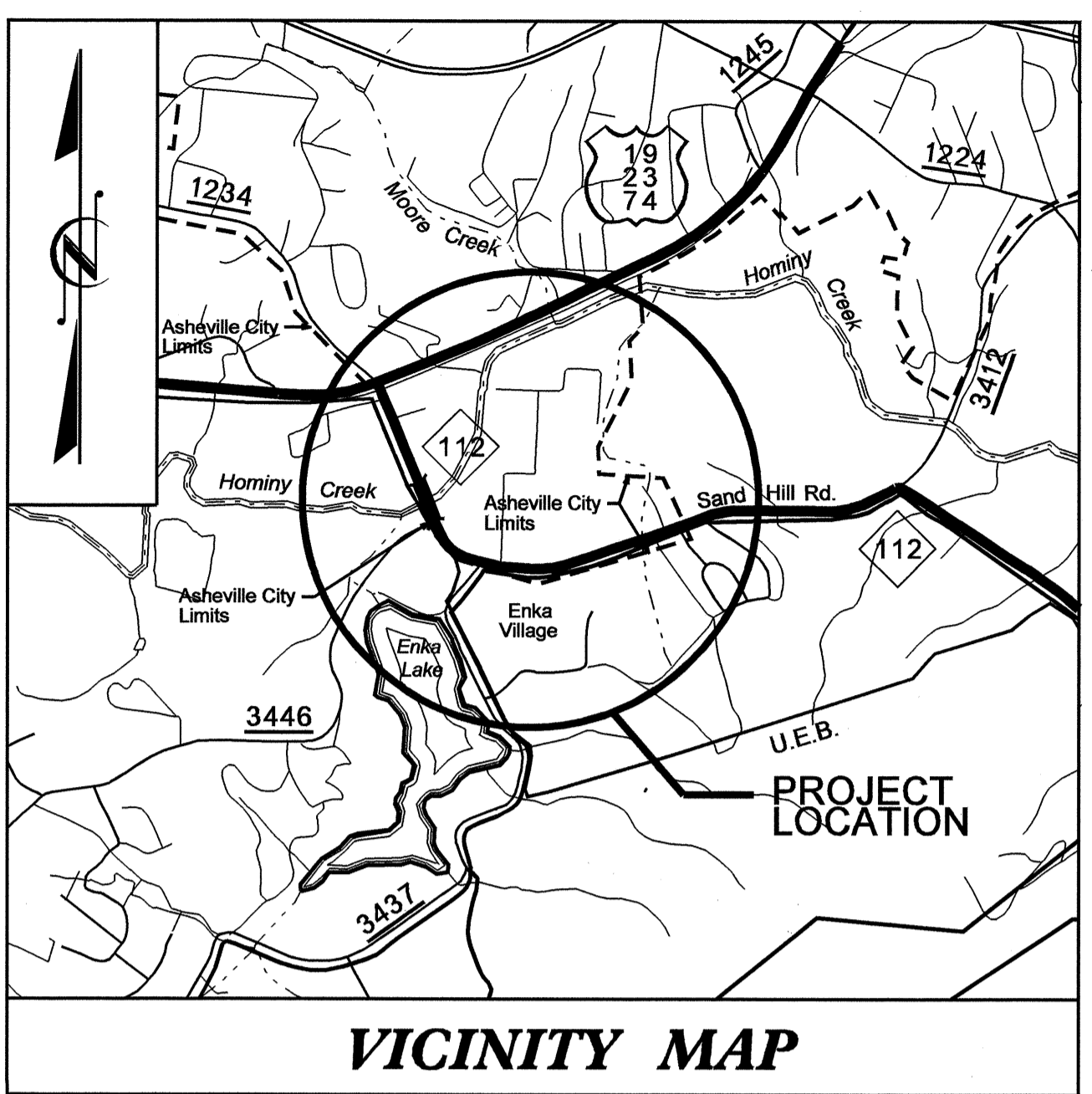


02-SEP-2008 09:09  
 \$\$\$DGN\$\$\$\$\$\$\$  
 dcr:ut:cher

**CONTRACT: C201892**      **TIP PROJECT: B-4033**

**STRUCTURE**



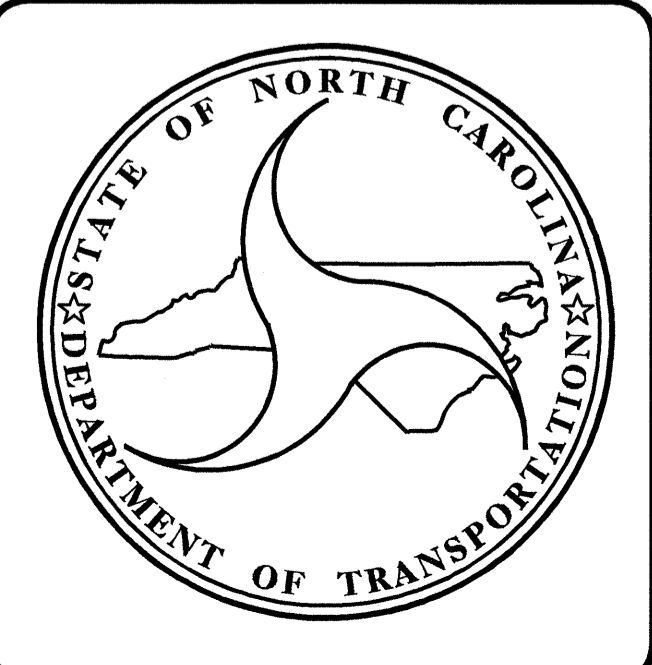
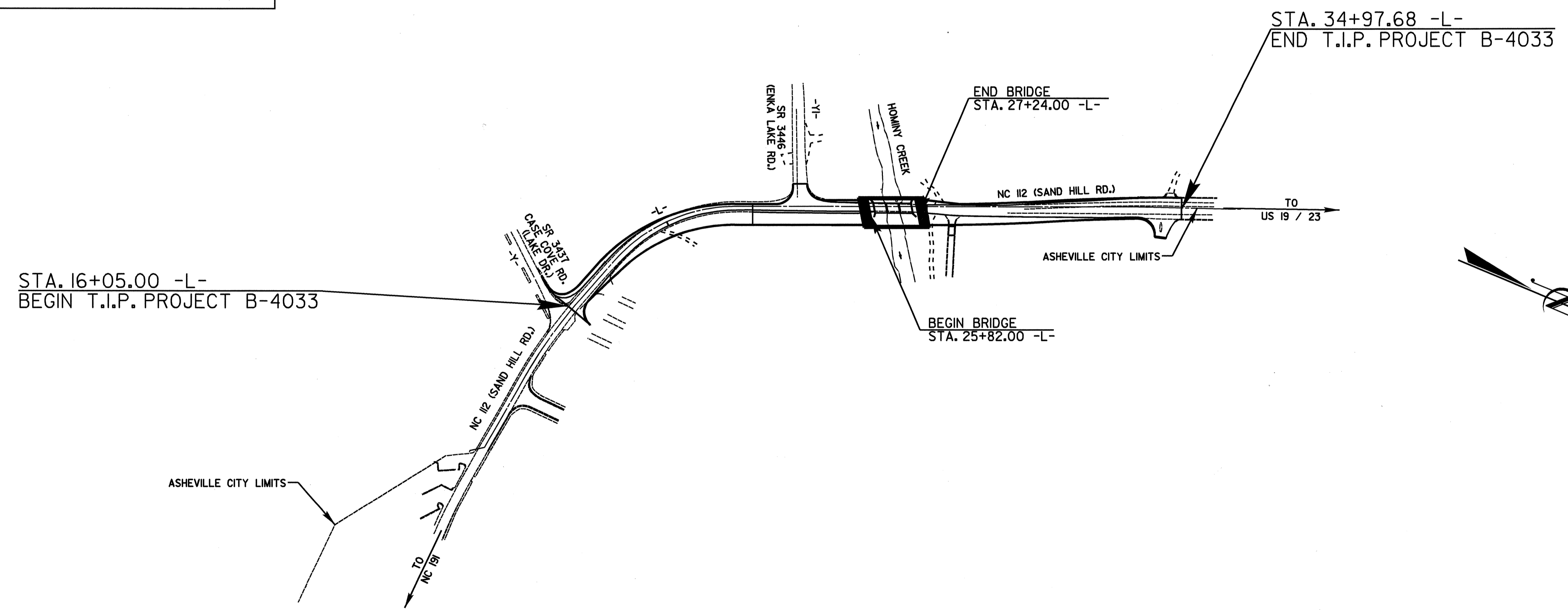
STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

**BUNCOMBE COUNTY**

**LOCATION: BRIDGE NO. 85 OVER HOMINY CREEK ON NC 112**

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4033		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33400.1.1	BRSTP-112(1)	PE	
33400.2.1	BRSTP-112(1)	R/W, UTIL.	
33400.3.1	BRSTP-112(1)	CONSTRUCTION	



**DESIGN DATA**

ADT 2007 =	20,885
ADT 2030 =	39,200
DHV =	10 %
D =	60 %
T =	16 % *
V =	40 MPH
* TTST 4%	DUAL 12%
FUNC CLASS = RURAL MINOR ARTERIAL	

**PROJECT LENGTH**

LENGTH ROADWAY T.I.P. PROJECT B-4033	=	0.331 MILES
LENGTH STRUCTURES T.I.P. PROJECT B-4033	=	0.027 MILES
TOTAL LENGTH T.I.P. PROJECT B-4033	=	0.358 MILES

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

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2006 STANDARD SPECIFICATIONS

---

**LETTING DATE:**  
 NOVEMBER 18, 2008

---

Q.H. NGUYEN, PE PROJECT ENGINEER
J.R. DUGGINS, JR, PE PROJECT DESIGN ENGINEER

**STRUCTURE DESIGN UNIT**  
 1000 BIRCHRIDGE DRIVE  
 RALEIGH, NC 27610

DIVISION OF HIGHWAYS  
 STATE OF NORTH CAROLINA

---

STATE DESIGN ENGINEER P.E.  
 DEPARTMENT OF TRANSPORTATION  
 FEDERAL HIGHWAY ADMINISTRATION

---

APPROVED  
 DIVISION ADMINISTRATOR      DATE

(-)2.9500% (+)5.6500%

**GRADE DATA**

PI = 24+74.34  
EL. = 2057.53  
VC = 626'

25+00 26+00 27+00 28+00

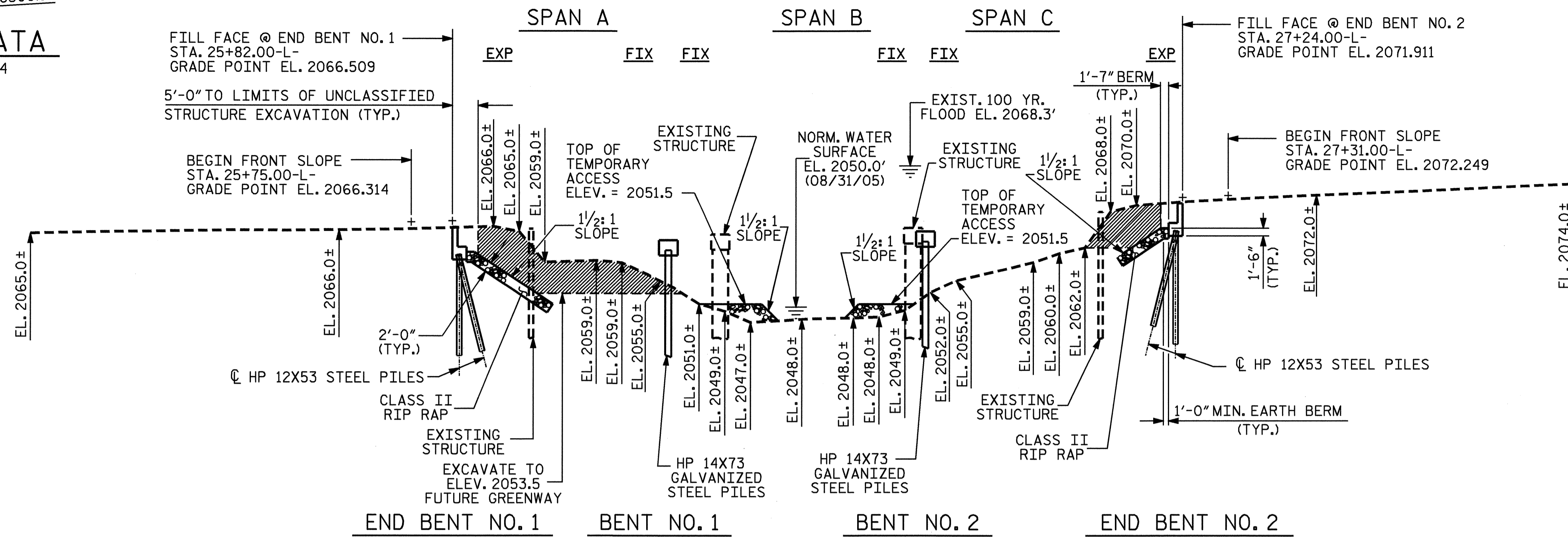
FILL FACE @ END BENT NO. 1  
STA. 25+82.00-L-  
GRADE POINT EL. 2066.509

5'-0" TO LIMITS OF UNCLASSIFIED  
STRUCTURE EXCAVATION (TYP.)

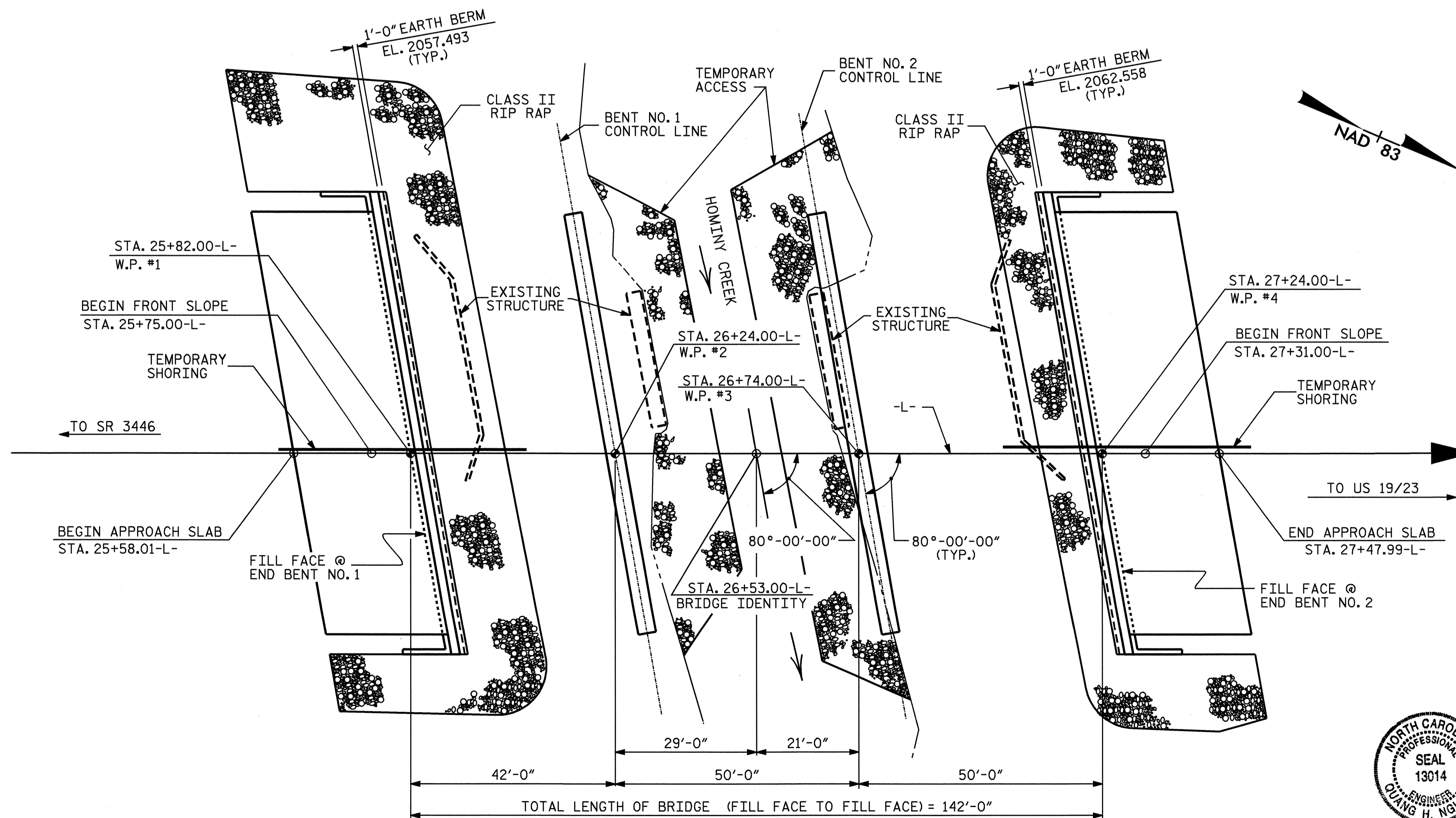
BEGIN FRONT SLOPE  
STA. 25+75.00-L-  
GRADE POINT EL. 2066.314

FILL FACE @ END BENT NO. 2  
STA. 27+24.00-L-  
GRADE POINT EL. 2071.911

BEGIN FRONT SLOPE  
STA. 27+31.00-L-  
GRADE POINT EL. 2072.249



UNCLASSIFIED STRUCTURE  
EXCAVATION



PROJECT NO. B-4033  
BUNCOMBE COUNTY  
STATION: 26+53.00-L-

SHEET 1 OF 3 REPLACES BRIDGE No. 85

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**GENERAL DRAWING**

FOR BRIDGE OVER HOMINY  
CREEK ON NC 112  
(SAND HILL ROAD) BETWEEN  
SR 3446 AND US 19/23

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-1
2			4			50



Quang H. Nguyen 7-15-08



John R. Duggins 8/21/08

DRAWN BY : L.L. MURPHY DATE : 04-08  
CHECKED BY : J.R. DUGGINS DATE : 04-08

NOTES

DRIVE PILES AT END BENT No.1 TO A REQUIRED BEARING CAPACITY OF 120 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

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

INSTALL PILES AT END BENT No.1 TO TIP ELEVATIONS NO HIGHER THAN 2013 FT. (LT.), 2003 FT. (CT) AND 2008 FT. (RT).

DRIVE PILES AT BENT No.1 TO A REQUIRED BEARING CAPACITY OF 180 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT BENT No.1 IS 90 TONS PER PILE.

INSTALL PILES AT BENT No.1 TO TIP ELEVATIONS NO HIGHER THAN 2010 FT. (LT.), 2023 FT. (CT) AND 2019 FT. (RT).

STEEL PILE POINTS ARE REQUIRED FOR STEEL PILES AT BENT No.1.

THE SCOUR CRITICAL ELEVATION FOR BENT No.1 IS ELEVATION 2036 FT. (LT.), 2034 FT. (CT) AND 2034 FT. (RT.) SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

DRIVE PILES AT BENT No.2 TO A REQUIRED BEARING CAPACITY OF 180 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT BENT No.2 IS 90 TONS PER PILE.

INSTALL PILES AT BENT No.2 TO TIP ELEVATIONS NO HIGHER THAN 2009 FT. (LT.), 2015 FT. (CT) AND 2018 FT. (RT).

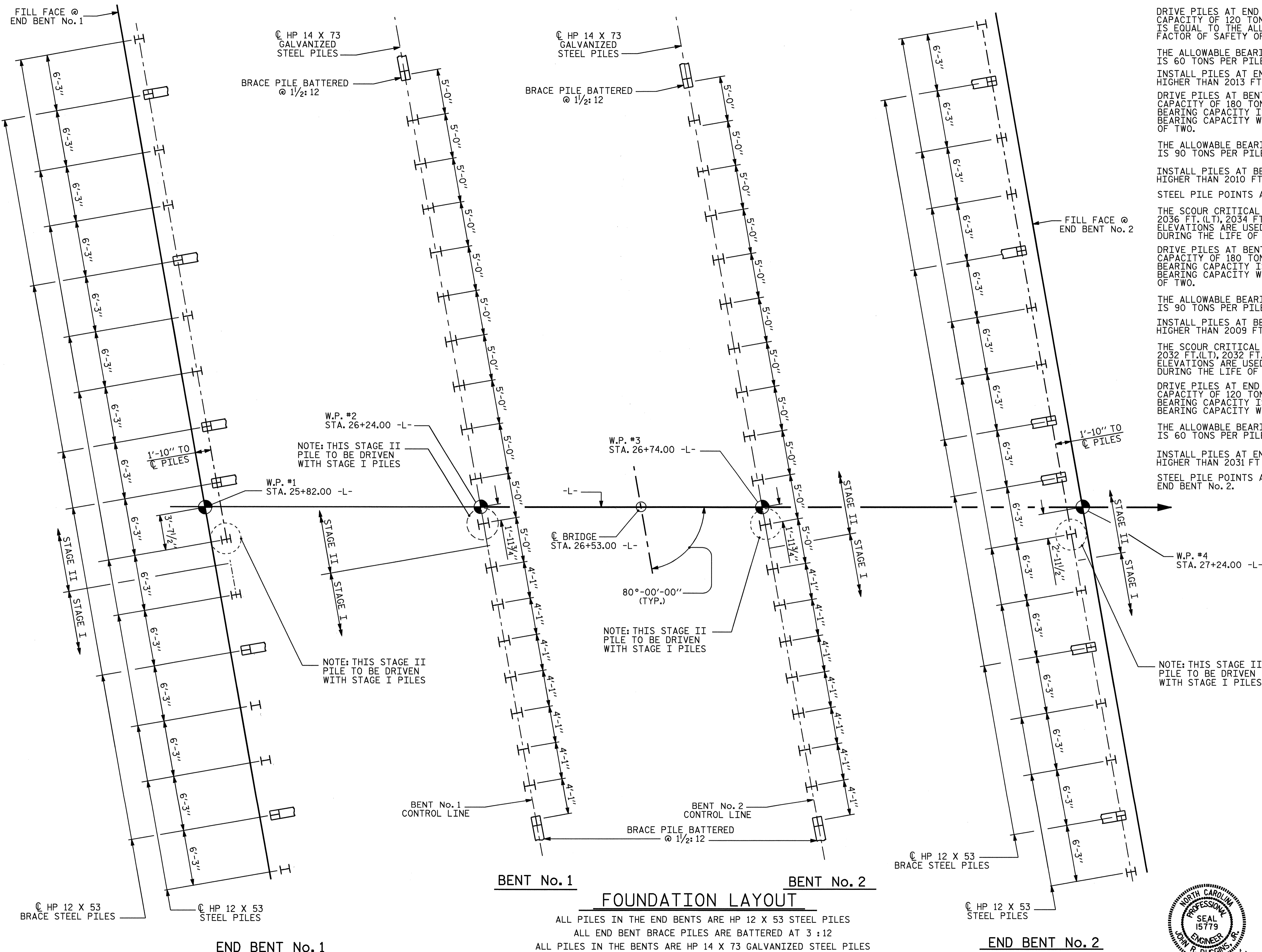
THE SCOUR CRITICAL ELEVATION FOR BENT No.2 IS ELEVATION 2032 FT. (LT.), 2032 FT. (CT) AND 2033 FT. (RT.) SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

DRIVE PILES AT 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.

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

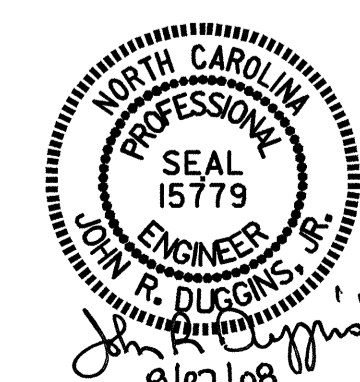
INSTALL PILES AT END BENT No.2 TO TIP ELEVATIONS NO HIGHER THAN 2031 FT. (LT.), 2027 FT. (CT) AND 2008 FT. (RT).

STEEL PILE POINTS ARE REQUIRED FOR STEEL PILES AT END BENT No.2.



PROJECT NO. B-4033  
 BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

SHEET 2 OF 3  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 GENERAL DRAWING  
 FOR BRIDGE OVER HOMINY  
 CREEK ON NC 112  
 (SAND HILL ROAD)  
 BETWEEN  
 SR 3446 AND US 19/23



REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	5-2
1			3			TOTAL SHEETS
2			4			50

DRAWN BY: M. POOLE DATE: 04-08  
 CHECKED BY: J. R. DUGGINS DATE: 05-08

26-AUG-2008 11:35  
 F:\structures\B4033\marle\B4033\_sd.fl.01.dgn  
 dahodge

ALL PILES IN THE END BENTS ARE HP 12 X 53 STEEL PILES  
 ALL END BENT BRACE PILES ARE BATTERED AT 3 : 12  
 ALL PILES IN THE BENTS ARE HP 14 X 73 GALVANIZED STEEL PILES  
 DIMENSIONS LOCATING PILES ARE SHOWN  
 TO THE PILE CENTERLINE AT THE BOTTOM OF THE CAP.

BM #3 : 8" SPIKE IN BASE OF 20" WHITE OAK, -L- STA. 28+63.05 (26.77 RT) EL = 2,082.06' NAVD '88

NOTES

HYDRAULIC DATA

DESIGN DISCHARGE = 7800 C.F.S.  
 FREQUENCY OF DESIGN FLOOD = 25 YRS.  
 DESIGN HIGH WATER ELEVATION = 2065.0'  
 DRAINAGE AREA = 79.7 SQ. MI.  
 BASIC DISCHARGE (Q100) = 13700 C.F.S.  
 BASIC HIGH WATER ELEVATION = 2068.3'

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 8300 C.F.S.  
 FREQUENCY OF OVERTOPPING FLOOD = 25 YRS.+  
 OVERTOPPING FLOOD ELEVATION = 2064.4'

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.

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

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

AFTER SERVING AS A TEMPORARY STRUCTURE THE EXISTING STRUCTURE CONSISTING OF 3 SPANS AT 37'-4" EACH WITH A REINFORCED CONCRETE DECK GIRDER SUPERSTRUCTURE AND A CLEAR ROADWAY WIDTH OF 24'-0" ON A SUBSTRUCTURE CONSISTING OF REINFORCED CONCRETE ABUTMENT END BENTS AND REINFORCED CONCRETE POST AND WEB BENTS ON SPREAD FOOTINGS AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE A LOAD LIMIT MAY BE POSTED AND 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 75 FT. LEFT AND 60 FT. RIGHT OF THE CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE PER CUBIC YARD FOR UNCLASSIFIED STRUCTURE EXCAVATION.

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

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.

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

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

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 AT STATION 26+53.00-L-.

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

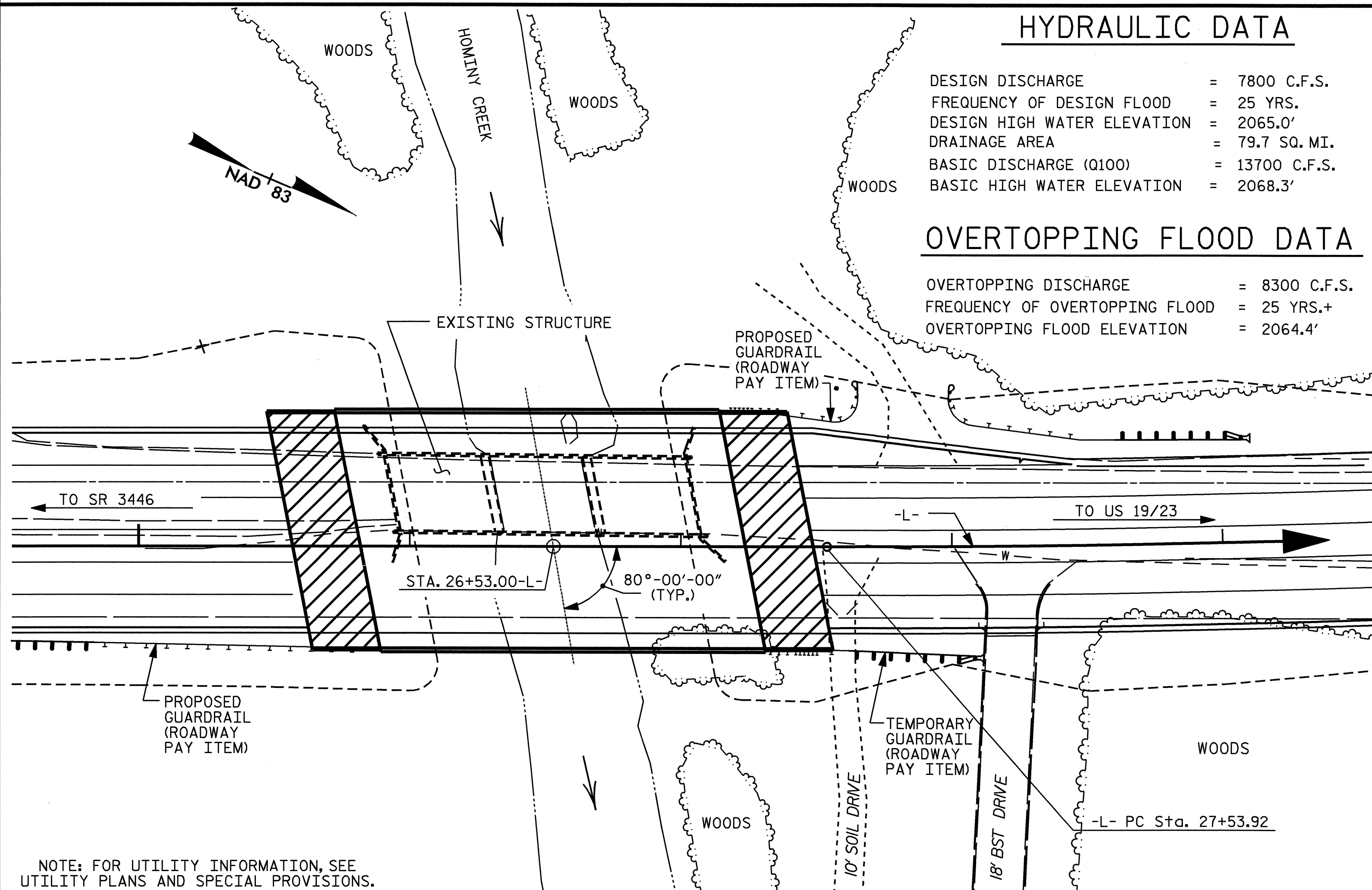
FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.

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

FOR GALVANIZED PILES, A MINIMUM OF 20'-0" OF THE TOP OF EACH PILE SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



LOCATION SKETCH

NOTE: FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	CONSTRUCTION MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	36" PRESTRESSED CONCRETE GIRDERS	HP 12 X 53 STEEL PILES	HP 14 X 73 GALVANIZED STEEL PILES	STEEL PILE POINTS	TWO BAR METAL RAIL	1'-2" X 3'-2 1/16" CONCRETE PARAPET	RIP RAP CLASS II 2'-0" THICK	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS			
	LUMP SUM	LUMP SUM	CU. YDS.	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	NO.	LIN. FT.	EACH	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM		
SUPERSTRUCTURE	LUMP SUM			12531	13570		LUMP SUM		33	1507.00				264.18	279.60			LUMP SUM	LUMP SUM		
END BENT NO.1			850			63.4		8522		16	885					360	400				
BENT NO.1						42.9		6932			19	865	19								
BENT NO.2						43.4		6937			19	950									
END BENT NO.2			225			66.3		8773		16	715				170	189					
TOTAL	LUMP SUM	LUMP SUM	1075	12531	13570	216.0	LUMP SUM	31164	33	1507.00	32	1600	38	1815	35	264.18	279.60	530	589	LUMP SUM	LUMP SUM

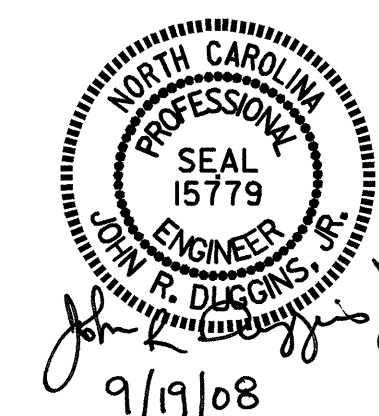
PROJECT NO. B-4033  
BUNCOMBE COUNTY  
 STATION: 26+53.00-L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

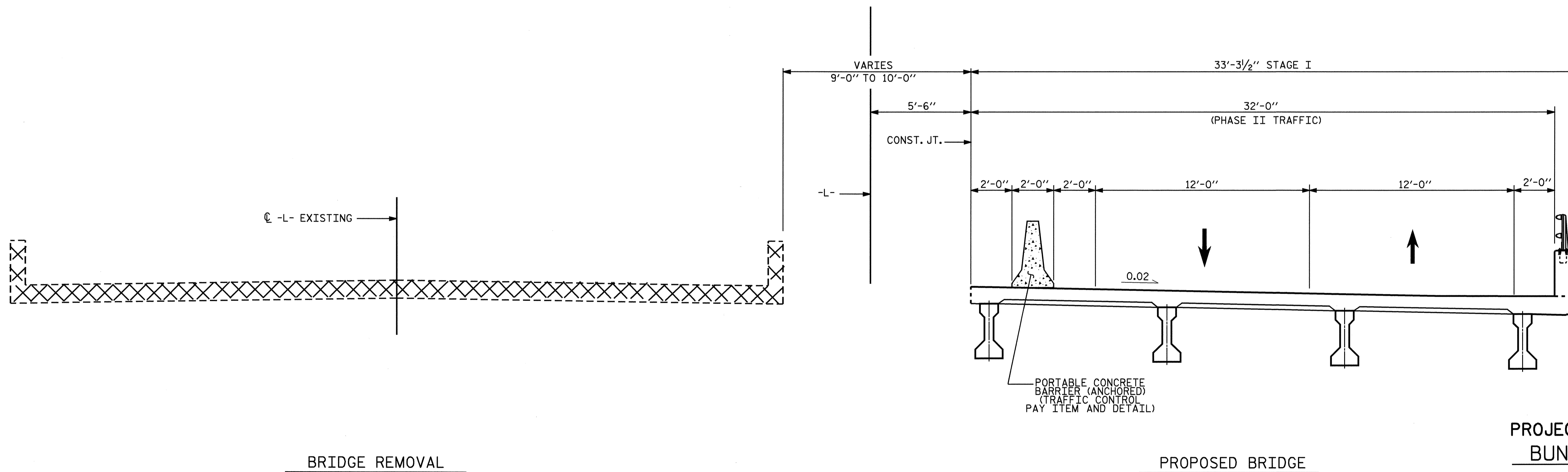
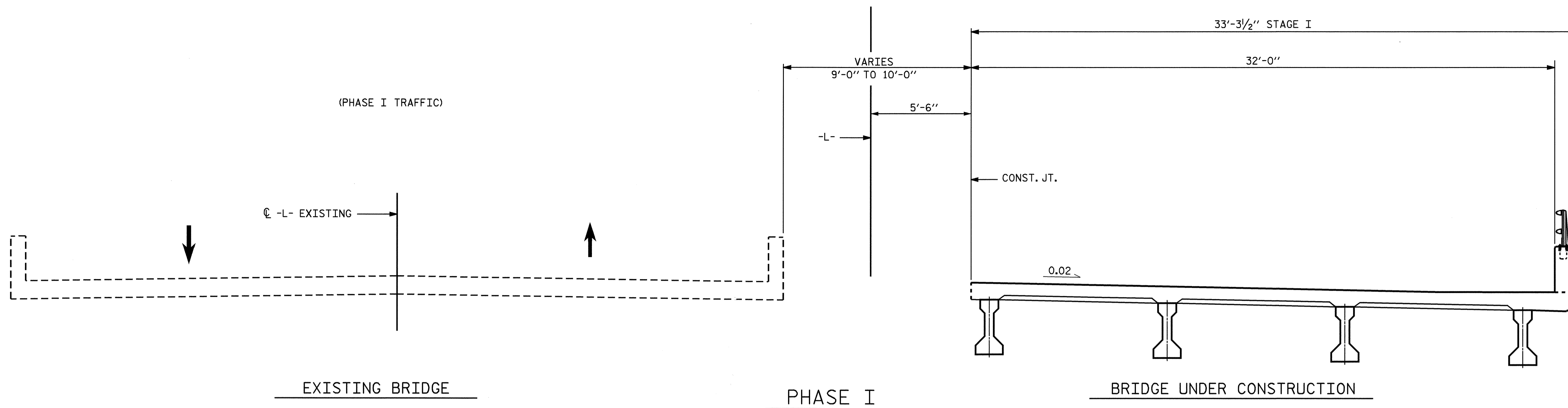
GENERAL DRAWING

FOR BRIDGE OVER HOMINY CREEK ON NC 112 (SAND HILL ROAD) BETWEEN SR 3446 AND US 19/23



DRAWN BY : L.L. MURPHY DATE : 04-08  
 CHECKED BY : J. R. DUGGINS DATE : 04-08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			5-3
2			4			TOTAL 50

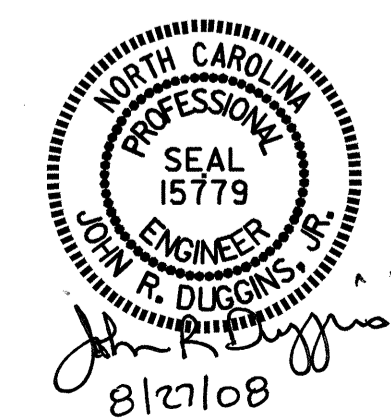


PROJECT NO. B-4033  
BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

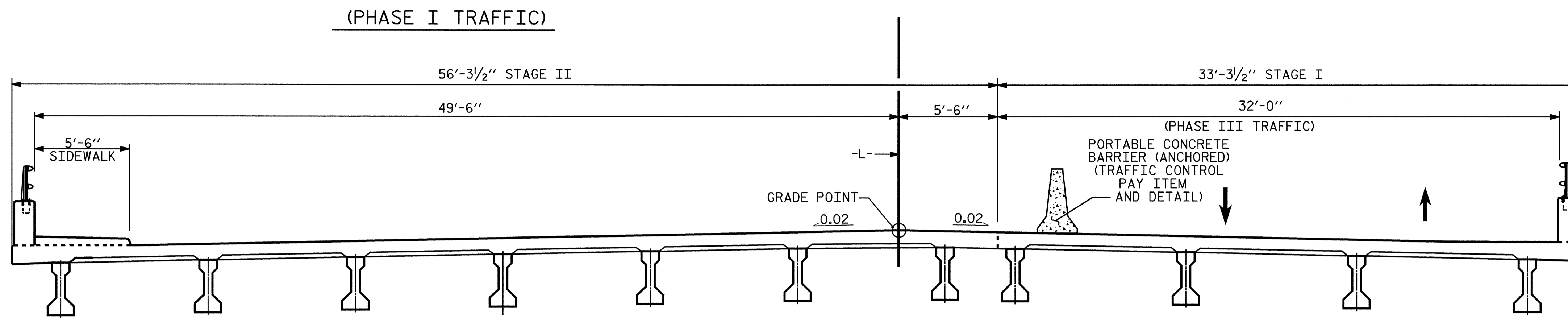
**CONSTRUCTION SEQUENCE**  
 FOR BRIDGE OVER HOMINY CREEK  
 ON NC 112 (SAND HILL ROAD)  
 BETWEEN SR 3446 & US 19 / 23



DRAWN BY : M. POOLE DATE : 05/08  
 CHECKED BY : J. R. DUGGINS DATE : 05/08

26-AUG-2008 08:47  
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 dahodge

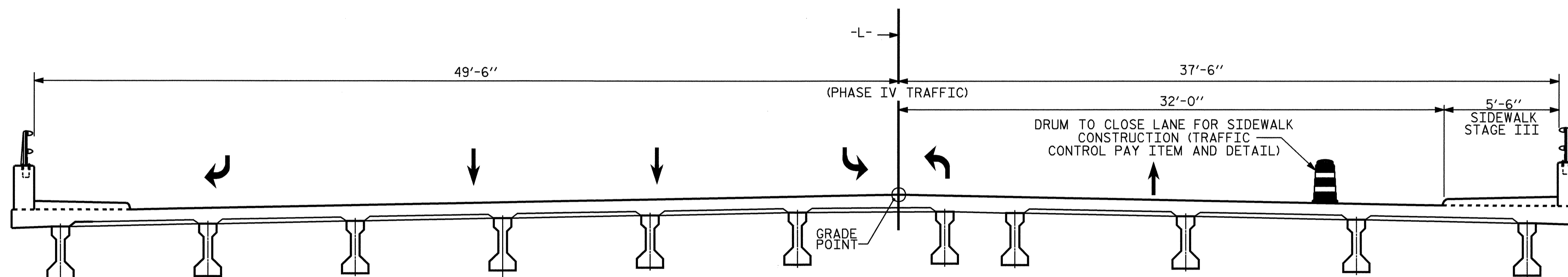
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NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-4
2			4			50



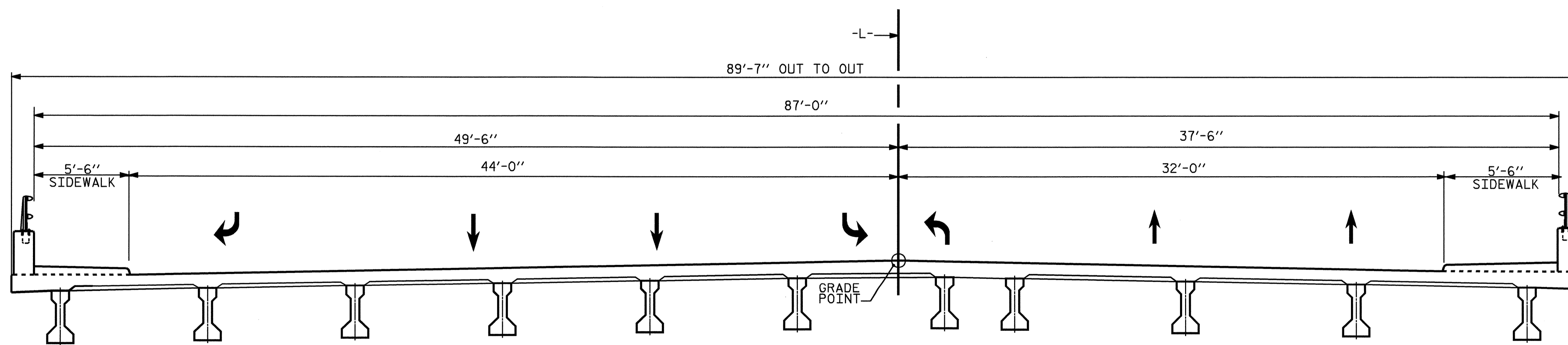
BRIDGE UNDER CONSTRUCTION

PHASE III

PROPOSED BRIDGE



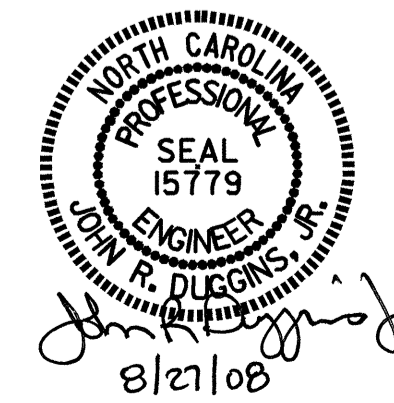
PHASE IV



FINAL TYPICAL SECTION

PROJECT NO. B-4033  
BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

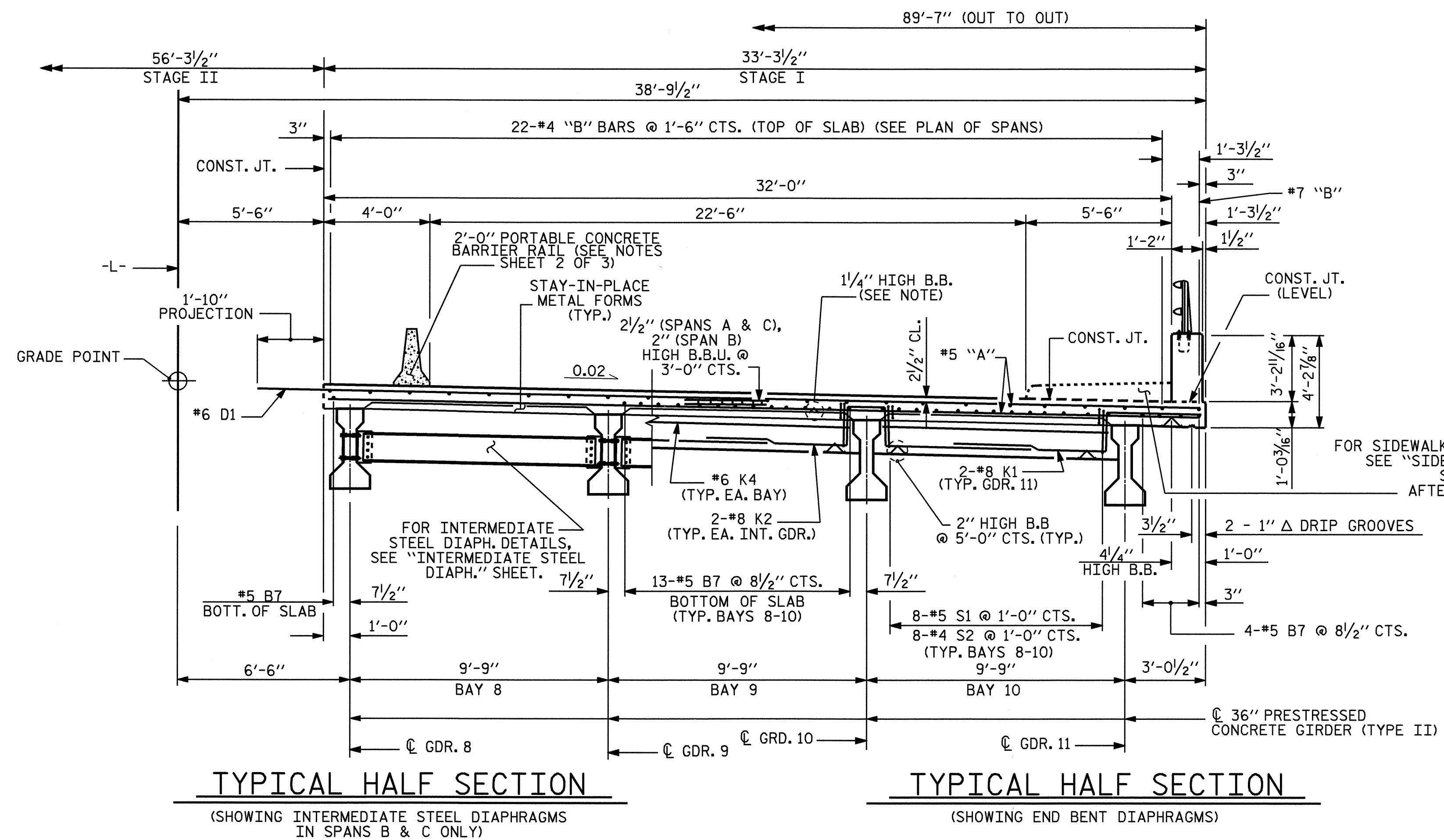
SHEET 2 OF 2  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**CONSTRUCTION SEQUENCE**  
 FOR BRIDGE OVER HOMINY CREEK  
 ON NC 112 (SAND HILL ROAD)  
 BETWEEN SR 3446 & US 19 / 23



DRAWN BY : M. POOLE DATE : 05-08  
 CHECKED BY : J. R. DUGGINS DATE : 05-08

REVISIONS						SHEET NO. 3-5 TOTAL SHEETS 50
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

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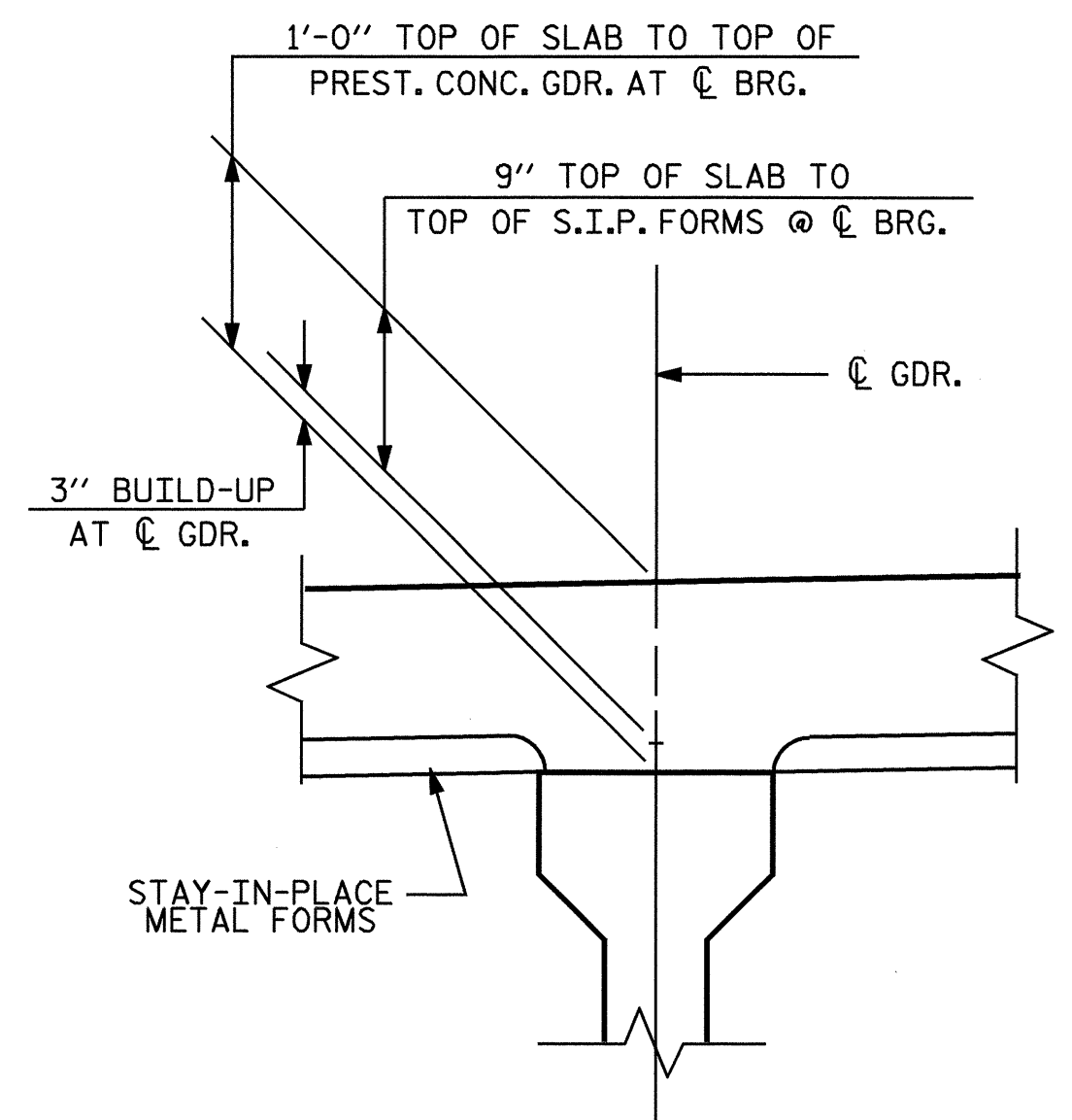


**TYPICAL HALF SECTION**

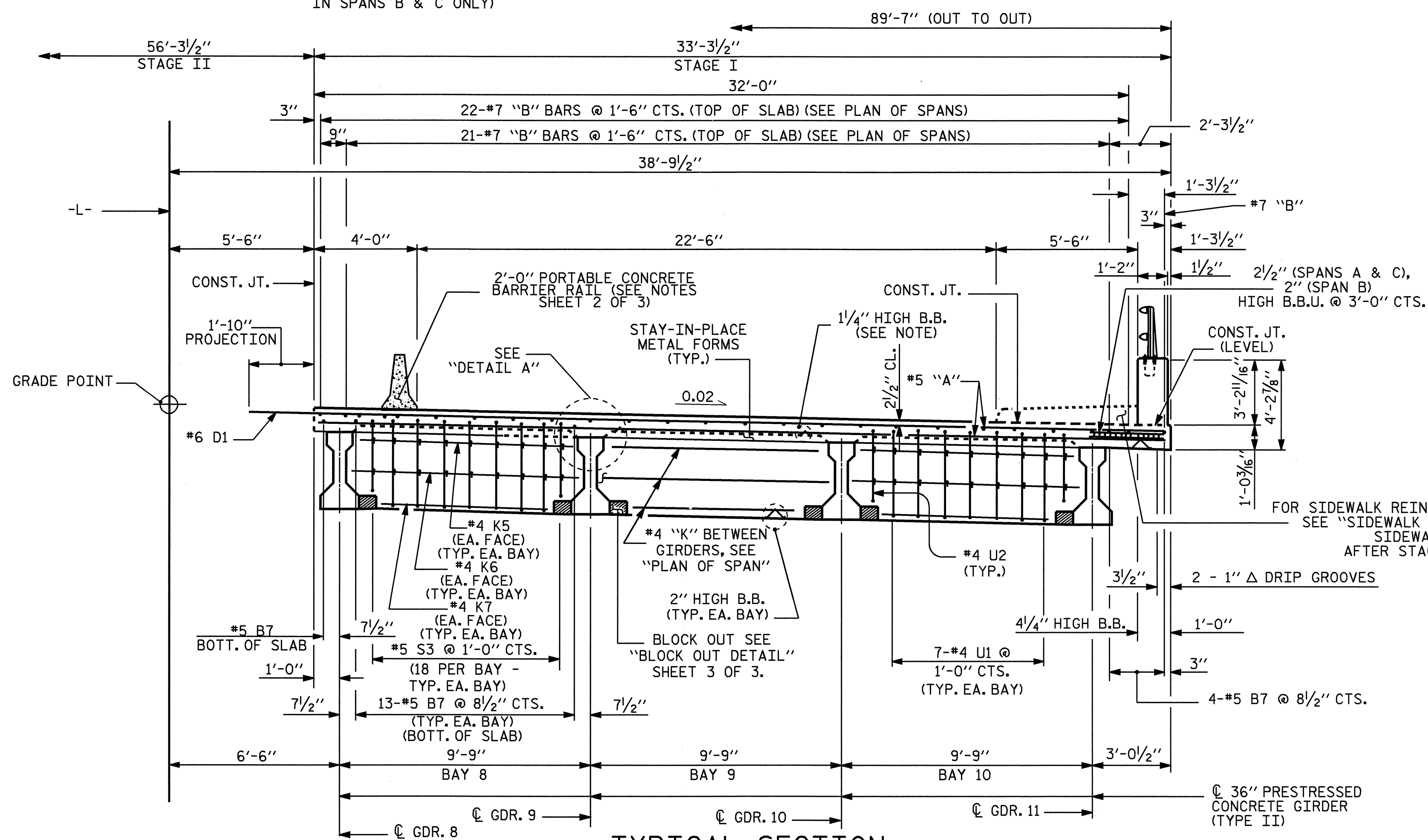
(SHOWING INTERMEDIATE STEEL DIAPHRAGMS IN SPANS B & C ONLY)

**TYPICAL HALF SECTION**

(SHOWING END BENT DIAPHRAGMS)



**DETAIL A**



**TYPICAL SECTION**

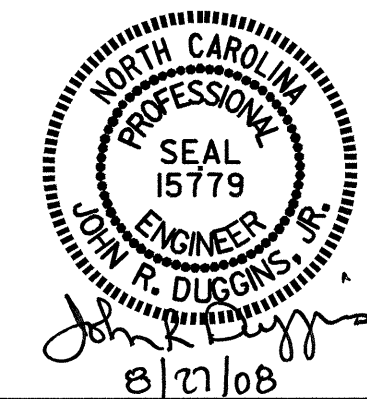
(SHOWING CONTINUOUS BENT DIAPHRAGMS)

PROJECT NO. B-4033  
 BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 TYPICAL SECTION  
 STAGE I



REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			56
2			4			50

DRAWN BY: M. POOLE DATE: 10-07  
 CHECKED BY: D. HODGE DATE: 05-08

**NOTES**

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

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

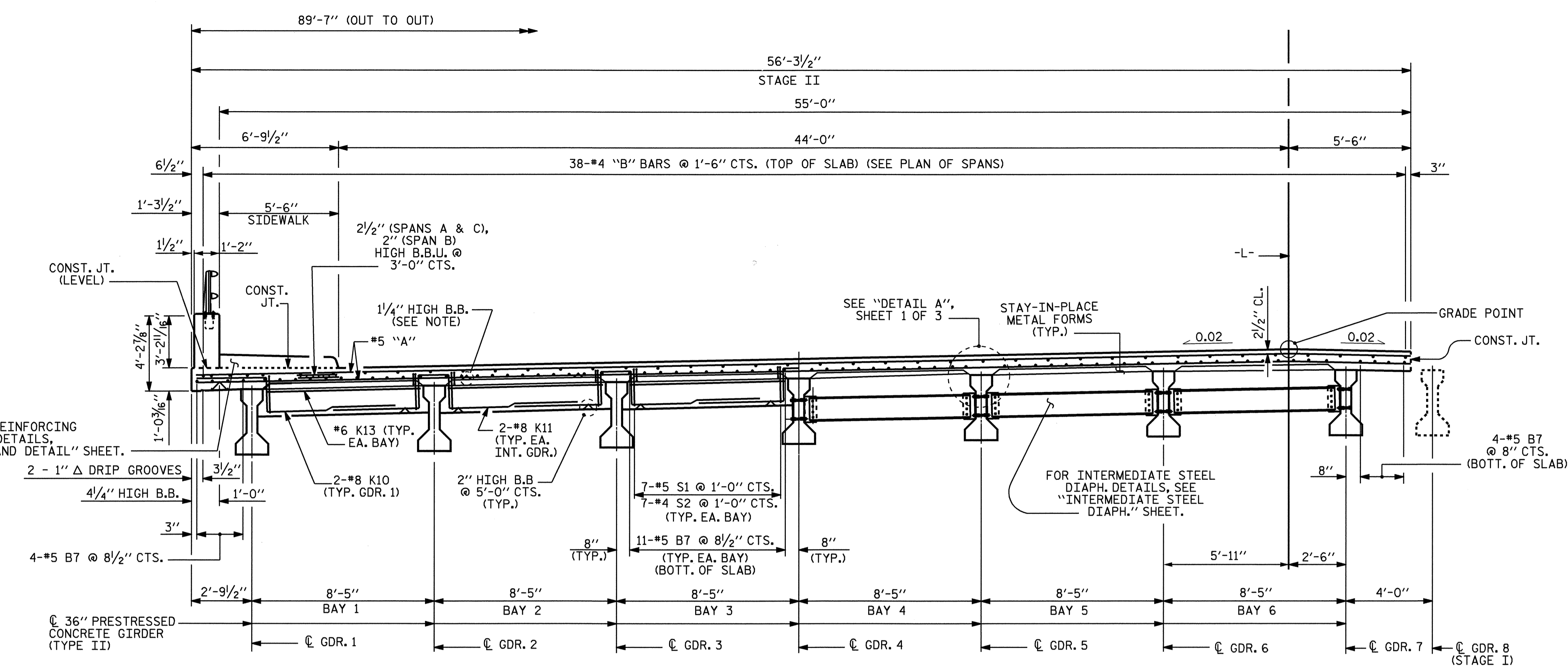
PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

SEE TRAFFIC CONTROL PLANS FOR LOCATION AND PAY LIMITS OF THE ANCHORED PORTABLE CONCRETE BARRIER.

PARAPET AND SIDEWALK 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 3000 PSI.

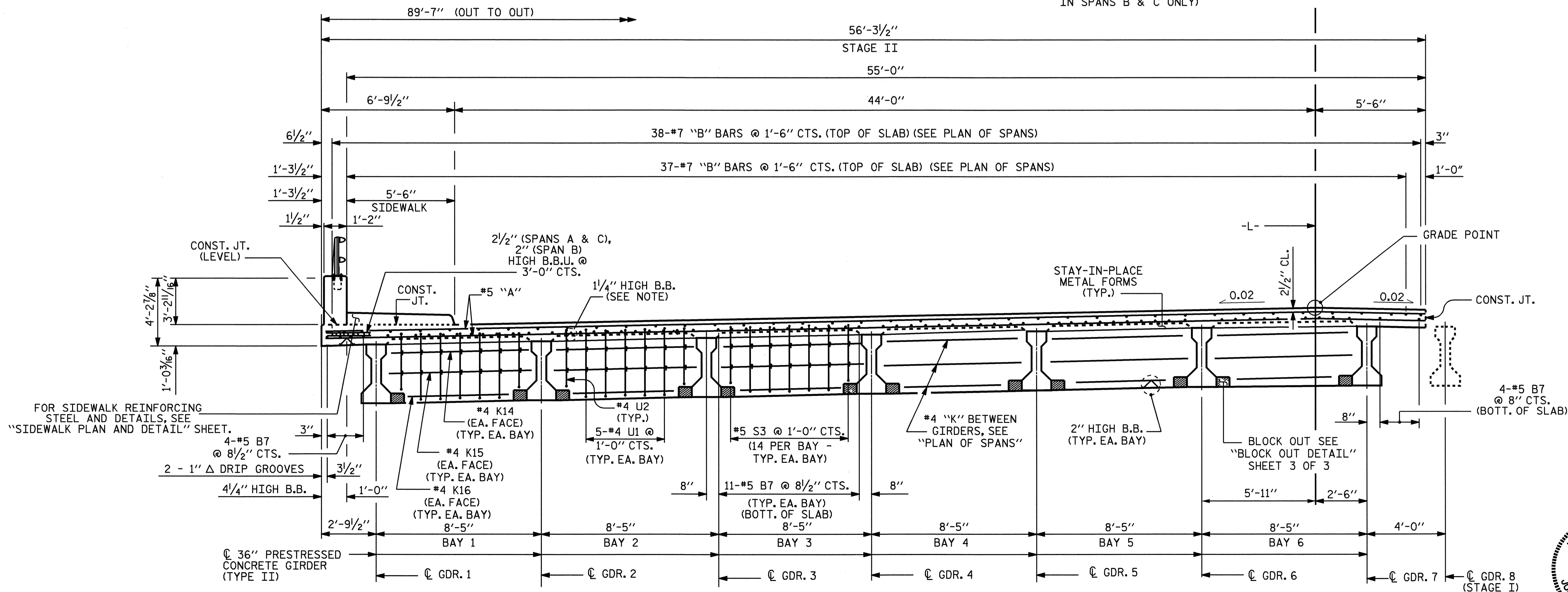
FOR SIDEWALK REINFORCING STEEL AND DETAILS, SEE "SIDEWALK PLAN AND DETAIL" SHEET.

FOR INTERMEDIATE STEEL DIAPH. DETAILS, SEE "INTERMEDIATE STEEL DIAPH." SHEET.



**TYPICAL HALF SECTION**  
(SHOWING END BENT DIAPHRAGMS)

**TYPICAL HALF SECTION**  
(SHOWING INTERMEDIATE STEEL DIAPHRAGMS IN SPANS B & C ONLY)

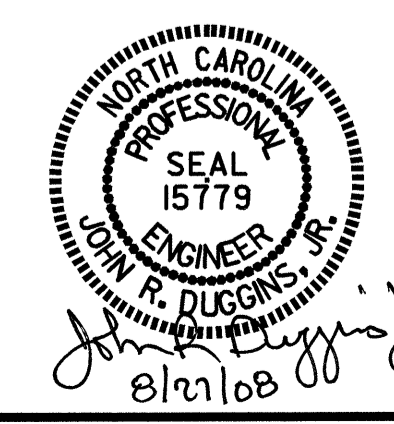


**TYPICAL HALF SECTION**  
(SHOWING CONTINUOUS BENT DIAPHRAGMS)

PROJECT NO. B-4033  
BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**SUPERSTRUCTURE**  
**TYPICAL SECTION**  
 STAGE II

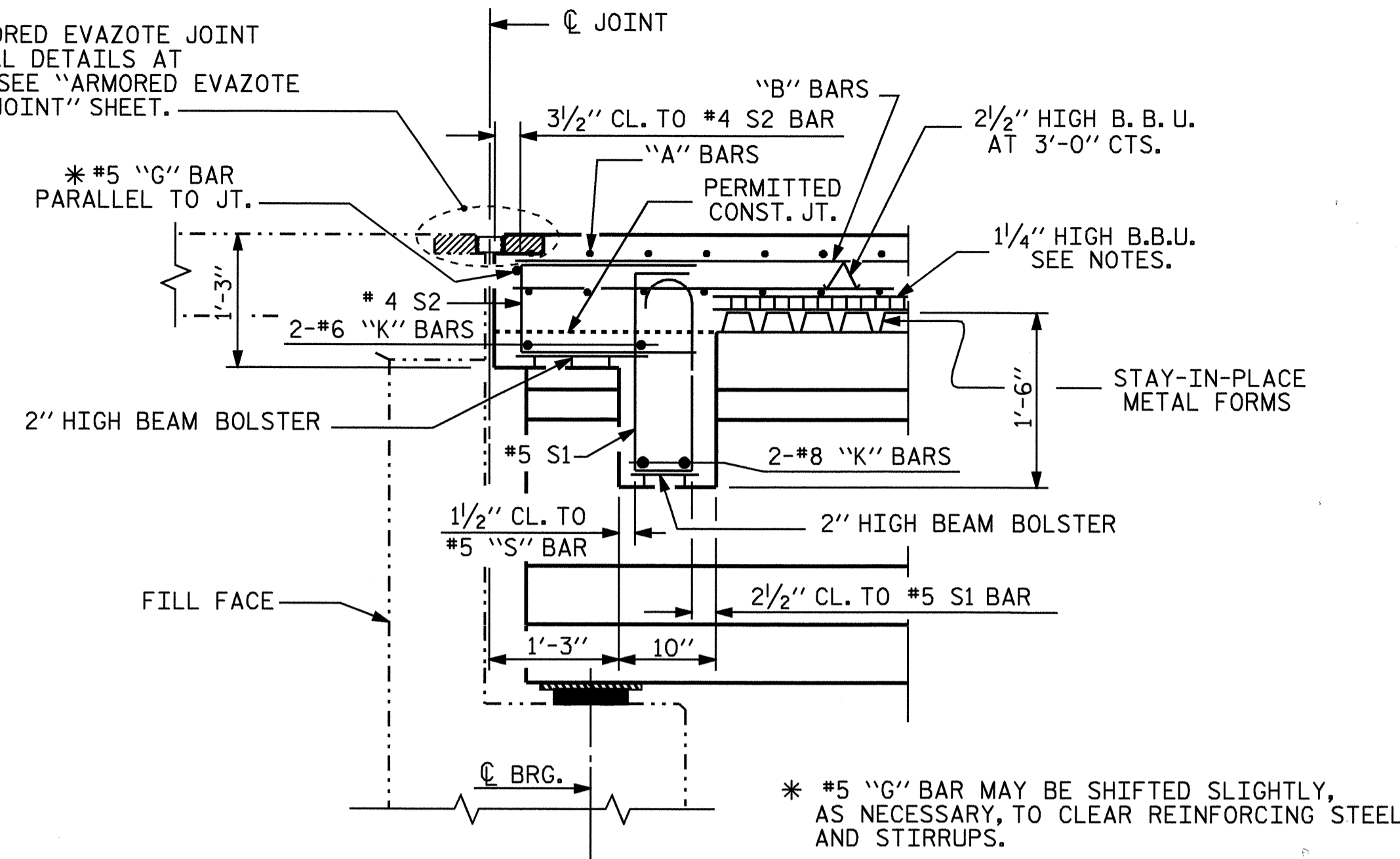


DRAWN BY: M. POOLE DATE: 10-07  
 CHECKED BY: D. HODGE DATE: 05-08

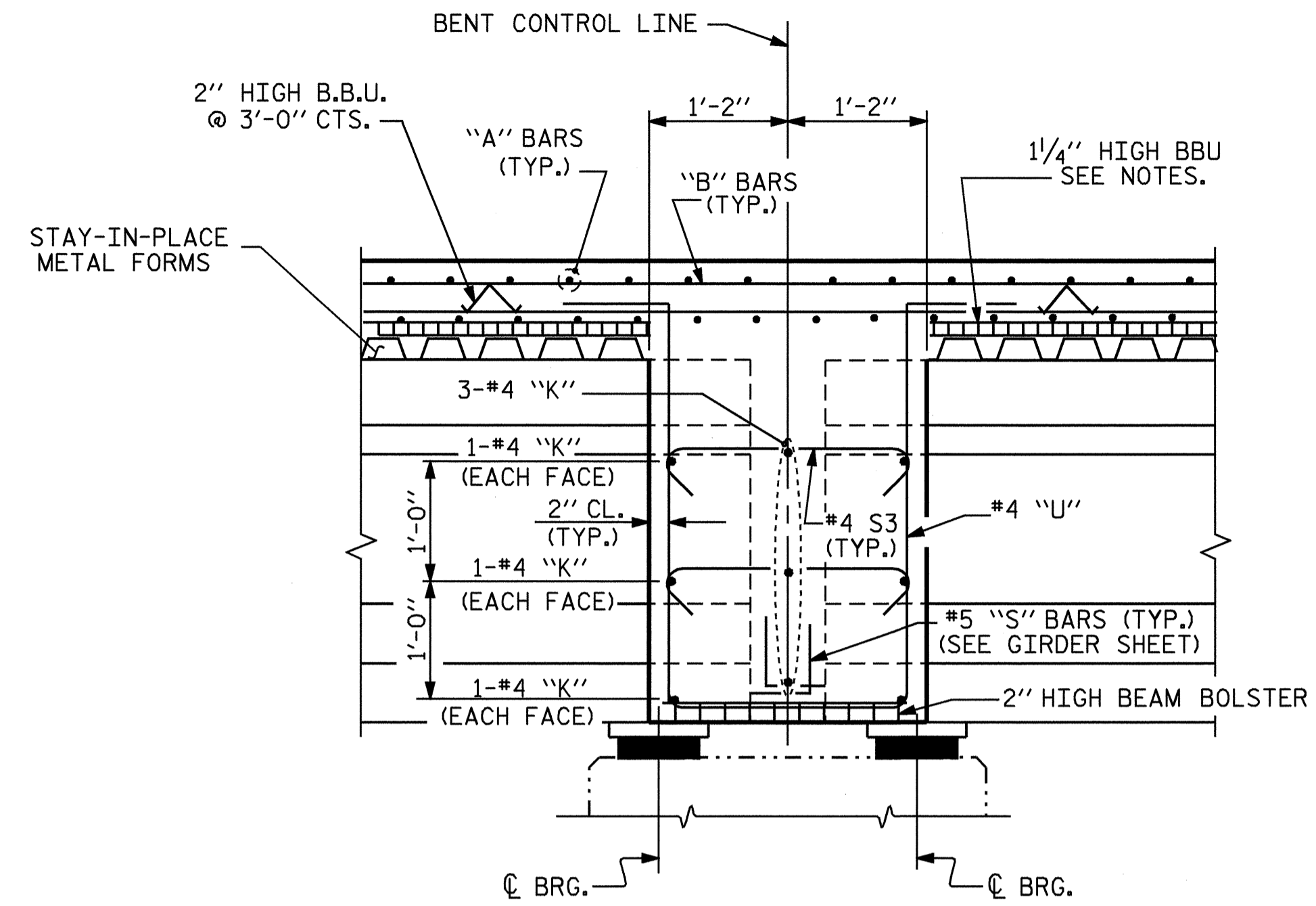
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
1			3			50	5-1
2			4				



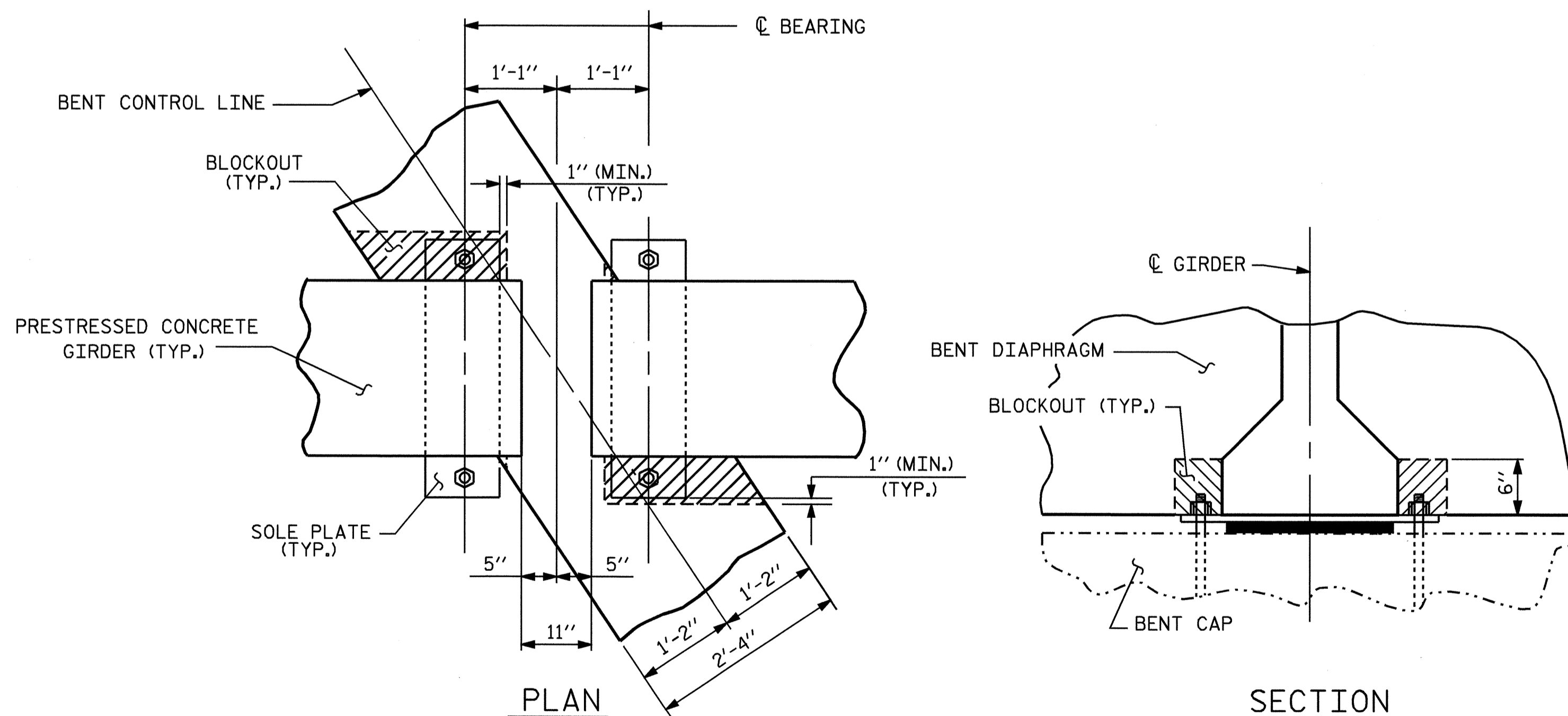
FOR ARMORED EVAZOTE JOINT  
SEAL DETAILS AT  
END BENT, SEE "ARMORED EVAZOTE  
JOINT" SHEET.



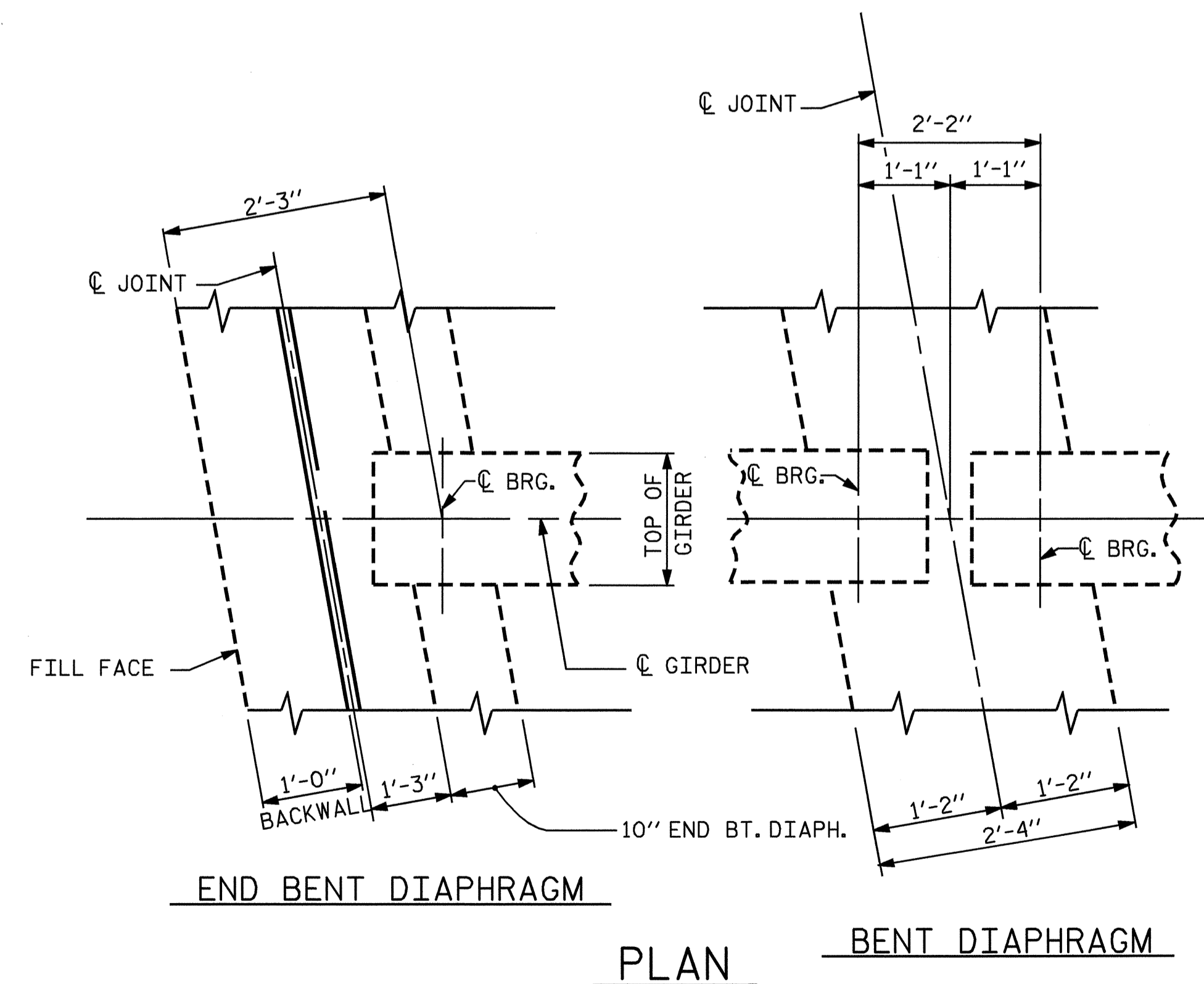
SECTION THRU END BENT DIAPHRAGM



SECTION THRU CONTINUOUS BENT DIAPHRAGM



BENT DIAPHRAGM BLOCK-OUT DETAIL



END BENT DIAPHRAGM

PLAN

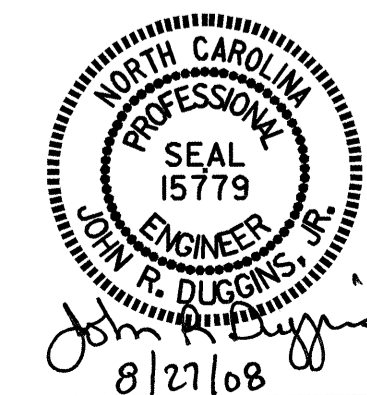
BENT DIAPHRAGM

PROJECT NO. B-4033  
BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 TYPICAL SECTION

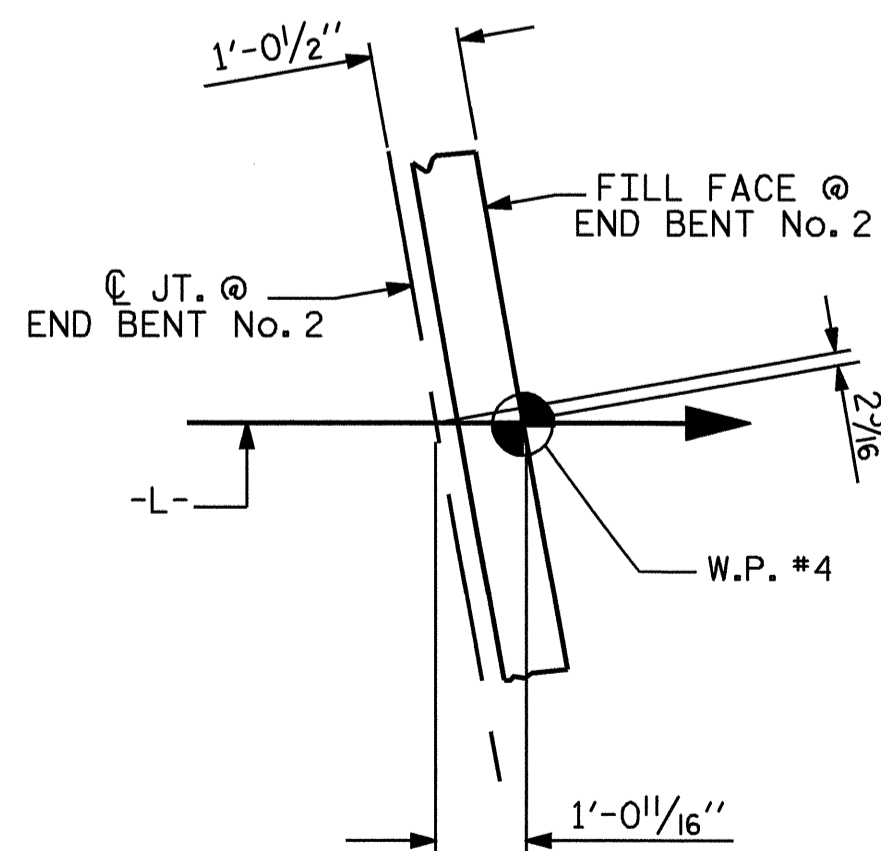
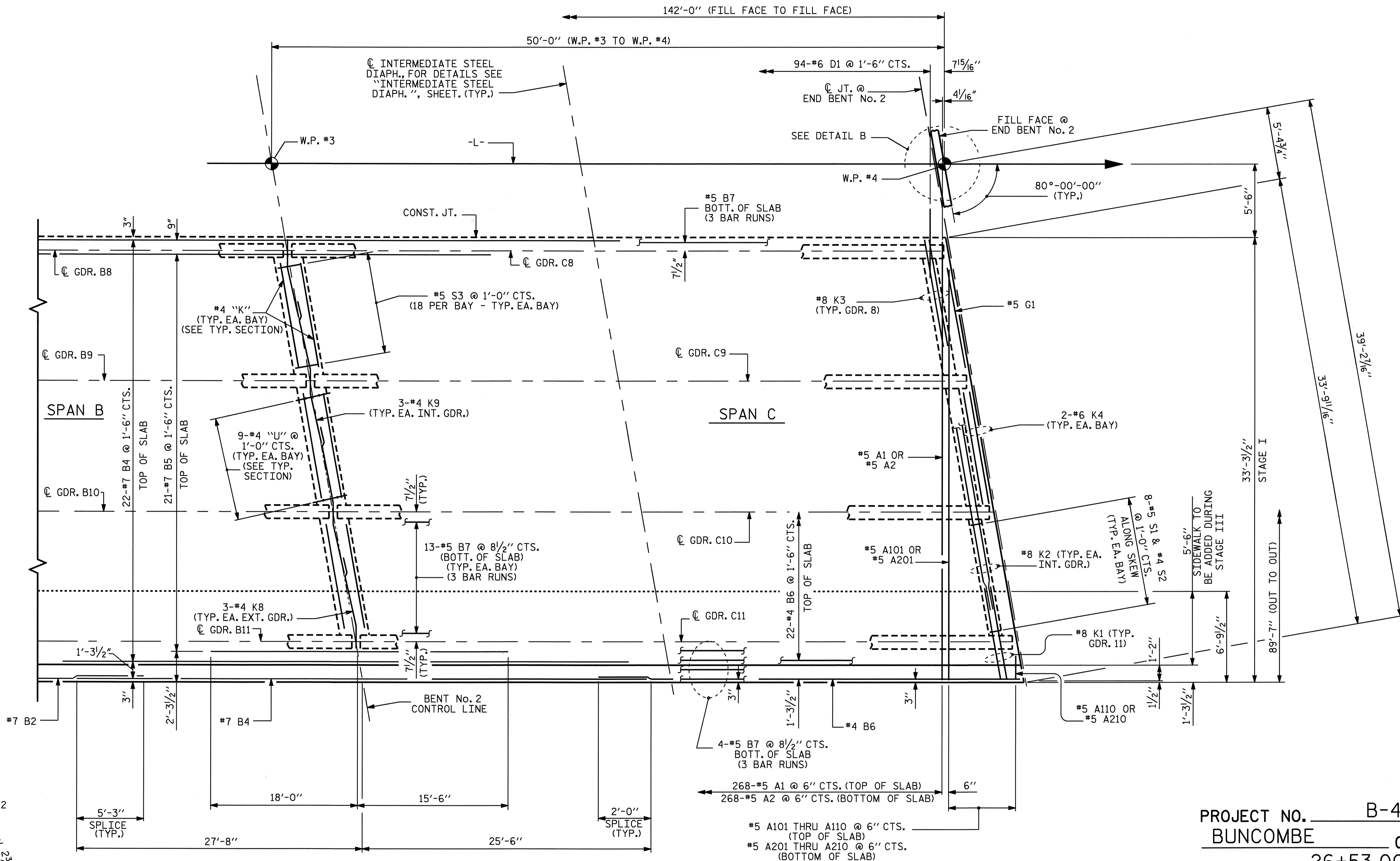


DRAWN BY : M. POOLE DATE : 10-07  
 CHECKED BY : D. HODGE DATE : 05-08

27-AUG-2008 10:40  
 F:\Structures\B4033\marle\B4033.ed.TS.01.dgn  
 dahodge

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			50



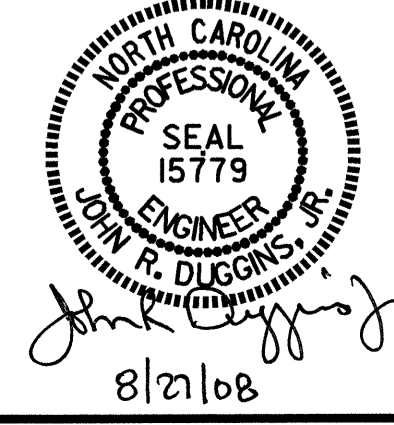


**PLAN OF SPAN C**

FOR REINFORCING STEEL IN SIDEWALK, SEE "SIDEWALK DETAILS" SHEET.  
 THE #6 D1 BARS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AS THE MAIN SLAB REINFORCING STEEL. THE #6 D1 BARS SHALL EXTEND 1'-10" INTO STAGE II.

DRAWN BY : M. POOLE DATE : 10/07  
 CHECKED BY : D. HODGE DATE : 05-08

25-AUG-2008 09:12  
 Structures\B4033\mario\B4033.ed.S.01.dgn  
 dahodge

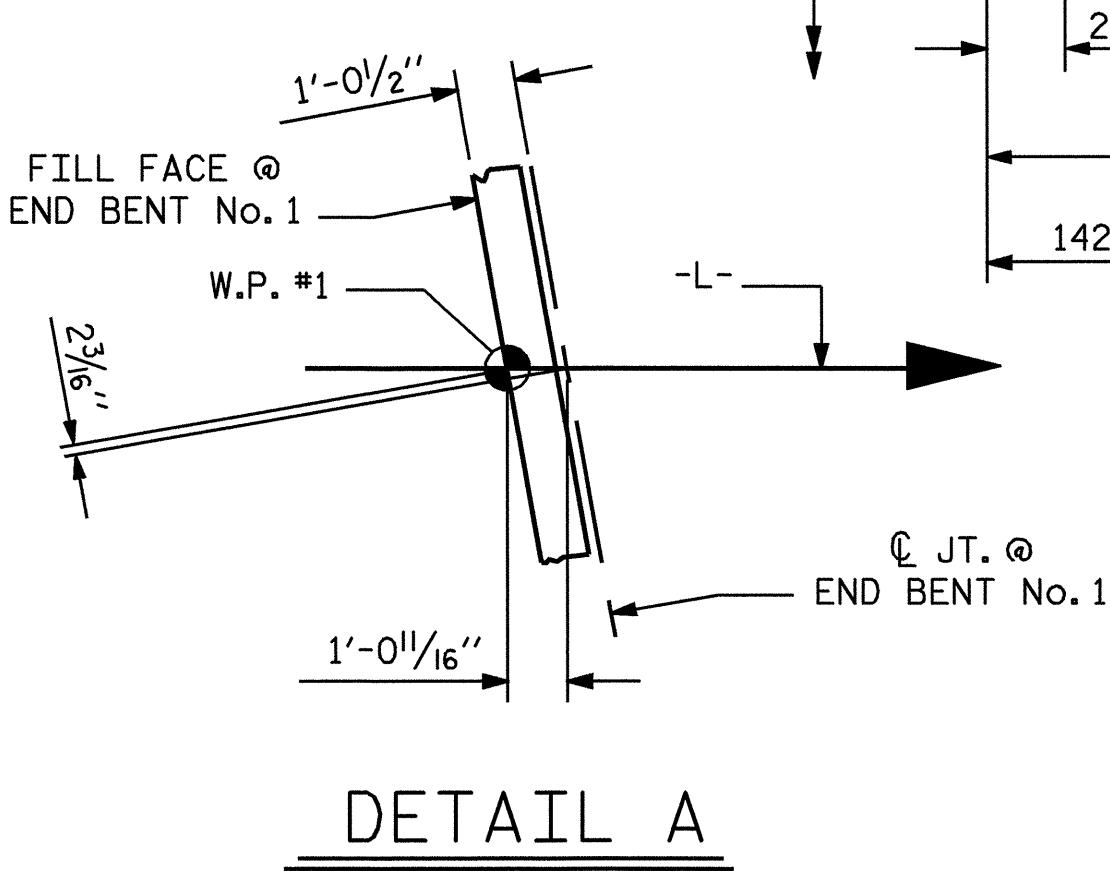
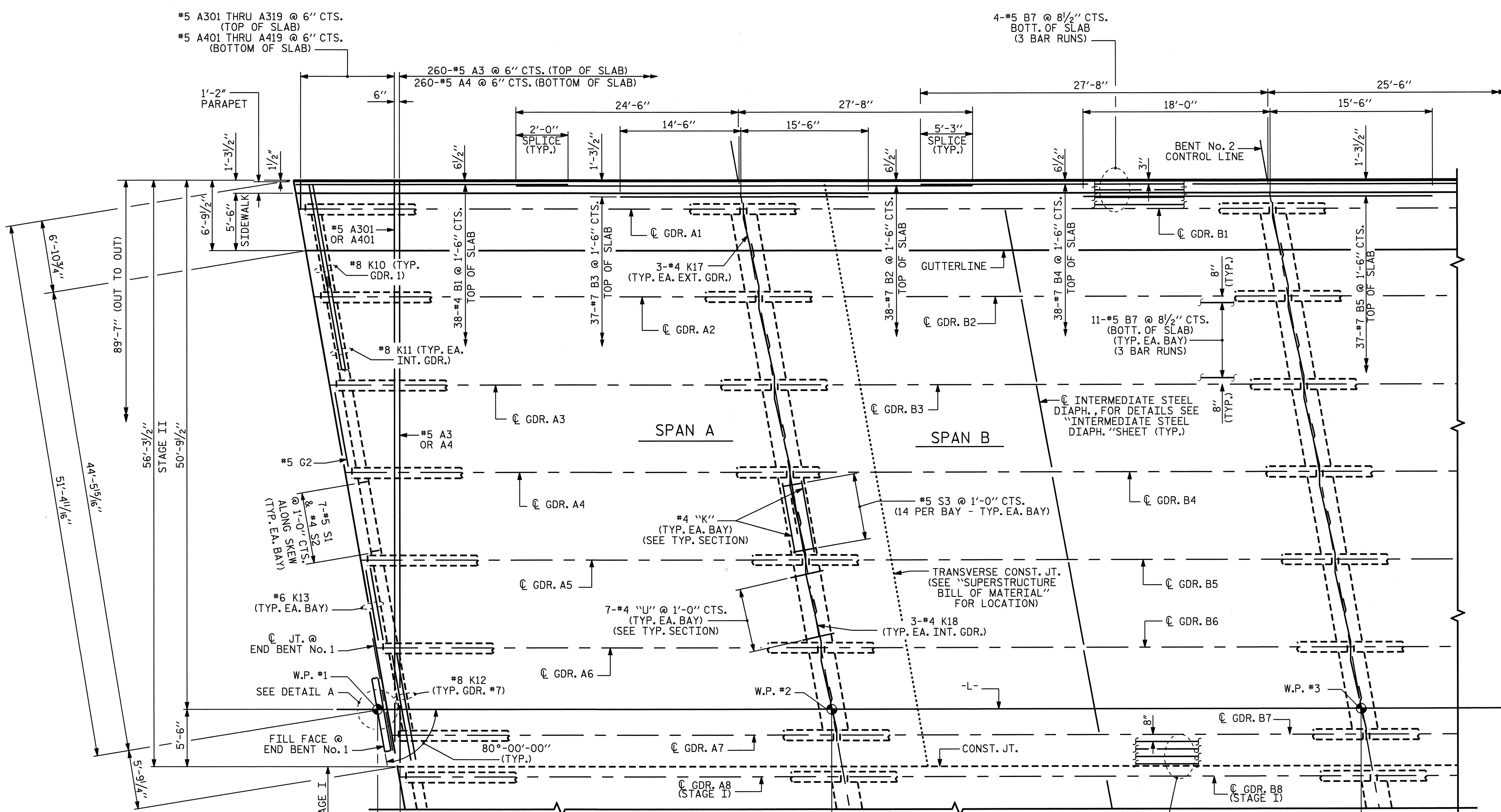


PROJECT NO. B-4033  
 BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-10
SUPERSTRUCTURE PLAN OF SPAN STAGE I						TOTAL SHEETS 50
REVISIONS						NO. 1 BY: [ ] DATE: [ ]
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

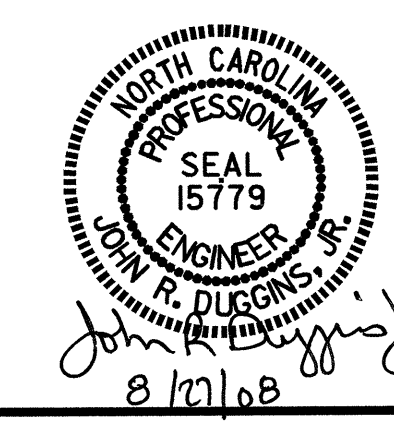
NCDD



**PLAN OF SPANS A & B**  
 FOR REINFORCING STEEL IN SIDEWALK, SEE "SIDEWALK DETAILS" SHEET.

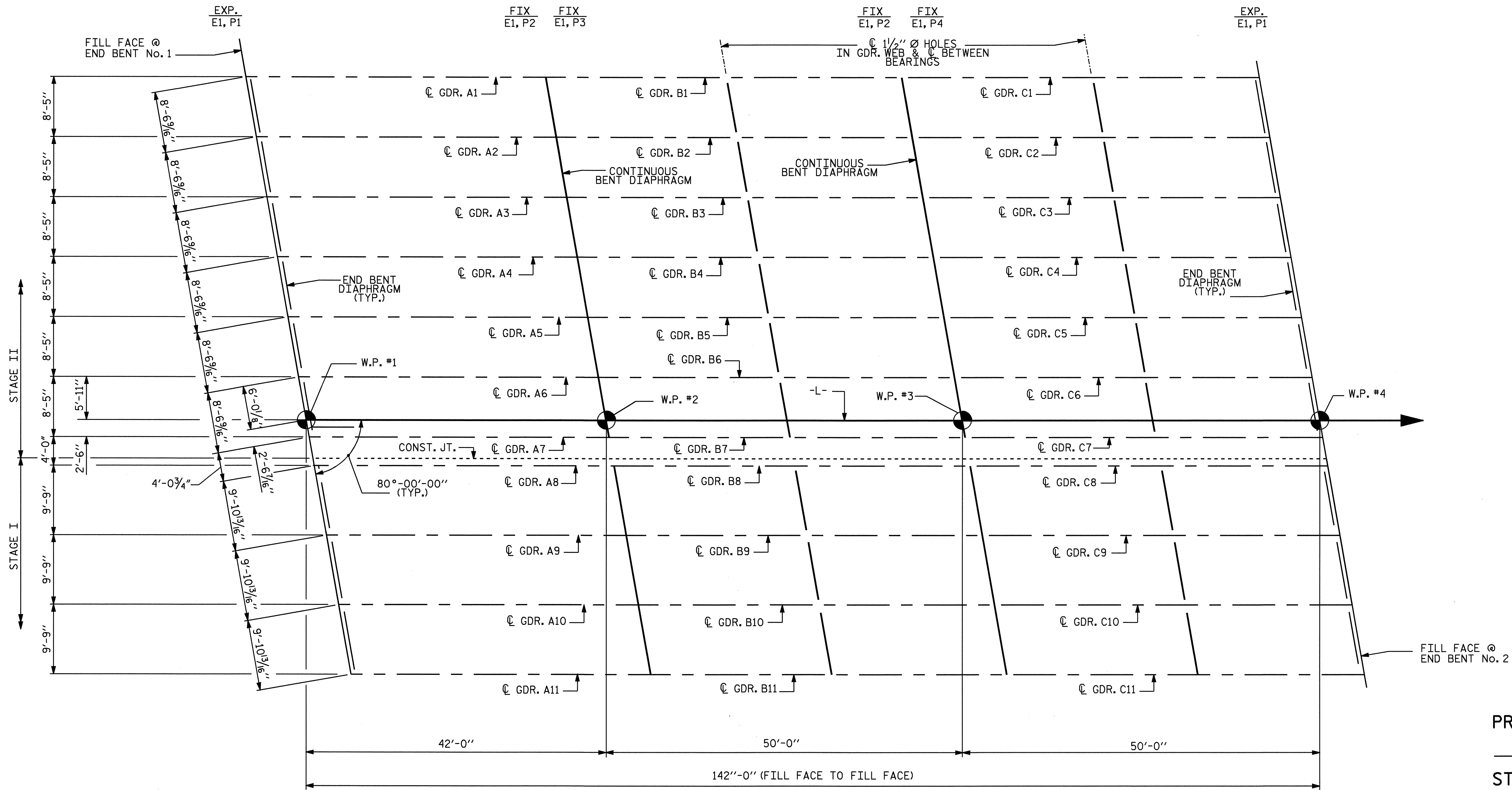
PROJECT NO. B-4033  
 BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-  
 SHEET 3 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPAN STAGE II					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-11					TOTAL SHEETS 50



DRAWN BY: M. POOLE DATE: 10/07  
 CHECKED BY: D. HODGE DATE: 6-08





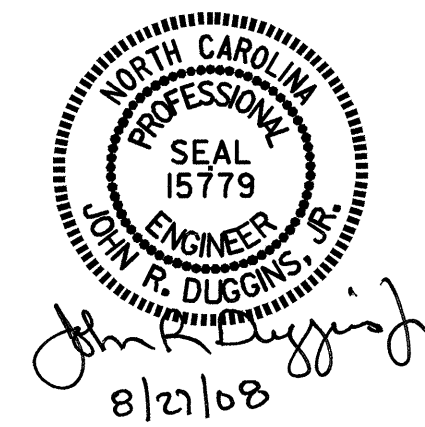
PROJECT NO. B-4033  
BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUPERSTRUCTURE  
 FRAMING PLAN**

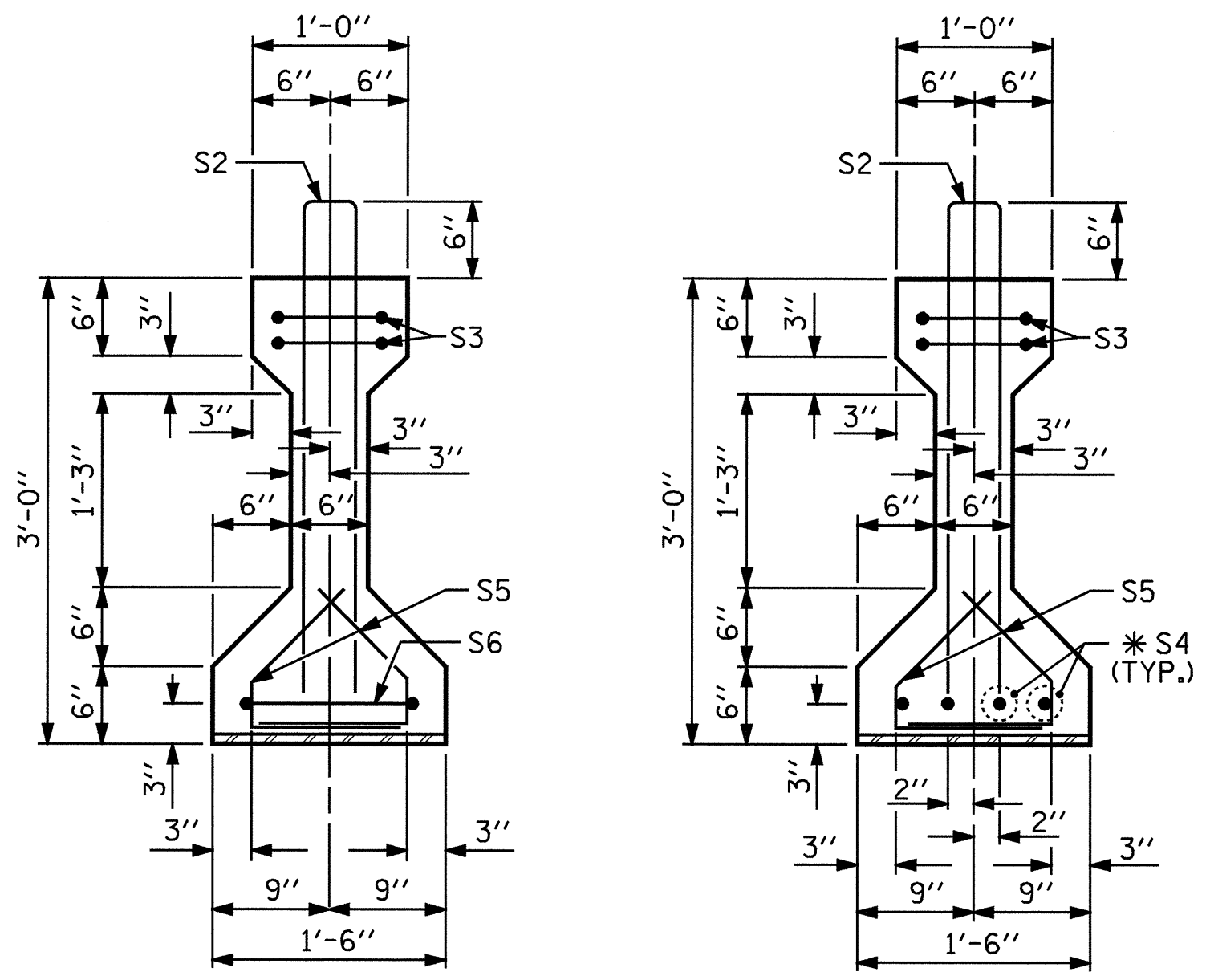
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			50
2			4			

SHEET NO. S-13



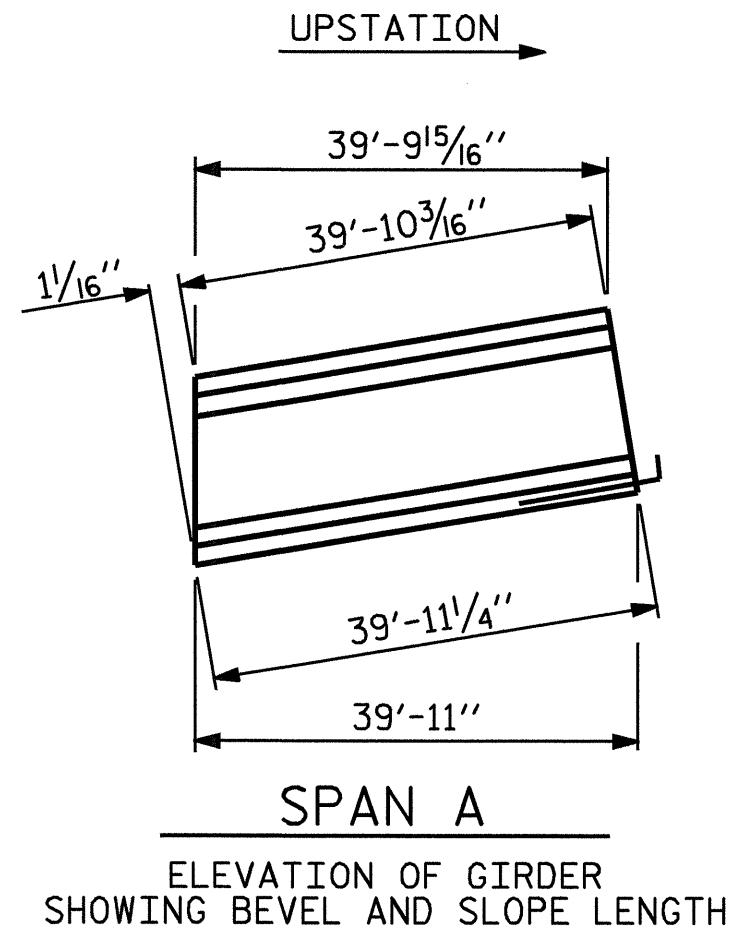
DRAWN BY : M. POOLE DATE : 10/07  
 CHECKED BY : D. HODGE DATE : 05-08

**FRAMING PLAN**

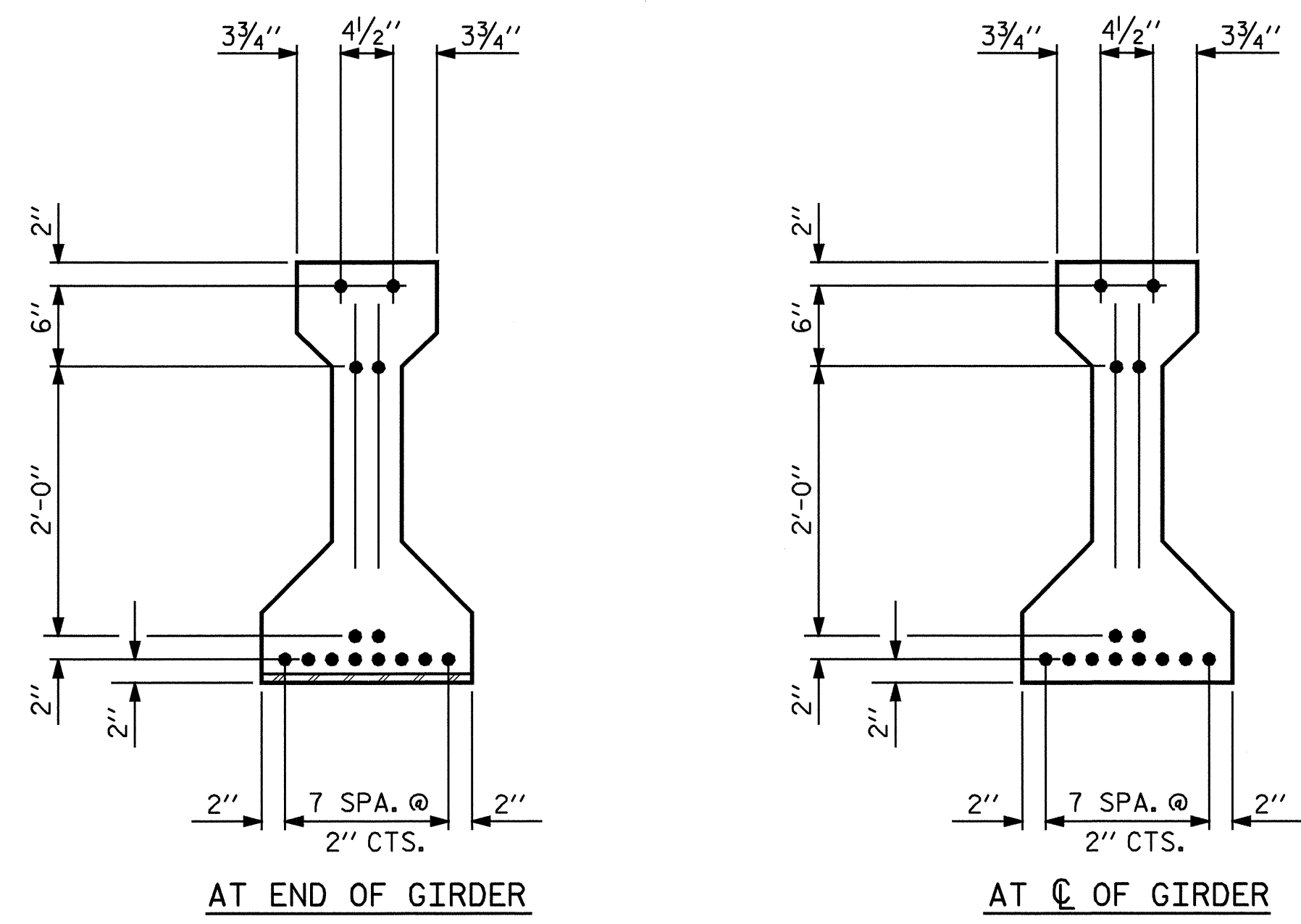


SECTION A-A

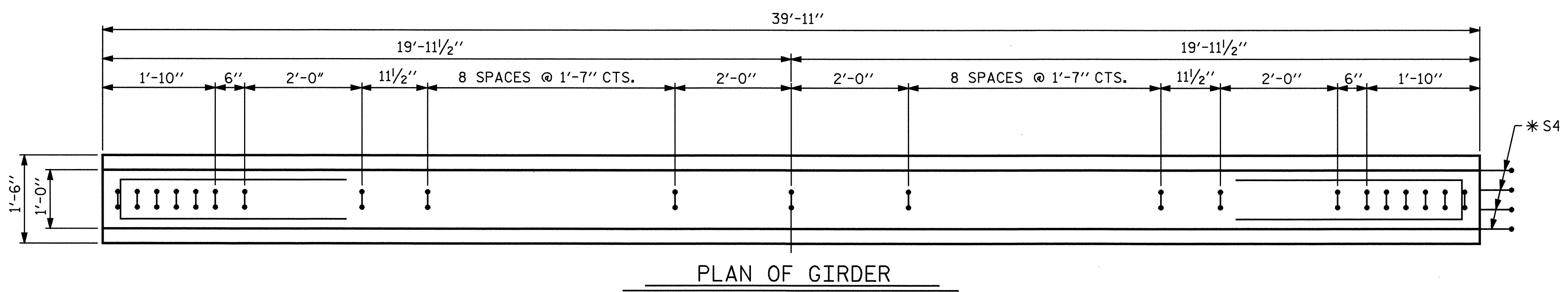
SECTION B-B



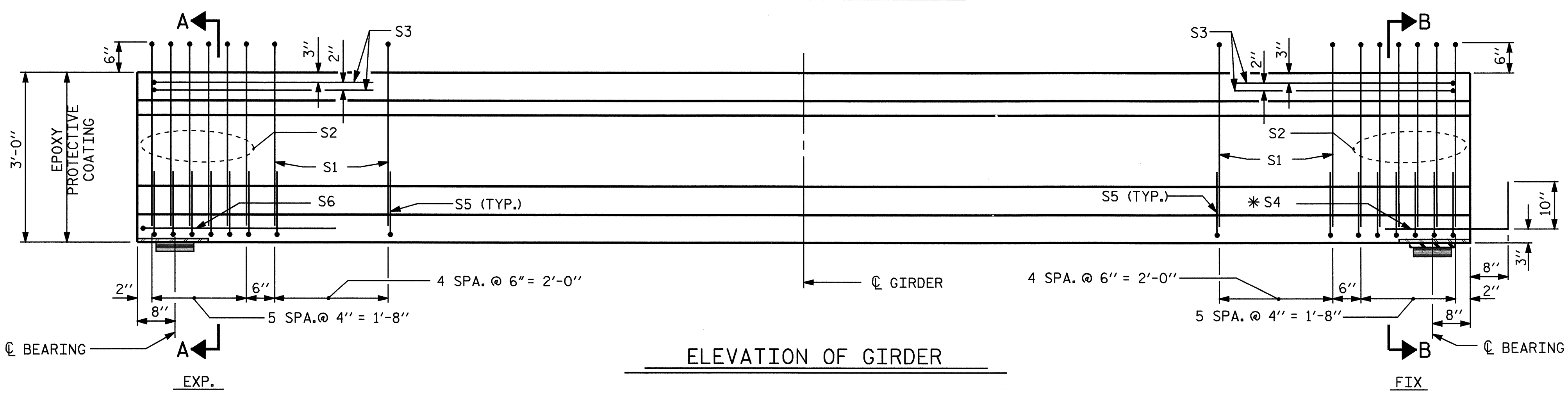
SPAN A  
ELEVATION OF GIRDER  
SHOWING BEVEL AND SLOPE LENGTH



0.6" Ø LOW RELAXATION STRAND LAYOUT



PLAN OF GIRDER



ELEVATION OF GIRDER

0.6" Ø L. R. GRADE 270 STRANDS

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

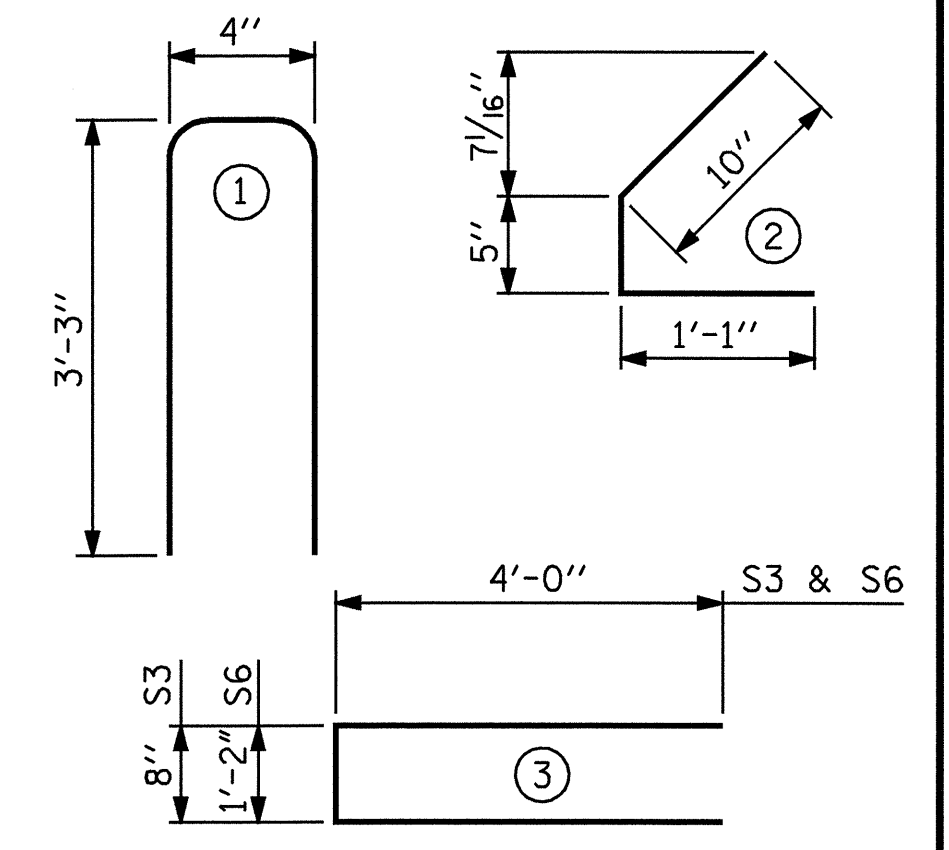
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	29	#4	1	6'-10"	132
S2	12	#5	1	6'-10"	86
S3	4	#4	3	8'-8"	23
*S4	4	#5	STR	3'-8"	15
S5	44	#4	2	2'-4"	69
S6	1	#4	3	9'-2"	6

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

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL LB.	6000 PSI CONCRETE C.Y.	0.6" Ø L.R. STRANDS No.
	331	3.8	14

GIRDERS REQUIRED

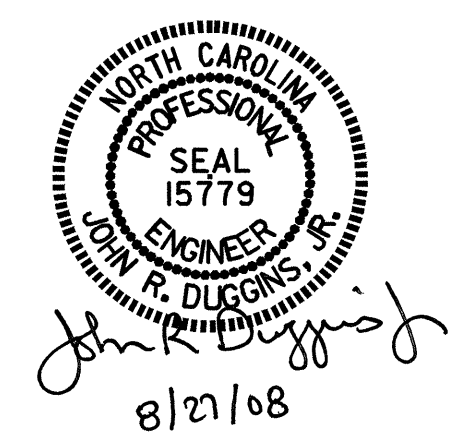
NUMBER	LENGTH	TOTAL LENGTH
11	39'-11"	439'-1"

PROJECT NO. B-4033  
BUNCOMBE COUNTY  
STATION: 26+53.00 -L

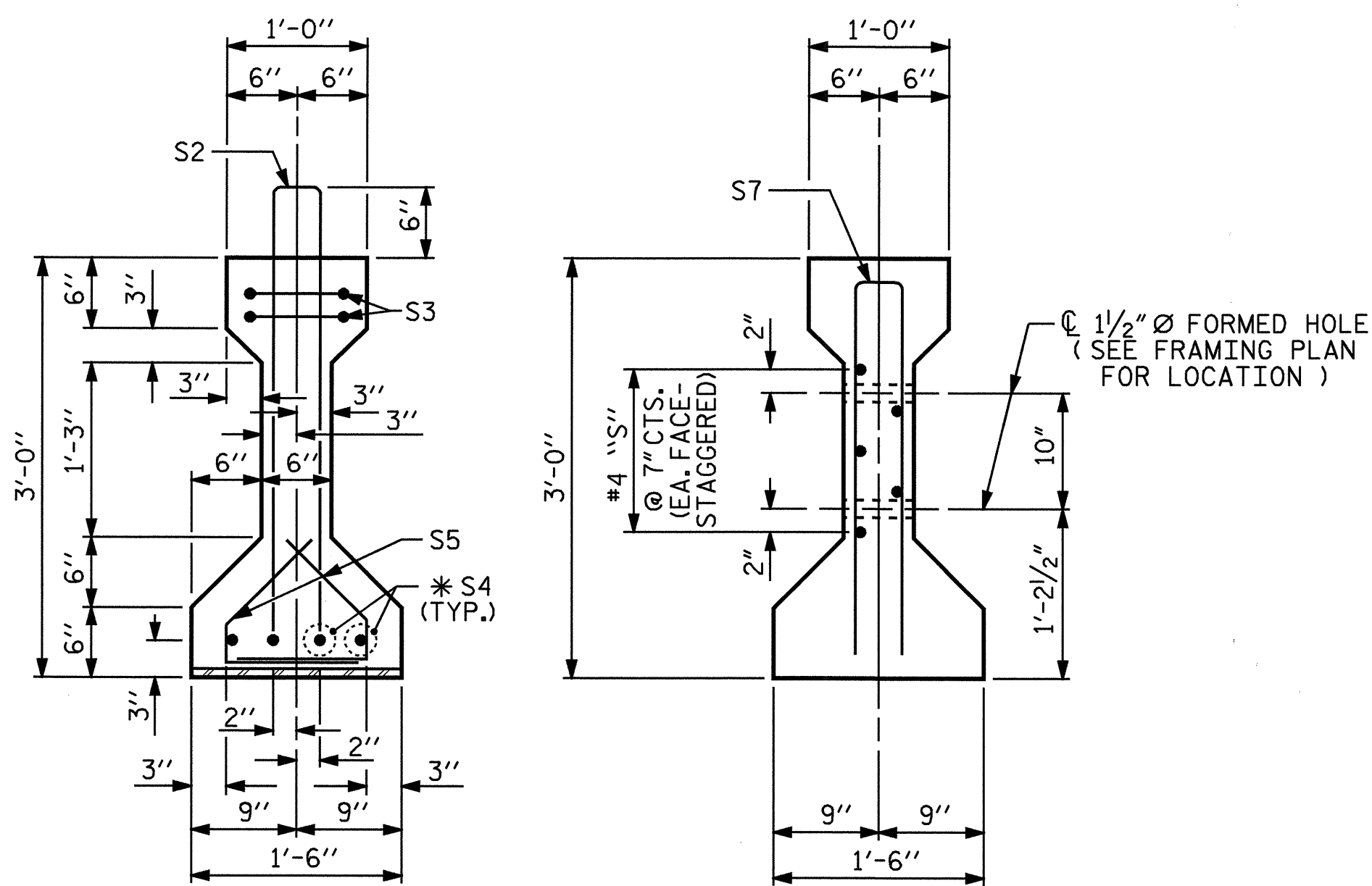
SHEET 1 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

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



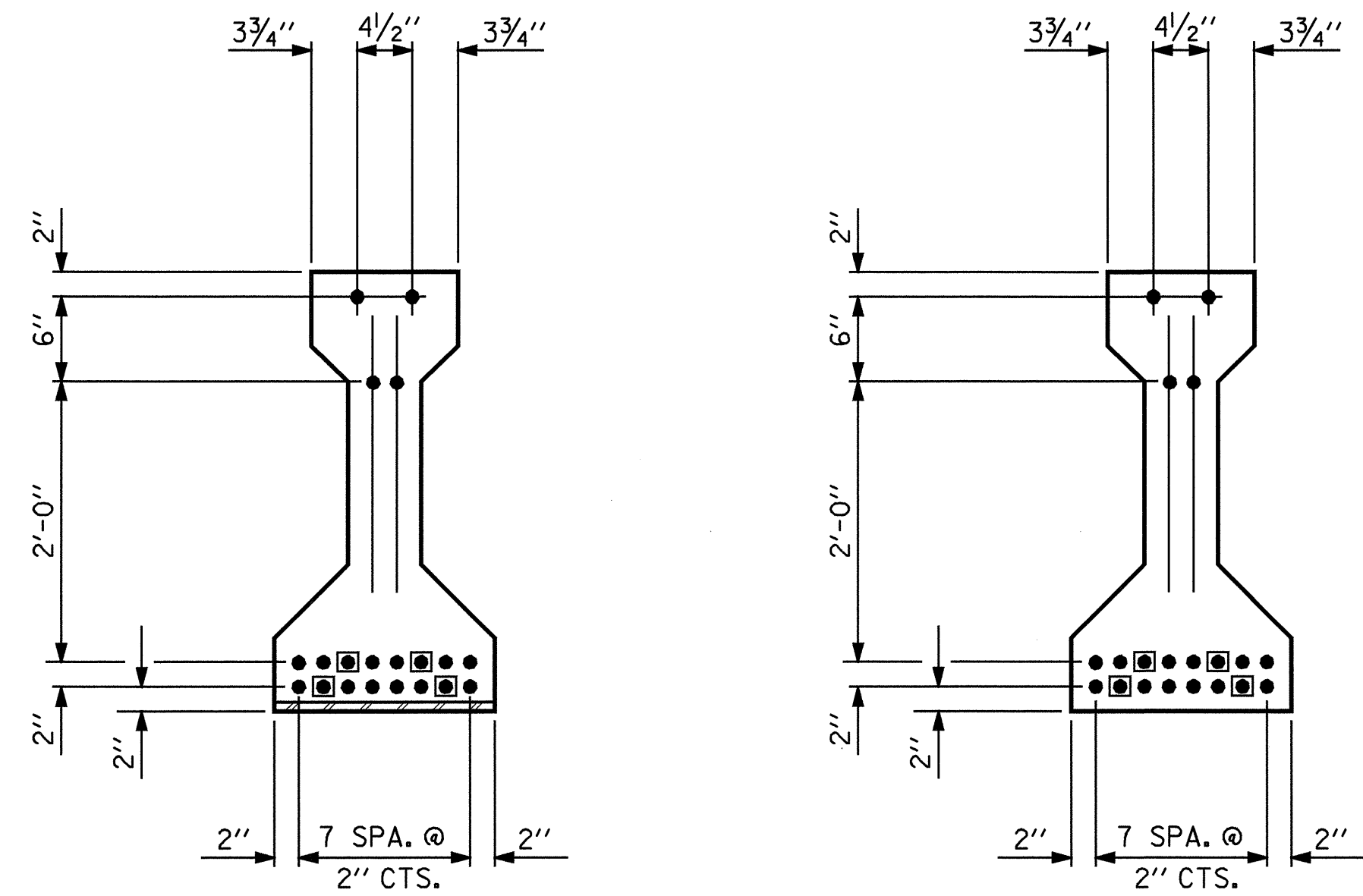
ASSEMBLED BY : M. POOLE DATE : 10/07  
CHECKED BY : D. HODGE DATE : 05-08  
DRAWN BY : ELR 8/91 REV. 8/16/99 RWW/LES  
CHECKED BY : GRP 8/91 REV. 10/17/00R RWW/LES  
REV. 5/1/06 TLA/GM



SECTION B-B

SECTION C-C

(S1 BARS NOT SHOWN)

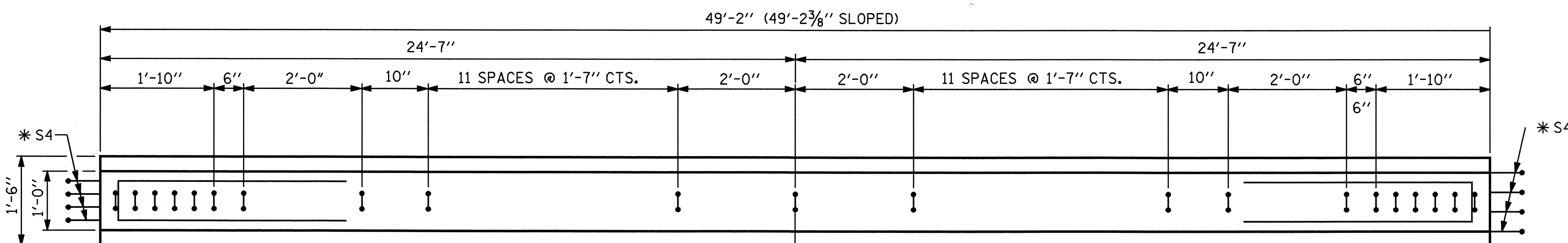


AT END OF GIRDER

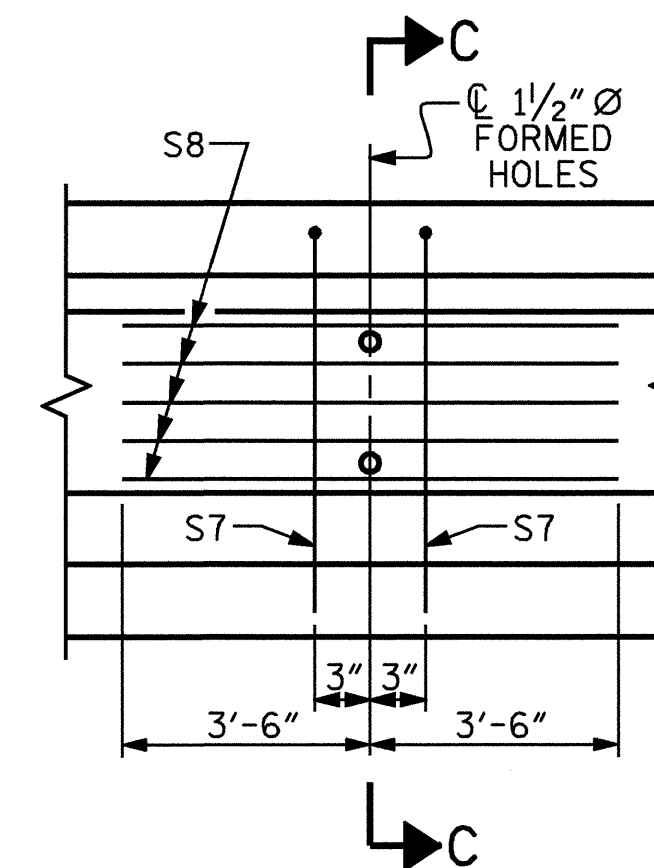
AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER

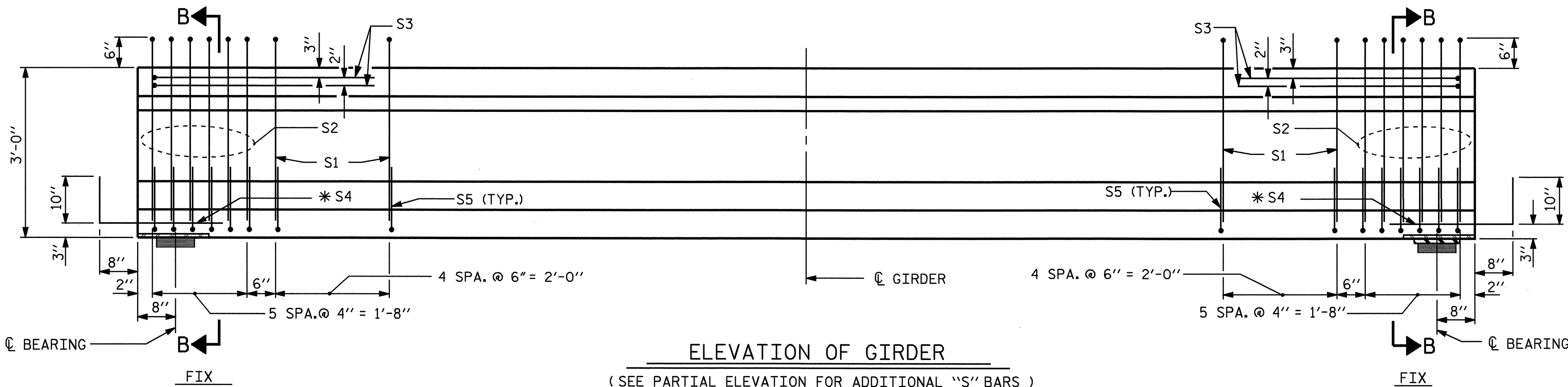


PLAN OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL (FOR ALL EXTERIOR GIRDERS AND INTERIOR GIRDERS WITH 70° < SKEW < 110°)



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

0.6" Ø L. R. GRADE 270 STRANDS

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

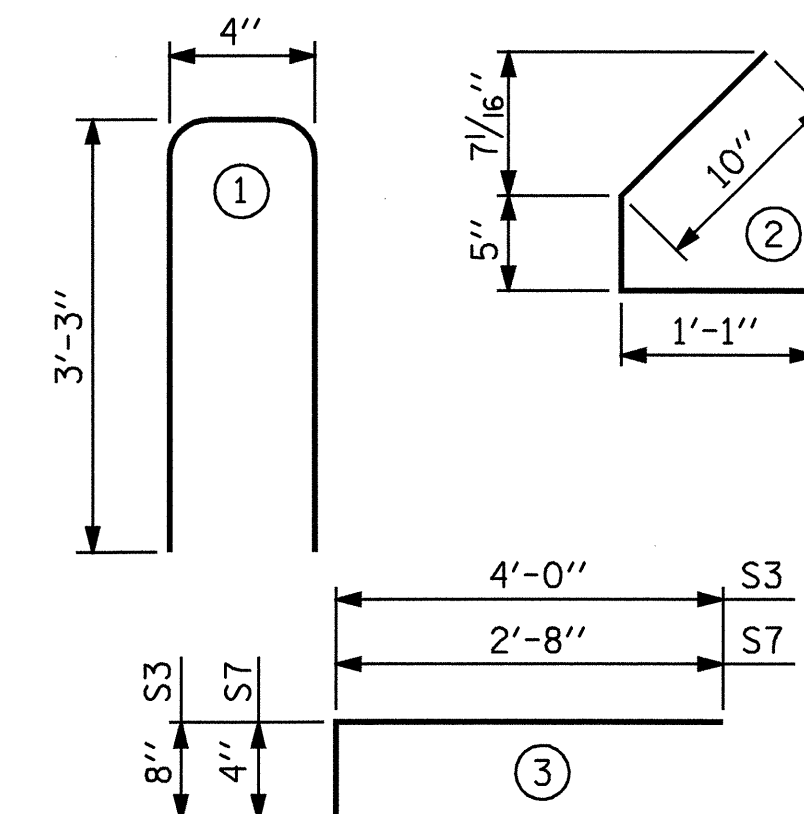
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	35	#4	1	6'-10"	160
S2	12	#5	1	6'-10"	86
S3	4	#4	3	8'-8"	23
*S4	8	#5	STR	3'-8"	31
S5	44	#4	2	2'-4"	69
S7	2	#5	3	5'-8"	12
S8	5	#4	STR	7'-0"	23

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

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

REINFORCING STEEL (LB.)	8000 PSI CONCRETE (C.Y.)	0.6" Ø L.R. STRANDS (No.)
404	4.7	20

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
11	49'-2"	540'-10"

PROJECT NO. B-4033

BUNCOMBE COUNTY

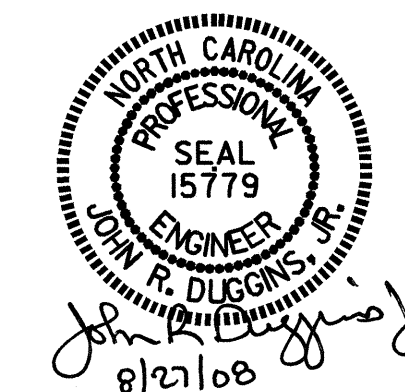
STATION: 26+53.00 --L

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

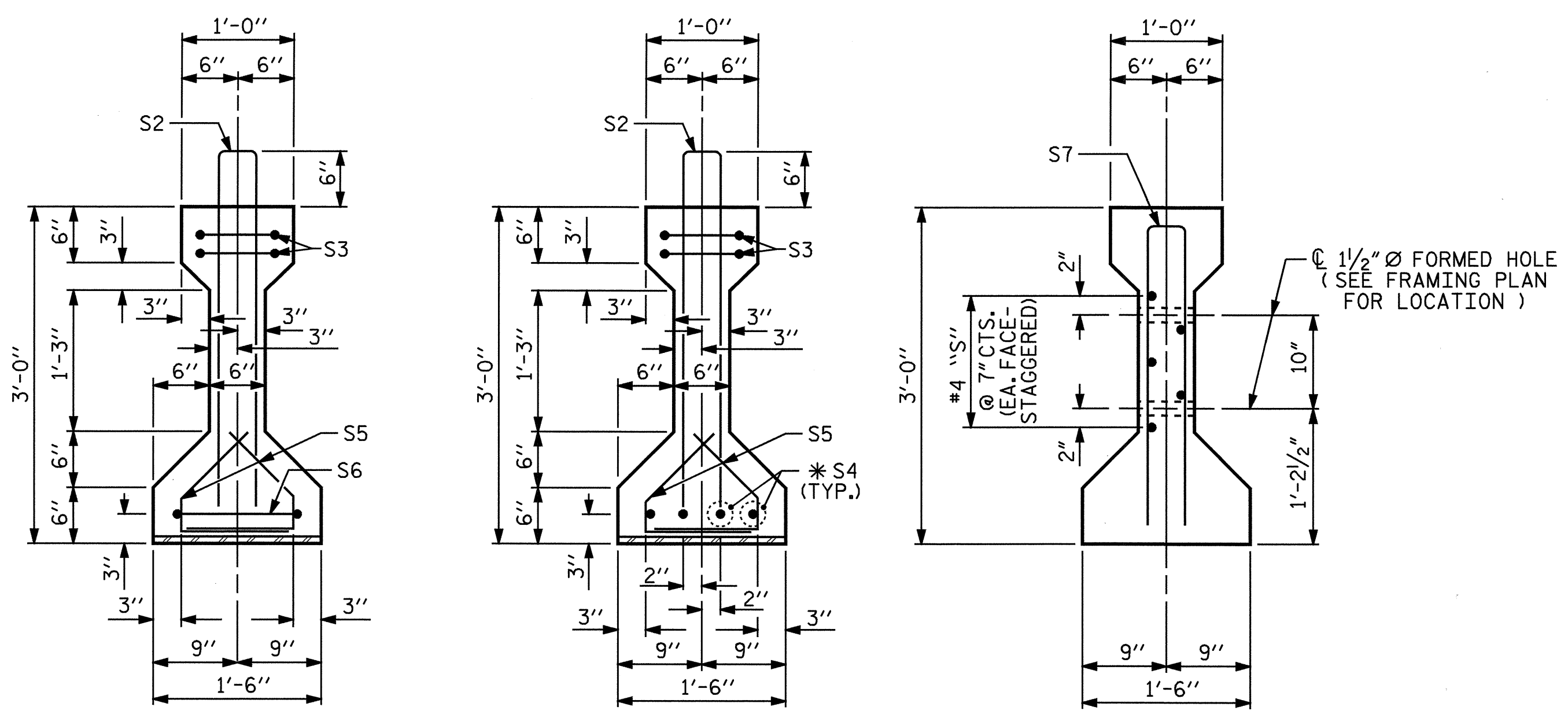
SPAN B  
AASHTO TYPE II  
PRESTRESSED CONCRETE GIRDER  
CONTINUOUS FOR LIVE LOAD

ASSEMBLED BY : M. POOLE	DATE : 10/07
CHECKED BY : D. HODGE	DATE : 05-08
DRAWN BY : ELR 8/91	REV. 8/16/99 RWW/LES
CHECKED BY : GRP 8/91	REV. 10/17/00R RWW/LES
	REV. 5/1/06 TLA/GM



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

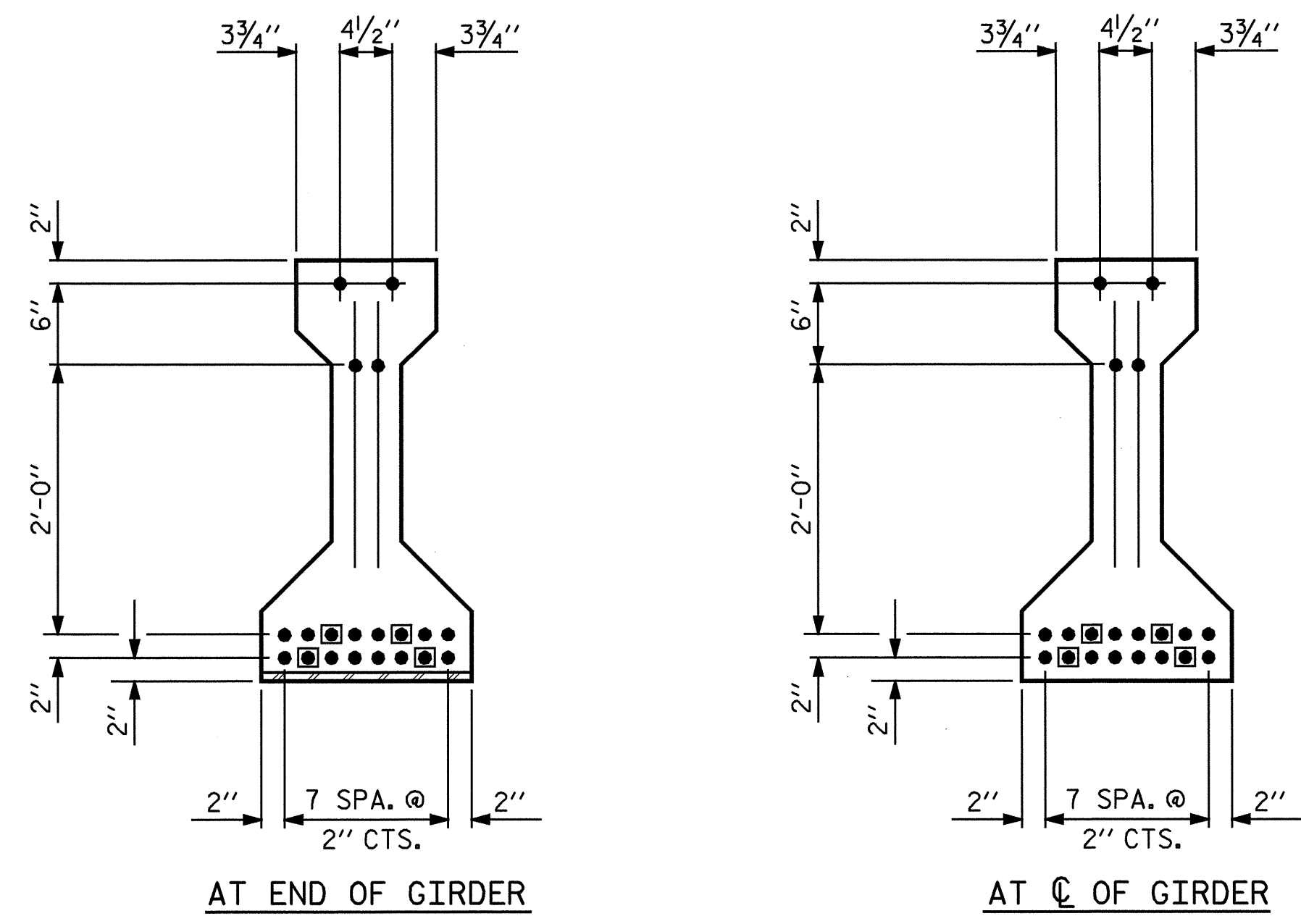




SECTION A-A

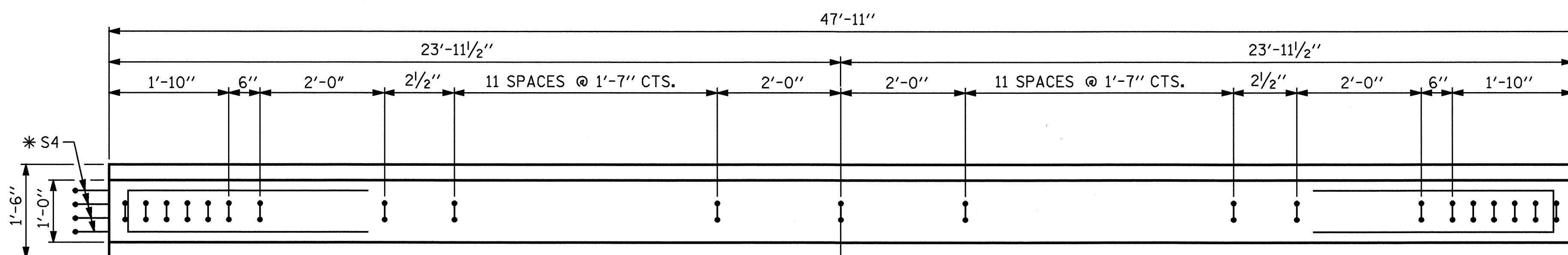
SECTION B-B

SECTION C-C  
(S1 BARS NOT SHOWN)

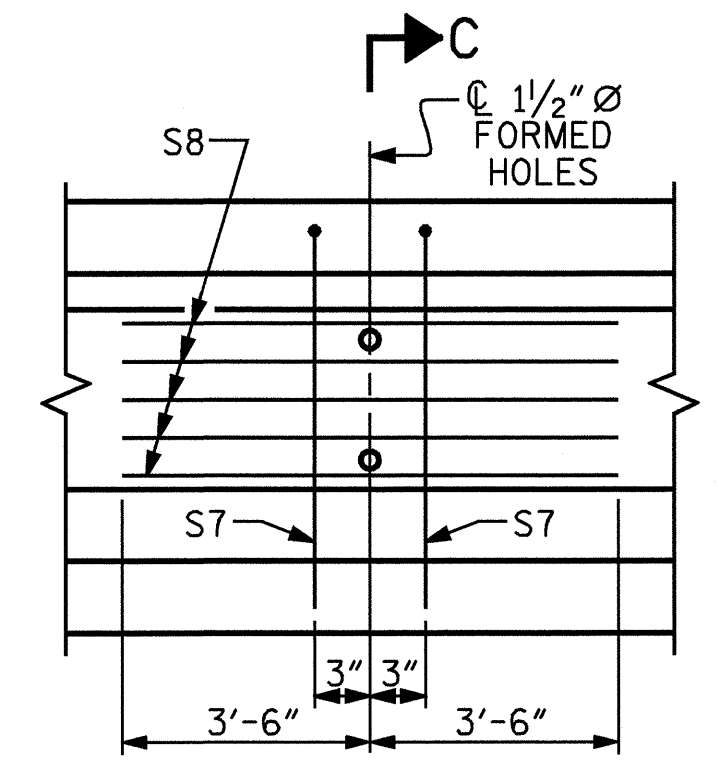


0.6" Ø LOW RELAXATION STRAND LAYOUT

■ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER

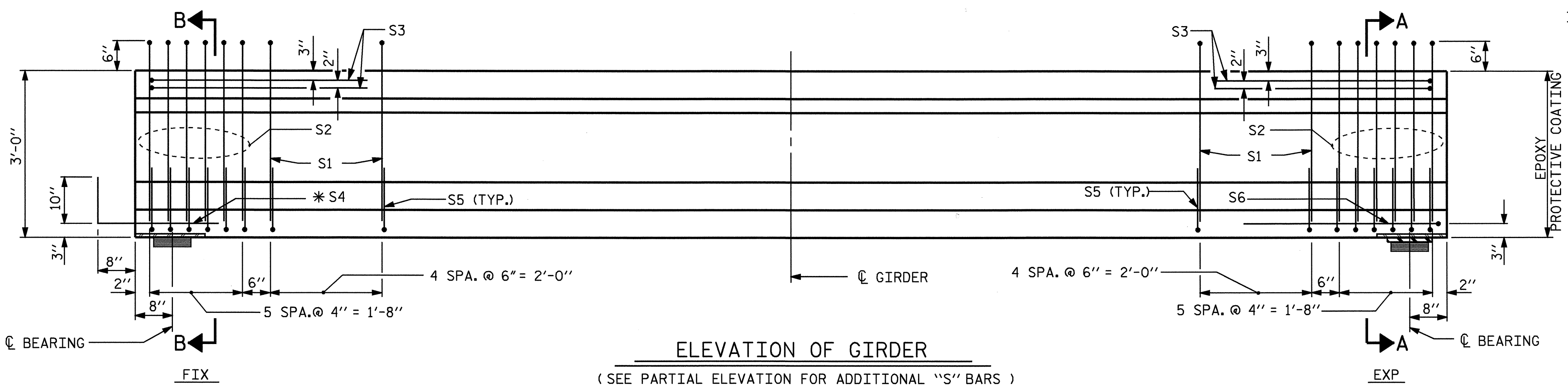


PLAN OF GIRDER



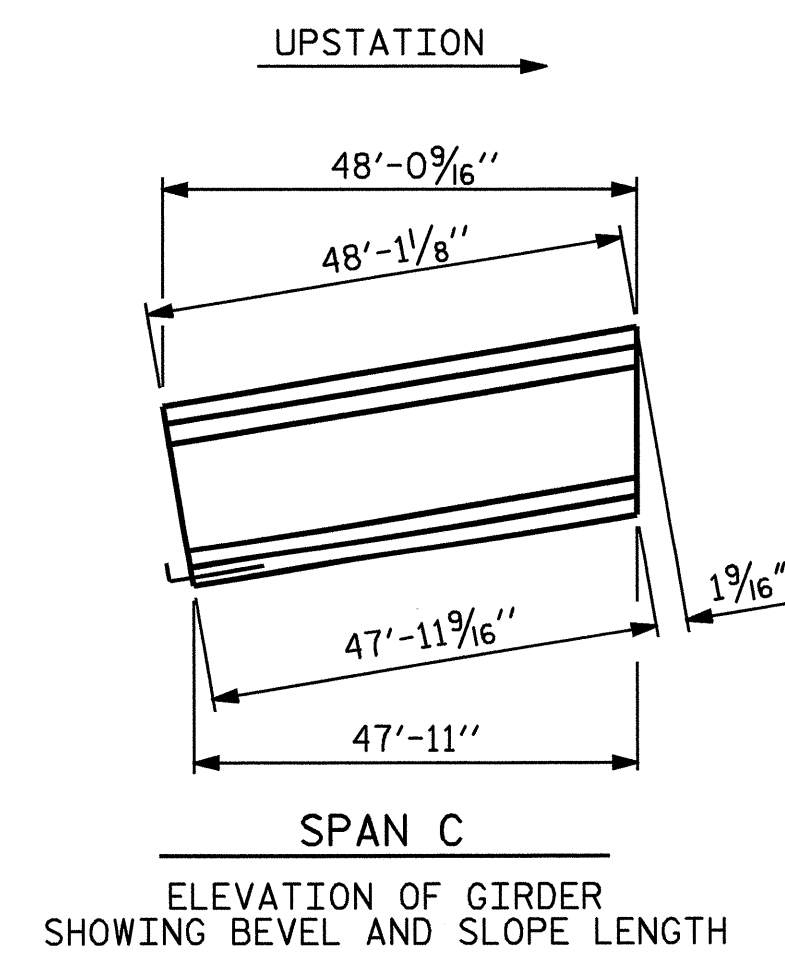
PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL (FOR ALL EXTERIOR GIRDERS AND INTERIOR GIRDERS WITH 70° ≤ SKEW ≤ 110°)



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



SPAN C

ELEVATION OF GIRDER SHOWING BEVEL AND SLOPE LENGTH

0.6" Ø L. R. GRADE 270 STRANDS

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

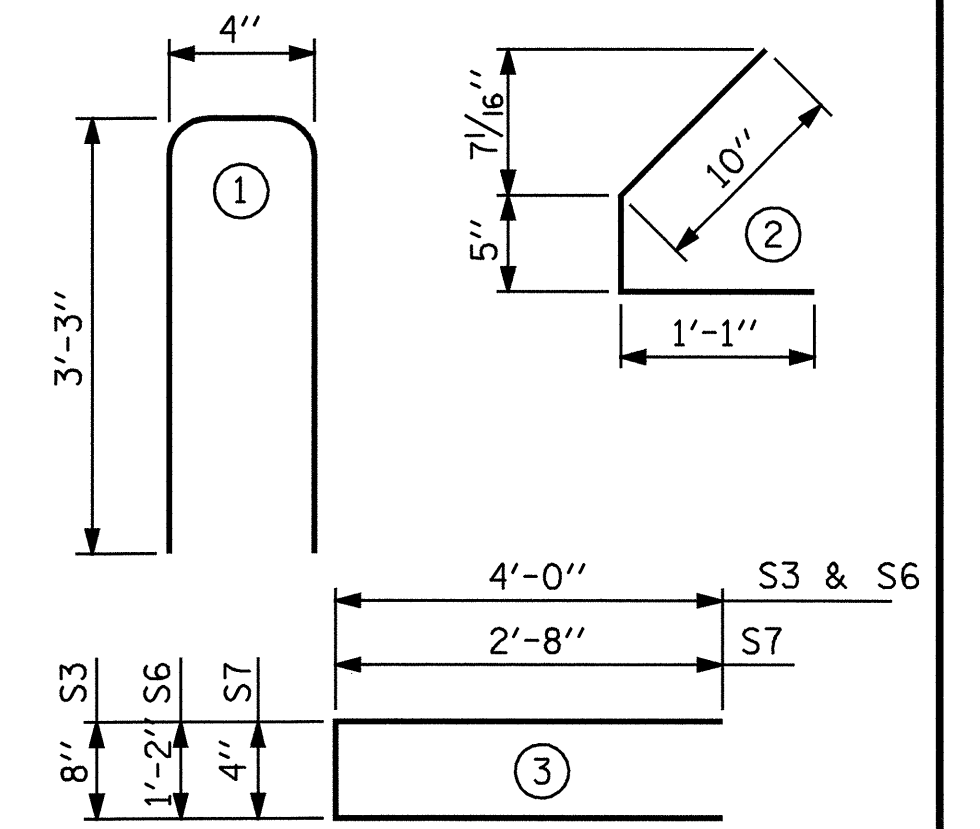
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	35	#4	1	6'-10"	160
S2	12	#5	1	6'-10"	86
S3	4	#4	3	8'-8"	23
*S4	4	#5	STR	3'-8"	15
S5	44	#4	2	2'-4"	69
S6	1	#4	3	9'-2"	6
S7	2	#5	3	5'-8"	12
S8	5	#4	STR	7'-0"	23

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

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	8000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
	394	4.5	20

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
11	47'-11"	527'-1"

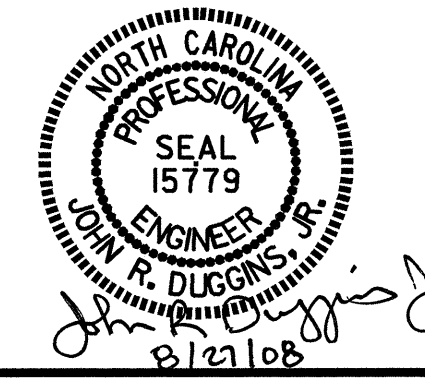
PROJECT NO. B-4033  
BUNCOMBE COUNTY  
STATION: 26+53.00 -L

SHEET 3 OF 4

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

ASSEMBLED BY : M. POOLE DATE : 10/07  
CHECKED BY : D. HODGE DATE : 05-08  
DRAWN BY : ELR 8/91  
CHECKED BY : GRP 8/91

REV. 8/16/99 RWW/LES  
REV. 10/17/00R RWW/LES  
REV. 5/1/06 TLA/GM



NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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

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

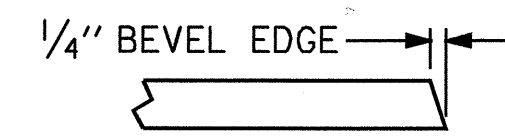
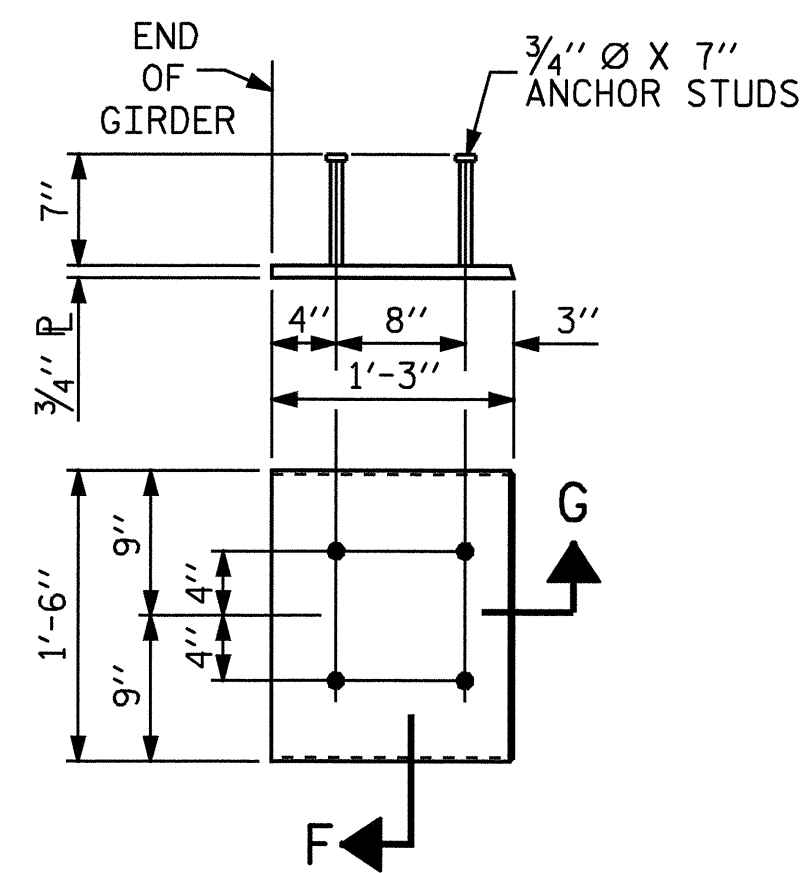
AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4200 PSI IN SPAN A & 6400 PSI IN SPANS B & C.

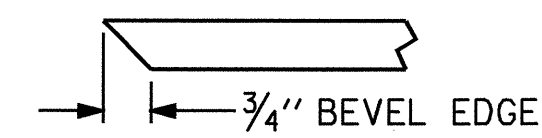
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

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

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



SECTION "G"



SECTION "F"

(SEE NOTES)

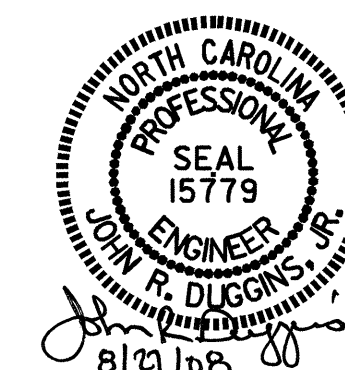
EMBEDDED PLATE "B-1" DETAILS  
FOR AASHTO TYPE II GIRDER  
(2 REQ'D PER GIRDER)

PROJECT NO. B-4033  
BUNCOMBE COUNTY  
STATION: 26+53.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

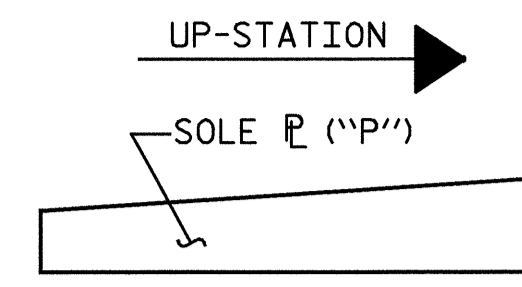
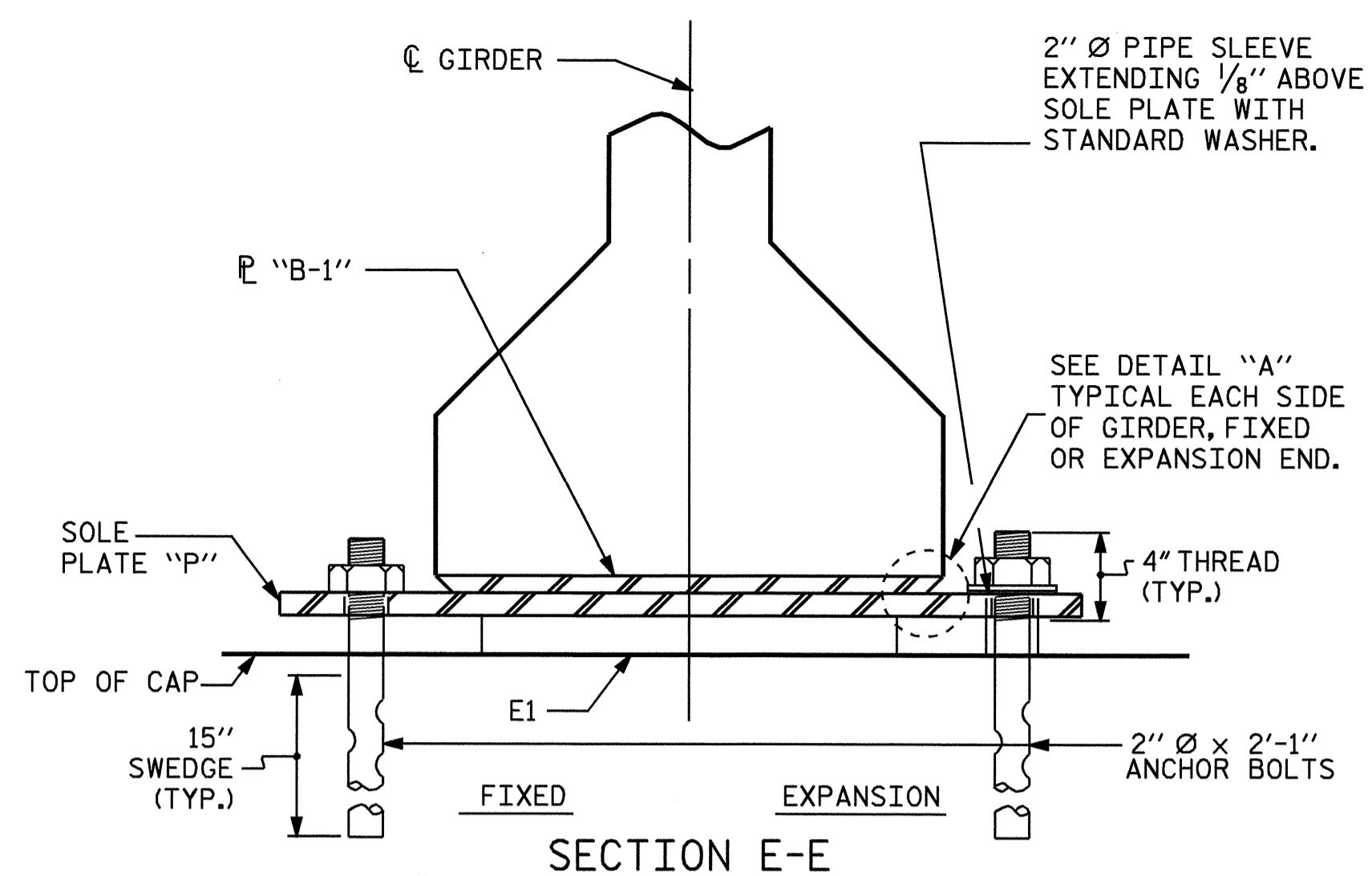
PRESTRESSED CONCRETE GIRDER  
CONTINUOUS FOR LIVE LOAD  
DETAILS



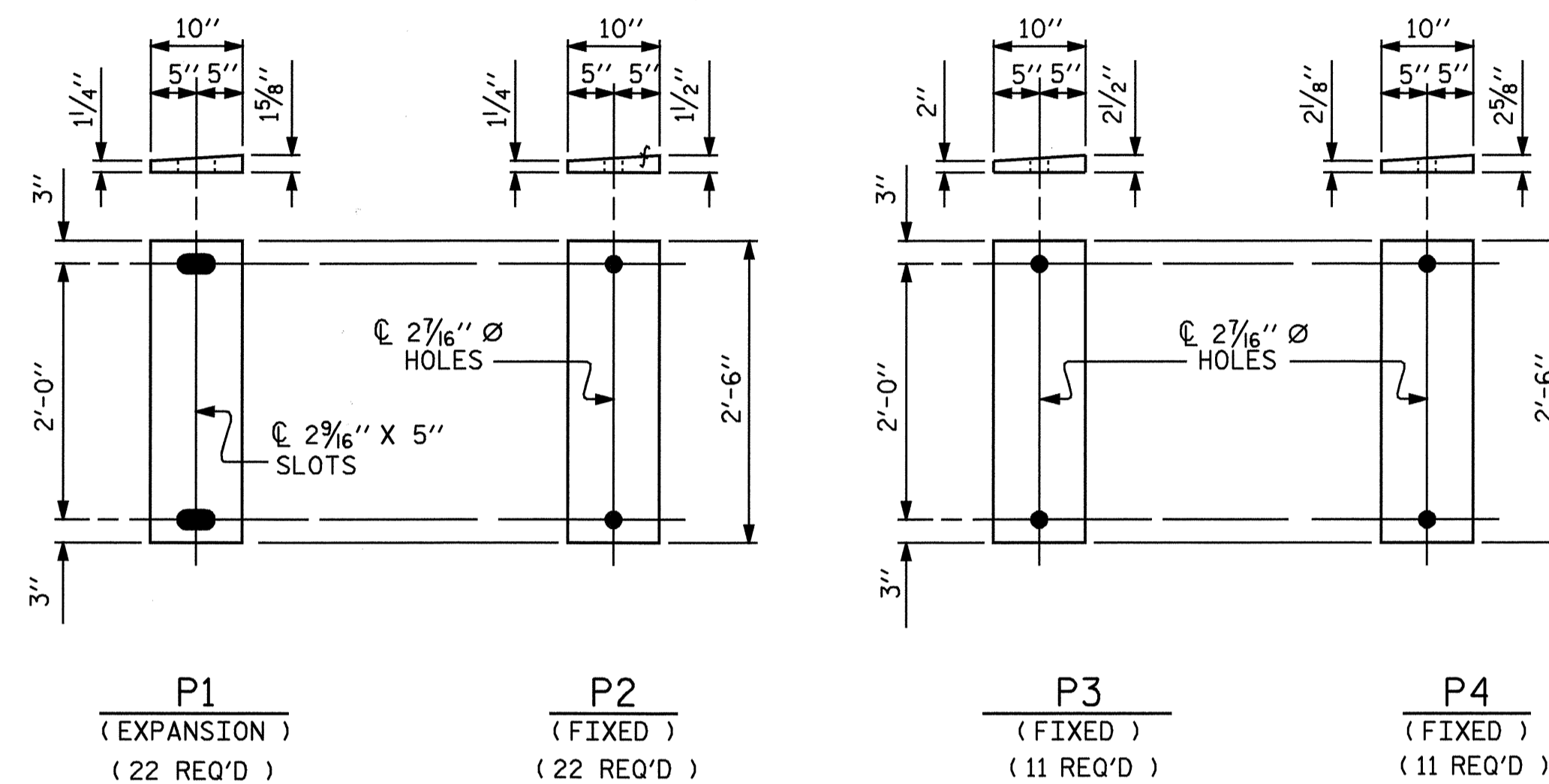
ASSEMBLED BY : M. POOLE	DATE : 10/05
CHECKED BY : D. HODGE	DATE : 05-08
DRAWN BY : ELR 11/91	REV. 8/16/99 MAB/LES
CHECKED BY : GRP 11/91	REV. 10/17/00 RWW/LES
	REV. 7/10/01RR LES/RDR

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			50
2			4			

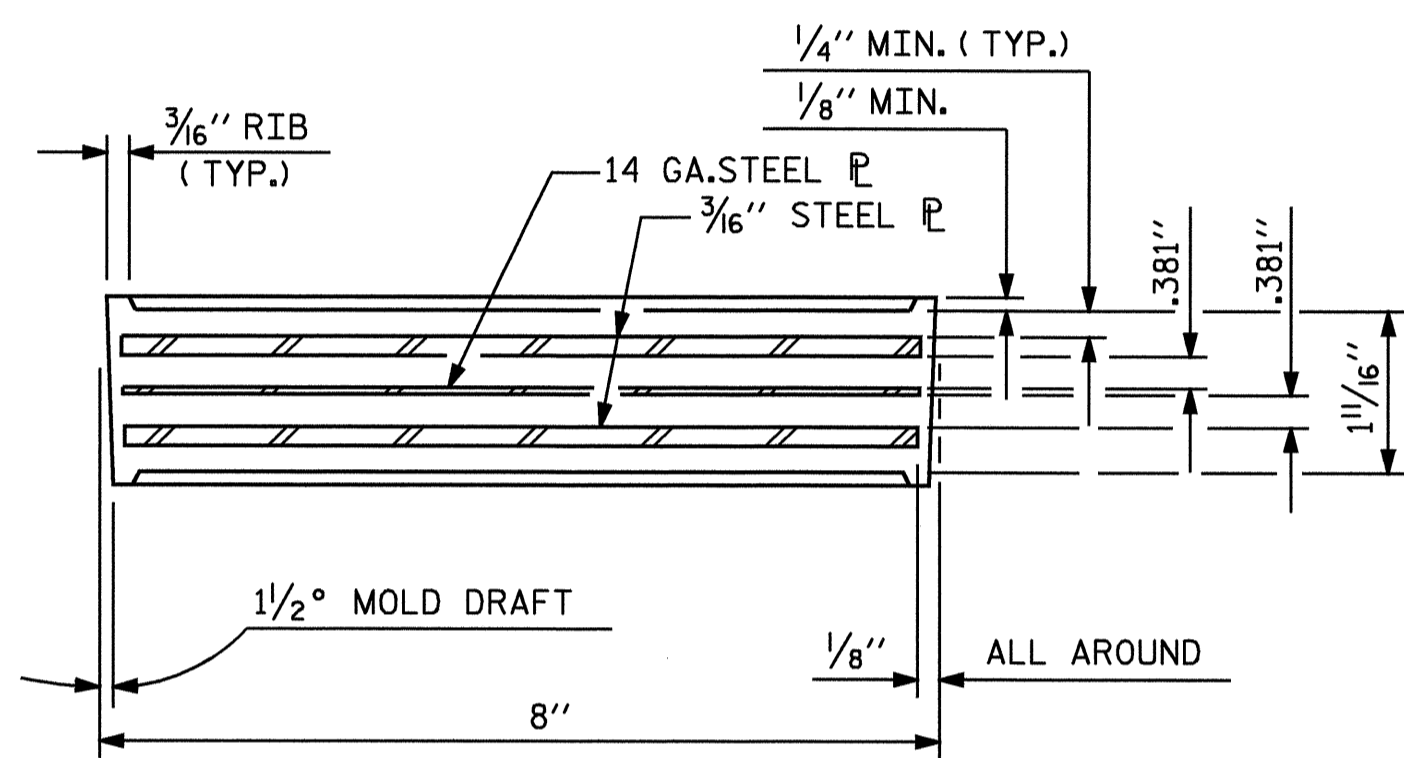




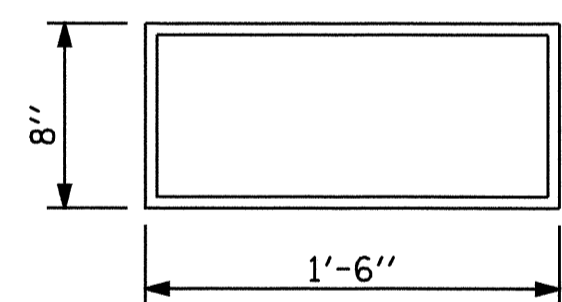
**SOLE P PLACEMENT DETAIL**



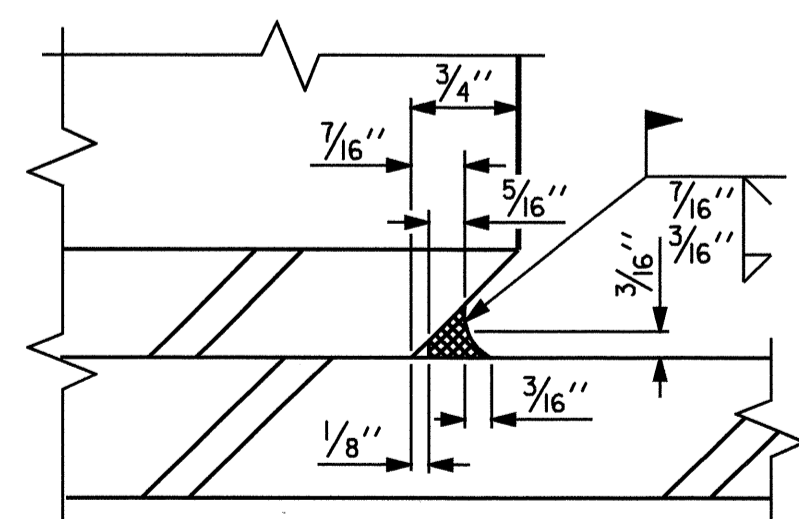
**SOLE PLATE DETAILS ("P")**



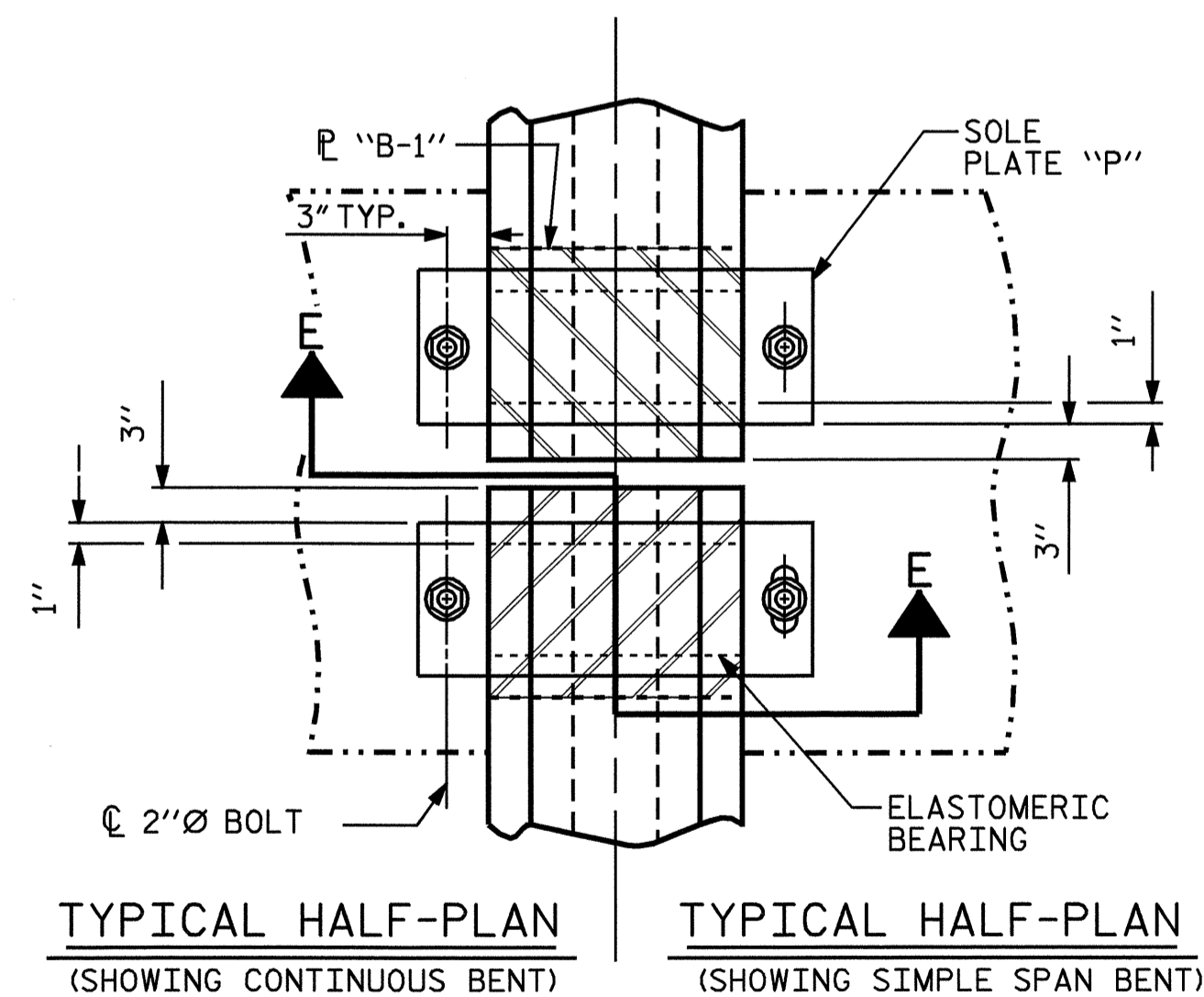
**TYPICAL SECTION OF ELASTOMERIC BEARINGS**



**E1 (66 REQ'D)  
PLAN VIEW OF ELASTOMERIC BEARING  
TYPE III**



**DETAIL "A"**



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

**NOTES**

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

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

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

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

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

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

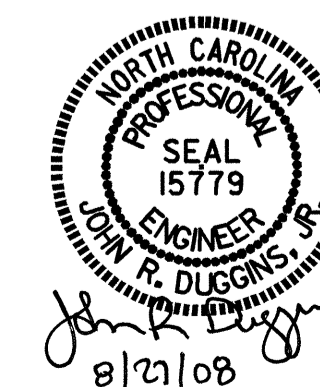
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

PROJECT NO. B-4033  
BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

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



ASSEMBLED BY : M. POOLE	DATE : 10/07
CHECKED BY : D. HODGE	DATE : 05-08
DRAWN BY : WJH 8/89	REV. 10/17/00 RWW/LES
CHECKED BY : CRK 8/89	REV. 7/10/01 RWW/LES
	REV. 5/1/06 TLA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-19
2			4			50

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
	SPAN A																					
	GIRDER 1											GIRDERS 2, 3, 9 & 10										
TENTH POINTS	0	.10	.20	.30	.40	.50	.60	.70	.80	.90	0	0	.10	.20	.30	.40	.50	.60	.70	.80	.90	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.020	0.037	0.051	0.059	0.062	0.059	0.051	0.037	0.020	0.000	0.000	0.020	0.037	0.051	0.059	0.062	0.059	0.051	0.037	0.020	0.000
* DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD ↓	0.000	0.006	0.011	0.014	0.017	0.018	0.017	0.014	0.011	0.006	0.000	0.000	0.007	0.014	0.019	0.023	0.024	0.023	0.019	0.014	0.007	0.000
FINAL CAMBER ↑	0	3/16"	5/16"	7/16"	1/2"	1/2"	1/2"	7/16"	5/16"	3/16"	0	0	1/8"	1/4"	3/8"	7/16"	7/16"	7/16"	3/8"	1/4"	1/8"	0

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
	SPAN A																					
	GIRDERS 4 THRU 6 & 11											GIRDERS 7 & 8										
TENTH POINTS	0	.10	.20	.30	.40	.50	.60	.70	.80	.90	0	0	.10	.20	.30	.40	.50	.60	.70	.80	.90	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.020	0.037	0.051	0.059	0.062	0.059	0.051	0.037	0.020	0.000	0.000	0.020	0.037	0.051	0.059	0.062	0.059	0.051	0.037	0.020	0.000
* DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD ↓	0.000	0.007	0.013	0.018	0.021	0.022	0.021	0.018	0.013	0.007	0.000	0.000	0.005	0.010	0.014	0.016	0.017	0.016	0.014	0.010	0.005	0.000
FINAL CAMBER ↑	0	1/8"	5/16"	3/8"	7/16"	1/2"	7/16"	3/8"	5/16"	1/8"	0	0	3/16"	5/16"	7/16"	1/2"	9/16"	1/2"	7/16"	5/16"	3/16"	0

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
	SPANS B & C																					
	GIRDER 1											GIRDERS 2 THRU 6 & 11										
TENTH POINTS	0	.10	.20	.30	.40	.50	.60	.70	.80	.90	0	0	.10	.20	.30	.40	.50	.60	.70	.80	.90	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.050	0.094	0.129	0.151	0.159	0.151	0.129	0.094	0.050	0.000	0.000	0.050	0.094	0.129	0.151	0.159	0.151	0.129	0.094	0.050	0.000
* DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD ↓	0.000	0.012	0.023	0.031	0.036	0.038	0.036	0.031	0.023	0.012	0.000	0.000	0.016	0.030	0.042	0.049	0.051	0.049	0.042	0.030	0.016	0.000
FINAL CAMBER ↑	0	7/16"	7/8"	1 3/16"	1 3/8"	1 7/16"	1 3/8"	1 3/16"	7/8"	7/16"	0	0	7/16"	3/4"	1 1/16"	1 1/4"	1 5/16"	1 1/4"	1 1/16"	3/4"	7/16"	0

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

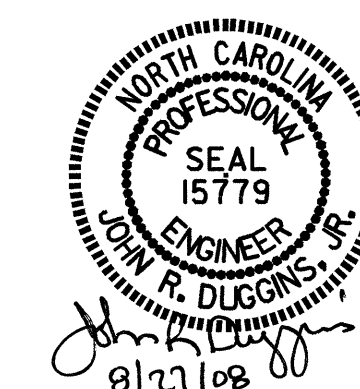
PROJECT NO. B-4033  
BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 DEAD LOAD DEFLECTION  
 TABLES

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-20
1			3			
2			4			TOTAL SHEETS 50



DRAWN BY: M. POOLE DATE: 05-08  
 CHECKED BY: D. HODGE DATE: 05-08

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

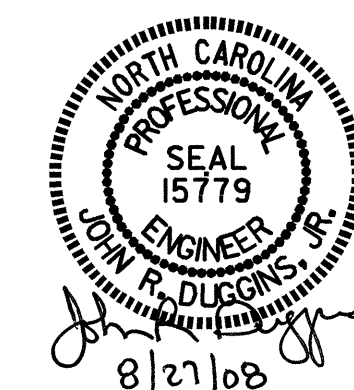
TENTH POINTS	SPANS B & C																					
	GIRDERS 7 & 8											GIRDERS 9 & 10										
	0	.10	.20	.30	.40	.50	.60	.70	.80	.90	0	0	.10	.20	.30	.40	.50	.60	.70	.80	.90	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.050	0.094	0.129	0.151	0.159	0.151	0.129	0.094	0.050	0.000	0.000	0.050	0.094	0.129	0.151	0.159	0.151	0.129	0.094	0.050	0.000
* DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD ↓	0.000	0.011	0.021	0.029	0.034	0.036	0.034	0.029	0.021	0.011	0.000	0.000	0.018	0.035	0.047	0.055	0.058	0.055	0.047	0.035	0.018	0.000
FINAL CAMBER ↑	0	1/16"	7/8"	13/16"	13/8"	1 1/2"	1 3/8"	1 3/16"	7/8"	7/16"	0	0	3/8"	1 1/16"	1"	1 1/8"	1 3/16"	1 1/8"	1"	1 1/16"	3/8"	0

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

PROJECT NO. B-4033  
BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 DEAD LOAD DEFLECTION  
 TABLES

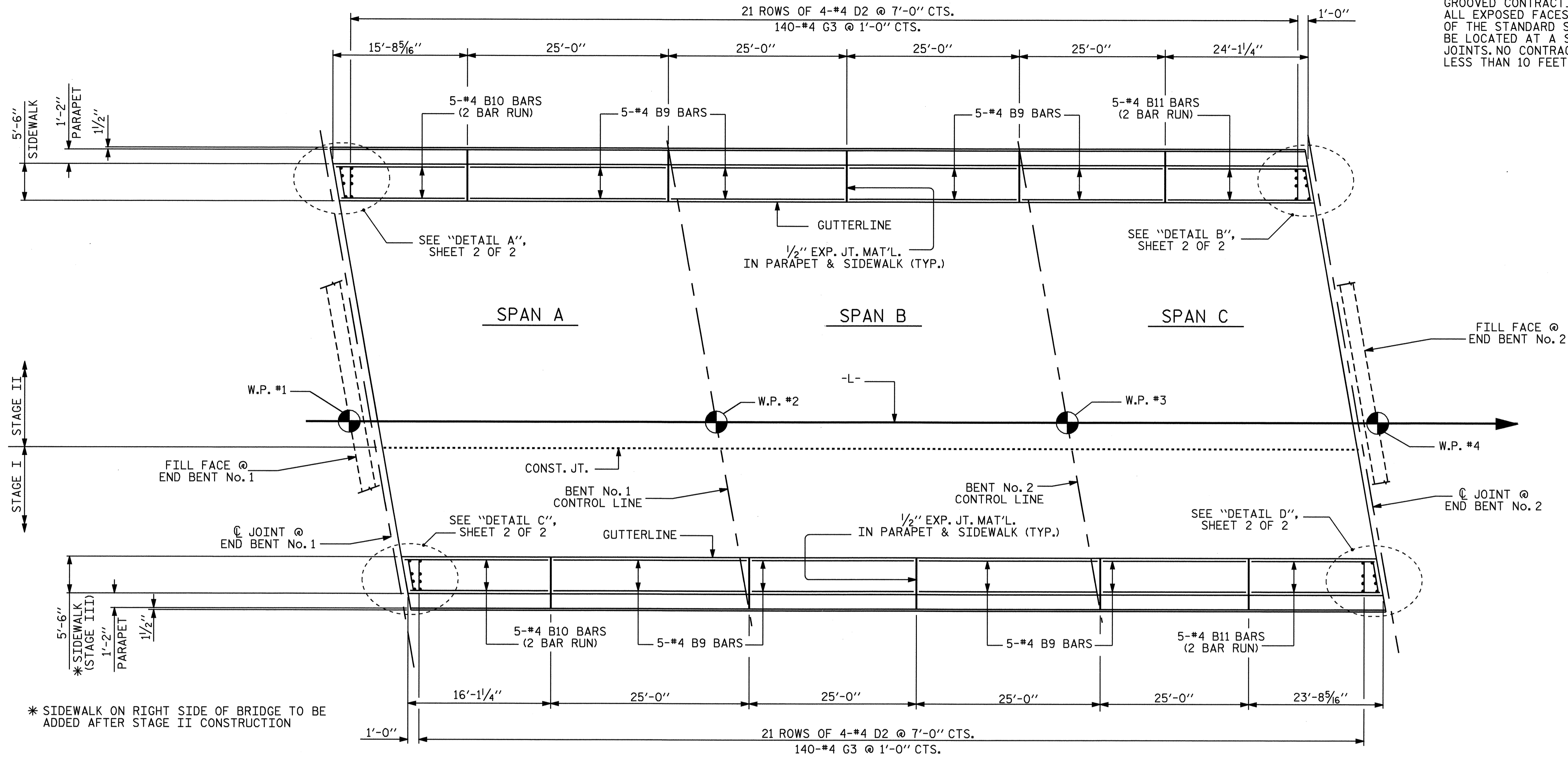


DRAWN BY : M. POOLE DATE : 05-08  
 CHECKED BY : D. HODGE DATE : 05-08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			50

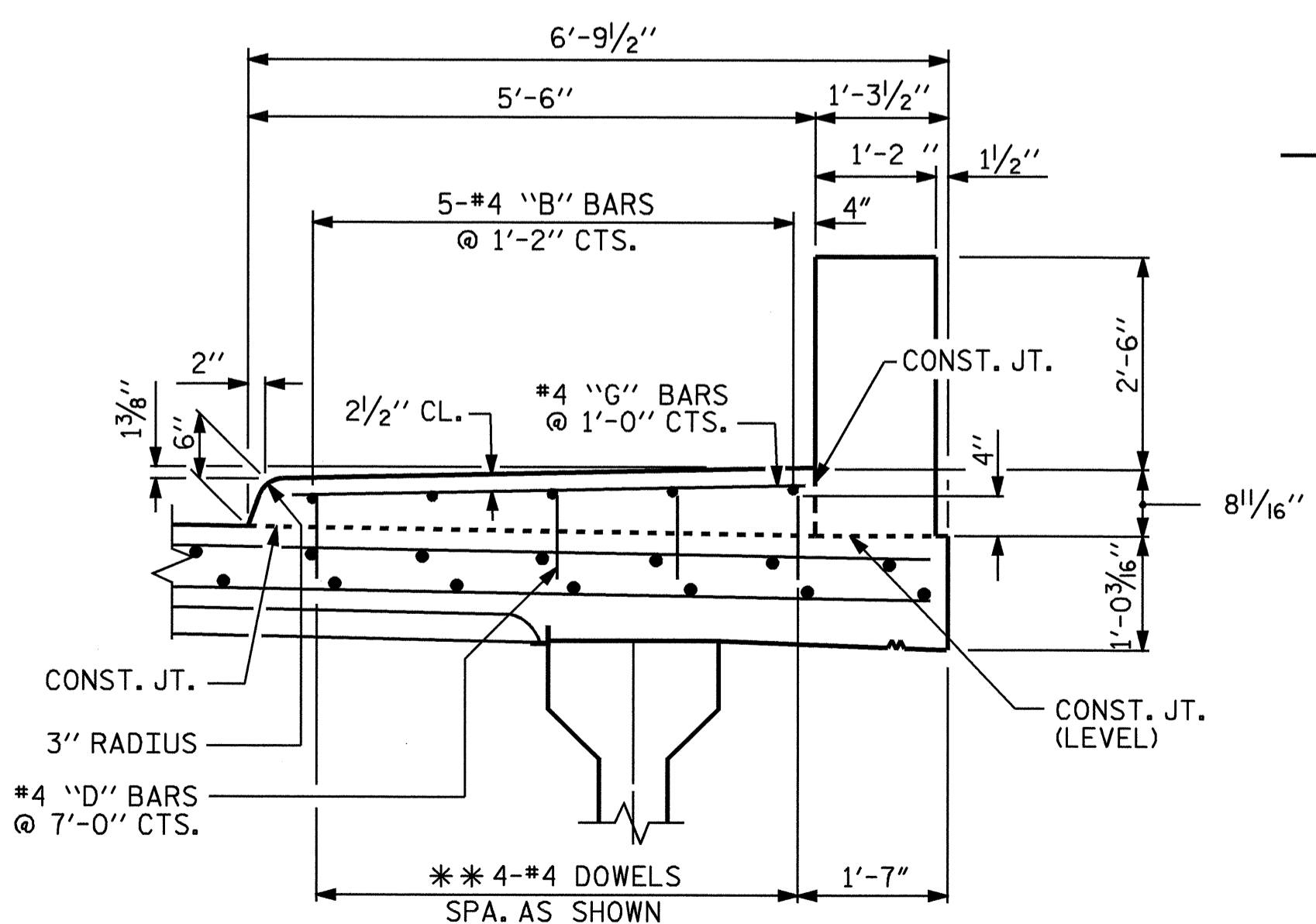
**NOTES:**

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



\* SIDEWALK ON RIGHT SIDE OF BRIDGE TO BE ADDED AFTER STAGE II CONSTRUCTION

**PLAN OF SIDEWALK**

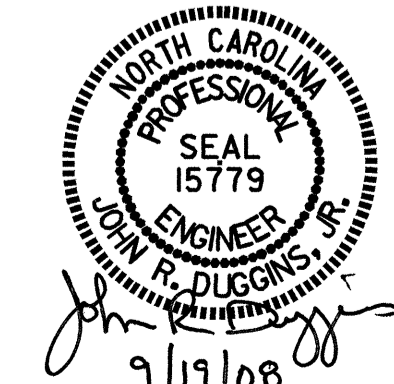


**SECTION THRU SIDEWALK**

\*\* DOWELS ON LEFT SIDEWALK MAY BE PUSHED INTO GREEN CONCRETE AFTER SPAN HAS BEEN SCREEDED OFF. DOWELS ON RIGHT SIDEWALK SHALL BE DRILLED & ADHESIVELY ANCHORED AFTER TRAFFIC IS SWITCHED TO LEFT SIDE OF BRIDGE. NO FIELD TESTING IS REQUIRED.

DRAWN BY: M. POOLE DATE: 10/07  
 CHECKED BY: D. HODGE DATE: 05-08

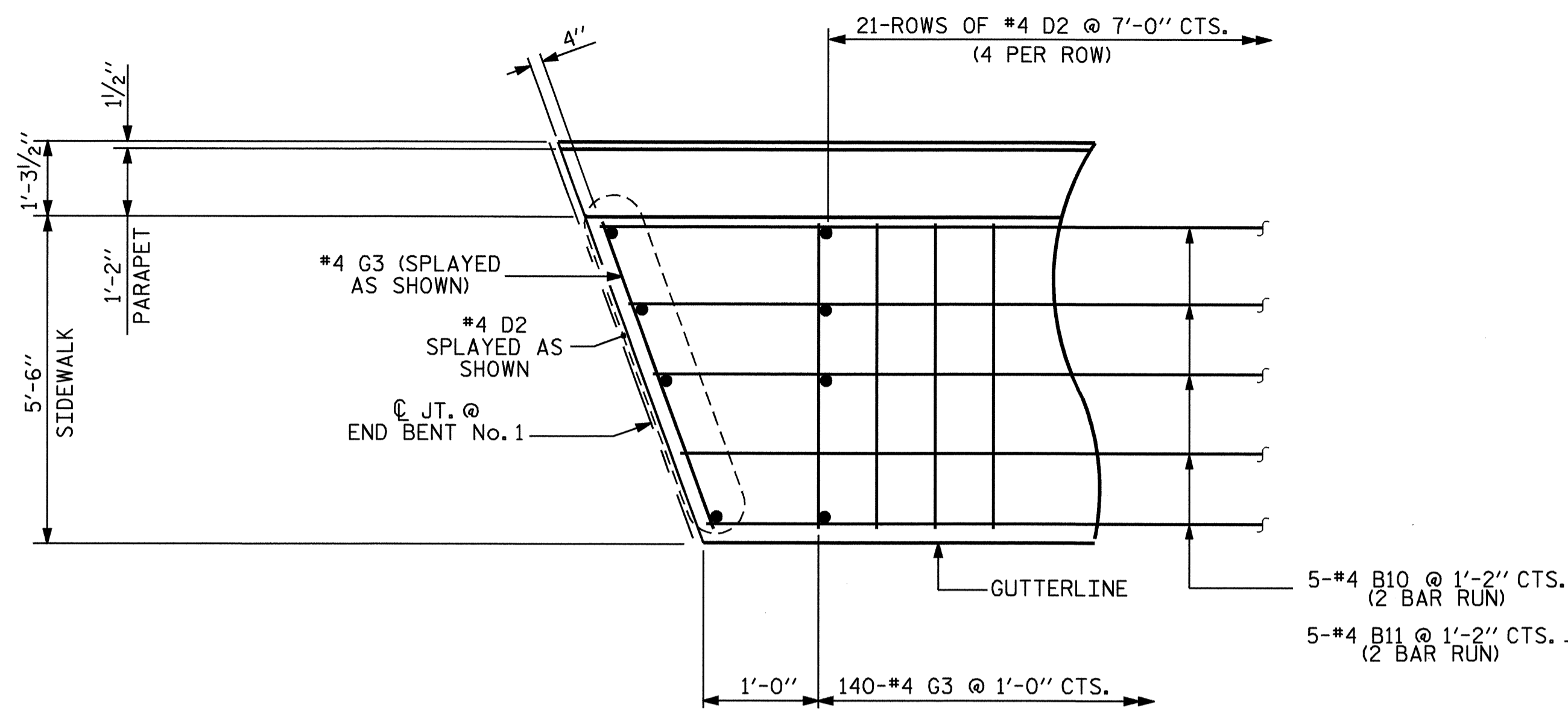
19-SEP-2008 10:15  
 r:\structures\b4033\Marie\B4033\_sd\_SW\_01.dgn  
 dahodge



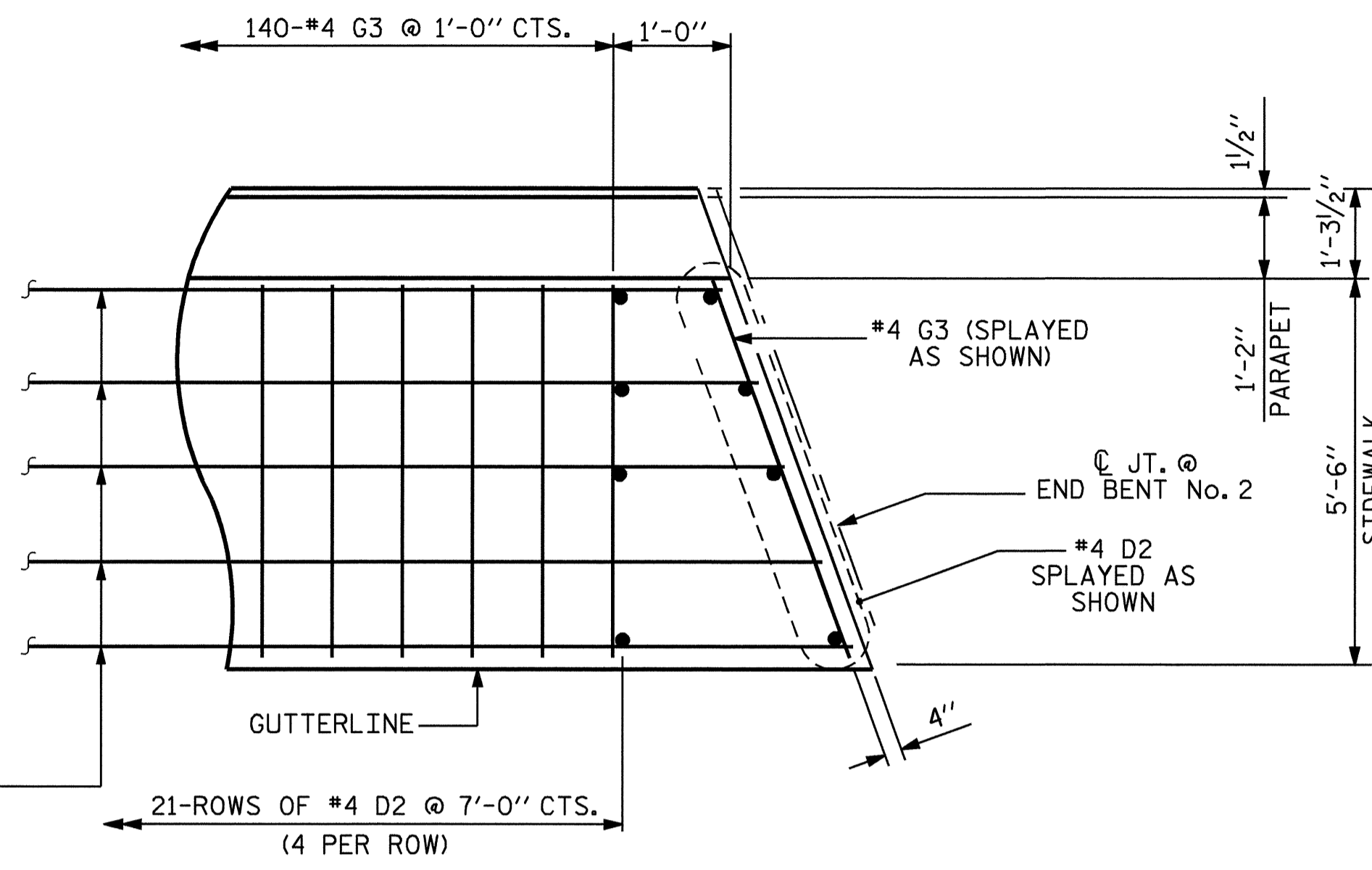
PROJECT NO. B-4033  
BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

SHEET 1 OF 2

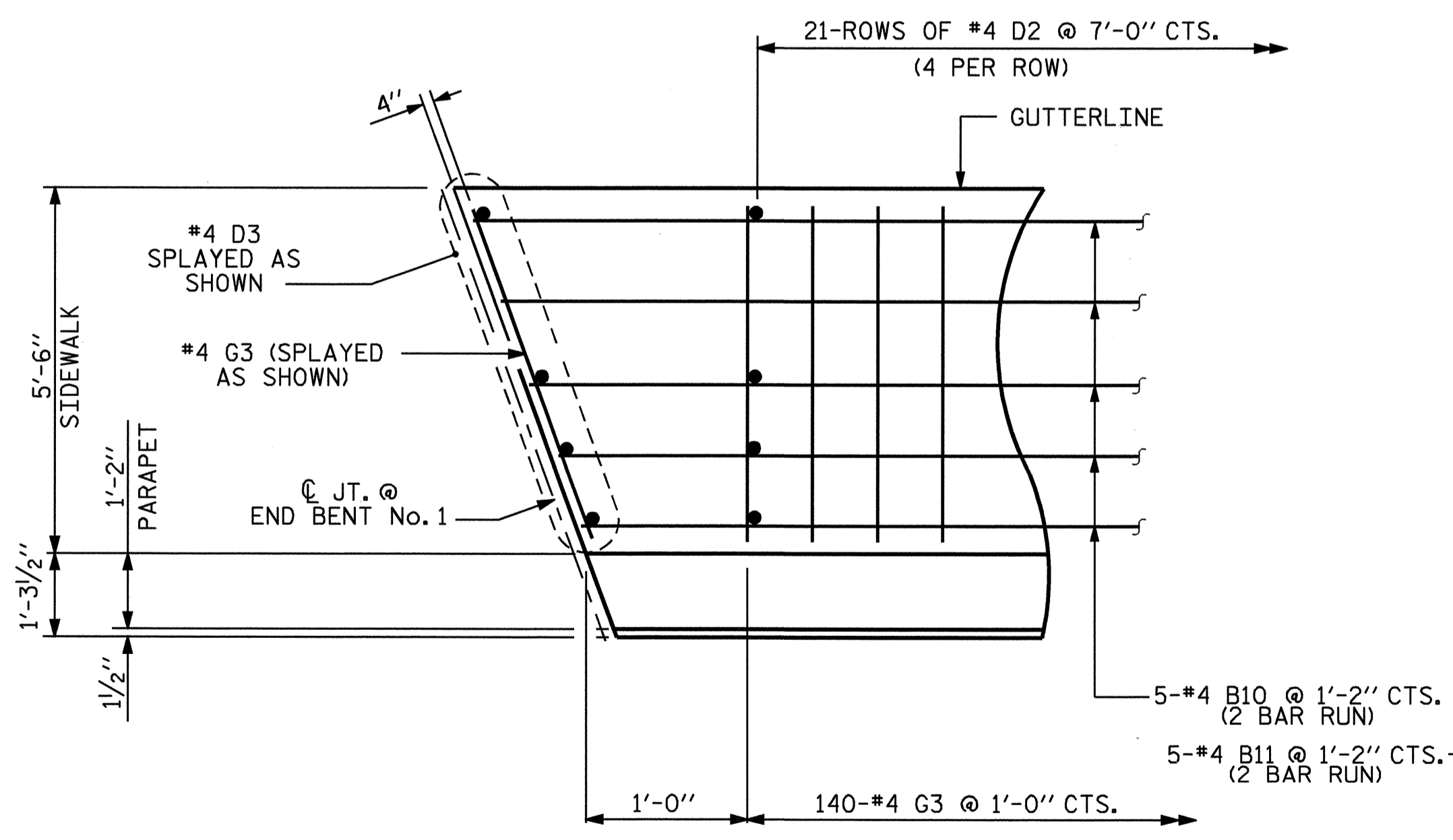
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-22
2			4			50



DETAIL A

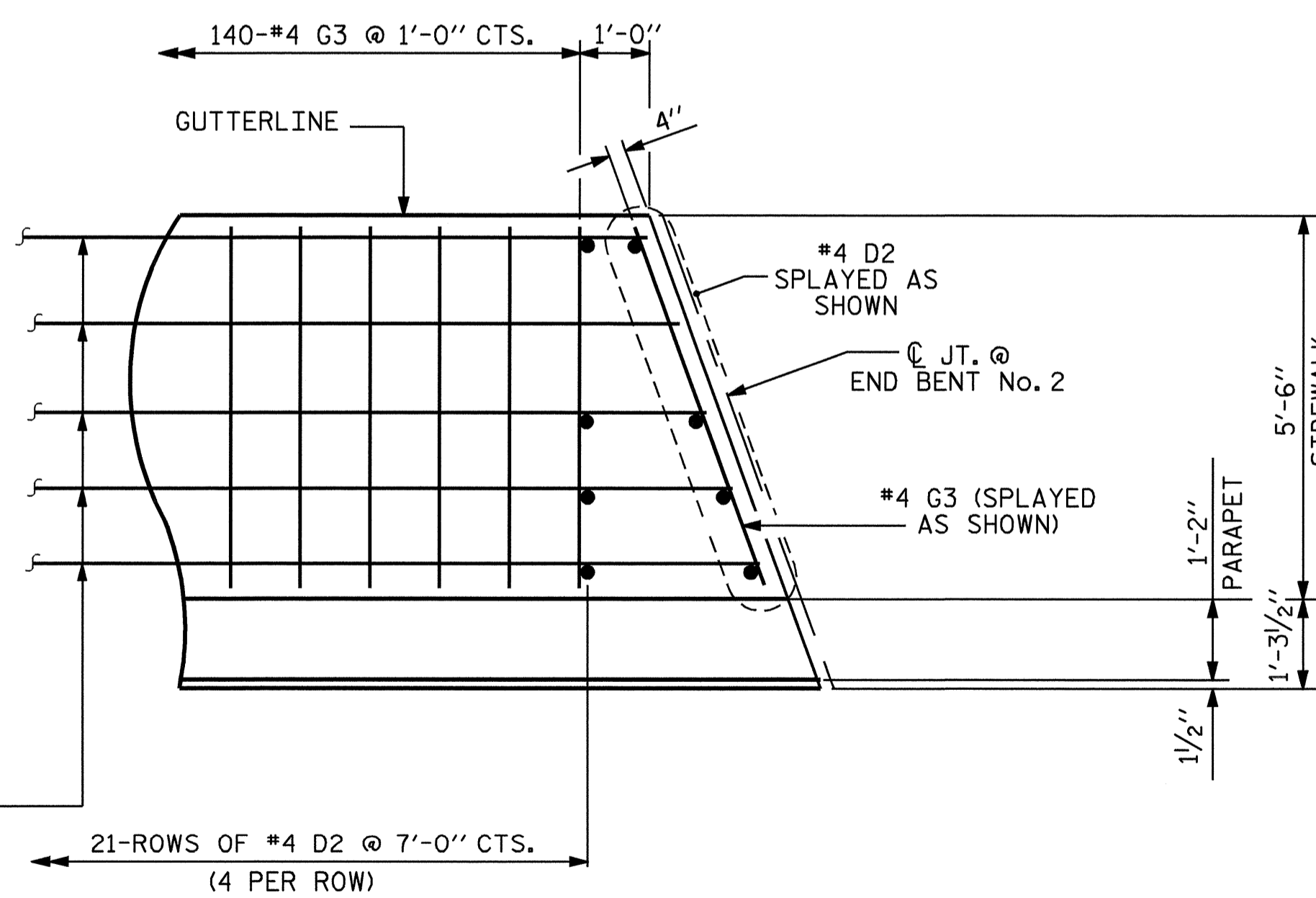


DETAIL B



DETAIL C

#4 D2 ON RIGHT SIDEWALK ARE TO BE PLACED AFTER STAGE II IS COMPLETE AND TRAFFIC IS MOVED FROM STAGE I. THE HOLES SHALL BE DRILLED AND THE DOWELS GROUTED IN PLACE.



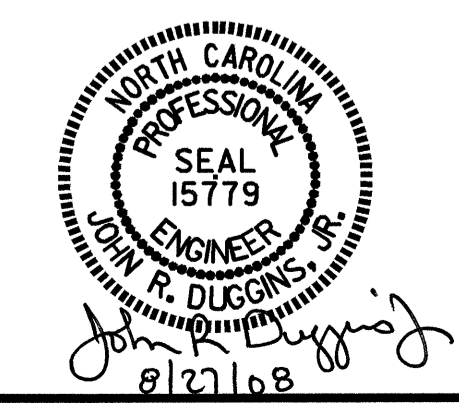
DETAIL D

#4 D2 ON RIGHT SIDEWALK ARE TO BE PLACED AFTER STAGE II IS COMPLETE AND TRAFFIC IS MOVED FROM STAGE I. THE HOLES SHALL BE DRILLED AND THE DOWELS GROUTED IN PLACE.

PROJECT NO. B-4033  
BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

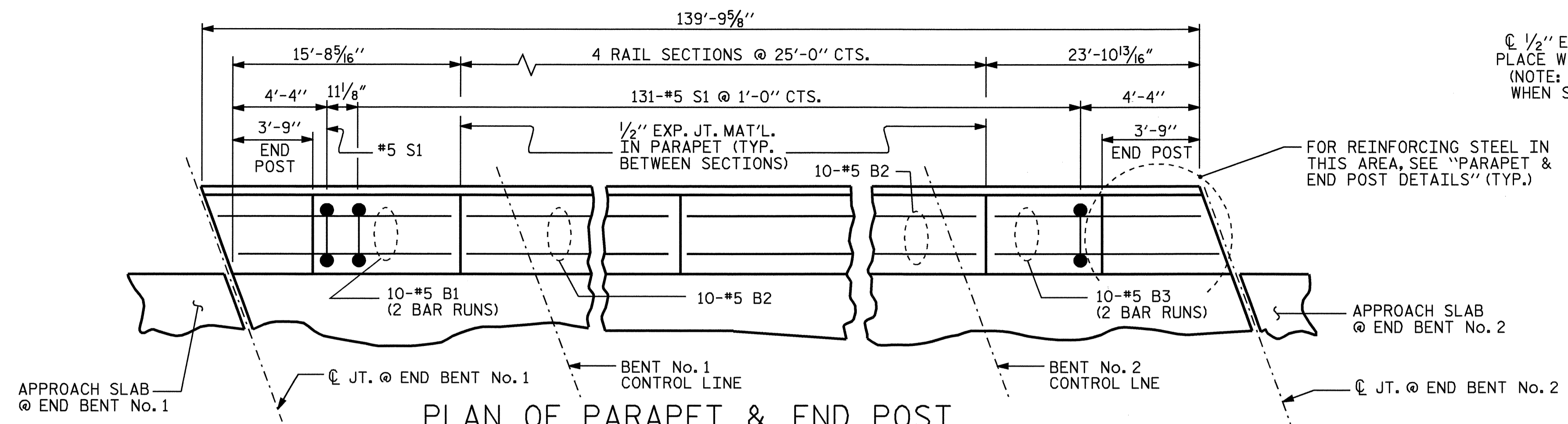
SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE SIDEWALK DETAILS					
SHEET NO. S-23					
TOTAL SHEETS 50					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		



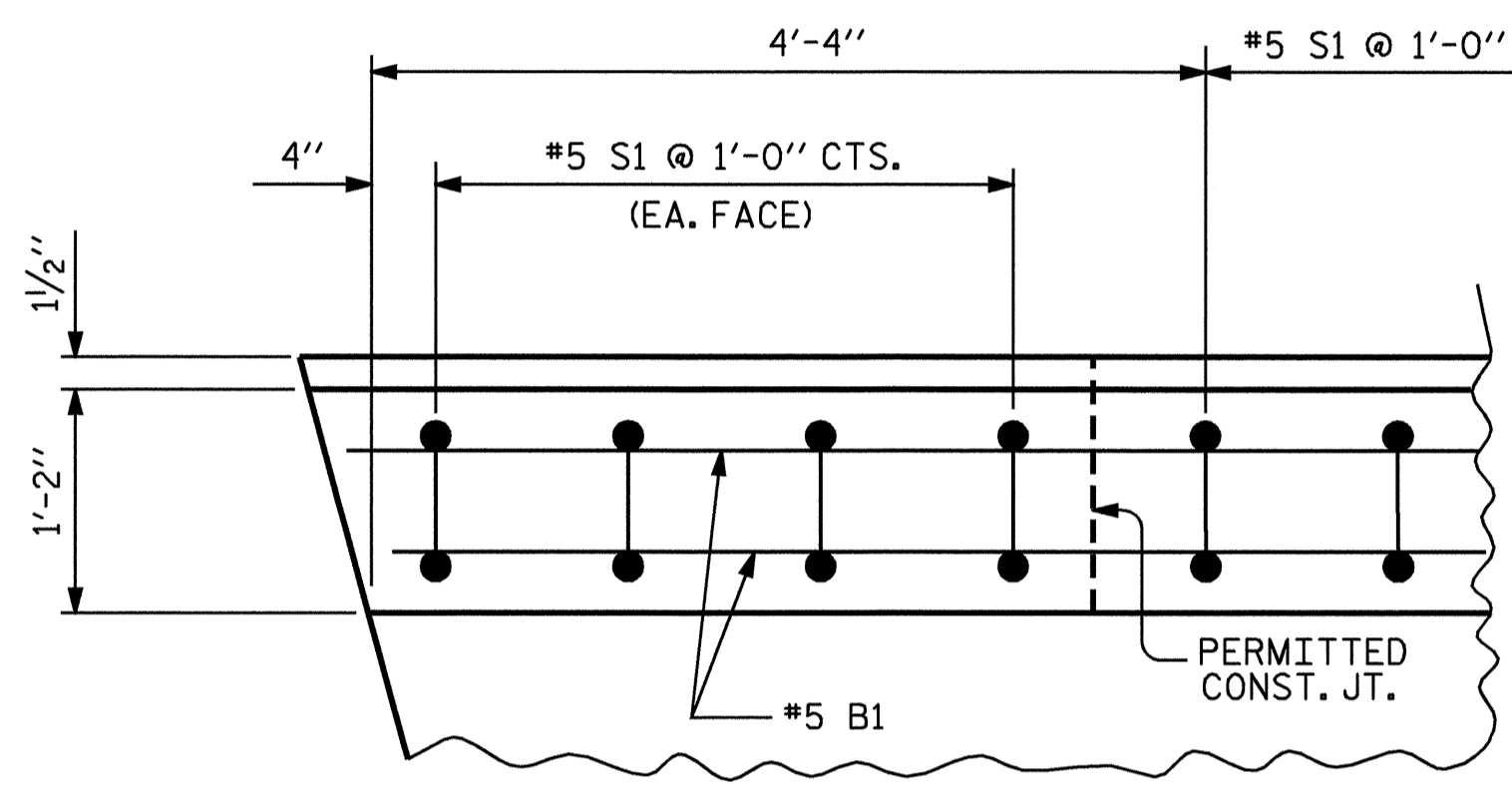
DRAWN BY : M. POOLE DATE : 11/07  
 CHECKED BY : D. HODGE DATE : 05-08



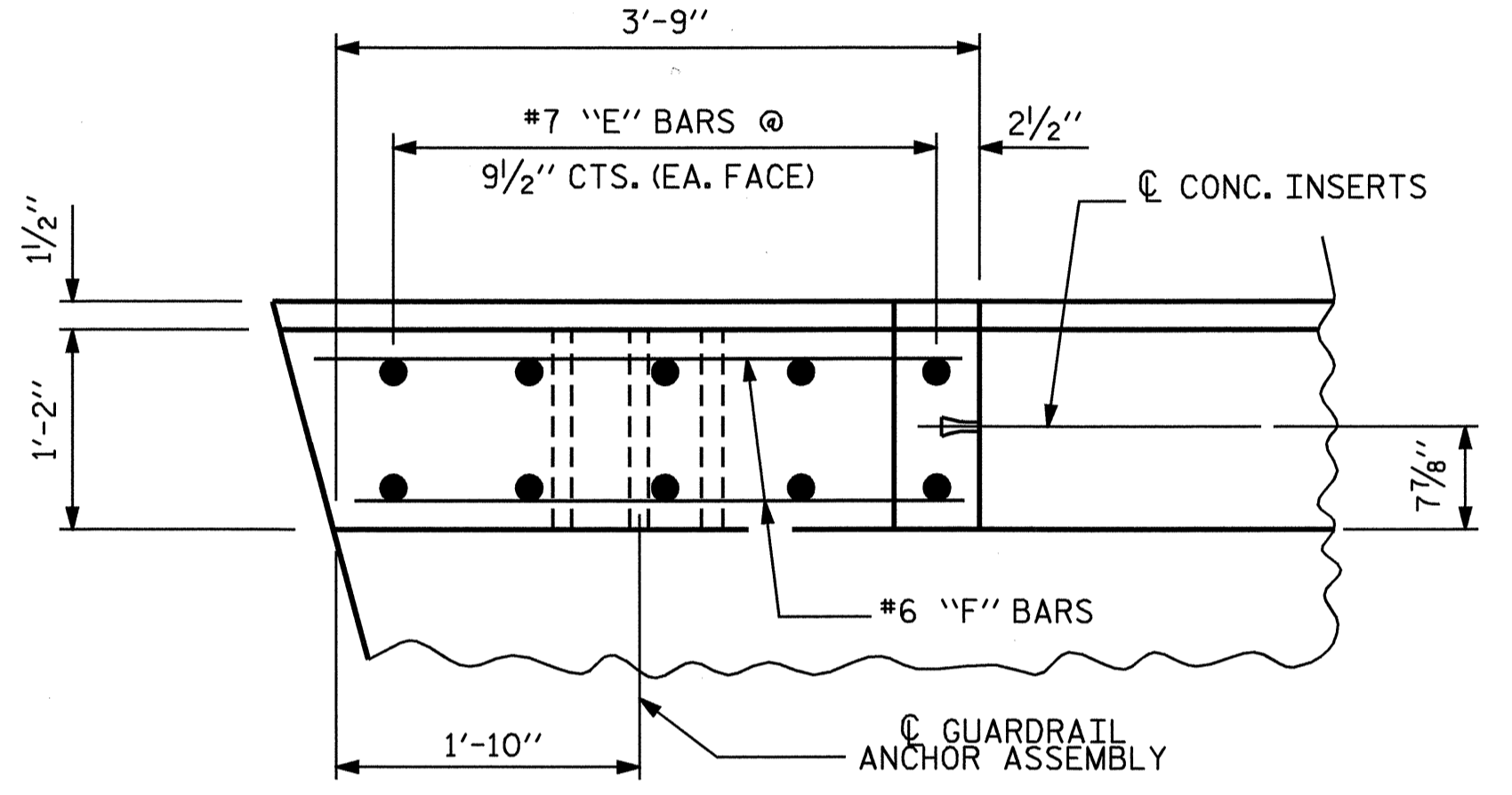


PLAN OF PARAPET & END POST

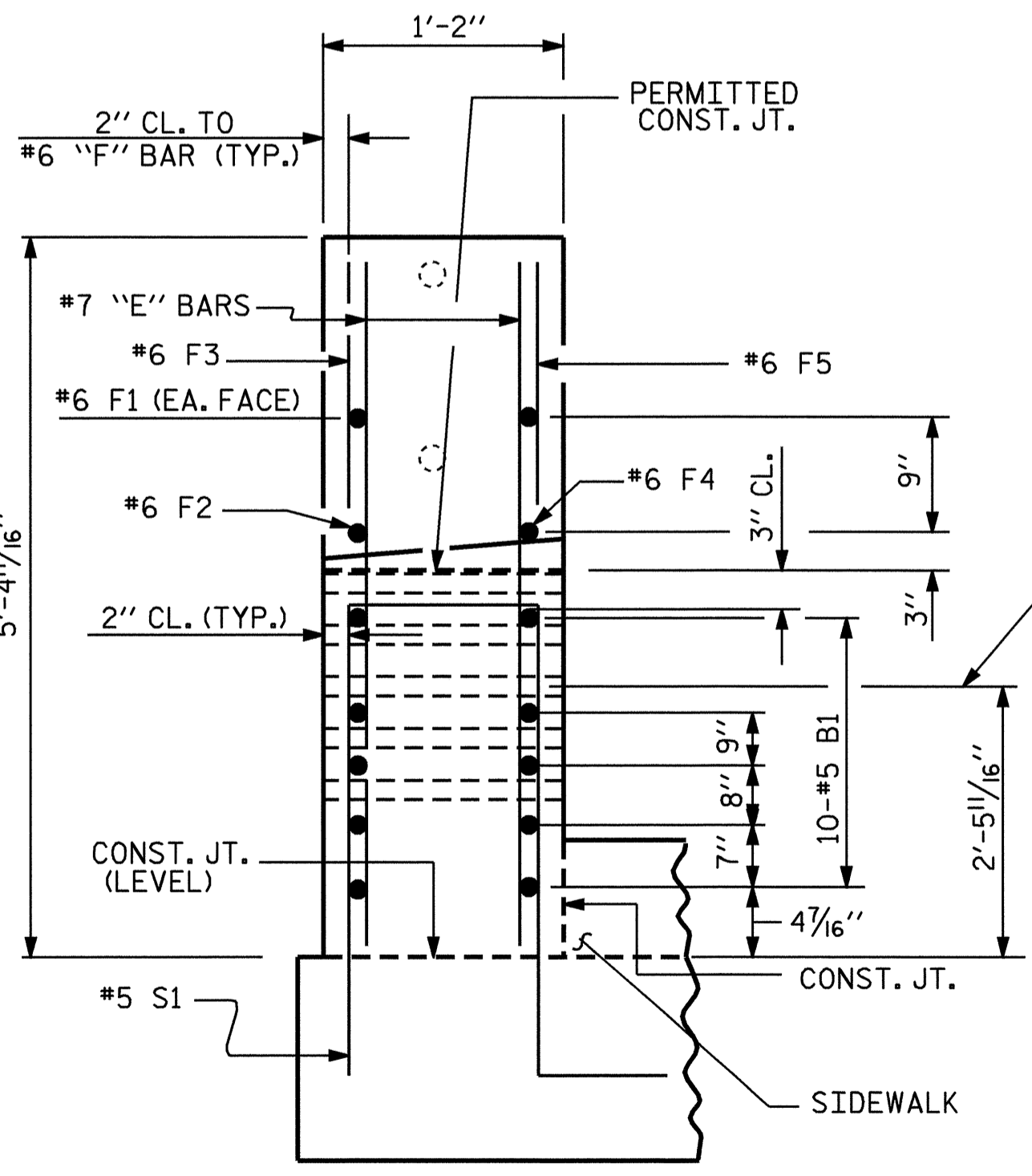
(TYP. EA. SIDE)  
 NOTE: #5 "S" BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN PARAPET.



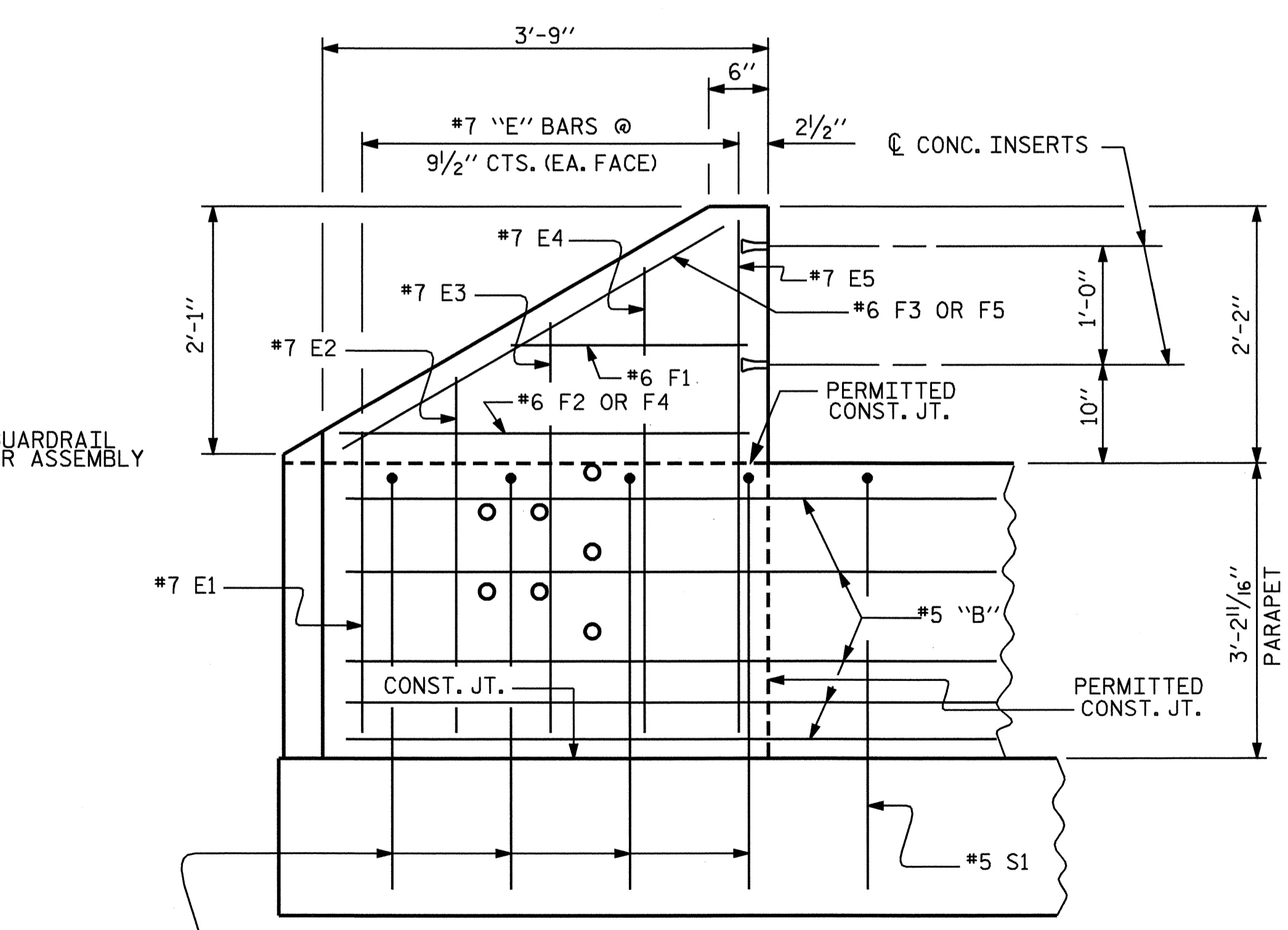
PLAN OF PARAPET



PLAN OF END POST



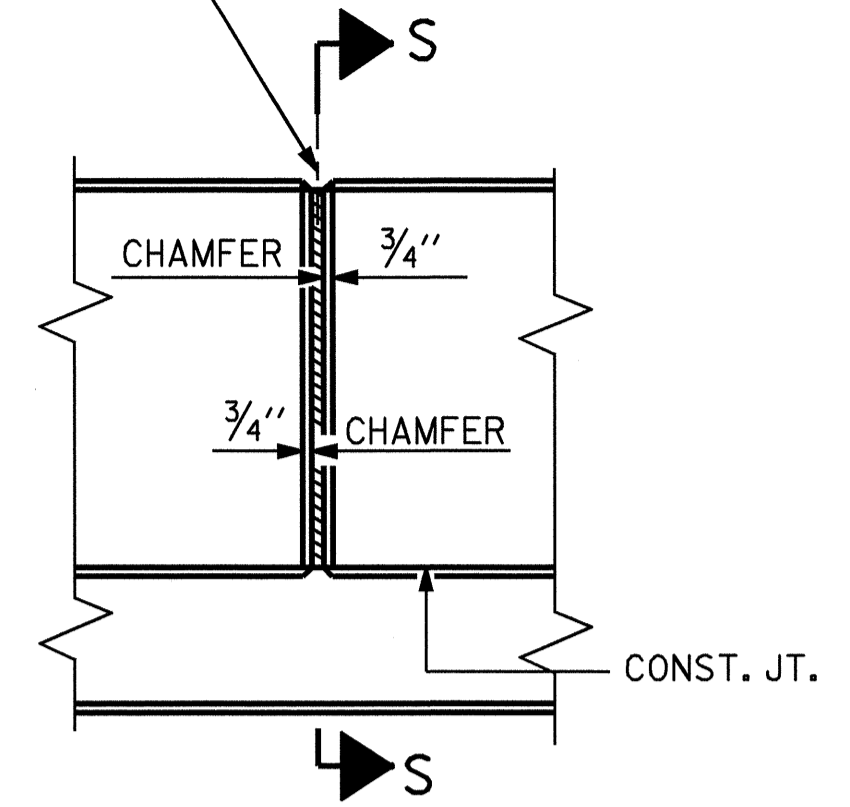
END VIEW



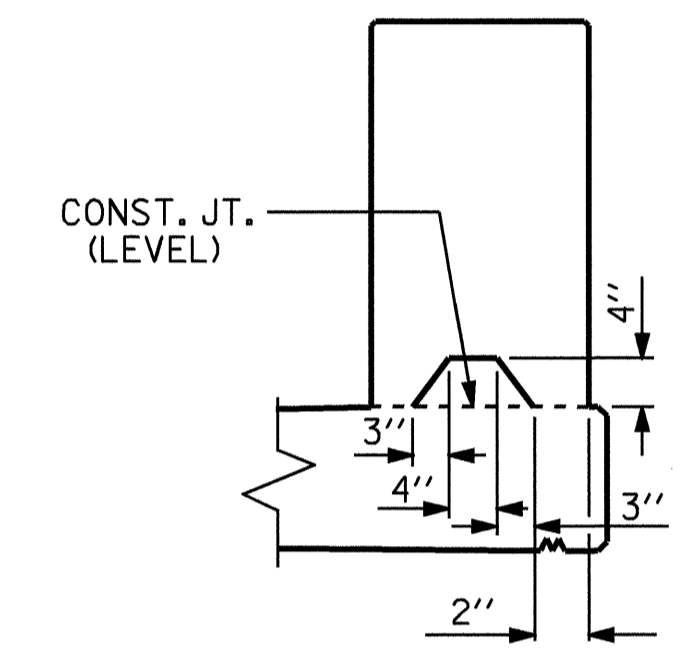
ELEVATION

PARAPET AND END POST FOR TWO BAR RAIL

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

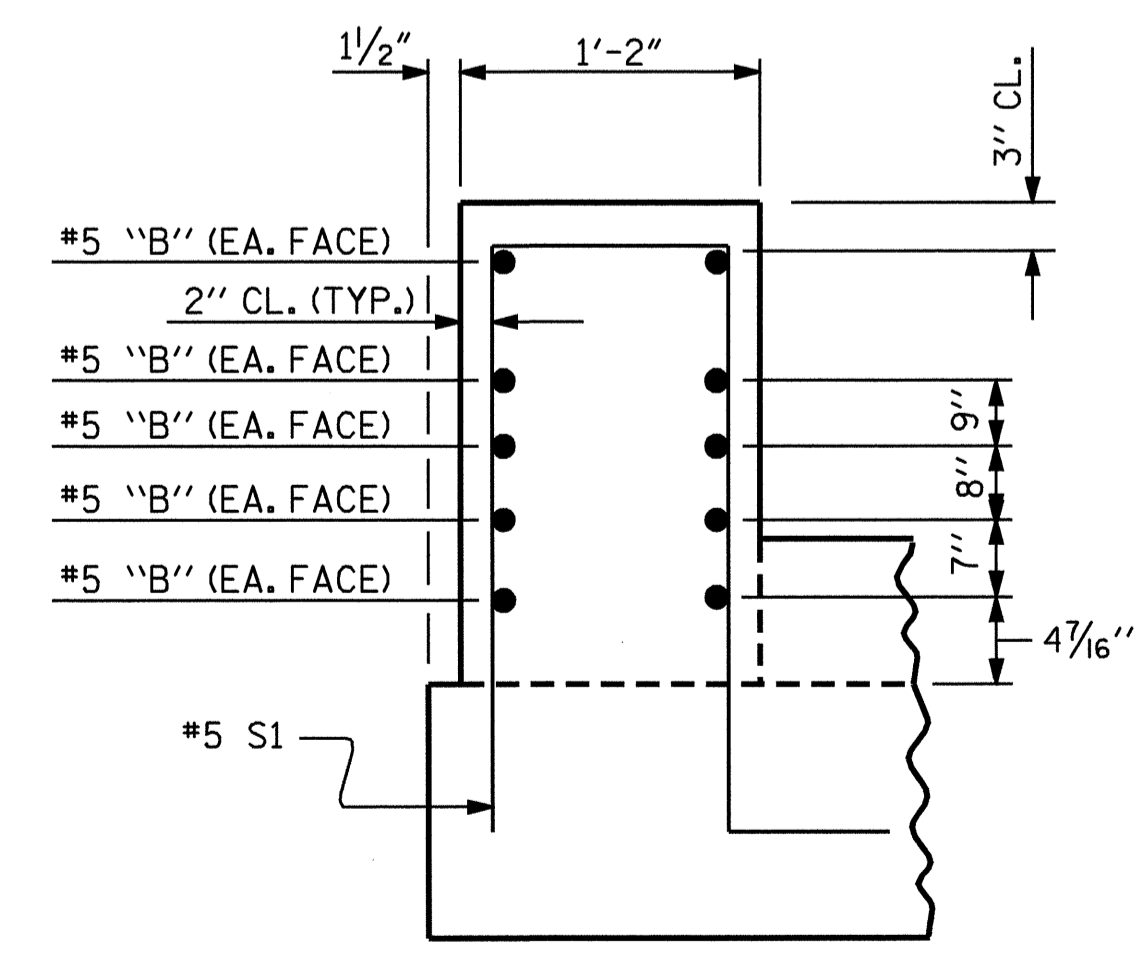


ELEVATION AT JOINTS IN PARAPET



SECTION S-S

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



SECTION THRU PARAPET

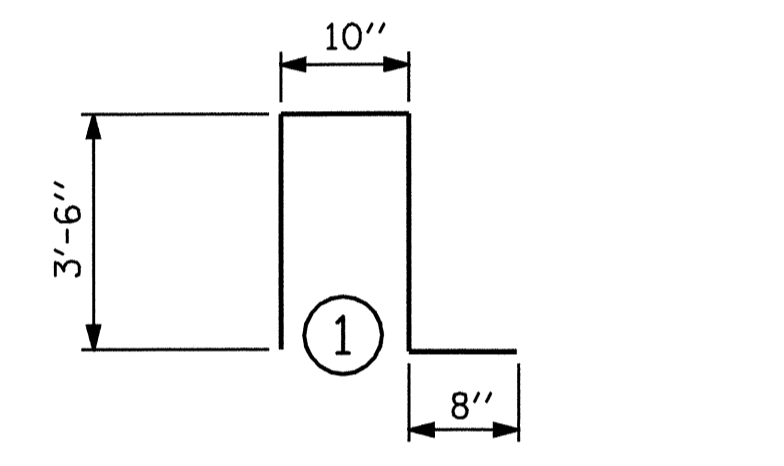
BILL OF MATERIAL

CONCRETE PARAPET & END POSTS

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	20	5	STR	9'-7"	200
* B2	80	5	STR	24'-7"	2051
* B3	20	5	STR	13'-7"	283
* E1	8	7	STR	3'-3"	53
* E2	8	7	STR	3'-9"	61
* E3	8	7	STR	4'-3"	69
* E4	8	7	STR	4'-9"	78
* E5	8	7	STR	5'-1"	83
* F1	8	6	STR	1'-10"	22
* F2	4	6	STR	3'-1"	19
* F3	4	6	STR	3'-5"	21
* F4	4	6	STR	3'-0"	18
* F5	4	6	STR	3'-4"	20
* S1	280	5	1	8'-6"	2482

\* EPOXY COATED REINFORCING STEEL 5460 LBS.  
 CLASS AA CONCRETE 39.8 C.Y.  
 1'-2" X 3'-2 1/16" CONCRETE PARAPET 279.60 LIN FEET

BAR TYPE

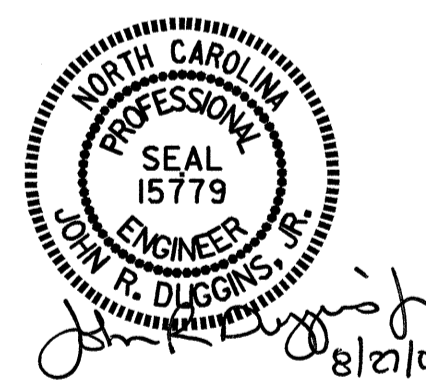


ALL BAR DIMENSIONS ARE OUT TO OUT

\* THESE BARS ARE EPOXY COATED

NOTES:

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.  
 FOR DETAILS OF CONCRETE INSERT AND GUARDRAIL ANCHOR ASSEMBLY, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEETS.

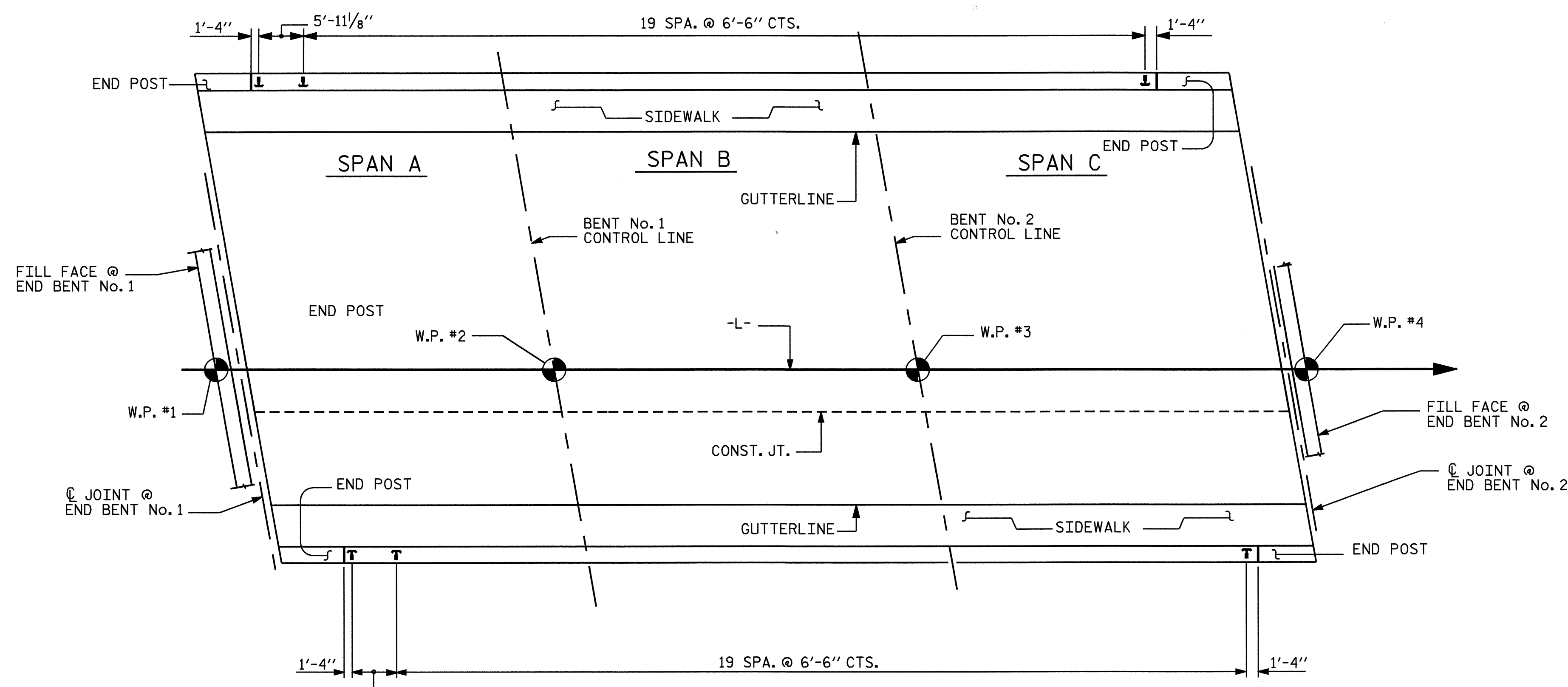


PROJECT NO. B-4033  
 BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

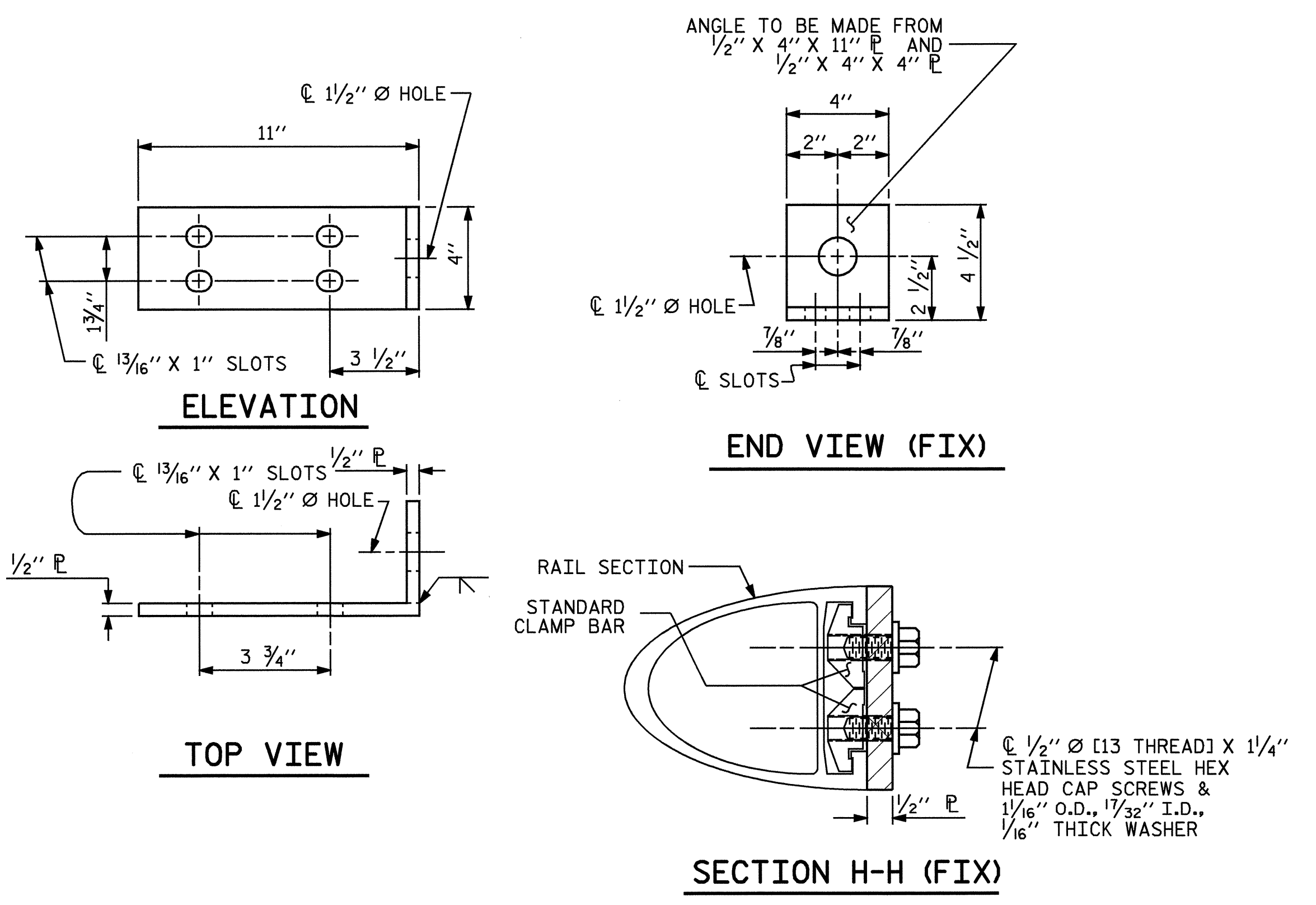
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 1'-2" X 3'-2 1/16"  
 CONCRETE PARAPET  
 FOR  
 2 BAR METAL RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-24
2			4			TOTALS 50

DRAWN BY: M. POOLE DATE: 05-08  
 CHECKED BY: D. HODGE DATE: 06-08



**PLAN OF RAIL POST SPACINGS**



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

**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 1/6" 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:

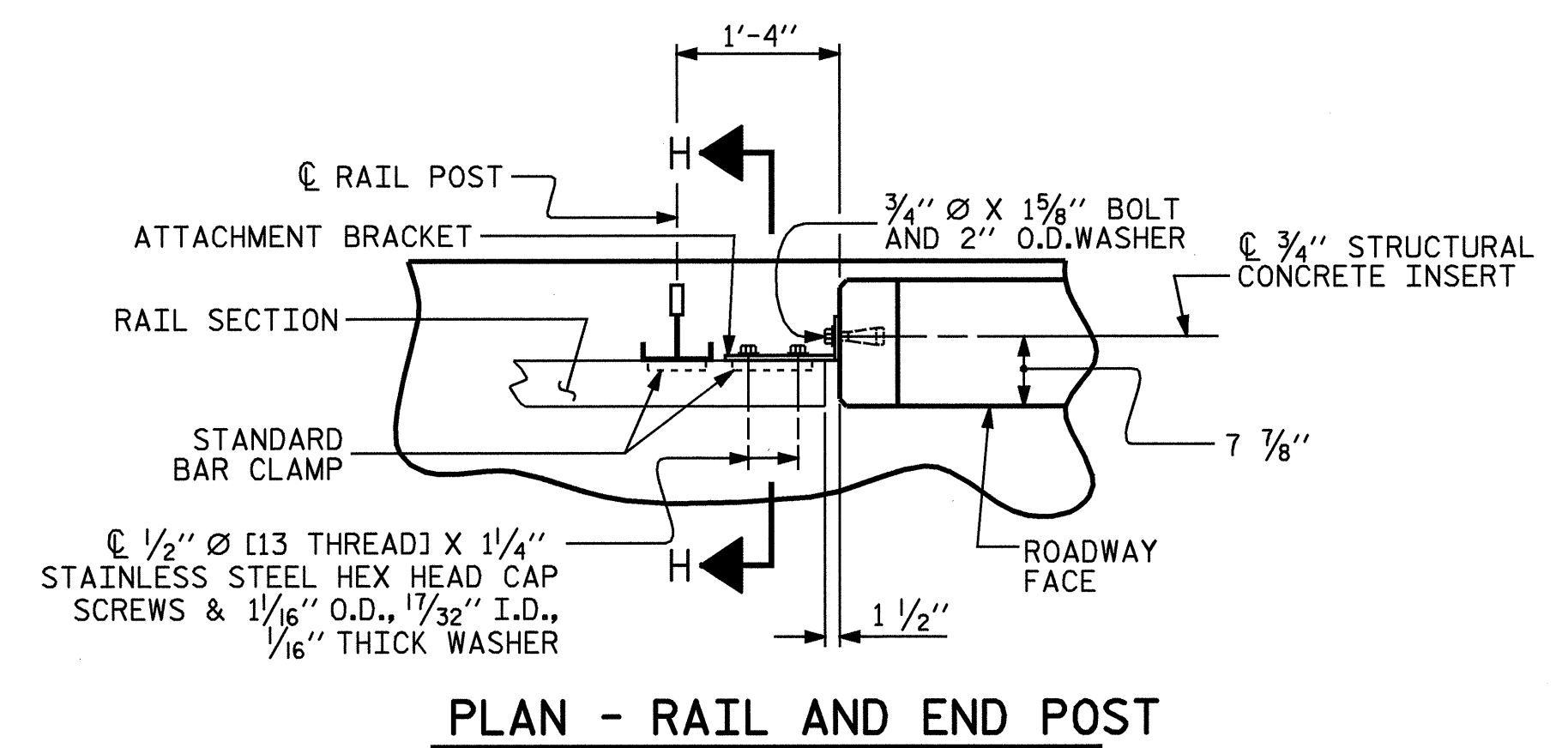
- 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 5/8" BOLT SHALL HAVE N. 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°F.
- 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.

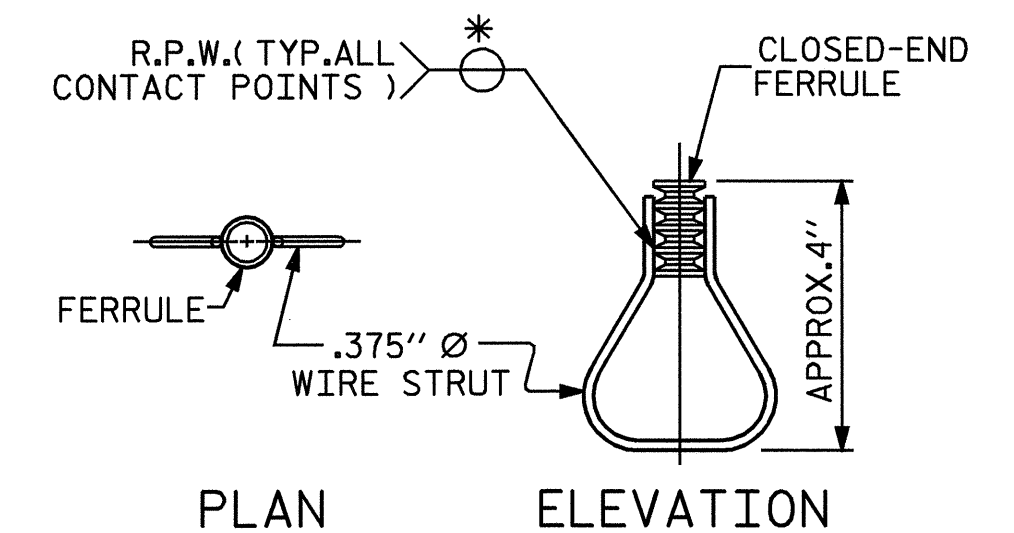
THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

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.



**PLAN - RAIL AND END POST**



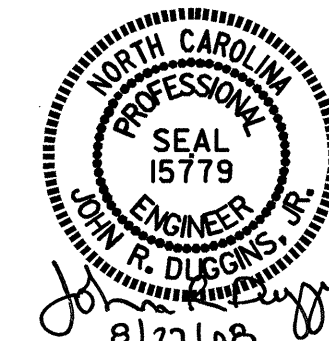
**STRUCTURAL CONCRETE INSERT**

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

PROJECT NO. B-4033  
 BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 RAIL POST SPACINGS  
 AND  
 END OF RAIL DETAILS  
 FOR ONE OR TWO BAR METAL RAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5
2			4			50



ASSEMBLED BY : M. POOLE DATE : 05-08  
 CHECKED BY : D. HODGE DATE : 05-08  
 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



NOTES

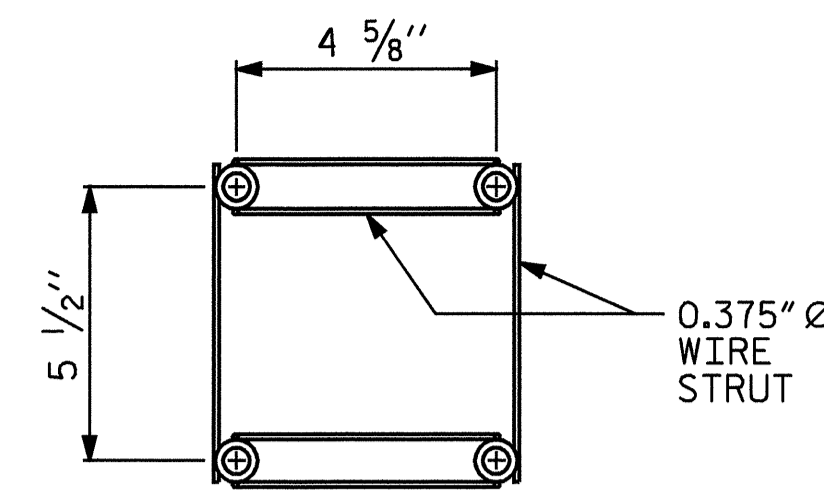
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

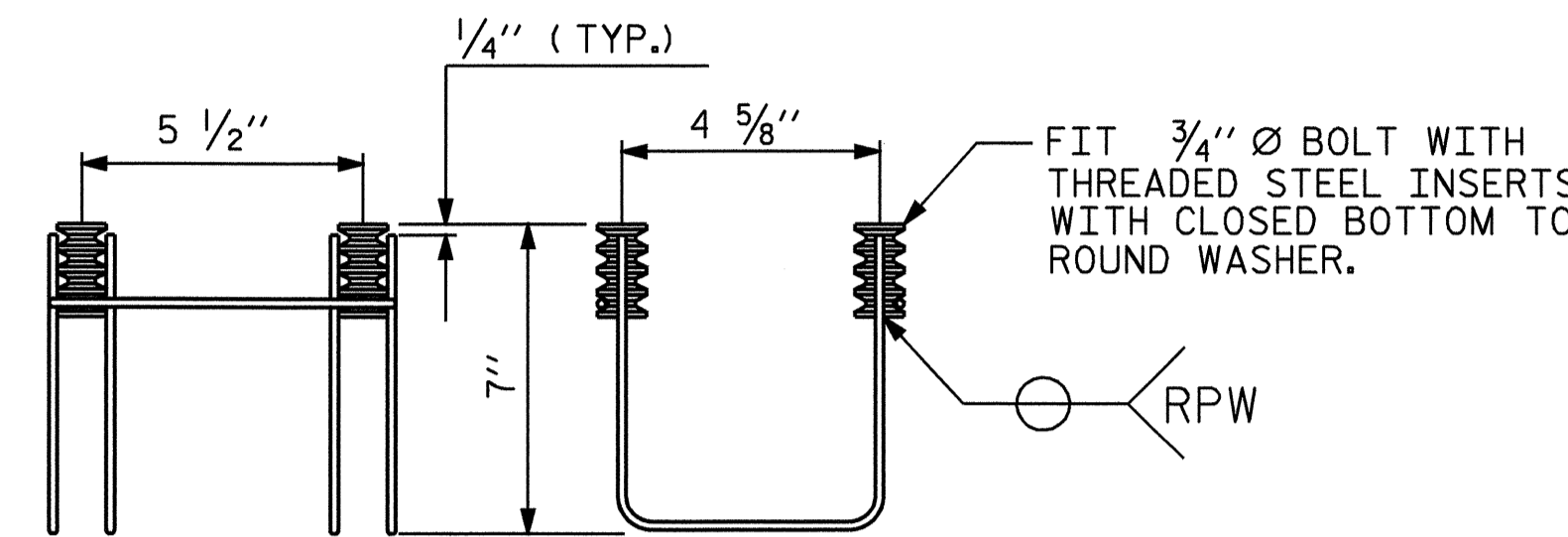
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT 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.



PLAN



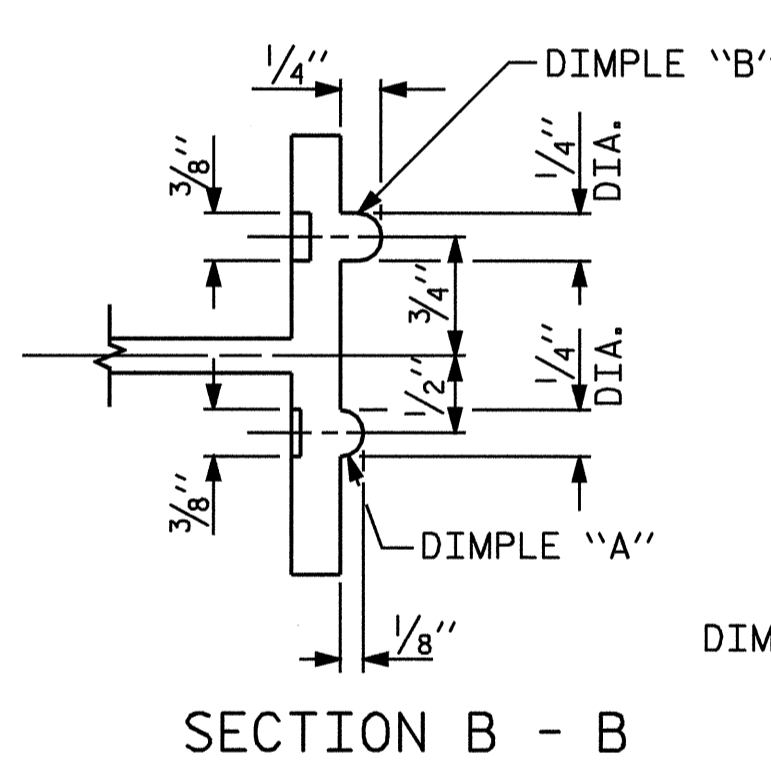
SIDE VIEW

ELEVATION

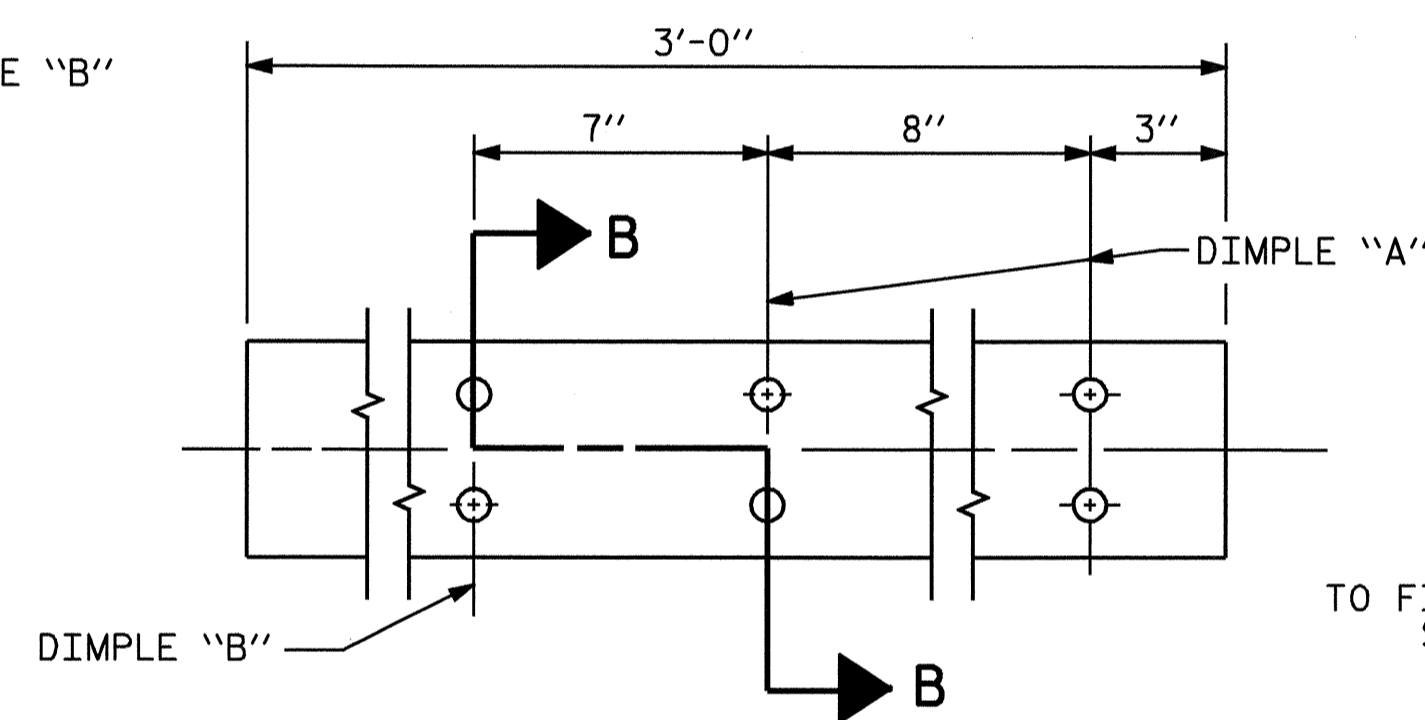
MINIMUM LENGTH OF THREADS IN INSERT (FERRULE) : 1 3/4"

4-BOLT METAL RAIL ANCHOR ASSEMBLY

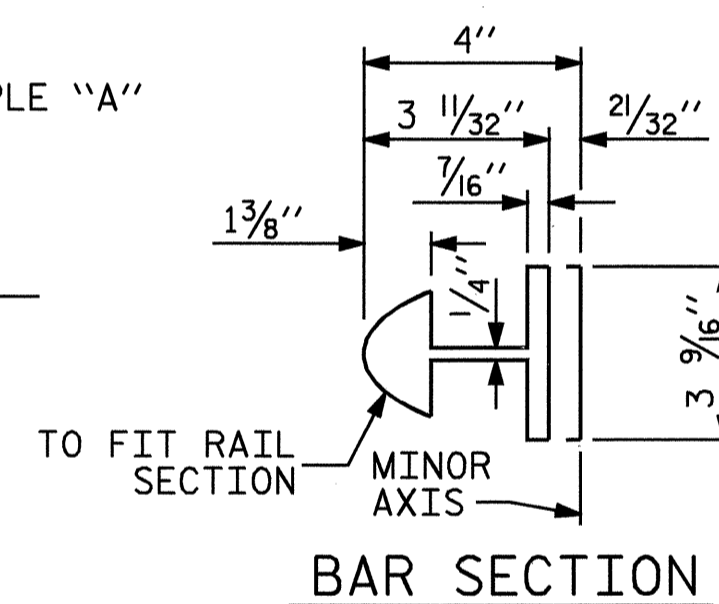
( 42 ASSEMBLIES REQUIRED )



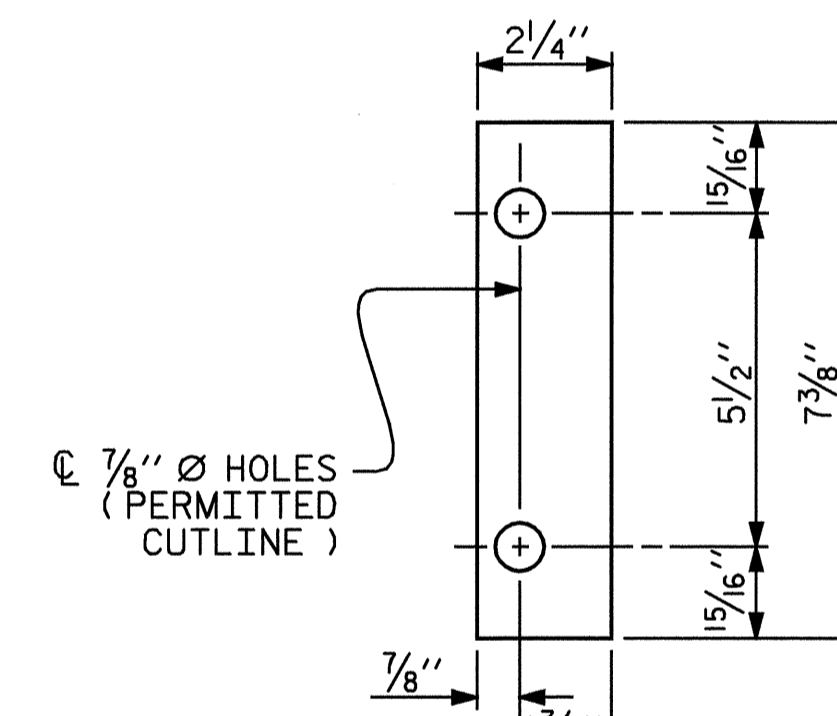
SECTION B - B



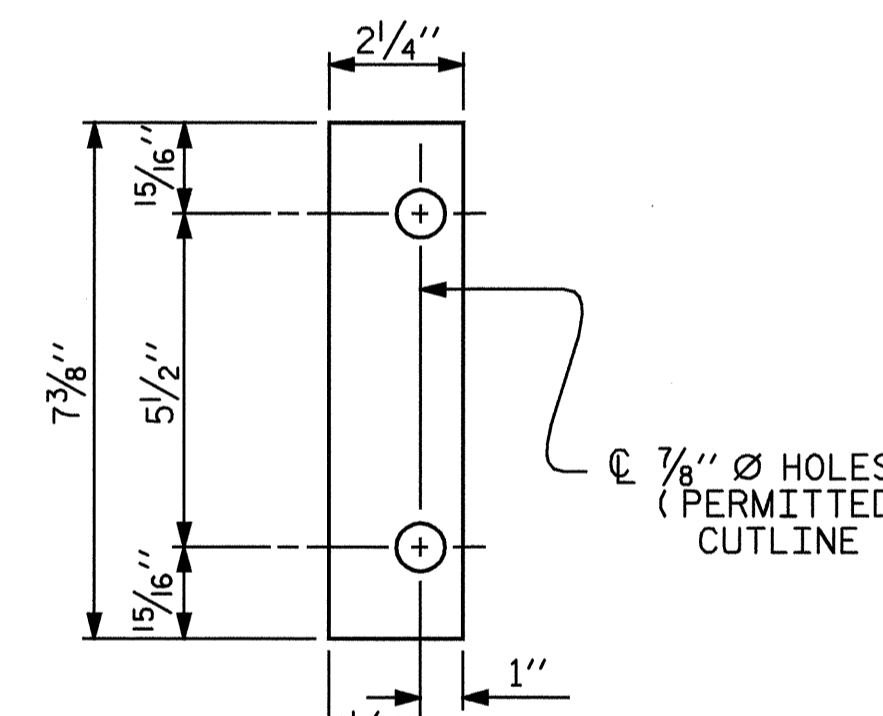
EXPANSION BAR DETAILS



BAR SECTION



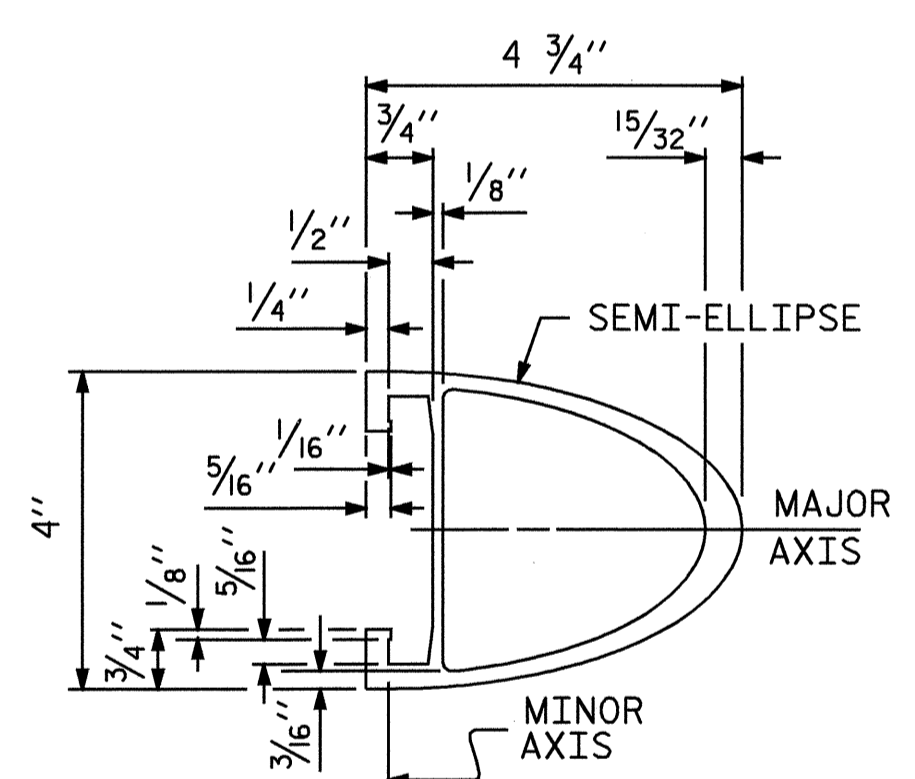
FRONT PLATE



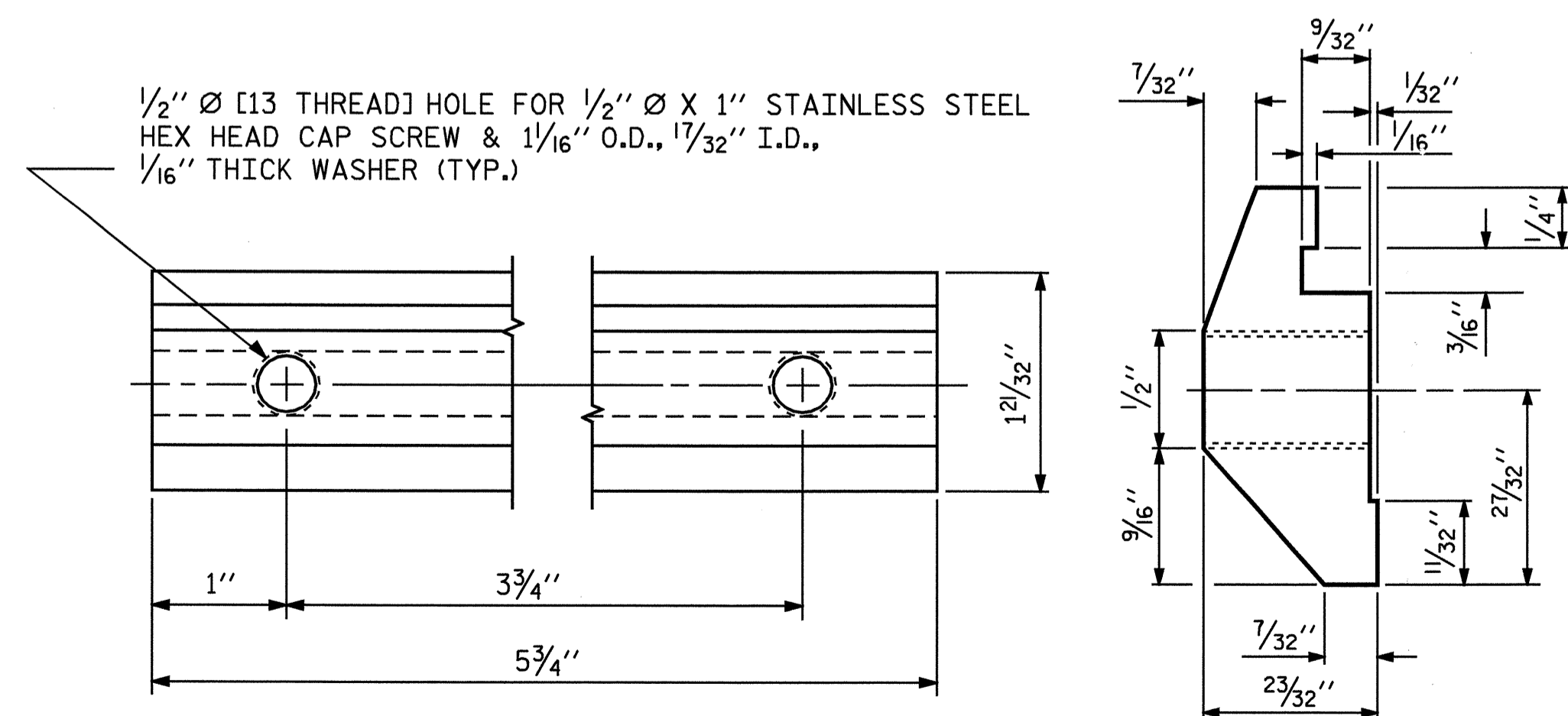
REAR PLATE

SHIM DETAILS

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



RAIL SECTION

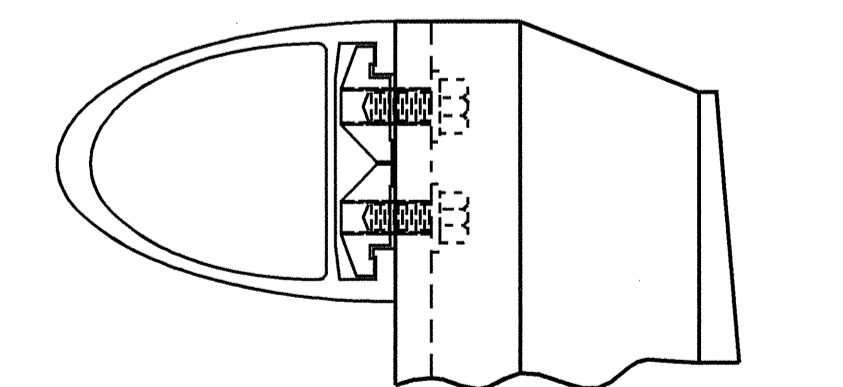


CLAMP BAR DETAIL

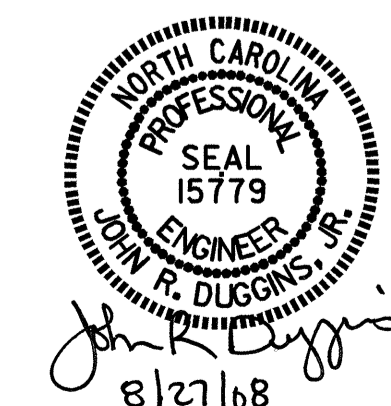
( 4 REQUIRED PER POST )



RAIL CAP



CLAMP ASSEMBLY



PROJECT NO. B-4033  
BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD					
2 BAR METAL RAIL					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-27					TOTAL SHEETS 50

ASSEMBLED BY : M. POOLE	DATE : 10/07
CHECKED BY : D. HODGE	DATE : 6-08
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 M111.

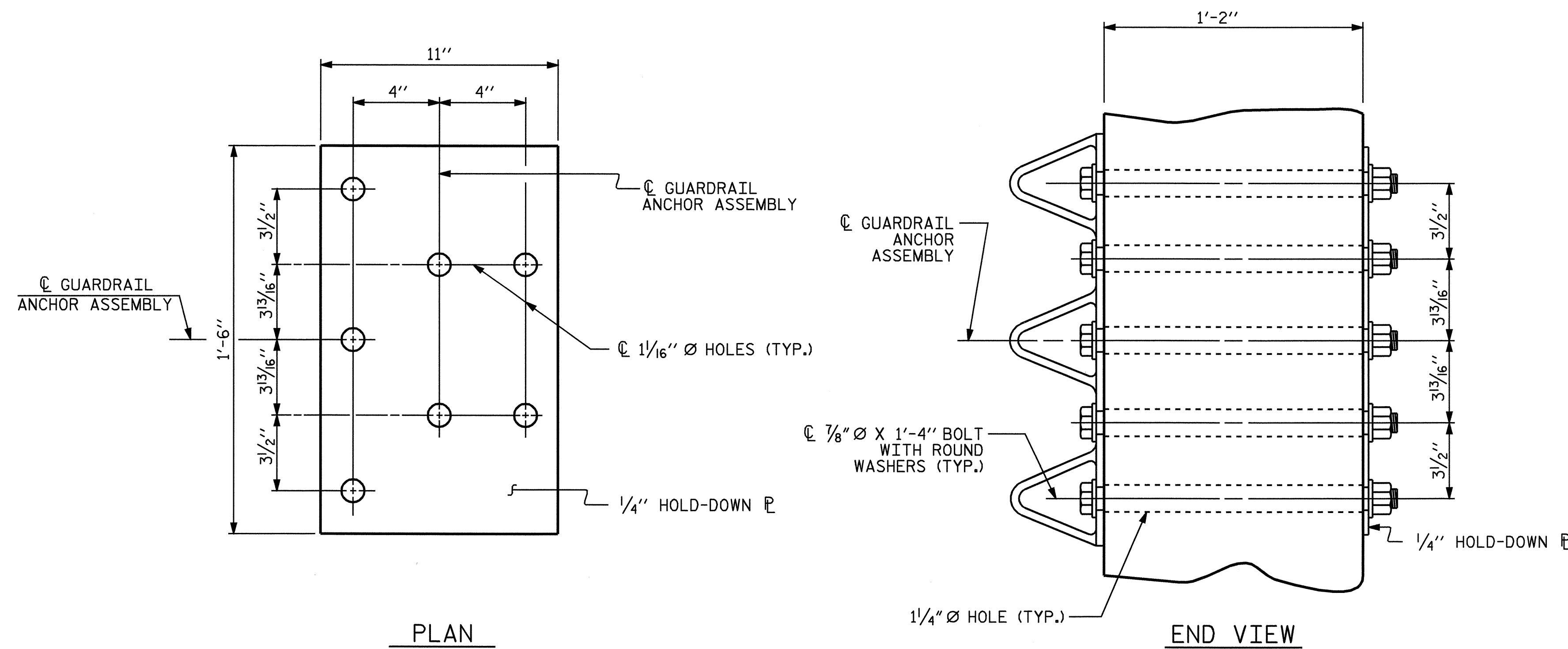
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS.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

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

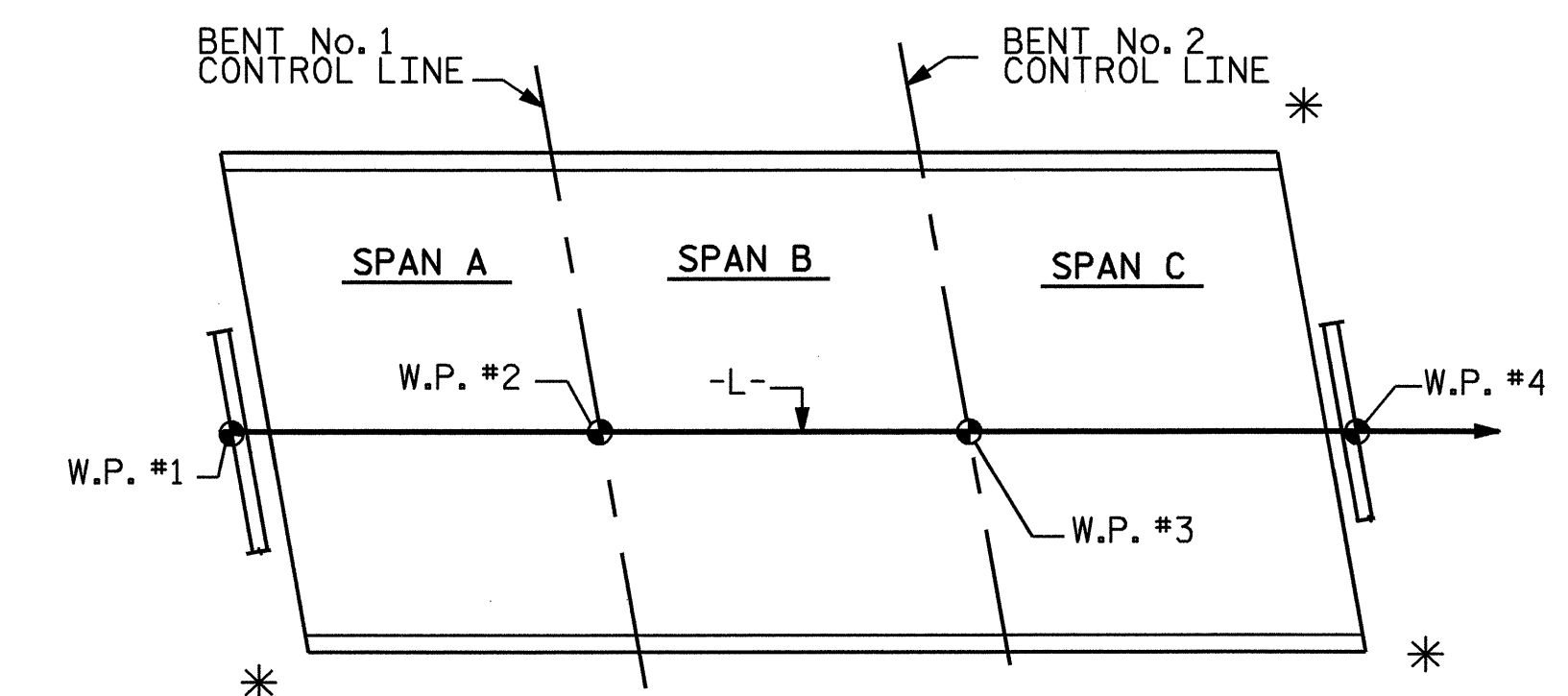
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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

THE 1/4" 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.

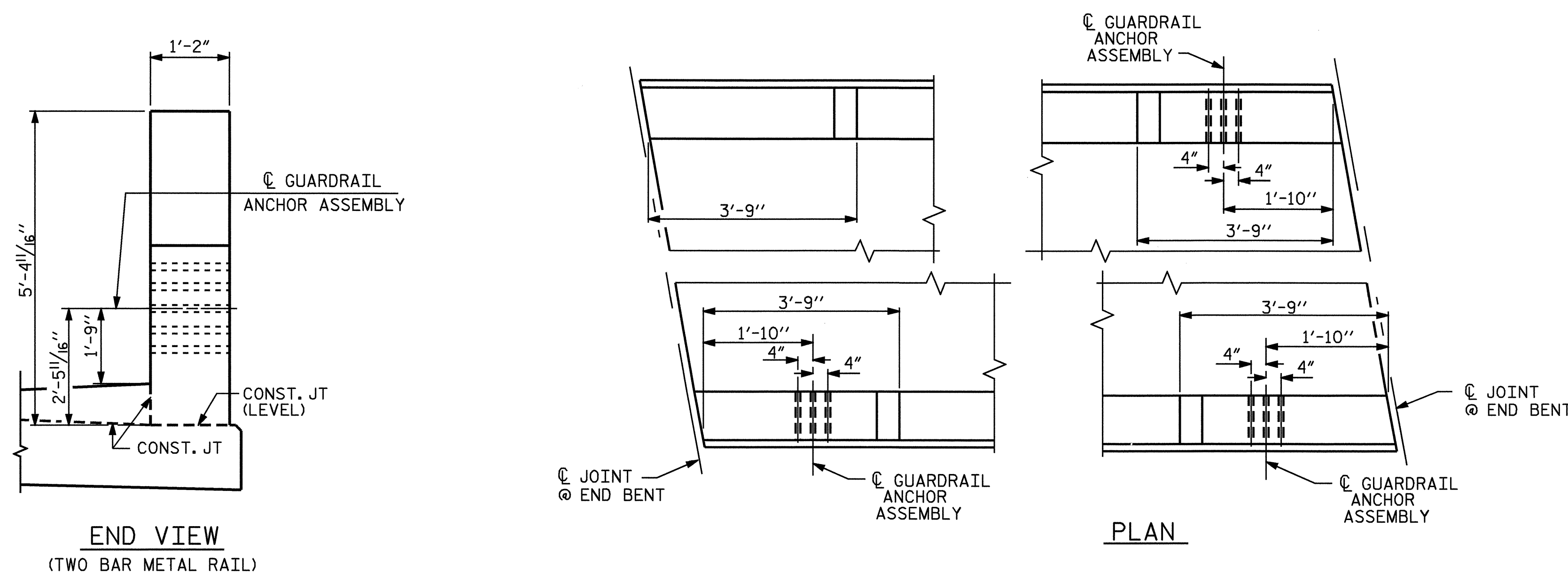


GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT

\*LOCATION OF GUARDRAIL ATTACHMENT

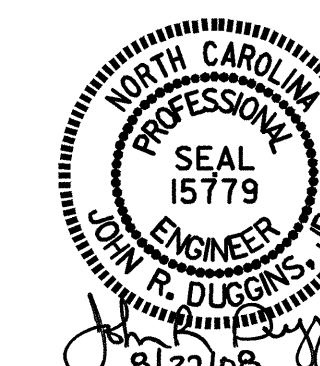


LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. B-4033  
BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

GUARDRAIL ANCHORAGE  
 DETAILS  
 FOR METAL RAILS



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28	
1			3			TOTAL SHEETS	
2			4			50	

ASSEMBLED BY :	M. POOLE	DATE :	10/07
CHECKED BY :	D. HODGE	DATE :	05-08
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

NOTES

ANGLES SHALL CONFORM TO AASHTO M270 GRADE 36 STEEL OR APPROVED EQUAL. ALL STUD ANCHORS SHALL CONFORM TO AASHTO M169 GRADES 1010 THRU 1020 OR APPROVED EQUAL.

STUD ANCHORS SHALL BE SHOP WELDED AND ALL HOLES SHALL BE SHOP DRILLED AS SHOWN ON THE PLANS. STUD ANCHORS SHALL BE ELECTRIC ARC END WELDED WITH COMPLETE FUSION.

UPON COMPLETION OF SHOP FABRICATION, THE ENTIRE ANCHOR ASSEMBLY SHALL BE METALLIZED. THE 1/2" Ø STUD ANCHORS AND ANCHOR TABS NEED NOT BE METALLIZED. SEE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).

ANCHOR ASSEMBLY SHALL BE MADE CONTINUOUS THE LENGTH OF THE JOINT FROM GUTTER TO GUTTER. FOR FIELD SPLICES AT ALL CROWN BREAK POINTS, THE ENDS OF THE STEEL ANGLES SHALL BE CUT PARALLEL TO THE BRIDGE CENTERLINE. FINISHED FIELD WELDS SHALL BE GRIND SMOOTH AND COATED WITH A MINIMUM THICKNESS OF 4 DRY MILS OF ZINC-RICH PAINT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

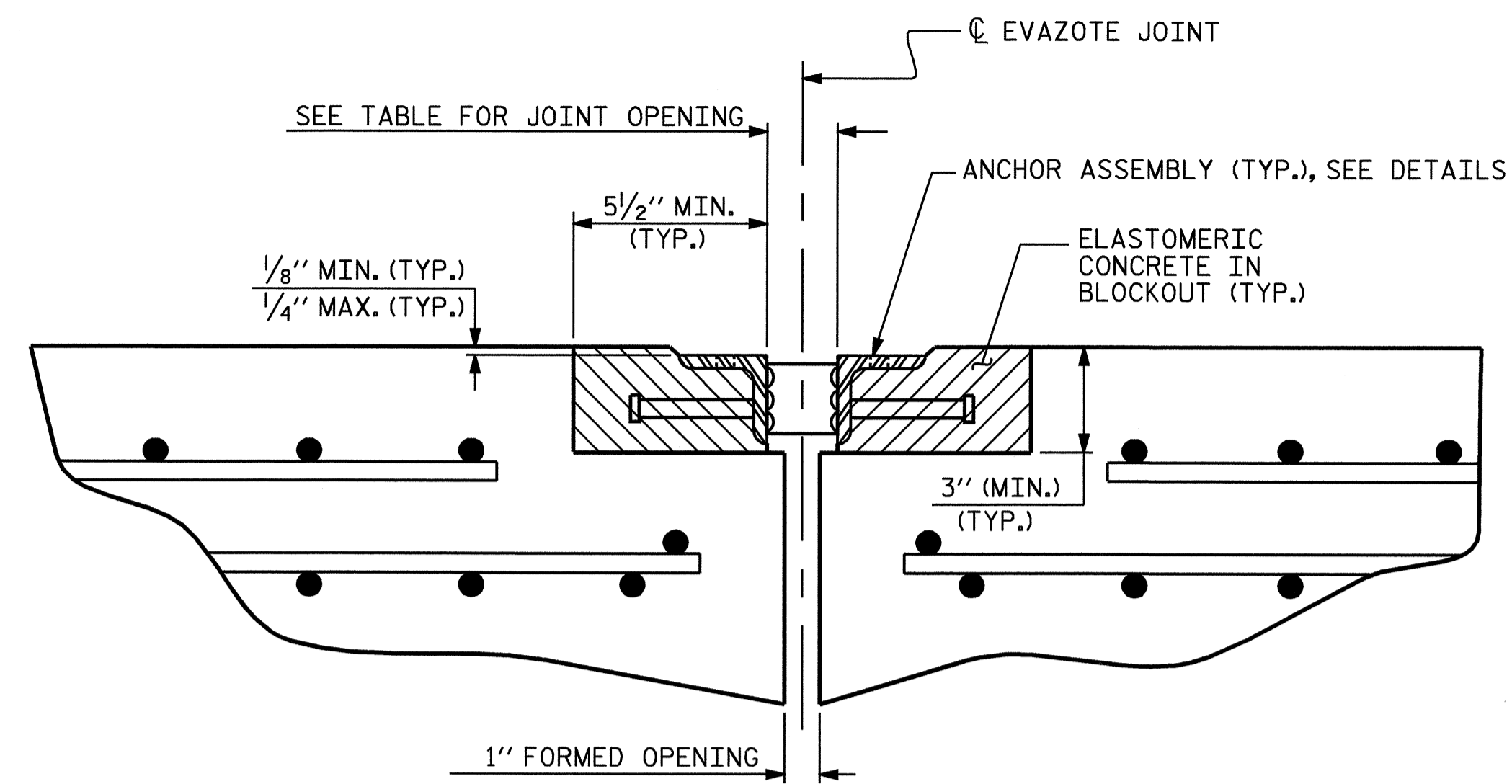
ANCHOR ASSEMBLY SEGMENTS SHALL NOT BE LESS THAN 12 FEET NOR MORE THAN 20 FEET IN LENGTH. SHORTER SEGMENTS MAY BE USED AT THE EDGE OF ROADWAY OR AT POINTS OF STAGED CONSTRUCTION.

THE ANCHOR ASSEMBLY SHALL BE SECURED AND LEVELLED AS SHOWN IN THE "ARMORED JOINT ANCHOR ASSEMBLY DETAILS". NO SUBMITTALS ARE REQUIRED FOR 3/8" Ø EXPANSION ANCHORS, NUTS OR WASHERS. THE CONTRACTOR MAY SUBMIT FOR APPROVAL AN ALTERNATE METHOD OF ALIGNING AND LEVELING THE ANGLES. THE ALTERNATE METHOD SHALL NOT INCLUDE ANY WELDING TO THE OUTSIDE FACE OF THE ANGLES.

AFTER THE ELASTOMERIC CONCRETE HAS BEEN CAST ON BOTH SIDES OF THE JOINT, REMOVE ANY EXCESS CONCRETE THAT COMES THROUGH THE WEEP HOLES AND THOROUGHLY CLEAN THE ANGLES. ANY DAMAGED STEEL SHALL BE COATED WITH A MINIMUM OF 4 MILS OF ZINC-RICH PAINT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

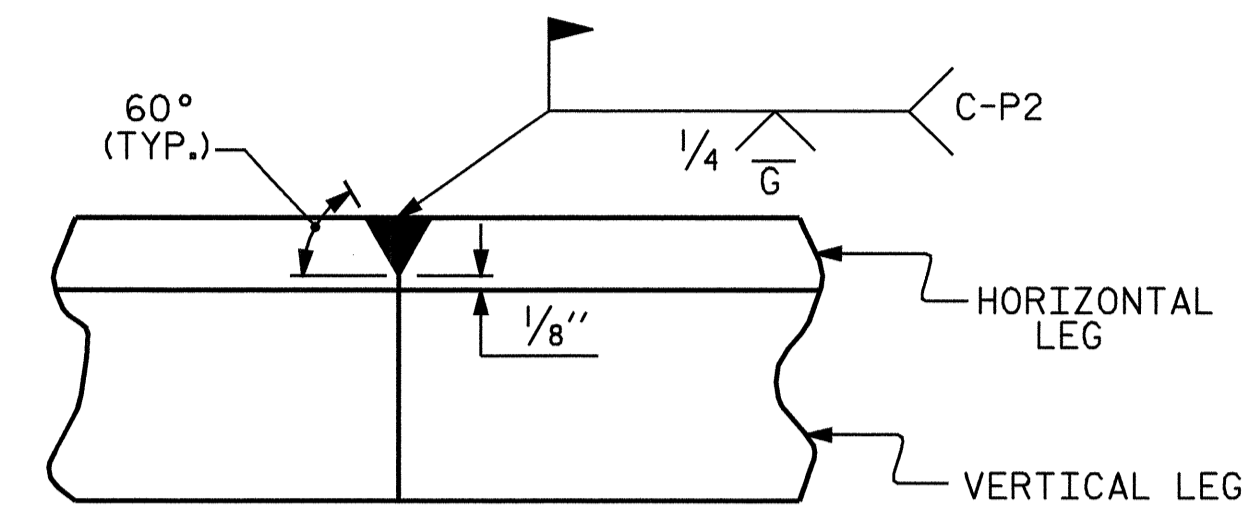
SEE SPECIAL PROVISIONS FOR EVAZOTE JOINT SEALS.

SEE SPECIAL PROVISIONS FOR ELASTOMERIC CONCRETE.

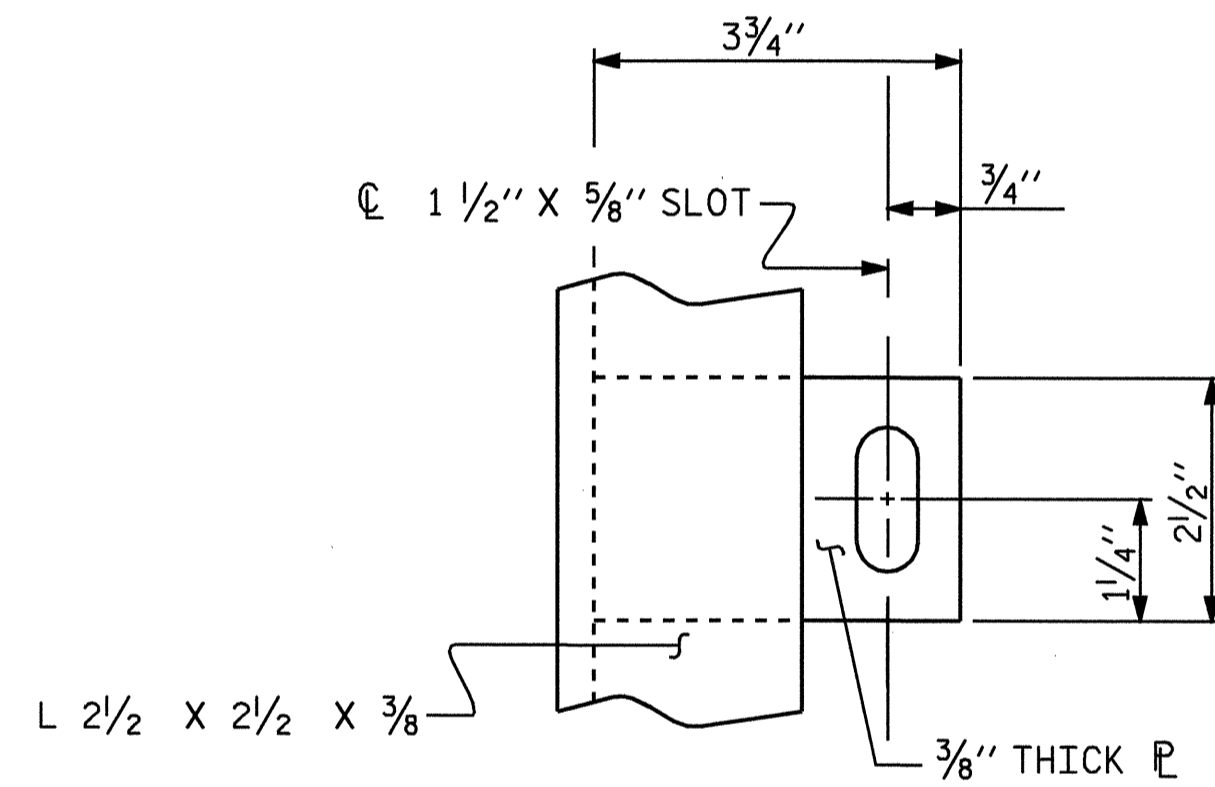


ARMORED JOINT DETAILS

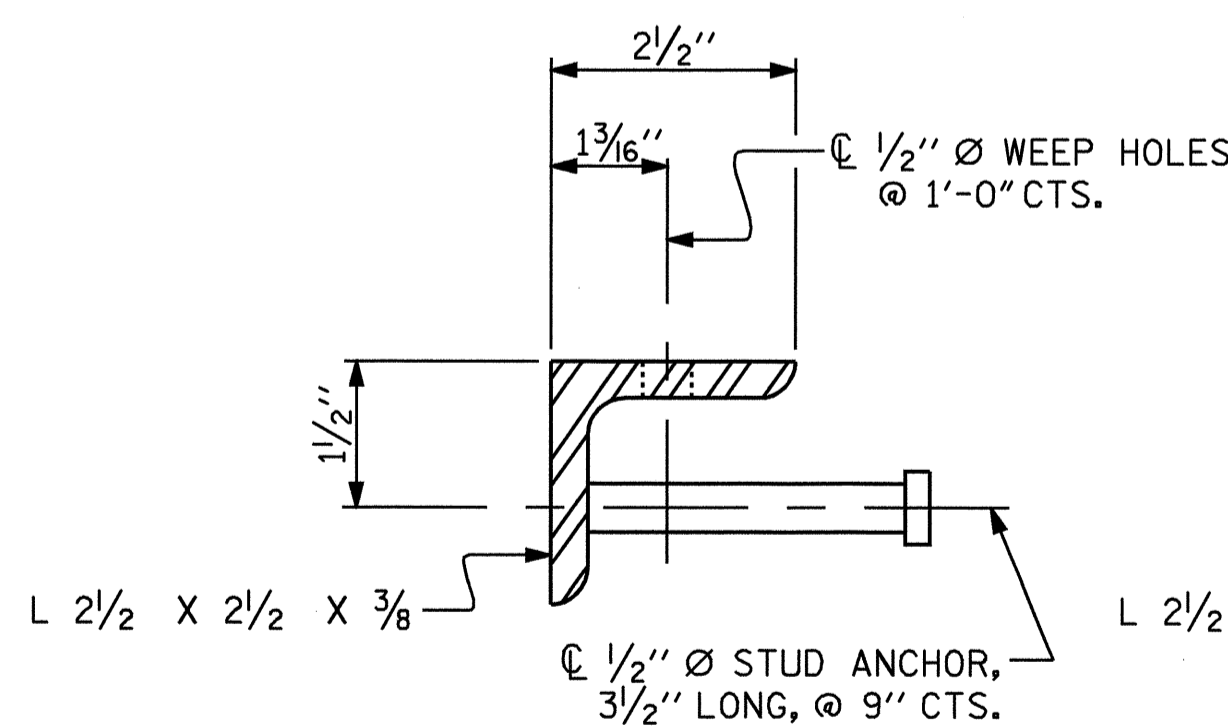
SECTION NORMAL TO JOINT AT END BENTS



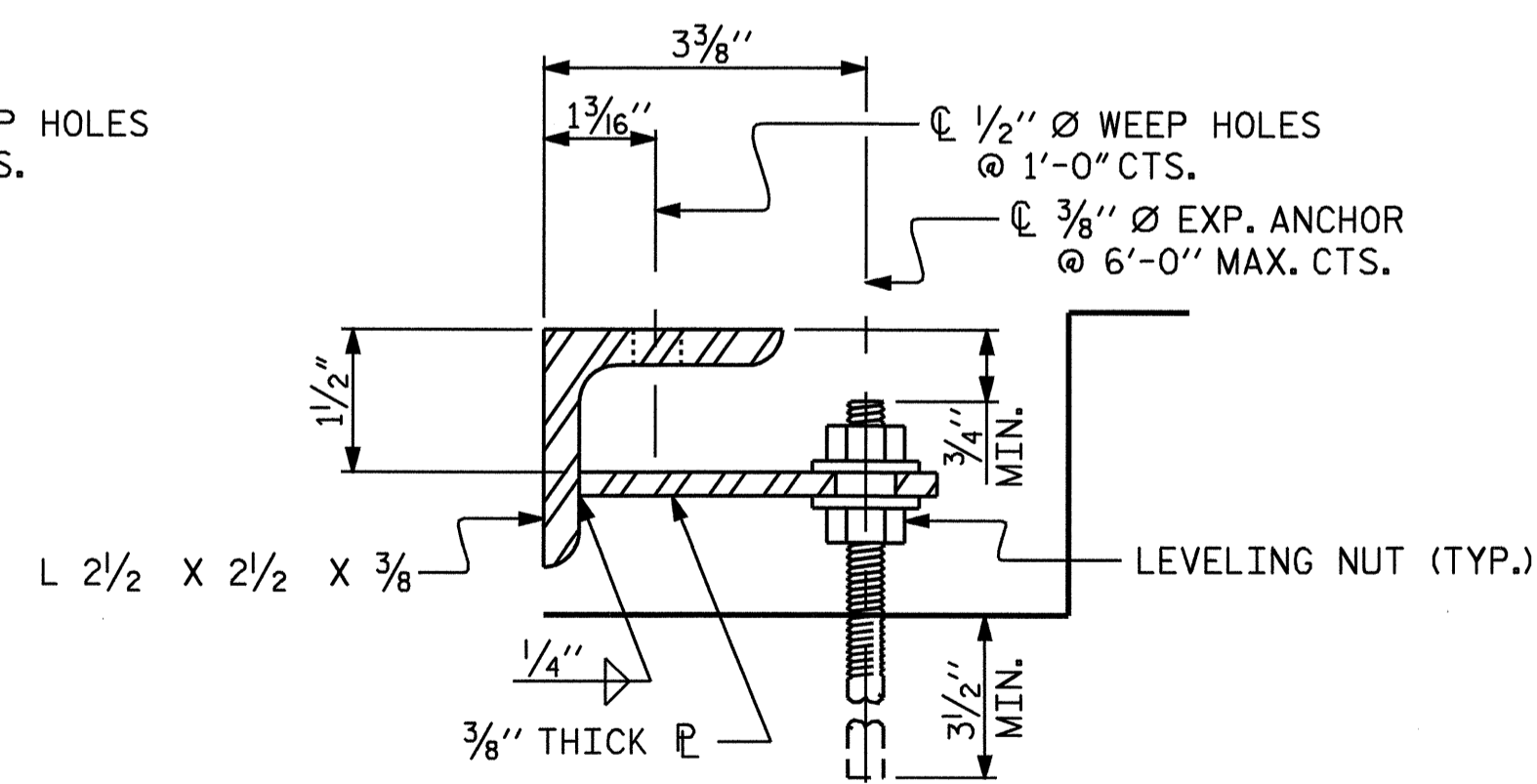
DETAIL- FIELD WELD SPLICE OF ANGLE



PLAN VIEW OF TAB



SECTION VIEW OF STUD



SECTION VIEW OF TAB

ARMORED JOINT ANCHOR ASSEMBLY DETAILS

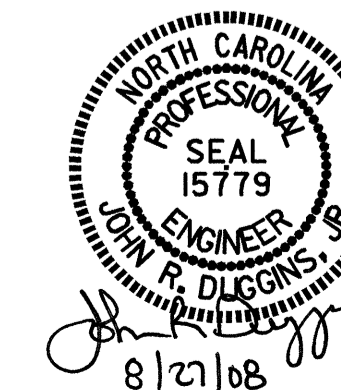
MOVEMENT AND SETTING AT EVAZOTE JOINT						
END BENT No.	SKEW ANGLE	NOMINAL UNCOMPRESSED SEAL WIDTH	TOTAL MOVEMENT (ALONG C.RDWAY)	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
1	80°-00'-00"	2 1/2"	9/16"	2 1/8"	2"	1 3/4"
2	80°-00'-00"	2 1/2"	5/8"	2 1/8"	2"	1 3/4"

TOTAL MOVEMENT IS CALCULATED ALONG THE CENTERLINE OF ROADWAY. JOINT OPENINGS ARE MEASURED PERPENDICULAR TO THE JOINT.

BILL OF MATERIAL		
END BENT No.	ELASTOMERIC CONCRETE * (CU. FT.)	TOTAL LENGTH OF ANGLE (FT)
1 - STAGE I	6.2	54
1 - STAGE II	11.5	101
2 - STAGE I	6.2	54
2 - STAGE II	11.5	101
TOTAL	35.4	310

\* BASED ON THE MINIMUM BLOCKOUT SHOWN.

PROJECT NO. B-4033  
BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 ARMORED EVAZOTE  
 JOINT DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			50
2			4			50

ASSEMBLED BY : M. POOLE	DATE : 05-08
CHECKED BY : D. HODGE	DATE : 06-08
DRAWN BY : EEM 1/96	REV. 7/10/01 LES/RDR
CHECKED BY : RGW 1/96	REV. 5/7/03RR RWW/JTE
	REV. 5/1/06 TLA/GM

# BAR SCHEDULE

## SPANS A, B, & C - STAGE I

BAR No.	SIZE	TYPE	LENGTH	WEIGHT	BAR No.	SIZE	TYPE	LENGTH	WEIGHT		
* A1	268	#5	STR.	32'-11"	9201	* B1	23	#4	STR.	18'-3"	280
A2	268	#5	STR.	32'-11"	9201	* B2	23	#7	STR.	52'-2"	2452
* A101	2	#5	STR.	30'-6"	64	* B3	21	#7	STR.	30'-0"	1288
* A102	2	#5	STR.	27'-8"	58	* B4	23	#7	STR.	53'-2"	2499
* A103	2	#5	STR.	24'-10"	52	* B5	21	#7	STR.	33'-6"	1438
* A104	2	#5	STR.	22'-0"	46	* B6	23	#4	STR.	25'-3"	388
* A105	2	#5	STR.	19'-2"	40	B7	132	#5	STR.	48'-0"	6608
* A106	2	#5	STR.	16'-3"	34	* D1	94	#6	STR.	3'-8"	518
* A107	2	#5	STR.	13'-5"	28	* G1	2	#5	STR.	33'-5"	70
* A108	2	#5	STR.	11'-7"	24	* K1	4	#8	1	13'-1"	140
* A109	2	#5	STR.	7'-9"	16	* K2	8	#8	2	20'-5"	436
* A110	2	#5	STR.	4'-11"	10	* K3	4	#8	1	11'-1"	118
A201	2	#5	STR.	30'-6"	64	K4	12	#6	STR.	8'-6"	153
A202	2	#5	STR.	27'-8"	58	K5	12	#4	STR.	9'-0"	68
A203	2	#5	STR.	24'-10"	52	K6	12	#4	STR.	6'-10"	72
A204	2	#5	STR.	22'-0"	46	K7	12	#4	STR.	6'-3"	55
A205	2	#5	STR.	19'-2"	40	K8	12	#4	5	6'-3"	50
A206	2	#5	STR.	16'-3"	34	K9	12	#4	6	11'-10"	95
A207	2	#5	STR.	13'-5"	28	* S1	48	#5	3	4'-11"	246
A208	2	#5	STR.	11'-7"	24	* S2	48	#4	4	3'-9"	120
A209	2	#5	STR.	7'-9"	16	S3	108	#5	7	2'-9"	310
A210	2	#5	STR.	4'-11"	10	* U1	42	#4	2	11'-10"	332
						* U2	12	#4	2	10'-10"	87
						REINFORCING STEEL				16984	LBS.
						* EPOXY COATED REINFORCING STEEL				19985	LBS.
						* THESE BARS ARE EPOXY COATED					
						CLASS AA CONCRETE				179.6	CU. YDS.

## SPANS A, B, & C - STAGE II

BAR No.	SIZE	TYPE	LENGTH	WEIGHT	BAR No.	SIZE	TYPE	LENGTH	WEIGHT		
* A3	260	#5	STR.	55'-11"	15163	* B1	38	#4	STR.	18'-3"	463
A4	260	#5	STR.	55'-11"	15163	* B2	38	#7	STR.	52'-2"	4052
* A301	2	#5	STR.	53'-6"	112	* B3	37	#7	STR.	30'-0"	2269
* A302	2	#5	STR.	50'-8"	106	* B4	38	#7	STR.	53'-2"	4130
* A303	2	#5	STR.	47'-10"	100	* B5	37	#7	STR.	33'-6"	2534
* A304	2	#5	STR.	45'-0"	94	* B6	38	#4	STR.	25'-3"	641
* A305	2	#5	STR.	42'-2"	88	B7	222	#5	STR.	48'-0"	11114
* A306	2	#5	STR.	39'-3"	82	* G2	2	#5	STR.	56'-9"	118
* A307	2	#5	STR.	36'-5"	76	* K10	4	#8	1	12'-2"	130
* A308	2	#5	STR.	33'-7"	70	* K11	20	#8	2	19'-1"	1019
* A309	2	#5	STR.	30'-9"	64	* K12	4	#8	1	12'-5"	133
* A310	2	#5	STR.	27'-11"	58	K13	24	#6	STR.	7'-2"	258
* A311	2	#5	STR.	25'-1"	52	K14	24	#4	STR.	7'-2"	115
* A312	2	#5	STR.	22'-3"	46	K15	24	#4	STR.	7'-8"	123
* A313	2	#5	STR.	19'-5"	41	K16	24	#4	STR.	5'-6"	88
* A314	2	#5	STR.	16'-7"	35	K17	12	#4	5	5'-7"	45
* A315	2	#5	STR.	13'-9"	29	K18	30	#4	6	10'-6"	210
* A316	2	#5	STR.	10'-11"	23	* S1	84	#5	3	4'-11"	431
* A317	2	#5	STR.	8'-1"	17	* S2	84	#4	4	3'-9"	210
* A318	2	#5	STR.	5'-3"	11	S3	168	#5	7	2'-9"	309
* A319	2	#5	STR.	2'-5"	5	* U1	60	#4	2	11'-10"	474
A401	2	#5	STR.	53'-6"	112	* U2	24	#4	2	10'-10"	190
A402	2	#5	STR.	50'-8"	106	REINFORCING STEEL				28534	LBS.
A403	2	#5	STR.	47'-10"	100	EPOXY COATED REINFORCING STEEL				33066	LBS.
A404	2	#5	STR.	45'-0"	94	* THESE BARS ARE EPOXY COATED					
A405	2	#5	STR.	42'-2"	88	CLASS AA CONCRETE				306.0	CU. YDS.
A406	2	#5	STR.	39'-3"	82						
A407	2	#5	STR.	36'-5"	76						
A408	2	#5	STR.	33'-7"	70						
A409	2	#5	STR.	30'-9"	64						
A410	2	#5	STR.	27'-11"	58						
A411	2	#5	STR.	25'-1"	52						
A412	2	#5	STR.	22'-3"	46						
A413	2	#5	STR.	19'-5"	41						
A414	2	#5	STR.	16'-7"	35						
A415	2	#5	STR.	13'-9"	29						
A416	2	#5	STR.	10'-11"	23						
A417	2	#5	STR.	8'-1"	17						
A418	2	#5	STR.	5'-3"	11						
A419	2	#5	STR.	2'-5"	5						

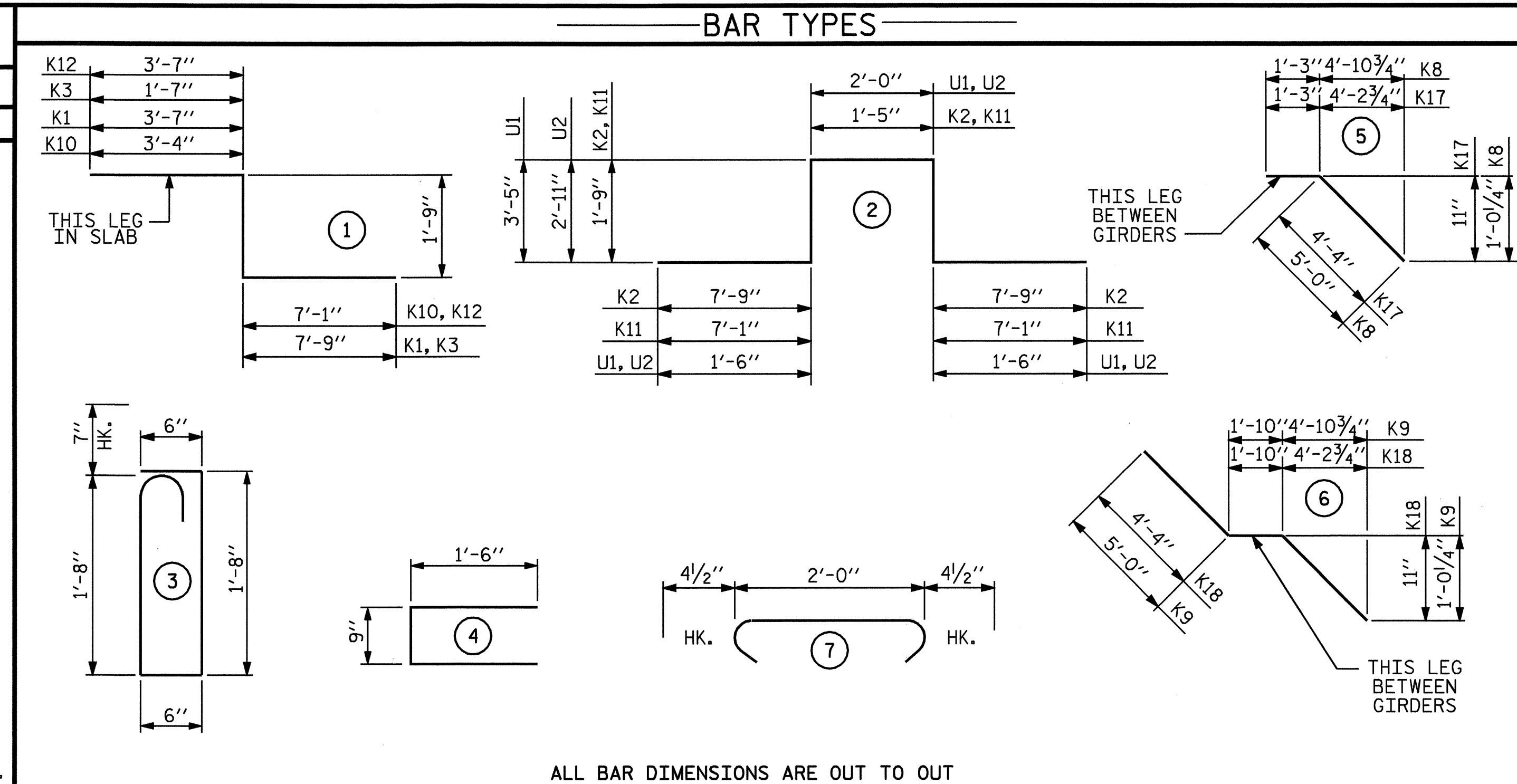
## SPAN A, B, & C STAGE II SIDEWALK

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
* B9	20	#4	STR.	24'-7"	328
* B10	10	#4	STR.	9'-3"	62
* B11	10	#4	STR.	13'-4"	89
* D2	92	#4	STR.	10"	51
* G3	142	#4	STR.	4'-11"	466
* EPOXY COATED REINFORCING STEEL				996	LBS.
CLASS AA CONCRETE				17.1	CU. YDS.

## SPAN A, B, & C STAGE III SIDEWALK

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
* B9	20	#4	STR.	24'-7"	328
* B10	10	#4	STR.	9'-3"	62
* B11	10	#4	STR.	13'-4"	89
* D2	92	#4	STR.	10"	51
* G3	142	#4	STR.	4'-11"	466
* EPOXY COATED REINFORCING STEEL				996	LBS.
CLASS AA CONCRETE				17.1	CU. YDS.

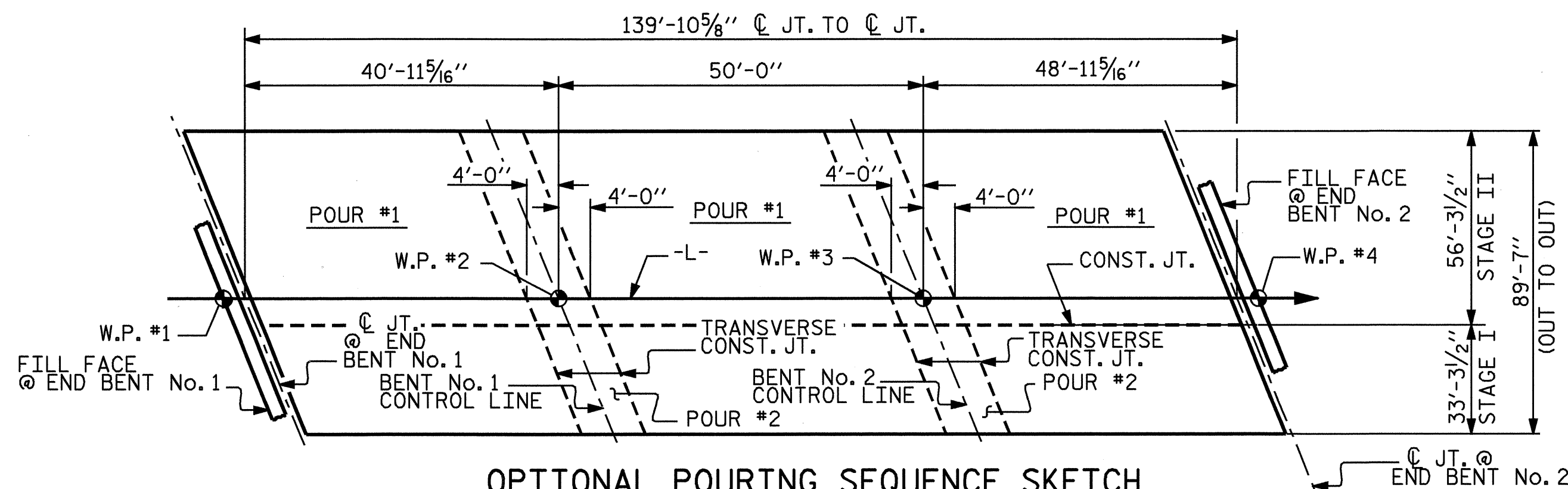
ASSEMBLED BY :	M. POOLE	DATE :	10/07
CHECKED BY :	D. HODGE	DATE :	06-08
DRAWN BY :	JMB	5/87	REV. 6/1/94
CHECKED BY :	SJD	9/87	REV. 8/16/99
			REV. 5/1/06



ALL BAR DIMENSIONS ARE OUT TO OUT

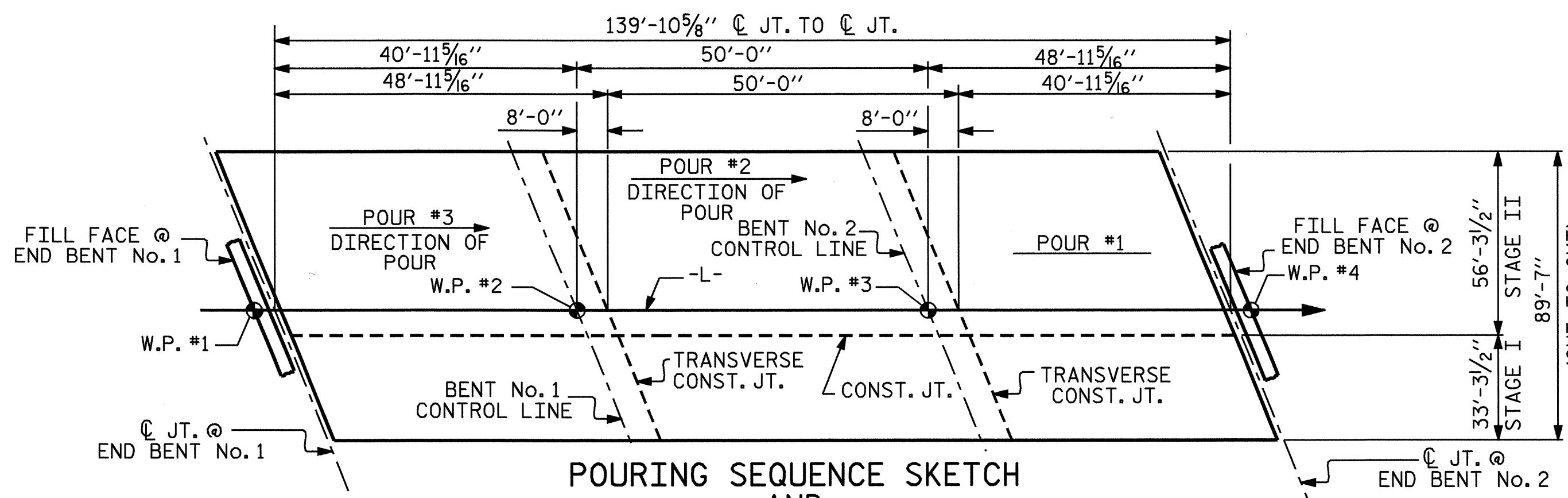
## GROOVING BRIDGE FLOORS

BRIDGE DECK		APPROACH SLAB	
STAGE I	3463 SQ.FT.	STAGE I	1184 SQ.FT.
STAGE II	6649 SQ.FT.	STAGE II	2274 SQ.FT.
TOTAL 13570 SQ. FT.			



## OPTIONAL POURING SEQUENCE SKETCH

NOTE: POUR 2 CAN NOT BE STARTED UNTIL BOTH ADJACENT POURS REACH A MINIMUM OF 3000 PSI.



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB  
 STAGE I - SQ. FEET = 4657  
 STAGE II - SQ. FEET = 7874  
 TOTAL = 12531

## SUPERSTRUCTURE BILL OF MATERIAL

	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
STAGE I	16984	19985
STAGE II	28534	33066
STAGE II SIDEWALK		996
STAGE III SIDEWALK		996
** TOTALS	45518	55043

## CLASS AA CONCRETE (CU. YDS.)

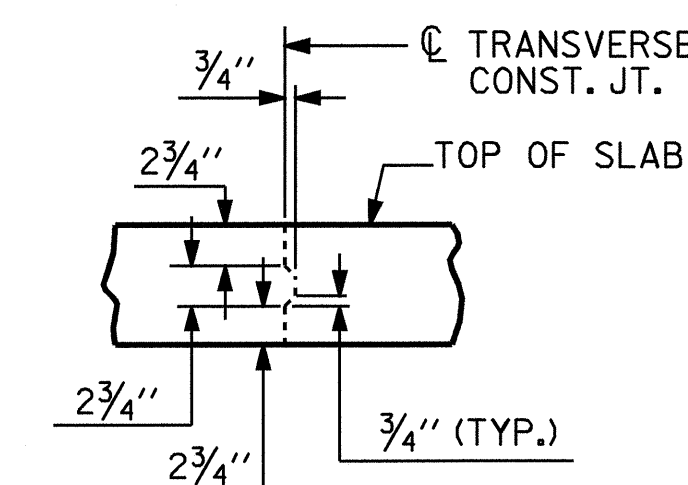
	STAGE I	STAGE II	STAGE III
POUR 1	48.8	POUR 1 83.2	SIDEWALK 17.1
POUR 2	65.2	POUR 2 111.1	
POUR 3	65.6	POUR 3 111.7	
TOTAL	179.6	TOTAL 323.1	

\*\* TOTAL CONCRETE 519.8 C.Y.

\*\* QUANTITIES FOR CONCRETE PARAPET ARE NOT INCLUDED

## 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"			



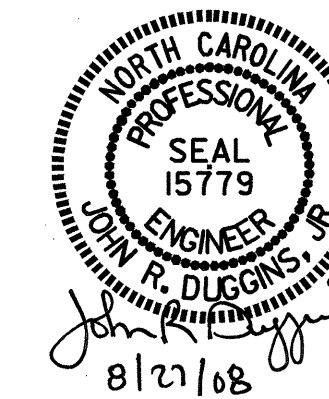
## TRANSVERSE CONSTRUCTION JOINT DETAIL

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

PROJECT NO. B-4033  
 BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

## SUPERSTRUCTURE BILL OF MATERIAL



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			50
2			4			

97'-1" TOTAL END BENT LENGTH

**NOTES**

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

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

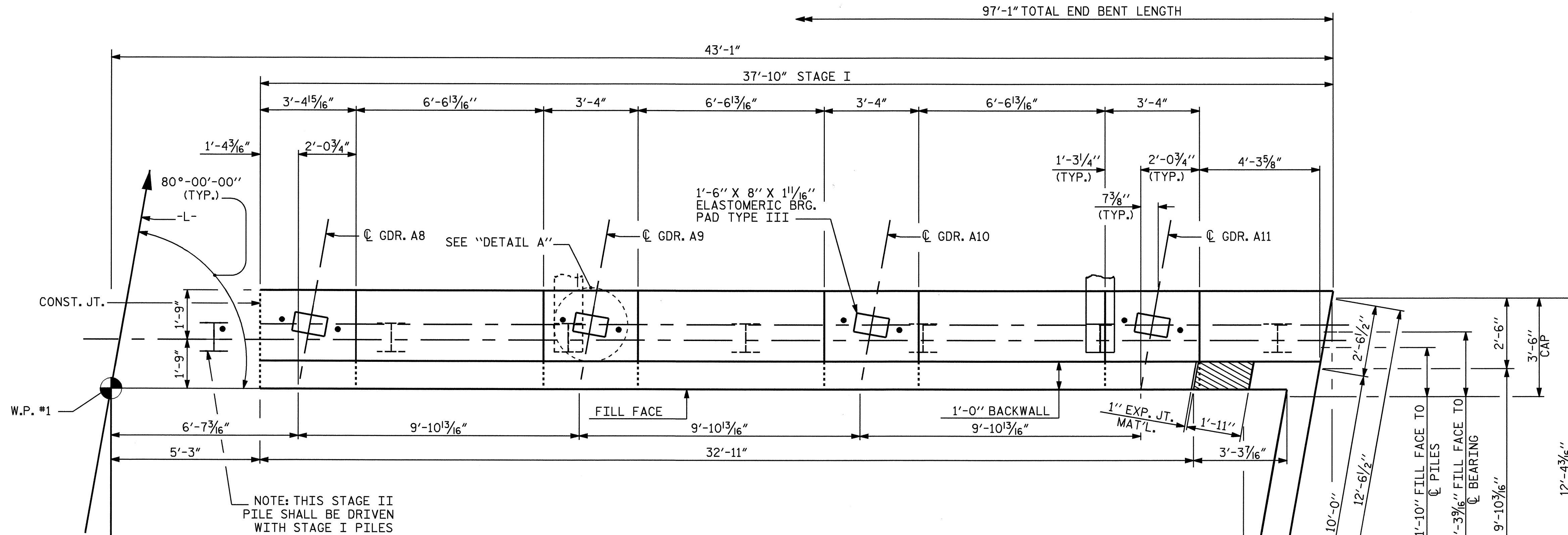
BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

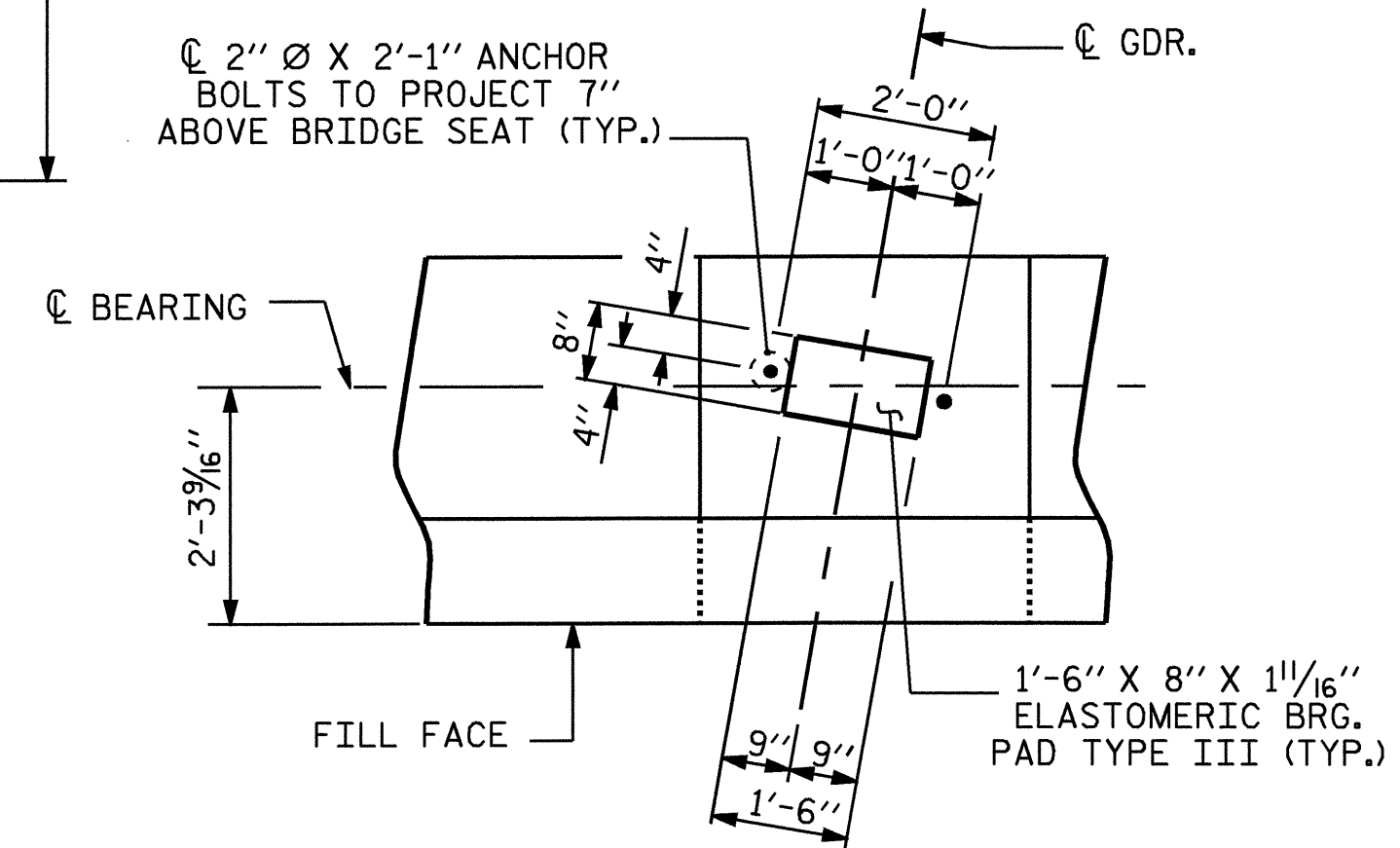
THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACKFACE AT A RATE OF 2%.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE PARAPET AND END POST ARE CAST IF SLIP FORMING IS USED.

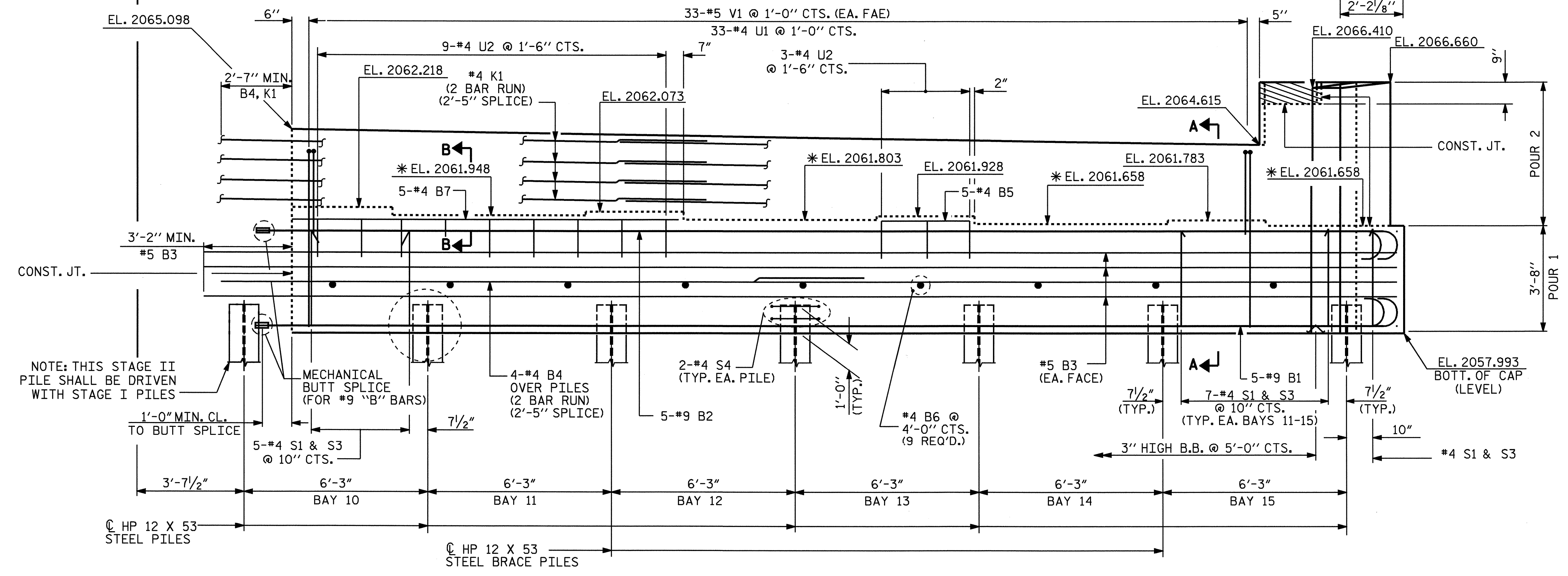
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.



**PLAN - STAGE I**



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



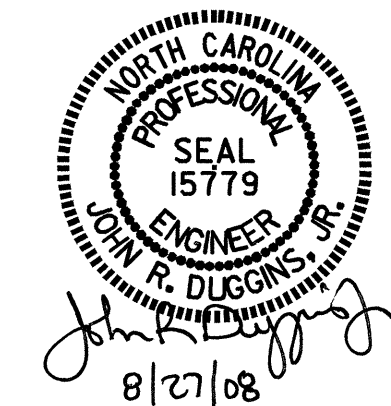
**ELEVATION - STAGE I**

PROJECT NO. B-4033  
BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

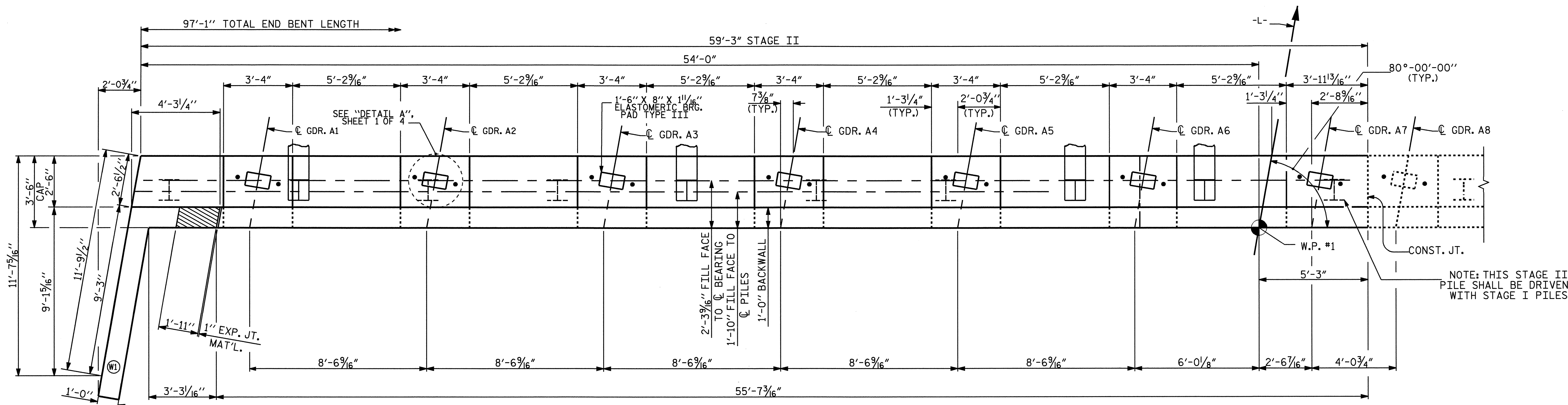
SUBSTRUCTURE  
 END BENT No. 1  
 STAGE I



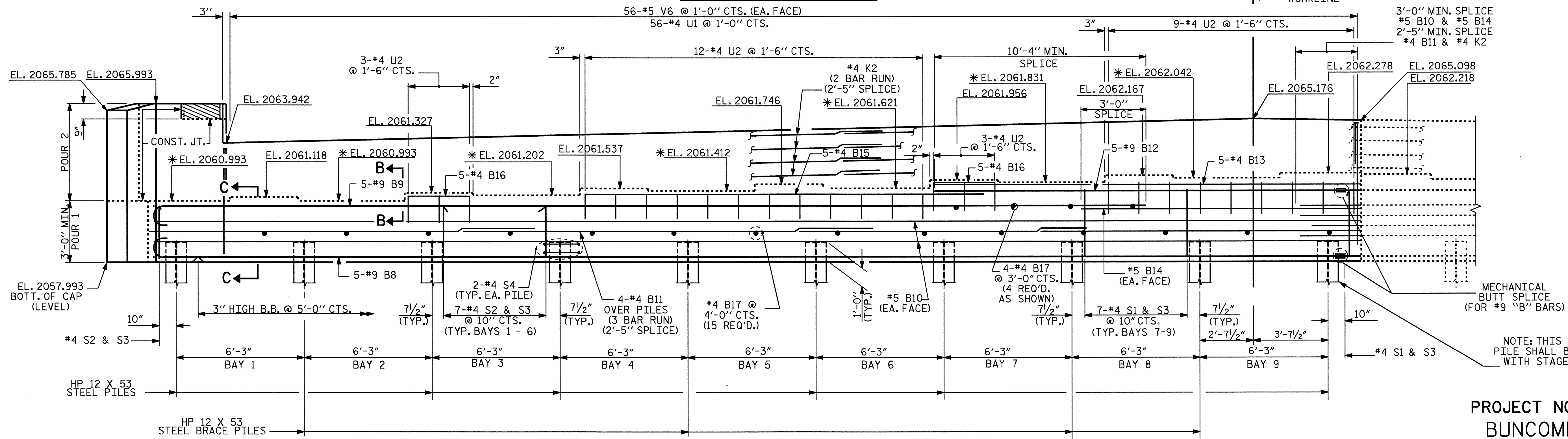
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-31	
1			3			TOTAL SHEETS	
2			4			50	

DRAWN BY: M. POOLE DATE: 02-08  
 CHECKED BY: J. R. DUGGINS DATE: 05-08





**PLAN - STAGE II**



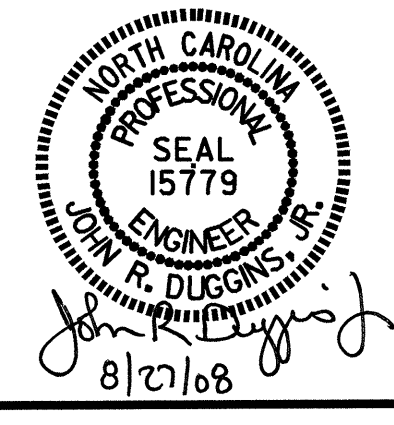
**ELEVATION - STAGE II**

PROJECT NO. B-4033  
BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

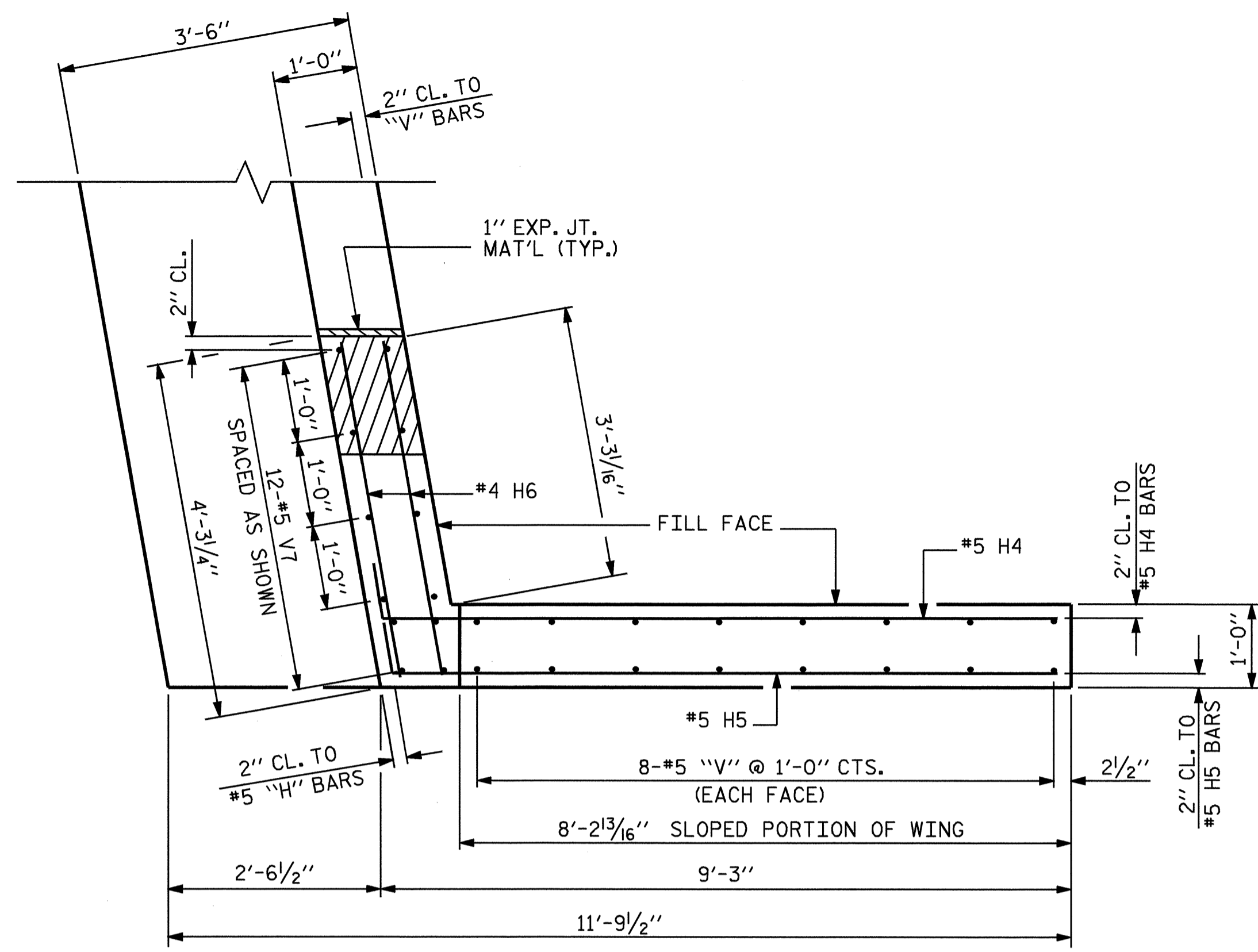
SUBSTRUCTURE  
 END BENT No. 1  
 STAGE II



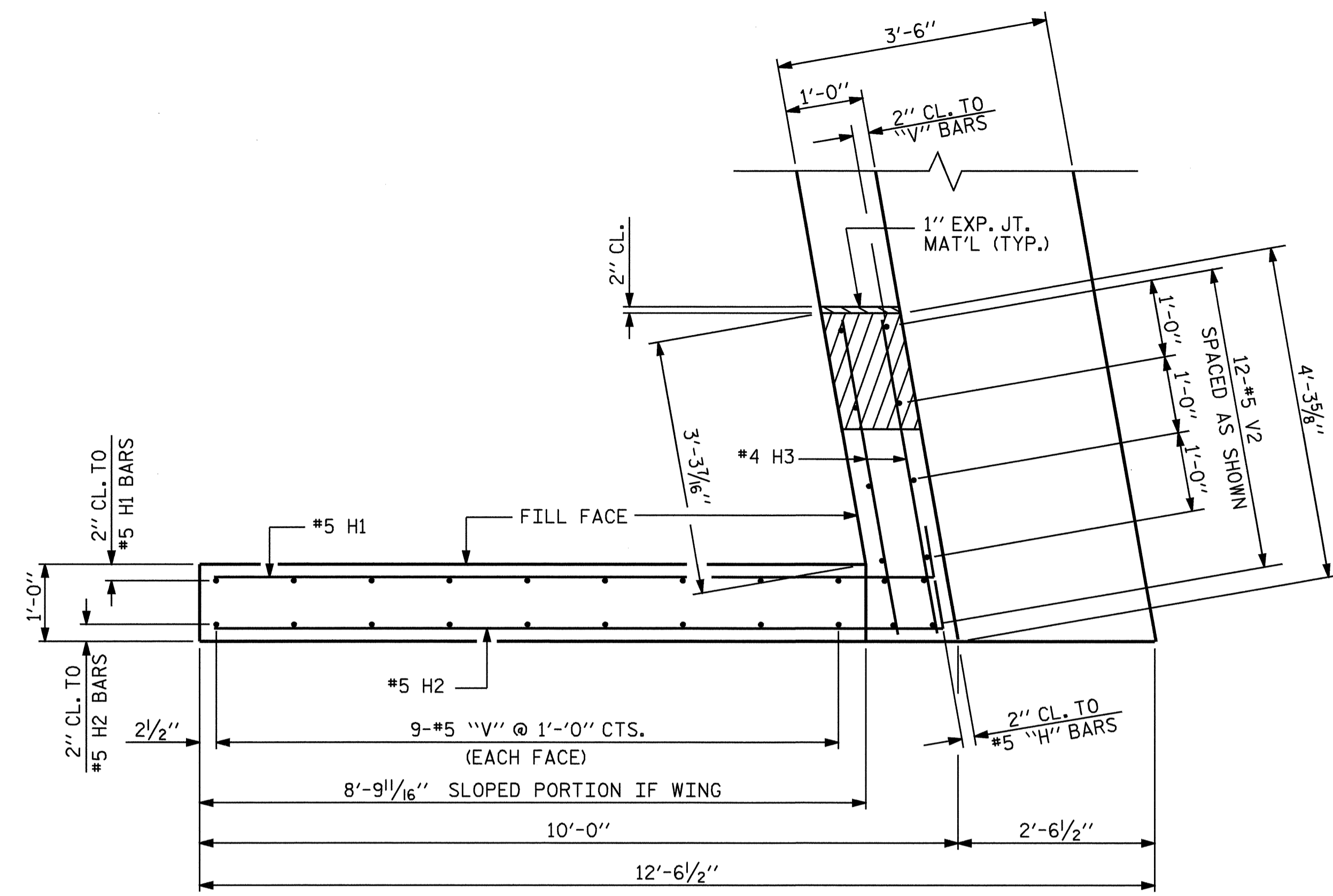
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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2			4			50

DRAWN BY: M. POOLE DATE: 05-08  
 CHECKED BY: J. R. DUGGINS DATE: 05-08

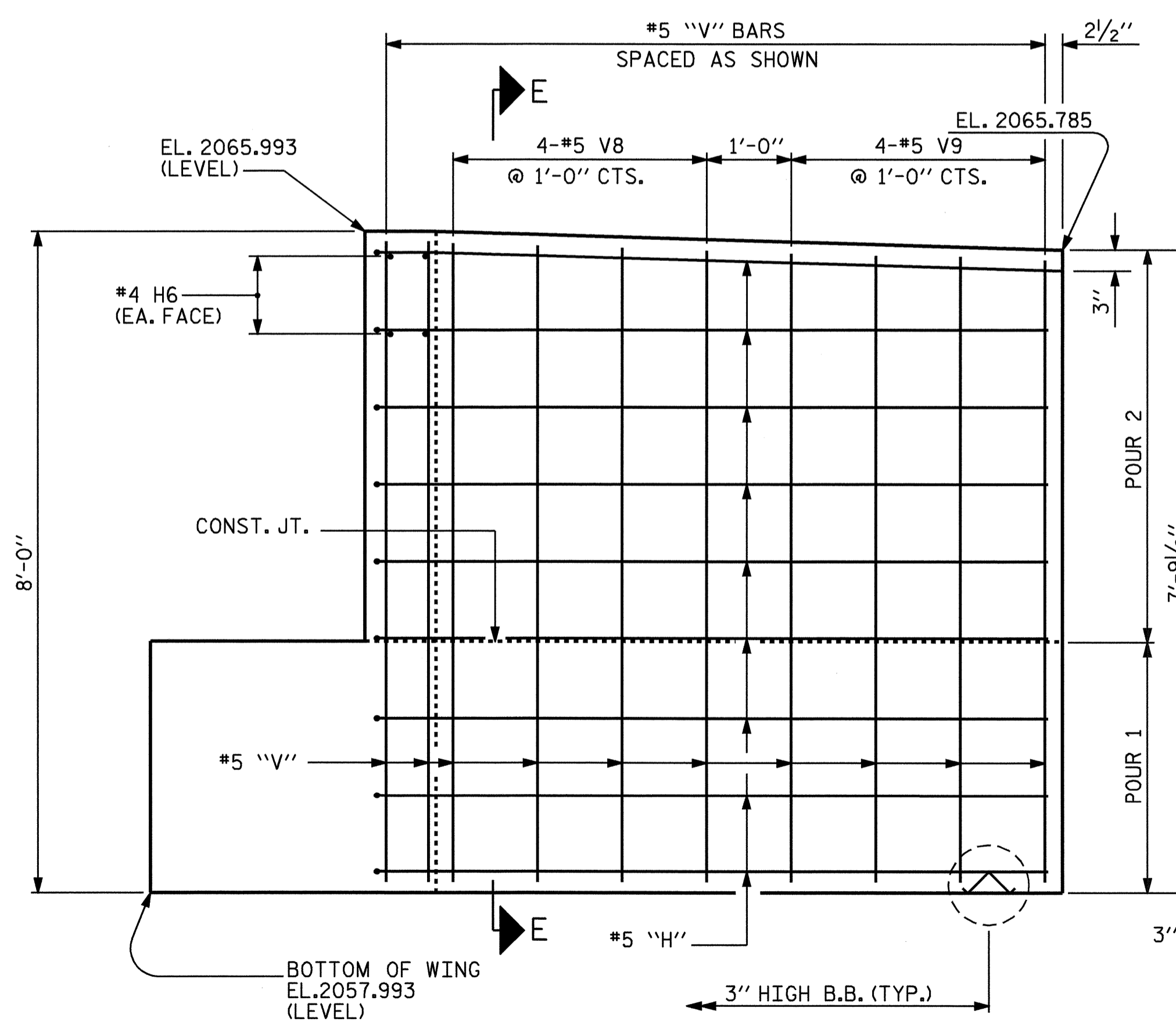
21-AUG-2008 15:36  
 r:\structures\B4033\marle\B4033.ed.E1.01.dgn  
 dahodge



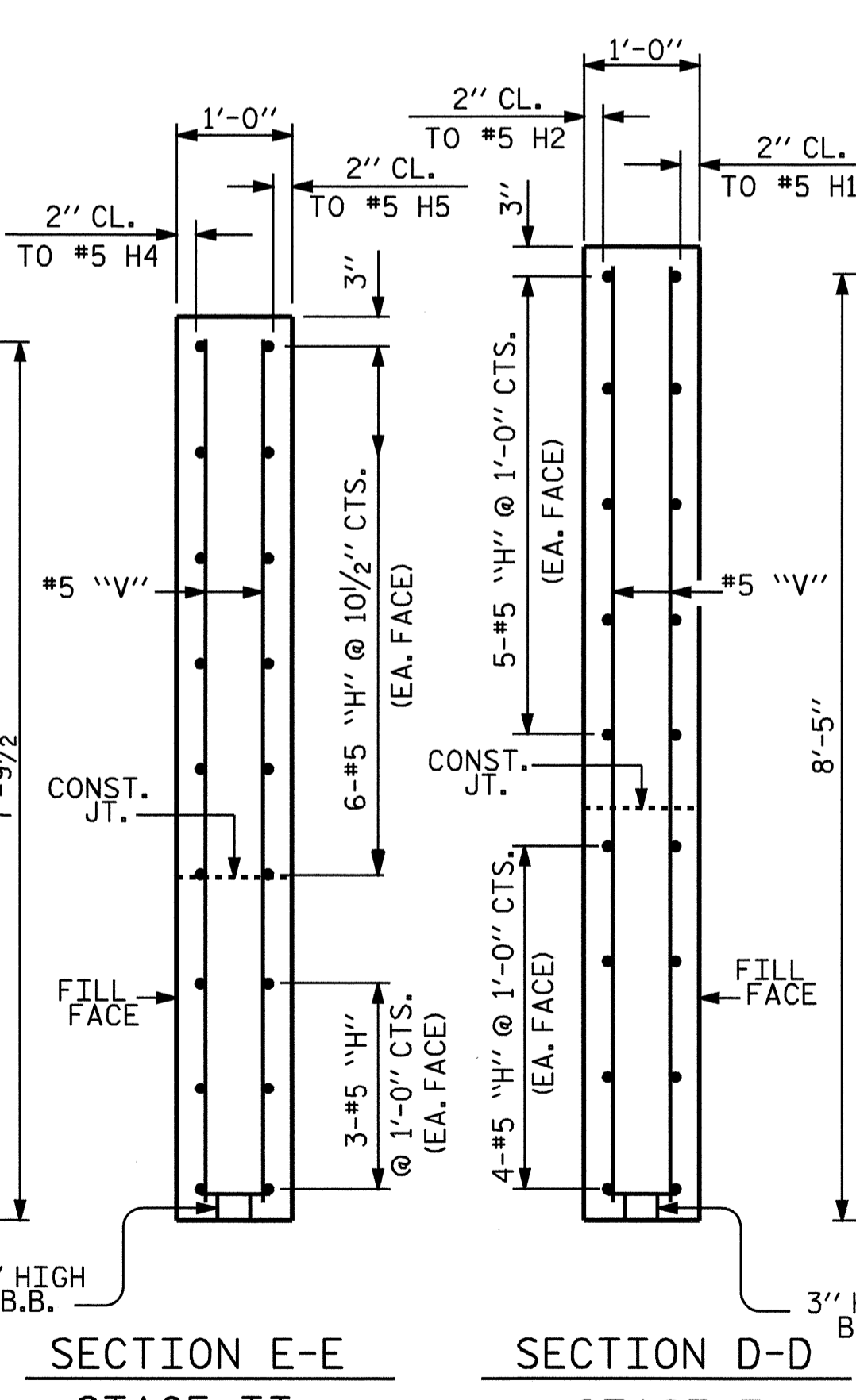
PLAN OF LEFT WING - W1  
STAGE II



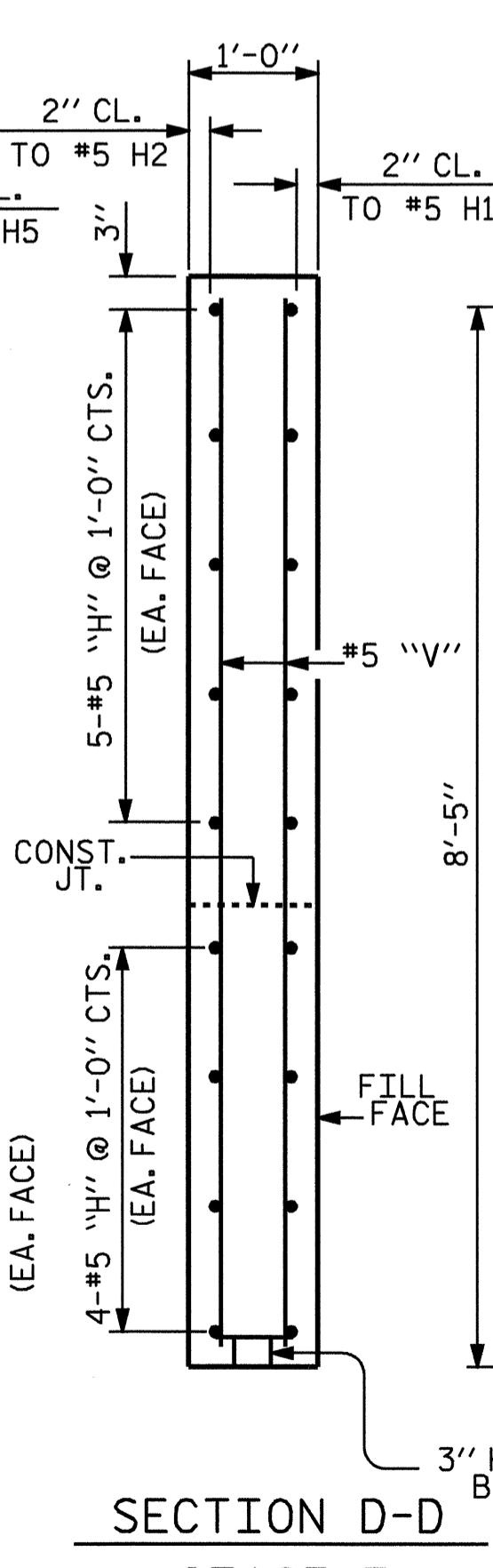
PLAN OF RIGHT WING - W2  
STAGE I



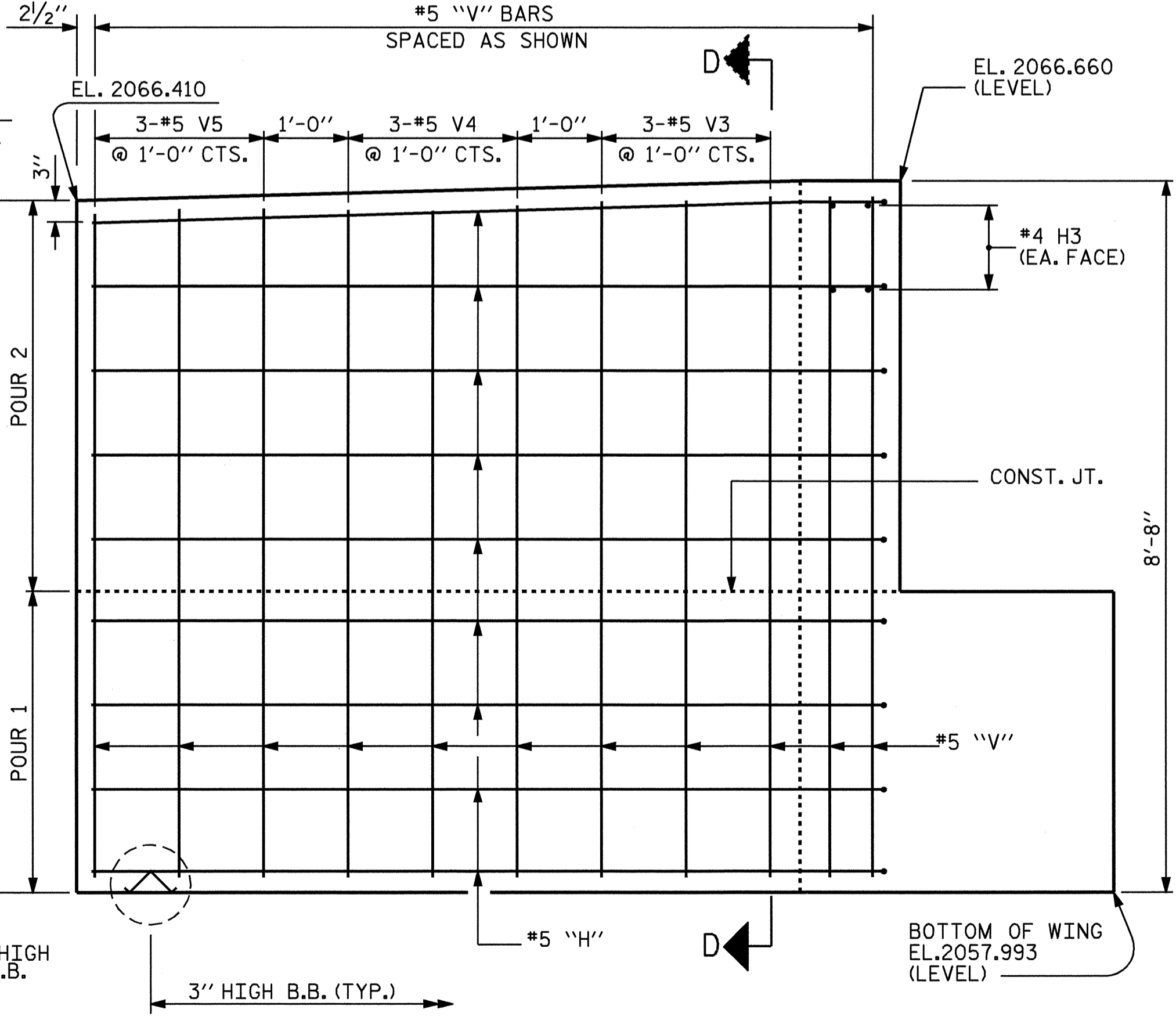
ELEVATION OF LEFT WING - W1  
STAGE II



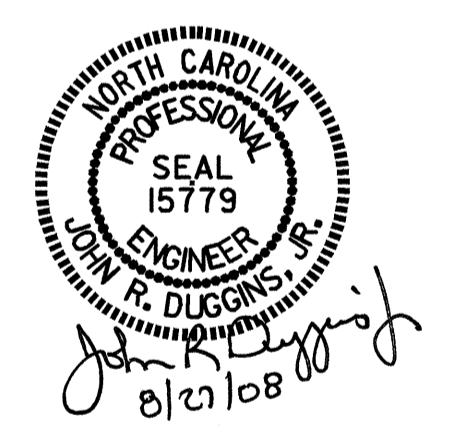
SECTION E-E  
STAGE II



SECTION D-D  
STAGE I



ELEVATION OF RIGHT WING - W2  
STAGE I



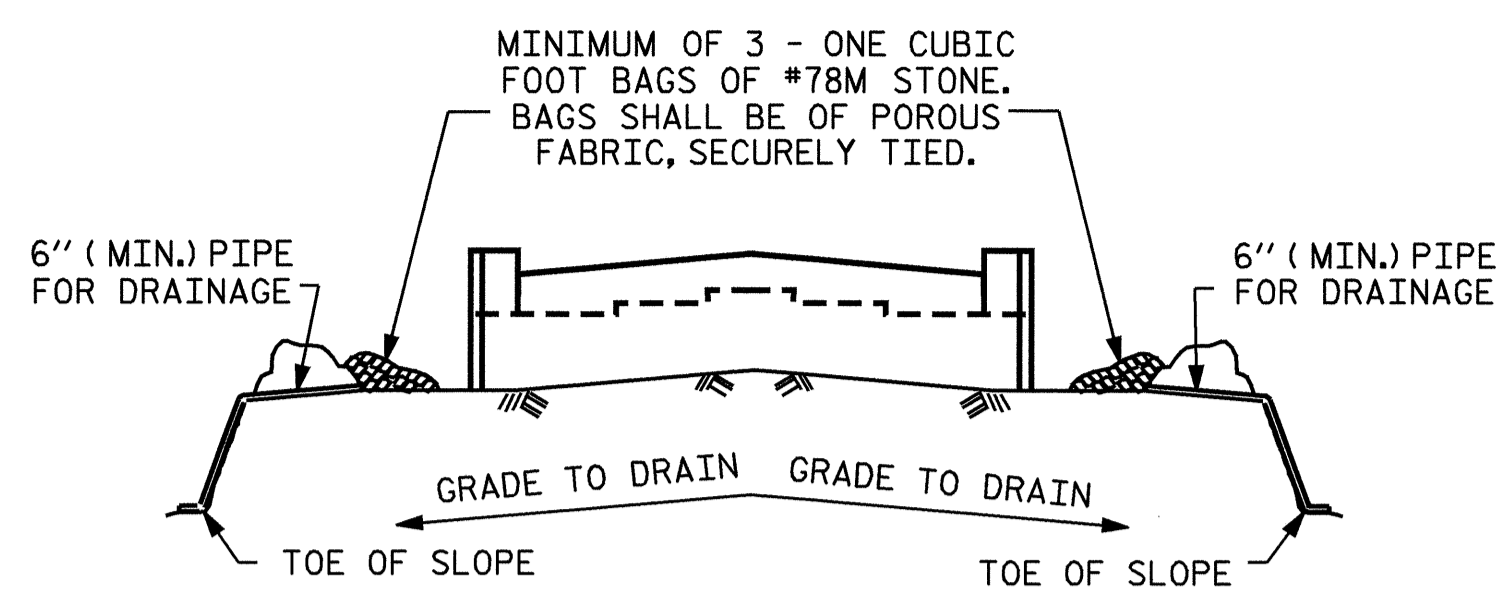
PROJECT NO. B-4033  
BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-  
 SHEET 3 OF 4

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			33
2			4			50

DRAWN BY: M. POOLE DATE: 02-08  
 CHECKED BY: J. R. DUGGINS DATE: 05-08

27-AUG-2008 10:30  
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 dahodge



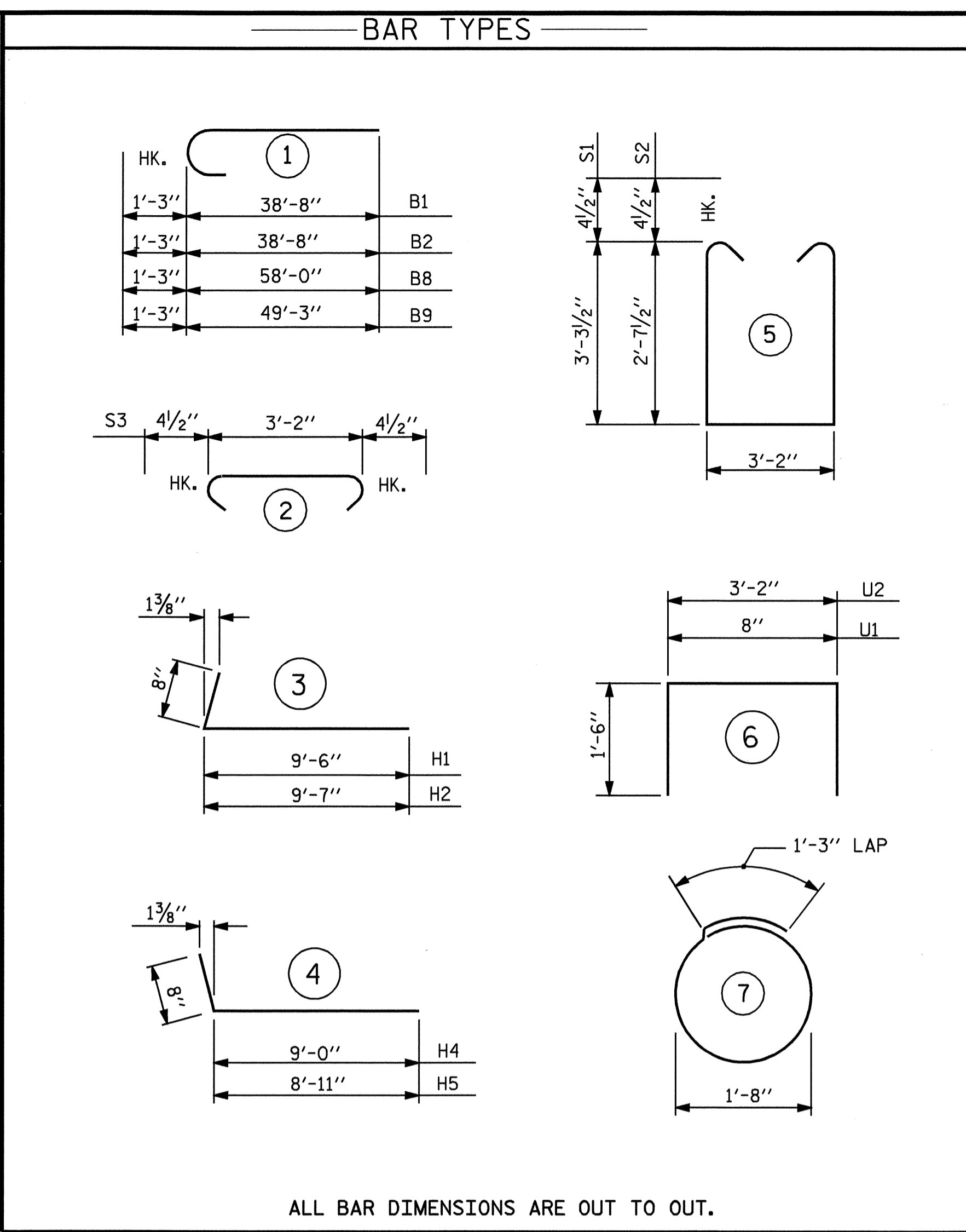
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

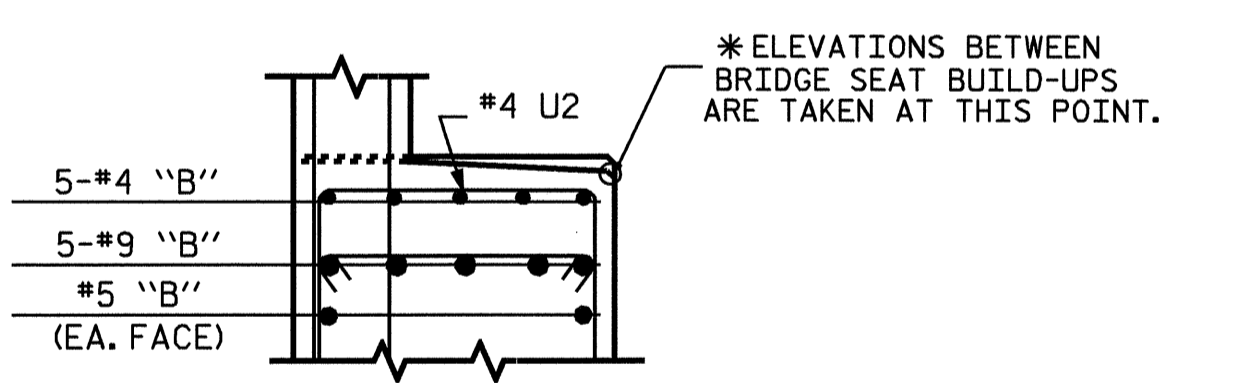
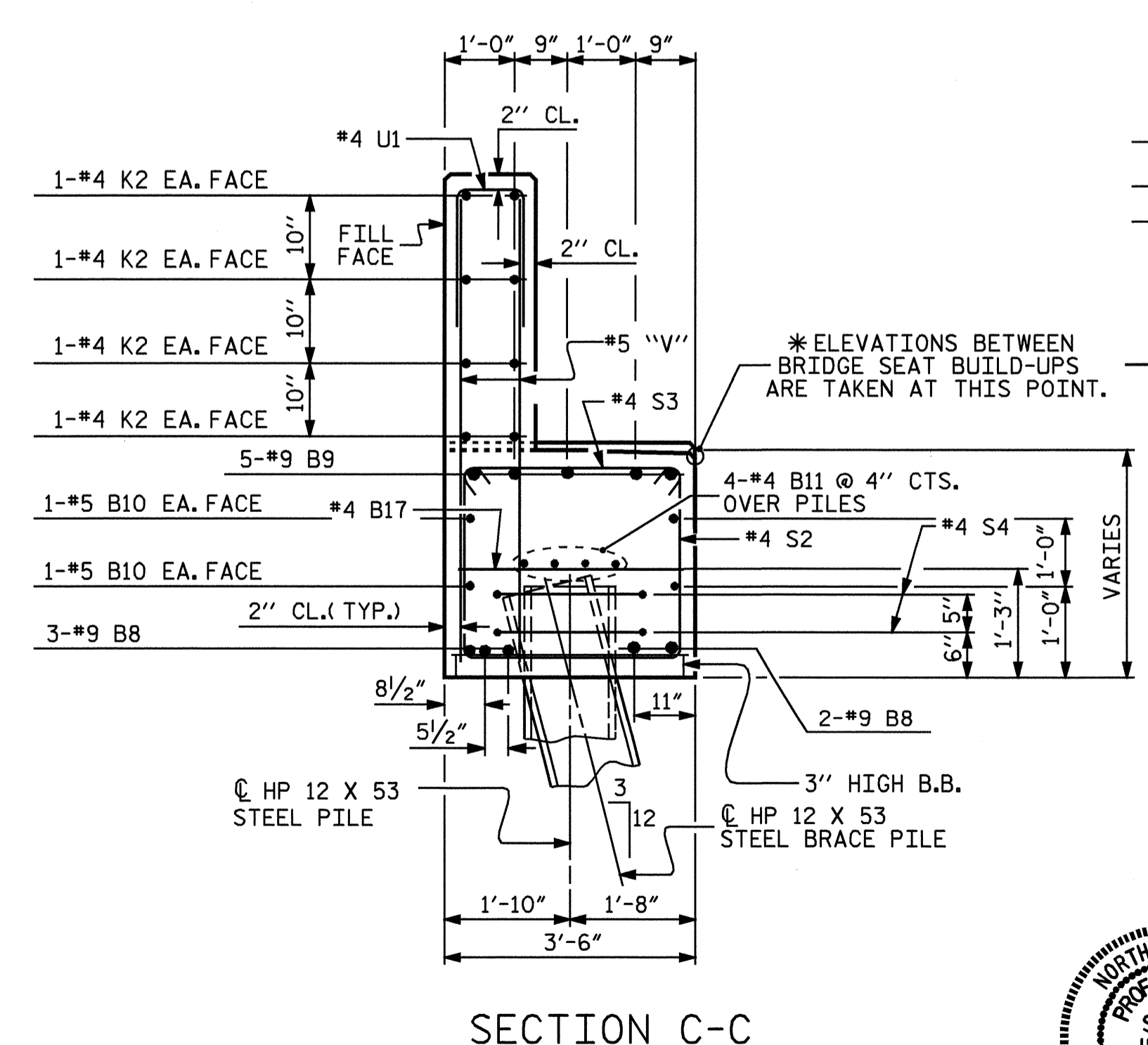
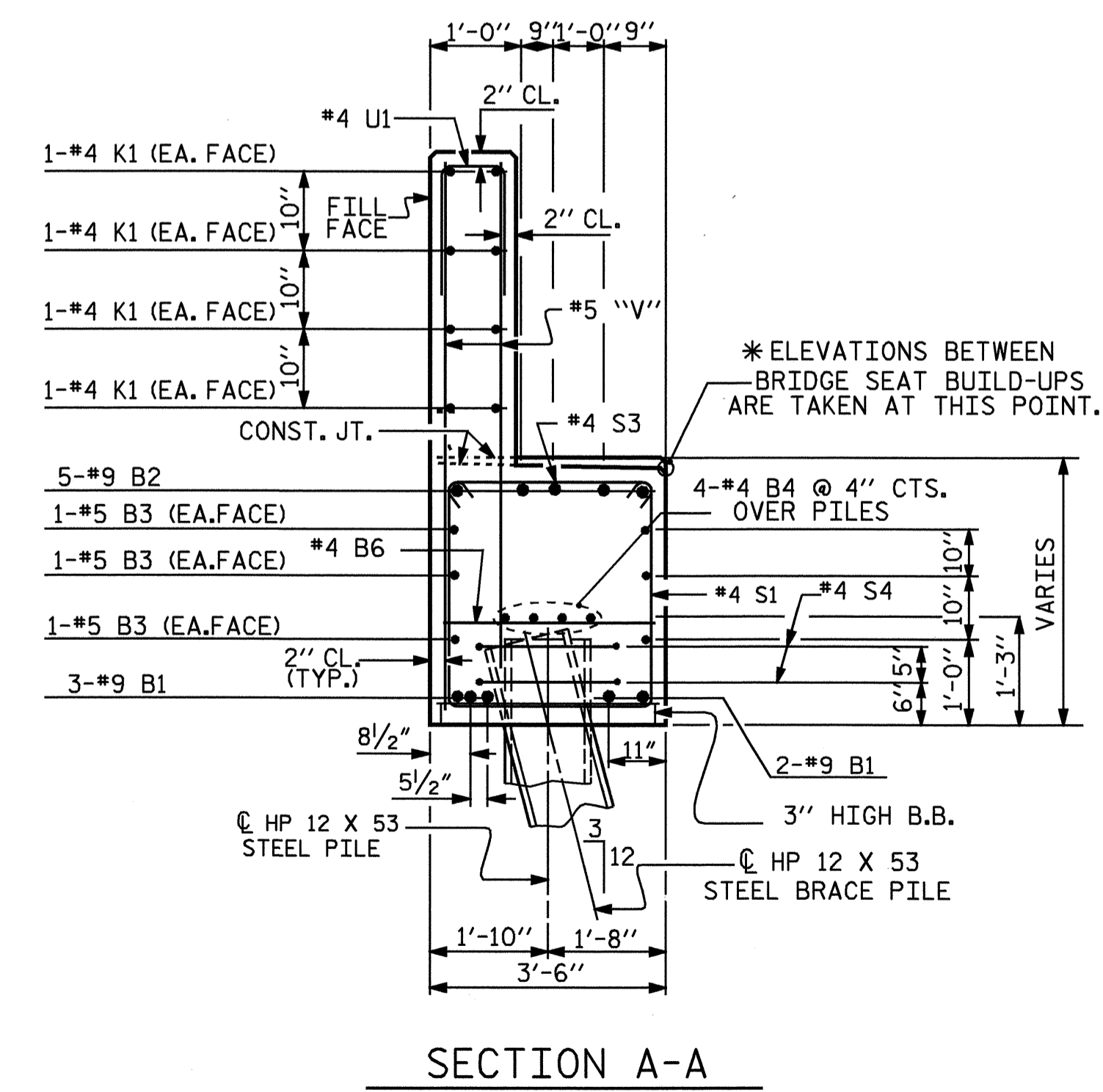
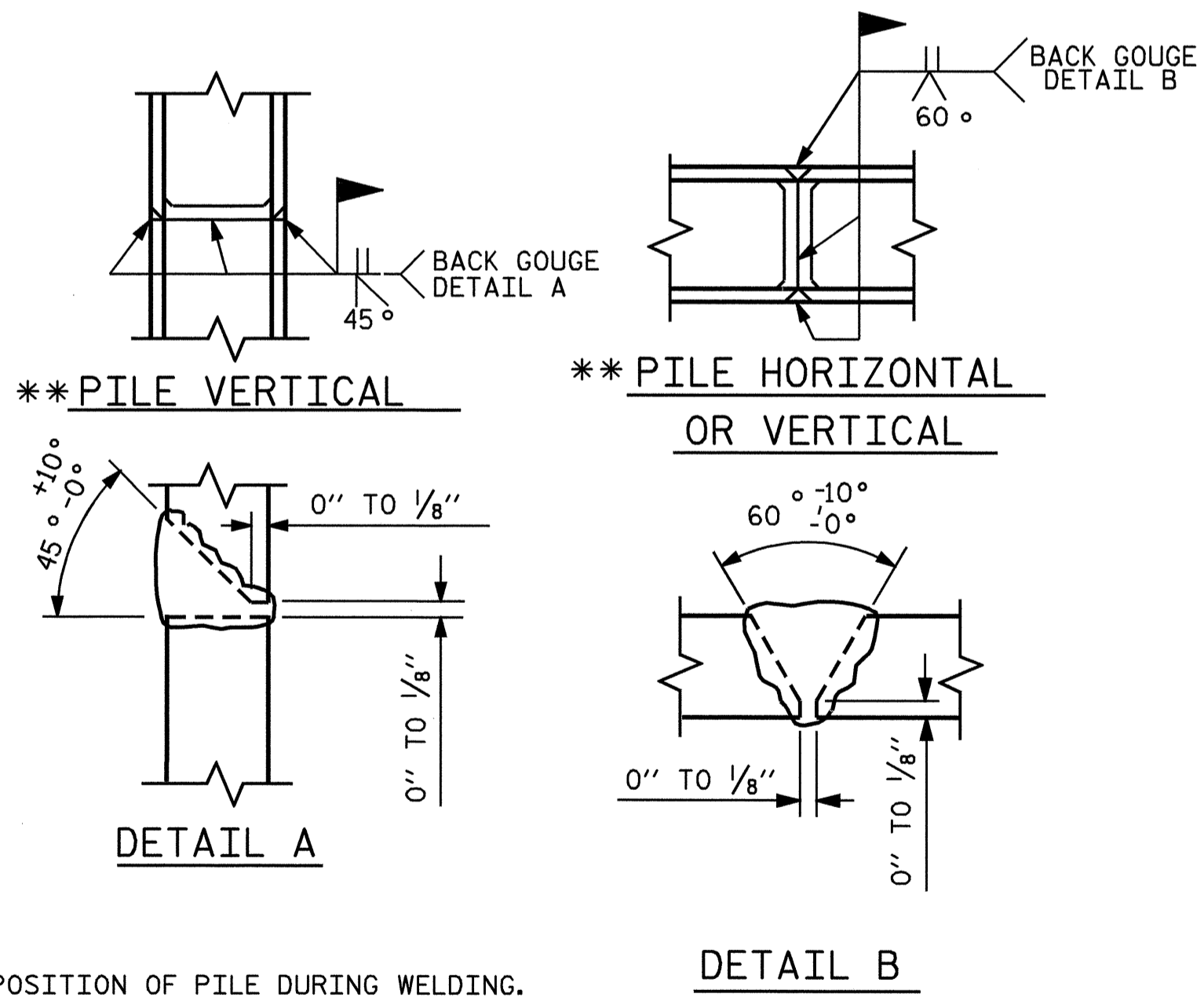
TOTAL QUANTITIES	
REINFORCING STEEL	8522 LBS.
CLASS A CONCRETE	63.4 C.Y.
HP 12 X 53 STEEL PILES	
No. 16	885 LIN. FT.



ALL BAR DIMENSIONS ARE OUT TO OUT.

### BILL OF MATERIAL

STAGE I						STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	5	9	1	39'-11"	679	B8	5	9	1	59'-3"	1007
B2	5	9	1	39'-11"	679	B9	5	9	1	50'-6"	859
B3	6	5	STR	40'-10"	256	B10	4	5	STR	59'-1"	246
B4	8	4	STR	21'-4"	114	B11	12	4	STR	21'-4"	171
B5	5	4	STR	3'-0"	10	B12	5	9	STR	20'-10"	354
B6	9	4	STR	3'-2"	19	B13	5	4	STR	12'-1"	40
B7	5	4	STR	12'-11"	43	B14	2	5	STR	13'-5"	28
						B15	5	4	STR	17'-0"	57
H1	9	5	3	10'-2"	95						
H2	9	5	3	10'-3"	96	H4	9	5	4	9'-8"	91
H3	4	4	STR	4'-0"	11	H5	9	5	4	9'-7"	90
						H6	4	4	STR	4'-0"	11
K1	16	4	STR	18'-11"	202						
						K2	16	4	STR	28'-10"	308
S1	41	4	5	10'-5"	285						
S3	41	4	2	3'-11"	107	S1	22	4	5	10'-5"	153
S4	12	4	7	6'-6"	52	S2	43	4	5	9'-2"	263
						S3	65	4	2	3'-11"	170
U1	33	4	6	3'-8"	81	S4	20	4	7	6'-6"	87
U2	12	4	6	6'-2"	49						
						U1	56	4	6	3'-8"	137
V1	66	5	STR	6'-3"	430	U2	27	4	6	6'-2"	111
V2	12	5	STR	8'-4"	104						
V3	6	5	STR	8'-3"	52	V6	112	5	STR	5'-7"	652
V4	6	5	STR	8'-2"	51	V7	12	5	STR	7'-8"	96
V5	6	5	STR	8'-1"	51	V8	8	5	STR	7'-7"	63
						V9	8	5	STR	7'-5"	62
REINFORCING STEEL 3466 LBS.						REINFORCING STEEL 5056 LBS.					
CLASS "A" CONCRETE POUR 1 CAP & LOWER WINGS 20.2 C.Y.						CLASS "A" CONCRETE POUR 1 CAP & LOWER WINGS 29.4 C.Y.					
POUR 2 BACKWALL & UPPER WINGS 6.1 C.Y.						POUR 2 BACKWALL & UPPER WINGS 7.7 C.Y.					
TOTAL 26.3 C.Y.						TOTAL 37.1 C.Y.					
HP 12 X 53 STEEL PILES No. 6 335 LIN. FT.						HP 12 X 53 STEEL PILES No. 10 550 LIN. FT.					



PROJECT NO. B-4033

BUNCOMBE COUNTY

STATION: 26+53.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
END BENT No. 1

REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	50
1			3			50
2			4			50

SEAL 15779  
ENGINEER  
J. R. DUGGINS  
8/27/08

DRAWN BY: M. POOLE DATE: 04-08  
CHECKED BY: J. R. DUGGINS DATE: 05-08

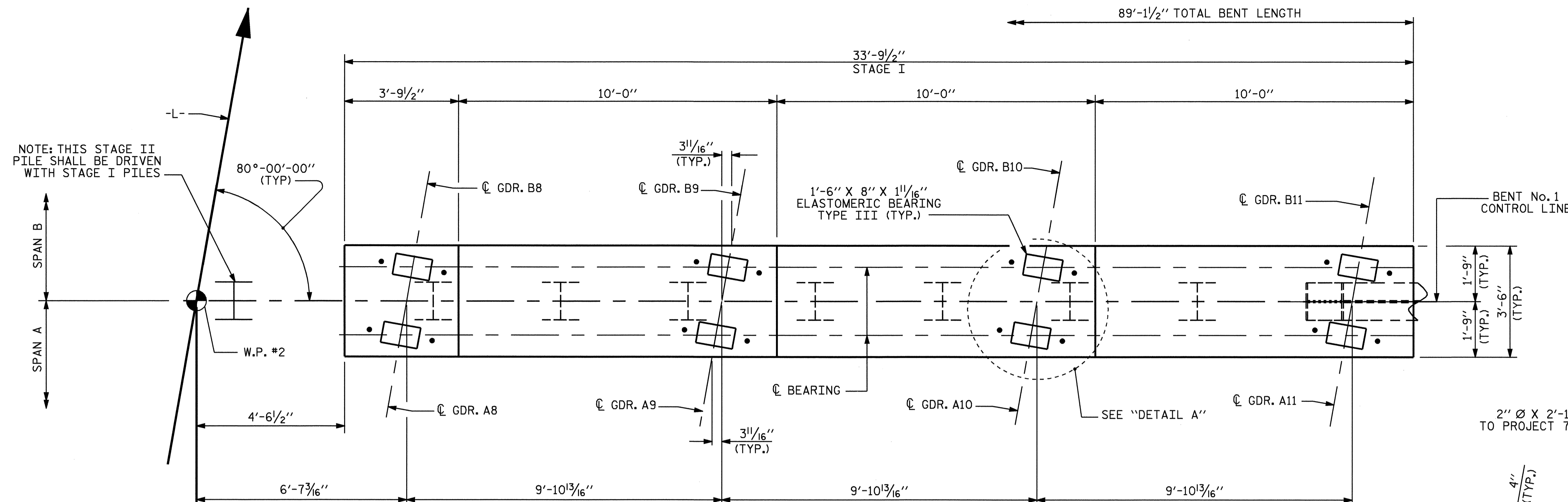
**NOTES**

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

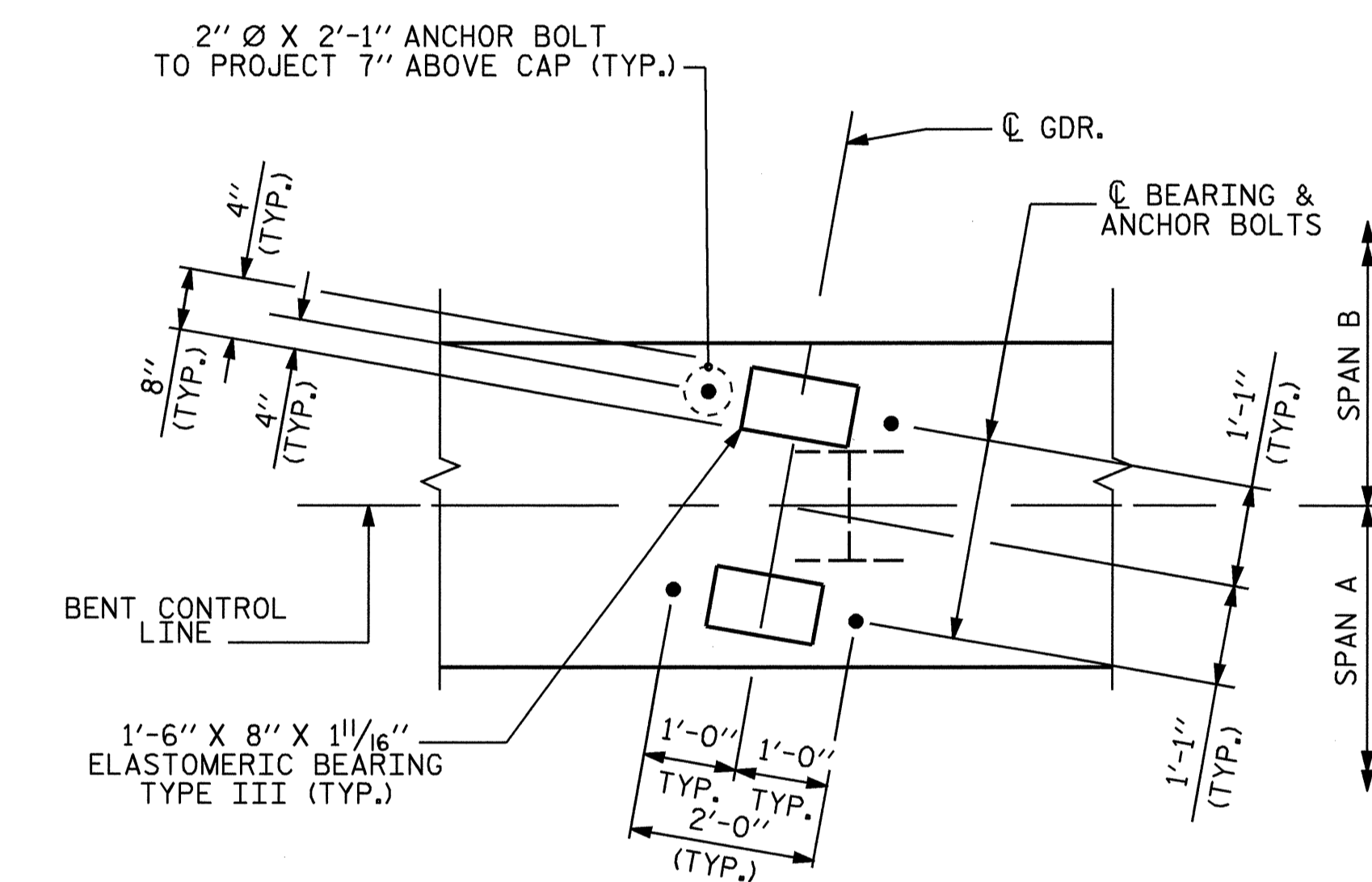
SEE SHEET 2 OF 2 FOR PILE SPLICE DETAILS.

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

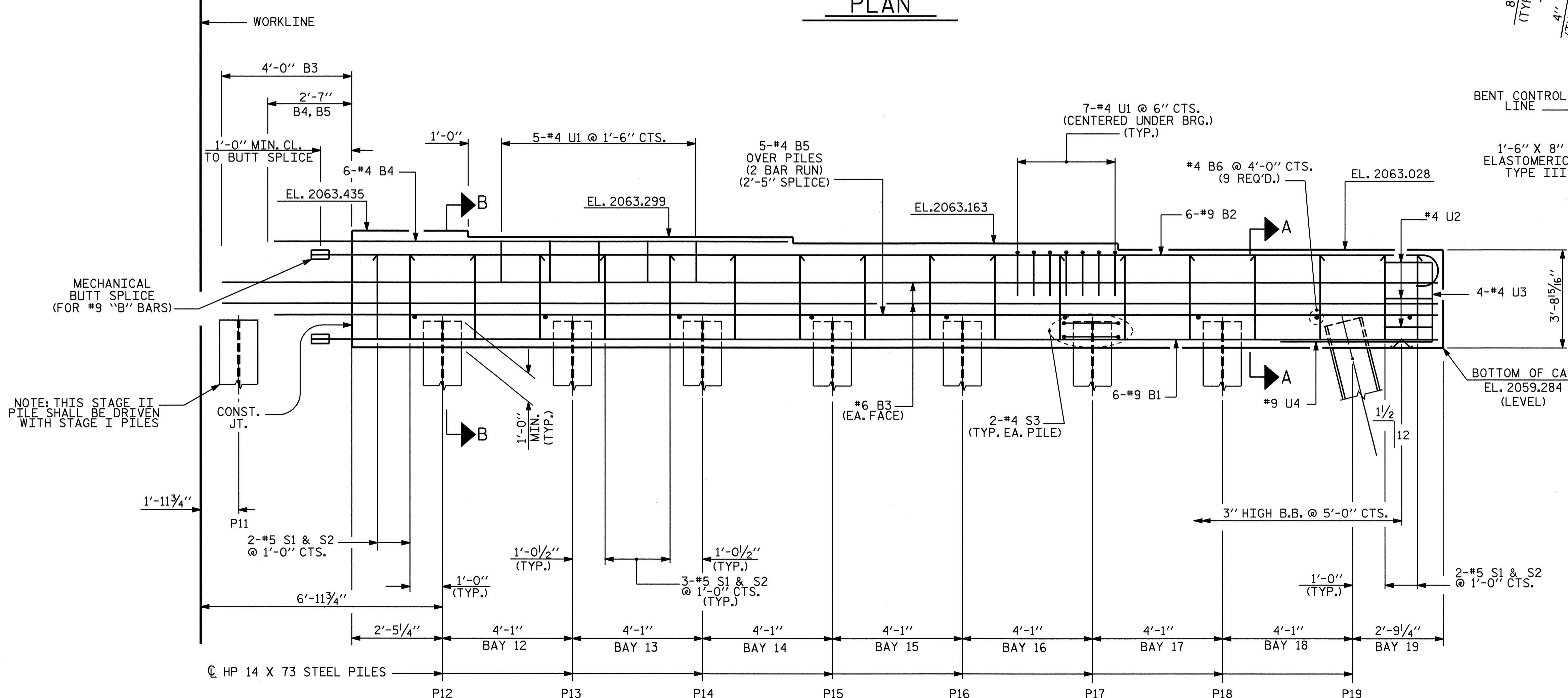
2" MINIMUM CONCRETE COVER FROM END OF CAP IS REQUIRED FOR ALL "U" BARS.



**PLAN**



**DETAIL A**



**ELEVATION**

FOR "SECTION A-A" AND "SECTION B-B", SEE SHEET 2 OF 2.

DRAWN BY: M. POOLE DATE: 02-08  
 CHECKED BY: J. R. DUGGINS DATE: 05/2008

19-SEP-2008 10:28  
 r:\structures\b4033\Marle\b4033.sd.B1.01.dgn  
 dahodge

PROJECT NO. B-4033  
BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT No. 1  
 STAGE I



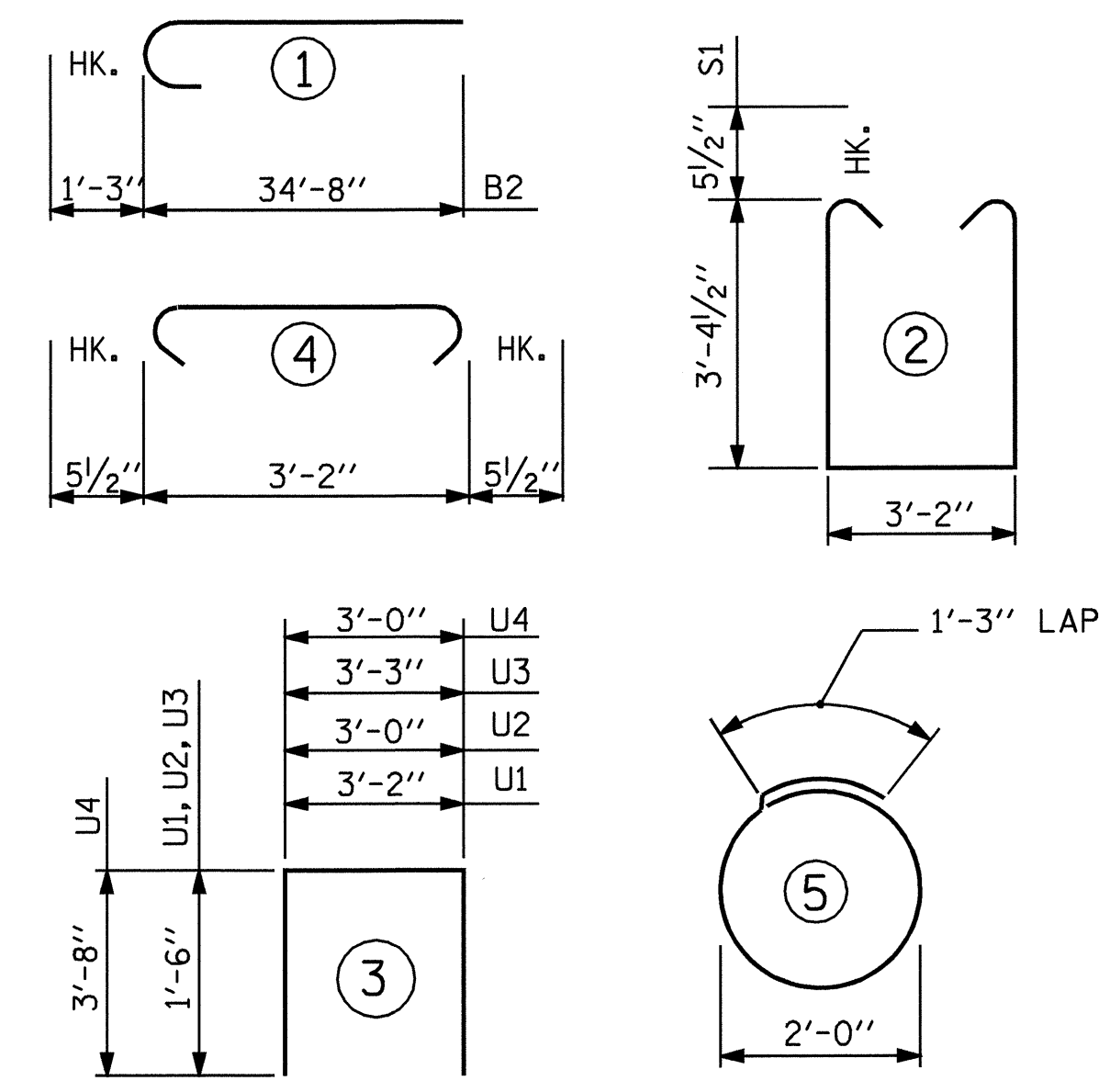
REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	50
1			3			50
2			4			

NC006

BAR TYPES BILL OF MATERIAL

BENT No. 1

STAGE I



BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	9	STR	34'-8"	707
B2	6	9	1	35'-11"	733
B3	4	6	STR	37'-7"	226
B4	6	4	STR	16'-3"	65
B5	10	4	STR	19'-4"	129
B6	9	4	STR	3'-2"	19
S1	25	5	2	10'-10"	282
S2	25	5	4	4'-1"	106
S3	16	4	5	7'-7"	81

U1	33	4	3	6'-2"	136
U2	3	4	3	6'-0"	12
U3	4	4	3	6'-3"	17
U4	1	9	3	10'-4"	35

REINFORCING STEEL 2548 LBS.

CLASS A CONCRETE

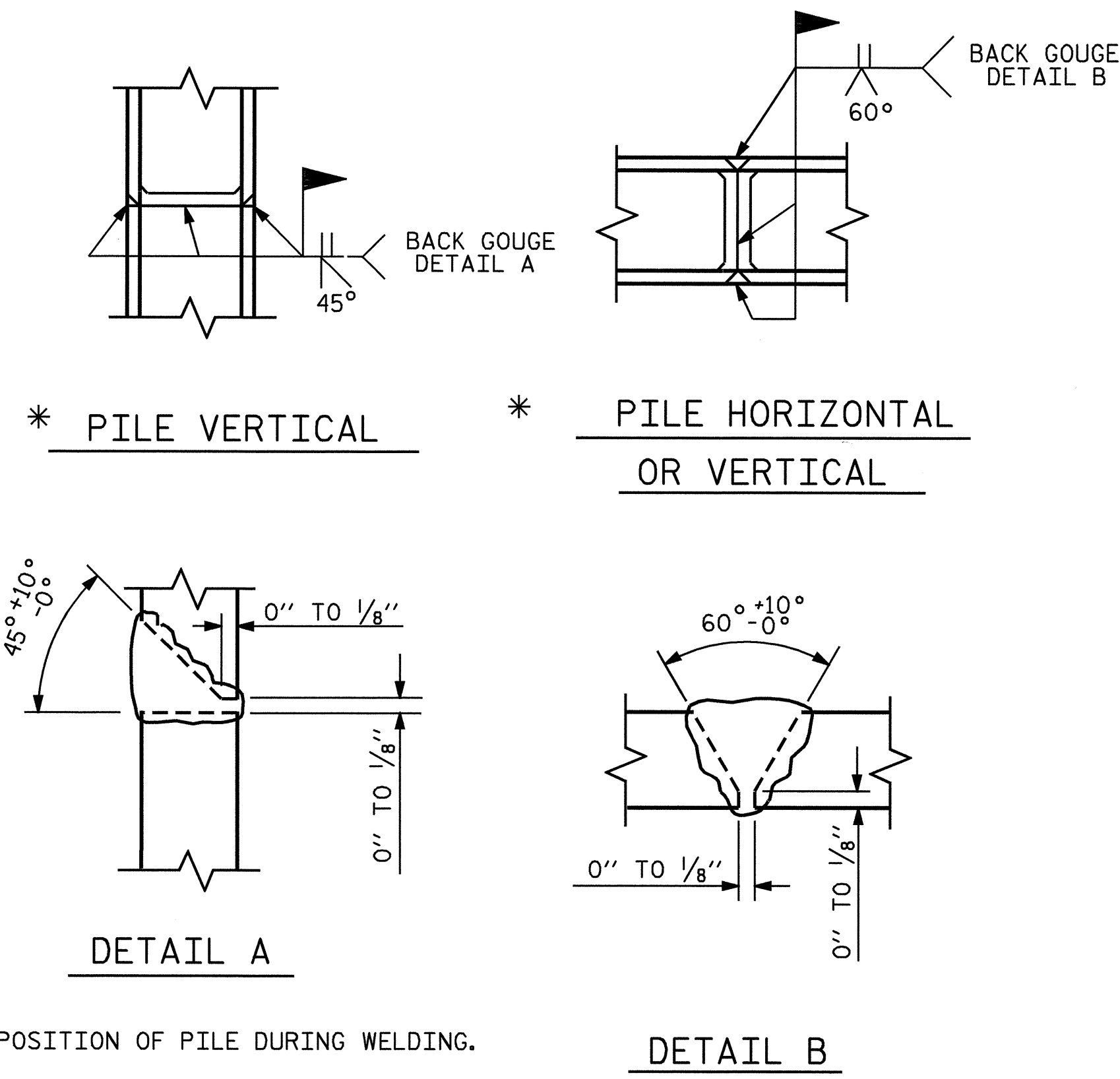
TOTAL 17.1 C.Y.

HP 14 x 73 GALVANIZED STEEL PILES  
NO. 8 355 LIN FT.

STEEL PILE POINTS 8 EACH

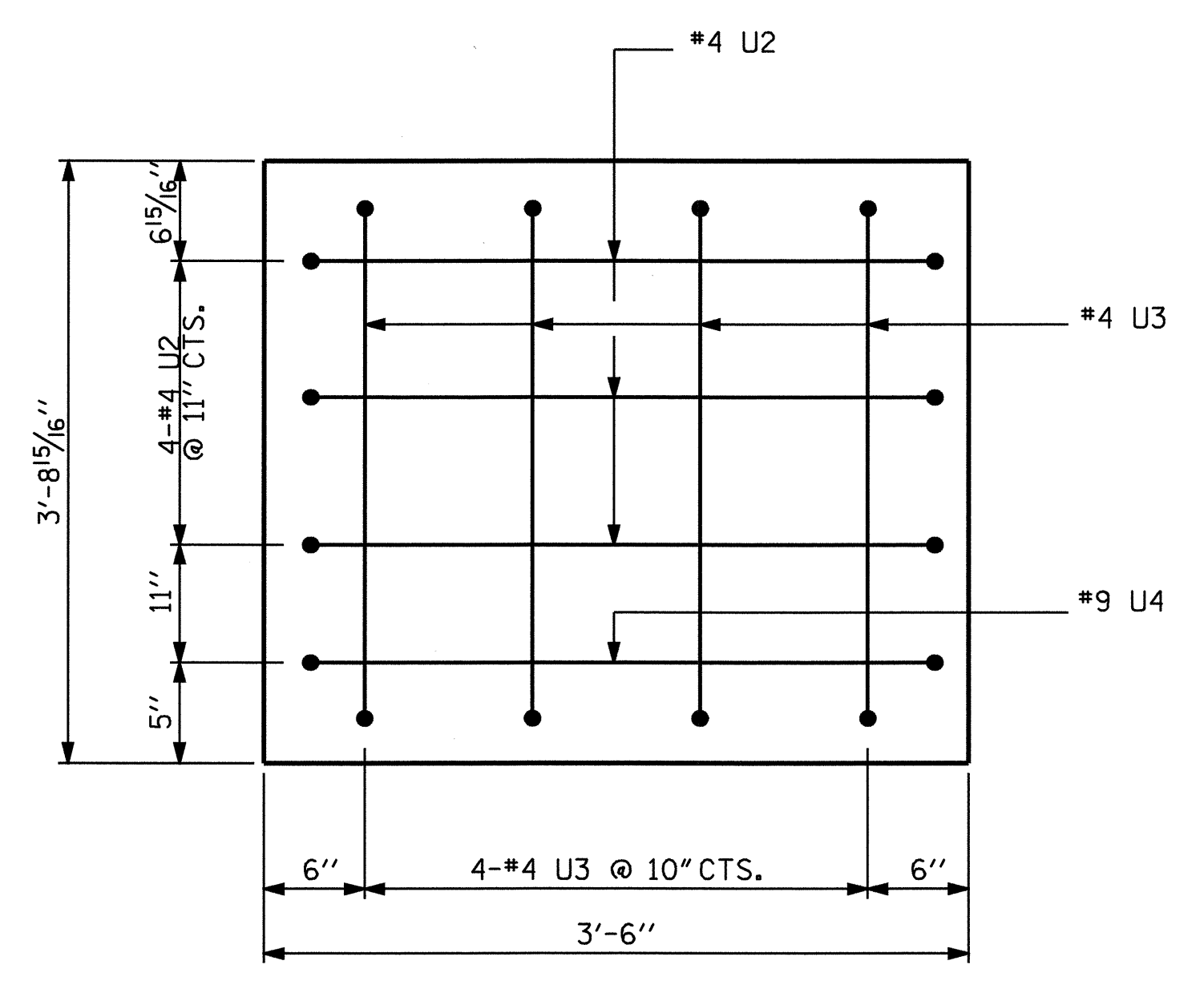
ALL BAR DIMENSIONS ARE OUT TO OUT.

FOR TOTAL QUANTITIES FOR BENT No. 1 STAGE I AND II, SEE SHEET No. S-38

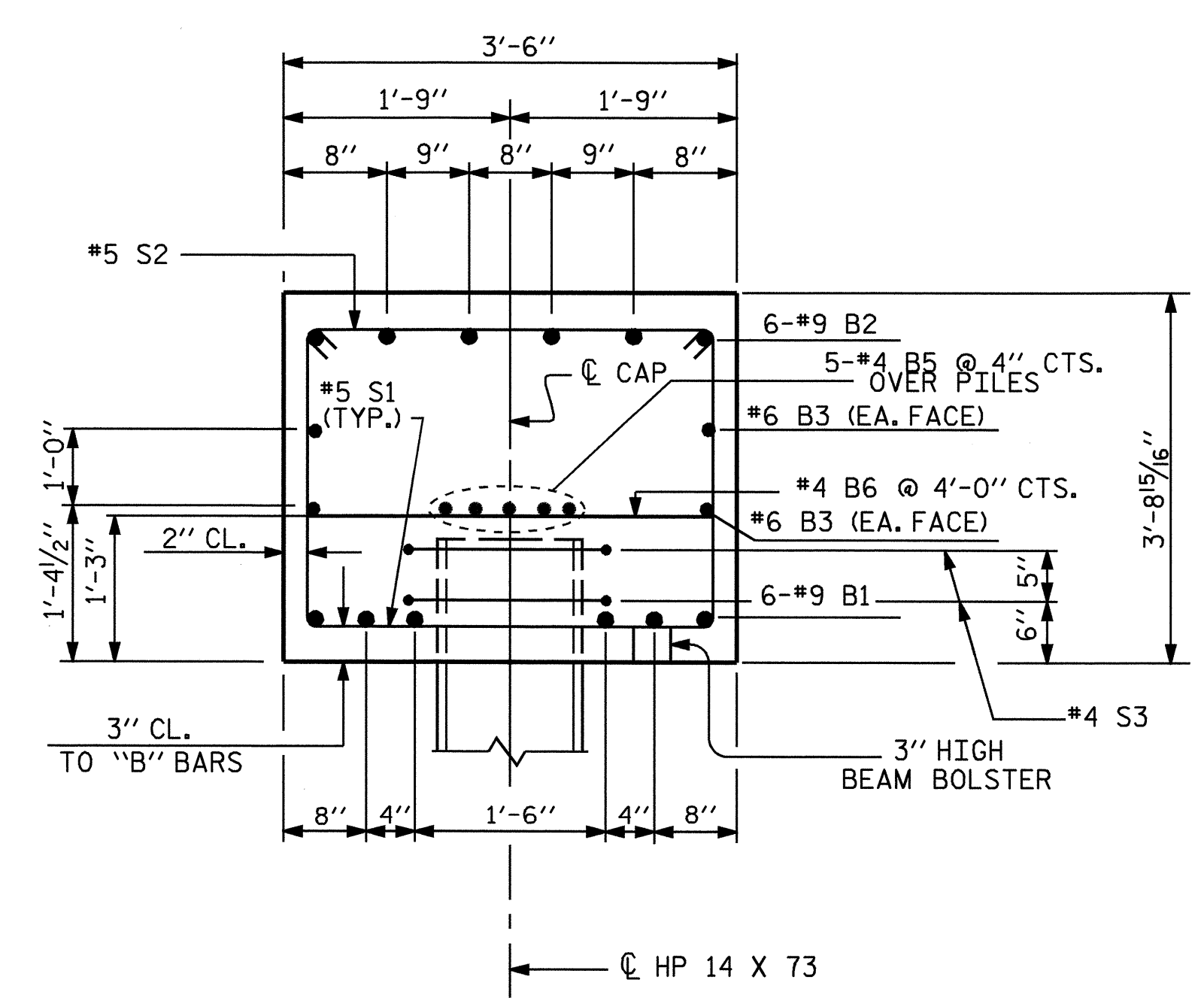


\* POSITION OF PILE DURING WELDING.

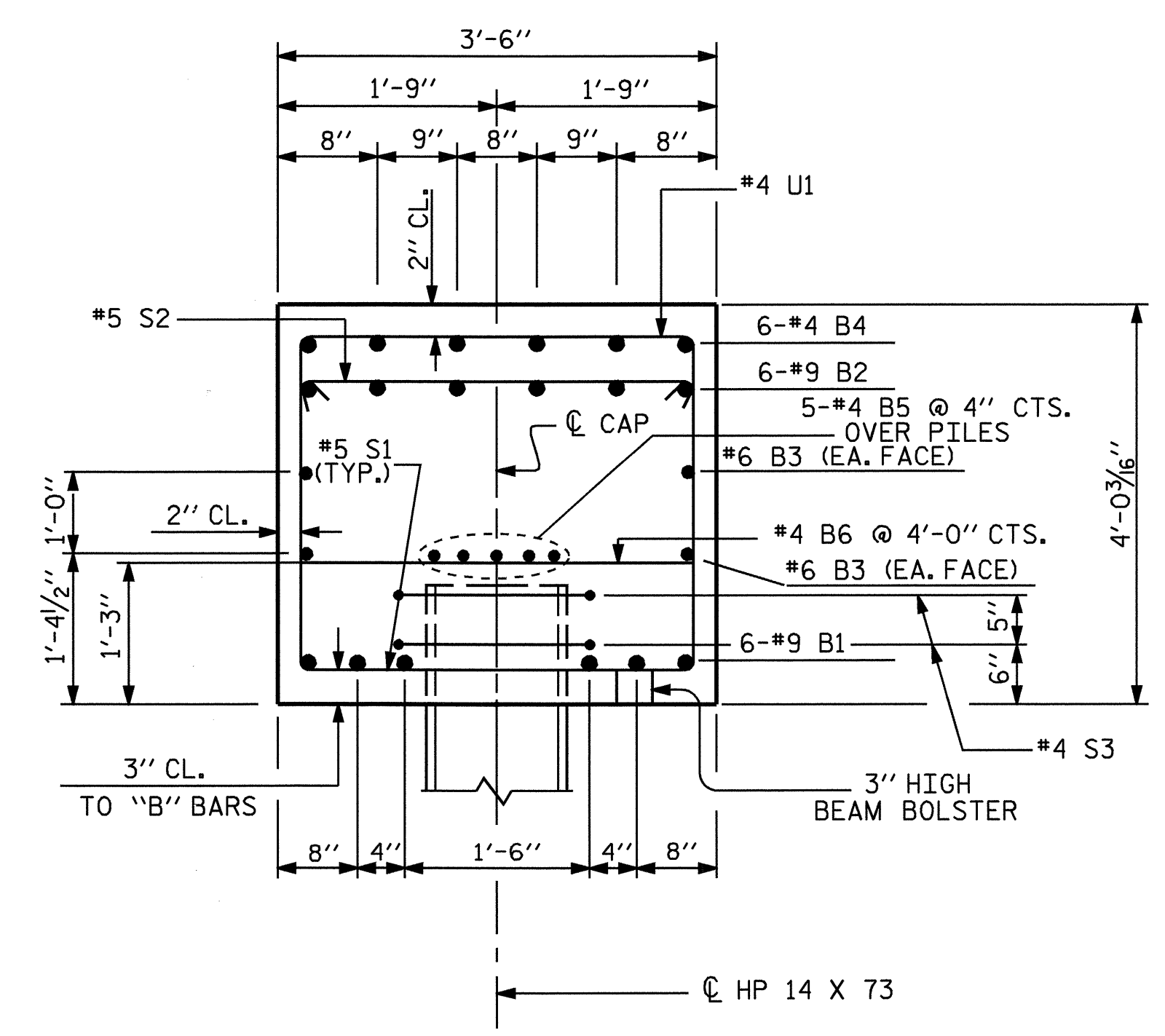
PILE SPLICE DETAILS



END VIEW



SECTION A-A



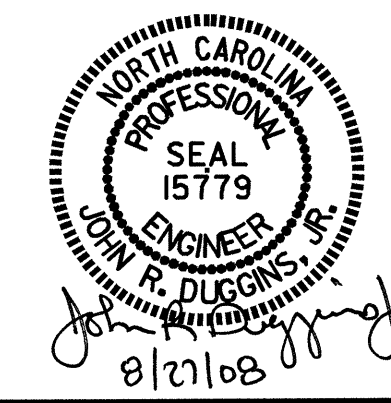
SECTION B-B

PROJECT NO. B-4033  
BUNCOMBE COUNTY  
STATION: 26+53.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
BENT No. 1  
STAGE I



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-36	
1			3			TOTAL SHEETS	50
2			4				

DRAWN BY: M. POOLE DATE: 02-08  
CHECKED BY: J. R. DUGGINS DATE: 05-08

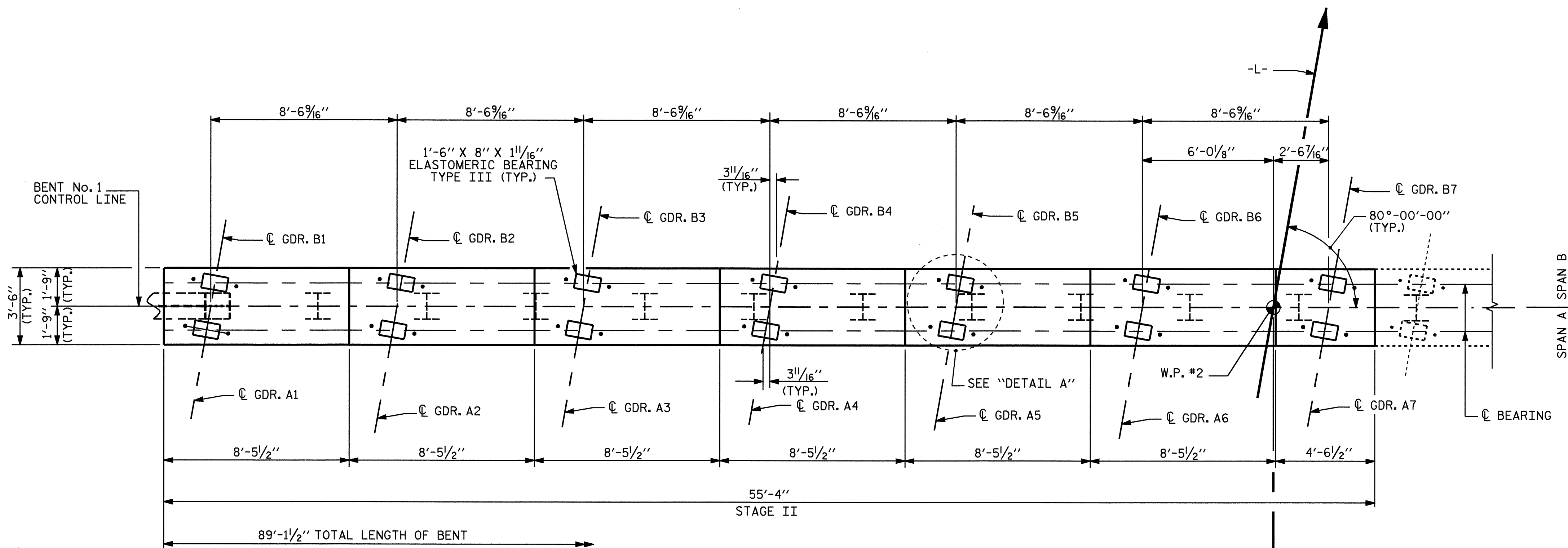
**NOTES**

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

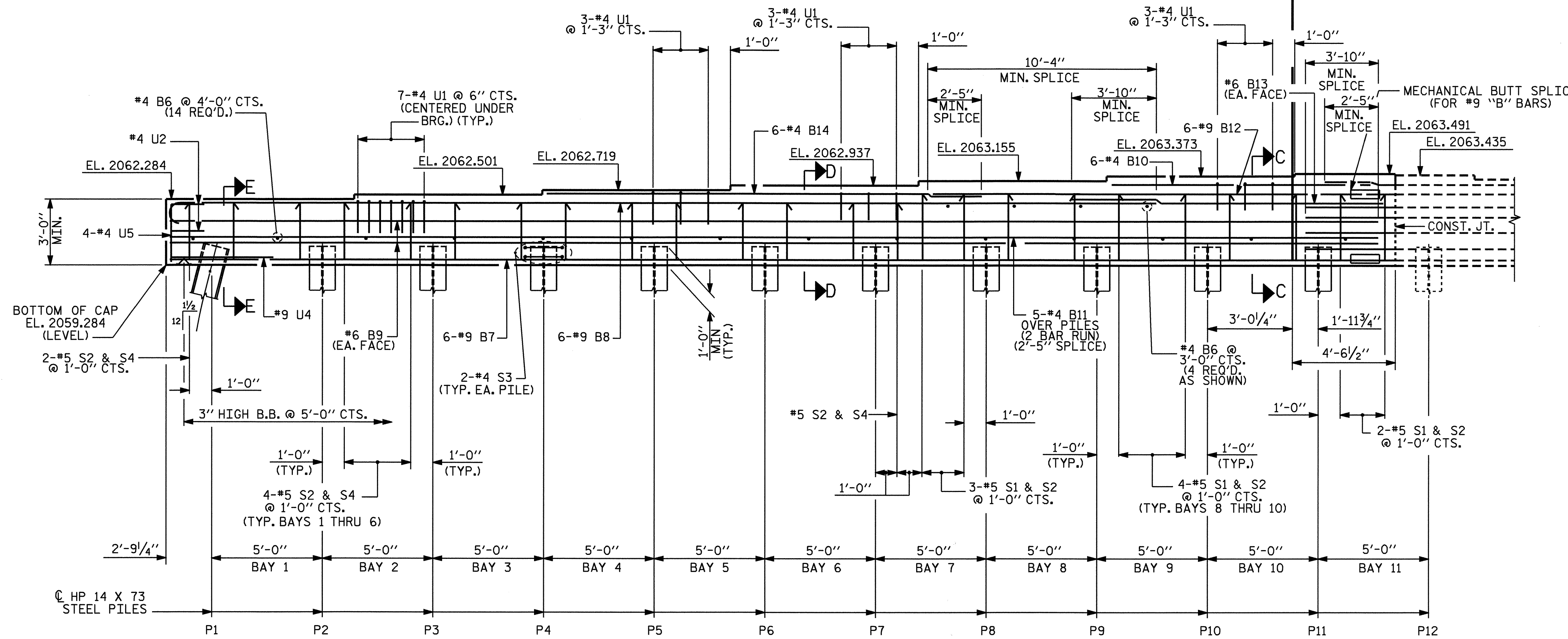
SEE SHEET 2 OF 2 FOR PILE SPLICE DETAILS.

"U" BARS IN 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.

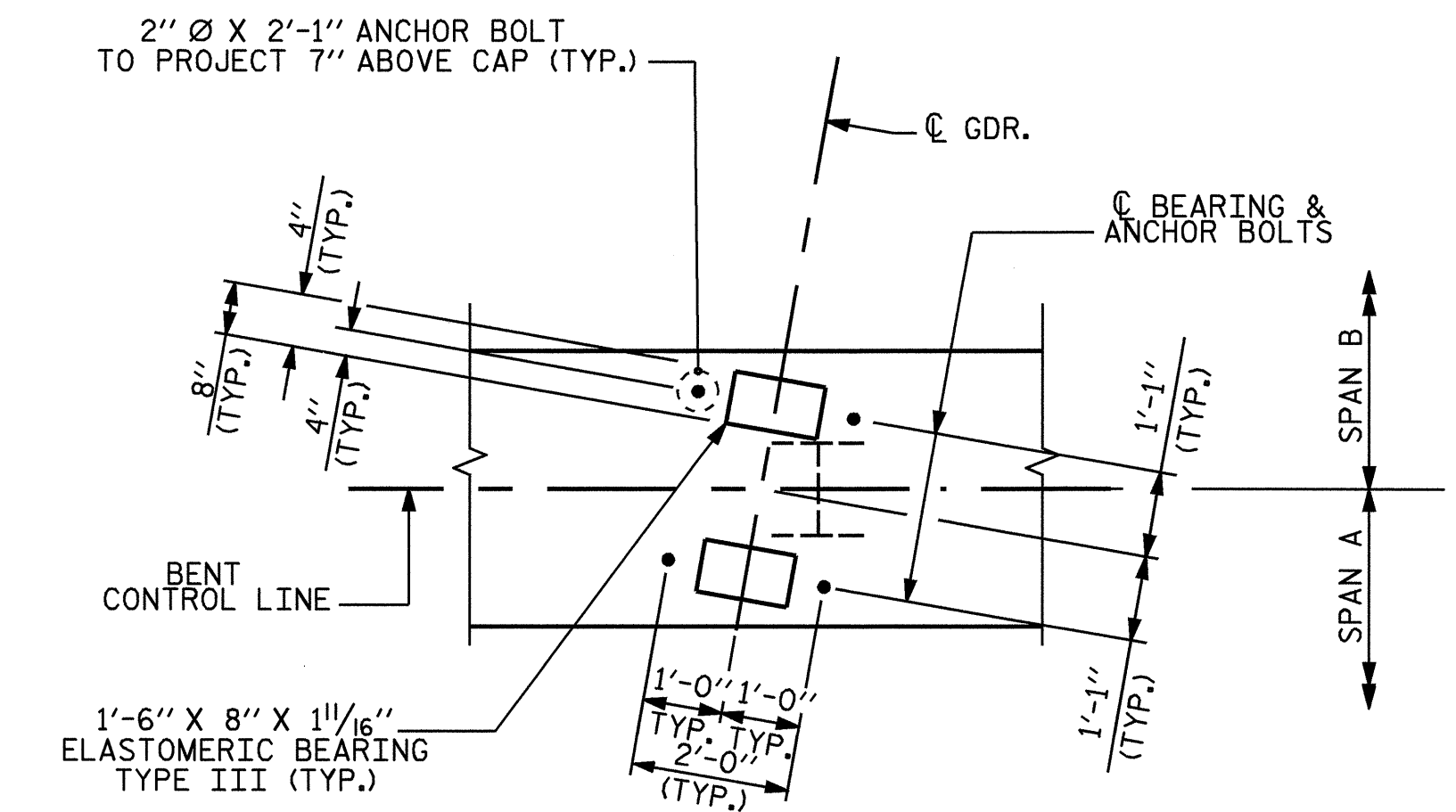


**PLAN**



**ELEVATION**

FOR "SECTION C-C", "SECTION D-D" AND "SECTION E-E", SEE SHEET 2 OF 2.



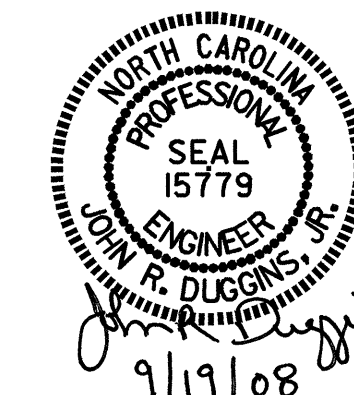
**DETAIL A**

PROJECT NO. B-4033  
BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

SHEET 1 OF 2

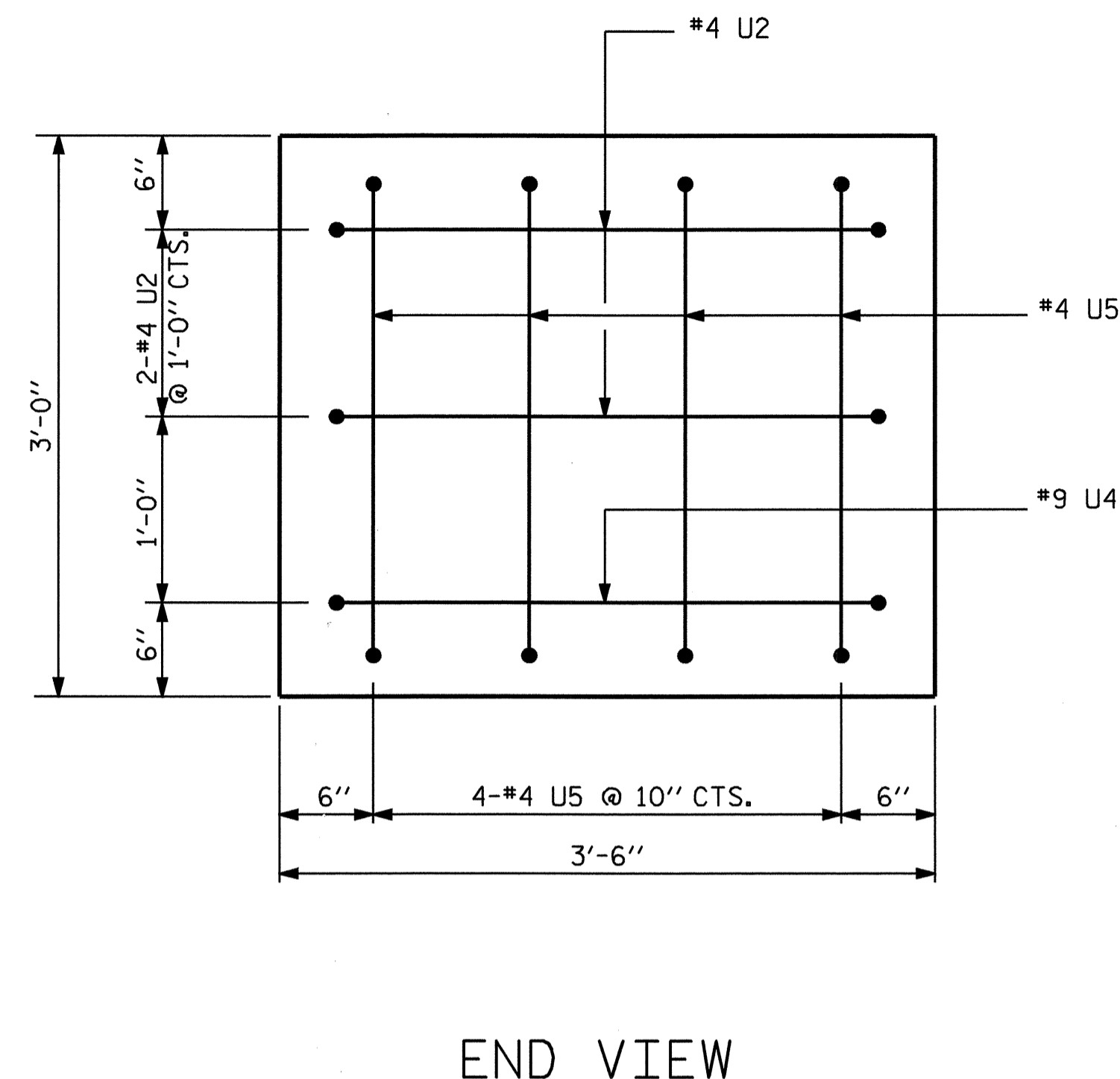
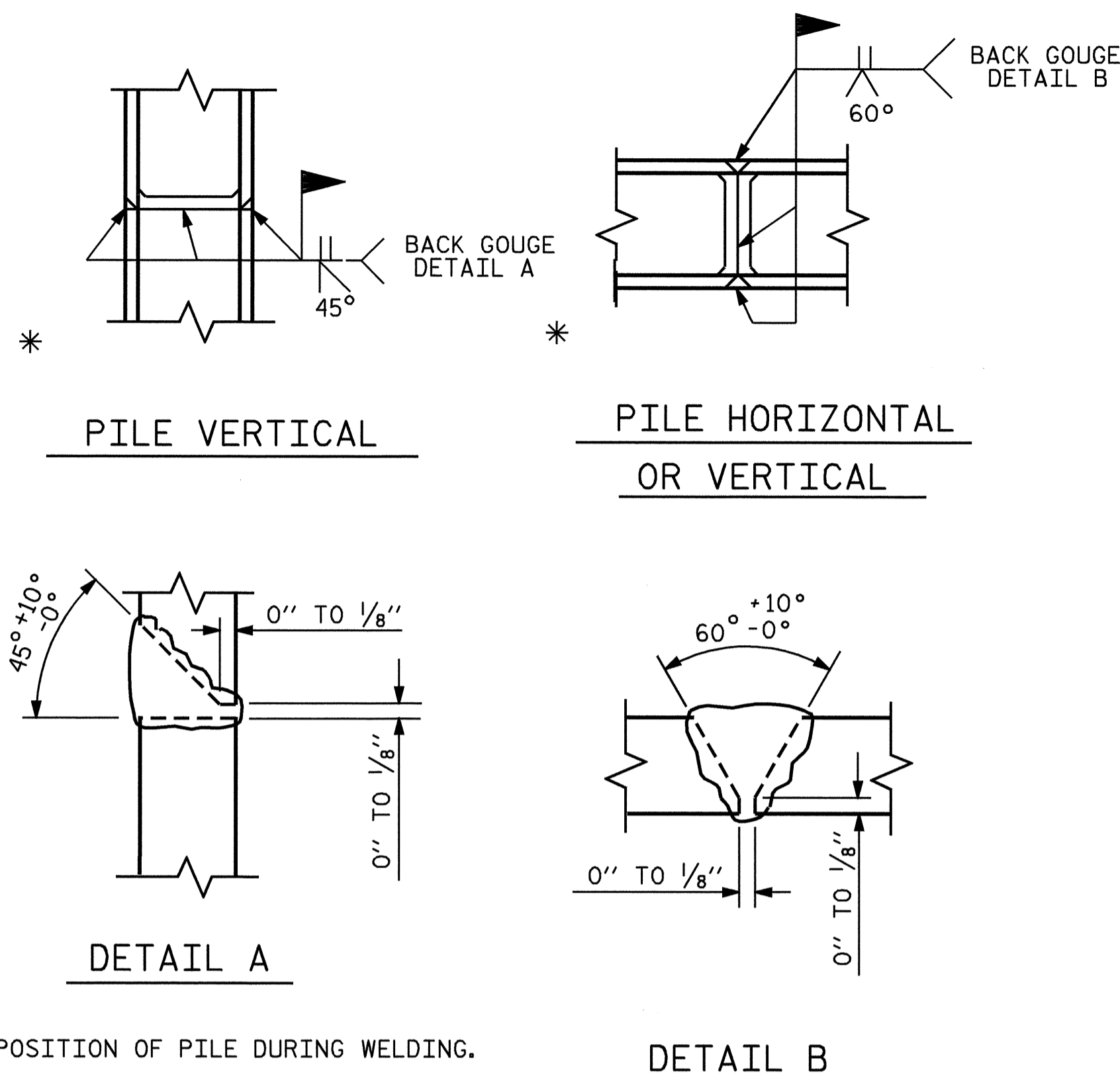
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT No. 1  
 STAGE II



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			5-37
2			4			TOTAL SHEETS 50

DRAWN BY: M. POOLE DATE: 02/2008  
 CHECKED BY: J. R. DUGGINS DATE: 05/2008



BAR TYPES BILL OF MATERIAL					
BENT No. 1					
STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B6	18	4	STR	3'-2"	38
B7	6	9	STR	54'-1"	1103
B8	6	9	1	45'-6"	928
B9	4	6	STR	55'-0"	330
B10	6	4	STR	12'-8"	51
B11	10	4	STR	28'-9"	192
B12	6	9	STR	28'-0"	571
B13	2	6	STR	14'-7"	44
B14	6	4	STR	19'-4"	77
S1	17	5	2	10'-10"	192
S2	44	5	4	4'-1"	187
S3	22	4	5	7'-7"	111
S4	27	5	2	9'-4"	263
U1	58	4	3	6'-2"	239
U2	2	4	3	6'-0"	8
U4	1	9	3	10'-4"	35
U5	4	4	3	5'-6"	15

REINFORCING STEEL 4384 LBS.

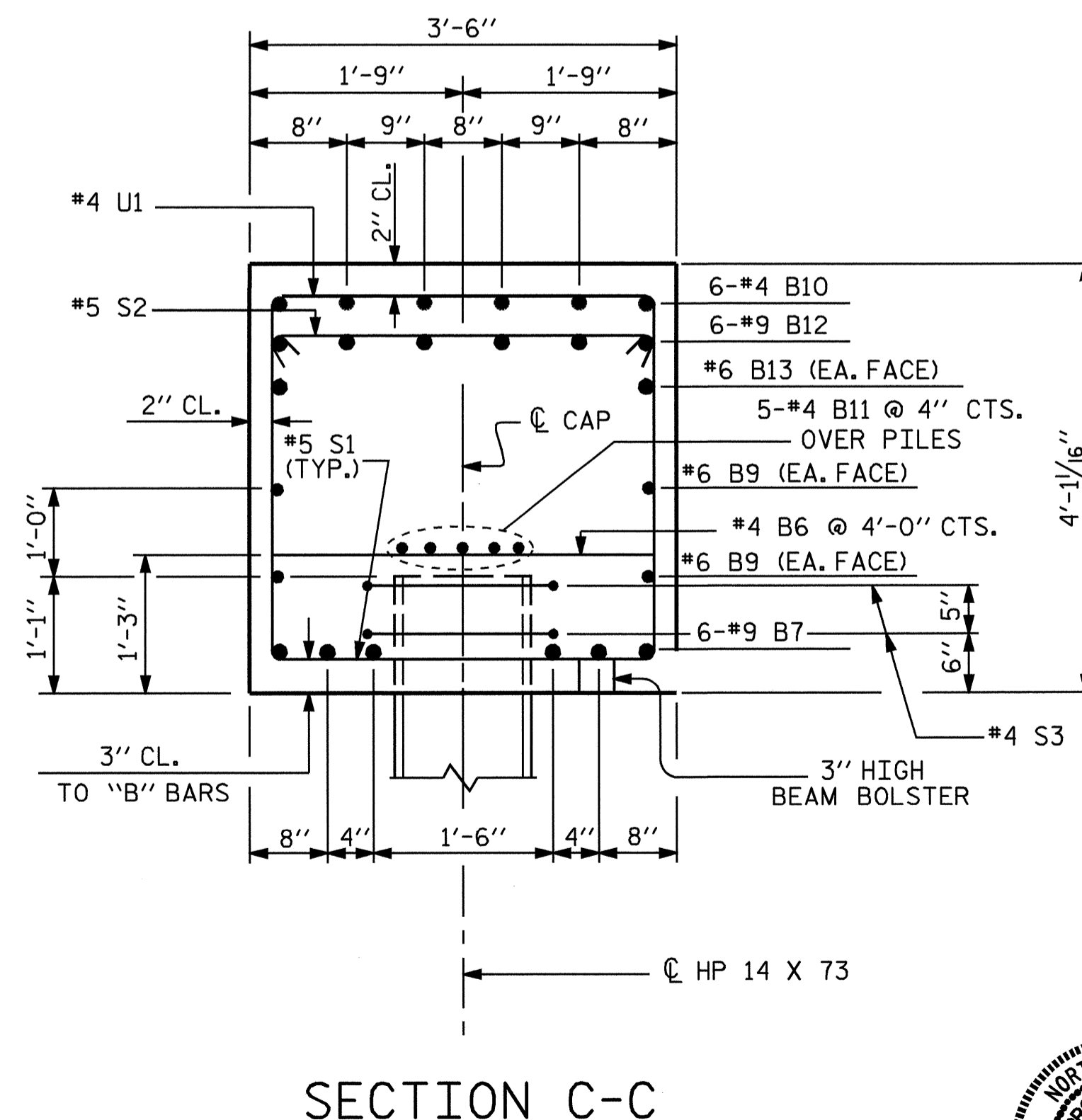
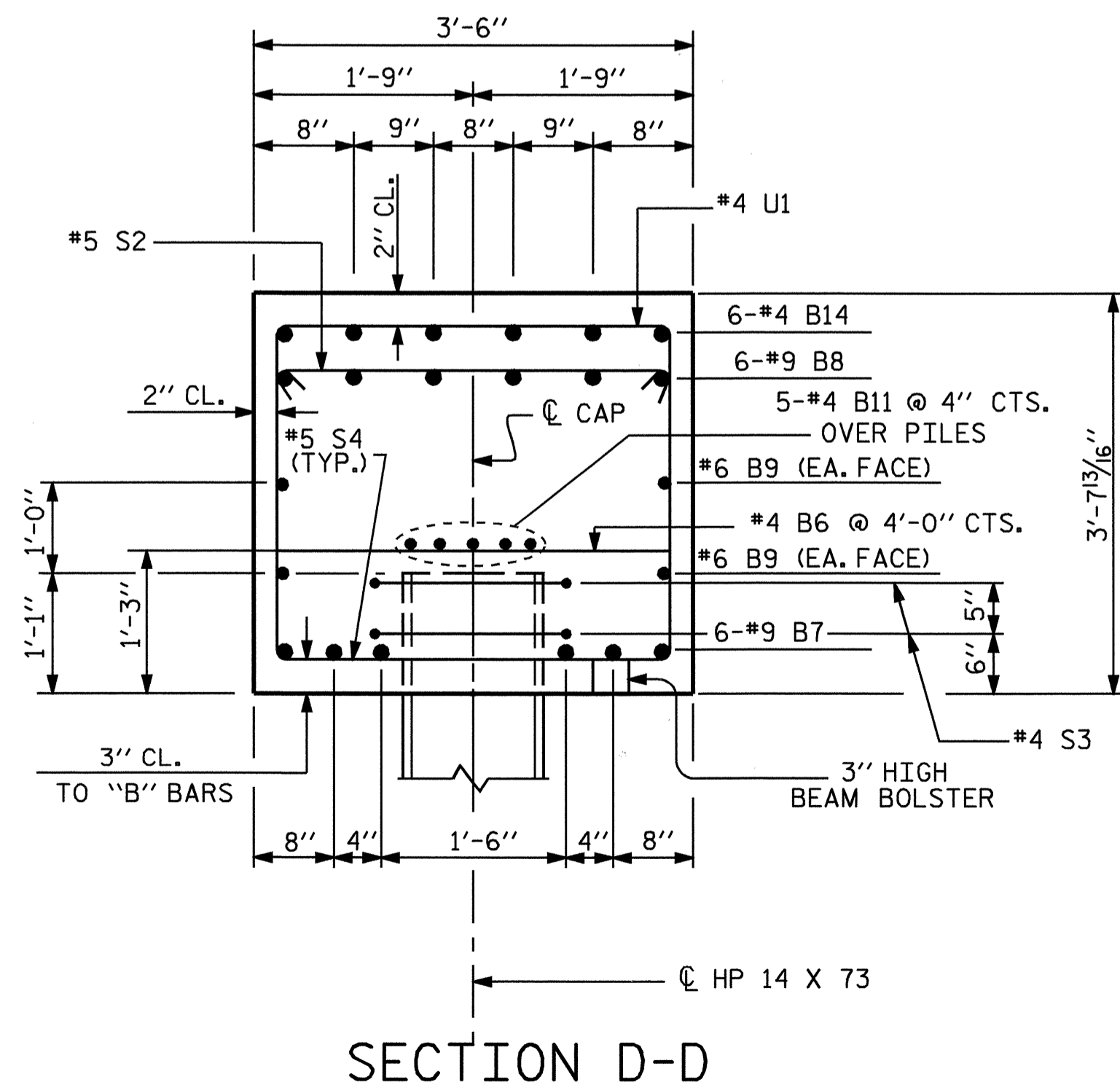
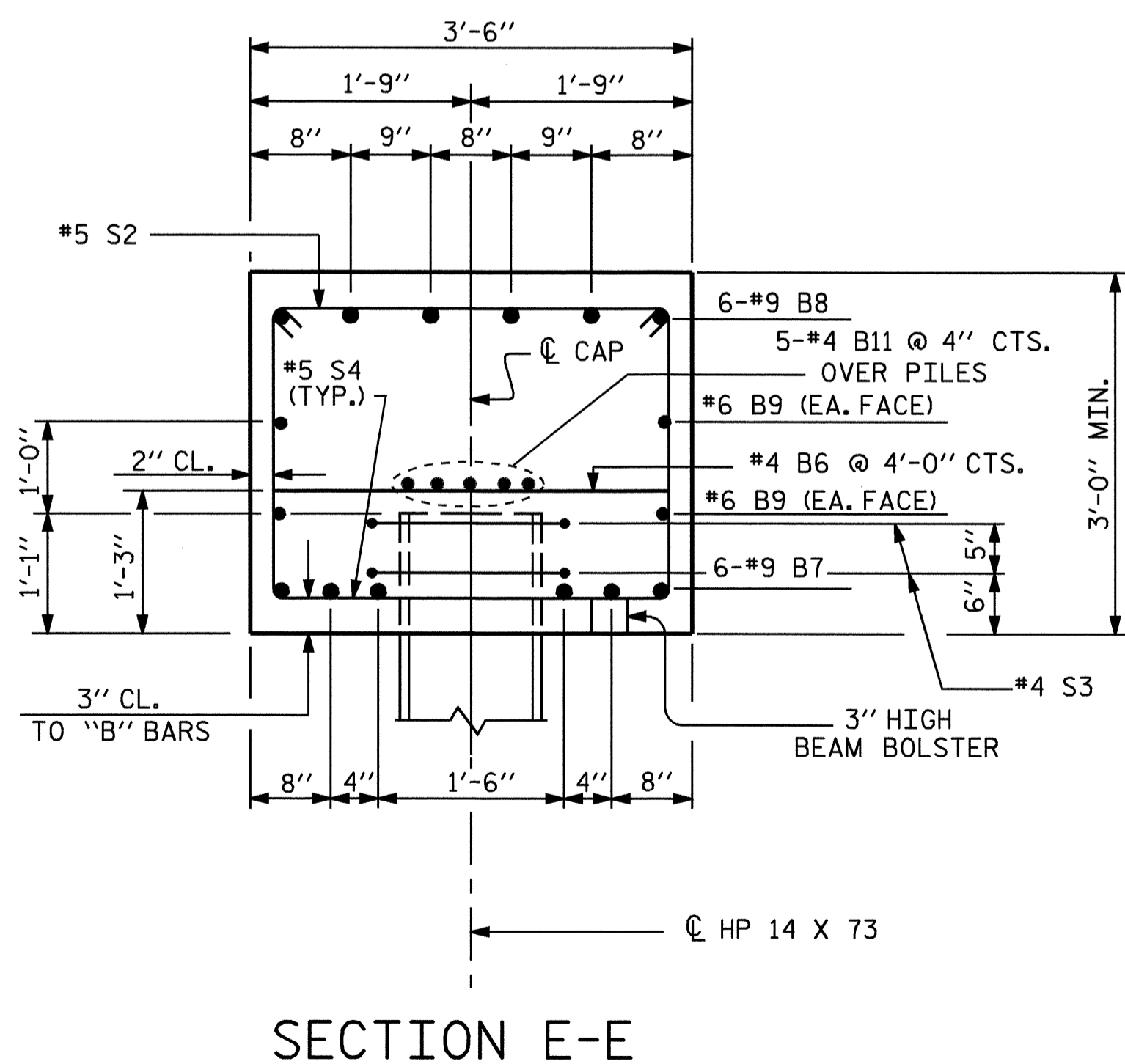
CLASS A CONCRETE

TOTAL 25.8 C.Y.

HP 14 x 73 GALVANIZED STEEL PILES NO. 11 510 LIN FT.

STEEL PILE POINTS 11 EACH

PILE SPLICE DETAILS



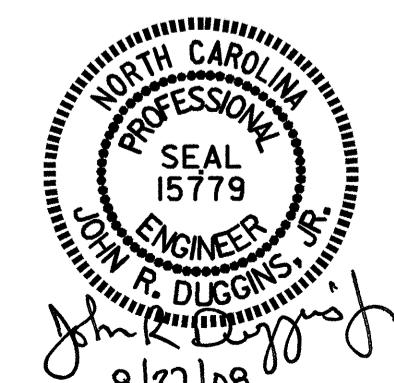
TOTAL QUANTITIES	
BENT No. 1	
STAGE I AND II	
REINFORCING STEEL	6932 LBS.
CLASS A CONCRETE BREAKDOWN	42.9 C.Y.
HP 14 x 73 GALVANIZED STEEL PILES NO. 19	865 LIN FT.
STEEL PILE POINTS	19 EACH

PROJECT NO. B-4033  
 BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT No. 1  
 STAGE II

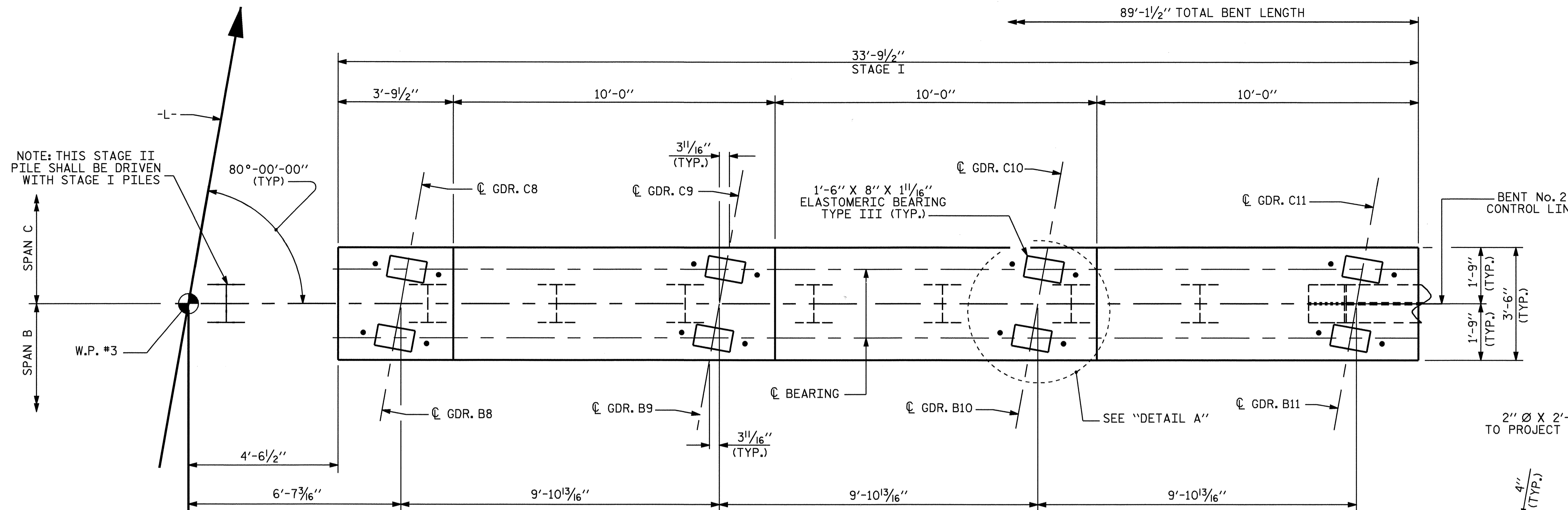


DRAWN BY: M. POOLE DATE: 02-08  
 CHECKED BY: J. R. DUGGINS DATE: 05/2008

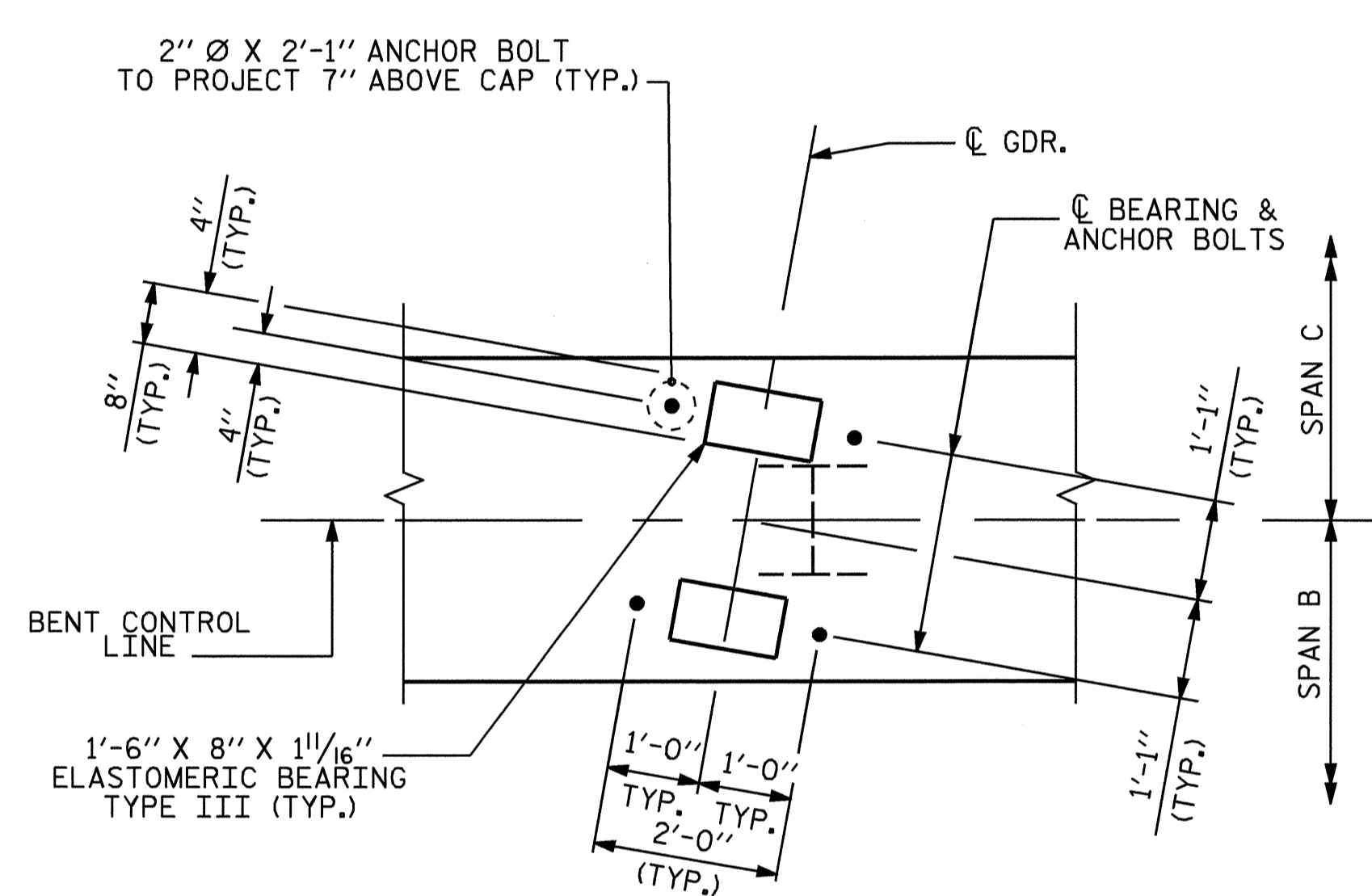
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-38	
1			3			TOTAL SHEETS	
2			4			50	

NOTES

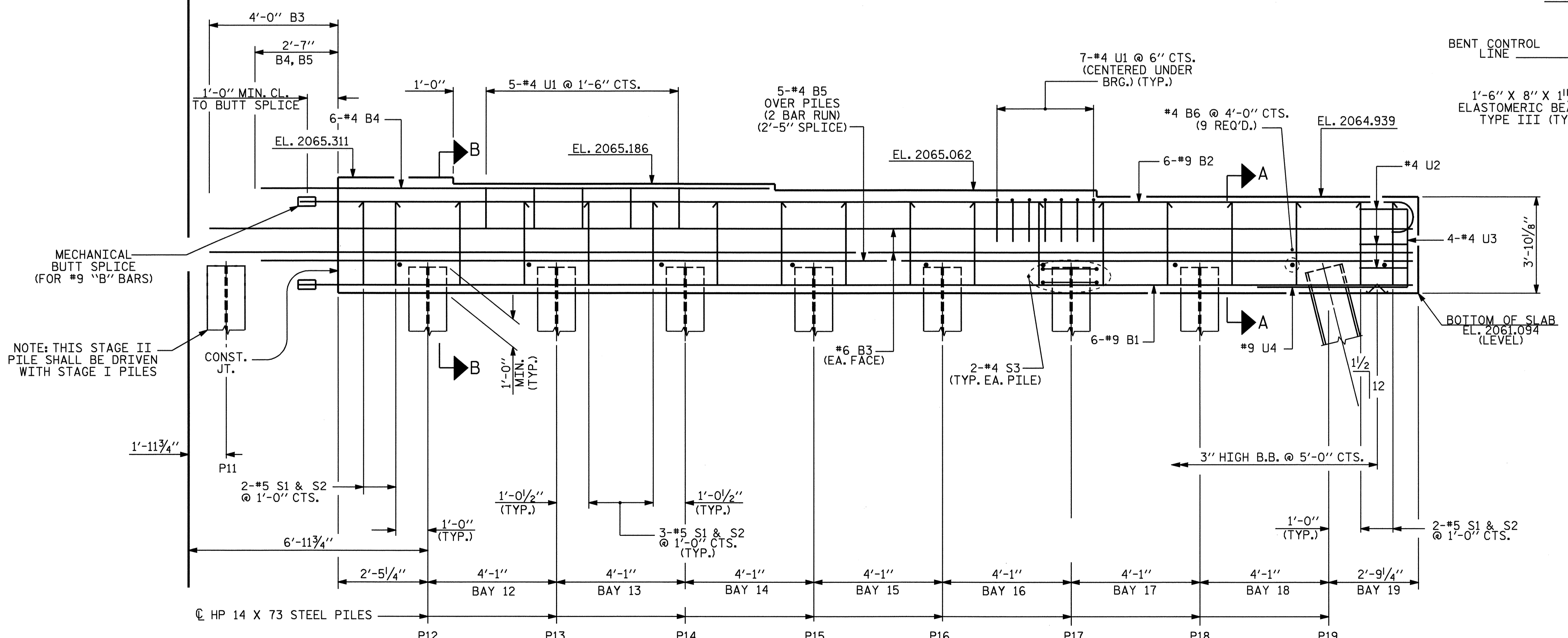
STIRRUPS IN CAP MAT BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.  
 SEE SHEET 2 OF 2 FOR PILE SPLICE DETAILS.  
 "U" BARS IN END OF CAP MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR "B" BARS.  
 2" MINIMUM CONCRETE COVER FROM END OF CAP IS REQUIRED FOR ALL "U" BARS.



PLAN



DETAIL A



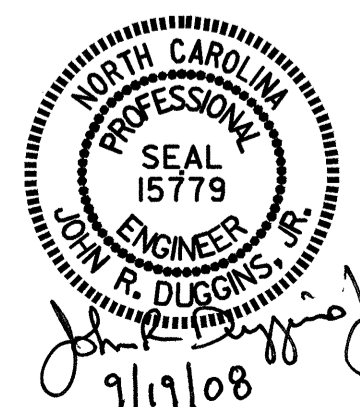
ELEVATION

PROJECT NO. B-4033  
 BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT No. 2  
 STAGE I



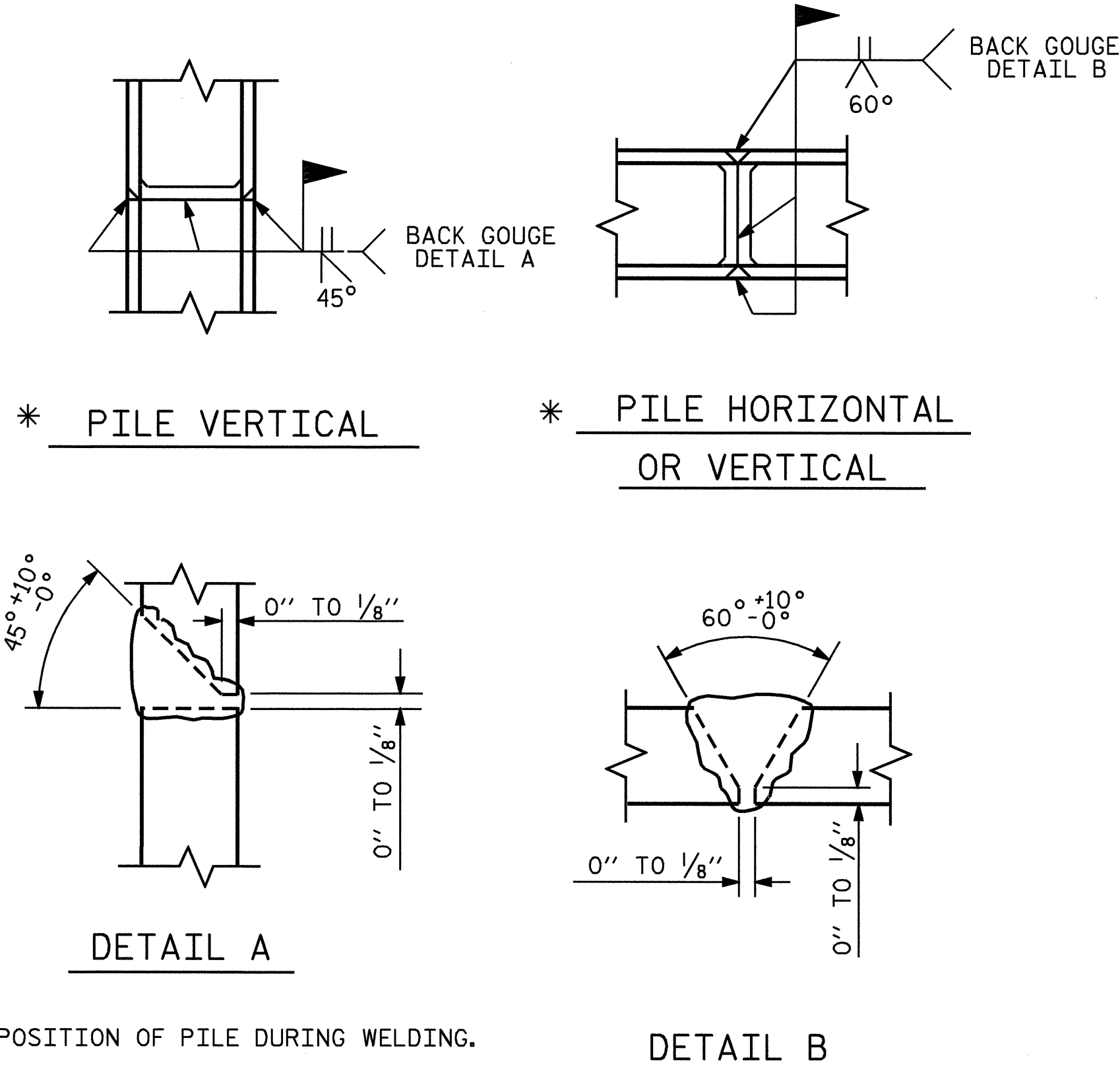
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS 50

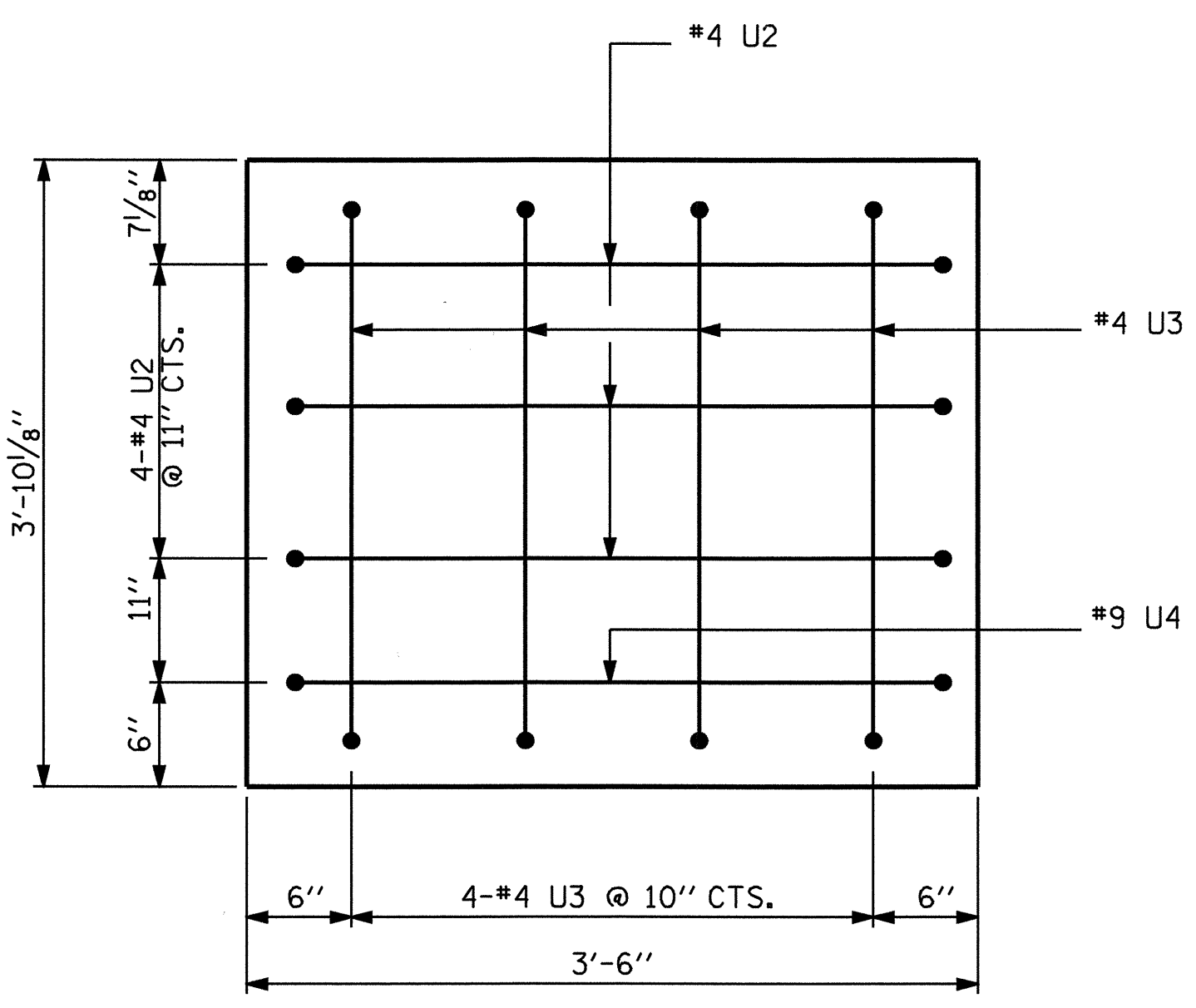
DRAWN BY: M. POOLE DATE: 02-08  
 CHECKED BY: J. R. DUGGINS DATE: 05-08

FOR "SECTION A-A" AND "SECTION B-B", SEE SHEET 2 OF 2.

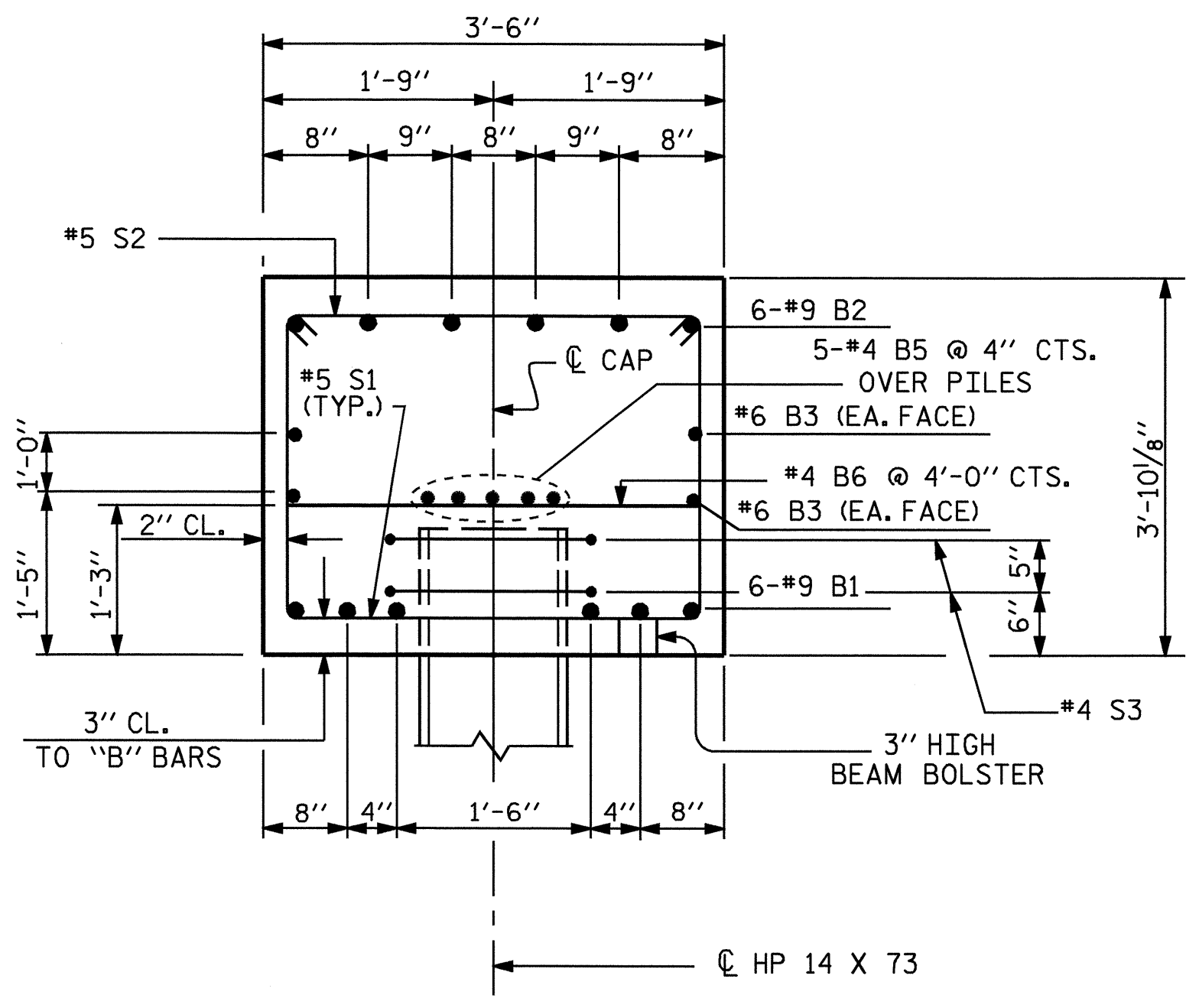




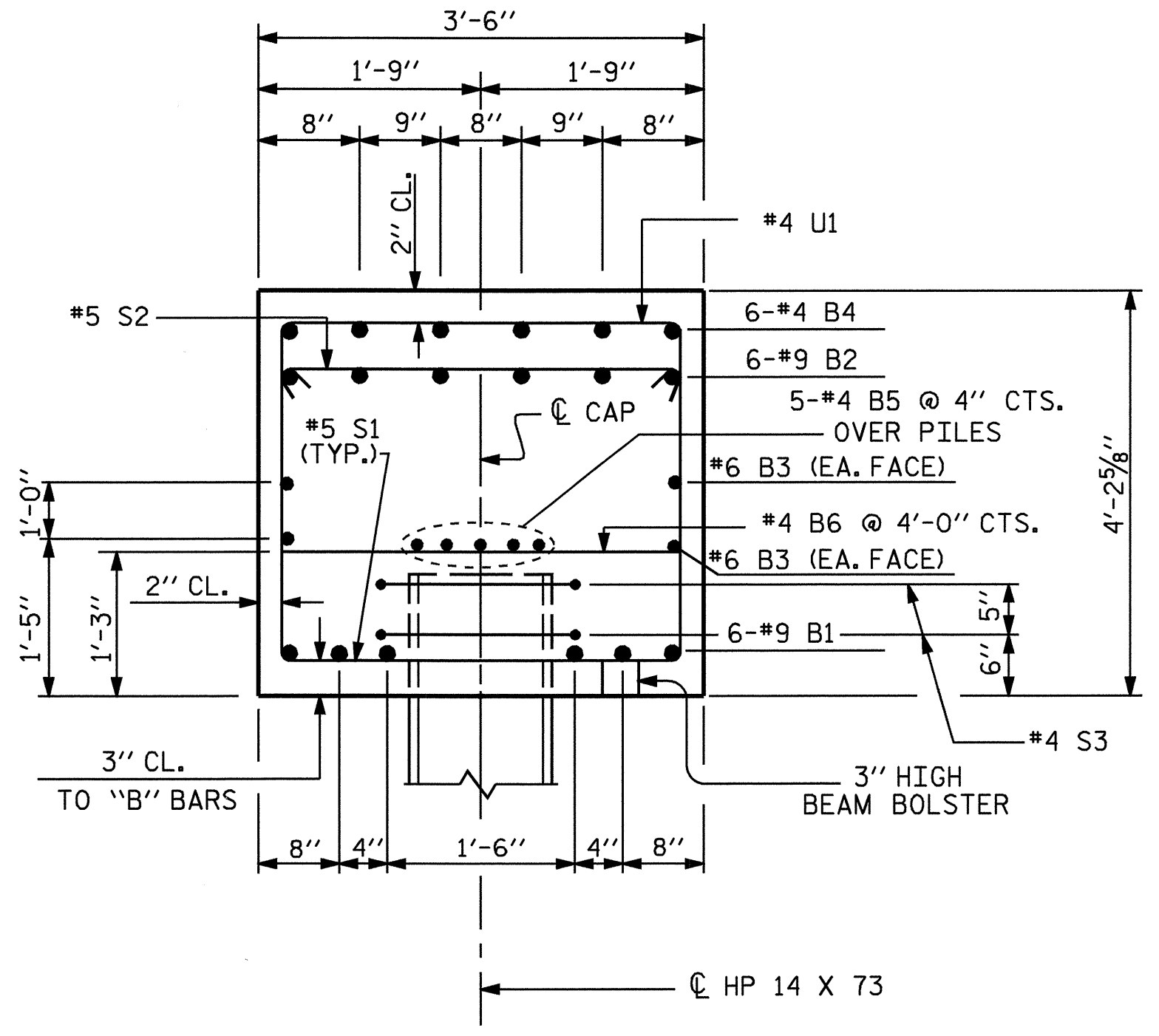
PILE SPLICE DETAILS



END VIEW



SECTION A-A



SECTION B-B

**BAR TYPES BILL OF MATERIAL**

BENT No. 2

STAGE I					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	9	STR	34'-8"	707
B2	6	9	1	35'-11"	733
B3	4	6	STR	37'-7"	226
B4	4	4	STR	16'-3"	65
B5	10	4	STR	19'-4"	129
B6	9	4	STR	3'-2"	19
S1	25	5	2	11'-0"	287
S2	25	5	4	4'-1"	106
S3	16	4	5	7'-7"	81
U1	33	4	3	6'-2"	136
U2	3	4	3	6'-0"	12
U3	4	4	3	6'-3"	17
U4	1	9	3	10'-4"	35

REINFORCING STEEL 2553 LBS.

CLASS A CONCRETE BREAKDOWN

TOTAL 17.4 C.Y.

HP 14 x 73 GALVANIZED STEEL PILES

NO. 8 365 LIN FT.

ALL BAR DIMENSIONS ARE OUT TO OUT.

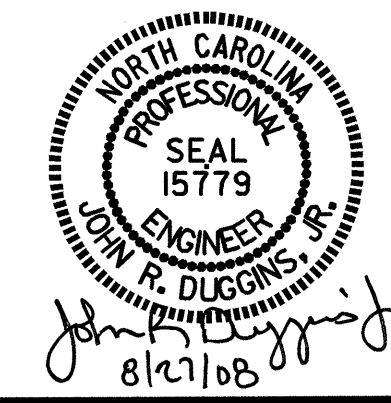
FOR TOTAL QUANTITIES FOR BENT No. 2 STAGE I AND II, SEE SHEET No. S-42

PROJECT NO. B-4033  
BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

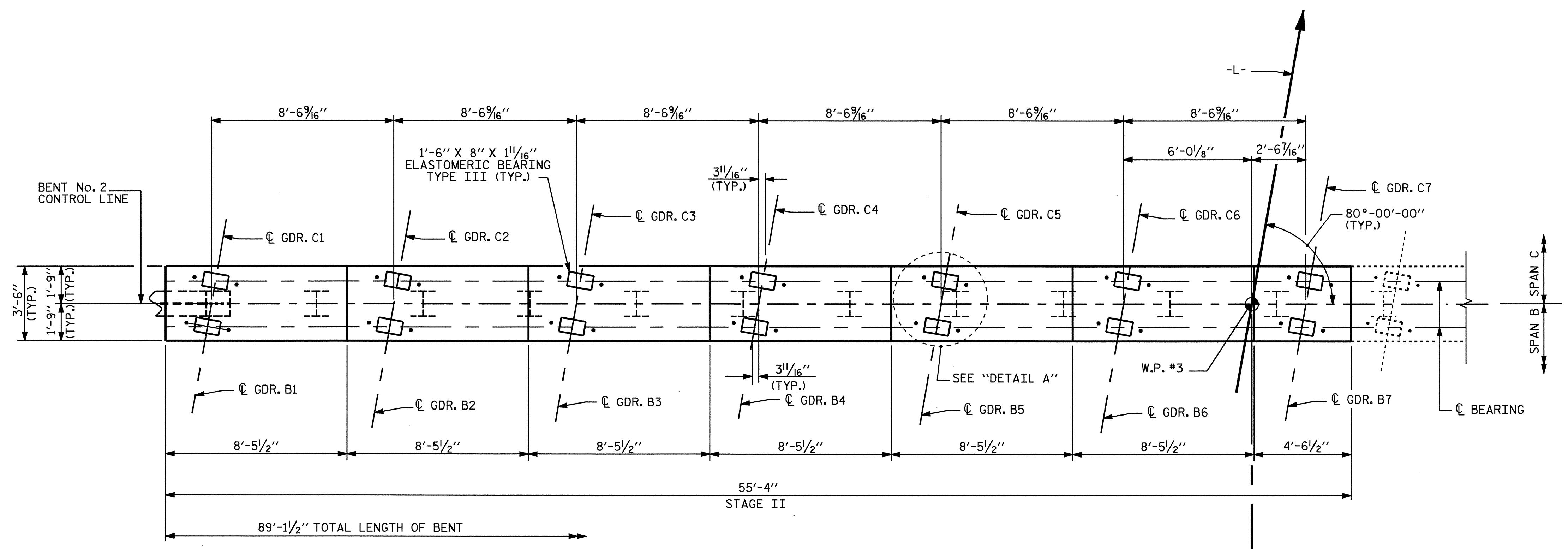
SUBSTRUCTURE  
 BENT No. 2  
 STAGE I



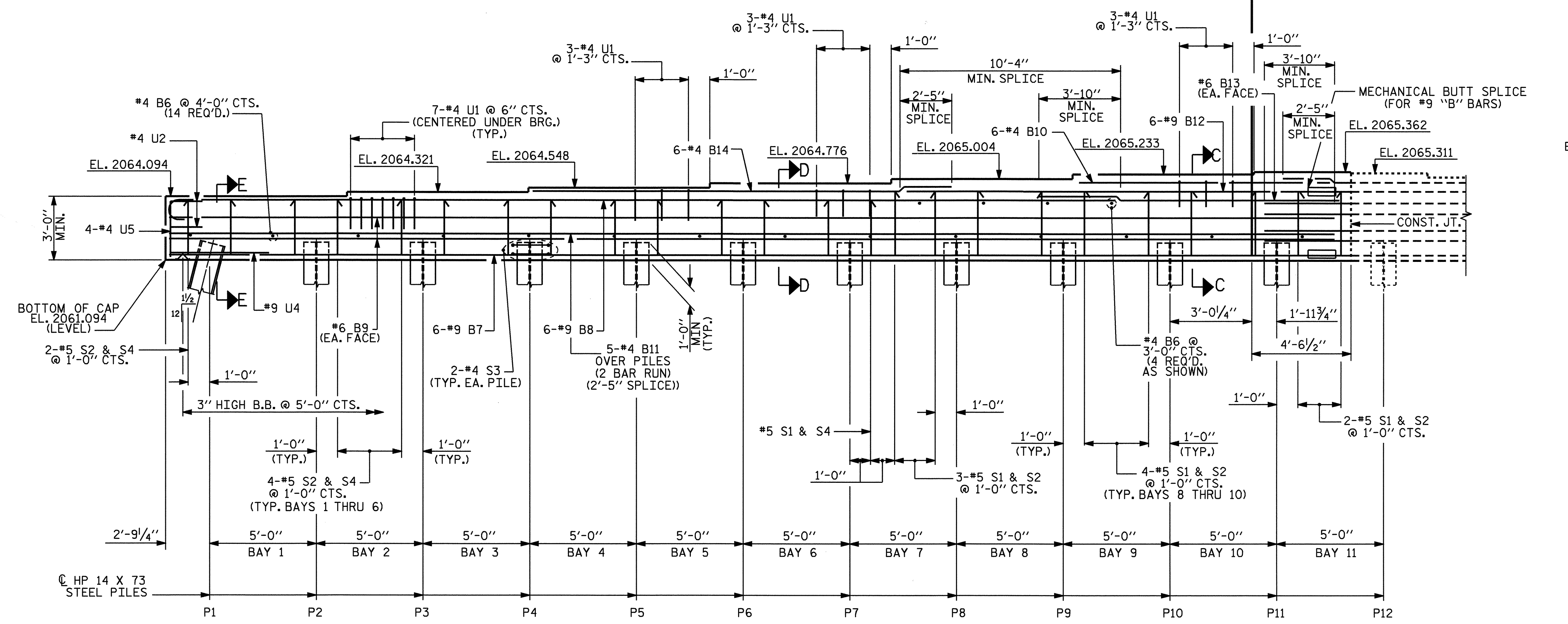
DRAWN BY: M. POOLE DATE: 02-08  
 CHECKED BY: J. R. DUGGINS DATE: 05-08

21-AUG-2008 15:29  
 P:\structures\B4033\marle\B4033.sd.B2.01.dgn  
 dahodge

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-40
1			3			TOTAL SHEETS 50
2			4			



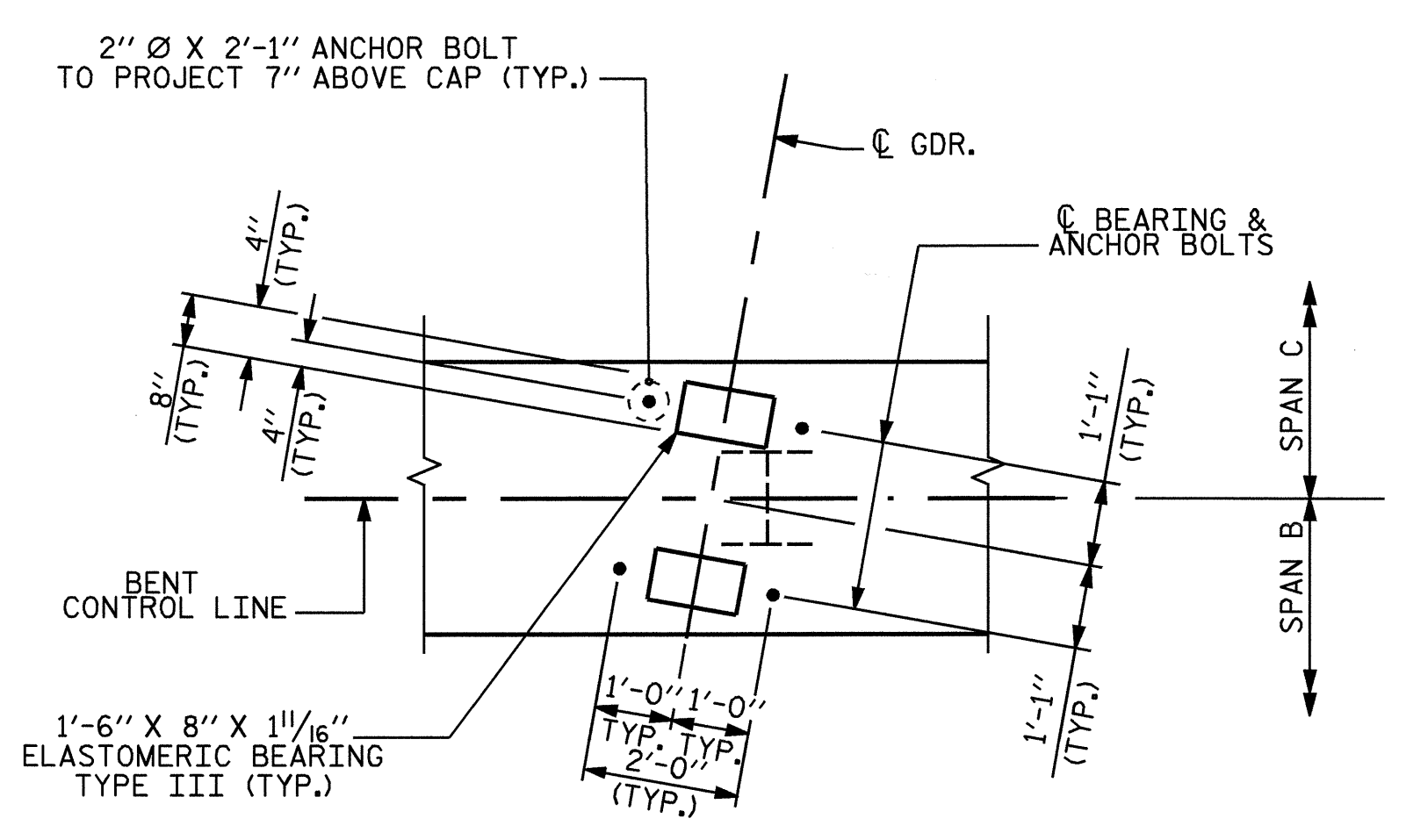
**PLAN**



**ELEVATION**

FOR "SECTION C-C", "SECTION D-D" AND "SECTION E-E", SEE SHEET 2 OF 2.

**NOTES**  
 STIRRUPS IN CAP MAT BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.  
 SEE SHEET 2 OF 2 FOR PILE SPLICE DETAILS.  
 "U" BARS IN 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.



**DETAIL A**

PROJECT NO. B-4033  
BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

SHEET 1 OF 2

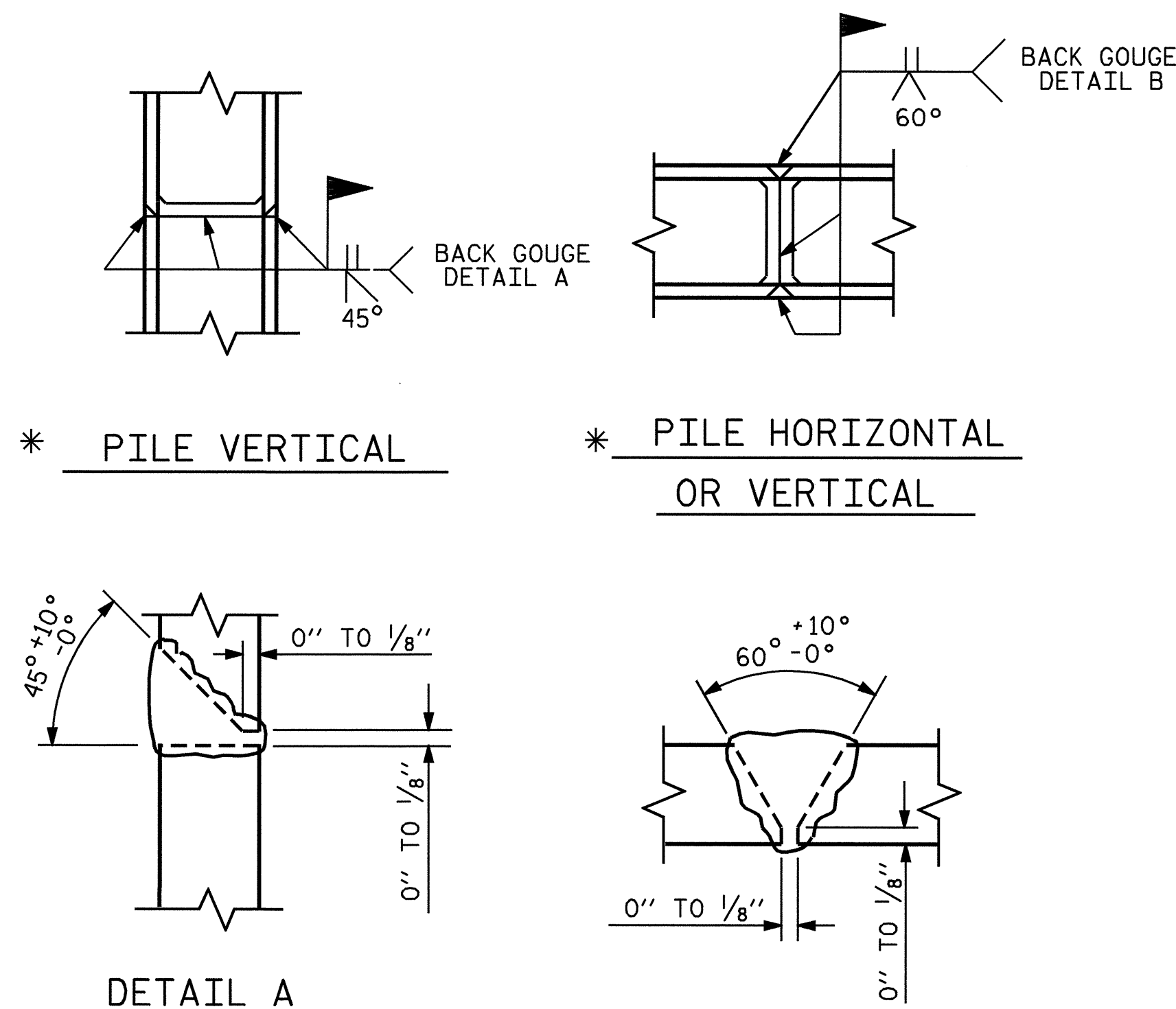
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT No. 2  
 STAGE II

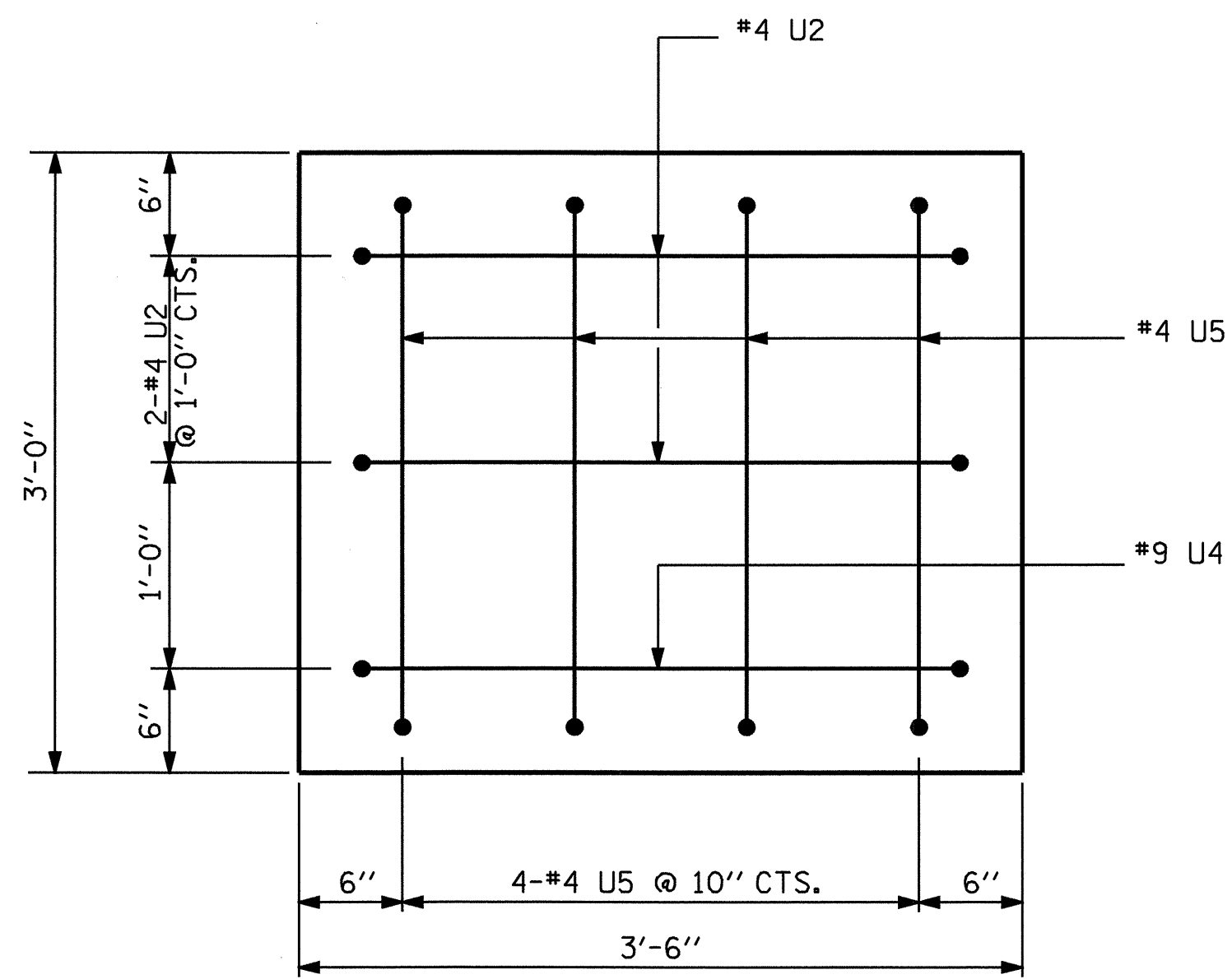


REVISIONS						SHEET NO. S-41
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 50
2			4			

DRAWN BY: M. POOLE DATE: 02/2008  
 CHECKED BY: J. R. DUGGINS DATE: 05/2008

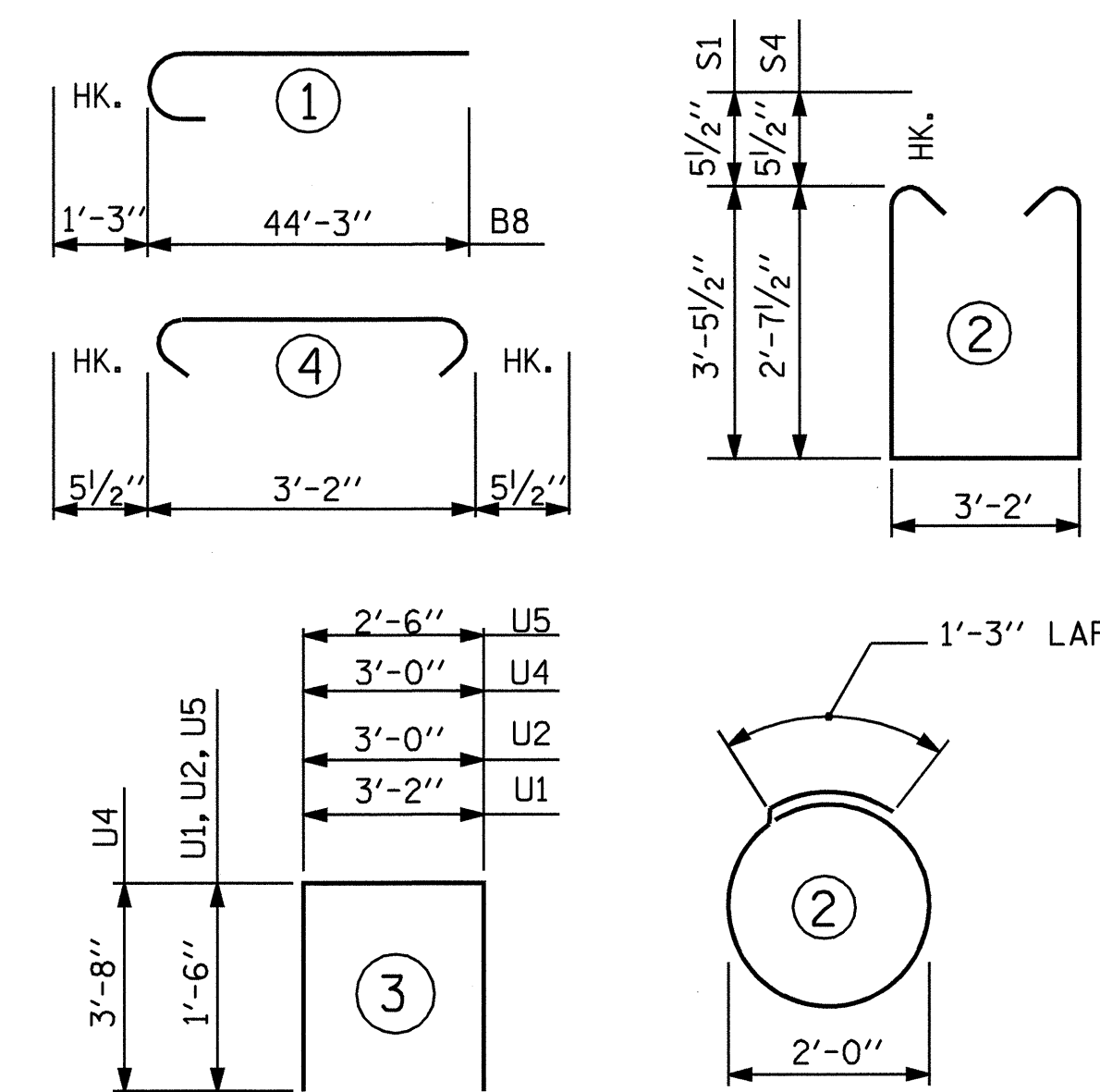


\* POSITION OF PILE DURING WELDING.



BAR TYPES BILL OF MATERIAL

BENT No. 2



ALL BAR DIMENSIONS ARE OUT TO OUT.

STAGE II

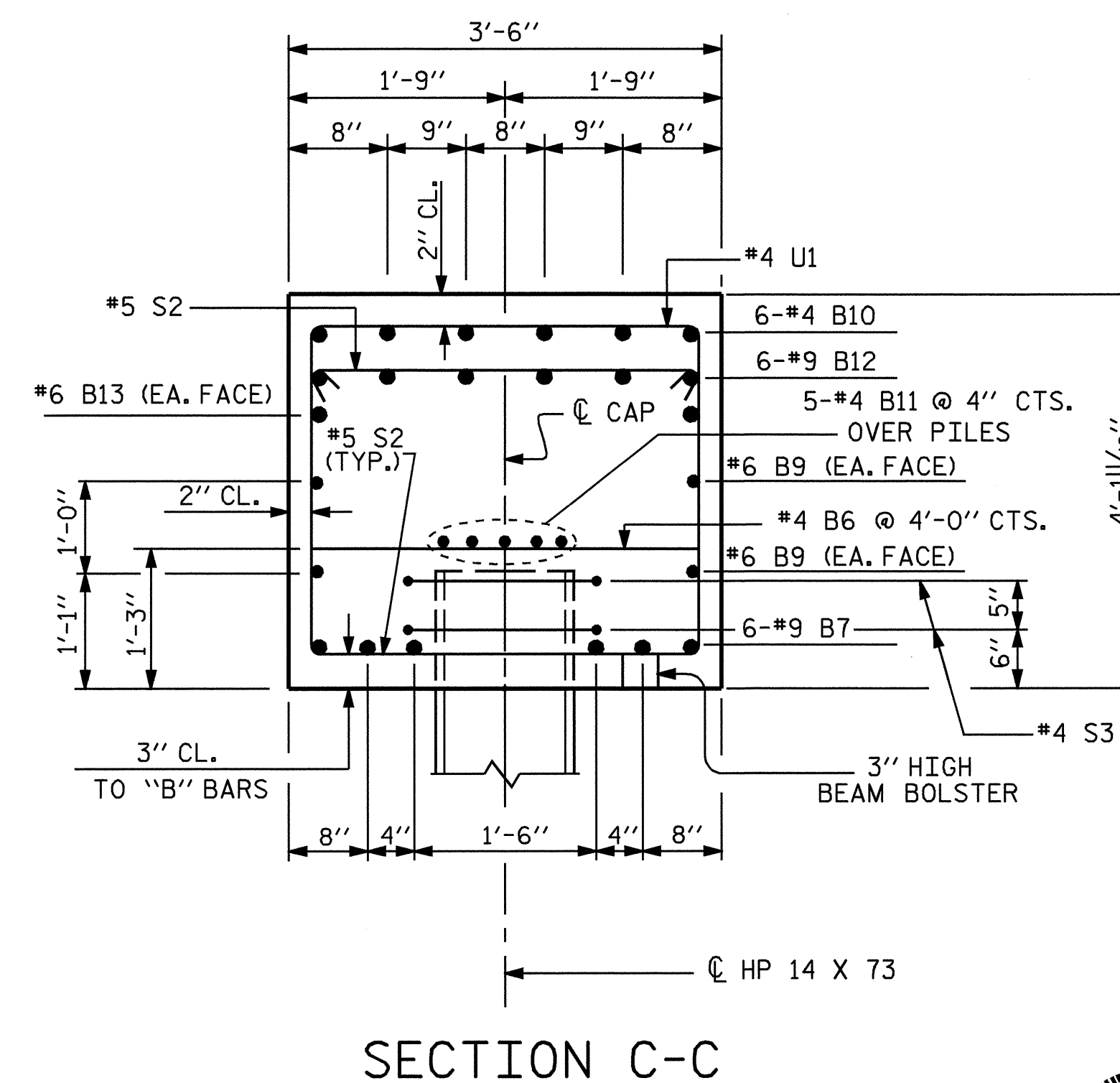
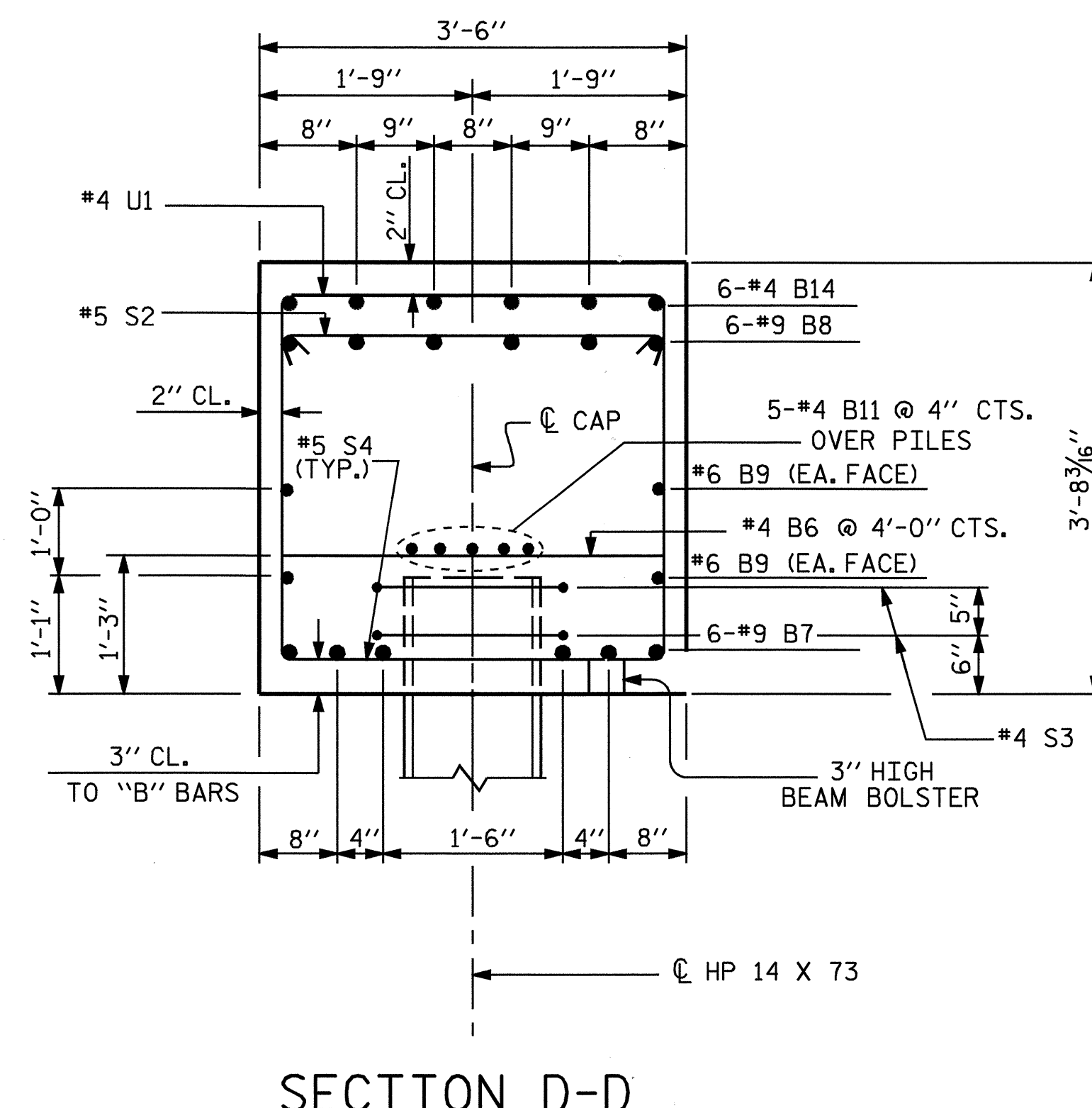
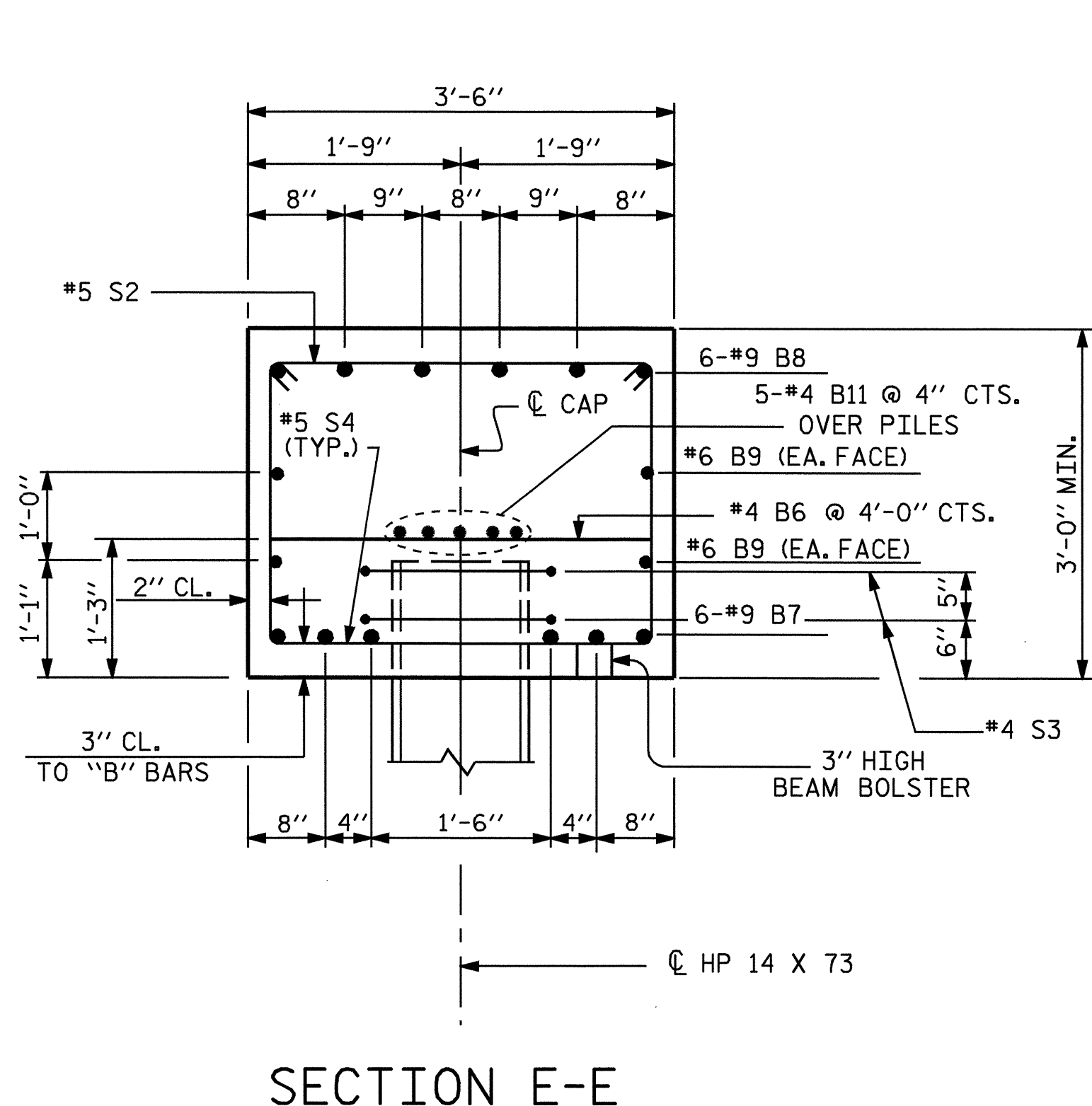
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B6	18	4	STR	3'-2"	38
B7	6	9	STR	54'-1"	1103
B8	6	9	1	45'-6"	928
B9	4	6	STR	55'-0"	330
B10	6	4	STR	12'-8"	51
B11	10	4	STR	28'-9"	192
B12	6	9	STR	28'-0"	571
B13	2	6	STR	14'-7"	44
B14	6	4	STR	19'-4"	77
S1	17	5	2	10'-10"	192
S2	44	5	4	4'-1"	187
S3	22	4	5	7'-7"	111
S4	27	5	2	9'-4"	263
U1	58	4	3	6'-2"	239
U2	2	4	3	6'-0"	8
U4	1	9	3	10'-4"	35
U5	4	4	3	5'-6"	15

REINFORCING STEEL 4384 LBS.

CLASS A CONCRETE BREAKDOWN  
TOTAL 26.0 C.Y.

HP 14 x 73 GALVANIZED STEEL PILES  
NO. 11 585 LIN FT.

PILE SPLICE DETAILS



TOTAL QUANTITIES  
BENT No. 2  
STAGE I AND II

REINFORCING STEEL 6937 LBS.

CLASS A CONCRETE BREAKDOWN 43.4 C.Y.

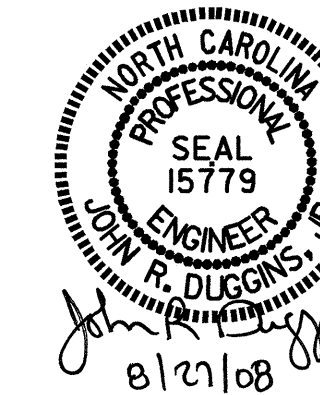
HP 14 x 73 GALVANIZED STEEL PILES  
NO. 19 950 LIN FT.

PROJECT NO. B-4033  
BUNCOMBE COUNTY  
STATION: 26+53.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
BENT No. 2  
STAGE II



DRAWN BY: M. POOLE DATE: 02-08  
CHECKED BY: J. R. DUGGINS DATE: 05/2008

REVISIONS						SHEET NO. S-42
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 50
2			4			

**NOTES**

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

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

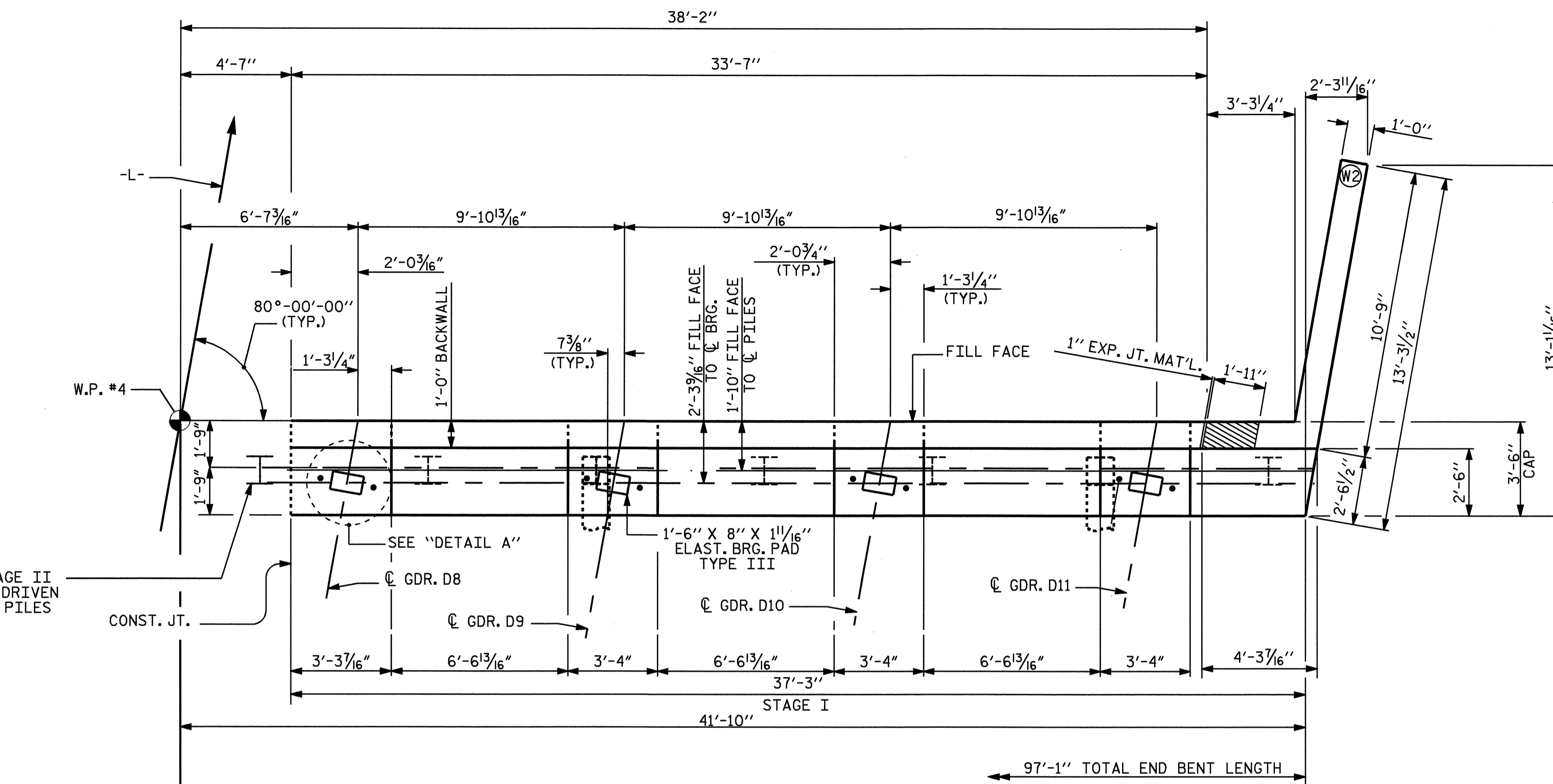
BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

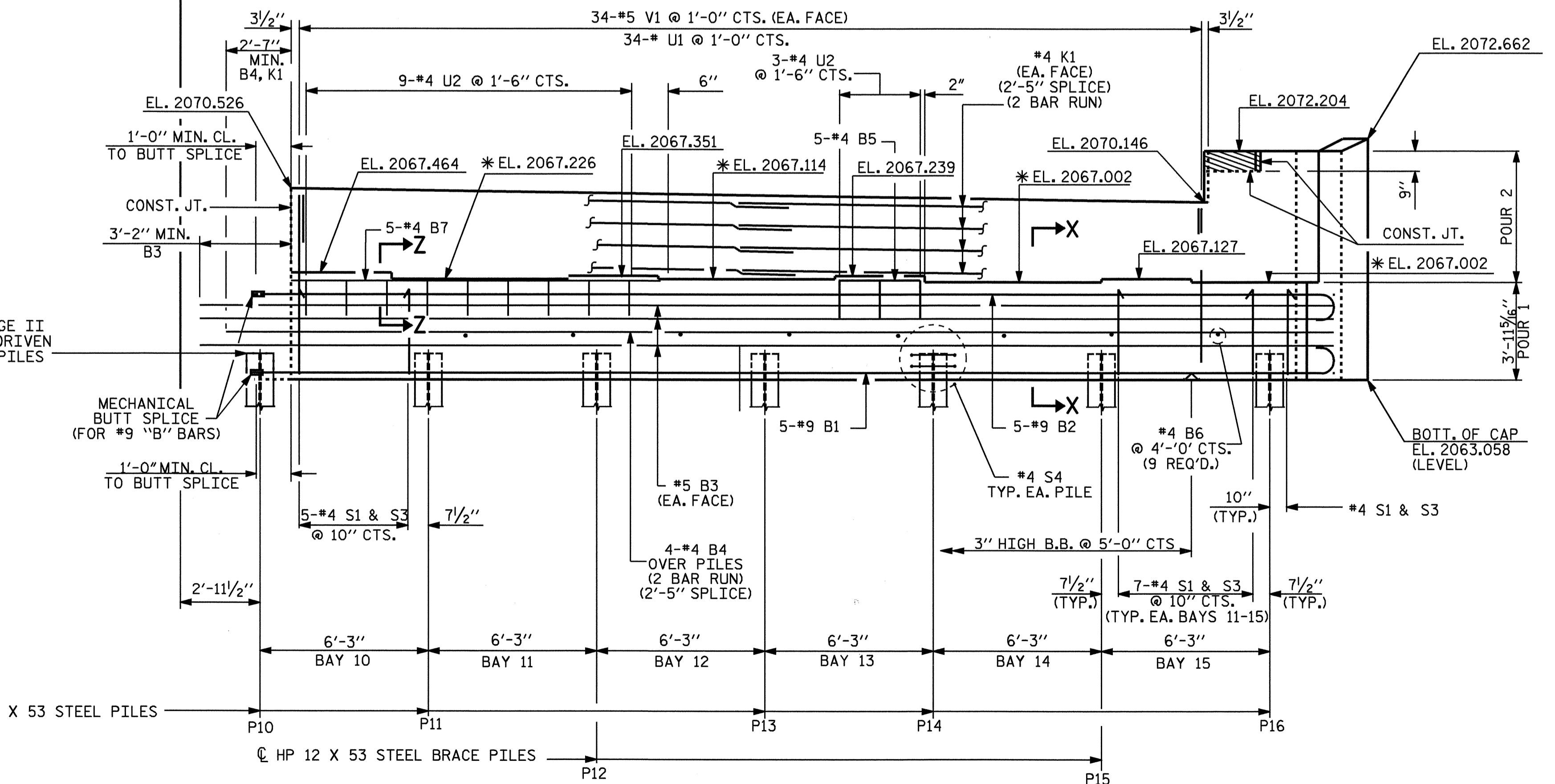
THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE PARAPET AND END POST ARE CAST IF SLIP FORMING IS USED.

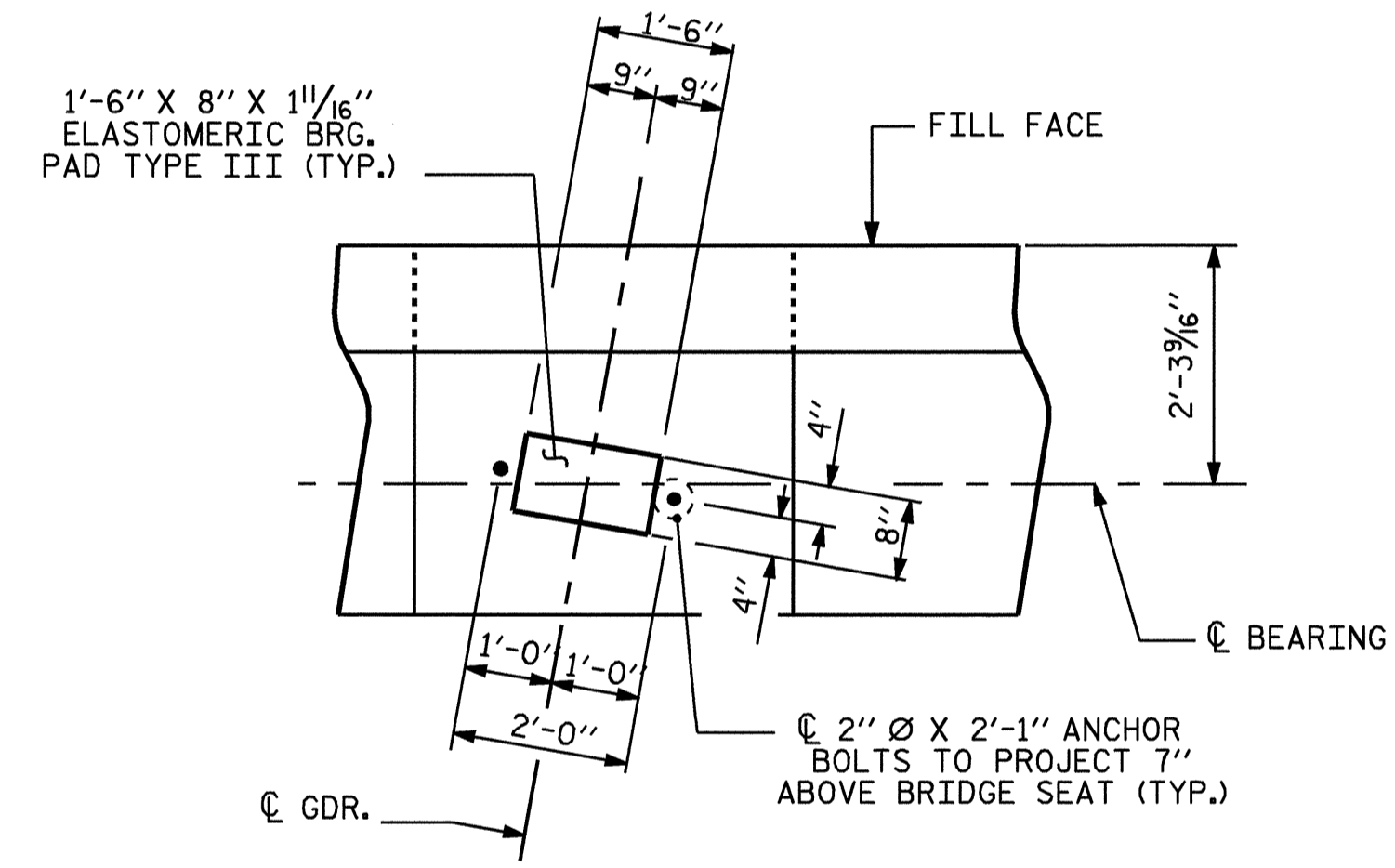
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.



**PLAN - STAGE I**



**ELEVATION - STAGE I**



**DETAIL A**

NOTE: THIS STAGE II PILE SHALL BE DRIVEN WITH STAGE I PILES

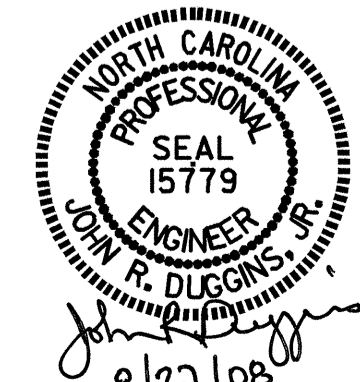
NOTE: THIS STAGE II PILE SHALL BE DRIVEN WITH STAGE I PILES

DRAWN BY: M. POOLE DATE: 04-08  
 CHECKED BY: J. R. DUGGINS DATE: 05-08

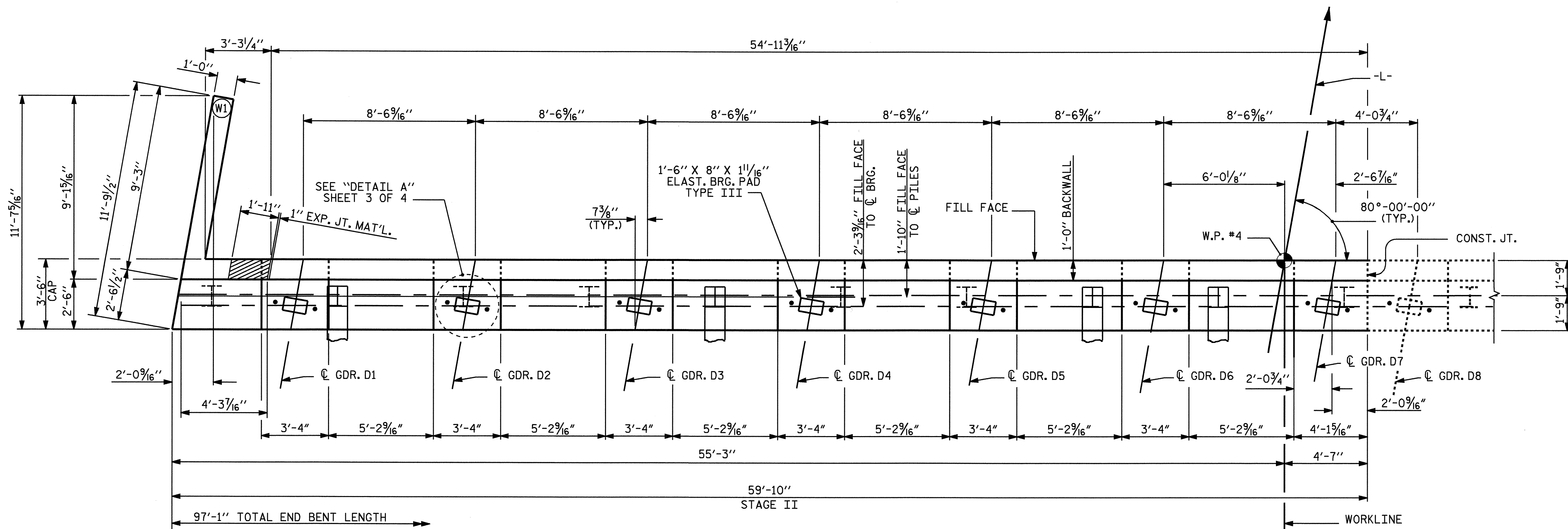
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 dahodge

PROJECT NO. B-4033  
 BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

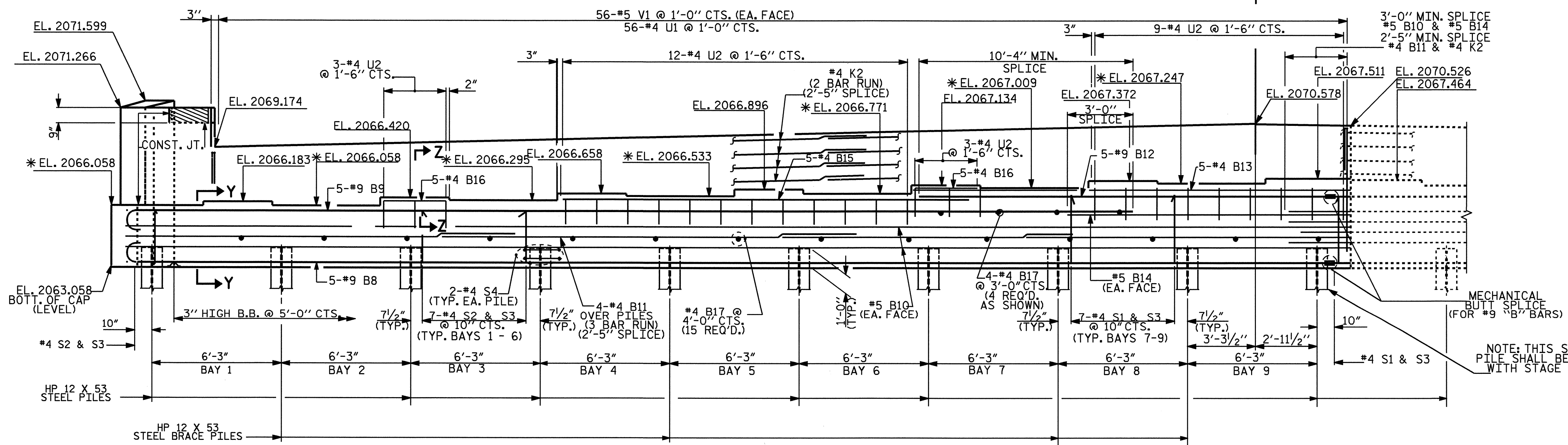
SHEET 1 OF 4



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT No. 2 STAGE I					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					50
					SHEET NO.
					S-43



PLAN - STAGE II



ELEVATION - STAGE II

PROJECT NO. B-4033  
 BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

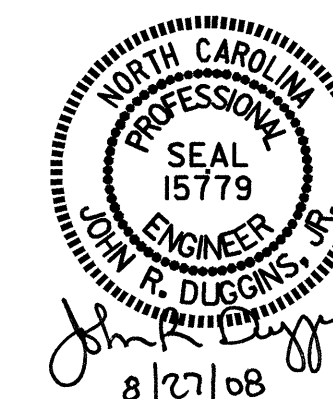
SHEET 2 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

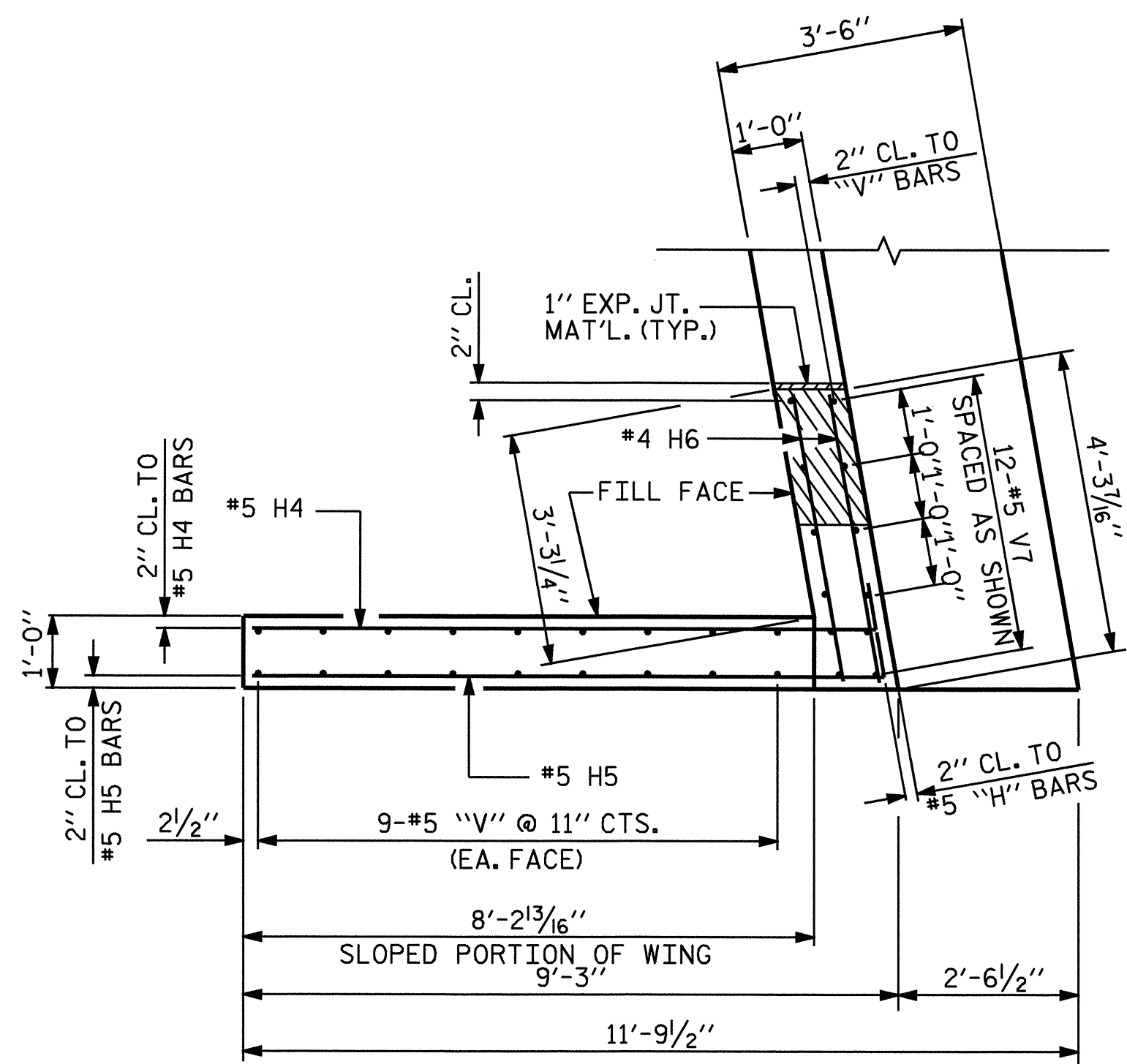
SUBSTRUCTURE  
 END BENT No. 2  
 STAGE II

DRAWN BY: M. POOLE DATE: 04-08  
 CHECKED BY: J. R. DUGGINS DATE: 05-08

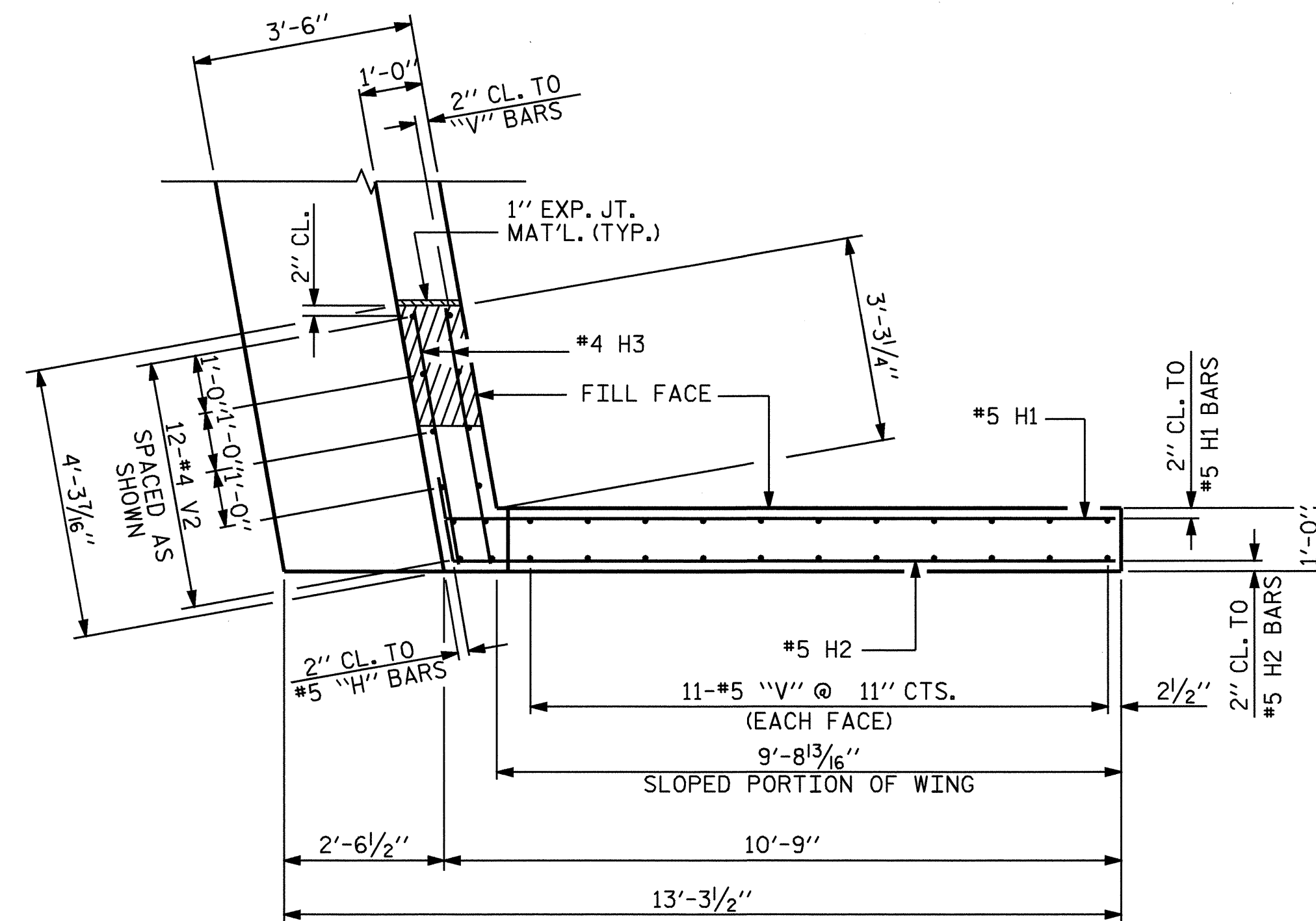
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 dahodge



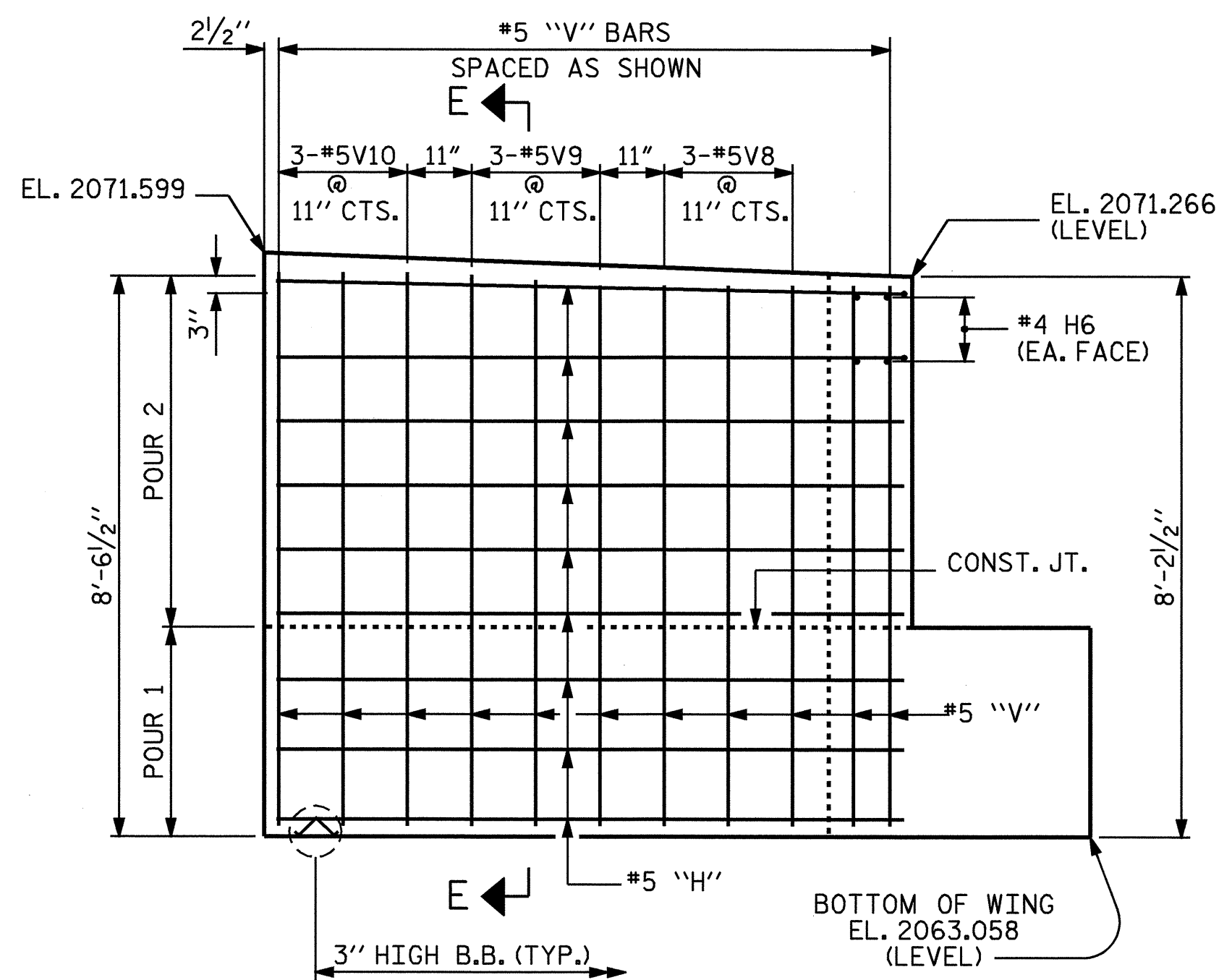
REVISIONS						SHEET NO. S-44
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 50
2			4			



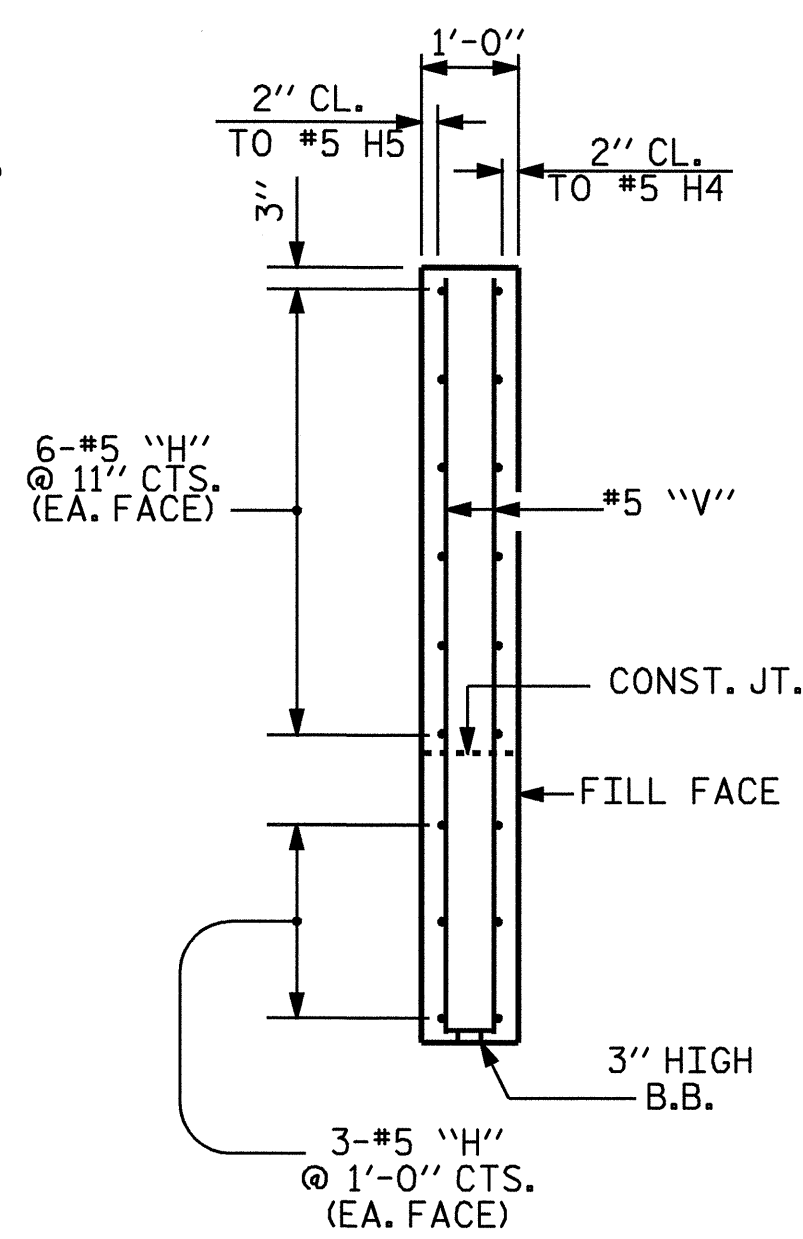
PLAN OF LEFT WING - W1  
STAGE II



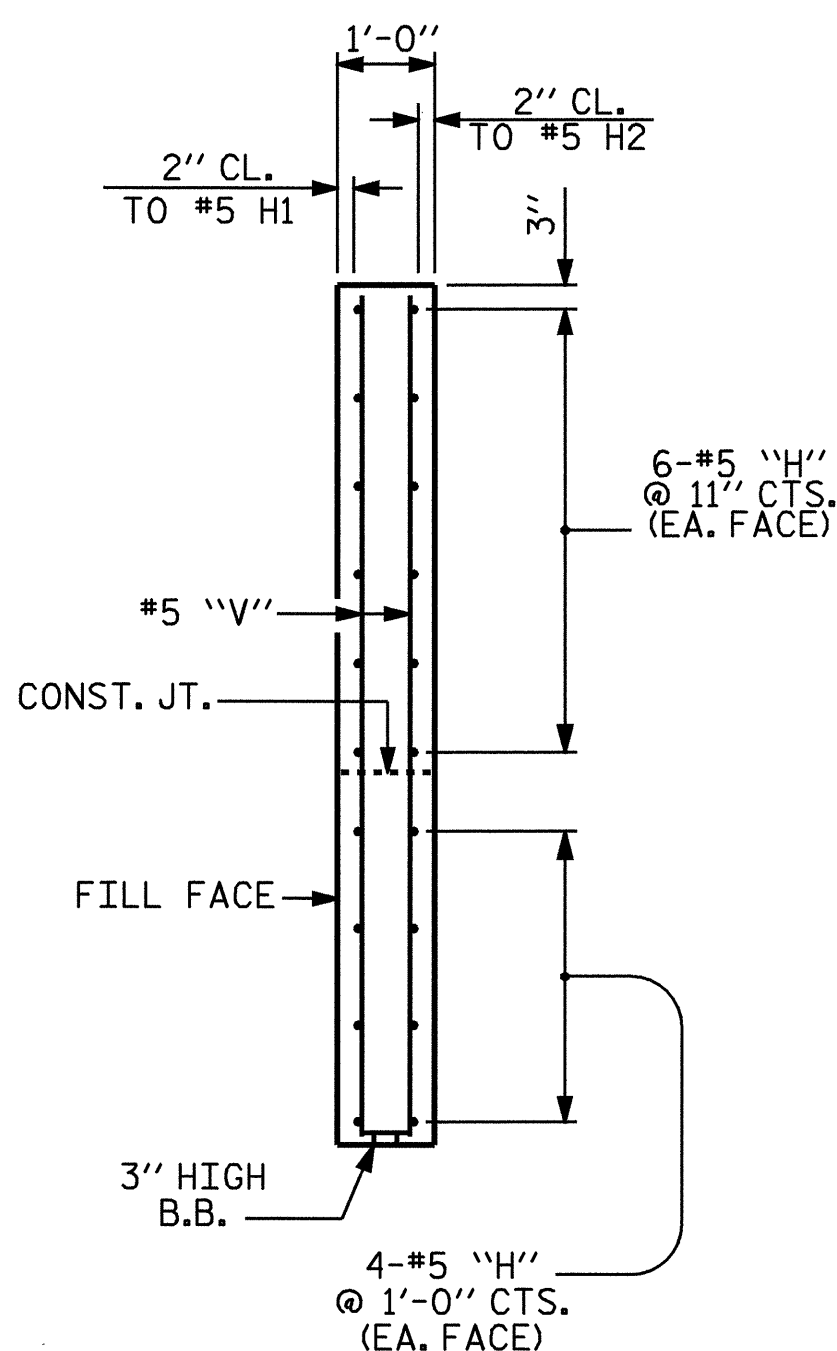
PLAN OF RIGHT WING - W2  
STAGE I



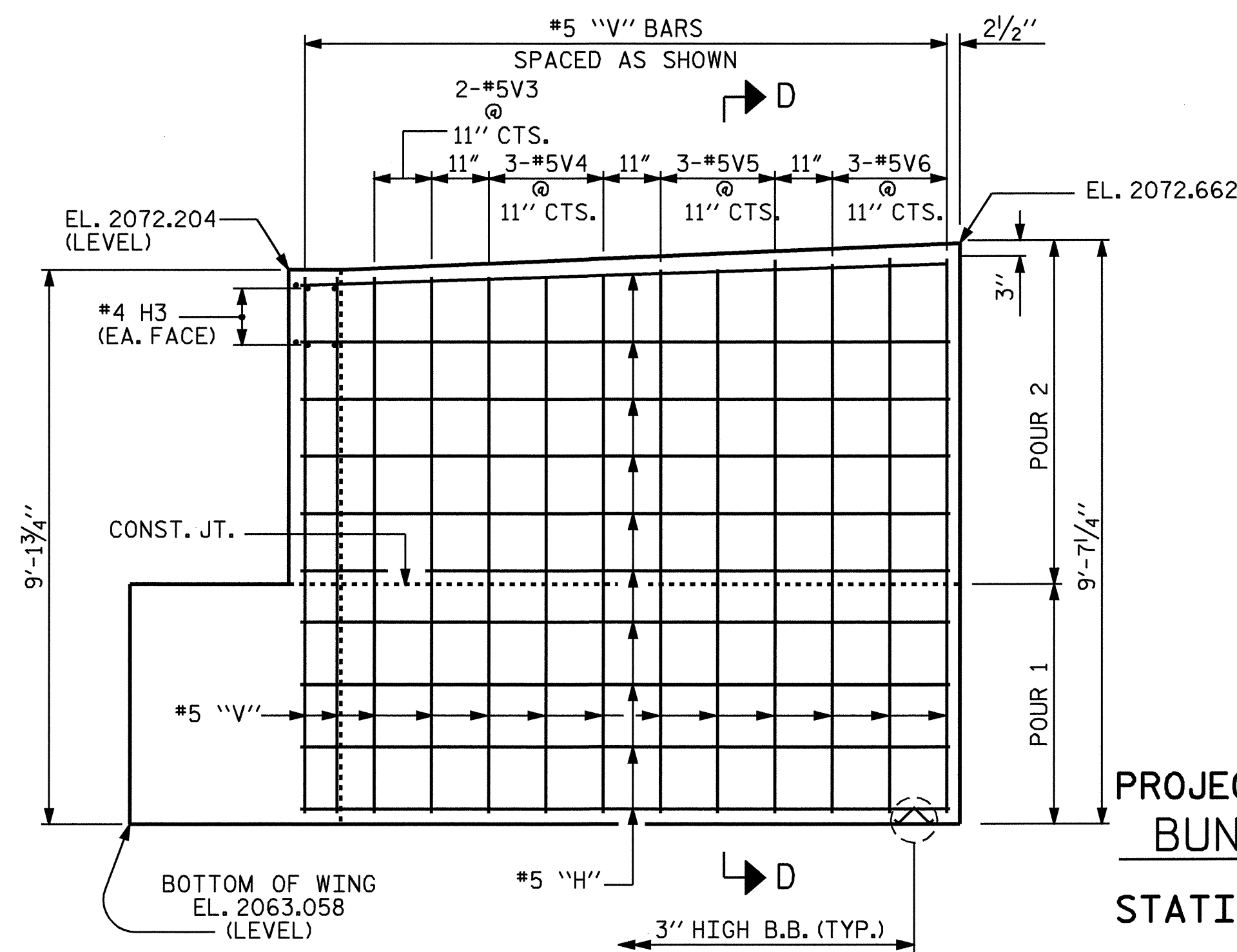
ELEVATION OF LEFT WING - W1  
STAGE II



SECTION E-E  
STAGE II



SECTION D-D  
STAGE I



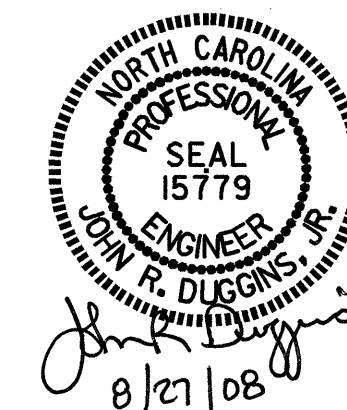
ELEVATION OF RIGHT WING - W2  
STAGE I

PROJECT NO. B-4033  
BUNCOMBE COUNTY  
STATION: 26+53.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

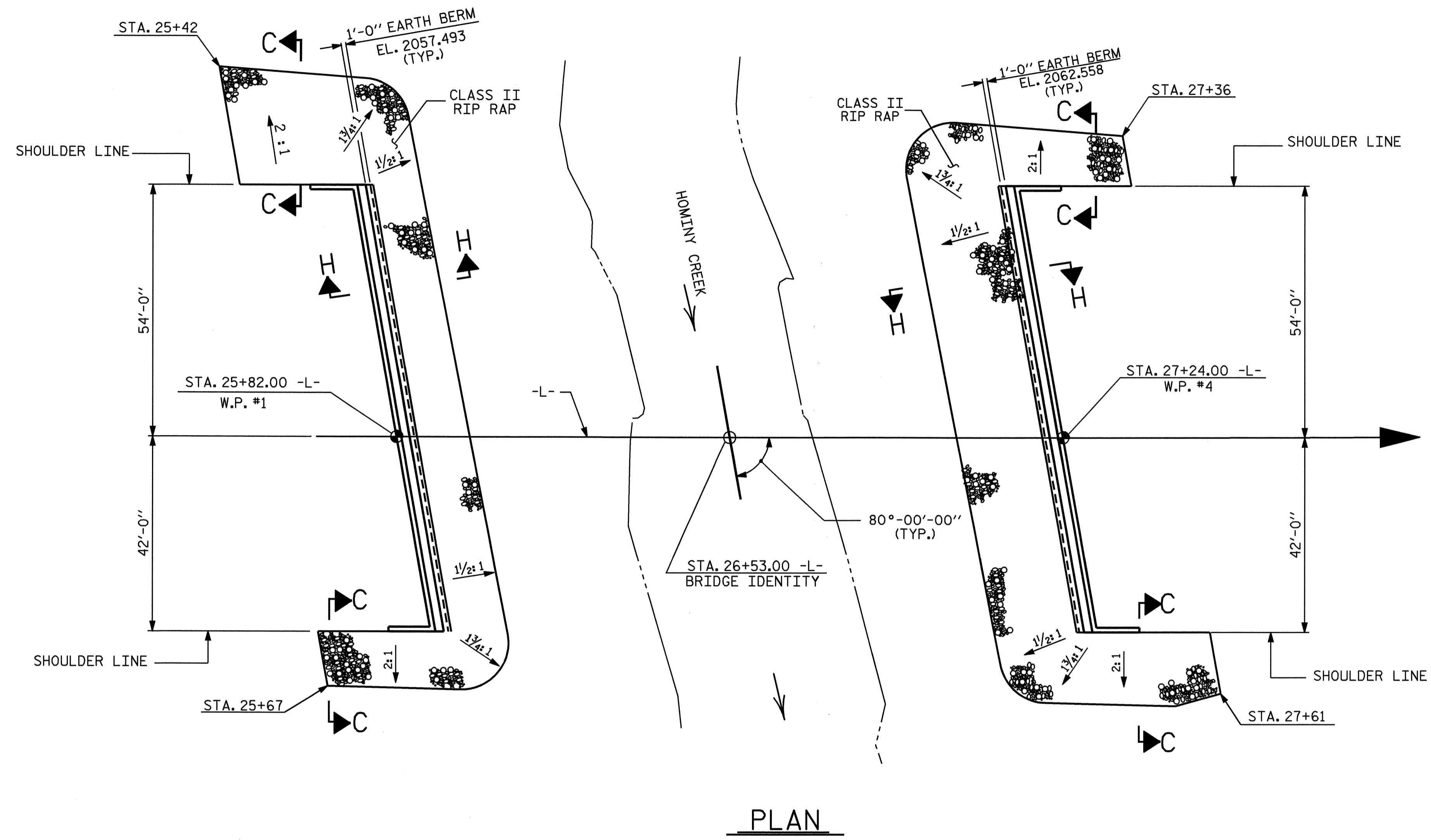
SUBSTRUCTURE  
END BENT No. 2



DRAWN BY: M. POOLE DATE: 04-08  
CHECKED BY: J. R. DUGGINS DATE: 05-08

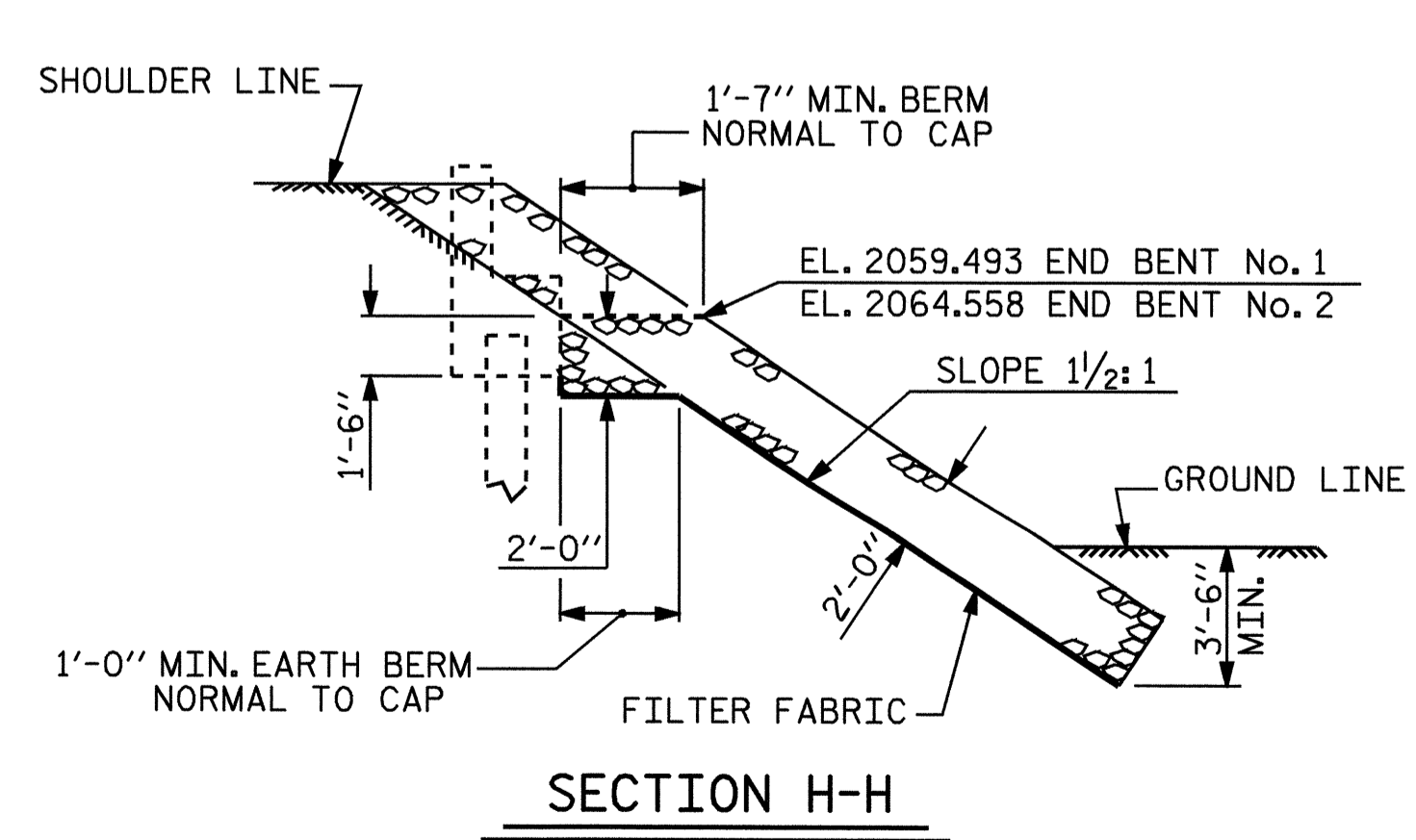
REVISIONS						SHEET NO. S-45
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 50
2			4			



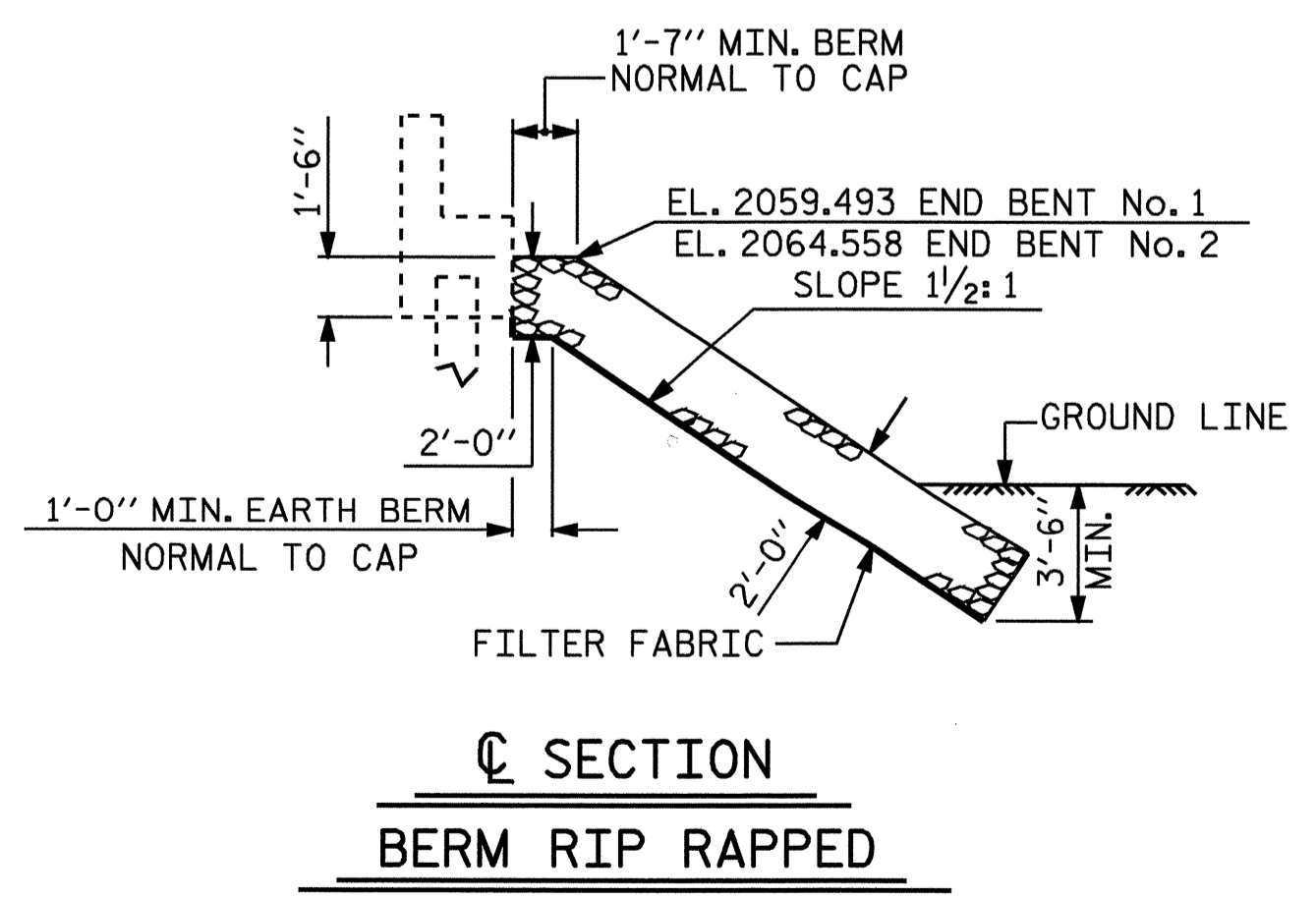


ESTIMATED QUANTITIES		
BRIDGE @ STA. 26+53.00 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT No. 1	360	400
END BENT No. 2	170	189

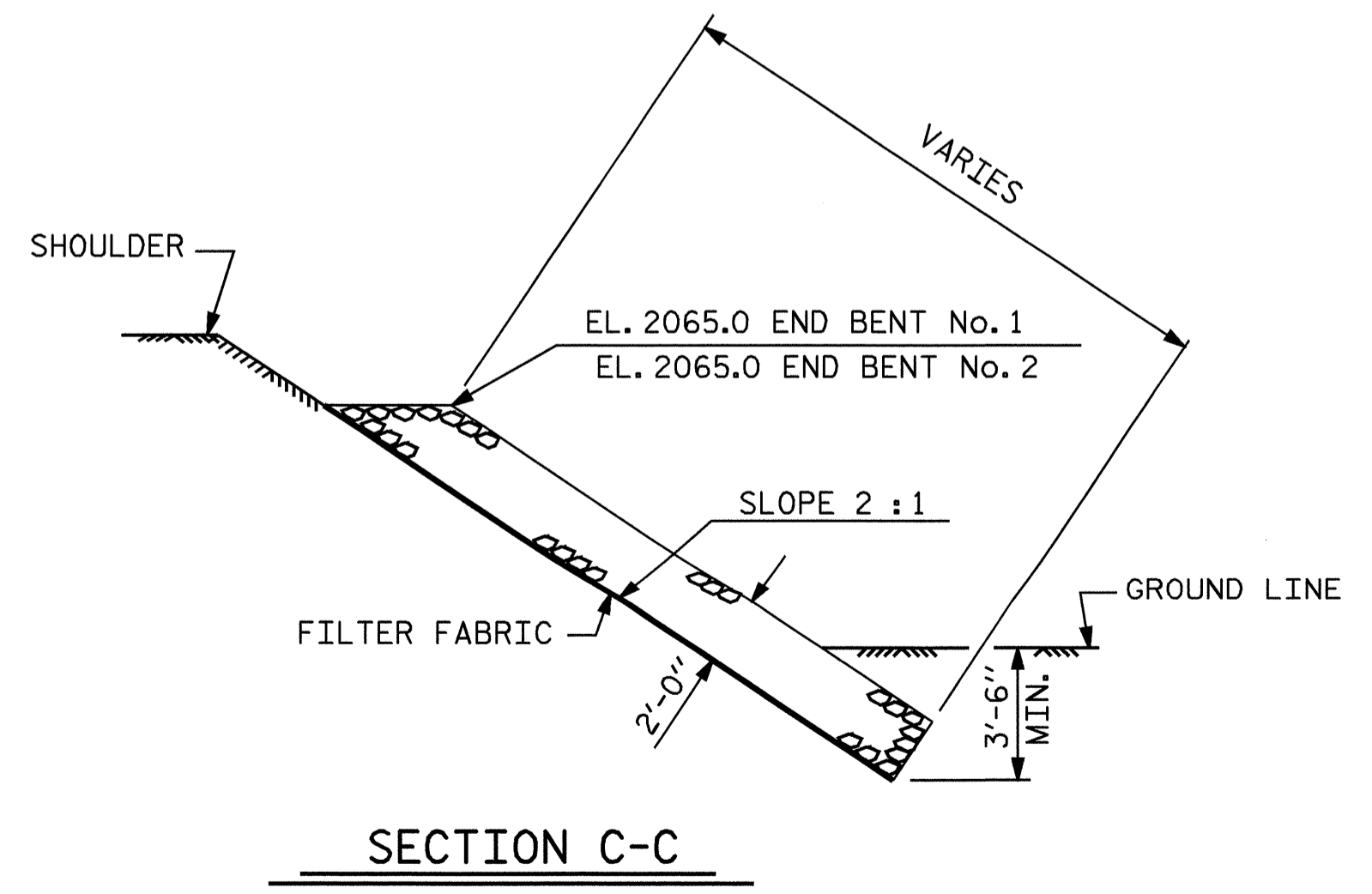
**PLAN**



**SECTION H-H**



**SECTION C-C  
BERM RIP RAPPED**



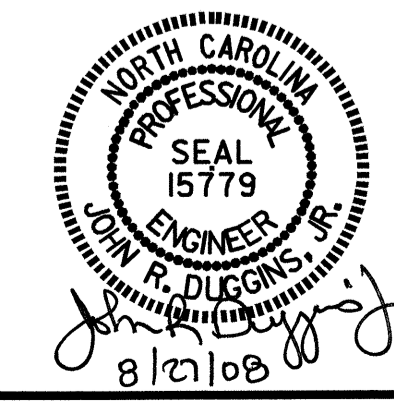
**SECTION C-C**

PROJECT NO. B-4033  
BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

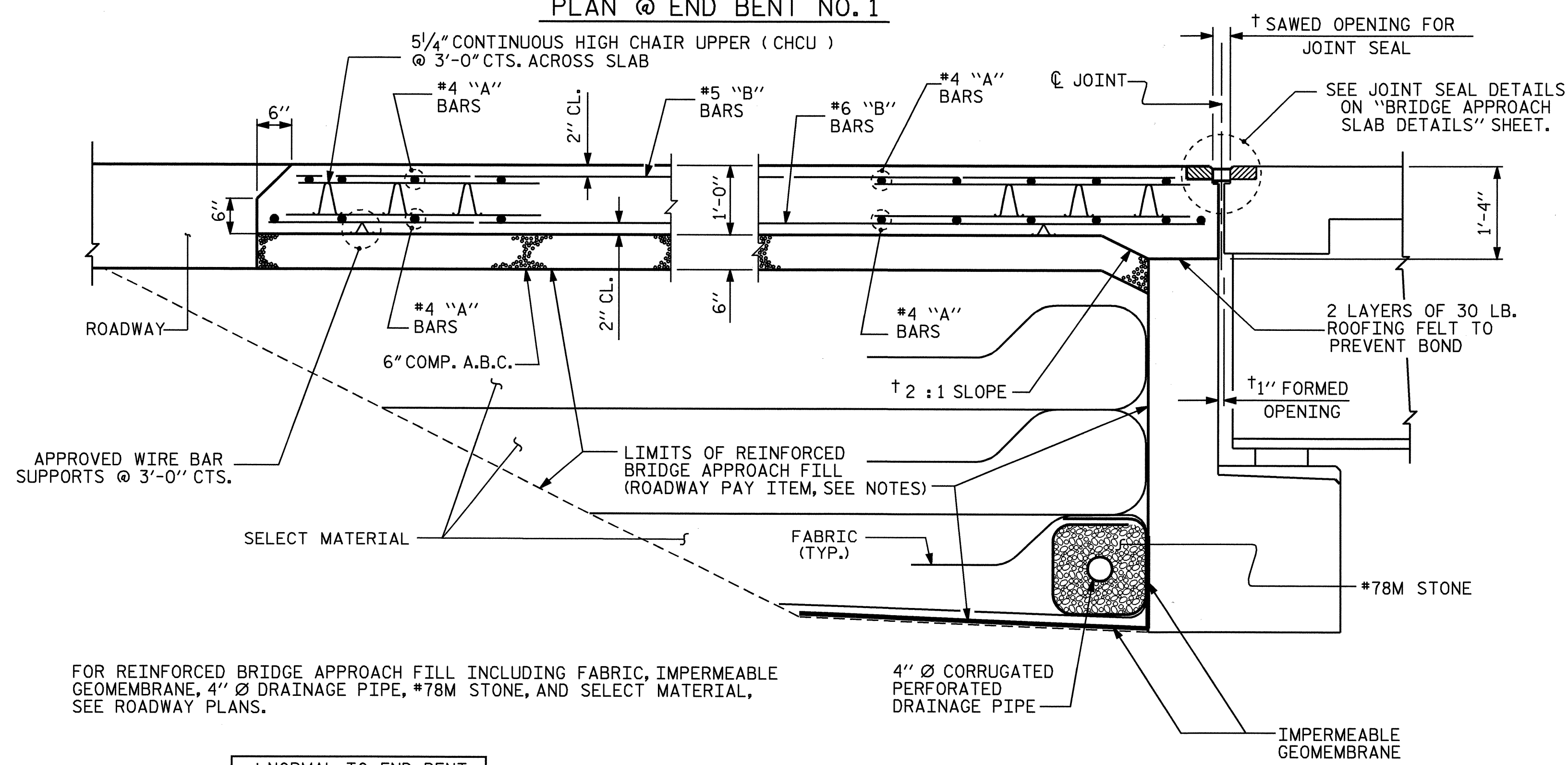
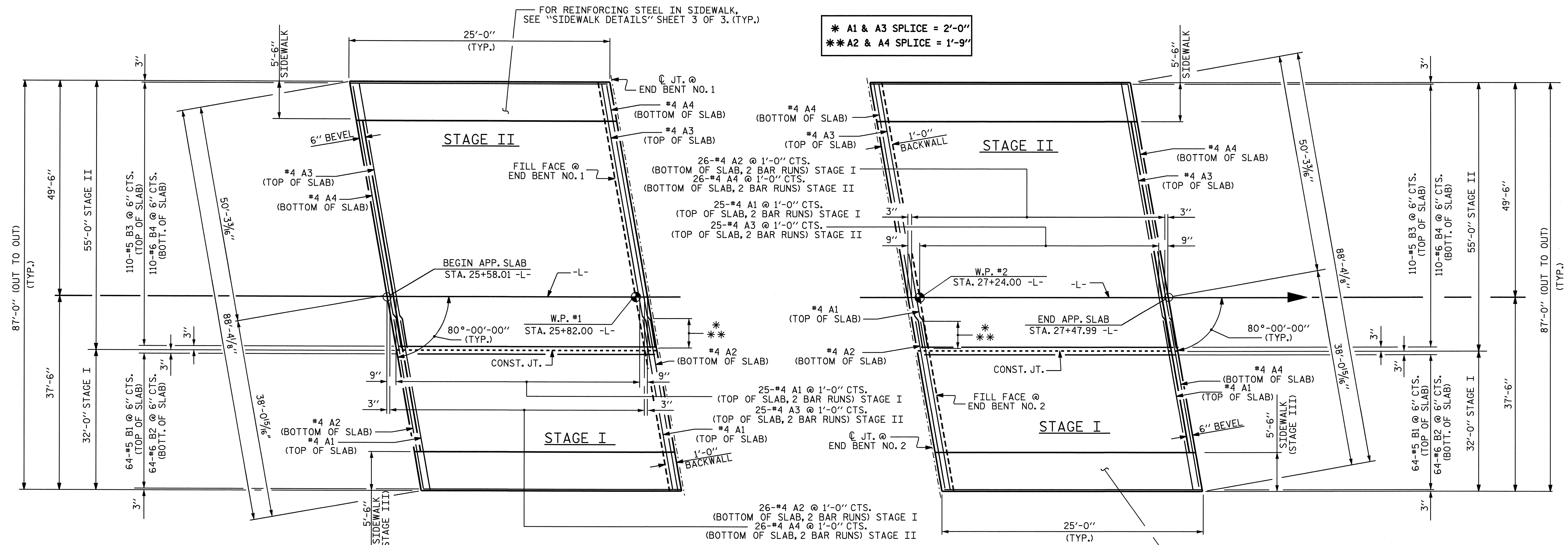
**== RIP RAP DETAILS ==**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-47
2			4			TOTAL SHEETS 50



DRAWN BY: M. POOLE DATE: 12/07  
 CHECKED BY: J. R. DUGGINS DATE: 05-08





SECTION THRU SLAB

ASSEMBLED BY : M. POOLE DATE : 12/07  
 CHECKED BY : J. R. DUGGINS DATE : 05-08  
 DRAWN BY : LES 8/01 REV. 5/7/03RR RWW/JTE  
 CHECKED BY : RDR 8/01

PROJECT NO. B-4033  
 BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

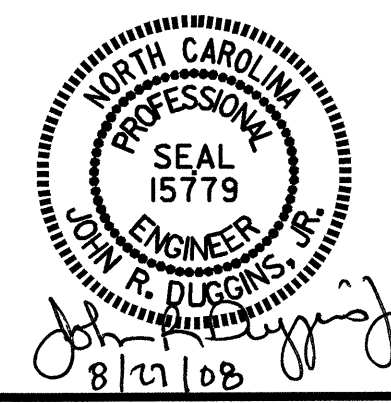
SHEET 1 OF 3

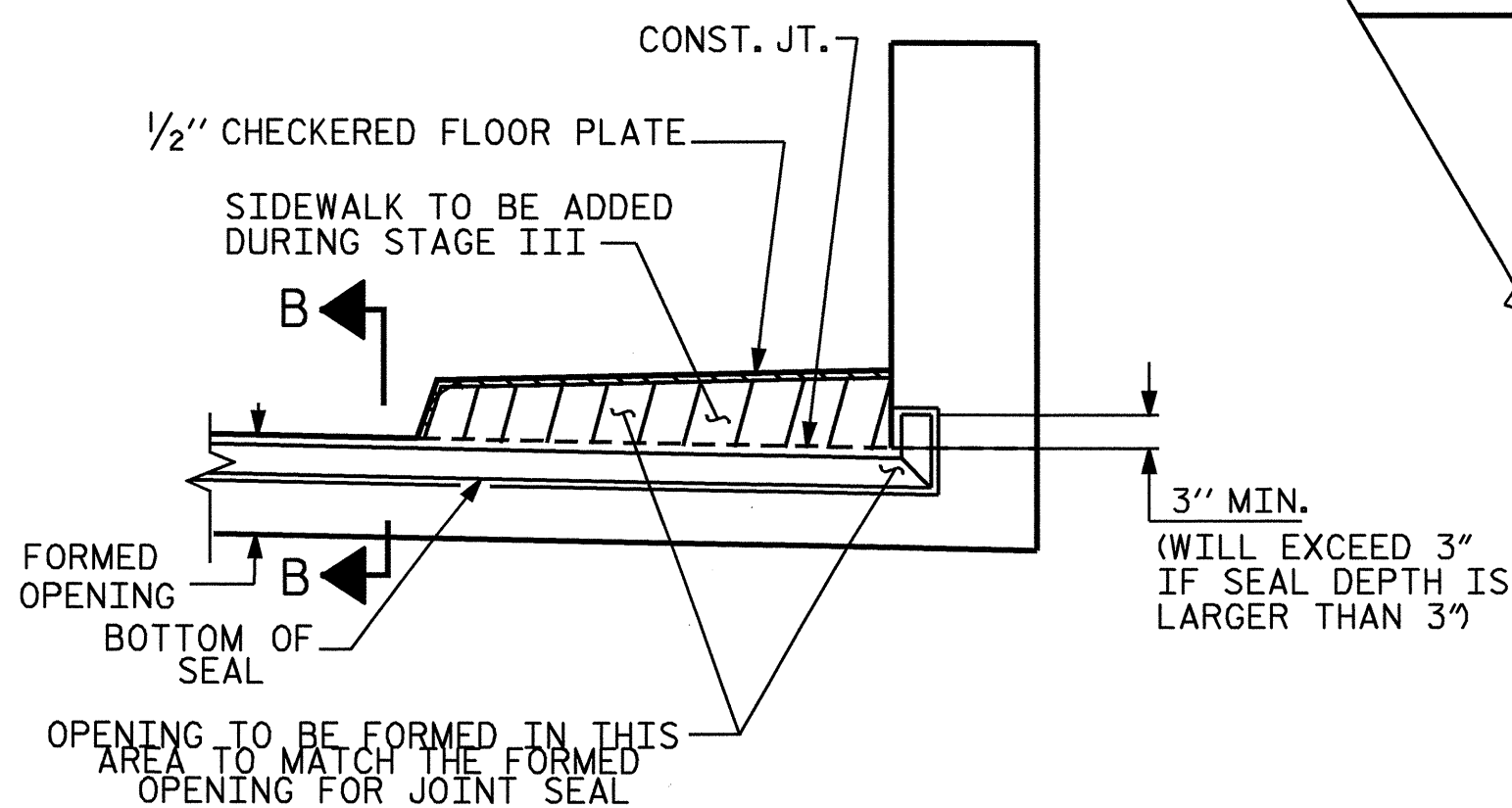
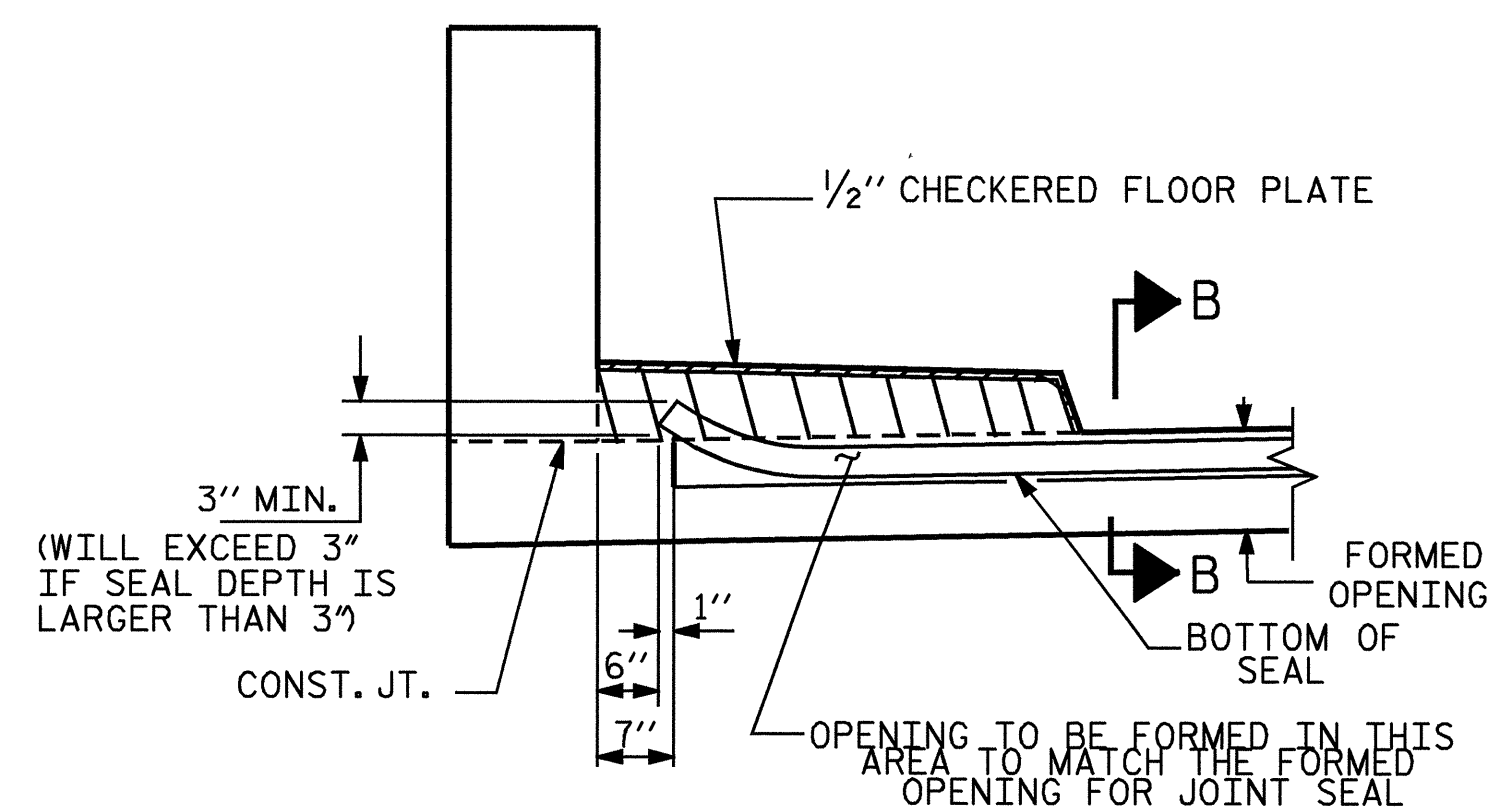
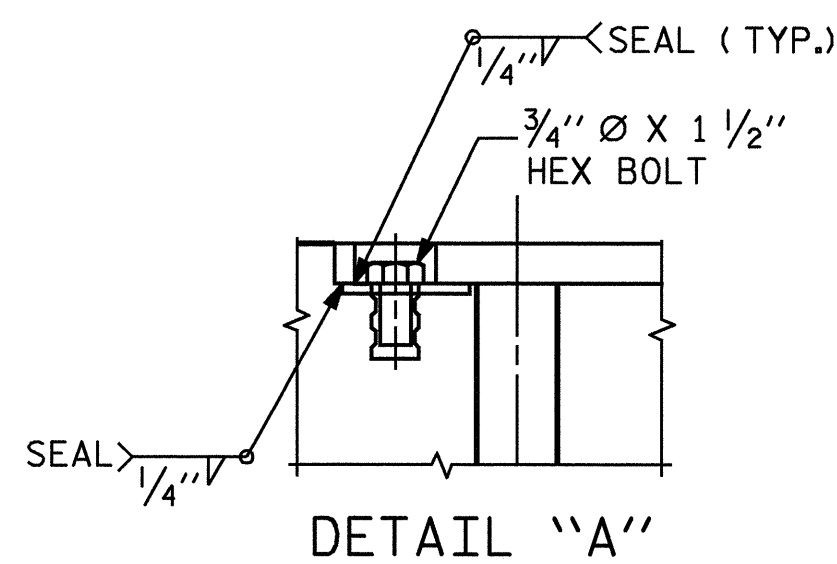
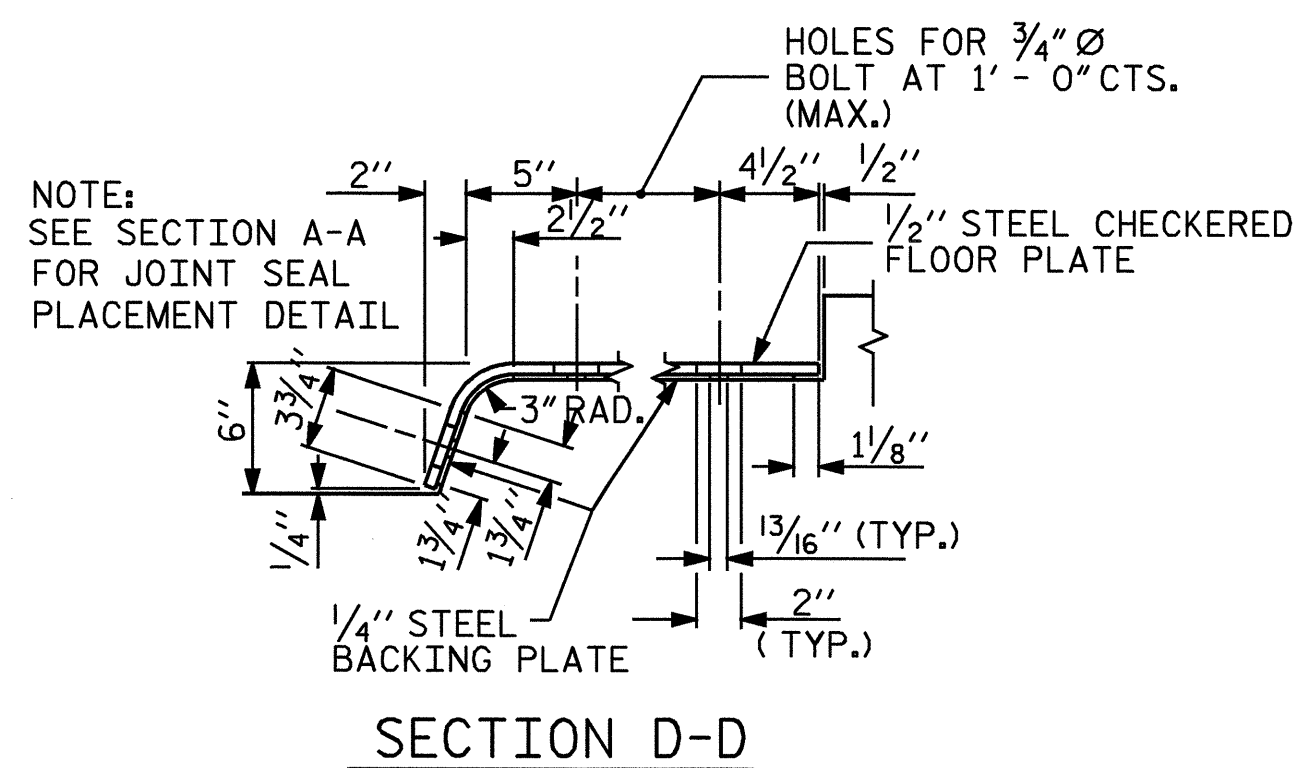
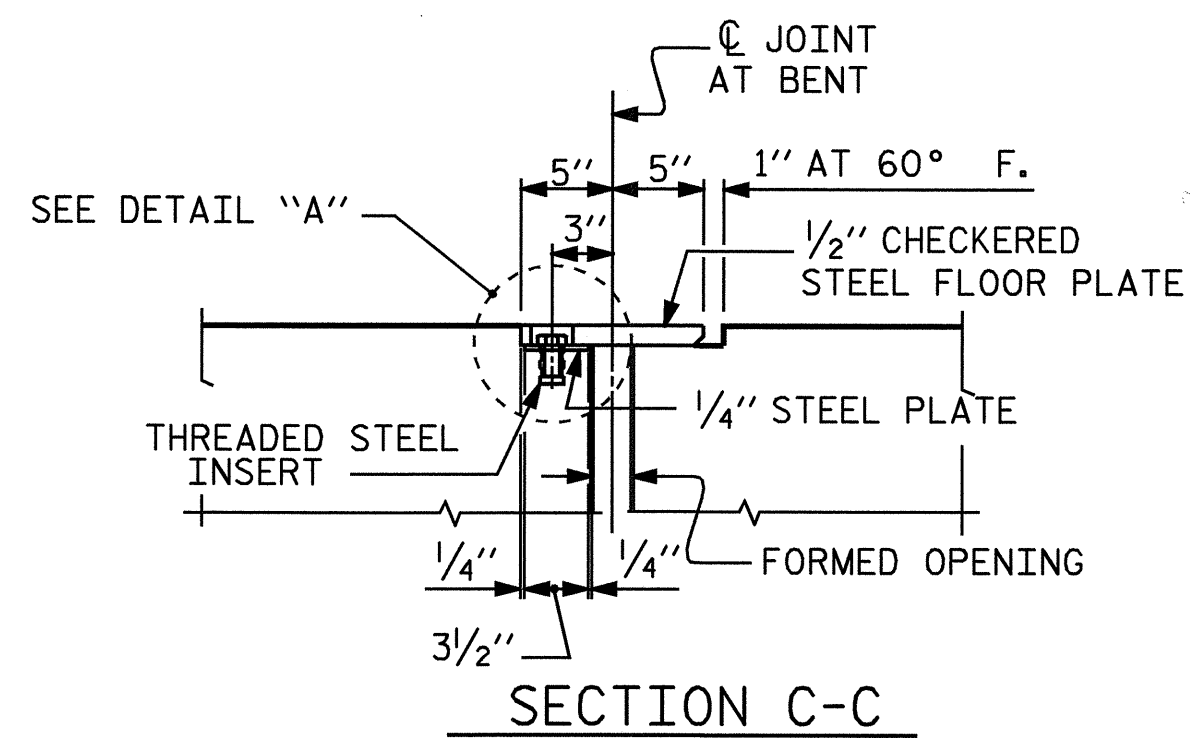
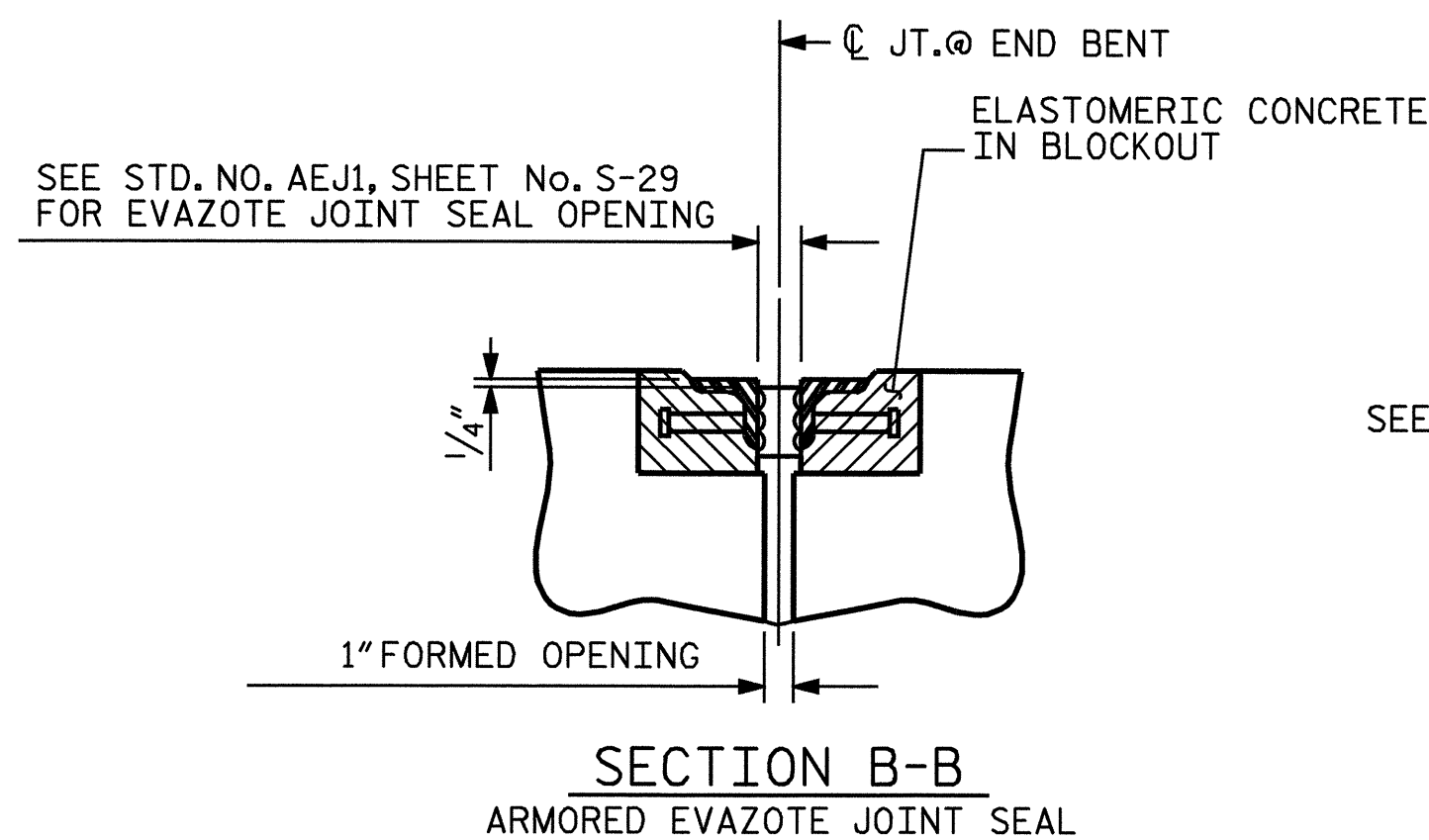
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT WITH SIDEWALK

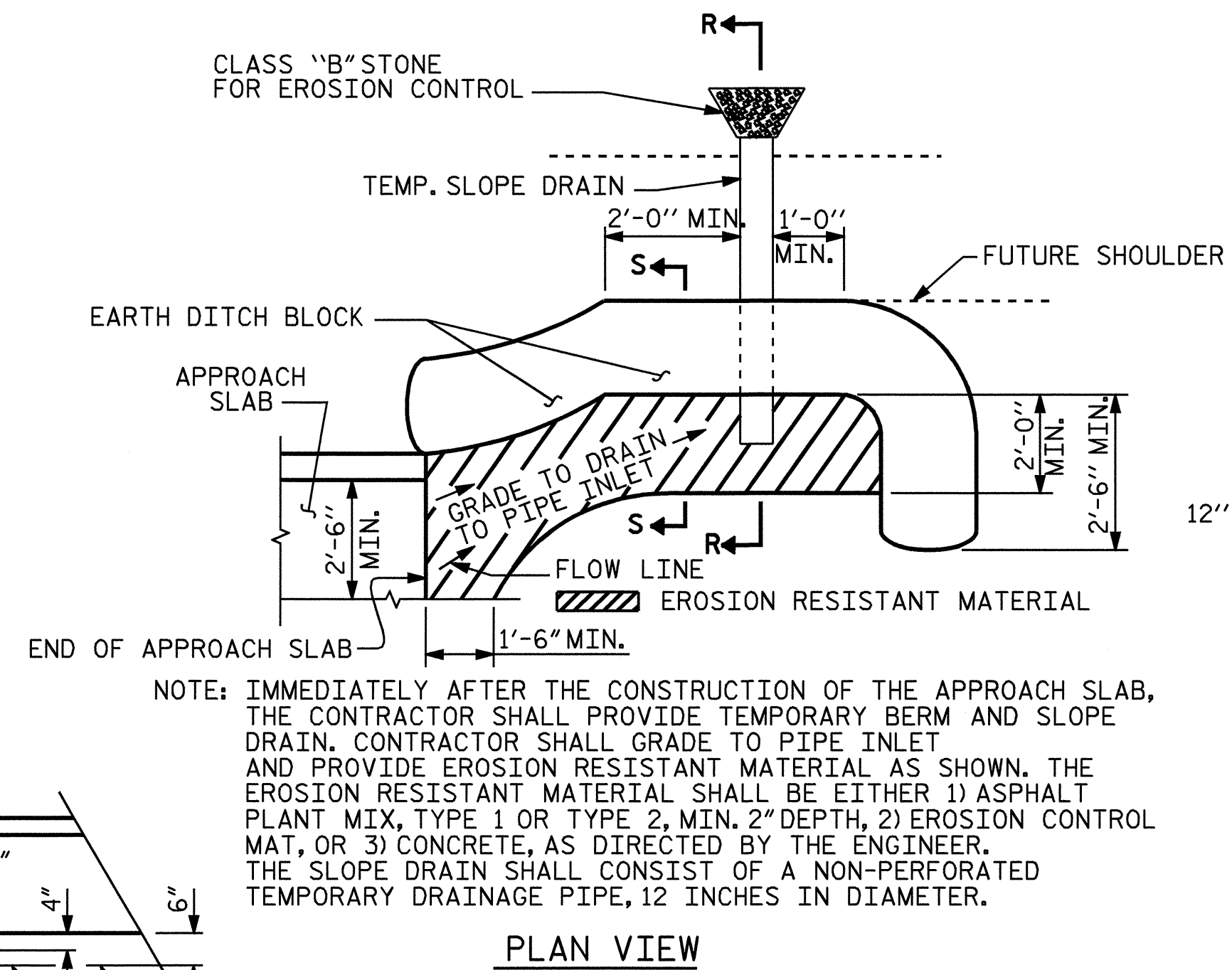
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SHEET NO. S-48  
 TOTAL SHEETS 50

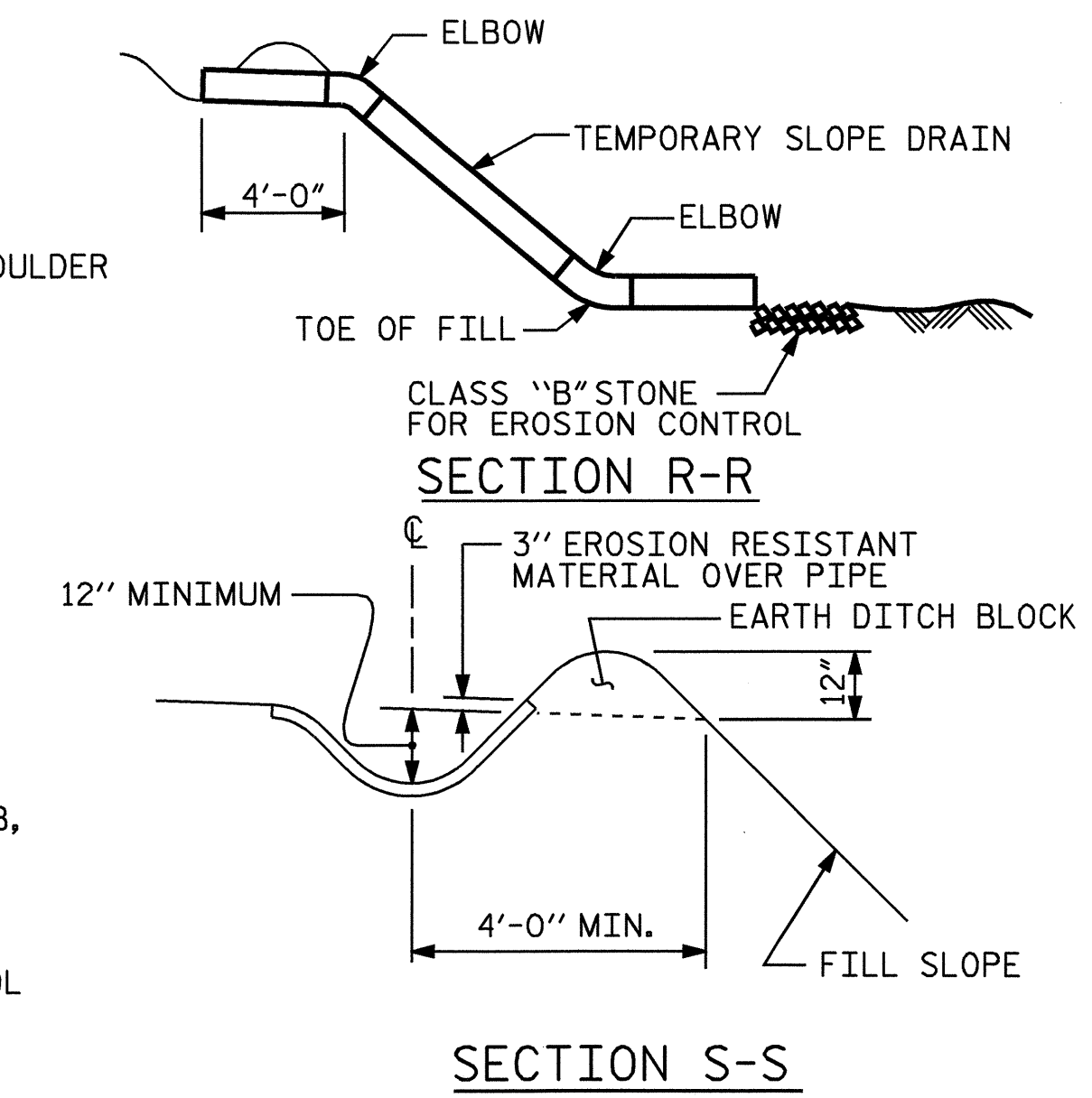




**SIDEWALK WITH EVAZOTE JOINT SEAL**

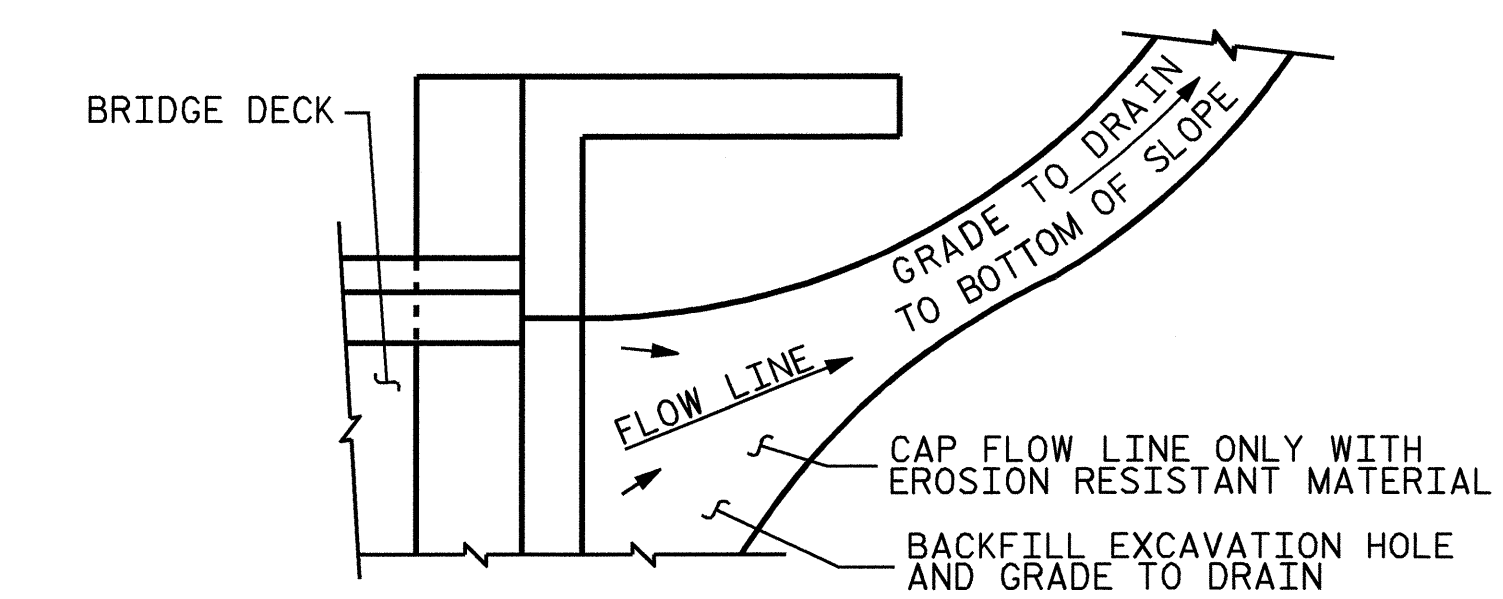
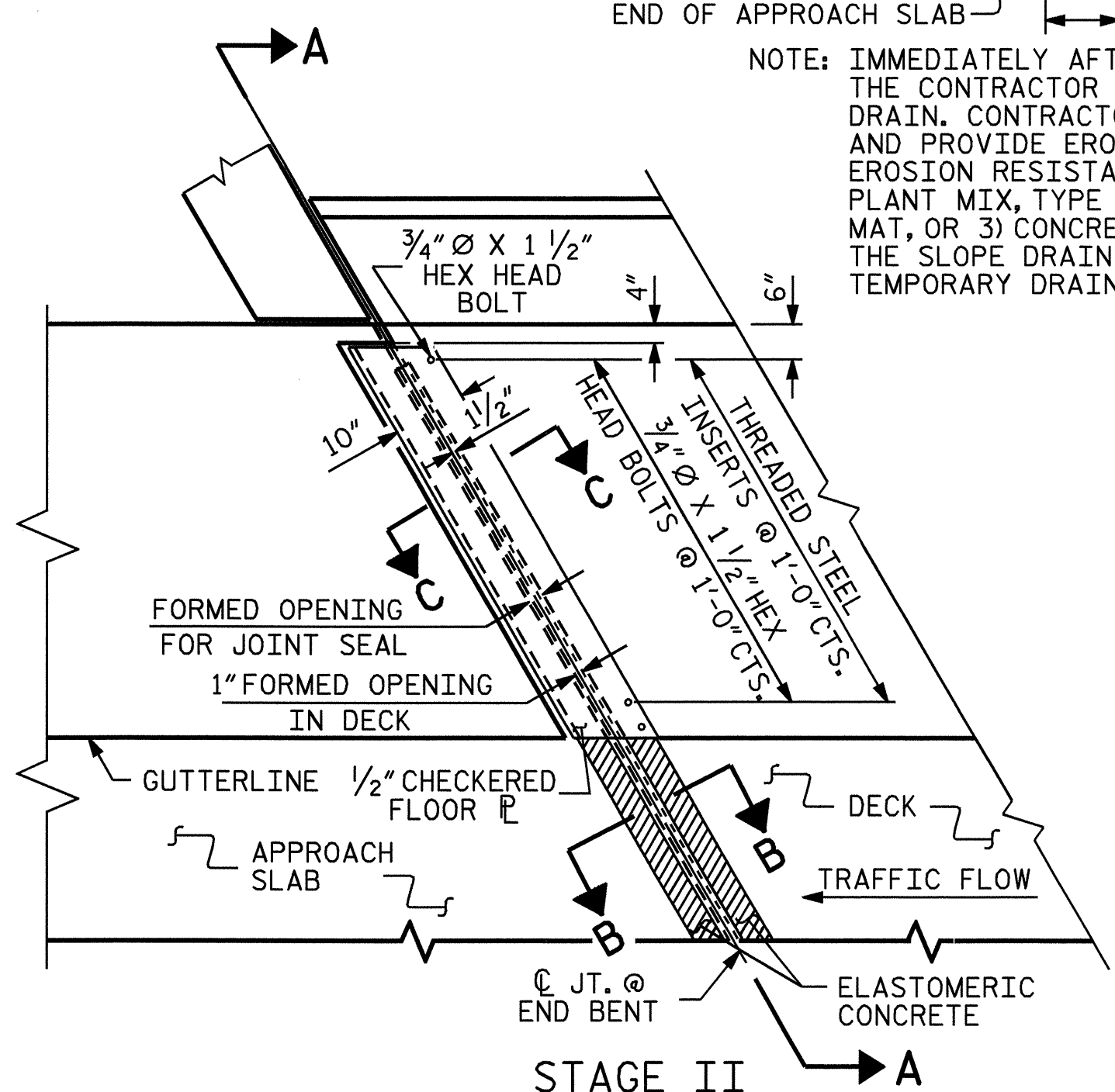


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

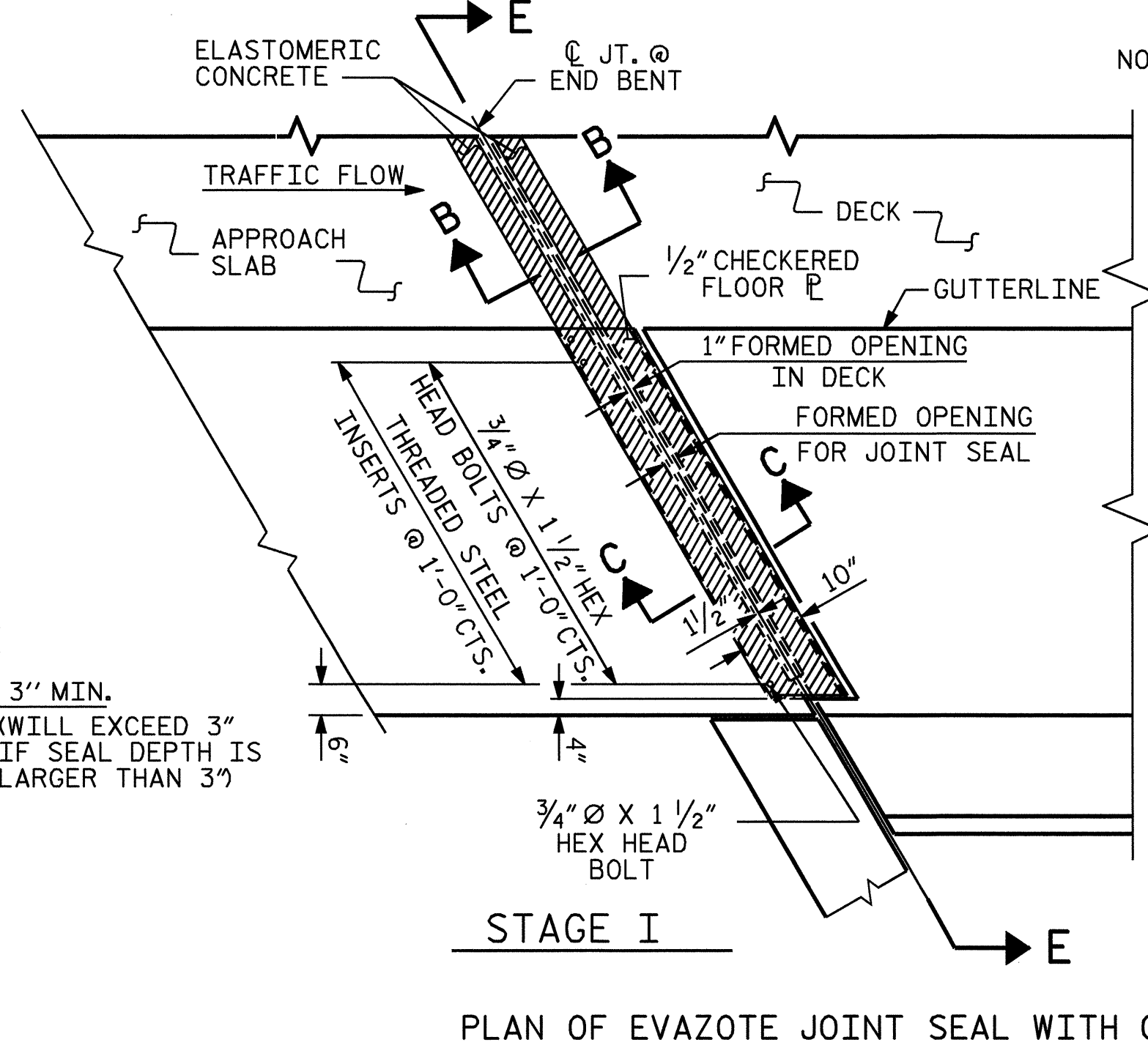


**TEMPORARY BERM AND SLOPE DRAIN DETAILS**

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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



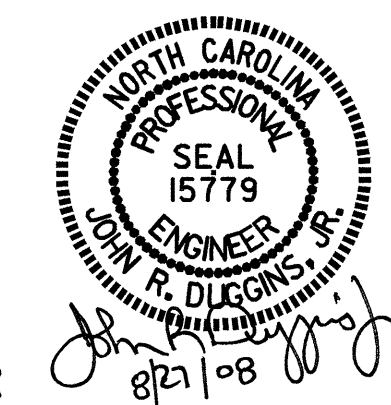
PLAN OF EVAZOTE JOINT SEAL WITH COVER  
END BENT NO. 1 SHOWN,  
END BENT NO. 2 SIMILAR

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**BRIDGE APPROACH SLAB DETAILS**

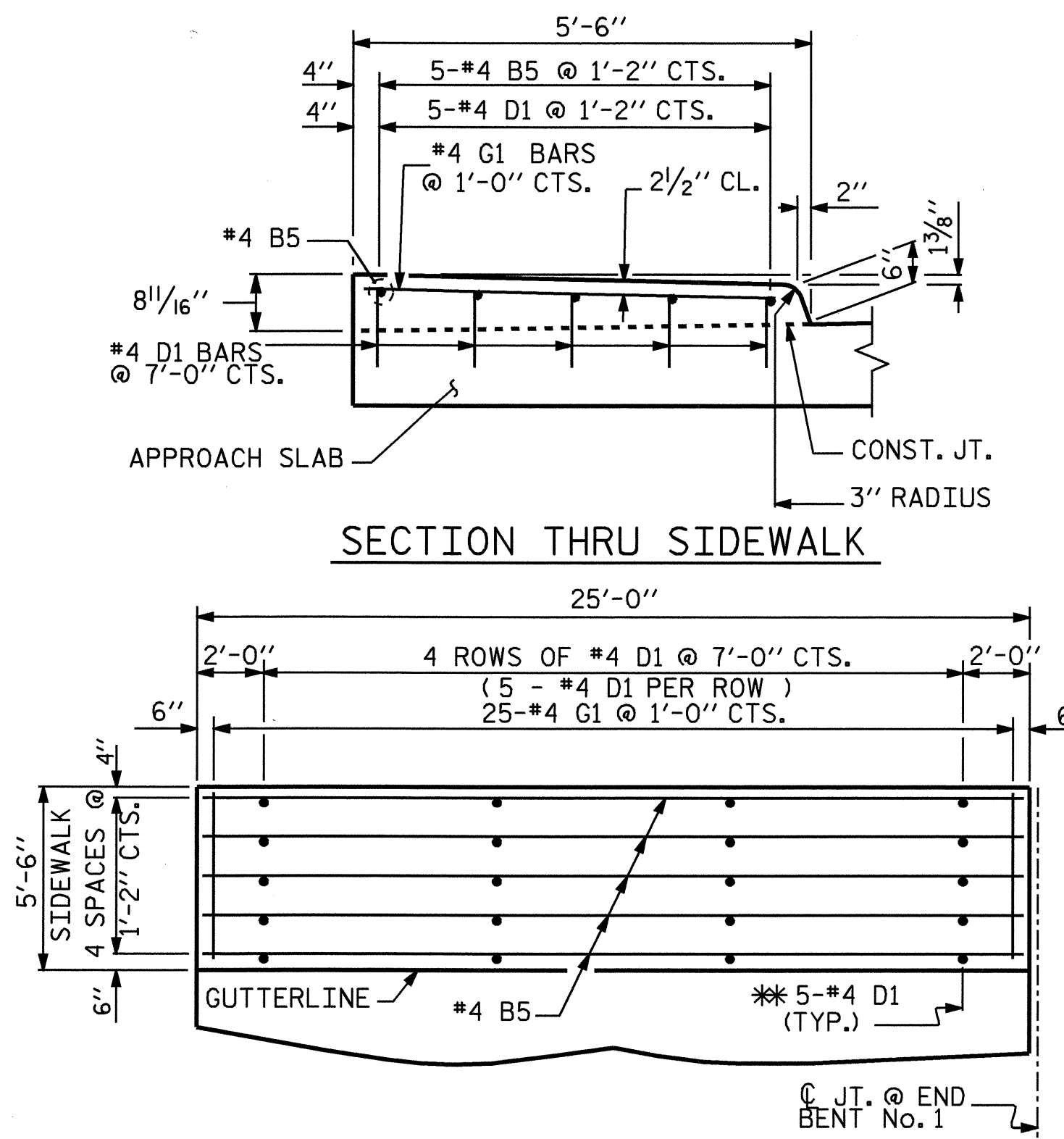


ASSEMBLED BY: M. POOLE	DATE: 12/07
CHECKED BY: J.R. DUGGINS	DATE: 05-08
DRAWN BY: FCJ	11/88
CHECKED BY: ARB	11/88
REV. 10/17/00	RWW/LES
REV. 5/7/03	RWW/JTE
REV. 5/1/06	TLA/GM

REVISIONS						SHEET NO. S-49
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			50

# BILL OF MATERIAL

APPROACH SLAB NO. 1 STAGE I						APPROACH SLAB No. 1 STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	50	#4	STR	18'-3"	610	* A3	50	#4	STR	28'-10"	963
A2	52	#4	STR	18'-0"	625	A4	52	#4	STR	28'-8"	996
* B1	64	#5	STR	23'-9"	1585	* B3	110	#5	STR	23'-9"	2725
B2	64	#6	STR	24'-8"	2371	B4	110	#6	STR	24'-8"	4075
* B5	5	#4	STR	24'-8"	82	* B5	5	#4	STR	24'-8"	82
* D1	20	#4	STR	1'-0"	13	* D1	20	#4	STR	1'-0"	13
* G1	25	#4	STR	5'-0"	84	* G1	25	#4	STR	5'-0"	84
REINFORCING STEEL					LBS. 2996	REINFORCING STEEL					LBS. 5071
* EPOXY COATED REINFORCING STEEL					LBS. 2374	* EPOXY COATED REINFORCING STEEL					LBS. 3867
CLASS AA CONCRETE						CLASS AA CONCRETE					
POUR 1 (SLAB)					29.9 C.Y.	POUR 1 (SLAB)					51.4 C.Y.
POUR 2 (SIDEWALK) (STAGE III)					3.1 C.Y.	POUR 2 (SIDEWALK)					3.1 C.Y.
TOTAL					33.0 C.Y.	TOTAL					54.5 C.Y.
APPROACH SLAB NO. 2 STAGE I						APPROACH SLAB No. 2 STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	50	#4	STR	18'-3"	610	* A3	50	#4	STR	28'-10"	963
A2	52	#4	STR	18'-0"	625	A4	52	#4	STR	28'-8"	996
* B1	64	#5	STR	23'-9"	1585	* B3	110	#5	STR	23'-9"	2725
B2	64	#6	STR	24'-8"	2371	B4	110	#6	STR	24'-8"	4075
* B5	5	#4	STR	24'-8"	82	* B5	5	#4	STR	24'-8"	82
* D1	20	#4	STR	1'-0"	13	* D1	20	#4	STR	1'-0"	13
* G1	25	#4	STR	5'-0"	84	* G1	25	#4	STR	5'-0"	84
REINFORCING STEEL					LBS. 2996	REINFORCING STEEL					LBS. 5071
* EPOXY COATED REINFORCING STEEL					LBS. 2374	* EPOXY COATED REINFORCING STEEL					LBS. 3867
CLASS AA CONCRETE						CLASS AA CONCRETE					
POUR 1 (SLAB)					29.9 C.Y.	POUR 1 (SLAB)					51.4 C.Y.
POUR 2 (SIDEWALK) (STAGE III)					3.1 C.Y.	POUR 2 (SIDEWALK)					3.1 C.Y.
TOTAL					33.0 C.Y.	TOTAL					54.5 C.Y.



## SIDEWALK DETAILS

### APPROACH SLAB No. 1

\*\* DOWELS ON STAGE II APPROACH SLAB SIDEWALK MAY BE PUSHED INTO GREEN CONCRETE AFTER THE SLAB IS CAST AND FINISHED, DOWELS ON THE STAGE I APPROACH SLAB SIDEWALK SHALL BE DRILLED AND ADHESIVELY ANCHORED PRIOR TO CASTING THE SIDEWALK DURING STAGE III CONSTRUCTION. NO FIELD TESTING IS REQUIRED.

## NOTES

APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

FOR REINFORCED BRIDGE APPROACH FILL INCLUDING FABRIC, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, AND SELECT MATERIAL, SEE ROADWAY PLANS.

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

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

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

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

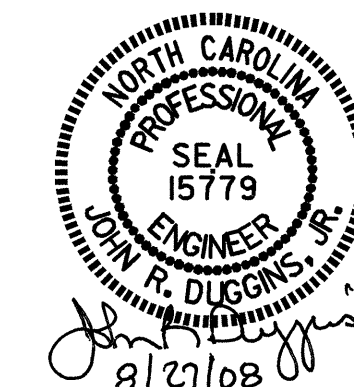
FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

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BUNCOMBE COUNTY  
 STATION: 26+53.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BRIDGE APPROACH SLAB



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-50
1			3			TOTAL SHEETS
2			4			50

DRAWN BY: M. POOLE DATE: 12-07  
 CHECKED BY: J.R. DUGGINS DATE: 05-08

## STANDARD NOTES

### DESIGN DATA:

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

### MATERIAL AND WORKMANSHIP:

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

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

### CONCRETE:

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

### CONCRETE CHAMFERS:

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

### DOWELS:

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

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

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

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

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

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

### REINFORCING STEEL:

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

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

### STRUCTURAL STEEL:

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

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

PLACEMENT OF BEAM OR GIRDER MEMBERS ON TRUCKS FOR HAULING SHALL BE DONE IN COMPLIANCE WITH LIMITS SHOWN ON SKETCHES PROVIDED TO THE MATERIALS AND TEST UNIT APPROVED BY THE STRUCTURE DESIGN UNIT DATED MAY 8, 1991.

THESE SKETCHES PRIMARILY LIMIT THE UNSUPPORTED CANTILEVER LENGTH OF MEMBERS. WHEN THE CONTRACTOR WISHES TO PLACE MEMBERS ON TRUCKS NOT IN ACCORDANCE WITH THESE LIMITS, TO SHIP BY RAIL, TO ATTACH SHIPPING RESTRAINTS TO THE MEMBERS OR TO INVERT MEMBERS, HE SHALL SUBMIT A SKETCH FOR APPROVAL PRIOR TO SHIPPING. SEE ALSO ARTICLE 1072-11.

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

### HANDRAILS AND POSTS:

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

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

### SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN