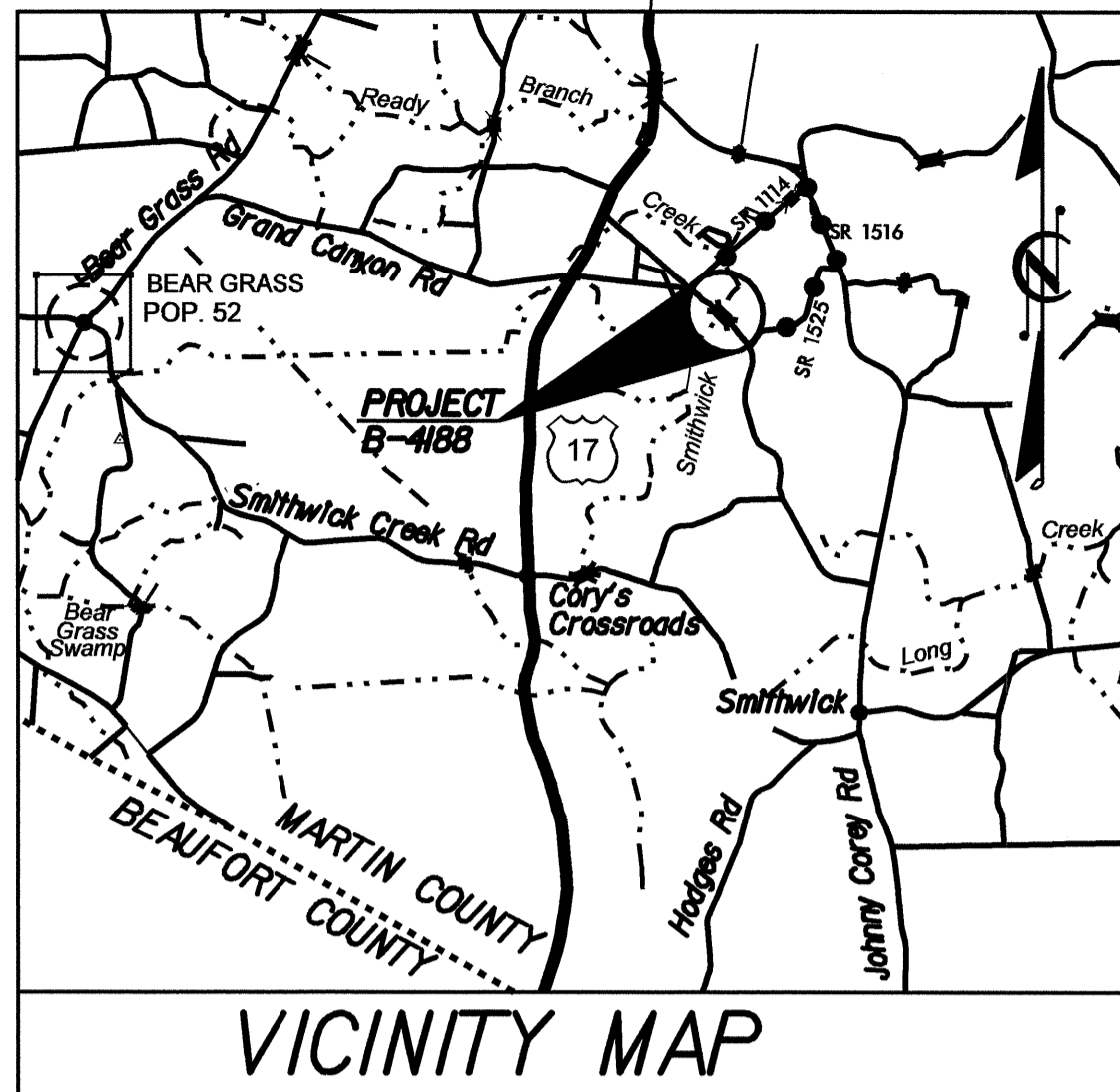


TIP PROJECT: B-4188

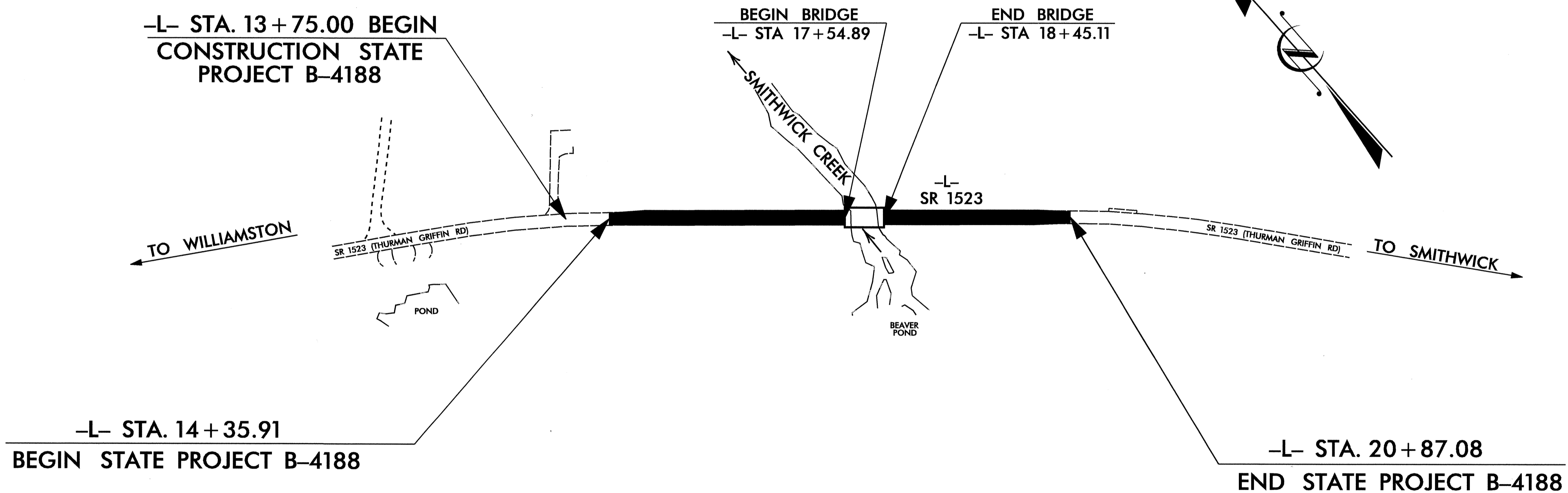
CONTRACT: C201501



VICINITY MAP

●●●● OFFSITE DETOUR

STRUCTURE

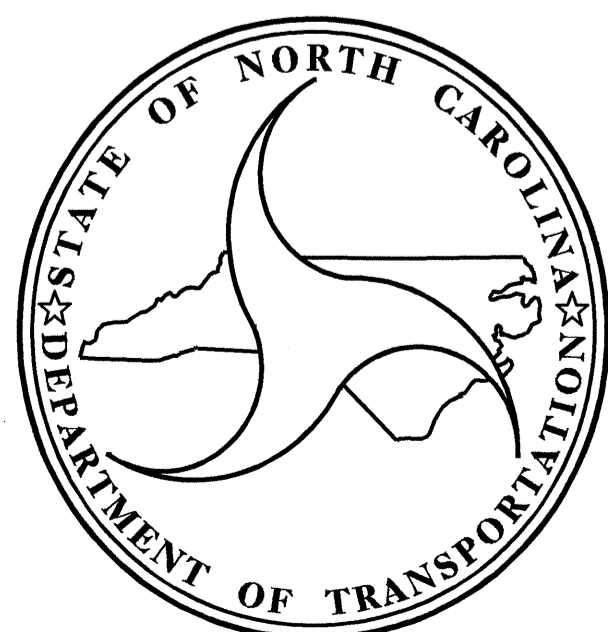


STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# MARTIN COUNTY

LOCATION: BRIDGE NO. 36 OVER SMITHWICK CREEK ON SR 1523  
TYPE OF WORK: GRADING, DRAINAGE, STRUCTURE AND PAVING

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4188		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33535.1.1	BRZ-1523(5)	P.E.	
33535.2.1	BRZ-1523(5)	R /W, UTILITIES	
33535.3.1	BRZ-1523(5)	CONST.	



**DESIGN DATA**

ADT 2005 =	552
ADT 2025 =	900
DHV =	10 %
D =	60 %
T =	4 % *
V =	60 MPH
* TTST 2	DUAL 2
FUNC. CLASS =	LOCAL

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT B-4188 =	0.106 mi.
LENGTH STRUCTURE TIP PROJECT B-4188 =	0.017 mi.
TOTAL LENGTH OF TIP PROJECT B-4188 =	0.123 mi.

Prepared In the Office of:

**DIVISION OF HIGHWAYS**

2006 STANDARD SPECIFICATIONS

LETTING DATE :  
AUGUST 15, 2006

OMAR R. AZIZI, P.E.  
PROJECT ENGINEER

E. E. MURRAY, P.E.  
PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT  
1000 BIRCH RIDGE DR.  
RALEIGH, N.C. 27610

*Gregory R. Perretti*  
7.7.06

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

\_\_\_\_\_  
P.E.

STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION

APPROVED  
DIVISION ADMINISTRATOR

\_\_\_\_\_  
DATE

**GRADE DATA**  
 (-) 2.9984% (+) 0.3129%  
 PI STA = 16+00.00  
 EL. = 25.13  
 VC = 280'

**FILL FACE @ END BENT #1**  
 STA 17+54.89 -L-  
 G.P. EL. = 25.615

**FILL FACE @ END BENT #2**  
 STA 18+45.11 -L-  
 G.P. EL. = 25.897

**BEGIN FRONT SLOPE**  
 STA. 17+47.79 -L-  
 G.P. EL. = 25.592

**BEGIN FRONT SLOPE**  
 STA. 18+52.30 -L-  
 G.P. EL. = 25.919

APPROXIMATE EXISTING GROUND LINE

EXIST. SUBSTRUCTURE TO BE REMOVED TO EL. 18.2±

NORMAL WATER SURFACE EL. 17.5

EXIST. SUBSTRUCTURE TO BE REMOVED TO EL. 19.5±

PLAIN RIP RAP (CLASS II) SLOPE 1 1/2:1 NORMAL TO CAP (TYP.)

HP 12 X 53 STEEL PILES (TYP.)

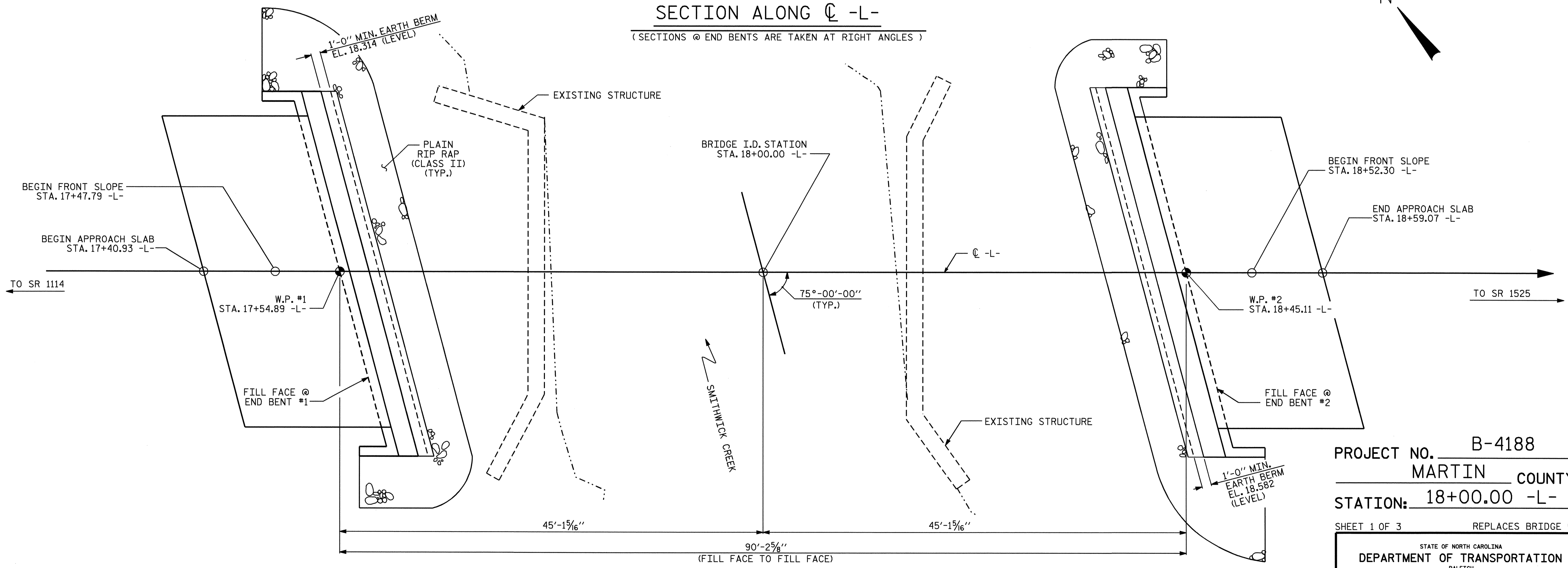
APPROX. NATURAL GROUND LINE

**END BENT #1**

**END BENT #2**

**SECTION ALONG C-L-**

(SECTIONS @ END BENTS ARE TAKEN AT RIGHT ANGLES)



**PLAN**  
 (PILES NOT SHOWN FOR CLARITY)

PROJECT NO. B-4188  
MARTIN COUNTY  
 STATION: 18+00.00 -L-

SHEET 1 OF 3 REPLACES BRIDGE #36

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

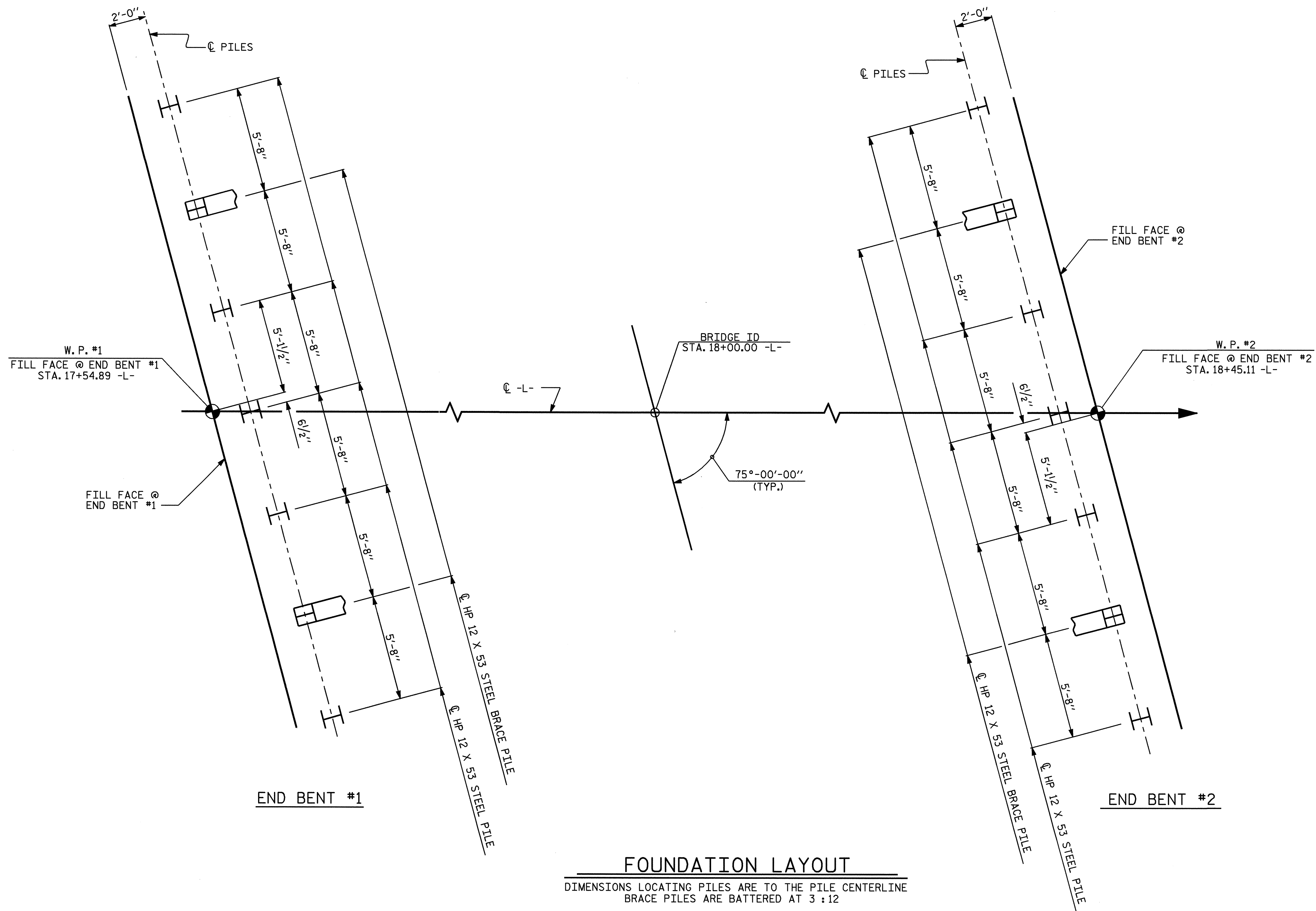
**GENERAL DRAWING**  
 FOR BRIDGE OVER SMITHWICK CREEK ON SR 1523 BETWEEN SR 1114 AND SR 1525

**PROFESSIONAL ENGINEER**  
 SEAL 12274  
 OMAR R. AZIZ  
 2/10/06

**PROFESSIONAL ENGINEER**  
 SEAL 025516  
 EMILY E. MURRAY  
 7/17/06

DRAWN BY: M.D. PISO DATE: 12/2004  
 CHECKED BY: E. E. MURRAY DATE: 6/2006

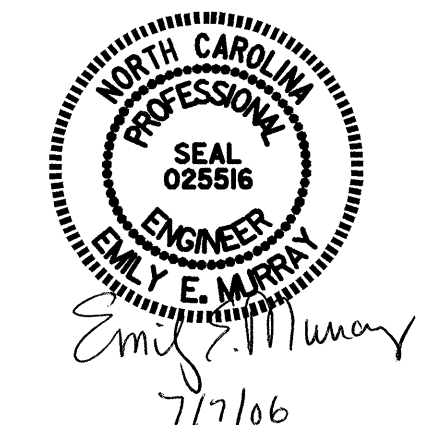
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1	
1			3			TOTAL SHEETS	
2			4			27	



**FOUNDATION LAYOUT**  
 DIMENSIONS LOCATING PILES ARE TO THE PILE CENTERLINE  
 BRACE PILES ARE BATTERED AT 3 : 12

PROJECT NO. B-4188  
MARTIN COUNTY  
 STATION: 18+00.00 -L-

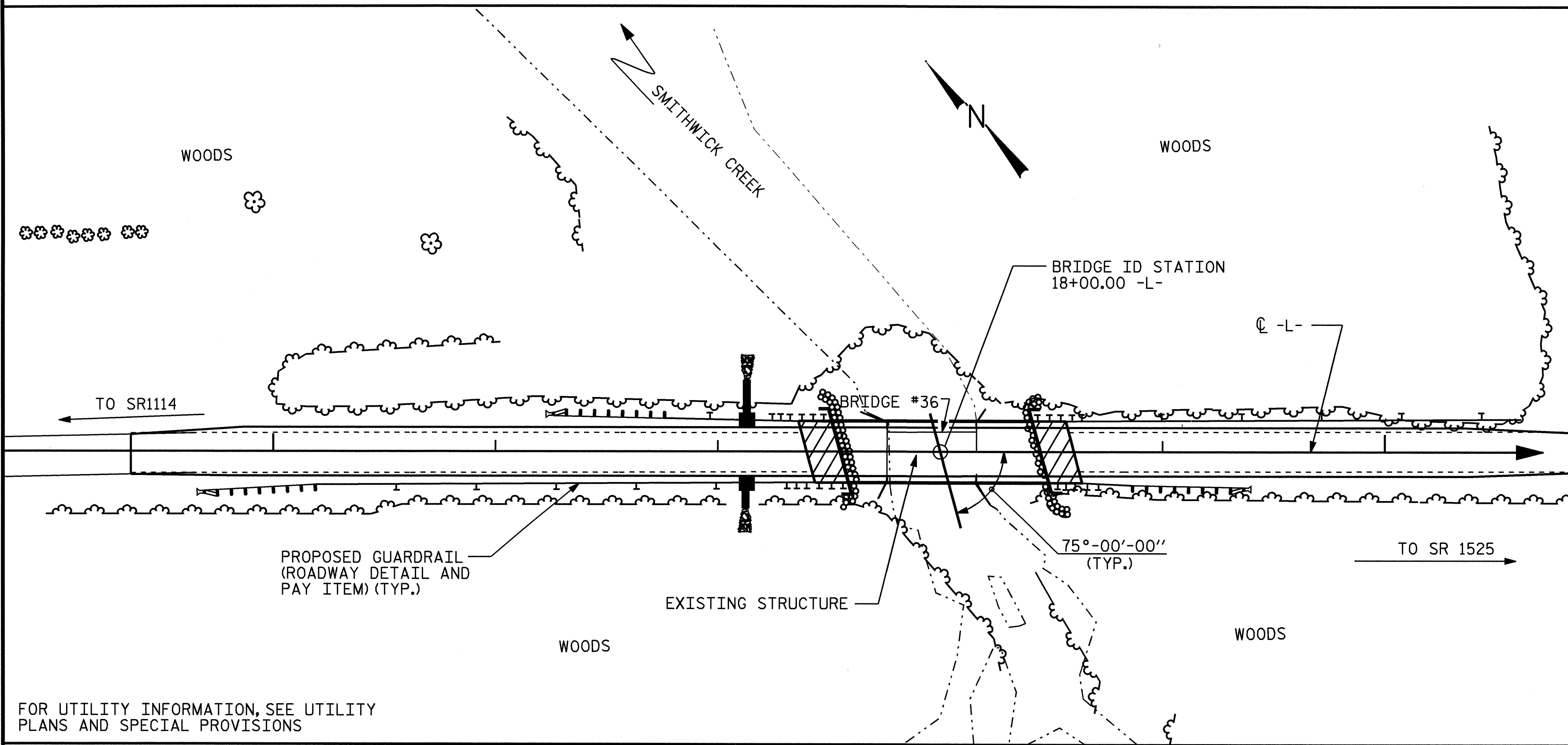
SHEET 2 OF 3  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE OVER SMITHWICK  
 CREEK ON SR 1523 BETWEEN  
 SR 1114 AND SR 1525



DRAWN BY : M.D.PISO DATE : 05/2006  
 CHECKED BY : E.E.MURRAY DATE : 06/2006

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

B.M. : RR SPIKE IN BASE OF 22" GUM, 90' LEFT OF STA. 20+50, ELEV. 33.66, NAVD 88



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS

**HYDRAULIC DATA**

DESIGN DISCHARGE = 1,200 CFS  
 FREQUENCY OF DESIGN FLOOD = 25 YRS.  
 DESIGN HIGH WATER ELEVATION = 22.3 FT.  
 DRAINAGE AREA = 12.0 SQ. MI.  
 BASIC DISCHARGE (Q100) = 1,900 CFS  
 BASIC HIGH WATER ELEVATION = 24.6 FT.

**OVERTOPPING DATA**

OVERTOPPING DISCHARGE = 2,300 CFS  
 FREQUENCY OF OVERTOPPING FLOOD = 100 YR +  
 OVERTOPPING FLOOD ELEVATION = 25.2 FT.

**TOTAL BILL OF MATERIAL**

	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	STRUCTURAL STEEL	HP 12 X 53 STEEL PILES	VERTICAL CONCRETE BARRIER RAIL	RIP-RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS	GROUTING AND POST-TENSIONING	BRIDGE DECK GRINDING	FULL WIDTH PRECAST CONCRETE DECK PANELS
	LUMP SUM	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	LBS.	NO. LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM	LUMP SUM	SQ. FT.	EACH
SUPERSTRUCTURE						80,925		176.1						2951	11
END BENT #1			19.1		2816		7 455		58	65					
END BENT #2			19.1		2816		7 455		39	43					
TOTAL	LUMP SUM	LUMP SUM	38.2	LUMP SUM	5632	80,925	14 910	176.1	97	108	LUMP SUM	LUMP SUM	LUMP SUM	2951	11

DRAWN BY : M.D.PISO DATE : 12/2004  
 CHECKED BY : E.E.MURRAY DATE : 6/2006

10-JUL-2006 12:25  
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 emurray

**NOTES**

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING.

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

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

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

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

THE EXISTING STRUCTURE CONSISTING OF ONE FORTY FIVE FOOT SPAN WITH A CLEAR ROADWAY WIDTH OF NINETEEN FEET CONSISTING OF A TIMBER FLOOR ON STEEL BEAMS SUPPORTED BY TIMBER BULKHEADS WITH TIMBER PILES AND LOCATED AT THE SITE OF THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 30 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE 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.

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 A.

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

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

THIS BRIDGE SHALL BE CONSTRUCTED USING TOP-DOWN CONSTRUCTION METHODS. THE USE OF A TEMPORARY CAUSEWAY OR WORK BRIDGE IS NOT PERMITTED.

DRIVE PILES AT END BENT NO.1 TO A MINIMUM BEARING CAPACITY OF 50 TONS EACH

DRIVE PILES AT END BENT NO.2 TO A MINIMUM BEARING CAPACITY OF 50 TONS EACH.

WHEN DRIVING PILES, THE MAXIMUM BLOW COUNT SHALL NOT BE EXCEEDED.

FOR FULL WIDTH PRECAST CONCRETE DECK PANELS, SEE SPECIAL PROVISIONS.

FOR GROUTING AND POST-TENSIONING, SEE SPECIAL PROVISIONS.

FOR BRIDGE DECK GRINDING, SEE SPECIAL PROVISIONS.

FOR SHIPPING STEEL STRUCTURAL MEMBERS, SEE SPECIAL PROVISIONS.

FOR VERTICAL CONCRETE BARRIER RAIL, SEE SPECIAL PROVISIONS.

PROJECT NO. B-4188  
MARTIN COUNTY  
 STATION: 18+00.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**

FOR BRIDGE OVER SMITHWICK CREEK ON SR 1523 BETWEEN SR 1114 AND SR 1525



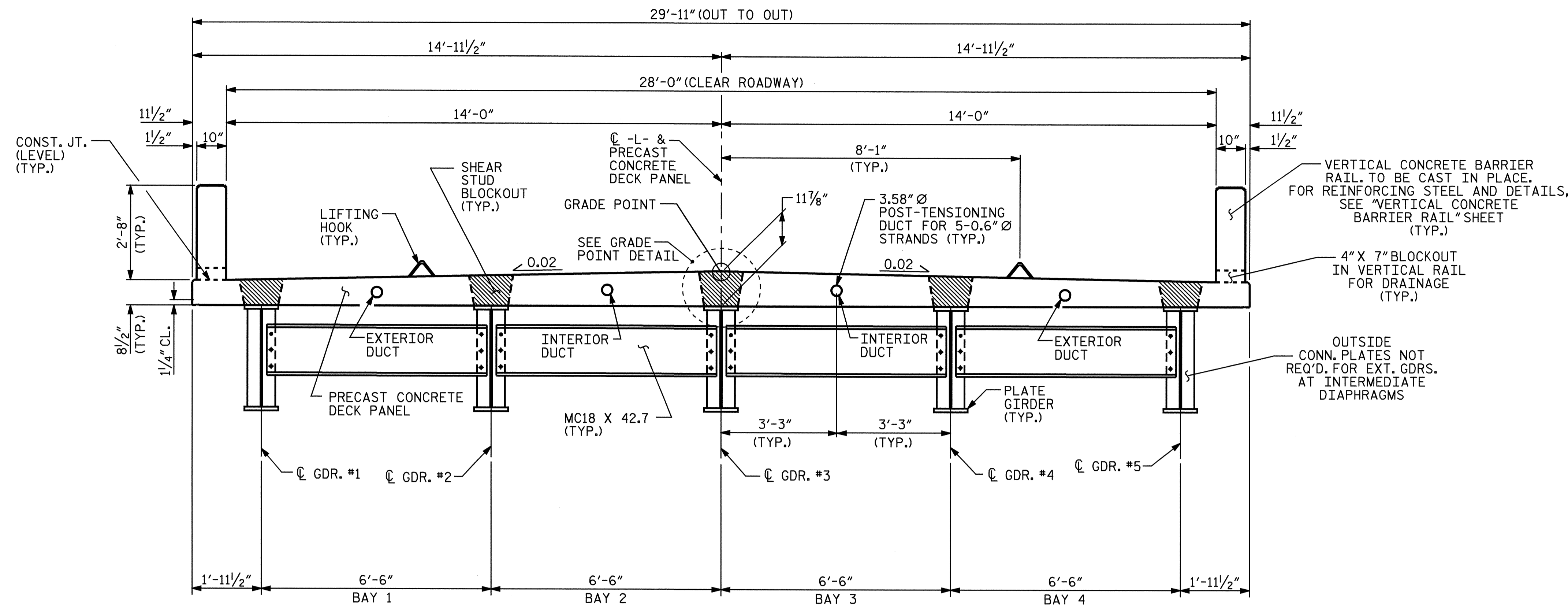
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS 27
2			4			

**NOTES:**

DECK PANEL THICKNESS SHOWN IS PRIOR TO BRIDGE DECK GRINDING. SEE SPECIAL PROVISION FOR BRIDGE DECK GRINDING.

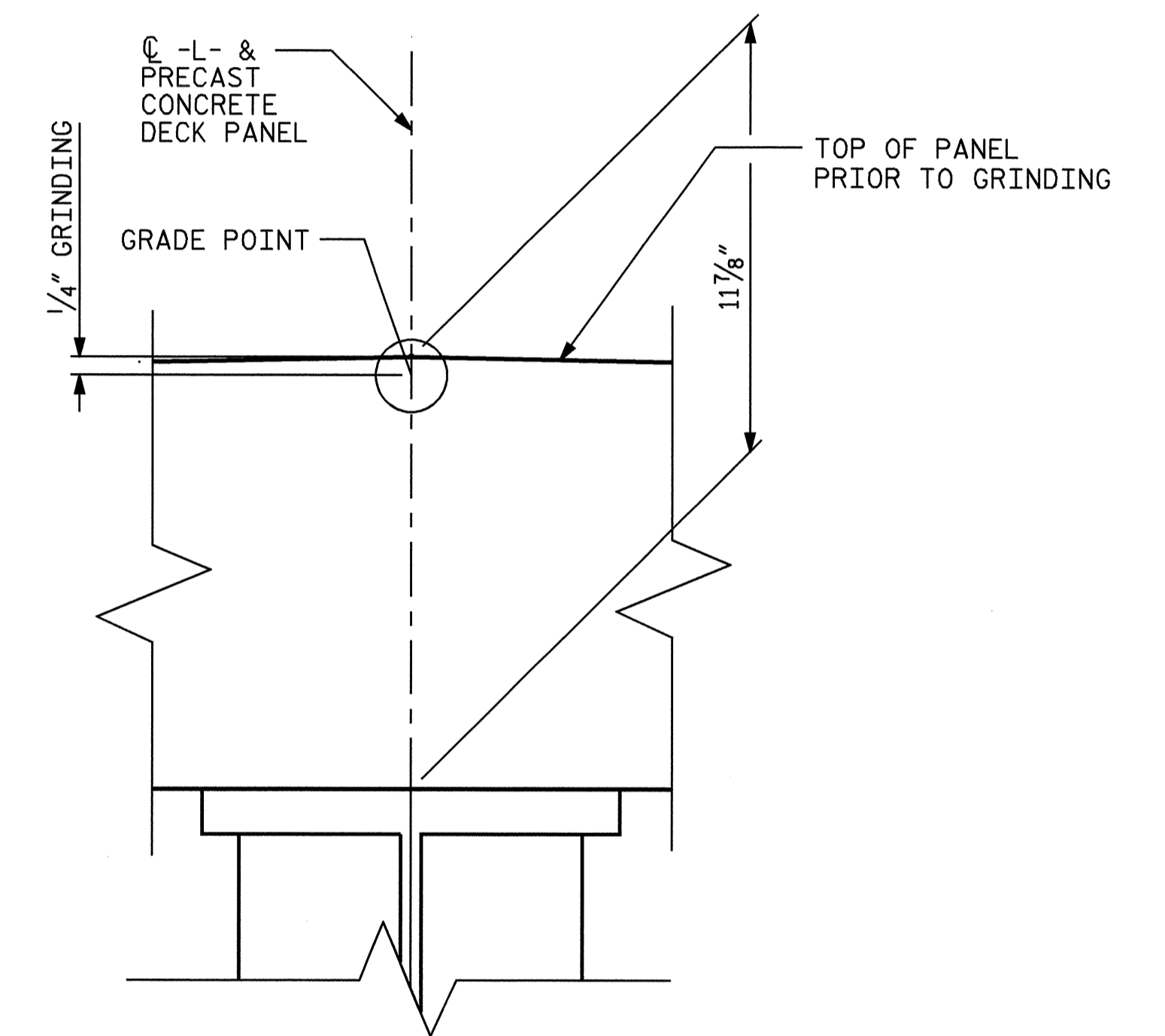
DETAILS FOR LIFTING INSERT SHALL BE SUBMITTED BY FABRICATOR FOR APPROVAL. ATTENTION IS CALLED TO THE FACT THAT THE SURFACE OF THE ASSEMBLED BRIDGE DECK WILL RECEIVE GRINDING.

LOCATE  $\phi$  OF DUCTS FROM BOTTOM OF SLAB:  
 EXTERIOR DUCTS = 4"  
 INTERIOR DUCTS = 5 $\frac{7}{16}$ "

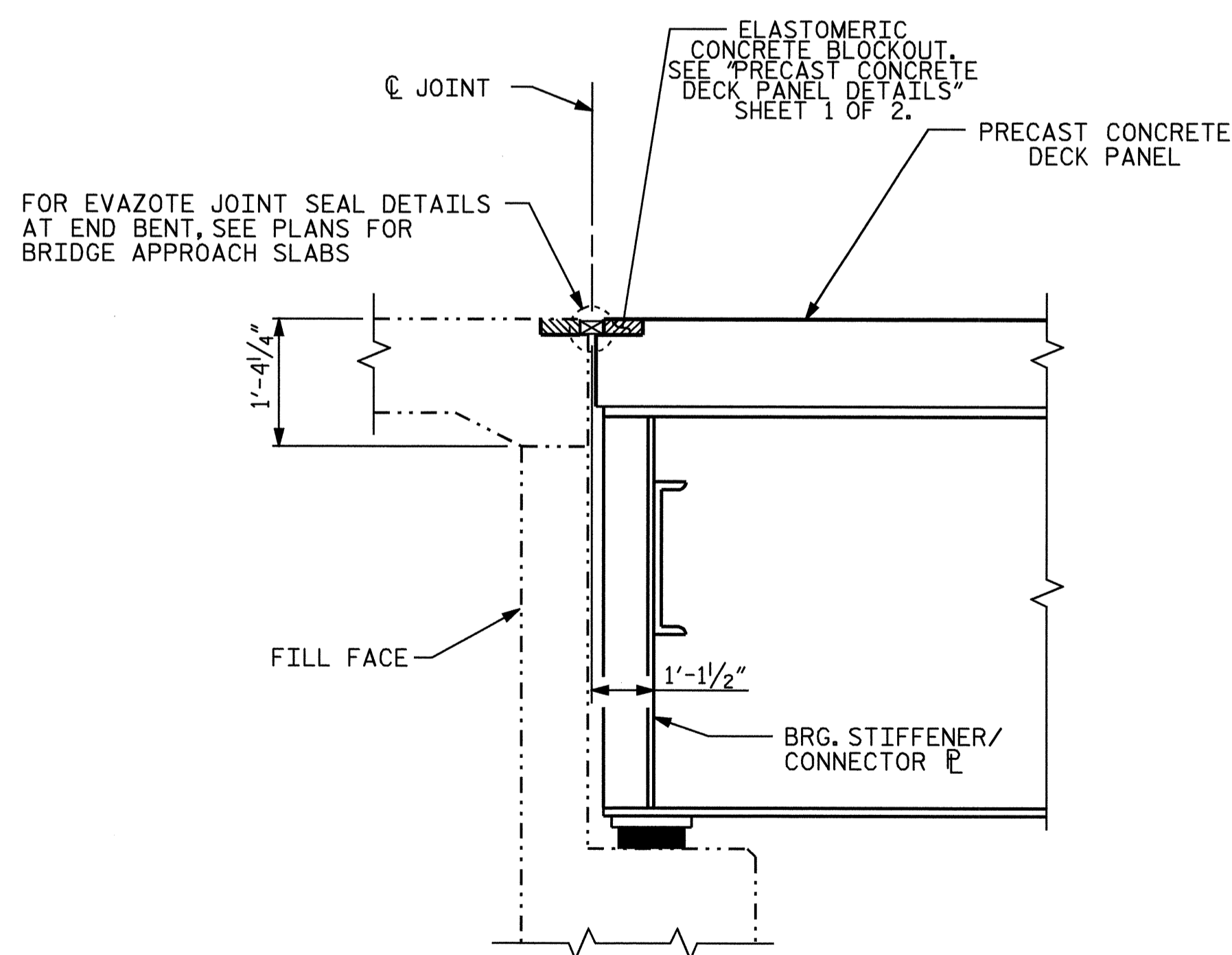


**TYPICAL SECTION**

(SHOWING END BENT AND INTERMEDIATE DIAPHRAGMS)

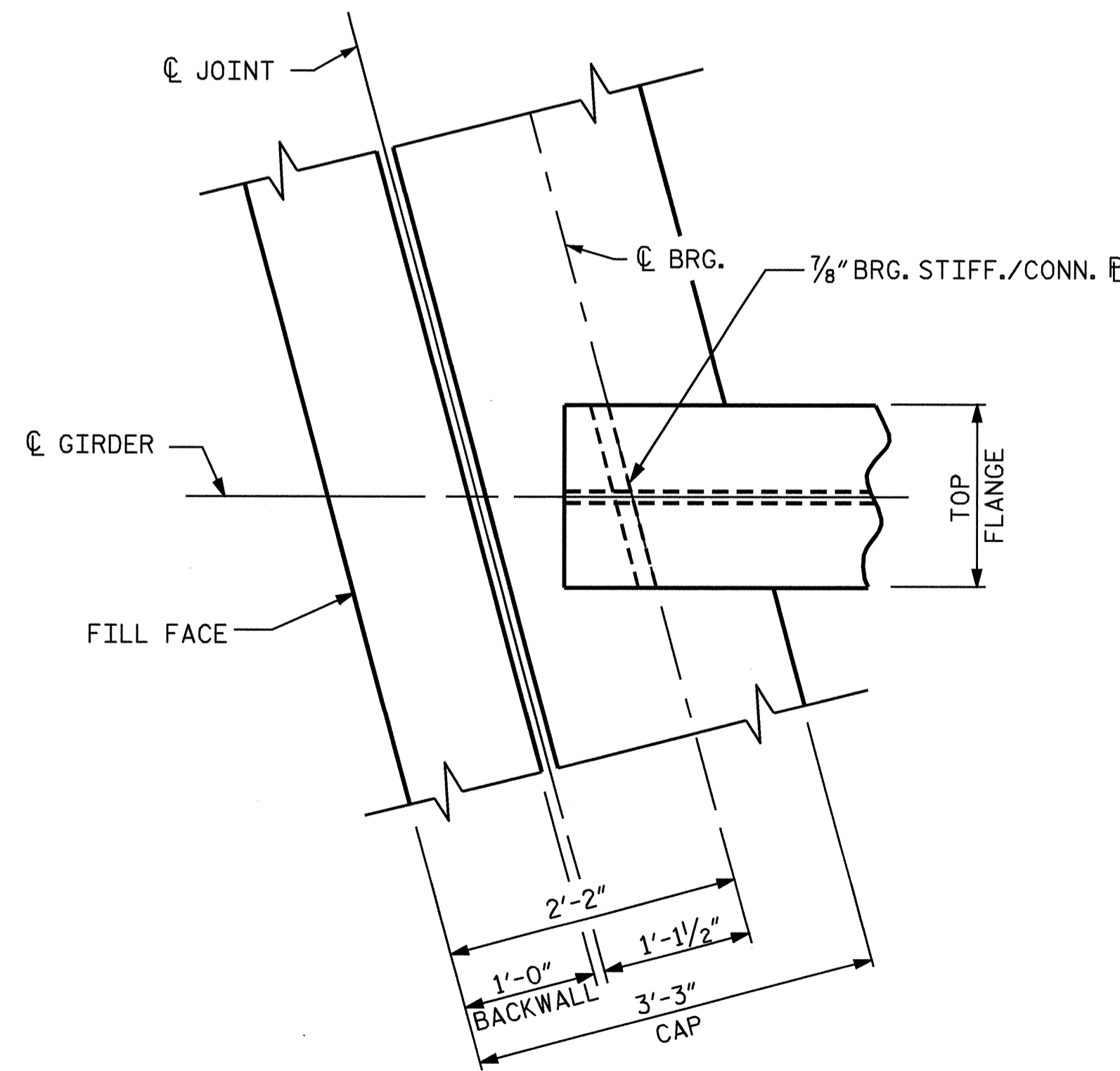


**GRADE POINT DETAIL**

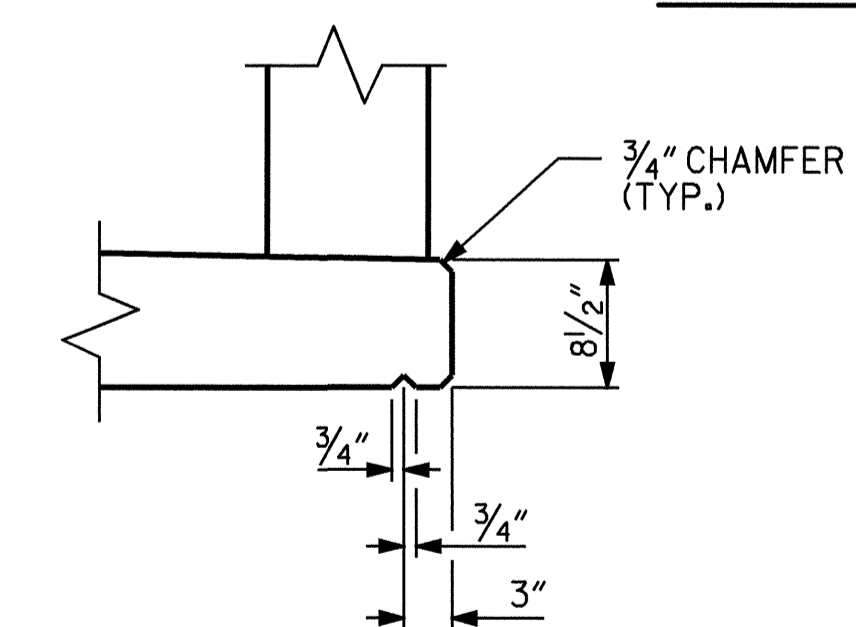


**SECTION @ END BENT**

(LEVELING BOLT BLOCKOUT, ANCHOR HARDWARE BLOCKOUT AND DUCT BLOCKOUT NOT SHOWN)



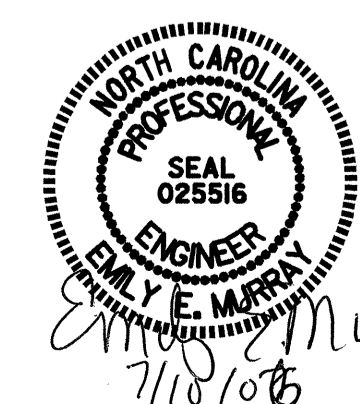
**PLAN @ END BENT**



**DRIP NOTCH DETAIL**  
(TYP. EACH END)

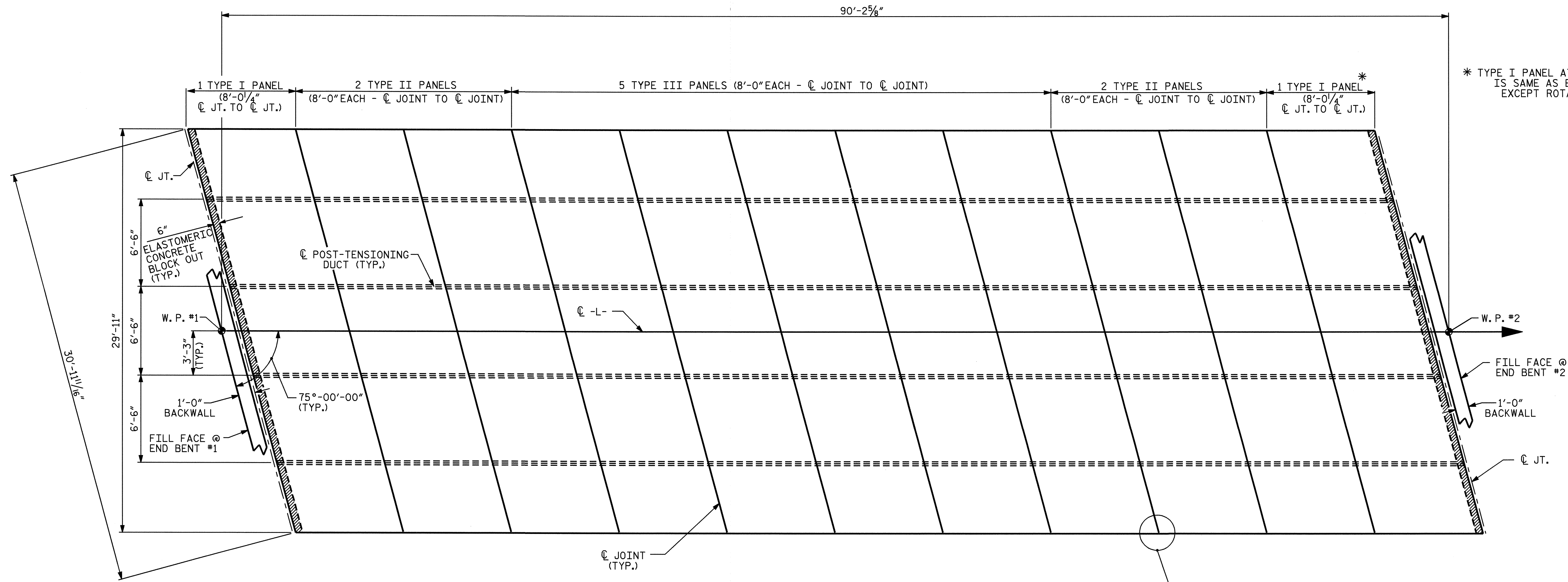
PROJECT NO. B-4188  
MARTIN COUNTY  
 STATION: 18+00.00 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
**TYPICAL SECTION & DETAILS**



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

DRAWN BY: PEGGY ADKINS DATE: 3-06  
 CHECKED BY: M. RORIE DATE: 6-06



\* TYPE I PANEL AT END BENT #2 IS SAME AS END BENT #1 EXCEPT ROTATED 180°.

**DECK PLAN (SPAN A)**

(BLOCKOUTS FOR SHEAR STUDS, LEVELING BOLTS AND ANCHOR HARDWARE NOT SHOWN.)

SHEAR KEYS TO BE FILLED WITH GROUT (FOR DETAILS, SEE PRECAST CONCRETE DECK PANEL DETAILS, SHEET 2 OF 2.) (TYP.)

**SUGGESTED PRECAST CONCRETE DECK CONSTRUCTION SEQUENCE:**

1. FABRICATE PRECAST CONCRETE DECK PANELS AS SHOWN ON PRECAST CONCRETE DECK PANEL SHEETS AND PRECAST CONCRETE DECK PANEL DETAILS SHEETS.
2. PLACE ALL PRECAST DECK PANELS ON GIRDERS.
3. ADJUST LEVELING DEVICE ON DECK PANELS TO BRING PANELS TO GRADE. ALL LEVELING BOLTS SHALL BE TORQUED TO APPROXIMATELY THE SAME VALUE (20% MAXIMUM DEVIATION).
4. INSTALL CONNECTORS FOR LONGITUDINAL DUCTS AND SEAL JOINTS IN DUCTS BETWEEN DECK PANELS. APPLY EPOXY TO THE FACES OF THE TRANSVERSE JOINTS, SEE SPECIAL PROVISION FOR GROUTING AND POST-TENSIONING.
5. PLACE GROUT IN ALL TRANSVERSE JOINTS AND LIFTING DEVICE BLOCKOUTS. THE GROUT SHALL BE RODDED AND VIBRATED TO ENSURE ALL VOIDS ARE FILLED. FOR GROUT, SEE SPECIAL PROVISION FOR GROUT FOR STRUCTURES.
6. AFTER THE GROUT IN THE TRANSVERSE JOINTS HAS ATTAINED A STRENGTH OF 1000 PSI (BASED ON THE GROUT MANUFACTURER'S RECOMMENDATIONS), INSTALL LONGITUDINAL POST TENSIONING STRANDS IN DUCTS. THE LONGITUDINAL POST TENSIONING STRANDS SHALL BE STRESSED AND GROUTED. SEE SPECIAL PROVISION FOR GROUTING AND POST-TENSIONING.
7. INSTALL SHEAR STUDS IN BLOCKOUTS. APPLY EPOXY TO BLOCKOUT SURFACES THAT ARE TO RECEIVE GROUT. SEE SPECIAL PROVISION FOR GROUTING AND POST-TENSIONING.
8. FILL SHEAR STUD BLOCKOUTS AND DUCT COUPLING BLOCKOUTS WITH CLASS AA CONCRETE. FOR CLASS AA CONCRETE, SEE SPECIAL PROVISION FOR GROUTING AND POST-TENSIONING. FILL BLOCKOUTS FOR ANCHOR HARDWARE AT END BENTS WITH GROUT. SEE SPECIAL PROVISION FOR GROUT FOR STRUCTURES.
9. REMOVE LEVELING BOLTS AND GROUT LEVELING BOLT BLOCKOUTS AFTER CLASS AA CONCRETE IN SHEAR STUD BLOCKOUTS HAS REACHED 3,000 PSI. SEE SPECIAL PROVISION FOR GROUT FOR STRUCTURES.
10. CAST CONCRETE CAST-IN-PLACE VERTICAL CONCRETE BARRIER RAILS.
11. AFTER COMPLETION OF APPROACH SLAB, PAVEMENT OF THE ROADWAY, AND PLACEMENT OF ELASTOMERIC CONCRETE AT JOINTS, GRIND DECK AND APPROACH SLAB IN ACCORDANCE WITH THE SPECIAL PROVISION FOR BRIDGE DECK GRINDING.

**NOTES:**

- CONCRETE STRENGTH  $f'c = 6500$  PSI.
- LONGITUDINAL POST-TENSIONING TENDON JACKING FORCE (PER TENDON) = 220 KIPS.
- LONGITUDINAL POST-TENSIONING SHALL BE SEQUENCED TO MINIMIZE ECCENTRICITY ABOUT THE CENTERLINE OF THE PRECAST CONCRETE DECK PANELS.
- FOR DECK PANEL ELEVATIONS, SEE "DECK PANEL ELEVATION" SHEET.
- THE PANELS SHALL BE PLACED AT THE NORMAL SPACING SHOWN ON THE PLANS WITH A 1/2" WIDE GAP BETWEEN THE PANELS. THE WIDTH OF THIS GAP CAN VARY DUE TO PANEL TOLERANCES.
- NO HEAVY CONSTRUCTION EQUIPMENT SHALL BE ALLOWED ON BRIDGE UNTIL STRANDS HAVE BEEN POST-TENSIONED AND ALL GROUTING OPERATIONS HAVE BEEN COMPLETED.

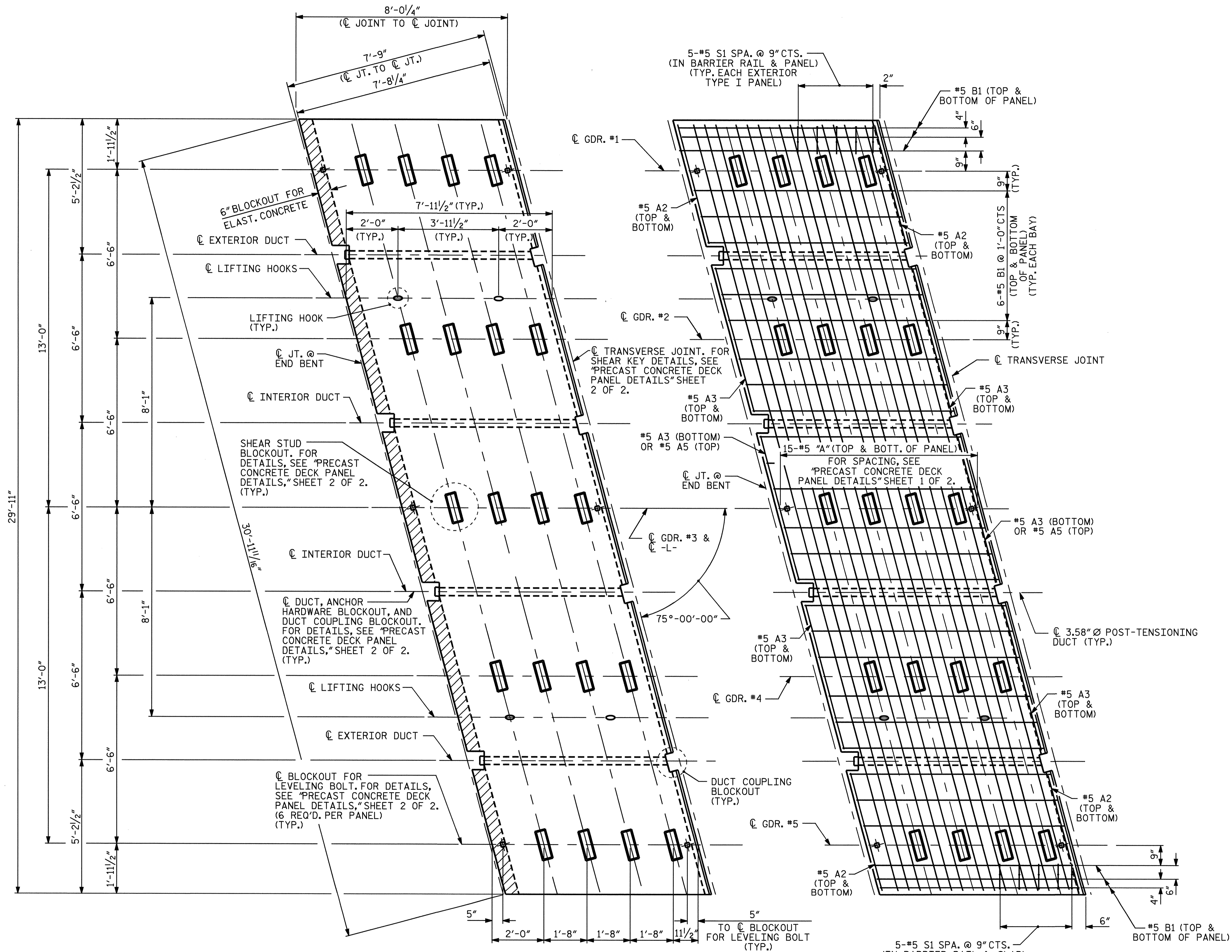
PROJECT NO. B-4188  
MARTIN COUNTY  
 STATION: 18+00.00 -L-



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 PRECAST CONCRETE  
 DECK PLAN OF SPAN

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5	
1			3			TOTAL SHEETS	
2			4			27	

DRAWN BY : PEGGY ADKINS DATE : 3-06  
 CHECKED BY : M. RORIE DATE : 6-06



PLAN OF DECK BLOCKOUTS

PLAN OF REINFORCING STEEL

PLAN OF PRECAST CONCRETE DECK PANEL TYPE I

PROJECT NO. B-4188  
MARTIN COUNTY  
 STATION: 18+00.00 -L-

SHEET 1 OF 3

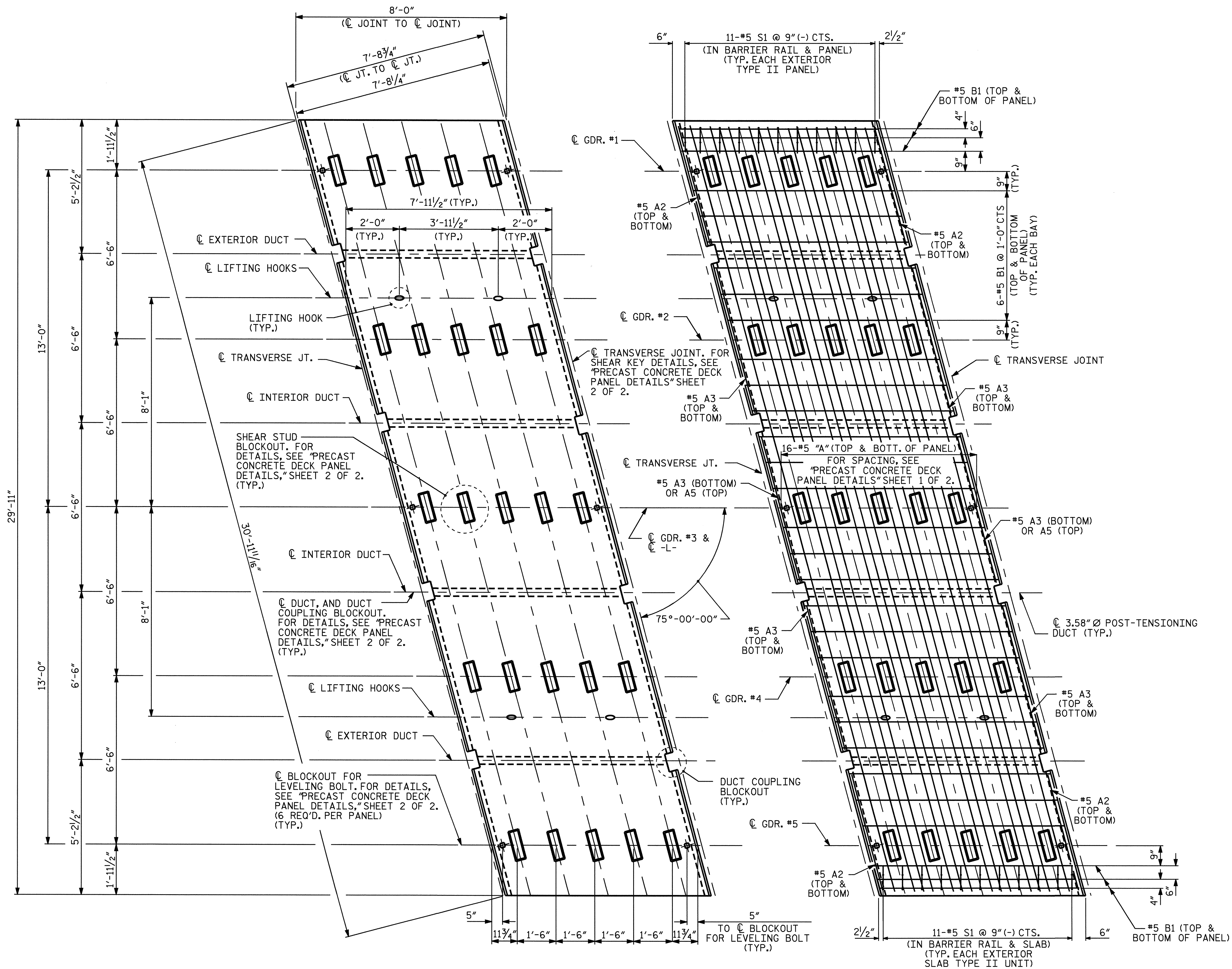
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 PRECAST CONCRETE  
 DECK PANEL  
 TYPE I



DRAWN BY: PEGGY ADKINS DATE: 3-06  
 CHECKED BY: M. RORIE DATE: 6-06

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2			4			



PLAN OF DECK BLOCKOUTS

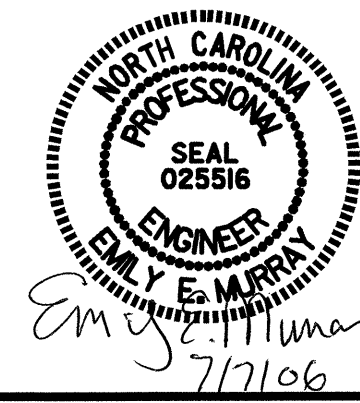
PLAN OF REINFORCING STEEL

PLAN OF PRECAST CONCRETE DECK PANEL TYPE II

PROJECT NO. B-4188  
 MARTIN COUNTY  
 STATION: 18+00.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 PRECAST CONCRETE  
 DECK PANEL  
 TYPE II

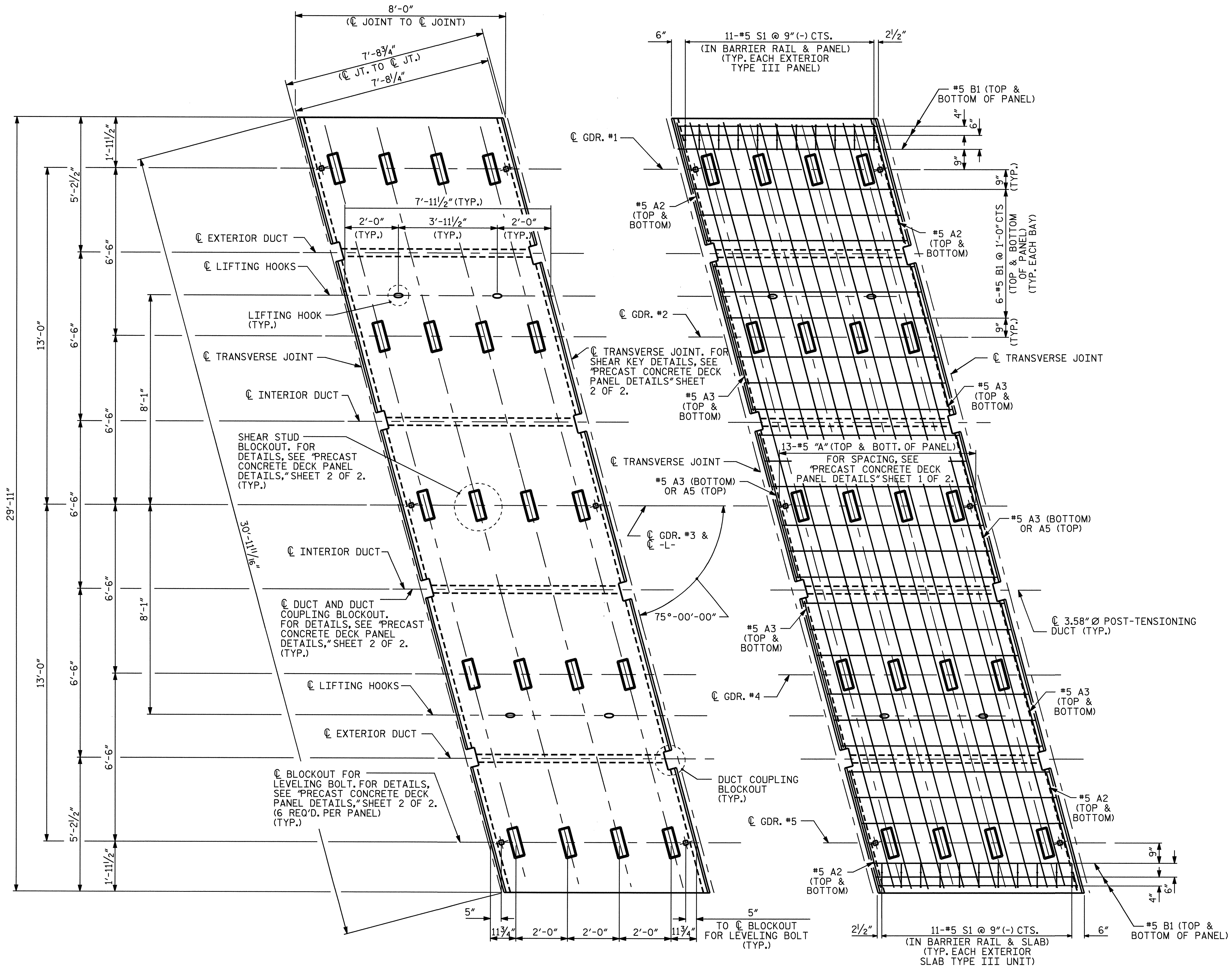


DRAWN BY: PEGGY ADKINS DATE: 3-06  
 CHECKED BY: M. RORIE DATE: 6-06

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7	
1			3			TOTAL SHEETS 27	
2			4				

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PLAN OF DECK BLOCKOUTS

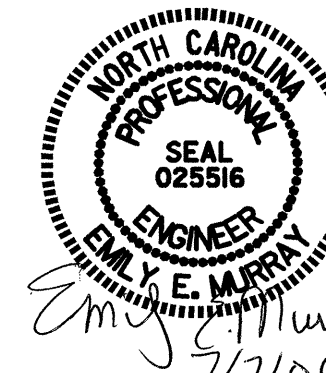
PLAN OF REINFORCING STEEL

PLAN OF PRECAST CONCRETE DECK PANEL TYPE III

PROJECT NO. B-4188  
MARTIN COUNTY  
 STATION: 18+00.00 -L-

SHEET 3 OF 3

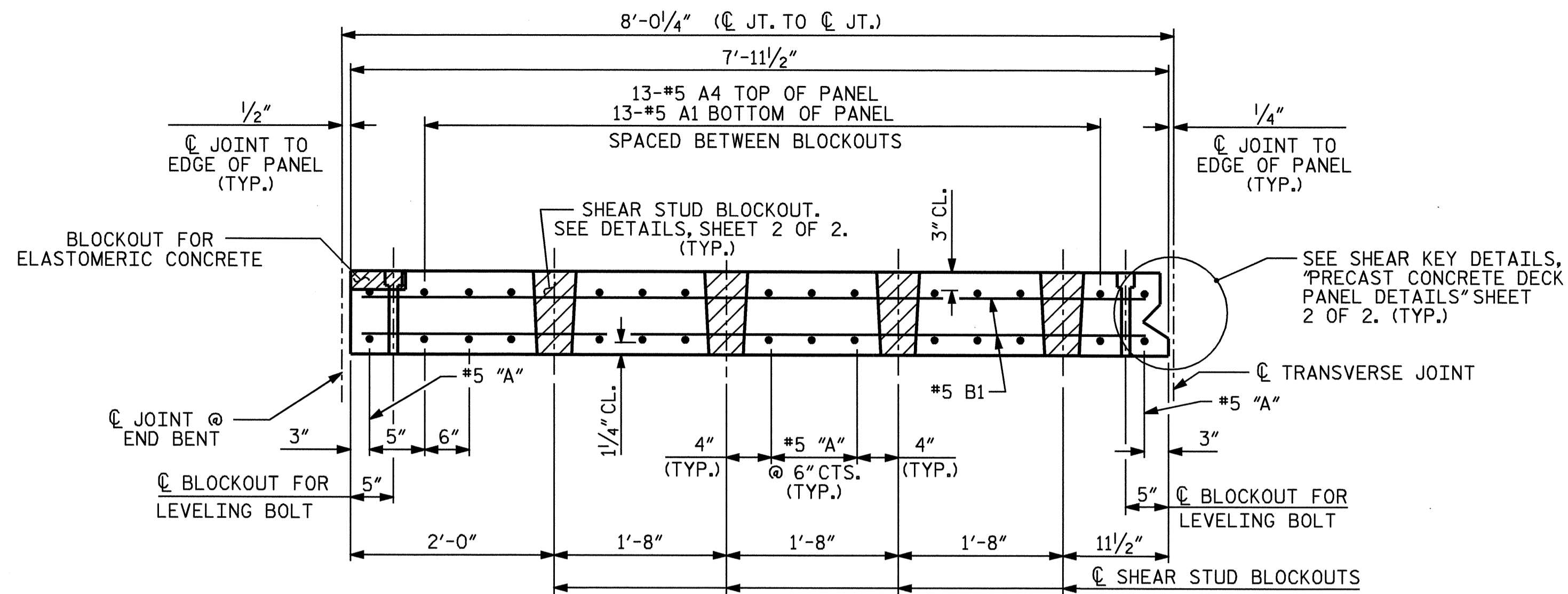
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 PRECAST CONCRETE  
 DECK PANEL  
 TYPE III



DRAWN BY : PEGGY ADKINS DATE : 3-06  
 CHECKED BY : M. RORIE DATE : 6-06

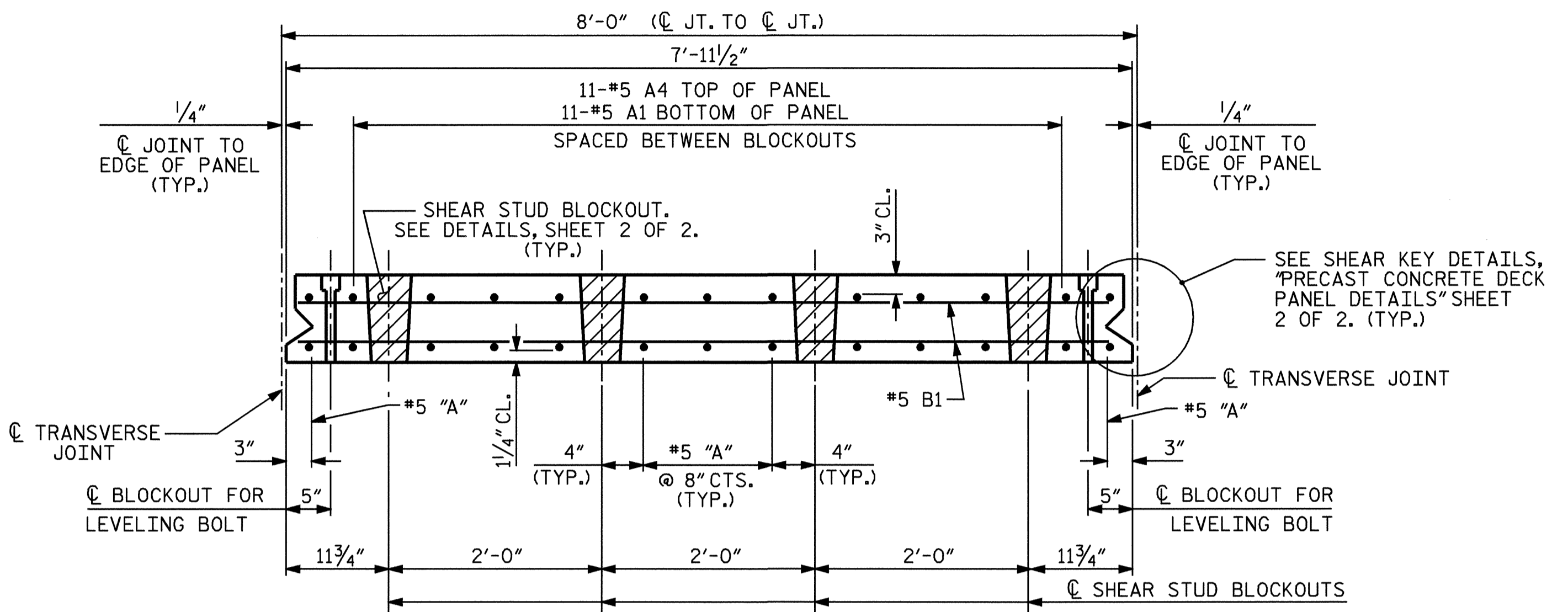
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			27



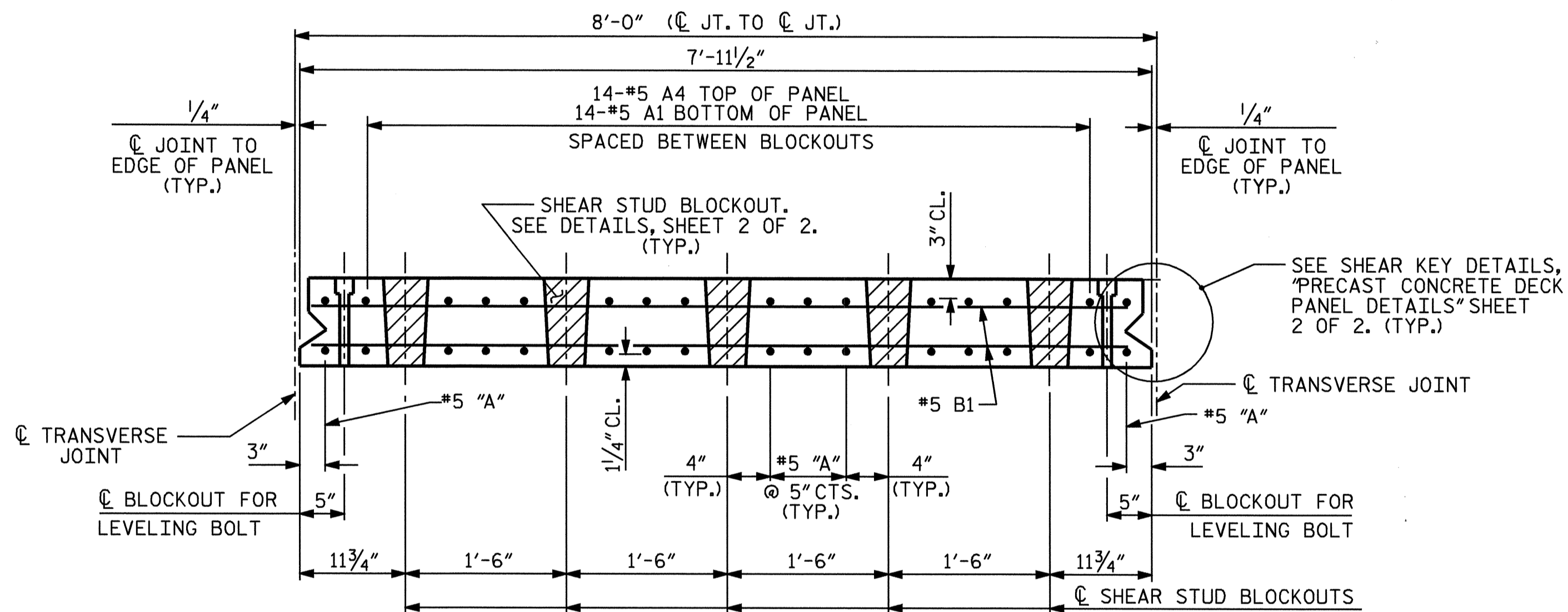
**TYPE I PANEL**

(POST-TENSIONING DUCT, ANCHOR HARDWARE BLOCKOUT, AND DUCT COUPLING BLOCKOUT NOT SHOWN)



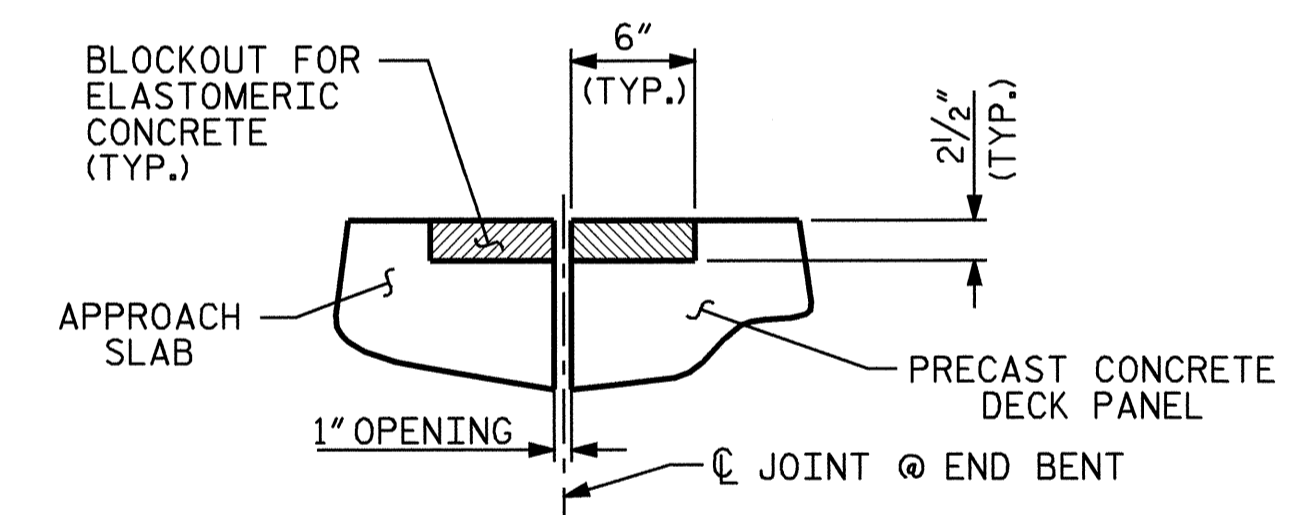
**TYPE III PANEL**

(POST-TENSIONING DUCT AND DUCT COUPLING BLOCKOUT NOT SHOWN)

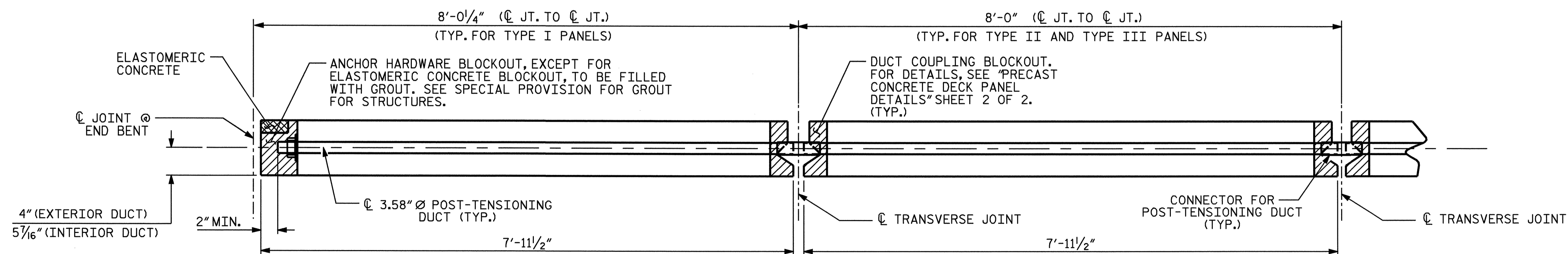


**TYPE II PANEL**

(POST-TENSIONING DUCT AND DUCT COUPLING BLOCKOUT NOT SHOWN)



**ELASTOMERIC CONCRETE BLOCKOUT**



**PARTIAL ELEVATION**

(SHOWN ALONG C-L-)

PROJECT NO. B-4188  
MARTIN COUNTY  
 STATION: 18+00.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE

**PRECAST CONCRETE DECK PANEL DETAILS**

DRAWN BY : PEGGY ADKINS DATE : 3-06  
 CHECKED BY : M. RORIE DATE : 6-06

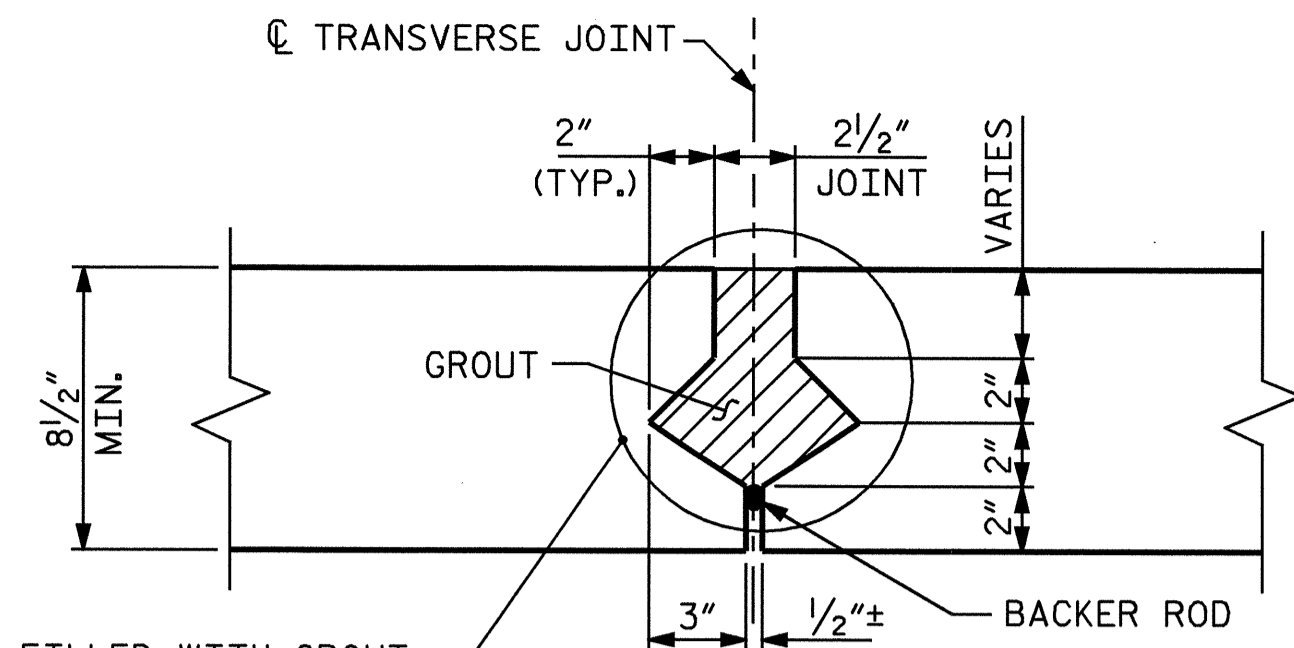
07-JUL-2006 14:18  
 RA\STRUCT\B4188\ADKINS\B4188\_02.DGN  
 podklns



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			27
2			4			

**QUANTITIES**

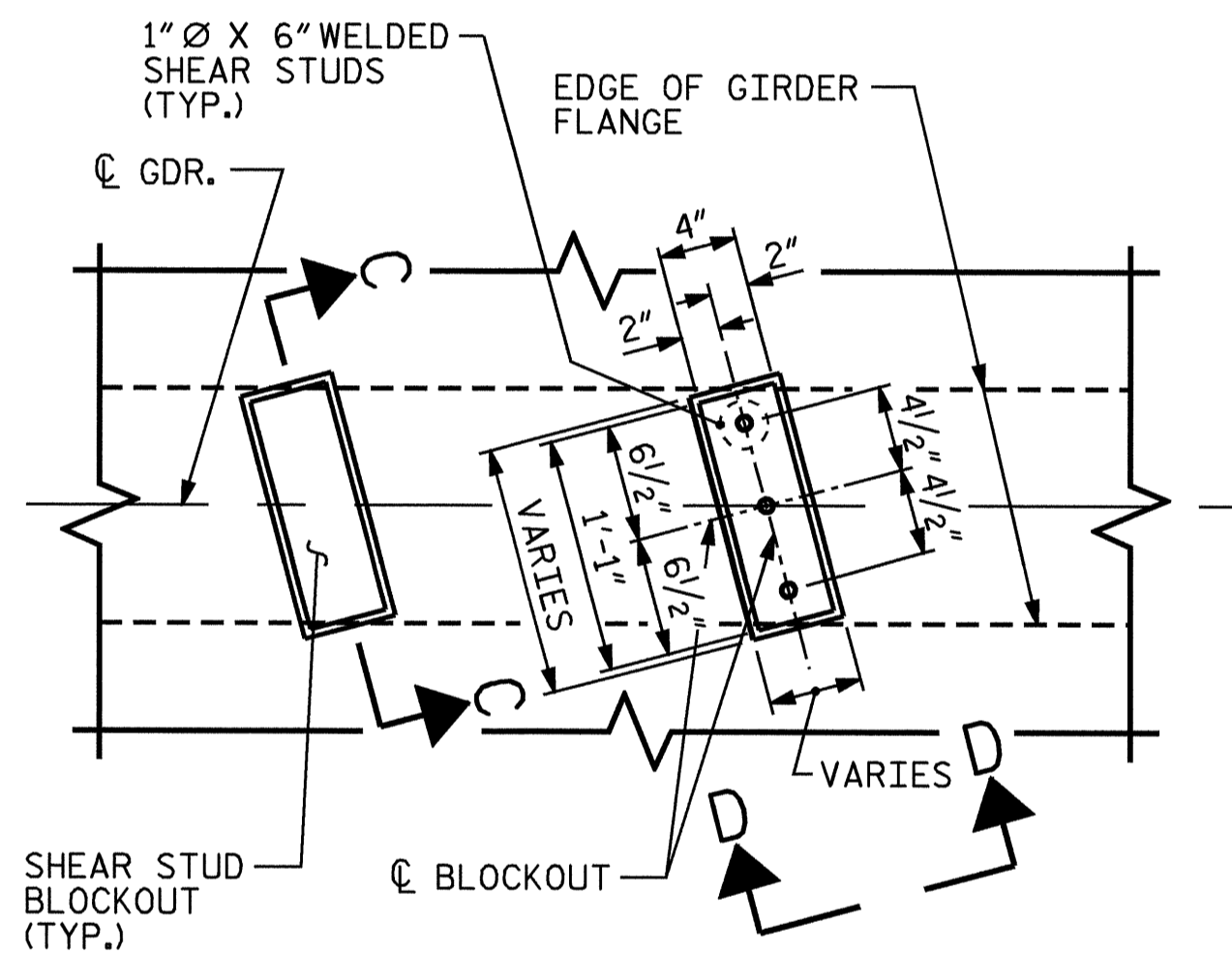
ITEM	NUMBER	STRAND LENGTH	TOTAL
0.6" Ø POST-TENSIONING STRANDS	20	88'-0 3/4"	1760 FT. ±
1" Ø X 6" SHEAR STUDS	144		720



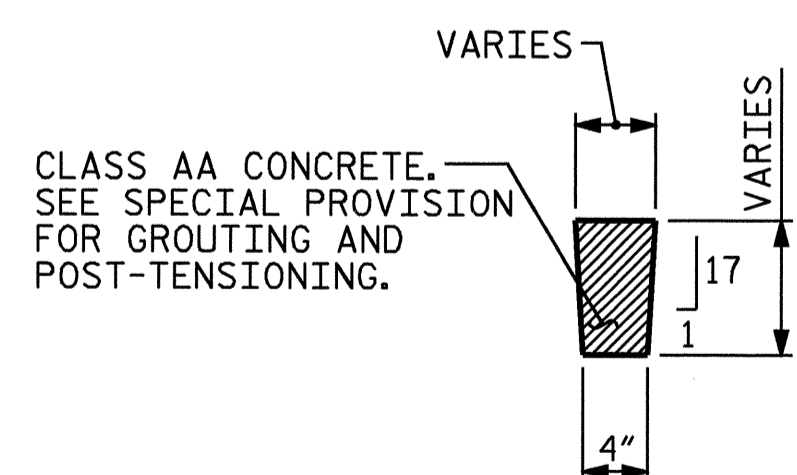
SHEAR KEYS TO BE FILLED WITH GROUT. SEE SPECIAL PROVISION FOR GROUT FOR STRUCTURES.

**SHEAR KEY DETAIL**

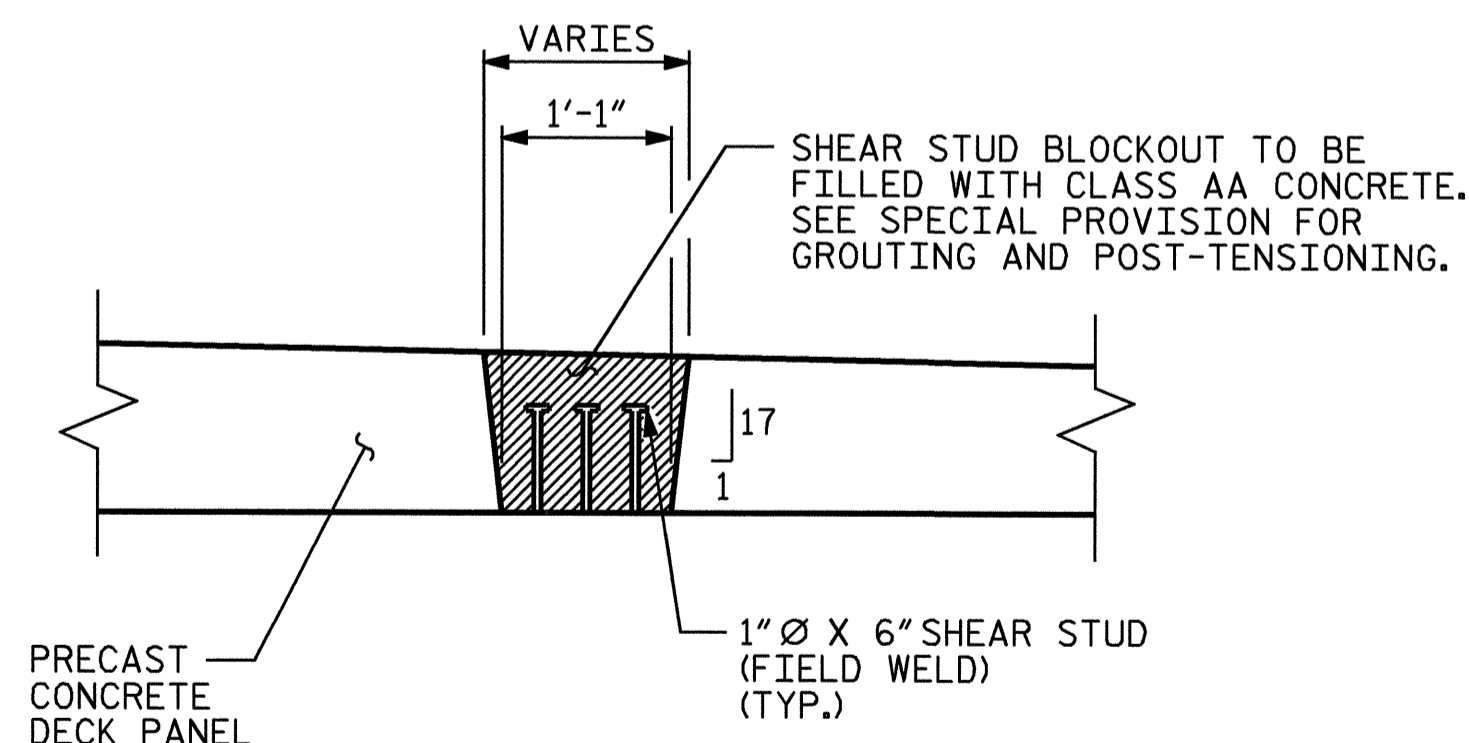
- NOTE: 1. BACKER ROD TO SEAL TRANSVERSE JOINT SHALL BE CLOSED CELL POLYETHYLENE FOAM AND SHALL BE PLACED PRIOR TO PLACING GROUT.  
 2. THE PANEL SHALL BE PLACED AT THE NOMINAL SPACING SHOWN ON THE PLANS WITH A 1/2" WIDE GAP BETWEEN THE PANELS. THE WIDTH OF THIS GAP CAN VARY DUE TO PANEL TOLERANCES.  
 3. GROUT FOR SHEAR KEYS SHALL BE RODDED OR VIBRATED TO ENSURE THAT ALL VOIDS IN THE SHEAR KEY ARE FILLED.



**PLAN VIEW**



**SECTION D-D**



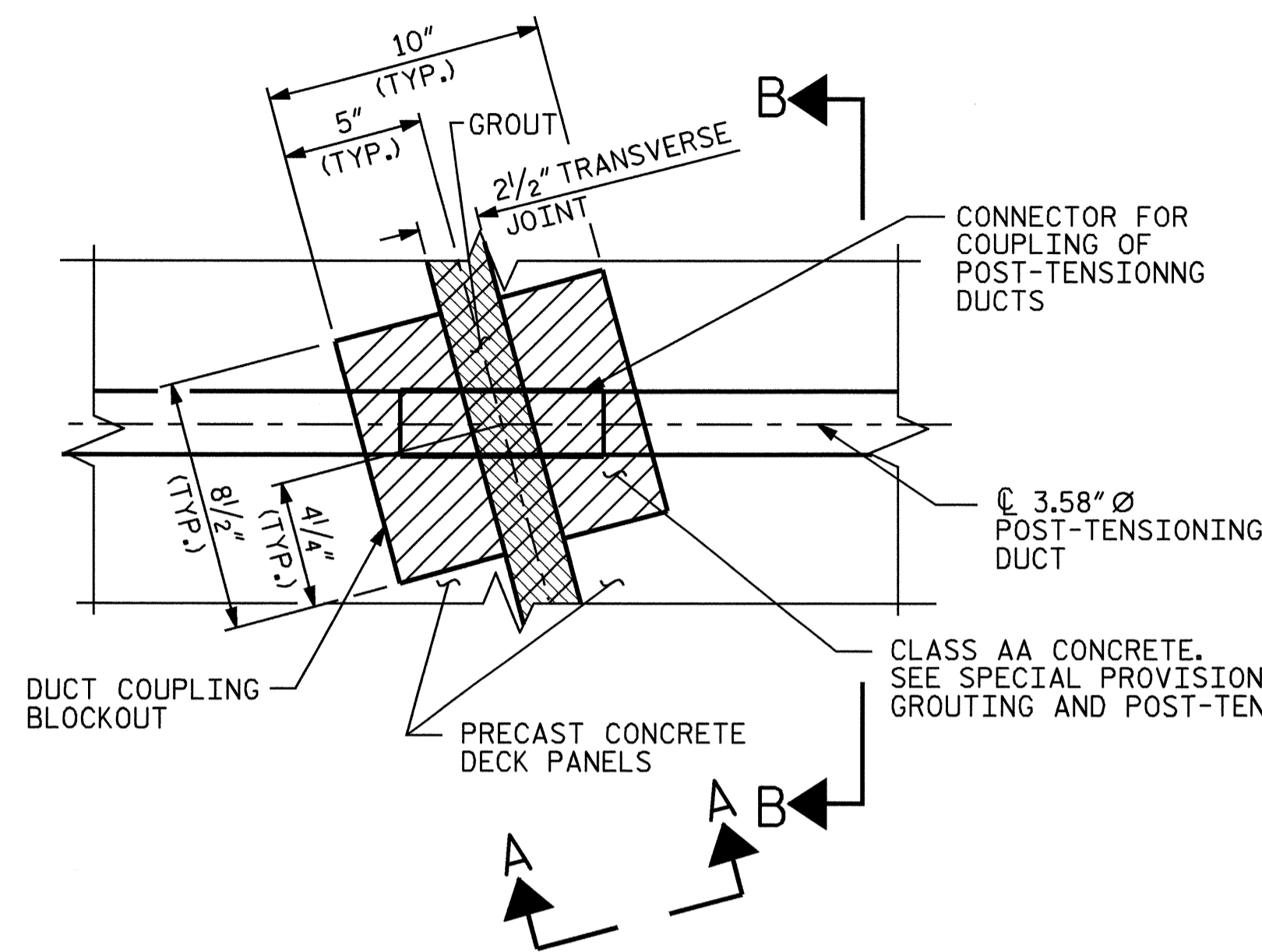
**SECTION C-C**

(GIRDER NOT SHOWN)

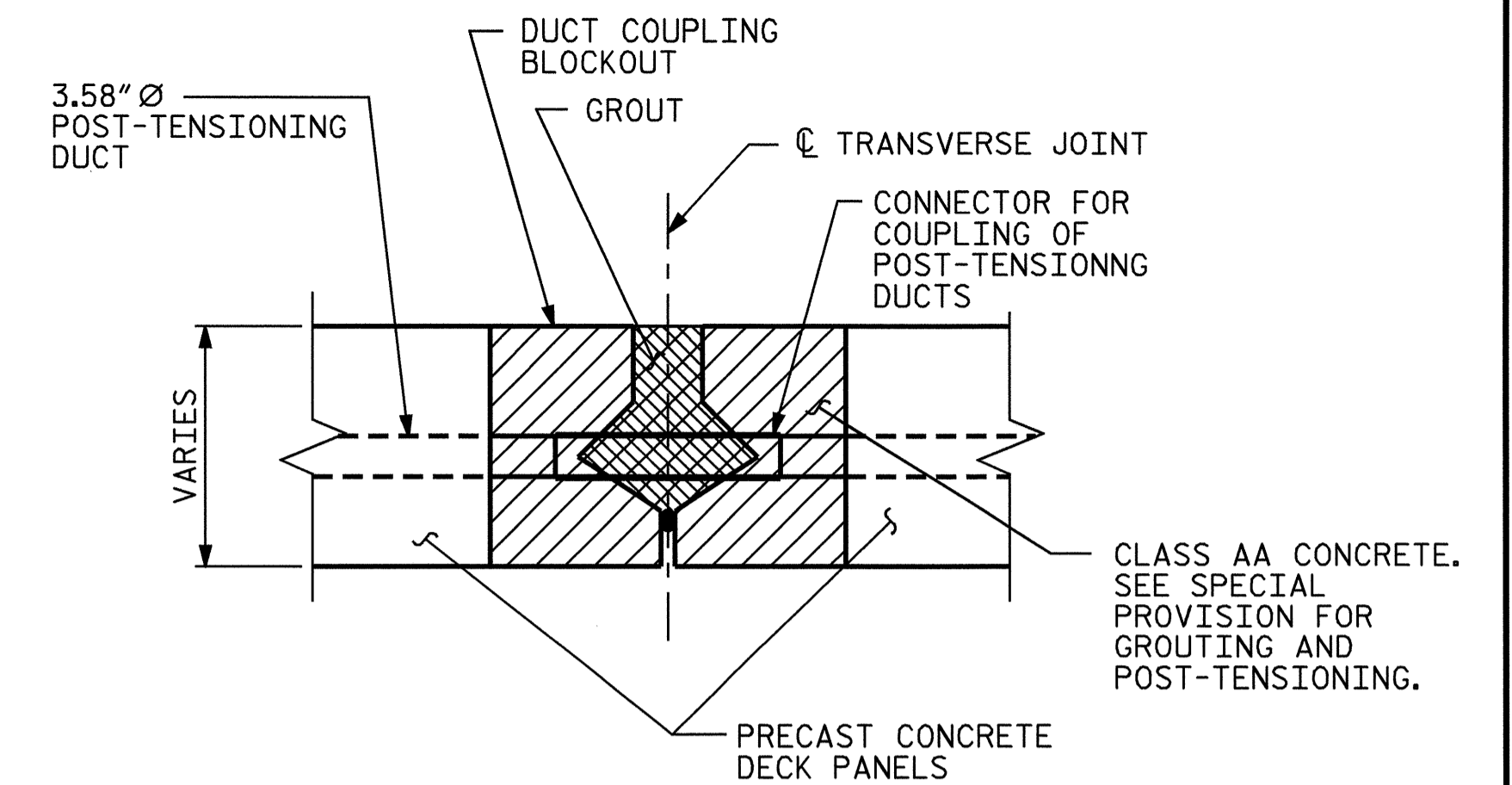
**SHEAR STUD BLOCKOUT DETAIL**

(DIMENSIONS ARE TYP. FOR EACH BLOCKOUT)

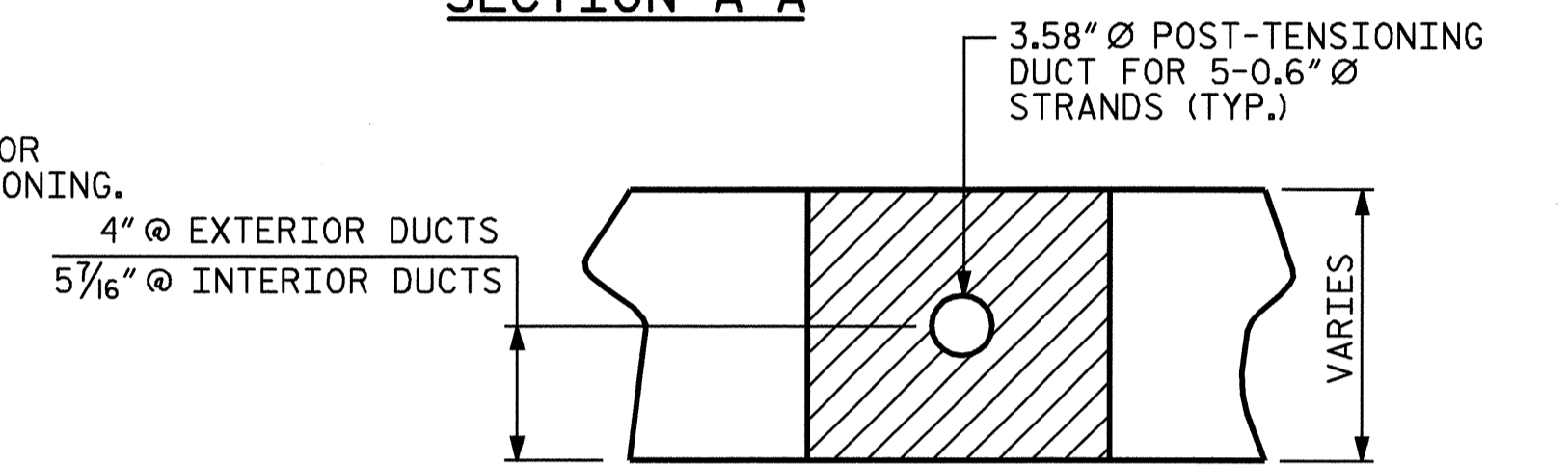
NOTE: FOR SHEAR STUD BLOCKOUT LOCATIONS, SEE PRECAST CONCRETE DECK PANEL SHEETS.



**PLAN**



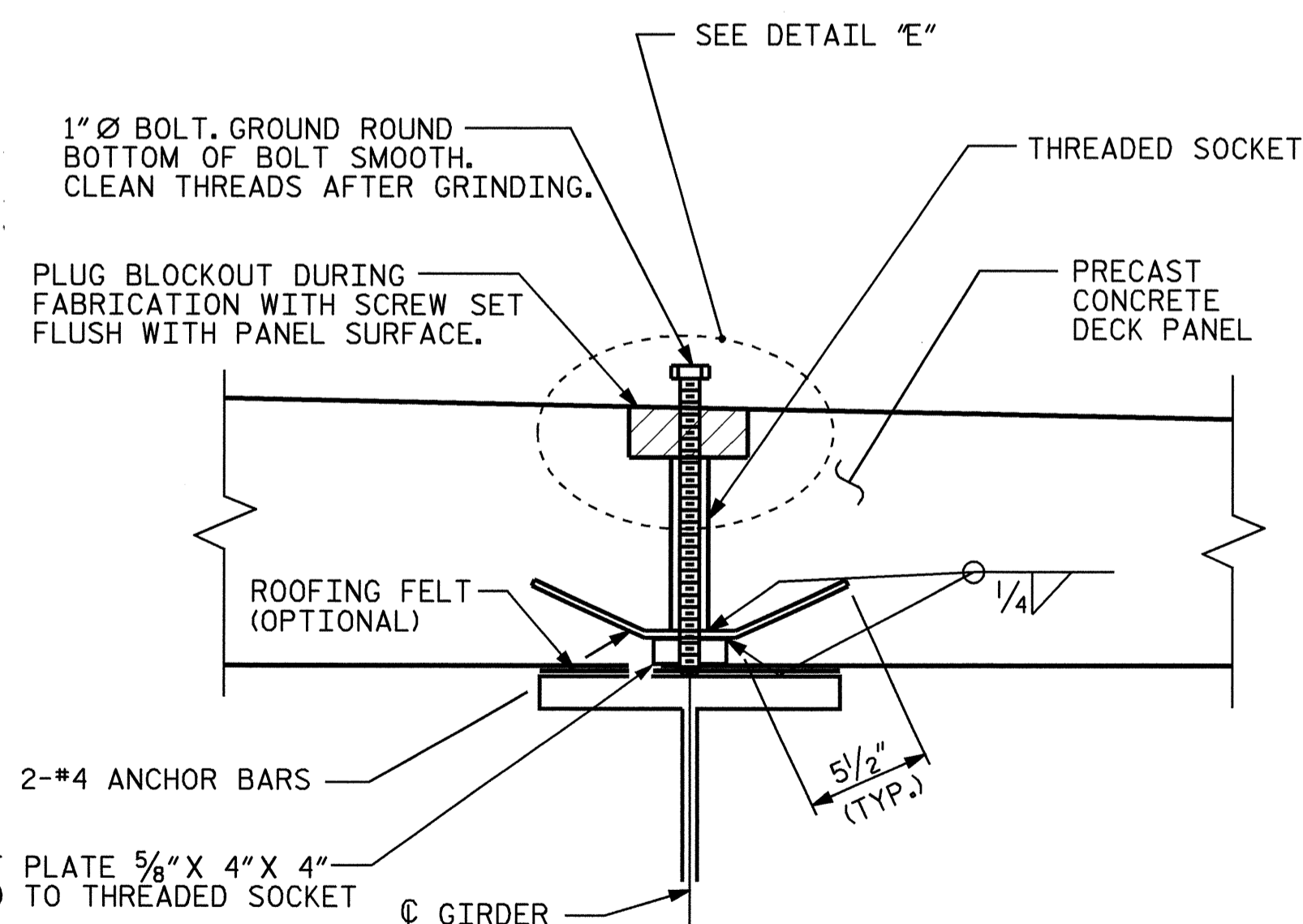
**SECTION A-A**



**SECTION B-B**

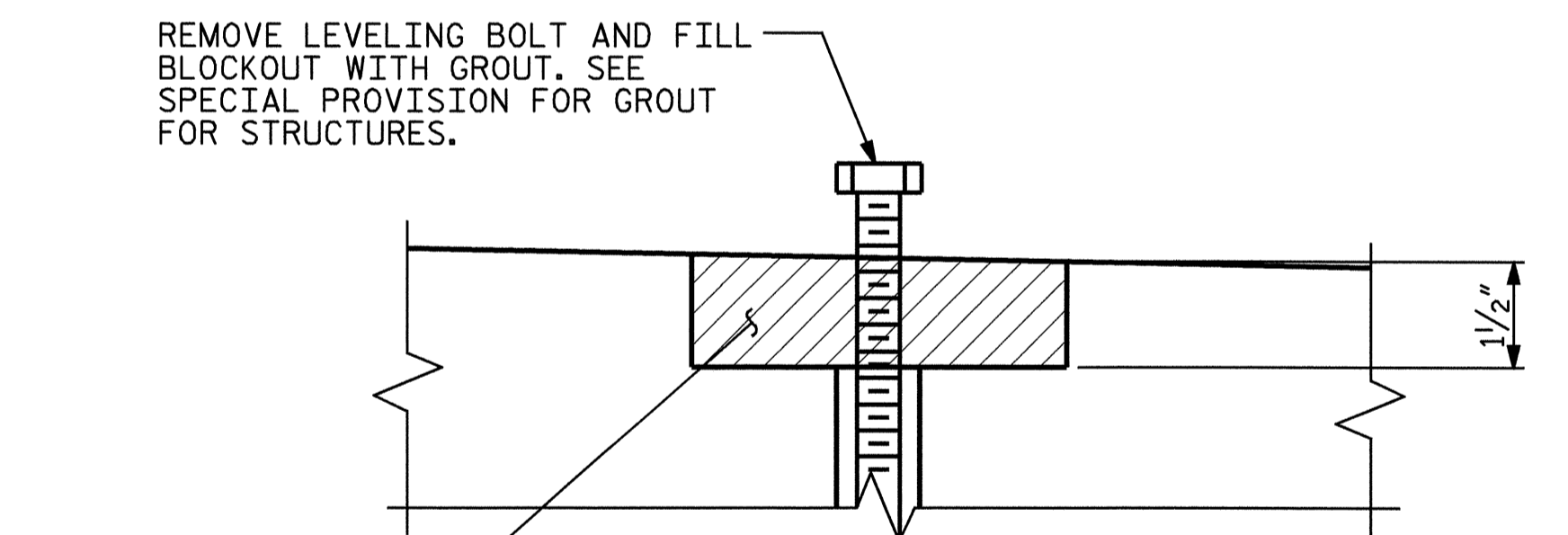
**DUCT COUPLING BLOCKOUT DETAIL**

NO SEPARATE PAYMENT WILL BE MADE FOR THE 0.6" Ø POST-TENSIONING STRANDS OR THE 1" Ø X 6" SHEAR STUDS, AS THEY ARE INCLUDED IN THE LUMP SUM PRICE FOR "GROUTING AND POST-TENSIONING".



**LEVELING BOLT DETAILS**

(6 REQUIRED PER PANEL)



**DETAIL "E"**

PROJECT NO. B-4188  
MARTIN COUNTY  
 STATION: 18+00.00 -L-

SHEET 2 OF 2

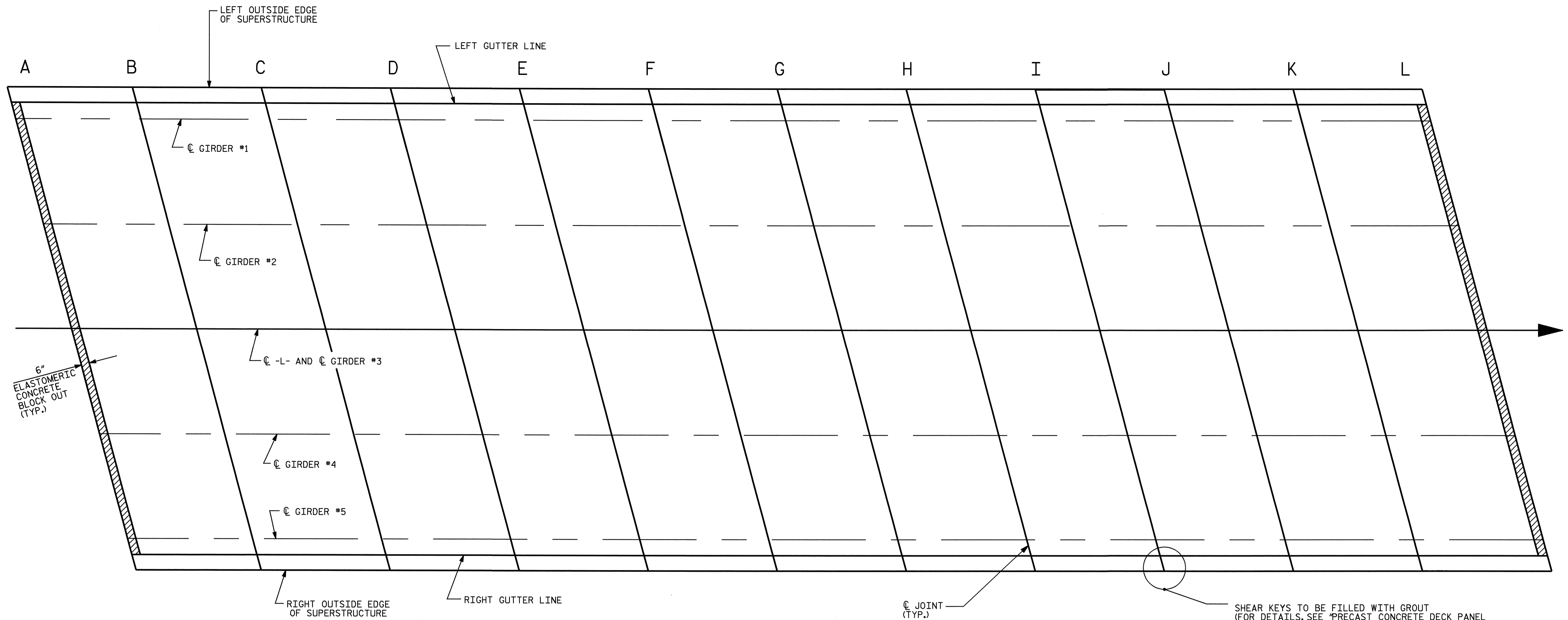
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE

**PRECAST CONCRETE DECK PANEL DETAILS**



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			27

DRAWN BY: PEGGY ADKINS DATE: 3-06  
 CHECKED BY: M. RORIE DATE: 6-06



**DECK PANEL ELEVATION LAYOUT**  
 (BLOCKOUTS FOR SHEAR STUDS, LEVELING BOLTS  
 AND ANCHOR HARDWARE NOT SHOWN.)

DECK PANEL ELEVATIONS SHOWN ARE TO THE TOP OF THE PRECAST CONCRETE DECK PANEL SURFACE ALONG THE CENTERLINE OF THE TRANSVERSE JOINT AND DIRECTLY ABOVE THE CENTERLINE OF THE GIRDER. ELEVATIONS ALONG LINE A AND L ARE ALONG THE EDGE OF THE BLOCKOUT FOR ELASTOMERIC CONCRETE.

LOCATION	LEFT OUTSIDE EDGE OF SUPERSTRUCTURE	LEFT GUTTER LINE	GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4	GIRDER 5	RIGHT GUTTER LINE	RIGHT OUTSIDE EDGE OF SUPERSTRUCTURE
A		25.328	25.349	25.484	25.620	25.495	25.371	25.351	
B	25.351	25.351	25.372	25.508	25.643	25.519	25.394	25.375	25.376
C	25.376	25.376	25.397	25.533	25.668	25.544	25.419	25.400	25.401
D	25.401	25.401	25.422	25.558	25.693	25.569	25.444	25.425	25.426
E	25.426	25.426	25.447	25.583	25.718	25.594	25.469	25.450	25.451
F	25.451	25.451	25.472	25.608	25.743	25.619	25.494	25.475	25.476
G	25.476	25.477	25.497	25.633	25.768	25.644	25.519	25.500	25.501
H	25.501	25.502	25.522	25.658	25.793	25.669	25.544	25.525	25.526
I	25.526	25.527	25.547	25.683	25.818	25.694	25.569	25.550	25.551
J	25.551	25.552	25.572	25.708	25.843	25.719	25.594	25.575	25.576
K	25.576	25.577	25.597	25.733	25.868	25.744	25.619	25.600	25.601
L		25.600	25.621	25.756	25.892	25.767	25.643	25.623	

**DECK PANEL ELEVATIONS**  
 ELEVATIONS ARE AFTER THE 1/4" GRINDING OF THE BRIDGE DECK.

PROJECT NO. B-4188  
MARTIN COUNTY  
 STATION: 18+00.00 -L-

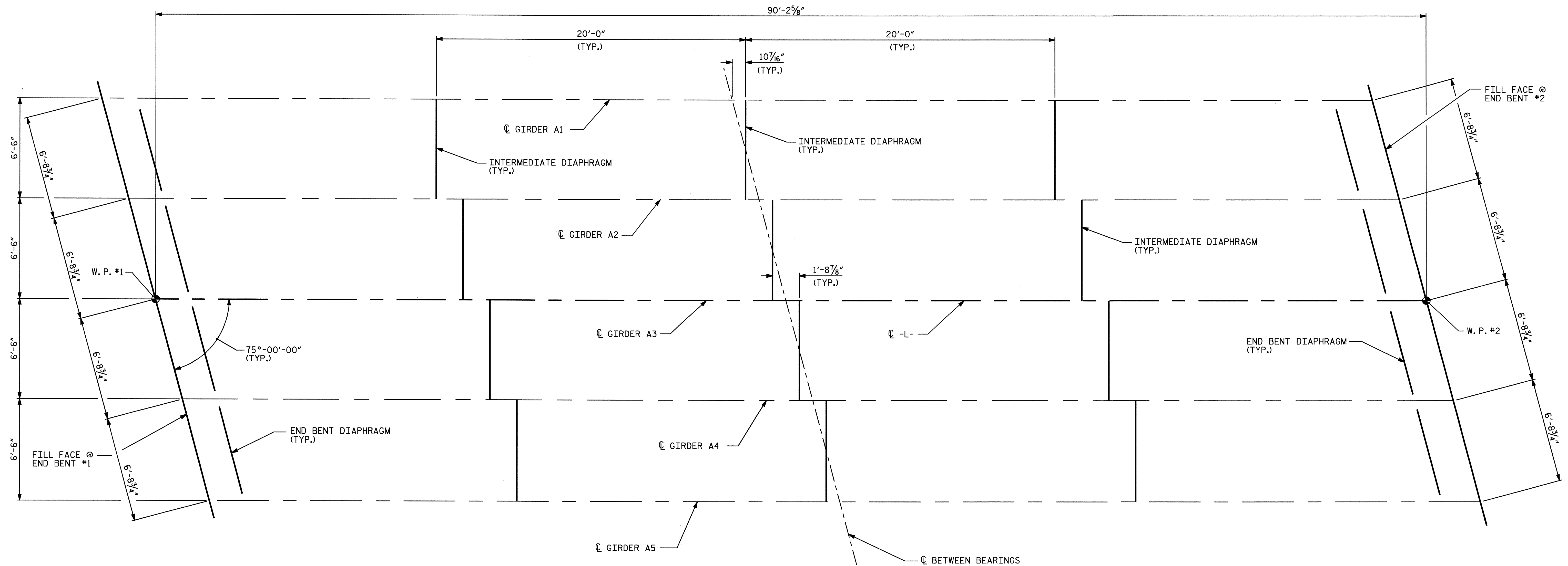


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUPERSTRUCTURE  
 DECK PANEL  
 ELEVATIONS**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS 27
2			4			

DRAWN BY : PEGGY ADKINS DATE : 3-06  
 CHECKED BY : M. RORIE DATE : 6-06



FIXED  
E1, P2

EXP.  
E2, P1

FRAMING PLAN

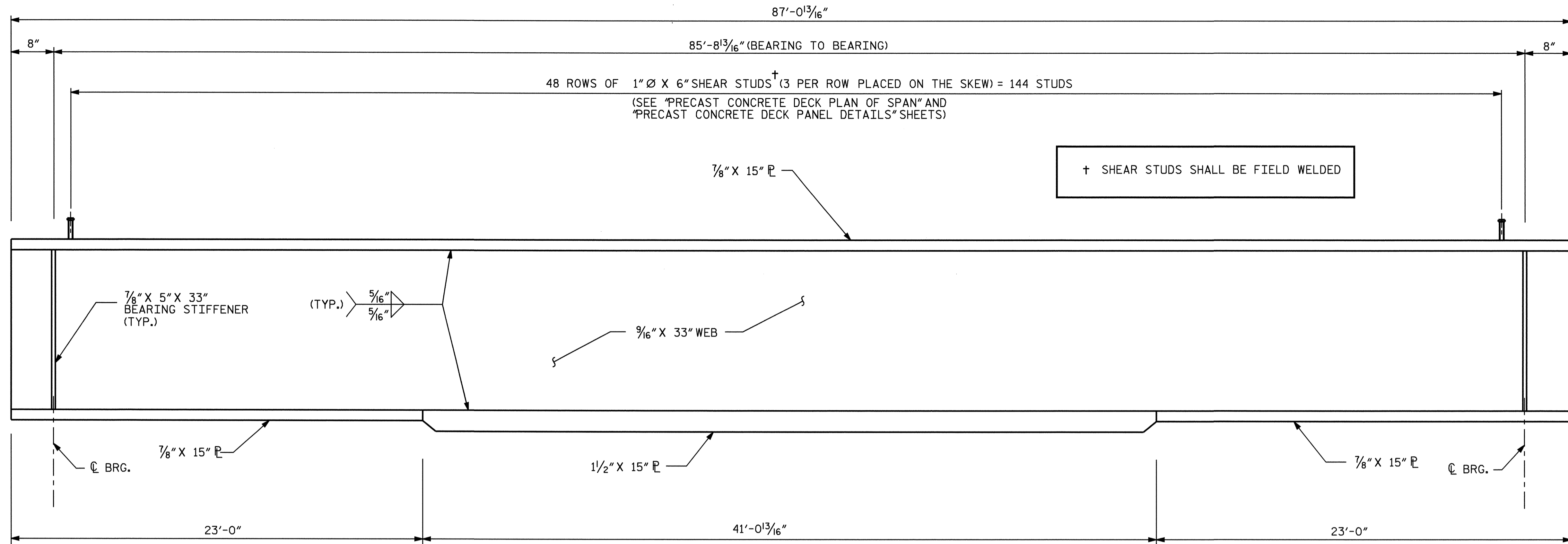
PROJECT NO. B-4188  
MARTIN COUNTY  
 STATION: 18+00.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE FRAMING PLAN					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-12					TOTAL SHEETS 27

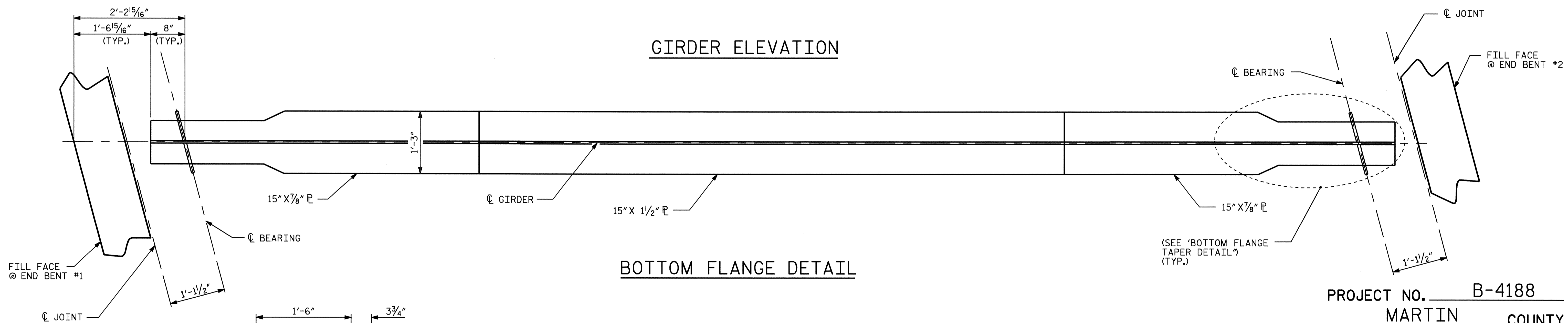


*Emily E. Murray*  
7/7/06

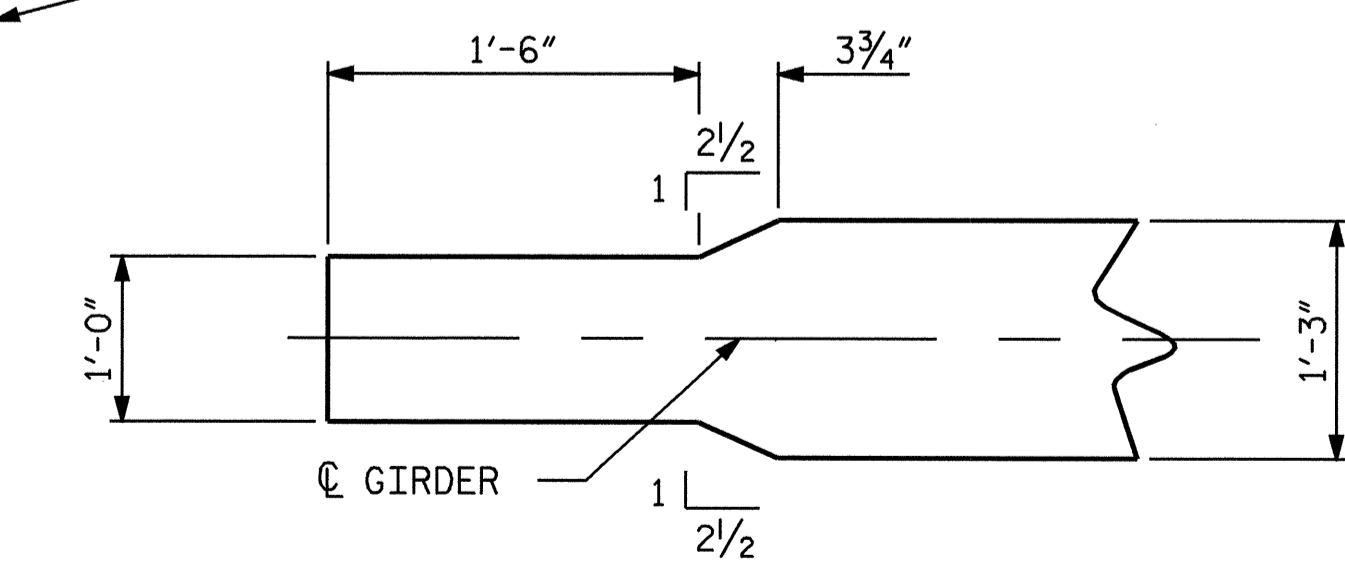
DRAWN BY : PEGGY ADKINS DATE : 3-06  
 CHECKED BY : M. RORIE DATE : 6-06



GIRDER ELEVATION



BOTTOM FLANGE DETAIL



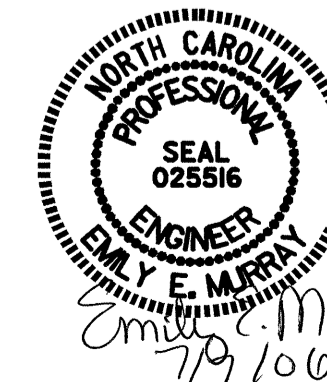
BOTTOM FLANGE TAPER DETAIL

CAMBER TABLE FOR GIRDERS											
TENTH POINTS	SPAN A										
	REQUIRED CAMBER										
	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
GIRDERS 1 & 5	0	1/16"	1 15/16"	2 5/8"	3 1/16"	3 3/16"	3 1/16"	2 5/8"	1 15/16"	1/16"	0
GIRDERS 2 & 4	0	1 3/8"	2 1/2"	3 3/8"	3 15/16"	4 1/8"	3 15/16"	3 3/8"	2 1/2"	1 3/8"	0
GIRDER 3	0	1 1/2"	2 3/4"	3 11/16"	4 1/4"	4 7/16"	4 1/4"	3 11/16"	2 3/4"	1 1/2"	0

PROJECT NO. B-4188  
 MARTIN COUNTY  
 STATION: 18+00.00 -L-

SHEET 1 OF 2

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



DRAWN BY : PEGGY ADKINS DATE : 3-06  
 CHECKED BY : M. RORIE DATE : 6-06

07-JUL-2006 14:37  
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 padkins

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			27

**NOTES:**

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

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

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

A CHARPY V-NOTCH TEST IS REQUIRED FOR WEB PLATES AND BOTTOM FLANGE PLATES FOR ALL GIRDERS AND IN ACCORDANCE WITH ARTICLE 1072-9 OF THE STANDARD SPECIFICATIONS.

SHOP SPLICES ARE PERMITTED TO LIMIT THE MAXIMUM REQUIRED FLANGE PIECE LENGTHS TO 60 FEET AND WEB PIECE LENGTHS TO 45 FEET. PERMITTED FLANGE AND WEB SHOP SPLICES SHALL NOT BE LOCATED WITHIN 15 FEET OF MAXIMUM DEAD LOAD DEFLECTION. KEEP 2 FEET MINIMUM BETWEEN WEB AND FLANGE SHOP SPLICES. KEEP 6" MINIMUM BETWEEN CONNECTOR PLATE WELDS AND WEB OR FLANGE SHOP SPLICES.

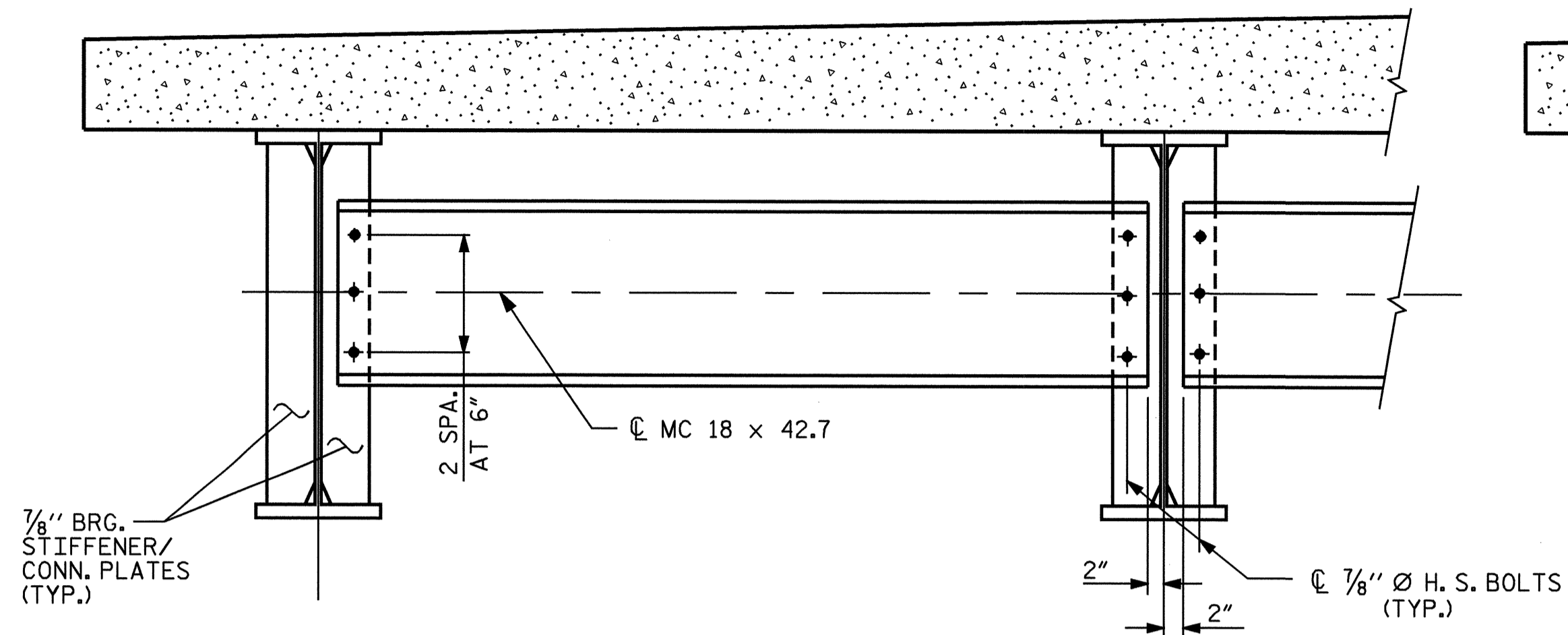
TENSION ON THE AASHTO M164 BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-10 OF THE STANDARD SPECIFICATIONS.

END OF GIRDERS SHALL BE PLUMB.

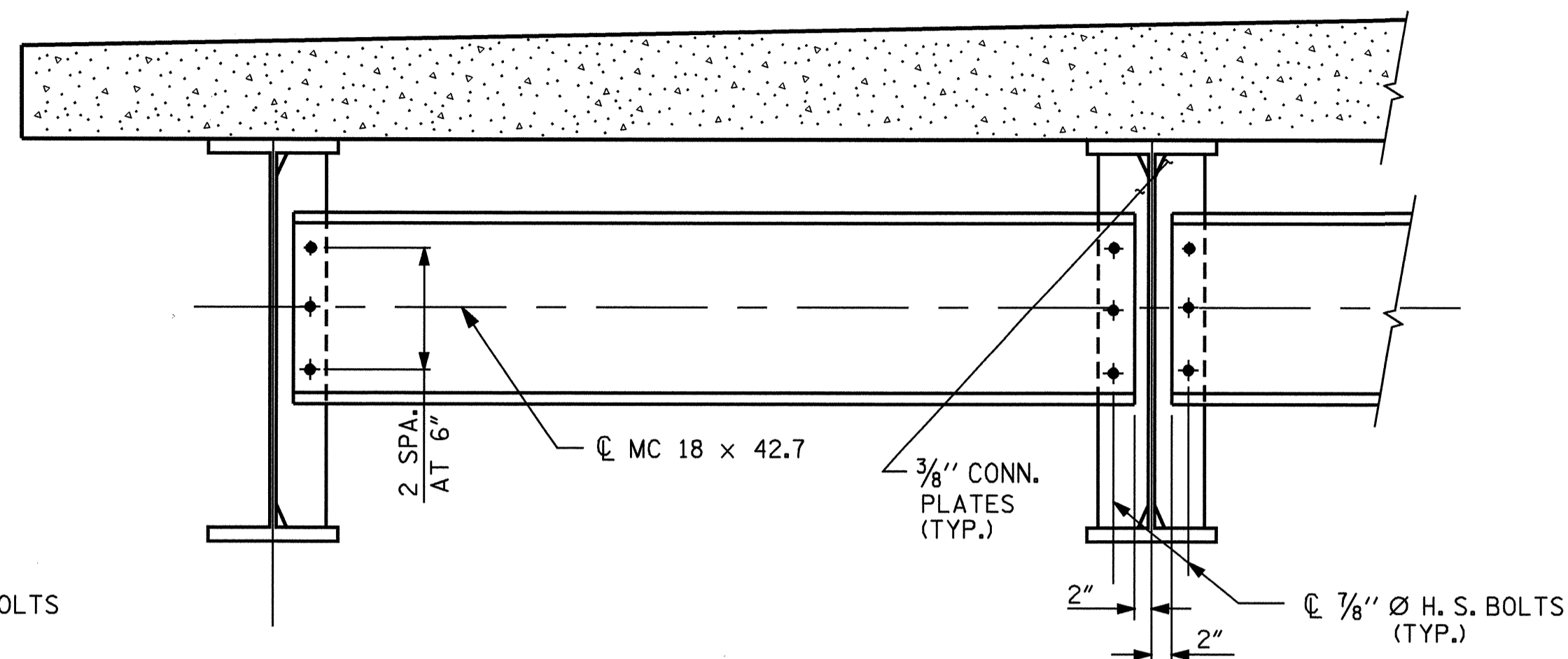
BEARING STIFFENERS ARE TO BE PLACED ALONG THE SKEW AND SHALL BE PLUMB.

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

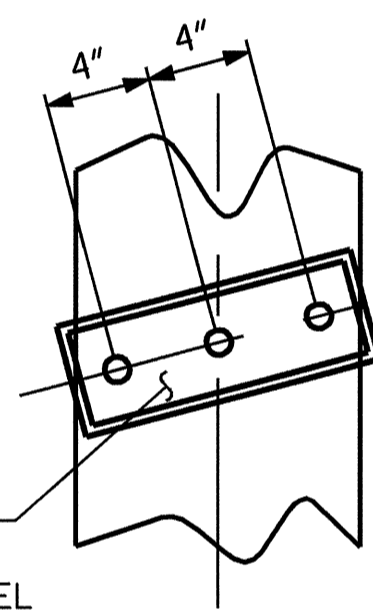
FURNISHING AND INSTALLING THE 1" Ø X 6" SHEAR STUDS SHALL BE INCLUDED IN THE COST OF GROUTING AND POST-TENSIONING.



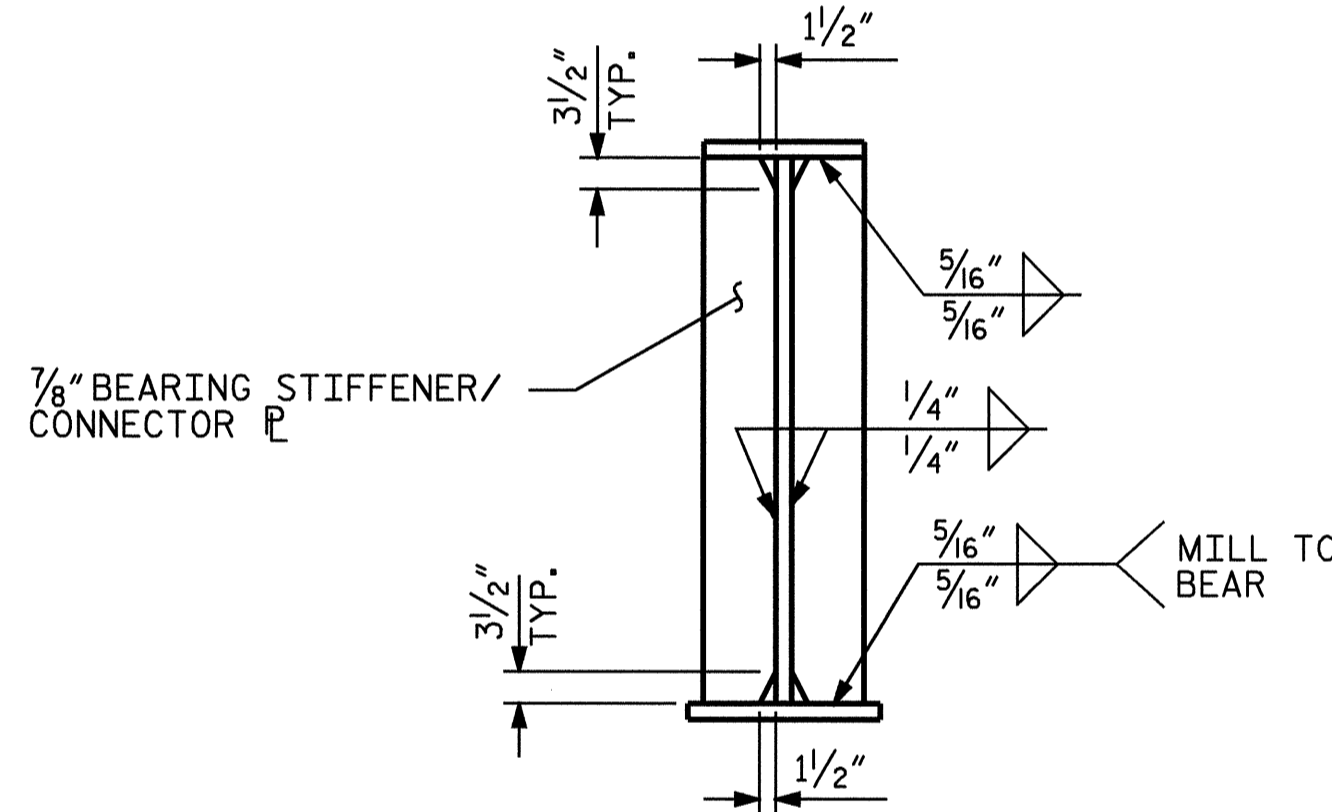
**TYPICAL END BENT DIAPHRAGM**



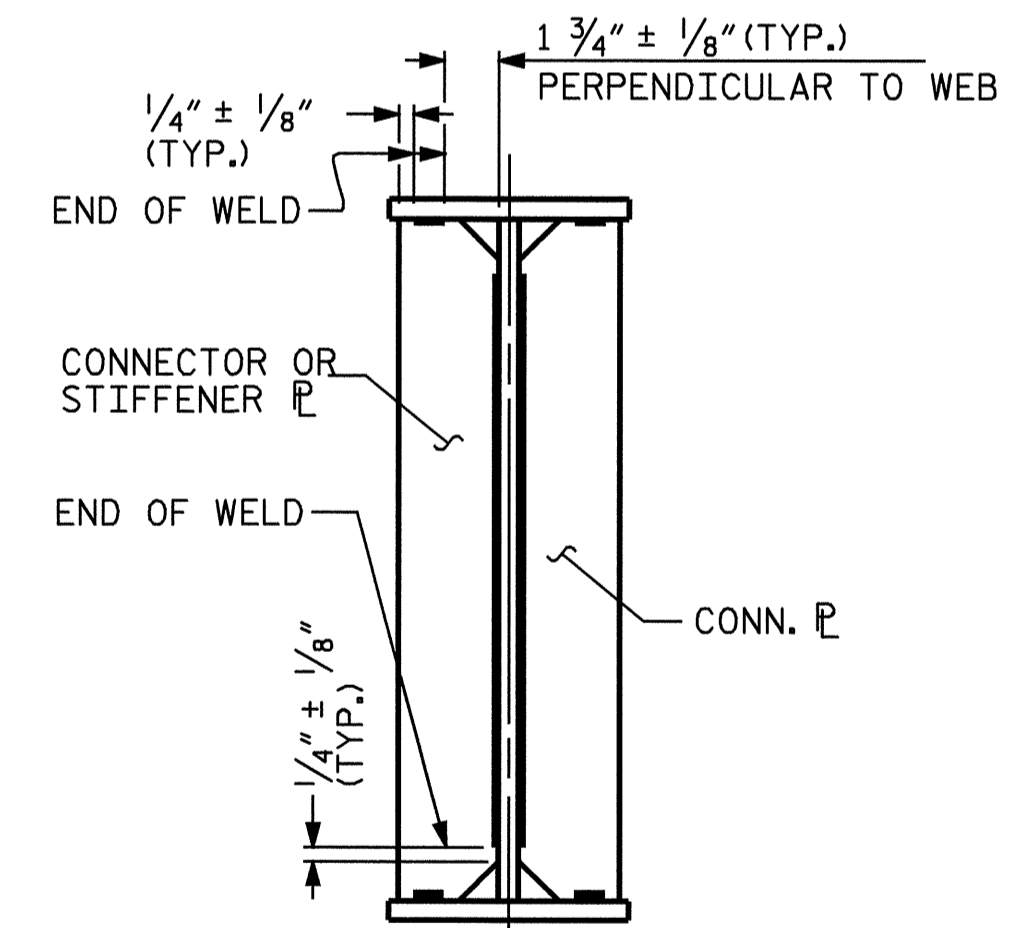
**TYPICAL INTERMEDIATE DIAPHRAGM**



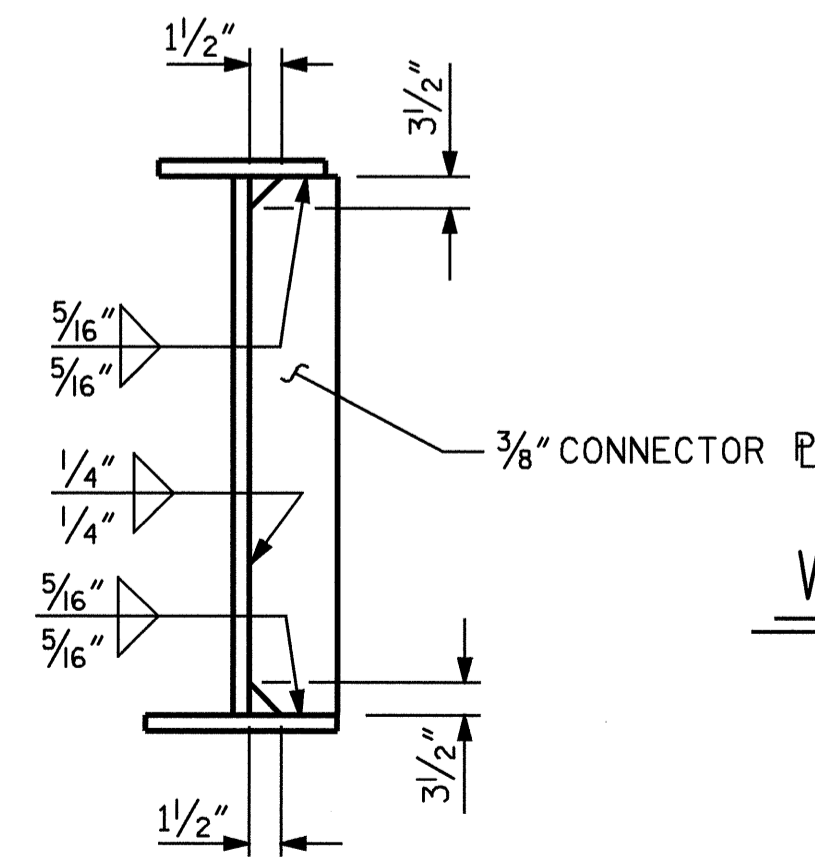
**PLAN VIEW**



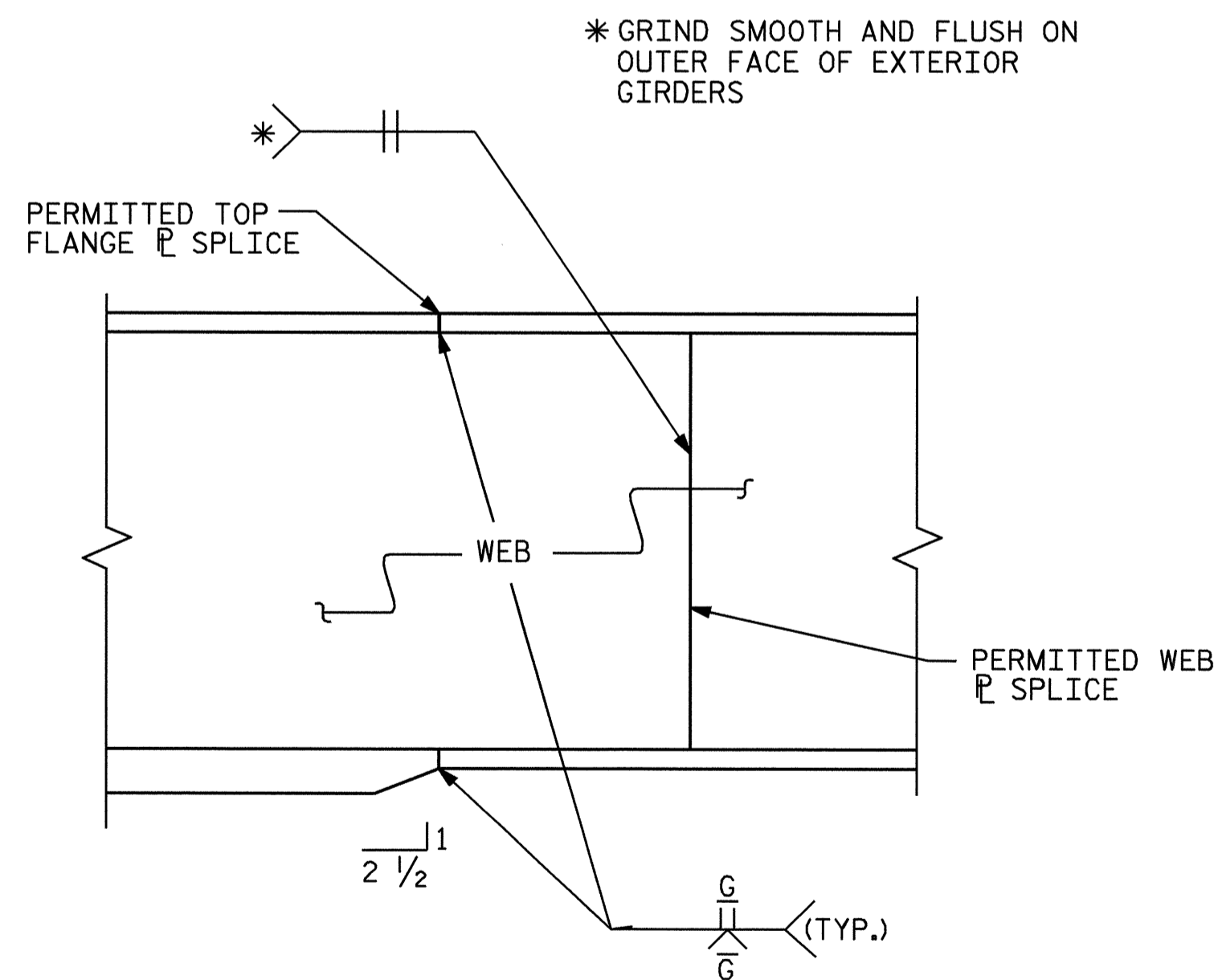
**BEARING STIFFENER/  
CONNECTOR PLATE DETAILS**  
(TYP. EACH END BENT DIAPHRAGM)



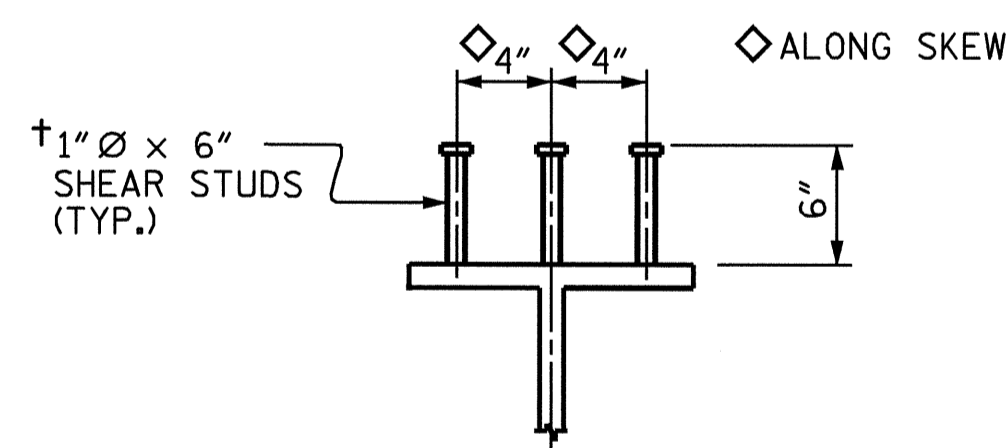
**WELD TERMINATION DETAILS**



**CONNECTOR PLATE DETAILS**  
(TYP. EACH INTERMEDIATE DIAPHRAGM)



**ELEVATION  
TYPICAL FLANGE AND WEB BUTT JOINT**



**SHEAR STUD DETAILS**  
(TYP. ALL GIRDERS)

† FIELD WELD STUDS TO TOP FLANGE IN ACCORDANCE WITH "SUGGESTED PRECAST CONCRETE DECK CONSTRUCTION SEQUENCE."

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

PERMITTED TOP FLANGE SPLICE

\*

WEB

PERMITTED WEB SPLICE

1/2

G/6 (TYP.)

DRAWN BY : PEGGY ADKINS DATE : 3-06  
CHECKED BY : M. RORIE DATE : 6-06

10-JUL-2006 09:38  
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PROJECT NO. B-4188  
MARTIN COUNTY  
STATION: 18+00.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
STRUCTURAL STEEL  
DETAILS



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			27

**NOTES**

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

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

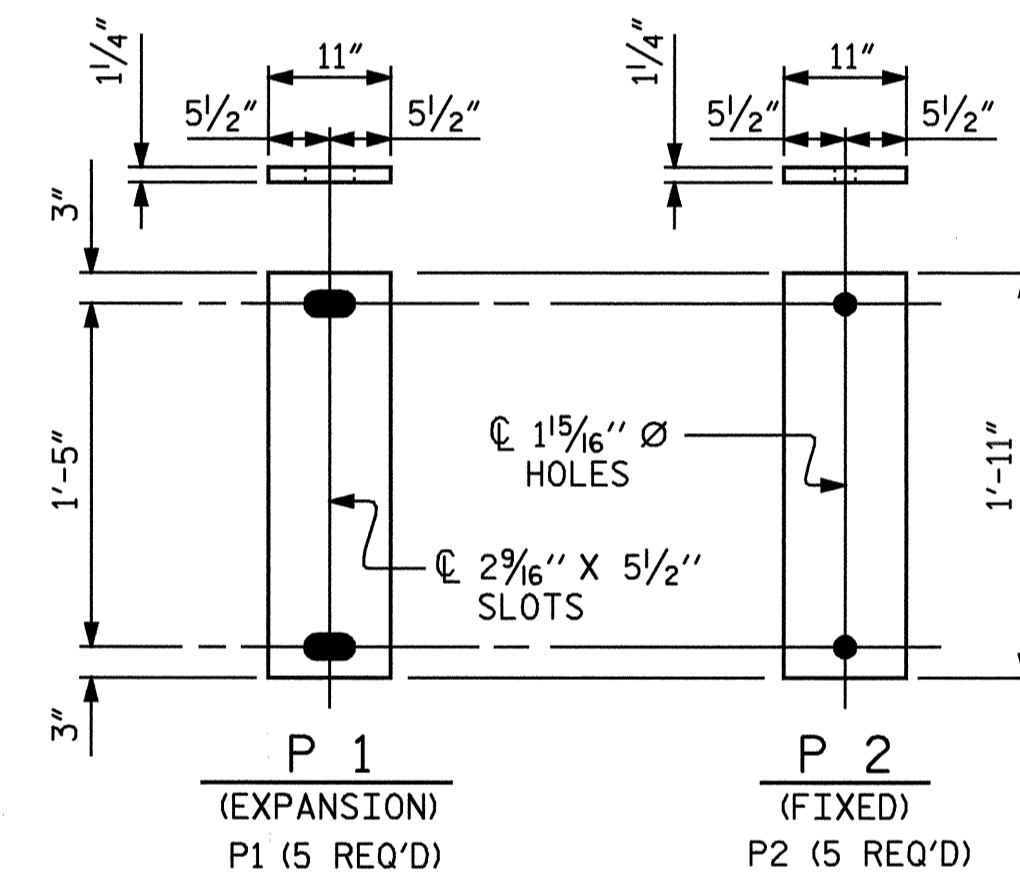
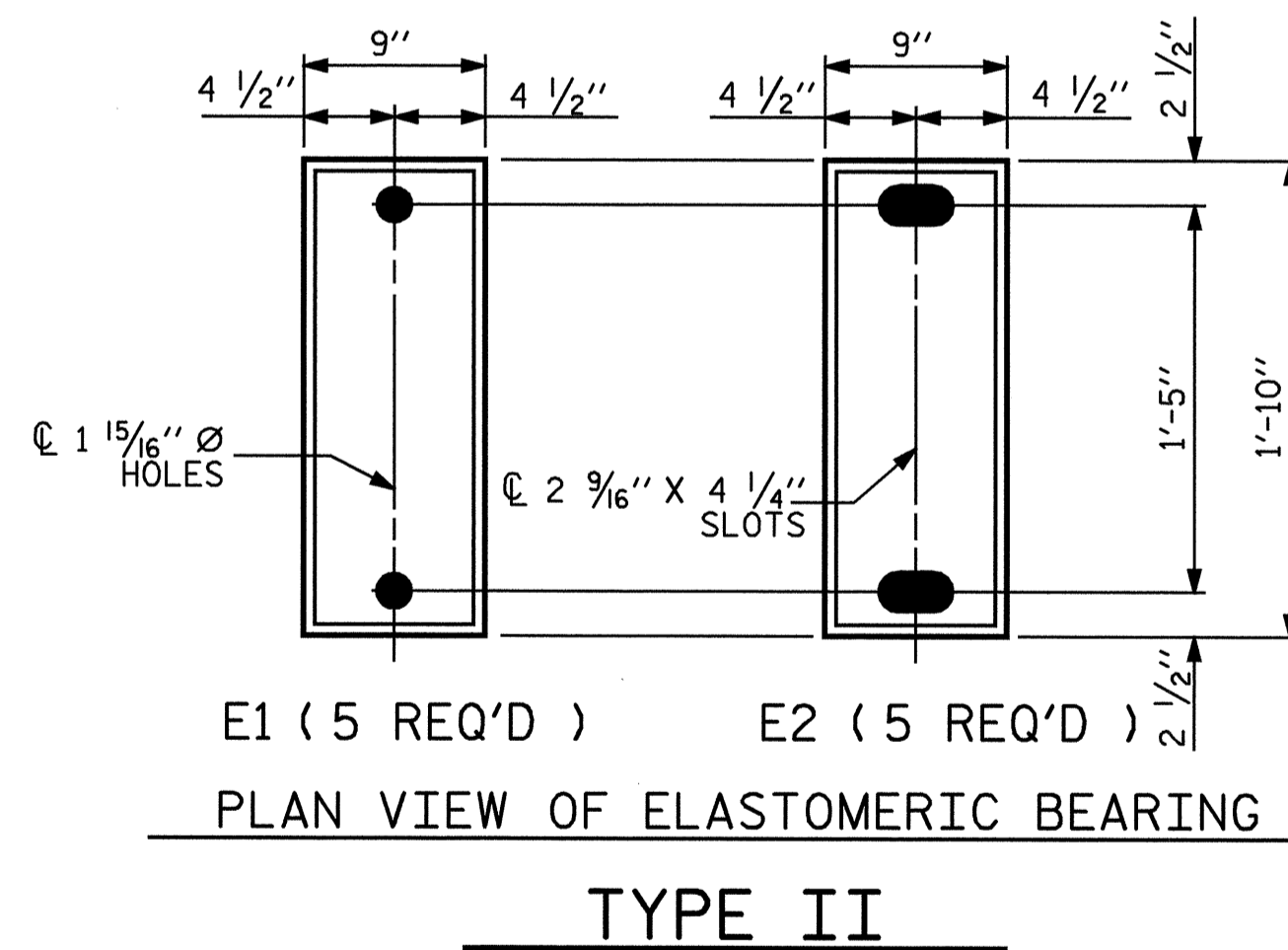
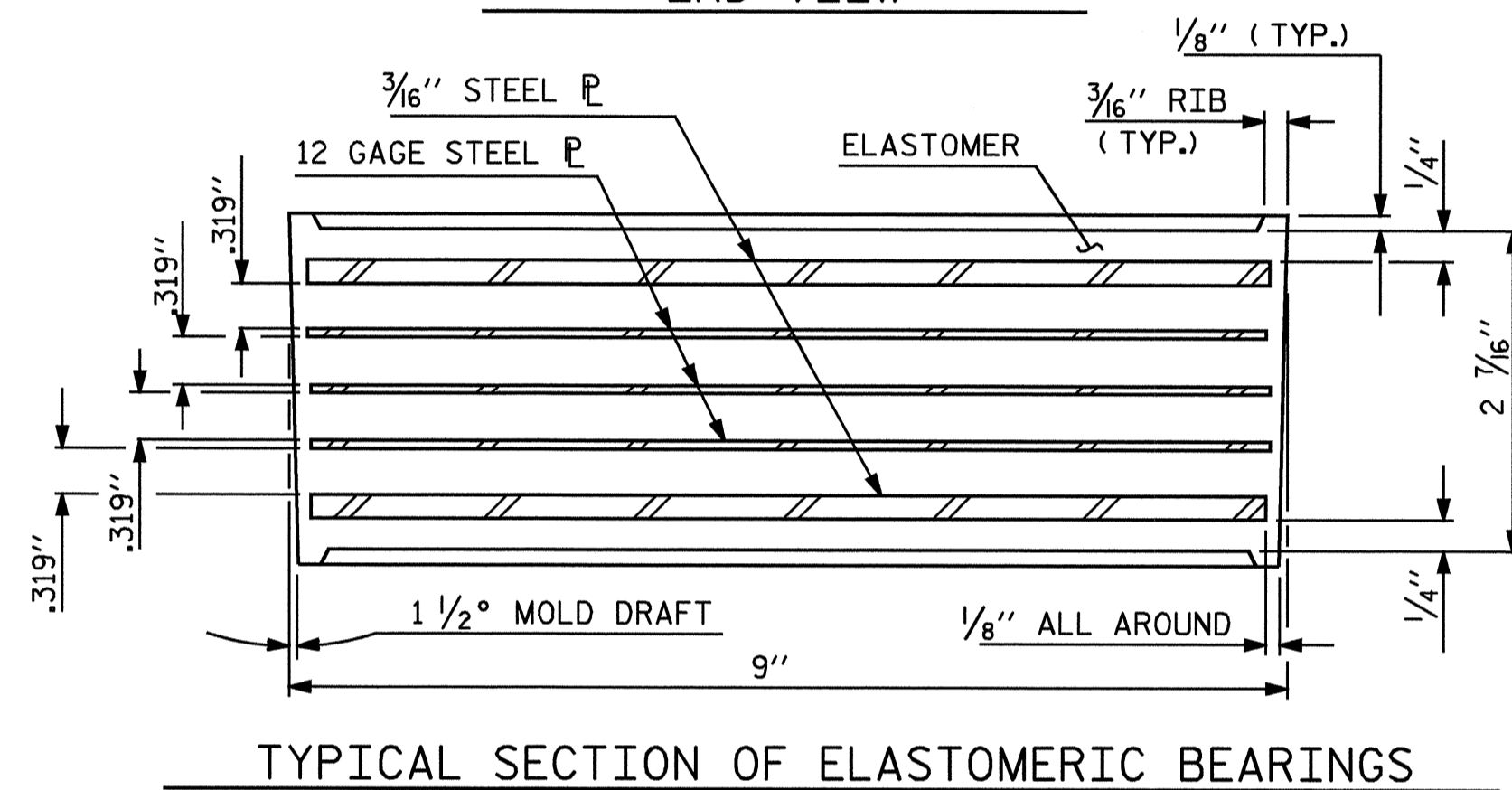
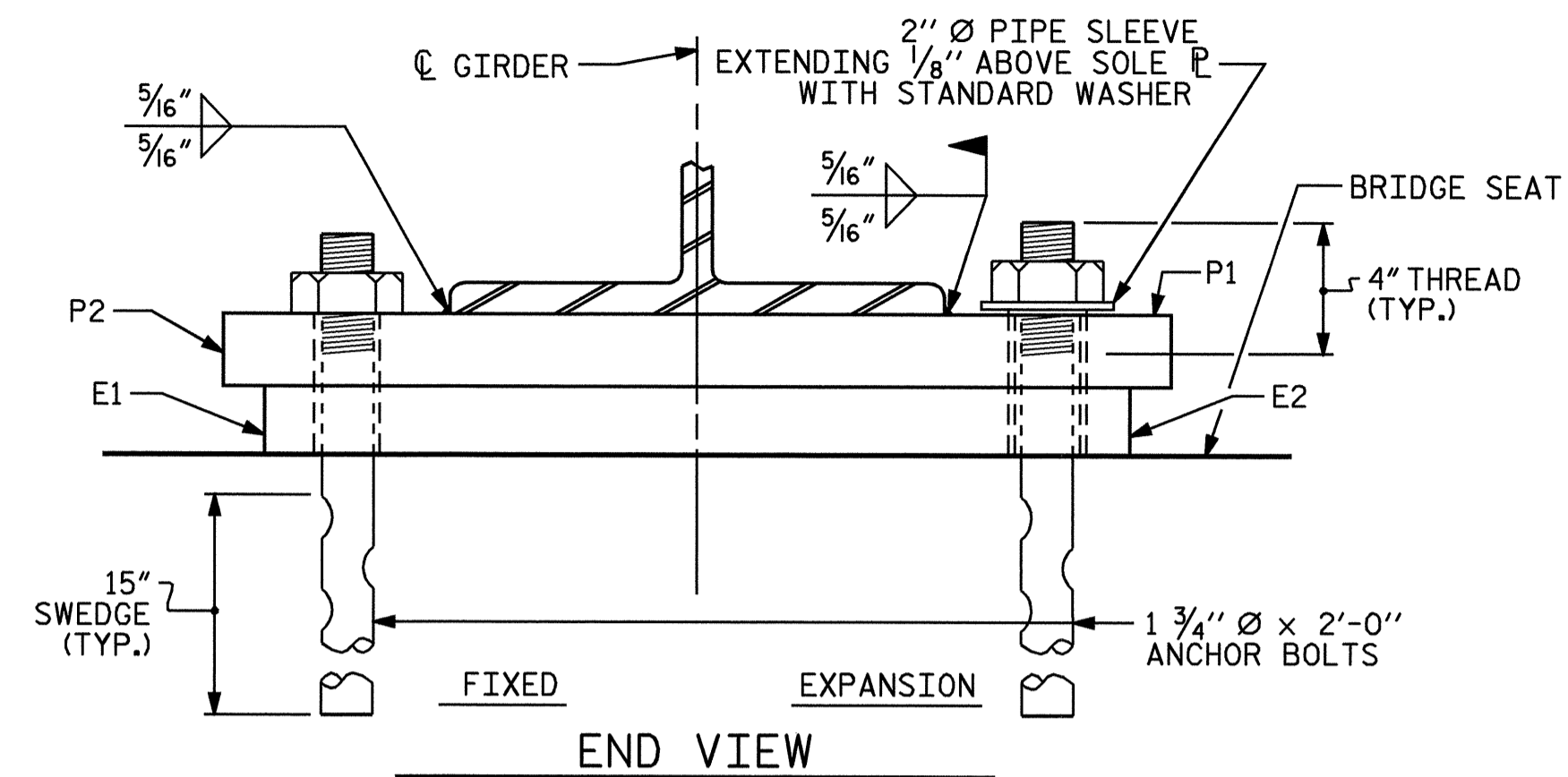
THE PAYMENT FOR THE PIPE SLEEVES SHALL BE INCLUDED IN THE SEVERAL PAY ITEMS.

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

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

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

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.



-LOAD RATINGS-	
	MAX.D.L.+L.L.
TYPE II	119 K

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

PROJECT NO. B-4188  
MARTIN COUNTY  
 STATION: 18+00.00 -L-



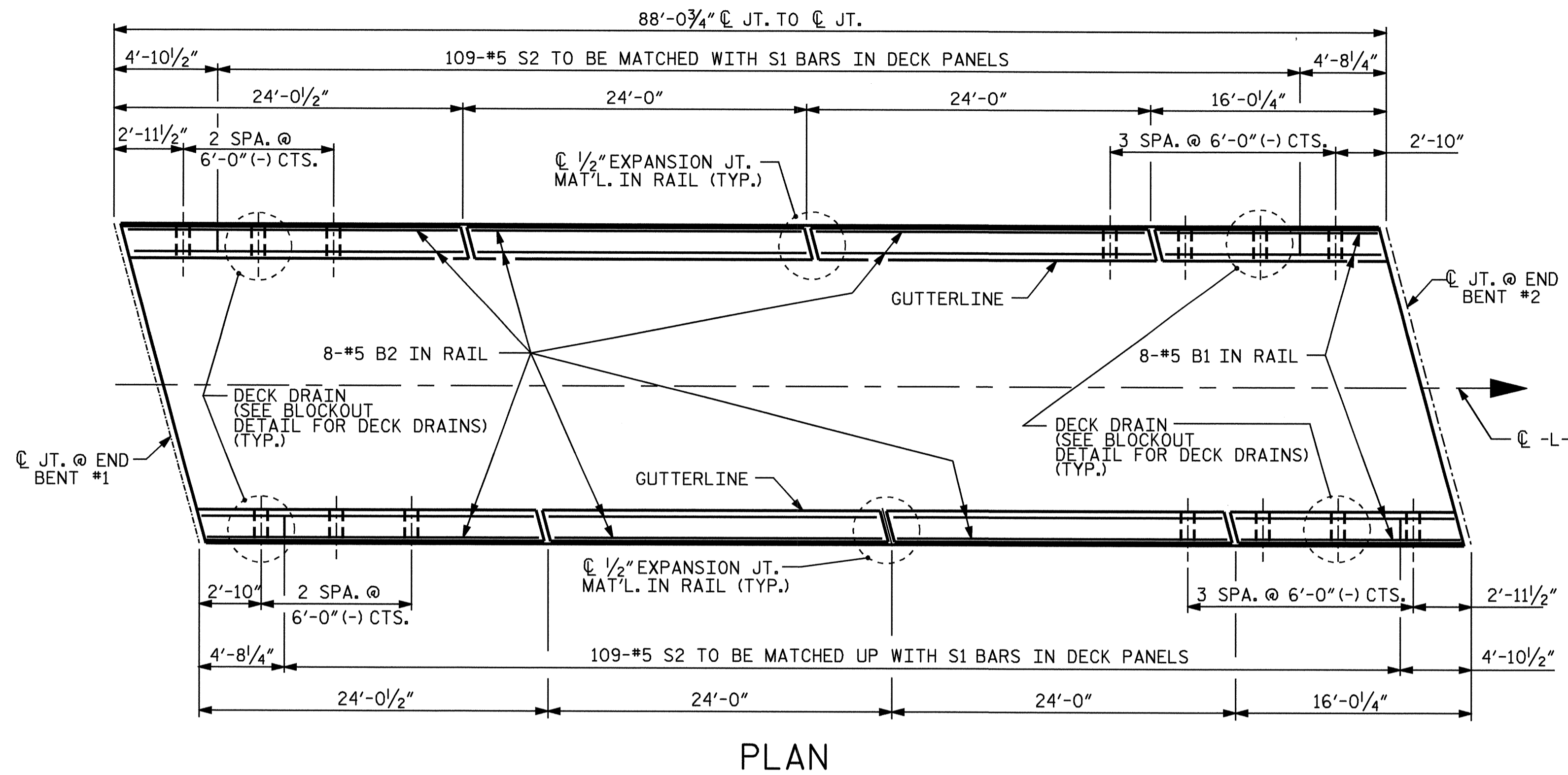
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**STANDARD  
 ELASTOMERIC BEARING  
 DETAILS**  
 (STEEL SUPERSTRUCTURE)

FEB. 1988

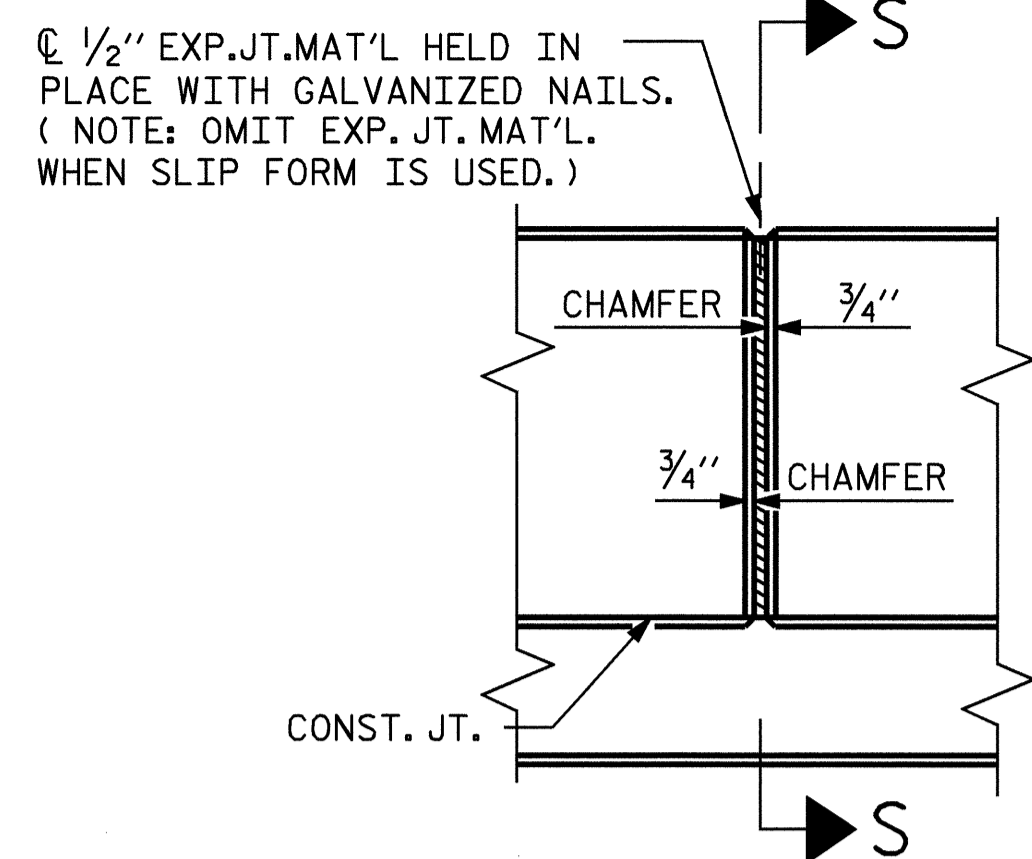
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			27

ASSEMBLED BY : PEGGY ADKINS	DATE : 3-06
CHECKED BY : M. RORIE	DATE : 6-06
DRAWN BY : JMB 11/87	REV. 7/17/98 RWW/LES
CHECKED BY : ARB 11/87	REV. 8/16/99 MAB/LES
	REV. 10/17/00 RWW/LES

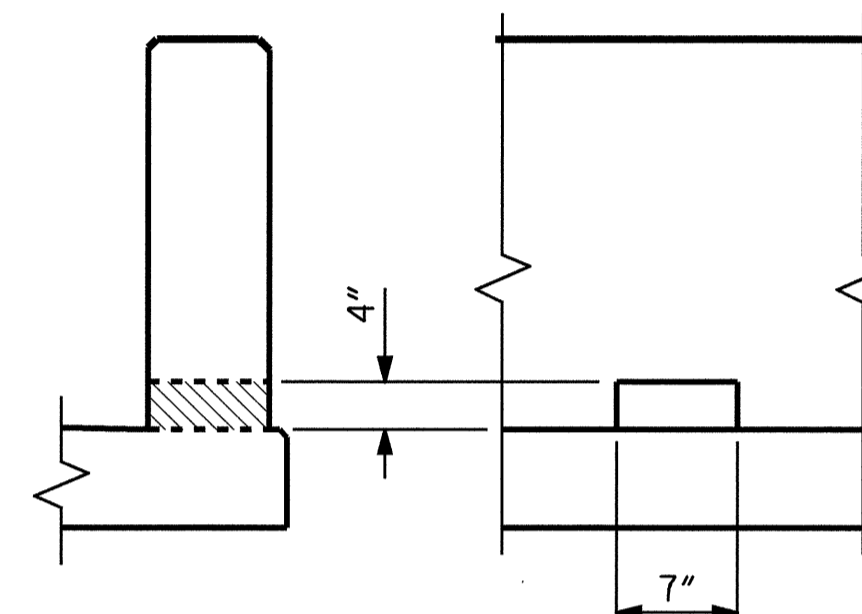




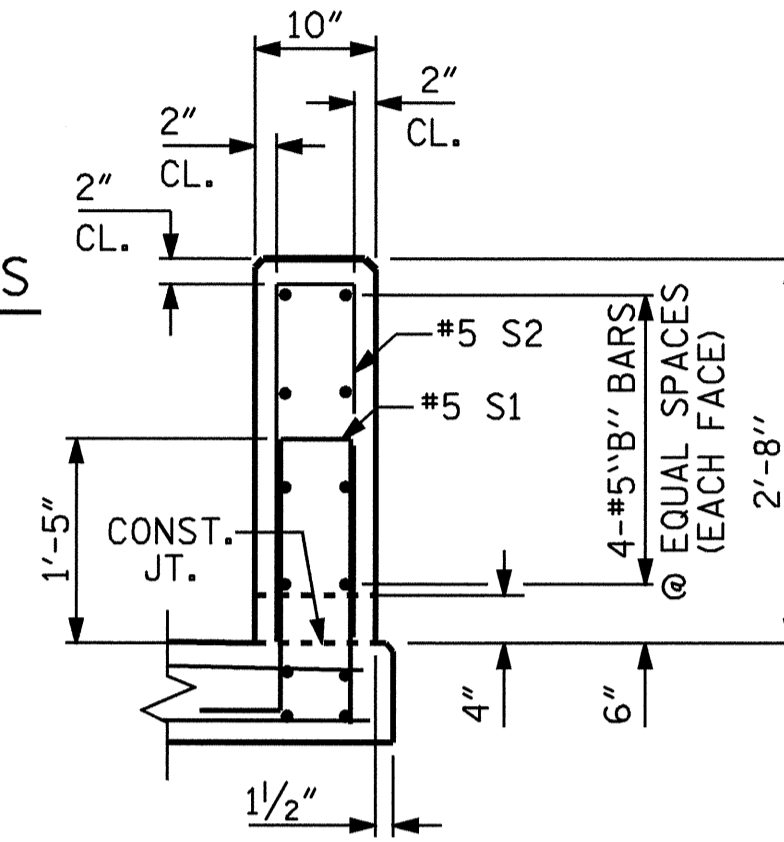
PLAN



ELEVATION AT EXPANSION JOINTS

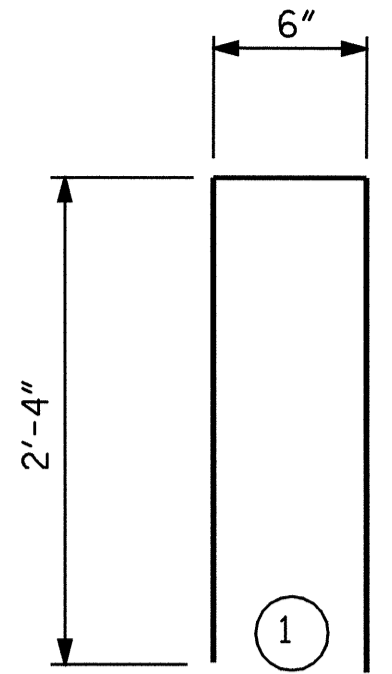


BLOCKOUT DETAIL FOR DECK DRAINS



SECTION THRU RAIL  
(14 BLOCKOUTS REQUIRED)  
(BLOCKOUTS TO BE CENTERED BETWEEN "S" BARS IN BARRIER RAIL)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	16	#5	STR	15'-7"	260
* B2	48	#5	STR	23'-7"	1181
* S2	242	#5	1	5'-2"	1304
* S3	48	#6	STR	2'-0"	144
* EPOXY COATED REINFORCING STEEL					2889 LBS.
CLASS AA CONCRETE					14.5 CU. YDS.
CONCRETE BARRIER RAIL					176.1 LIN. FT.

RAIL DETAILS

NOTES

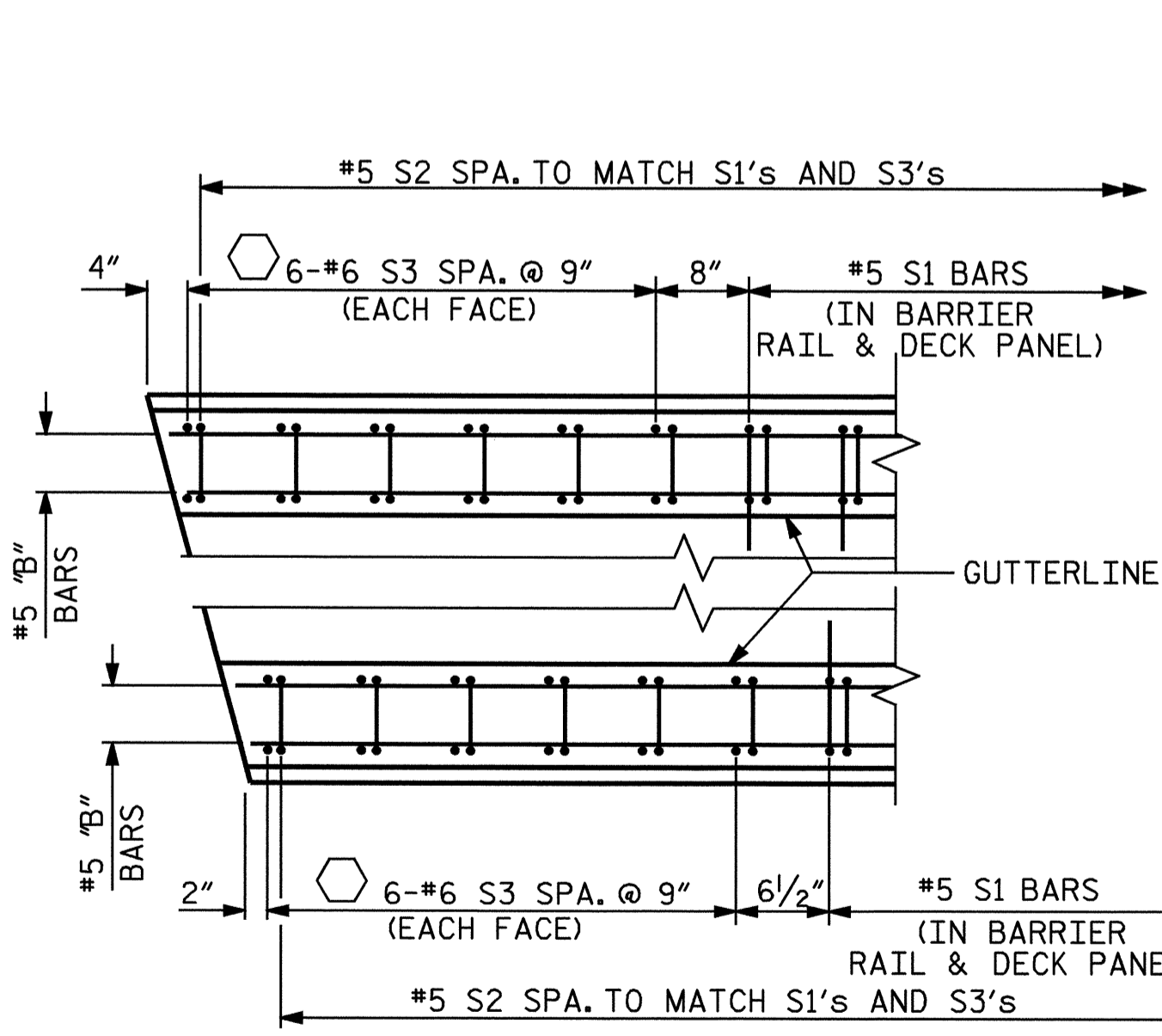
WHEN EVAZOTE JOINT SEAL IS REQUIRED, THE JOINT IN THE DECK SHALL BE SAWED PRIOR TO THE CASTING OF BARRIER RAIL.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

THE #6 S3 BARS SHALL BE INSTALLED, USING AN ADHESIVE ANCHORING SYSTEM, AFTER SAWING THE JOINT. THE YIELD LOAD FOR THE #6 S3 BARS IS 26.4 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

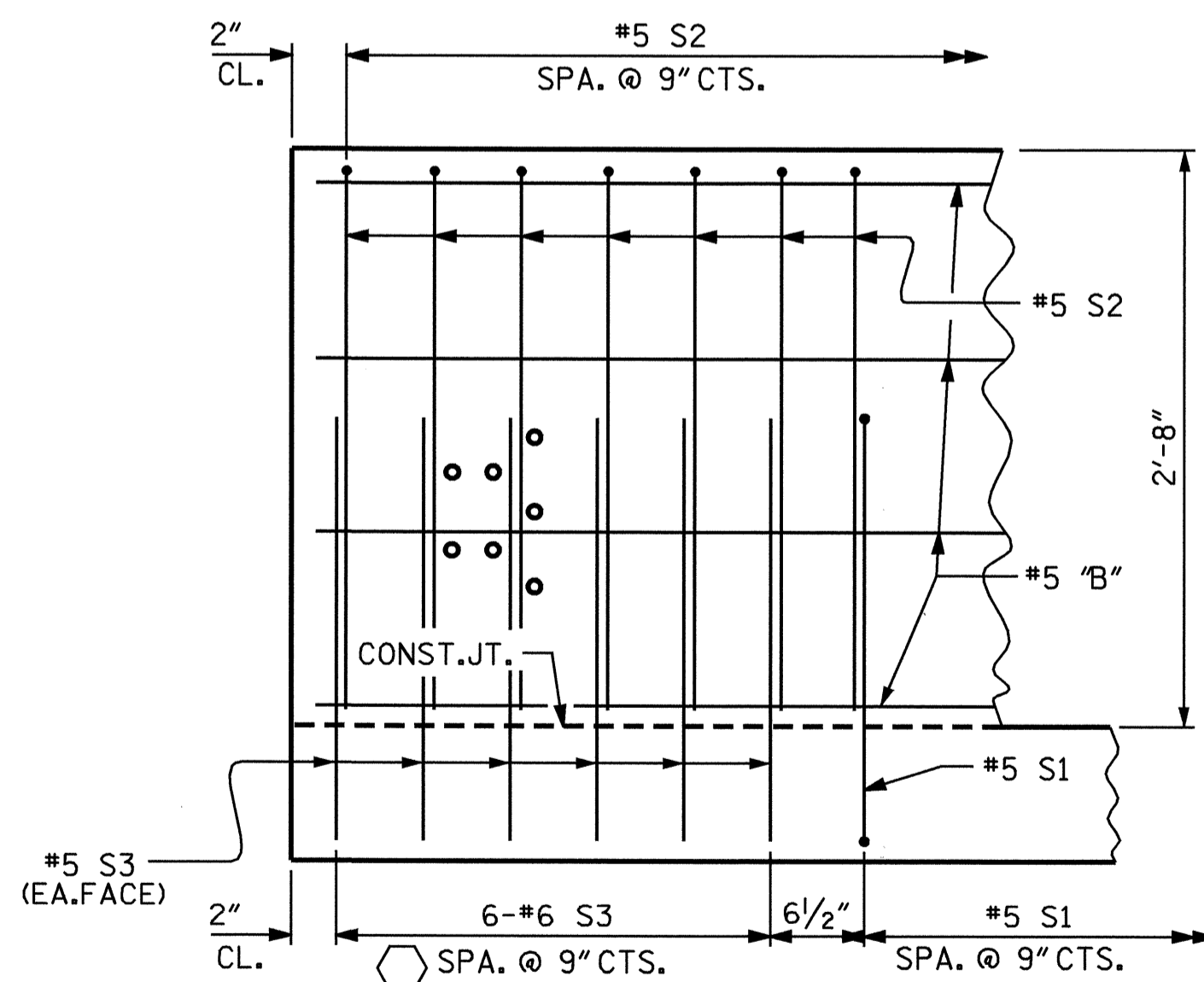
VERTICAL GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION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

DECK DRAINS MAY BE SHIFTED SLIGHTLY TO CLEAR "S" BARS.

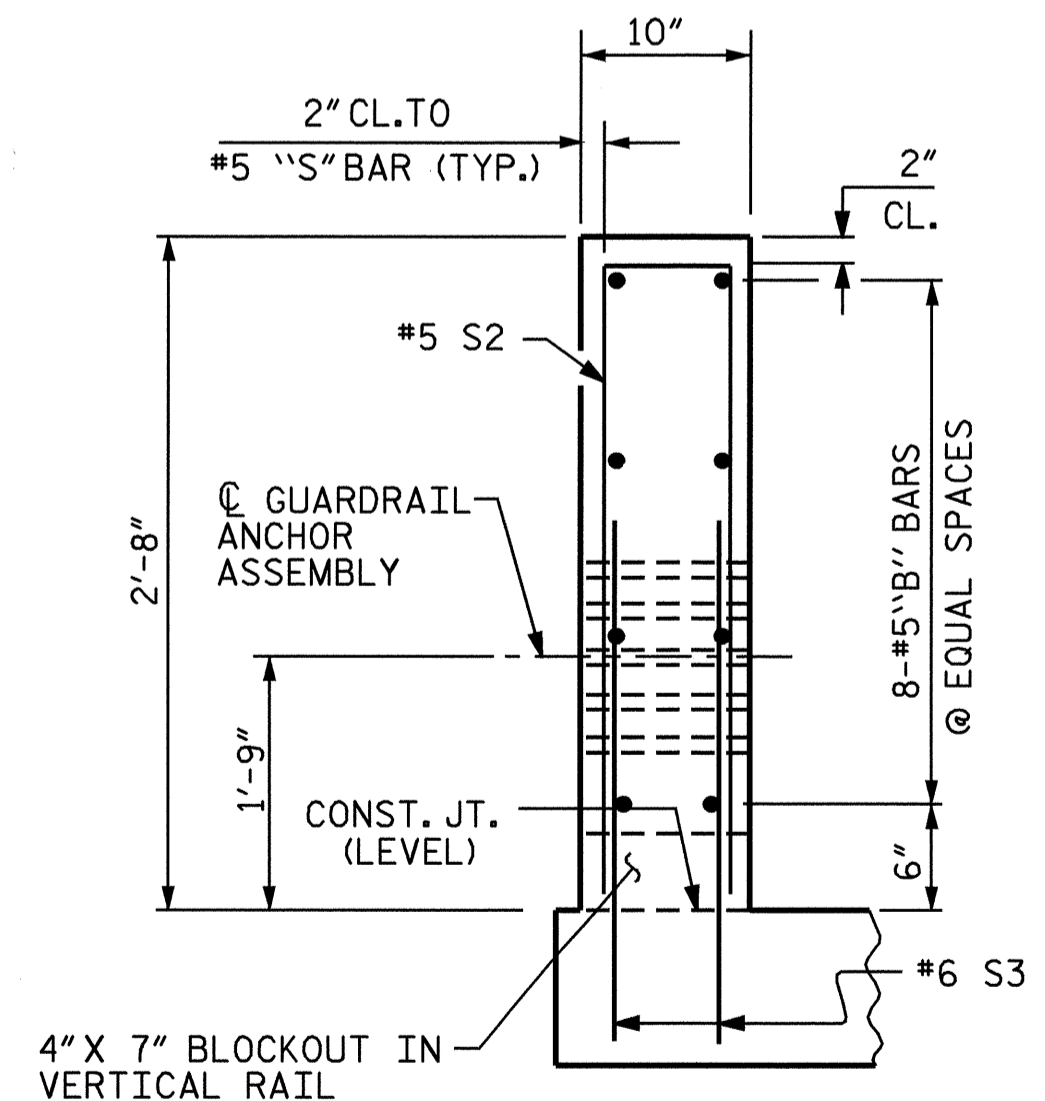


PLAN  
(TYPICAL FOR TYPE I DECK PANEL)

ADHESIVELY ANCHORED



ELEVATION



END VIEW

END OF RAIL DETAILS

FOR ADHESIVE ANCHORING AT SAWED JOINTS.

PROJECT NO. B-4188  
MARTIN COUNTY  
 STATION: 18+00.00 -L-



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

VERTICAL CONCRETE BARRIER RAIL

ASSEMBLED BY : PEGGY ADKINS	DATE : 5-03
CHECKED BY : M. RORIE	DATE : 6-03
DRAWN BY : ARB 5/87	REV. 8/16/99 RWW/LES
CHECKED BY : SJD 9/87	REV. 10/17/00 RWW/LES
	REV. 5/7/03R RWW/JTE

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

SHEET NO.	S-16
TOTAL SHEETS	27

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.

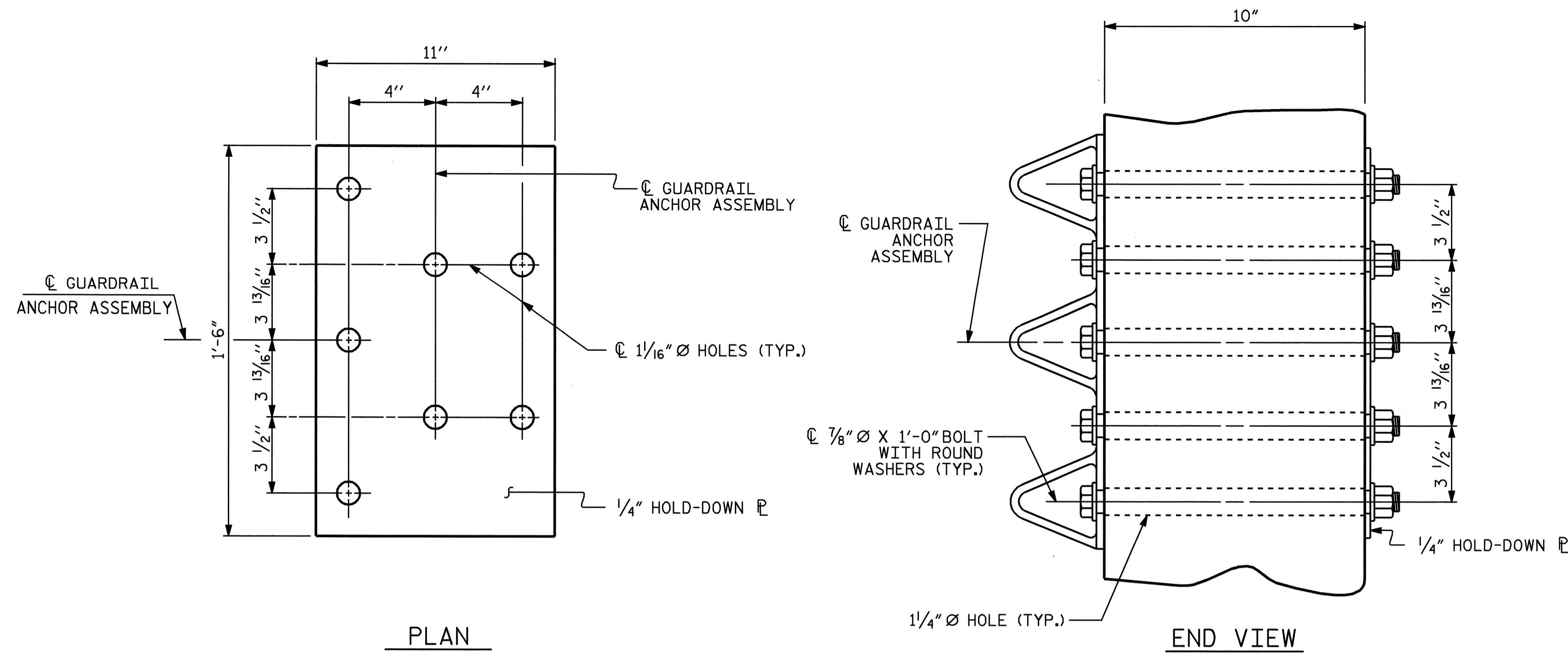
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS.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

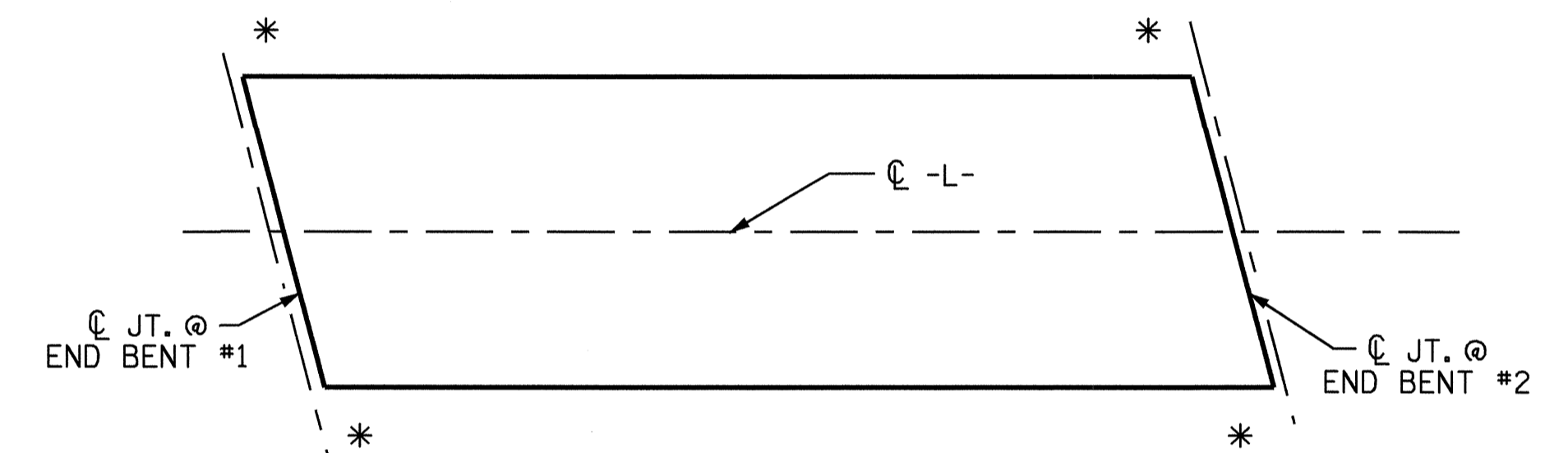
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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

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

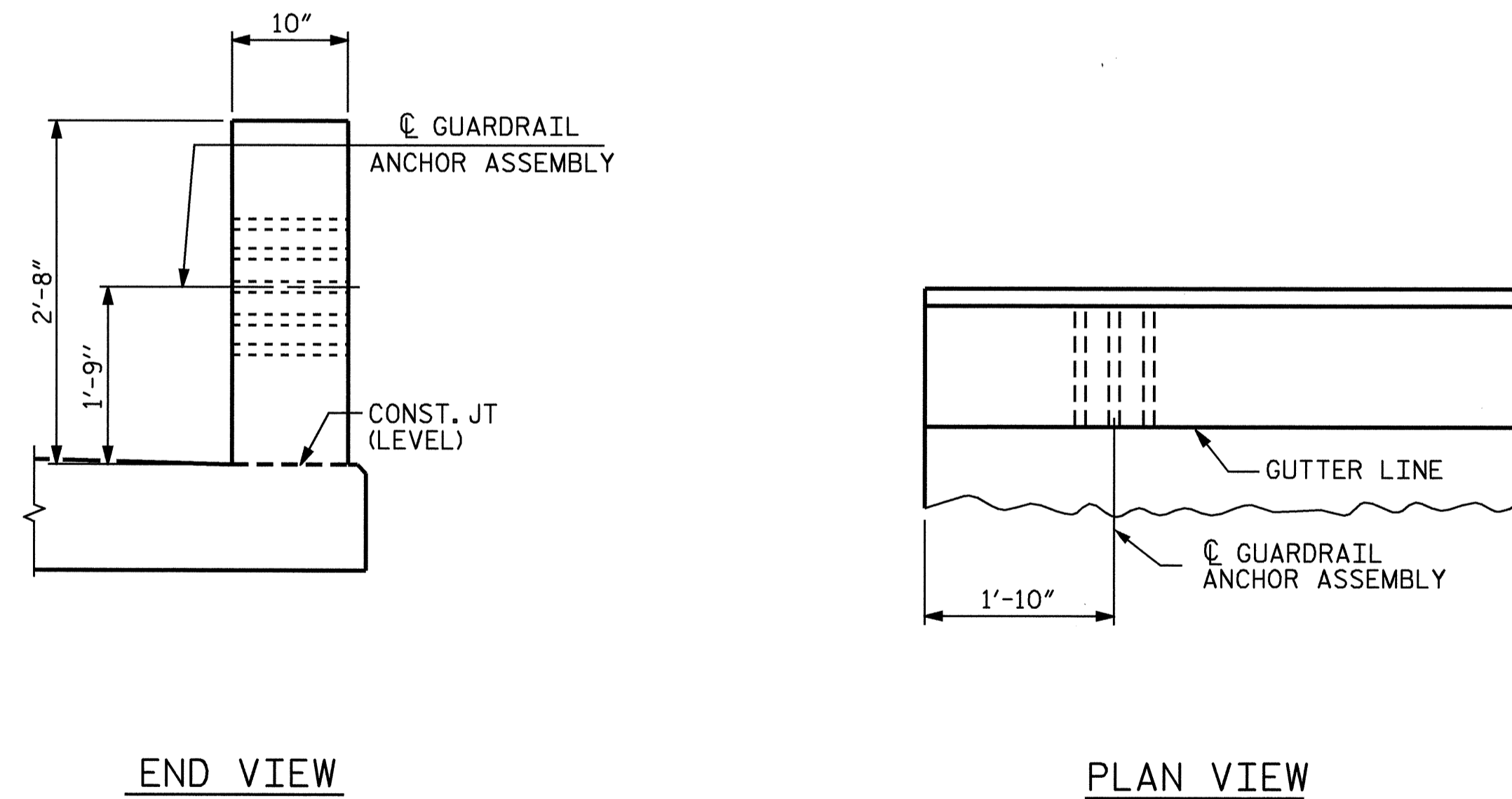


GUARDRAIL ANCHOR ASSEMBLY DETAILS



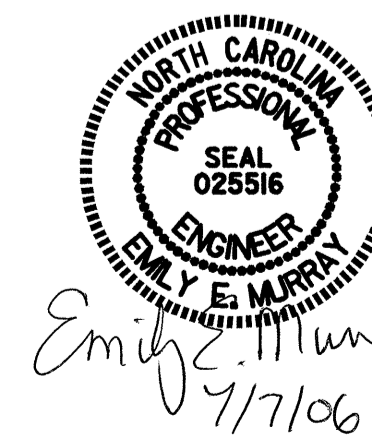
SKETCH SHOWING POINTS OF ATTACHMENT

\* LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END OF RAIL

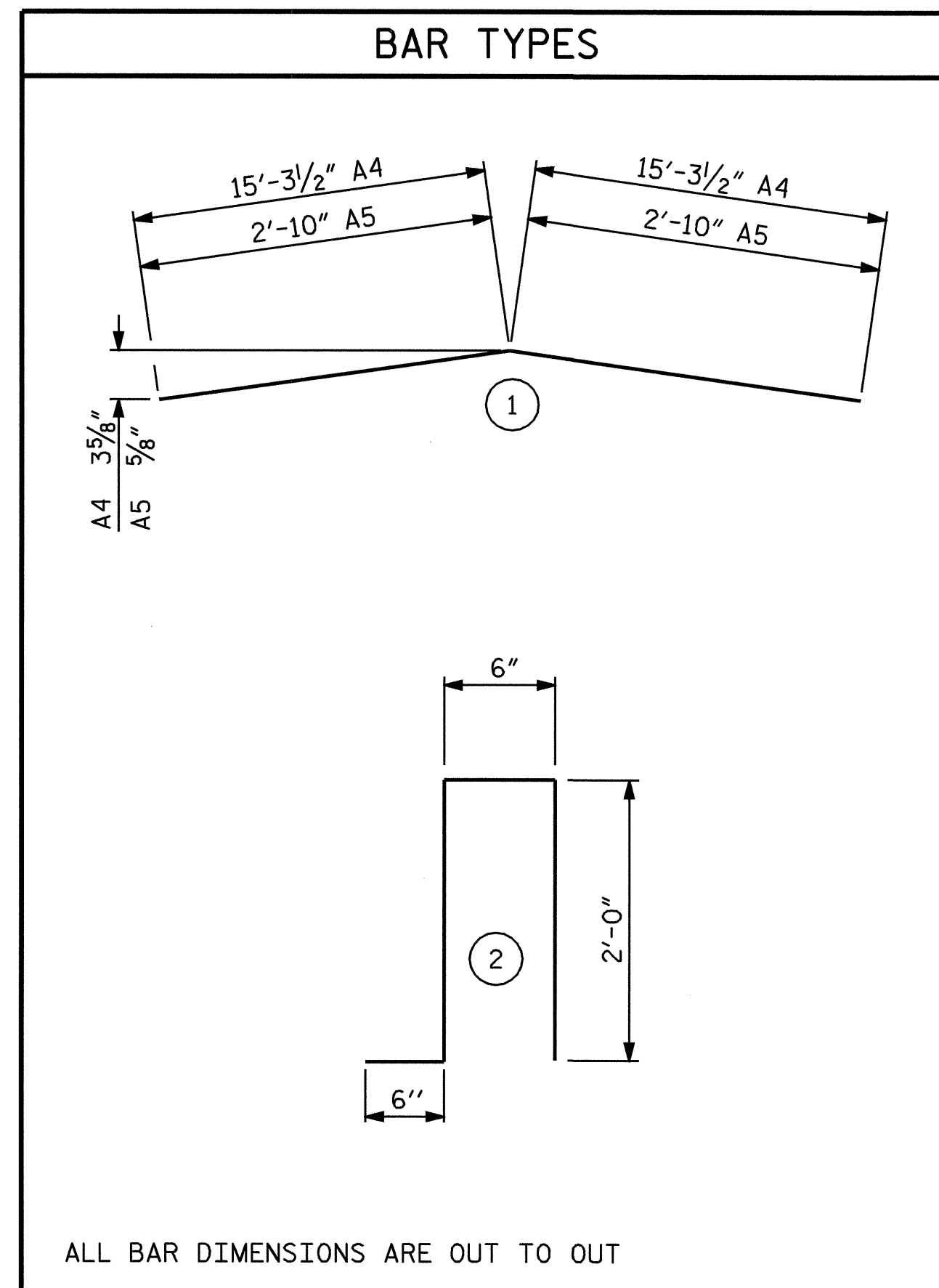
PROJECT NO. B-4188  
MARTIN COUNTY  
 STATION: 18+00.00 -L-



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GUARDRAIL ANCHORAGE  
 DETAILS FOR  
 VERTICAL CONCRETE  
 BARRIER RAIL**

ASSEMBLED BY : PEGGY ADKINS	DATE : 5-06
CHECKED BY : M. RORIE	DATE : 6-06
DRAWN BY : EEM 6/94	REV. 8/16/99 RWW/LJS
CHECKED BY : RGW 6/94	REV. 10/17/00 RWW/LJS
	REV. 5/7/03 RWW/JTE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			27



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

BILL OF MATERIAL FOR TYPE I DECK PANEL					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
A1	13	#5	STR	30'-7"	415
A2	8	#5	STR	4'-8"	39
A3	10	#5	STR	5'-8"	59
A4	13	#5	1	30'-7"	415
A5	2	#5	1	5'-8"	12
B1	60	#5	STR	7'-5"	464
* S1	10	#5	2	5'-0"	52
REINFORCING STEEL					LBS. 1404
* EPOXY COATED REINFORCING STEEL					LBS. 52
6,500 P.S.I. CONCRETE					CU. YDS. 6.9

BILL OF MATERIAL FOR TYPE II DECK PANEL					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
A1	14	#5	STR	30'-7"	447
A2	8	#5	STR	4'-8"	39
A3	10	#5	STR	5'-8"	59
A4	14	#5	1	30'-7"	447
A5	2	#5	1	5'-8"	12
B1	60	#5	STR	7'-5"	464
* S1	22	#5	2	5'-0"	115
REINFORCING STEEL					LBS. 1468
* EPOXY COATED REINFORCING STEEL					LBS. 115
6,500 P.S.I. CONCRETE					CU. YDS. 7.0

BILL OF MATERIAL FOR TYPE III DECK PANEL					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
A1	11	#5	STR	30'-7"	351
A2	8	#5	STR	4'-8"	39
A3	10	#5	STR	5'-8"	59
A4	11	#5	1	30'-7"	351
A5	2	#5	1	5'-8"	12
B1	60	#5	STR	7'-5"	464
* S1	22	#5	2	5'-0"	115
REINFORCING STEEL					LBS. 1276
* EPOXY COATED REINFORCING STEEL					LBS. 115
6,500 P.S.I. CONCRETE					CU. YDS. 7.1

DECK PANELS REQUIRED	
PANEL	NUMBER
TYPE I	2
TYPE II	4
TYPE III	5
TOTAL	11

## 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 CAST WITH THE PANELS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRECAST CONCRETE DECK PANELS.

THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE SL LOW MODULUS SILICONE SEALANT. THE 2" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE PANEL UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

CONTRACTOR, AT HIS OPTION, MAY PUT ROOFING FELT ON TOP FLANGE PRIOR TO PLACING PANELS.

FOR CLASS AA CONCRETE FOR SHEAR STUD AND DUCT COUPLING BLOCKOUTS, SEE SPECIAL PROVISION FOR GROUTING AND POST-TENSIONING.

FOR PORTLAND CEMENT GROUT FOR TENDONS IN POST-TENSIONED STRUCTURES, SEE SPECIAL PROVISION FOR GROUTING AND POST-TENSIONING.

ANCHOR HARDWARE BLOCKOUT DIMENSIONS TO BE DETERMINED WHEN POST-TENSIONING ANCHORAGE HARDWARE IS SELECTED.

A2 AND A3 BAR LENGTHS MAY BE ADJUSTED AS NECESSARY TO CLEAR ANCHOR HARDWARE BLOCKOUT. IF BARS ARE ADJUSTED, MAINTAIN 2" COVER.

PROJECT NO. B-4188  
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 STATION: 18+00.00 -L-

GRINDING BRIDGE FLOORS	
BRIDGE DECK	2201 SQ. FT.
APPROACH SLABS	750 SQ. FT.
TOTAL	2951 SQ. FT.



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

## BILL OF MATERIAL

ASSEMBLED BY : PEGGY ADKINS DATE : 5-06  
 CHECKED BY : M. RORIE DATE : 6-06

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			27

**NOTES:**

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

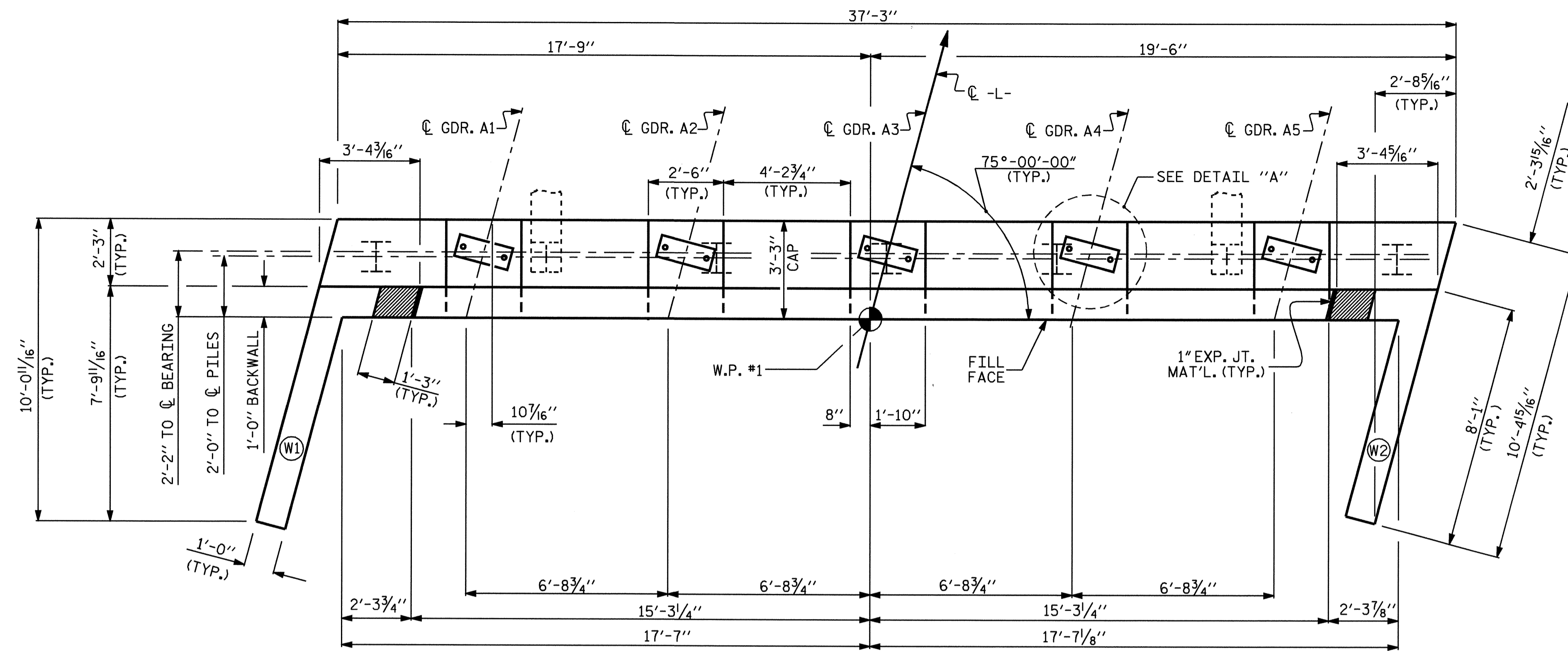
BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

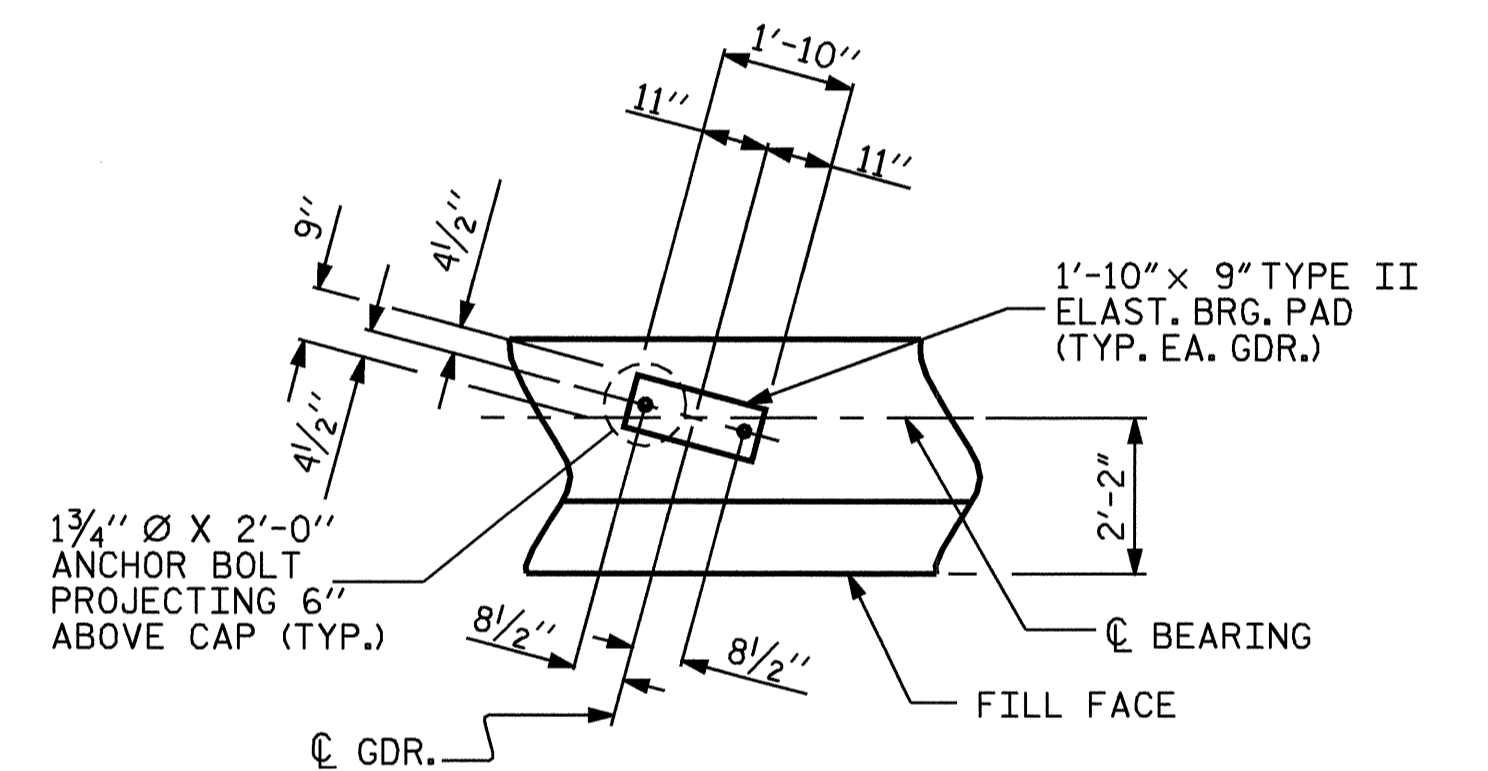
THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

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

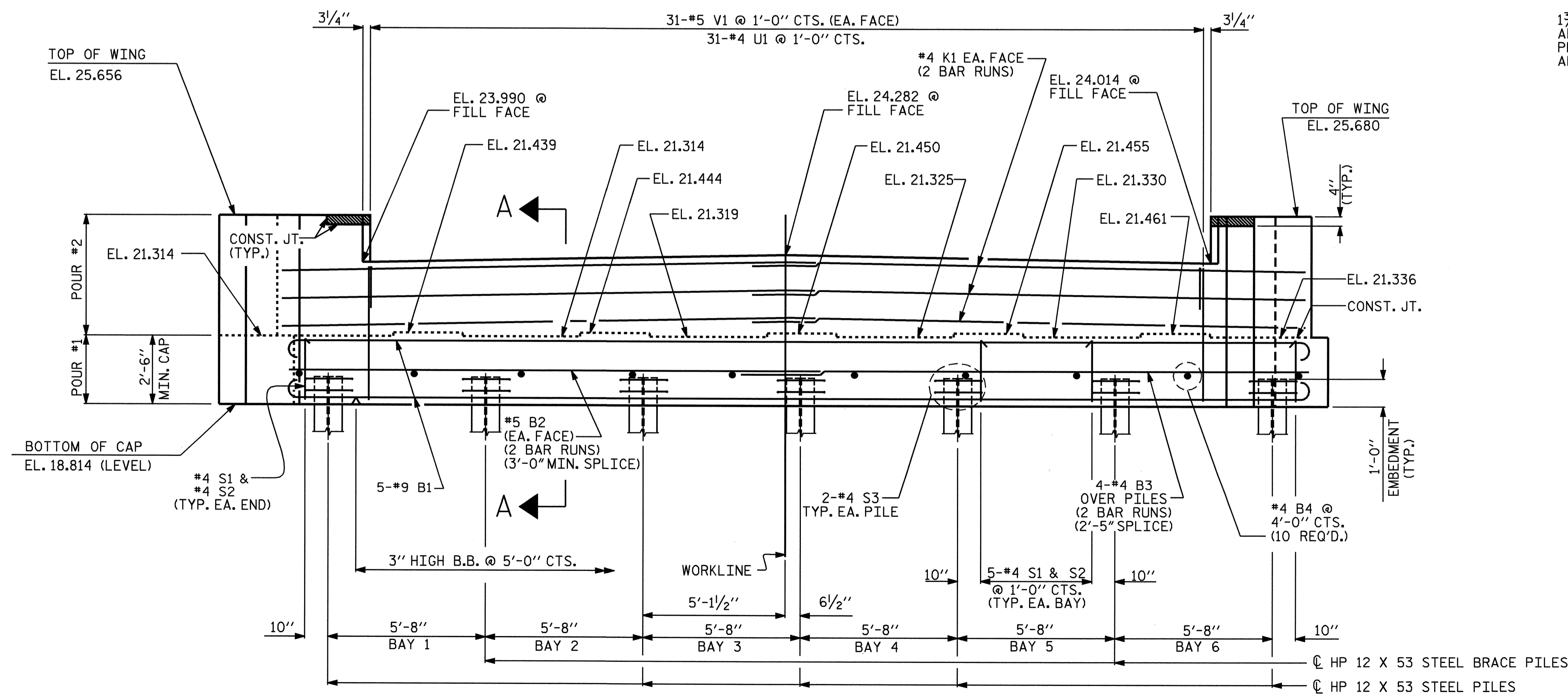
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.



**PLAN**



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



**ELEVATION**

PROJECT NO. B-4188  
MARTIN COUNTY  
 STATION: 18+00.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

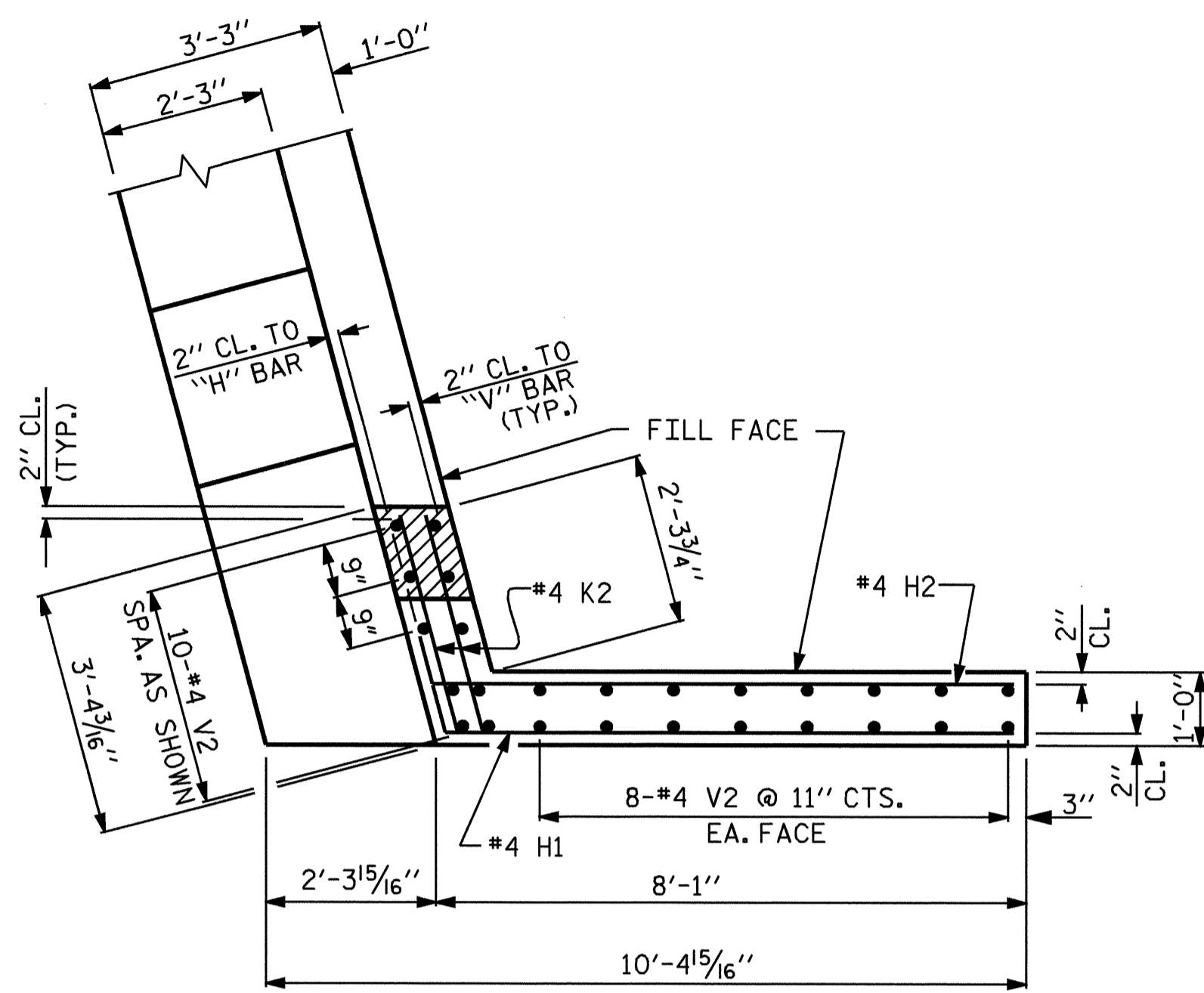
SUBSTRUCTURE

END BENT #1

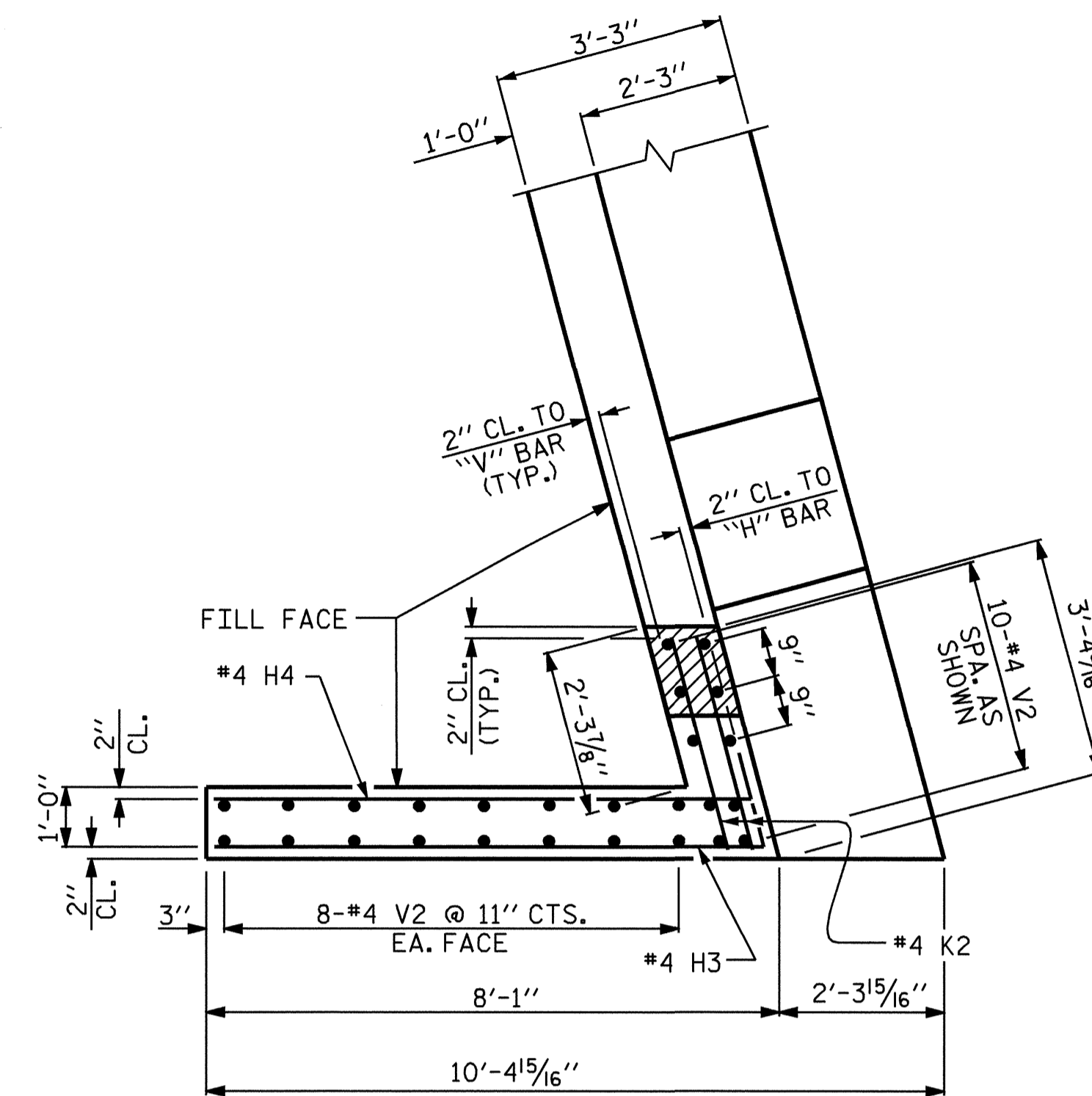


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NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			27

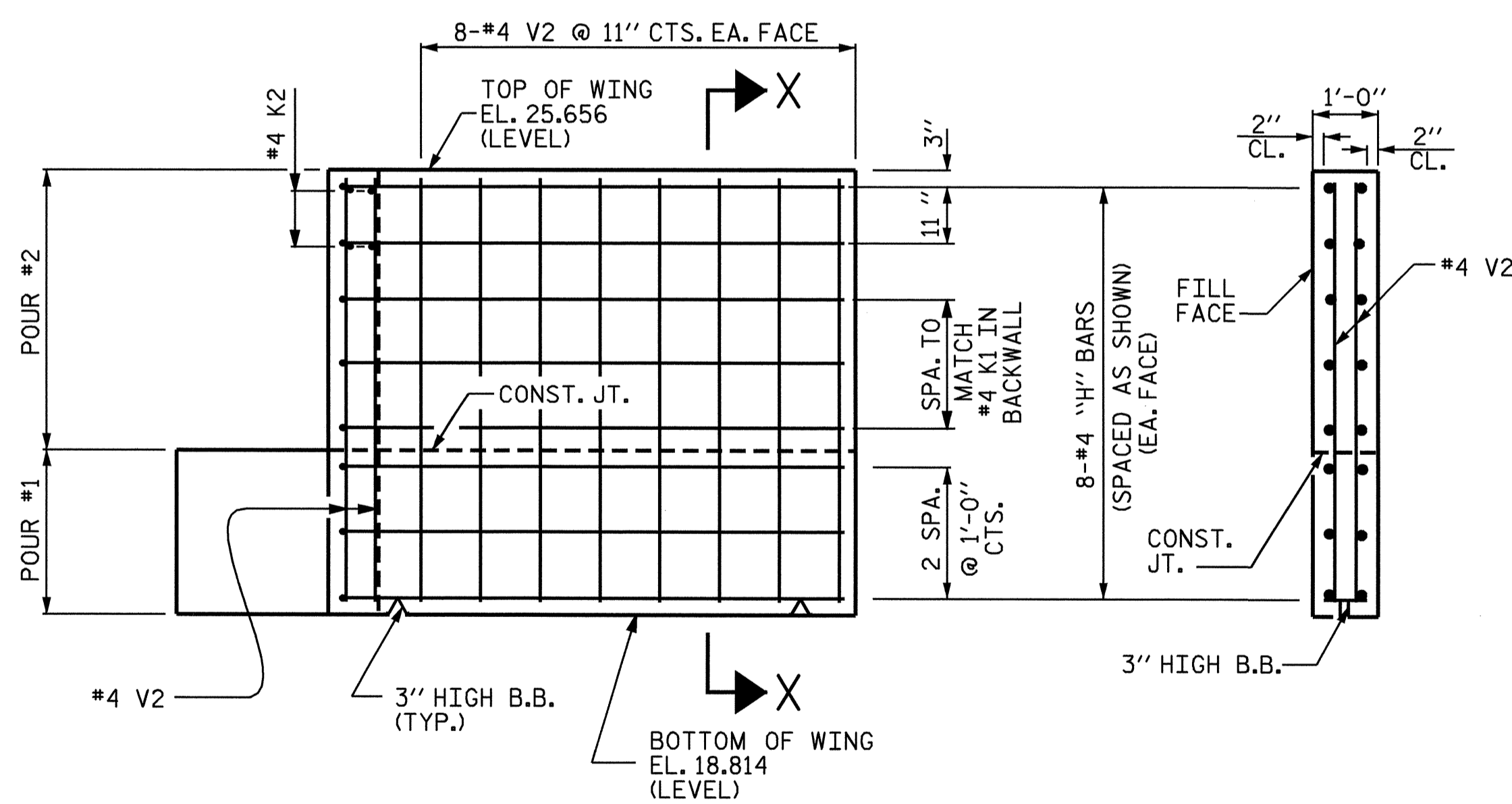
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 CHECKED BY: P.ADKINS DATE: 05/2006



PLAN OF LEFT WING (W1)

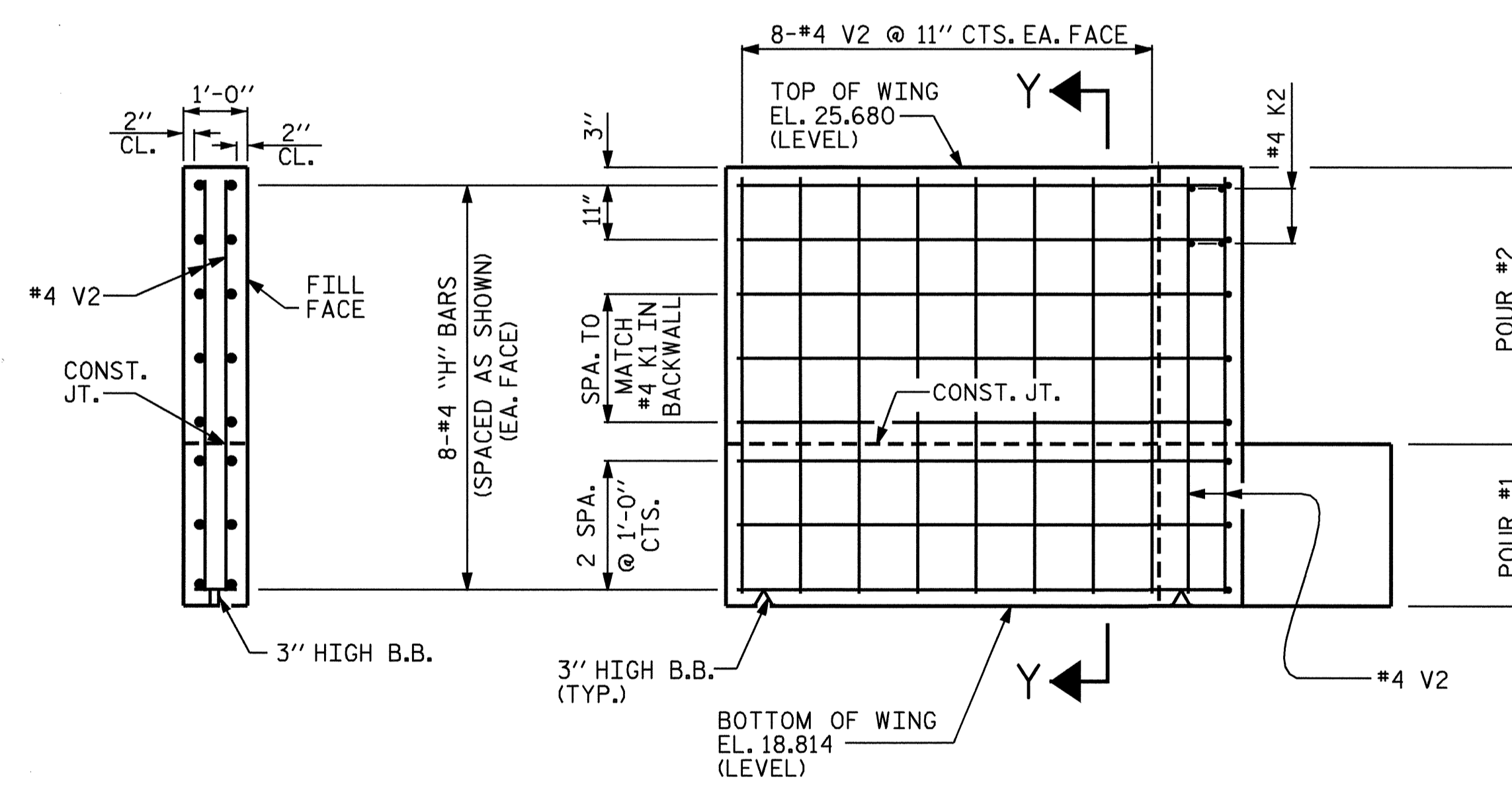


PLAN OF RIGHT WING (W2)



ELEVATION OF LEFT WING (W1)

SECTION X-X



ELEVATION OF RIGHT WING (W2)

SECTION Y-Y

PROJECT NO. B-4188  
 MARTIN COUNTY  
 STATION: 18+00.00 -L-

SHEET 2 OF 3

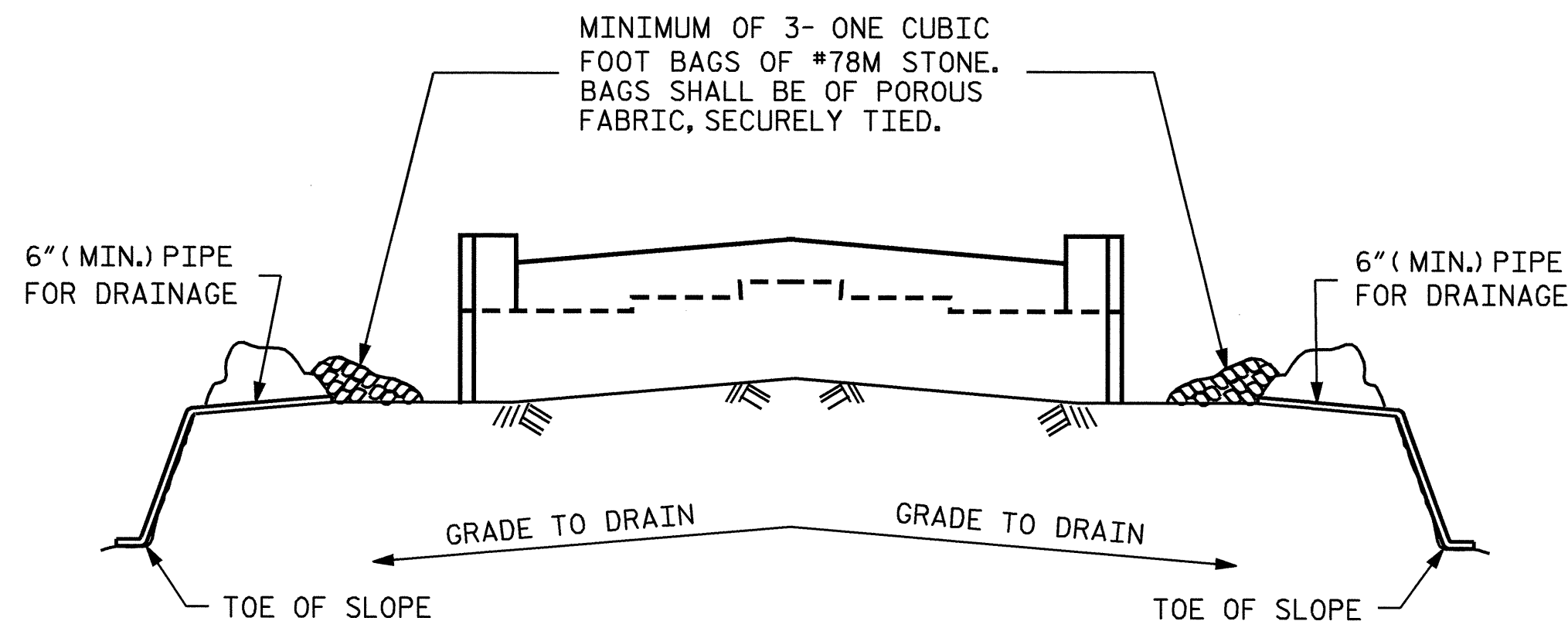
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 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT #1



DRAWN BY: M.D.PISO DATE: 01/2006  
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 PADKINS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			27

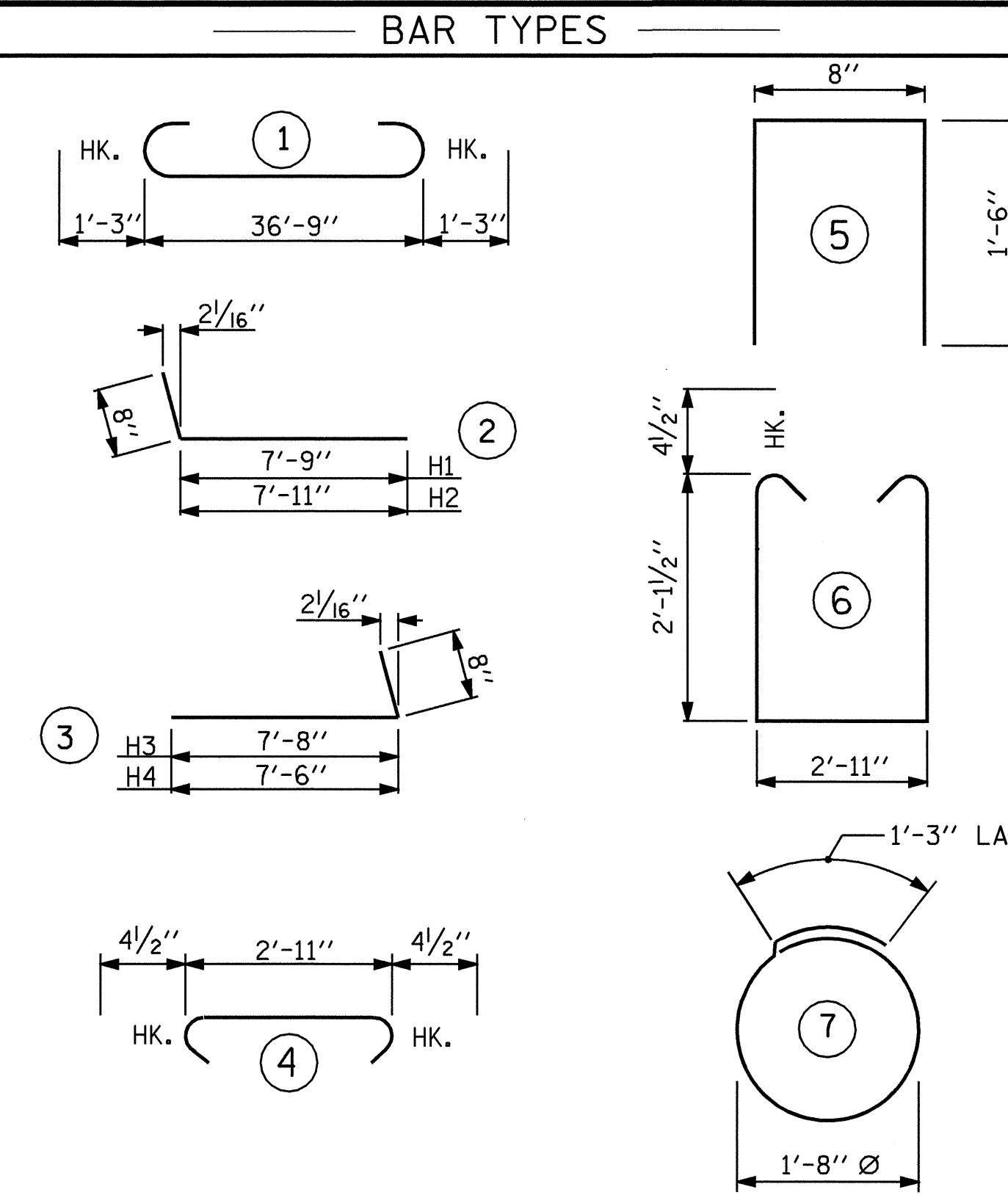


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

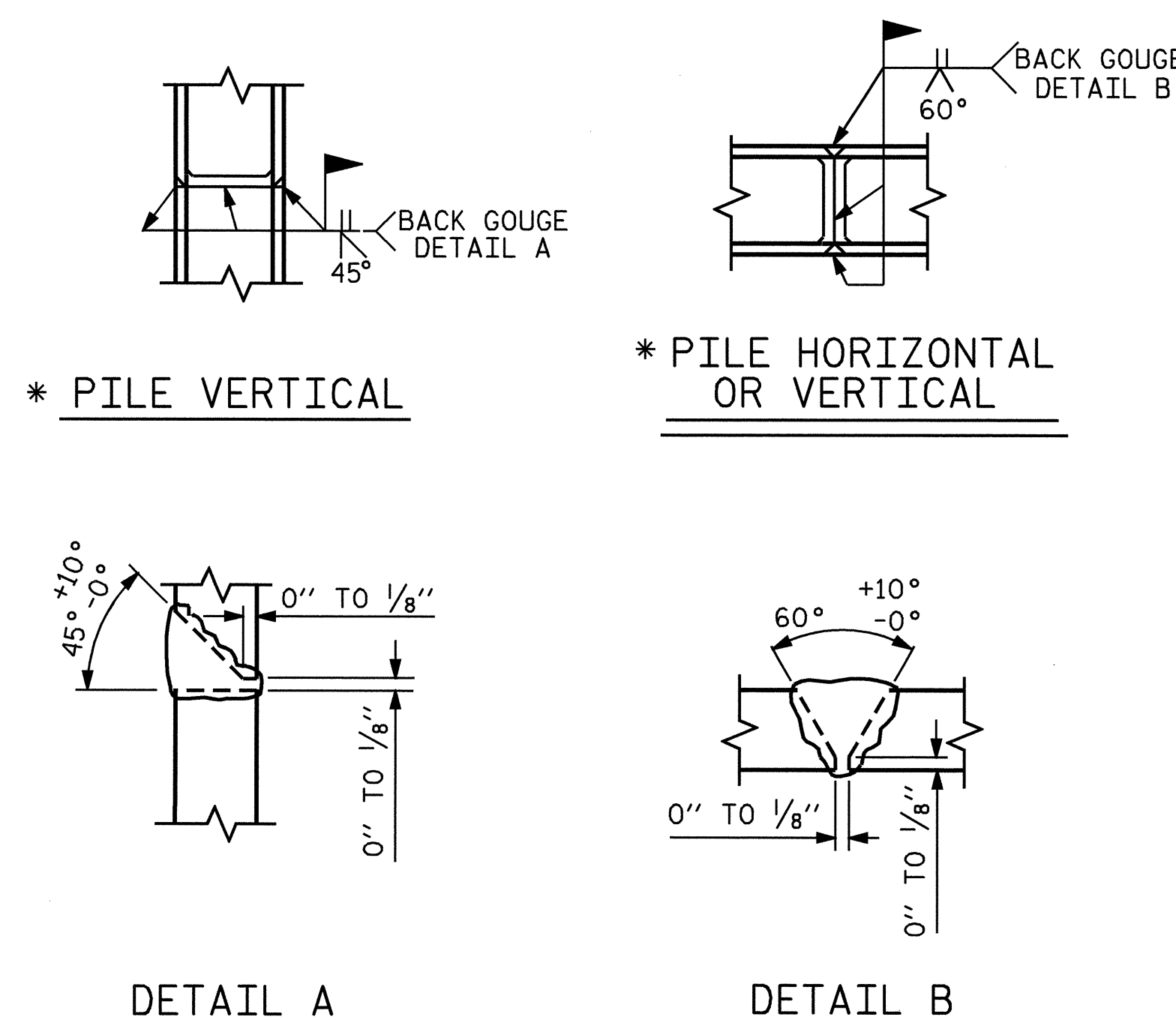
**TEMPORARY DRAINAGE AT END BENT**



ALL BAR DIMENSIONS ARE OUT TO OUT.

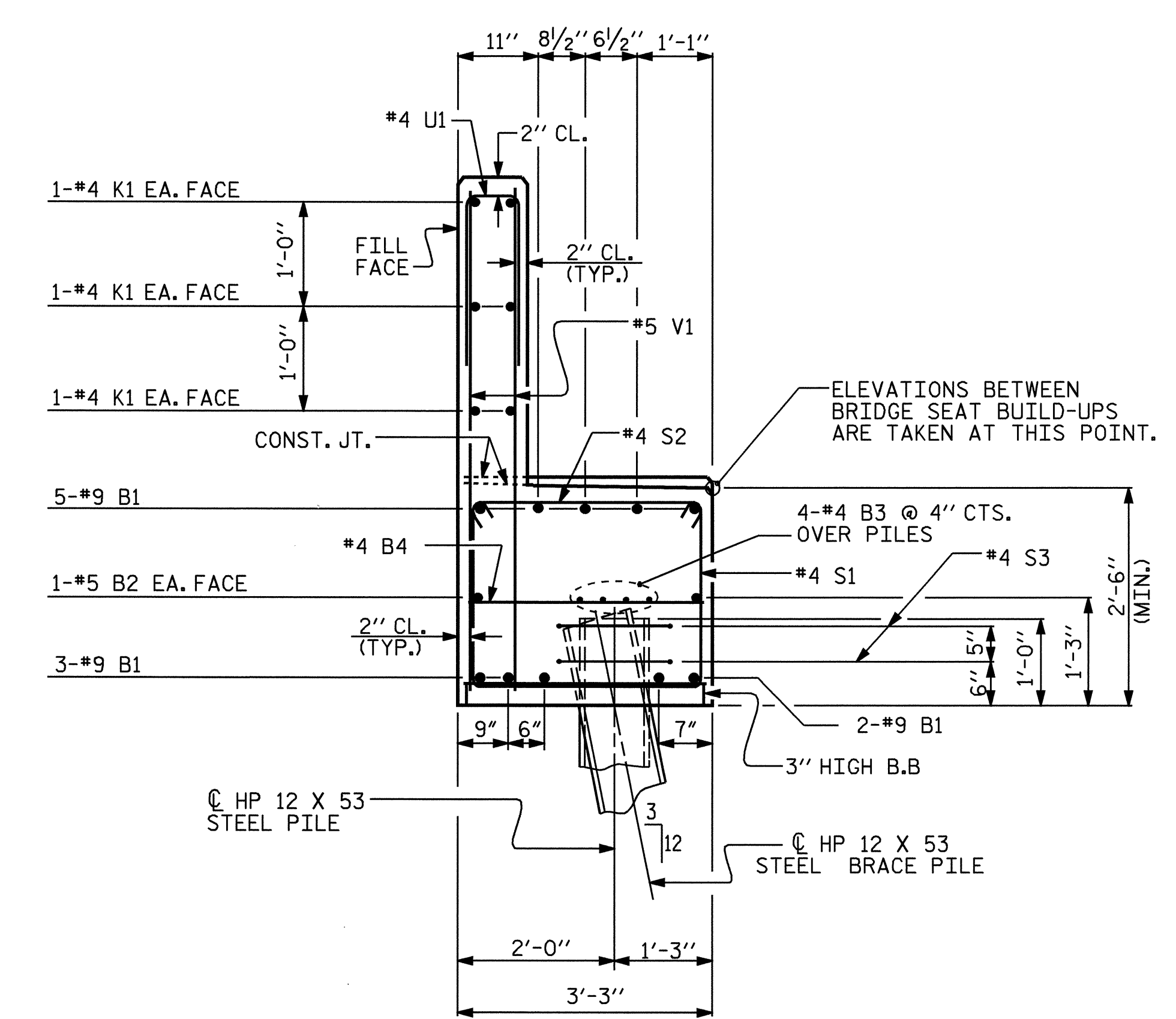
**BILL OF MATERIAL**  
**END BENT #1**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	9	1	39'-3"	1335
B2	4	5	STR	20'-0"	83
B3	8	4	STR	19'-8"	105
B4	10	4	STR	2'-11"	19
H1	8	4	2	8'-5"	45
H2	8	4	2	8'-7"	46
H3	8	4	3	8'-4"	45
H4	8	4	3	8'-2"	44
K1	12	4	STR	19'-8"	158
K2	8	4	STR	3'-0"	16
S1	32	4	6	7'-11"	169
S2	32	4	4	3'-8"	78
S3	14	4	7	6'-6"	61
U1	31	4	5	3'-8"	76
V1	62	5	STR	4'-10"	313
V2	52	4	STR	6'-5"	223
TOTAL REINFORCING STEEL				2816 LBS.	
CLASS A CONCRETE BREAKDOWN					
POUR #1 CAP & LOWER WINGS				12.7 C.Y.	
POUR #2 BACKWALL & UPPER WINGS				6.4 C.Y.	
CLASS A CONCRETE TOTAL				19.1 C.Y.	
HP 12 X 53 STEEL PILES					
NO. 7				455 LIN. FT.	



\* POSITION OF PILE DURING WELDING.

**PILE SPLICE DETAILS**



**SECTION A-A**

PROJECT NO. B-4188  
MARTIN COUNTY  
 STATION: 18+00.00 -L-

SHEET 3 OF 3

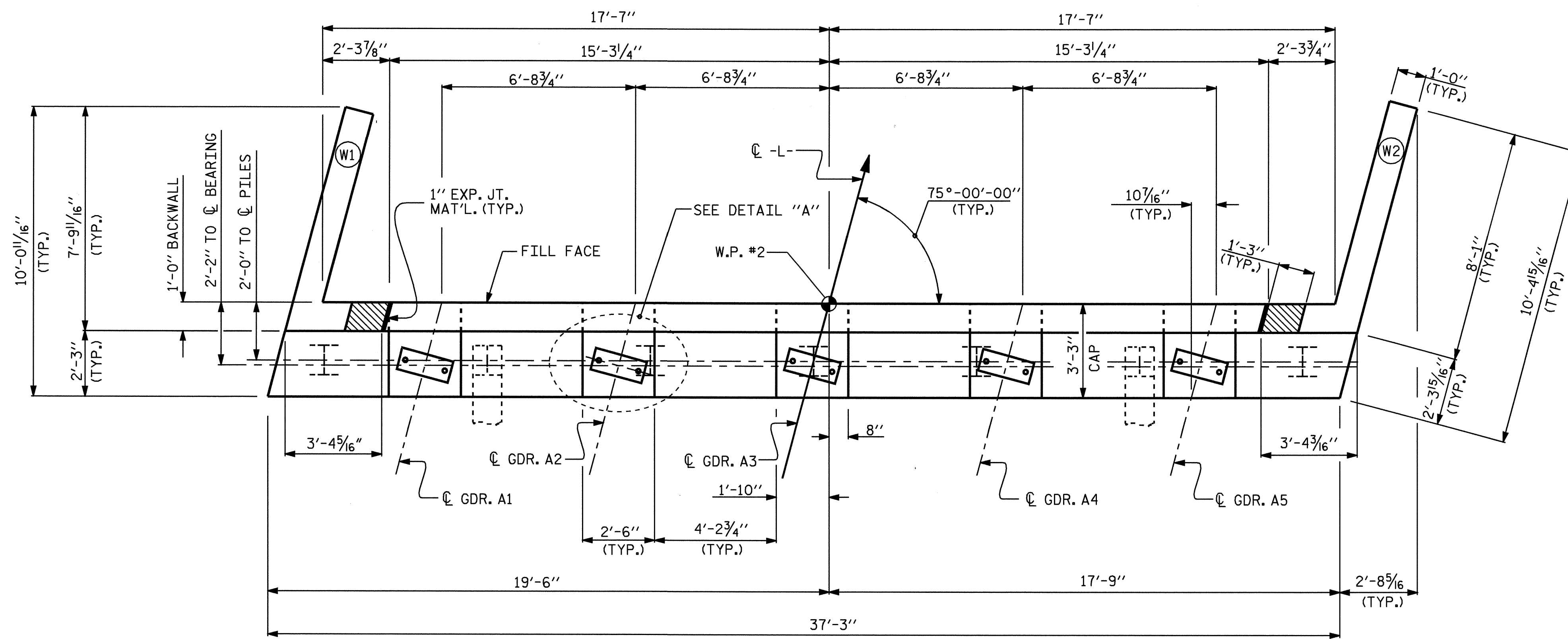
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT #1



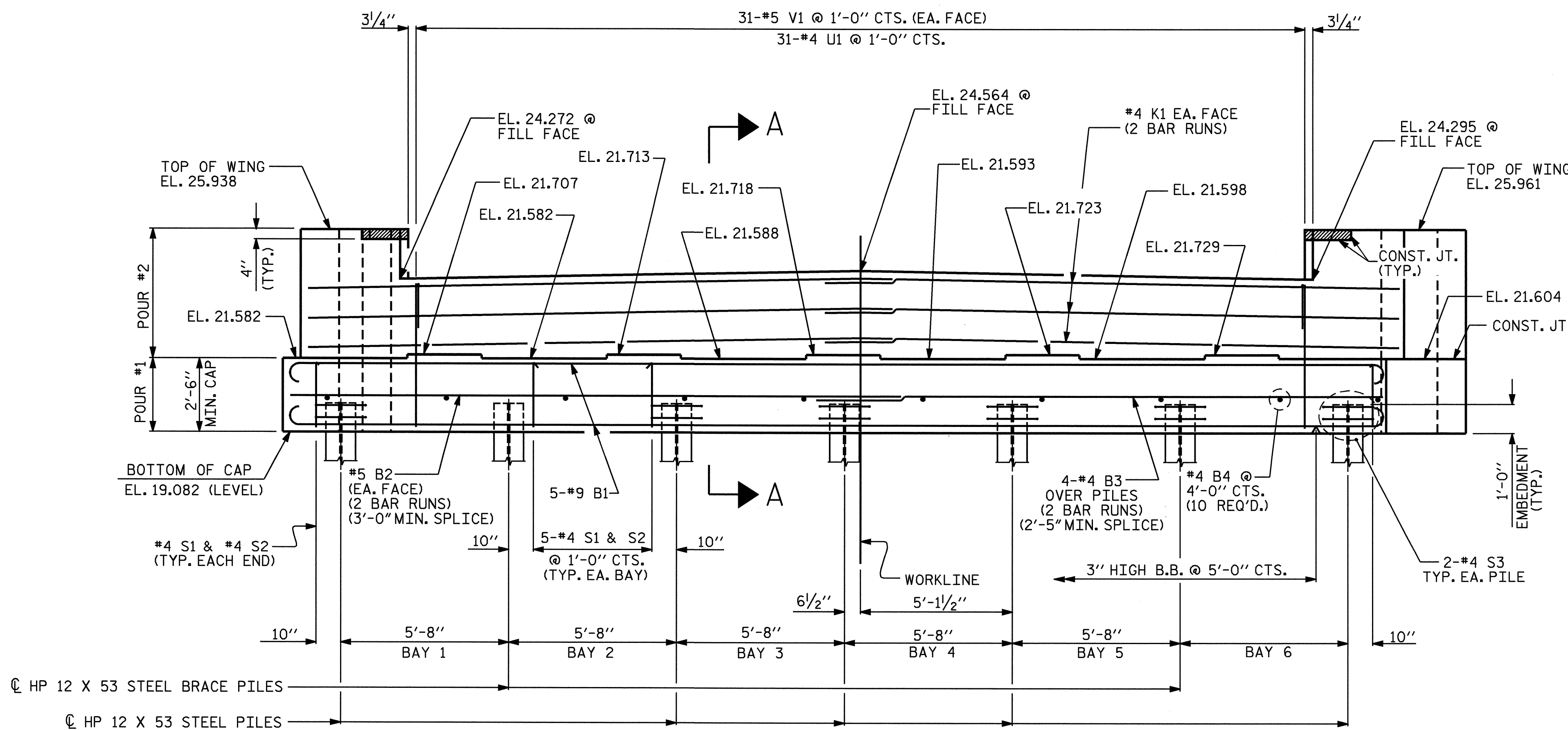
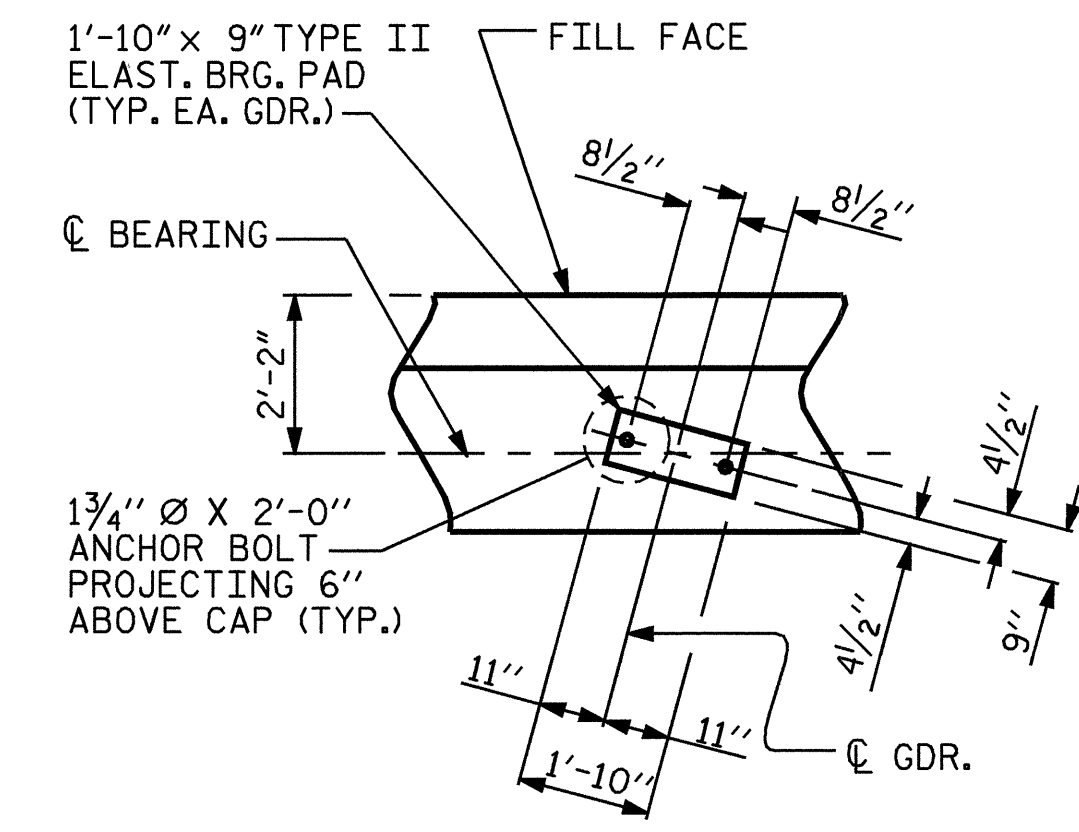
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 CHECKED BY : P.ADKINS DATE : 05/2006

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS 27
2			4			



**NOTES:**

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
- THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
- THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.
- THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND THE APPROACH SLAB HAS BEEN SAWED AND THE VERTICAL BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
- THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.



PROJECT NO. B-4188  
MARTIN COUNTY  
 STATION: 18+00.00 -L-

SHEET 1 OF 3

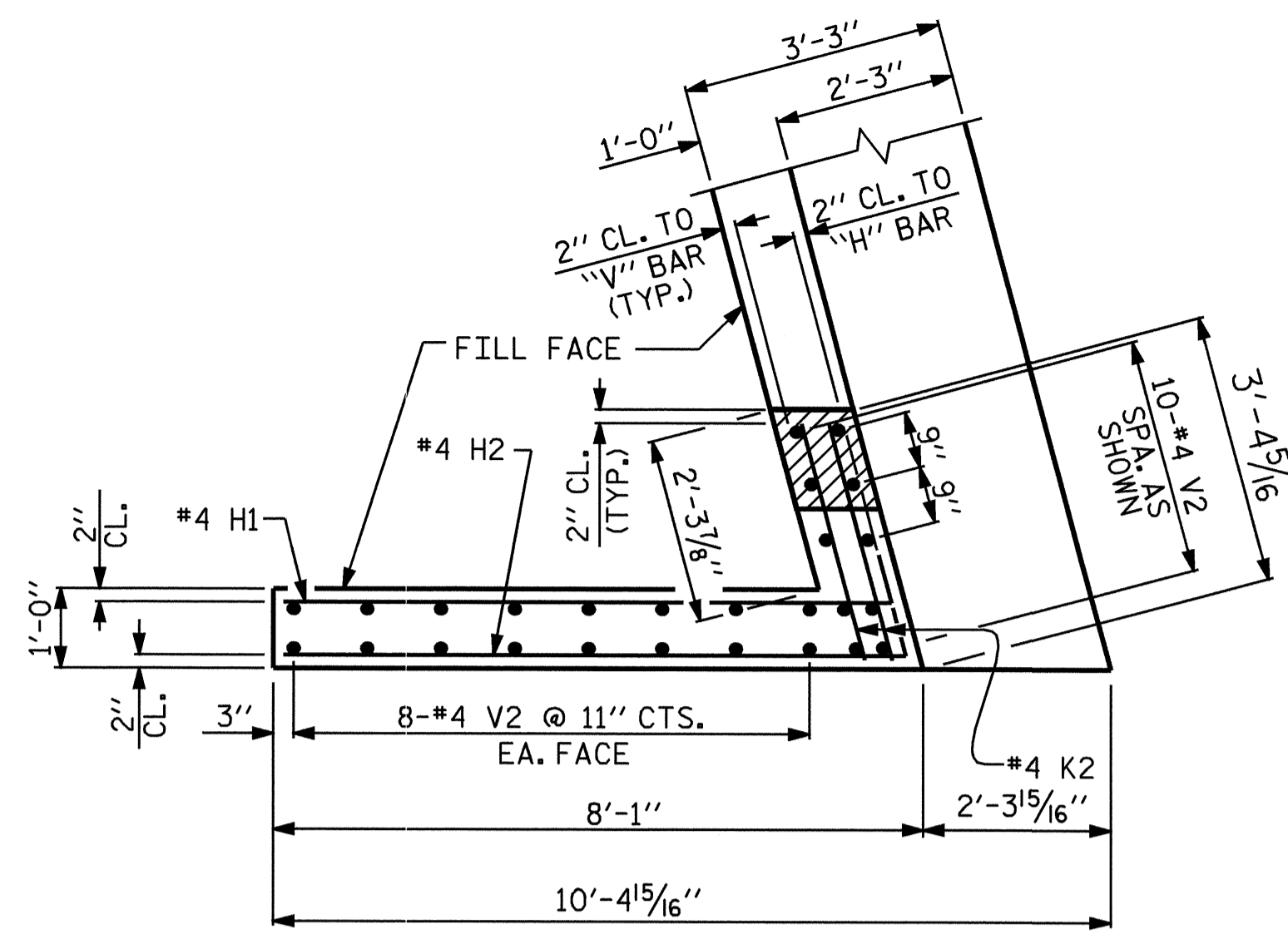
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT #2

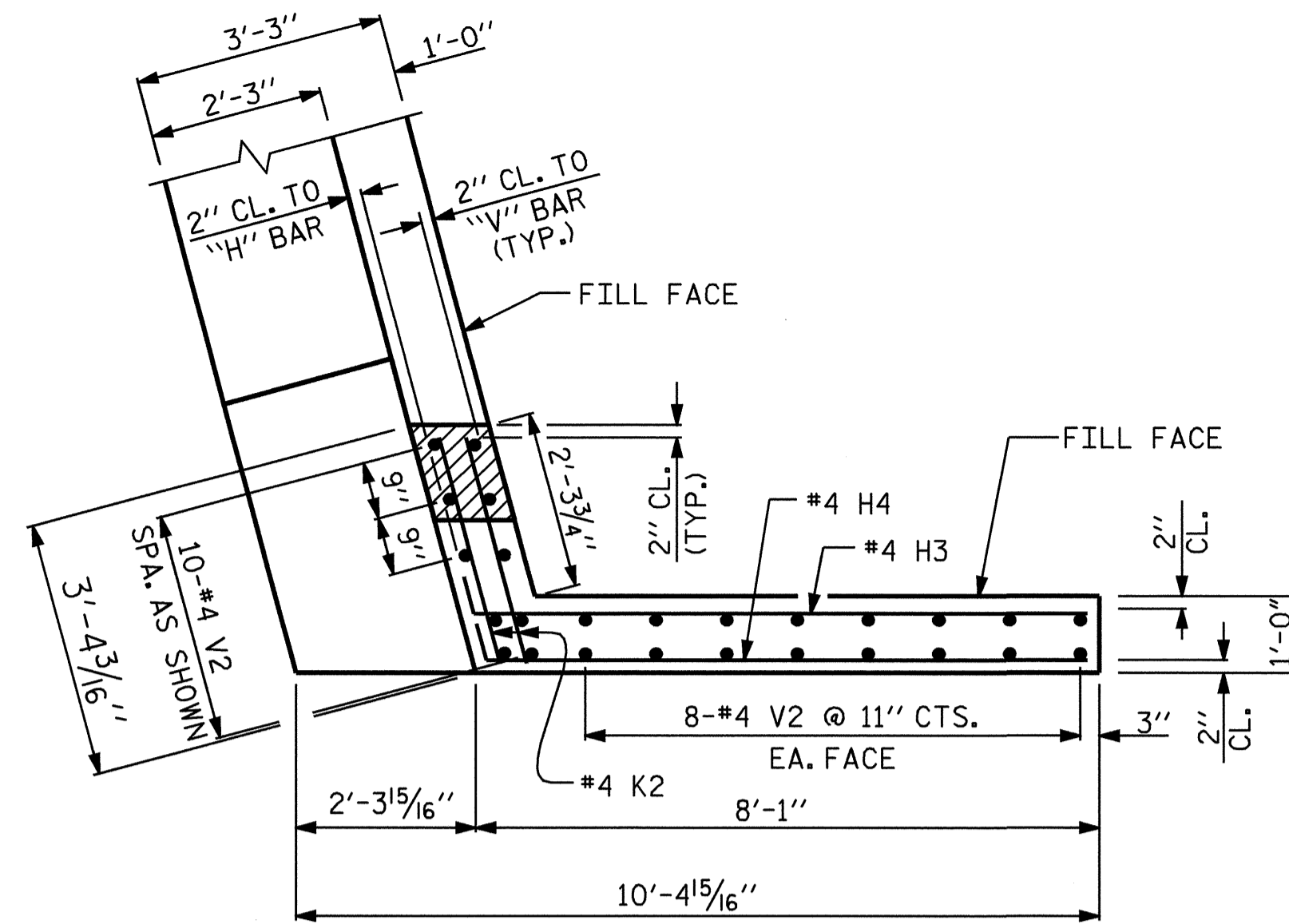


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1			3			TOTAL SHEETS	
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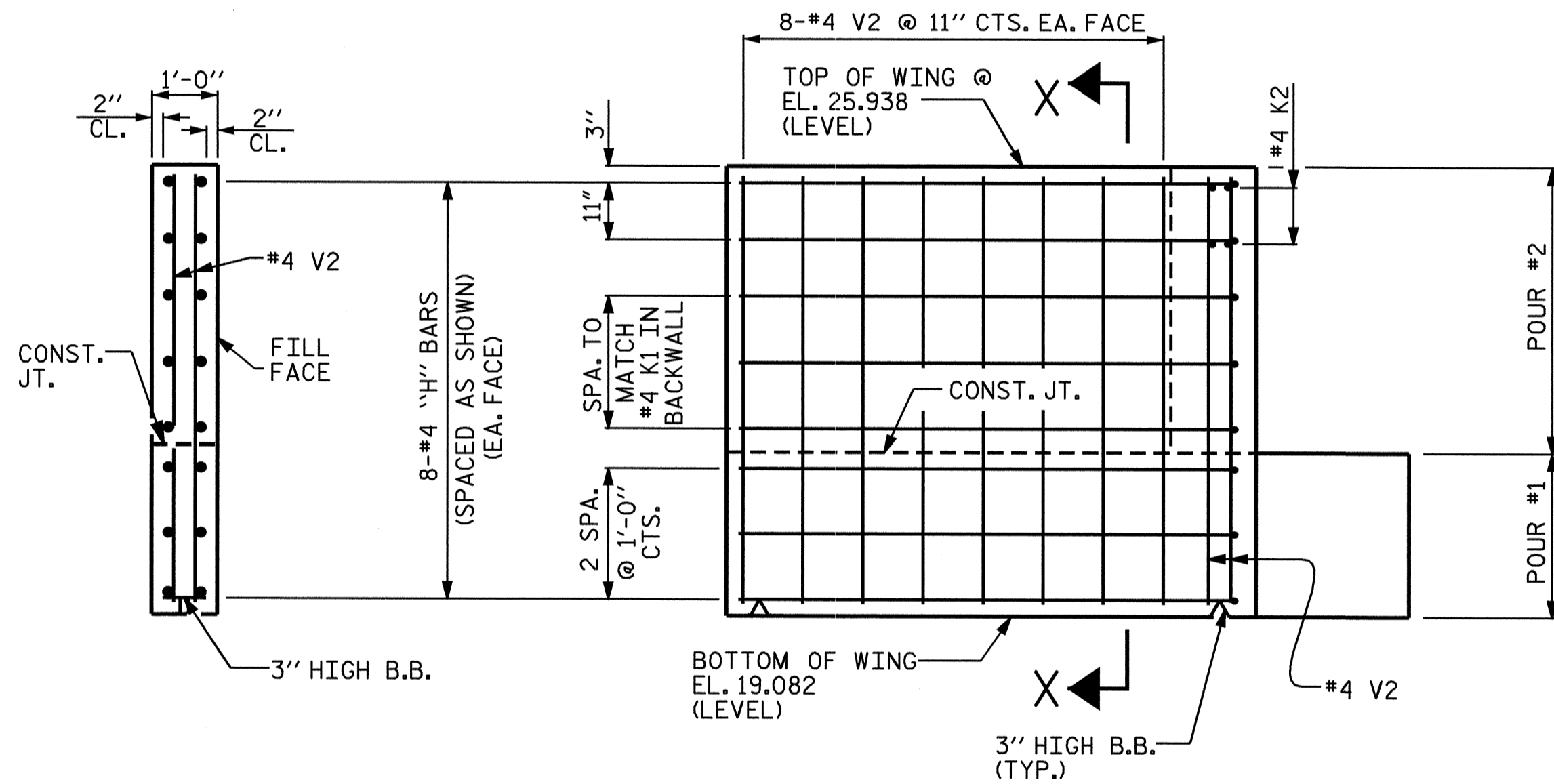
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PLAN OF LEFT WING (W1)

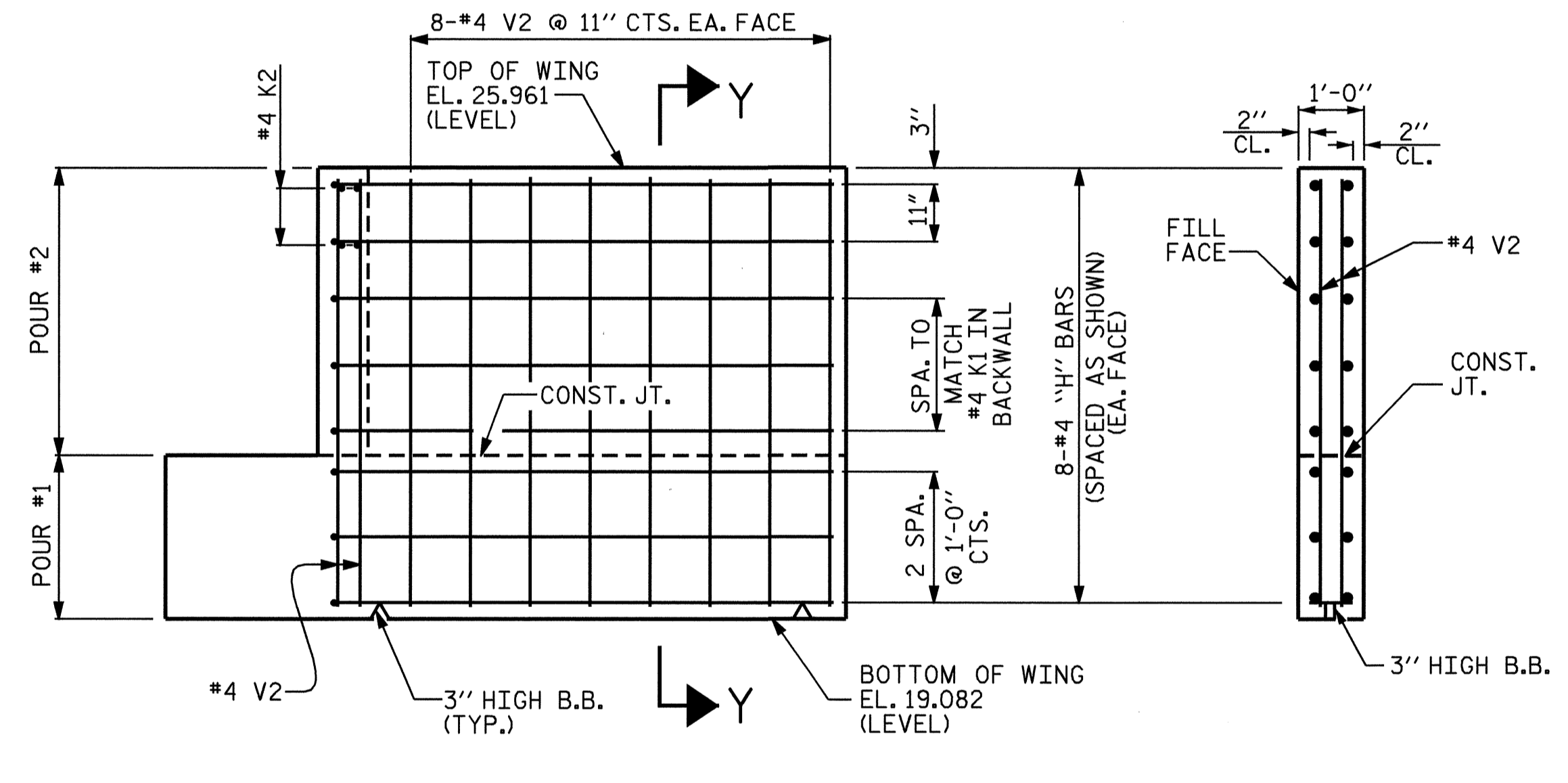


PLAN OF RIGHT WING (W2)



SECTION X-X

ELEVATION OF LEFT WING (W1)



ELEVATION OF RIGHT WING (W2)

SECTION Y-Y

PROJECT NO. B-4188  
MARTIN COUNTY  
 STATION: 18+00.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT #2



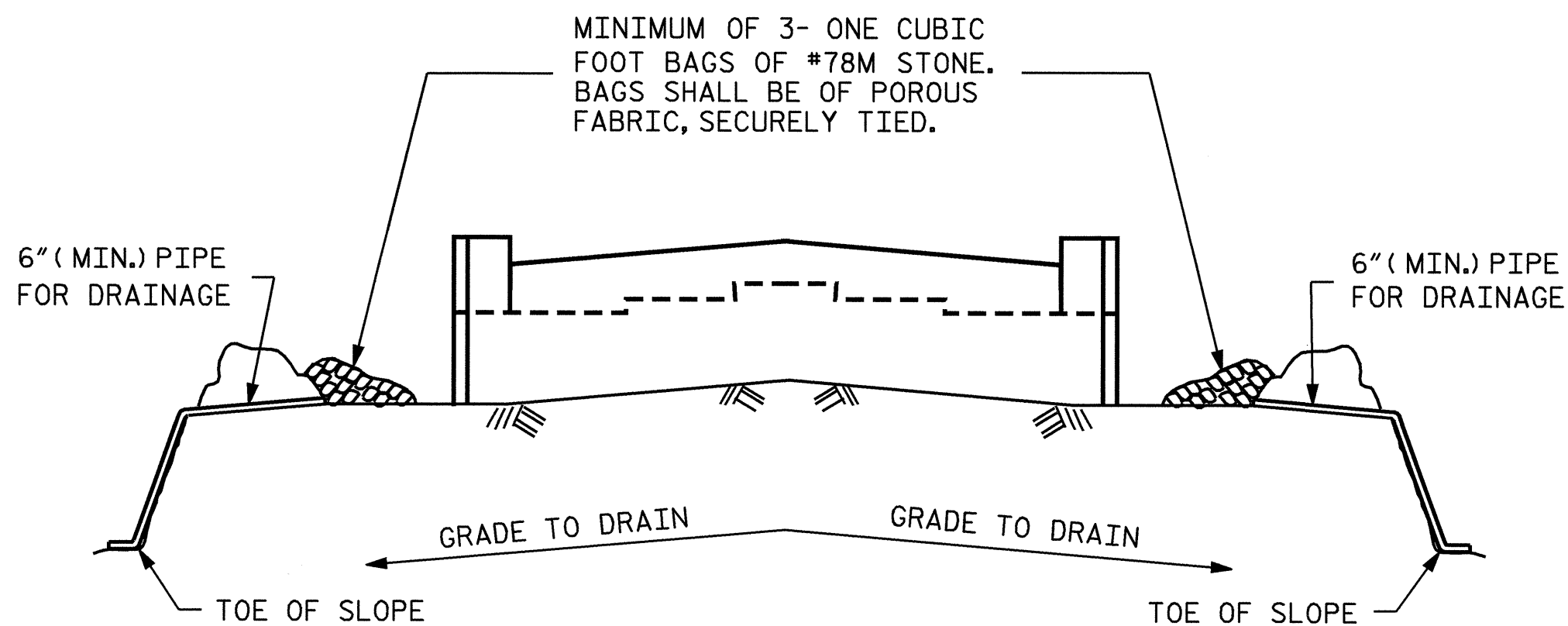
*Emily E. Murray*  
 7/2/06

DRAWN BY: M.D. PISO DATE: 01/2006  
 CHECKED BY: P. ADKINS DATE: 05/2006

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 PADKINS

REVISIONS						SHEET NO.	
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1			3			TOTAL SHEETS	27
2			4				



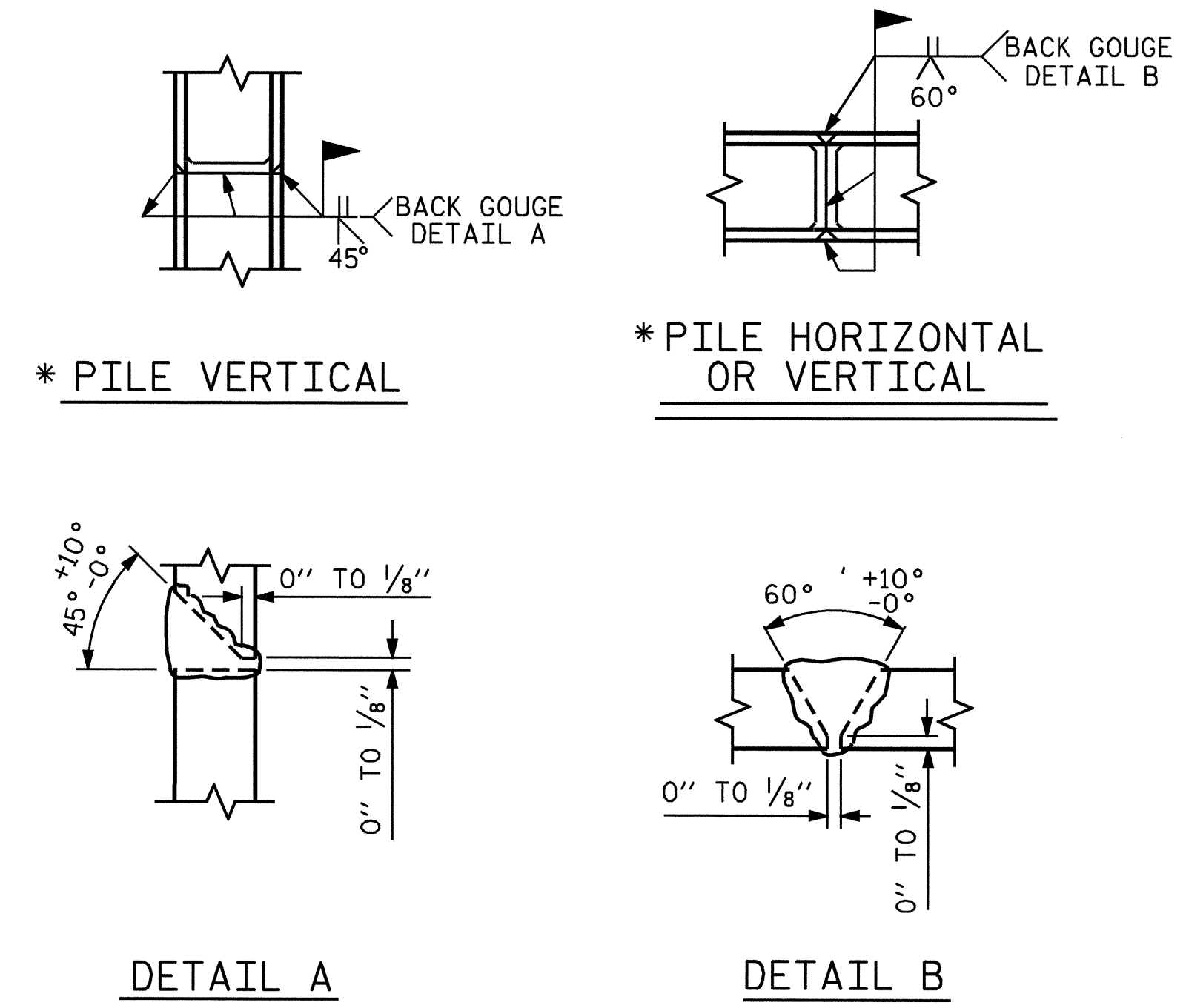


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

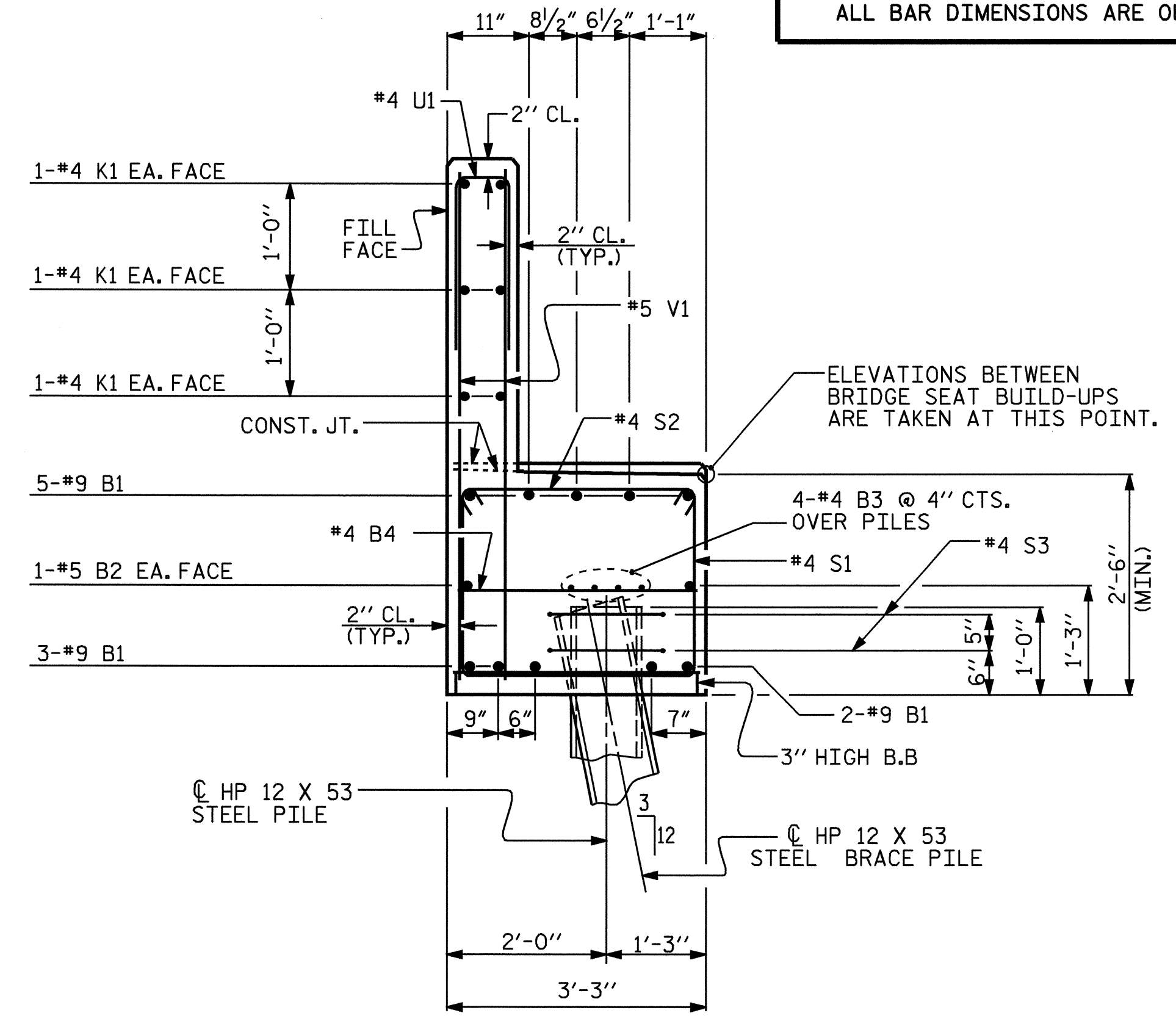
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

**TEMPORARY DRAINAGE AT END BENT**



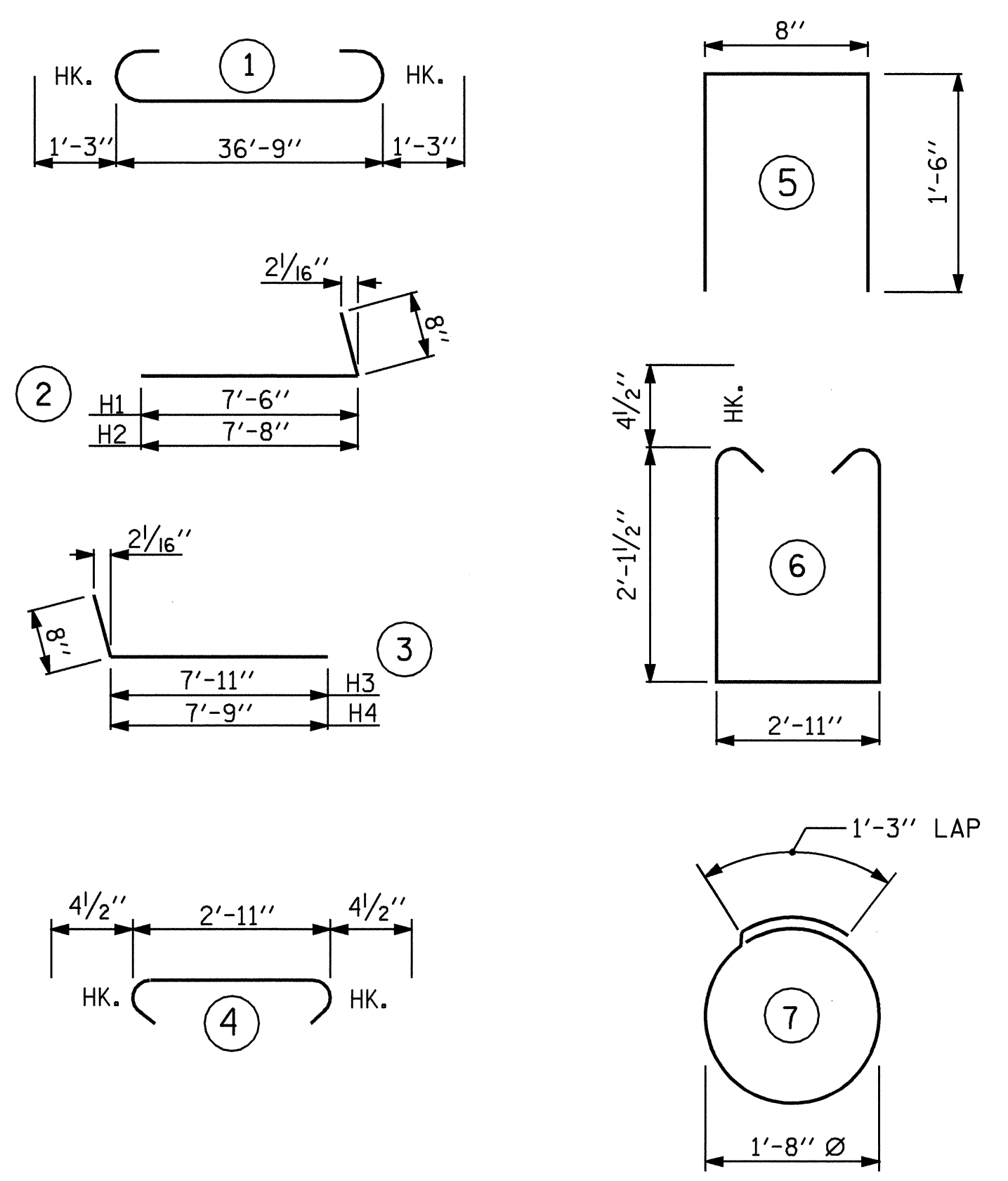
\* POSITION OF PILE DURING WELDING.

**PILE SPLICE DETAILS**



**SECTION A-A**

**BAR TYPES**



ALL BAR DIMENSIONS ARE OUT TO OUT.

**BILL OF MATERIAL**

**END BENT #2**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	9	1	39'-3"	1335
B2	5	4	STR	20'-0"	83
B3	8	4	STR	19'-8"	105
B4	10	4	STR	2'-11"	19
H1	8	4	2	8'-2"	44
H2	8	4	2	8'-4"	45
H3	8	4	3	8'-7"	46
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V1	62	5	STR	4'-10"	313
V2	52	4	STR	6'-5"	223

TOTAL REINFORCING STEEL 2816 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #1 CAP & LOWER WINGS	12.7 C.Y.
POUR #2 BACKWALL & UPPER WINGS	6.4 C.Y.

CLASS A CONCRETE TOTAL 19.1 C.Y.

HP 12 X 53 STEEL PILES

NO. 7	455 LIN. FT.
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PROJECT NO. B-4188

MARTIN COUNTY

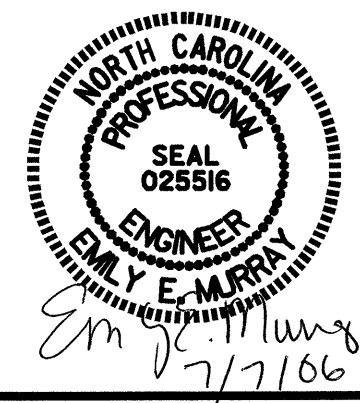
STATION: 18+00.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE

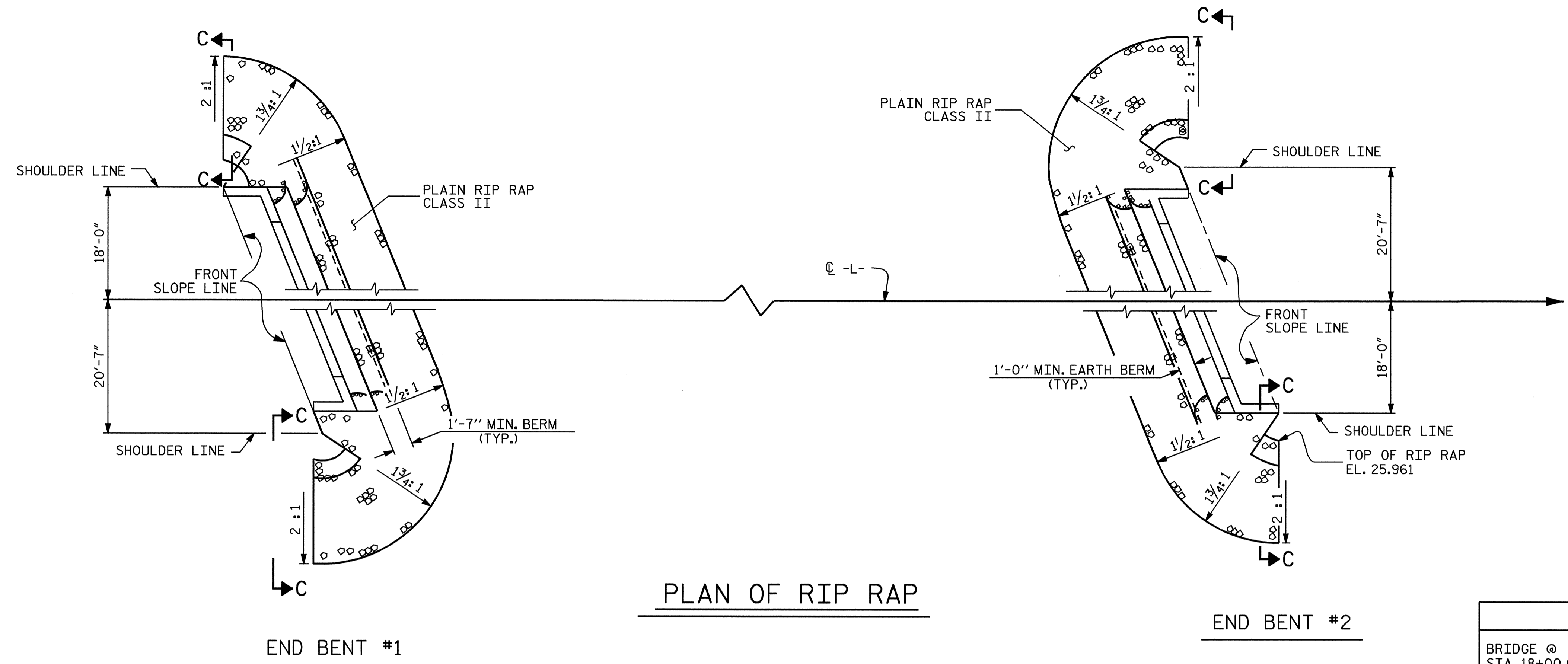
END BENT #2



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS 27
2			4			

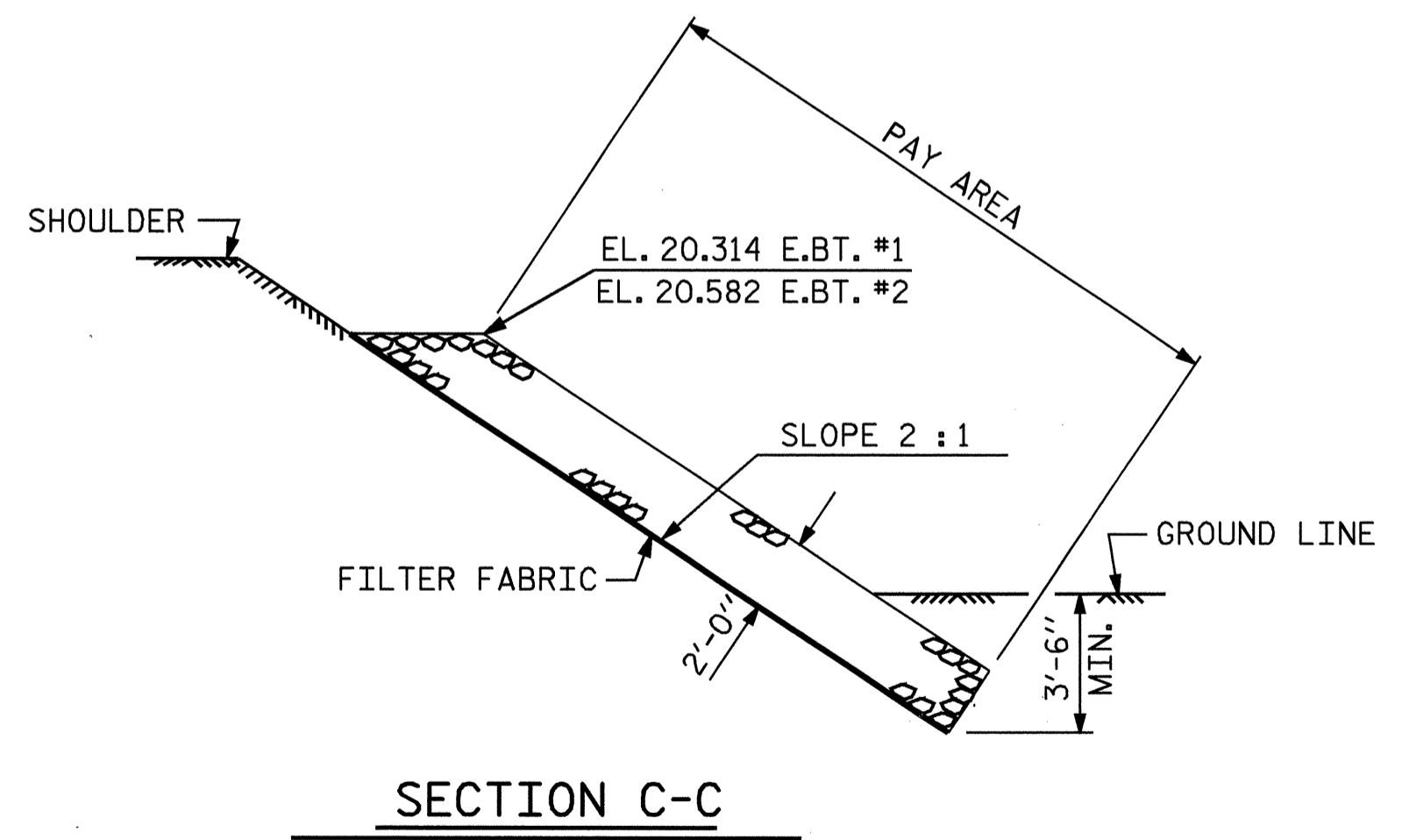
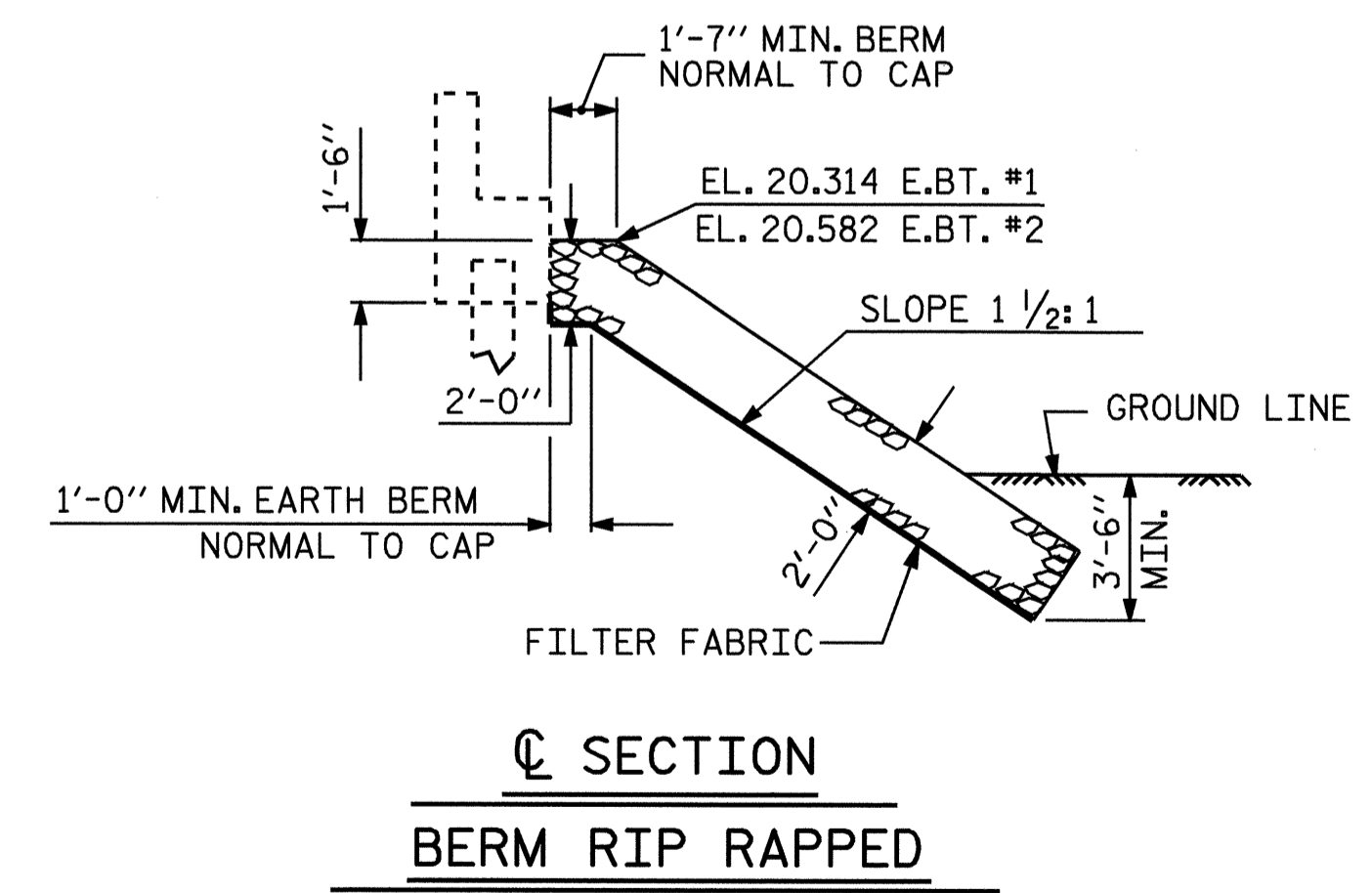
DRAWN BY: M.D.PISO DATE: 01/2006

CHECKED BY: P.ADKINS DATE: 05/2006



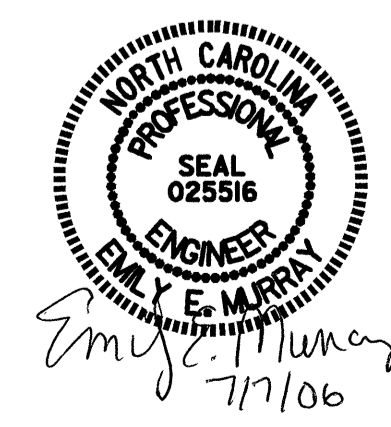
PLAN OF RIP RAP

ESTIMATED QUANTITIES		
BRIDGE @ STA. 18+00.00 -L-	PLAIN RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT #1	58	65
END BENT #2	39	43



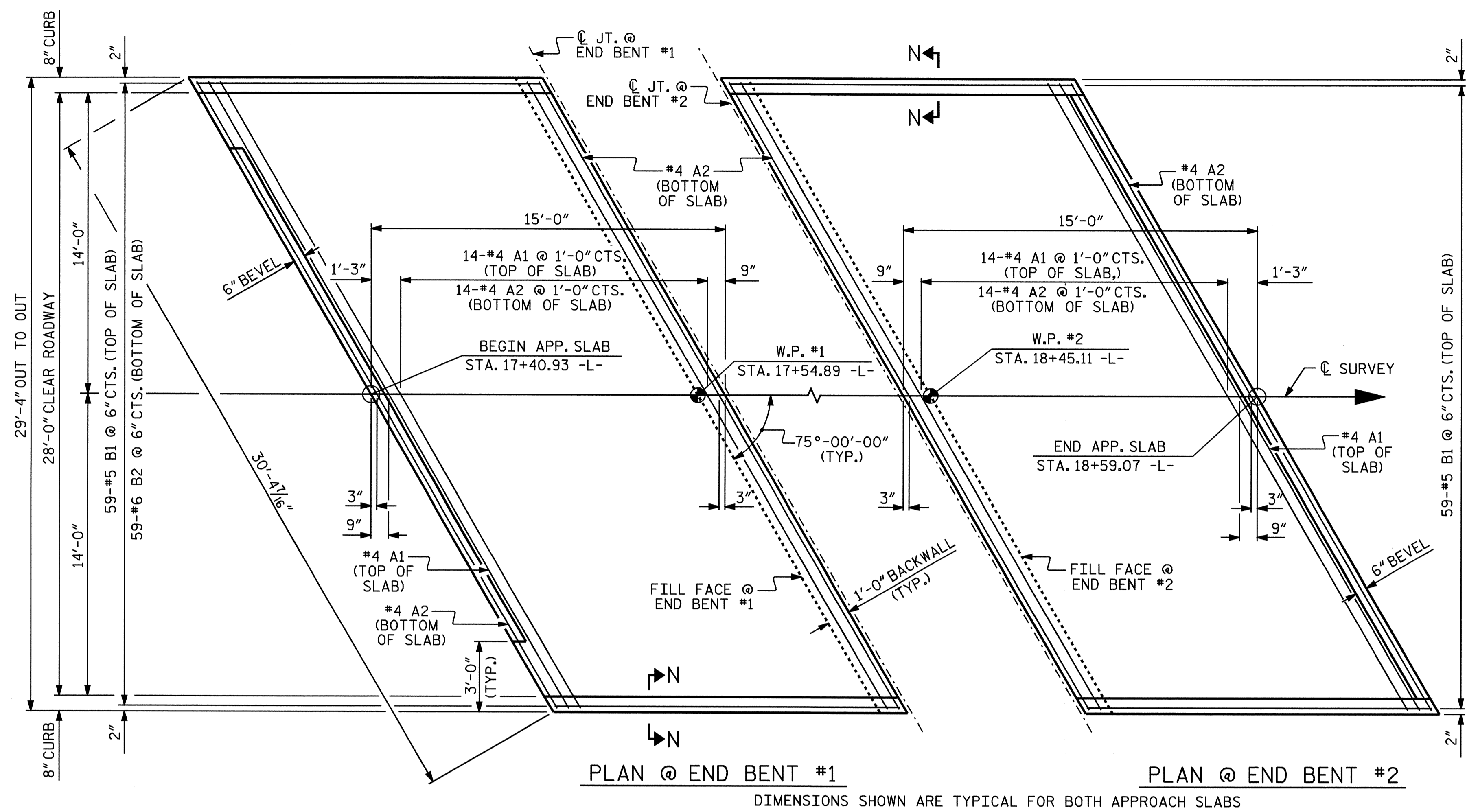
PROJECT NO. B-4188  
MARTIN COUNTY  
 STATION: 18+00.00 -L-

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



ASSEMBLED BY : ZION RORIE DATE : 4/21/05  
 CHECKED BY : C. MILLER DATE : 05/05  
 DRAWN BY : REK 1/84 REV. 7/17/98 REK/RWW  
 CHECKED BY : RDU 1/84 REV. 8/16/99 RWW/LES  
 REV. 10/17/00 RWW/LES

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTALS
2			4			27



**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 EXTEND 10'-0" BEYOND THE END OF THE APPROACH SLAB AND 1'-0" OUTSIDE OF EACH EDGE OF 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 EXTEND 1'-0" BEYOND THE 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 EXTEND 1'-0" BEYOND THE END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

THE JOINT SHALL BE SAWS PRIOR TO THE CASTING OF THE VERTICAL CONCRETE BARRIER RAIL.

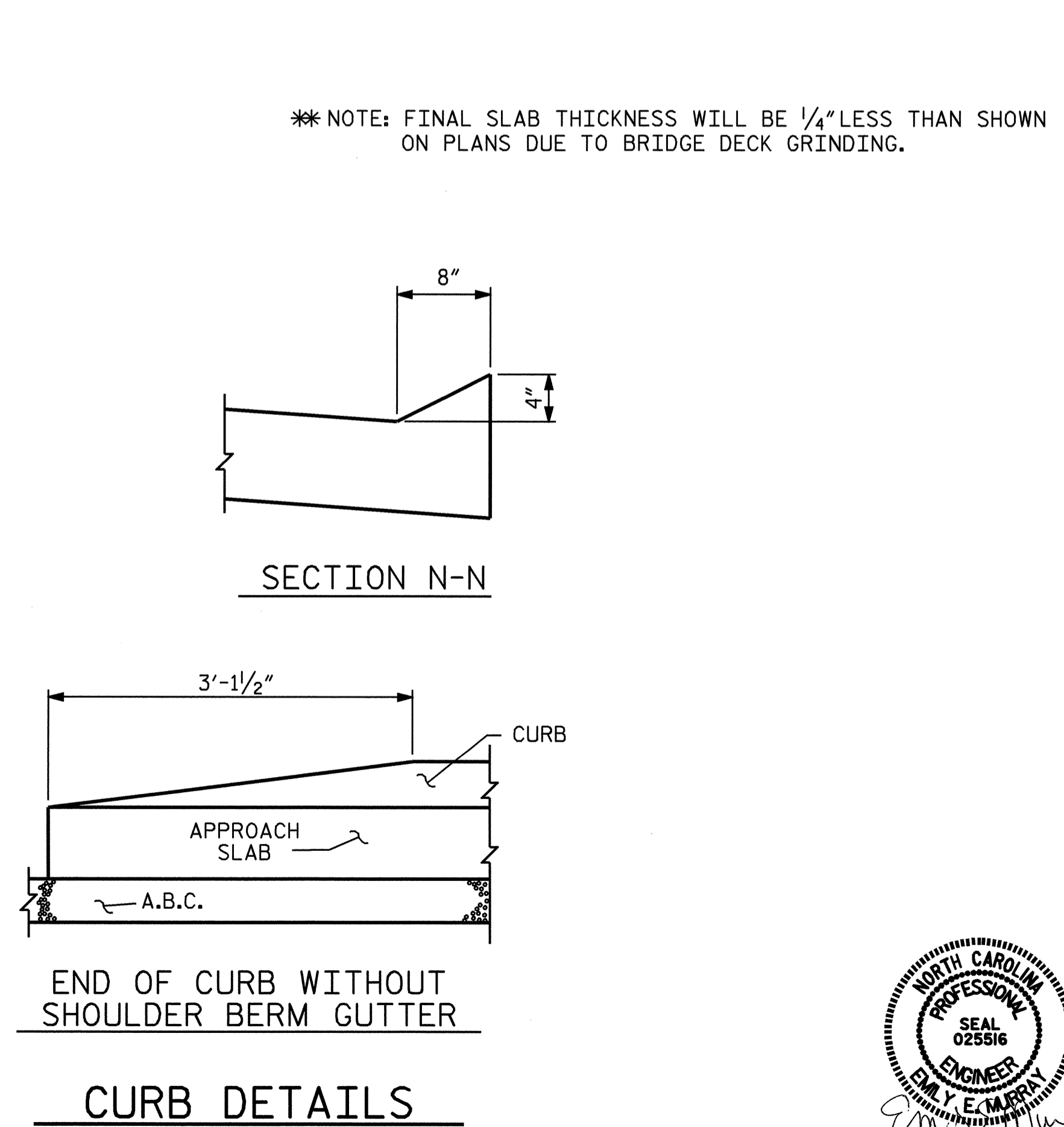
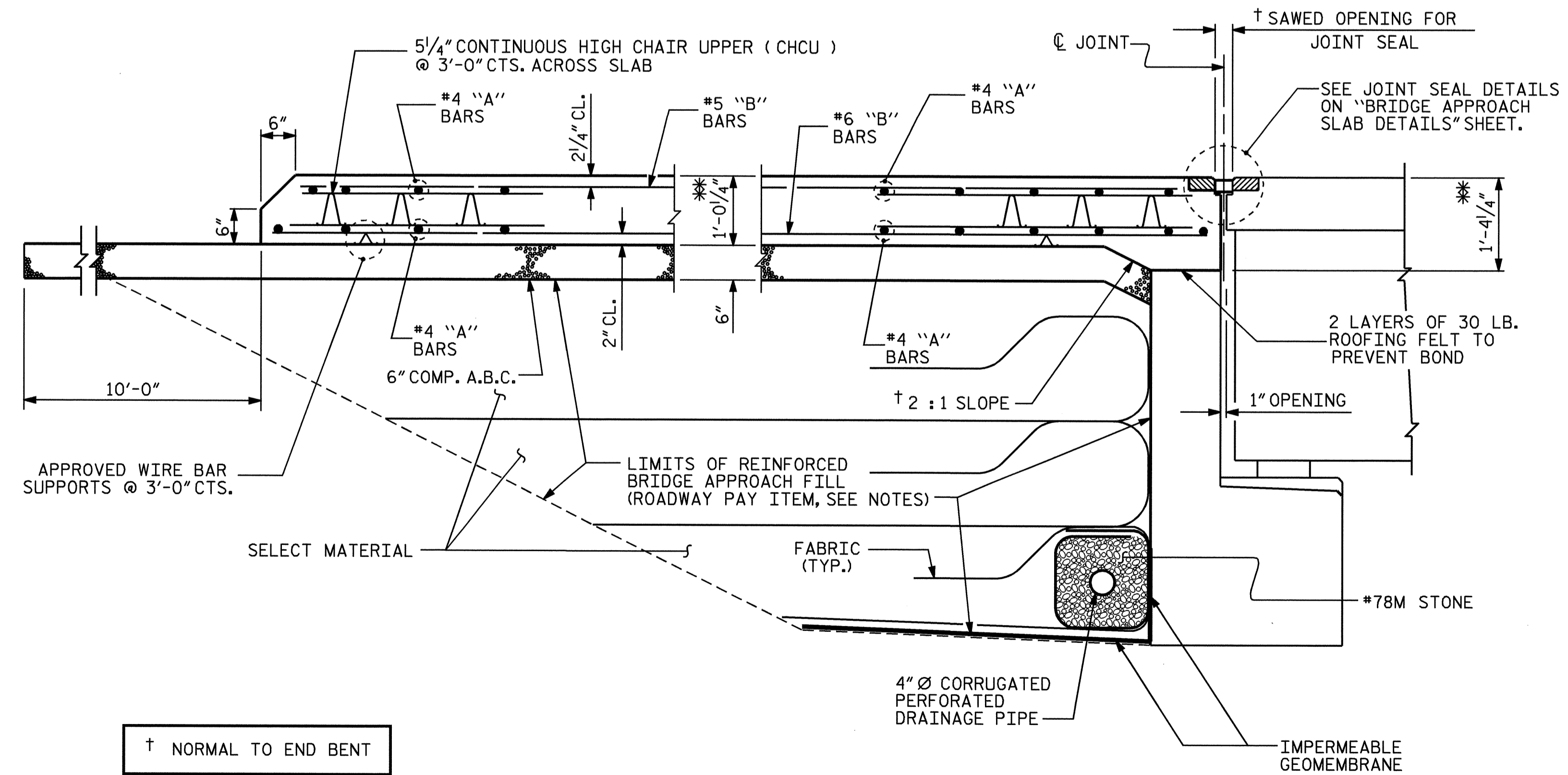
**WITH EVAZOTE JOINT SEAL**

FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

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

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	15	#4	STR	30'-0"	301
A2	16	#4	STR	30'-0"	321
*B1	59	#5	STR	13'-8"	841
B2	59	#6	STR	14'-7"	1292
REINFORCING STEEL				LBS.	1613
*EPOXY COATED REINFORCING STEEL				LBS.	1142
CLASS AA CONCRETE				C. Y.	16.7
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	15	#4	STR	30'-0"	301
A2	16	#4	STR	30'-0"	321
*B1	59	#5	STR	13'-8"	841
B2	59	#6	STR	14'-7"	1292
REINFORCING STEEL				LBS.	1613
*EPOXY COATED REINFORCING STEEL				LBS.	1142
CLASS AA CONCRETE				C. Y.	16.7



ASSEMBLED BY : ZION J. RORIE DATE : 5/17/06  
 CHECKED BY : M. PISO DATE : 5/06  
 DRAWN BY : EEM 3/95 REV. 10/17/00 RWW/LES  
 CHECKED BY : VAP 3/95 REV. 7/10/01 LES/RDR  
 REV. 5/7/03R RWW/JTE

**SECTION THRU SLAB**

**CURB DETAILS**

PROJECT NO. B-4188  
MARTIN COUNTY  
 STATION: 18+00.00 -L-

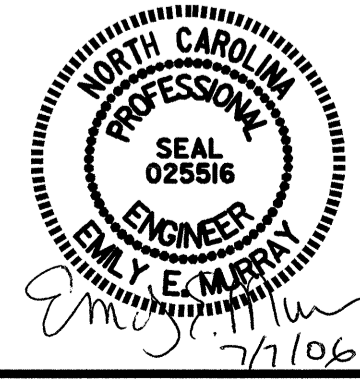
SHEET 1 OF 2

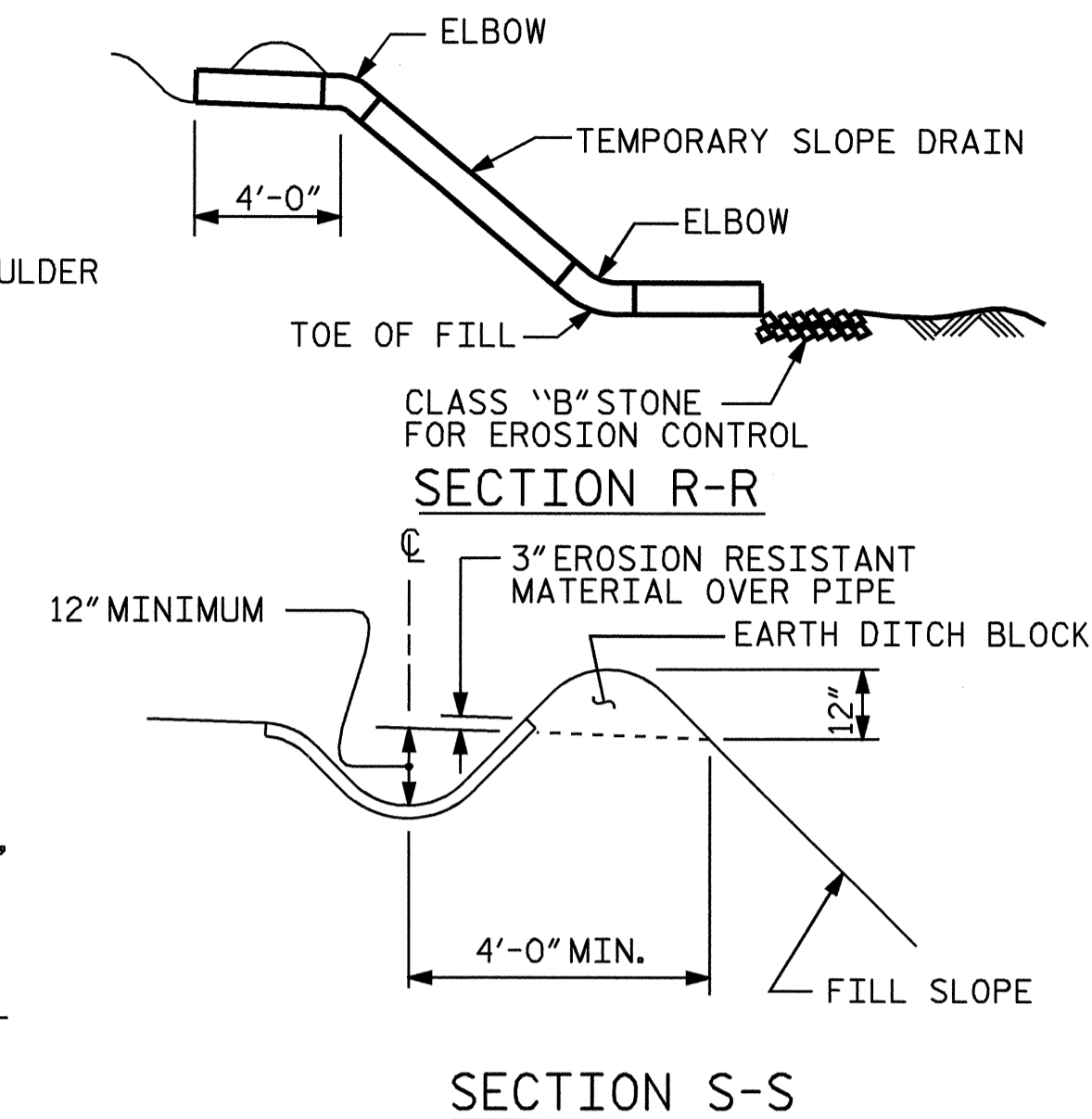
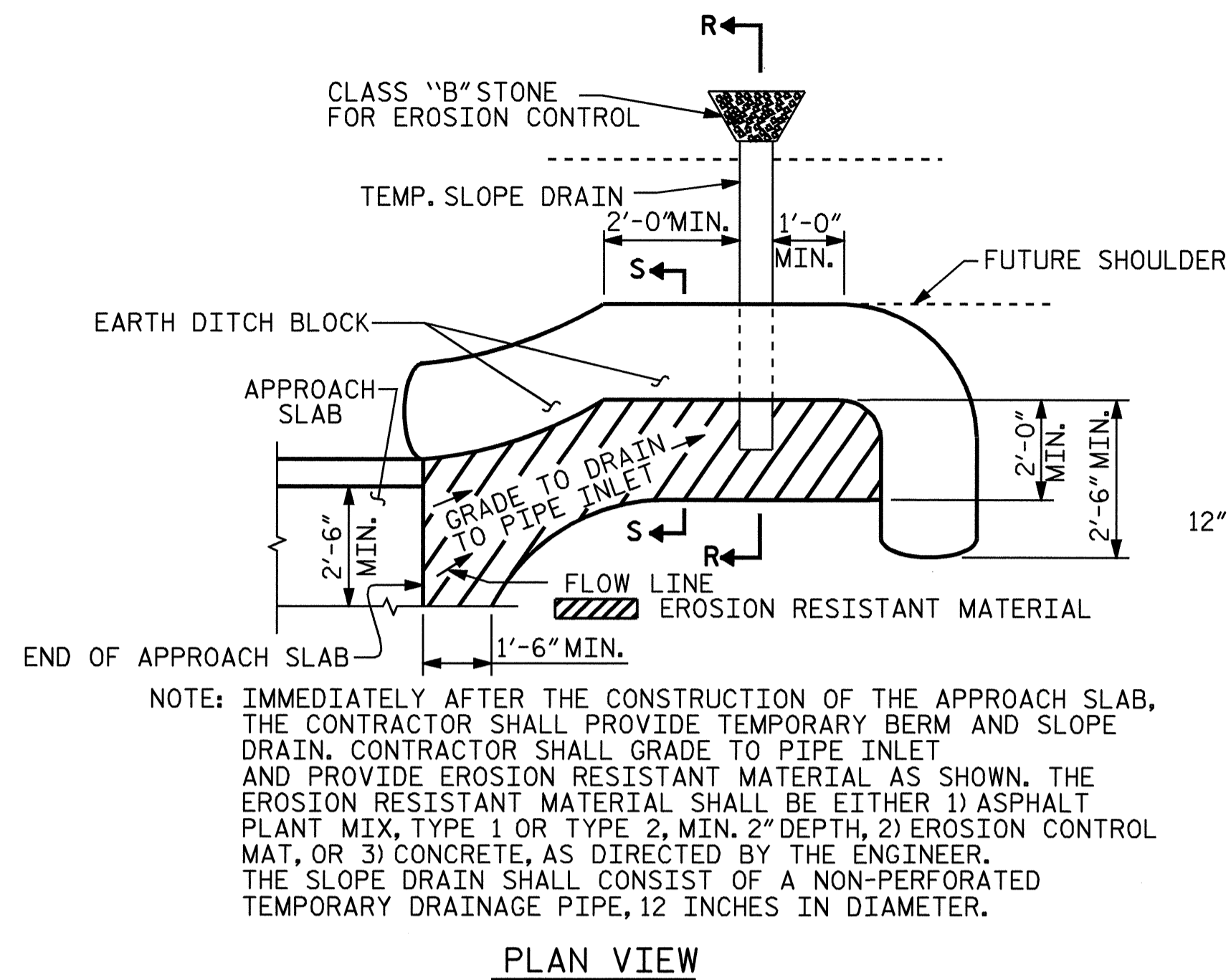
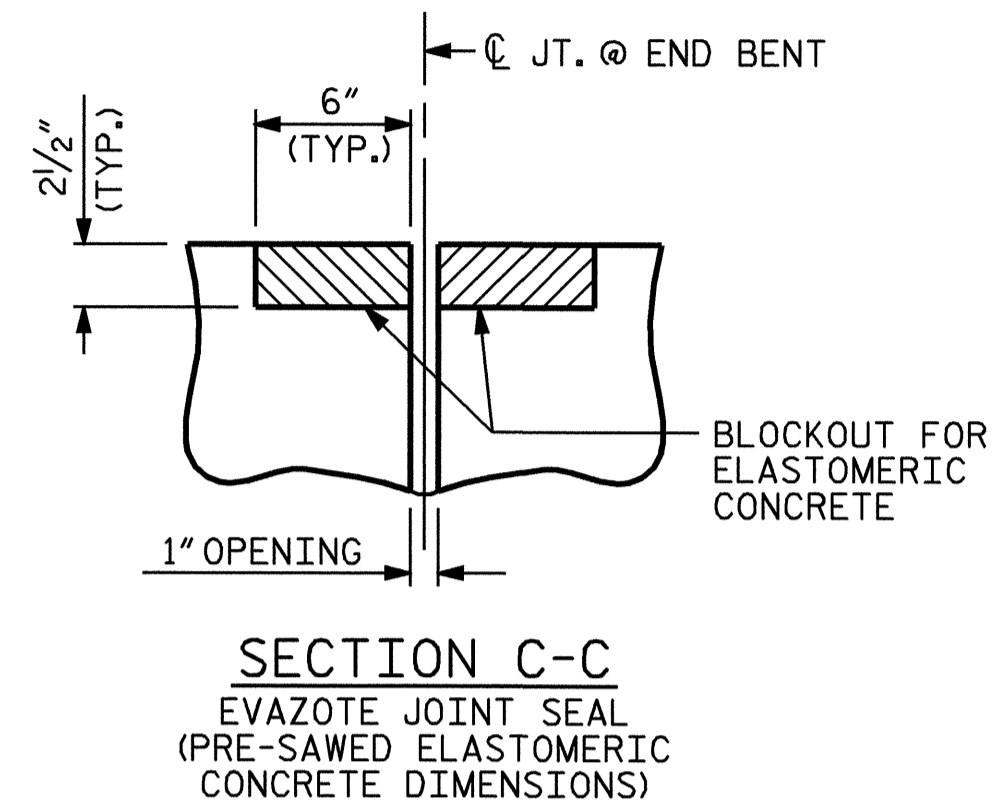
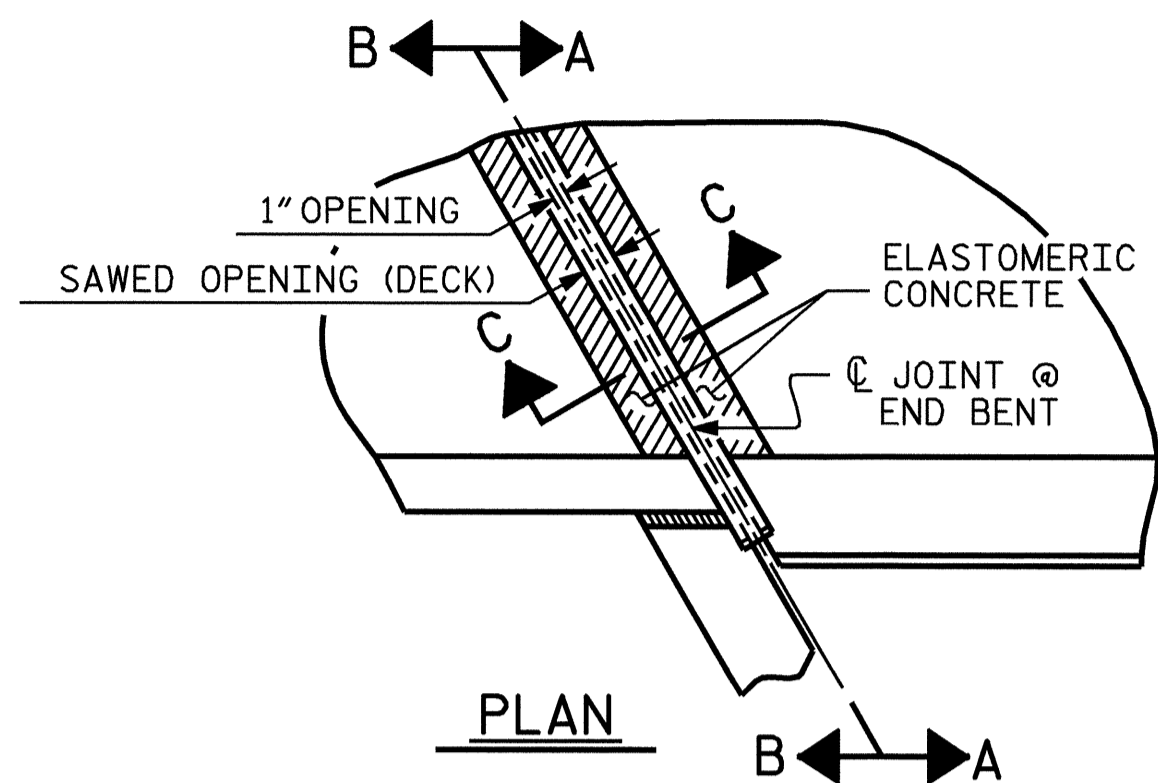
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 BRIDGE APPROACH SLAB  
 FOR  
 FLEXIBLE PAVEMENT

MAR. 1995

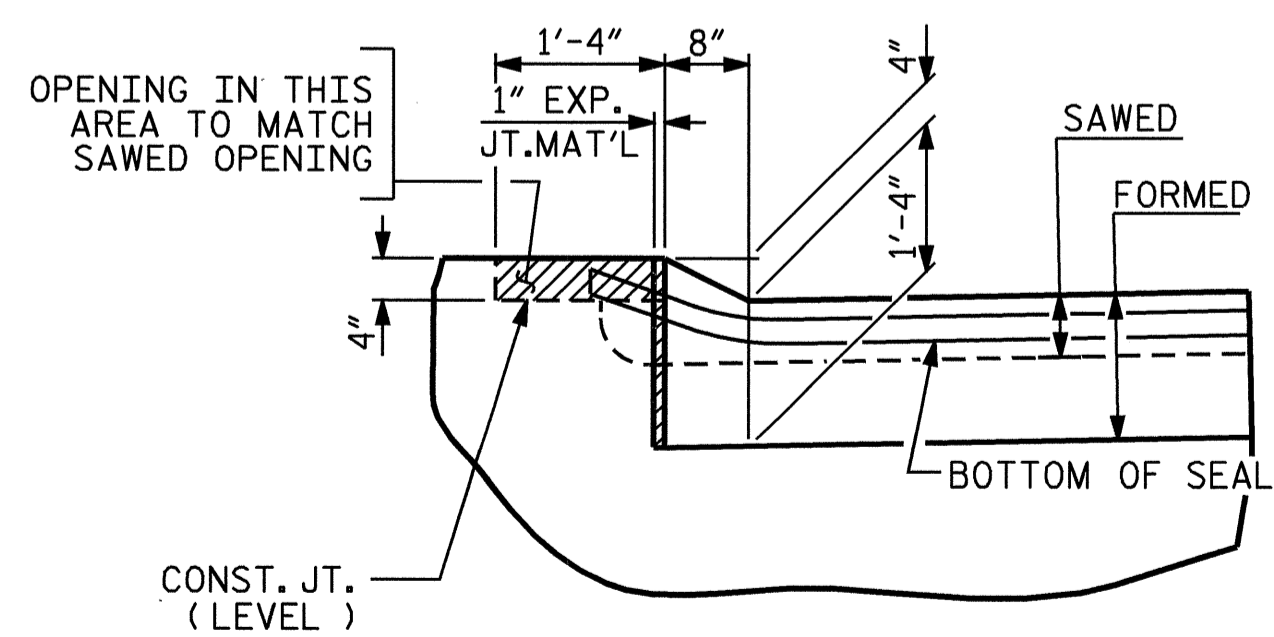
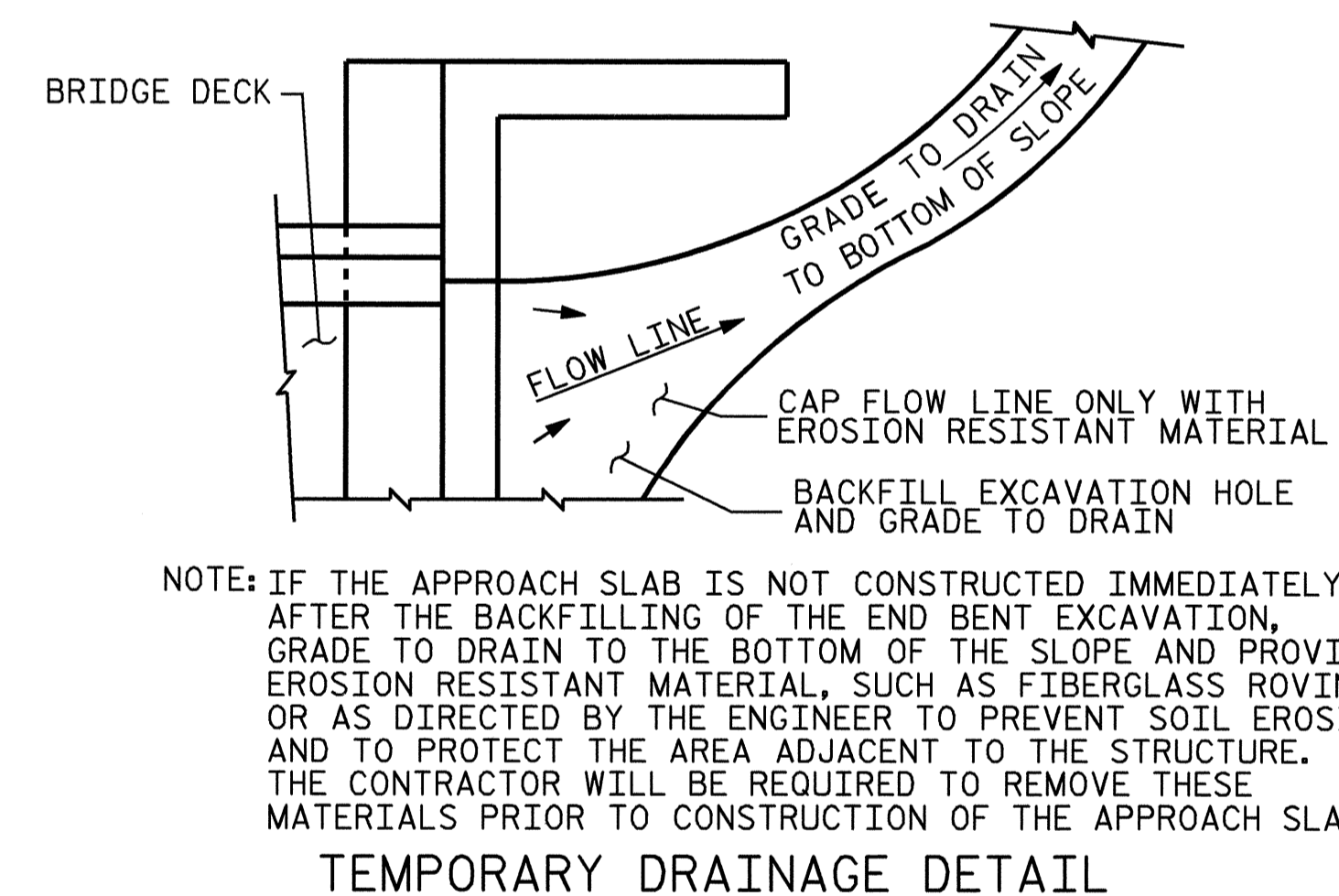
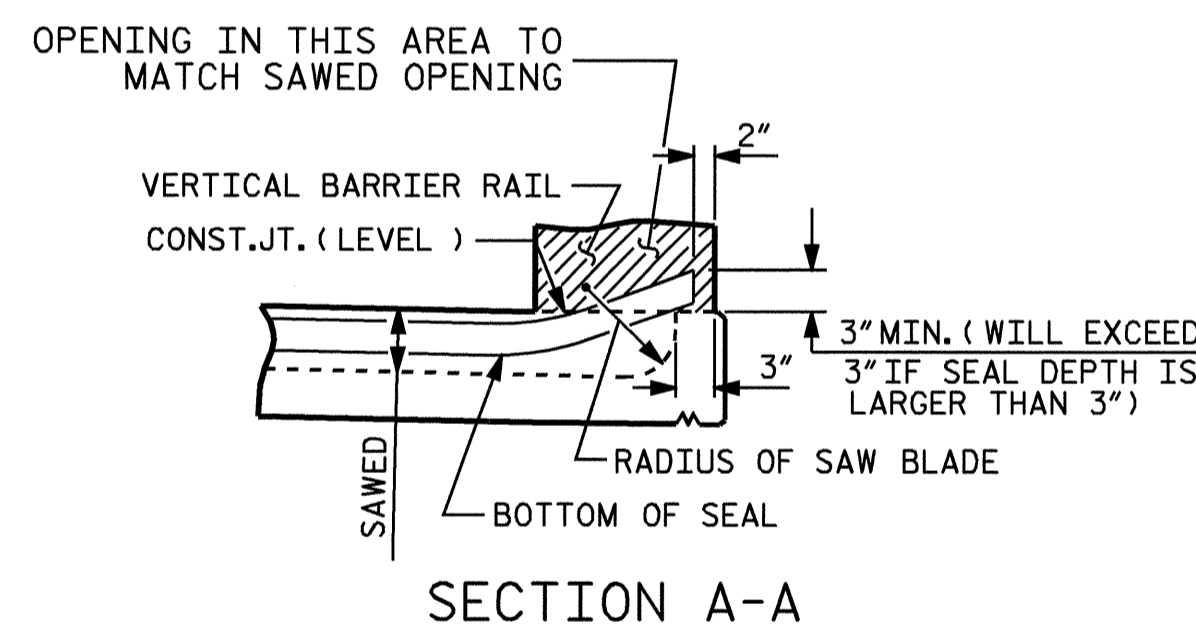
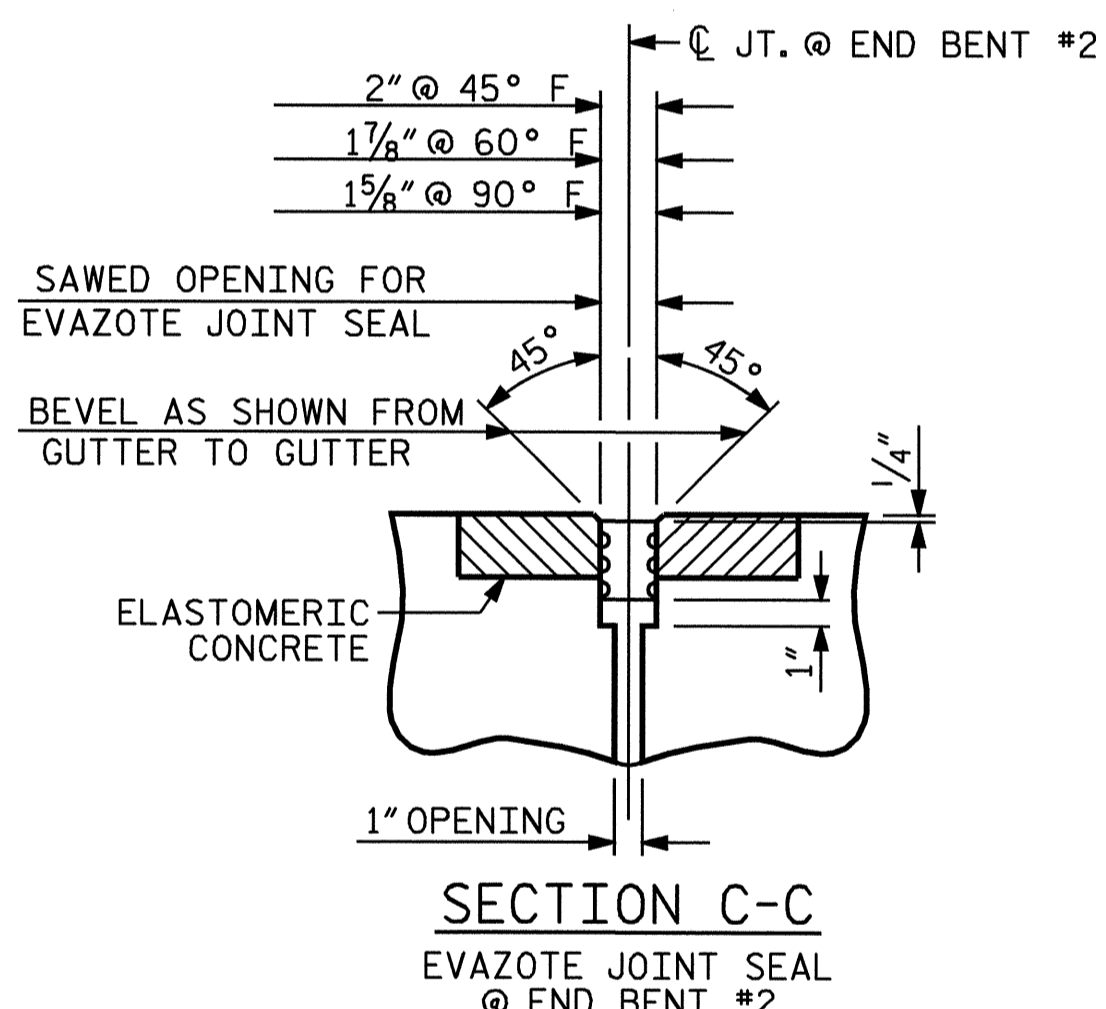
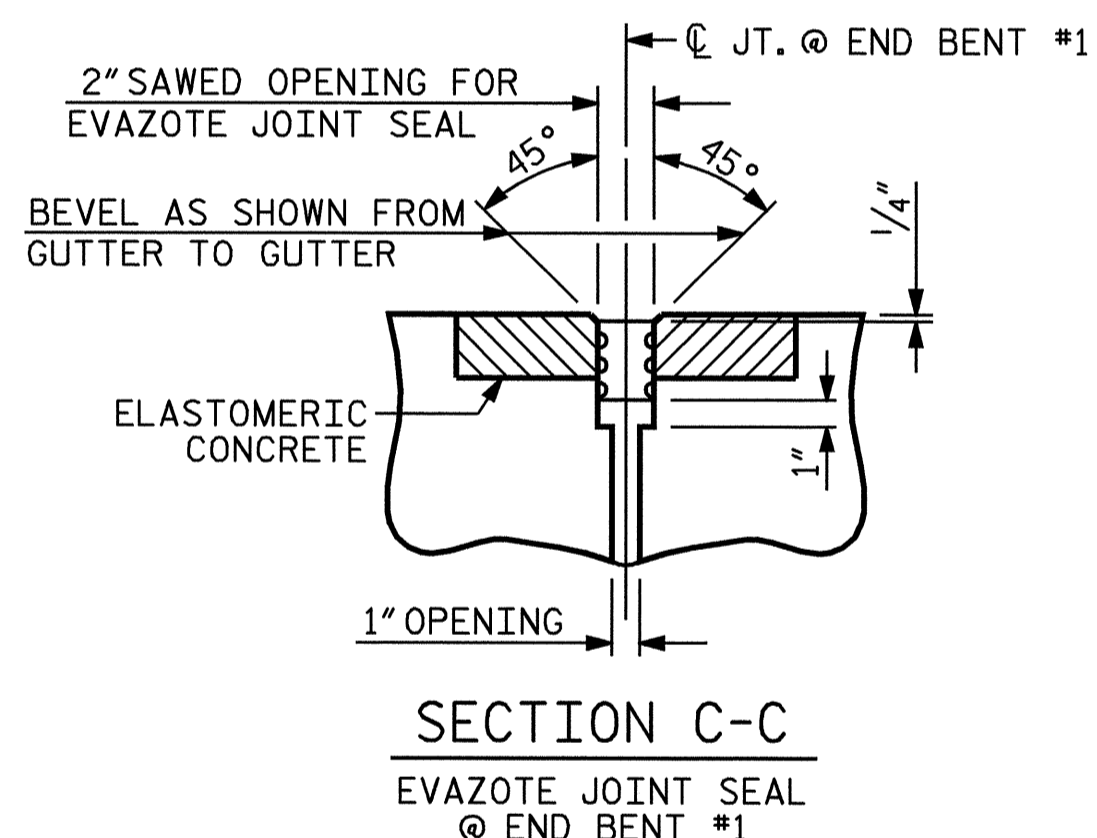
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NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
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SHEET NO. S-26  
 TOTAL SHEETS 27





**TEMPORARY BERM AND SLOPE DRAIN DETAILS**



**JOINT SEAL DETAILS @ END BENT**

ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	6.0
2	6.0
TOTAL	12.0

\* BASED ON THE MINIMUM BLOCKOUT SHOWN.

ASSEMBLED BY : ZION J. RORIE DATE : 5/17/06  
 CHECKED BY : M. PISO DATE : 5/06  
 DRAWN BY : FCJ 11/88 REV. 8/16/99 MAB/LES  
 CHECKED BY : ARB 11/88 REV. 10/17/00 RWW/LES  
 REV. 5/7/03 RWW/JTE

**NORTH CAROLINA PROFESSIONAL SEAL 025516 ENGINEER EMILY E. MARRIY 7/7/06**

PROJECT NO. B-4188  
MARTIN COUNTY  
 STATION: 18+00.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD

BRIDGE APPROACH  
 SLAB DETAILS

REVISIONS						1988	
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO. S-27	
1			3			TOTAL SHEETS 27	
2			4				

STD. NO. BAS10

## STANDARD NOTES

### DESIGN DATA:

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

### MATERIAL AND WORKMANSHIP:

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

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

### CONCRETE:

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

### CONCRETE CHAMFERS:

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

### DOWELS:

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

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

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

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

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

### REINFORCING STEEL:

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

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

### STRUCTURAL STEEL:

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

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

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

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

### HANDRAILS AND POSTS:

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

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

### SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN