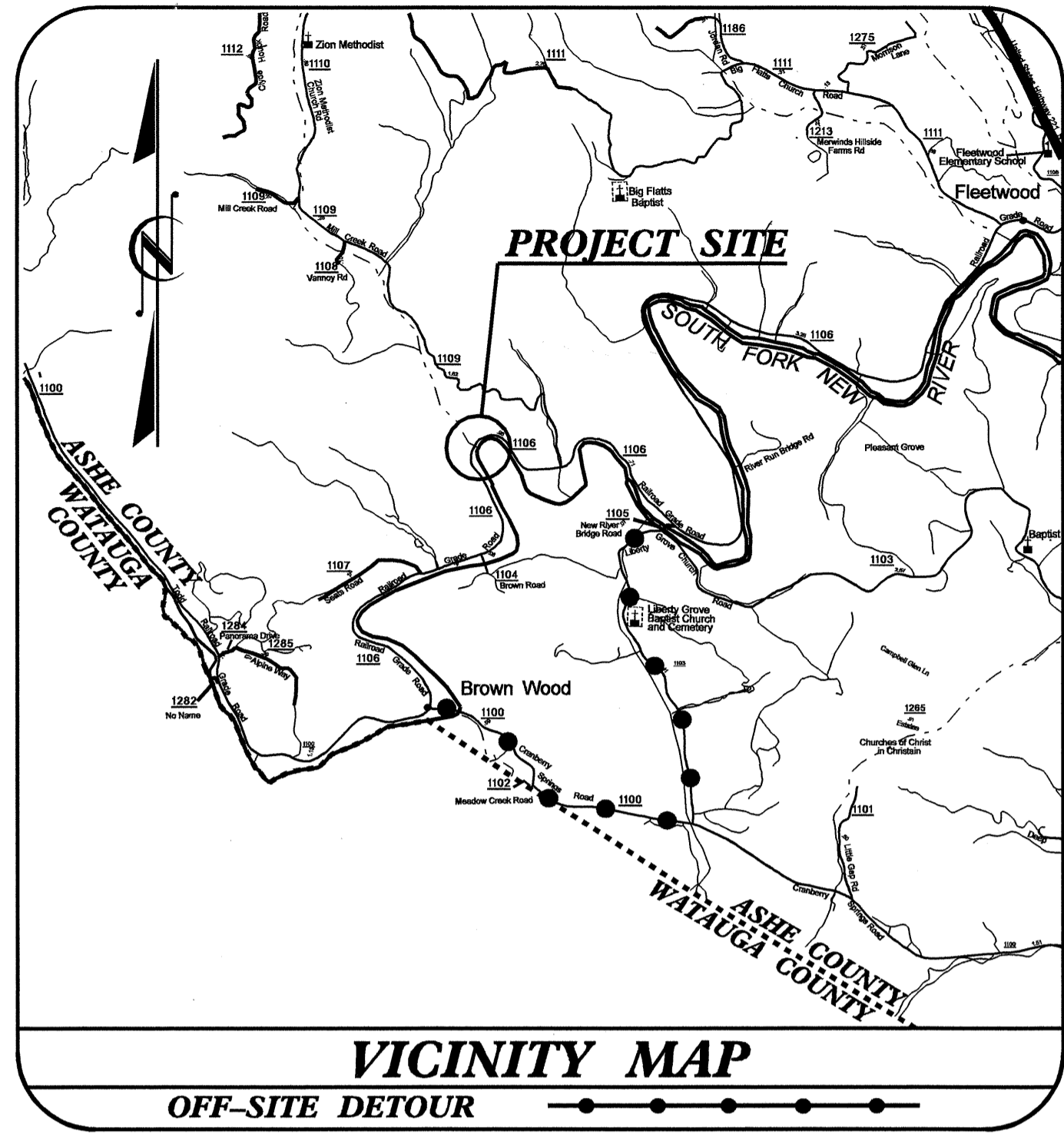


**CONTRACT: C201766 TIP PROJECT: B-4011**

**STRUCTURES**



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

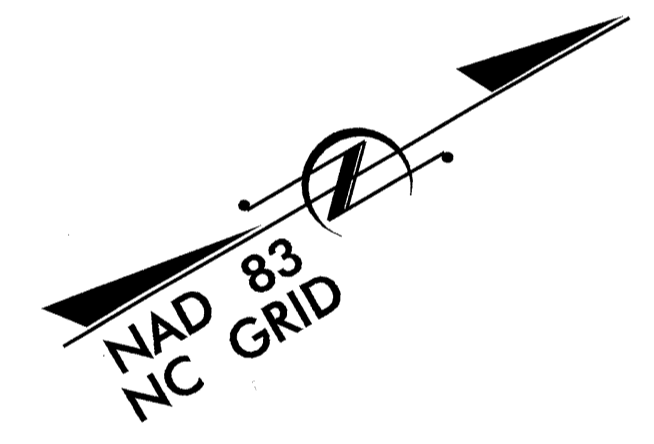
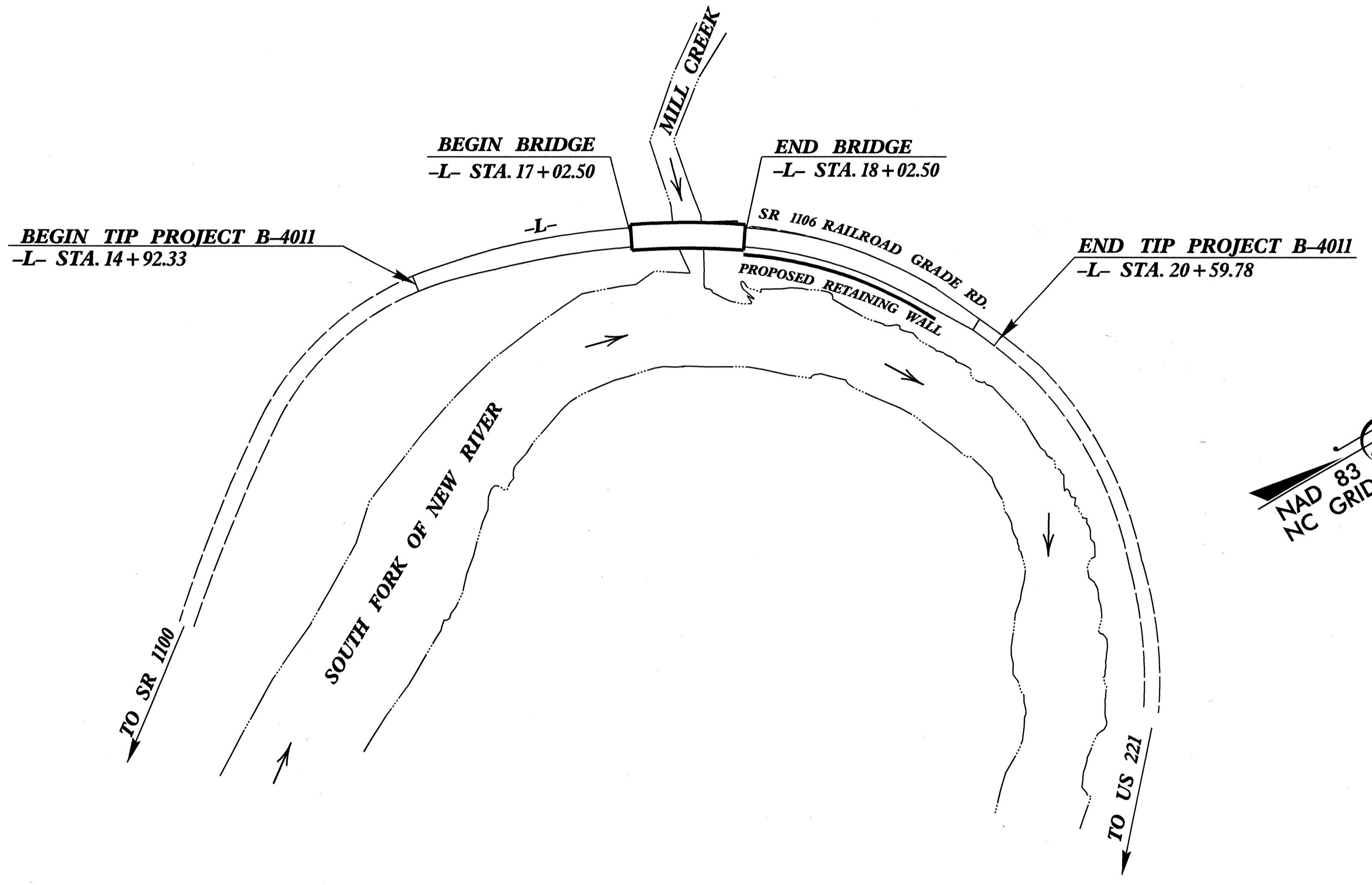
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# ASHE COUNTY

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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4011		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33379.1.1	BRZ-1106(4)	PE	
33379.3.1	BRZ-1106(4)	UTIL. & RW	
33379.3.1	BRZ-1106(4)	CONSTRUCTION	

**LOCATION: BRIDGE NO. 85 OVER MILL CREEK ON SR 1106**  
**TYPE OF WORK: GRADING, DRAINAGE, PAVING, BRIDGE & WALL**



**DESIGN DATA**

ADT 2006 =	345
ADT 2025 =	500
DHV =	12 %
D =	60 %
T =	3 % *
V =	35 MPH
* TTST 1% DUAL 2%	
<b>FUNC. CLASS. = LOCAL</b>	

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT B-4011	= 0.089 MILES
LENGTH STRUCTURE TIP PROJECT B-4011	= 0.019 MILES
TOTAL LENGTH TIP PROJECT B-4011	= 0.108 MILES

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

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2006 STANDARD SPECIFICATIONS

**LETTING DATE:**  
NOVEMBER 18, 2008

J. C. FRYE, P.E.  
PROJECT ENGINEER

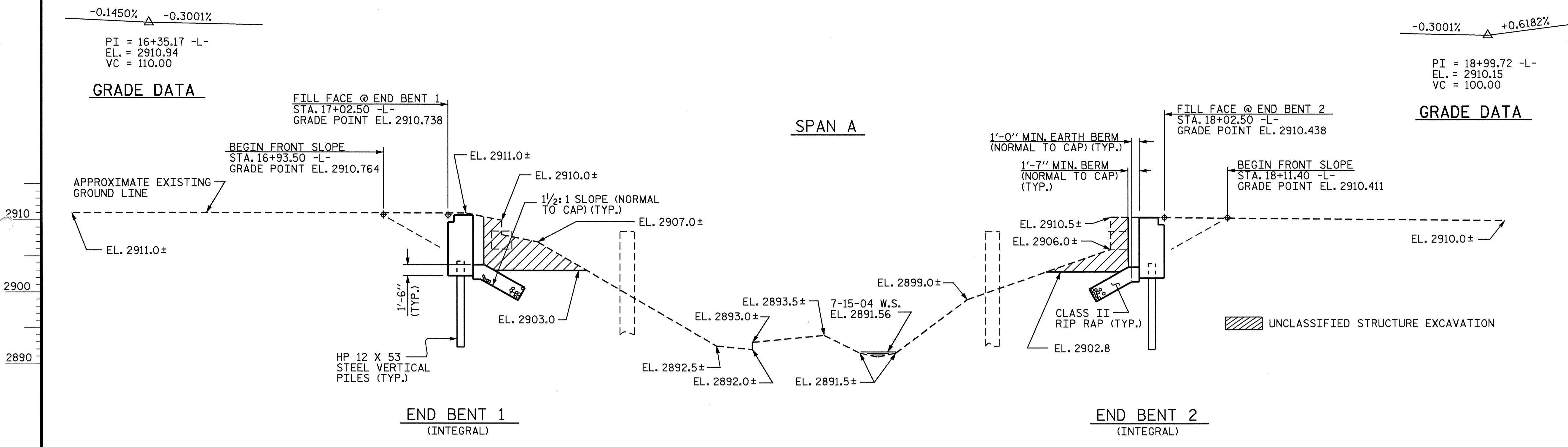
T. H. FANG, P.E.  
PROJECT DESIGN ENGINEER

**STRUCTURE DESIGN UNIT**

**DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA**

PE  
STATE HIGHWAY ENGINEER - DESIGN  
**DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION**

APPROVED FOR  
DIVISION ADMINISTRATOR  
DATE



**GRADE DATA**

PI = 16+35.17 -L-  
EL. = 2910.94  
VC = 110.00

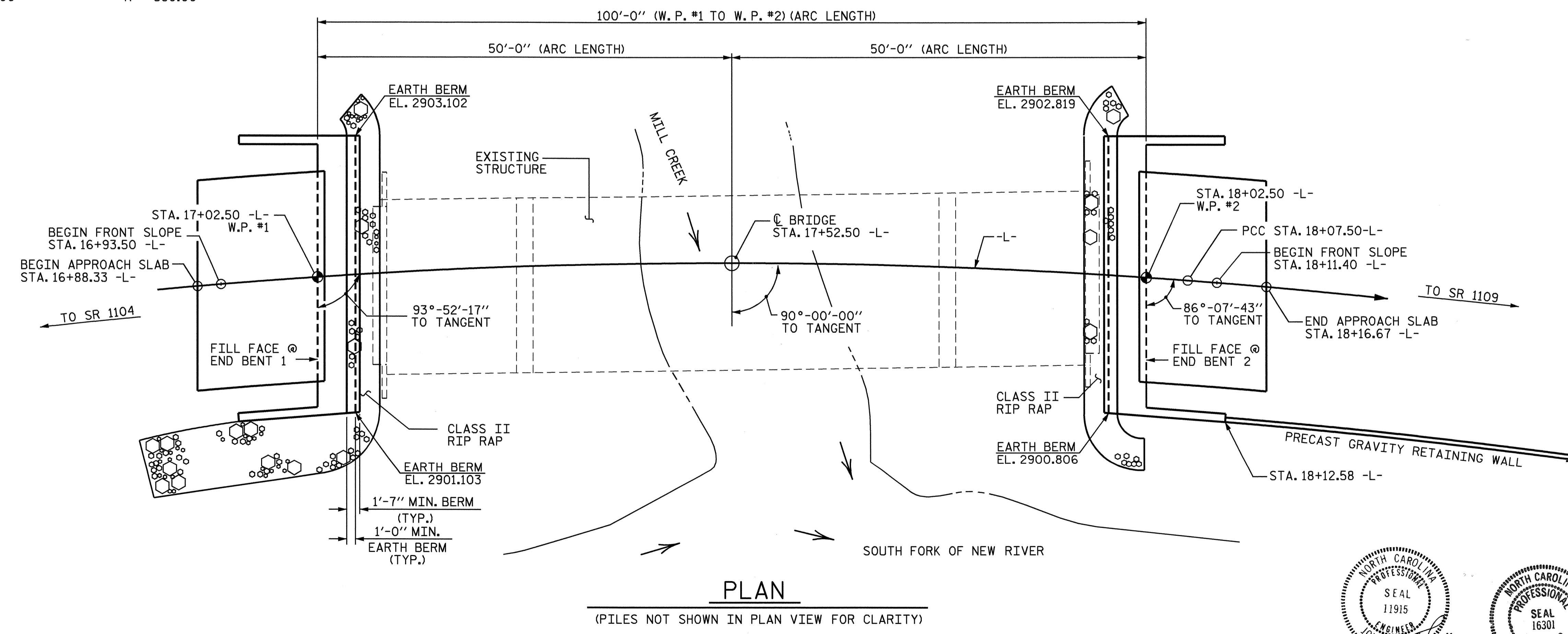
**GRADE DATA**

PI = 18+99.72 -L-  
EL. = 2910.15  
VC = 100.00

**HORIZONTAL CURVE DATA**

PI = 16+64.30	PI = 19+00.62
Δ = 22°-28'-0.8" (RT)	Δ = 27°-32'-25.7" (RT)
D = 7°-44'-33.6"	D = 15°-04'-40.2"
L = 290.17'	L = 182.66'
T = 146.97'	T = 93.13'
R = 740.00'	R = 380.00'

**SECTION ALONG -L-**  
(SECTION TAKEN AT RIGHT ANGLES TO END BENTS)



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

PROJECT NO. B-4011  
ASHE COUNTY  
 STATION: 17+52.50 -L-

SHEET 1 OF 3 REPLACES BRIDGE NO. 85

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 BRIDGE OVER MILL CREEK  
 ON SR 1106 BETWEEN  
 SR 1104 AND SR 1109

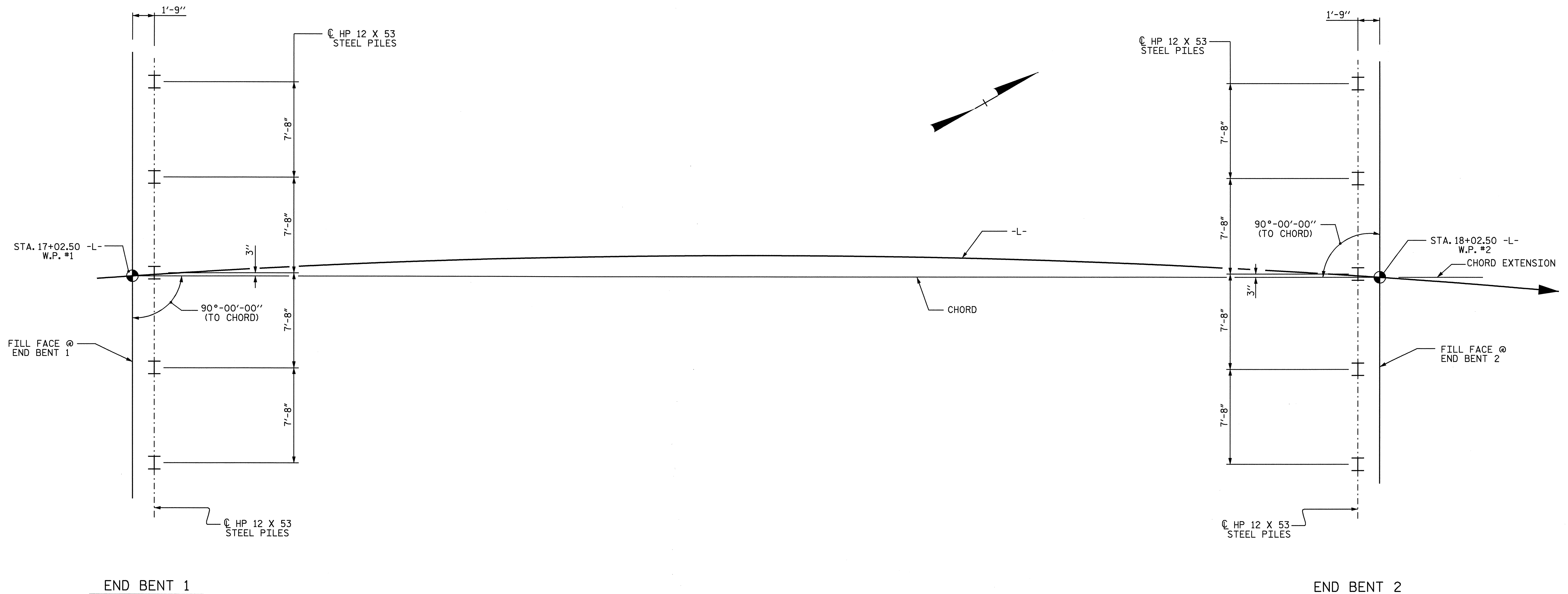
**PROFESSIONAL SEAL**  
 JOHN C. FORT  
 ENGINEER  
 11915

**PROFESSIONAL SEAL**  
 TING HSUNG TANG  
 ENGINEER  
 16301

8/22/08

DRAWN BY: Q. T. NGUYEN DATE: 4/05-5/06  
 CHECKED BY: K. K. PUROHIT DATE: 4/05-5/06

REVISIONS						SHEET NO. S-1
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			



### FOUNDATION LAYOUT

(DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE)  
ORIENT PILES AS SHOWN. ALL PILES ARE VERTICAL.

#### NOTES:

DRIVE PILES AT END BENTS 1 AND 2 TO A REQUIRED BEARING CAPACITY OF 180 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENTS 1 AND 2 IS 90 TONS PER PILE.

WHEN DRIVING PILES, DO NOT EXCEED THE MAXIMUM BLOW COUNT.

PILE EXCAVATION IS REQUIRED TO INSTALL PILES AT END BENT 1, EXCAVATE HOLES TO ELEVATION 2895.9 FT. (LT) AND 2896.8 FT. (RT). SEE PILE EXCAVATION SPECIAL PROVISION.

PILE EXCAVATION IS REQUIRED TO INSTALL PILES AT END BENT 2, EXCAVATE HOLES TO ELEVATION 2898.5 FT. (LT) AND 2891.2 FT. (RT). SEE PILE EXCAVATION SPECIAL PROVISION.

#### CONSTRUCTION SEQUENCE :

DRIVE STEEL PILES FOR END BENT 1 AND END BENT 2. COMPLETE POUR 1 OF END BENTS.

ONCE CONCRETE HAS ATTAINED THE REQUIRED STRENGTH, INSTALL NUT, WASHER AND SOLE PLATE ON ANCHOR BOLTS. ERECT GIRDERS AND ALIGN SOLE PLATES WITH HOLES IN FLANGES REGARDLESS OF TEMPERATURE AT TIME OF SETTING. SOLE PLATE SHOULD BE WELDED TO THE GIRDER FLANGE BEFORE FALSEWORK IS PLACED. ADJUST LOWER NUT TO SET GIRDER BEARING AT THE PROPER ELEVATION. INSTALL WASHER AND NUT ON TOP OF FLANGES. LEAVE TOP NUT LOOSE TO ALLOW FOR GIRDER END ROTATION AND TRANSLATION DURING DECK POURING SEQUENCE.

POUR BRIDGE DECK IN ACCORDANCE WITH THE POURING SEQUENCE OUTLINED ON THE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET EXCEPT THE FINAL TWO POURS CONTAINING THE ABUTMENT. NOTE THAT THE FINAL TWO POURS CONTAINING THE WING WALLS AND ABUTMENT ARE PLACED WITH THE FINAL POURS OF THE BRIDGE DECK.

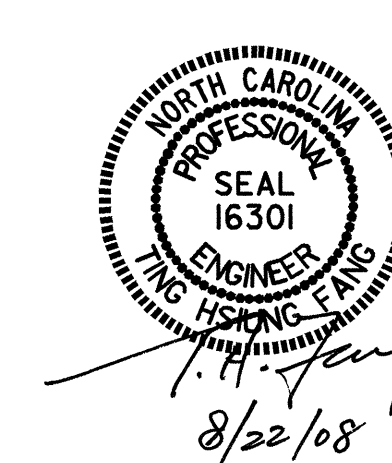
TIGHTEN TOP NUTS 1/4 TURN PAST FINGER TIGHT. COMPLETE FINAL TWO DECK POURS WHICH INCLUDES THE ABUTMENT, DECK AND THE WING WALLS.

PLACE THE REINFORCED BRIDGE APPROACH FILL AND BACKFILL IN LIFTS UNTIL THE DESIRED SUBGRADE ELEVATION IS REACHED. CONSTRUCT SLEEPER SLABS.

POUR THE APPROACH SLABS STARTING AT THE END FURTHEST FROM THE BACK WALL AND PROGRESSING TOWARDS THE END BENT. POURS SHALL BE PERFORMED DURING THE MORNING HOURS TO MINIMIZE PLACING THE APPROACH SLAB IN TENSION FROM BRIDGE THERMAL MOVEMENTS.

PROJECT NO. B-4011  
ASHE COUNTY  
STATION: 17+52.50 -L-

SHEET 2 OF 3

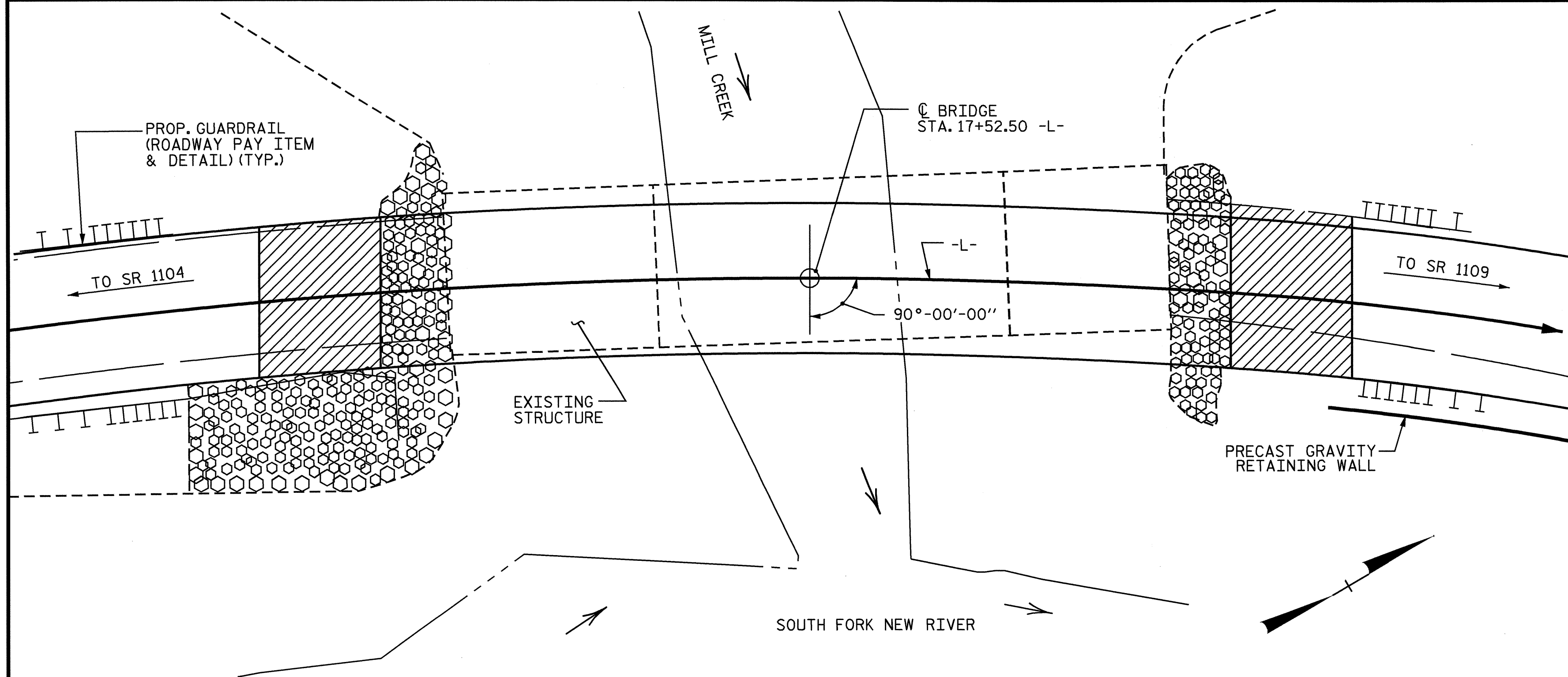


STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
GENERAL DRAWING  
BRIDGE OVER MILL CREEK  
ON SR 1106 BETWEEN  
SR 1104 AND SR 1109

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS 25
2			4			

DRAWN BY : Q. T. NGUYEN DATE : 5-06  
CHECKED BY : T. H. FANG DATE : 8/05/08

BM#2: R/R SPIKE SET IN POWER POLE, EL. 2906.47', STA. 17+01.80 -L-, 18.74' RT.



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING, EXCEPT THAT THE GIRDERS HAVE BEEN DESIGNED FOR HS25.

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

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

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.

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

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

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.

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

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR REMOVAL OF EXISTING STRUCTURE AT STATION 17+52.50 -L-."

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET NO. S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 25 FT. LEFT SIDE AND 25 FT. RIGHT SIDE OF CENTERLINE OF ROADWAY AT END BENTS 1 AND 2 AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION.

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

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

THE EXISTING STRUCTURE, CONSISTING OF 3 SPANS: 1 @ 18'-3", 1 @ 50'-0", 1 @ 18'-3"; 19'-2" CLEAR ROAD WIDTH AND TIMBER FLOOR ON STEEL I-BEAMS AND TIMBER JOISTS; END BENTS: ALL TIMBER PILES AND SILL; INTERIOR BENTS: CONCRETE POSTS AND BEAM WIDENED WITH TIMBER PILES ON CONCRETE SILL, AND LOCATED IN THE AREA OF PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

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

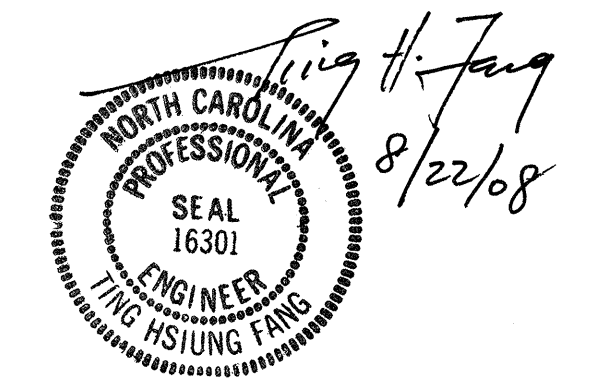
FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR SHIPPING STEEL STRUCTURAL MEMBERS, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.



HYDRAULIC DATA	
DESIGN DISCHARGE	= 1000 CFS.
FREQUENCY OF DESIGN FLOOD	= 25 YRS.
DESIGN HIGH WATER ELEVATION	= 2897.700
DRAINAGE AREA	= 3.17 SQ. MI.
BASIC DISCHARGE (Q100)	= 1550 CFS.
BASIC HIGH WATER ELEVATION	= 2899.000
OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE	= 2350+ CFS.
FREQUENCY OF OVERTOPPING FLOOD	= 500+ YRS
OVERTOPPING FLOOD ELEVATION	= 2910.400

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	STRUCTURAL STEEL	HP 12 X 53 STEEL PILES		CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	EVAZOTE JOINT SEALS
	LUMP SUM	LIN. FT.	LIN. FT.	LUMP SUM	SQ.FT.	SQ.FT.	CU.YDS.	LUMP SUM	LBS.	APPROX. LBS.	NO.	LIN.FT.	LIN.FT.	TON	SQ. YDS.	LUMP SUM
SUPERSTRUCTURE					2,678	2,637		LUMP SUM		80,200			196.67			LUMP SUM
END BENT 1		5	25				16.4		2,353		5	50		63	70	
END BENT 2		5	25				16.3		2,343		5	65		27	30	
TOTAL	LUMP SUM	10	50	LUMP SUM	2,678	2,637	32.7	LUMP SUM	4,696	80,200	10	115	196.67	90	100	LUMP SUM

PROJECT NO. B-4011  
ASHE COUNTY  
 STATION: 17+52.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-3
GENERAL DRAWING						TOTAL SHEETS 25
BRIDGE OVER MILL CREEK ON SR 1106 BETWEEN SR 1104 AND SR 1109						
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DRAWN BY: QT NGUYEN DATE: 4/05  
 CHECKED BY: T. H. FANG DATE: 9/05/07

**NOTES**

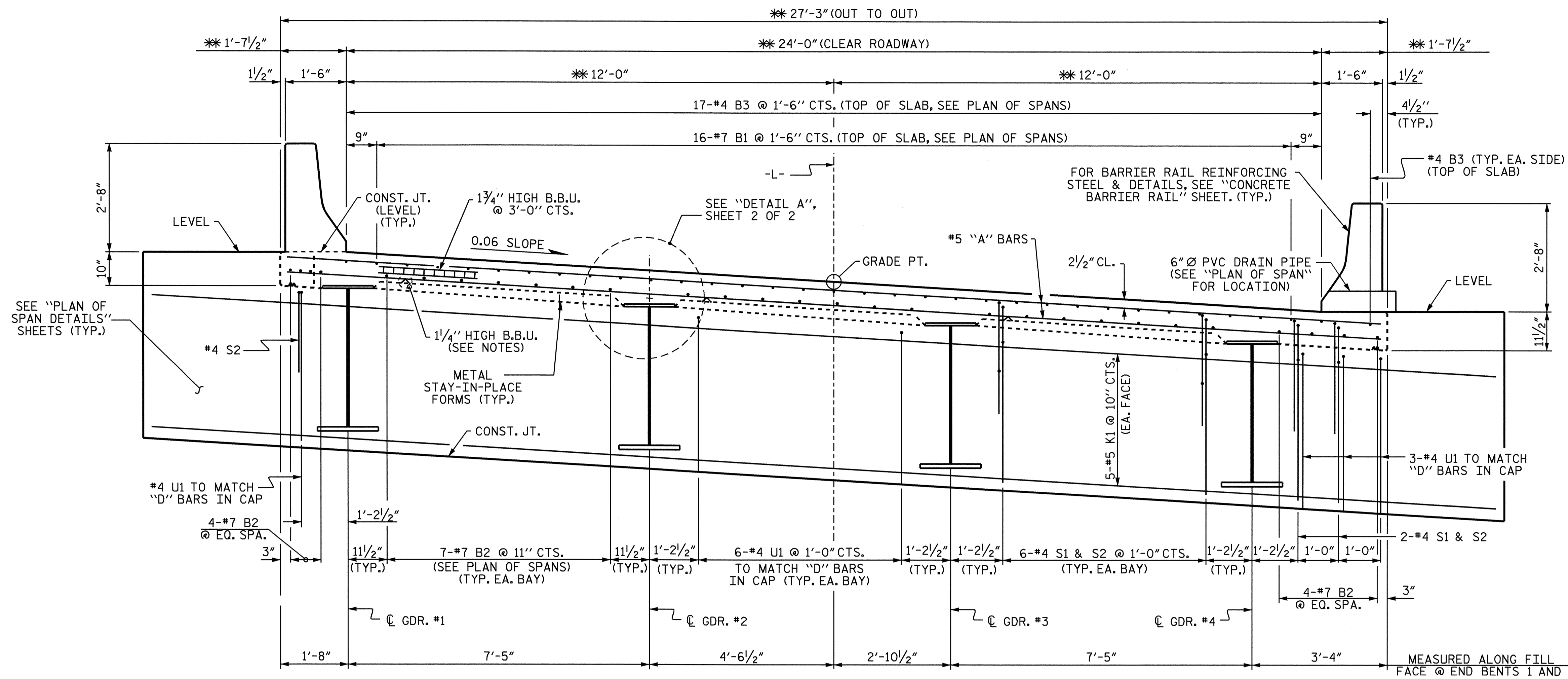
PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF 'A' BARS A CLEAR DISTANCE OF 2 1/2"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

BARRIER RAIL 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.

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

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

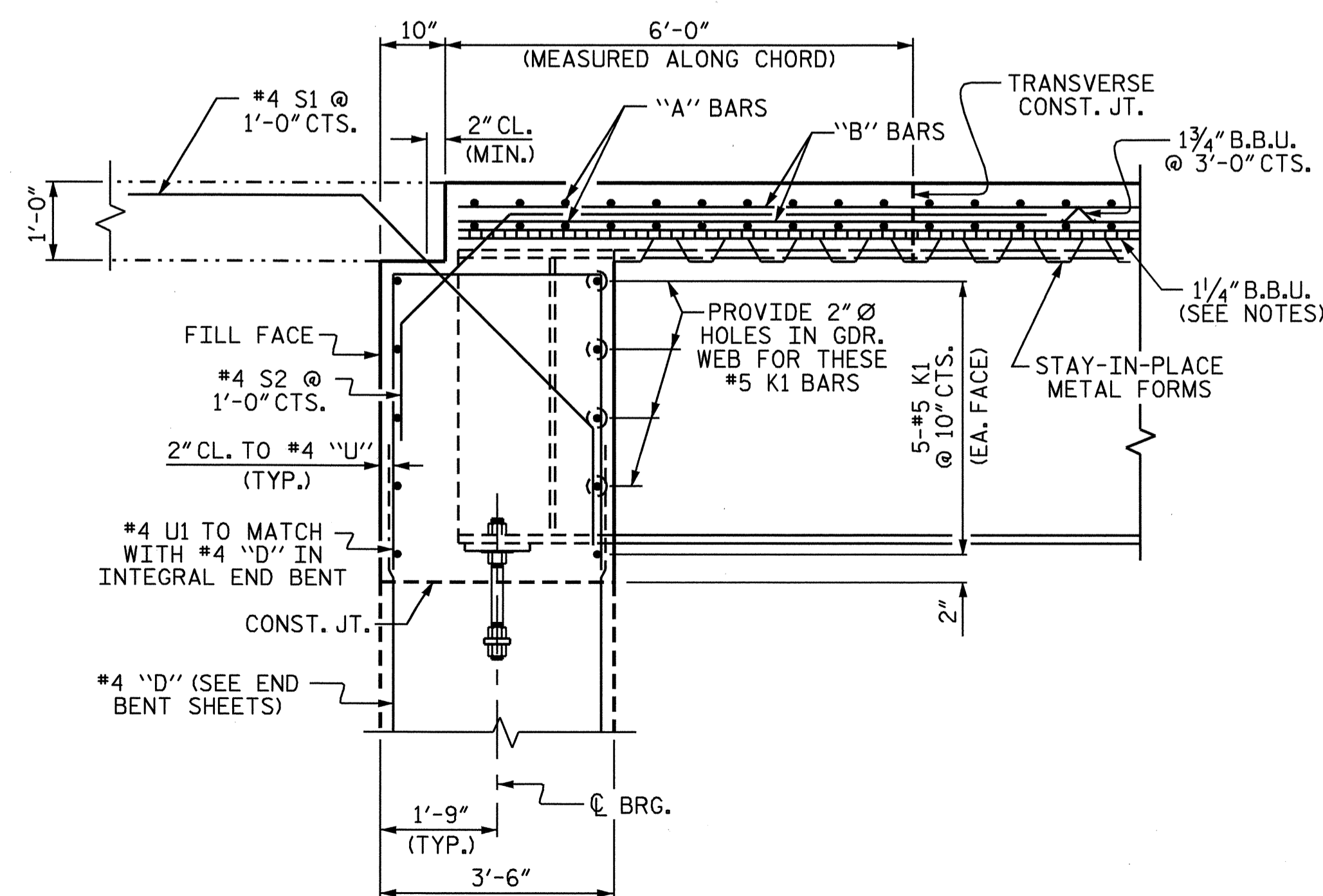
CONTRACTOR MAY PROPOSE ALTERNATE METHOD OF INSTALLING 6" Ø PVC DRAIN PIPE THROUGH BARRIER RAIL. 6" Ø PVC DRAIN PIPE MAYBE SHIFTED TO AVOID 'S' BARS IN BARRIER RAIL.



**TYPICAL SECTION**

SHOWING ABUTMENT WALL AT FILL FACE OF END BENTS, APPROACH SLAB BLOCKOUT & WINGS NOT SHOWN FOR CLARITY.

\*\* RADIAL DIMENSIONS

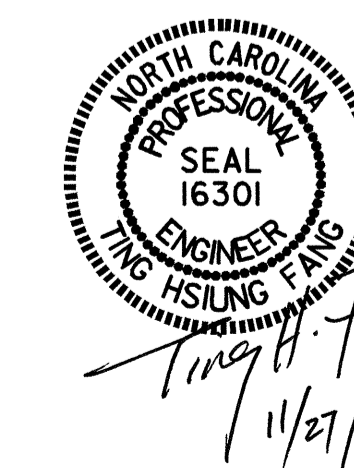


**SECTION THROUGH ABUTMENT @ END BENT**

PROJECT NO. B-4011  
ASHE COUNTY  
 STATION: 17+52.50 -L-

SHEET 1 OF 2

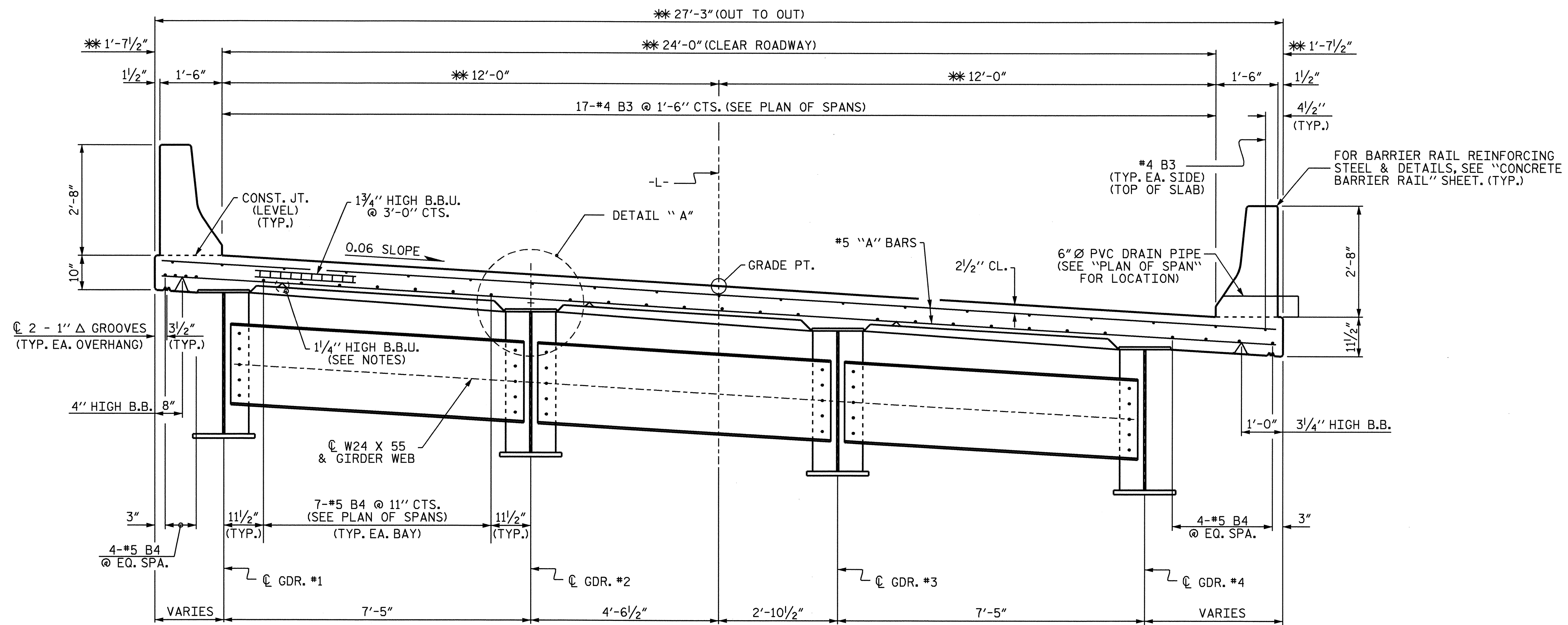
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 TYPICAL SECTION



DRAWN BY: William J. Parker DATE: 10/13/05  
 CHECKED BY: K.K. PUROHIT DATE: 2/16/06

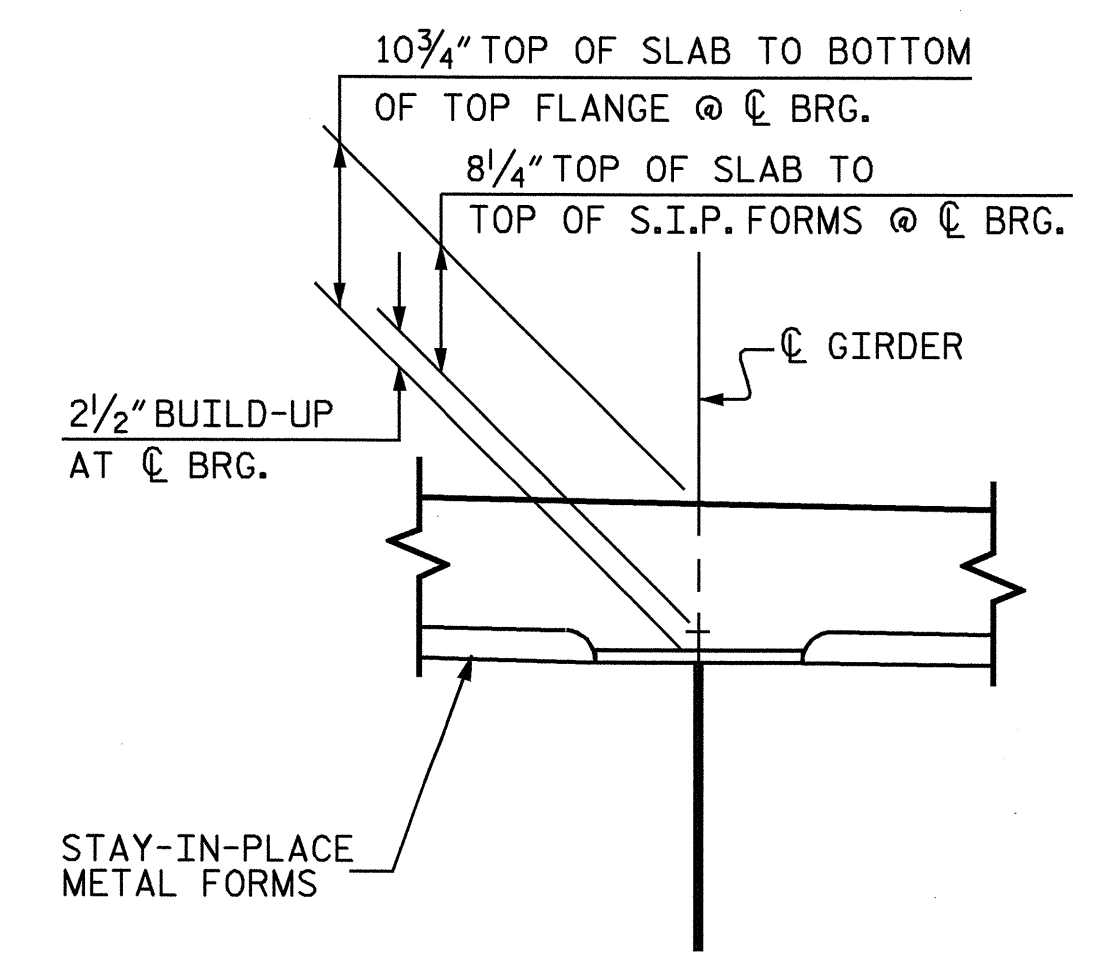
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REVISIONS						SHEET NO. S-4
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			



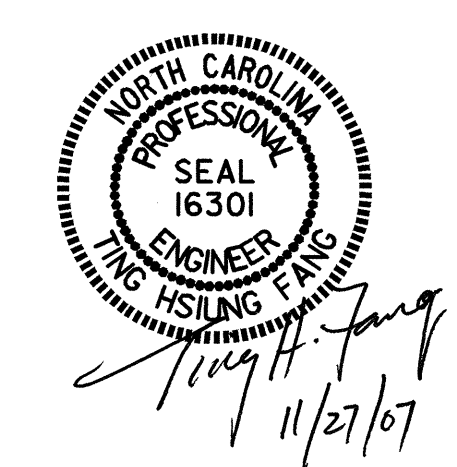
**TYPICAL SECTION**  
(SHOWING INTERMEDIATE DIAPHRAGMS)

\*\* RADIAL DIMENSIONS



**DETAIL A**

PROJECT NO. B-4011  
ASHE COUNTY  
 STATION: 17+52.50 -L-  
 SHEET 2 OF 2

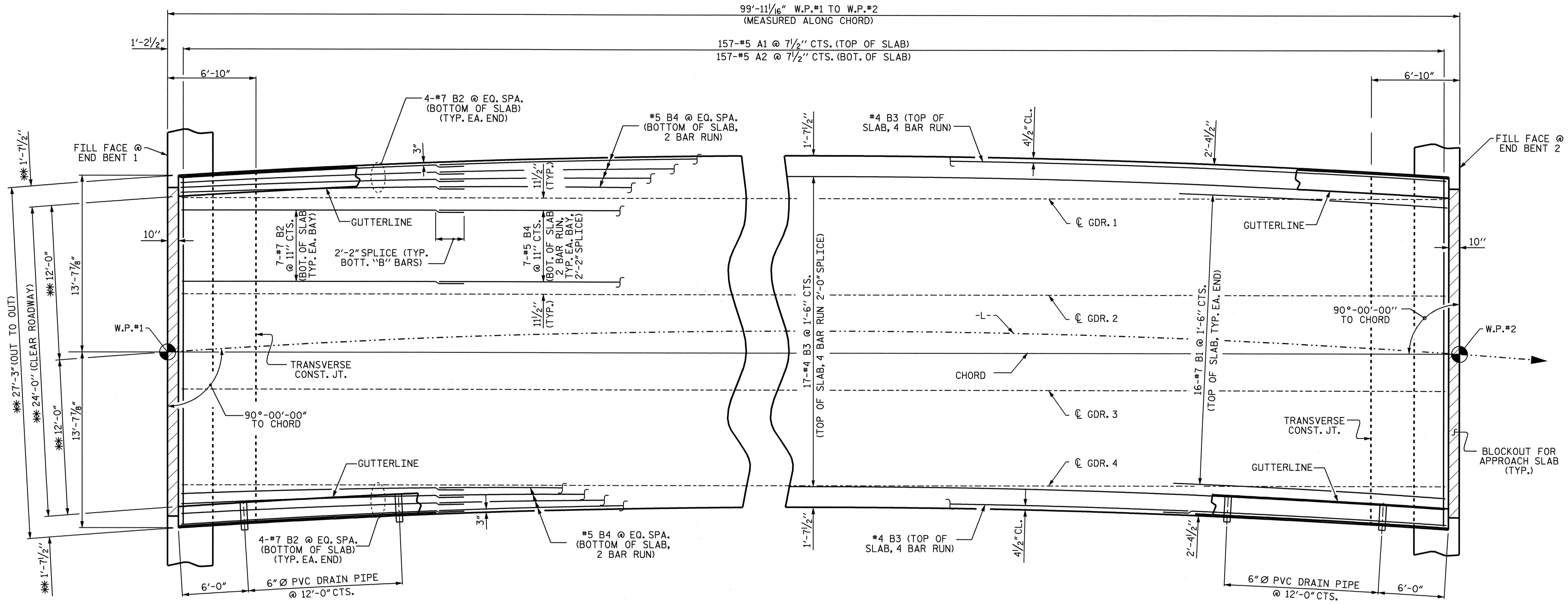


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 TYPICAL SECTION

DRAWN BY: William J. Parker DATE: 10/3/05  
 CHECKED BY: K.K. PUROHIT DATE: 2/16/06

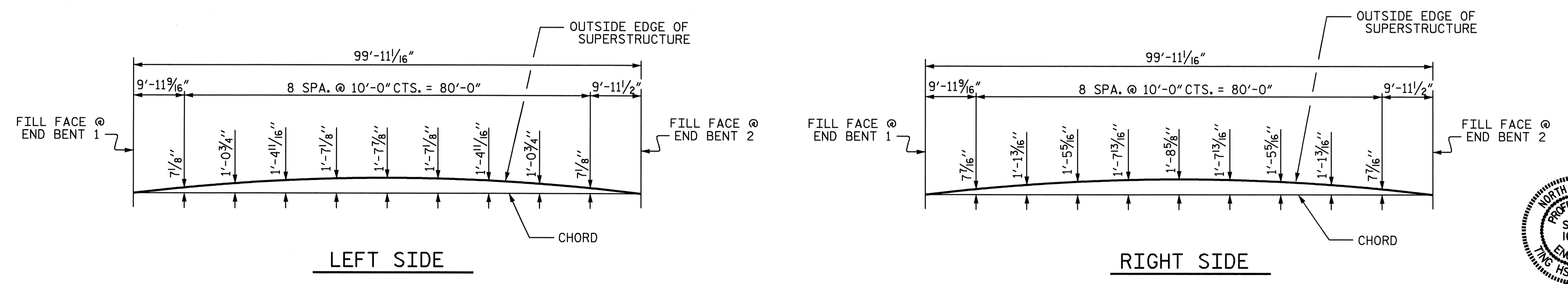
REVISIONS						SHEET NO. S-5
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			

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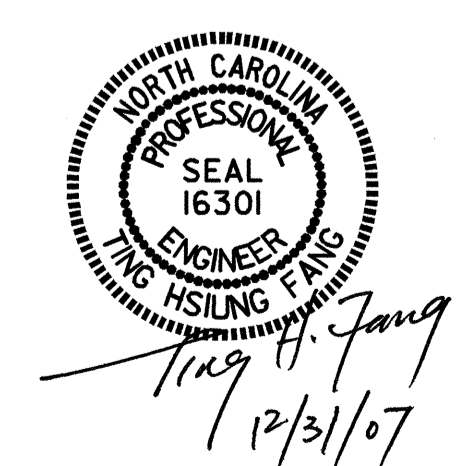
**PLAN OF SPAN A**

\* RADIAL DIMENSIONS



**ARC OFFSETS**

PROJECT NO. B-4011  
ASHE COUNTY  
 STATION: 17+52.50 -L-  
 SHEET 1 OF 4



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 PLAN OF SPAN

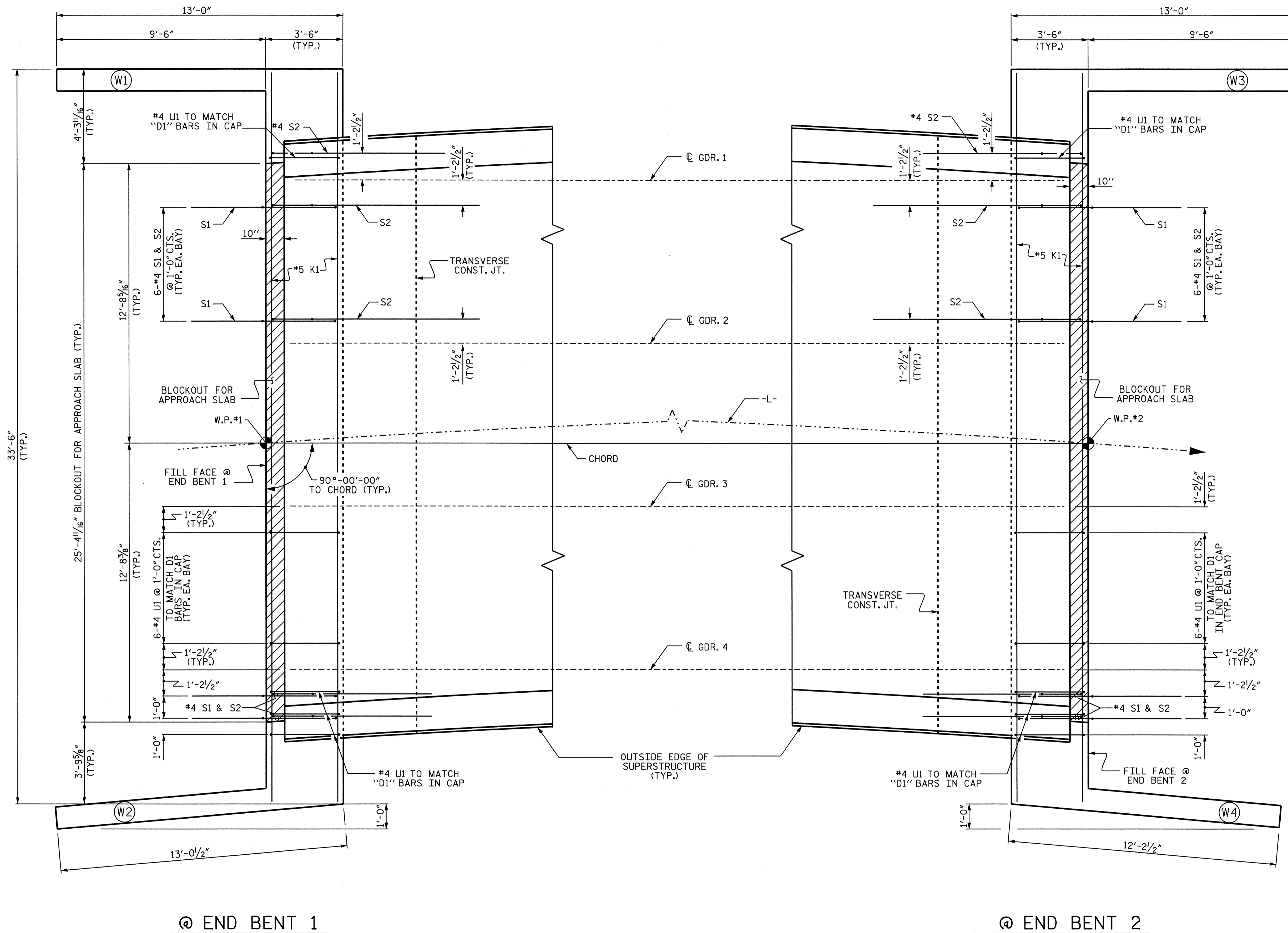
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			25

DRAWN BY: William F. Parker DATE: 10/13/05  
 CHECKED BY: K.K. PUROHIT DATE: 2/16/06

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 Hshdh

**NOTES**

FOR SECTION THROUGH ABUTMENT, SEE "TYPICAL SECTIONS", SHEET 1 OF 2  
 FOR DETAILS AND REINFORCING STEEL IN WINGS, SEE "PLAN OF SPAN DETAILS" SHEET 3 OF 4 AND SHEET 4 OF 4.



Ting Hsing Fung  
 12/31/07

PROJECT NO. B-4011  
ASHE COUNTY  
 STATION: 17+52.50 -L-  
 SHEET 2 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 PLAN OF SPAN  
 DETAILS

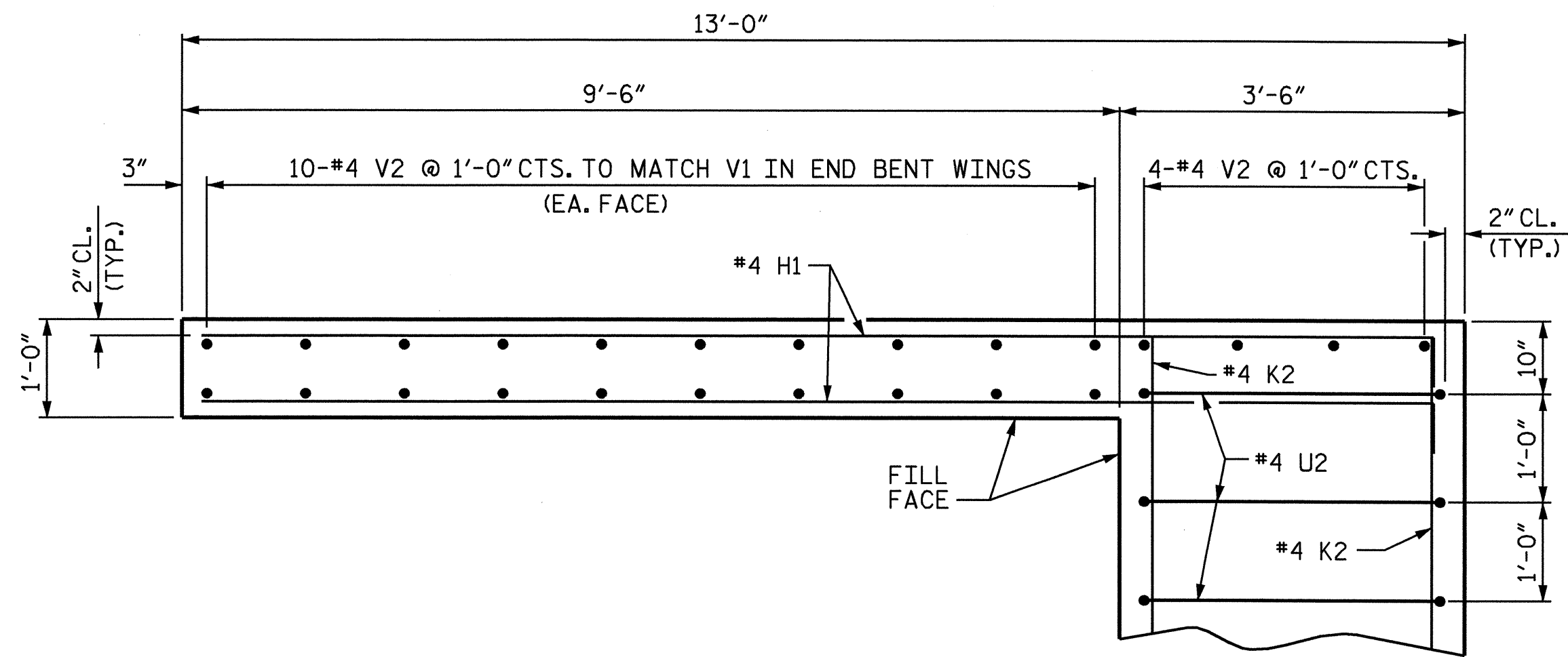
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			25

DRAWN BY: William J. Parker DATE: 10/13/05  
 CHECKED BY: K.K. PUROHIT DATE: 2/16/06

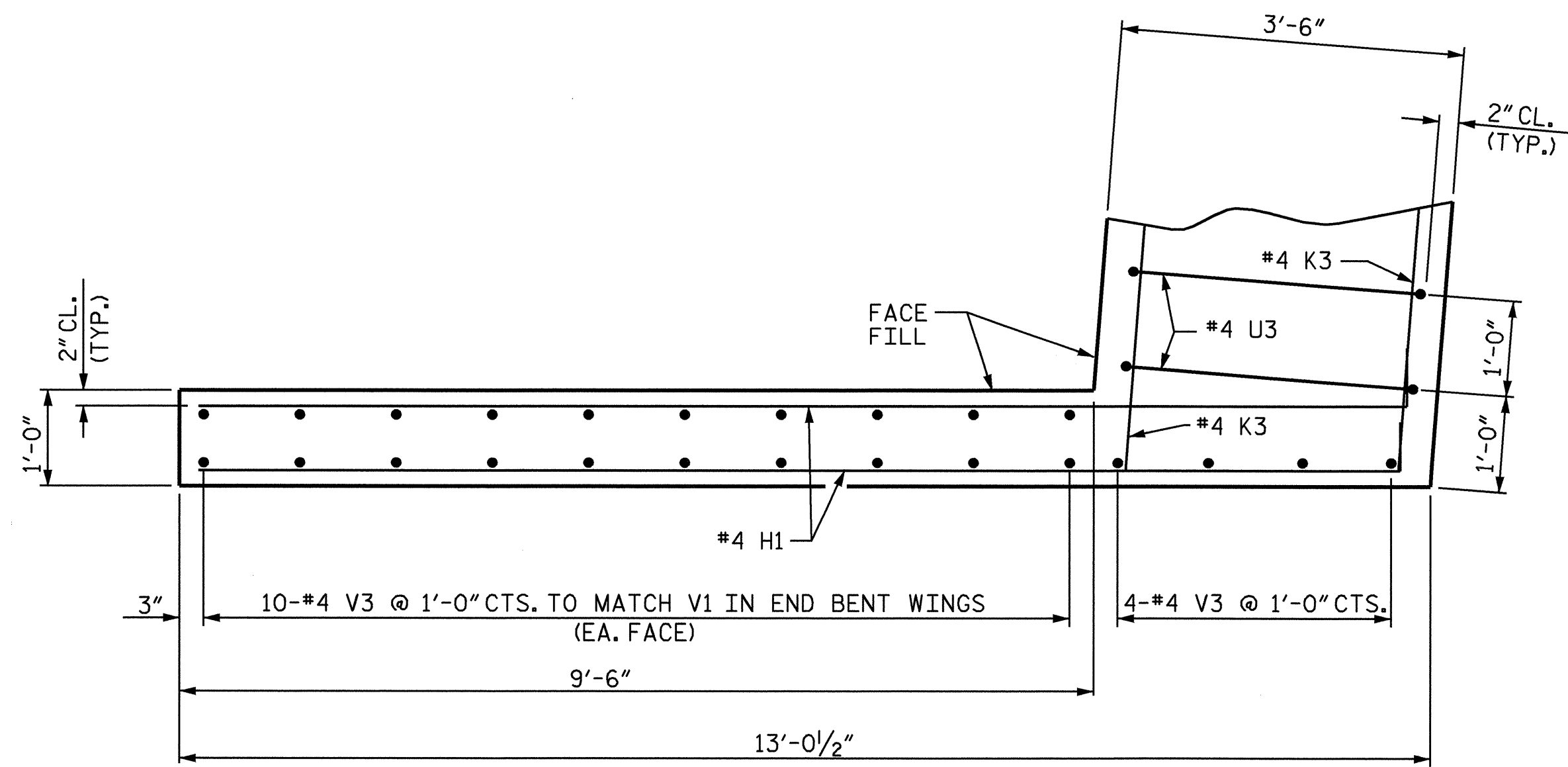
**PLAN OF ABUTMENT WALLS**

ALL DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR BOTH END BENTS

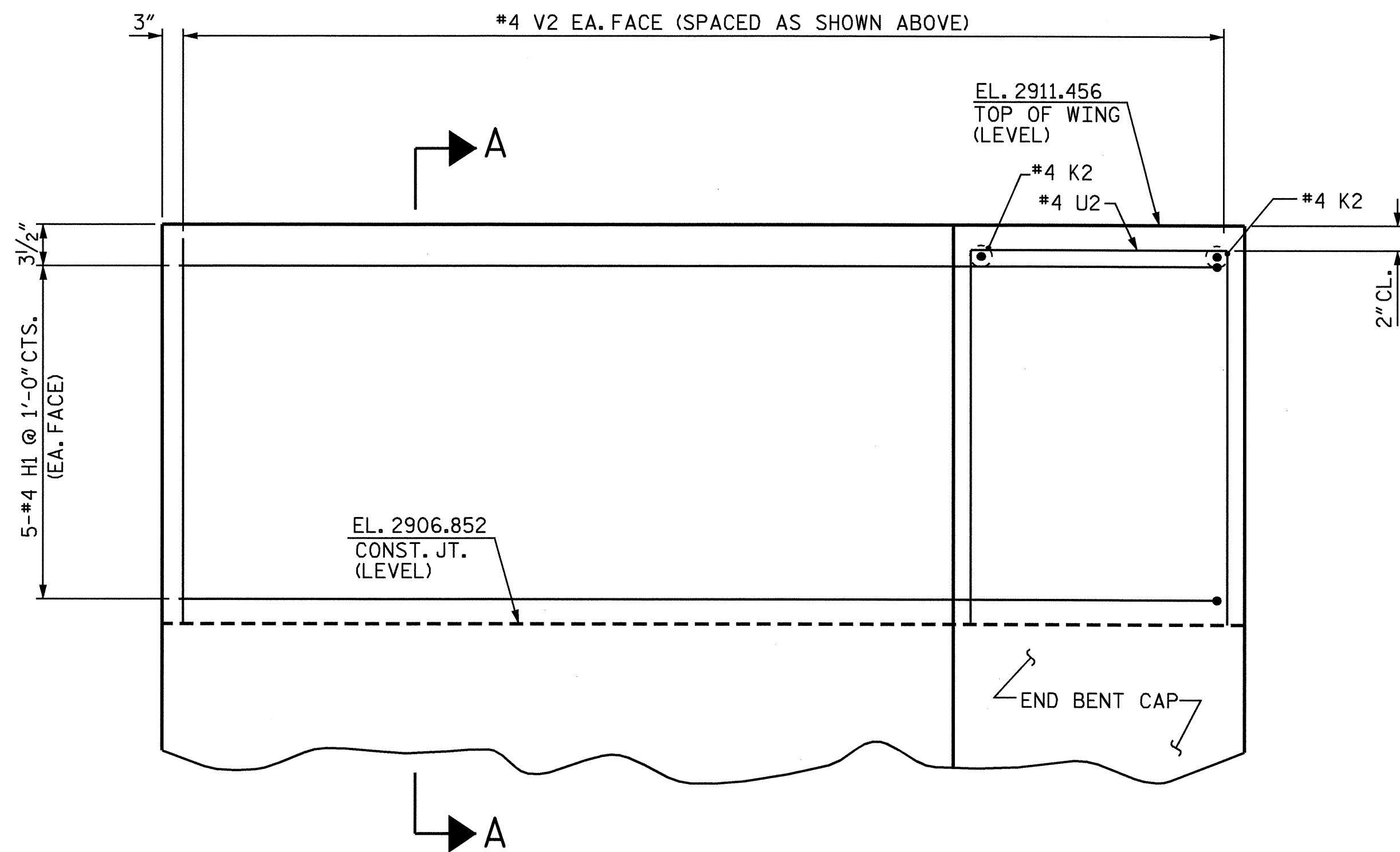




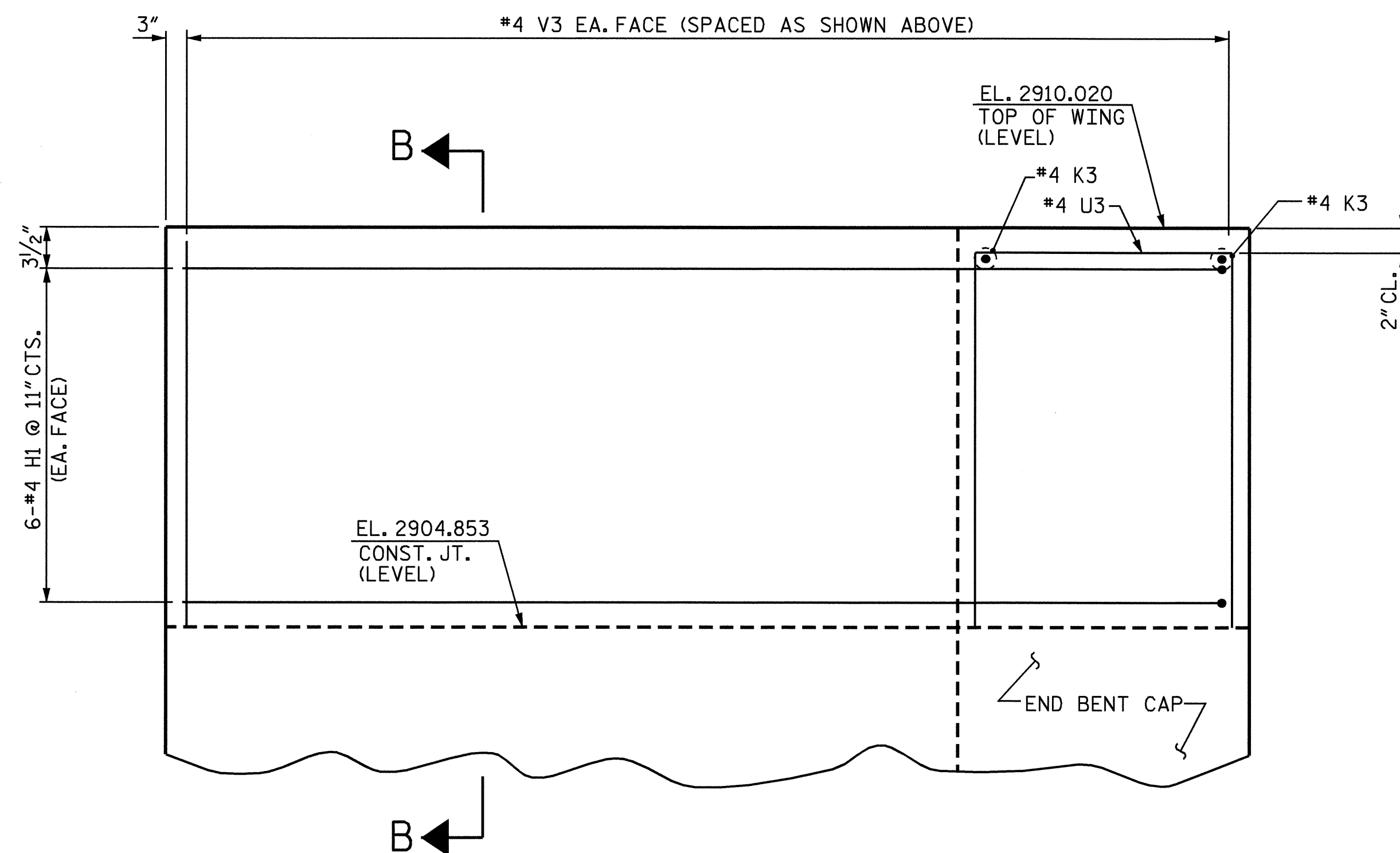
PLAN (W1)



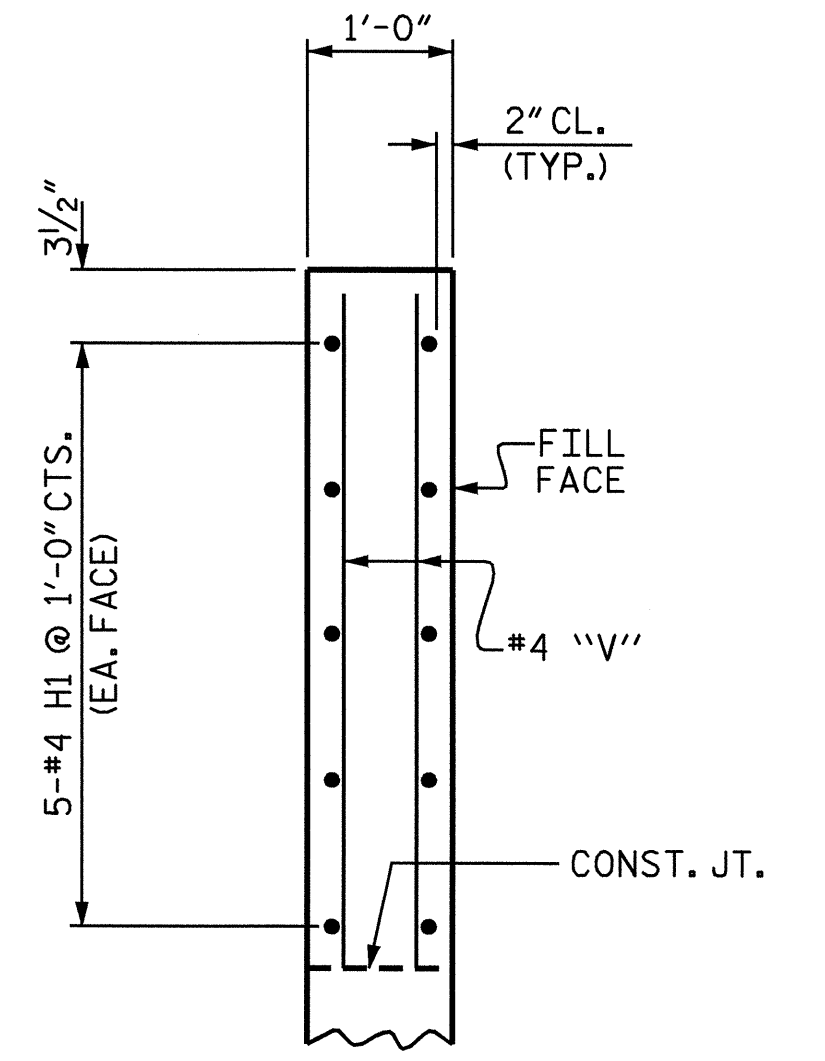
PLAN (W2)



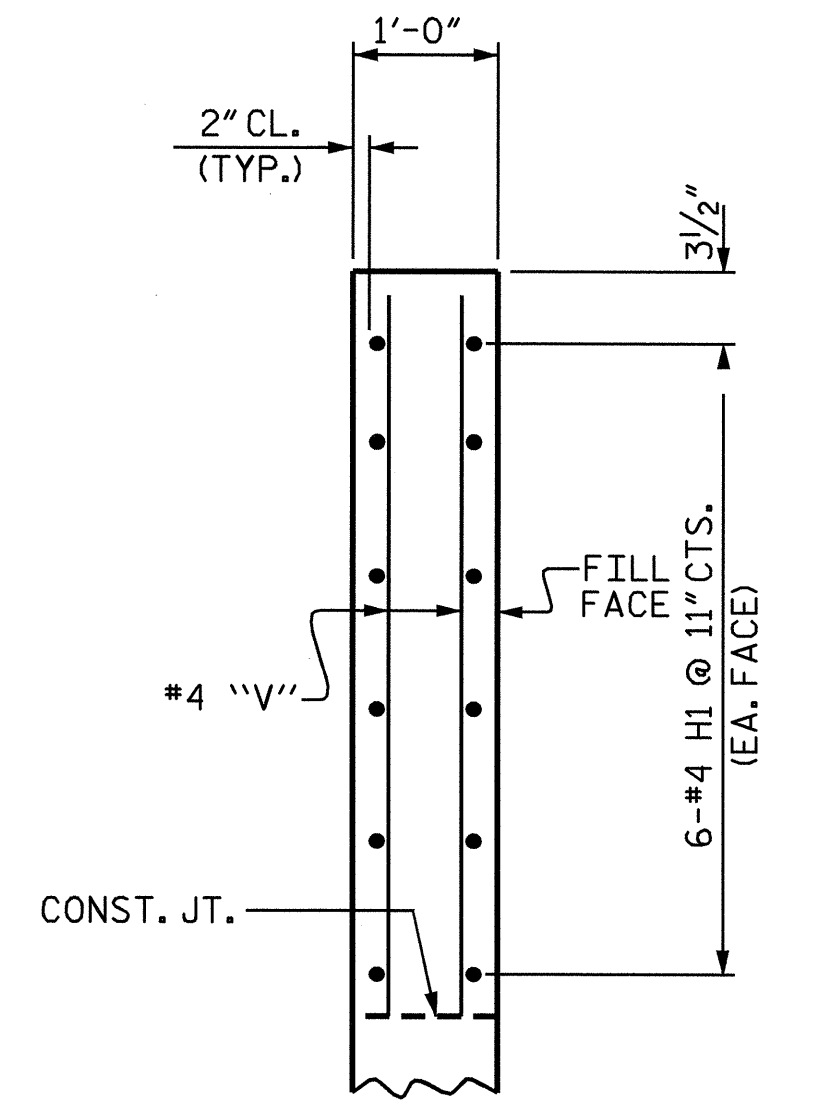
ELEVATION (W1)



ELEVATION (W2)



SECTION A-A



SECTION B-B

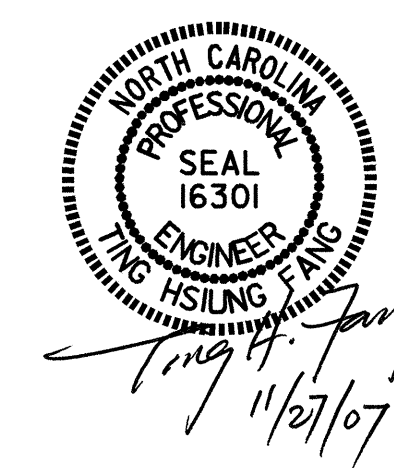
PROJECT NO. B-4011  
ASHE COUNTY  
 STATION: 17+52.50 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 PLAN OF SPAN  
 DETAILS

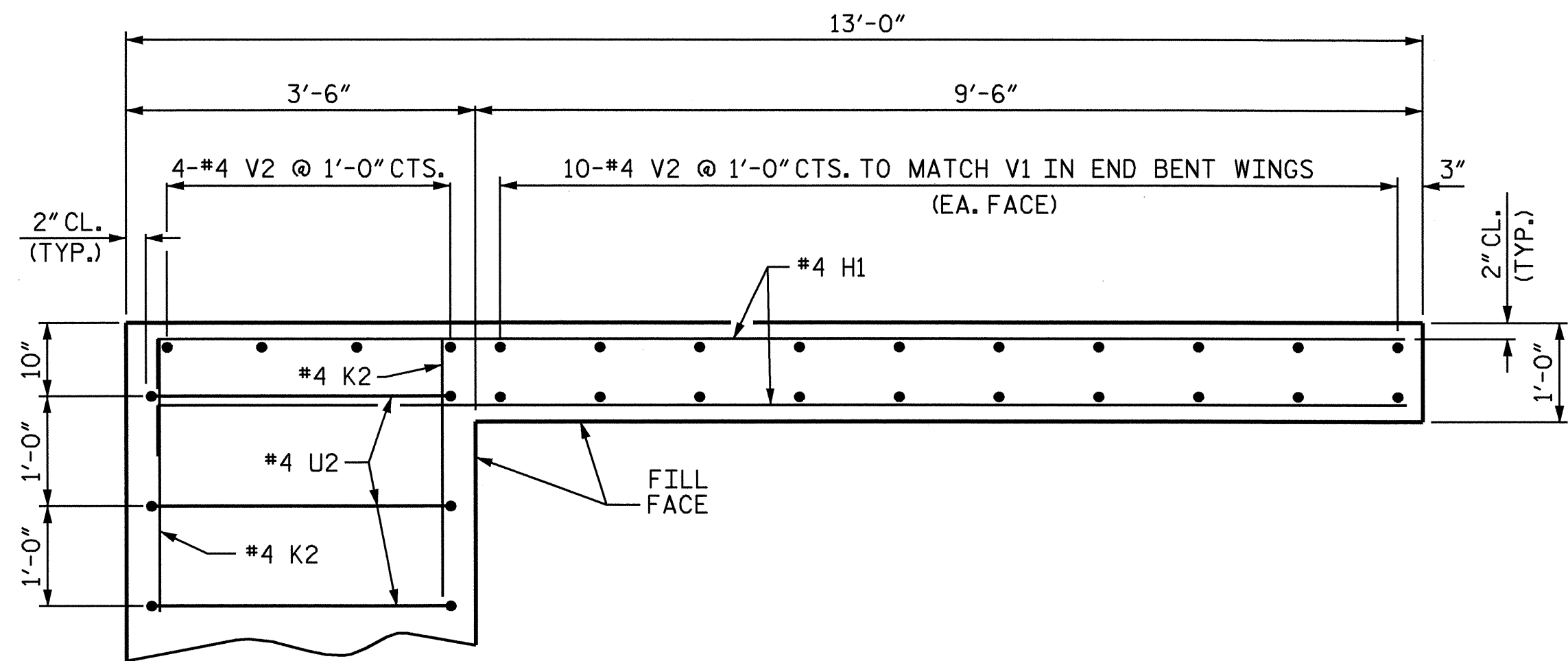
REVISIONS						SHEET NO. S-8
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			



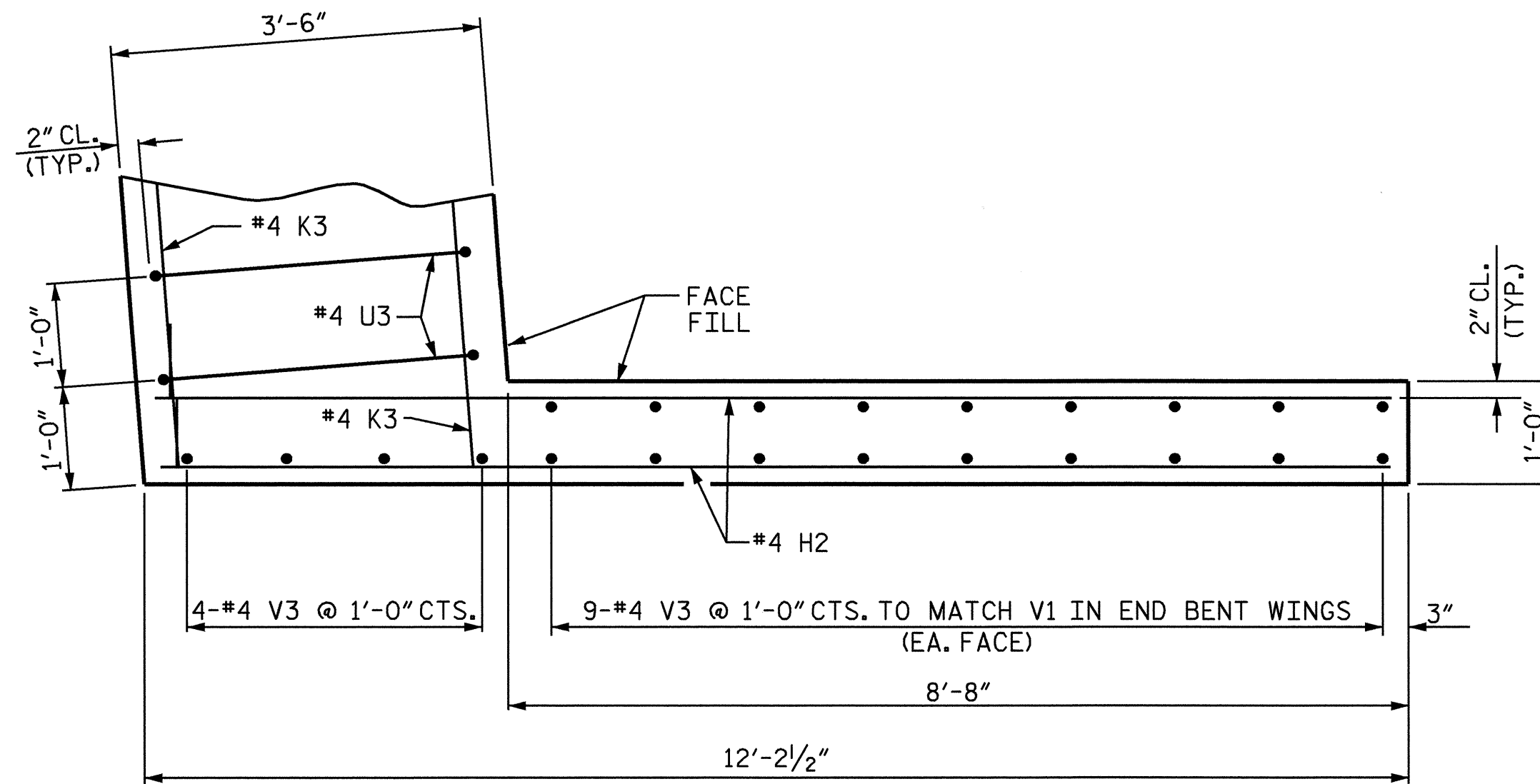
**ABUTMENT WINGS AT END BENT 1**

FOR END BENT REINFORCEMENT STEEL AND DETAILS,  
 SEE "SUBSTRUCTURE END BENT 1" SHEETS

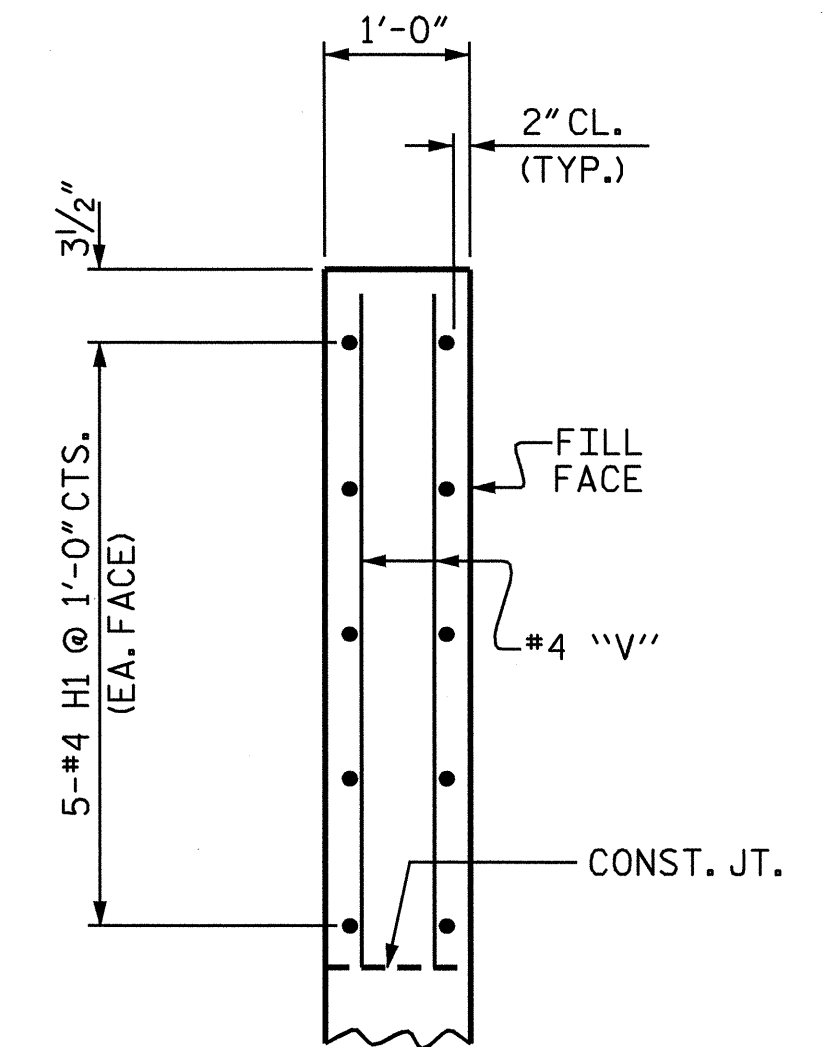
DRAWN BY: William J. Parker DATE: 10/30/05  
 CHECKED BY: K.K. PUROHIT DATE: 2/16/06



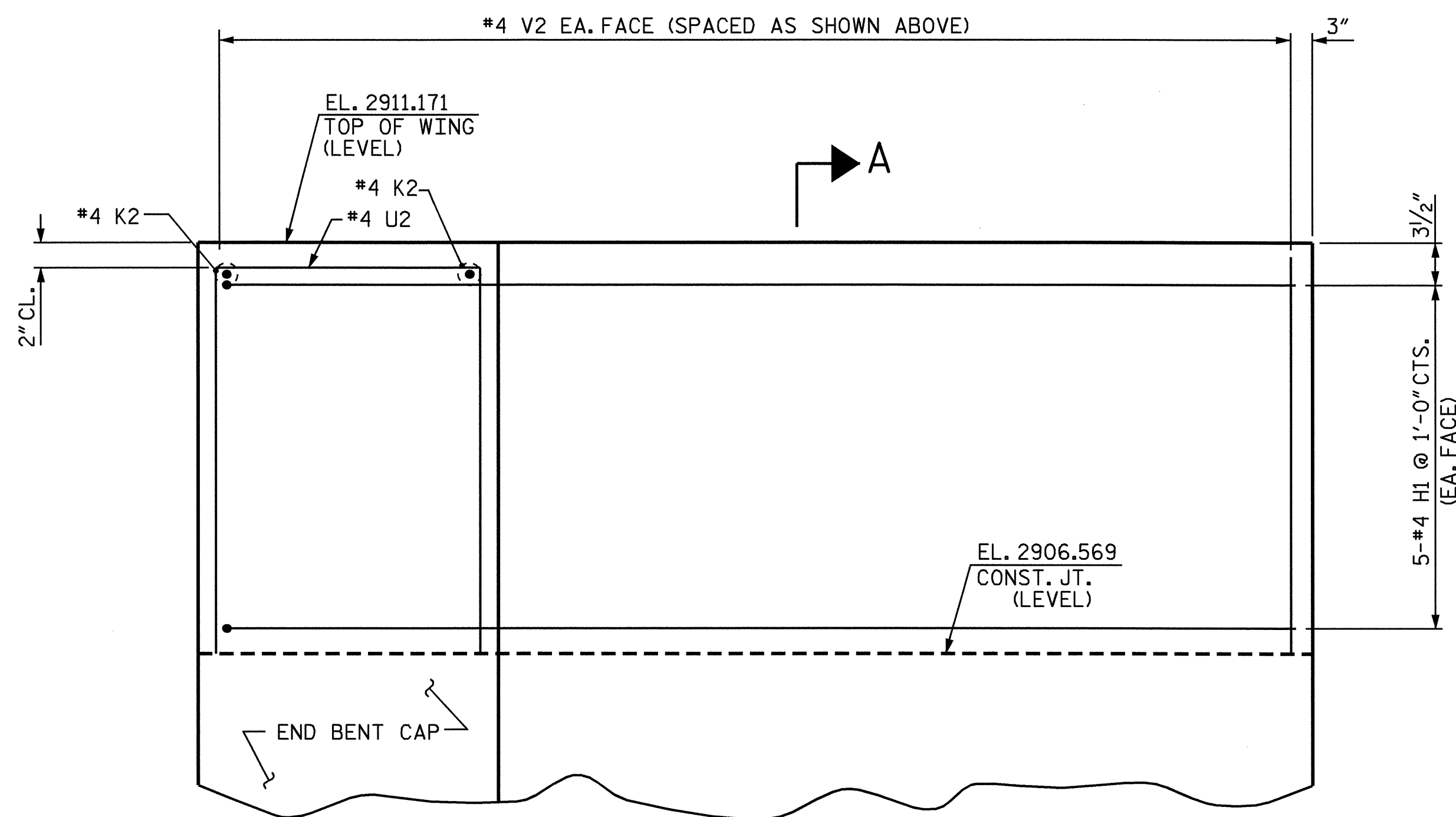
PLAN (W3)



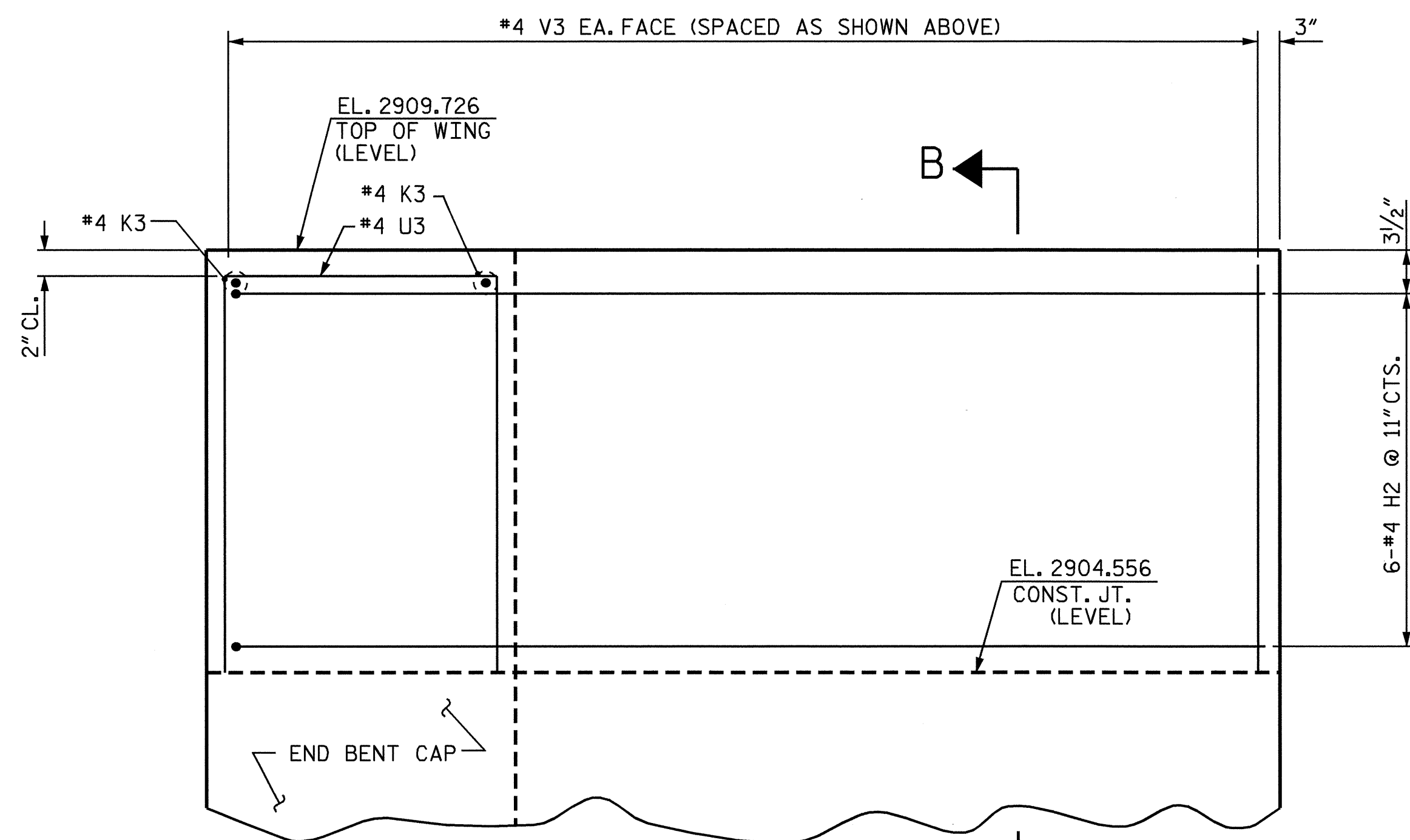
PLAN (W4)



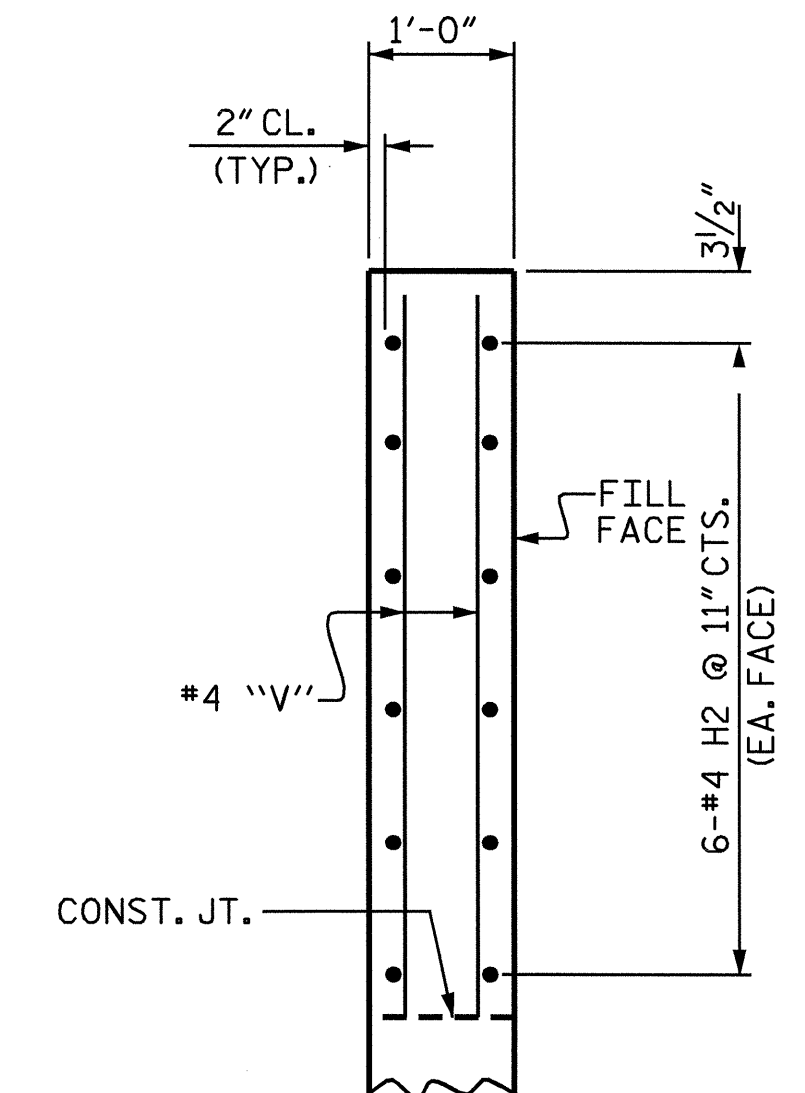
SECTION A-A



ELEVATION (W3)



ELEVATION (W4)



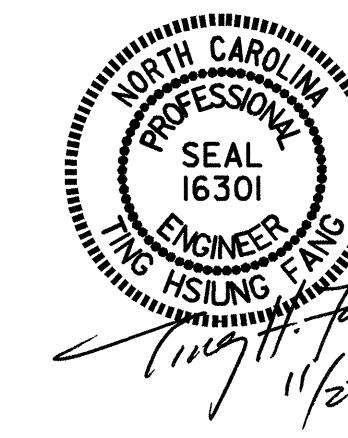
SECTION B-B

ABUTMENT WINGS AT END BENT 2

FOR END BENT REINFORCEMENT STEEL AND DETAILS,  
SEE "SUBSTRUCTURE END BENT 2" SHEETS

PROJECT NO. B-4011  
ASHE COUNTY  
STATION: 17+52.50 -L-

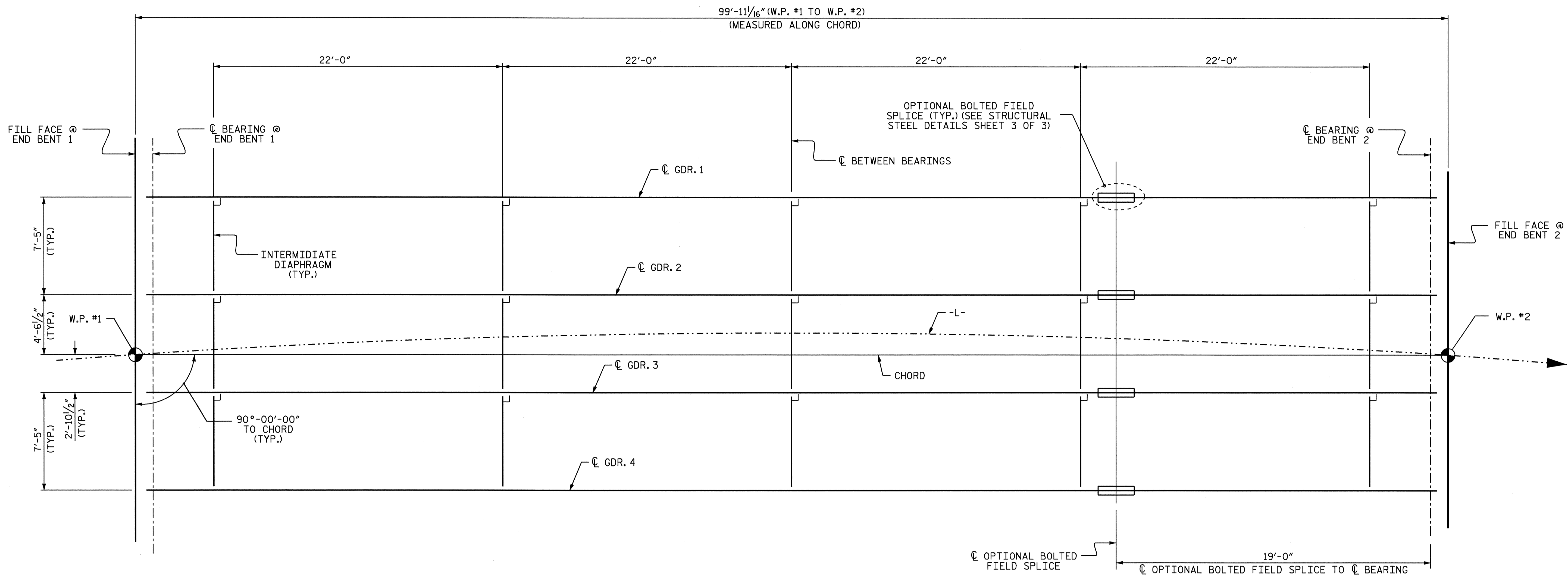
SHEET 4 OF 4



DRAWN BY: William F. Parker DATE: 10/13/05  
CHECKED BY: K.K. PUROHIT DATE: 2/16/06

27-NOV-2007 11:22  
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-9	
SUPERSTRUCTURE PLAN OF SPAN DETAILS						TOTAL SHEETS 25	
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9	
1			3			TOTAL SHEETS 25	
2			4				

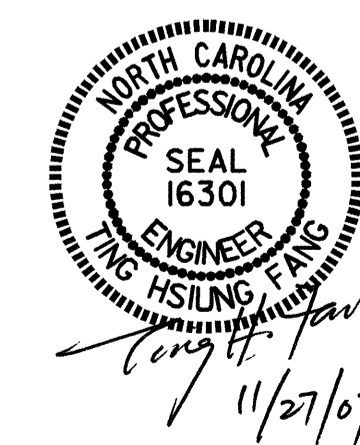


INTEGRAL  
P1, P2

INTEGRAL  
P1, P2

FRAMING PLAN

PROJECT NO. B-4011  
ASHE COUNTY  
 STATION: 17+52.50 -L-



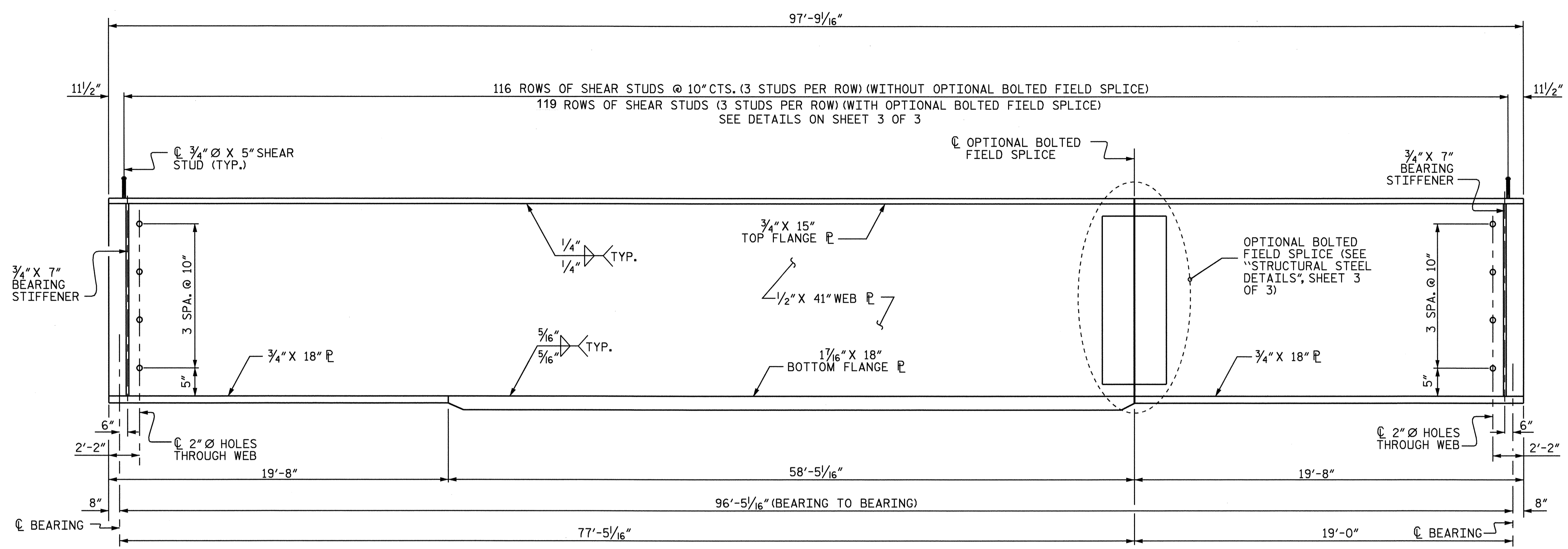
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 FRAMING PLAN

DRAWN BY : J.L. WALTON DATE : 8/21/05  
 CHECKED BY : K.K. PUROHIT DATE : 12/12/05

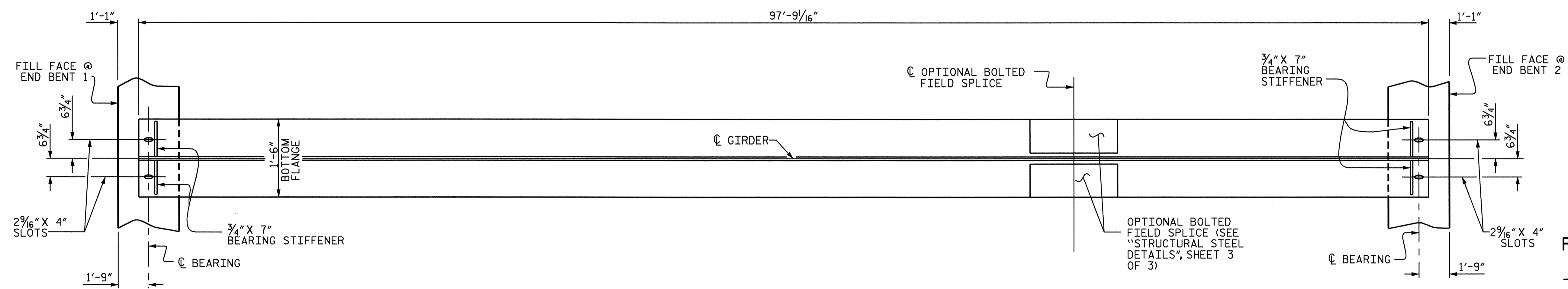
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			25

**NOTES :**

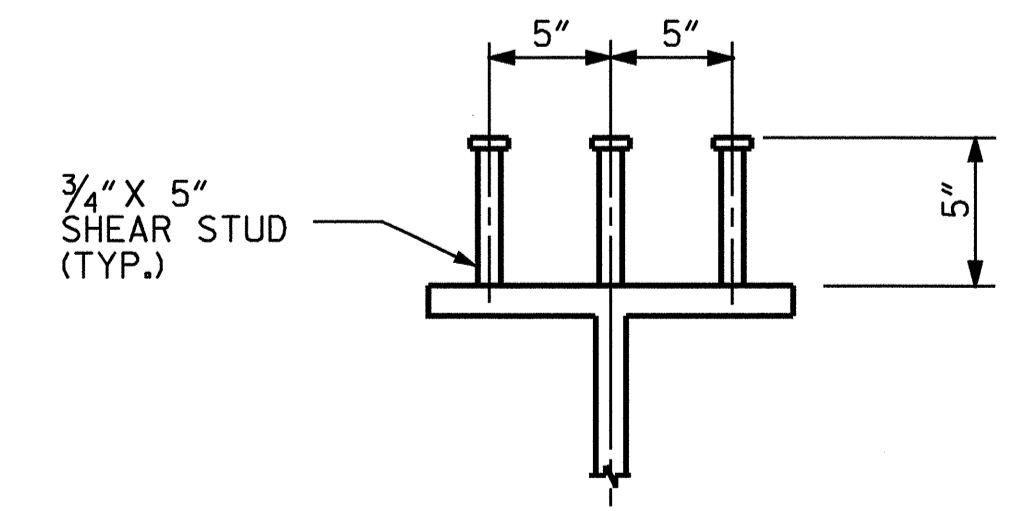
- ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W.
- ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.
- STUDS ON GIRDERS MAY BE SHIFTED UP TO 1" IF NECESSARY TO CLEAR FLANGE SPLICE WELD.
- SHOP SPLICES ARE PERMITTED TO LIMIT THE MAXIMUM REQUIRED FLANGE PIECE LENGTHS TO 60 FEET AND WEB PIECE LENGTHS TO 45 FEET. PERMITTED FLANGE AND WEB SHOP SPLICES SHALL NOT BE LOCATED WITHIN 15 FEET OF MAXIMUM DEAD LOAD DEFLECTION. KEEP 2 FEET MINIMUM BETWEEN WEB AND FLANGE SHOP SPLICES. KEEP 6" MINIMUM BETWEEN CONNECTOR PLATE, WEB OR FLANGE SHOP SPLICES.
- END OF GIRDERS SHALL BE PLUMB.
- FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.
- FOR SHIPPING STEEL STRUCTURAL MEMBERS, SEE SPECIAL PROVISIONS.
- ALL FIELD CONNECTIONS TO BE 7/8" DIAMETER HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED.
- TENSION ON THE AASHTO M164 BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-8 OF THE STANDARD SPECIFICATIONS.
- BEARING STIFFENERS ARE TO BE PLACED NORMAL TO THE WEB OF THE GIRDER AND SHALL BE PLUMB.
- IF THE OPTIONAL BOLTED FIELD SPLICE IS USED, IT SHALL BE MADE ENTIRELY AT THE CONTRACTOR'S EXPENSE AND NO ADDITIONAL MEASUREMENT OR PAYMENT WILL BE MADE.
- A CHARPY V-NOTCH TEST IS REQUIRED FOR WEB PLATES, BOTTOM FLANGE PLATES, TOP FLANGE PLATES WITHIN 10 FEET OF THE FILL FACE, BOTTOM FLANGE SPLICE PLATES AND WEB SPLICE PLATES (IF USED) FOR ALL GIRDERS AND IN ACCORDANCE WITH ARTICLE 1072-9 OF THE STANDARD SPECIFICATIONS.
- NO WELDING OF FORMS OR FALSEWORK TO THE TOP FLANGE WILL BE PERMITTED WITHIN 10 FEET OF THE FILL FACE.



**PLATE GIRDER ELEVATION**



**BOTTOM FLANGE DETAIL**

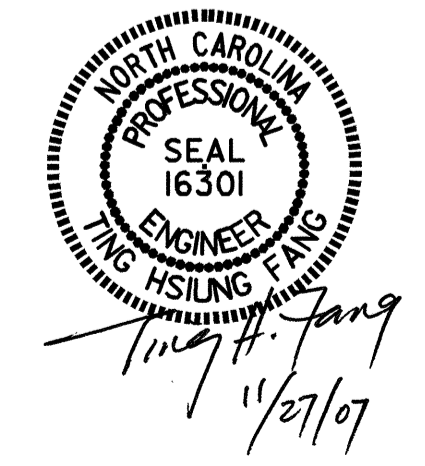


**SHEAR STUD DETAIL**  
(TYP. EA. GIRDER)

PROJECT NO. B-4011  
ASHE COUNTY  
 STATION: 17+52.50 -L-

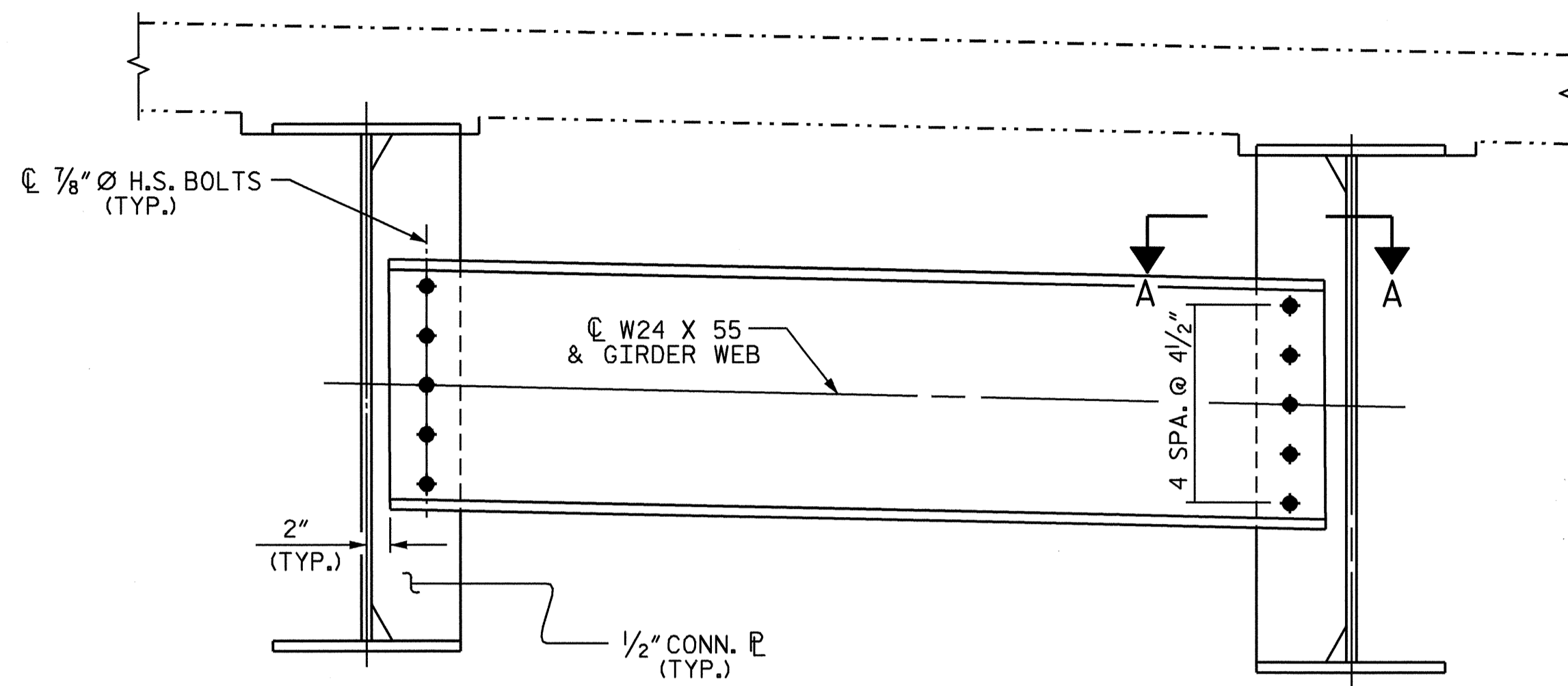
SHEET 1 OF 3

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

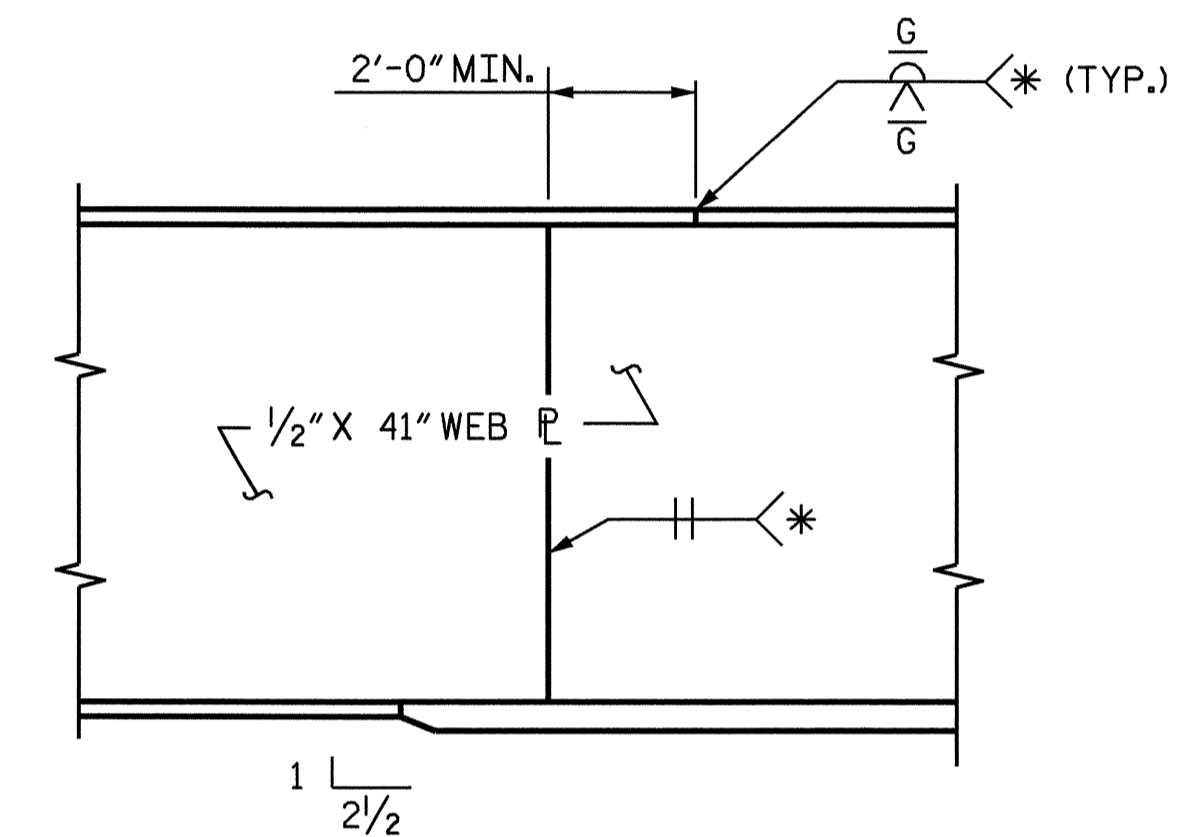
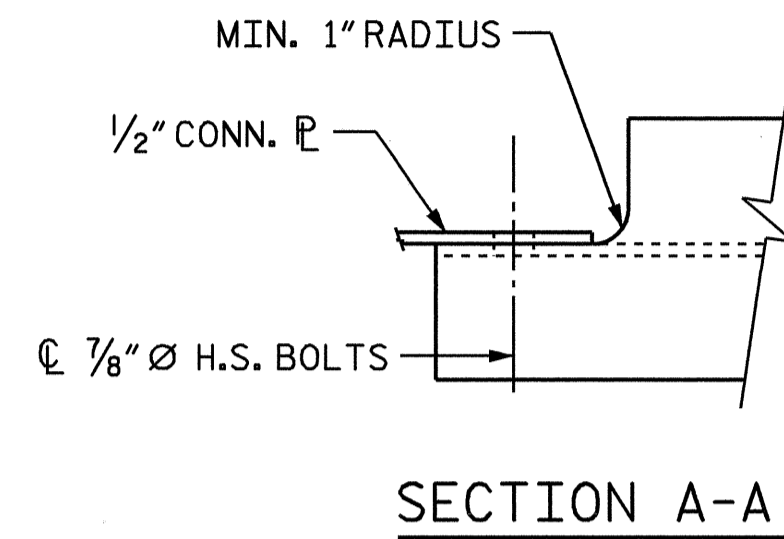


DRAWN BY : J. L. WALTON DATE : 8/21/05  
 CHECKED BY : K. K. PUROHIT DATE : 12/12/05

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			25

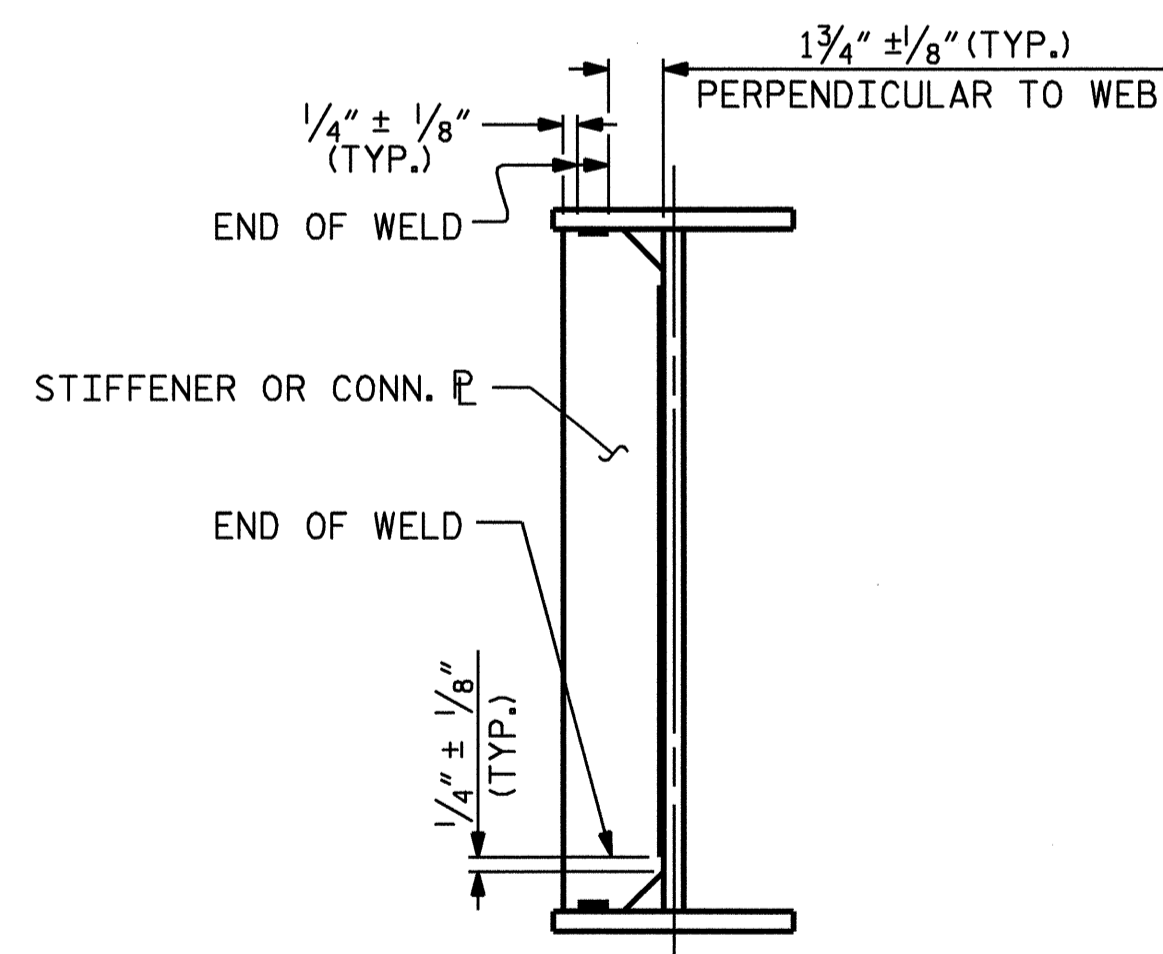


TYPICAL INTERMEDIATE DIAPHRAGM



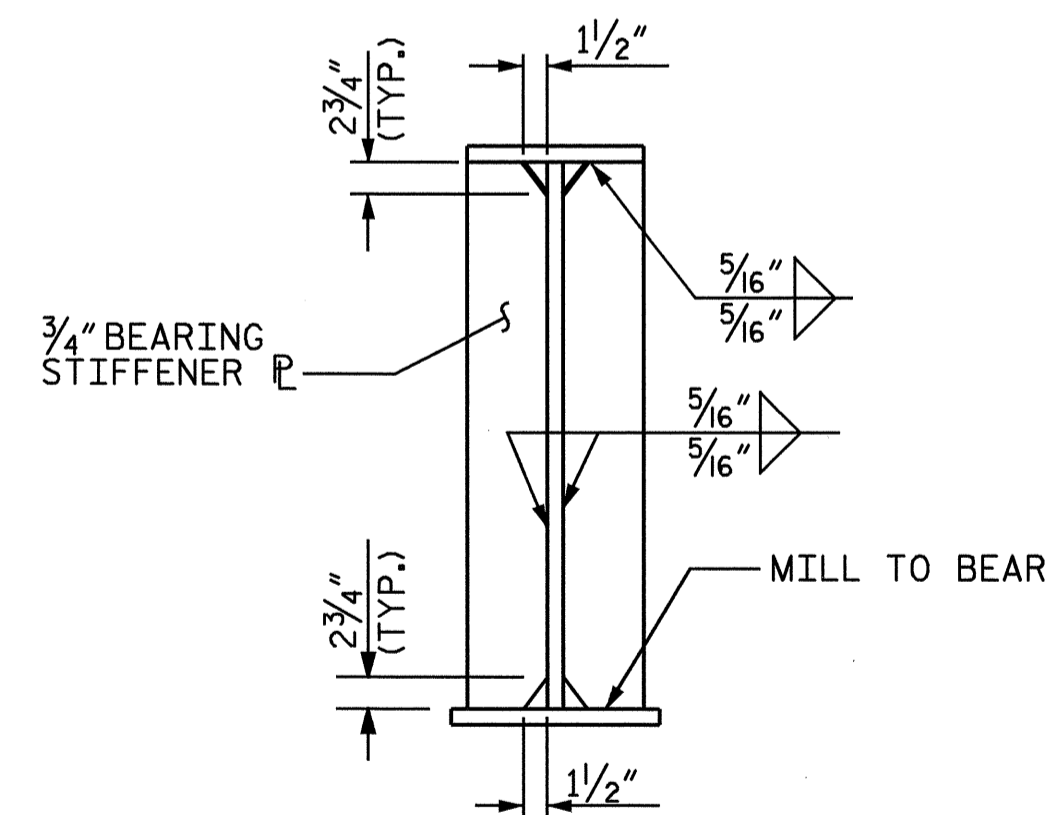
TYPICAL FLANGE AND WEB BUTT JOINT

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

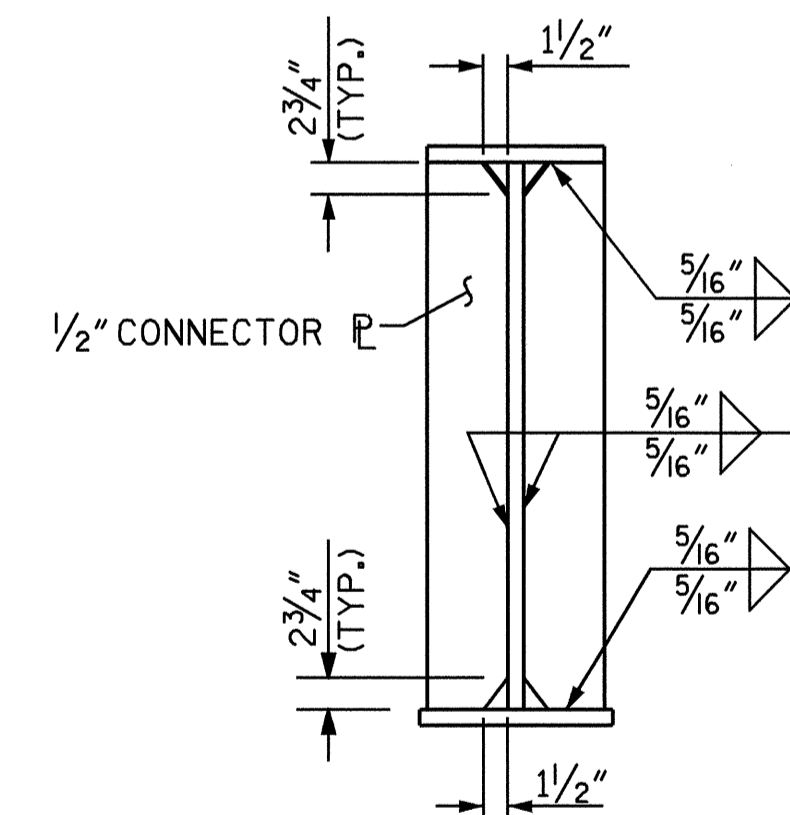


TYPICAL STIFFENER OR  
CONNECTOR PLATE CONNECTIONS

WELD TERMINATION DETAILS



BEARING STIFFENER

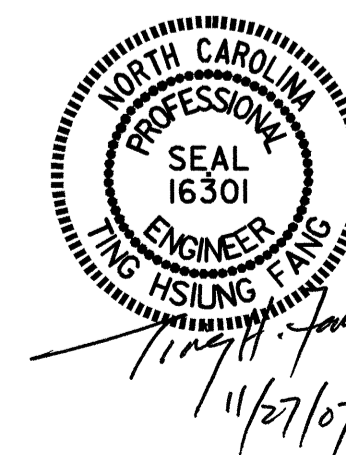


CONNECTOR PLATE DETAILS

PROJECT NO. B-4011  
ASHE COUNTY  
 STATION: 17+52.50 -L-

SHEET 2 OF 3

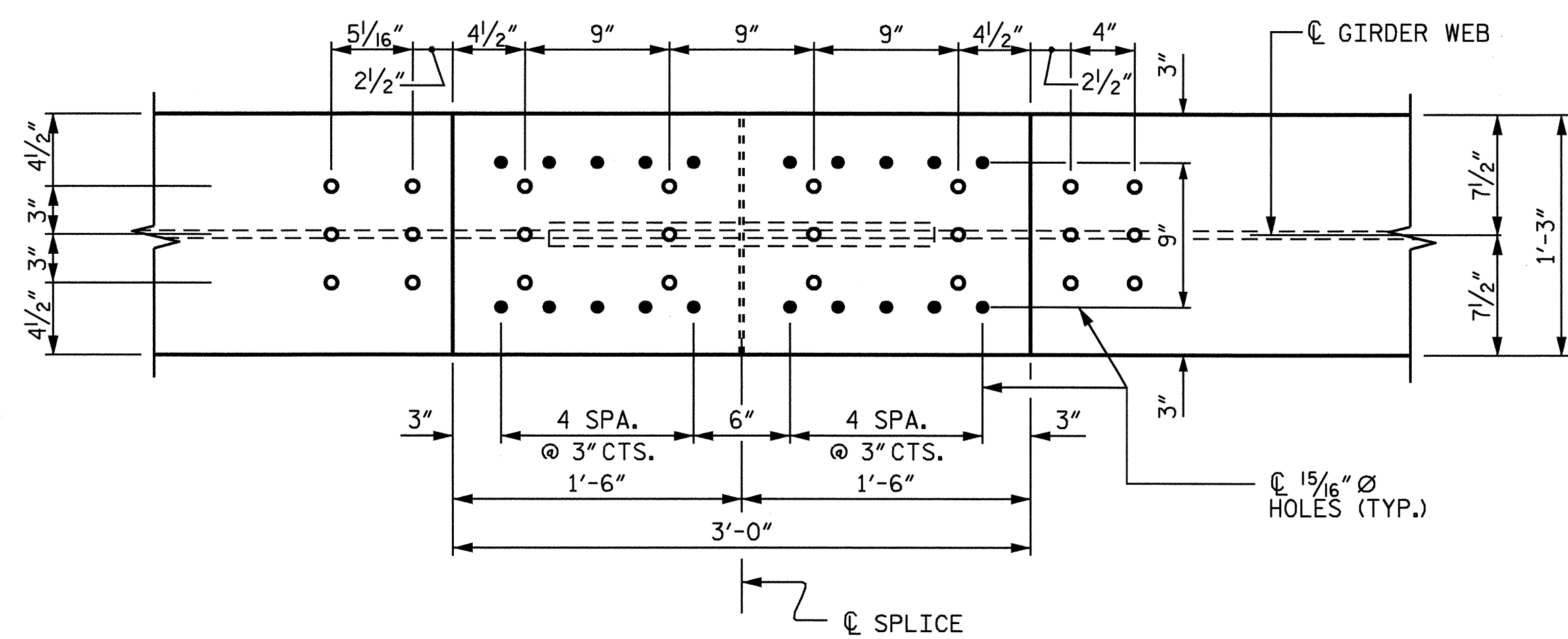
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 STRUCTURAL STEEL  
 DETAILS



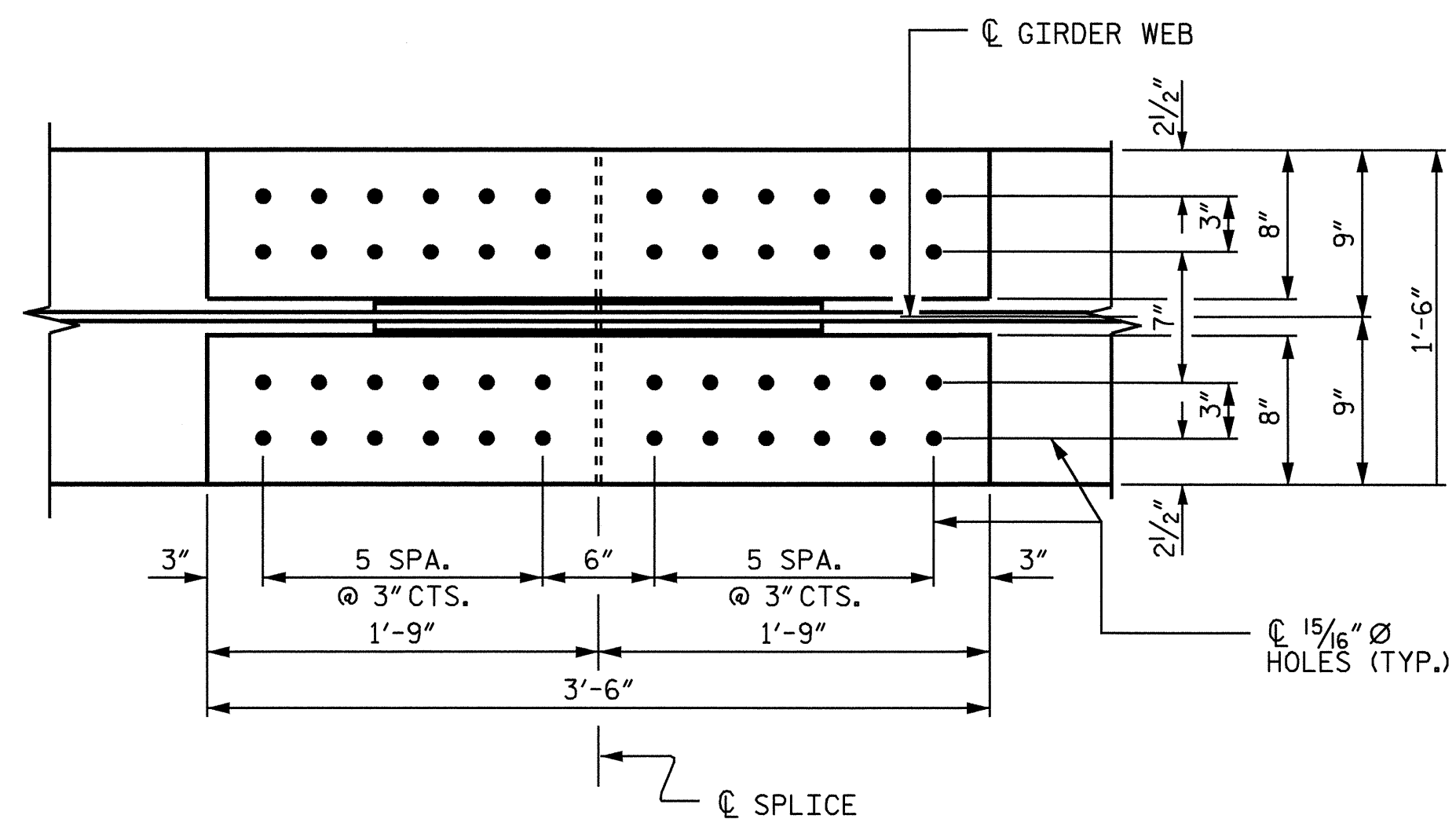
DRAWN BY : J. L. WALTON DATE : 8-05  
 CHECKED BY : T. H. FANG DATE : 11-06

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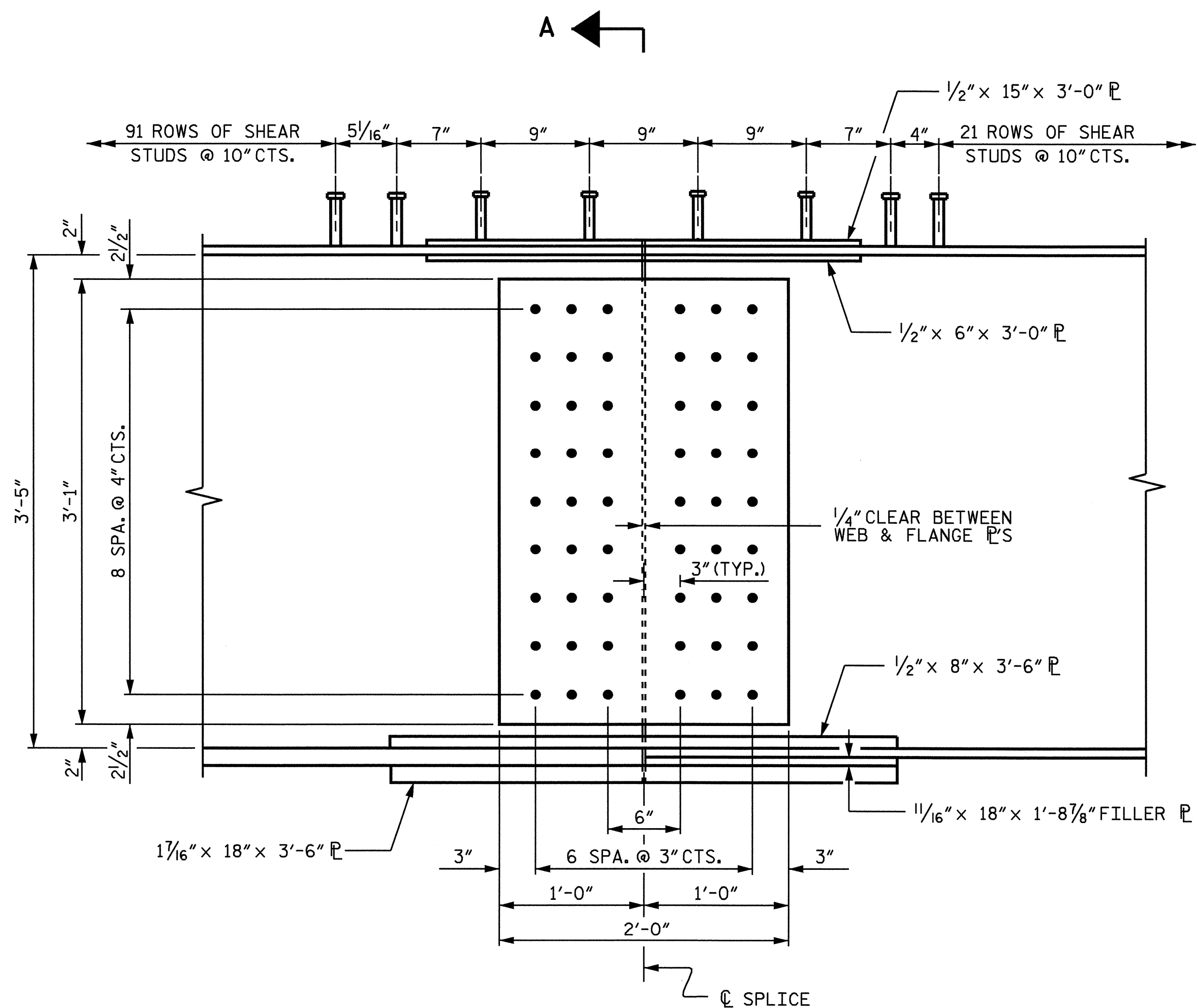
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			25



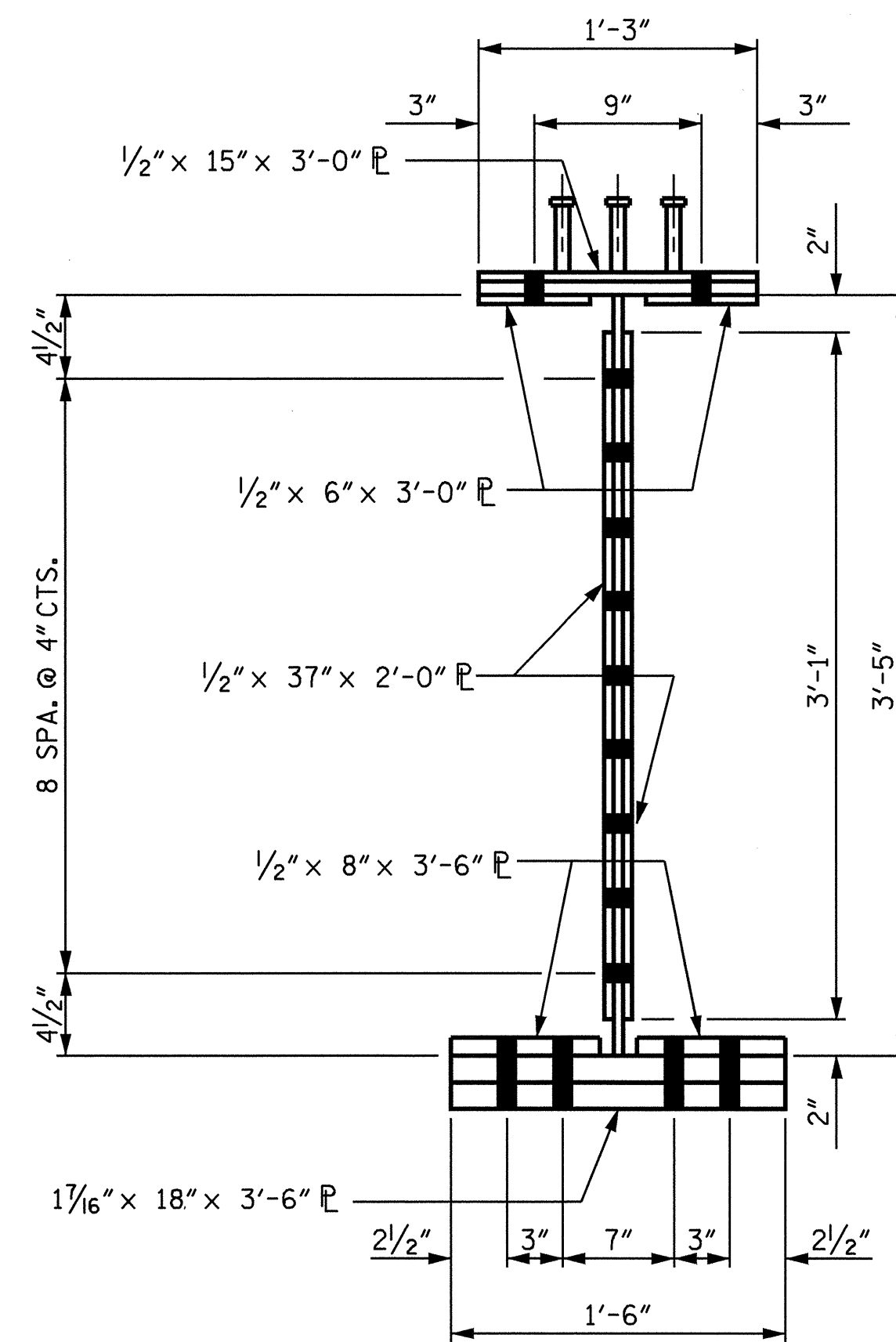
PLAN (TOP OF TOP FLANGE)



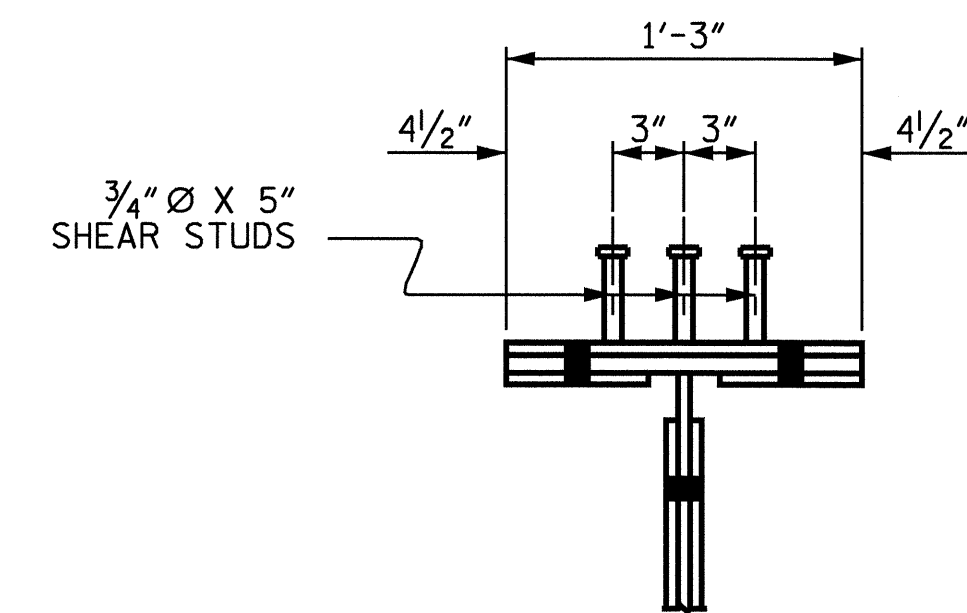
PLAN (TOP OF BOTTOM FLANGE)



ELEVATION



SECTION A-A



SHEAR STUD DETAIL FOR TOP FLANGE SPLICE PLATE

OPTIONAL BOLTED FIELD SPLICE DETAILS

(TYPICAL EACH FIELD SPLICE)

PROJECT NO. B-4011  
ASHE COUNTY  
 STATION: 17+52.50 -L-

SHEET 3 OF 3

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			25

*Ting H. Fang*  
 12/31/07

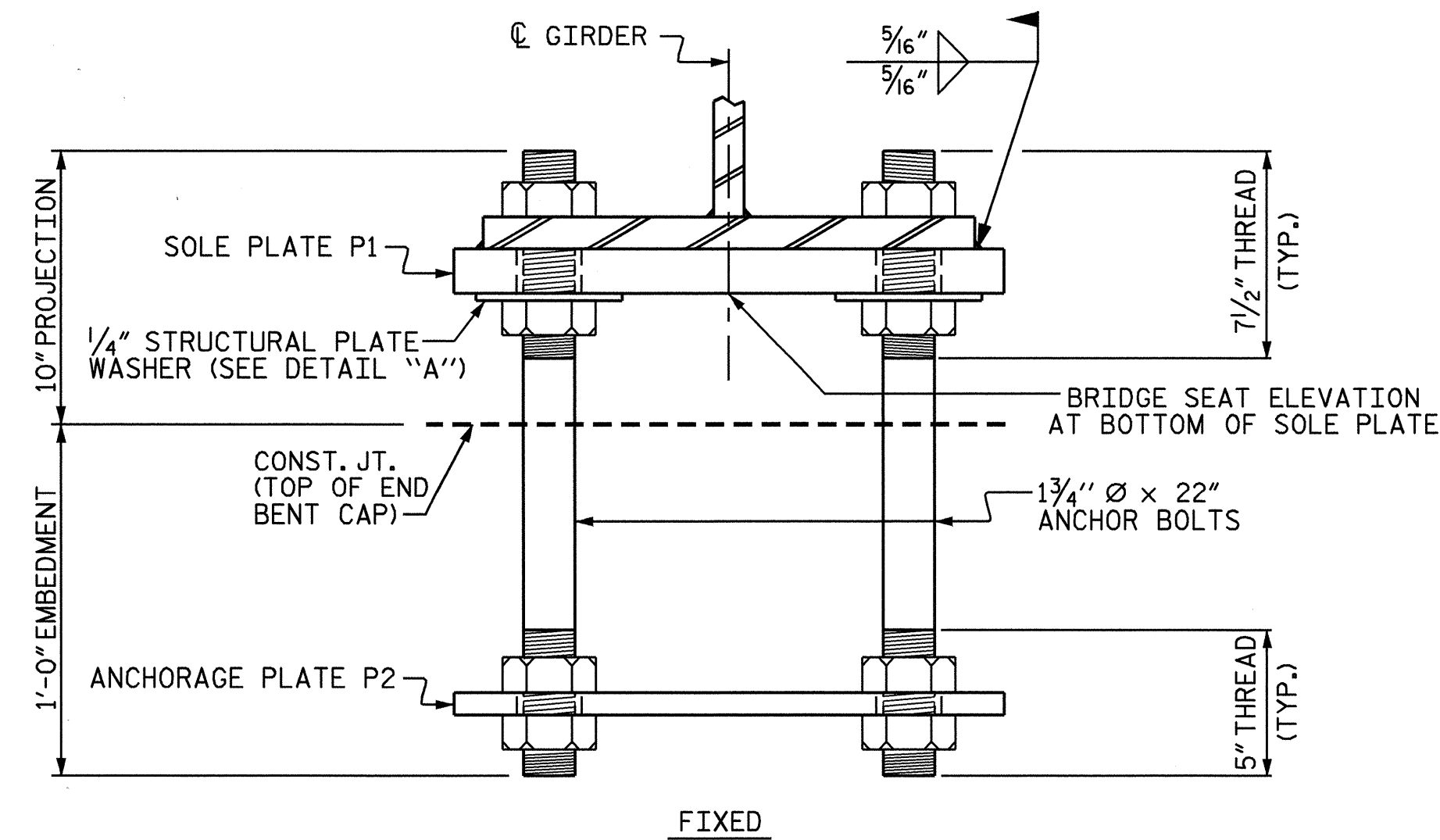
DRAWN BY: J. L. WALTON DATE: 5/06  
 CHECKED BY: T. H. FANG DATE: 9/25/07

NOTES

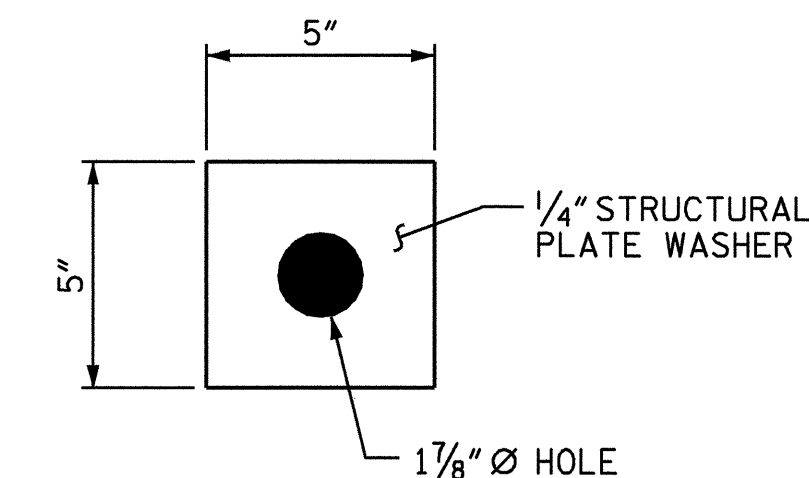
FOR AASHTO M270 GRADE 50W STRUCTURAL STEEL, SOLE PLATE SHALL BE AASHTO M270 GRADE 50W AND SHALL NOT BE GALVANIZED. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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

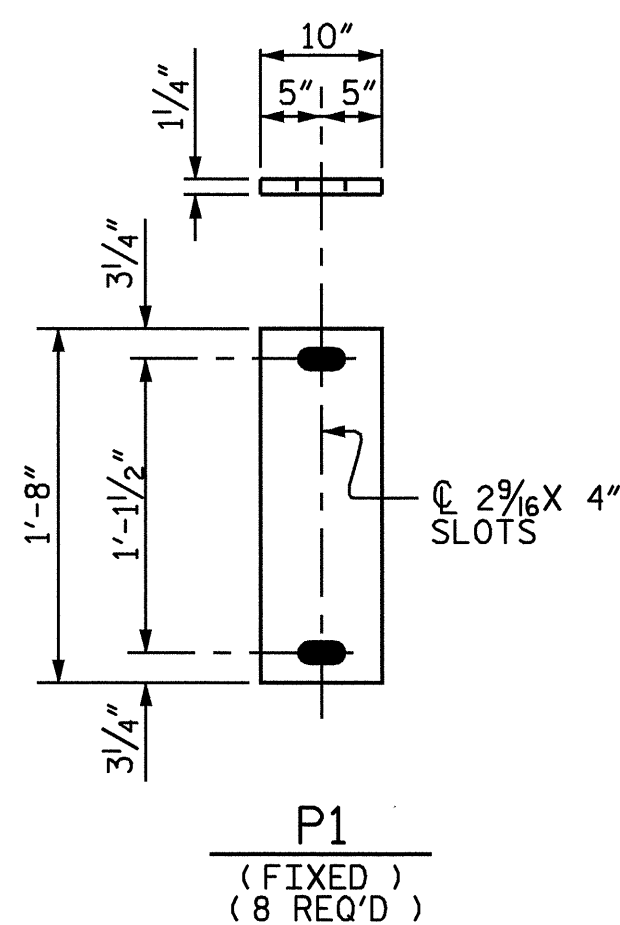
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.



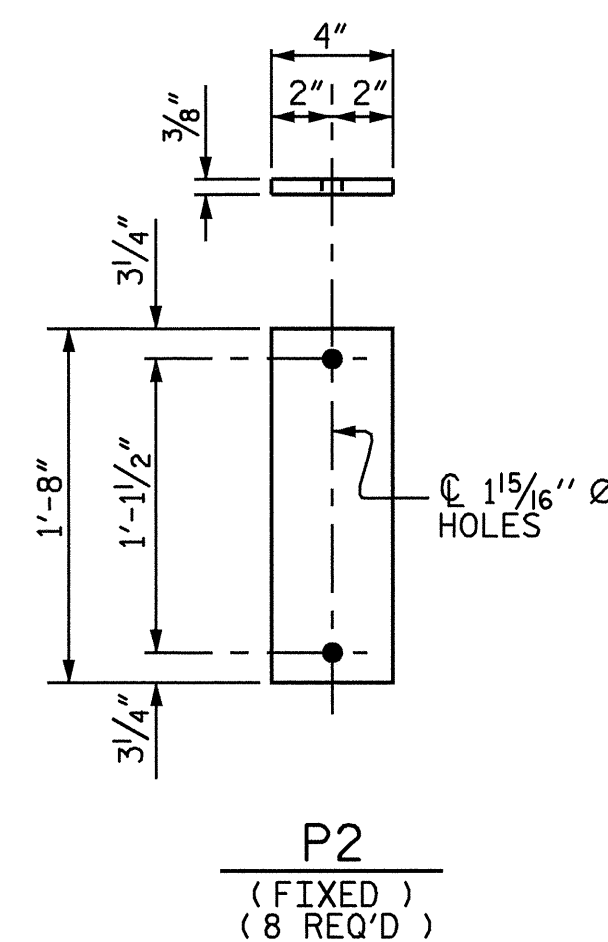
END VIEW



DETAIL A

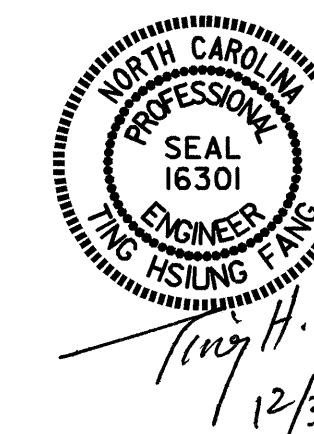


SOLE PLATE DETAILS



ANCHORAGE PLATE DETAILS

PROJECT NO. B-4011  
ASHE COUNTY  
 STATION: 17+52.50 -L-



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 BEARING DETAILS

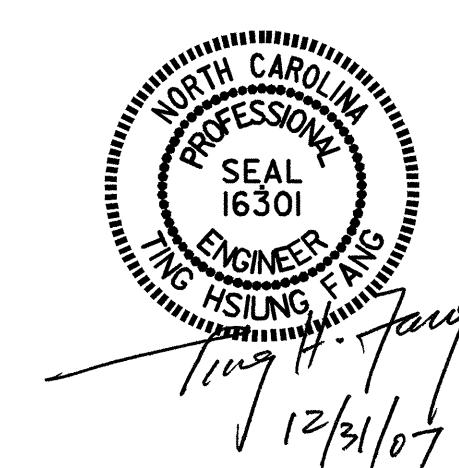
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : A.R.CHESSON DATE : 9-06  
 CHECKED BY : T. H. FANG DATE : 9-07

DEAD LOAD DEFLECTION TABLE FOR GIRDERS											
GIRDER 1											
TENTH POINTS	BRG.	.1	.2	.3	.4	.5	.6	.7	.8	.9	BRG.
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.021	0.039	0.052	0.061	0.064	0.061	0.052	0.039	0.021	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.081	0.166	0.230	0.271	0.285	0.271	0.230	0.166	0.081	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	0.010	0.019	0.026	0.030	0.032	0.030	0.026	0.019	0.010	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.112	0.224	0.308	0.362	0.381	0.362	0.308	0.224	0.112	0.000
VERTICAL CURVE ORDINATE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ORDINATE DUE TO SUPERELEVATION	0.000	-0.033	-0.059	-0.078	-0.089	-0.093	-0.089	-0.078	-0.059	-0.033	0.000
REQUIRED CAMBER	0	15/16"	2"	2 3/4"	3 1/4"	3 3/16"	3 1/4"	2 3/4"	2"	15/16"	0
GIRDER 2											
TENTH POINTS	BRG.	.1	.2	.3	.4	.5	.6	.7	.8	.9	BRG.
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.021	0.039	0.052	0.061	0.064	0.061	0.052	0.039	0.021	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.055	0.142	0.208	0.251	0.265	0.251	0.208	0.142	0.055	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	0.010	0.019	0.026	0.030	0.032	0.030	0.026	0.019	0.010	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.086	0.200	0.286	0.342	0.360	0.342	0.286	0.200	0.086	0.000
VERTICAL CURVE ORDINATE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ORDINATE DUE TO SUPERELEVATION	0.000	-0.034	-0.060	-0.079	-0.090	-0.094	-0.090	-0.079	-0.060	-0.034	0.000
REQUIRED CAMBER	0	5/8"	1 1/16"	2 1/2"	3"	3 3/16"	3"	2 1/2"	1 1/16"	5/8"	0
GIRDERS 3											
TENTH POINTS	BRG.	.1	.2	.3	.4	.5	.6	.7	.8	.9	BRG.
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.021	0.039	0.052	0.061	0.064	0.061	0.052	0.039	0.021	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.029	0.119	0.187	0.231	0.246	0.231	0.187	0.119	0.029	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	0.010	0.019	0.026	0.030	0.032	0.030	0.026	0.019	0.010	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.060	0.177	0.265	0.322	0.342	0.322	0.265	0.177	0.060	0.000
VERTICAL CURVE ORDINATE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ORDINATE DUE TO SUPERELEVATION	0.000	-0.034	-0.061	-0.080	-0.091	-0.095	-0.091	-0.080	-0.061	-0.034	0.000
REQUIRED CAMBER	0	5/16"	1 3/8"	2 1/4"	2 3/4"	2 5/16"	2 3/4"	2 1/4"	1 3/8"	5/16"	0
GIRDER 4											
TENTH POINTS	BRG.	.1	.2	.3	.4	.5	.6	.7	.8	.9	BRG.
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.021	0.039	0.052	0.061	0.064	0.061	0.052	0.039	0.021	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.002	0.095	0.166	0.211	0.226	0.211	0.166	0.095	0.002	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	0.010	0.019	0.026	0.030	0.032	0.030	0.026	0.019	0.010	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.033	0.153	0.244	0.302	0.322	0.302	0.244	0.153	0.033	0.000
VERTICAL CURVE ORDINATE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ORDINATE DUE TO SUPERELEVATION	0.000	-0.034	-0.061	-0.080	-0.092	-0.095	-0.092	-0.080	-0.061	-0.034	0.000
REQUIRED CAMBER	0	0	1 1/8"	1 5/16"	2 1/2"	2 3/4"	2 1/2"	1 5/16"	1 1/8"	0	0

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

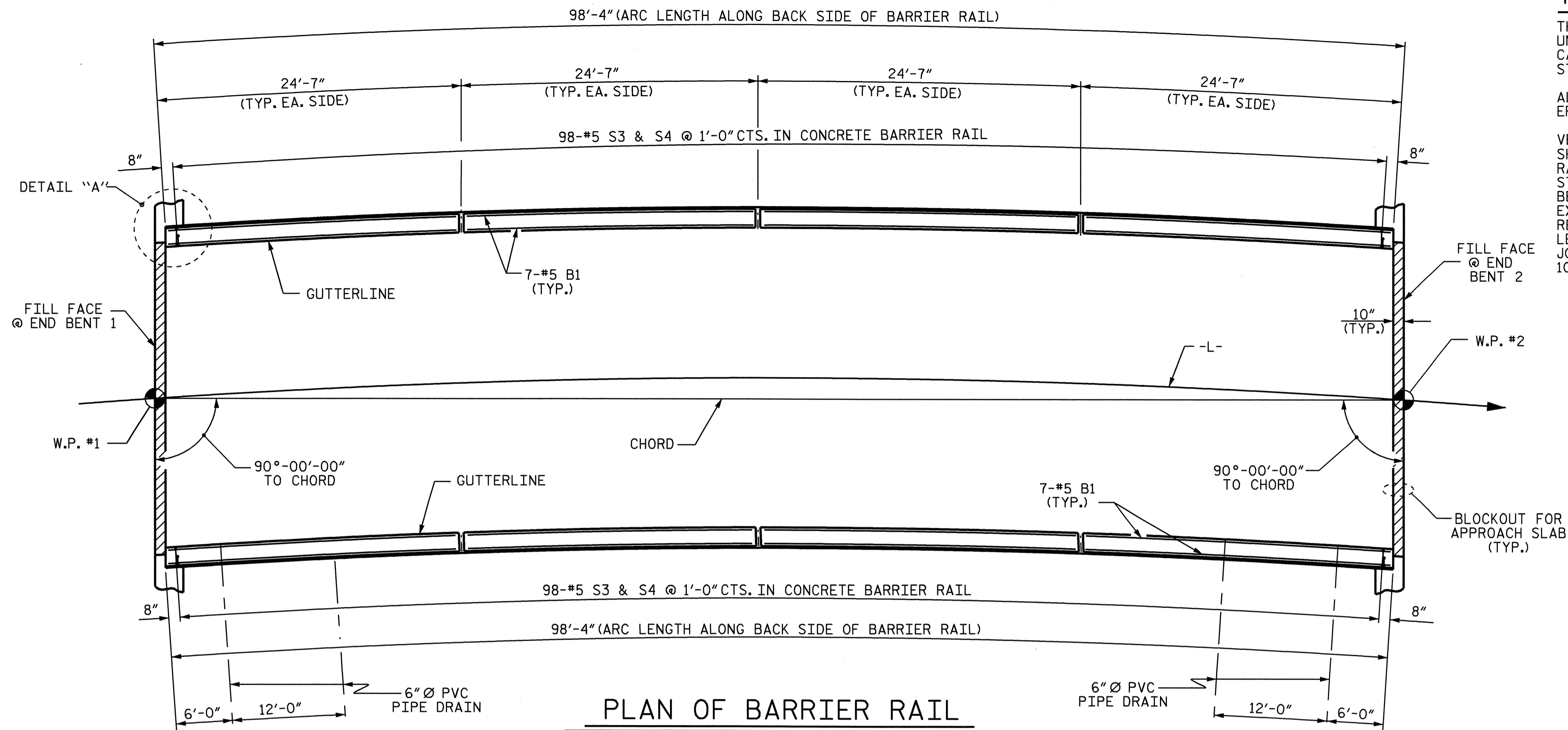
PROJECT NO. B-4011  
ASHE COUNTY  
 STATION: 17+52.50 -L-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE					
DEAD LOAD DEFLECTIONS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 25

DRAWN BY: J.L. WALTON DATE: 8/21/05  
 CHECKED BY: K.K. PUROHIT DATE: 12/12/05





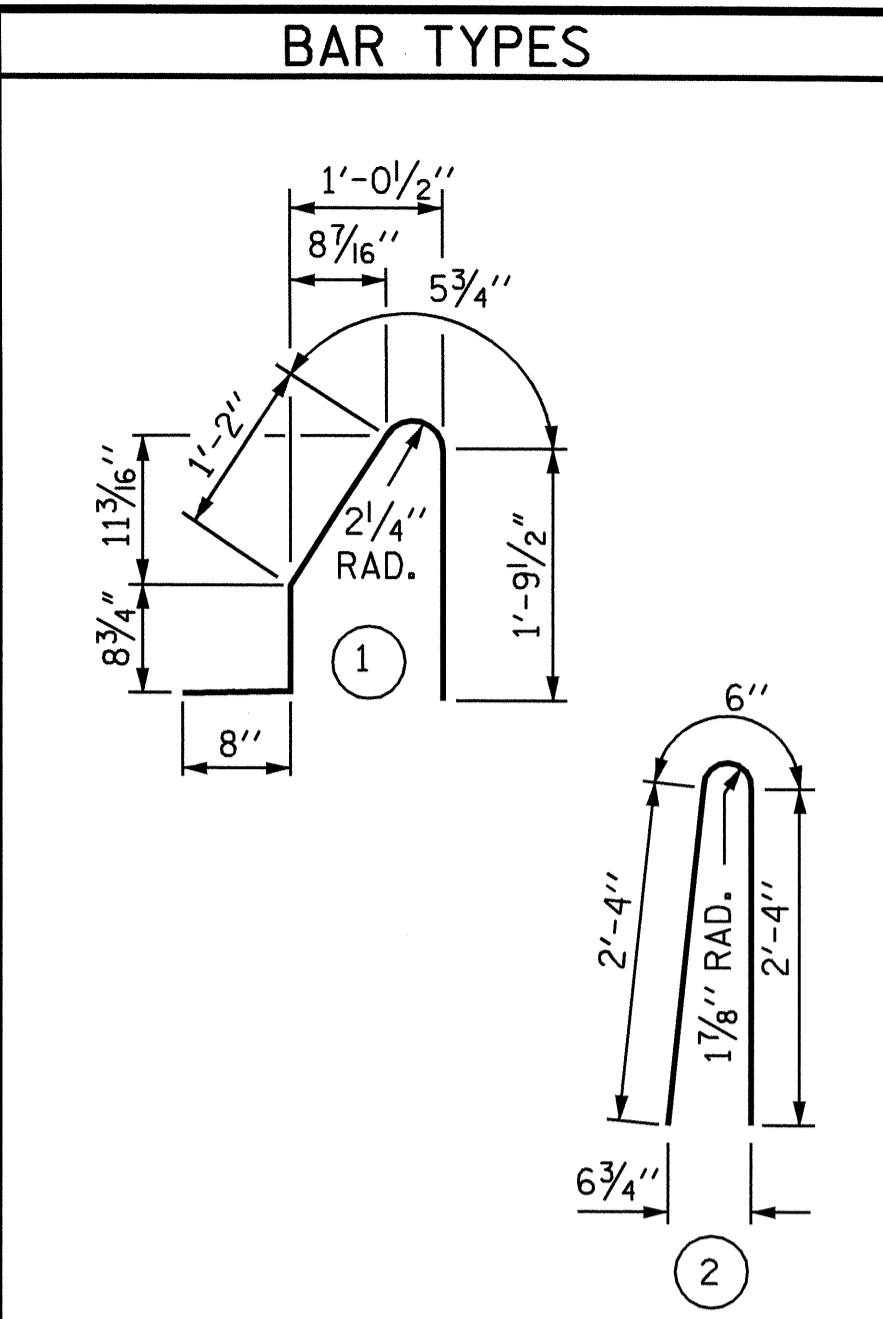
PLAN OF BARRIER RAIL

NOTES

THE BARRIER RAIL IN THE SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT 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.

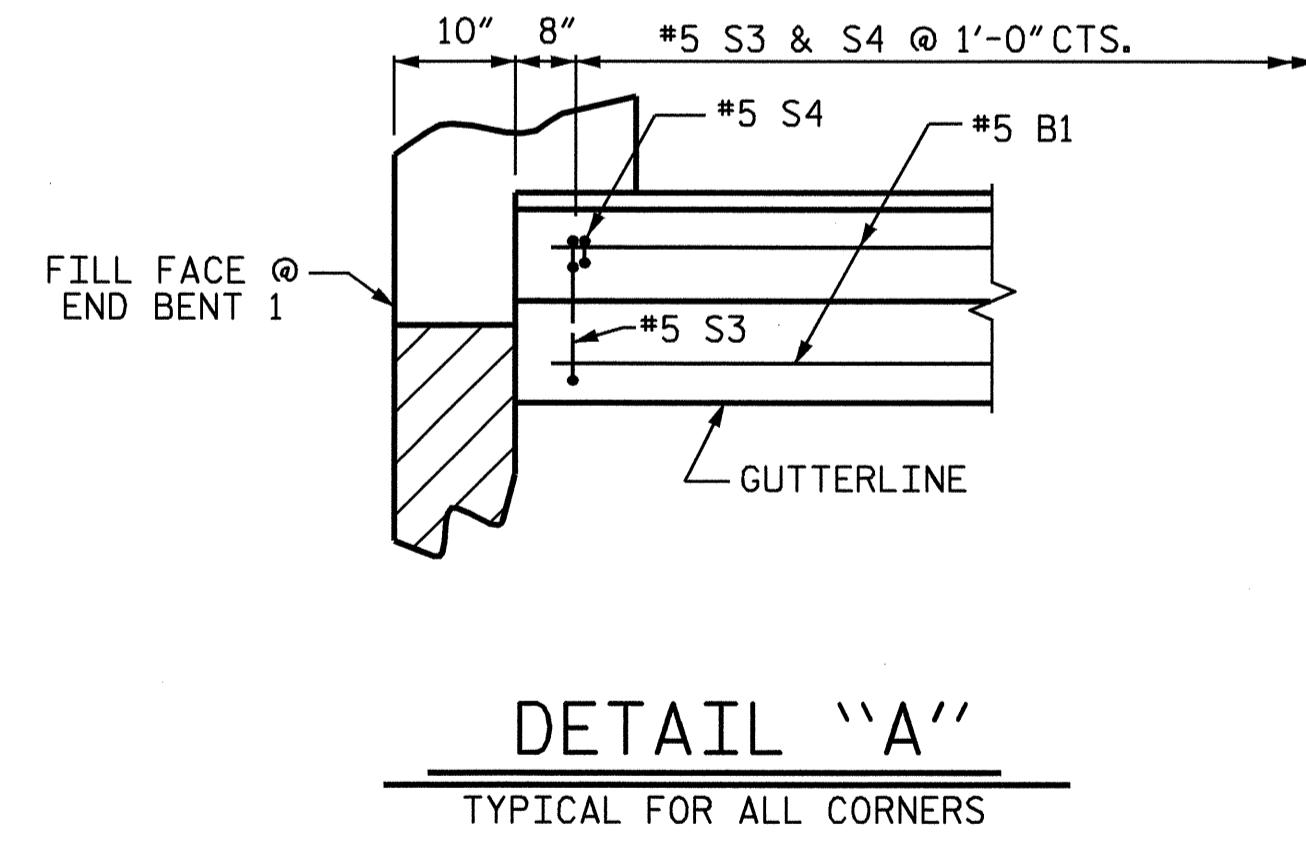


ALL BAR DIMENSIONS ARE OUT TO OUT

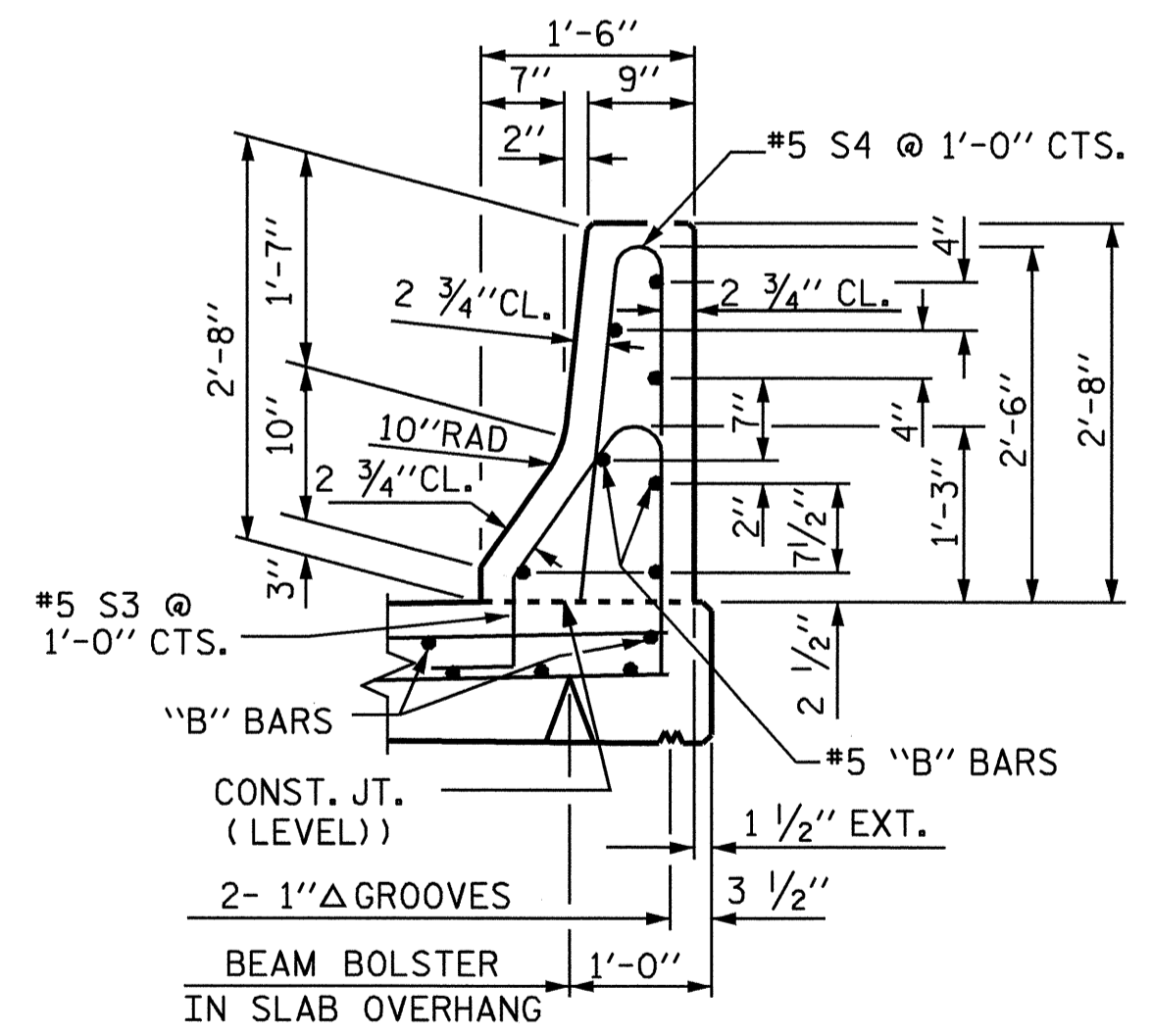
BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

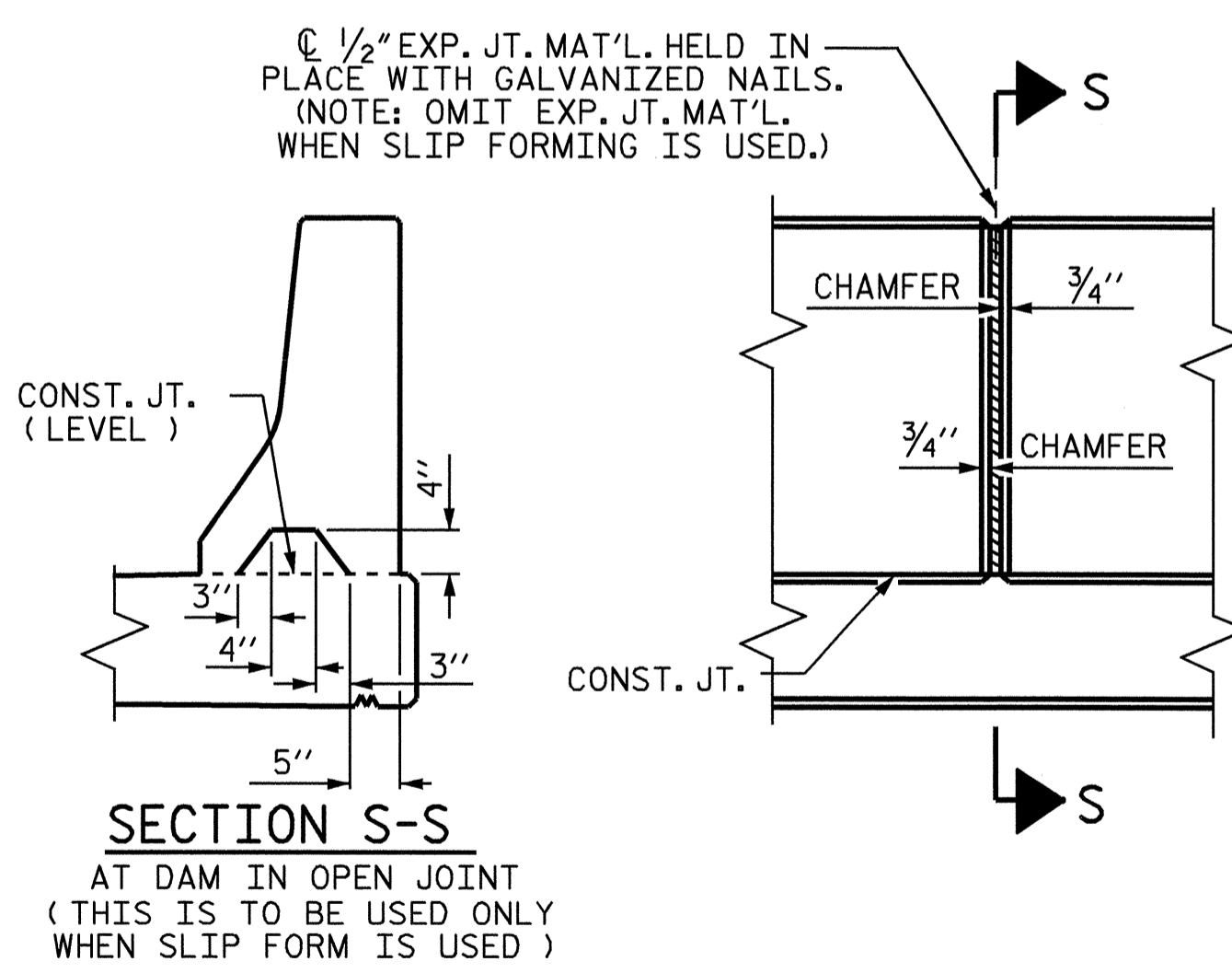
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	56	#5	STR	24'-2"	1412
* S3	196	#5	1	4'-10"	988
* S4	196	#5	2	5'-2"	1056
* EPOXY COATED REINFORCING STEEL					3456
CLASS AA CONCRETE				19.7 CU. YDS.	
CONCRETE BARRIER RAIL				196.67 LIN. FT.	



DETAIL "A"  
TYPICAL FOR ALL CORNERS

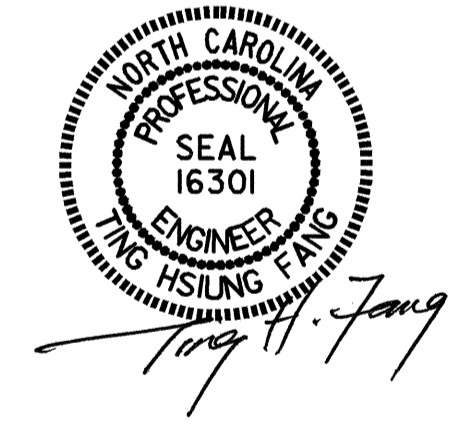


SECTION THRU RAIL



ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS



PROJECT NO. B-4011  
ASHE COUNTY  
STATION: 17+52.50 -L-

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

CONCRETE BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			25

ASSEMBLED BY : J. L. WALTON	DATE : 8/21/05
CHECKED BY : T. H. FANG	DATE : 9/12/07
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

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD-DOWN PLATE AND 4 - 1/8" 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 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

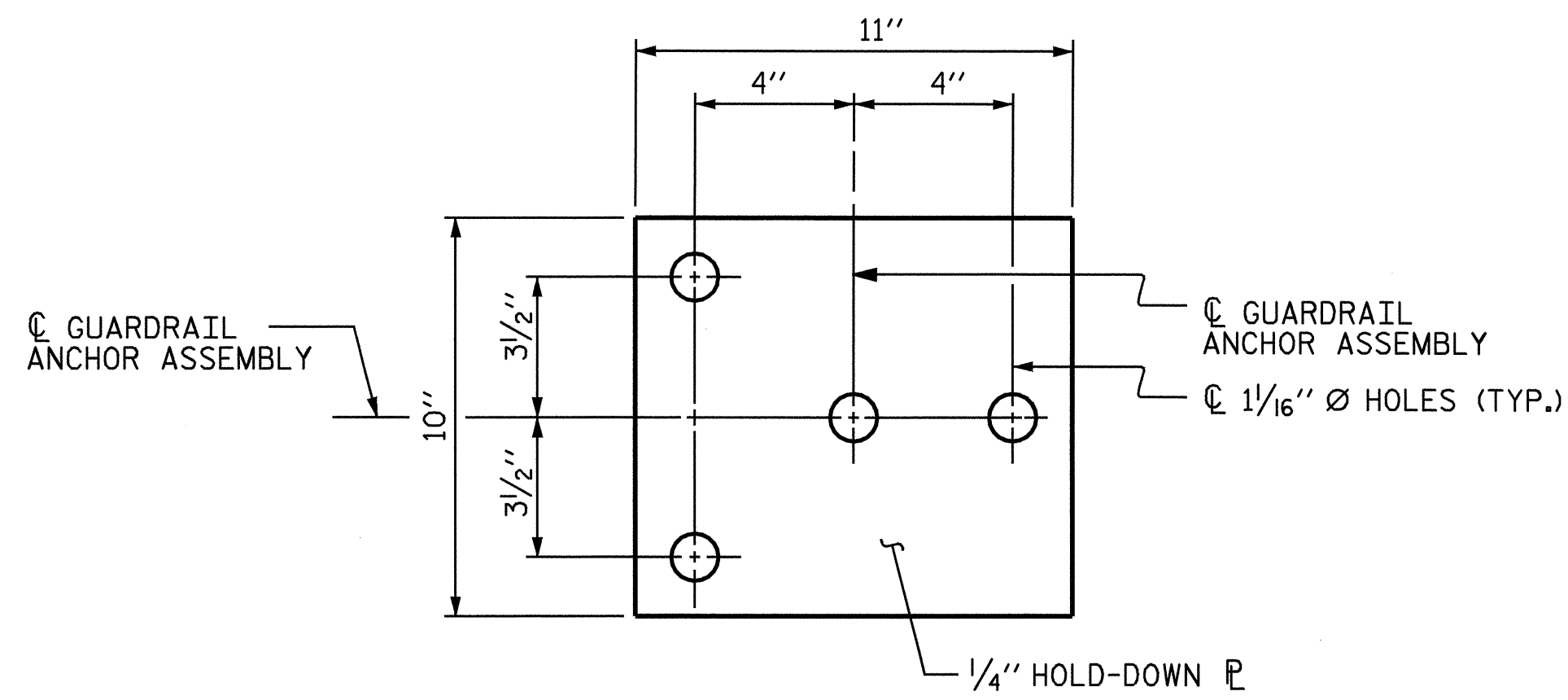
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

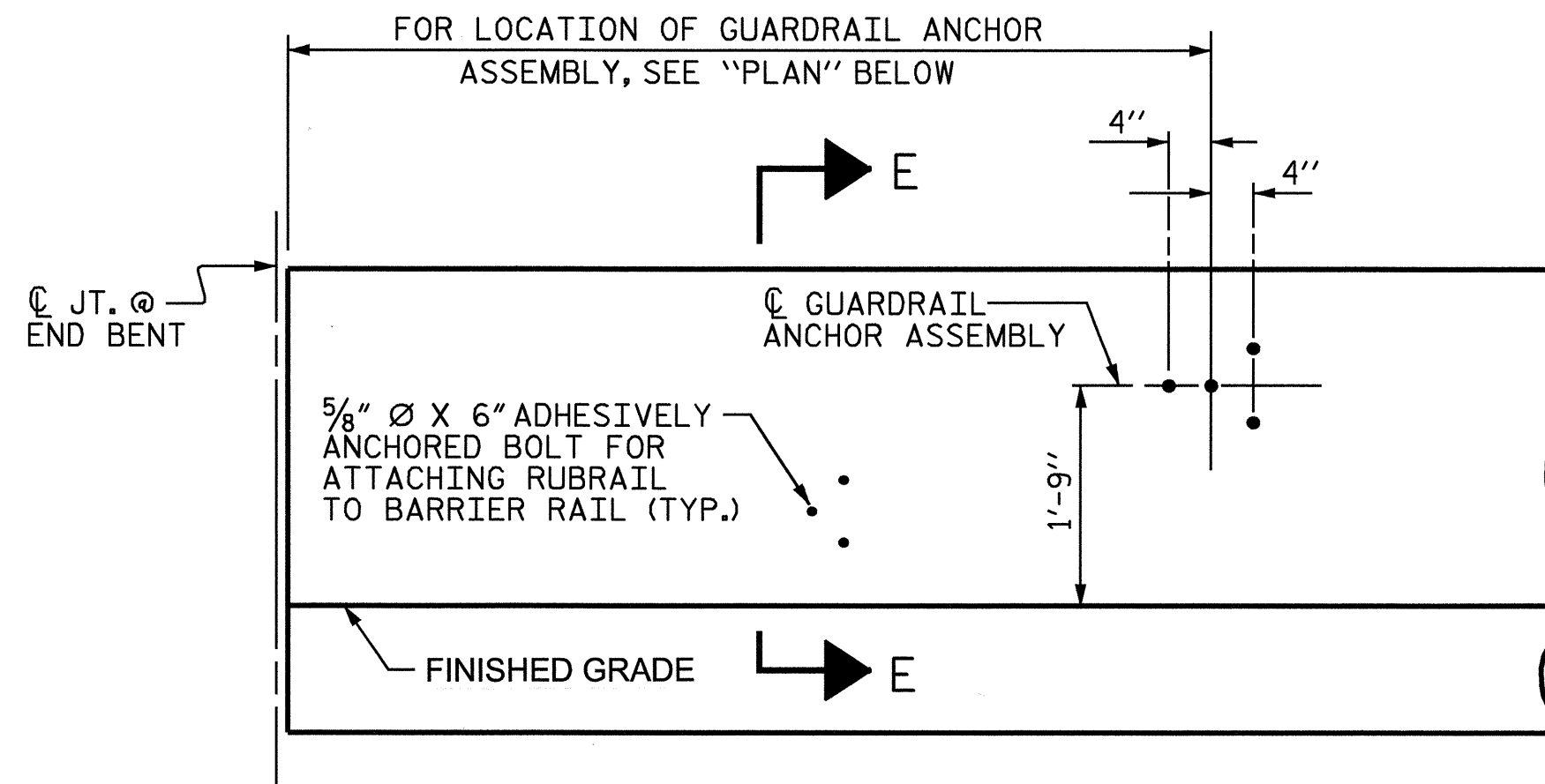
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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

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

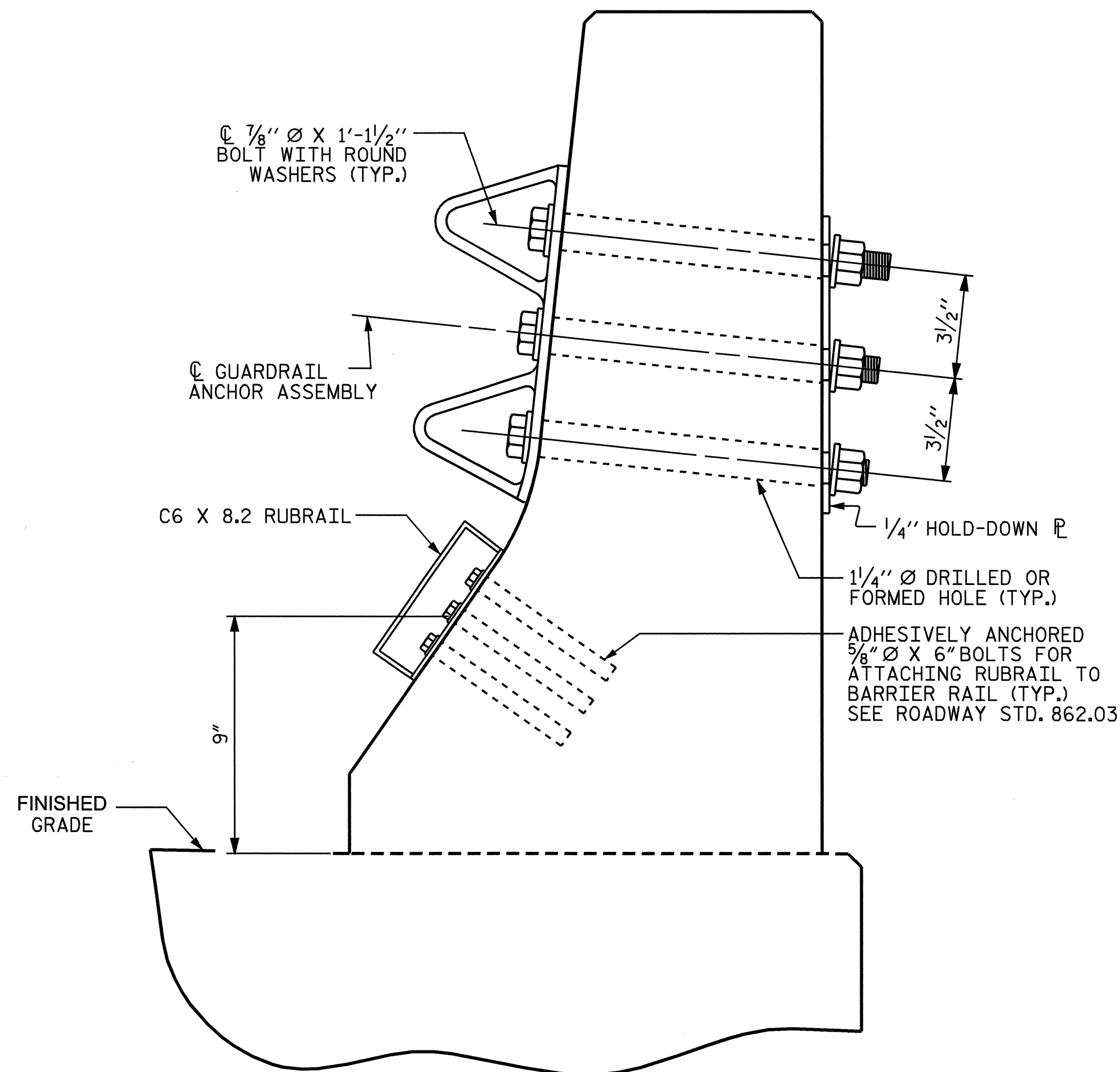


PLAN



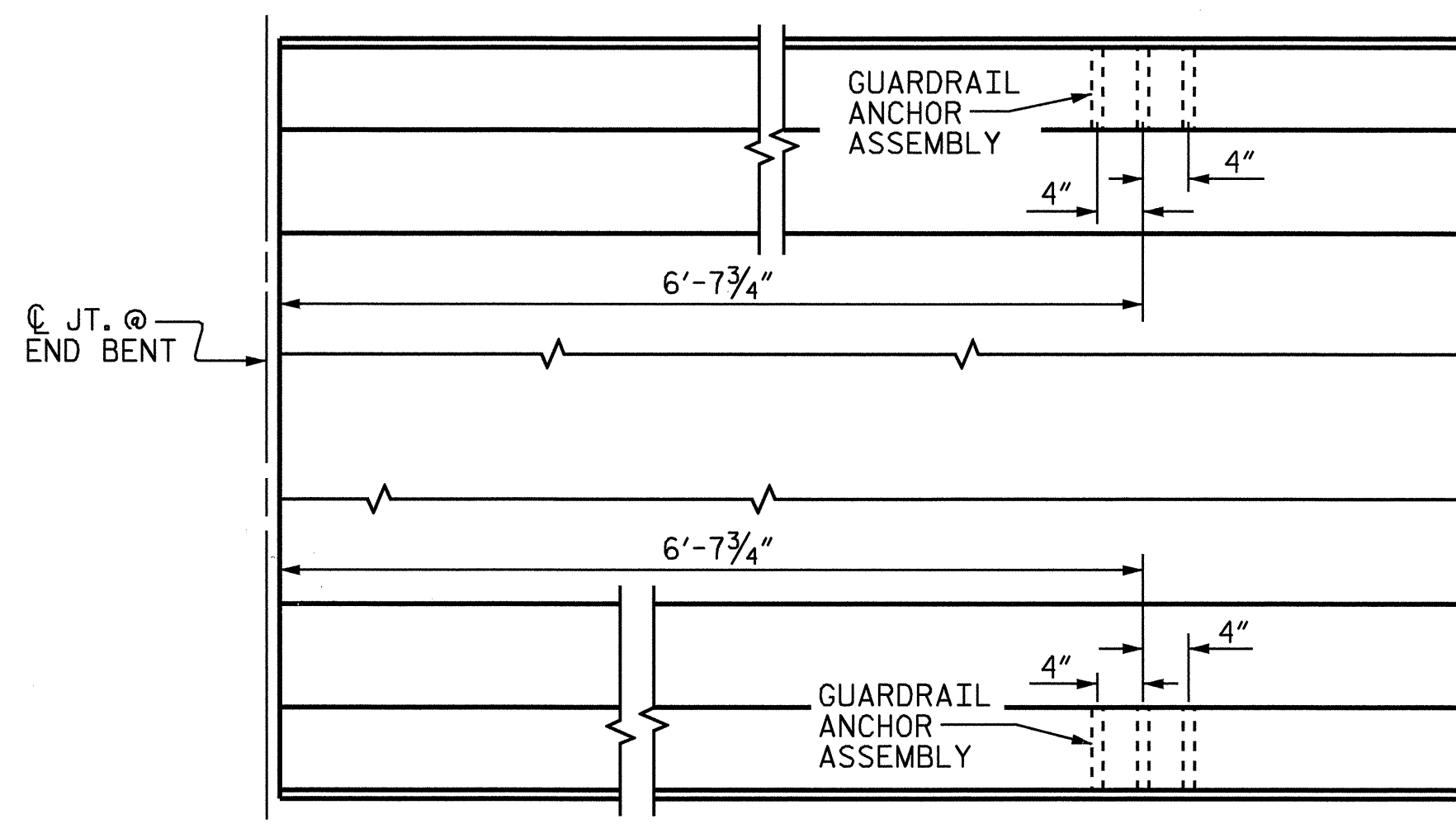
ELEVATION

FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03



SECTION E-E

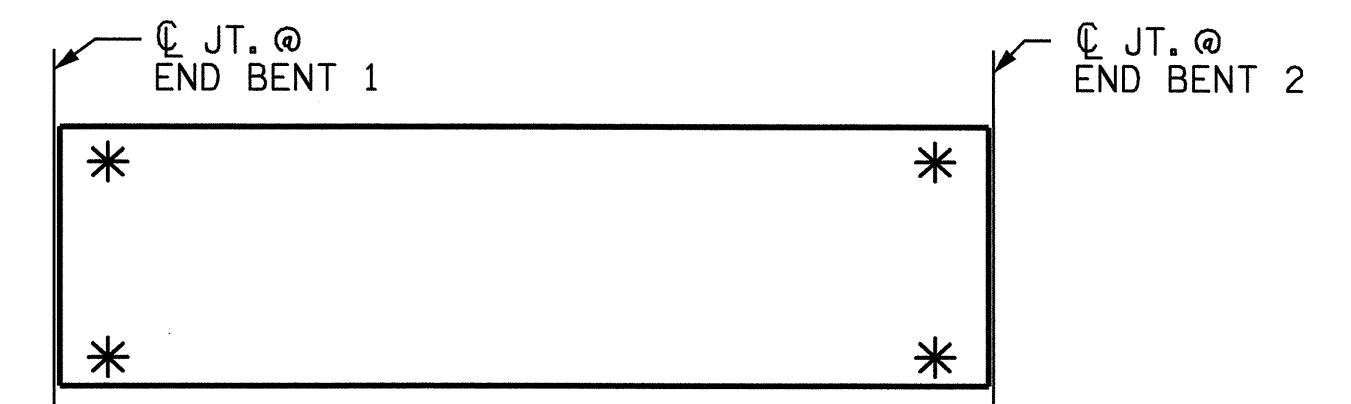
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

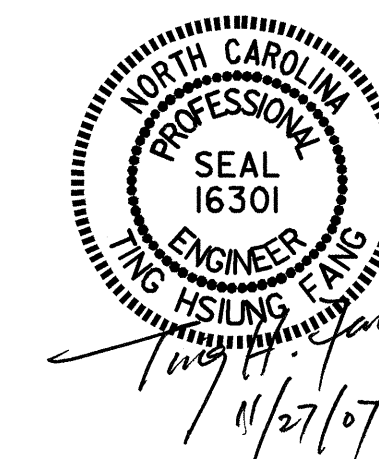
END BENT #1 SHOWN, END BENT #2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENTS

\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4011  
ASHE COUNTY  
 STATION: 17+52.50 -L-



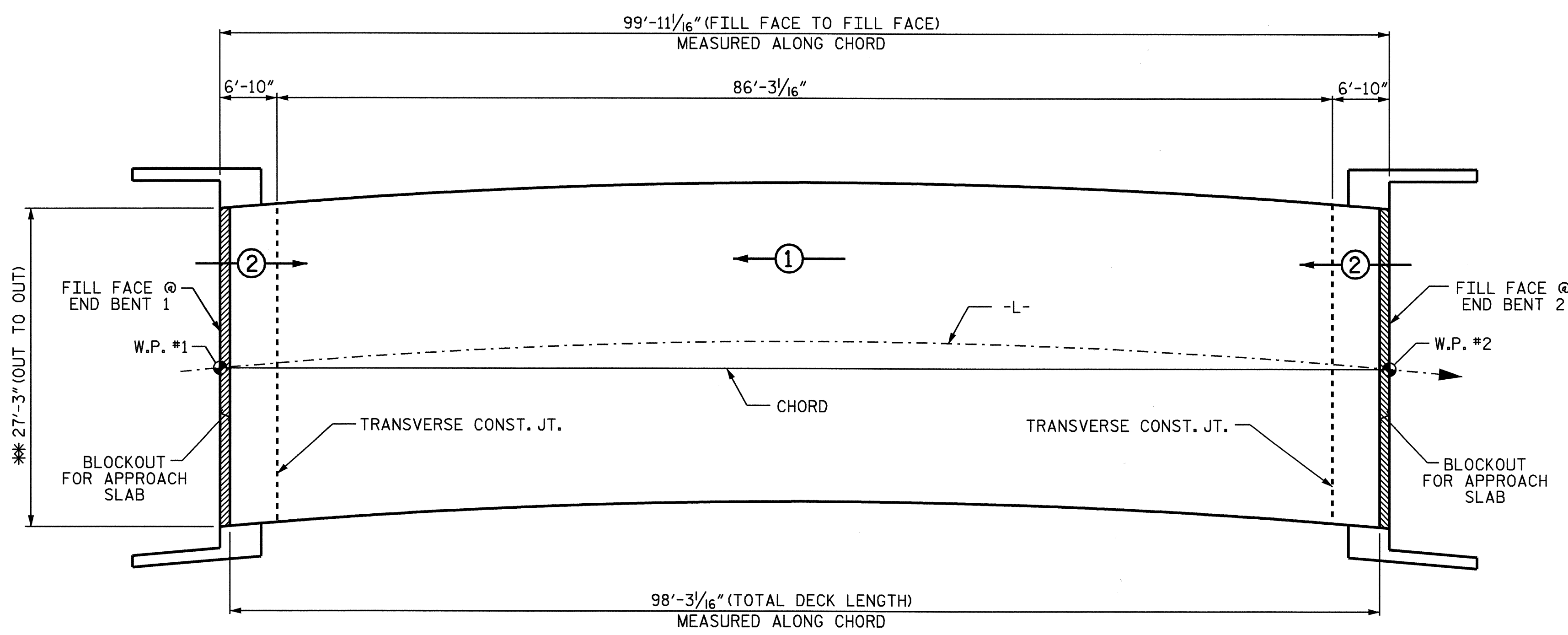
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD  
 GUARDRAIL ANCHORAGE  
 FOR BARRIER RAIL

REVISIONS						SHEET NO. S-17
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			

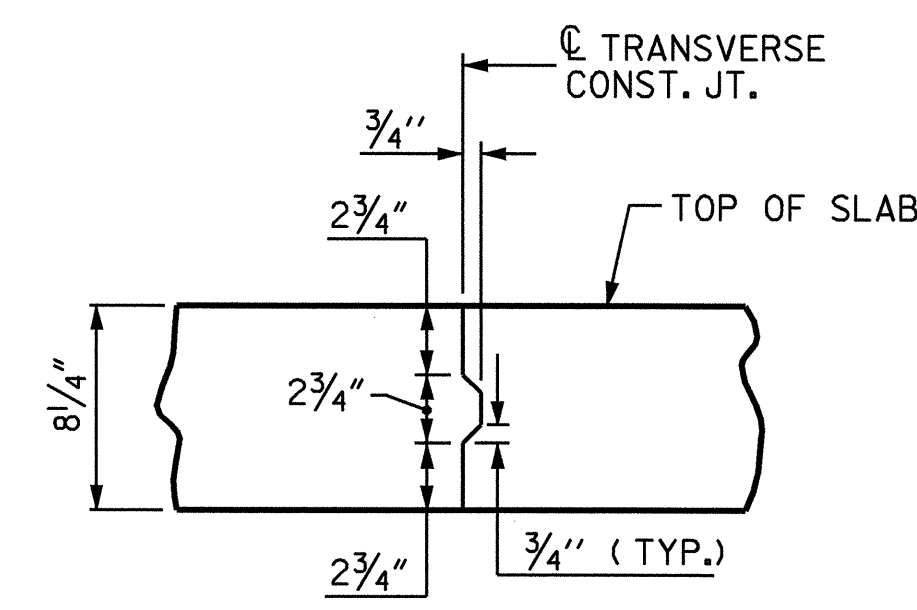
STD. NO. GRA2

ASSEMBLED BY : J. L. WALTON	DATE : 8/21/05
CHECKED BY : T. H. FANG	DATE : 9/12/07
DRAWN BY : TLA 5/06	ADDED 5/1/06
CHECKED BY : GM 5/06	



\*\* RADIAL DIMENSION

POURING SEQUENCE AND LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB (SQ. FT. = 2678)



TRANSVERSE CONSTRUCTION JOINT DETAIL

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

BILL OF MATERIAL

SPAN A					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	157	#5	STR	26'-10"	4394
A2	157	#5	STR	26'-10"	4394
* B1	32	#7	STR	19'-10"	1297
B2	58	#7	STR	20'-8"	2450
* B3	76	#4	STR	26'-0"	1320
B4	58	#5	STR	32'-0"	1936
H1	32	#4	1	13'-2"	281
H2	12	#4	1	12'-4"	99
K1	20	#5	STR	33'-2"	692
K2	4	#4	STR	3'-10"	10
K3	4	#4	STR	3'-6"	9
* S1	40	#4	2	9'-11"	265
* S2	42	#4	2	12'-2"	341
U1	44	#4	3	10'-2"	299
U2	6	#4	3	12'-0"	48
U3	4	#4	3	13'-0"	35
V2	48	#4	STR	4'-5"	142
V3	46	#4	STR	4'-11"	151
REINFORCING STEEL					= 10,546 LBS
* EPOXY COATED REINF. STEEL					= 7,617 LBS

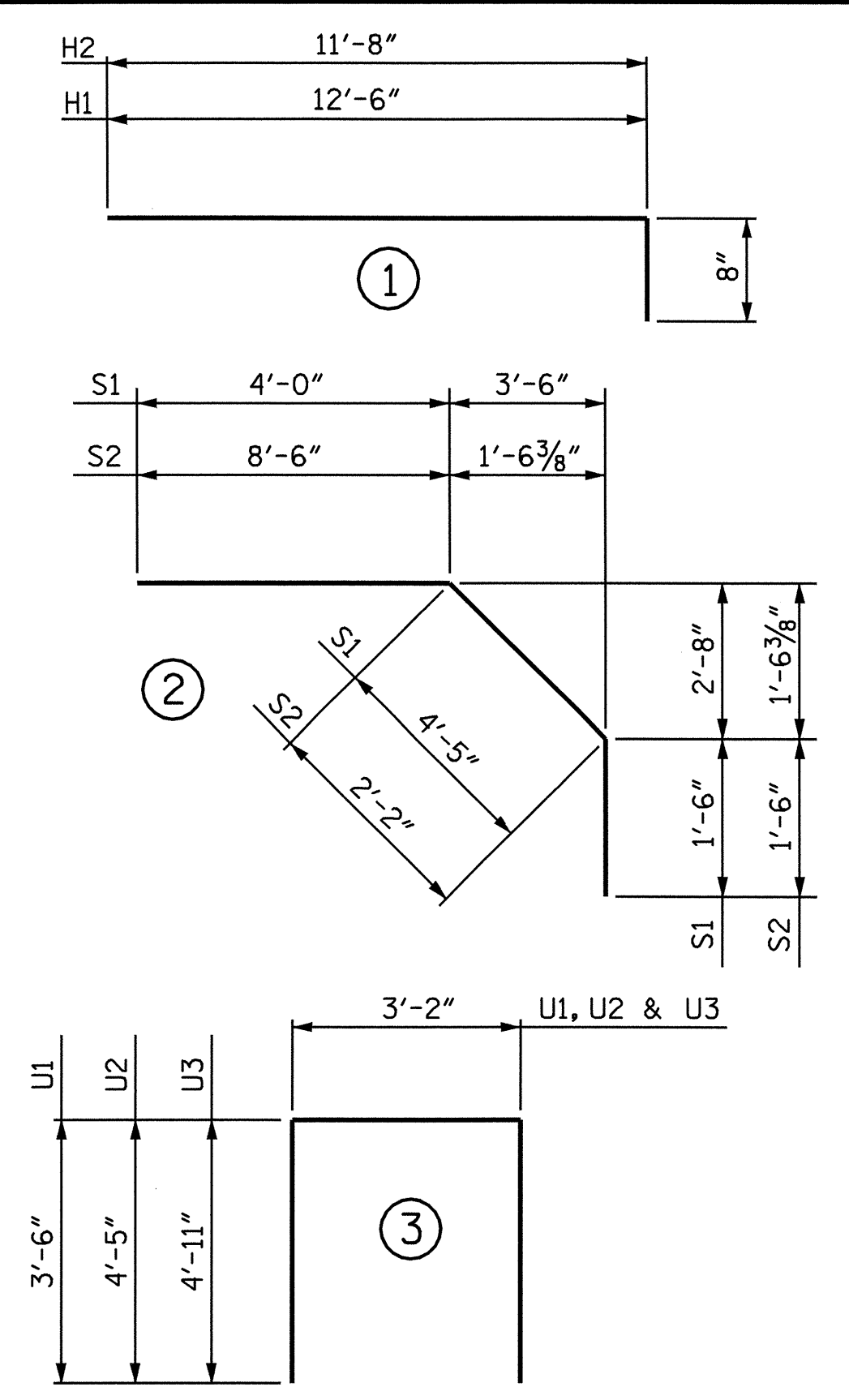
SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

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"			

GROOVING BRIDGE FLOORS

APPROACH SLABS	574	SQ.FT.
BRIDGE DECK	2,063	SQ.FT.
TOTAL	2,637	SQ.FT.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

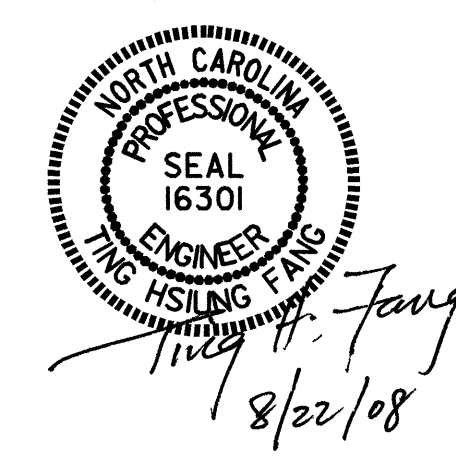
	CLASS AA CONCRETE (CU.YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
SPAN A		7,617	10,546
POUR #1	73.4		
POUR #2	53.0		
** TOTALS	126.4	7,617	10,546

\*\* QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

PROJECT NO. B-4011  
ASHE COUNTY  
STATION: 17+52.50 -L-

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

STANDARD  
SUPERSTRUCTURE  
BILL OF MATERIAL



ASSEMBLED BY: William J. Parker	DATE: 10/3/05
CHECKED BY: T. H. FANG	DATE: 9/11/07
DRAWN BY: JMB 5/87	REV. 6/1/94 EEM/GRP
CHECKED BY: SJD 9/87	REV. 8/16/99 RWW/LES
	REV. 5/1/06 TLA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			25

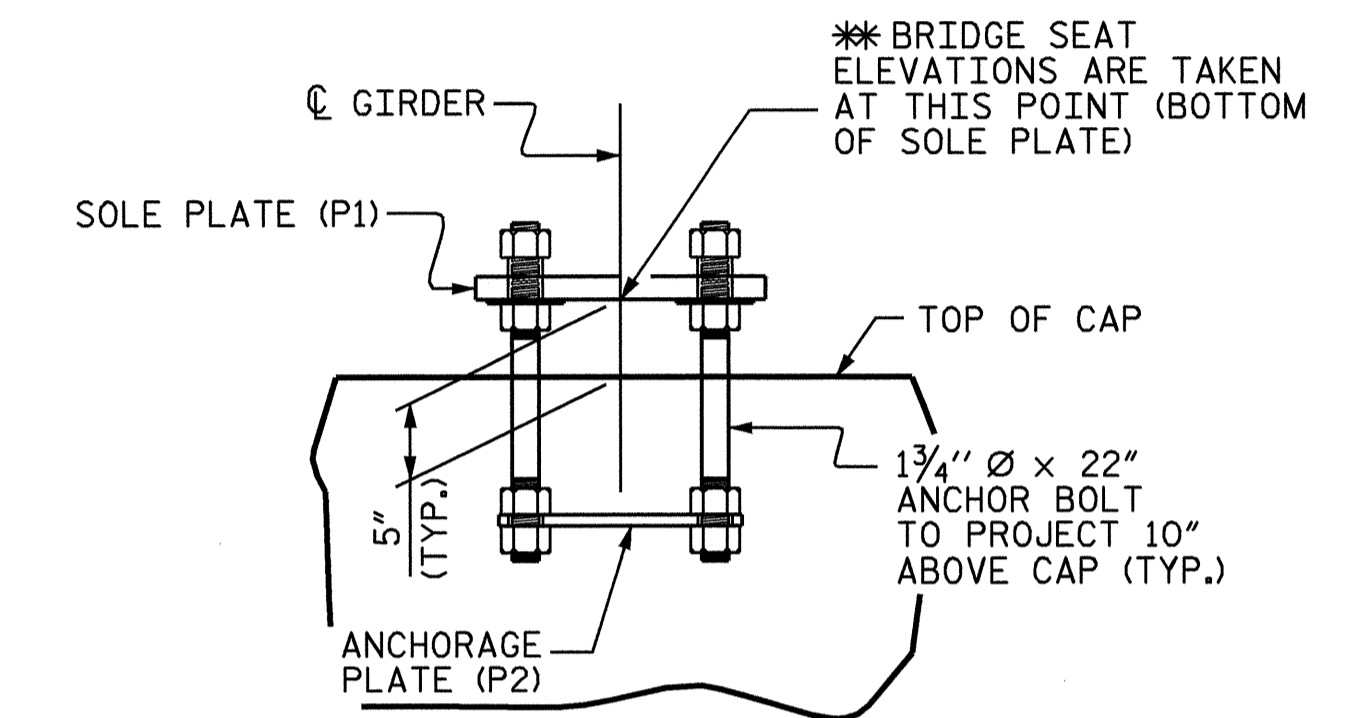
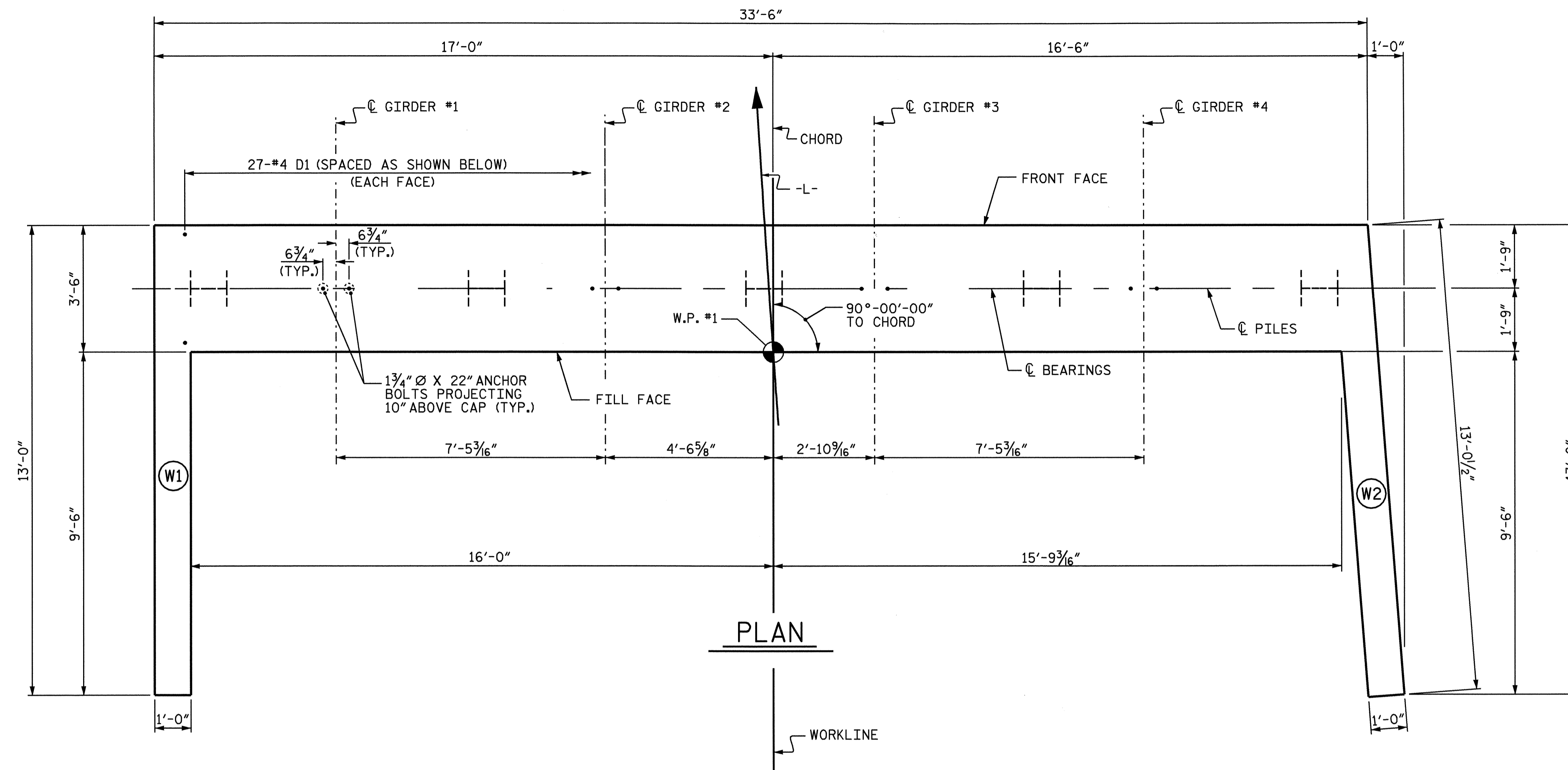
**NOTES**

STIRRUPS AND #4 B2 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

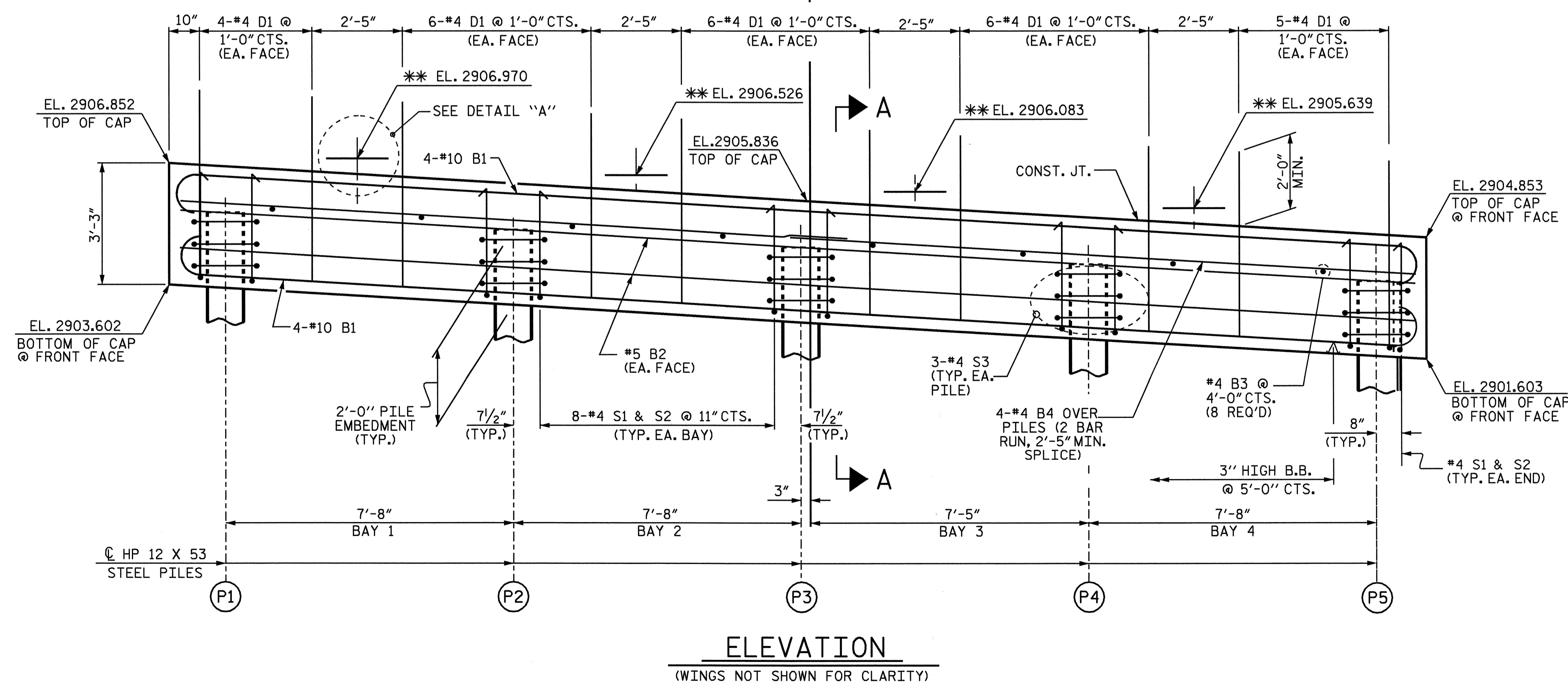
FOR PILE SPLICE DETAILS, SEE END BENT 1, SHEET 2 OF 2.

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

SEE SUPERSTRUCTURE SHEETS FOR ABUTMENT DETAILS.



**DETAIL "A"**  
TYP. EA. BEARING. FOR DETAILS, SEE BEARING DETAILS SHEET.

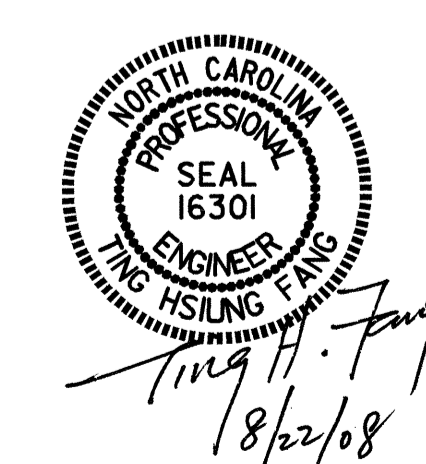


**TOP OF PILE ELEVATIONS**

PILE	ELEVATION
(P1)	2905.548
(P2)	2905.092
(P3)	2904.636
(P4)	2904.181
(P5)	2903.725

PROJECT NO. B-4011  
ASHE COUNTY  
 STATION: 17+52.50 -L-

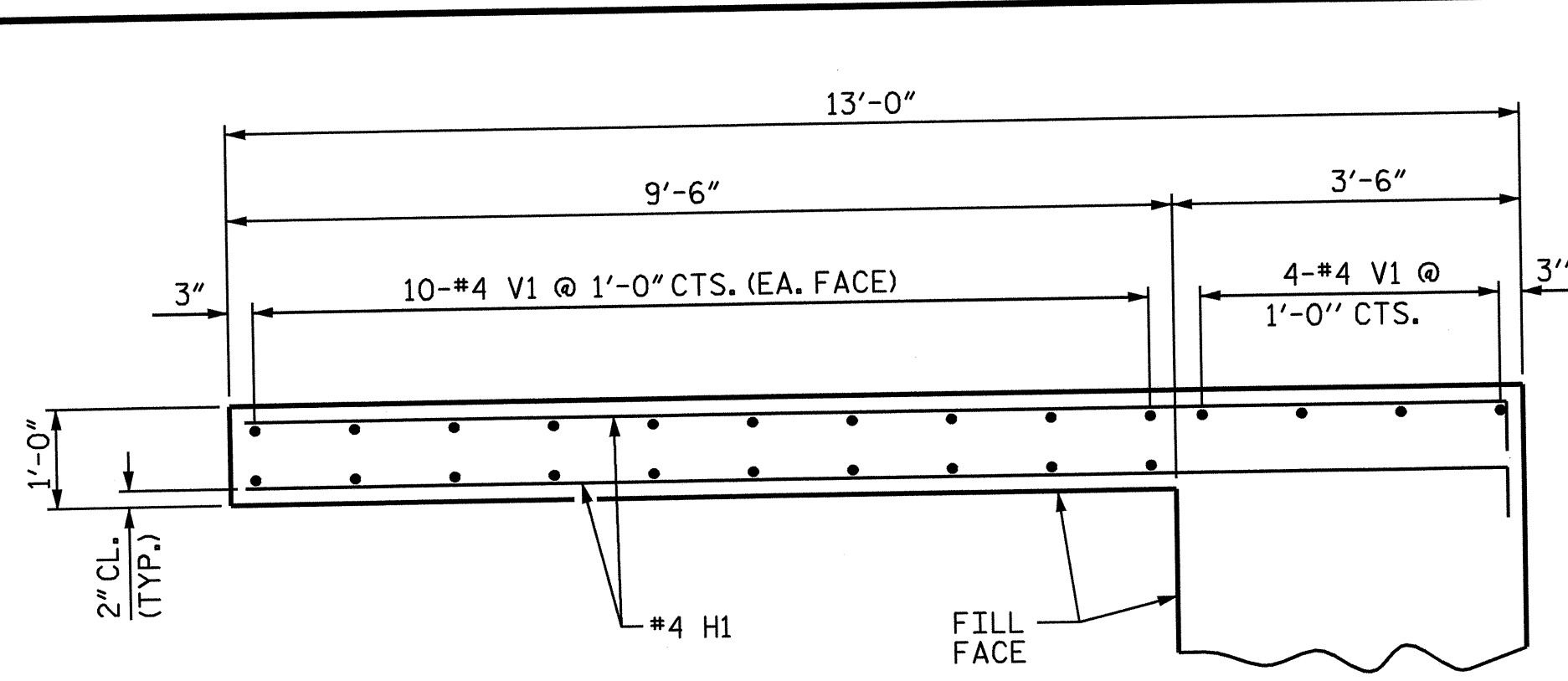
SHEET 1 OF 2



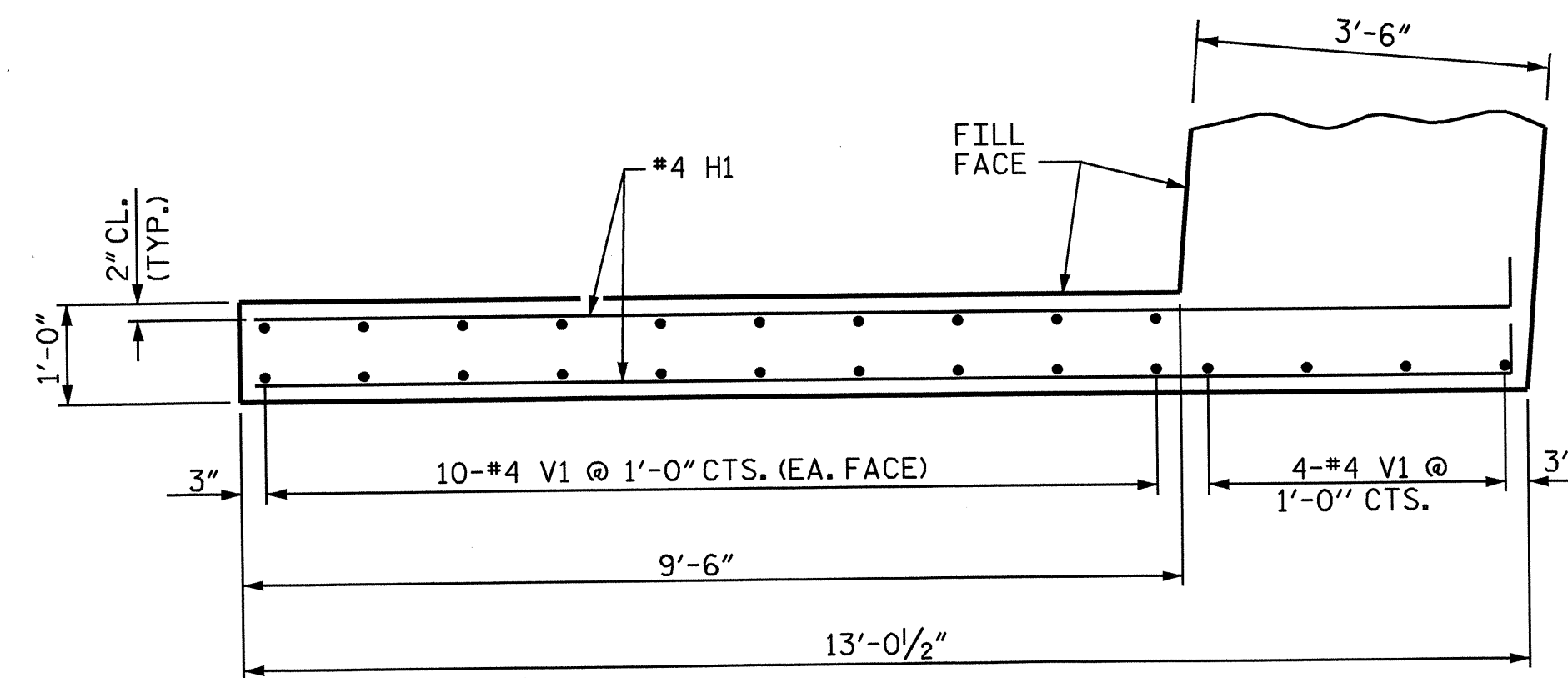
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**SUBSTRUCTURE**  
**END BENT 1**  
**INTEGRAL**

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19	
1			3			TOTAL SHEETS	25
2			4				

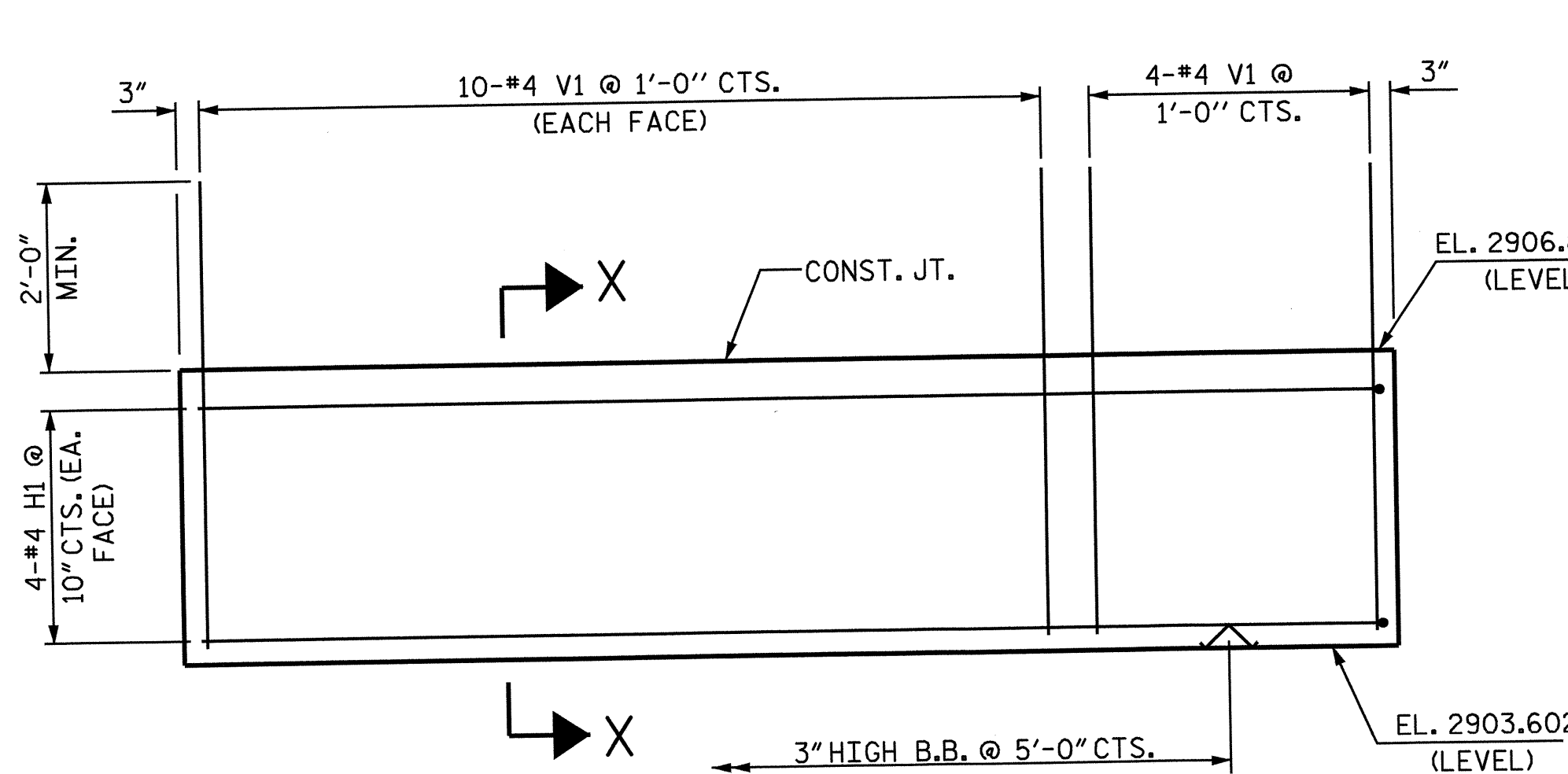
DRAWN BY: William J. Parkes/HRS DATE: 01/3/05-06/08  
 CHECKED BY: T. H. FANG DATE: 09/7/07



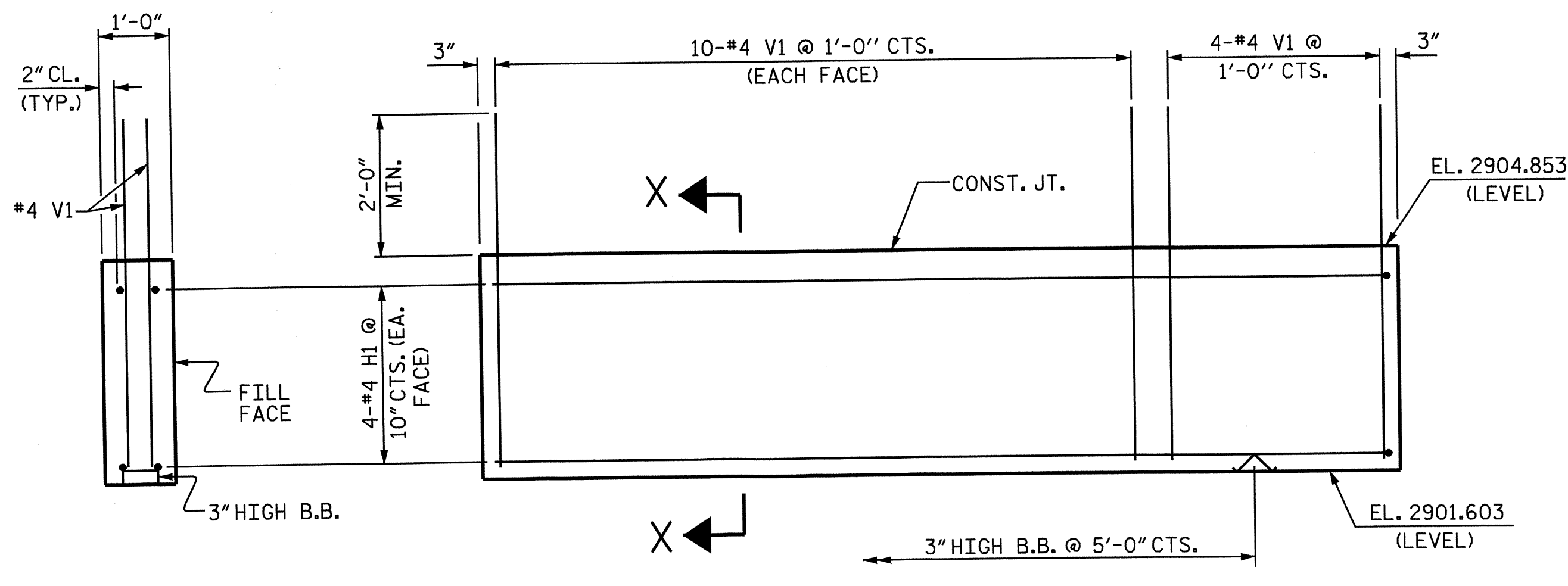
PLAN OF WING (W1)



PLAN OF WING (W2)

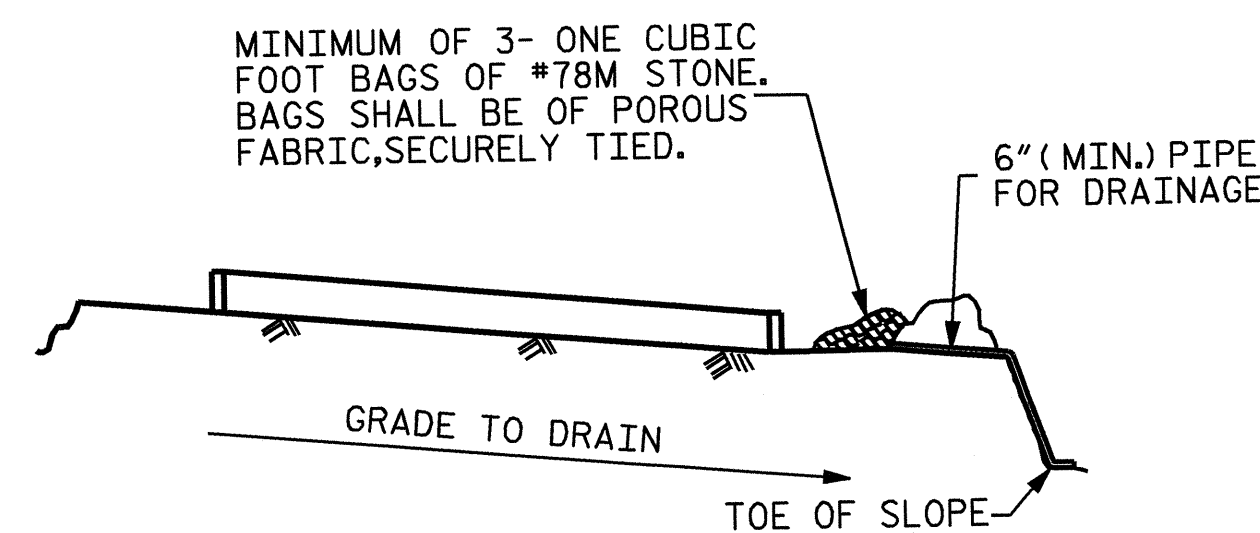


ELEVATION OF WING (W1)



SECTION X-X

ELEVATION OF WING (W2)



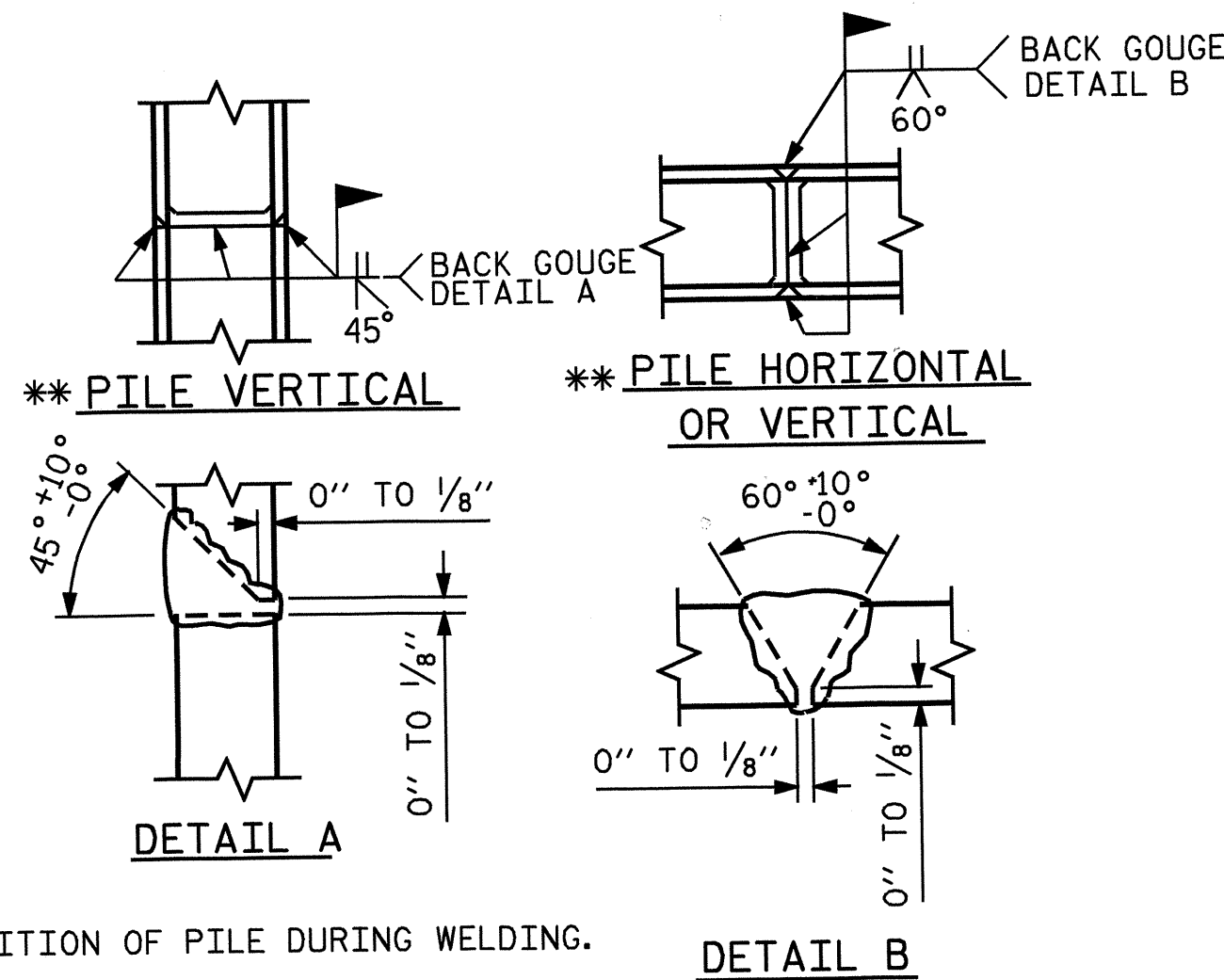
MINIMUM OF 3- ONE CUBIC FOOT BAGS OF #78M STONE. BAGS SHALL BE OF POROUS FABRIC, SECURELY TIED.

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

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

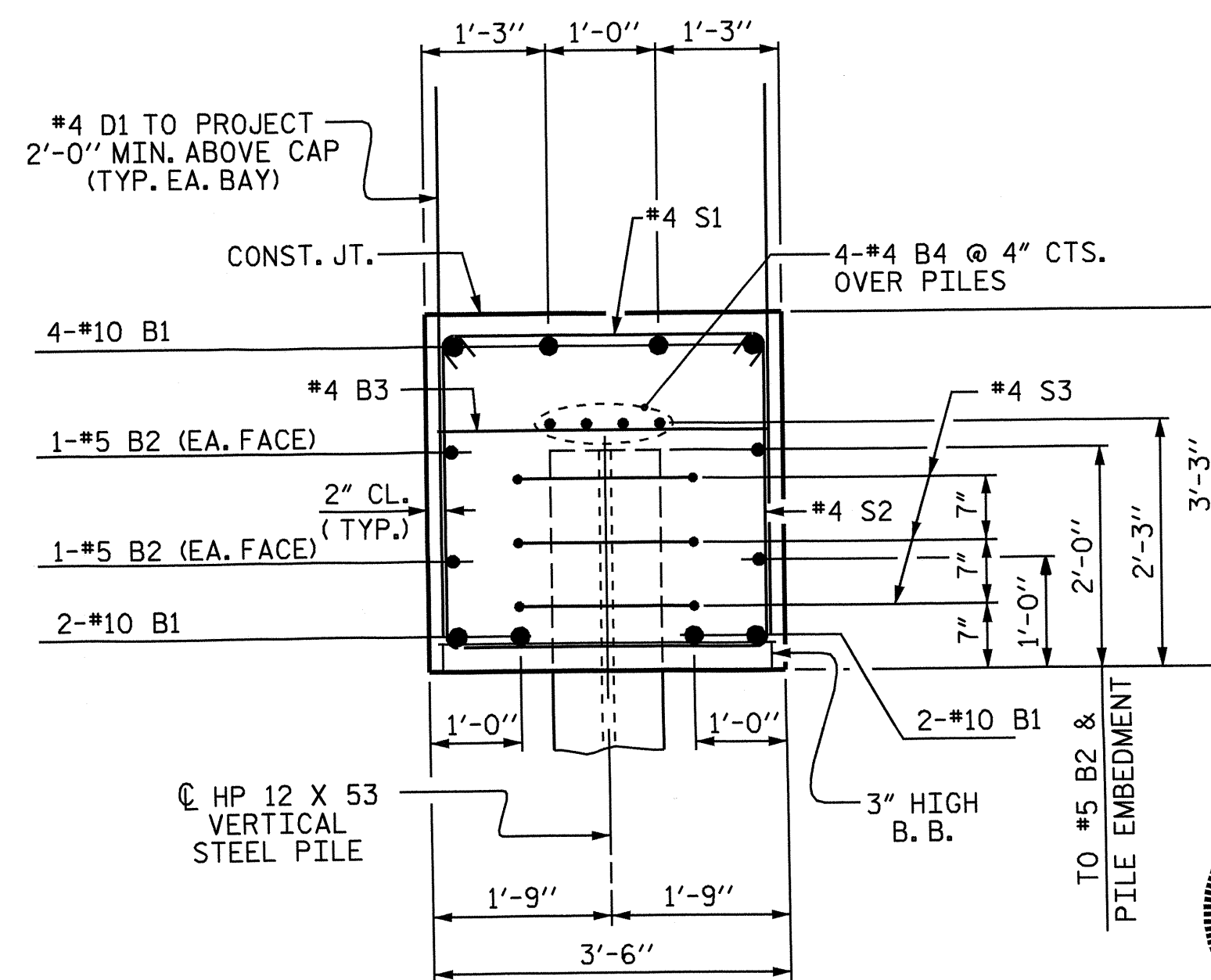
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



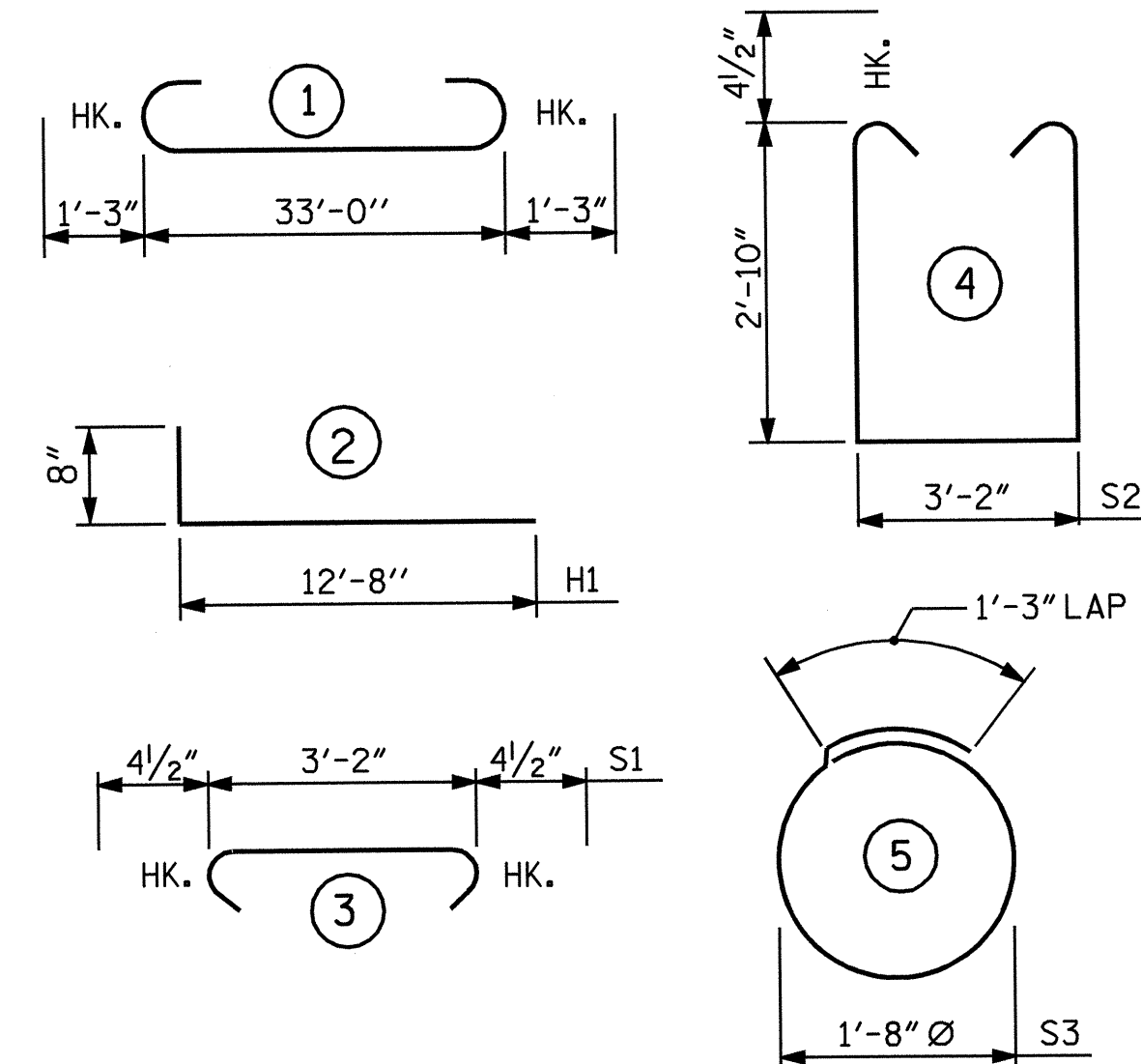
\*\* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



SECTION A-A

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10	1	35'-6"	1222
B2	4	#5	STR	33'-2"	138
B3	8	#4	STR	3'-2"	17
B4	8	#4	STR	17'-10"	95
D1	54	#4	STR	5'-0"	180
H1	16	#4	2	13'-4"	143
S1	34	#4	3	3'-11"	89
S2	34	#4	4	9'-7"	218
S3	21	#4	5	6'-6"	91
V1	48	#4	STR	5'-0"	160

REINFORCING STEEL = 2353 LBS

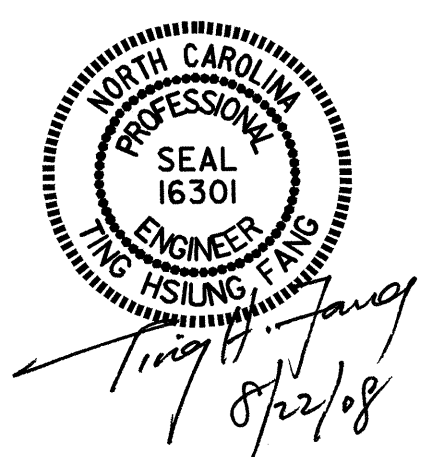
CLASS A CONCRETE QUANTITIES :  
CAP & WINGS 16.4 C.Y.

HP 12 X 53 STEEL PILES :  
No. 5 50 LIN. FT.

PILE EXCAVATION QUANTITIES :  
PILE EXCAVATION IN SOIL 5 L. FT.  
PILE EXCAVATION NOT IN SOIL 25 L. FT.

PROJECT NO. B-4011  
ASHE COUNTY  
STATION: 17+52.50 -L-

SHEET 2 OF 2  
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUBSTRUCTURE  
END BENT 1  
INTEGRAL



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20	
1			3			TOTAL SHEETS 25	
2			4				

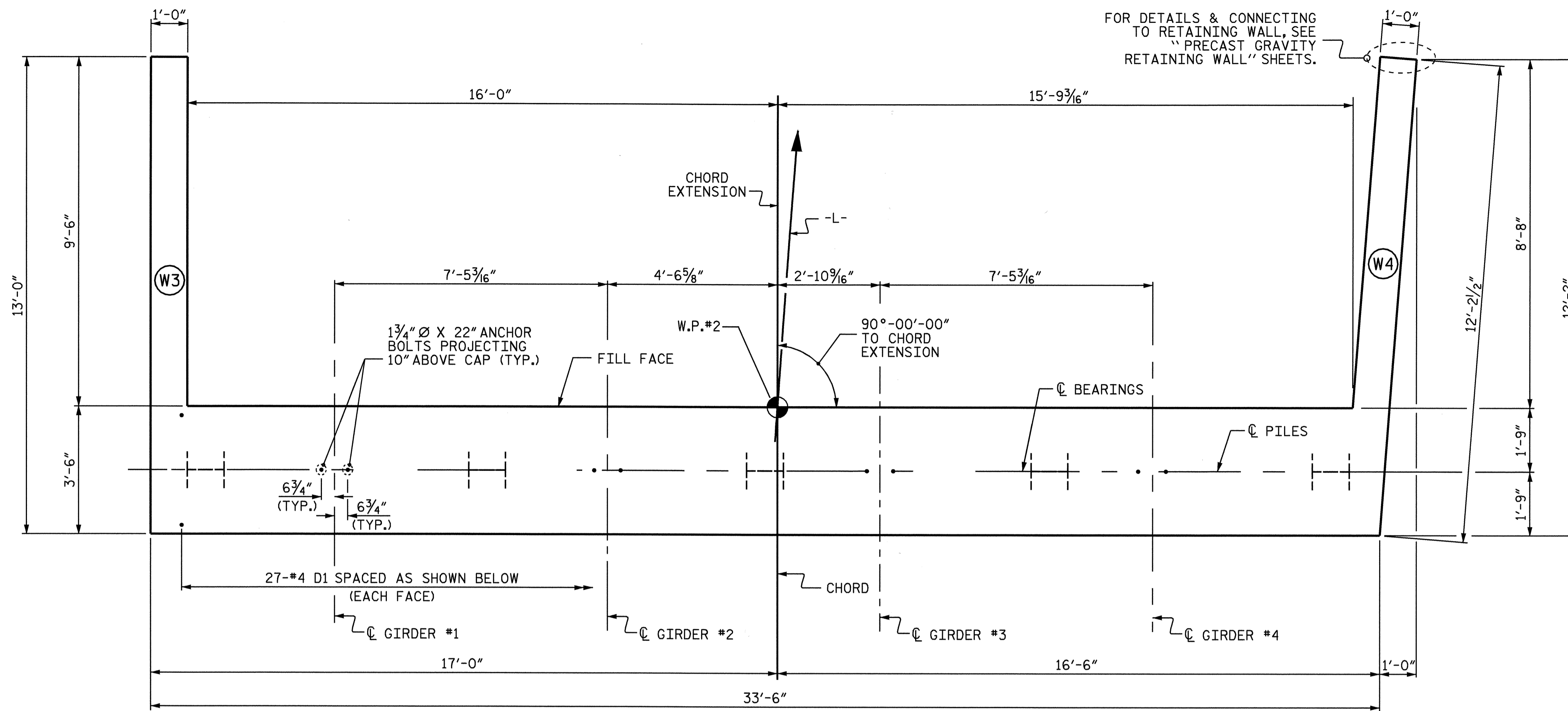
**NOTES**

STIRRUPS AND #4 B2 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

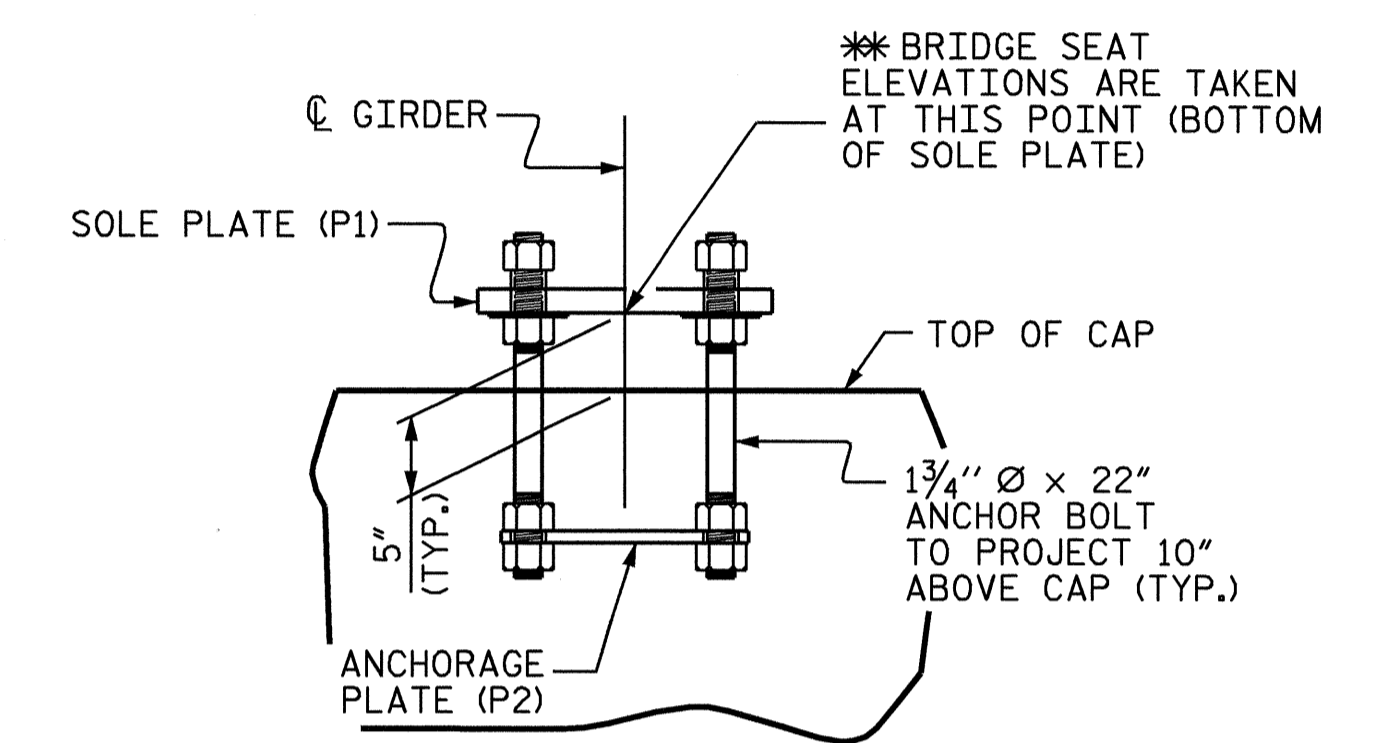
FOR PILE SPLICE DETAILS, SEE END BENT 2, SHEET 2 OF 2.

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

SEE SUPERSTRUCTURE SHEETS FOR ABUTMENT DETAILS.

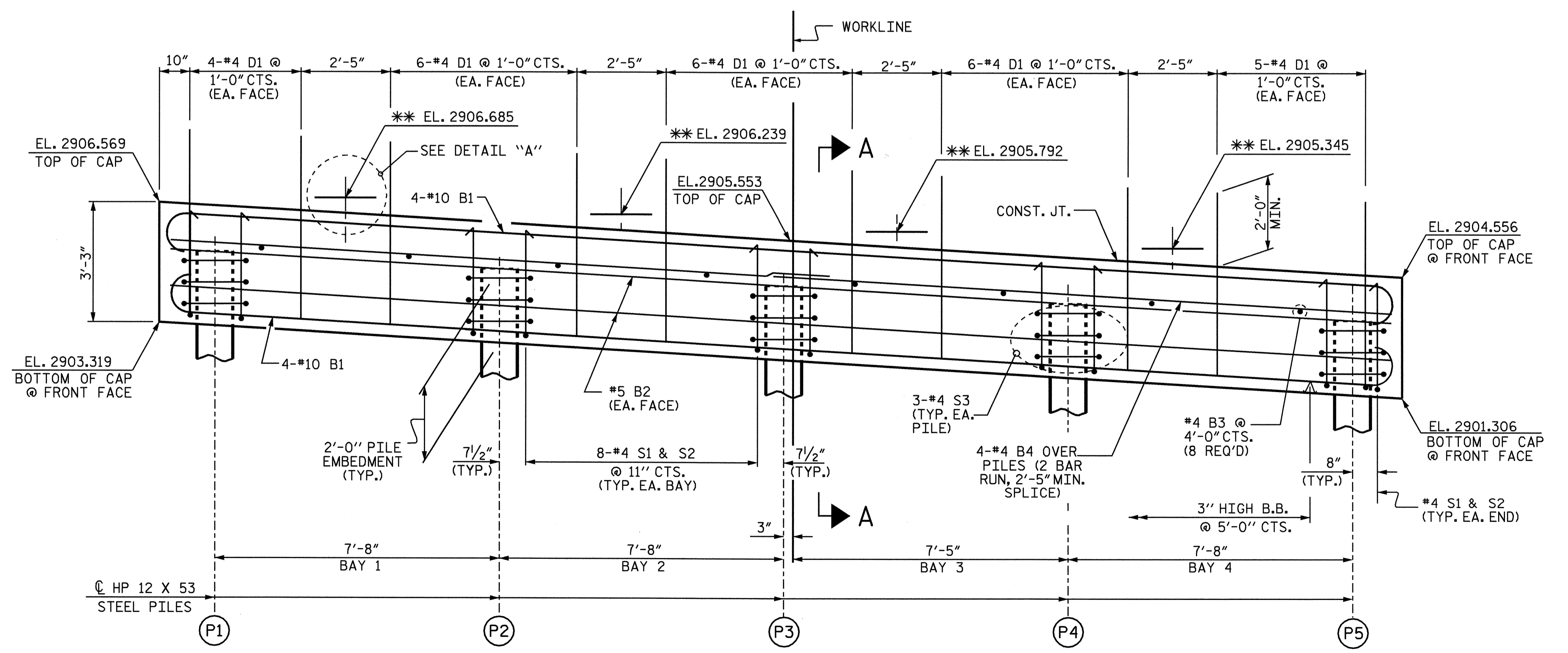


**PLAN**



**DETAIL "A"**

TYP. EA. BEARING. FOR DETAILS, SEE BEARING DETAILS SHEET.



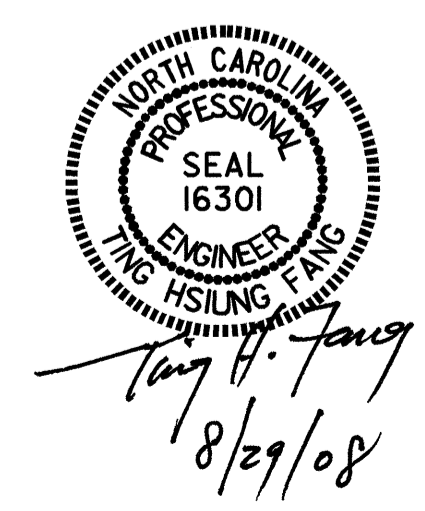
**ELEVATION**

(WINGS NOT SHOWN FOR CLARITY)

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
(P1)	2905.264
(P2)	2904.805
(P3)	2904.347
(P4)	2903.888
(P5)	2903.429

PROJECT NO. B-4011  
ASHE COUNTY  
 STATION: 17+52.50 -L-

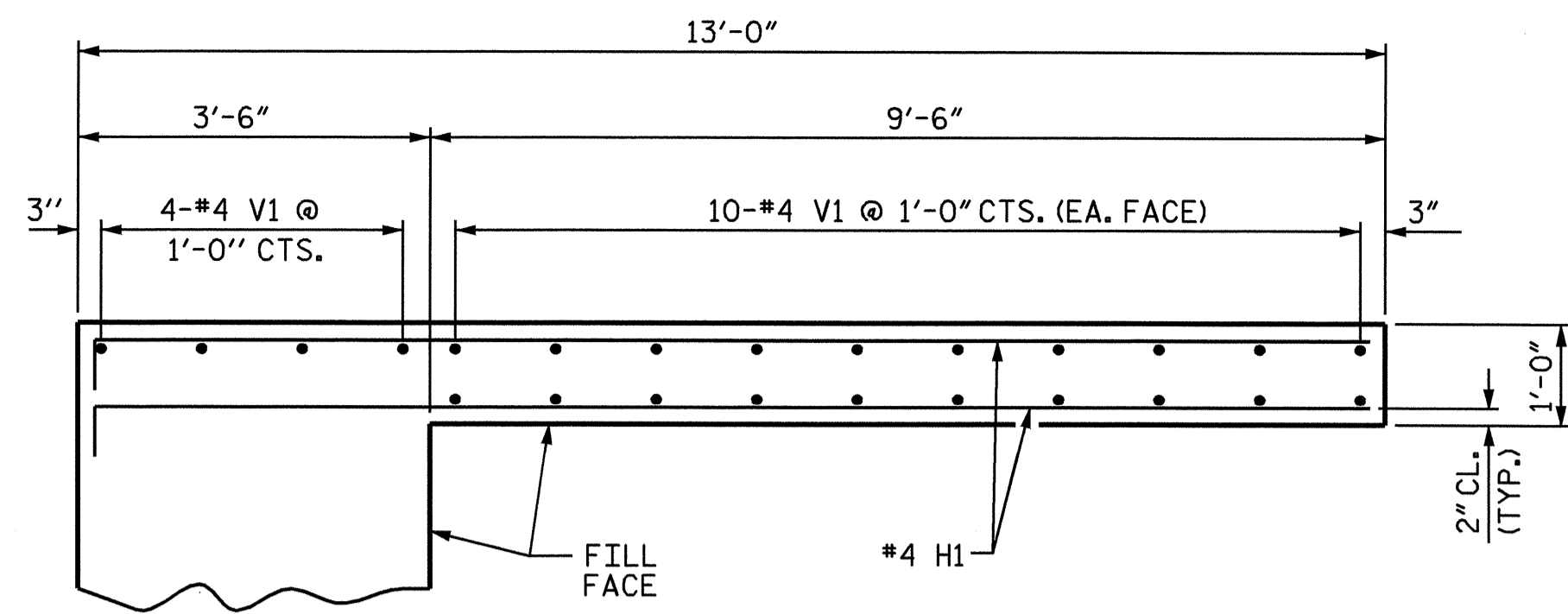
SHEET 1 OF 2



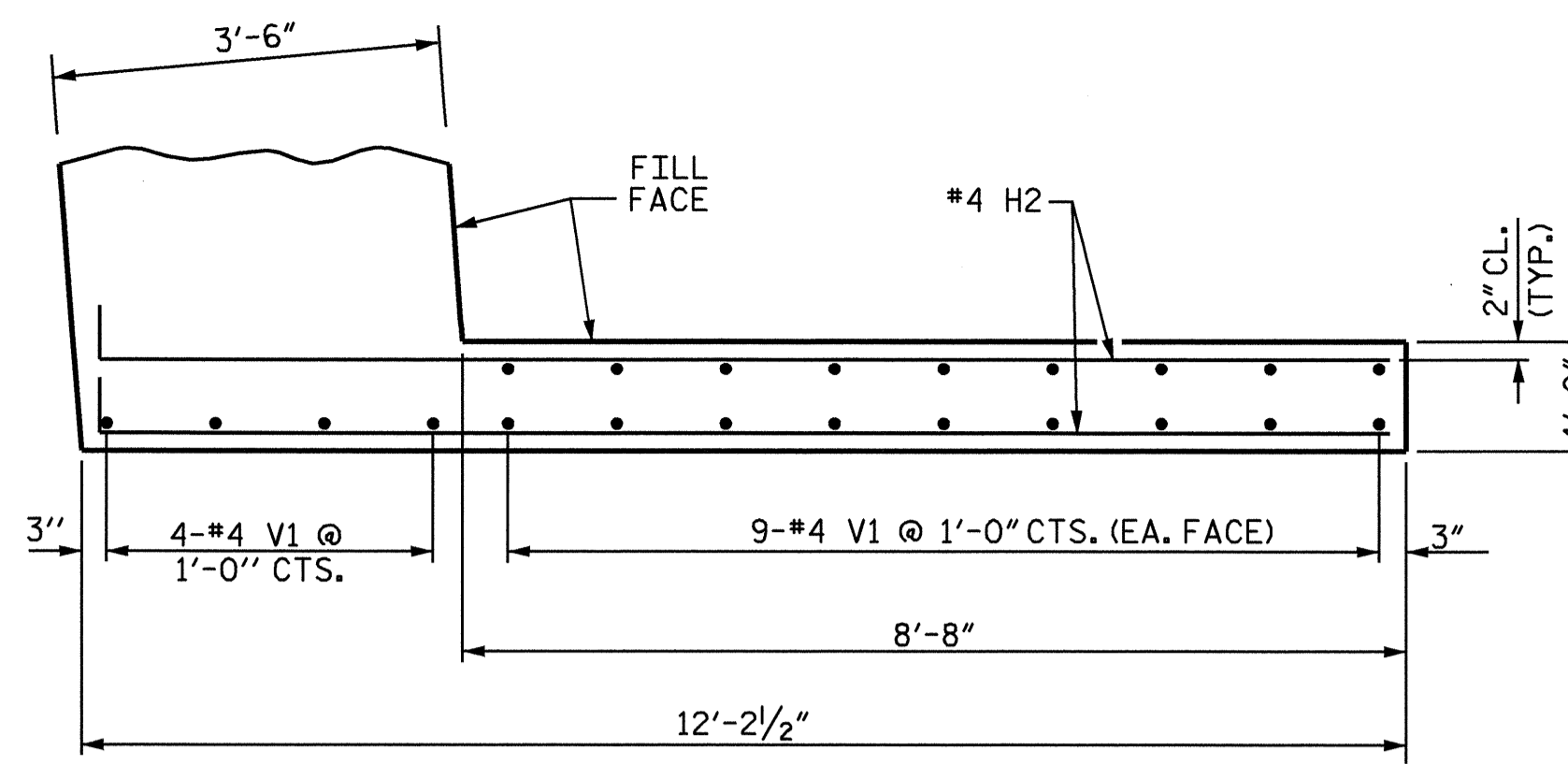
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT 2  
 INTEGRAL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			25

DRAWN BY: William J. Parker/HBS DATE: 01/20/05-06/08  
 CHECKED BY: T. H. FANG DATE: 09/7/07



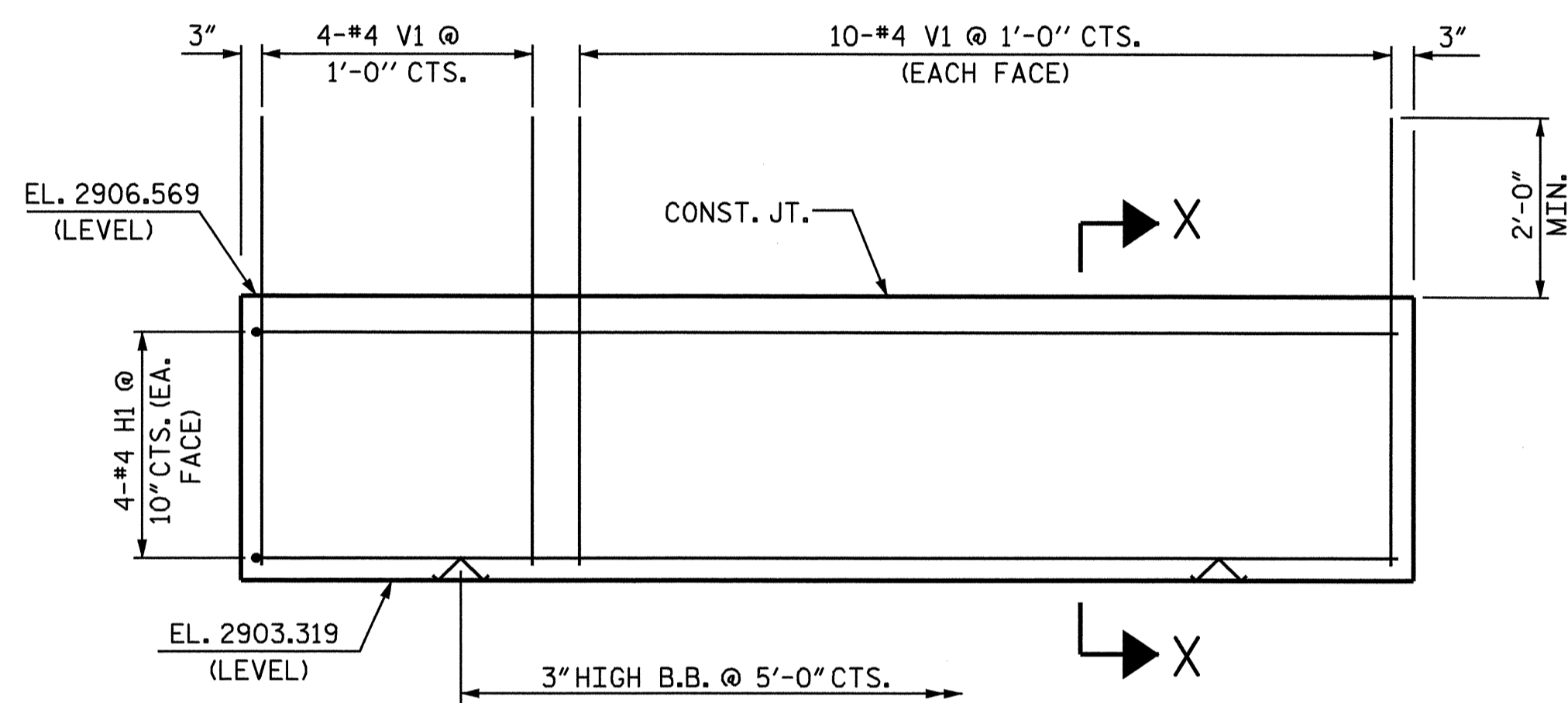
PLAN OF WING (W3)



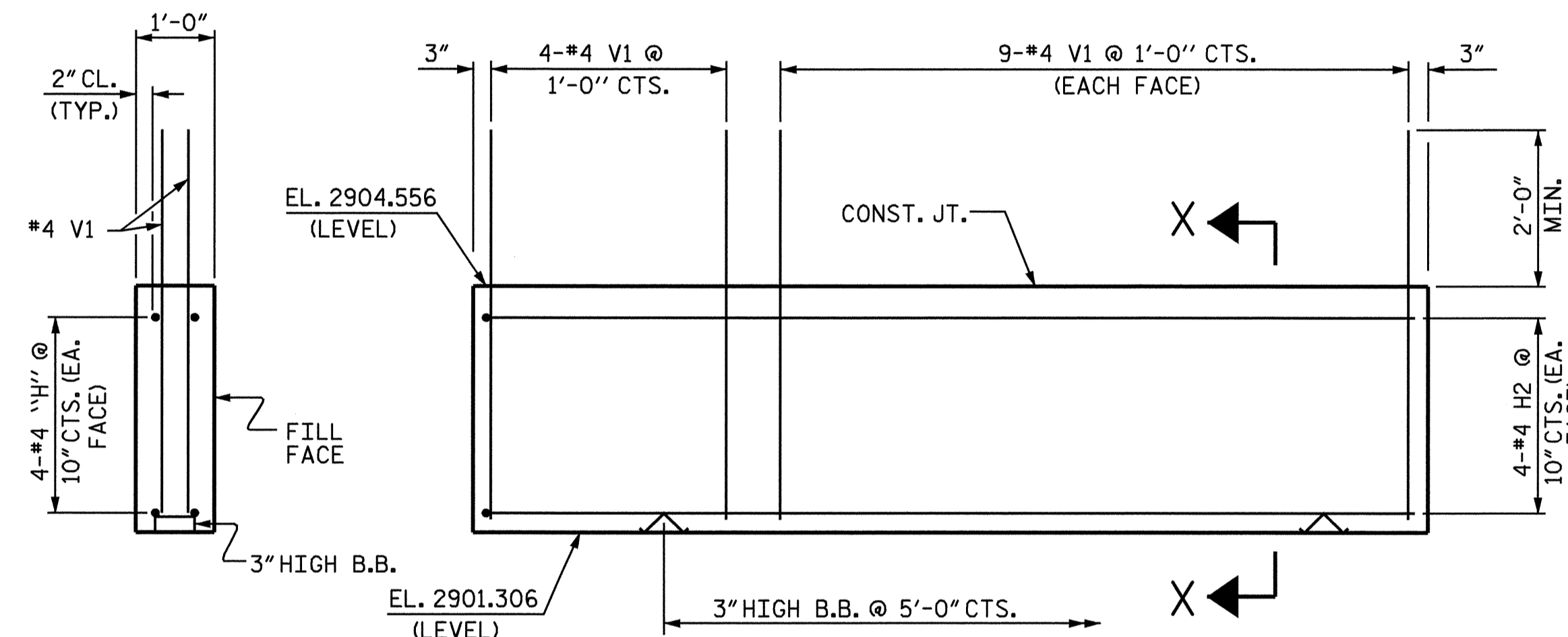
PLAN OF WING (W4)

**BAR TYPES**

ALL BAR DIMENSIONS ARE OUT TO OUT.

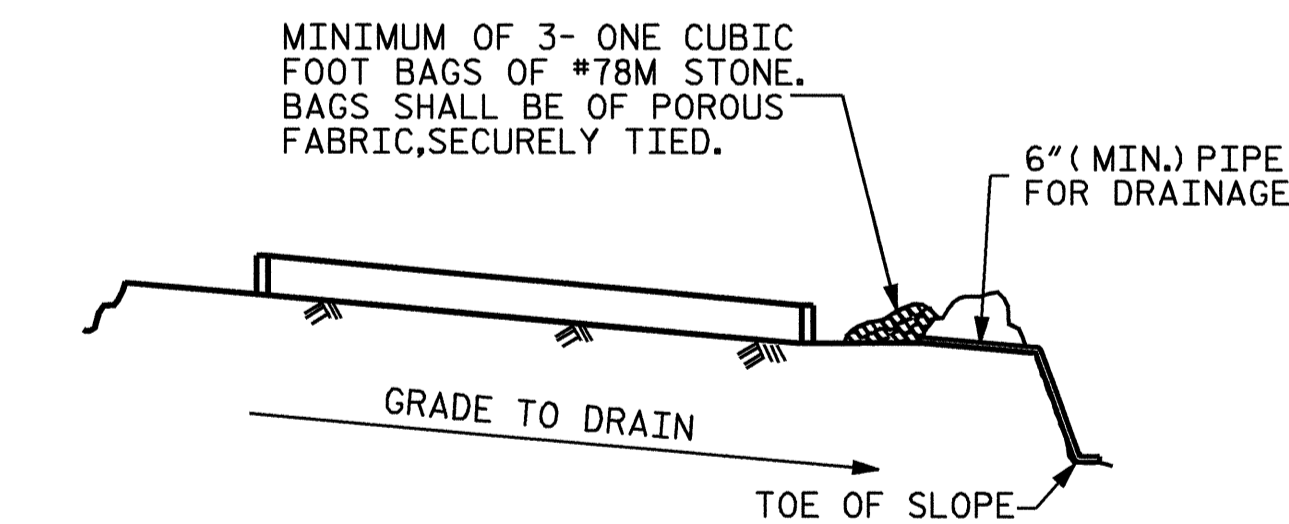


ELEVATION OF WING (W3)



SECTION X-X

ELEVATION OF WING (W4)

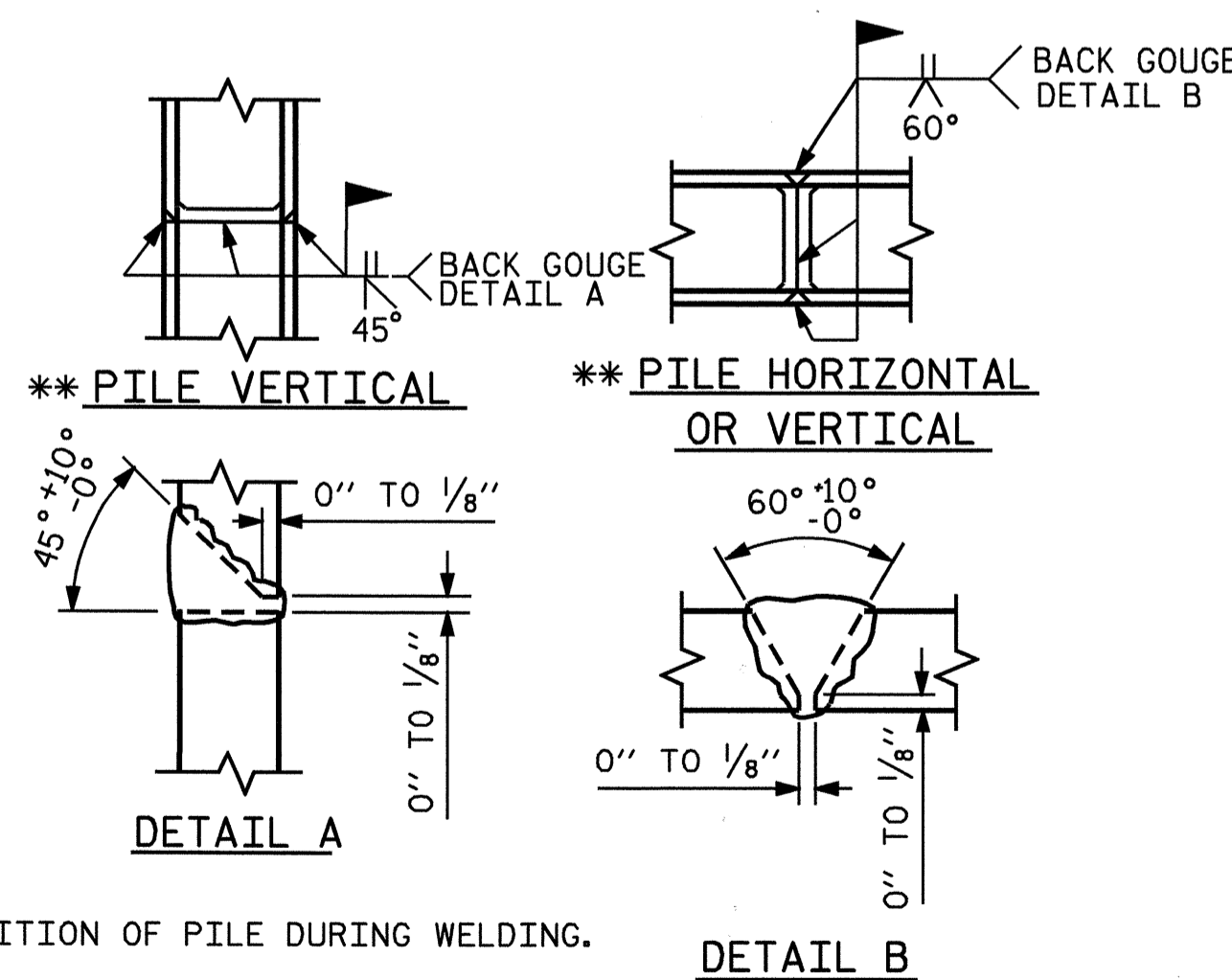


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

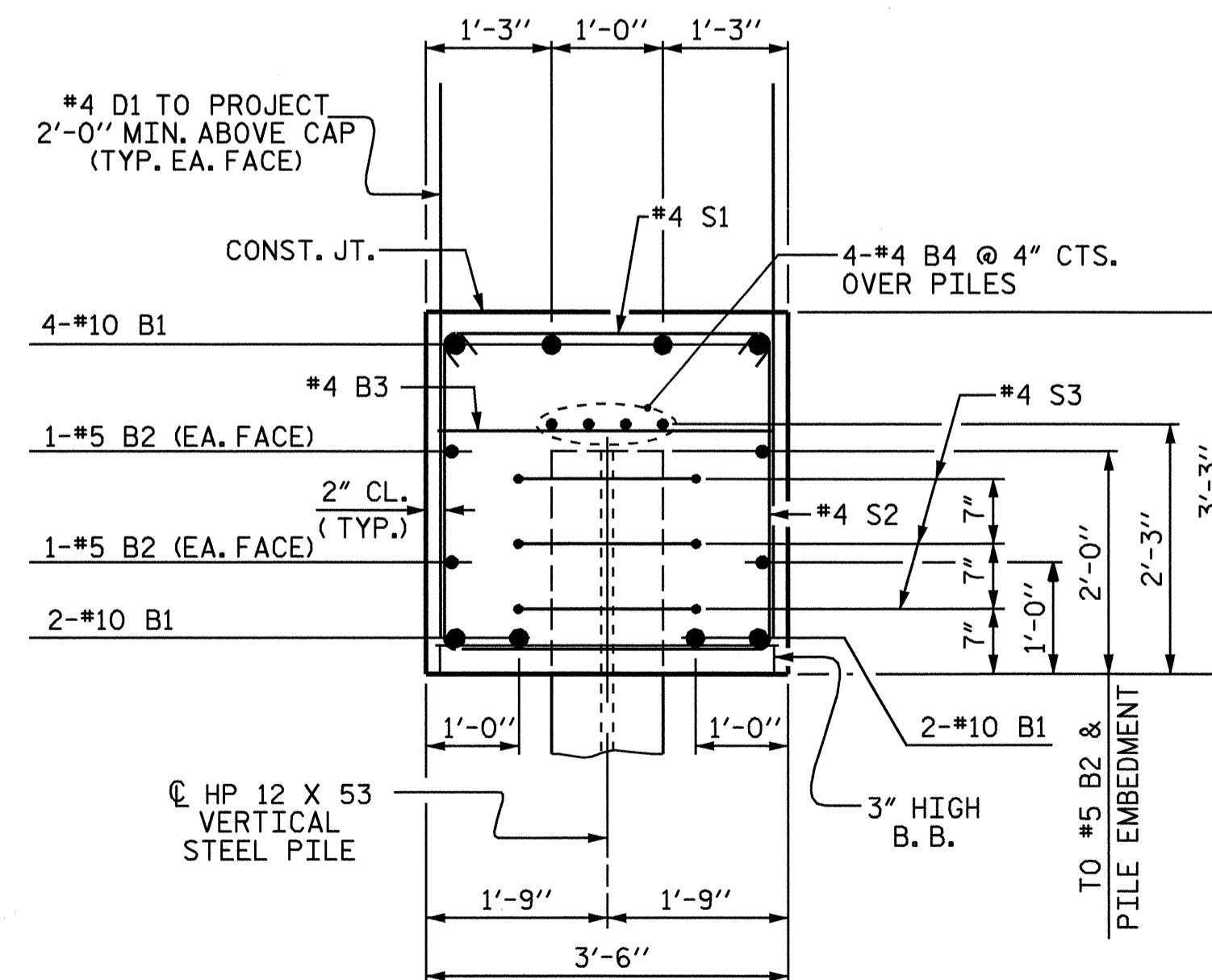
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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



SECTION A-A

**BILL OF MATERIAL**

END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10	1	35'-6"	1222
B2	4	#5	STR	33'-2"	138
B3	8	#4	STR	3'-2"	17
B4	8	#4	STR	17'-10"	95
D1	54	#4	STR	5'-0"	180
H1	8	#4	2	13'-4"	71
H2	8	#4	2	12'-6"	67
S1	34	#4	3	3'-11"	89
S2	34	#4	4	9'-7"	218
S3	21	#4	5	6'-6"	91
V1	46	#4	STR	5'-0"	154

REINFORCING STEEL = 2343 LBS

CLASS A CONCRETE QUANTITIES :  
CAP & WINGS 16.3 C.Y.

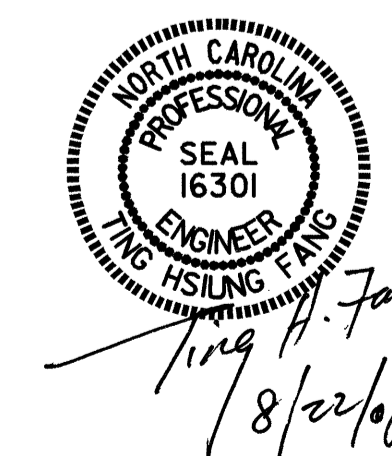
HP 12 X 53 STEEL PILES :  
No. 5 65 LIN. FT.

PILE EXCAVATION QUANTITIES :  
PILE EXCAVATION IN SOIL 5 L. FT.  
PILE EXCAVATION NOT IN SOIL 25 L. FT.

PROJECT NO. B-4011  
ASHE COUNTY  
STATION: 17+52.50 -L-

SHEET 2 OF 2

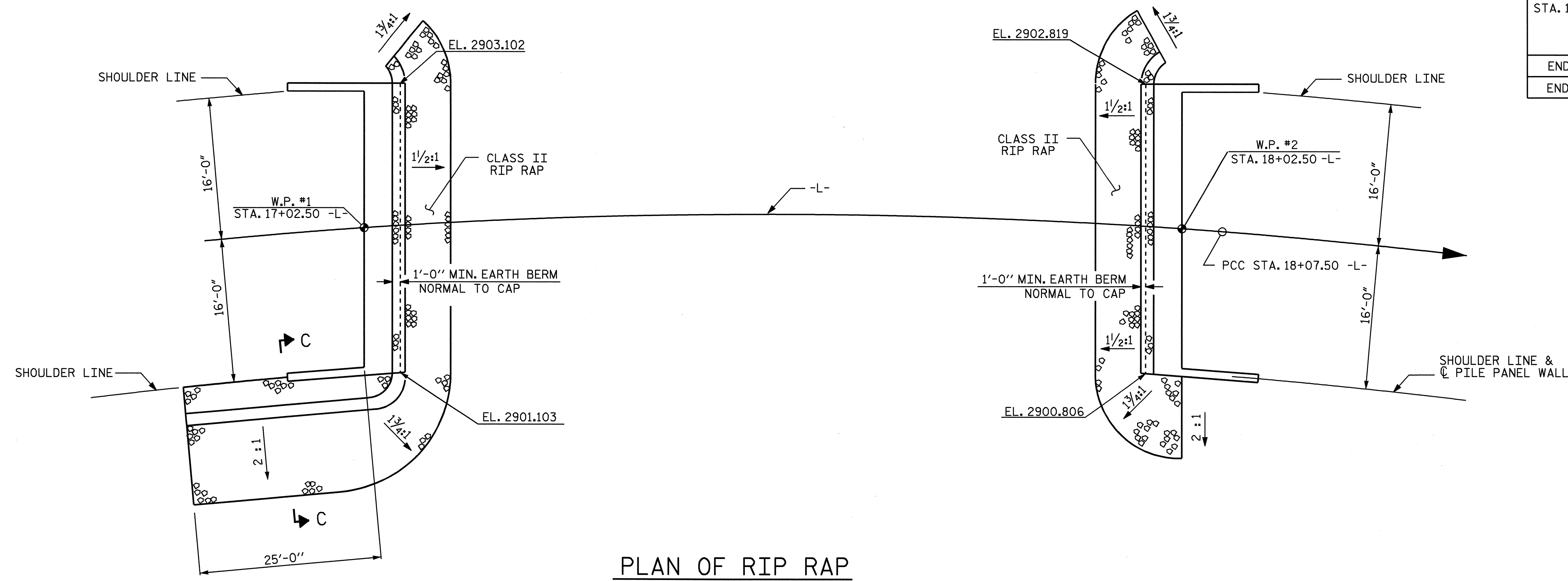
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUBSTRUCTURE  
END BENT 2  
INTEGRAL



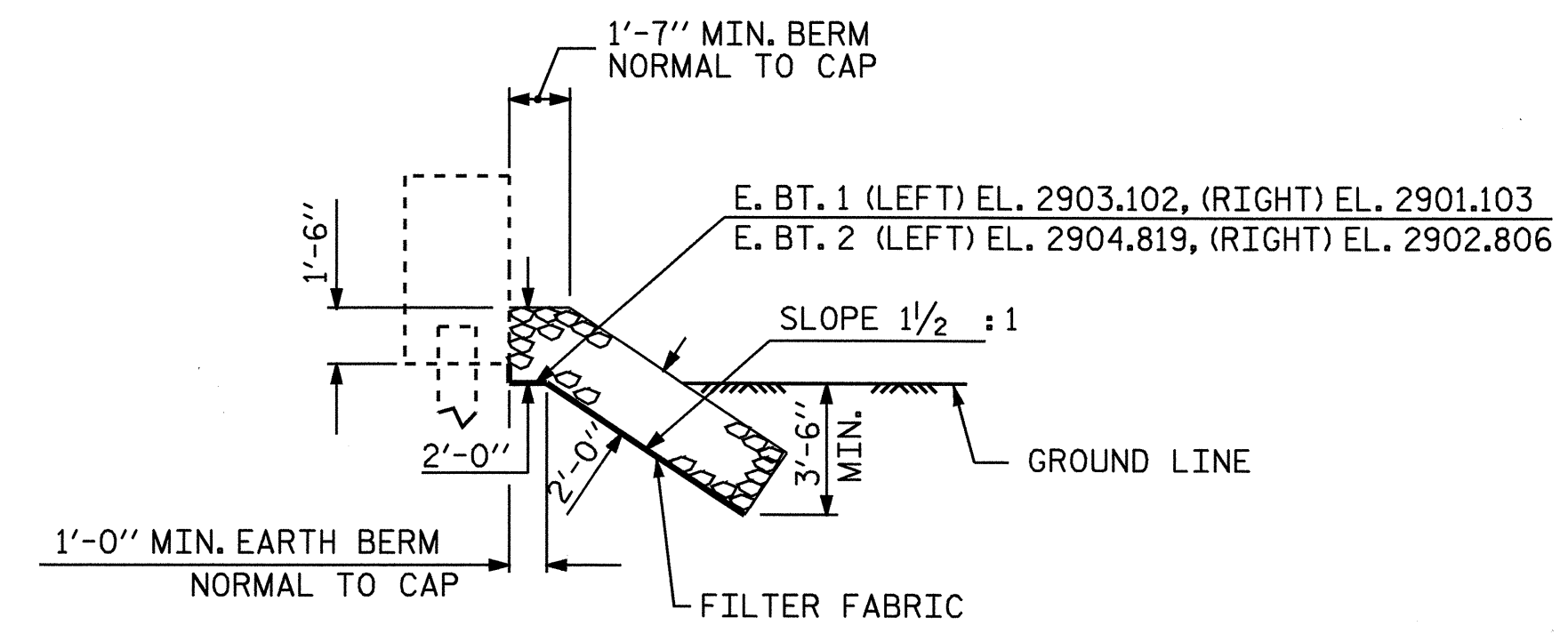
DRAWN BY: William J. Parker DATE: 10/13/05  
CHECKED BY: T. H. FANG DATE: 09/12/07

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			25

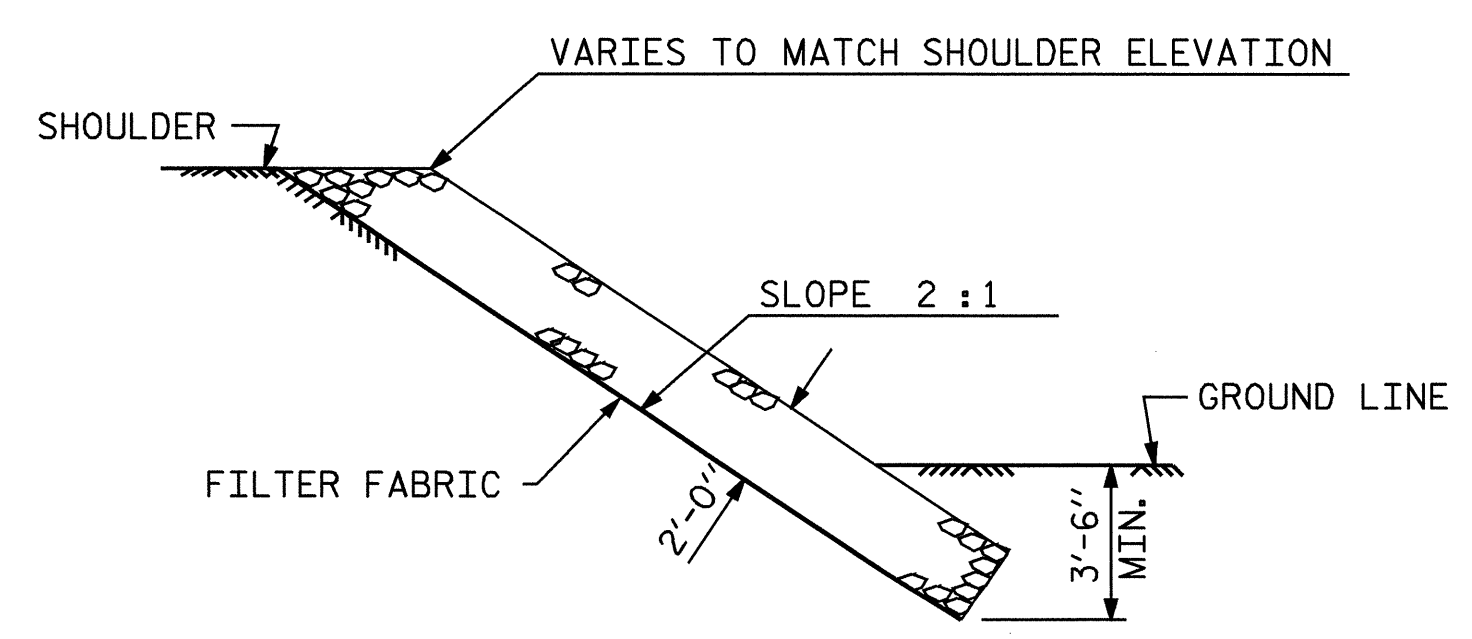
ESTIMATED QUANTITIES		
BRIDGE @ STA. 17+52.50 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	63	70
END BENT 2	27	30



PLAN OF RIP RAP

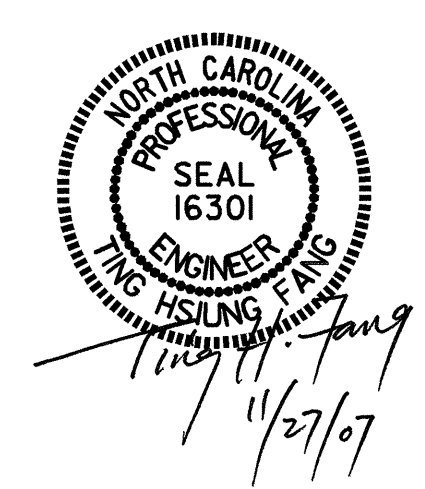


SECTION C-C  
BERM RIP RAPPED



SECTION C-C

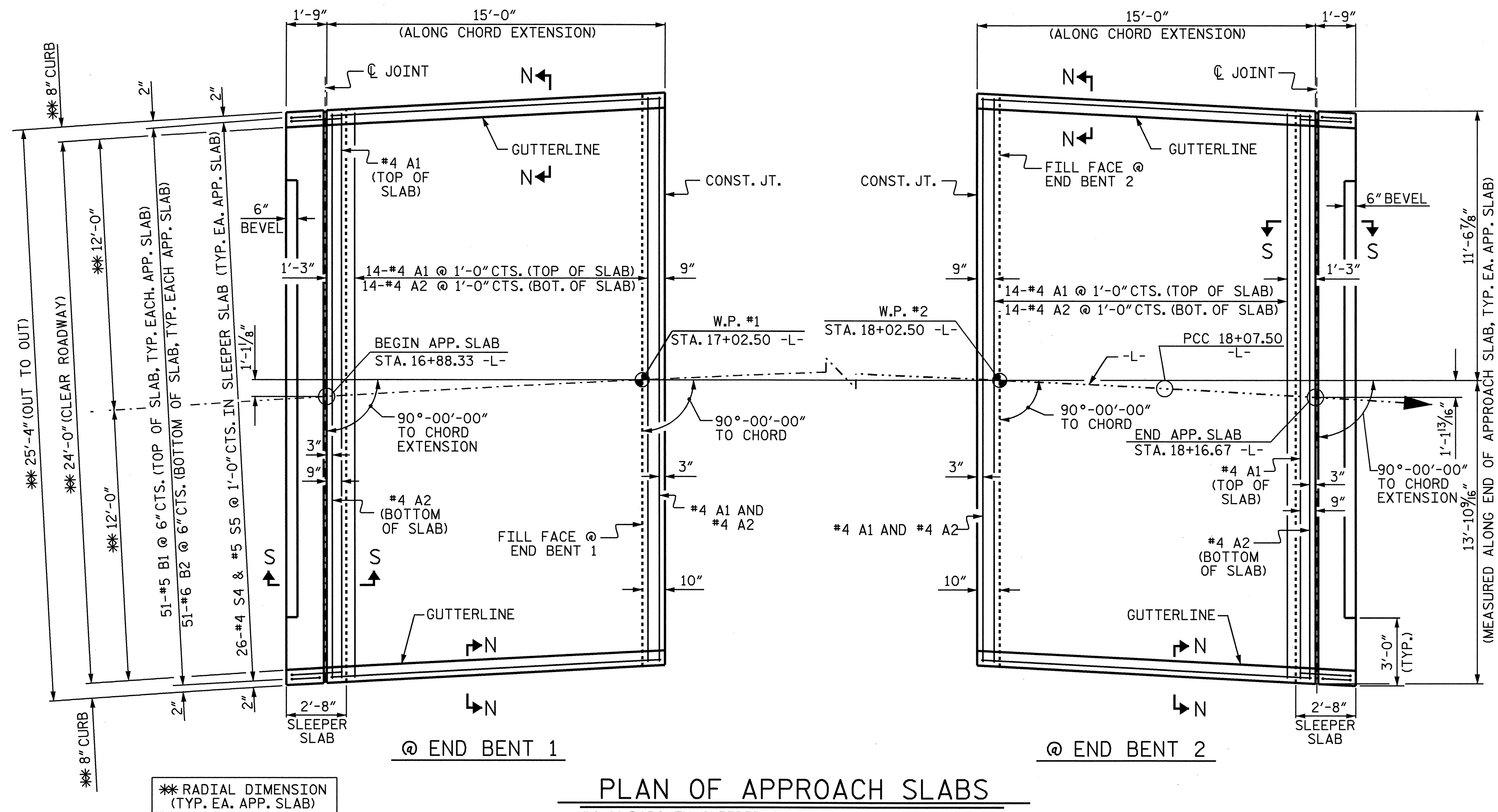
PROJECT NO. B-4011  
ASHE COUNTY  
STATION: 17+52.50 -L-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
= RIP RAP DETAILS =					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

ASSEMBLED BY : <i>William J. Parker</i>	DATE : 10/13/05
CHECKED BY : K.K. PUROHIT	DATE : 2/16/06
DRAWN BY : FCJ 2/88	REV. 7/17/98 REK/RWW
CHECKED BY : ARB 8/88	REV. 8/16/99 RWW/LES
	REV. 10/17/00 RWW/LES





**PLAN OF APPROACH SLABS**

#4 A1 BARS IN SLEEPER SLAB NOT SHOWN FOR CLARITY. DIMENSIONS AND REINFORCING STEEL FOR APPROACH SLABS ARE TYPICAL.

**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 PLACED AS SHOWN IN SECTION THRU SLAB AND SHALL EXTEND 1'-0" OUTSIDE OF EACH EDGE OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL BE PLACED AS SHOWN IN SECTION THRU 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 PLACED AS SHOWN IN SECTION THRU SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

THE VERTICAL JOINT ON THE RIGHT AND LEFT SIDE OF THE APPROACH SLAB AT THE ENDS OF THE EVAZOTE JOINT SHALL BE FILLED WITH SILICONE OR OTHER APPROVED MATERIAL IN ORDER TO PREVENT BACKFILL FROM ENTERING THE JOINT OPENING.

THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWS NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE SL LOW MODULUS SILICONE SEALANT.

**WITH EVAZOTE JOINT SEAL**

FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

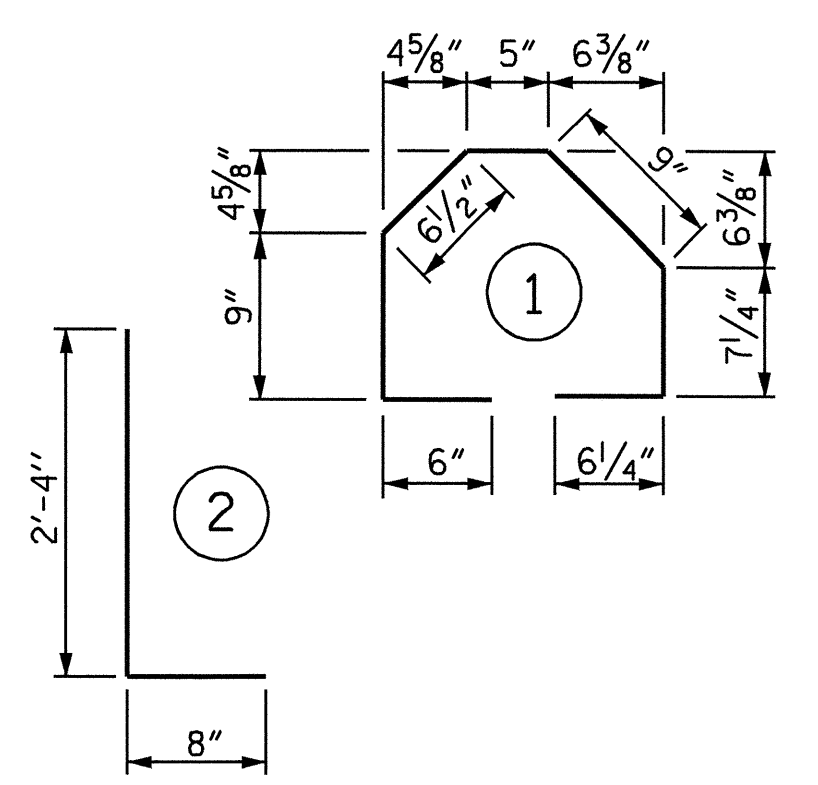
THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2 1/2".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

**BILL OF MATERIAL**

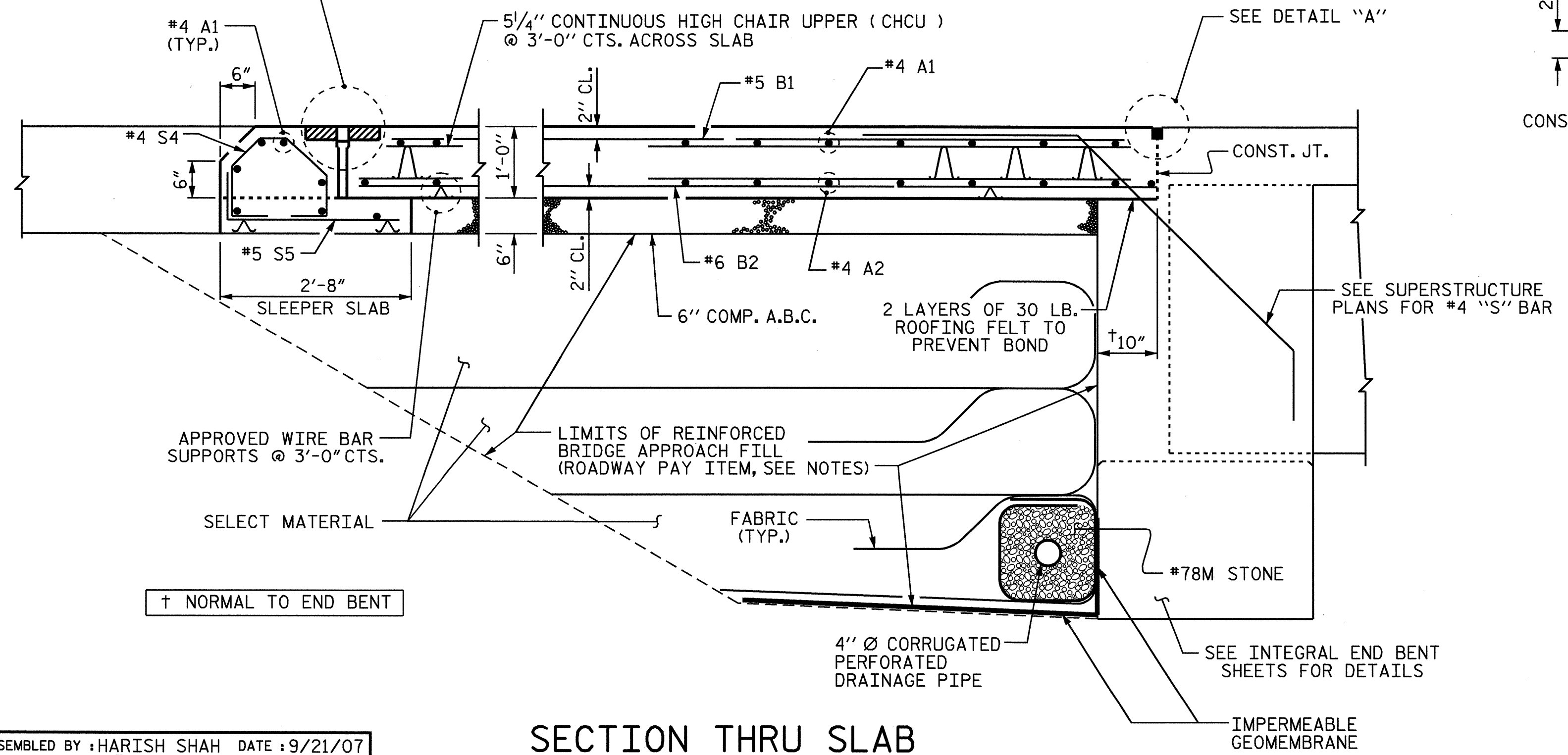
FOR ONE APPROACH SLAB (2 REQUIRED)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	23	#4	STR	25'-0"	384
A2	16	#4	STR	25'-0"	267
* B1	51	#5	STR	14'-0"	745
B2	51	#6	STR	14'-6"	1111
* S4	26	#4	1	4'-1"	71
S5	26	#5	2	3'-0"	81
REINFORCING STEEL				LBS. 1,459	
* EPOXY COATED REINFORCING STEEL				LBS. 1,200	
<b>CLASS AA CONCRETE</b>					
POUR #1 - SLAB & CURB				14.2 C.Y.	
POUR #2 - SLEEPER SLAB				1.9 C.Y.	
TOTAL				16.1 C.Y.	

**BAR TYPES**

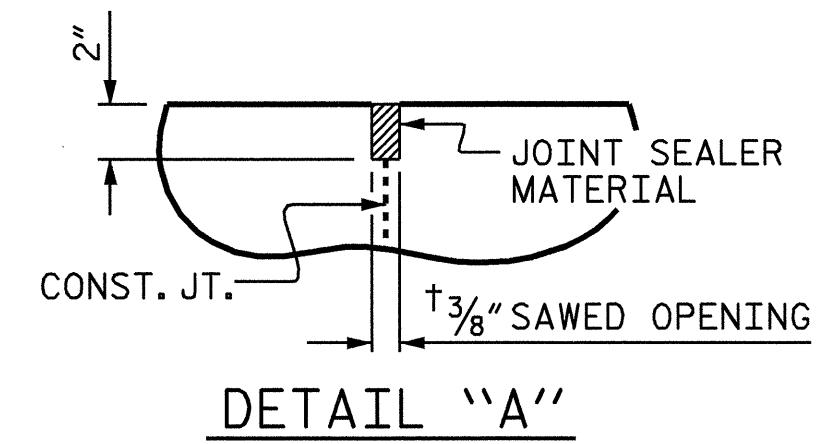


ALL BAR DIMENSIONS ARE OUT TO OUT.

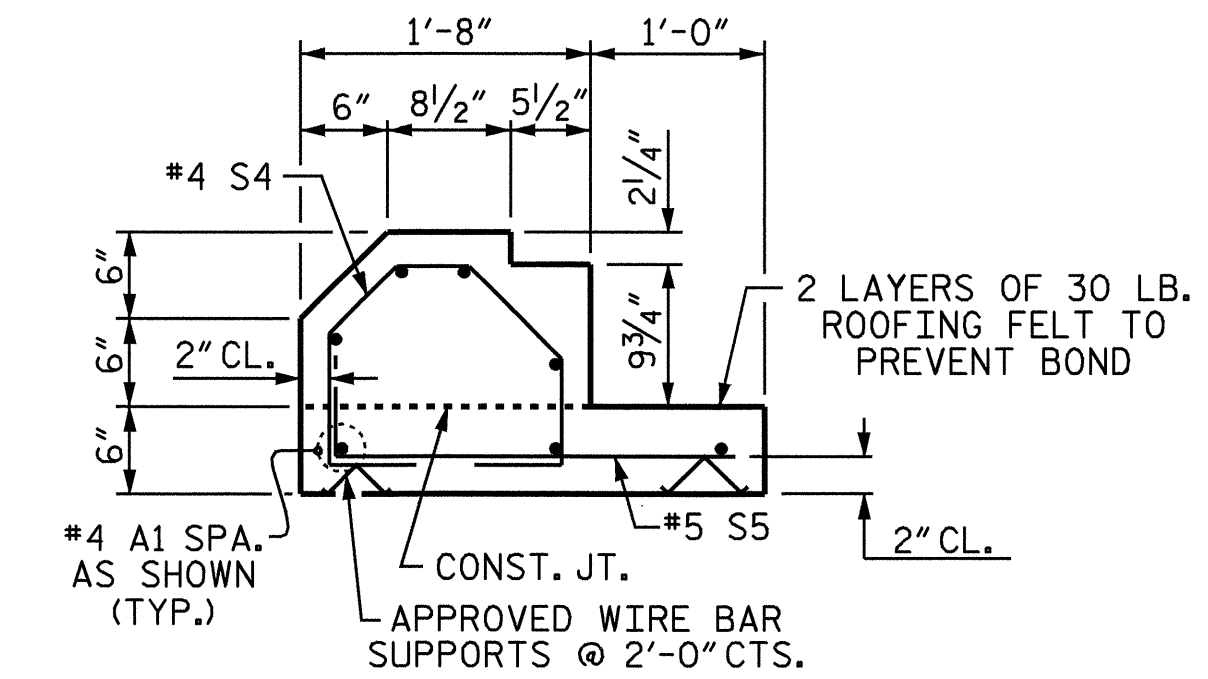
SEE JOINT SEAL DETAILS ON "BRIDGE APPROACH SLAB DETAILS" SHEET.



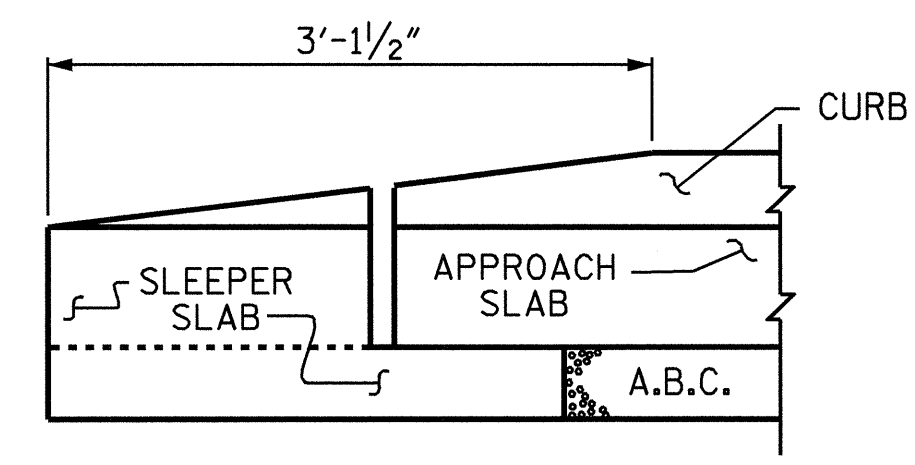
**SECTION THRU SLAB**



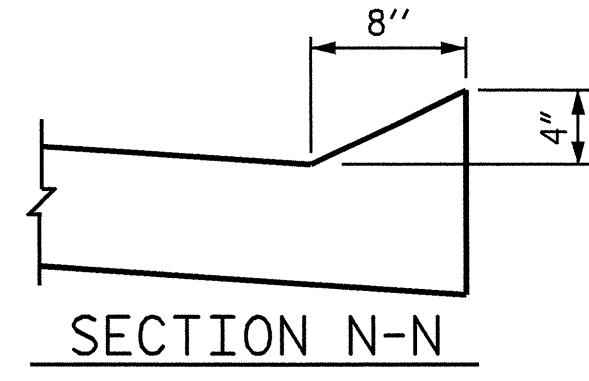
DETAIL "A"



SECTION S-S SHOWING SLEEPER SLAB



END OF CURB WITHOUT SHOULDER BERM GUTTER



SECTION N-N



Ting H. Fang  
12/21/07

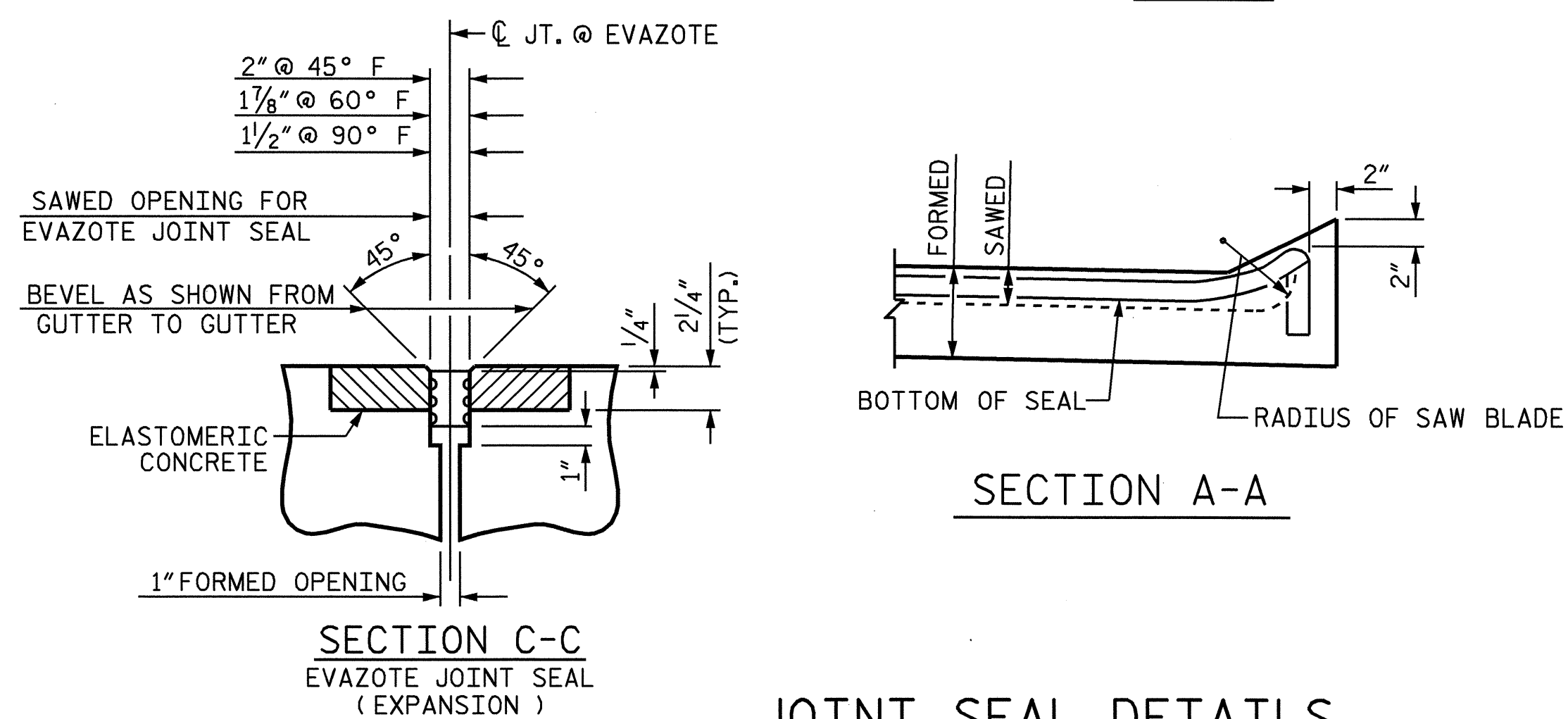
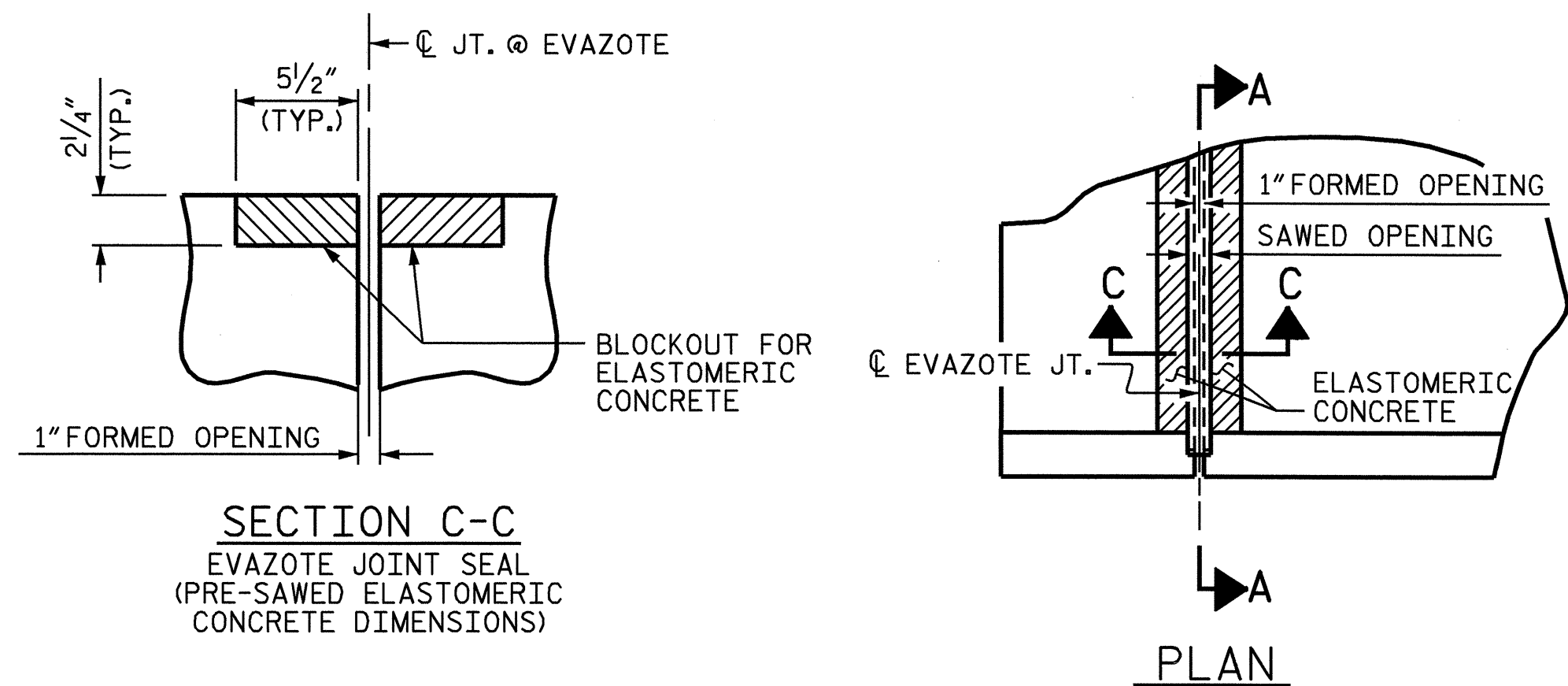
PROJECT NO. B-4011  
ASHE COUNTY  
 STATION: 17+52.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 BRIDGE APPROACH SLAB  
 FOR INTEGRAL ABUTMENT

ASSEMBLED BY: HARISH SHAH DATE: 9/21/07  
 CHECKED BY: T. H. FANG DATE: 9/21/07  
 DRAWN BY: TLA 10/05 ADDED 5/1/06  
 CHECKED BY: GM 5/06

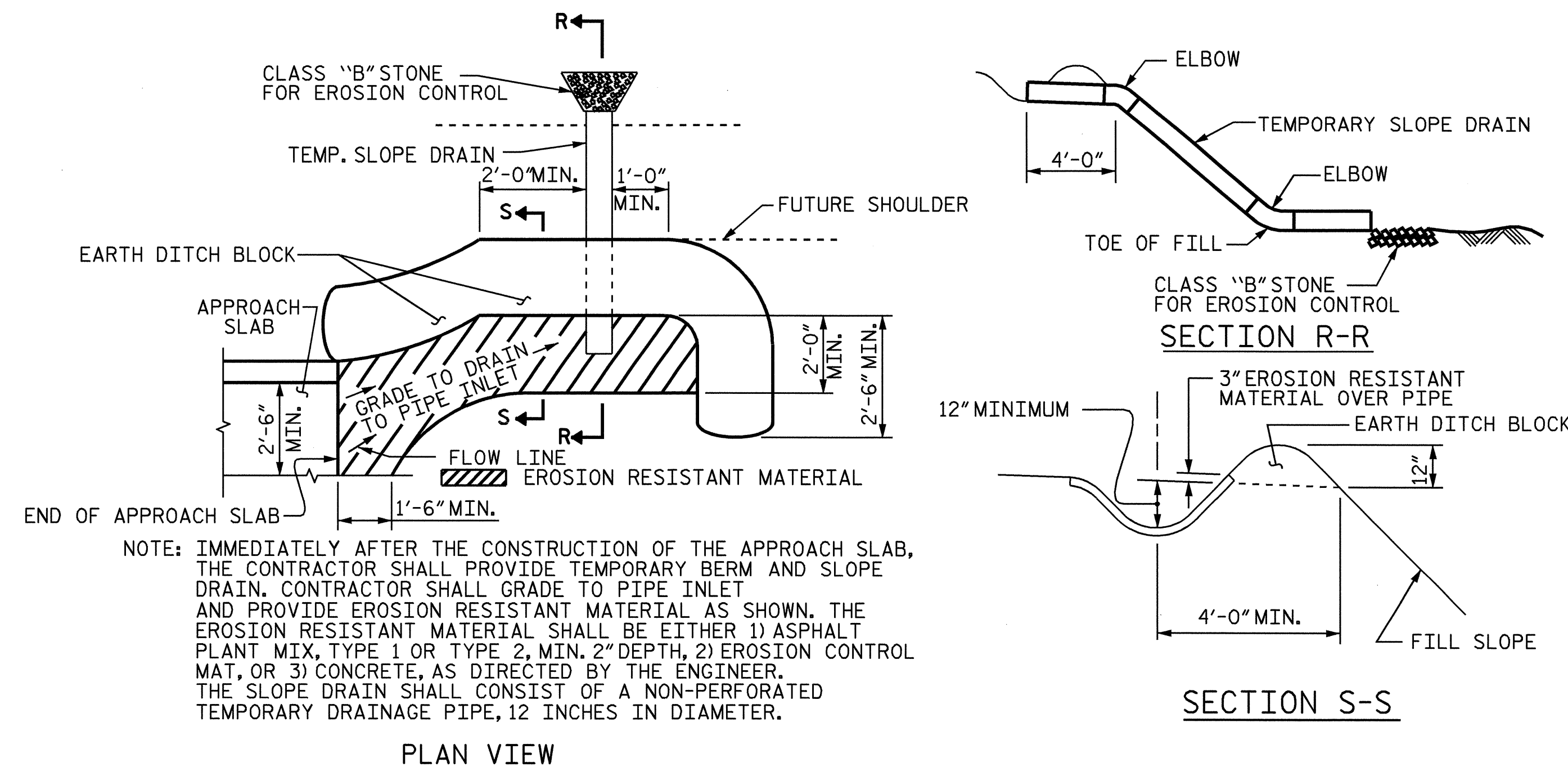
REVISIONS						SHEET NO. S-24
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			



**JOINT SEAL DETAILS**

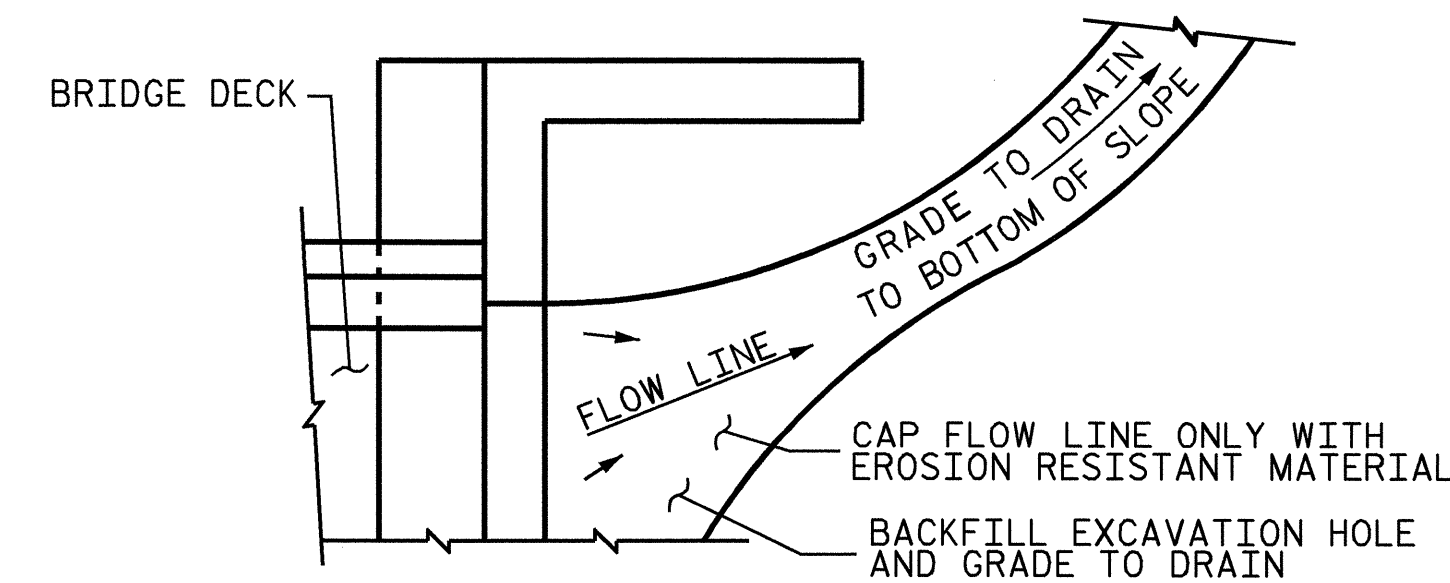
ELASTOMERIC CONCRETE	
APPROACH SLAB NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	4.1
2	4.1
TOTAL	8.2

\* BASED ON THE MINIMUM BLOCKOUT SHOWN.



**TEMPORARY BERM AND SLOPE DRAIN DETAILS**

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

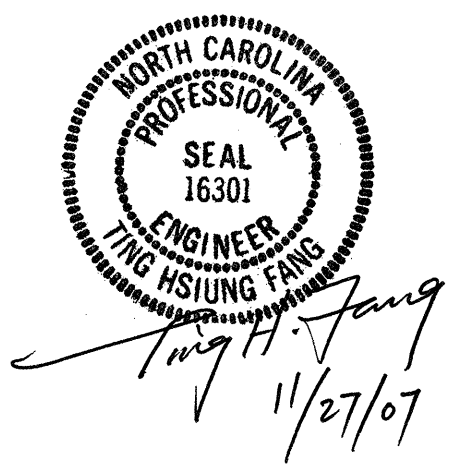


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

**TEMPORARY DRAINAGE DETAIL**

PROJECT NO. B-4011  
ASHE COUNTY  
 STATION: 17+52.50 -L-

SHEET 2 OF 2

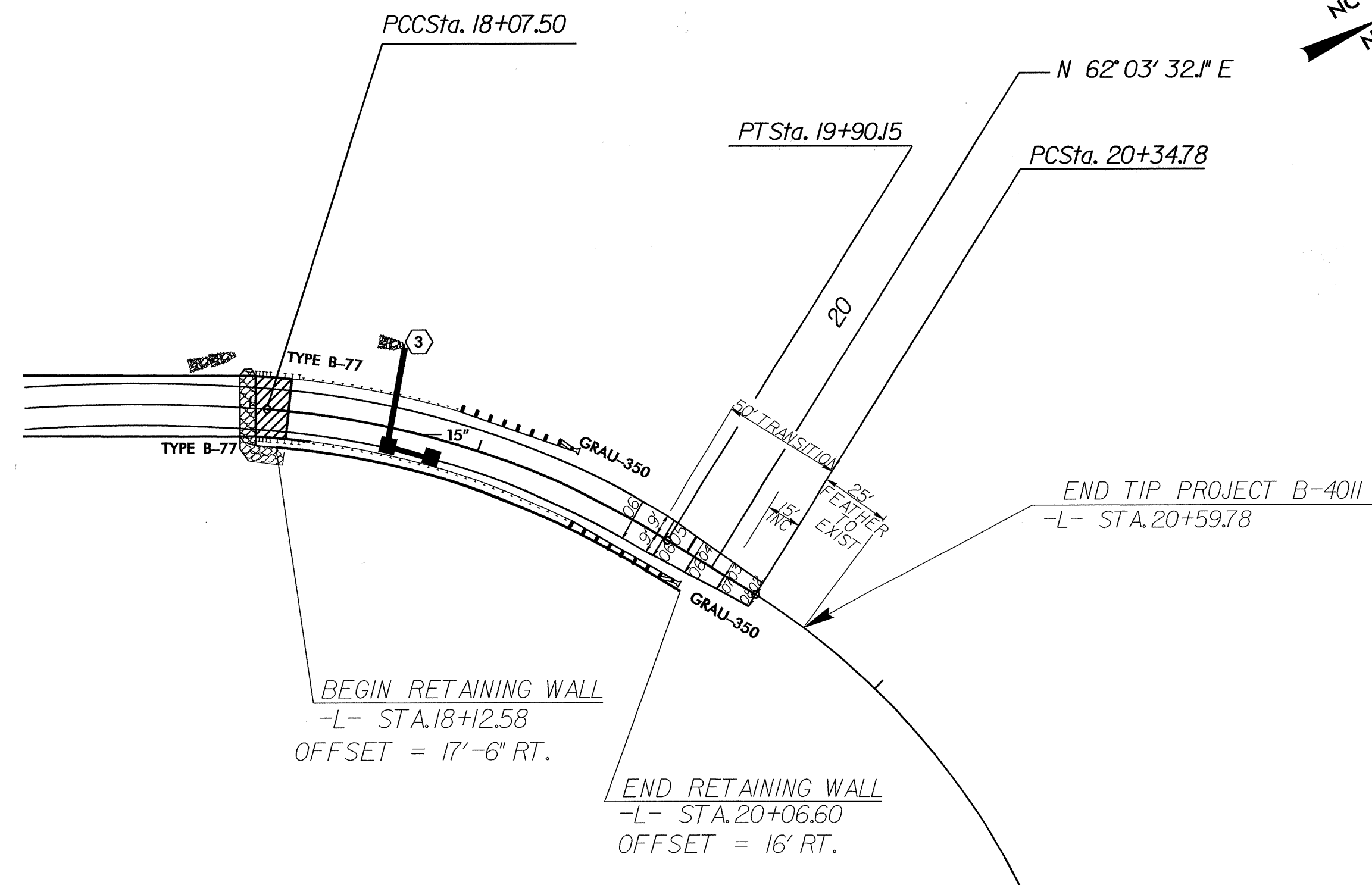
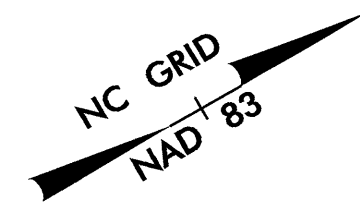


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD BRIDGE APPROACH SLAB DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

ASSEMBLED BY : HARISH SHAH	DATE : 9/21/07
CHECKED BY : T. H. FANG	DATE : 9/21/07
DRAWN BY : FCJ	11/88
CHECKED BY : ARB	11/88

REV. 10/17/00	RWW/LES
REV. 5/7/03	RWW/JTE
REV. 5/1/06	TLA/GM

BM - 3 RR SPIKE SET IN 18" WHITE PINE TREE -BL- STA.16+08.27 26.52' RT.  
 EL. = 2916.41' N 934279 E 1248179



LOCATION SKETCH

TOTAL STRUCTURE QUANTITIES

SEGMENTAL BLOCK GRAVITY RETAINING WALL 1088 SO. FT.

GEOTECHNICAL ENGINEER   SIGNATURE: <i>En. Co. L.</i> DATE: 9/9/08	ENGINEER   SIGNATURE: _____ DATE: _____
---	--

NOTES

FOR PRECAST GRAVITY RETAINING WALLS, SEE PRECAST GRAVITY RETAINING WALLS PROVISION.

FOR GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

BEFORE BEGINNING PRECAST GRAVITY WALL DESIGN FOR RETAINING WALL, SURVEY EXISTING GROUND ELEVATIONS SHOWN ON THE WALL PROFILE VIEW (WALL ENVELOPE) AND SUBMIT A REVISED WALL ENVELOPE FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THIS ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL FOR WALL HEIGHTS EQUAL TO THE DESIGN HEIGHT (DIFFERENCE BETWEEN GRADE ELEVATION AND BOTTOM OF WALL ELEVATION) PLUS EMBEDMENT (DIFFERENCE BETWEEN BOTTOM OF WALL ELEVATION AND TOP OF LEVELING PAD ELEVATION).

DESIGN RETAINING WALL FOR THE FOLLOWING:

- 1) MINIMUM SERVICE LIFE = 100 YEARS
- 2) IN-SITU ASSUMED BACKFILL MATERIAL PARAMETERS:  
 UNIT WEIGHT,  $\gamma$  = 100 PCF  
 FRICTION ANGLE,  $\phi$  = 30 DEGREES  
 COHESION,  $c$  = 0 PSF

- 2) IN-SITU ASSUMED FOUNDATION MATERIAL PARAMETERS:  
 UNIT WEIGHT,  $\gamma$  = 120 PCF  
 FRICTION ANGLE,  $\phi$  = 38 DEGREES  
 COHESION,  $c$  = 0 PSF

IF BEARING CAPACITY IS LESS THAN 5000 PSF (ULTIMATE), OVER EXCAVATE AS DIRECTED BY ENGINEER AND REPLACE WITH PROPERLY COMPACTED FILL. ANY REQUIRED OVER EXCAVATION WILL BE PAID FOR AS UNCLASSIFIED EXCAVATION. BACKFILLING WILL BE CONSIDERED INCIDENTAL TO THE WALL.

DESIGN RETAINING WALL FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

"TEMPORARY SHORING FOR WALL CONSTRUCTION" MAY BE REQUIRED FOR RETAINING WALL. FOR TEMPORARY SHORING FOR WALL CONSTRUCTION, SUBMIT WORKING DRAWINGS AND DESIGN CALCULATIONS WITH THE SOLDIER PILE WALL DESIGN SUBMITTAL AND DESIGN AND CONSTRUCT THE SHORING IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. NO SEPARATE PAYMENT WILL BE MADE FOR TEMPORARY SHORING FOR WALL CONSTRUCTION. PAYMENT WILL BE CONSIDERED INCIDENTAL TO THE COST OF THE RETAINING WALL.

DO NOT PLACE CONCRETE FOR FOOTINGS FOR RETAINING WALL UNTIL OBTAINING THE APPROVAL OF THE EXCAVATION DEPTH AND FOUNDATION MATERIAL.

RECONSTRUCT A 2:1 (H:V) SOIL SLOPE FROM THE TOP EDGE OF THE BERM BACK TO THE WALL FACE AND VEGETATE ACCORDING TO THE CONTRACT.

PROJECT NO.: B-4011  
 ASHE COUNTY  
 STATION: 18+12.58 -L- TO 20+06.60 -L-  
 SHEET 1 OF 3

**GEOTECHNICAL ENGINEERING UNIT**

EASTERN REGIONAL OFFICE  
 WESTERN REGIONAL OFFICE

**STATE OF NORTH CAROLINA**  
**DEPARTMENT OF TRANSPORTATION**  
**RALEIGH**

**PRECAST GRAVITY  
RETAINING WALL**

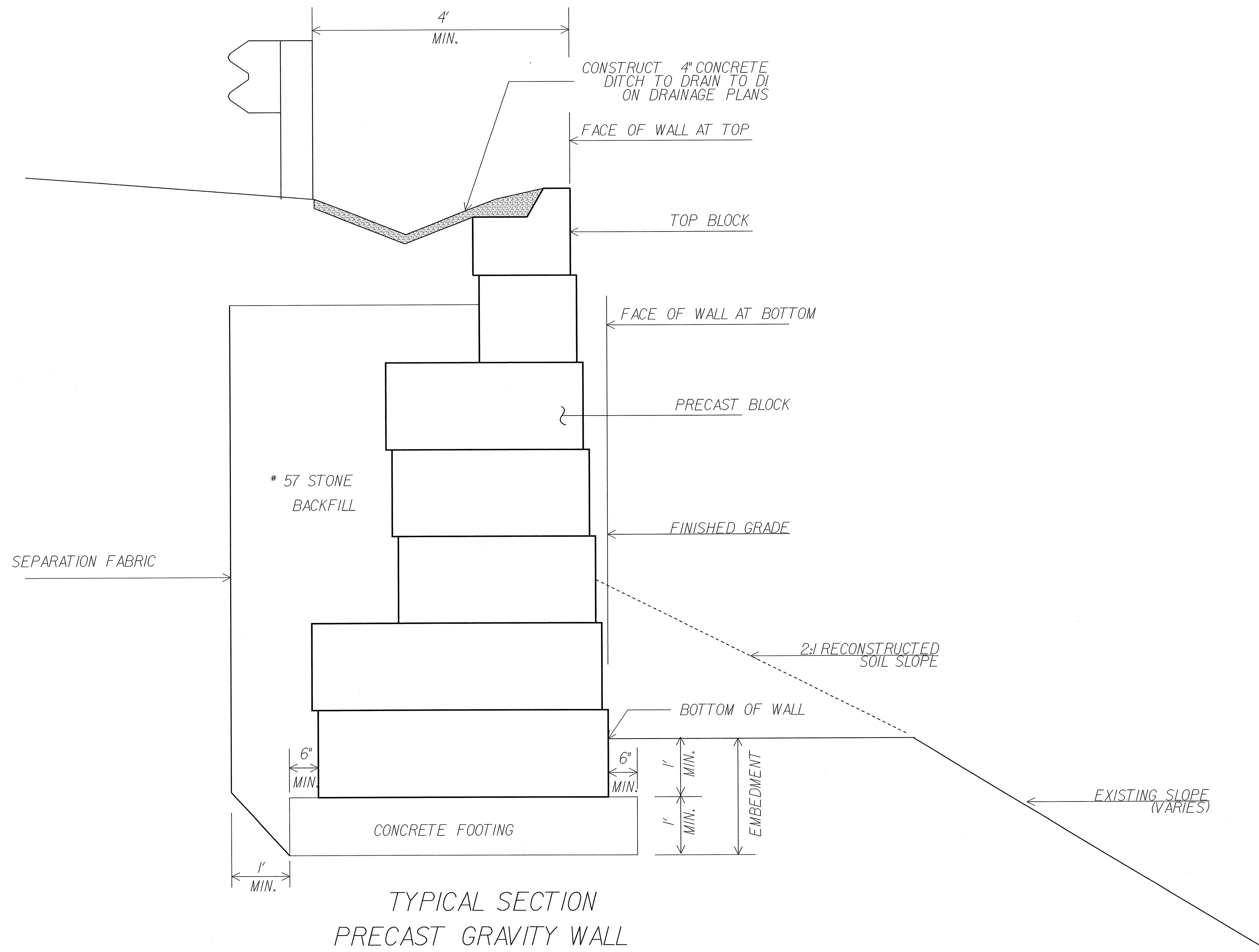
PREPARED BY: EJS DATE: 8/08  
 REVIEWED BY: SCC DATE: 8/08

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



Signature: *SCC* Date: 8/9/08

Signature: \_\_\_\_\_ Date: \_\_\_\_\_



TYPICAL SECTION  
PRECAST GRAVITY WALL

N.T.S.

PROJECT NO.: B-4011  
 ASHE COUNTY  
 STATION: 18+12.58 -L- TO 20+06.60 -L-  
 SHEET 2 OF 3

PREPARED BY: EJS	DATE: 8/08
REVIEWED BY: SCC	DATE: 8/08

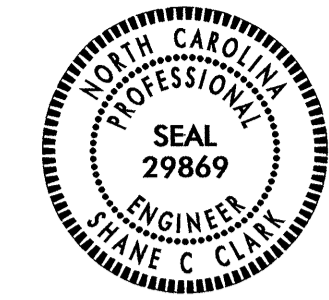
**GEOTECHNICAL ENGINEERING UNIT**

EASTERN REGIONAL OFFICE  
 WESTERN REGIONAL OFFICE

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

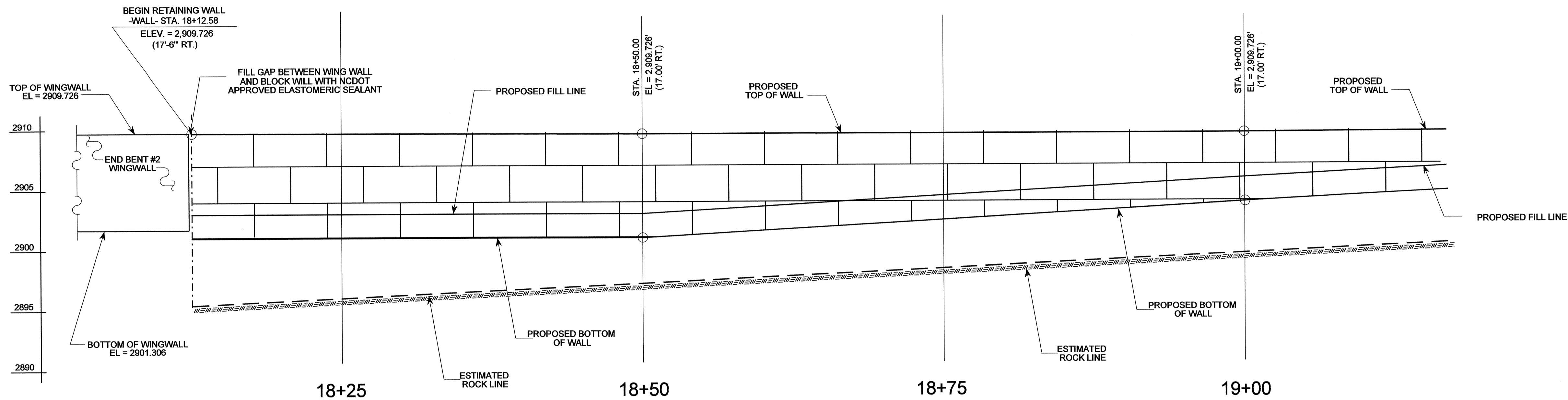
### PRECAST GRAVITY RETAINING WALL

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

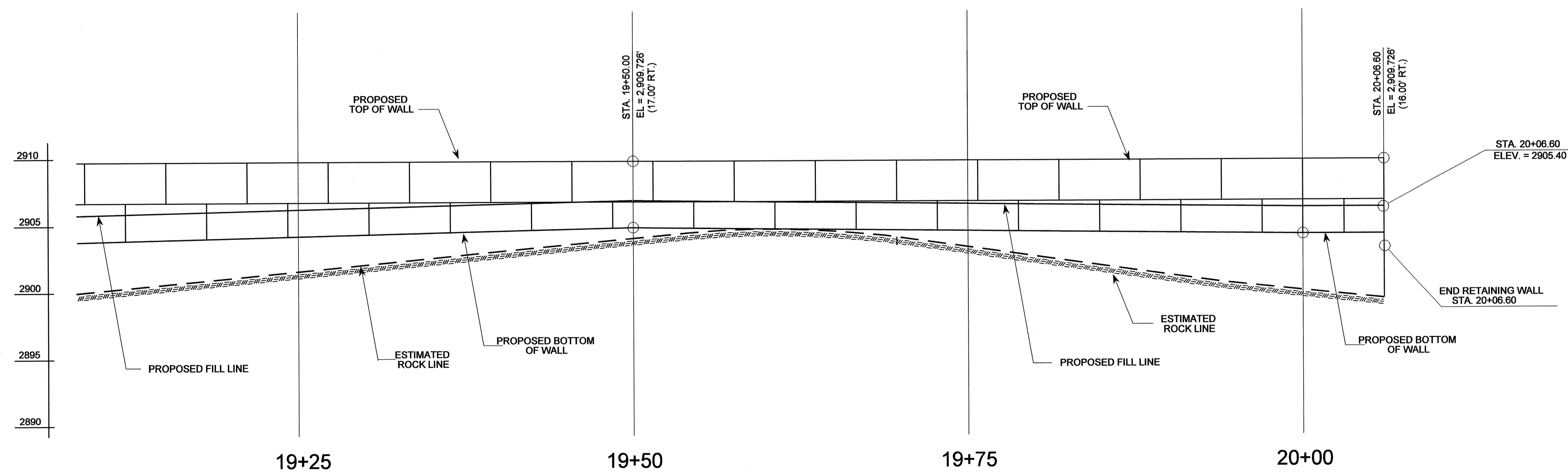


Signature: *Stave C. Clark* Date: 9/9/08

SIGNATURE DATE



**ELEVATION OF WALL LAYOUT**



**ELEVATION OF WALL LAYOUT**

PROJECT NO.: **B-4011**  
**ASHE** COUNTY  
 STATION: 18+12.58 -L- TO 20+06.60 -L-  
 SHEET 3 OF 3

PREPARED BY: EJS DATE: 8/08  
 REVIEWED BY: SCC DATE: 8/08

**GEOTECHNICAL ENGINEERING UNIT**  
 EASTERN REGIONAL OFFICE  
 WESTERN REGIONAL OFFICE

**STATE OF NORTH CAROLINA**  
**DEPARTMENT OF TRANSPORTATION**  
**RALEIGH**

**PRECAST GRAVITY RETAINING WALL**

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-3
1			3			TOTAL SHEETS
2			4			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. FINISHES AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

### SPECIAL NOTES:

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

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