

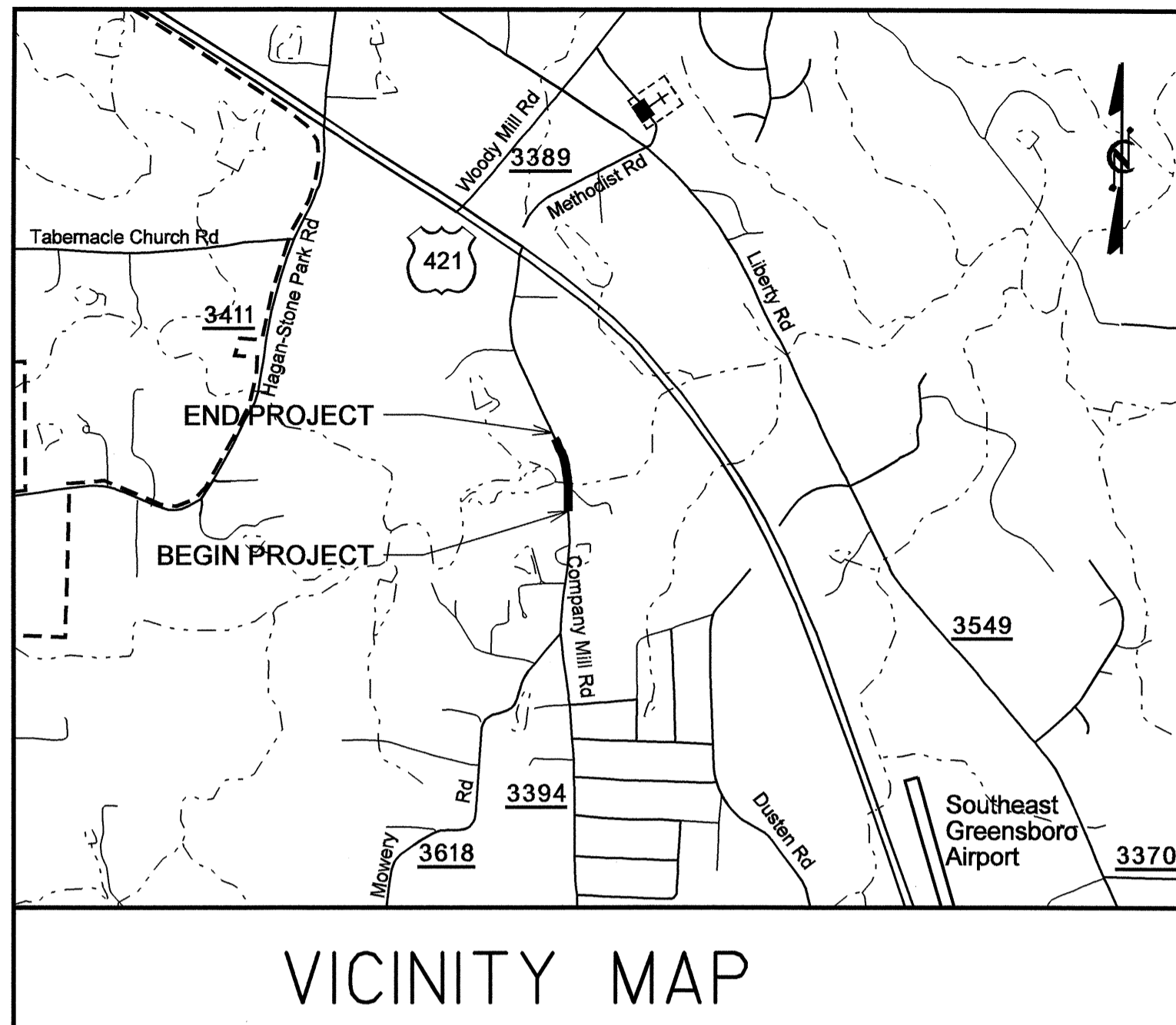
TIP PROJECT: B-4131
CONTRACT: C201770

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

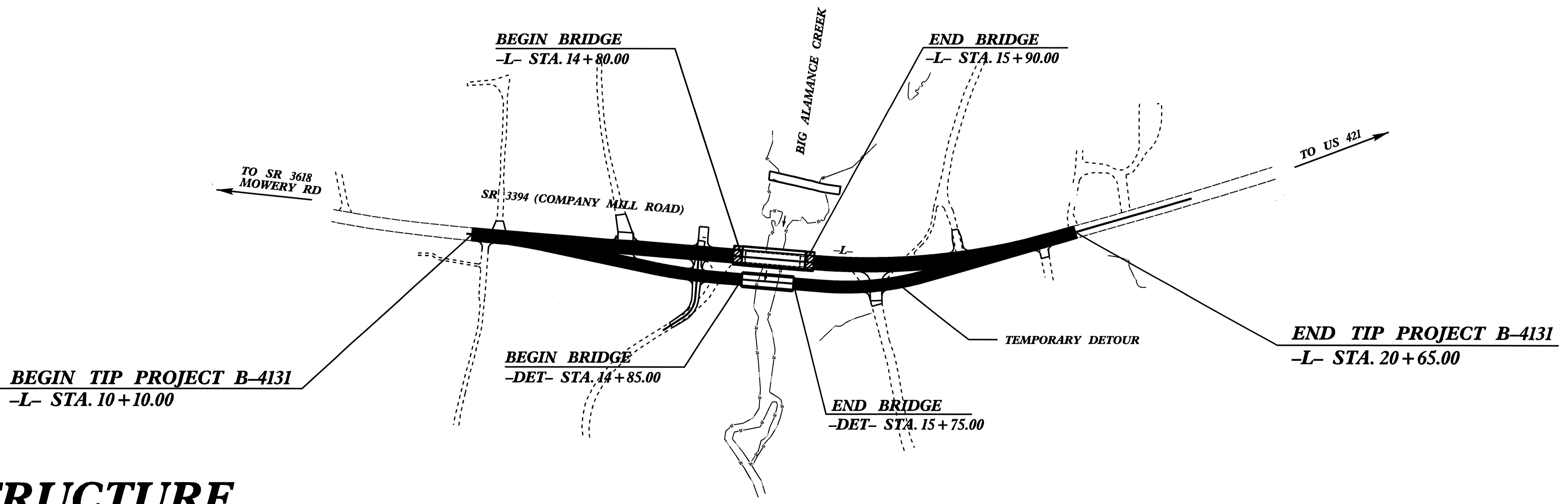
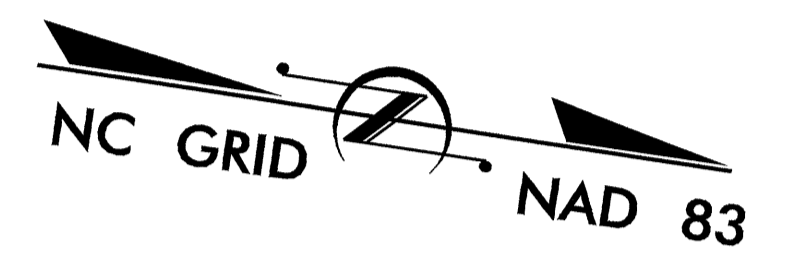
GUILFORD COUNTY

**LOCATION: BRIDGE NO. 11 OVER BIG ALAMANCE CREEK ON
 SR 3394 (COMPANY MILL ROAD)**

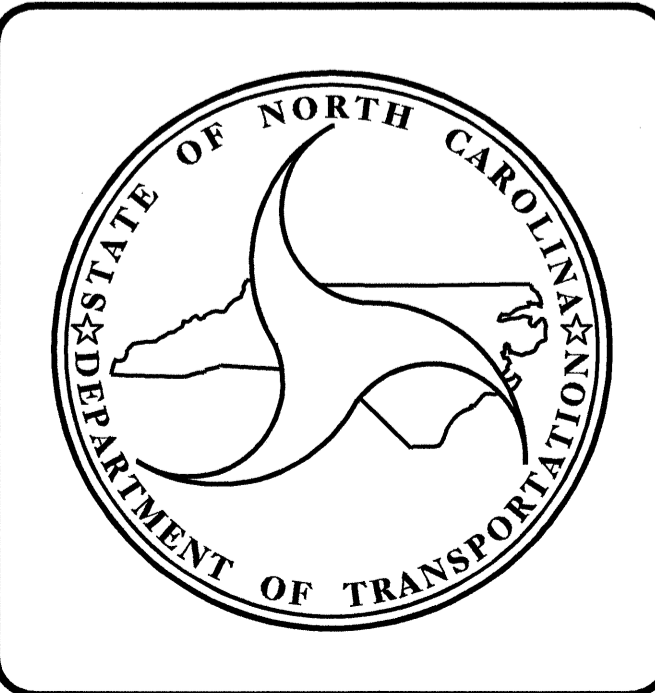
**TYPE OF WORK: GRADING, DRAINAGE, PAVING
 & STRUCTURE**



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4131		
WBS PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33484.1.1	BRZ-3394(1)	P.E.	
33484.2.1	BRZ-3394(1)	RW & UTILS.	
33484.3.1	BRZ-3394(1)	CONST.	



STRUCTURE



DESIGN DATA

ADT 2007 =	3100
ADT 2027 =	5200
DHV =	12 %
D =	65 %
T =	4 % *
** V =	50 MPH
* TTST 1%	DUAL 3%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4131	=	0.179 MI.
LENGTH STRUCTURE TIP PROJECT B-4131	=	0.021 MI.
TOTAL LENGTH OF TIP PROJECT B-4131	=	0.200 MI.

** DESIGN EXCEPTION FOR VERTICAL ALIGNMENT AND VERTICAL STOPPING SIGHT DISTANCE REQUIRED.

Prepared in the Office of:
DIVISION OF HIGHWAYS

2006 STANDARD SPECIFICATIONS

LETTING DATE:
FEBRUARY 19, 2008

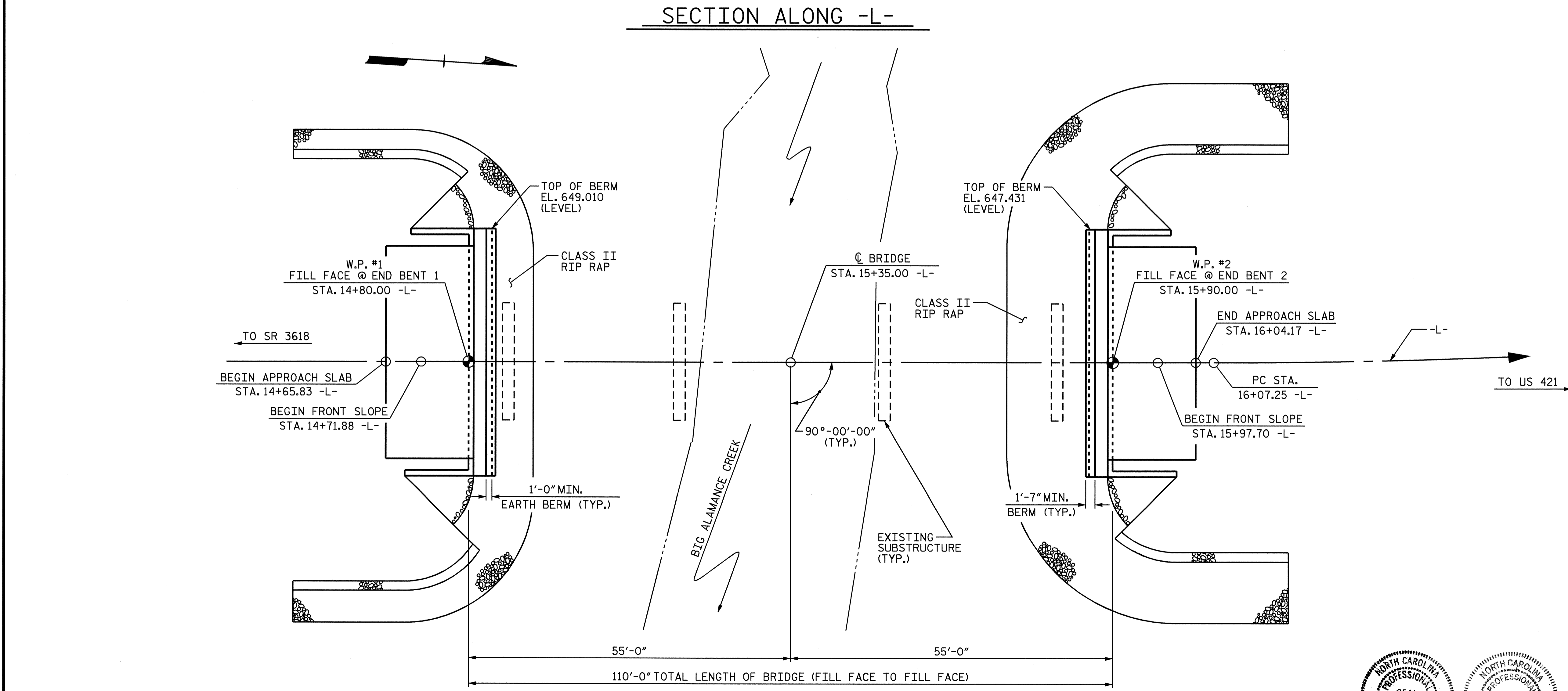
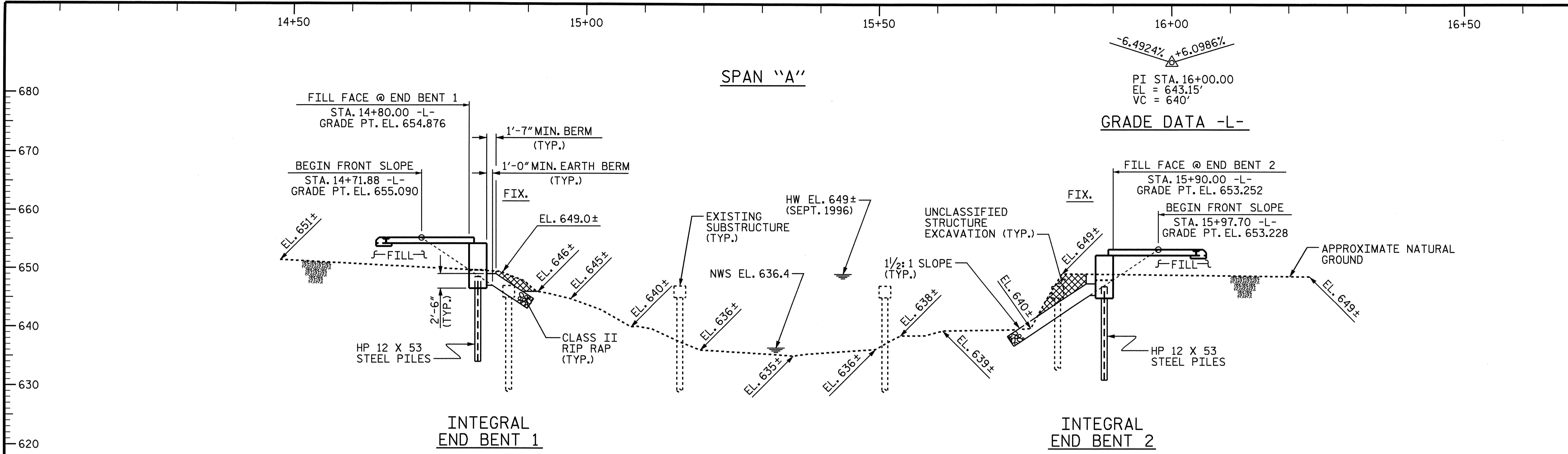
ROY M. GIROLAMI, P.E.
 PROJECT ENGINEER

LAURA E. SUTTON, P.E.
 PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT
 1000 BIRCH RIDGE DR.
 RALEIGH, NC 27610

DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER



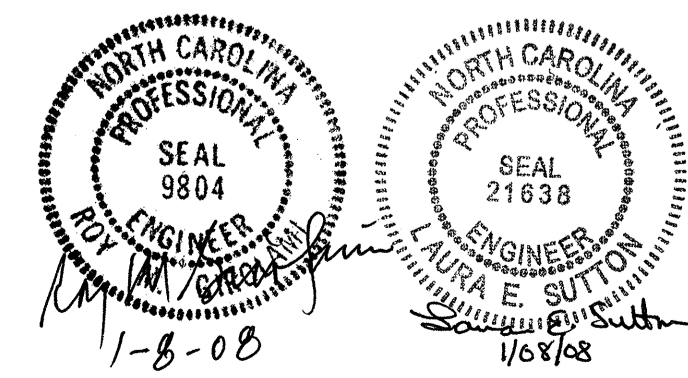
PLAN
(FOR CLARITY, PILES ARE NOT SHOWN IN PLAN VIEW)

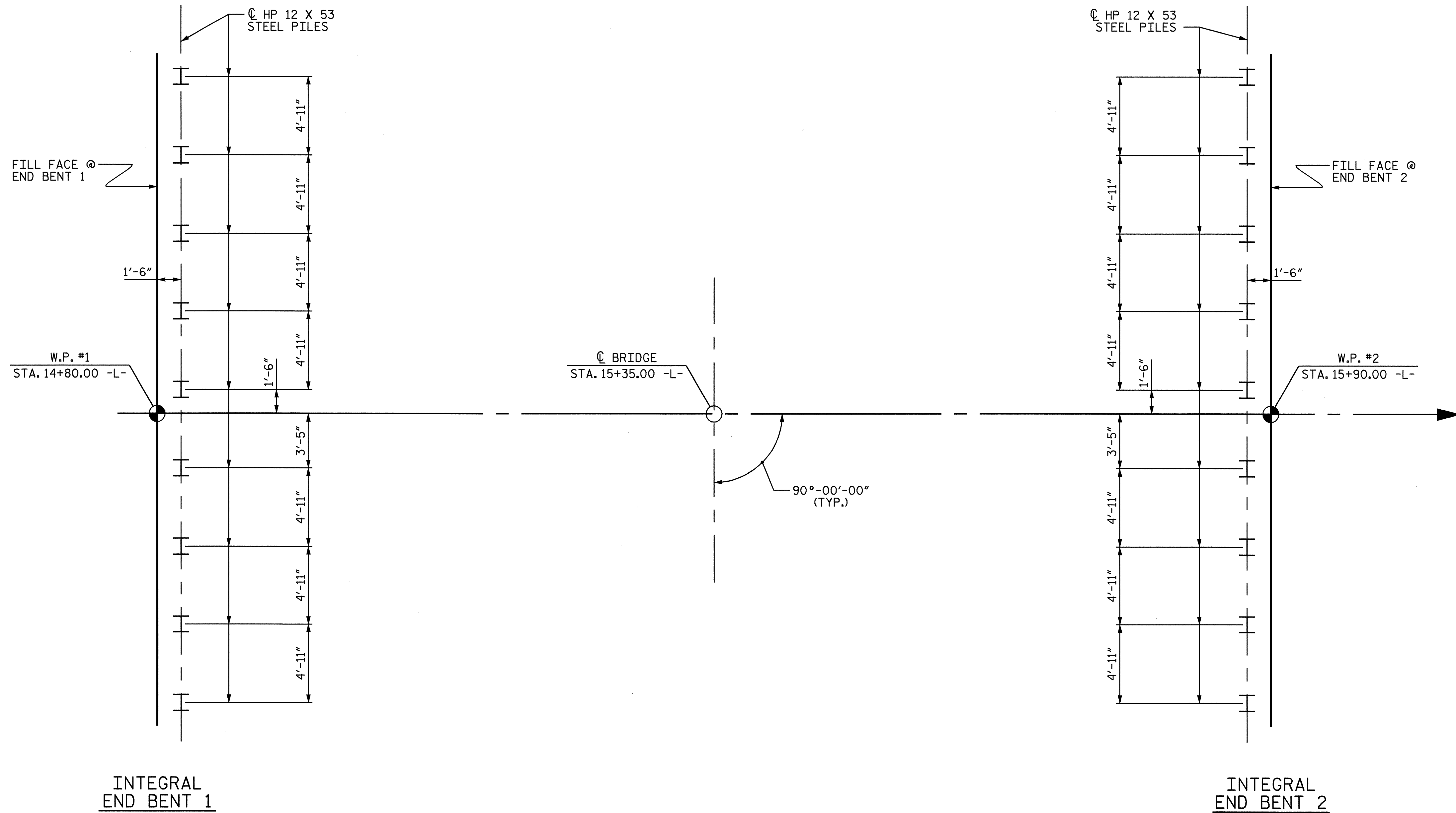
PROJECT NO. B-4131
GUILFORD COUNTY
 STATION: 15+35.00 -L-
 SHEET 1 OF 3 REPLACES BRIDGE #11

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE OVER BIG ALAMANCE
 CREEK ON SR 3394 BETWEEN
 SR 3618 AND US 421

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

DRAWN BY: E.C. LOCKLEAR DATE: 7-31-07
 CHECKED BY: P.C. BREWER DATE: 8-22-07





FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE AT THE BOTTOM OF THE CAP.

NOTES:

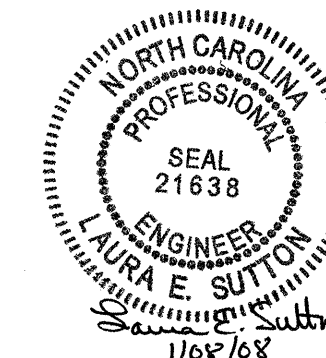
DRIVE PILES AT END BENT 1 AND END BENT 2 TO A REQUIRED BEARING CAPACITY OF 120 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENT 1 AND END BENT 2 IS 60 TONS PER PILE.

DRIVE PILES AT END BENT 2 TO A TIP ELEVATION NO HIGHER THAN 631 FT.

PILE EXCAVATION IS REQUIRED TO ATTAIN THE REQUIRED PILE PENETRATION OR TIP ELEVATION NO HIGHER THAN 634 FT. AT END BENT 1. SEE PILE EXCAVATION FOR INTEGRAL ABUTMENT SPECIAL PROVISION.

PILE DRIVING AT THE END BENTS SHALL BE PERFORMED WITH VIBRATION MONITORING BY THE DEPARTMENT. CONTRACTOR SHALL NOTIFY THE ENGINEER 24 HOURS BEFORE BEGINNING PILE DRIVING.



PROJECT NO. B-4131
GUILFORD COUNTY
 STATION: 15+35.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

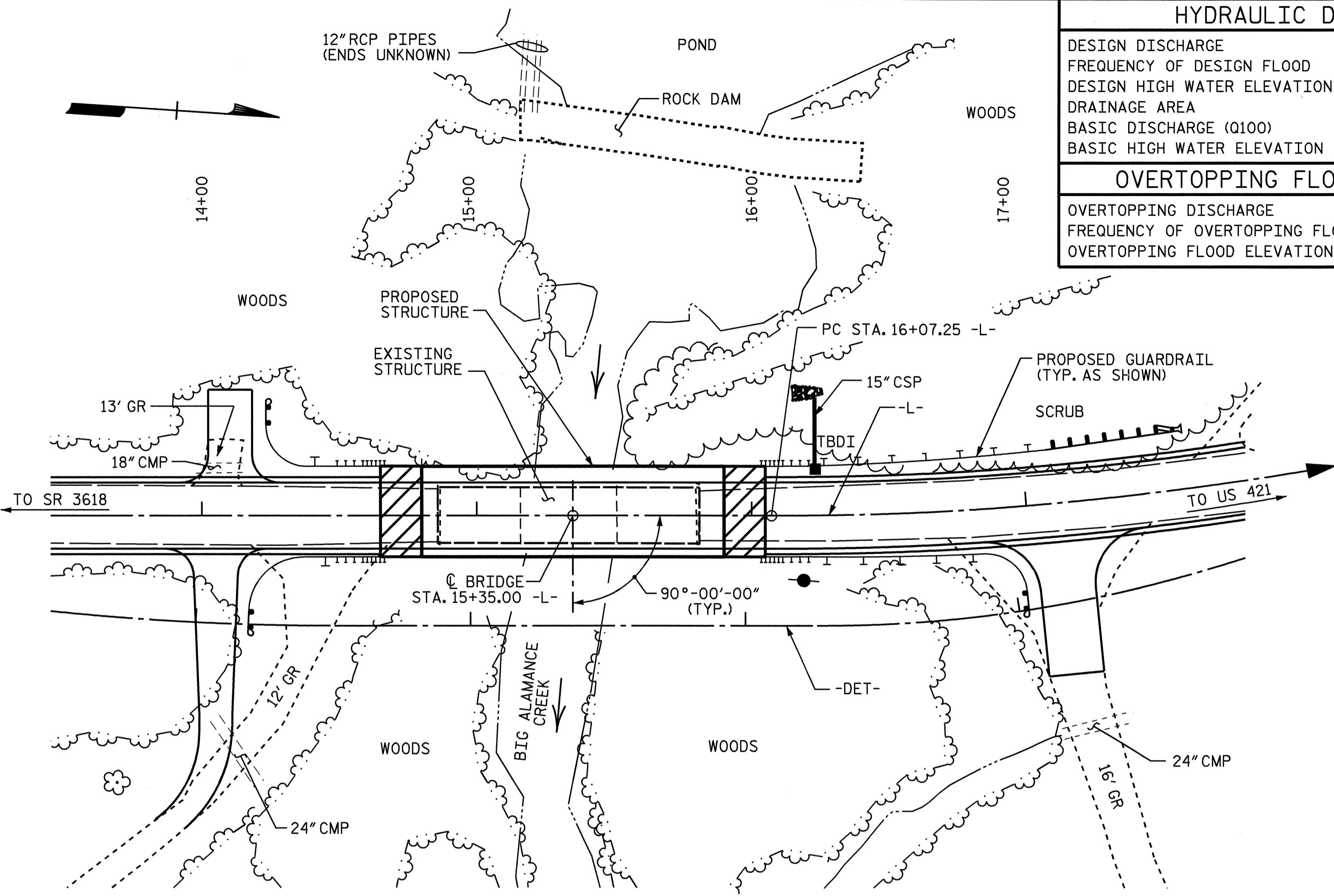
GENERAL DRAWING
 BRIDGE OVER BIG ALAMANCE
 CREEK ON SR 3394 BETWEEN
 SR 3618 AND US 421

DRAWN BY : E.C. LOCKLEAR DATE : 7-30-07
 CHECKED BY : P.C. BREWER DATE : 8-22-07

24-OCT-2007 10:54
 R:\Structures\elocklear\Microstation\B4131.sd.GD.01.dgn
 LSUTTON

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

S-2
 TOTAL SHEETS
 22



HYDRAULIC DATA	
DESIGN DISCHARGE	= 2640 CFS
FREQUENCY OF DESIGN FLOOD	= 25 YEARS
DESIGN HIGH WATER ELEVATION	= 646.2
DRAINAGE AREA	= 9.6 SQ. MI.
BASIC DISCHARGE (Q100)	= 4600 CFS
BASIC HIGH WATER ELEVATION	= 650.4
OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE	= 7,000 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 200+ YEARS
OVERTOPPING FLOOD ELEVATION	= 653.2

NOTES:

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

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W.

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

THE EXISTING STRUCTURE CONSISTING OF 3 SPANS (1 @ 30'-9", 1 @ 35'-1", AND 1 @ 31'-2") WITH A CLEAR ROADWAY WIDTH OF 19.2' AND HAVING A TIMBER DECK SUPPORTED BY I-BEAMS ON MASS CONCRETE (ABUTMENT 1 AND INTERIOR BENTS) AND RUBBLE MASONRY (ABUTMENT 2) SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY STRUCTURE AT STATION 15+35.00 -L- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 25 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION.

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

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

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

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO STANDARD SPECIFICATIONS FOR SEISMIC DESIGN OF HIGHWAY BRIDGES FOR SEISMIC PERFORMANCE CATEGORY A.

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

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 15+35.00 -L-."

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR SHIPPING STRUCTURAL STEEL MEMBERS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.

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

LOCATION SKETCH

TOTAL BILL OF MATERIAL

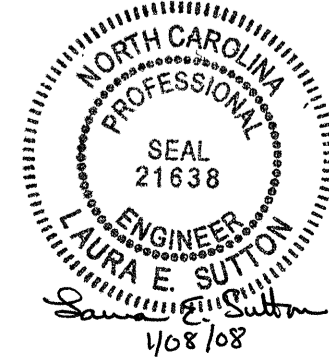
	CONSTRUCTION, MAINTENANCE & REMOVAL OF TEMPORARY STRUCTURE	REMOVAL OF EXISTING STRUCTURE	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	STRUCTURAL STEEL	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	LUMP SUM	LIN. FT.	LIN. FT.	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	APPROX. LBS.	NO.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM
SUPERSTRUCTURE						3,933	3,986				120,700		220.00				LUMP SUM
END BENT 1			30	105				21.7		2,939		9	135		145	161	
END BENT 2								21.7		2,936		9	135		252	280	
TOTAL	LUMP SUM	LUMP SUM	30	105	LUMP SUM	3,933	3,986	43.4	LUMP SUM	5,875	120,700	18	270	220.00	397	441	LUMP SUM

PROJECT NO. B-4131
GUILFORD COUNTY
 STATION: 15+35.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

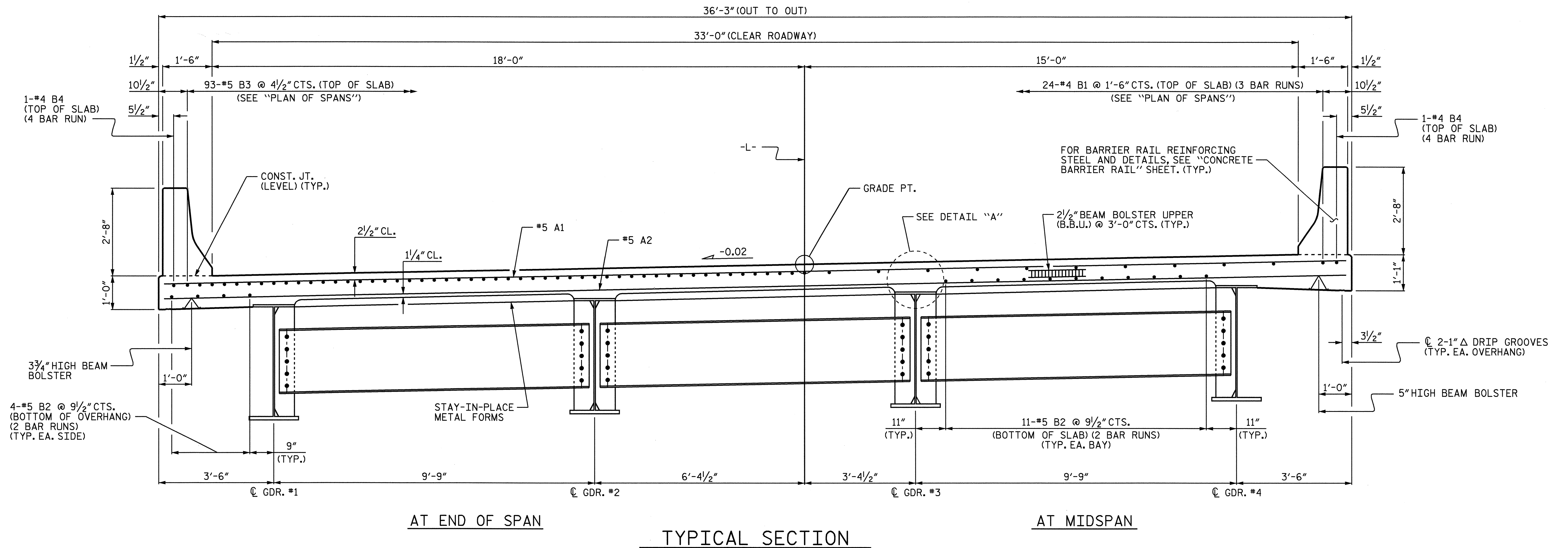
GENERAL DRAWING
 BRIDGE OVER BIG ALAMANCE
 CREEK ON SR 3394 BETWEEN
 SR 3618 AND US 421



DRAWN BY: E.C. LOCKLEAR DATE: 7-31-07
 CHECKED BY: P.C. BREWER DATE: 8-22-07

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

S-3
 TOTAL SHEETS
 22



NOTES:

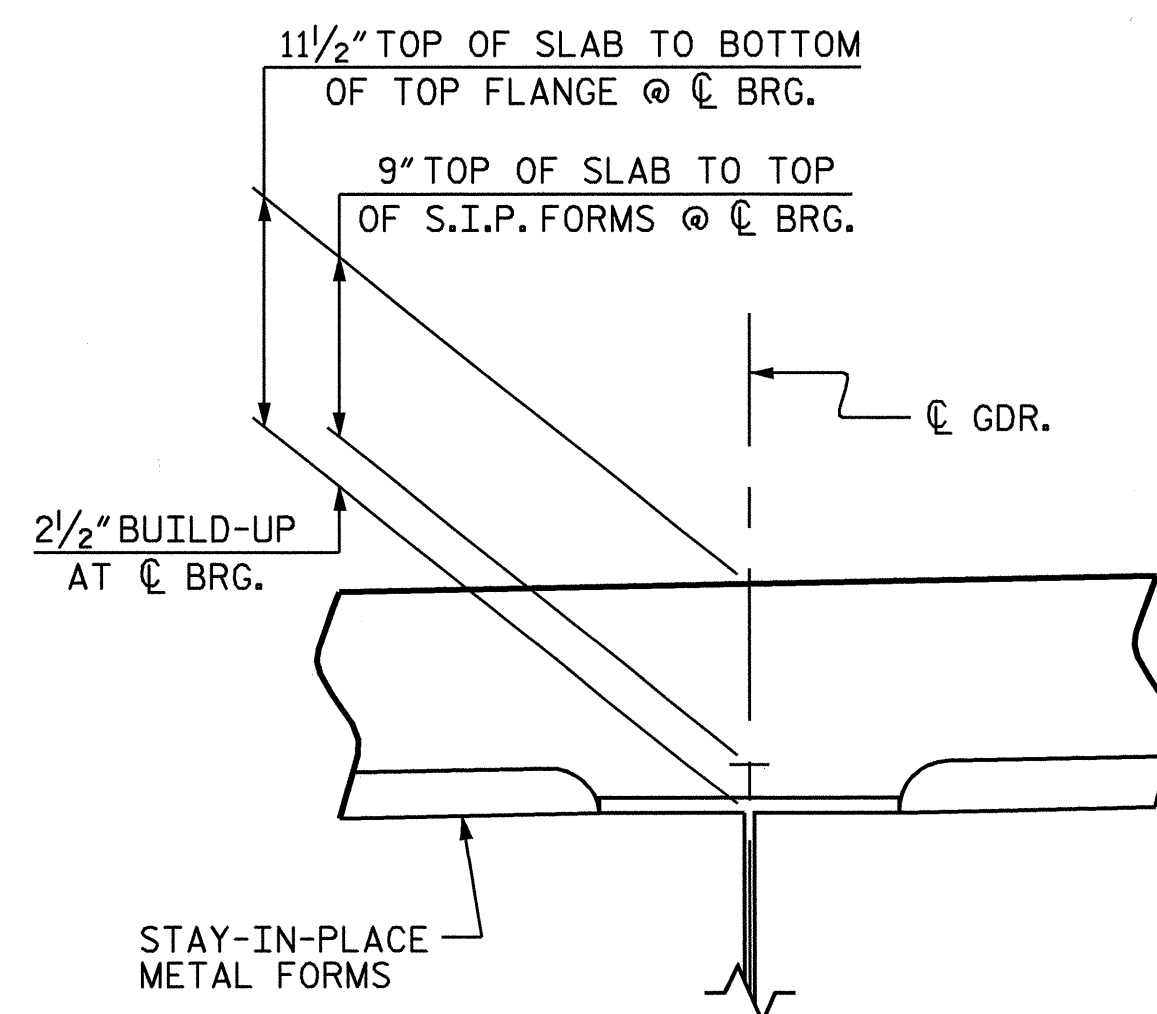
PROVIDE 1 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2 1/2"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

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.

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

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.



DETAIL "A"
(TYP. EA. GIRDER)

PROJECT NO. B-4131
GUILFORD COUNTY
STATION: 15+35.00 -L-

SHEET 1 OF 2

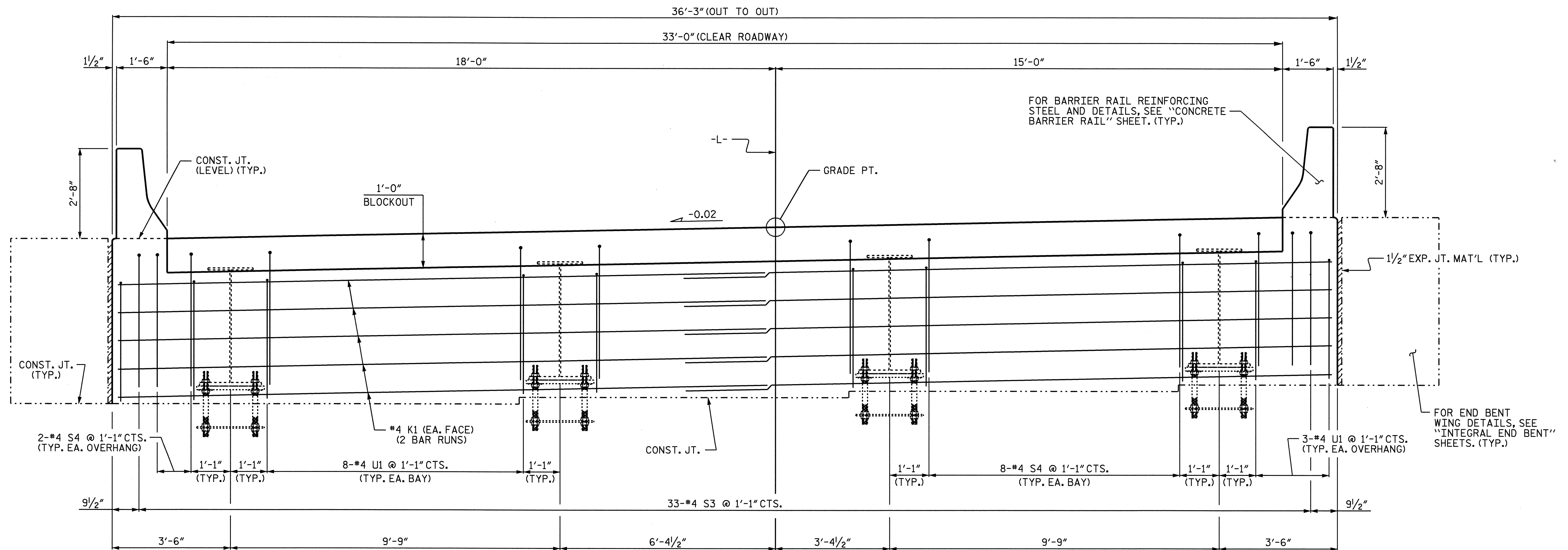
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTIONS

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

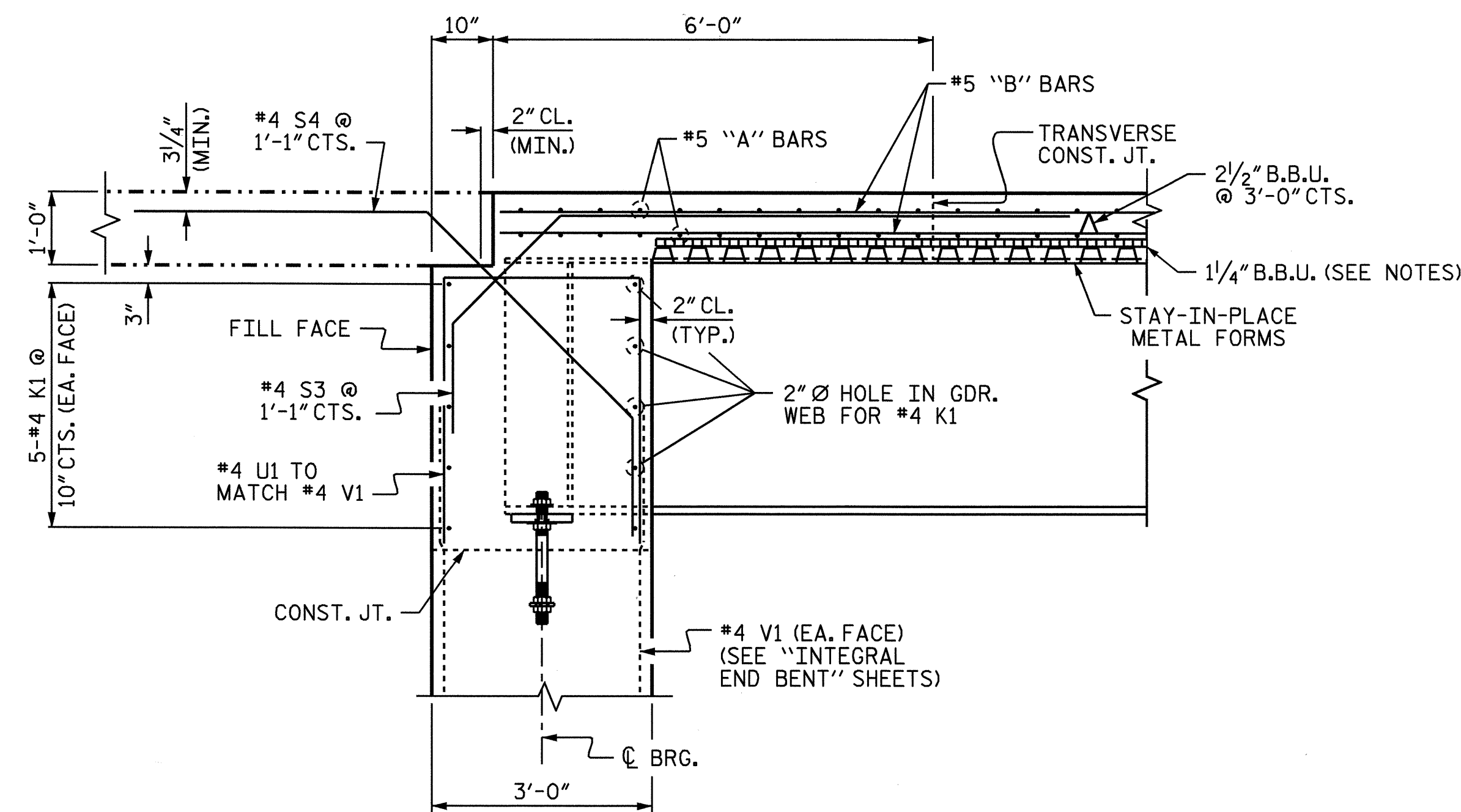
DRAWN BY : P.C. BREWER DATE : 10/4/06
CHECKED BY : L.E. SUTTON DATE : 6/22/07





END ELEVATION

(END BENT 1 SHOWN, END BENT 2 SIMILAR)
(FOR CLARITY, DECK REINFORCING STEEL NOT SHOWN)



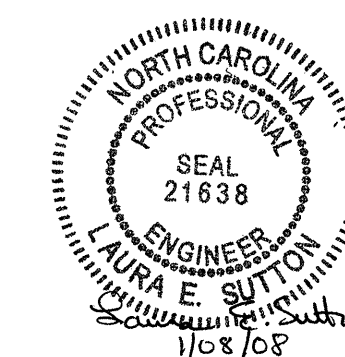
SECTION A-A

PROJECT NO. B-4131
GUILFORD COUNTY
 STATION: 15+35.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

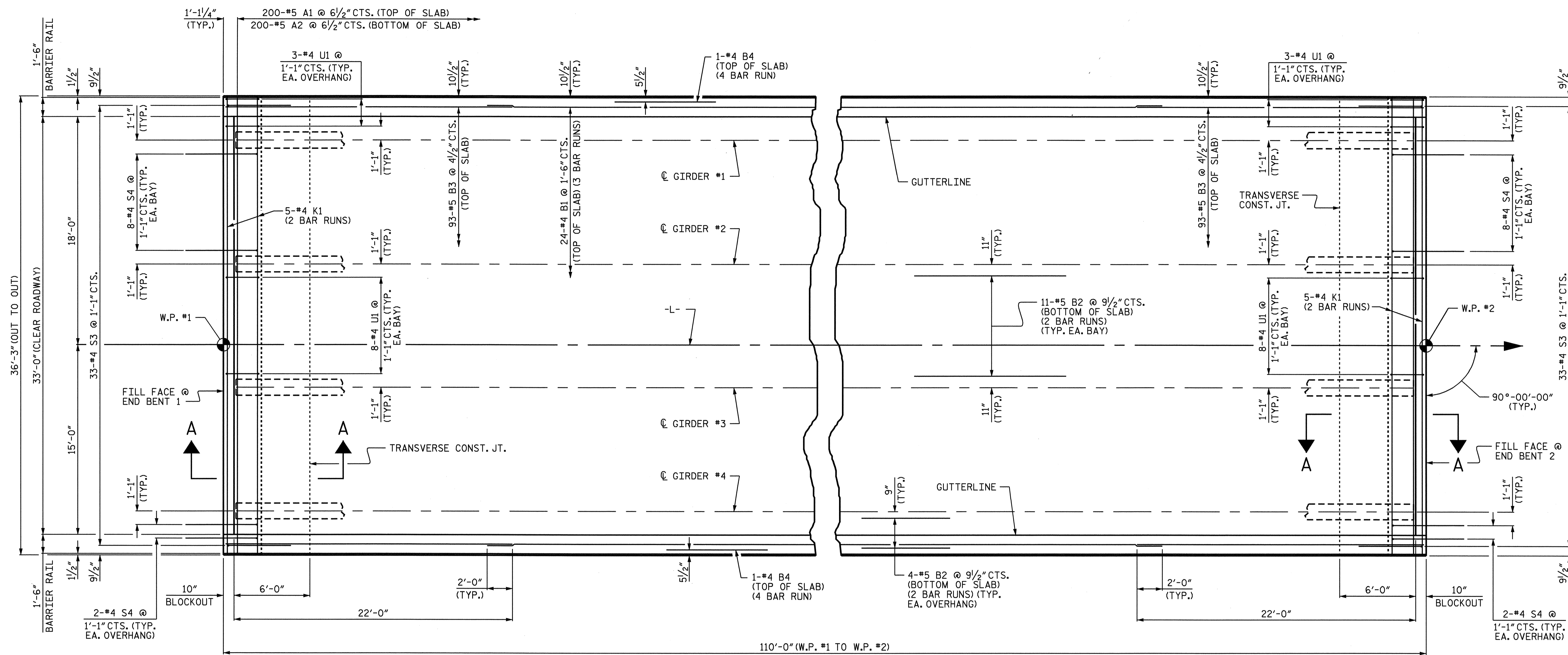
SUPERSTRUCTURE
 TYPICAL SECTIONS



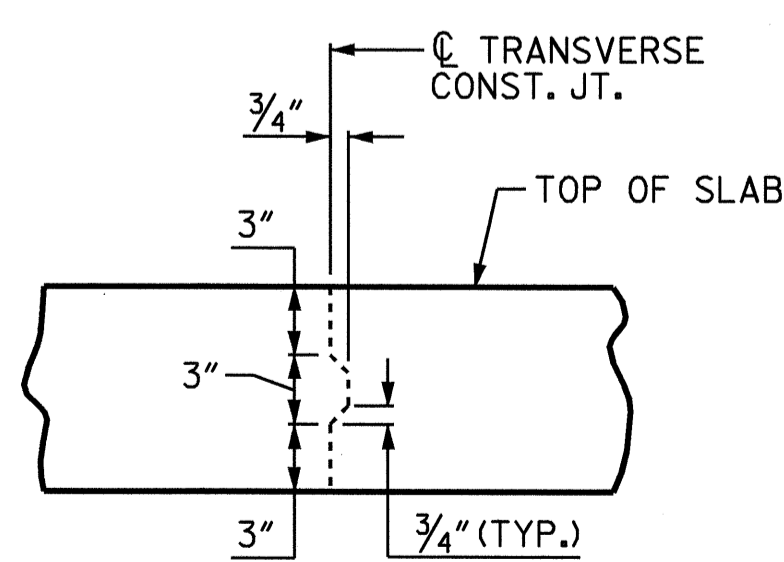
DRAWN BY : P.C. BREWER DATE : 10/4/06
 CHECKED BY : L.E. SUTTON DATE : 6/22/07

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

S-5
 TOTAL SHEETS
 22



PLAN OF SPAN



TRANSVERSE CONSTRUCTION JOINT DETAIL

REINFORCING STEEL IN SLAB NOT SHOWN.
LONGITUDINAL REINFORCING STEEL SHALL BE
CONTINUOUS THROUGH JOINT.

NOTES:

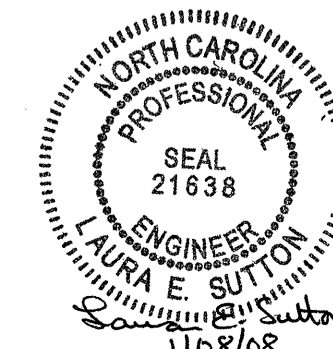
FOR BARRIER RAIL REINFORCING STEEL AND
DETAILS, SEE "CONCRETE BARRIER RAIL" SHEET.

FOR SECTION A-A, SEE "TYPICAL SECTIONS",
SHEET 2 OF 2.

PROJECT NO. B-4131
GUILFORD COUNTY
 STATION: 15+35.00 -L-

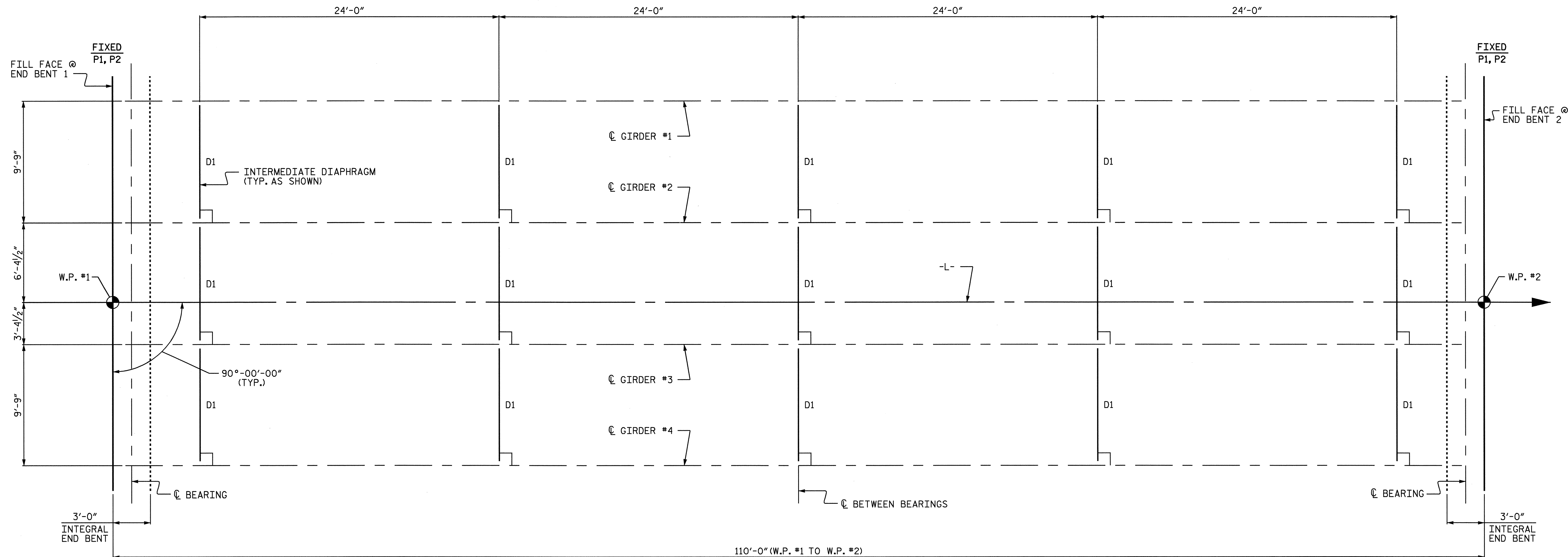
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			22

DRAWN BY: P.C. BREWER DATE: 10/4/06
 CHECKED BY: L.E. SUTTON DATE: 6/22/07



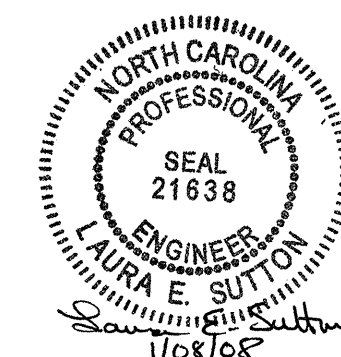
FRAMING PLAN

PROJECT NO. B-4131
GUILFORD COUNTY
 STATION: 15+35.00 -L-

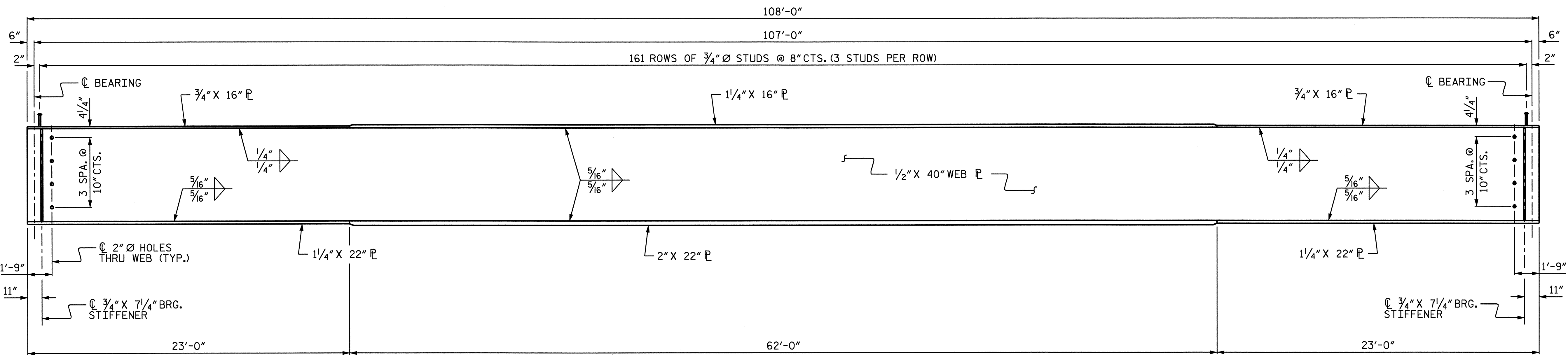
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 FRAMING PLAN

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			22

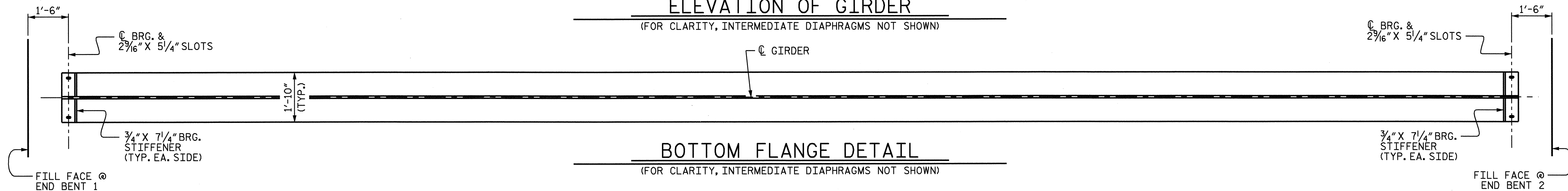


DRAWN BY : P.C. BREWER DATE : 10/3/06
 CHECKED BY : L.E. SUTTON DATE : 6/22/07



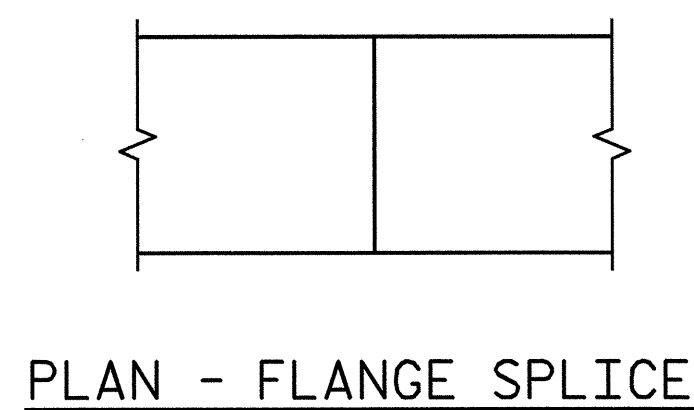
ELEVATION OF GIRDER

(FOR CLARITY, INTERMEDIATE DIAPHRAGMS NOT SHOWN)

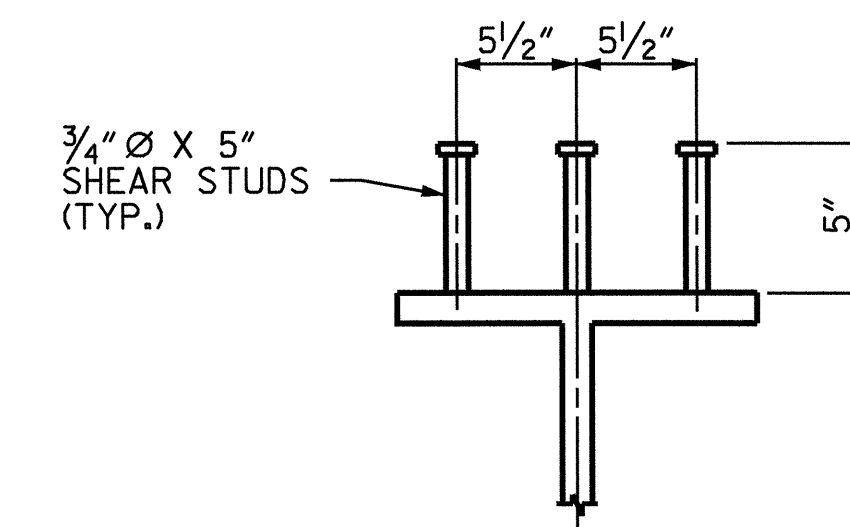


BOTTOM FLANGE DETAIL

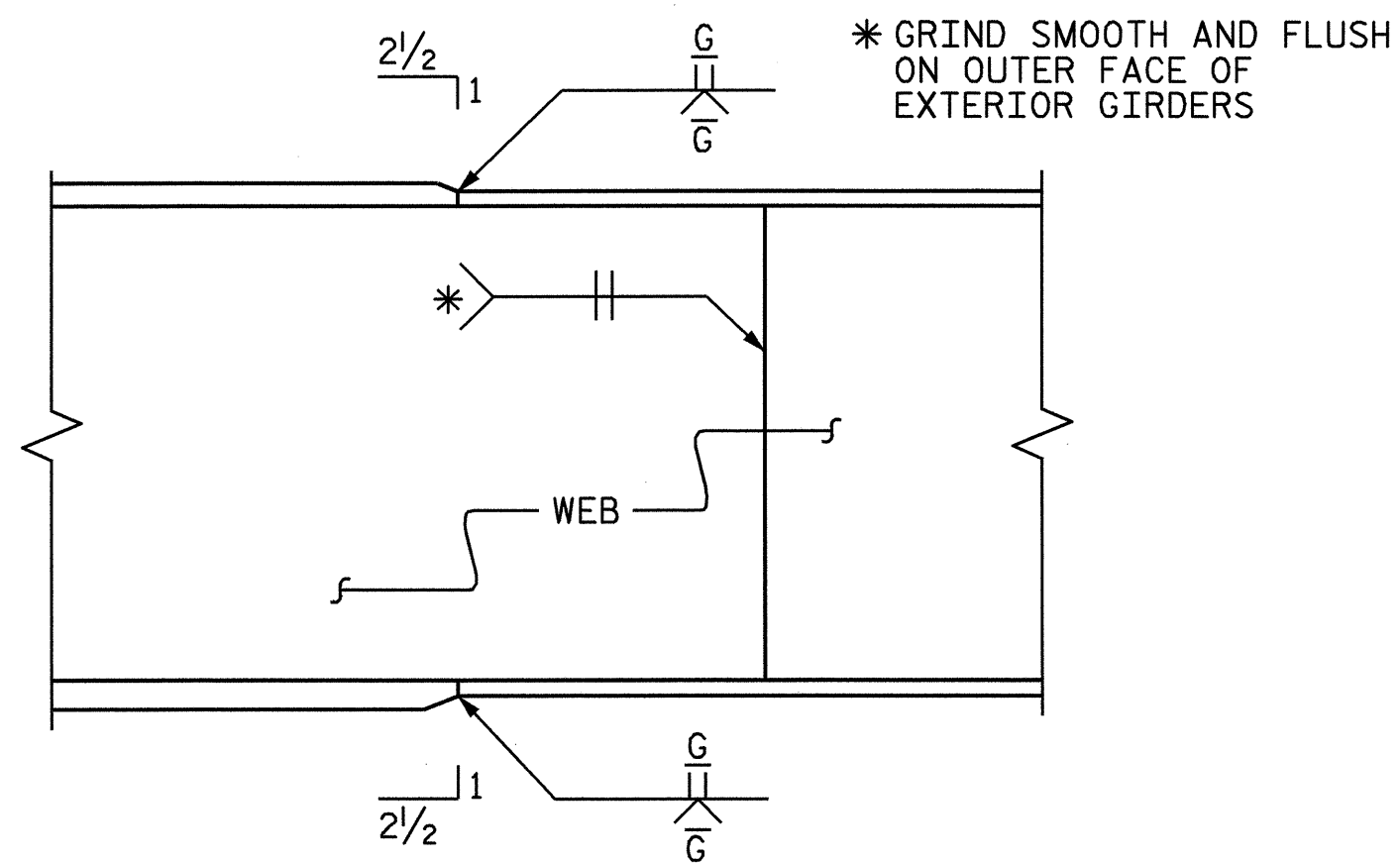
(FOR CLARITY, INTERMEDIATE DIAPHRAGMS NOT SHOWN)



PLAN - FLANGE SPLICE

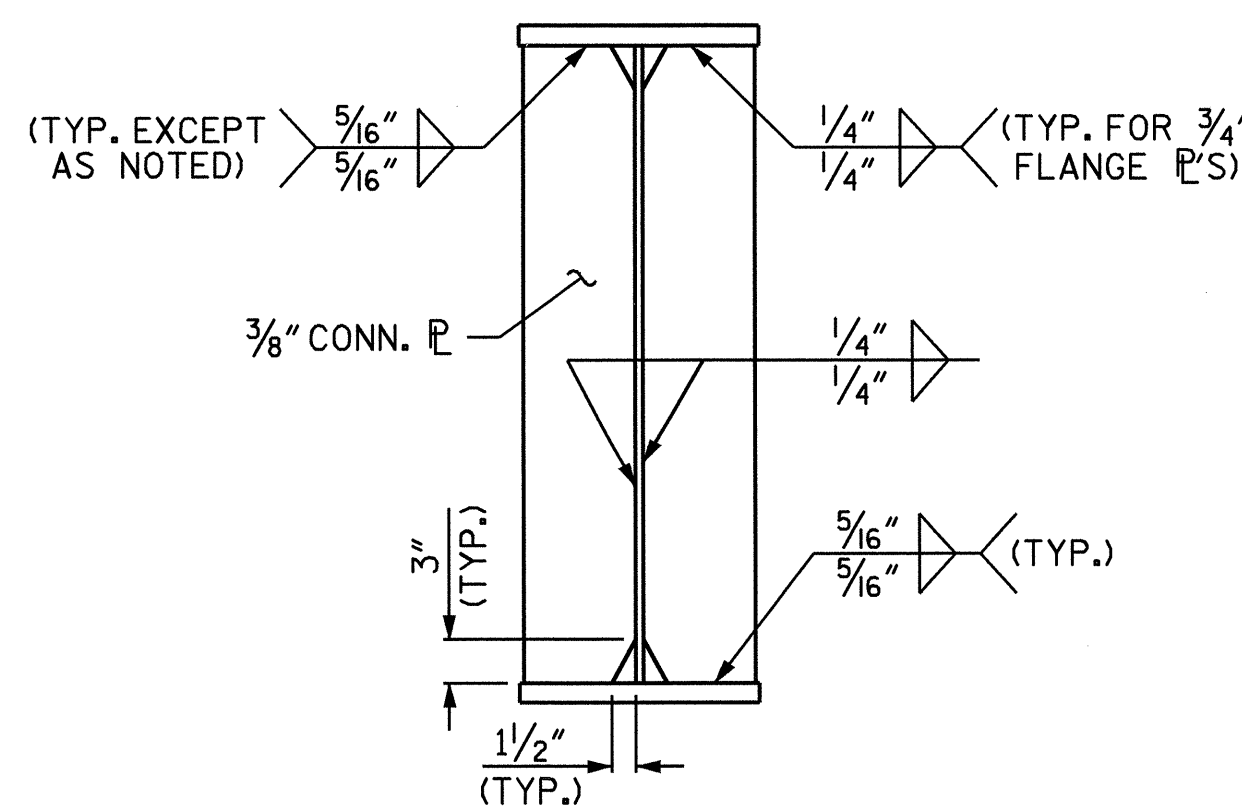


SHEAR STUD DETAIL

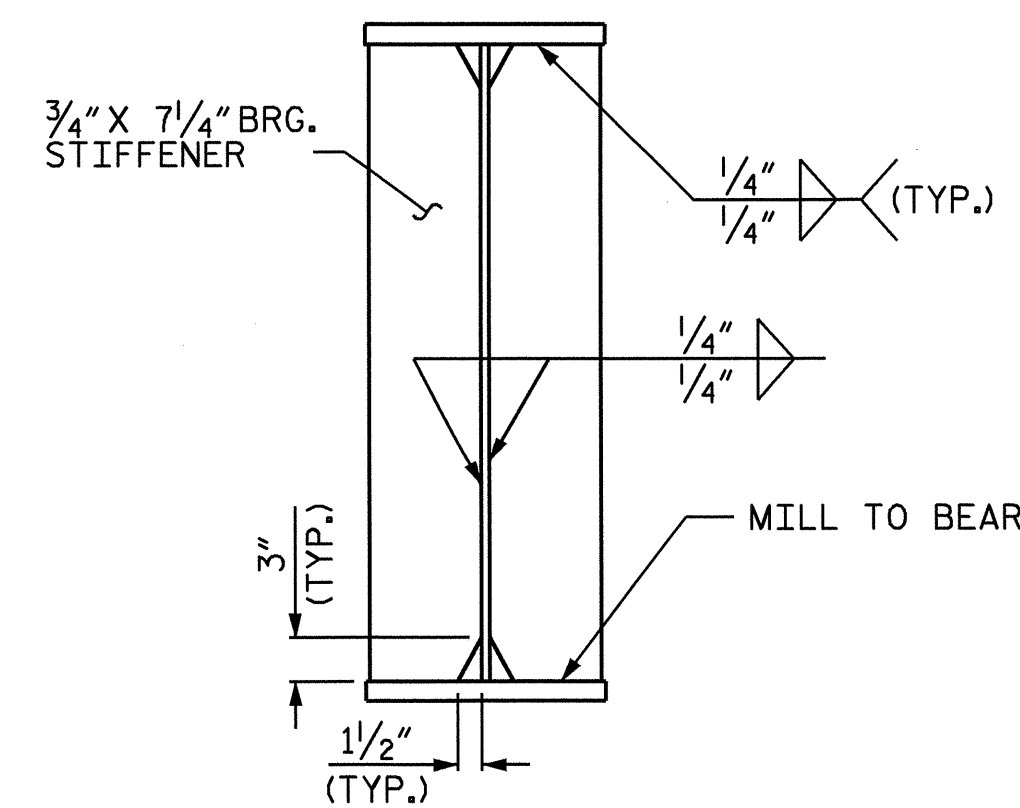


ELEVATION

TYPICAL FLANGE AND WEB BUTT JOINT



CONNECTOR PLATE

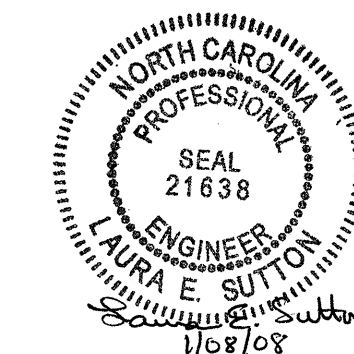


BEARING STIFFENER

PROJECT NO. B-4131
GUILFORD COUNTY
 STATION: 15+35.00 -L-

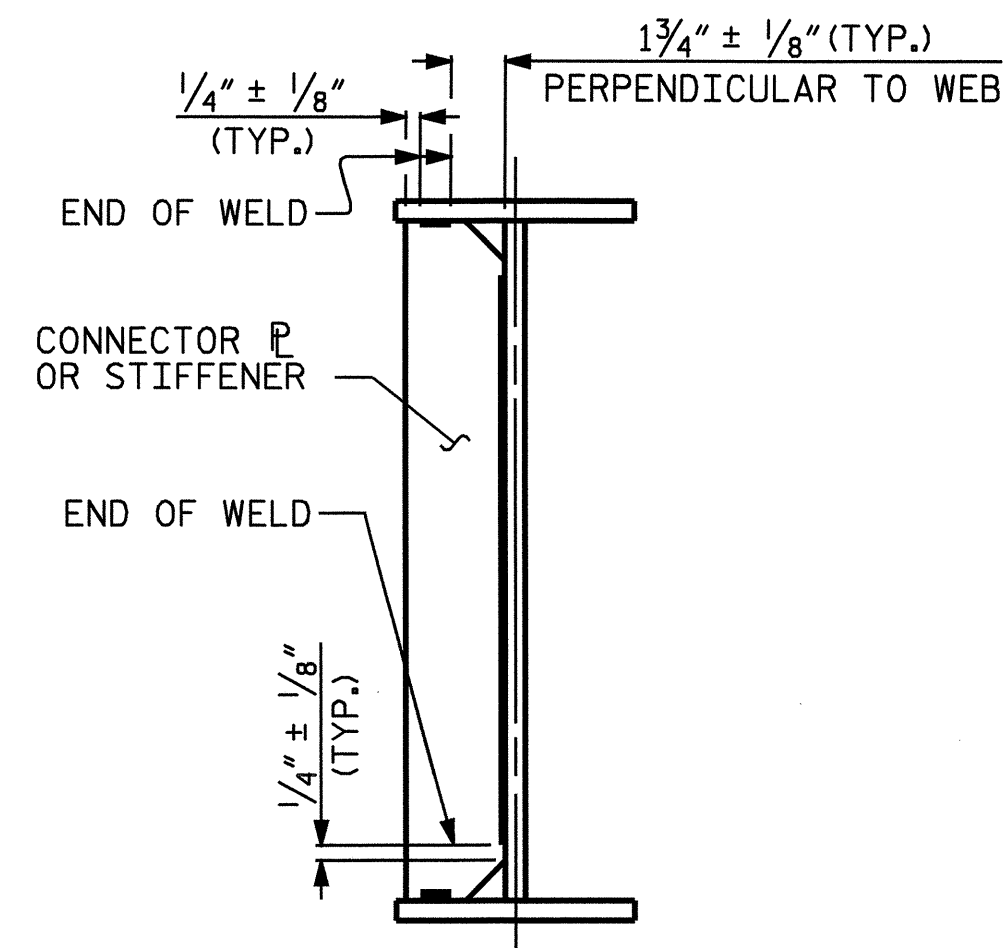
SHEET 1 OF 2

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

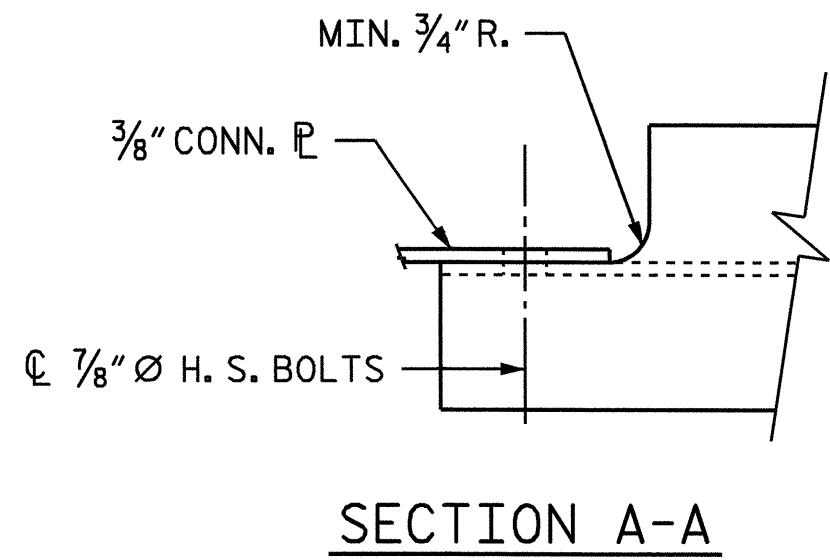


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			22

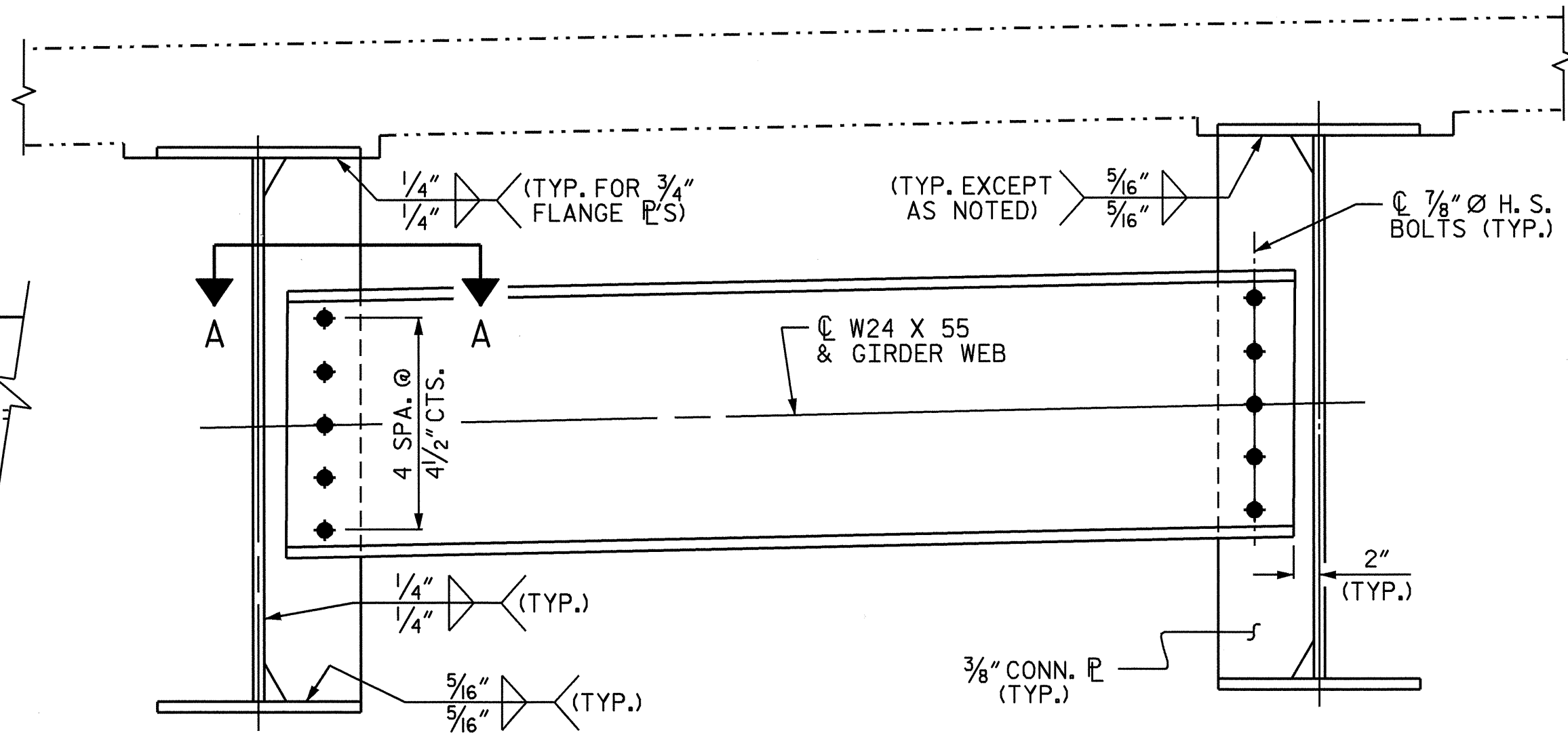
DRAWN BY: P.C. BREWER DATE: 10/9/06
 CHECKED BY: L.E. SUTTON DATE: 6/22/07



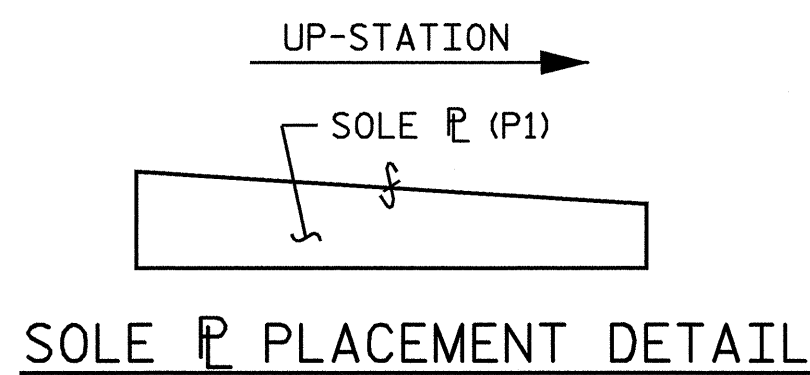
WELD TERMINATION DETAIL



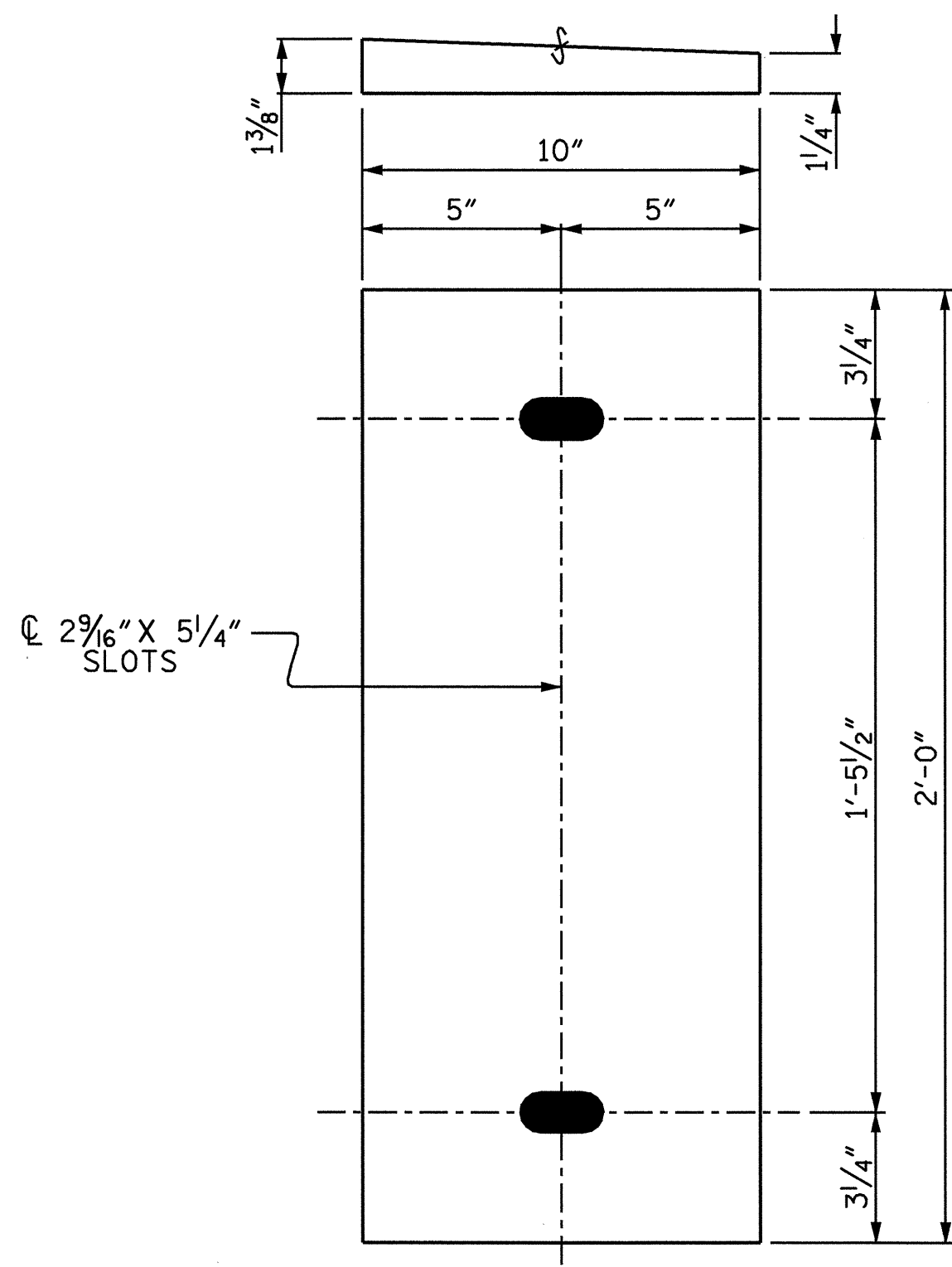
SECTION A-A



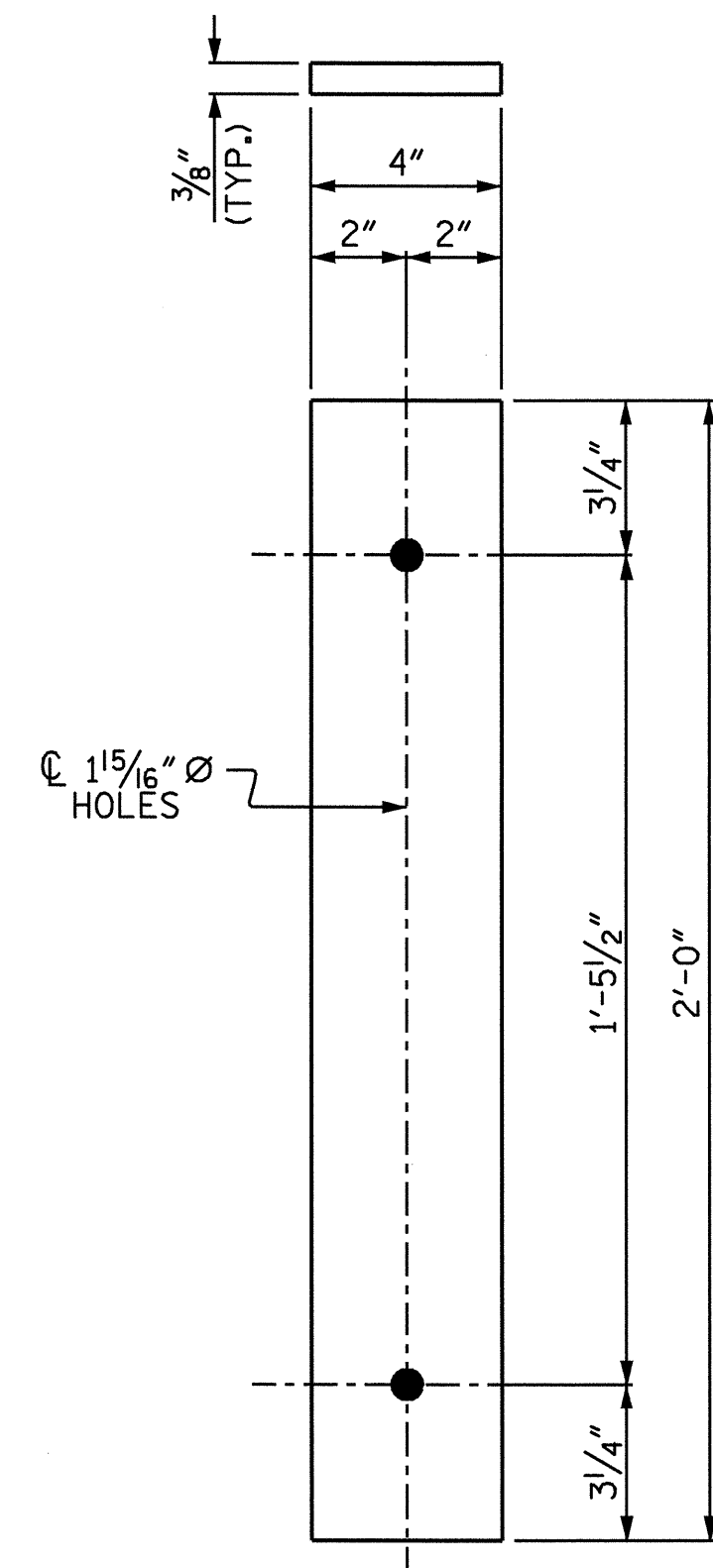
INTERMEDIATE DIAPHRAGM (D1)



SOLE P PLACEMENT DETAIL

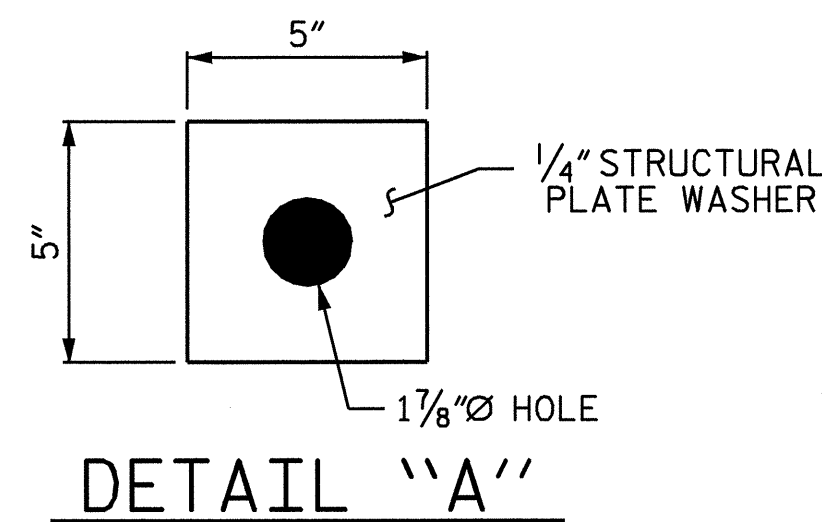


SOLE PLATE (P1)
(8 REQ'D)

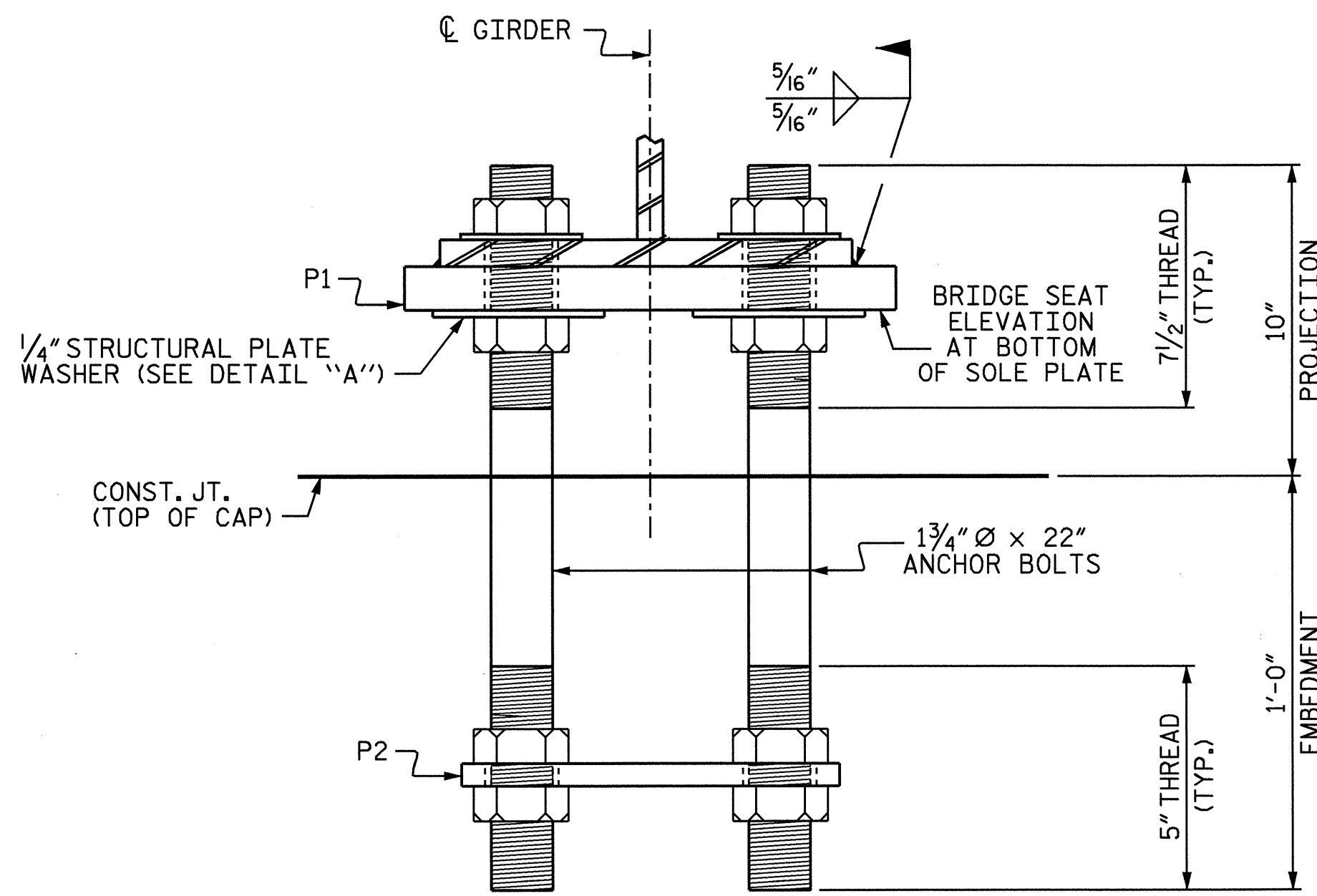


ANCHORAGE PLATE (P2)
(8 REQ'D)

BEARING DETAILS



DETAIL "A"



FIXED END VIEW

NOTES:

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W.
 ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.
 ALL FIELD CONNECTIONS TO BE 7/8" Ø HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED. FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS
 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, TOP AND BOTTOM FLANGE PLATES, BOTTOM FLANGE SPLICE PLATES AND WEB SPLICE PLATES (IF USED) 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 BEAMS AND GIRDERS SHALL BE PLUMB.
 SOLE PLATES, ANCHORAGE PLATES, AND STRUCTURAL PLATE WASHERS SHALL BE AASHTO M270 GRADE 50W AND SHALL NOT BE GALVANIZED. ANCHOR BOLTS, NUTS AND STANDARD WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

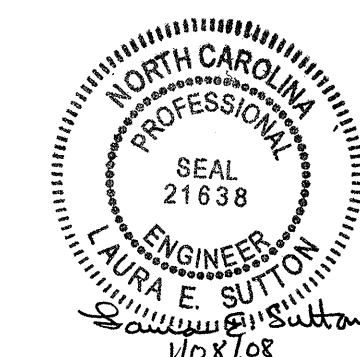
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. STANDARD WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.
 TOP NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AFTER SETTING THE GIRDERS, AND SUBSEQUENTLY FULLY TIGHTENED JUST PRIOR TO THE FINAL POUR.

PROJECT NO. B-4131
GUILFORD COUNTY
 STATION: 15+35.00 -L-

SHEET 2 OF 2

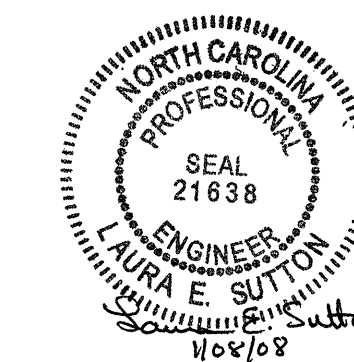
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE STRUCTURAL STEEL DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-9
					TOTAL SHEETS 22



DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
GIRDERS 1 & 4																					
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.015	0.029	0.042	0.054	0.064	0.072	0.079	0.084	0.086	0.087	0.086	0.084	0.079	0.072	0.064	0.054	0.042	0.029	0.015	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.047	0.117	0.181	0.237	0.285	0.325	0.358	0.381	0.396	0.400	0.396	0.381	0.358	0.325	0.285	0.237	0.181	0.117	0.047	0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	0.006	0.011	0.016	0.021	0.025	0.028	0.031	0.032	0.034	0.034	0.034	0.032	0.031	0.028	0.025	0.021	0.016	0.011	0.006	0
TOTAL DEAD LOAD DEFLECTION	0	0.068	0.157	0.239	0.312	0.374	0.425	0.468	0.497	0.516	0.521	0.516	0.497	0.468	0.425	0.374	0.312	0.239	0.157	0.068	0
VERTICAL CURVE ORDINATE	0	-0.054	-0.101	-0.144	-0.180	-0.211	-0.237	-0.256	-0.270	-0.279	-0.282	-0.279	-0.270	-0.256	-0.237	-0.211	-0.180	-0.144	-0.101	-0.054	0
REQUIRED CAMBER	0	3/16"	1/16"	1/8"	1/16"	1 5/16"	2/4"	2 9/16"	2 3/4"	2 7/8"	2 7/8"	2 7/8"	2 3/4"	2 9/16"	2/4"	1 5/16"	1 9/16"	1/8"	1/16"	3/16"	0
GIRDERS 2 & 3																					
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.015	0.030	0.043	0.055	0.065	0.074	0.081	0.086	0.089	0.090	0.089	0.086	0.081	0.074	0.065	0.055	0.043	0.030	0.015	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.049	0.120	0.186	0.244	0.293	0.334	0.367	0.392	0.406	0.411	0.406	0.392	0.367	0.334	0.293	0.244	0.186	0.120	0.049	0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	0.005	0.011	0.016	0.020	0.024	0.027	0.029	0.031	0.032	0.033	0.032	0.031	0.029	0.027	0.024	0.020	0.016	0.011	0.005	0
TOTAL DEAD LOAD DEFLECTION	0	0.069	0.161	0.245	0.319	0.382	0.435	0.477	0.509	0.527	0.534	0.527	0.509	0.477	0.435	0.382	0.319	0.245	0.161	0.069	0
VERTICAL CURVE ORDINATE	0	-0.054	-0.101	-0.144	-0.180	-0.211	-0.237	-0.256	-0.270	-0.279	-0.282	-0.279	-0.270	-0.256	-0.237	-0.211	-0.180	-0.144	-0.101	-0.054	0
REQUIRED CAMBER	0	3/16"	3/4"	1 3/16"	1 1/16"	2/16"	2 3/8"	2 5/8"	2 7/8"	3"	3"	3"	2 7/8"	2 5/8"	2 3/8"	2/16"	1 1/16"	1 3/16"	3/4"	3/16"	0

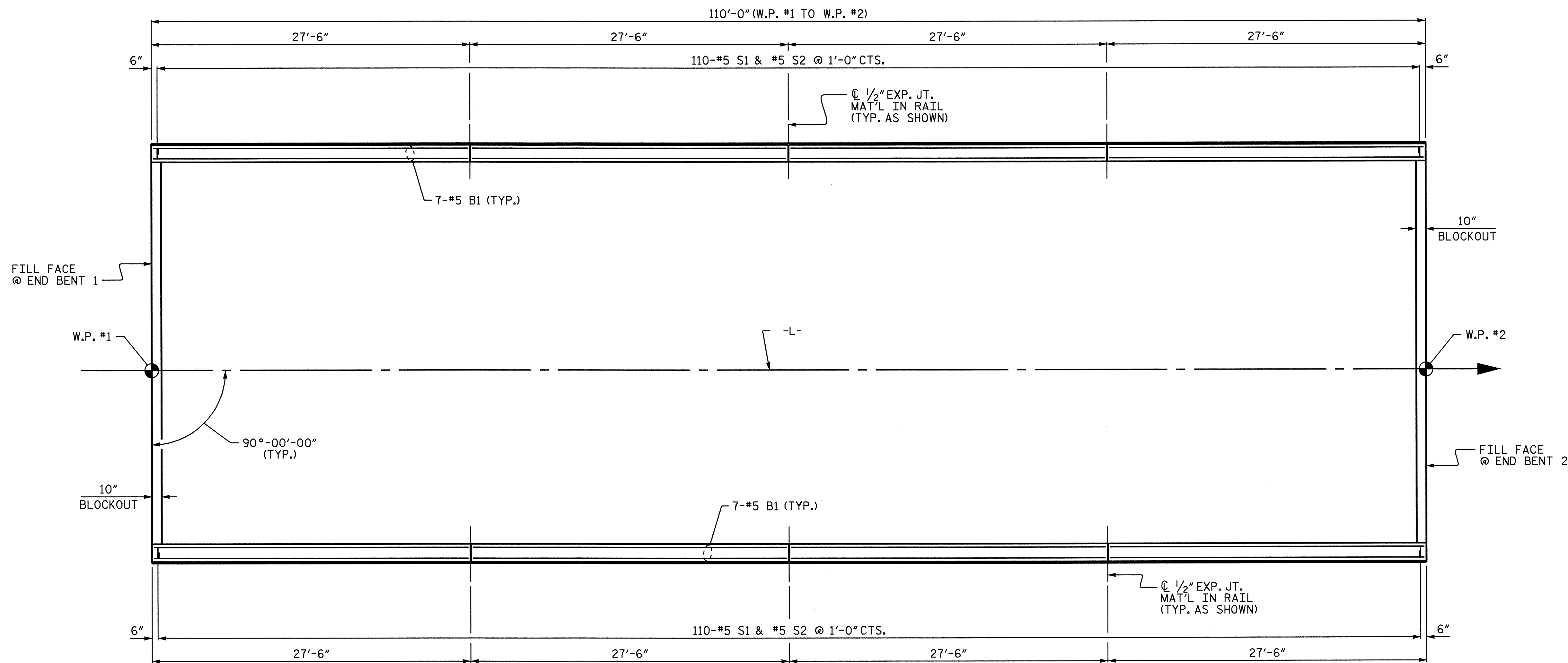
* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
 ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

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GUILFORD COUNTY
 STATION: 15+35.00 -L-

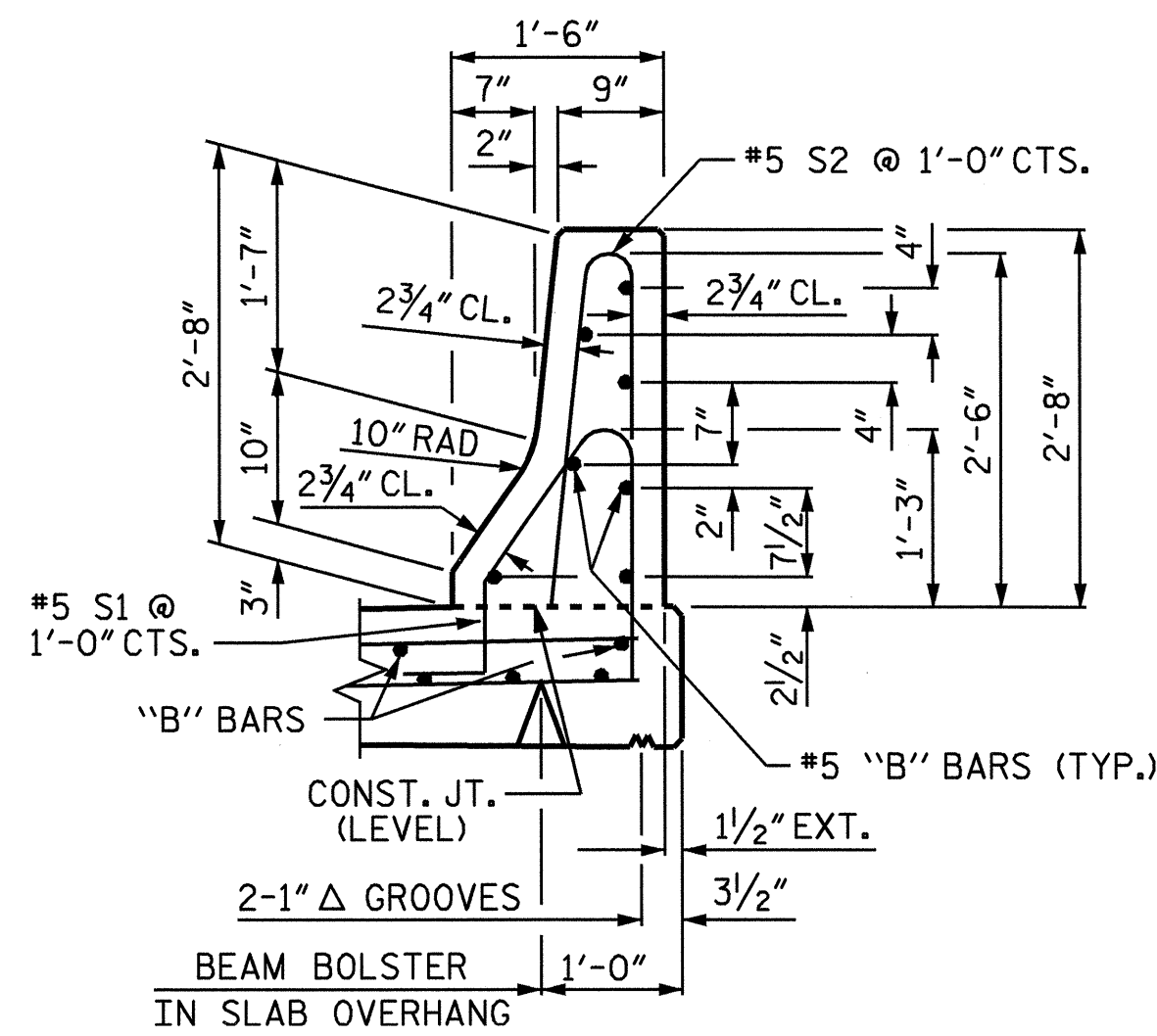


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE DEAD LOAD DEFLECTIONS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-10
					TOTAL SHEETS 22

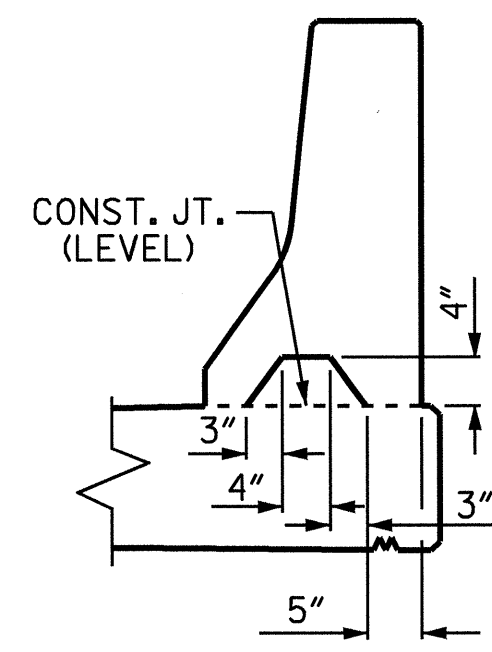
DRAWN BY : P.C. BREWER DATE : 3/23/06
 CHECKED BY : L.E. SUTTON DATE : 6/22/07



PLAN OF BARRIER RAIL

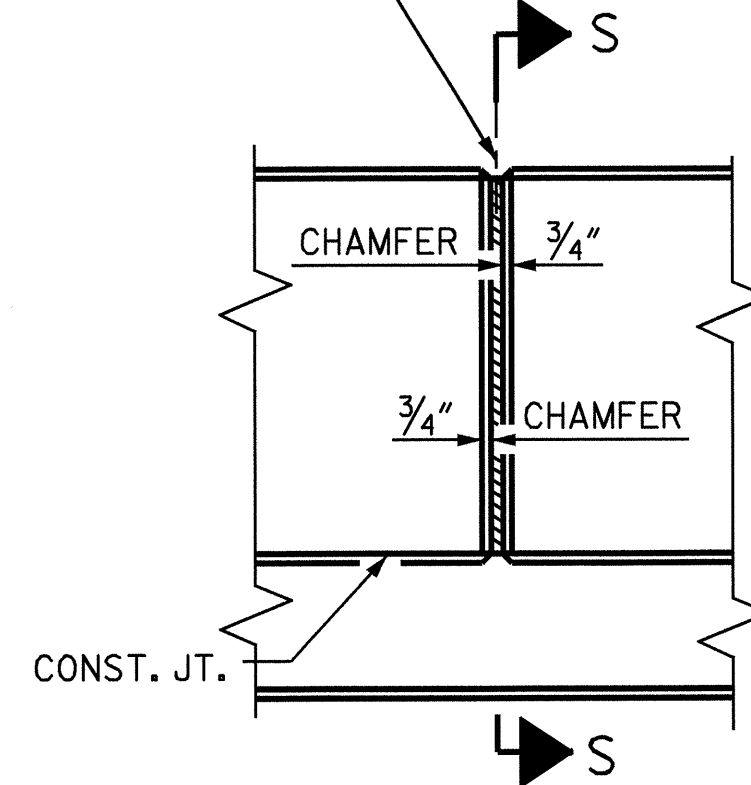


SECTION THRU RAIL



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

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

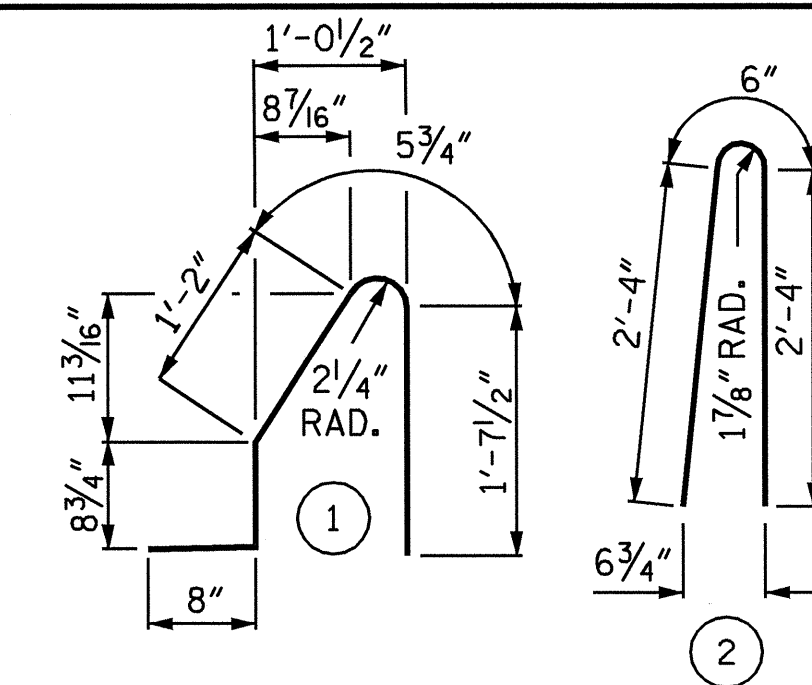


ELEVATION AT EXPANSION JOINTS

ASSEMBLED BY : P.C. BREWER DATE : 10/9/06
CHECKED BY : L.E. SUTTON DATE : 6/22/07
DRAWN BY : ARB 5/87 REV. 10/17/00 RWW/LES
CHECKED BY : SJD 9/87 REV. 5/7/03R RWW/JTE
REV. 5/1/06 TLA/GM

BARRIER RAIL DETAILS

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	27'-1"	1582
* S1	220	#5	1	4'-8"	1071
* S2	220	#5	2	5'-2"	1186

* EPOXY COATED REINFORCING STEEL LBS. 3,839

CLASS AA CONCRETE CU. YDS. 22.1

CONCRETE BARRIER RAIL LIN. FT. 220.00

NOTES:

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

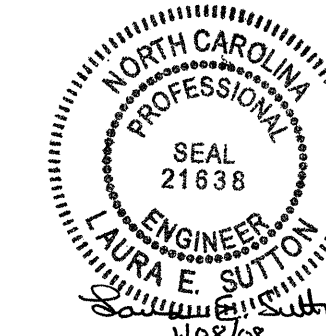
THE #5 S1 AND #5 S2 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO 1/2" EXPANSION JOINT MATERIAL IN THE BARRIER RAIL.

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.

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GUILFORD COUNTY
STATION: 15+35.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

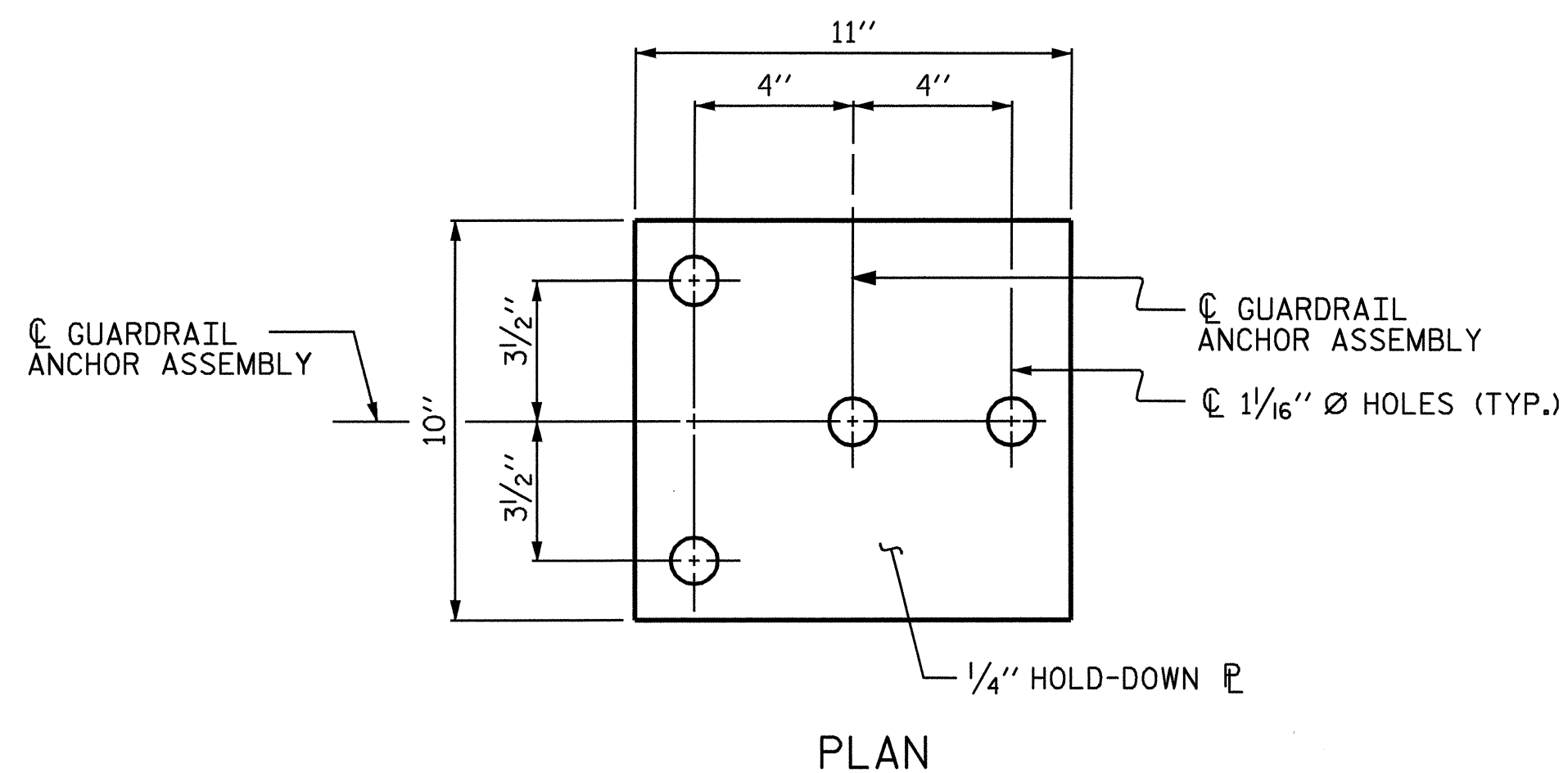
STANDARD
CONCRETE
BARRIER RAIL



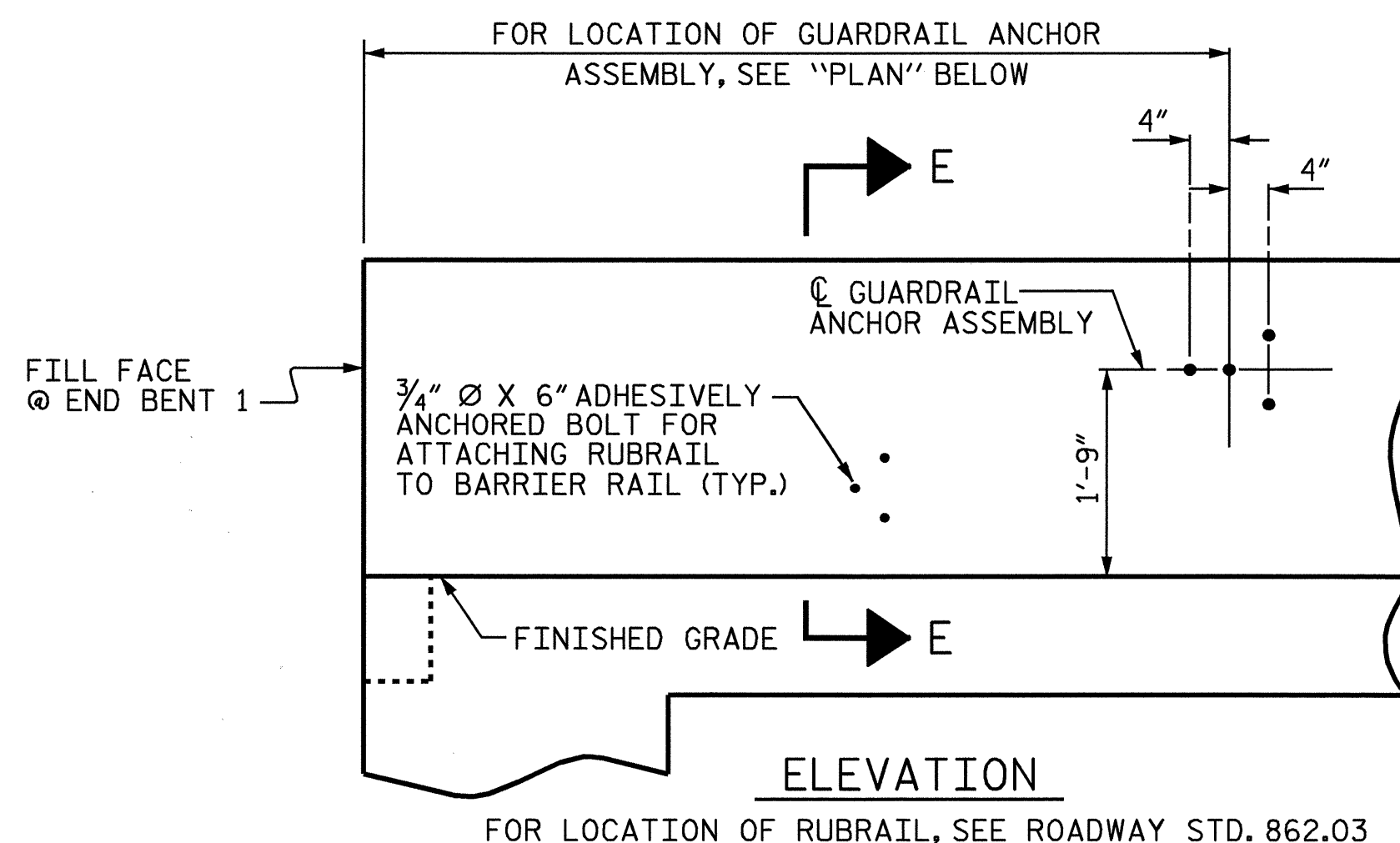
REVISIONS				SHEET NO.	
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TOTAL SHEETS
22

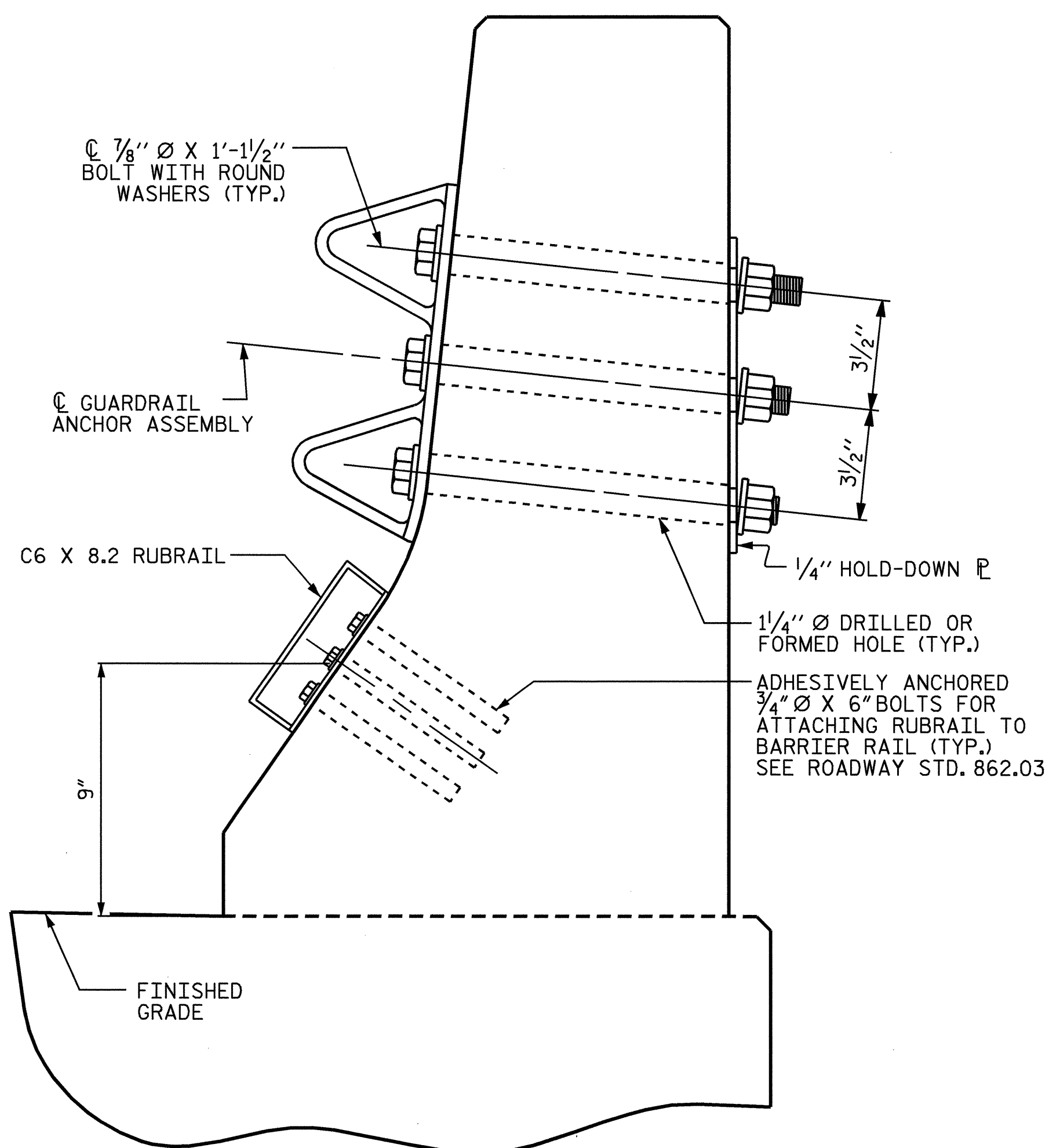
STD. NO. CBR1



PLAN

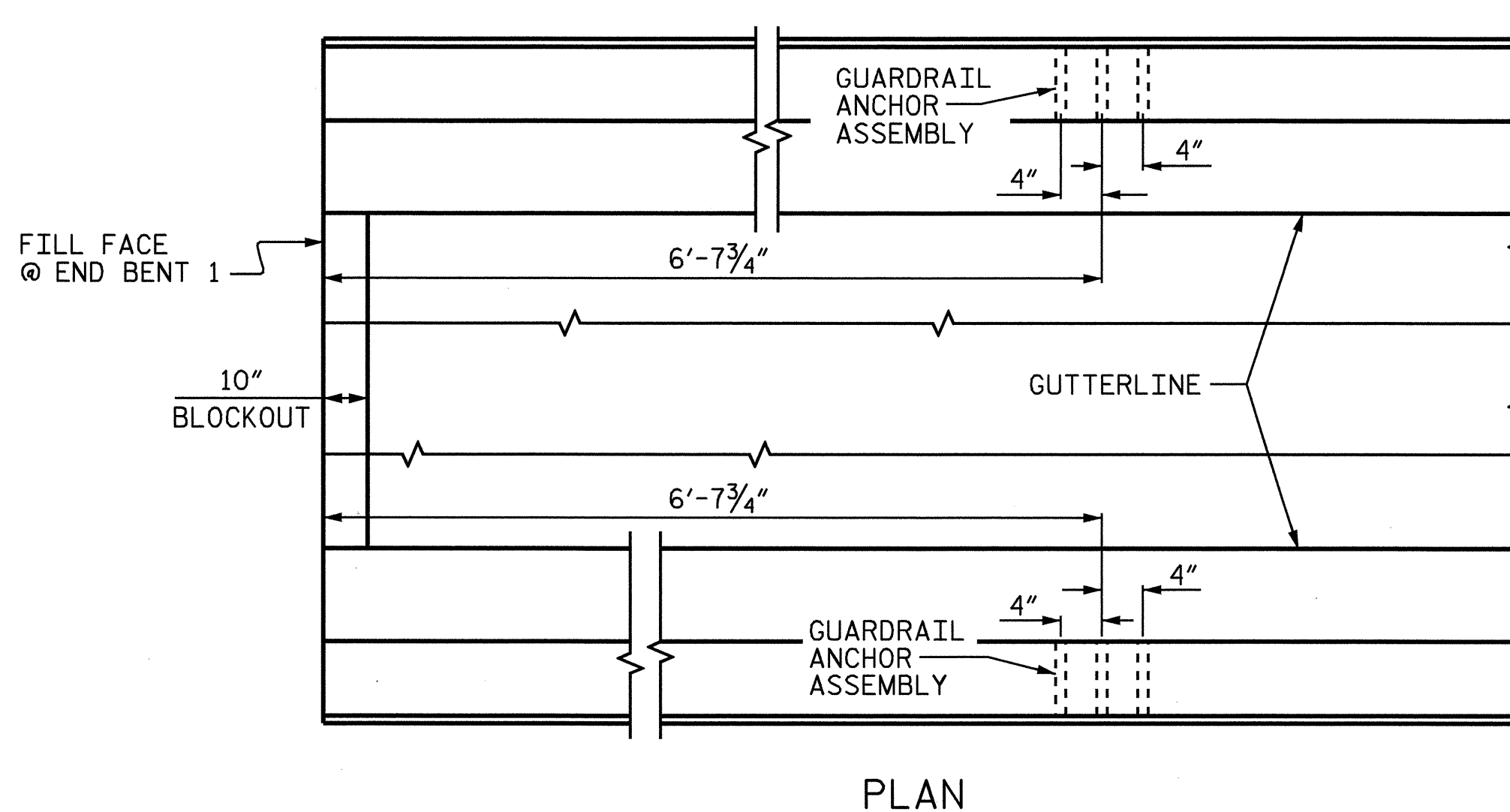


ELEVATION



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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

NOTES:

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 4 - 7/8" 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 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

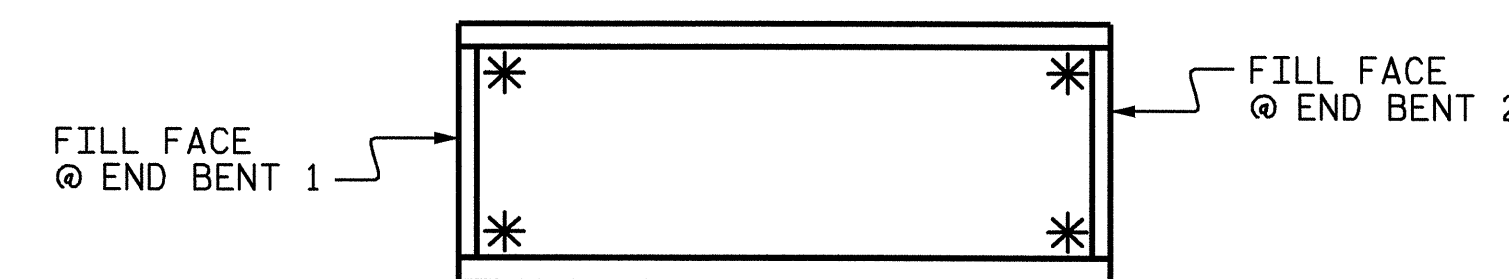
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

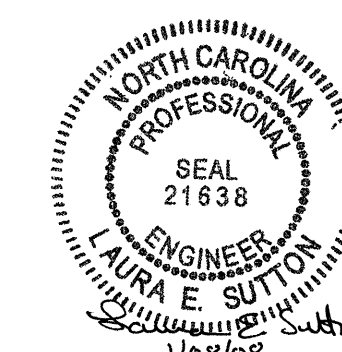
THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS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



SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

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 GUILFORD COUNTY
 STATION: 15+35.00 -L-

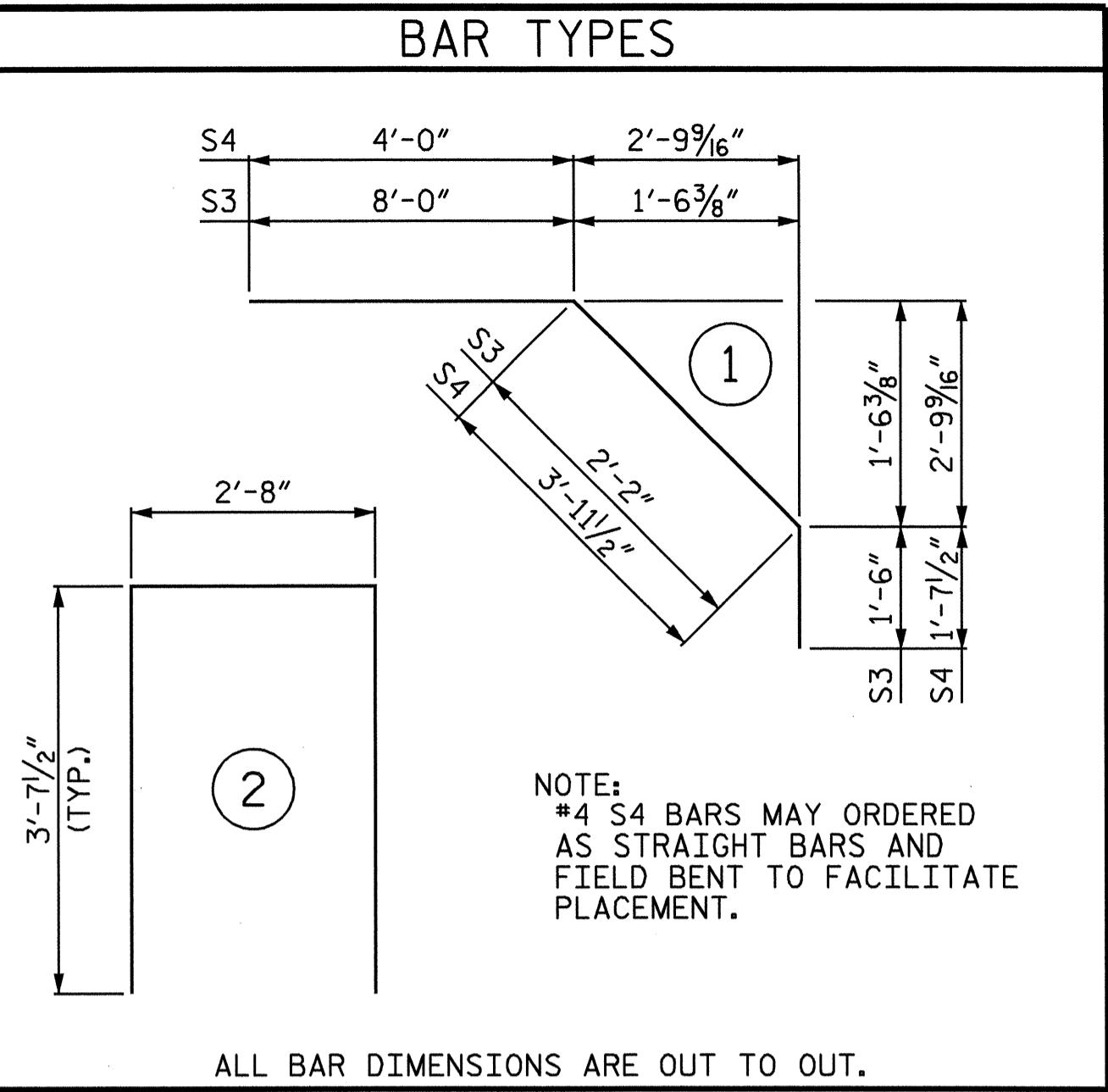


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 FOR BARRIER RAIL

ASSEMBLED BY : P.C. BREWER	DATE : 10/9/06
CHECKED BY : L.E. SUTTON	DATE : 6/22/07
DRAWN BY : TLA 5/06	ADDED 5/1/06R KMM/GM
CHECKED BY : GM 5/06	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-12
2			4			TOTAL SHEETS 22

BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	200	#5	STR	35'-11"	7492
A2	200	#5	STR	35'-11"	7492
*B1	72	#4	STR	24'-2"	1162
B2	82	#5	STR	55'-1"	4711
*B3	186	#5	STR	21'-10"	4236
*B4	8	#4	STR	28'-11"	155
K1	40	#4	STR	18'-10"	503
*S3	66	#4	1	11'-8"	514
*S4	56	#4	1	9'-7"	358
U1	60	#4	2	9'-11"	397
REINFORCING STEEL				LBS.	13,103
*EPOXY COATED REINFORCING STEEL				LBS.	13,917

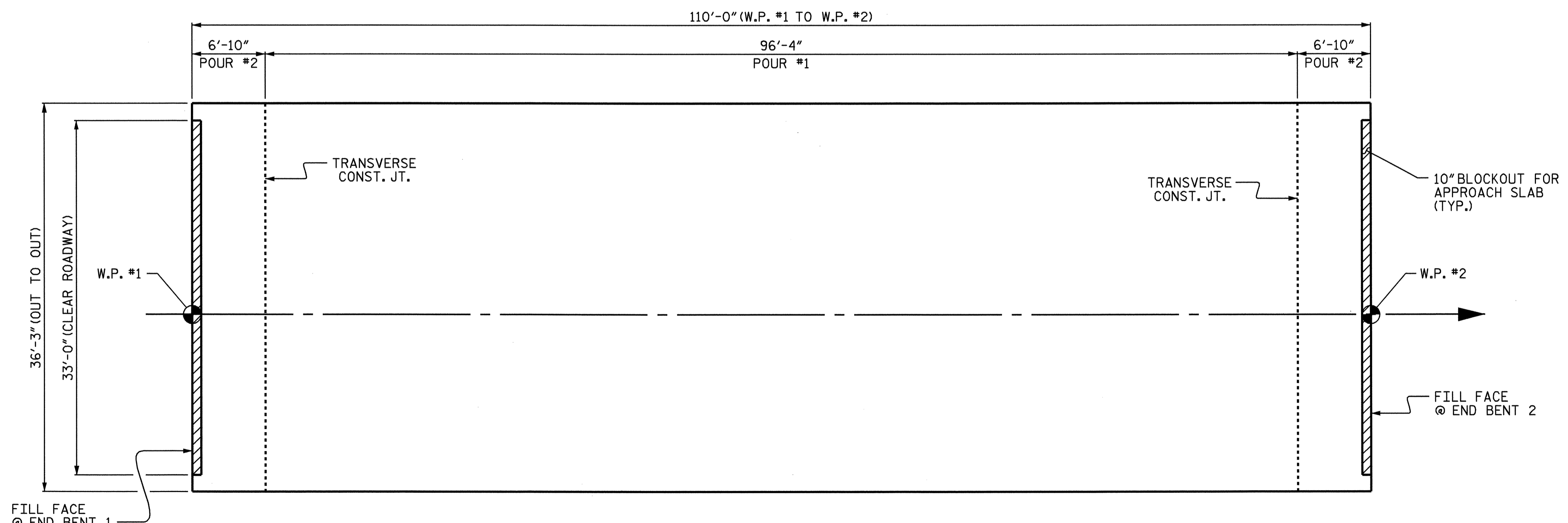


LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

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	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
POUR #1	105.0	---	---
POUR #2	46.1	---	---
TOTALS **	151.1	13,103	13,917

**QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED.



GROOVING BRIDGE FLOORS	
APPROACH SLABS	747 SQ.FT.
BRIDGE DECK	3,239 SQ.FT.
TOTAL	3,986 SQ.FT.

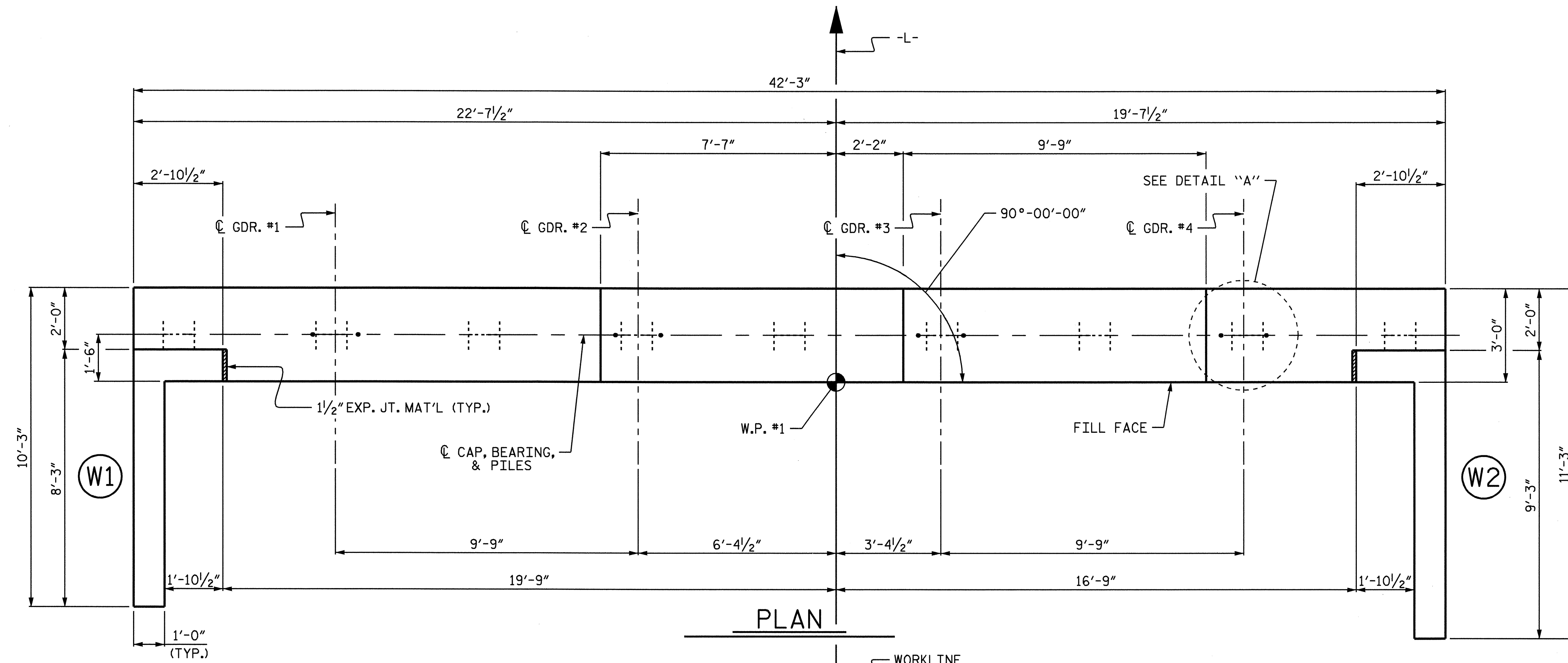
PROJECT NO. B-4131
GUILFORD COUNTY
 STATION: 15+35.00 -L-

LAYOUT FOR COMPUTING AREA
 OF REINFORCED CONCRETE DECK SLAB
 AND POURING SEQUENCE
 (SQ. FT. = 3,933)



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH				
SUPERSTRUCTURE BILL OF MATERIAL				
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	
				S-13
				TOTAL SHEETS 22

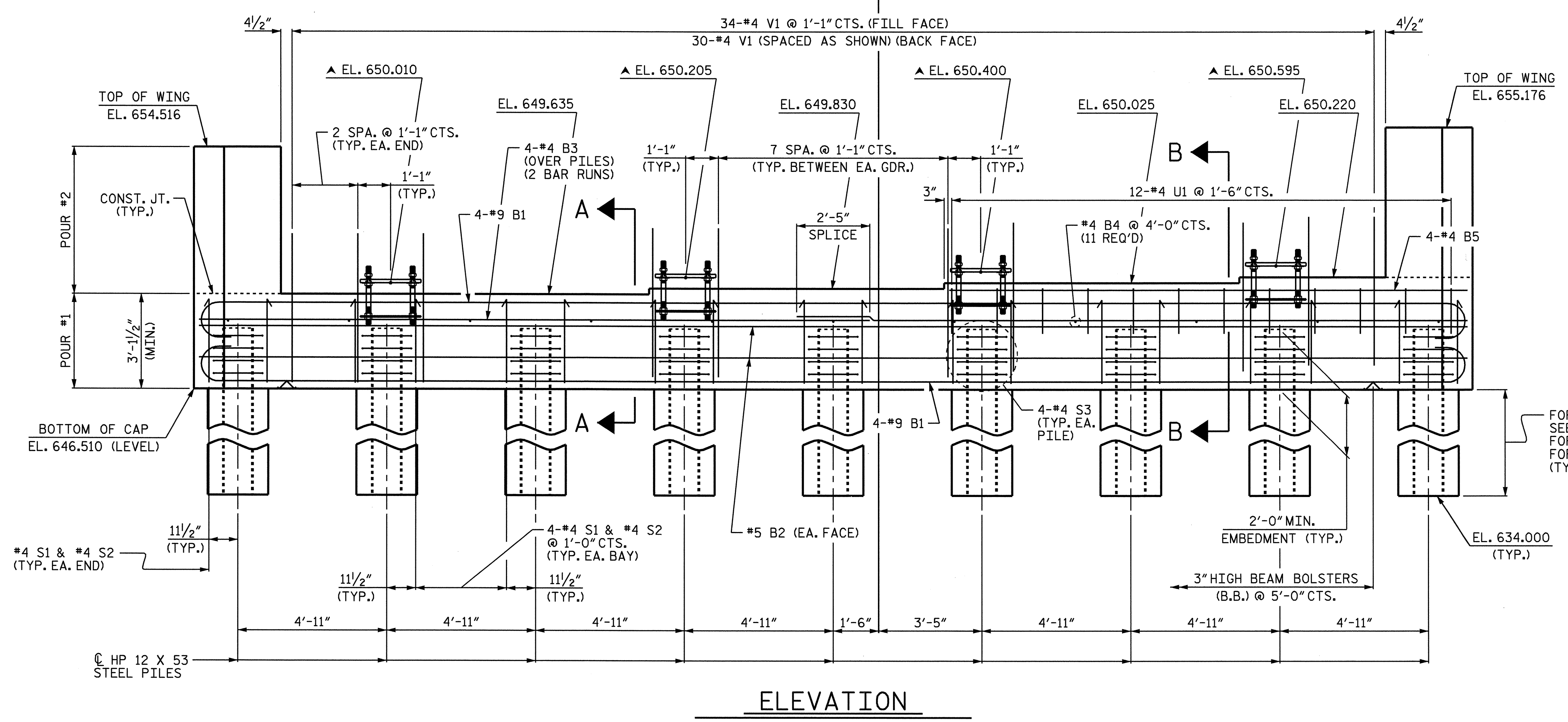
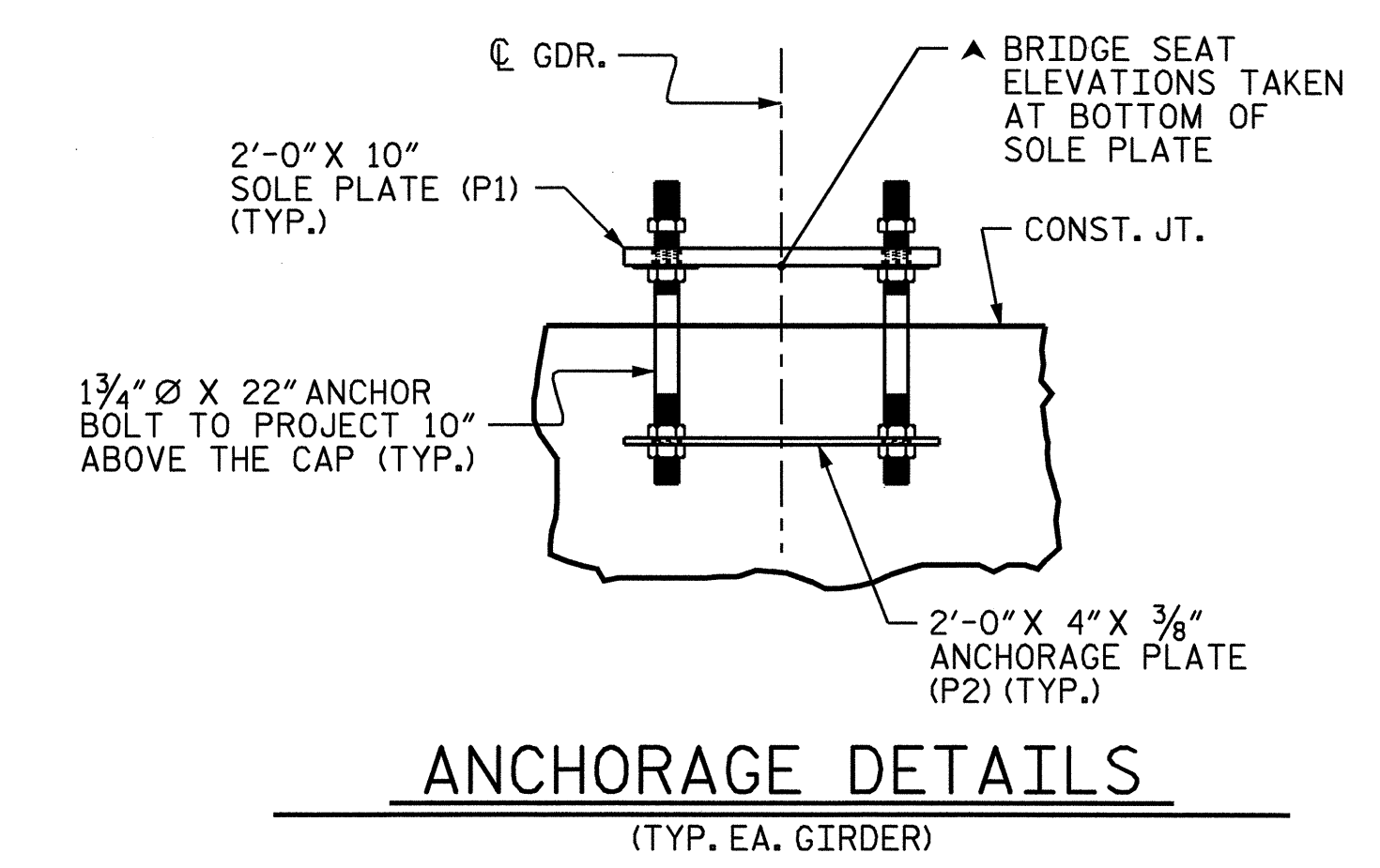
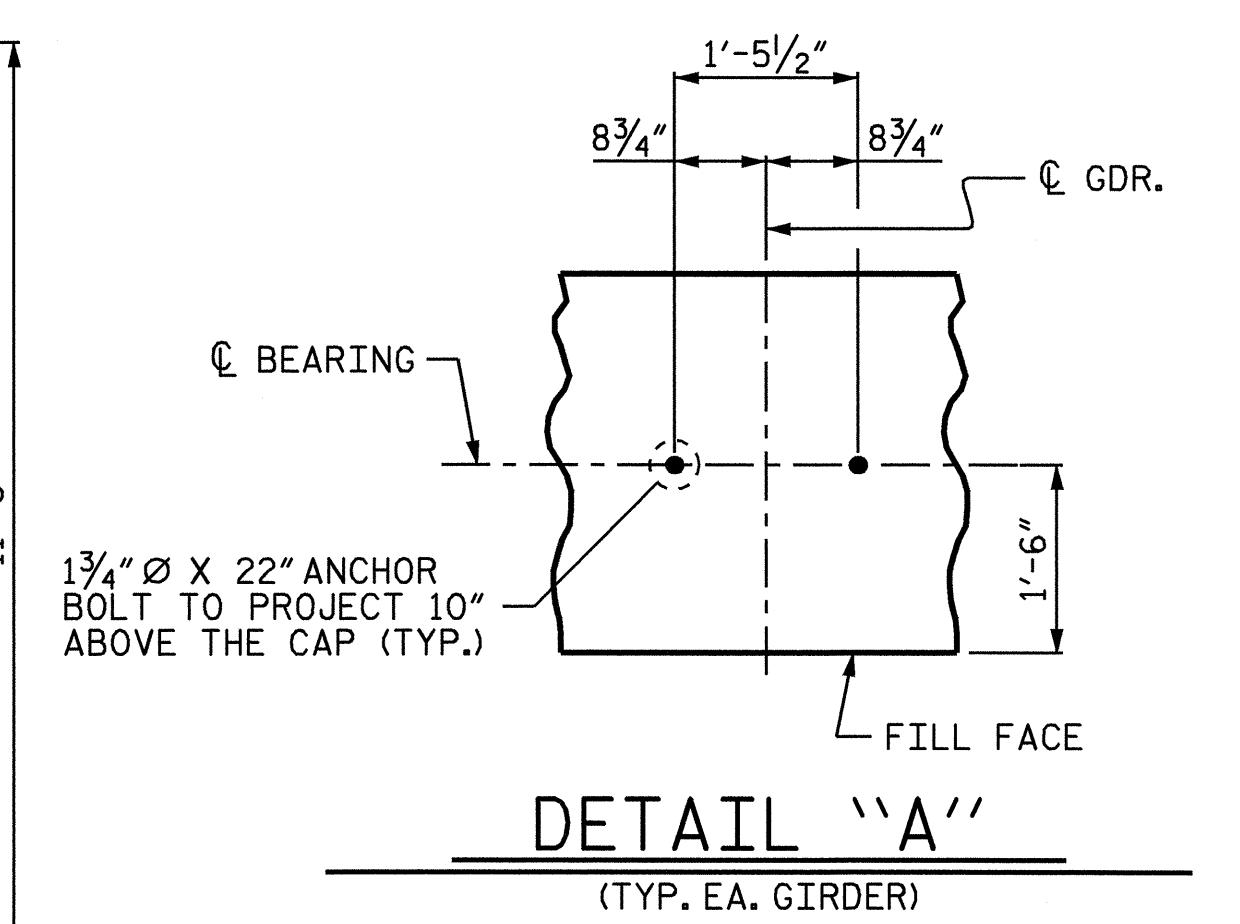
DRAWN BY : P.C. BREWER DATE : 10/9/06
 CHECKED BY : L.E. SUTTON DATE : 6/07



NOTES:

STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLT ASSEMBLIES.

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



PROJECT NO. B-4131

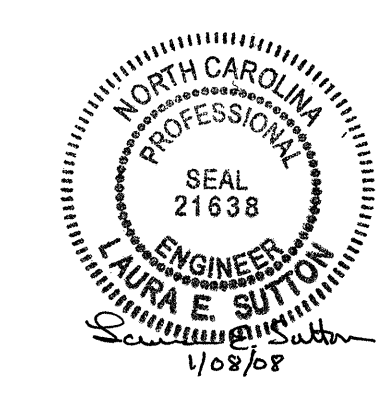
GUILFORD COUNTY

STATION: 15+35.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
INTEGRAL
END BENT 1

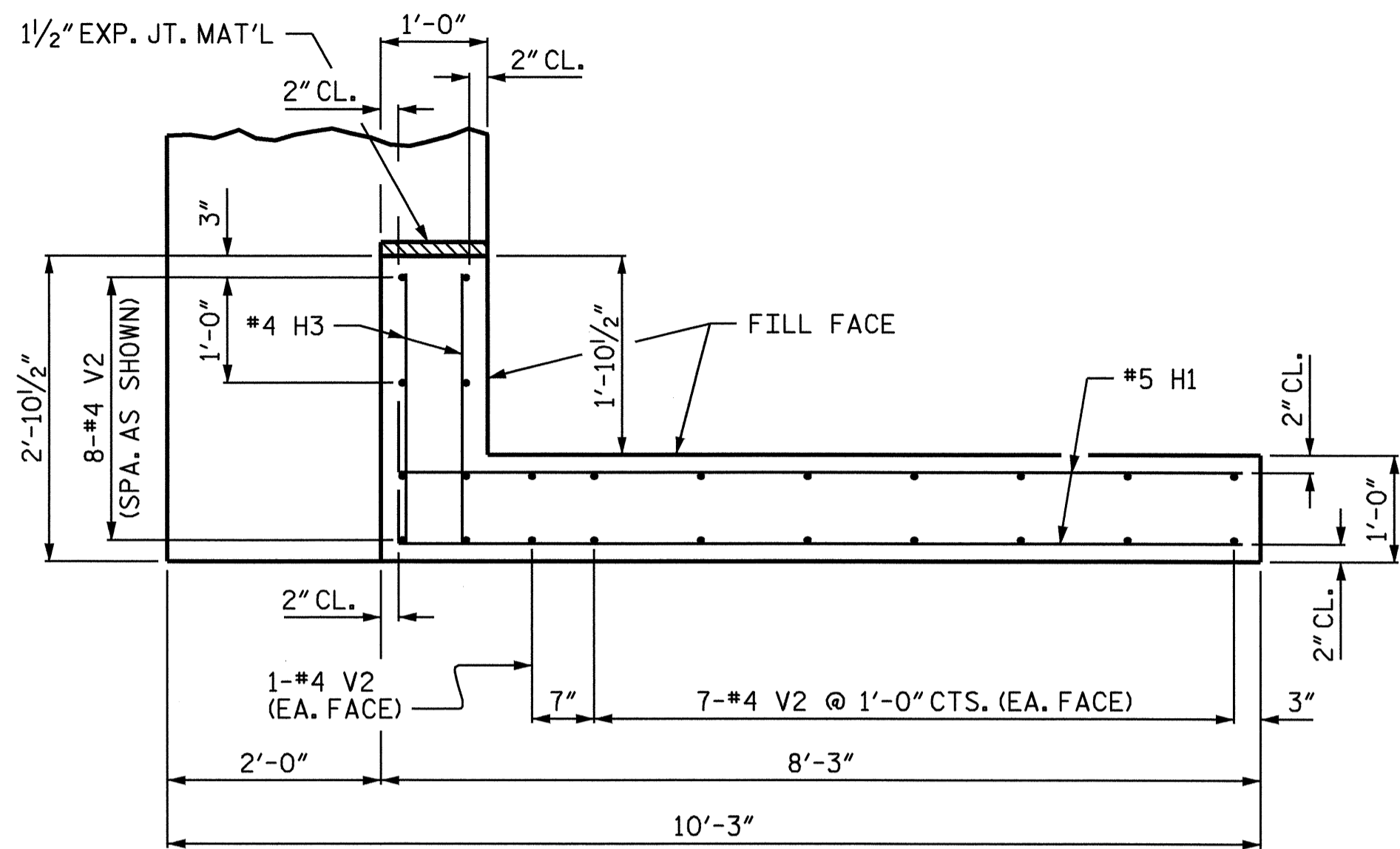


DRAWN BY : P.C. BREWER DATE : 10/3/06

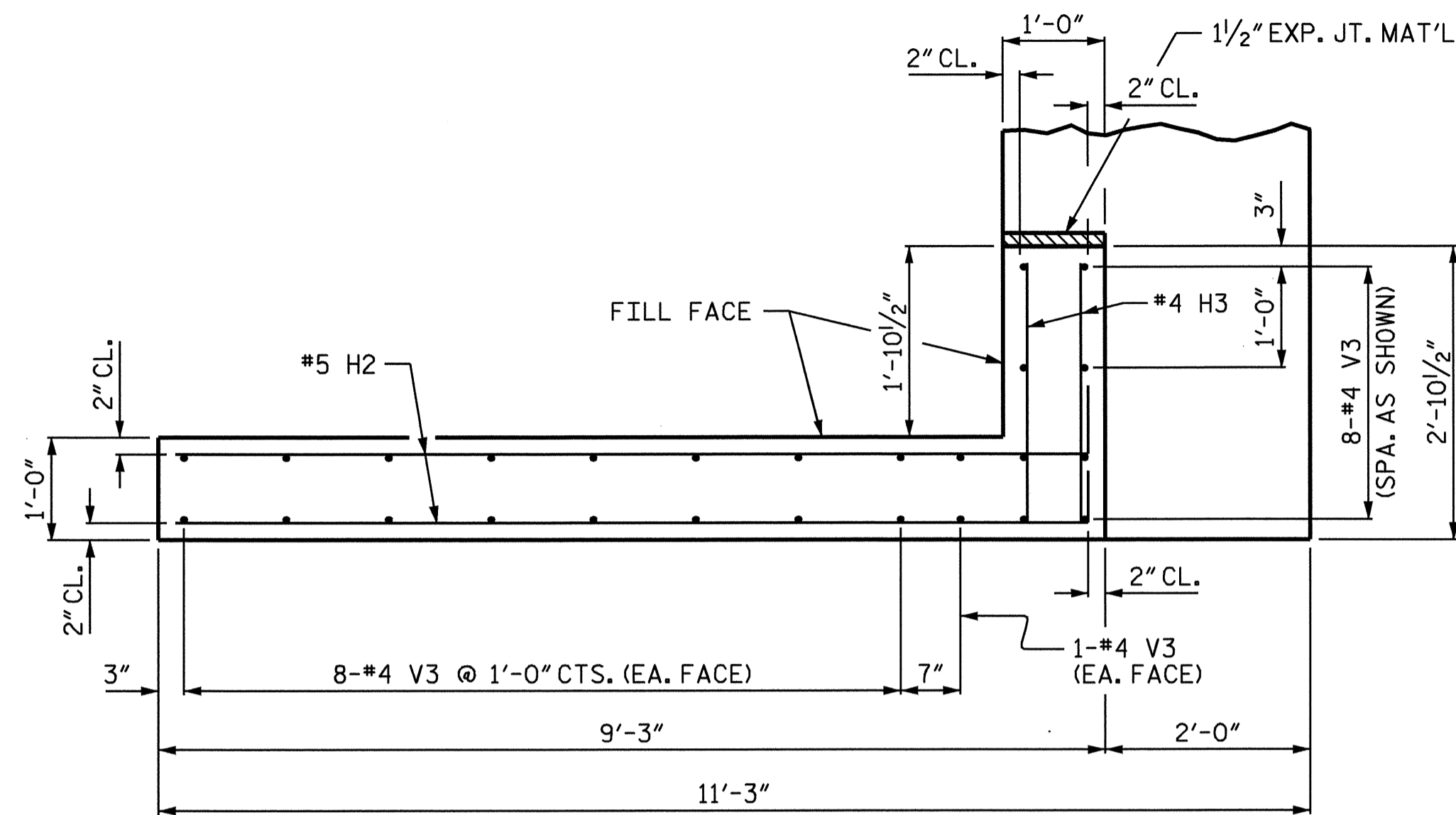
CHECKED BY : E.C. LOCKLEAR DATE : 10/6/06

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

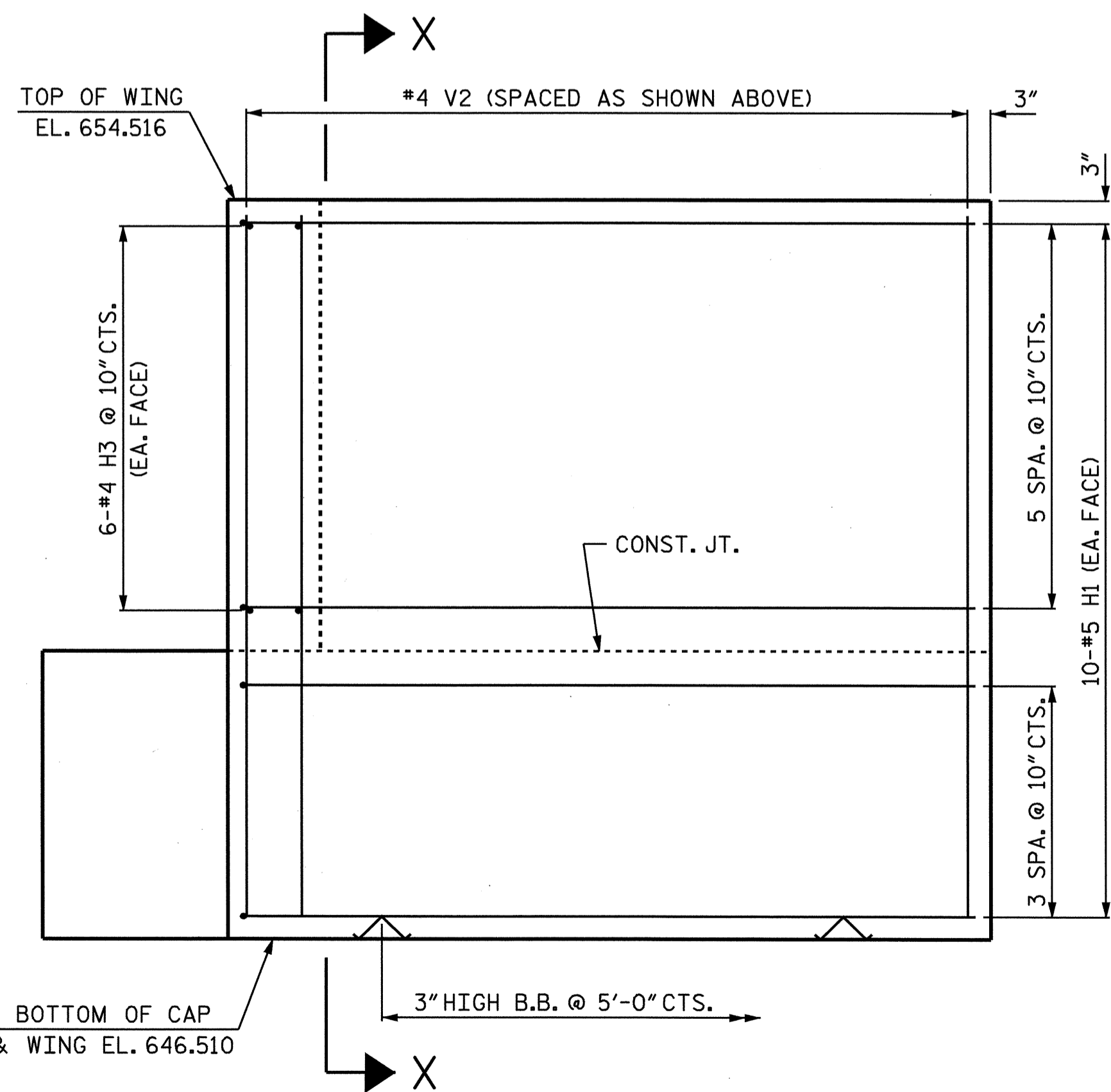
S-14
TOTAL SHEETS
22



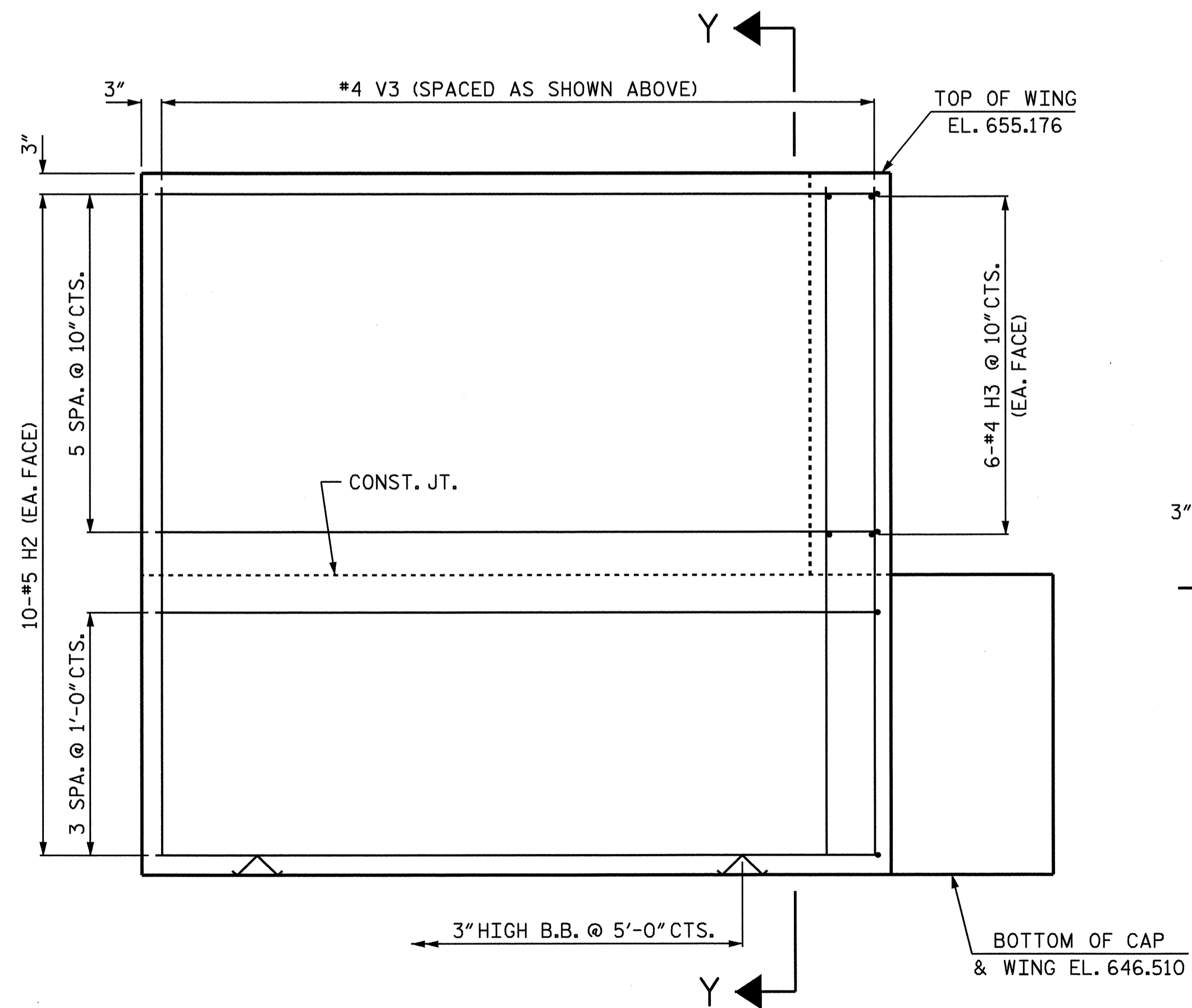
PLAN OF WING (W1)



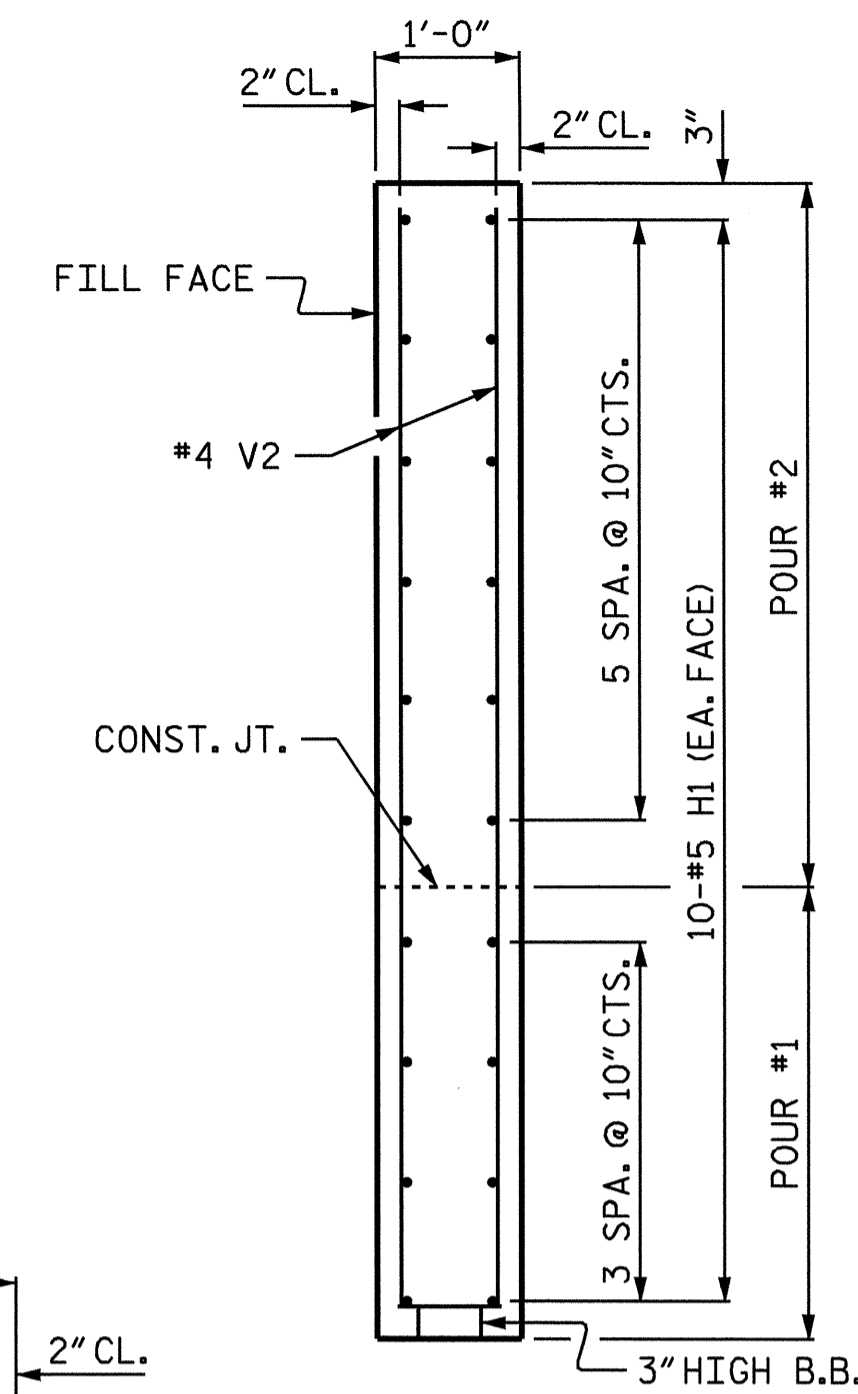
PLAN OF WING (W2)



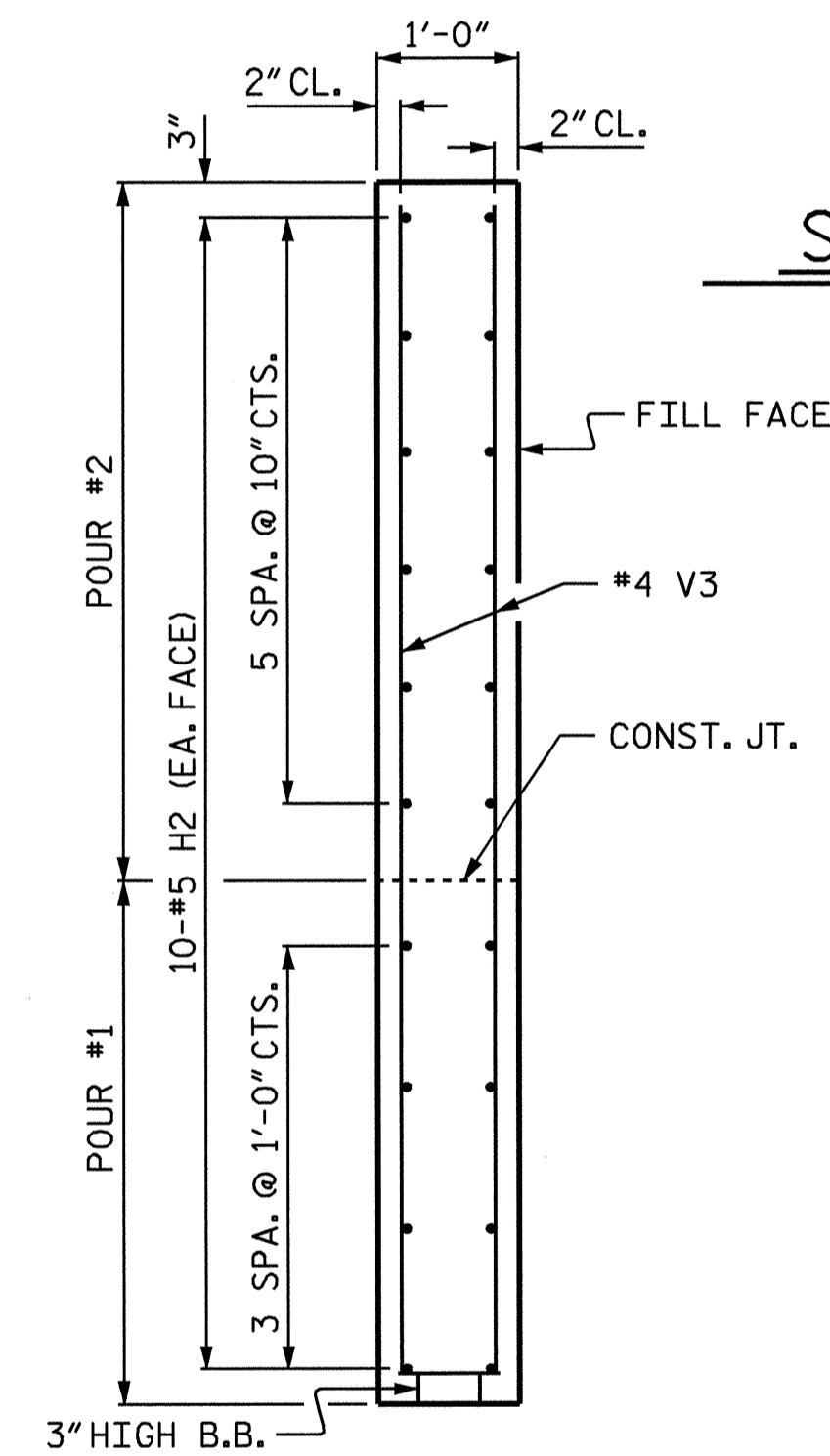
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION X-X



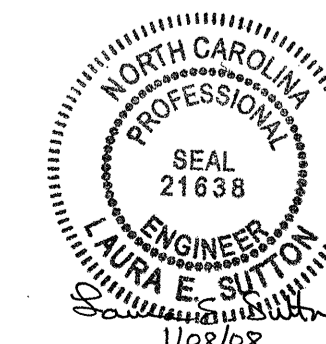
SECTION Y-Y

PROJECT NO. B-4131
 GUILFORD COUNTY
 STATION: 15+35.00 -L-

SHEET 2 OF 3

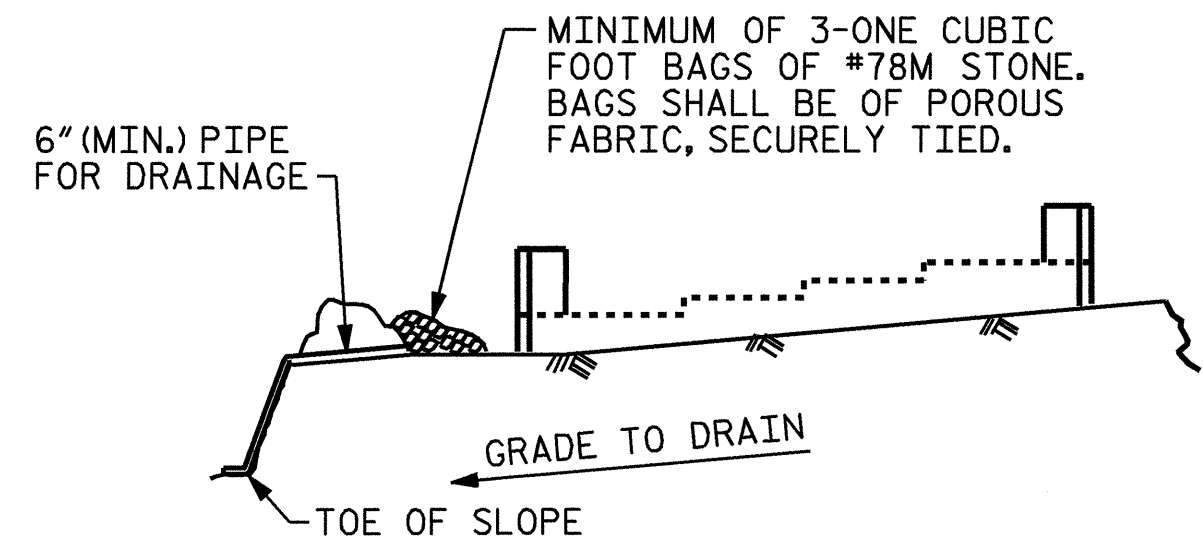
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 INTEGRAL
 END BENT 1



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			22

DRAWN BY: P.C. BREWER DATE: 10/3/06
 CHECKED BY: E.C. LOCKLEAR DATE: 10/6/06

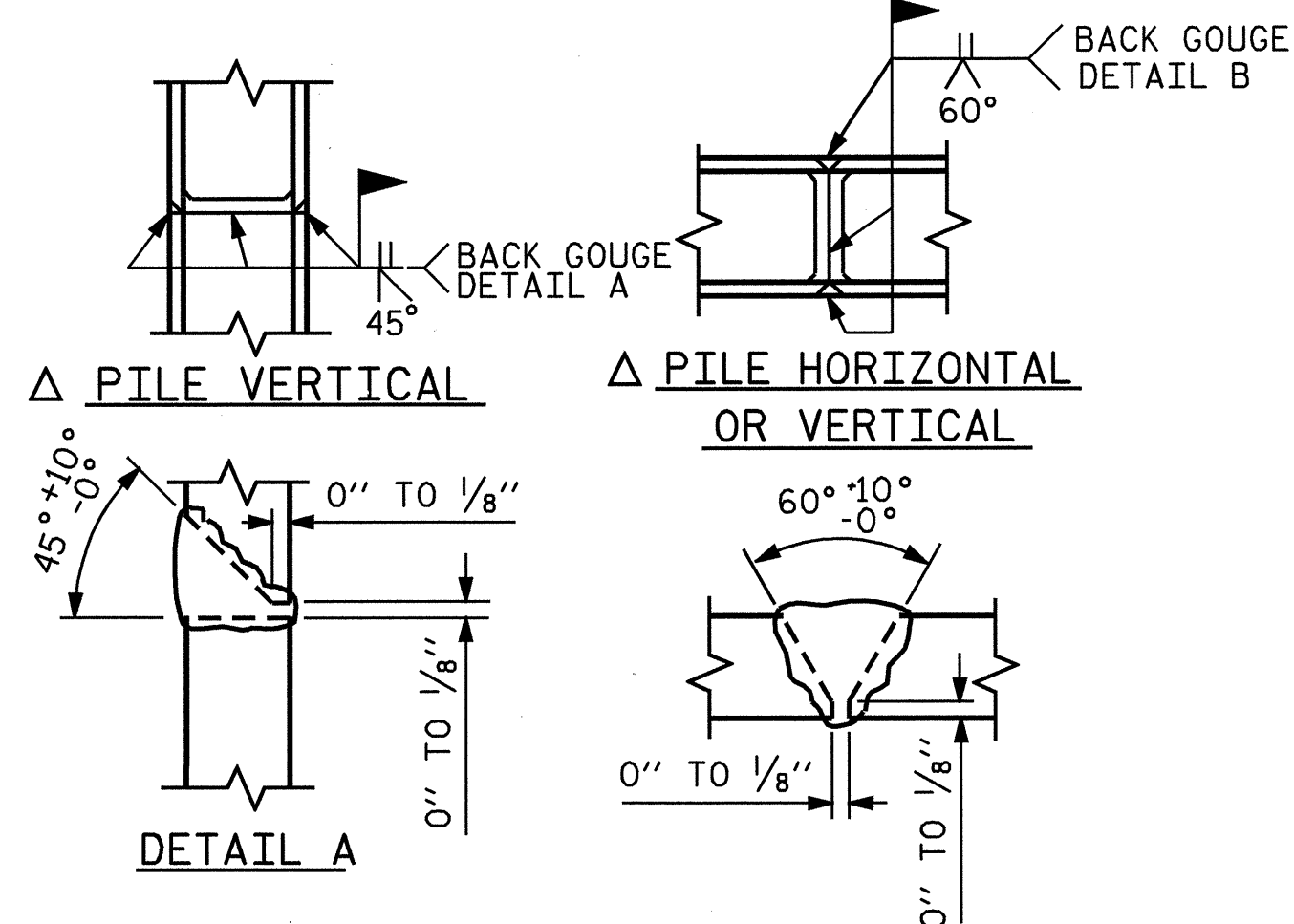


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

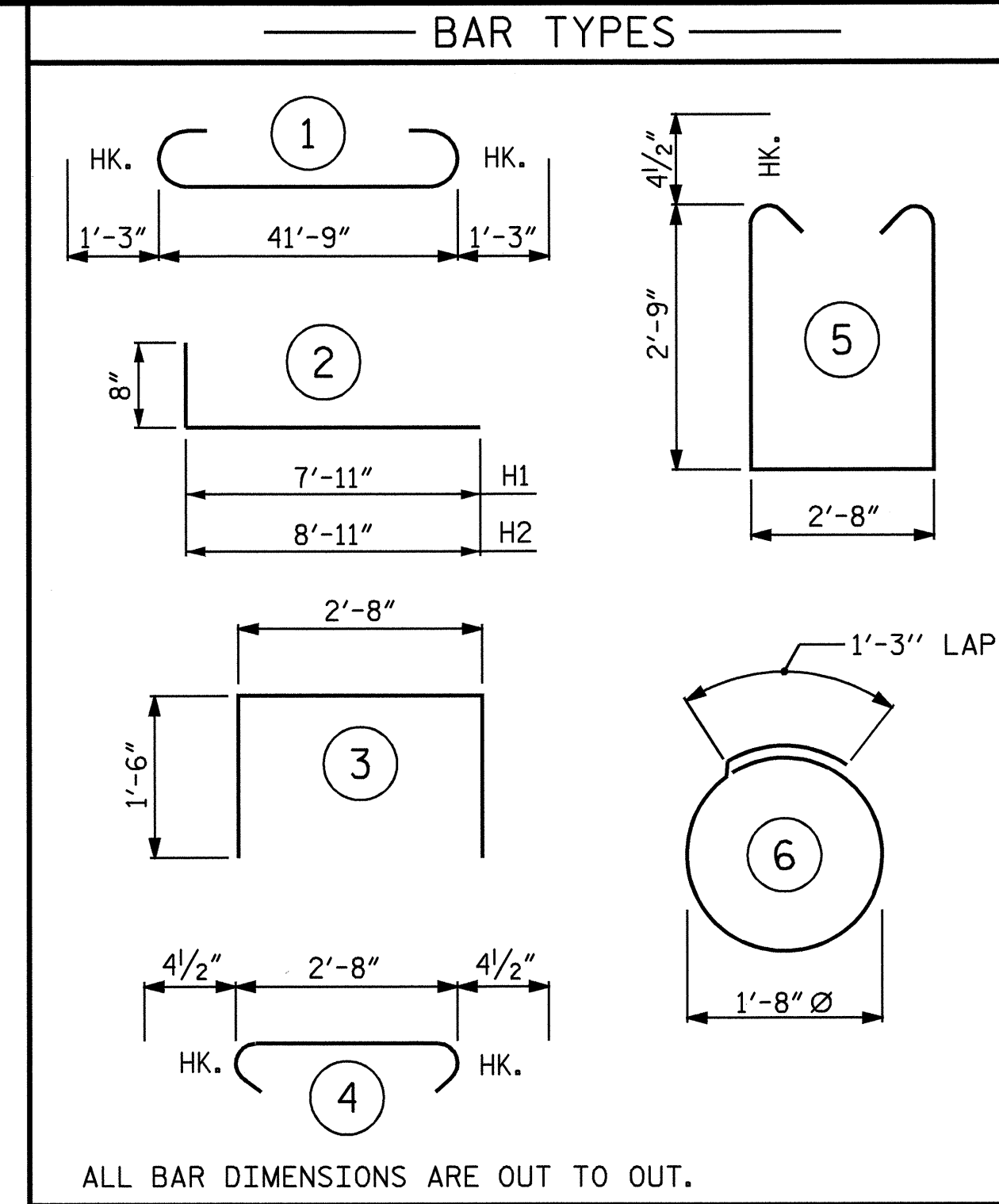
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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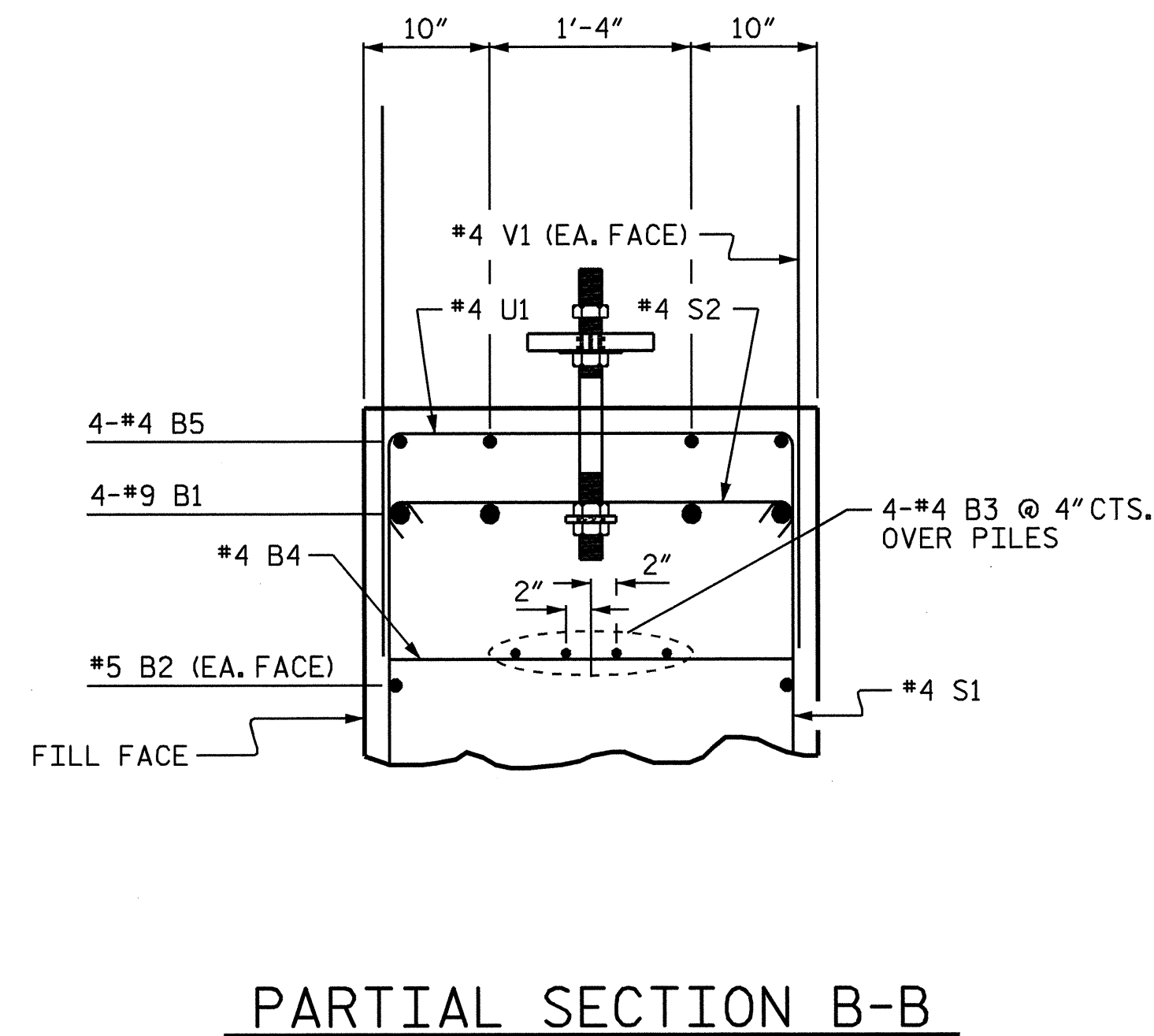
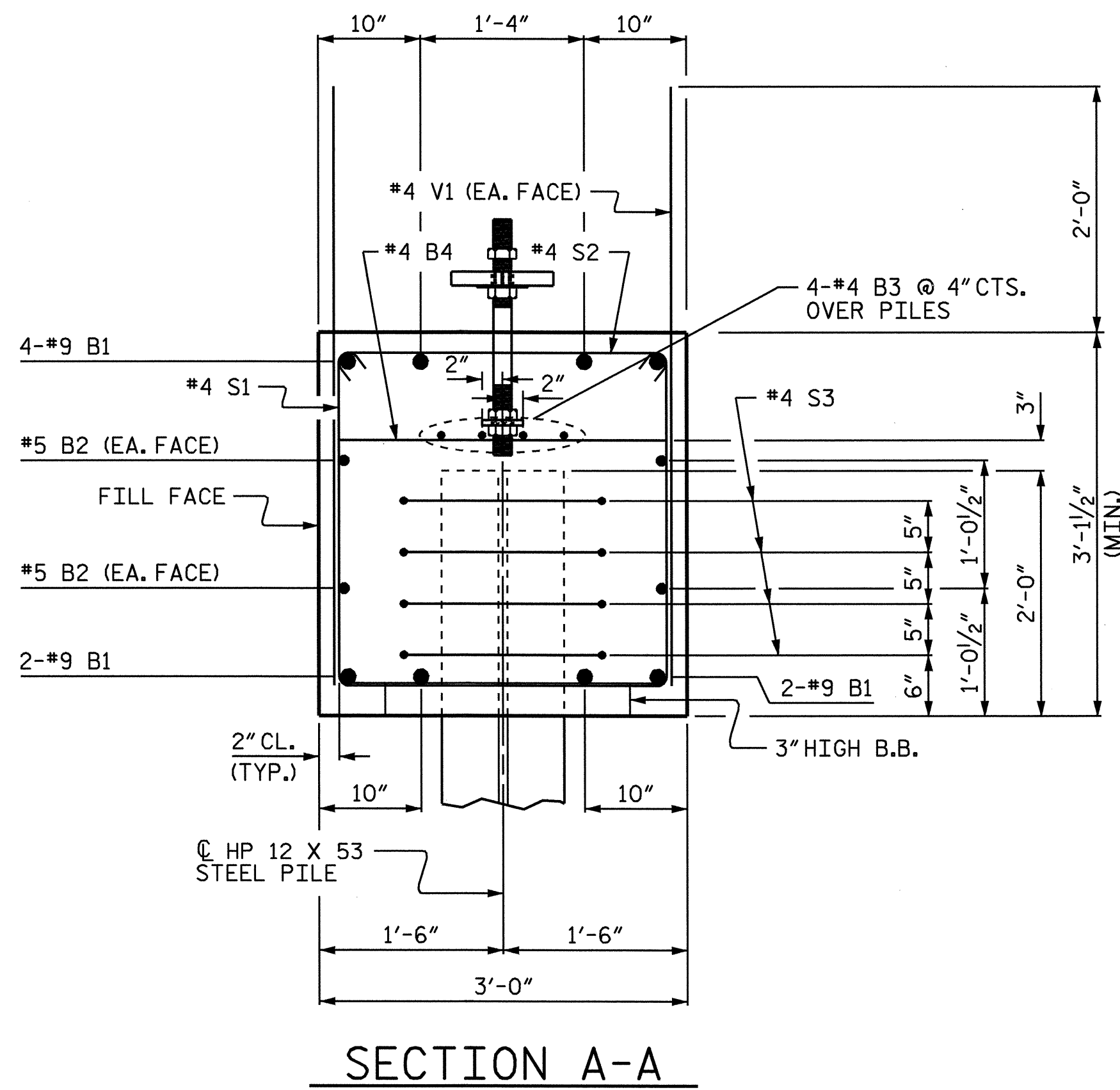
TEMPORARY DRAINAGE AT END BENT



Δ POSITION OF PILE DURING WELDING. **PILE SPLICE DETAILS**



BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		44'-3"	1204
B2	4	#5	STR	41'-11"	175
B3	8	#4	STR	22'-2"	118
B4	11	#4	STR	2'-8"	20
B5	4	#4	STR	17'-1"	46
H1	20	#5	2	8'-7"	179
H2	20	#5	2	9'-7"	200
H3	24	#4	STR	2'-6"	40
S1	34	#4	5	8'-11"	203
S2	34	#4	4	3'-5"	78
S3	36	#4	6	6'-6"	156
U1	12	#4	3	5'-8"	45
V1	64	#4	STR	4'-11"	210
V2	24	#4	STR	7'-7"	122
V3	26	#4	STR	8'-3"	143
REINFORCING STEEL					LBS. 2,939
CLASS A CONCRETE BREAKDOWN :					
POUR #1 - CAP & LOWER WINGS				CU. YDS.	17.8
POUR #2 - UPPER WINGS				CU. YDS.	3.9
TOTAL				CU. YDS.	21.7
HP 12 x 53 STEEL PILES				LIN. FT.	135
NO. = 9				LIN. FT.	30
PILE EXCAVATION IN SOIL				LIN. FT.	105
PILE EXCAVATION NOT IN SOIL				LIN. FT.	



PROJECT NO. B-4131

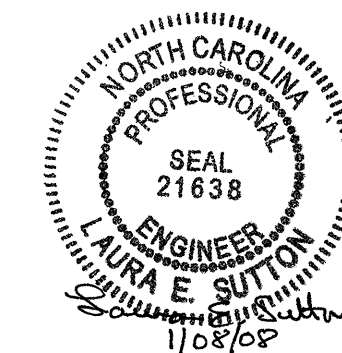
GUILFORD COUNTY

STATION: 15+35.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

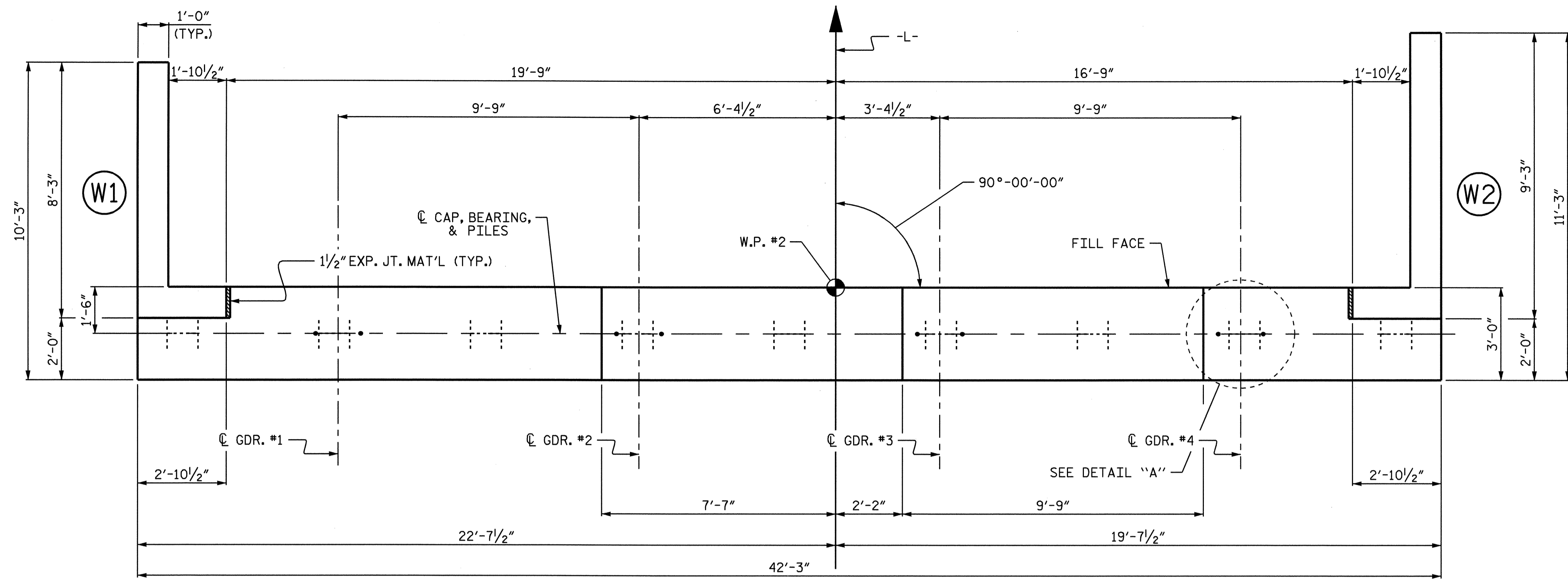
SUBSTRUCTURE
INTEGRAL
END BENT 1



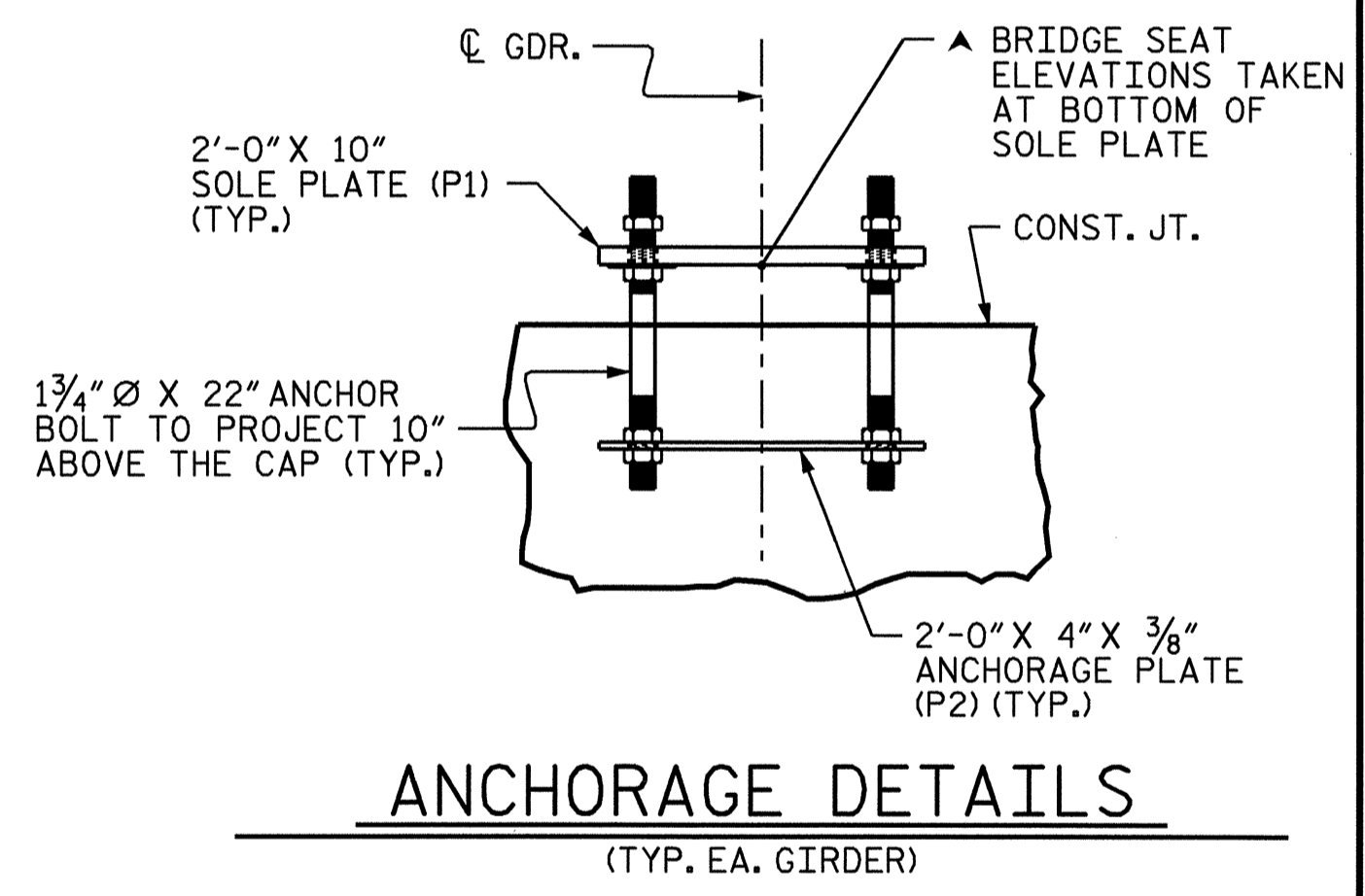
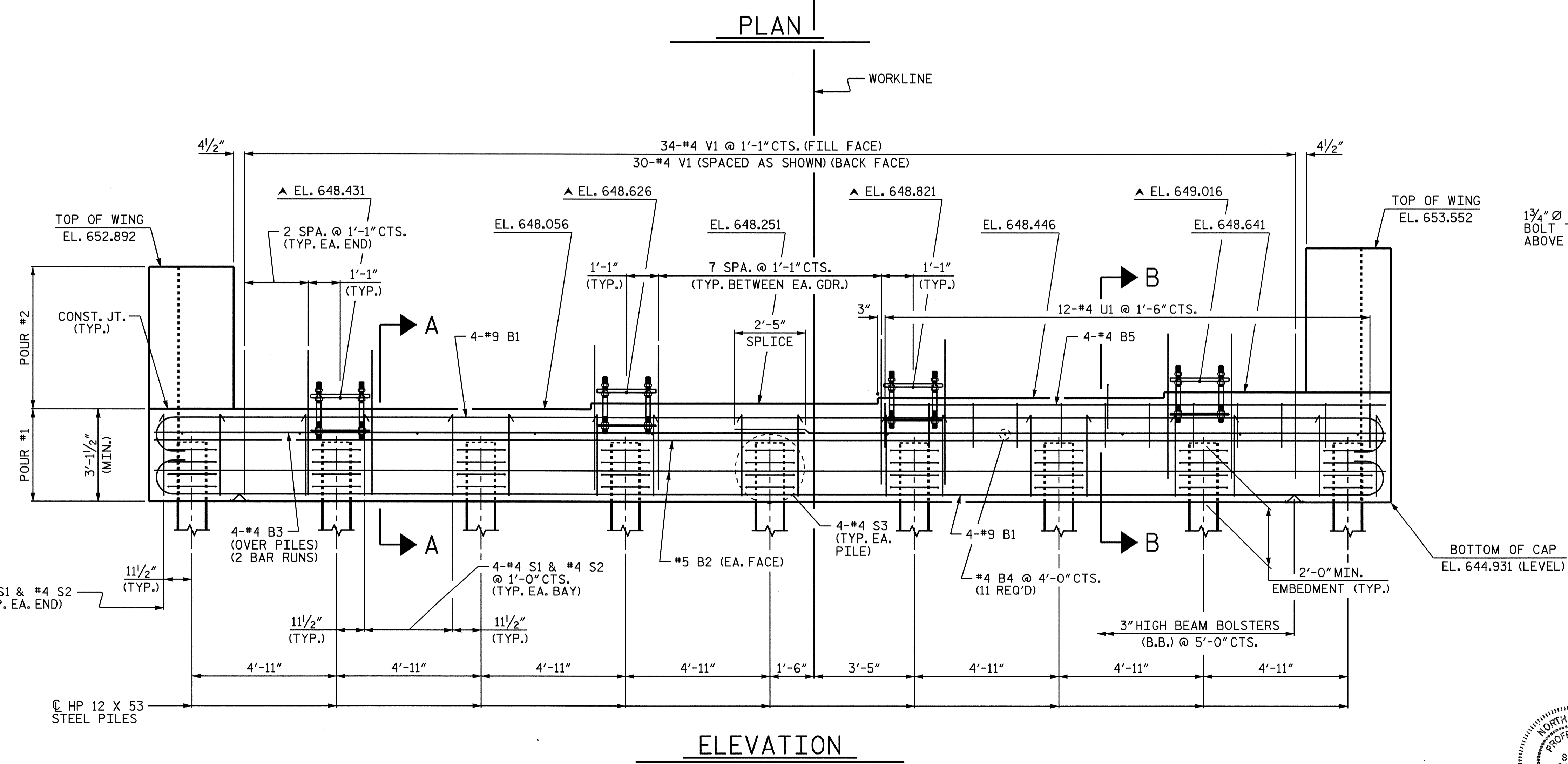
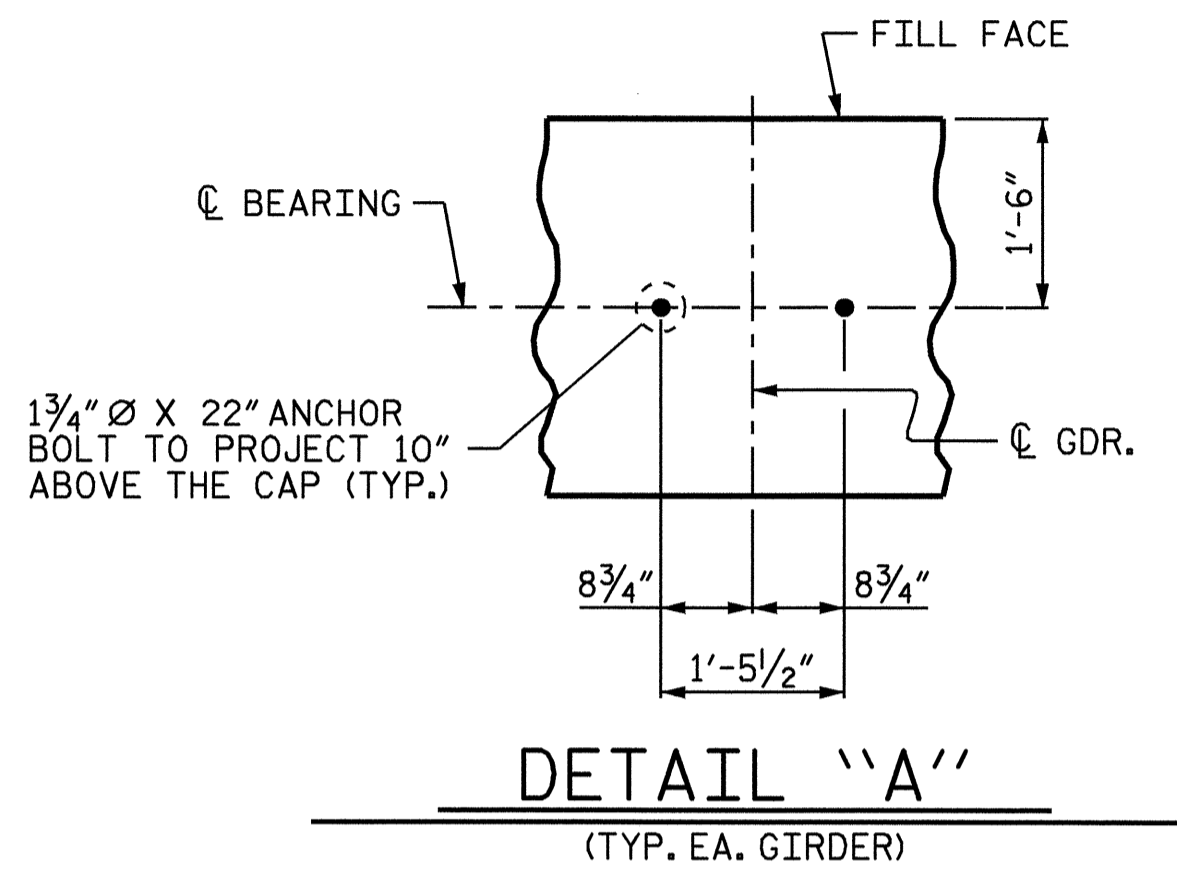
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

DRAWN BY : P.C. BREWER DATE : 10/3/06

CHECKED BY : E.C. LOCKLEAR DATE : 10/6/06

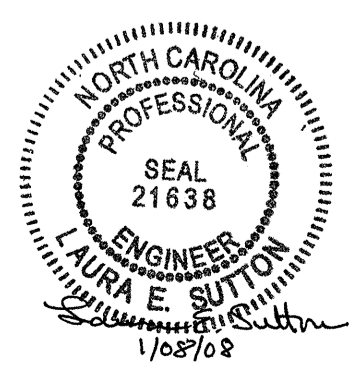


NOTES:
 STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLT ASSEMBLIES.
 THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.



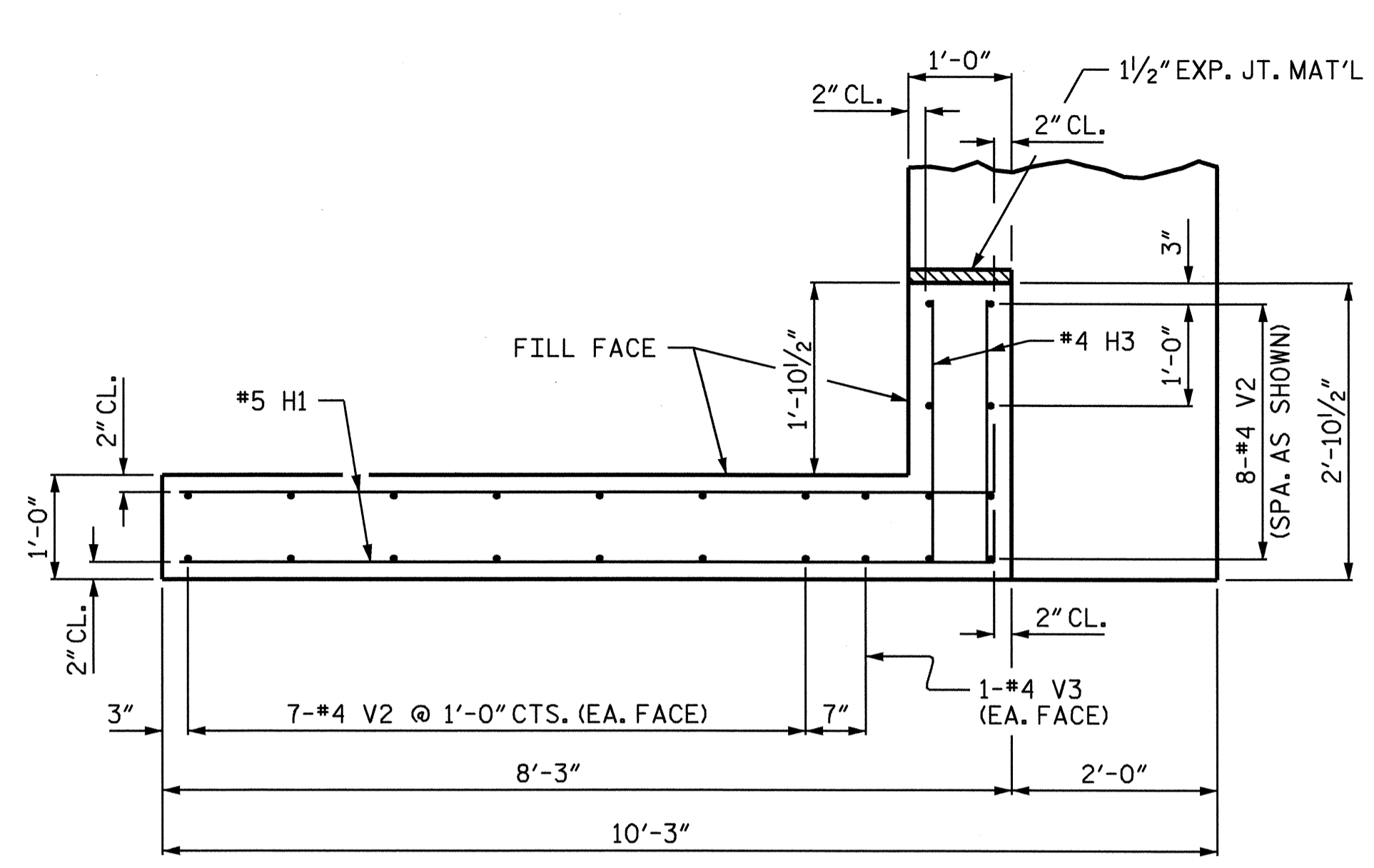
PROJECT NO. B-4131
 GUILFORD COUNTY
 STATION: 15+35.00 -L-

SHEET 1 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 INTEGRAL
 END BENT 2

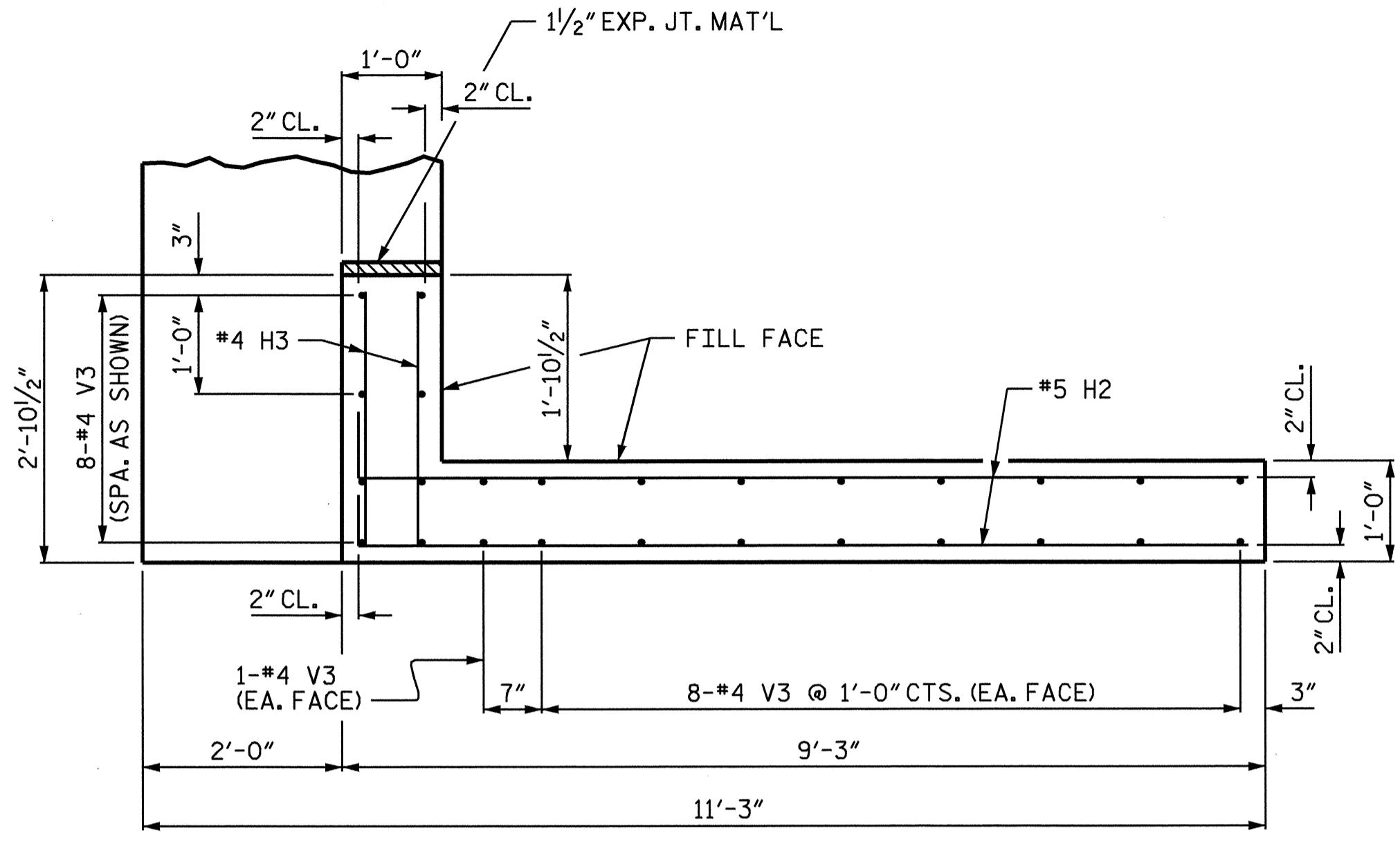


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-17
2			4			TOTAL SHEETS 22

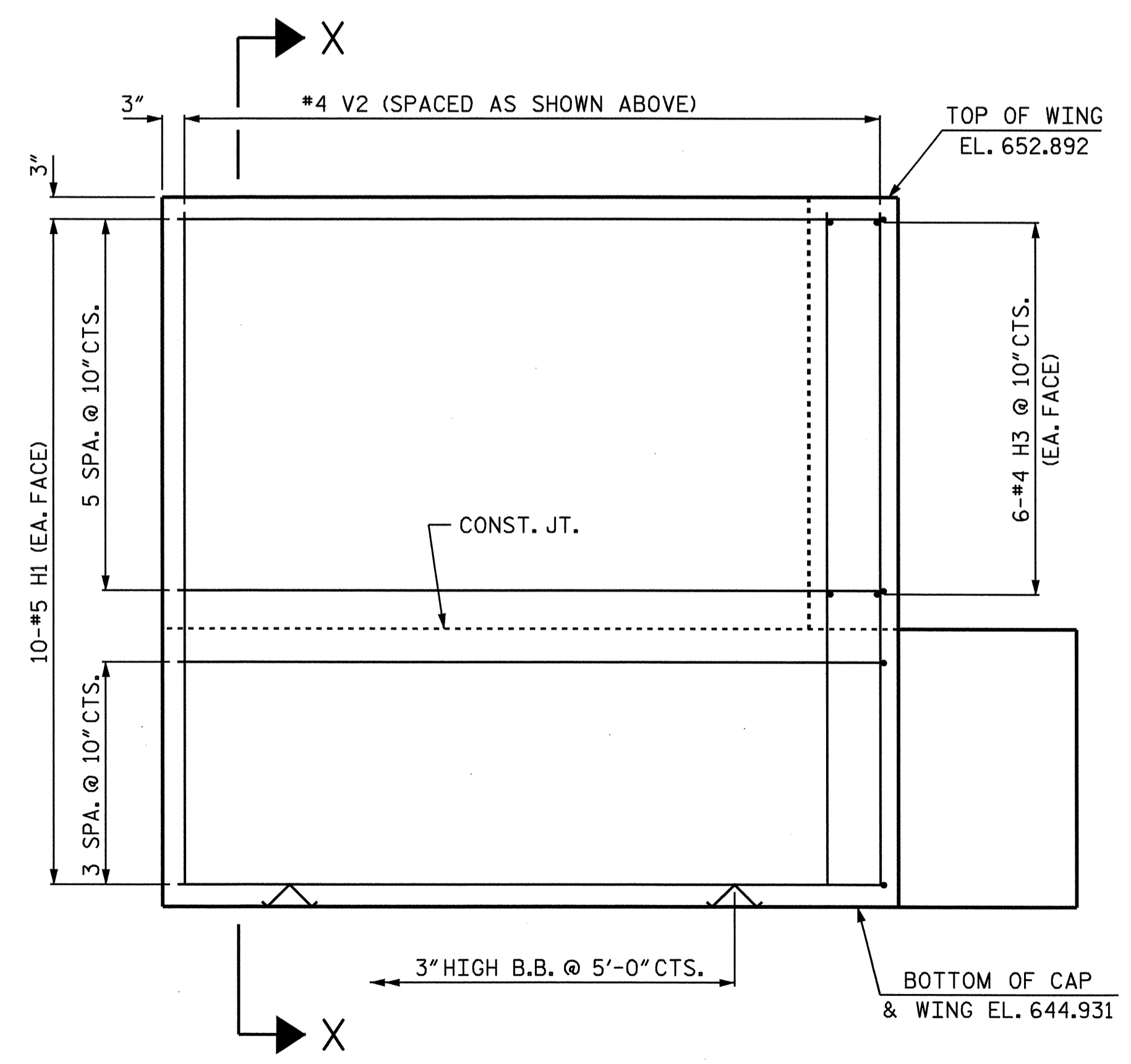
DRAWN BY: P.C. BREWER DATE: 10/3/06
 CHECKED BY: E.C. LOCKLEAR DATE: 10/6/06



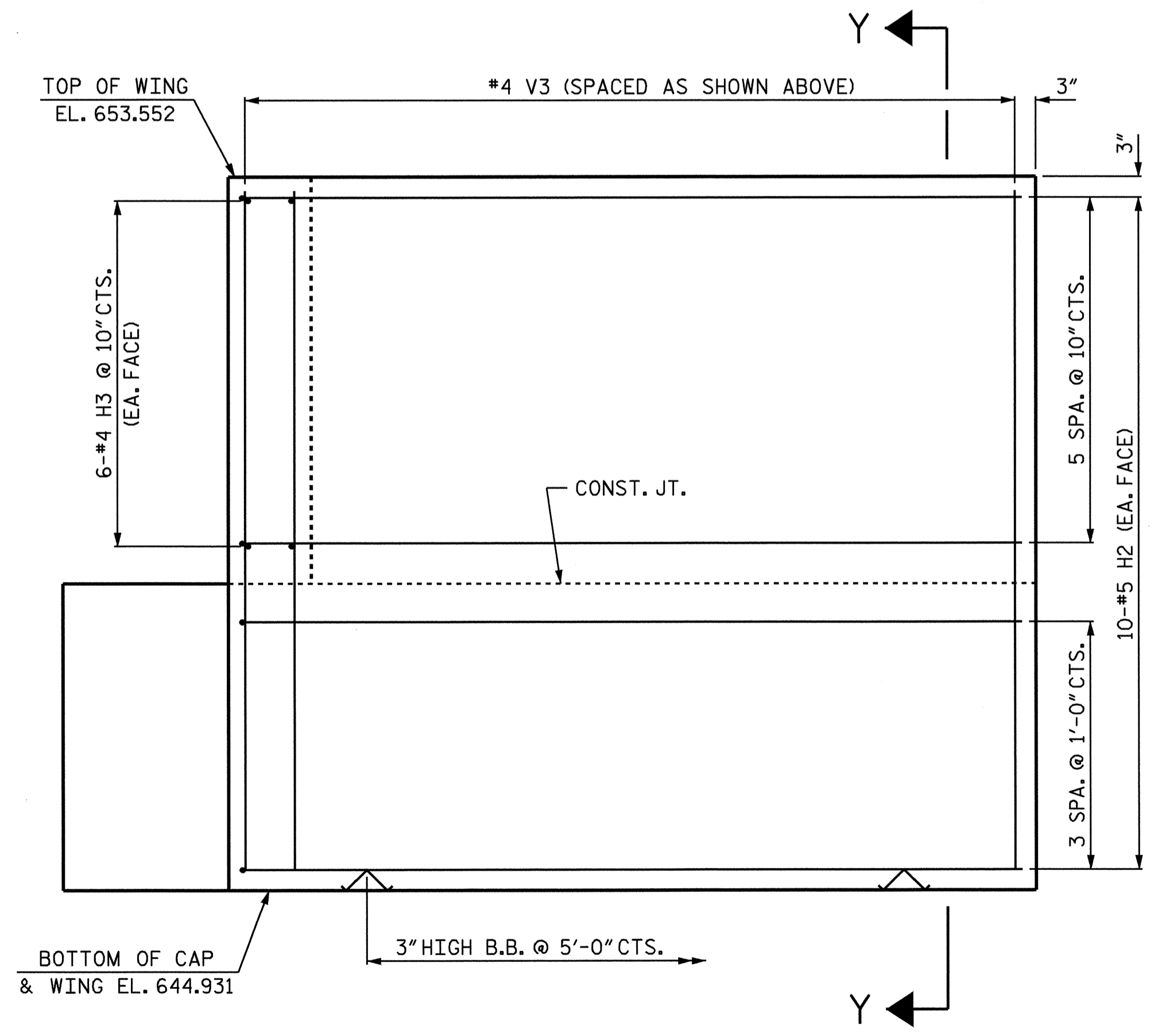
PLAN OF WING (W1)



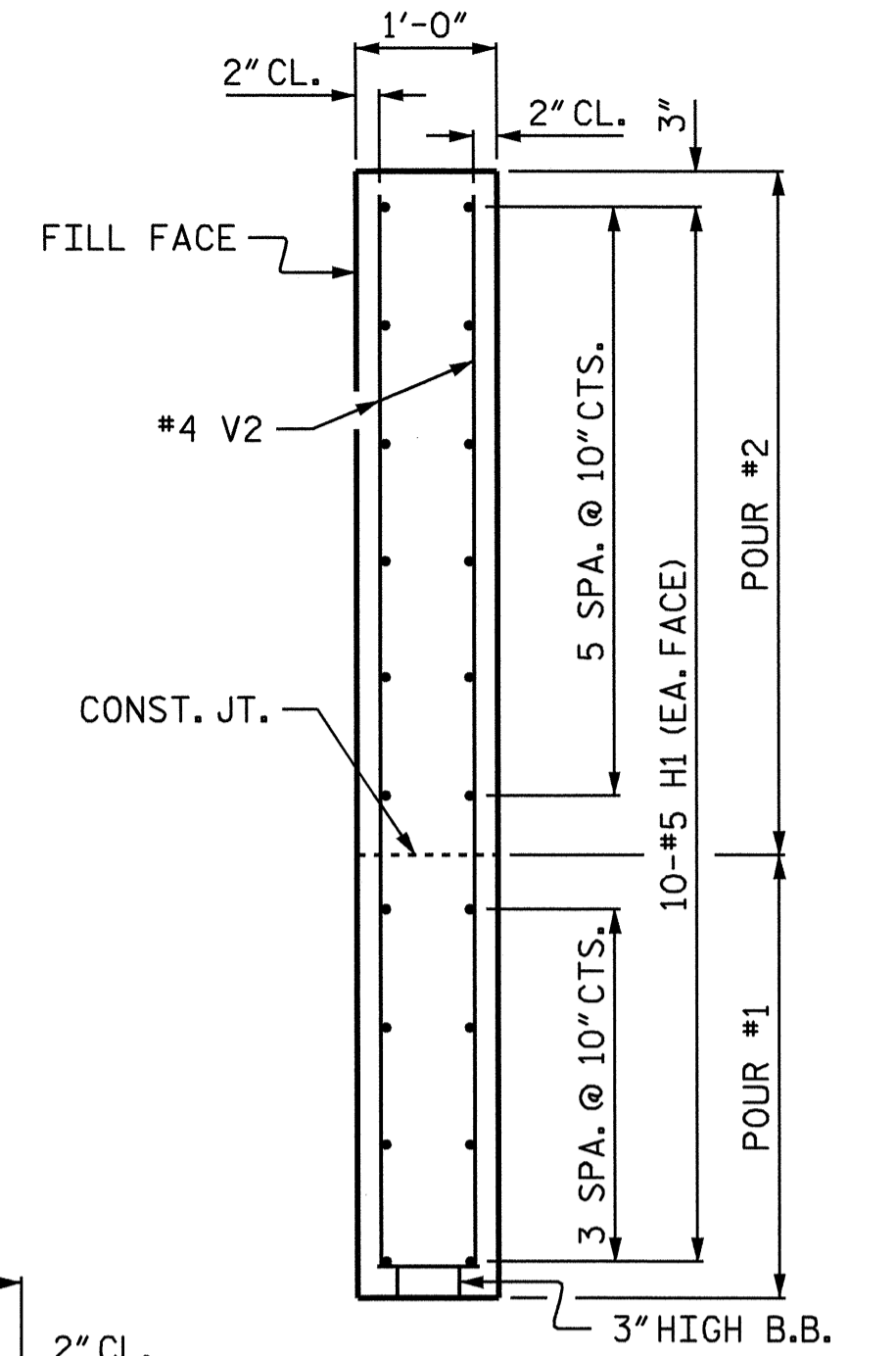
PLAN OF WING (W2)



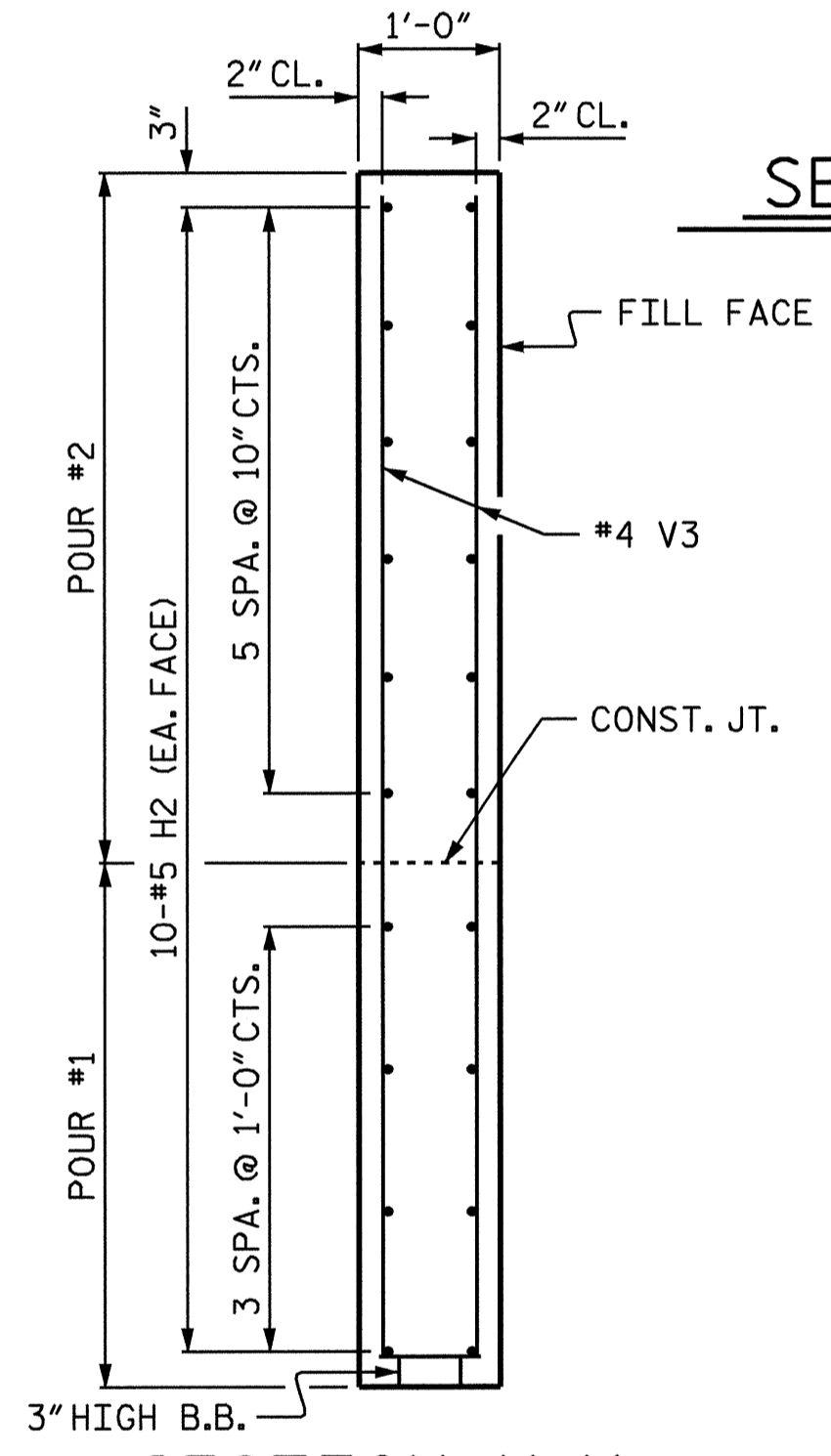
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION X-X



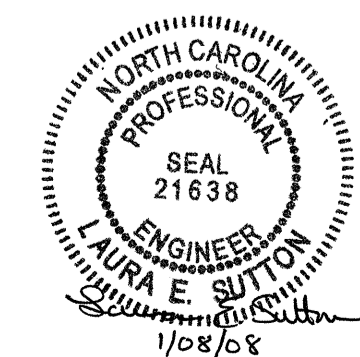
SECTION Y-Y

PROJECT NO. B-4131
GUILFORD COUNTY
 STATION: 15+35.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

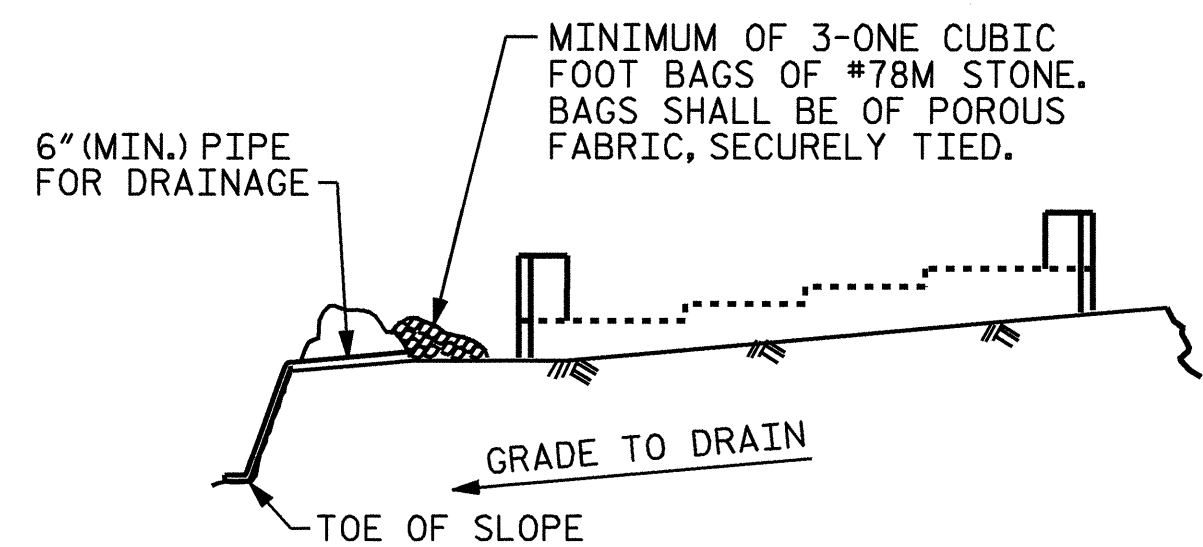
SUBSTRUCTURE
 INTEGRAL
 END BENT 2



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			22

DRAWN BY: P.C. BREWER DATE: 10/3/06
 CHECKED BY: E.C. LOCKLEAR DATE: 10/6/06

24-OCT-2007 10:53
 R:\Structures\pbrewer\Microstation\B4131.sd_EB_01.dgn
 LSUTTON

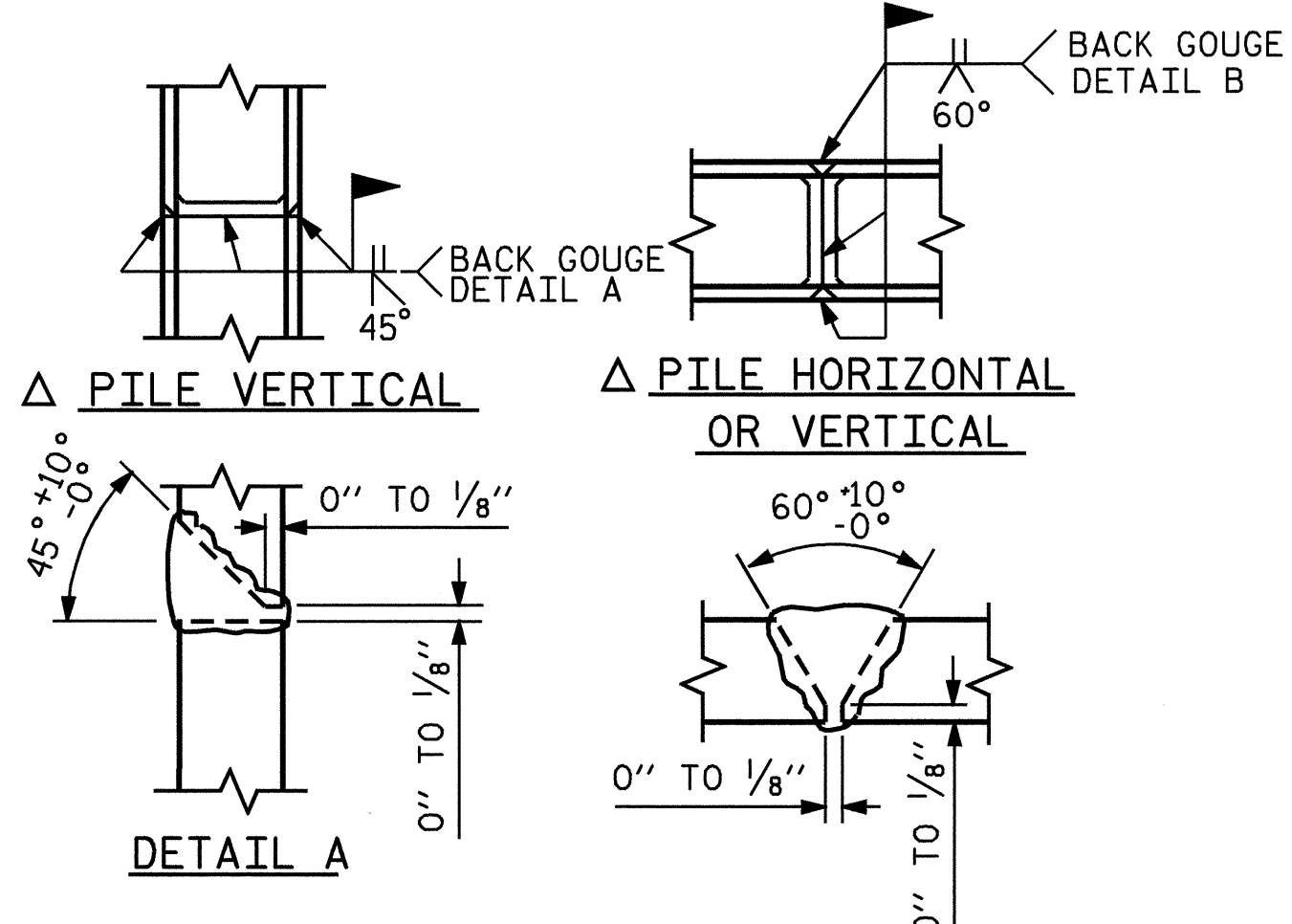


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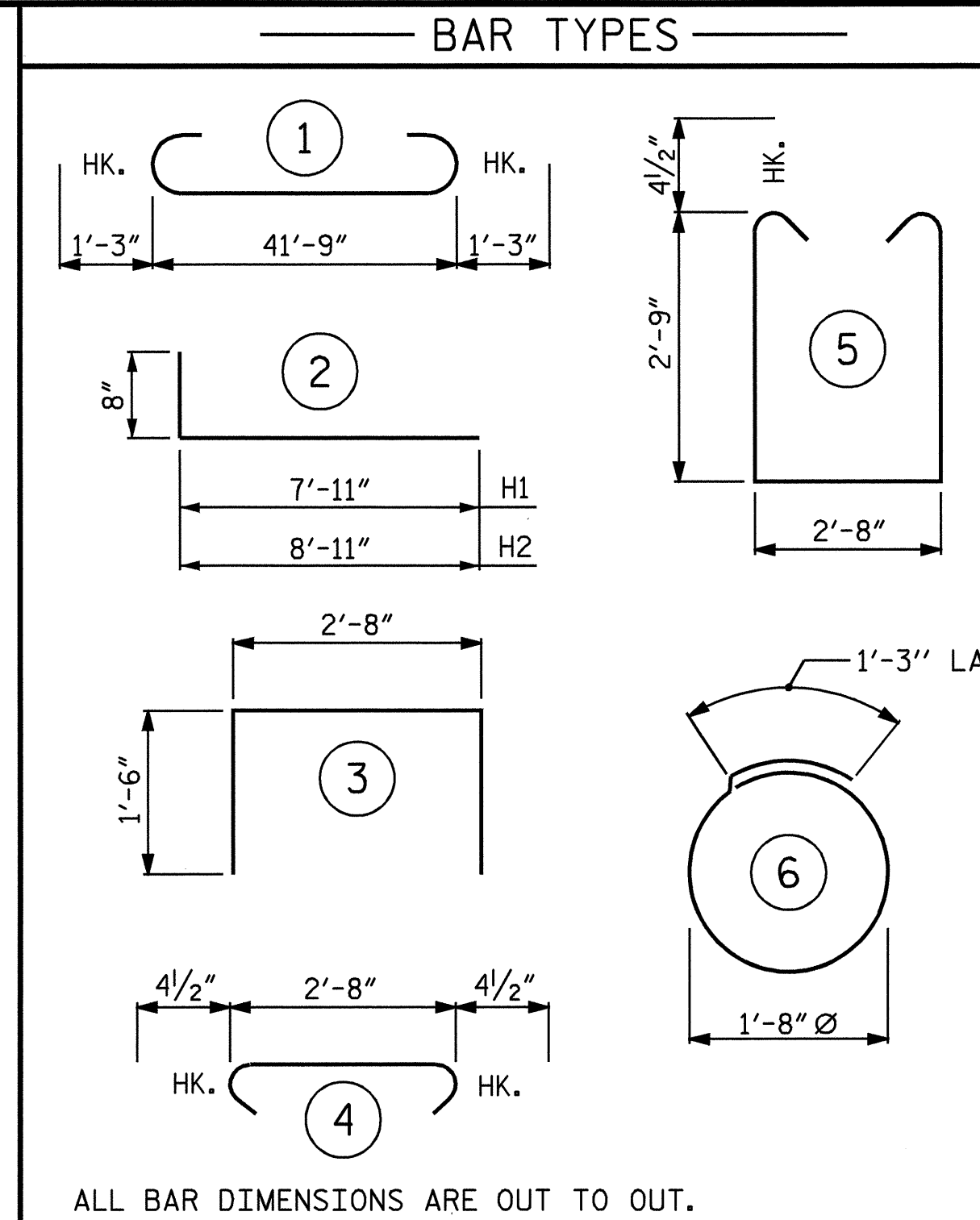
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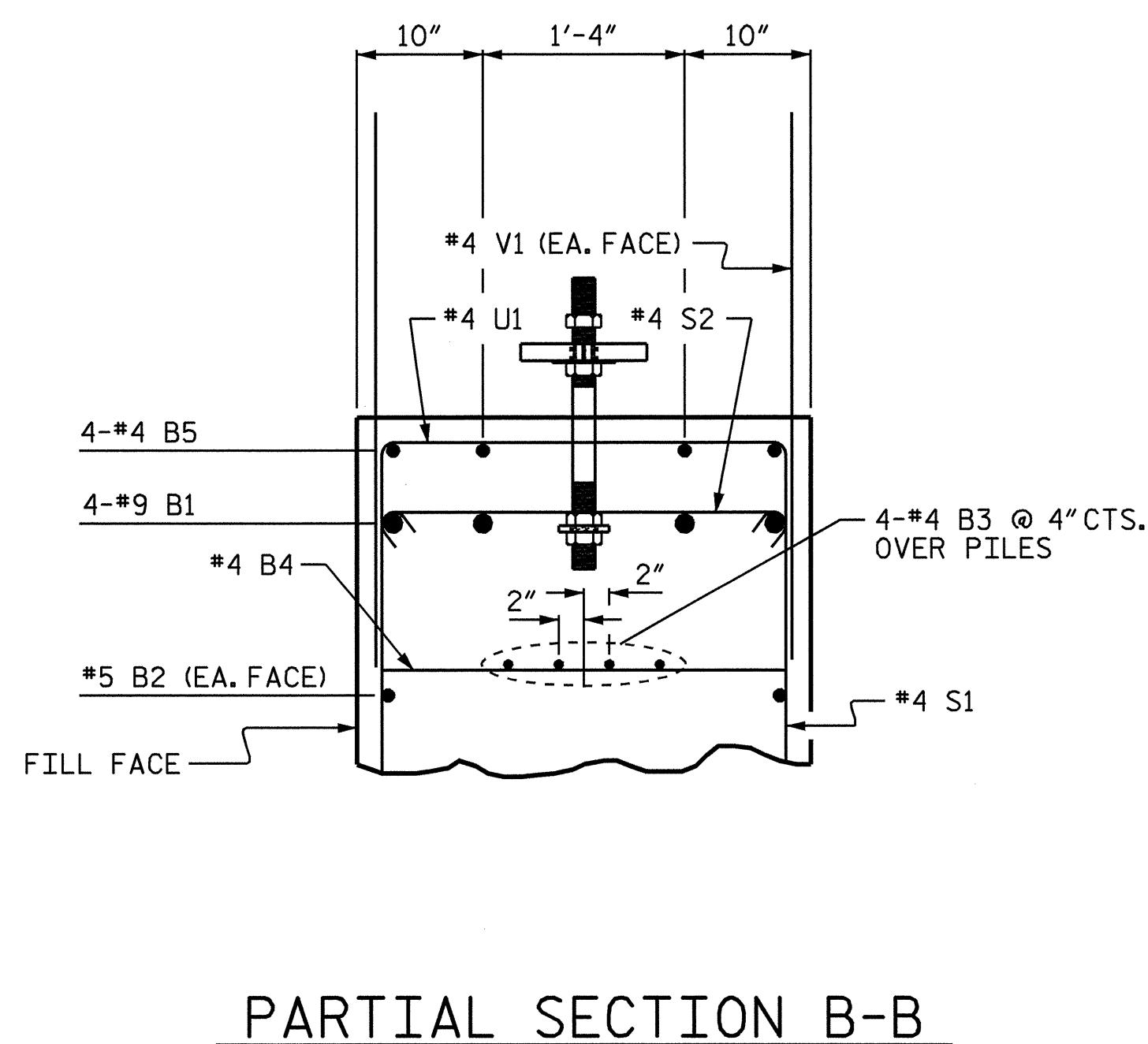
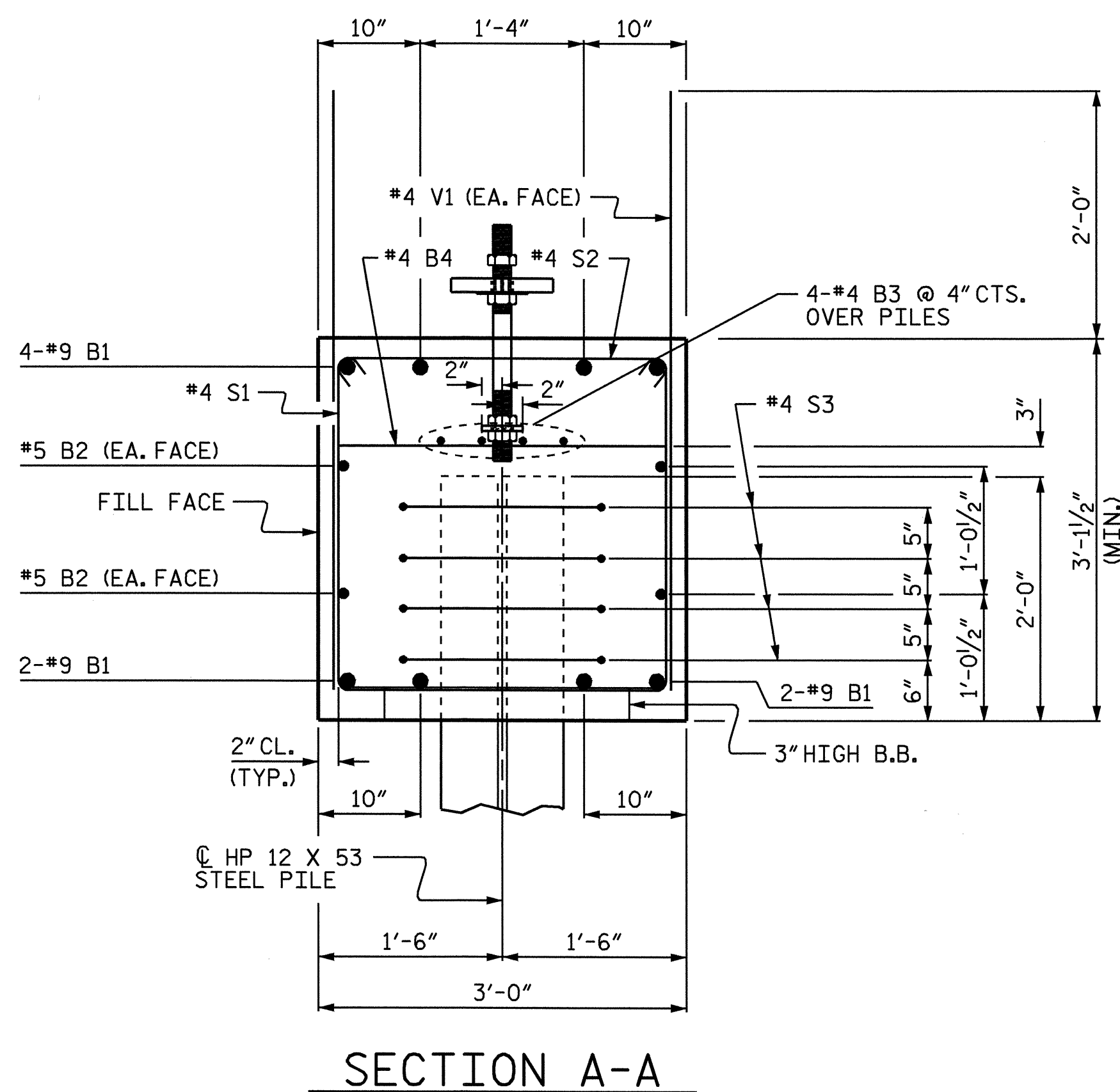
TEMPORARY DRAINAGE AT END BENT



Δ POSITION OF PILE DURING WELDING. PILE SPLICE DETAILS



BILL OF MATERIAL					
END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		44'-3"	1204
B2	4	#5	STR	41'-11"	175
B3	8	#4	STR	22'-2"	118
B4	11	#4	STR	2'-8"	20
B5	4	#4	STR	17'-1"	46
H1	20	#5	2	8'-7"	179
H2	20	#5	2	9'-7"	200
H3	24	#4	STR	2'-6"	40
S1	34	#4	5	8'-11"	203
S2	34	#4	4	3'-5"	78
S3	36	#4	6	6'-6"	156
U1	12	#4	3	5'-8"	45
V1	64	#4	STR	4'-11"	210
V2	24	#4	STR	7'-6"	120
V3	26	#4	STR	8'-2"	142
REINFORCING STEEL				LBS.	2,936
CLASS A CONCRETE BREAKDOWN :					
POUR #1 - CAP & LOWER WINGS				CU. YDS.	17.8
POUR #2 - UPPER WINGS				CU. YDS.	3.9
TOTAL				CU. YDS.	21.7
HP 12 x 53 STEEL PILES				LIN. FT.	135
NO. = 9					

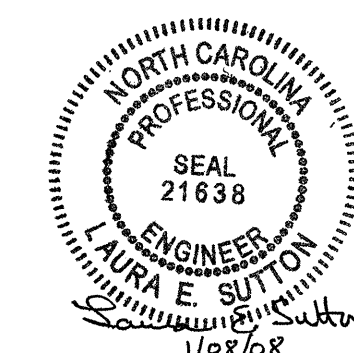


PROJECT NO. B-4131
GUILFORD COUNTY
 STATION: 15+35.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

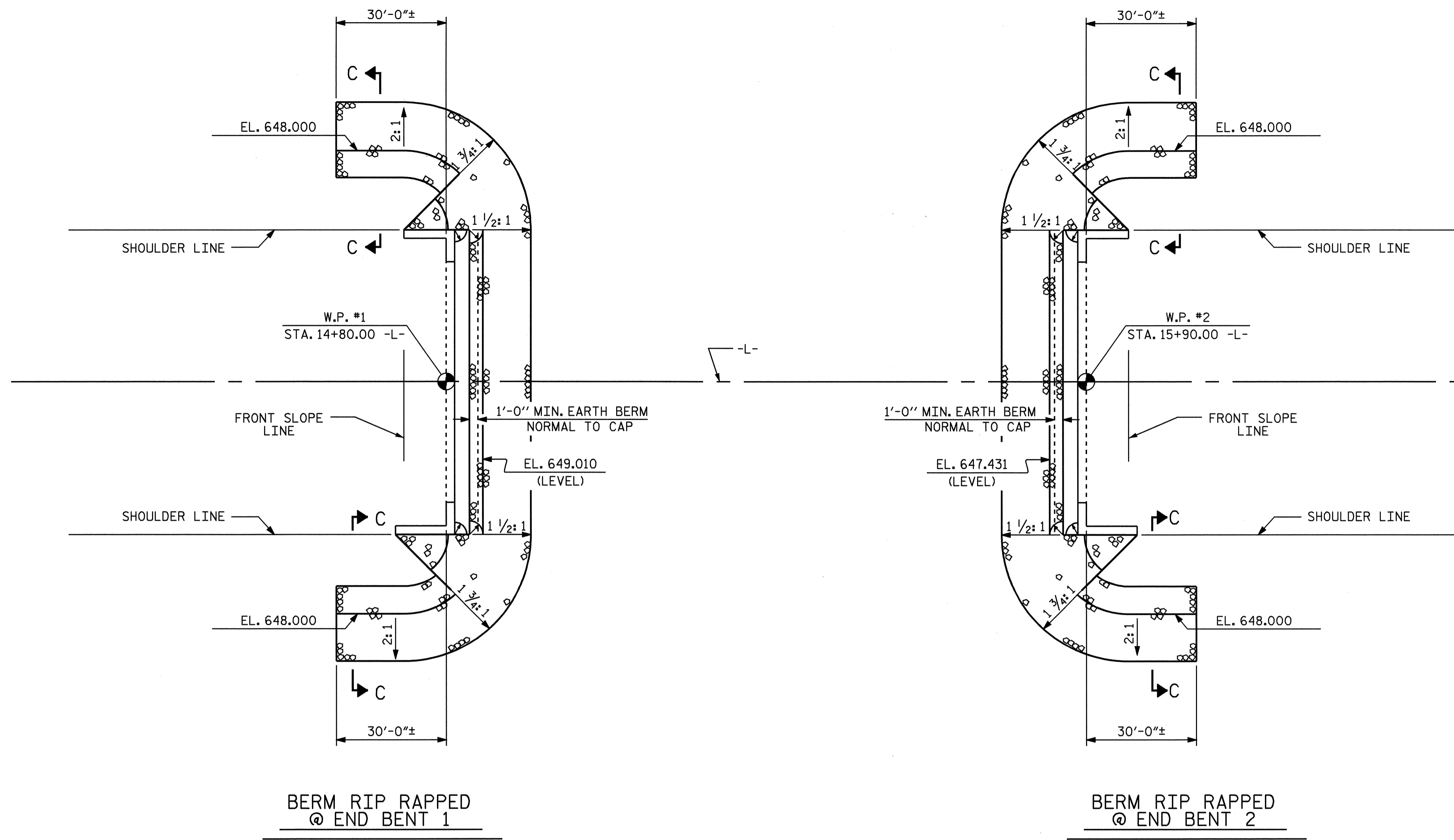
SUBSTRUCTURE
 INTEGRAL
 END BENT 2



REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-19
2			4			TOTAL SHEETS 22

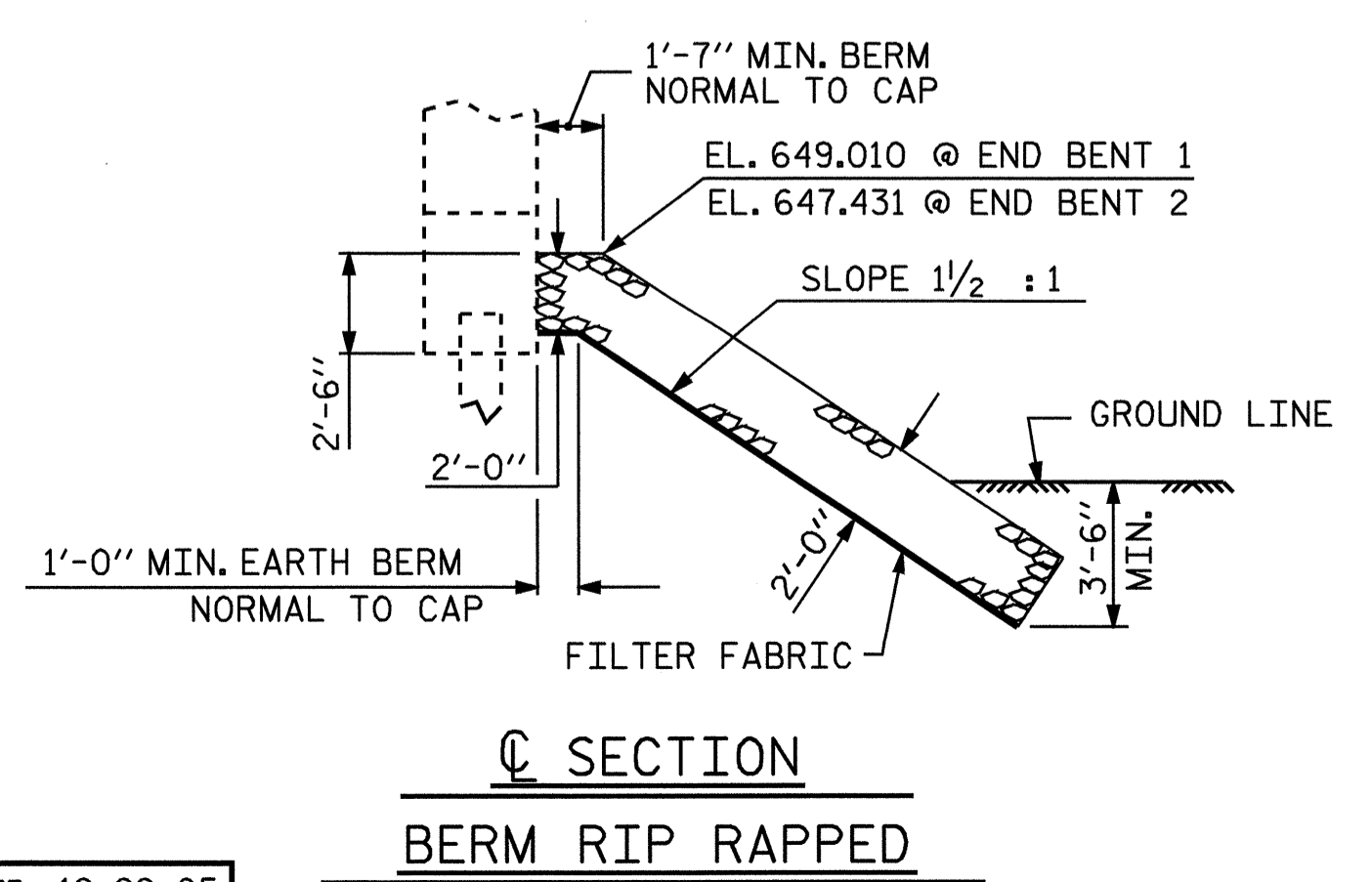
DRAWN BY : P.C. BREWER DATE : 10/3/06
 CHECKED BY : E.C. LOCKLEAR DATE : 10/6/06



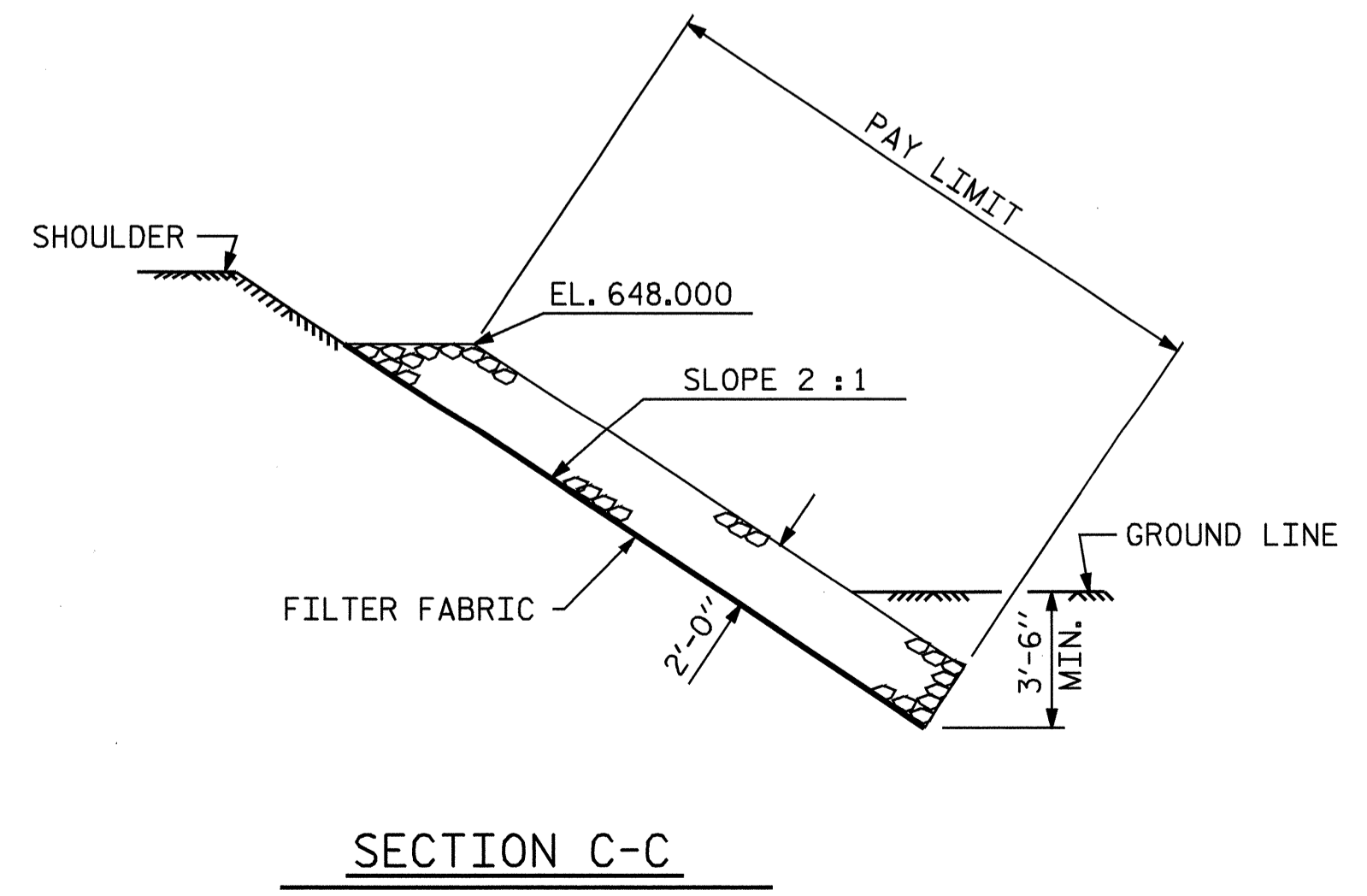
ESTIMATED QUANTITIES		
BRIDGE @ STA. 15+35.00 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	145	161
END BENT 2	252	280

BERM RIP RAPPED @ END BENT 1

BERM RIP RAPPED @ END BENT 2



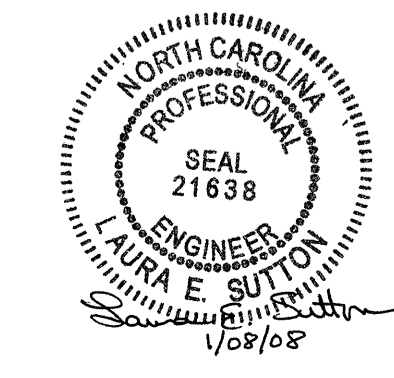
SECTION C SECTION
BERM RIP RAPPED



SECTION C-C

PROJECT NO. B-4131
GUILFORD COUNTY
 STATION: 15+35.00 -L-

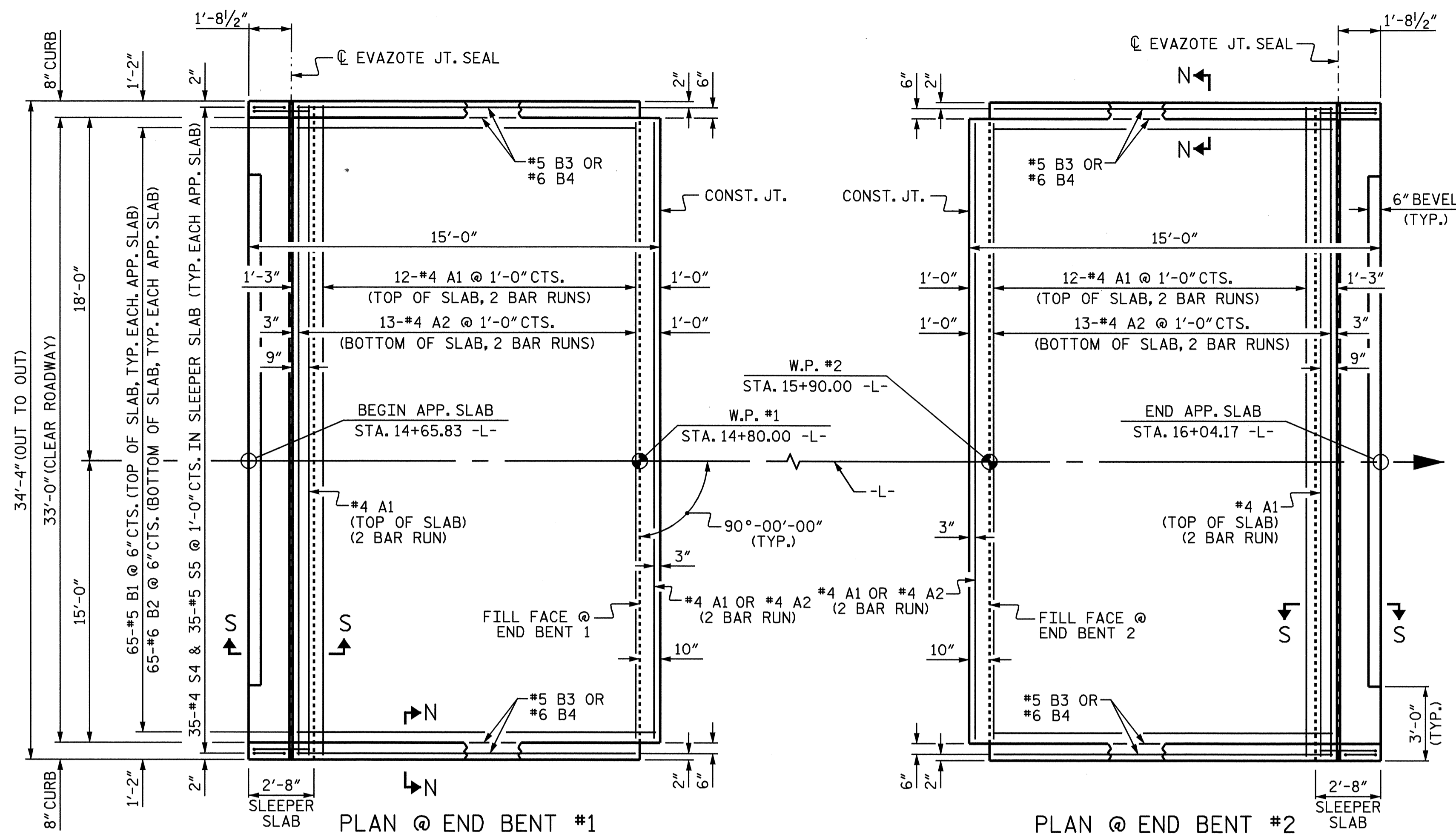
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 RIP RAP DETAILS



ASSEMBLED BY : E.C. LOCKLEAR DATE : 12-29-05
 CHECKED BY : A.S. CALLAWAY DATE : 1-11-06
 DRAWN BY : FCJ 2/88 REV. 8/16/99 RWW/LES
 CHECKED BY : ARB 8/88 REV. 10/17/00 RWW/LES
 REV. 5/1/06 TLA/GM

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

TOTAL SHEETS: 22



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 THE APPROACH SLAB.

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

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

THE 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.

GROOVING BRIDGE FLOORS IS NOT REQUIRED ON TOP SURFACE OF THE SLEEPER SLAB. INSTEAD, APPLY A BROOMED TEXTURE IN ACCORDANCE WITH ARTICLE 442-3 OF THE STANDARD SPECIFICATIONS.

WITH EVAZOTE JOINT SEAL

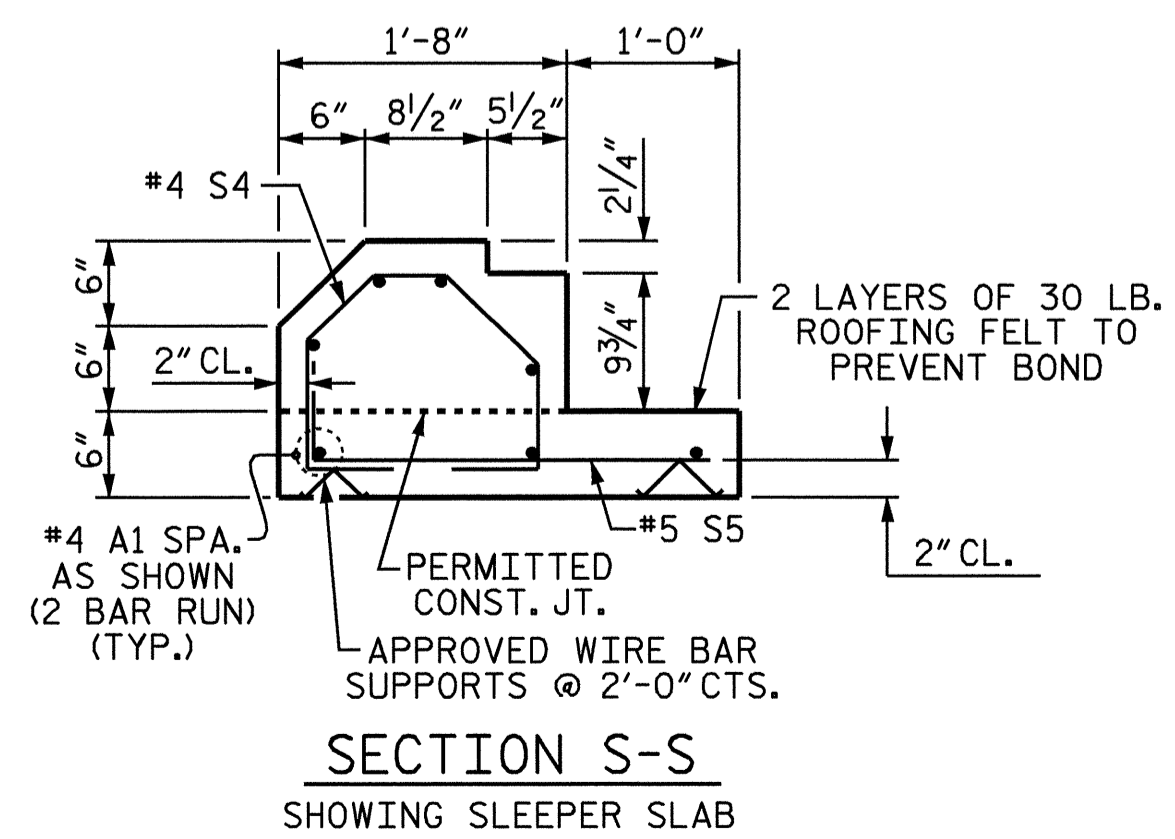
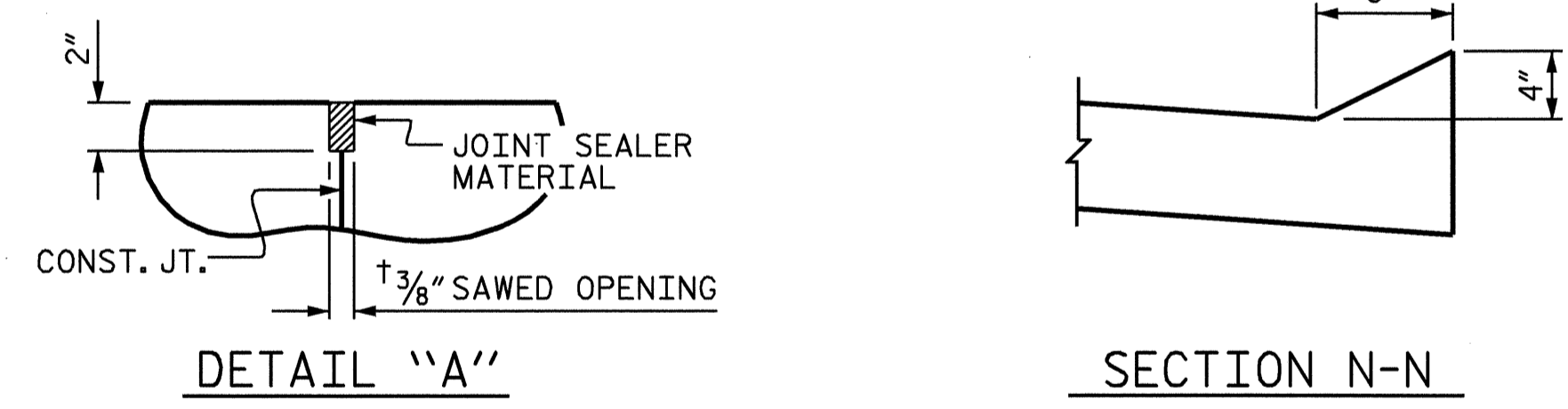
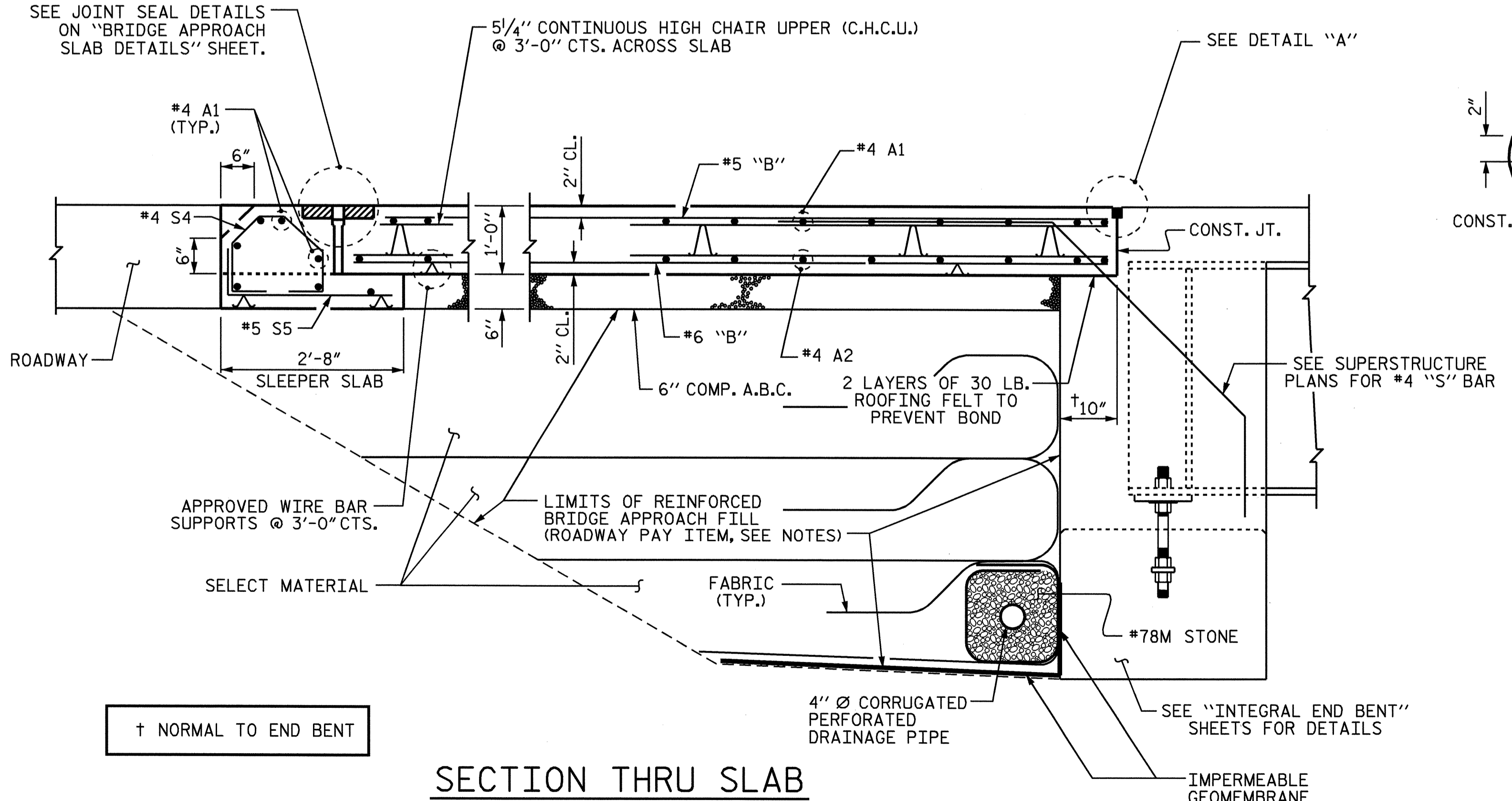
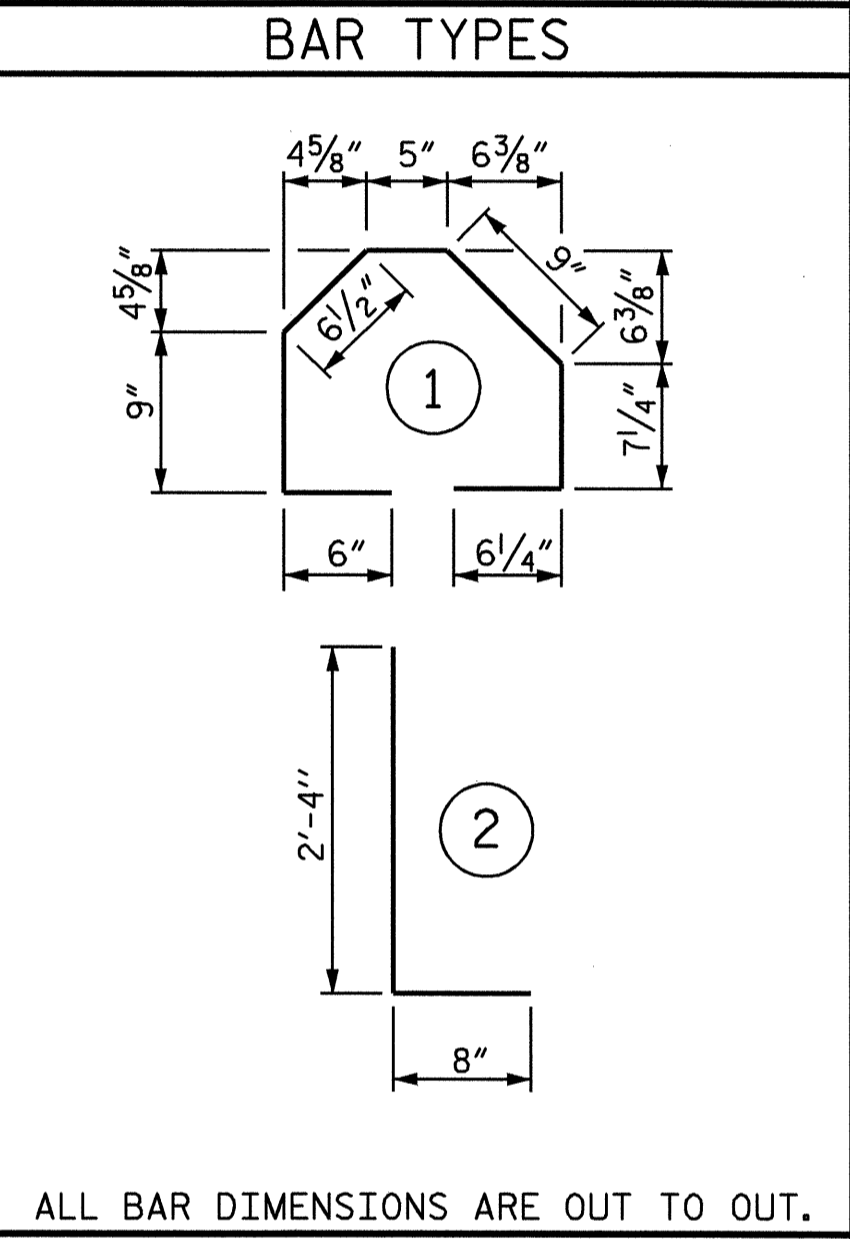
FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

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 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	42	#4	STR	18'-0"	505
A2	28	#4	STR	17'-11"	335
* B1	65	#5	STR	12'-4"	836
B2	65	#6	STR	12'-10"	1253
* B3	4	#5	STR	11'-6"	48
B4	4	#6	STR	12'-0"	72
* S4	35	#4	1	4'-1"	95
S5	35	#5	2	3'-0"	110
REINFORCING STEEL				LBS.	1,770
* EPOXY COATED REINFORCING STEEL				LBS.	1,484
CLASS AA CONCRETE					
POUR #1 - SLEEPER SLAB				CU. YDS.	3.6
POUR #2 - SLAB & CURB				CU. YDS.	16.8
TOTAL				CU. YDS.	20.4

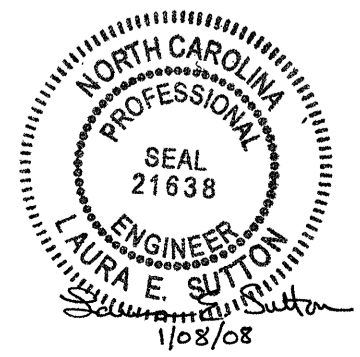


PROJECT NO. B-4131
GUILFORD COUNTY
 STATION: 15+35.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

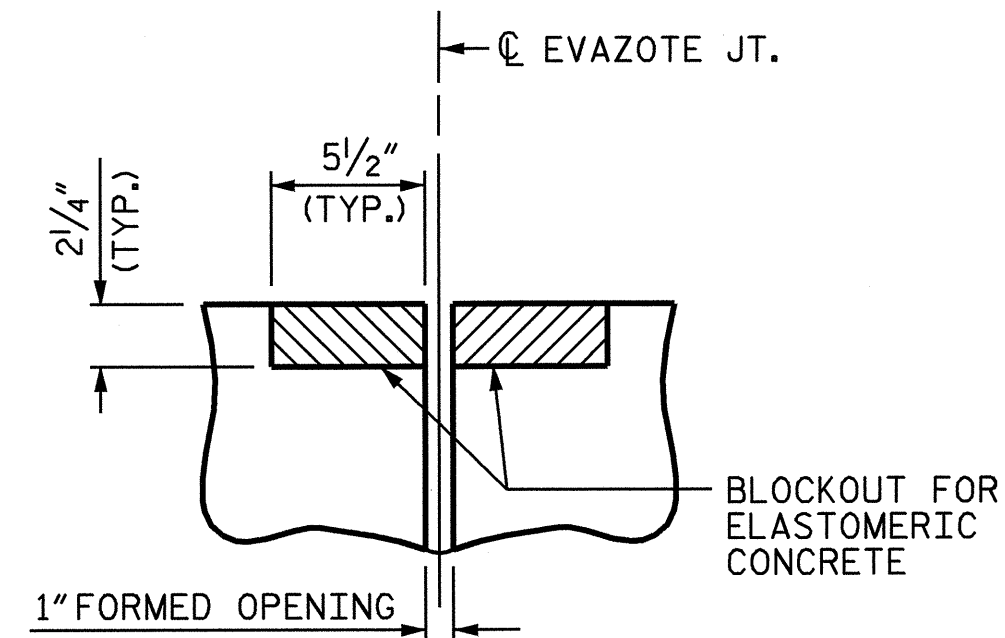
**STANDARD
 BRIDGE APPROACH SLAB
 FOR
 INTEGRAL ABUTMENT**



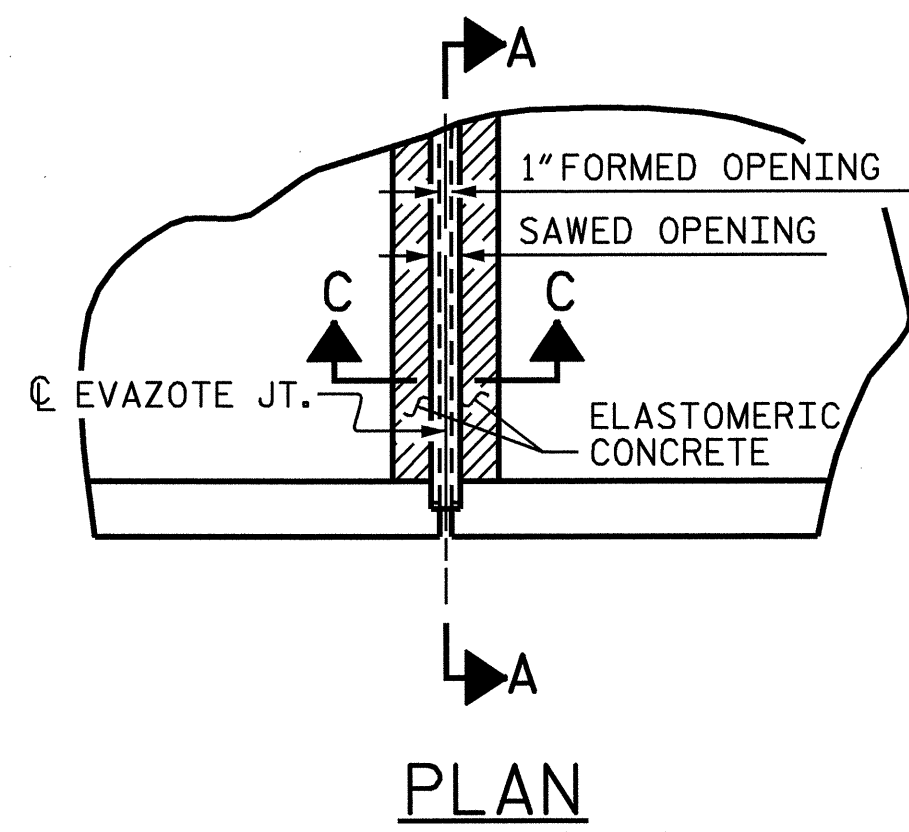
ASSEMBLED BY: E.C. LOCKLEAR DATE: 4-26-07
 CHECKED BY: L.E. SUTTON DATE: 6-13-07
 DRAWN BY: TLA 10/05
 CHECKED BY: GM 5/06

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

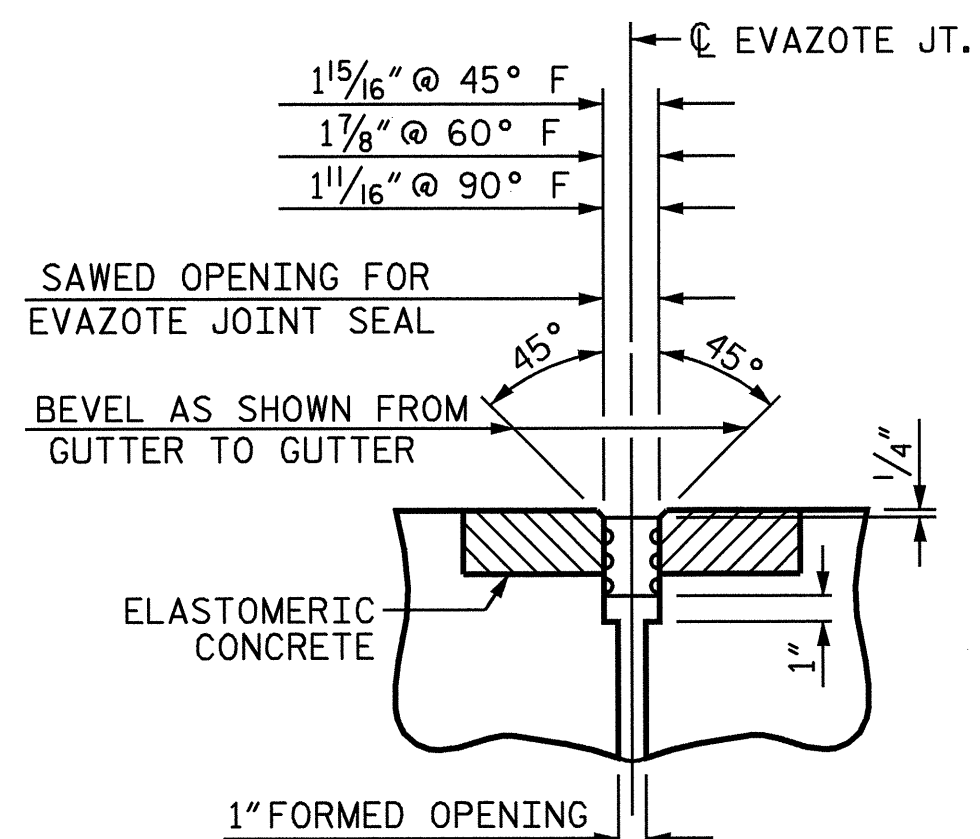
S-21
 TOTAL SHEETS 22



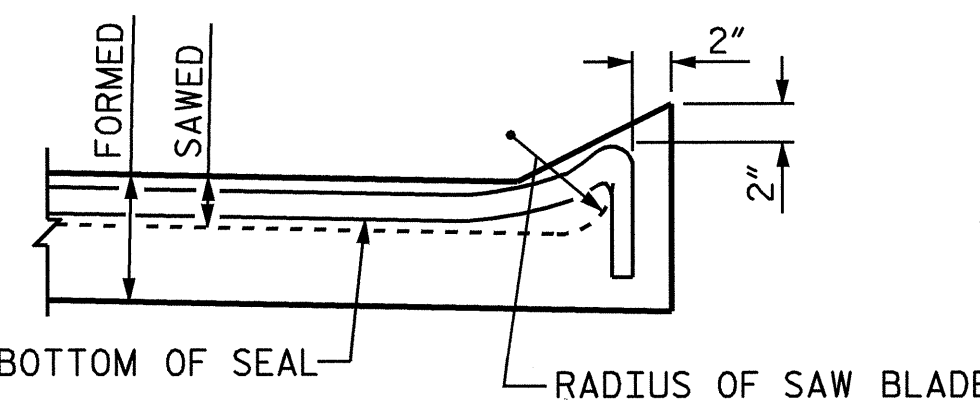
SECTION C-C
EVAZOTE JOINT SEAL
(PRE-SAWED ELASTOMERIC
CONCRETE DIMENSIONS)



PLAN



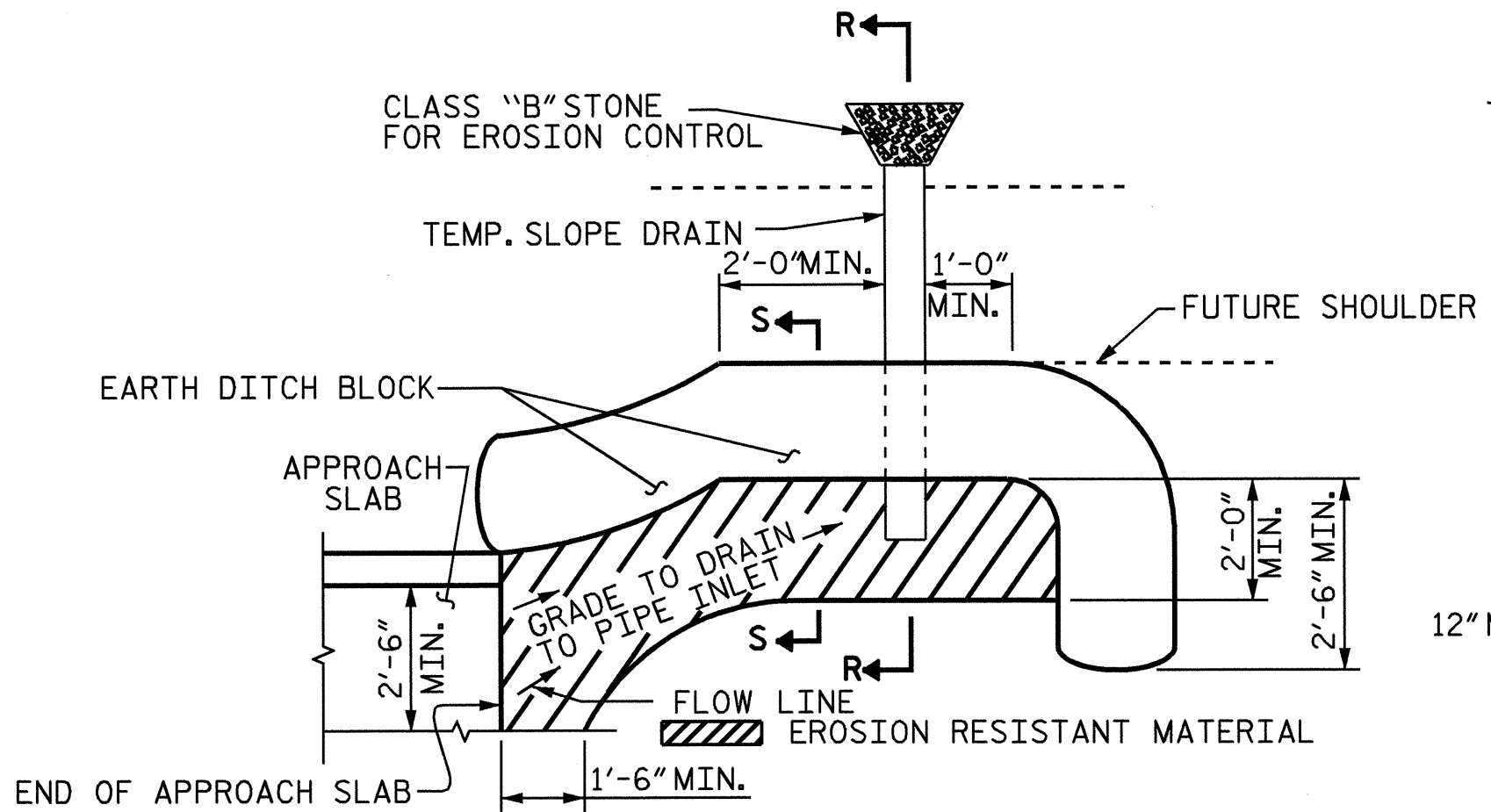
SECTION C-C
EVAZOTE JOINT SEAL



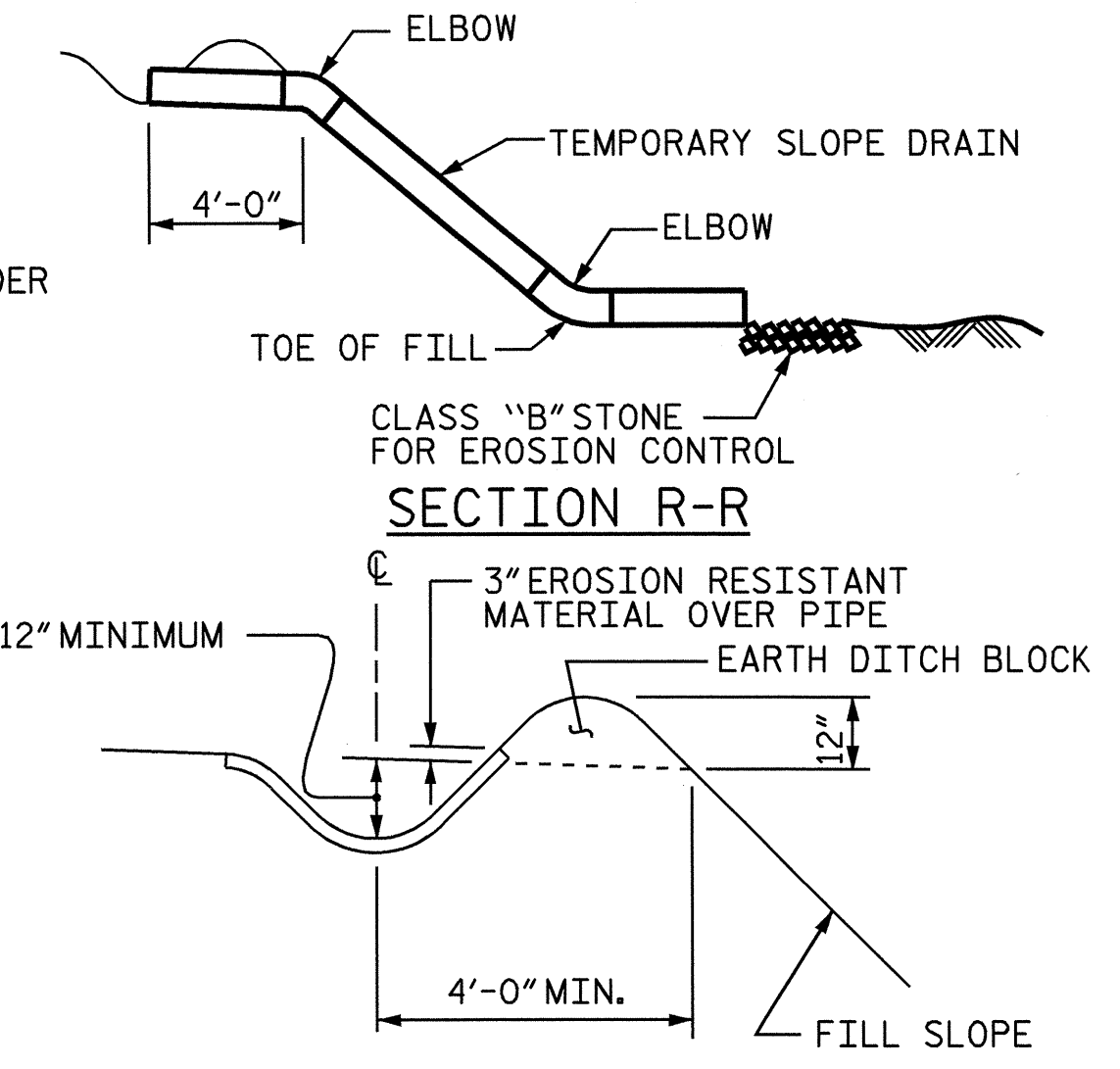
SECTION A-A

ELASTOMERIC CONCRETE	
END BENT	ELASTOMERIC CONCRETE * (CU. FT.)
1	5.7
2	5.7
TOTAL	11.4

* BASED ON THE MINIMUM BLOCKOUT SHOWN.



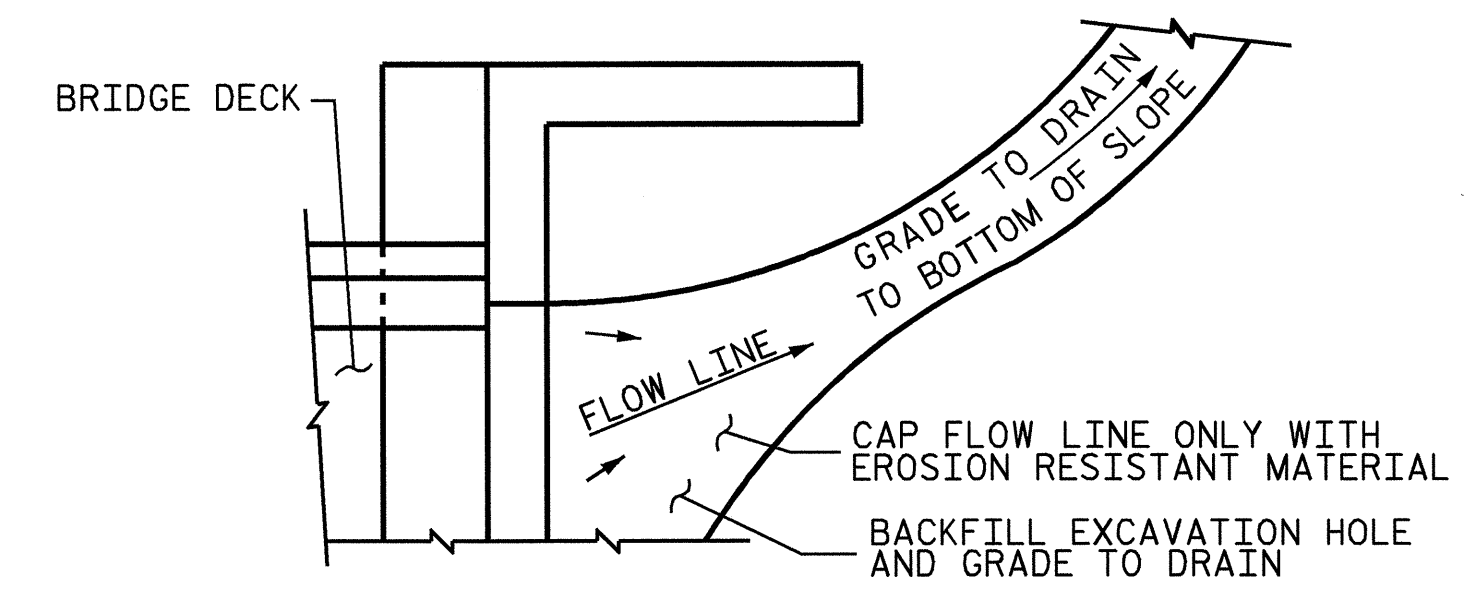
PLAN VIEW



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



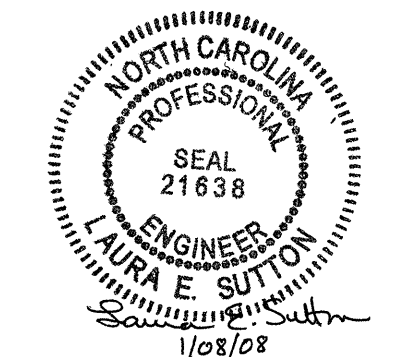
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

PROJECT NO. B-4131
GUILFORD COUNTY
STATION: 15+35.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BRIDGE APPROACH
SLAB DETAILS



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

ASSEMBLED BY: E.C. LOCKLEAR DATE: 4-26-07
CHECKED BY: L.E. SUTTON DATE: 6-13-07
DRAWN BY: FCJ 11/88 REV. 10/17/00 RWW/LES
CHECKED BY: ARB 11/88 REV. 5/1/03 RWW/JTE
REV. 5/1/06R MAA/KMM

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

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

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

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN