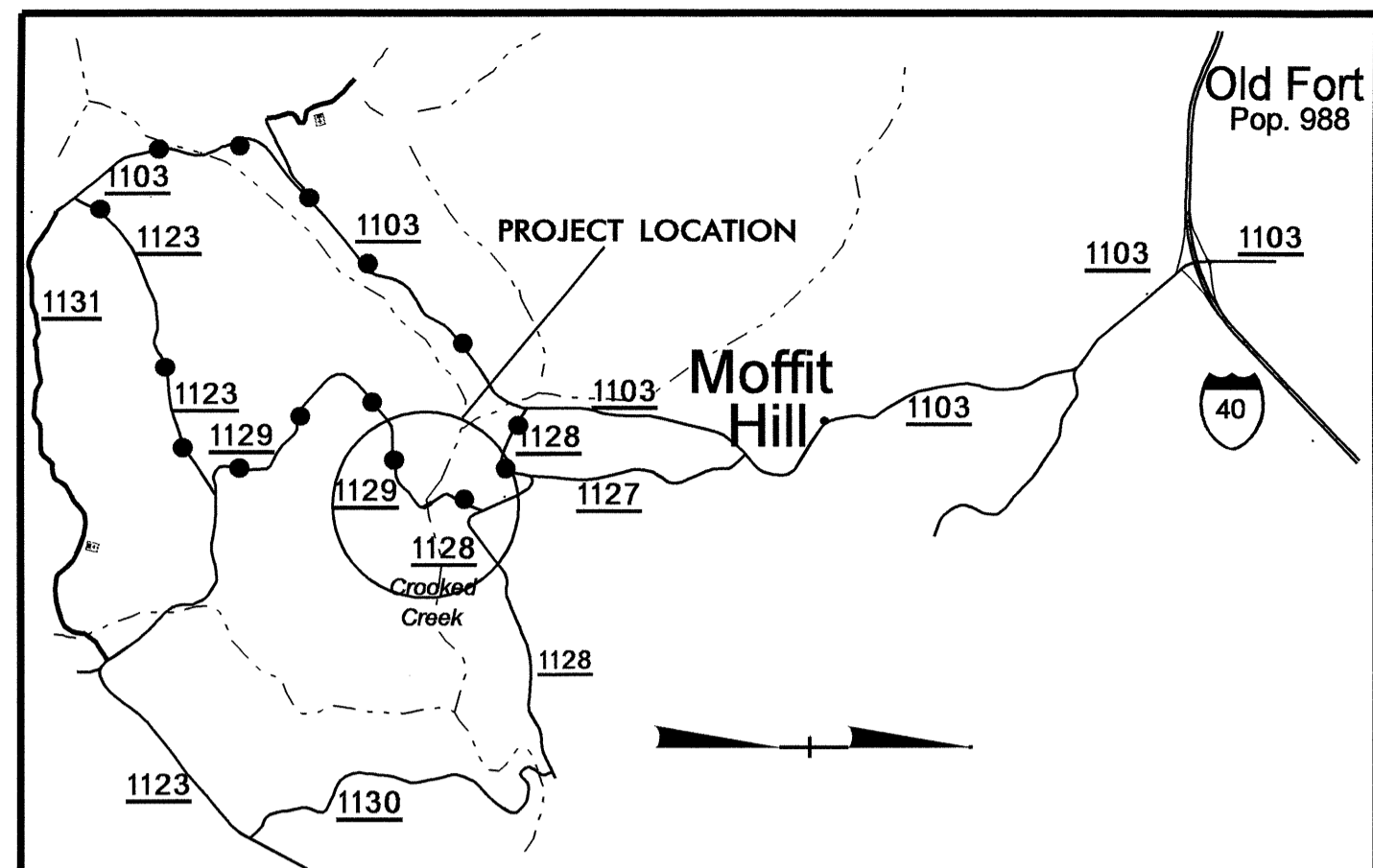


**CONTRACT: C201871 TIP PROJECT: B-4194**



**VICINITY MAP**

—•—•—•—•— OFF SITE DETOUR ROUTE

NEAREST SHIPPING POINT: OLD FORT ON SOUTHERN RR  
APPROX. 4 MILES FROM PROJECT

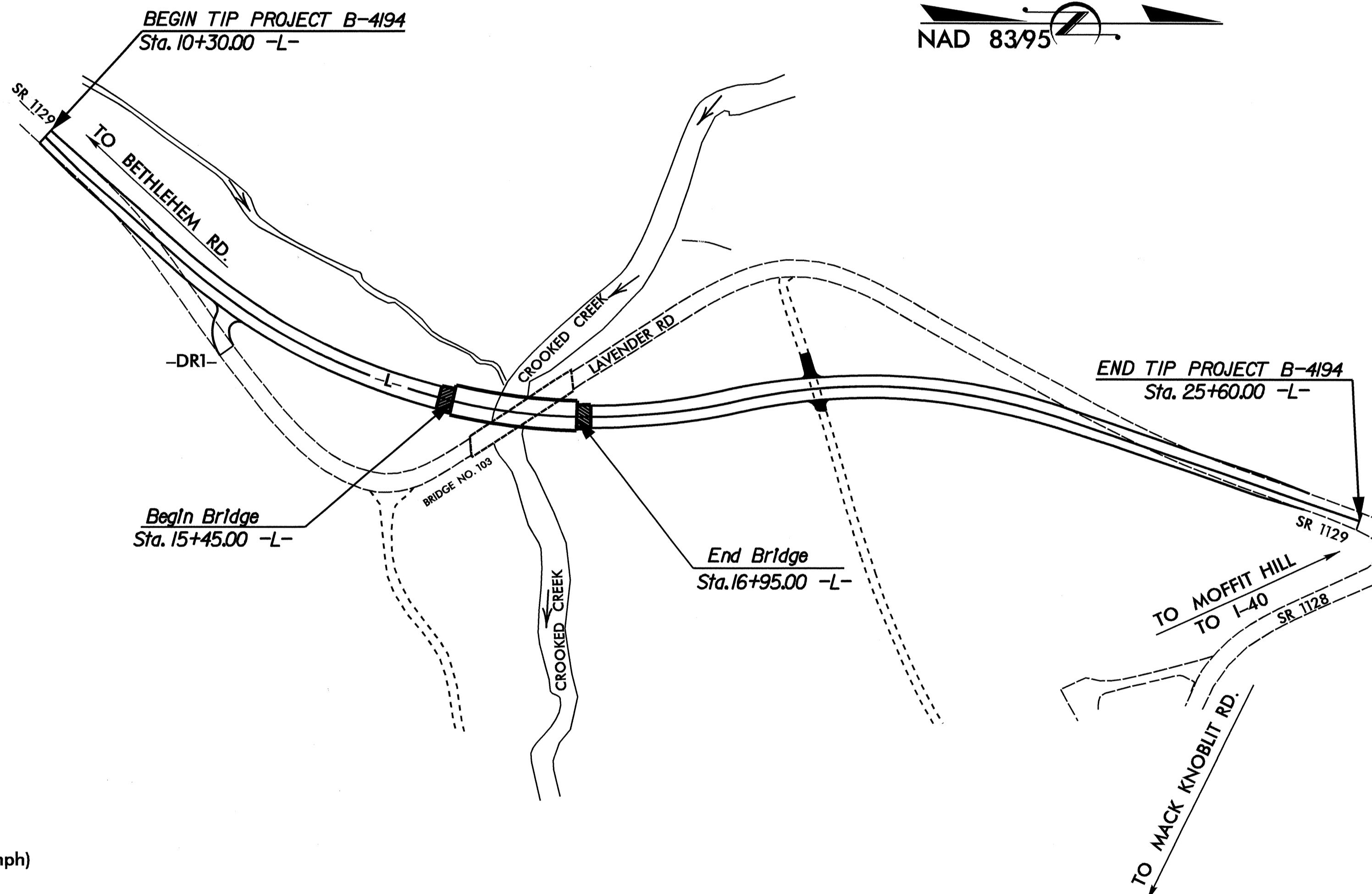
# STRUCTURE

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

## McDOWELL COUNTY

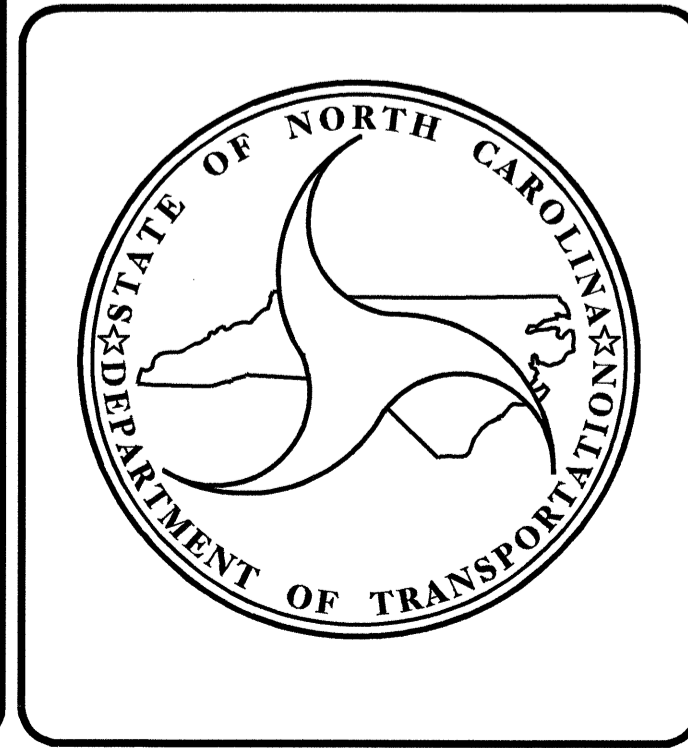
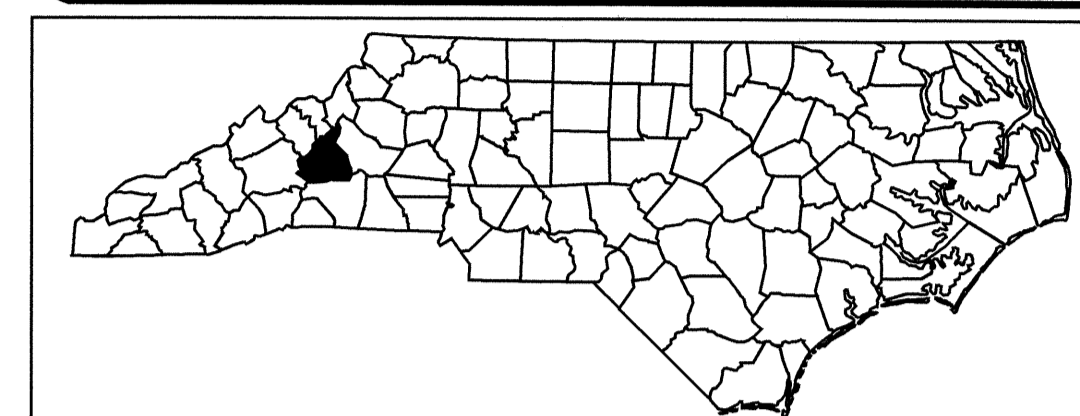
**LOCATION: BRIDGE NO. 103 OVER CROOKED CREEK  
ON SR 1129 AND APPROACHES**

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



\*\*DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED (45mph)  
AND HORIZONTAL STOPPING SIGHT DISTANCE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4194		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33541.1.1	BRZ-1129(9)	PE	
33541.2.1	BRZ-1129(9)	RAW, UTIL.	
33541.3.1	BRZ-1129(9)	CONST.	



**DESIGN DATA**

ADT 2006 =	605
ADT 2030 =	1105
DHV =	12 %
D =	65 %
T =	3 % *
V =	45 MPH **
FUNC CLASS =	RURAL LOCAL
* (TTST 1% + DUAL 2%)	

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT B-4194 =	0.262 MI
LENGTH STRUCTURE TIP PROJECT B-4194 =	0.028 MI
TOTAL LENGTH OF TIP PROJECT B-4194 =	0.290 MI

Prepared in the Office of:  
**DIVISION OF HIGHWAYS**  
1000 BIRCH RIDGE DR. RALEIGH, NC 27610

2006 STANDARD SPECIFICATIONS

<b>LETTING DATE:</b> JULY 15, 2008	<b>N. N. BULLOCK, PE</b> PROJECT ENGINEER
	<b>D. R. CALHOUN, PE</b> PROJECT DESIGN ENGINEER

**STRUCTURE DESIGN UNIT**

**DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA**

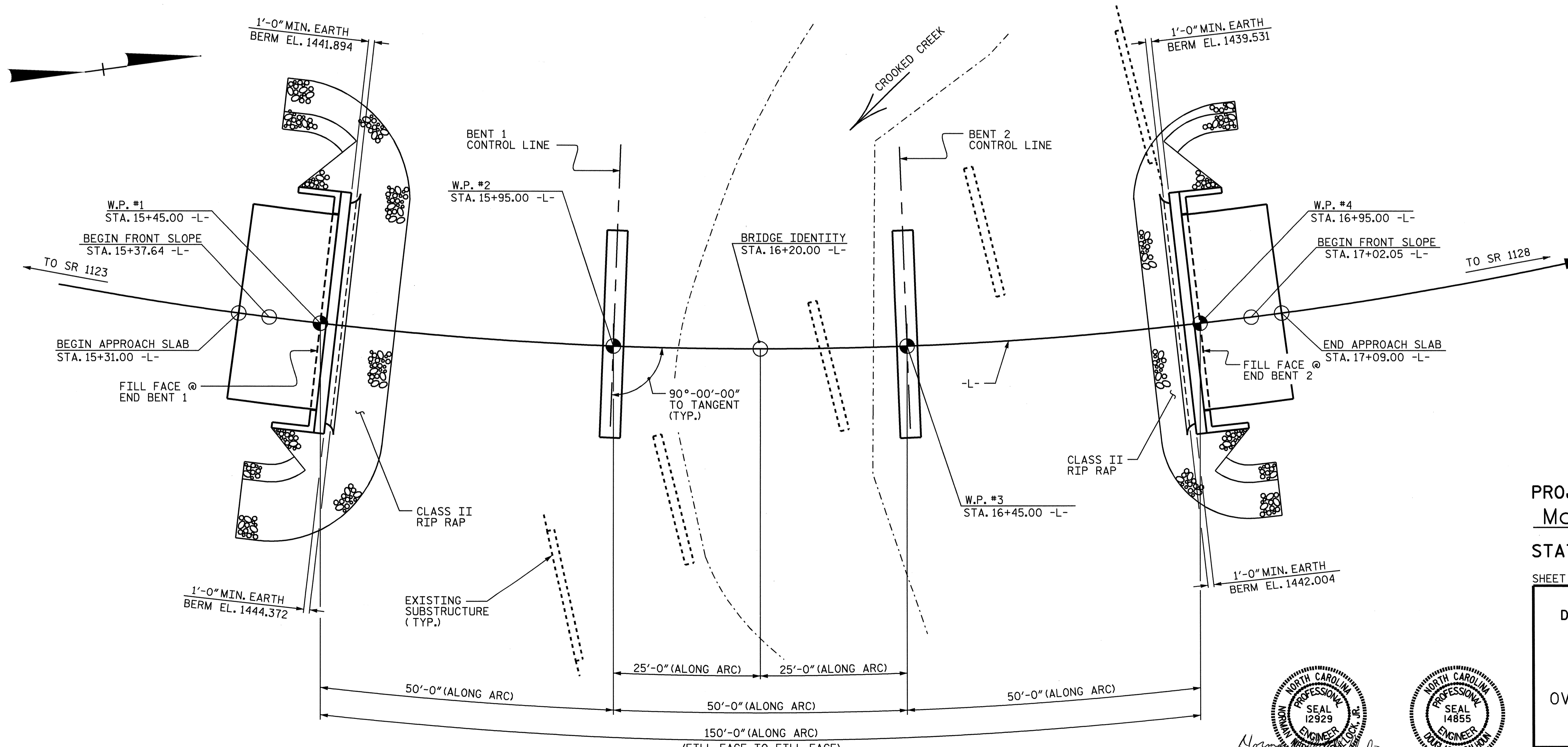
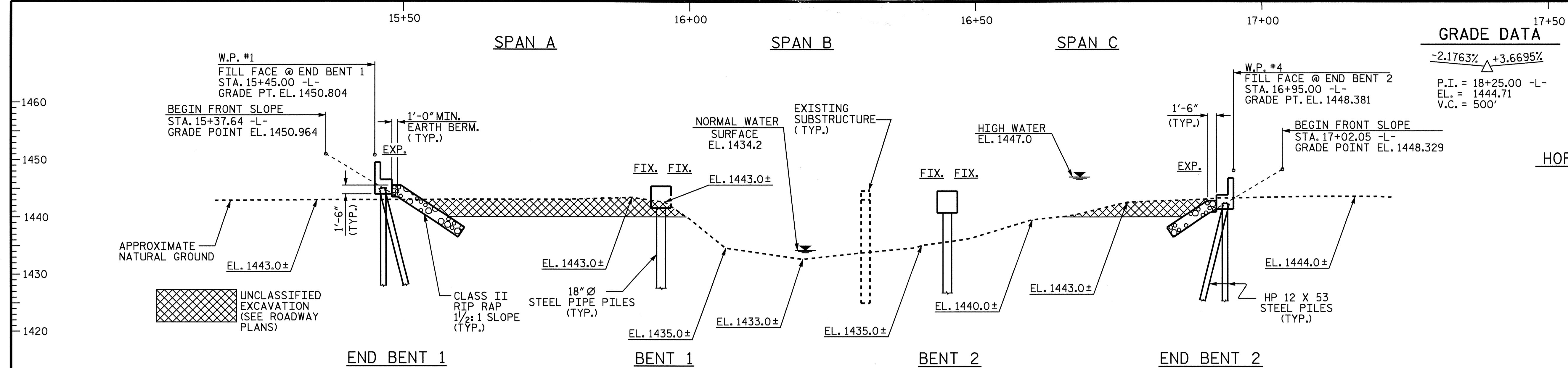
STATE DESIGN ENGINEER

**DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION**

APPROVED  
DIVISION ADMINISTRATOR

P.E.  
DATE

15 MAY 2008 07:56  
R:\S\1\Structure\Final Plans\B4194.scd.tsh.dgn  
gallen



DRAWN BY: J.L. WALTON    DATE: 3-08  
 CHECKED BY: J. MYA      DATE: 4-08

15-MAY-2008 15:37  
 R:\Structures\Final Plans\B-4194.sd..60..1.dgn  
 jmya

**PROFESSIONAL ENGINEER SEAL**  
 NORTH CAROLINA  
 SEAL 12929  
 ENGINEER  
 DOUGLAS R. CALVIN

**PROFESSIONAL ENGINEER SEAL**  
 NORTH CAROLINA  
 SEAL 14855  
 ENGINEER  
 DOUGLAS R. CALVIN

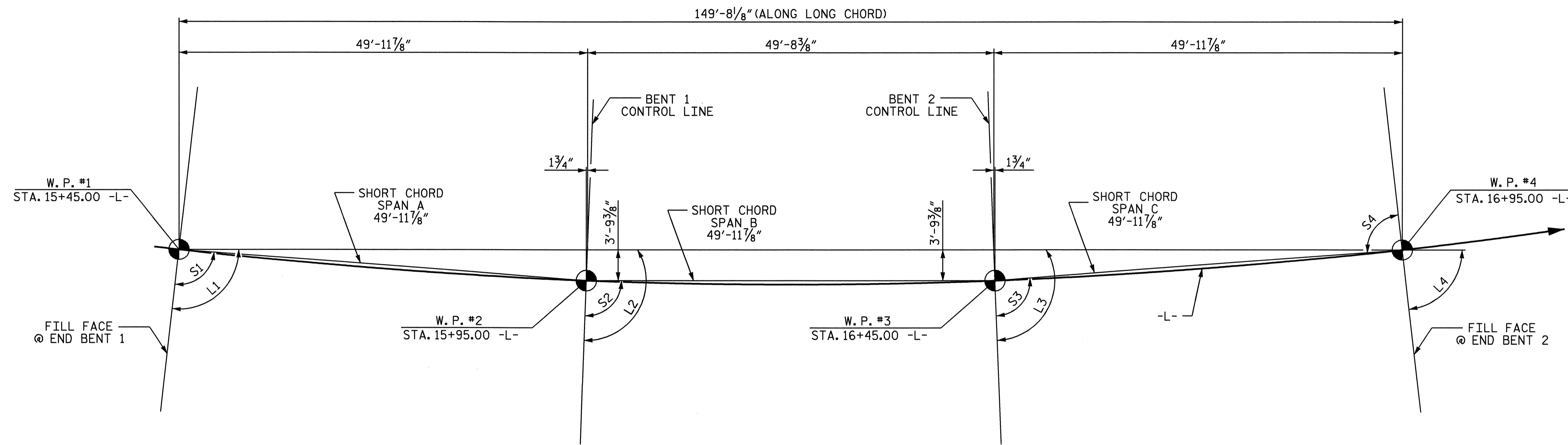
6/2/08

16-2-08

PROJECT NO. B-4194  
MCDOWELL COUNTY  
 STATION: 16+20.00 -L-

SHEET 1 OF 4      REPLACES BRIDGE NO. 103

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
GENERAL DRAWING FOR BRIDGE ON SR 1129 OVER CROOKED CREEK BETWEEN SR 1123 AND SR 1128					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-1					TOTAL SHEETS 35



**HORIZONTAL CURVE DATA**

PI STA = 15+68.09 -L-  
 $\Delta$  = 55°-36'-52.1" (LT.)  
D = 8°-40'-52.2"  
L = 640.63'  
T = 348.08'  
R = 660.00'

ANGLES			
	LONG CHORD		SHORT CHORD
L1	96°-30'-39"	S1	92°-10'-13"
L2	92°-10'-13"	S2	92°-10'-13"
L3	87°-49'-47"	S3	92°-10'-13"
L4	83°-29'-21"	S4	87°-49'-47"

**LONG CHORD LAYOUT**

PROJECT NO. B-4194  
MCDOWELL COUNTY  
STATION: 16+20.00 -L-

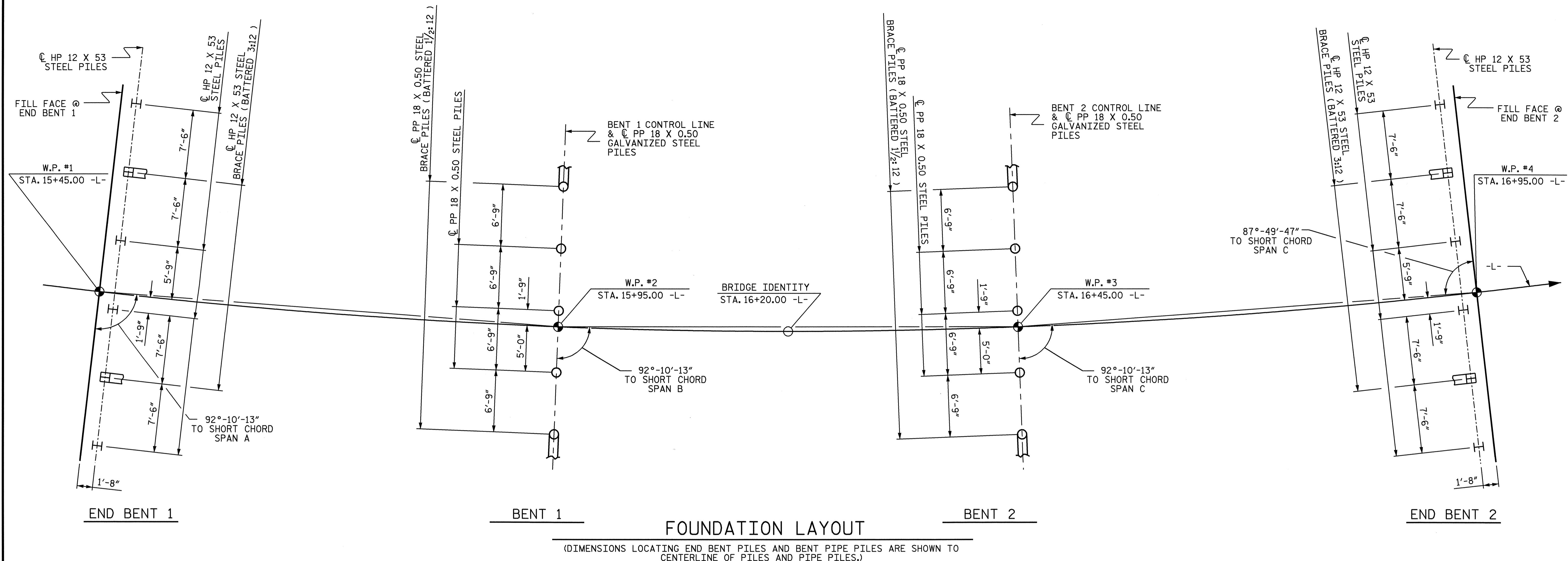
SHEET 2 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
GENERAL DRAWING  
FOR BRIDGE ON SR 1129  
OVER CROOKED CREEK BETWEEN  
SR 1123 AND SR 1128



DRAWN BY : J.L. WALTON DATE : 4-08  
CHECKED BY : J. MYA DATE : 4-08

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



**NOTES:**

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

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

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

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

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

THE EXISTING STRUCTURE CONSISTING OF FOUR (1 @ 25'-7", 1 @ 34'-10", 1 @ 35'-0", 1 @ 35'-9") TIMBER DECK SPANS ON STEEL I-BEAMS WITH A CLEAR ROADWAY WIDTH OF 19'-2" ON STEEL CAP END BENT 1 WITH STEEL H-PILES AND TIMBER PILE AND CAP BENT 1, 2 AND END BENT 2 AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED.

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

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

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 16+20.00 -L-."

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

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

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

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

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

**FOUNDATION NOTES:**

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

THE ALLOWABLE BEARING CAPACITY FOR PILES AT BENTS 1 AND 2 IS 100 TONS PER PILE.

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

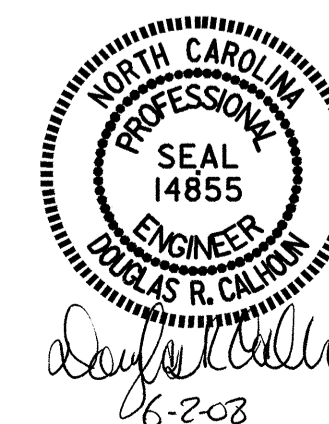
DRIVE PILES AT BENTS 1 AND 2 TO A REQUIRED BEARING CAPACITY OF 200 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

THE SCOUR CRITICAL ELEVATIONS FOR BENT 1 ARE ELEVATION 1,418.0 FEET (LEFT) AND 1,419.0 FEET (RIGHT). SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SCOUR CRITICAL ELEVATIONS FOR BENT 2 ARE ELEVATION 1,413.0 FEET. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

PIPE PILE PLATES ARE NOT REQUIRED FOR THE PIPE PILES AT BENT 1 AND BENT 2

DRAWN BY : J.L. WALTON DATE : 3-08  
CHECKED BY : J. MYA DATE : 4-08



PROJECT NO. B-4194  
McDOWELL COUNTY  
STATION: 16+20.00 -L-

SHEET 3 OF 4

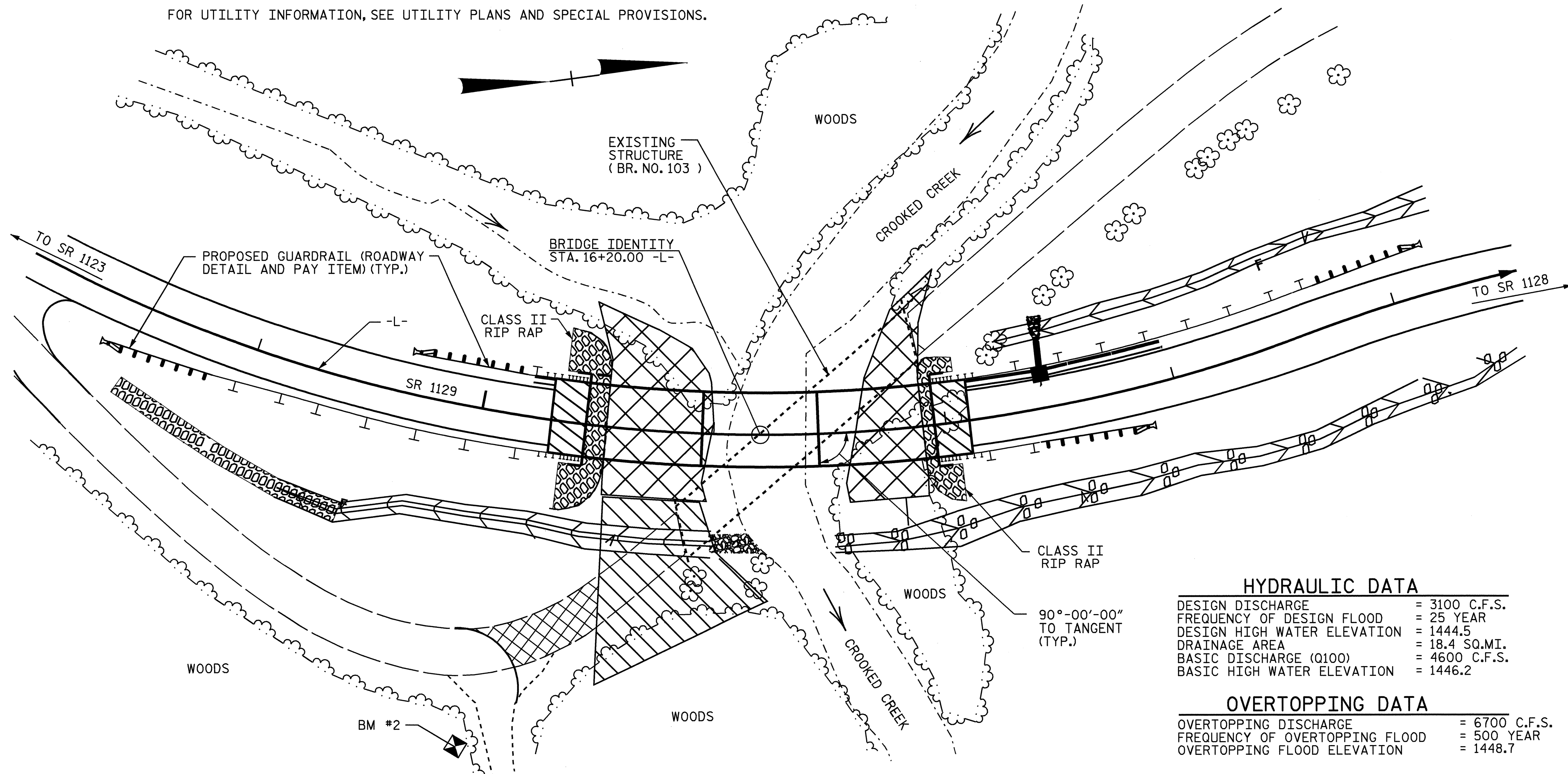
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
<b>GENERAL DRAWING</b>					
FOR BRIDGE ON SR 1129 OVER CROOKED CREEK BETWEEN SR 1123 AND SR 1128					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					35

**TOTAL BILL OF MATERIAL**

	REMOVAL OF EXISTING STRUCTURE	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	36" PRESTRESSED CONCRETE GIRDERS		HP 12 X 53 STEEL PILES		PP 18 X 0.50 GALVANIZED STEEL PILES		CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS
	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	NO.	LIN. FT.	NO.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE		5198	5108		LUMP SUM		12	580.90					294.92			LUMP SUM	LUMP SUM
END BENT 1				19.5		3013			6	210				118	131		
BENT 1				16.0		2232					5	195					
BENT 2				16.0		2232					5	178					
END BENT 2				19.5		3013			6	210				68	76		
<b>TOTAL</b>	LUMP SUM	5198	5108	71.0	LUMP SUM	10,490	12	580.90	12	420	10	373	294.92	186	207	LUMP SUM	LUMP SUM

BM. #2 : NAIL SET IN 14" HARDWOOD, 145.70' RIGHT STA. 15+12.00 -L- ELEV. 1459.42' NAVD 88

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.



**HYDRAULIC DATA**  
 DESIGN DISCHARGE = 3100 C.F.S.  
 FREQUENCY OF DESIGN FLOOD = 25 YEAR  
 DESIGN HIGH WATER ELEVATION = 1444.5  
 DRAINAGE AREA = 18.4 SQ.MI.  
 BASIC DISCHARGE (Q100) = 4600 C.F.S.  
 BASIC HIGH WATER ELEVATION = 1446.2

**OVERTOPPING DATA**  
 OVERTOPPING DISCHARGE = 6700 C.F.S.  
 FREQUENCY OF OVERTOPPING FLOOD = 500 YEAR  
 OVERTOPPING FLOOD ELEVATION = 1448.7

**LOCATION SKETCH**

DRAWN BY : J.L. WALTON DATE : 3-08  
 CHECKED BY : J. MYA DATE : 4-08

02-JUN-2008 13:34  
 r:\structures\jwalton\b-4194.ed.gd.1.dgn  
 jwalton

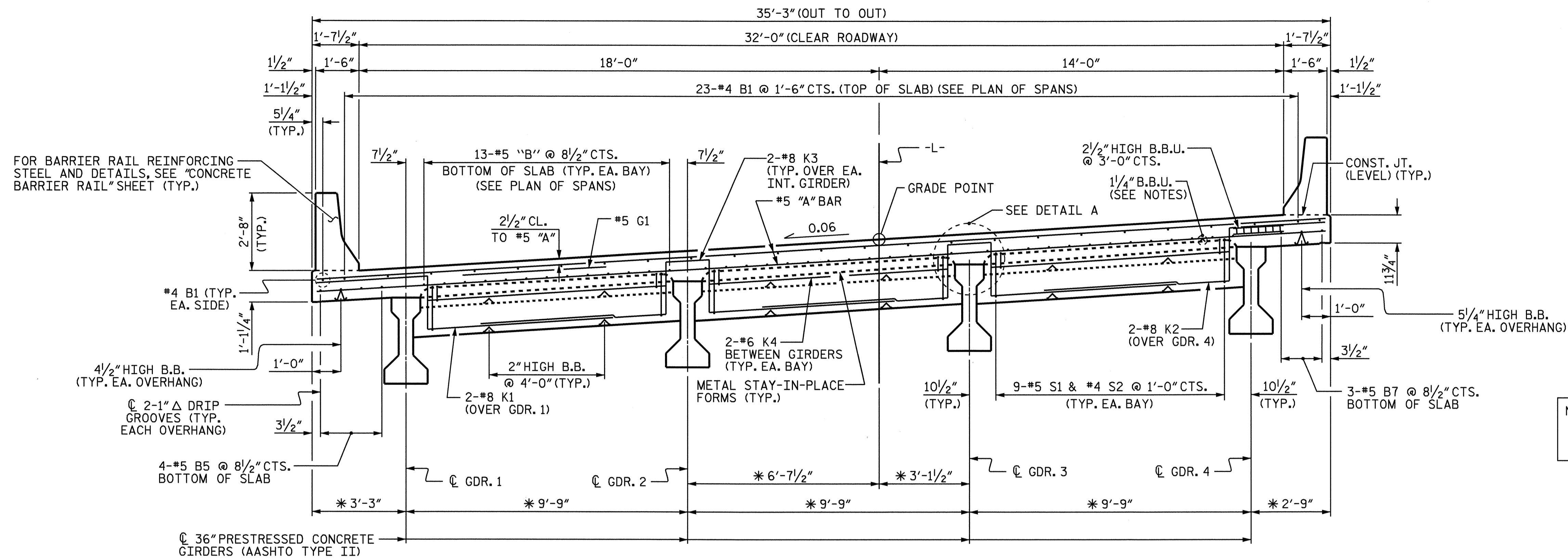
PROJECT NO. B-4194  
McDOWELL COUNTY  
 STATION: 16+20.00 -L-

SHEET 4 OF 4



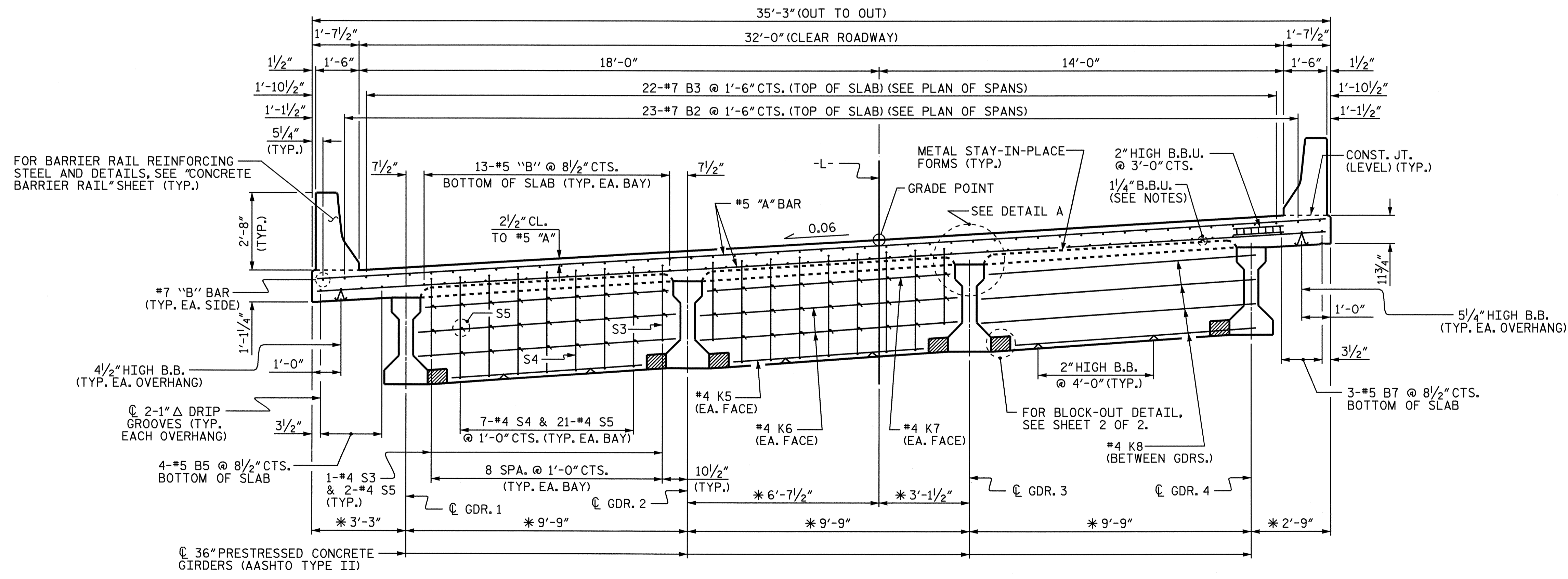
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE ON SR 1129  
 OVER CROOKED CREEK BETWEEN  
 SR 1123 AND SR 1128

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



**TYPICAL SECTION @ END BENT DIAPHRAGMS**

FOR "B" BARS IN TOP AND BOTTOM OF SLAB, SEE "PLAN OF SPAN" SHEETS.



**TYPICAL SECTION @ BENT DIAPHRAGMS**

FOR "B" BARS IN TOP AND BOTTOM OF SLAB, SEE "PLAN OF SPAN" SHEETS.

**NOTES:**

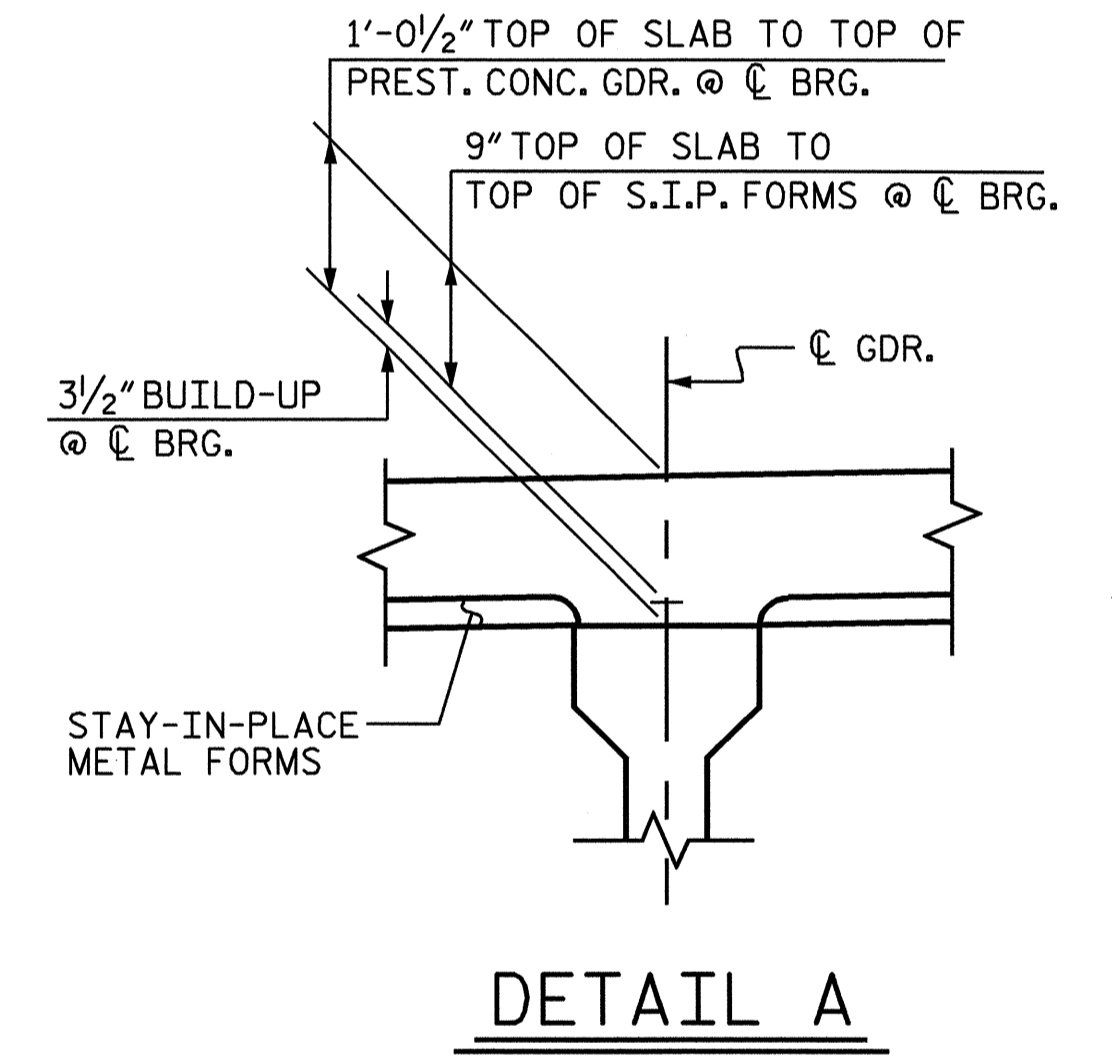
PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2 1/2"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

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

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

FOR TYPICAL SECTION OF INTERMEDIATE DIAPHRAGMS, SEE "PRESTRESSED CONCRETE GIRDER" SHEET 6 OF 6.

NOTE: ALL HORIZONTAL DIMENSIONS ARE RADIAL EXCEPT AS NOTED.  
\* DIMENSIONS ARE RADIAL @ END BENT FILL FACES AND BENT CONTROL LINES.



**DETAIL A**

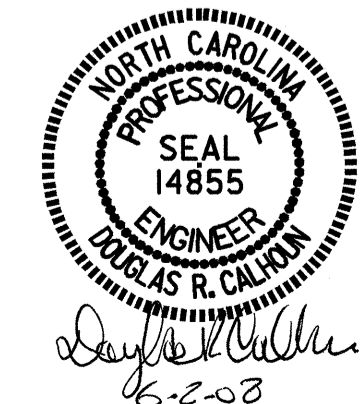
PROJECT NO. B-4194  
McDOWELL COUNTY  
STATION: 16+20.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

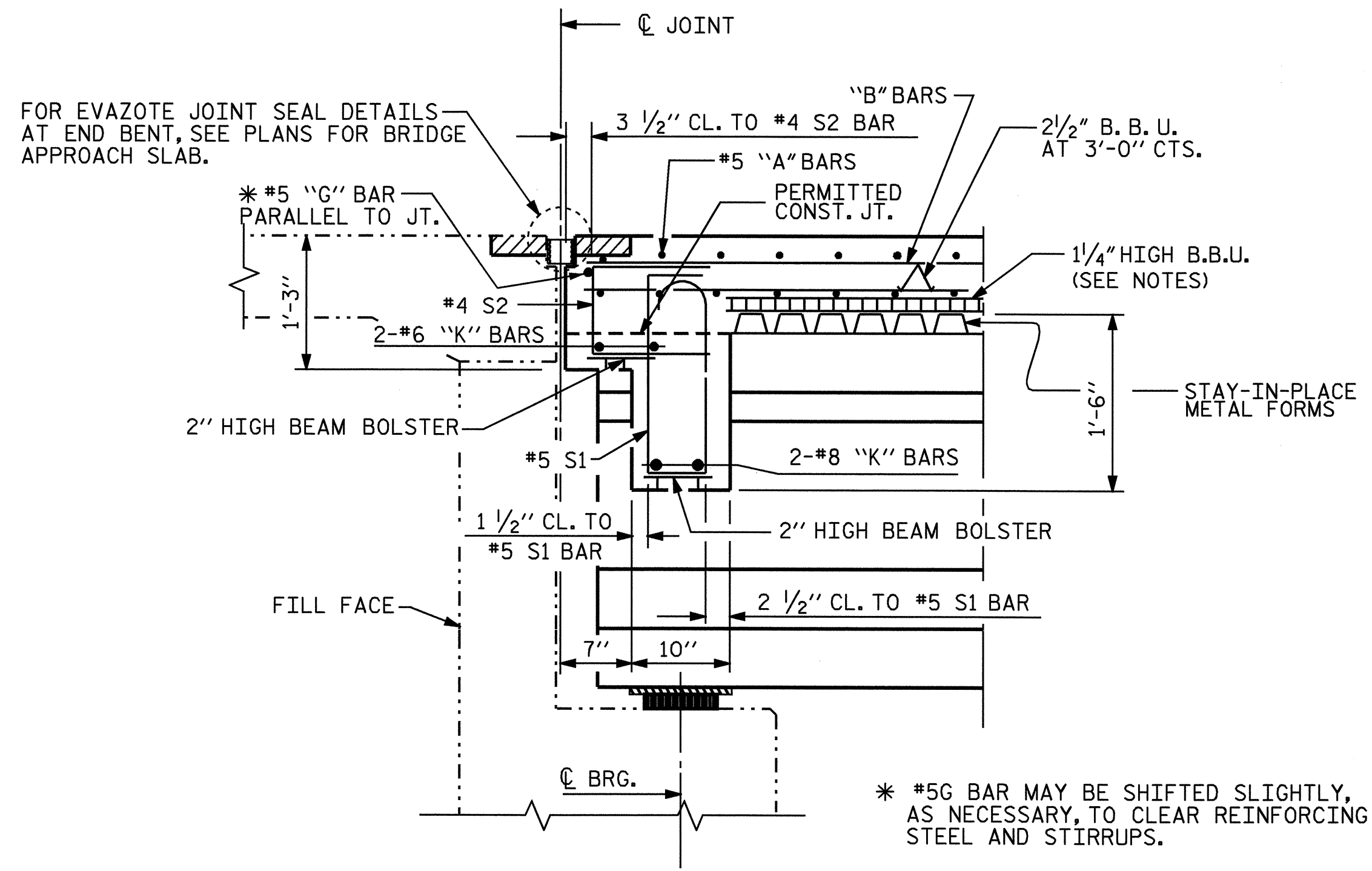
**SUPERSTRUCTURE  
TYPICAL SECTION**

DRAWN BY: A. K. PATEL DATE: 3/26/07  
CHECKED BY: BNG DATE: 5/07

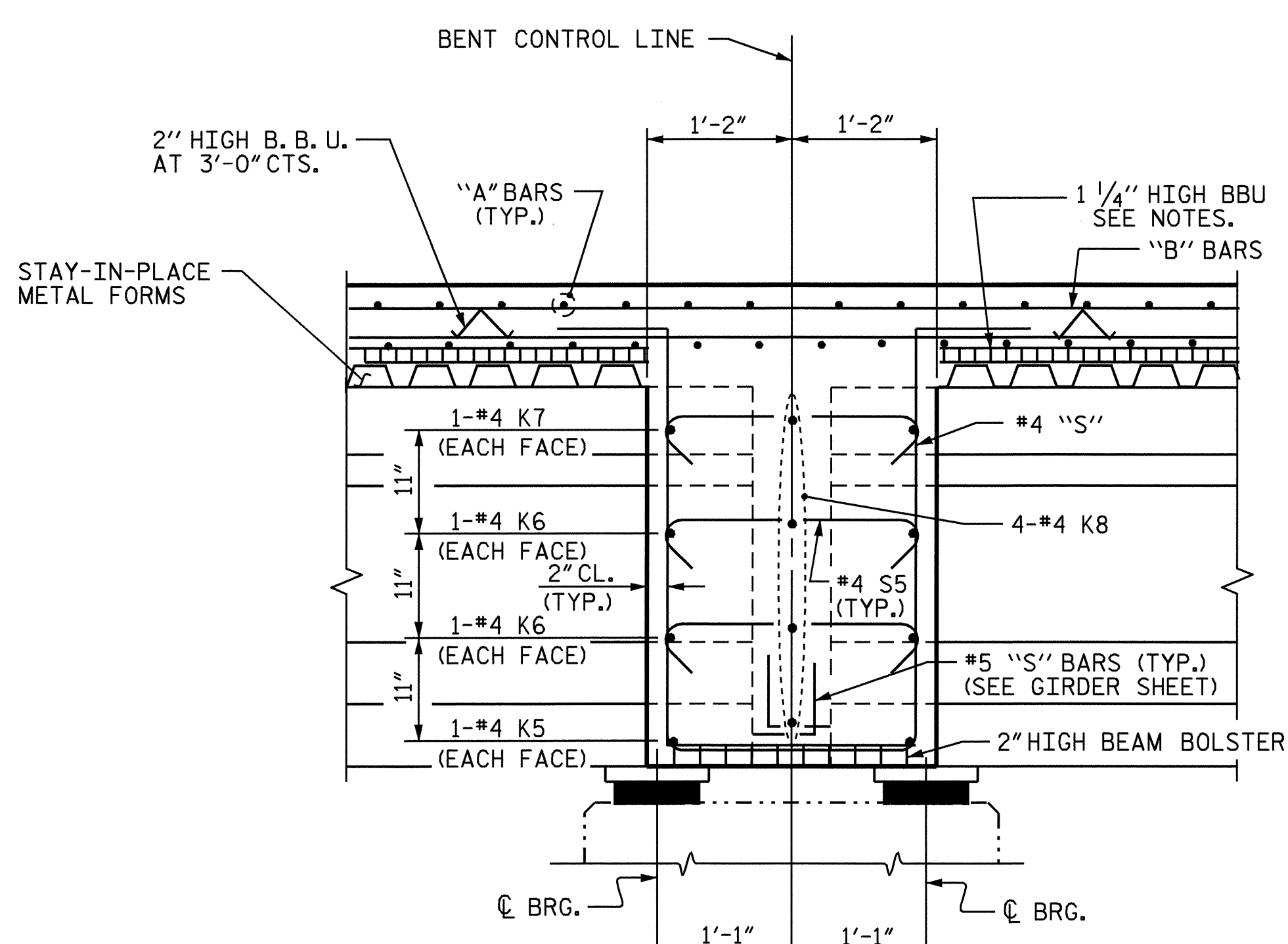


REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

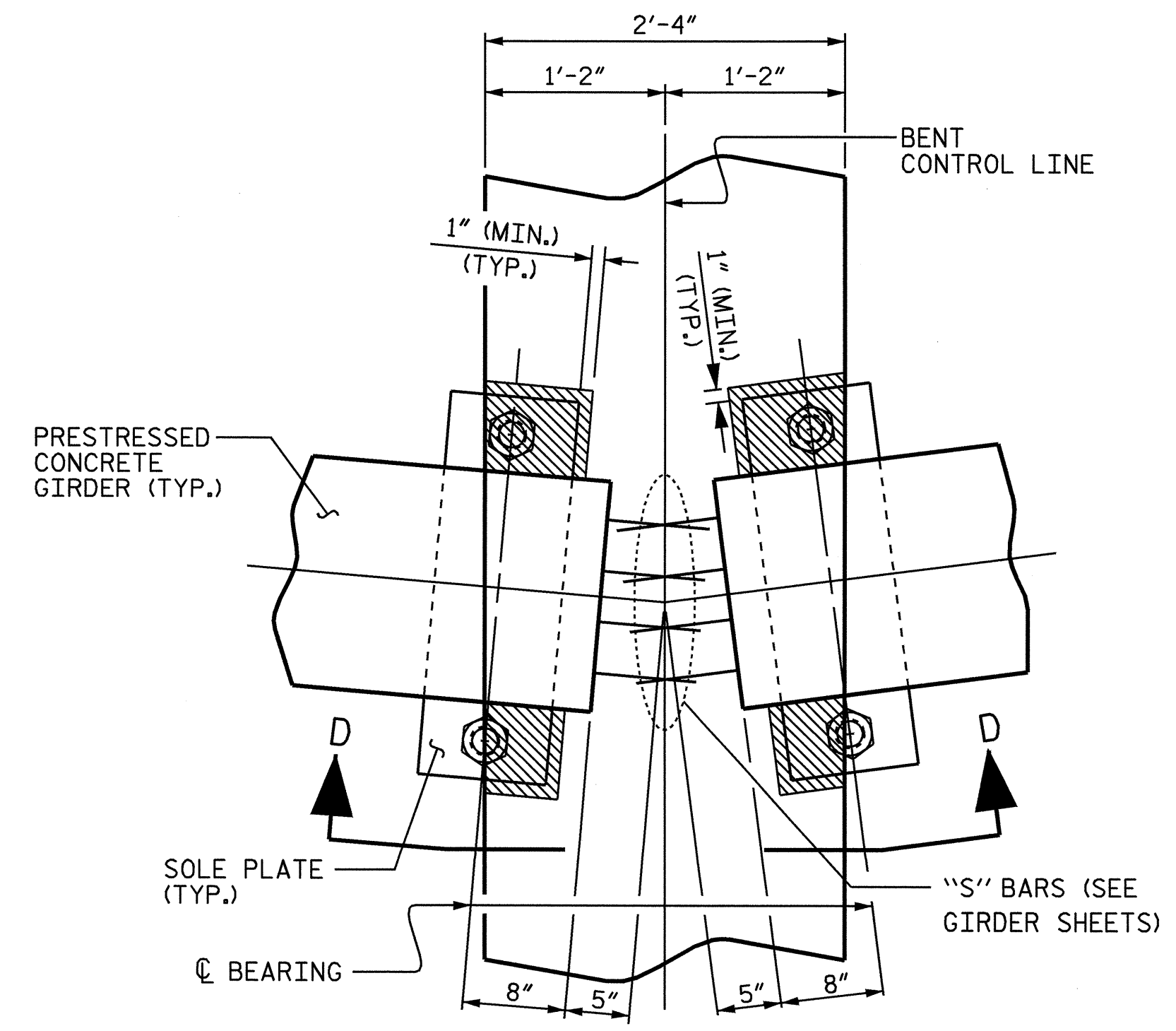
TOTAL SHEETS: **35**



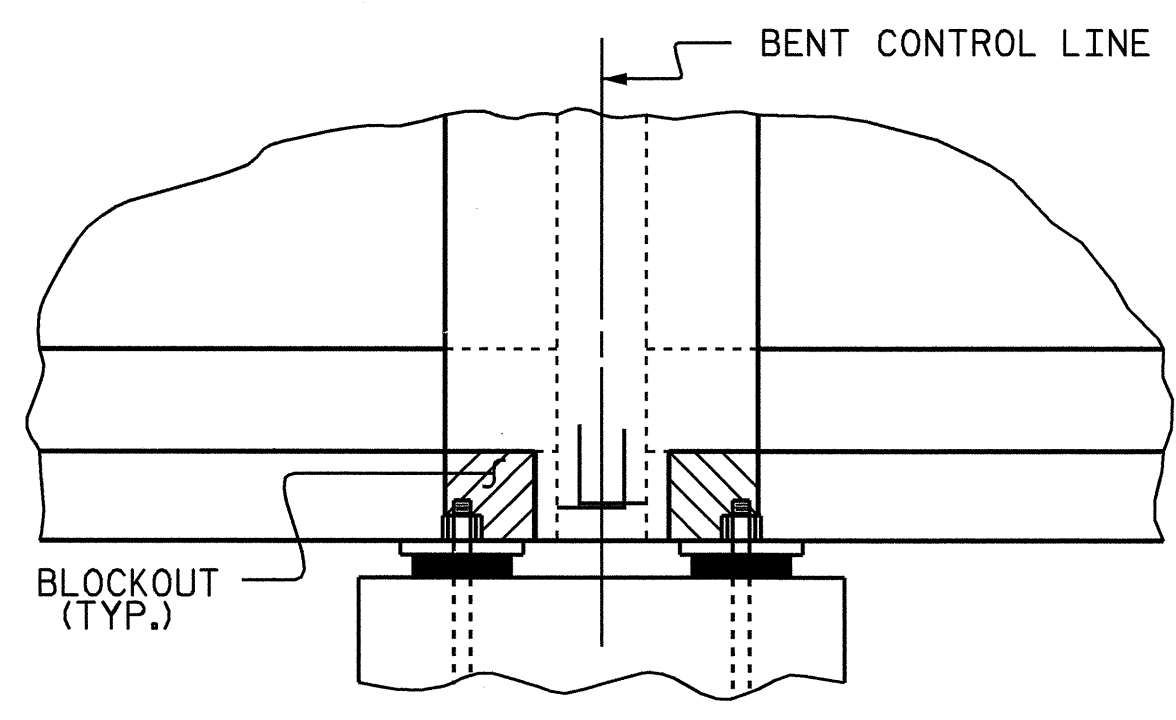
**SECTION A-A**  
(THRU END BENT DIAPHRAGM)



**SECTION B-B**  
(THRU BENT DIAPHRAGM)

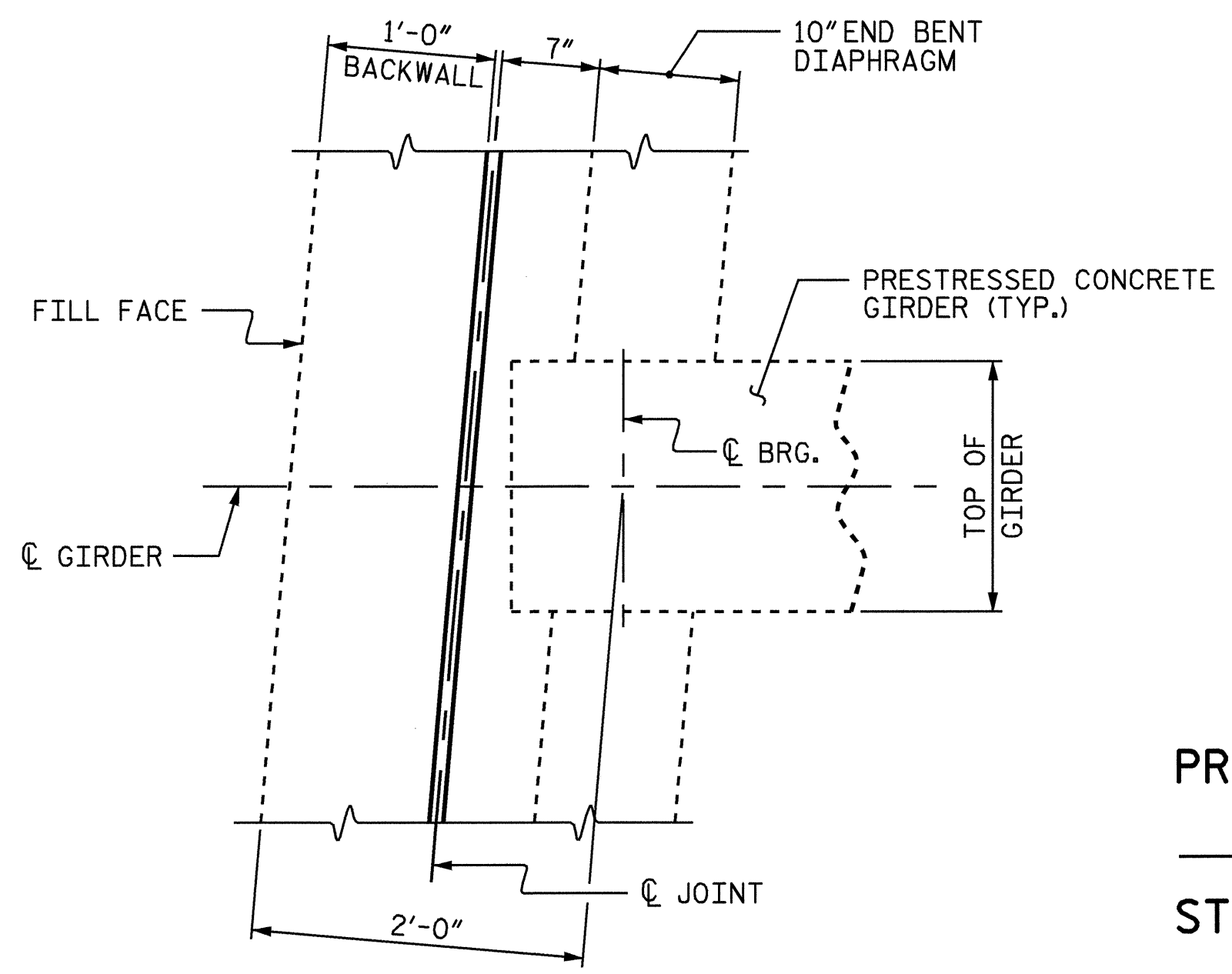


**PLAN**



**SECTION D-D**

**BENT DIAPHRAGM BLOCKOUT DETAIL**



**PLAN OF END BENT DIAPHRAGM**  
END BENT 1 SHOWN, END BENT 2 SIMILAR

PROJECT NO. B-4194  
McDOWELL COUNTY  
STATION: 16+20.00 -L-

SHEET 2 OF 2

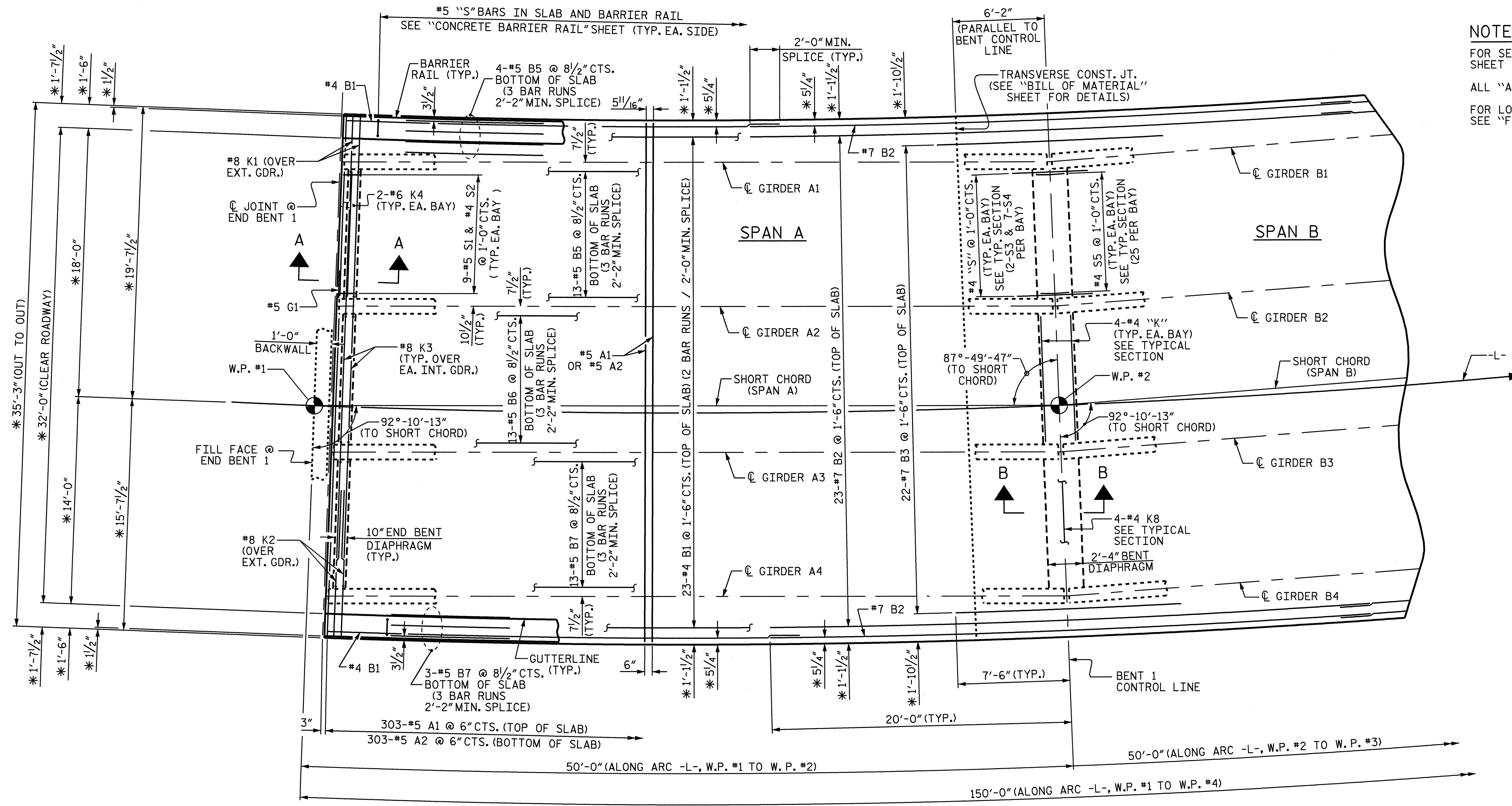
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE TYPICAL SECTION					
SHEET NO. S-6					
TOTAL SHEETS 35					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

DRAWN BY: A. K. PATEL DATE: 3/26/07  
CHECKED BY: BNG DATE: 5/07

15-MAY-2008 15:37  
R:\Structures\Final Plans\B-4194.ed. TS.dgn  
jmya



**NOTES**  
 FOR SECTION A-A & B-B, SEE "TYPICAL SECTION" SHEET 2 OF 2.  
 ALL "A" BARS ARE PLACED NORMAL TO ARC -L-.  
 FOR LOCATION OF INTERMEDIATE DIAPHRAGMS, SEE "FRAMING PLAN."



**PLAN OF SPAN A**

\* RADIAL DIMENSIONS TO -L-

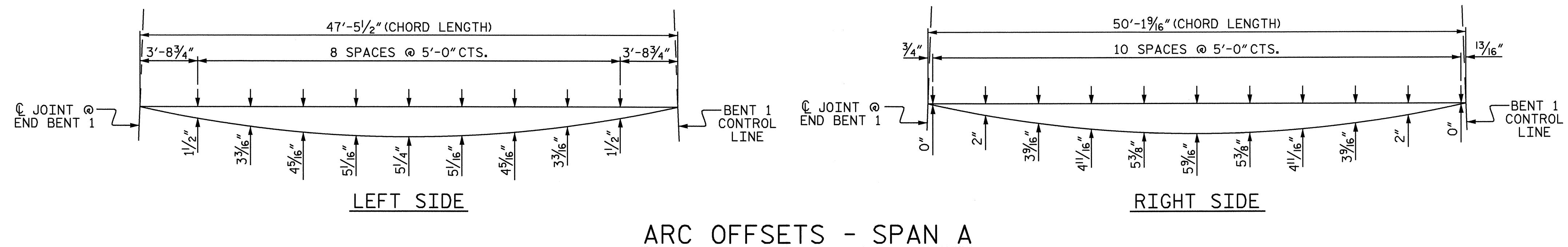
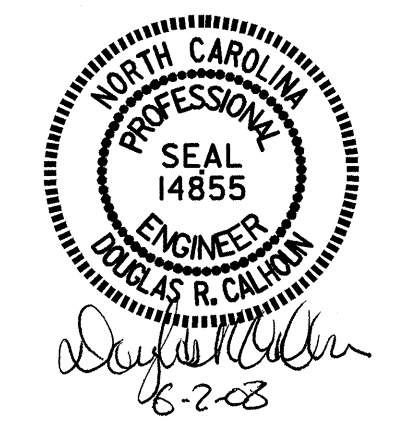
PROJECT NO. B-4194  
MCDOWELL COUNTY  
 STATION: 16+20.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUPERSTRUCTURE  
 PLAN OF SPAN A**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			35



**ARC OFFSETS - SPAN A**

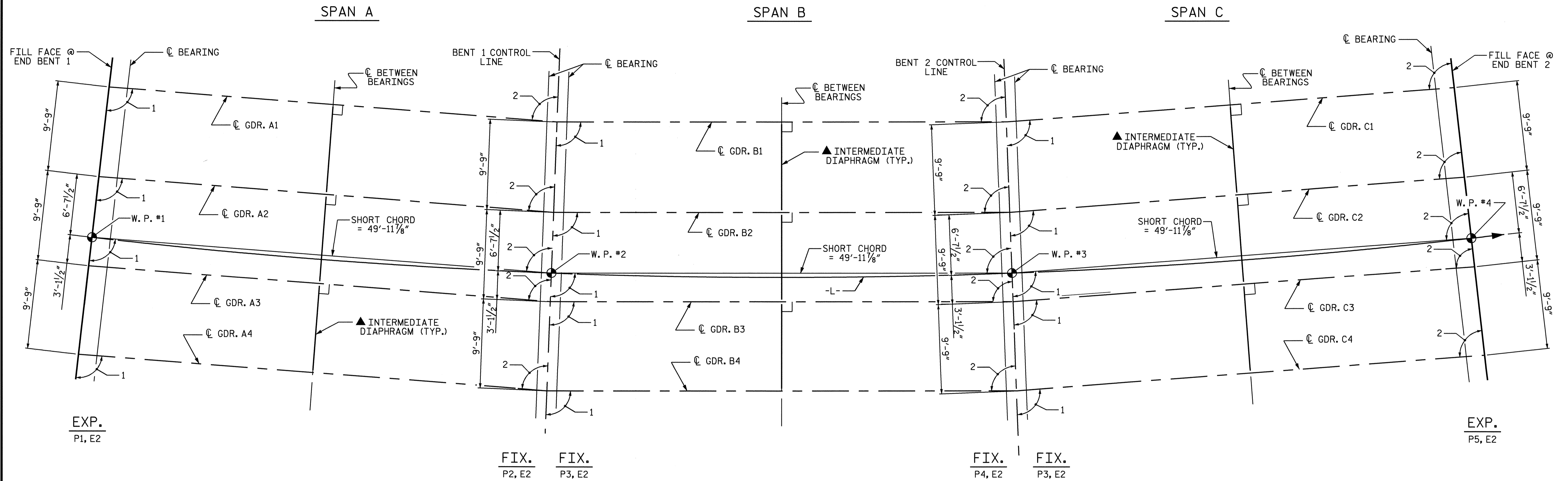
DRAWN BY: A. K. PATEL DATE: 4/9/07  
 CHECKED BY: BNG DATE: 5/07

15-MAY-2008 15:37  
 R:\Structures\Final Plans\B-4194.sd. S\*.dgn  
 jmya









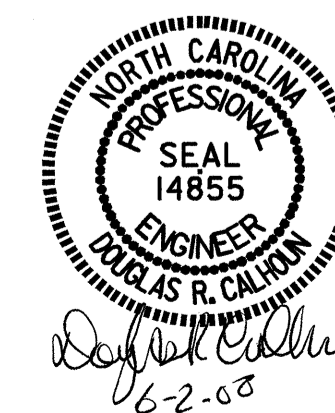
**FRAMING PLAN**

ANGLES	
1	92°-10'-13"
2	87°-49'-47"

▲ FOR DETAILS OF INTERMEDIATE DIAPHRAGM, SEE SHEET 6 OF 6.

PROJECT NO. B-4194  
McDOWELL COUNTY  
 STATION: 16+20.00 -L-

SHEET 1 OF 6

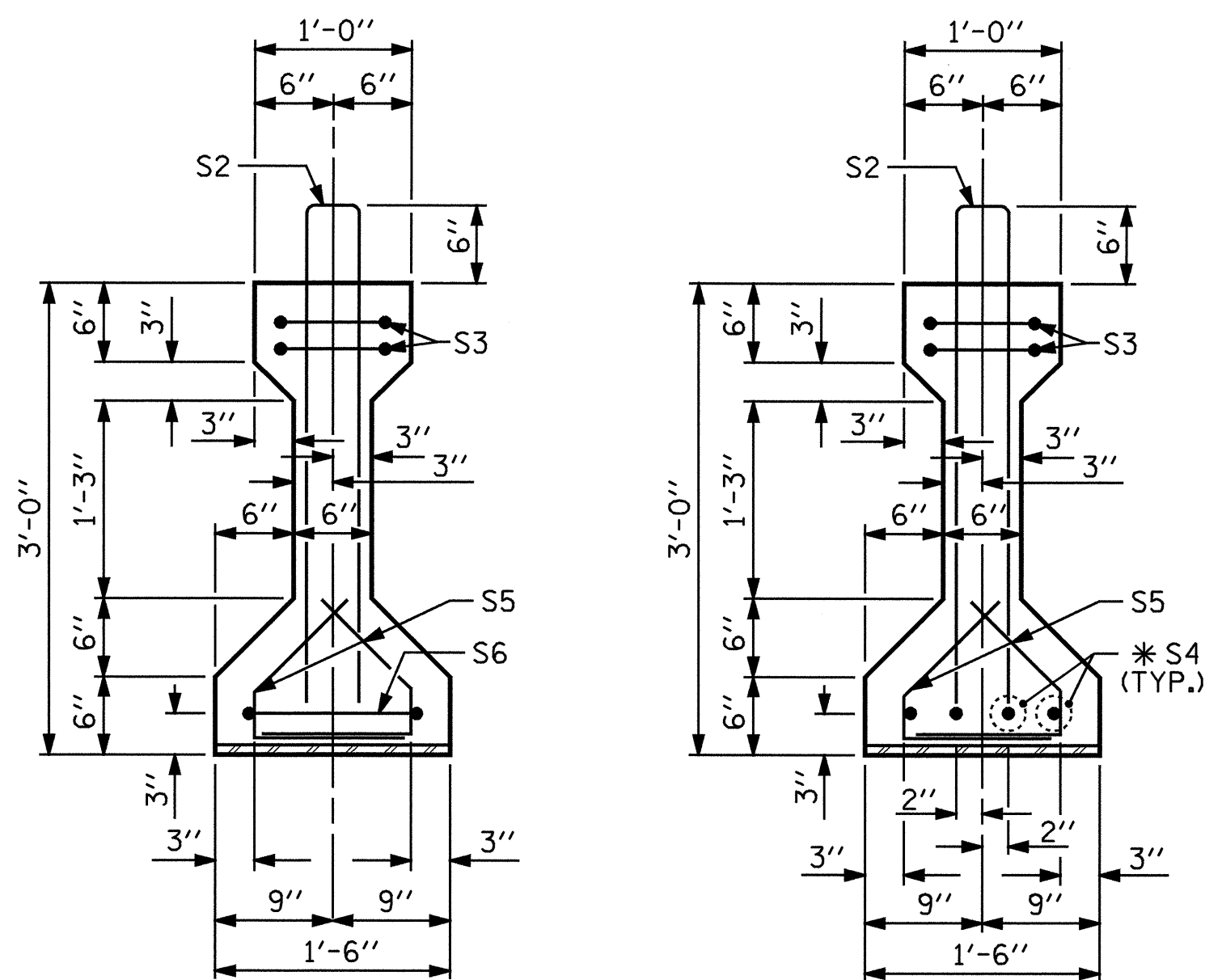


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

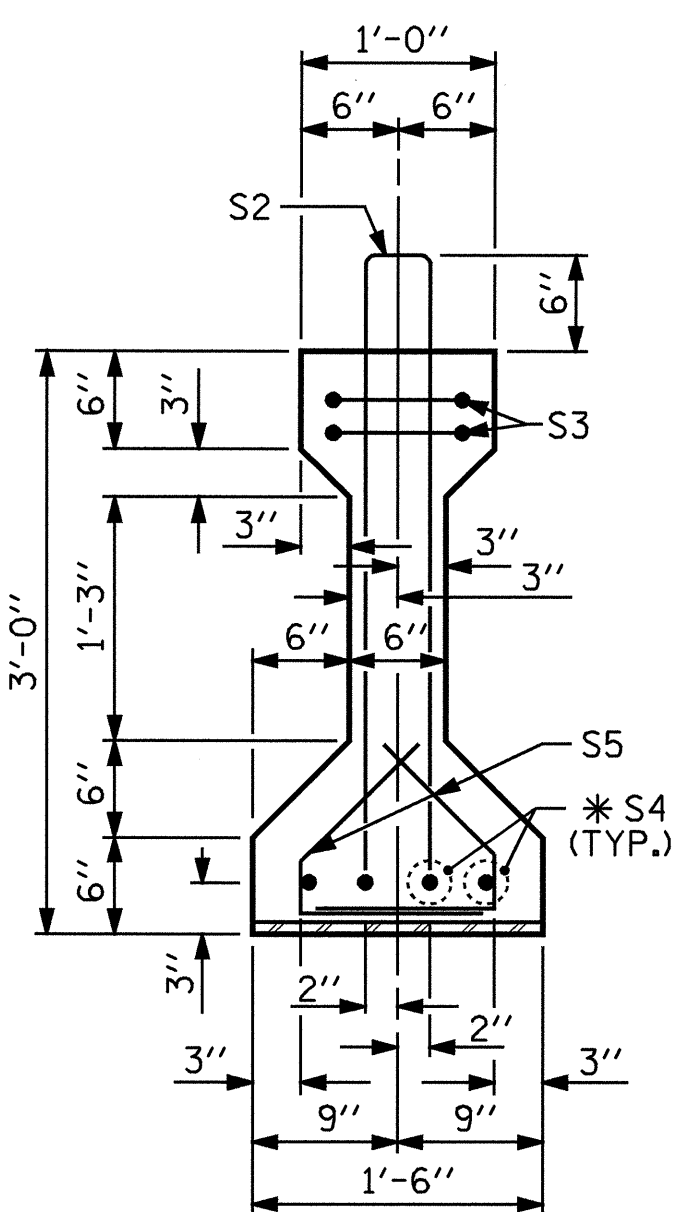
**SUPERSTRUCTURE  
 FRAMING PLAN**

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

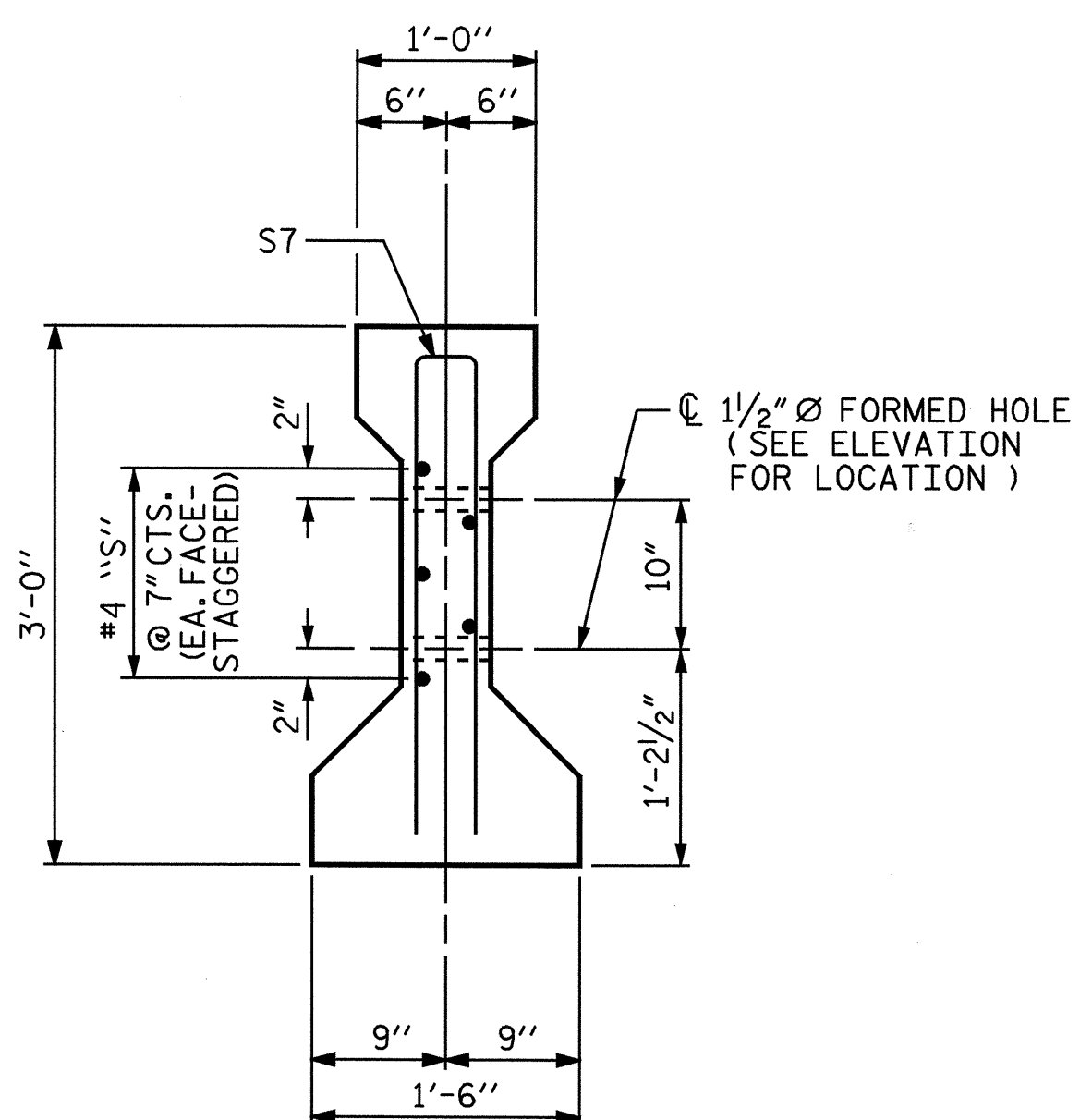
DRAWN BY : A. K. PATEL DATE : 4/17/07  
 CHECKED BY : BNG DATE : 5/07



SECTION A-A

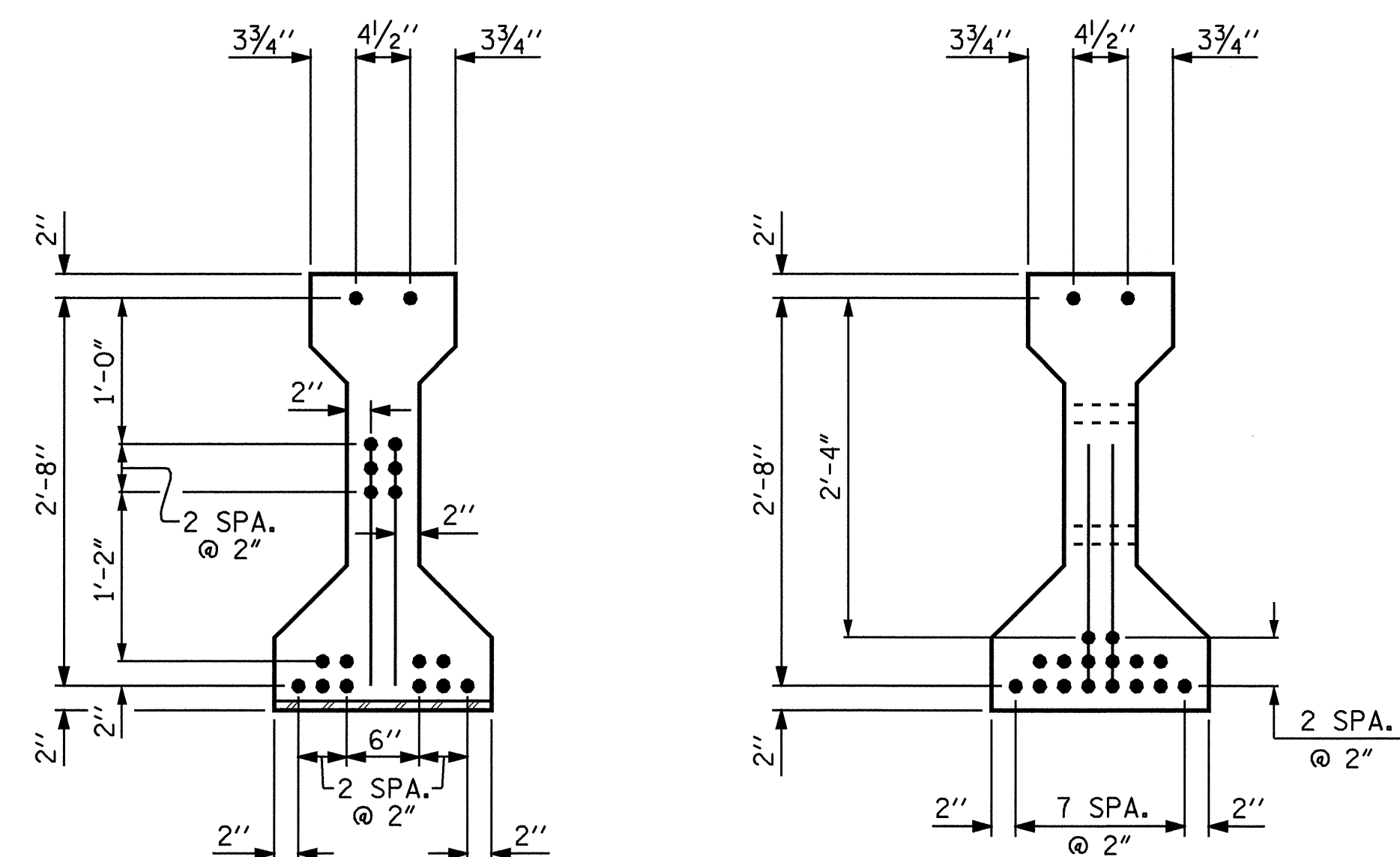


SECTION B-B



SECTION C-C

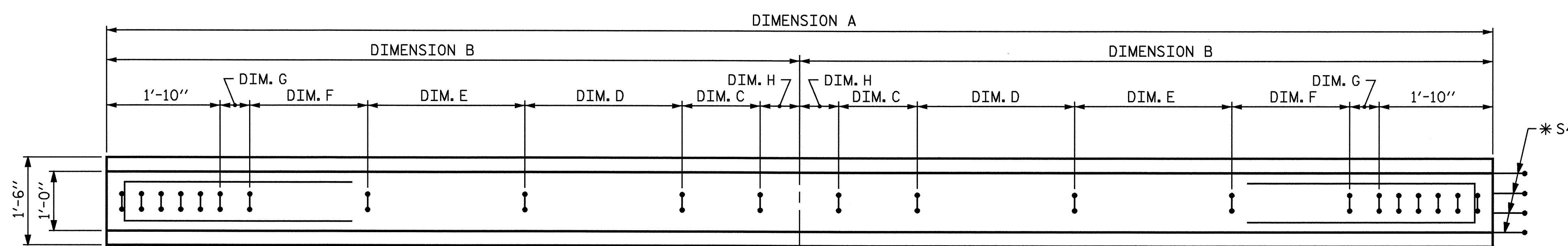
(S1 BARS NOT SHOWN)



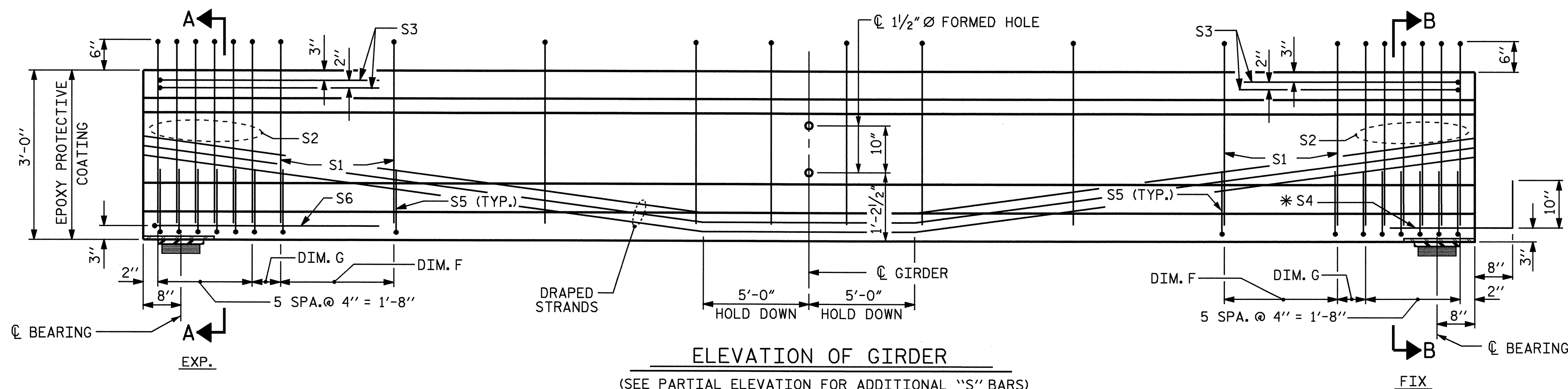
AT END OF GIRDER

AT C OF GIRDER

0.60" Ø LOW RELAXATION STRAND LAYOUT

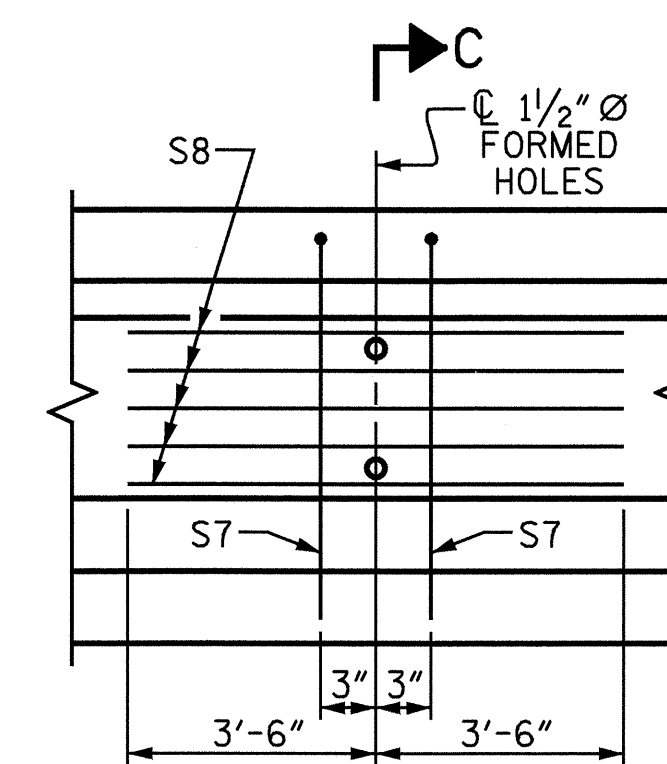


PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION

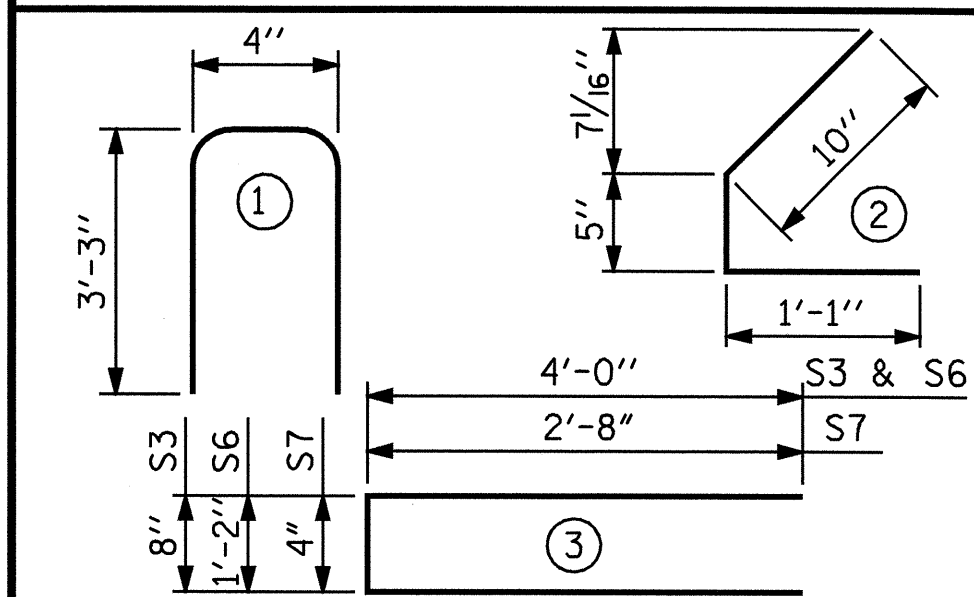
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1 THRU 4

0.60" 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. 1	S1	40	#4	1	6'-10"	183
GDR. 2	S1	68	#4	1	6'-10"	310
GDR. 3	S1	70	#4	1	6'-10"	320
GDR. 4	S1	48	#4	1	6'-10"	219
	S2	12	#5	1	6'-10"	86
	S3	4	#4	3	8'-8"	23
	*S4	4	#5	STR	3'-8"	15
GDR. 1	S5	52	#4	2	2'-4"	81
GDR. 2	S5	64	#4	2	2'-4"	100
GDR. 3	S5	68	#4	2	2'-4"	106
GDR. 4	S5	60	#4	2	2'-4"	94
	S6	1	#4	3	9'-2"	6
	S7	2	#5	3	5'-8"	12
	S8	5	#4	STR	7'-0"	23

\* NOTE: S4 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	8,000 PSI CONCRETE	0.60" Ø L.R. STRANDS
	LB.	C.Y.	No.
GIRDER 1	429	4.5	18
GIRDER 2	575	4.5	18
GIRDER 3	591	4.6	18
GIRDER 4	478	4.7	18

GIRDERS REQUIRED

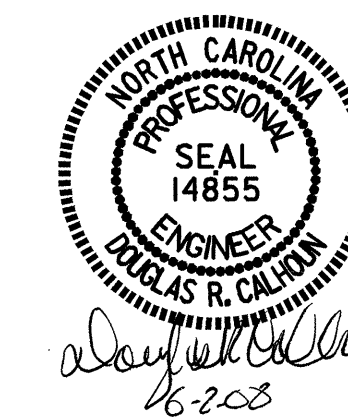
NUMBER	LENGTH	TOTAL LENGTH
1	46'-11 7/8"	46'-11 7/8"
1	47'-8 3/4"	47'-8 3/4"
1	48'-5 5/8"	48'-5 5/8"
1	49'-2 1/2"	49'-2 1/2"
4 GIRDERS		192'-4 3/4"

PROJECT NO. B-4194  
MCDOWELL COUNTY  
 STATION: 16+20.00 -L-

SHEET 2 OF 6

GIRDER DIMENSIONS								
	DIMENSION A	DIMENSION B	DIMENSION C	DIMENSION D	DIMENSION E	DIMENSION F	DIMENSION G	DIMENSION H
GIRDER 1	46'-11 7/8"	23'-5 5/8"	6 SPA. @ 2'-0"	-	7 SPA. @ 9"	6 SPA. @ 6"	4 5/16"	1'-0"
GIRDER 2	47'-8 3/4"	23'-10 3/8"	3 SPA. @ 1'-2"	10 SPA. @ 11"	11 SPA. @ 6"	9 SPA. @ 4"	3 3/8"	7"
GIRDER 3	48'-5 5/8"	24'-2 13/16"	3 SPA. @ 1'-2"	10 SPA. @ 11"	11 SPA. @ 6"	10 SPA. @ 4"	3 3/16"	7"
GIRDER 4	49'-2 1/2"	24'-7 1/4"	2 SPA. @ 1'-8"	6 SPA. @ 1'-6"	7 SPA. @ 9"	8 SPA. @ 6"	4 1/4"	10"

ASSEMBLED BY : A.K. PATEL DATE : 4/16/07  
 CHECKED BY : BNG DATE : 5/07  
 DRAWN BY : ELR 8/91 REV. 8/16/99 RWW/LES  
 CHECKED BY : GRP 8/91 REV. 10/17/00R RWW/LES  
 REV. 5/1/06 TLA/GM

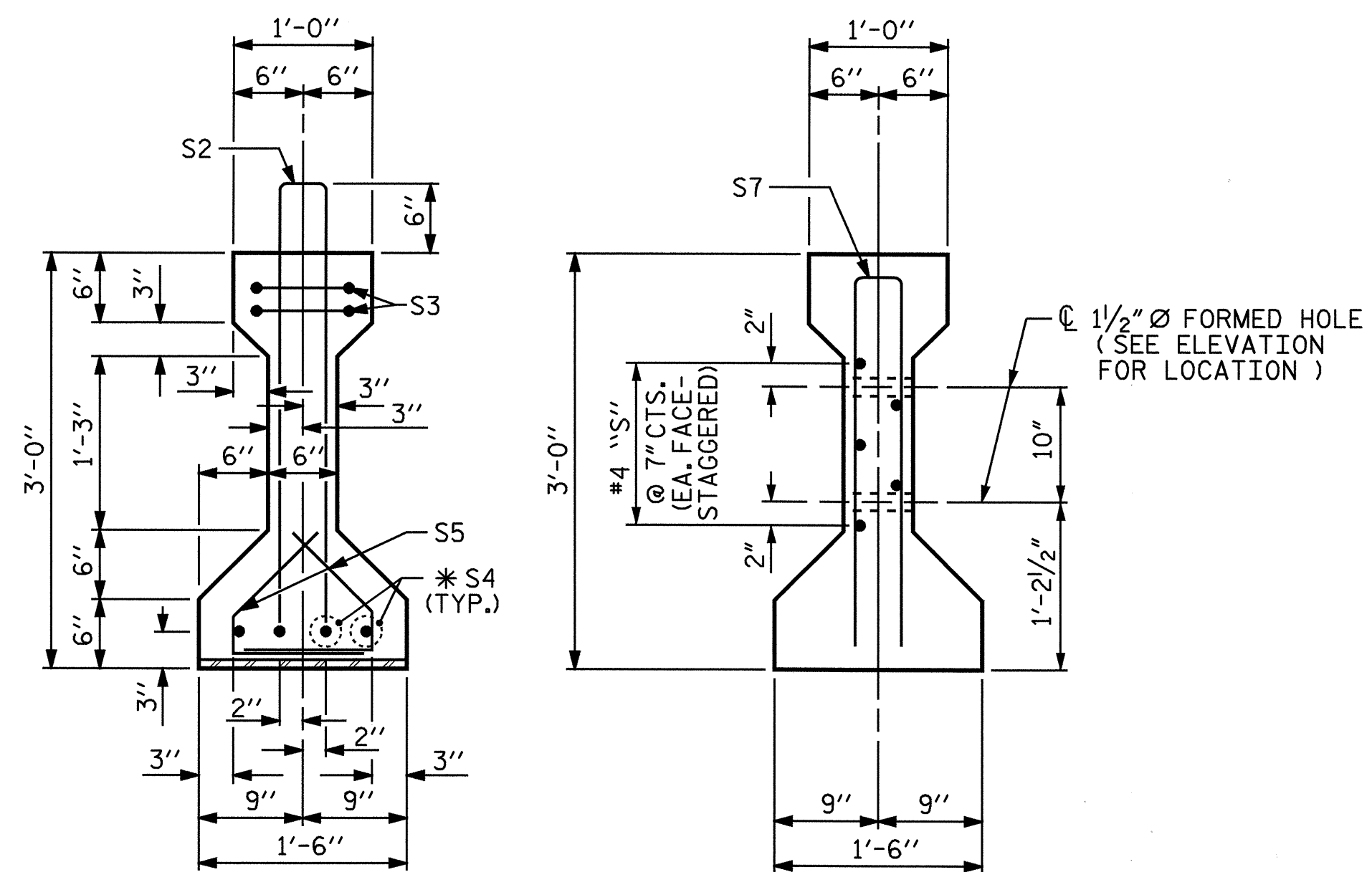


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD  
 AASHTO TYPE II  
 PRESTRESSED CONCRETE GIRDER  
 CONTINUOUS FOR LIVE LOAD  
 SPAN A

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

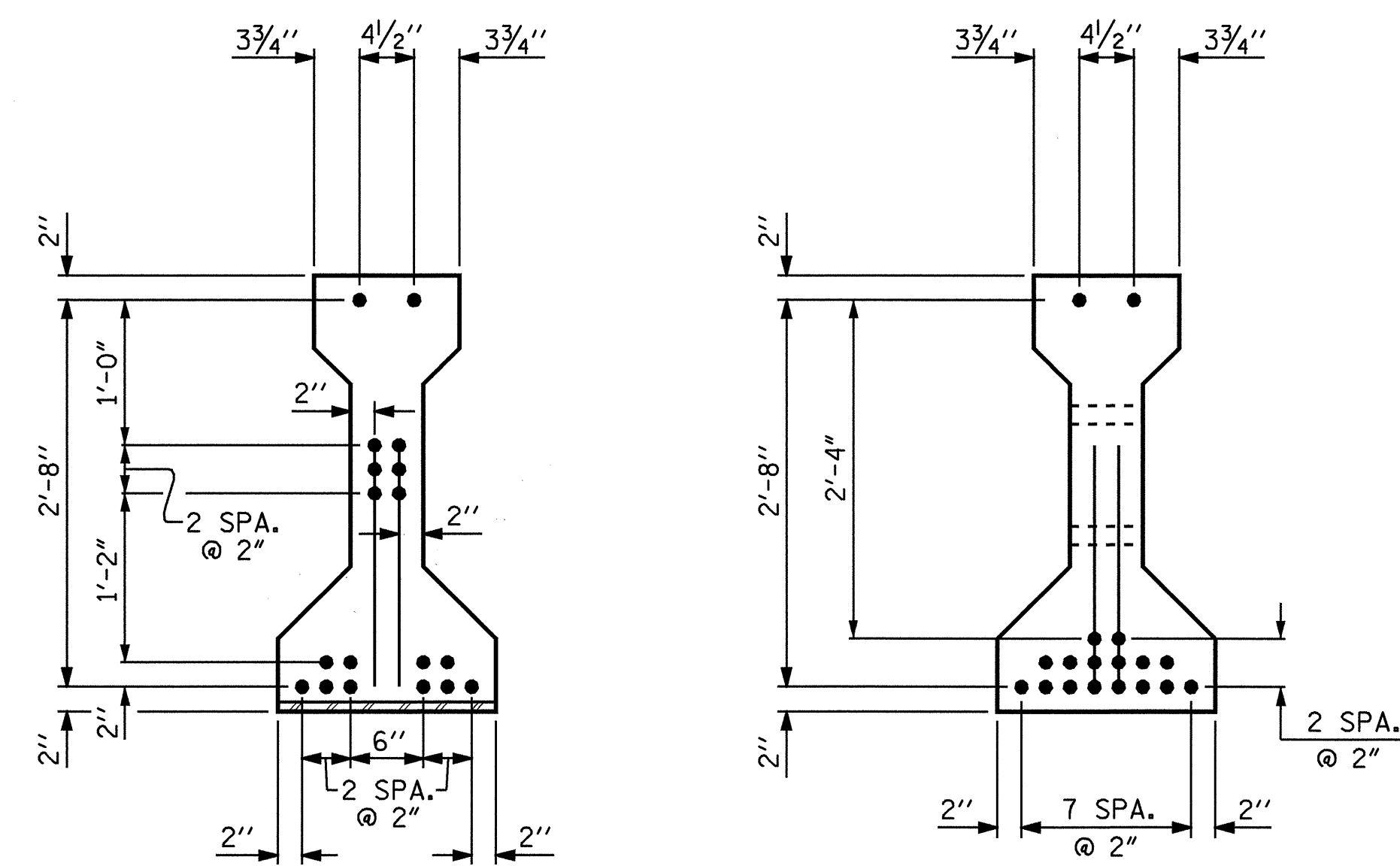
STD. NO. PCG4



SECTION B-B

SECTION C-C

(S1 BARS NOT SHOWN)



AT END OF GIRDER

AT C OF GIRDER

0.60" Ø LOW RELAXATION STRAND LAYOUT

0.60" 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

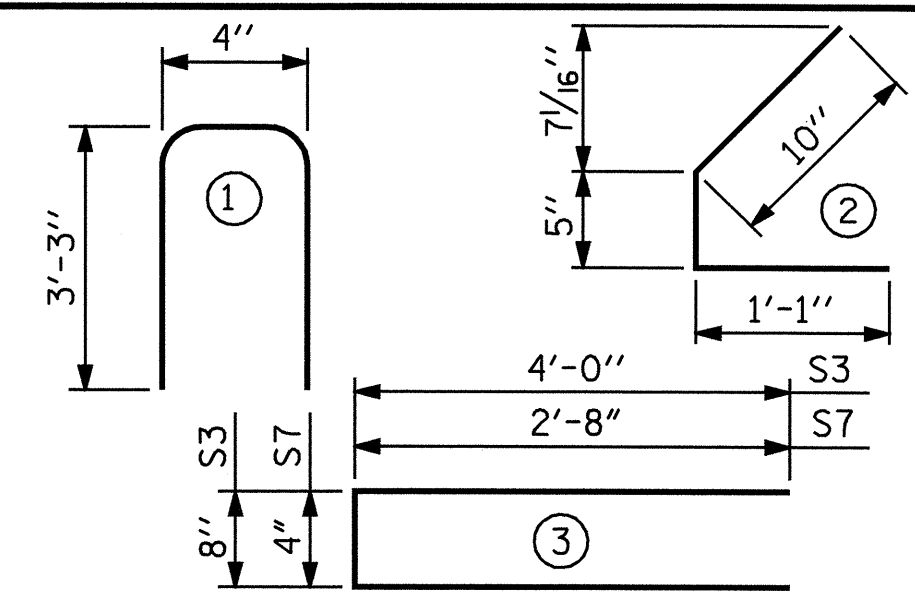
REINFORCING STEEL FOR ONE GIRDER

GDR.	BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
GDR. 1	S1	46	#4	1	6'-10"	210
GDR. 2	S1	70	#4	1	6'-10"	320
GDR. 3	S1	72	#4	1	6'-10"	329
GDR. 4	S1	50	#4	1	6'-10"	228
	S2	12	#5	1	6'-10"	86
	S3	4	#4	3	8'-8"	23
	*S4	8	#5	STR	3'-8"	31
GDR. 1	S5	64	#4	2	2'-4"	100
GDR. 2	S5	64	#4	2	2'-4"	100
GDR. 3	S5	64	#4	2	2'-4"	100
GDR. 4	S5	60	#4	2	2'-4"	94
	S7	2	#5	3	5'-8"	12
	S8	5	#4	STR	7'-0"	23

\* NOTE: S4 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT

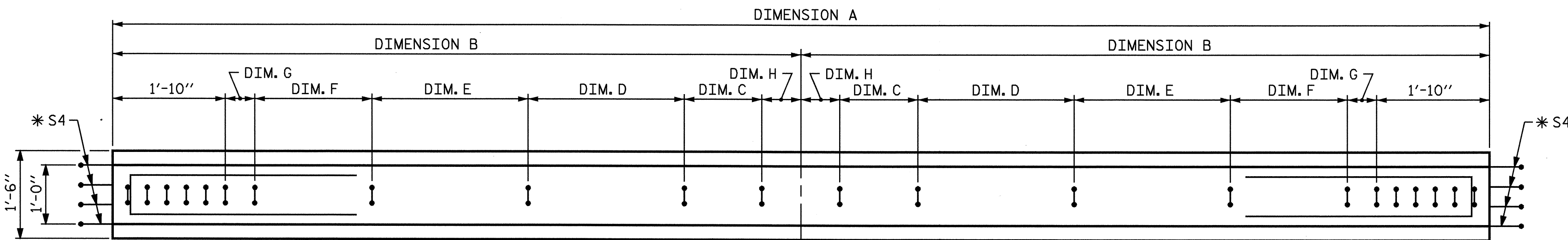


QUANTITIES FOR ONE GIRDER

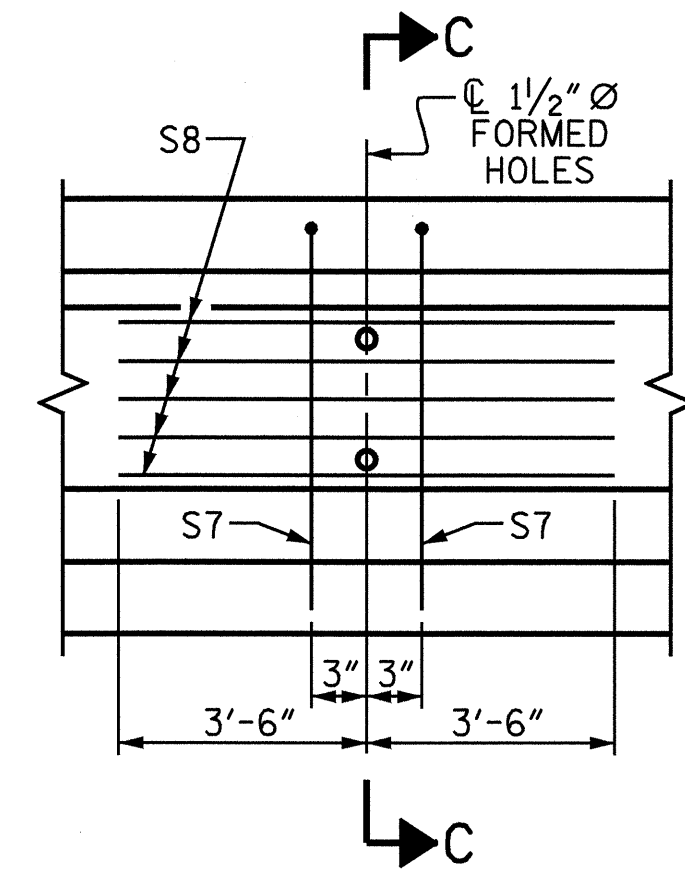
	REINFORCING STEEL	8,000 PSI CONCRETE	0.60" Ø L.R. STRANDS
	LB.	C.Y.	No.
GIRDER 1	485	4.5	18
GIRDER 2	595	4.6	18
GIRDER 3	604	4.7	18
GIRDER 4	497	4.8	18

GIRDERS REQUIRED

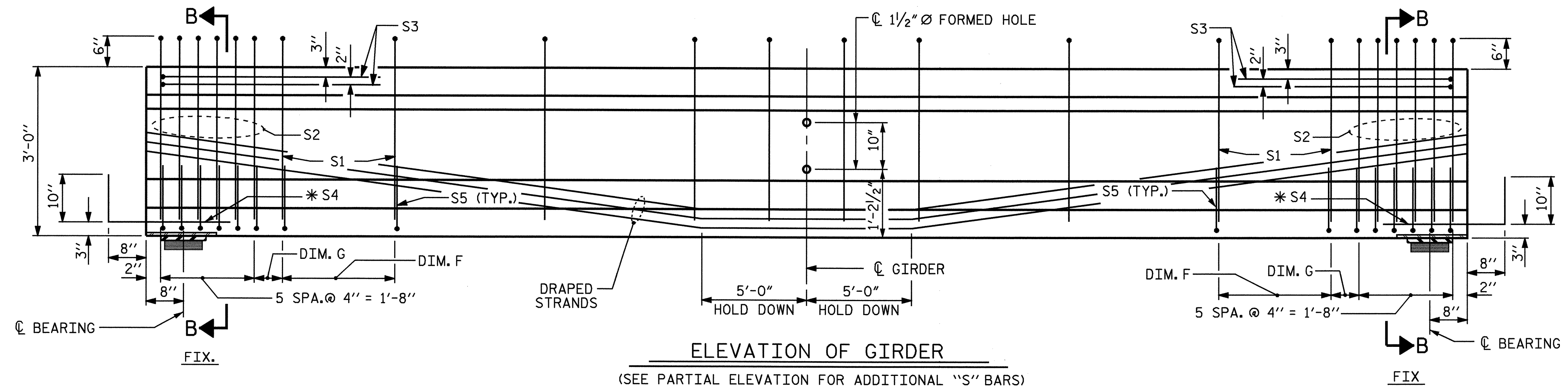
NUMBER	LENGTH	TOTAL LENGTH
1	47'-11"	47'-11"
1	48'-7 <sup>7</sup> / <sub>8</sub> "	48'-7 <sup>7</sup> / <sub>8</sub> "
1	49'-4 <sup>3</sup> / <sub>4</sub> "	49'-4 <sup>3</sup> / <sub>4</sub> "
1	50'-1 <sup>5</sup> / <sub>8</sub> "	50'-1 <sup>5</sup> / <sub>8</sub> "
4 GIRDERS		196'-1 <sup>1</sup> / <sub>4</sub> "



PLAN OF GIRDER



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



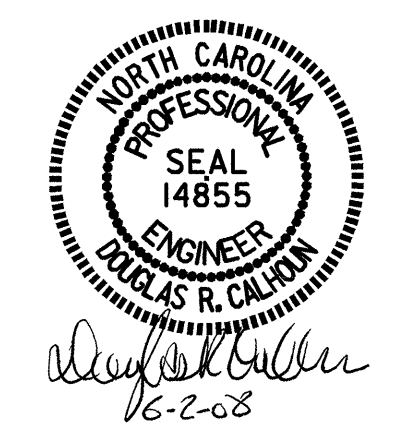
ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

GIRDER DIMENSIONS

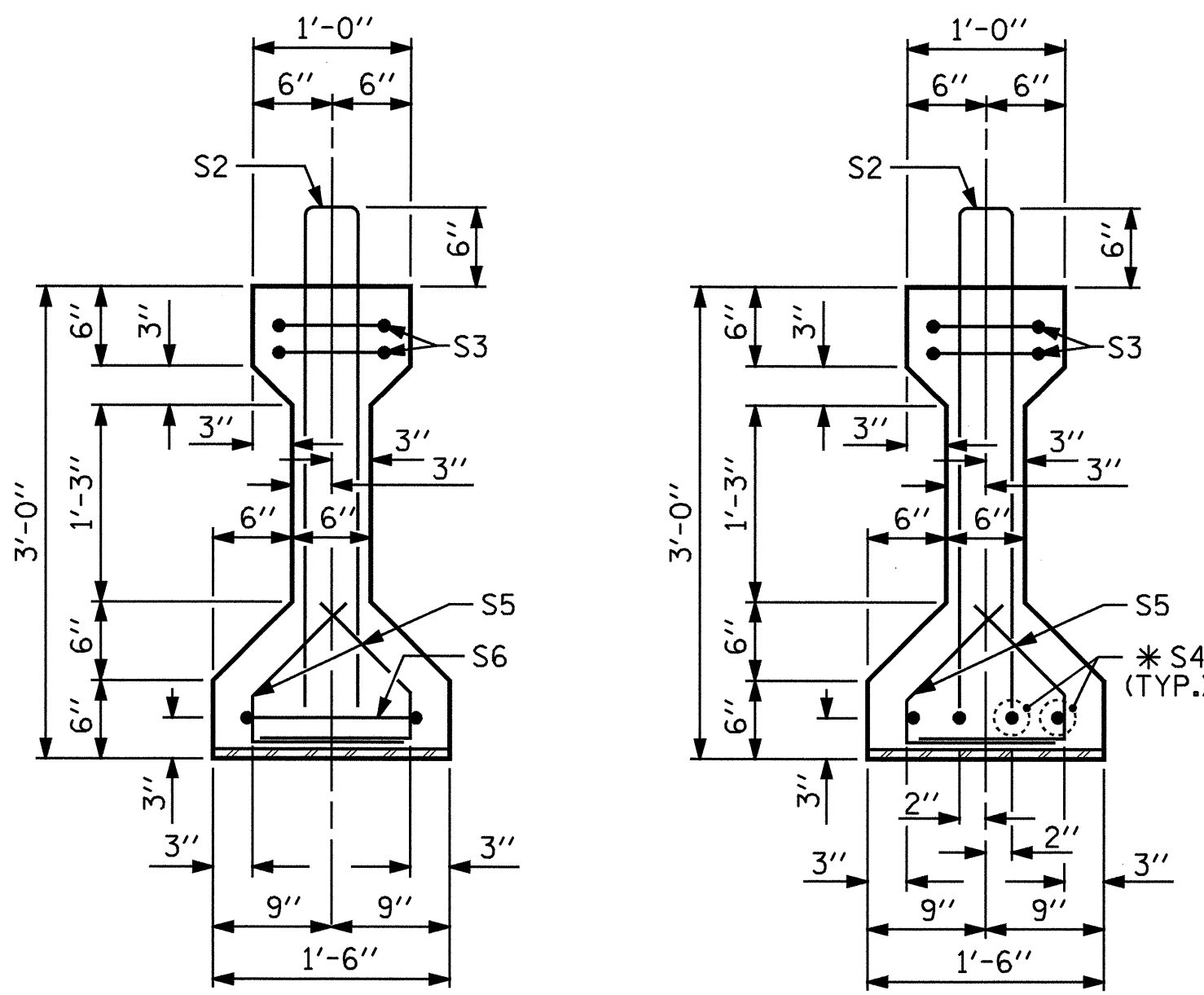
	DIMENSION A	DIMENSION B	DIMENSION C	DIMENSION D	DIMENSION E	DIMENSION F	DIMENSION G	DIMENSION H
GIRDER 1	47'-11"	23'-11 <sup>1</sup> / <sub>2</sub> "	2 SPA. @ 1'-9"	5 SPA. @ 1'-9"	6 SPA. @ 9"	9 SPA. @ 6"	4"	6 <sup>1</sup> / <sub>2</sub> "
GIRDER 2	48'-7 <sup>7</sup> / <sub>8</sub> "	24'-3 <sup>5</sup> / <sub>8</sub> "	4 SPA. @ 1'-0"	10 SPA. @ 11"	11 SPA. @ 6"	9 SPA. @ 4"	3 <sup>5</sup> / <sub>8</sub> "	6"
GIRDER 3	49'-4 <sup>3</sup> / <sub>4</sub> "	24'-8 <sup>3</sup> / <sub>8</sub> "	4 SPA. @ 1'-0"	10 SPA. @ 11"	12 SPA. @ 6"	9 SPA. @ 4"	2 <sup>3</sup> / <sub>8</sub> "	6"
GIRDER 4	50'-1 <sup>5</sup> / <sub>8</sub> "	25'-0 <sup>13</sup> / <sub>16</sub> "	2 SPA. @ 1'-6"	8 SPA. @ 1'-4"	6 SPA. @ 9"	8 SPA. @ 6"	3 <sup>13</sup> / <sub>16</sub> "	9"

ASSEMBLED BY : A.K. PATEL DATE : 4/16/07  
 CHECKED BY : BNG DATE : 5/07  
 DRAWN BY : ELR 8/91 REV. 8/16/99 RWW/LES  
 CHECKED BY : GRP 8/91 REV. 10/17/00R RWW/LES  
 REV. 5/1/06 TLA/GM

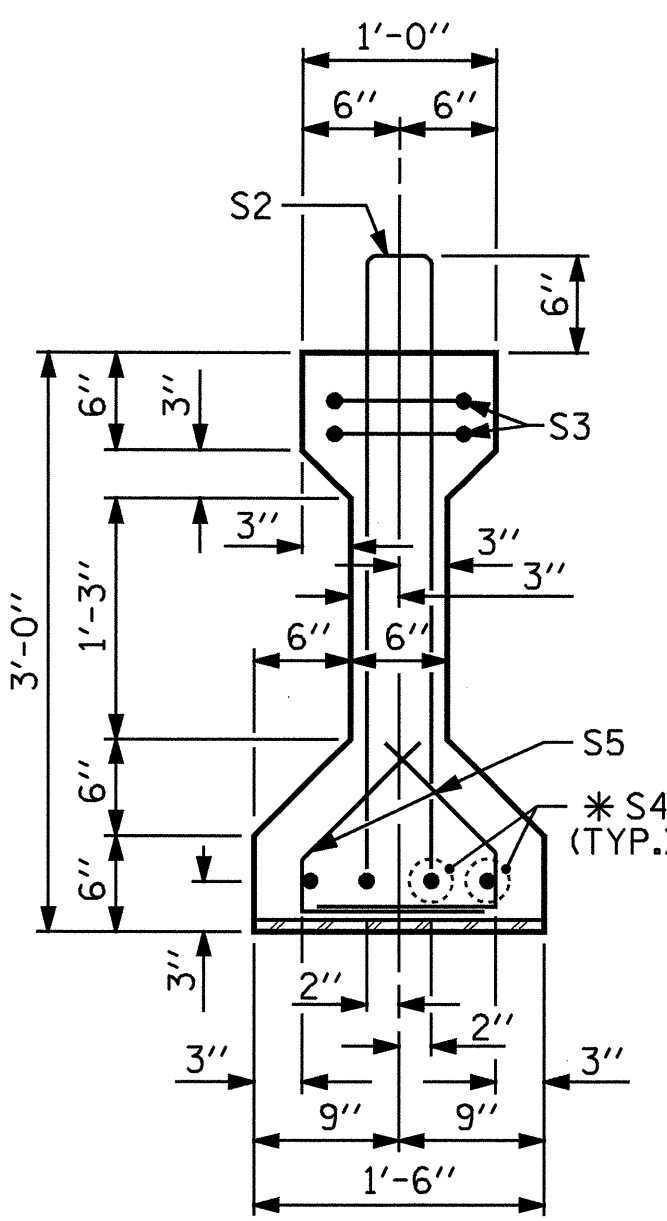


PROJECT NO. B-4194  
 McDOWELL COUNTY  
 STATION: 16+20.00 -L-

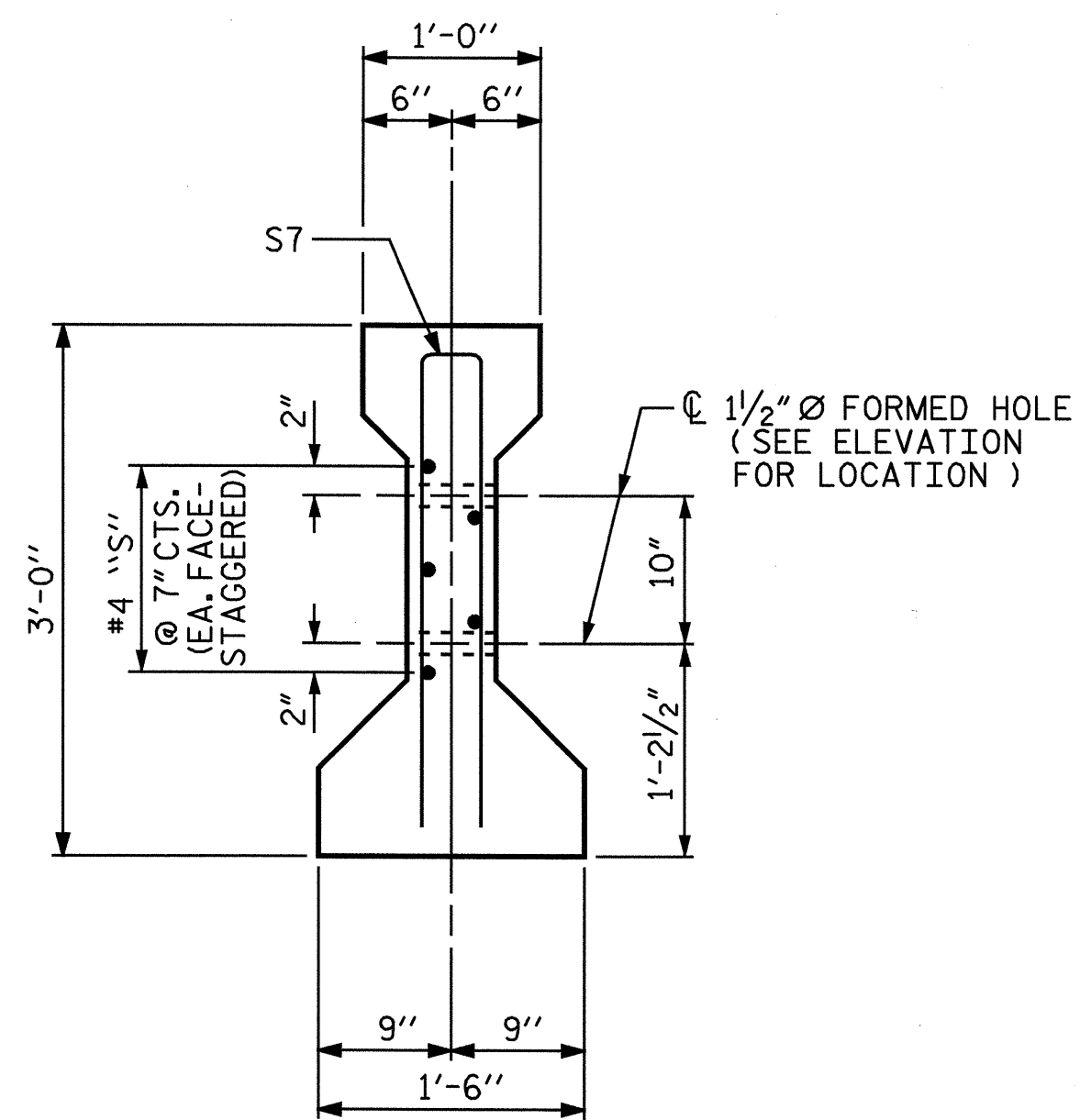
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH				STANDARD AASHTO TYPE II PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD SPAN B	
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		



SECTION A-A

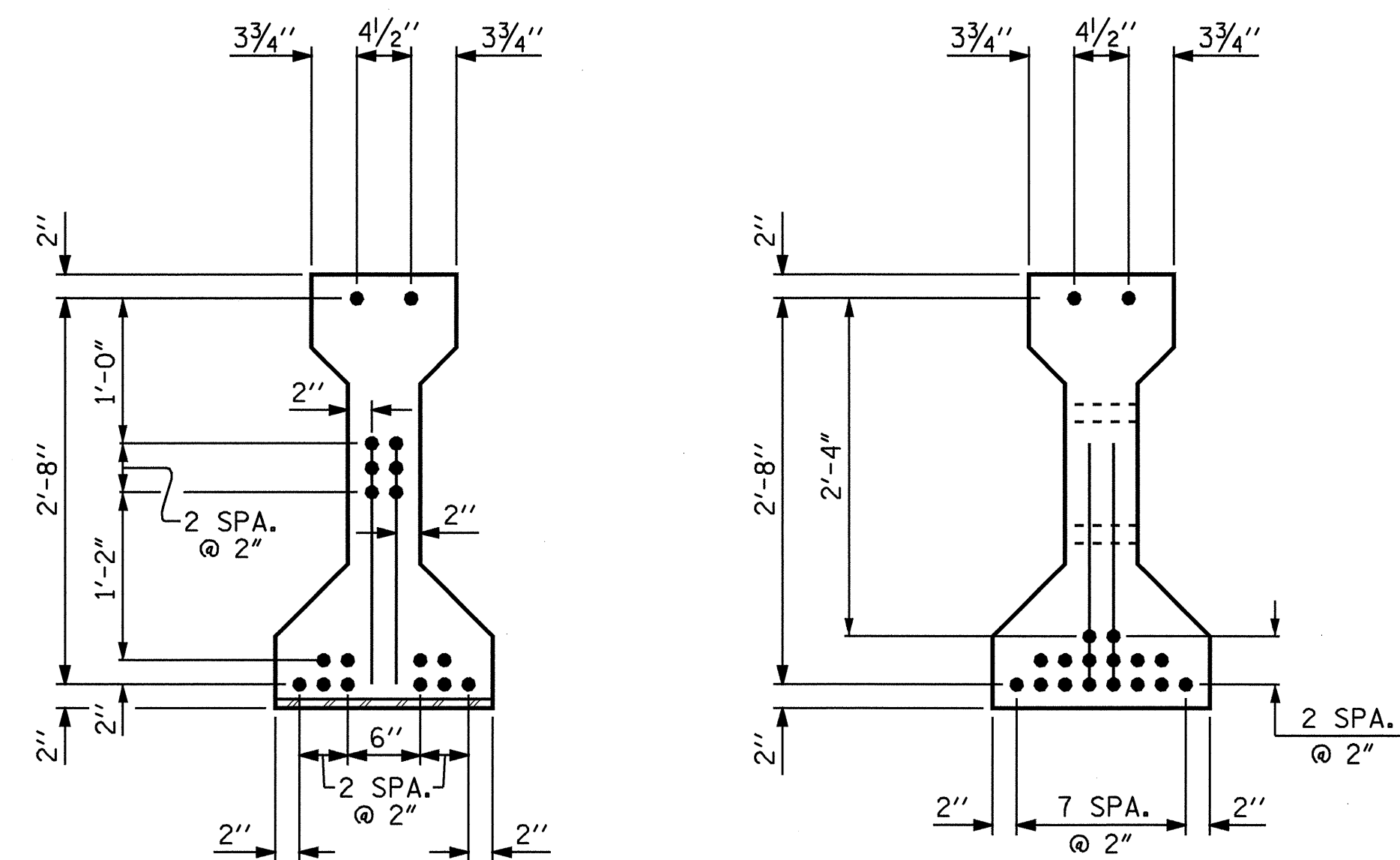


SECTION B-B



SECTION C-C

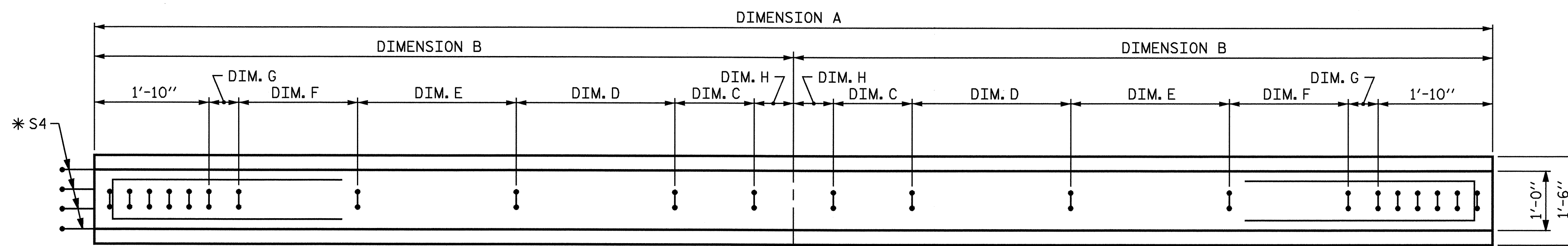
(S1 BARS NOT SHOWN)



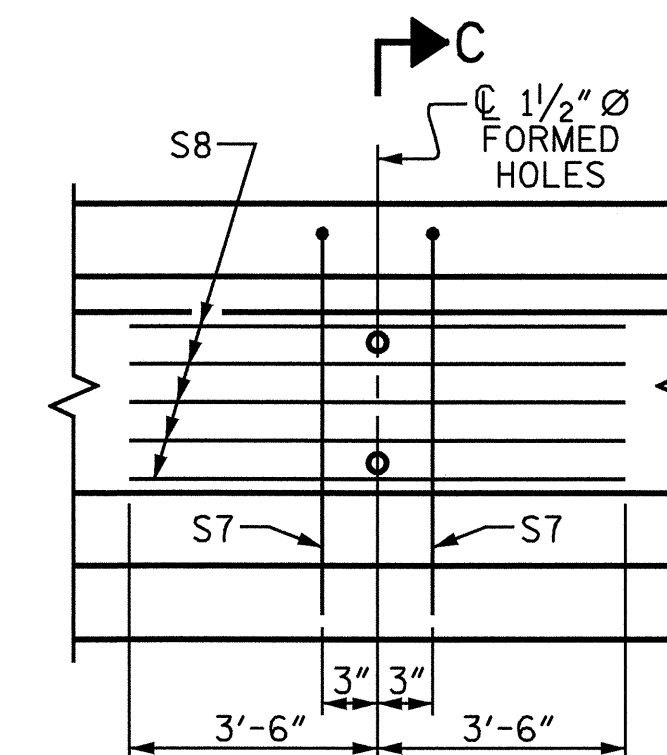
AT END OF GIRDER

AT C OF GIRDER

0.60" Ø LOW RELAXATION STRAND LAYOUT

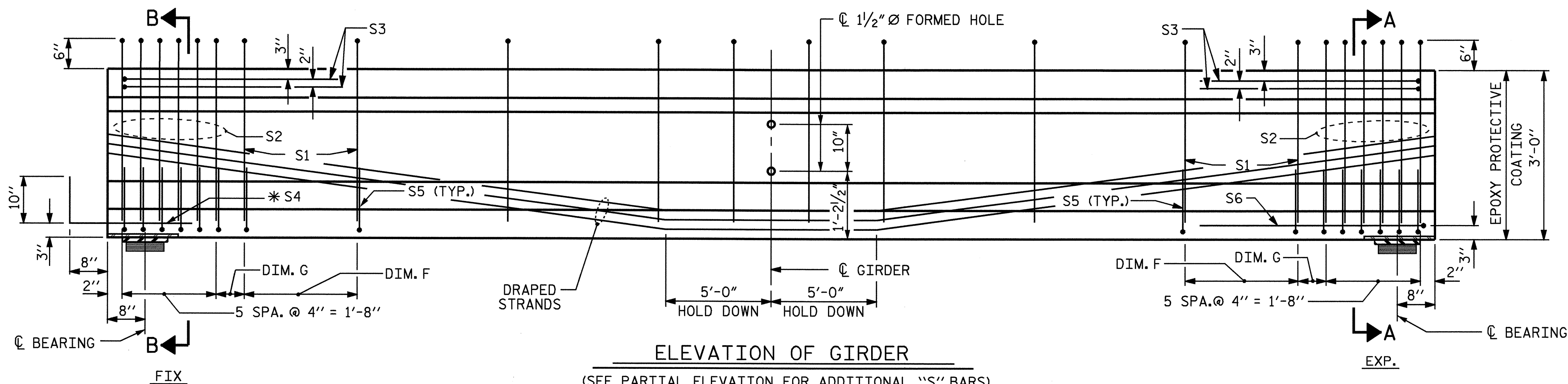


PLAN OF GIRDER



PARTIAL ELEVATION

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



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

GIRDER DIMENSIONS

	DIMENSION A	DIMENSION B	DIMENSION C	DIMENSION D	DIMENSION E	DIMENSION F	DIMENSION G	DIMENSION H
GIRDER 1	46'-11 <sup>7</sup> / <sub>8</sub> "	23'-5 <sup>5</sup> / <sub>16</sub> "	6 SPA. @ 2'-0"	-	7 SPA. @ 9"	6 SPA. @ 6"	4 <sup>15</sup> / <sub>16</sub> "	1'-0"
GIRDER 2	47'-8 <sup>3</sup> / <sub>4</sub> "	23'-10 <sup>3</sup> / <sub>8</sub> "	3 SPA. @ 1'-2"	10 SPA. @ 11"	11 SPA. @ 6"	9 SPA. @ 4"	3 <sup>3</sup> / <sub>8</sub> "	7"
GIRDER 3	48'-5 <sup>5</sup> / <sub>8</sub> "	24'-2 <sup>3</sup> / <sub>16</sub> "	3 SPA. @ 1'-2"	10 SPA. @ 11"	11 SPA. @ 6"	10 SPA. @ 4"	3 <sup>13</sup> / <sub>16</sub> "	7"
GIRDER 4	49'-2 <sup>1</sup> / <sub>2</sub> "	24'-7 <sup>1</sup> / <sub>4</sub> "	2 SPA. @ 1'-8"	6 SPA. @ 1'-6"	7 SPA. @ 9"	8 SPA. @ 6"	4 <sup>1</sup> / <sub>4</sub> "	10"

0.60" 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

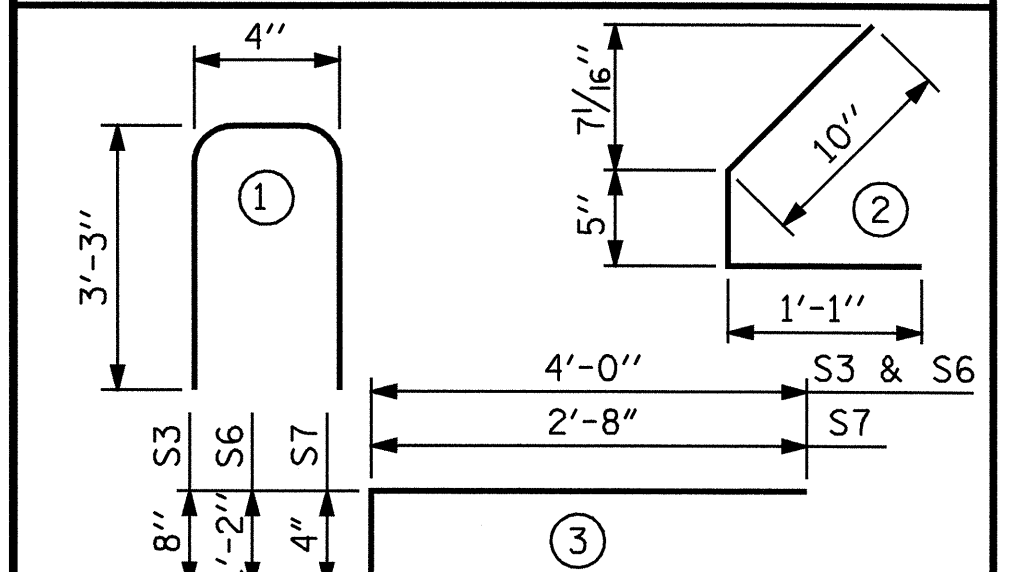
REINFORCING STEEL FOR ONE GIRDER

GDR.	BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
GDR. 1	S1	40	#4	1	6'-10"	183
	S2	12	#5	1	6'-10"	86
	S3	4	#4	3	8'-8"	23
	*S4	4	#5	STR	3'-8"	15
GDR. 2	S5	52	#4	2	2'-4"	81
	S6	64	#4	2	2'-4"	100
GDR. 3	S5	68	#4	2	2'-4"	106
	S6	60	#4	2	2'-4"	94
GDR. 4	S7	1	#4	3	9'-2"	6
	S8	2	#5	3	5'-8"	12
	S8	5	#4	STR	7'-0"	23

\* NOTE: S4 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL		8,000 PSI CONCRETE		0.60" Ø L.R. STRANDS	
	LB.	C.Y.			No.	
GIRDER 1	429	4.5			18	
GIRDER 2	575	4.5			18	
GIRDER 3	591	4.6			18	
GIRDER 4	478	4.7			18	

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
1	46'-11 <sup>7</sup> / <sub>8</sub> "	46'-11 <sup>7</sup> / <sub>8</sub> "
1	47'-8 <sup>3</sup> / <sub>4</sub> "	47'-8 <sup>3</sup> / <sub>4</sub> "
1	48'-5 <sup>5</sup> / <sub>8</sub> "	48'-5 <sup>5</sup> / <sub>8</sub> "
1	49'-2 <sup>1</sup> / <sub>2</sub> "	49'-2 <sup>1</sup> / <sub>2</sub> "
4 GIRDERS		192'-4 <sup>3</sup> / <sub>4</sub> "

PROJECT NO. B-4194  
 McDOWELL COUNTY  
 STATION: 16+20.00 -L-

SHEET 4 OF 6

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD  
 AASHTO TYPE II  
 PRESTRESSED CONCRETE GIRDER  
 CONTINUOUS FOR LIVE LOAD  
 SPAN C

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

TOTAL SHEETS: 35



ASSEMBLED BY: A.K. PATEL DATE: 4/16/07  
 CHECKED BY: BNG DATE: 5/07  
 DRAWN BY: ELR 8/91 REV. 8/16/99 RWW/LES  
 CHECKED BY: GRP 8/91 REV. 10/17/00R RWW/LES  
 REV. 5/1/06 TLA/GM

DEAD LOAD DEFLECTION TABLE FOR SPAN A & C																																		
0.6" Ø LOW RELAXATION	GIRDERS A1 & C1											GIRDERS A2 & C2									GIRDERS A3 & C3													
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	0.047	0.089	0.122	0.143	0.150	0.143	0.122	0.089	0.047	0.000	0.000	0.048	0.091	0.125	0.147	0.154	0.147	0.125	0.091	0.048	0.000	0.000	0.049	0.094	0.128	0.150	0.158	0.150	0.128	0.094	0.049	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.013	0.025	0.034	0.039	0.041	0.039	0.034	0.025	0.013	0.000	0.000	0.016	0.030	0.041	0.048	0.051	0.048	0.041	0.030	0.016	0.000	0.000	0.017	0.032	0.044	0.051	0.054	0.051	0.044	0.032	0.017	0.000
FINAL CAMBER	↑	0	7/16"	3/4"	1/16"	1/4"	15/16"	1/4"	1/16"	3/4"	7/16"	0	0	3/8"	3/4"	1"	13/16"	1/4"	13/16"	1"	3/4"	3/8"	0	0	3/8"	3/4"	1"	13/16"	1/4"	13/16"	1"	3/4"	3/8"	0

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

DEAD LOAD DEFLECTION TABLE FOR SPAN A & C												
0.6" Ø LOW RELAXATION	GIRDERS A4 & C4											
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	
CAMBER ( GIRDER ALONE IN PLACE )	↑	0.000	0.051	0.096	0.131	0.154	0.161	0.154	0.131	0.096	0.051	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.015	0.029	0.039	0.046	0.048	0.046	0.039	0.029	0.015	0.000
FINAL CAMBER	↑	0	7/16"	13/16"	1/8"	15/16"	13/8"	15/16"	1/8"	13/16"	7/16"	0

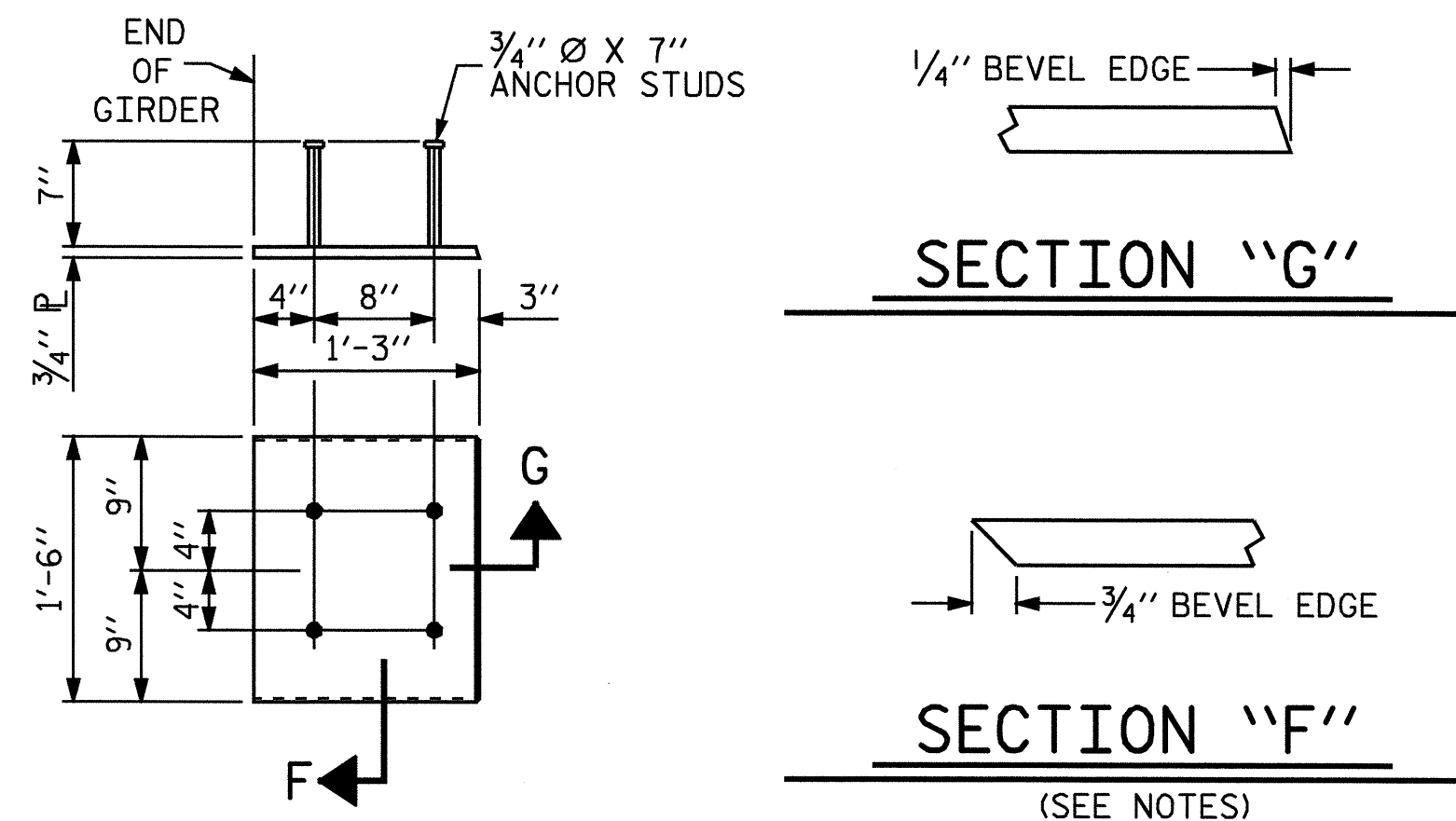
\* INCLUDES FUTURE WEARING SURFACE  
ALL VALUES ARE SHOWN IN FEET ( DECIMAL FORM ), EXCEPT " FINAL CAMBER ", WHICH IS GIVEN IN INCHES ( FRACTION FORM ).

DEAD LOAD DEFLECTION TABLE FOR SPAN B												
0.6" Ø LOW RELAXATION	GIRDER B4											
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	
CAMBER ( GIRDER ALONE IN PLACE )	↑	0.000	0.052	0.098	0.135	0.158	0.166	0.158	0.135	0.098	0.052	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.016	0.031	0.042	0.049	0.052	0.049	0.042	0.031	0.016	0.000
FINAL CAMBER	↑	0	7/16"	13/16"	1/8"	15/16"	13/8"	15/16"	1/8"	13/16"	7/16"	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 SPAN B																																		
0.6" Ø LOW RELAXATION	GIRDER B1											GIRDER B2									GIRDER B3													
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	0.049	0.092	0.126	0.148	0.155	0.148	0.126	0.092	0.049	0.000	0.000	0.050	0.094	0.129	0.151	0.159	0.151	0.129	0.094	0.050	0.000	0.000	0.051	0.096	0.132	0.154	0.162	0.154	0.132	0.096	0.051	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.014	0.027	0.036	0.043	0.045	0.043	0.036	0.027	0.014	0.000	0.000	0.017	0.033	0.045	0.052	0.055	0.052	0.045	0.033	0.017	0.000	0.000	0.018	0.035	0.047	0.056	0.058	0.056	0.047	0.035	0.018	0.000
FINAL CAMBER	↑	0	7/16"	3/4"	1/16"	1/4"	15/16"	1/4"	1/16"	3/4"	7/16"	0	0	3/8"	3/4"	1"	13/16"	1/4"	13/16"	1"	3/4"	3/8"	0	0	3/8"	3/4"	1"	13/16"	1/4"	13/16"	1"	3/4"	3/8"	0

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



EMBEDDED PLATE "B-1" DETAILS  
FOR AASHTO TYPE II GIRDER  
(2 REQ'D PER GIRDER)

### NOTES

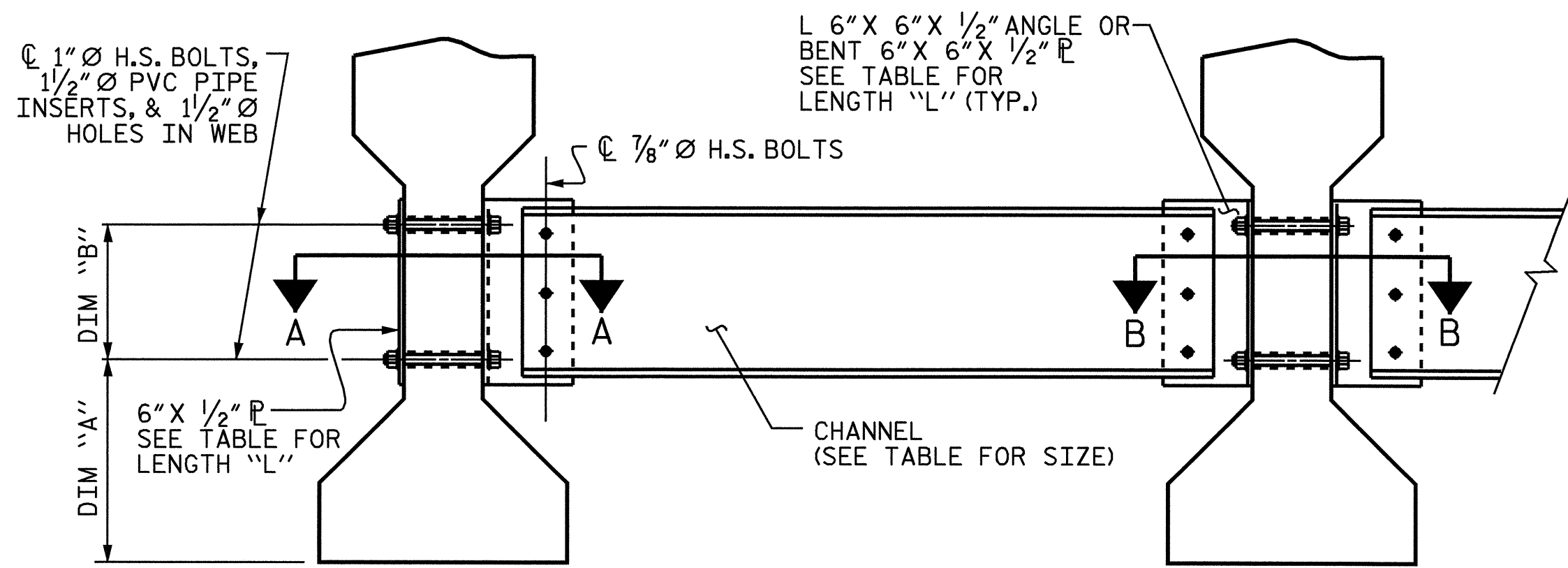
- ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- ALL REINFORCING STEEL SHALL BE GRADE 60.
- APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES 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 FOR ALL SPANS.
- DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.
- THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".
- WHEN DRAPED STRANDS ARE DETAILED, THE LONGITUDINAL LOCATION OF THE HOLD DOWN DEVICES SHALL BE WITHIN 6" OF THE LOCATION SHOWN AND THE CENTER OF GRAVITY OF THE GROUP OF DRAPED STRANDS SHALL BE LOCATED WITHIN 1/2" OF THE THEORETICAL LOCATION SHOWN.
- FOR CRACK REPAIR OF PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.
- FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

PROJECT NO. B-4194  
McDOWELL COUNTY  
STATION: 16+20.00 -L-

SHEET 5 OF 6

STATE OF NORTH CAROLINA				DEPARTMENT OF TRANSPORTATION				RALEIGH			
STANDARD											
PRESTRESSED CONCRETE GIRDER											
CONTINUOUS FOR LIVE LOAD											
DETAILS AND											
DEAD LOAD DEFLECTION TABLES											
REVISIONS											
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.					
1			3			S-14					
2			4			TOTAL SHEETS 35					

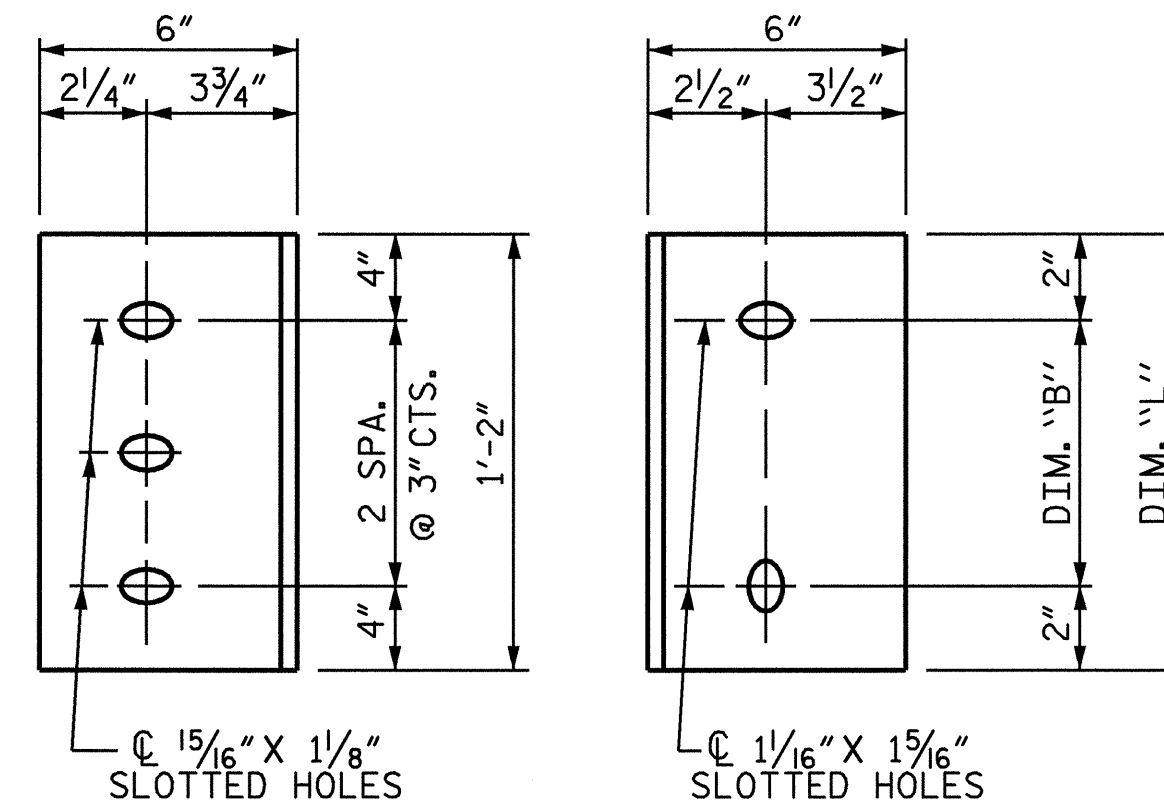
ASSEMBLED BY : A. K. PATEL DATE : 4/17/07  
CHECKED BY : BNG DATE : 5/07  
DRAWN BY : ELR 11/91 REV. 10/17/00 RWW/LES  
CHECKED BY : GRP 11/91 REV. 7/10/01RR LES/RDR  
REV. 5/1/06 TLA/GM



EXTERIOR GIRDER INTERIOR GIRDER  
PART SECTION AT INTERMEDIATE DIAPHRAGM  
(TYPE II GIRDER SHOWN)

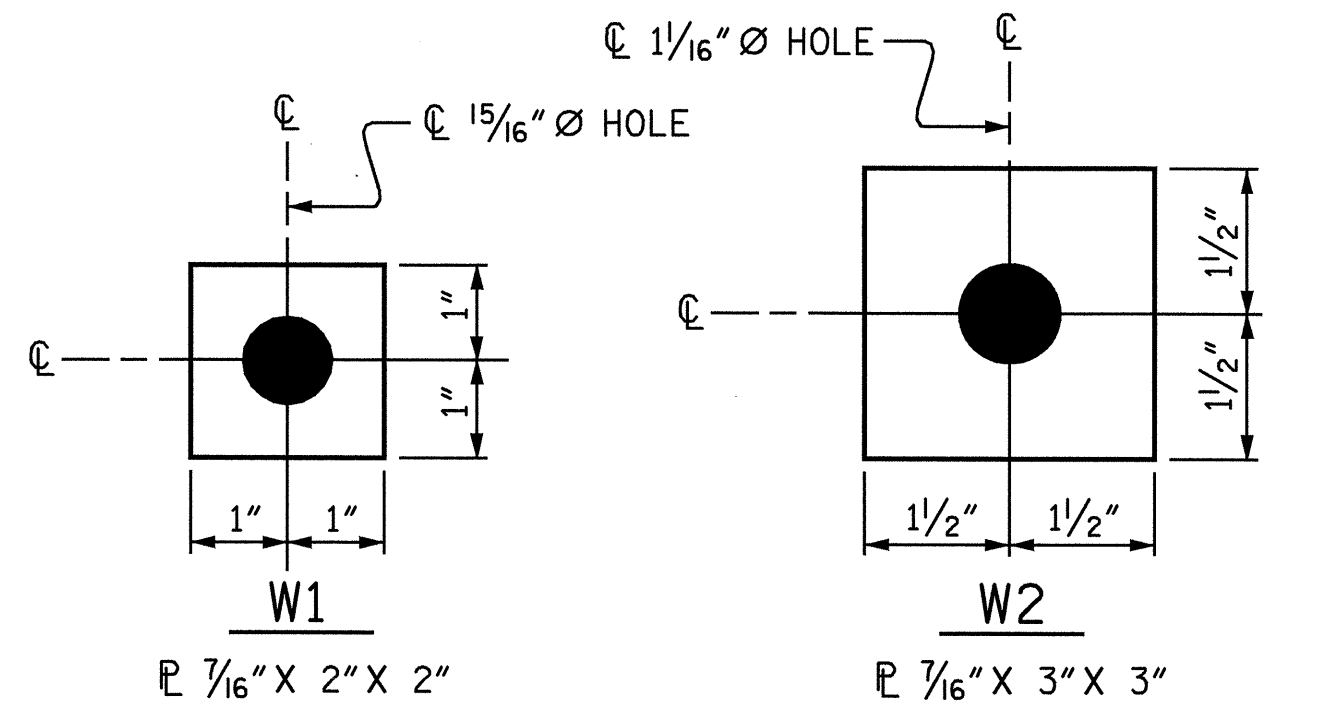
**TABLE**

GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
II	MC 12 x 31	1'-2 1/2"	10"	1'-2"



DIAPHRAGM FACE WEB FACE  
(TYPE II GDR.)

**CONNECTOR PLATE DETAILS**



USE WITH 7/8" Ø HVY. HEX NUTS & DIRECT TENSION INDICATOR WASHERS AT DIAPHRAGM CHANNEL TO CONNECTOR PLATE CONNECTIONS  
USE WITH 1" Ø HVY. HEX NUTS & DIRECT TENSION INDICATOR WASHERS AT CONNECTOR PLATE TO GIRDER CONNECTIONS

**WASHER DETAILS**

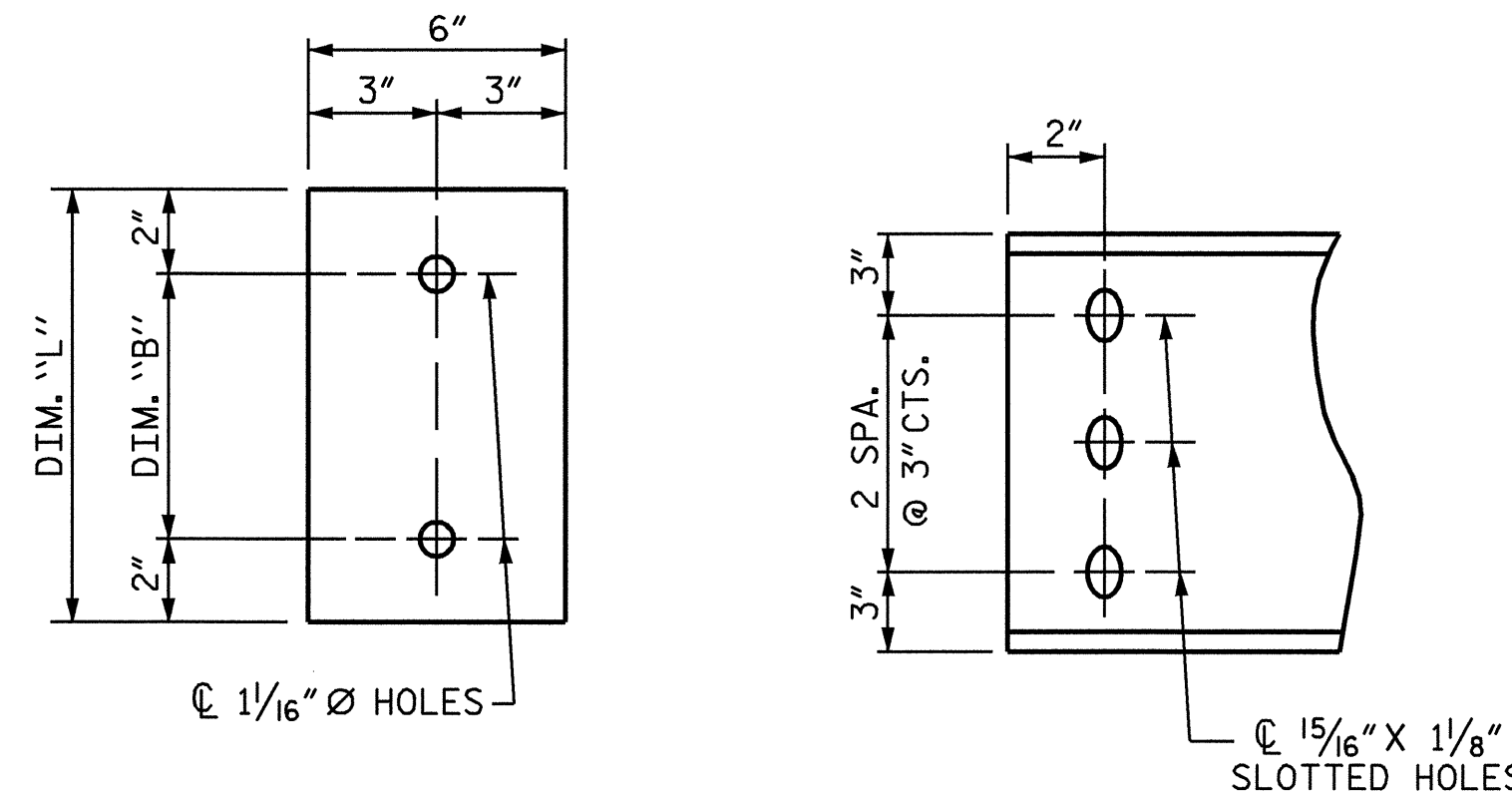
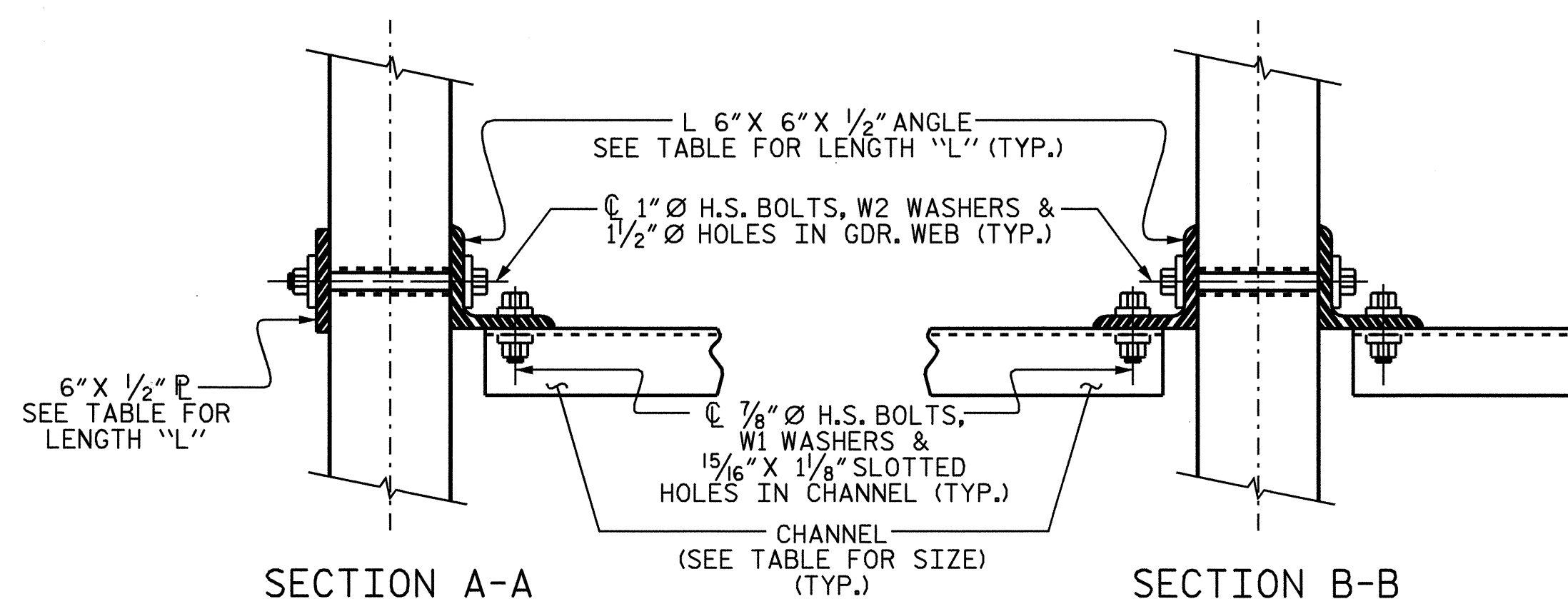


PLATE DETAILS CHANNEL END  
(TYPE II GDR.)



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

**STRUCTURAL STEEL NOTES**

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

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

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

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

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

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

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

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

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

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

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

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

PROJECT NO. B-4194  
McDOWELL COUNTY  
STATION: 16+20.00 -L-

SHEET 6 OF 6

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

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



ASSEMBLED BY : A.K. PATEL DATE : 4/16/07  
CHECKED BY : BNG DATE : 5/07  
DRAWN BY : TLA 6/05  
CHECKED BY : VC 6/05  
ADDED 10/21/05  
REV. 5/1/06R KMM/GM



**NOTES**

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

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

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

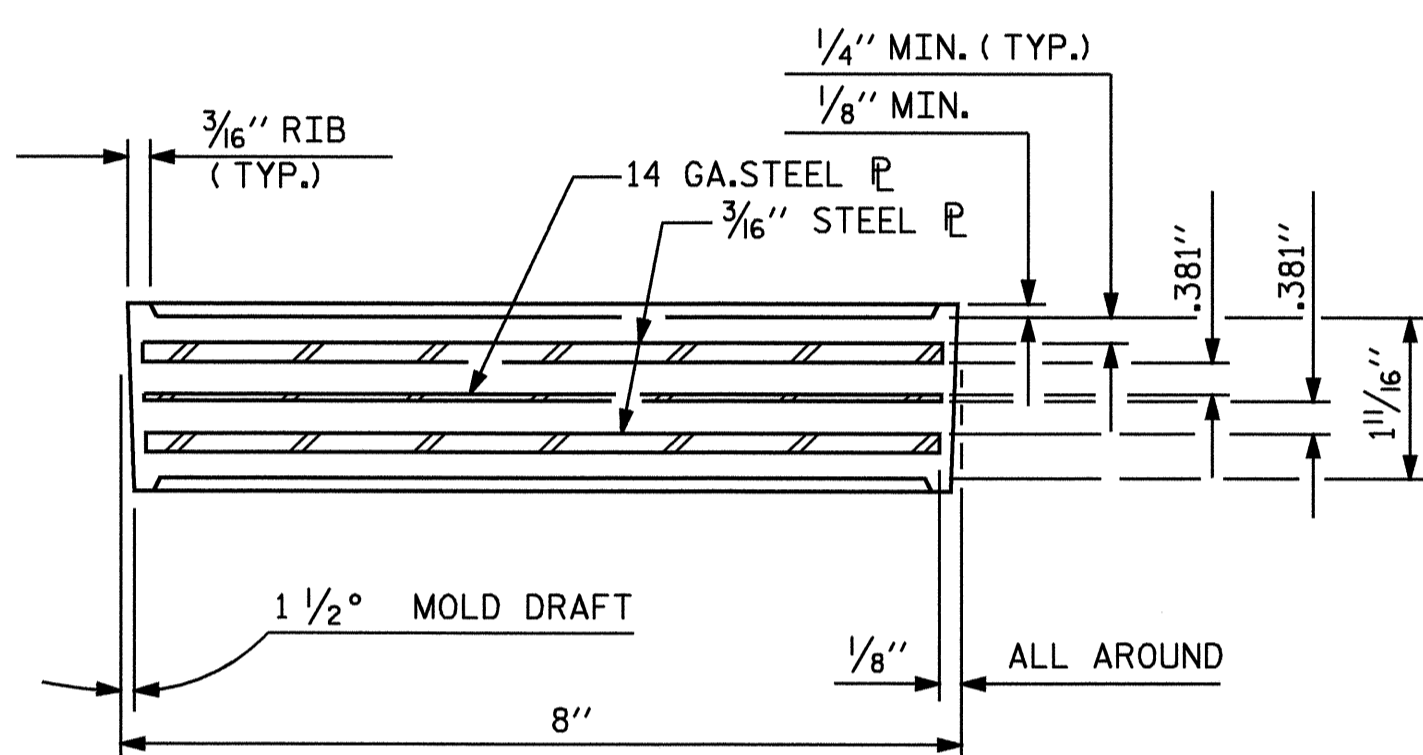
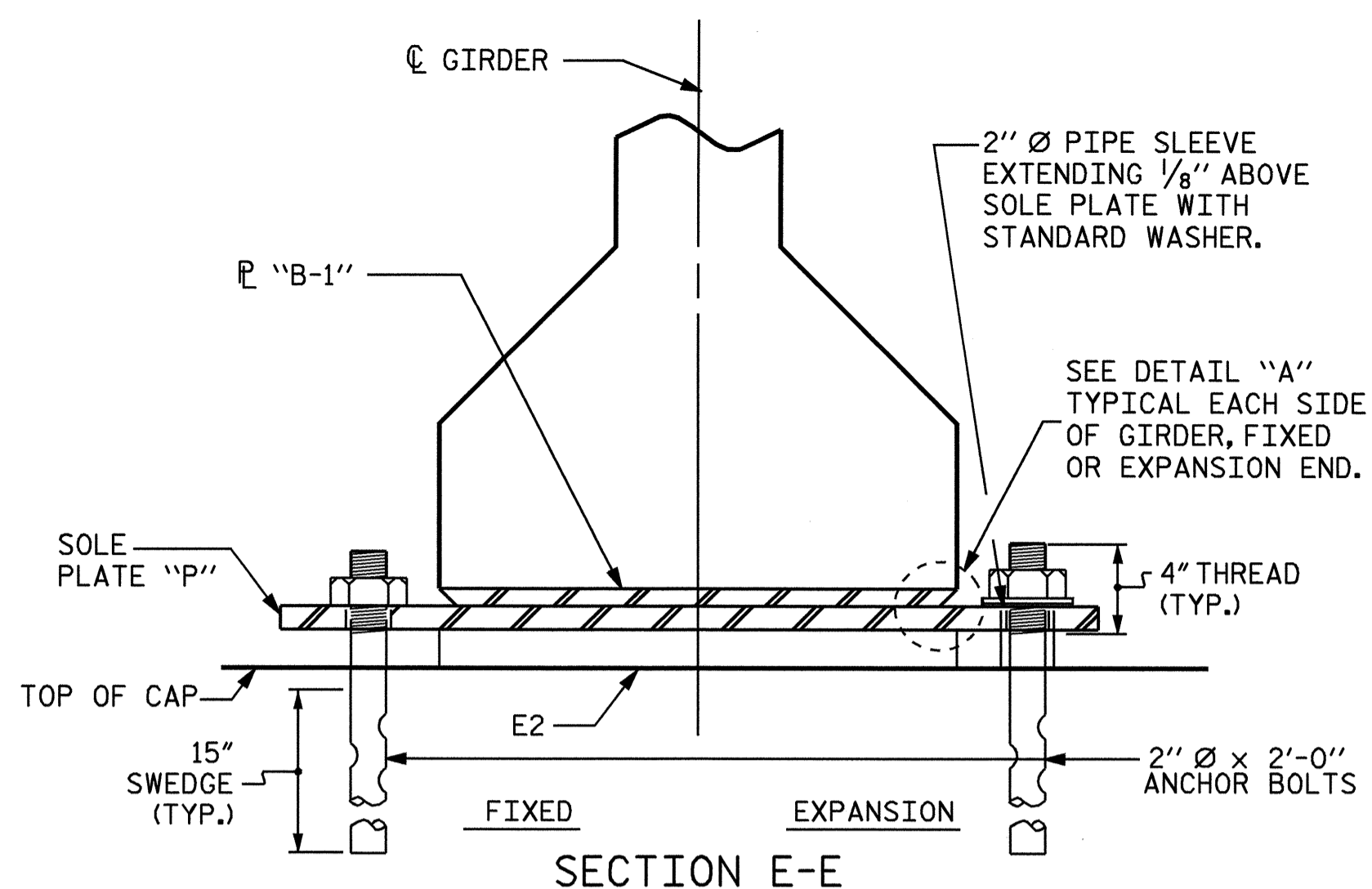
PRIOR TO WELDING, GRIND THE GALVANIZED SURFACE OF THE PORTION OF THE EMBEDDED PLATE AND SOLE PLATE THAT ARE TO BE WELDED. AFTER WELDING, DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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

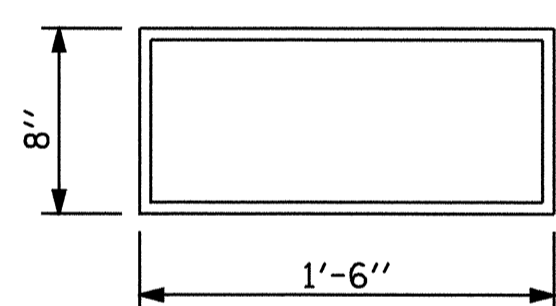
SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

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

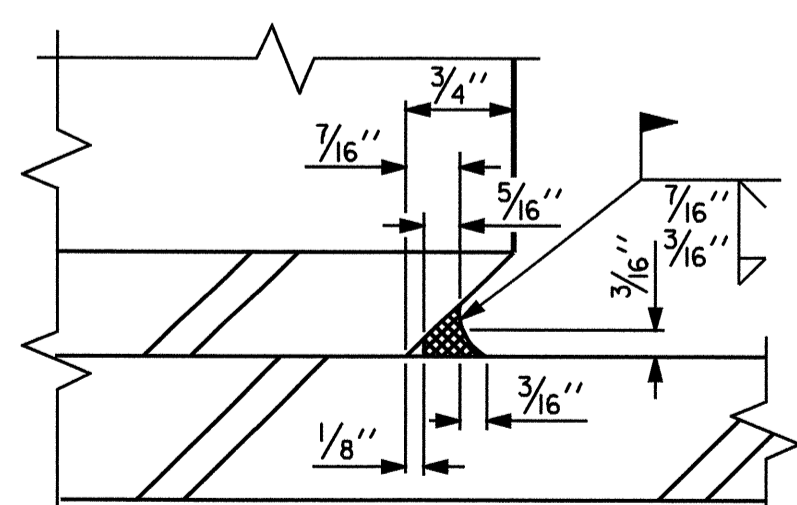
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.



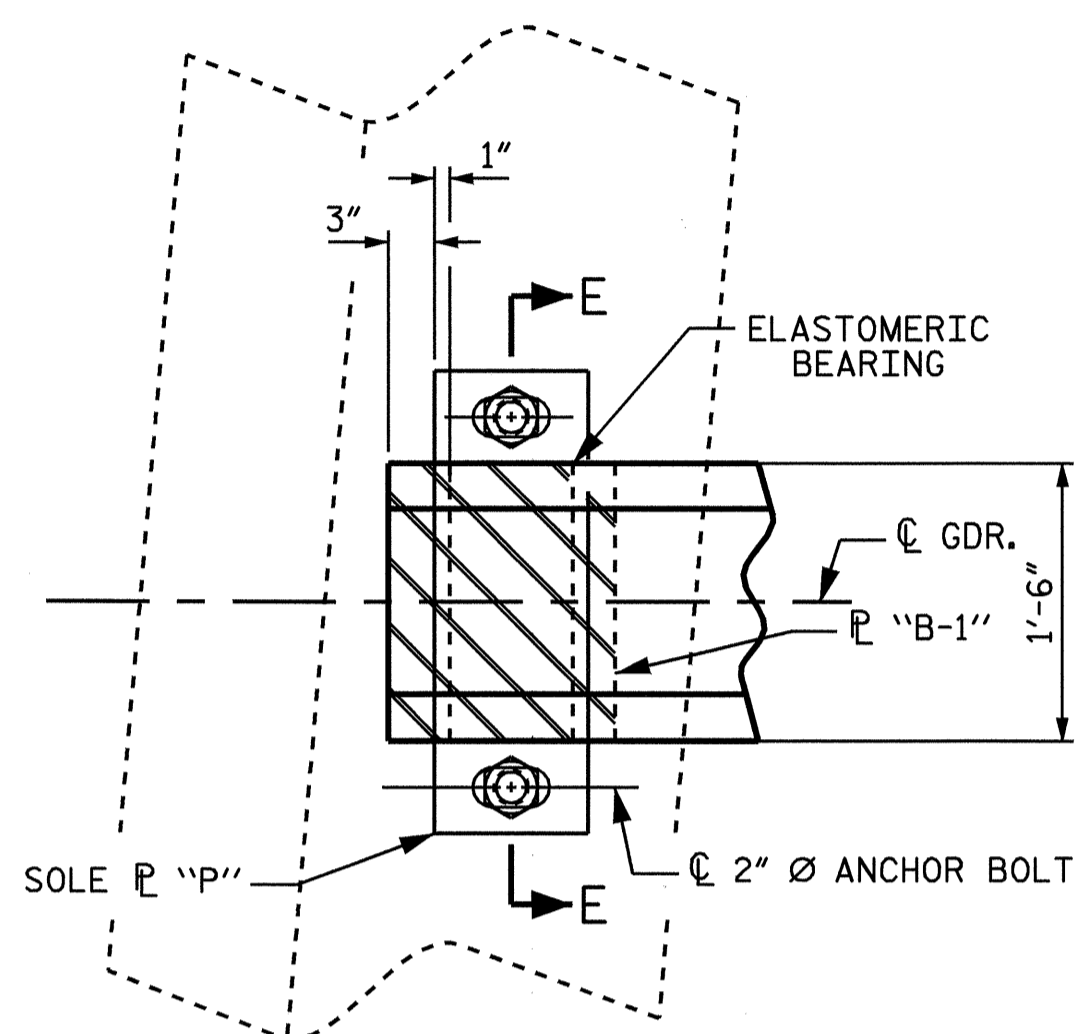
TYPICAL SECTION OF ELASTOMERIC BEARINGS



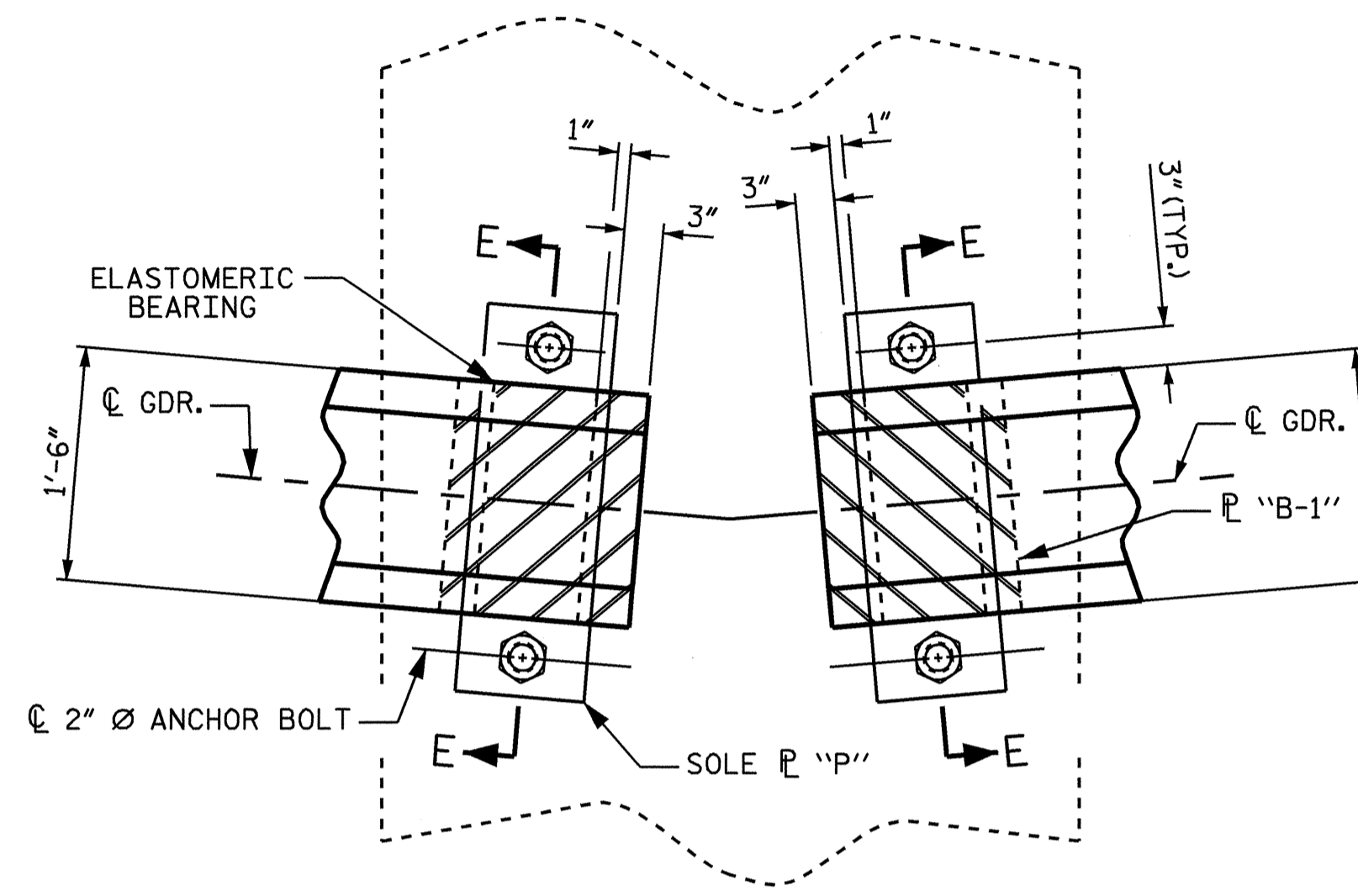
E2 (24 REQ'D)  
PLAN VIEW OF ELASTOMERIC BEARING  
TYPE III



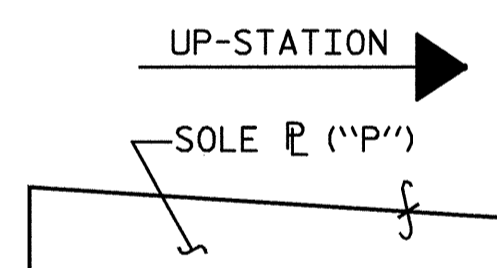
DETAIL "A"



TYPICAL PLAN @ END BENT

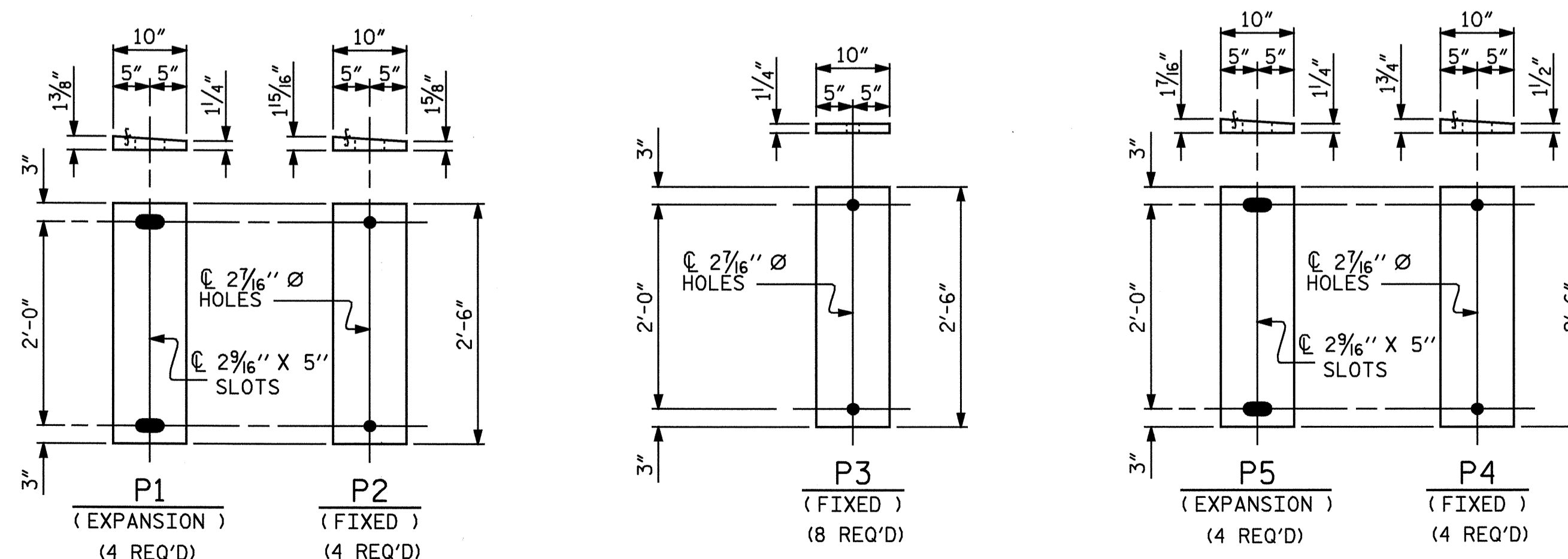


TYPICAL PLAN @ BENT  
(SHOWING CONTINUOUS BENT)



SOLE "P" PLACEMENT DETAIL

— LOAD RATINGS —	
	MAX.D.L.+L.L.
TYPE III	115 K



SOLE PLATE DETAILS ("P")

(SEE "SUPERSTRUCTURE FRAMING PLAN" FOR LOCATION OF SOLE PLATES)



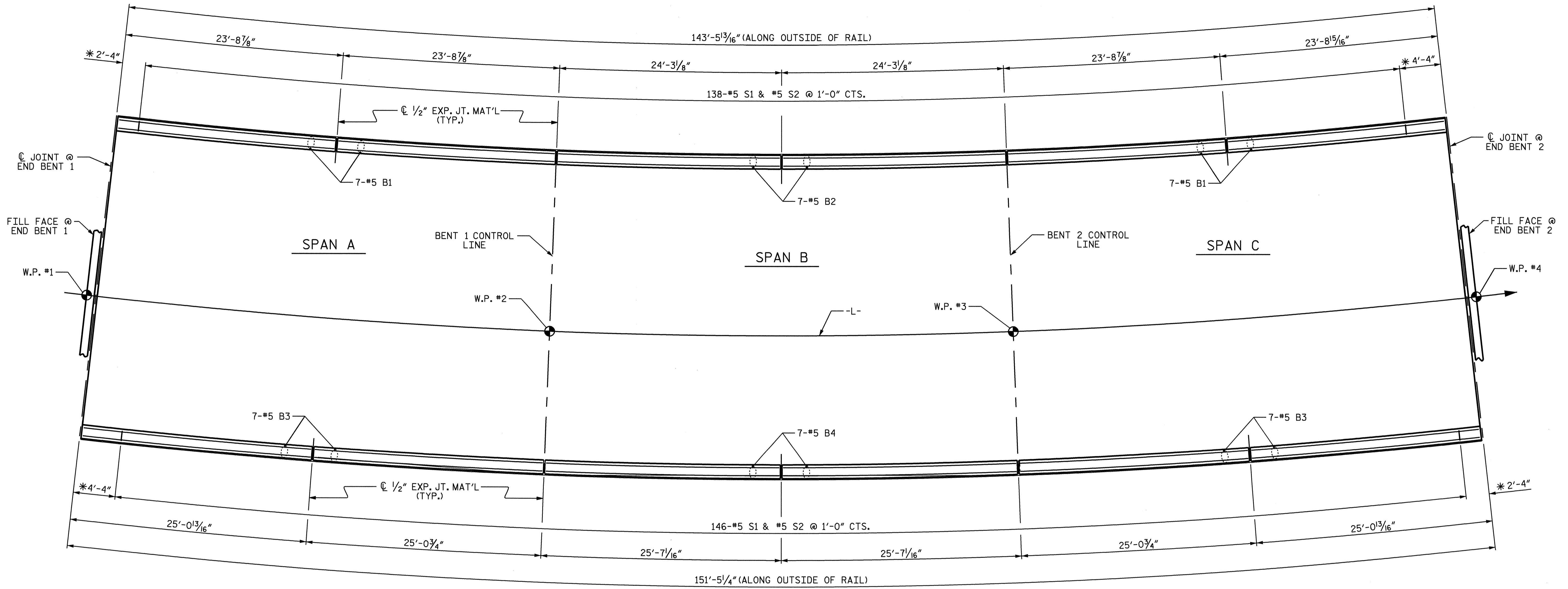
*Douglas R. Calhoun*  
16-2-08

PROJECT NO. B-4194  
McDOWELL COUNTY  
STATION: 16+20.00 -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:	TOTAL SHEETS
1			3			35
2			4			

ASSEMBLED BY : A. K. PATEL	DATE : 4/18/07
CHECKED BY : BNG	DATE : 5/07
DRAWN BY : WJH 8/89	REV. 10/17/00 RWW/LES
CHECKED BY : CRK 8/89	REV. 7/10/01 RWW/LES
	REV. 5/1/06 TLA/GM



**PLAN OF BARRIER RAIL**

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE FROM C JOINT TO C JOINT.  
 \* FOR REINFORCING STEEL AT ENDS OF RAIL, SEE "END OF RAIL DETAILS" SHEET 2 OF 3.

PROJECT NO. B-4194

McDOWELL COUNTY

STATION: 16+20.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUPERSTRUCTURE  
 CONCRETE BARRIER  
 RAIL**



DRAWN BY: A. K. PATEL DATE: 4/18/07  
 CHECKED BY: BNG DATE: 5/07

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



NOTES

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

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

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

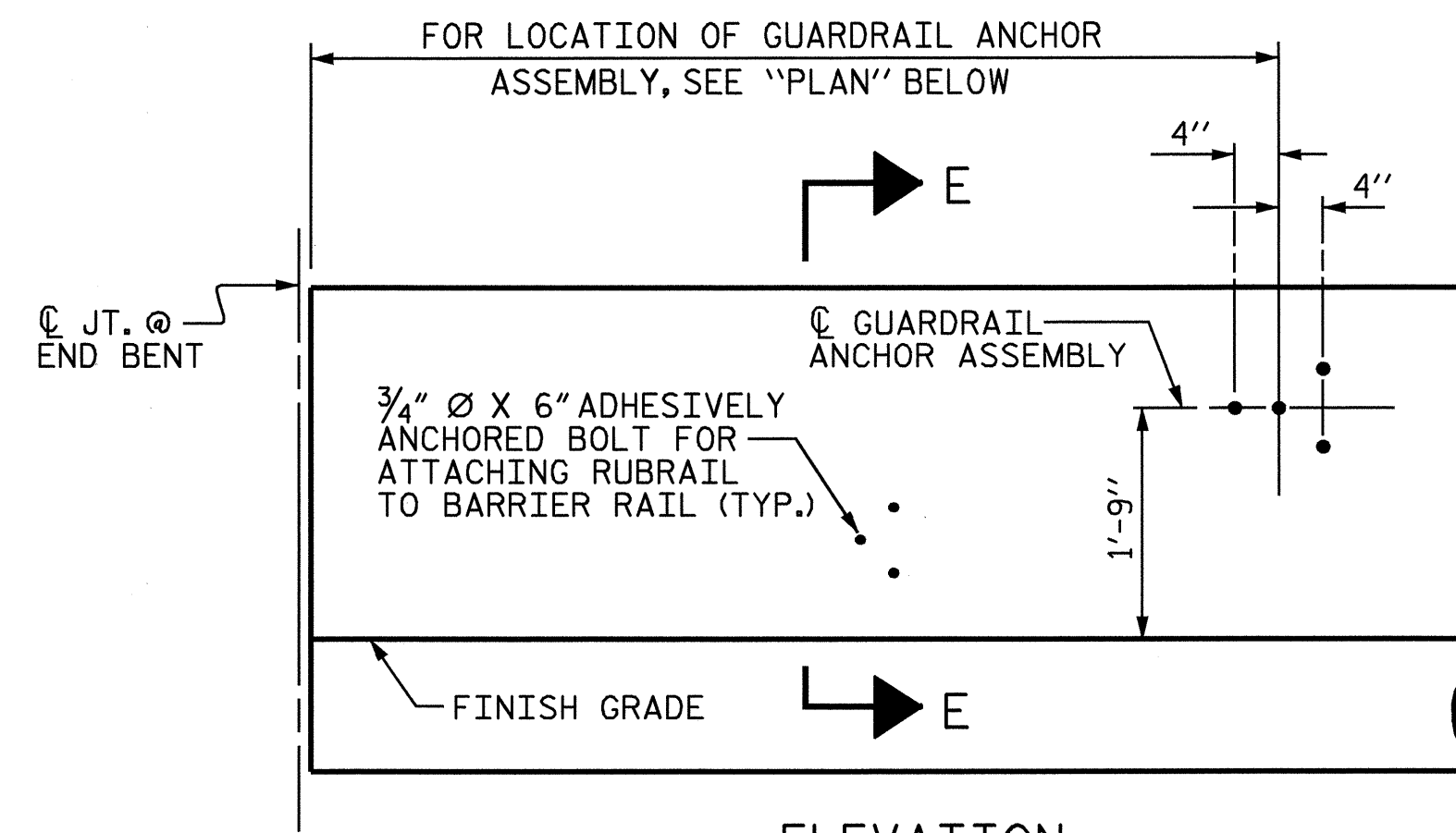
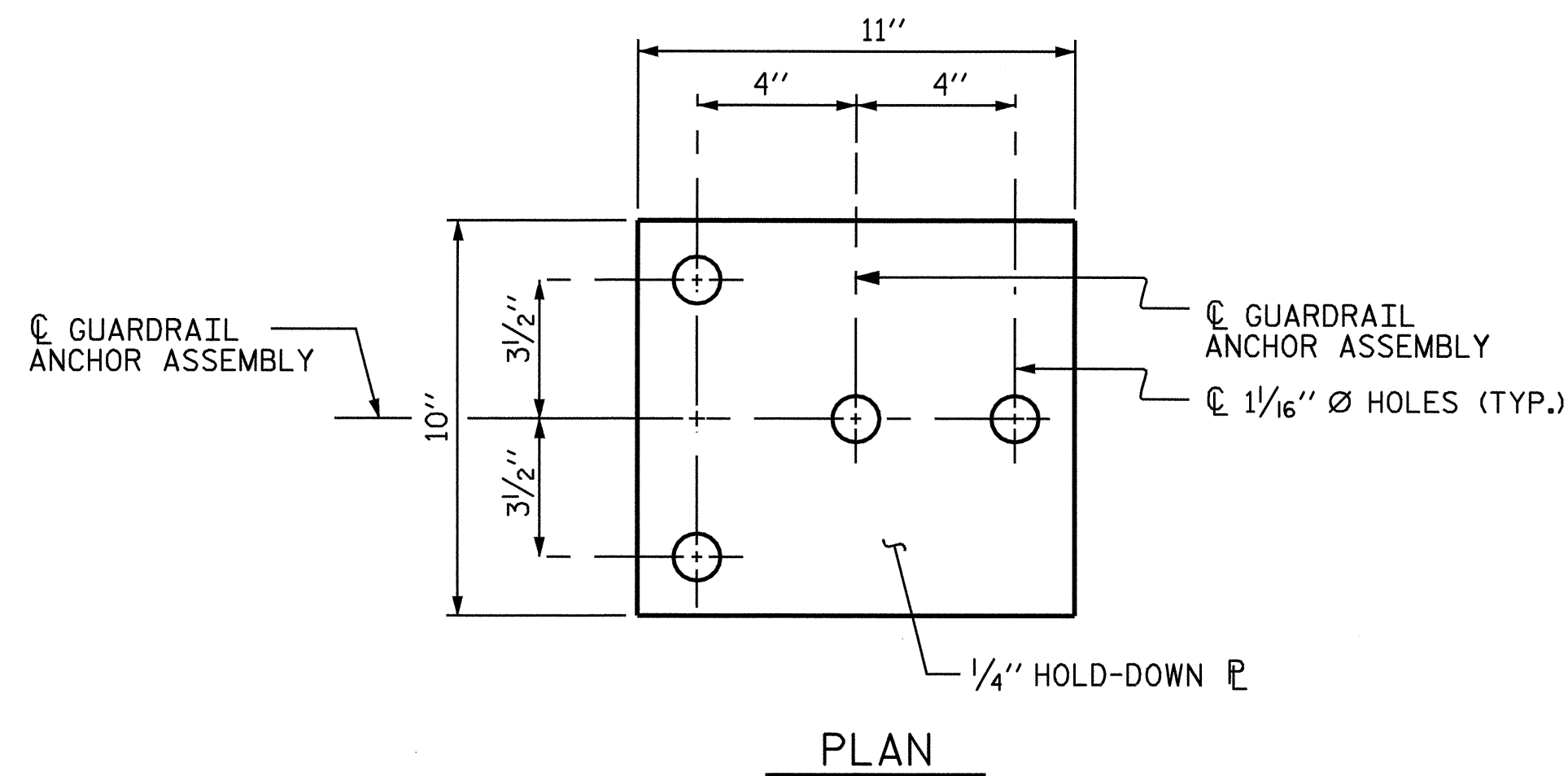
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

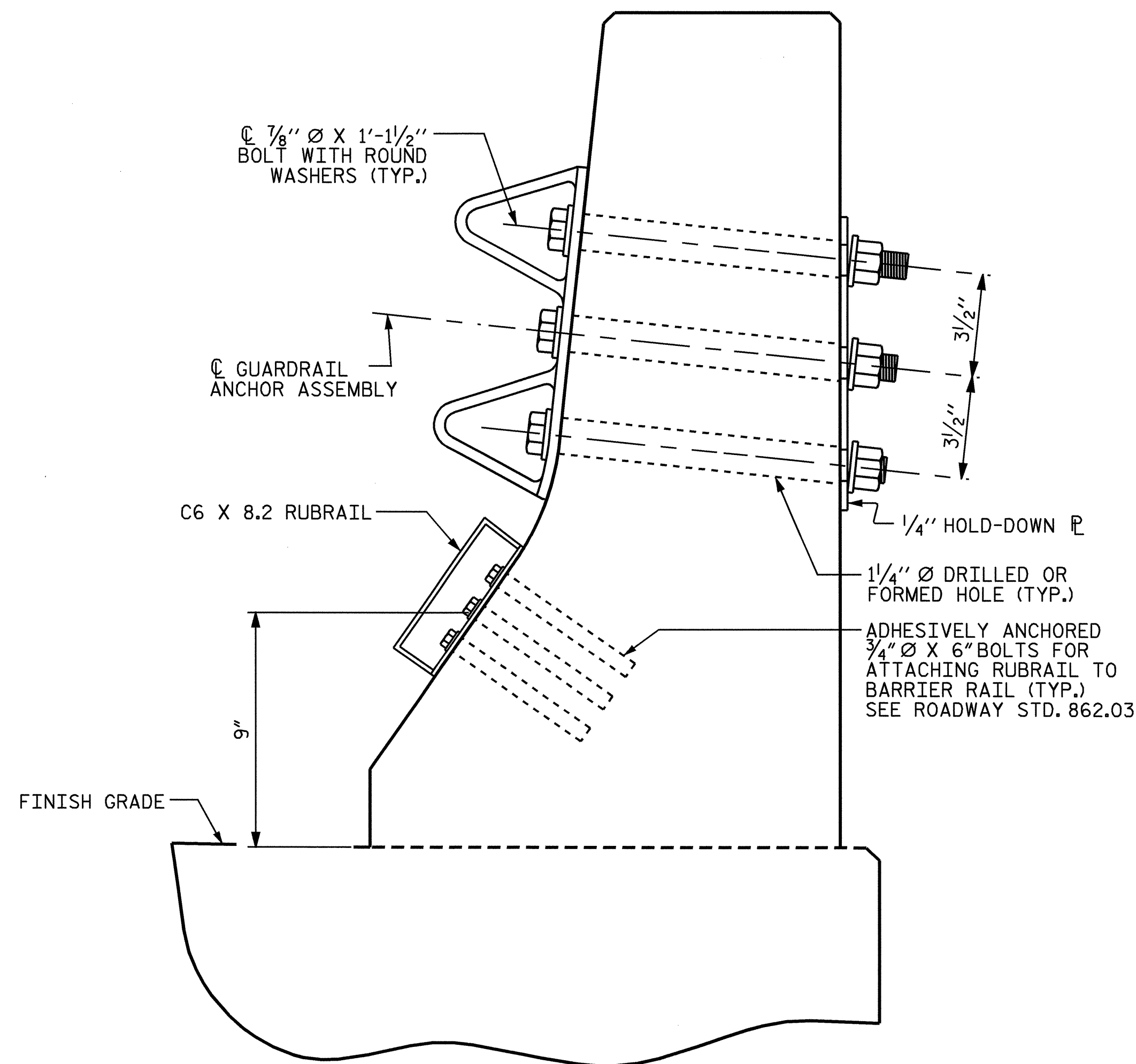
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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

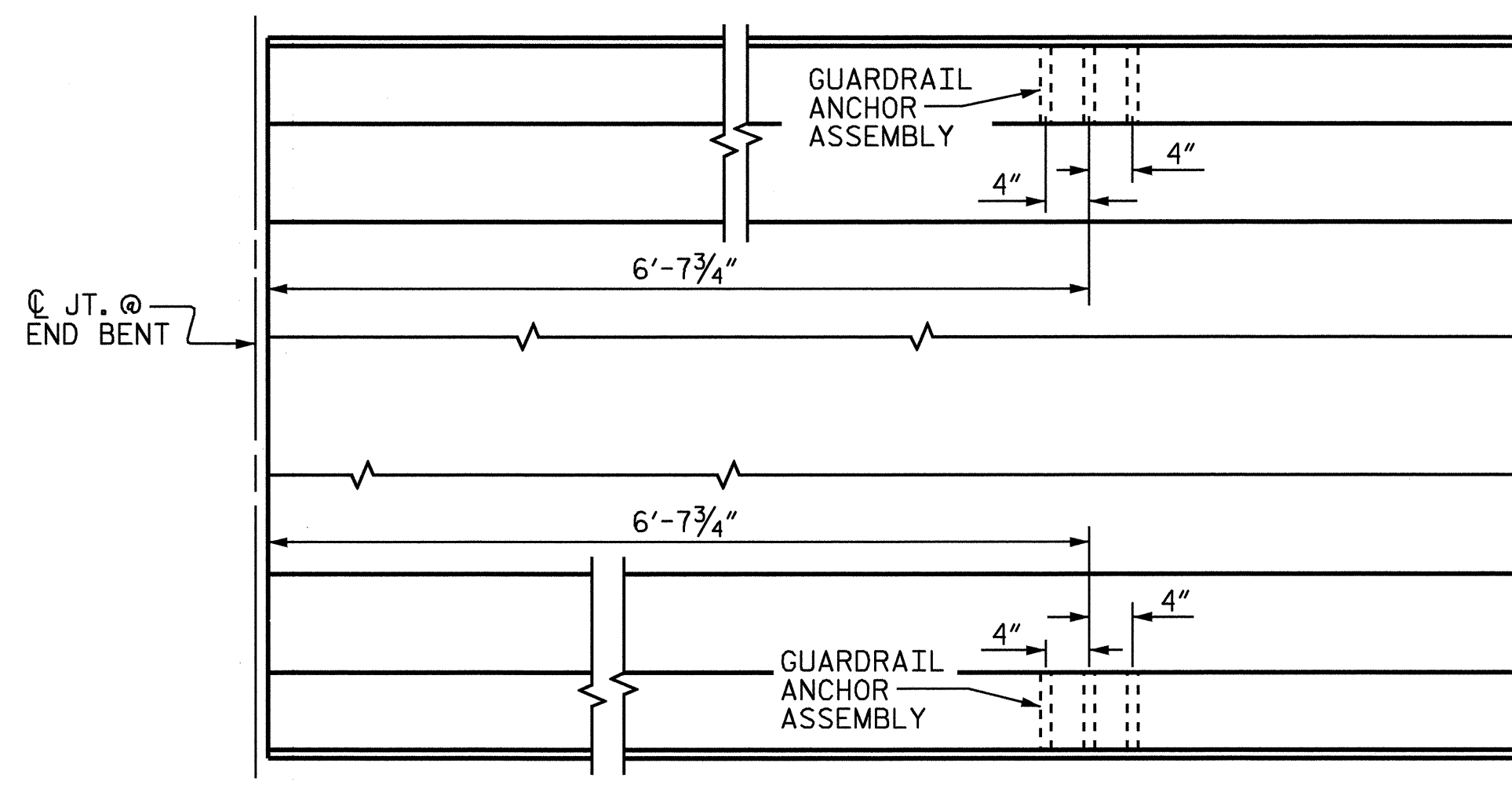
THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS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



FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03

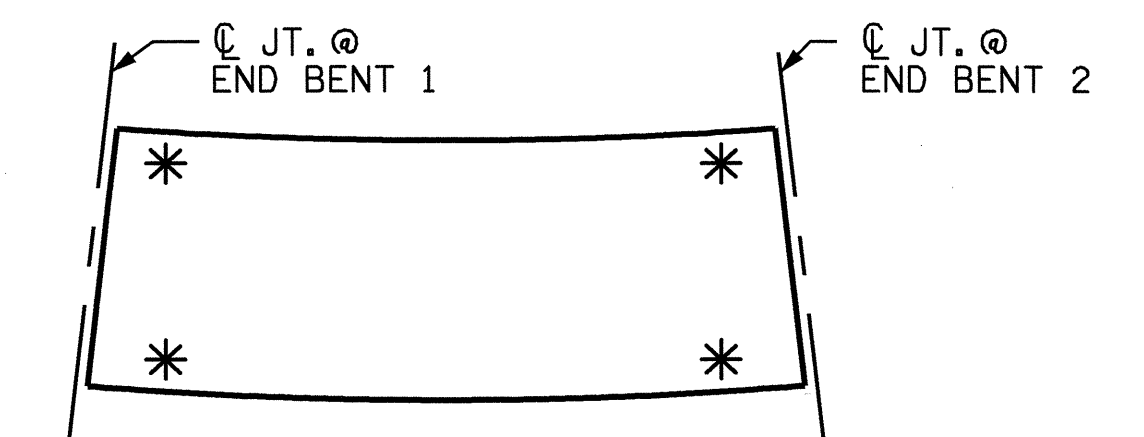


GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR.



\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4194  
 McDOWELL COUNTY  
 STATION: 16+20.00 -L-

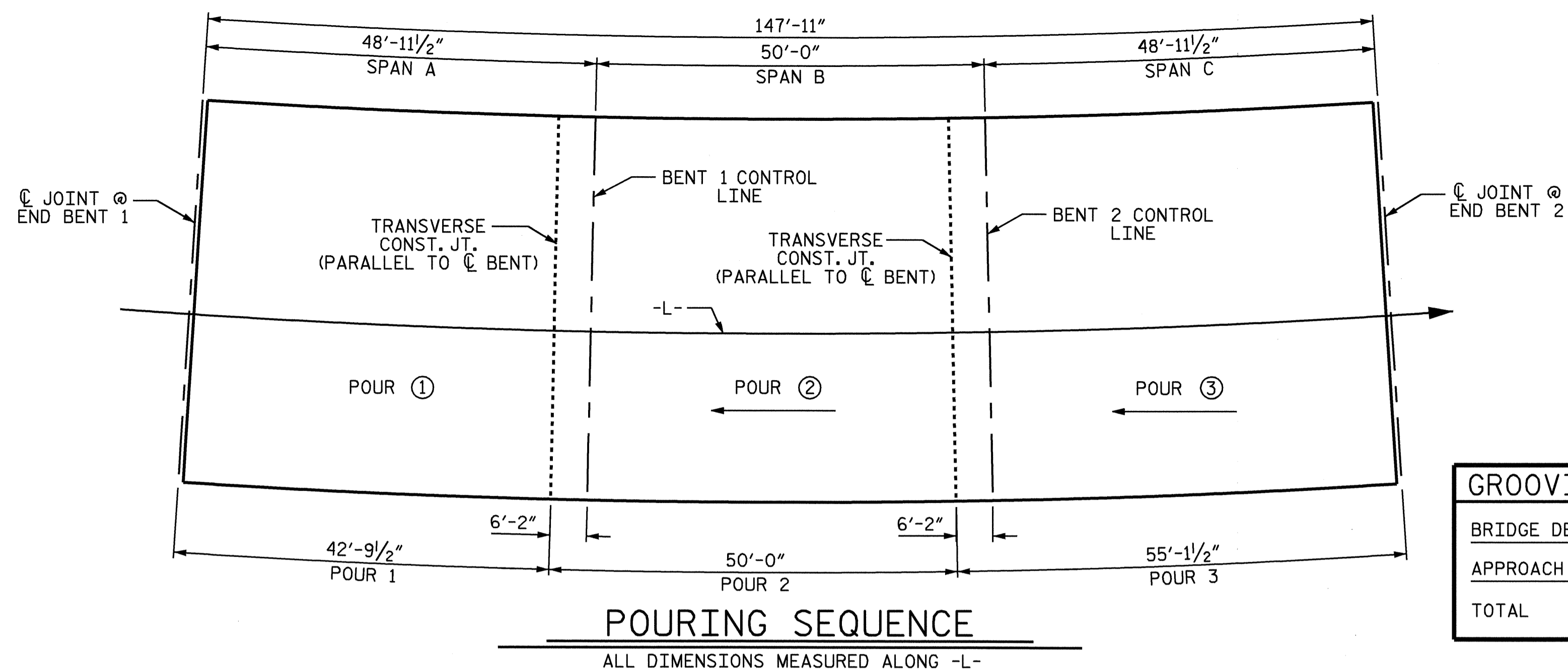
SHEET 3 OF 3



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

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

ASSEMBLED BY : A. K. PATEL	DATE : 4/19/07
CHECKED BY : BNG	DATE : 5/07
DRAWN BY : TLA 5/06	ADDED 5/1/06R KMM/GM
CHECKED BY : GM 5/06	



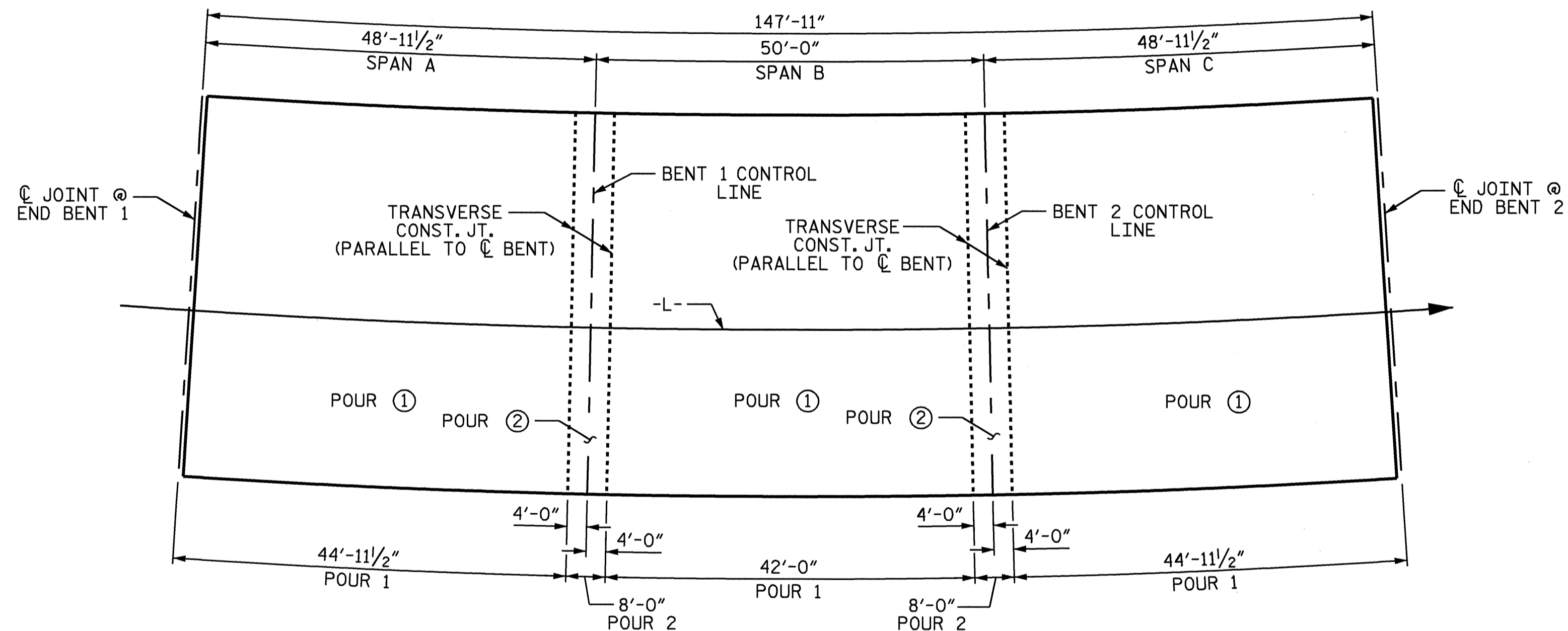
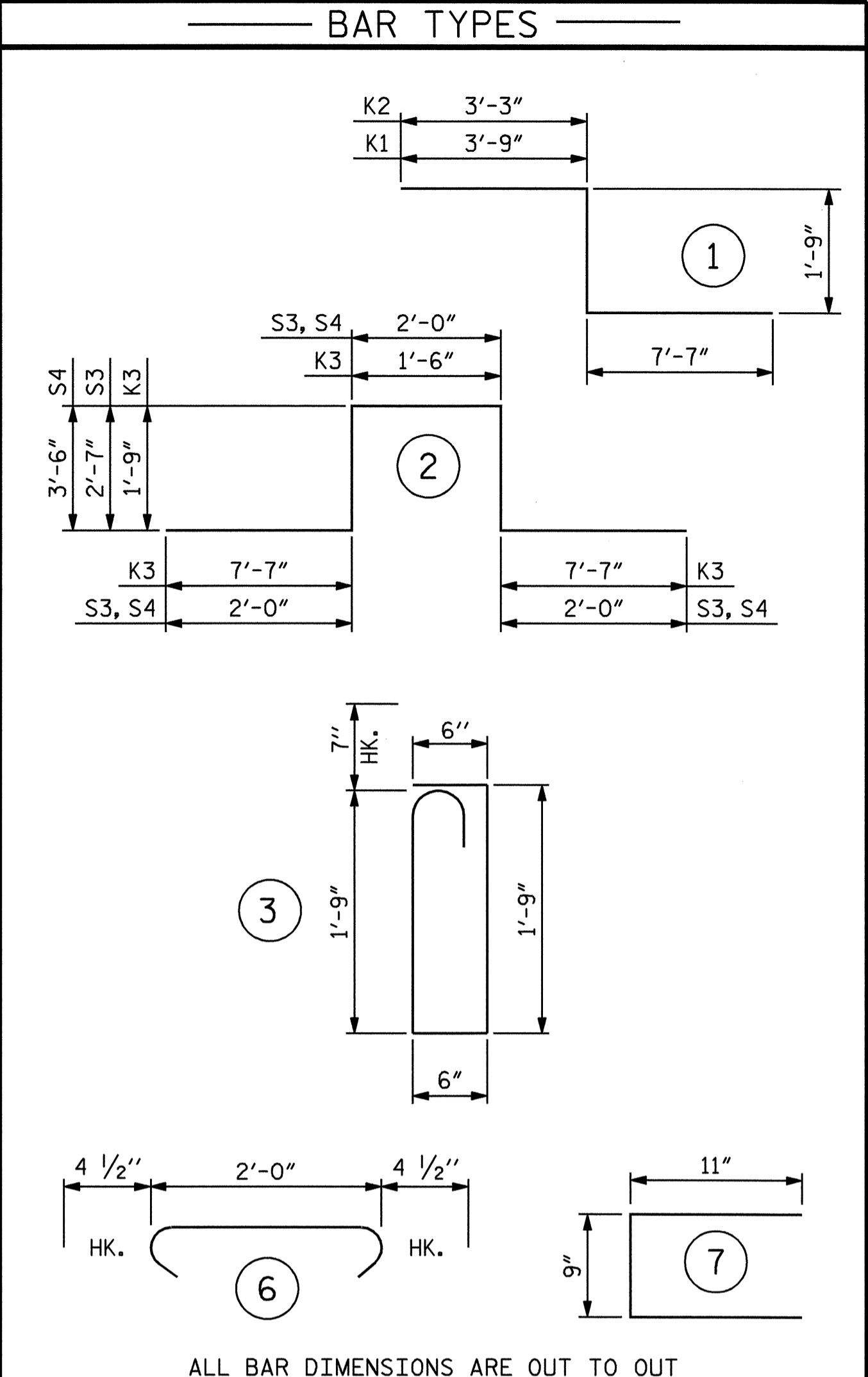
**GROOVING BRIDGE FLOORS**

BRIDGE DECK	4265 SQ.FT.
APPROACH SLABS	843 SQ.FT.
TOTAL	5108 SQ.FT.

**REINFORCING BAR SCHEDULE**

SPANS A, B, & C

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	303	#5	STR	34'-11"	11035
A2	303	#5	STR	34'-11"	11035
*B1	100	#4	STR	17'-0"	1136
*B2	50	#7	STR	40'-4"	4122
*B3	44	#7	STR	15'-2"	1364
*B4	25	#4	STR	14'-7"	244
B5	51	#5	STR	50'-1"	2664
B6	39	#5	STR	50'-10"	2068
B7	48	#5	STR	51'-10"	2595
*G1	2	#5	STR	34'-11"	73
*K1	4	#8	1	13'-1"	140
*K2	4	#8	1	12'-7"	134
*K3	8	#8	2	20'-2"	431
K4	12	#6	STR	8'-5"	152
K5	12	#4	STR	6'-9"	54
K6	24	#4	STR	8'-11"	143
K7	12	#4	STR	8'-5"	67
K8	8	#4	STR	29'-5"	157
*S1	54	#5	3	5'-1"	286
*S2	54	#4	7	2'-7"	93
S3	12	#4	2	11'-2"	90
S4	42	#4	2	13'-0"	365
S5	150	#4	6	2'-9"	276
REINFORCING STEEL (LBS.)					19666
*EPOXY COATED REINFORCING STEEL (LBS.)					19058



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

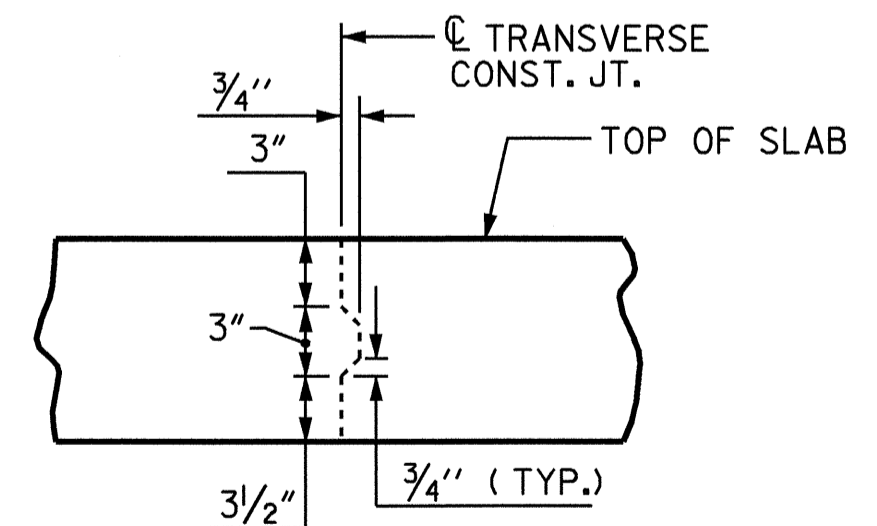
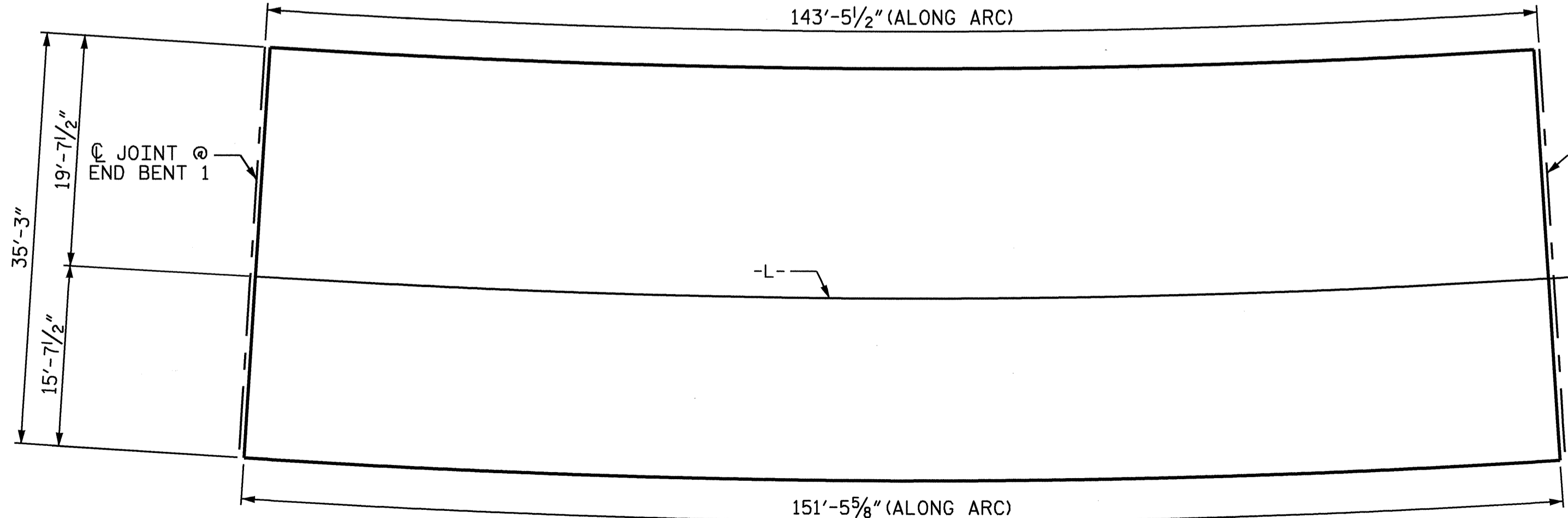
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"	—	—	—
#8	6'-10"	4'-7"	—	—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

**SUPERSTRUCTURE BILL OF MATERIAL**

	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
POUR 1	51.5		
POUR 2	66.3		
POUR 3	73.8		
TOTALS**	191.6	19666	19058

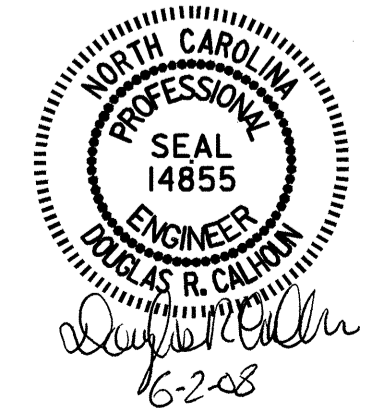
\*\*QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

POUR ② CANNOT BE STARTED UNTIL BOTH ADJACENT ① POURS REACH A MINIMUM OF 3000 PSI.  
ALL DIMENSIONS MEASURED ALONG -L-



**TRANSVERSE CONSTRUCTION JOINT DETAIL**

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



PROJECT NO. B-4194  
McDOWELL COUNTY  
STATION: 16+20.00 -L-

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
**SUPERSTRUCTURE  
BILL OF MATERIAL**

ASSEMBLED BY : A. K. PATEL	DATE : 4/20/07
CHECKED BY : BNG	DATE : 5/07
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

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

**NOTES**

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

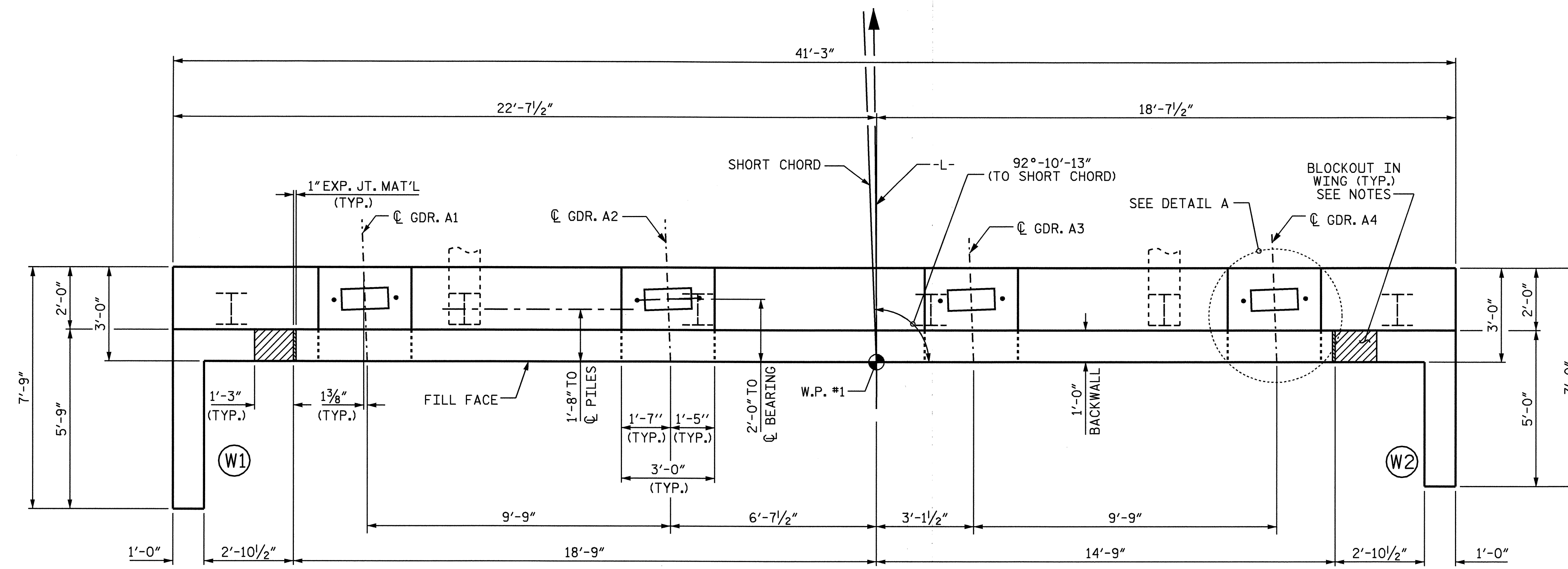
BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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.

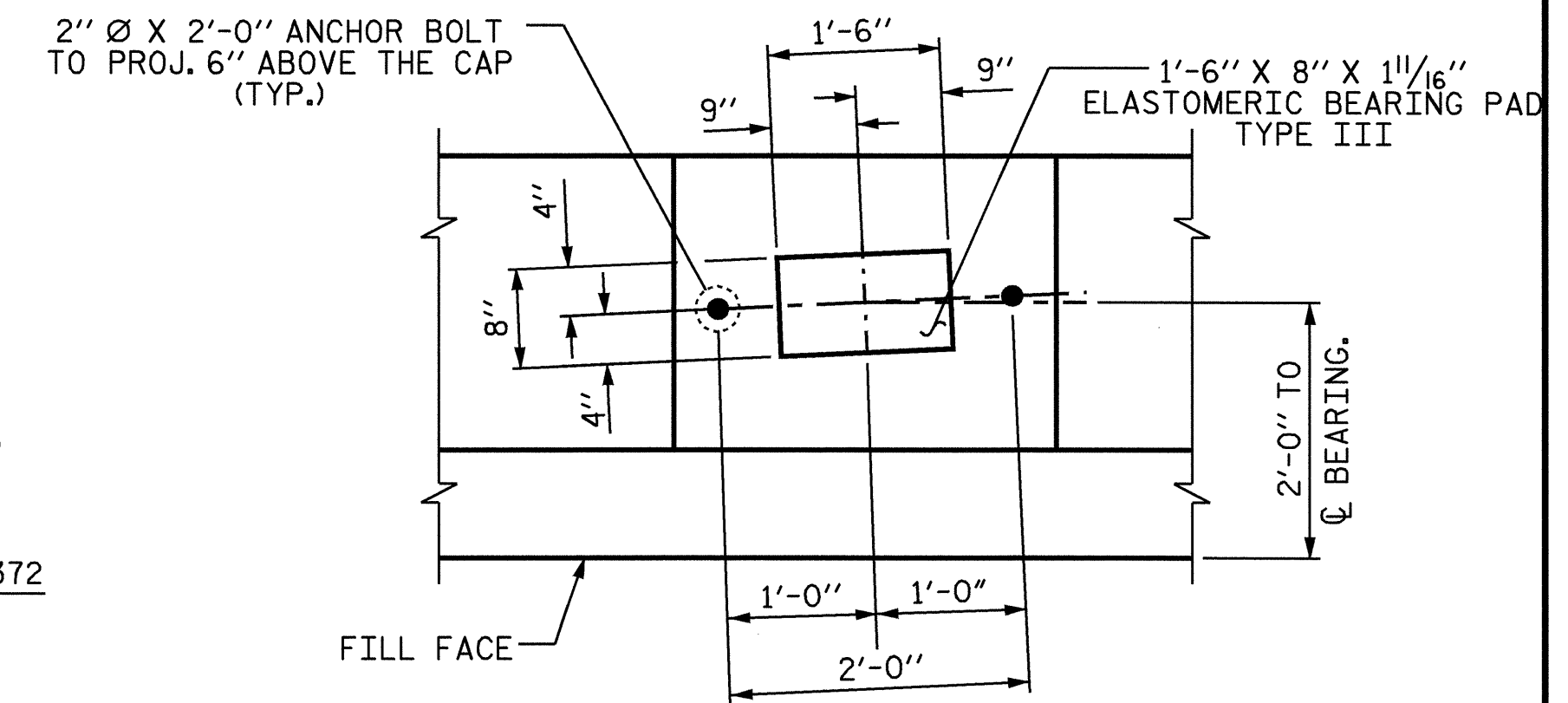
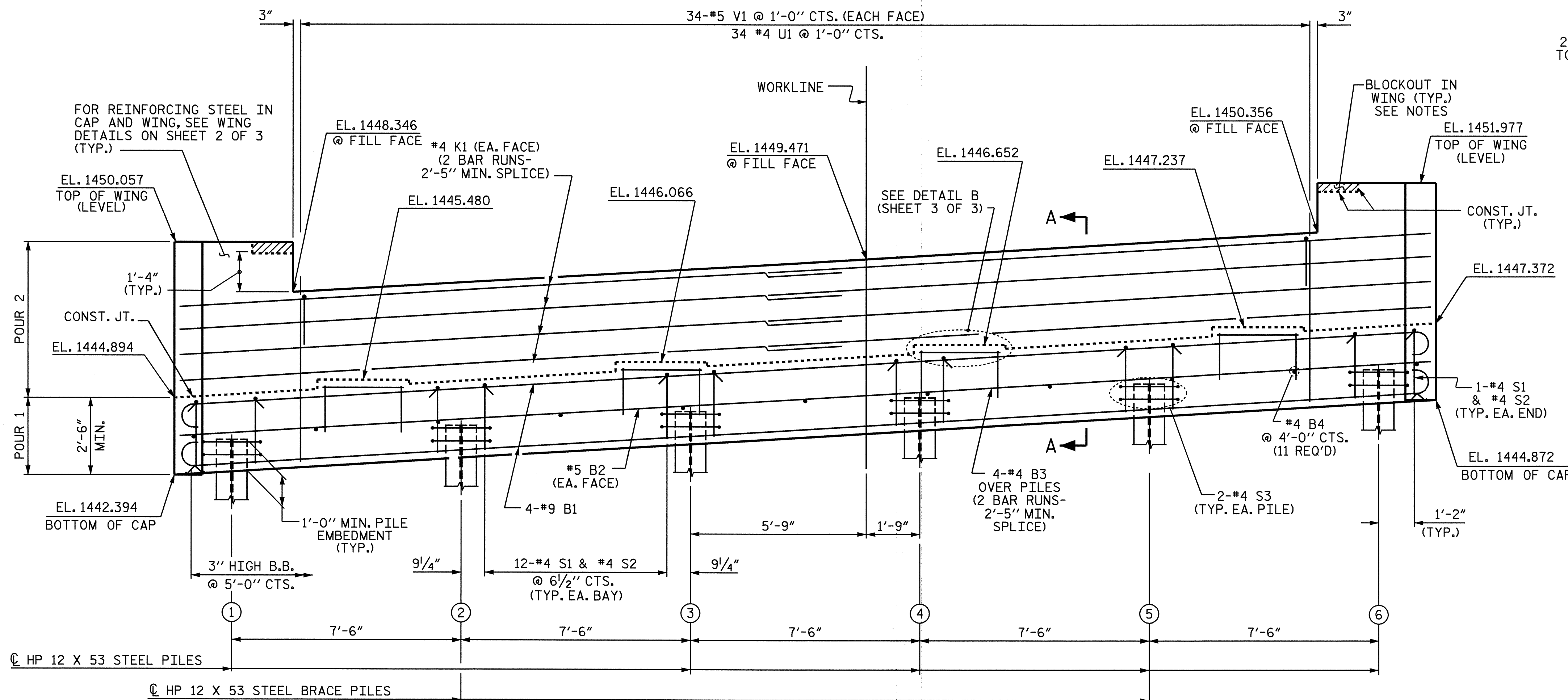
THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

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

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



TOP OF PILE ELEVATIONS	
PILE	ELEVATION
①	1443.537
②	1443.987
③	1444.438
④	1444.888
⑤	1445.339
⑥	1445.789

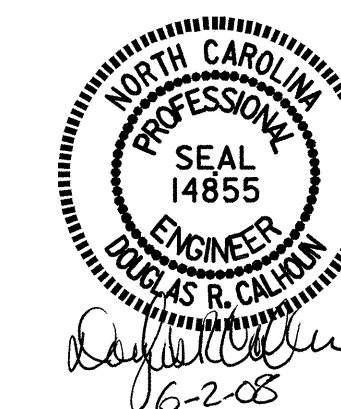


PROJECT NO. B-4194  
McDOWELL COUNTY  
 STATION: 16+20.00 -L-

SHEET 1 OF 3

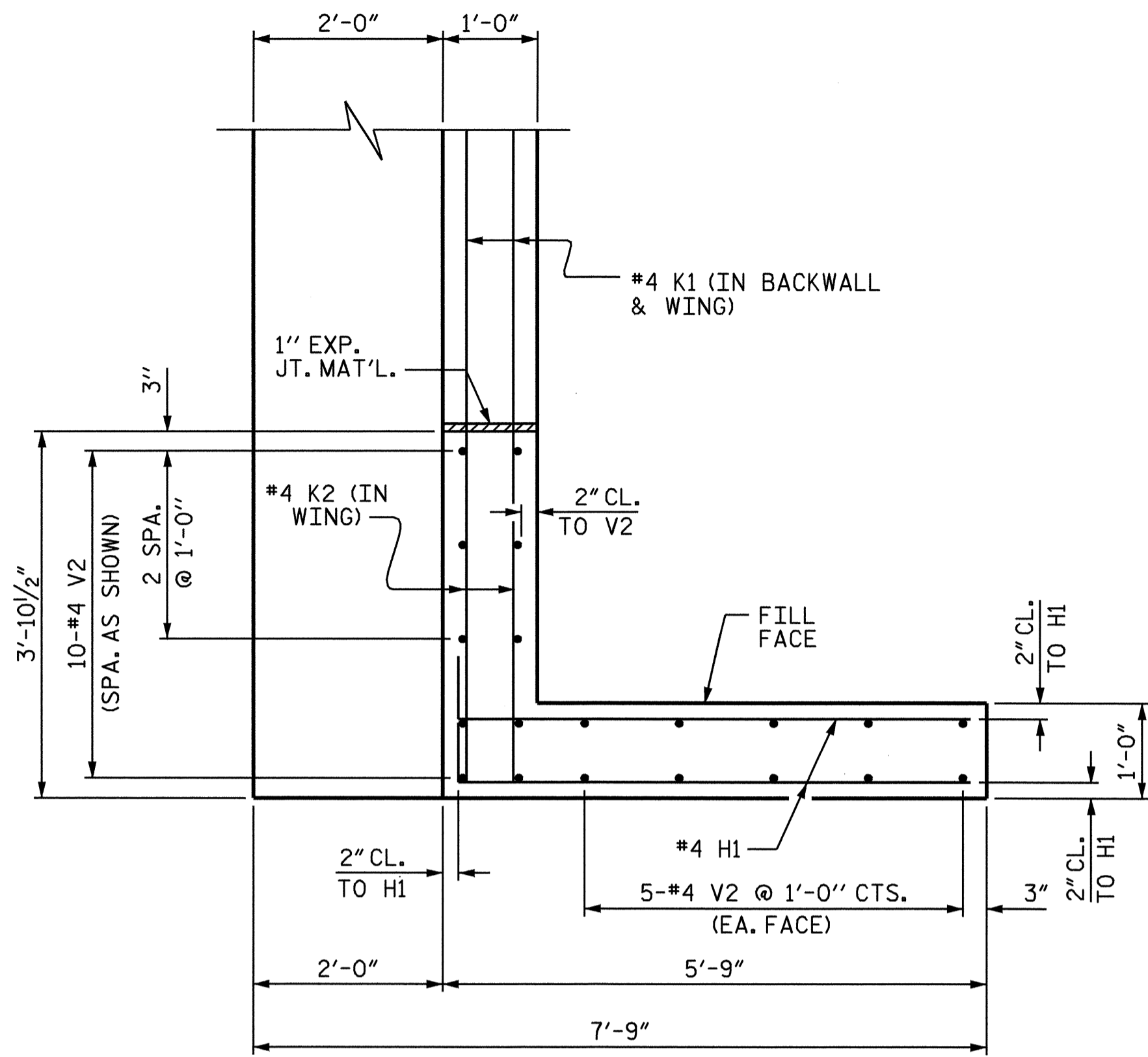
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT 1

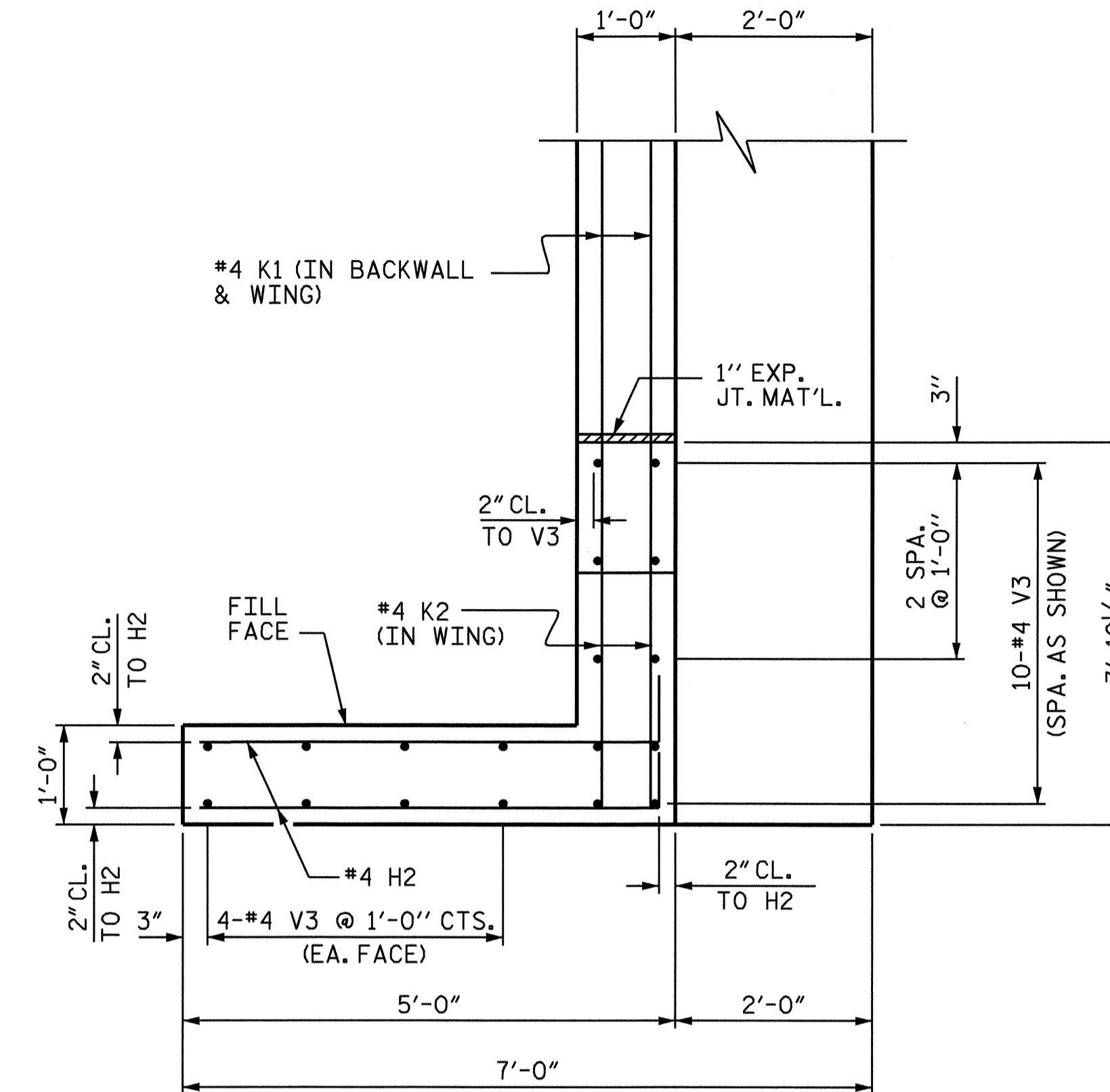


REVISIONS						SHEET NO. S-21
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

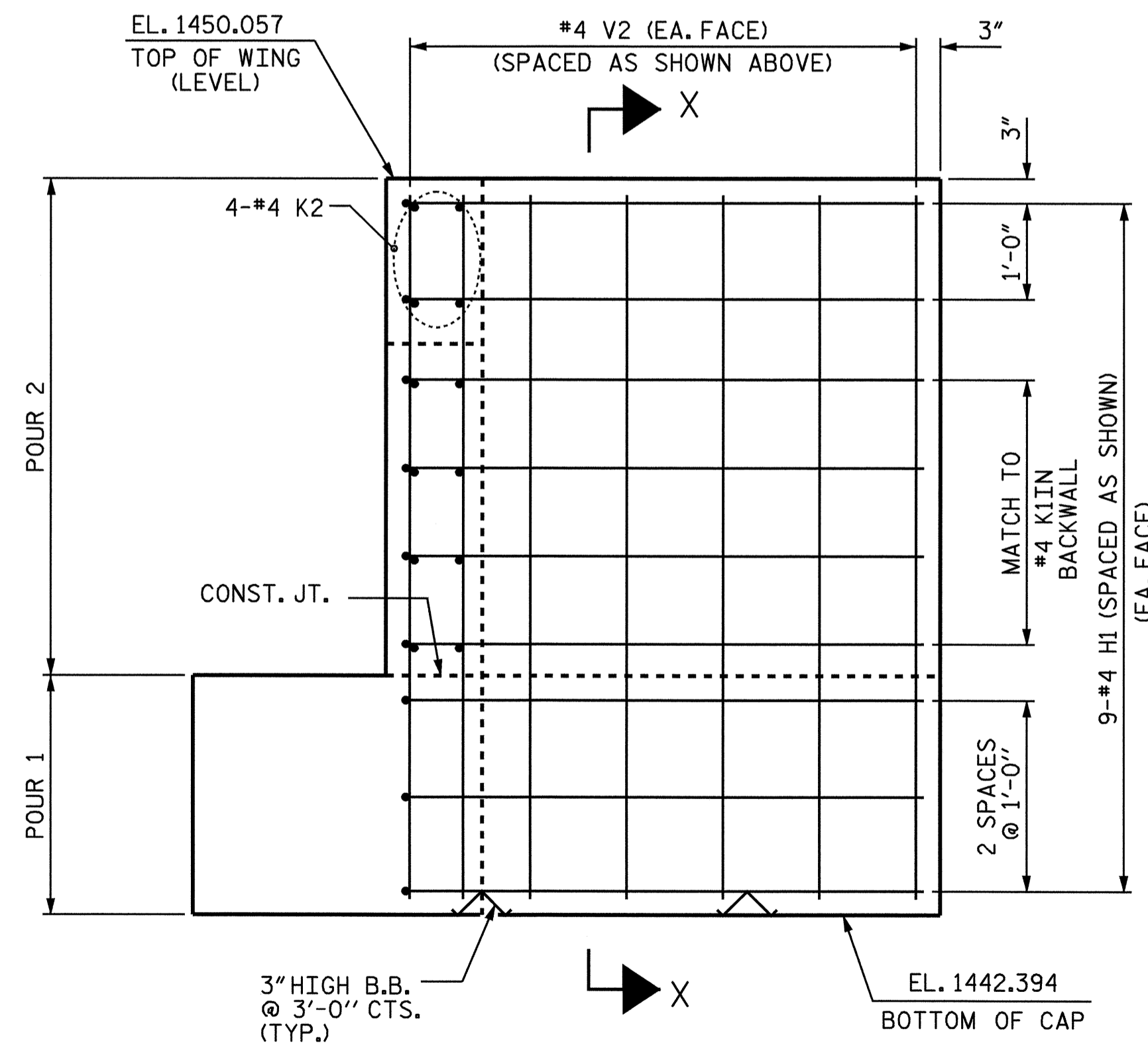
DRAWN BY: J. MYA DATE: 8/21/07  
 CHECKED BY: A. K. PATEL DATE: 8/31/07



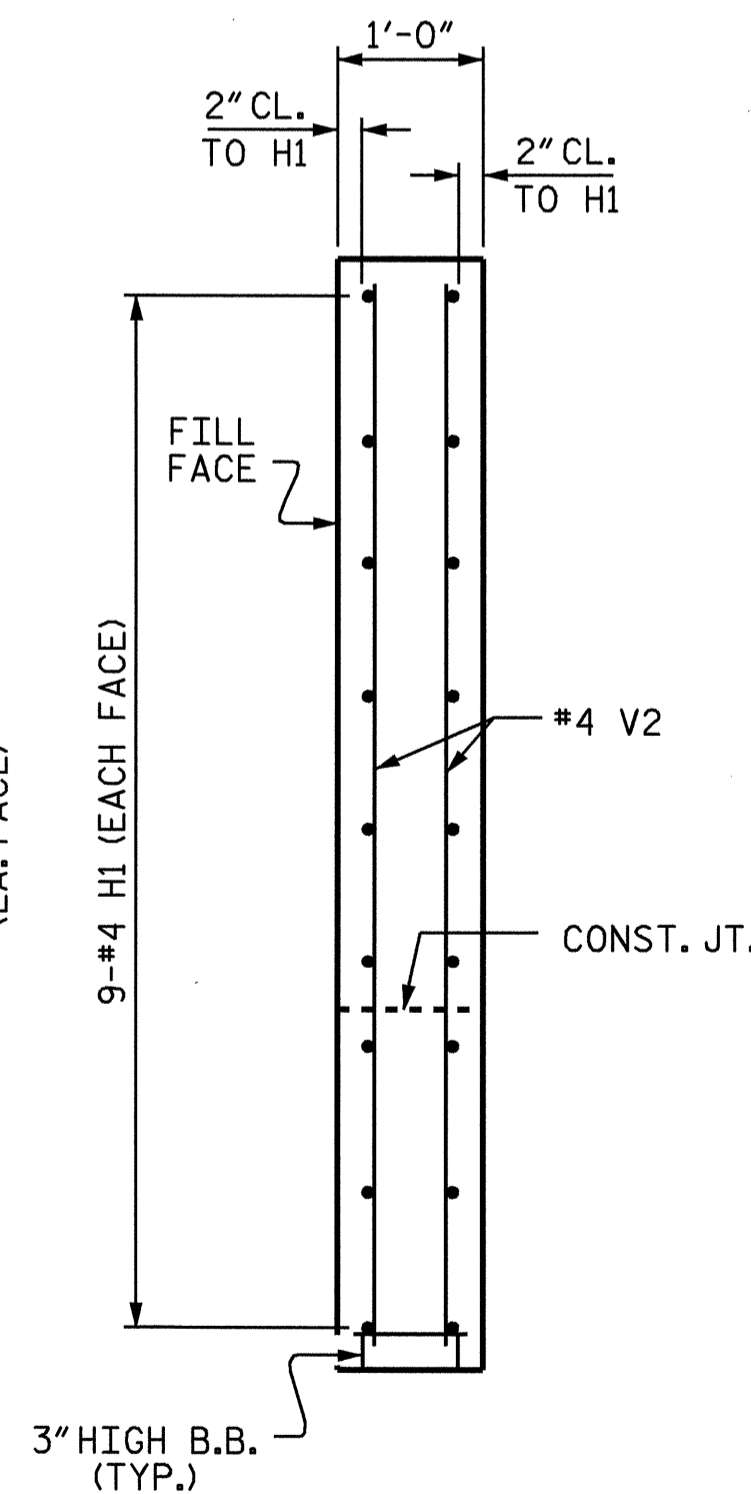
PLAN OF WING - W1



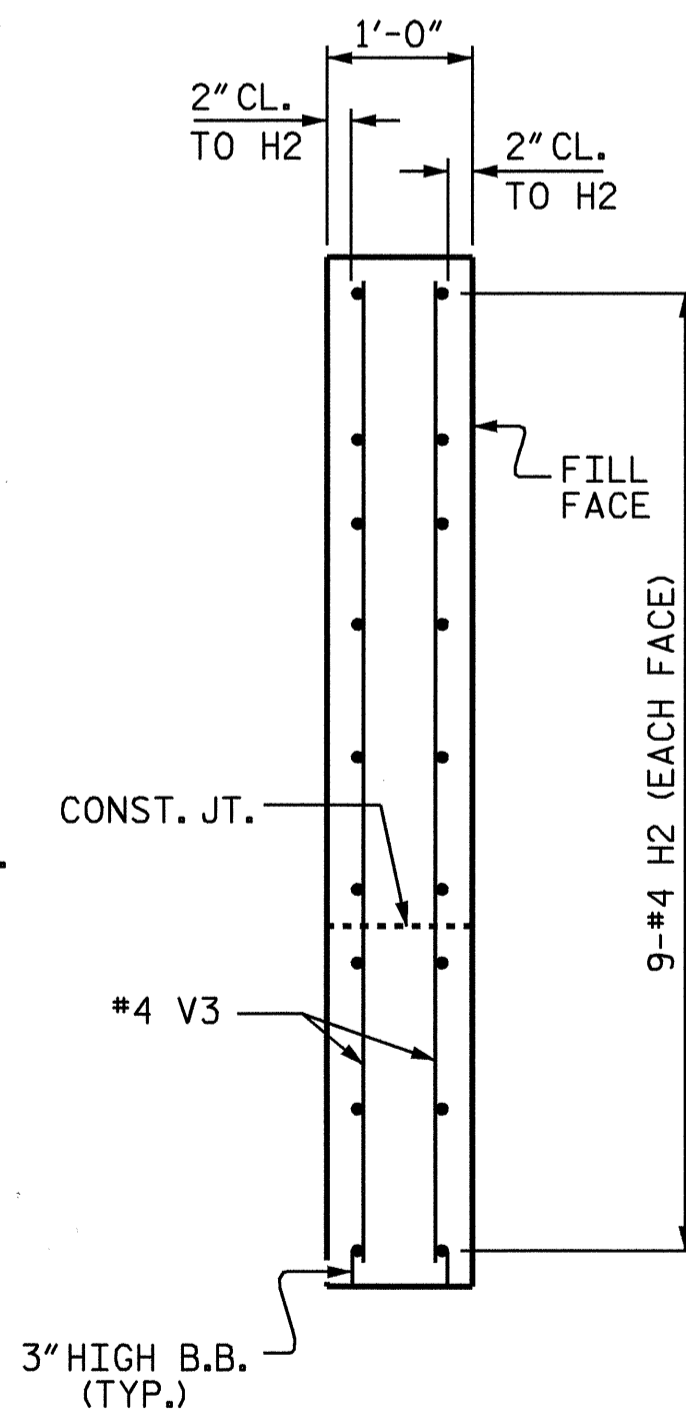
PLAN OF WING - W2



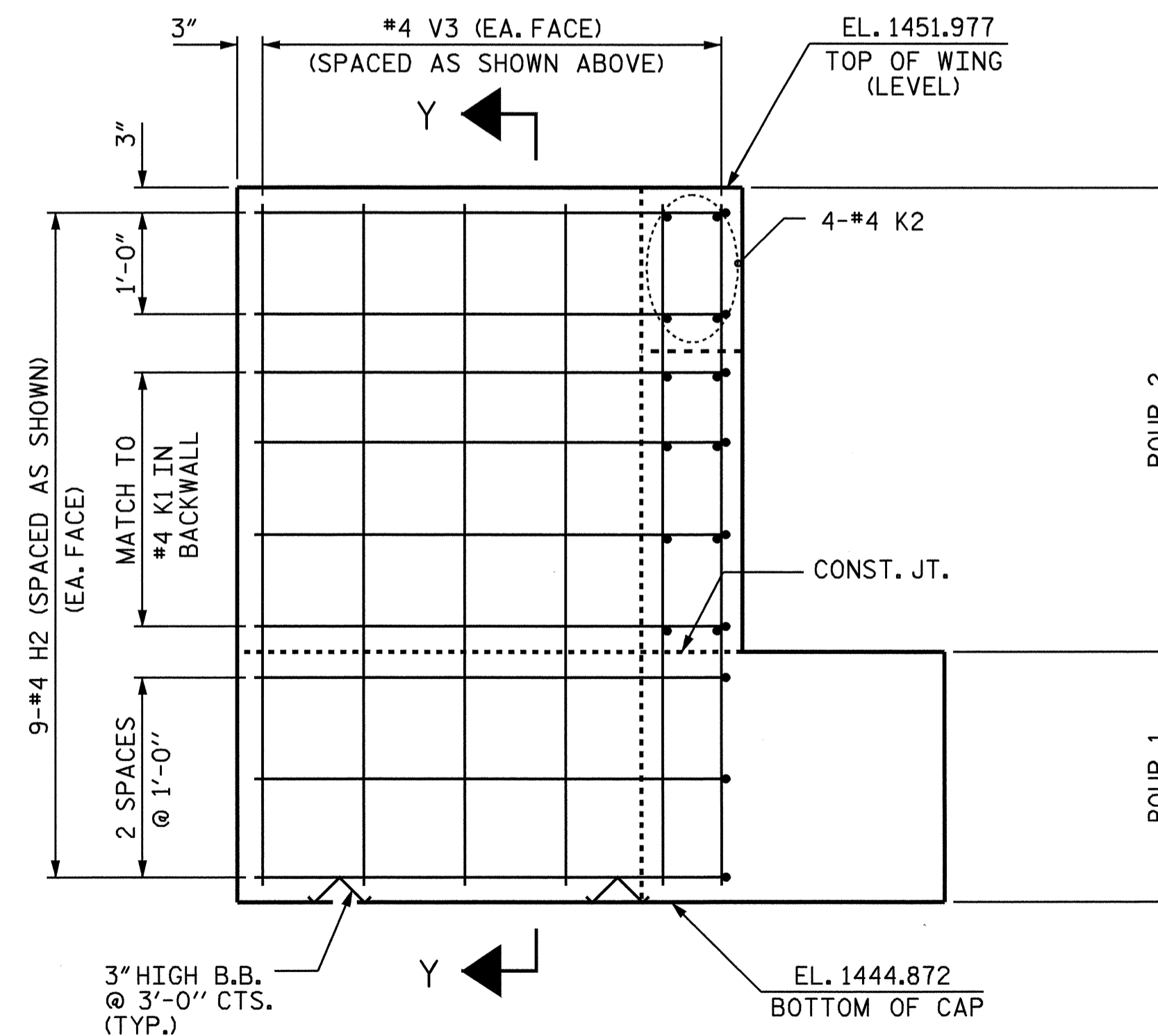
ELEVATION OF WING - W1



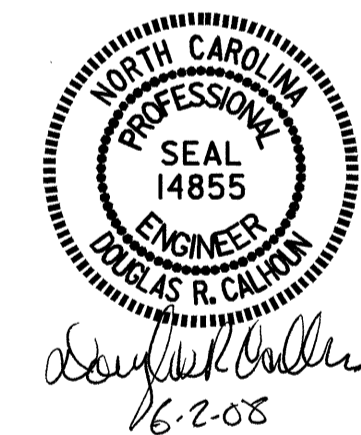
SECTION X-X



SECTION Y-Y



ELEVATION OF WING - W2



PROJECT NO. B-4194  
 McDOWELL COUNTY  
 STATION: 16+20.00 -L-

SHEET 2 OF 3

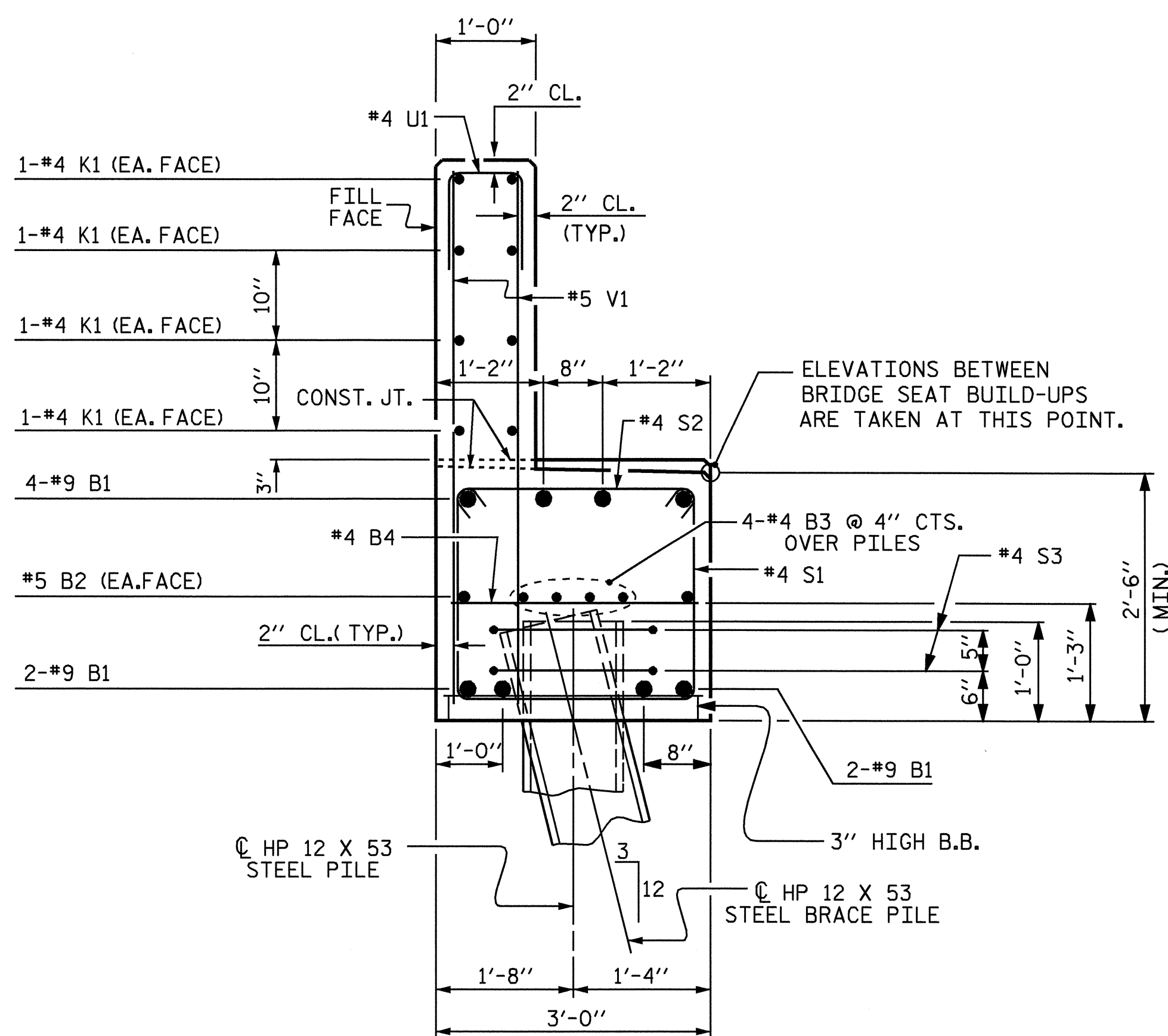
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT 1

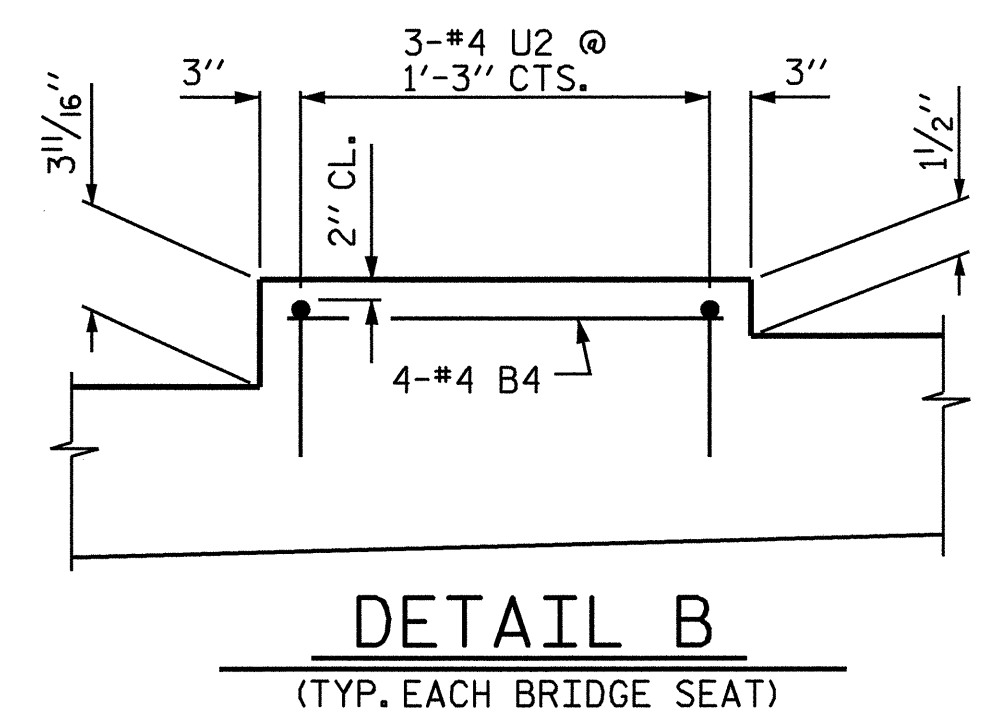
DRAWN BY: J. MYA DATE: 08/21/07  
 CHECKED BY: A. K. PATEL DATE: 08/31/07

15-MAY-2008 15:38  
 R:\Structures\Final Plans\B-4194\_sd.E.dgn  
 jmya

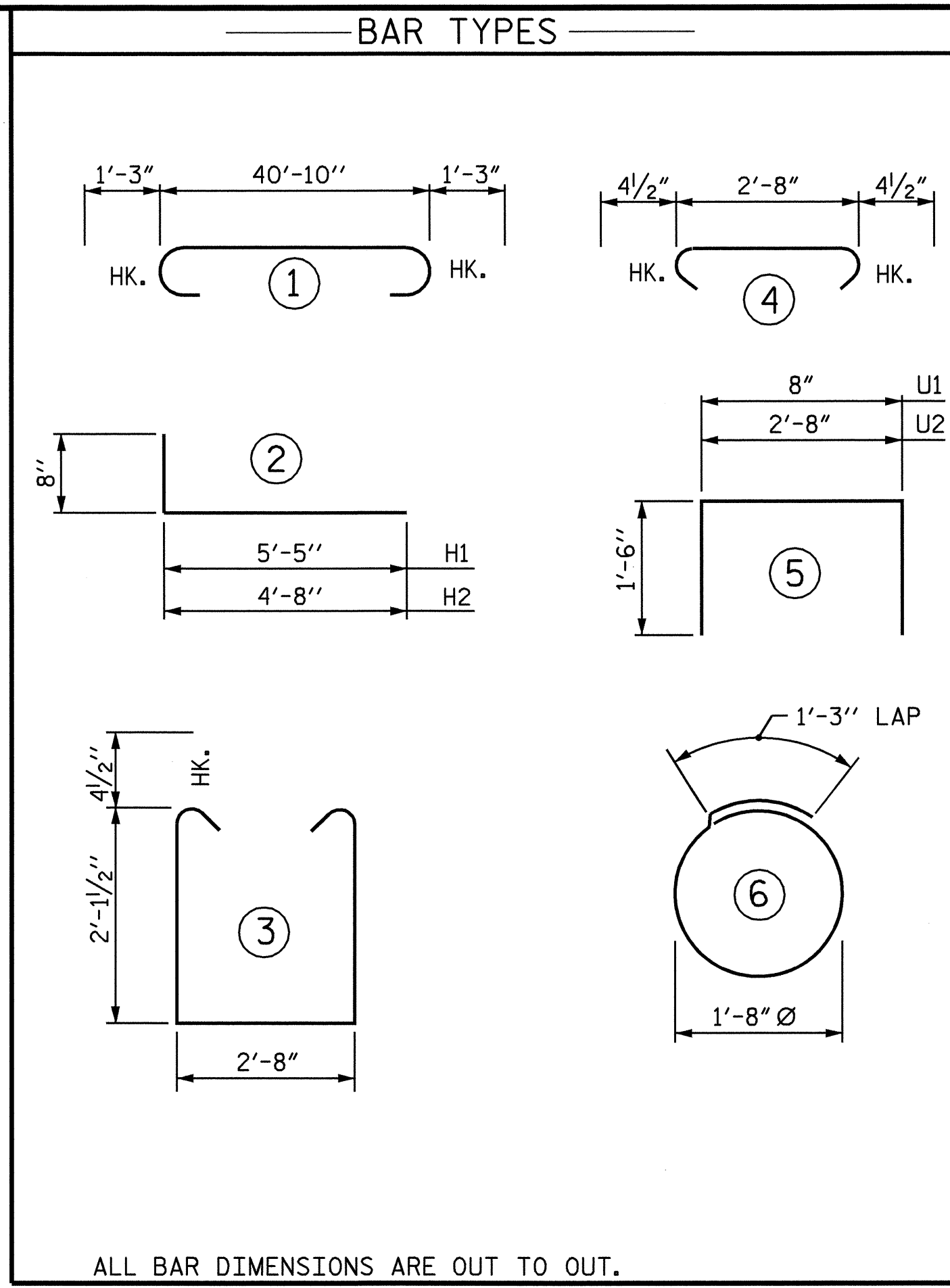
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			35



SECTION A-A

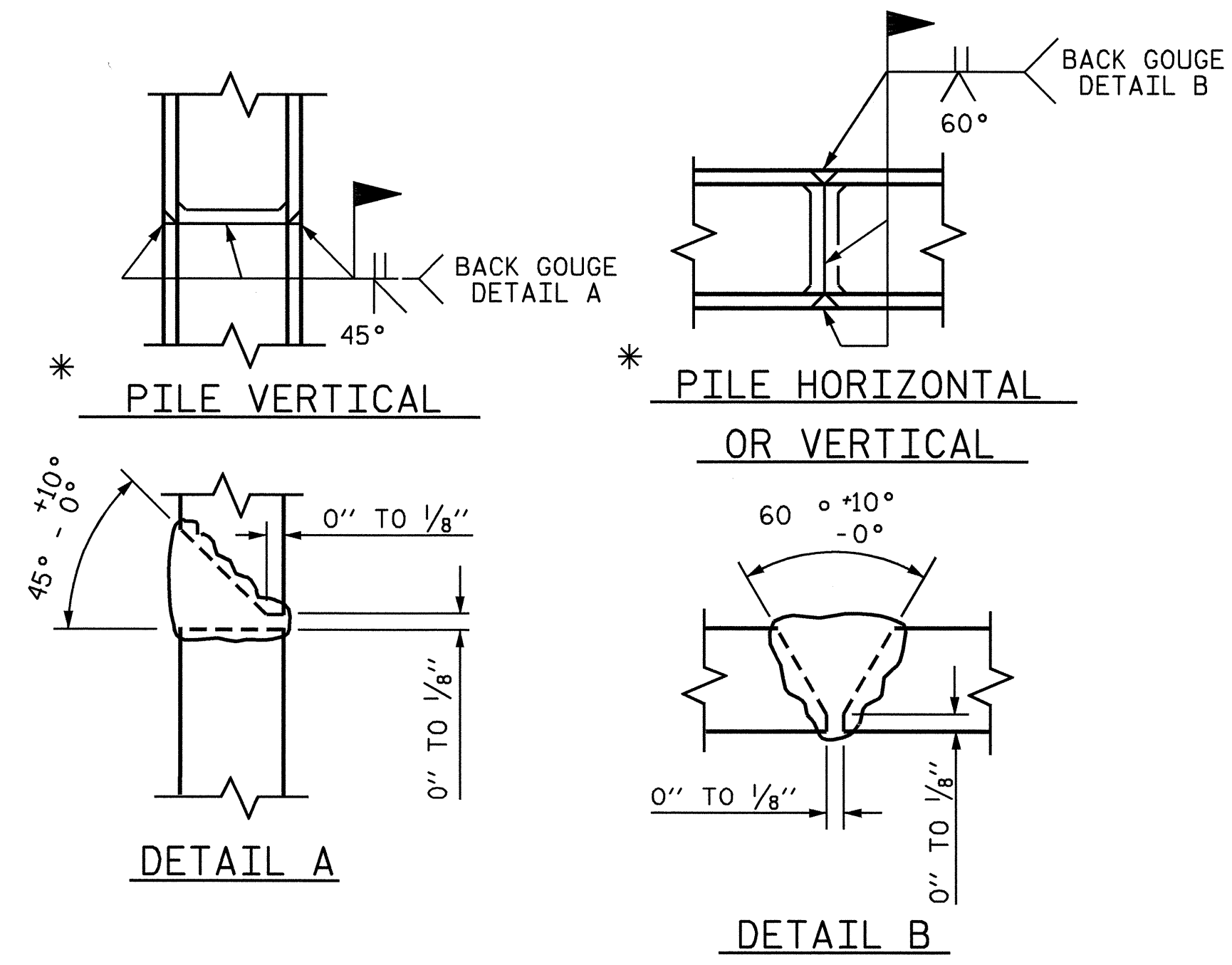


DETAIL B  
(TYP. EACH BRIDGE SEAT)

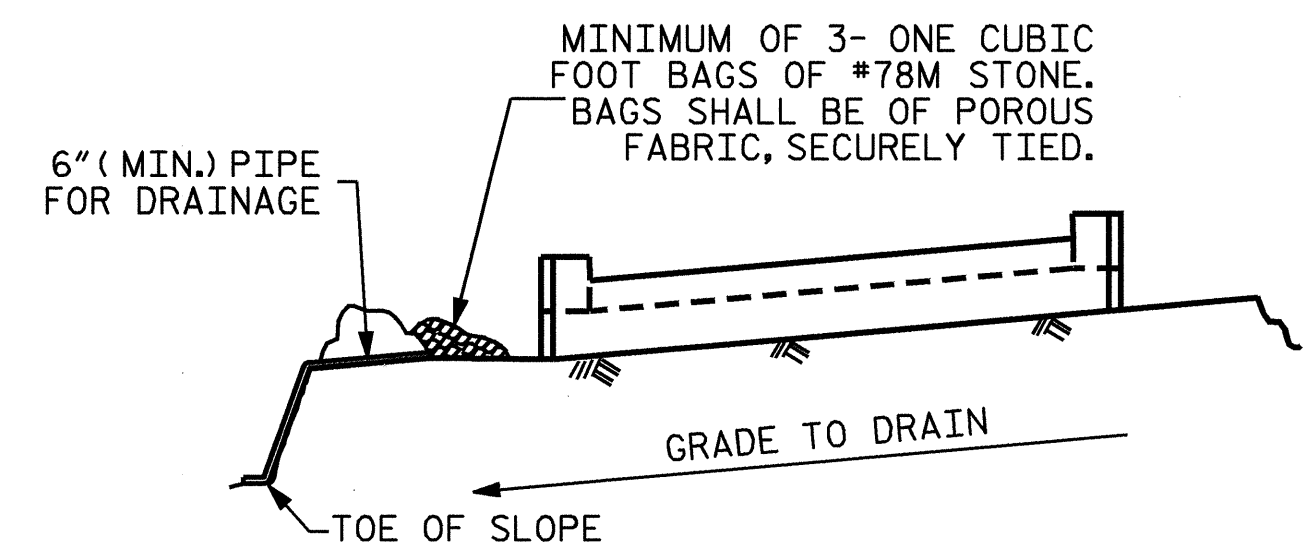


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	43'-4"	1179
B2	2	#5	STR	40'-11"	85
B3	8	#4	STR	21'-8"	116
B4	27	#4	STR	2'-8"	48
H1	18	#4	2	6'-1"	73
H2	18	#4	2	5'-4"	64
K1	16	#4	STR	21'-8"	232
K2	8	#4	STR	3'-6"	19
S1	62	#4	3	7'-8"	318
S2	62	#4	4	3'-5"	142
S3	12	#4	6	6'-6"	52
U1	34	#4	5	3'-8"	83
U2	12	#4	5	5'-8"	45
V1	68	#5	STR	5'-4"	378
V2	20	#4	STR	7'-4"	98
V3	18	#4	STR	6'-9"	81
REINFORCING STEEL				LBS	3013
CLASS A CONCRETE BREAKDOWN					
POUR 1 (CAP & LOWER PART OF WINGS)				C.Y.	12.6
POUR 2 (BACKWALL & UPPER PART OF WINGS)				C.Y.	6.9
TOTAL				C.Y.	19.5
HP 12 X 53 STEEL PILES :					
NO. : 6				LIN. FT. : 210	



PILE SPLICE DETAILS



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

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

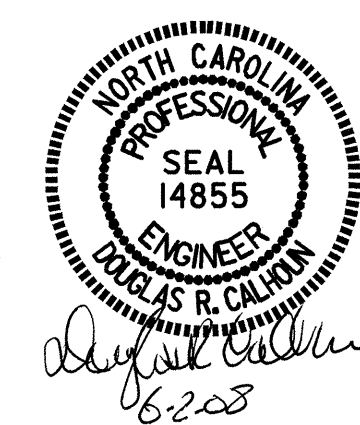
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

PROJECT NO. B-4194  
McDOWELL COUNTY  
 STATION: 16+20.00 -L-

SHEET 3 OF 3

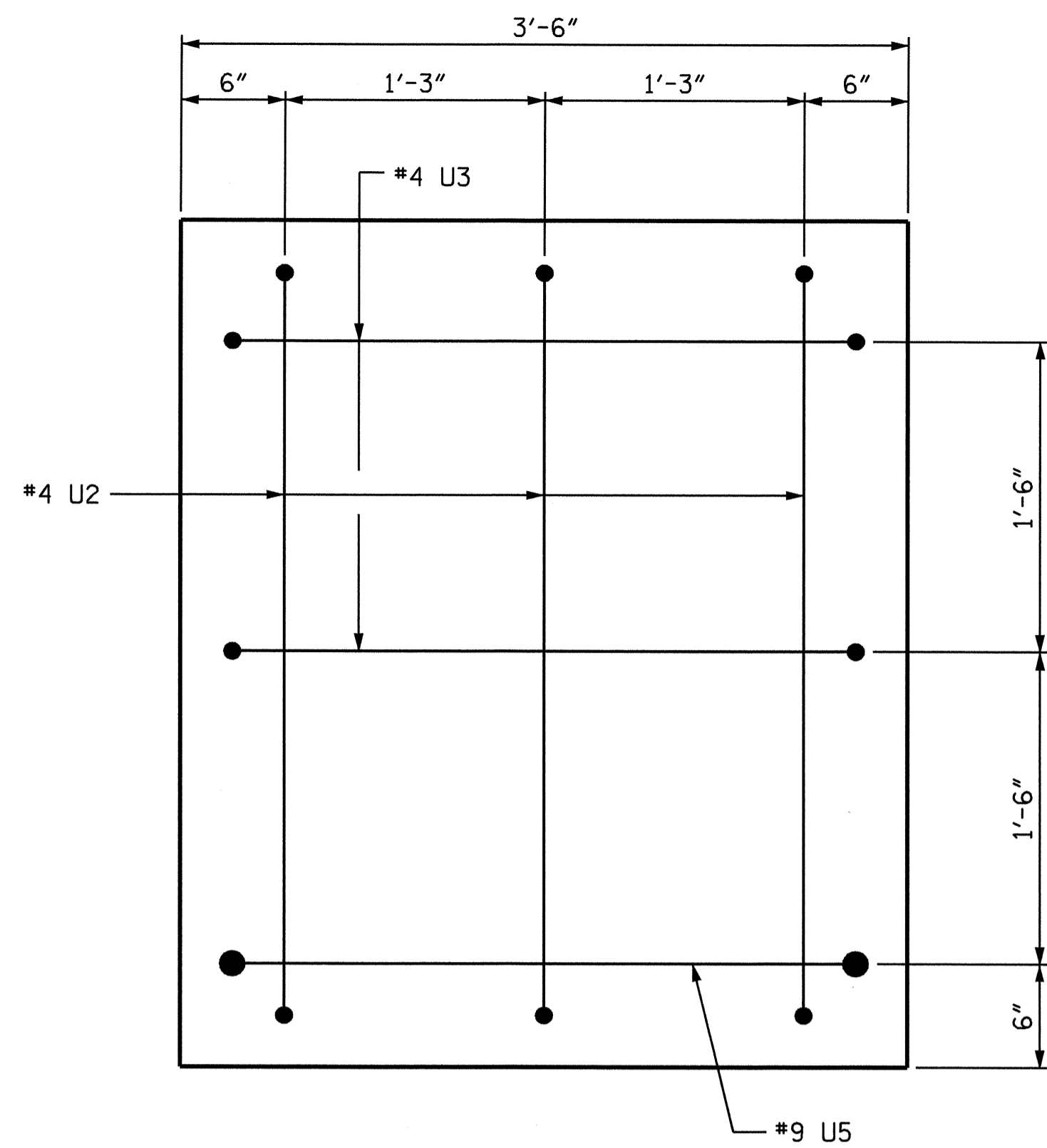
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-23
					TOTAL SHEETS 35



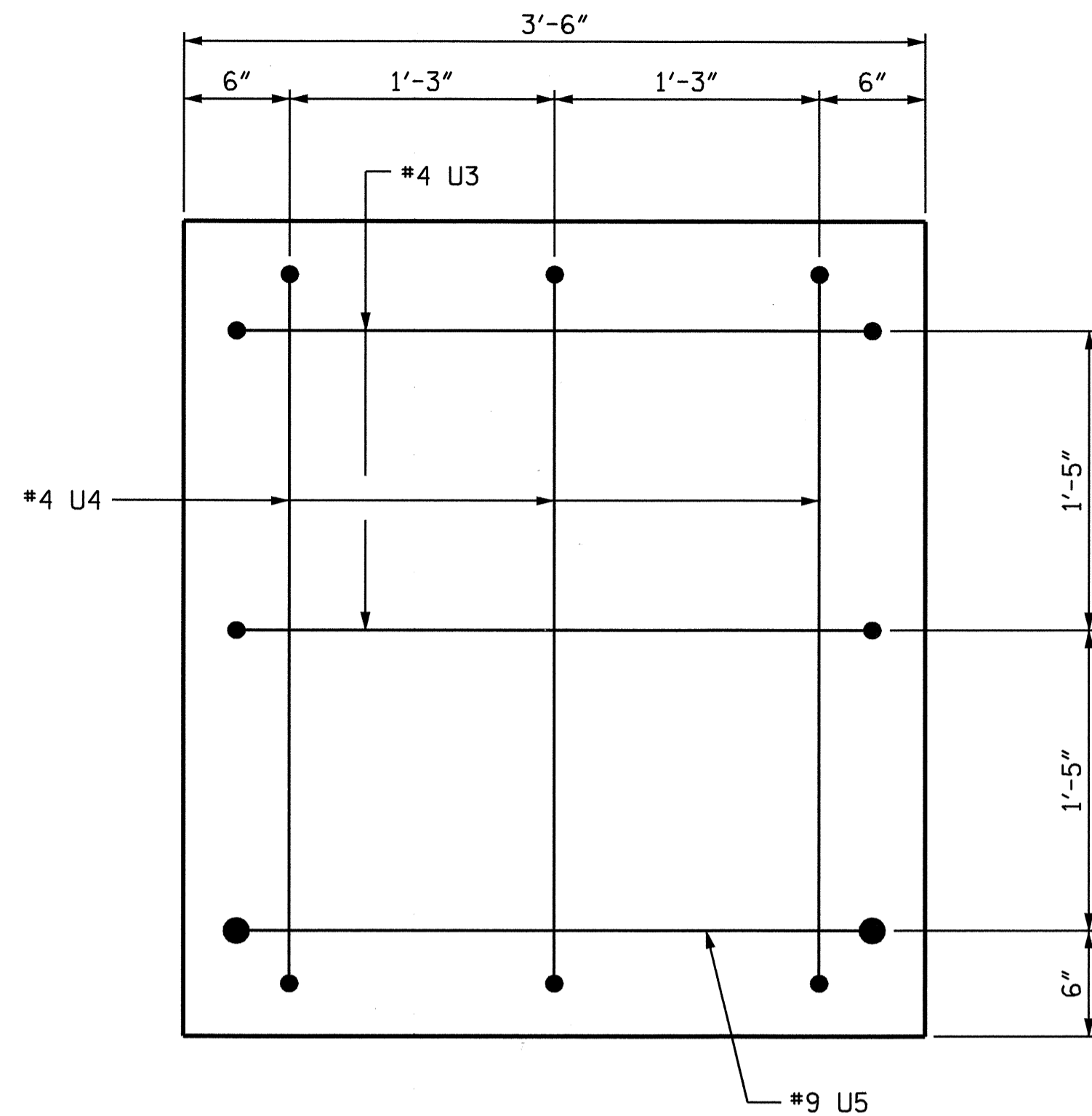
DRAWN BY : J. MYA DATE : 08/21/07  
 CHECKED BY : A. K. PATEL DATE : 08/31/07



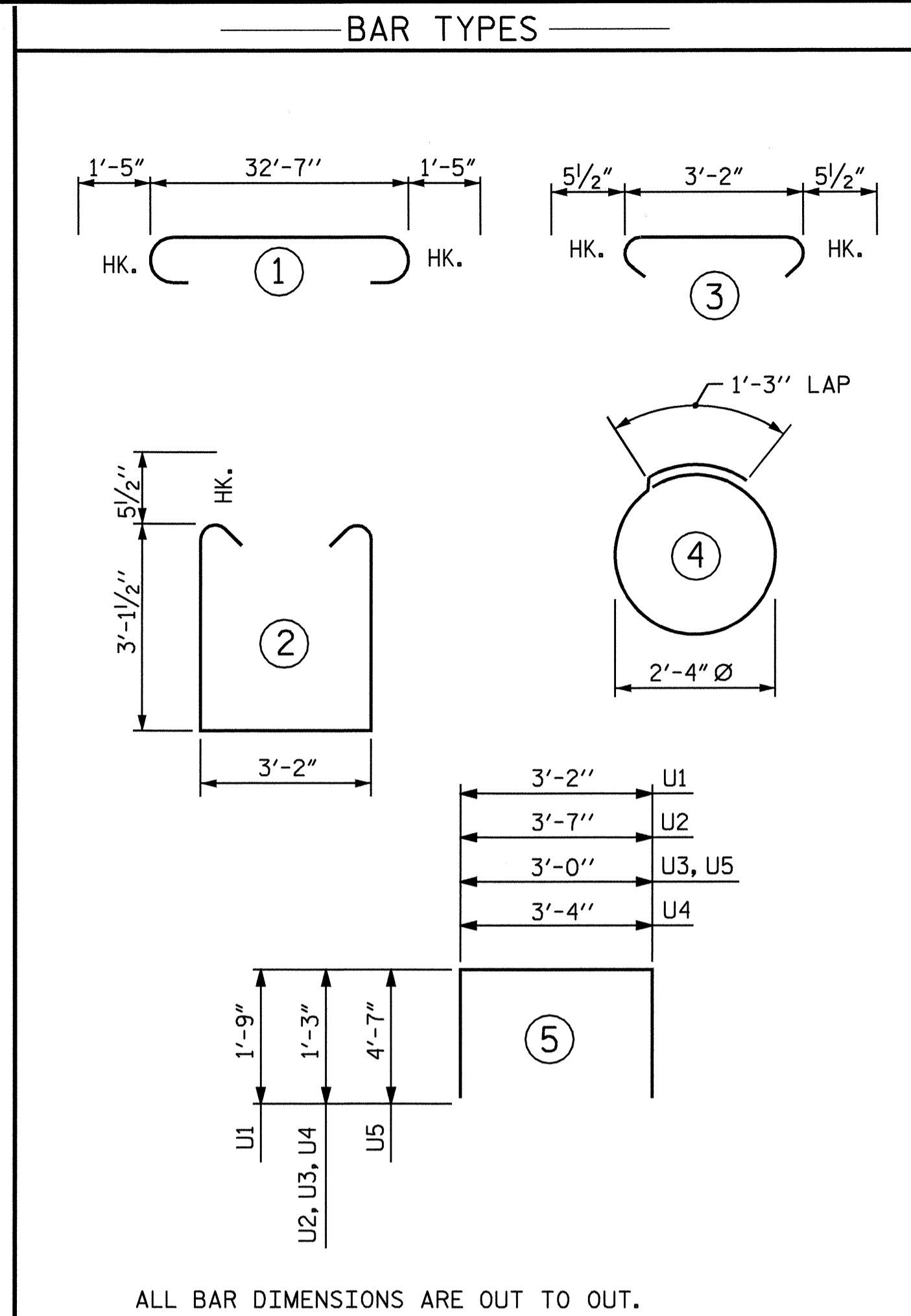




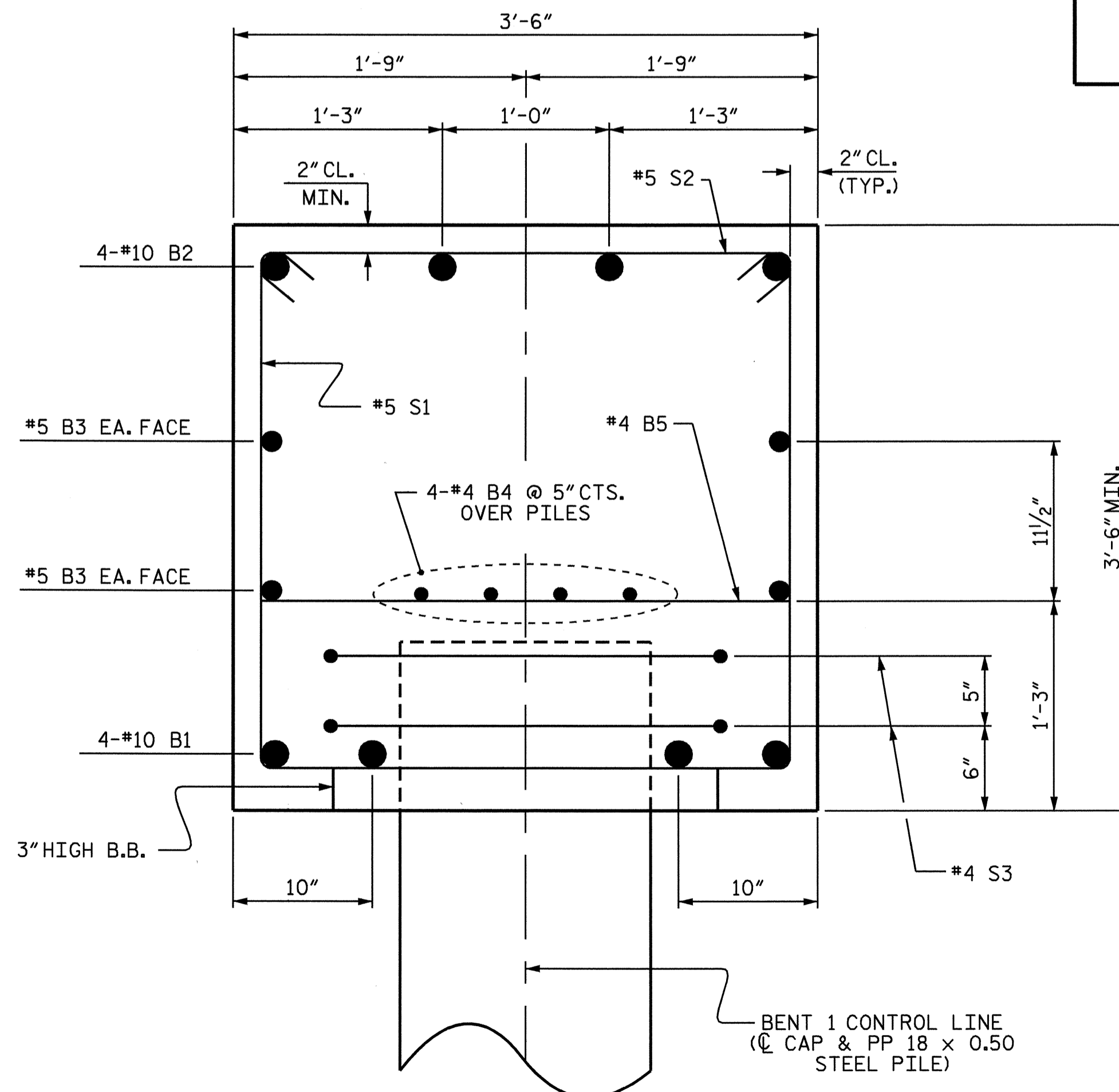
VIEW X-X



VIEW Y-Y



BILL OF MATERIAL					
BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	STR	32'-8"	562
B2	4	#10	1	35'-5"	610
B3	4	#5	STR	32'-8"	136
B4	8	#4	STR	17'-7"	94
B5	9	#4	STR	3'-2"	19
B6	12	#4	STR	4'-8"	37
B7	4	#4	STR	3'-6"	9
S1	28	#5	2	10'-4"	302
S2	28	#5	3	4'-1"	119
S3	10	#4	4	8'-7"	57
U1	37	#4	5	6'-8"	165
U2	3	#4	5	6'-1"	12
U3	4	#4	5	5'-6"	15
U4	3	#4	5	5'-10"	12
U5	2	#9	5	12'-2"	83
REINFORCING STEEL				LBS	2232
CLASS A CONCRETE BREAKDOWN					
CAP				C.Y.	16.0
▲TOTAL				C.Y.	16.0
PP 18 X 0.50 GALVANIZED STEEL PILES :					
NO. : 5				LIN. FT. :	195



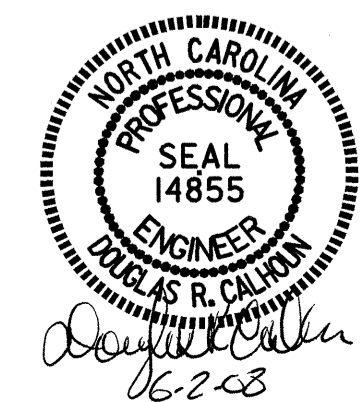
SECTION A-A

PROJECT NO. B-4194  
McDOWELL COUNTY  
 STATION: 16+20.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT 1



DRAWN BY : B.N. GRADY DATE : 5/8/08  
 CHECKED BY : D.R. CALHOUN DATE : 5/9/08

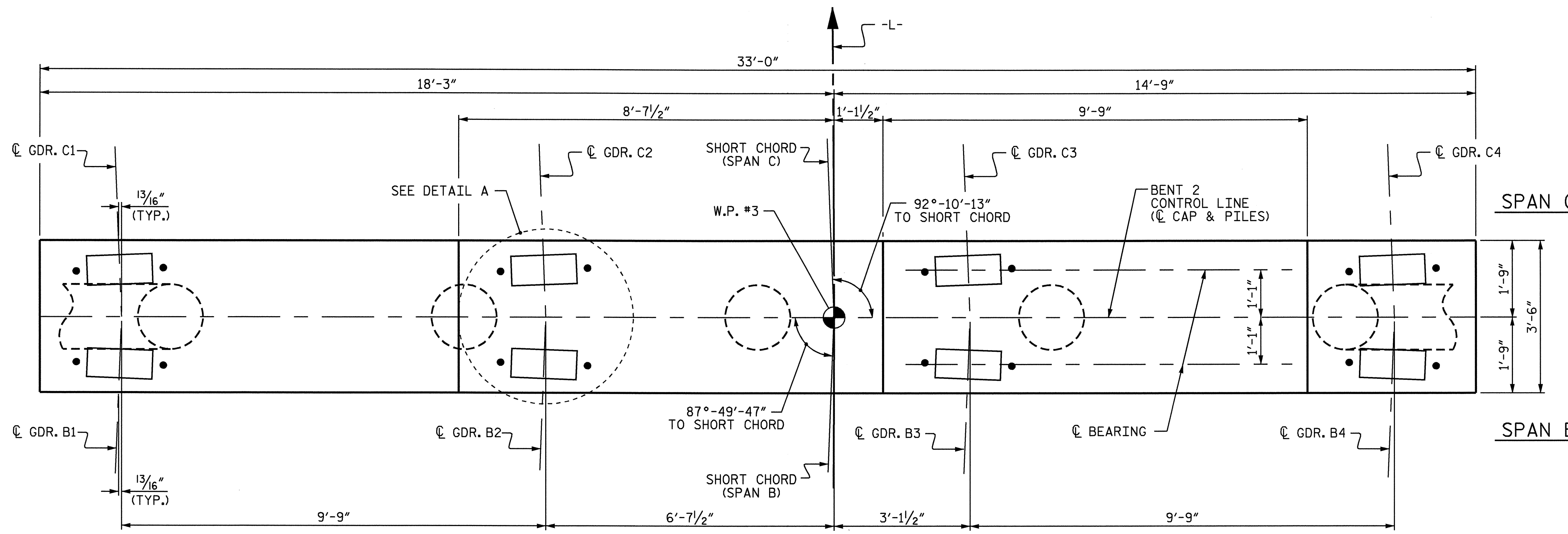
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

TOTAL SHEETS: **35**

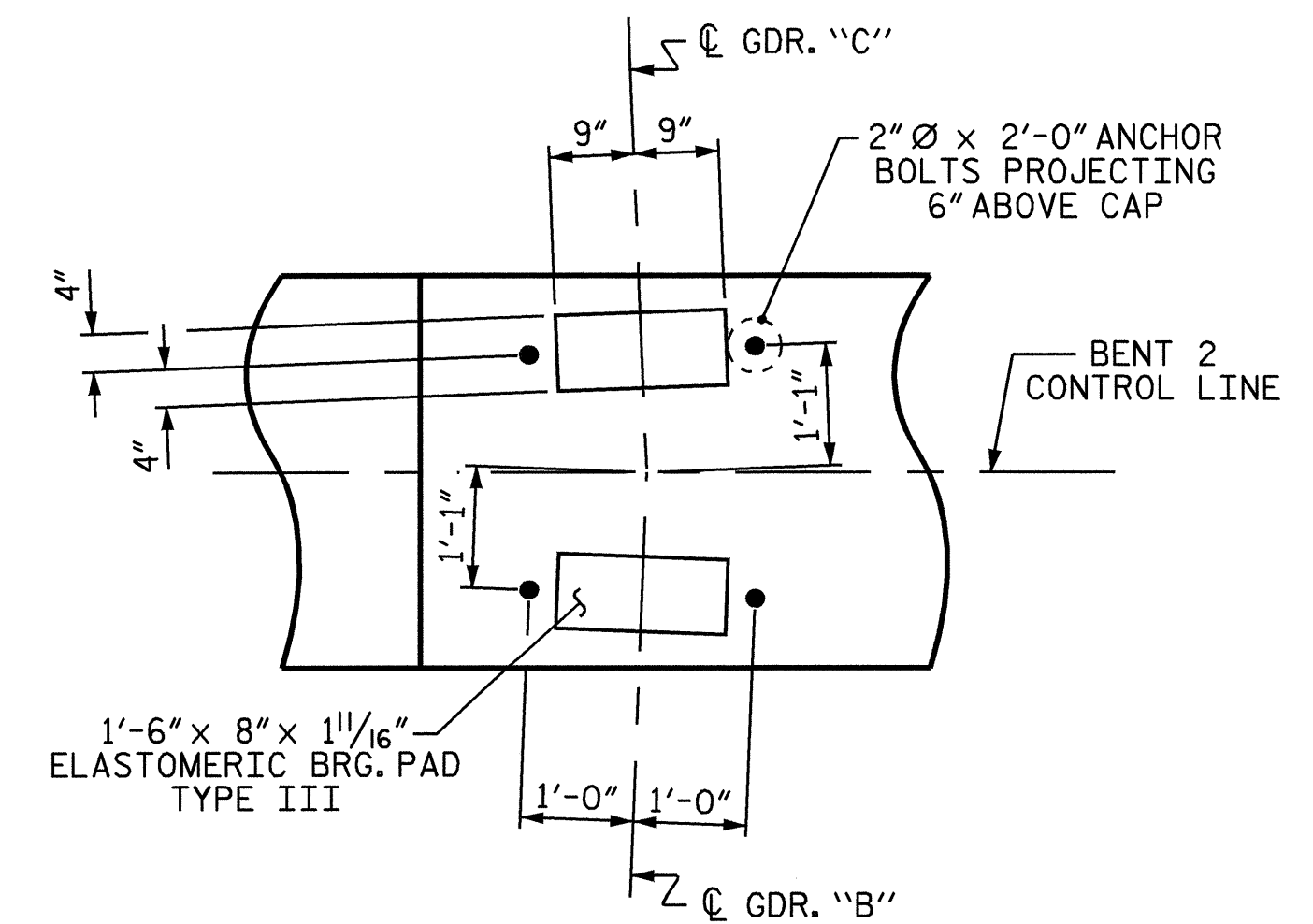
**NOTES**

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

FOR REINFORCING STEEL IN PIPE PILES, SEE "18" STEEL PIPE PILE" SHEET S-28.

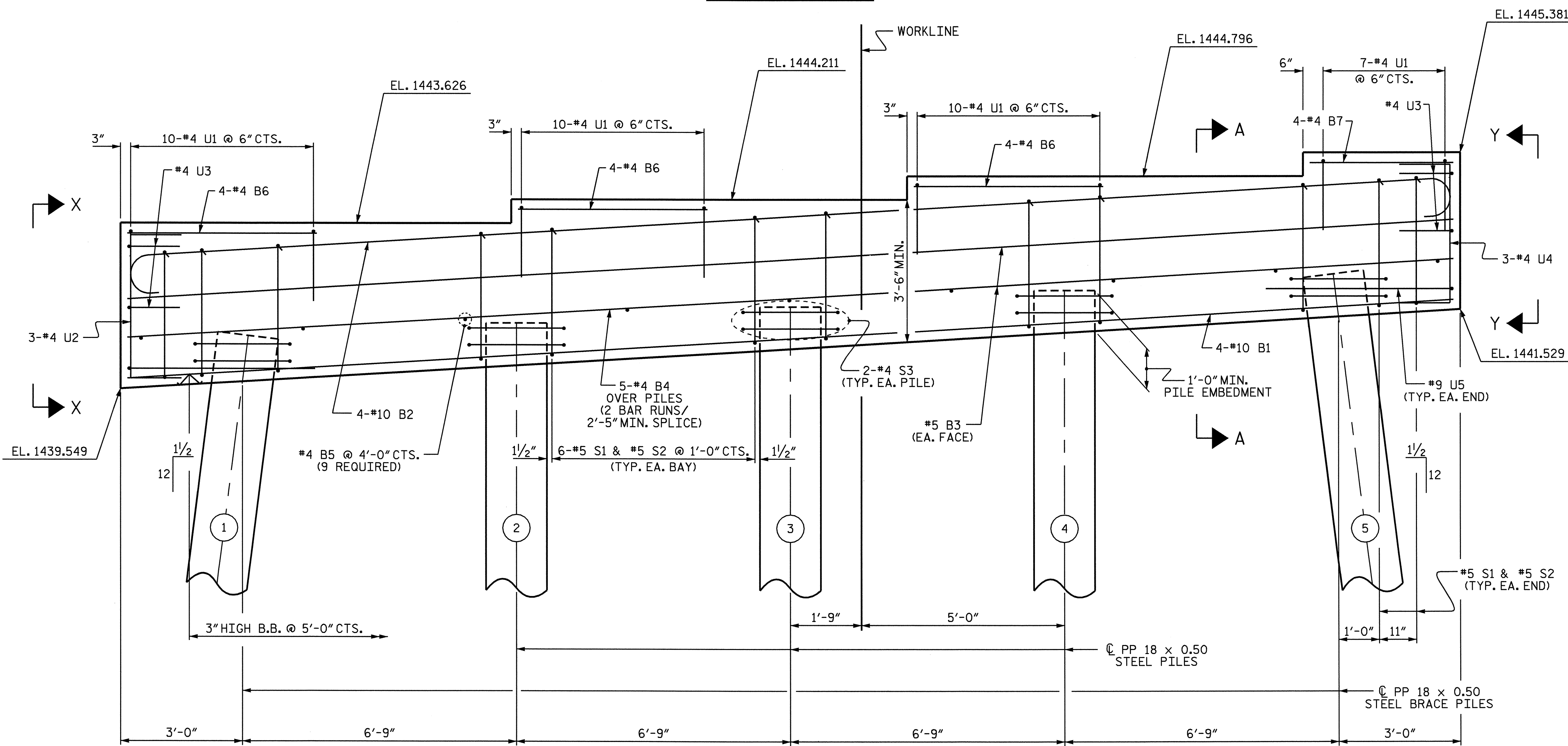


**PLAN**



**DETAIL A**  
(TYP. EA. BEARING)

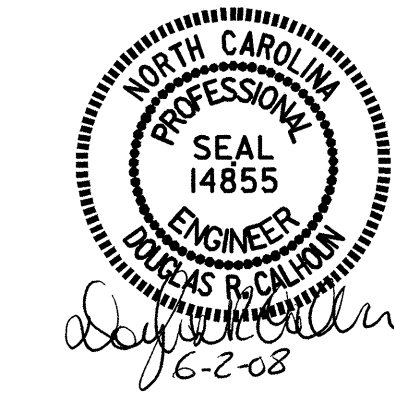
TOP OF PILE ELEVATIONS	
PILE 1	1440.875
PILE 2	1441.179
PILE 3	1441.584
PILE 4	1441.989
PILE 5	1442.389



**ELEVATION**

DRAWN BY : B.N. GRADY DATE : 5/7/08  
 CHECKED BY : D.R. CALHOUN DATE : 5/9/08

15-MAY-2008 15:38  
 R:\Structures\Final Plans\B4194\_sd.B\_01.dgn  
 jmya



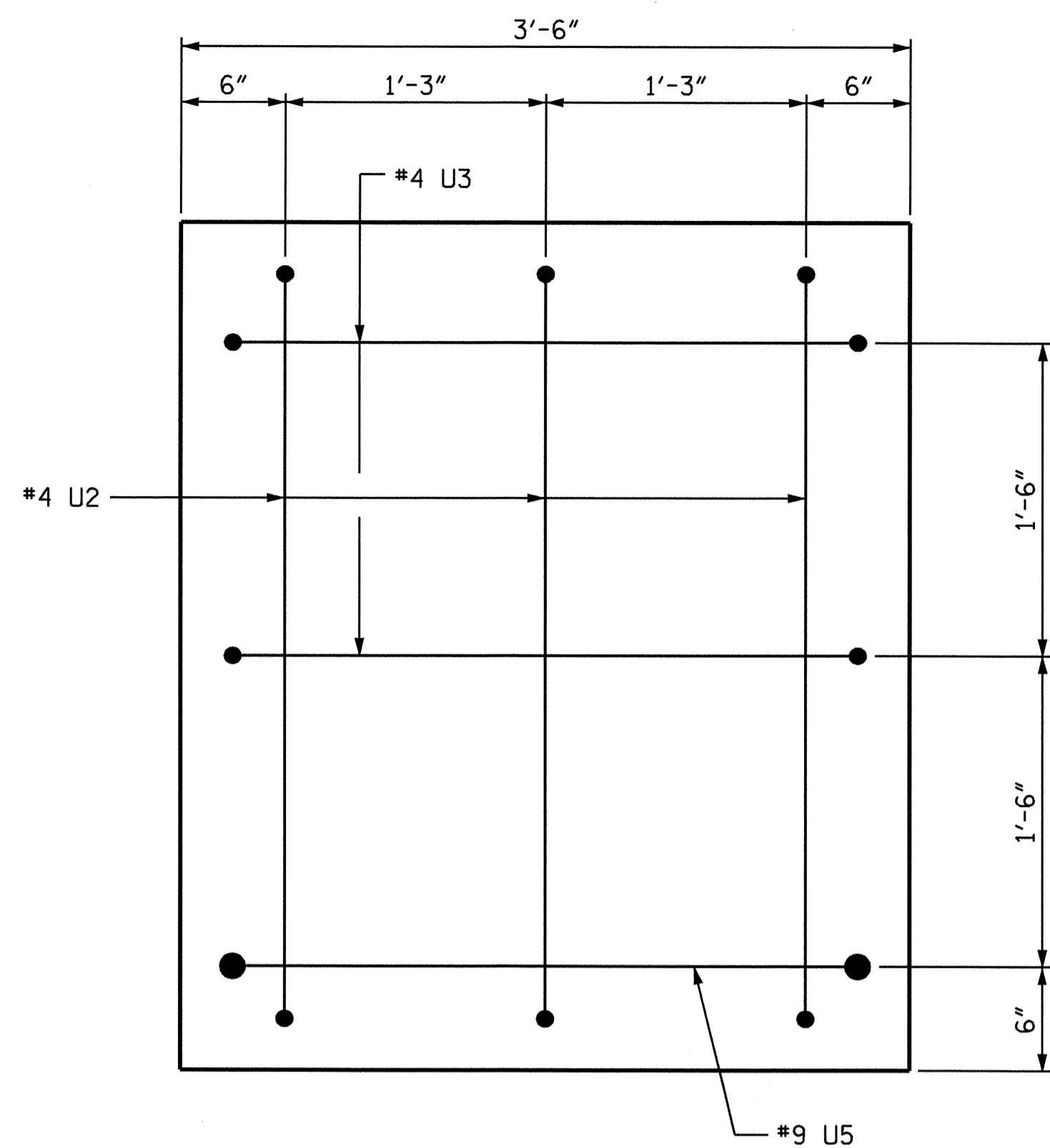
PROJECT NO. B-4194  
McDOWELL COUNTY  
 STATION: 16+20.00 -L-

SHEET 1 OF 2

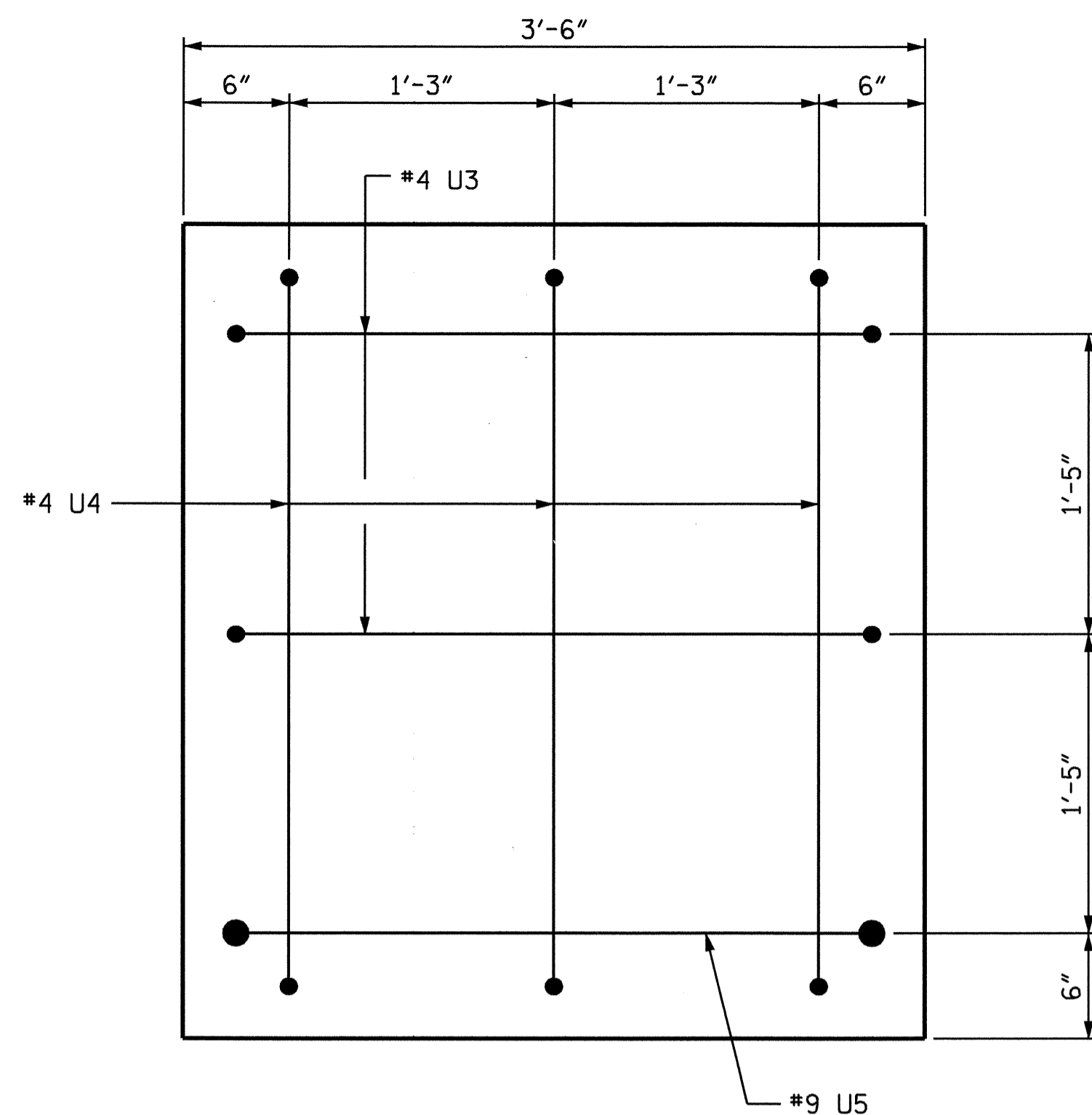
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE BENT 2**

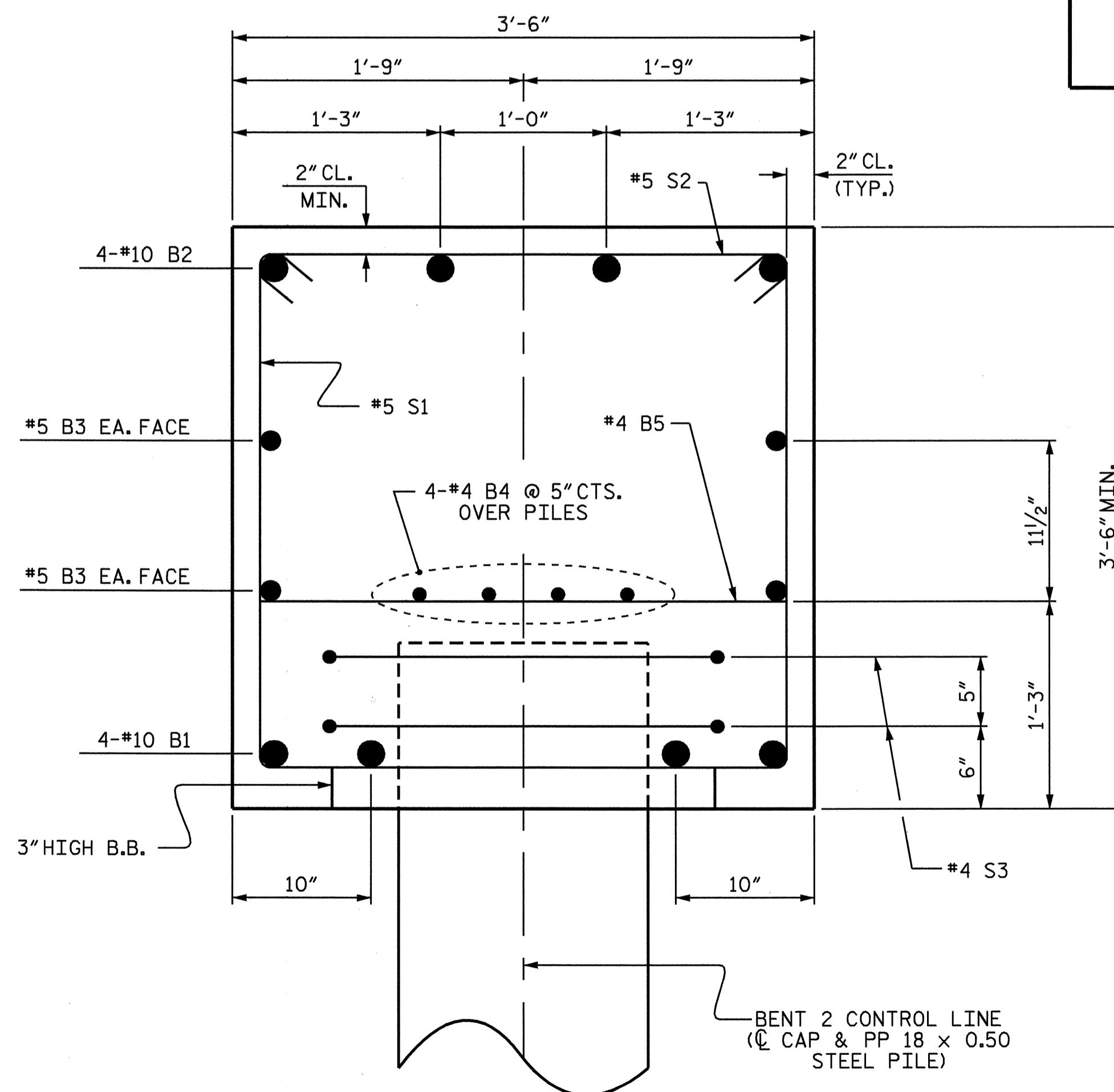
REVISIONS						SHEET NO. S-26
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			



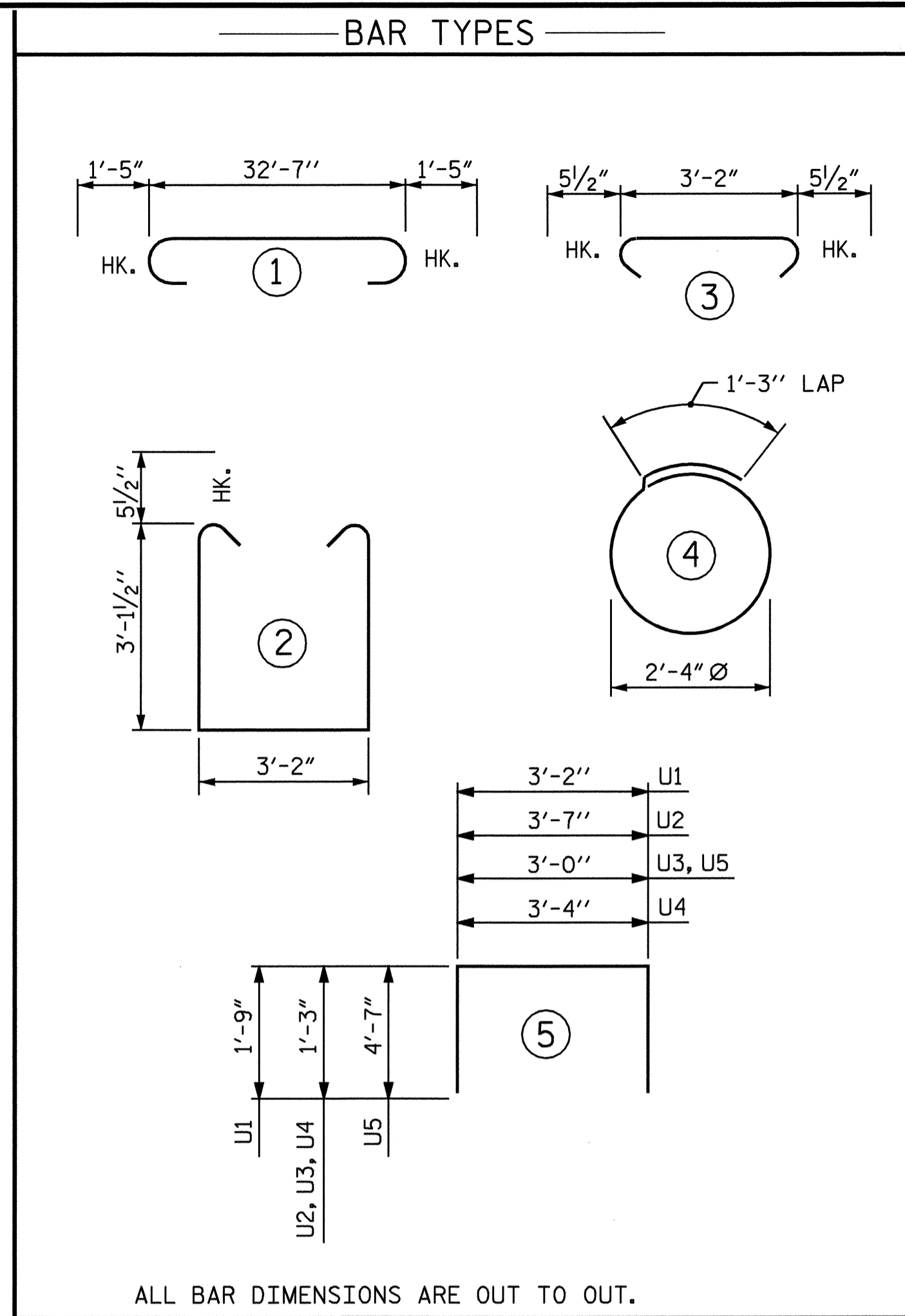
VIEW X-X



VIEW Y-Y



SECTION A-A



BILL OF MATERIAL					
BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	STR	32'-8"	562
B2	4	#10	1	35'-5"	610
B3	4	#5	STR	32'-8"	136
B4	8	#4	STR	17'-7"	94
B5	9	#4	STR	3'-2"	19
B6	12	#4	STR	4'-8"	37
B7	4	#4	STR	3'-6"	9
S1	28	#5	2	10'-4"	302
S2	28	#5	3	4'-1"	119
S3	10	#4	4	8'-7"	57
U1	37	#4	5	6'-8"	165
U2	3	#4	5	6'-1"	12
U3	4	#4	5	5'-6"	15
U4	3	#4	5	5'-10"	12
U5	2	#9	5	12'-2"	83
REINFORCING STEEL				LBS	2232
CLASS A CONCRETE BREAKDOWN					
CAP				C.Y.	16.0
▲TOTAL				C.Y.	16.0
PP 18 X 0.50 GALVANIZED STEEL PILES :					
NO. : 5				LIN. FT. :	178

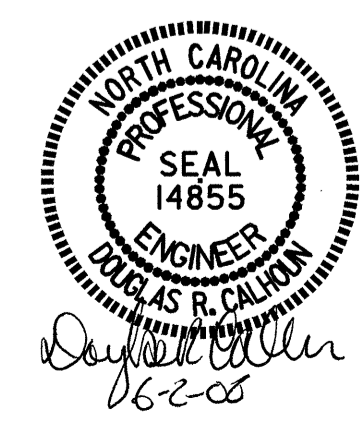
▲ CONCRETE DISPLACED BY THE 18" STEEL PILE PILES HAS BEEN DEDUCTED FROM THE CONCRETE TOTAL

PROJECT NO. B-4194  
McDOWELL COUNTY  
 STATION: 16+20.00 -L-

SHEET 2 OF 2

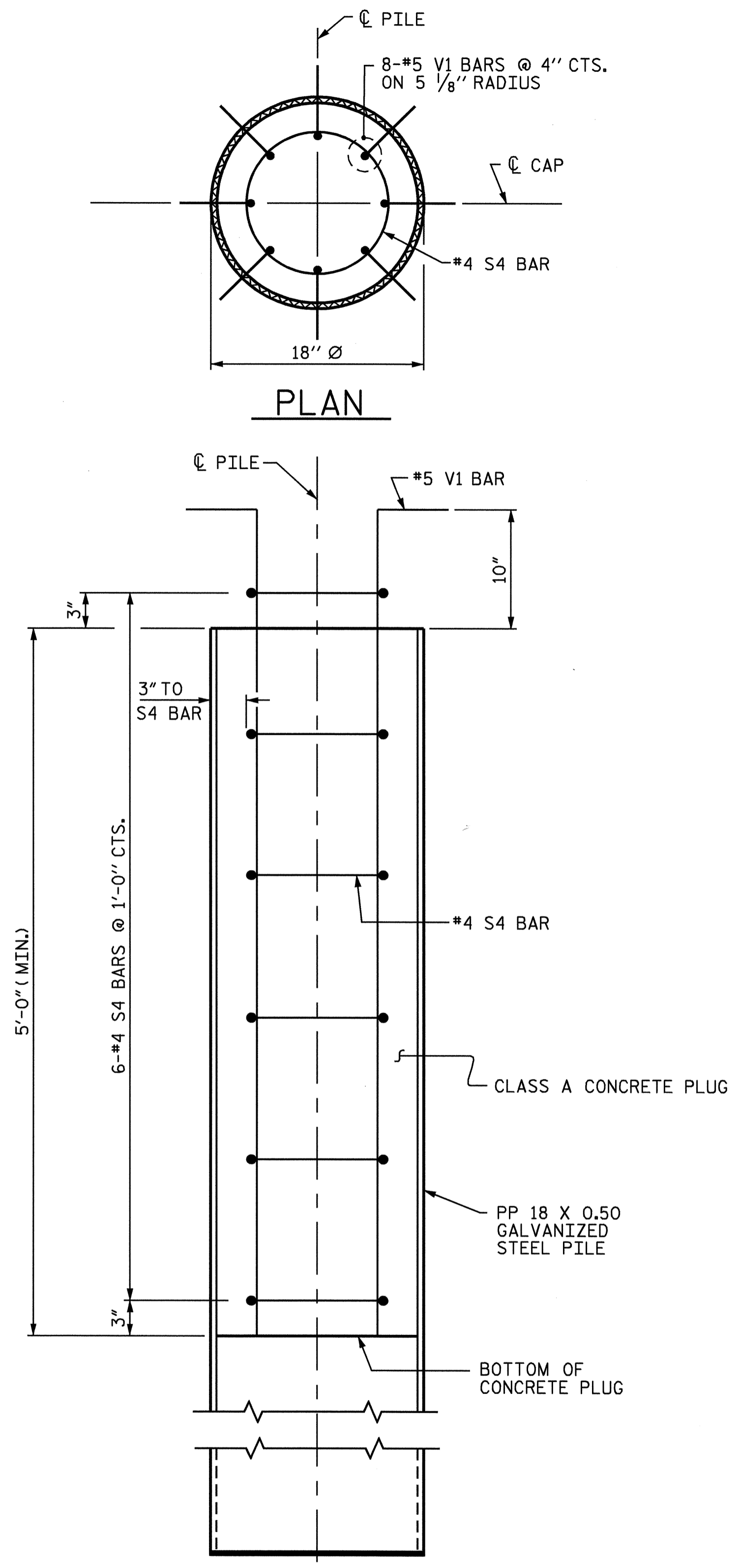
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT 2



REVISIONS						SHEET NO. S-27
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			35

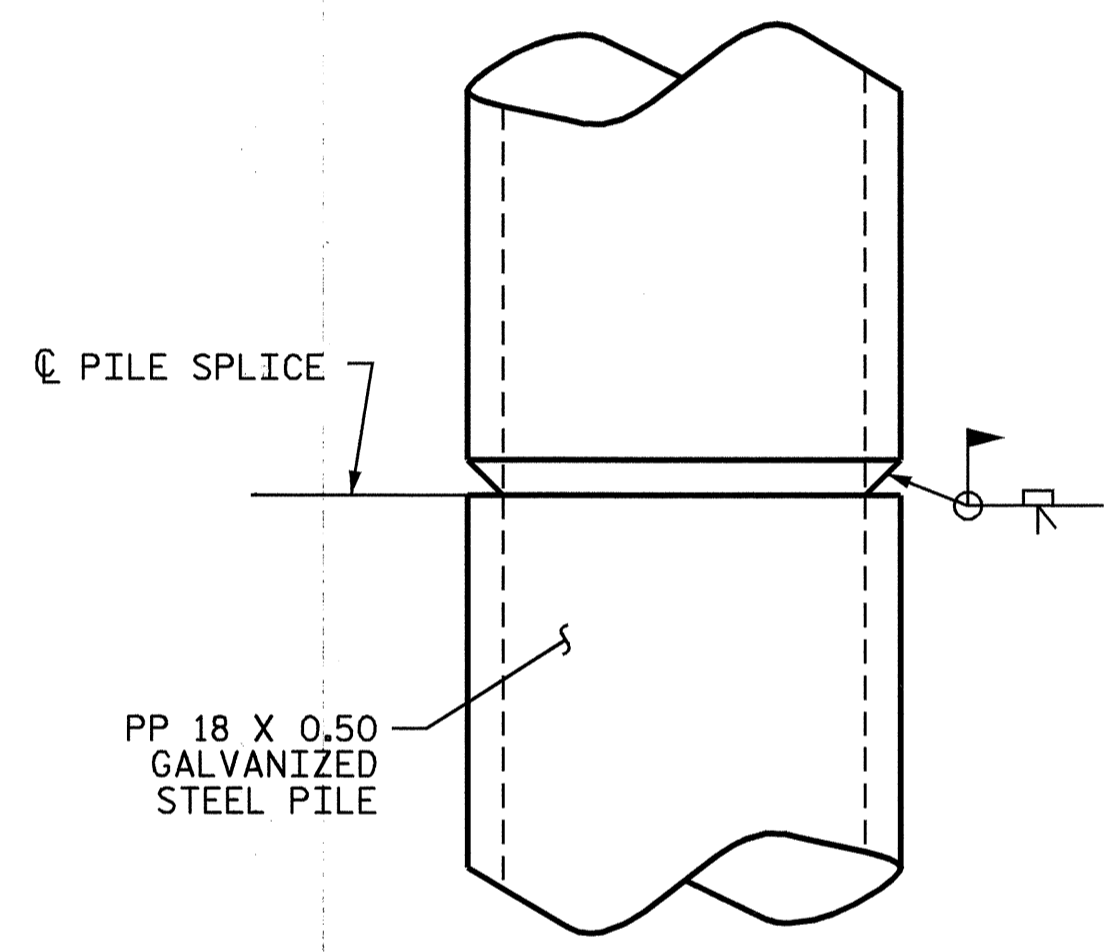
DRAWN BY : B.N. GRADY DATE : 5/8/08  
 CHECKED BY : D.R. CALHOUN DATE : 5/9/08



**PLAN**

**ELEVATION**

**PP 18 X 0.50 GALVANIZED STEEL PILE**  
( OPEN END )



**PIPE PILE SPLICE DETAIL**

**NOTES**

PIPE PILES SHALL BE IN ACCORDANCE WITH SECTION 1084 OF THE STANDARD SPECIFICATIONS.

GALVANIZE STEEL PIPE PILES IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

REMOVE AND REPLACE OR REPAIR TO THE SATISFACTION OF THE ENGINEER PILES THAT ARE DAMAGED, DEFORMED OR COLLAPSED DURING INSTALLATION OR DRIVING.

PILE SPLICES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND AWS D1.1.

FOR OPEN END PIPE PILES, REMOVE ENOUGH SOIL AND WATER FROM INSIDE THE PILES TO CONSTRUCT THE CONCRETE PLUG WITHOUT FOULING THE CONCRETE.

FORM THE CONCRETE PLUG SUCH THAT THE REINFORCING STEEL OR CONCRETE DOES NOT MOVE AND THE CLEARANCE FROM THE REINFORCING STEEL TO THE INSIDE OF THE PILE IS MAINTAINED AFTER CONCRETE PLACEMENT. DO NOT PLACE CONCRETE IN THE BENT CAP UNTIL THE CONCRETE PLUG HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI.

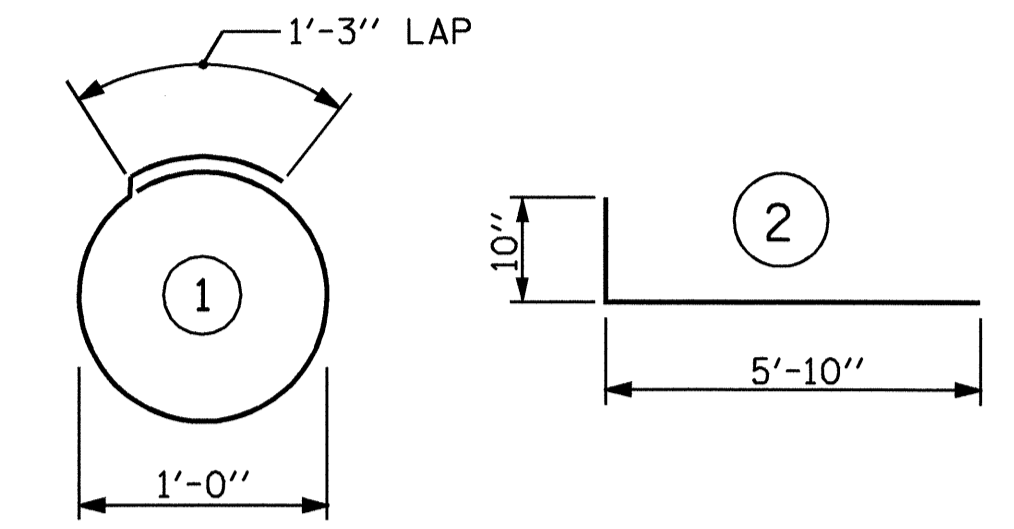
THE REINFORCING STEEL, CLASS A CONCRETE, AND GALVANIZING ARE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR PP 18 X 0.50 GALVANIZED STEEL PILES.

**BILL OF MATERIAL FOR ONE PP 18 X 0.50 GALVANIZED STEEL PILE**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S4	6	#4	1	4'-5"	18
V1	8	#5	2	6'-8"	56
REINFORCING STEEL =				74	lbs

CLASS A CONCRETE  
5'-0" MINIMUM PLUG 0.3 CY

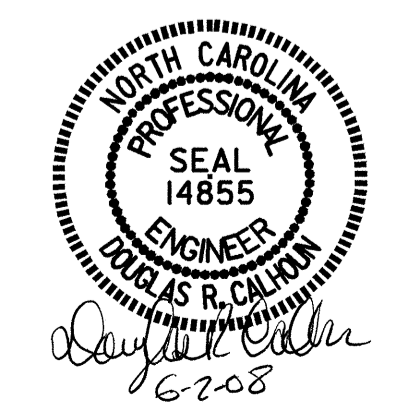
**BAR TYPES**



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. B-4194  
McDOWELL COUNTY  
STATION: 16+20.00 -L-

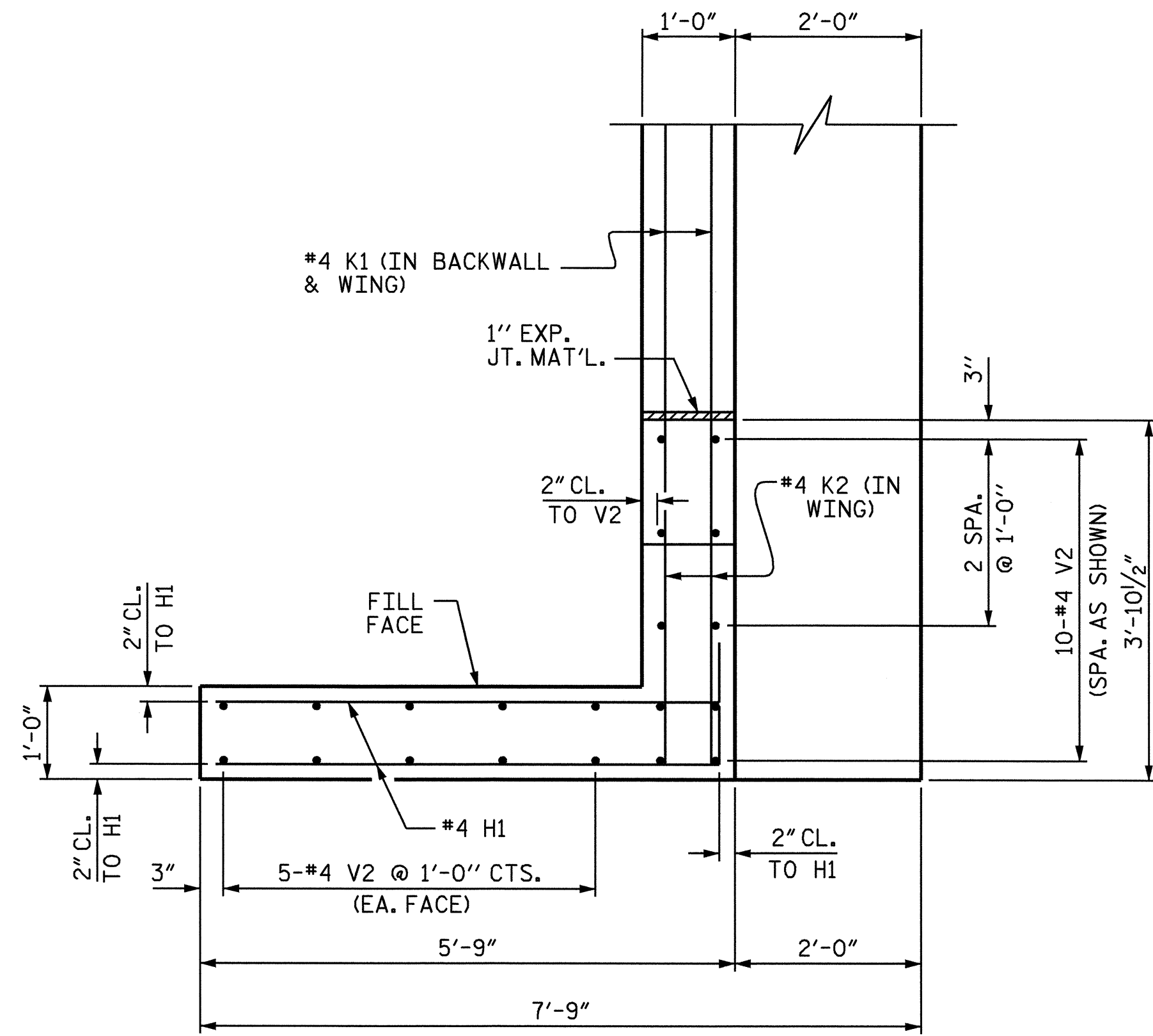
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
18" STEEL PIPE PILE



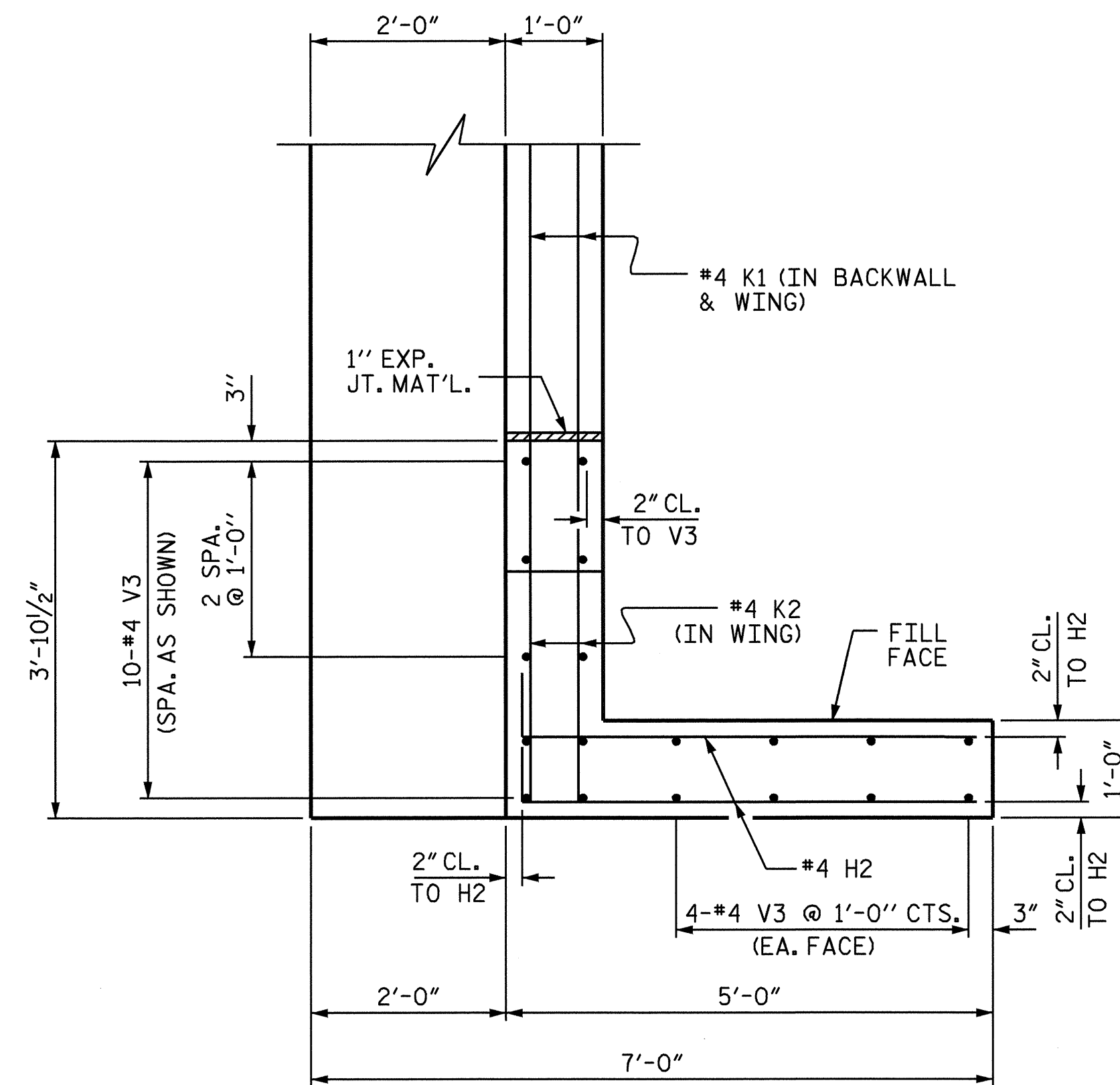
ASSEMBLED BY : B.N. GRADY	DATE : 5/8/08
CHECKED BY : D.R. CALHOUN	DATE : 5/9/08
DRAWN BY : RWW 1/01	REV. 5/7/03 RWW/JTE
CHECKED BY : LES 1/01	REV. 10/1/05 LBG/TLA
	REV. 5/1/06R MAA/KMM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			35

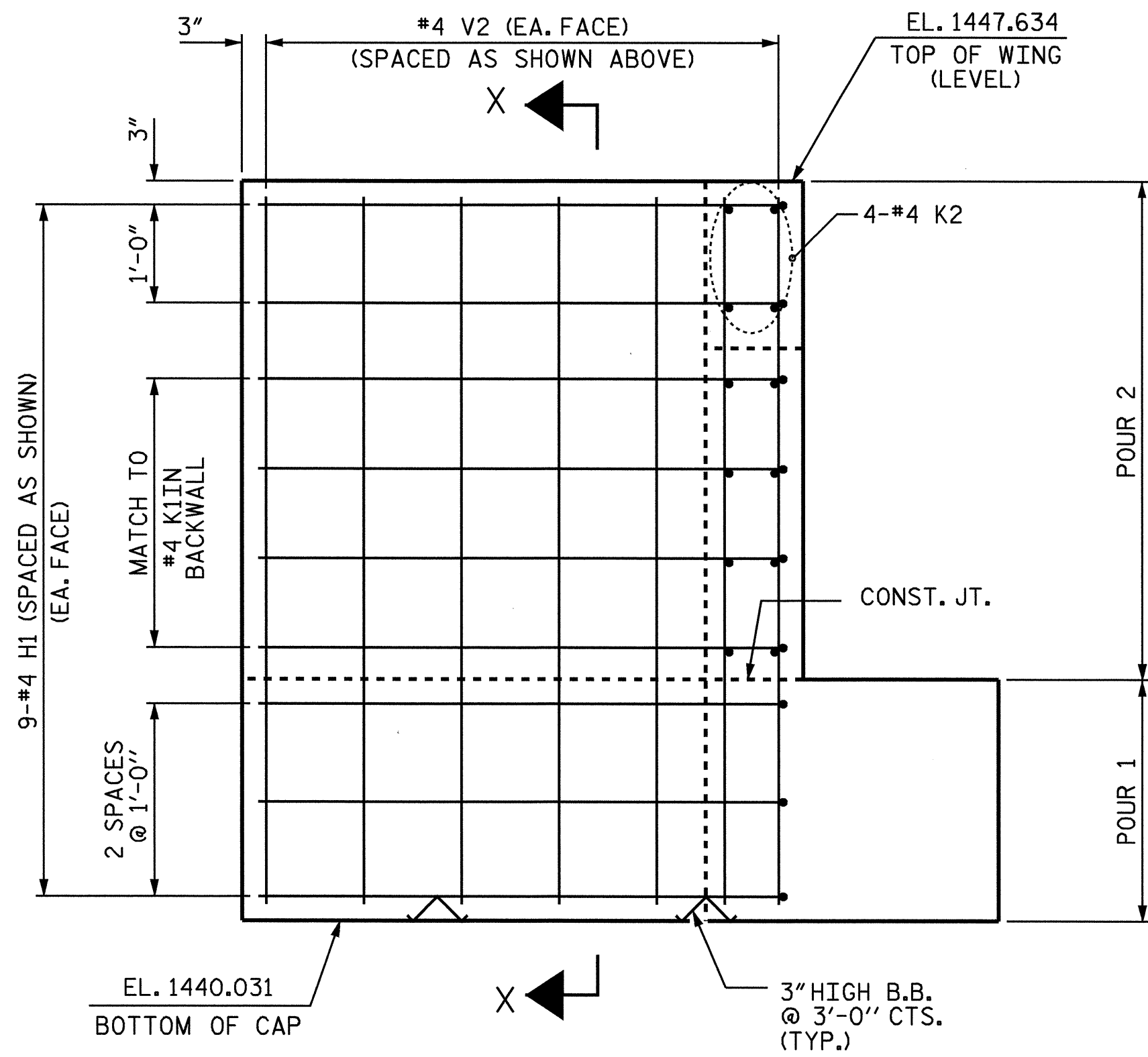




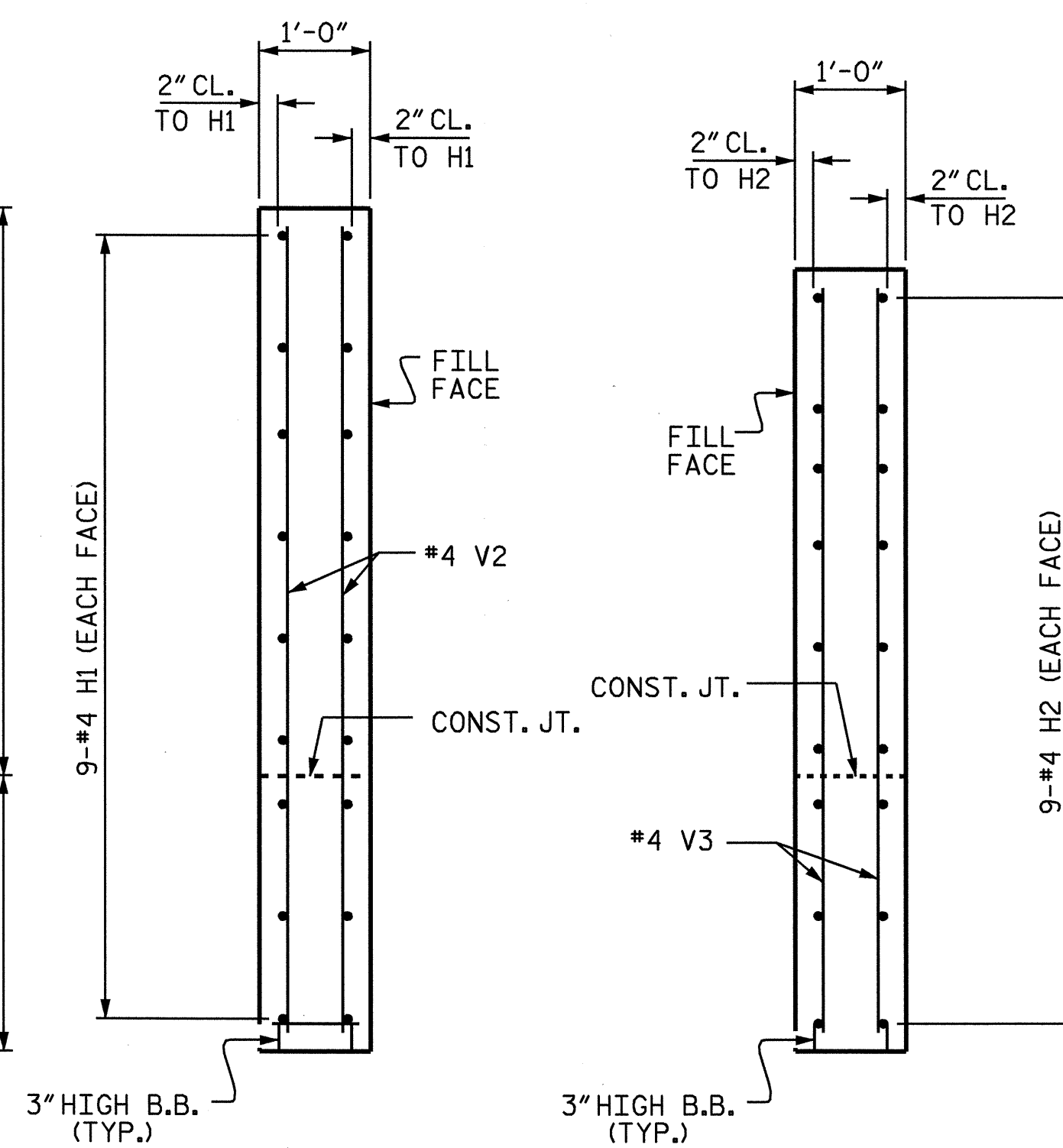
PLAN OF WING - W1



PLAN OF WING - W2

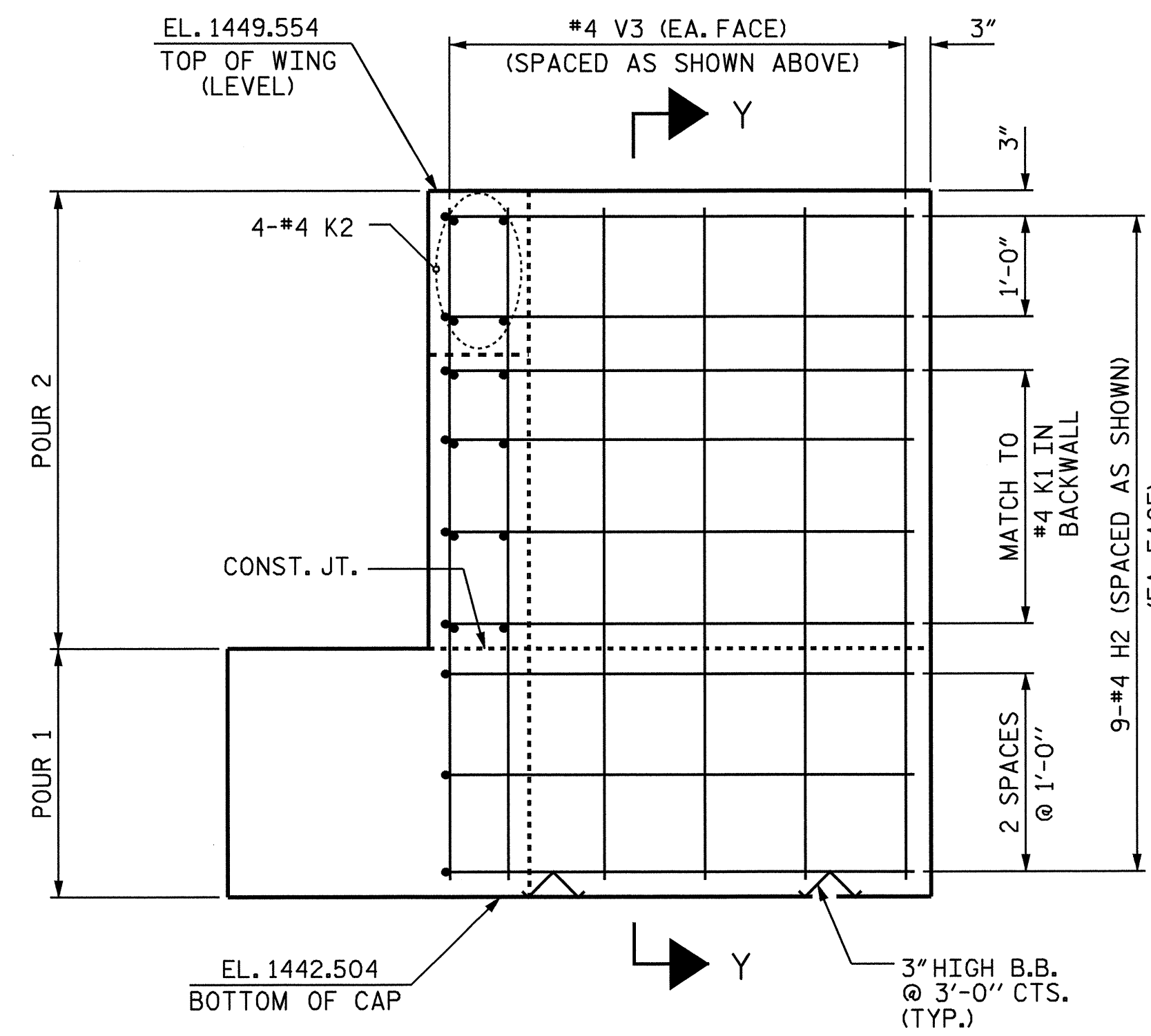


ELEVATION OF WING - W1



SECTION X-X

SECTION Y-Y



ELEVATION OF WING - W2



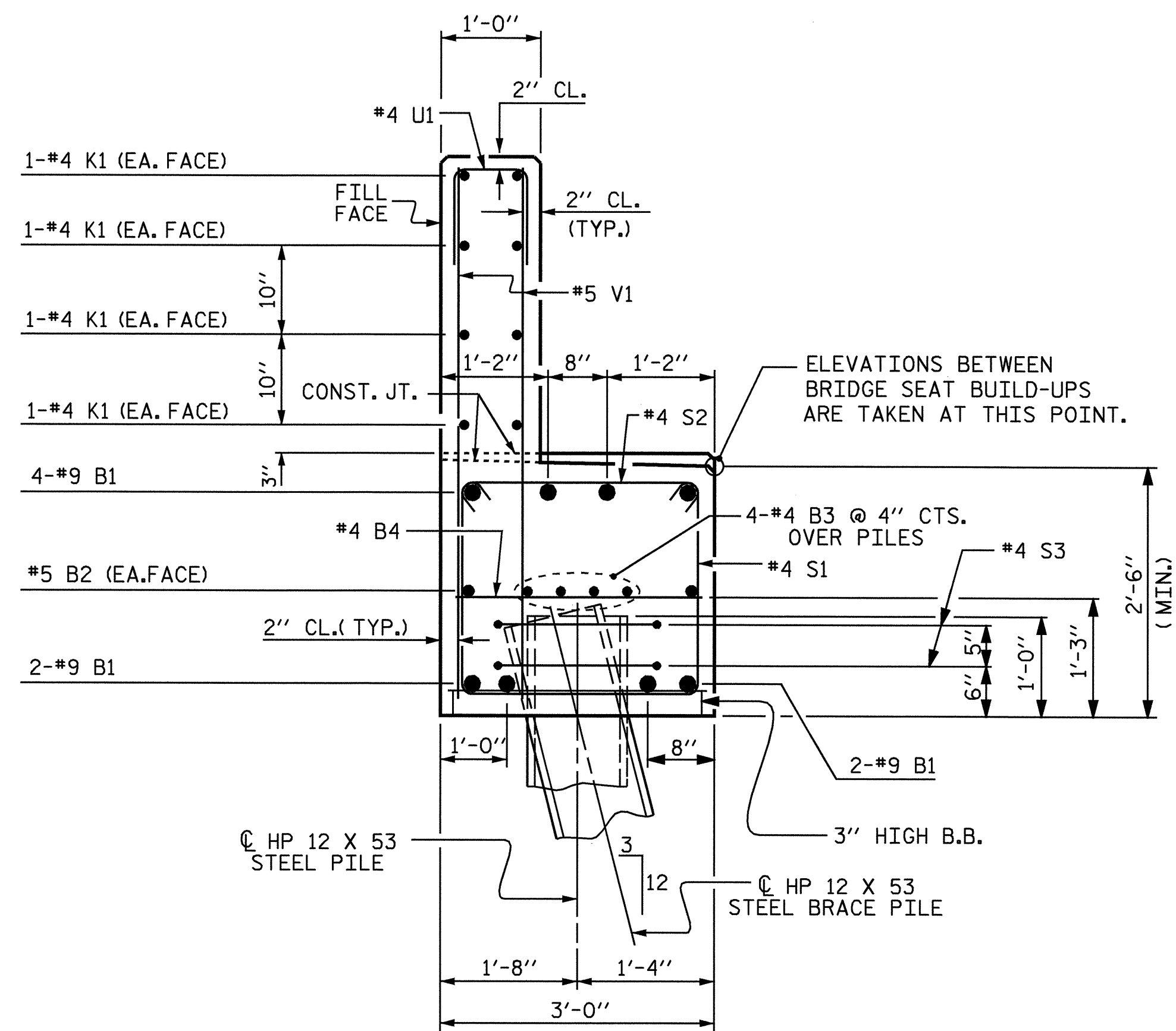
PROJECT NO. B-4194  
 McDOWELL COUNTY  
 STATION: 16+20.00 -L-

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

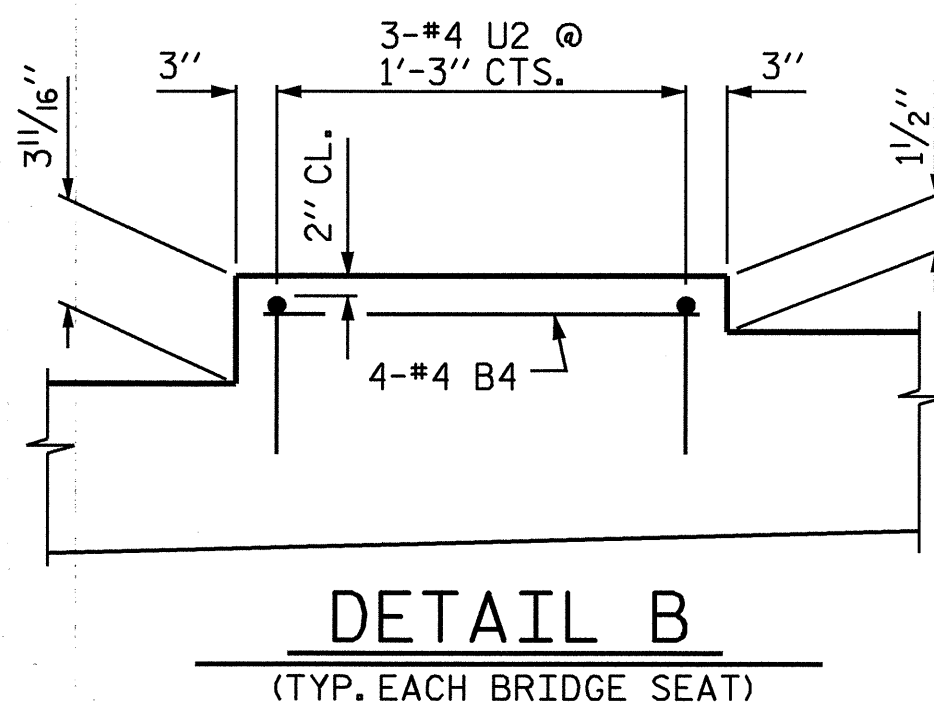
DRAWN BY: J. MYA DATE: 08/21/07  
 CHECKED BY: A. K. PATEL DATE: 08/31/07

15-MAY-2008 15:38  
 R:\S\structures\Final Plans\B-4194.sd.E\*.dgn  
 jmya

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS
2			4			35



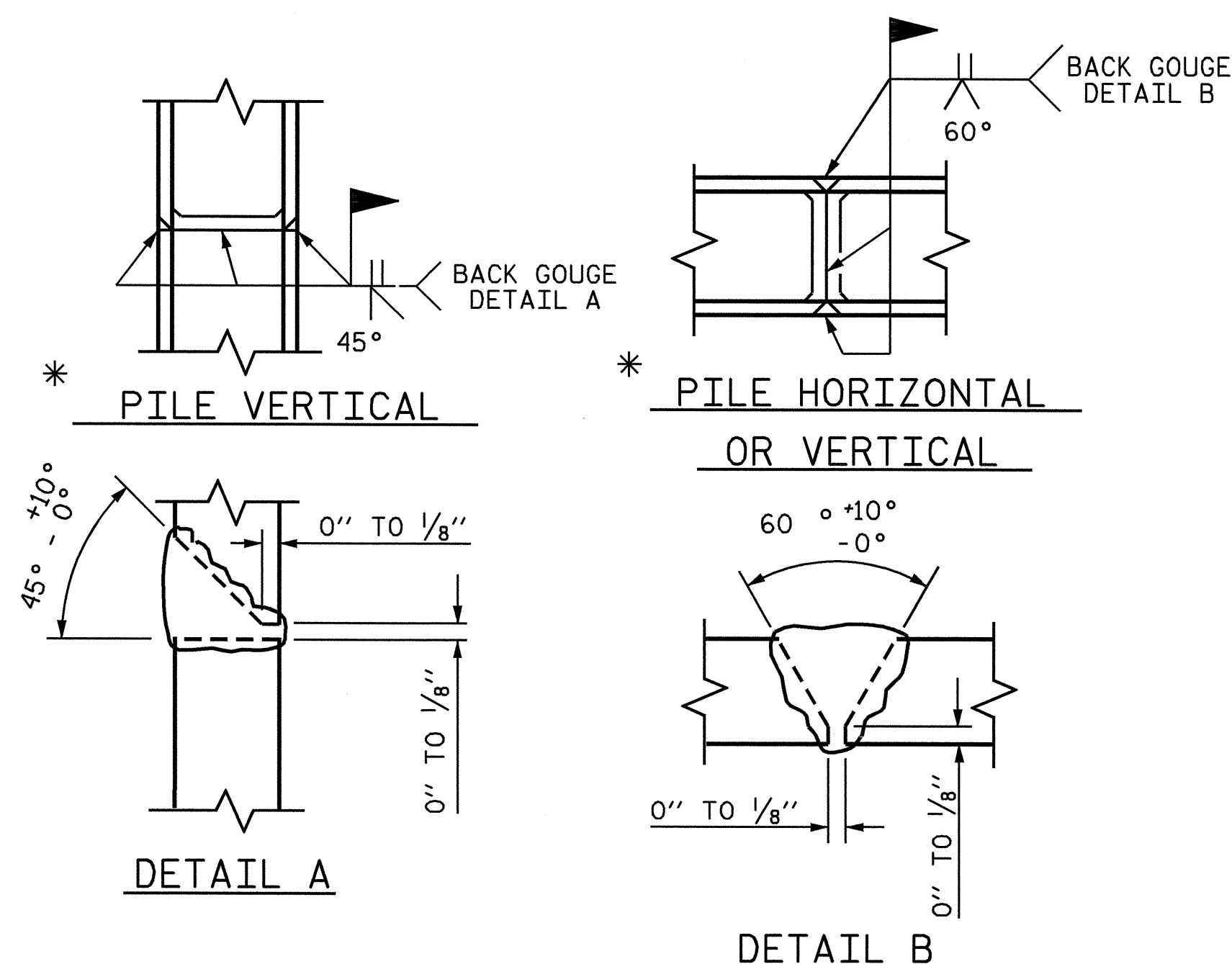
SECTION A-A



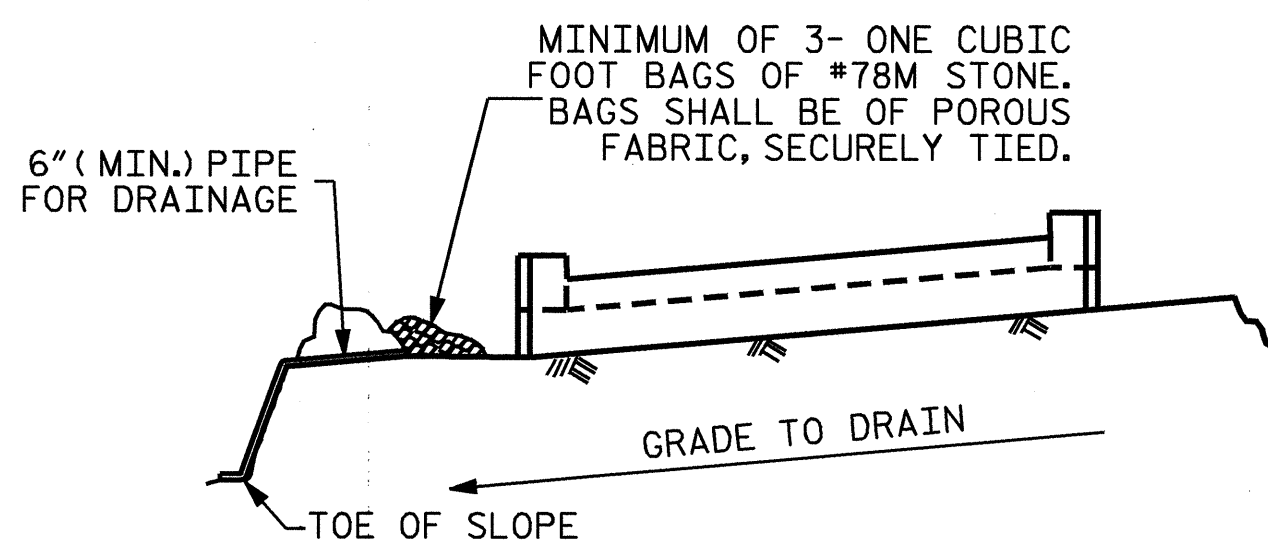
DETAIL B  
(TYP. EACH BRIDGE SEAT)

BAR TYPES		BILL OF MATERIAL				
		END BENT 2				
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		
B1	#9	1	43'-4"	1179		
B2	#5	STR	40'-11"	85		
B3	#4	STR	21'-8"	116		
B4	#4	STR	2'-8"	48		
H1	#4	2	6'-1"	73		
H2	#4	2	5'-4"	64		
K1	#4	STR	21'-8"	232		
K2	#4	STR	3'-6"	19		
S1	#4	3	7'-8"	318		
S2	#4	4	3'-5"	142		
S3	#4	6	6'-6"	52		
U1	#4	5	3'-8"	83		
U2	#4	5	5'-8"	45		
V1	#5	STR	5'-4"	378		
V2	#4	STR	7'-4"	98		
V3	#4	STR	6'-9"	81		
REINFORCING STEEL			LBS	3013		
CLASS A CONCRETE BREAKDOWN						
POUR 1 (CAP & LOWER PART OF WINGS)				C.Y.	12.6	
POUR 2 (BACKWALL & UPPER PART OF WINGS)				C.Y.	6.9	
TOTAL				C.Y.	19.5	
HP 12 X 53 STEEL PILES :						
NO. : 6		LIN. FT. : 210				

ALL BAR DIMENSIONS ARE OUT TO OUT.



PILE SPLICE DETAILS



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

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

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

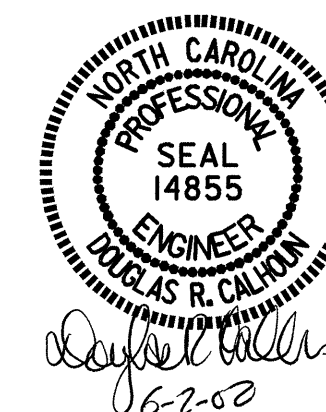
TEMPORARY DRAINAGE AT END BENT

PROJECT NO. B-4194  
McDOWELL COUNTY  
 STATION: 16+20.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

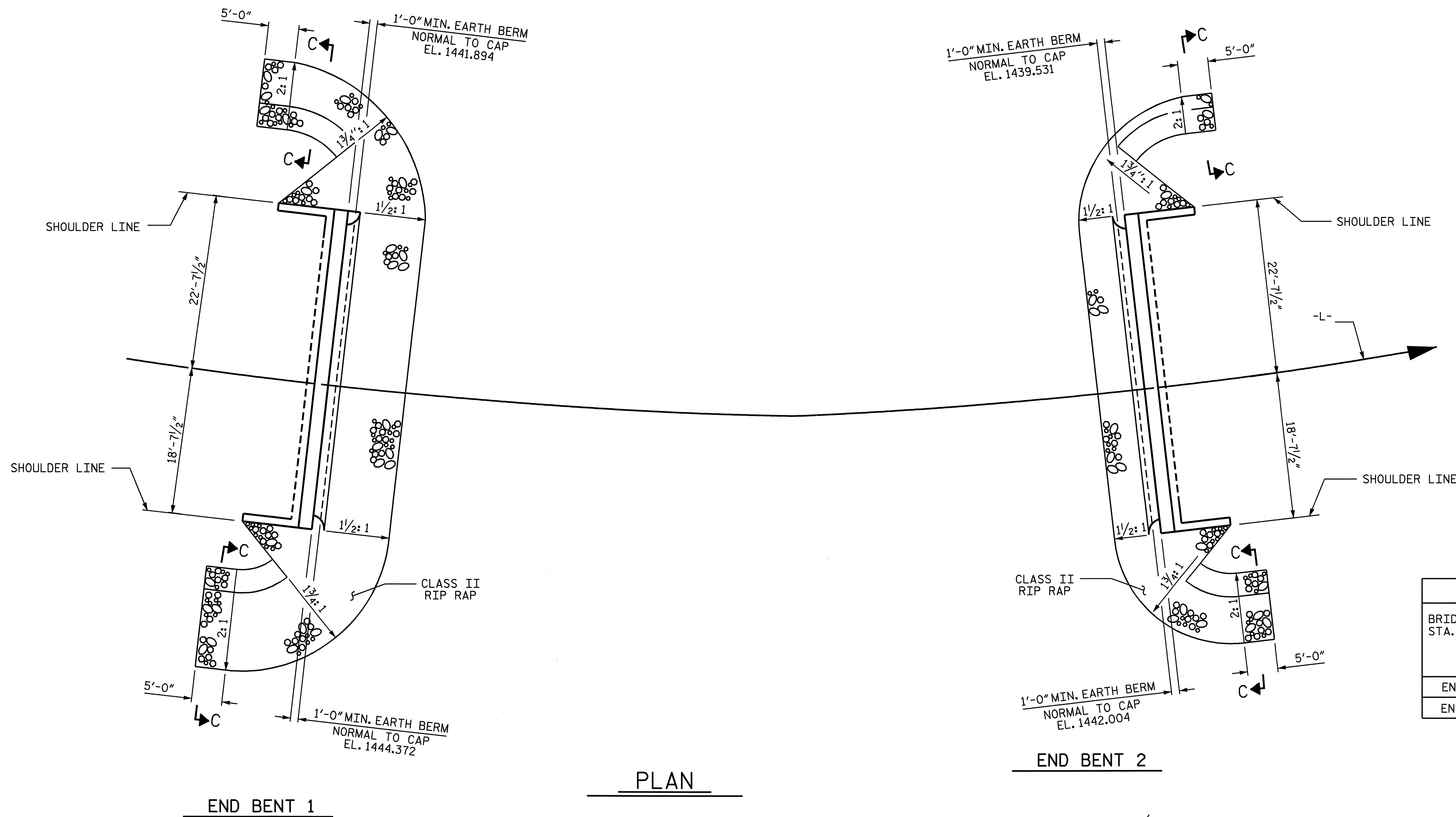
SUBSTRUCTURE  
 END BENT 2



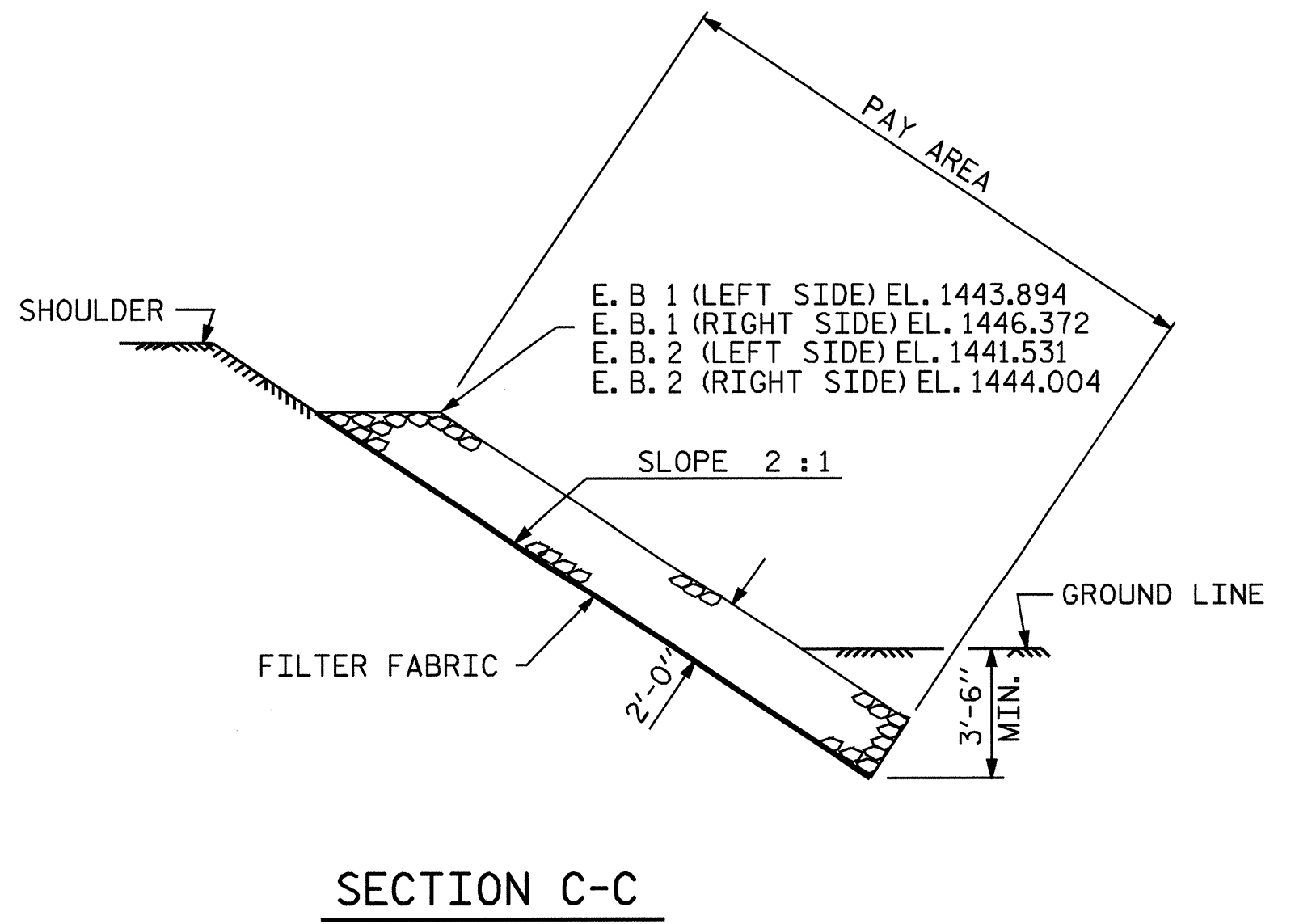
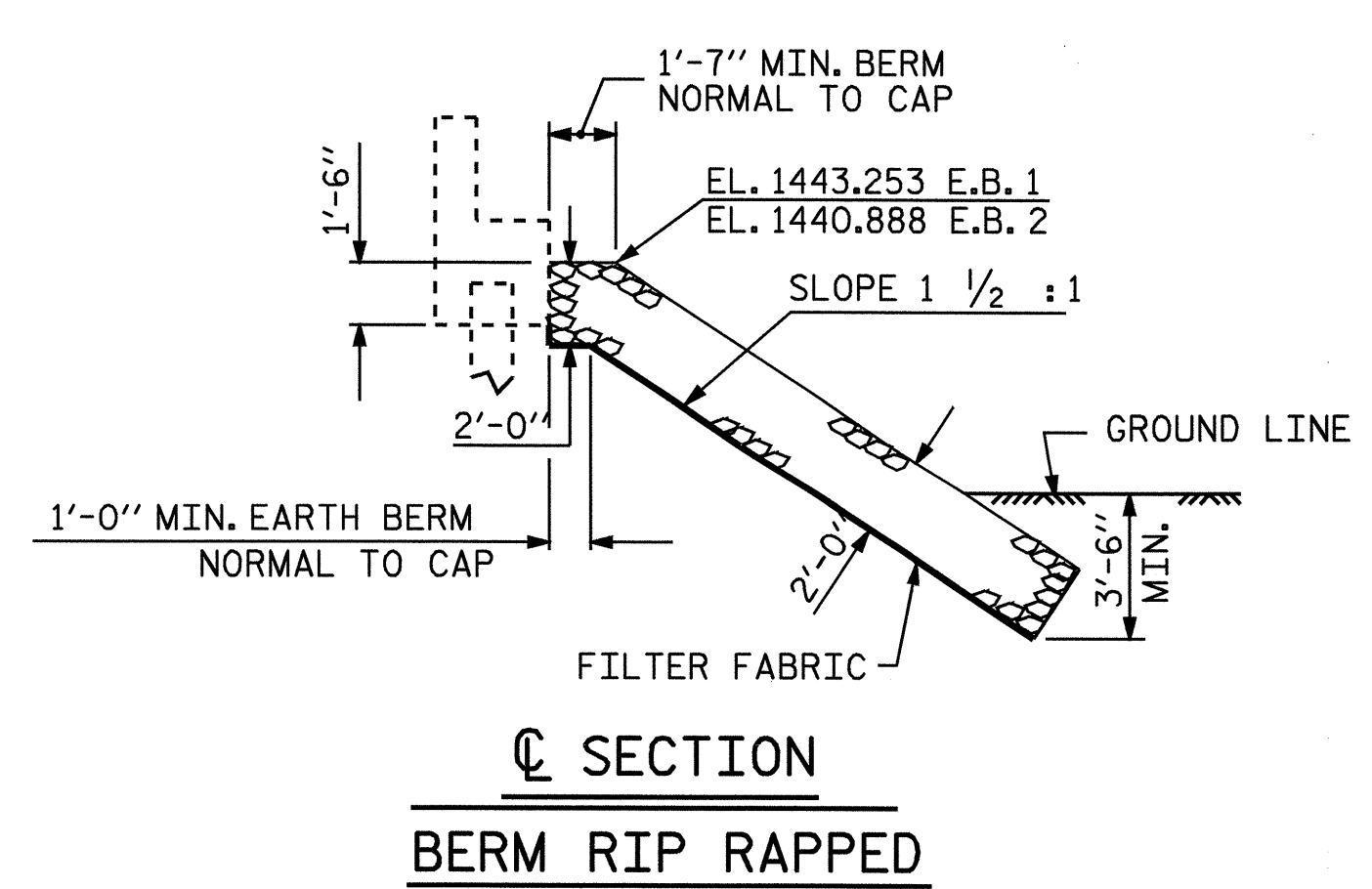
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-31
1			3			TOTAL SHEETS
2			4			35

DRAWN BY : J. MYA DATE : 08/21/07  
 CHECKED BY : A. K. PATEL DATE : 08/31/07



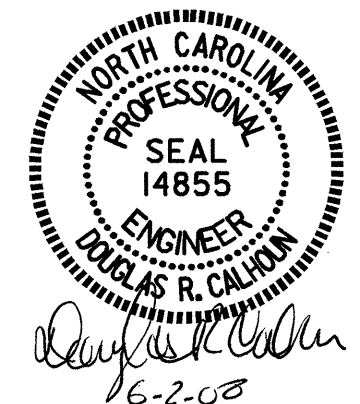


ESTIMATED QUANTITIES		
BRIDGE @ STA. 16+20.00 -L-	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	118	131
END BENT 2	68	76



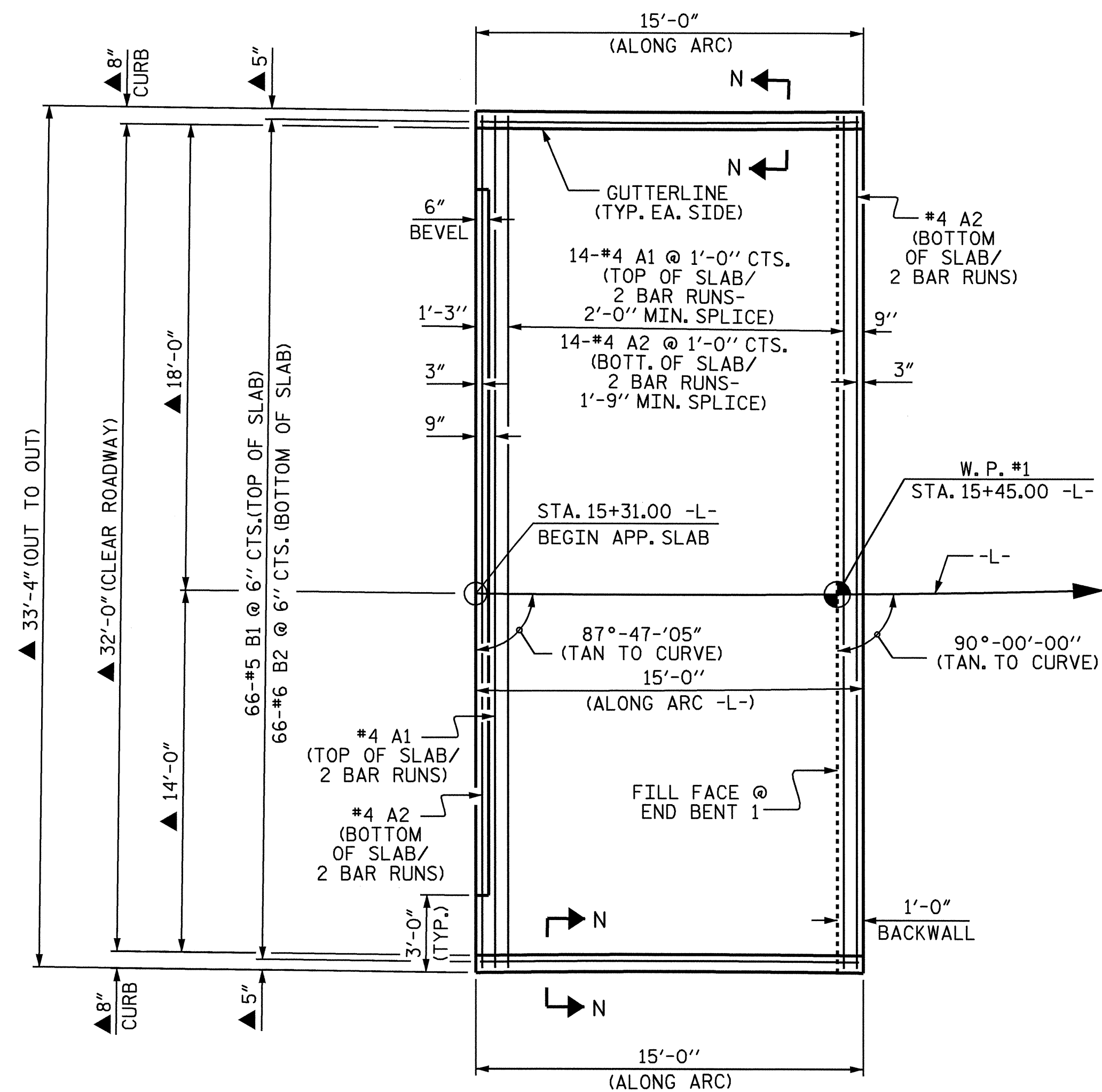
PROJECT NO. B-4194  
McDOWELL COUNTY  
 STATION: 16+20.00 -L-

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

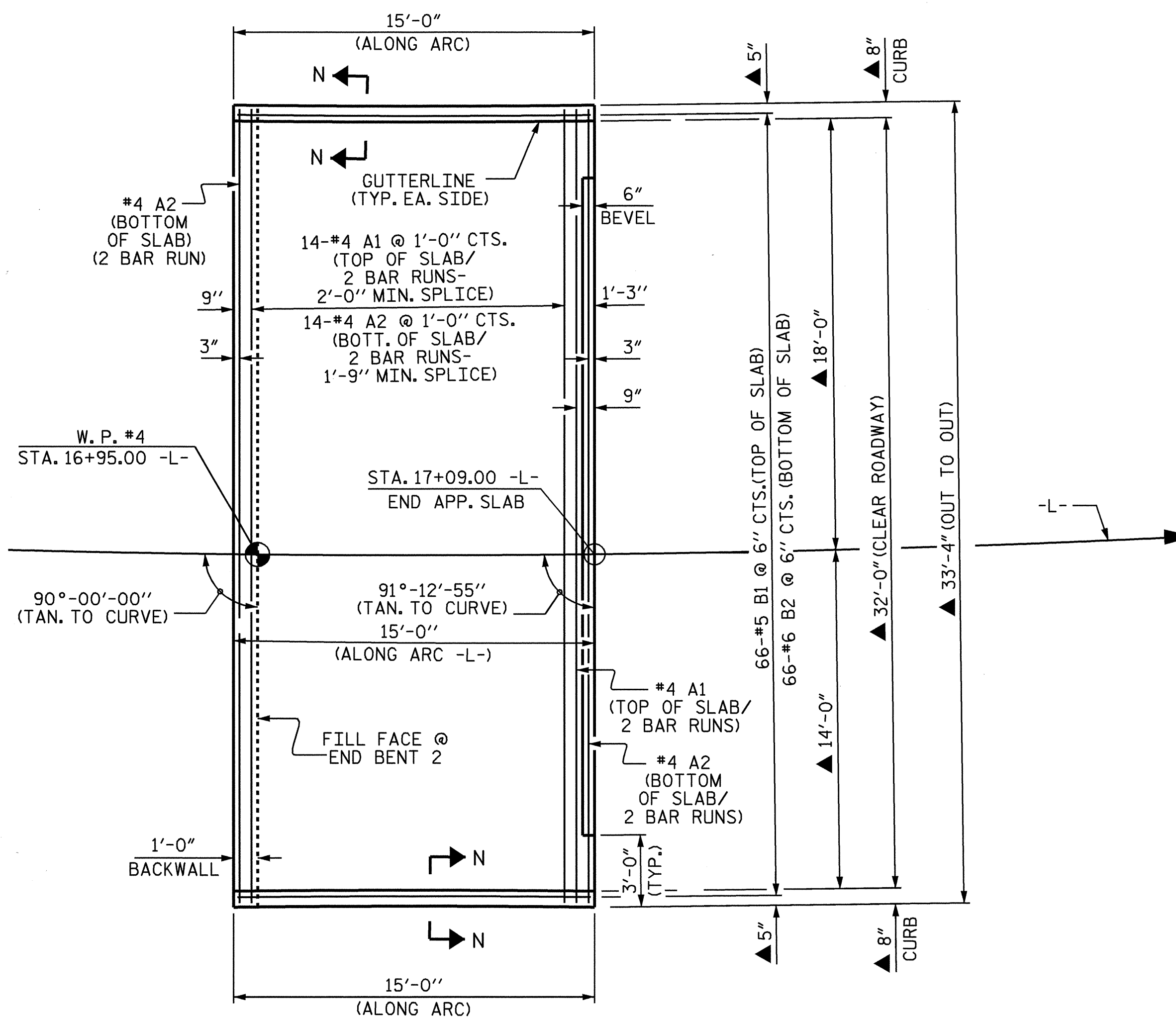


ASSEMBLED BY : J. MYA DATE : 4/07  
 CHECKED BY : J.L. WALTON DATE : 3-08  
 DRAWN BY : FCJ 2/88 REV. 8/16/99 RWW/LES  
 CHECKED BY : ARB 8/88 REV. 10/17/00 RWW/LES  
 REV. 5/1/06 TLA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			35

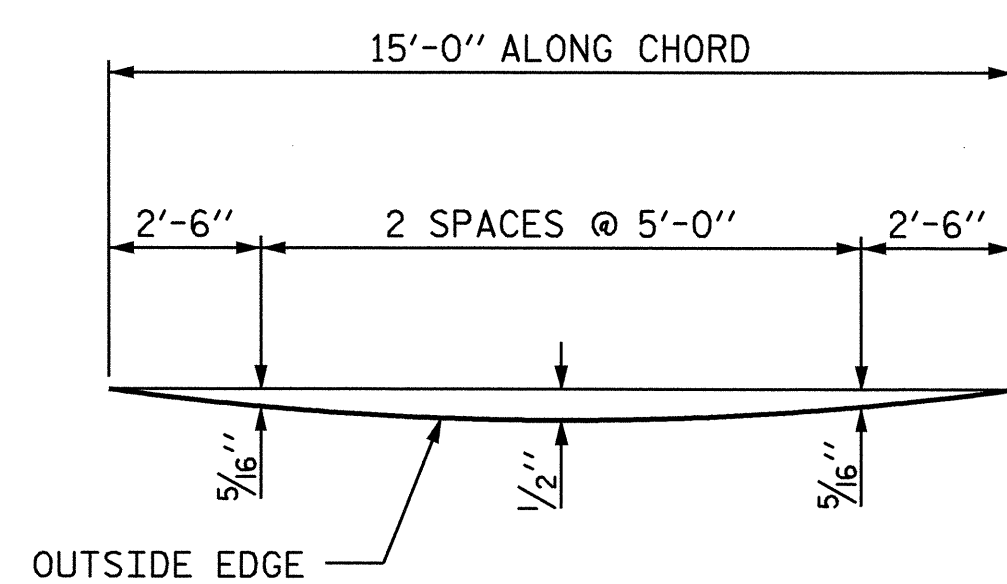


PLAN @ END BENT 1

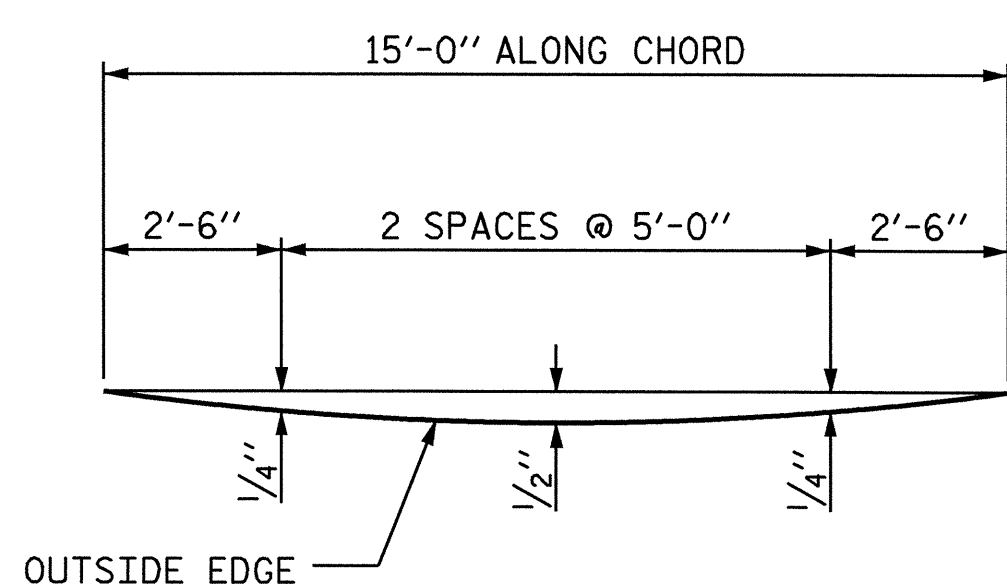


PLAN @ END BENT 2

▲ RADIAL DIMENSION ALONG -L-

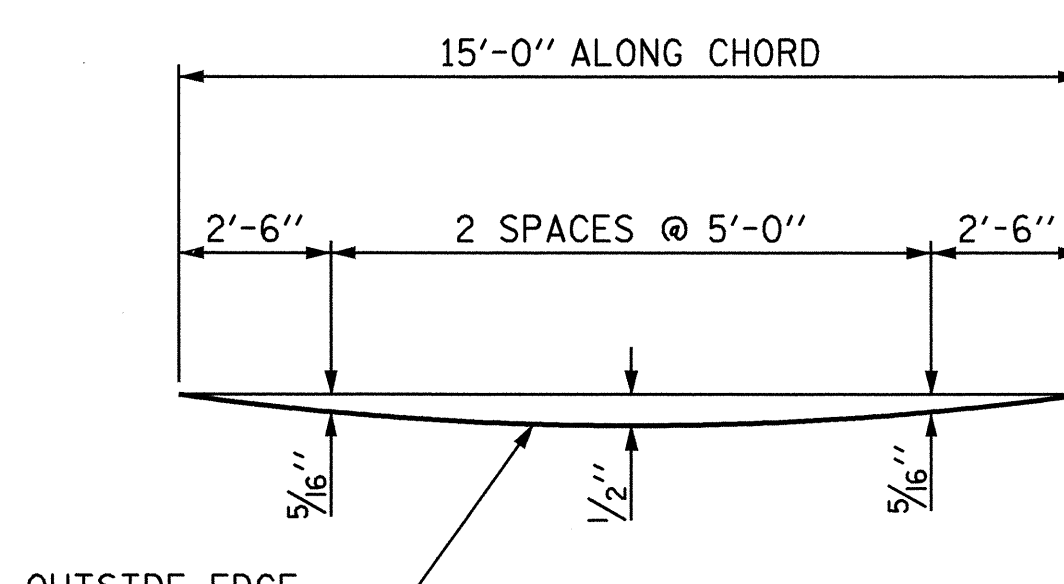


LEFT SIDE

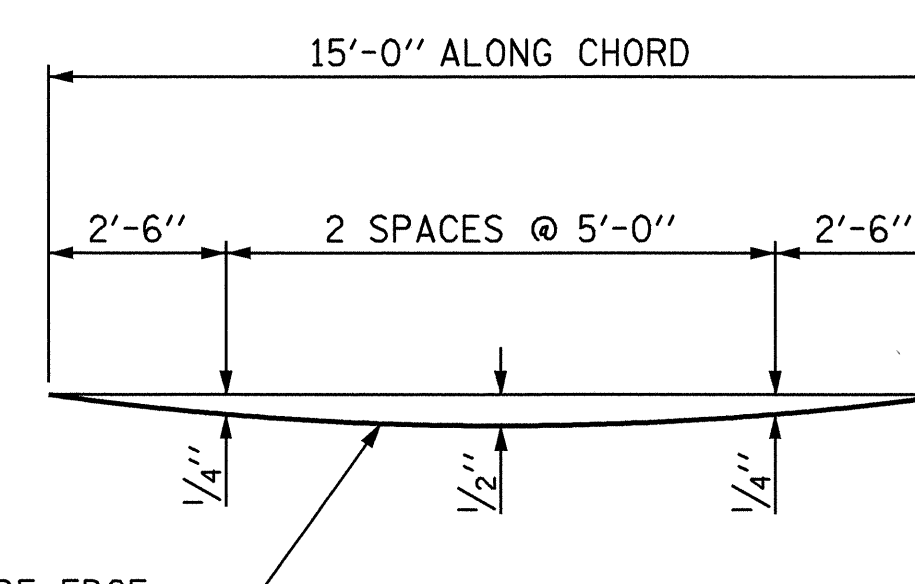


RIGHT SIDE

END BENT 1



LEFT SIDE



RIGHT SIDE

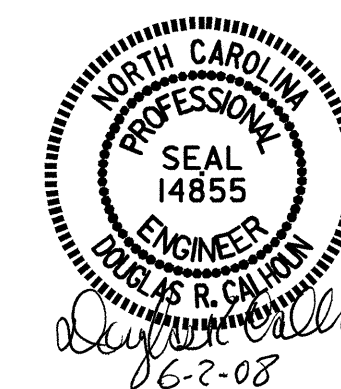
END BENT 2

ARC OFFSETS

PROJECT NO. B-4194  
MCDOWELL COUNTY  
 STATION: 16+20.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. <b>S-33</b> TOTAL SHEETS <b>35</b>



ASSEMBLED BY : J.MYA	DATE : 4/01/07
CHECKED BY : B. N. GRADY	DATE : 4/01/07
DRAWN BY : EEM 3/95	REV. 7/10/01 LES/RDR
CHECKED BY : VAP 3/95	REV. 5/7/03R RWW/JTE
	REV. 5/1/06R KMM/GM

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 SAWED PRIOR TO THE CASTING OF THE BARRIER RAIL.

FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

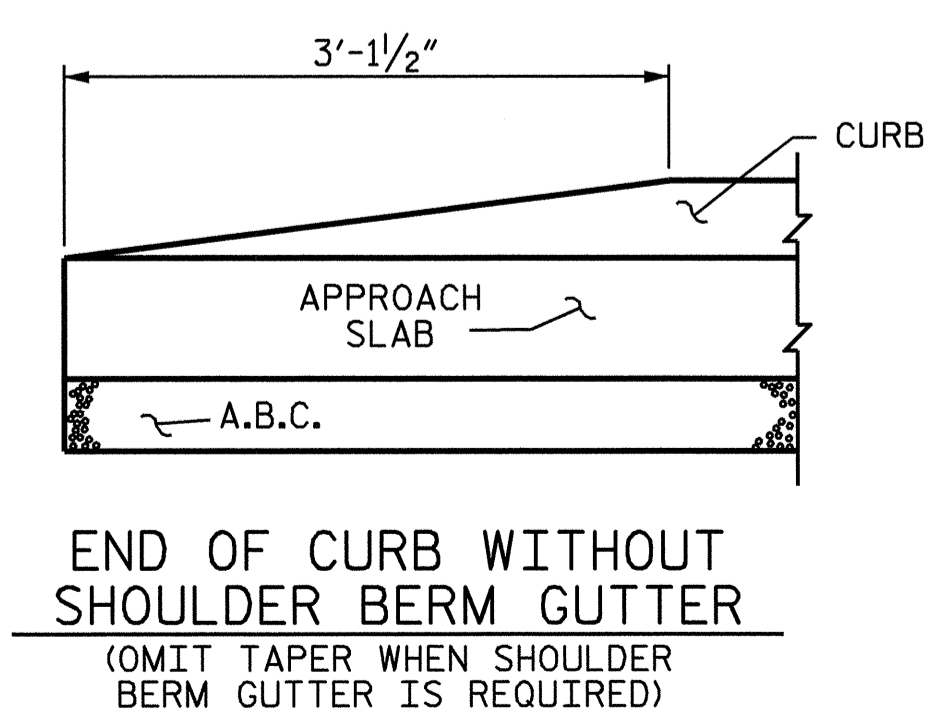
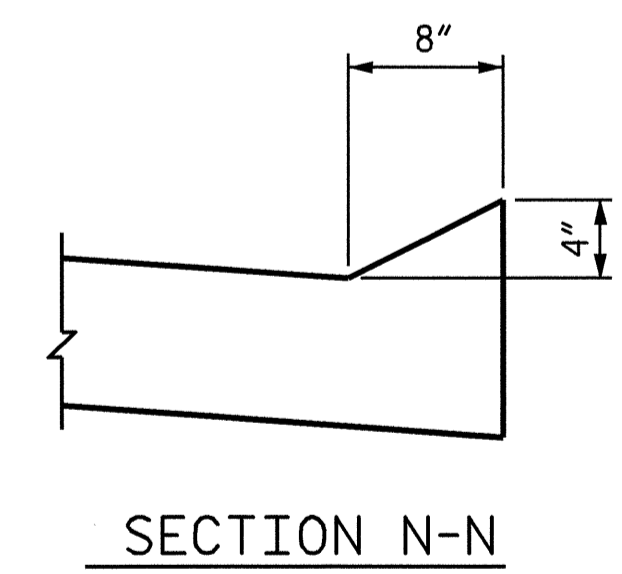
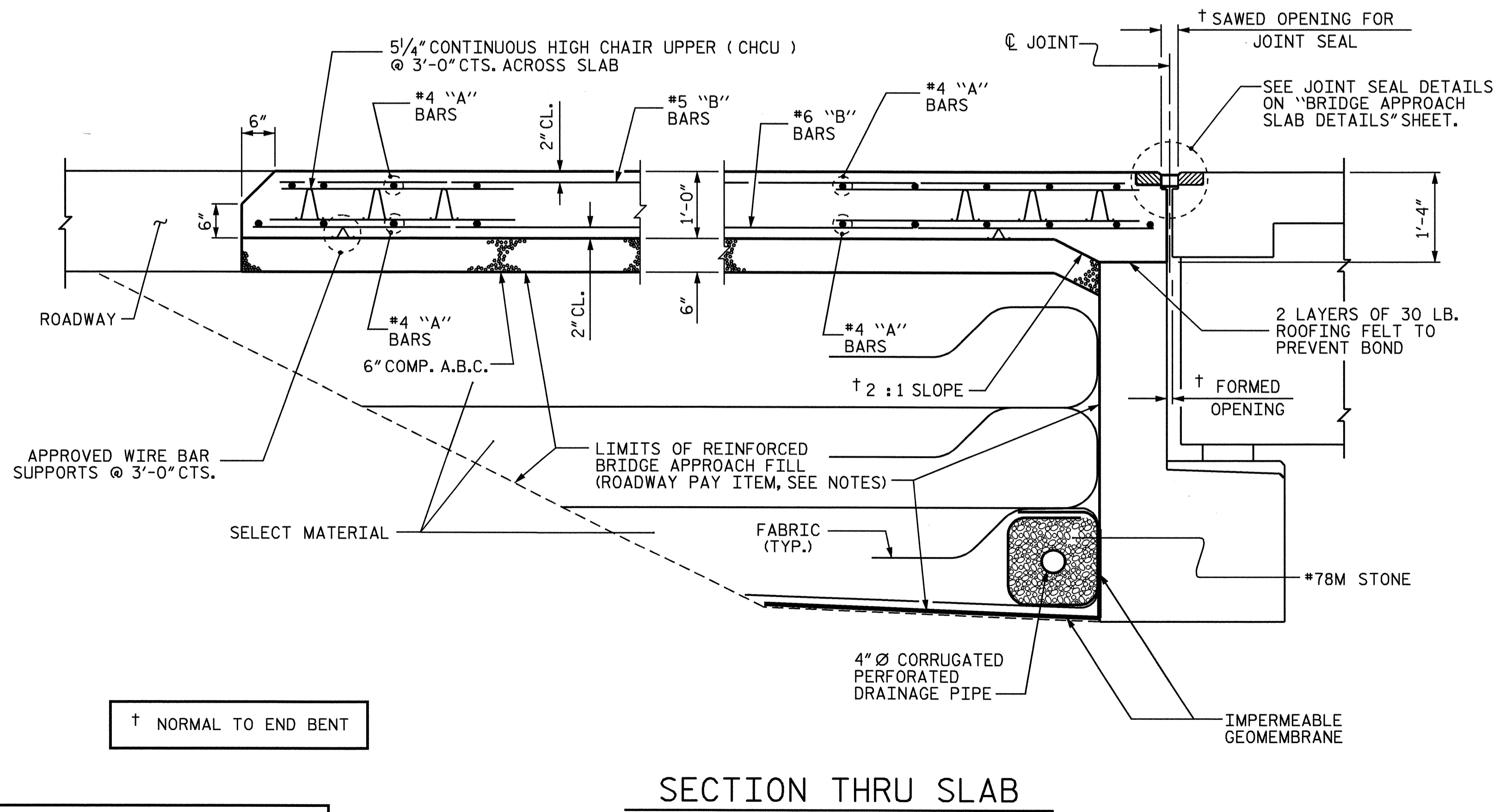
THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2 1/2".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	30	#4	STR	17'-6"	351
A2	32	#4	STR	17'-5"	372
*B1	66	#5	STR	13'-10"	952
B2	66	#6	STR	14'-8"	1454
REINFORCING STEEL				LBS.	1826
*EPOXY COATED REINFORCING STEEL				LBS.	1303
CLASS AA CONCRETE				C. Y.	19.4



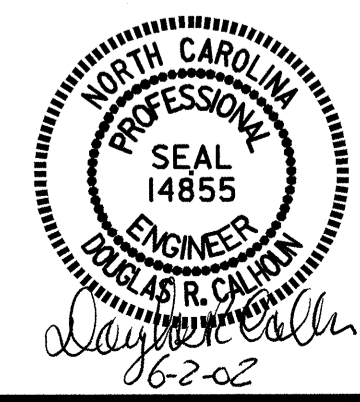
SECTION THRU SLAB

PROJECT NO. B-4194  
MCDOWELL COUNTY  
 STATION: 16+20.00 -L-

SHEET 2 OF 3

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

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



ASSEMBLED BY : J. MYA DATE : 4/01/07  
 CHECKED BY : B. N. GRADY DATE : 4/07/07  
 DRAWN BY : EEM 3/95 REV. 7/10/01 LES/RDR  
 CHECKED BY : VAP 3/95 REV. 5/7/03R RWW/JTE  
 REV. 5/1/06R KMM/GM



## STANDARD NOTES

### DESIGN DATA:

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

### MATERIAL AND WORKMANSHIP:

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

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

### CONCRETE:

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

### CONCRETE CHAMFERS:

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

### DOWELS:

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

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

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE. ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER. DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

### REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED WITH THE EXCEPTION OF #2 BARS WHICH MAY BE FABRICATED FROM COLD DRAWN STEEL WIRE. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS. WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

### STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0". EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED. PLACEMENT OF BEAM OR GIRDER MEMBERS ON TRUCKS FOR HAULING SHALL BE DONE IN COMPLIANCE WITH LIMITS SHOWN ON SKETCHES PROVIDED TO THE MATERIALS AND TEST UNIT APPROVED BY THE STRUCTURE DESIGN UNIT DATED MAY 8, 1991. THESE SKETCHES PRIMARILY LIMIT THE UNSUPPORTED CANTILEVER LENGTH OF MEMBERS. WHEN THE CONTRACTOR WISHES TO PLACE MEMBERS ON TRUCKS NOT IN ACCORDANCE WITH THESE LIMITS, TO SHIP BY RAIL, TO ATTACH SHIPPING RESTRAINTS TO THE MEMBERS OR TO INVERT MEMBERS, HE SHALL SUBMIT A SKETCH FOR APPROVAL PRIOR TO SHIPPING. SEE ALSO ARTICLE 1072-11. WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

### HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB. METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. 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