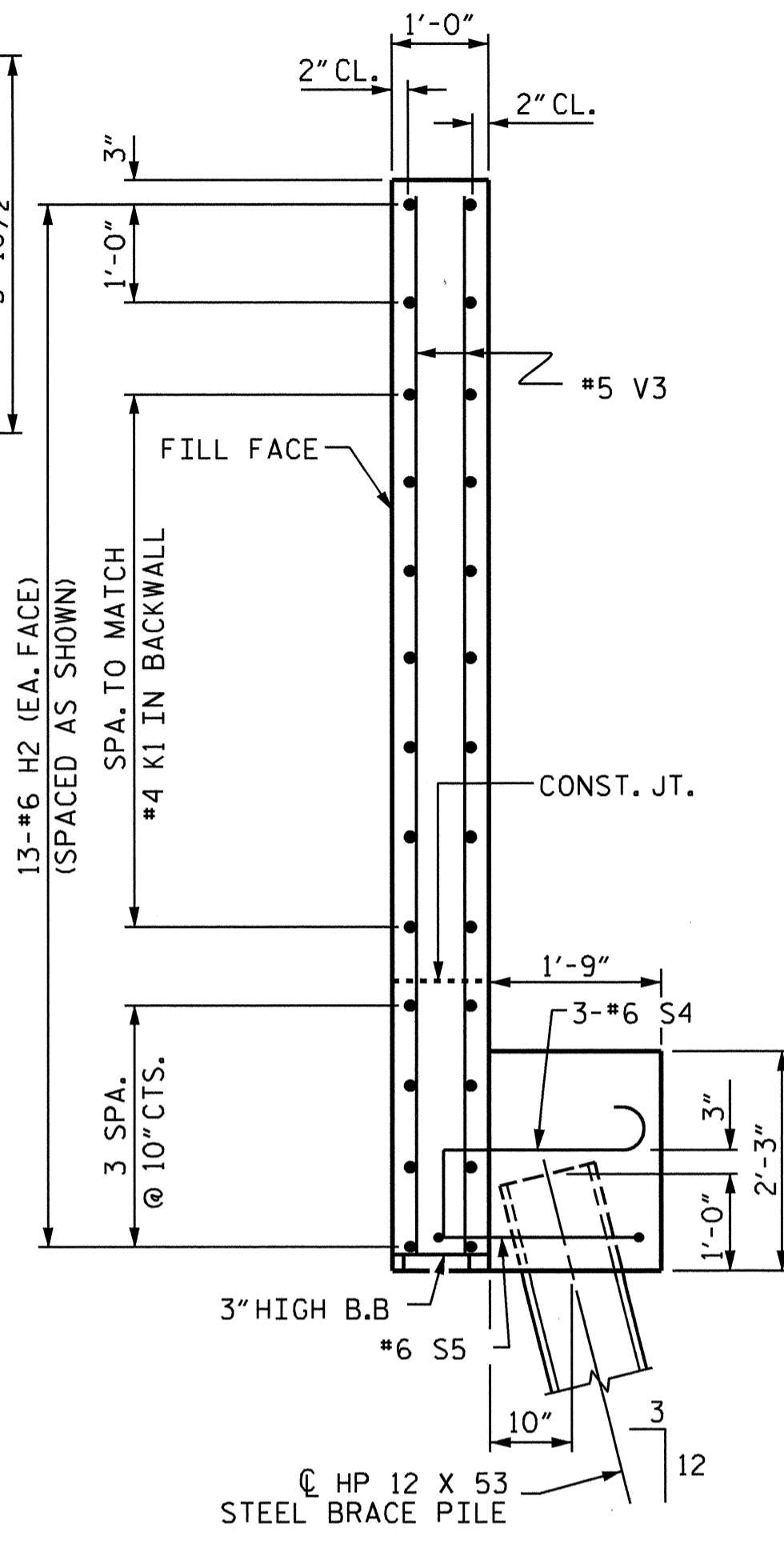




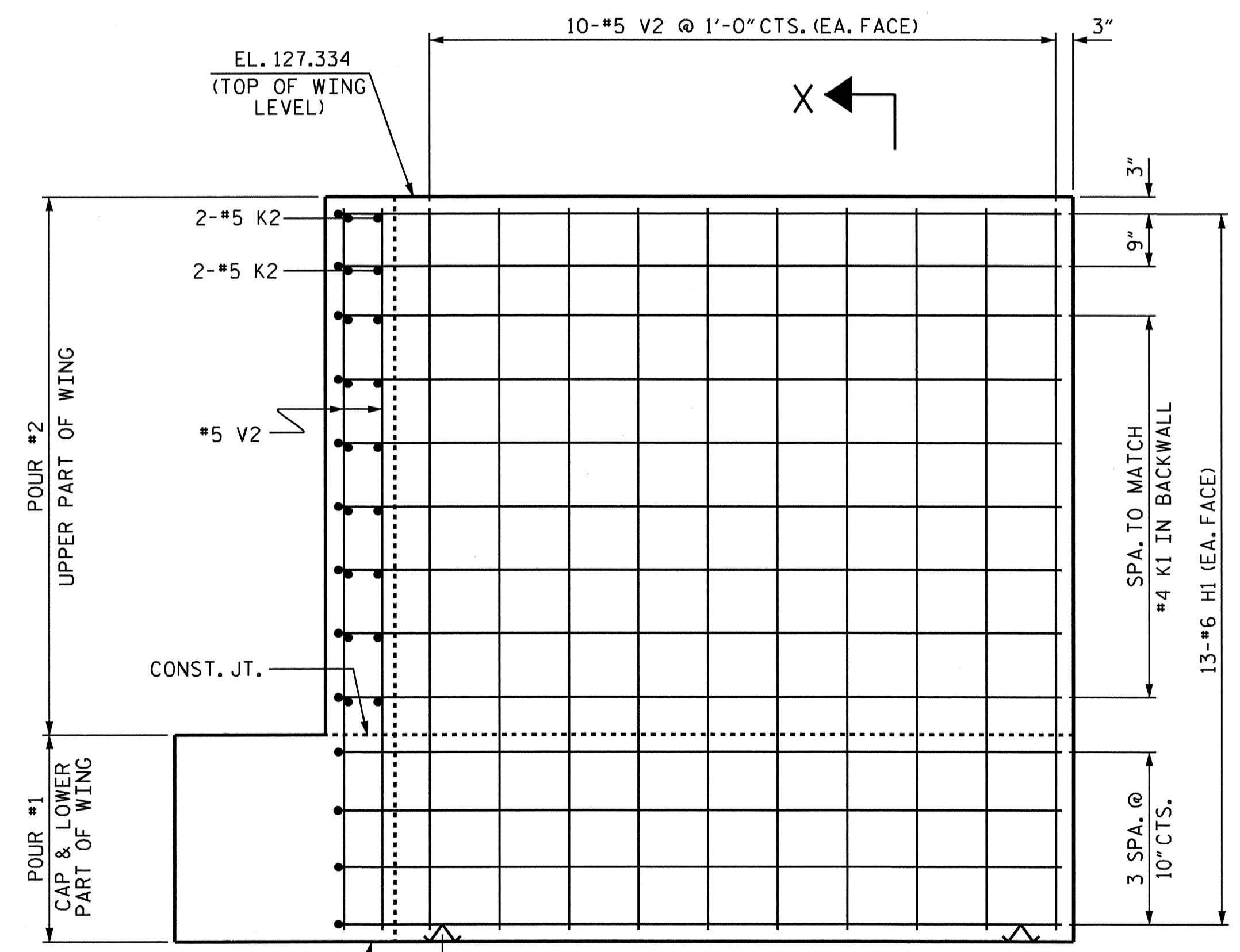
PLAN OF WING W1



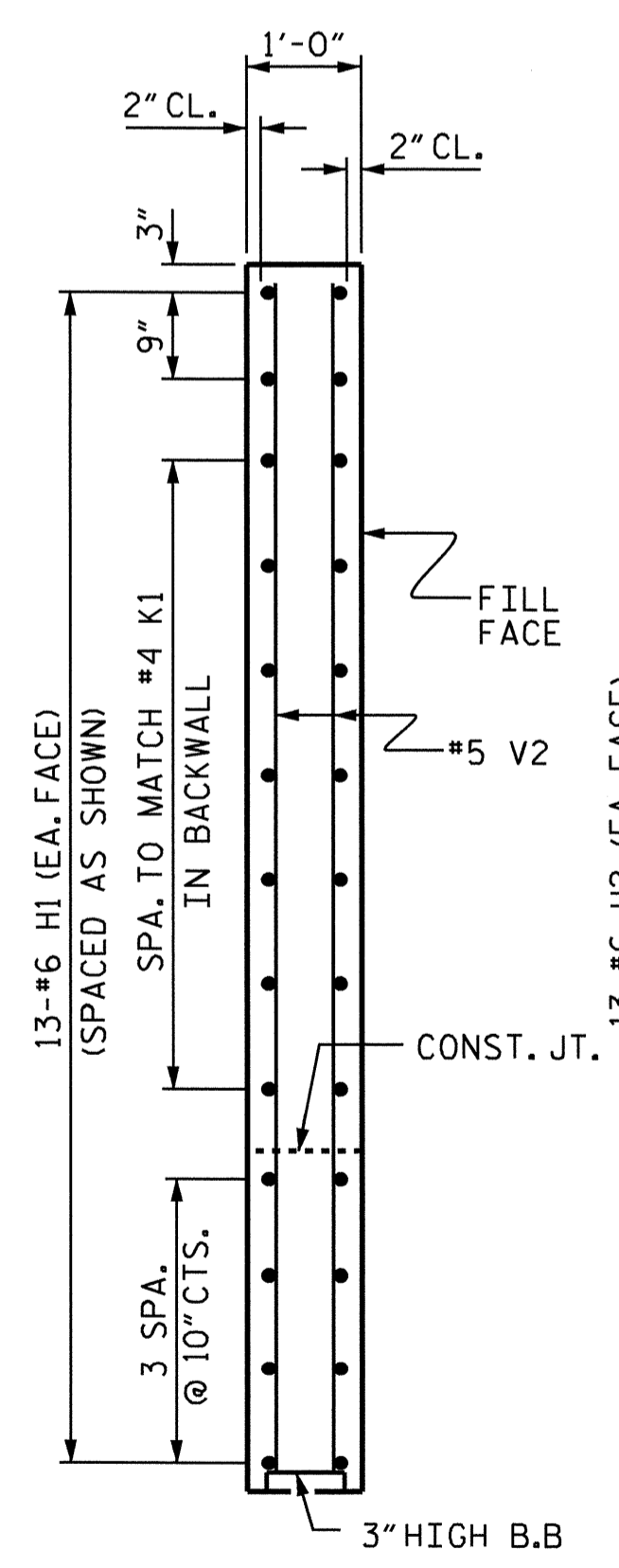
PLAN OF WING W2



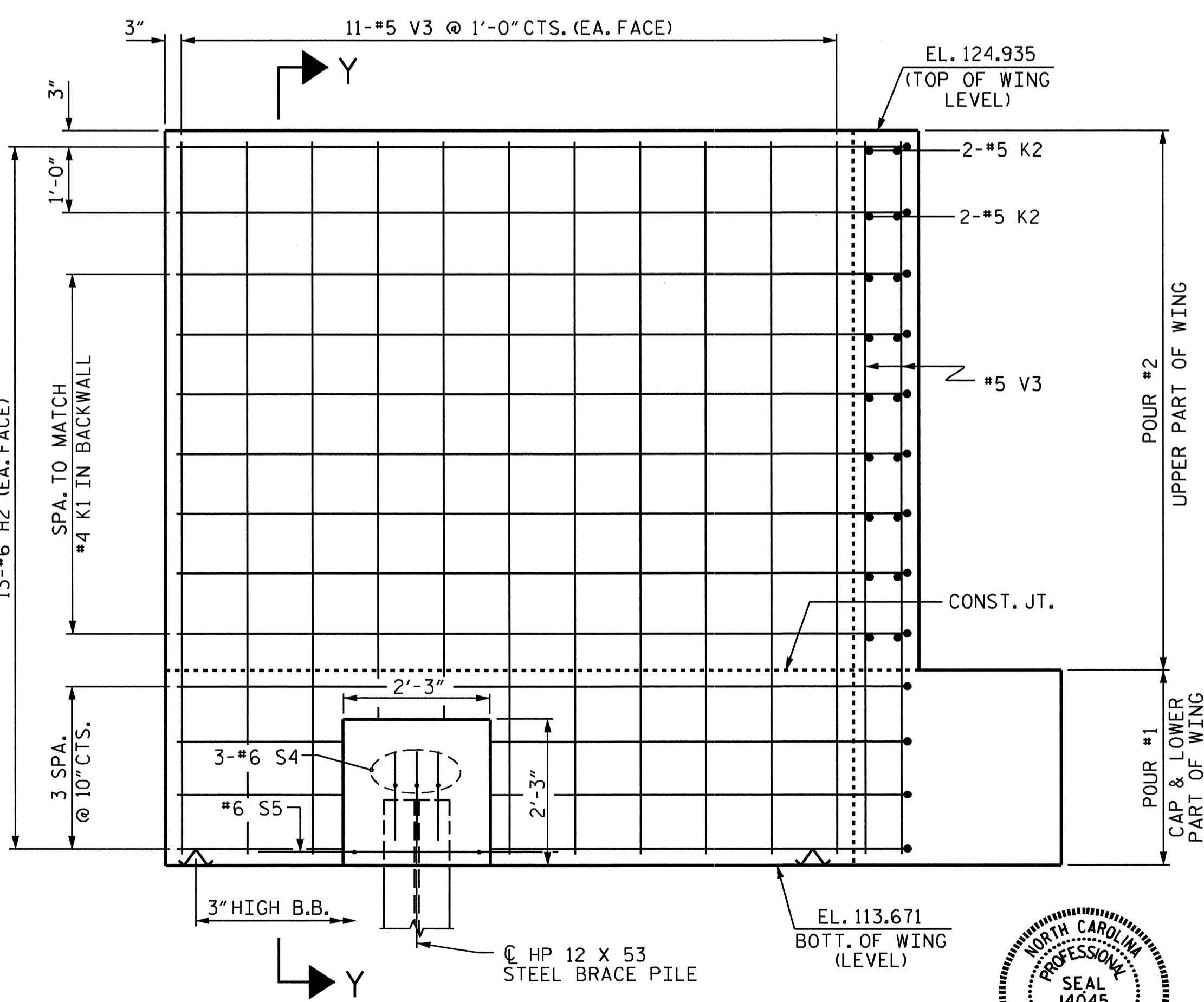
SECTION Y-Y



ELEVATION OF WING W1



SECTION X-X



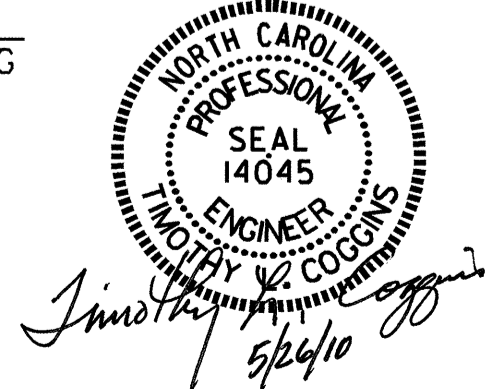
ELEVATION OF WING W2

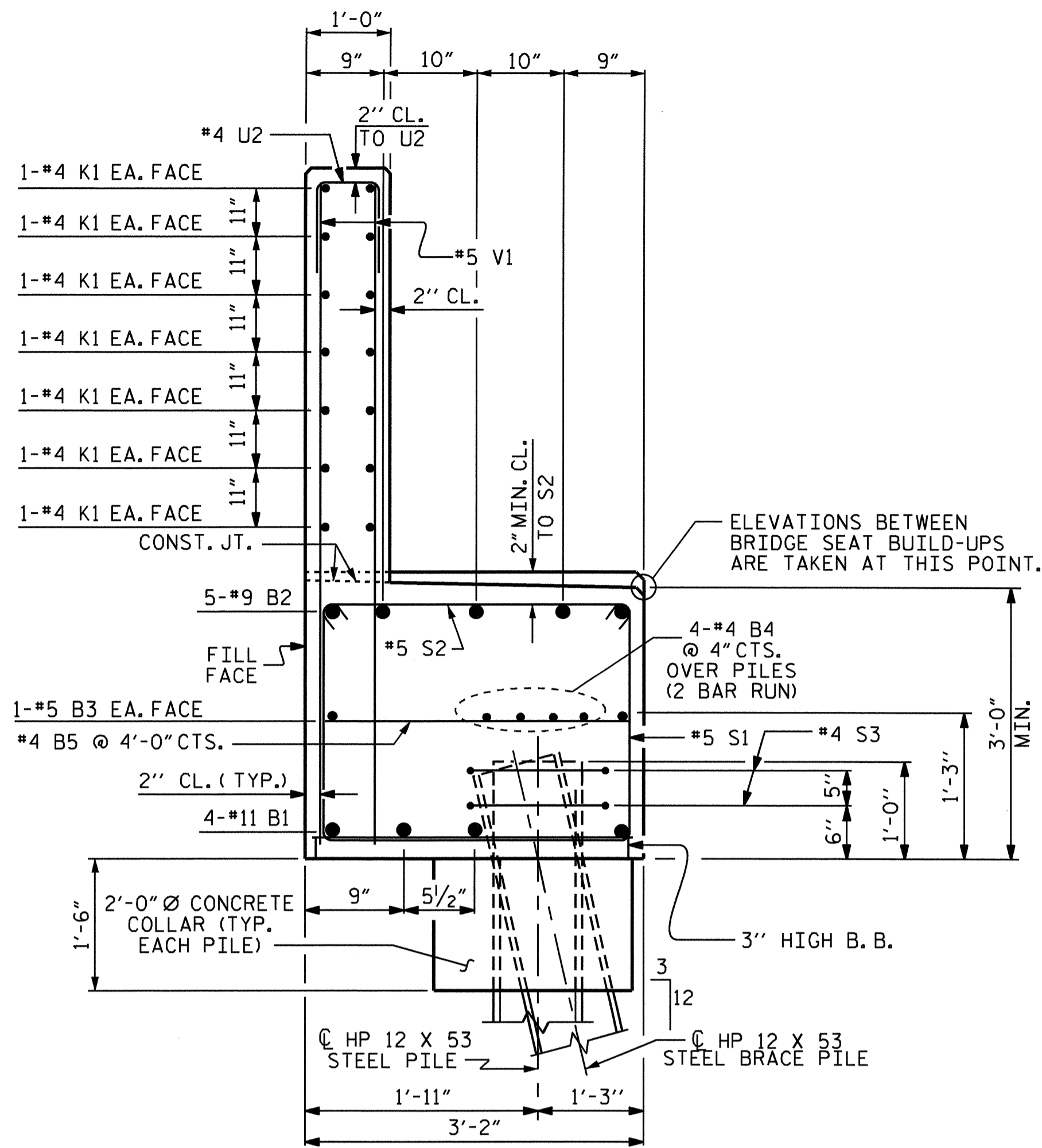
PROJECT NO. R-4900  
 COLUMBUS COUNTY  
 STATION: 42+58.19 -L-  
 SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT #1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-24					TOTAL SHEETS 35

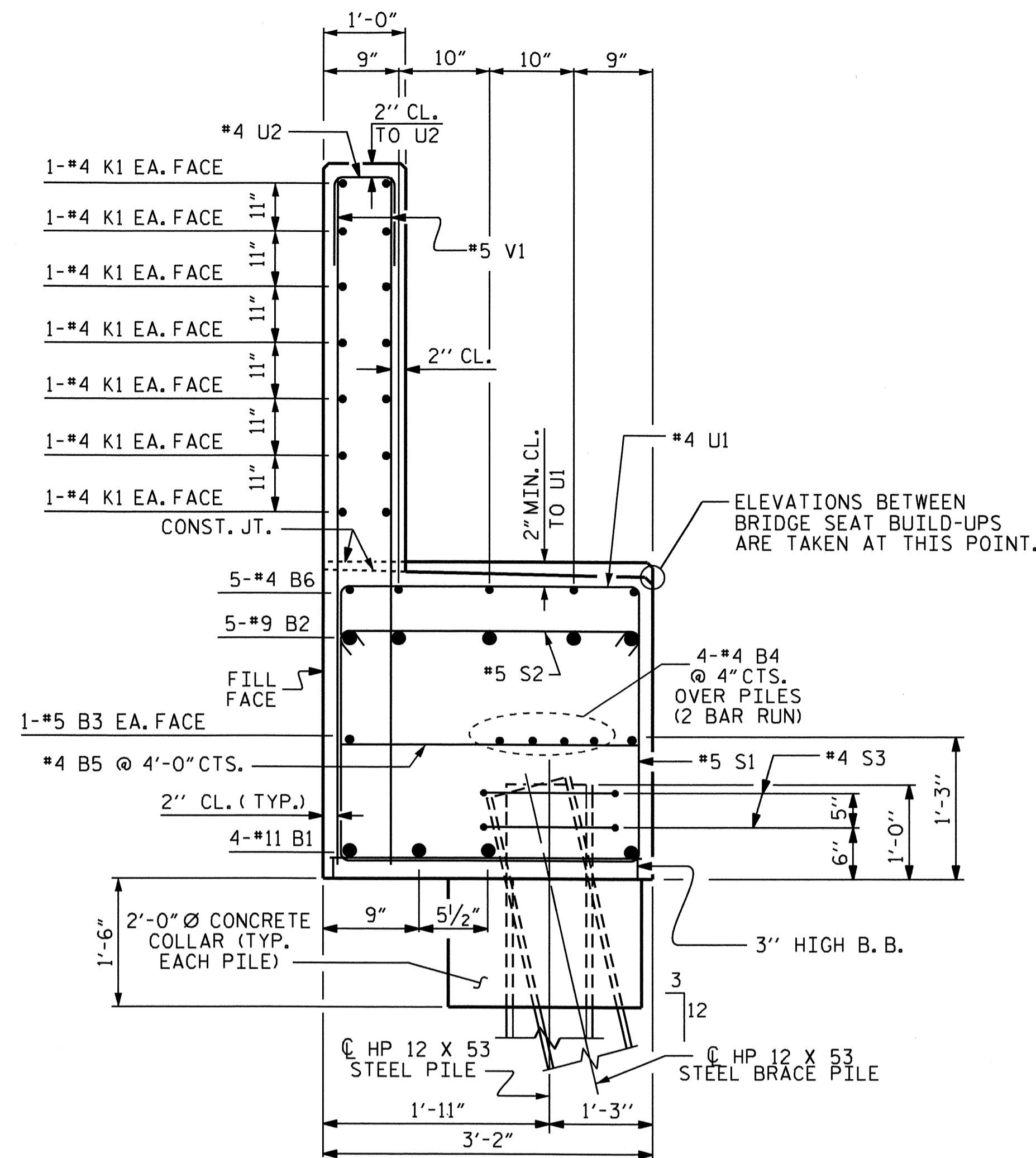
DRAWN BY: M.GUDLAUGSSON DATE: 10/16/09  
 CHECKED BY: J.B. WILSON DATE: 01/18/10

26-MAY-2010 12:21  
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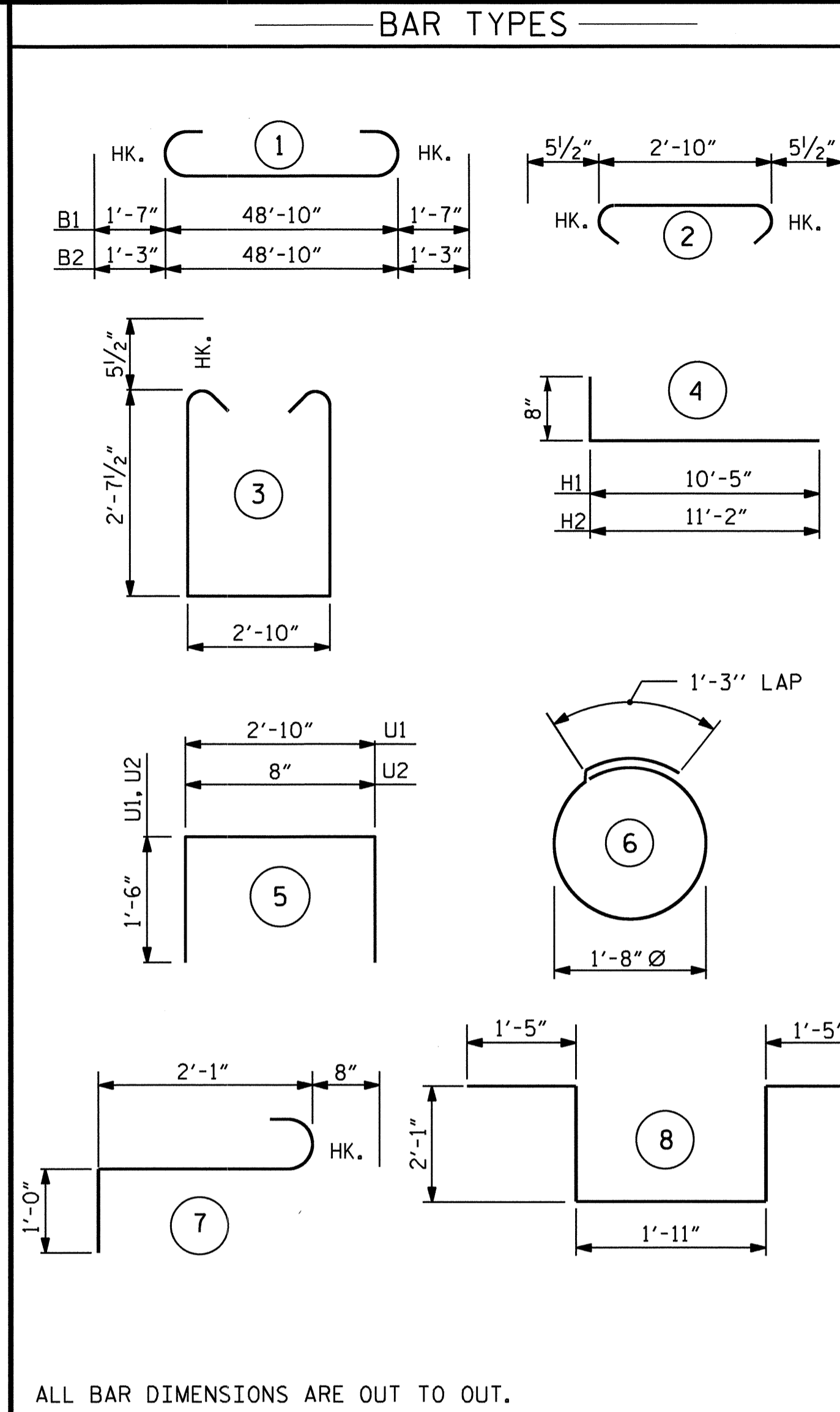




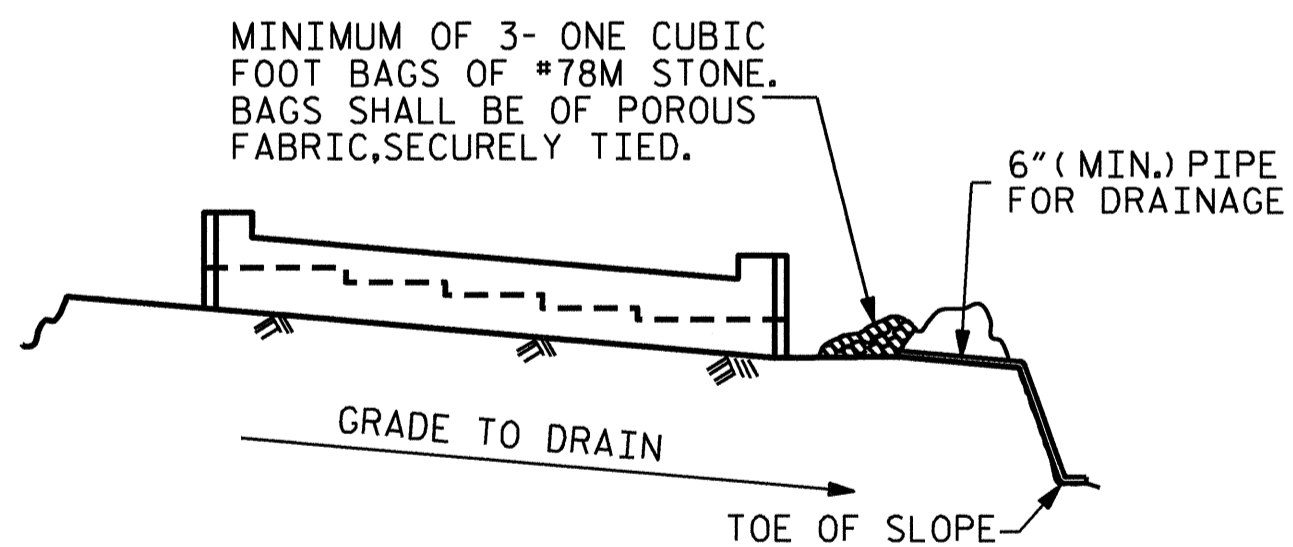
SECTION A-A



SECTION B-B



BILL OF MATERIAL					
END BENT #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#11	1	52'-0"	1105
B2	5	#9	1	51'-4"	873
B3	2	#5	STR	48'-11"	102
B4	8	#4	STR	25'-9"	138
B5	12	#4	STR	2'-10"	23
B6	20	#4	STR	3'-4"	45
H1	26	#6	4	11'-1"	433
H2	26	#6	4	11'-10"	462
K1	28	#4	STR	25'-9"	482
K2	8	#5	STR	3'-6"	29
S1	63	#5	3	9'-0"	591
S2	63	#5	2	3'-9"	246
S3	14	#4	6	6'-6"	61
S4	3	#6	7	3'-9"	17
S5	1	#6	8	8'-11"	13
U1	12	#4	5	5'-10"	47
U2	42	#4	5	3'-8"	103
V1	84	#5	STR	8'-11"	781
V2	30	#5	STR	10'-5"	326
V3	32	#5	STR	10'-8"	356
REINFORCING STEEL					= 6233 LBS
CLASS "A" CONCRETE BREAKDOWN					
POUR #1 CAP, CONCRETE PILE COLLARS AND LOWER PART OF WINGS					21.5 C.Y.
POUR #2 BACKWALL AND UPPER PART OF WINGS					17.8 C.Y.
CLASS "A" CONCRETE TOTAL					39.3 C.Y.
HP 12 x 53 STEEL PILES					
No.	8	LIN. FT.			560
PILE REDRIVES					EA. 4

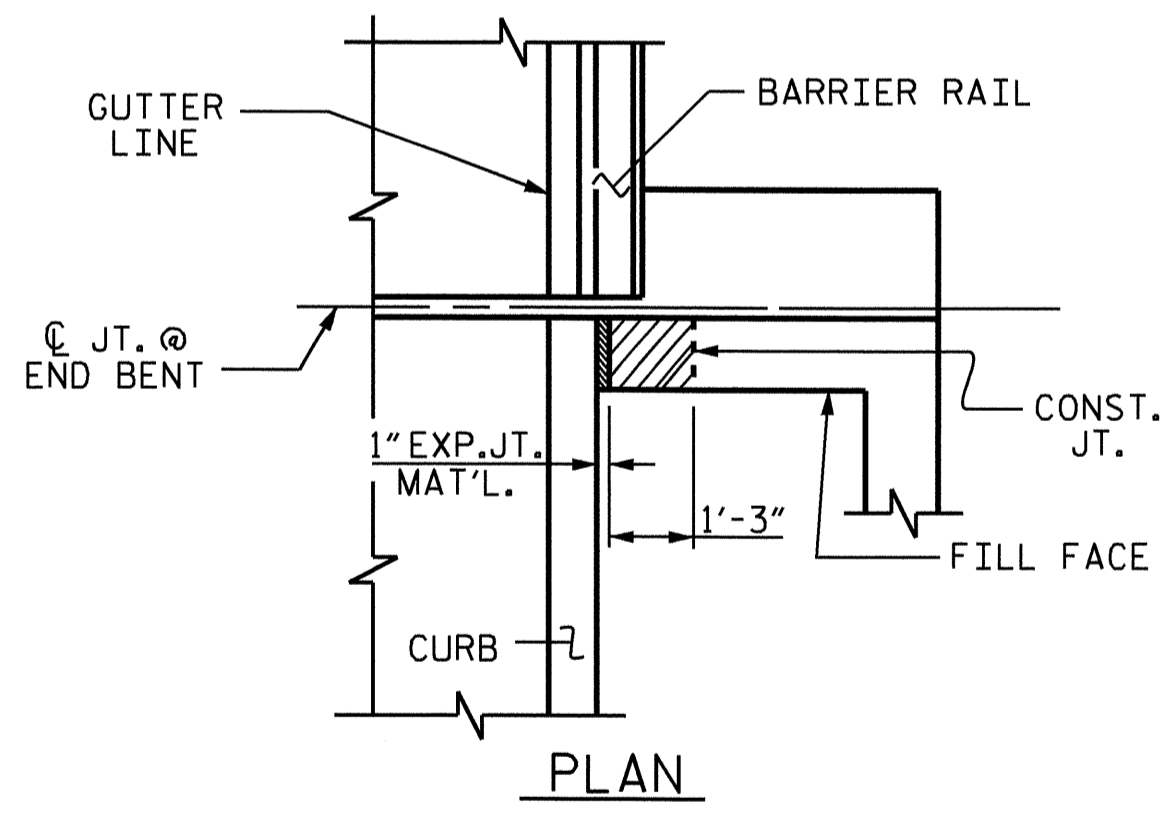


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

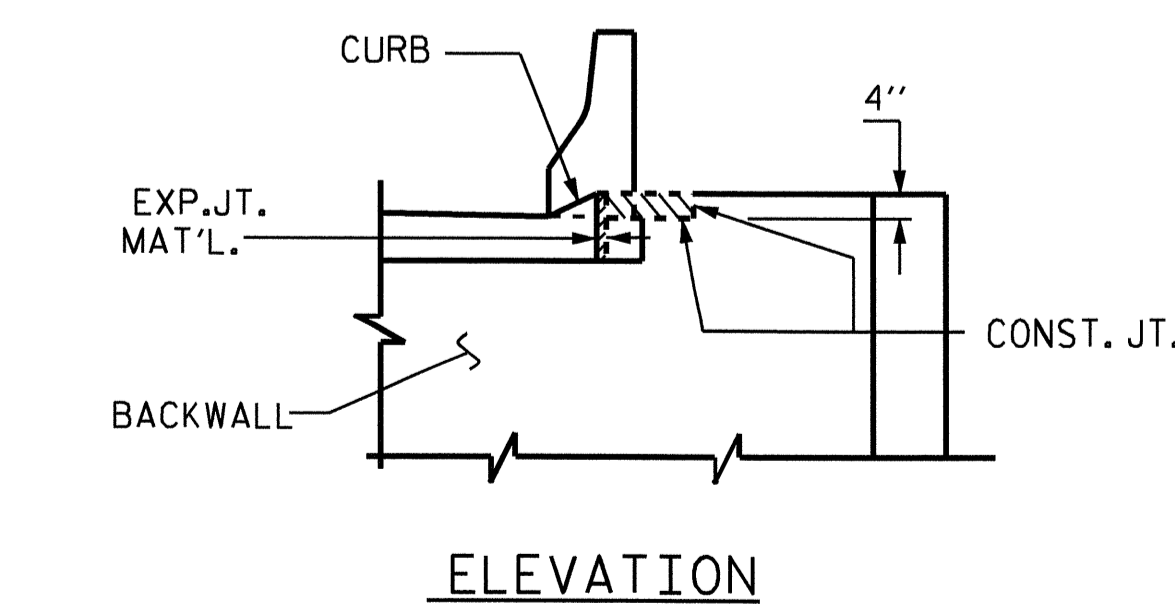
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

TEMPORARY DRAINAGE AT END BENT



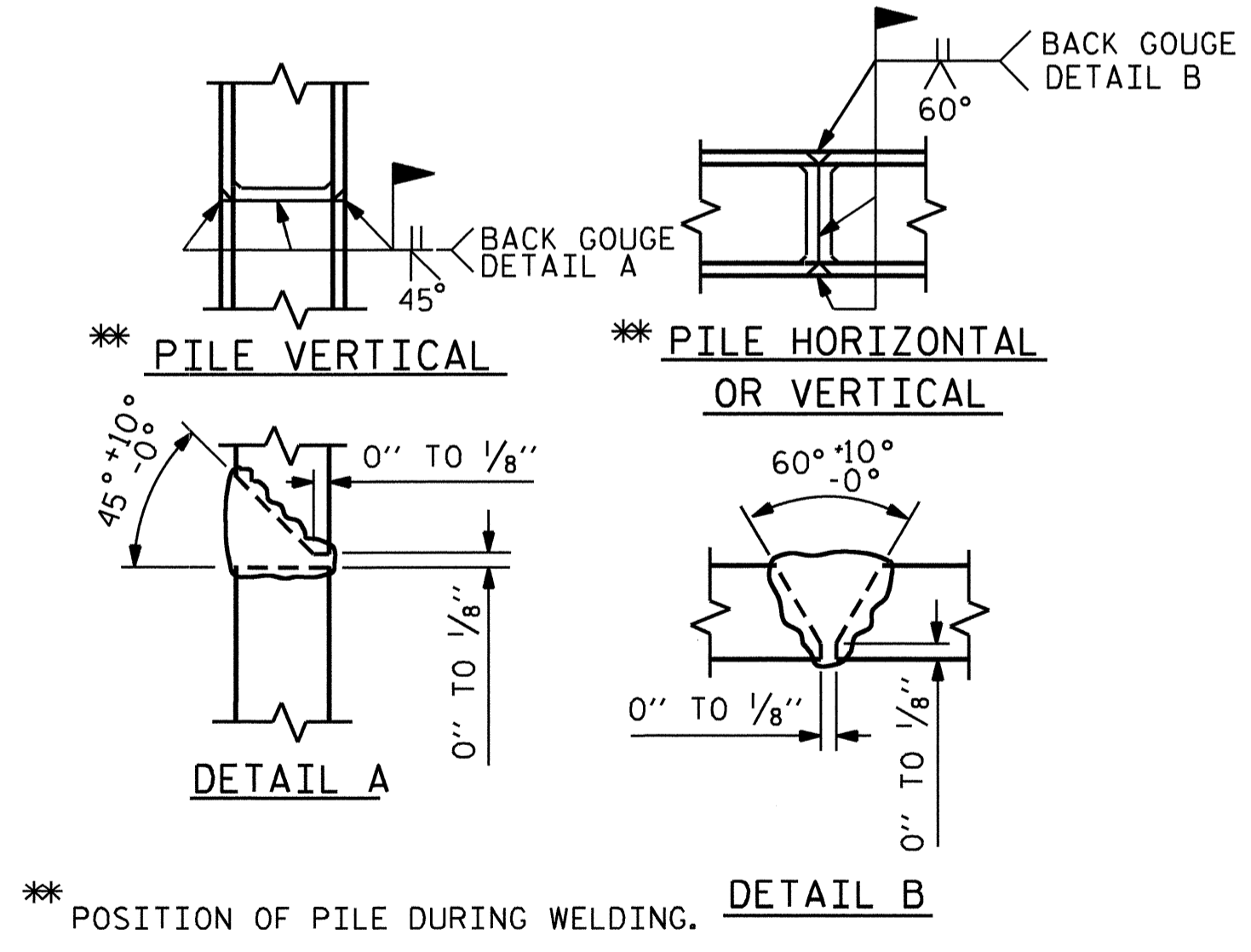
PLAN



ELEVATION

BLOCKOUT IN WING WALL

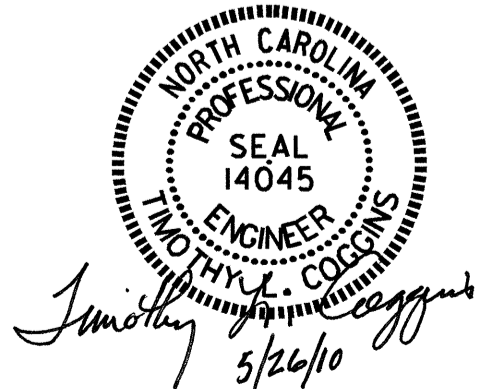
NOTE: THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND APPROACH SLAB HAS BEEN SAWED AND THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.



PILE SPLICE DETAILS

PROJECT NO. R-4900  
COLUMBUS COUNTY  
STATION: 42+58.19 -L-

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



DRAWN BY: M.GUDLAUGSSON DATE: 10/16/09  
CHECKED BY: J.B. WILSON DATE: 01/18/10

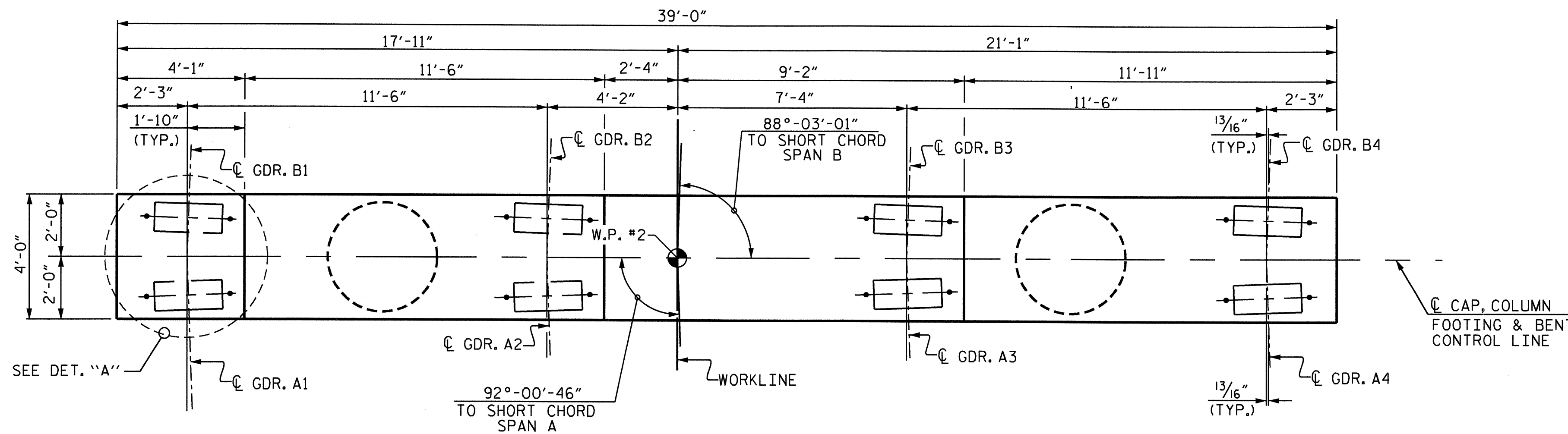
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					35

**NOTES**

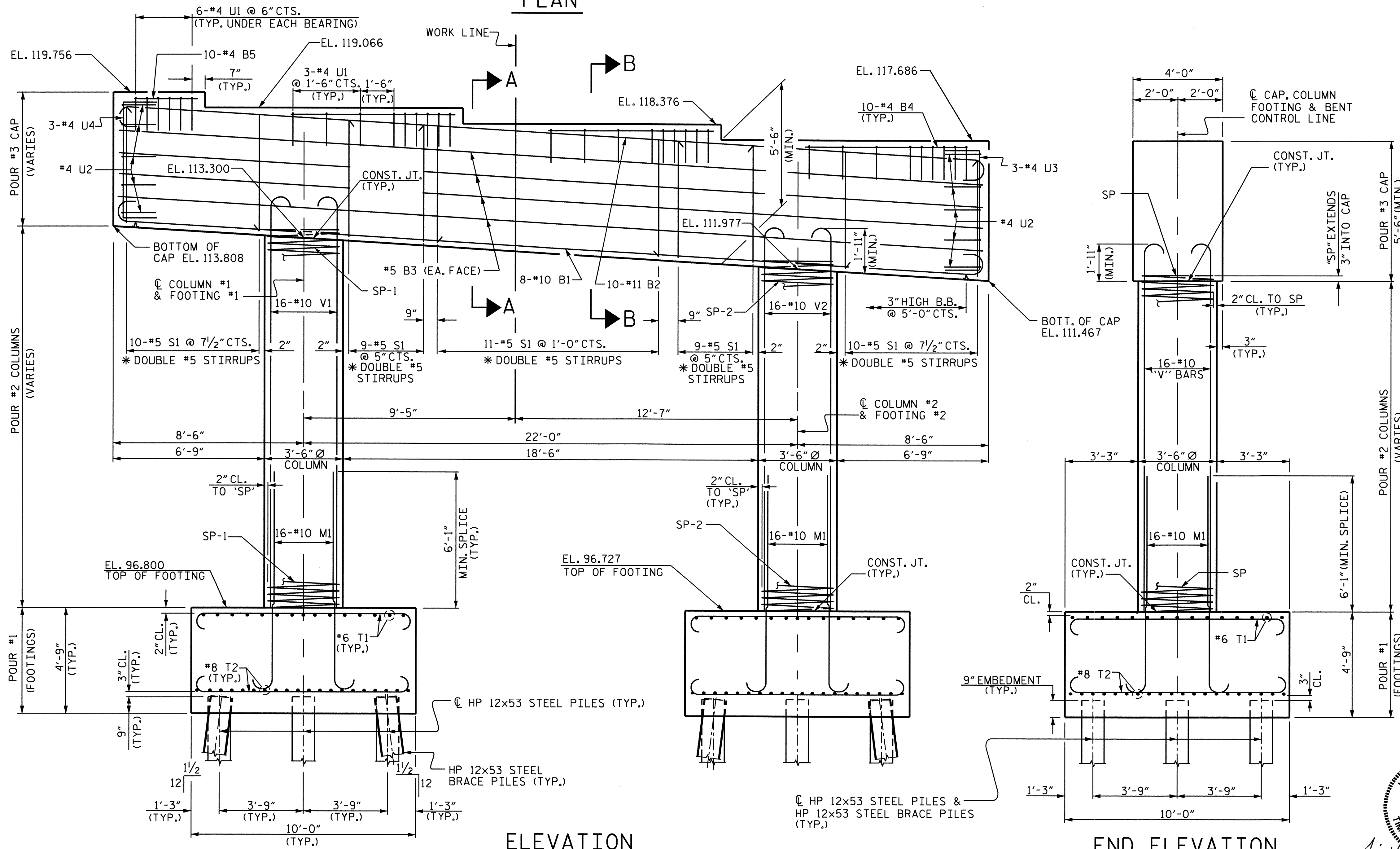
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.  
 HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.  
 FOR PILE SPLICE DETAIL, SEE END BENT #1, SHEET 3 OF 3.

SPAN B

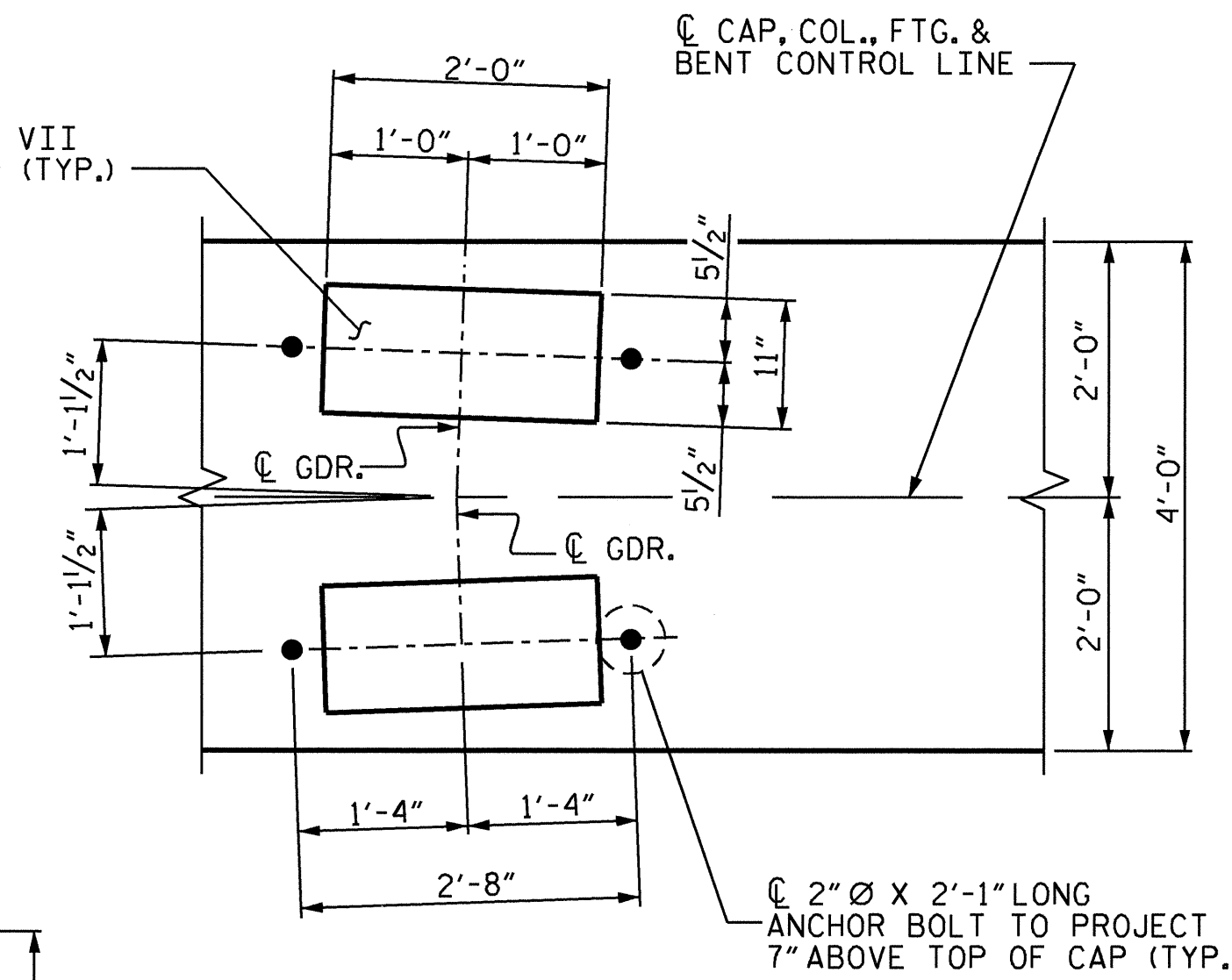
SPAN A



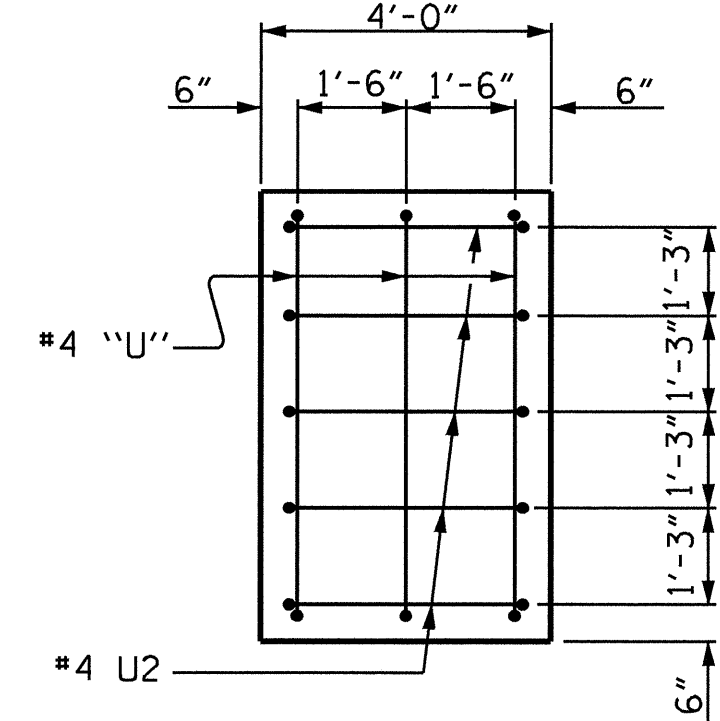
**PLAN**



**ELEVATION**  
 \* INVERT ALT. STIRRUPS



**DETAIL A**  
 (TYP. EACH GDR.)



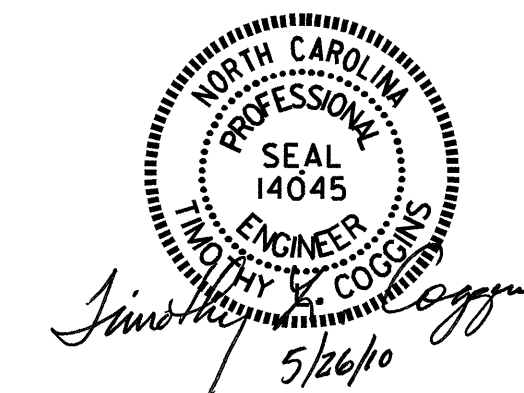
**END VIEW**  
 (TYP. EACH END)

PROJECT NO. R-4900  
 COLUMBUS COUNTY  
 STATION: 42+58.19 -L-

SHEET 1 OF 2

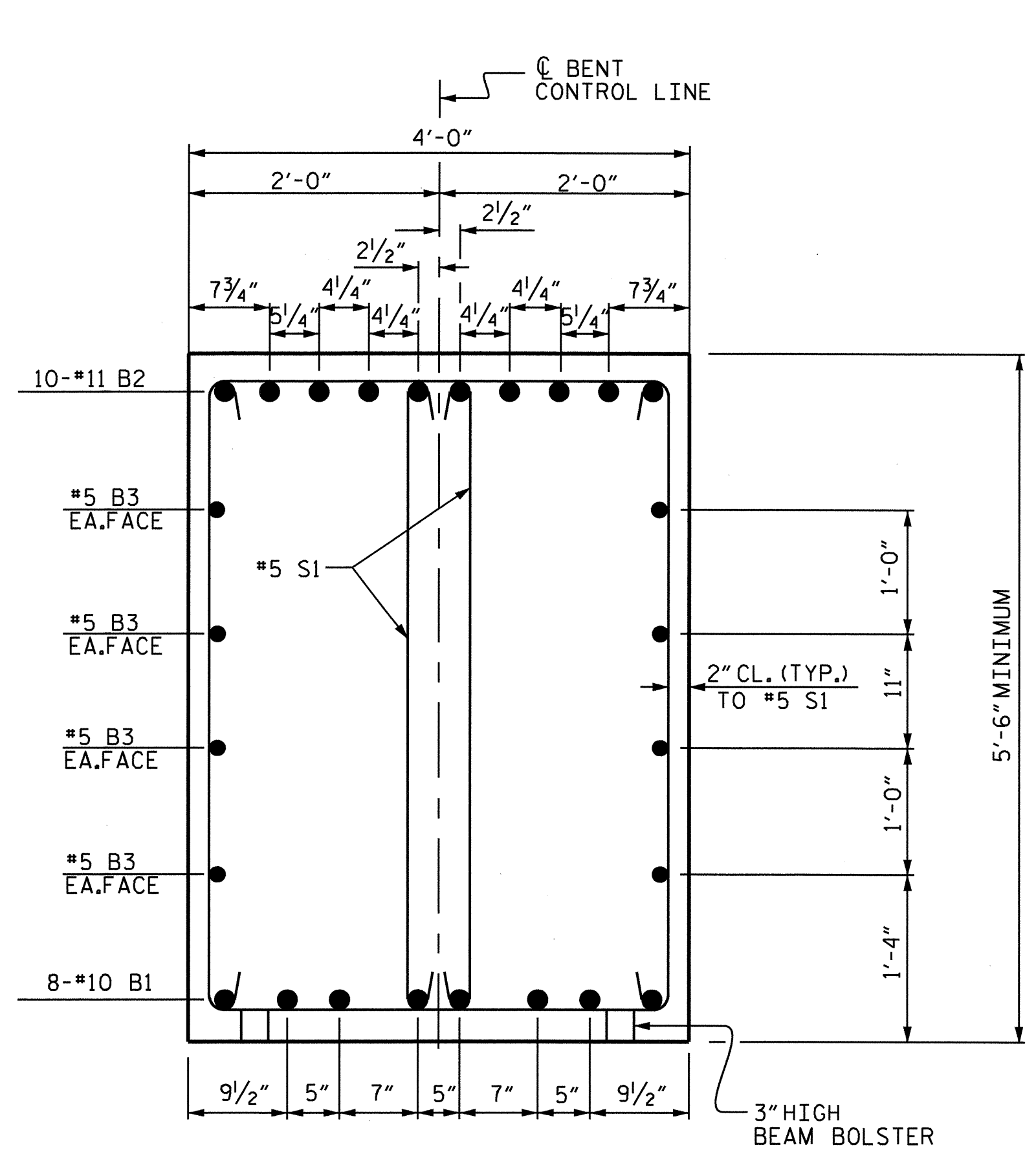
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT #1

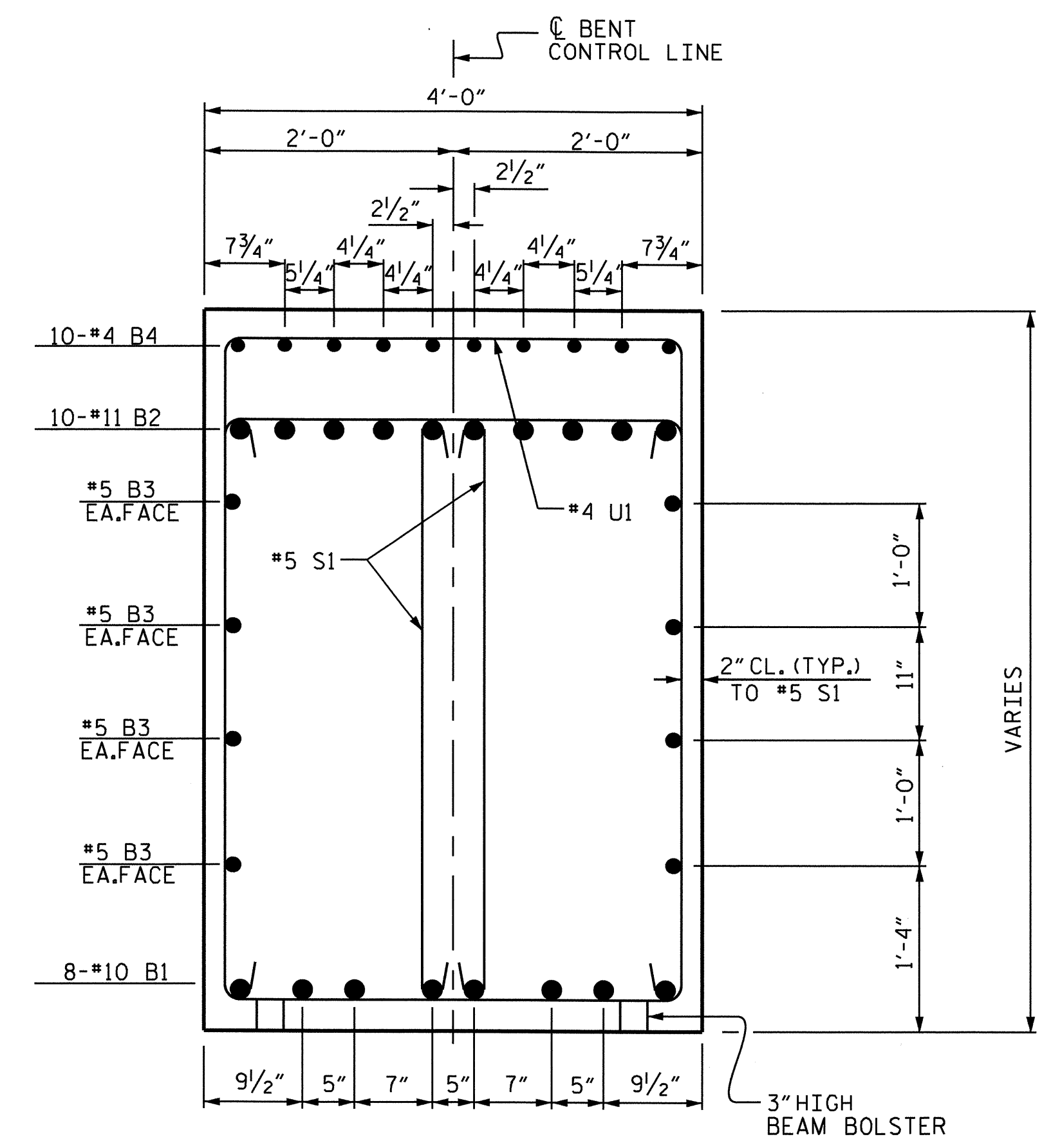


DRAWN BY: M.D. PISO DATE: 11/02/09  
 CHECKED BY: J.B. WILSON DATE: 03/10/10

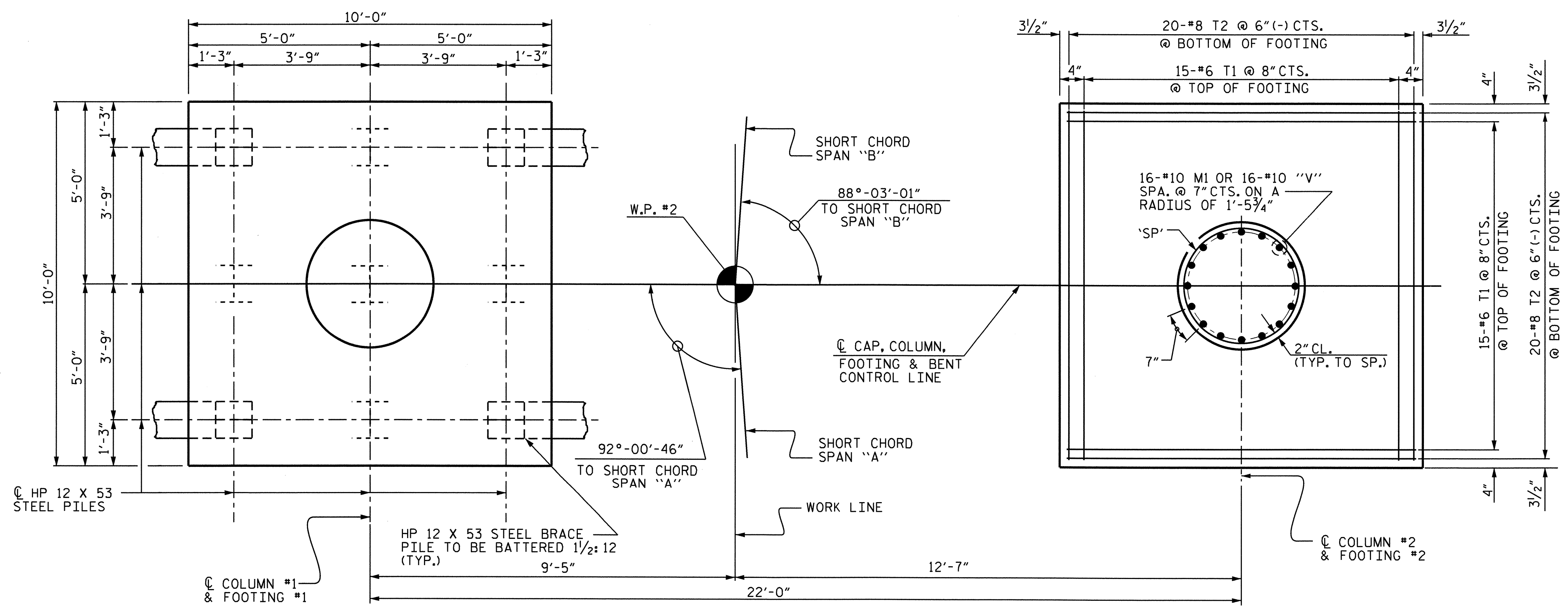
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			35



SECTION A-A



SECTION B-B



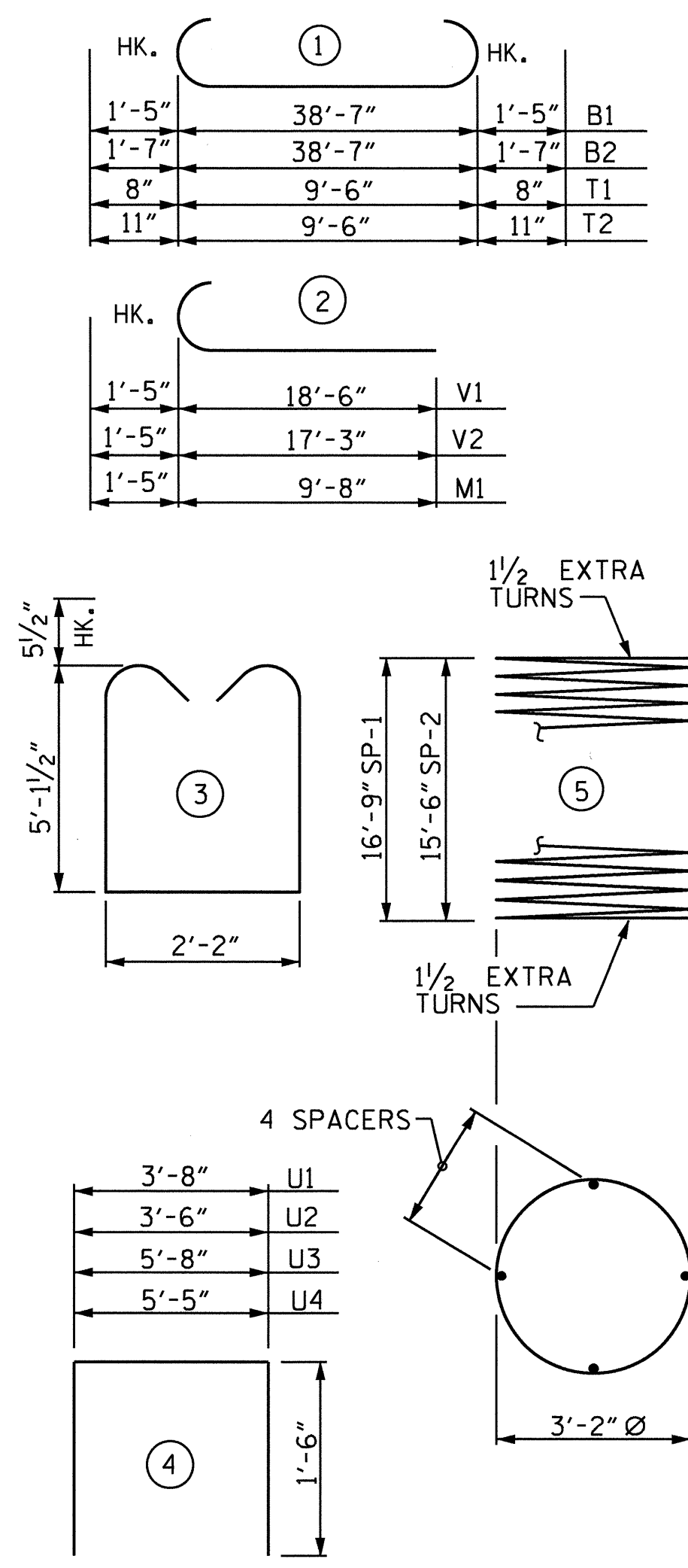
PLAN OF COLUMNS AND FOOTINGS

(ALL PILES, FOOTINGS, COLUMNS, DIMENSIONS, AND REINFORCING STEEL ARE TYPICAL)

DRAWN BY: M.D.PISO DATE: 11/02/09  
 CHECKED BY: J.B. WILSON DATE: 03/10/10

26-MAY-2010 10:33  
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BAR TYPES



BILL OF MATERIAL

BENT #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10	1	41'-5"	1426
B2	10	#11	1	41'-9"	2218
B3	8	#5	STR.	38'-8"	323
B4	30	#4	STR.	8'-0"	160
B5	10	#4	STR.	3'-9"	25
M1	32	#10	2	11'-1"	1526
S1	98	#5	3	13'-4"	1363
T1	60	#6	1	10'-10"	976
T2	80	#8	1	11'-4"	2421
U1	33	#4	4	6'-8"	147
U2	10	#4	4	6'-6"	43
U3	3	#4	4	8'-8"	17
U4	3	#4	4	8'-5"	17
V1	16	#10	2	19'-11"	1371
V2	16	#10	2	18'-8"	1285
REINFORCING STEEL				13318 LBS.	
SPIRAL COLUMN REINFORCING STEEL					
NO.	SIZE	TYPE	LENGTH	WEIGHT	
SP-1	1	*	5	687'-6"	459
SP-2	1	*	5	638'-5"	426
SPIRAL COLUMN REINFORCING STEEL				885 LBS.	
CLASS A CONCRETE					
POUR #1 FOOTINGS				35.2 C.Y.	
POUR #2 COLUMNS				11.3 C.Y.	
POUR #3 CAP				33.9 C.Y.	
TOTAL CLASS A CONCRETE				80.4 C.Y.	
HP 12 X 53 STEEL PILES					
No. 18				810 LIN. FT.	
PILE REDRIVES				5 EACH	
FOUNDATION EXCAVATION				LUMP SUM	

\* THE SP-1 AND SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

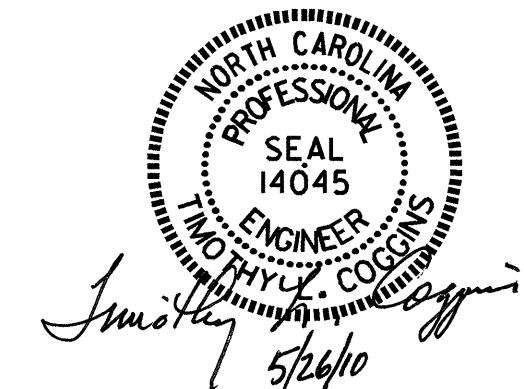
ALL BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. R-4900  
 COLUMBUS COUNTY  
 STATION: 42+58.19 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT #1

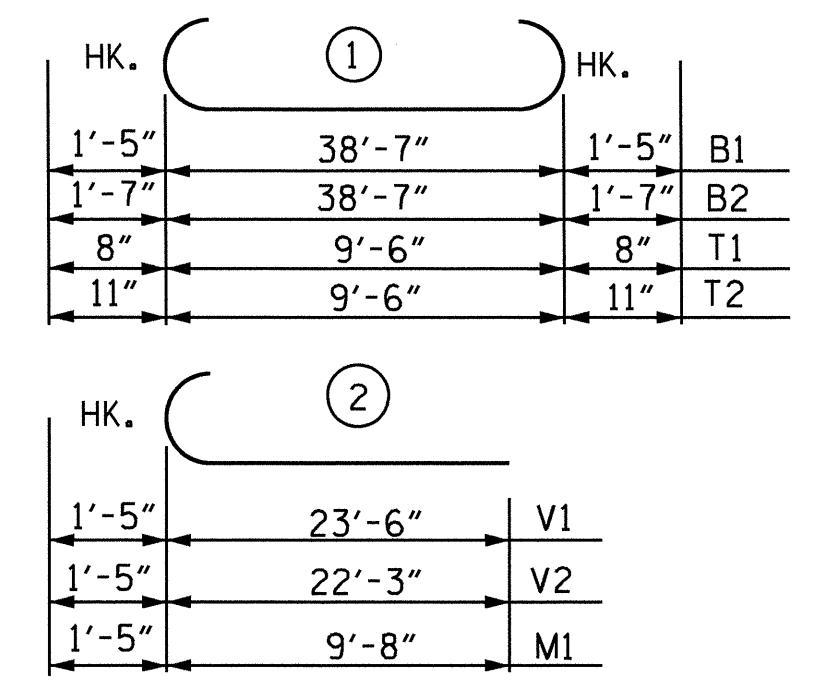


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NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

S-27  
 TOTAL SHEETS  
 35

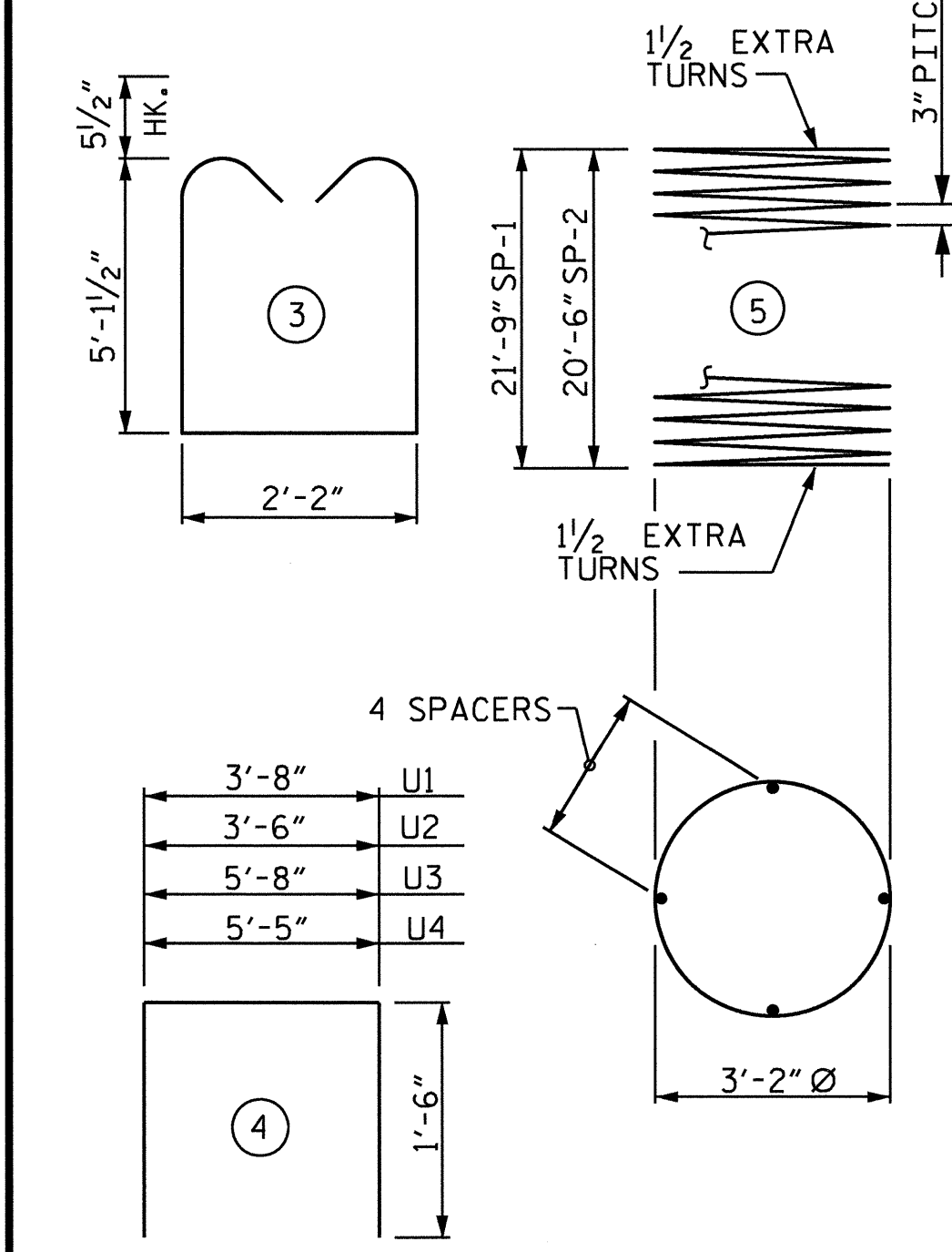


BAR TYPES



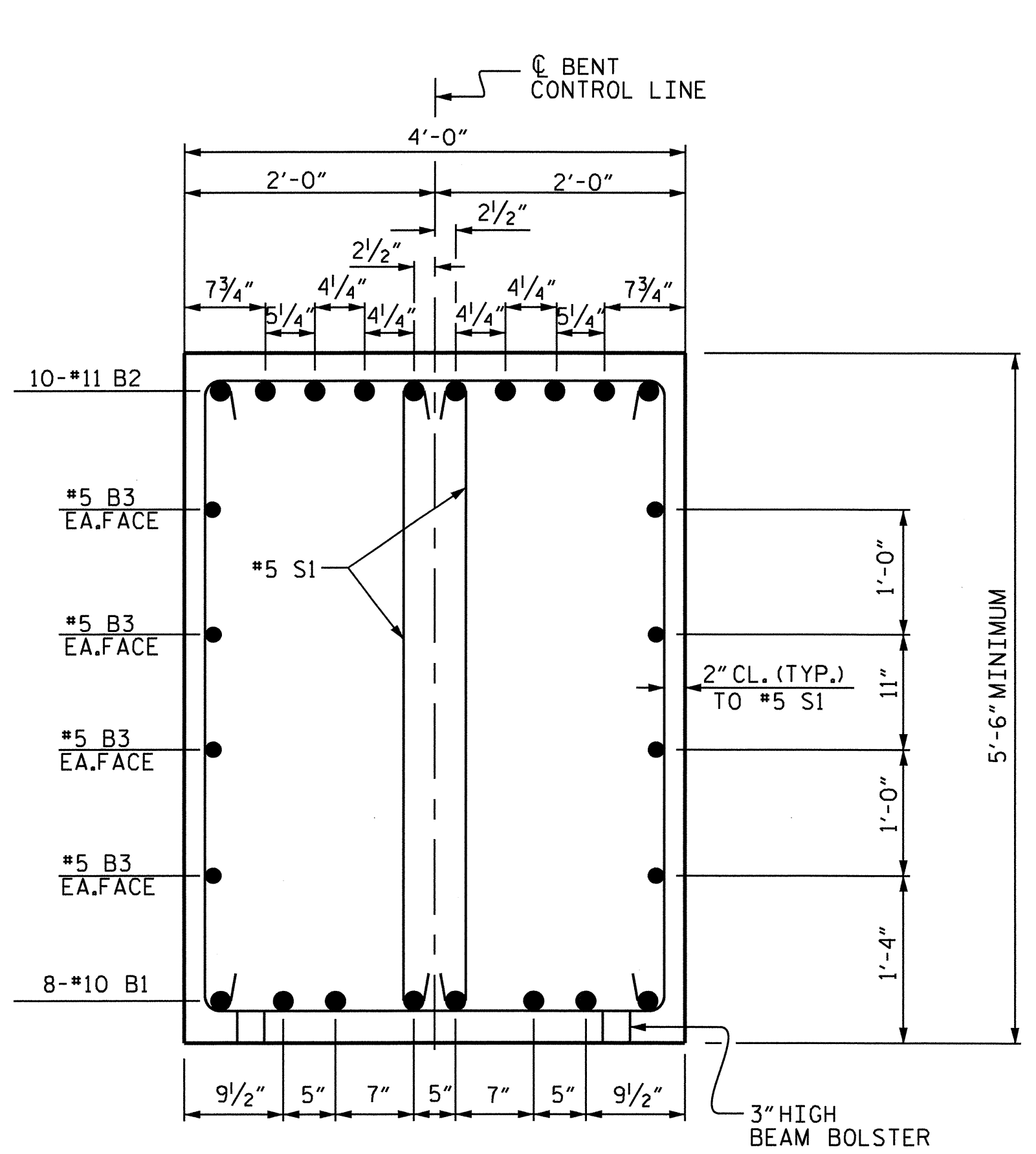
BILL OF MATERIAL

BENT #2					
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B2	10	#11	1	41'-9"	2218
B3	8	#5	STR.	38'-8"	323
B4	30	#4	STR.	8'-0"	160
B5	10	#4	STR.	3'-9"	25
M1	32	#10	2	11'-1"	1526
S1	98	#5	3	13'-4"	1363
T1	60	#6	1	10'-10"	976
T2	80	#8	1	11'-4"	2421
U1	33	#4	4	6'-8"	147
U2	10	#4	4	6'-6"	43
U3	3	#4	4	8'-8"	17
U4	3	#4	4	8'-5"	17
V1	16	#10	2	24'-11"	1715
V2	16	#10	2	23'-8"	1629
REINFORCING STEEL					14006 LBS.
SPIRAL COLUMN REINFORCING STEEL					
NO.	SIZE	TYPE	LENGTH	WEIGHT	
SP-1	1	*	5	883'-11"	590
SP-2	1	*	5	834'-10"	558
SPIRAL COLUMN REINFORCING STEEL					1148 LBS.
CLASS A CONCRETE					
POUR #1 FOOTINGS				35.2	C.Y.
POUR #2 COLUMNS				14.9	C.Y.
POUR #3 CAP				33.9	C.Y.
TOTAL CLASS A CONCRETE					84.0 C.Y.
HP 12 X 53 STEEL PILES					
No. 18				900	LIN. FT.
PILE REDRIVES					5 EACH
FOUNDATION EXCAVATION					LUMP SUM

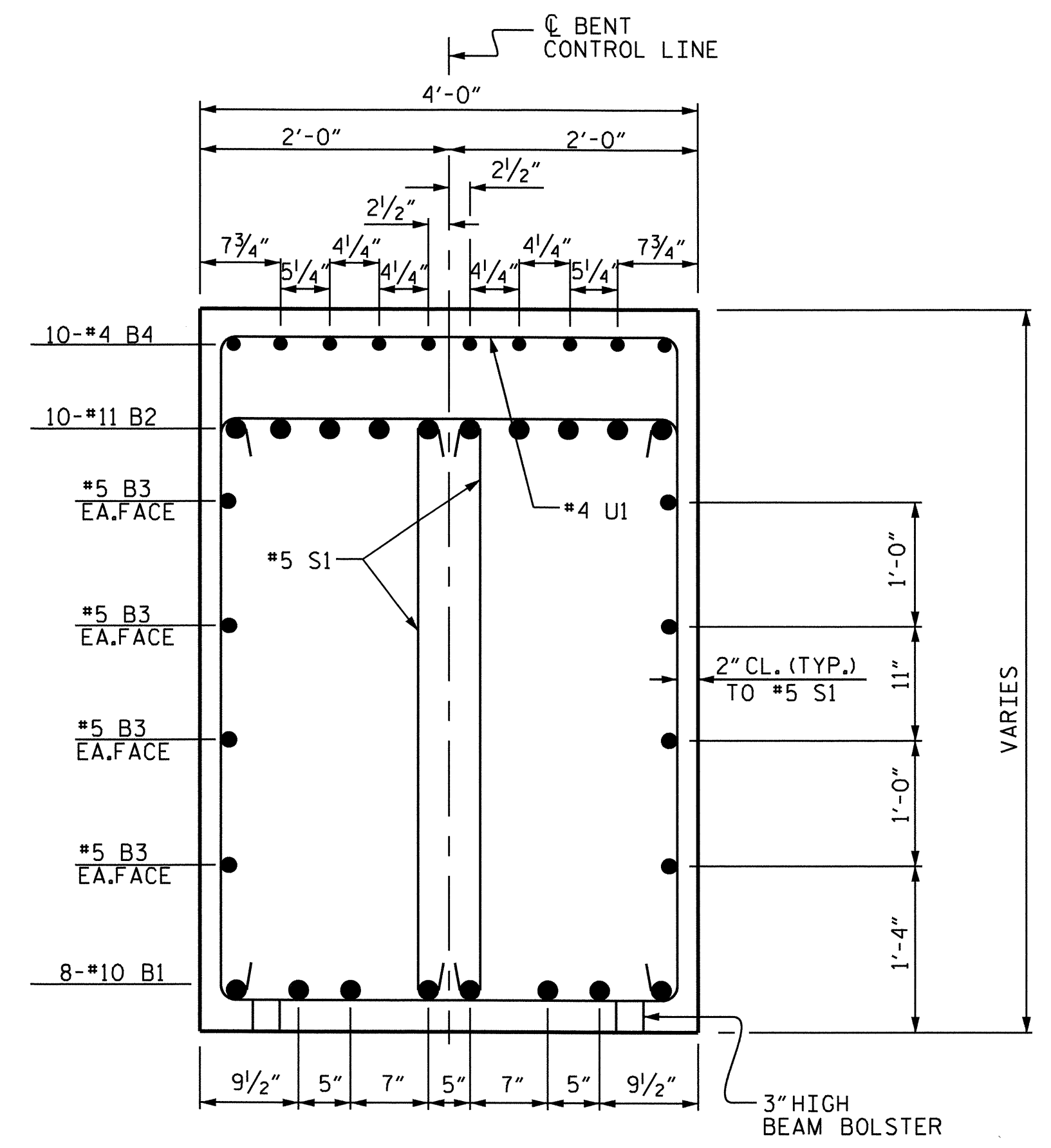


\* THE SP-1 AND SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

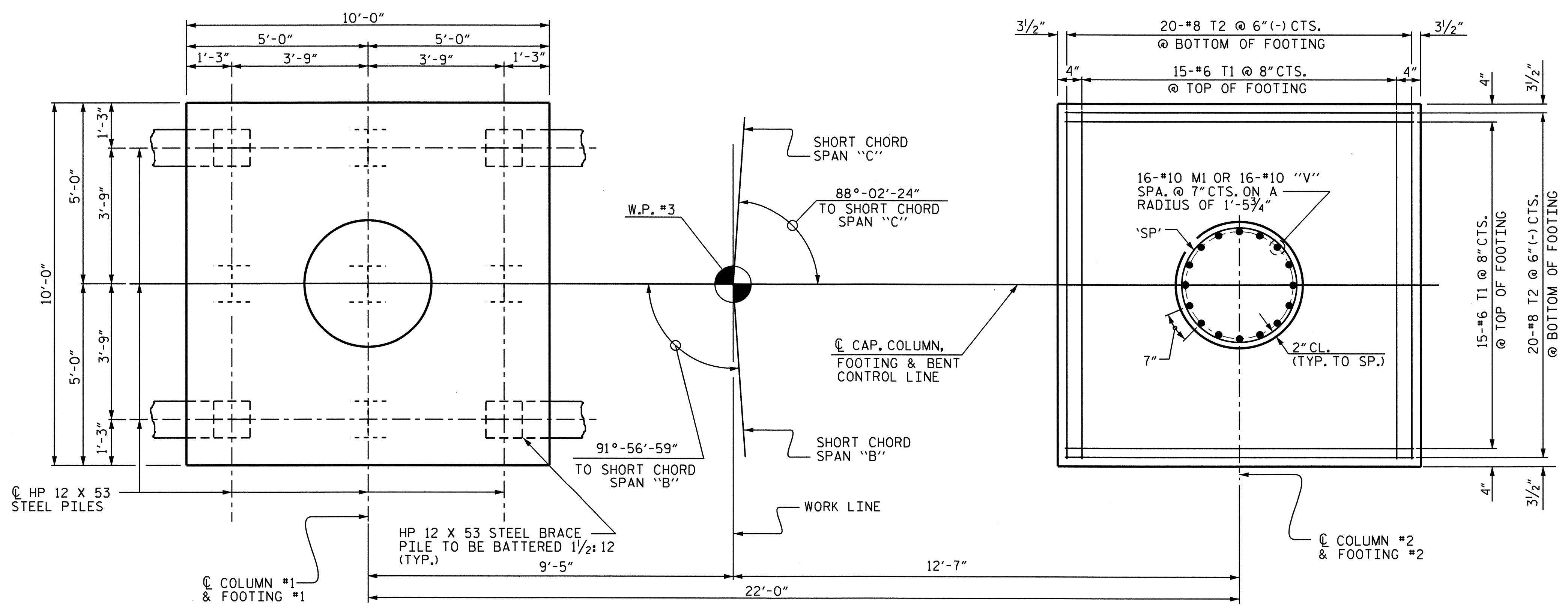
ALL BAR DIMENSIONS ARE OUT TO OUT



SECTION A-A



SECTION B-B

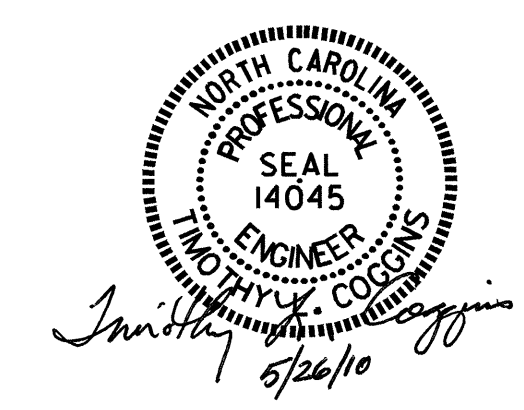


PLAN OF COLUMNS AND FOOTINGS

(ALL PILES, FOOTINGS, COLUMNS, DIMENSIONS, AND REINFORCING STEEL ARE TYPICAL)

DRAWN BY : M.D.PISO DATE : 11/02/09  
 CHECKED BY : J.B. WILSON DATE : 03/10/10

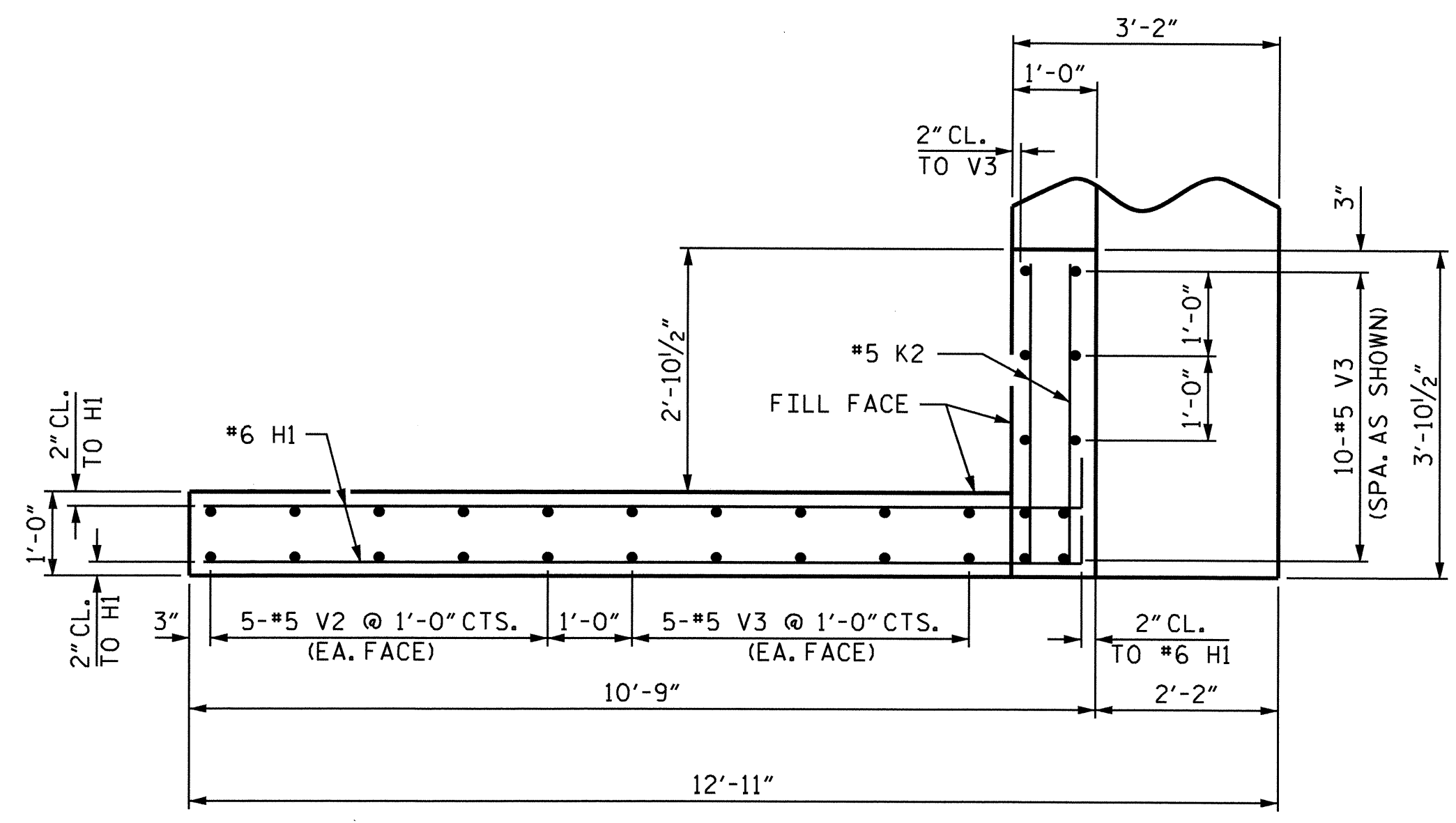
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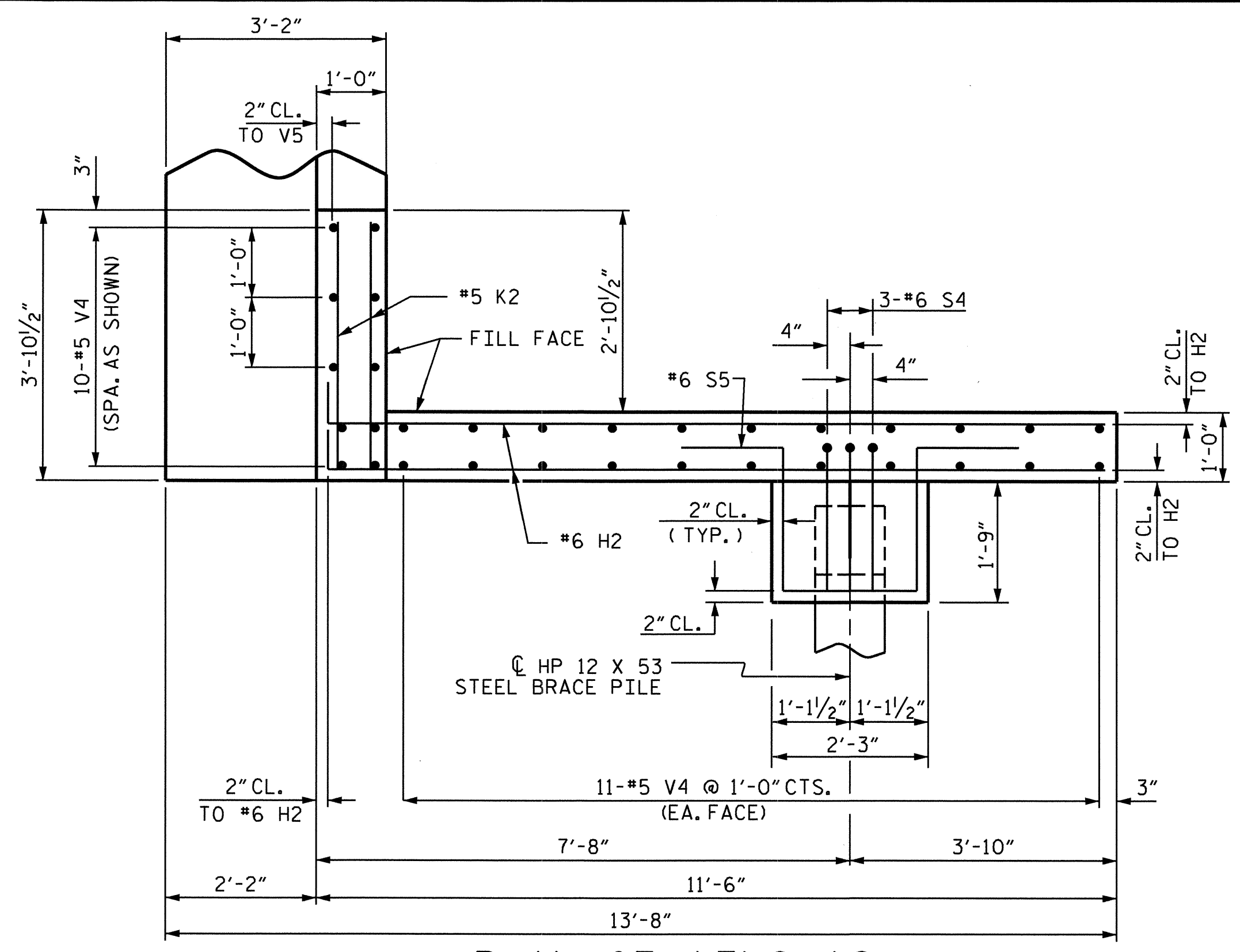
PROJECT NO. R-4900  
 COLUMBUS COUNTY  
 STATION: 42+58.19 -L-  
 SHEET 2 OF 2

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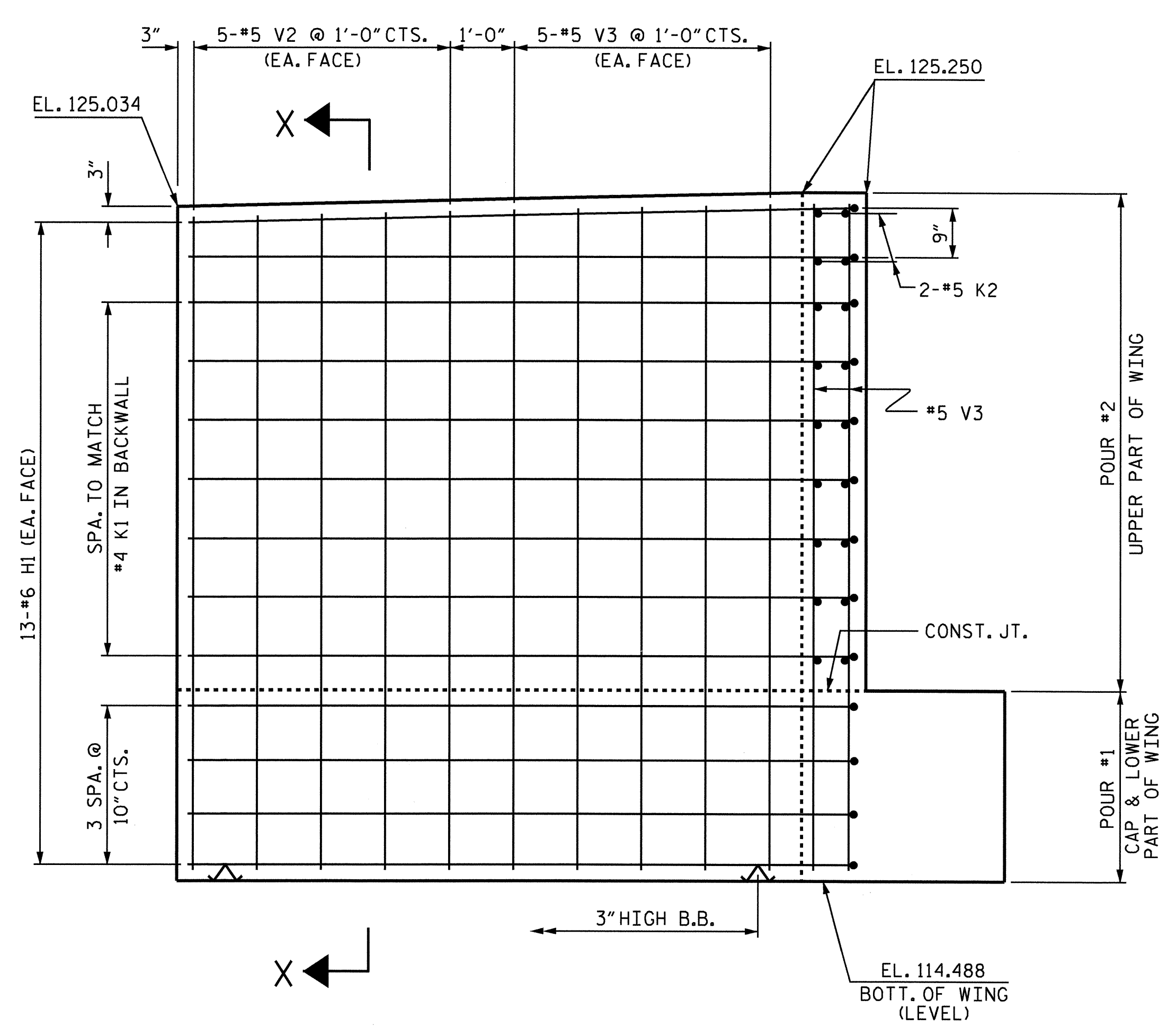




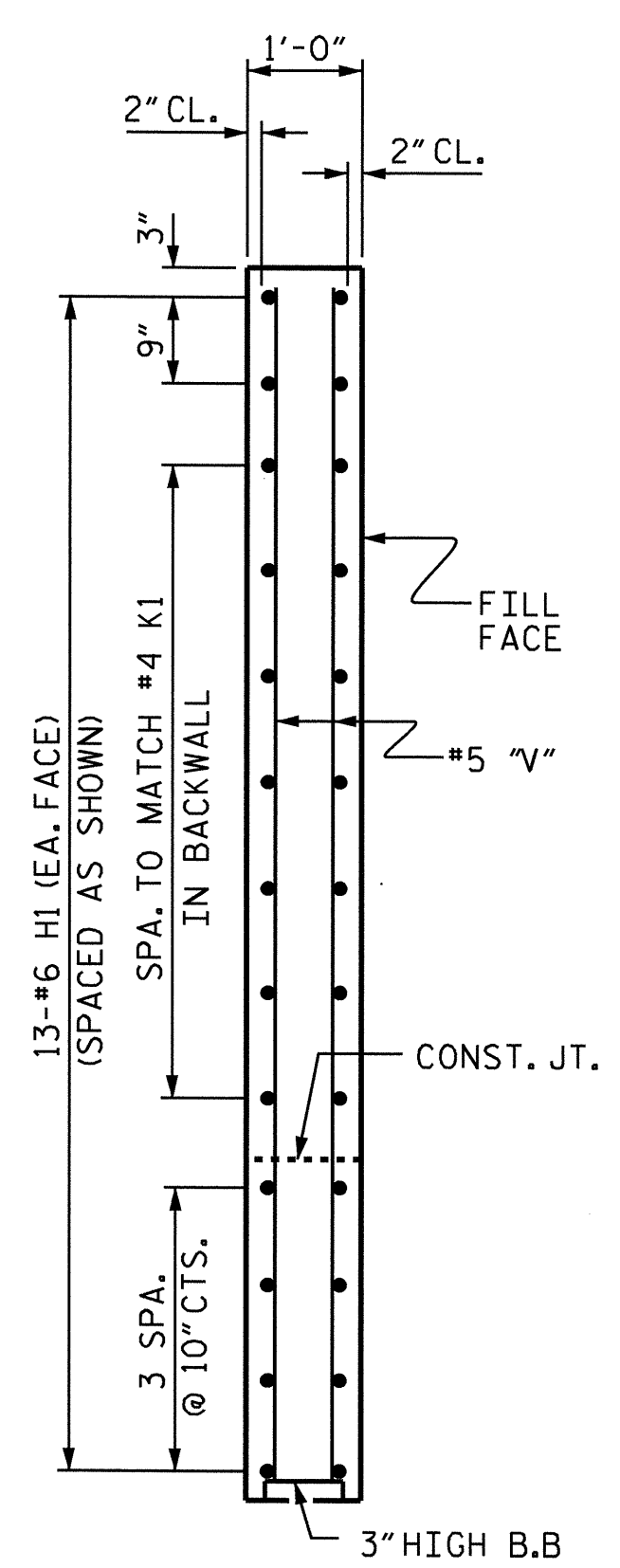
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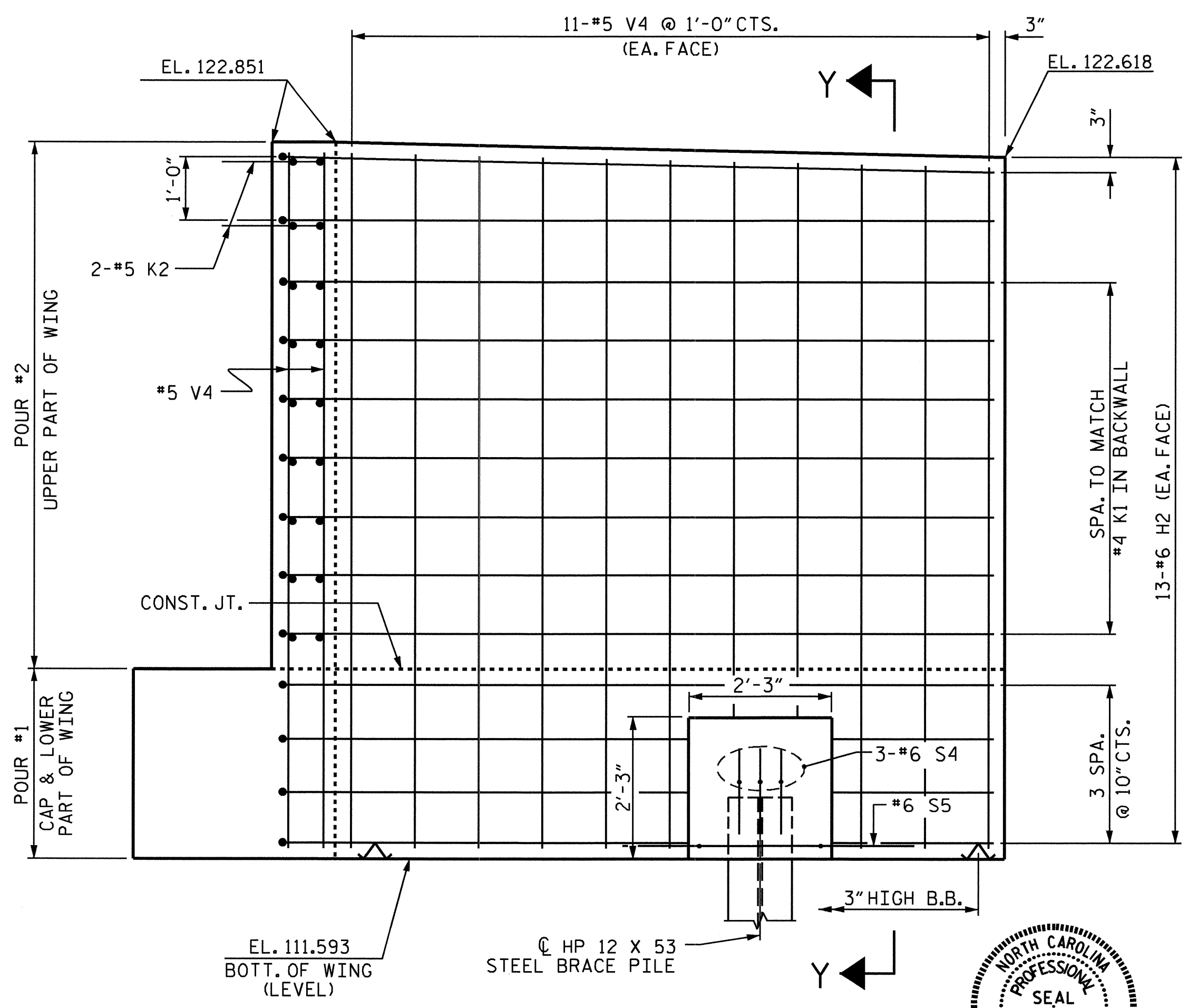
PLAN OF WING W2



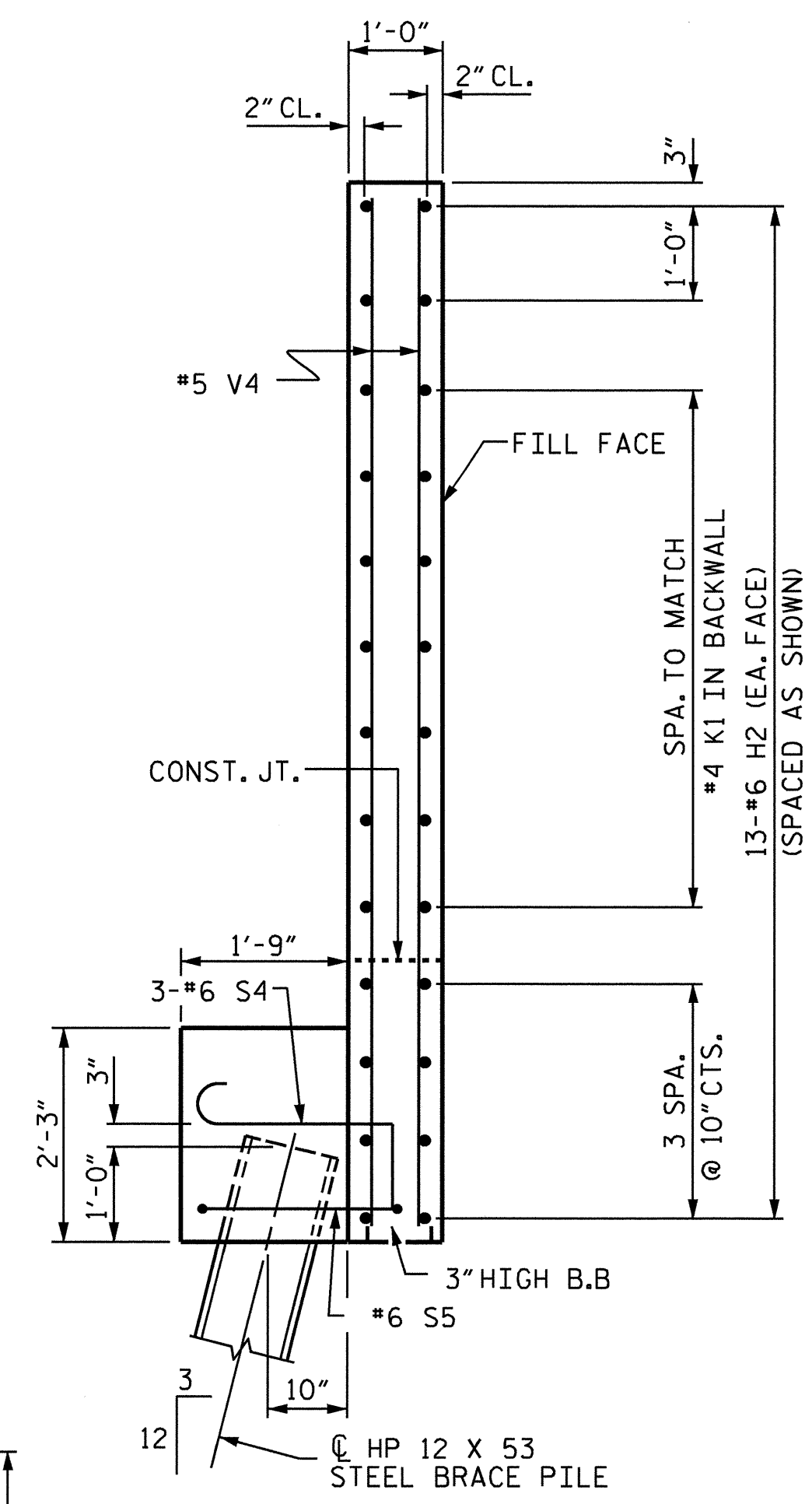
ELEVATION OF WING W1



SECTION X-X



ELEVATION OF WING W2



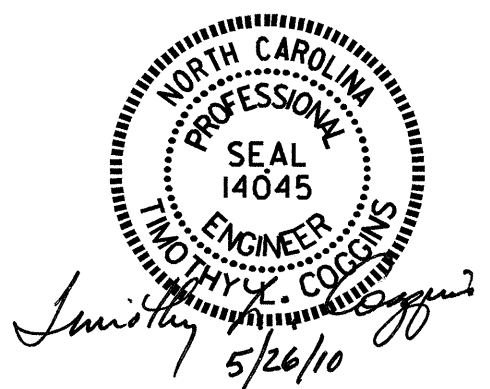
SECTION Y-Y

PROJECT NO. R-4900  
COLUMBUS COUNTY  
 STATION: 42+58.19 -L-  
 SHEET 2 OF 3

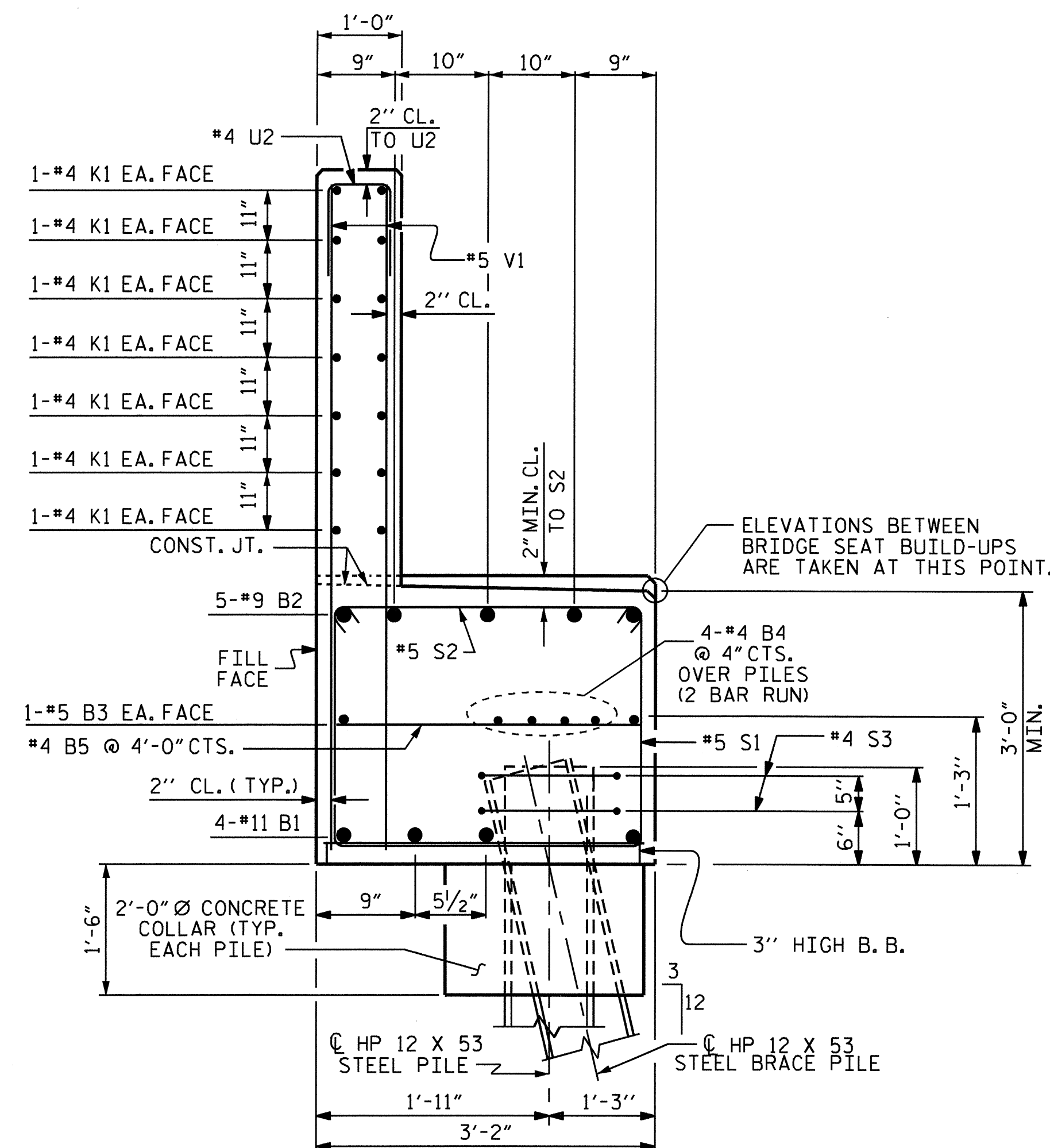
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SUBSTRUCTURE END BENT #2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-31
					TOTAL SHEETS 35

DRAWN BY: M. GUDLAUGSSON DATE: 10/16/09  
 CHECKED BY: J.B. WILSON DATE: 01/18/10

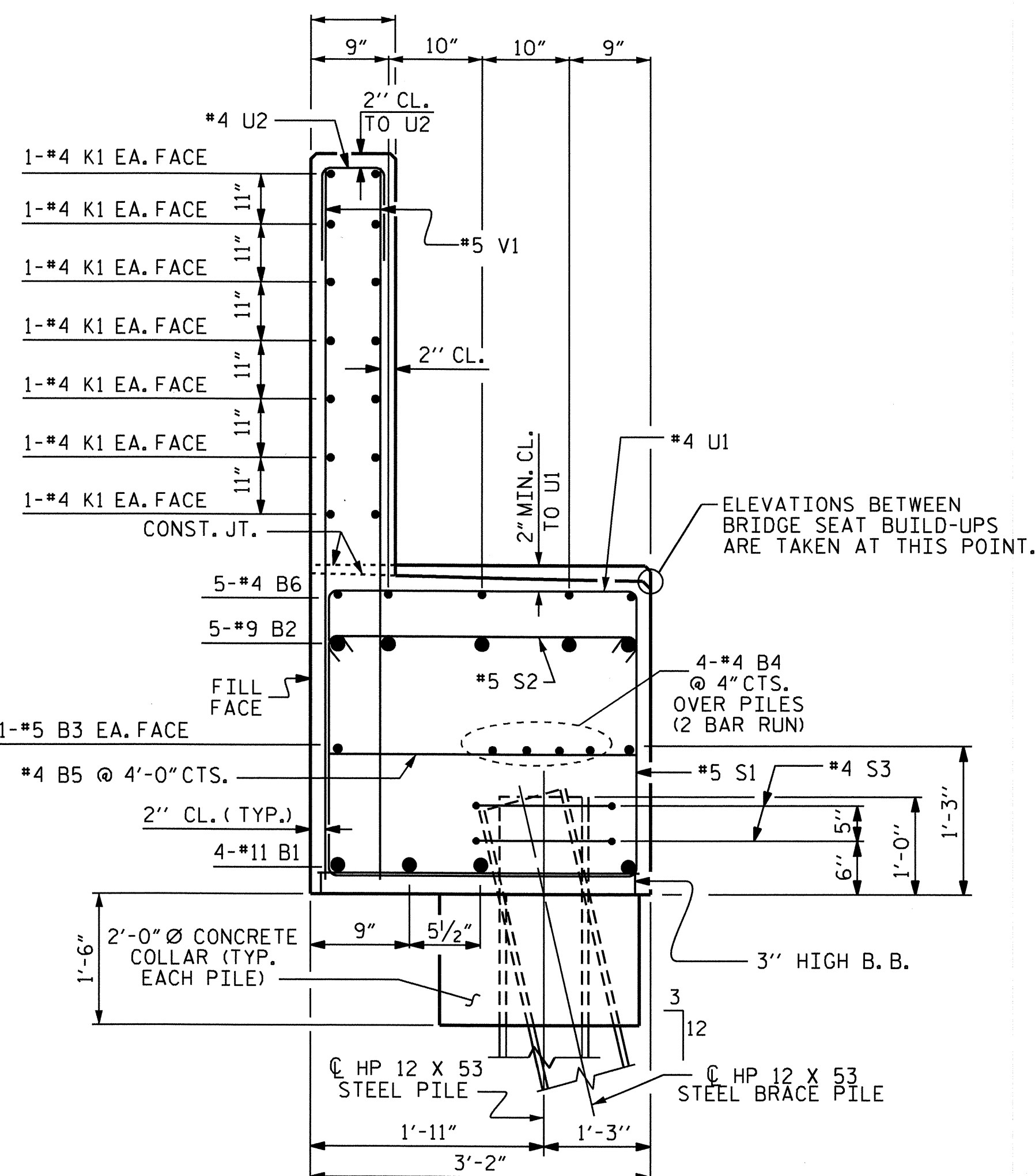
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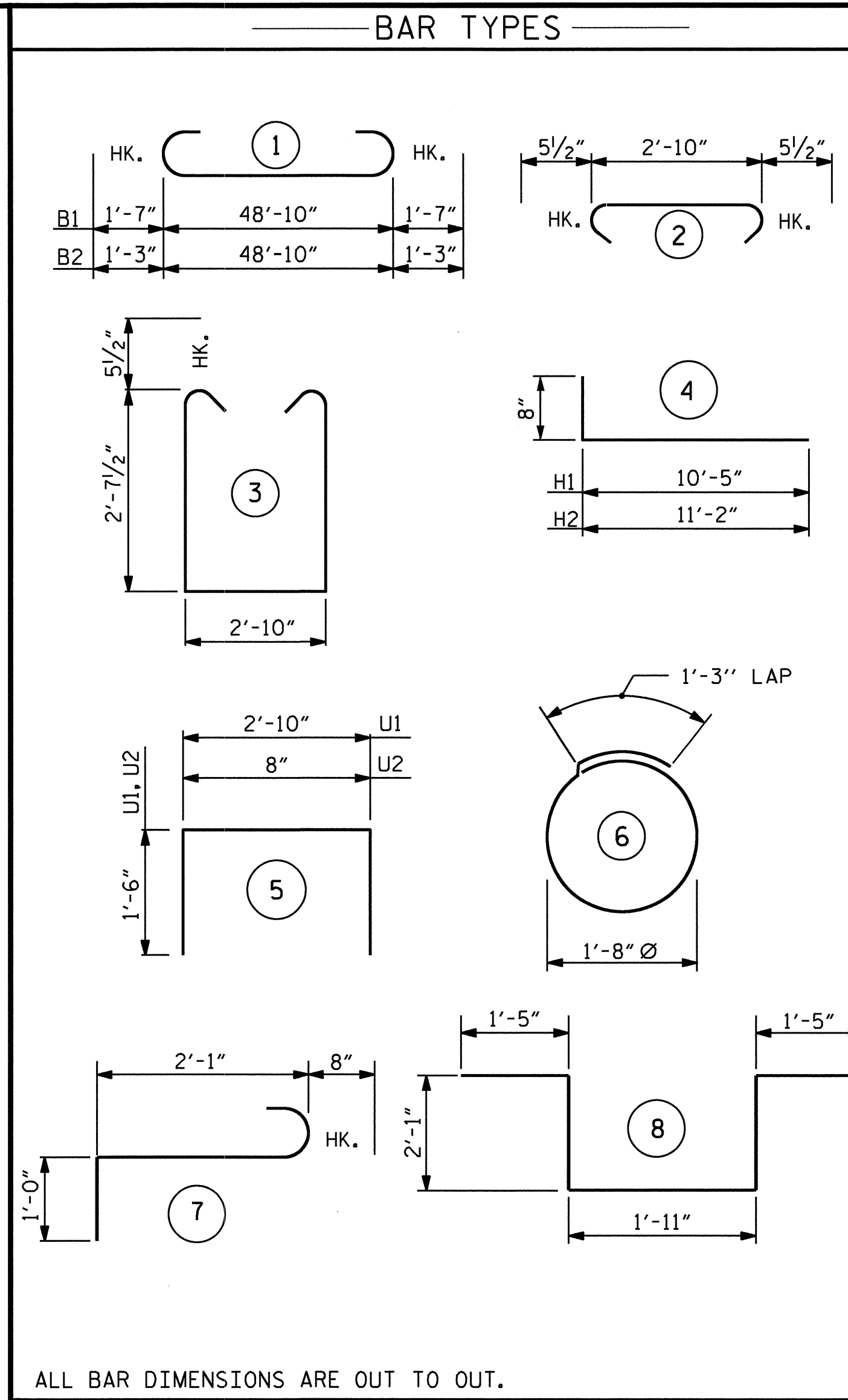




SECTION A-A

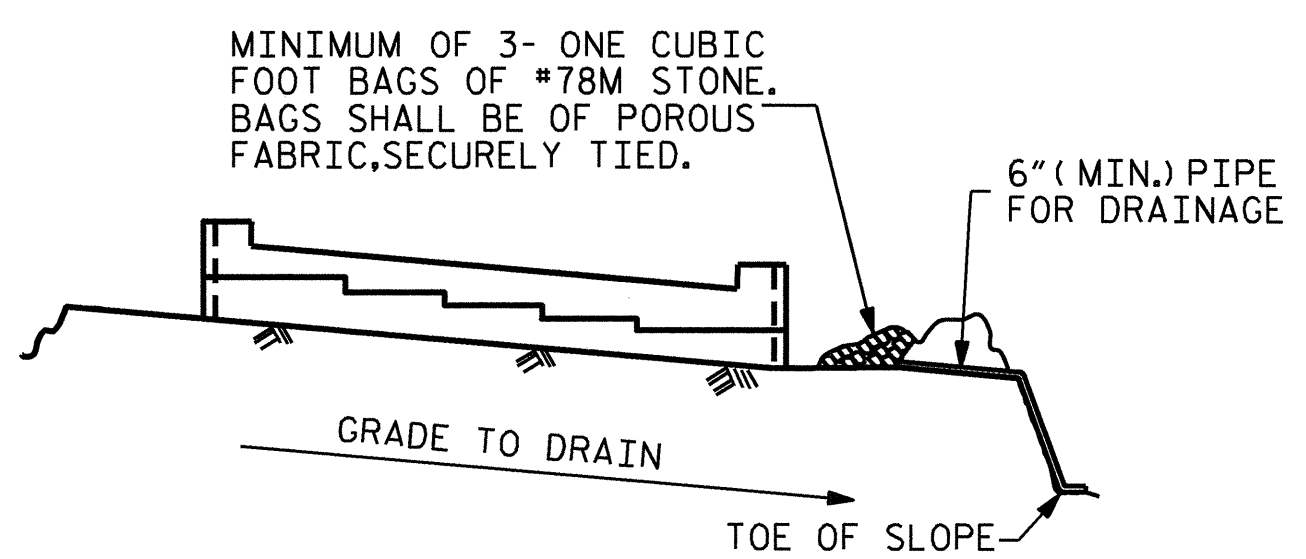


SECTION B-B



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#11	1	52'-0"	1105
B2	5	#9	1	51'-4"	873
B3	2	#5	STR	48'-11"	102
B4	8	#4	STR	25'-9"	138
B5	12	#4	STR	2'-10"	23
B6	20	#4	STR	3'-4"	45
H1	26	#6	4	11'-1"	433
H2	26	#6	4	11'-10"	462
K1	28	#4	STR	25'-9"	482
K2	8	#5	STR	3'-6"	29
S1	63	#5	3	9'-0"	591
S2	63	#5	2	3'-9"	246
S3	14	#4	6	6'-6"	61
S4	3	#6	7	3'-9"	17
S5	1	#6	8	8'-11"	13
U1	12	#4	5	5'-10"	47
U2	42	#4	5	3'-8"	103
V1	84	#5	STR	8'-11"	781
V2	10	#5	STR	10'-1"	105
V3	20	#5	STR	10'-4"	216
V4	32	#5	STR	10'-8"	356
REINFORCING STEEL					= 6228 LBS
CLASS "A" CONCRETE BREAKDOWN					
POUR #1 CAP, CONCRETE PILE COLLARS AND LOWER PART OF WINGS					21.6 C.Y.
POUR #2 BACKWALL AND UPPER PART OF WINGS					17.8 C.Y.
CLASS "A" CONCRETE TOTAL					39.4 C.Y.
HP 12 x 53 STEEL PILES					
No.	8	LIN. FT.			560
PILE REDRIVES					EA. 4

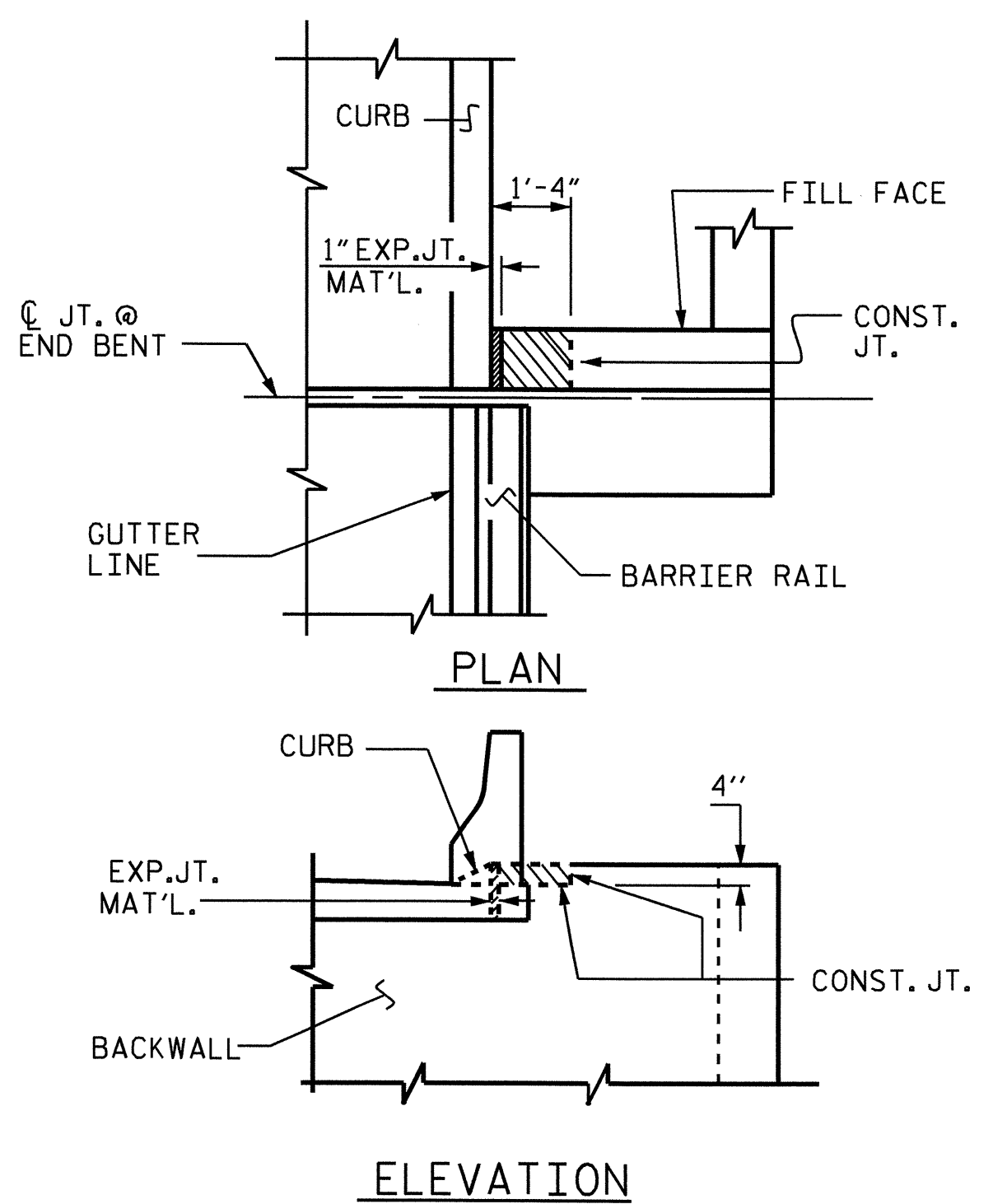


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

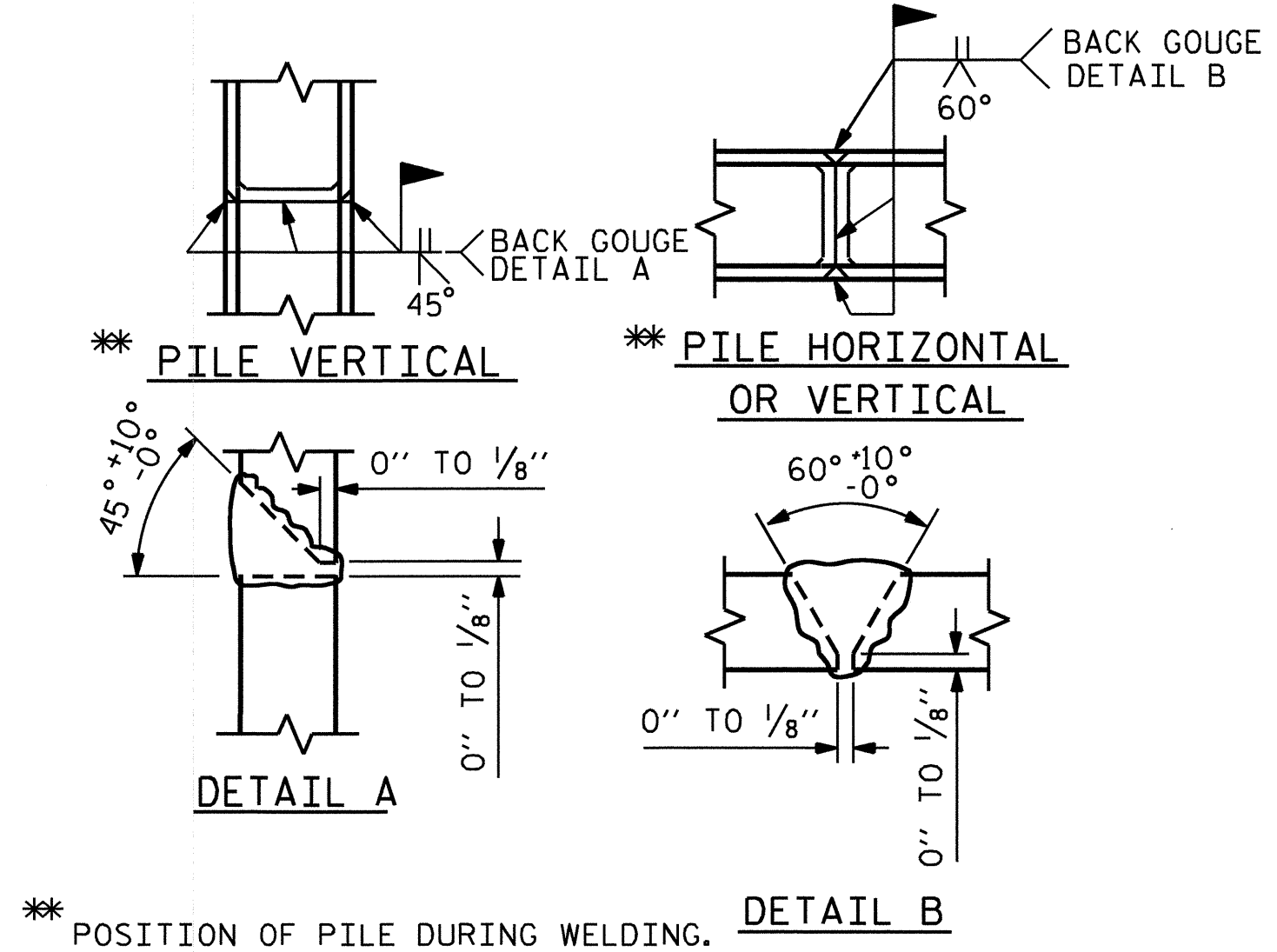
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



BLOCKOUT IN WING WALL

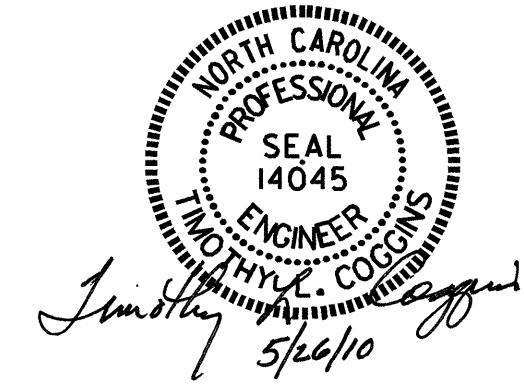
NOTE: THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND APPROACH SLAB HAS BEEN SAWED AND THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.



PILE SPLICE DETAILS

PROJECT NO. R-4900  
COLUMBUS COUNTY  
STATION: 42+58.19 -L-  
SHEET 3 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT #2					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 35



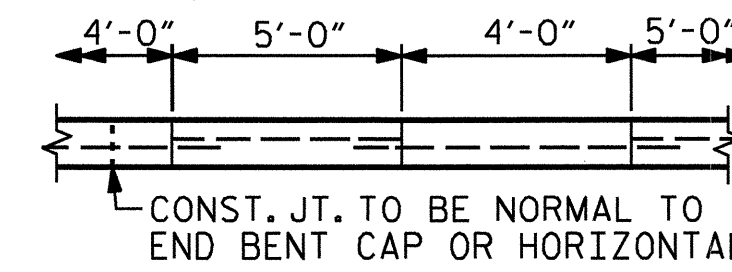
DRAWN BY : M.GUDLAUGSSON DATE : 10/16/09  
CHECKED BY : J.B. WILSON DATE : 01/18/10

**GENERAL 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. FOR BERM WIDTH, SEE GENERAL DRAWING.

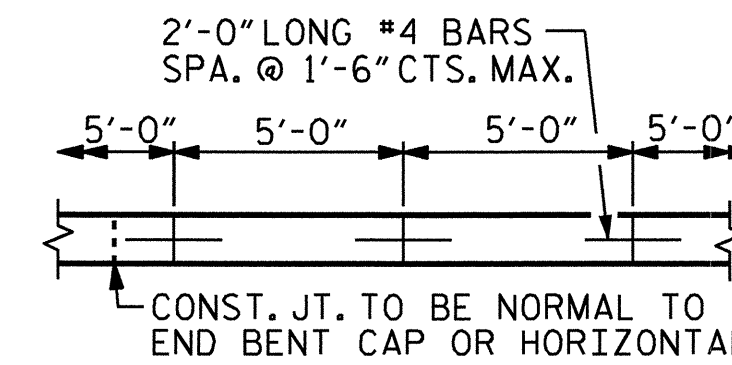
**ALTERNATE "A"**

ALTERNATE "A" 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.



POUR A 4'-0" STRIP FIRST. STRIP WIDTHS MAY VARY IN CURVED PORTION.

**OPTIONAL POURING DETAIL**

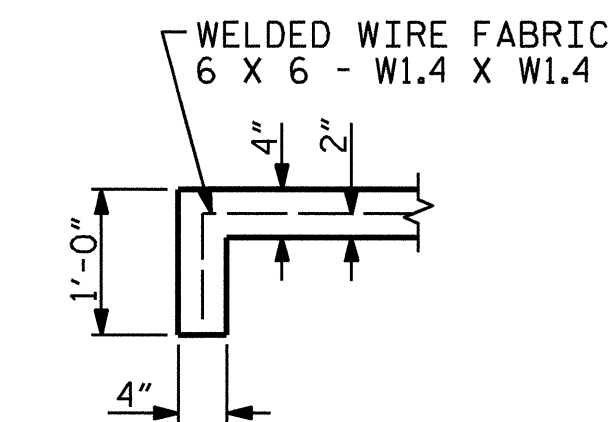


STRIP WIDTHS MAY VARY IN CURVED PORTION.

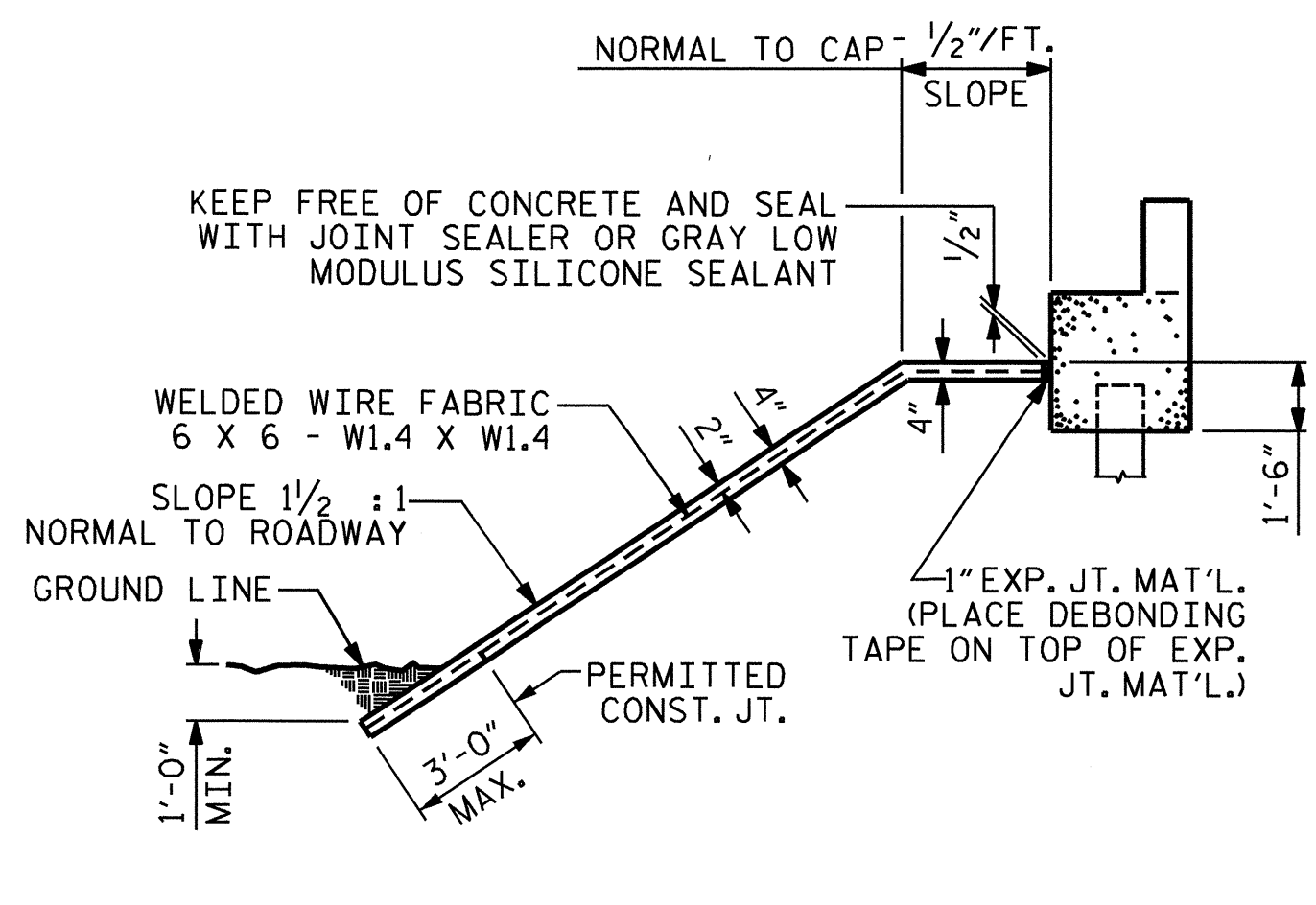
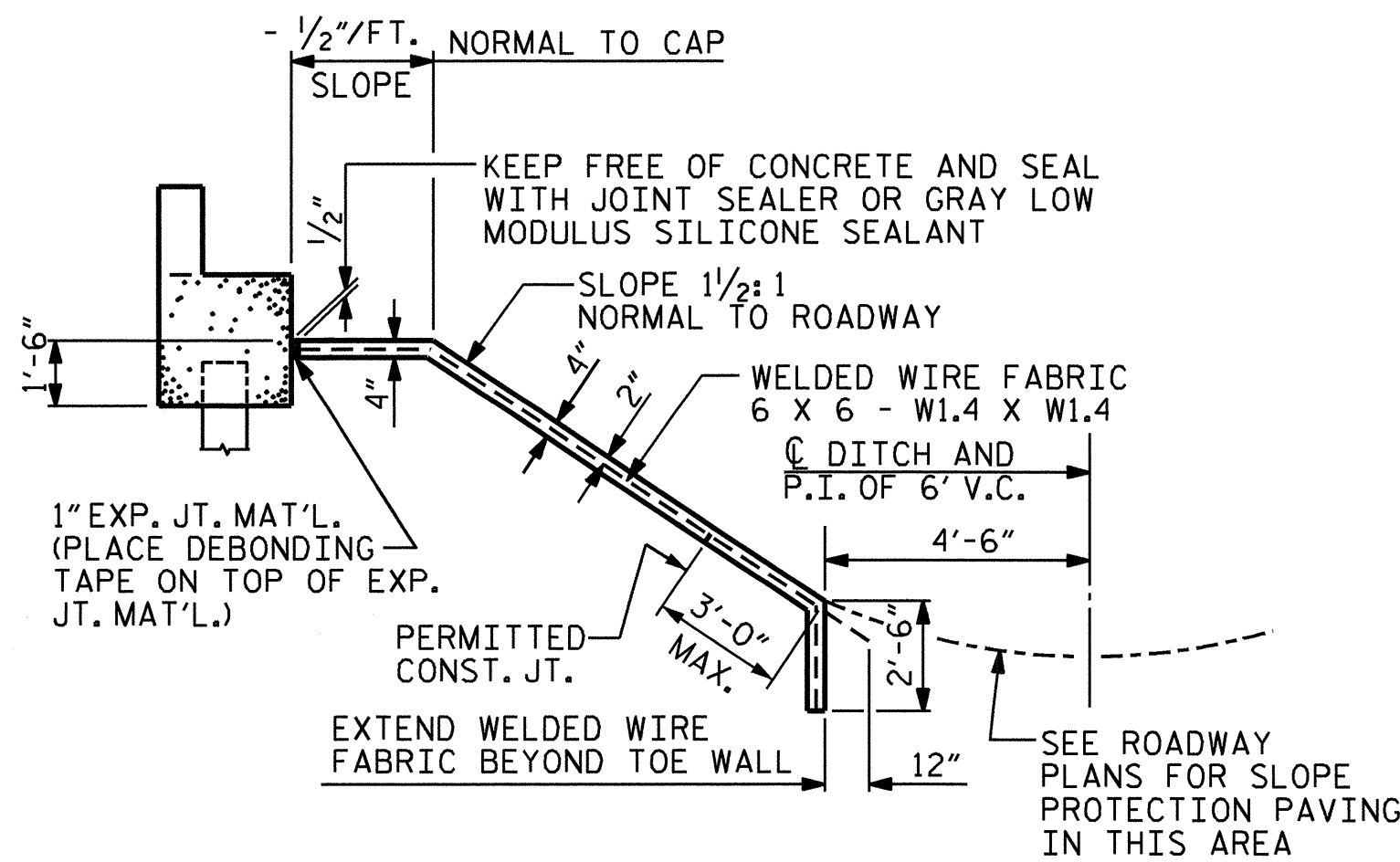
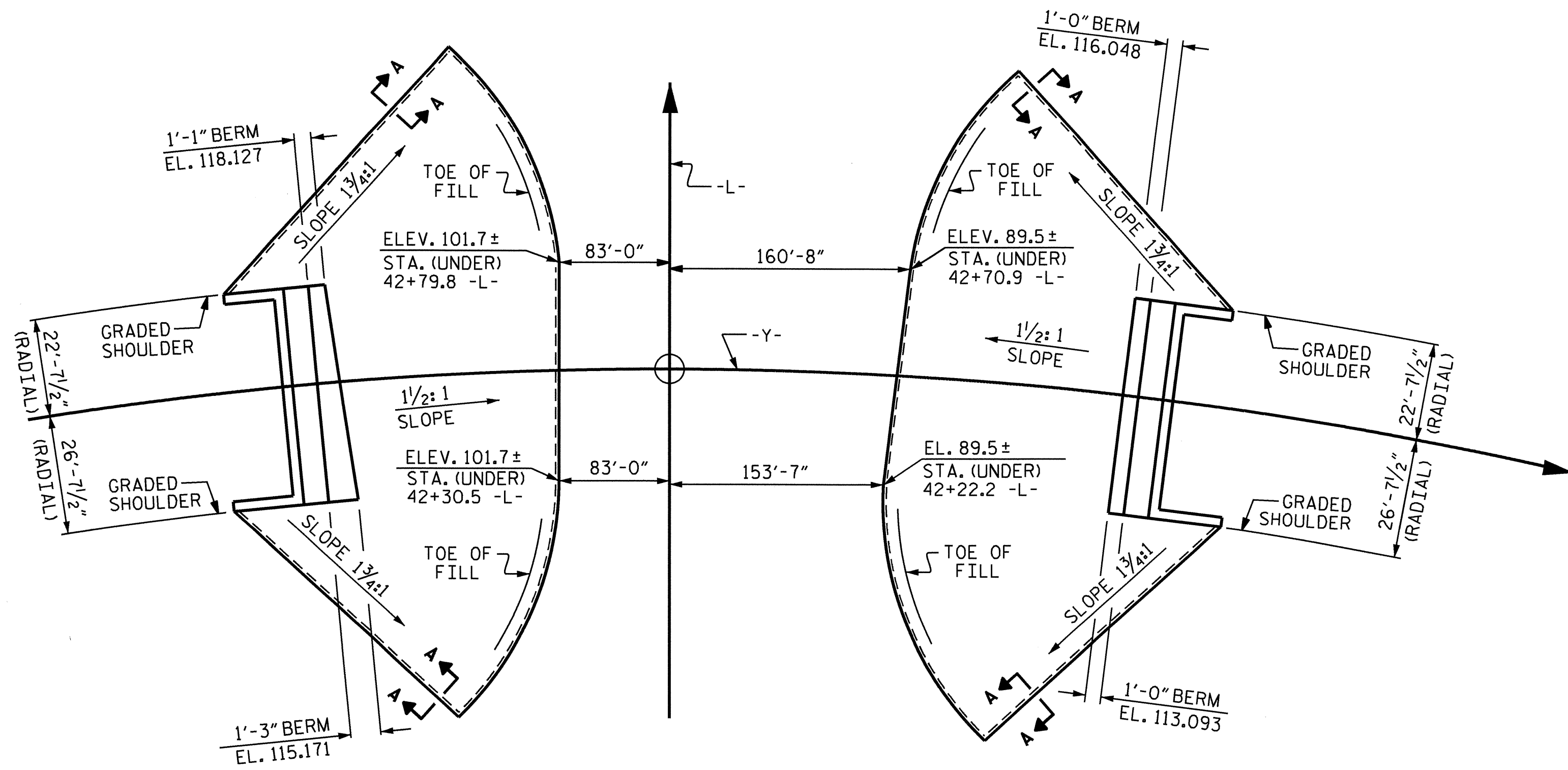
**POURING DETAIL**

BRIDGE @ STA. 42+58.19 -L-	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	325	650
END BENT 2	597	1194

\* QUANTITY SHOWN IS BASED ON 5' POURS.



**SECTION A-A**



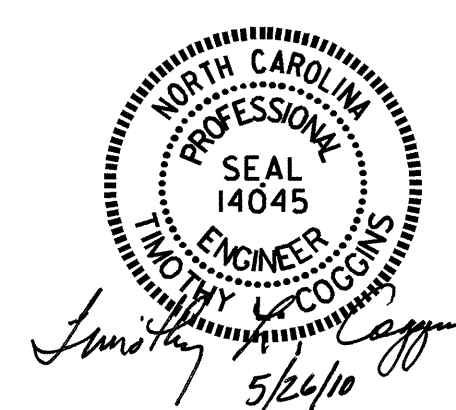
SECTION ALONG C ROADWAY WHEN FILL CATCHES IN DITCH

SECTION ALONG C ROADWAY WHEN DITCH IS NOT PROVIDED

**DETAILS FOR ALTERNATE "A"**

PROJECT NO. R-4900  
COLUMBUS COUNTY  
 STATION: 42+58.19 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SLOPE PROTECTION DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-33
					TOTAL SHEETS 35



ASSEMBLED BY : J.B. WILSON	DATE : 02/04/10
CHECKED BY : PEGGY PARISI	DATE : 02/16/10
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

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 BARRIER RAIL.

WITH EVAZOTE JOINT SEAL

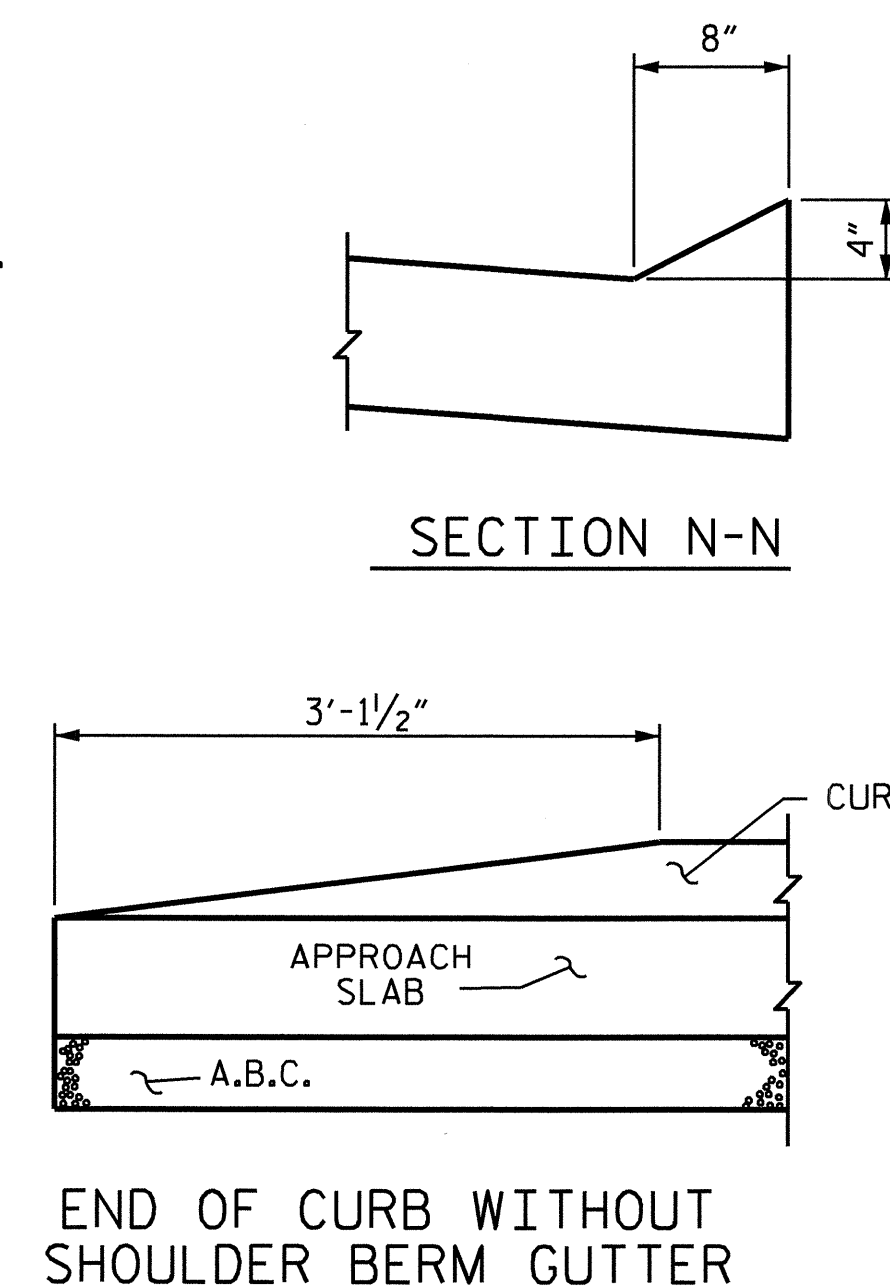
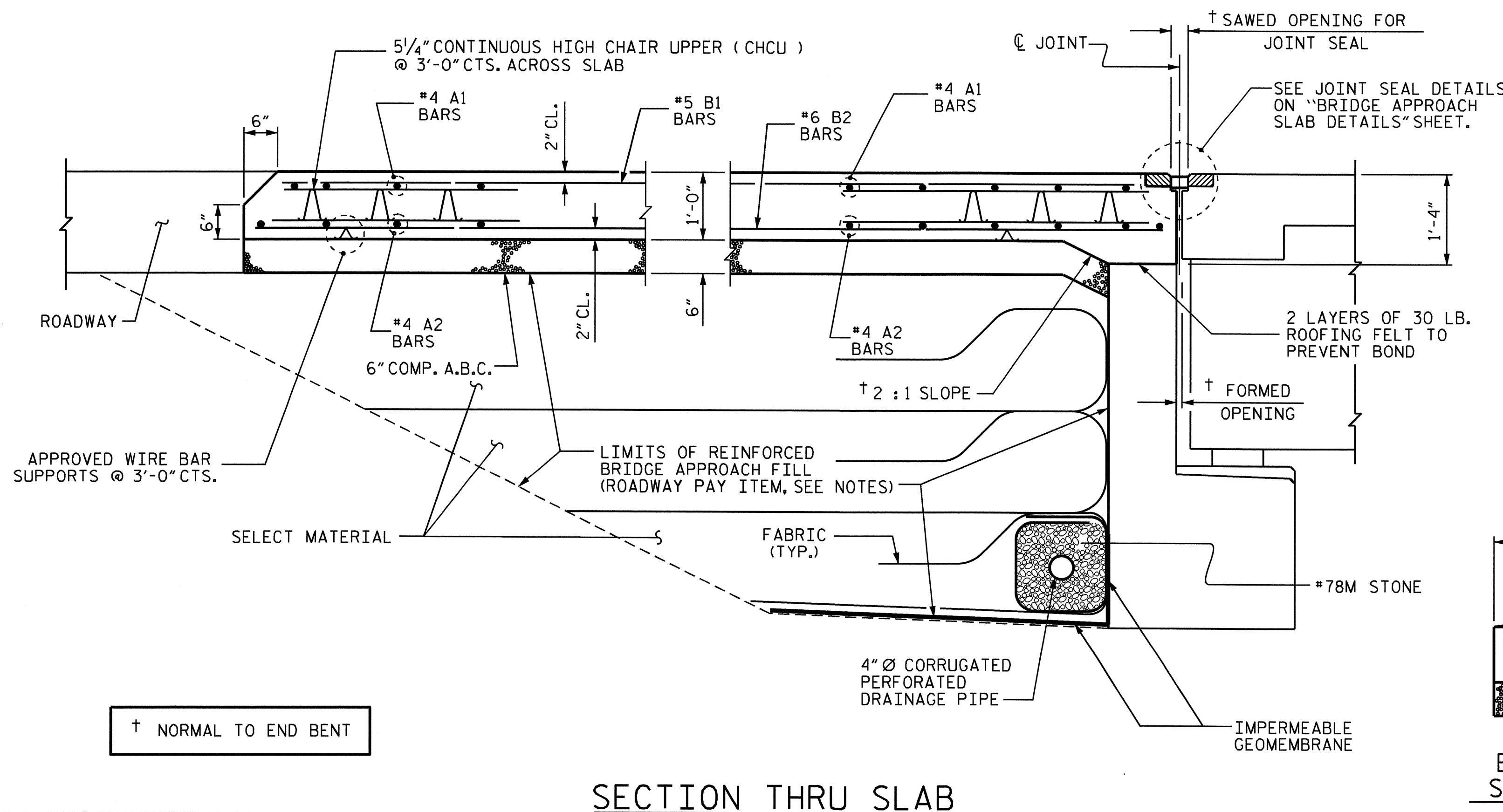
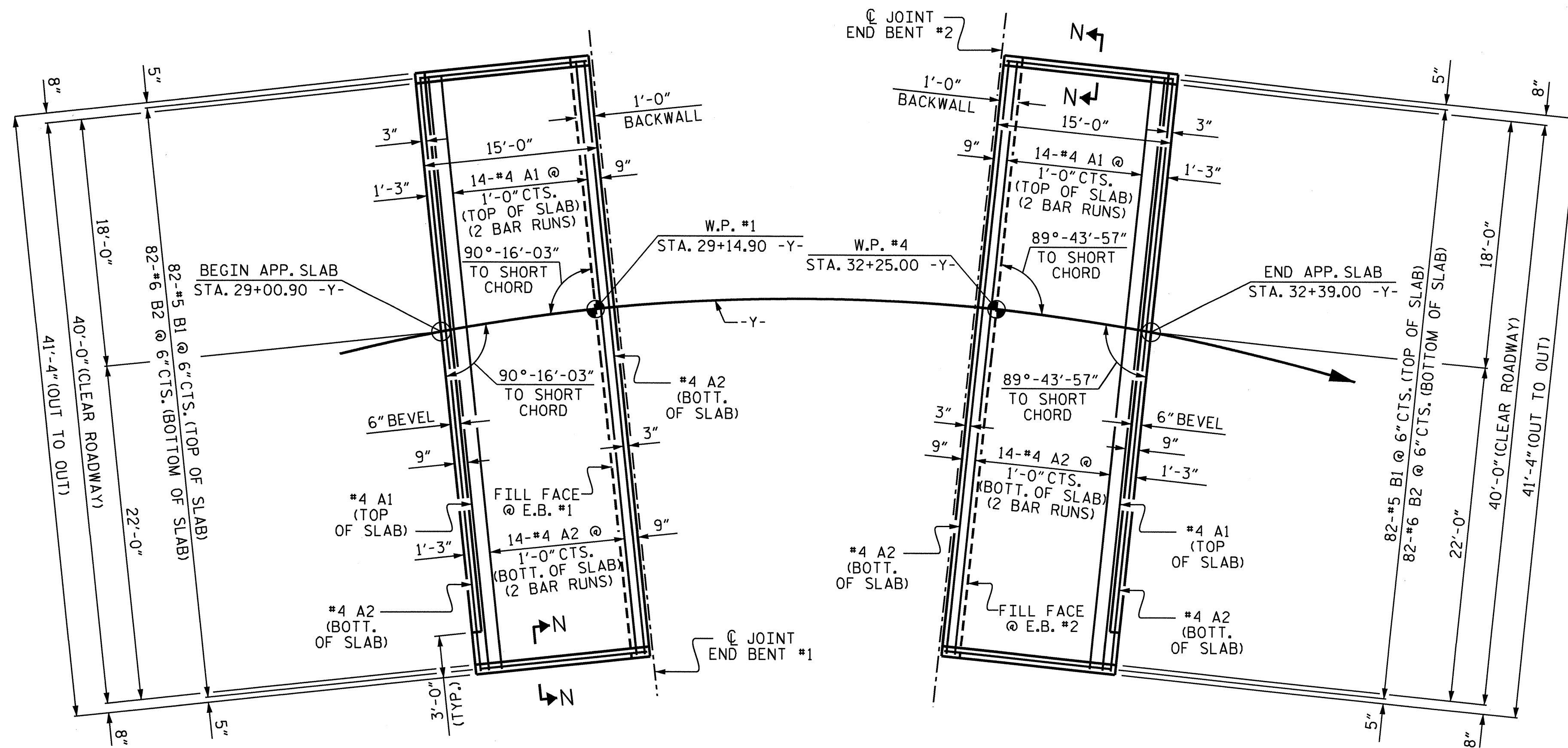
FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 3/8".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL					
FOR ONE APPROACH SLAB (2 REQ. D.)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	30	#4	STR	21'-6"	431
A2	32	#4	STR	21'-5"	458
*B1	82	#5	STR	13'-8"	1169
B2	82	#6	STR	14'-8"	1806
REINFORCING STEEL				LBS.	2264
*EPOXY COATED REINFORCING STEEL				LBS.	1600
CLASS AA CONCRETE				C. Y.	23.5

SPLICE LENGTH CHART	
BAR	MIN. SPLICE
#4 A1	2'-0"
#4 A2	1'-9"

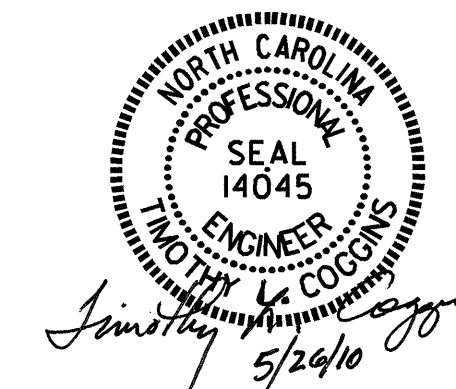


PROJECT NO. R-4900  
 COLUMBUS COUNTY  
 STATION: 42+58.19 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

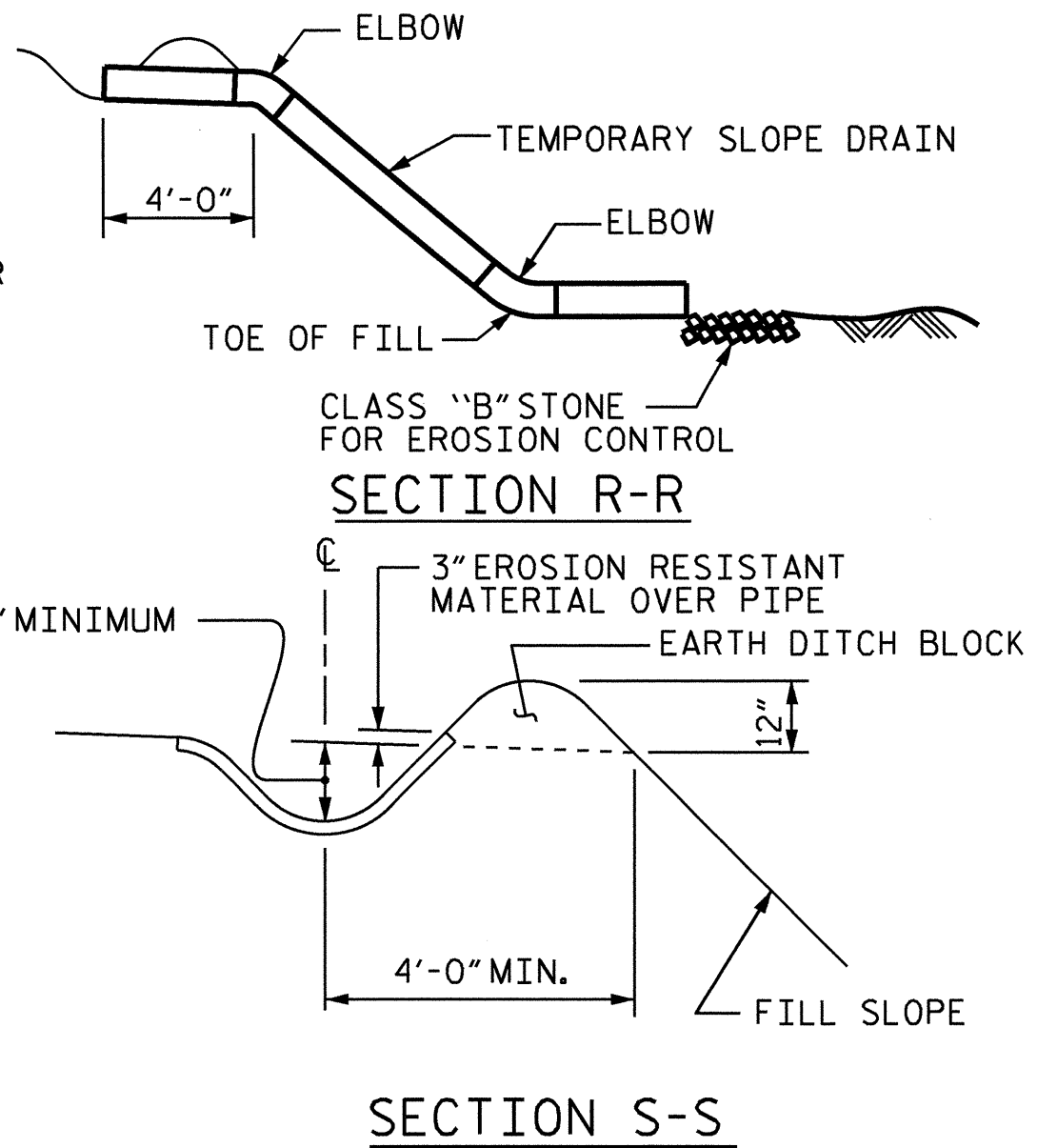
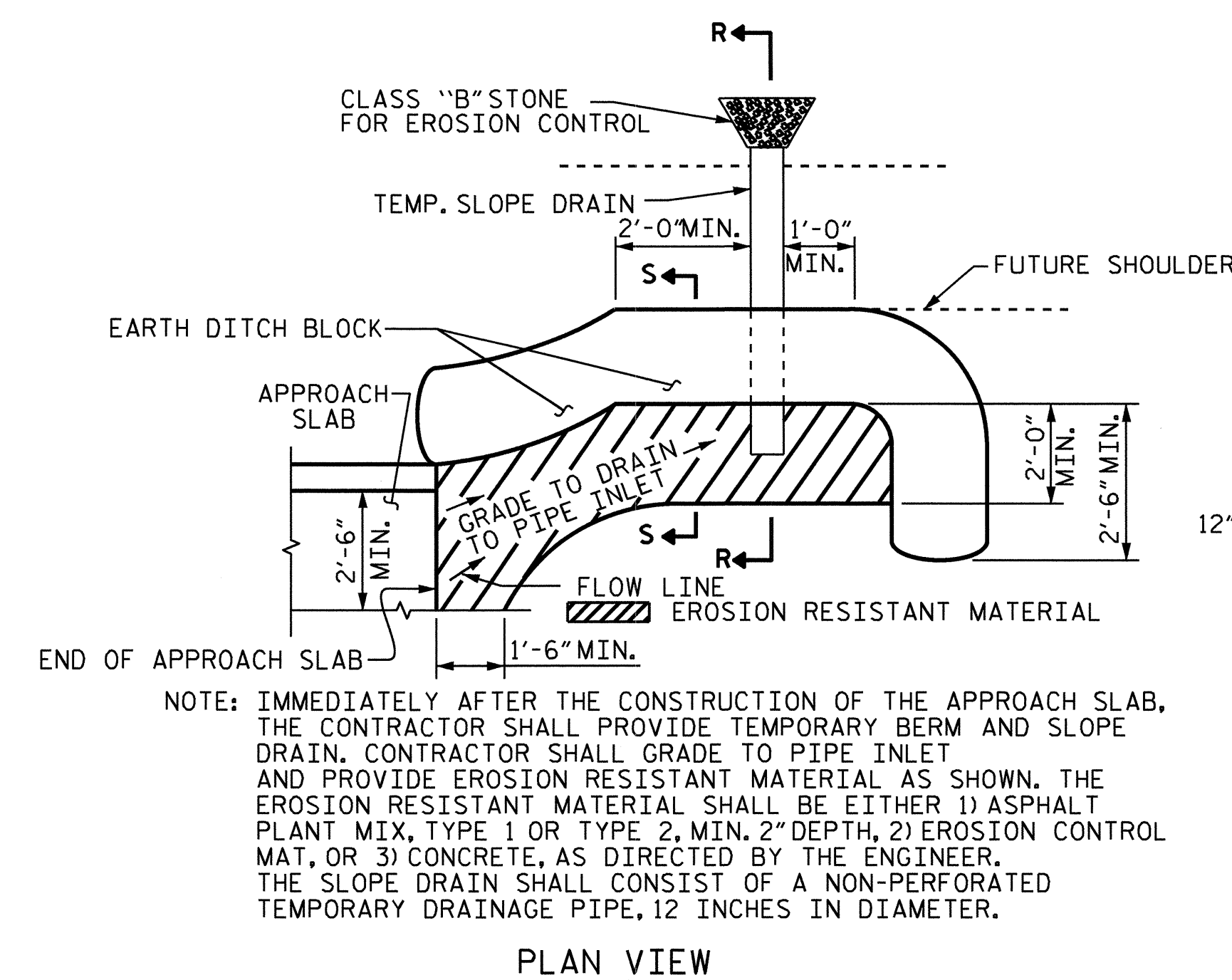
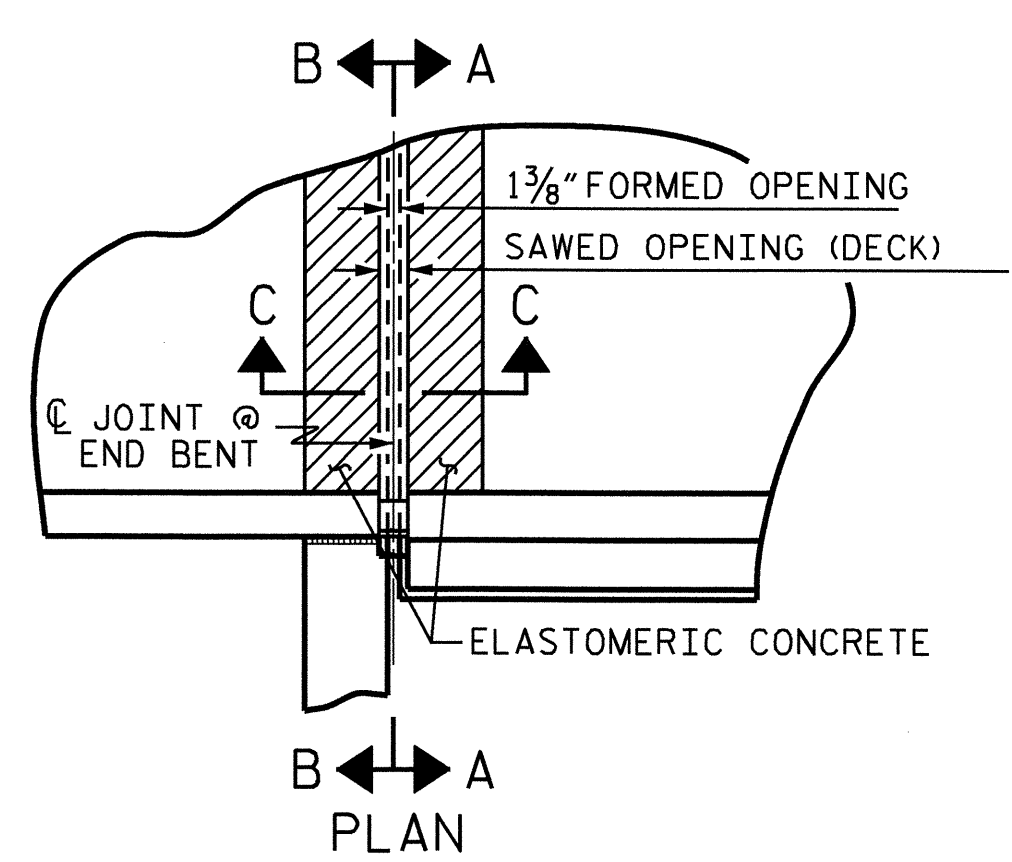
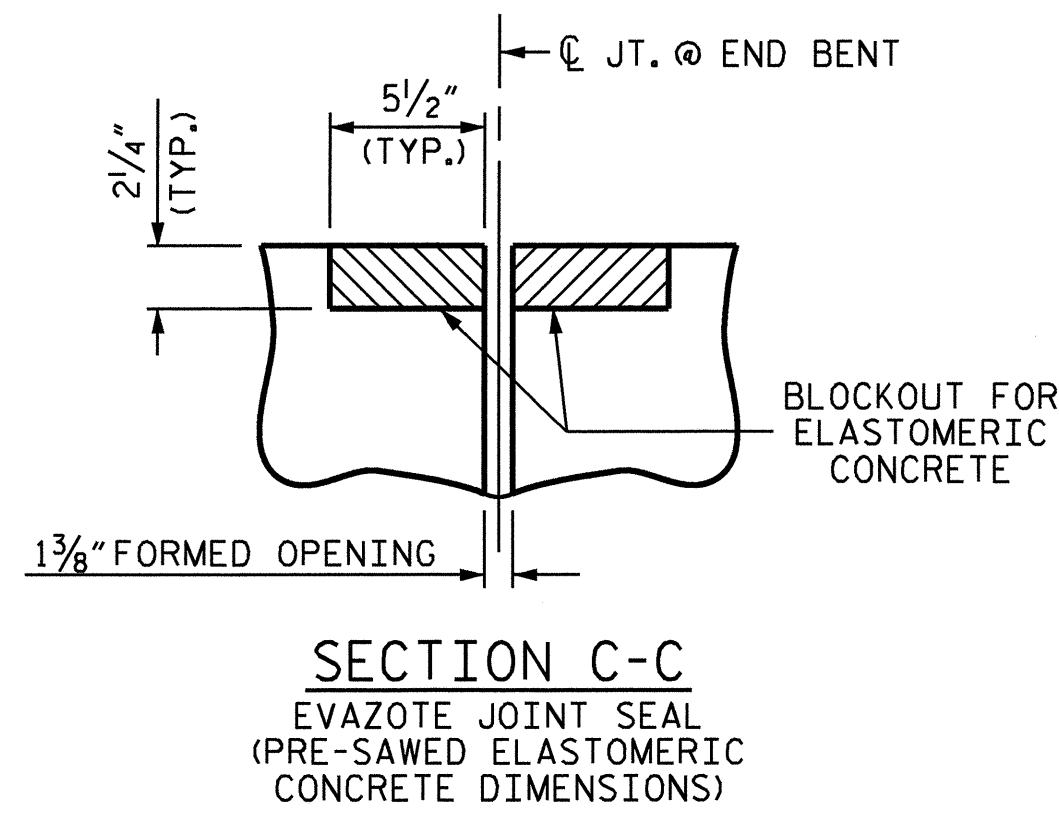
STANDARD  
 BRIDGE APPROACH  
 SLAB FOR  
 FLEXIBLE PAVEMENT



ASSEMBLED BY: J.B. WILSON DATE: 7/10/09  
 CHECKED BY: M.D. PISO DATE: 10/7/09  
 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

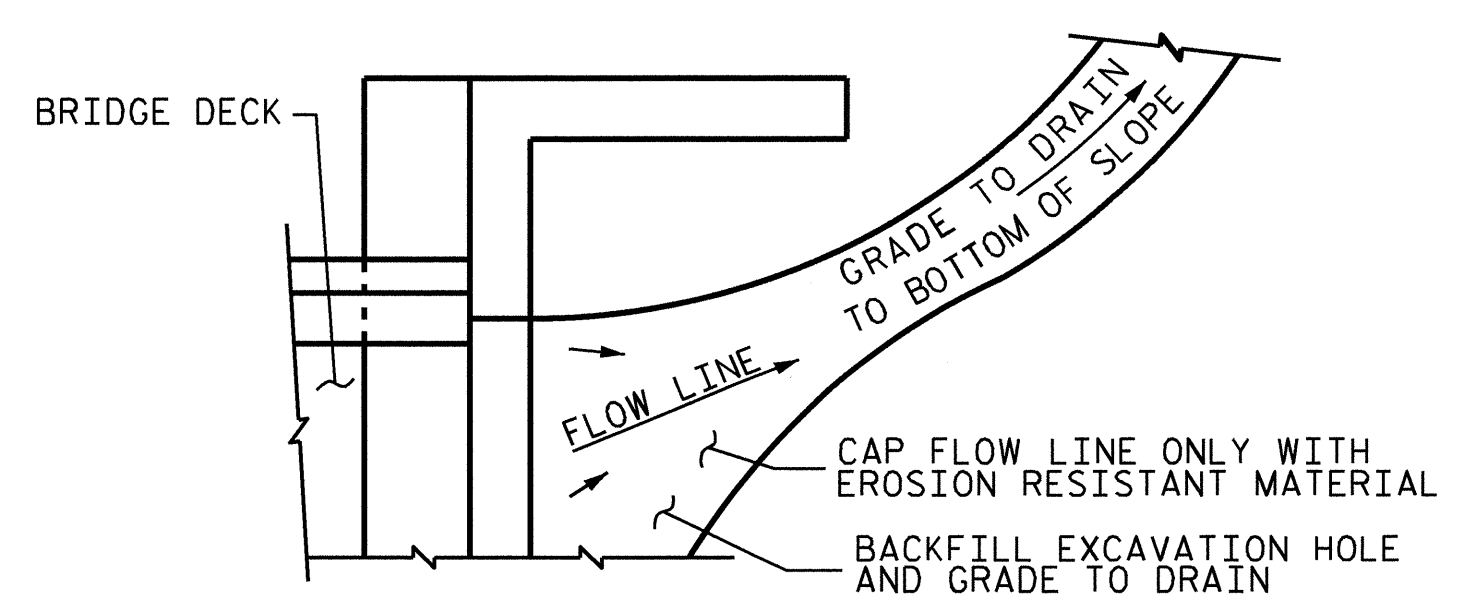
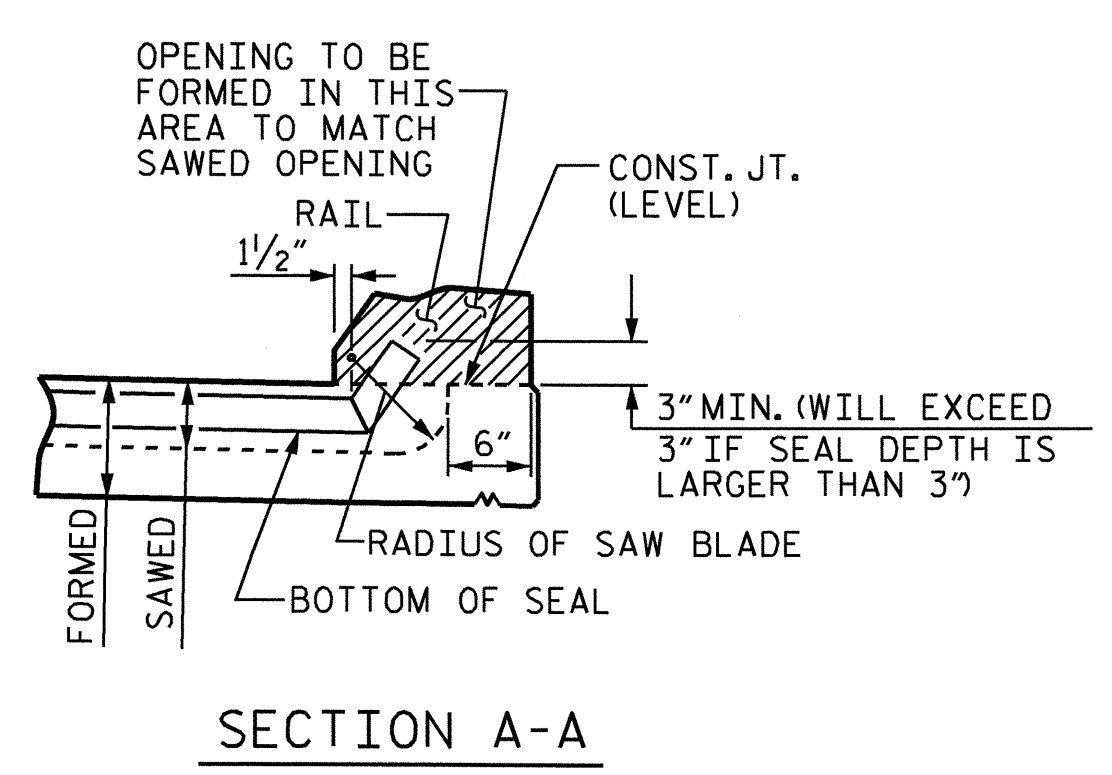
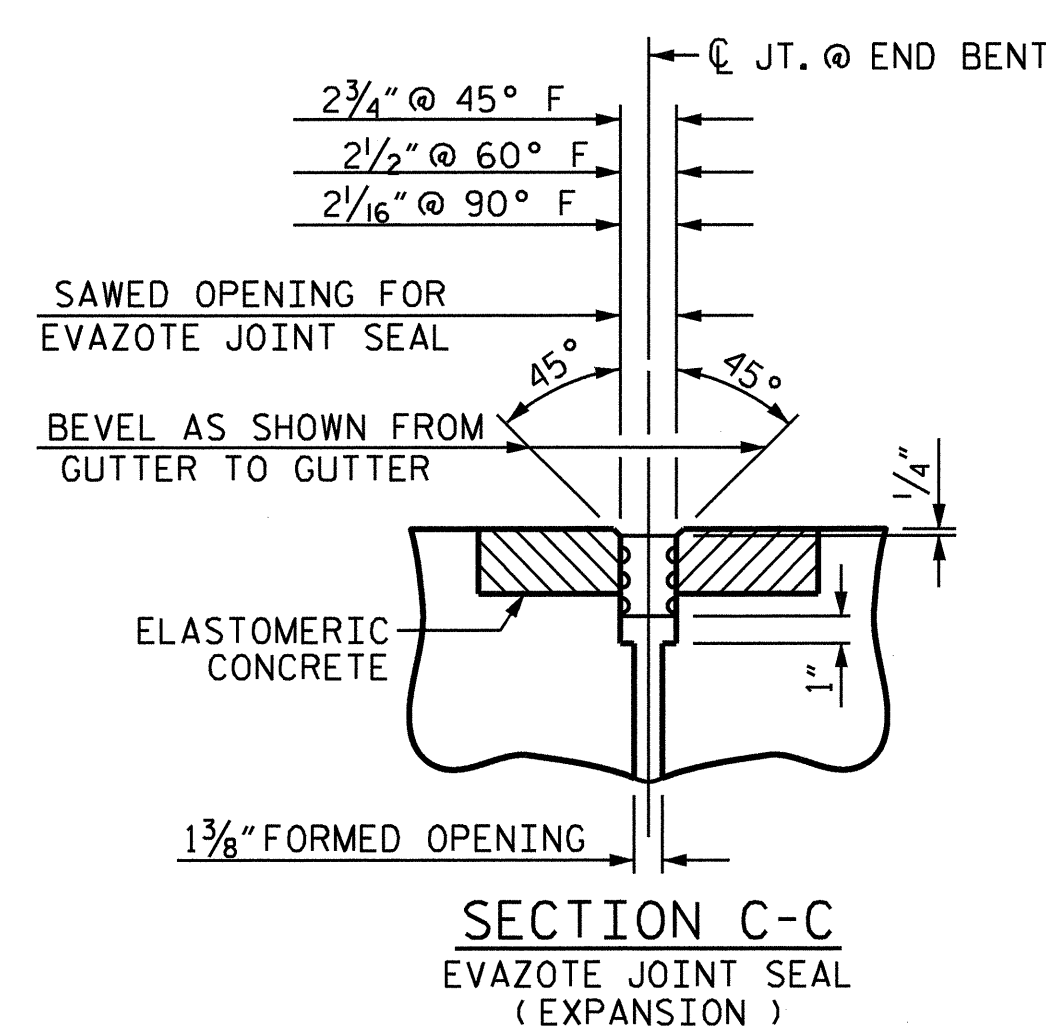
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	DATE:	S-34
1			3		TOTAL SHEETS
2			4		35



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**

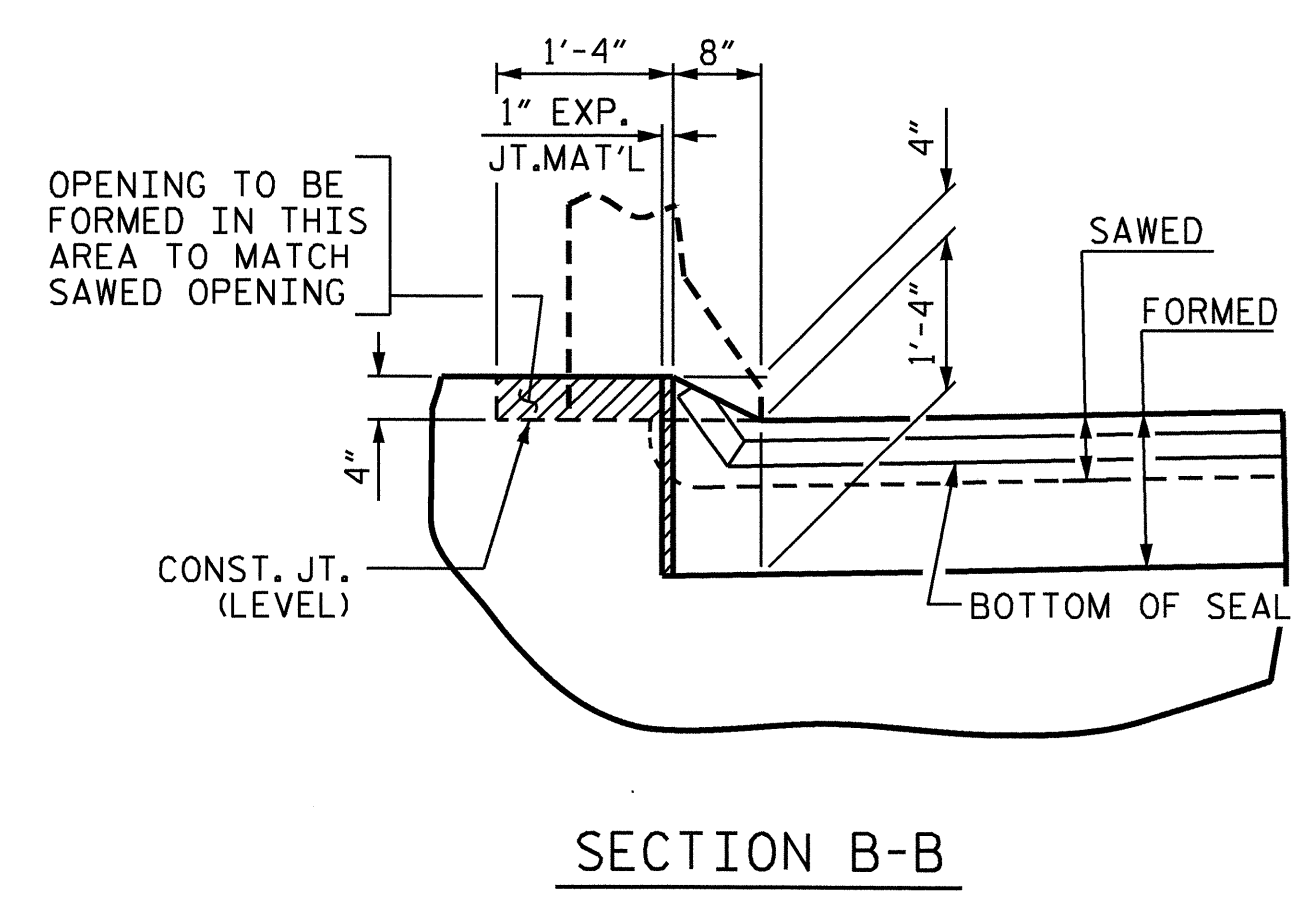
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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.

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

\* BASED ON THE MINIMUM BLOCKOUT SHOWN.



**JOINT SEAL DETAILS @ END BENT**

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

ASSEMBLED BY : J.B. WILSON DATE : 7/10/09  
 CHECKED BY : M.D. PISO DATE : 10/7/09  
 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



PROJECT NO. R-4900  
COLUMBUS COUNTY  
 STATION: 42+58.19 -L-

SHEET 2 OF 2

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

STD. NO. BAS10

## STANDARD NOTES

### DESIGN DATA:

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

### MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2006 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N.C. DEPARTMENT OF TRANSPORTATION.

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

### CONCRETE:

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

### CONCRETE CHAMFERS:

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

### DOWELS:

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

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

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

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

### REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

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

### STRUCTURAL STEEL:

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

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

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

### HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

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

### SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN