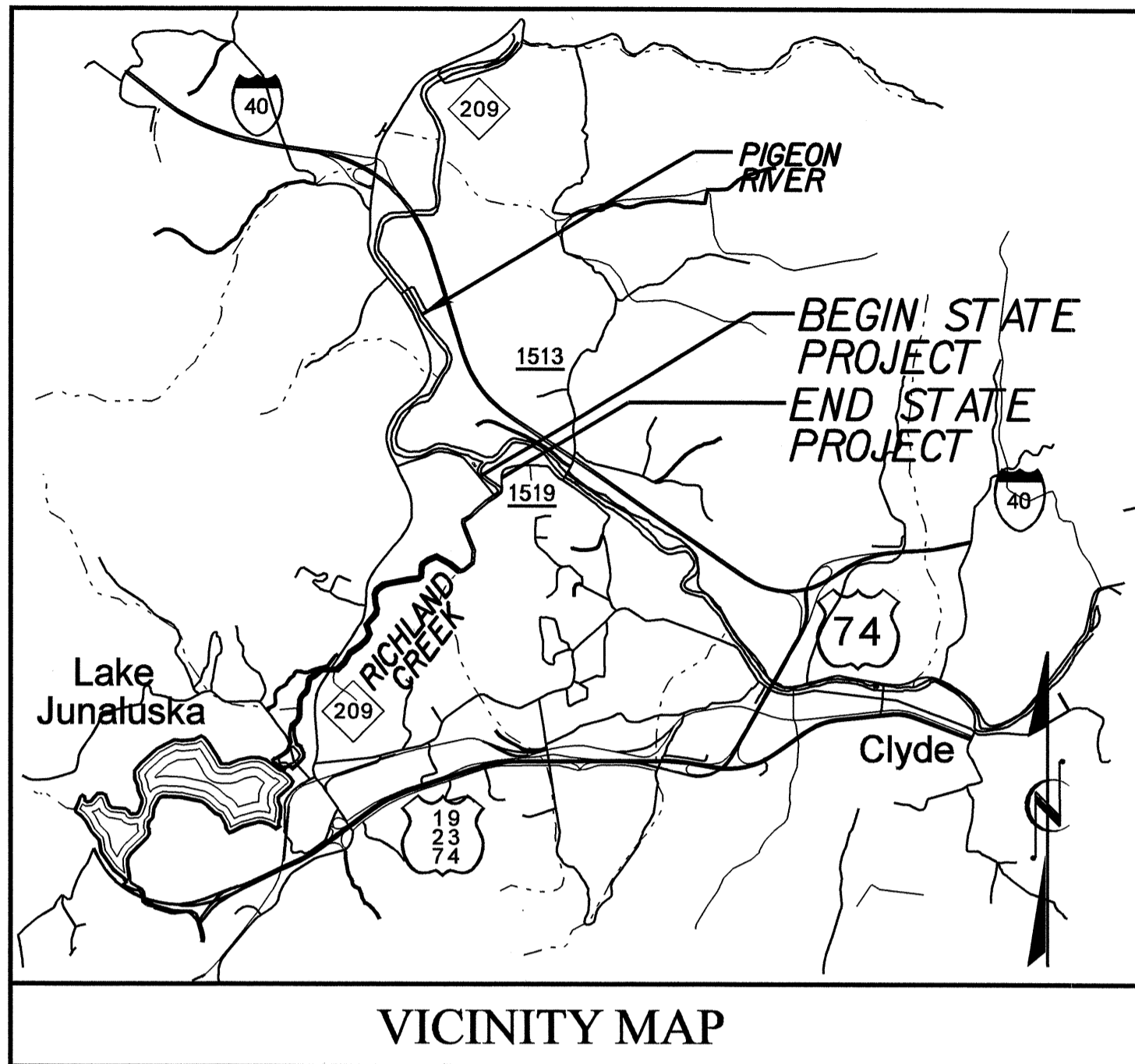


TIP PROJECT: B-4144

CONTRACT: C201760

STRUCTURE



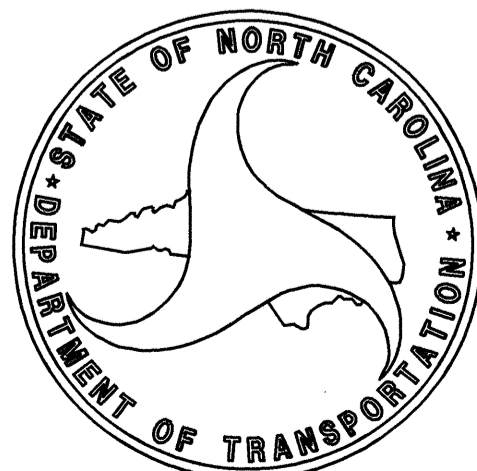
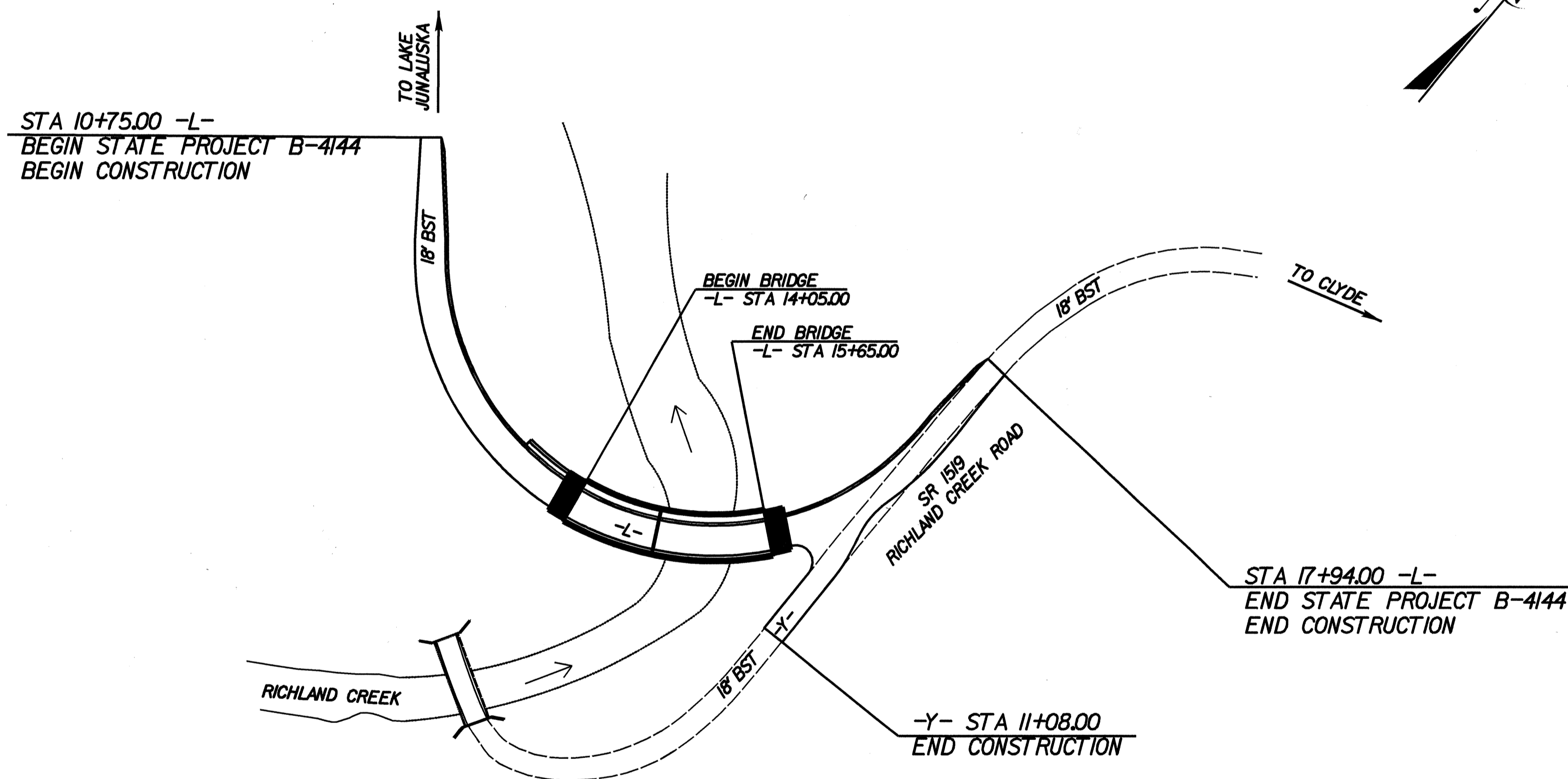
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**HAYWOOD COUNTY**

**LOCATION: BRIDGE NO. 211 OVER RICHLAND CREEK ON SR 1519 (RICHLAND CREEK ROAD)**

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4144		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33493.1.1	BRZ-1519(2)	P.E.	
33493.2.1	BRZ-1519(2)	RIGHT-OF-WAY	
33493.2.1	BRZ-1519(2)	UTILITY	
33493.3.1	BRZ-1519(2)	CONSTRUCTION	



**DESIGN DATA**

ADT 2007 = 1,400 VPD  
 ADT 2030 = 3,300 VPD  
 DHV = 10%  
 D = 60%  
 T = 8% \*  
 V = 20 mph

FUNCTIONAL CLASSIFICATION:  
 LOCAL RURAL  
 \* (TTST 4% + DUAL 4%)

**PROJECT LENGTH**

LENGTH OF ROADWAY TIP PROJECT B-4144 = 0.106 MILES  
 LENGTH OF STRUCTURE TIP PROJECT B-4144 = 0.030 MILES  
 TOTAL LENGTH OF TIP PROJECT B-4144 = 0.136 MILES

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

2006 STANDARD SPECIFICATIONS

Q. H. NGUYEN, PE  
 PROJECT ENGINEER

J. R. DUGGINS, JR., PE  
 PROJECT DESIGN ENGINEER

LETTING DATE:  
 MAY 20, 2008

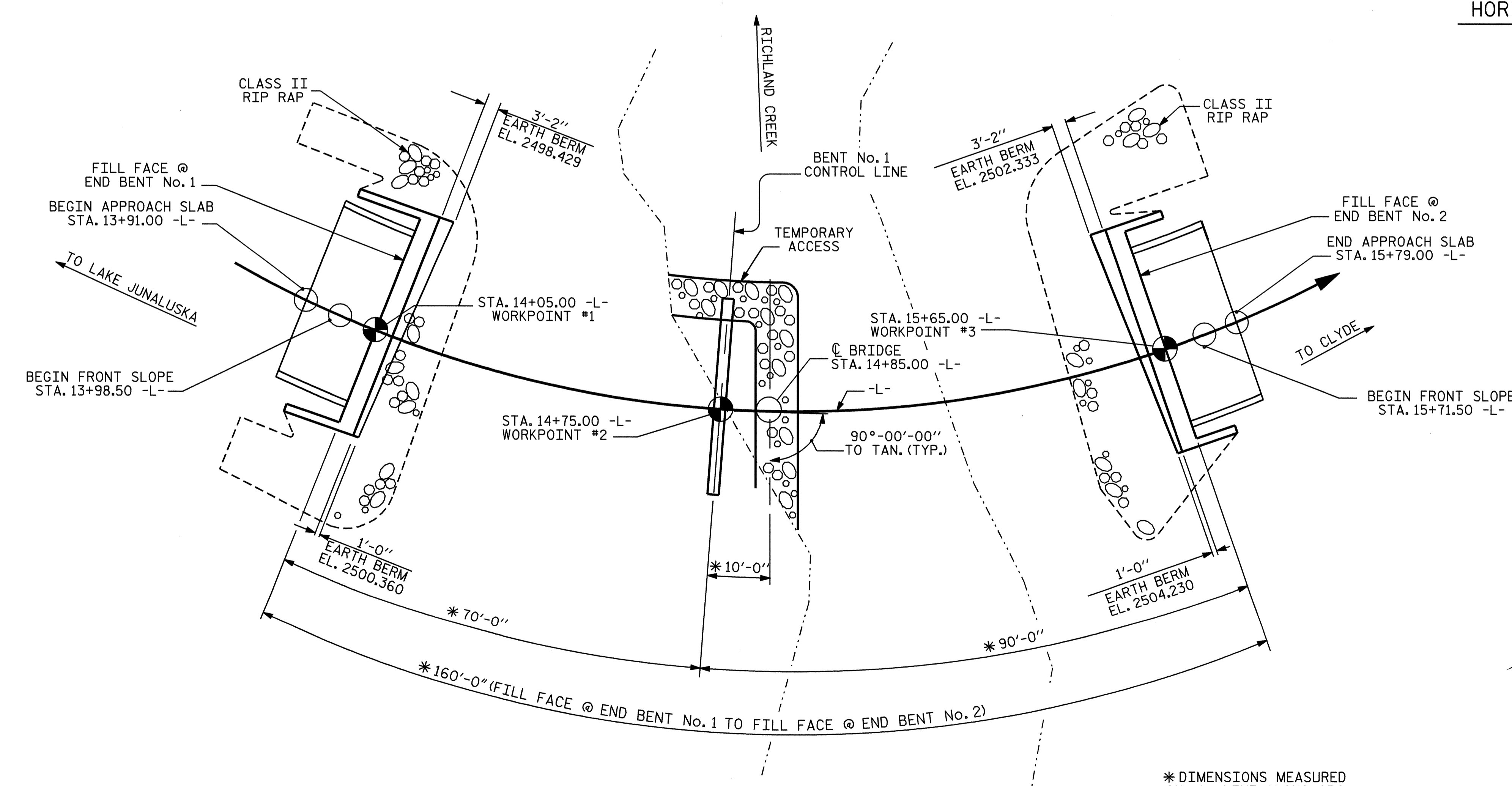
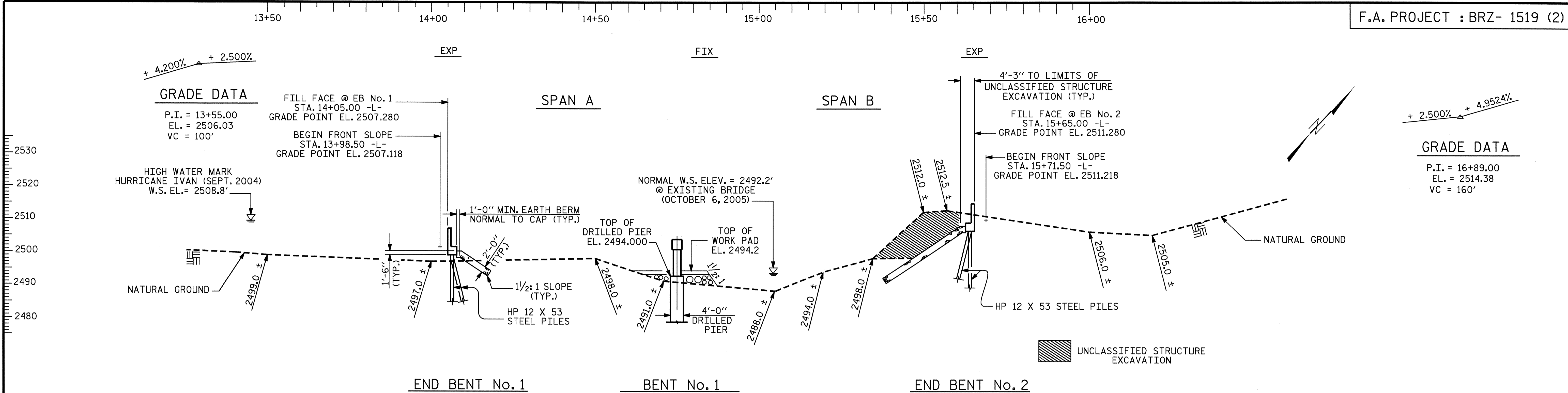
STRUCTURE DESIGN UNIT  
 1000 BIRCH RIDGE DRIVE  
 RALEIGH, NC 27610

DIVISION OF HIGHWAYS  
 STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION  
 FEDERAL HIGHWAY ADMINISTRATION

APPROVED  
 DIVISION ADMINISTRATOR

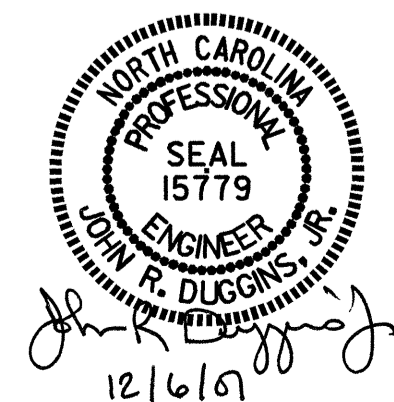


DRAWN BY : M. POOLE DATE : 10/07  
 CHECKED BY : J. R. DUGGINS DATE : 10/07

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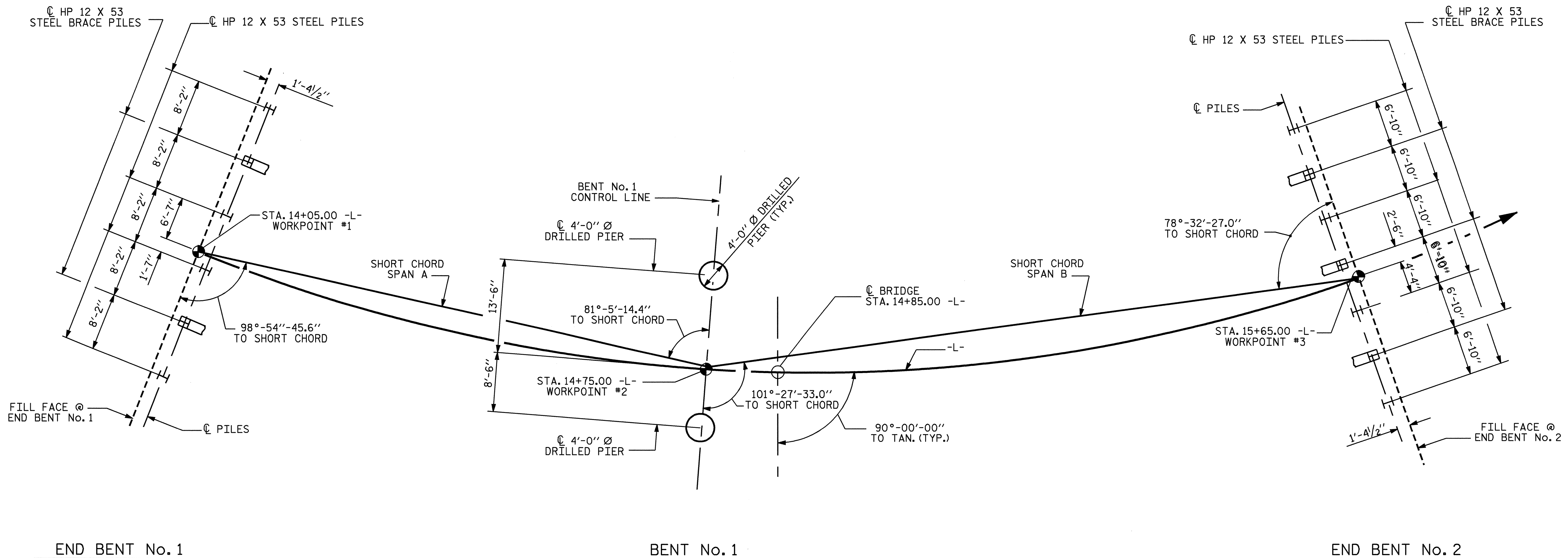
Quang H. Nguyen 12-06-07



PROJECT NO. B-4144  
 HAYWOOD COUNTY  
 STATION: 14+85.00 -L-  
 SHEET 1 OF 5 REPLACES BRIDGE NO. 211

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE ON SR 1519  
 OVER RICHLAND CREEK  
 BETWEEN NC 209 AND SR 1533

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-1
1			3			TOTAL SHEETS
2			4			40



### FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES AND DRILLED PIERS ARE SHOWN TO THE PILE AND DRILLED PIER CENTERLINE AT THE BOTTOM OF CAP. BRACE PILES AT END BENTS ARE BATTERED 3 : 12

#### NOTES

DRIVE PILES AT END BENT No.1 AND END BENT No.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.

STEEL PILE POINTS WITH TEETH ARE REQUIRED FOR STEEL PILES AT END BENT No.1 AND END BENT No.2. SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENT No.1 AND END BENT No.2 IS 60 TONS PER PILE.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 22.6 FT-KIP TO 40.6 FT-KIP PER BLOW WILL BE REQUIRED TO DRIVE THE HP 12 X 53 PILES. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM THE PROVISIONS OUTLINED IN ARTICLE 450-5 OF THE STANDARD SPECIFICATIONS.

DRILLED PIERS AT BENT No.1 ARE DESIGNED FOR BOTH SKIN FRICTION AND TIP BEARING. CHECK FIELD CONDITIONS FOR THE REQUIRED END BEARING CAPACITY OF 50 TSF.

DRILLED PIERS AT BENT No.1 ARE DESIGNED FOR AN APPLIED LOAD OF 625 TONS EACH AT THE TOP OF THE COLUMN.

PERMANENT STEEL CASING IS REQUIRED FOR DRILLED PIERS AT BENT No.1. DO NOT EXTEND THE CASING BELOW ELEVATION 2486.0 FT. TO 2488.0 FT. (L TO R) WITHOUT PRIOR APPROVAL FROM THE ENGINEER. SEE DRILLED PIERS SPECIAL PROVISION.

DRILLED PIERS AT BENT No.1 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN 2475.0 FT. AND SATISFY THE REQUIRED END BEARING CAPACITY.

THE SCOUR CRITICAL ELEVATION FOR BENT No.1 IS ELEVATION 2486.0 FT. AND 2489.0 FT. (L TO R) SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

FOR DRILLED PIERS, SEE DRILLED PIERS SPECIAL PROVISION.

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

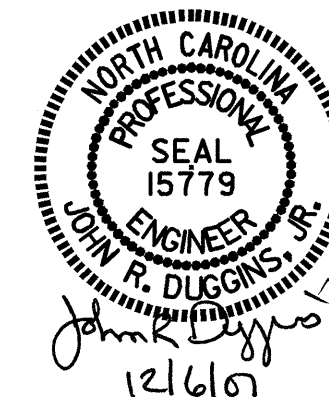
DO NOT USE SLURRY CONSTRUCTION FOR DRILLED PIERS AT BENT No.1.

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

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

DRAWN BY : M. POOLE DATE : 10/07  
 CHECKED BY : J.R. DUGGINS DATE : 10/07

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 dahodge



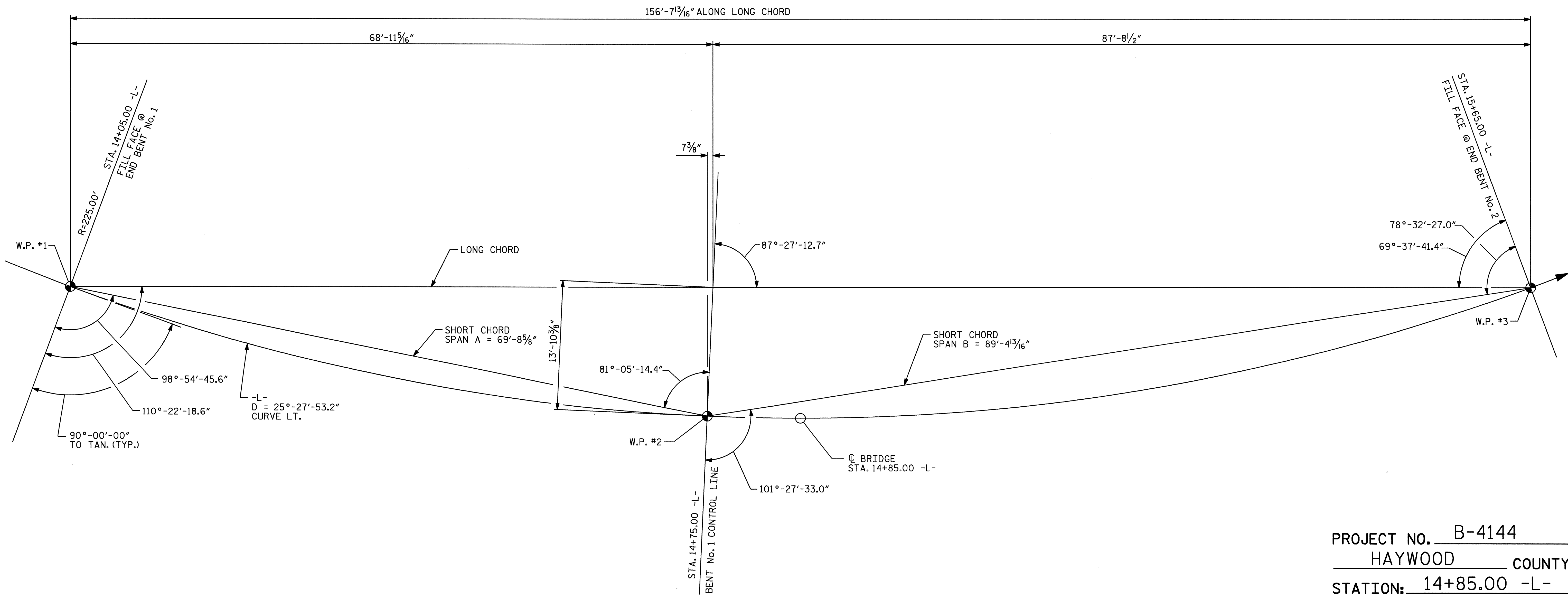
PROJECT NO. B-4144  
HAYWOOD COUNTY  
 STATION: 14+85.00 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
GENERAL DRAWING FOR BRIDGE ON SR 1519 OVER RICHLAND CREEK BETWEEN NC 209 AND SR 1533					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 40

NC005





**LONG CHORD LAYOUT**

NOTE: END BENTS AND BENT ARE RADIAL TO -L-.

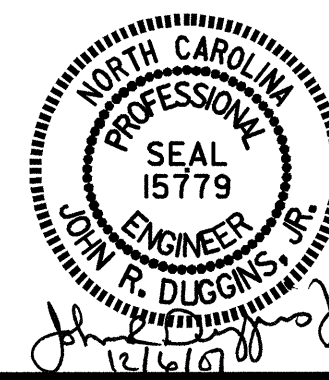
PROJECT NO. B-4144  
HAYWOOD COUNTY  
 STATION: 14+85.00 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**

FOR BRIDGE ON SR 1519  
 OVER RICHLAND CREEK  
 BETWEEN NC 209 AND SR 1533

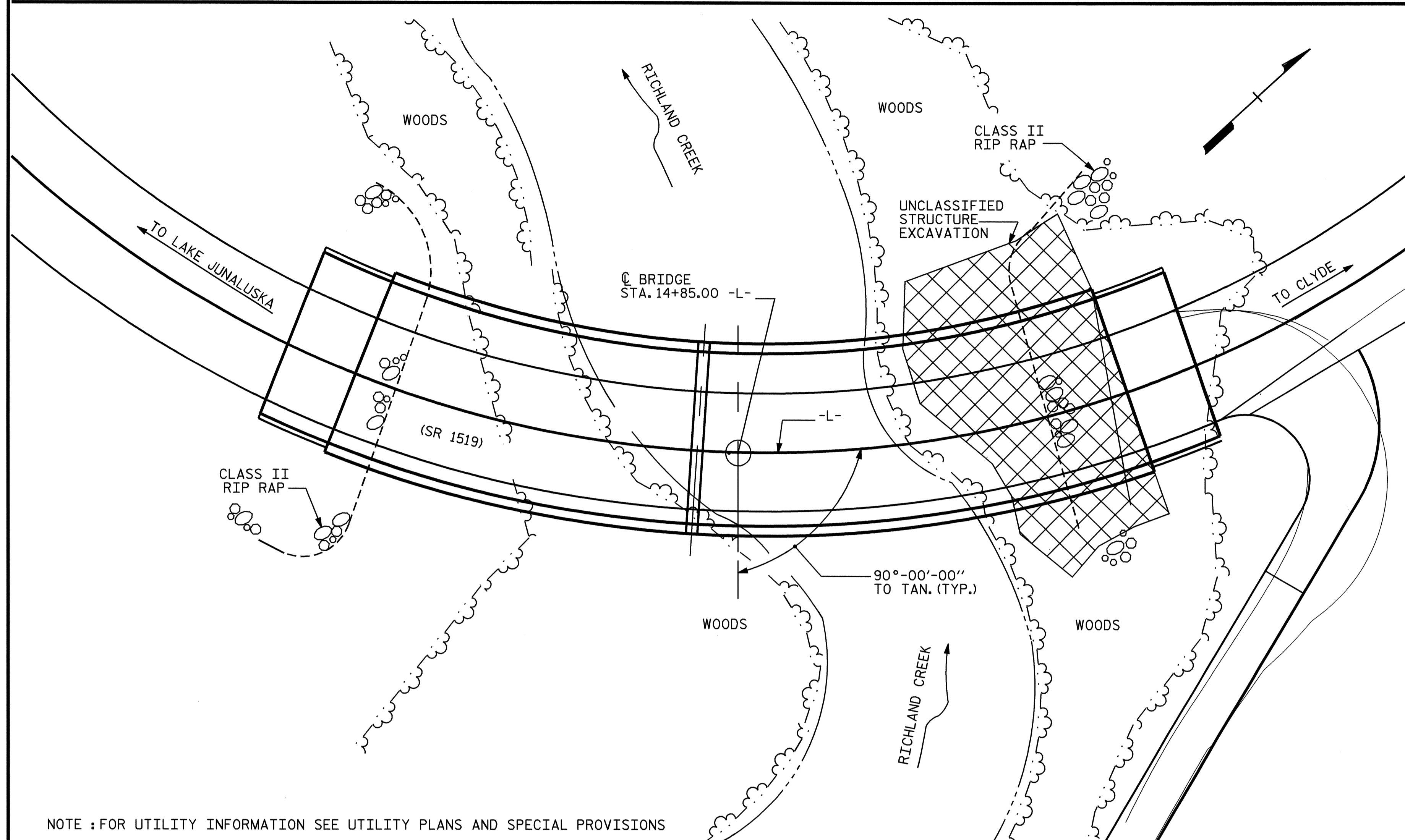


DRAWN BY: D. HODGE DATE: 10/07  
 CHECKED BY: J.R. DUGGINS DATE: 10/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			40



B.M. #2 : STA. 14+00.51 -L-, 240.05' RT., EL. 2506.57, 8" SPIKE SET IN BASE OF 60" WILLOW TREE.



NOTE : FOR UTILITY INFORMATION SEE UTILITY PLANS AND SPECIAL PROVISIONS

LOCATION SKETCH

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.

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

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

AFTER SERVING AS A TEMPORARY STRUCTURE THE EXISTING STRUCTURE CONSISTING OF TWO SPANS 1 @ 35'-3" AND 1 @ 35'-9" WITH A TIMBER DECK ON STEEL I-BEAMS SUPERSTRUCTURE AND A CLEAR ROADWAY WIDTH OF 19'-2" ON A SUBSTRUCTURE CONSISTING OF ONE END BENT WITH TIMBER CAP AND TIMBER PILES, ONE END BENT A CONCRETE ABUTMENT AND THE BENT IS A TIMBER CAP ON TIMBER PILES WITH CONCRETE SILL AND LOCATED UP STREAM APPROXIMATELY 200 FT. FROM THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 30 FT. RIGHT AND 35 FT. LEFT EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER CUBIC YARD FOR UNCLASSIFIED STRUCTURE EXCAVATION.

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.

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

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

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

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR SHIPPING STEEL STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

HYDRAULIC DATA

DESIGN DISCHARGE.....7300 CFS.  
 FREQUENCY OF DESIGN FLOOD.....25 YEARS  
 DESIGN HIGH WATER ELEVATION.....2502.1  
 DRAINAGE AREA.....68.4 SQ. MI.  
 BASIC DISCHARGE(Q100).....10000 CFS.  
 BASIC HIGH WATER ELEVATION.....2503.0

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE..... < 7300 CFS.  
 FREQUENCY OF OVERTOPPING FLOOD..... < 25 YEARS  
 \* OVERTOPPING FLOOD ELEVATION.....2500.9  
 \* OVERTOPPING OCCURS AT LOW SAG IN ROADWAY PRIOR TO BRIDGE

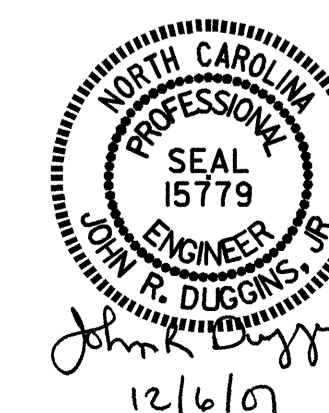
PROJECT NO. B-4144  
HAYWOOD COUNTY  
 STATION: 14+85.00 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1519  
 OVER RICHLAND CREEK  
 BETWEEN NC 209 AND SR 1533



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			5-4
2			4			TOTAL SHEETS 40

DRAWN BY : M. POOLE DATE : 10/07  
 CHECKED BY : J. R. DUGGINS DATE : 10/07

TOTAL BILL OF MATERIAL													
	CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS	REMOVAL OF EXISTING STRUCTURE	4'-0" Ø DRILLED PIERS IN SOIL	4'-0" Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIERS	SID INSPECTION	CROSSHOLE SONIC LOGGING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	CU. YDS.	SQ. FT.	SQ. FT.	CU. YD.	LUMP SUM	LBS.
SUPERSTRUCTURE	LUMP SUM	LUMP SUM							5868	5841		LUMP SUM	
END BENT No. 1											22.7		3199
BENT No. 1			11.00	27.00	14.00	1	1				27.7		8479
END BENT No. 2								600			22.8		3225
TOTAL	LUMP SUM	LUMP SUM	11.00	27.00	14.00	1	1	600	5868	5841	73.2	LUMP SUM	14903

TOTAL BILL OF MATERIAL											
	SPIRAL COLUMN REINFORCING STEEL	STRUCTURAL STEEL	HP 12 X 53 STEEL PILES		STEEL PILE POINTS	TWO BAR METAL RAIL	1'-2" X 2'-6" CONCRETE PARAPET	RIP RAP CLASS II 2'-0" THICK	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS
	LBS.	APPROX. LBS.	NO.	LIN. FT.	EACH	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE		231000				297.11	312.11			LUMP SUM	LUMP SUM
END BENT No. 1			6	90	6			127	141		
BENT No. 1	1328										
END BENT No. 2			7	105	7			182	202		
TOTAL	1328	231000	13	195	13	297.11	312.11	309	343	LUMP SUM	LUMP SUM

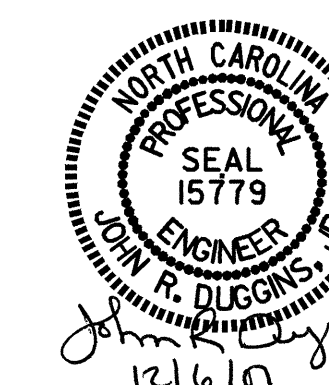
PROJECT NO. B-4144  
HAYWOOD COUNTY  
STATION: 14+85.00 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

GENERAL DRAWING

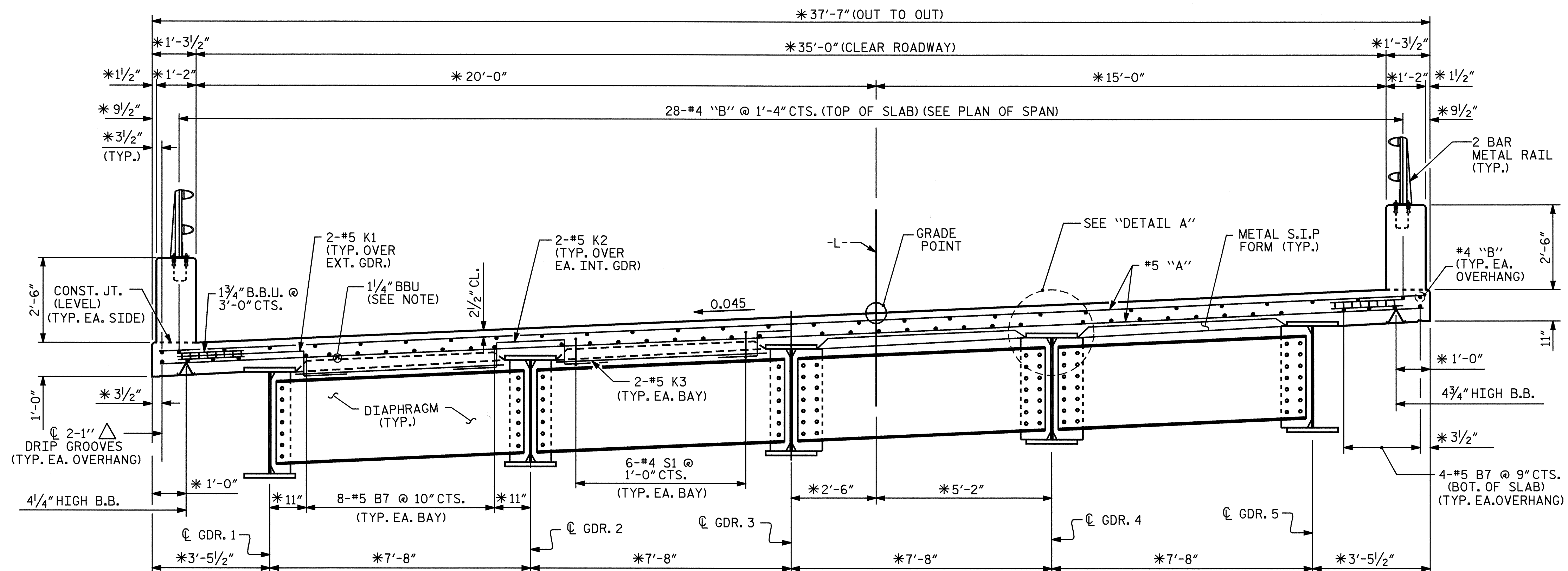
FOR BRIDGE ON SR 1519  
OVER RICHLAND CREEK  
BETWEEN NC 209 AND SR 1533



DRAWN BY : M. POOLE DATE : 10/07  
CHECKED BY : J.R. DUGGINS DATE : 10/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-5
1			3			TOTAL SHEETS
2			4			40

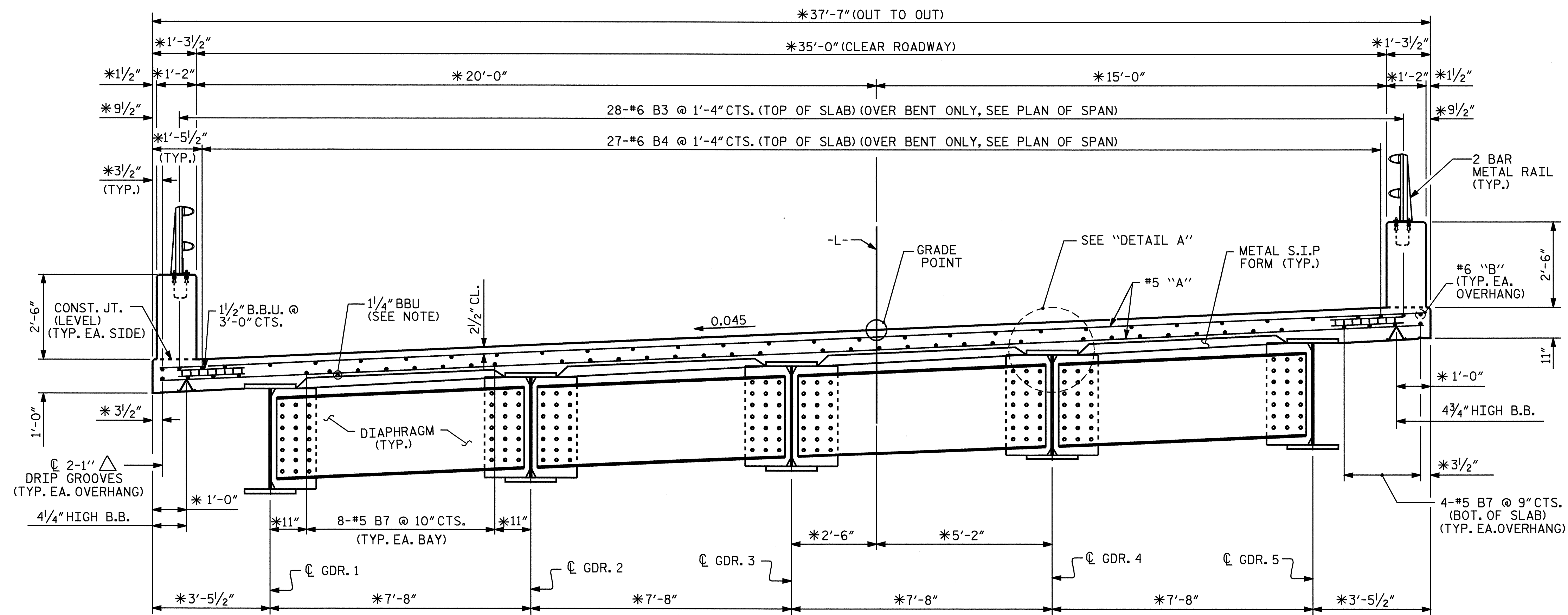




**HALF TYPICAL SECTION**  
SHOWING END BENT DIAPHRAGMS

**HALF TYPICAL SECTION**  
SHOWING INTERMEDIATE DIAPHRAGMS

\* RADIAL DIMENSIONS



**TYPICAL SECTION**  
SHOWING BENT DIAPHRAGMS

**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.

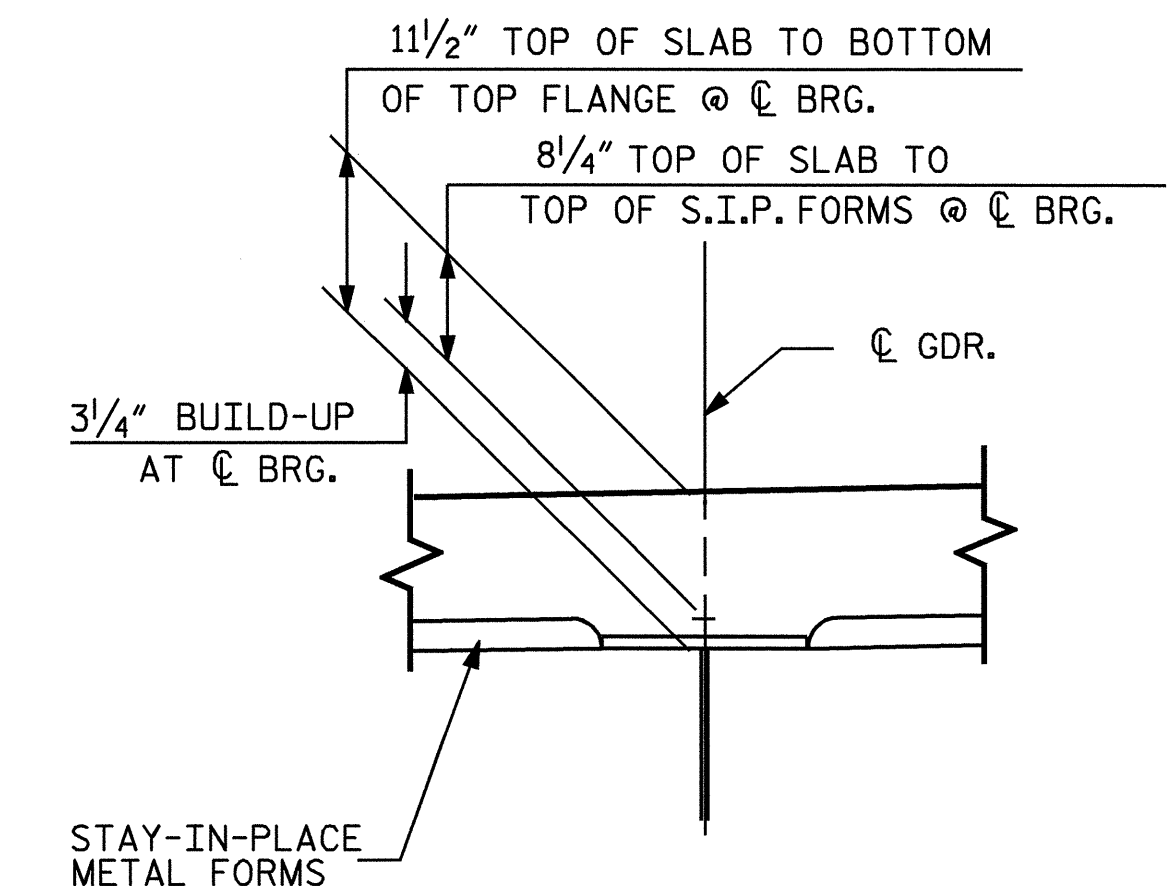
METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO GIRDER FLANGES IN THE ZONES REQUIRING CHARNY V-NOTCH TEST. SEE STRUCTURAL STEEL DETAIL SHEETS.

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

THE CONTRACTOR MAY, WHEN NECESSARY, PROPOSE A SCHEME FOR AVOIDING INTERFERENCE BETWEEN METAL STAY-IN-PLACE FORM SUPPORTS OR FORMS AND GIRDER STIFFENERS OR CONNECTOR PLATES. THE PROPOSAL SHALL BE INDICATED, AS APPROPRIATE, ON EITHER THE STEEL WORKING DRAWINGS OR THE METAL STAY-IN-PLACE FORM WORKING DRAWINGS.

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.

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

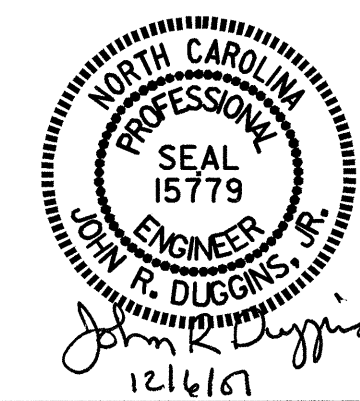


**"DETAIL A"**

PROJECT NO. B-4144  
HAYWOOD COUNTY  
STATION: 14+85.00-L-

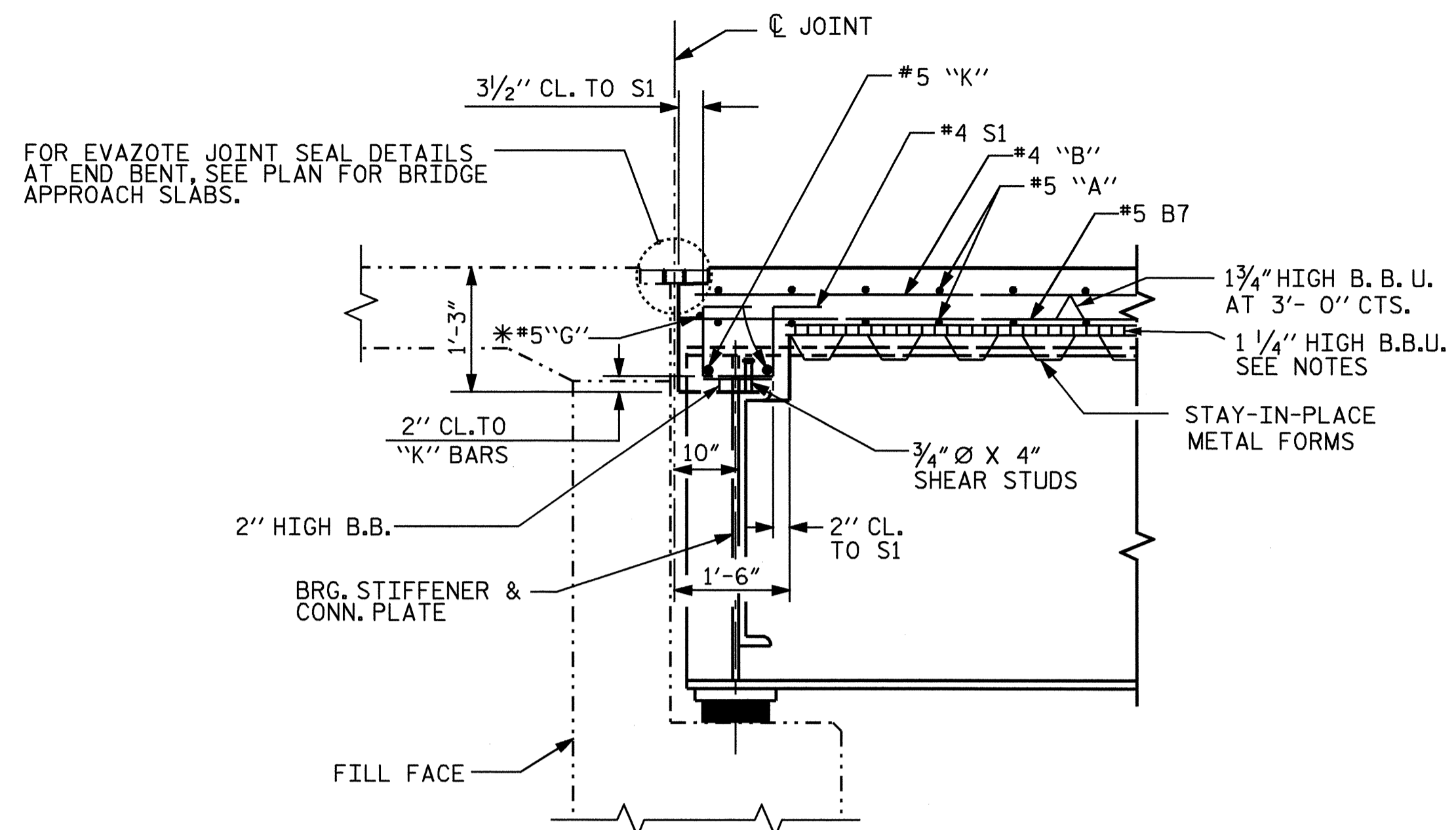
SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE TYPICAL SECTION					
REVISIONS					SHEET NO. S-6 TOTAL SHEETS 40
NO.	BY:	DATE:	NO.	DATE:	
1			3		
2			4		



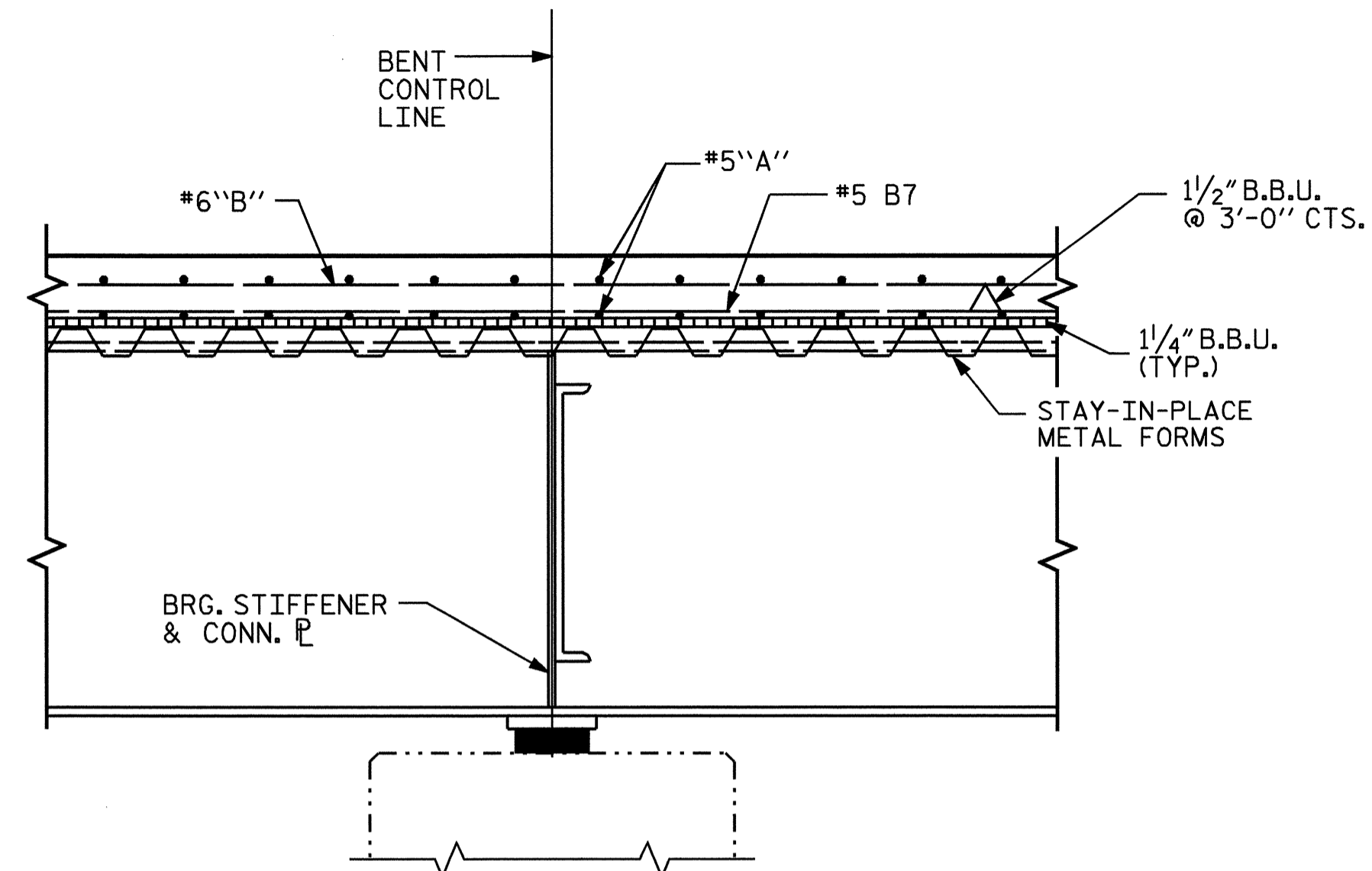
DRAWN BY: V.X. NGUYEN DATE: 06-07  
CHECKED BY: D. HODGE DATE: 10-07





**SECTION @ END BENT**

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



**SECTION AT BENT**

PROJECT NO. B-4144  
HAYWOOD COUNTY  
 STATION: 14+85.00-L-

SHEET 2 OF 2

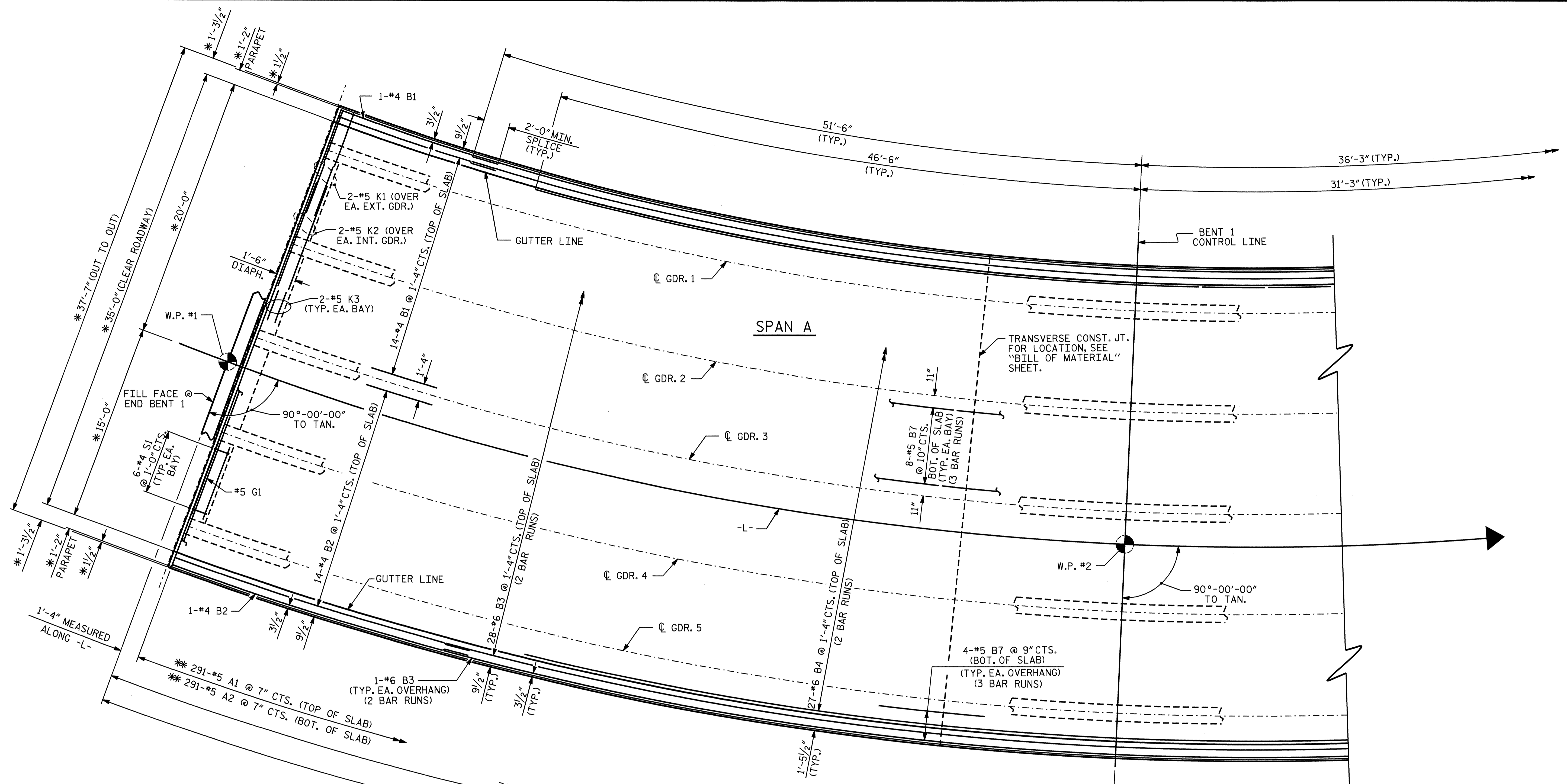
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 TYPICAL SECTION

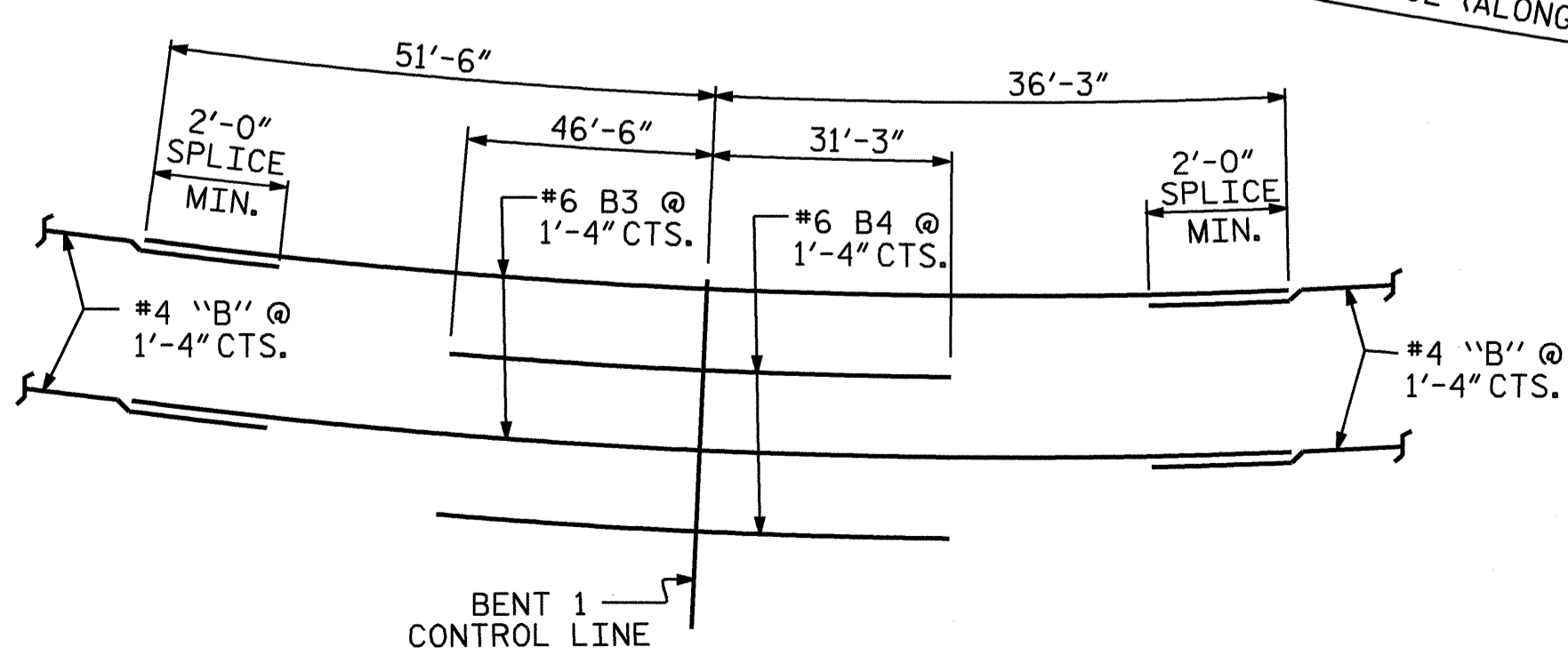
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			40
2			4			



DRAWN BY: V.X. NGUYEN DATE: 06-07  
 CHECKED BY: D. HODGE DATE: 10-07



\* RADIAL DIMENSIONS  
 \*\* #5 "A" BARS ARE TO BE PLACED RADIALLY ALONG OUTSIDE RIGHT EDGE OF SUPERSTRUCTURE.



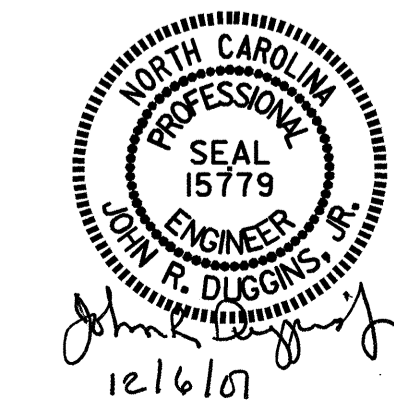
TOP LONGITUDINAL BARS LAYOUT @ BENT 1

PLAN OF SPAN A

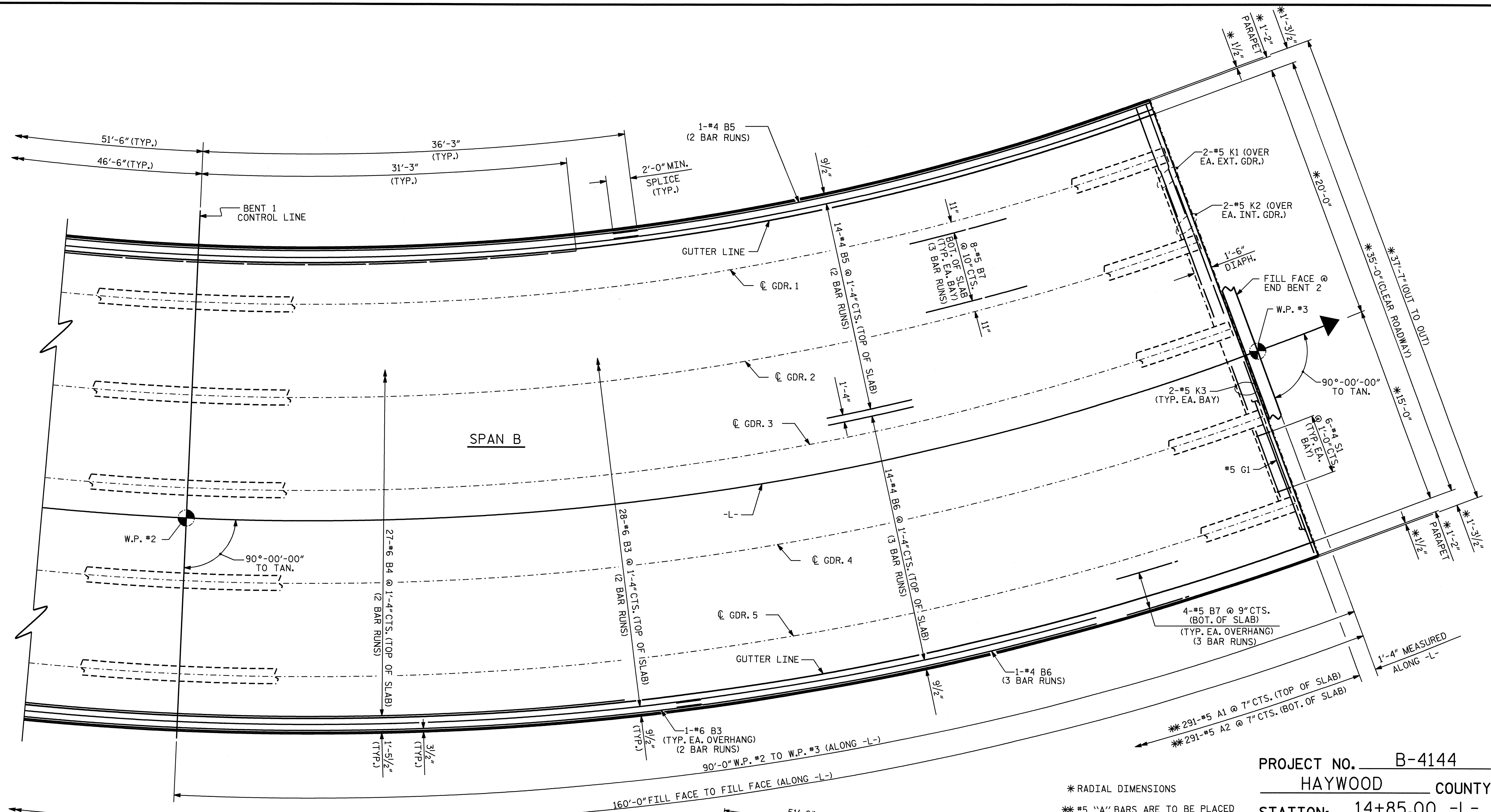
PROJECT NO. B-4144  
HAYWOOD COUNTY  
 STATION: 14+85.00 -L-

SHEET 1 OF 2

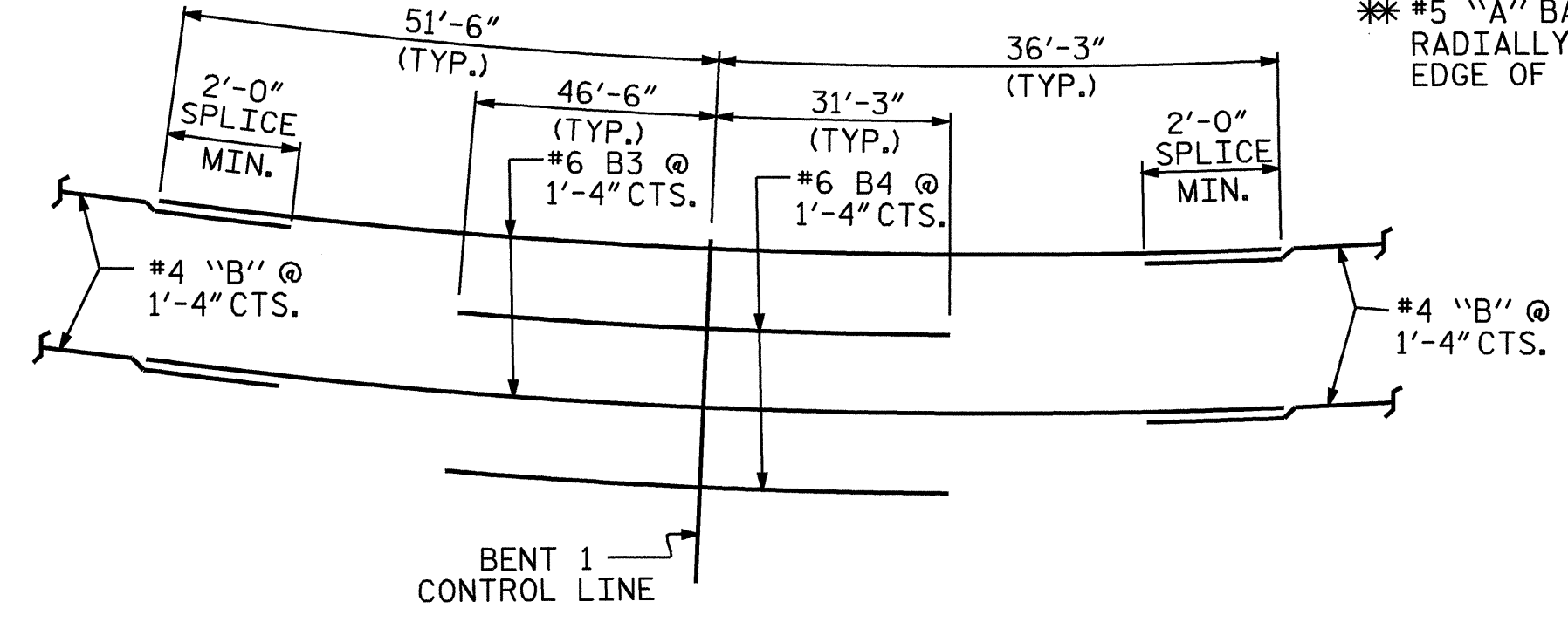
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPAN A					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-8
TOTAL SHEETS					40



DRAWN BY: V.X. NGUYEN DATE: 5-03-07  
 CHECKED BY: D. HODGE DATE: 10-07



PLAN OF SPAN B



\* RADIAL DIMENSIONS  
\* #5 "A" BARS ARE TO BE PLACED RADIALLY ALONG OUTSIDE RIGHT EDGE OF SUPERSTRUCTURE.

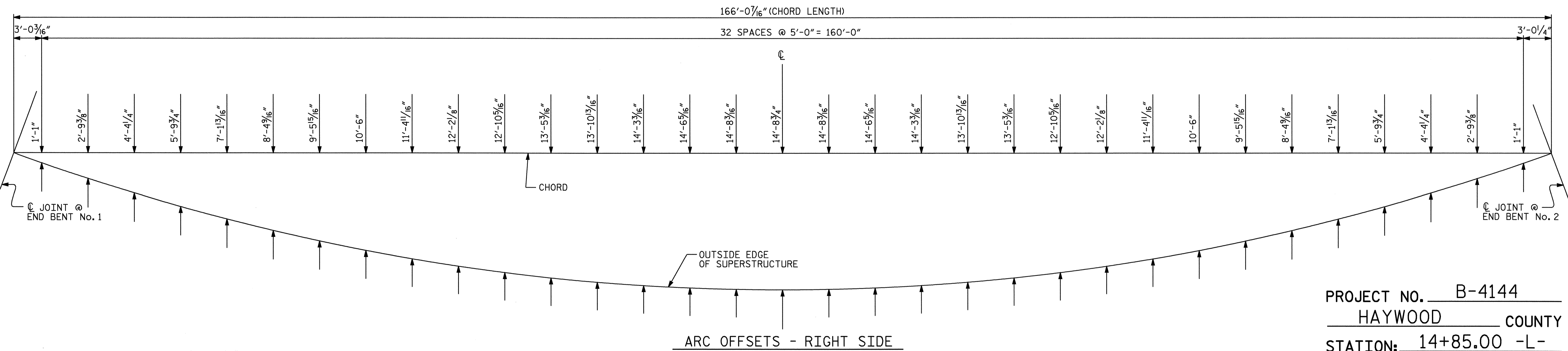
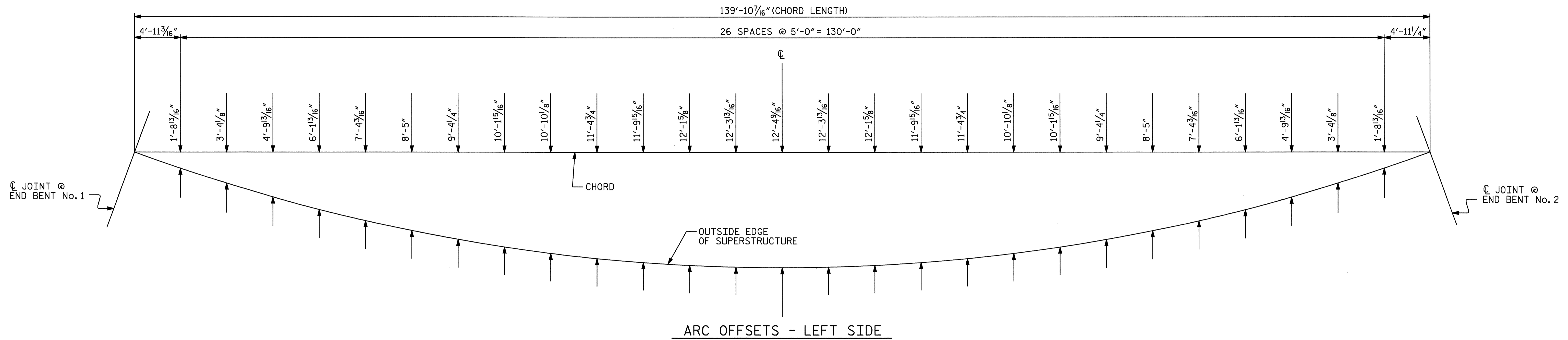
PROJECT NO. B-4144  
HAYWOOD COUNTY  
STATION: 14+85.00 -L-  
SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPAN B					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
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					TOTAL SHEETS 40



DRAWN BY: V.X. NGUYEN DATE: 5-03-07  
CHECKED BY: D. HODGE DATE: 10-07



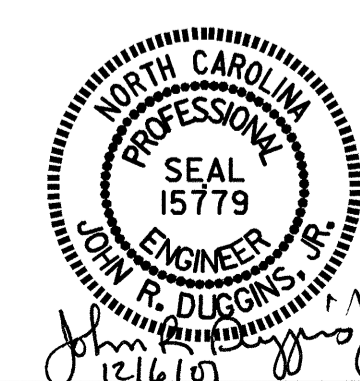


PROJECT NO. B-4144  
HAYWOOD COUNTY  
 STATION: 14+85.00 -L-

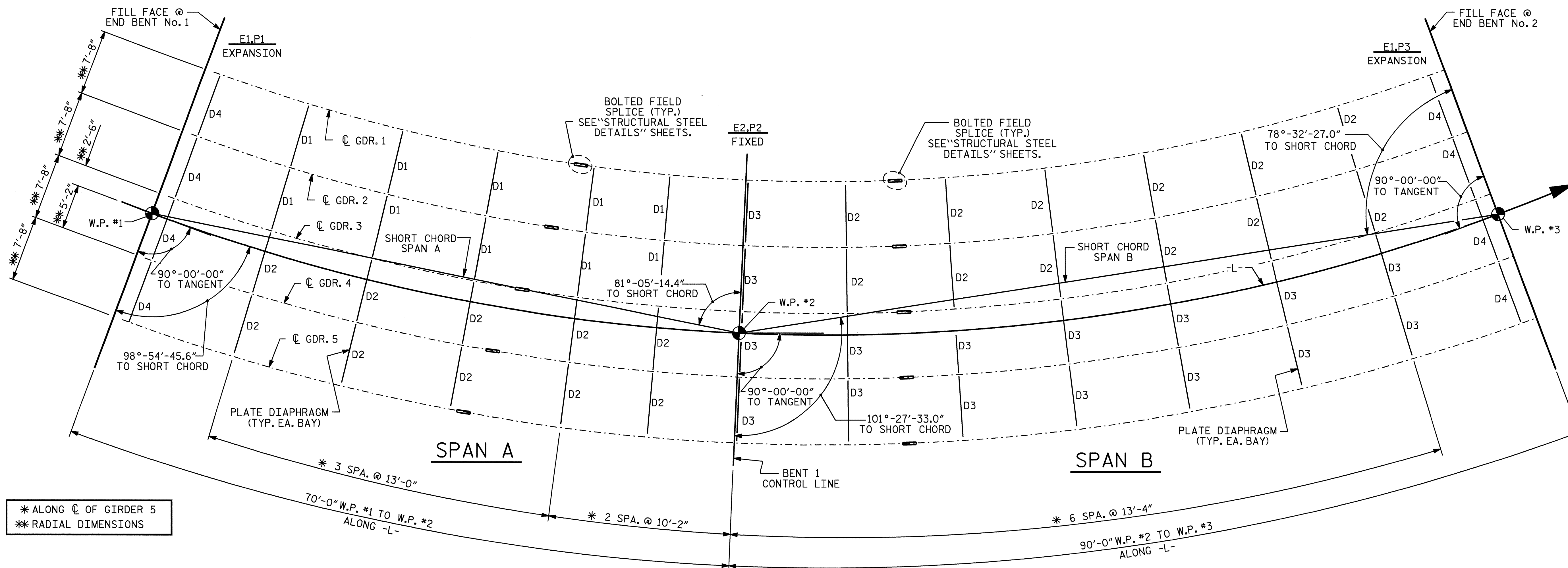
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 ARC OFFSETS

REVISIONS						SHEET NO.
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2			4			40



DRAWN BY : D. HODGE DATE : 11/07  
 CHECKED BY : J.R. DUGGINS DATE : 11/07



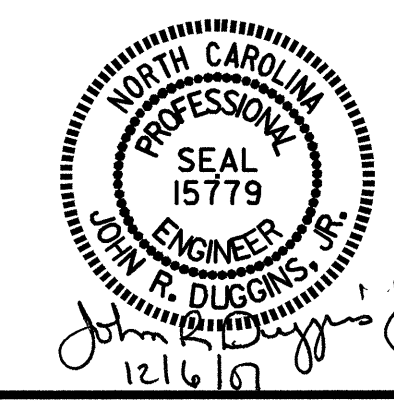
\* ALONG  $\phi$  OF GIRDER 5  
 \* RADIAL DIMENSIONS

### FRAMING PLAN

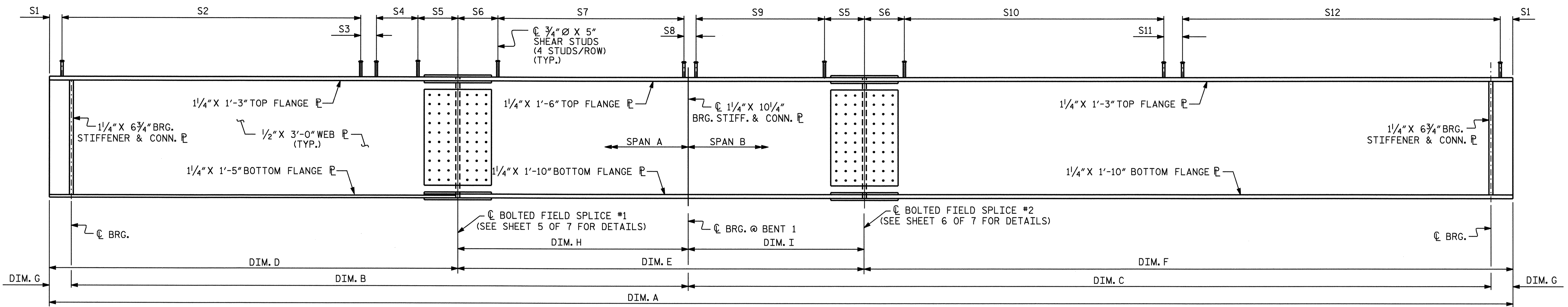
BOTH END BENTS, BENT AND DIAPHRAGMS ARE RADIAL TO -L-

PROJECT NO. B-4144  
HAYWOOD COUNTY  
 STATION: 14+85.00 -L-

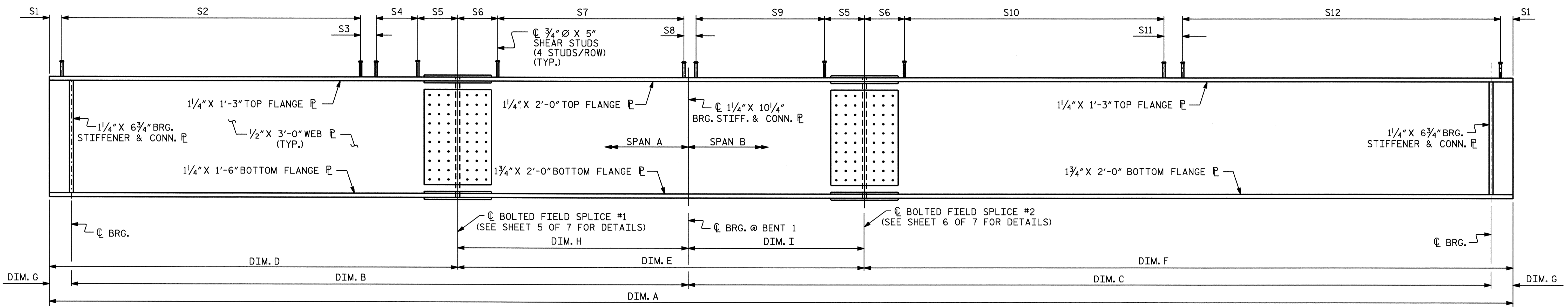
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE FRAMING PLAN					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
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2			4		
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 CHECKED BY: D. HODGE DATE: 11/07



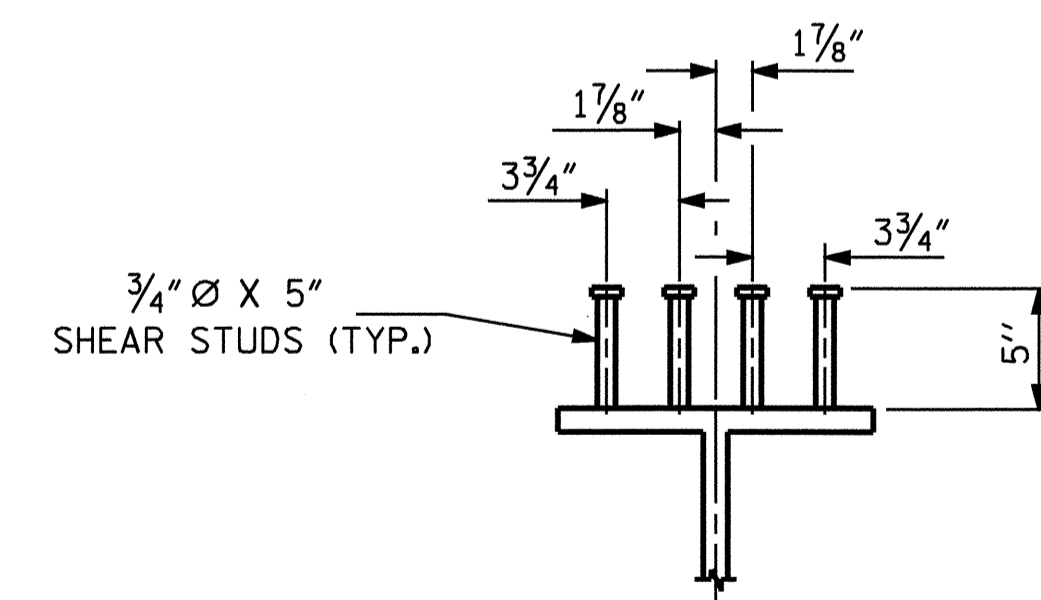
**PLATE GIRDER 1,2 & 3 ELEVATION**



**PLATE GIRDER 4 & 5 ELEVATION**

**SHEAR STUD SPACING TABLE FOR GIRDERS**

GIRDERS	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
GIRDER 1	4 1/2"	26 SPA. @ 1'-3 1/2"	9 7/8"	10 SPA. @ 8"	2'-0"	2'-0"	25 SPA. @ 8 1/2"	8 3/4"	15 SPA. @ 1'-0 1/4"	21 SPA. @ 1'-2 1/2"	1'-2 7/16"	26 SPA. @ 1'-4"
GIRDER 2	4 1/2"	26 SPA. @ 1'-4"	7 1/2"	8 SPA. @ 8 1/2"	2'-0"	2'-0"	27 SPA. @ 8 3/4"	1'-0 3/4"	12 SPA. @ 1'-4"	23 SPA. @ 1'-2"	1'-2 3/4"	26 SPA. @ 1'-4 1/2"
GIRDER 3	4 1/2"	26 SPA. @ 1'-4 1/2"	1'-1 1/8"	6 SPA. @ 8 1/2"	2'-0"	2'-0"	29 SPA. @ 9"	1'-3"	13 SPA. @ 1'-3"	23 SPA. @ 1'-3"	1'-0 9/16"	26 SPA. @ 1'-5"
GIRDER 4	4 1/2"	26 SPA. @ 1'-5"	10 3/4"	2 SPA. @ 8 1/2"	2'-4"	2'-4"	32 SPA. @ 9 1/2"	1'-1"	12 SPA. @ 1'-5 1/2"	23 SPA. @ 1'-3"	1'-4 5/16"	26 SPA. @ 1'-5 1/2"
GIRDER 5	4 1/2"	26 SPA. @ 1'-5 3/4"	0	6 7/8"	2'-4"	2'-4"	34 SPA. @ 10"	9"	12 SPA. @ 1'-6 1/2"	23 SPA. @ 1'-3 1/4"	1'-1 7/8"	26 SPA. @ 1'-6 1/4"



**SHEAR STUD DETAILS**

TYPICAL ALL GIRDERS EXCEPT @ FIELD SPLICE LOCATIONS

**GIRDER DIMENSIONS**

GIRDERS	DIM. A	DIM. A (SLOPED)	DIM. B	DIM. C	DIM. D	DIM. E	DIM. F	DIM. G	DIM. H	DIM. I
GIRDER 1	144'-9 3/16"	144'-10 3/8"	62'-6 5/16"	80'-11 7/8"	43'-5 7/16"	37'-9"	63'-7 3/8"	7 1/2"	19'-9"	18'-0"
GIRDER 2	150'-3 1/4"	150'-3 13/16"	64'-11 3/16"	84'-0 11/16"	43'-4 1/16"	40'-9"	66'-2 3/16"	7 1/2"	22'-3"	18'-6"
GIRDER 3	155'-8 11/16"	155'-9 1/4"	67'-4 3/16"	87'-1 1/2"	43'-5 11/16"	43'-3"	69'-0"	7 1/2"	24'-6"	18'-9"
GIRDER 4	161'-2 1/16"	161'-2 11/16"	69'-8 13/16"	90'-2 5/16"	41'-10 5/16"	48'-7"	70'-8 13/16"	7 1/2"	28'-6"	20'-1"
GIRDER 5	166'-7 1/2"	166'-8 1/8"	72'-1 1/16"	93'-3 3/8"	41'-8 5/16"	52'-3"	72'-7 5/8"	7 1/2"	31'-0"	21'-3"

DRAWN BY: V.X. NGUYEN DATE: 6-14-07  
 CHECKED BY: D. HODGE DATE: 11-07

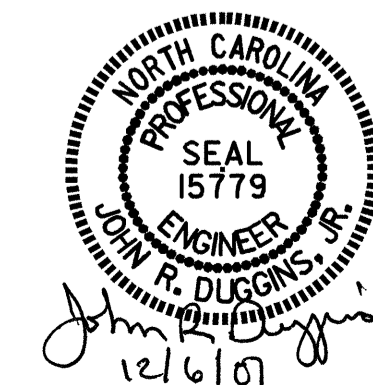
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PROJECT NO. B-4144  
HAYWOOD COUNTY  
 STATION: 14+85.00 -L-

SHEET 1 OF 7

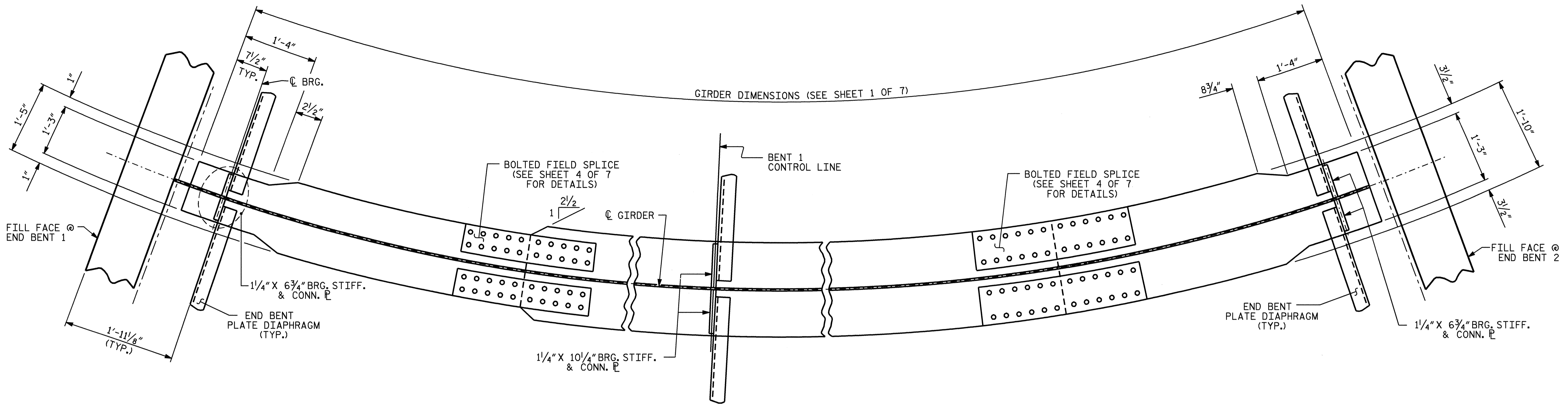
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 STRUCTURAL STEEL  
 DETAILS



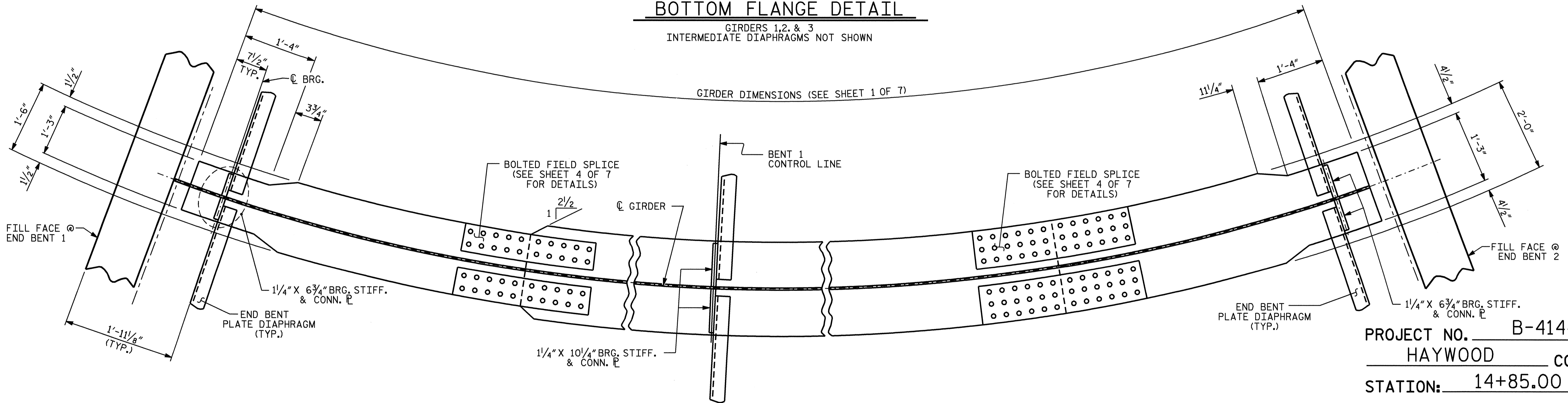
REVISIONS						SHEET NO. S-12
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			





**BOTTOM FLANGE DETAIL**

GIRDERS 1, 2, & 3  
INTERMEDIATE DIAPHRAGMS NOT SHOWN



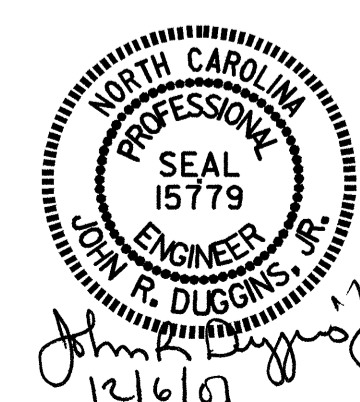
**BOTTOM FLANGE DETAIL**

GIRDERS 4 & 5  
INTERMEDIATE DIAPHRAGMS NOT SHOWN

PROJECT NO. B-4144  
HAYWOOD COUNTY  
 STATION: 14+85.00 -L-

SHEET 2 OF 7

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

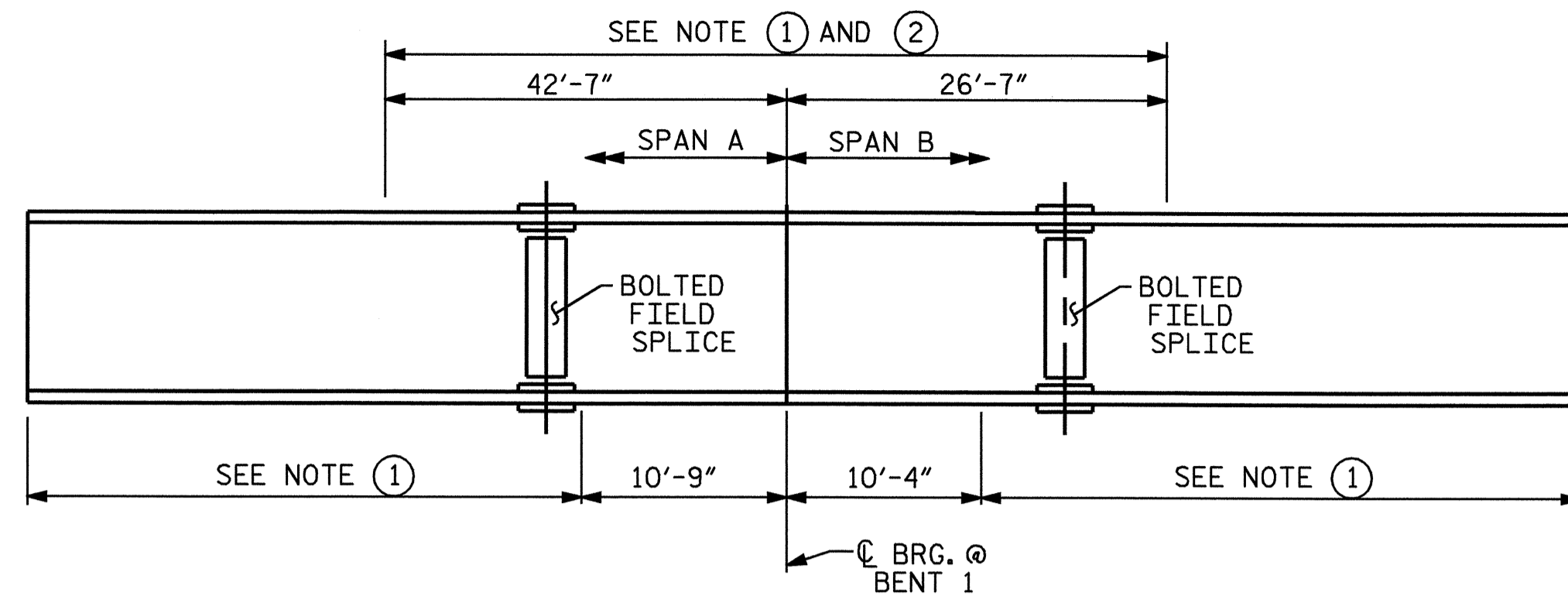


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 CHECKED BY: D. HODGE DATE: 11-07

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 dahodge

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			40

NC006



ELEVATION

- NOTE ① : CHARPY V-NOTCH TESTS ARE REQUIRED FOR ALL TOP OR BOTTOM FLANGE PLATES WHICH FALL WITHIN THESE LIMITS, ALL WEB PLATES, AND ALL SPLICE PLATES. IF A PERMITTED SHOP FLANGE SPLICE IS NOT USED, CHARPY V-NOTCH TESTS WILL BE REQUIRED FOR THE ENTIRE FLANGE PLATE. FOR CHARPY V-NOTCH TESTS, SEE ARTICLE 1072-9 OF THE STANDARD SPECIFICATIONS.
- NOTE ② : NO WELDING OF FORMS OR FALSEWORK TO THE TOP FLANGE WILL BE PERMITTED IN THIS REGION
- NOTE : FOR CURVED GIRDER STRUCTURES, ALL DIAPHRAGM STEEL AND THEIR CONNECTOR PLATES SHALL BE SUBJECT TO V-NOTCH TESTS.

CHARPY V-NOTCH TESTS FOR CONTINUOUS PLATE GIRDERS

NOTES

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

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

ALL FIELD CONNECTIONS TO BE 7/8" DIA. HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED.

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

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

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

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

END OF GIRDERS SHALL BE PLUMB.

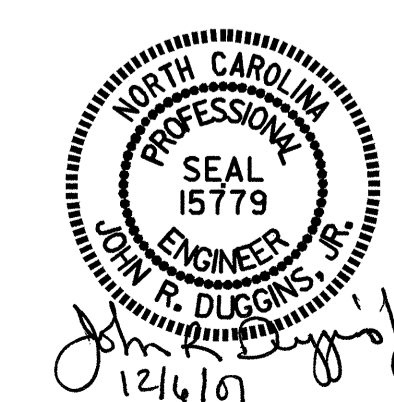
BEARING STIFFENER MAY REQUIRE COPING IF WIDER THAN BOTTOM FLANGE TO AVOID INTERFERENCE WITH THE ANCHOR BOLT.

FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS. HEAT CURVING OF GIRDERS WILL NOT BE PERMITTED.

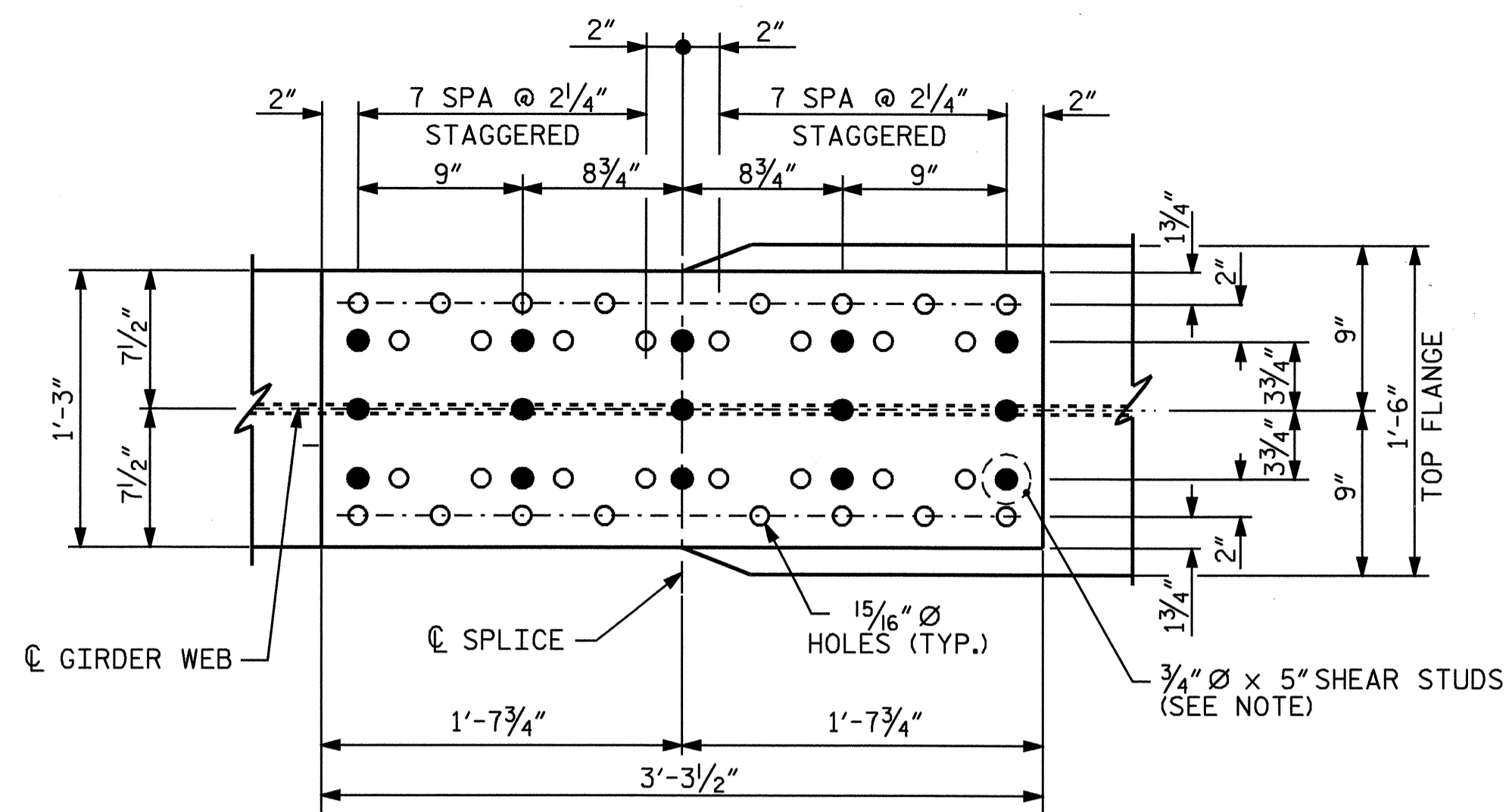
PROJECT NO. B-4144  
HAYWOOD COUNTY  
 STATION: 14+85.00 -L-

SHEET 3 OF 7

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE STRUCTURAL STEEL DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					40

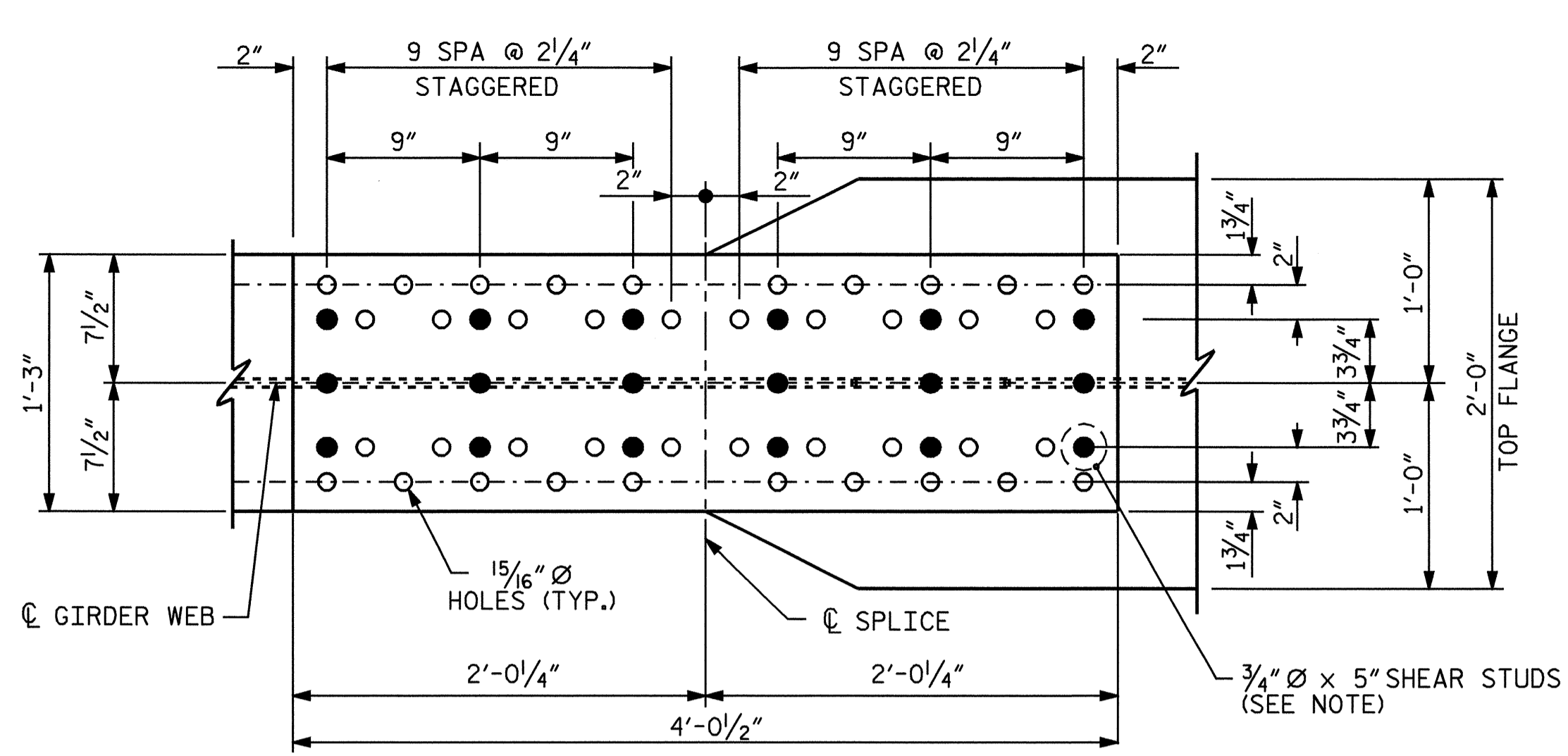


DRAWN BY : V.X. NGUYEN DATE : 6-21-07  
 CHECKED BY : D. HODGE DATE : 11-07



PLAN - TOP OF TOP FLANGE - SPAN A & B

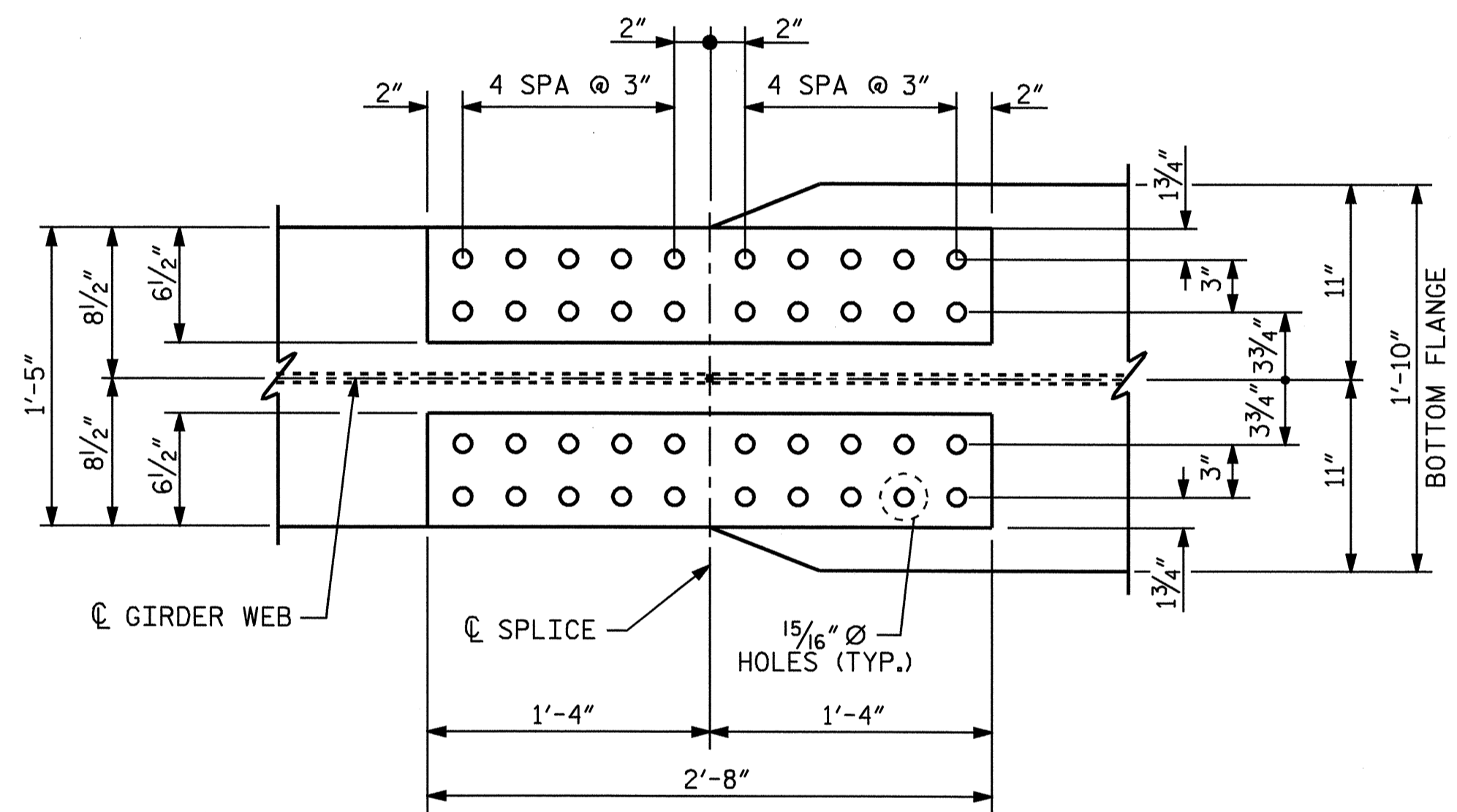
GIRDERS 1,2 & 3



PLAN - TOP OF TOP FLANGE - SPAN A & B

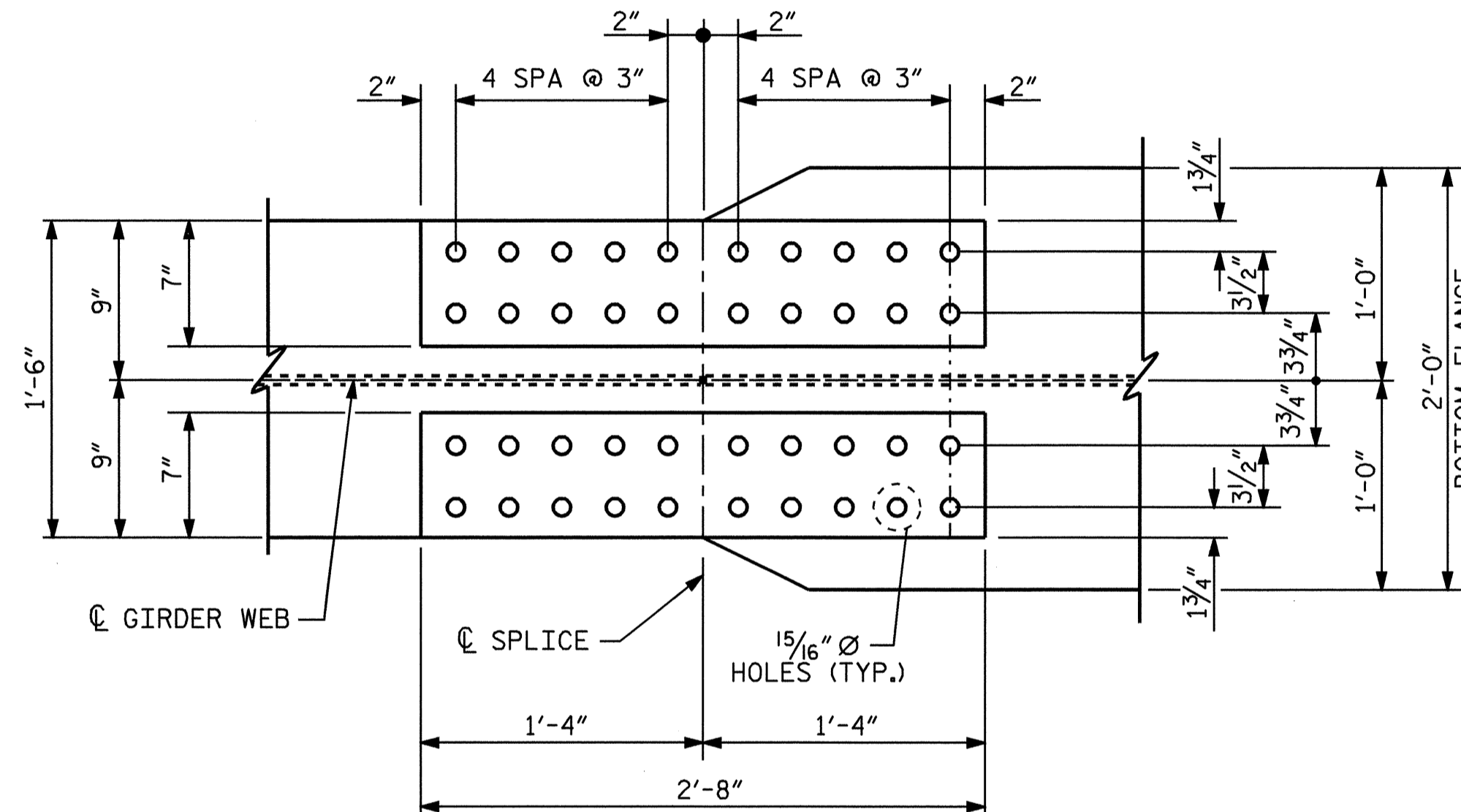
GIRDERS 4 & 5

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



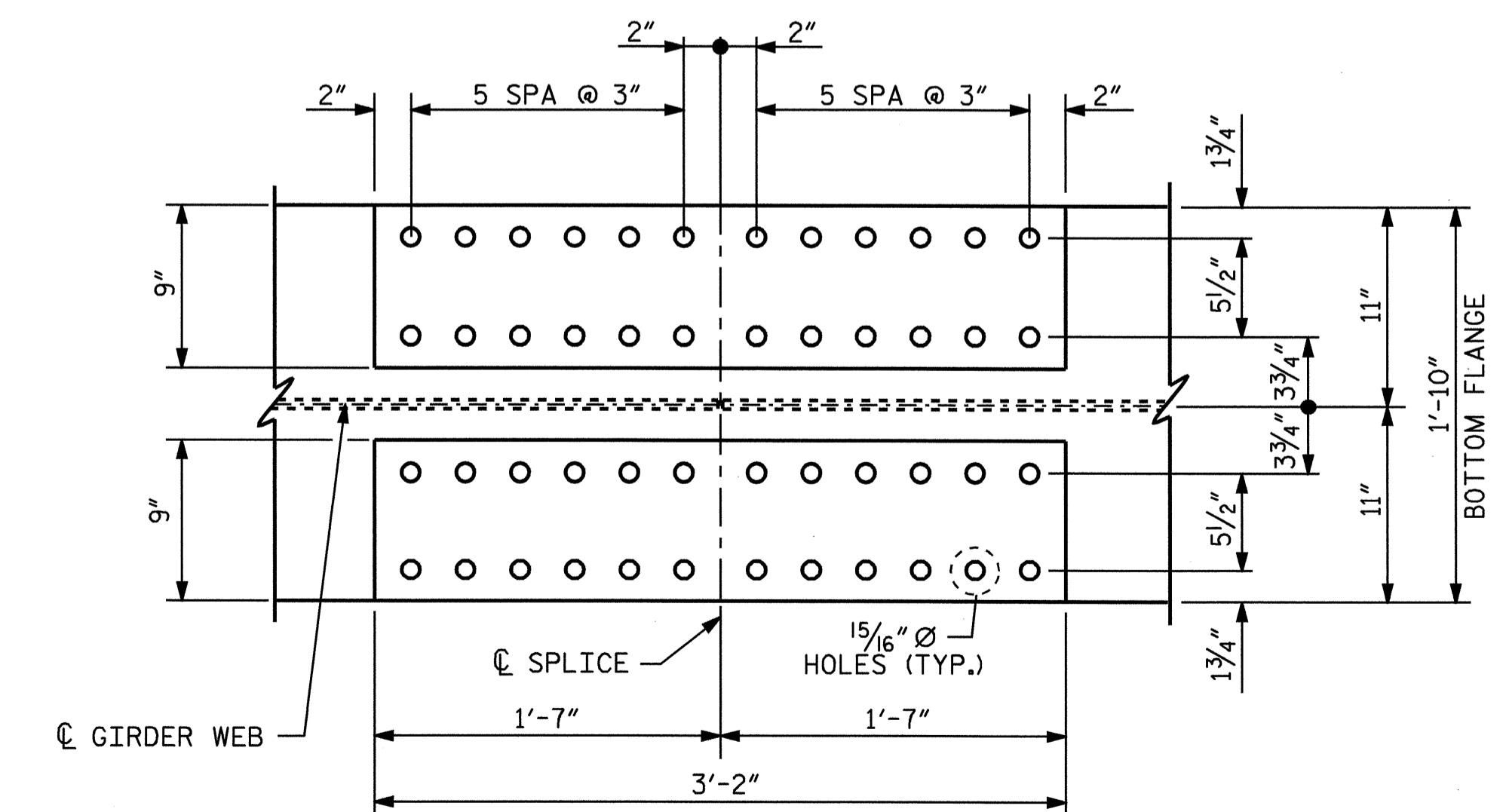
PLAN - TOP OF BOTTOM FLANGE - SPAN A

GIRDERS 1,2 & 3



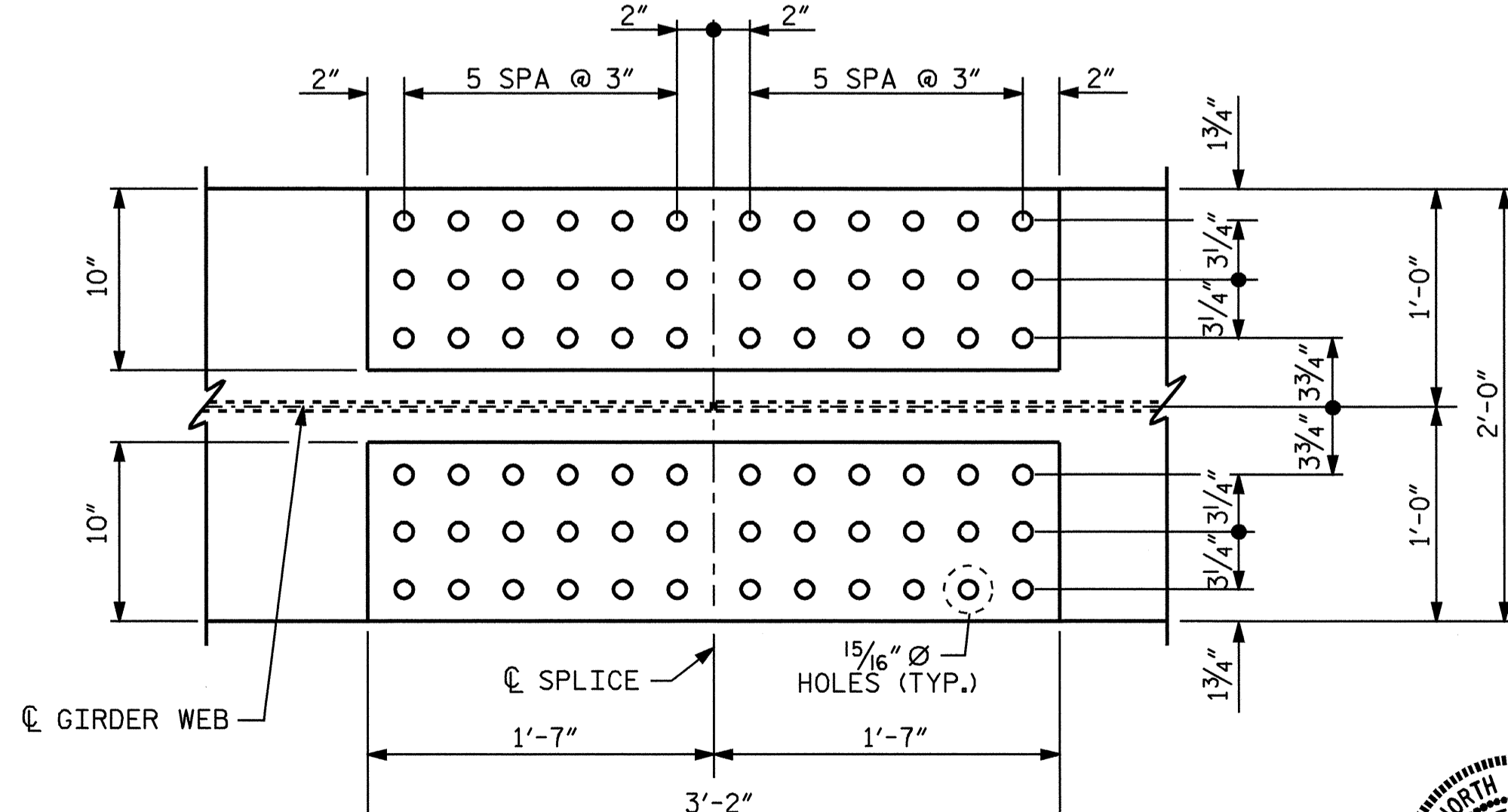
PLAN - TOP OF BOTTOM FLANGE - SPAN A

GIRDERS 4 & 5



PLAN - TOP OF BOTTOM FLANGE - SPAN B

GIRDERS 1,2 & 3

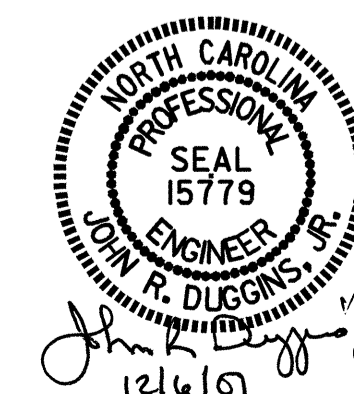


PLAN - TOP OF BOTTOM FLANGE - SPAN B

GIRDERS 4 & 5

DRAWN BY: V.X. NGUYEN DATE: 6-21-07  
CHECKED BY: D. HODGE DATE: 11-07

16-NOV-2007 11:19  
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PROJECT NO. B-4144  
HAYWOOD COUNTY  
STATION: 14+85.00 -L-

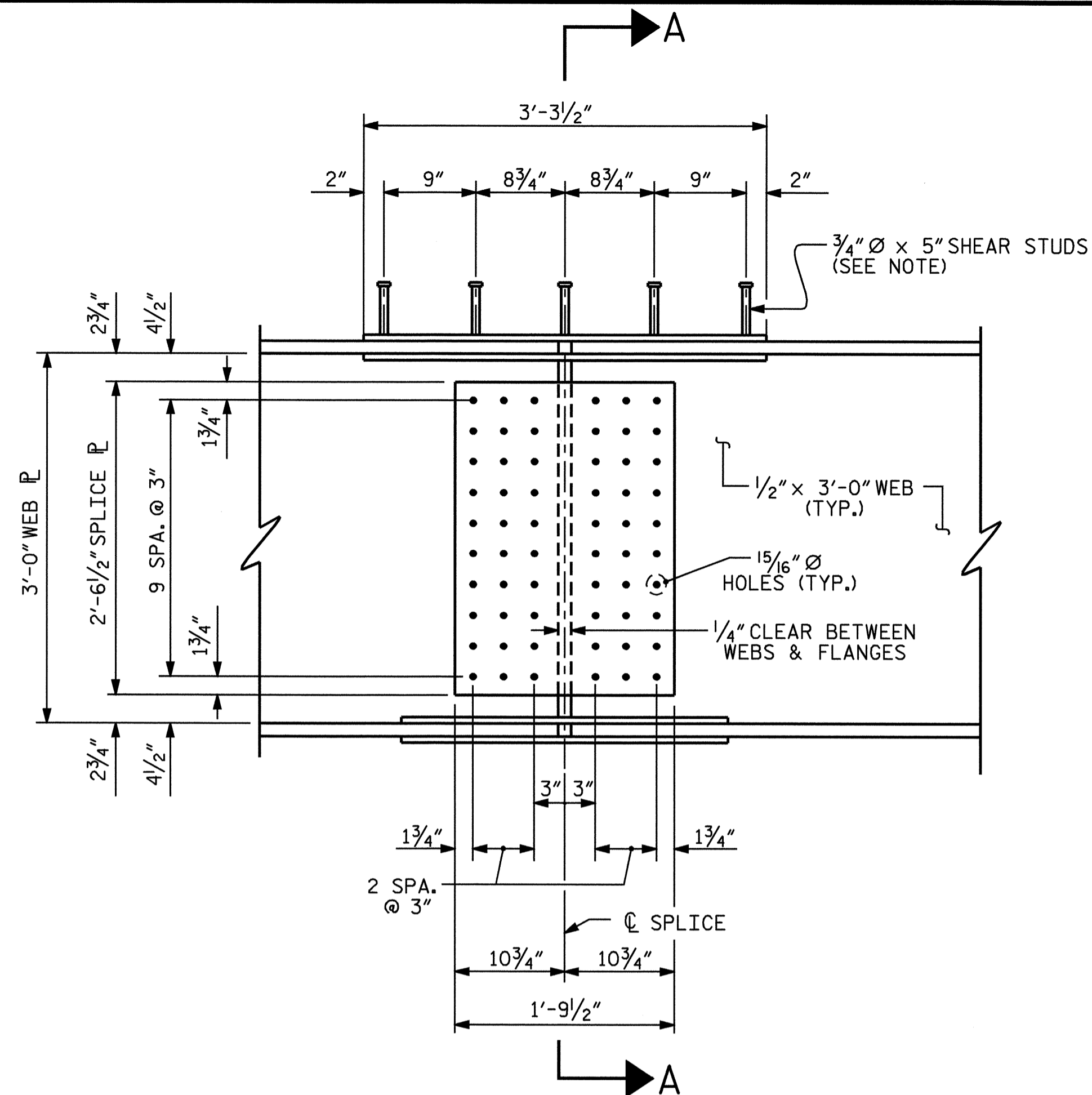
SHEET 4 OF 7

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

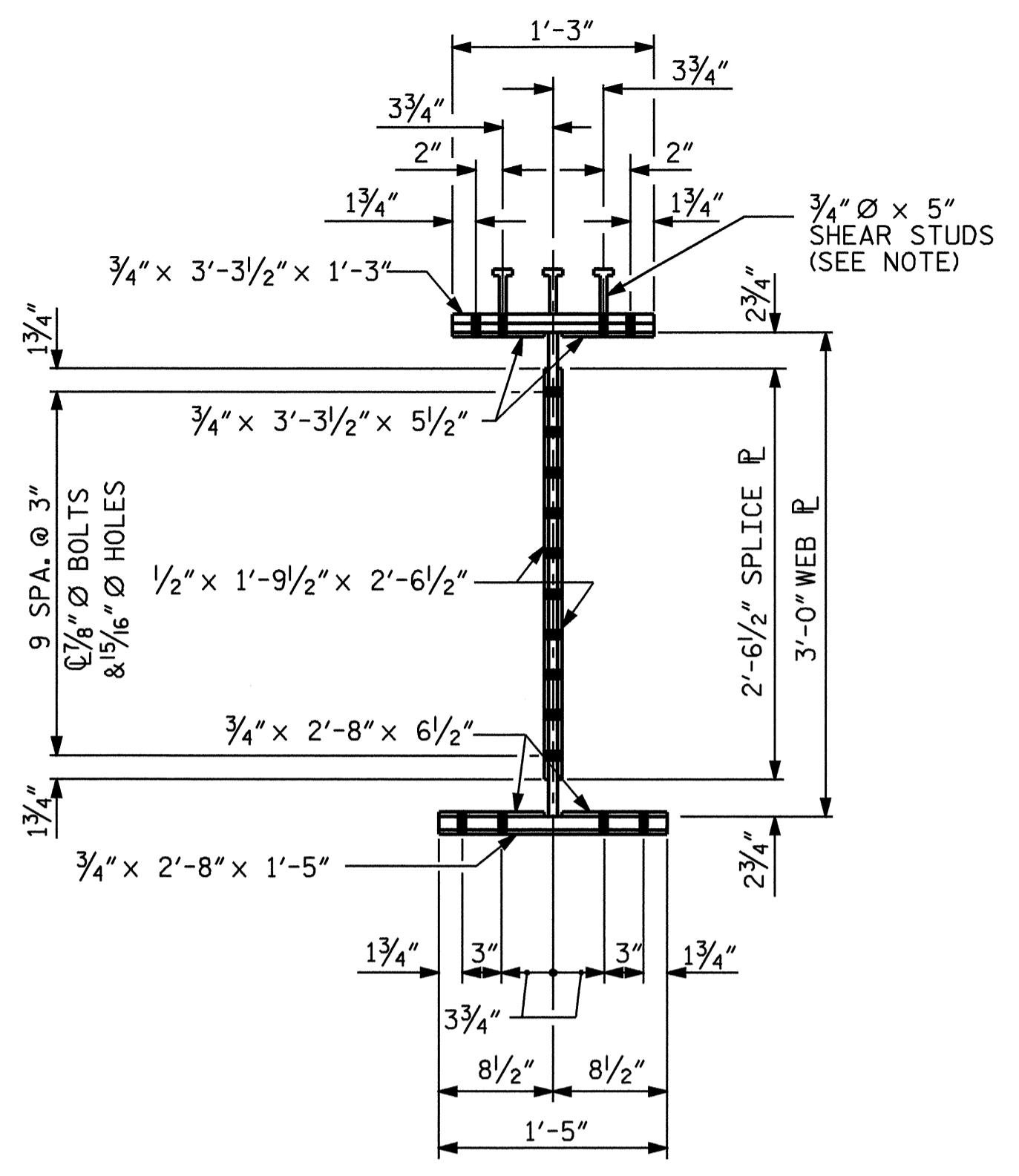
SUPERSTRUCTURE  
STRUCTURAL STEEL  
DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			40

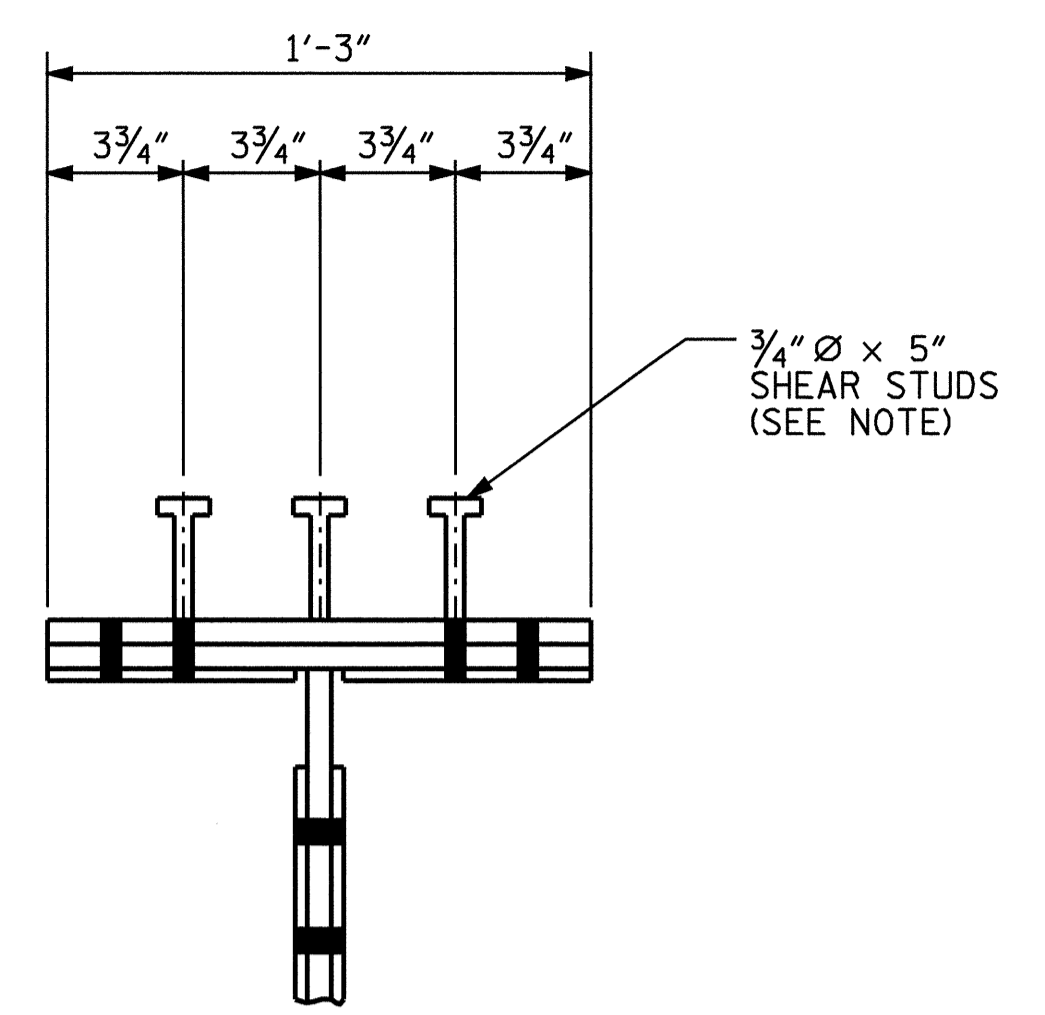




**ELEVATION**  
SPAN A - GIRDERS 1, 2 & 3

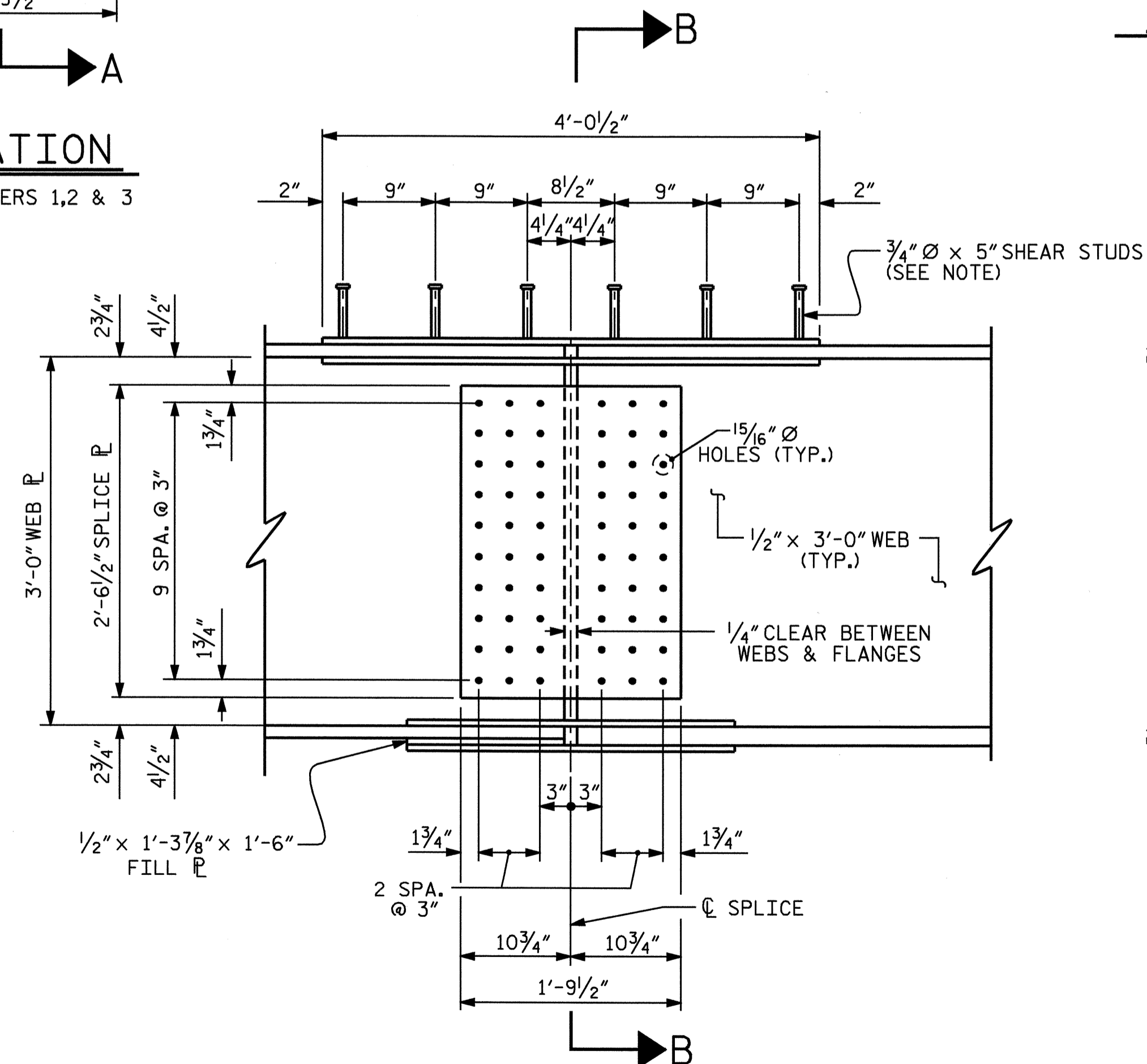


**SECTION A-A**  
SPAN A - GIRDERS 1, 2 & 3

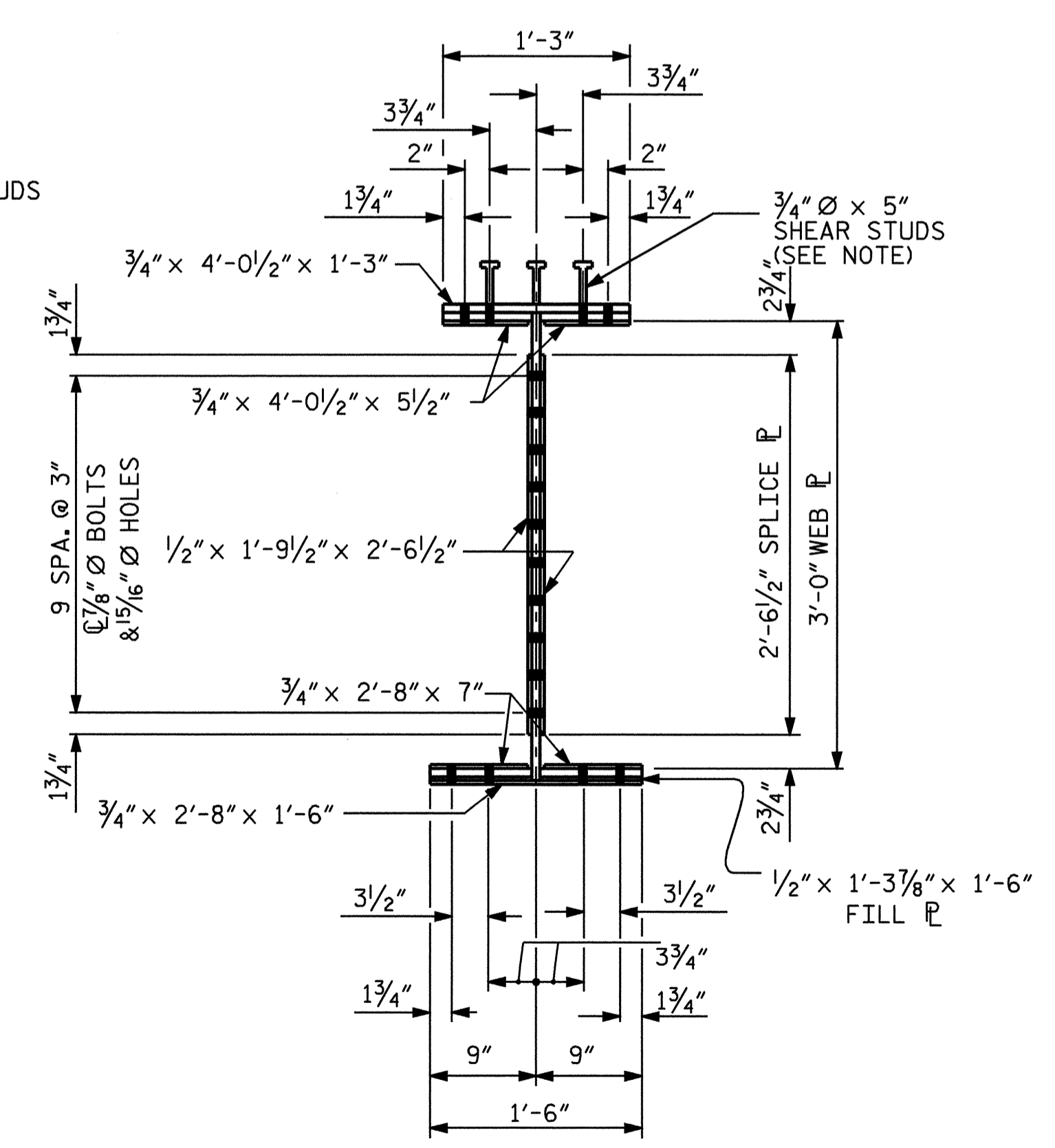


**SHEAR STUD DETAIL FOR TOP FLANGE SPLICE PLATE**

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



**ELEVATION**  
SPAN A - GIRDERS 4 & 5

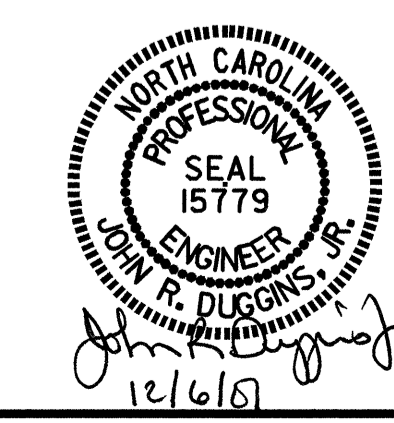


**SECTION B-B**  
SPAN A - GIRDERS 4 & 5

**BOLTED FIELD SPLICE #1 DETAILS**

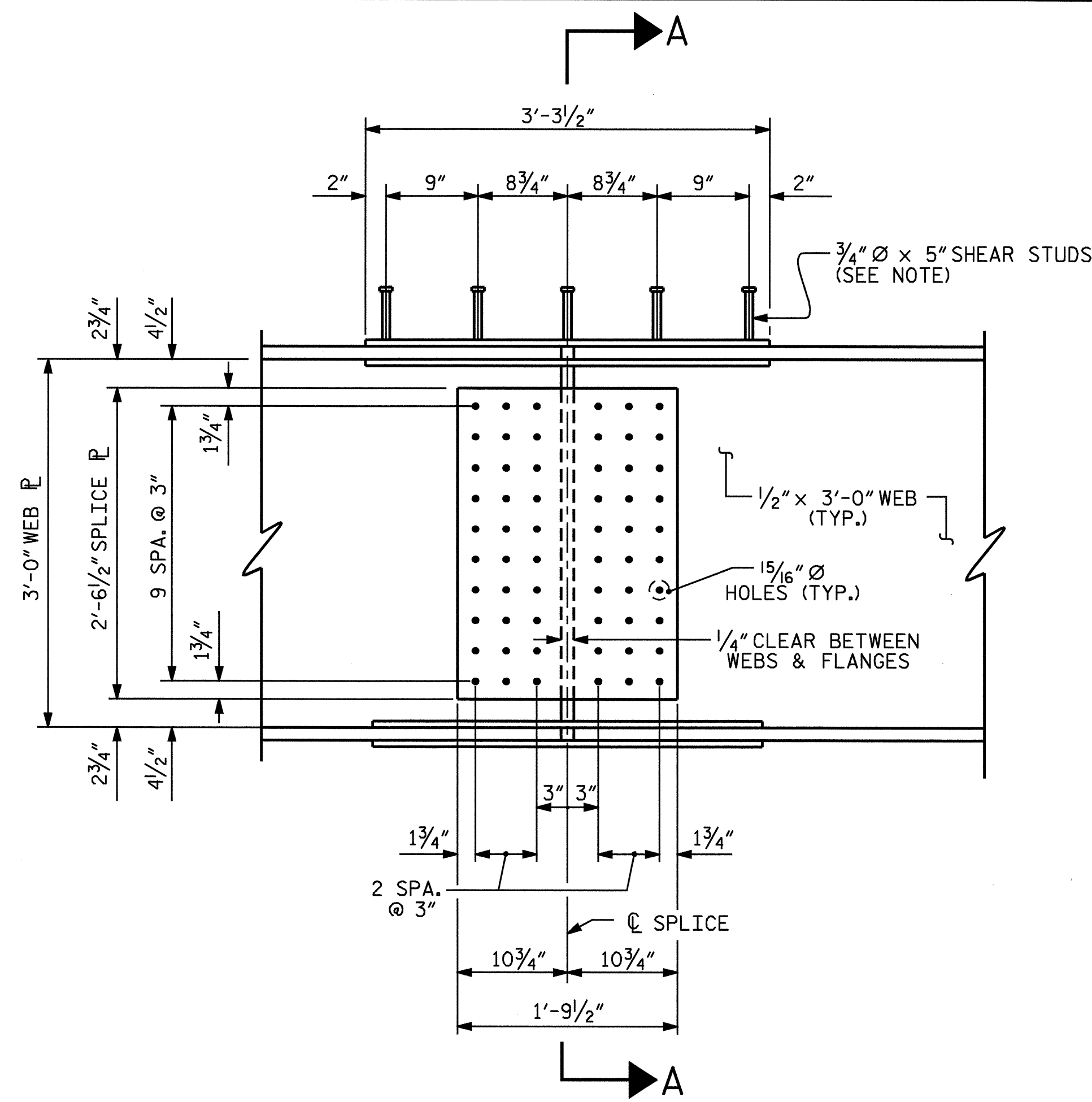
PROJECT NO. B-4144  
HAYWOOD COUNTY  
 STATION: 14+85.00 -L-  
 SHEET 5 OF 7

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

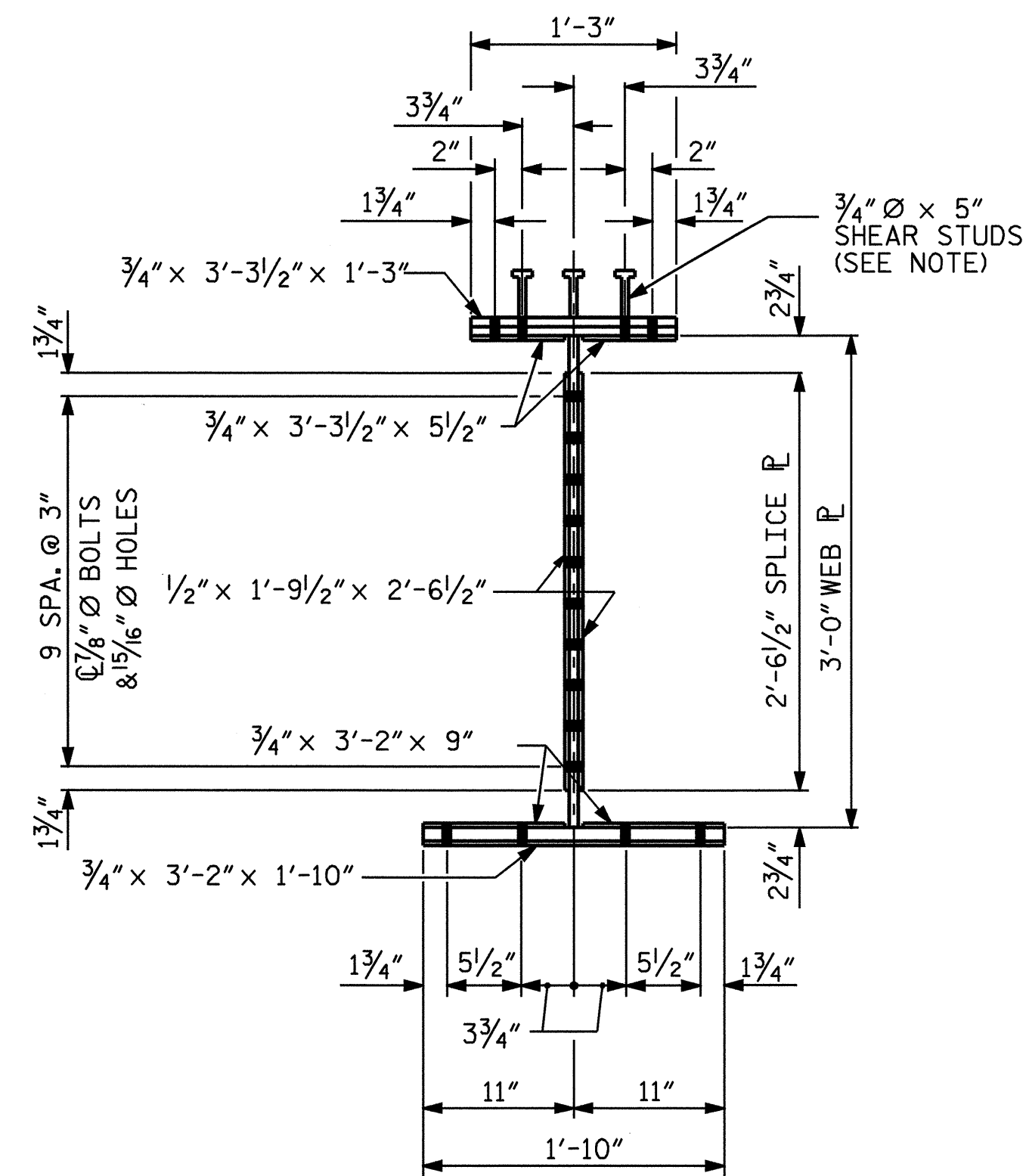


DRAWN BY: V.X. NGUYEN DATE: 6-21-07  
 CHECKED BY: D. HODGE DATE: 11-07

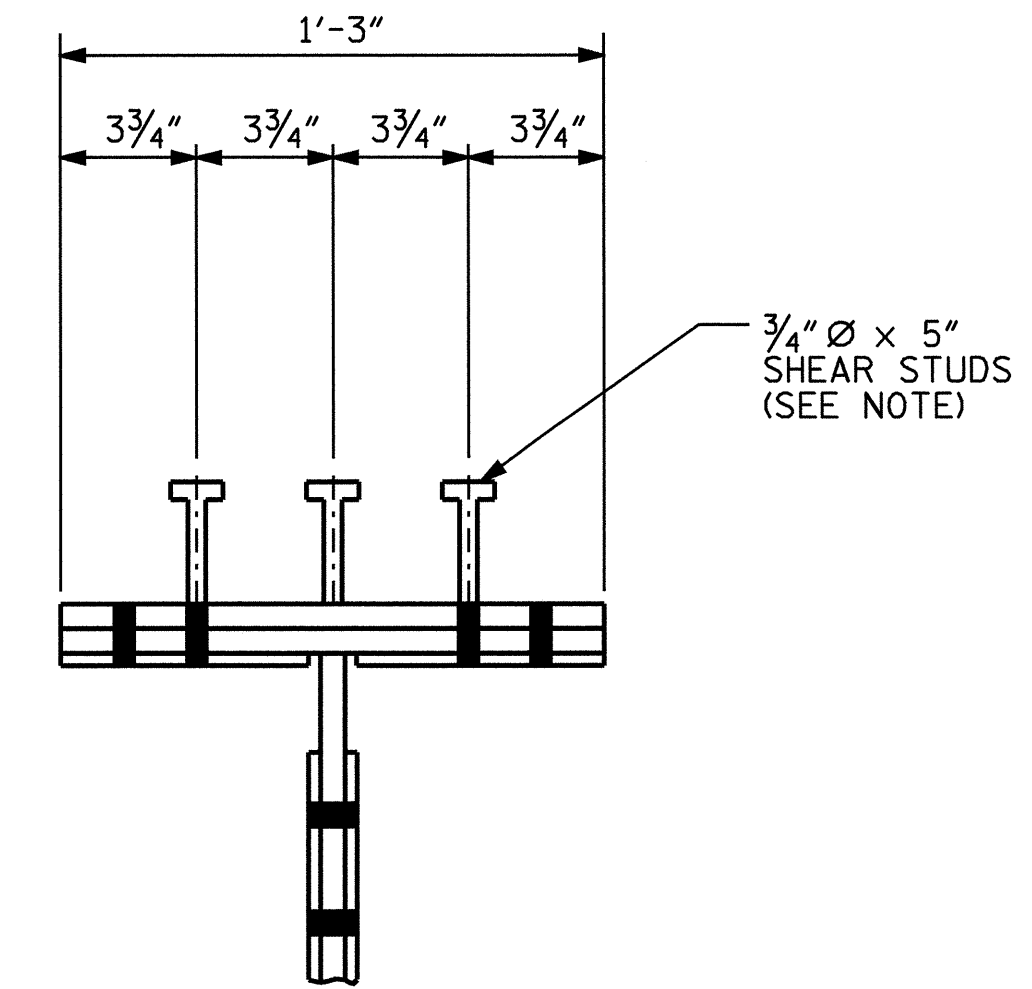
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			40
2			4			



**ELEVATION**  
SPAN B - GIRDERS 1, 2 & 3

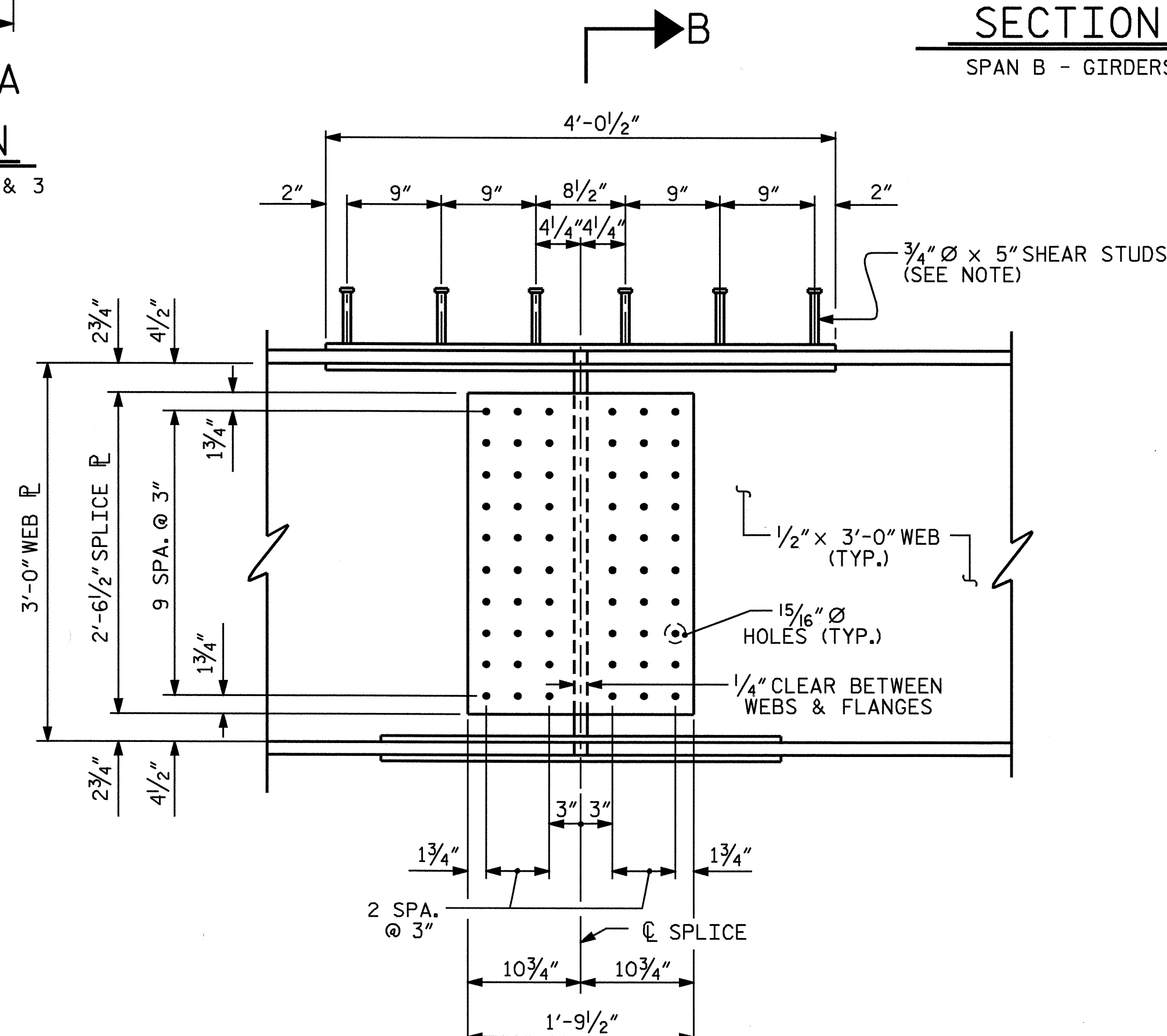


**SECTION A-A**  
SPAN B - GIRDERS 1, 2 & 3

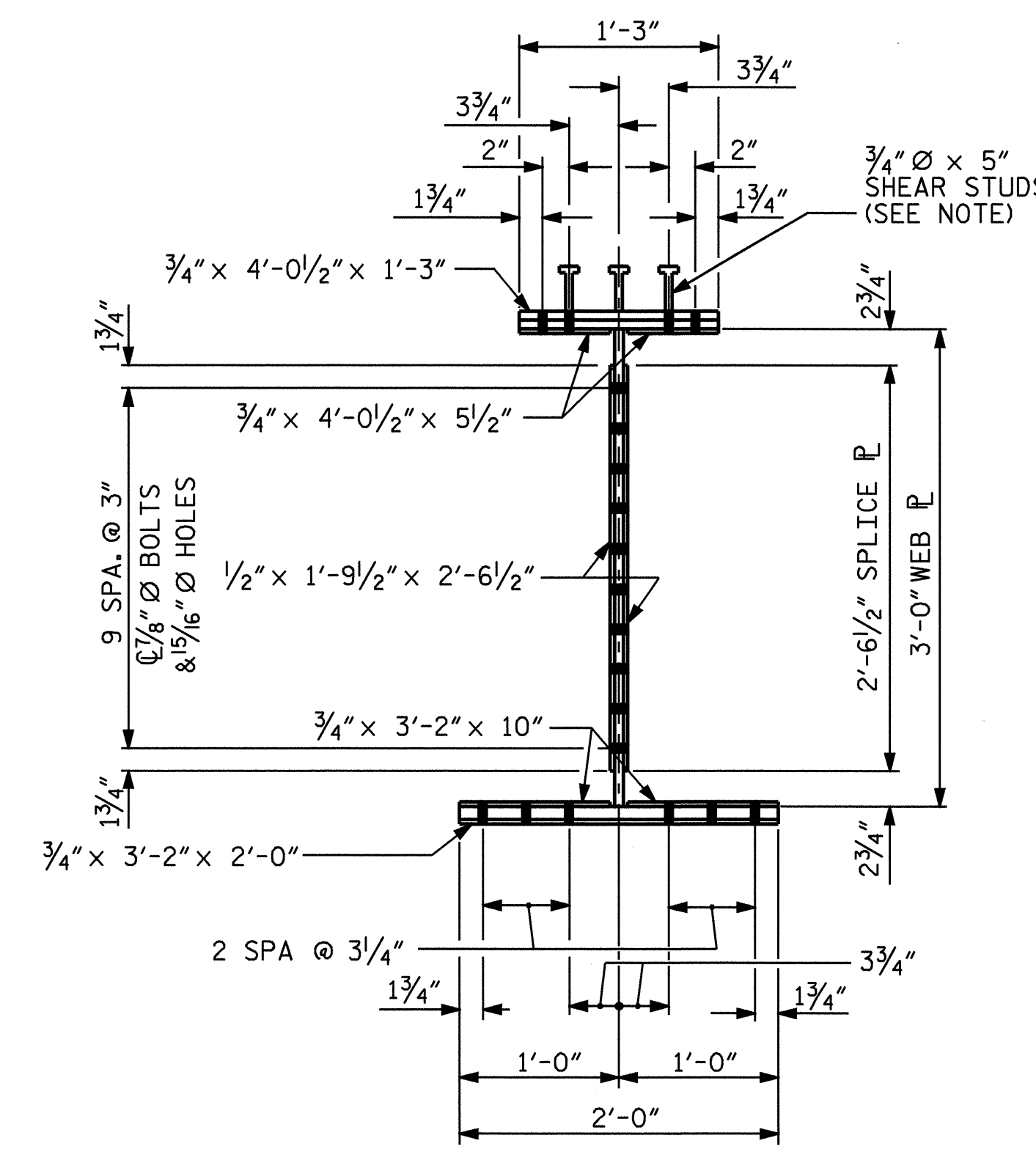


**SHEAR STUD DETAIL FOR TOP FLANGE SPLICE PLATE**

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



**ELEVATION**  
SPAN B - GIRDERS 4 & 5



**SECTION B-B**  
SPAN B - GIRDERS 4 & 5

PROJECT NO. B-4144  
HAYWOOD COUNTY  
STATION: 14+85.00 -L-

SHEET 6 OF 7

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
STRUCTURAL STEEL  
DETAILS



REVISIONS

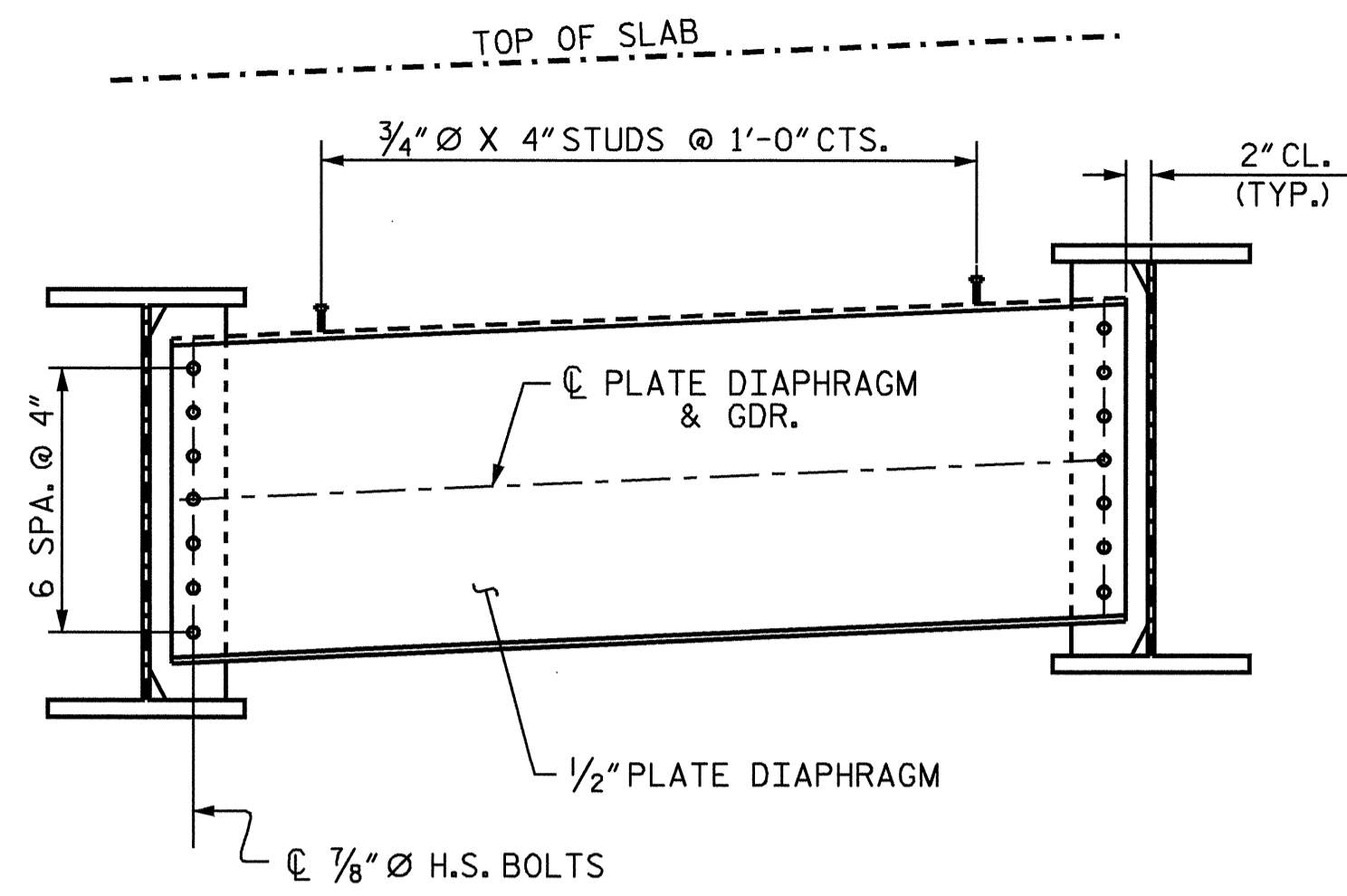
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TOTAL SHEETS 40

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CHECKED BY: D. HODGE DATE: 11-07

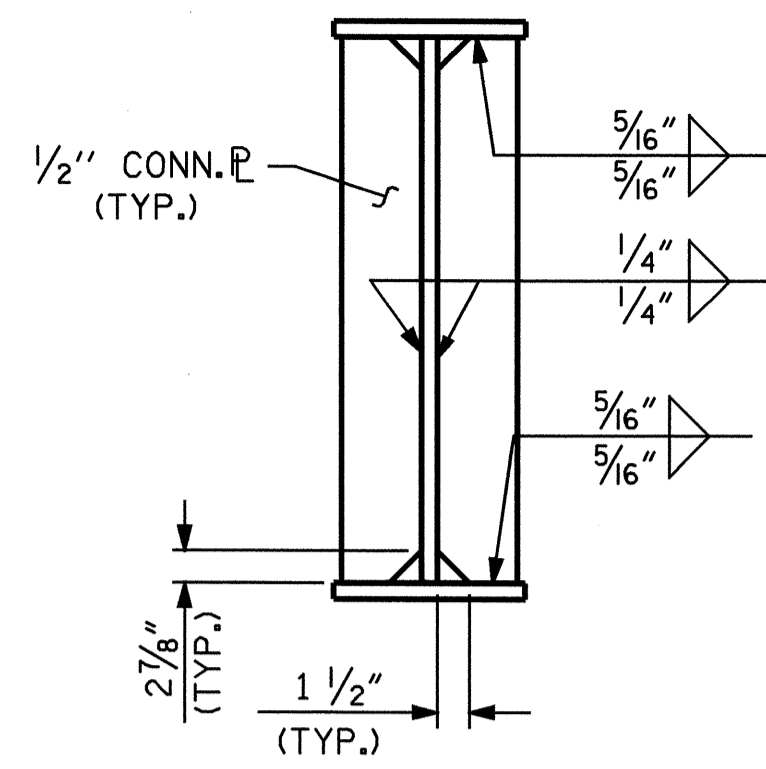
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**BOLTED FIELD SPLICE #2 DETAILS**

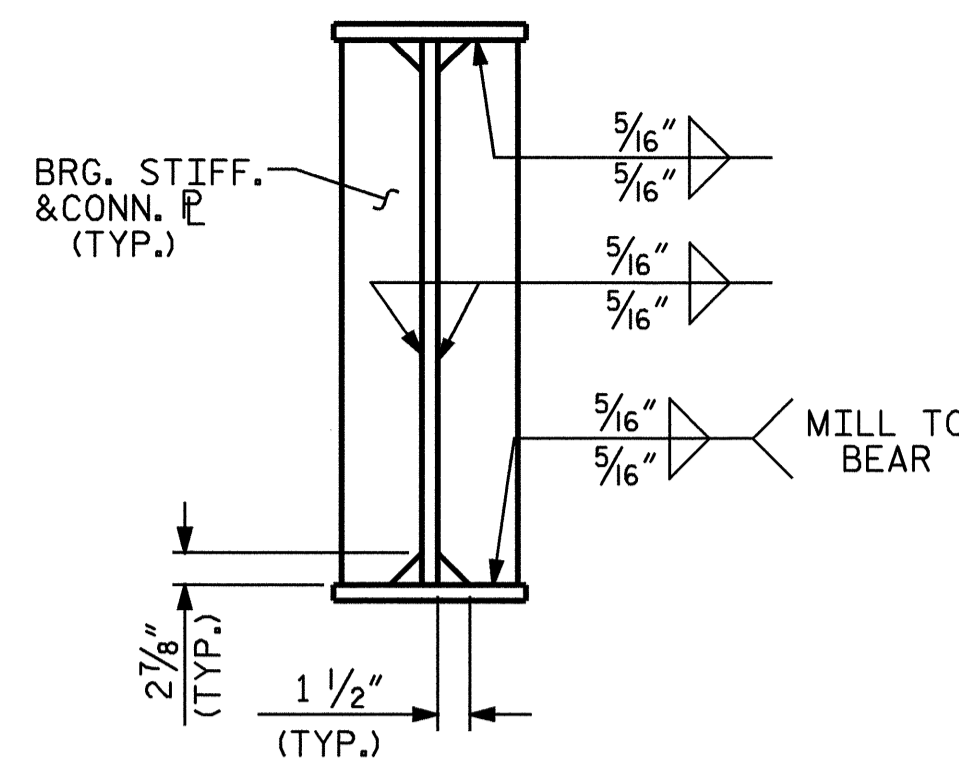


TYPICAL END BENT DIAPHRAGM

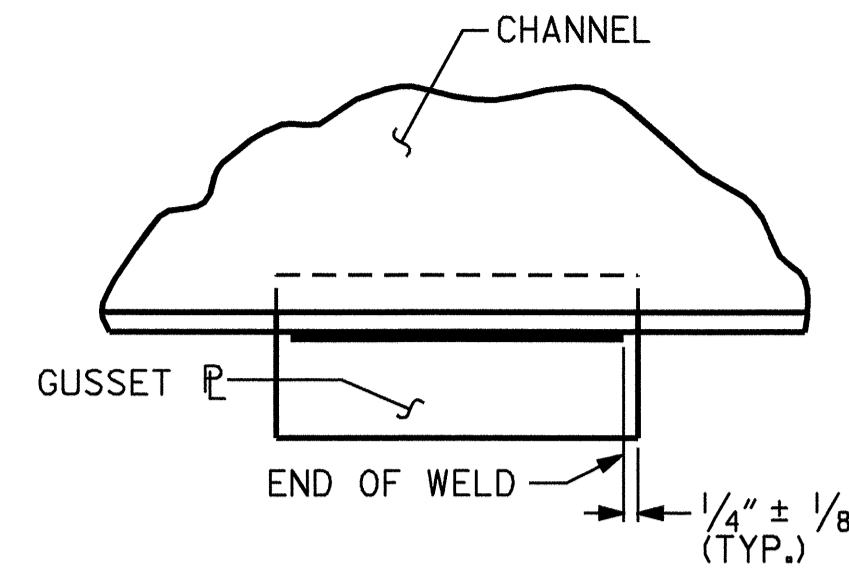
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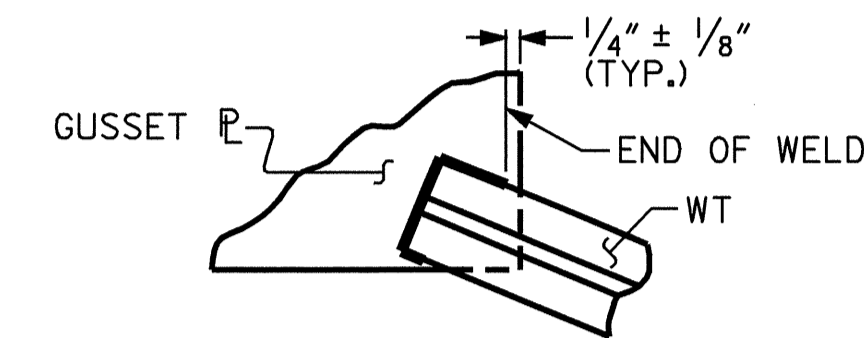
CONNECTOR



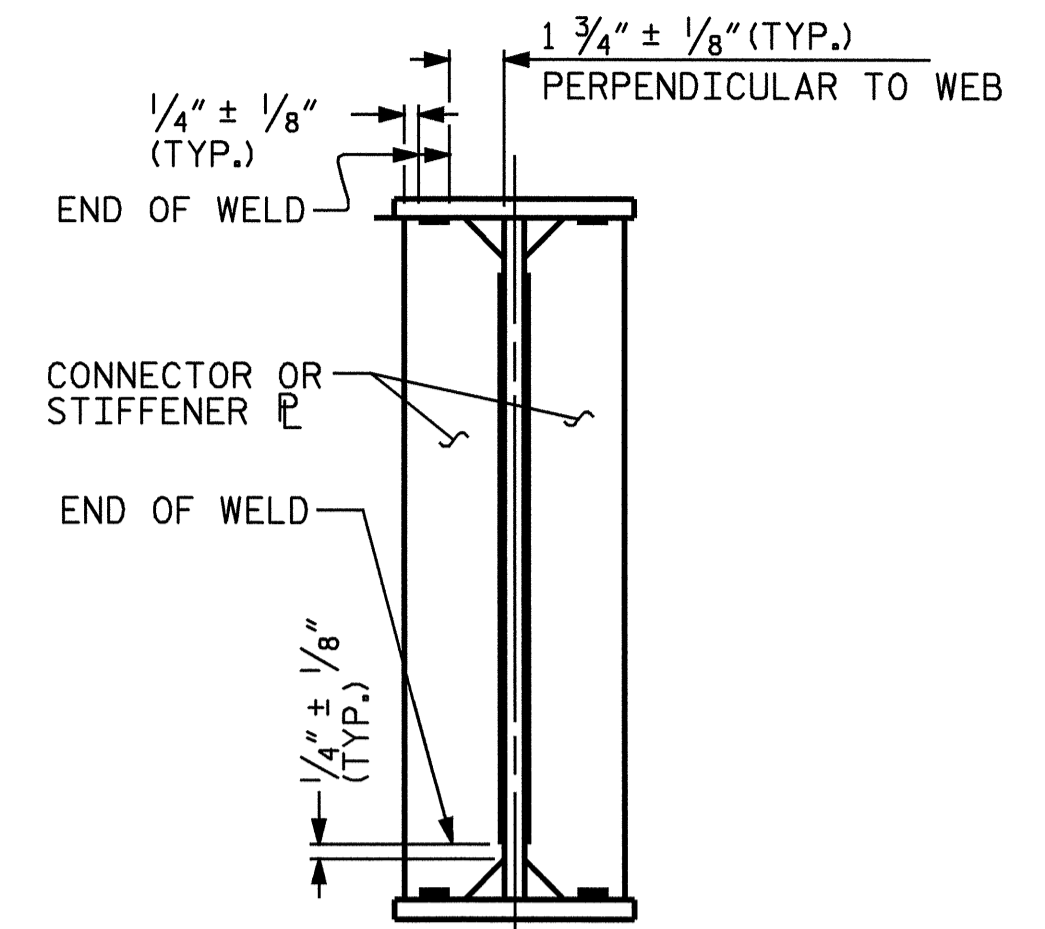
BEARING STIFFENER & CONNECTOR



TYPICAL GUSSET PLATE CONNECTION



TYPICAL "TEE" TO GUSSET PLATE CONNECTION



TYPICAL STIFFENER OR CONNECTOR PLATE CONNECTIONS

WELD TERMINATION DETAILS

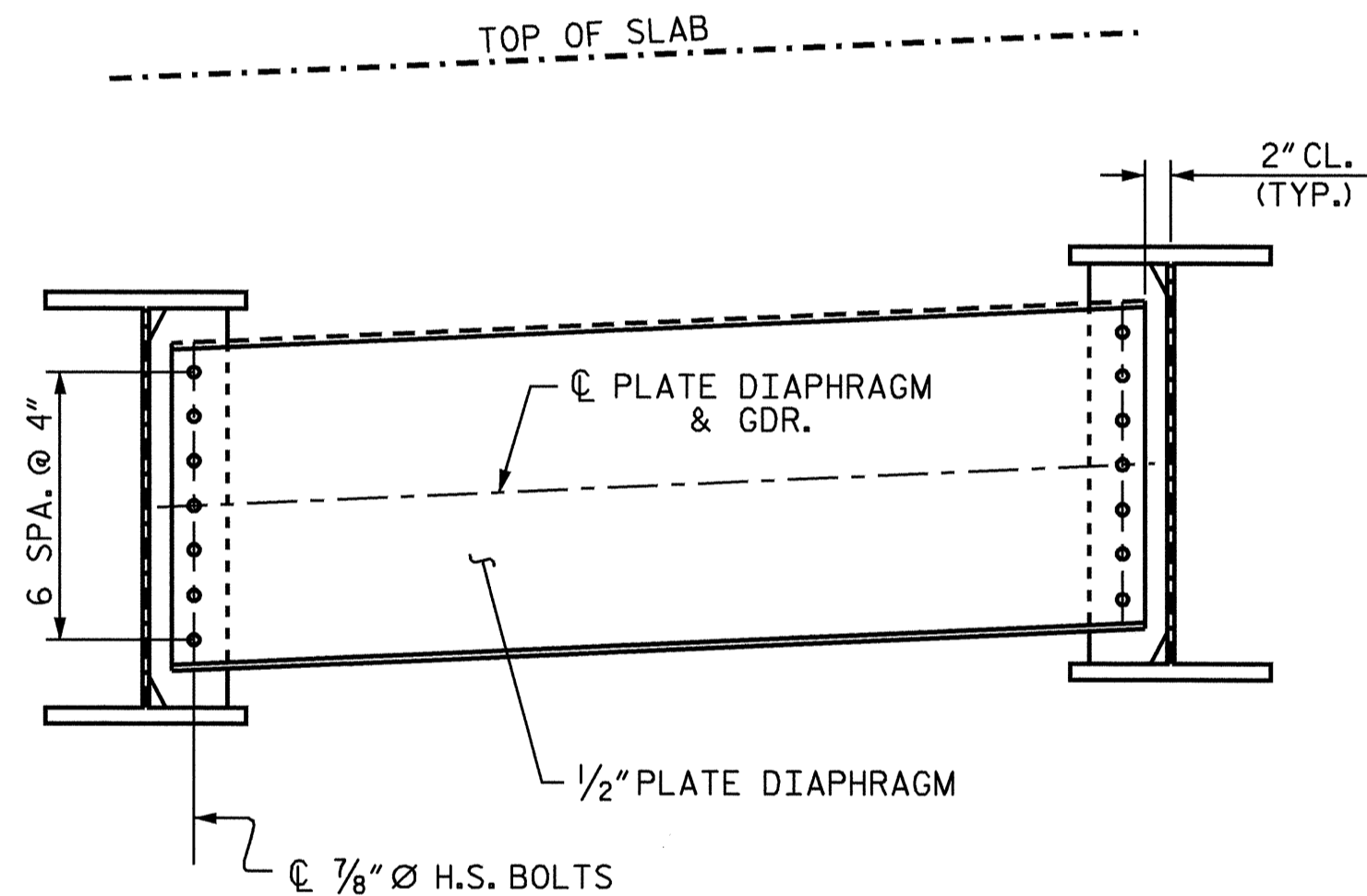


PLATE DIAPHRAGM

(D1)

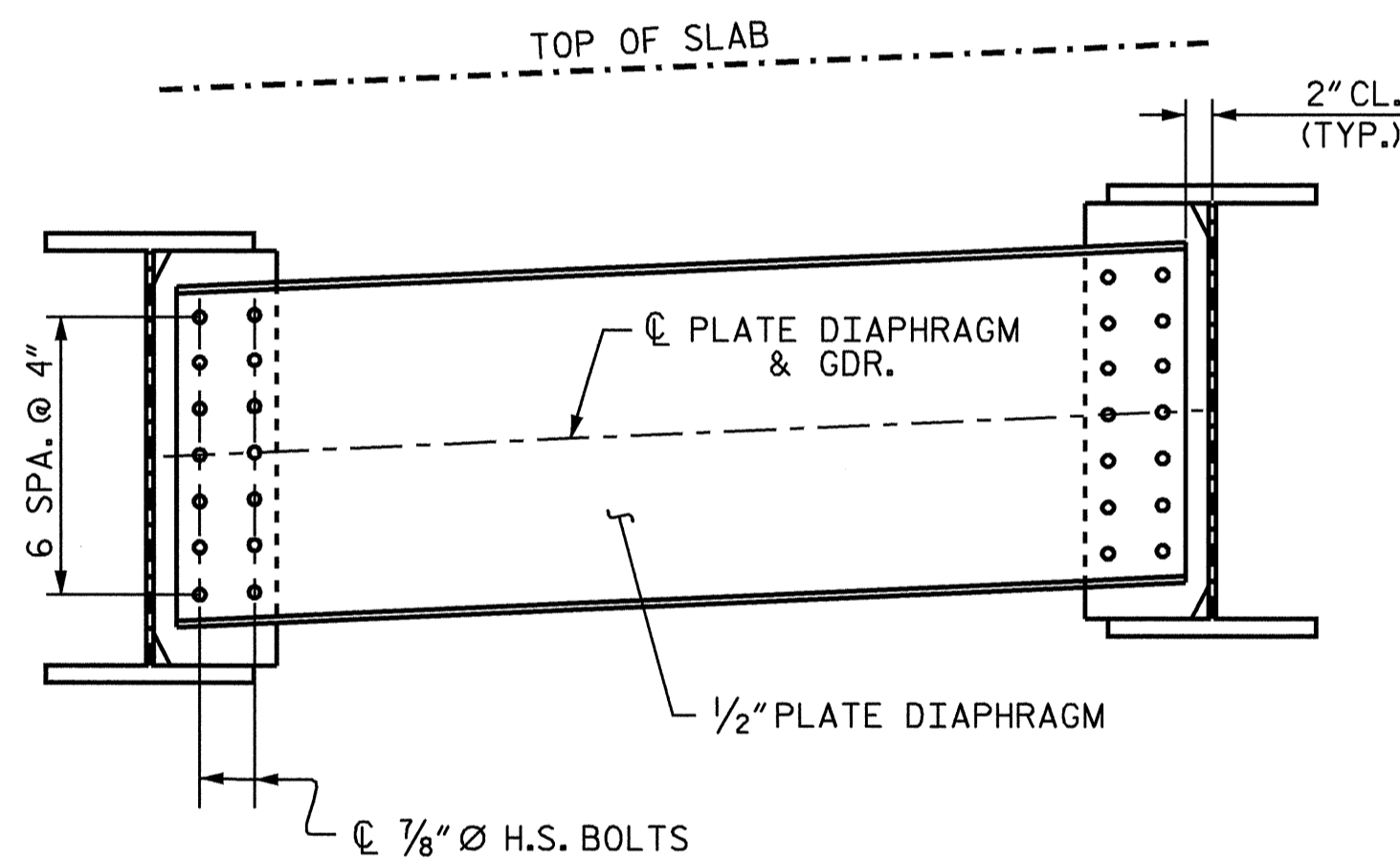


PLATE DIAPHRAGM

(D2)

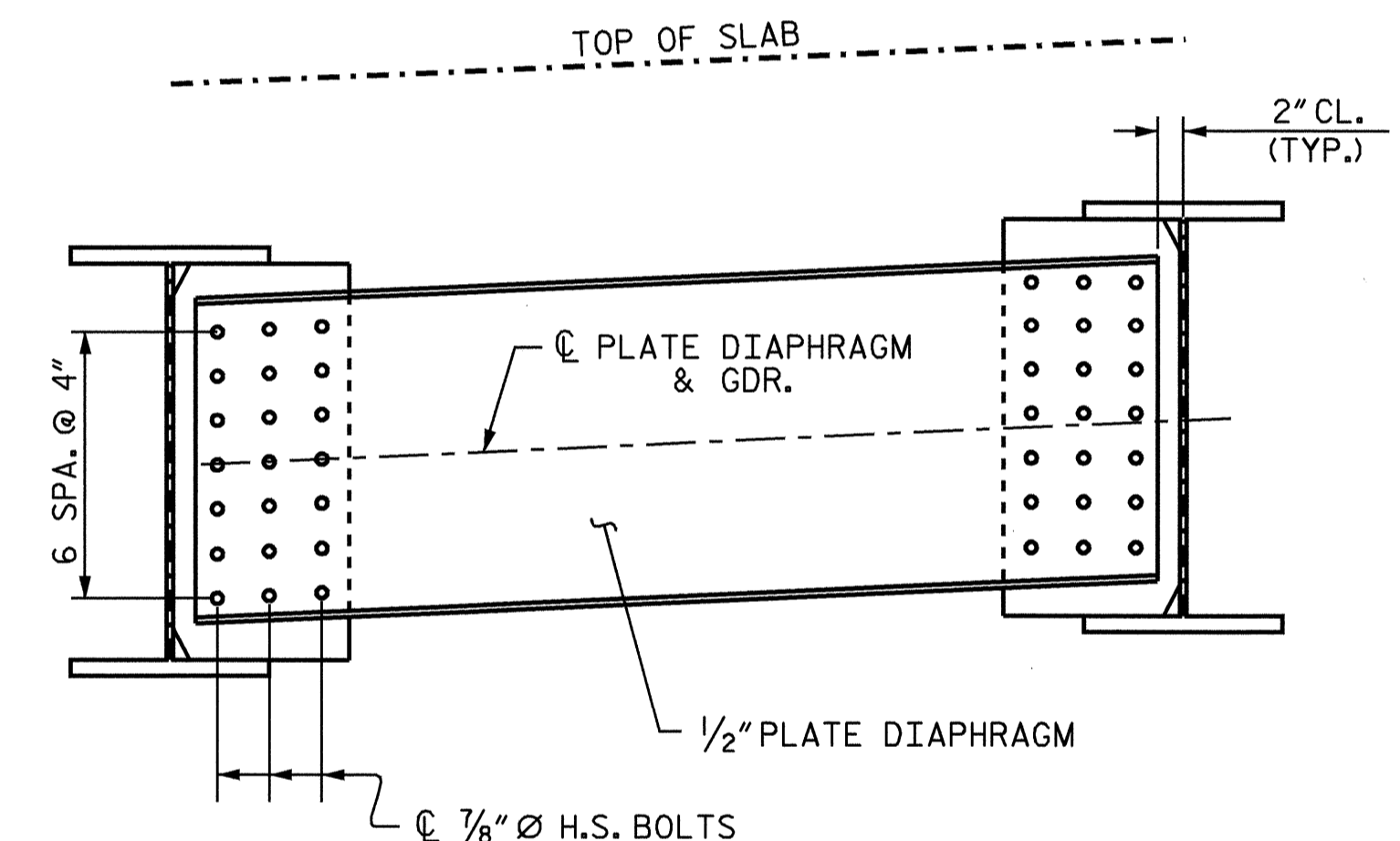


PLATE DIAPHRAGM

(D3)

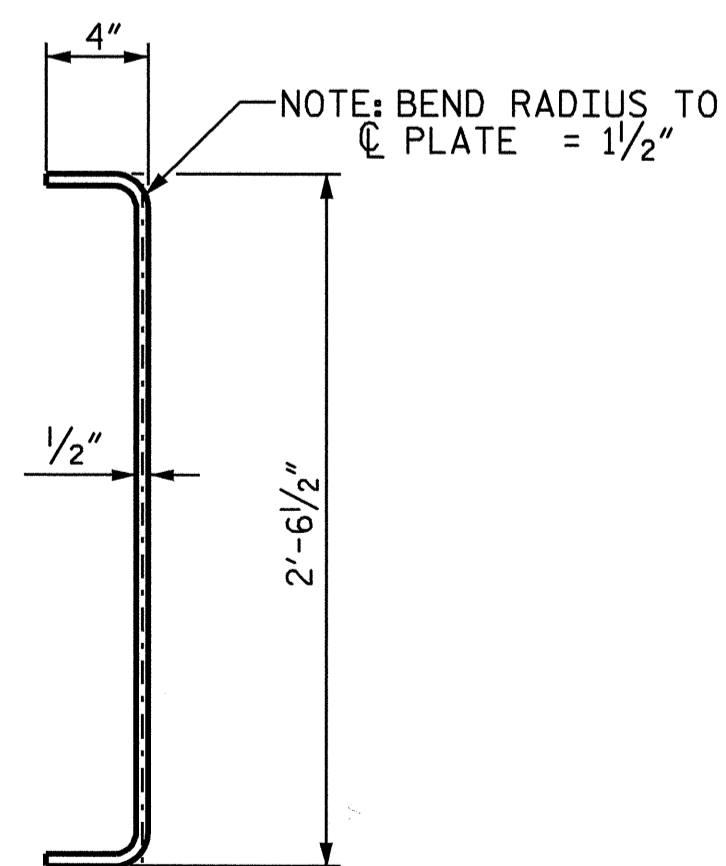
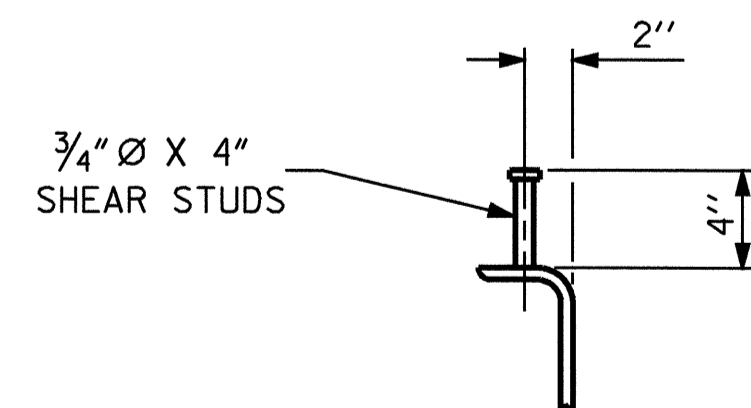
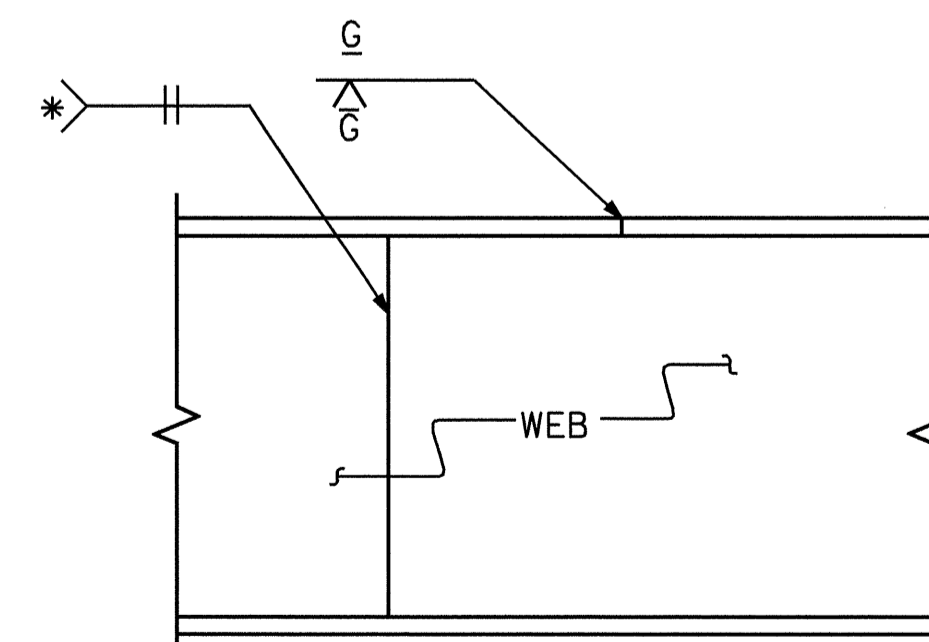


PLATE DIAPHRAGM DETAIL



SHEAR STUD DETAILS



ELEVATION

\* GRIND SMOOTH AND FLUSH ON OUTER FACE OF EXTERIOR GIRDERS

PERMISSIBLE SHOP WEB AND FLANGE BUTT JOINT

PROJECT NO. B-4144  
 HAYWOOD COUNTY  
 STATION: 14+85.00 -L-

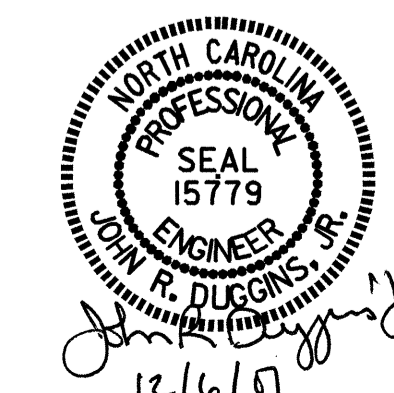
SHEET 7 OF 7

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 STRUCTURAL STEEL  
 DETAILS

DRAWN BY: V.X. NGUYEN DATE: 6-22-07  
 CHECKED BY: D. HODGE DATE: 11-07

19-NOV-2007 08:32  
 I:\structures\b4144\nguyen\m\crostation\b4144\_sd\_ss.dgn  
 vnguyen



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

TOTAL SHEETS: 40



**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.

THE PAYMENT FOR THE PIPE SLEEVES SHALL BE INCLUDED IN THE SEVERAL PAY ITEMS.

FOR AASHTO M270 GRADE 50W STRUCTURAL STEEL, SOLE PLATE SHALL BE AASHTO M270 GRADE 50W AND SHALL NOT BE GALVANIZED. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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 BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

WHEN FIELD WELDING THE SOLE PLATE TO THE GIRDER FLANGE, 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.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FOLLOWING PROCEDURES TO ACCOMMODATE GIRDER TRANSLATION AND END ROTATION:

1. ONCE THE DECK HAS CURED, THE GIRDERS SHALL BE JACKED AND THE ANCHOR BOLTS, SOLE PLATE, AND ELASTOMERIC BEARING SLOTS SHALL BE CENTERED AS NEARLY AS PRACTICAL ABOUT THE BEARING STIFFENER. THIS OPERATION SHALL BE PERFORMED AT APPROXIMATELY 60° F.
2. AFTER CENTERING THE SLOTS AND ANCHOR BOLTS, THE SOLE PLATES SHALL BE FIELD WELDED TO THE GIRDER FLANGES AND ANCHOR BOLTS GROUTED.

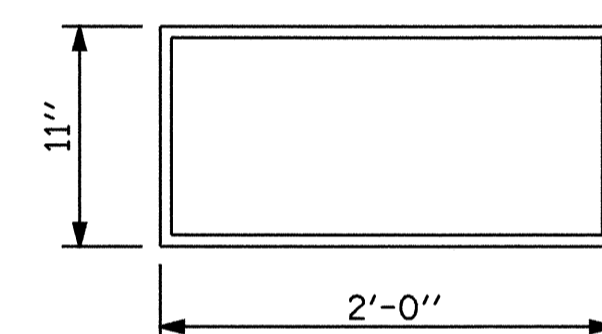
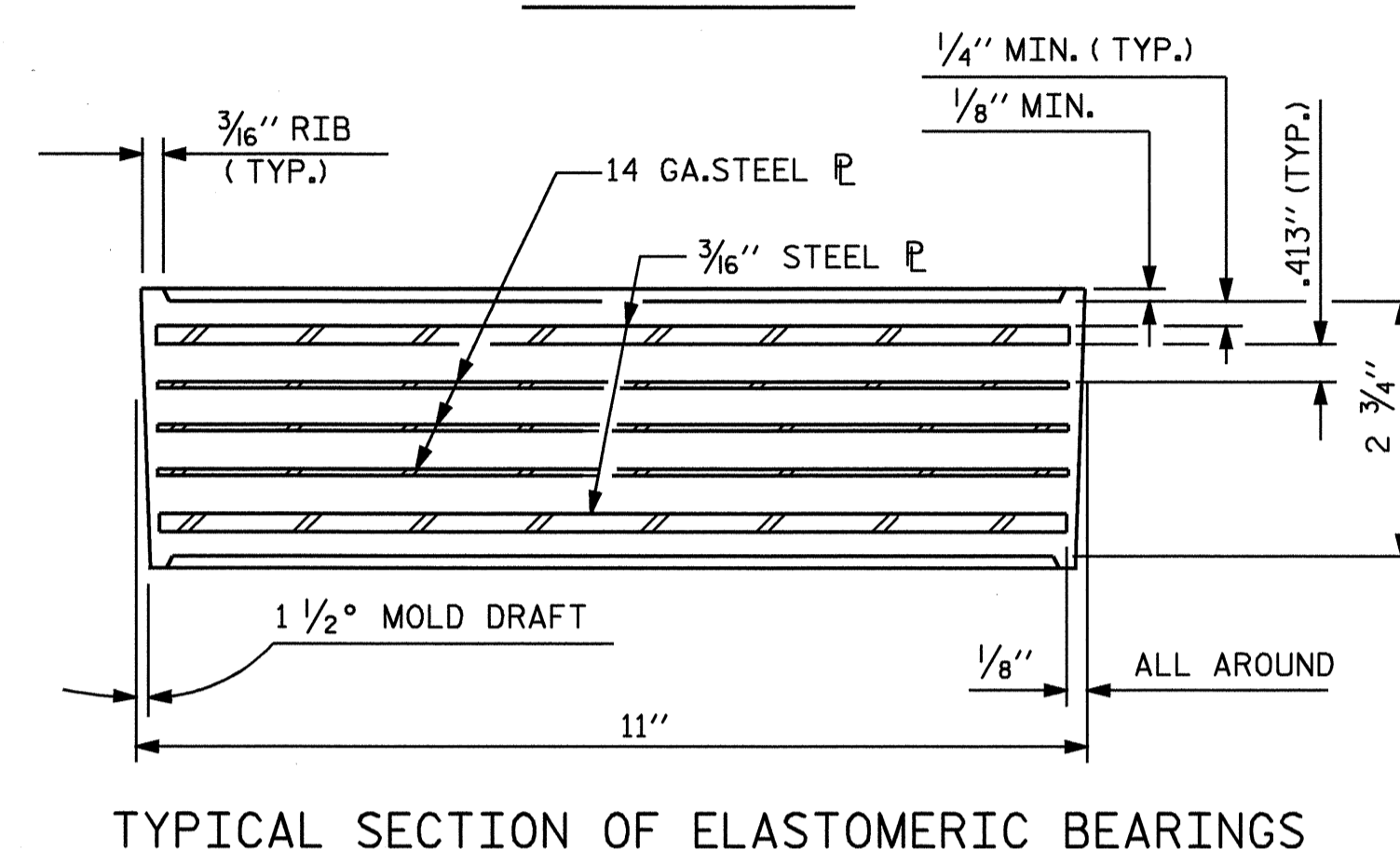
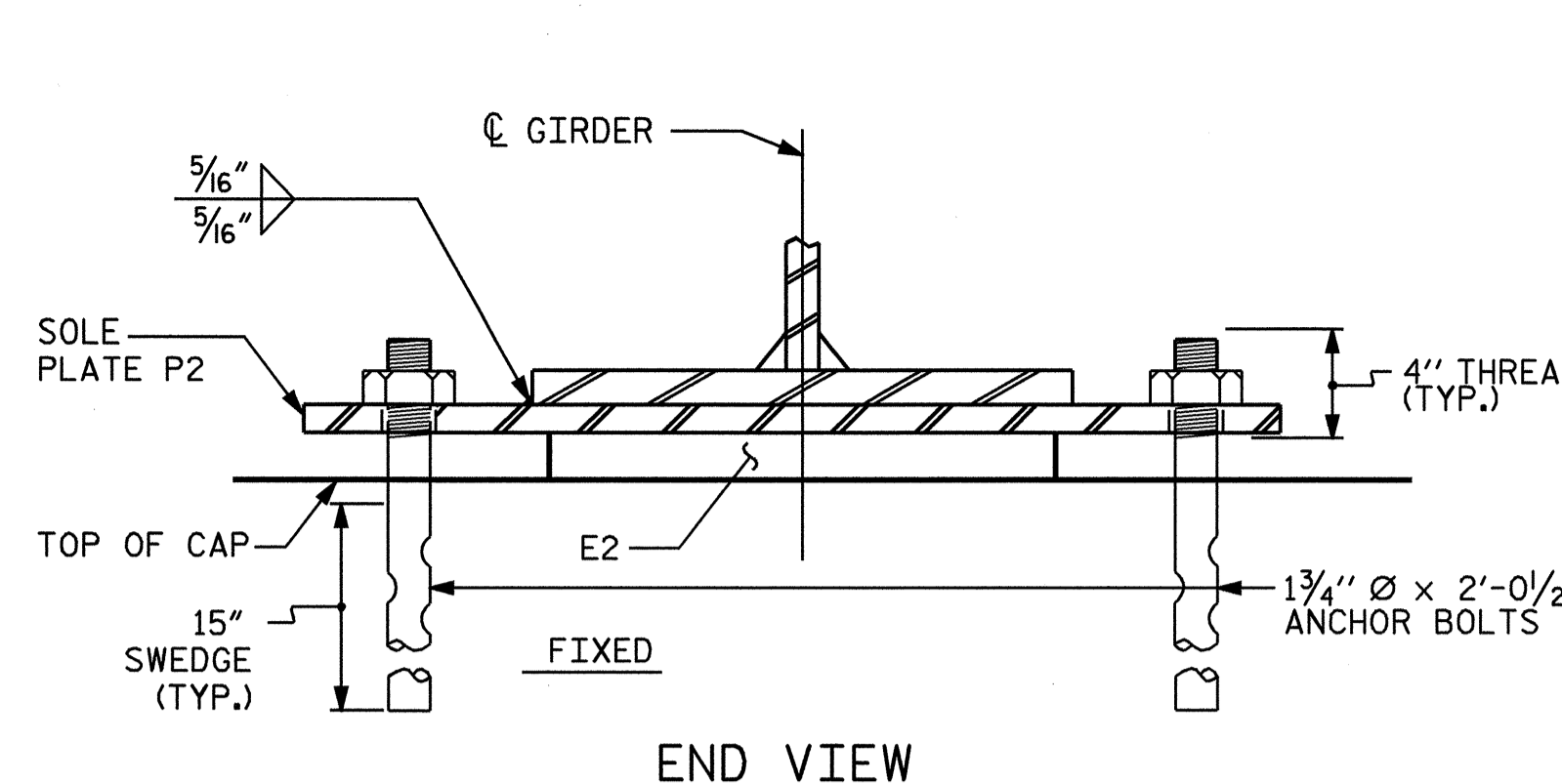
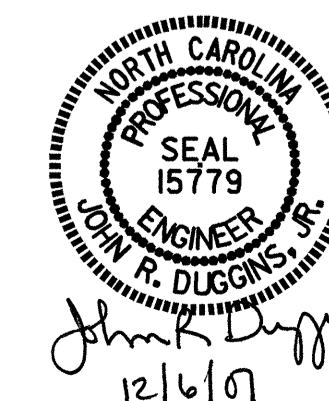
THE CONTRACTOR MAY PROPOSE ALTERNATE METHODS, PROVIDED DETAILS ARE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

-LOAD RATINGS-	
	MAX.D.L.+L.L.
TYPE IV	137 K
TYPE VII	264 K

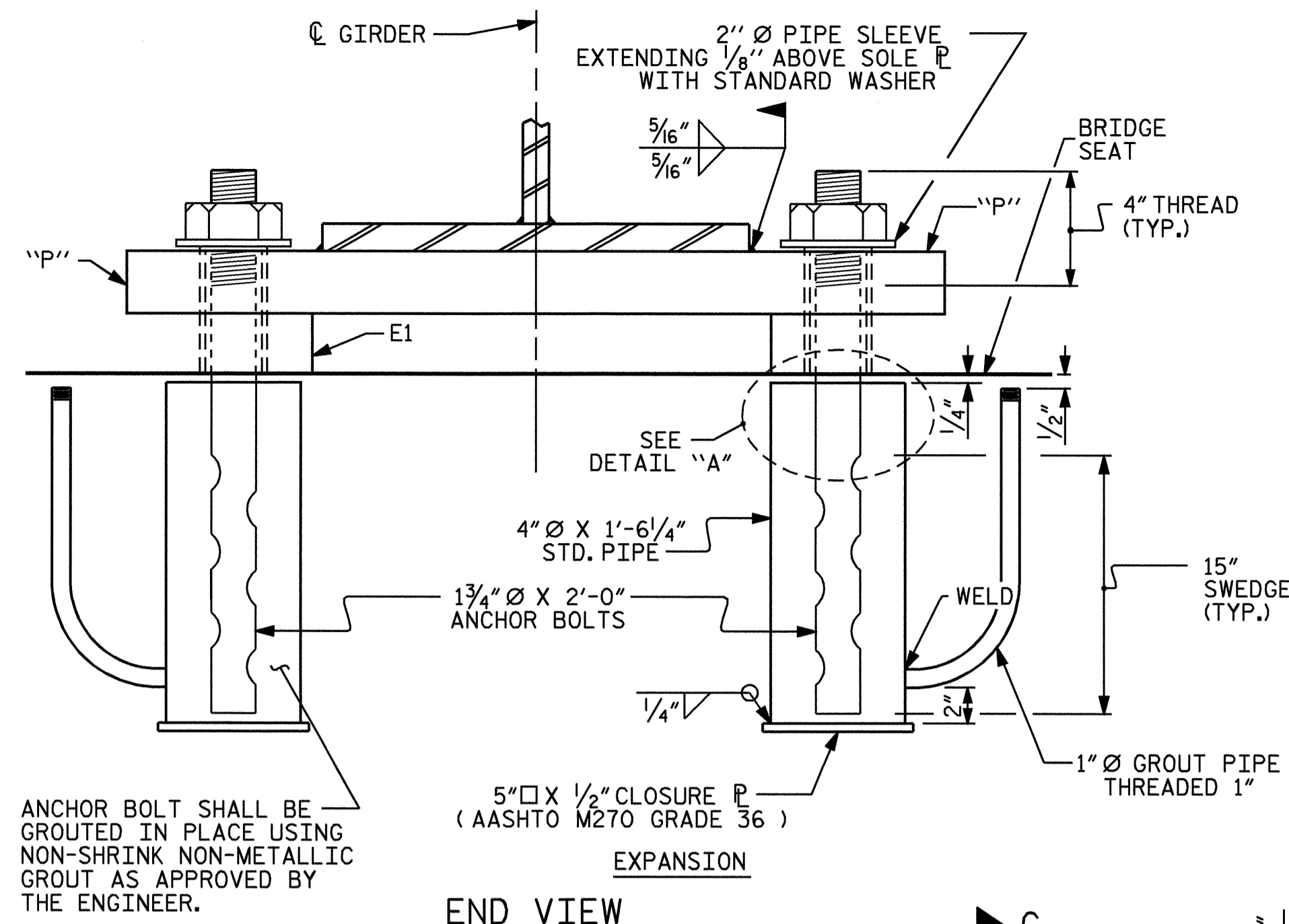
PROJECT NO. B-4144  
HAYWOOD COUNTY  
 STATION: 14+85.00 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
**ELASTOMERIC BEARING**  
**DETAILS**

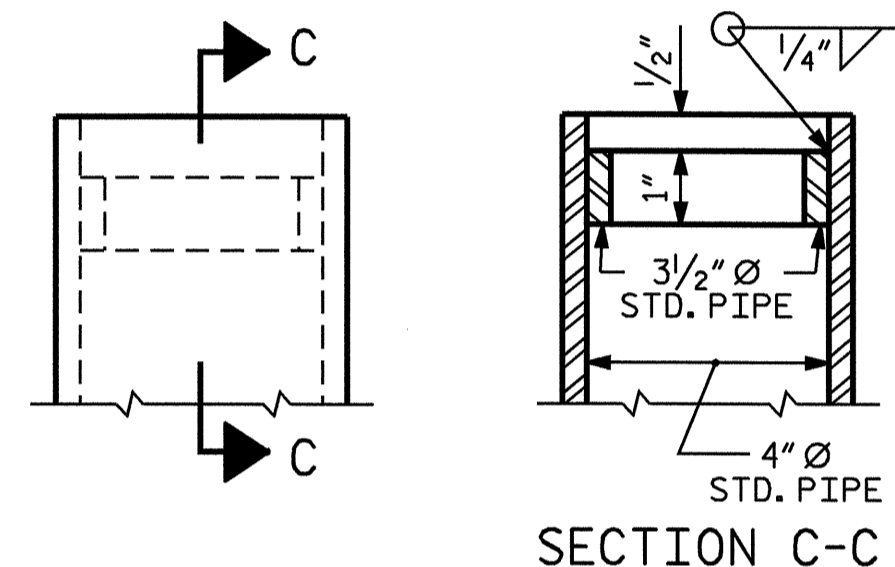
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			5-19
2			4			TOTAL SHEETS 40



E2 (5 REQ'D)  
 PLAN VIEW OF ELASTOMERIC BEARING  
**TYPE VII**

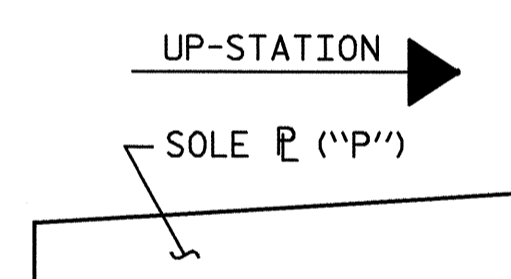


END VIEW

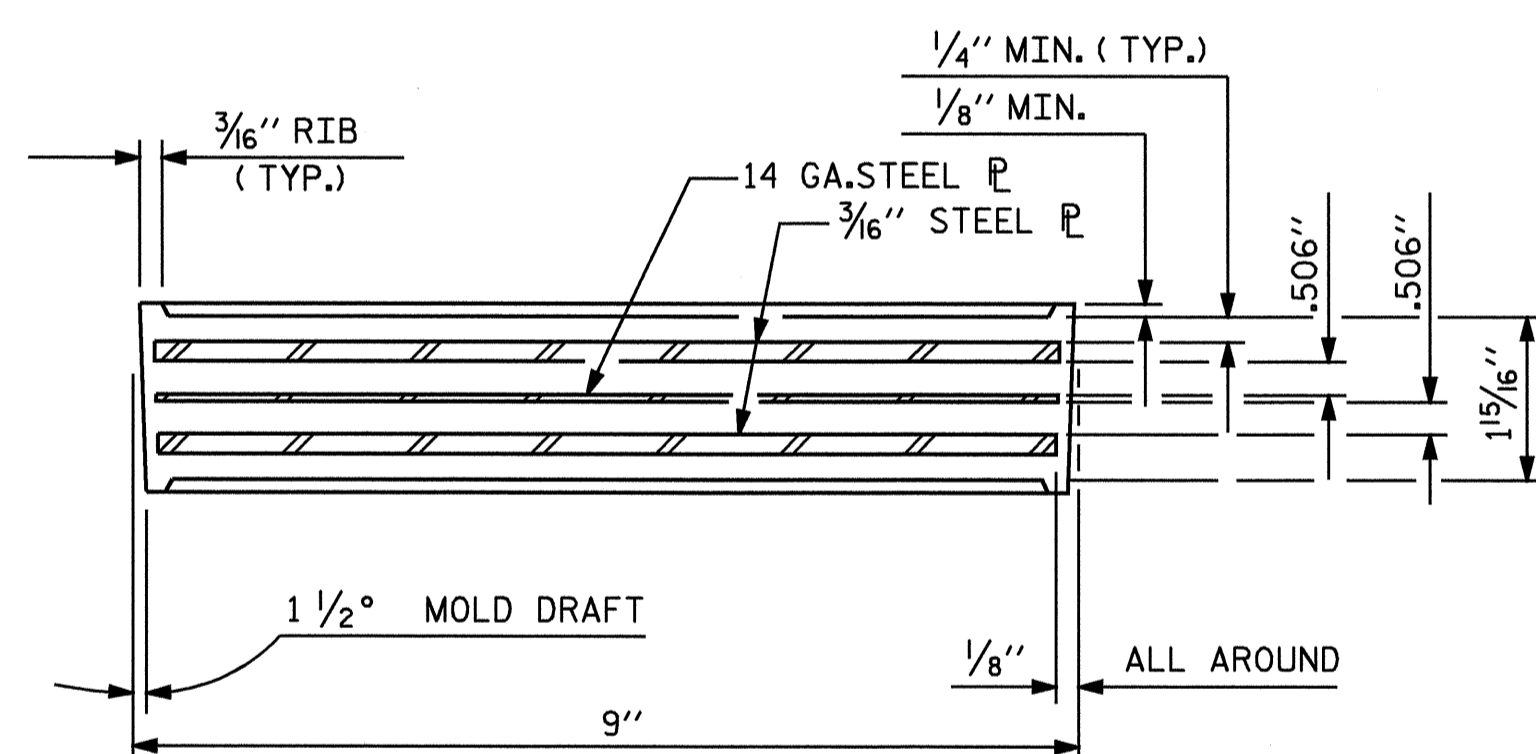


SECTION C-C

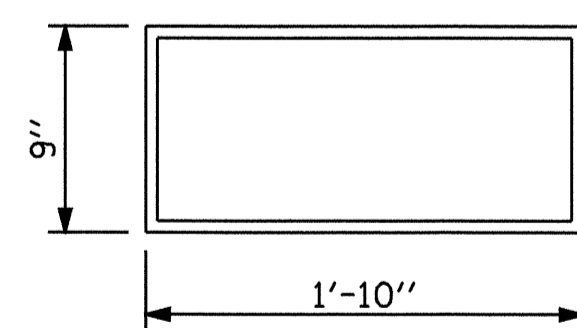
DETAIL "A"



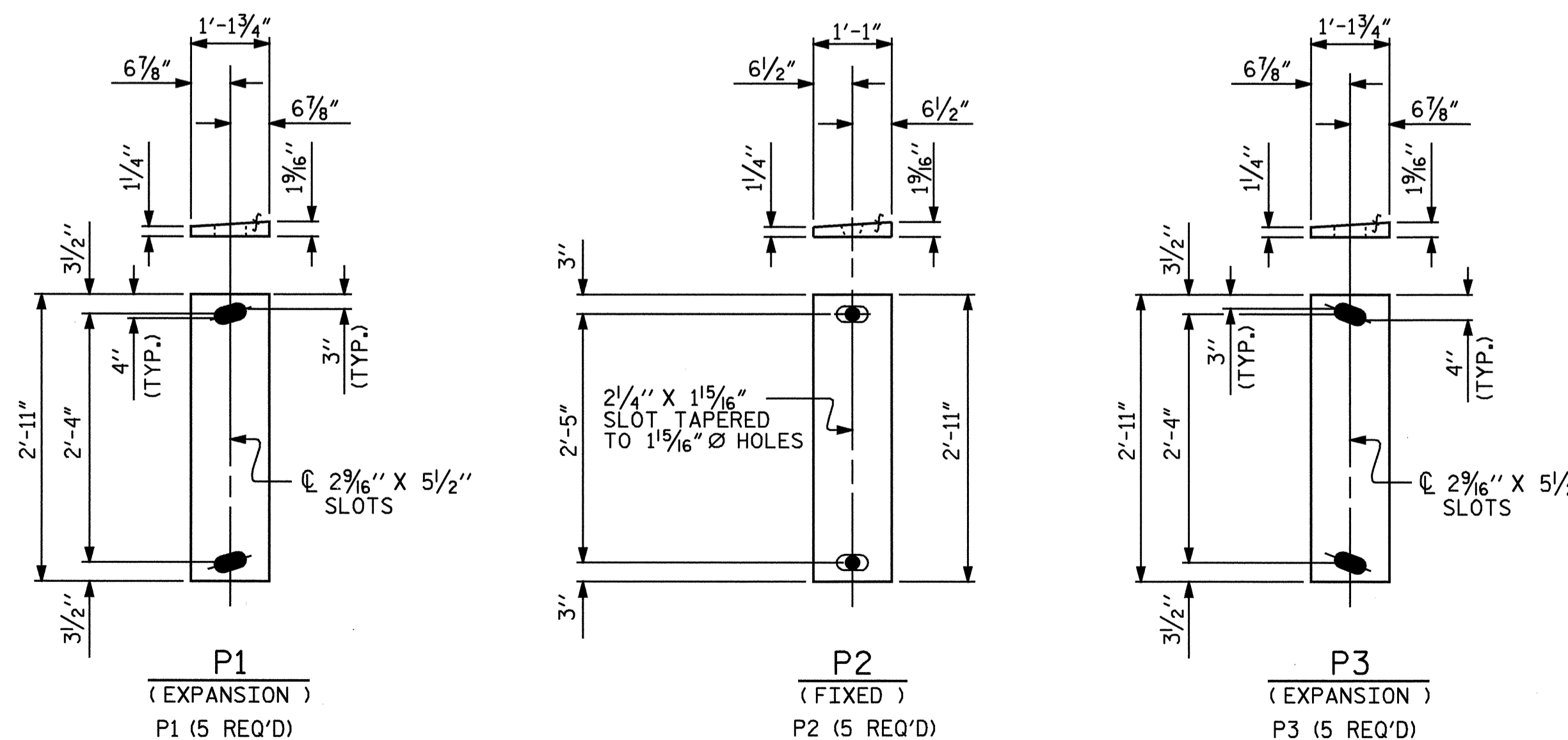
SOLE P PLACEMENT DETAIL



TYPICAL SECTION OF ELASTOMERIC BEARINGS



E1 (10 REQ'D)  
 PLAN VIEW OF ELASTOMERIC BEARING  
**TYPE IV**



SOLE PLATE DETAILS ("P")

ASSEMBLED BY : V.X. NGUYEN	DATE : 8-22-07
CHECKED BY : D. HODGE	DATE : 10-07
DRAWN BY : JMB 11/87	REV. 8/16/99 MAB/LES
CHECKED BY : ARB 11/87	REV. 10/17/00 RWW/LES
	REV. 5/1/06 TLA/GM

DEAD LOAD DEFLECTION TABLE FOR GIRDER																					
SPAN A																					
GIRDER 1																					
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.001	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.001	0.001	0.000	0.000	0.000	0.000	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.003	0.006	0.009	0.011	0.013	0.0014	0.015	0.015	0.0014	0.013	0.012	0.010	0.008	0.005	0.003	0.001	-0.001	-0.001	-0.001	0
DEFLECTION DUE TO WEIGHT OF PARAPET	0.000	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.000	0.000	0.000	0
TOTAL DEAD LOAD DEFLECTION	0.000	0.005	0.009	0.012	0.016	0.018	0.019	0.020	0.020	0.019	0.018	0.017	0.014	0.012	0.007	0.005	0.002	-0.001	-0.001	-0.001	0
REQUIRED CAMBER	0	1/16"	1/8"	1/8"	3/16"	3/16"	1/4"	1/4"	1/4"	1/4"	3/16"	3/16"	3/16"	1/8"	1/16"	1/16"	0	0	0	0	0

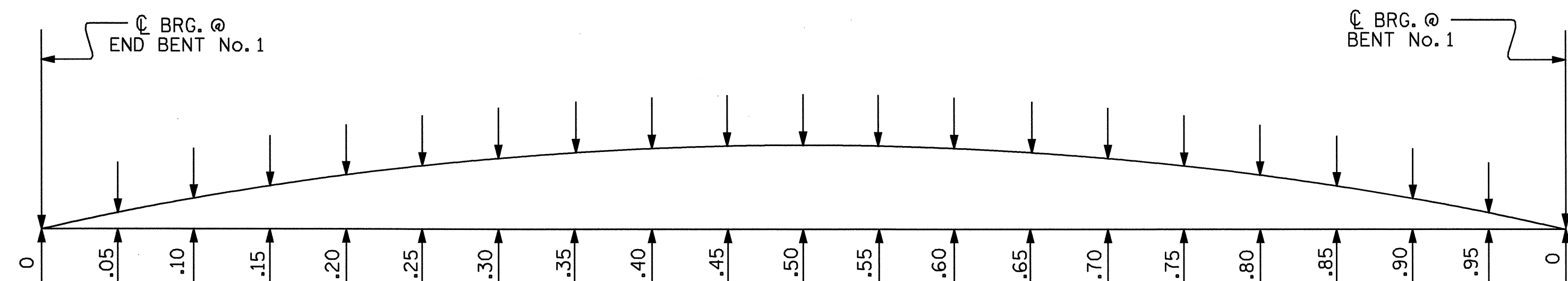
\* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.  
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "REQUIRED CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

DEAD LOAD DEFLECTION TABLE FOR GIRDER																					
SPAN A																					
GIRDER 2																					
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.001	0.001	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.001	0.001	0.000	-0.001	-0.001	-0.001	-0.001	-0.001	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.004	0.007	0.010	0.012	0.014	0.015	0.015	0.015	0.014	0.013	0.011	0.008	0.006	0.003	0.001	-0.001	-0.003	-0.003	-0.002	0
DEFLECTION DUE TO WEIGHT OF PARAPET	0.000	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0
TOTAL DEAD LOAD DEFLECTION	0.000	0.006	0.009	0.013	0.016	0.019	0.020	0.020	0.020	0.019	0.017	0.015	0.010	0.008	0.004	0.001	-0.002	-0.004	-0.004	-0.003	0
REQUIRED CAMBER	0	1/16"	1/8"	1/8"	3/16"	1/4"	1/4"	1/4"	1/4"	1/4"	3/16"	3/16"	1/8"	1/8"	1/16"	0	0	-1/16"	-1/16"	-1/16"	0

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

DEAD LOAD DEFLECTION TABLE FOR GIRDER																					
SPAN A																					
GIRDER 3																					
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.000	-0.001	-0.001	-0.002	-0.002	-0.002	-0.002	-0.001	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.004	0.007	0.009	0.012	0.013	0.014	0.014	0.014	0.013	0.011	0.009	0.006	0.003	0.001	-0.002	-0.004	-0.005	-0.005	-0.003	0
DEFLECTION DUE TO WEIGHT OF PARAPET	0.000	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0
TOTAL DEAD LOAD DEFLECTION	0.000	0.006	0.009	0.012	0.016	0.017	0.018	0.018	0.018	0.017	0.014	0.012	0.007	0.003	0.001	-0.004	-0.006	-0.007	-0.007	-0.004	0
REQUIRED CAMBER	0	1/16"	1/8"	1/8"	3/16"	3/16"	3/16"	3/16"	3/16"	3/16"	3/16"	1/8"	1/16"	1/16"	0	-1/16"	-1/16"	-1/16"	-1/16"	-1/16"	0

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



SCHMATIC CAMBER ORDINATES

DRAWN BY : V. X. NGUYEN DATE : 8-21-07  
CHECKED BY : D. HODGE DATE : 11/07

19-NOV-2007 08:59  
r:\structures\b4144\nguyen\mlcrostation\b4144.sd.dwg  
dahodge

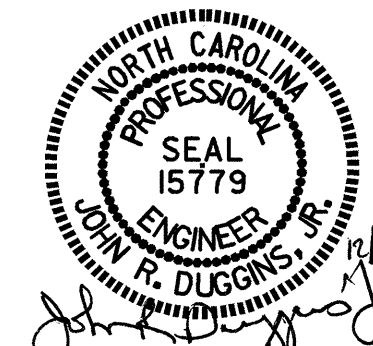
PROJECT NO. B-4144  
HAYWOOD COUNTY  
STATION: 14+85.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
DEAD LOAD  
DEFLECTIONS  
SPAN A

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			5-20
2			4			TOTAL SHEETS 40

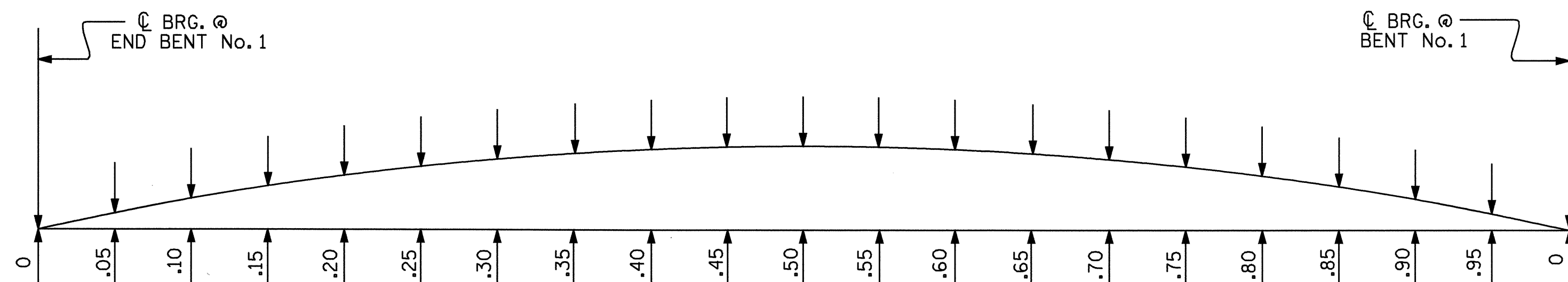


DEAD LOAD DEFLECTION TABLE FOR GIRDER																					
TWENTIETH POINTS	SPAN A																				
	GIRDER 4																				
	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.001	0.001	0.001	0.002	0.002	0.002	0.001	0.001	0.001	0.000	-0.001	-0.002	-0.002	-0.003	-0.003	-0.003	-0.003	-0.003	-0.002	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.004	0.007	0.009	0.011	0.012	0.013	0.013	0.012	0.010	0.008	0.005	0.002	-0.001	-0.003	-0.005	-0.007	-0.008	-0.007	-0.004	0
DEFLECTION DUE TO WEIGHT OF PARAPET	0.000	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.000	0.000	0.000	-0.001	-0.001	0.000	0
TOTAL DEAD LOAD DEFLECTION	0.000	0.006	0.009	0.011	0.015	0.016	0.017	0.016	0.015	0.013	0.010	0.006	0.001	-0.002	-0.006	-0.008	-0.010	-0.012	-0.011	-0.006	0
REQUIRED CAMBER	0	1/16"	1/8"	1/8"	3/16"	3/16"	3/16"	3/16"	3/16"	1/8"	1/8"	1/16"	0	0	-1/16"	-1/8"	-1/8"	-1/8"	-1/8"	-1/16"	0

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

DEAD LOAD DEFLECTION TABLE FOR GIRDER																					
TWENTIETH POINTS	SPAN A																				
	GIRDER 5																				
	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	-0.001	-0.002	-0.002	-0.003	-0.004	-0.005	-0.005	-0.005	-0.005	-0.004	-0.002	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.004	0.007	0.010	0.011	0.013	0.013	0.012	0.011	0.009	0.006	0.002	-0.001	-0.004	-0.007	-0.009	-0.010	-0.011	-0.009	-0.005	0
DEFLECTION DUE TO WEIGHT OF PARAPET	0.000	0.001	0.001	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.001	0.001	0.000	-0.001	-0.001	-0.001	-0.001	0	0
TOTAL DEAD LOAD DEFLECTION	0.000	0.006	0.009	0.013	0.015	0.017	0.017	0.016	0.014	0.011	0.007	0.002	-0.002	-0.007	-0.011	-0.014	-0.016	-0.017	-0.014	-0.008	0
REQUIRED CAMBER	0	1/16"	1/8"	1/8"	3/16"	3/16"	3/16"	3/16"	3/16"	1/8"	1/16"	0	0	-1/16"	-1/8"	-3/16"	-3/16"	-3/16"	-3/16"	-1/16"	0

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



SCHEMATIC CAMBER ORDINATES

PROJECT NO. B-4144

HAYWOOD COUNTY

STATION: 14+85.00 -L-

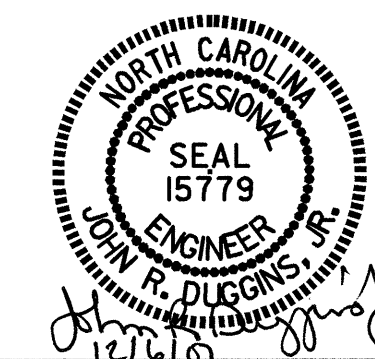
SHEET 2 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
DEAD LOAD  
DEFLECTIONS  
SPAN A

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

TOTAL SHEETS: 40



DRAWN BY: V. X. NGUYEN DATE: 8-21-07  
CHECKED BY: D. HODGE DATE: 11/07



DEAD LOAD DEFLECTION TABLE FOR GIRDER																					
TWENTIETH POINTS	SPAN B																				
	GIRDER 1																				
	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.001	0.003	0.005	0.007	0.009	0.011	0.013	0.014	0.015	0.016	0.016	0.016	0.016	0.014	0.013	0.011	0.009	0.006	0.003	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.005	0.011	0.018	0.026	0.034	0.041	0.049	0.054	0.059	0.061	0.063	0.062	0.060	0.056	0.050	0.042	0.033	0.023	0.012	0
DEFLECTION DUE TO WEIGHT OF PARAPET	0.000	0.001	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.007	0.008	0.008	0.008	0.007	0.007	0.006	0.005	0.004	0.003	0.001	0
TOTAL DEAD LOAD DEFLECTION	0.000	0.007	0.015	0.025	0.036	0.047	0.057	0.068	0.075	0.081	0.085	0.087	0.086	0.083	0.077	0.069	0.058	0.046	0.032	0.016	0
REQUIRED CAMBER	0	1/16"	3/16"	5/16"	7/16"	9/16"	1 1/16"	1 3/16"	7/8"	1"	1"	1 1/16"	1 1/16"	1"	1 5/16"	1 3/16"	1 1/16"	9/16"	3/8"	3/16"	0

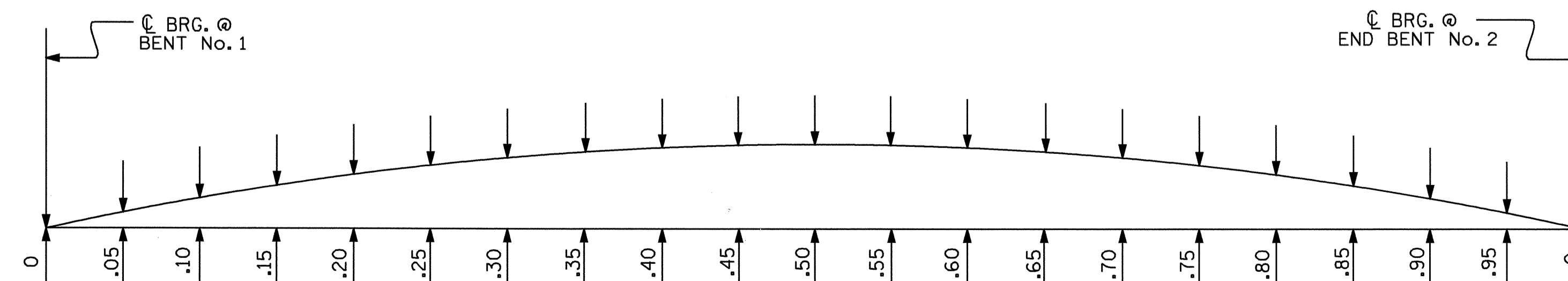
\* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.  
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "REQUIRED CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

DEAD LOAD DEFLECTION TABLE FOR GIRDER																					
TWENTIETH POINTS	SPAN B																				
	GIRDER 2																				
	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.002	0.004	0.007	0.010	0.013	0.016	0.019	0.021	0.022	0.023	0.024	0.024	0.023	0.021	0.019	0.016	0.012	0.009	0.005	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.007	0.014	0.024	0.034	0.045	0.055	0.064	0.072	0.077	0.081	0.083	0.082	0.079	0.073	0.066	0.056	0.043	0.030	0.016	0
DEFLECTION DUE TO WEIGHT OF PARAPET	0.000	0.001	0.002	0.003	0.004	0.005	0.007	0.008	0.008	0.009	0.009	0.009	0.009	0.009	0.008	0.007	0.006	0.005	0.003	0.002	0
TOTAL DEAD LOAD DEFLECTION	0.000	0.010	0.020	0.034	0.048	0.063	0.078	0.091	0.101	0.108	0.113	0.116	0.115	0.111	0.102	0.092	0.078	0.060	0.042	0.023	0
REQUIRED CAMBER	0	1/8"	1/4"	7/16"	9/16"	3/4"	1 5/16"	1 1/16"	1 3/16"	1 5/16"	1 3/8"	1 3/8"	1 3/8"	1 5/16"	1 1/4"	1 1/8"	1 5/16"	3/4"	1/2"	1/4"	0

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

DEAD LOAD DEFLECTION TABLE FOR GIRDER																					
TWENTIETH POINTS	SPAN B																				
	GIRDER 3																				
	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.003	0.006	0.010	0.014	0.018	0.021	0.025	0.028	0.030	0.031	0.032	0.031	0.030	0.028	0.025	0.021	0.016	0.011	0.006	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.008	0.018	0.030	0.042	0.056	0.068	0.080	0.089	0.096	0.100	0.102	0.102	0.098	0.091	0.081	0.069	0.053	0.037	0.019	0
DEFLECTION DUE TO WEIGHT OF PARAPET	0.000	0.001	0.002	0.004	0.005	0.007	0.008	0.009	0.010	0.011	0.011	0.011	0.011	0.011	0.010	0.009	0.007	0.006	0.004	0.002	0
TOTAL DEAD LOAD DEFLECTION	0.000	0.012	0.026	0.044	0.061	0.081	0.097	0.114	0.127	0.137	0.142	0.145	0.144	0.139	0.129	0.115	0.097	0.075	0.052	0.027	0
REQUIRED CAMBER	0	1/8"	5/16"	1/2"	3/4"	1"	1 3/16"	1 3/8"	1 1/2"	1 5/8"	1 11/16"	1 3/4"	1 3/4"	1 11/16"	1 1/6"	1 3/8"	1 3/16"	7/8"	5/8"	5/16"	0

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



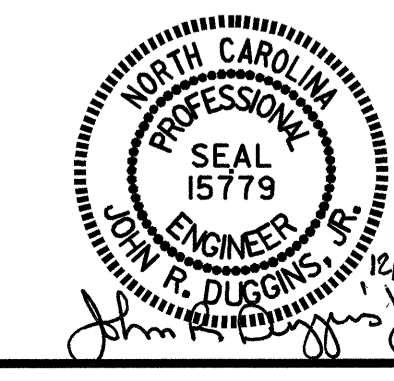
SCHMATIC CAMBER ORDINATES

DRAWN BY : V. X. NGUYEN DATE : 8-21-07  
CHECKED BY : D. HODGE DATE : 11/07

PROJECT NO. B-4144  
HAYWOOD COUNTY  
STATION: 14+85.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE DEAD LOAD DEFLECTIONS SPAN B					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					40
					S-22

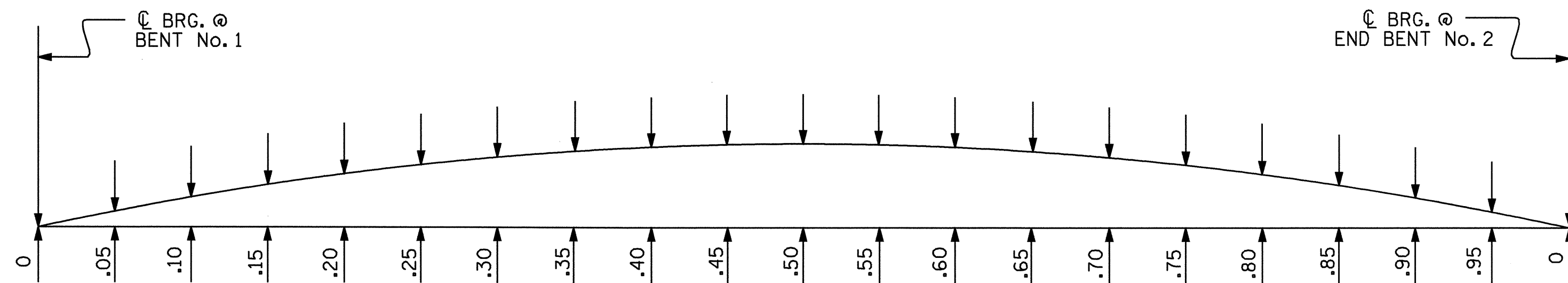


DEAD LOAD DEFLECTION TABLE FOR GIRDER																					
TWENTIETH POINTS	SPAN B																				
	GIRDER 4																				
	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.004	0.008	0.012	0.017	0.022	0.027	0.032	0.035	0.038	0.040	0.041	0.040	0.039	0.036	0.032	0.027	0.021	0.015	0.008	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.010	0.022	0.036	0.051	0.067	0.082	0.096	0.107	0.115	0.121	0.124	0.123	0.118	0.110	0.098	0.083	0.065	0.045	0.024	0
DEFLECTION DUE TO WEIGHT OF PARAPET	0.000	0.001	0.003	0.004	0.006	0.008	0.010	0.011	0.013	0.013	0.014	0.014	0.014	0.013	0.012	0.011	0.009	0.007	0.005	0.003	0
TOTAL DEAD LOAD DEFLECTION	0.000	0.015	0.033	0.052	0.074	0.097	0.119	0.139	0.155	0.166	0.175	0.179	0.177	0.170	0.158	0.141	0.119	0.093	0.065	0.035	0
REQUIRED CAMBER	0	3/16"	3/8"	5/8"	7/8"	1 3/16"	1 1/16"	1 1/16"	1 1/8"	2"	2 1/8"	2 1/8"	2 1/8"	2 1/16"	1 7/8"	1 11/16"	1 7/16"	1 1/8"	3/4"	7/16"	0

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

DEAD LOAD DEFLECTION TABLE FOR GIRDER																					
TWENTIETH POINTS	SPAN B																				
	GIRDER 5																				
	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.005	0.010	0.015	0.021	0.028	0.034	0.040	0.044	0.048	0.050	0.051	0.051	0.049	0.045	0.040	0.034	0.027	0.019	0.010	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.012	0.027	0.043	0.061	0.080	0.098	0.115	0.129	0.139	0.146	0.150	0.149	0.144	0.134	0.120	0.101	0.079	0.055	0.029	0
DEFLECTION DUE TO WEIGHT OF PARAPET	0.000	0.002	0.004	0.006	0.008	0.011	0.013	0.015	0.016	0.017	0.018	0.018	0.018	0.017	0.016	0.014	0.012	0.009	0.007	0.003	0
TOTAL DEAD LOAD DEFLECTION	0.000	0.019	0.041	0.064	0.090	0.119	0.145	0.170	0.189	0.204	0.214	0.219	0.218	0.210	0.195	0.174	0.147	0.115	0.081	0.042	0
REQUIRED CAMBER	0	1/4"	1/2"	3/4"	1 1/16"	1 1/16"	1 3/4"	2 1/16"	2 1/4"	2 7/16"	2 9/16"	2 5/8"	2 5/8"	2 1/2"	2 5/16"	2 1/16"	1 3/4"	1 3/8"	1"	1/2"	0

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



SCHMATIC CAMBER ORDINATES

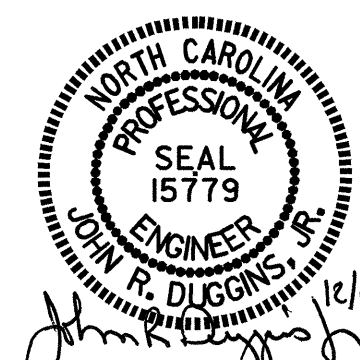
PROJECT NO. B-4144  
HAYWOOD COUNTY  
STATION: 14+85.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

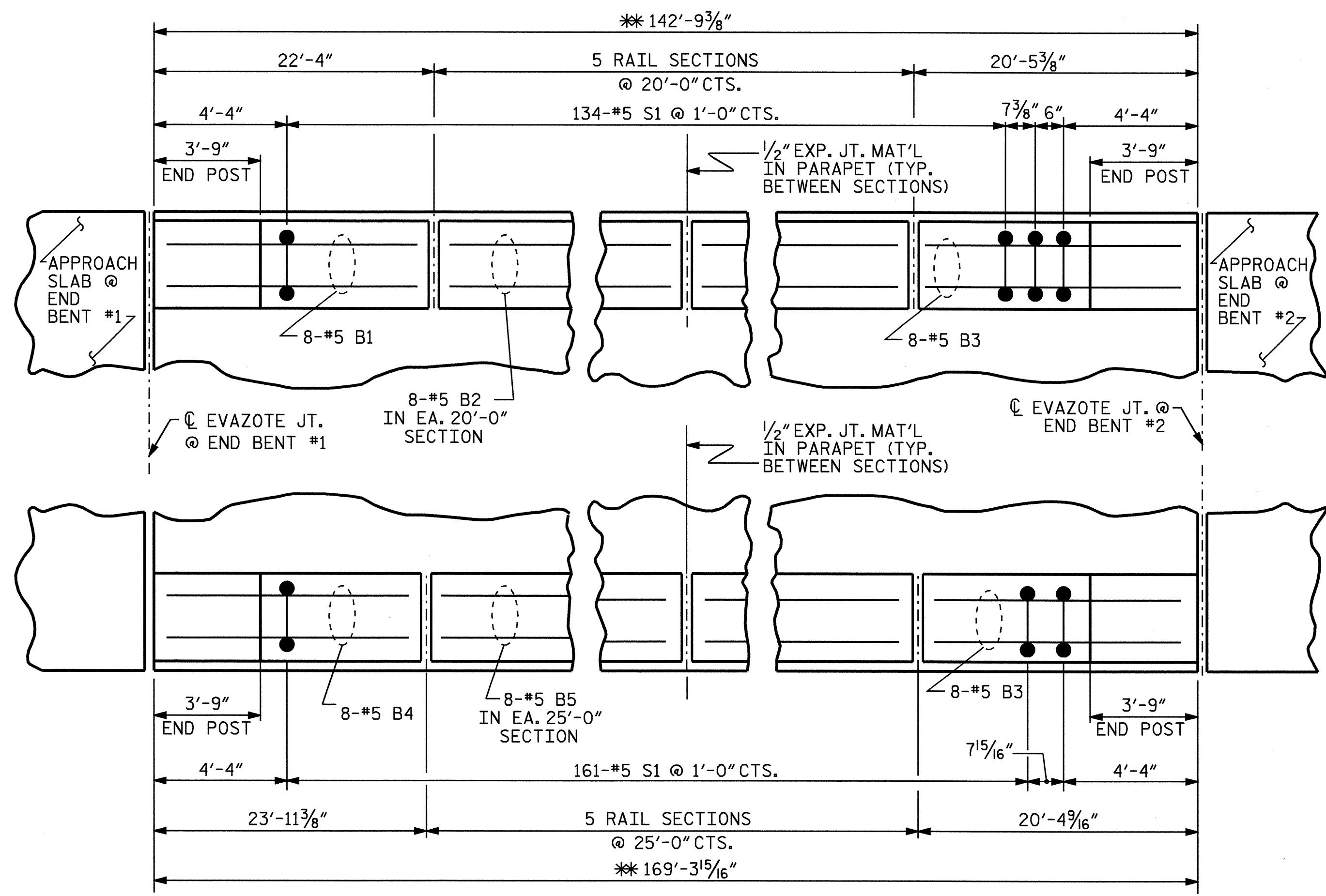
SUPERSTRUCTURE  
DEAD LOAD  
DEFLECTIONS  
SPAN B

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	5-23	
1			3			TOTAL SHEETS	
2			4			40	



DRAWN BY: V. X. NGUYEN DATE: 8-21-07  
CHECKED BY: D. HODGE DATE: 11/07



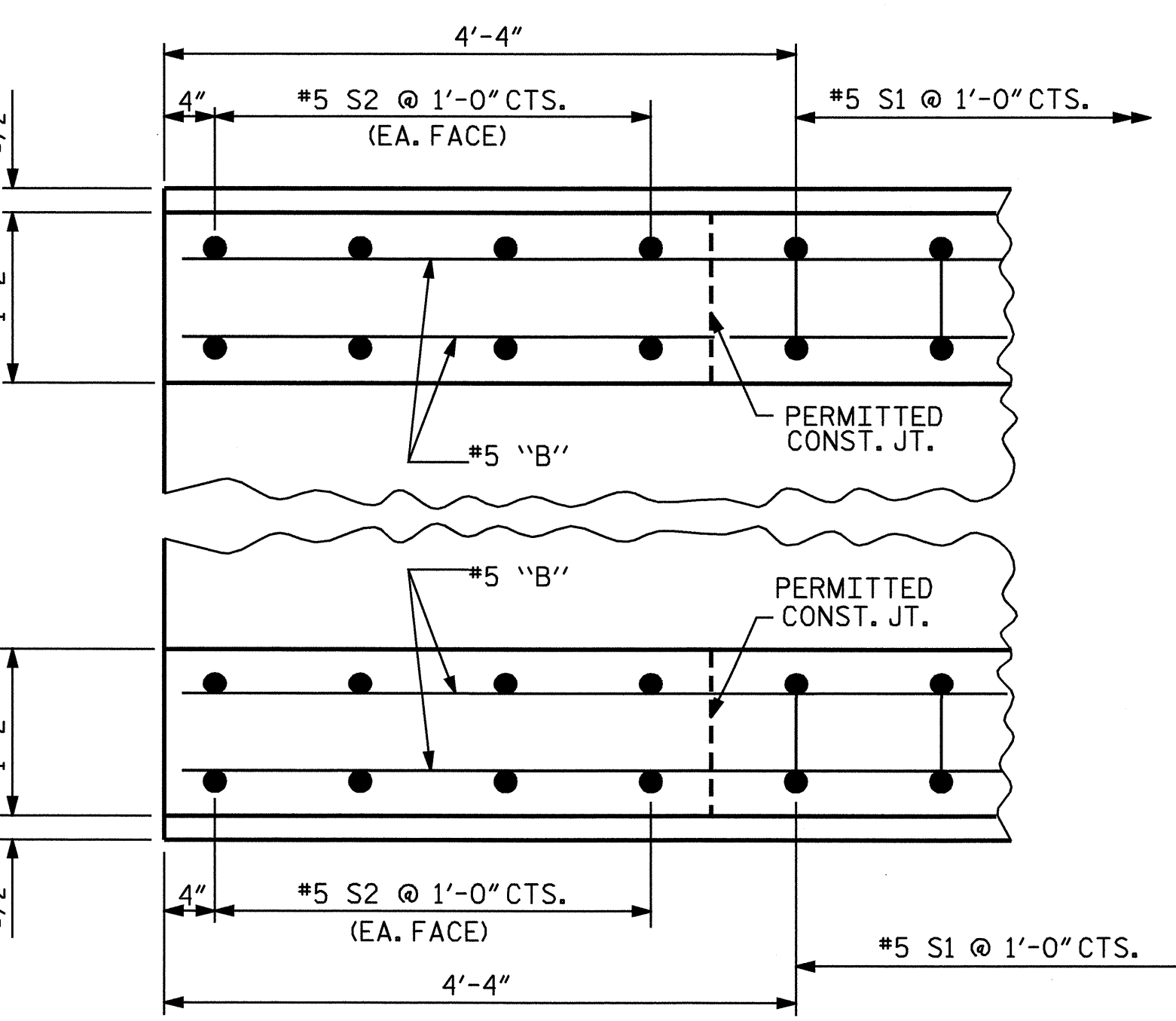


PLAN OF PARAPET & END POST

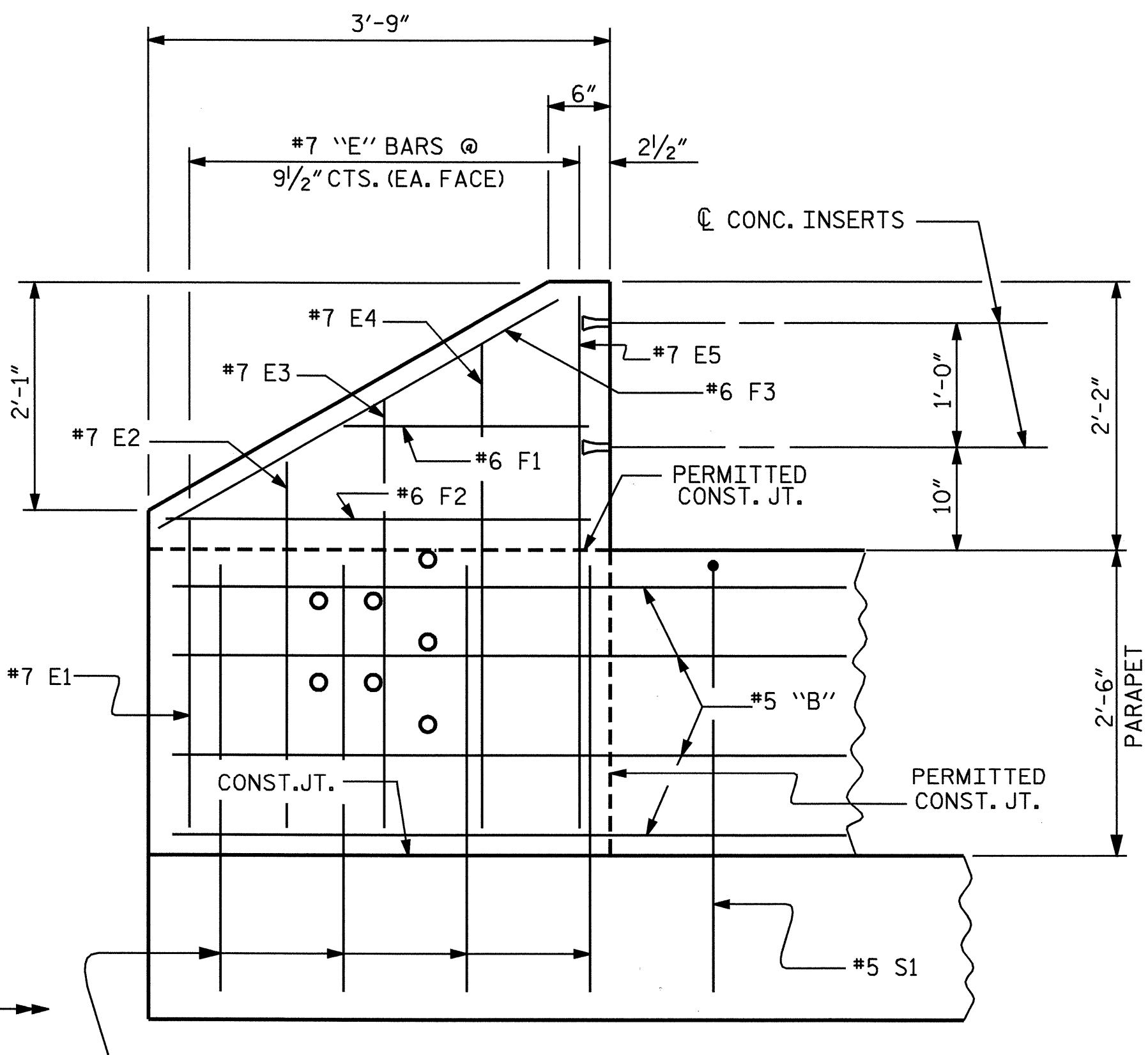
NOTES:  
 THE #5 S2 BARS SHALL BE INSTALLED USING AN ADHESIVE ANCHORING SYSTEM AFTER SAWING THE JOINT. FOR ADHESIVELY ANCHORED BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. THE YIELD LOAD OF THE #5 S2 BARS IS 18.6 KIPS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

\*\* ALL DIMENSIONS ARE TAKEN ALONG OUTSIDE EDGE OF PARAPET

NOTES:  
 #5 "S" BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN PARAPET.

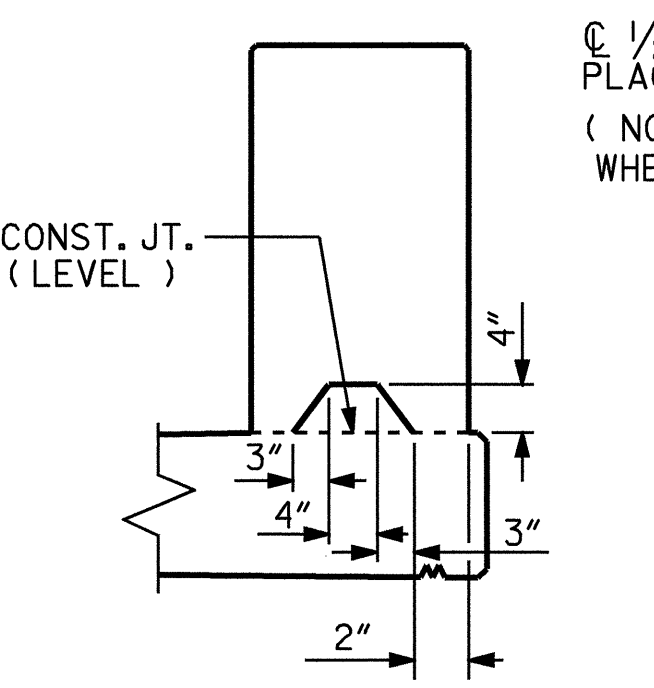


PLAN OF PARAPET



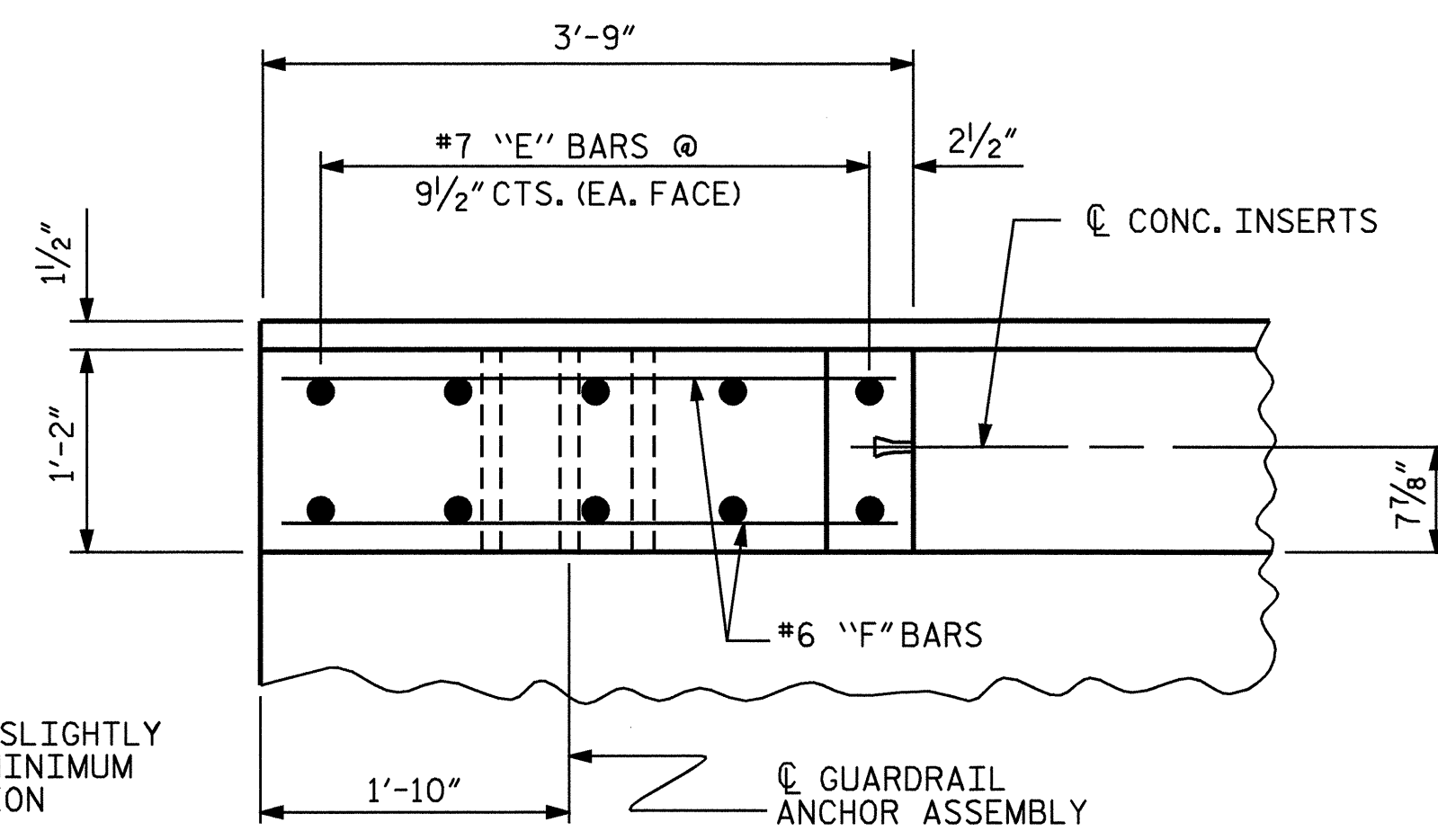
ELEVATION

PARAPET AND END POST FOR TWO BAR RAIL

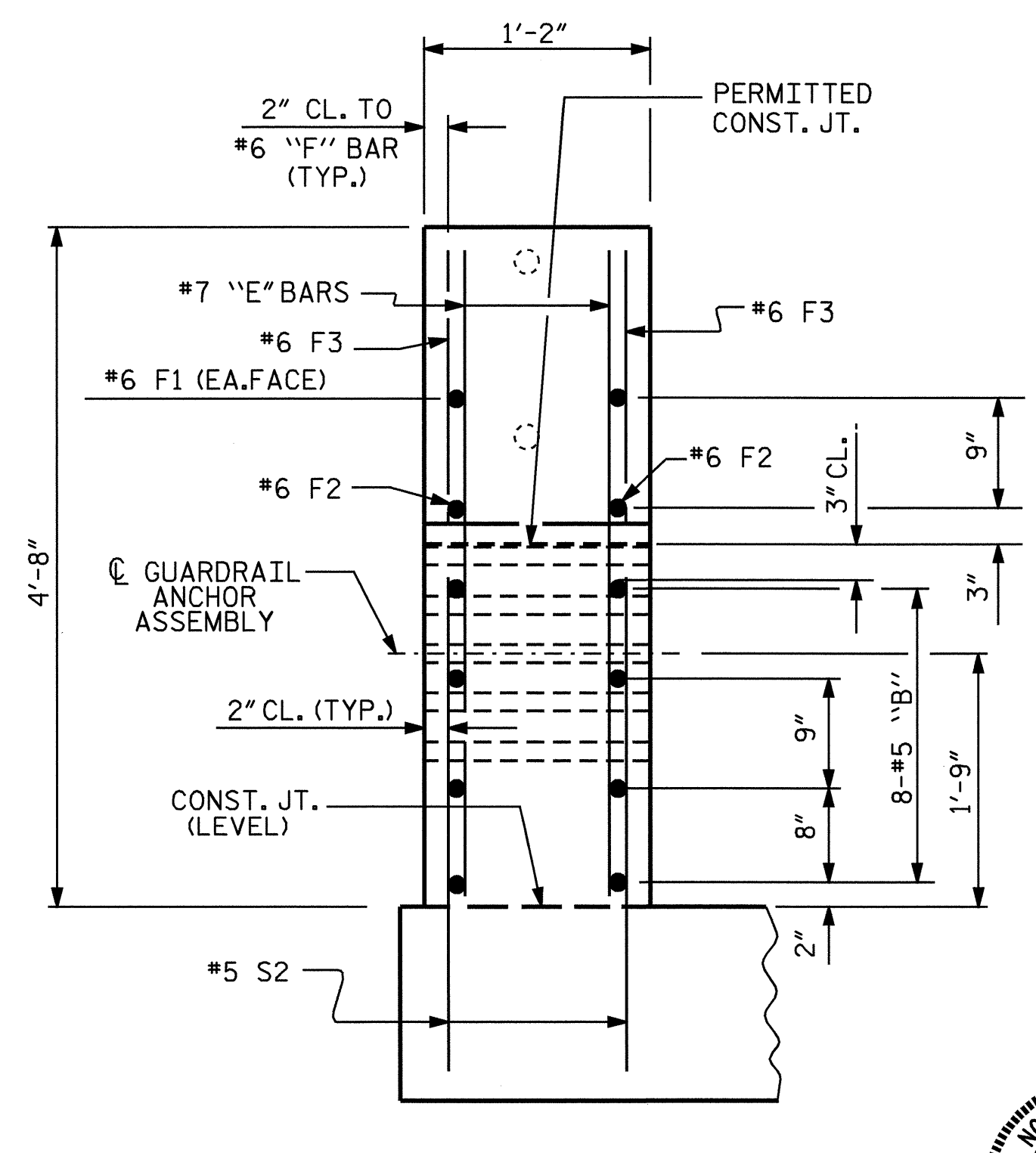


SECTION S-S  
 AT DAM IN OPEN JOINT  
 (THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

ELEVATION AT JOINTS IN PARAPET



PLAN OF END POST



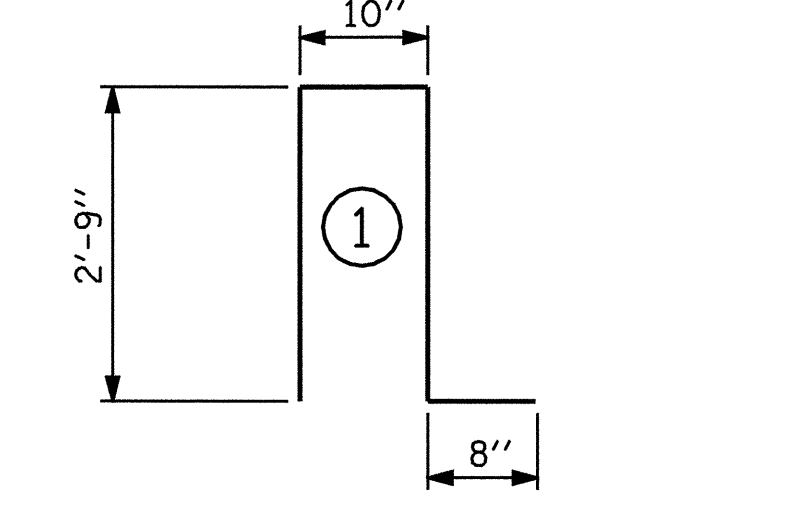
END VIEW

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

BILL OF MATERIAL

CONCRETE PARAPET & END POSTS					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	8	5	STR	21'-11"	183
*B2	40	5	STR	19'-7"	817
*B3	16	5	STR	19'-11"	332
*B4	8	5	STR	23'-5"	195
*B5	40	5	STR	24'-6"	1022
*E1	8	7	STR	2'-6"	41
*E2	8	7	STR	3'-0"	49
*E3	8	7	STR	3'-6"	57
*E4	8	7	STR	4'-0"	65
*E5	8	7	STR	4'-4"	71
*F1	8	6	STR	1'-10"	22
*F2	8	6	STR	3'-0"	36
*F3	8	6	STR	3'-4"	40
*S1	298	5	1	7'-0"	2176
*S2	32	5	STR	2'-9"	92
*EPOXY COATED REINFORCING STEEL					5198 LBS.
CLASS AA CONCRETE					34.5 C.Y.
CONCRETE PARAPET					312.11 LIN. FEET
* THESE BARS ARE EPOXY COATED					

BAR TYPE



ALL BAR DIMENSIONS ARE OUT TO OUT

NOTES:

FOR DETAILS OF CONCRETE INSERT AND GUARDRAIL ANCHOR ASSEMBLY, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEETS.  
 ALL REINFORCING STEEL IN CONCRETE PARAPET SHALL BE EPOXY COATED.  
 THE REINFORCING STEEL & CONCRETE IN THE END POSTS IS INCLUDED IN THE UNIT PRICE BID FOR THE CONCRETE PARAPET.  
 GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FT. TO 10 FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

PROJECT NO. B-4144  
HAYWOOD COUNTY  
 STATION: 14+85.00 -L-



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

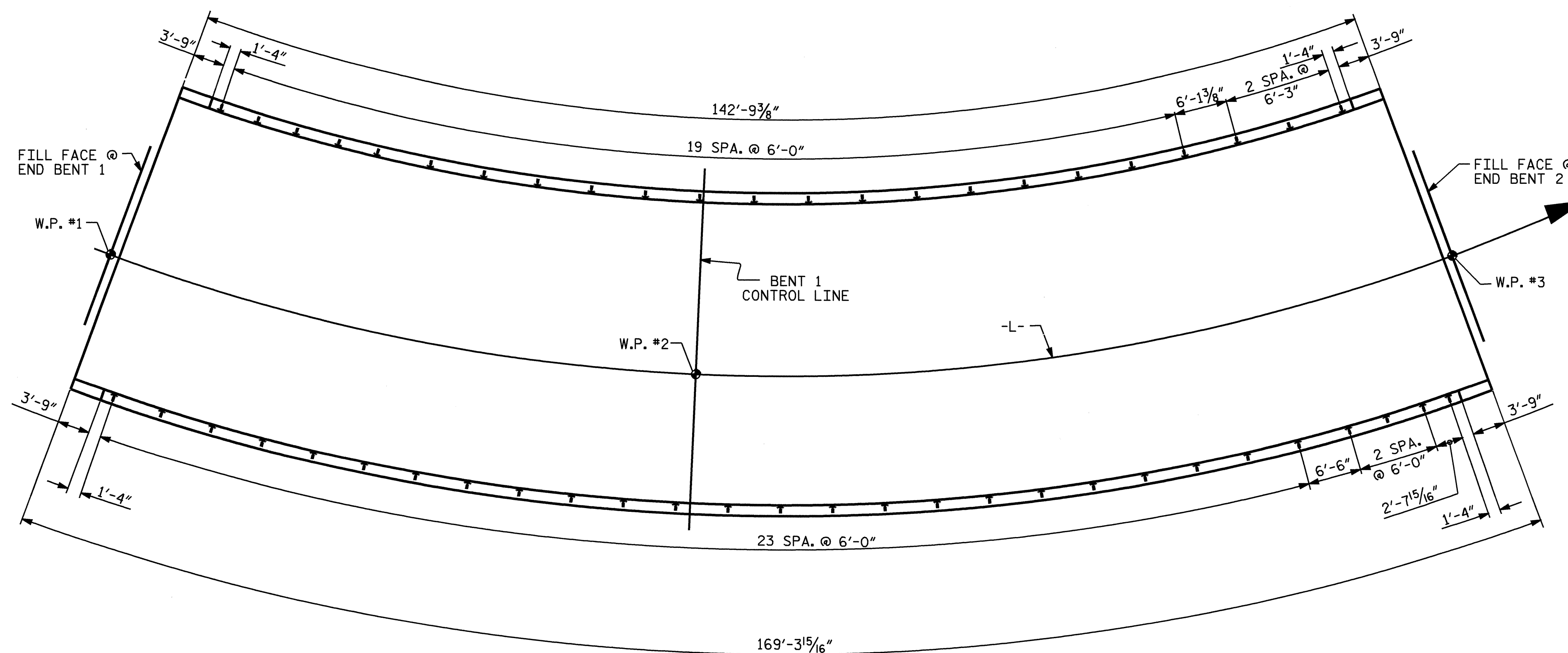
1'-2" X 2'-6"  
 CONCRETE PARAPET  
 FOR  
 2 BAR METAL RAIL

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

TOTAL SHEETS: 40

DRAWN BY: V.X. NGUYEN DATE: 06/07  
 CHECKED BY: D. HODGE DATE: 11/07





**PLAN OF RAIL POST SPACINGS**

RAIL POST DIMENSIONS ARE MEASURED ALONG ARC AT OUTSIDE FACE OF PARAPET

**NOTES**  
STRUCTURAL CONCRETE INSERT

THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".
- 1 - 3/4" Ø X 1 5/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 1 5/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

**NOTES**  
METAL RAIL TO END POST CONNECTION

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

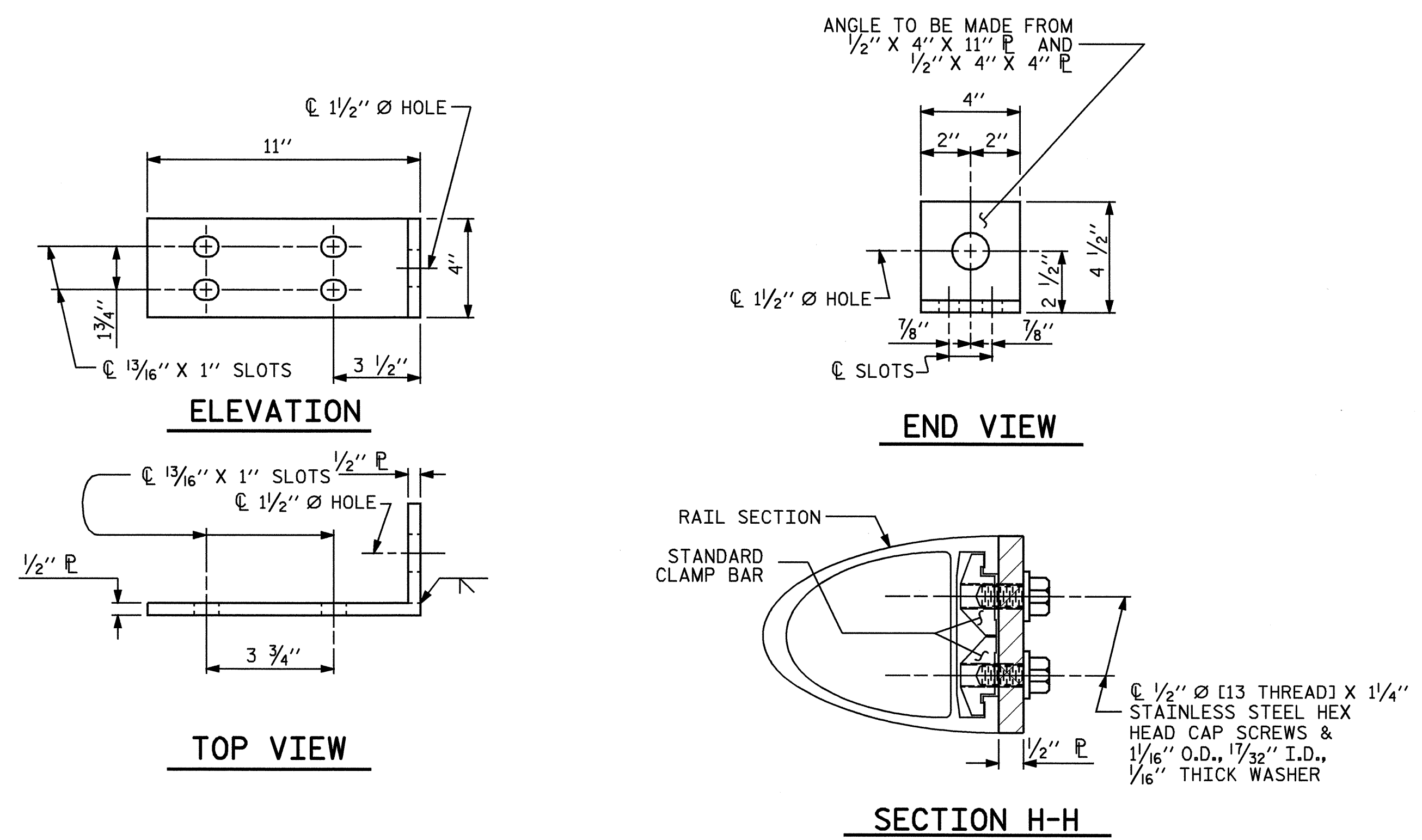
- 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 5/8" BOLT SHALL HAVE N.C. THREADS.
- CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°.
- STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
- 1/2" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

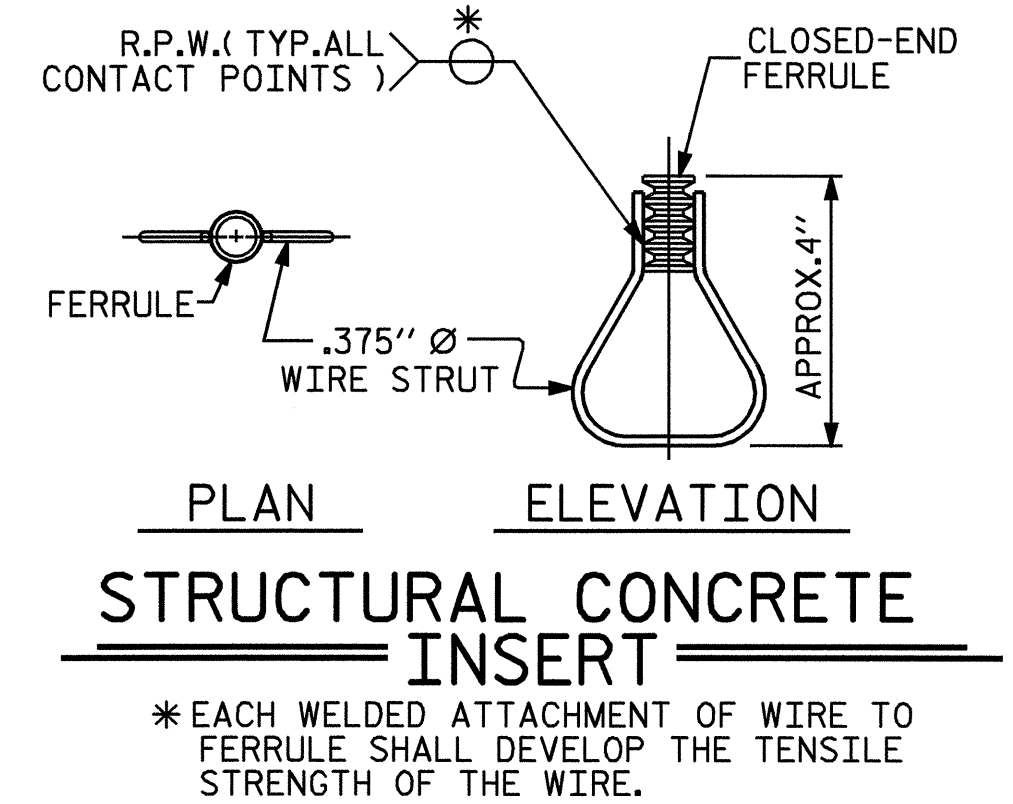
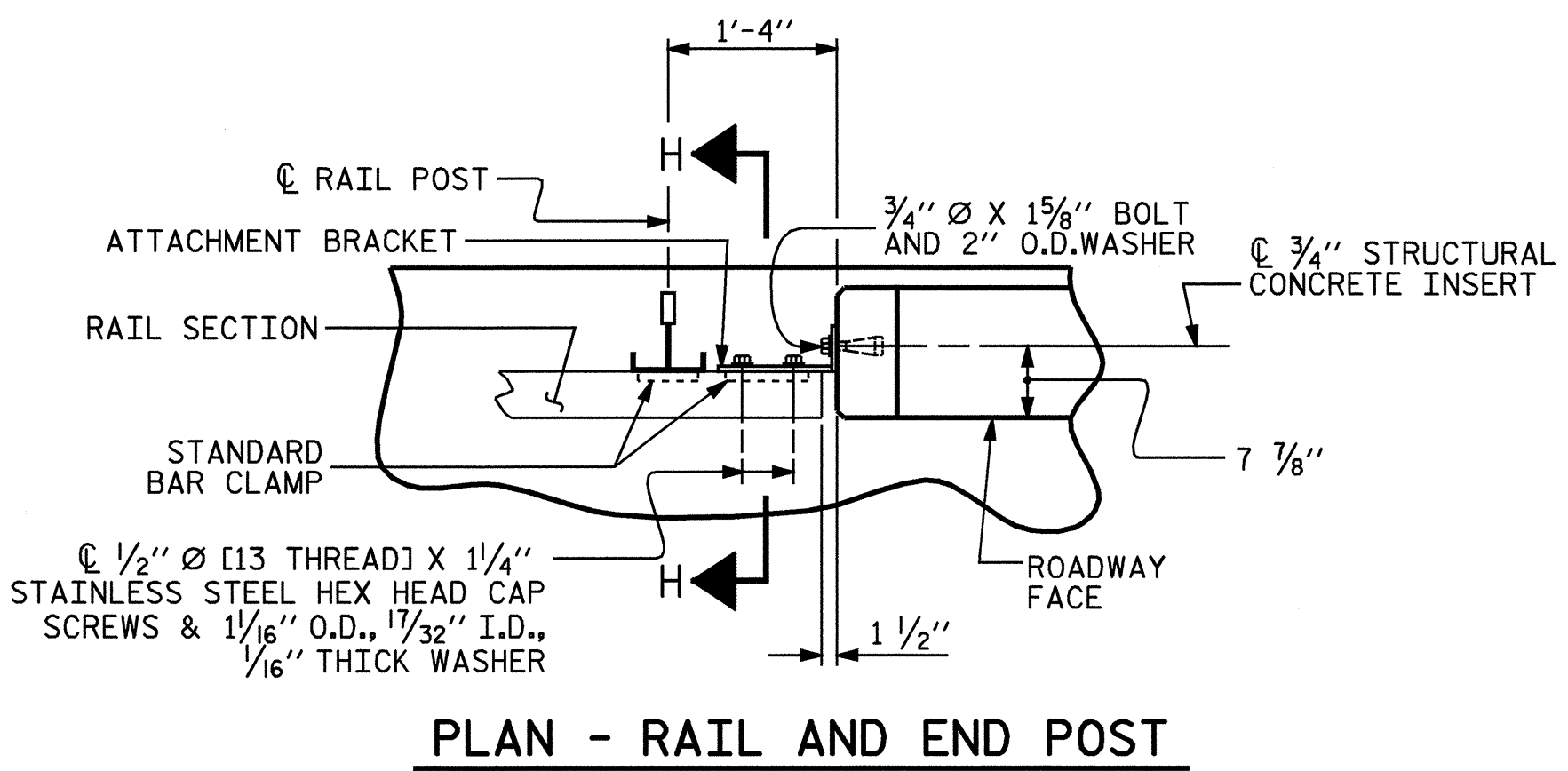
THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 5/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



**DETAILS FOR ATTACHING METAL RAIL TO END POST**



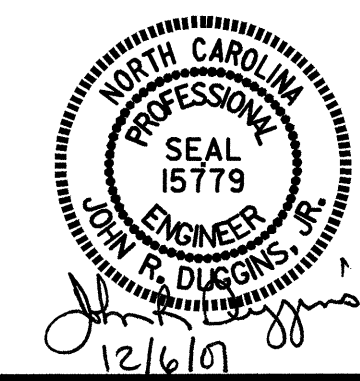
**STRUCTURAL CONCRETE INSERT**

\* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PROJECT NO. B-4144  
HAYWOOD COUNTY  
 STATION: 14+85.00 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 RAIL POST SPACINGS  
 AND  
 END OF RAIL DETAILS

ASSEMBLED BY : V.X. NGUYEN	DATE : 06/07
CHECKED BY : D. HODGE	DATE : 11/07
DRAWN BY : FCJ 1/88	REV. 10/17/00 LES/RDR
CHECKED BY : CRK 3/89	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			40
2			4			

**NOTES**

AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER, THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

**ALUMINUM RAILS**

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6. MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

**GALVANIZED STEEL RAILS**

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.

RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

**GENERAL NOTES**

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

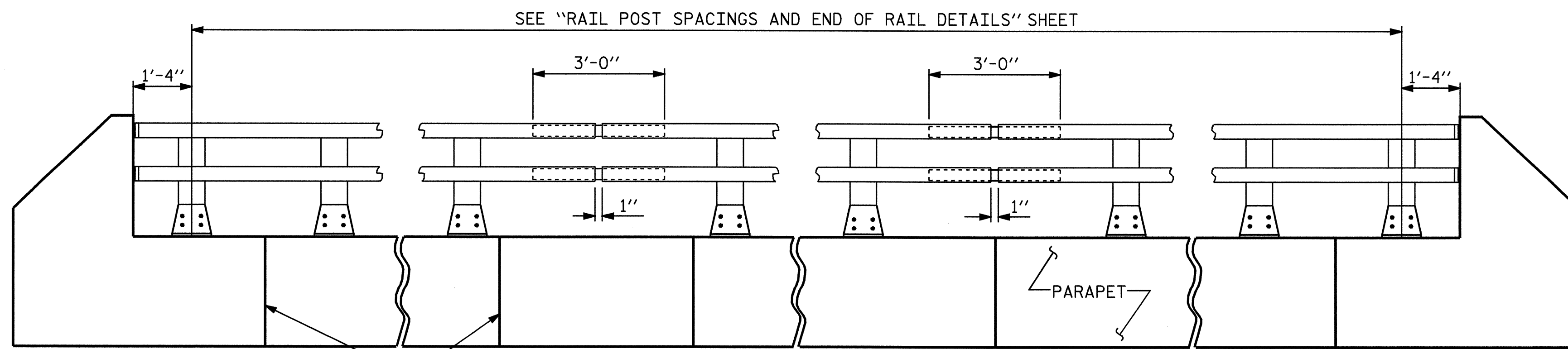
SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

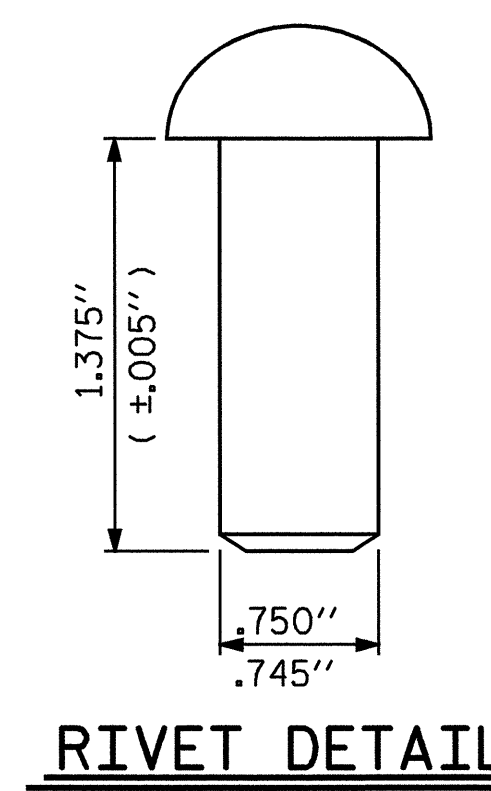
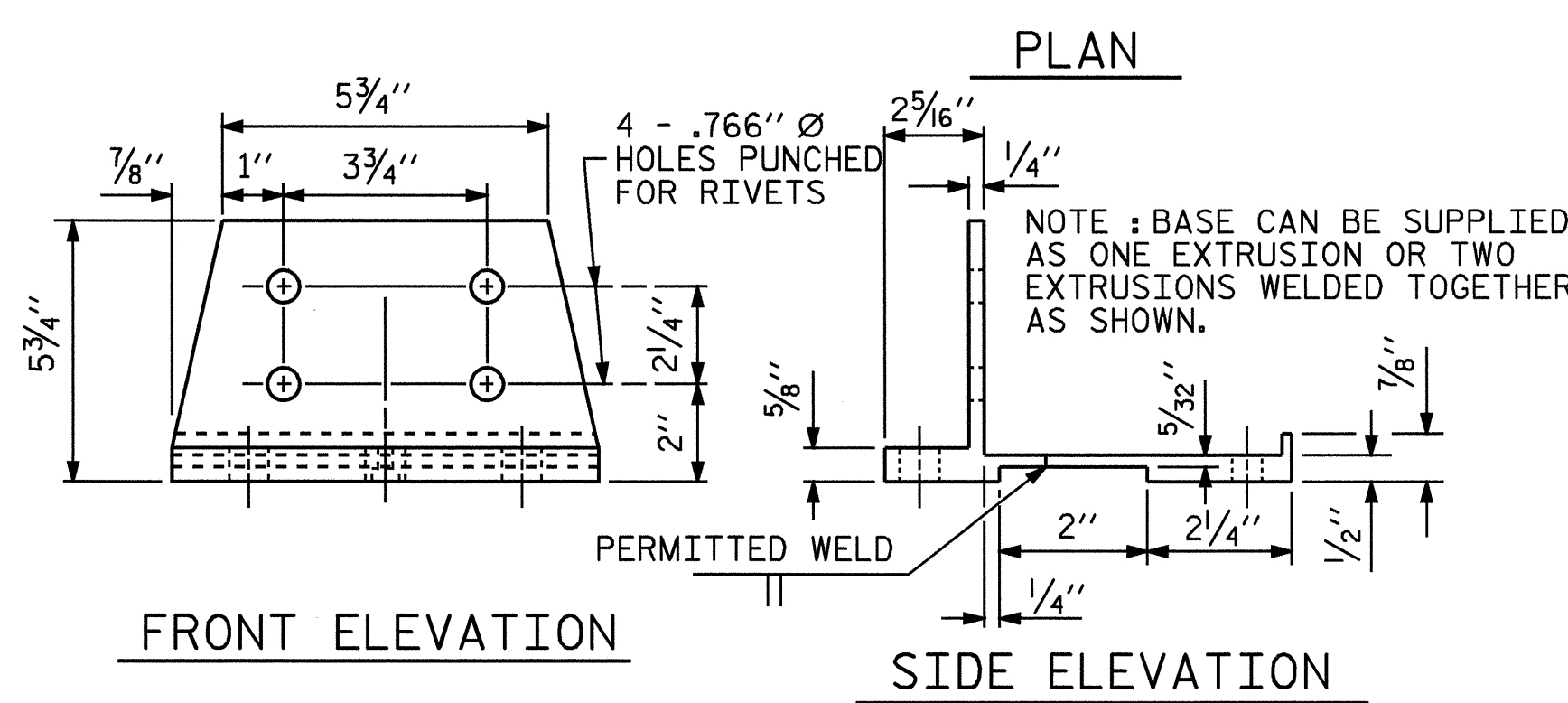
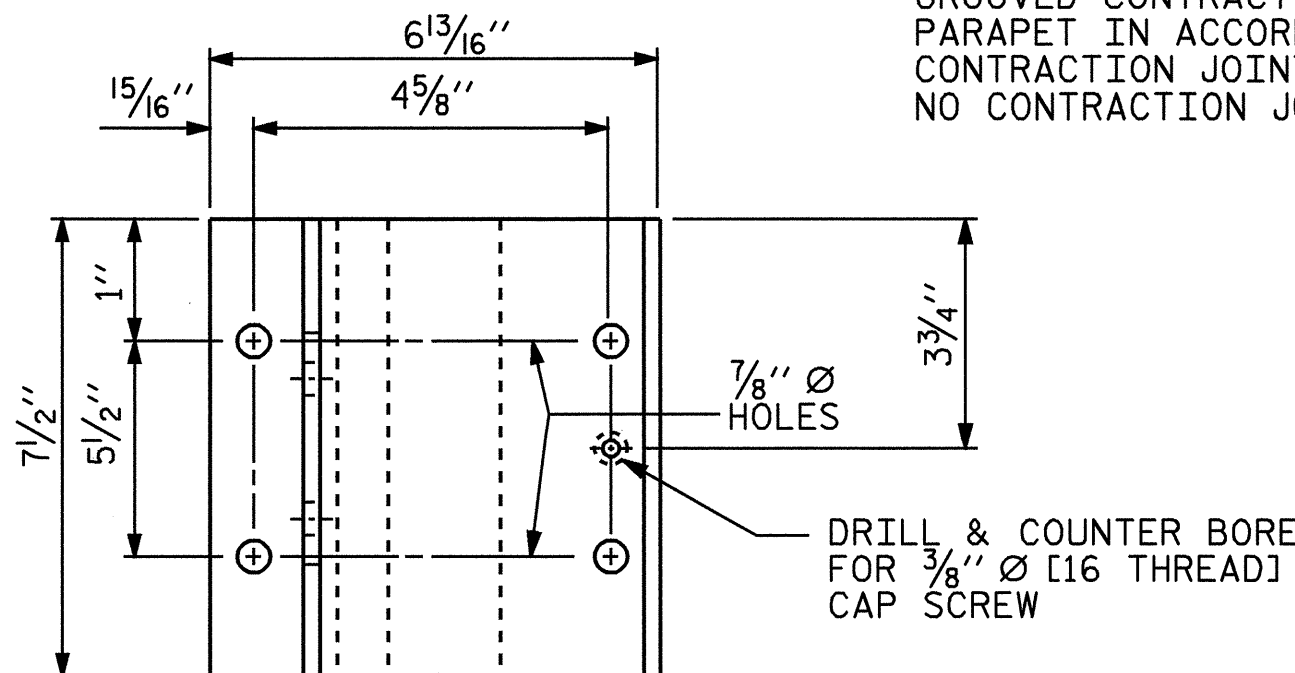
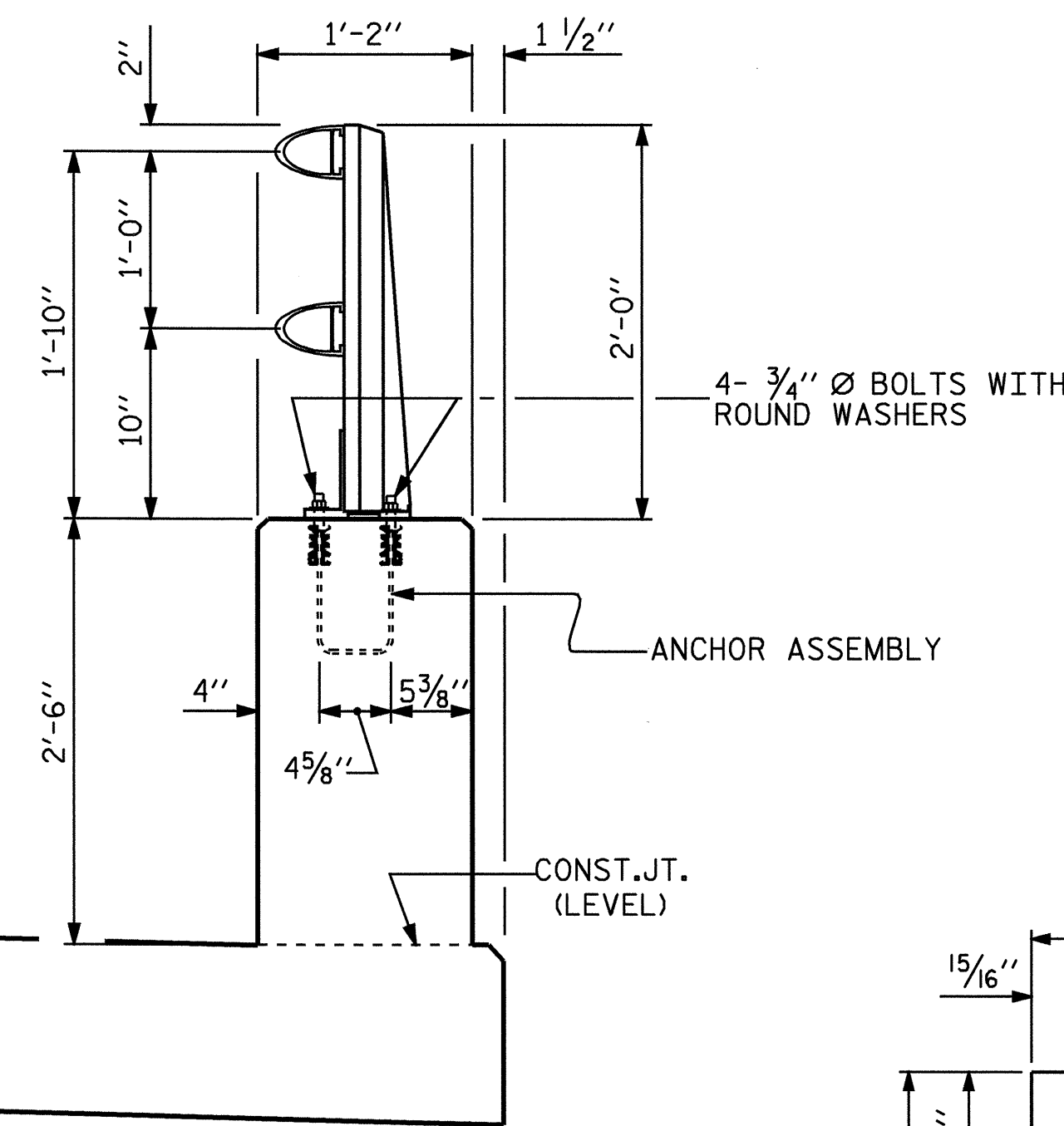
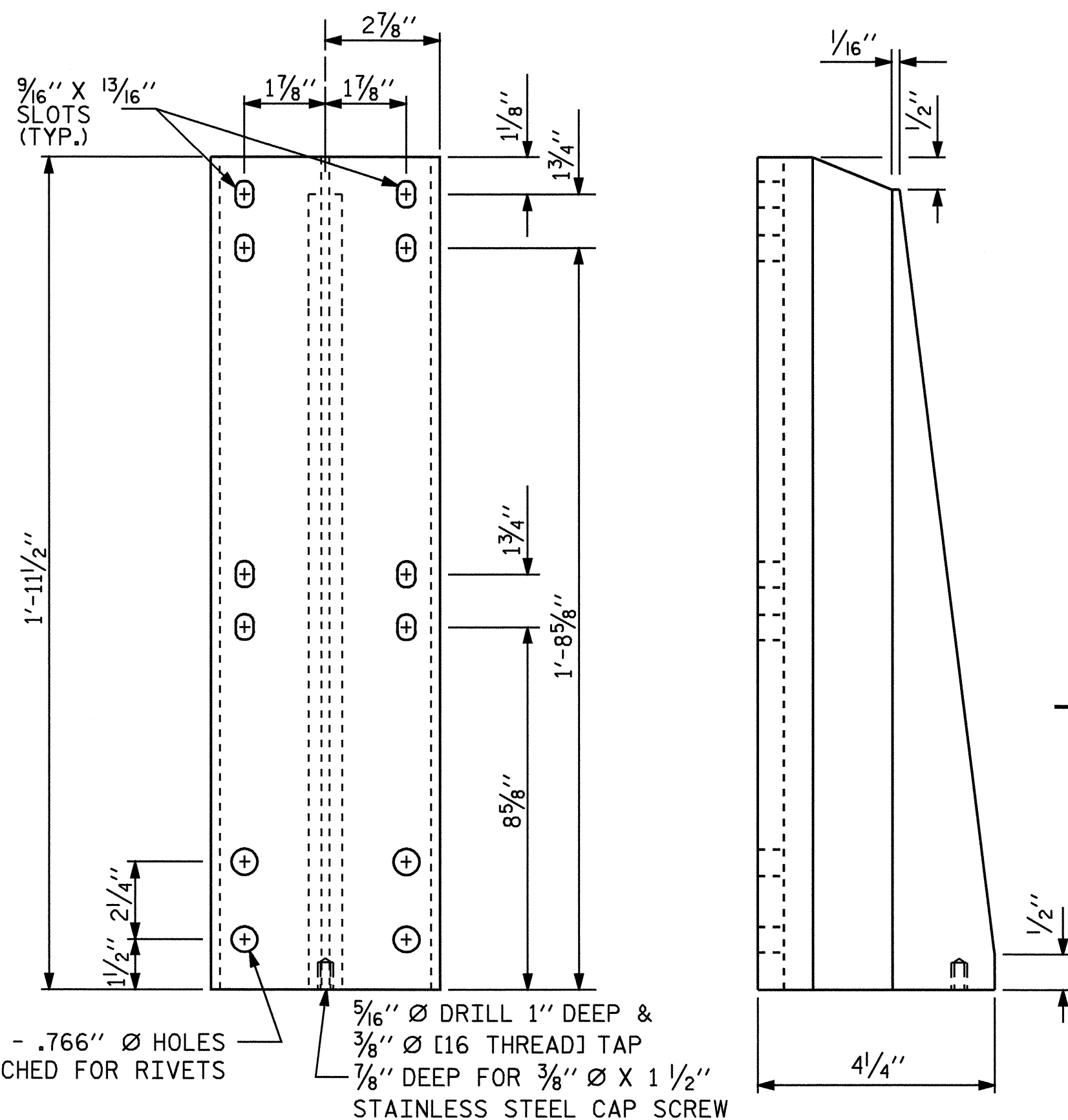
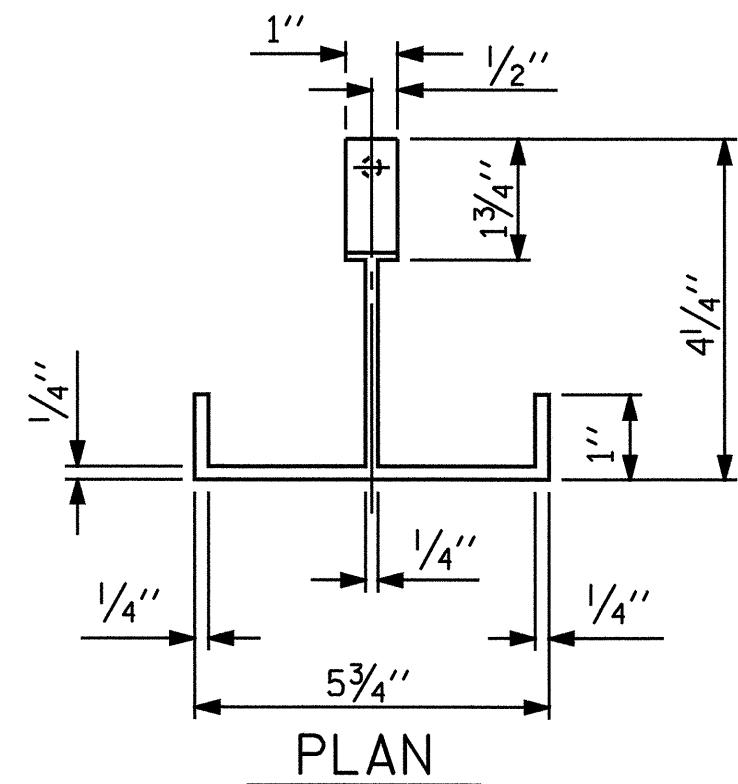
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT A SPACING OF 8FT. TO 10FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR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

PAY LENGTH = 297.11 LIN. FT.



**ELEVATION**

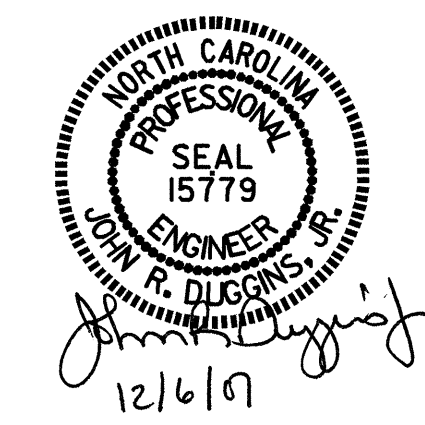
NOTE: FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2.



PROJECT NO. B-4144  
HAYWOOD COUNTY  
 STATION: 14+85.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD 2 BAR METAL RAIL					
SHEET NO. S-26					
TOTAL SHEETS 40					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		



ASSEMBLED BY: V.X. NGUYEN	DATE: 6-28-07
CHECKED BY: D. HODGE	DATE: 11-07
DRAWN BY: EEM 6/94	REV. 10/17/00 LES/RDR
CHECKED BY: RGW 6/94	REV. 5/7/03R RWW/JTE
	REV. 5/1/06 TLA/GM



NOTES

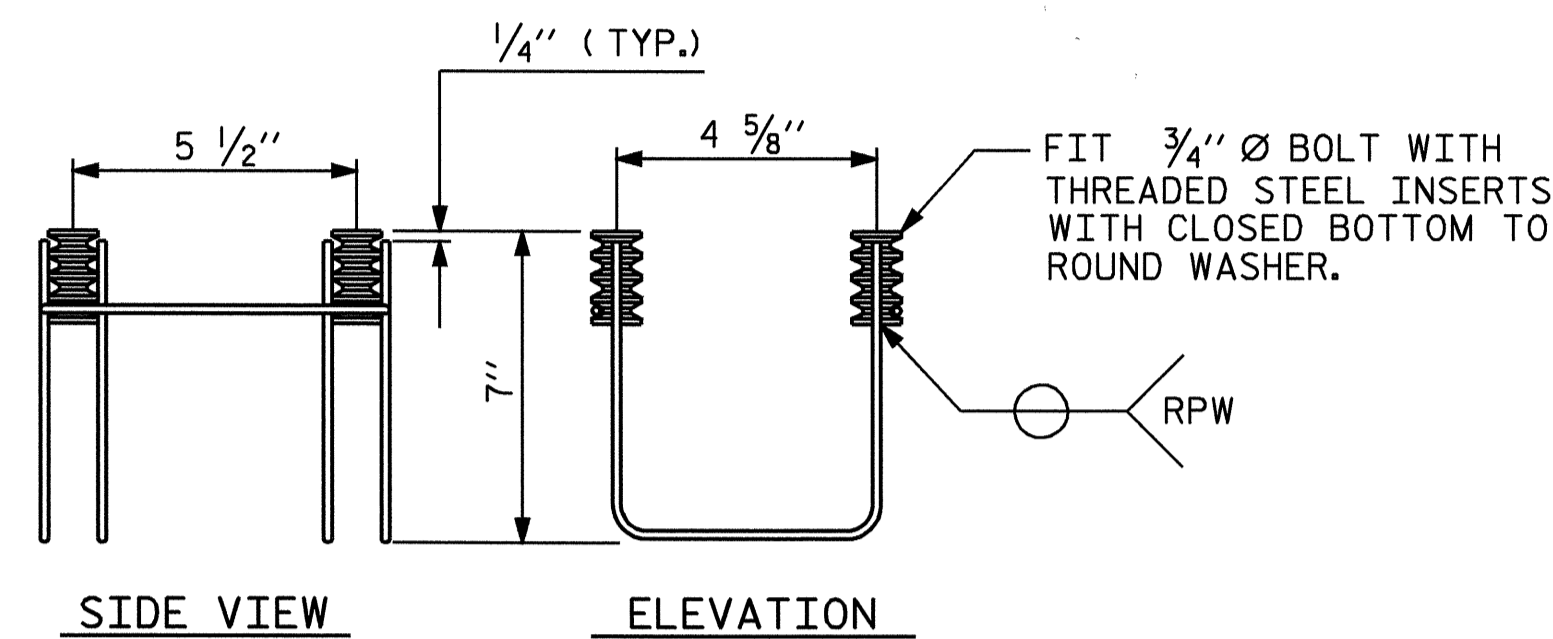
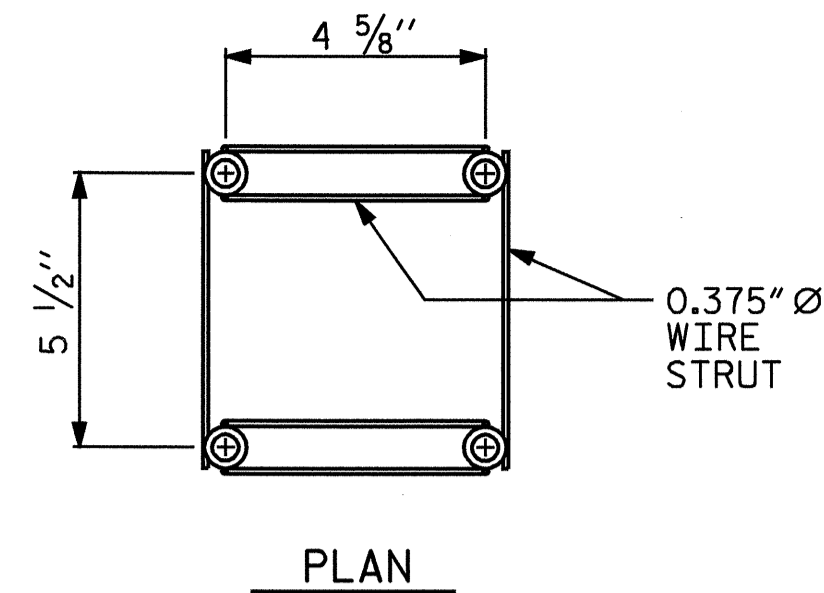
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS :

- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 2 1/2" GALVANIZED BOLTS 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.
- C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
- E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
- F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

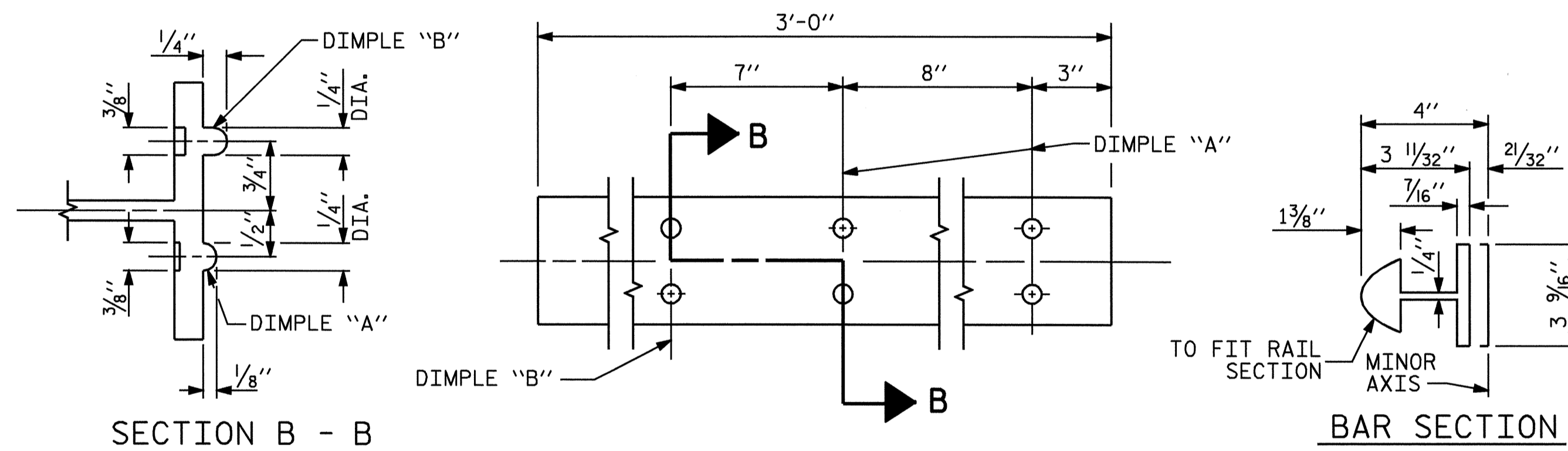
WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.



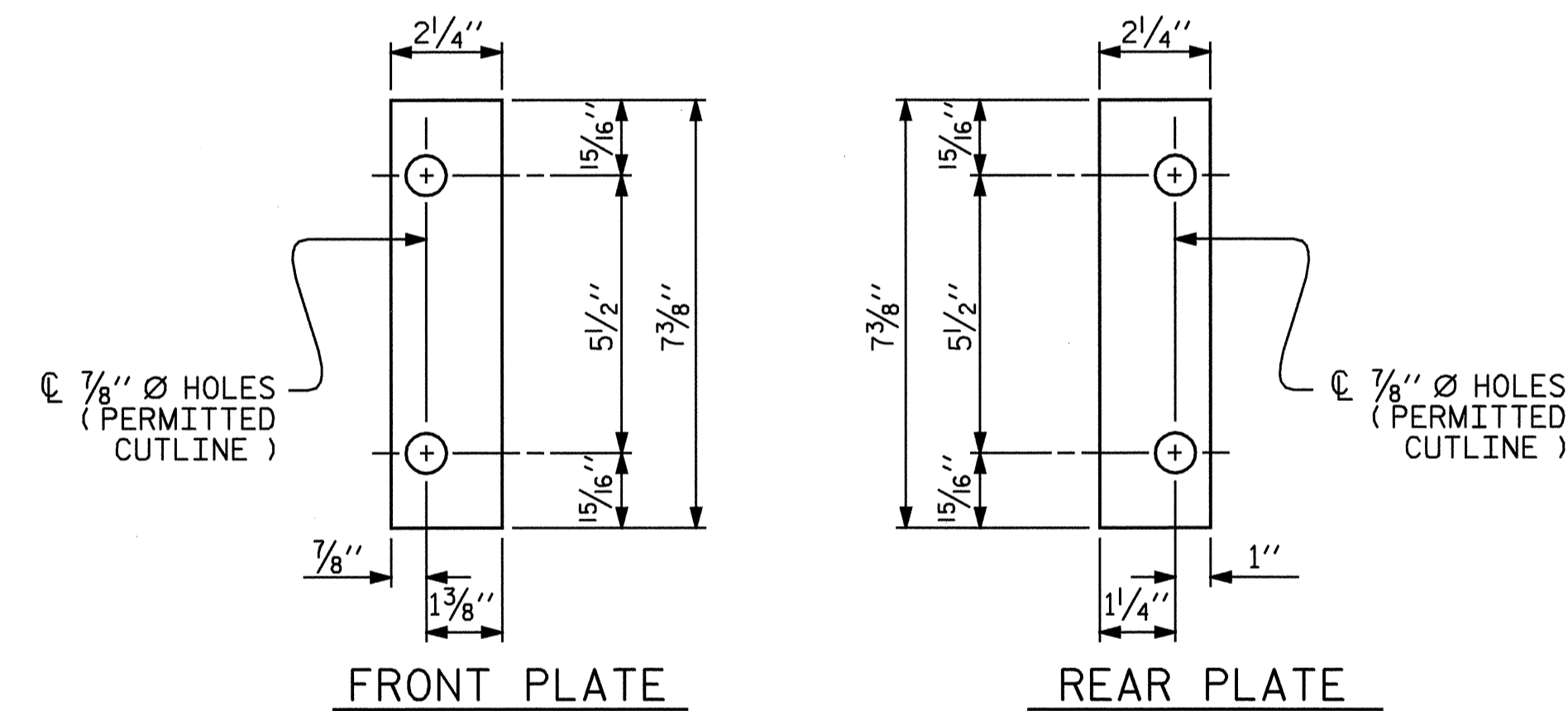
MINIMUM LENGTH OF THREADS IN INSERT (FERRULE) : 1 3/4"

4-BOLT METAL RAIL ANCHOR ASSEMBLY

(51 ASSEMBLIES REQUIRED)

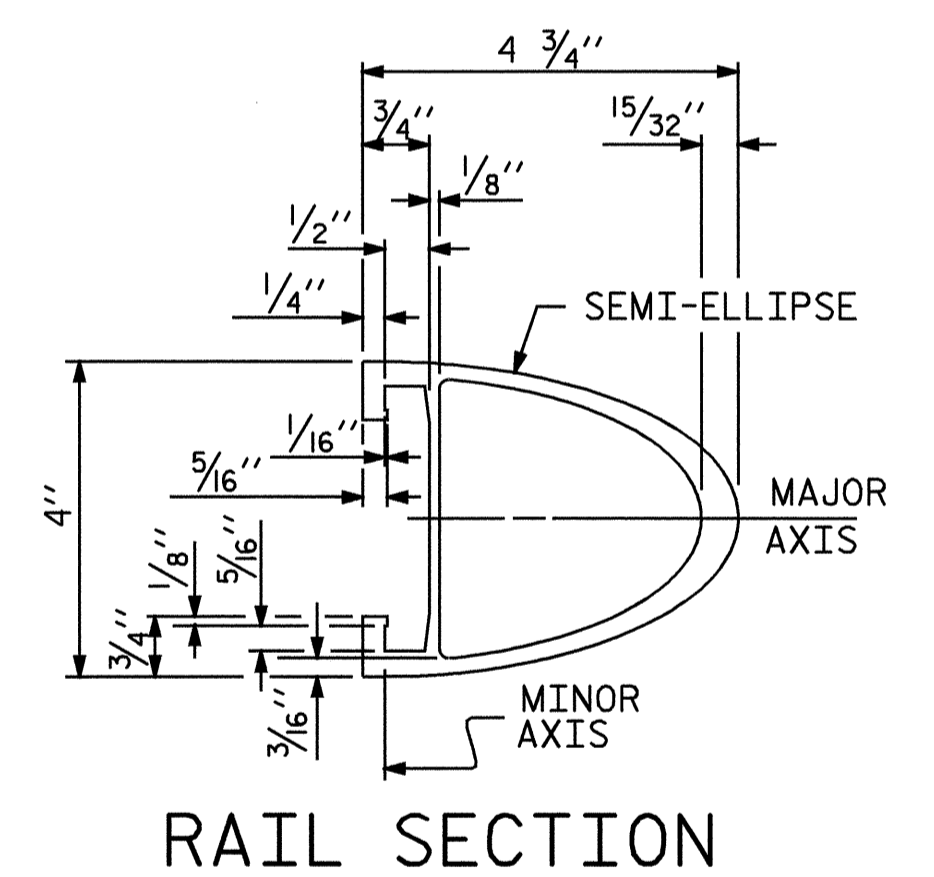


EXPANSION BAR DETAILS

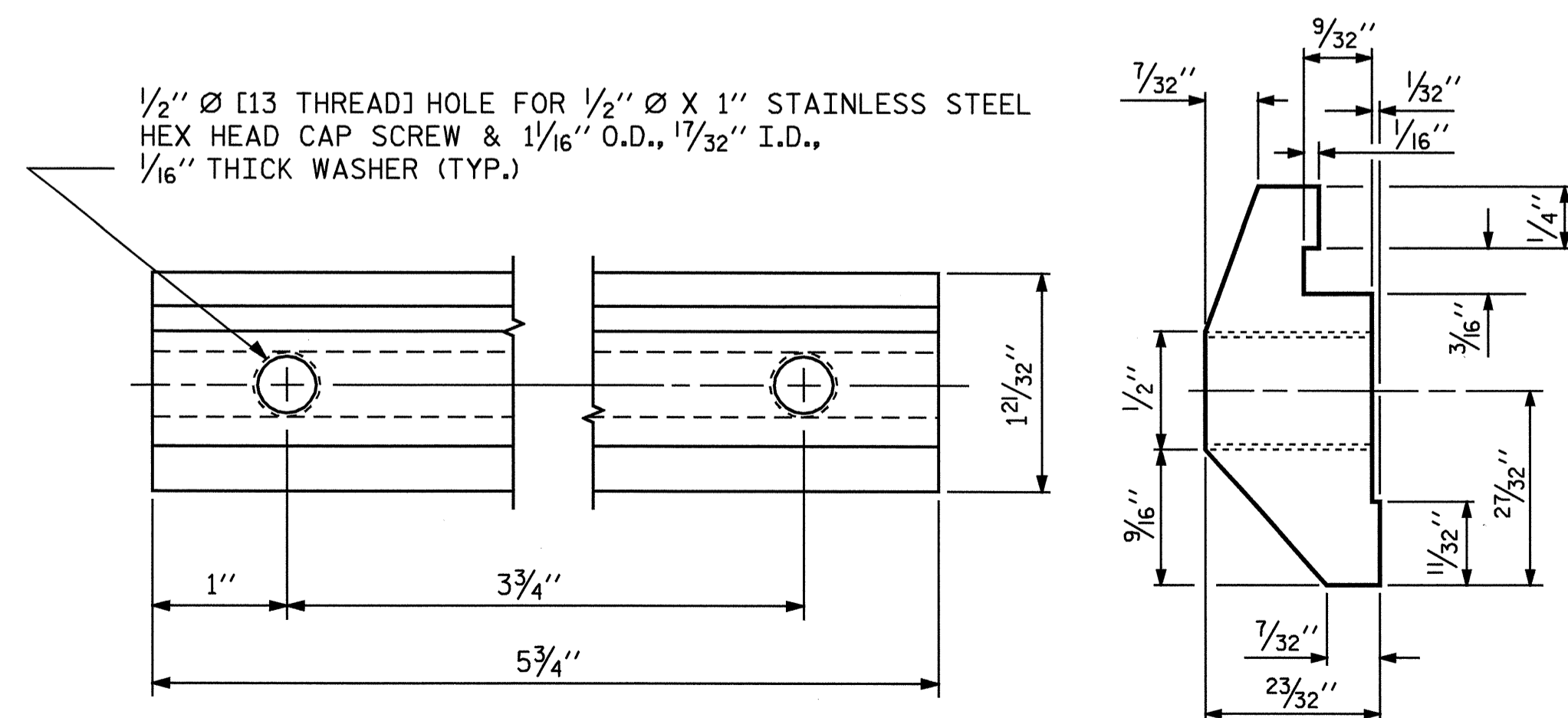


SHIM DETAILS

NOTE : SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.

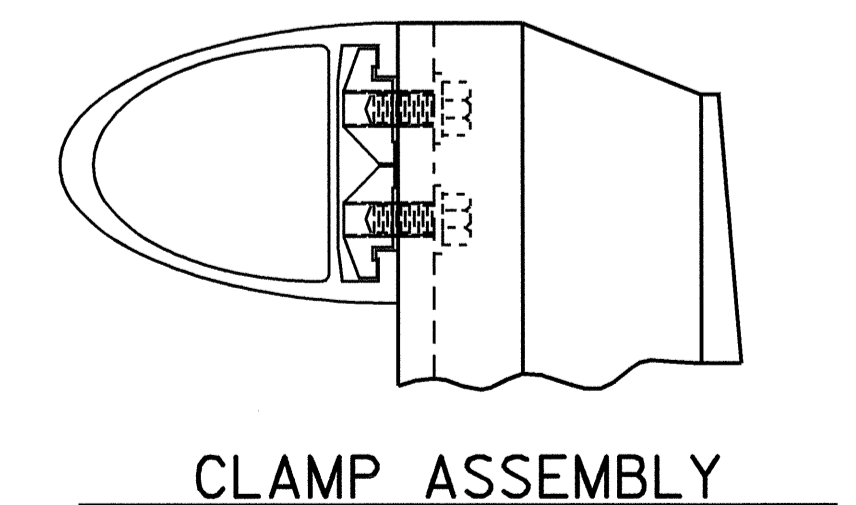


RAIL SECTION

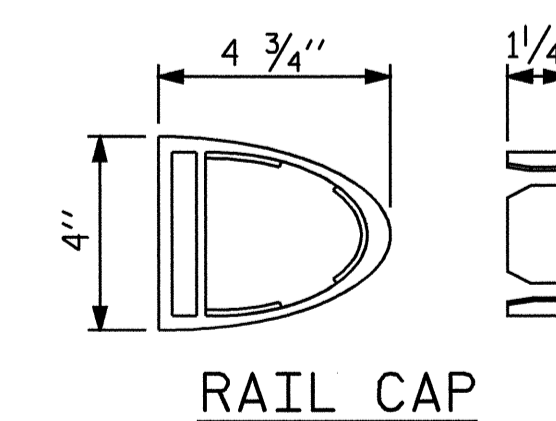


CLAMP BAR DETAIL

(4 REQUIRED PER POST)



CLAMP ASSEMBLY

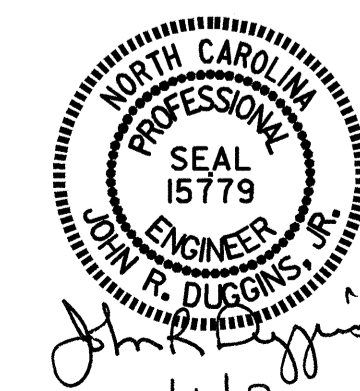


RAIL CAP

PROJECT NO. B-4144  
HAYWOOD COUNTY  
STATION: 14+85.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD					
2 BAR METAL RAIL					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 40



ASSEMBLED BY : V.X. NGUYEN	DATE : 6-28-07
CHECKED BY : D. HODGE	DATE : 11-07
DRAWN BY : EEM 6/94	REV. 2/6/97 EEM/RGW
CHECKED BY : RGW 6/94	REV. 8/16/99 MAB/LES
	REV. 5/1/06R KMM/GM



NOTES

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

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M11.

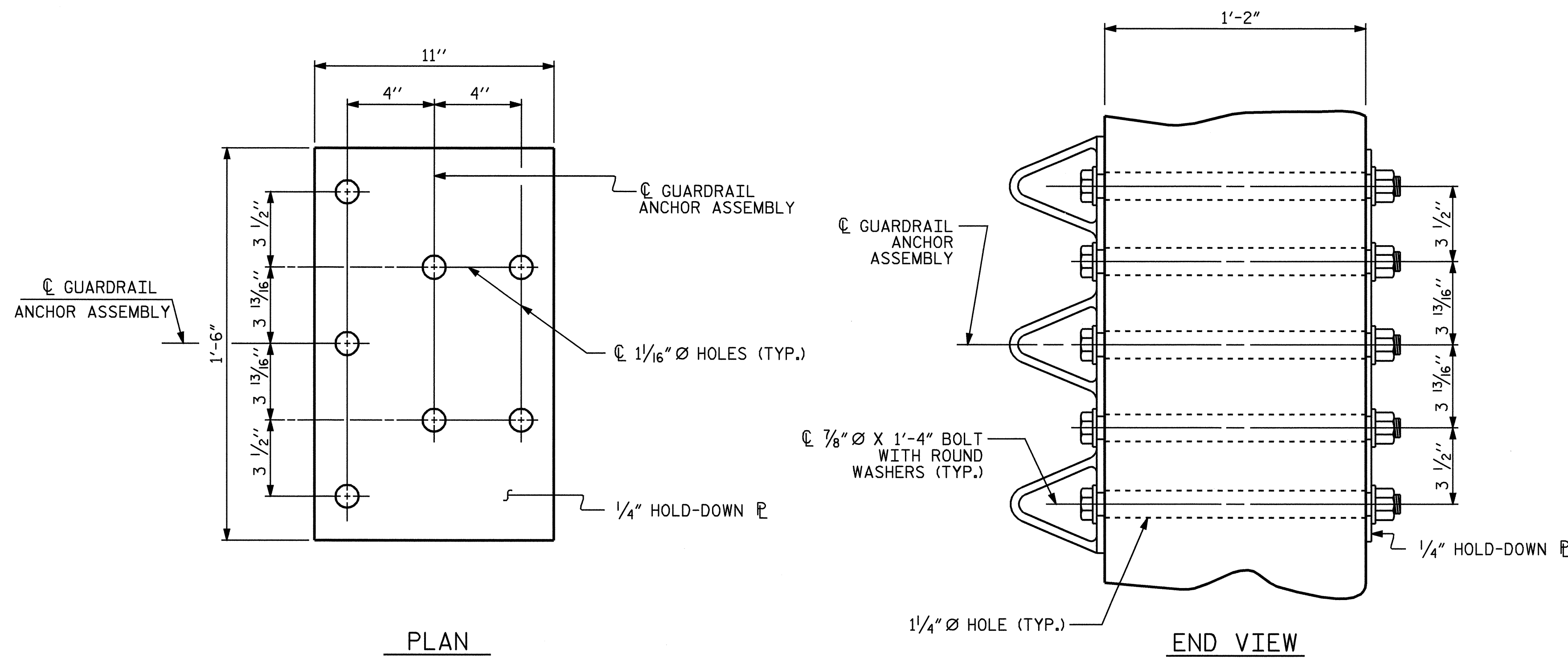
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS.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

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

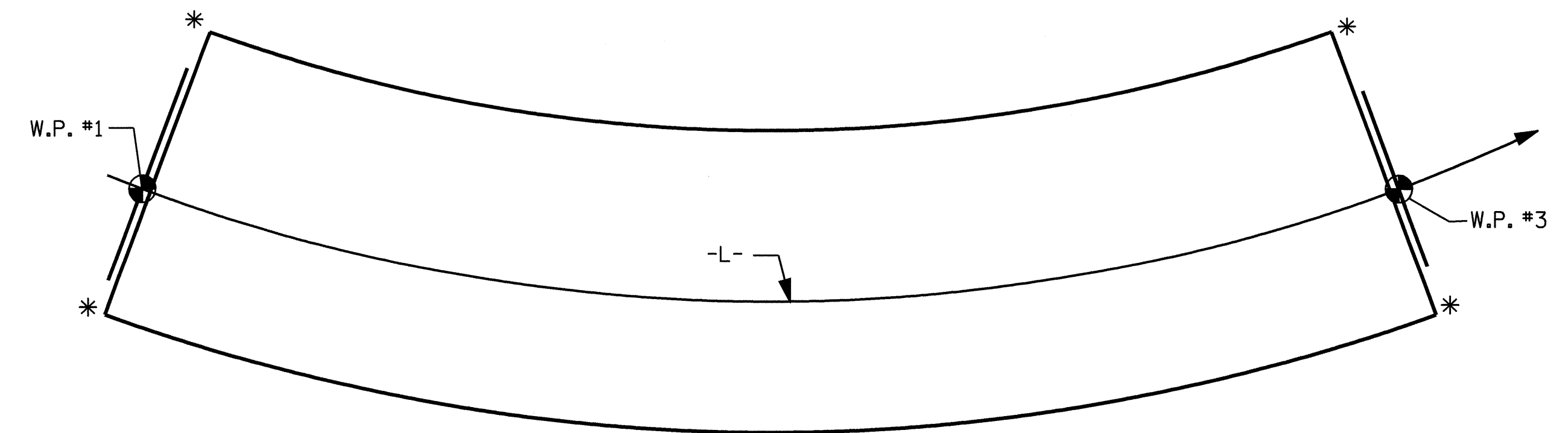
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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

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

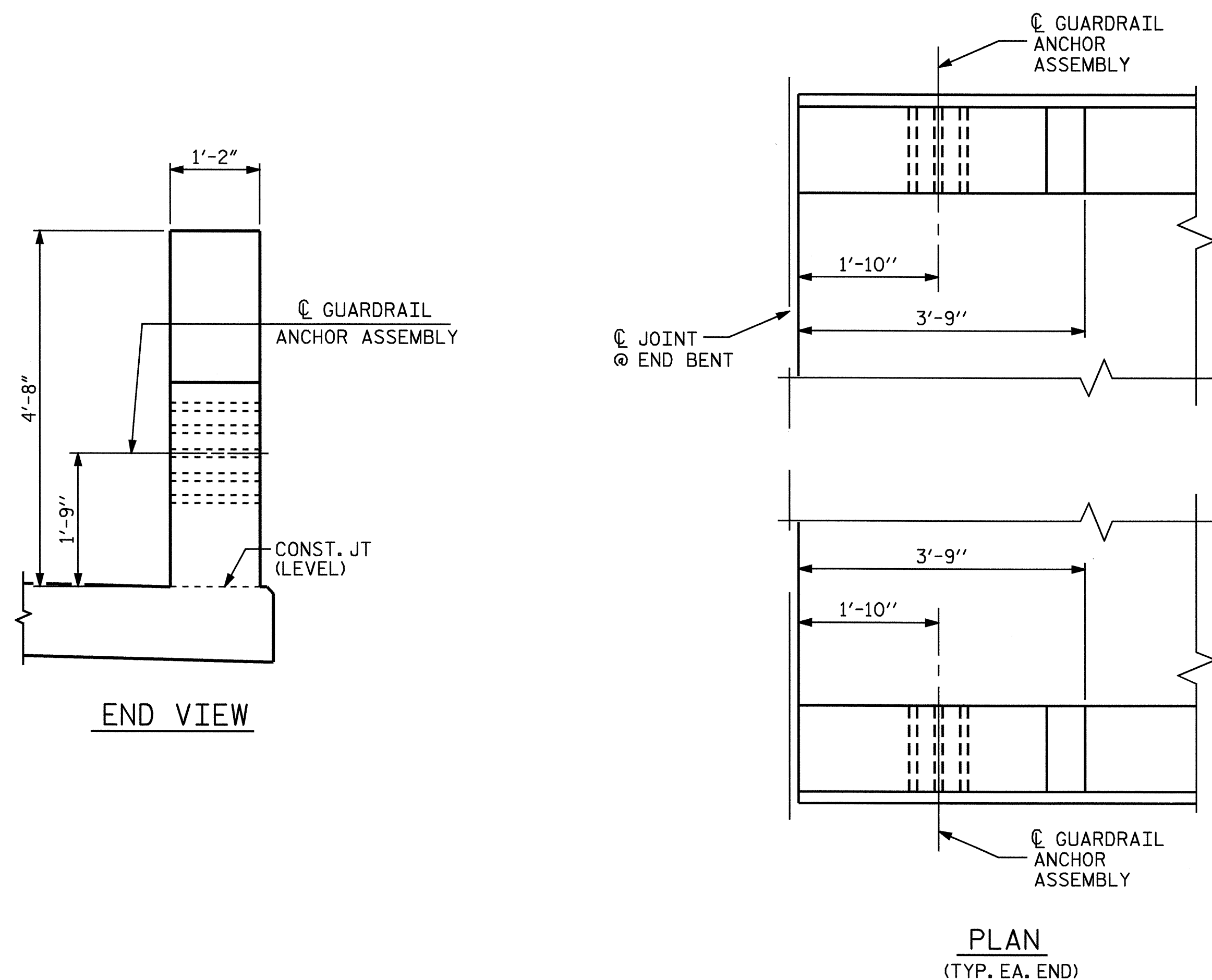


GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT

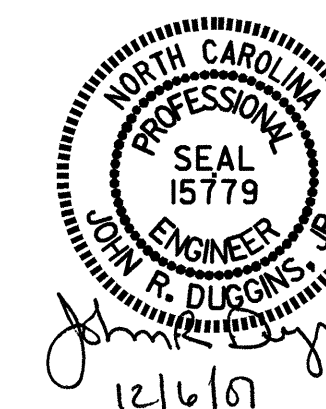
\* LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. B-4144  
HAYWOOD COUNTY  
 STATION: 14+85.00 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 GUARDRAIL ANCHORAGE  
 DETAILS  
 FOR METAL RAILS



ASSEMBLED BY : V.X. NGUYEN	DATE : 6-28-07
CHECKED BY : D. HODGE	DATE : 11-07
DRAWN BY : EEM 6/94	REV. 10/17/00 RWW/LES
CHECKED BY : RGW 6/94	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			40

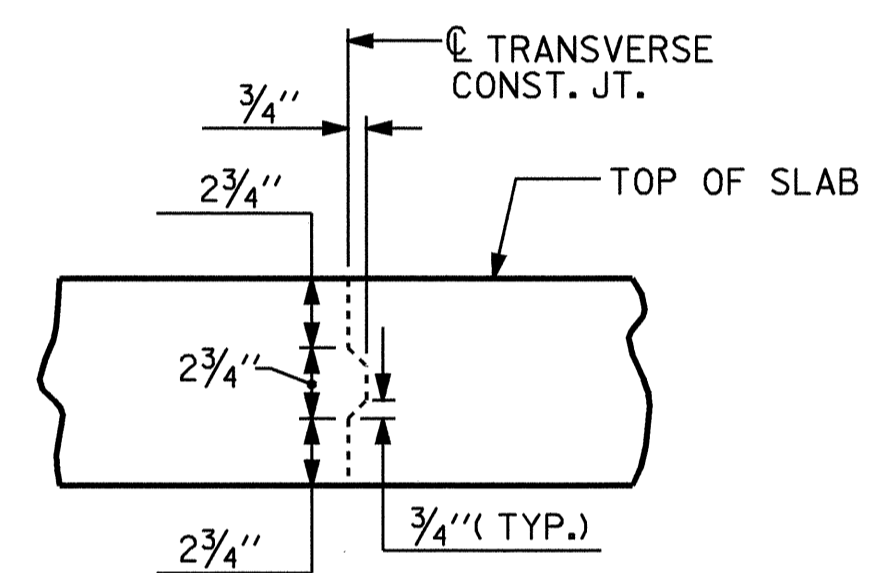
**SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS**

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"			

**REINFORCING BAR SCHEDULE SPANS A & B**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	291	#5	STR	37'-2"	11281
A2	291	#5	STR	37'-2"	11281
* B1	15	#4	STR	18'-4"	184
* B2	15	#4	STR	24'-3"	243
* B3	60	#6	STR	45'-5"	4093
* B4	54	#6	STR	40'-5"	3278
* B5	30	#4	STR	27'-8"	554
* B6	45	#4	STR	21'-8"	651
B7	120	#5	STR	57'-10"	7238
* K1	8	#5	1	7'-3"	60
* K2	12	#5	2	8'-2"	102
* K3	16	#5	STR	6'-9"	113
* G1	2	#5	STR	37'-2"	78
* S1	48	#4	3	3'-6"	112
REINFORCING STEEL =				18,519	LBS
* EPOXY COATED REINF. STEEL =				20,749	LBS

\* THESE BARS ARE EPOXY COATED

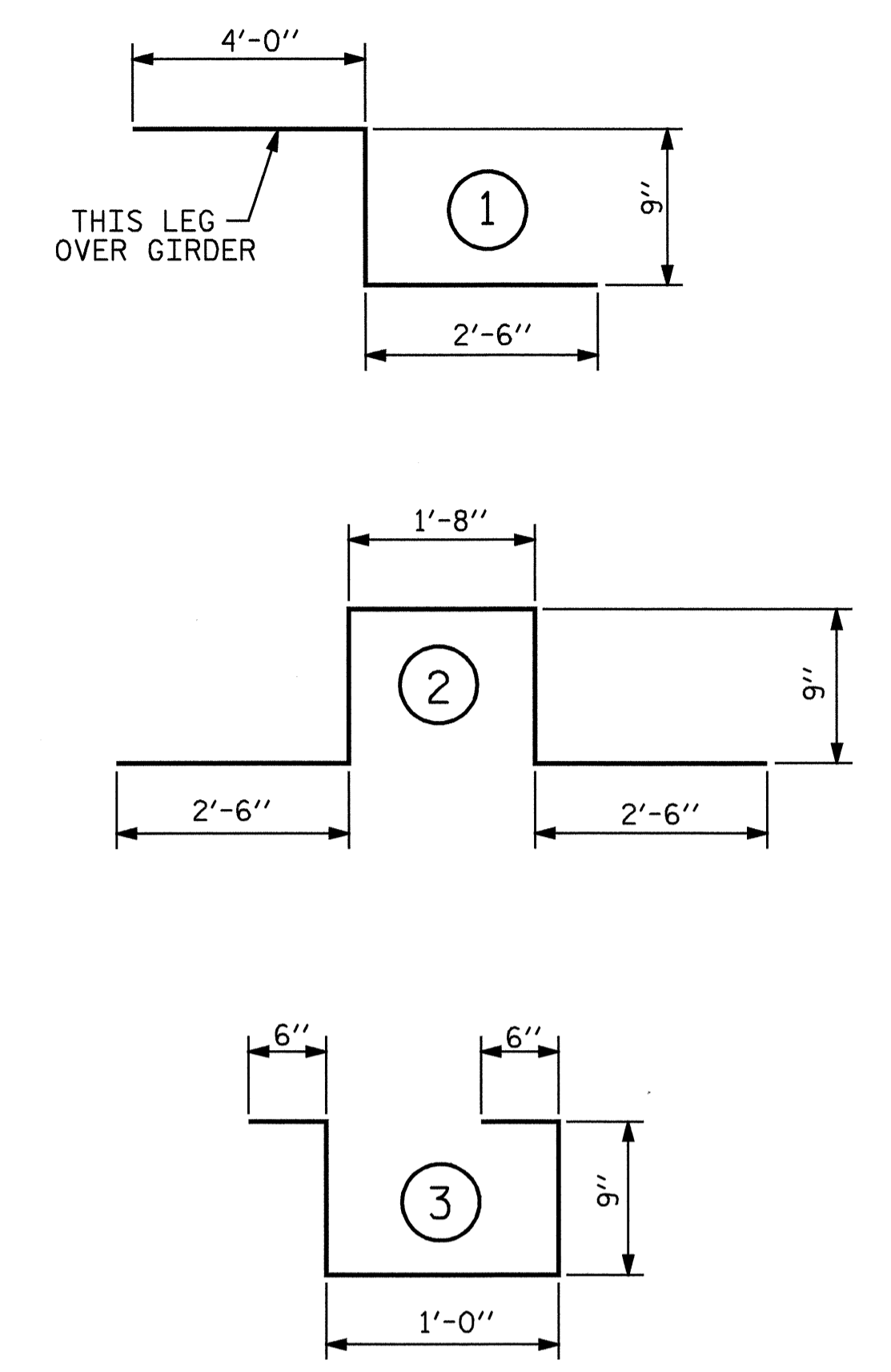


**TRANSVERSE CONSTRUCTION JOINT DETAIL**

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

GROOVING BRIDGE FLOORS	
APPROACH SLABS	882 SQ.FT.
BRIDGE DECK	4,959 SQ.FT.
TOTAL	5,841 SQ.FT.

**BAR TYPES**

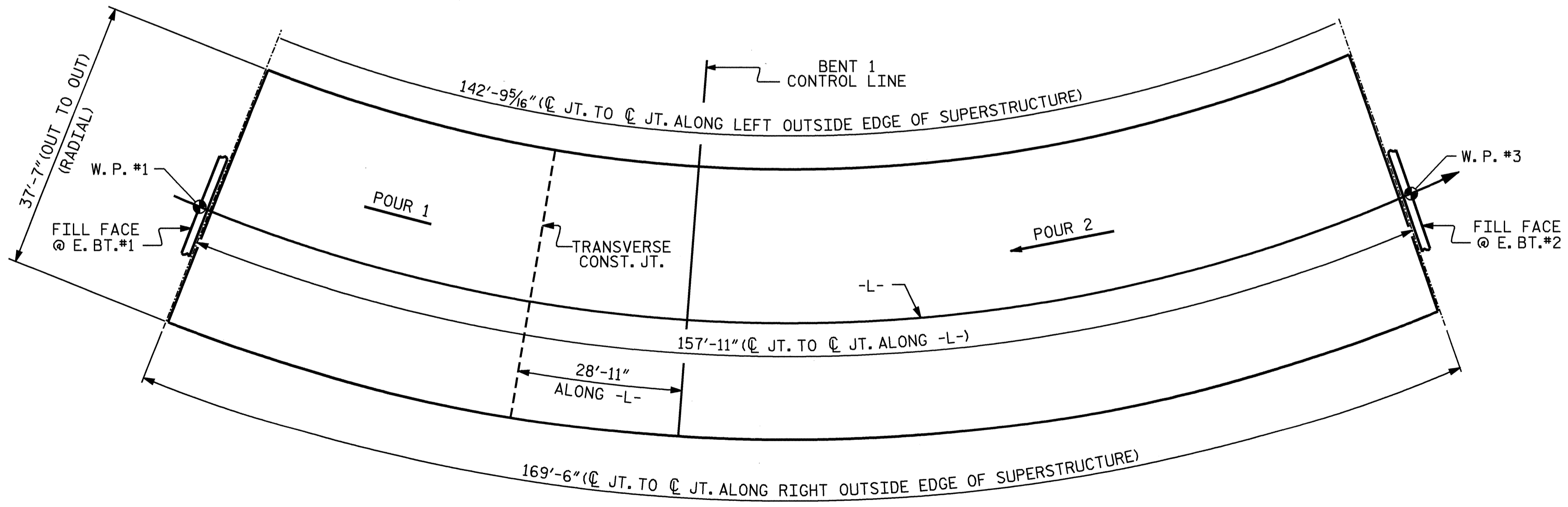


ALL BAR DIMENSIONS ARE OUT TO OUT

**— SUPERSTRUCTURE BILL OF MATERIAL —**

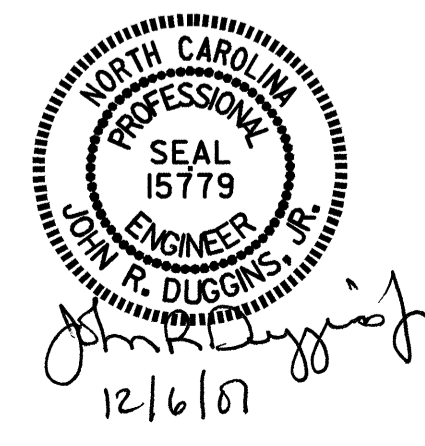
	CLASS AA CONCRETE (CU.YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
SPANS A & B		18,519	20,749
POUR #1	46.1		
POUR #2	134.0		
TOTALS**	180.1	18,519	20,749

\*\*QUANTITIES FOR PARAPET ARE NOT INCLUDED



**CONCRETE POURING SEQUENCE AND LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB (SQ. FT. = 5,868)**

PROJECT NO. B-4144  
HAYWOOD COUNTY  
 STATION: 14+85.00-L-



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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			5-29
2			4			TOTAL SHEETS 40

ASSEMBLED BY : V.X. NGUYEN	DATE : 8/13/07
CHECKED BY : D. HODGE	DATE : 11-07
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

**NOTES**

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

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

EPOXY COAT THE END BENT CAP AFTER ADJUSTMENTS ARE MADE TO BEARINGS AND ANCHOR BOLTS ARE GROUTED.

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.

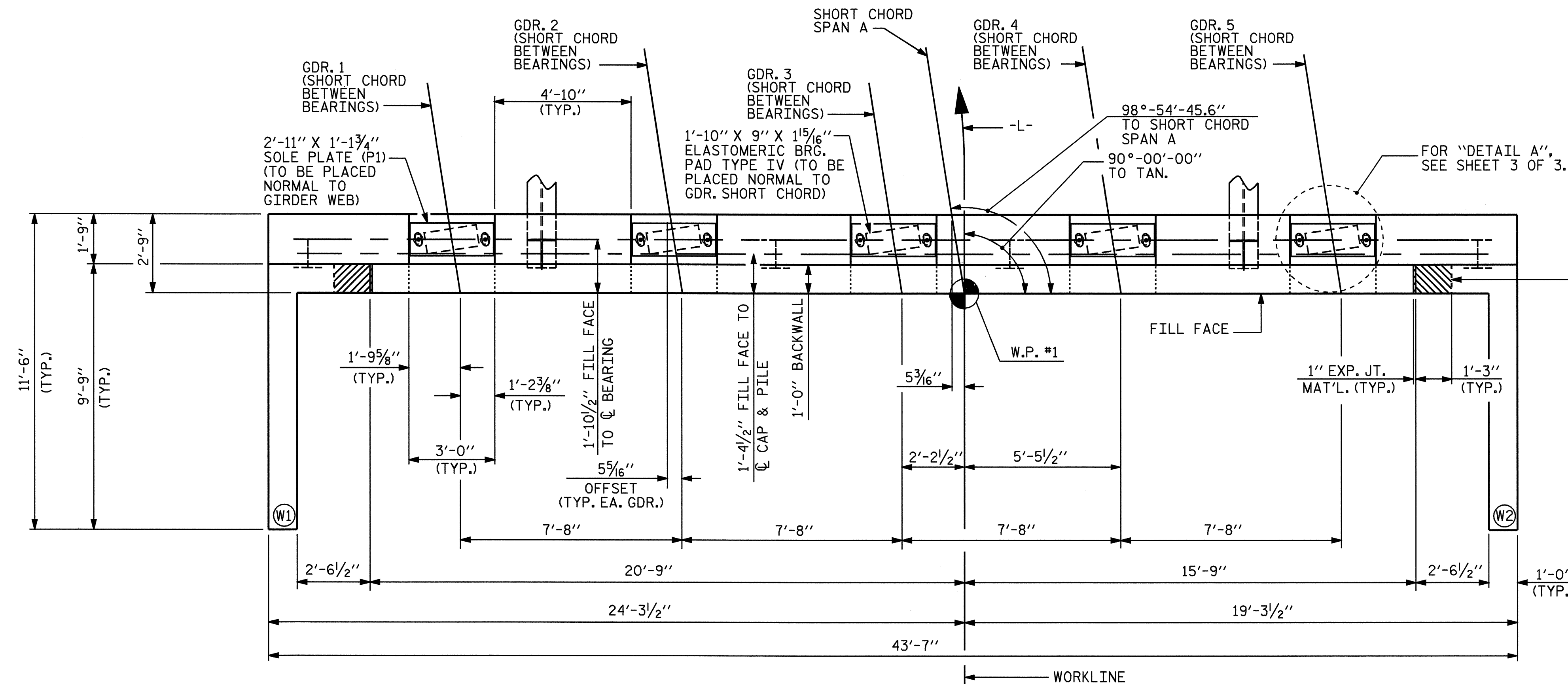
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND THE APPROACH SLAB HAS BEEN SAWED AND THE PARAPET AND END POST ARE CAST IF SLIP FORMING IS USED.

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%.

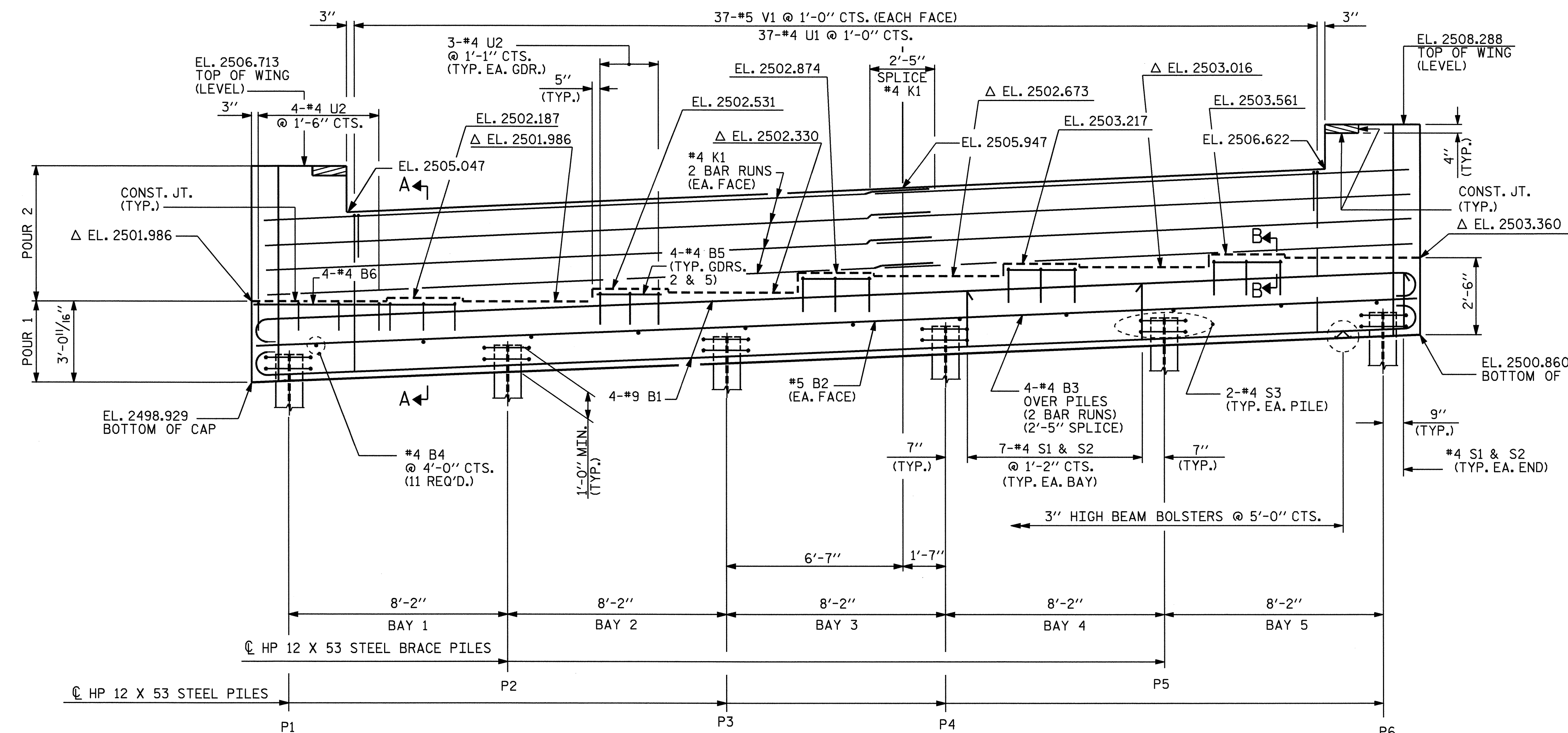
FOR 4" Ø STD. PIPE DETAILS, SEE ELASTOMERIC BEARING SHEET.

**TOP OF PILE ELEVATIONS**

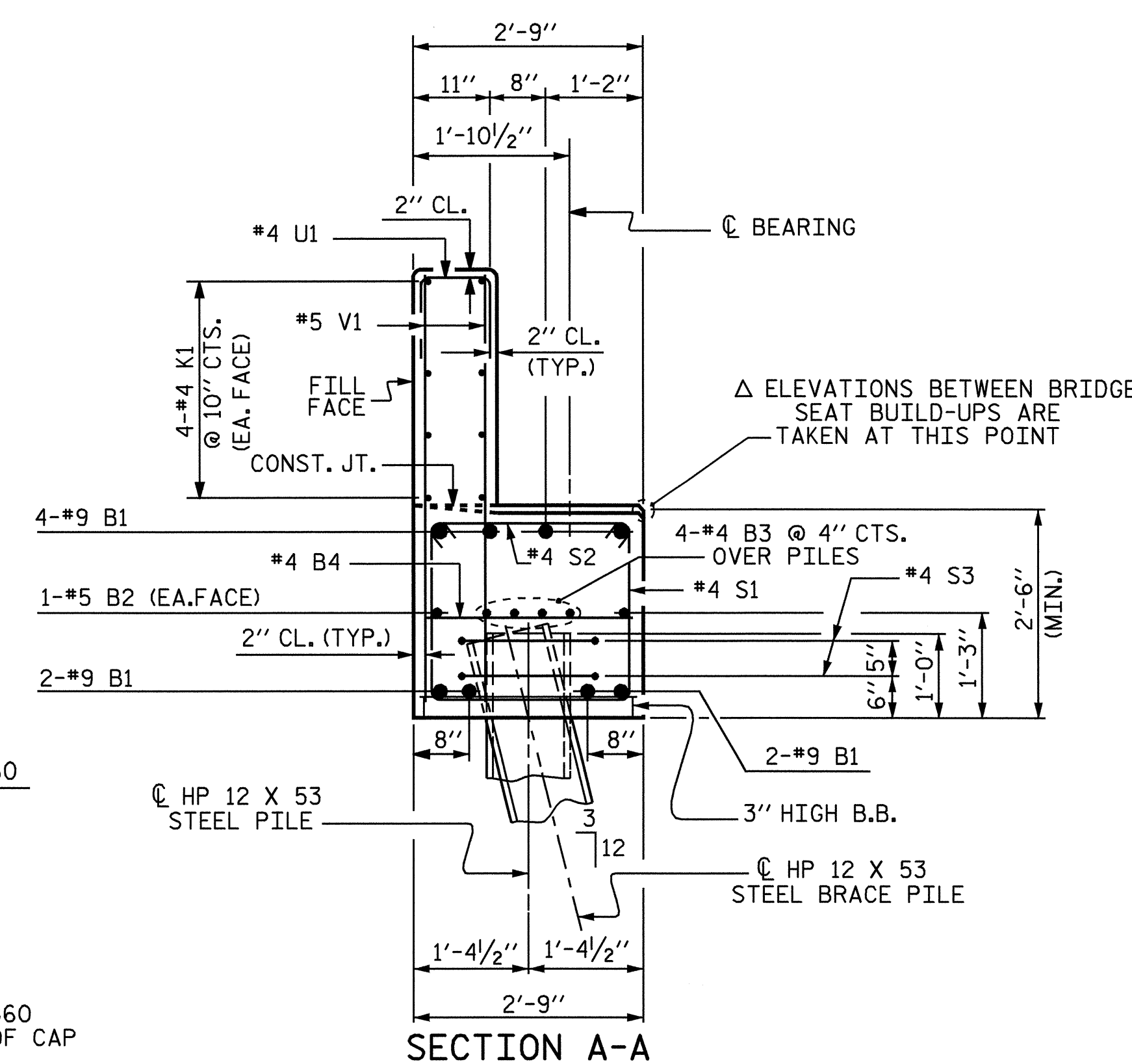
P1	P2	P3	P4	P5	P6
EL. 2500.012	EL. 2500.374	EL. 2500.736	EL. 2501.097	EL. 2501.459	EL. 2501.821



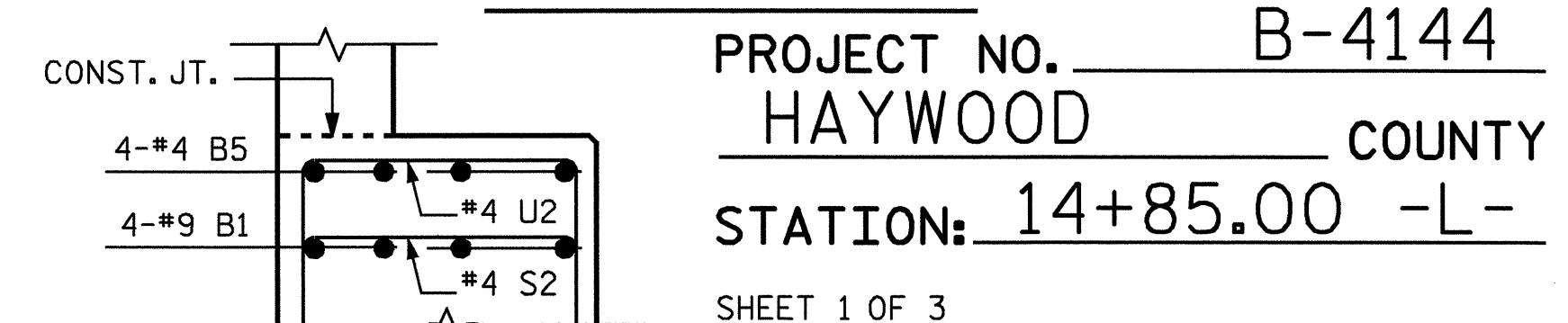
**PLAN**



**ELEVATION**



**SECTION A-A**



**SECTION B-B**

PROJECT NO. **B-4144**  
**HAYWOOD** COUNTY  
 STATION: **14+85.00 -L-**

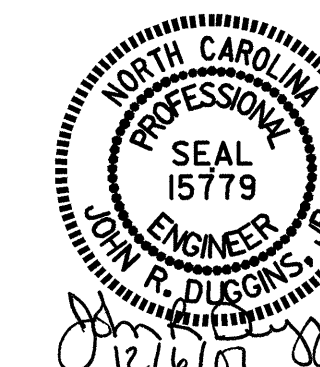
SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

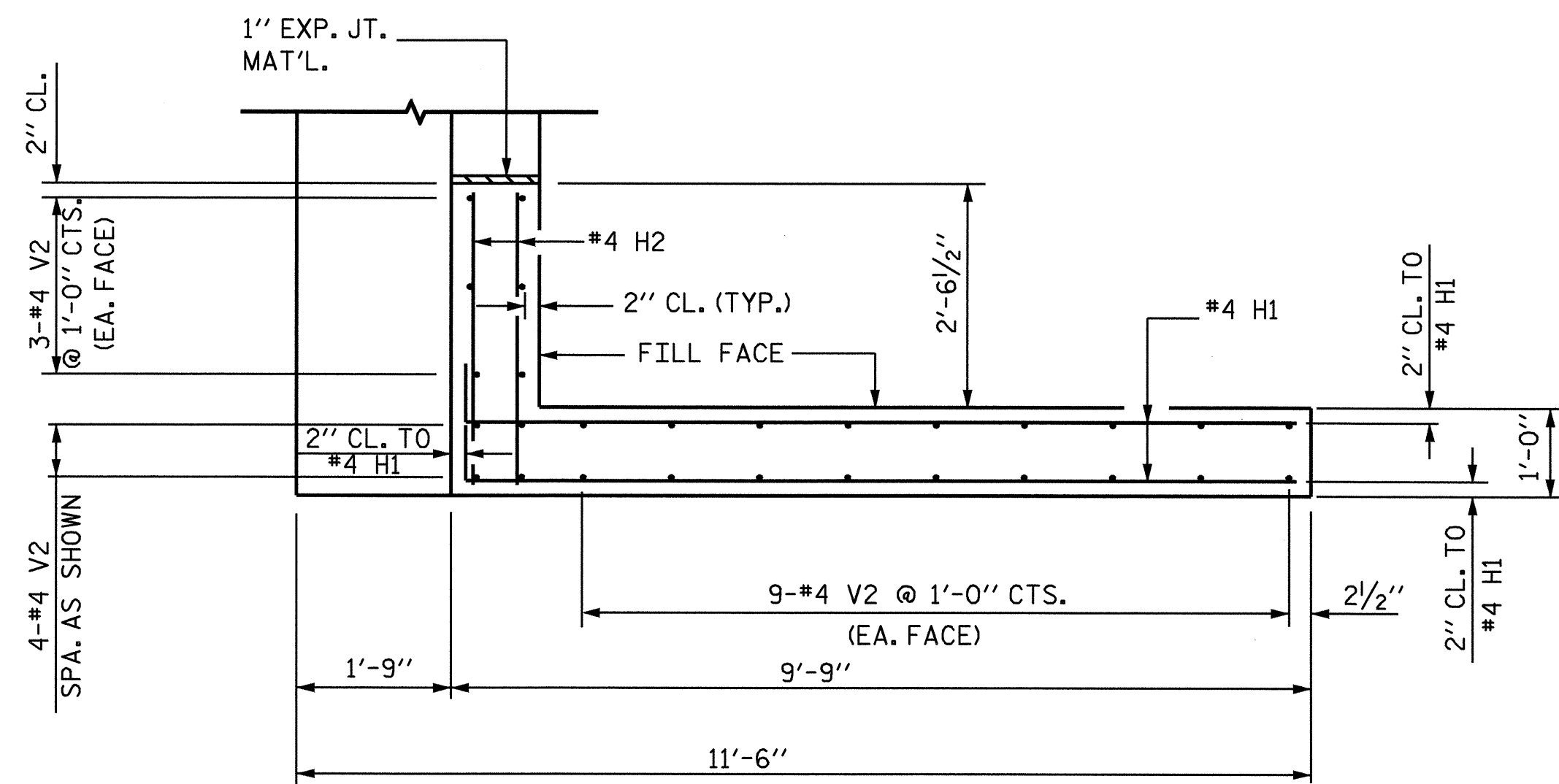
**SUBSTRUCTURE  
 END BENT No. 1**

REVISIONS						SHEET NO. 5-30
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 40
2			4			

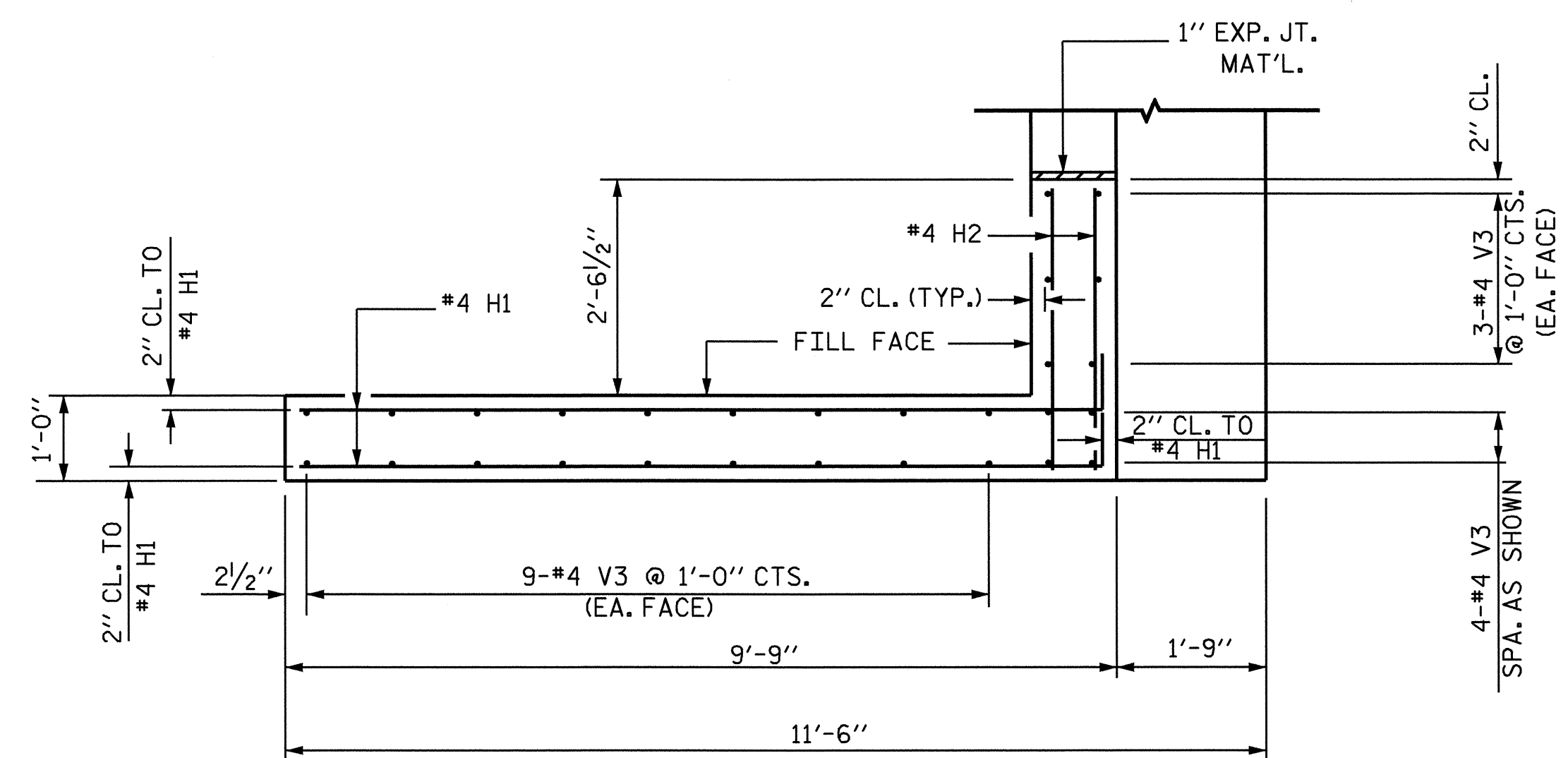
DRAWN BY: M. POOLE DATE: 10/07  
 CHECKED BY: D. HODGE DATE: 11/07



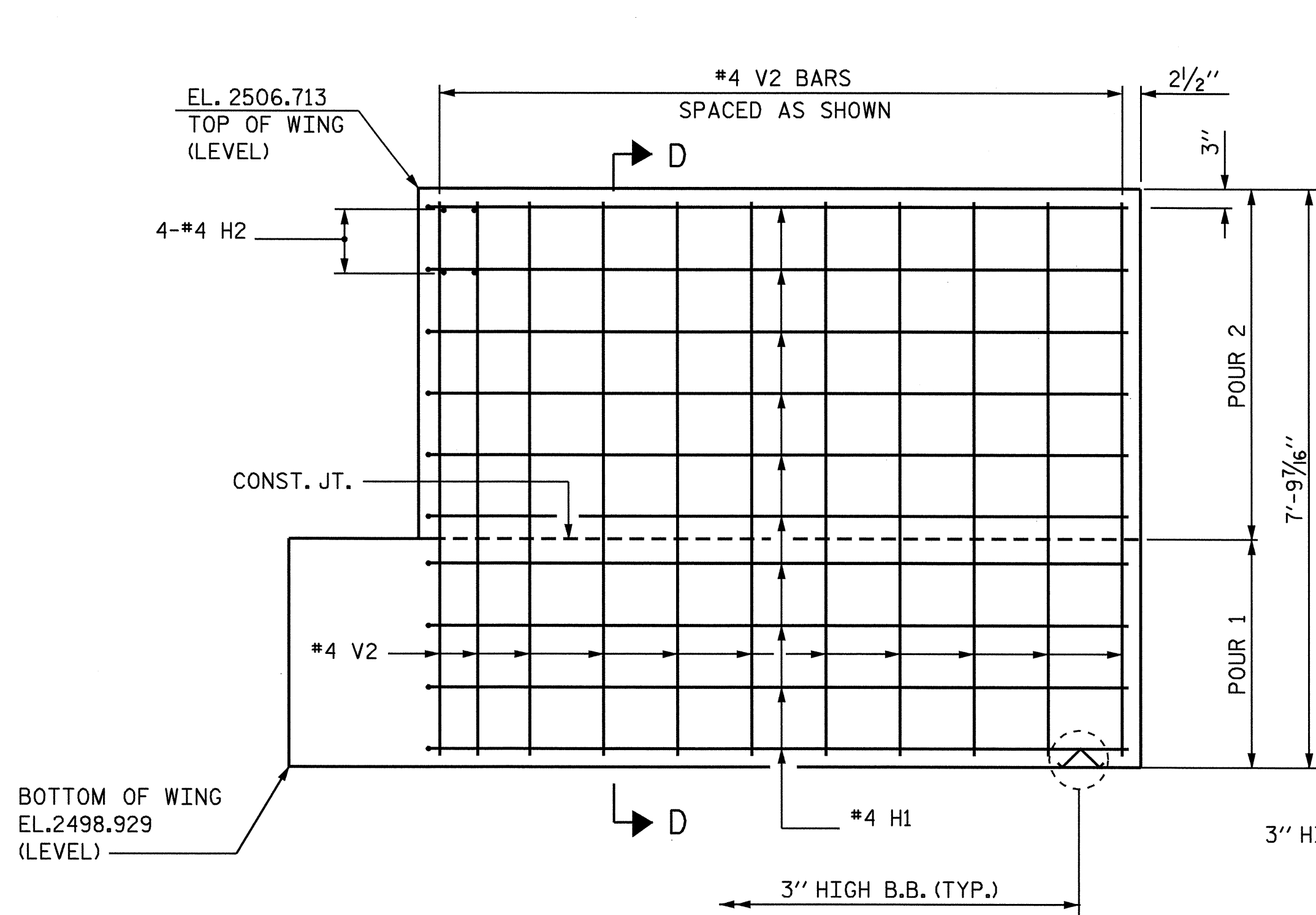




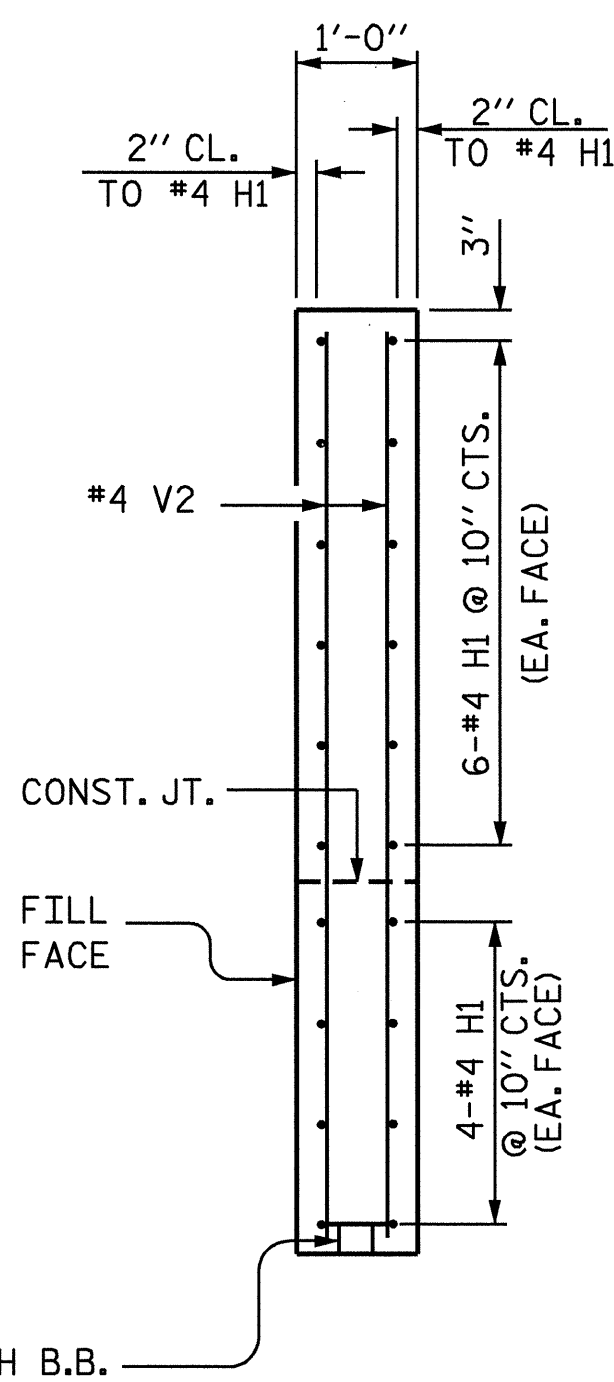
PLAN OF LEFT WING - W1



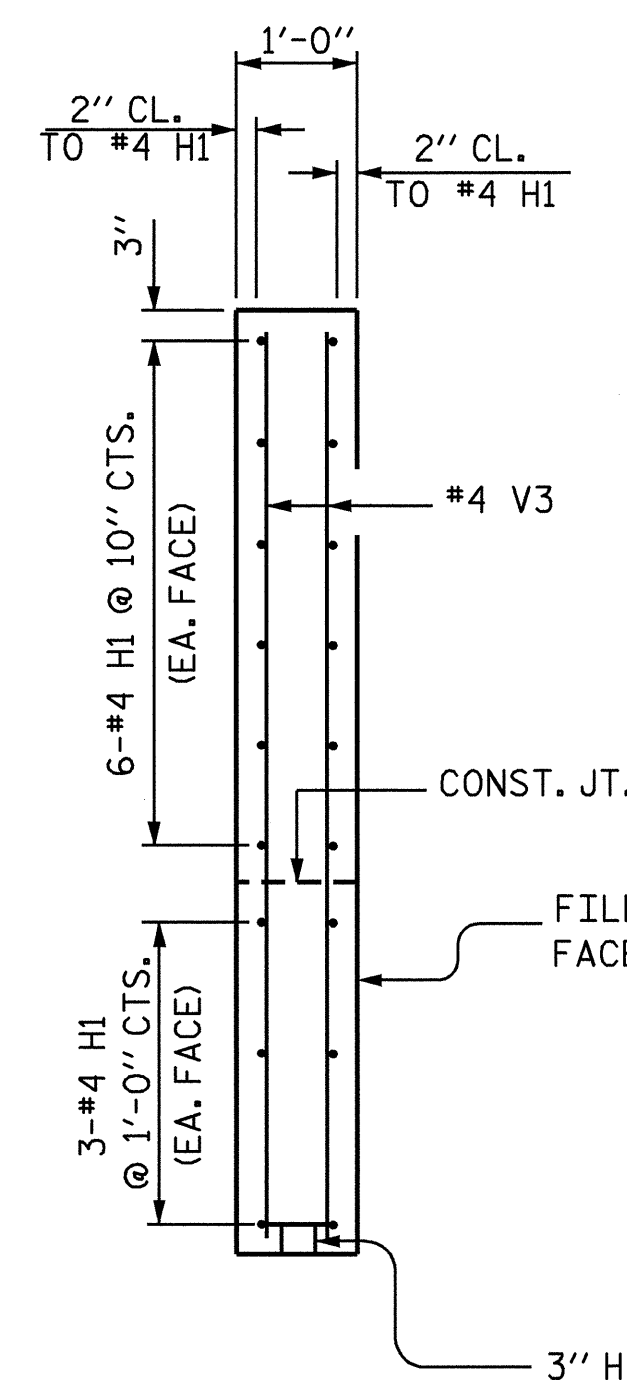
PLAN OF RIGHT WING - W2



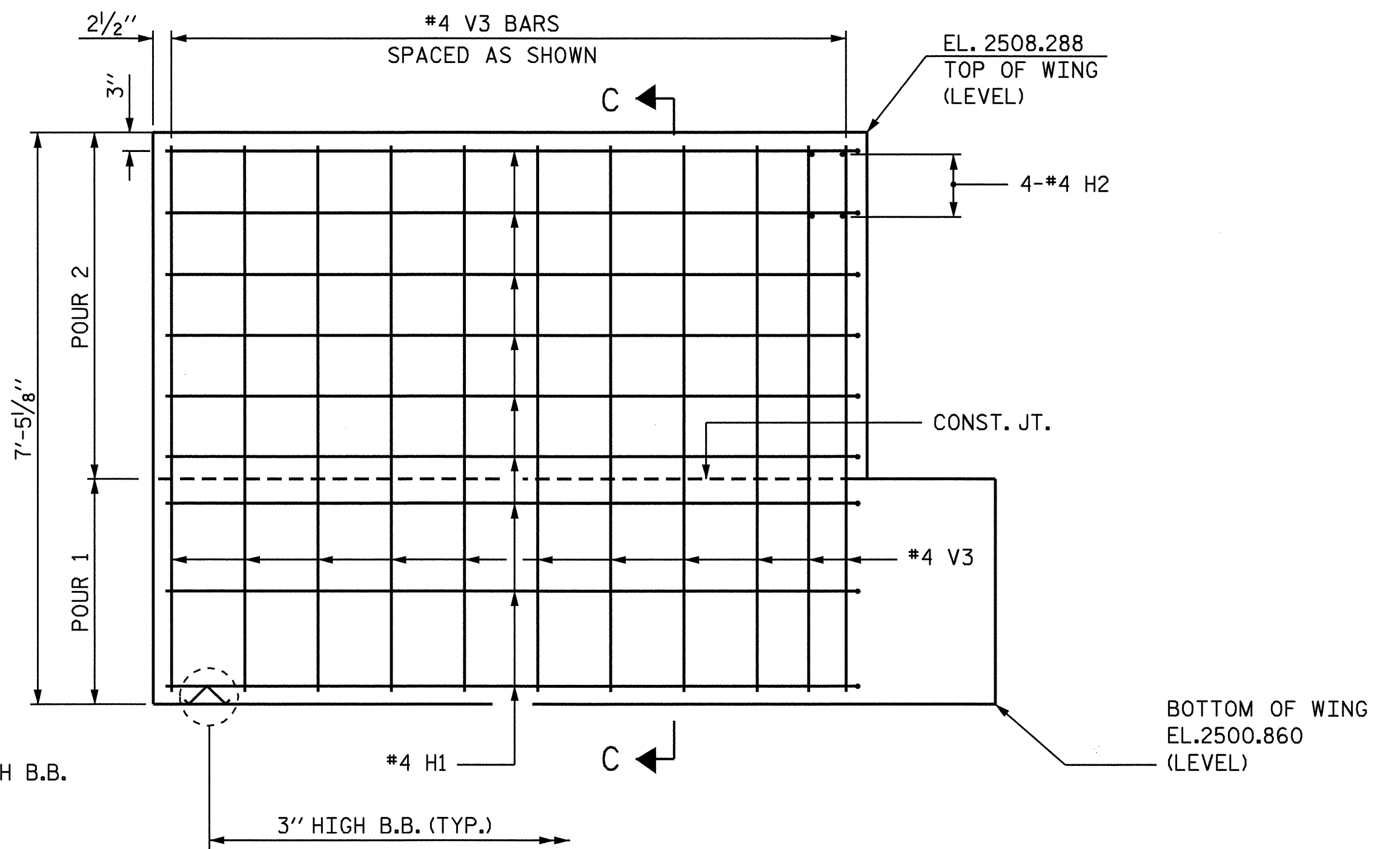
ELEVATION OF LEFT WING - W1



SECTION D-D



SECTION C-C



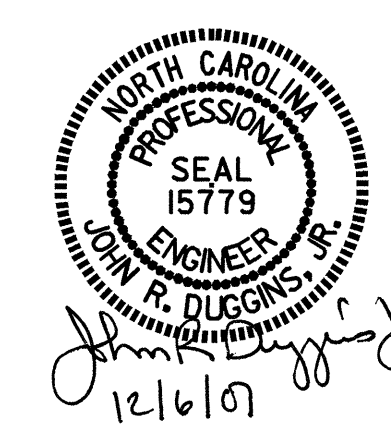
ELEVATION OF RIGHT WING - W2

PROJECT NO. B-4144  
HAYWOOD COUNTY  
 STATION: 14+85.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

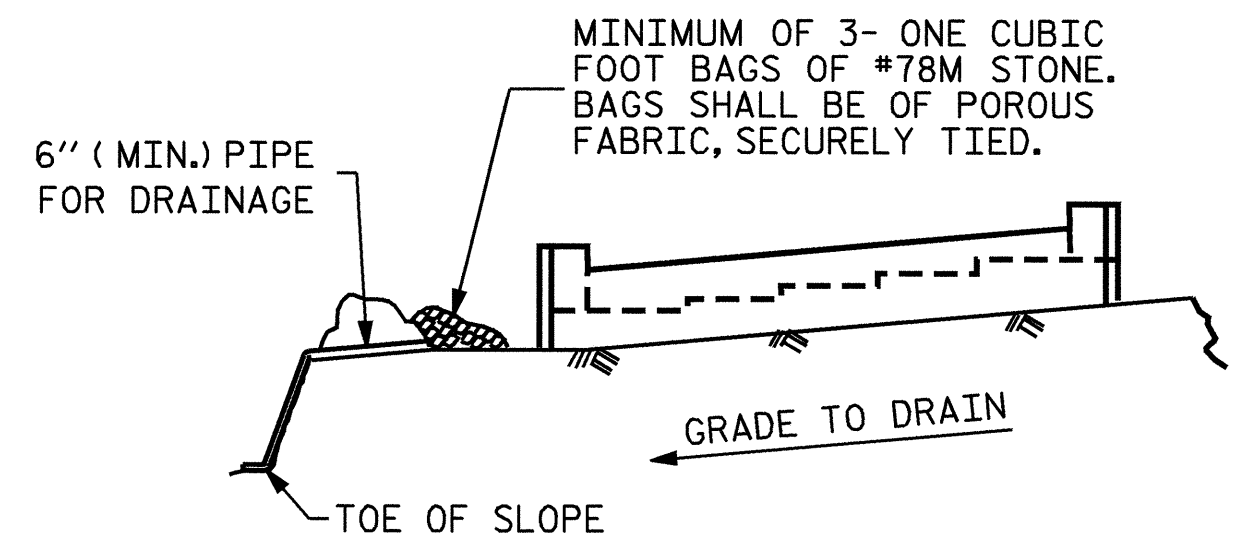
SUBSTRUCTURE  
 END BENT No. 1



DRAWN BY : M. POOLE DATE : 10/07  
 CHECKED BY : D. HODGE DATE : 11/07

16-NOV-2007 09:02  
 RAS\structures\B-4144\m\poole\l\m\roast\ion\B4144.sd.EI.01.dgn  
 mpoole

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-31
1			3			TOTAL SHEETS
2			4			40



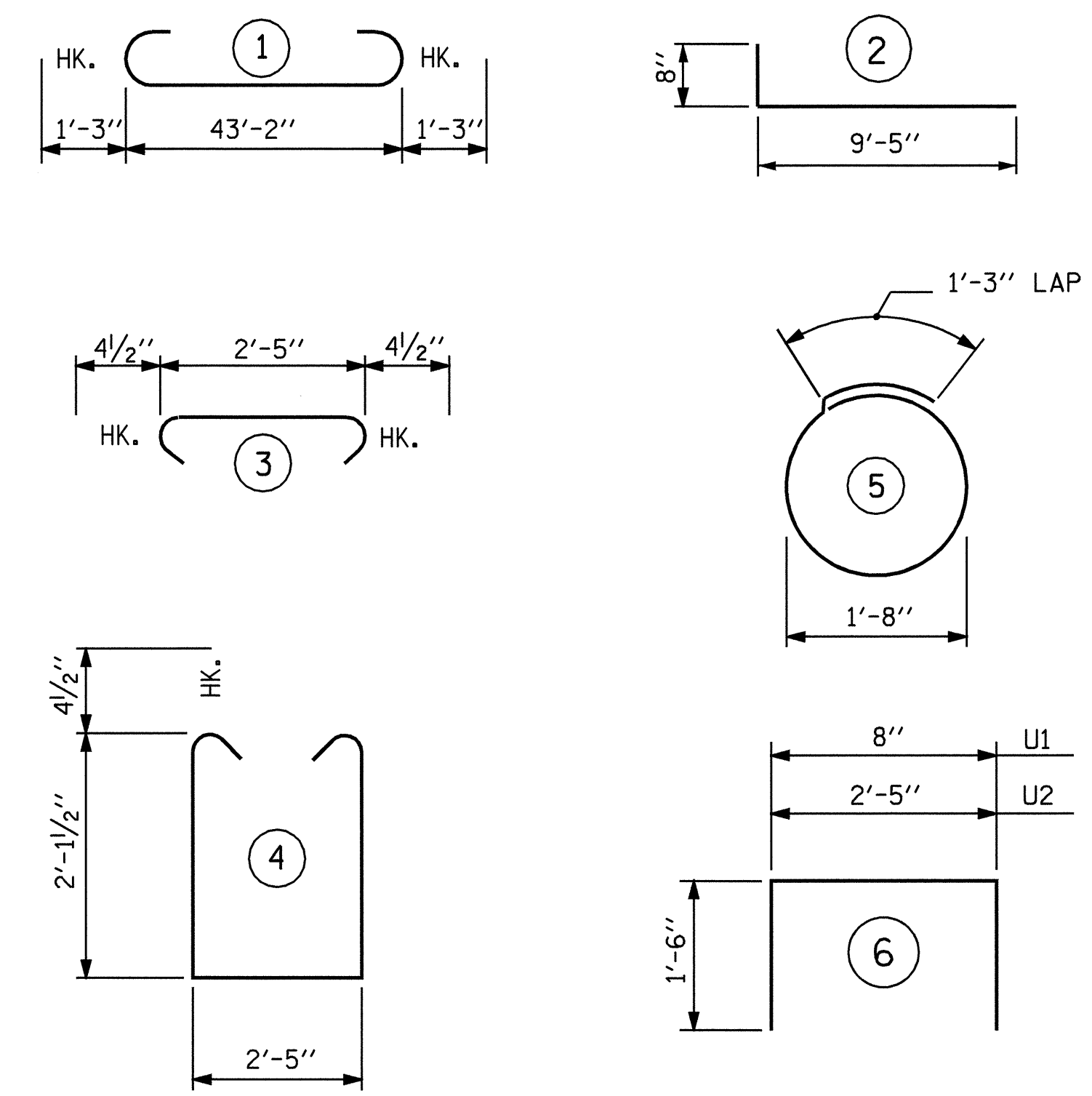
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

TEMPORARY DRAINAGE AT END BENT

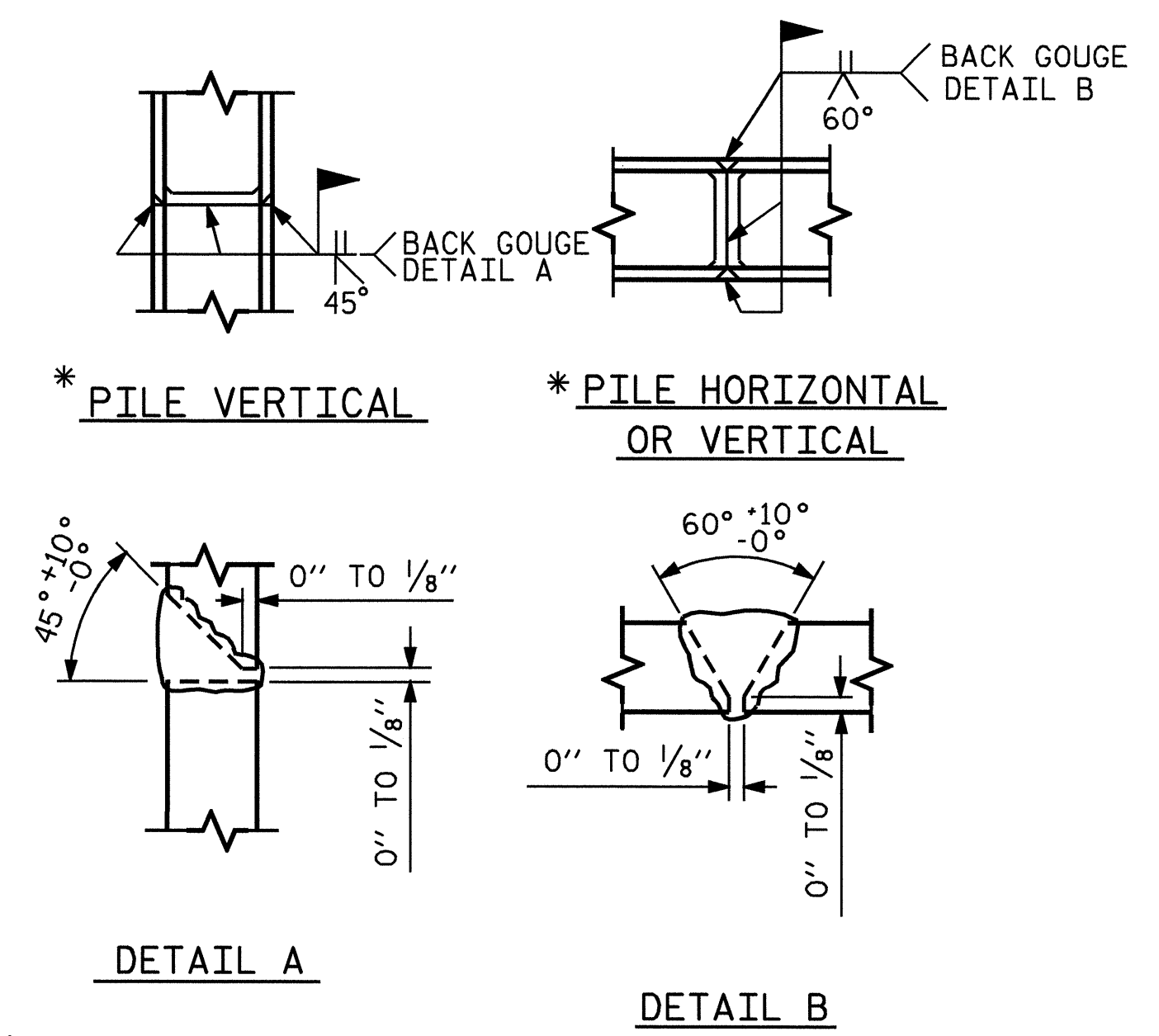
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

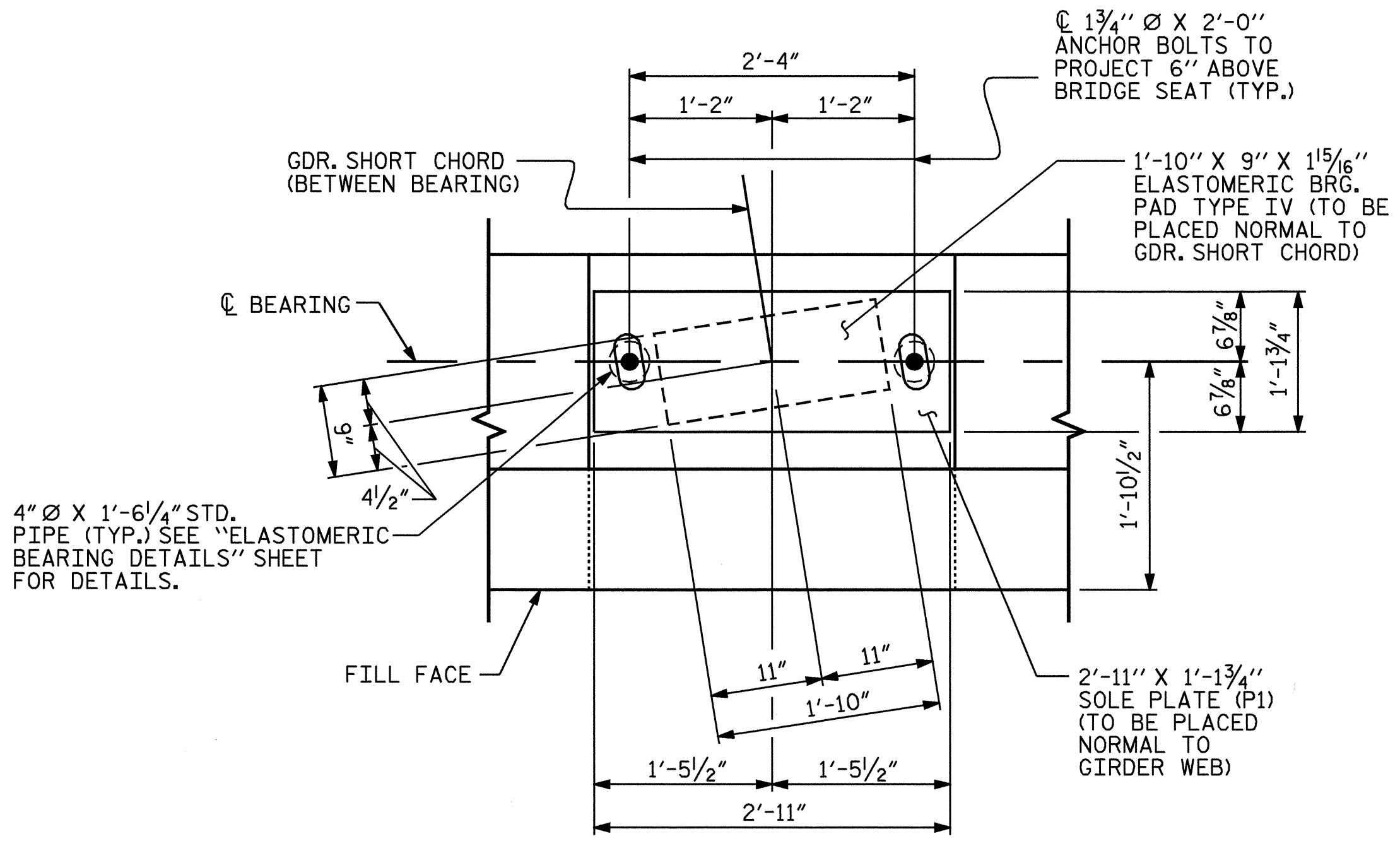
BILL OF MATERIAL

END BENT NO. 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	9	1	45'-8"	1242
B2	2	5	STR	43'-3"	90
B3	8	4	STR	22'-10"	122
B4	11	4	STR	2'-5"	18
B5	16	4	STR	2'-6"	27
B6	4	4	STR	7'-8"	20
H1	38	4	2	10'-1"	256
H2	8	4	STR	3'-2"	17
K1	16	4	STR	22'-10"	244
S1	37	4	4	7'-5"	183
S2	37	4	3	3'-2"	78
S3	12	4	5	6'-6"	52
U1	37	4	6	3'-8"	91
U2	19	4	6	5'-5"	69
V1	74	5	STR	5'-6"	425
V2	28	4	STR	7'-2"	134
V3	28	4	STR	7'-0"	131
REINFORCING STEEL					3199 LBS
CLASS A CONCRETE BREAKDOWN :					
POUR #1 (CAP & LOWER WINGS)				14.0 C.Y.	
POUR #2 (UPPER PORTION OF WINGS & BACKWALL)				8.7 C.Y.	
TOTAL				22.7 C.Y.	
HP 12 X 53 STEEL PILES					
NO. 6					90 LIN FT.
STEEL PILE POINTS					
NO. 6 EACH					



\* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

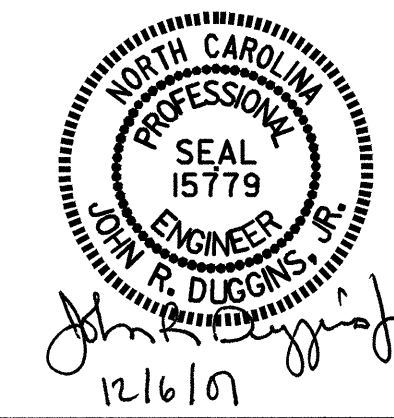


DETAIL A

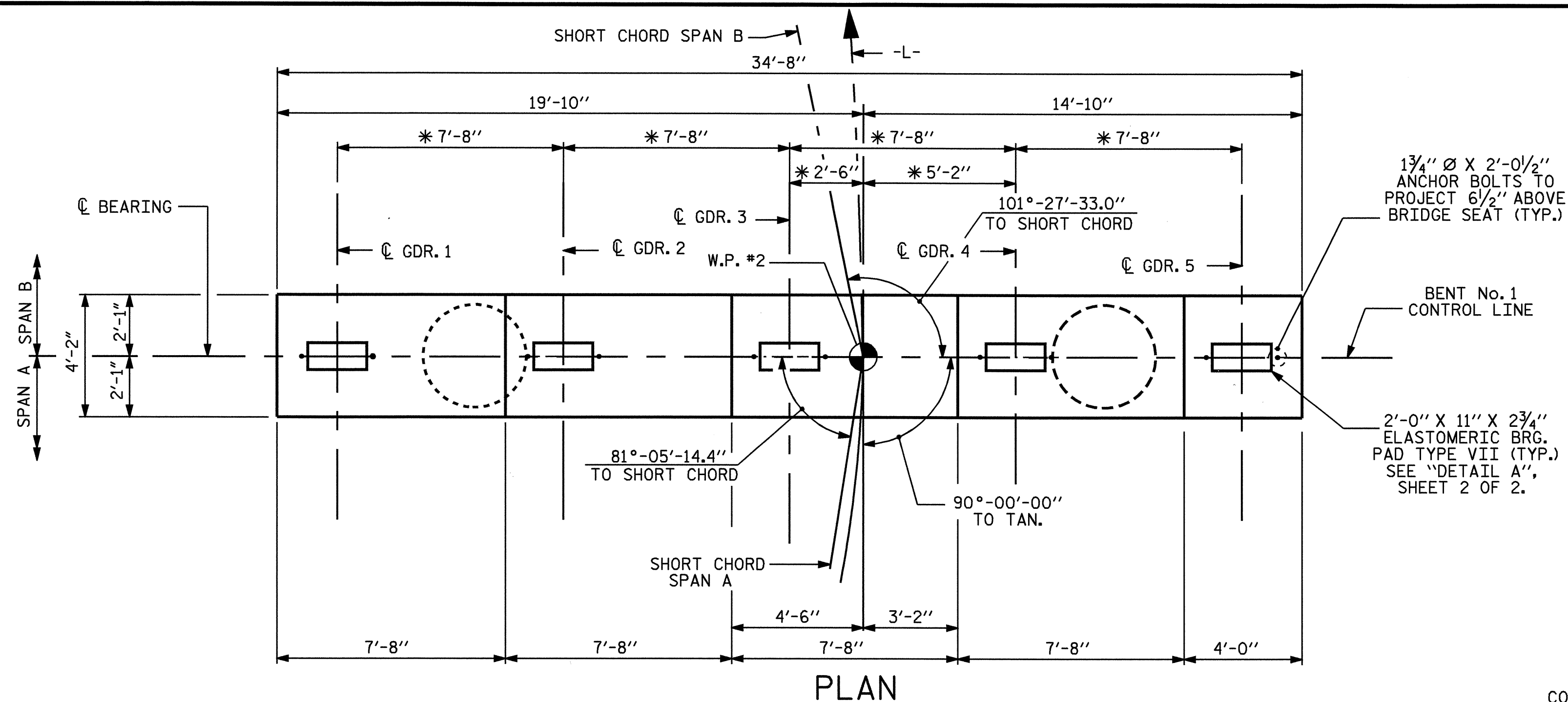
PROJECT NO. B-4144  
HAYWOOD COUNTY  
 STATION: 14+85.00 -L-  
 SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

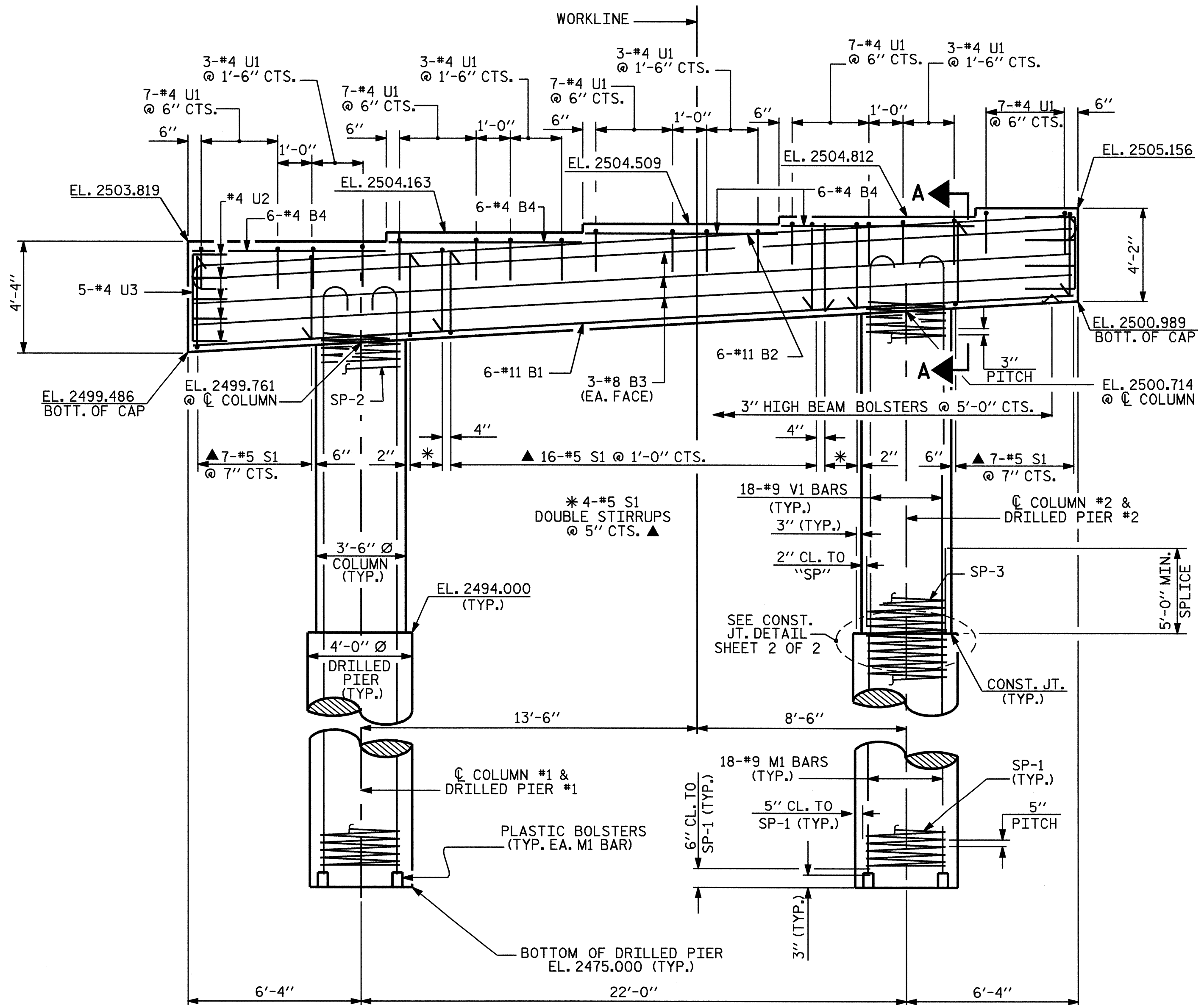
SUBSTRUCTURE  
 END BENT No. 1



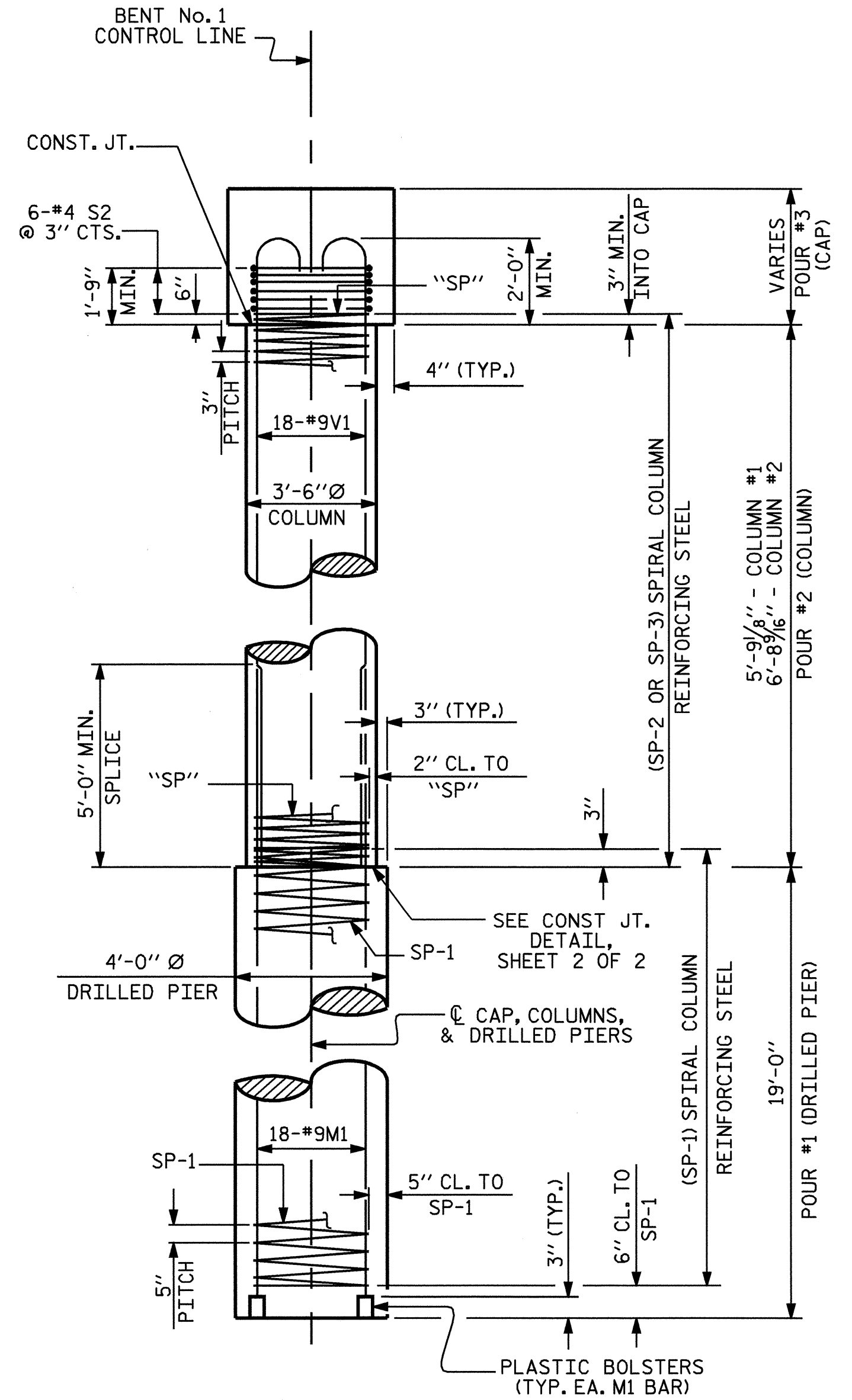
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			9-32
2			4			40



PLAN



ELEVATION



END ELEVATION

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.

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

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH. IF DUE TO THIS EXTRA LENGTH THE "M" BARS EXTEND INTO THE BENT CAP. THE "M" BARS SHALL BE FIELD CUT TO THE PROPER SPLICE LENGTH.

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

"U" BARS IN THE END OF CAP MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR "B" BARS.

2" MINIMUM CONCRETE COVER FROM END OF CAP IS REQUIRED FOR ALL "U" BARS.

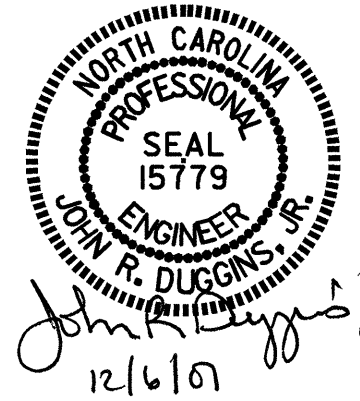
THE CONTRACTOR SHALL ALIGN THE "M" AND "V" BARS AS SHOWN IN THE PLAN OF DRILLED PIERS AND COLUMNS.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

DRAWN BY: M. POOLE DATE: 06/07  
 CHECKED BY: J.R. DUGGINS DATE: 10/07

DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER EXCEPT AS NOTED.  
 ▲ INVERT ALTERNATE STIRRUPS

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 dahodge



PROJECT NO. B-4144  
 HAYWOOD COUNTY  
 STATION: 14+85.00 -L-

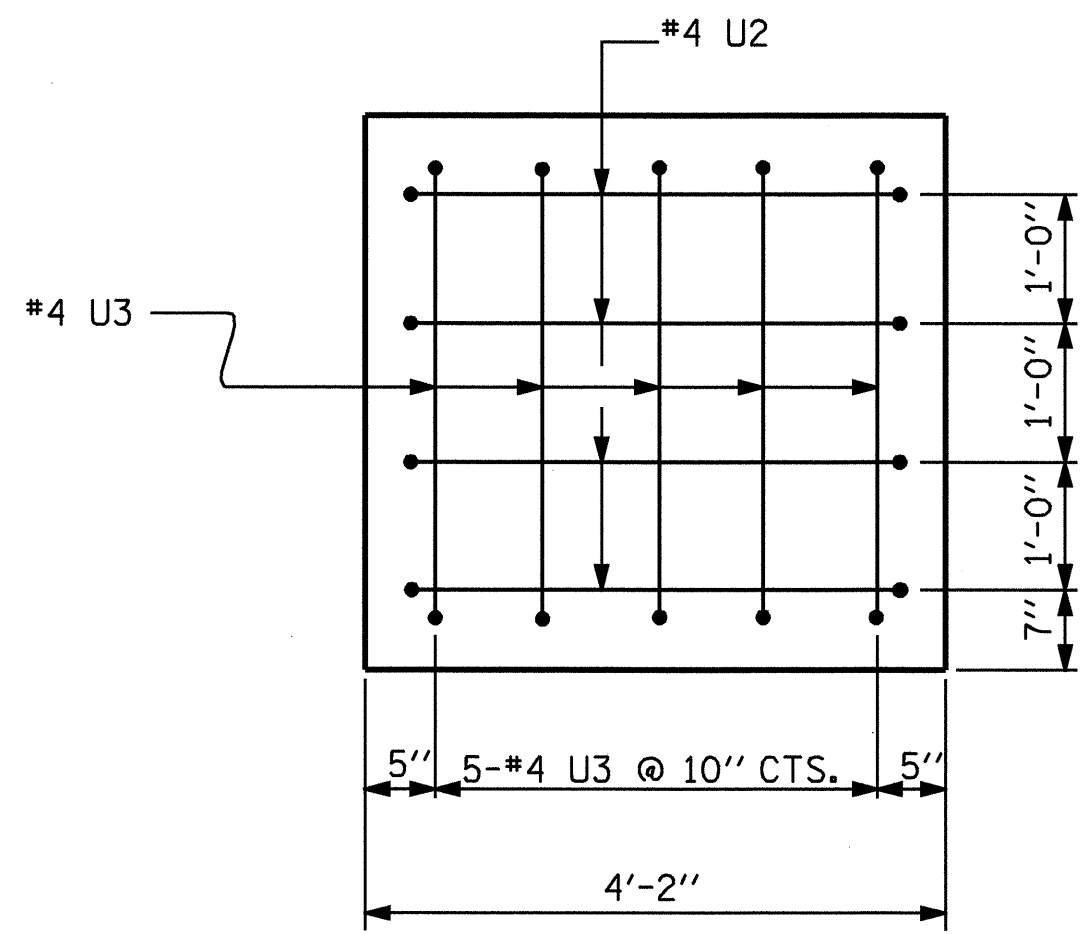
SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

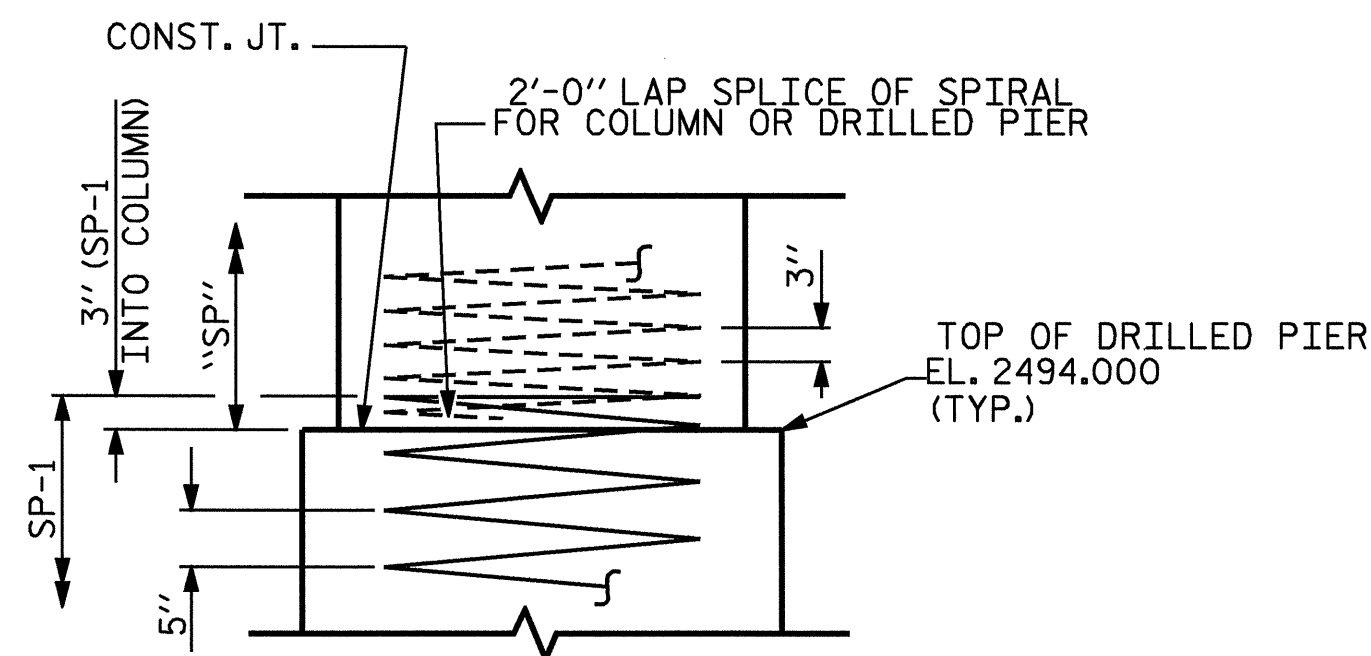
SUBSTRUCTURE  
 BENT No. 1

REVISIONS						SHEET NO. S-33 TOTAL SHEETS 40
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

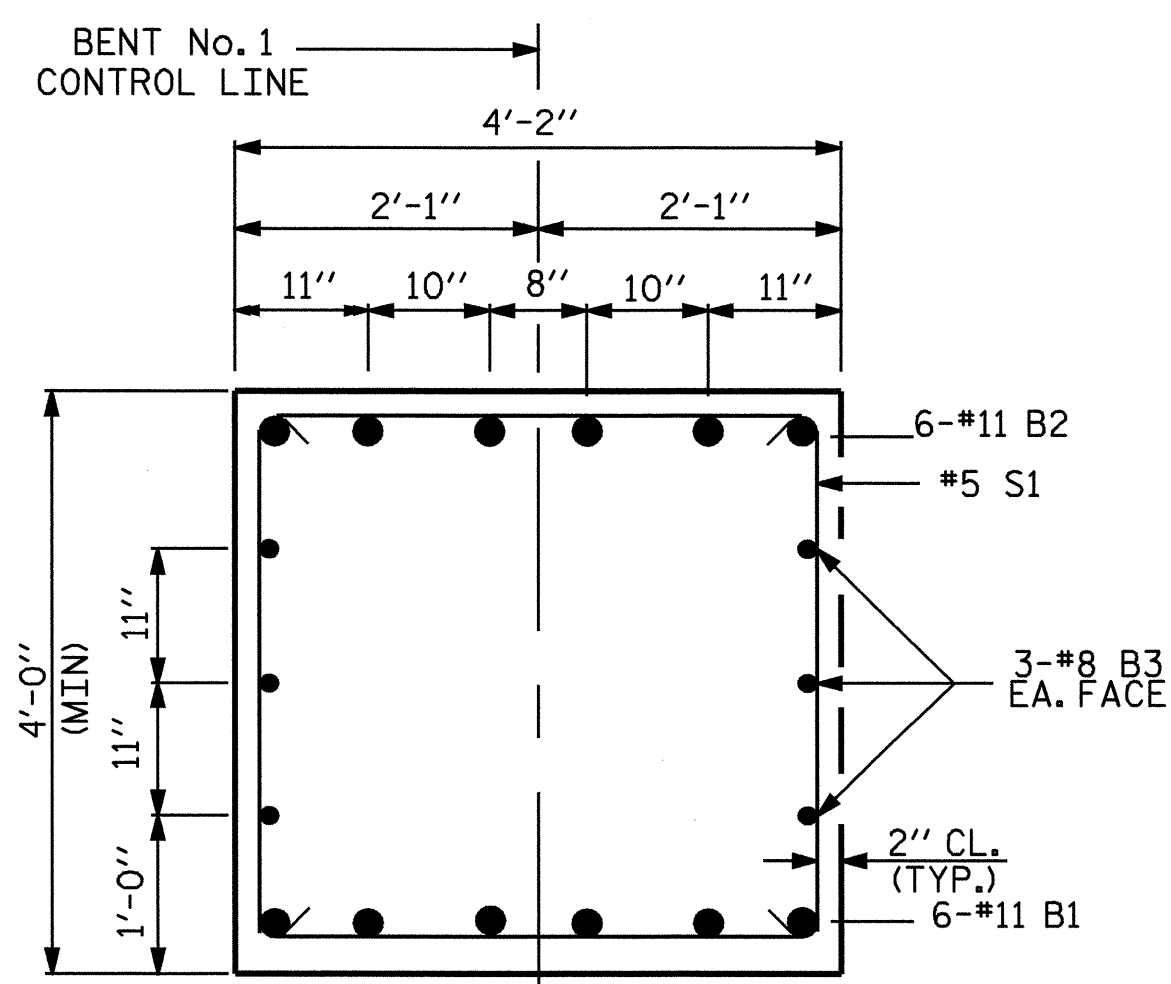




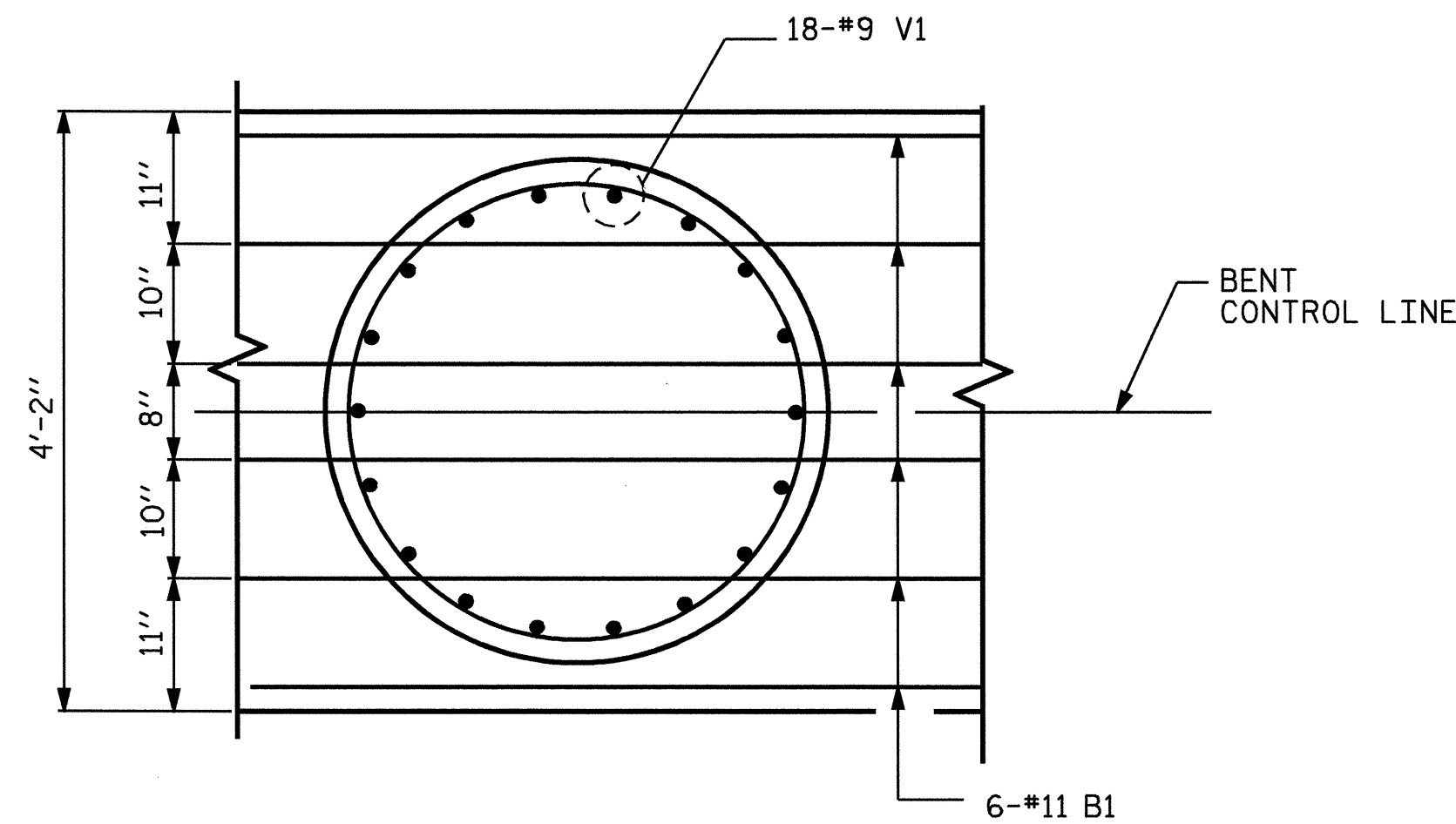
END VIEW  
(TYP. EA. END)



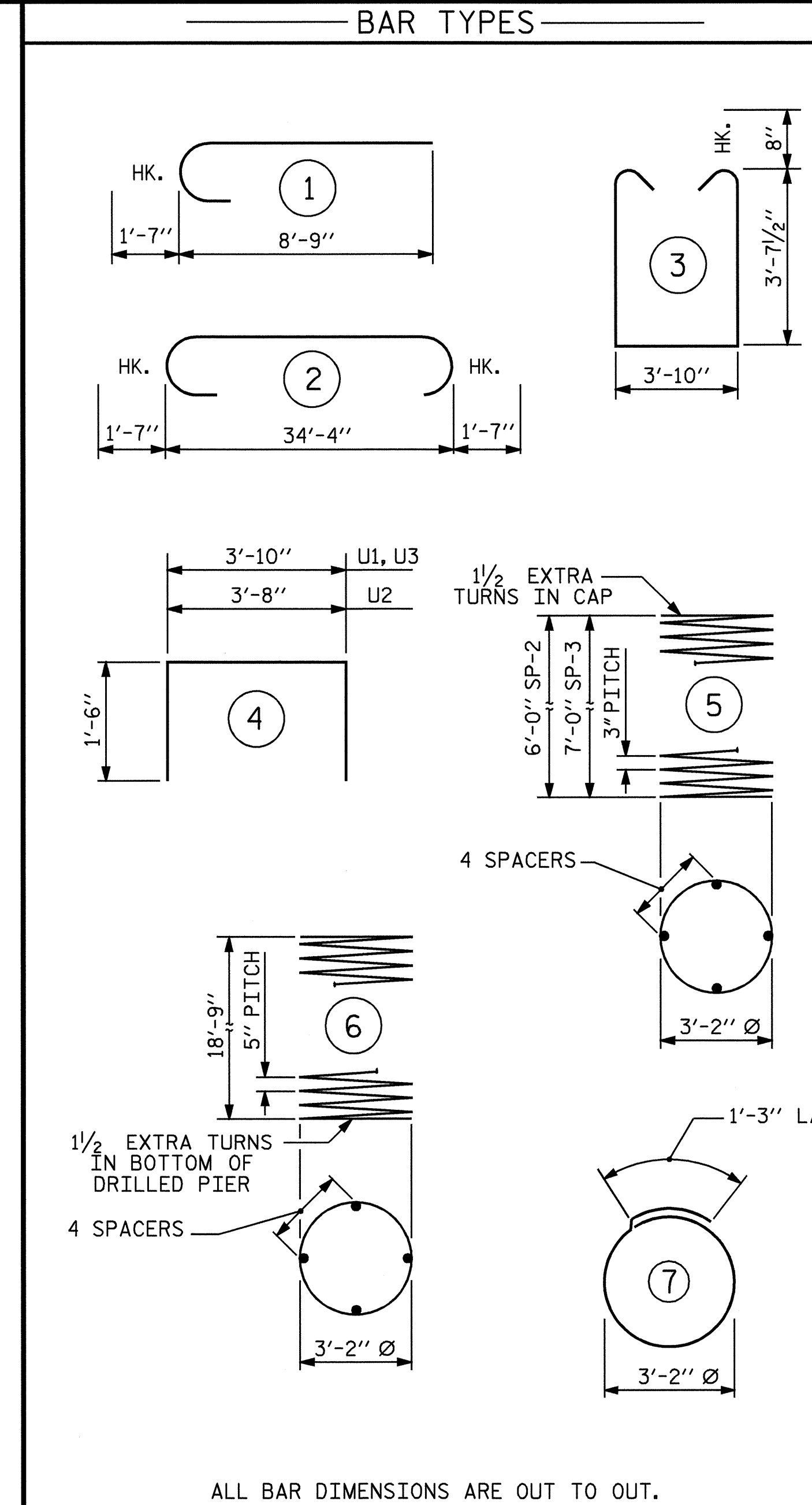
CONSTRUCTION JOINT DETAIL



SECTION A-A



BOTTOM OF CAP



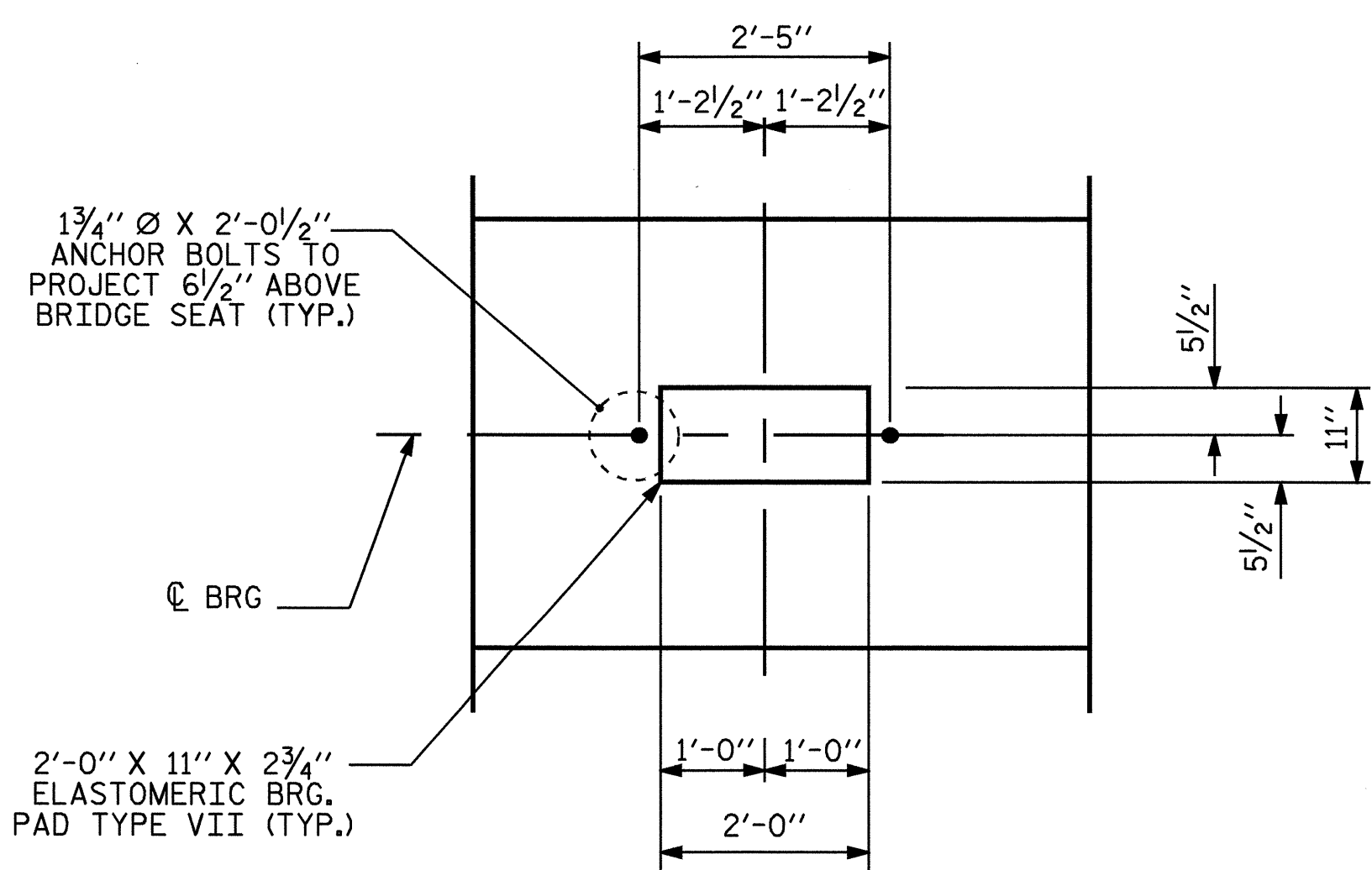
ALL BAR DIMENSIONS ARE OUT TO OUT.

\*\* THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.  
 \*\*\* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

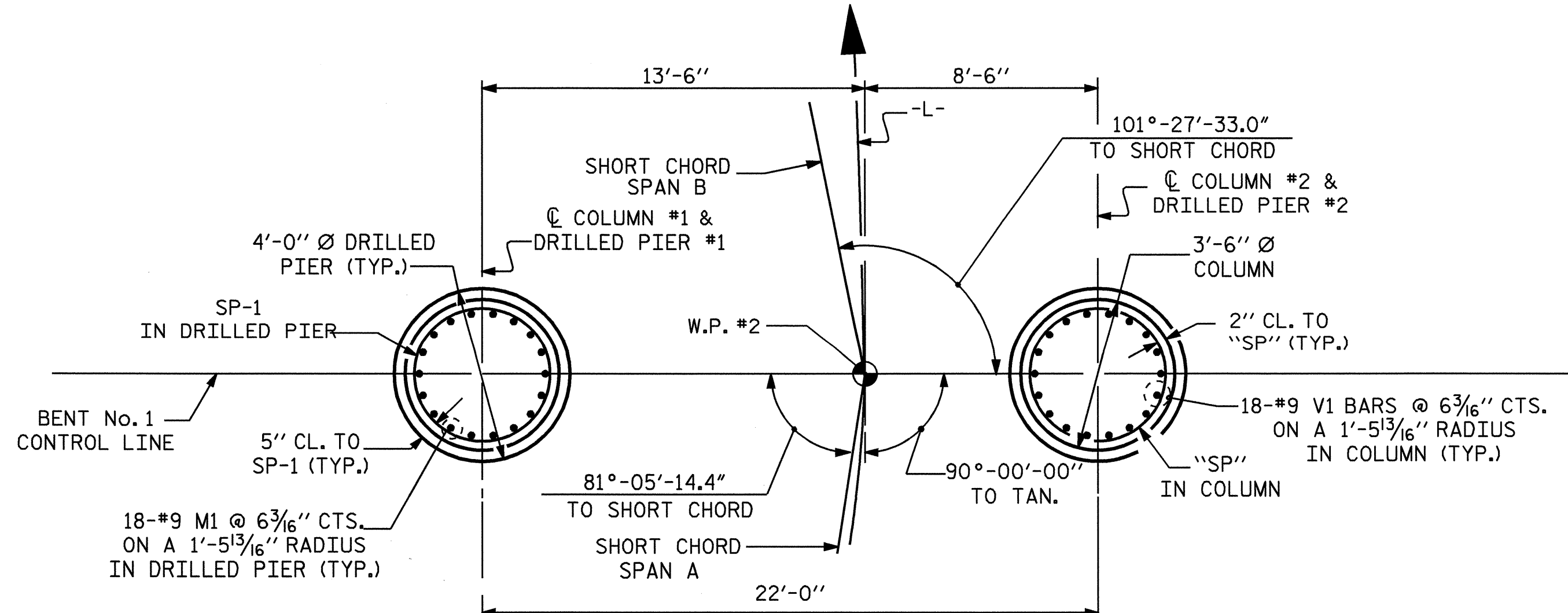
BILL OF MATERIAL						
BENT No. 1						
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	6	#11	STR	34'-4"	1094	
B2	6	#11	2	37'-6"	1195	
B3	6	#8	STR	34'-4"	550	
B4	24	#4	STR	7'-4"	118	
M1	36	#9	STR	26'-9"	3274	
S1	46	#5	3	12'-5"	596	
S2	12	#4	7	11'-3"	90	
U1	47	#4	4	6'-10"	215	
U2	8	#4	4	6'-8"	36	
U3	10	#4	4	6'-10"	46	
V1	36	#9	1	10'-4"	1265	
REINFORCING STEEL				=	8479	LBS

CLASS A CONCRETE BREAKDOWN			
POUR #2 (COLUMNS)			4.5 C.Y.
POUR #3 (CAP)			23.2 C.Y.
TOTAL			27.7 C.Y.

DRILLED PIER QUANTITIES		
DRILLED PIER CONCRETE BREAKDOWN		
POUR #1 (DRILLED PIERS)		17.7 C.Y.
4'-0" Ø DRILLED PIERS IN SOIL		11.00 LIN. FT.
4'-0" Ø DRILLED PIERS NOT IN SOIL		27.00 LIN. FT.
PERMANENT STEEL CASING		14.0 LIN. FT.
CSL TUBES		172 LIN. FT.



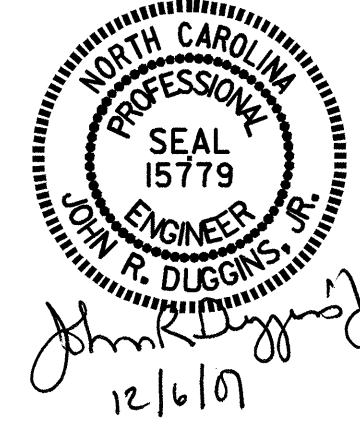
DETAIL A



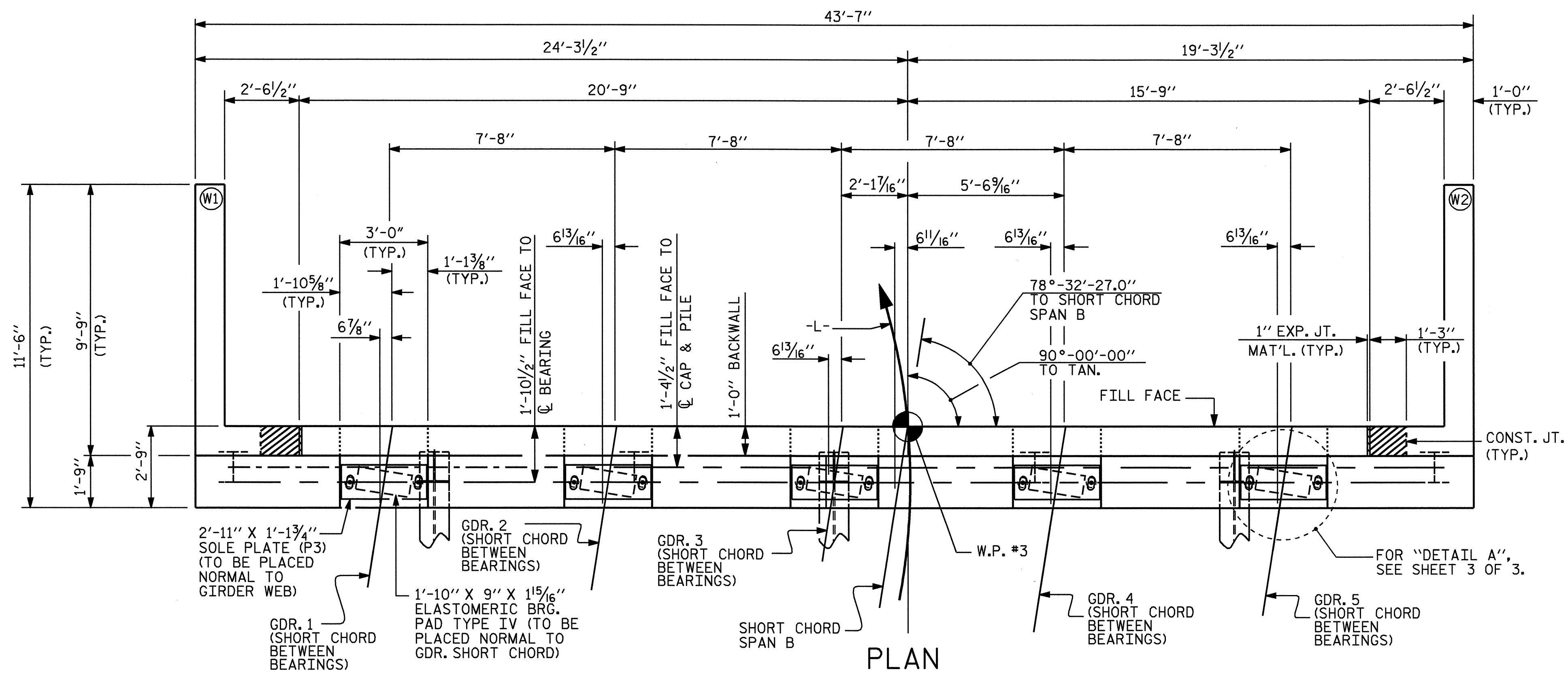
PLAN OF DRILLED PIERS & COLUMNS

PROJECT NO. B-4144  
 HAYWOOD COUNTY  
 STATION: 14+85.00 -L-  
 SHEET 2 OF 2

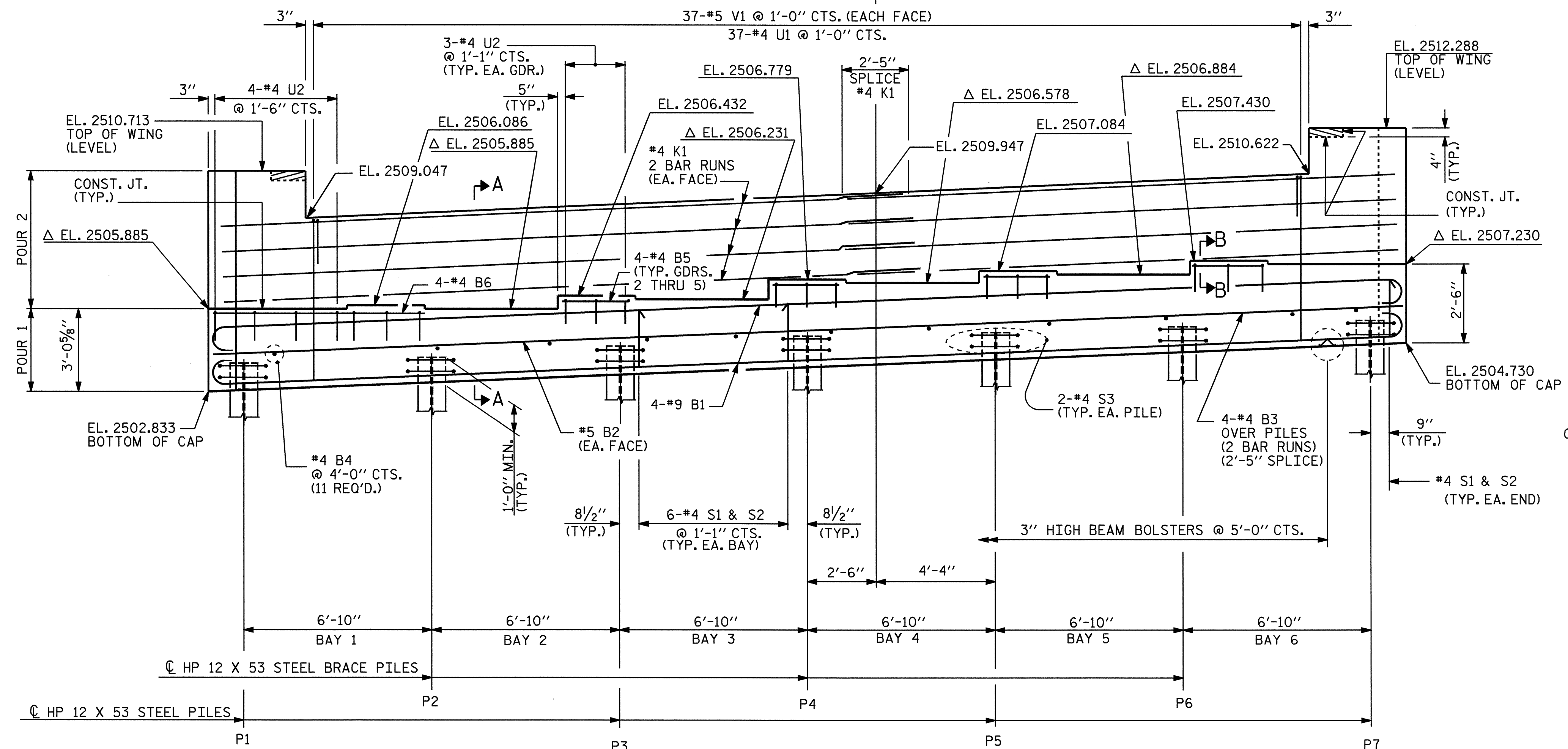
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT No. 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		



DRAWN BY: M. POOLE DATE: 06/07  
 CHECKED BY: J.R. DUGGINS DATE: 10/07



PLAN



ELEVATION

**NOTES**

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

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

EPOXY COAT THE END BENT CAP AFTER ADJUSTMENTS ARE MADE TO BEARINGS AND ANCHOR BOLTS ARE GROUTED.

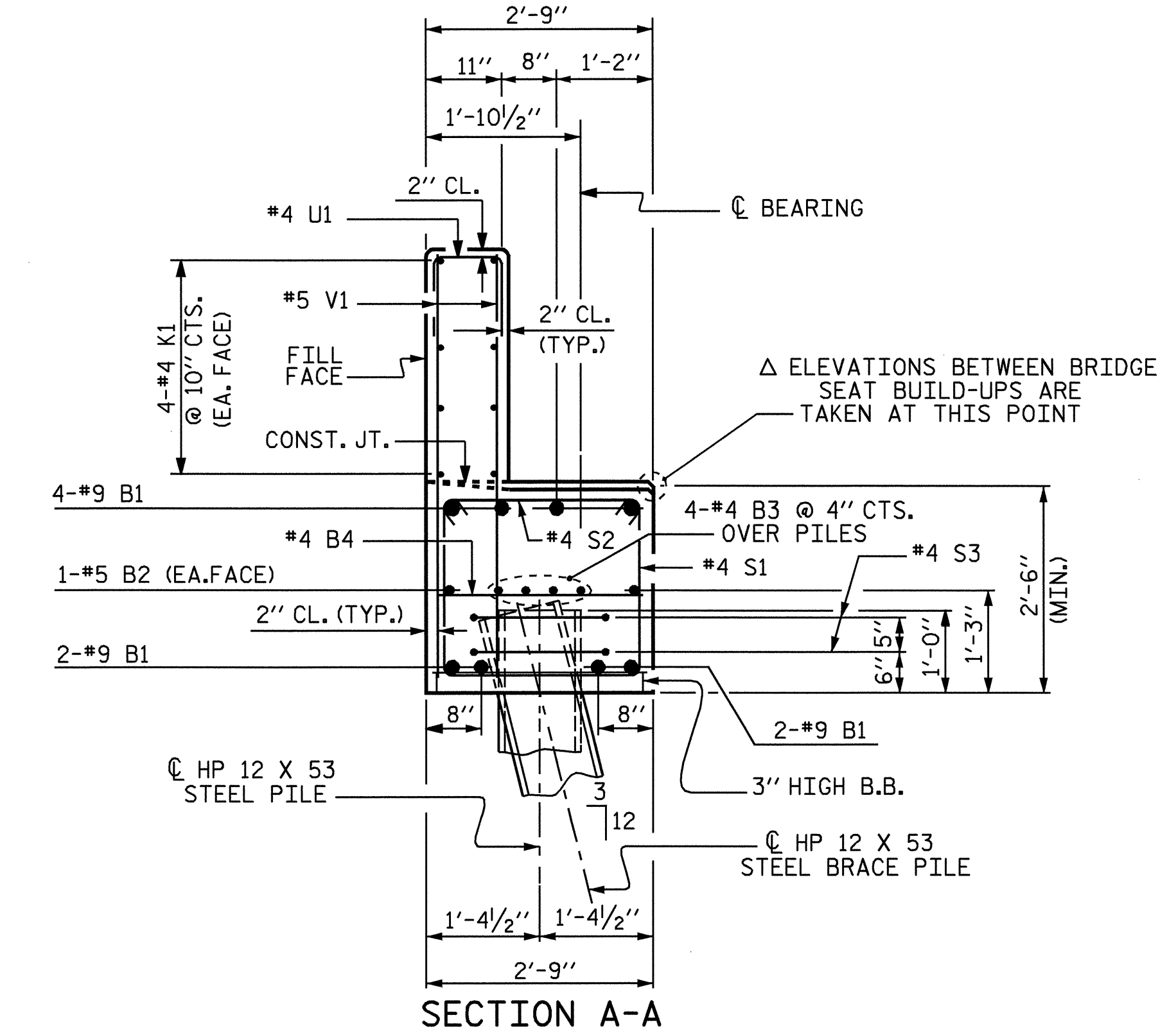
THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

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

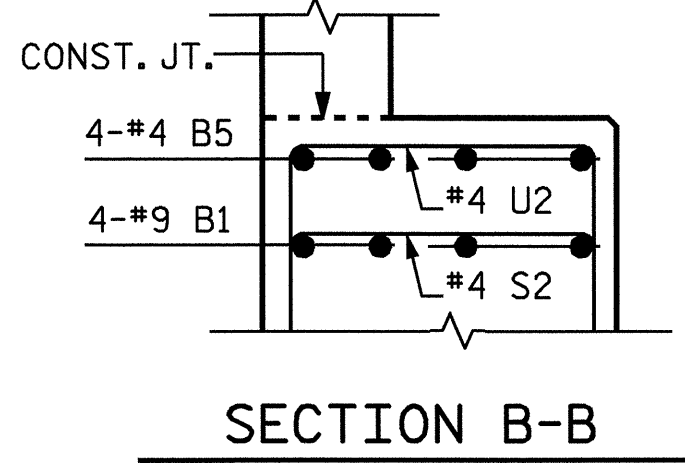
THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

FOR 4" Ø STD. PIPE DETAILS, SEE ELASTOMERIC BEARING SHEET.

TOP OF PILE ELEVATIONS						
P1	P2	P3	P4	P5	P6	P7
EL. 2503.911	EL. 2504.208	EL. 2504.506	EL. 2504.803	EL. 2505.101	EL. 2505.398	EL. 2505.696



SECTION A-A



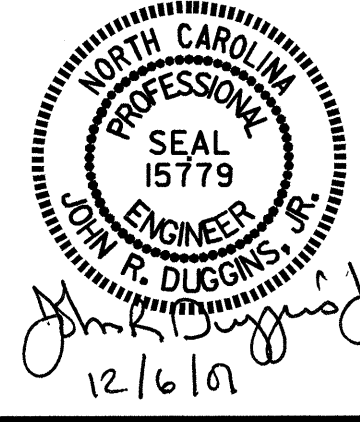
SECTION B-B

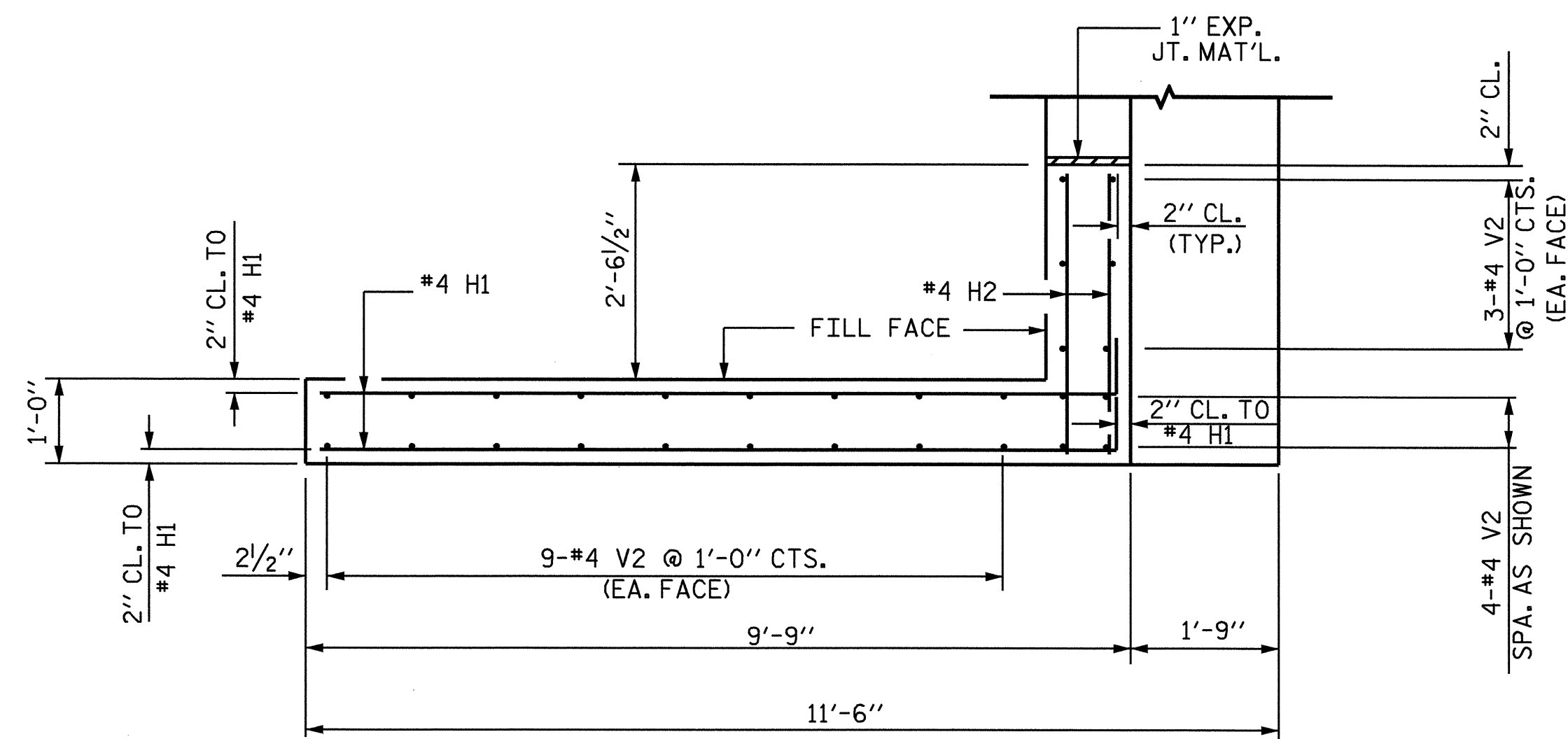
PROJECT NO. B-4144  
HAYWOOD COUNTY  
 STATION: 14+85.00 -L-  
 SHEET 1 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT No. 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. <u>S-35</u>					TOTAL SHEETS <u>40</u>

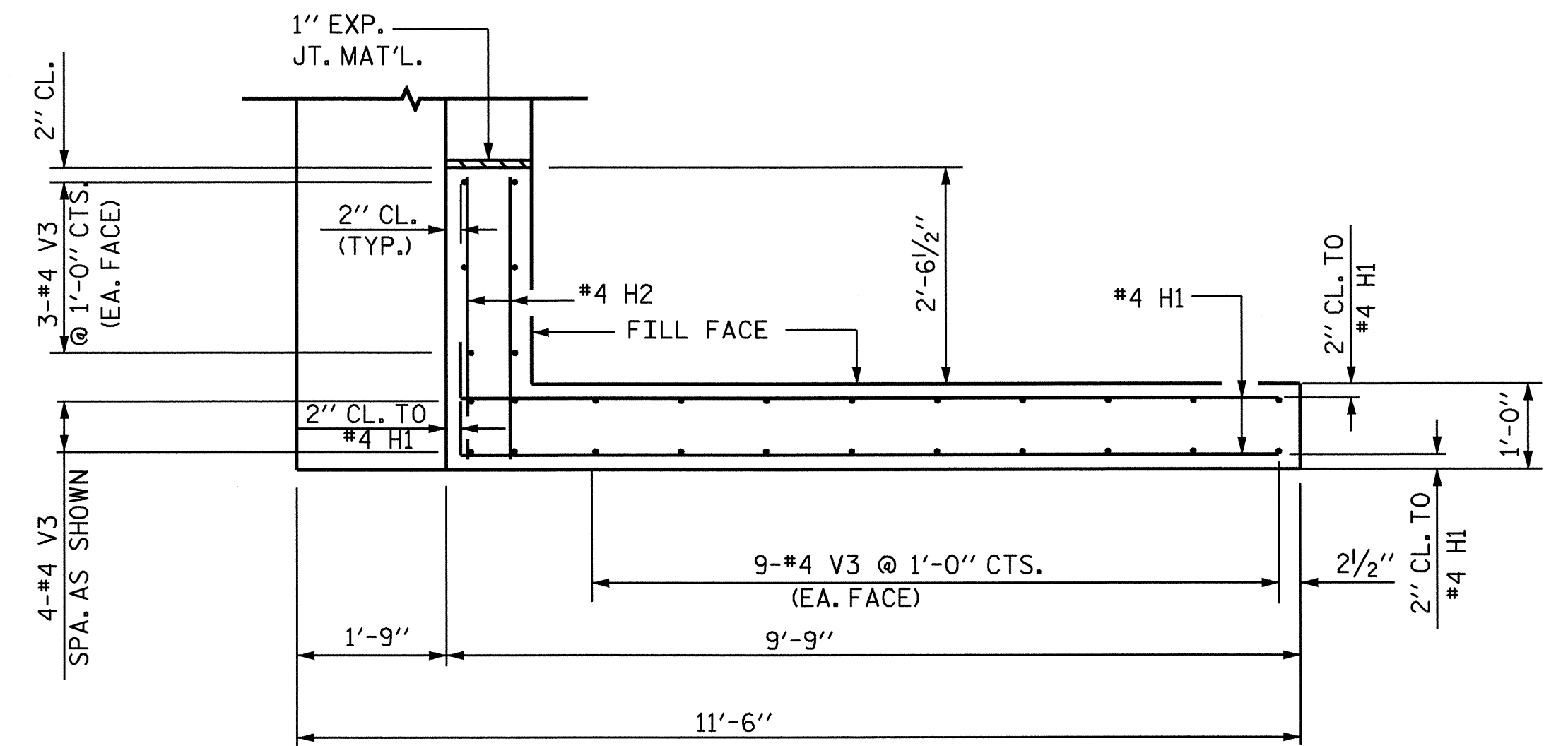
DRAWN BY: M. POOLE DATE: 10/07  
 CHECKED BY: D. HODGE DATE: 11/07

06-DEC-2007 09:57  
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 dahodge

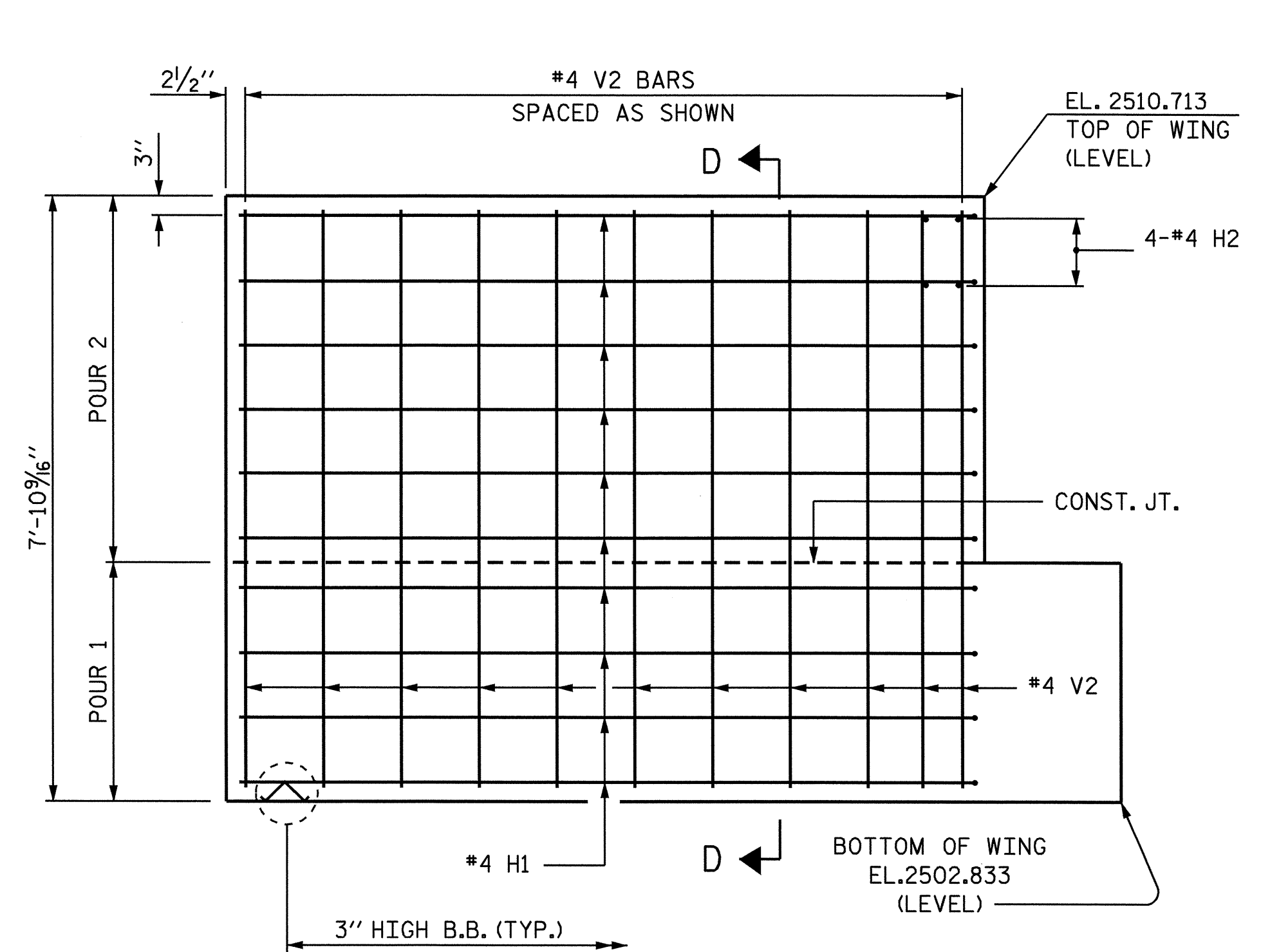




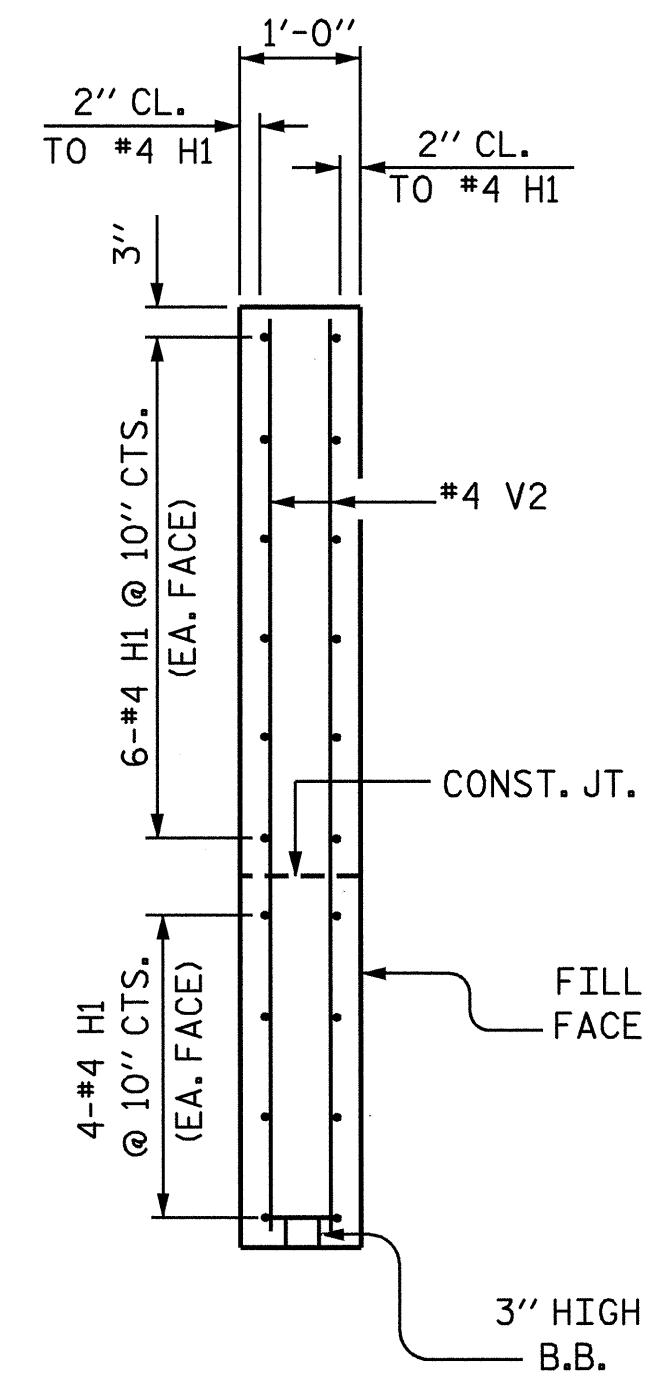
PLAN OF LEFT WING - W1



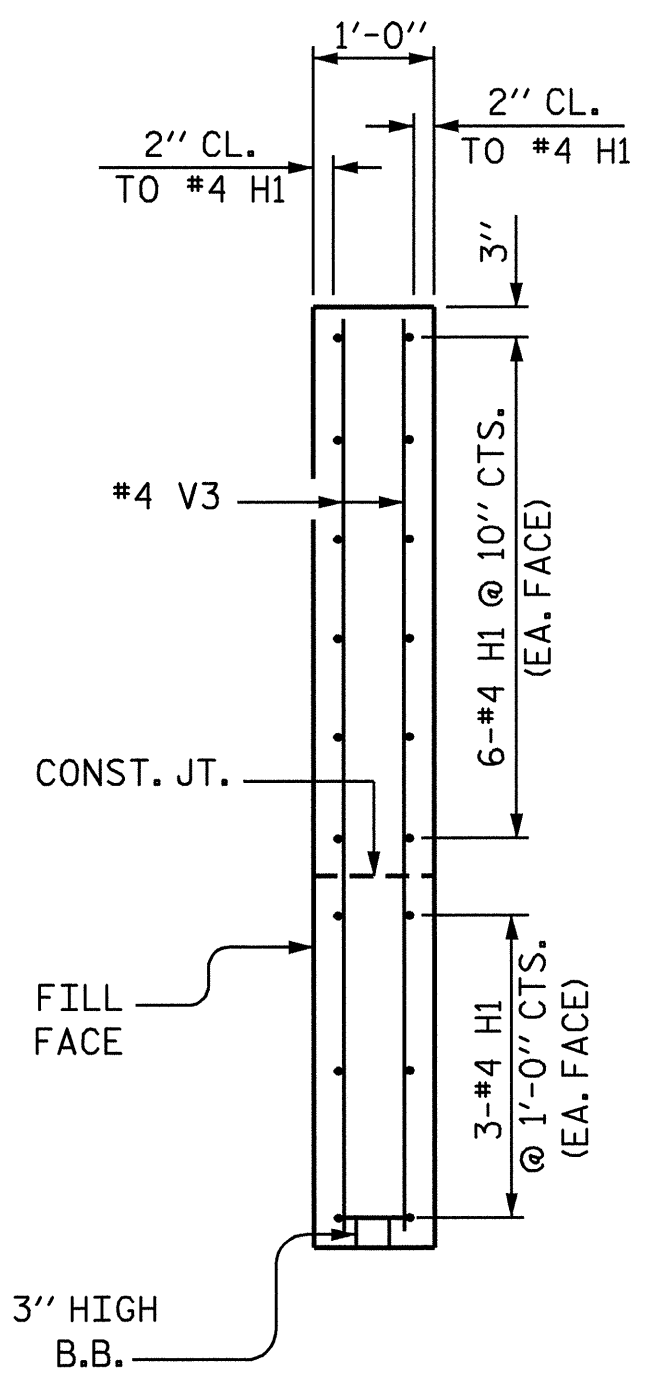
PLAN OF RIGHT WING - W2



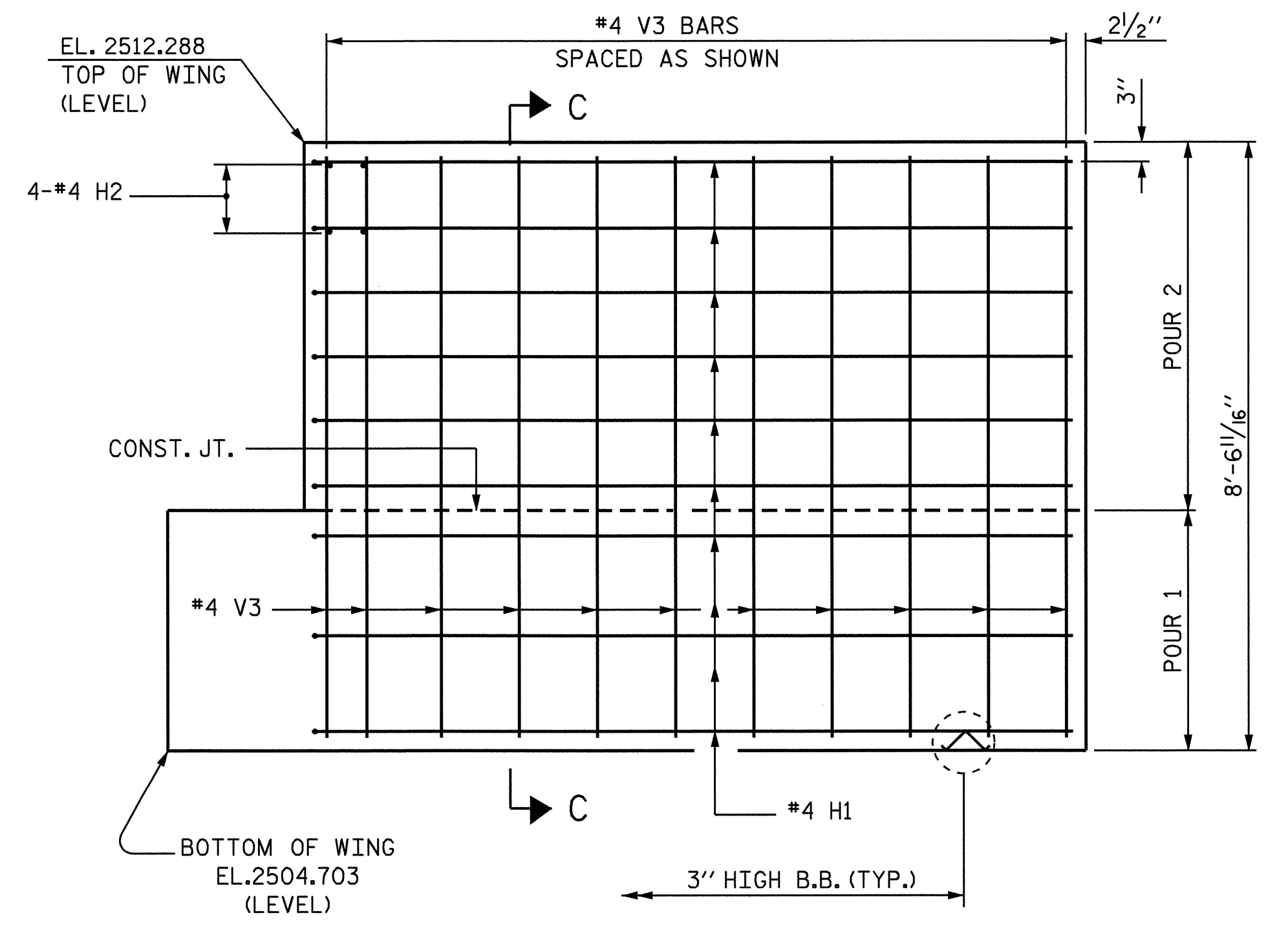
ELEVATION OF LEFT WING - W1



SECTION D-D



SECTION C-C



ELEVATION OF RIGHT WING - W2

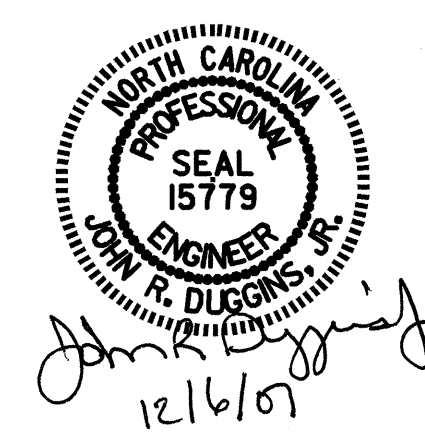
PROJECT NO. B-4144  
HAYWOOD COUNTY  
 STATION: 14+85.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT No. 2

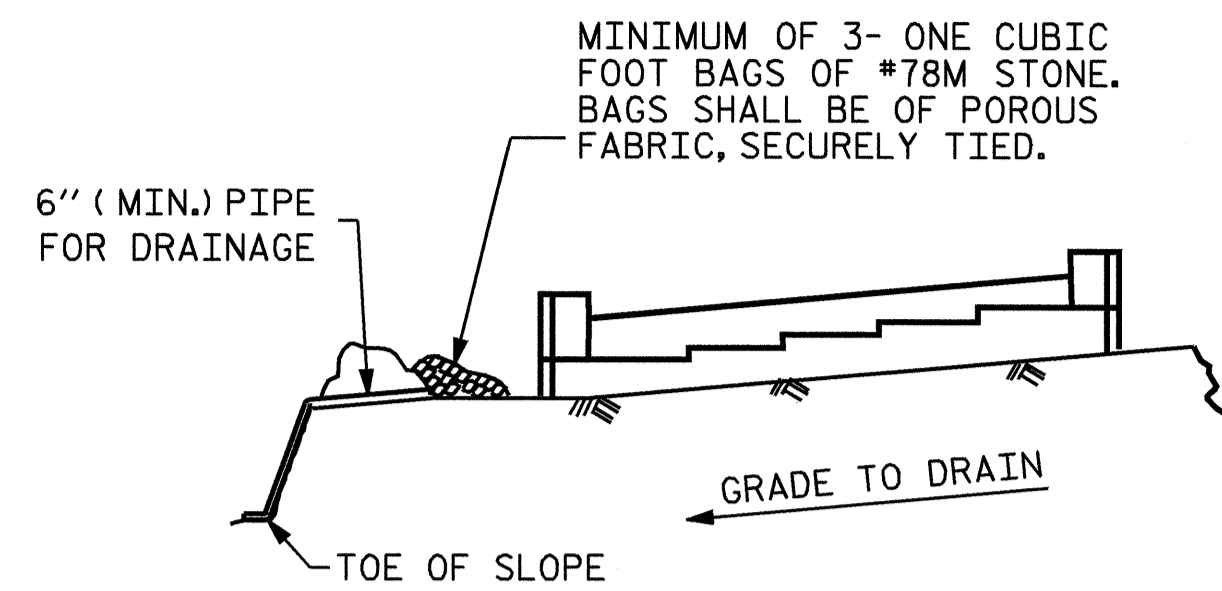
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			40
2			4			



DRAWN BY : M. POOLE DATE : 10/07  
 CHECKED BY : D. HODGE DATE : 11/07

16-NOV-2007 09:10 R:\Structures\B4144\m\poole\Microstation\B4144.sd.E2.01.dgn mpoole





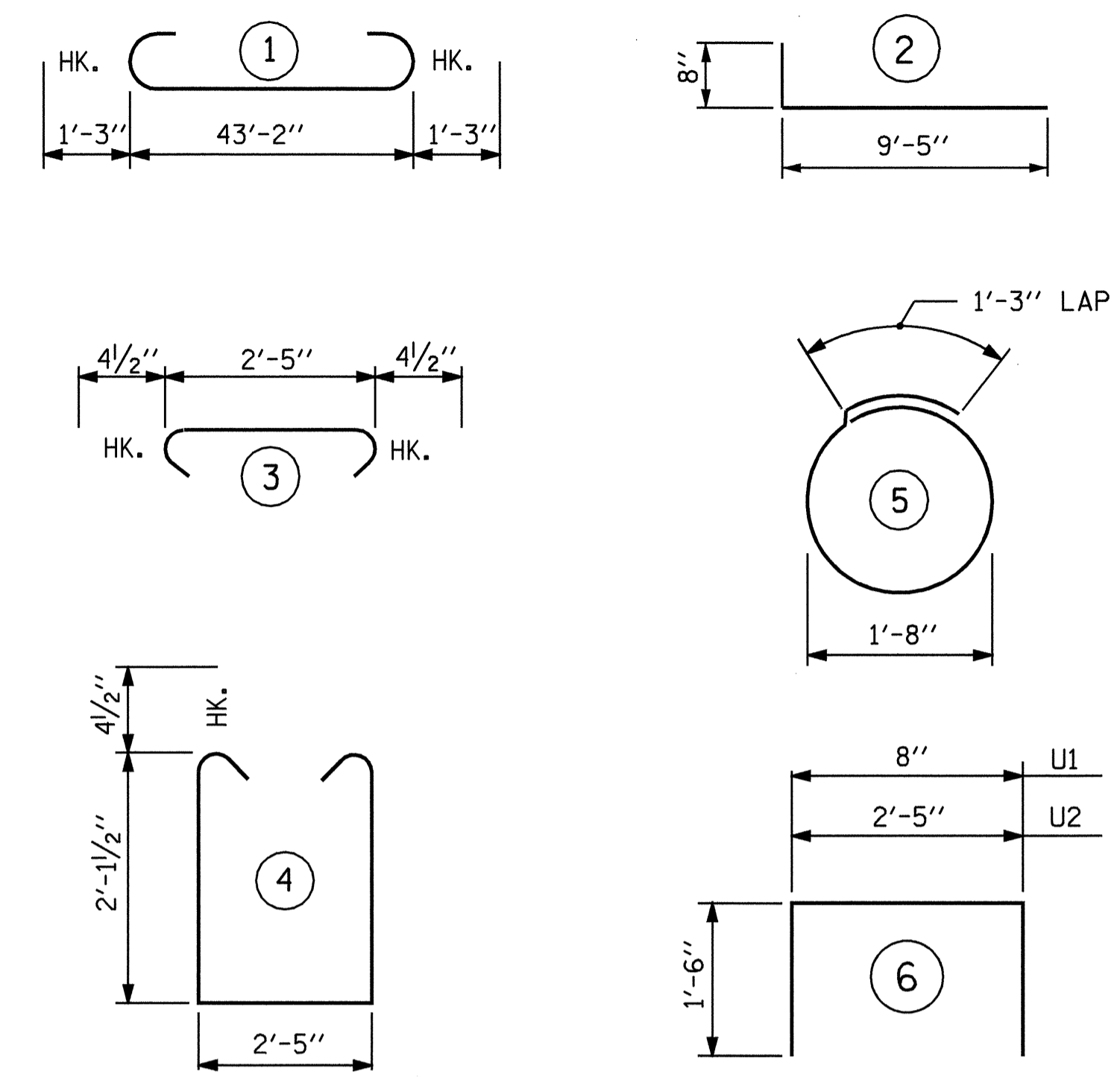
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

### TEMPORARY DRAINAGE AT END BENT

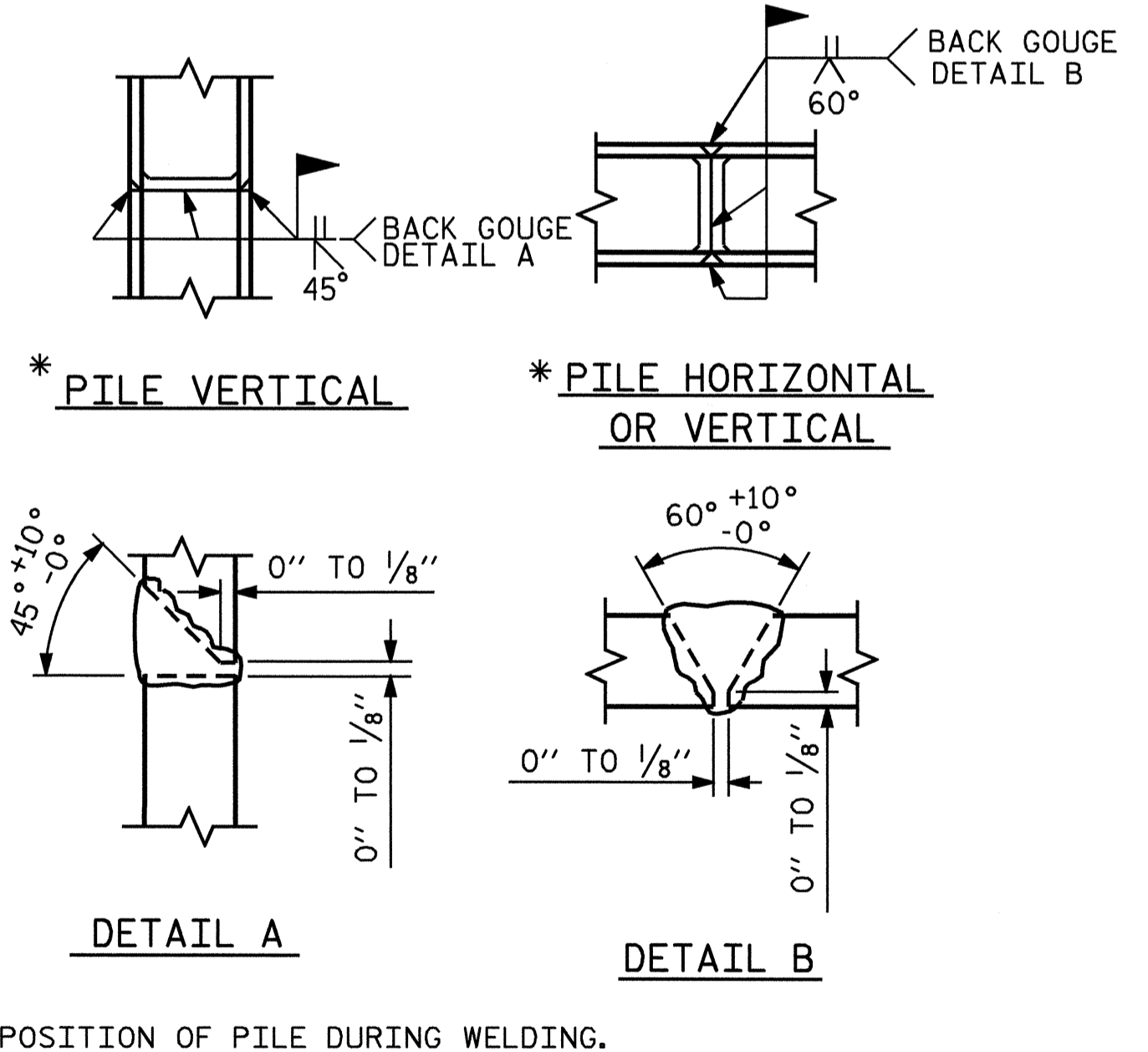
### BAR TYPES



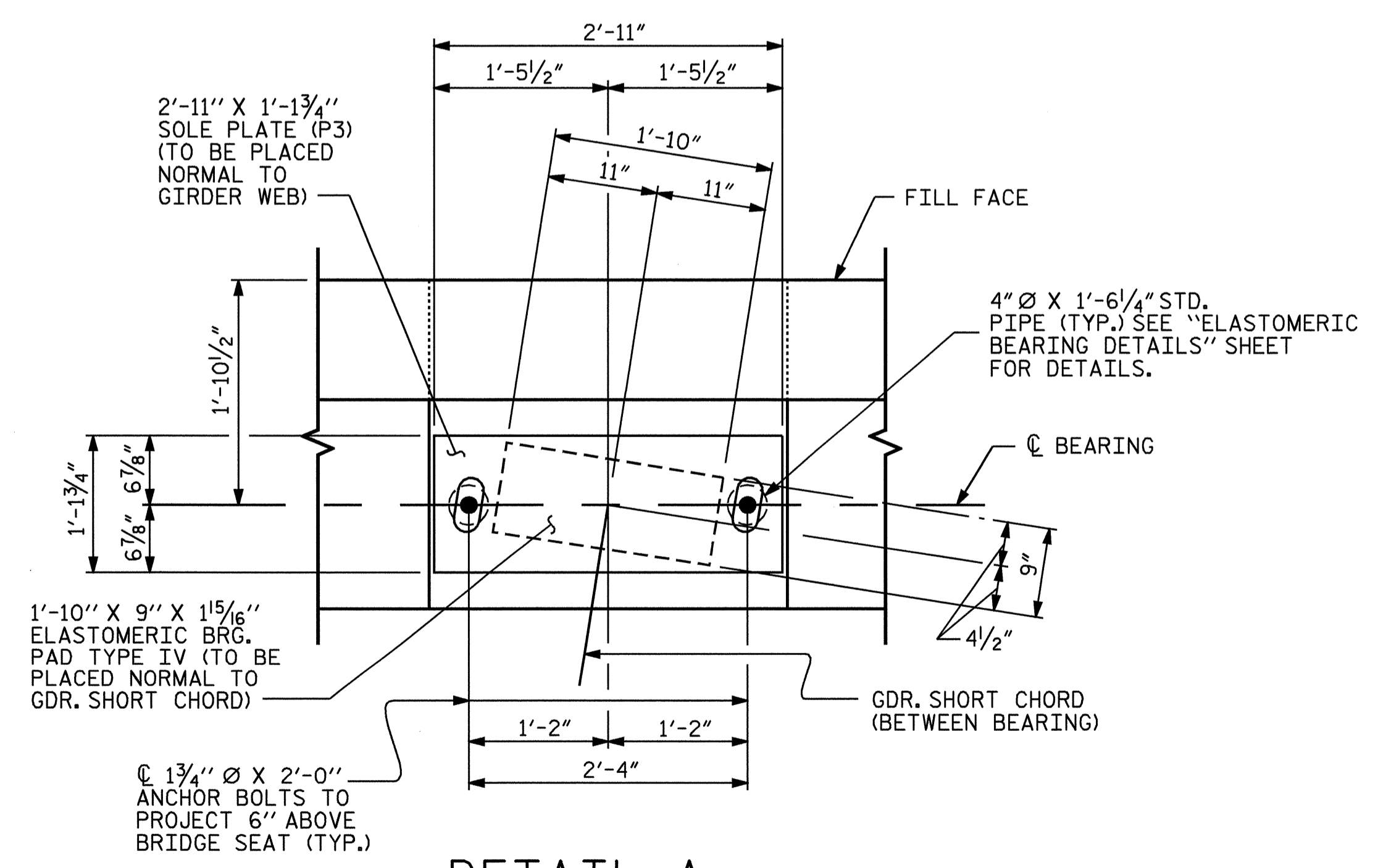
ALL BAR DIMENSIONS ARE OUT TO OUT.

### BILL OF MATERIAL

END BENT NO. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	9	1	45'-8"	1242
B2	2	5	STR	43'-3"	90
B3	8	4	STR	22'-10"	122
B4	11	4	STR	2'-5"	18
B5	16	4	STR	2'-6"	27
B6	4	4	STR	7'-8"	20
H1	38	4	2	10'-1"	256
H2	8	4	STR	3'-2"	17
K1	16	4	STR	22'-10"	244
S1	38	4	4	7'-5"	188
S2	38	4	3	3'-2"	80
S3	14	4	5	6'-6"	61
U1	37	4	6	3'-8"	91
U2	19	4	6	5'-5"	69
V1	74	5	STR	5'-7"	431
V2	28	4	STR	7'-4"	137
V3	28	4	STR	7'-1"	132
REINFORCING STEEL					3225 LBS
CLASS A CONCRETE BREAKDOWN :					
POUR #1 (CAP & LOWER WINGS)				14.0 C.Y.	
POUR #2 (UPPER PORTION OF WINGS & BACKWALL)				8.8 C.Y.	
TOTAL				22.8 C.Y.	
HP 12 X 53 STEEL PILES					
NO. 7				105 LIN FT.	
STEEL PILE POINTS					
NO. 7				EACH	



### PILE SPLICE DETAILS

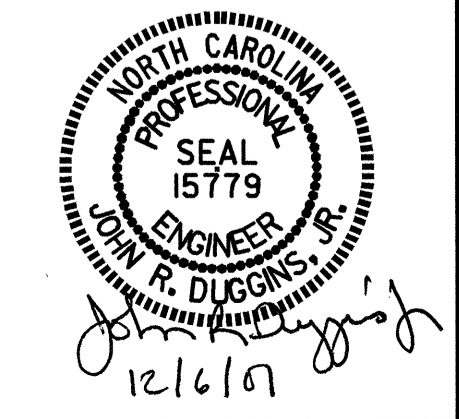


### DETAIL A

PROJECT NO. B-4144  
 HAYWOOD COUNTY  
 STATION: 14+85.00 -L-  
 SHEET 3 OF 3

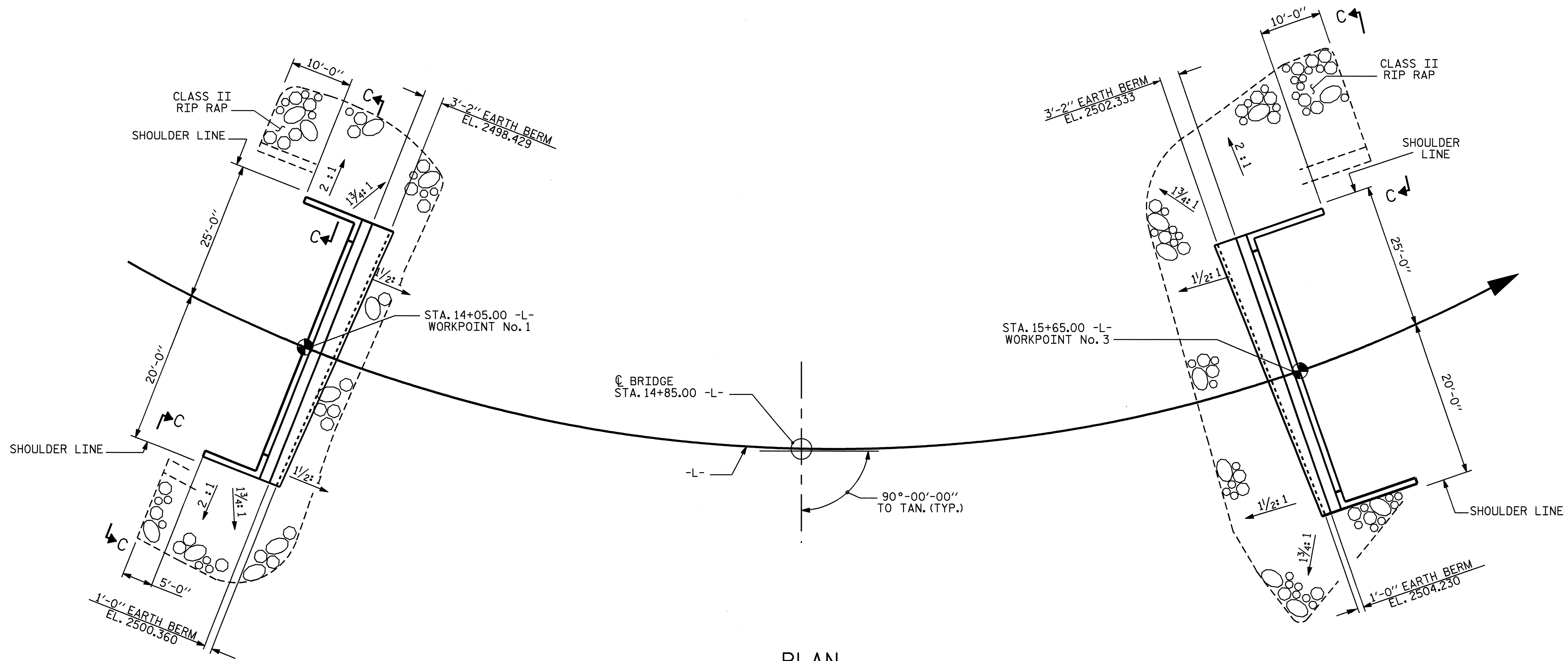
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT No. 2



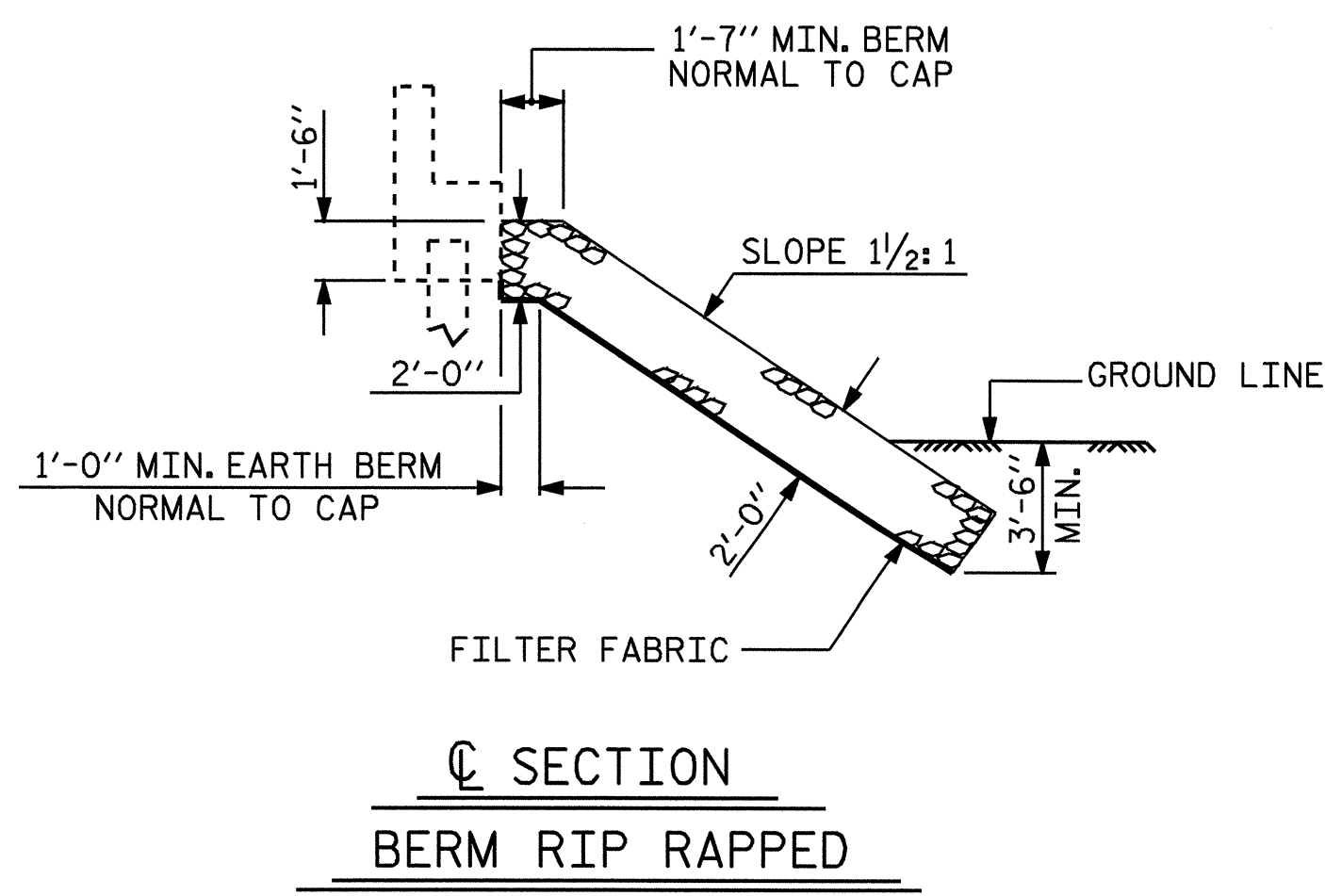
DRAWN BY: M. POOLE DATE: 10/07  
 CHECKED BY: D. HODGE DATE: 11/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-37
2			4			40

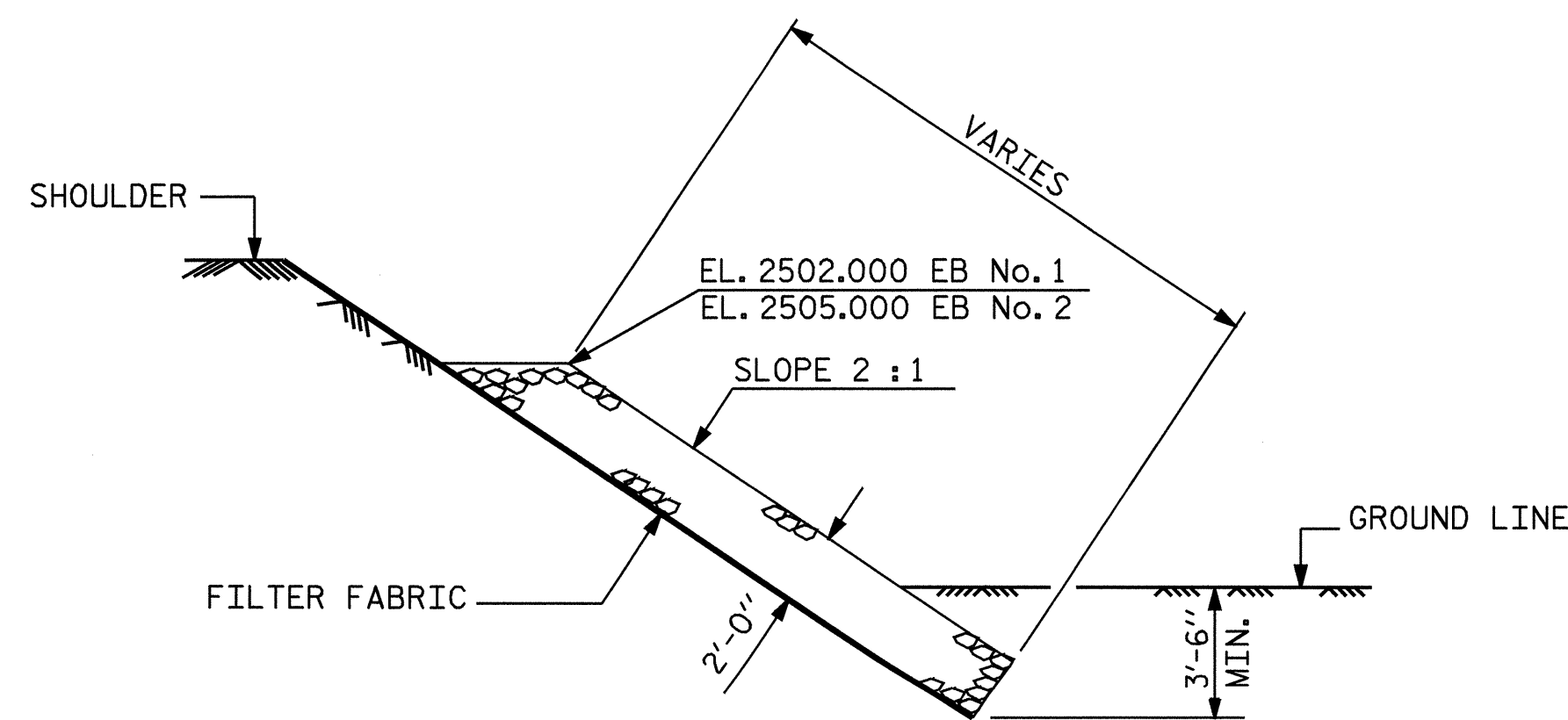


PLAN

ESTIMATED QUANTITIES		
BRIDGE @ STA. 14+85.00 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT No. 1	127	141
END BENT No. 2	182	202



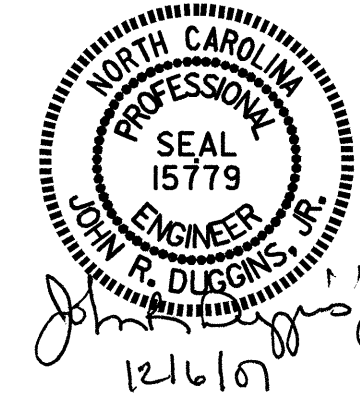
SECTION BERM RIP RAPPED



SECTION C-C

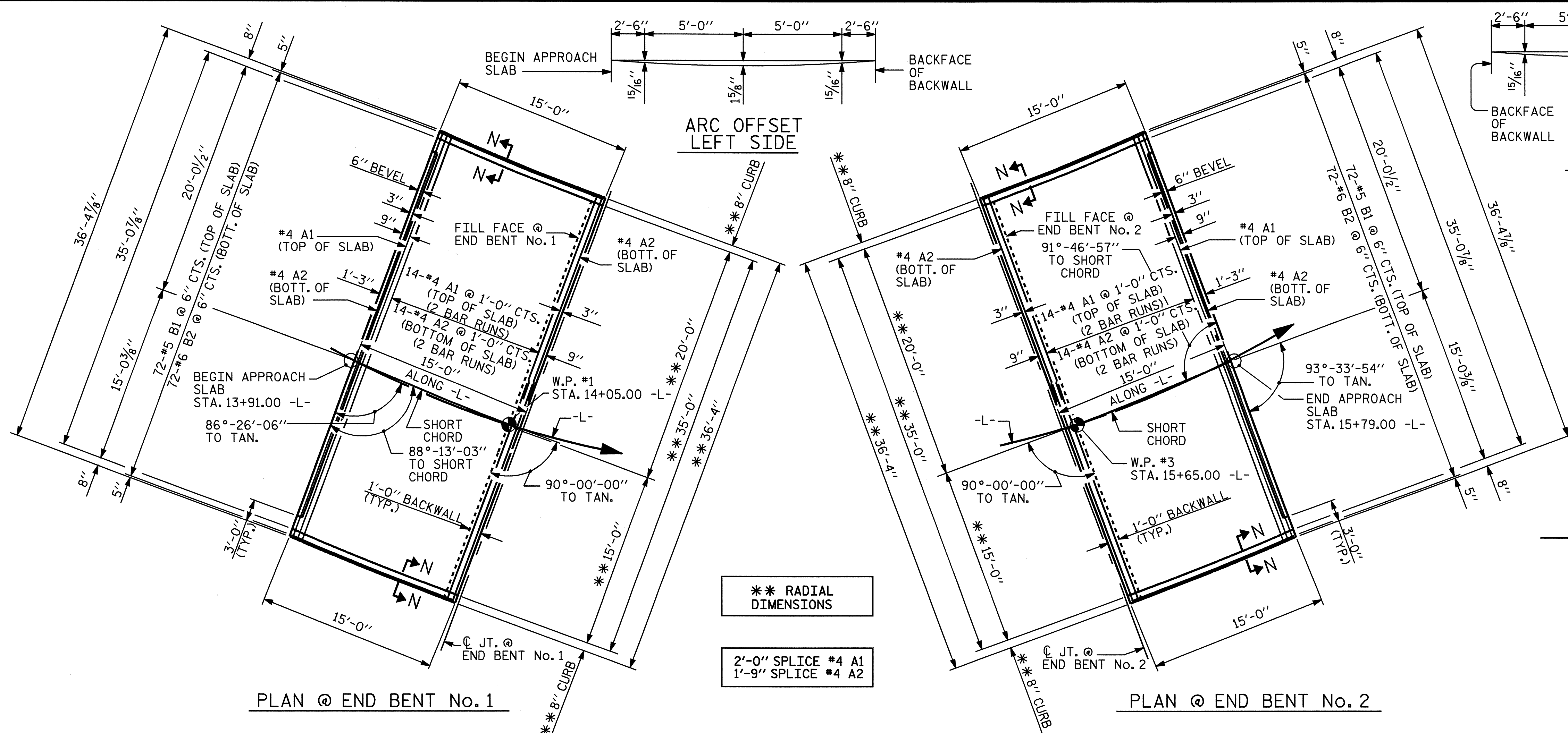
PROJECT NO. B-4144  
HAYWOOD COUNTY  
 STATION: 14+85.00 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 RIP RAP DETAILS



DRAWN BY : M. POOLE DATE : 07/07  
 CHECKED BY : J.R. DUGGINS DATE : 10/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS 40
2			4			



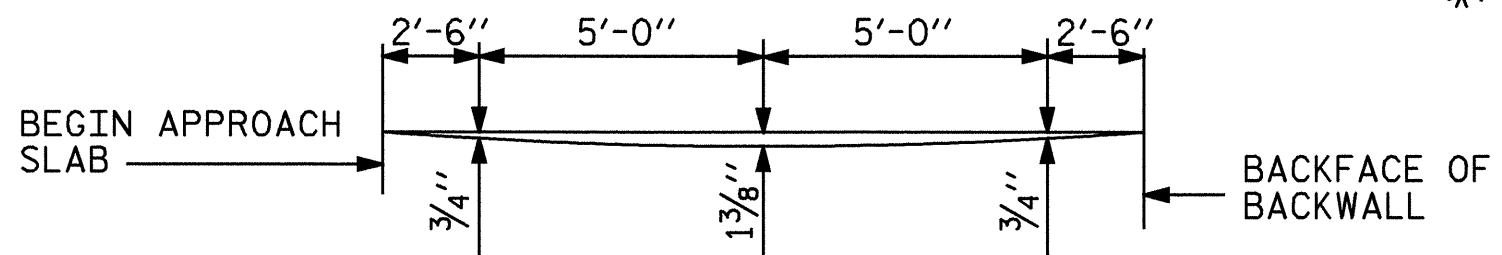
PLAN @ END BENT No. 1

PLAN @ END BENT No. 2

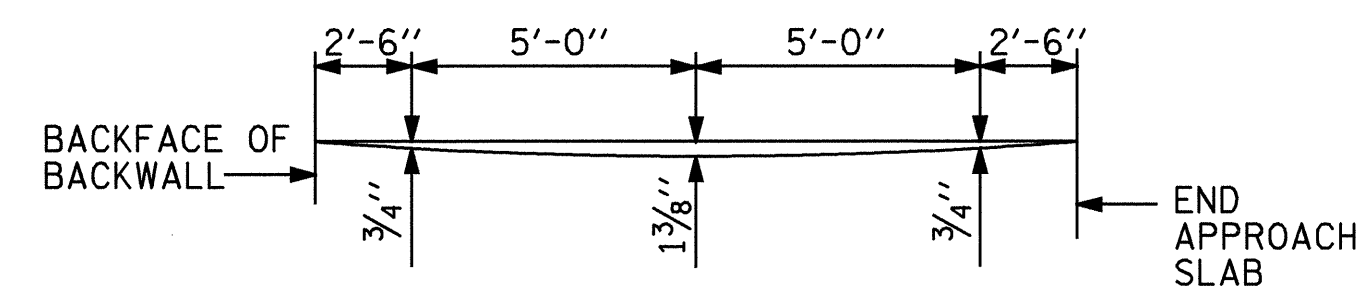
BILL OF MATERIAL						
APPROACH SLAB @ EB No. 1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	30	#4	STR	19'-0"	381	
A2	32	#4	STR	18'-11"	404	
*B1	72	#5	STR	14'-1"	1058	
B2	72	#6	STR	14'-7"	1577	
REINFORCING STEEL					LBS.	1981
* EPOXY COATED REINFORCING STEEL					LBS.	1439
CLASS AA CONCRETE					C. Y.	20.6
APPROACH SLAB @ EB No. 2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	30	#4	STR	19'-0"	381	
A2	32	#4	STR	18'-11"	404	
*B1	72	#5	STR	14'-1"	1058	
B2	72	#6	STR	14'-7"	1577	
REINFORCING STEEL					LBS.	1981
* EPOXY COATED REINFORCING STEEL					LBS.	1439
CLASS AA CONCRETE					C. Y.	20.6

NOTES

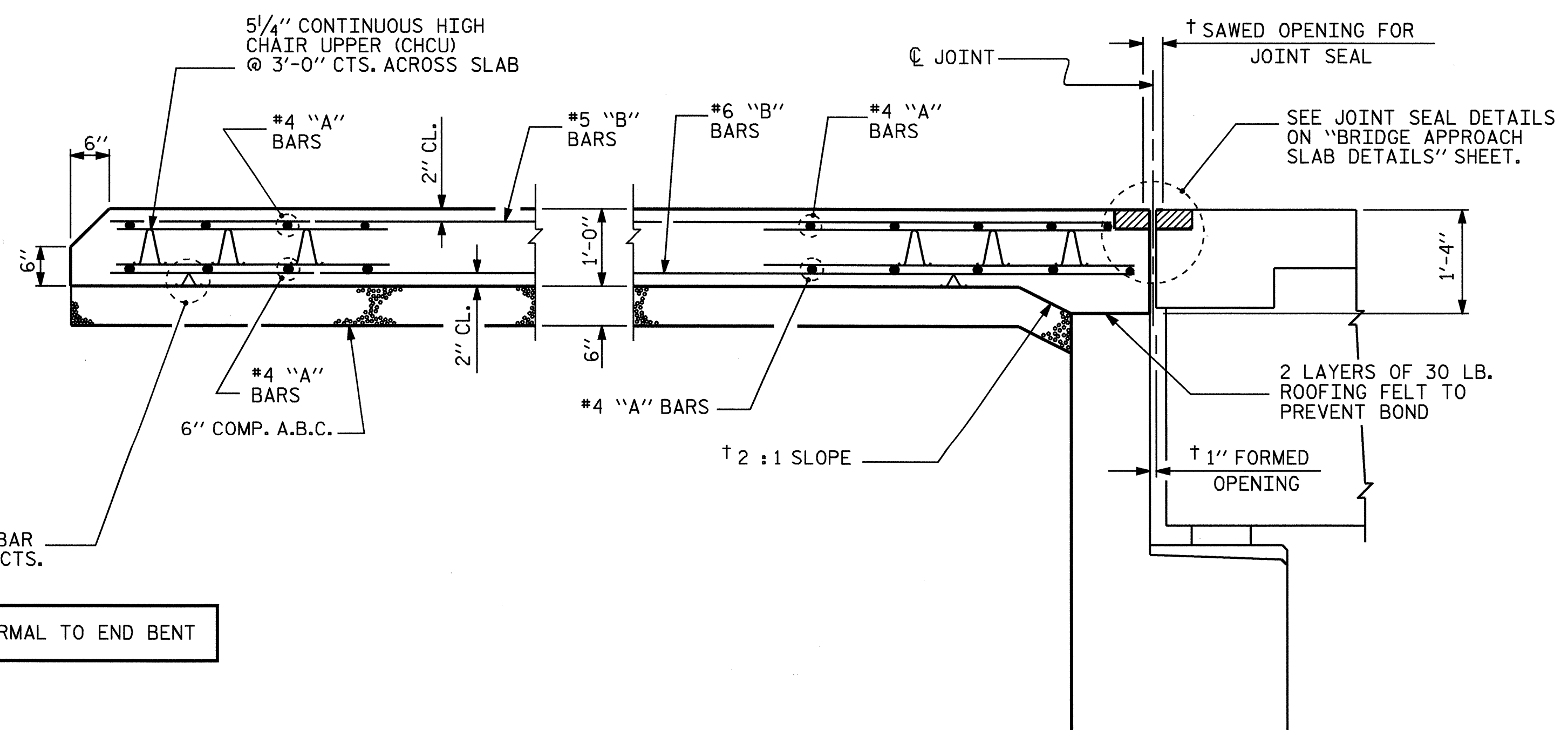
- APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
- AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.
- THE 6" COMP. A.B.C. SHALL BE FLUSH WITH THE ROADWAY END OF THE 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 PARAPET AND END POST.
- 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.



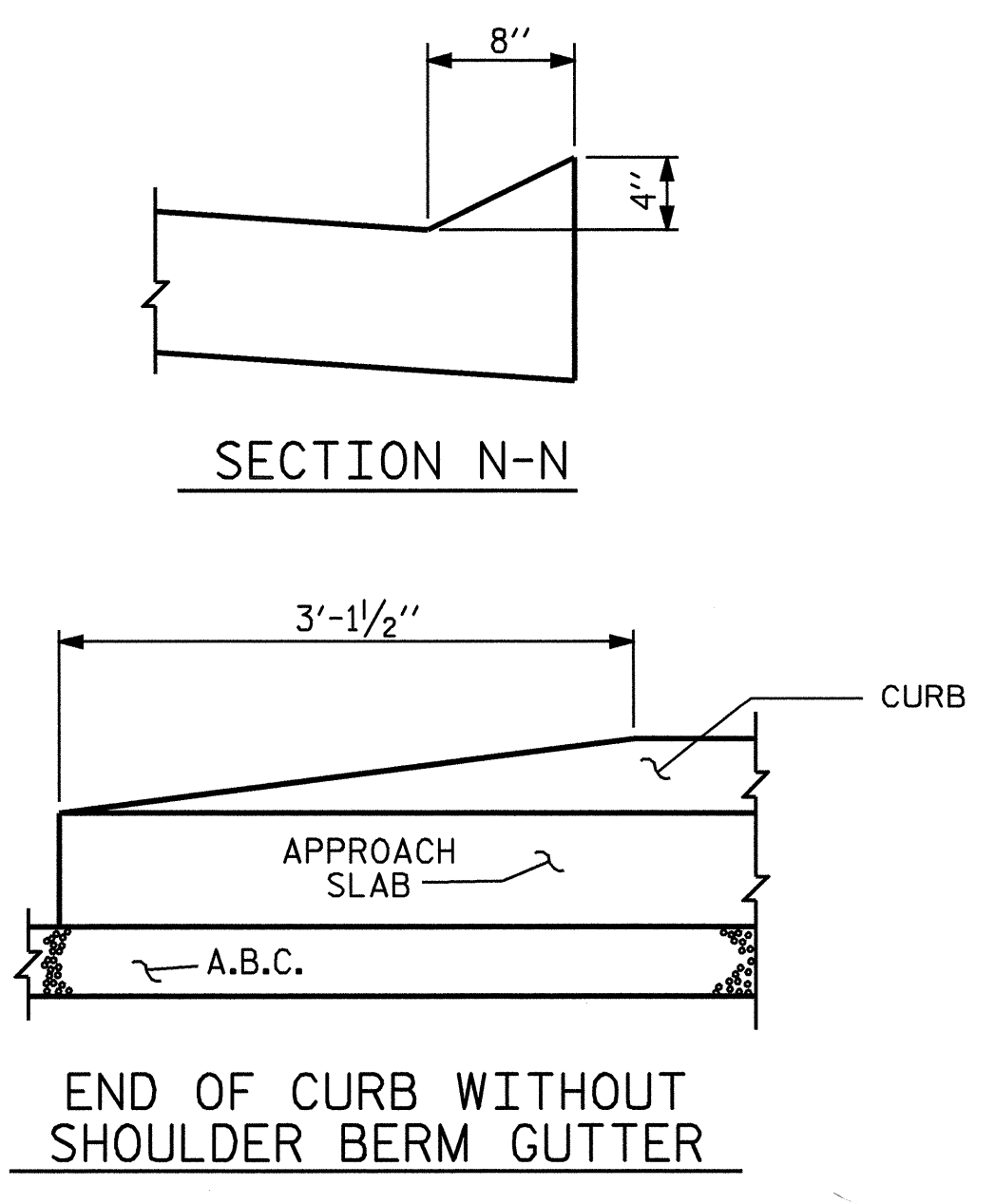
ARC OFFSET RIGHT SIDE



ARC OFFSET RIGHT SIDE



SECTION THRU SLAB



CURB DETAILS

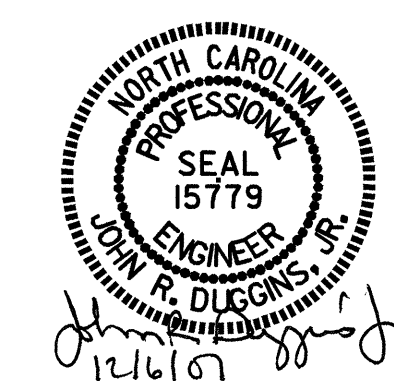
ASSEMBLED BY: M. POOLE DATE: 07/07  
 CHECKED BY: J.R. DUGGINS DATE: 10/07

06-DEC-2007 09:58  
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 danodge

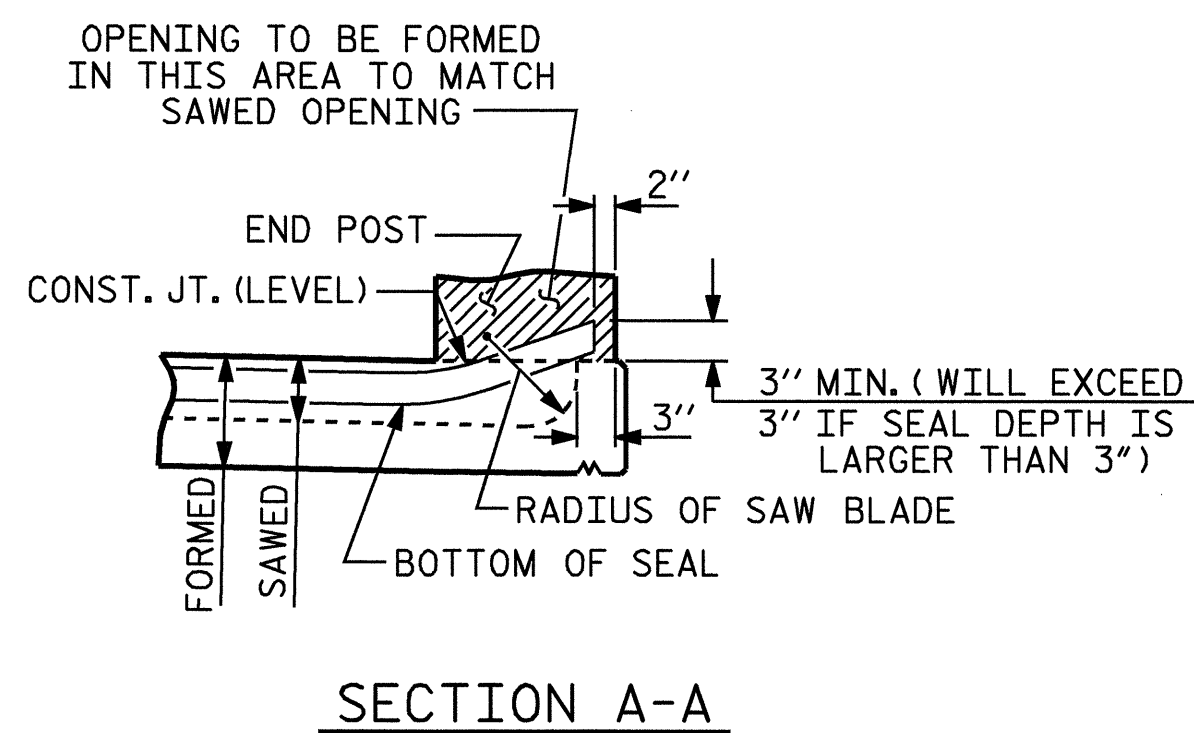
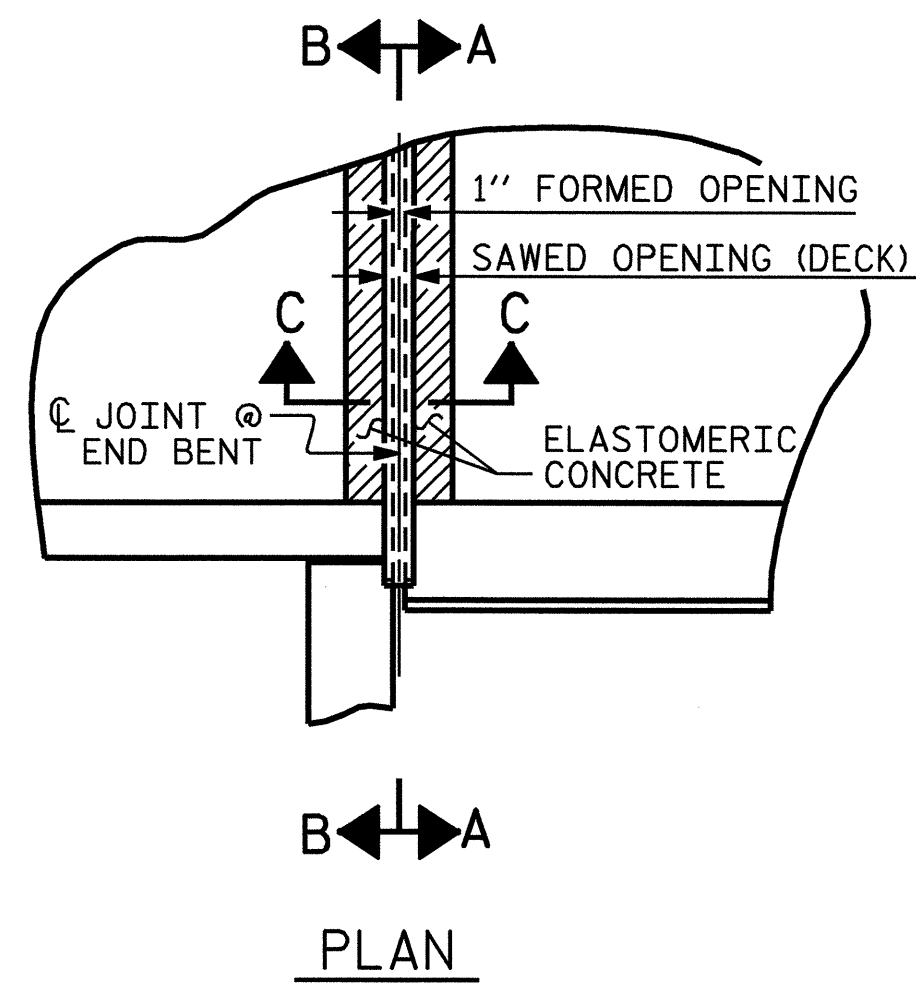
PROJECT NO. B-4144  
HAYWOOD COUNTY  
 STATION: 14+85.00 -L-

SHEET 1 OF 2

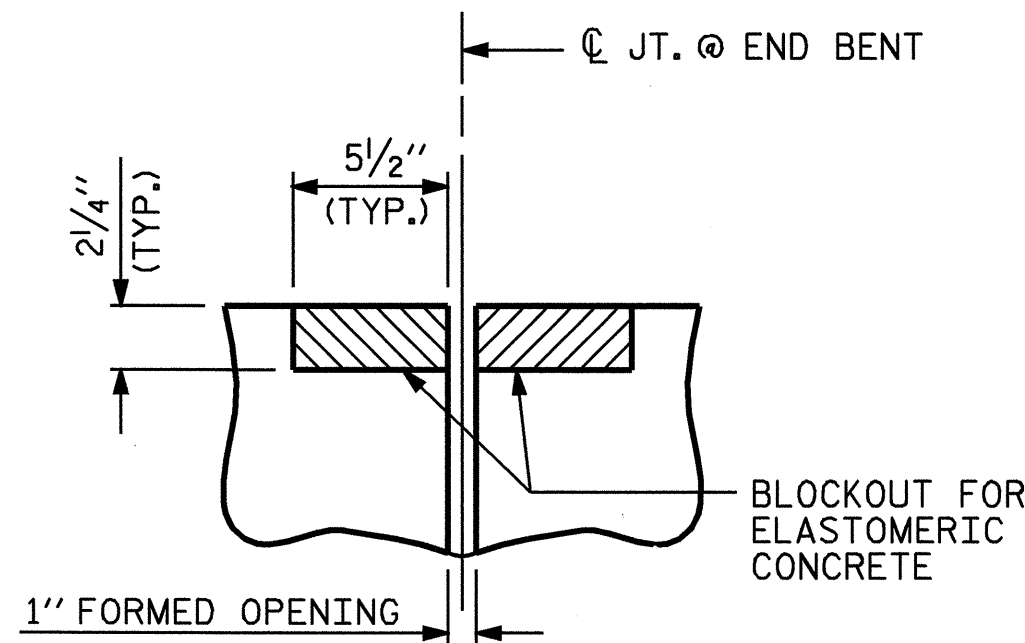
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					9-39
					TOTAL SHEETS 40



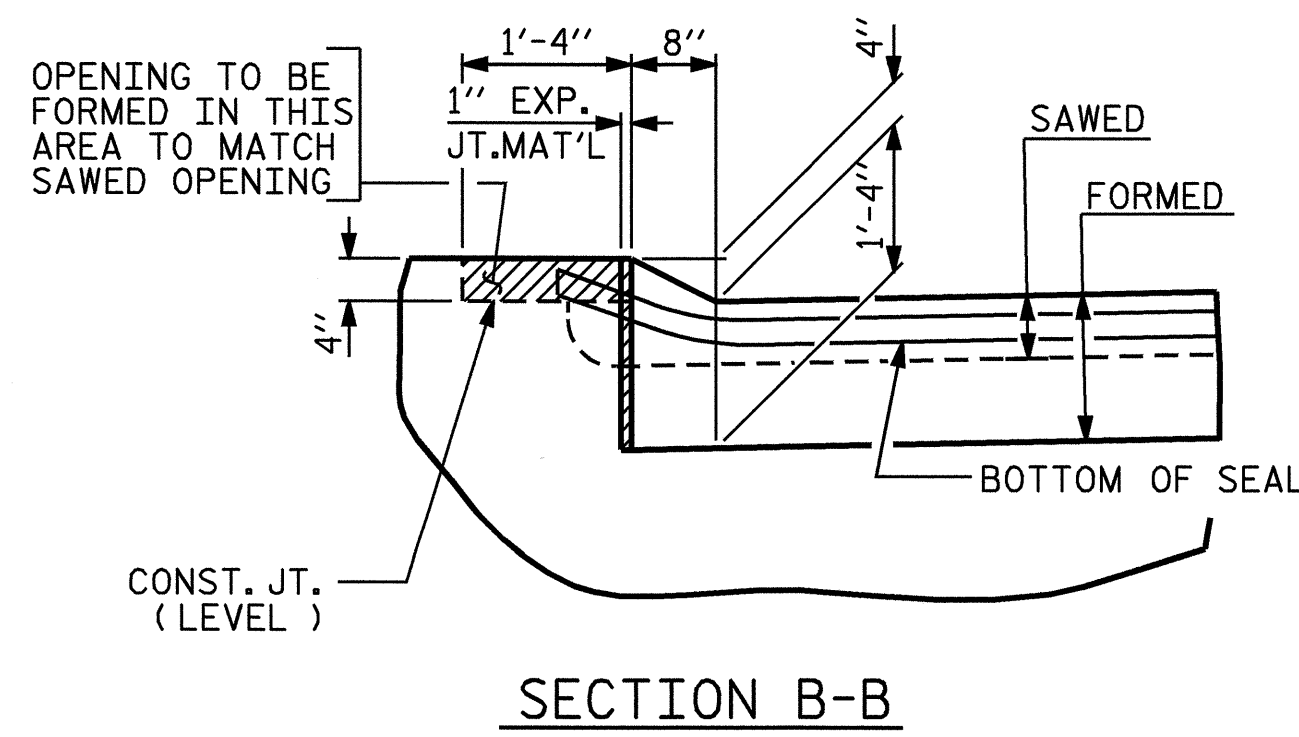




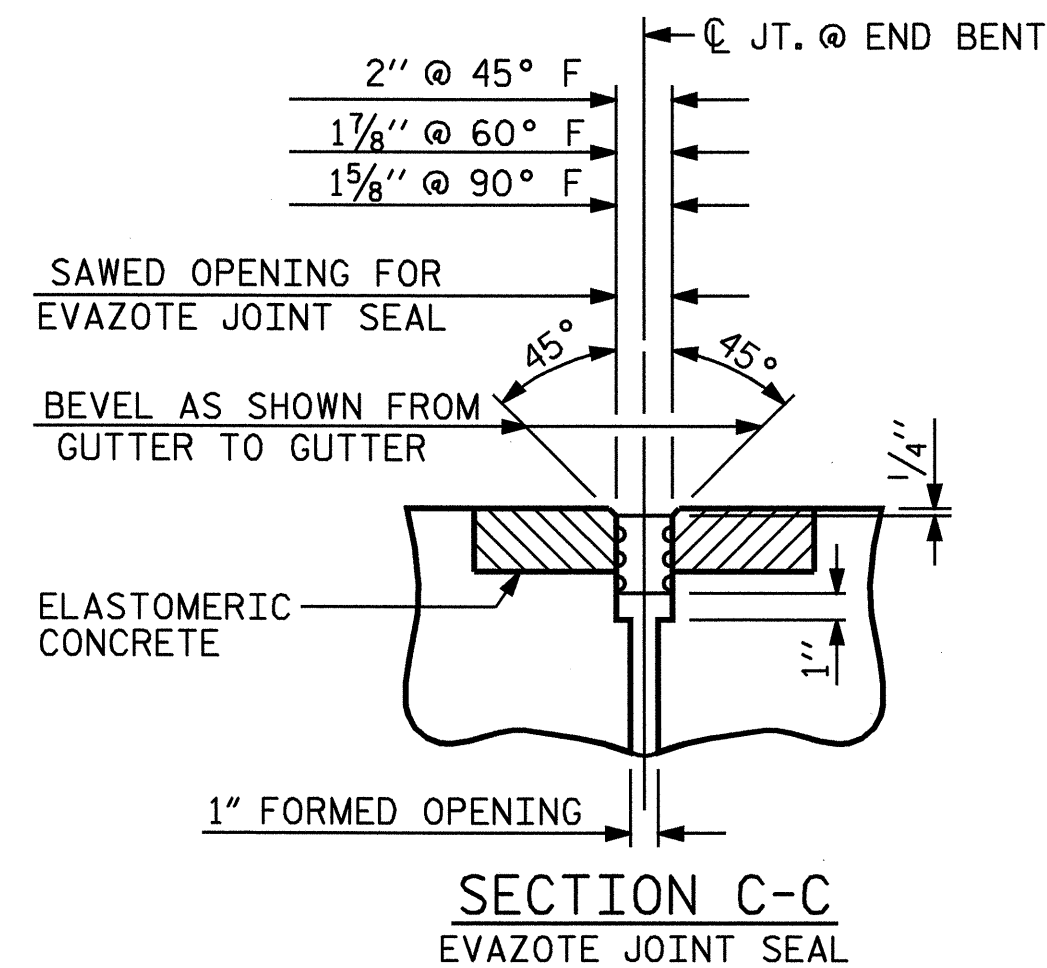
SECTION A-A



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

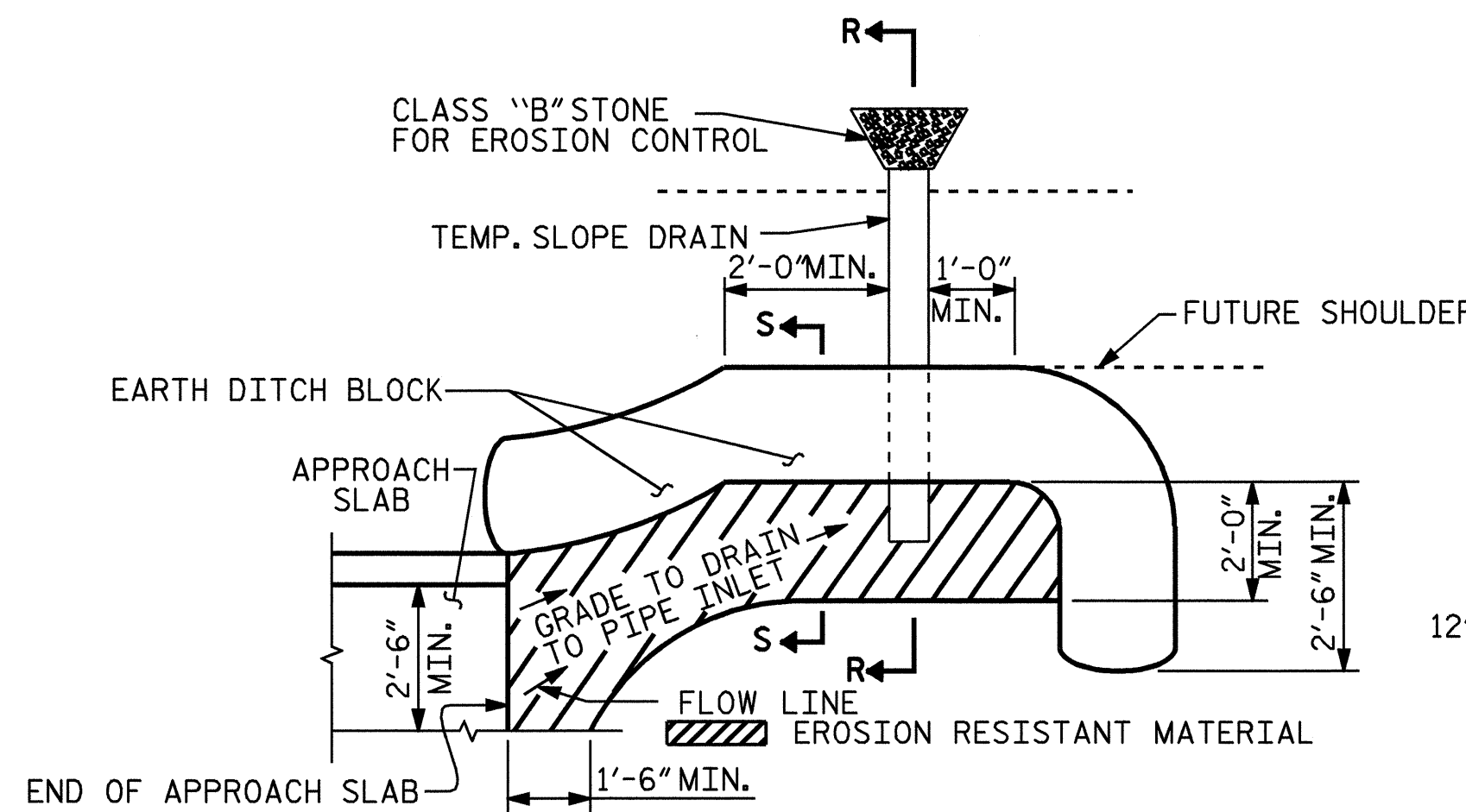


SECTION B-B

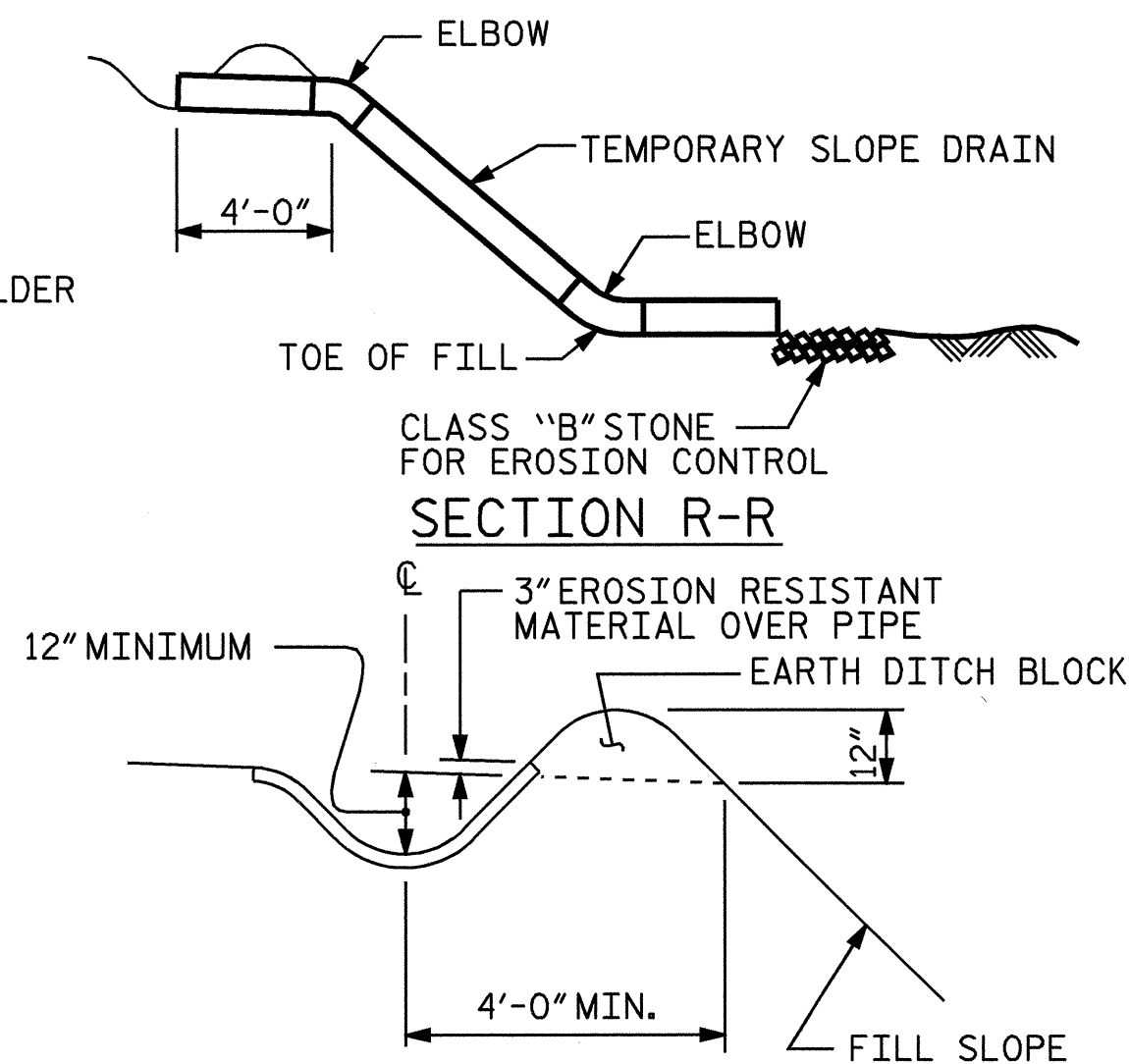


SECTION C-C  
EVAZOTE JOINT SEAL

JOINT SEAL DETAILS @ END BENT



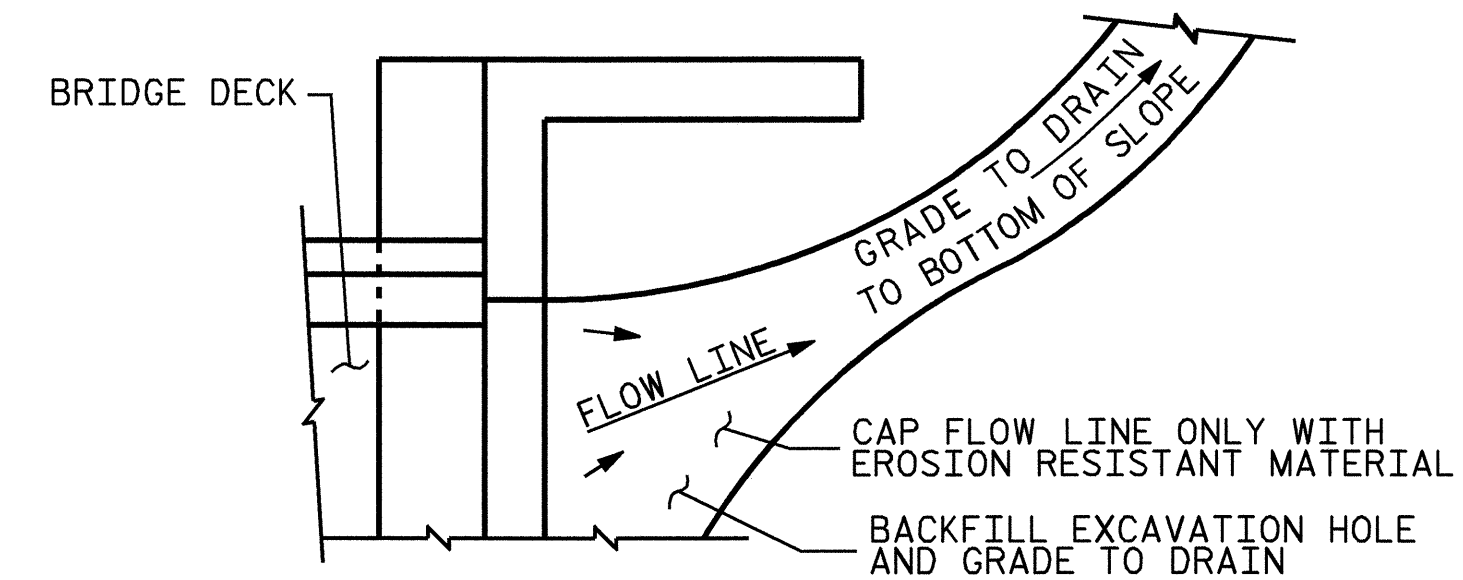
PLAN VIEW



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

TEMPORARY DRAINAGE DETAIL

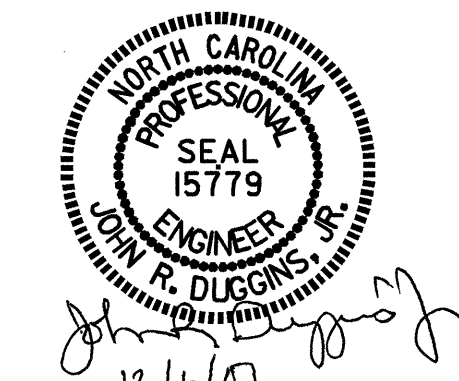
ELASTOMERIC CONCRETE	
END BENT No.	ELASTOMERIC CONCRETE (CU. FT.) ▲
1	6.0
2	6.0
TOTAL	12.0

▲ BASED ON THE MINIMUM BLOCKOUT SHOWN.

PROJECT NO. B-4144  
HAYWOOD COUNTY  
STATION: 14+85.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
BRIDGE APPROACH SLAB DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		



ASSEMBLED BY : M. POOLE DATE : 07/07  
CHECKED BY : J.R. DUGGINS DATE : 10/07  
DRAWN BY : FCJ 11/88 REV. 8/16/99 MAB/LES  
CHECKED BY : ARB 11/88 REV. 10/17/00 RWW/LES  
REV. 5/7/03 RWW/JTE

## STANDARD NOTES

### DESIGN DATA:

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

### MATERIAL AND WORKMANSHIP:

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

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

### CONCRETE:

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

### CONCRETE CHAMFERS:

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

### DOWELS:

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

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

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

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

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

### REINFORCING STEEL:

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

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

### STRUCTURAL STEEL:

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

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

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

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

### HANDRAILS AND POSTS:

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

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

### SPECIAL NOTES:

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

# ENGLISH

JANUARY, 1990

STD. NO. SN