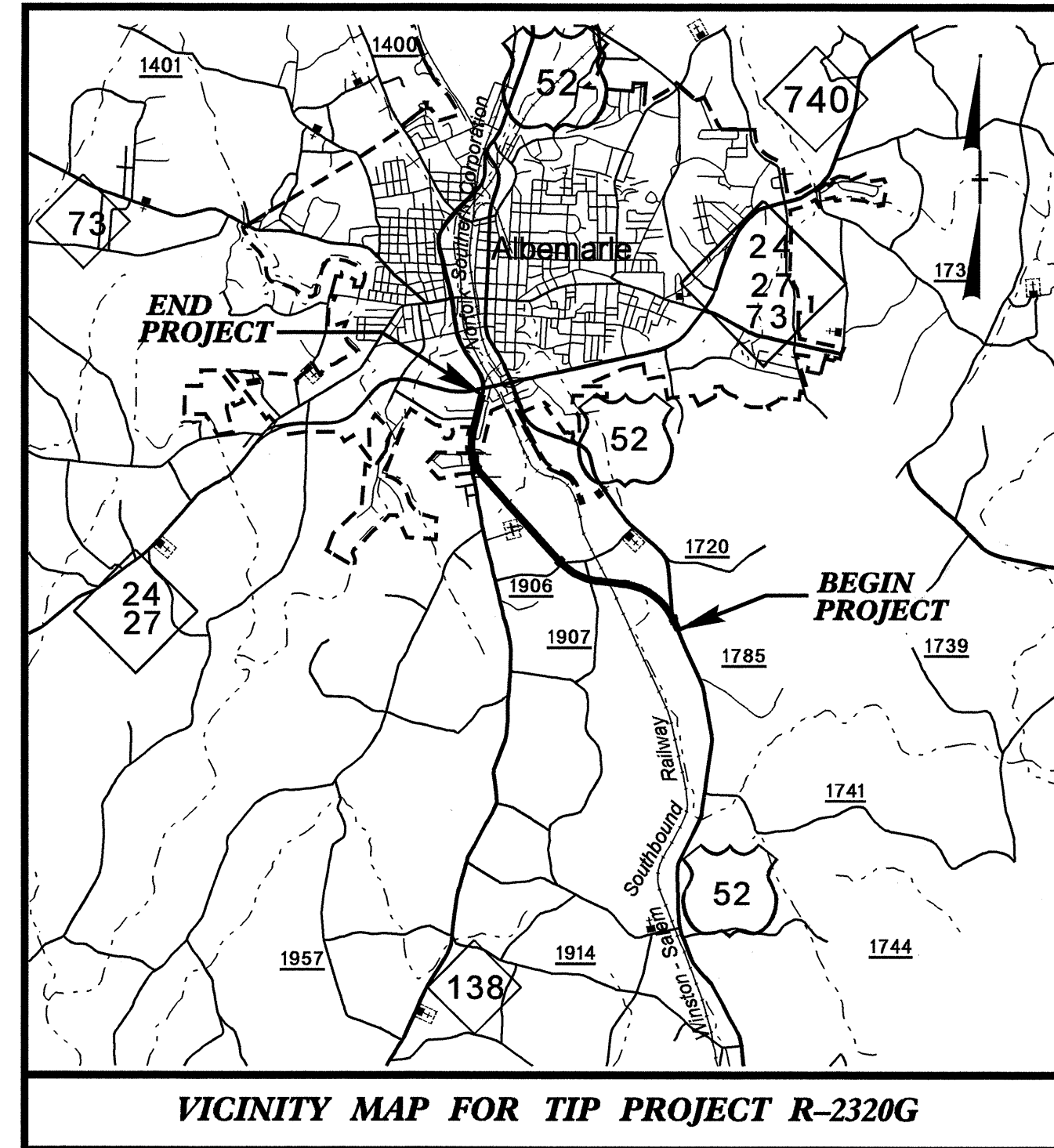


CONTRACT: C201368 **TIP PROJECT: R-2320G**

STRUCTURES



VICINITY MAP FOR TIP PROJECT R-2320G

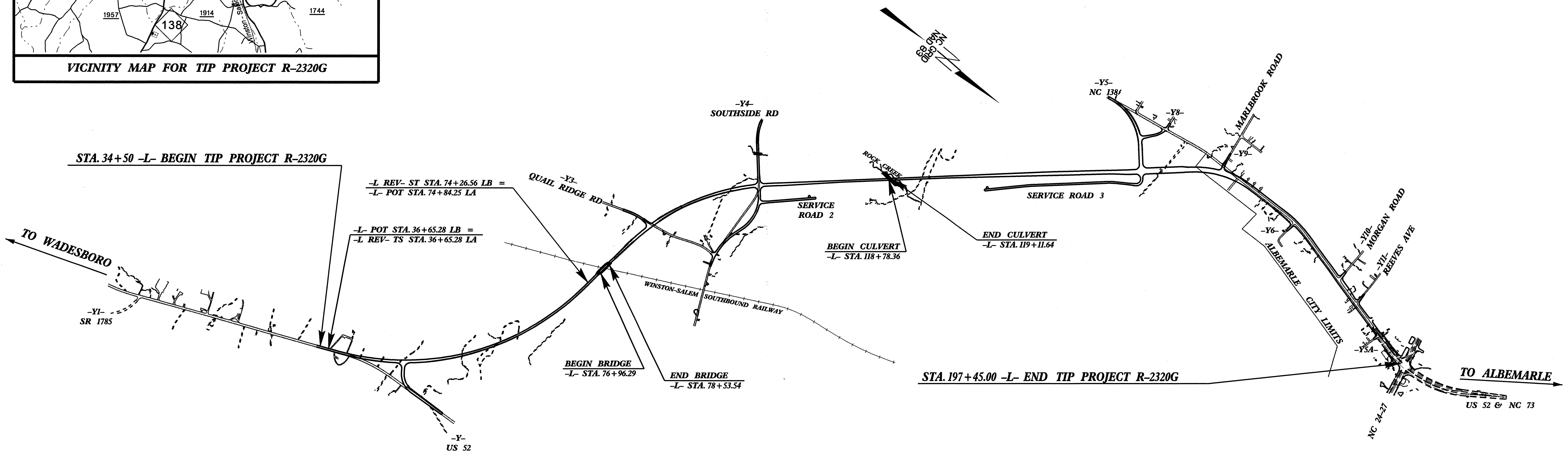
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STANLY COUNTY

LOCATION: ALBEMARLE - US 52 EXTENSION FROM THE INTERSECTION OF US 52, NC 73, NC 24-27 & NC 138 TO INTERSECTION OF US 52 AND SR 1785 (JOHNS ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNALS & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.		
N.C.	R-2320G		
WBS PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
34422.1.1	NHF-52(10)	P.E.	
34422.2.2	NHF-52(10)	RW & UTIL	
34422.3.5	NHF-52(23)	CONST.	

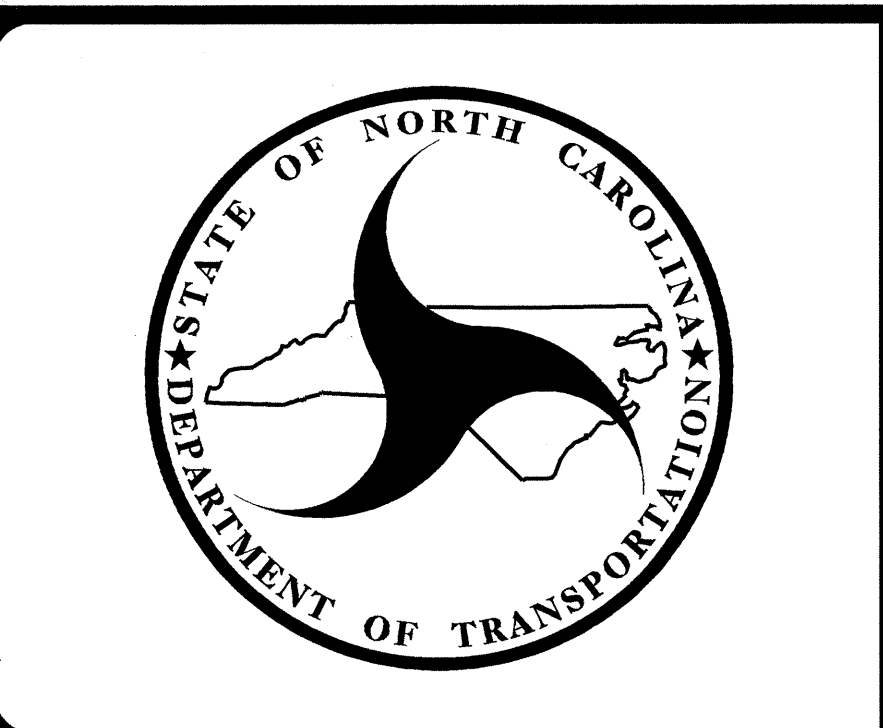


DESIGN DATA	PROJECT LENGTH
ADT 2008 = 5,800/13,200	LENGTH ROADWAY TIP PROJECT R-2320G = 3.039 MI
ADT 2028 = 8,300/18,900	LENGTH STRUCTURE TIP PROJECT R-2320G = 0.036 MI
DHV = 10 %	TOTAL LENGTH TIP PROJECT R-2320G = 3.075 MI
D = 60 %	2006 STANDARDS SPECIFICATION
T = 6 % *	LETTING DATE: MAY 20, 2008
V = 60/50 MPH	
* TTST 3% + DUAL 3%	

Prepared in the Office of:
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
 1000 Birch Ridge Drive Raleigh, N.C. 27610

B.S. COX, P.E.
PROJECT ENGINEER

T.J. BEACH, P.E.
PROJECT DESIGN ENGINEER



DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY ENGINEER - DESIGN

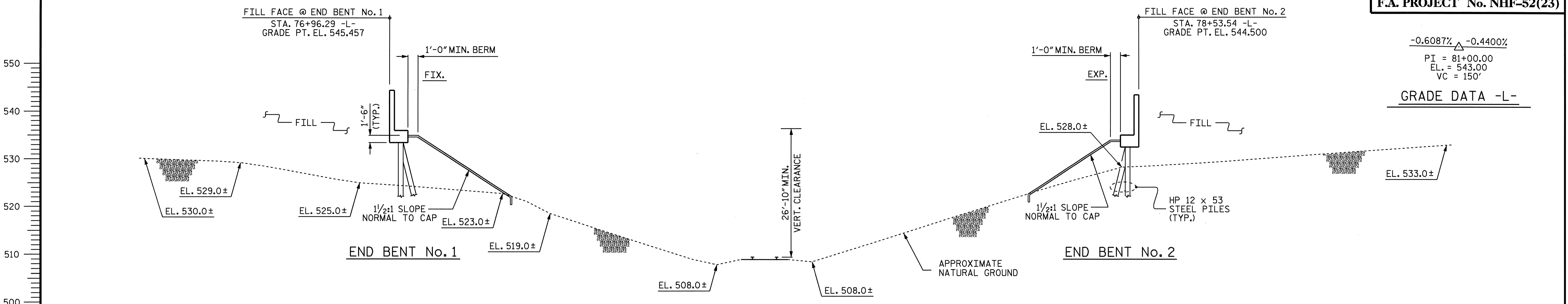
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED FOR
DIVISION ADMINISTRATOR

DATE

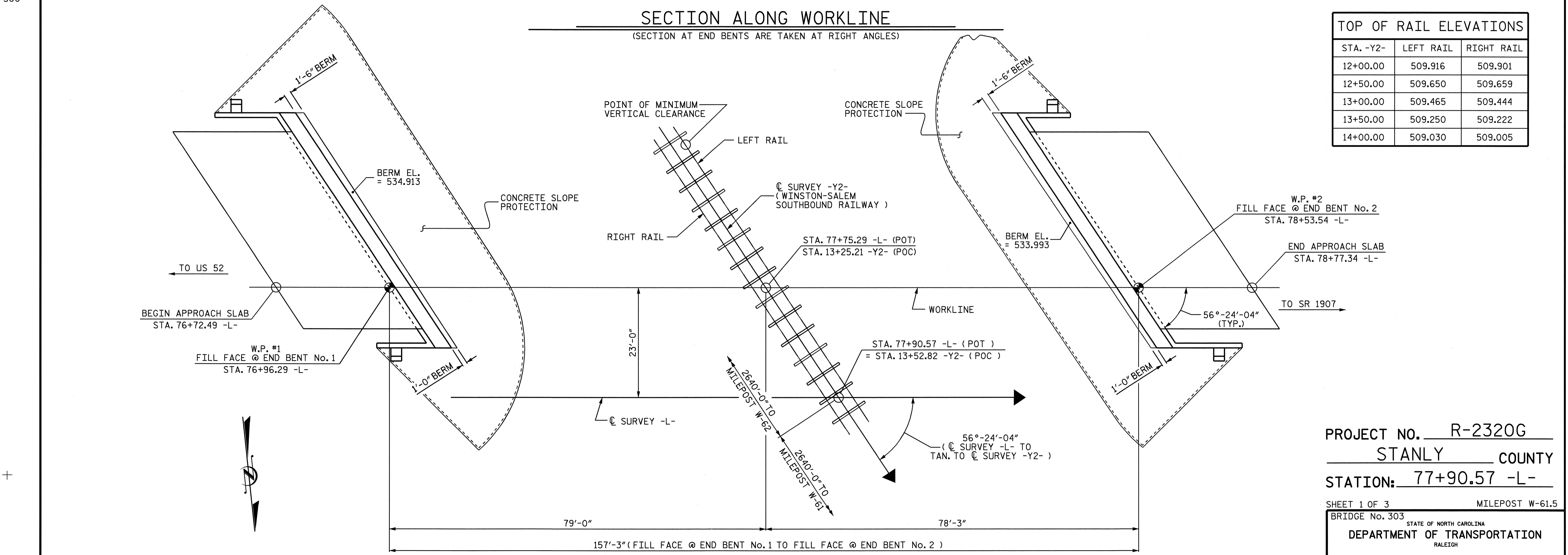
76+50 77+00 77+50 78+00 78+50 79+00

F.A. PROJECT No. NHF-52(23)



TOP OF RAIL ELEVATIONS

STA. -Y2-	LEFT RAIL	RIGHT RAIL
12+00.00	509.916	509.901
12+50.00	509.650	509.659
13+00.00	509.465	509.444
13+50.00	509.250	509.222
14+00.00	509.030	509.005



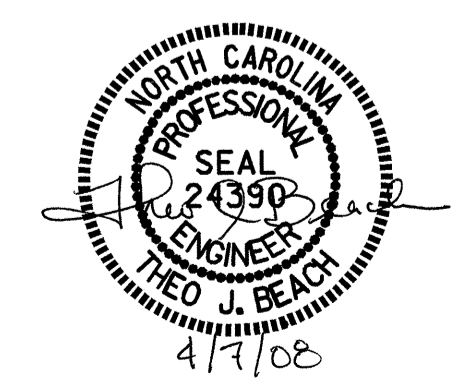
PROJECT NO. R-2320G
STANLY COUNTY
 STATION: 77+90.57 -L-
 SHEET 1 OF 3 MILEPOST W-61.5

BRIDGE No. 303
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE OVER
 WINSTON-SALEM SOUTHBOUND
 RAILWAY ON US 52 EXTENSION
 BETWEEN US 52 AND SR 1907

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

DRAWN BY : P.C. BREWER/ JMB DATE : 1/30/08
 CHECKED BY : T.J. BEACH DATE : 2-08

07-APR-2008 14:42
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 tbeach



STR. #1

NOTES :

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

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

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

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

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

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 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.

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

FOR SHIPPING STEEL STRUCTURAL MEMBERS, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

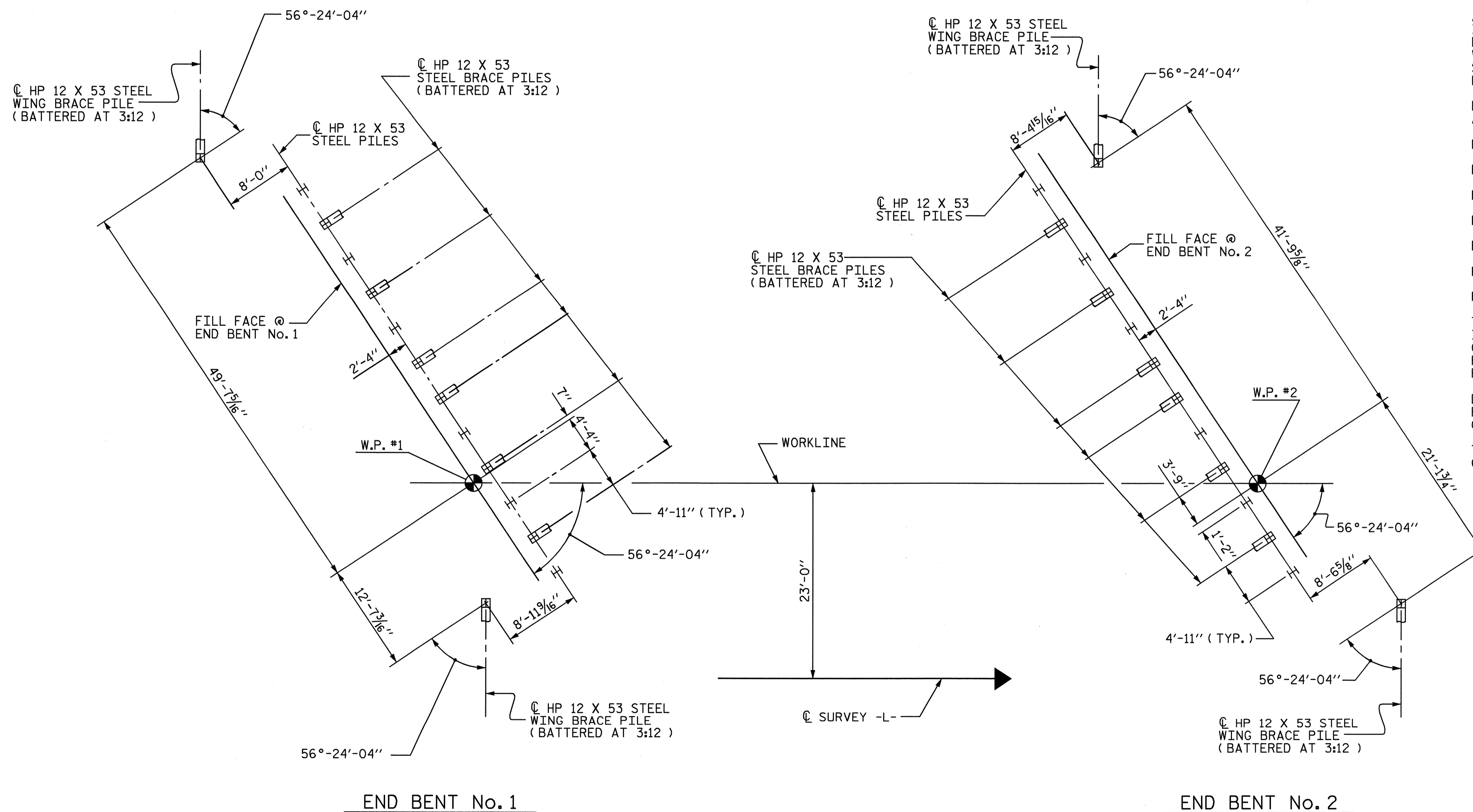
FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.

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

THE RAILROAD TRACK TOP OF RAIL ELEVATIONS SHOWN ON THE PLANS ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE TOP OF RAIL ELEVATIONS AND REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.

DRIVE PILES AT END BENTS No. 1 AND No. 2 TO A REQUIRED BEARING CAPACITY OF 130 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 BENTS No. 1 AND No. 2 IS 65 TONS PER PILE.



FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE.
 DIMENSIONS LOCATING END BENT WING BRACE PILES ARE SHOWN TO THE PILE CENTERLINE AT THE BOTTOM OF WING ELEVATION

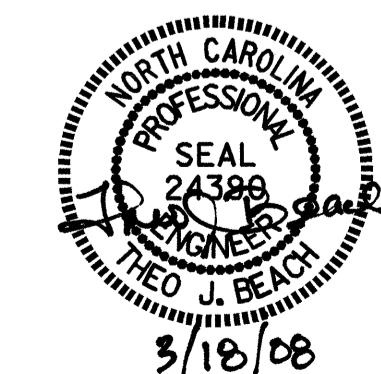
PROJECT NO. R-2320G
STANLY COUNTY
 STATION: 77+90.57 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

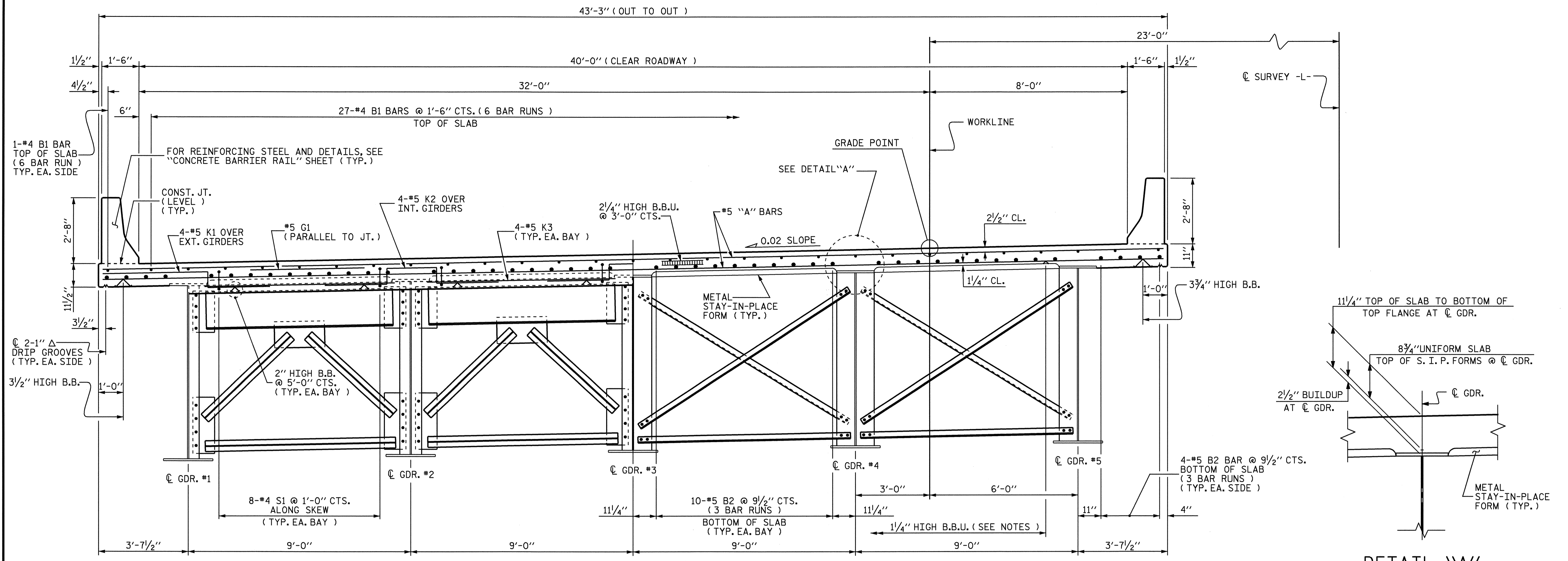
GENERAL DRAWING

BRIDGE OVER
 WINSTON-SALEM SOUTHBOUND
 RAILWAY ON US 52 EXTENSION
 BETWEEN US 52 AND SR 1907



DRAWN BY : MIKE BRITT DATE : 1-31-08
 CHECKED BY : T.J. BEACH DATE : 2-08

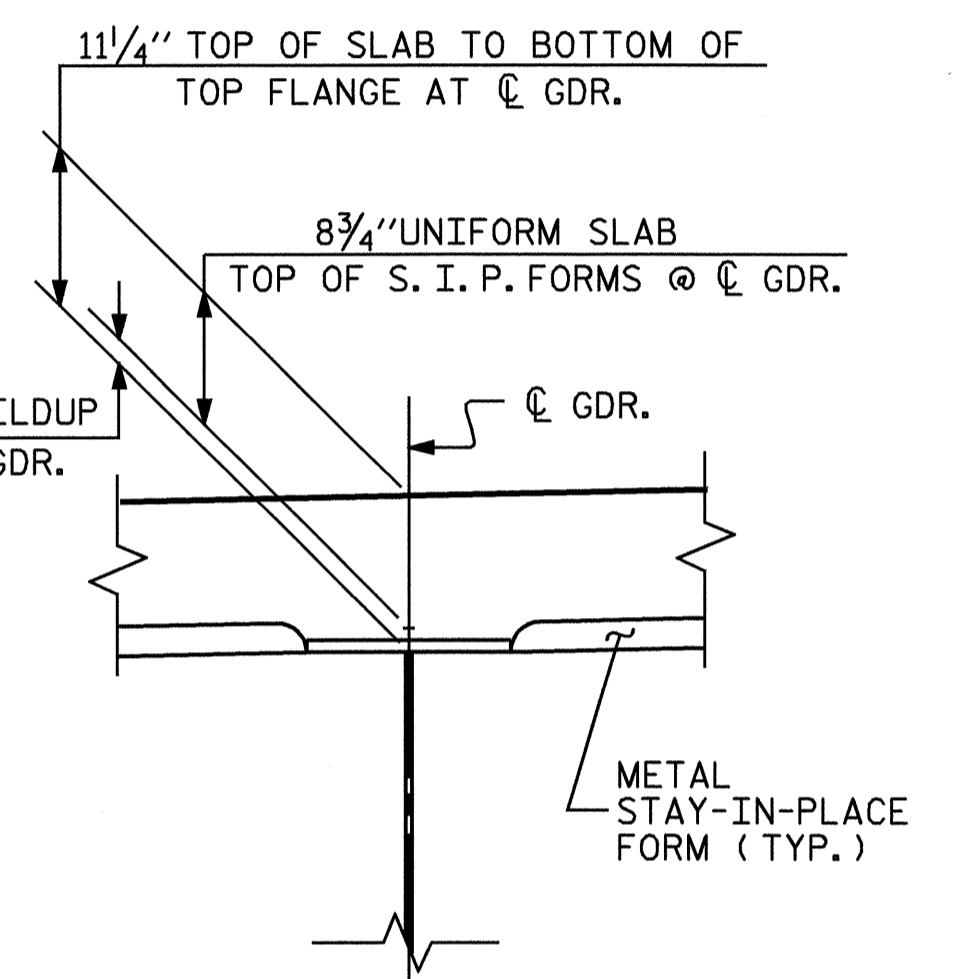
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS 24
2			4			



HALF-SECTION @ END BENT DIAPHRAGM

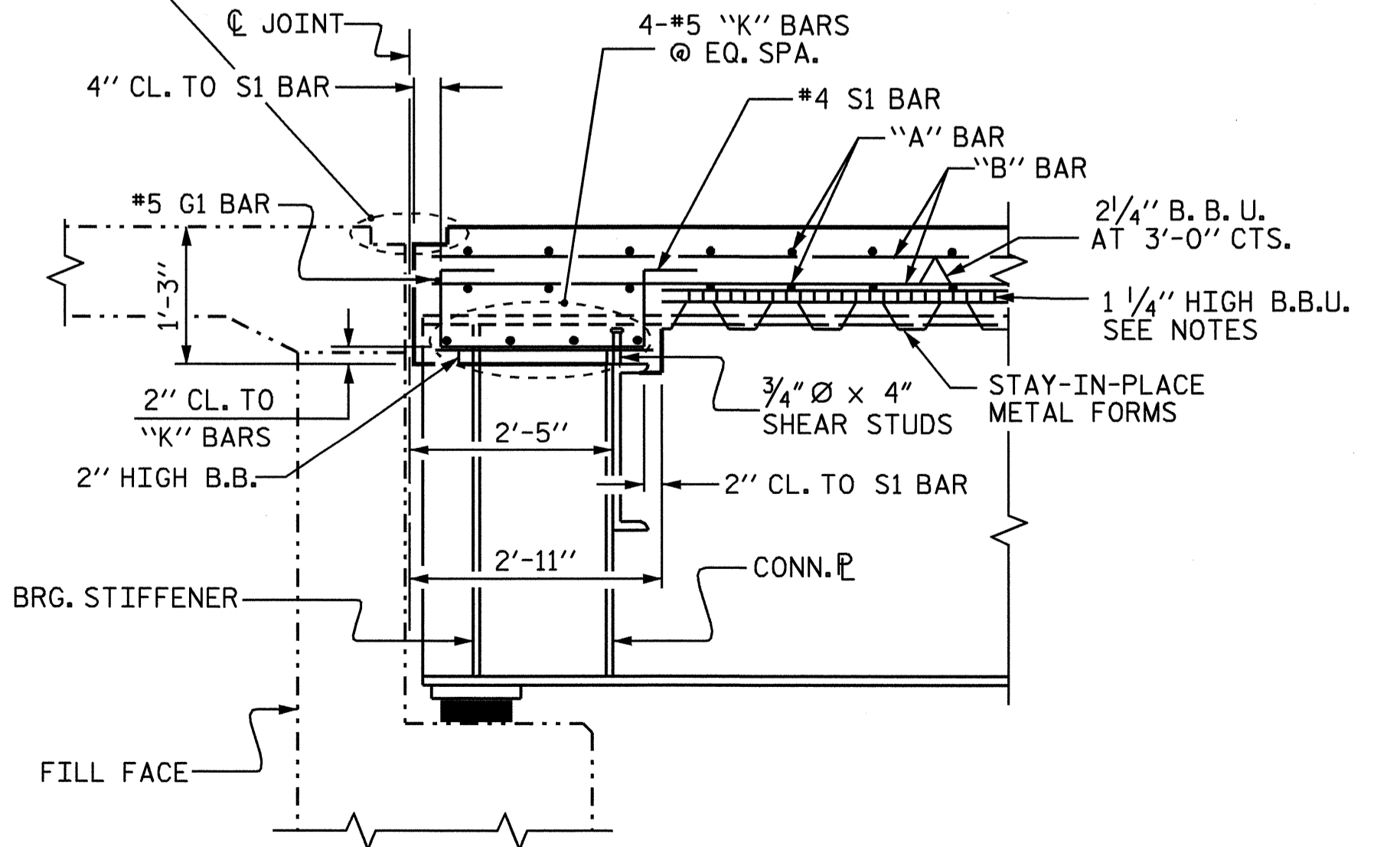
HALF-SECTION @ INTERMEDIATE DIAPHRAGM

TYPICAL SECTION



DETAIL "A"

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



SECTION THRU END BENT DIAPHRAGM

(SECTION TAKEN NORMAL TO FILL FACE)

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 2/2" ABOVE THE TOP OF THE REMOVABLE FORM.

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

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

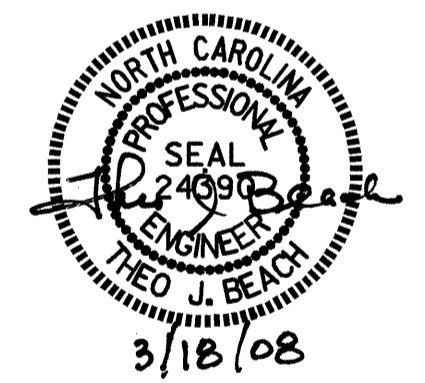
#5 G1 BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

DIRECTION OF CASTING DECK CONCRETE SHALL BE FROM THE FIXED BEARING END TOWARD THE EXPANSION BEARING END OF THE SPAN.

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

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2 1/2" AT END BENTS. FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

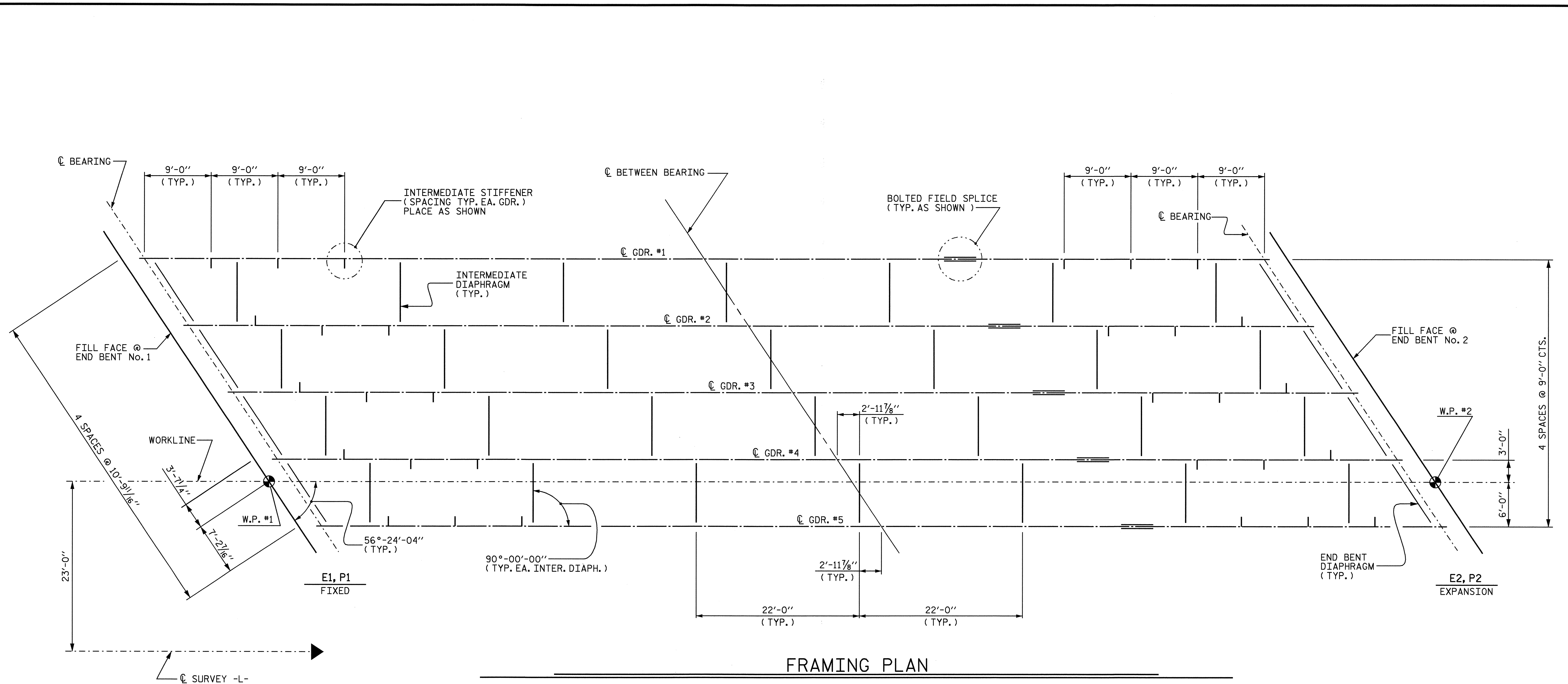


PROJECT NO. R-2320 G
 STANLY COUNTY
 STATION: 77+90.57 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTIONS

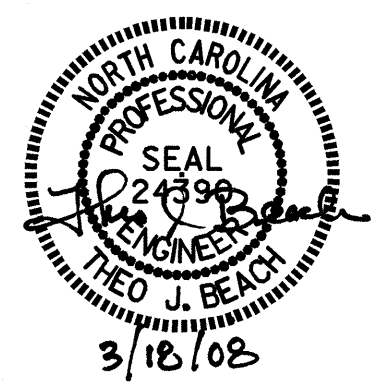
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 CHECKED BY: N. PIERCE DATE: 7-18-05

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



FRAMING PLAN

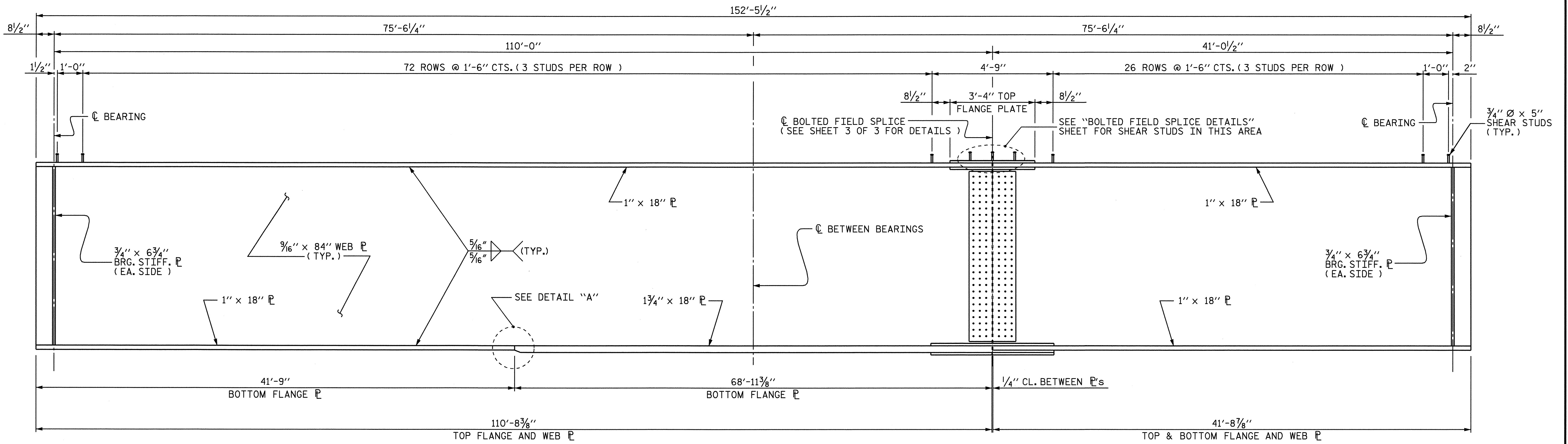
PROJECT NO. R-2320 G
STANLY COUNTY
 STATION: 77+90.57 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 FRAMING PLAN

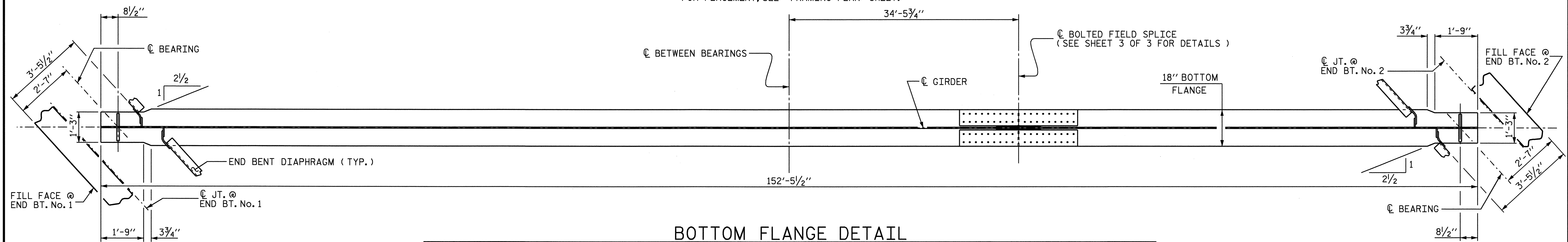
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 CHECKED BY : N. PIERCE DATE : 7-18-05

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2			4			24



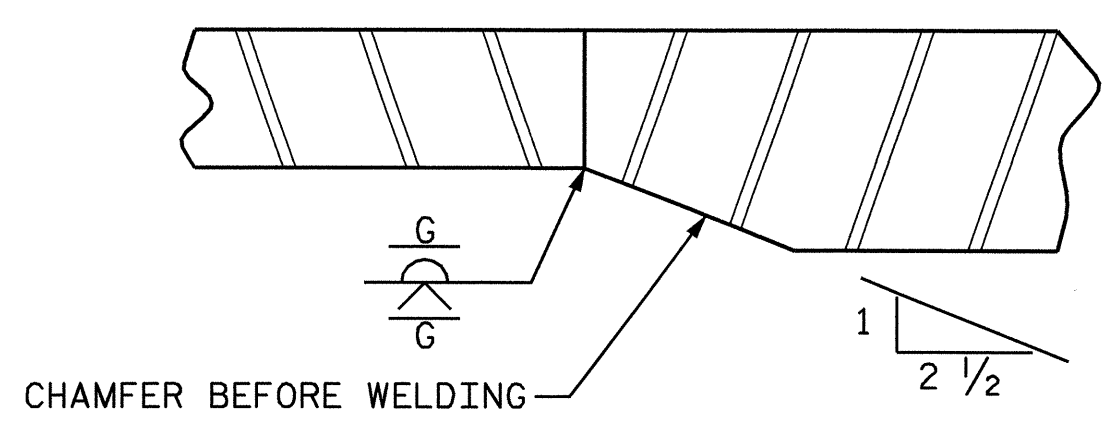
ELEVATION OF GIRDER

NOTE :
CONNECTOR & INTERMEDIATE STIFFENER P's NOT SHOWN.
FOR PLACEMENT, SEE "FRAMING PLAN" SHEET.

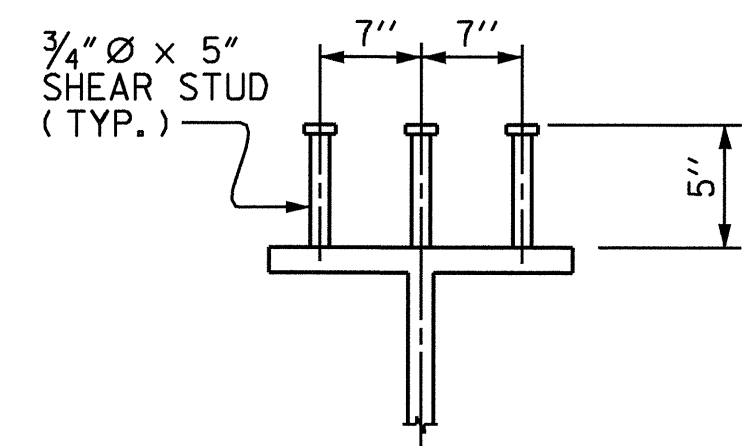


BOTTOM FLANGE DETAIL

NOTE :
CONNECTOR & INTERMEDIATE STIFFENER P's NOT SHOWN.
FOR PLACEMENT, SEE "FRAMING PLAN" SHEET.

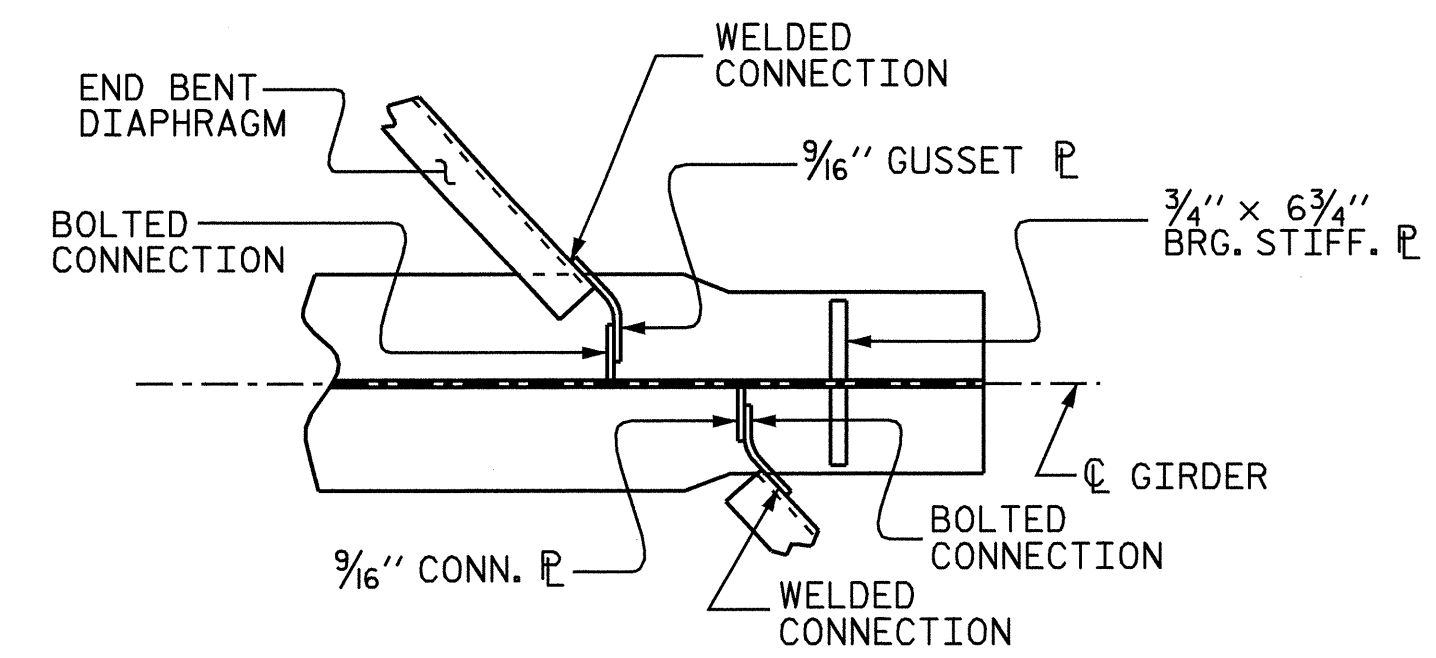


DETAIL "A"



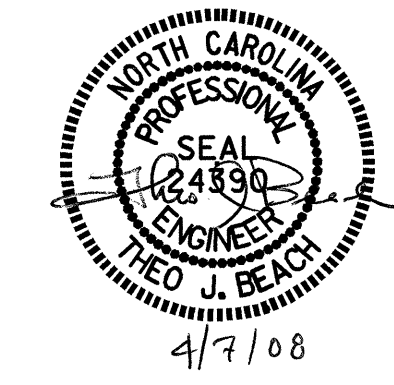
SHEAR STUD DETAIL

TYPICAL EXCEPT AT TOP FLANGE SPLICE PL
SEE "BOLTED FIELD SPLICE DETAILS" SHEET
FOR SHEAR STUDS IN THIS AREA



CONNECTOR PLATE DETAIL

(EACH END SIMILAR)



PROJECT NO. R-2320 G
STANLY COUNTY
STATION: 77+90.57 -L-

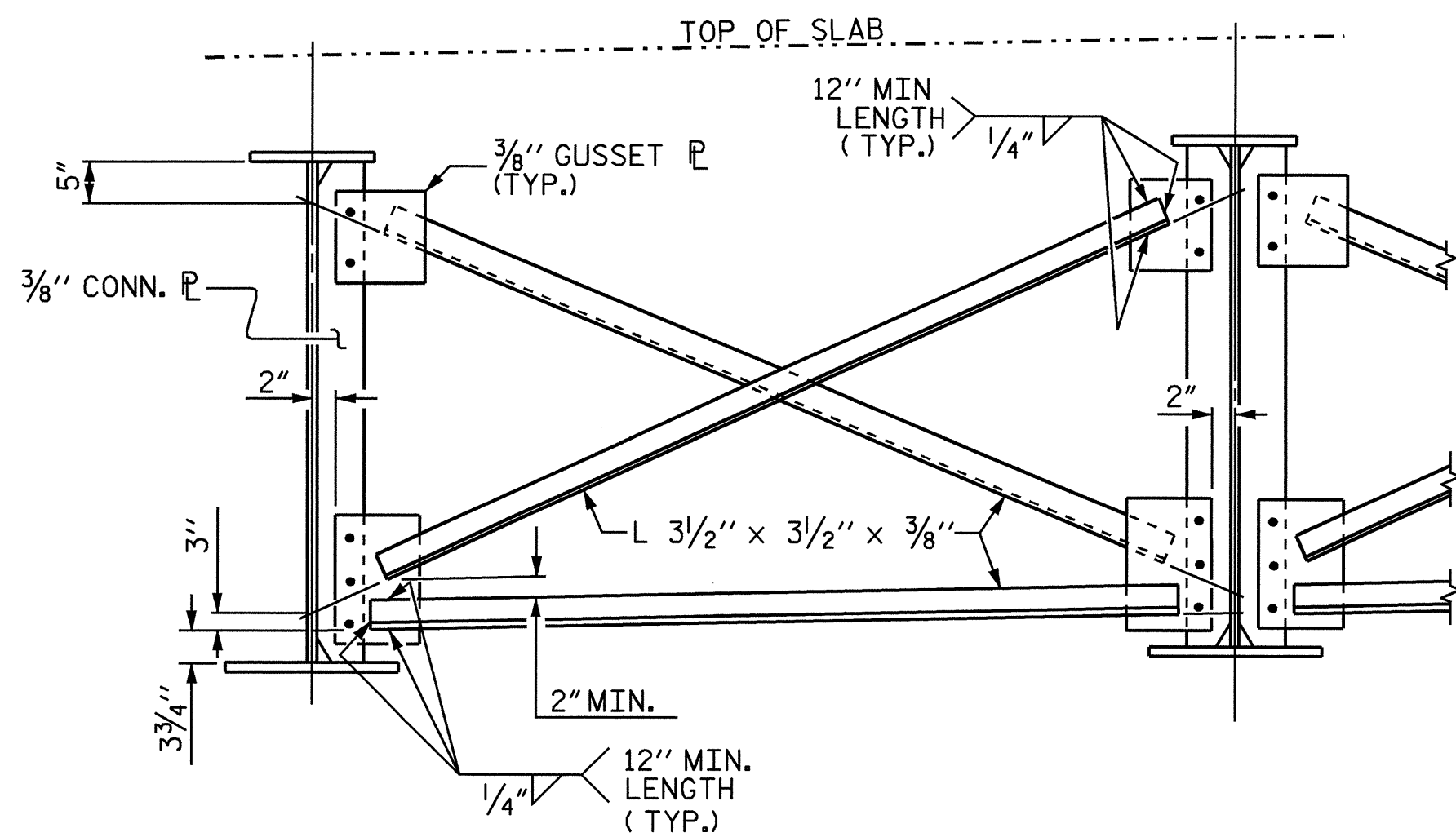
SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
STRUCTURAL STEEL
DETAILS

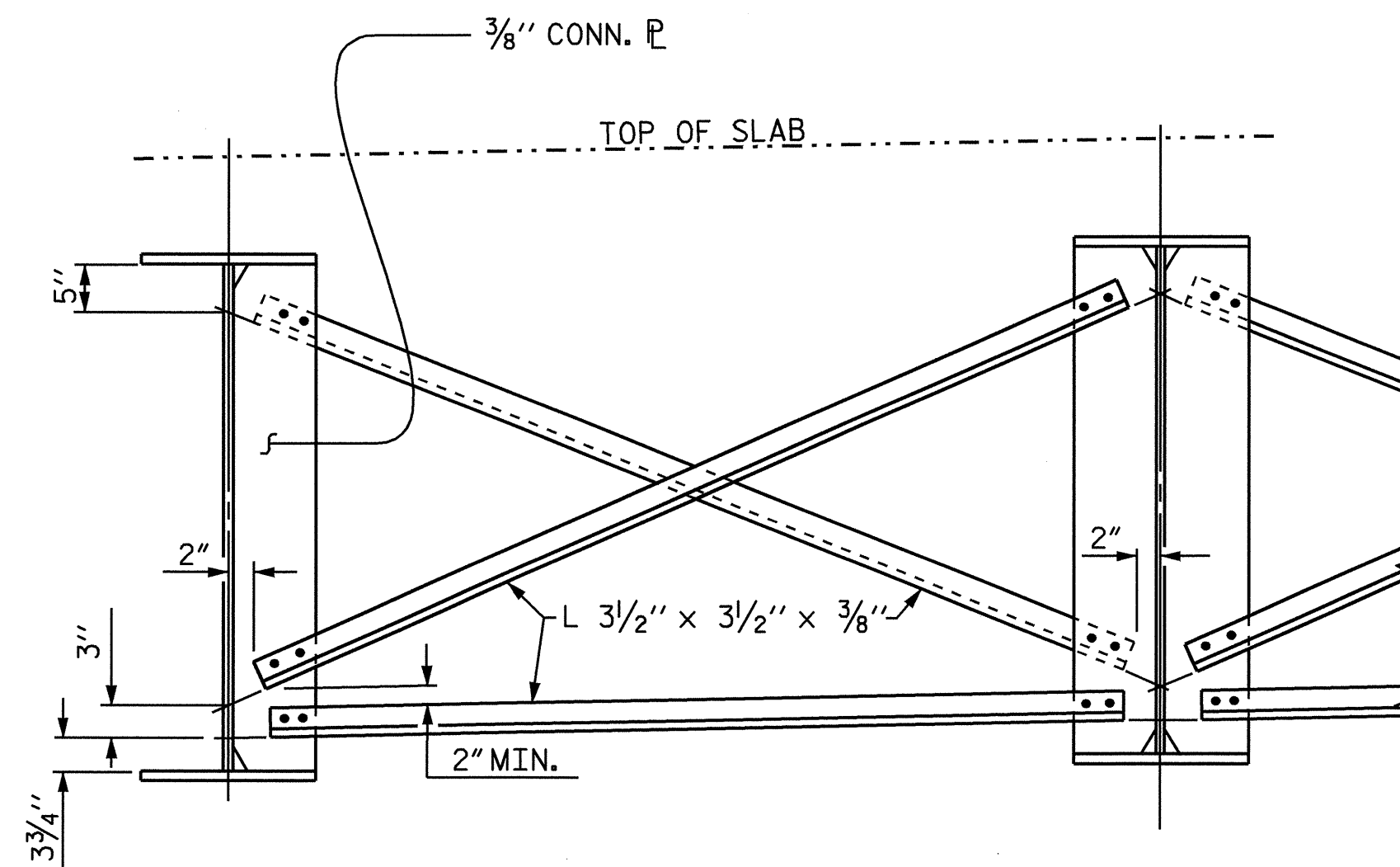
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1			3			TOTAL SHEETS
2			4			24

DRAWN BY : MIKE BRITT DATE : 6-22-05
CHECKED BY : N. PIERCE DATE : 7-18-05

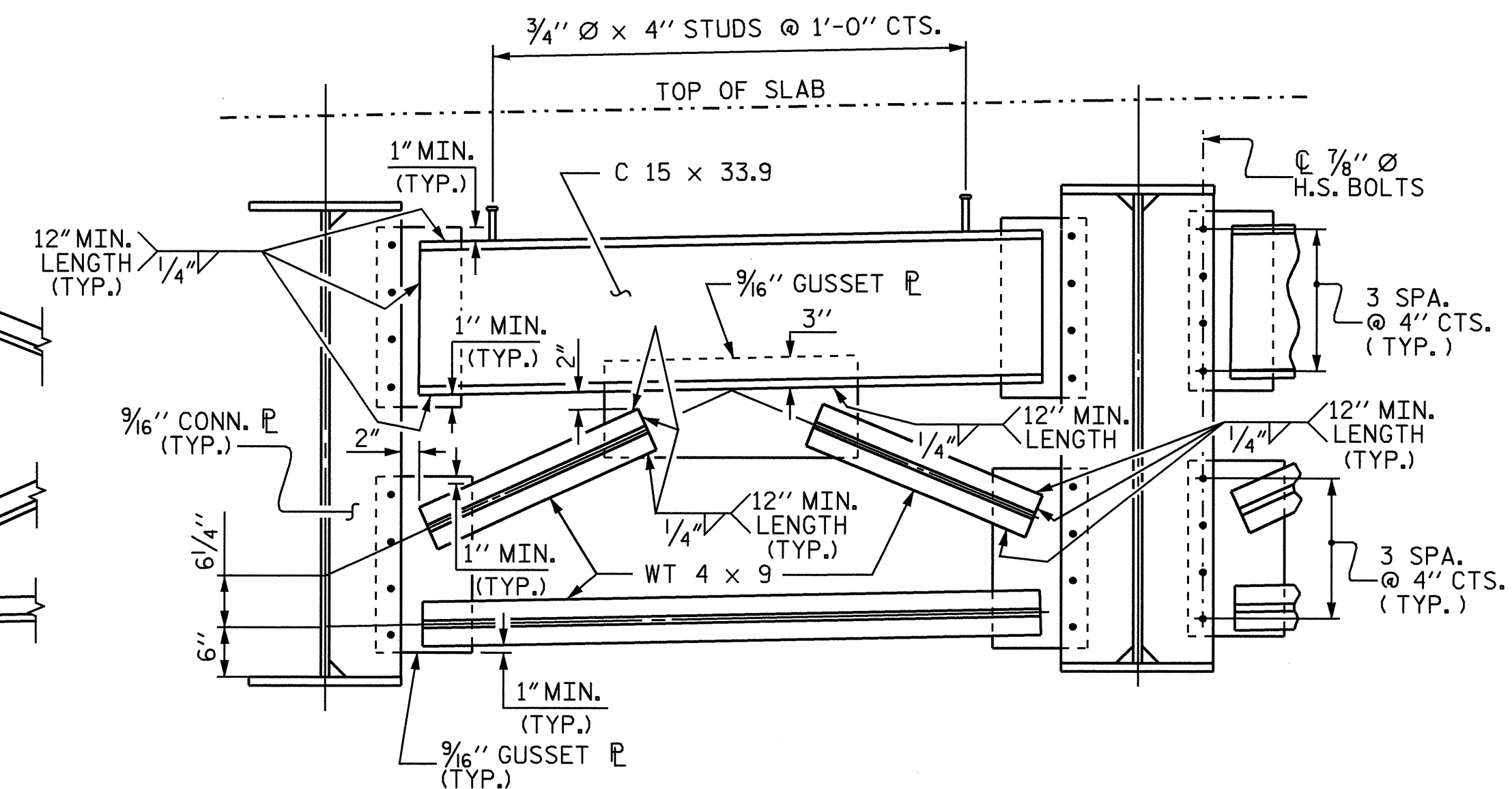


OPTIONAL INTERMEDIATE DIAPHRAGM

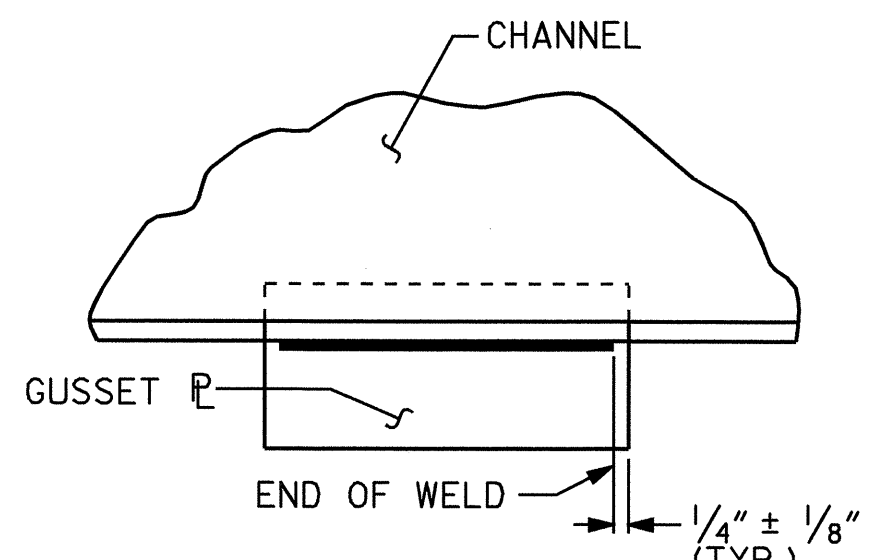
(SEE NOTES, SHEET 3 OF 3)



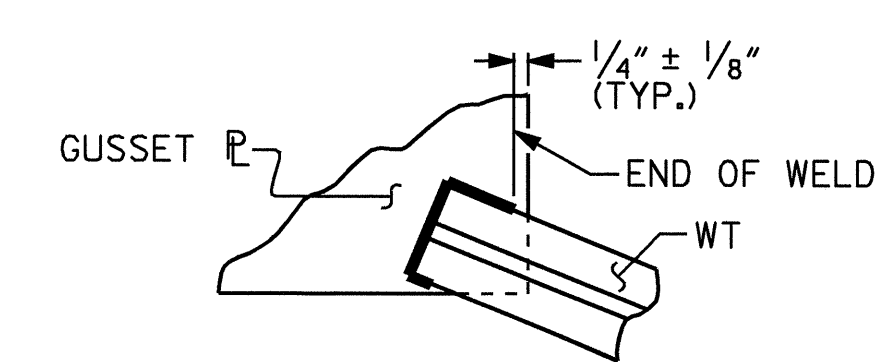
TYPICAL INTERMEDIATE DIAPHRAGM



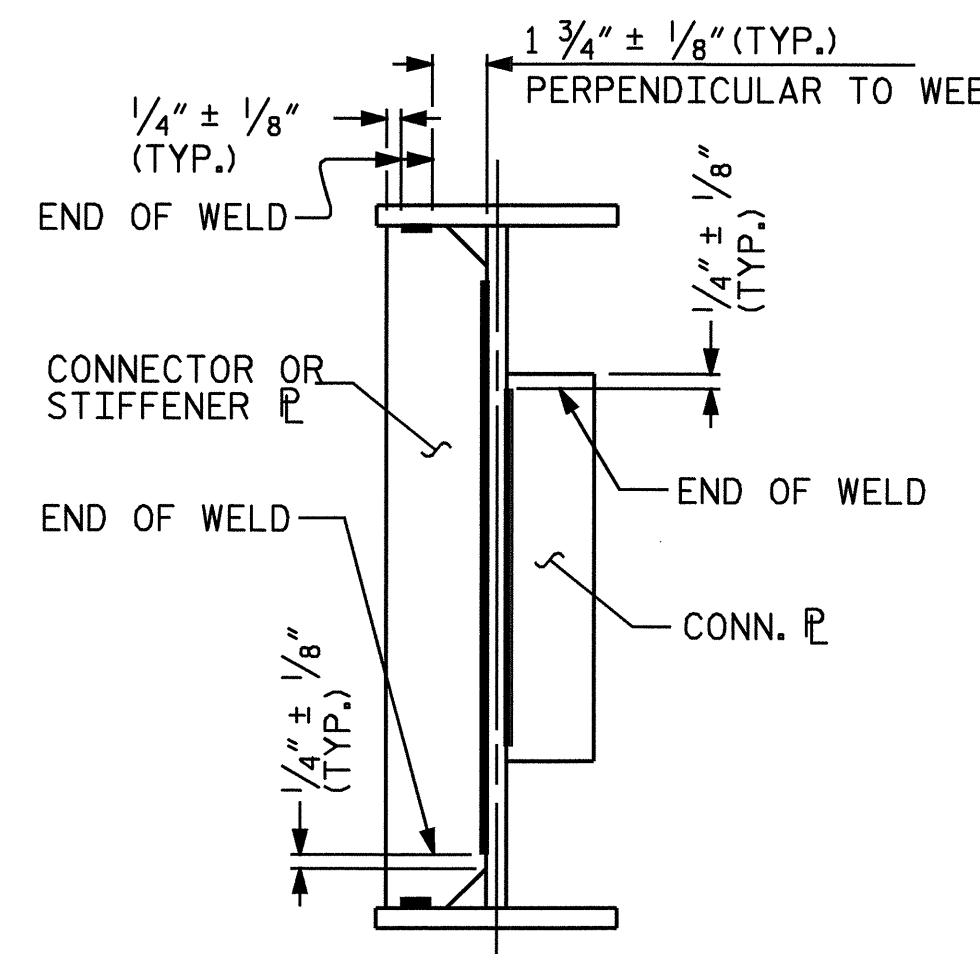
TYPICAL END BENT DIAPHRAGM



TYPICAL GUSSET PLATE CONNECTION

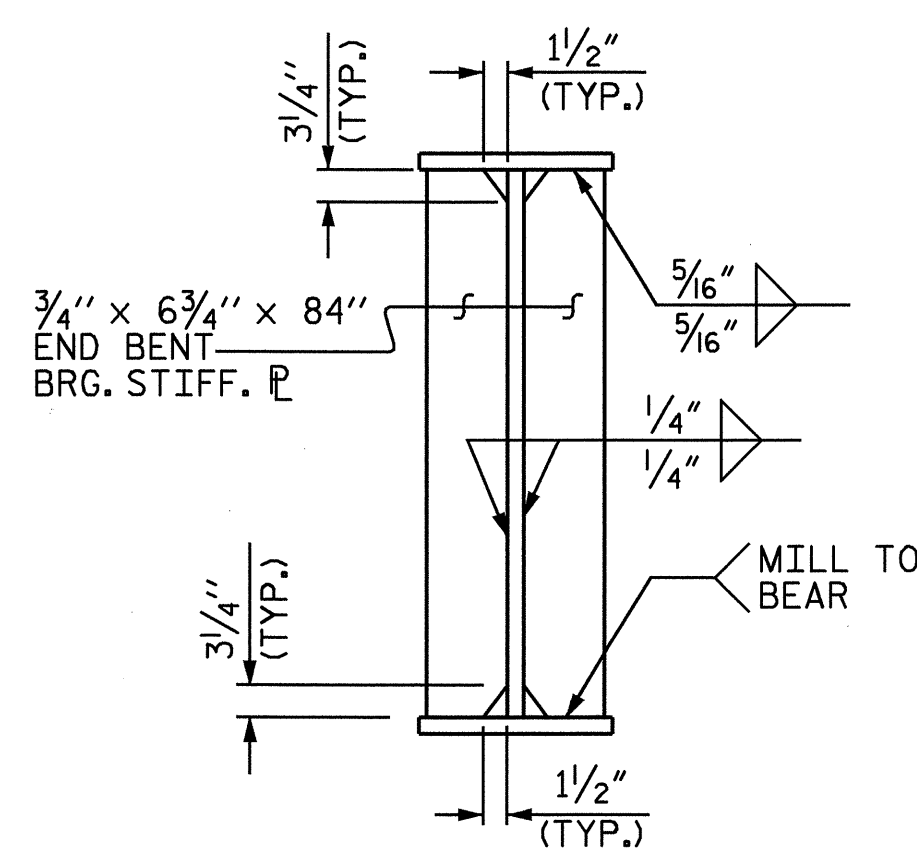


TYPICAL "TEE" TO GUSSET PLATE CONNECTION

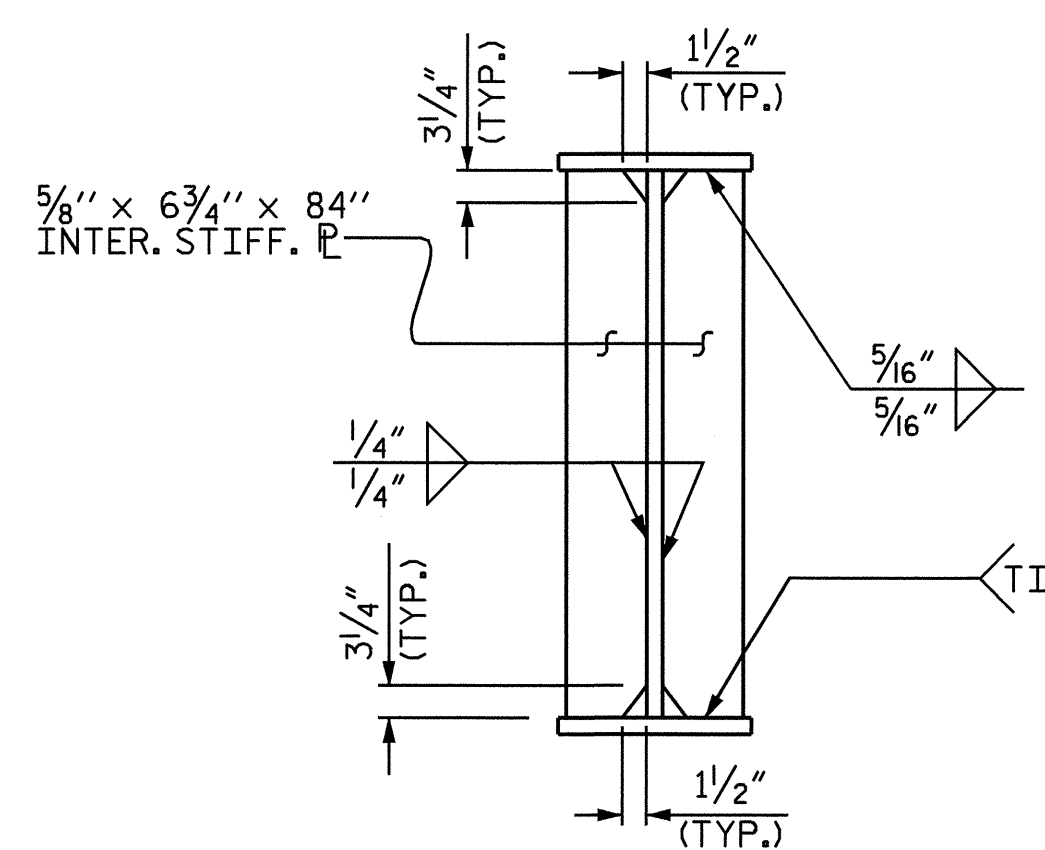


TYPICAL STIFFENER OR CONNECTOR PLATE CONNECTIONS

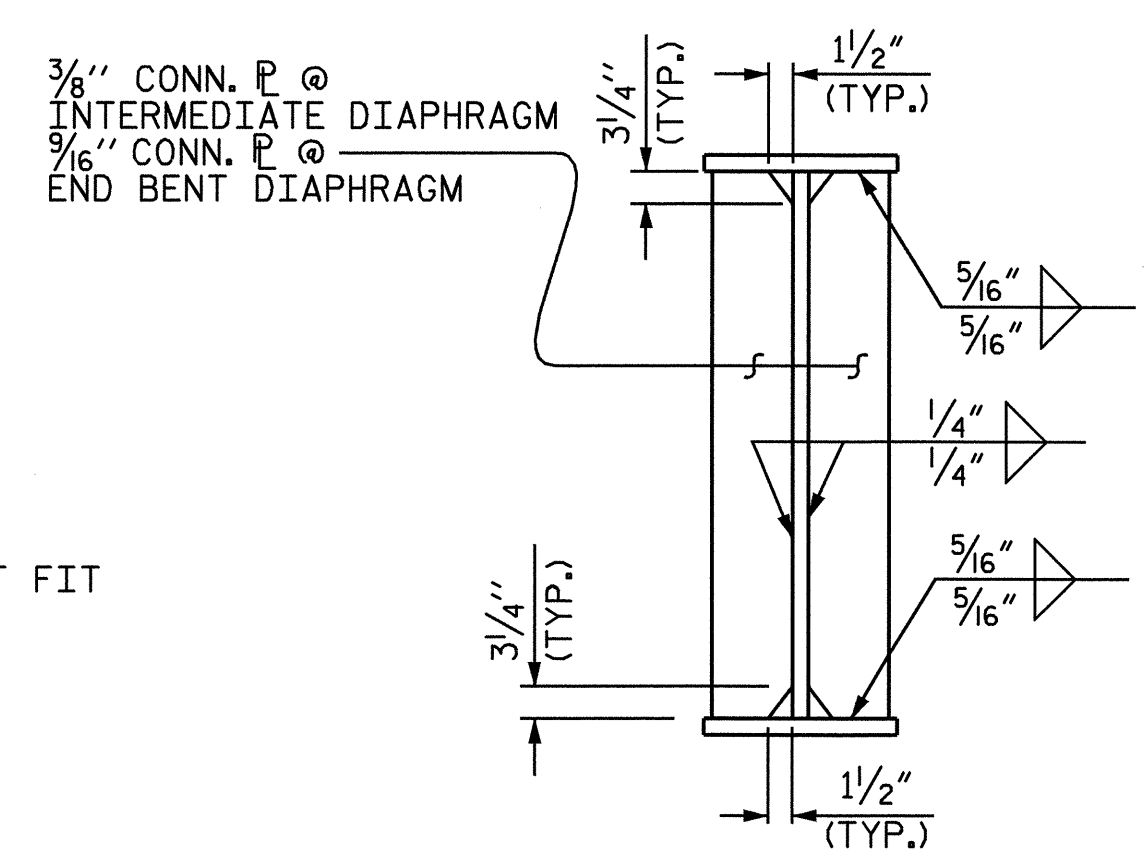
WELD TERMINATION DETAILS



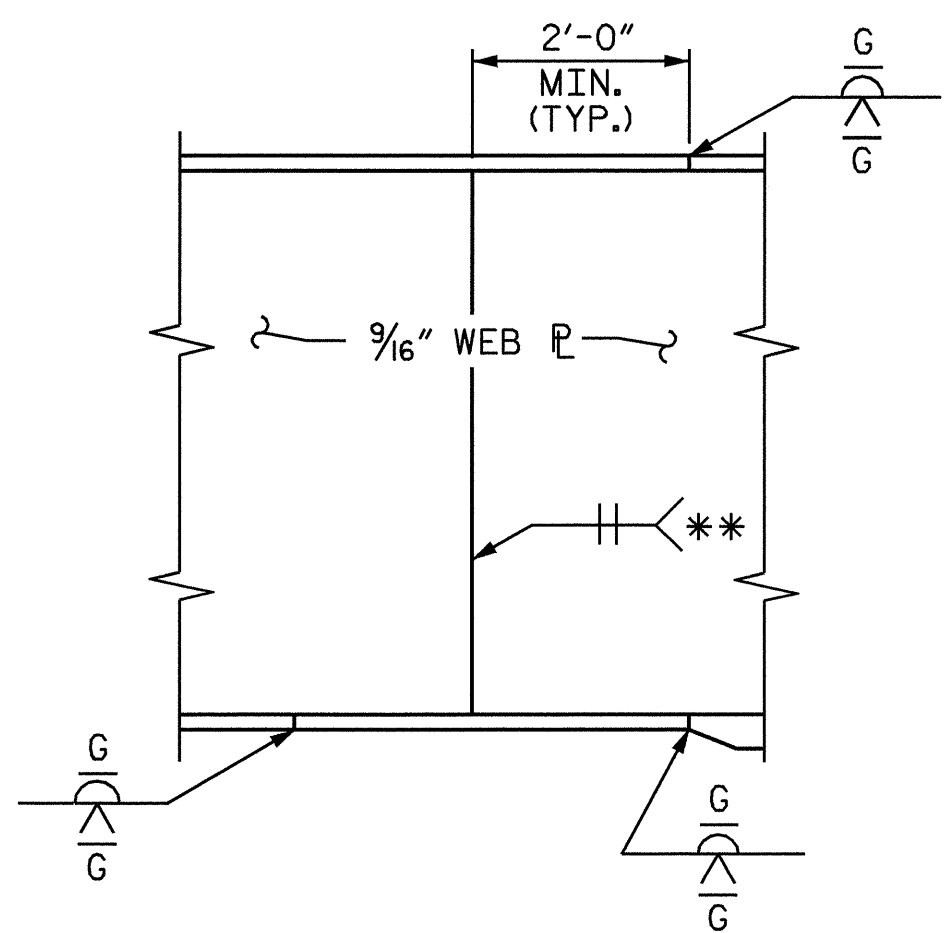
BEARING STIFFENER



INTERMEDIATE STIFFENER

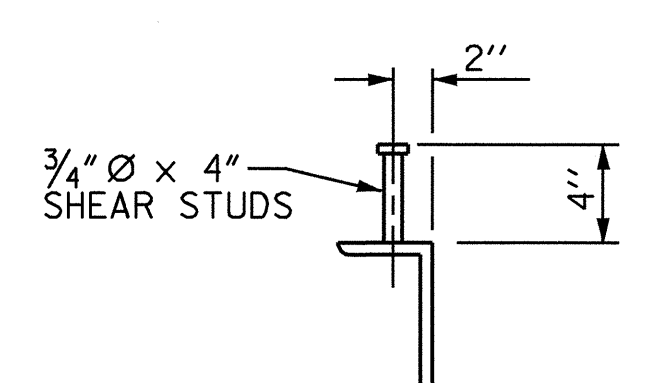


CONNECTOR P

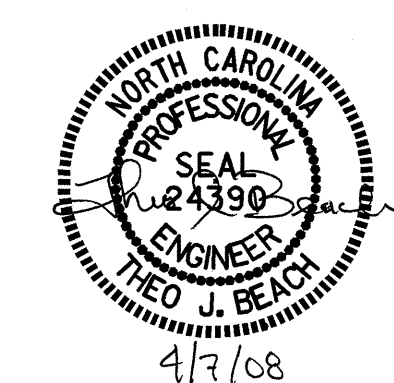


PERMISSIBLE SHOP FLANGE & WEB SPLICE

** GRIND SMOOTH AND FLUSH ON OUTSIDE OF EXTERIOR GIRDER



SHEAR STUD DETAILS
(TYP. EA. END BENT DIAPHRAGM)



PROJECT NO. R-2320 G
STANLY COUNTY
 STATION: 77+90.57 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 STRUCTURAL STEEL
 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			24

DRAWN BY : MIKE BRITT DATE : 6-22-05
 CHECKED BY : N. PIERCE DATE : 7-19-05

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 tbeach

STRUCTURAL STEEL NOTES :

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

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

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

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

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

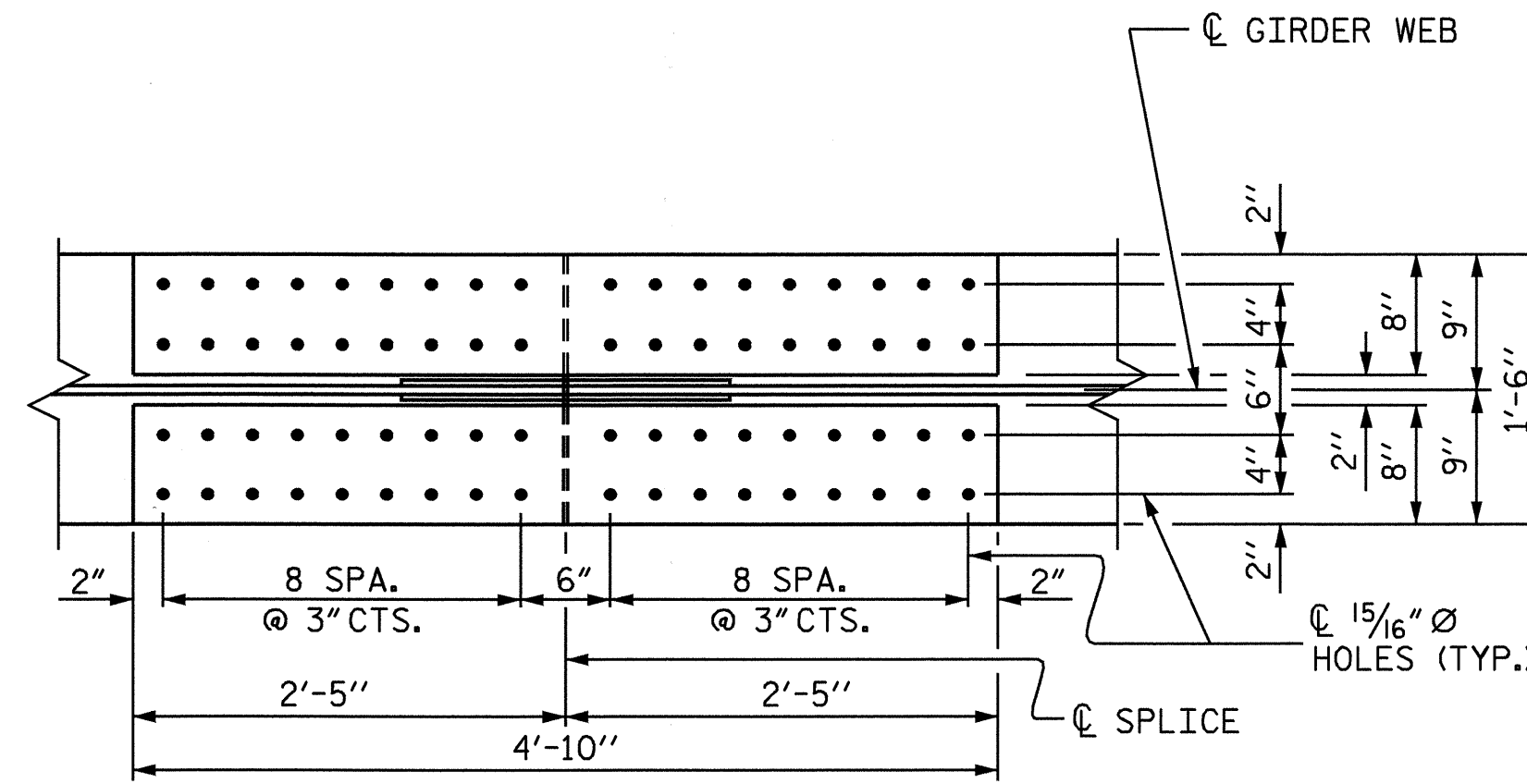
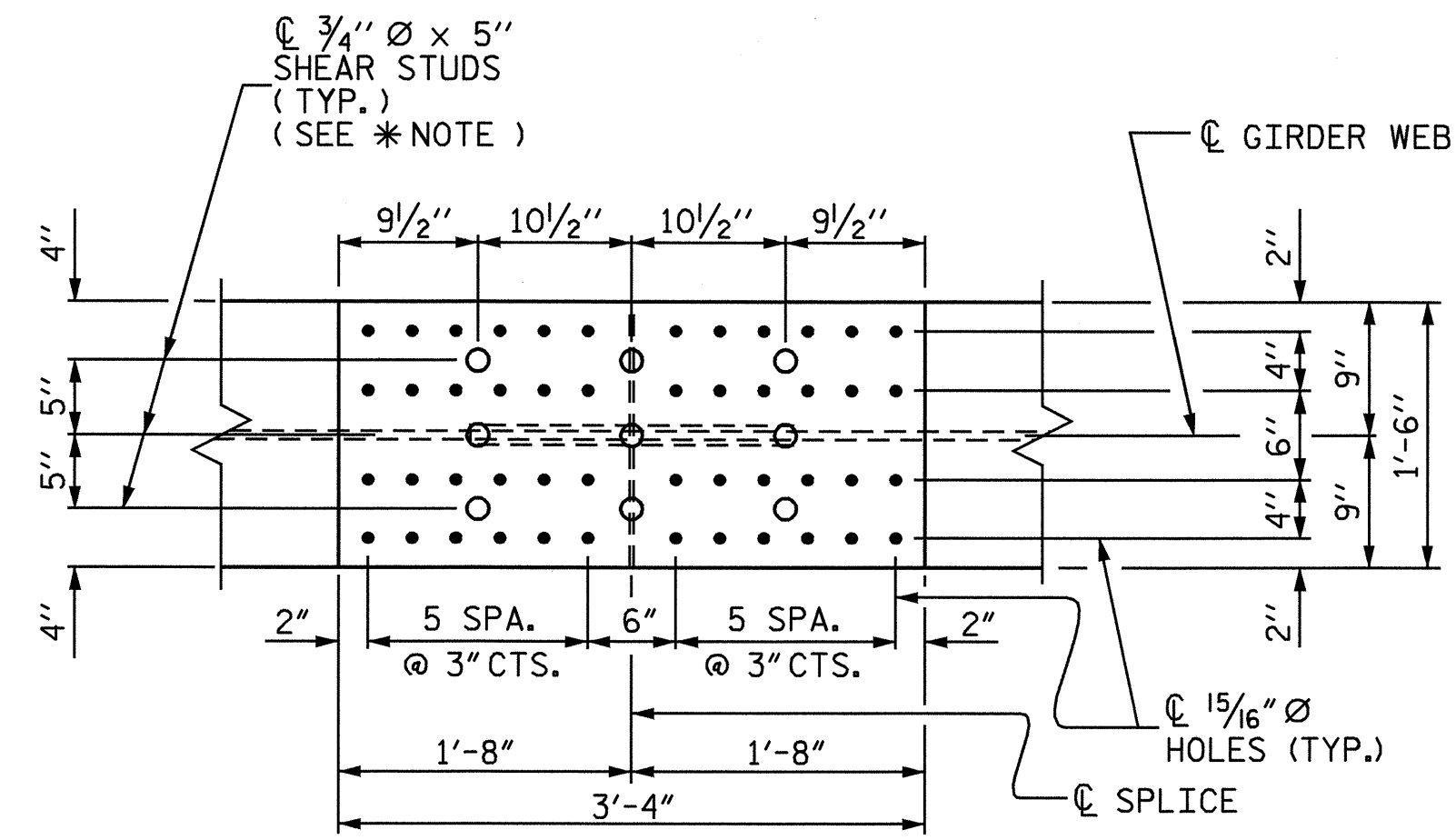
SHOP SPLICES ARE PERMITTED TO LIMIT THE MAXIMUM REQUIRED FLANGE PIECE LENGTHS TO 60 FEET AND WEB PIECE LENGTHS TO 45 FEET. PERMITTED FLANGE AND WEB SHOP SPLICES SHALL NOT BE LOCATED WITHIN 15 FEET OF MAXIMUM DEAD LOAD DEFLECTION (NOR WITHIN 15 FEET OF INTERMEDIATE BEARINGS OF CONTINUOUS UNITS). KEEP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

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

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

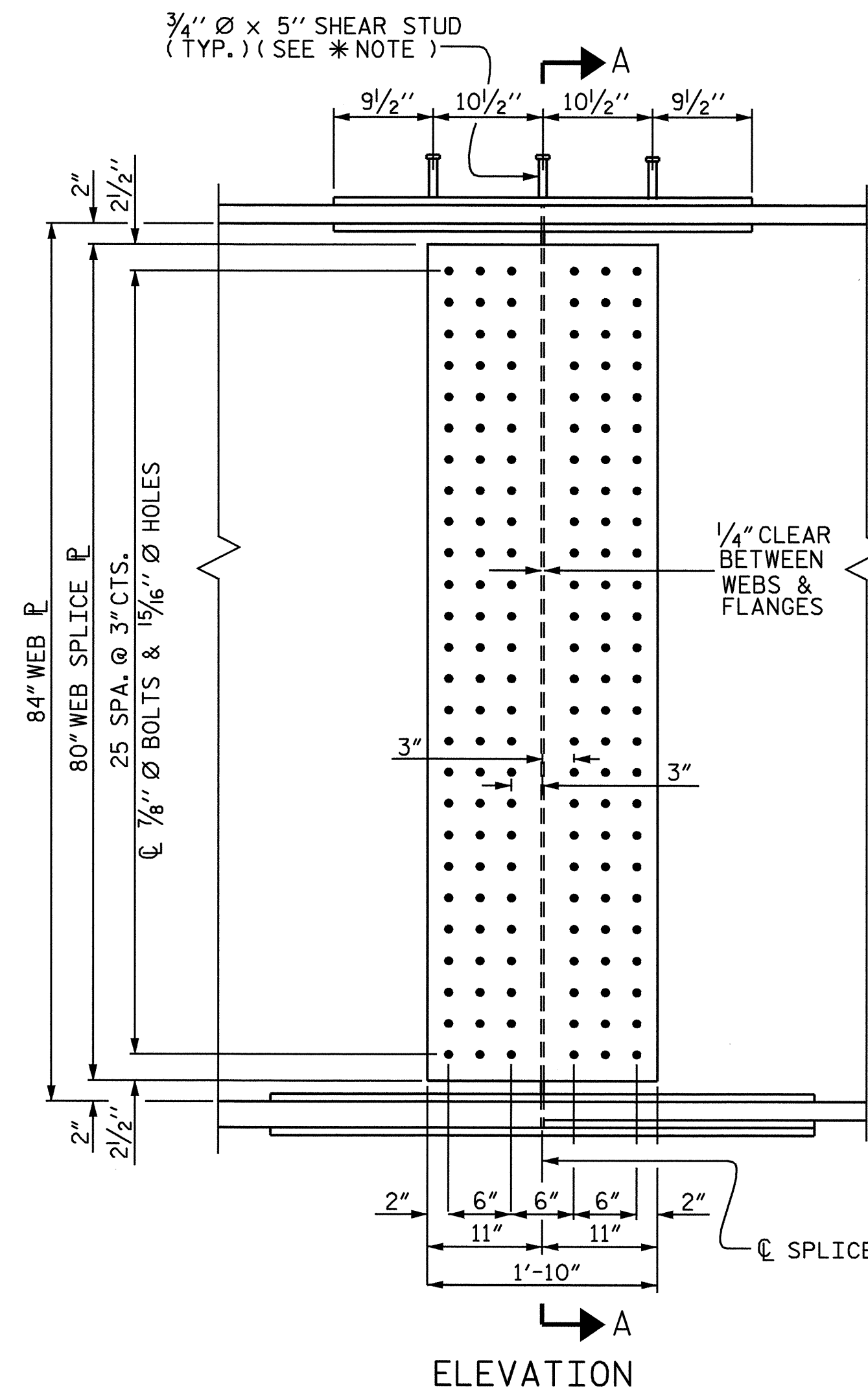
END OF GIRDERS SHALL BE PLUMB.

AT THE CONTRACTOR'S OPTION, THE INTERMEDIATE DIAPHRAGM WITH THE WELDED GUSSET PLATES MAY BE USED IN LIEU OF THE INTERMEDIATE DIAPHRAGM WITH BOLTED ANGLES AT NO ADDITIONAL COST TO THE DEPARTMENT.

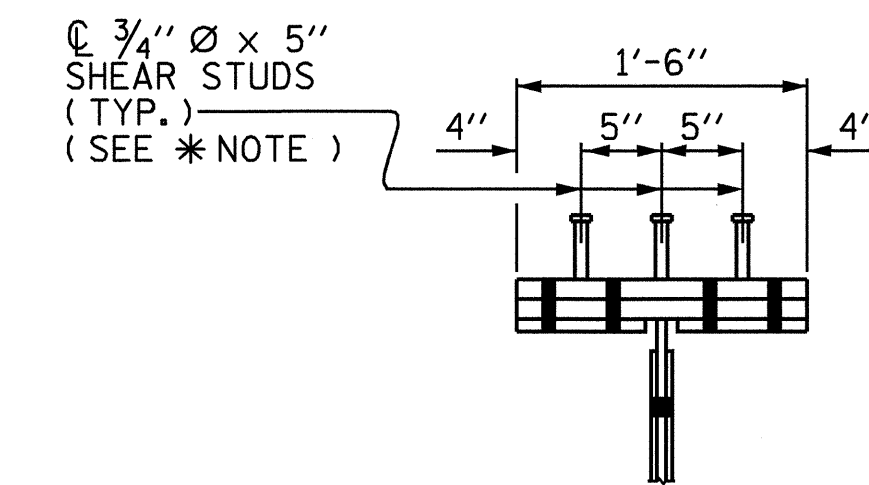
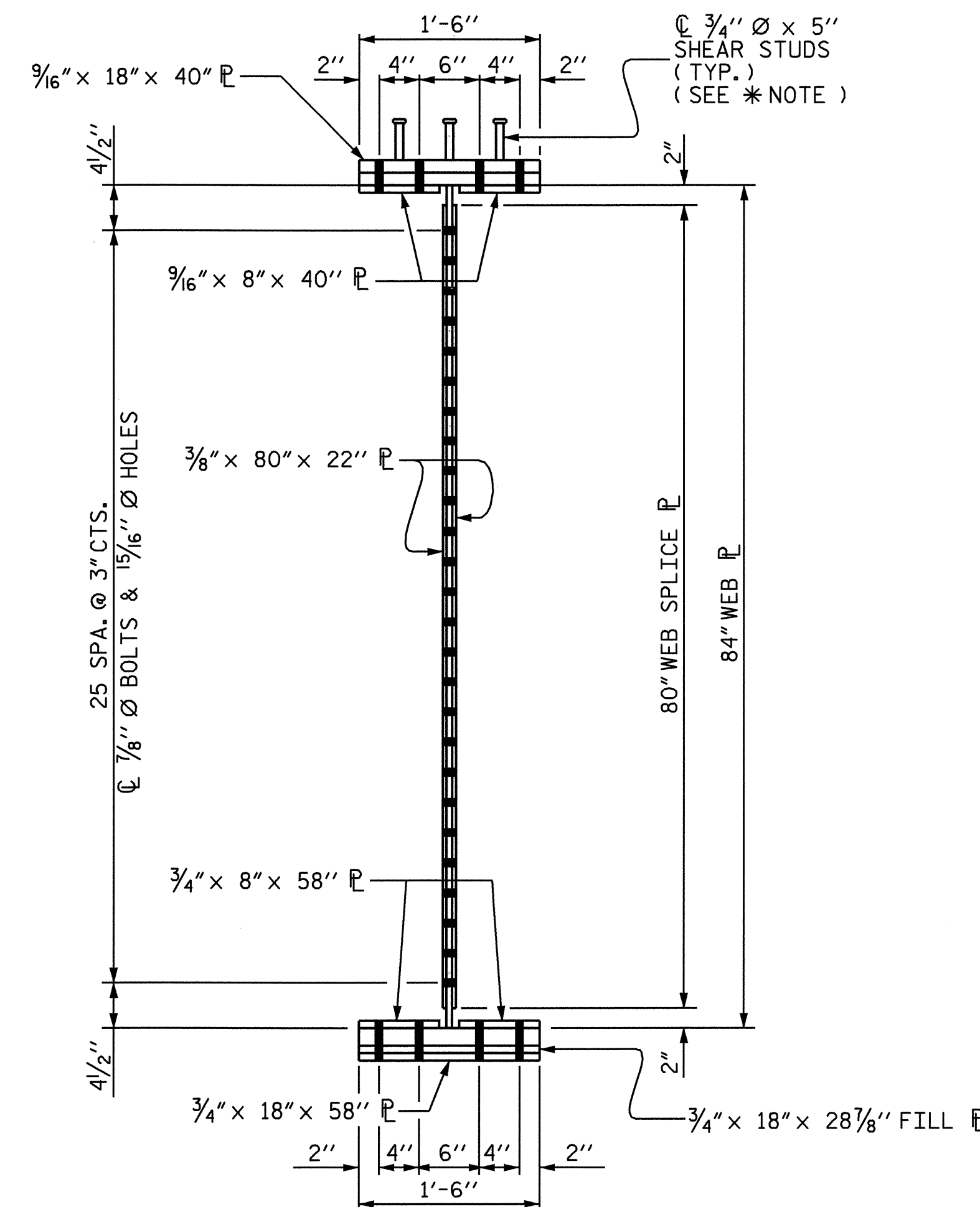


PLAN (TOP OF TOP FLANGE)

PLAN (TOP OF BOTTOM FLANGE)



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



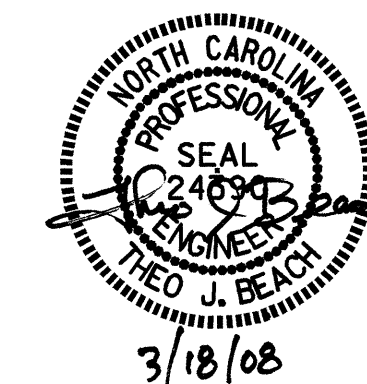
BOLTED FIELD SPLICE DETAILS

PROJECT NO. R-2320 G
STANLY COUNTY
 STATION: 77+90.57 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 STRUCTURAL STEEL
 DETAILS



DRAWN BY : MIKE BRITT DATE : 6-23-05
 CHECKED BY : N. PIERCE DATE : 7-19-05

18-MAR-2008 15:44
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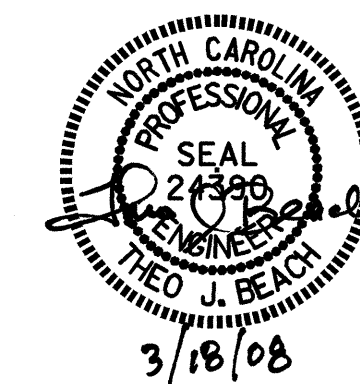
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			24

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

TWENTIETH POINTS	GIRDER #1 THRU #5																				
	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.017	0.033	0.049	0.063	0.075	0.085	0.093	0.098	0.102	0.103	0.102	0.098	0.093	0.085	0.075	0.063	0.049	0.033	0.017	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.047	0.100	0.149	0.194	0.232	0.264	0.290	0.308	0.319	0.323	0.319	0.308	0.290	0.264	0.232	0.194	0.149	0.100	0.047	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	0.005	0.010	0.015	0.019	0.022	0.025	0.027	0.029	0.030	0.031	0.030	0.029	0.027	0.025	0.022	0.019	0.015	0.010	0.005	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.069	0.143	0.213	0.276	0.329	0.374	0.410	0.435	0.451	0.457	0.451	0.435	0.410	0.374	0.329	0.276	0.213	0.143	0.069	0.000
REQUIRED CAMBER	0	13/16"	1 1/16"	2 9/16"	3 5/16"	3 15/16"	4 1/2"	4 15/16"	5 1/4"	5 7/16"	5 1/2"	5 7/16"	5 1/4"	4 15/16"	4 1/2"	3 15/16"	3 5/16"	2 9/16"	1 11/16"	1 3/16"	0

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

PROJECT NO. R-2320 G
STANLY COUNTY
 STATION: 77+90.57 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 DEAD LOAD
 DEFLECTIONS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			24

DRAWN BY : MIKE BRITT DATE : 3-11-08
 CHECKED BY : THEO BEACH DATE : 3-12-08

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 AND THE 4" Ø x 1'-6 1/4" STANDARD PIPE ASSEMBLY 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. THE CLOSURE PLATE AND STANDARD PIPE NEED NOT BE GALVANIZED.

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

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

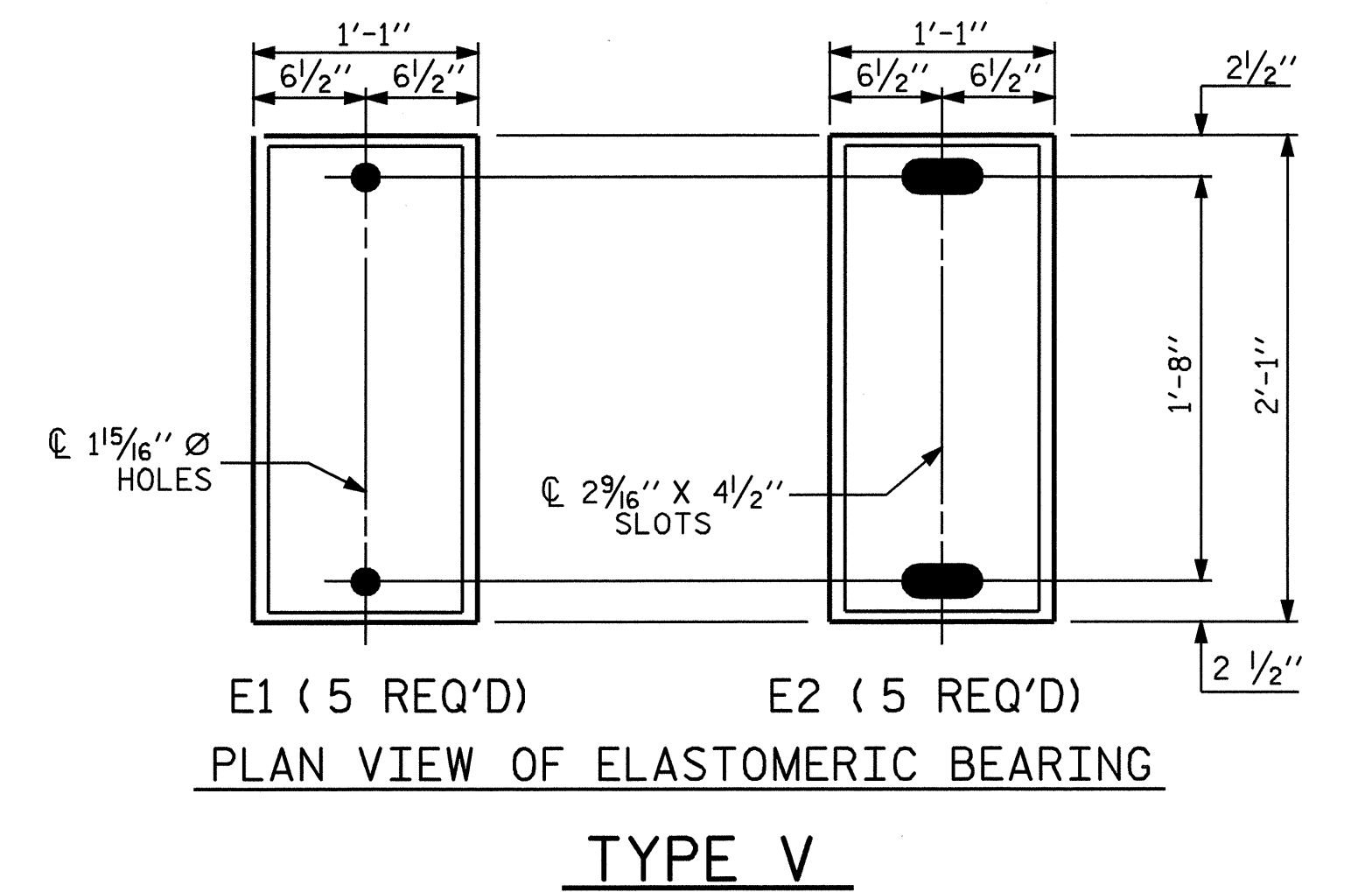
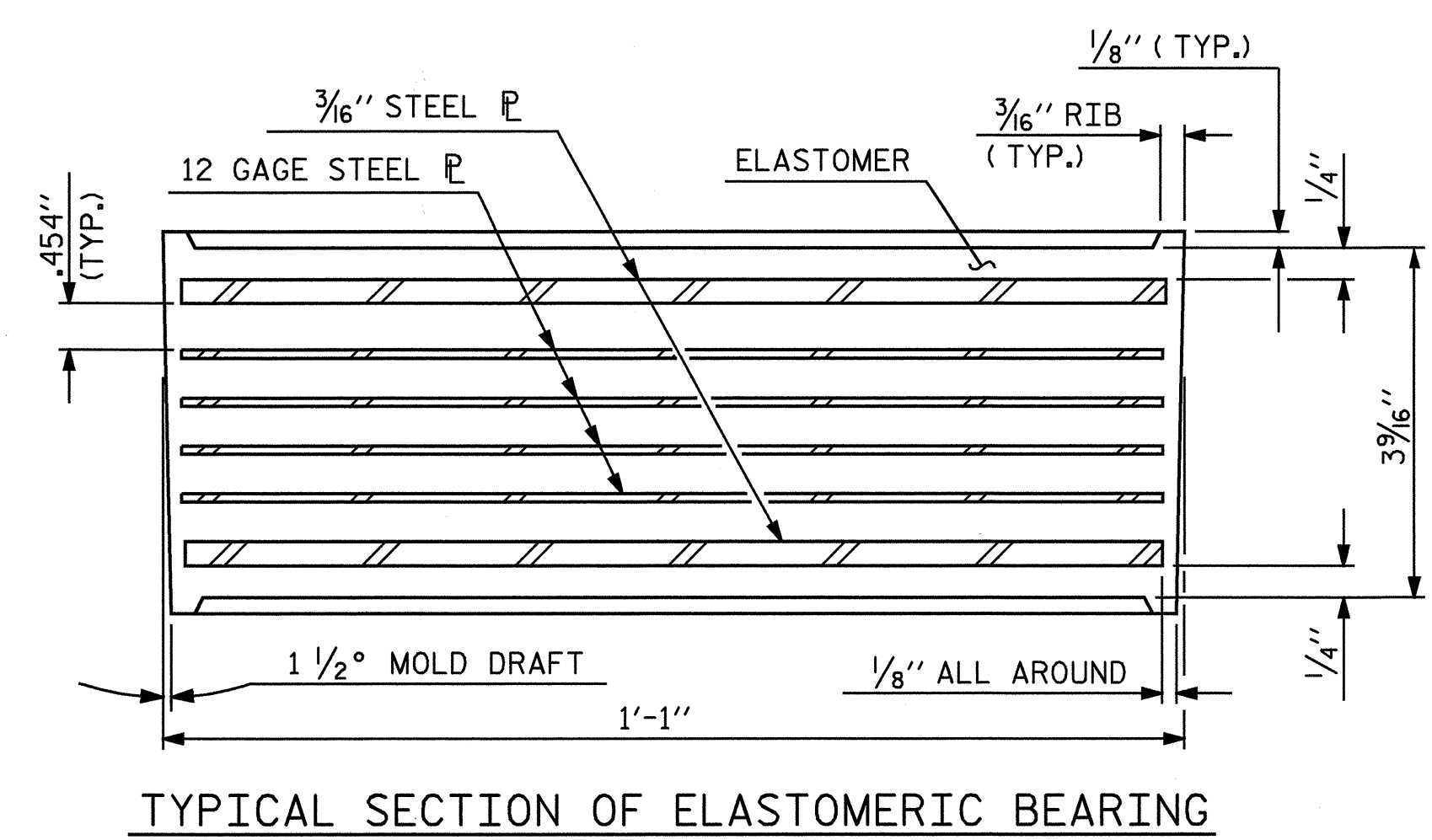
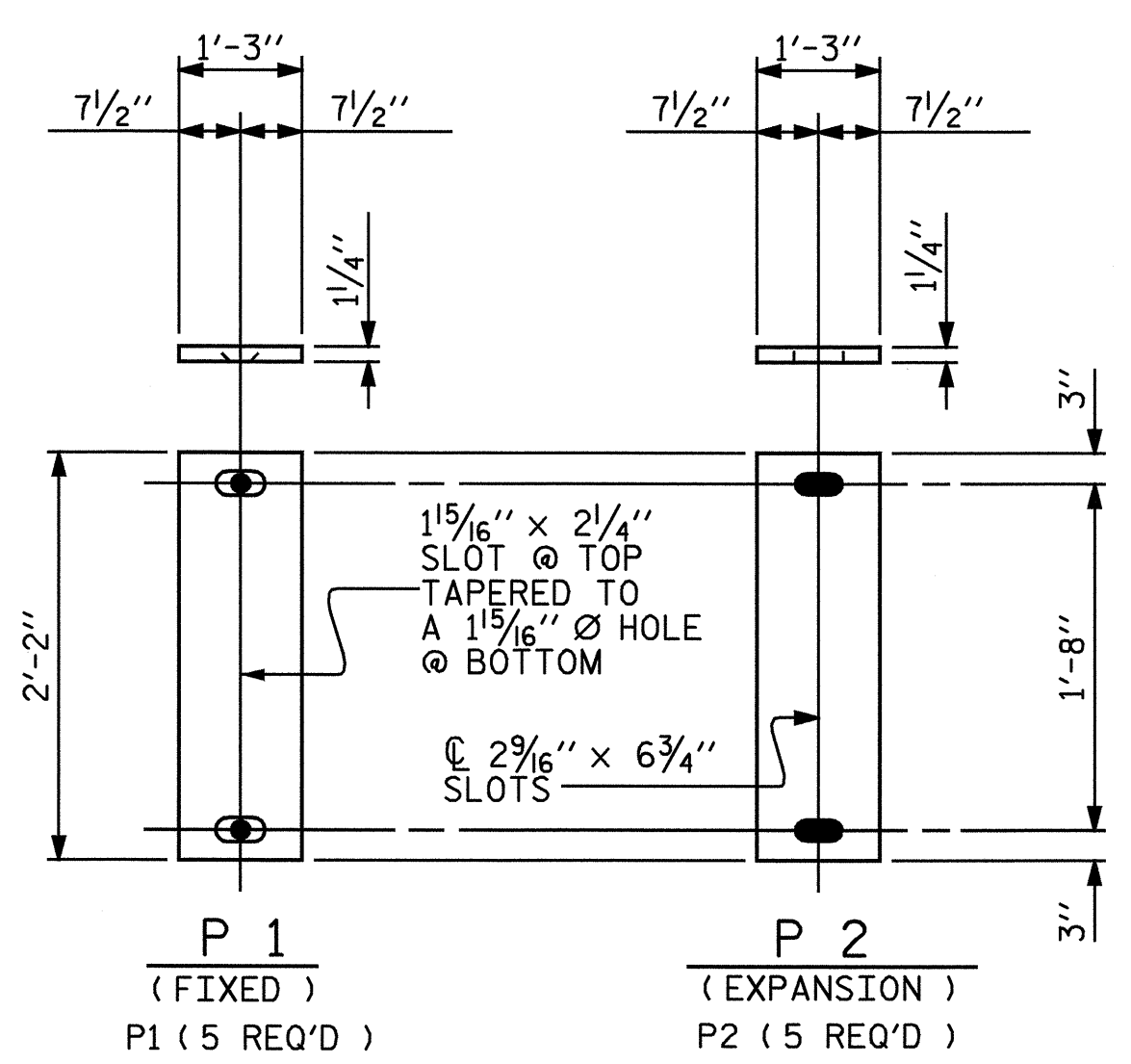
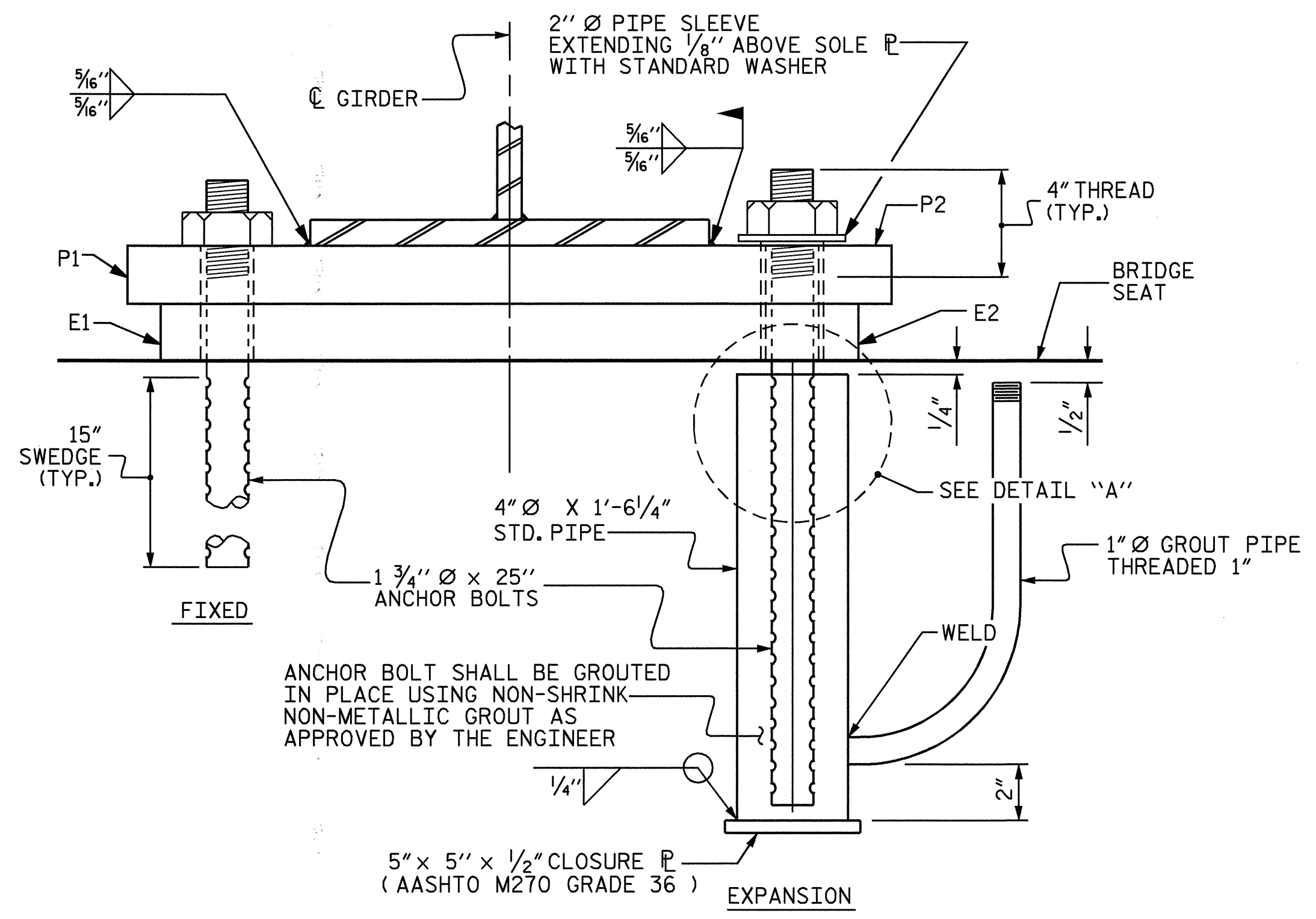
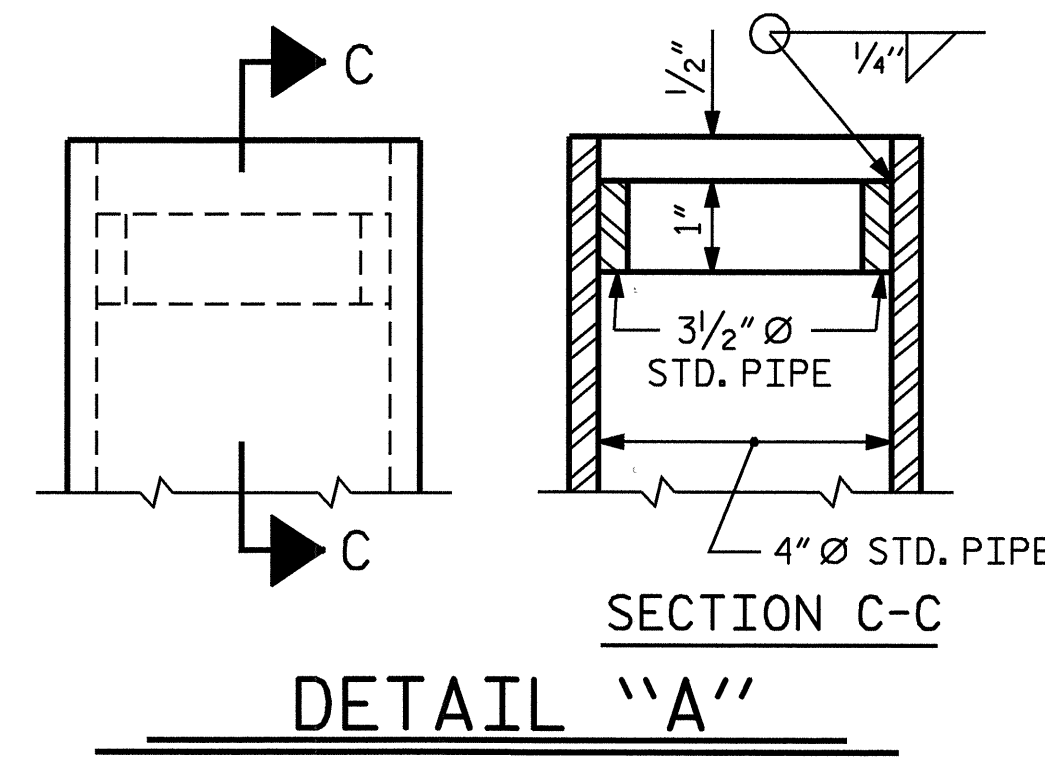
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FOLLOWING PROCEDURES TO ACCOMMODATE GIRDER TRANSLATION AND END ROTATION AT END BENT No. 2.

1. ONCE THE DECK HAS CURED, THE GIRDERS SHALL BE JACKED AND THE ANCHOR BOLTS, SOLE PLATE AND ELASTOMERIC BEARING SLOTS SHALL BE CENTERED AS NEARLY AS PRACTICAL ABOUT THE BEARING STIFFENER. THIS OPERATION SHALL BE PERFORMED AT APPROXIMATELY 60° F.

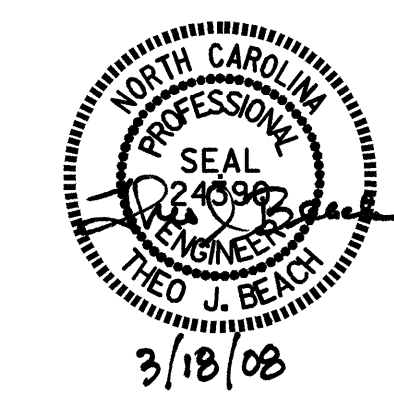
2. AFTER CENTERING THE SLOTS AND THE ANCHOR BOLTS, THE SOLE PLATES SHALL BE FIELD WELDED TO THE GIRDER FLANGES AND ANCHOR BOLTS GROUTED.

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



-LOAD RATINGS-	
TYPE V	MAX.D.L.+ L.L. 200 K

PROJECT NO. R-2320 G
STANLY COUNTY
 STATION: 77+90.57 -L-



OCTOBER				1996			
REVISIONS							
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.	
1			3			S-11	
2			4			TOTAL SHEETS	
						24	

DRAWN BY: MIKE BRITT DATE: 6-20-05
 CHECKED BY: N. PIERCE DATE: 7-19-05

NOTES

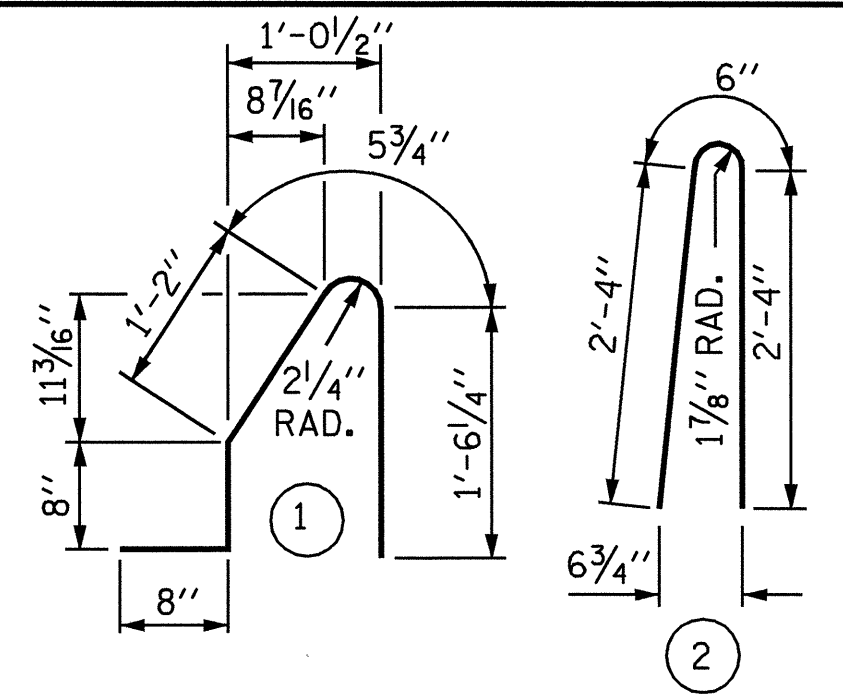
THE BARRIER RAIL IN THE SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

THE #5 S1 AND S2 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN BARRIER RAIL.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

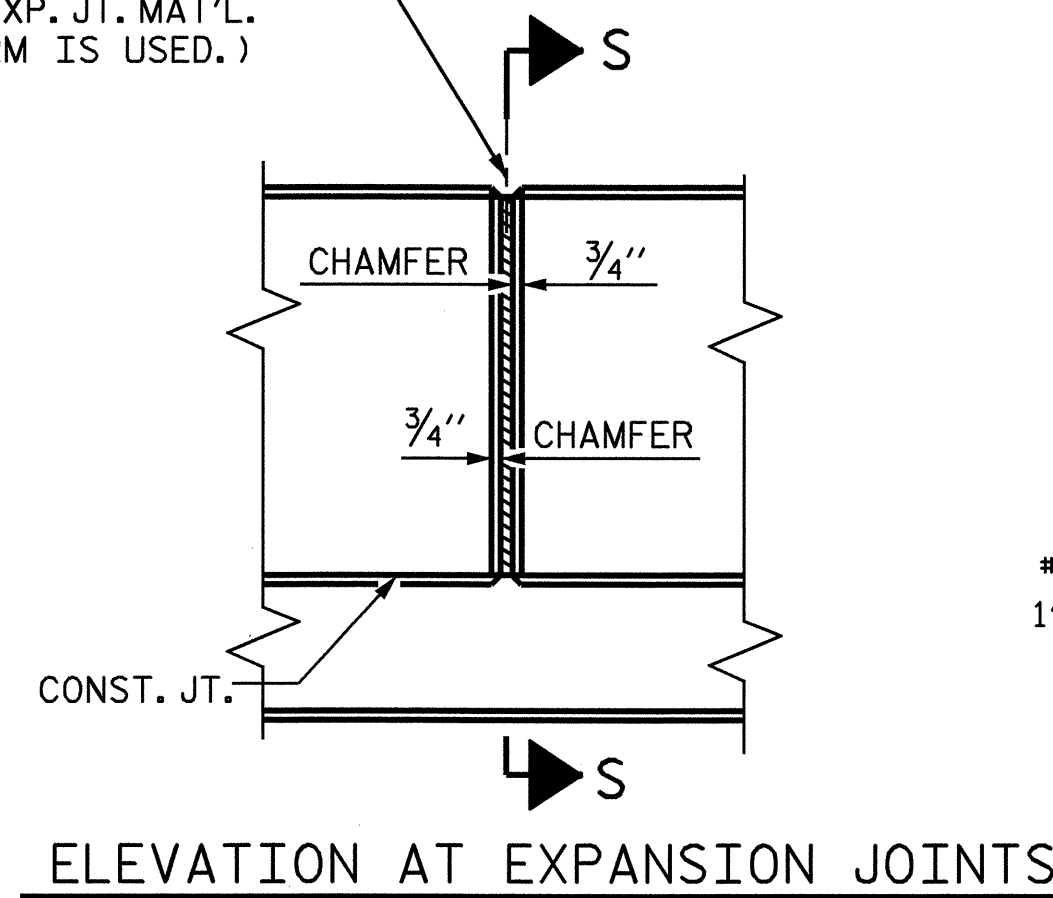
BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

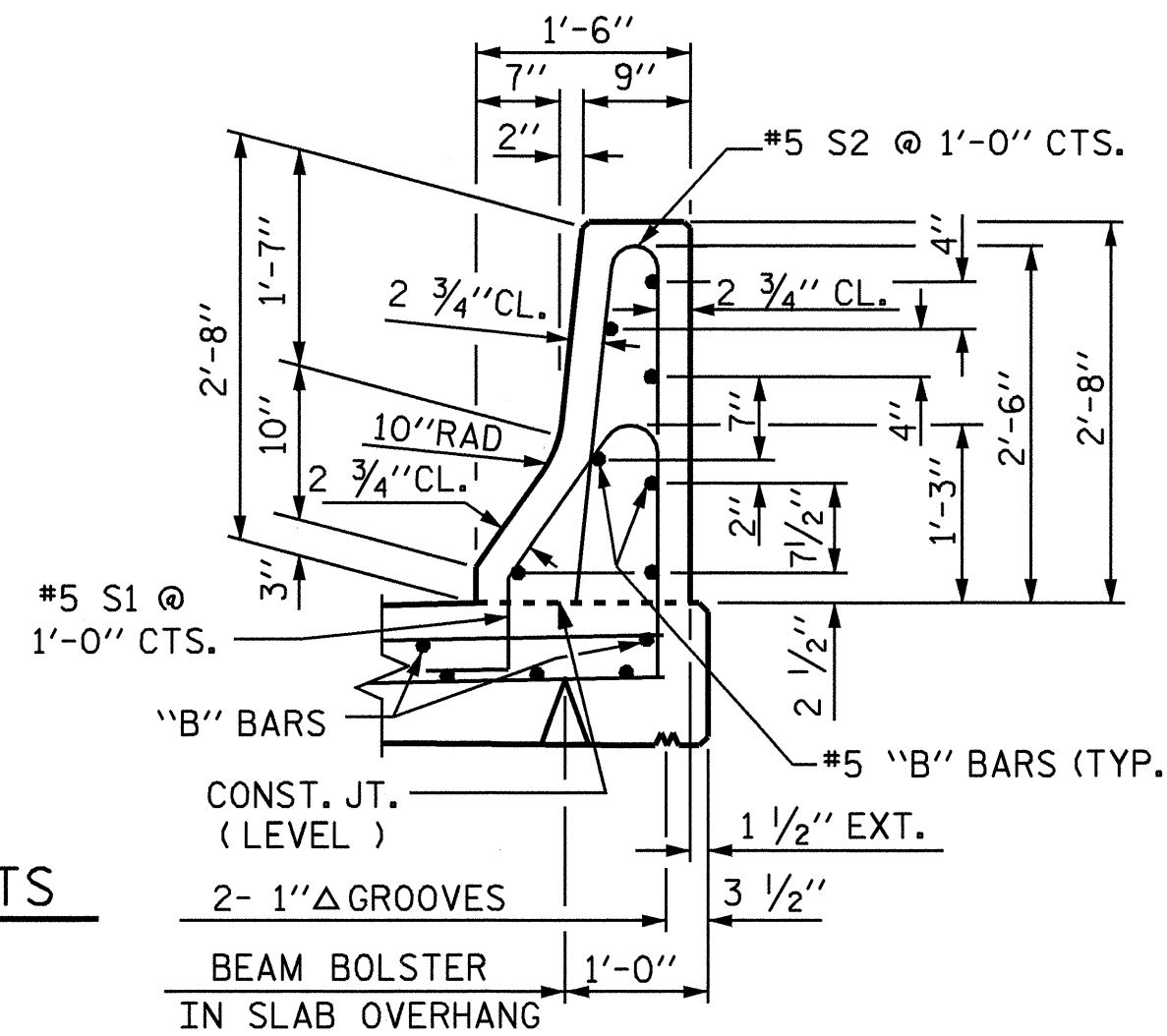
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	56	#5	STR.	14'-5"	842
* B2	56	#5	STR.	25'-7"	1494
* S1	308	#5	1	4'-6"	1446
* S2	308	#5	2	5'-2"	1660

* EPOXY COATED REINFORCING STEEL	5,442 LBS.
CLASS AA CONCRETE	31.0 CU. YDS.
CONCRETE BARRIER RAIL	309.50 LIN. FT.

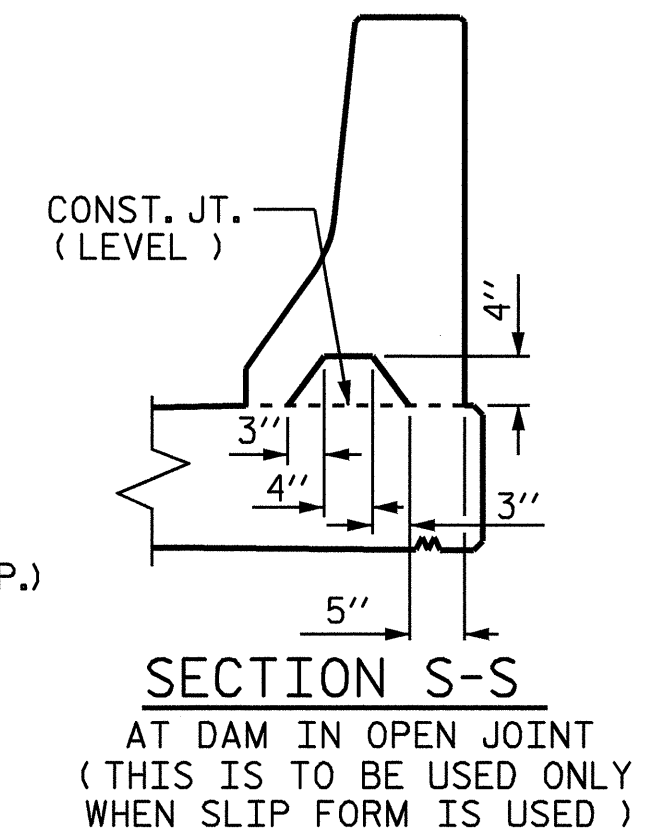
1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS.
(NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED.)



ELEVATION AT EXPANSION JOINTS

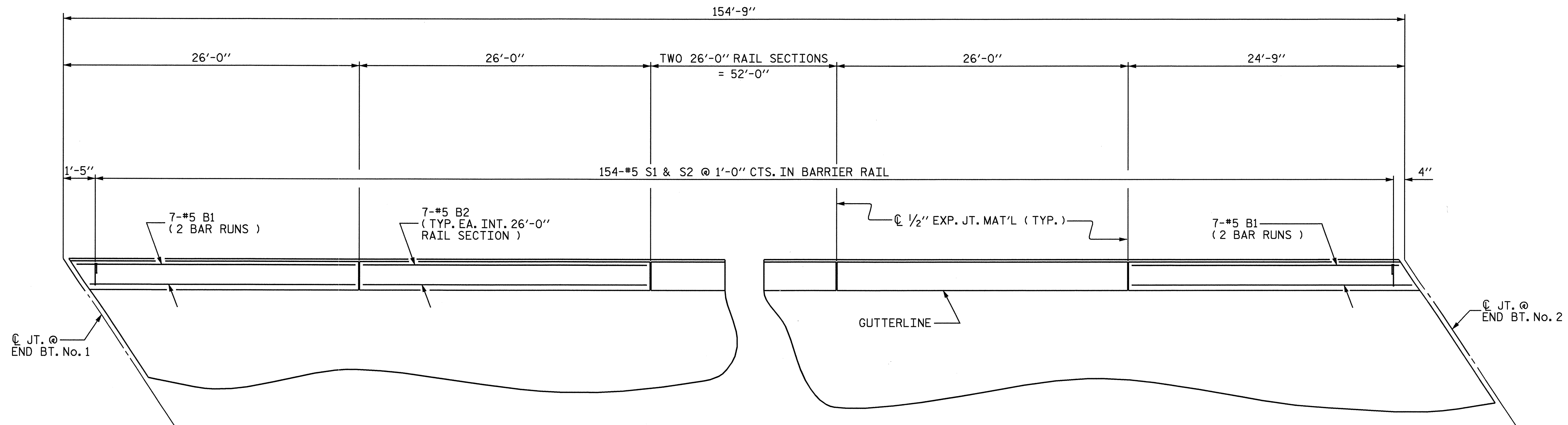


SECTION THRU RAIL



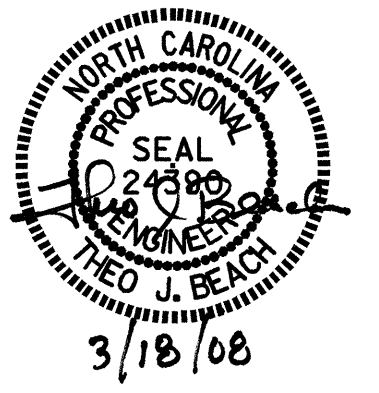
SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

BARRIER RAIL DETAILS



PLAN OF BARRIER RAIL

(LEFT SIDE BARRIER RAIL SHOWN, RIGHT SIDE SIMILAR)



PROJECT NO. R-2320 G
STANLY COUNTY
 STATION: 77+90.57 -L-

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

ASSEMBLED BY : MIKE BRITT	DATE : 11-16-04
CHECKED BY : N. PIERCE	DATE : 7-19-05
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

NO.		BY:	DATE:	REVISIONS		SHEET NO.	
1				3		S-12	TOTAL SHEETS 24
2				4			

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 4 - 3/8" Ø BOLTS WITH NUTS AND WASHERS, RUBRAIL, AND ADHESIVELY ANCHORED BOLTS.

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

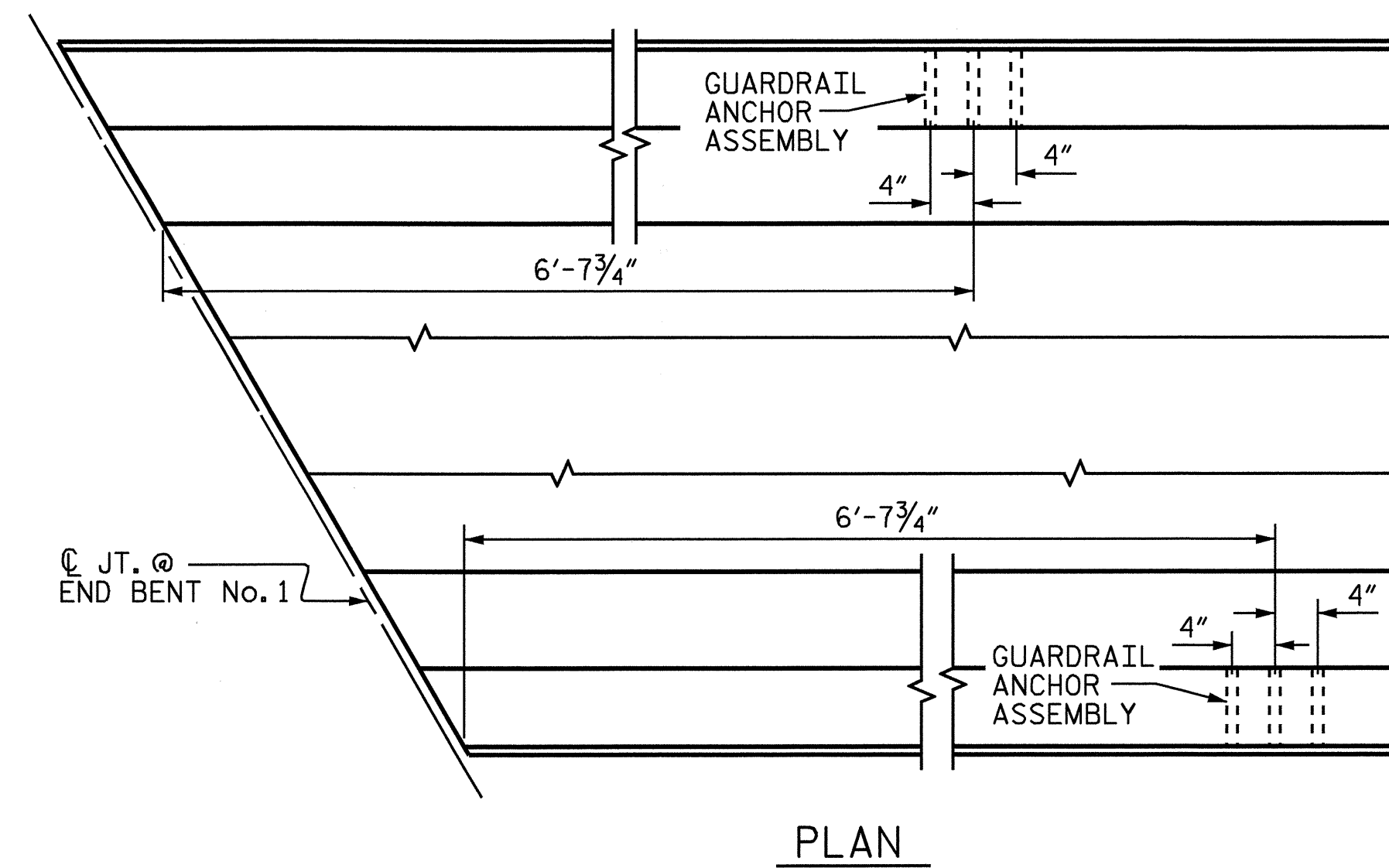
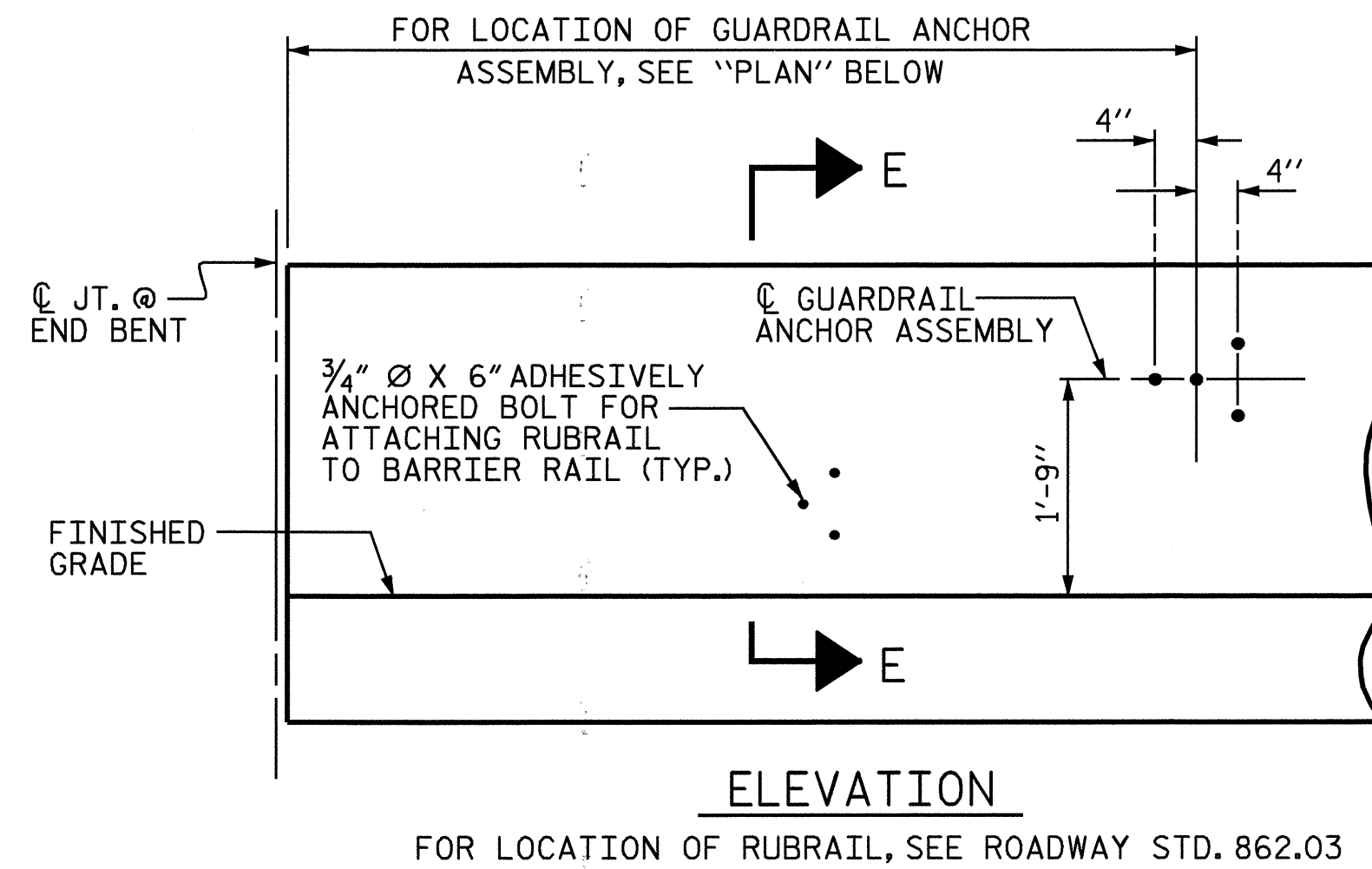
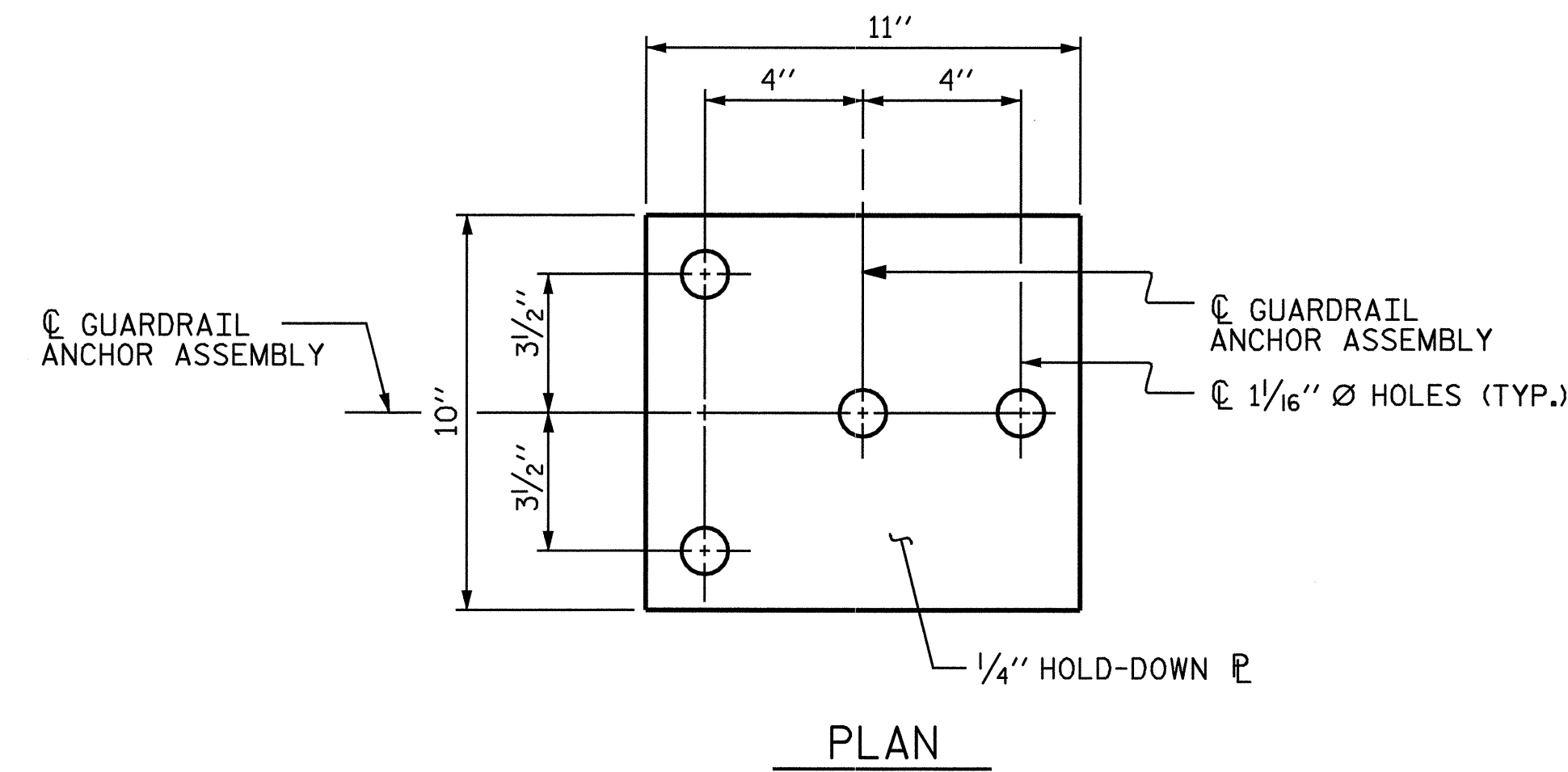
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

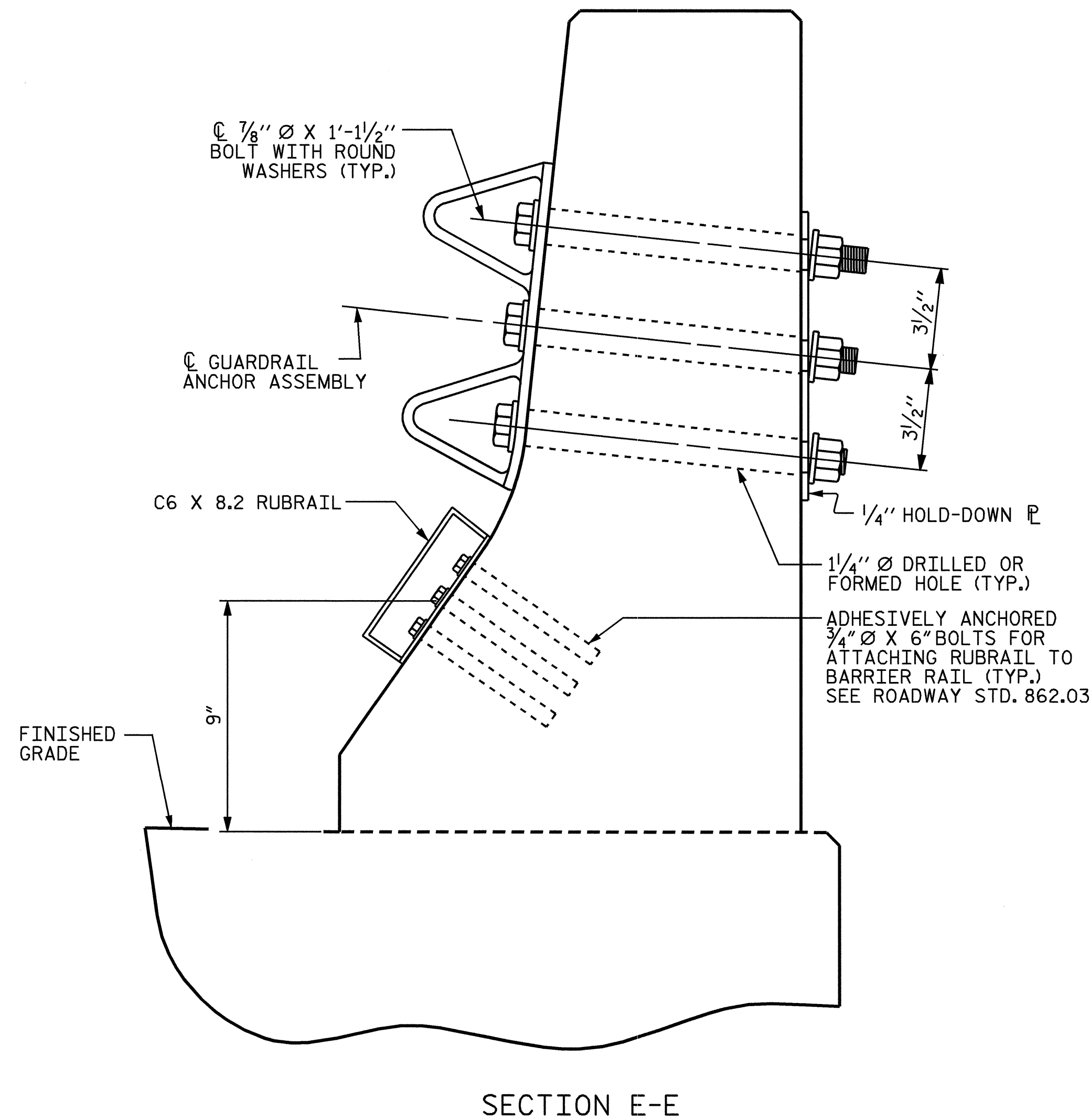
THE 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

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

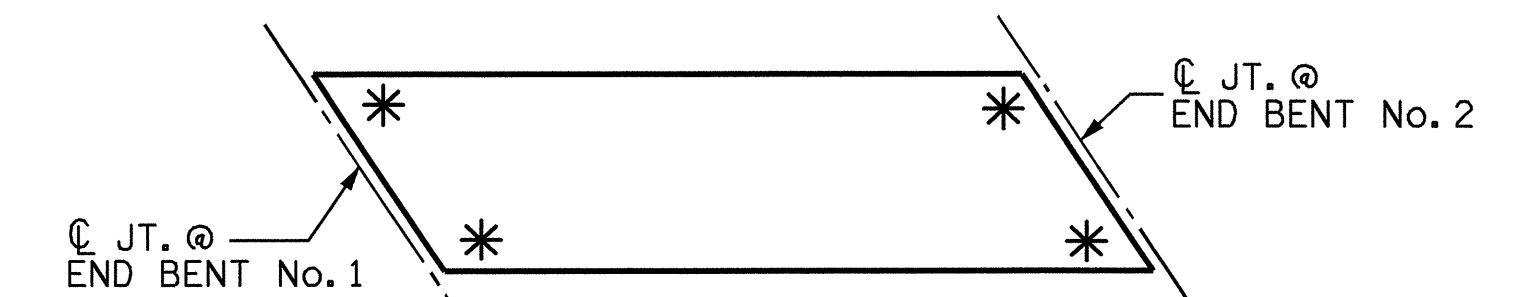


LOCATION OF ANCHORS FOR GUARDRAIL

END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR.



GUARDRAIL ANCHOR ASSEMBLY DETAILS

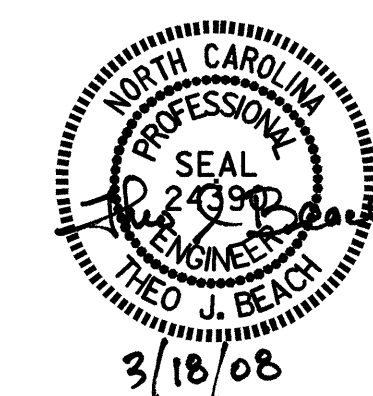


SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY & RUBRAIL ATTACHMENT

PROJECT NO. R-2320 G
STANLY COUNTY
 STATION: 77+90.57 -L-

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



ASSEMBLED BY : MIKE BRITT	DATE : 3/11/08
CHECKED BY : THEO BEACH	DATE : 3/12/08
DRAWN BY : TLA 5/06	ADDED 5/1/06R KMM/GM
CHECKED BY : GM 5/06	

18-MAR-2008 15:46
 R:\Structures\Structure*1\Superstructure\R2320G.sd.GR.01.dgn
 theobch

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

TOTAL SHEETS 24

STD. NO. GRA2

STR. #1

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. 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 GROUND SMOOTH AND COATED WITH A MINIMUM THICKNESS OF 4 DRY MILS OF ZINC-RICH PAINT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

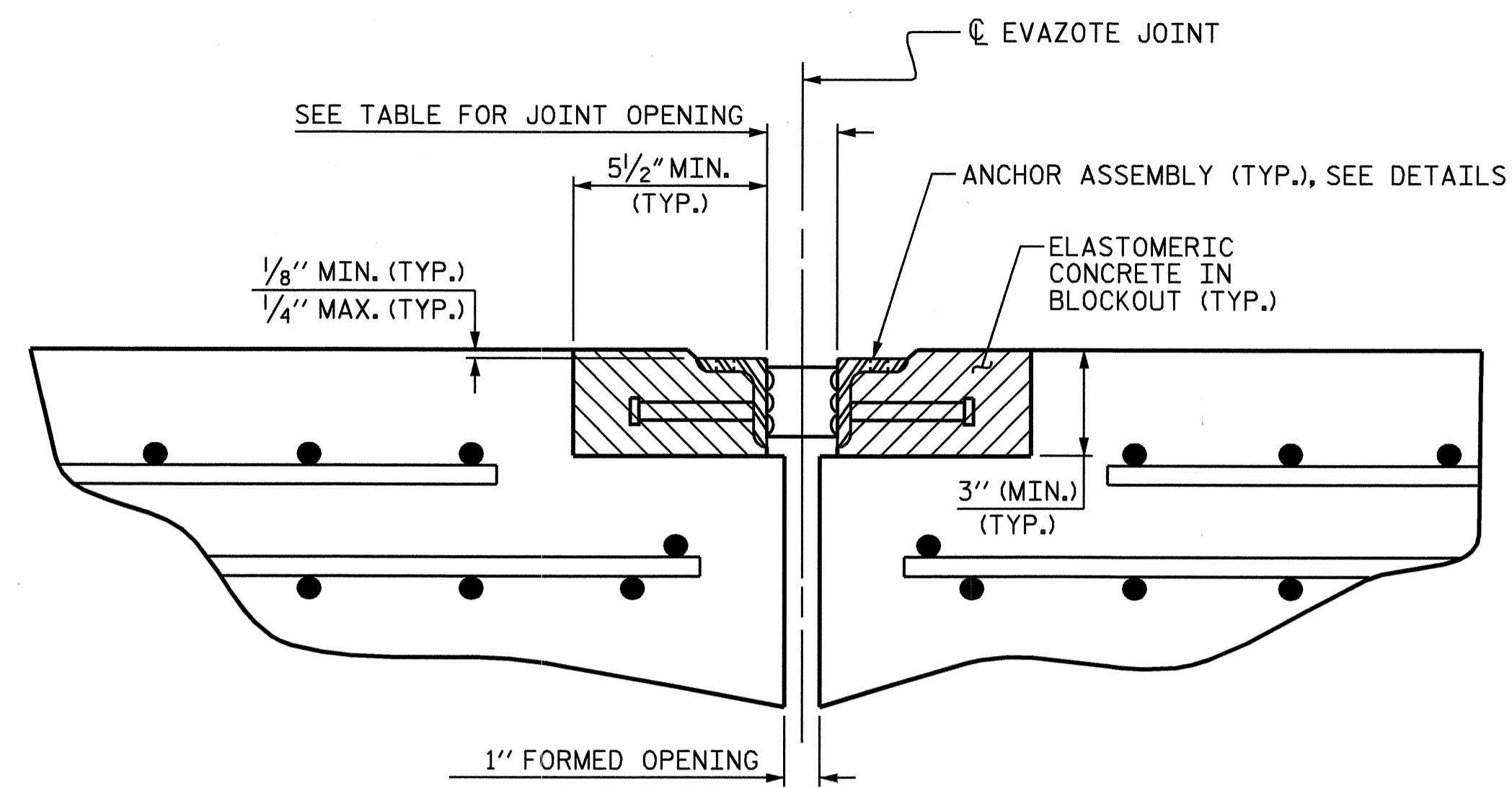
ANCHOR ASSEMBLY SEGMENTS SHALL NOT BE LESS THAN 12 FEET NOR MORE THAN 20 FEET IN LENGTH. SHORTER SEGMENTS MAY BE USED AT THE EDGE OF ROADWAY OR AT POINTS OF STAGED CONSTRUCTION.

THE ANCHOR ASSEMBLY SHALL BE SECURED AND LEVELED 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.

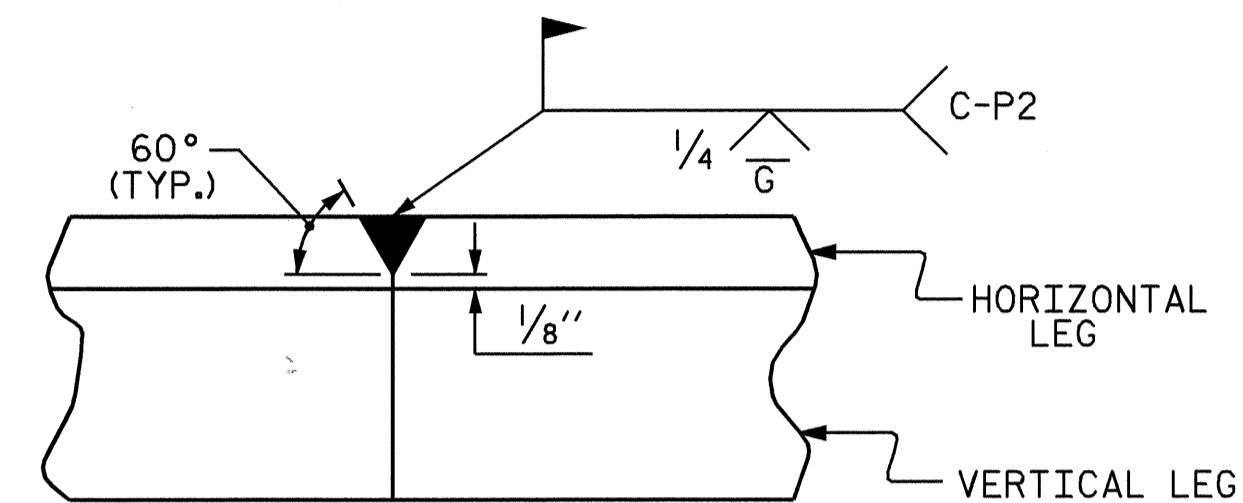
SEE SPECIAL PROVISIONS FOR EVAZOTE JOINT SEALS.

SEE SPECIAL PROVISIONS FOR ELASTOMERIC CONCRETE.

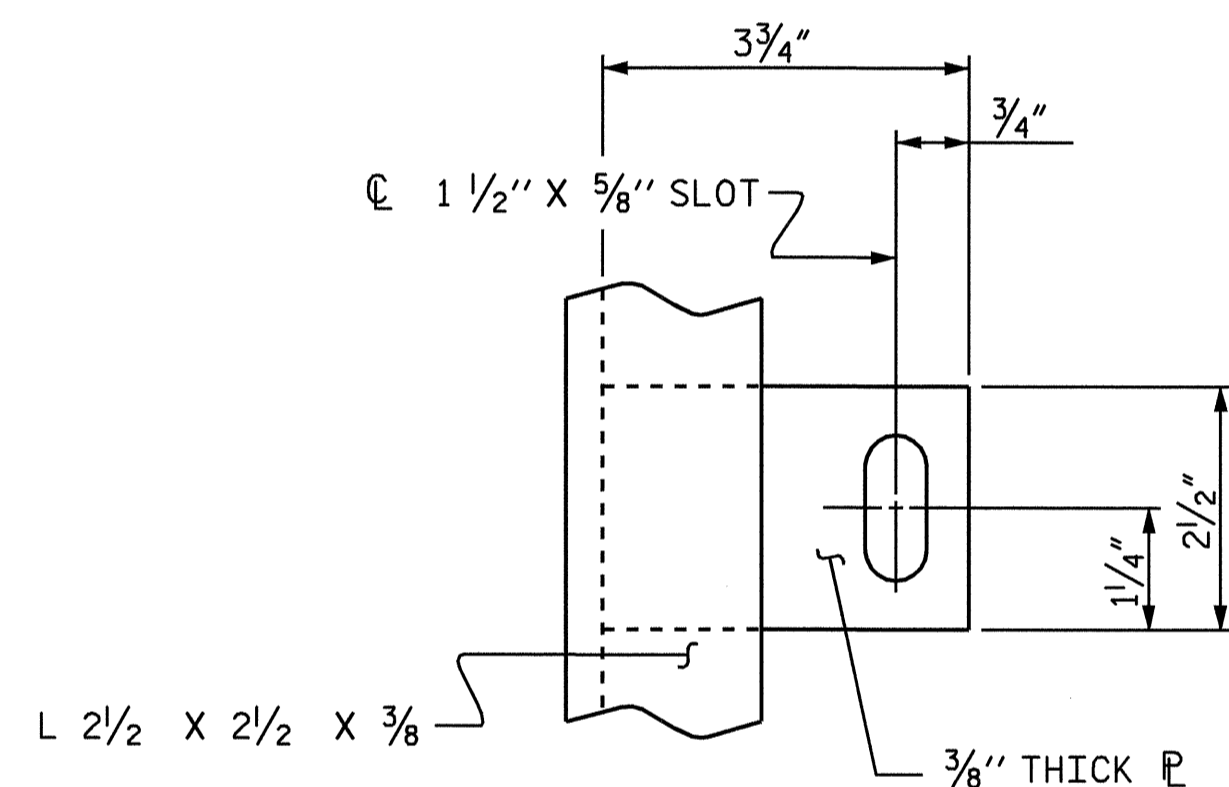


ARMORED JOINT DETAILS

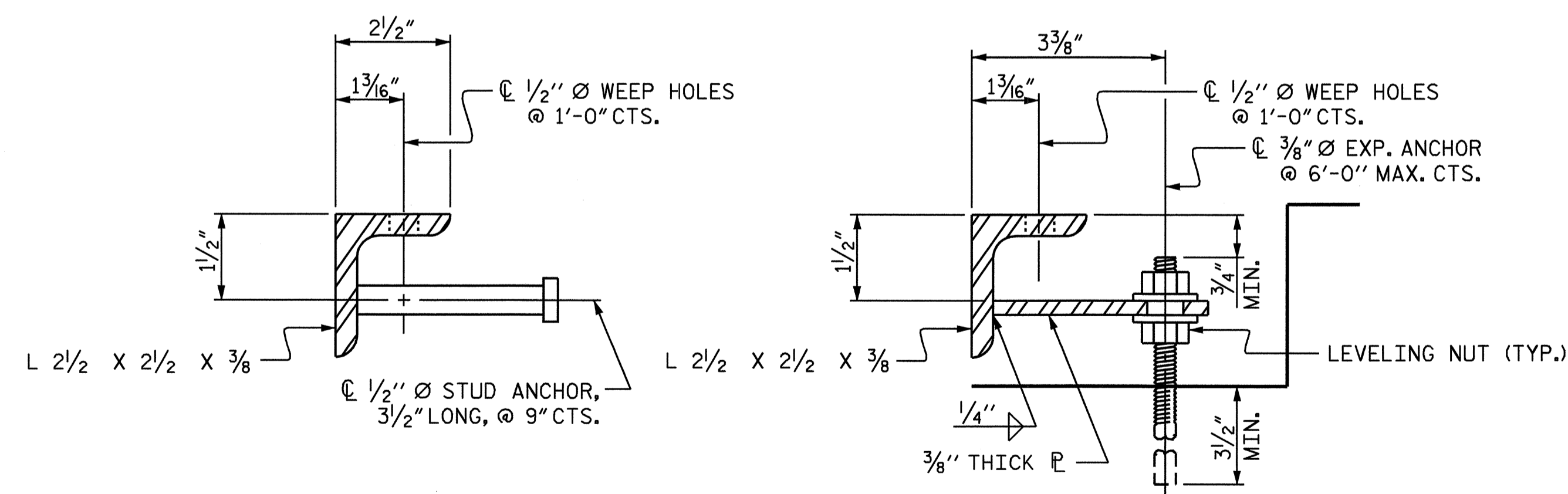
SECTION NORMAL TO JOINT AT END BENT



DETAIL- FIELD WELD SPLICE OF ANGLE



PLAN VIEW OF TAB



SECTION VIEW OF STUD

SECTION VIEW OF TAB

ARMORED JOINT ANCHOR ASSEMBLY DETAILS

END BENT No.	SKEW ANGLE	NOMINAL UNCOMPRESSED SEAL WIDTH	TOTAL MOVEMENT (ALONG C. RDWY)	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
1	56°-24'-04"	2 1/2"	0	1 1/8"	1 1/8"	1 1/8"
2	56°-24'-04"	2 1/2"	1 1/4"	2 1/16"	1 1/8"	1 1/2"

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

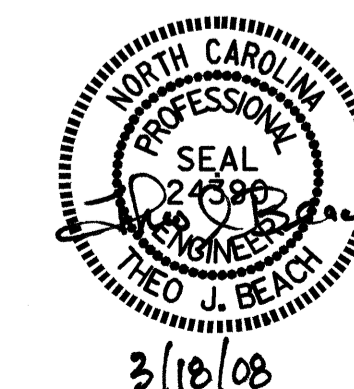
END BENT No.	ELASTOMERIC CONCRETE * (CU. FT.)	TOTAL LENGTH OF ANGLE (FT.)
1	11.0	96.04
2	11.0	96.04

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

PROJECT NO. R-2320 G
STANLY COUNTY
 STATION: 77+90.57 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

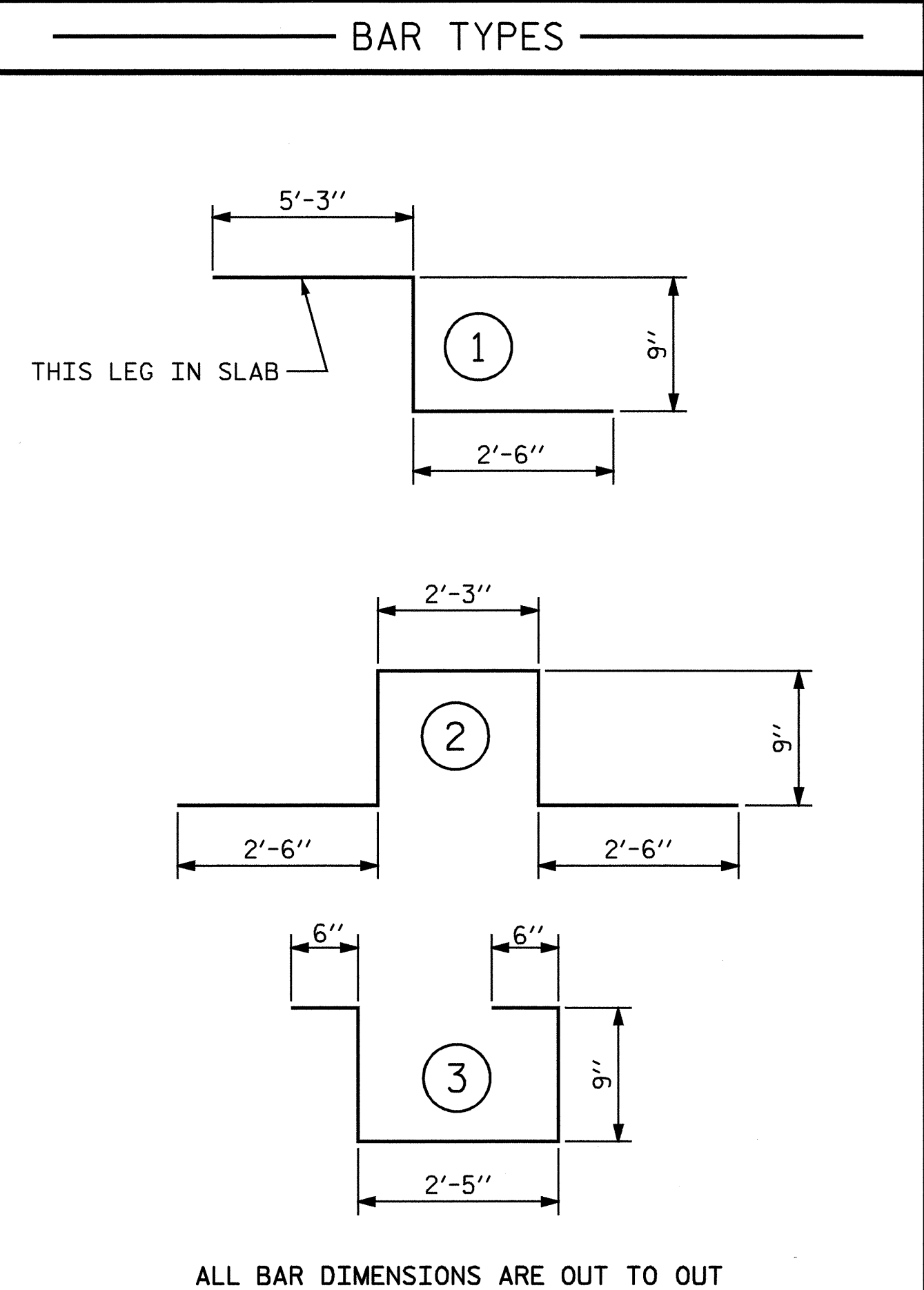
STANDARD
 ARMORED EVAZOTE
 JOINT DETAILS



ASSEMBLED BY : MIKE BRITT	DATE : 11-17-04
CHECKED BY : N. PIERCE	DATE : 7-19-05
DRAWN BY : EEM 1/96	REV. 10/17/00 RWW/LES
CHECKED BY : RGW 1/96	REV. 7/10/01 LES/RDR
	REV. 5/7/03 RWW/JTE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS 24
2			4			

BILL OF MATERIAL					
BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
* A1	232	#5	STR.	42'-11"	10385
A2	232	#5	STR.	42'-11"	10385
* A101	6	#5	STR.	40'-11"	256
* A102	6	#5	STR.	38'-5"	240
* A103	6	#5	STR.	36'-0"	225
* A104	6	#5	STR.	33'-7"	210
* A105	6	#5	STR.	31'-1"	195
* A106	6	#5	STR.	28'-8"	179
* A107	6	#5	STR.	26'-3"	164
* A108	6	#5	STR.	23'-9"	149
* A109	6	#5	STR.	21'-4"	134
* A110	6	#5	STR.	18'-11"	118
* A111	6	#5	STR.	16'-5"	103
* A112	6	#5	STR.	14'-0"	88
* A113	6	#5	STR.	11'-6"	72
* A114	6	#5	STR.	9'-1"	57
* A115	6	#5	STR.	6'-8"	42
* A116	6	#5	STR.	4'-2"	26
A201	6	#5	STR.	40'-11"	256
A202	6	#5	STR.	38'-5"	240
A203	6	#5	STR.	36'-0"	225
A204	6	#5	STR.	33'-7"	210
A205	6	#5	STR.	31'-1"	195
A206	6	#5	STR.	28'-8"	179
A207	6	#5	STR.	26'-3"	164
A208	6	#5	STR.	23'-9"	149
A209	6	#5	STR.	21'-4"	134
A210	6	#5	STR.	18'-11"	118
A211	6	#5	STR.	16'-5"	103
A212	6	#5	STR.	14'-0"	88
A213	6	#5	STR.	11'-6"	72
A214	6	#5	STR.	9'-1"	57
A215	6	#5	STR.	6'-8"	42
A216	6	#5	STR.	4'-2"	26
* B1	174	#4	STR.	27'-5"	3187
B2	144	#5	STR.	52'-10"	7935
* G1	2	#5	STR.	51'-6"	107
* G2	6	#6	STR.	8'-0"	72
* K1	16	#5	1	8'-6"	142
* K2	24	#5	2	8'-9"	219
* K3	32	#5	STR.	10'-3"	342
* S1	64	#4	3	4'-11"	210
REINFORCING STEEL					20,578 LBS.
* EPOXY COATED REINFORCING STEEL					16,922 LBS.



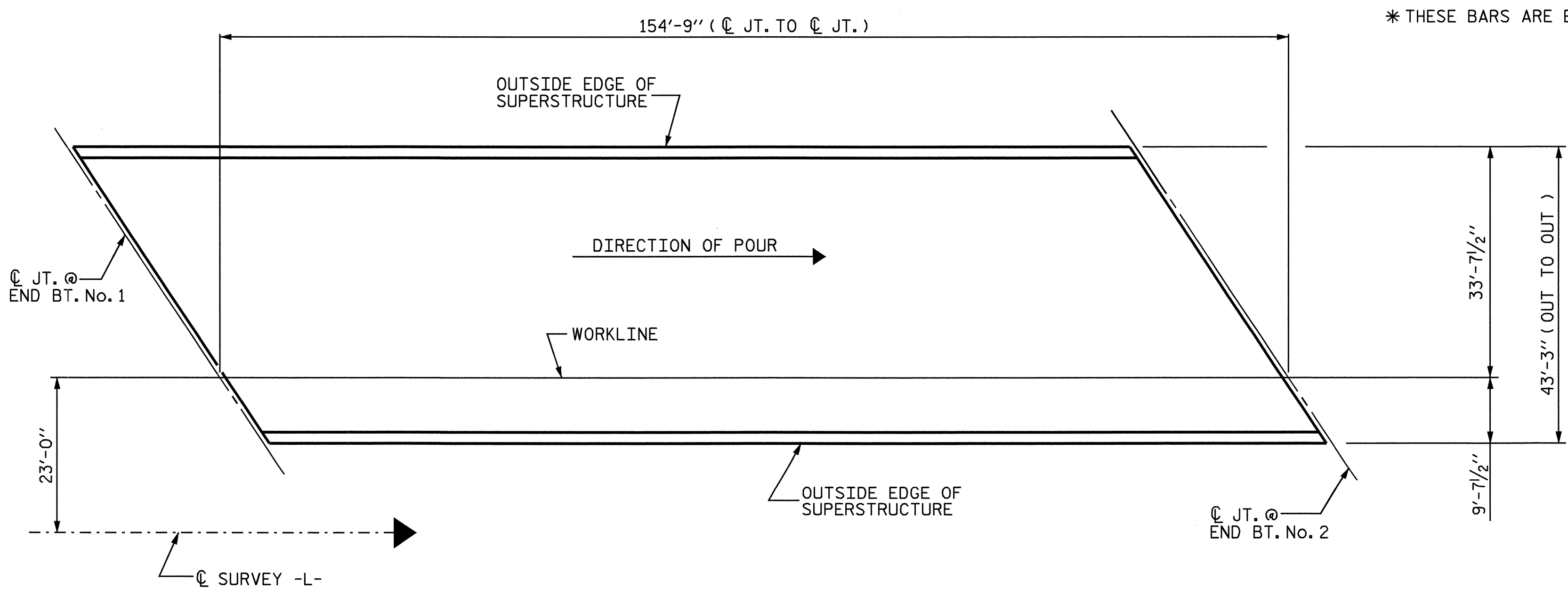
SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

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

— SUPERSTRUCTURE BILL OF MATERIAL —

	CLASS AA CONCRETE (CU.YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
TOTALS**	211.2	20,578	16,922

** QUANTITIES FOR CONCRETE BARRIER RAIL ARE NOT INCLUDED

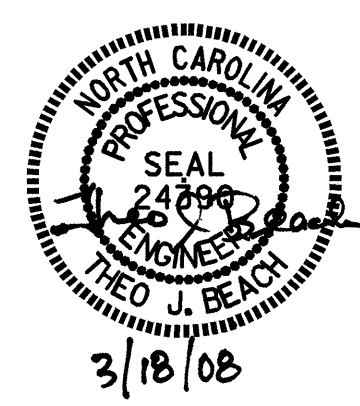


* THESE BARS ARE EPOXY COATED

GROOVING BRIDGE FLOORS

APPROACH SLABS	1,747 SQ.FT.
BRIDGE DECK	5,666 SQ.FT.
TOTAL	7,413 SQ.FT.

PROJECT NO. R-2320 G
 STANLY COUNTY
 STATION: 77+90.57 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

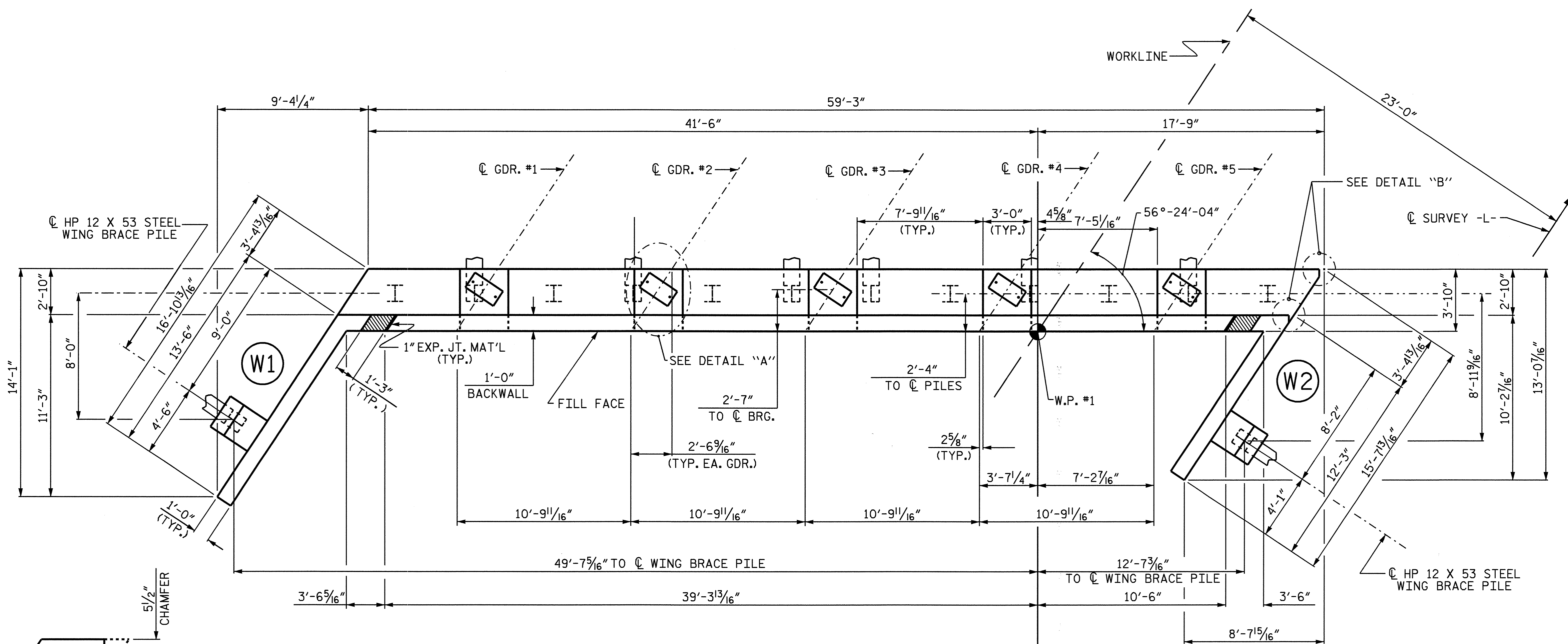
STANDARD
 SUPERSTRUCTURE
 BILL OF MATERIAL

OCTOBER 1987

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15	
1			3			TOTAL SHEETS	
2			4			24	

STD. NO. BOM1 STR. #1

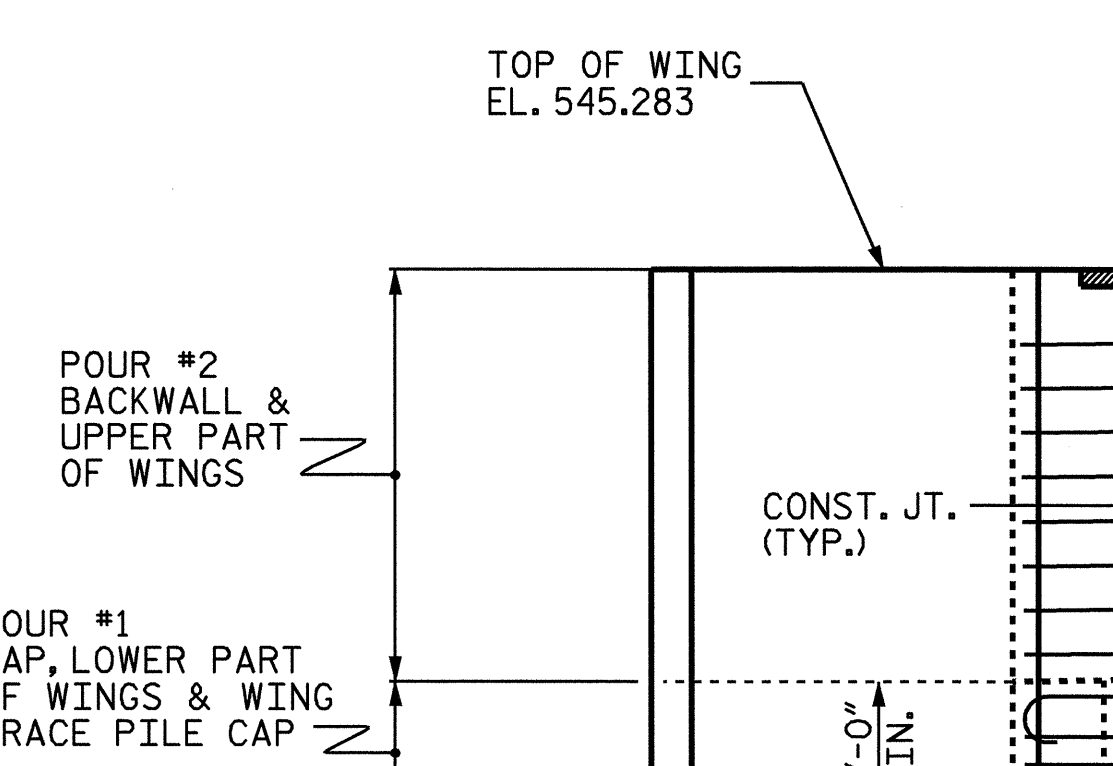
ASSEMBLED BY : MIKE BRITT	DATE : 11-17-04
CHECKED BY : N. PIERCE	DATE : 7-20-05
DRAWN BY : JMB 5/87	REV. 6/1/94 EEM/GRP
CHECKED BY : SJD 9/87	REV. 8/16/99 RWW/LES



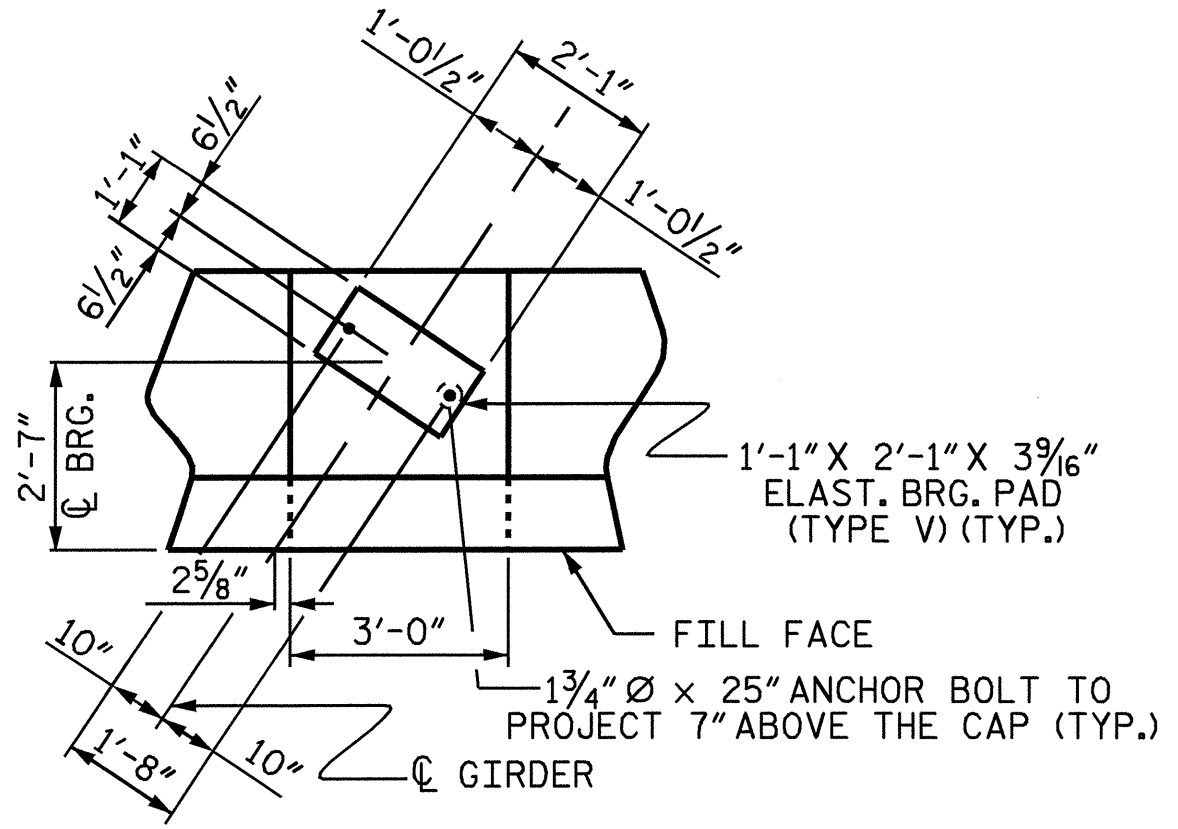
NOTES:

- ▲ FOR LOCATION OF ELEVATIONS BETWEEN BUILDUPS, SEE SECTION A-A ON SHEET 3 OF 3.
- ★ THIS ELEVATION TAKEN ON FILL FACE OF BACKWALL. STIRRUPS AND U2 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- #5 "V" BARS IN BACKWALL SHALL BE PLACED 2" CLEAR FROM TOP OF BACKWALL.
- 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%.
- BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
- THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.
- THE CONCRETE IN THE SHADED AREA OF THE WINGWALL SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

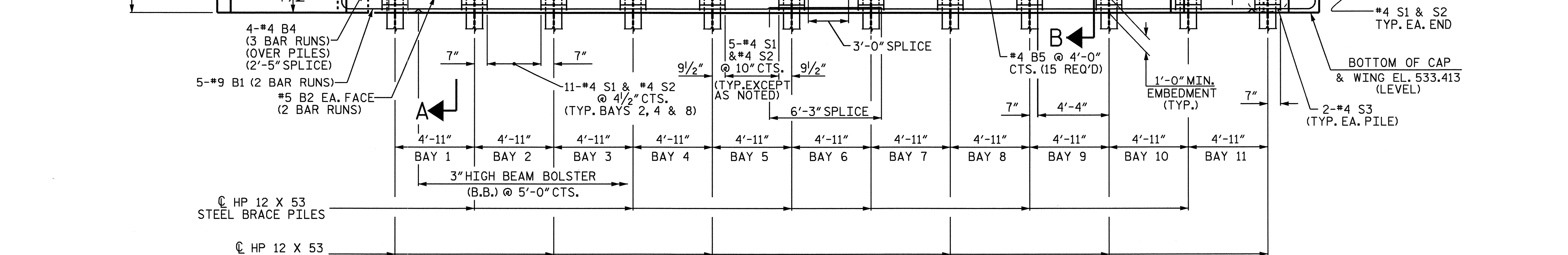
DETAIL "B"



PLAN



DETAIL "A"



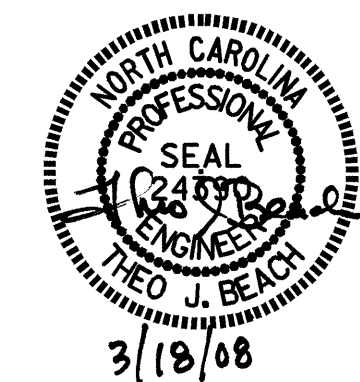
ELEVATION

(FOR CLARITY, WING BRACE PILES NOT SHOWN)

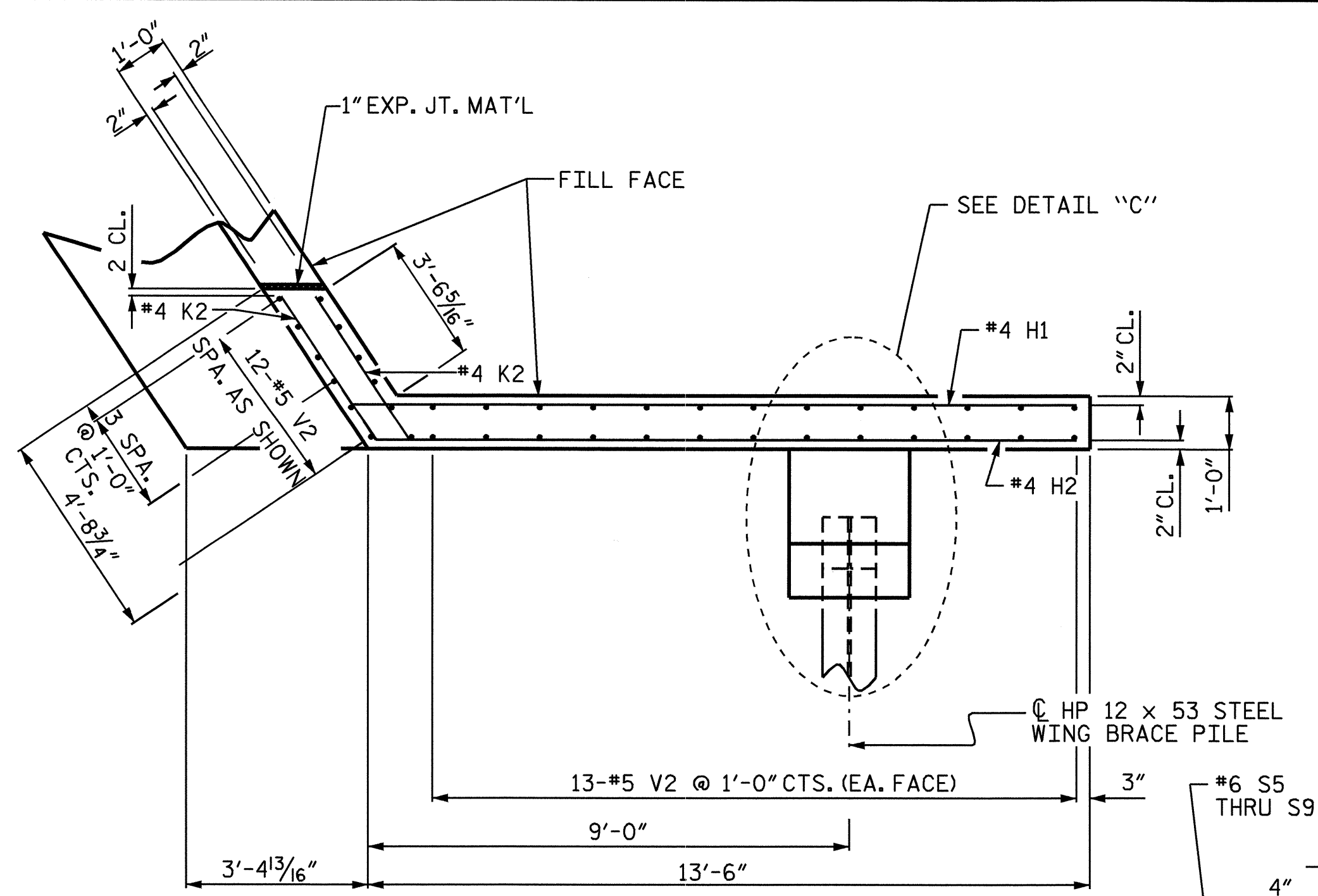
PROJECT NO. R-2320G
STANLY COUNTY
 STATION: 77+90.57 -L-

SHEET 1 OF 3

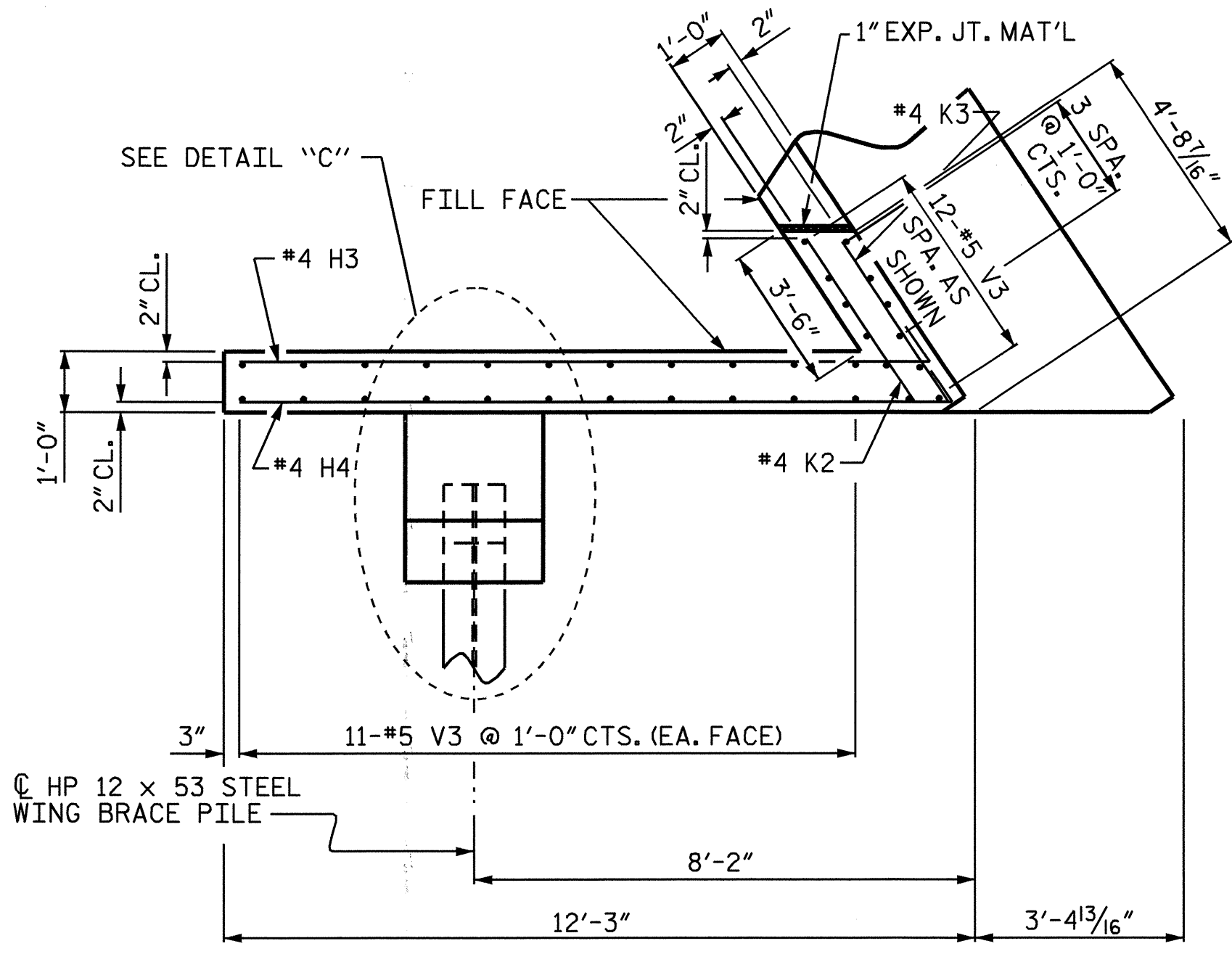
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT No. 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-16
					TOTAL SHEETS 24



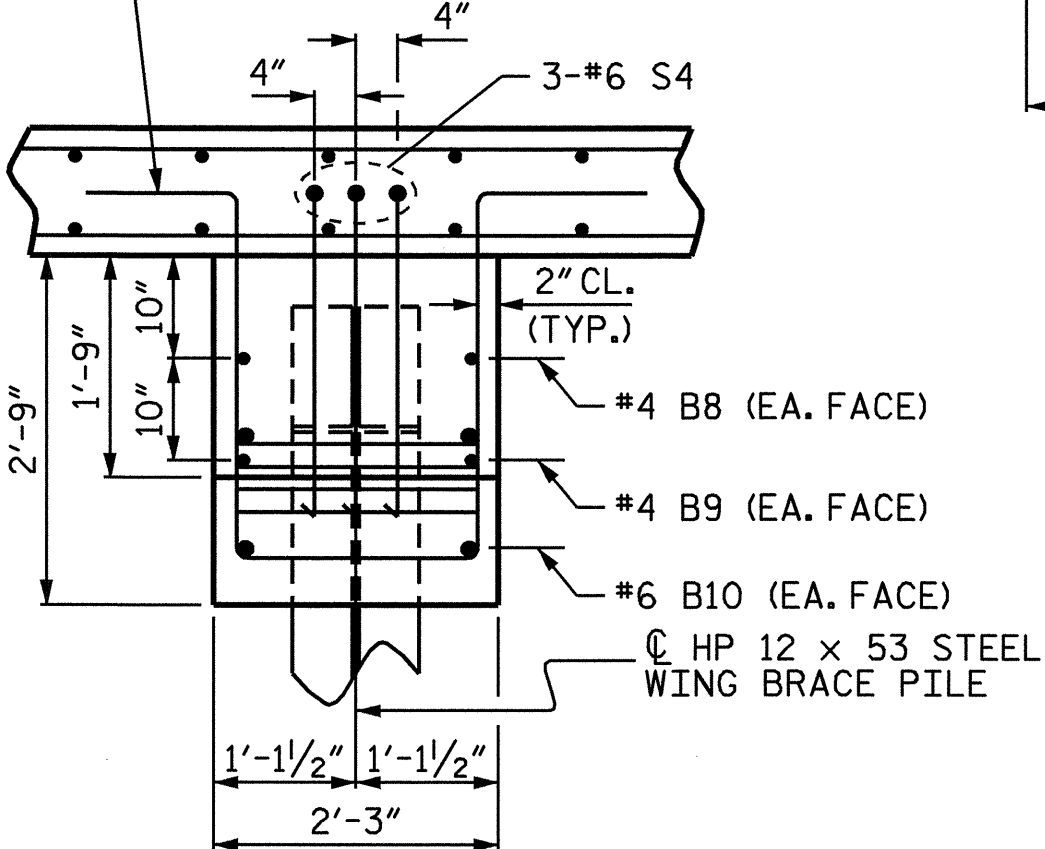
DRAWN BY : N. PIERCE DATE : 3/05
 CHECKED BY : SBW/TJB DATE : 6/07



PLAN OF WING (W1)

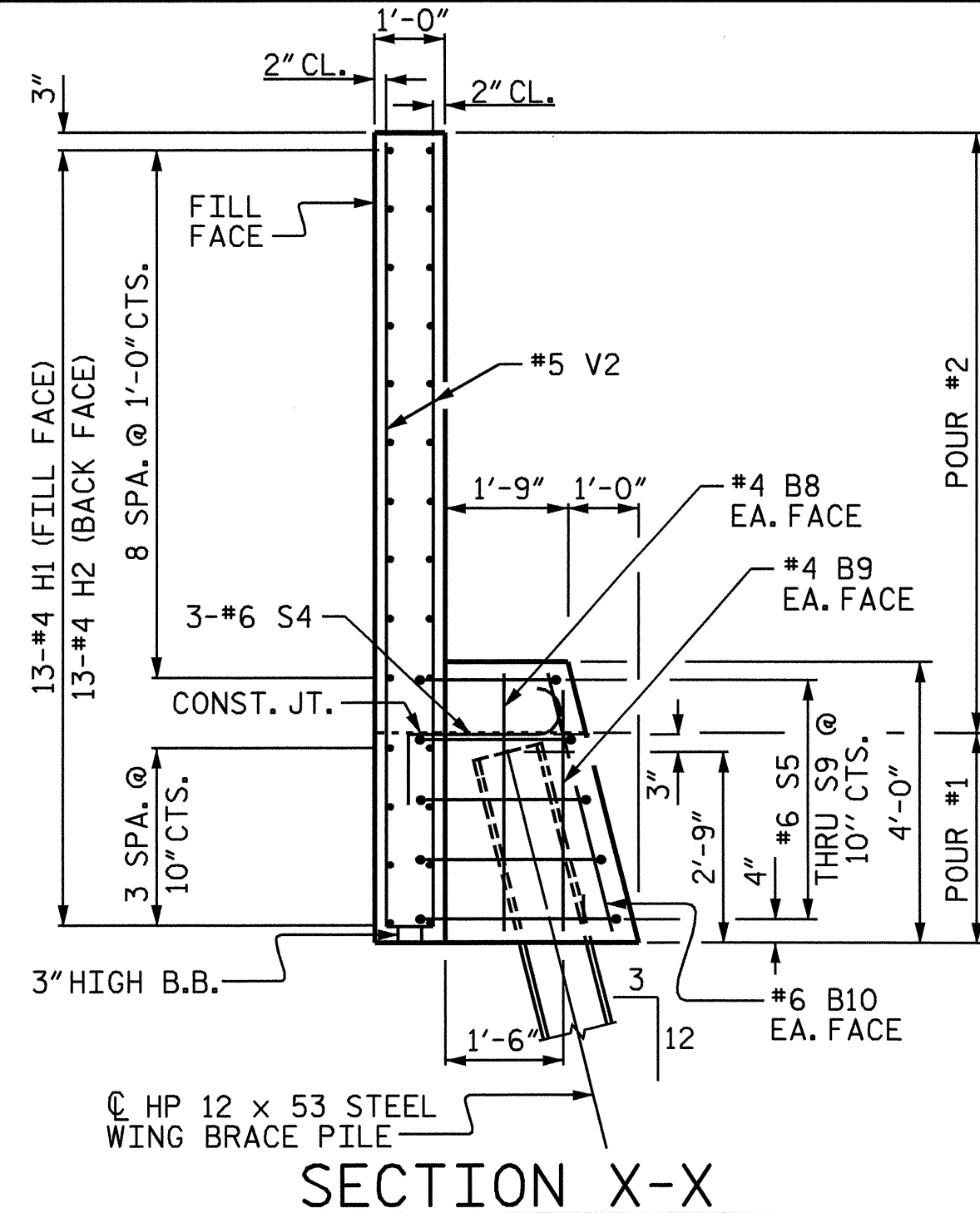


PLAN OF WING (W2)

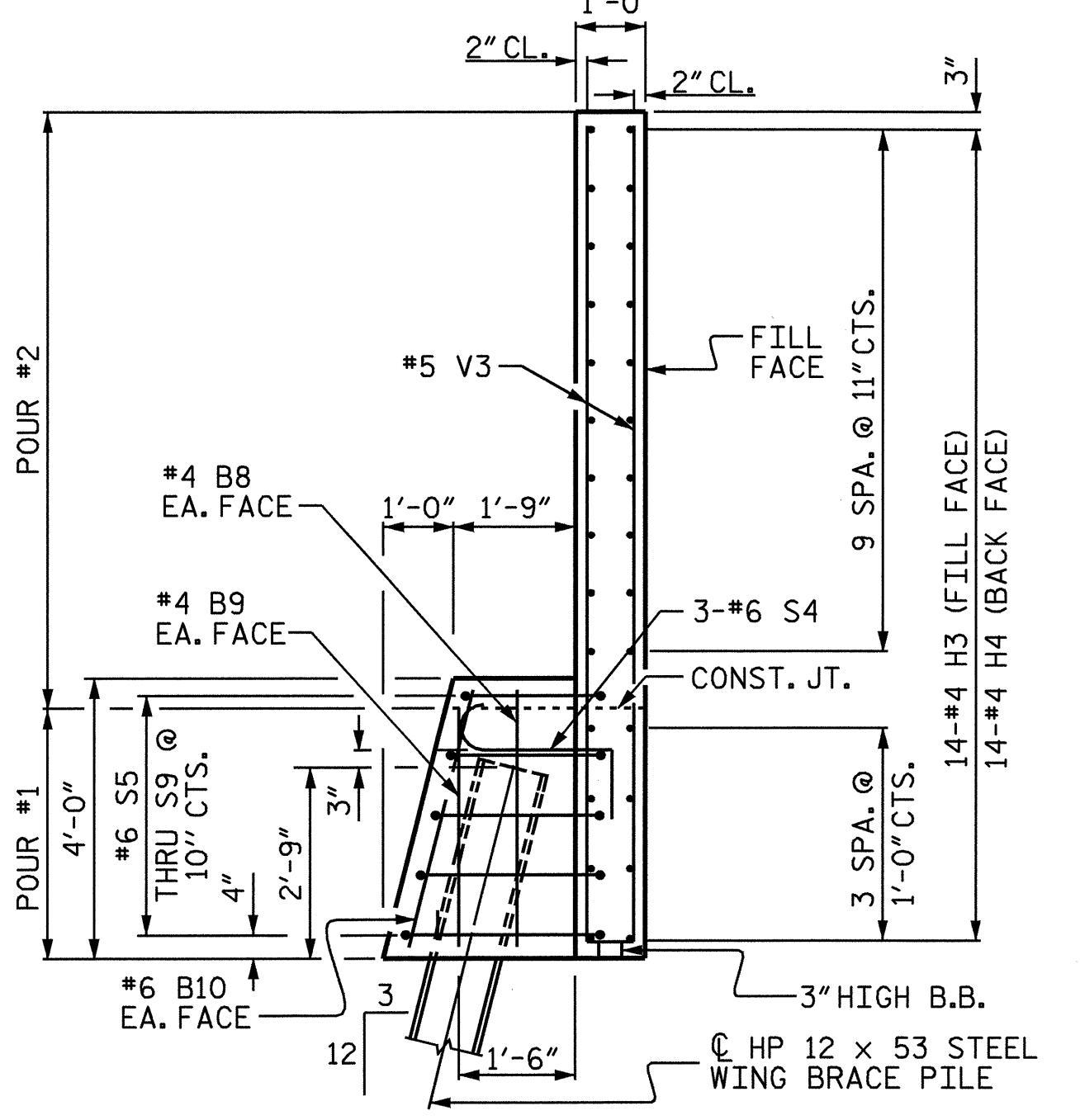


DETAIL "C"

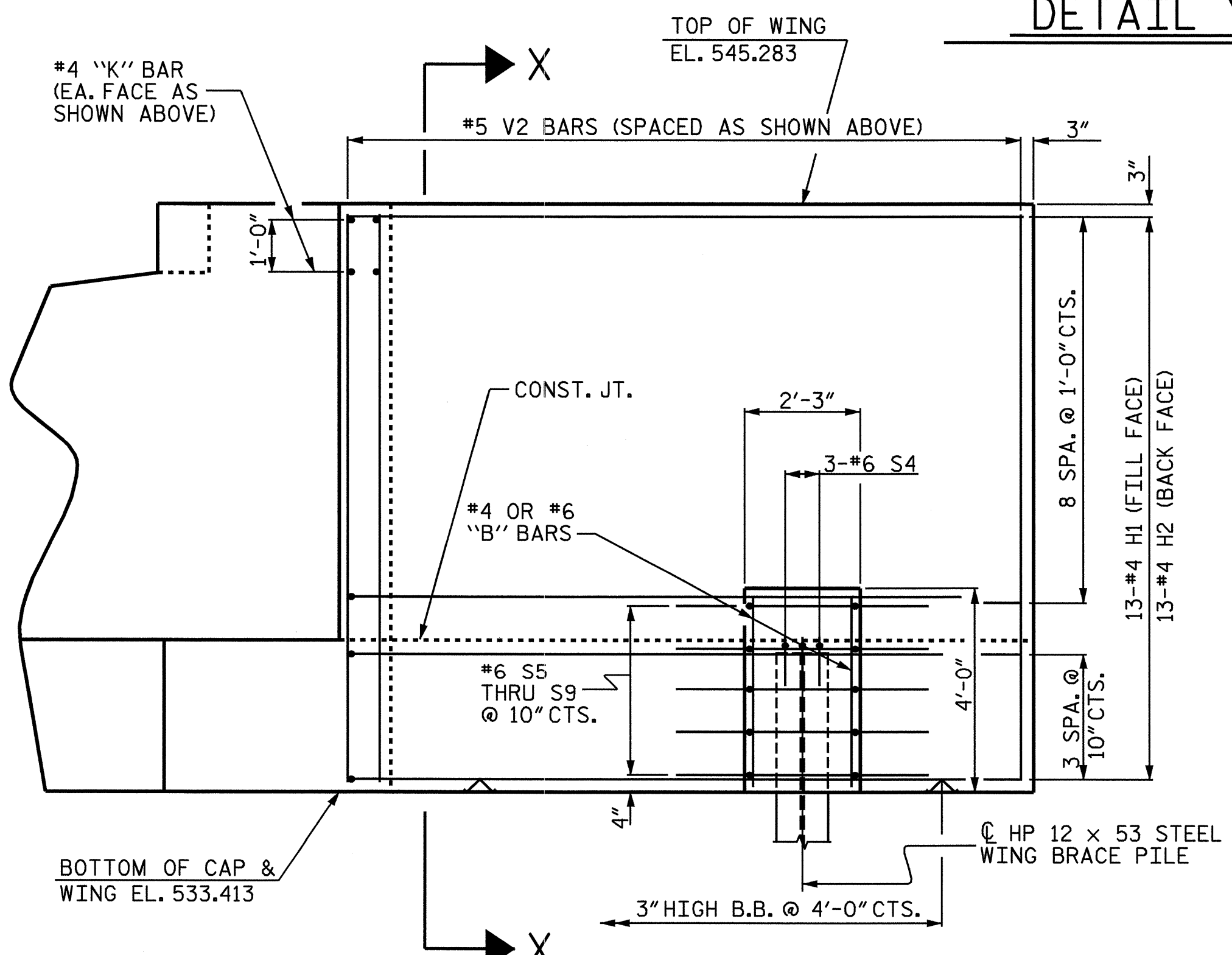
NOTE:
 AT THE CONTRACTOR'S OPTION, THE CONSTRUCTION JOINT IN THE WING BRACE PILE CAP MAY BE A PERMITTED CONSTRUCTION JOINT.



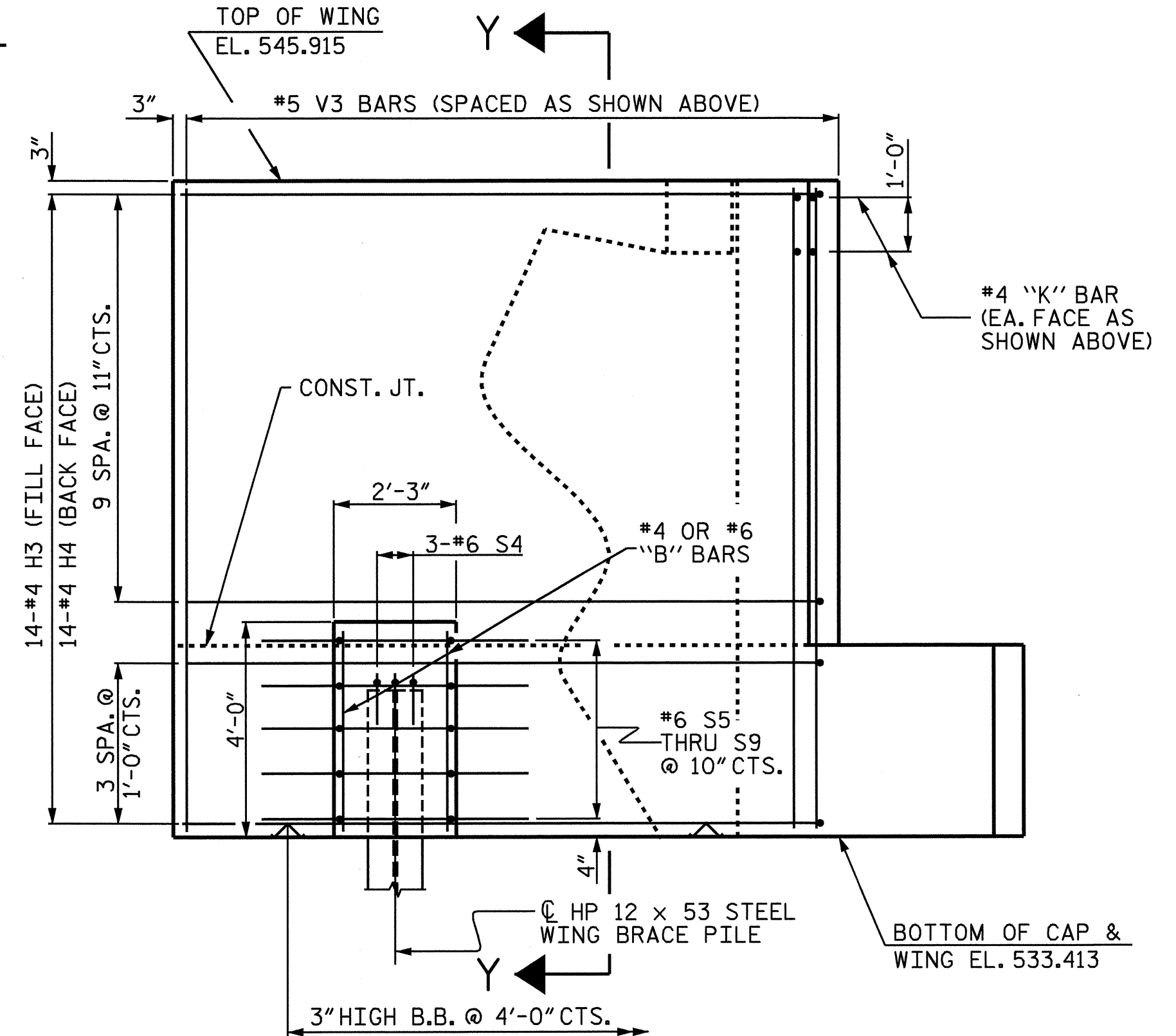
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)

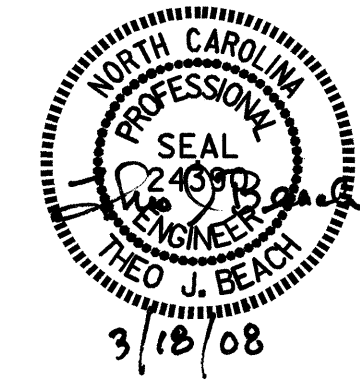


ELEVATION OF WING (W2)

PROJECT NO. R-2320G
 STANLY COUNTY
 STATION: 77+90.57 -L-

SHEET 2 OF 3

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS 24
2			4			



DRAWN BY : N. PIERCE DATE : 3/05
 CHECKED BY : SBW/TJB DATE : 6/07

BAR TYPES

BILL OF MATERIAL

END BENT No. 1

BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	9	1	33'-10"	1150
B2	8	5	STR	31'-0"	259
B3	10	9	1	35'-1"	1193
B4	12	4	STR	21'-3"	170
B5	15	4	STR	3'-6"	35
B6	10	4	STR	17'-0"	114
B7	10	4	STR	2'-8"	18
B8	4	4	STR	3'-8"	10
B9	4	4	STR	3'-5"	9
B10	4	6	STR	3'-9"	23
H1	13	4	6	14'-3"	124
H2	13	4	6	13'-10"	120
H3	14	4	5	11'-11"	111
H4	14	4	5	12'-2"	114
K1	48	4	STR	21'-3"	681
K2	6	4	STR	4'-4"	17
K3	2	4	STR	4'-0"	5
S1	75	4	2	9'-6"	476
S2	75	4	3	4'-3"	213
S3	24	4	4	6'-6"	104
S4	6	6	8	3'-9"	34
S5	2	6	9	10'-9"	32
S6	2	6	9	10'-5"	31
S7	2	6	9	9'-11"	30
S8	2	6	9	9'-7"	29
S9	2	6	9	9'-1"	27
U1	50	4	7	4'-2"	139
U2	24	4	7	6'-6"	104
V1	100	5	STR	9'-10"	1026
V2	38	5	STR	11'-6"	456
V3	34	5	STR	12'-1"	428

REINFORCING STEEL 7282 LBS.

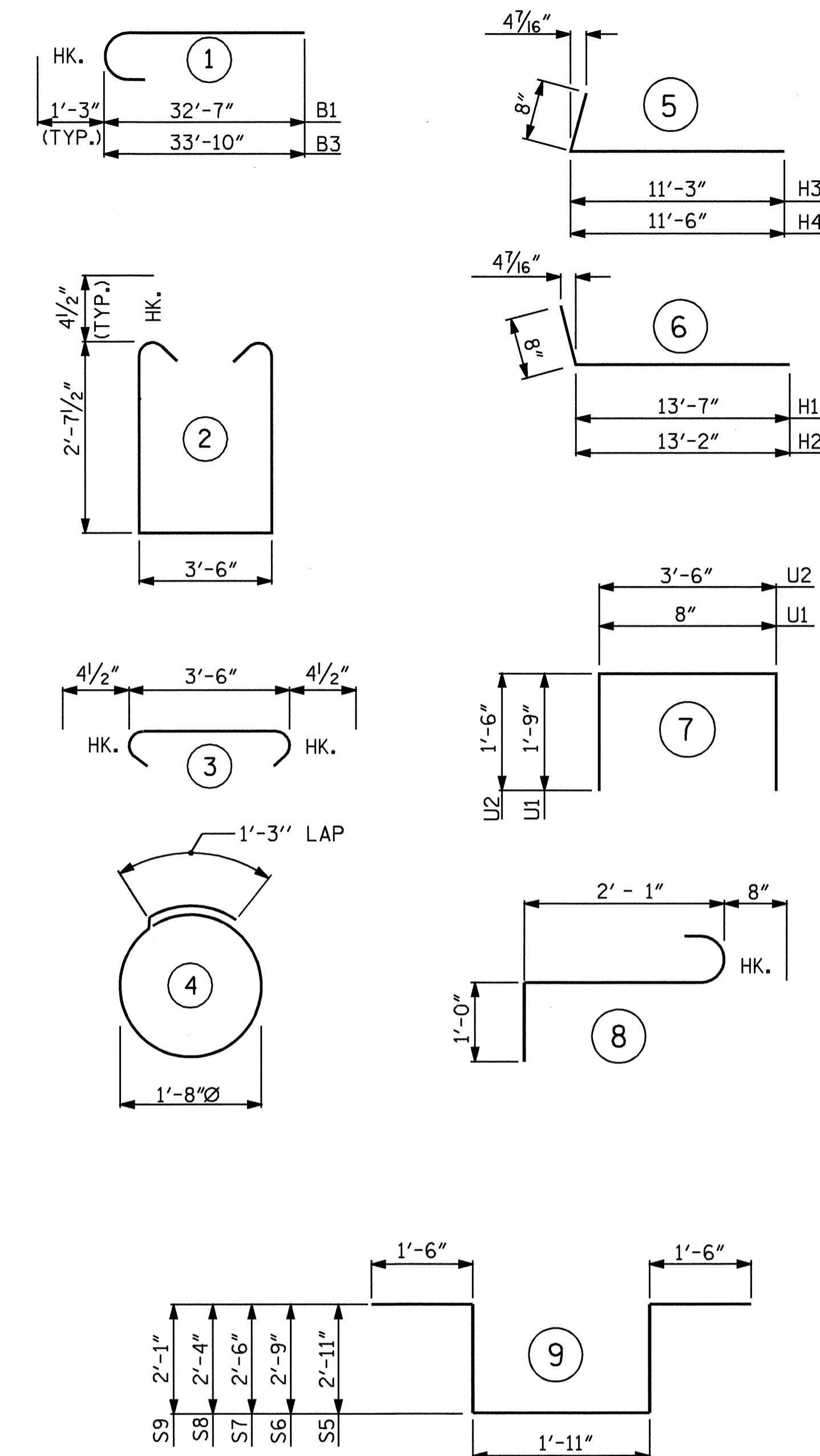
CLASS A CONCRETE BREAKDOWN:

POUR #1
(CAP & LOWER PART OF WING & WING BRACE PILE CAP) 31.5 CU. YDS.

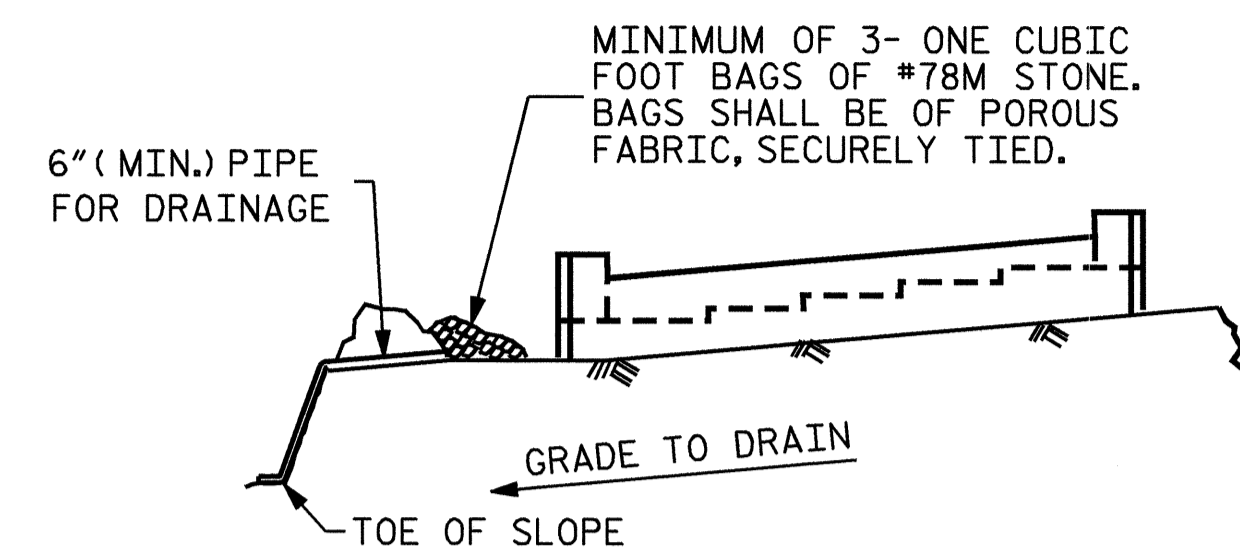
POUR #2
(BACKWALL & UPPER PART OF WING & WING PILE BRACE CAP) 24.5 CU. YDS.

TOTAL: 56.0 CU. YDS.

HP 12 X 53 STEEL PILES
NO. 14 LIN. FT. = 350



ALL BAR DIMENSIONS ARE OUT TO OUT.

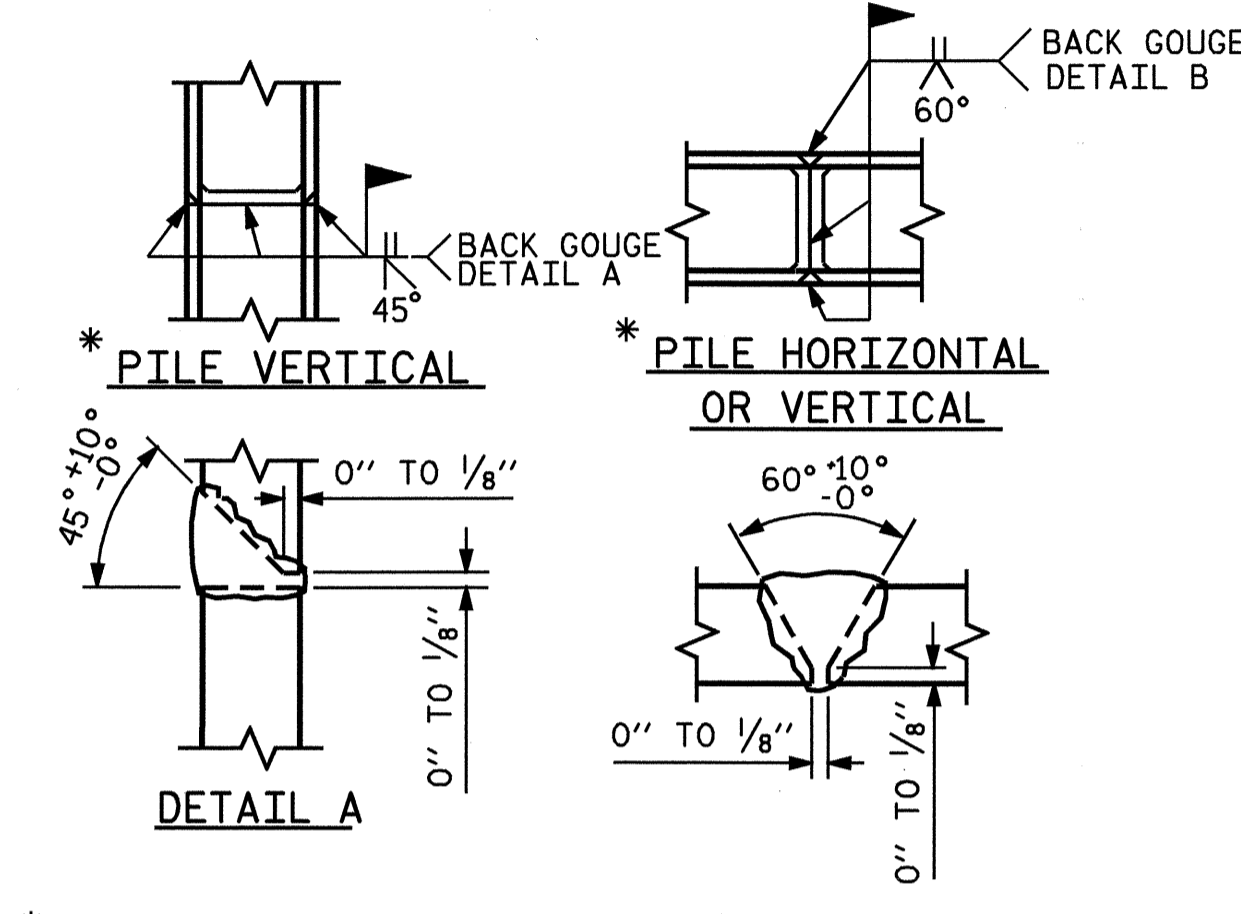


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

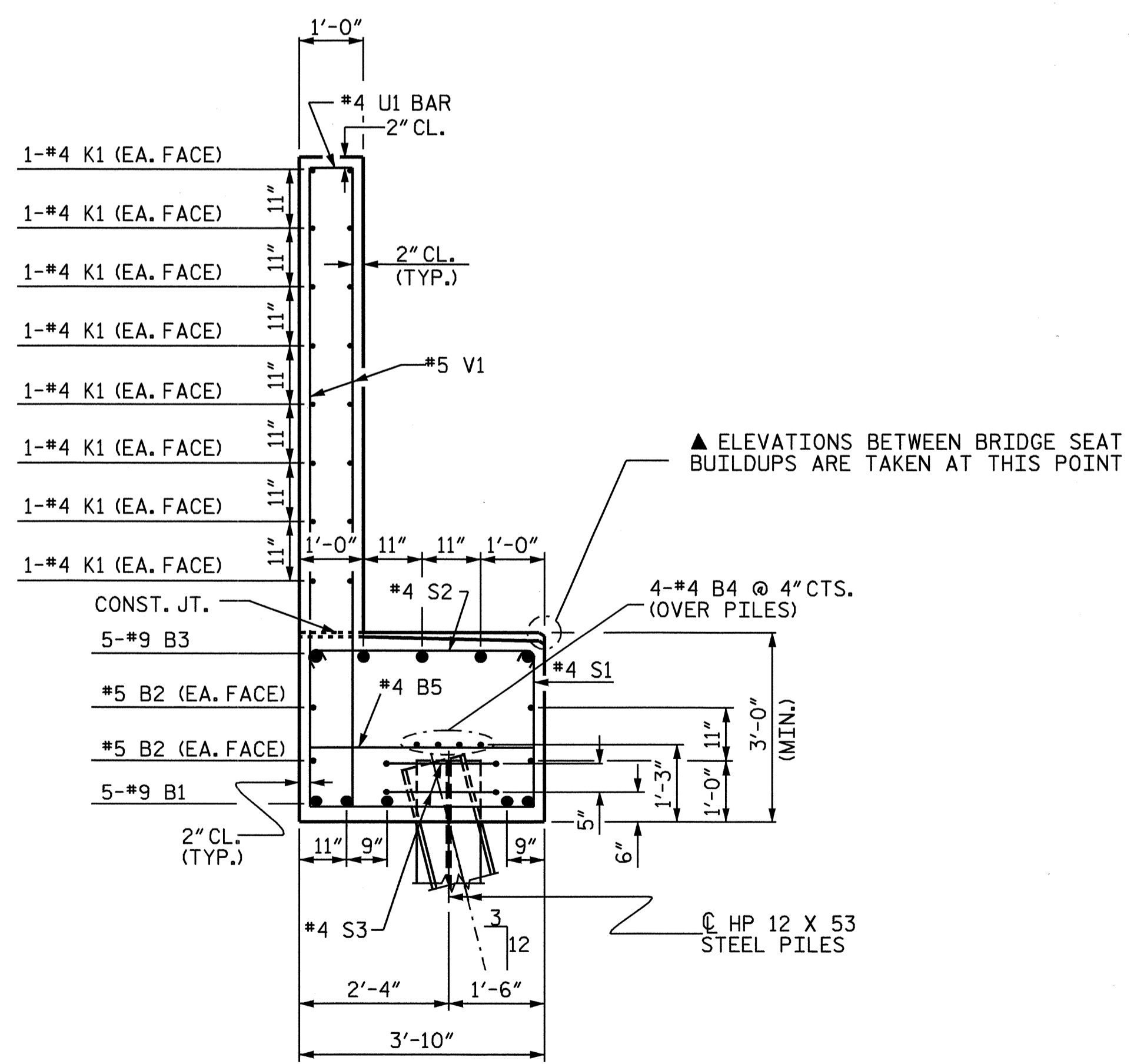
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

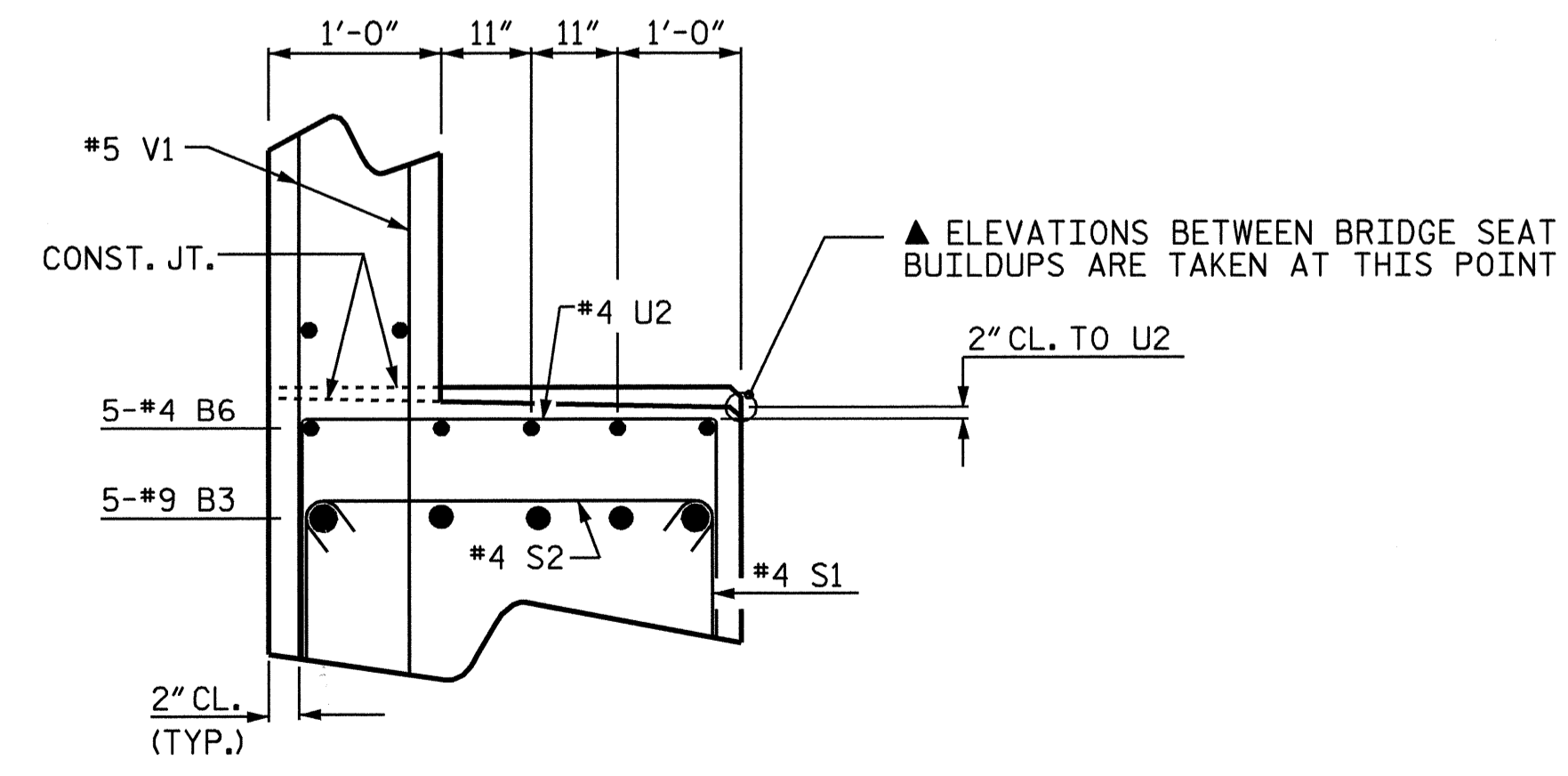


* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



SECTION A-A

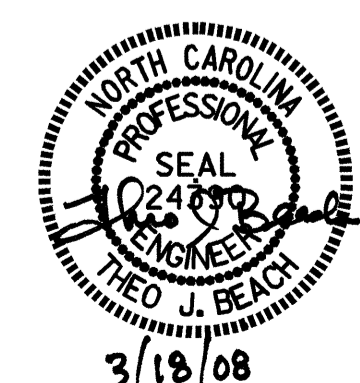


SECTION B-B

PROJECT NO. R-2320G
STANLY COUNTY
STATION: 77+90.57 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT No. 1



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS 24
2			4			

DRAWN BY: N. PIERCE DATE: 3/05
CHECKED BY: SBW/TJB DATE: 6/07

NOTES:

▲ FOR LOCATION OF ELEVATIONS BETWEEN BUILDUPS, SEE SECTION A-A ON SHEET 3 OF 3.

★ THIS ELEVATION TAKEN ON FILL FACE OF BACKWALL.

STIRRUPS AND U2 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

#5 "V" BARS IN BACKWALL SHALL BE PLACED 2" CLEAR FROM TOP OF BACKWALL.

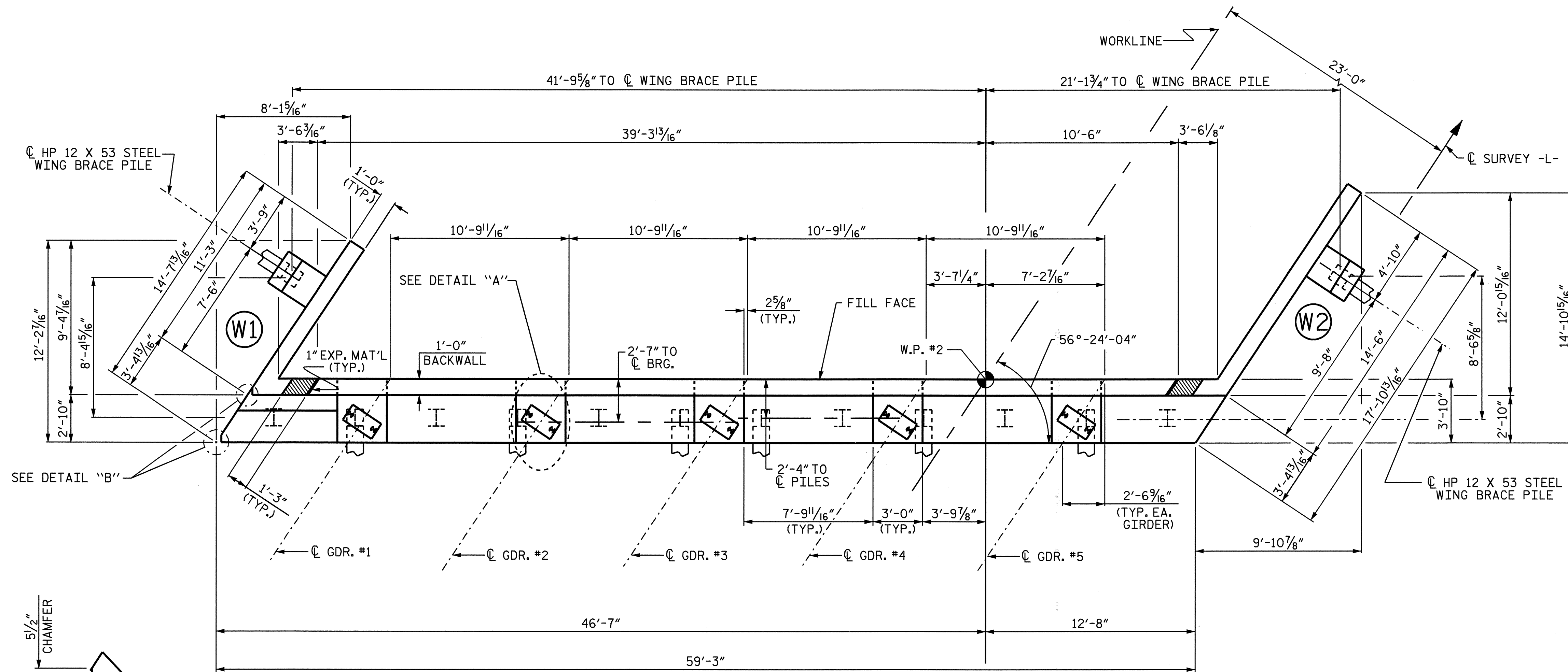
THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

EPOXY COAT THE END BENT CAP AFTER ADJUSTMENTS ARE MADE TO BEARINGS AND ANCHOR BOLTS ARE GROUTED. SEE "ELASTOMERIC BEARING DETAILS" SHEET.

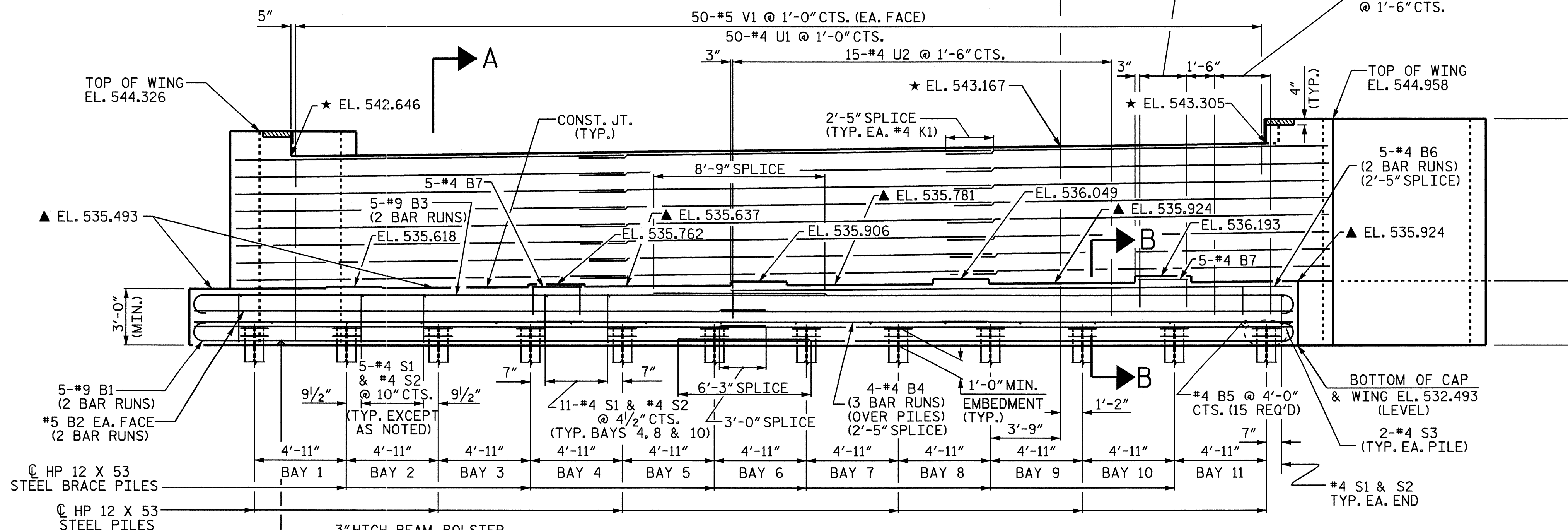
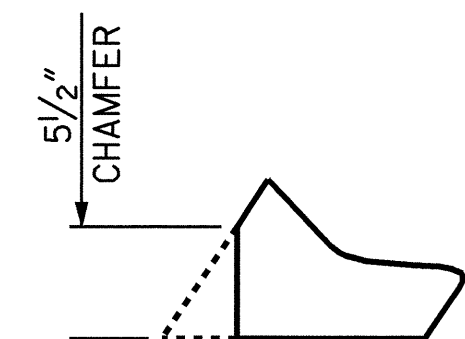
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

THE CONCRETE IN THE SHADED AREA OF THE WINGWALL SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.



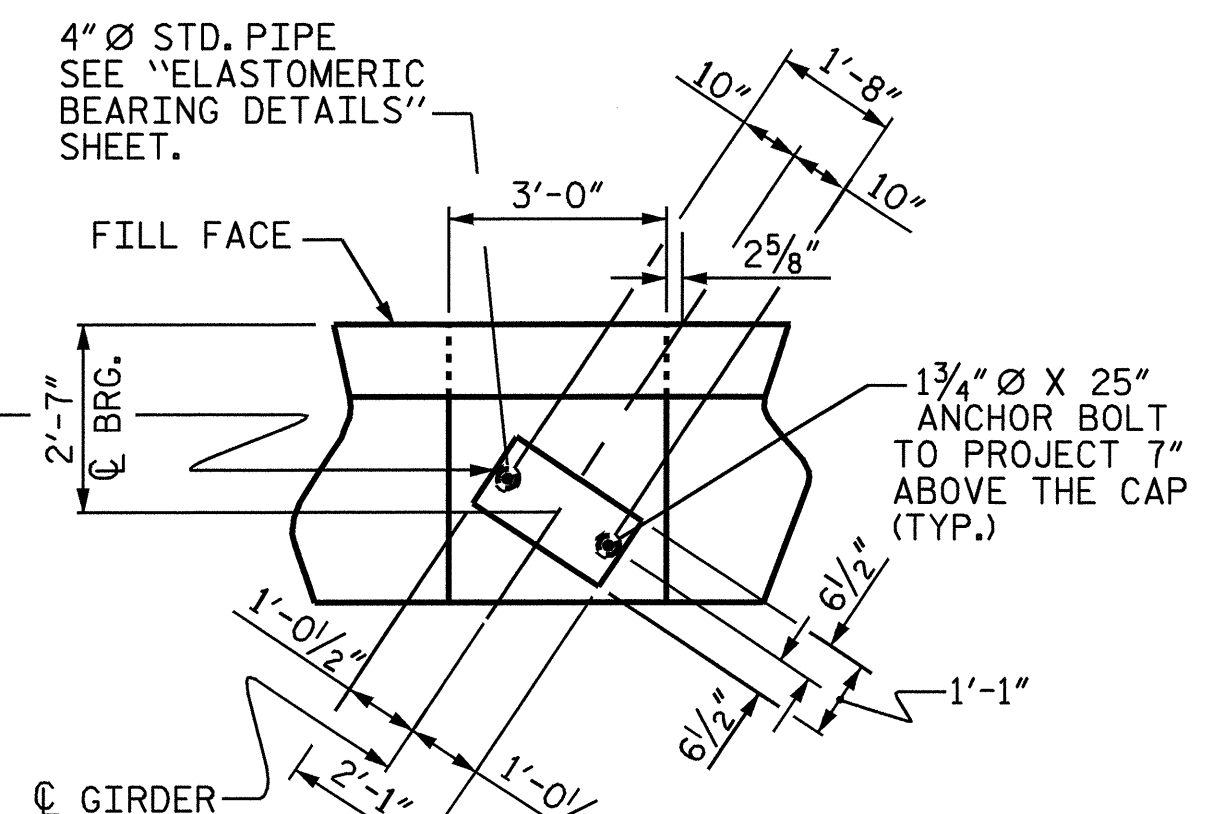
PLAN

DETAIL "B"



ELEVATION

(FOR CLARITY, WING BRACE PILES NOT SHOWN)



DETAIL "A"

1'-1" X 2'-1" X 3/16" ELAST. BRG. PAD (TYPE V) (TYP.)

POUR #2 BACKWALL & UPPER PART OF WINGS

POUR #1 CAP, BACKWALL & LOWER PART OF WINGS & WING BRACE PILE CAP

PROJECT NO. R-2320G

STANLY COUNTY

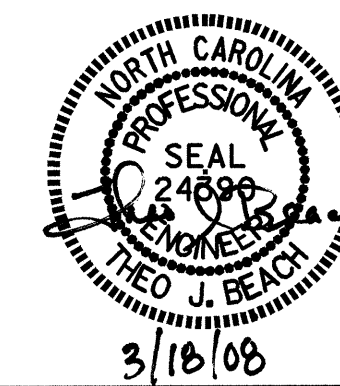
STATION: 77+90.57 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

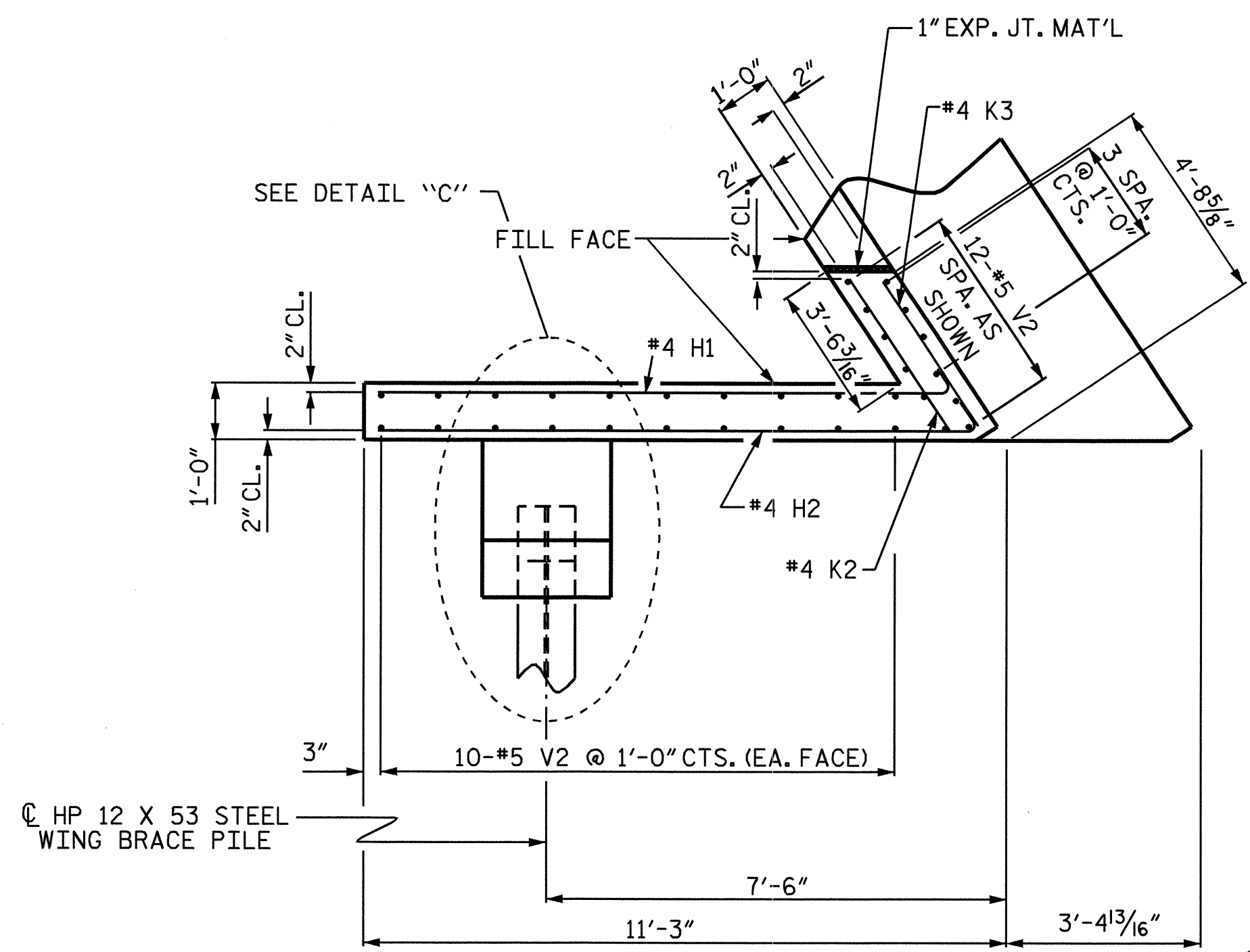
END BENT No. 2



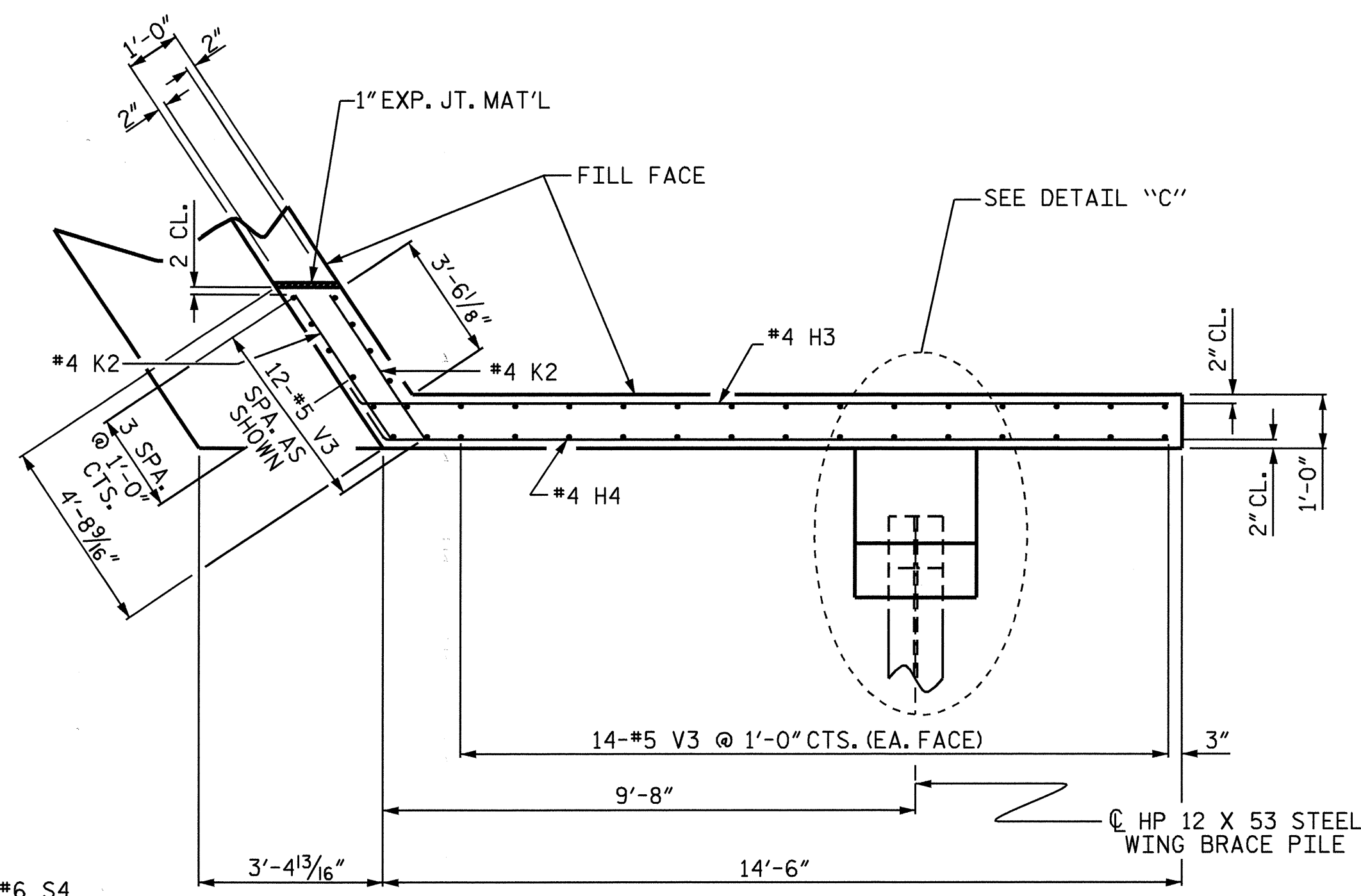
DRAWN BY: N. PIERCE DATE: 4/05
CHECKED BY: SBW/TJB DATE: 6/07

18-MAR-2008 15:56
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tbeach

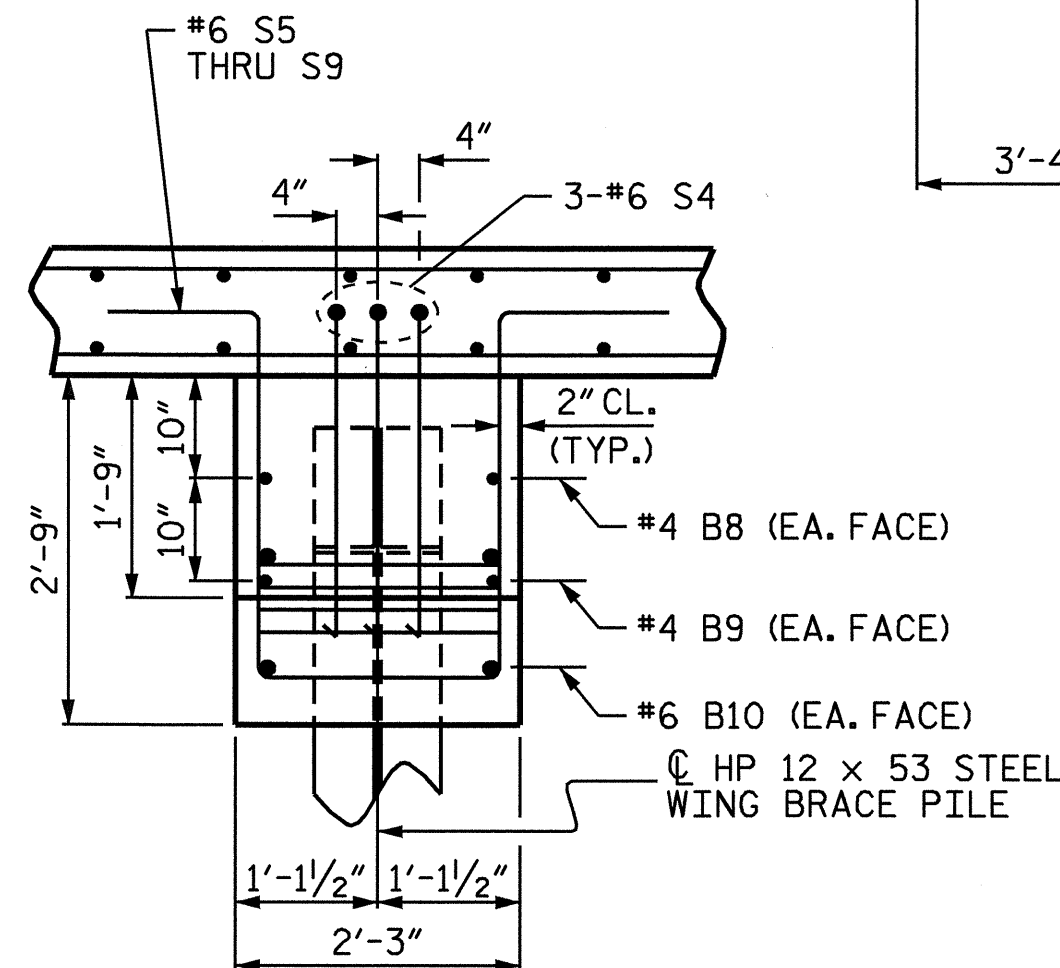
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS 24
2			4			



PLAN OF WING (W1)

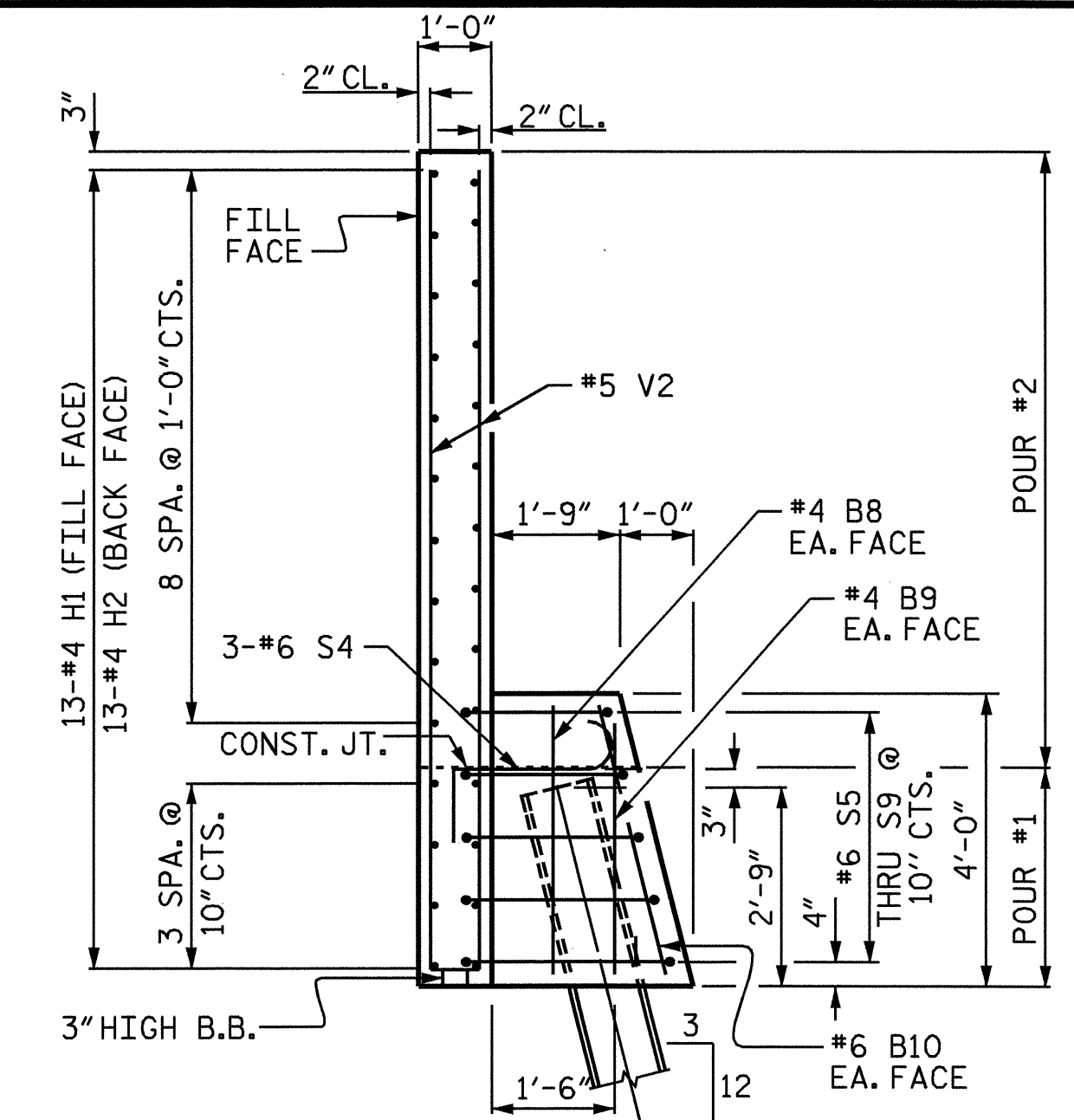


PLAN OF WING (W2)

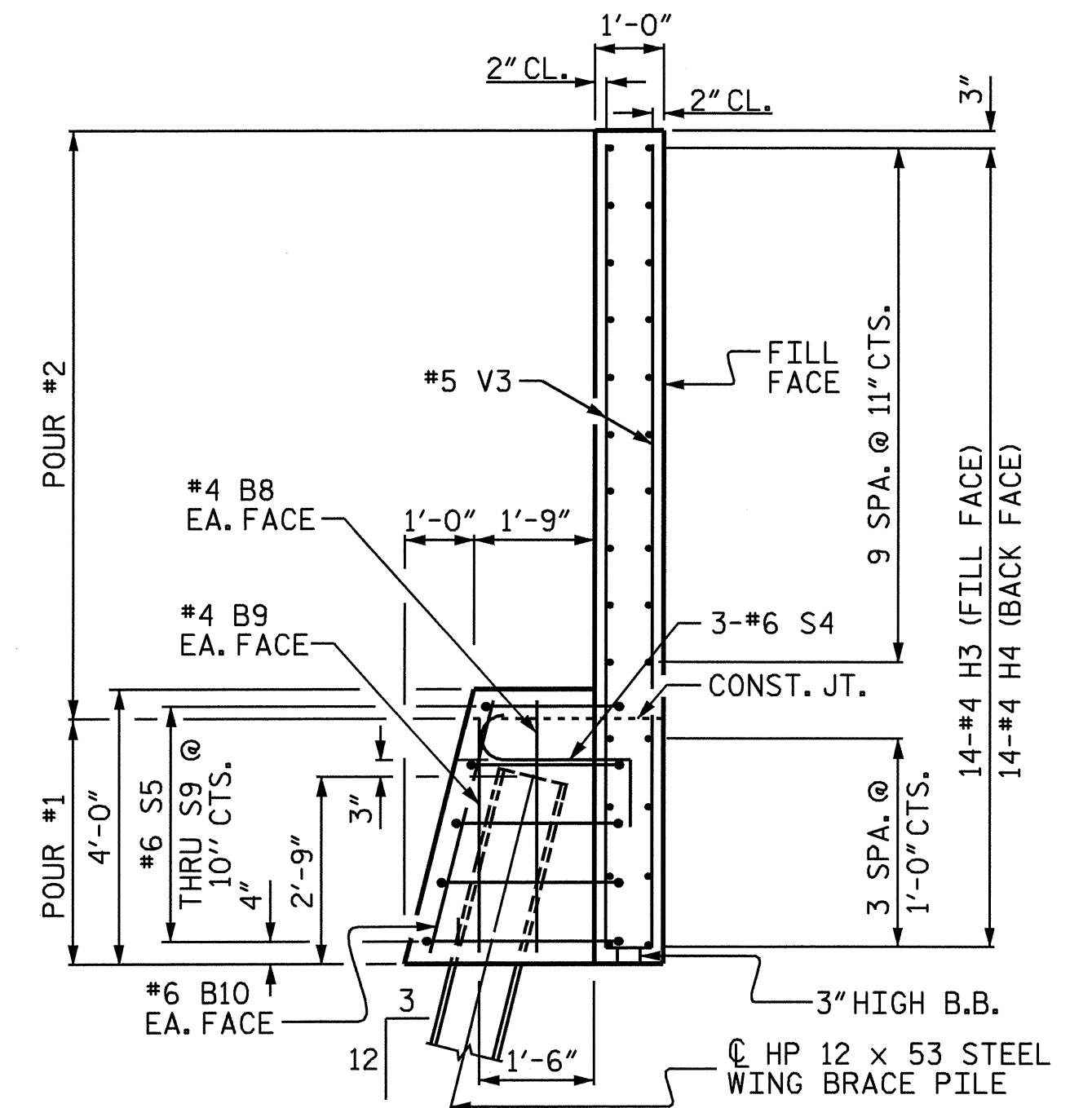


DETAIL "C"

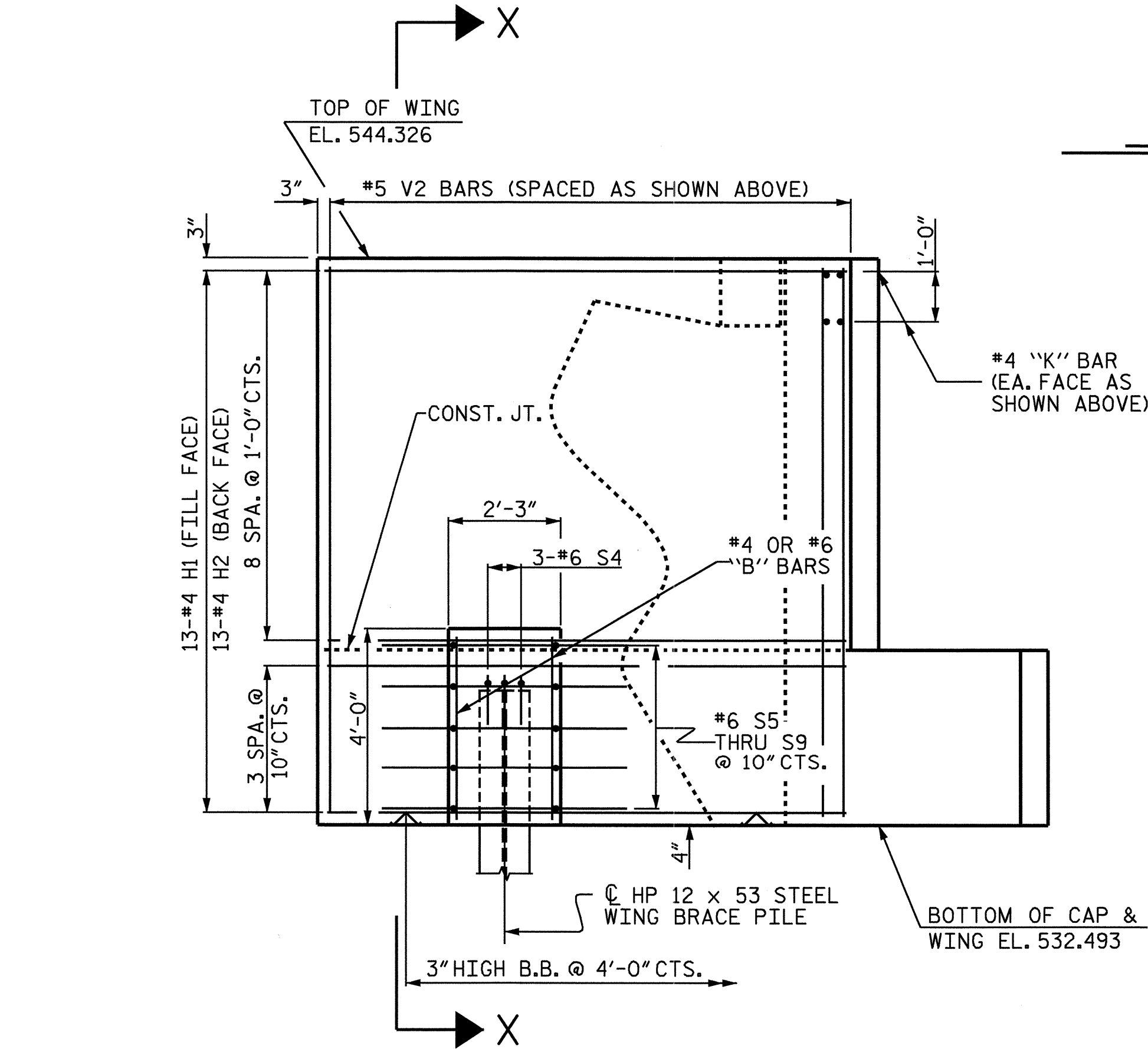
NOTE:
AT THE CONTRACTOR'S OPTION, THE
CONSTRUCTION JOINT IN THE WING
BRACE PILE CAP MAY BE A PERMITTED
CONSTRUCTION JOINT.



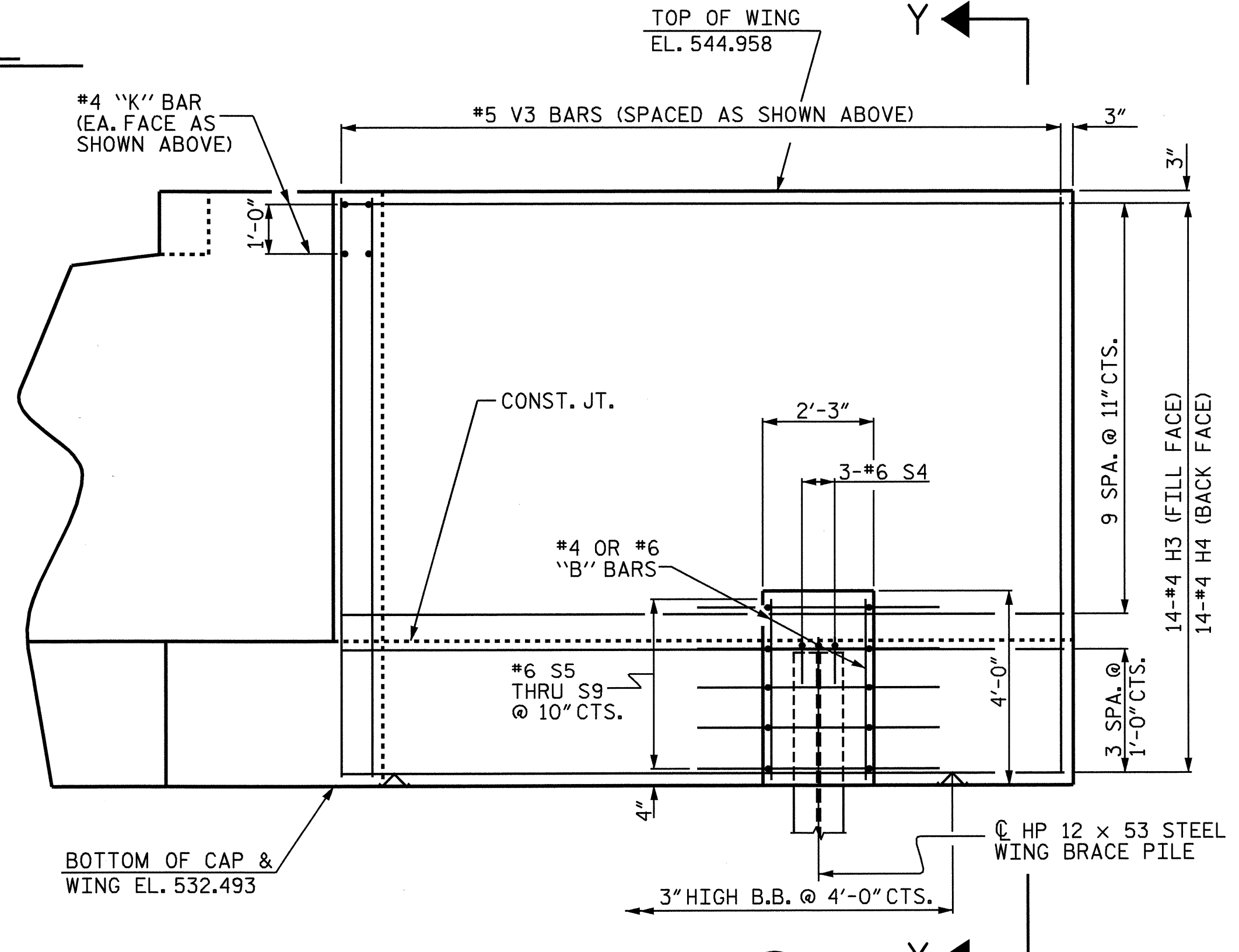
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)

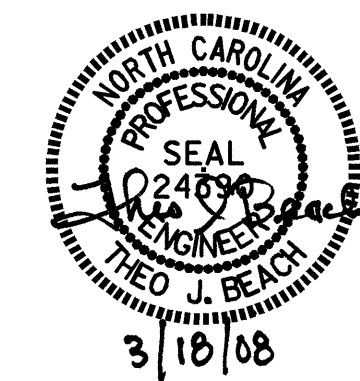


ELEVATION OF WING (W2)

PROJECT NO. R-2320G
STANLY COUNTY
STATION: 77+90.57 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT No. 2



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

DRAWN BY: N. PIERCE DATE: 4/05
CHECKED BY: SBW/TJB DATE: 6/07

18-MAR-2008 15:56
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tbeach

BAR TYPES

BILL OF MATERIAL

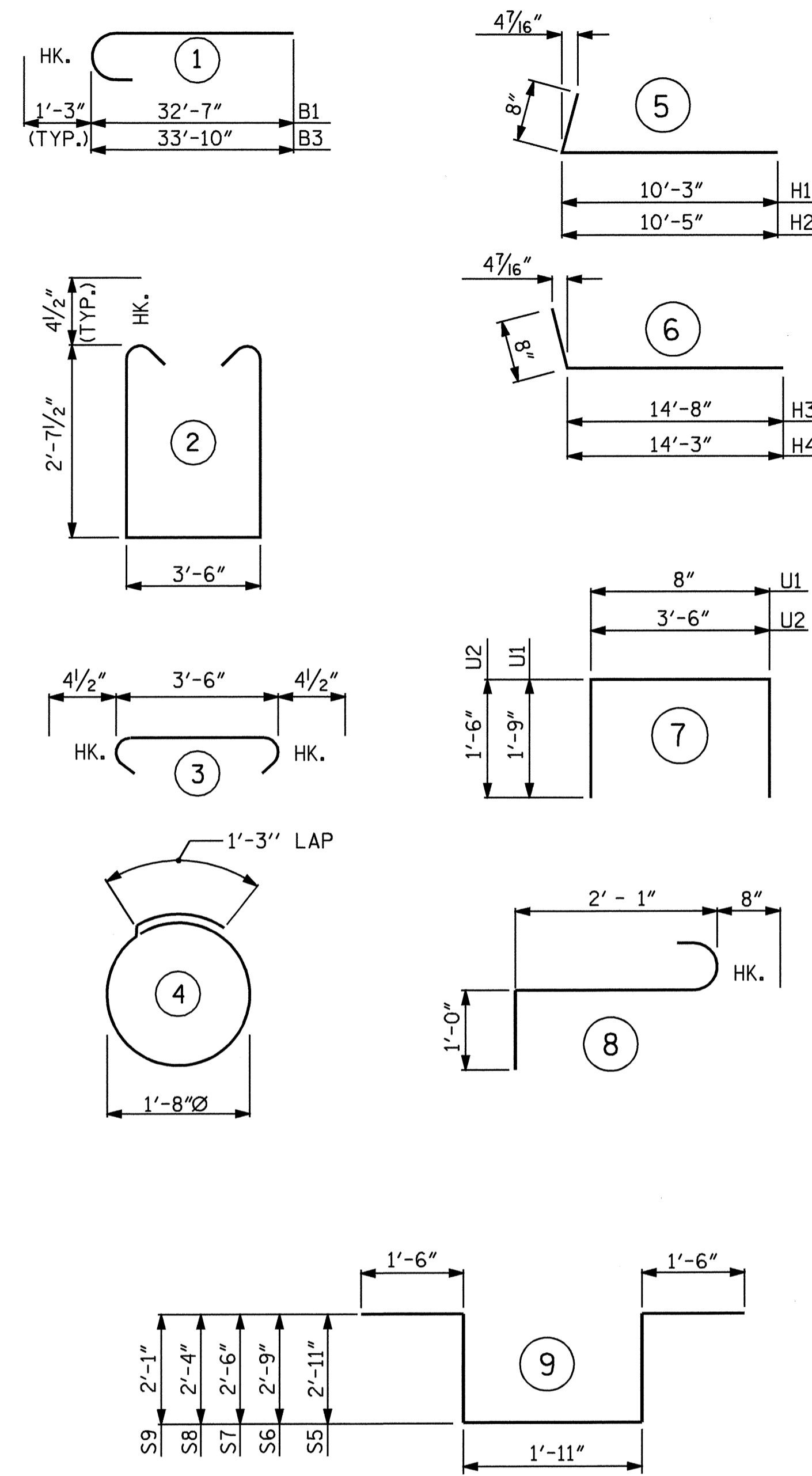
END BENT No. 2

BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
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B2	8	5	STR	31'-0"	259
B3	10	9	1	35'-1"	1193
B4	12	4	STR	21'-3"	170
B5	15	4	STR	3'-6"	35
B6	10	4	STR	17'-6"	117
B7	10	4	STR	2'-8"	18
B8	4	4	STR	3'-8"	10
B9	4	4	STR	3'-5"	9
B10	4	6	STR	3'-9"	23
H1	13	4	5	10'-11"	95
H2	13	4	5	11'-1"	96
H3	14	4	6	15'-4"	143
H4	14	4	6	14'-11"	140
K1	48	4	STR	21'-3"	681
K2	6	4	STR	4'-4"	17
K3	2	4	STR	4'-0"	5
S1	75	4	2	9'-6"	476
S2	75	4	3	4'-3"	213
S3	24	4	4	6'-6"	104
S4	6	6	8	3'-9"	34
S5	2	6	9	10'-9"	32
S6	2	6	9	10'-5"	31
S7	2	6	9	9'-11"	30
S8	2	6	9	9'-7"	29
S9	2	6	9	9'-1"	27
U1	50	4	7	4'-2"	139
U2	24	4	7	6'-6"	104
V1	100	5	STR	9'-10"	1026
V2	32	5	STR	11'-6"	384
V3	40	5	STR	12'-1"	504

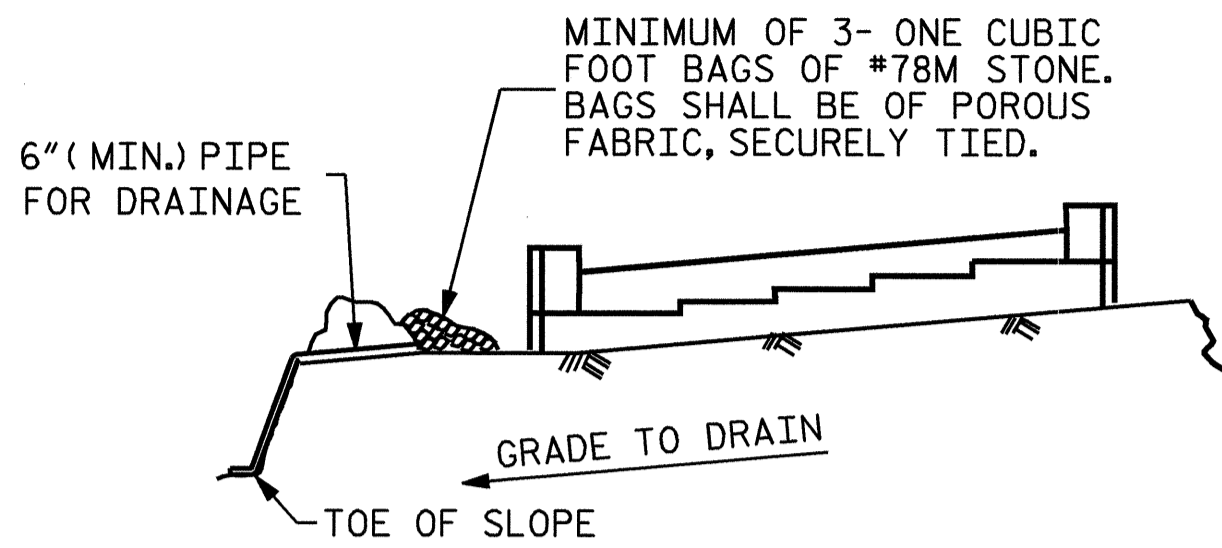
REINFORCING STEEL 7294 LBS.

CLASS A CONCRETE BREAKDOWN:
 POUR #1
 (CAP & LOWER PART OF WING & WING BRACE PILE CAP) 31.5 CU. YDS.
 POUR #2
 (BACKWALL & UPPER PART OF WING & WING BRACE PILE CAP) 24.5 CU. YDS.
 TOTAL: 56.0 CU. YDS.

HP 12 X 53 STEEL PILES
 NO. 14 LIN. FT. = 280



ALL BAR DIMENSIONS ARE OUT TO OUT.

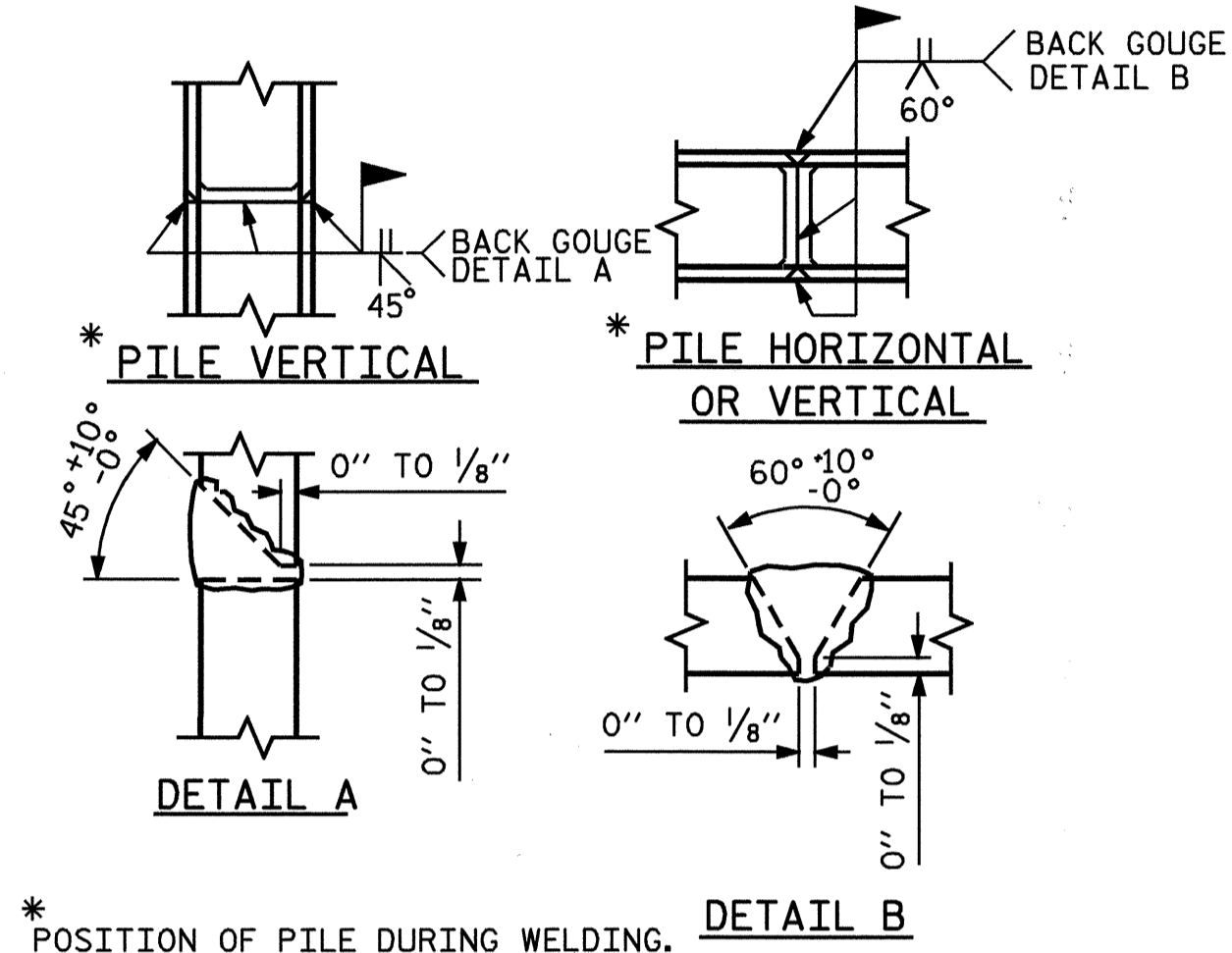


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

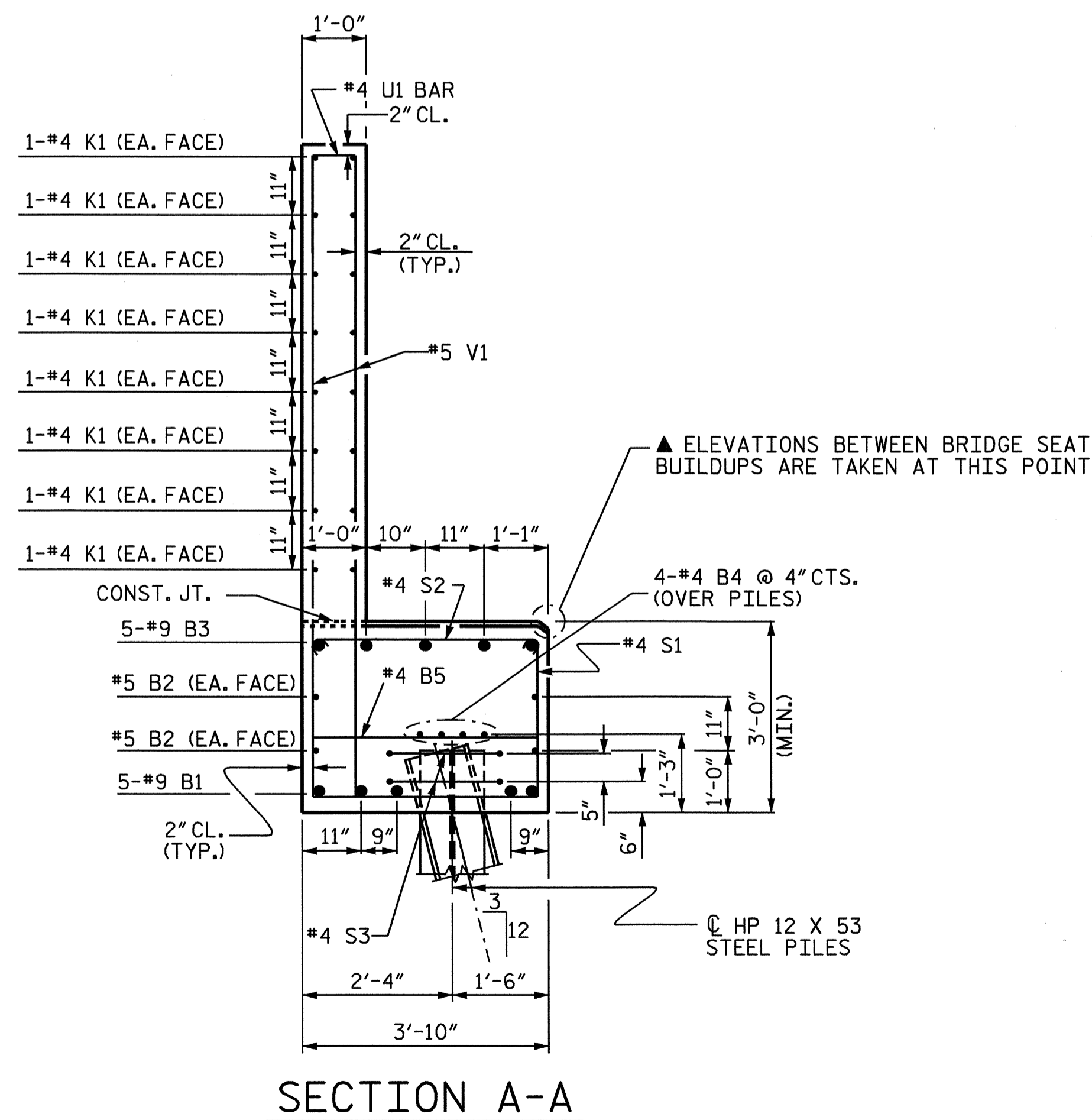
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

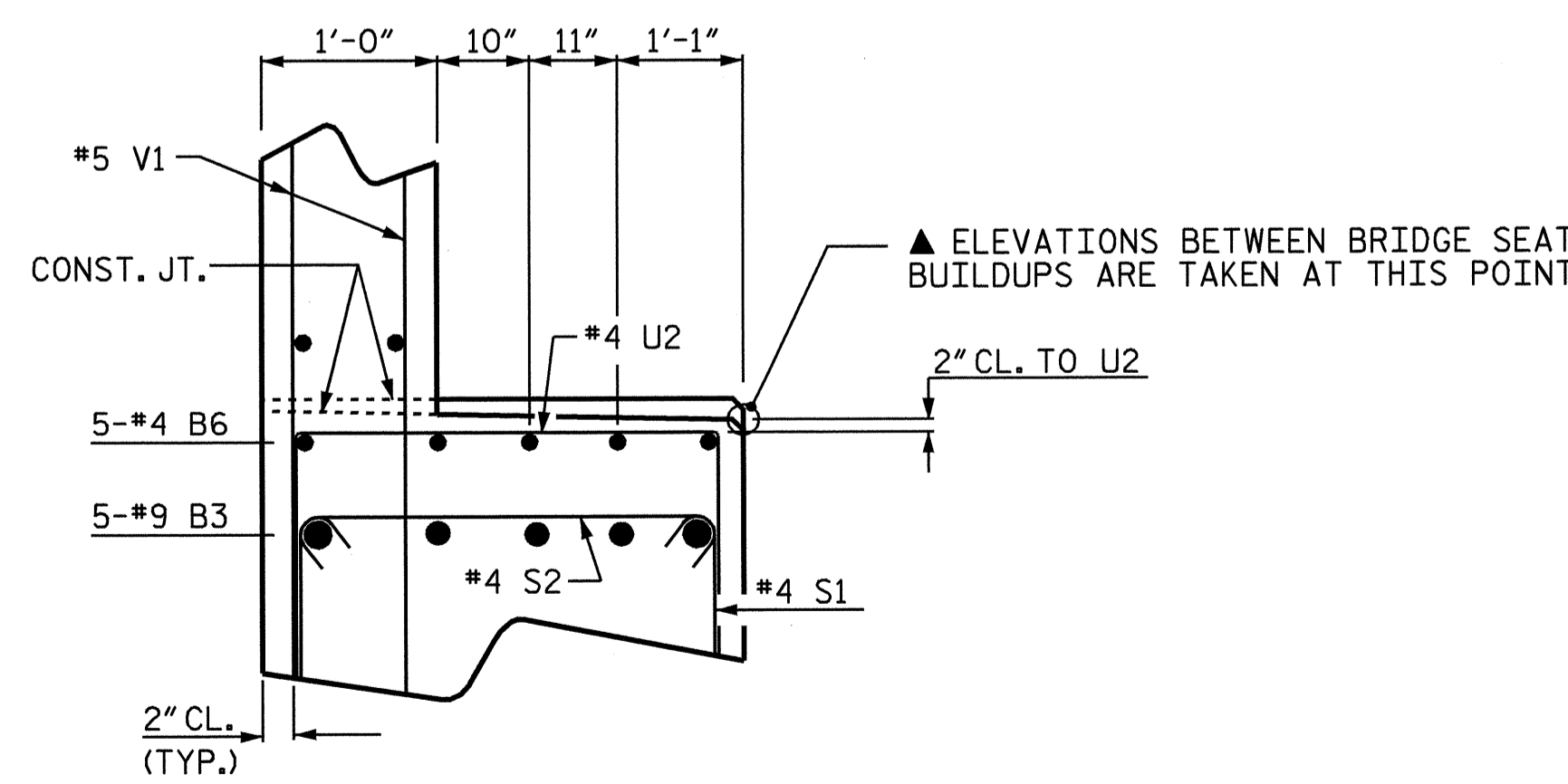
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS
 * POSITION OF PILE DURING WELDING.



SECTION A-A



SECTION B-B

PROJECT NO. R-2320G
STANLY COUNTY
 STATION: 77+90.57 -L-

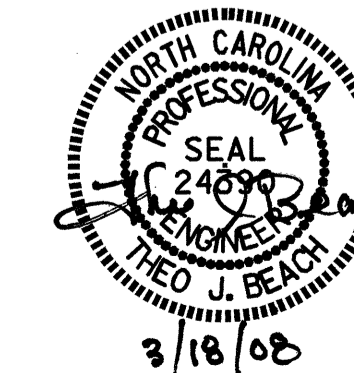
SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT No. 2

REVISIONS

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

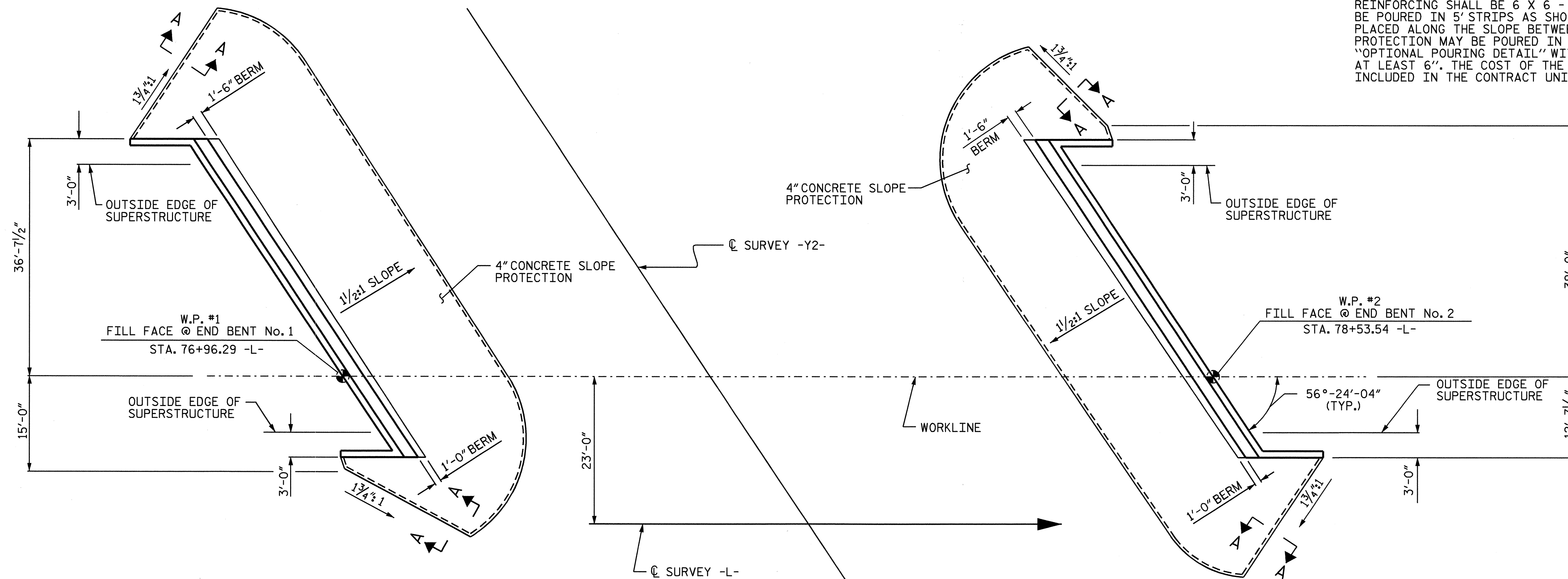
SHEET NO.
S-21
TOTAL SHEETS 24



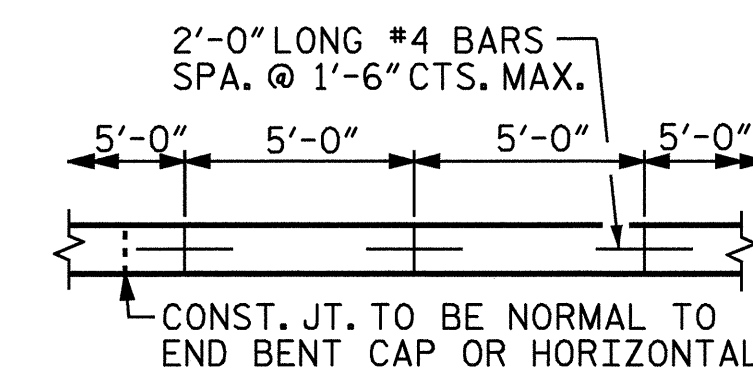
GENERAL NOTES

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. METHOD OF MEASUREMENT AND BASIS OF PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS.

SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60" WIDE. SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6". THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.

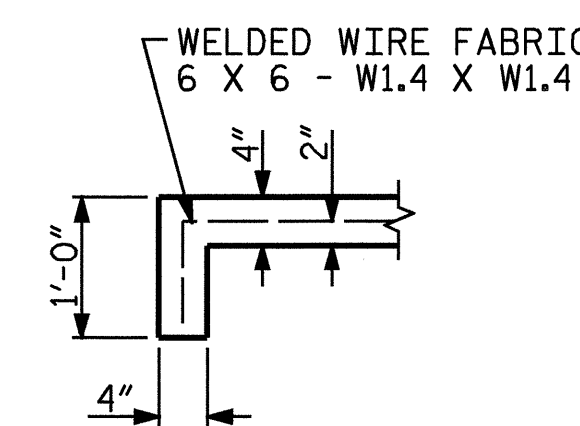


PLAN

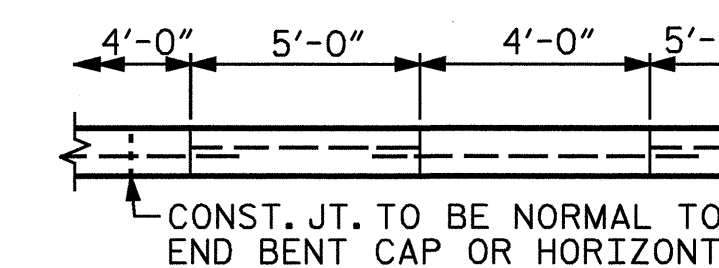


CONST. JT. TO BE NORMAL TO END BENT CAP OR HORIZONTAL
STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL



SECTION A-A

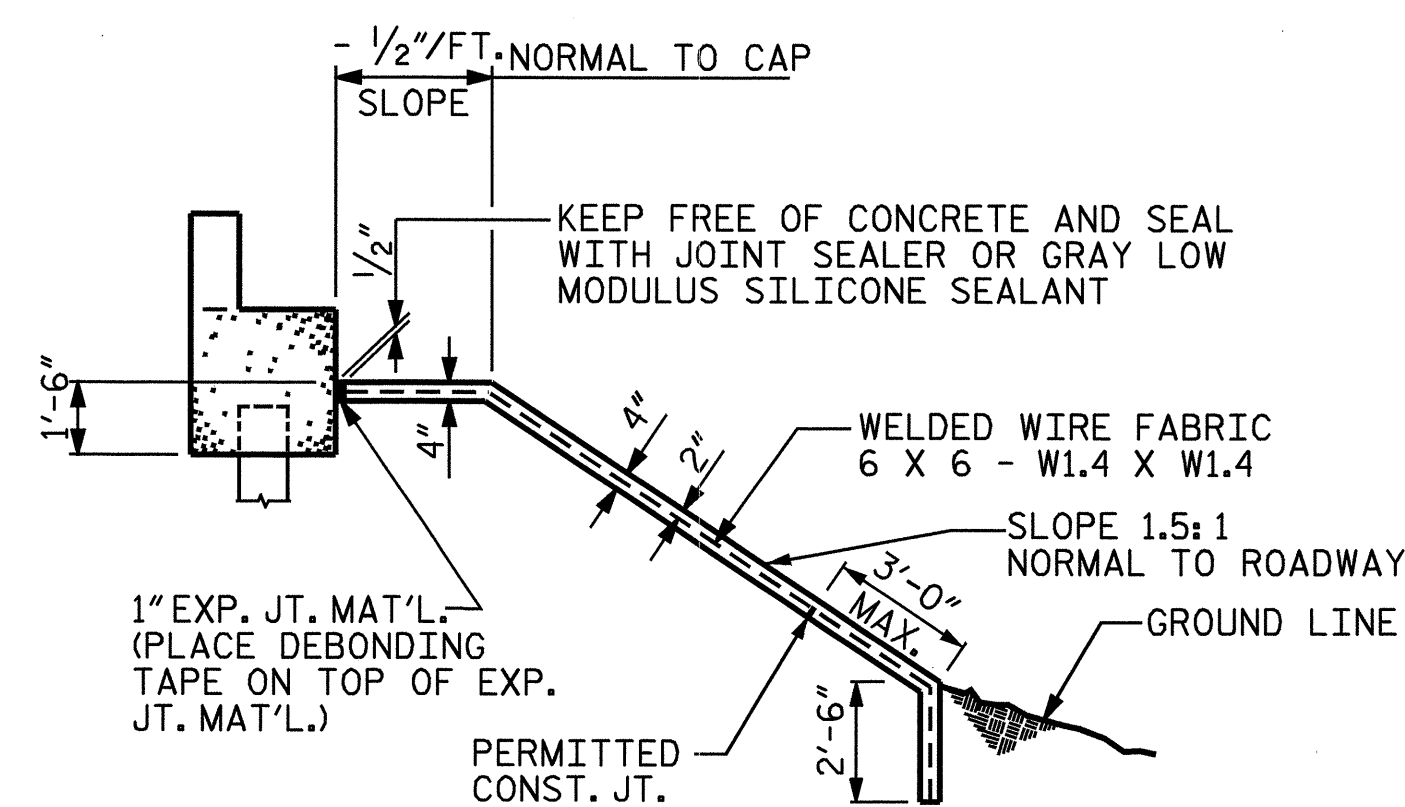


POUR A 4'-0" STRIP FIRST. STRIP WIDTHS MAY VARY IN CURVED PORTION.

OPTIONAL POURING DETAIL

BRIDGE @ STA. 77+90.57 -L-	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	350	630
END BENT 2	305	549

* QUANTITY SHOWN IS BASED ON 5' POURS.



SECTION ALONG C SURVEY -Y2- WHEN DITCH IS NOT PROVIDED

PROJECT NO. R-2320G
STANLY COUNTY
STATION: 77+90.57 -L-

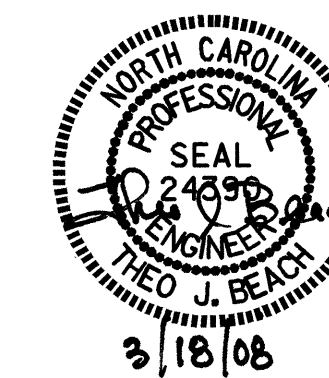
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**STANDARD
SLOPE PROTECTION
DETAILS**

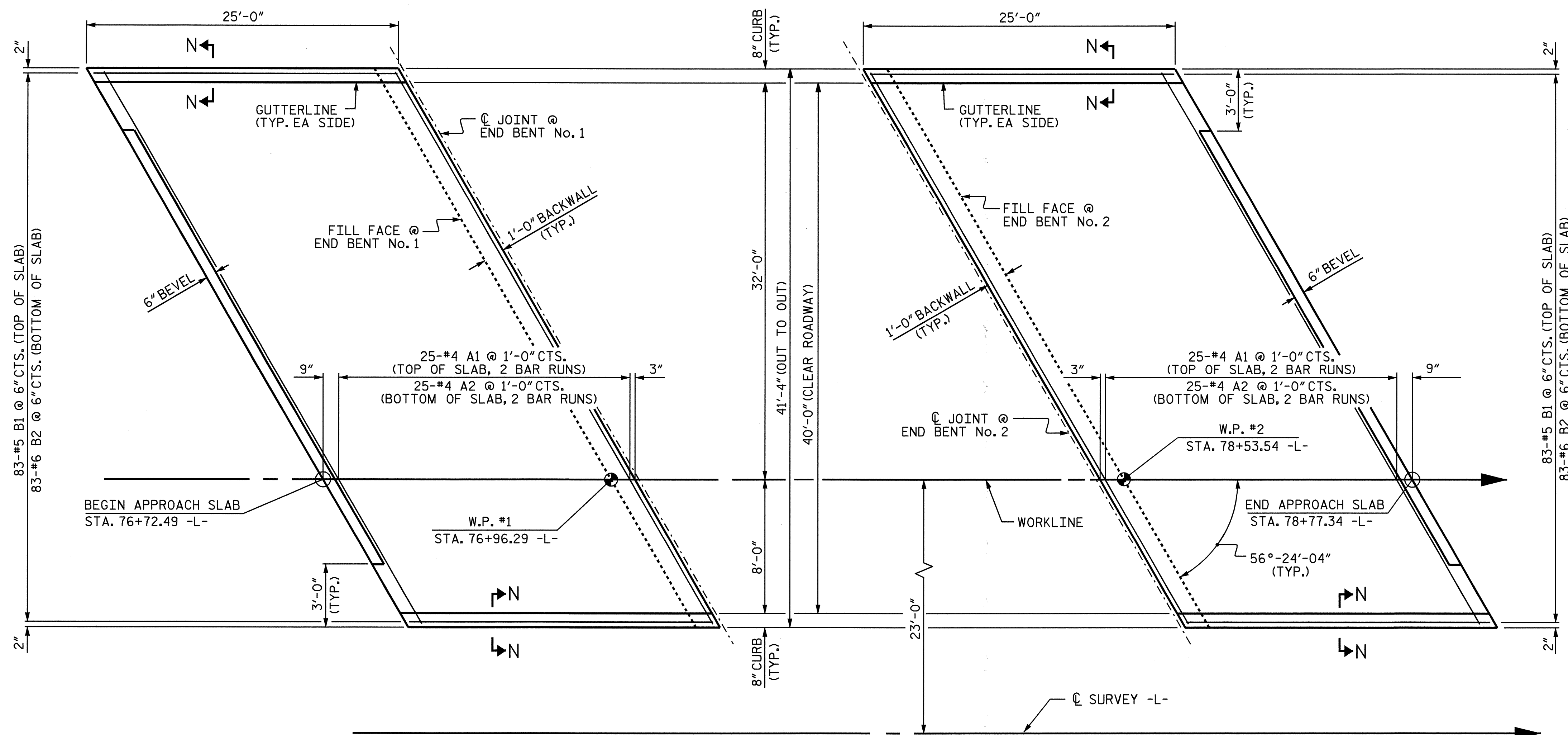
AUG. 1992

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

TOTAL SHEETS: 24



ASSEMBLED BY : P.E. LACKEY DATE : 4/05
CHECKED BY : S.B. WILLIAMS DATE : 5/05
DRAWN BY : ELR 5/92 REV. 10/17/00 LES/RDR
CHECKED BY : GRP 6/92 REV. 7/10/01 LES/RDR
REV. 5/7/03 RWW/JTE

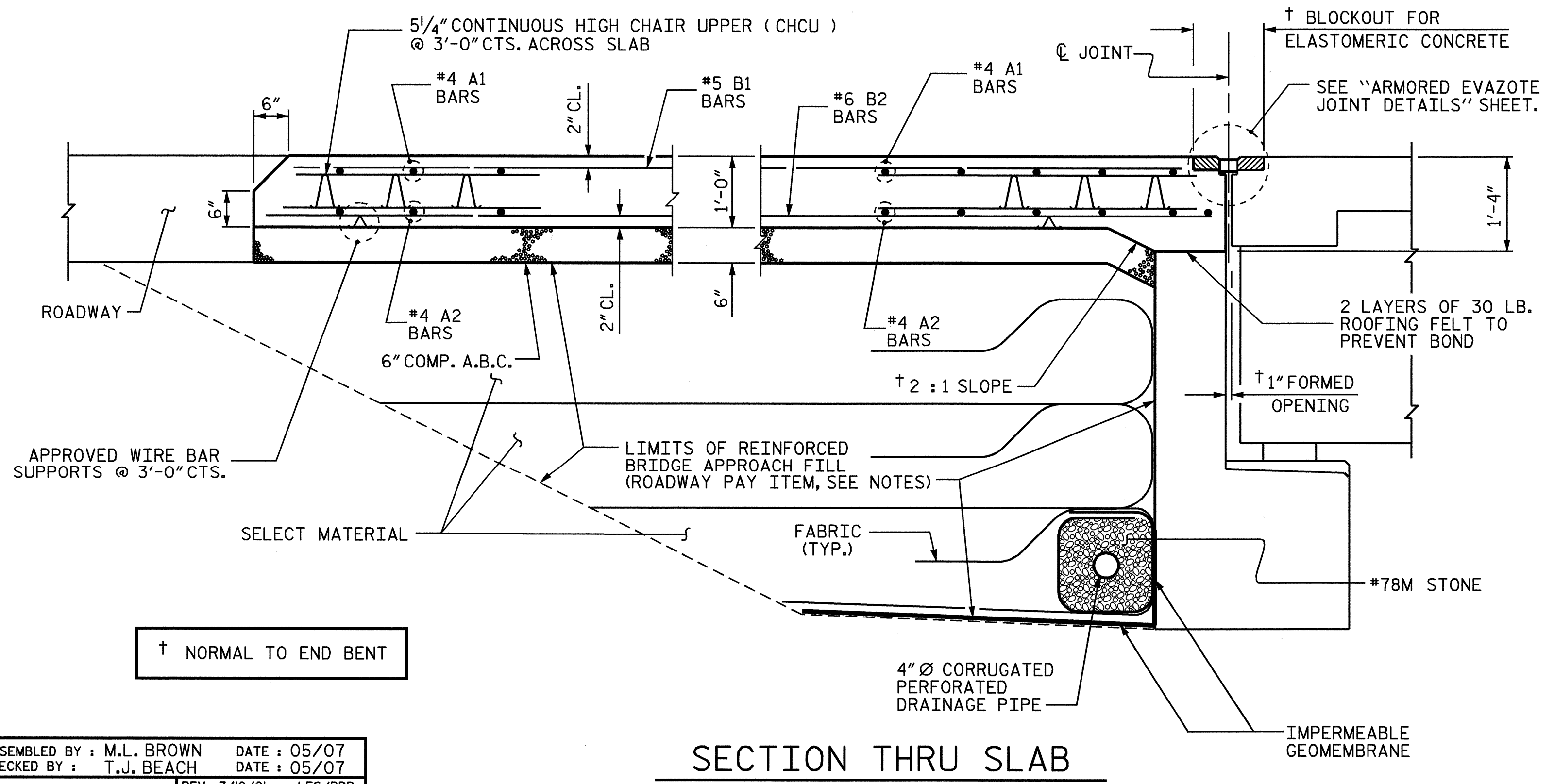


PLAN @ END BENT No. 1

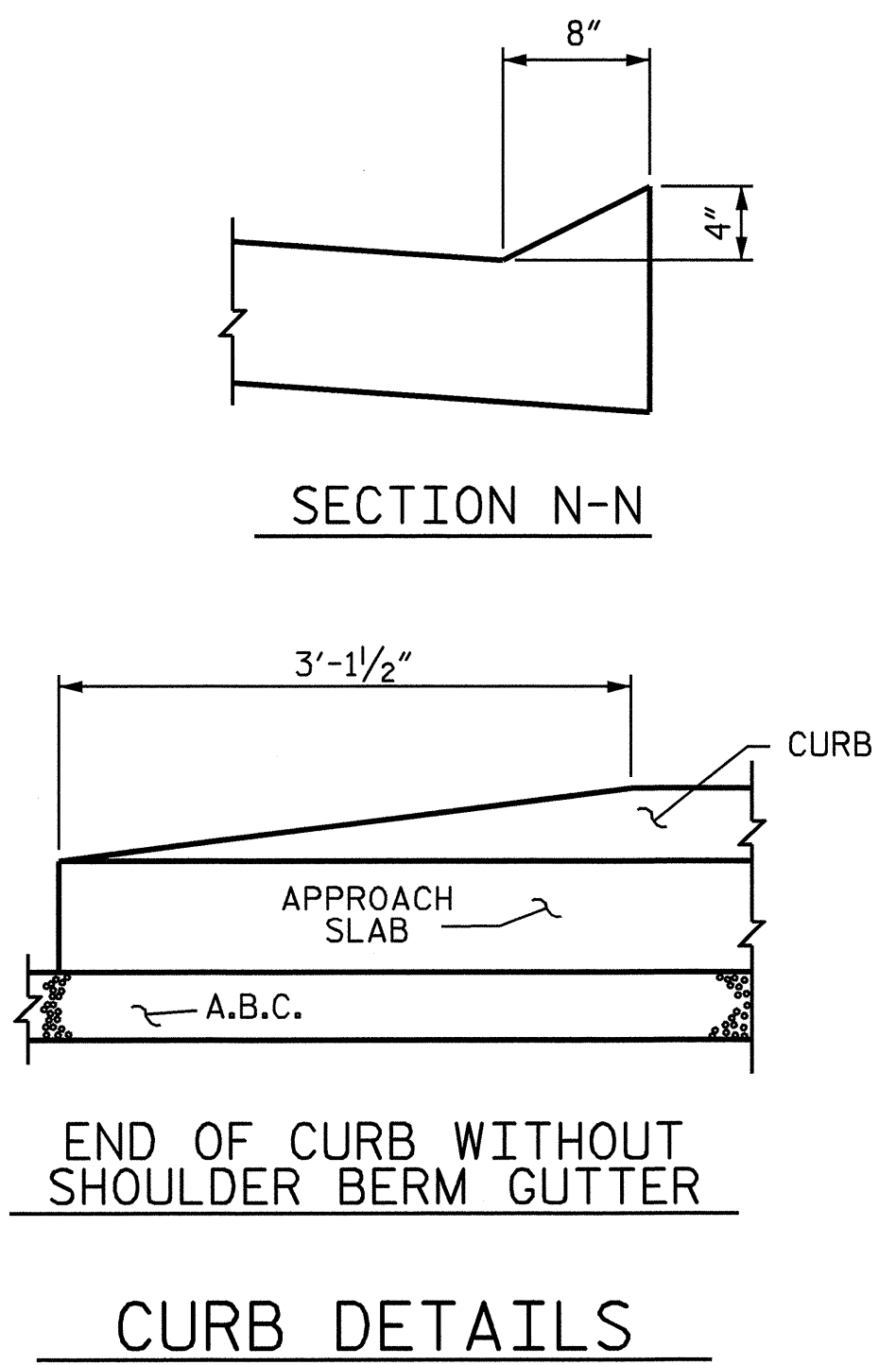
PLAN OF APPROACH SLABS

PLAN @ END BENT No. 2

BILL OF MATERIAL					
APPROACH SLAB AT EB No. 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	50	#4	STR	25'-7"	854
A2	50	#4	STR	25'-6"	852
* B1	83	#5	STR	23'-8"	2049
B2	83	#6	STR	24'-7"	3065
REINFORCING STEEL					3917 LBS.
* EPOXY COATED REINFORCING STEEL					2903 LBS.
CLASS AA CONCRETE					39.1 C. Y.
APPROACH SLAB AT EB No. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	50	#4	STR	25'-7"	854
A2	50	#4	STR	25'-6"	852
* B1	83	#5	STR	23'-8"	2049
B2	83	#6	STR	24'-7"	3065
REINFORCING STEEL					3917 LBS.
* EPOXY COATED REINFORCING STEEL					2903 LBS.
CLASS AA CONCRETE					39.1 C. Y.



SECTION THRU SLAB



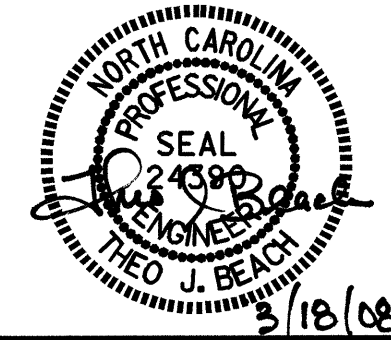
CURB DETAILS

PROJECT NO. R-2320G
 STANLY COUNTY
 STATION: 77+90.57 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-23
					TOTAL SHEETS 24

ASSEMBLED BY : M.L. BROWN DATE : 05/07
 CHECKED BY : T.J. BEACH DATE : 05/07
 DRAWN BY : EEM 3/95 REV. 7/10/01 LES/RDR
 CHECKED BY : VAP 3/95 REV. 5/7/03R RWW/JTE
 REV. 5/1/06 TLA/GM



NOTES

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

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

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

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

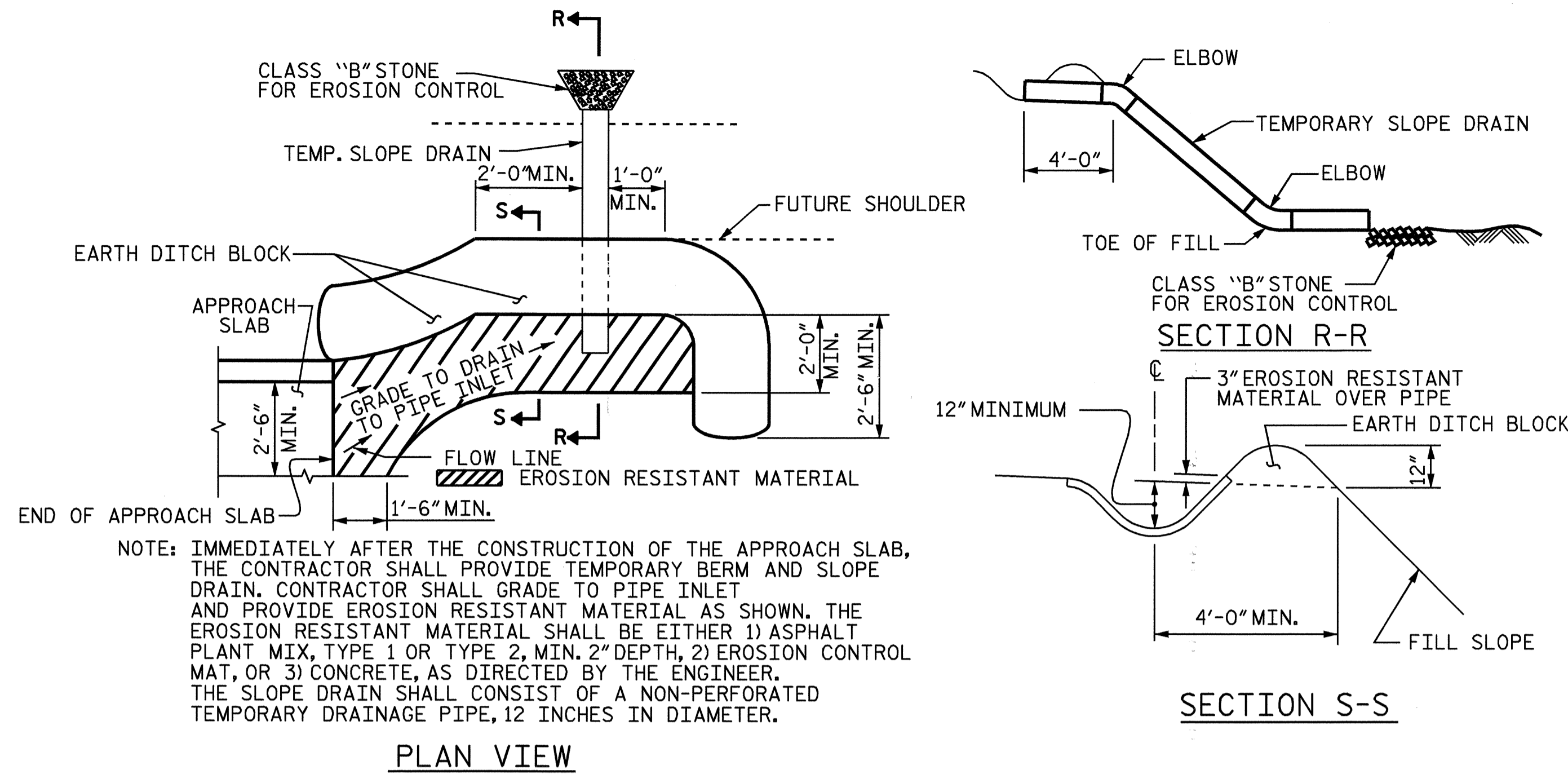
THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

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 EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

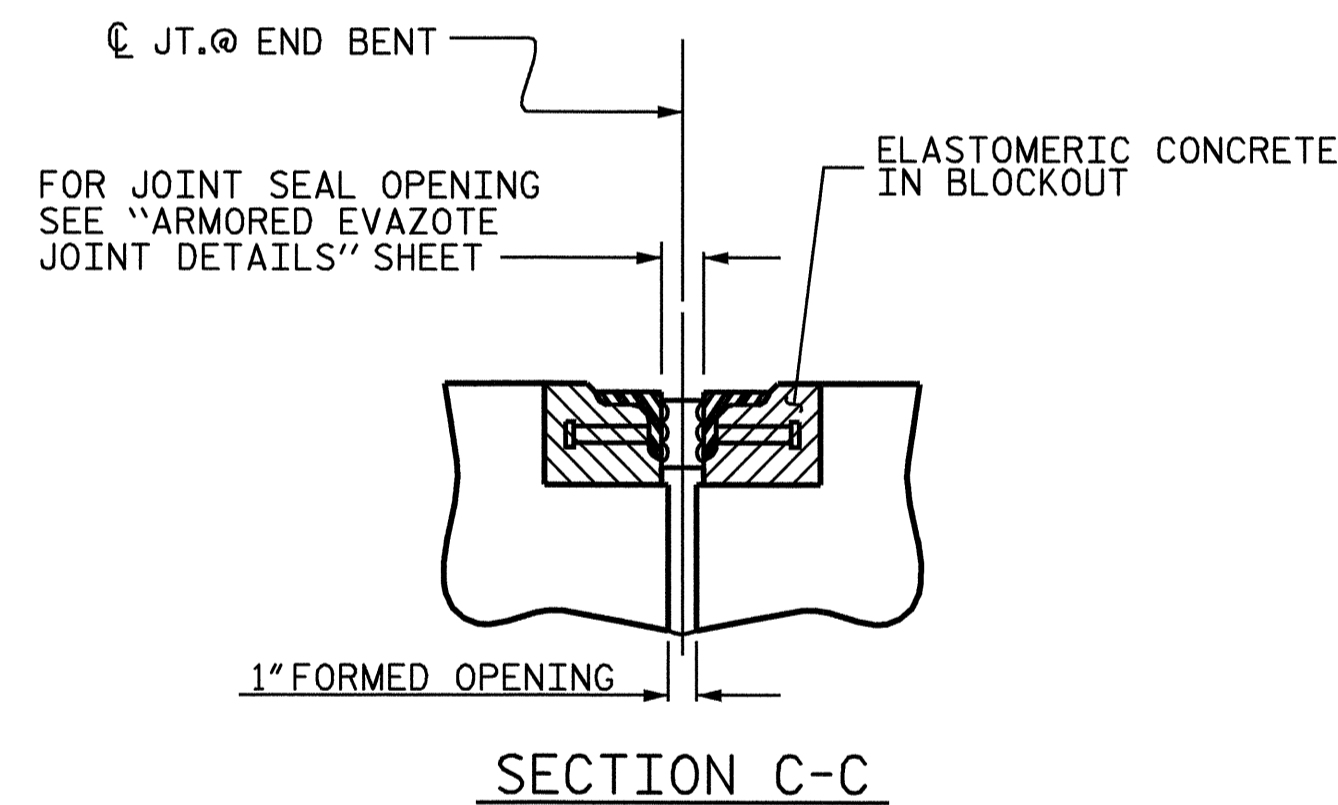
THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2 1/2".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

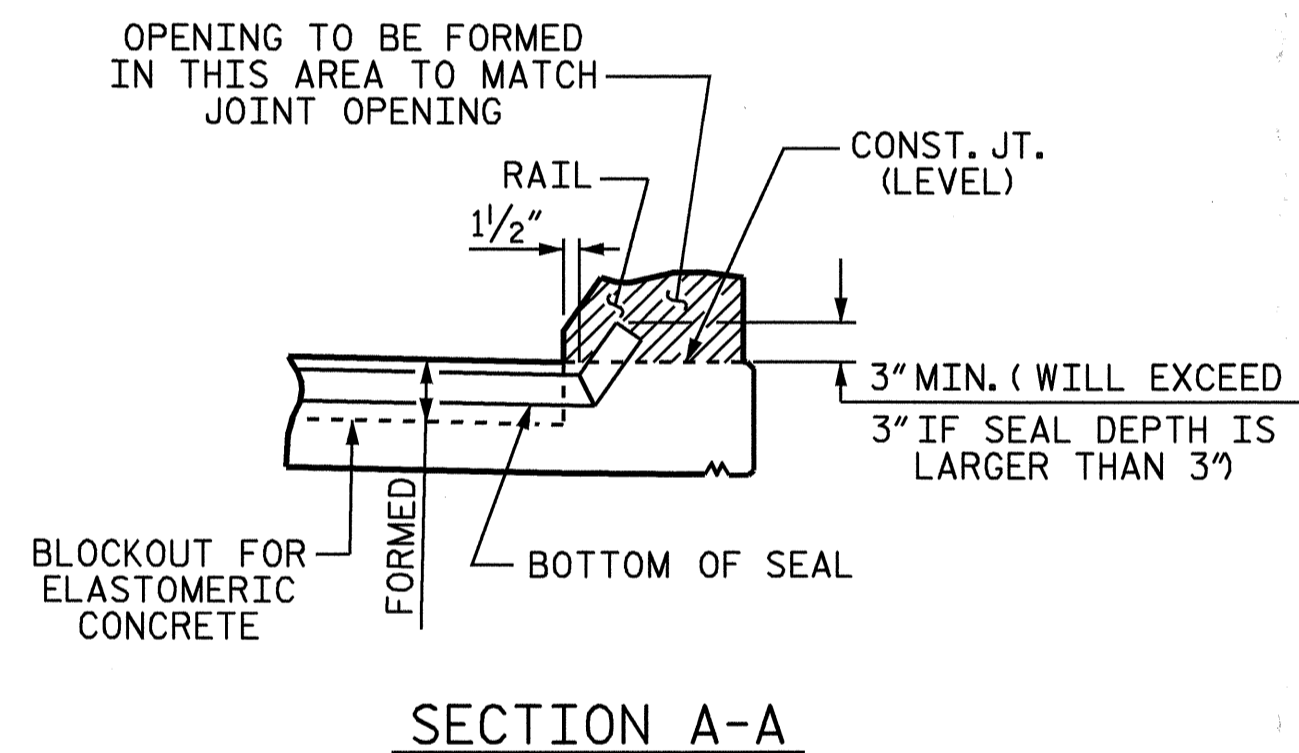


TEMPORARY BERM AND SLOPE DRAIN DETAILS

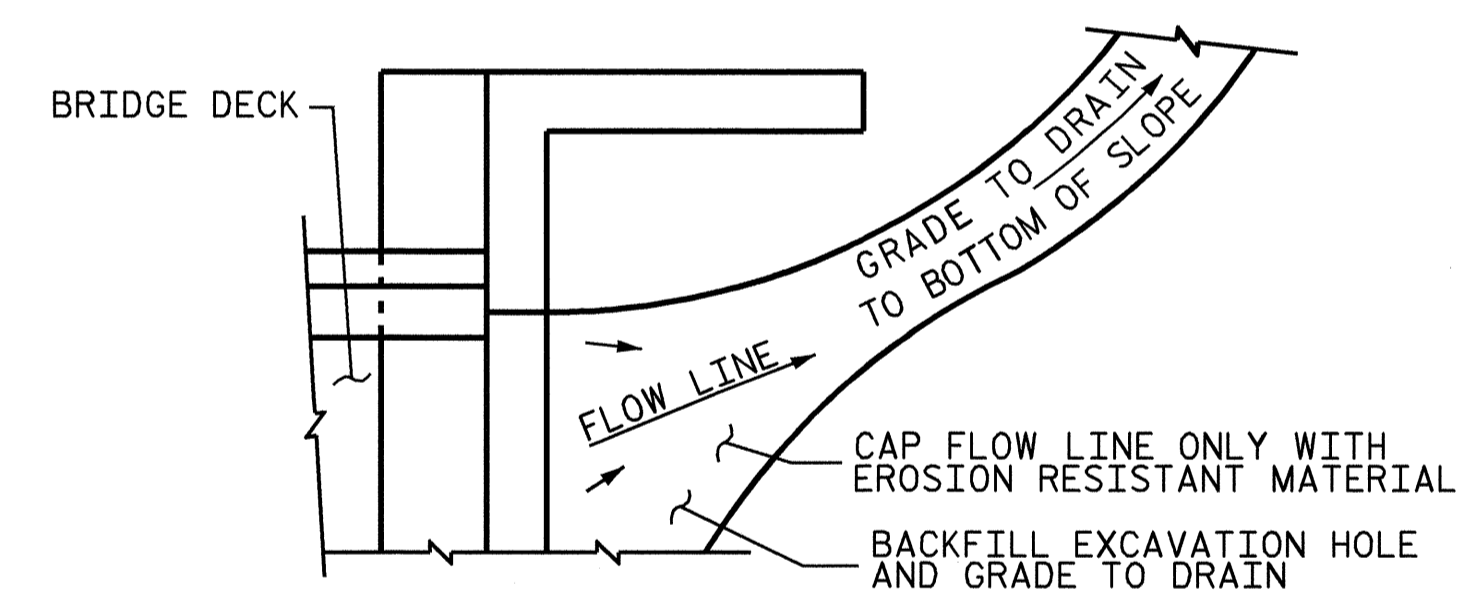
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION C-C

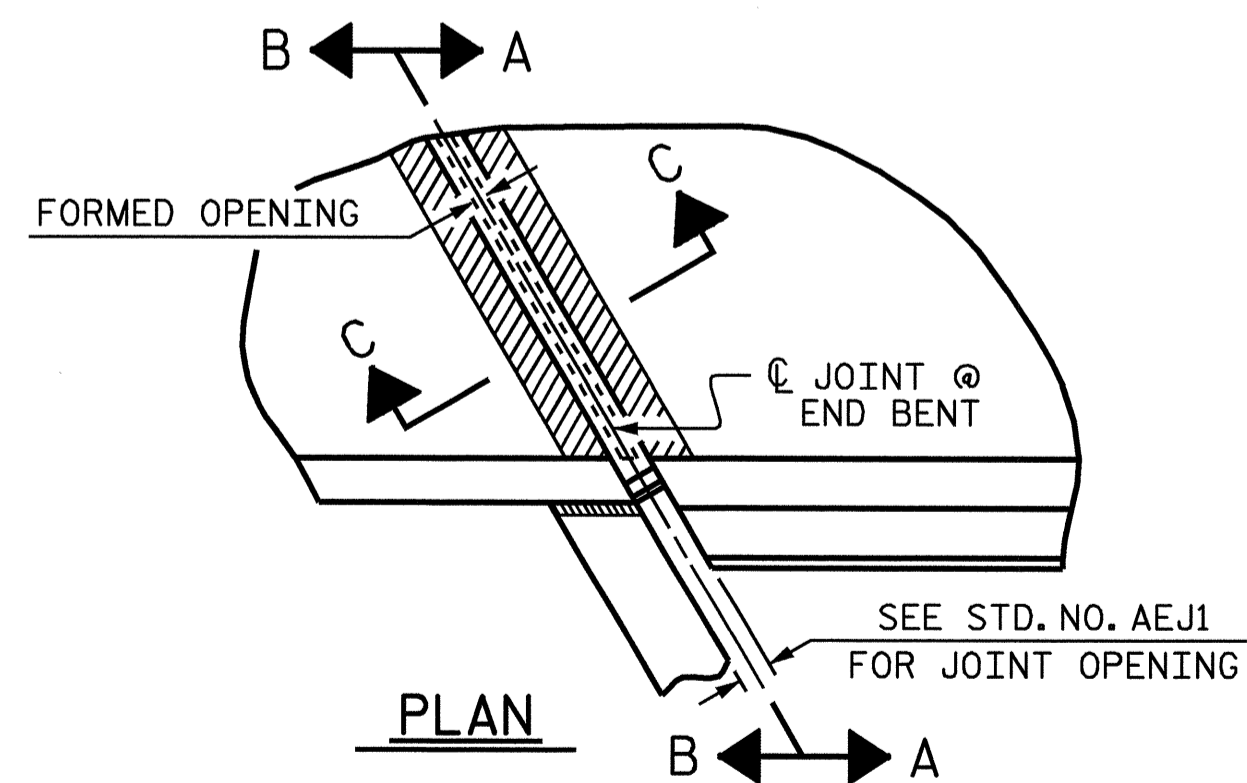


SECTION A-A

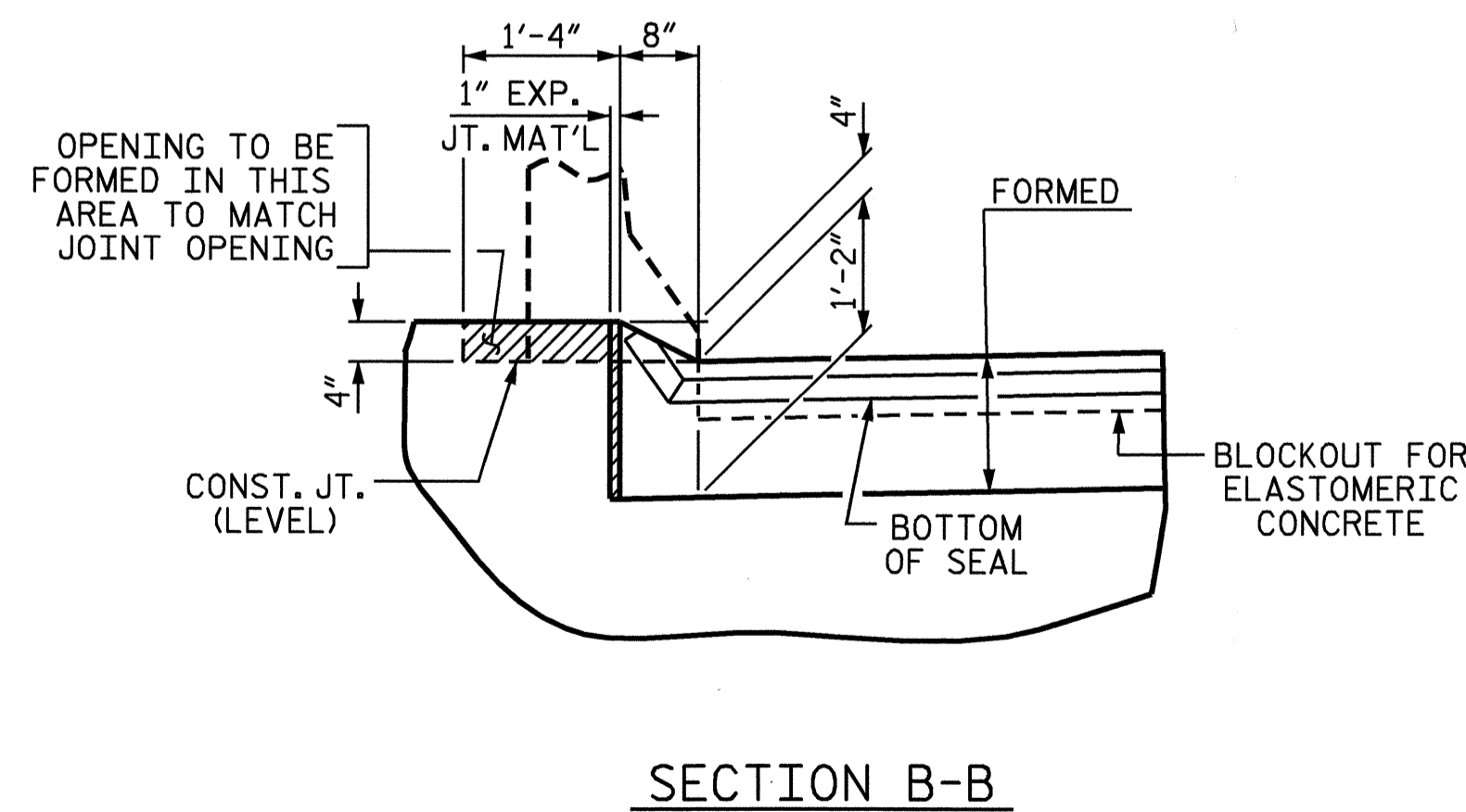


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL



PLAN



SECTION B-B

JOINT SEAL DETAILS @ END BENT

(ARMORED EVAZOTE JOINT SEAL)

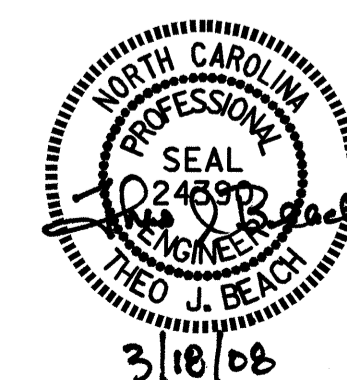
PROJECT NO. R-2320G
STANLY COUNTY
 STATION: 77+90.57 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD

BRIDGE APPROACH
 SLAB DETAILS



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

REVISIONS						1988
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-24
2			4			TOTAL SHEETS 24

BENCHMARK: BM #12 SPIKE IN BASE OF 32" OAK 106' LT OF -Y4- STA. 16+28.22 EL. 534.48 NGVD 29

HYDROGRAPHIC DATA

DESIGN DISCHARGE	550 CFS
FREQUENCY OF DESIGN FLOOD	25 YRS.
DESIGN HIGH WATER ELEVATION	482.8
DRAINAGE AREA	391.3 ACRES
BASIC DISCHARGE (Q100)	750 CFS
BASIC HIGH WATER ELEVATION	484.1

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	1850 CFS
FREQUENCY OF OVERTOPPING FLOOD	500+ YR.
OVERTOPPING FLOOD ELEVATION	492.9

GRADE DATA

GRADE POINT ELEVATION @ STA. 9+10.00 -Y4-	494.33
BED ELEVATION @ STA. 9+10.00 -Y4-	474.55
ROADWAY SLOPES	2:1

REINFORCING STEEL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A100	185	5	STR	10'-11"	2106
A200	169	6	STR	10'-11"	2771
A1	272	5	6	4'-9"	1348
A2	272	5	6	4'-8"	1324
B1	290	4	STR	10'-5"	2018
B2	272	5	STR	8'-4"	2364
C1	96	4	STR	29'-6"	1892
C2	48	4	STR	27'-6"	882
D1	18	6	STR	3'-0"	81
G1	4	4	STR	11'-0"	29

REINFORCING STEEL LBS. 14,815

SPLICE LENGTH CHART

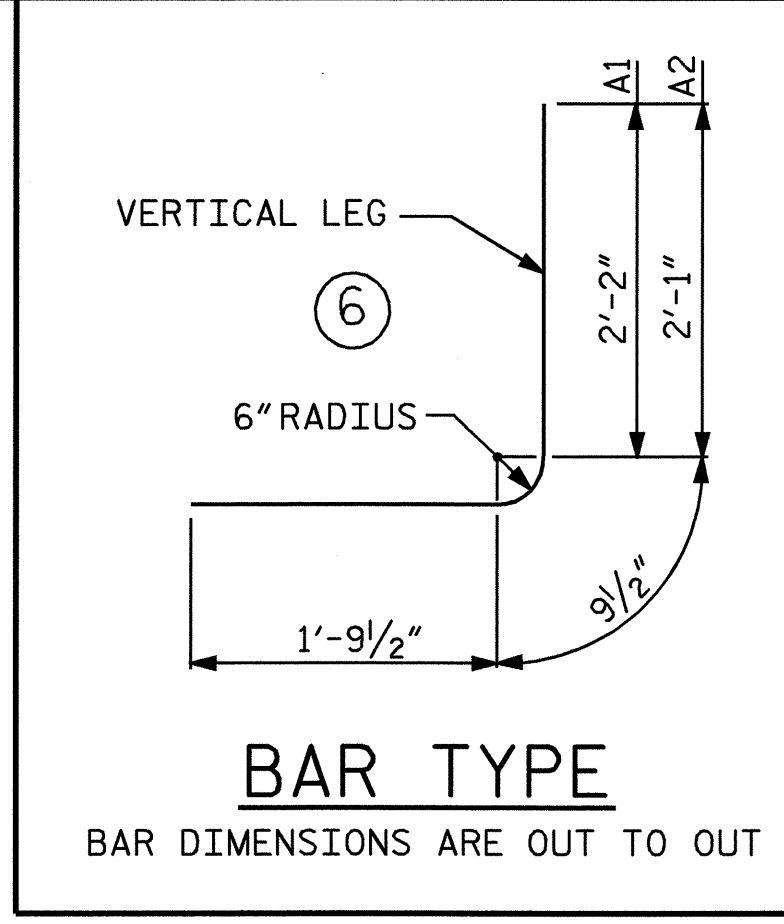
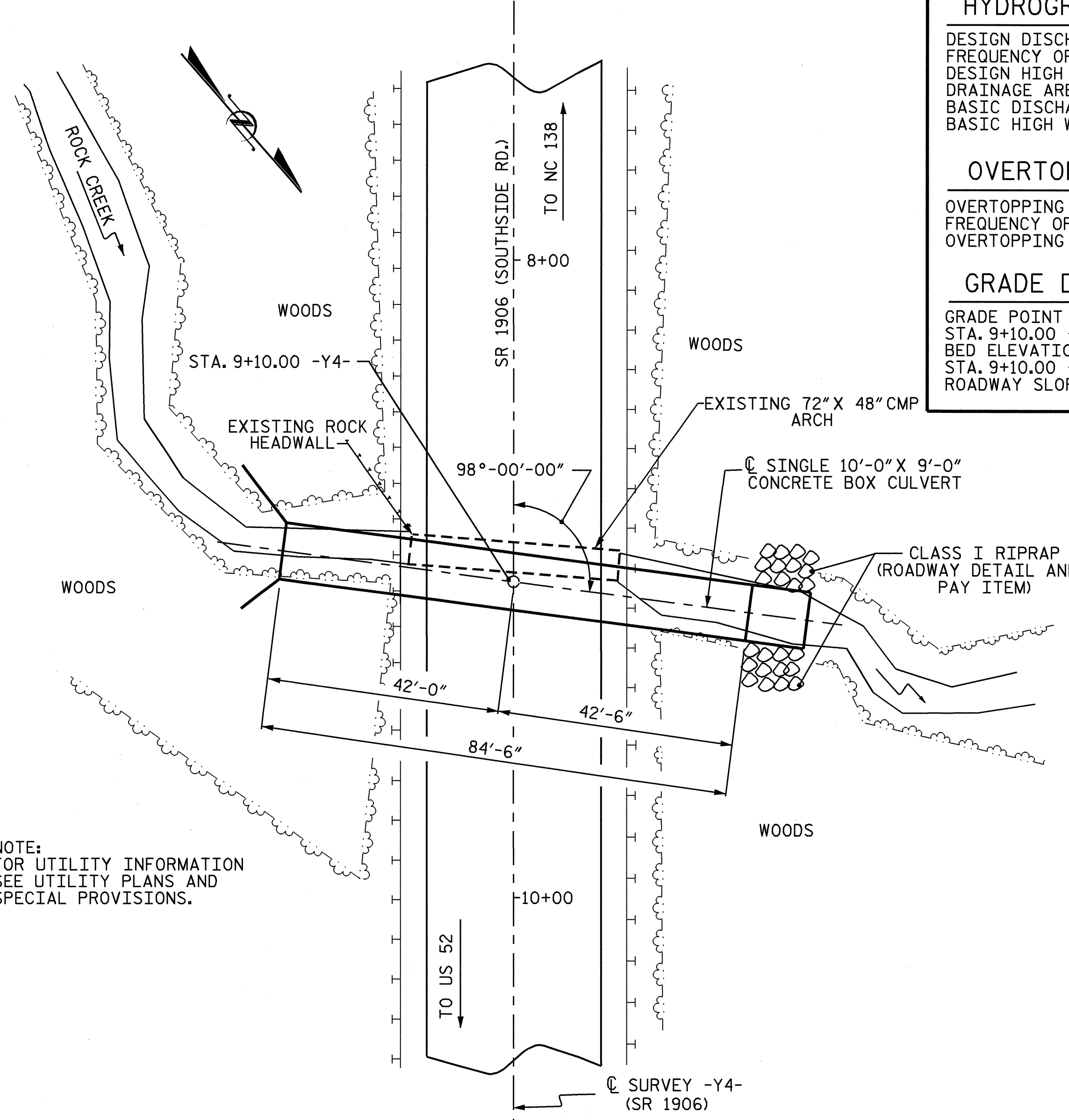
BAR	SIZE	SPLICE LENGTH
B1	#4	1'-9"
C1, C2	#4	1'-11"

TOTAL STRUCTURE QUANTITIES

CLASS A CONCRETE	
BARREL @ 1.271 CY/FT	107.4 C.Y.
INLET WINGS ETC.	14.1 C.Y.
OUTLET WINGS ETC.	14.4 C.Y.
TOTAL	135.9 C.Y.
REINFORCING STEEL	
BARREL	14,815 LBS.
INLET WINGS ETC.	902 LBS.
OUTLET WINGS ETC.	1,858 LBS.
TOTAL	17,575 LBS.
CULVERT EXCAVATION	LUMP SUM
FOUNDATION CONDITIONING MAT'L	83 TONS
REMOVAL OF EXISTING STRUCTURE	LUMP SUM

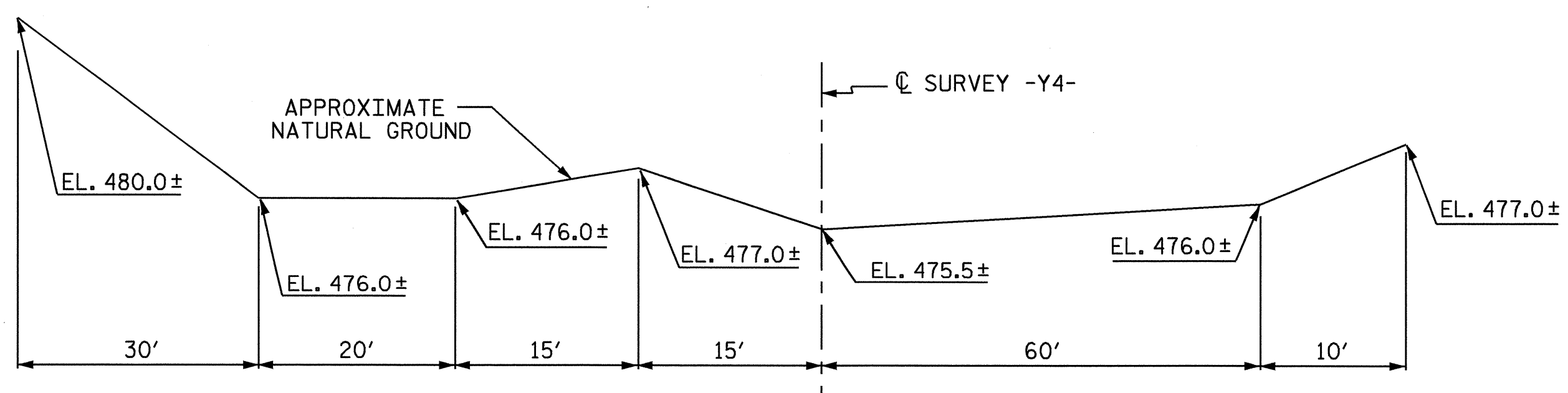
NOTES

- ASSUMED LIVE LOAD -----HS20-44 OR ALTERNATE LOADING.
- DESIGN FILL----- 9.92'
- FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.
- 3" Ø WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.
- CONCRETE IN CULVERTS TO BE POURED IN THE FOLLOWING ORDER:
 1. WING FOOTINGS, APRON, AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.
 2. THE REMAINING PORTIONS OF THE WALLS AND WINGS FULL HEIGHT FOLLOWED BY ROOF SLAB AND HEADWALLS.
- THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.
- DIMENSIONS FOR WING LAYOUT AS WELL AS ADDITIONAL REINFORCING STEEL EMBEDDED IN BARREL ARE SHOWN ON WING SHEETS.
- TRANSVERSE CONSTRUCTION JOINTS SHALL BE USED IN THE BARREL, SPACED TO LIMIT THE POURS TO A MAXIMUM OF 70 FT. LOCATION OF JOINTS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER.
- AT THE CONTRACTOR'S OPTION, HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF EXTERIOR WALL ABOVE LOWER WALL CONSTRUCTION JOINT. THE SPLICE LENGTH SHALL BE AS PROVIDED IN THE SPLICE LENGTH CHART SHOWN ON THE PLANS. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.
- AT THE CONTRACTOR'S OPTION HE MAY SUBMIT, TO THE ENGINEER FOR APPROVAL, DESIGN AND DETAIL DRAWINGS FOR A PRECAST REINFORCED CONCRETE BOX CULVERT IN LIEU OF THE CAST-IN-PLACE CULVERT SHOWN ON THE PLANS. THE DESIGN SHALL PROVIDE THE SAME SIZE AND NUMBER OF BARRELS AS USED ON THE CAST-IN-PLACE DESIGN. FOR OPTIONAL PRECAST REINFORCED CONCRETE BOX CULVERT, SEE SPECIAL PROVISIONS.
- THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS.
- FOR CULVERT DIVERSION DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- AT THE CONTRACTOR'S OPTION THE VERTICAL CONSTRUCTION JOINT BETWEEN THE OUTLET WINGS AND THE BARREL MAY BE ELIMINATED AND THE "C" BARS IN THE BARREL MAY BE EXTENDED TO REPLACE THE "D" AND "H" BARS IN THE WINGS AND SLAB.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- A 3 FOOT STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT.
- THE EXISTING 72" X 48" CORRUGATED METAL PIPE ARCH AND ROCK HEADWALL LOCATED AT THE SITE OF THE PROPOSED STRUCTURE SHALL BE REMOVED.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS.
- EXISTING BED MATERIAL WILL BE STOCKPILED ON SITE AND REUSED AS BACKFILL MATERIAL INSIDE THE CULVERT TO BURY THE BOTTOM OF THE CULVERT THE REQUIRED 1'-0".

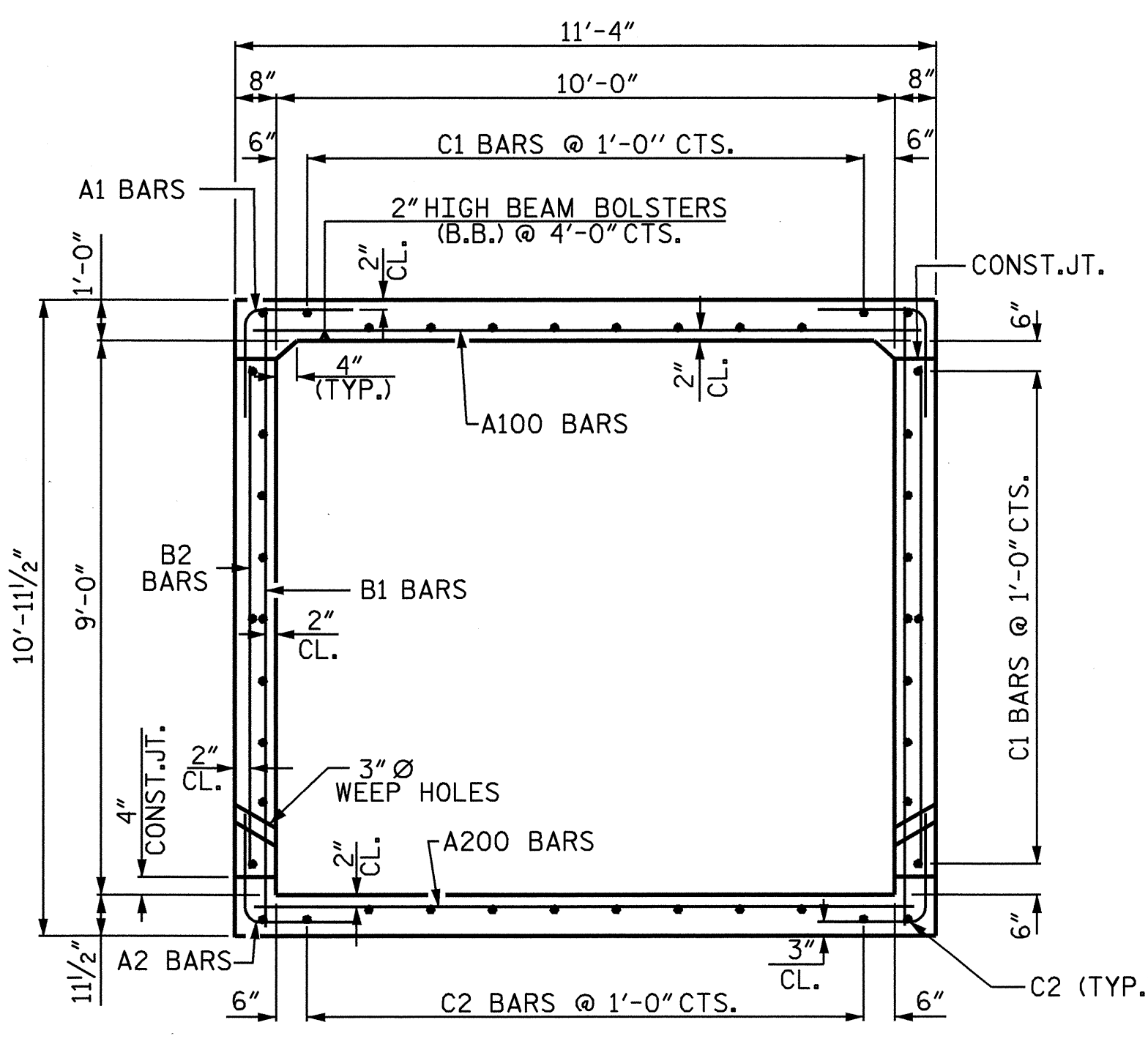


NOTE:
FOR UTILITY INFORMATION
SEE UTILITY PLANS AND
SPECIAL PROVISIONS.

LOCATION SKETCH



PROFILE ALONG CULVERT
(LOOKING DOWNSTATION ON -Y4-)



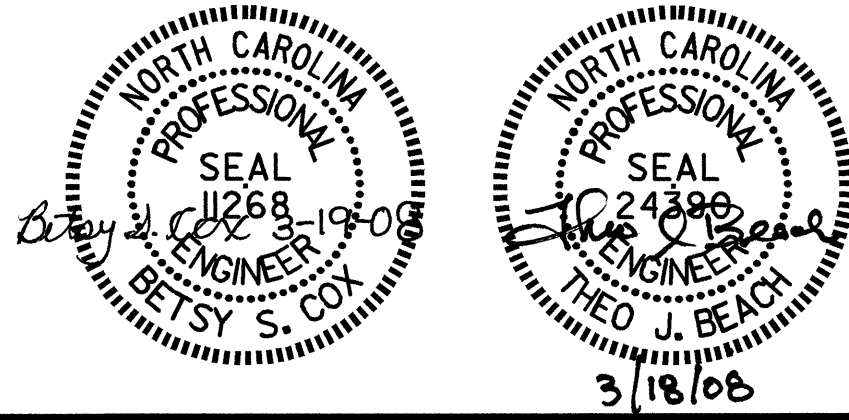
RIGHT ANGLE SECTION OF BARREL
THERE ARE 44 "C" BARS IN SECTION OF BARREL

PROJECT NO. R-2320G
STANLY COUNTY
STATION: 9+10.00 -Y4-
SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
**SINGLE 10 FT. X 9 FT.
CONCRETE BOX CULVERT
98° SKEW**

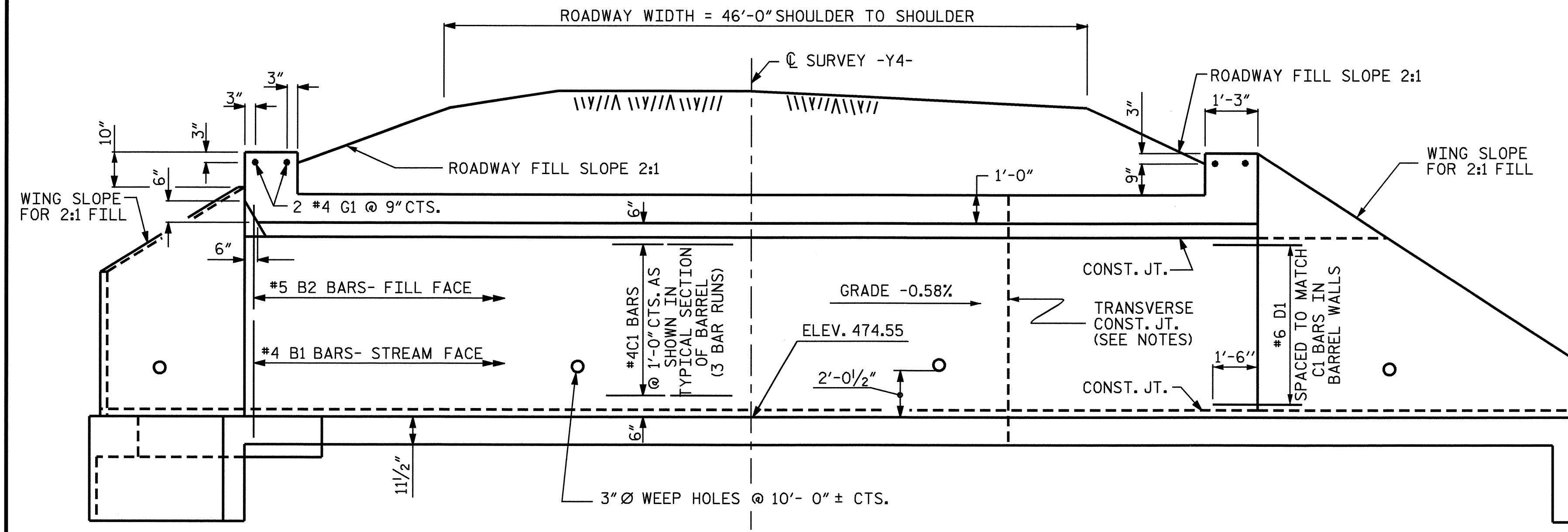
AUGUST 1989		REVISIONS		SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 8

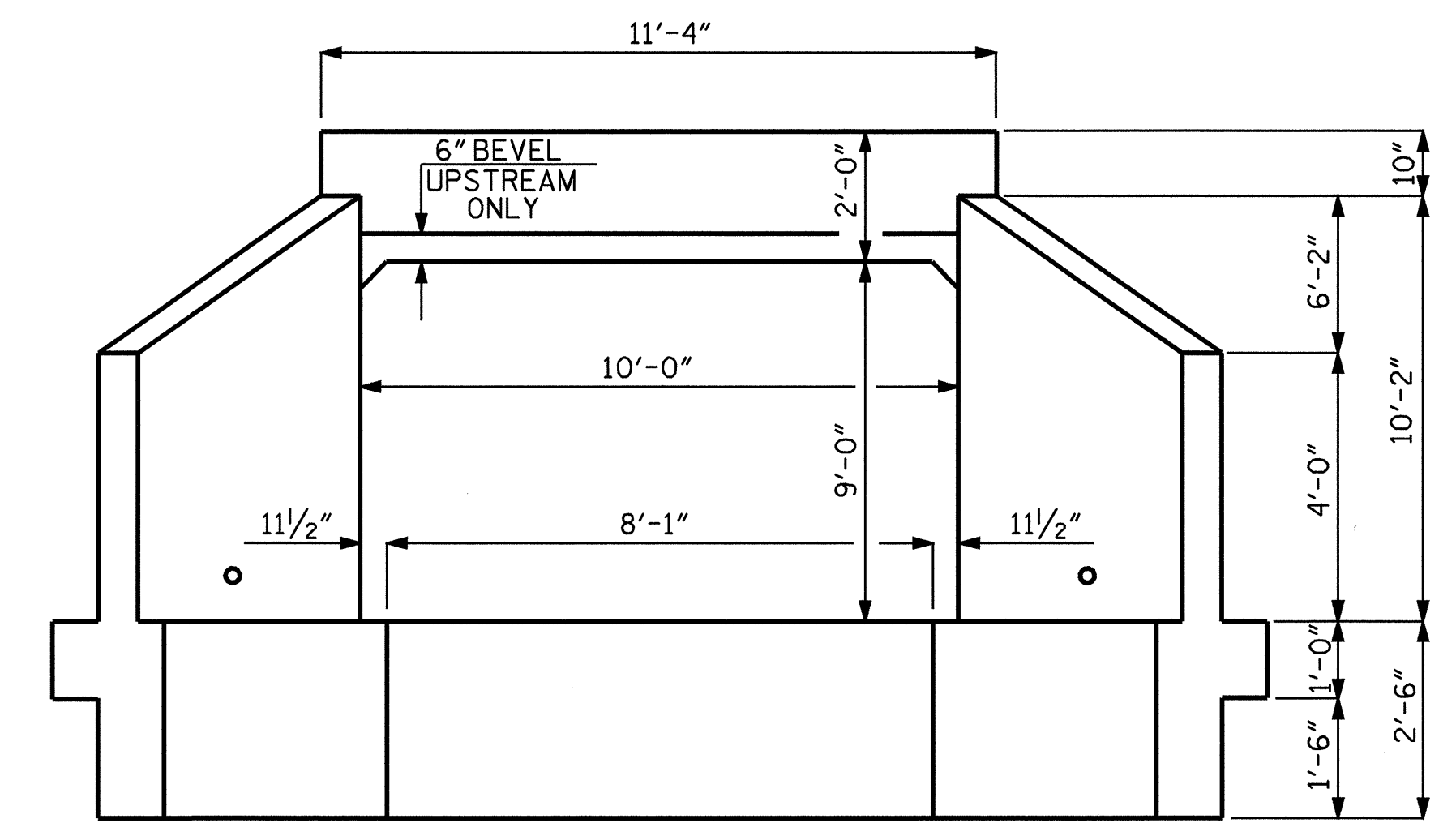


REVISED 11-13-91 BY E.L.R. CHECKED BY G.R.P.
ADDED 8-22-89

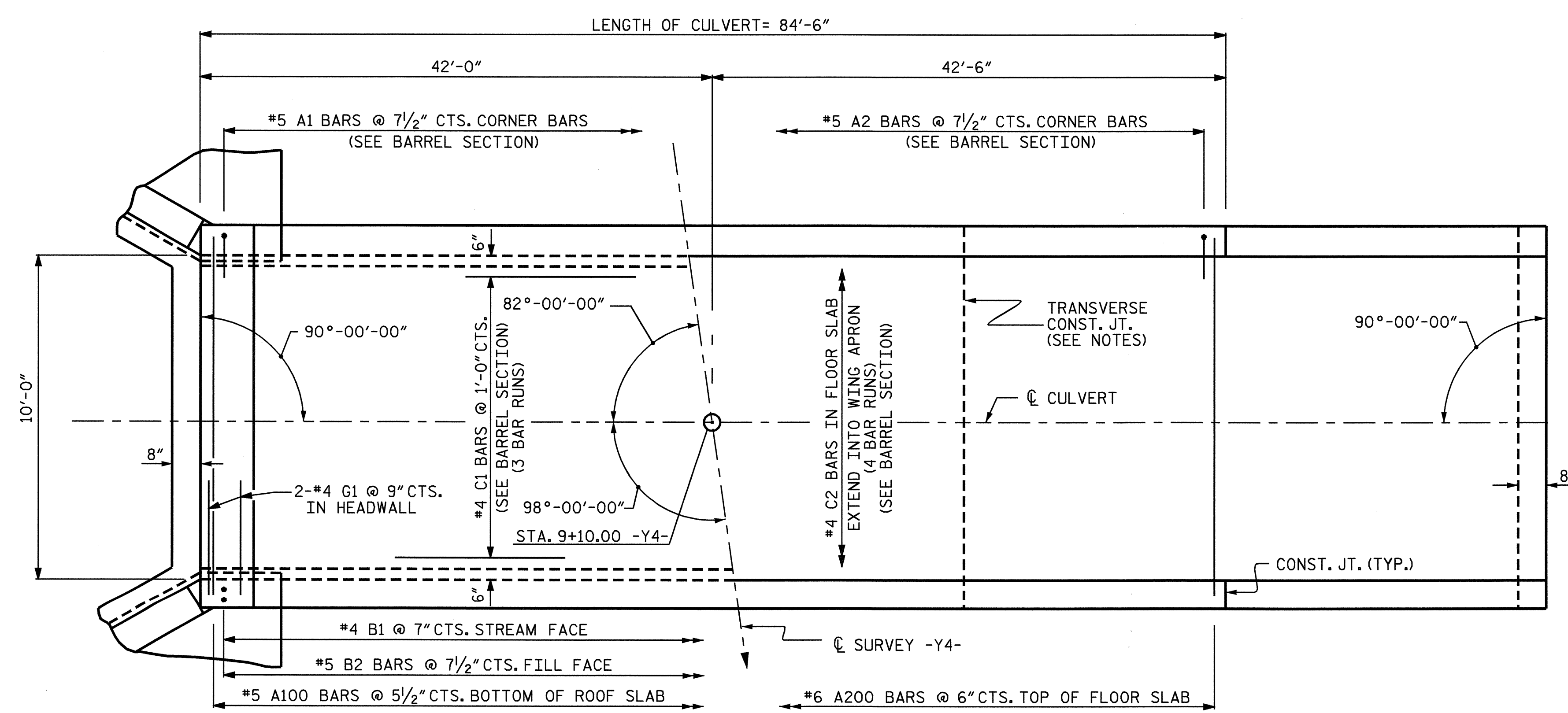
ASSEMBLED BY: P.E. LACKEY	DATE: 8/04	SPECIAL
CHECKED BY: S.B. WILLIAMS	DATE: 8/9/04	
DRAWN BY: R. WRIGHT	DATE: AUG. 1989	STANDARD
CHECKED BY: C.R.K.	DATE: AUG. 1989	



CULVERT SECTION NORMAL TO ROADWAY
 (LOOKING DOWNSTATION ON -Y4-)

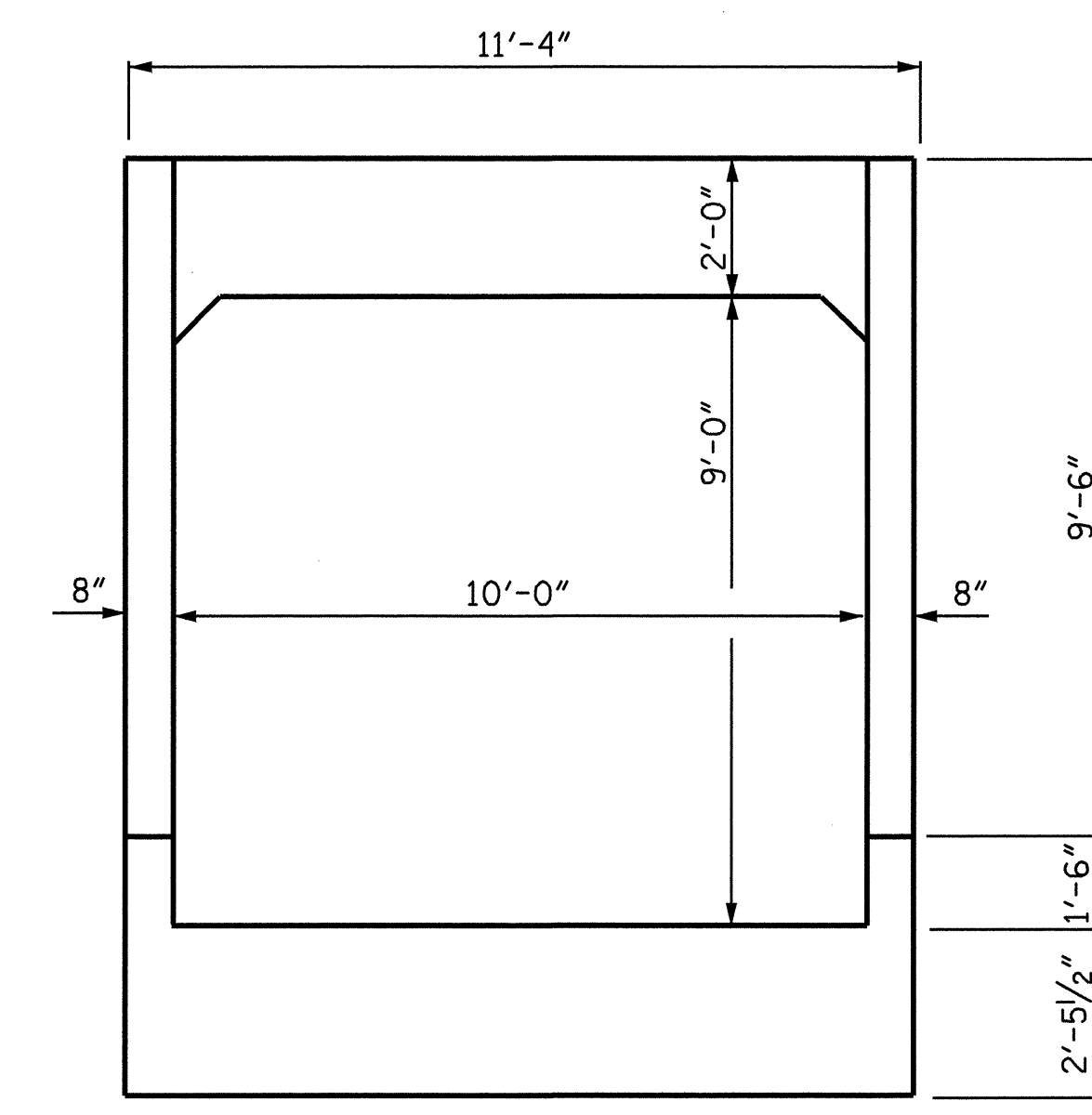


INLET END ELEVATION



PART PLAN ROOF SLAB

PART PLAN FLOOR SLAB



OUTLET END ELEVATION

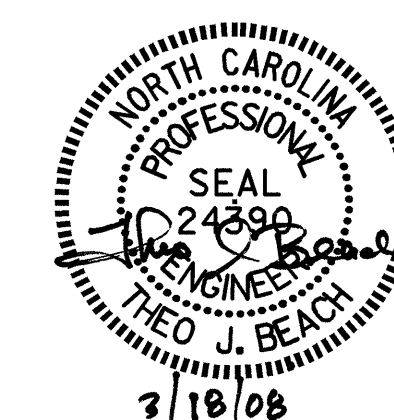
PROJECT NO. R-2320G
STANLY COUNTY
 STATION: 9+10.00 -Y4-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SINGLE 10FT. X 9FT.
 CONCRETE BOX CULVERT
 98° SKEW**

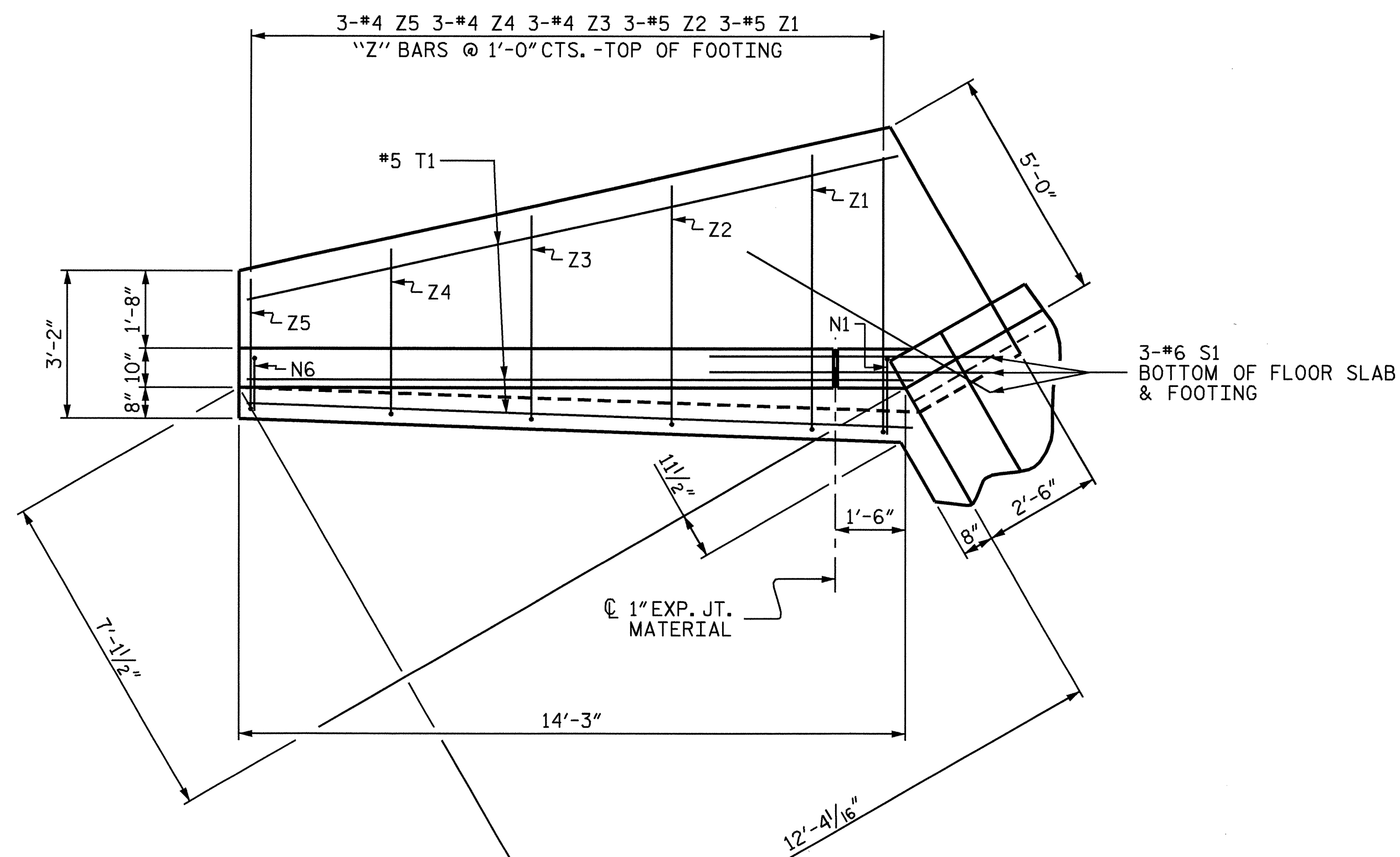
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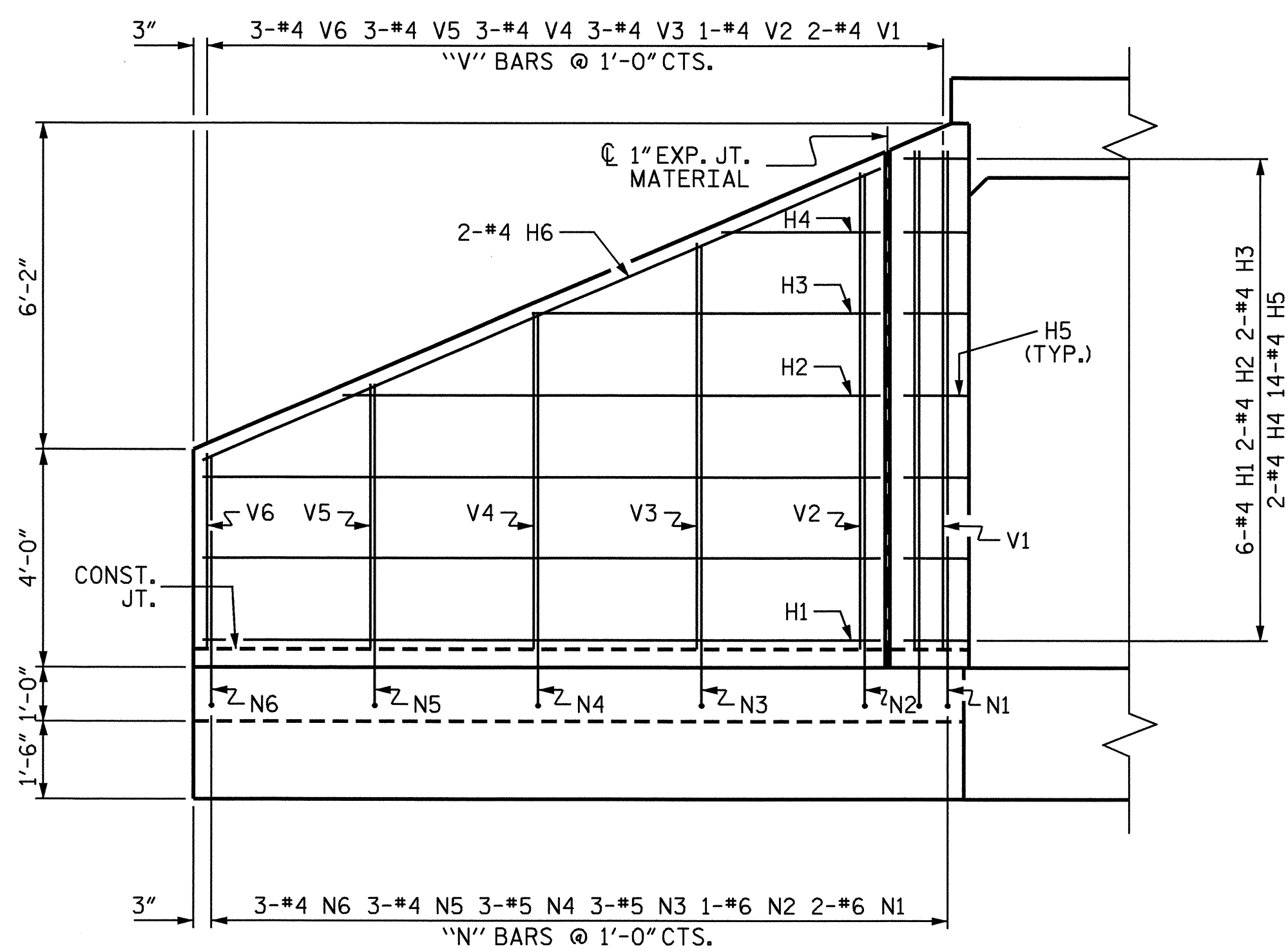
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-2
1			3			TOTAL SHEETS
2			4			8

REVISED 8-28-92 BY E.L.R. CHECKED BY G.R.F.
 REVISED 8-22-89 BY A.R.B. CHECKED BY C.R.K.
 REDRAWN 8-22-1989
 REVISED 11-9-99 BY M.M. CHECKED BY R.W.W.

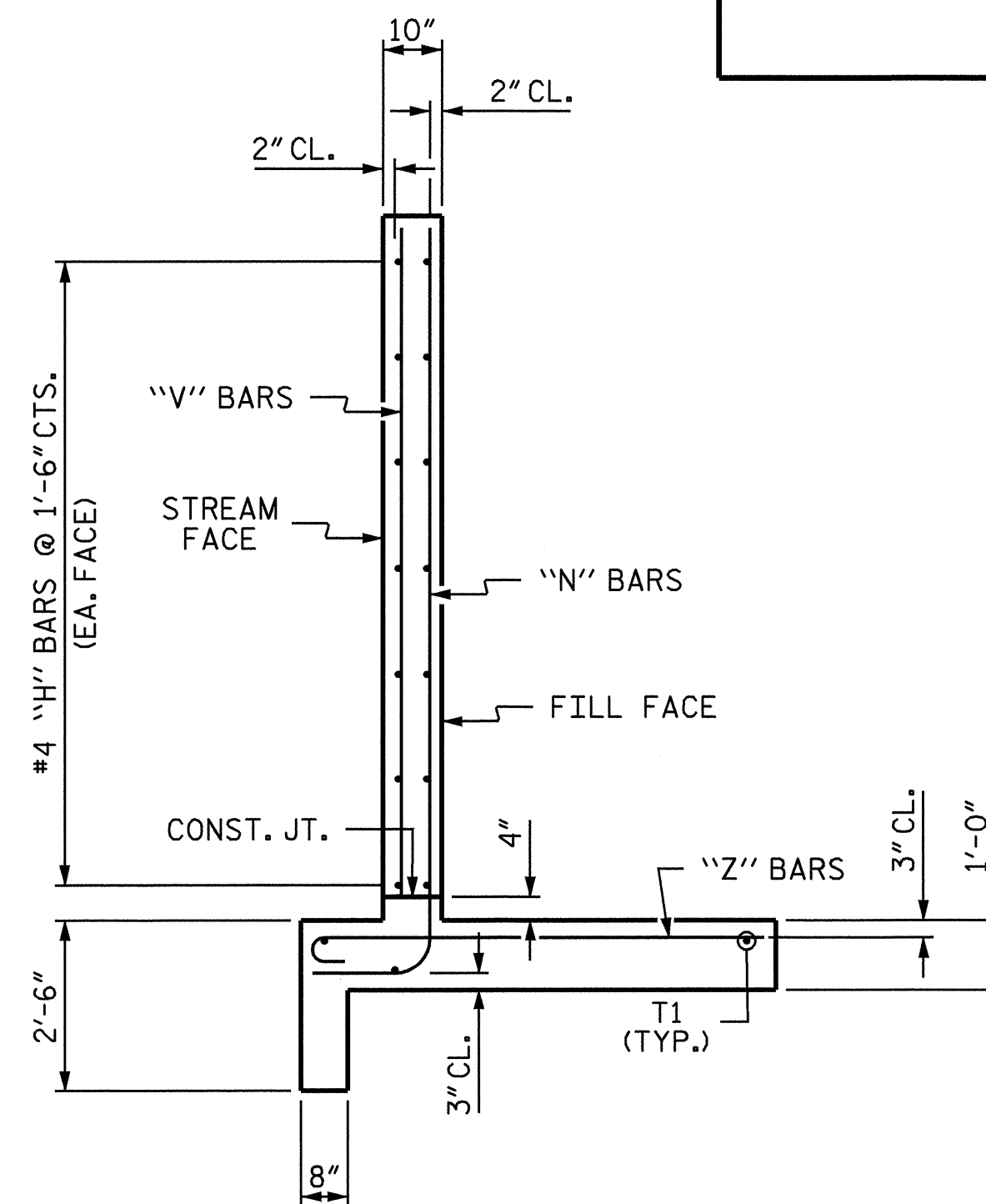
ASSEMBLED BY: P.E. LACKEY DATE: 8/04
 CHECKED BY: S.B. WILLIAMS DATE: 8/9/04



PLAN



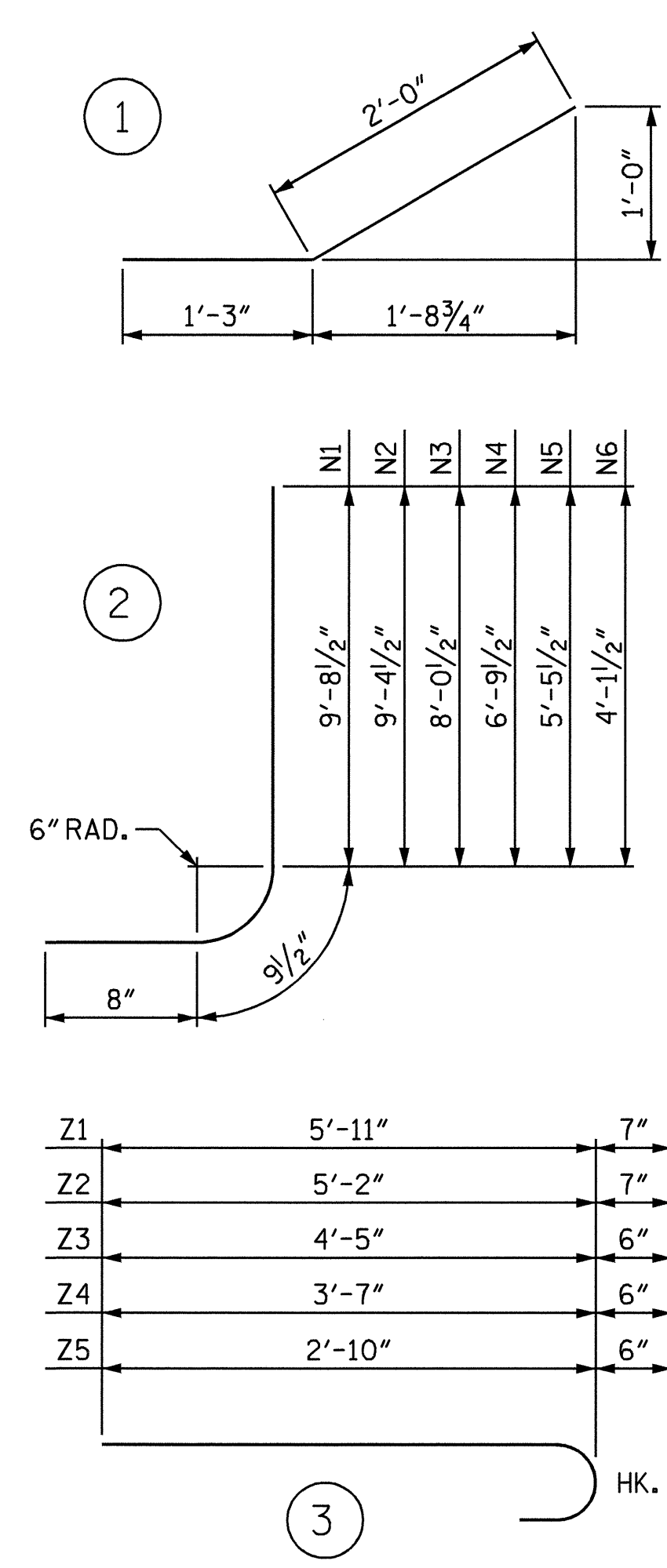
ELEVATION



TYPICAL WING SECTION

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.



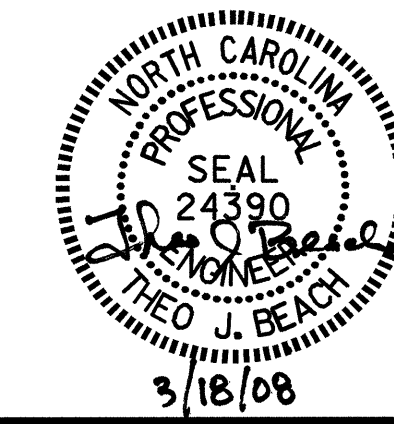
BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	12	#4	STR	12'-5"	100
H2	4	#4	STR	9'-10"	26
H3	4	#4	STR	6'-5"	17
H4	4	#4	STR	2'-11"	8
H5	28	#4	1	3'-3"	61
H6	4	#4	STR	13'-6"	36
N1	4	#6	2	11'-2"	67
N2	2	#6	2	10'-10"	33
N3	6	#5	2	9'-6"	59
N4	6	#5	2	8'-3"	52
N5	6	#4	2	6'-11"	28
N6	6	#4	2	5'-7"	22
S1	6	#6	STR	6'-0"	54
T1	6	#5	STR	14'-3"	89
V1	4	#4	STR	9'-2"	24
V2	2	#4	STR	8'-9"	12
V3	6	#4	STR	7'-5"	30
V4	6	#4	STR	6'-2"	25
V5	6	#4	STR	4'-10"	19
V6	6	#4	STR	3'-7"	14
Z1	6	#5	3	6'-6"	41
Z2	6	#5	3	5'-9"	36
Z3	6	#4	3	4'-11"	20
Z4	6	#4	3	4'-1"	16
Z5	6	#4	3	3'-4"	13

REINFORCING STEEL FOR 2 WINGS 902 LBS

CLASS A CONCRETE
 2 WINGS 13.1 CY
 1 HEADWALL 0.5 CY
 1 END CURTAIN WALL 0.5 CY
 TOTAL 14.1 CY

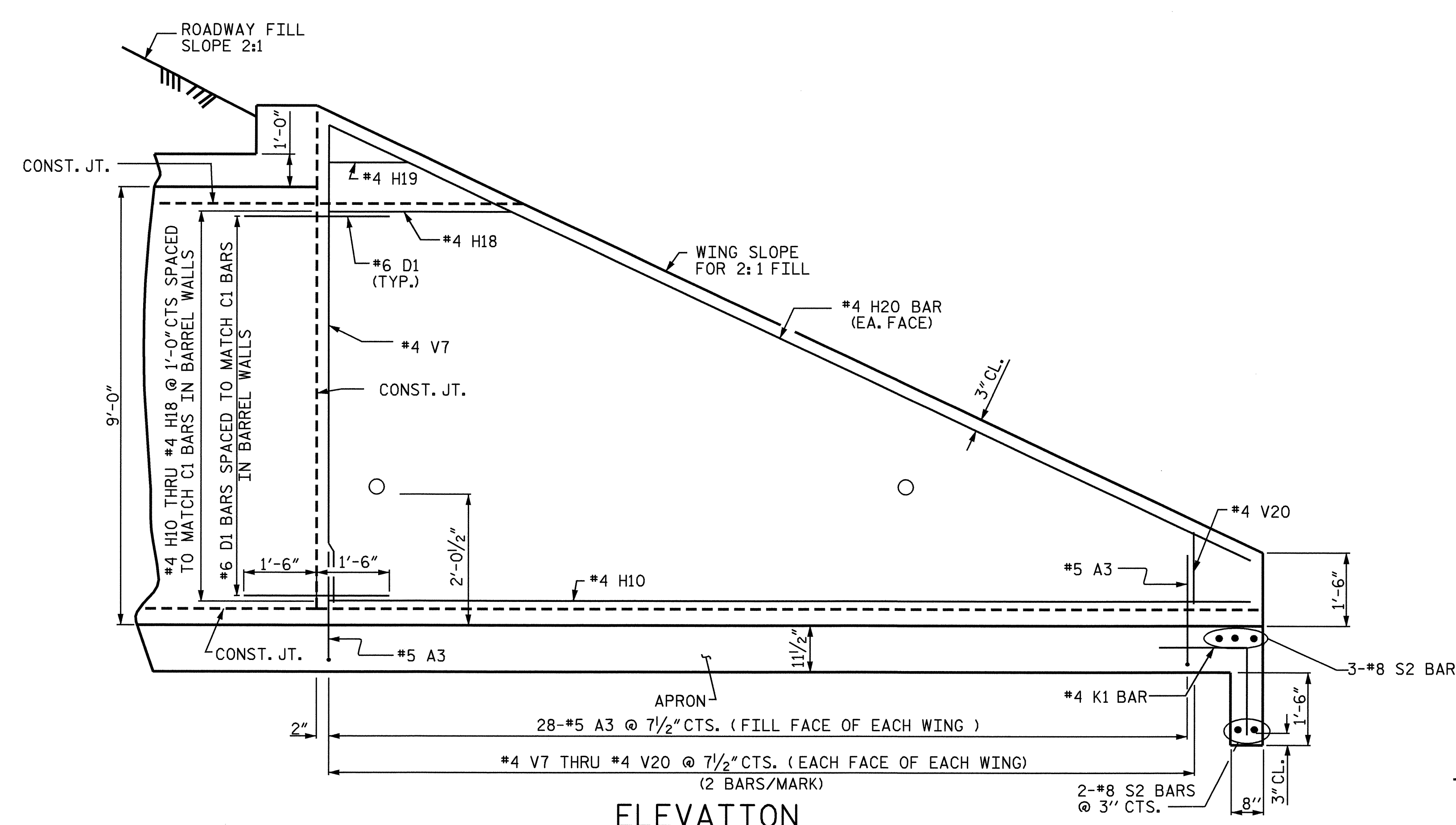
ASSEMBLED BY : P.E. LACKEY DATE : 8/04
 CHECKED BY : S.B. WILLIAMS DATE : 8/9/04
 DRAWN BY : CCJ 10/99
 CHECKED BY : RWW 03/00



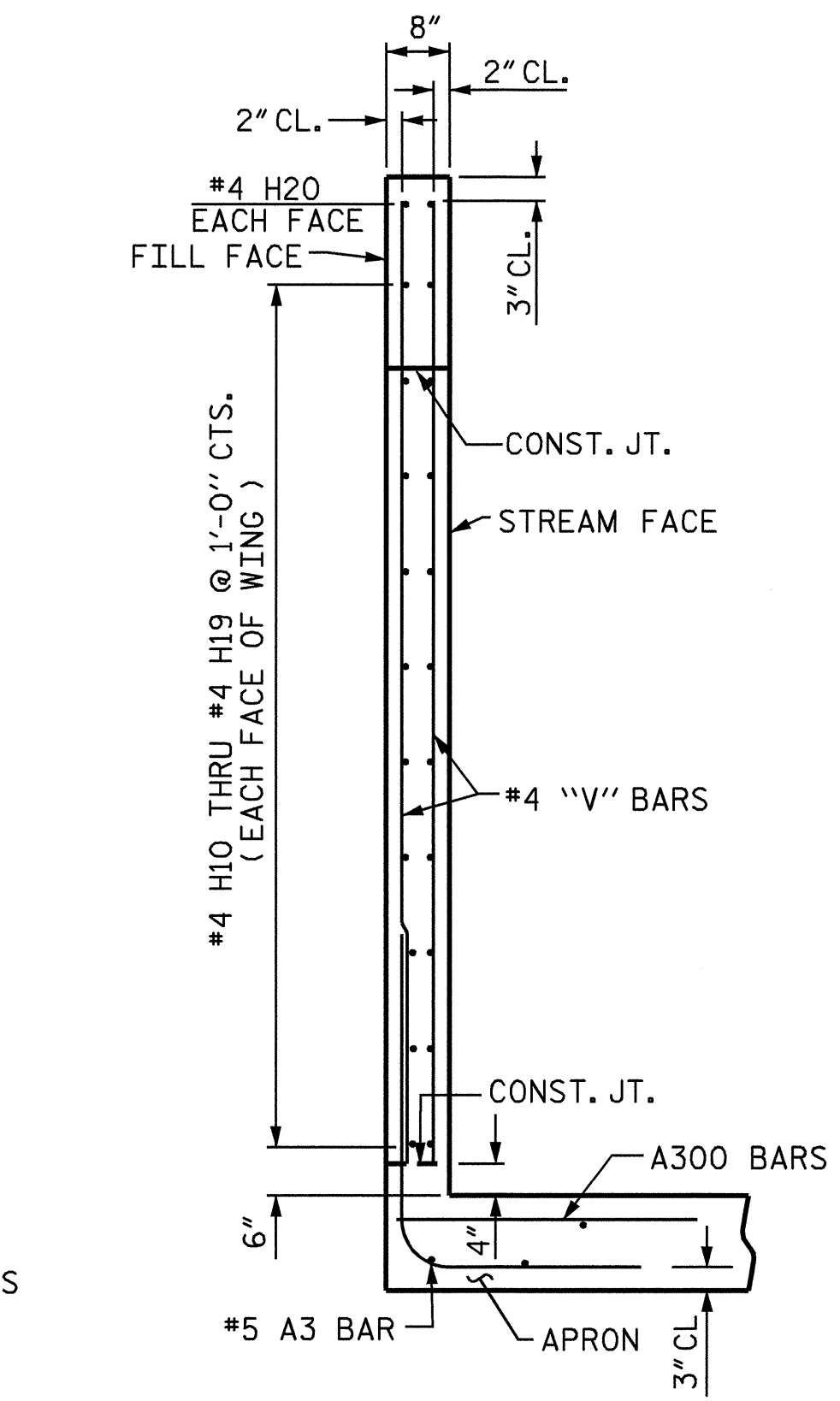
PROJECT NO. R-2320G
 STANLY COUNTY
 STATION: 9+10.00 -Y4-

SHEET 3 OF 4
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 INLET WINGS
 FOR
 CONCRETE BOX CULVERT
 H = 9'-0" SLOPE = 2:1
 90° SKEW

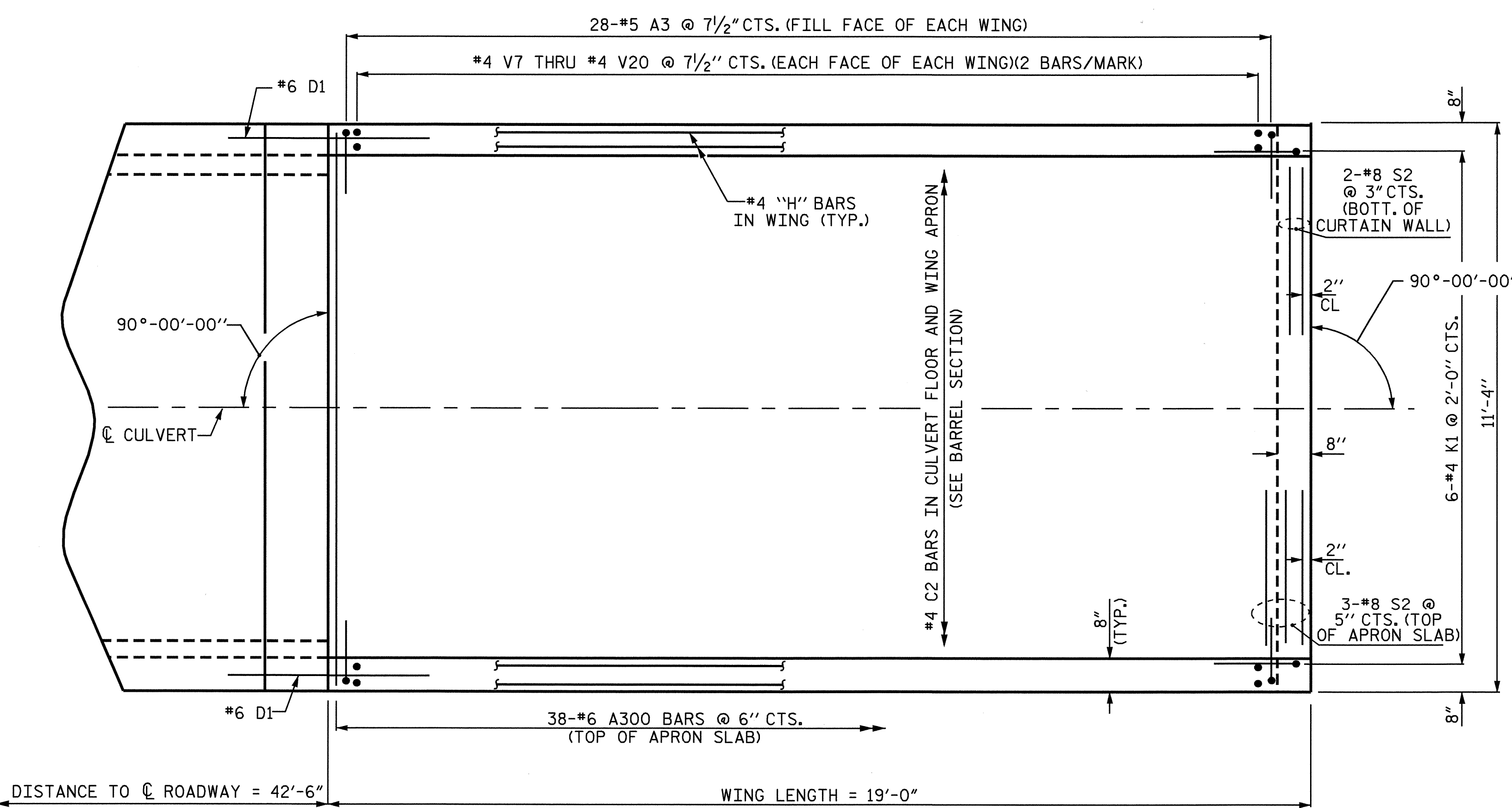
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-3
1			3			TOTAL SHEETS
2			4			8



ELEVATION

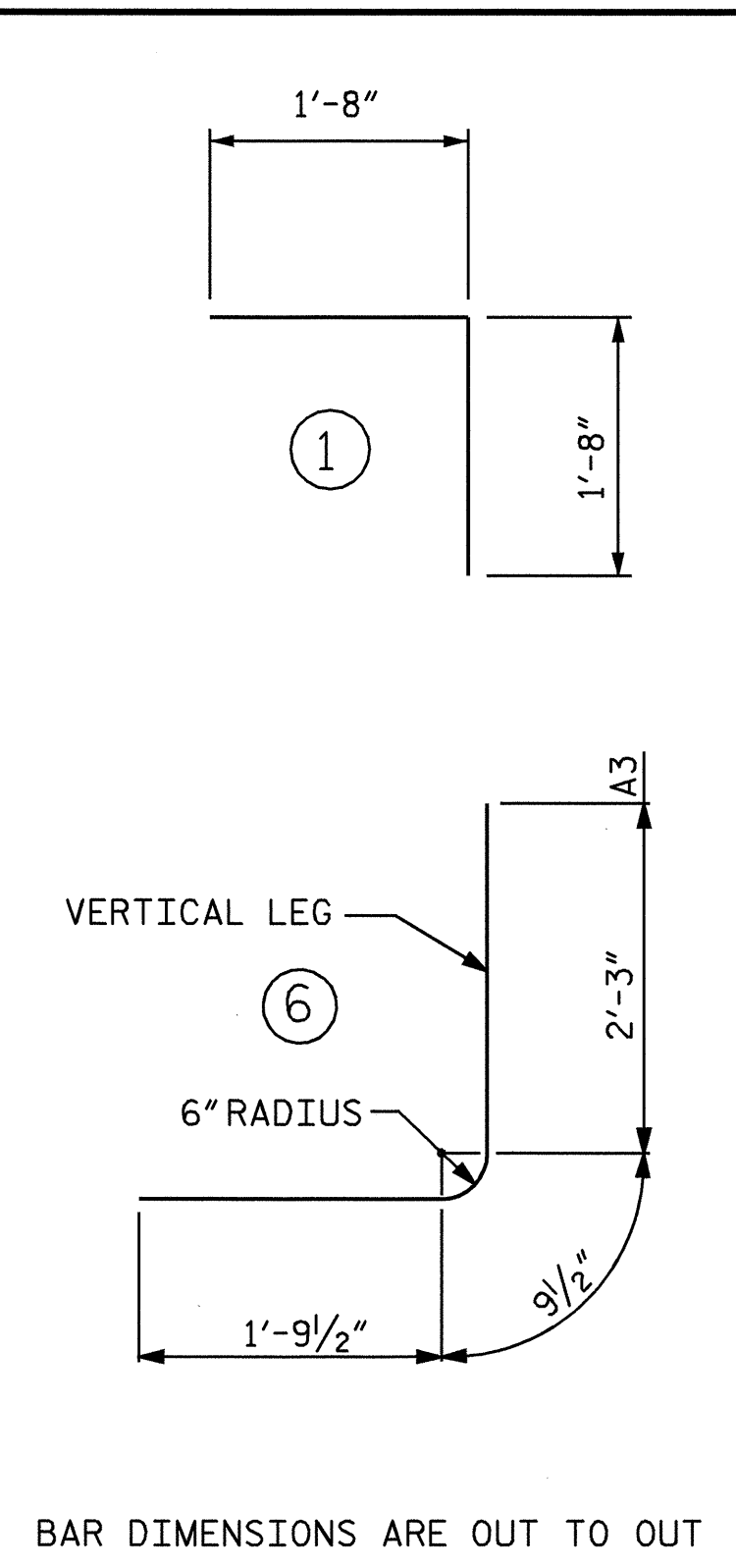


TYPICAL WING SECTION



PLAN - OUTLET WINGS

BAR TYPES



BILL OF MATERIAL FOR OUTLET WINGS

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A3	56	#5	6	4'-10"	282
A300	38	#6	STR	10'-11"	623
H10	4	#4	STR	18'-7"	50
H11	4	#4	STR	18'-3"	49
H12	4	#4	STR	16'-3"	43
H13	4	#4	STR	14'-3"	38
H14	4	#4	STR	12'-3"	33
H15	4	#4	STR	10'-3"	27
H16	4	#4	STR	8'-3"	22
H17	4	#4	STR	6'-3"	17
H18	4	#4	STR	4'-3"	11
H19	4	#4	STR	2'-3"	6
H20	4	#4	STR	20'-9"	55
K1	6	#4	1	3'-4"	13
S2	5	#8	STR	11'-0"	147
V7	8	#4	STR	10'-0"	53
V8	8	#4	STR	9'-4"	50
V9	8	#4	STR	8'-9"	47
V10	8	#4	STR	8'-1"	43
V11	8	#4	STR	7'-6"	40
V12	8	#4	STR	6'-10"	37
V13	8	#4	STR	6'-3"	33
V14	8	#4	STR	5'-7"	30
V15	8	#4	STR	5'-0"	27
V16	8	#4	STR	4'-4"	23
V17	8	#4	STR	3'-9"	20
V18	8	#4	STR	3'-1"	16
V19	8	#4	STR	2'-6"	13
V20	8	#4	STR	1'-11"	10

REINFORCING STEEL FOR 2 OUTLET WINGS = 1858 LBS

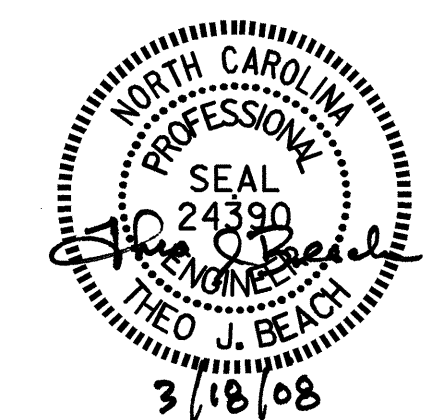
CLASS A CONCRETE

2 OUTLET WINGS AND APRON=	13.5	CY.
1 HEADWALL =	0.5	CY.
1 END CURTAIN WALL =	0.4	CY.
TOTAL	14.4	CY.

NOTE: THE #6 D1 AND #4 C2 BARS ARE INCLUDED IN THE BARREL BILL OF MATERIAL

PROJECT NO. R-2320G
STANLY COUNTY
 STATION: 9+10.00 -Y4-
 SHEET 4 OF 4

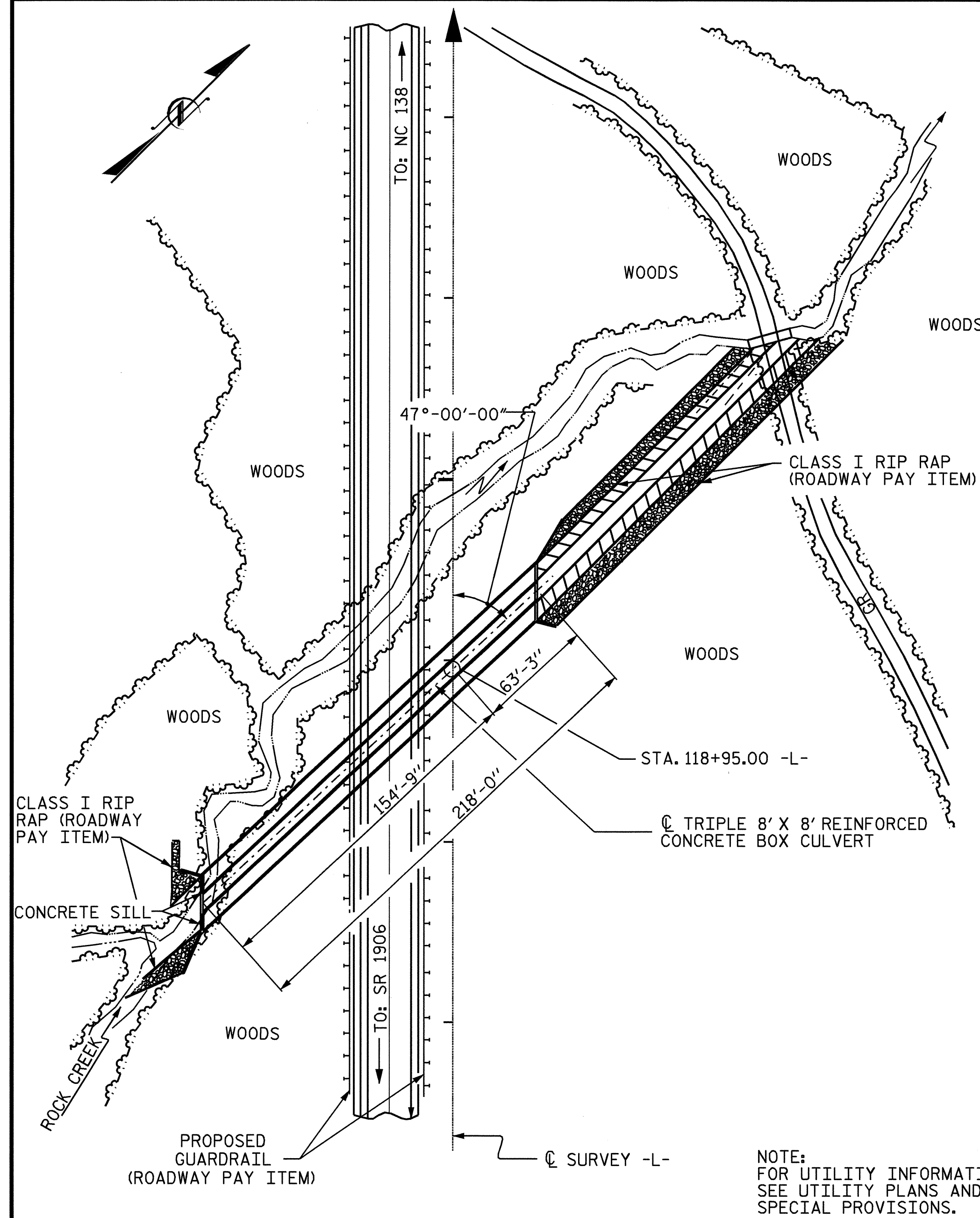
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
OUTLET WINGS FOR CONCRETE BOX CULVERT
 H = 9' SLOPE 2:1
 90° SKEW



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

ASSEMBLED BY: P.E. LACKEY DATE: 8/04
 CHECKED BY: S.B. WILLIAMS DATE: 8/9/04

BENCH MARK #14: SPIKE IN BASE OF 12" SWEETGUM 151' RT. OF STA. 122+30.39 -L-
EL 470.38' NGVD 29



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

LOCATION SKETCH

HYDROGRAPHIC DATA

DESIGN DISCHARGE	800 CFS
FREQUENCY OF DESIGN FLOOD	50 YRS.
DESIGN HIGH WATER ELEVATION	467.3
DRAINAGE AREA	547.5 ACRES
BASIC DISCHARGE (Q100)	900 CFS
BASIC HIGH WATER ELEVATION	468.3

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	3000 CFS
FREQUENCY OF OVERTOPPING FLOOD	500 YR.+
OVERTOPPING FLOOD ELEVATION	497.18

GRADE DATA

GRADE POINT ELEVATION @	
STA. 118+95.00 -L-	497.18
BED ELEVATION @	
STA. 118+95.00 -L-	459.57
ROADWAY SLOPES	2:1

DRAWN BY: P.E. LACKEY DATE: 8/04
CHECKED BY: S.B. WILLIAMS DATE: 2/6/06

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REINFORCING STEEL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A100	307	5	STR	26'-3"	8405	A404	4	6	STR	21'-2"	127
A101	4	5	STR	24'-11"	104	A405	4	6	STR	19'-11"	120
A102	4	5	STR	23'-8"	99	A406	4	6	STR	18'-8"	112
A103	4	5	STR	22'-5"	94	A407	4	6	STR	17'-5"	105
A104	4	5	STR	21'-2"	88	A408	4	6	STR	16'-2"	97
A105	4	5	STR	19'-11"	83	A409	4	6	STR	14'-11"	90
A106	4	5	STR	18'-8"	78	A410	4	6	STR	13'-8"	82
A107	4	5	STR	17'-5"	73	A411	4	6	STR	12'-5"	75
A108	4	5	STR	16'-2"	67	A412	4	6	STR	11'-2"	67
A109	4	5	STR	14'-11"	62	A413	4	6	STR	9'-11"	60
A110	4	5	STR	13'-8"	57	A414	4	6	STR	8'-8"	52
A111	4	5	STR	12'-5"	52	A415	4	6	STR	7'-5"	45
A112	4	5	STR	11'-2"	47	A416	4	6	STR	6'-2"	37
A113	4	5	STR	9'-11"	41	A417	4	6	STR	4'-11"	30
A114	4	5	STR	8'-8"	36	A418	4	6	STR	3'-8"	22
A115	4	5	STR	7'-5"	31	A419	4	6	STR	2'-5"	15
A116	4	5	STR	6'-2"	26	A1	698	6	6	8'-1"	8475
A117	4	5	STR	4'-11"	21	A2	698	6	6	6'-3"	6552
A118	4	5	STR	3'-8"	15	B1	698	4	STR	10'-3"	4779
A119	4	5	STR	2'-5"	10	B2	698	4	STR	7'-4"	3419
A200	307	5	STR	26'-3"	8405	B3	1048	4	STR	10'-3"	7176
A201	4	5	STR	24'-11"	104	C1	1032	4	STR	29'-1"	20049
A202	4	5	STR	23'-8"	99	D1	8	6	STR	3'-0"	36
A203	4	5	STR	22'-5"	94	G1	8	5	STR	37'-2"	310
A204	4	5	STR	21'-2"	88	S2	12	8	STR	37'-2"	1191
A205	4	5	STR	19'-11"	83	REINFORCING STEEL LBS. 98,299					
A206	4	5	STR	18'-8"	78	SPLICE LENGTHS CHART					
A207	4	5	STR	17'-5"	73	BAR	SIZE	SPLICE LENGTH			
A208	4	5	STR	16'-2"	67	A200	#5	2'-5"			
A209	4	5	STR	14'-11"	62	A400	#6	2'-4"			
A210	4	5	STR	13'-8"	57	B1	#4	1'-9"			
A211	4	5	STR	12'-5"	52	B3	#4	1'-9"			
A212	4	5	STR	11'-2"	47	C1	#4	1'-11"			
A213	4	5	STR	9'-11"	41	TOTAL STRUCTURE QUANTITIES					
A214	4	5	STR	8'-8"	36	CLASS A CONCRETE					
A215	4	5	STR	7'-5"	31	BARREL @	3.560	CY/FT	776.1	C.Y.	
A216	4	5	STR	6'-2"	26	SILLS			1.7	C.Y.	
A217	4	5	STR	4'-11"	21	WING ETC.			36.8	C.Y.	
A218	4	5	STR	3'-8"	15	TOTAL			814.6	C.Y.	
A219	4	5	STR	2'-5"	10	REINFORCING STEEL					
A300	307	6	STR	26'-3"	12104	BARREL & SILLS			98,299	LBS.	
A301	4	6	STR	24'-11"	150	WINGS ETC.			1,876	LBS.	
A302	4	6	STR	23'-8"	142	TOTAL			100,175	LBS.	
A303	4	6	STR	22'-5"	135	CULVERT EXCAVATION LUMP SUM					
A304	4	6	STR	21'-2"	127	FOUNDATION CONDITIONING MAT'L 410 TONS					
A305	4	6	STR	19'-11"	120	<p>BAR TYPE DIMENSIONS ARE OUT TO OUT</p>					
A306	4	6	STR	18'-8"	112						
A307	4	6	STR	17'-5"	105						
A308	4	6	STR	16'-2"	97						
A309	4	6	STR	14'-11"	90						
A310	4	6	STR	13'-8"	82						
A311	4	6	STR	12'-5"	75						
A312	4	6	STR	11'-2"	67						
A313	4	6	STR	9'-11"	60						
A314	4	6	STR	8'-8"	52						
A315	4	6	STR	7'-5"	45						
A316	4	6	STR	6'-2"	37						
A317	4	6	STR	4'-11"	30						
A318	4	6	STR	3'-8"	22						
A319	4	6	STR	2'-5"	15						
A400	307	6	STR	26'-3"	12104						
A401	4	6	STR	24'-11"	150						
A402	4	6	STR	23'-8"	142						
A403	4	6	STR	22'-5"	135						

NOTES

ASSUMED LIVE LOAD -----HS20-44 OR ALTERNATE LOADING.
DESIGN FILL-----28.36 FT.
FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.
3" Ø WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.

CONCRETE IN CULVERTS TO BE POURED IN THE FOLLOWING ORDER:

1. WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.
2. THE REMAINING PORTIONS OF THE WALLS AND WINGS FULL HEIGHT FOLLOWED BY ROOF SLAB AND HEADWALLS.

THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.

DIMENSIONS FOR WING LAYOUT AS WELL AS ADDITIONAL REINFORCING STEEL EMBEDDED IN BARREL ARE SHOWN ON WING SHEET.

TRANSVERSE CONSTRUCTION JOINTS SHALL BE USED IN THE BARREL, SPACED TO LIMIT THE POURS TO A MAXIMUM OF 70 FT. LOCATION OF JOINTS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER.

STEEL IN THE BOTTOM SLAB MAY BE SPLICED AT THE PERMITTED CONSTRUCTION JOINT AT THE CONTRACTORS OPTION. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.

AT THE CONTRACTORS OPTION, HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF EXTERIOR WALL AND BOTH FACES OF INTERIOR WALLS ABOVE LOWER WALL CONSTRUCTION JOINT. THE SPLICE LENGTH SHALL BE AS PROVIDED IN THE SPLICE LENGTH CHART SHOWN ON THE PLANS. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.

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.

FOR CULVERT DIVERSION DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.

NO PRECAST REINFORCED CONCRETE BOX CULVERT OPTION WILL BE ALLOWED.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

A THREE FOOT STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT.

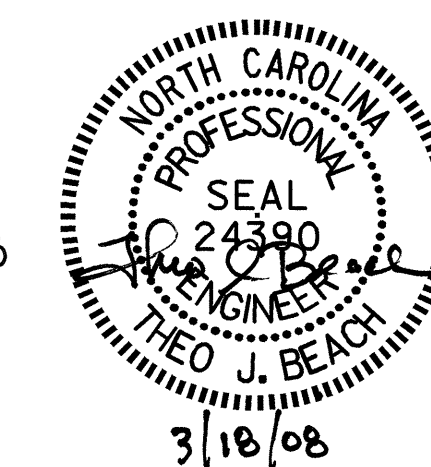
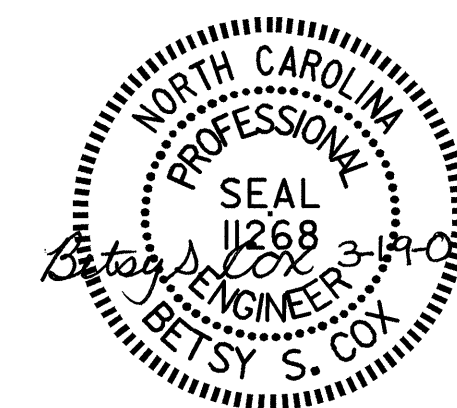
FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

EXISTING BED MATERIAL SHALL BE STOCK PILED ON SITE AND REUSED AS BACK FILL MATERIAL INSIDE THE CULVERT TO BURY THE BOTTOM OF THE CULVERT THE REQUIRED 1'-0".

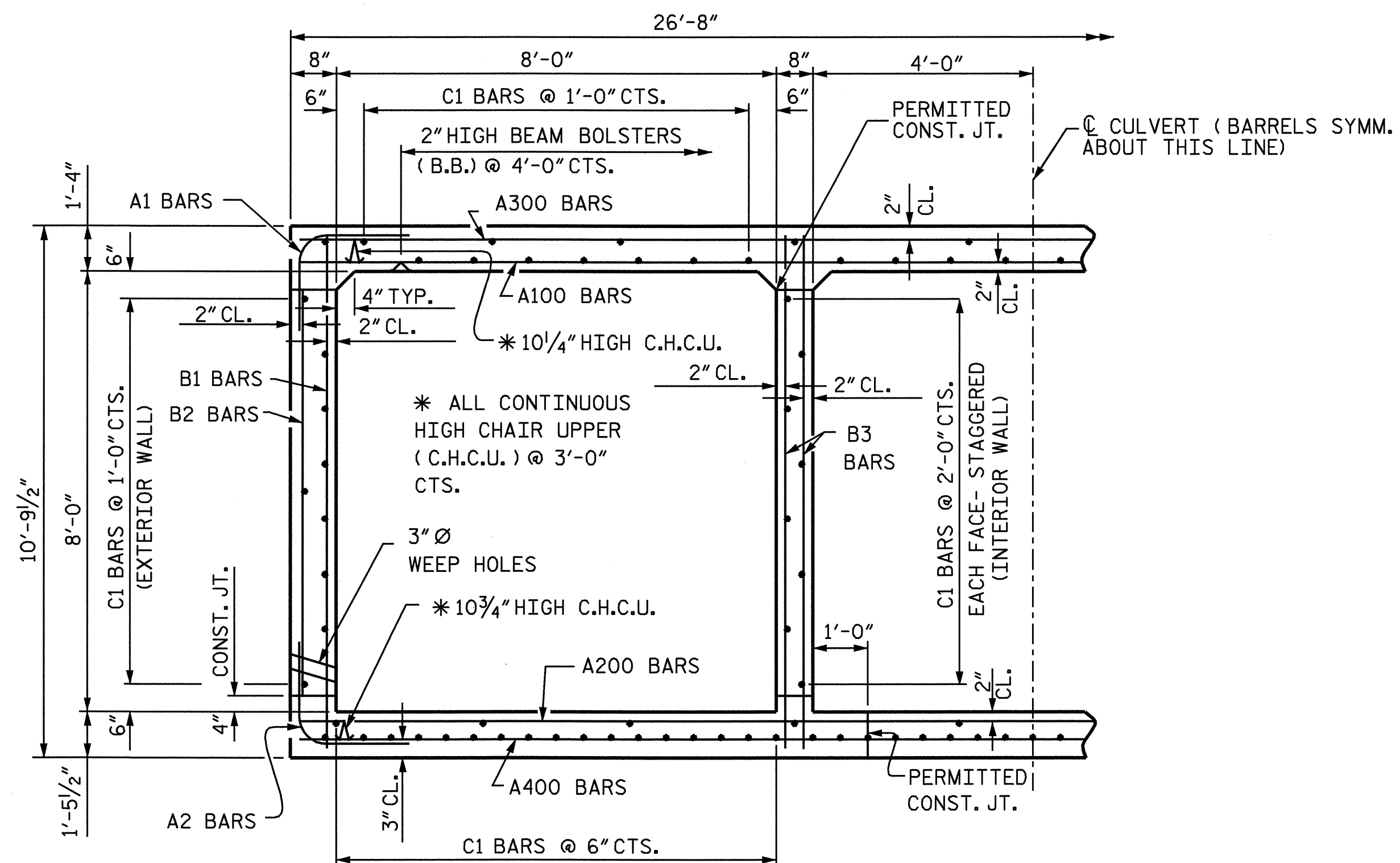
PROJECT NO. R-2320G
STANLY COUNTY
STATION: 118+95.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
TRIPLE 8 FT. X 8 FT.
CONCRETE BOX CULVERT
47° SKEW

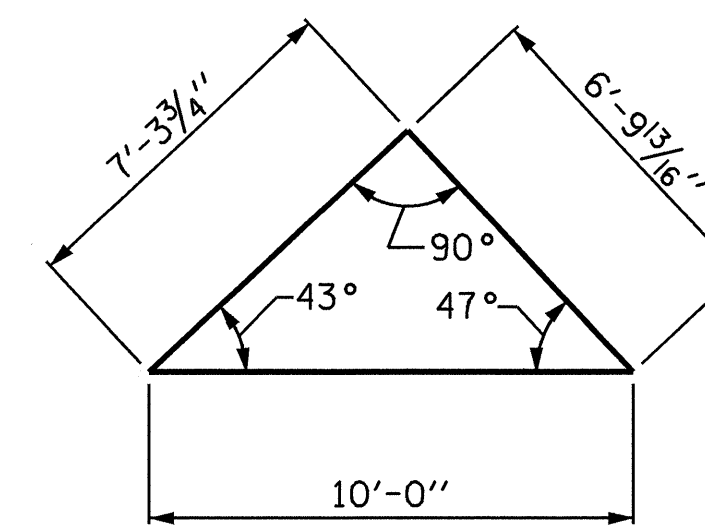


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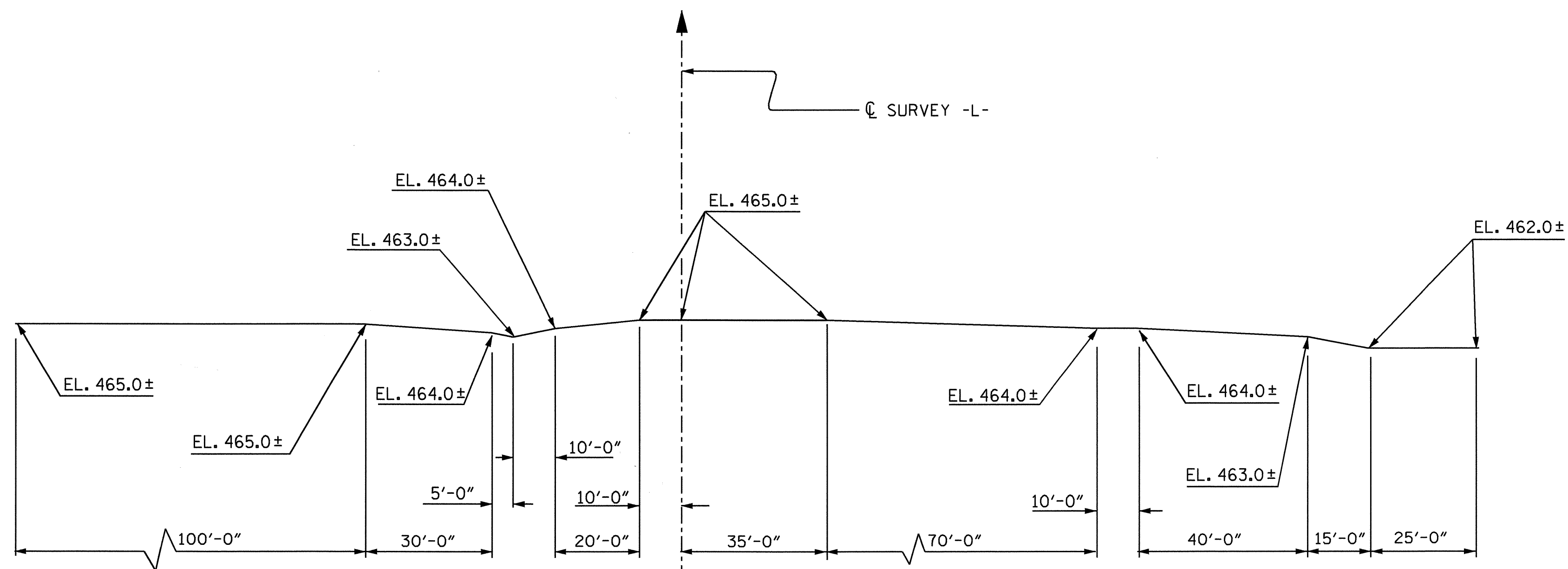


RIGHT ANGLE SECTION OF BARREL

THERE ARE 129 'C' BARS IN SECTION OF BARREL.
'C' BARS ARE 8 BAR RUNS



SKEW TRIANGLE

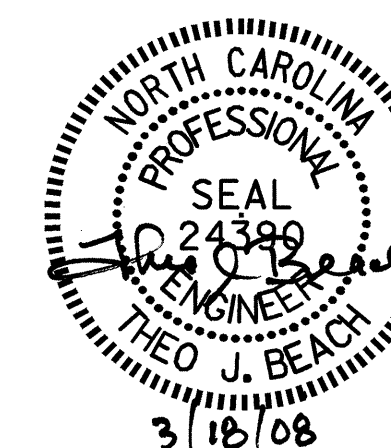


PROFILE ALONG CULVERT

PROJECT NO. R-2320G
STANLY COUNTY
STATION: 118+95.00 -L-

SHEET 2 OF 4

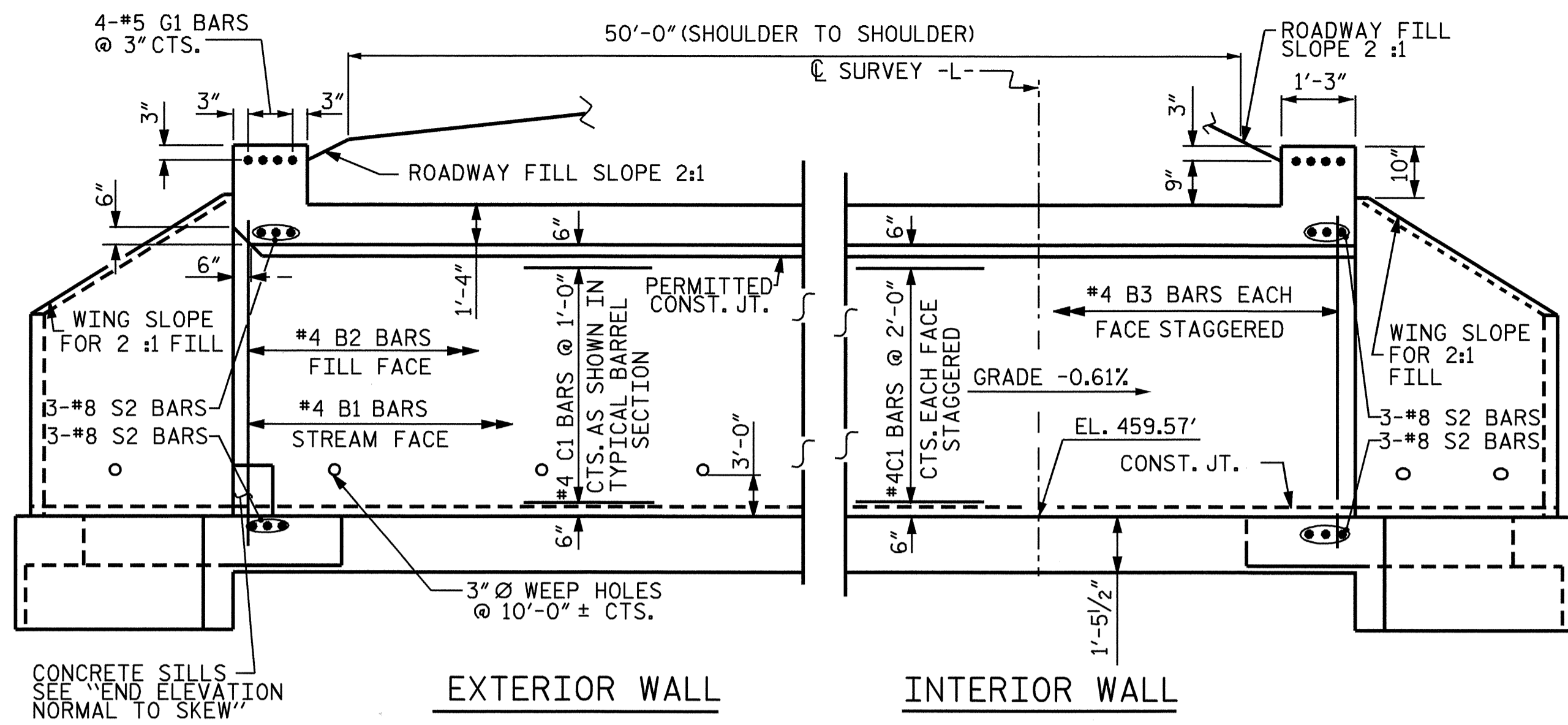
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DEPARTMENT OF TRANSPORTATION
RALEIGH
TRIPLE 8 FT. X 8 FT.
CONCRETE BOX CULVERT
47° SKEW



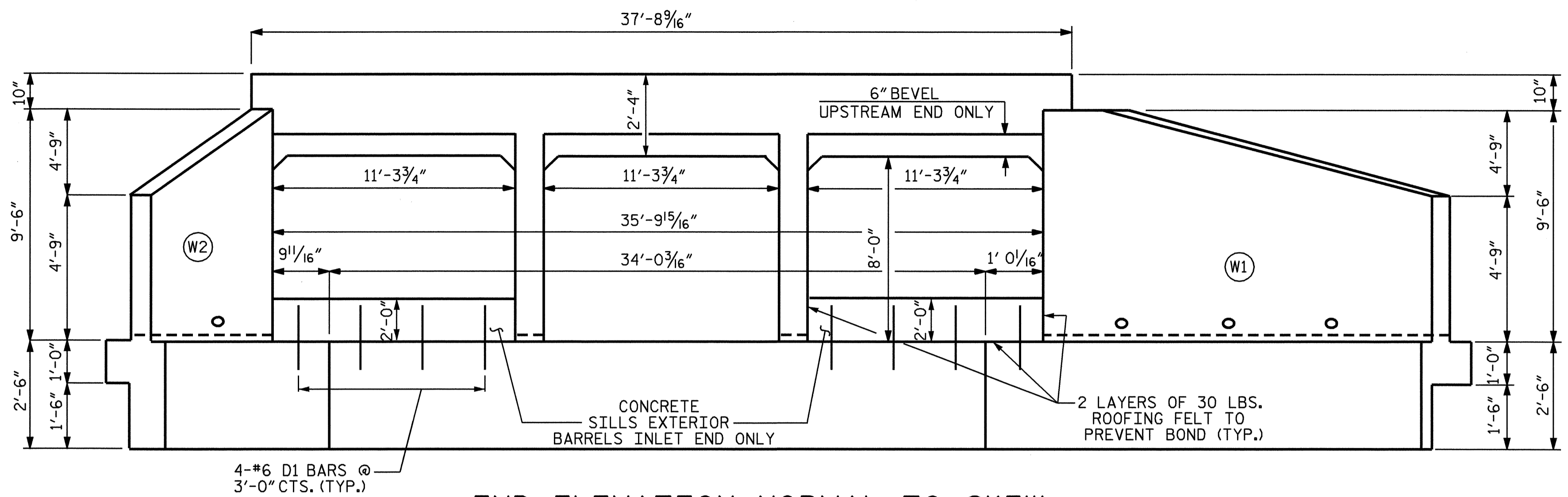
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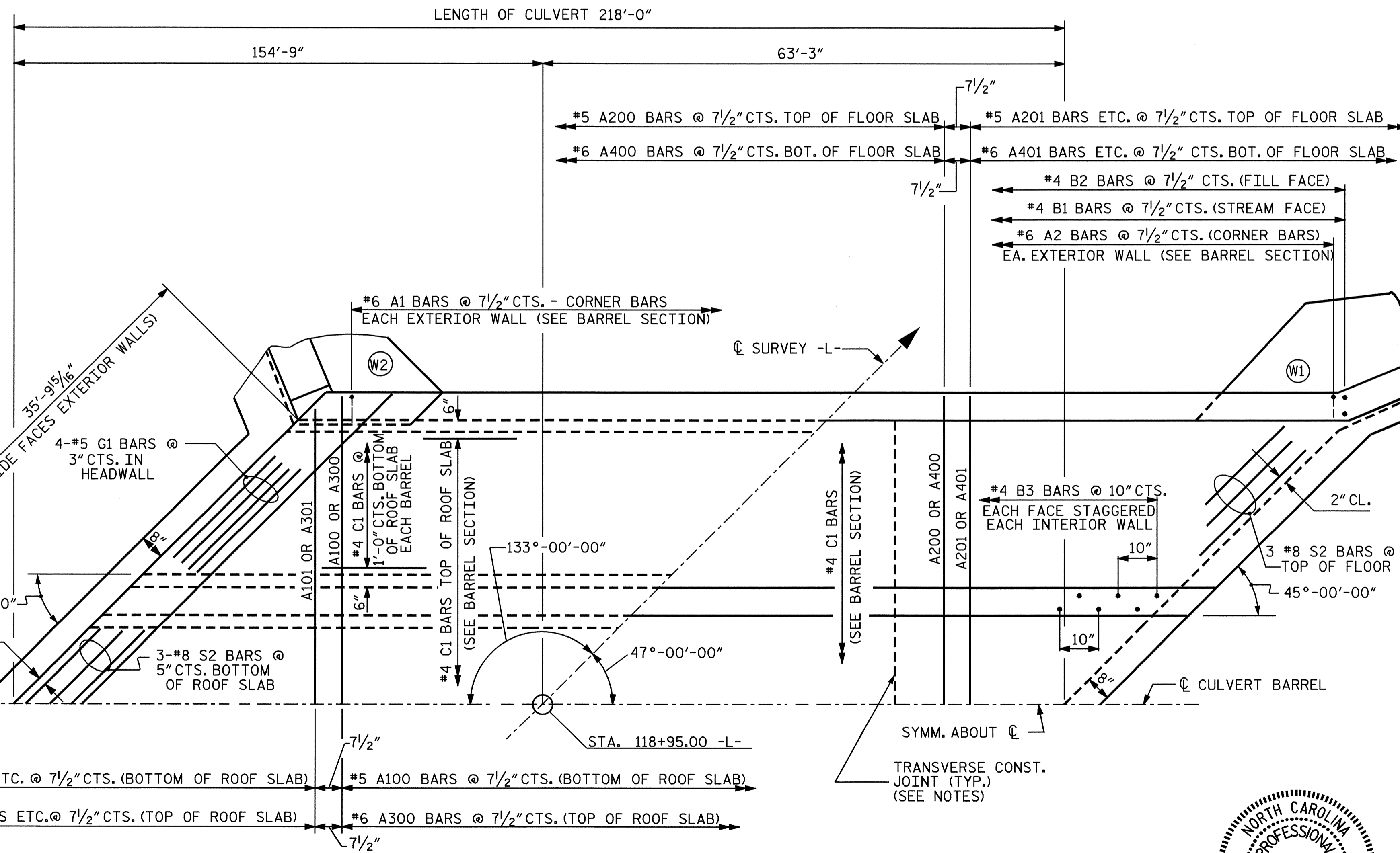
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1			3			TOTAL SHEETS
2			4			8



EXTERIOR WALL INTERIOR WALL
CULVERT SECTION NORMAL TO ROADWAY

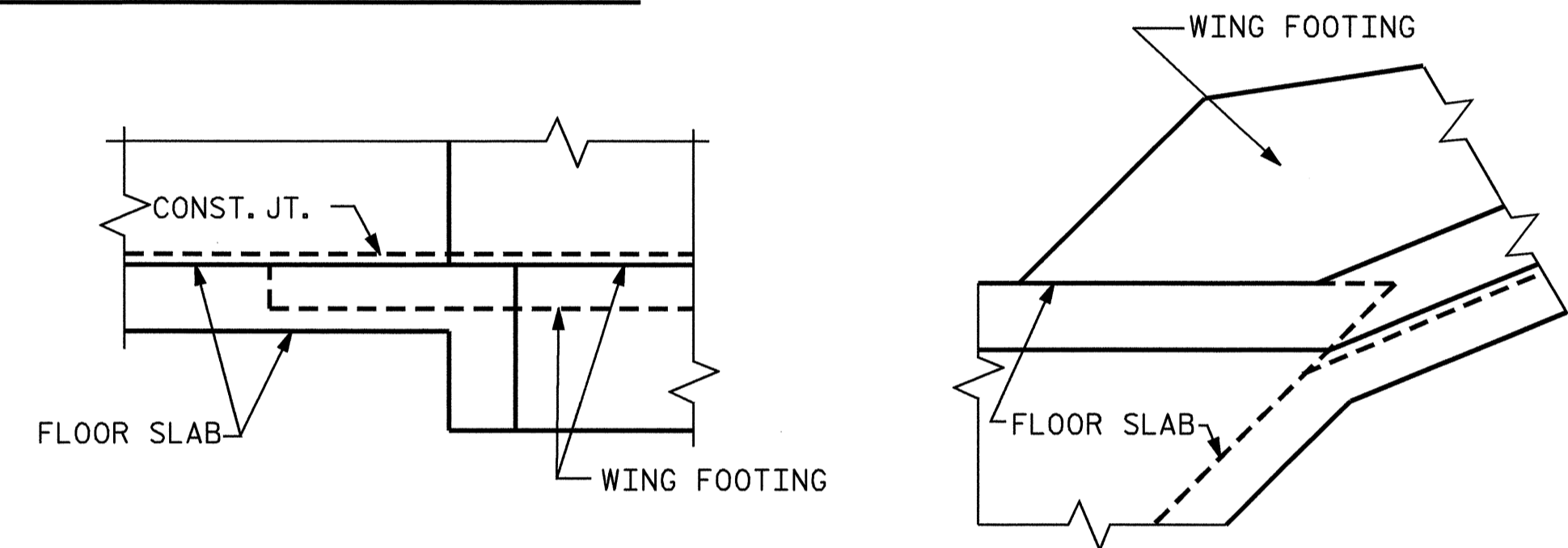


END ELEVATION NORMAL TO SKEW



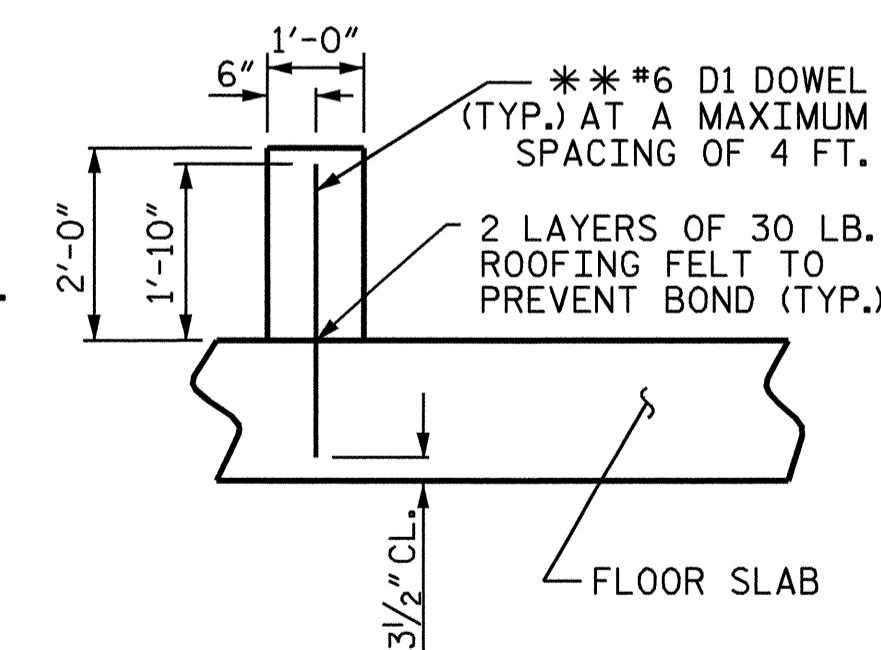
PART PLAN - ROOF SLAB PART PLAN - FLOOR SLAB

C1 BARS ARE 8 BAR RUNS



DETAIL

CONNECTION OF WING FOOTING AND FLOOR SLAB WHEN SLAB IS THICKER THAN FOOTING



SECTION THROUGH SILL

** DOWELS MAY BE PUSHED INTO GREEN CONCRETE AFTER SLAB HAS BEEN FLOAT FINISHED

PROJECT NO. R-2320G
STANLY COUNTY
STATION: 118+95.00 -L-

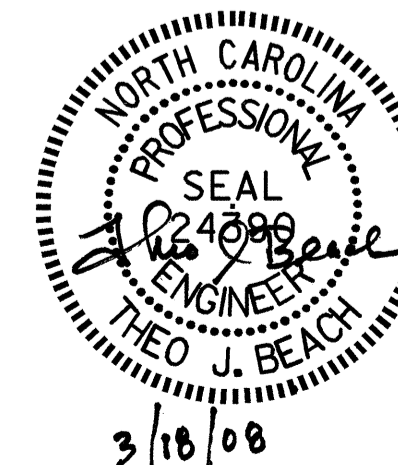
SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BARREL STANDARD
TRIPLE 8 FT. X 8 FT.
CONCRETE BOX CULVERT
47° SKEW

ASSEMBLED BY: P.E. LACKEY	DATE: 8/04	SPECIAL
CHECKED BY: P.C. BREWER	DATE: 8/04	
DRAWN BY: DANNY SHERROD	DATE: 4-24-72	STANDARD
CHECKED BY: F.M.H.	DATE: 5-3-72	

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3/18/08

REVISIONS						SHEET NO. C-7
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 8
2			4			

STR. #3

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