

TIP PROJECT: B-4622

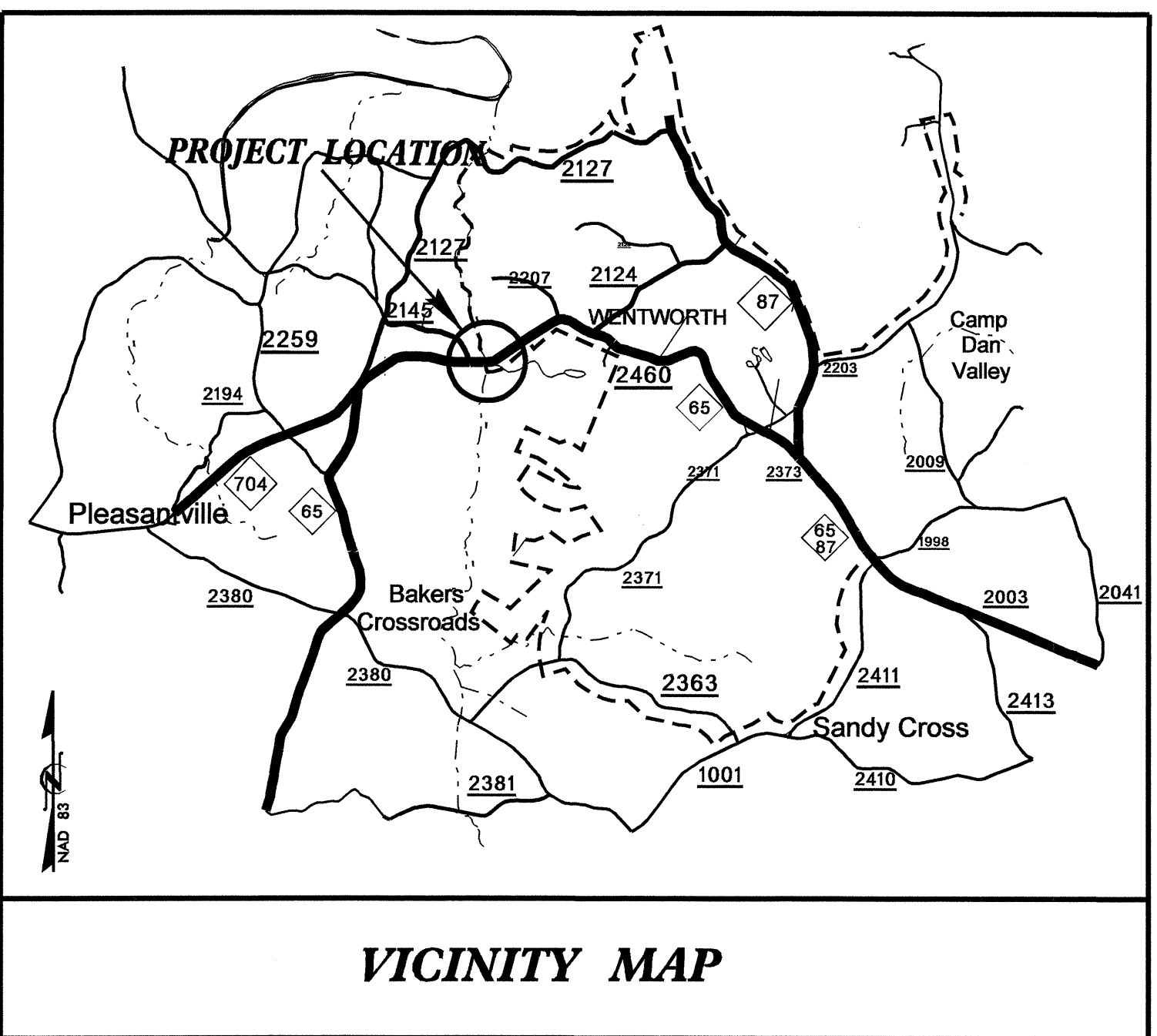
CONTRACT: C202263

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROCKINGHAM COUNTY

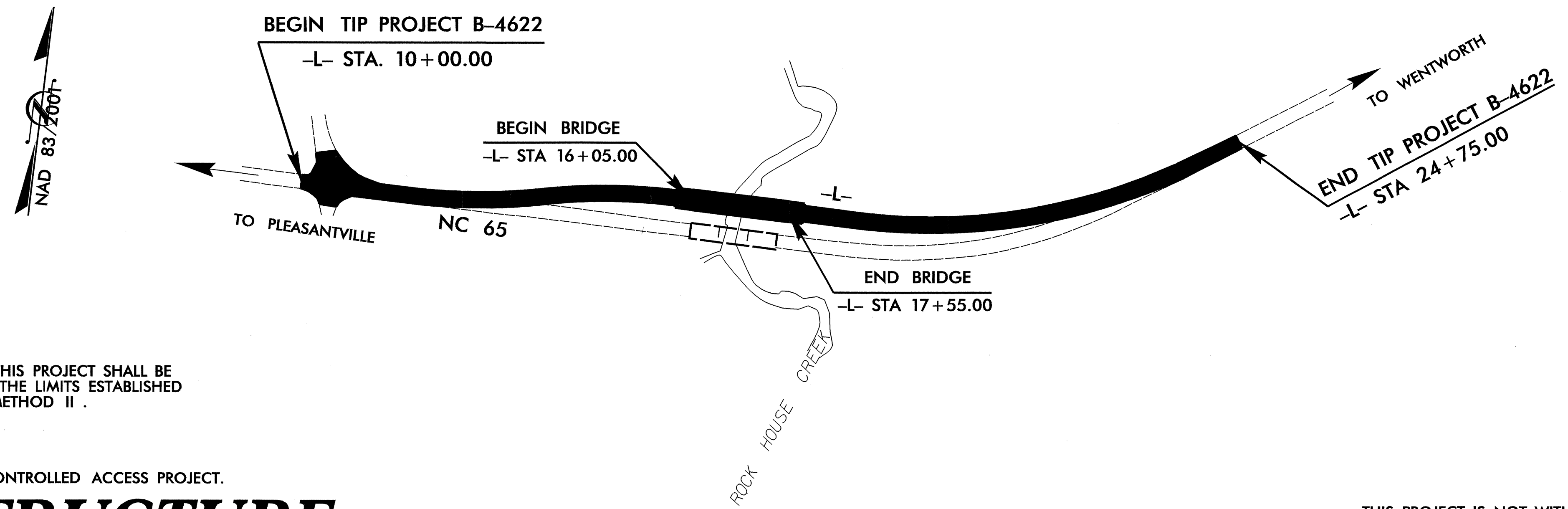
**LOCATION: REPLACEMENT OF BRIDGE NO. 54 ON NC 65
OVER ROCK HOUSE CREEK**

**TYPE OF WORK: RESURFACING, PAVING, GRADING,
GUARDRAIL, AND STRUCTURE**



VICINITY MAP

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4622		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33801.1.1	BRSTP-65 (65)	P.E.	
33801.2.1	BRSTP-65 (4)	RW & UTIL	
33801.3.STI	STM-0065 (7)	CONST.	

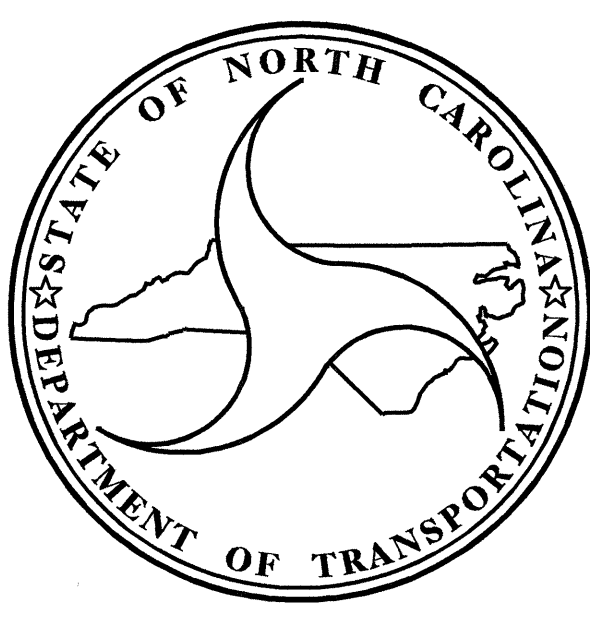


CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II .

THIS IS NOT A CONTROLLED ACCESS PROJECT.

STRUCTURE

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.



DESIGN DATA

ADT 2007 =	6800
ADT 2030 =	14000
DHV =	13 %
D =	60 %
T =	3 % *
V =	50 MPH
* TTST 1	DUAL 2

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4622 =	0.251 MILE
LENGTH STRUCTURE TIP PROJECT B-4622 =	0.028 MILE
TOTAL LENGTH TIP PROJECT B-4622 =	0.279 MILE

Prepared In the Office of:
DIVISION OF HIGHWAYS

2006 STANDARD SPECIFICATIONS
<p>LETTING DATE: DECEMBER 15, 2009</p>

ROY M. GIROLAMI, P.E.
PROJECT ENGINEER

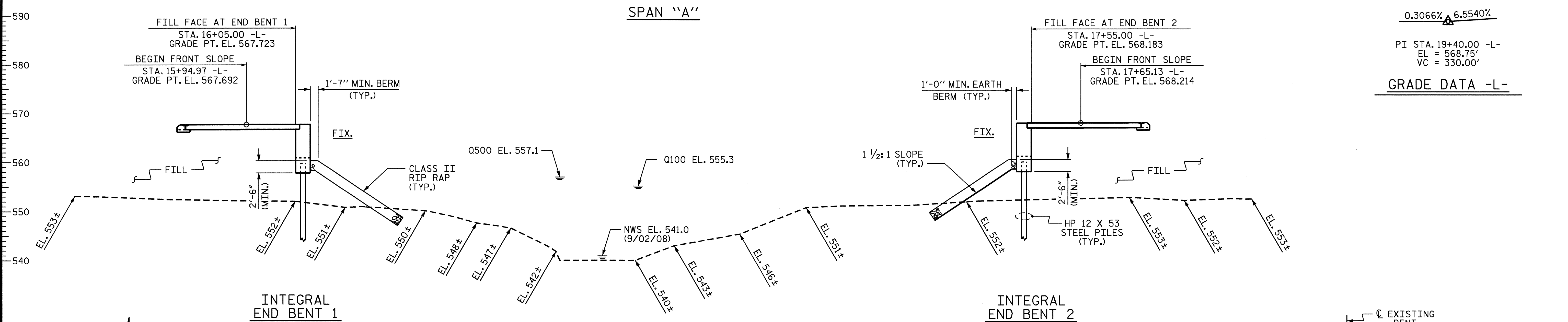
LAURA E. SUTTON, P.E.
PROJECT DESIGN ENGINEER

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

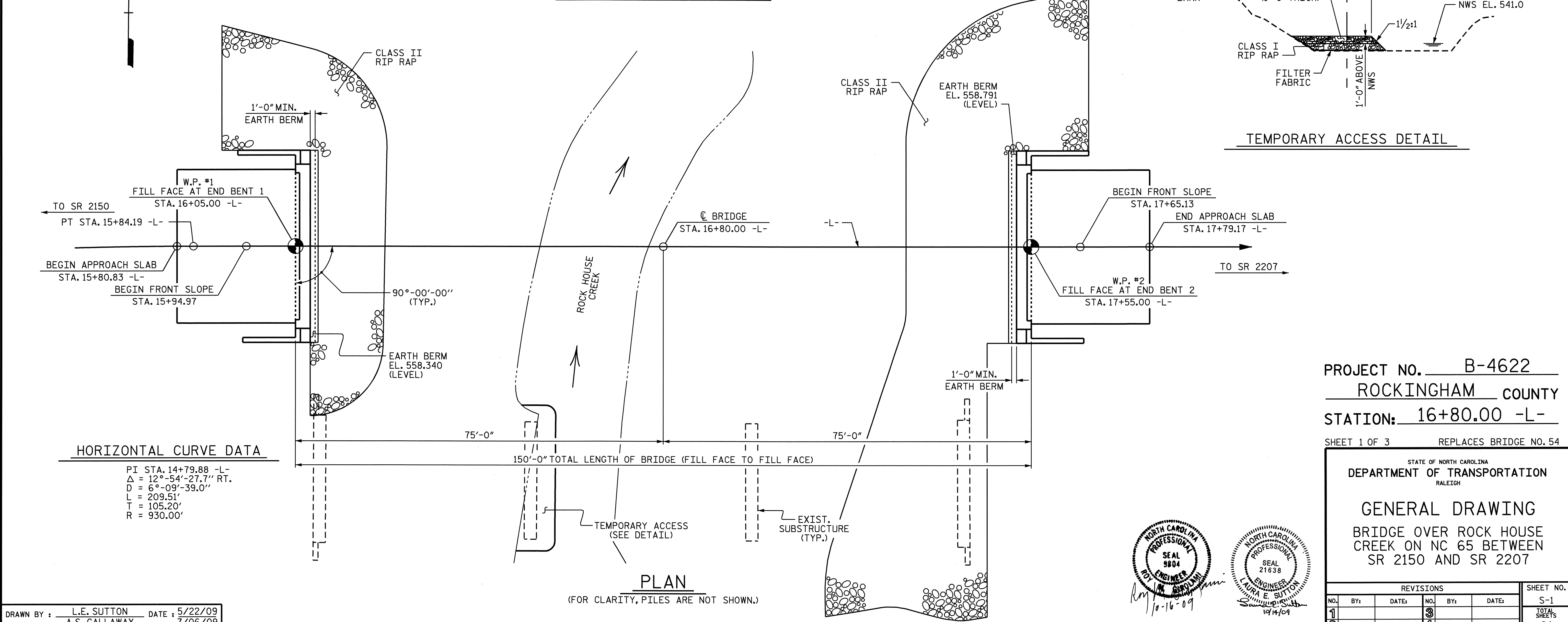
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

15+60 15+80 16+00 16+20 16+40 16+60 16+80 17+00 17+20 17+40 17+60 17+80 18+00



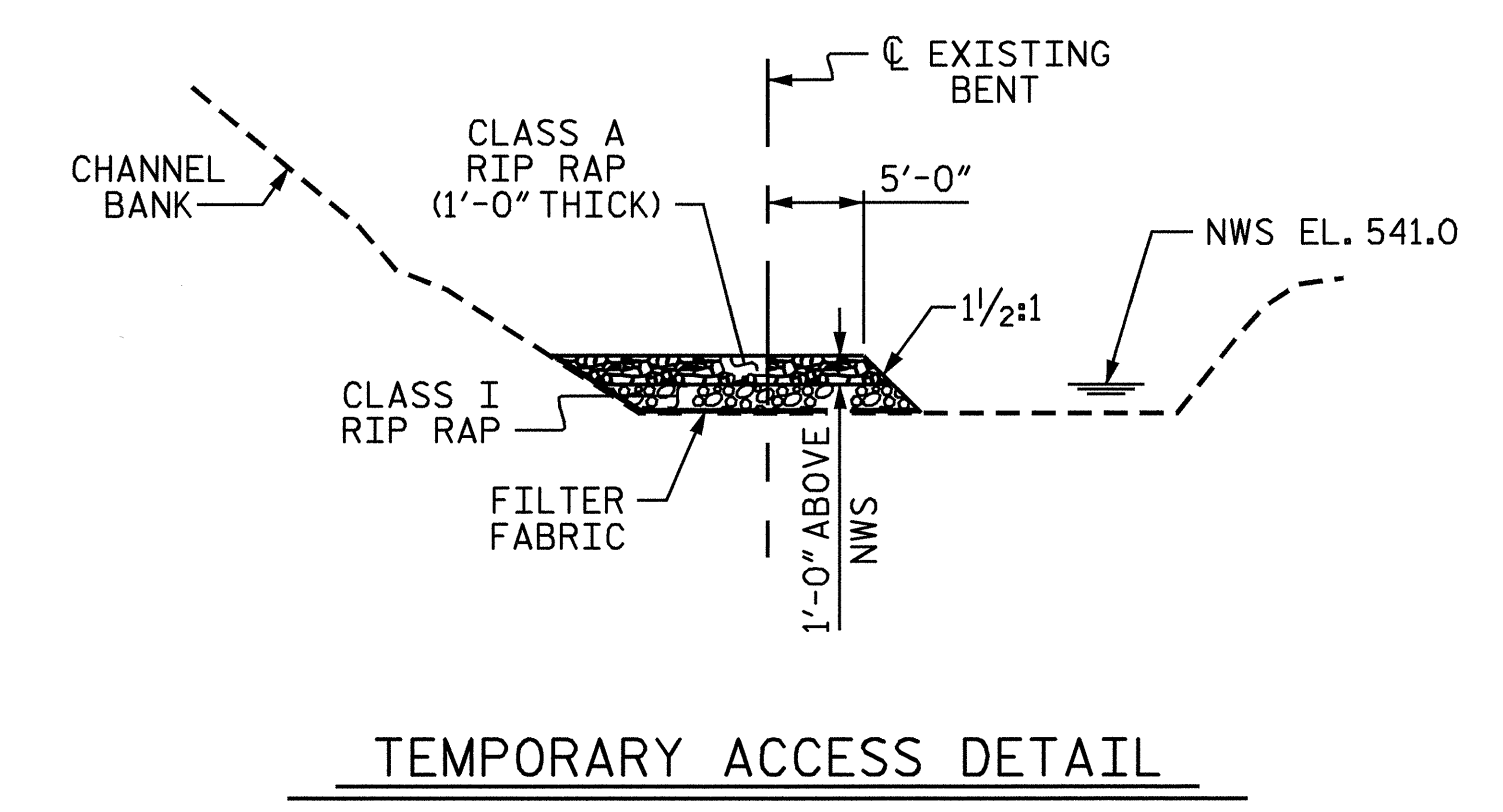
SECTION ALONG -L-



PLAN
(FOR CLARITY, PILES ARE NOT SHOWN.)

HORIZONTAL CURVE DATA

PI STA. 14+79.88 -L-
 $\Delta = 12^\circ-54'-27.7''$ RT.
 $D = 6^\circ-09'-39.0''$
 $L = 209.51'$
 $T = 105.20'$
 $R = 930.00'$



TEMPORARY ACCESS DETAIL

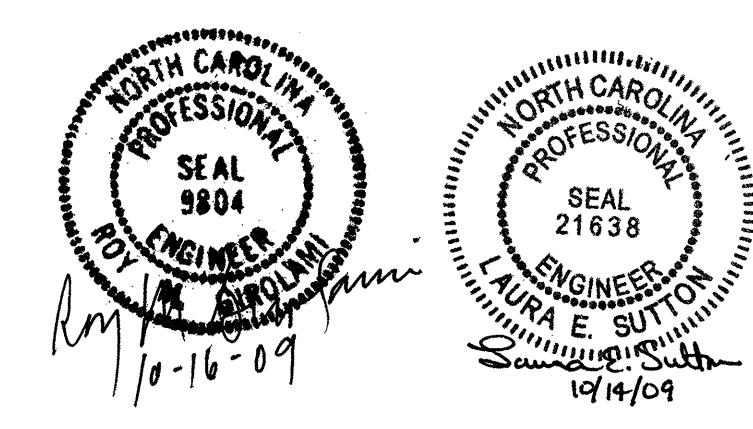
PROJECT NO. B-4622
ROCKINGHAM COUNTY
 STATION: 16+80.00 -L-
 SHEET 1 OF 3 REPLACES BRIDGE NO. 54

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE OVER ROCK HOUSE
 CREEK ON NC 65 BETWEEN
 SR 2150 AND SR 2207

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

DRAWN BY: L.E. SUTTON DATE: 5/22/09
 CHECKED BY: A.S. CALLAWAY DATE: 7/06/09

08-OCT-2009 09:51
 R:\structures\lsutton\b4622.sd.gd.01.dgn
 lsutton

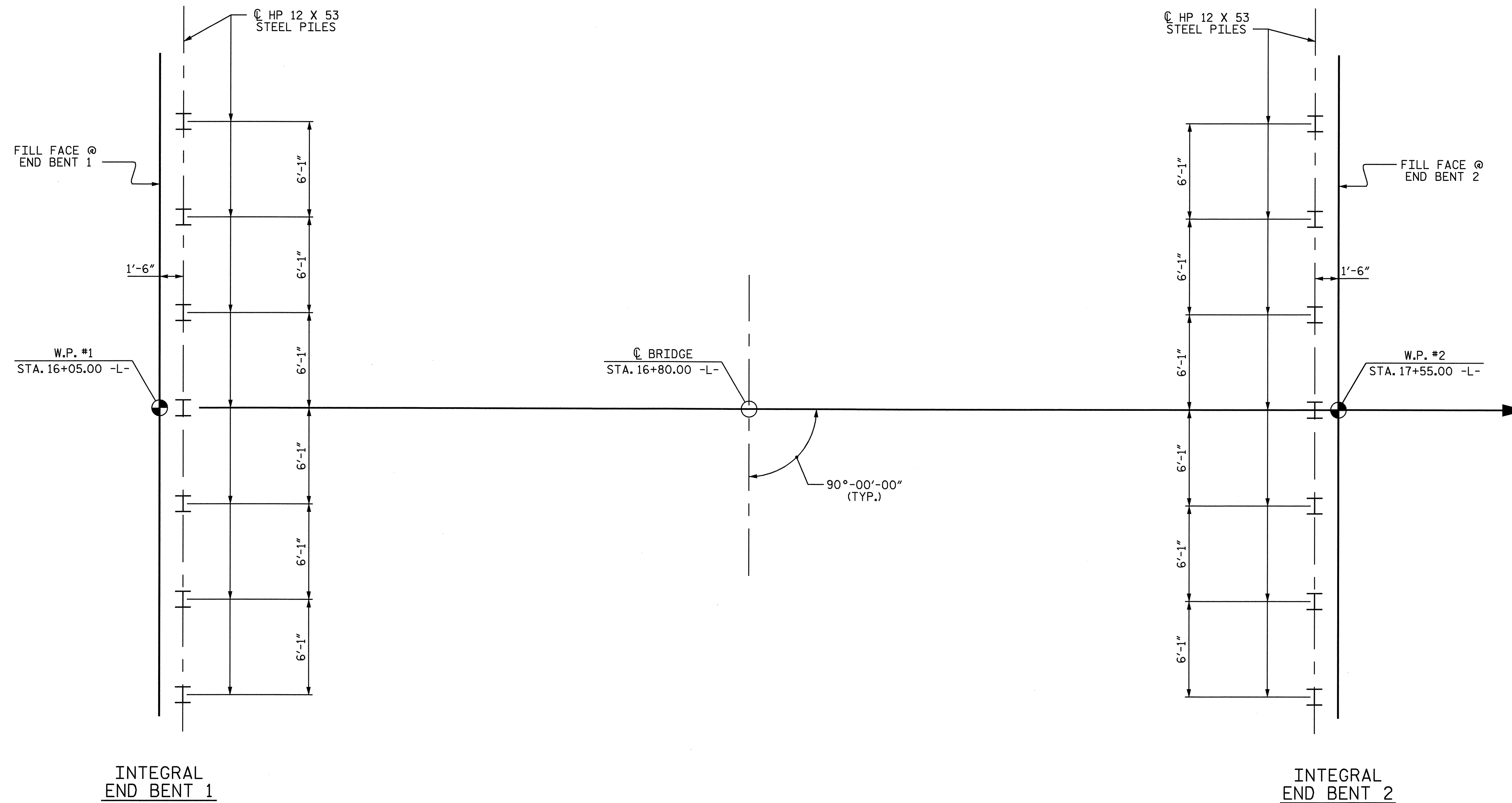


NOTES: (CONTINUED ON SHEET 3)

FOR PILES, SEE SPECIAL PROVISIONS.

PILES AT END BENT 1 AND END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 105 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 175 TONS PER PILE.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 25 TO 50 FT-KIP PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT 1 AND END BENT 2. THIS ESTIMATED ENERGY DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH THE PILES PROVISION.



FOUNDATION LAYOUT

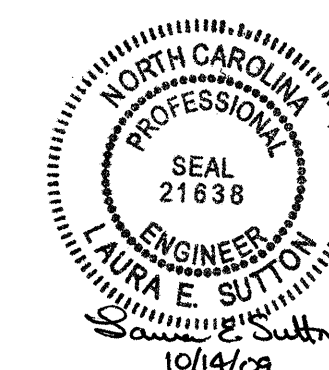
DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE AT THE BOTTOM OF THE CAP.

PROJECT NO. B-4622
ROCKINGHAM COUNTY
 STATION: 16+80.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 BRIDGE OVER ROCK HOUSE
 CREEK ON NC 65 BETWEEN
 SR 2150 AND SR 2207



DRAWN BY : L.E. SUTTON DATE : 5/22/09
 CHECKED BY : A.S. CALLAWAY DATE : 7/06/09

03-SEP-2009 10:47
 R:\Structures\lsutton\b4622.sd_gd.01.dgn
 lsutton

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

BENCH MARK #2: RR SPIKE SET IN BASE OF 48" POPLAR, 60' RIGHT OF STA. 38+06 -BL-, EL. 664.50.

HYDRAULIC DATA

DESIGN DISCHARGE = 3799 CFS
 FREQUENCY OF DESIGN FLOOD = 50 YEARS
 DESIGN HIGH WATER ELEVATION = 554.6
 DRAINAGE AREA = 18.4 SQ. MI.
 BASIC DISCHARGE (Q100) = 4567 CFS
 BASIC HIGH WATER ELEVATION = 555.3

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 32,000 CFS
 FREQUENCY OF OVERTOPPING FLOOD = 500+ YEARS
 OVERTOPPING FLOOD ELEVATION = 567.6

NOTES: (CONTINUED FROM SHEET 2)

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN 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.

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF 3 SPANS (1 @ 44'-6", 1 @ 45'-0" & 1 @ 44'-6") WITH A CLEAR ROADWAY WIDTH OF 20' AND HAVING A REINFORCED CONCRETE DECK SUPPORTED BY REINFORCED CONCRETE DECK GIRDERS ON REINFORCED CONCRETE SPILL THROUGH ABUTMENTS AND POST & WEB INTERIOR BENTS LOCATED 47'± UPSTREAM FROM PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY ACCESS AT STATION 16+80.00 -L- FOR USE DURING REMOVAL OF THE EXISTING STRUCTURE. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 16+80.00 -L-, SEE SPECIAL PROVISIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 75 FT. RIGHT OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 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.

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 LRFD BRIDGE DESIGN SPECIFICATIONS FOR SEISMIC DESIGN FOR SEISMIC PERFORMANCE ZONE 1.

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

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR SHIPPING STEEL STRUCTURAL MEMBERS, SEE SPECIAL PROVISIONS.

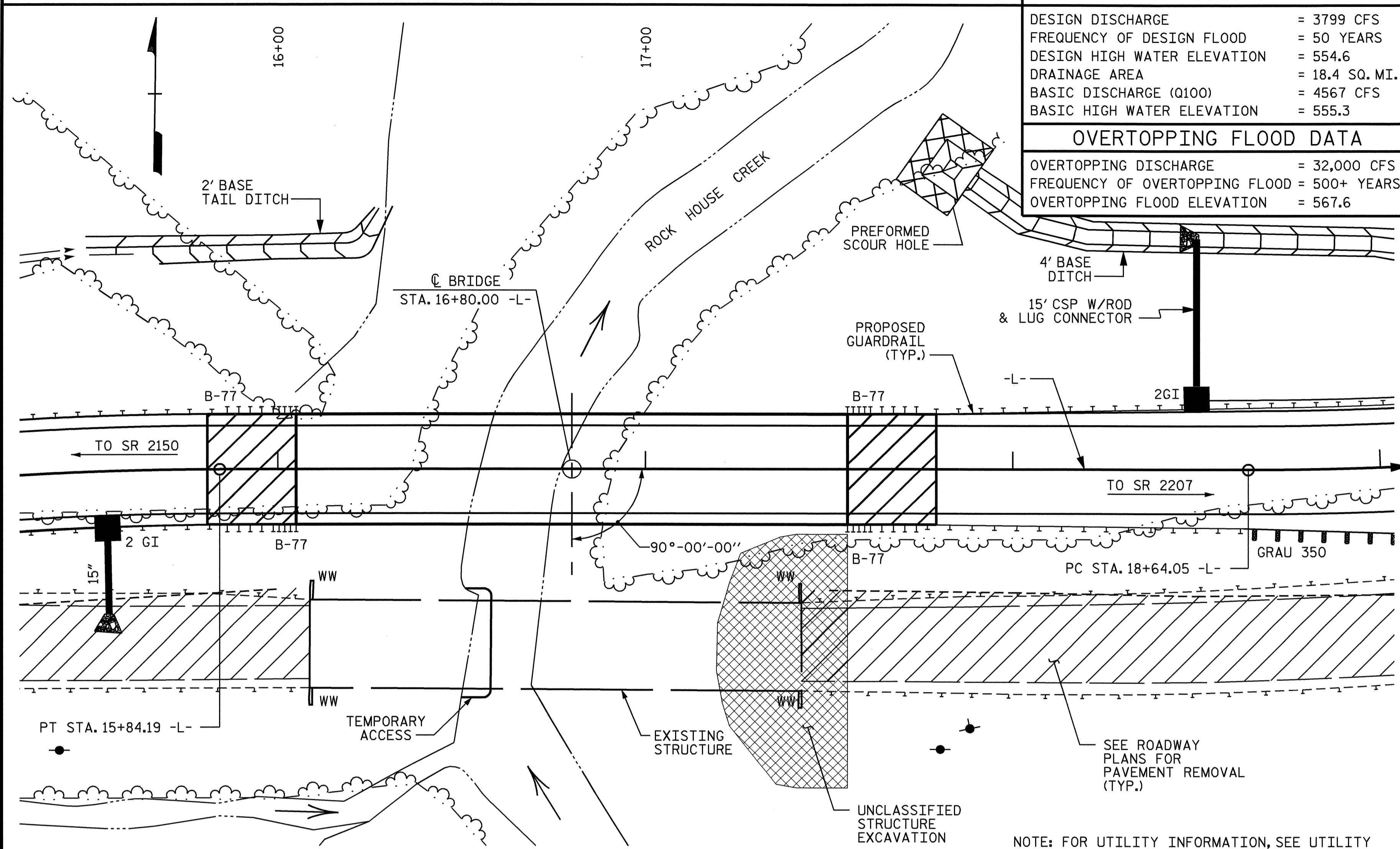
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.

FOR CURING CONCRETE, SEE SPECIAL PROVISIONS.

FOR FORMS FOR CONCRETE BRIDGE DECKS, SEE SPECIAL PROVISIONS.

FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.



LOCATION SKETCH

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE & REMOVAL OF TEMPORARY ACCESS	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	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	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	APPROX. LBS.	NO.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM
SUPERSTRUCTURE				4,988	5,207				206,400		300.00				LUMP SUM
END BENT 1						23.5		3,948		7	245		131	145	
END BENT 2						23.5		3,948		7	245		255	284	
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	4,988	5,207	47.0	LUMP SUM	7,896	206,400	14	490	300.00	386	429	LUMP SUM

PROJECT NO. B-4622

ROCKINGHAM COUNTY

STATION: 16+80.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 BRIDGE OVER ROCK HOUSE
 CREEK ON NC 65 BETWEEN
 SR 2150 AND SR 2207



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

DRAWN BY: L.E. SUTTON DATE: 5/22/09
 CHECKED BY: A.S. CALLAWAY DATE: 7/06/09

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE II	1.00	1.00

	YEAR	ADTT
CURRENT	2007	123
FUTURE	2030	252

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE II LIMIT STATES.

ALLOWABLE STRESS FOR SERVICE II LIMIT STATE ARE AS REQUIRED FOR DESIGN.

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR STEEL GIRDERS																							
LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE II LIMIT STATE					COMMENT NUMBER		
						MOMENT					SHEAR					MOMENT							
						LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.04	--	1.75	0.834	1.42	A	EL	73.5	0.867	1.04	A	I	147.0	1.30	0.834	1.70	A	EL	117.6	
	HL-93 (OPERATING)	N/A		1.34	--	1.35	0.834	1.84	A	EL	73.5	0.867	1.34	A	I	147.0	1.00	0.834	2.21	A	EL	117.6	
	HS-20 (INVENTORY)	36.00	②	1.53	55.1	1.80	0.834	2.14	A	EL	73.5	0.867	1.53	A	I	147.0	1.30	0.834	3.39	A	EL	117.6	
	HS-20 (OPERATING)	36.00		2.04	73.4	1.35	0.834	2.85	A	EL	73.5	0.867	2.04	A	I	147.0	1.00	0.834	4.40	A	EL	117.6	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		5.01	67.6	1.40	0.834	6.80	A	EL	73.5	0.867	5.01	A	I	147.0	1.30	0.834	8.46	A	EL	73.5
		SNGARBS2	20.000		3.52	70.4	1.40	0.834	4.81	A	EL	73.5	0.867	3.52	A	I	147.0	1.30	0.834	5.90	A	EL	117.6
		SNAGRIS2	22.000		3.17	69.7	1.40	0.834	4.45	A	EL	73.5	0.867	3.17	A	I	0.0	1.30	0.834	5.42	A	EL	117.6
		SNCOTTS3	27.250		2.49	67.9	1.40	0.834	3.38	A	EL	73.5	0.867	2.49	A	I	0.0	1.30	0.834	4.20	A	EL	73.5
		SNAGGRS4	34.925		2.00	69.9	1.40	0.834	2.72	A	EL	73.5	0.867	2.00	A	I	147.0	1.30	0.834	3.38	A	EL	73.5
		SNS5A	35.550		1.99	70.7	1.40	0.834	2.67	A	EL	73.5	0.867	1.99	A	I	147.0	1.30	0.834	3.32	A	EL	73.5
		SNS6A	39.950		1.79	71.5	1.40	0.834	2.41	A	EL	73.5	0.867	1.79	A	I	0.0	1.30	0.834	2.99	A	EL	73.5
		SNS7B	42.000		1.72	72.2	1.40	0.834	2.29	A	EL	73.5	0.867	1.72	A	I	0.0	1.30	0.834	2.85	A	EL	73.5
	TRUCK TRACTOR SEMI-TRAILER (TTS)	TNAGRIT3	33.000		2.15	71.0	1.40	0.834	2.92	A	EL	73.5	0.867	2.15	A	I	0.0	1.30	0.834	3.64	A	EL	73.5
		TNT4A	33.075		2.12	70.1	1.40	0.834	2.93	A	EL	73.5	0.867	2.12	A	I	0.0	1.30	0.834	3.63	A	EL	29.4
		TNT6A	41.600		1.77	73.6	1.40	0.834	2.36	A	EL	73.5	0.867	1.77	A	I	0.0	1.30	0.834	2.93	A	EL	73.5
		TNT7A	42.000		1.75	73.5	1.40	0.834	2.35	A	EL	73.5	0.867	1.75	A	I	0.0	1.30	0.834	2.92	A	EL	73.5
		TNT7B	42.000		1.70	71.4	1.40	0.834	2.38	A	EL	73.5	0.867	1.70	A	I	147.0	1.30	0.834	2.93	A	EL	29.4
		TNAGRIT4	43.000		1.66	71.4	1.40	0.834	2.30	A	EL	73.5	0.867	1.66	A	I	0.0	1.30	0.834	2.85	A	EL	117.6
FATIGUE	TNAGT5A	45.000		1.61	72.5	1.40	0.834	2.19	A	EL	73.5	0.867	1.61	A	I	147.0	1.30	0.834	2.72	A	EL	73.5	
	TNAGT5B	45.000	③	1.58	71.1	1.40	0.834	2.17	A	EL	73.5	0.867	1.58	A	I	0.0	1.30	0.834	2.70	A	EL	73.5	

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93) **

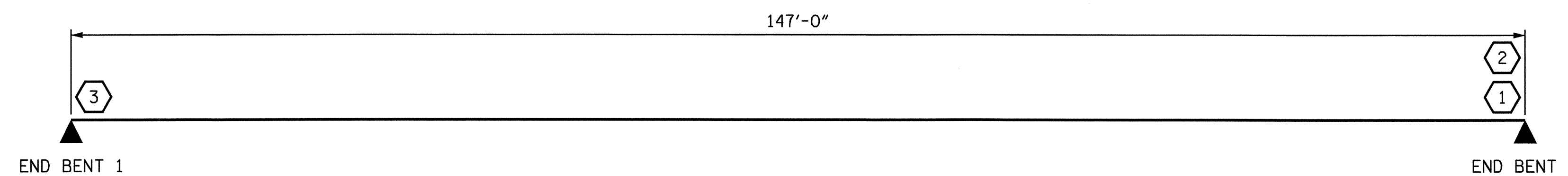
② DESIGN LOAD RATING (HS-20) **

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

PROJECT NO. B-4622
ROCKINGHAM COUNTY
STATION: 16+80.00 -L-

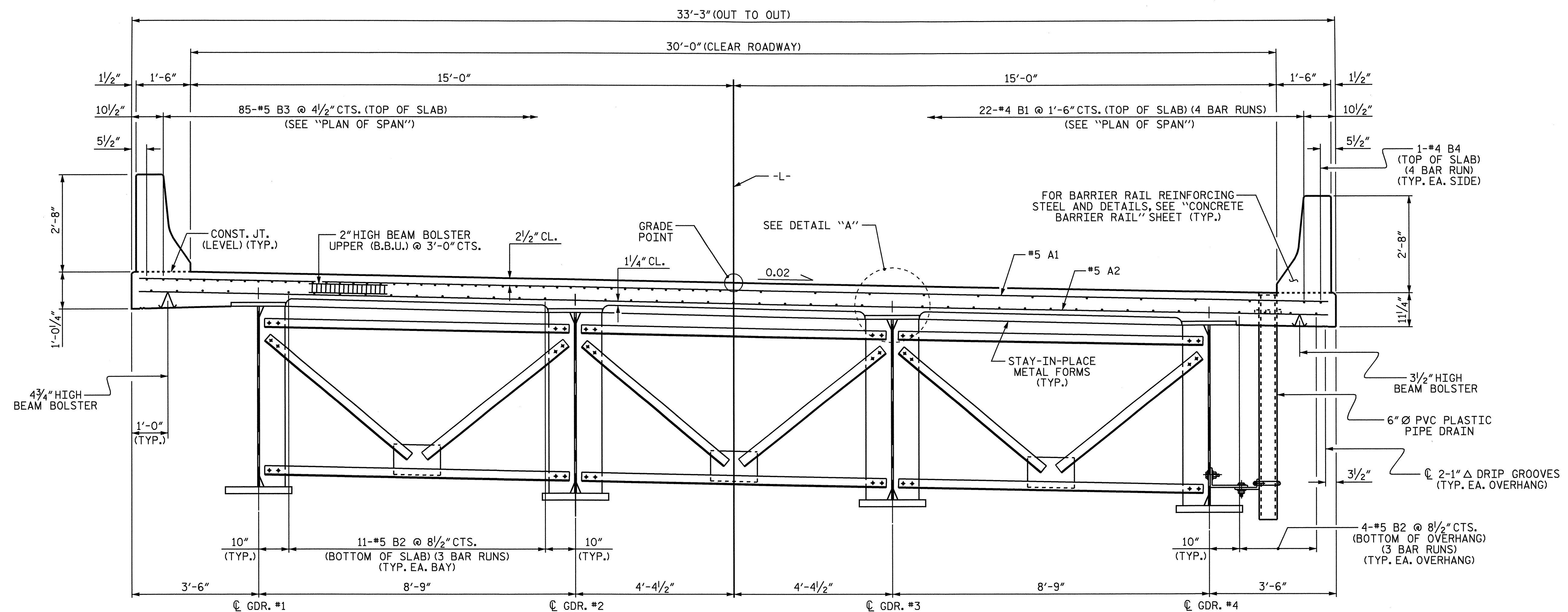


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD LRFR SUMMARY FOR STEEL GIRDERS (NON-INTERSTATE TRAFFIC)					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					24

ASSEMBLED BY : A.S. CALLAWAY DATE : 7/14/09
CHECKED BY : L.E. SUTTON DATE : 9/4/09
DRAWN BY : MAA 1/08
CHECKED BY : GM/DI 2/08

04-SEP-2009 14:56
R:\Structures\scallaway\B4622.ed..rf.01.dgn
lsutton

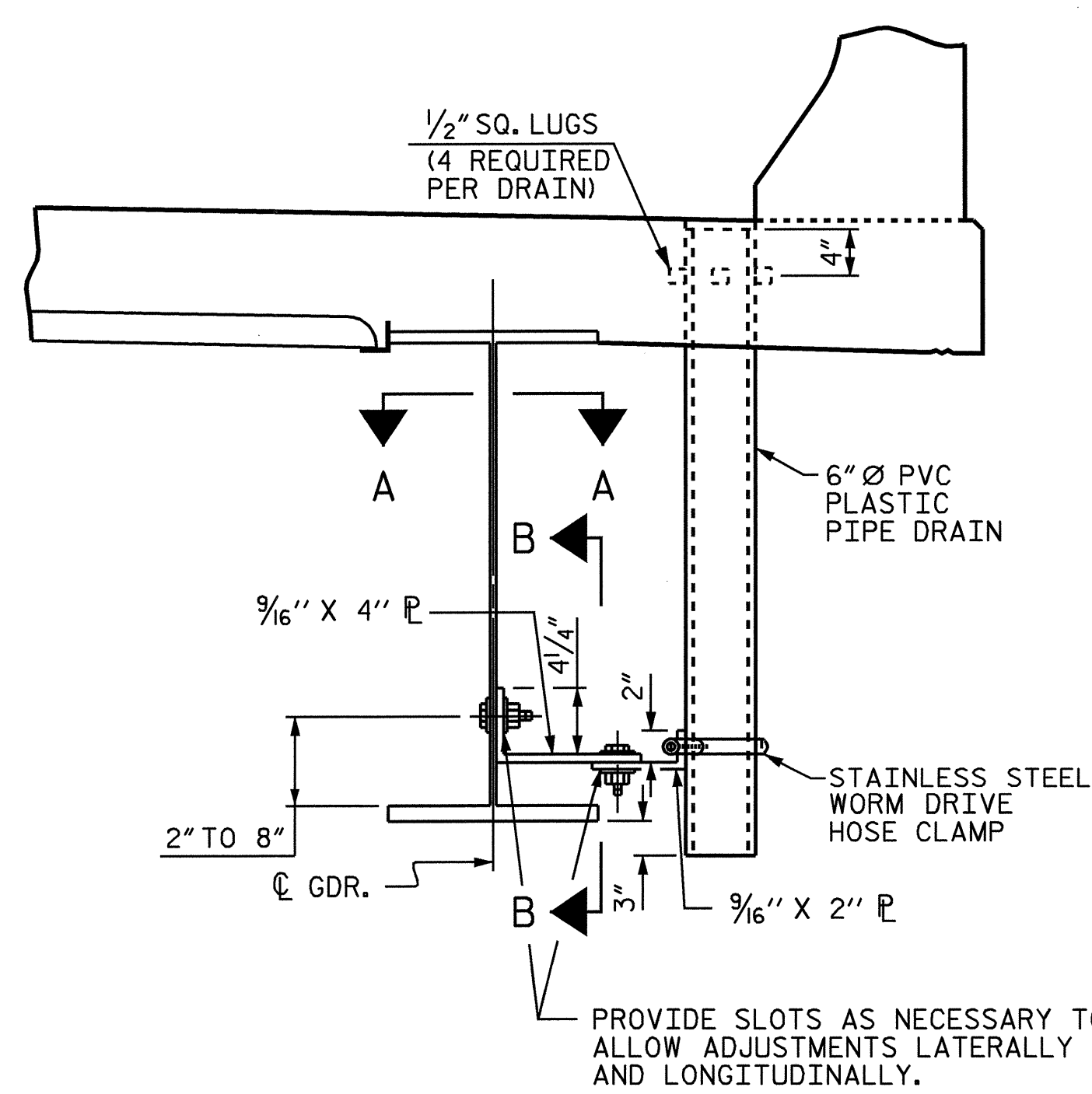
STD. NO. LRFR3



AT END OF SPAN

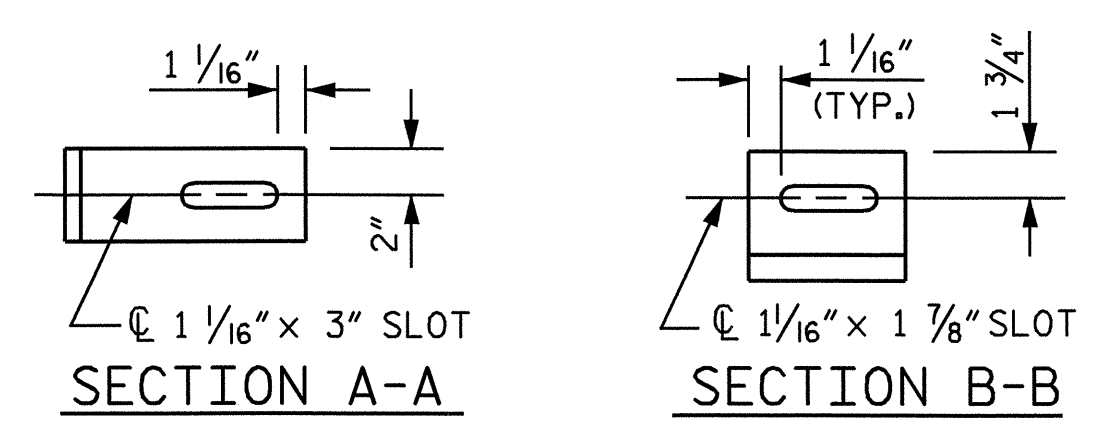
AT MIDSPAN

TYPICAL SECTION



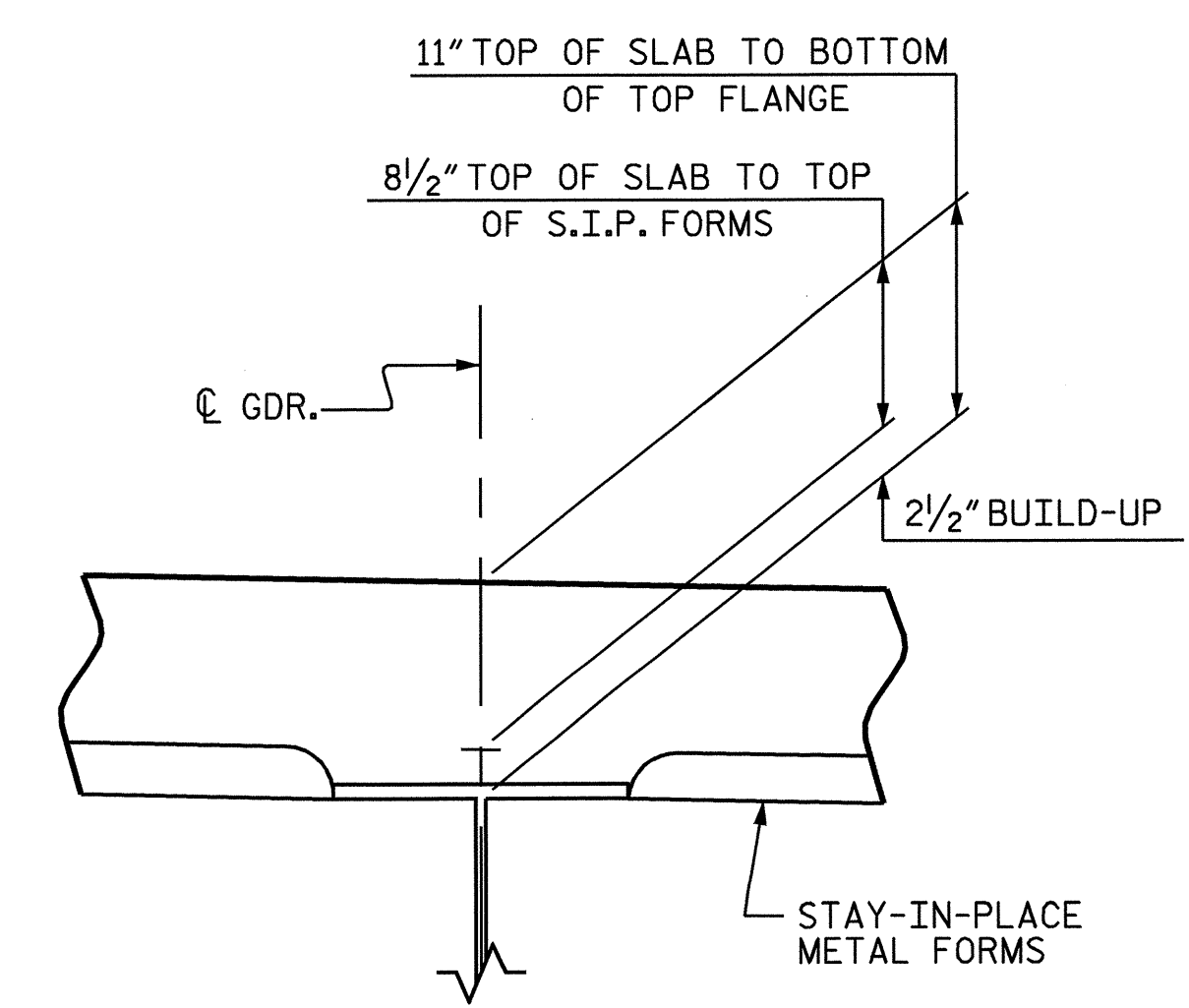
DRAIN CONNECTOR DETAIL

(9 DRAINS REQUIRED)



NOTES

- TOP OF FLOOR DRAIN TO BE SET 3/8" BELOW SURFACE OF SLAB.
- 4 - 1/2" SQUARE LUGS TO BE GLUED TO THE PVC PLASTIC PIPE AT EQUAL SPACES AROUND THE PIPE DRAIN APPROXIMATELY 4" FROM THE TOP OF THE PIPE.
- COUPLING IN DRAIN PIPE WILL BE PERMITTED AS APPROVED BY THE ENGINEER.
- BOLT SIZE TO BE SAME AS DIAPHRAGMS AND CROSSFRAME CONNECTIONS. STAINLESS STEEL WORM DRIVE HOSE CLAMP SHALL BE COMMERCIAL QUALITY.
- THE 6" PVC PIPE AND FITTINGS SHALL BE SCHEDULE 40 AND CONFORM TO ASTM D1785.



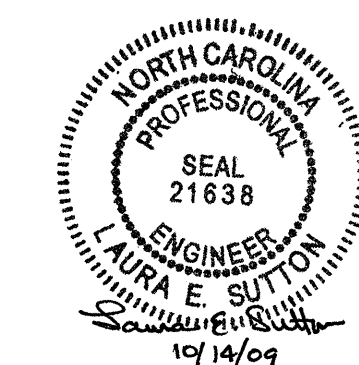
DETAIL "A"

(TYP. EA. GIRDER)

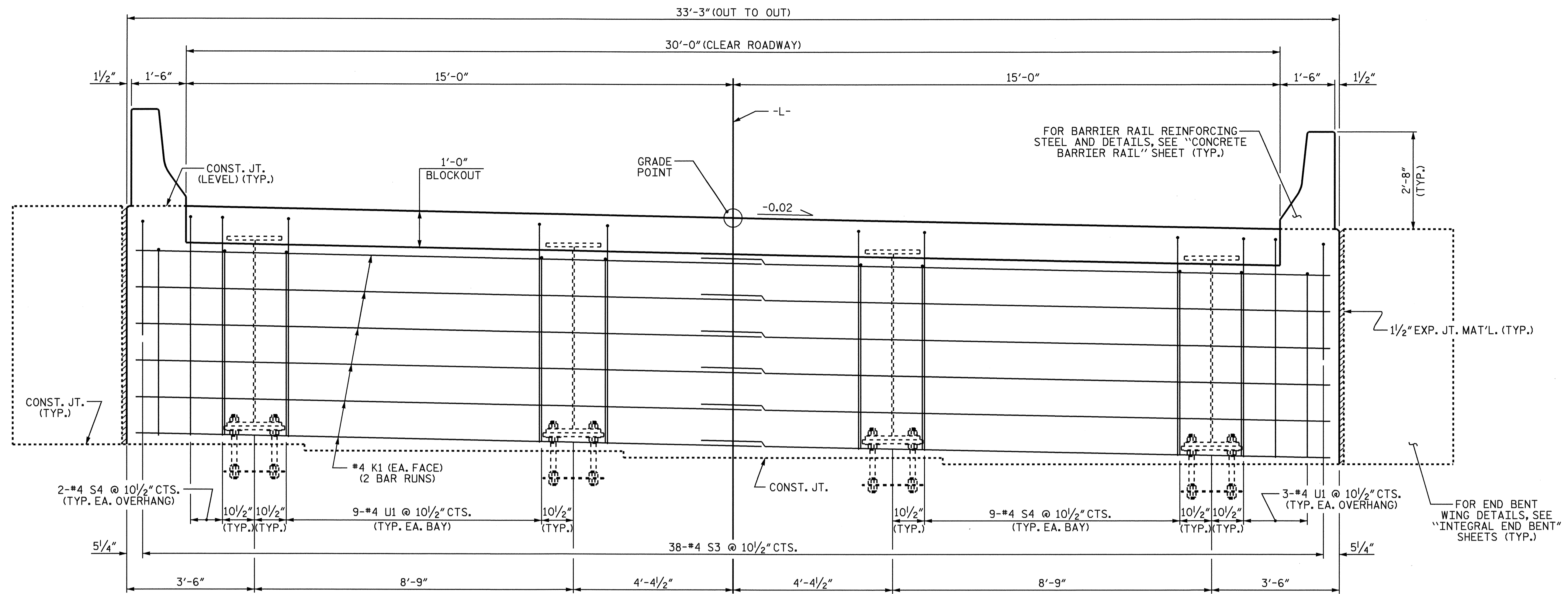
PROJECT NO. B-4622
 ROCKINGHAM COUNTY
 STATION: 16+80.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE TYPICAL SECTION					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 22

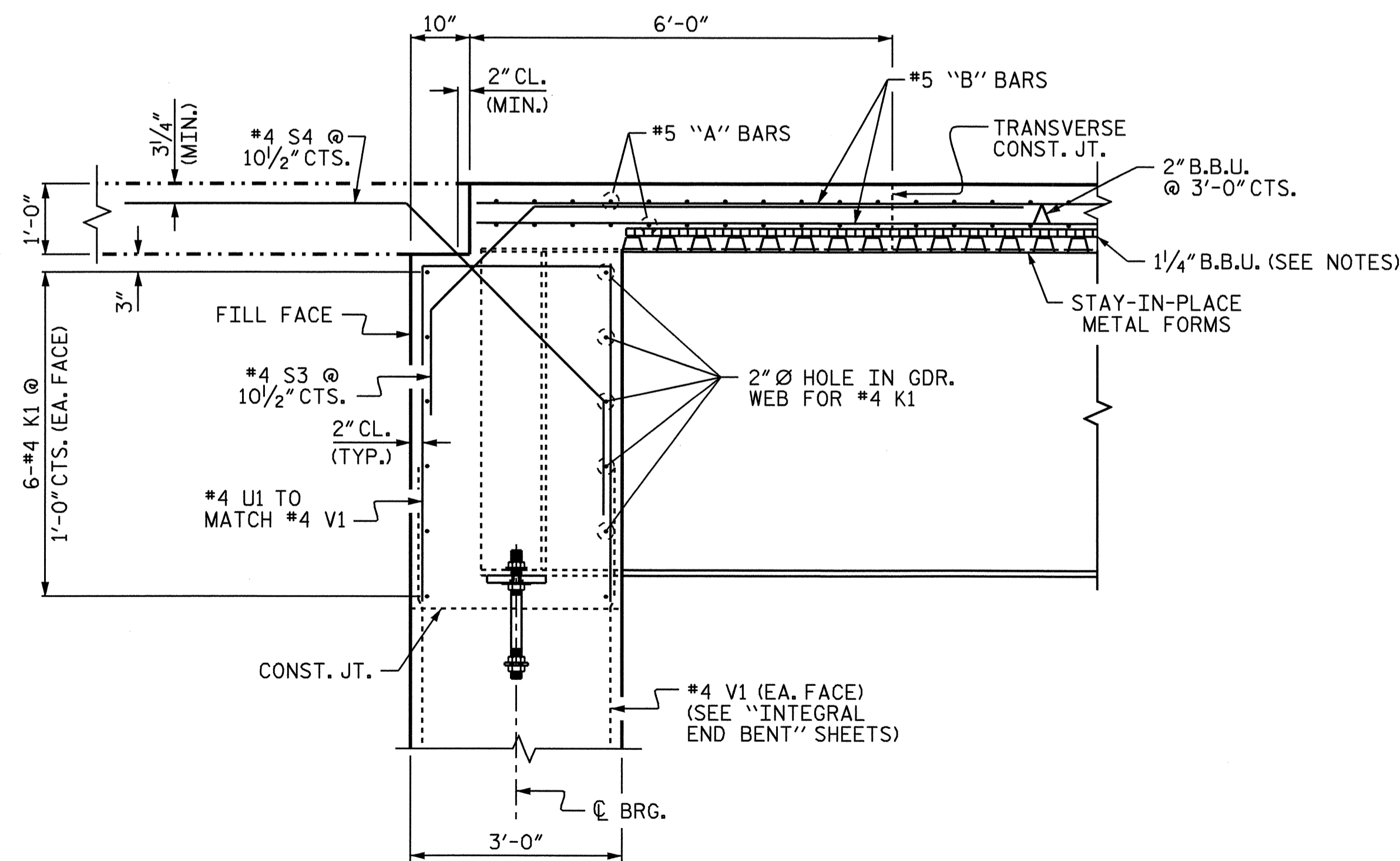


DRAWN BY: M.K. BEARD DATE: 4/7/09
 CHECKED BY: L.E. SUTTON DATE: 5/18/09



END ELEVATION

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



SECTION A-A

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.

METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO GIRDER FLANGES WITHIN 15 FEET OF THE GIRDER ENDS. FOR ZONES REQUIRING CHARPY V-NOTCH TEST, SEE STRUCTURAL STEEL DETAIL SHEETS.

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.

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

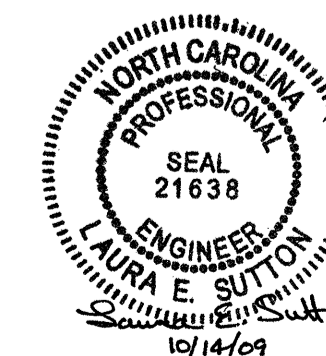
BARRIER RAIL SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

PROJECT NO. B-4622
ROCKINGHAM COUNTY
STATION: 16+80.00 -L-

SHEET 2 OF 2

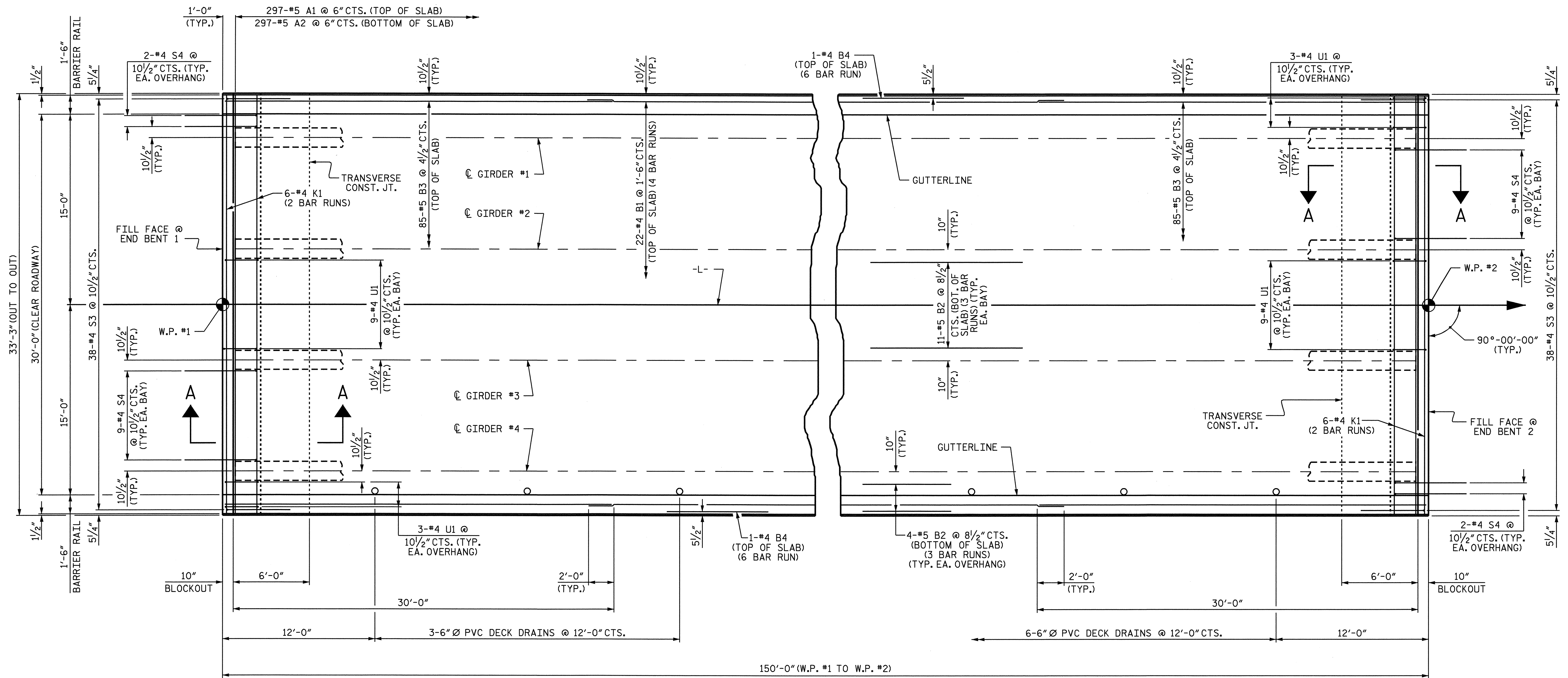
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTION



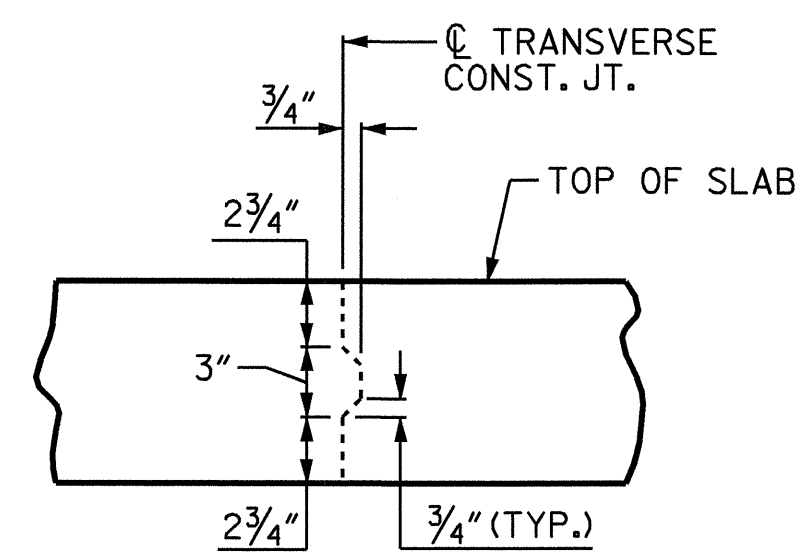
DRAWN BY: M.K. BEARD DATE: 4/7/09
CHECKED BY: L.E. SUTTON DATE: 5/18/09

08-OCT-2009 09:51
R:\Structures\kbeard\B4622.sd_TS_01.dgn
lsutton

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			24



PLAN OF SPAN



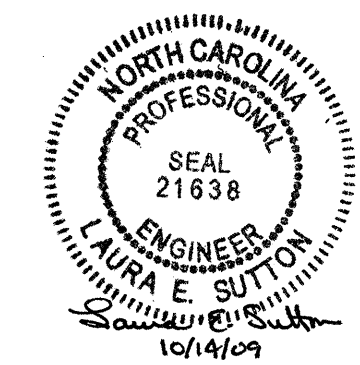
TRANSVERSE CONSTRUCTION JOINT DETAIL

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.

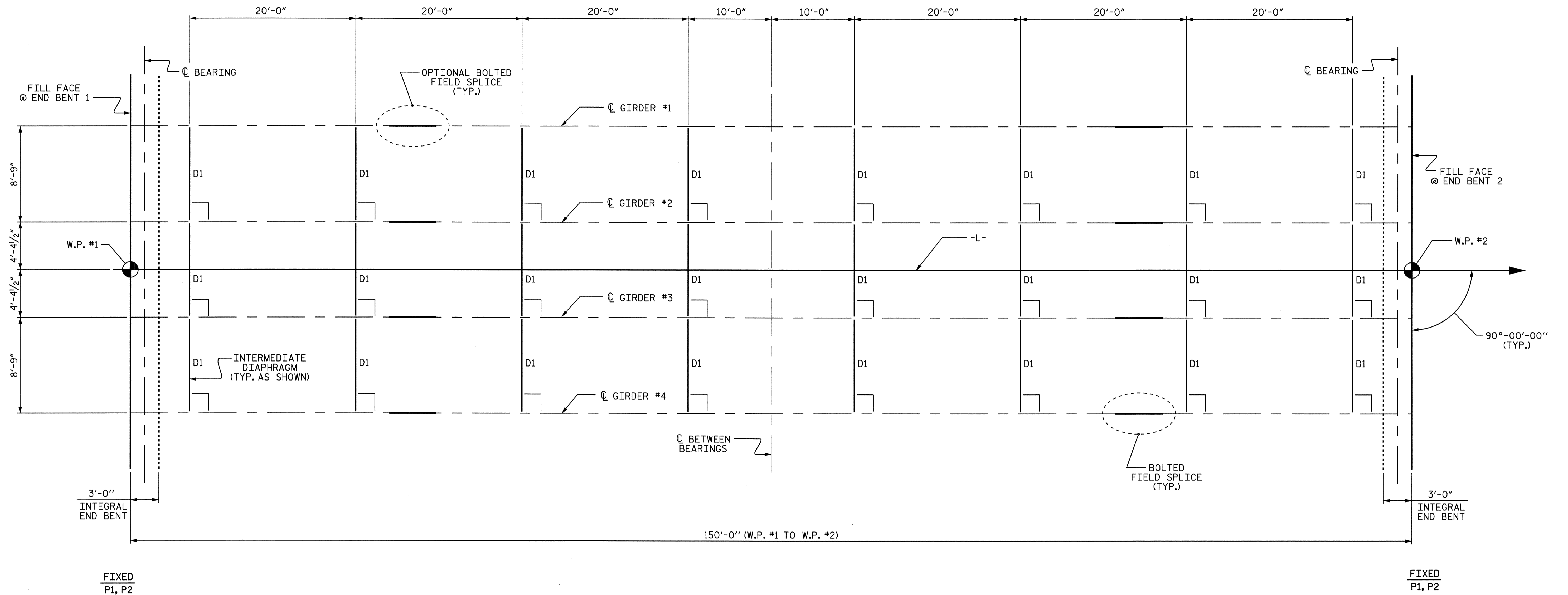
PROJECT NO. B-4622
 ROCKINGHAM COUNTY
 STATION: 16+80.00 -L-

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



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			24

DRAWN BY: M.K. BEARD DATE: 4/7/09
 CHECKED BY: L.E. SUTTON DATE: 5/18/09



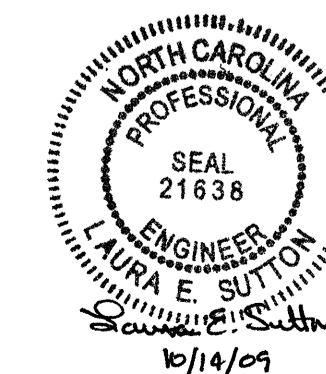
FRAMING PLAN

NOTE: THE OPTIONAL BOLTED FIELD SPLICE SHOWN IS PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR. IF THE OPTIONAL FIELD SPLICE IS USED, IT SHALL BE MADE ENTIRELY AT THE CONTRACTOR'S EXPENSE AND NO ADDITIONAL MEASUREMENT OR PAYMENT WILL BE MADE FOR THE ADDITIONAL MATERIALS REQUIRED. THE LOCATION, DETAILS AND SPLICE MATERIAL WILL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.

PROJECT NO. B-4622
ROCKINGHAM COUNTY
 STATION: 16+80.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

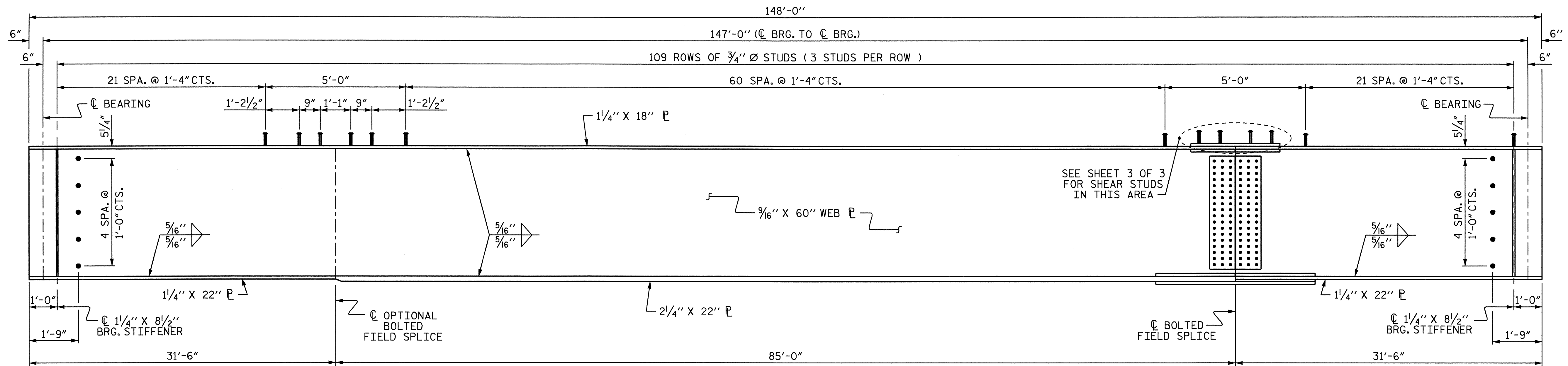
SUPERSTRUCTURE FRAMING PLAN



DRAWN BY : M.K. BEARD DATE : 4/7/09
 CHECKED BY : L.E. SUTTON DATE : 5/18/09

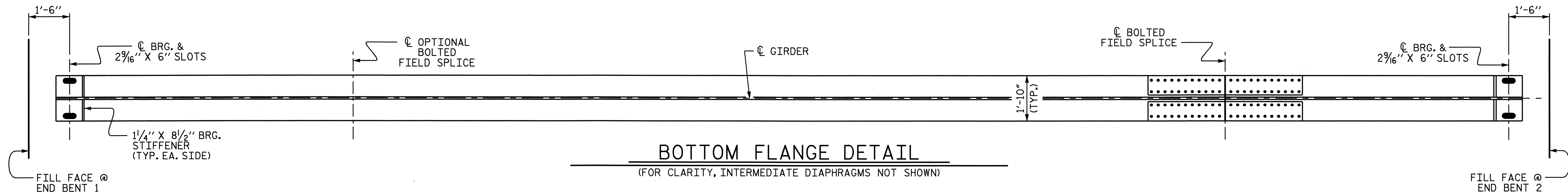
03-SEP-2009 10:47
 R:\Structures\kbeard\B4622.sd_FP_01.dgn
 lsutton

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



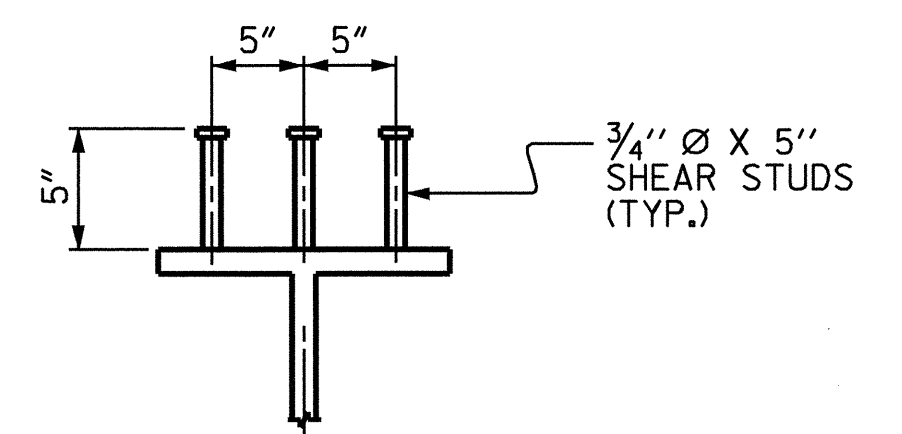
ELEVATION OF GIRDER

(FOR CLARITY, INTERMEDIATE DIAPHRAGMS NOT SHOWN)

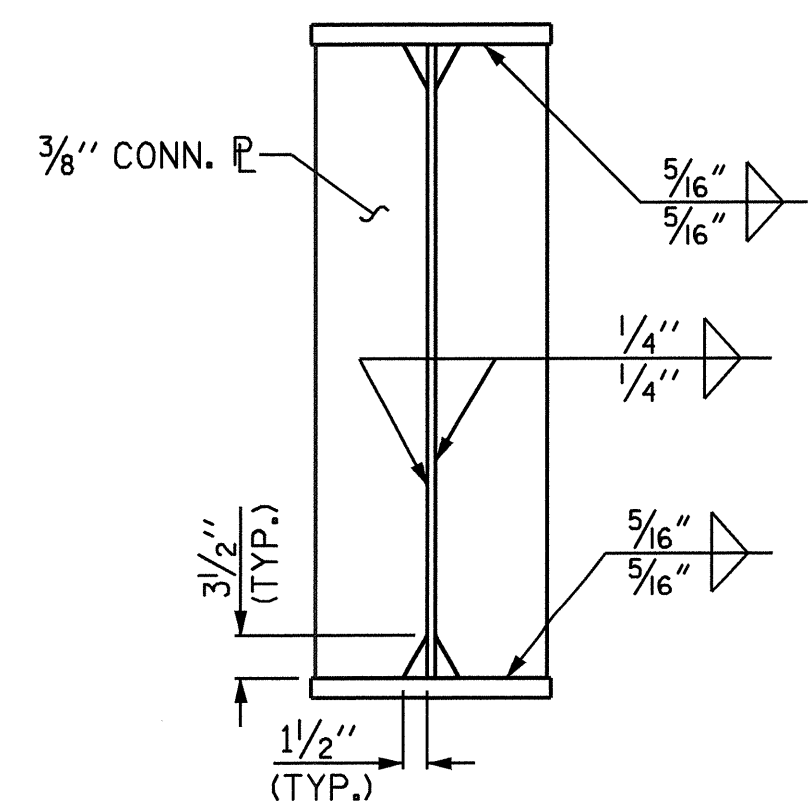


BOTTOM FLANGE DETAIL

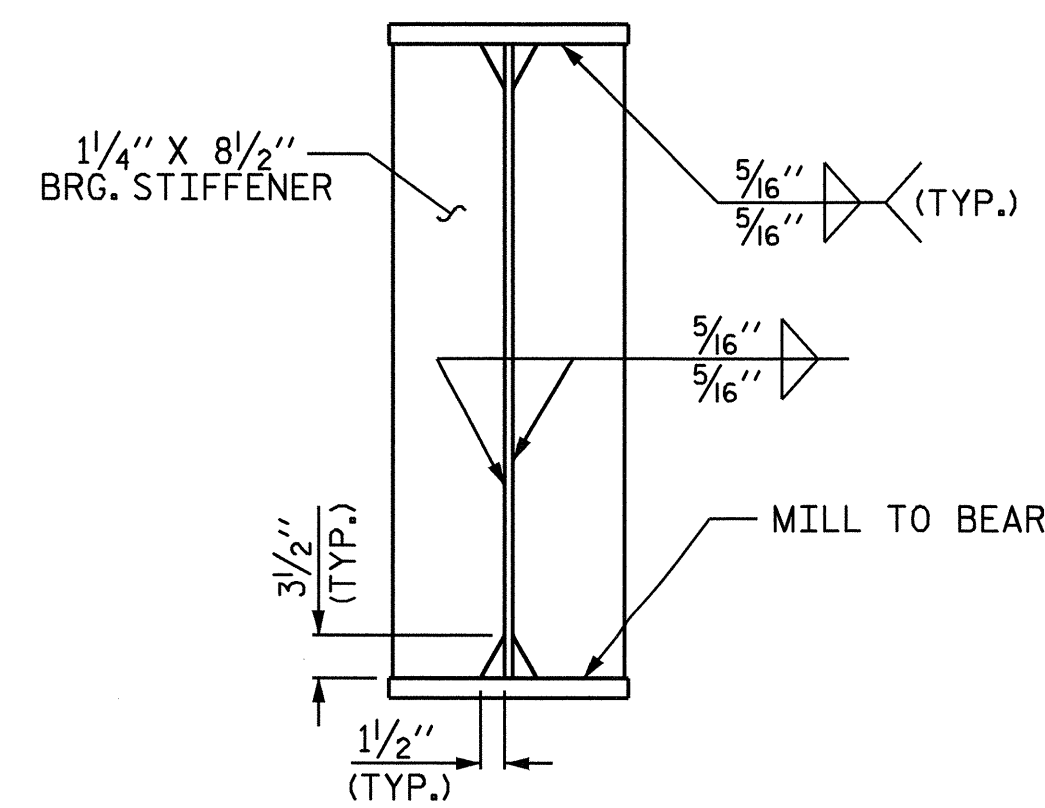
(FOR CLARITY, INTERMEDIATE DIAPHRAGMS NOT SHOWN)



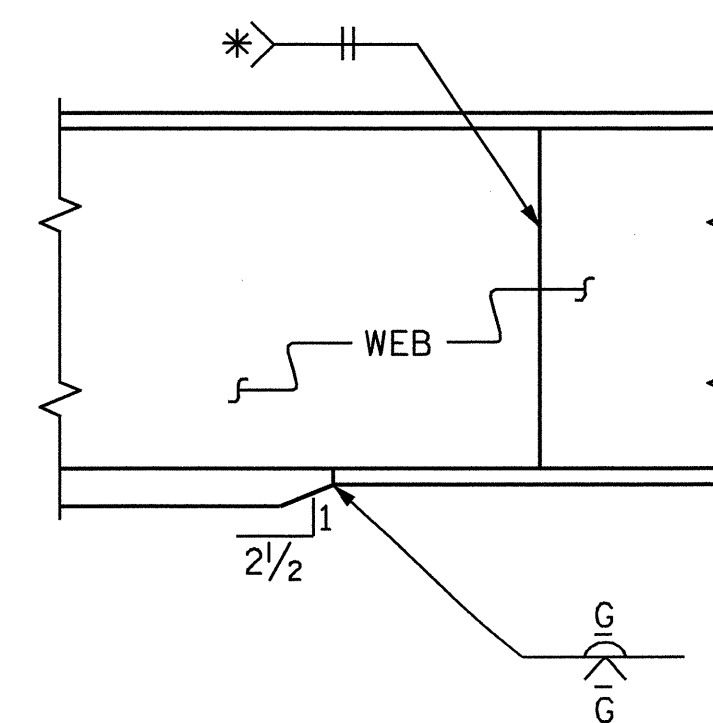
SHEAR STUD DETAIL



CONNECTOR PLATE



BEARING STIFFENER PLATE



ELEVATION

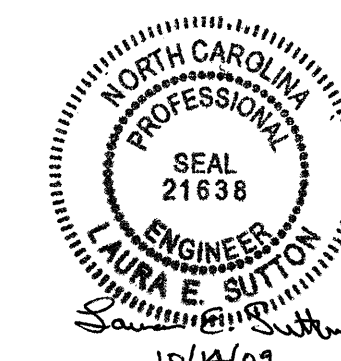
TYPICAL FLANGE AND WEB BUTT JOINT

* GRIND SMOOTH AND FLUSH ON OUTER FACE OF EXTERIOR GIRDERS

PROJECT NO. B-4622
ROCKINGHAM COUNTY
 STATION: 16+80.00 -L-

SHEET 1 OF 3

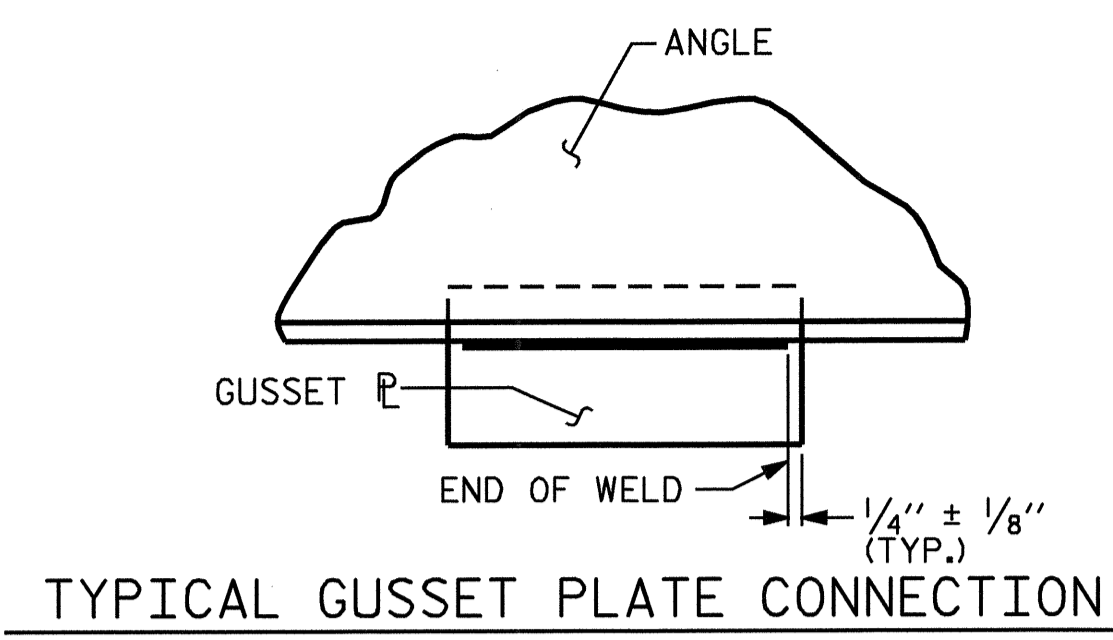
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 STRUCTURAL STEEL
 DETAILS



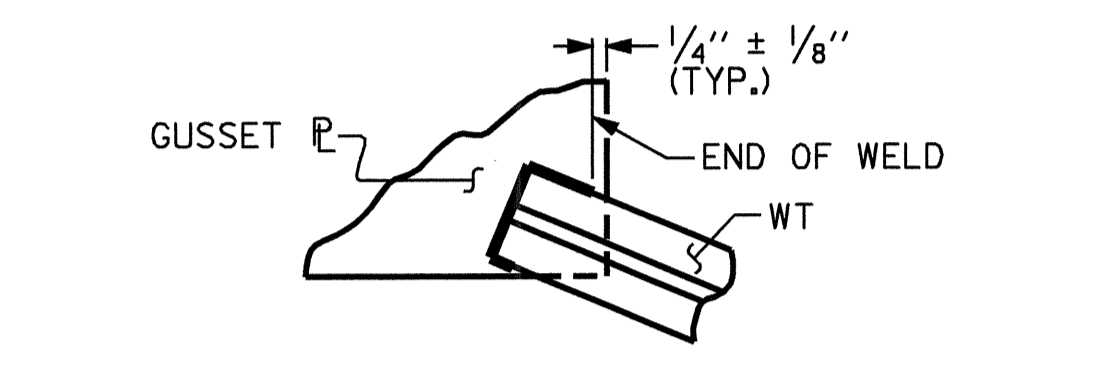
DRAWN BY : M.K. BEARD DATE : 4/7/09
 CHECKED BY : L.E. SUTTON DATE : 6/16/09

14-OCT-2009 09:02
 R:\Structures\kbeard\B4622.sd.SS_01.dgn
 lsutton

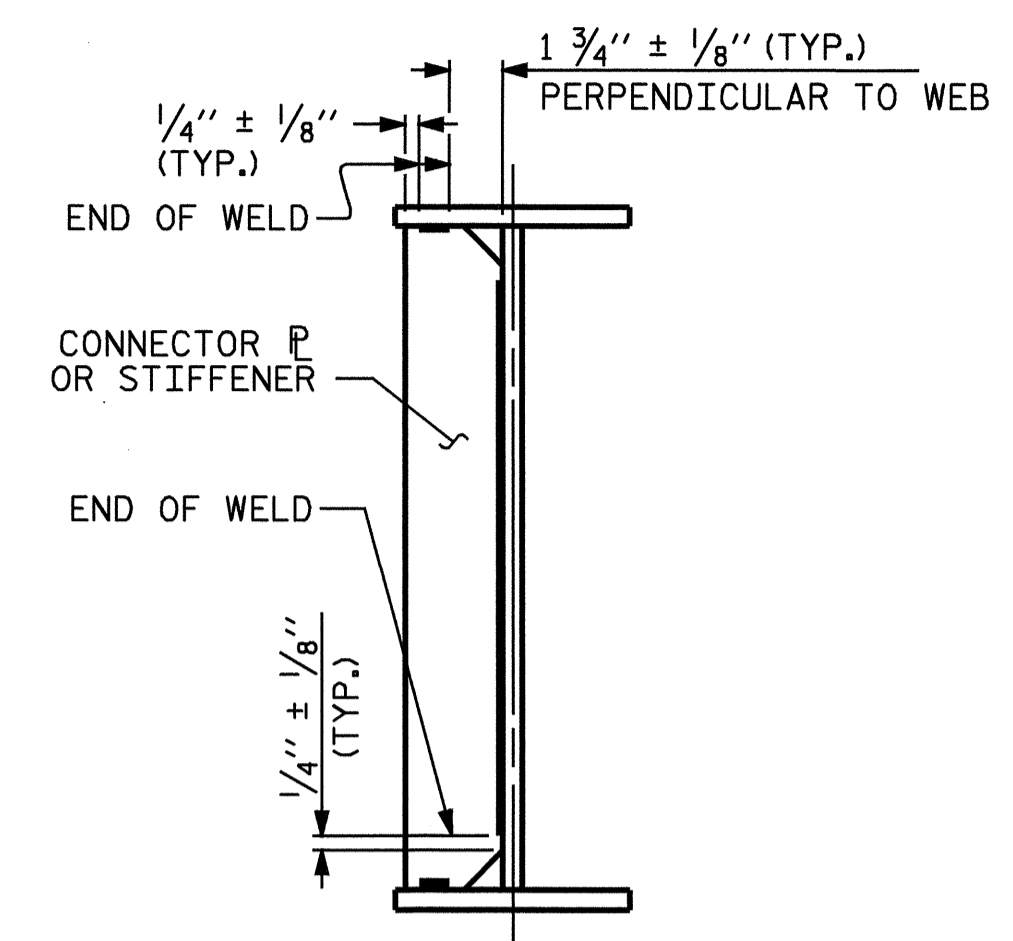
REVISIONS						SHEET NO. S-9
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 24
2			4			



TYPICAL GUSSET PLATE CONNECTION

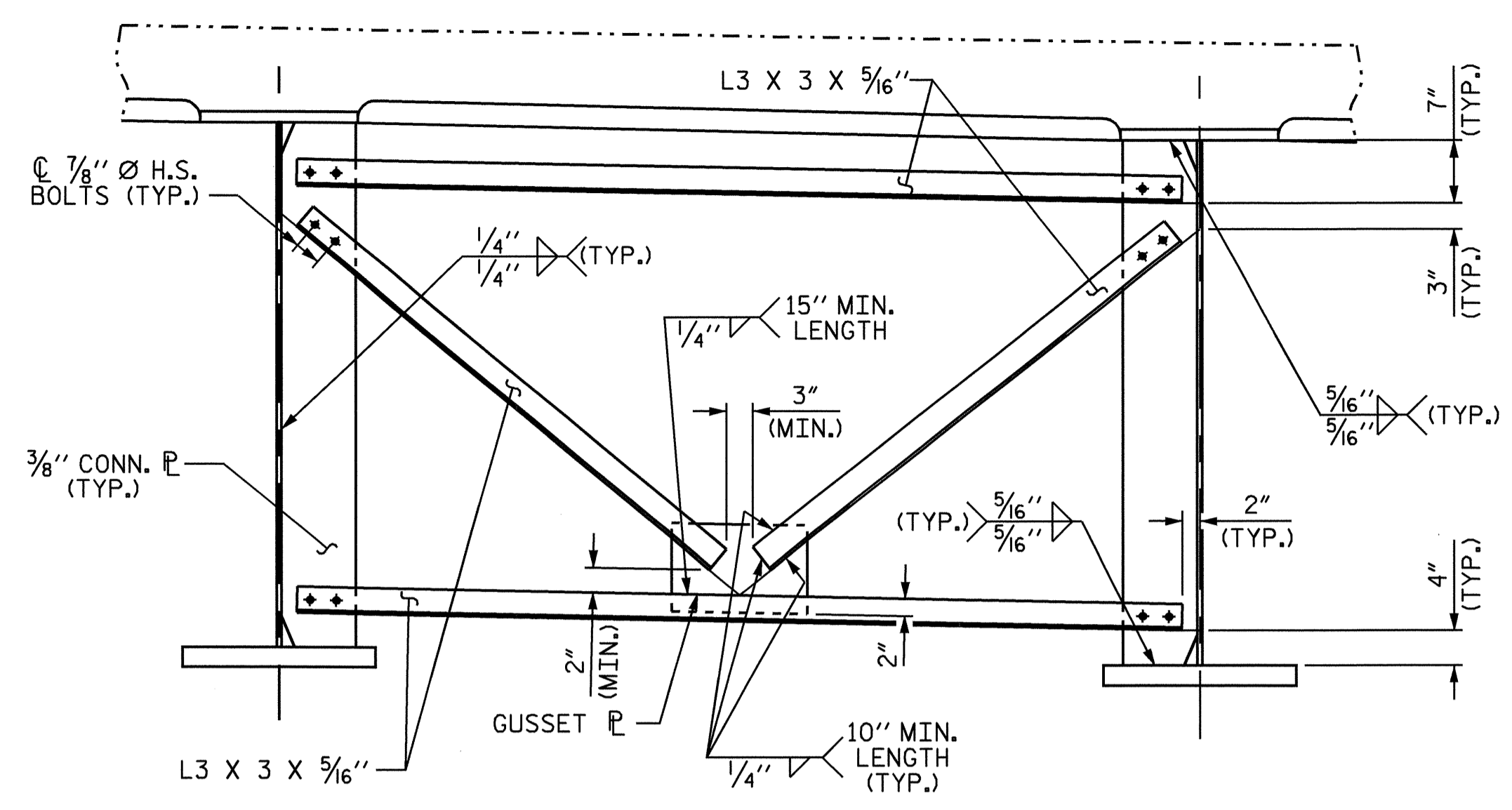


TYPICAL "TEE" TO GUSSET PLATE CONNECTION



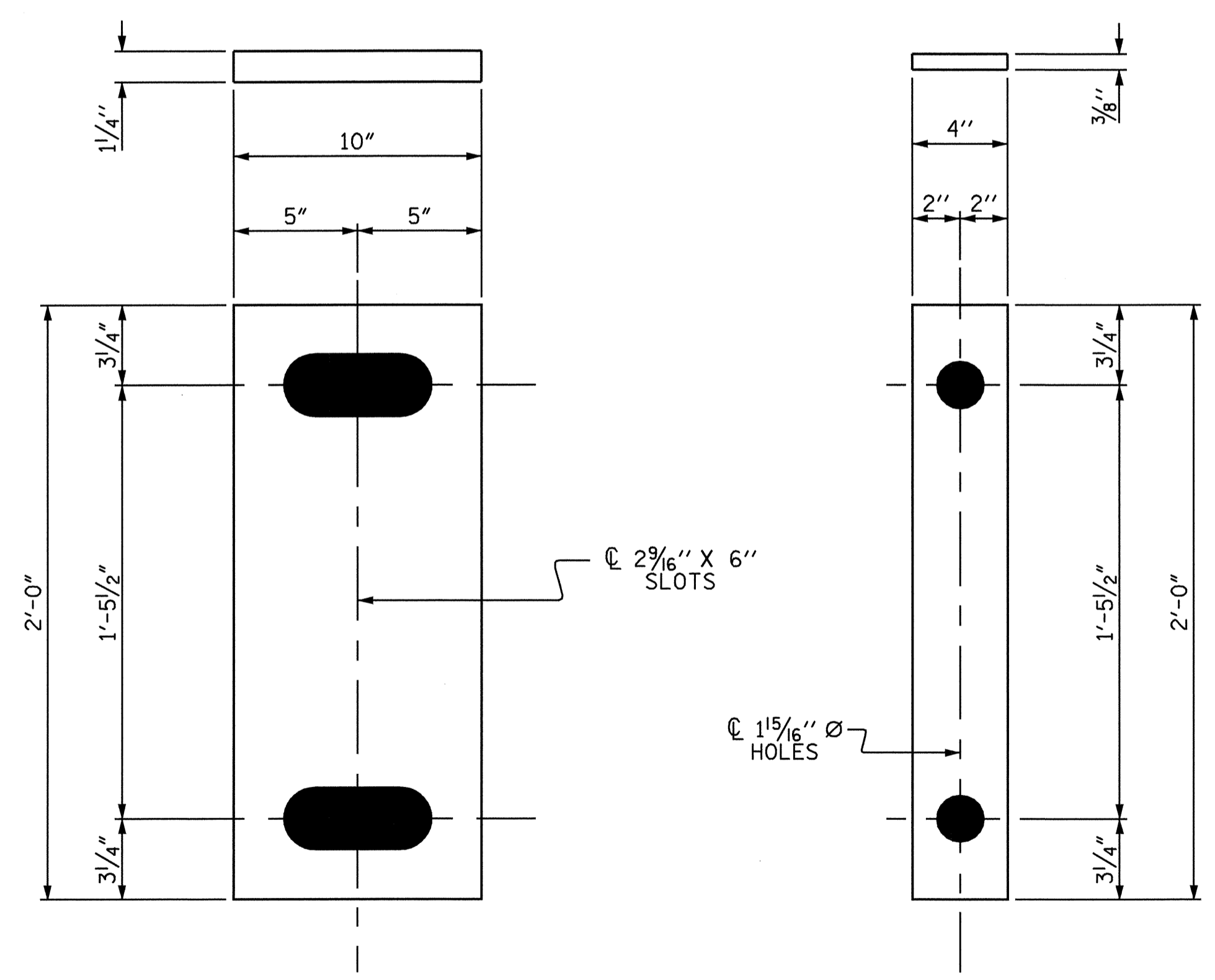
TYPICAL STIFFENER OR CONNECTOR PLATE CONNECTIONS

WELD TERMINATION DETAILS



INTERMEDIATE DIAPHRAGM (D1)

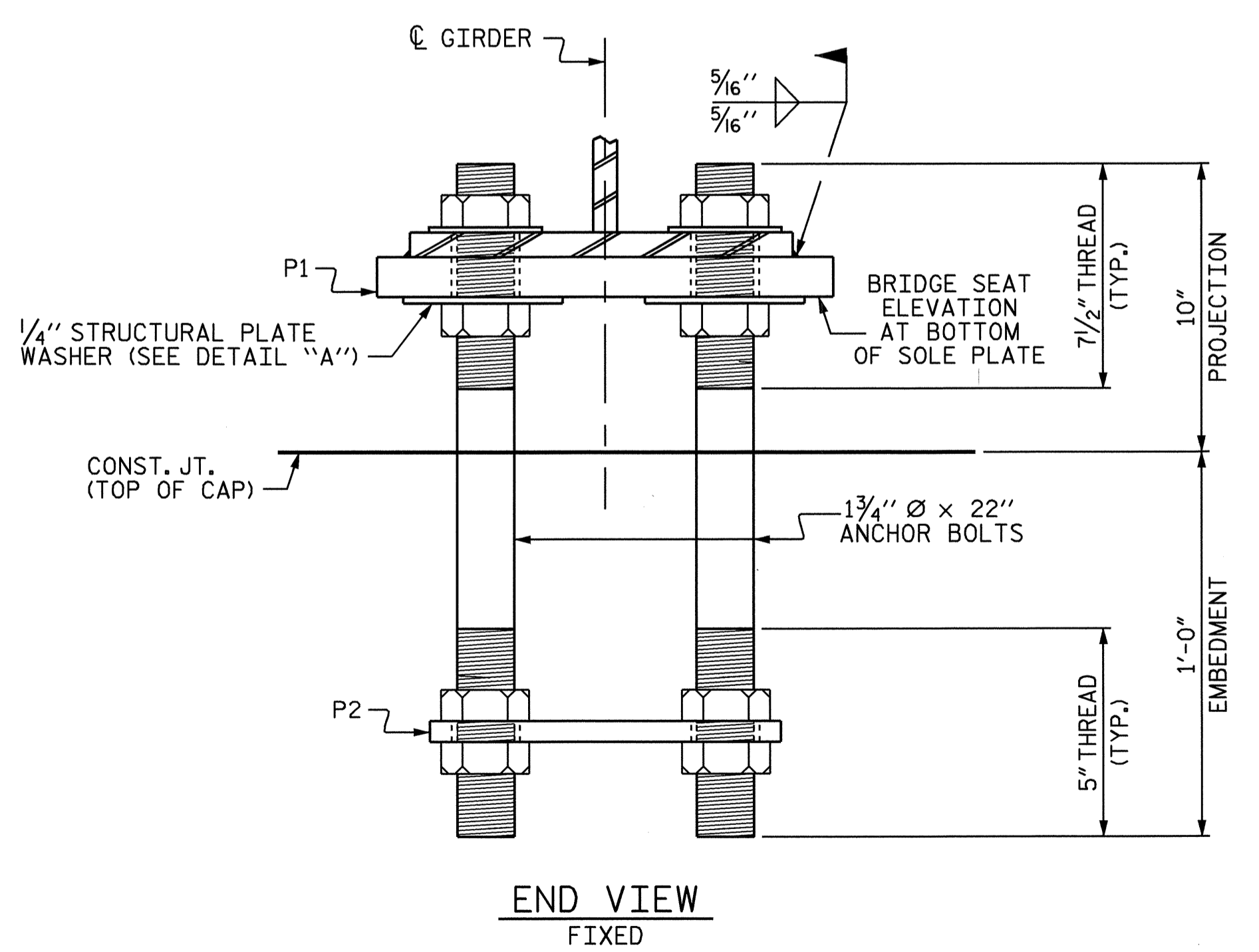
NOTES:
 ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W.
 ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.
 ALL FIELD CONNECTIONS TO BE 7/8" Ø HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED. FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS
 BEARING STIFFENERS ARE TO BE PLACED NORMAL TO THE WEB OF THE GIRDER AND SHALL BE PLUMB.
 A CHARPY V-NOTCH TEST IS REQUIRED FOR WEB PLATES, TOP FLANGE PLATES WITHIN 15' OF THE END OF THE GIRDER, 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. FOR DIRECT TENSION INDICATORS, SEE SPECIAL PROVISIONS.
 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.



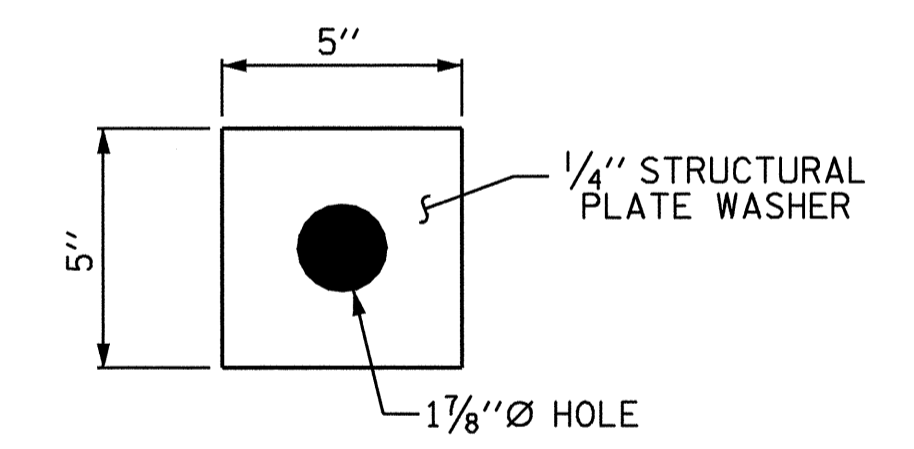
SOLE PLATE (P1)
(8 REQ'D)

ANCHORAGE PLATE (P2)
(8 REQ'D)

BEARING DETAILS



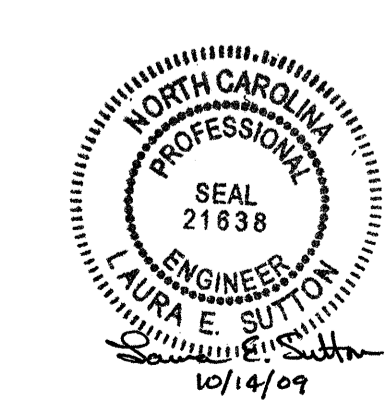
END VIEW
FIXED



DETAIL "A"

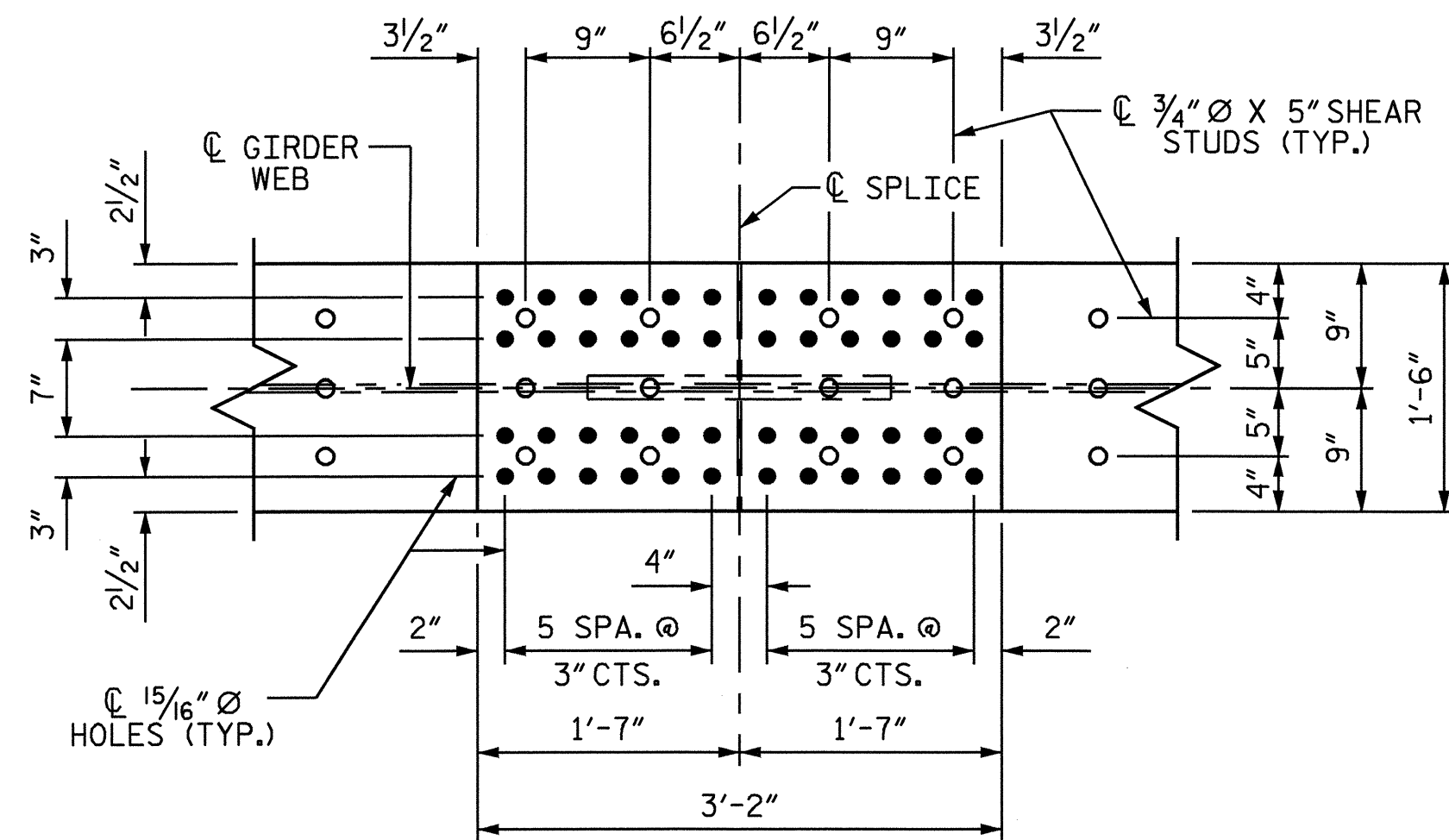
PROJECT NO. B-4622
ROCKINGHAM COUNTY
 STATION: 16+80.00 -L-
 SHEET 2 OF 3

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

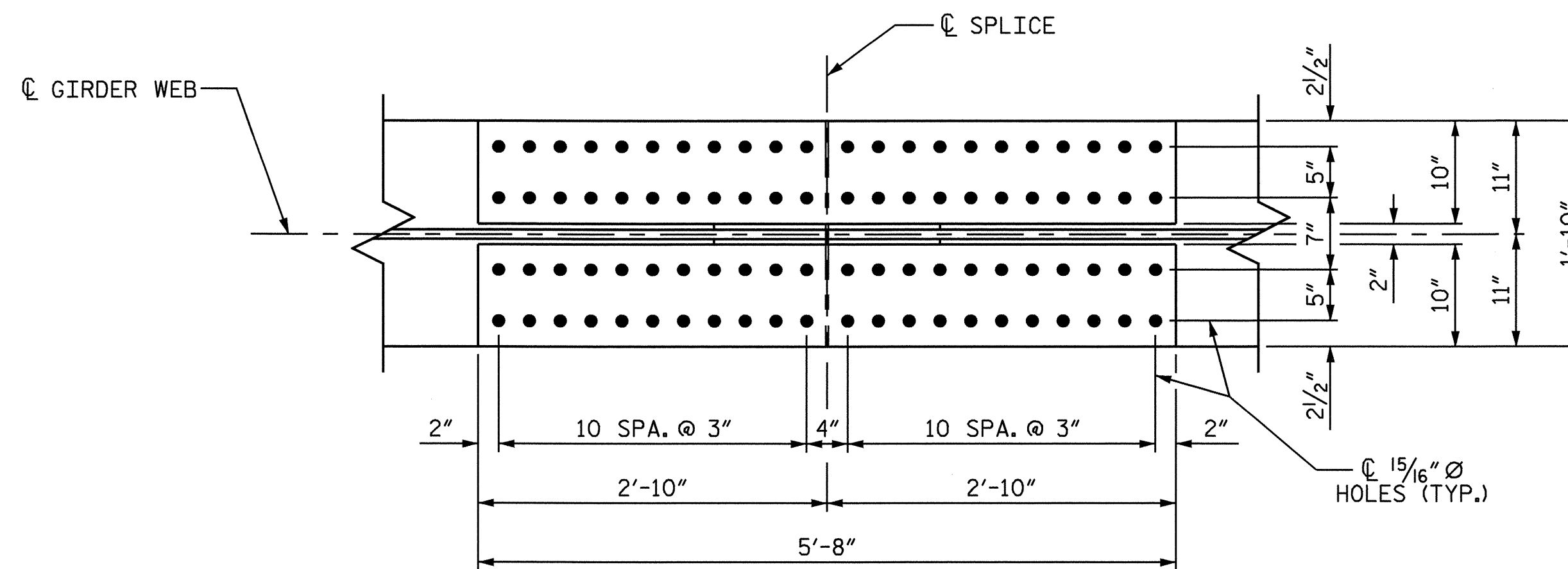


REVISIONS						SHEET NO. S-10
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 24
2			4			

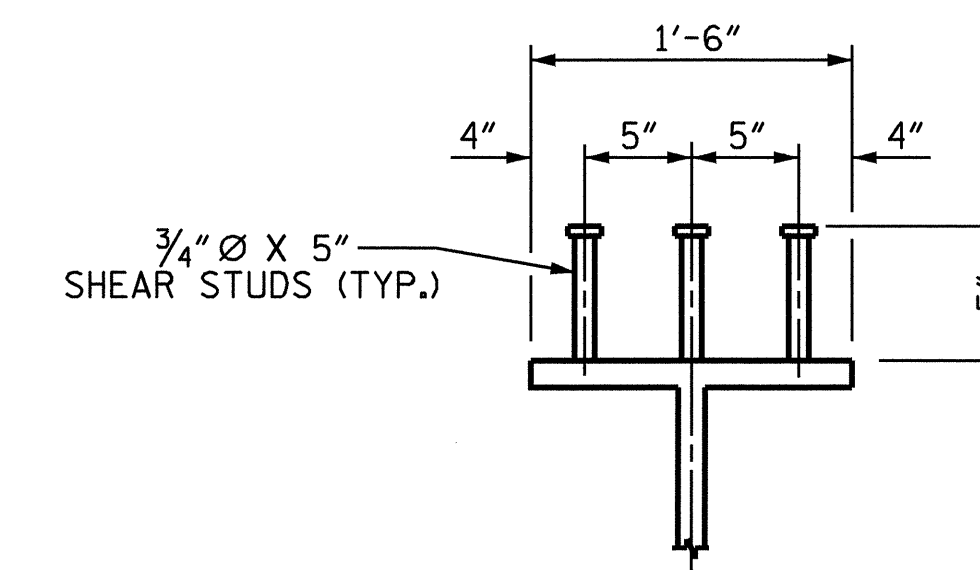
DRAWN BY: M.K. BEARD DATE: 4/7/09
 CHECKED BY: L.E. SUTTON DATE: 5/18/09



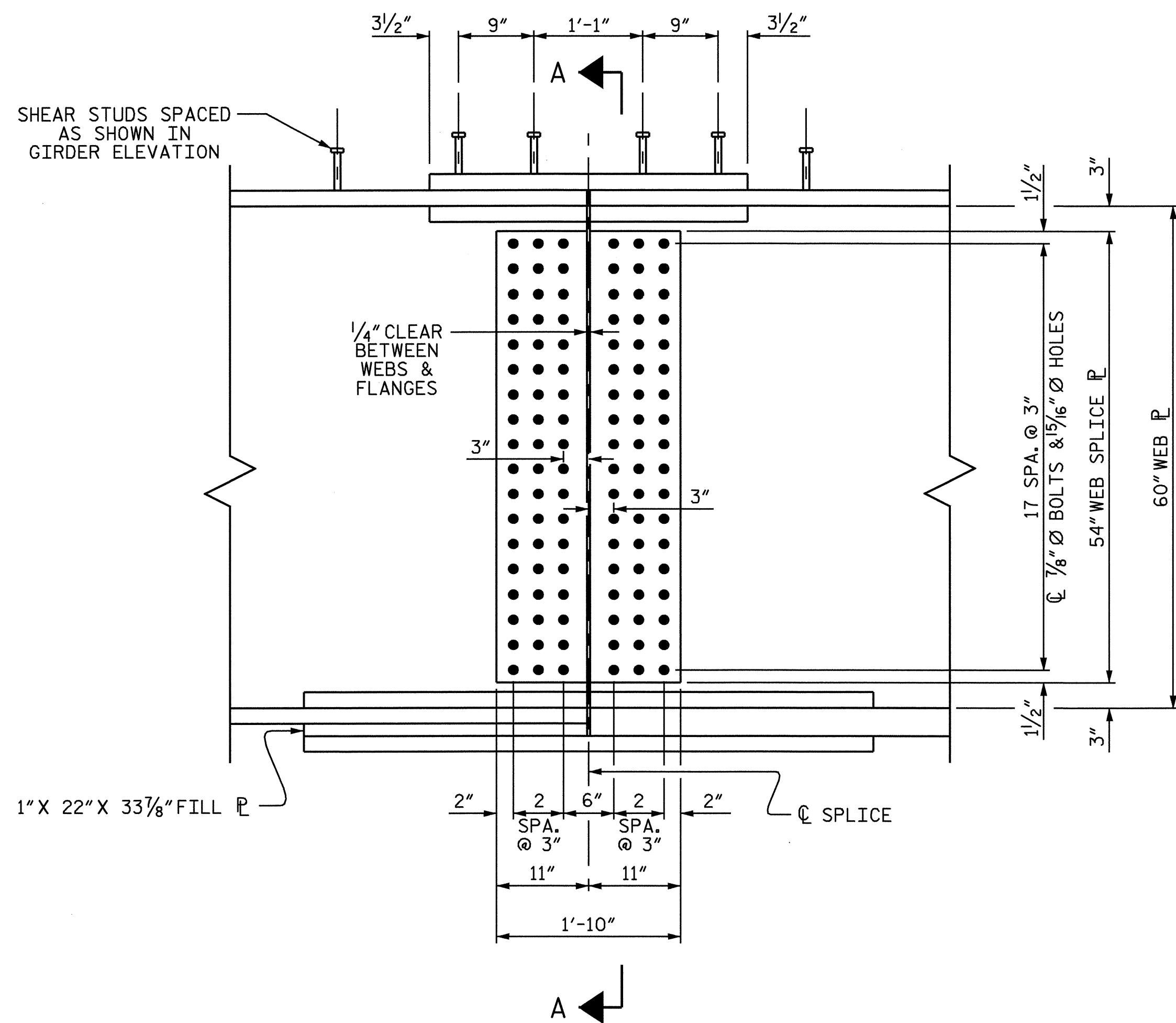
PLAN (TOP OF TOP FLANGE)



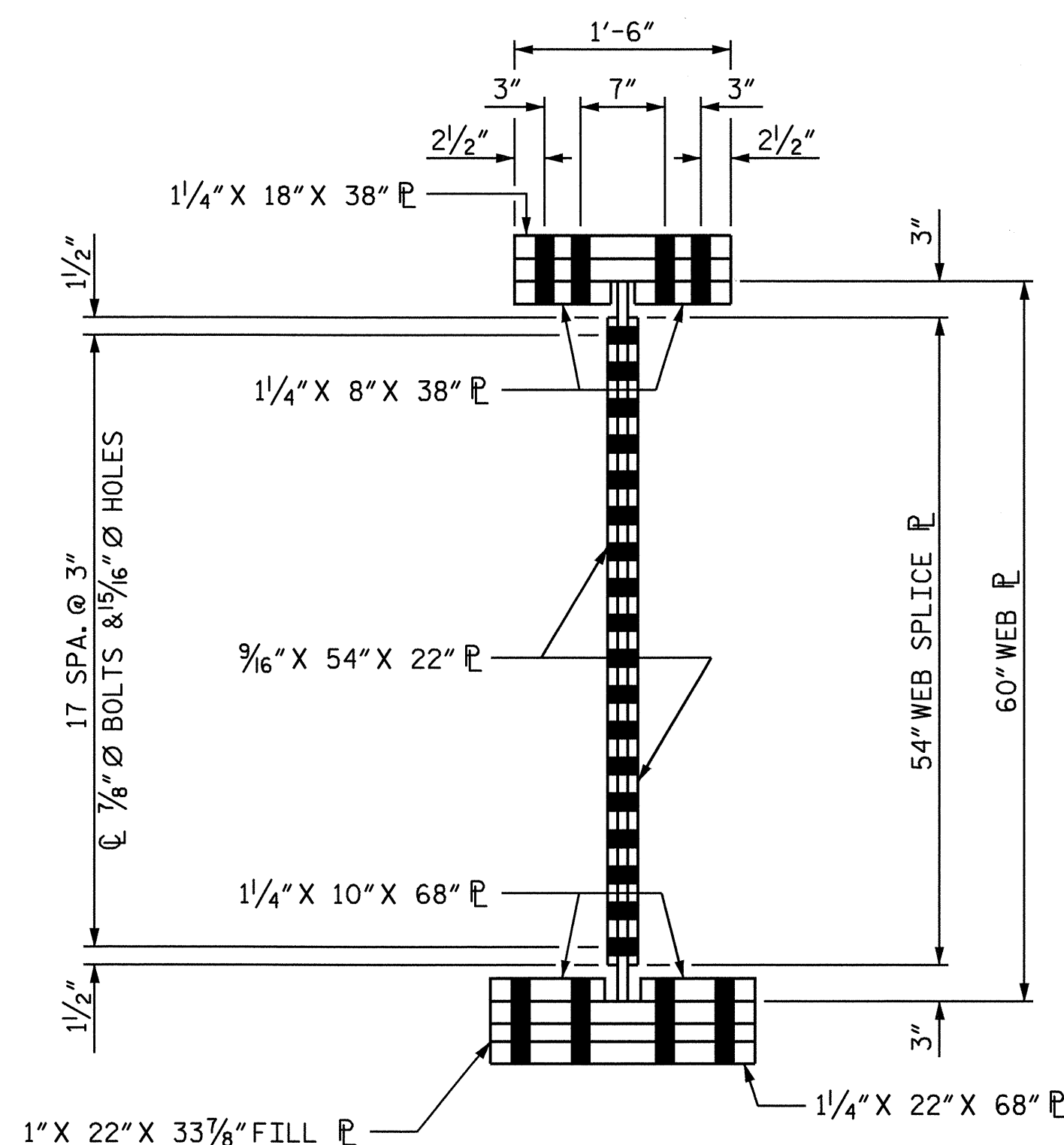
PLAN (TOP OF BOTTOM FLANGE)



SHEAR STUD DETAIL FOR TOP FLANGE SPLICE PLATE



ELEVATION



SECTION A-A

DESCRIPTION	SIZE	NO. REQ'D FOR ONE FIELD SPLICE	TOTAL REQ'D.
WEB SPLICE PLATE	9/16" X 54" X 22"	2	8
OUTER SPLICE PLATE TOP FLANGE W/SHEAR STUDS	1/4" X 18" X 38"	1	4
INNER SPLICE PLATE TOP FLANGE	1/4" X 8" X 38"	2	8
FILL PLATE BOTTOM FLANGE	1" X 22" X 33 7/8"	1	4
INNER SPLICE PLATE BOTTOM FLANGE	1/4" X 10" X 68"	2	8
OUTER SPLICE PLATE BOTTOM FLANGE	1/4" X 22" X 68"	1	4

BOLTED FIELD SPLICE DETAILS

PROJECT NO. B-4622
ROCKINGHAM COUNTY
 STATION: 16+80.00 -L-

SHEET 3 OF 3

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



DRAWN BY: M.K. BEARD DATE: 4/7/09
 CHECKED BY: L.E. SUTTON DATE: 6/16/09

03-SEP-2009 11:56
 R:\Structures\kbeard\B4622.sd.SS_01.dgn
 lsutton

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

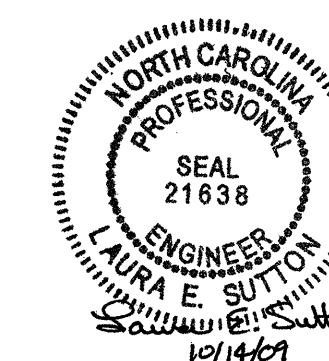
DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
	GIRDERS 1 & 4																				
	SPAN A																				
	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
TWENTIETH POINTS																					
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.025	0.049	0.071	0.091	0.109	0.123	0.135	0.144	0.149	0.151	0.149	0.144	0.135	0.123	0.109	0.091	0.071	0.049	0.025	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.069	0.143	0.212	0.274	0.328	0.373	0.410	0.436	0.452	0.458	0.452	0.436	0.410	0.373	0.328	0.274	0.212	0.143	0.069	0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	0.009	0.017	0.025	0.032	0.039	0.044	0.048	0.051	0.053	0.053	0.053	0.051	0.048	0.044	0.039	0.032	0.025	0.017	0.009	0
TOTAL DEAD LOAD DEFLECTION	0	0.103	0.209	0.308	0.397	0.476	0.540	0.593	0.631	0.654	0.662	0.654	0.631	0.593	0.540	0.476	0.397	0.308	0.209	0.103	0
REQUIRED CAMBER	0	1/4"	2/4"	3 1/16"	4 3/4"	5 1/16"	6 1/2"	7 1/8"	7 9/16"	7 7/8"	7 15/16"	7 7/8"	7 9/16"	7 1/8"	6 1/2"	5 1/16"	4 3/4"	3 1/16"	2 1/4"	1 1/4"	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).

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
	GIRDERS 2 & 3																				
	SPAN A																				
	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.
TWENTIETH POINTS																					
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.026	0.050	0.073	0.094	0.112	0.127	0.139	0.148	0.153	0.155	0.153	0.148	0.139	0.127	0.112	0.094	0.073	0.050	0.026	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.070	0.145	0.214	0.277	0.331	0.377	0.414	0.441	0.457	0.463	0.457	0.441	0.414	0.377	0.331	0.277	0.214	0.145	0.070	0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	0.009	0.017	0.025	0.031	0.037	0.042	0.046	0.049	0.051	0.052	0.051	0.049	0.046	0.042	0.037	0.031	0.025	0.017	0.009	0
TOTAL DEAD LOAD DEFLECTION	0	0.105	0.212	0.312	0.402	0.480	0.546	0.599	0.638	0.661	0.670	0.661	0.638	0.599	0.546	0.480	0.402	0.312	0.212	0.105	0
REQUIRED CAMBER	0	1/4"	2 9/16"	3 3/4"	4 13/16"	5 3/4"	6 9/16"	7 3/16"	7 5/8"	7 15/16"	8 1/16"	7 15/16"	7 5/8"	7 3/16"	6 9/16"	5 3/4"	4 13/16"	3 3/4"	2 9/16"	1 1/4"	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-4622
ROCKINGHAM COUNTY
 STATION: 16+80.00 -L-

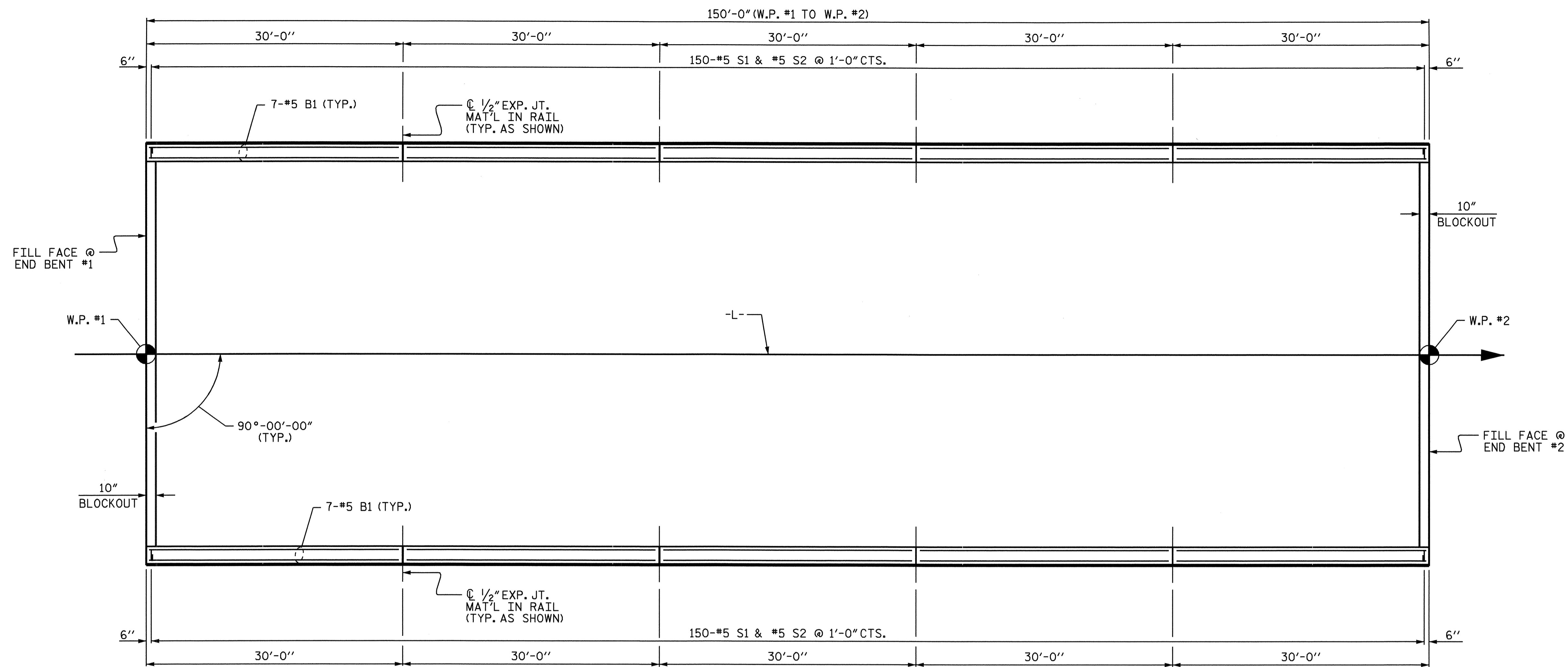


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

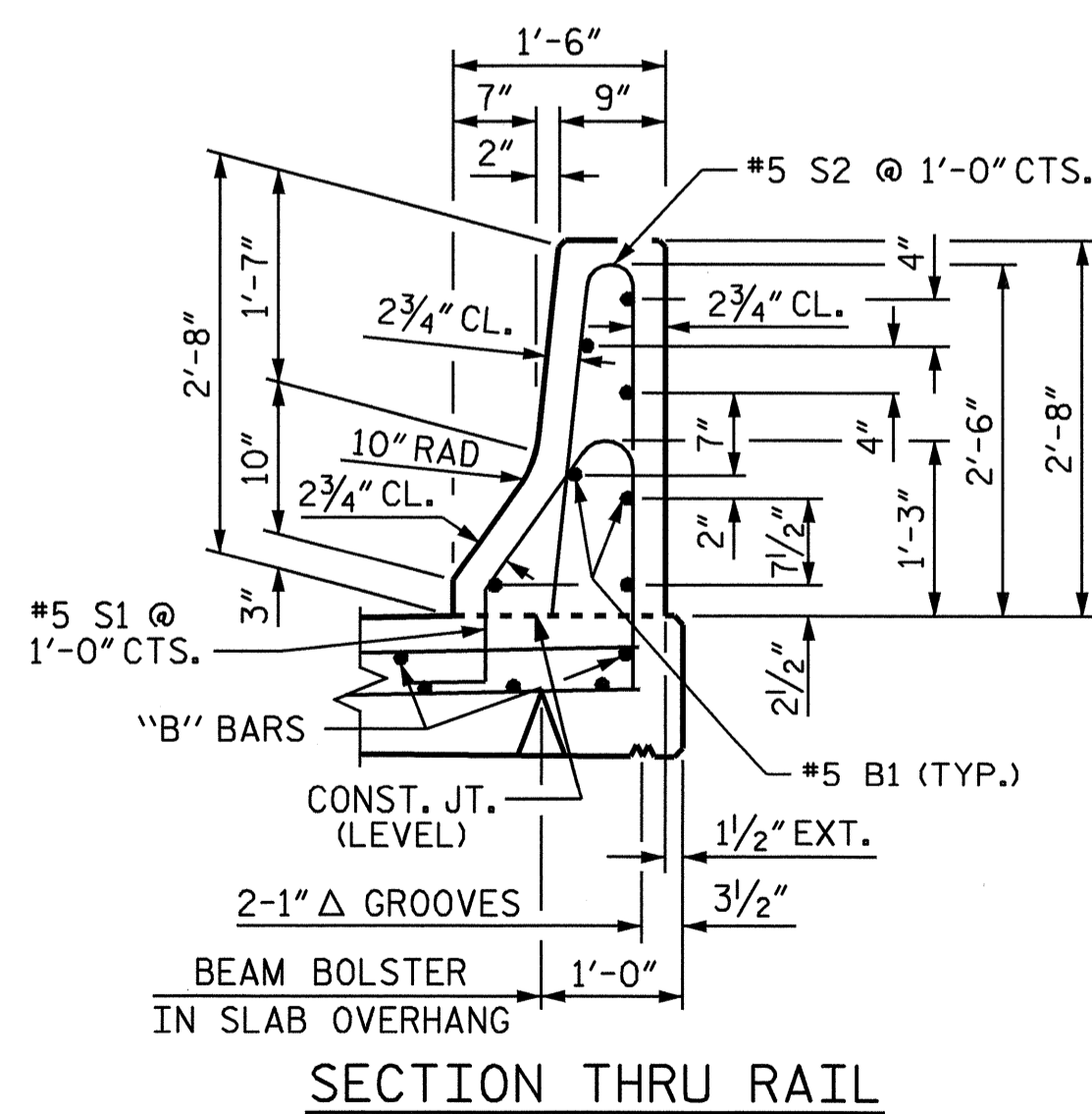
SUPERSTRUCTURE
 DEAD LOAD DEFLECTIONS

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

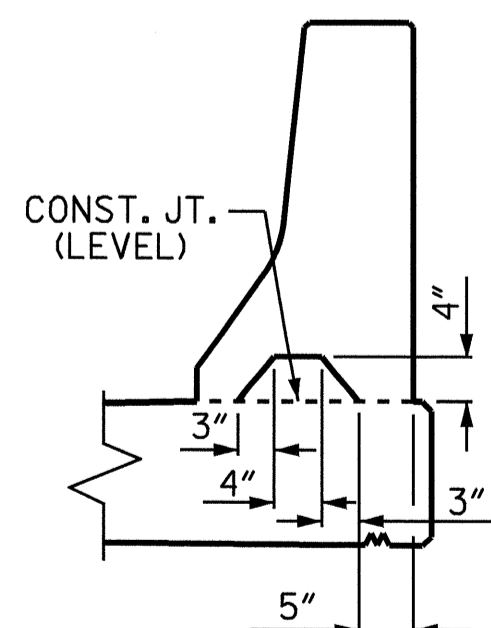
DRAWN BY: M.K. BEARD DATE: 4/7/09
 CHECKED BY: L.E. SUTTON DATE: 5/19/09



PLAN OF BARRIER RAIL

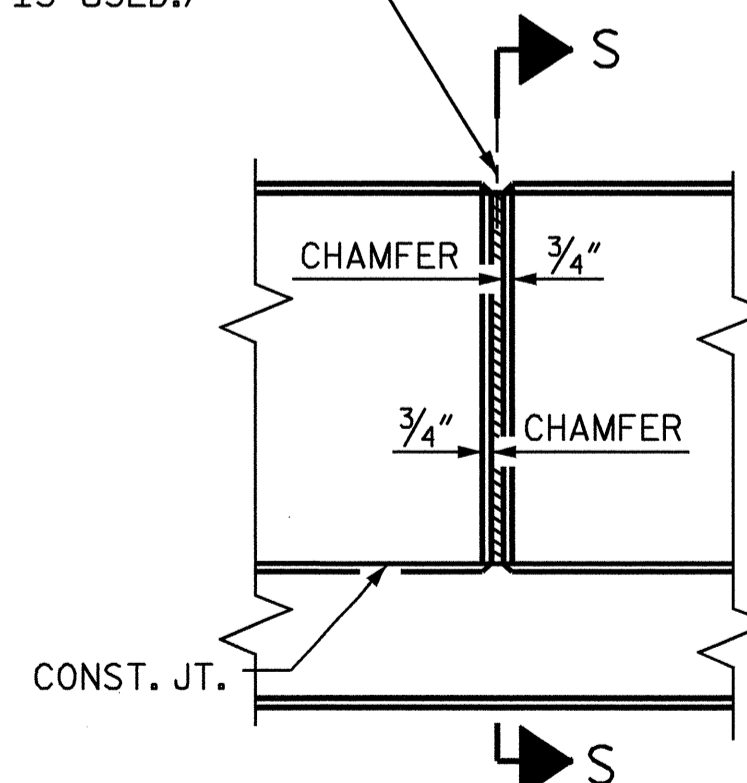


SECTION THRU RAIL



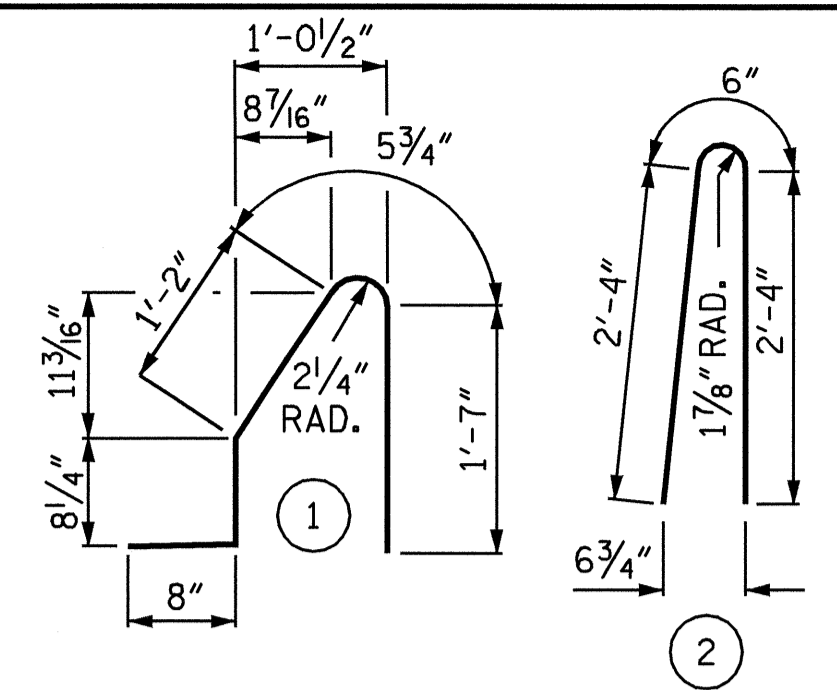
SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY
WHEN SLIP FORM IS USED)

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	70	#5	STR	29'-7"	2160
* S1	300	#5	1	4'-7"	1434
* S2	300	#5	2	5'-2"	1617

* EPOXY COATED REINFORCING STEEL	LBS.	5,211
CLASS AA CONCRETE	CU. YDS.	30.1
CONCRETE BARRIER RAIL	LIN. FT.	300.00

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.

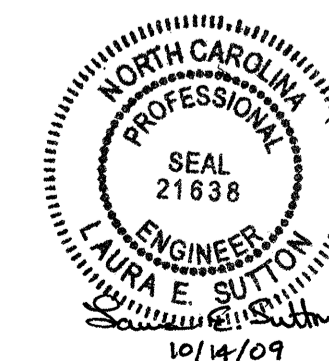
ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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.

PROJECT NO. B-4622
ROCKINGHAM COUNTY
 STATION: 16+80.00 -L-

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



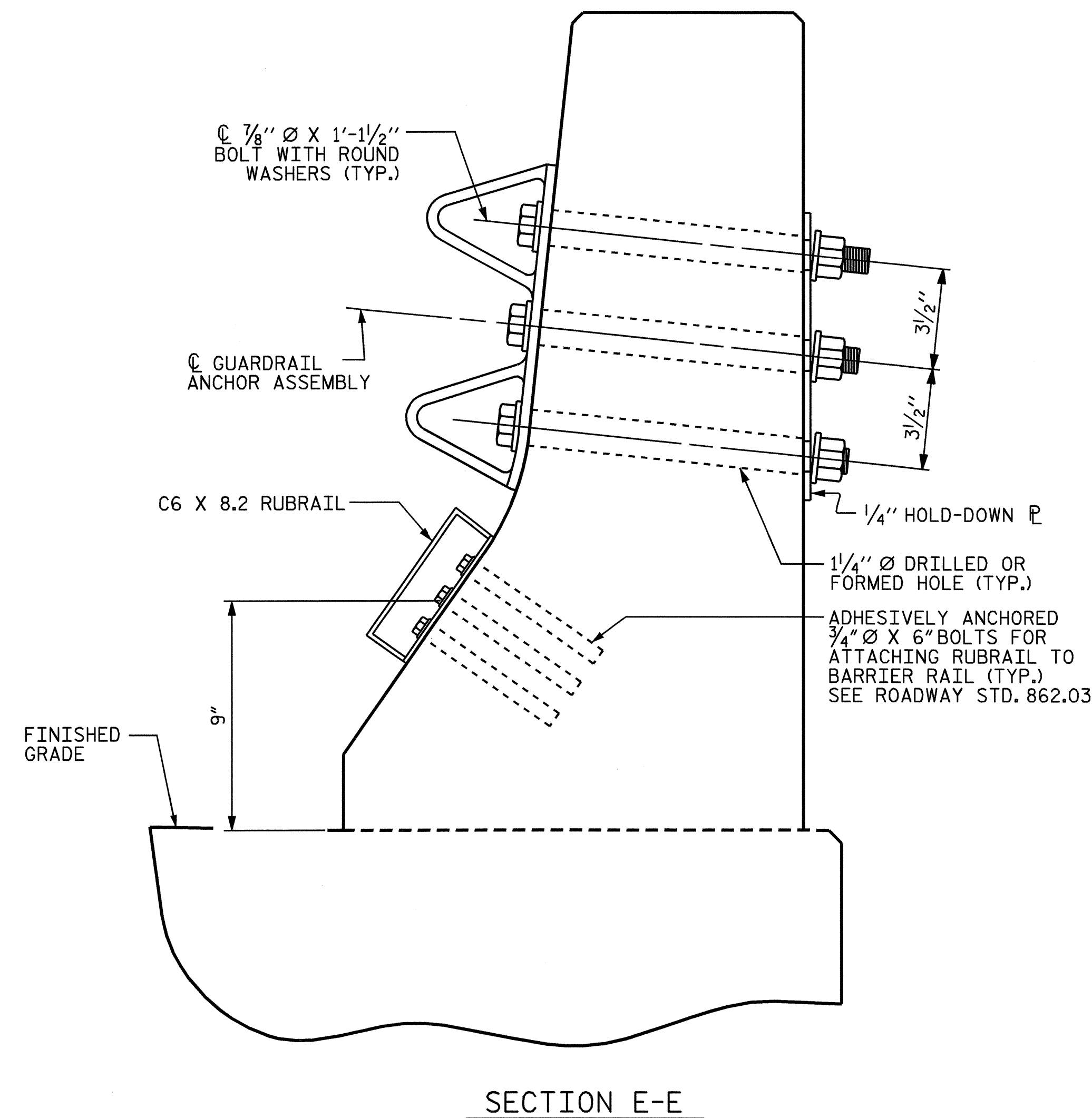
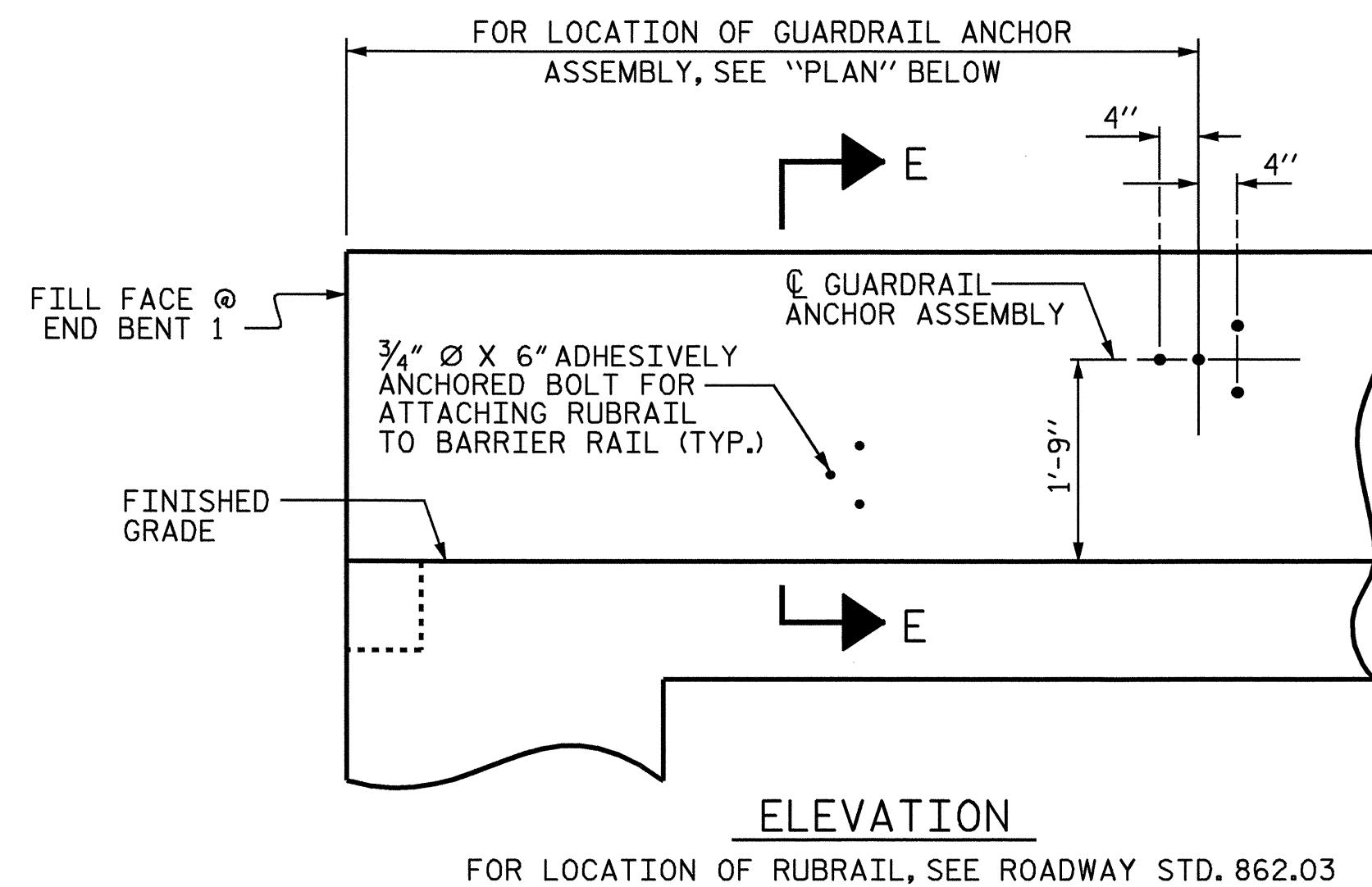
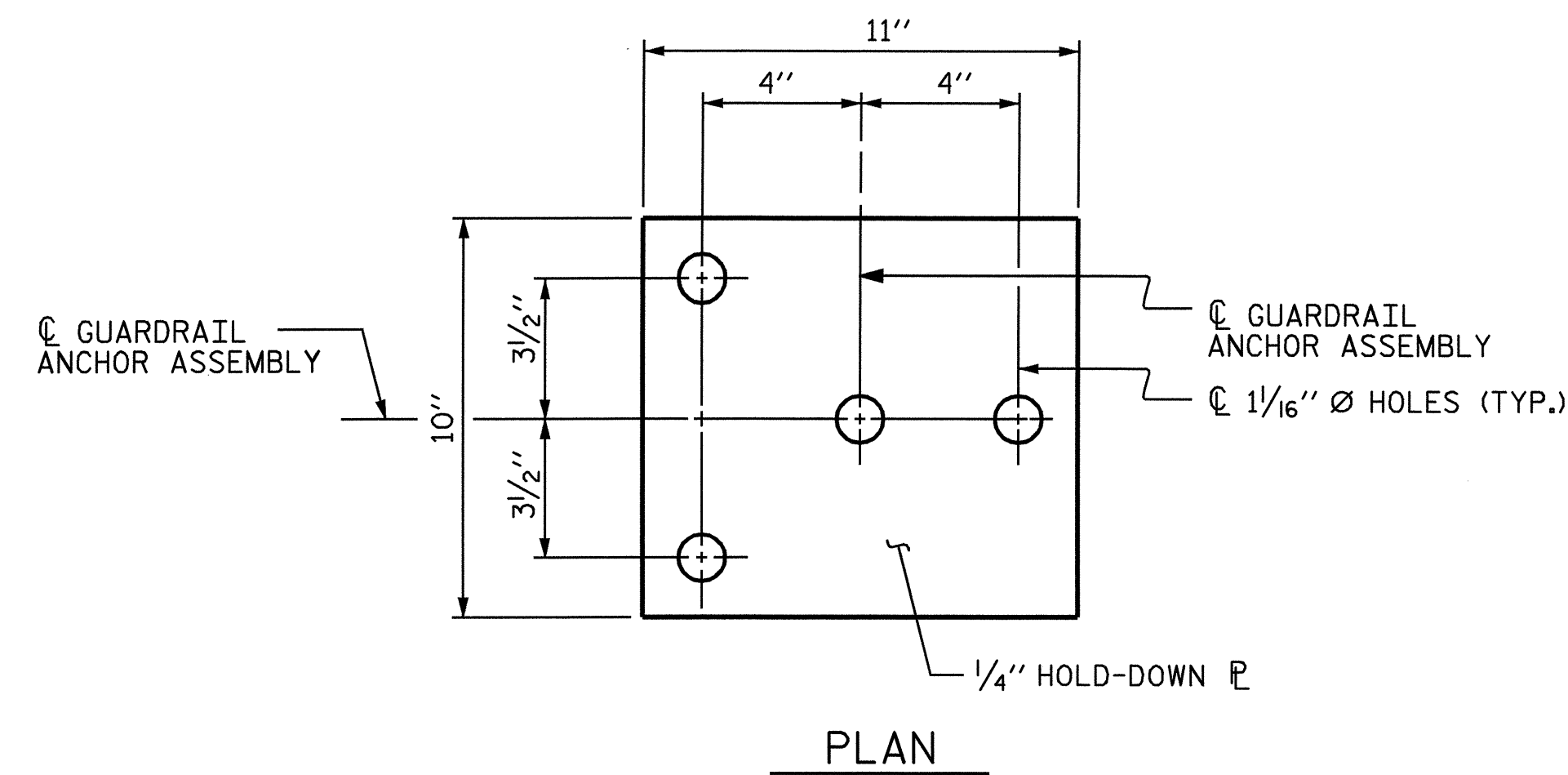
ASSEMBLED BY : M.K. BEARD DATE : 4/7/09
 CHECKED BY : L.E. SUTTON DATE : 5/18/09
 DRAWN BY : ARB 5/87 REV. 10/17/00 RWW/LES
 CHECKED BY : SJD 9/87 REV. 5/7/03R RWW/JTE
 REV. 5/1/06 TLA/GM

03-SEP-2009 10:46
 R:\Structures\kbeard\B4622.sd_BR_01.dgn
 lsutton

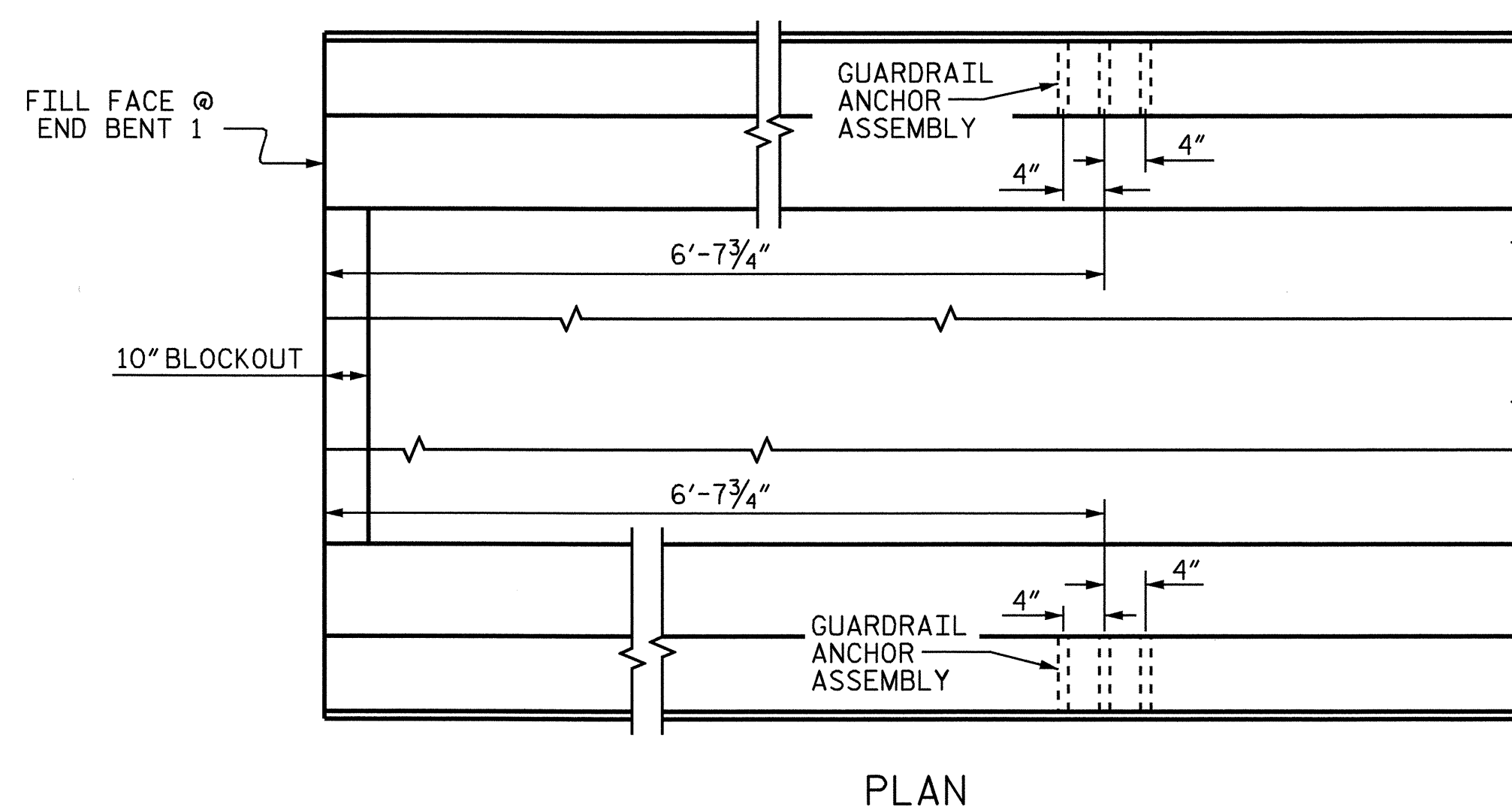
BARRIER RAIL DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS 24
2			4			

STD. NO. CBR1



GUARDRAIL ANCHOR ASSEMBLY DETAILS



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.)

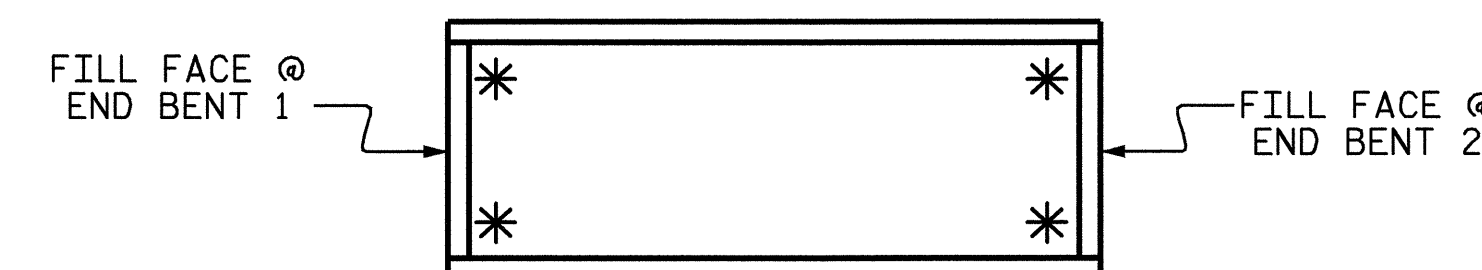
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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 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.

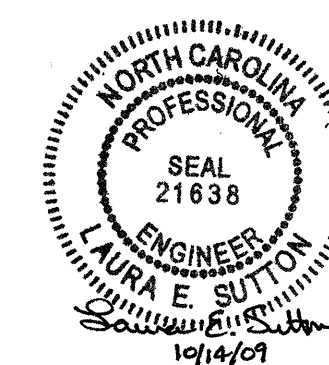
THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS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



SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4622
ROCKINGHAM COUNTY
 STATION: 16+80.00 -L-



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

ASSEMBLED BY : M.K. BEARD	DATE : 4/7/09
CHECKED BY : L.E. SUTTON	DATE : 5/18/09
DRAWN BY : TLA 5/06	ADDED 5/1/06R KMM/GM
CHECKED BY : GM 5/06	

03-SEP-2009 10:46
 R:\Structures\kbeard\B4622.sd_GR_01.dgn
 lsutton

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

STD. NO. GRA2

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

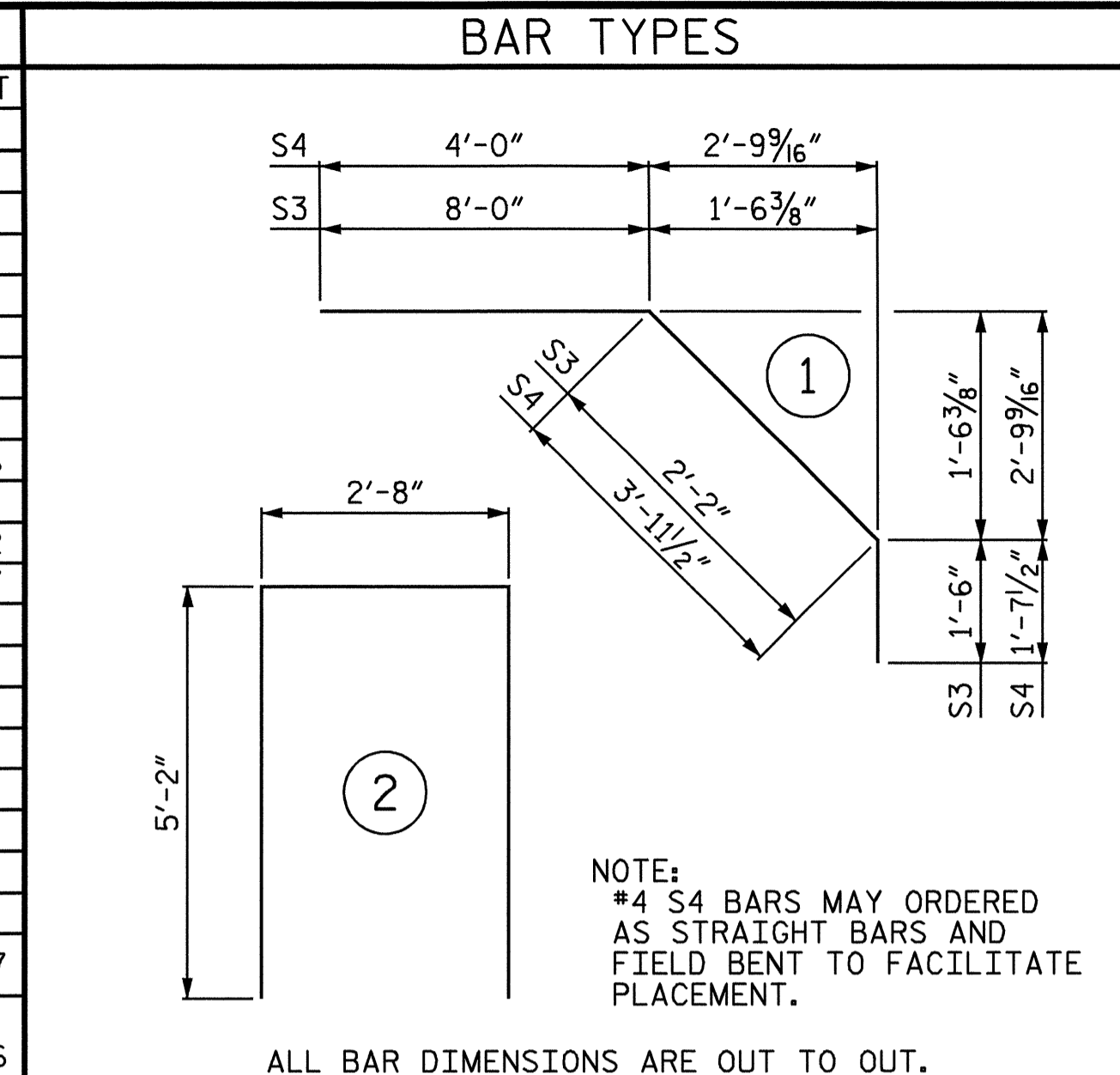
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			

GROOVING BRIDGE FLOORS

APPROACH SLABS	1,212	SQ.FT.
BRIDGE DECK	3,995	SQ.FT.
TOTAL	5,207	SQ.FT.

BILL OF MATERIAL

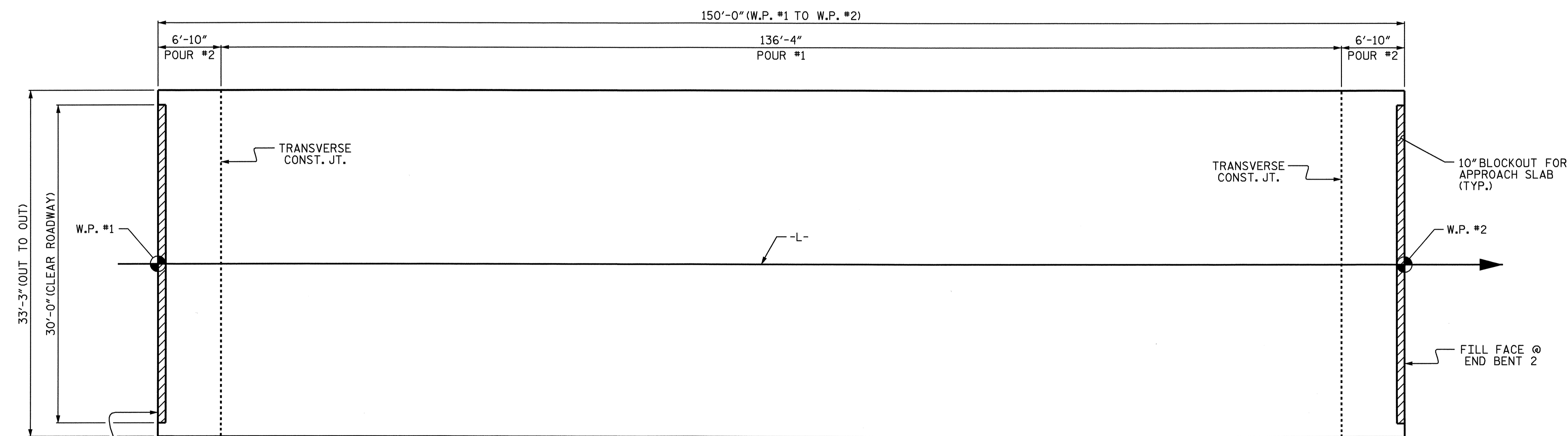
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	297	#5	STR	32'-11"	10197
A2	297	#5	STR	32'-11"	10197
*B1	88	#4	STR	24'-7"	2256
B2	123	#5	STR	50'-10"	6521
*B3	170	#5	STR	29'-10"	5290
*B4	12	#4	STR	26'-8"	214
K1	48	#4	STR	17'-4"	556
*S3	76	#4	1	11'-8"	592
*S4	62	#4	1	9'-7"	397
U1	66	#4	2	13'-0"	573
REINFORCING STEEL					LBS. 17,847
*EPOXY COATED REINFORCING STEEL					LBS. 18,946



SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
POUR #1	131.9	---	---
POUR #2	53.4	---	---
TOTALS **	185.3	17,847	18,946

**QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED.



LAYOUT FOR COMPUTING AREA
OF REINFORCED CONCRETE DECK SLAB
AND POURING SEQUENCE
(SQ. FT. = 4,988)

PROJECT NO. B-4622
ROCKINGHAM COUNTY
STATION: 16+80.00 -L-

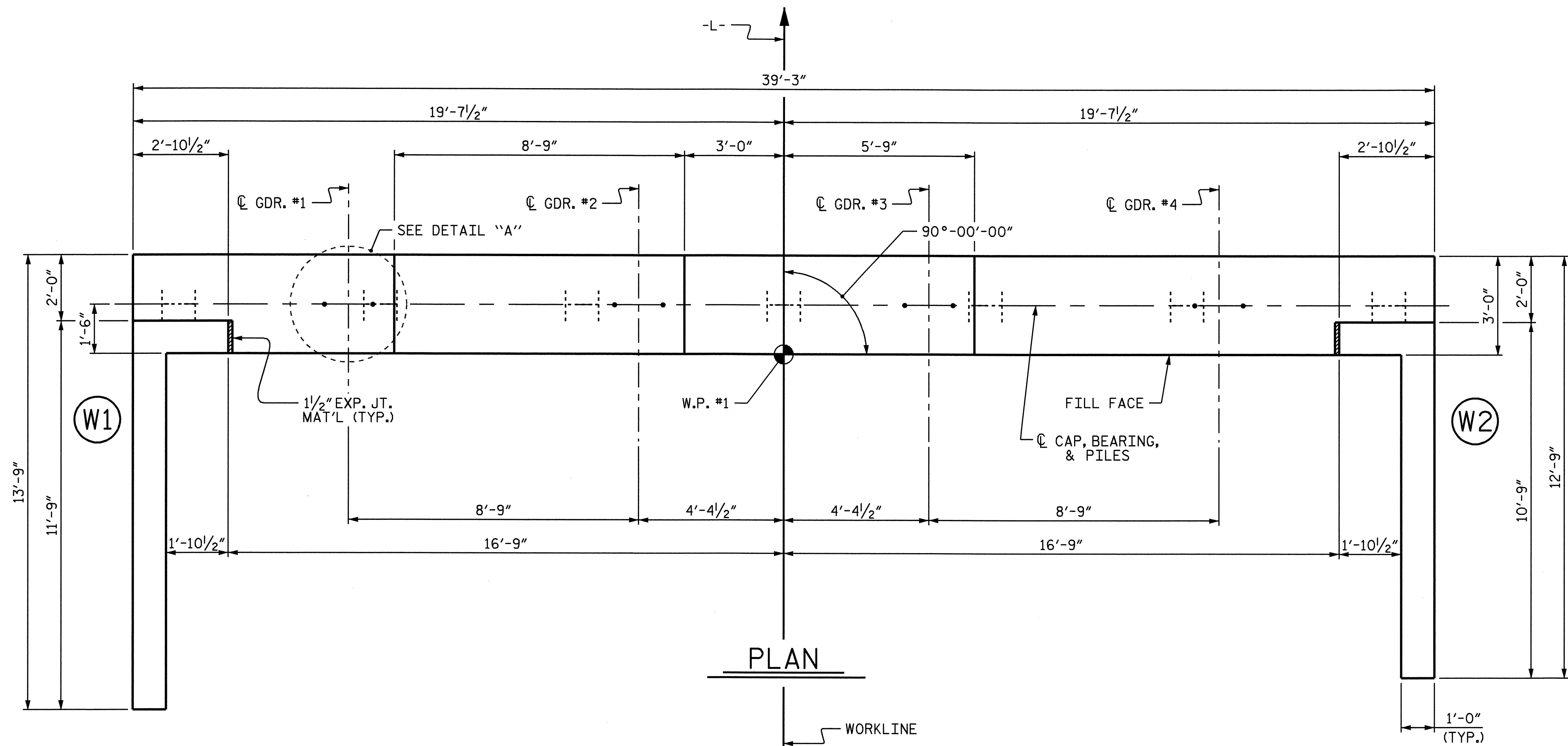


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
BILL OF MATERIAL

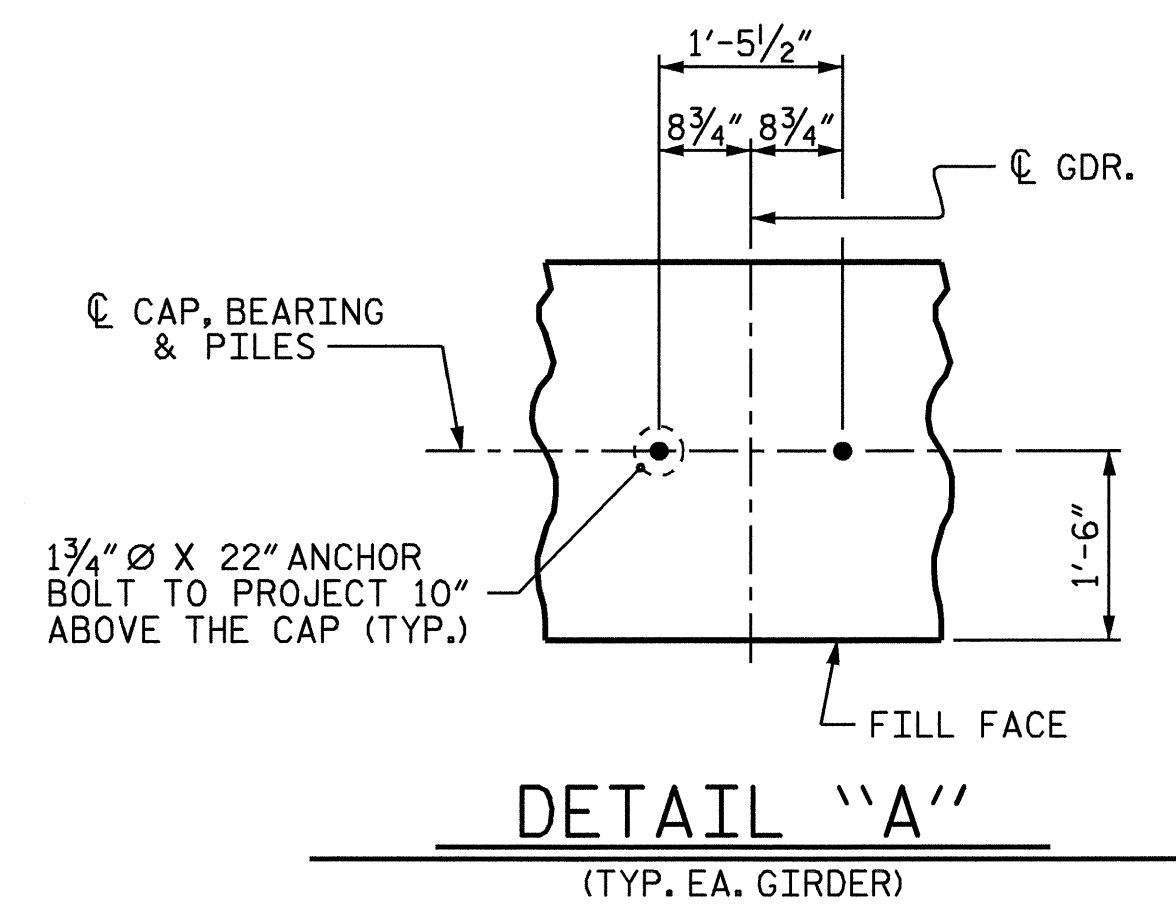
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			24

DRAWN BY: M.K. BEARD DATE: 4/7/09
CHECKED BY: L.E. SUTTON DATE: 5/18/09

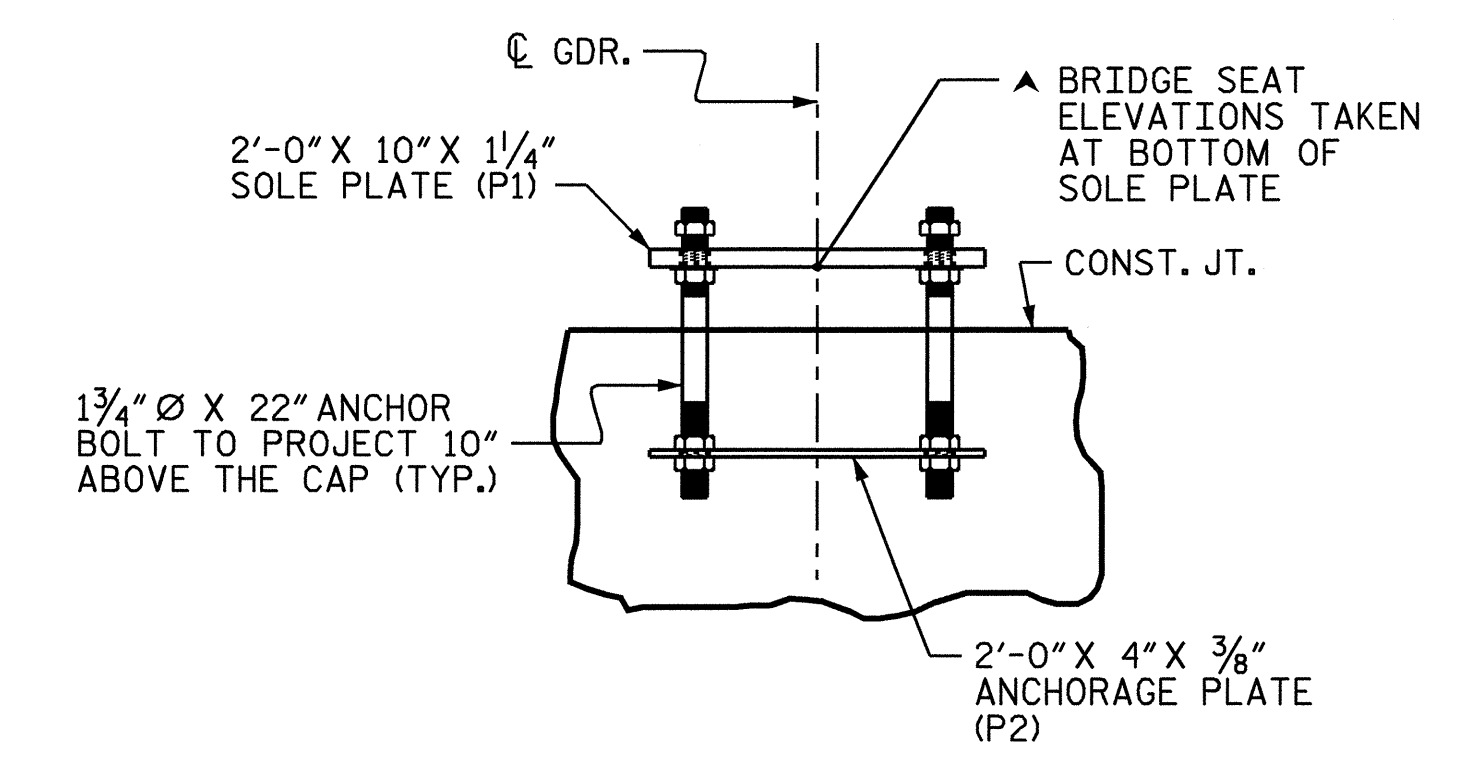


PLAN

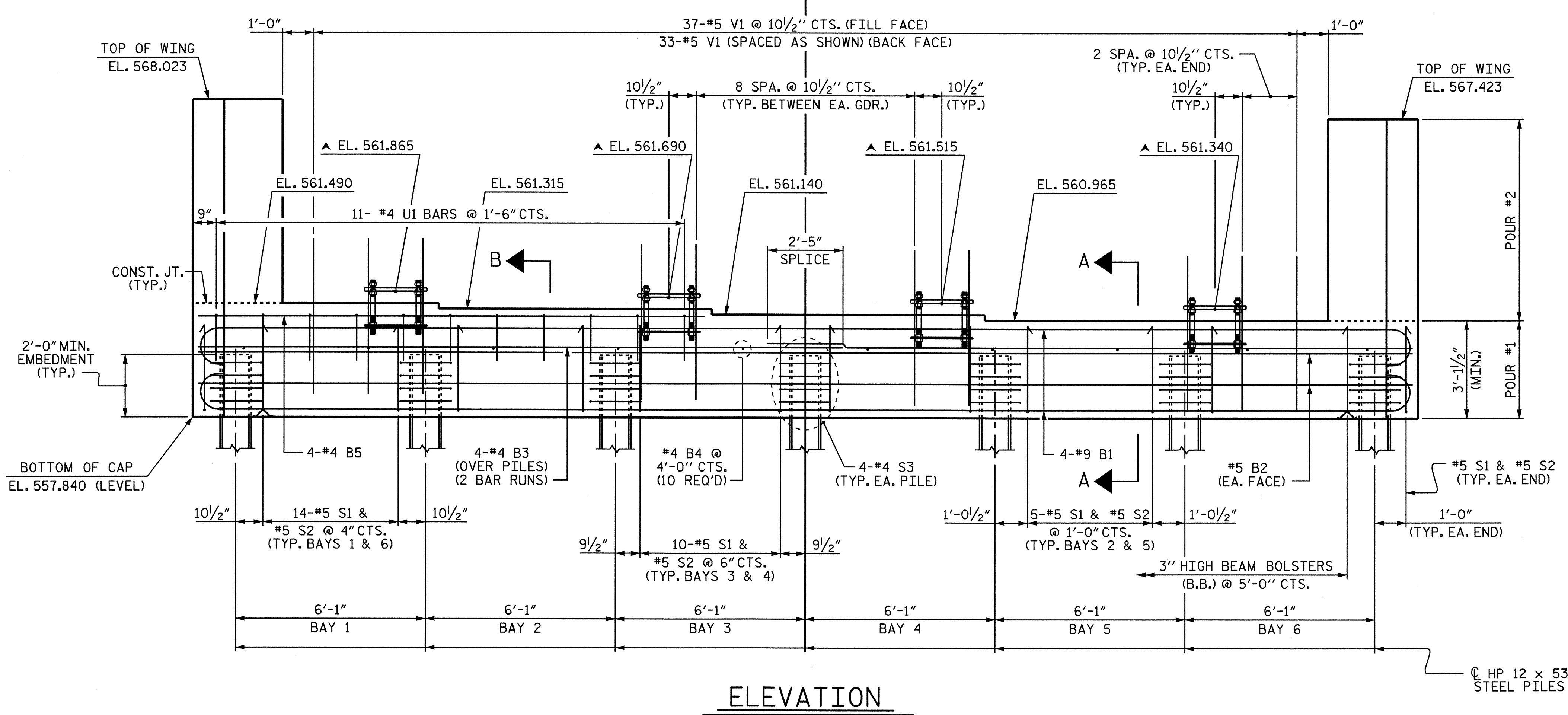
NOTES:
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY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



DETAIL "A"
(TYP. EA. GIRDER)



ANCHORAGE DETAILS
(TYP. EA. GIRDER)



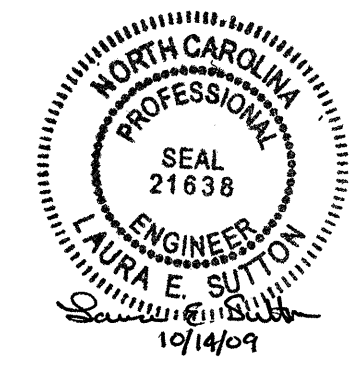
ELEVATION

PROJECT NO. B-4622
 ROCKINGHAM COUNTY
 STATION: 16+80.00 -L-

SHEET 1 OF 3

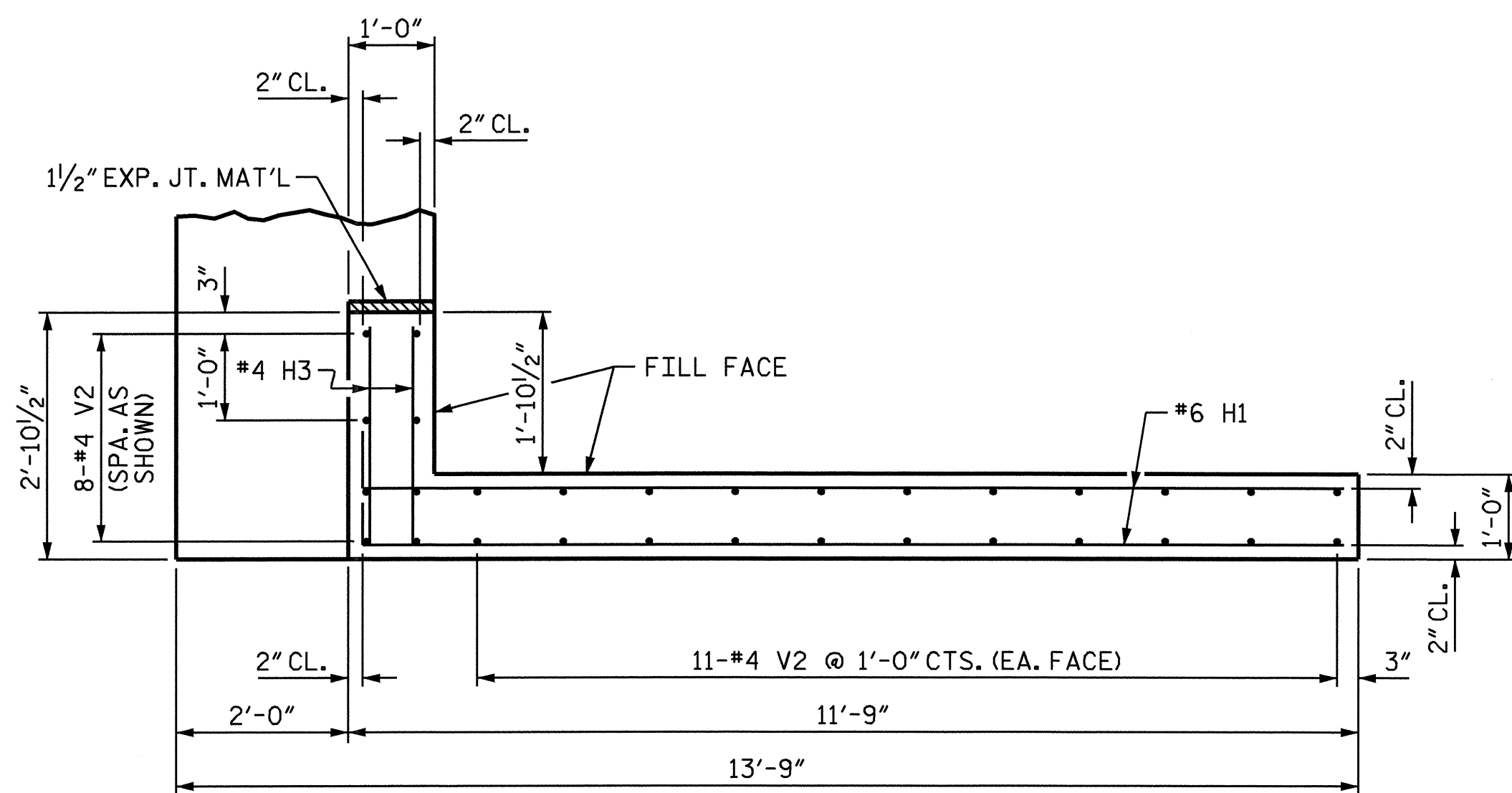
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 INTEGRAL
 END BENT 1

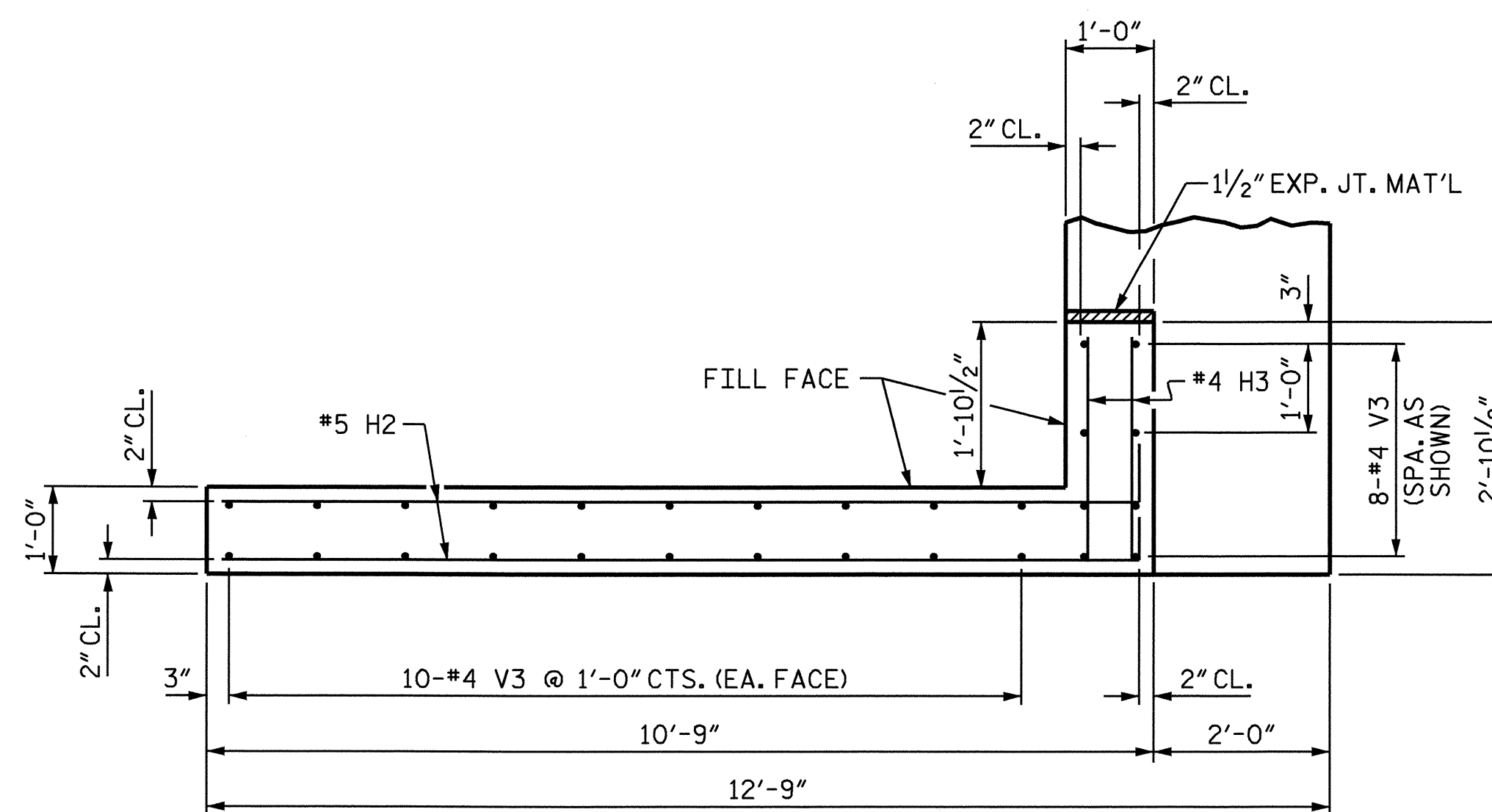


REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					24

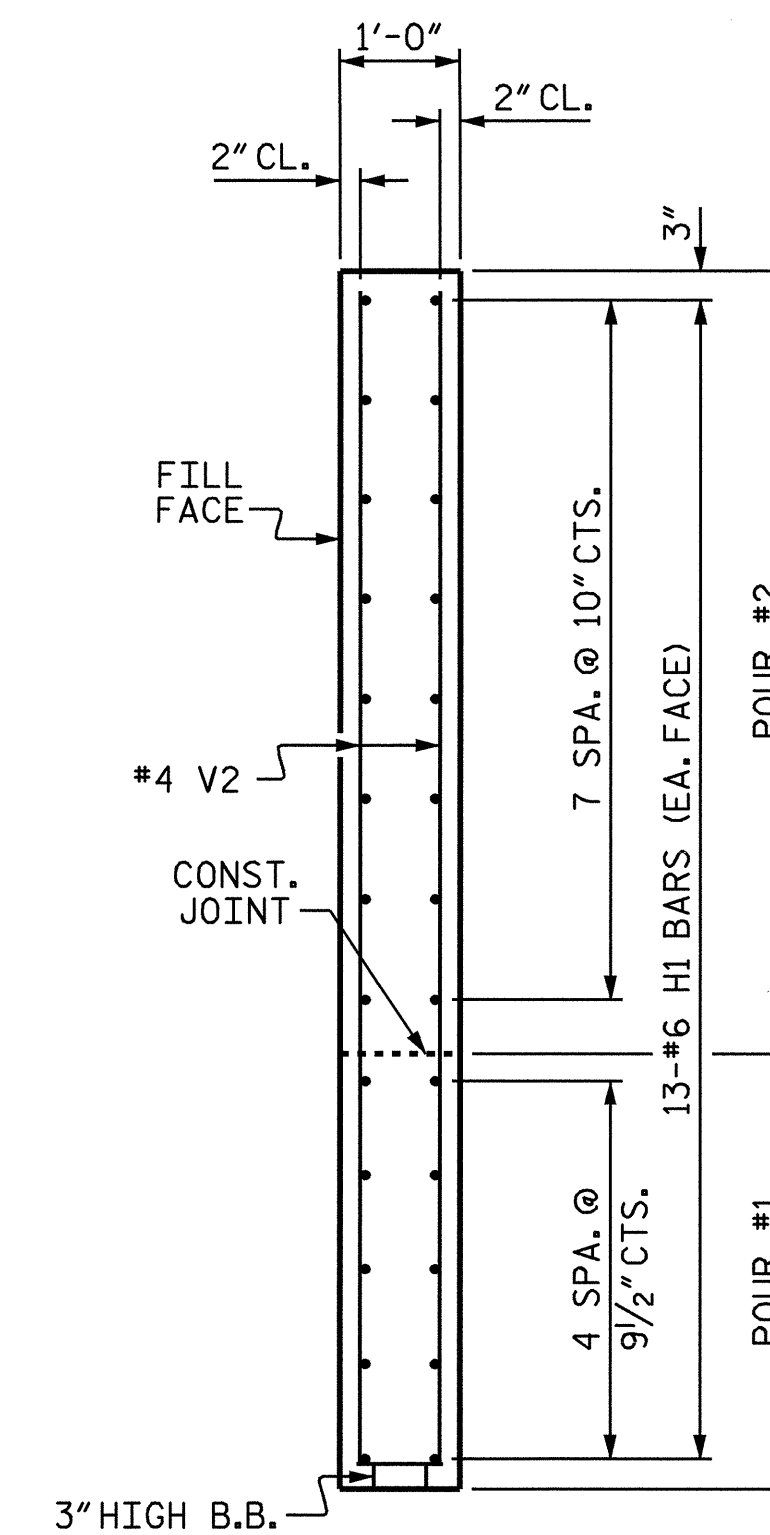
DRAWN BY: L.E. SUTTON DATE: 5/22/09
 CHECKED BY: M.K. BEARD DATE: 6/03/09



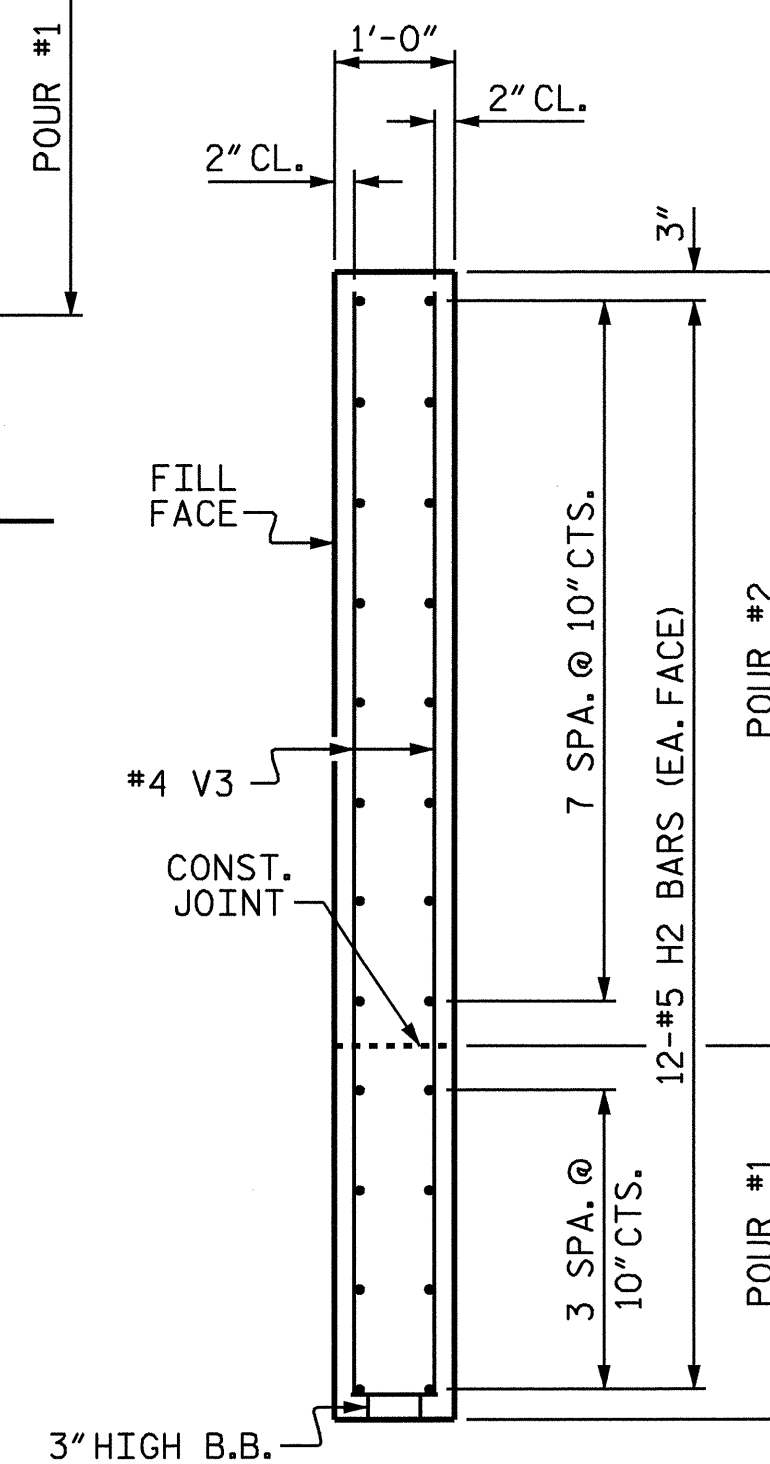
PLAN OF WING (W1)



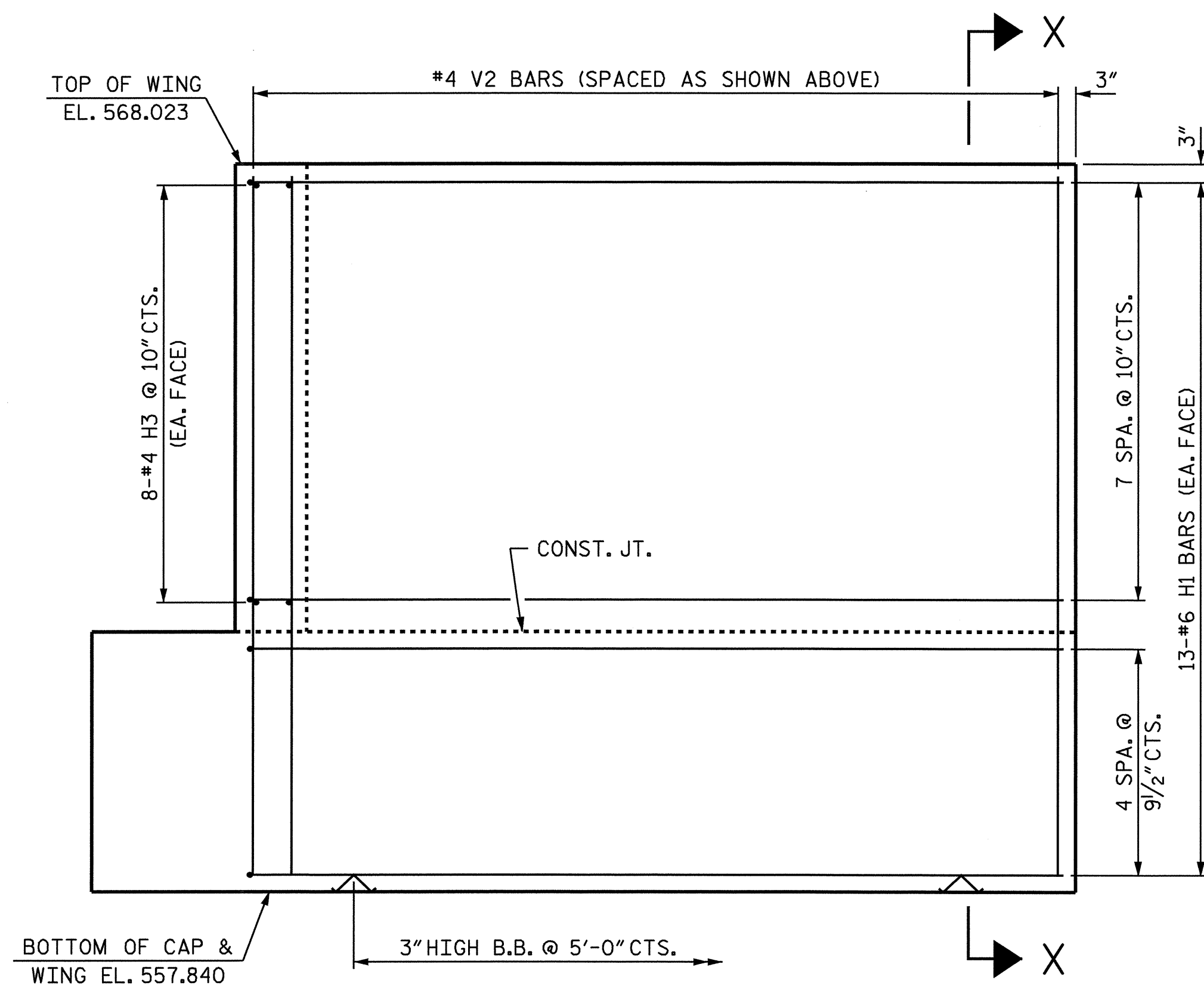
PLAN OF WING (W2)



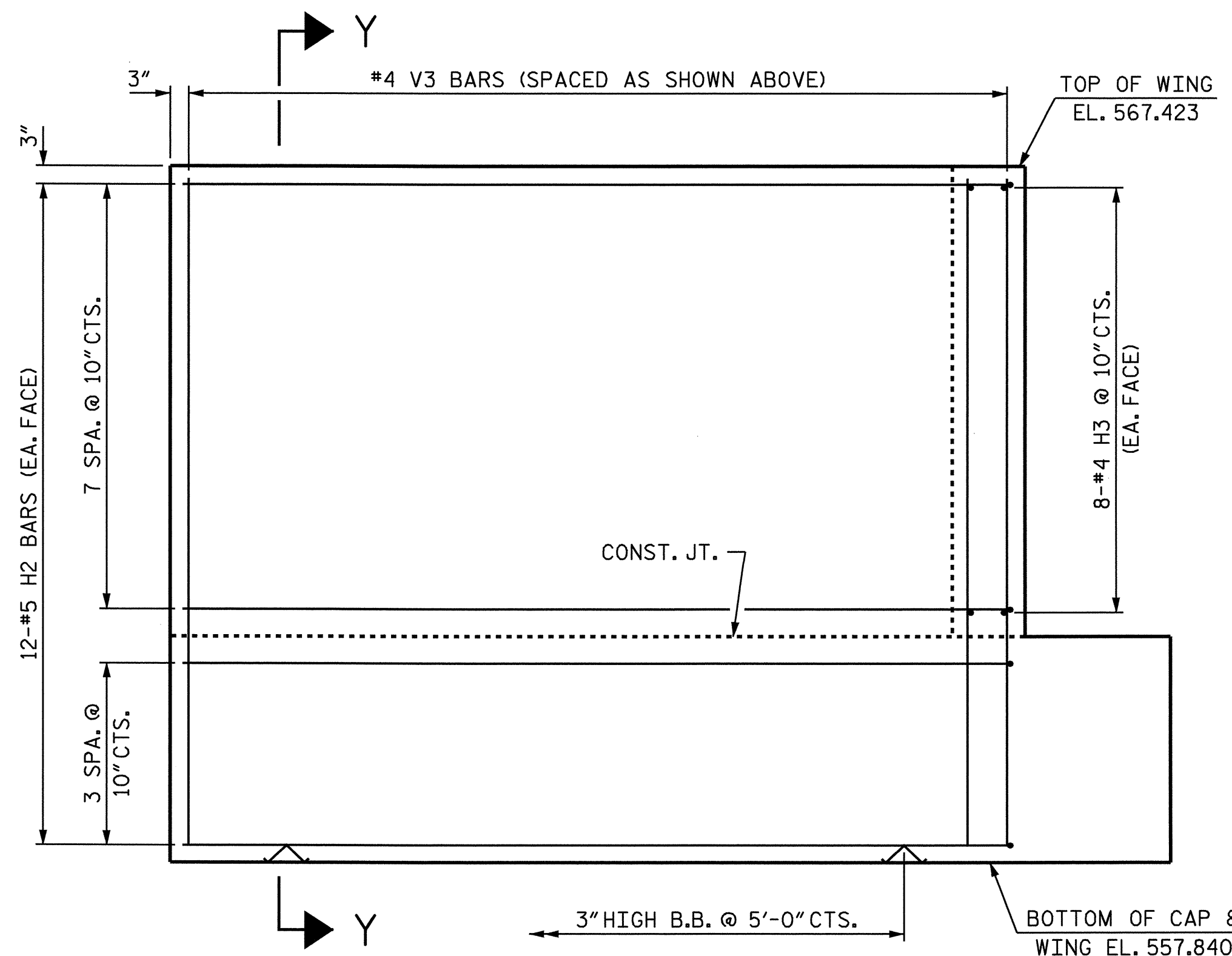
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)

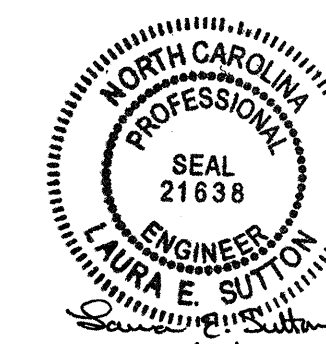


ELEVATION OF WING (W2)

PROJECT NO. B-4622
 ROCKINGHAM COUNTY
 STATION: 16+80.00 -L-

SHEET 2 OF 3

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

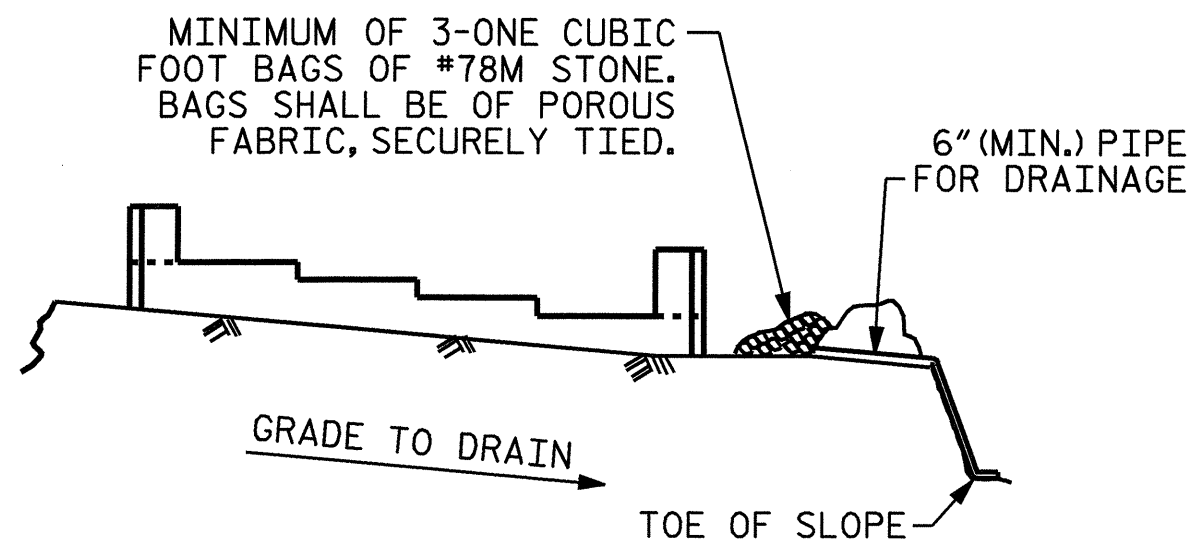


DRAWN BY: L.E. SUTTON DATE: 5/22/09
 CHECKED BY: M.K. BEARD DATE: 6/09/09

08-OCT-2009 09:51
 R:\Structures\lsutton\b4622.sd.eb.01.dgn
 lsutton

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

S-17
 TOTAL SHEETS
 24

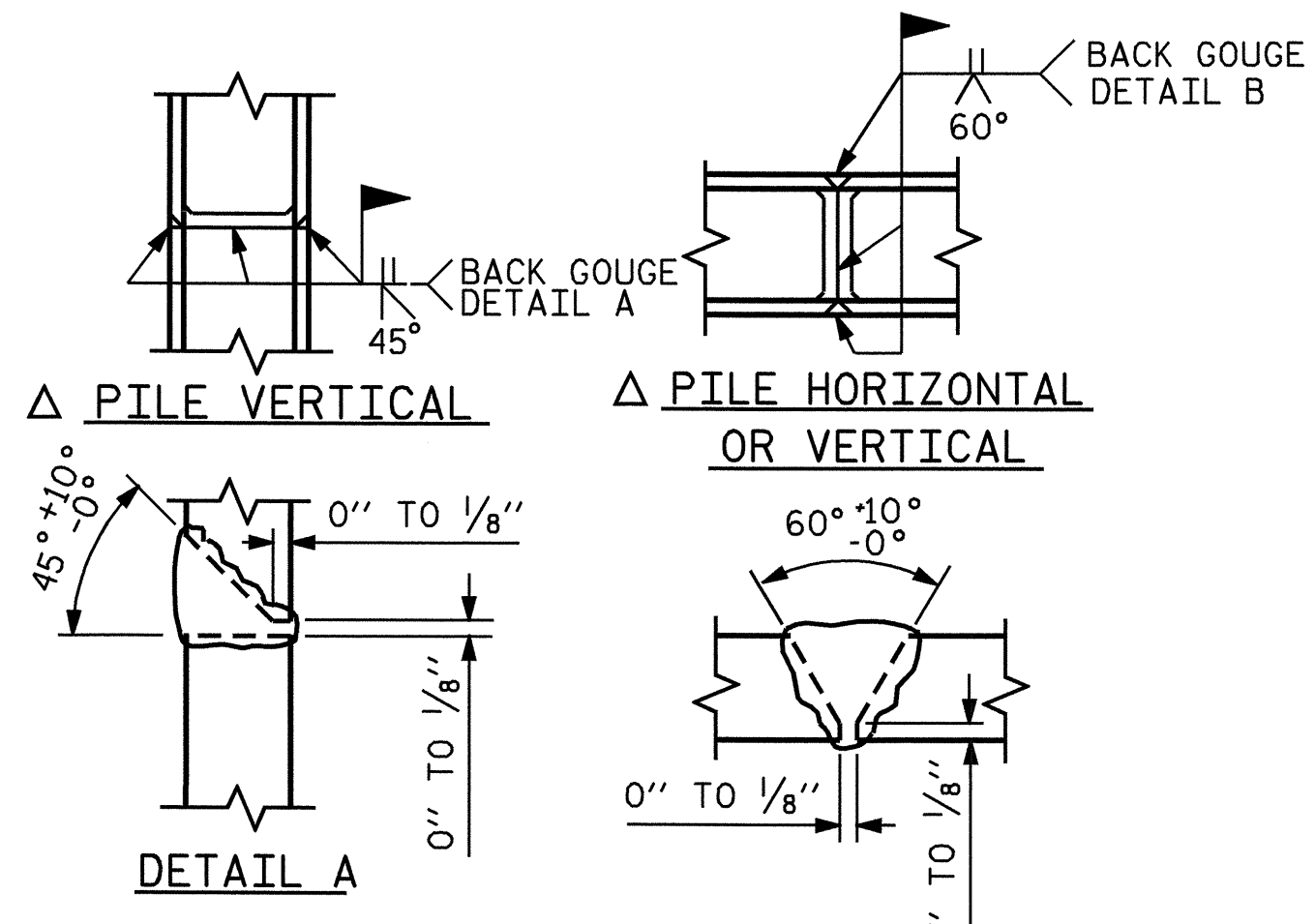


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

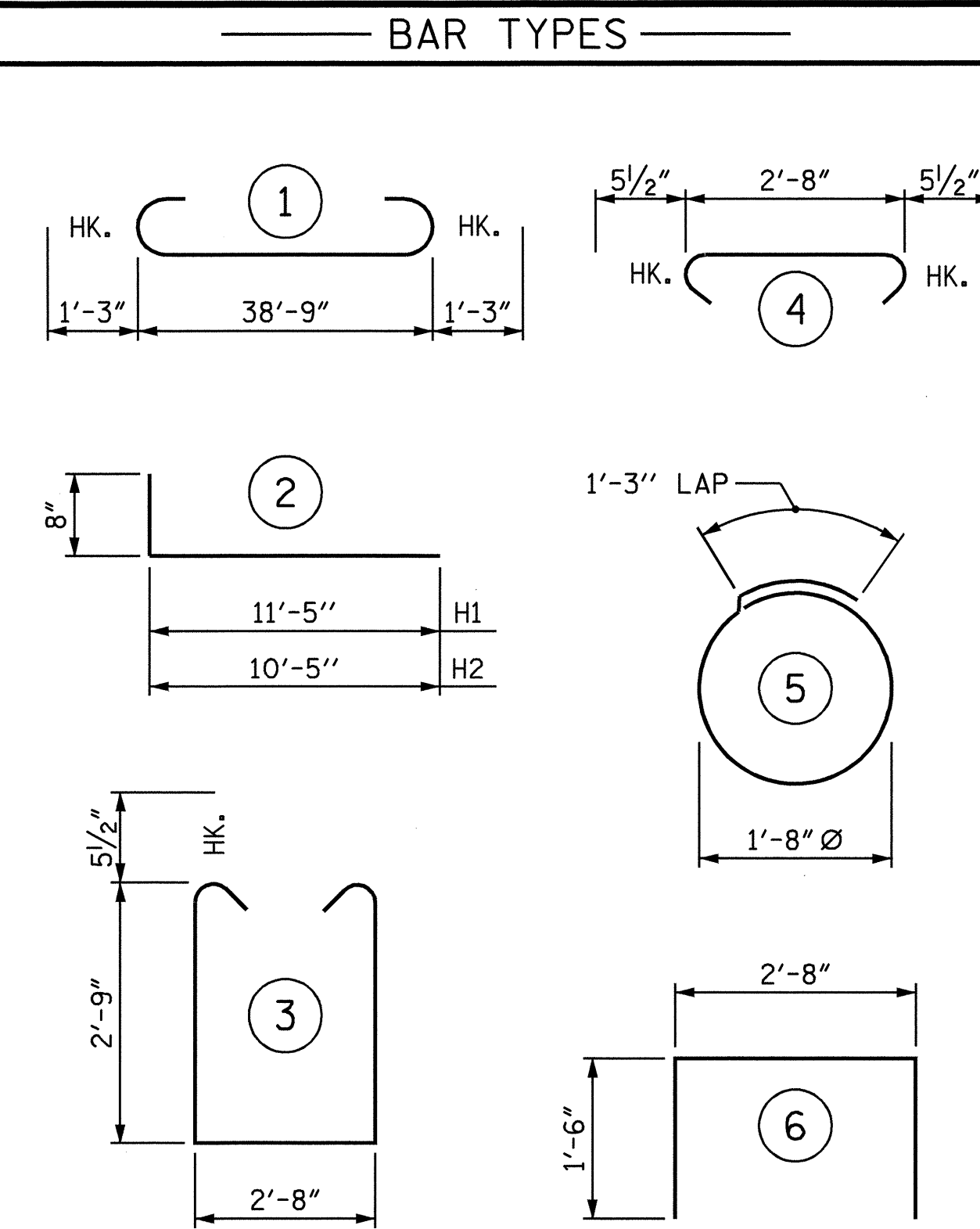
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

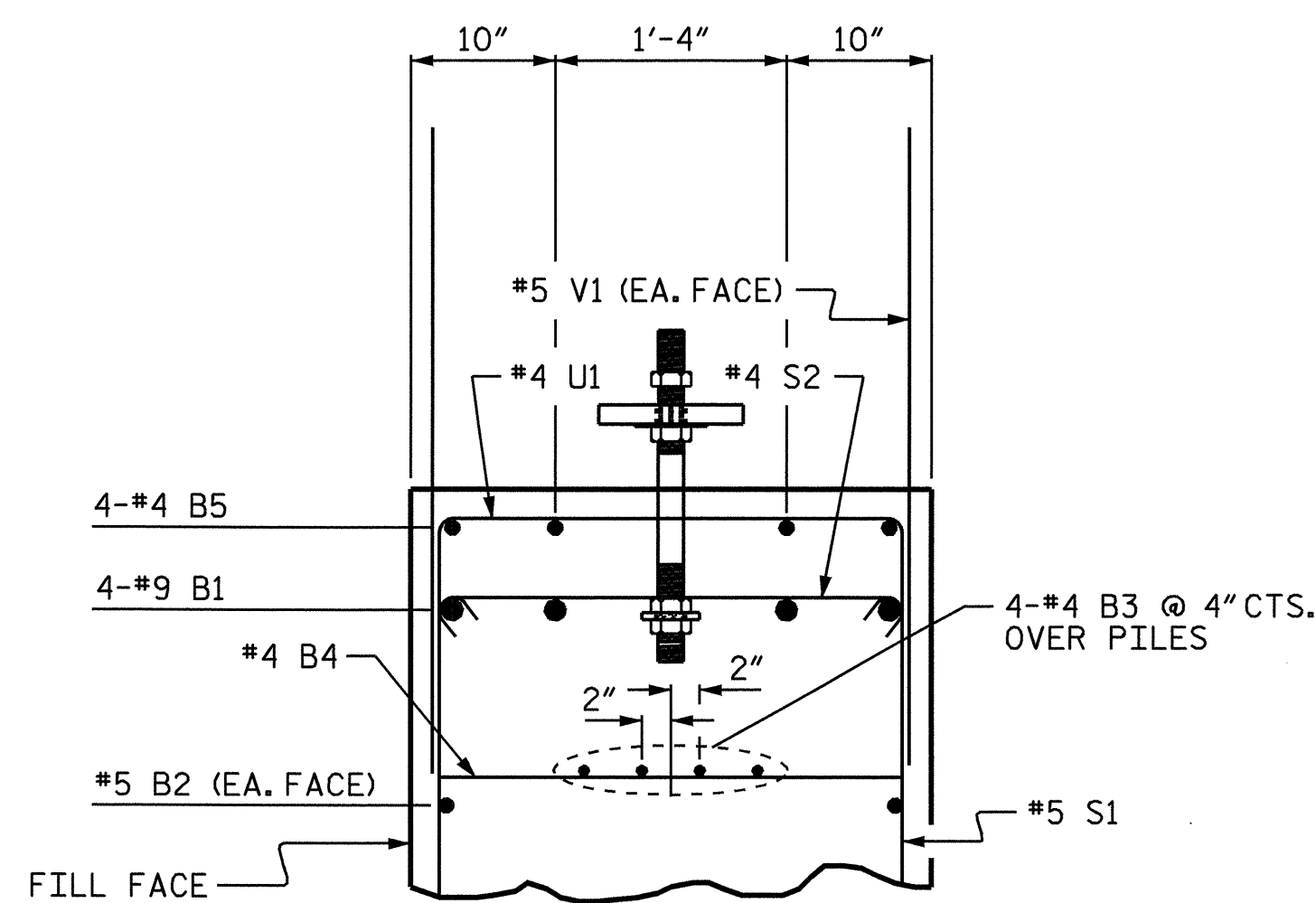
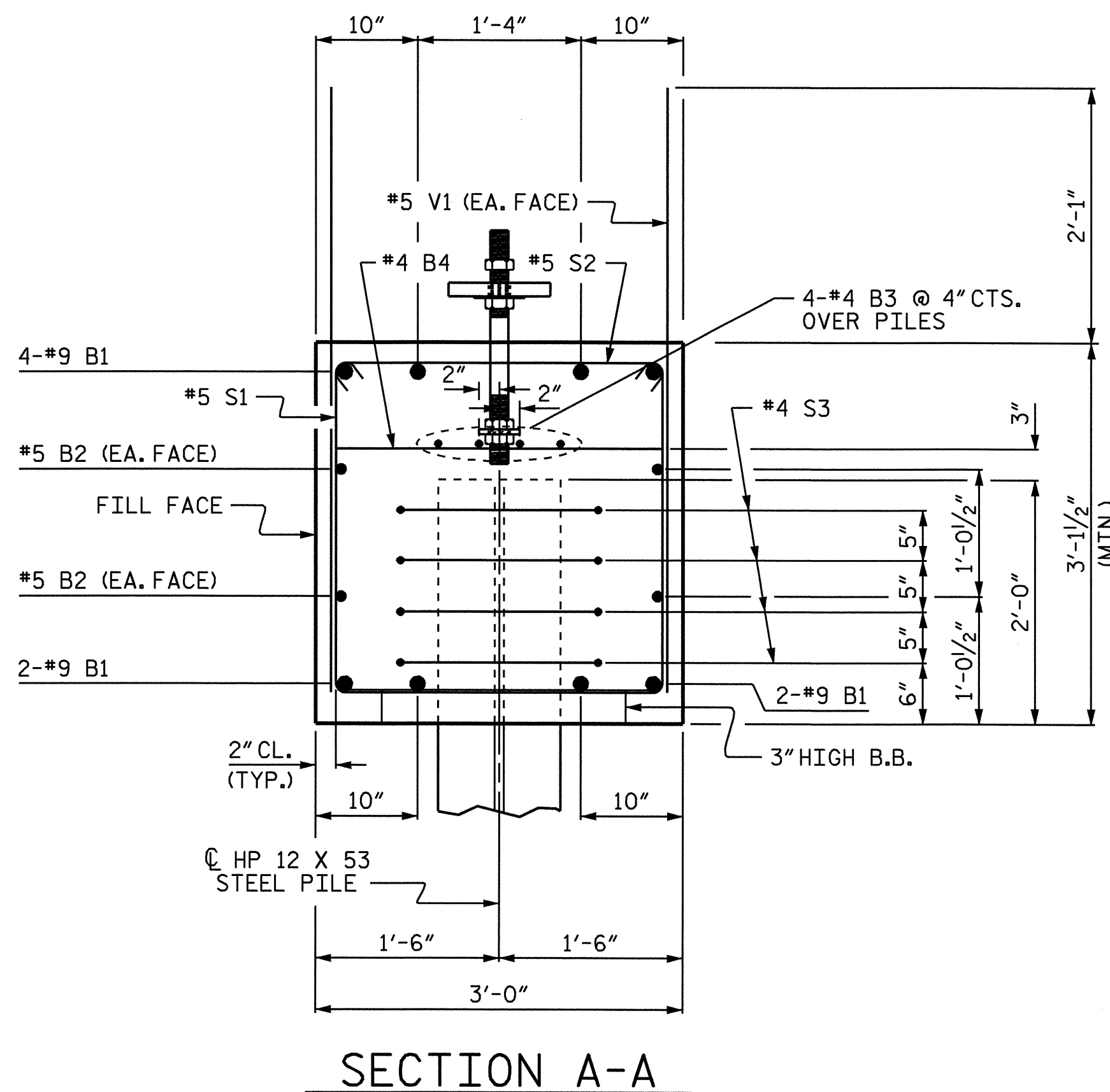


△ POSITION OF PILE DURING WELDING. **PILE SPLICE DETAILS**



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		41'-3"	1122
B2	4	#5	STR	38'-11"	162
B3	8	#4	STR	20'-8"	110
B4	10	#4	STR	2'-8"	18
B5	4	#4	STR	16'-3"	43
H1	26	#6		12'-1"	472
H2	24	#5		11'-1"	277
H3	32	#4	STR	2'-6"	53
S1	60	#5		9'-1"	568
S2	60	#5		3'-7"	224
S3	28	#4		6'-6"	122
V1	70	#5	STR	5'-0"	365
V2	30	#4	STR	9'-10"	197
V3	28	#4	STR	9'-3"	173
U1	11	#4		5'-8"	42
REINFORCING STEEL				LBS.	3,948
CLASS A CONCRETE BREAKDOWN :					
POUR #1 - CAP & LOWER WINGS				CU. YDS.	17.2
POUR #2 - UPPER WINGS				CU. YDS.	6.3
TOTAL				CU. YDS.	23.5
HP 12 x 53 STEEL PILES				NO. = 7	LIN. FT. 245



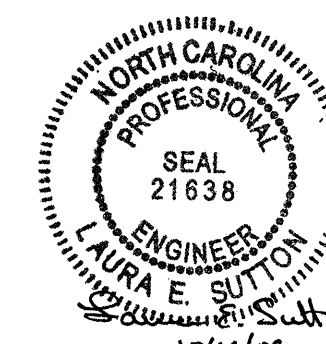
PARTIAL SECTION B-B

PROJECT NO. B-4622
ROCKINGHAM COUNTY
 STATION: 16+80.00 -L-

SHEET 3 OF 3

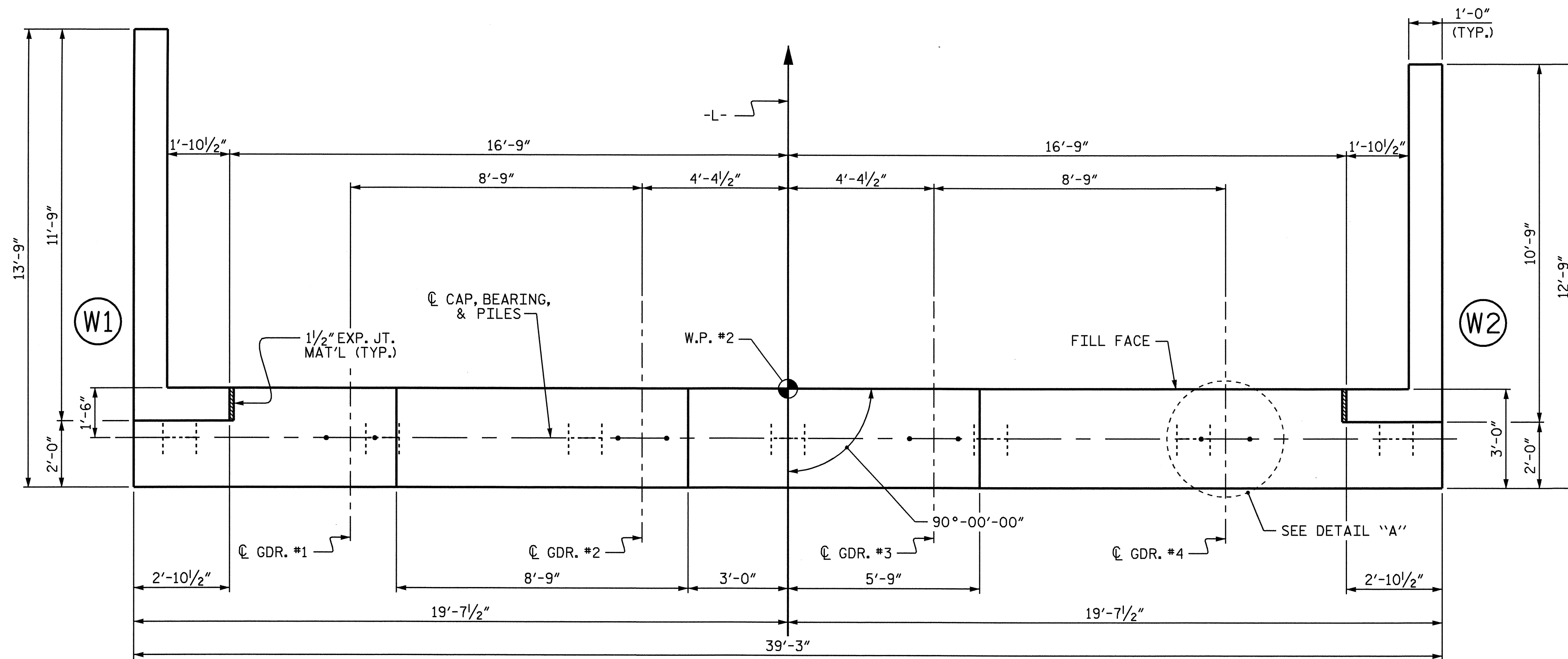
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 INTEGRAL
 END BENT 1



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

DRAWN BY : L.E. SUTTON DATE : 5/22/09
 CHECKED BY : M.K. BEARD DATE : 6/09/09

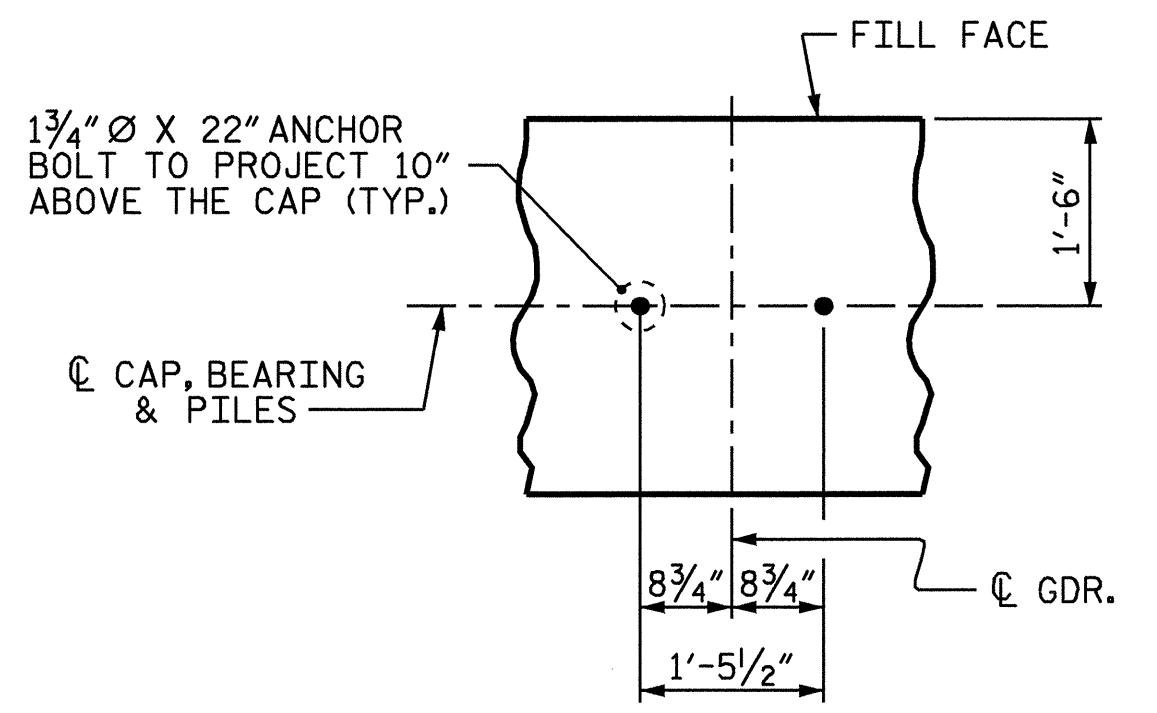


PLAN

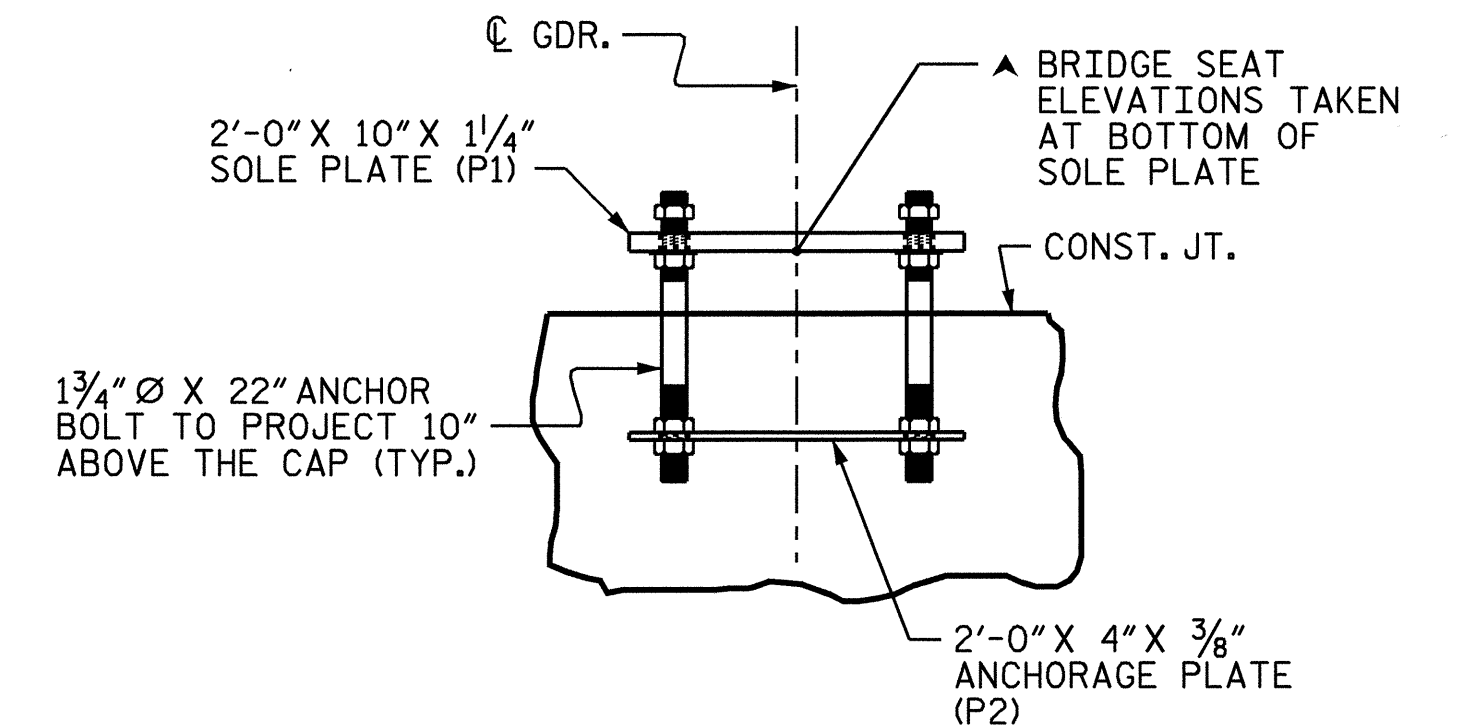
NOTES:

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

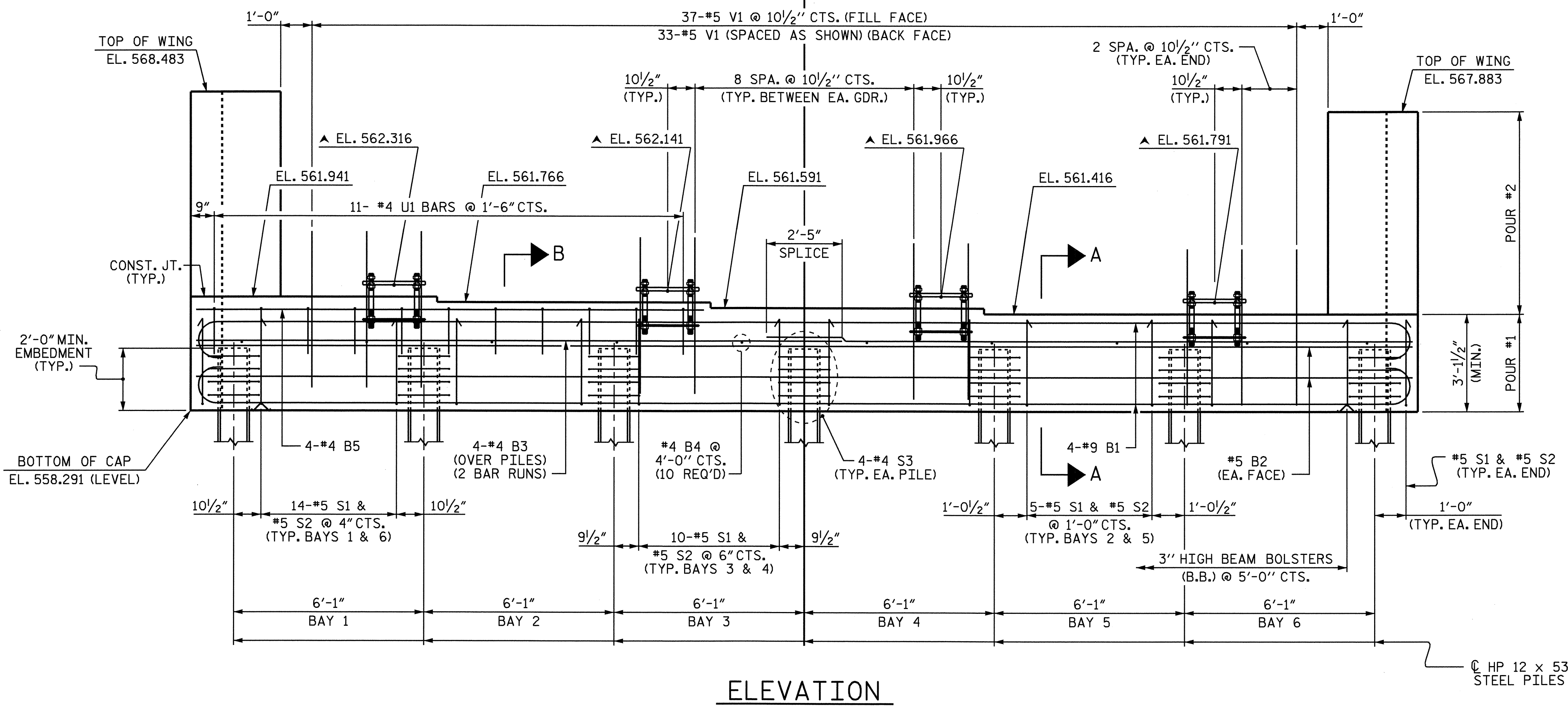
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.



DETAIL "A"
(TYP. EA. GIRDER)



ANCHORAGE DETAILS
(TYP. EA. GIRDER)



ELEVATION

PROJECT NO. B-4622
 ROCKINGHAM COUNTY
 STATION: 16+80.00 -L-

SHEET 1 OF 3

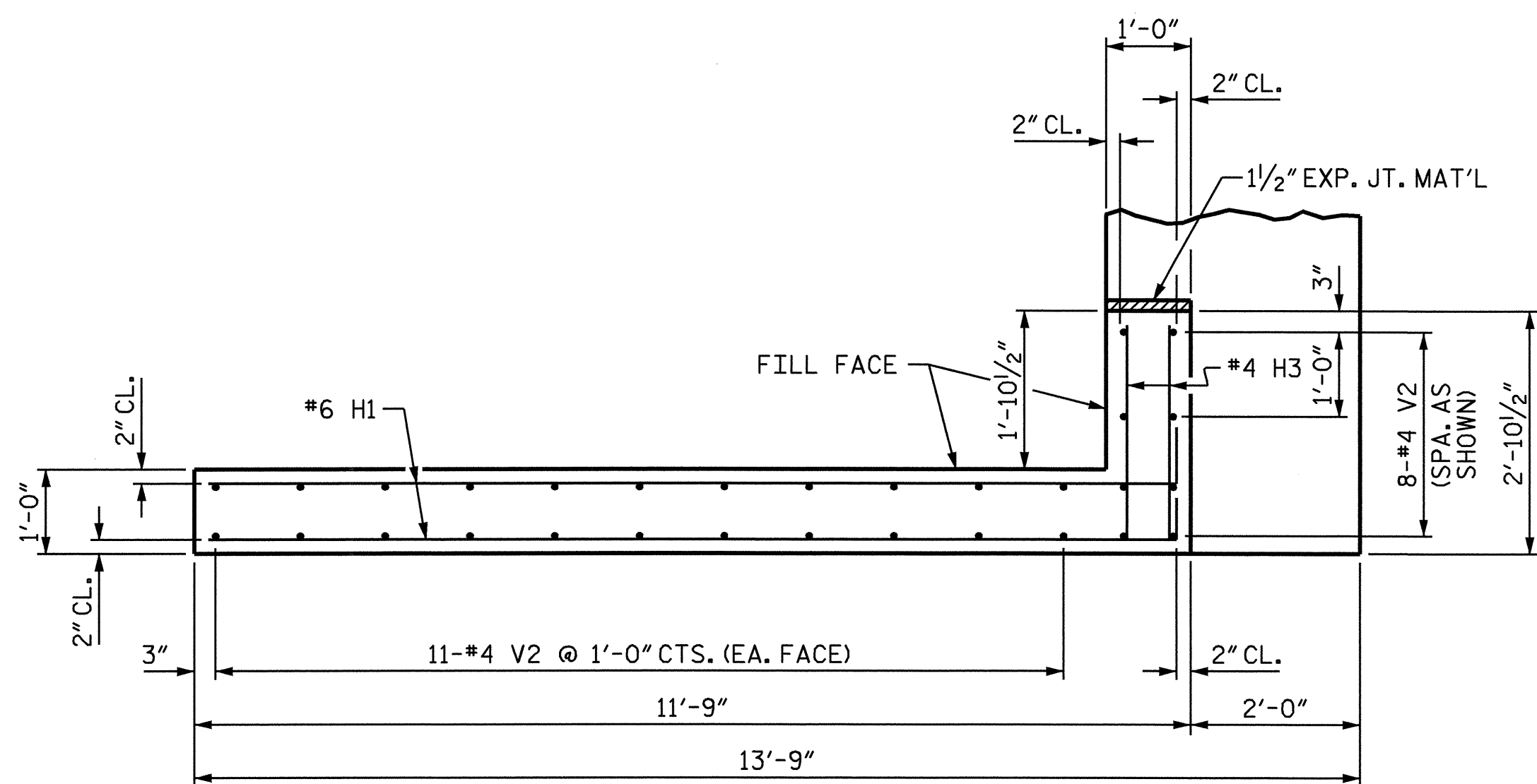
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 INTEGRAL
 END BENT 2

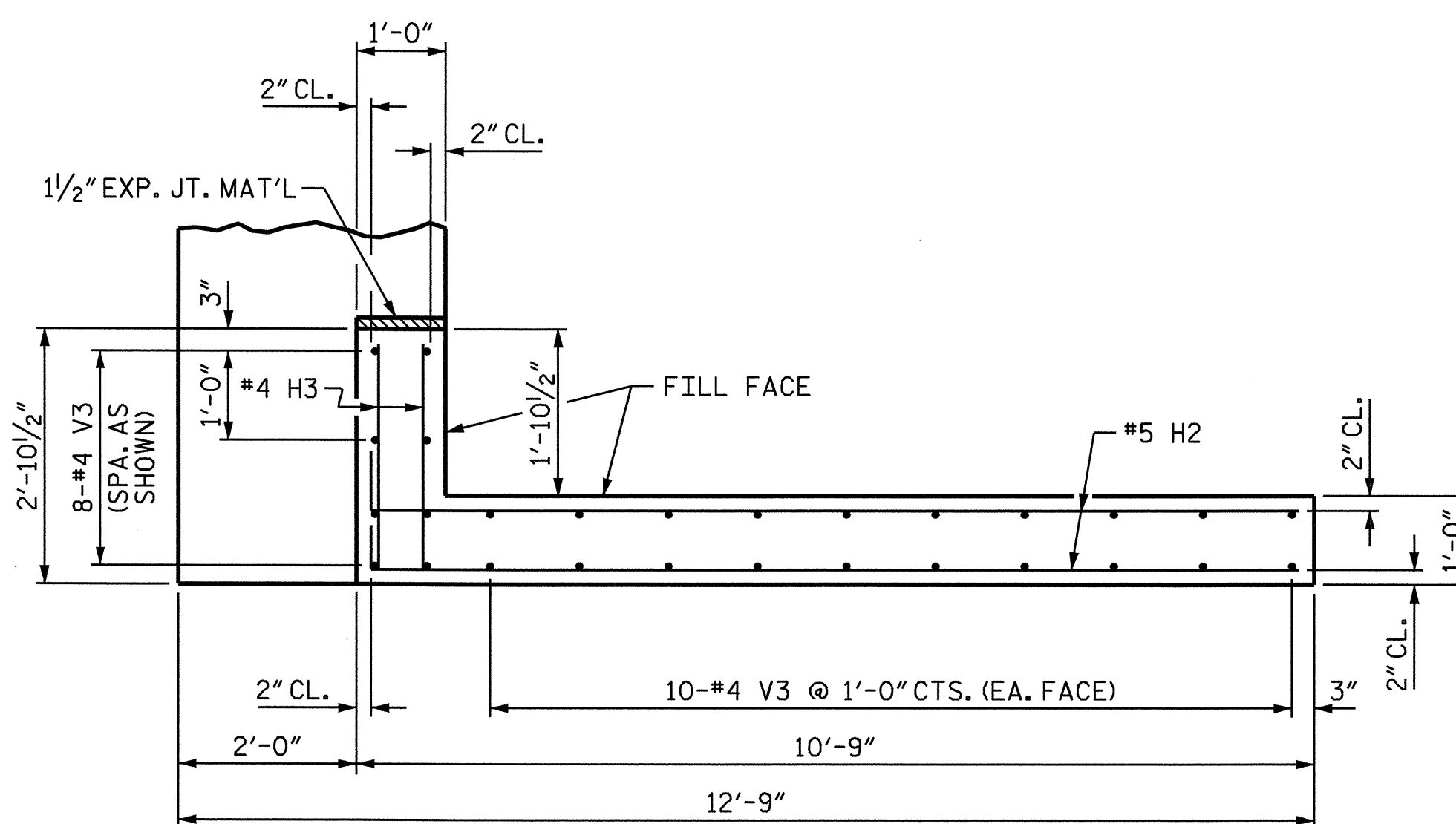


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			24

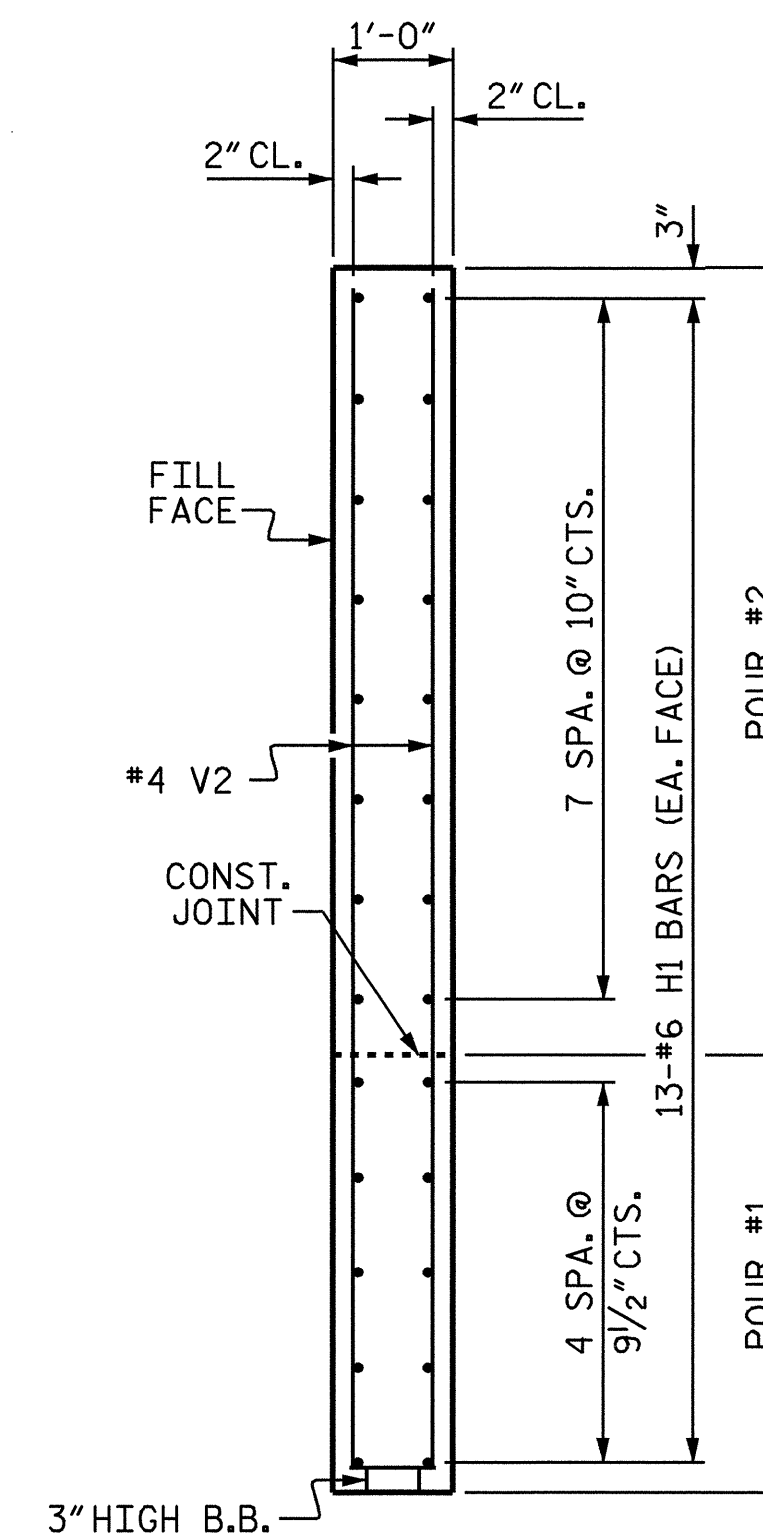
DRAWN BY: L.E. SUTTON DATE: 5/22/09
 CHECKED BY: M.K. BEARD DATE: 6/09/09



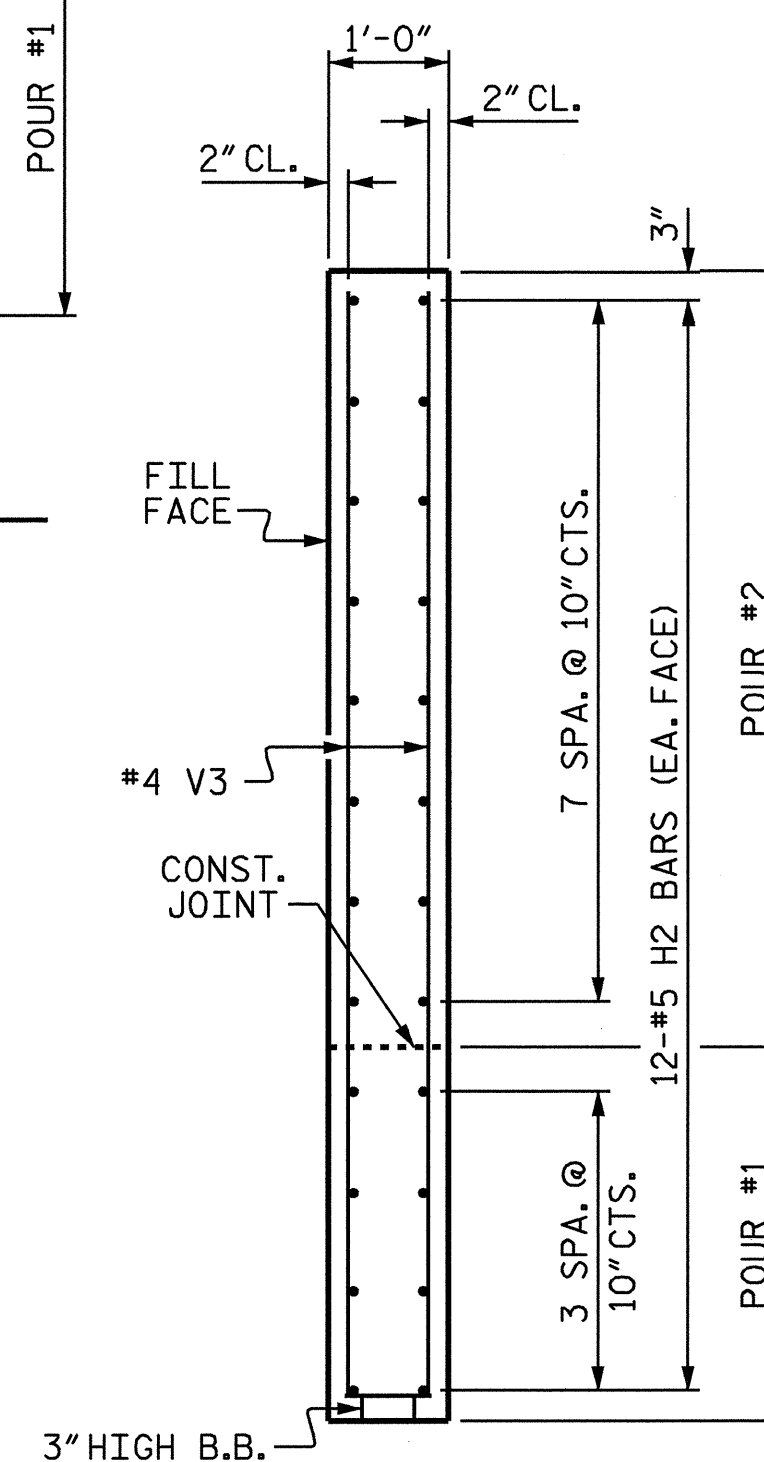
PLAN OF WING (W1)



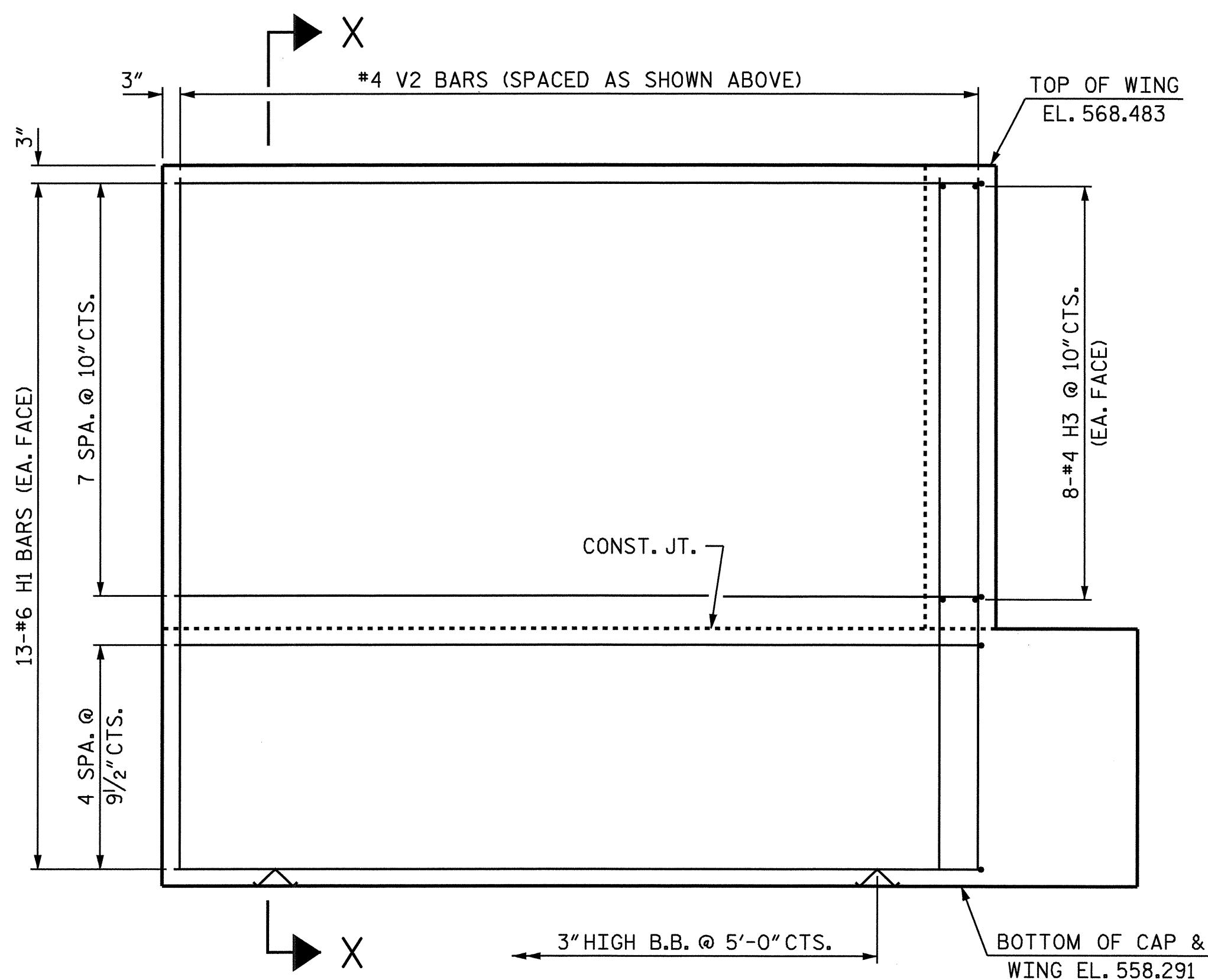
PLAN OF WING (W2)



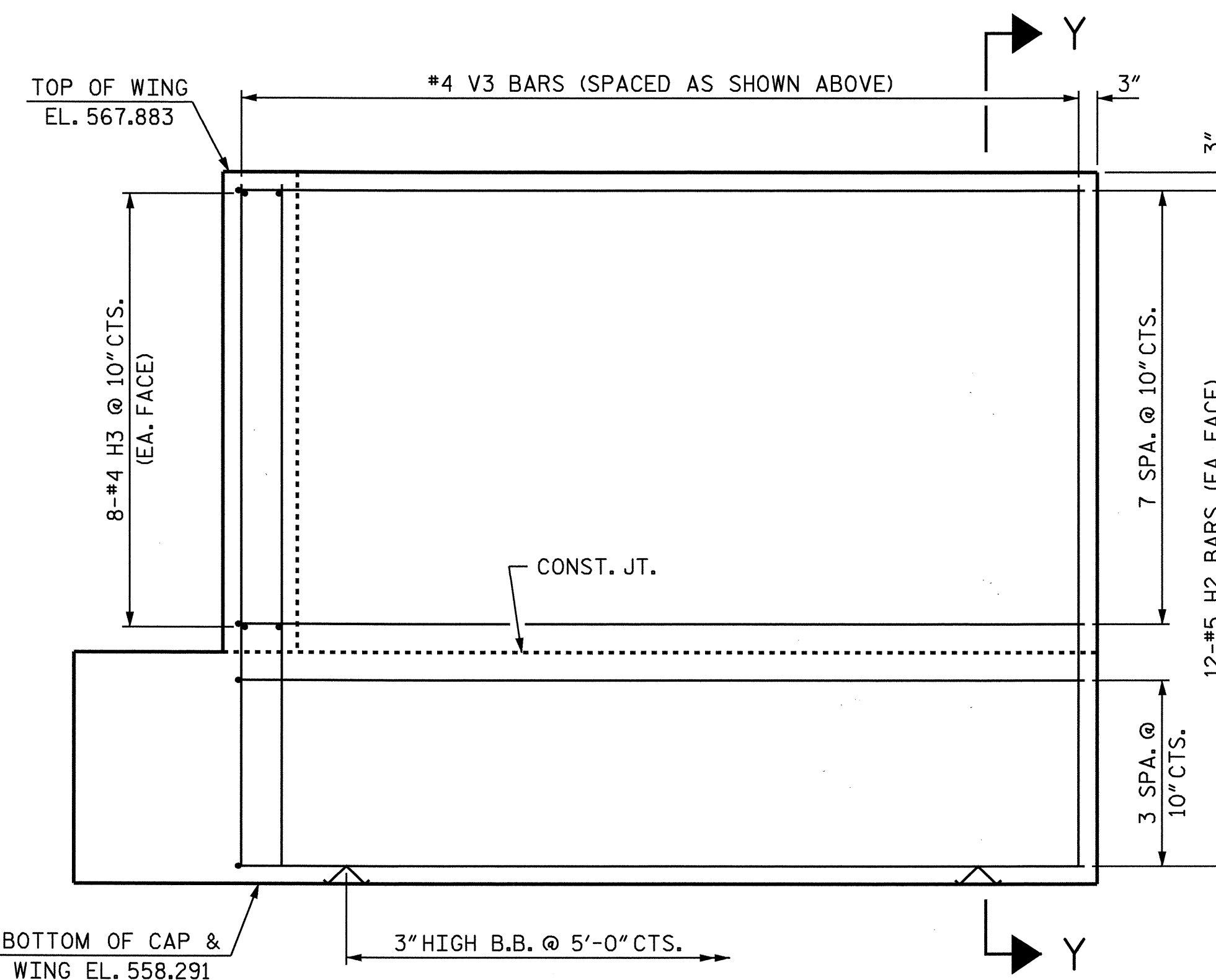
SECTION X-X



SECTION Y-Y



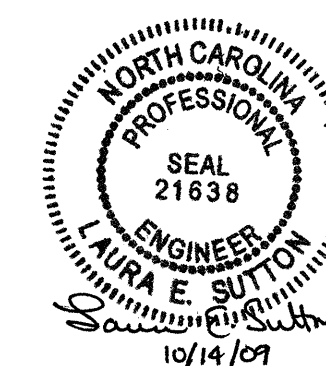
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

PROJECT NO. B-4622
 ROCKINGHAM COUNTY
 STATION: 16+80.00 -L-
 SHEET 2 OF 3

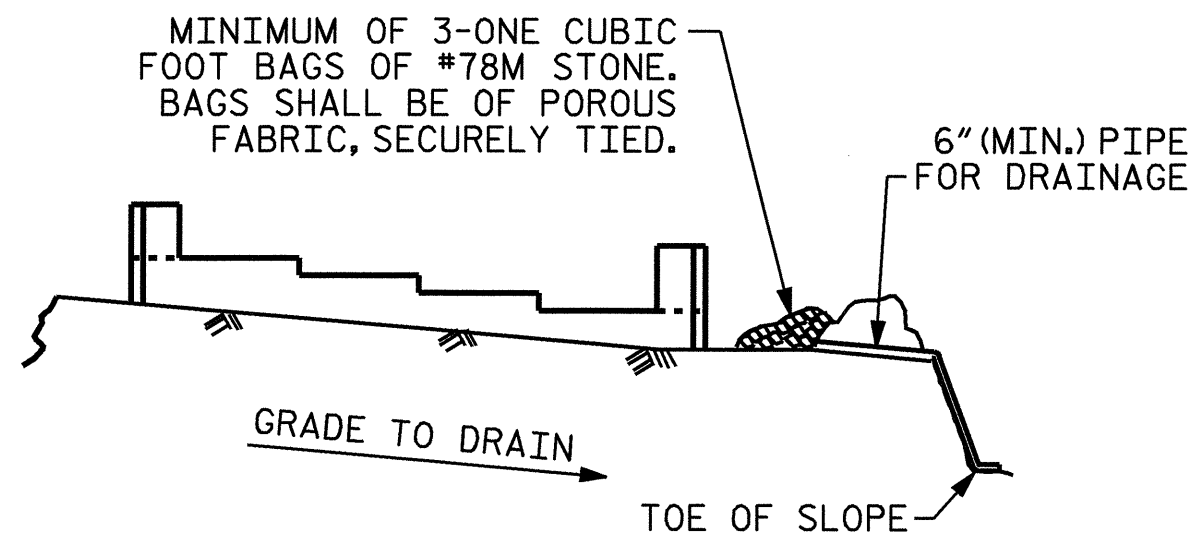
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 INTEGRAL
 END BENT 2



DRAWN BY: L.E. SUTTON DATE: 5/22/09
 CHECKED BY: M.K. BEARD DATE: 6/10/09

08-OCT-2009 09:51
 RA:\Structures\isutton\B4622.sd_eb_01.dgn
 isutton

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			24

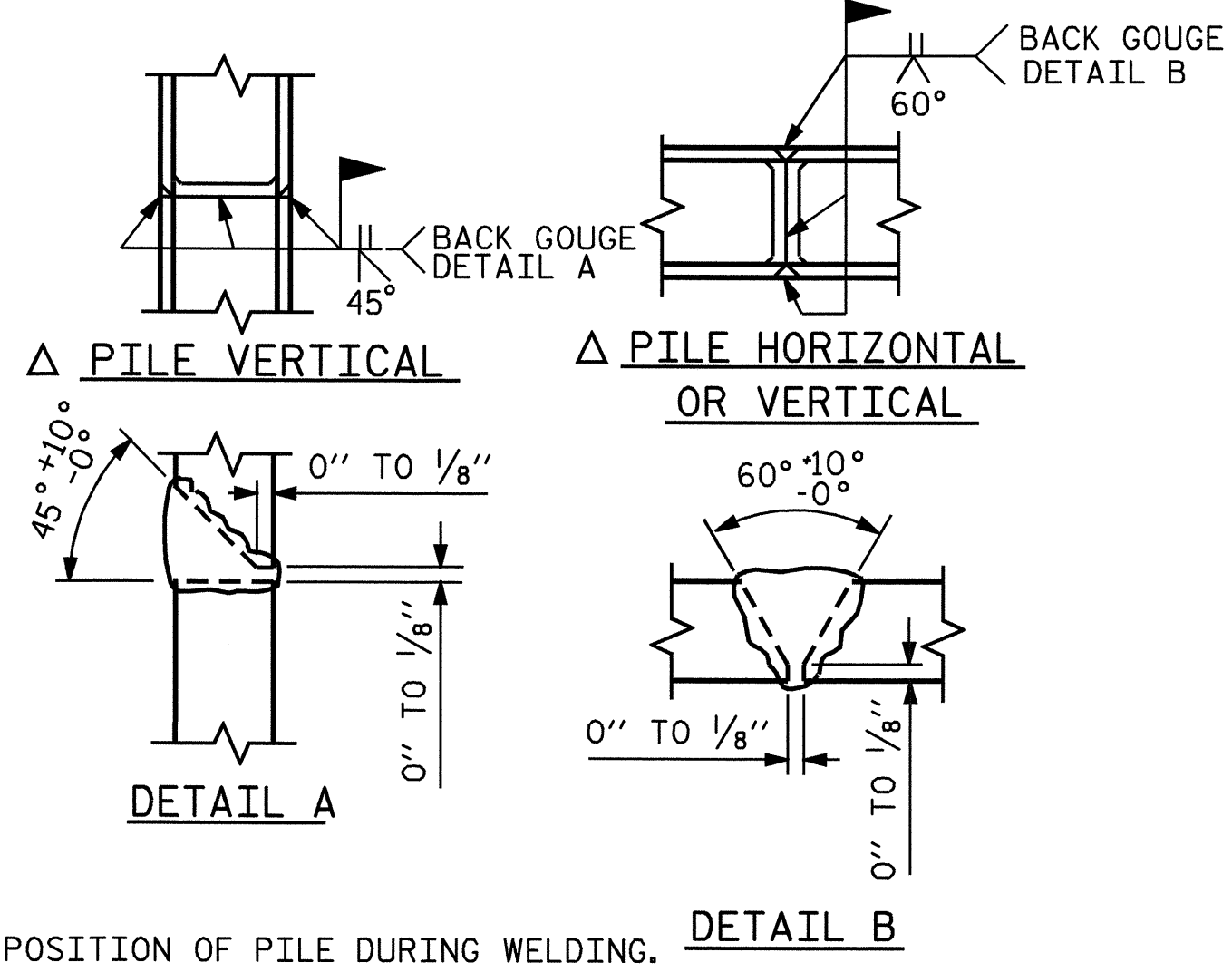


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

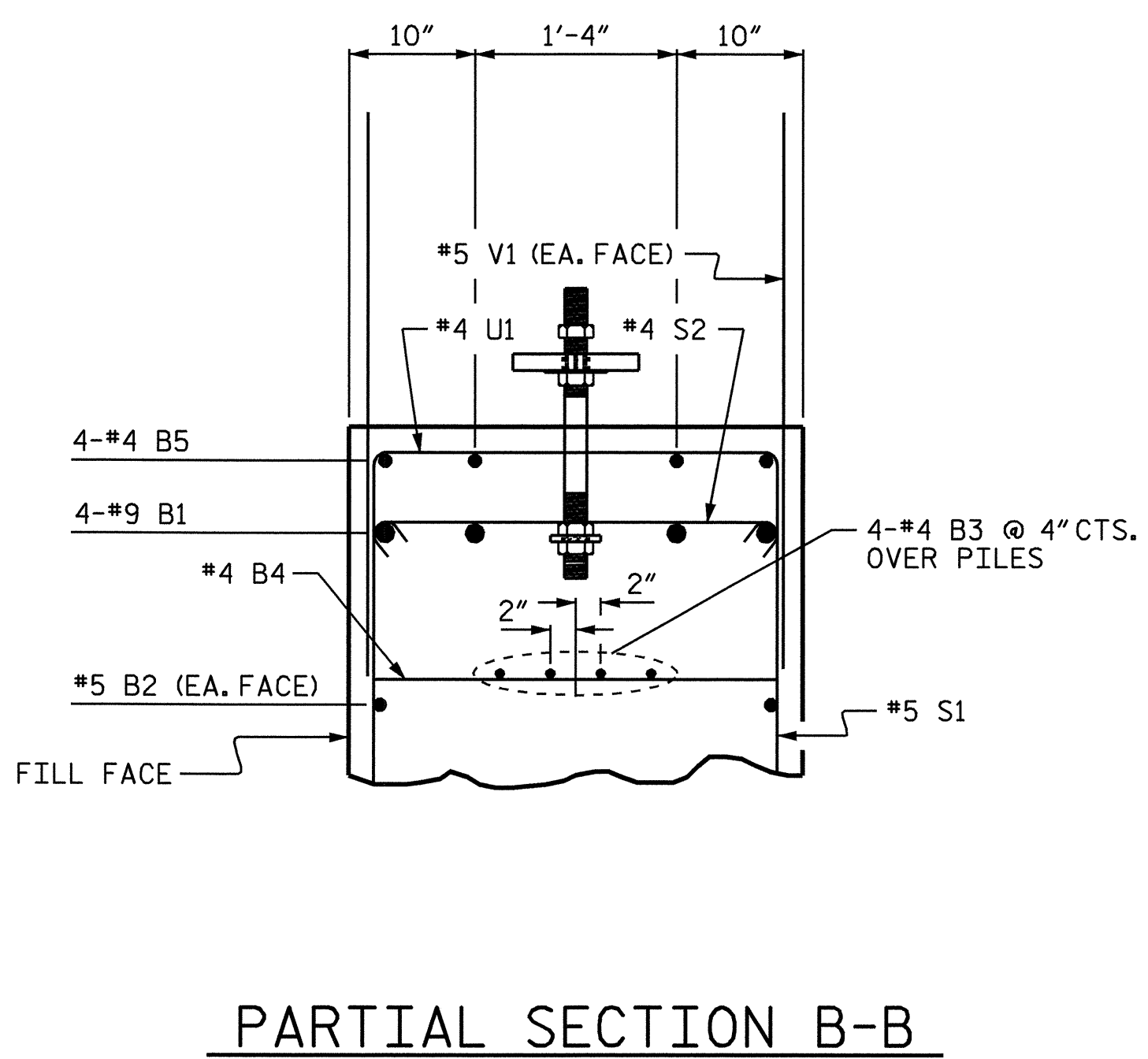
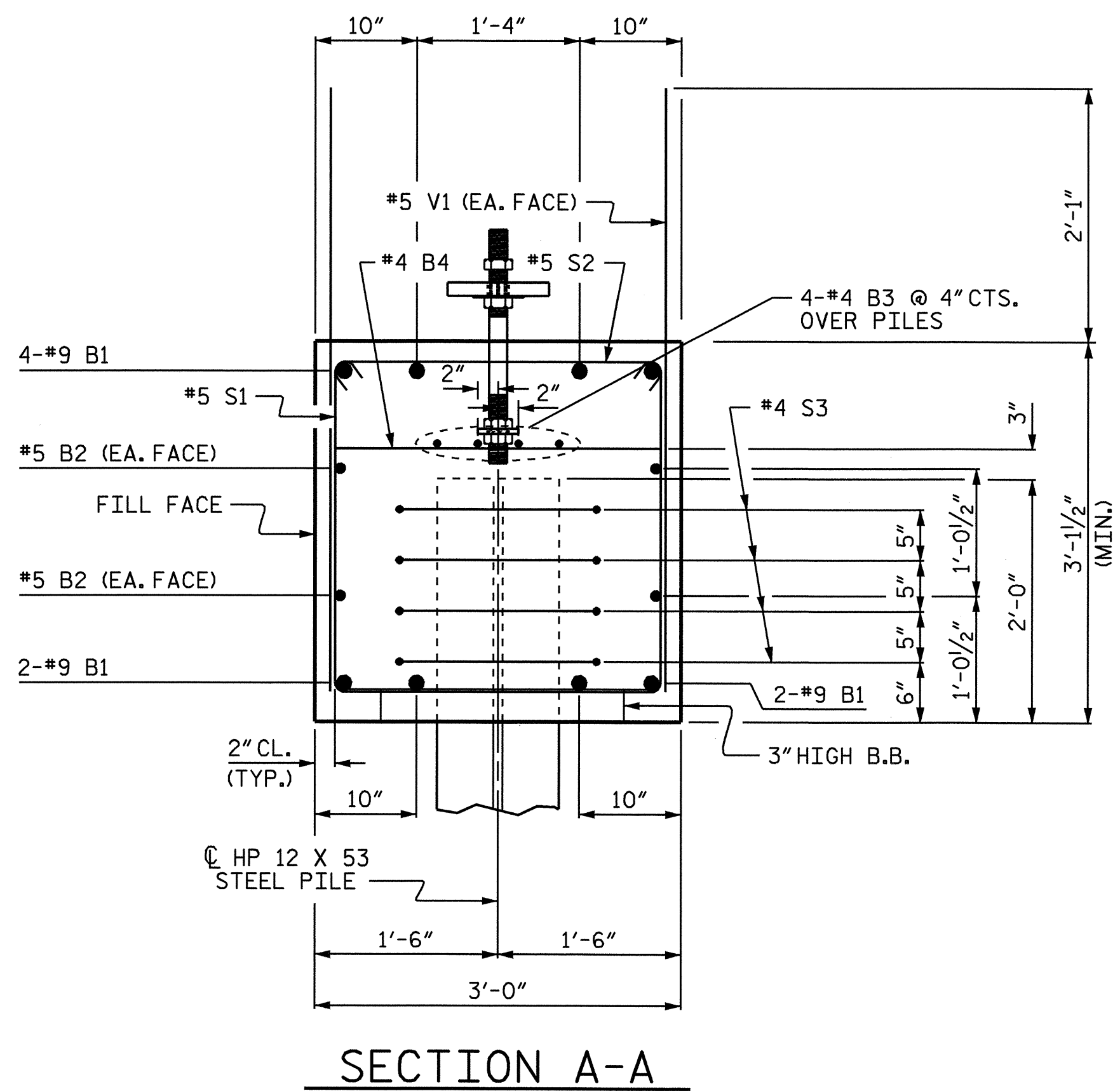
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



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

BAR TYPES					BILL OF MATERIAL				
					END BENT 2				
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT				
B1	8	#9		41'-3"	1122				
B2	4	#5	STR	38'-11"	162				
B3	8	#4	STR	20'-8"	110				
B4	10	#4	STR	2'-8"	18				
B5	4	#4	STR	16'-3"	43				
H1	26	#6		12'-1"	472				
H2	24	#5		11'-1"	277				
H3	32	#4	STR	2'-6"	53				
S1	60	#5		9'-1"	568				
S2	60	#5		3'-7"	224				
S3	28	#4		6'-6"	122				
V1	70	#5	STR	5'-0"	365				
V2	30	#4	STR	9'-10"	197				
V3	28	#4	STR	9'-3"	173				
U1	11	#4		5'-8"	42				
REINFORCING STEEL				LBS.	3,948				
CLASS A CONCRETE BREAKDOWN :									
POUR #1 - CAP & LOWER WINGS				CU. YDS.	17.2				
POUR #2 - UPPER WINGS				CU. YDS.	6.3				
TOTAL				CU. YDS.	23.5				
HP 12 x 53 STEEL PILES									
NO. = 7				LIN. FT.	245				

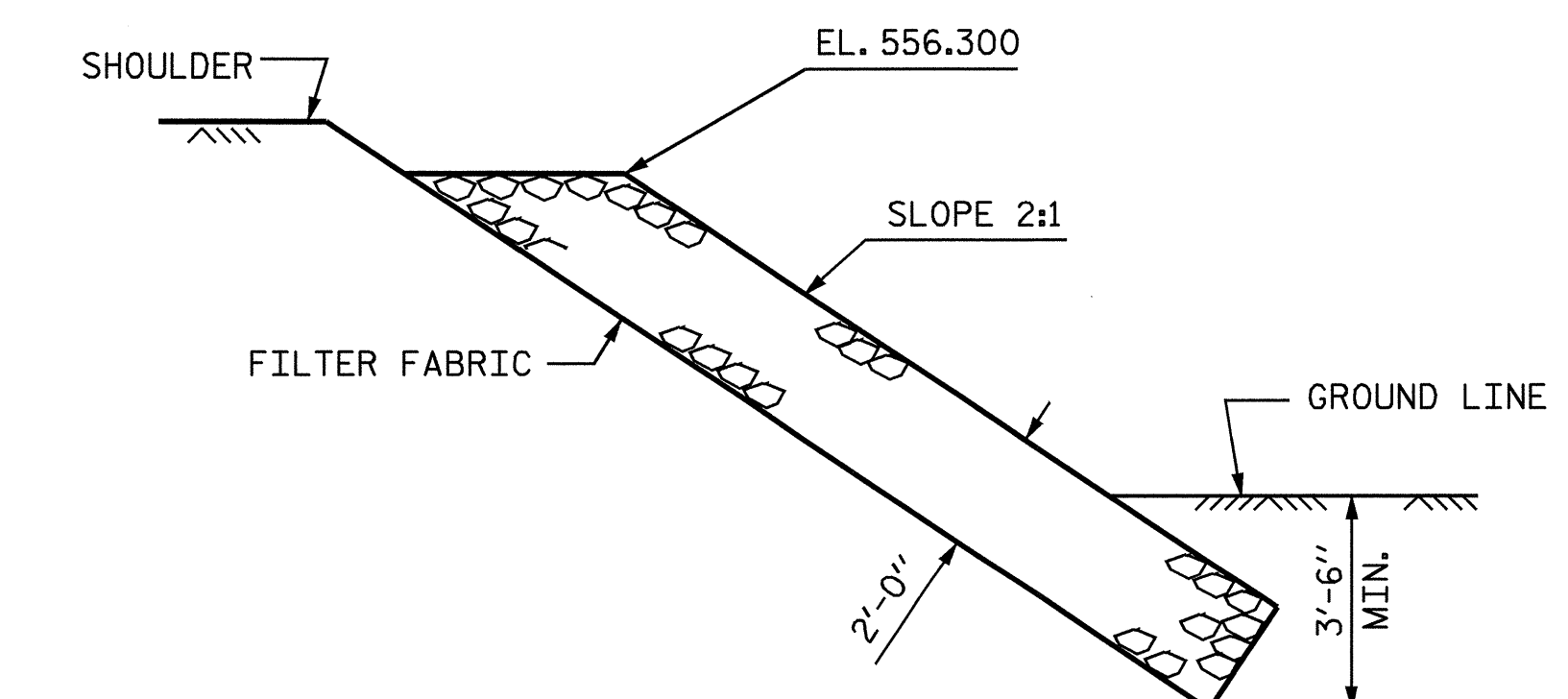
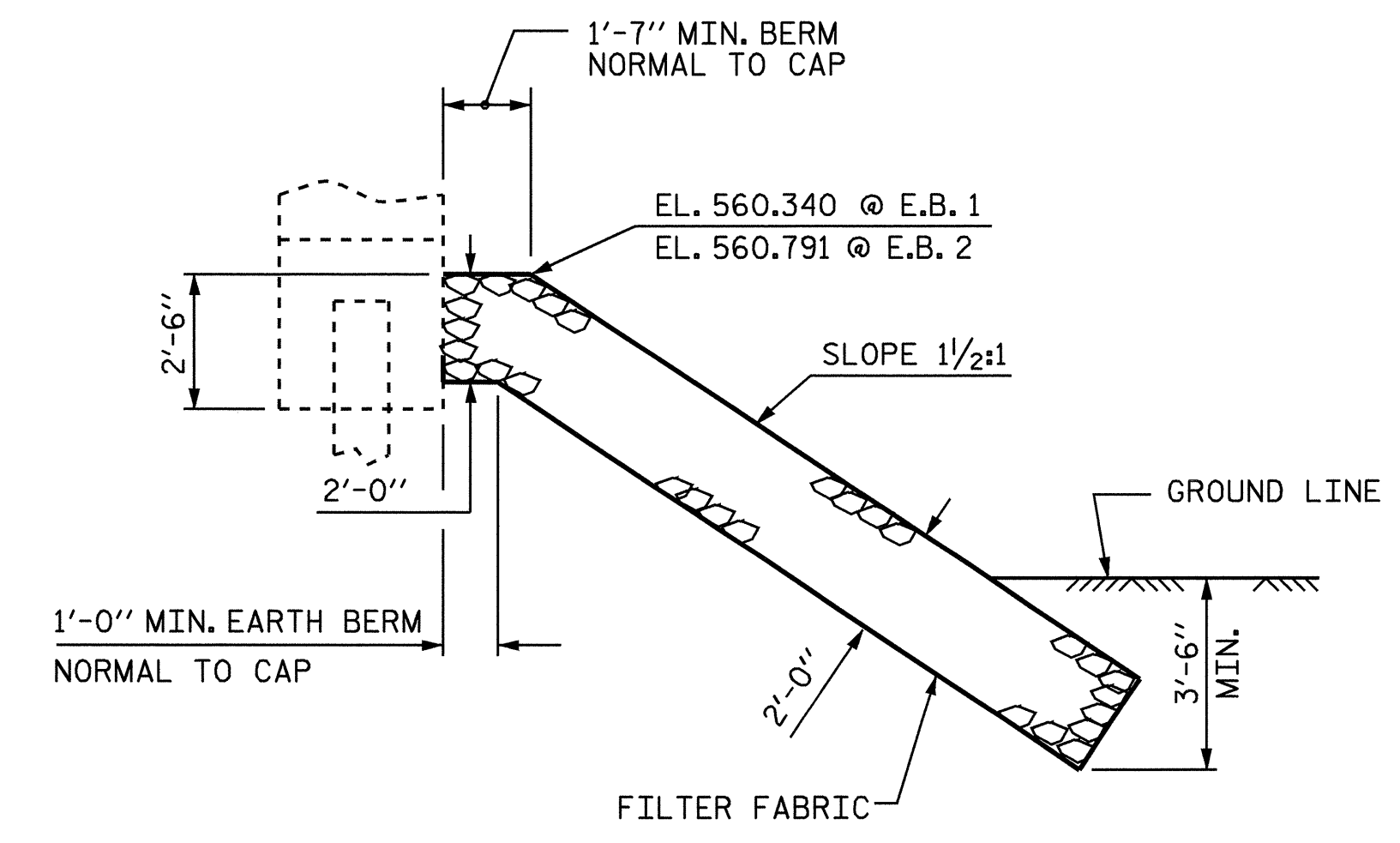
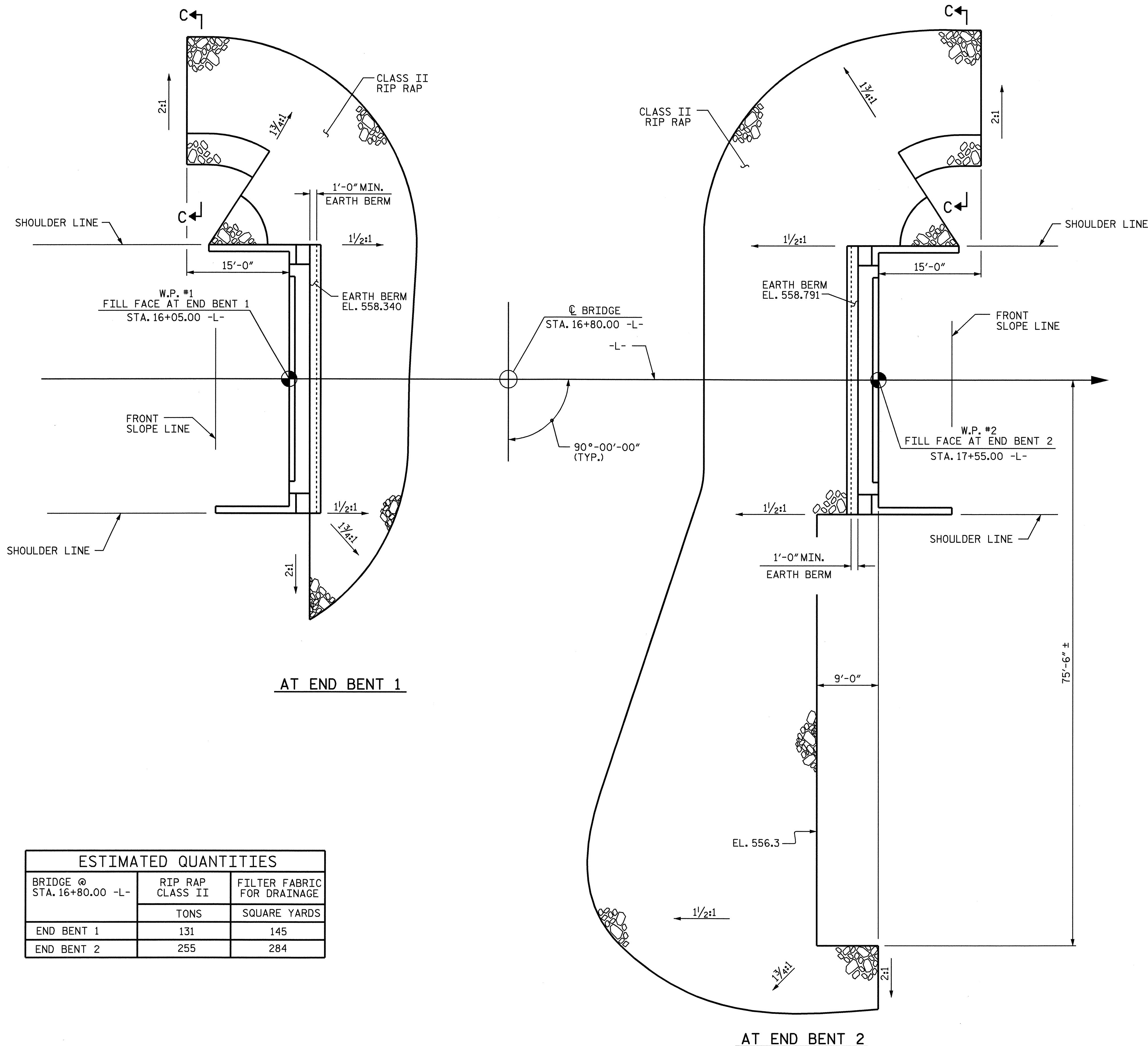


PROJECT NO. B-4622
ROCKINGHAM COUNTY
 STATION: 16+80.00 -L-
 SHEET 3 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					SHEET NO. S-21	
SUBSTRUCTURE INTEGRAL END BENT 2					TOTAL SHEETS 24	
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



DRAWN BY : L.E. SUTTON DATE : 5/22/09
 CHECKED BY : M.K. BEARD DATE : 6/10/09



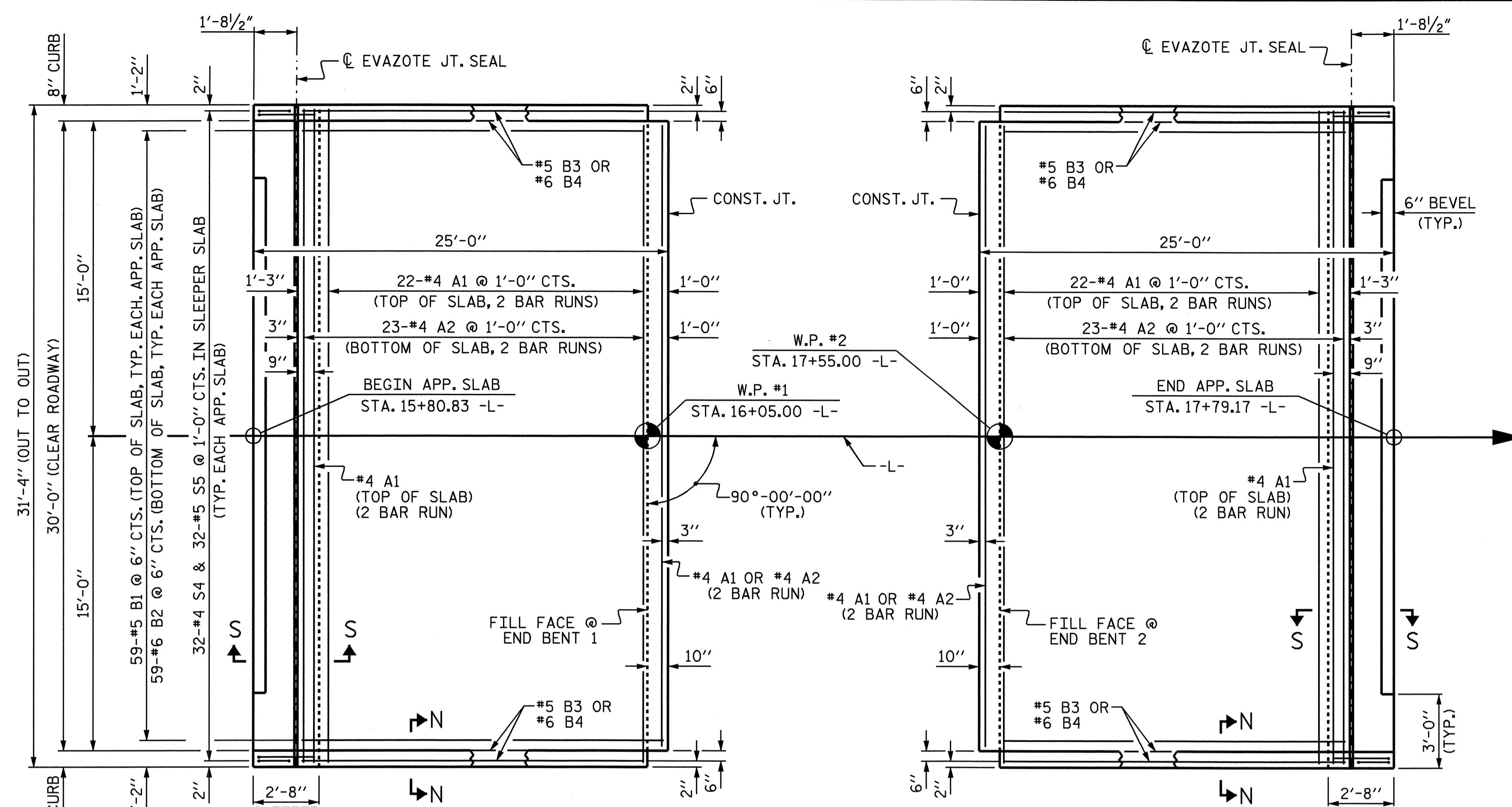
ESTIMATED QUANTITIES		
BRIDGE @ STA. 16+80.00 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	131	145
END BENT 2	255	284

PROJECT NO. B-4622
ROCKINGHAM COUNTY
 STATION: 16+80.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
RIP RAP DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					24



DRAWN BY : S. M. RASHIDI DATE : 2/13/09
 CHECKED BY : A. S. CALLAWAY DATE : 5/22/09



PLAN @ END BENT 1
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS. #4 A1 BARS IN SLEEPER SLAB NOT SHOWN FOR CLARITY.

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 SLEEPER 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 SLEEPER 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 SHALL BE FLUSH WITH THE SLEEPER 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 SAWED 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

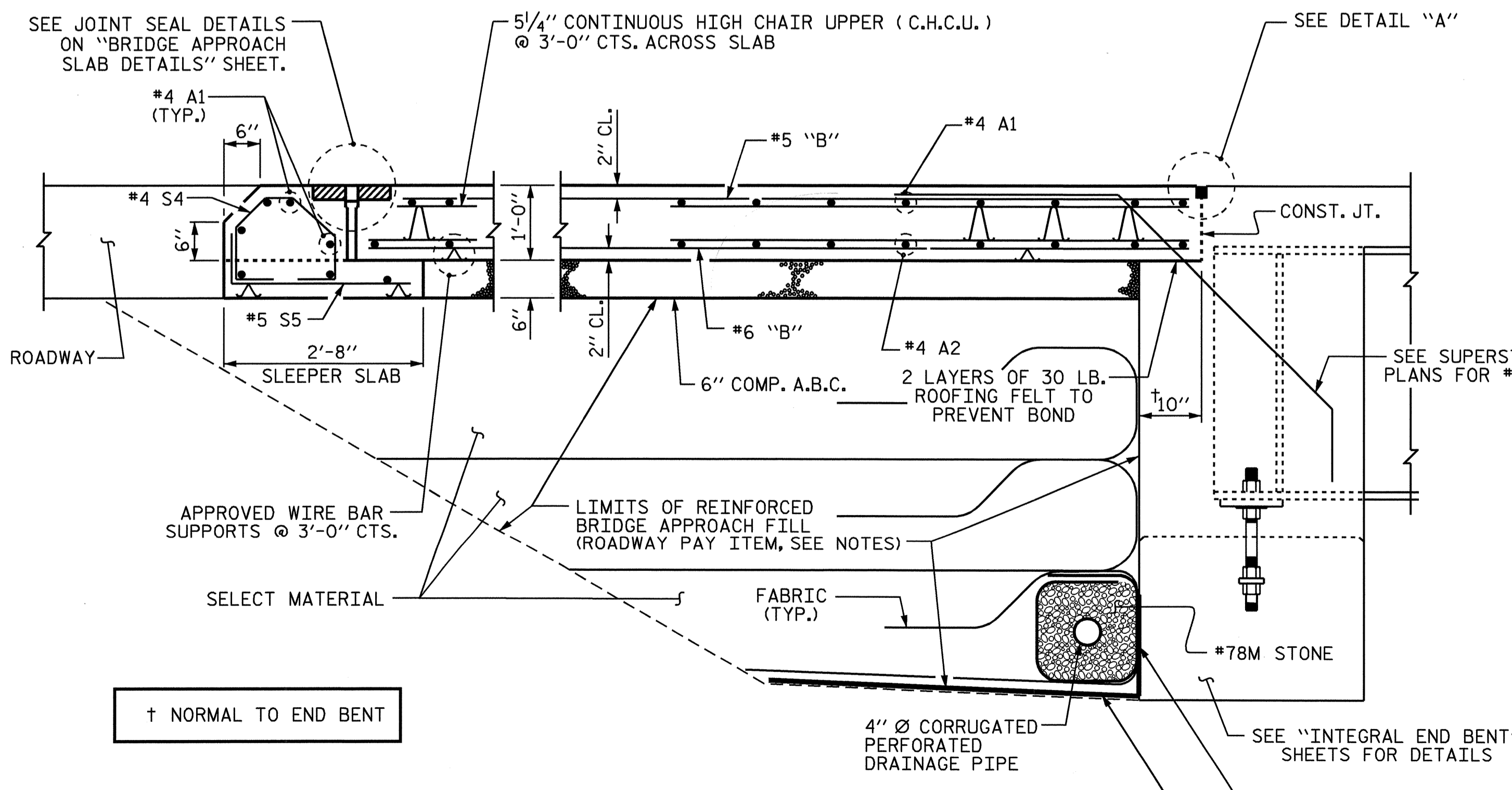
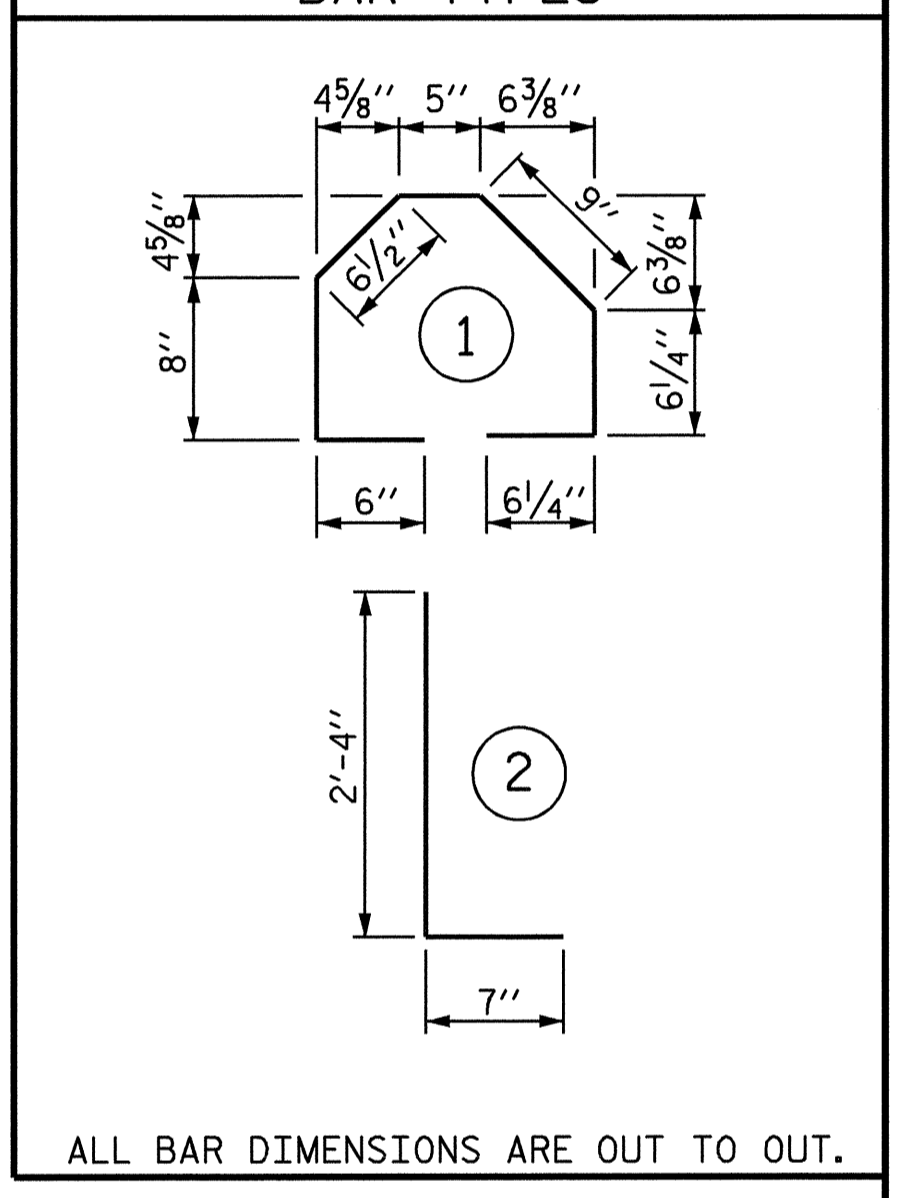
FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

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

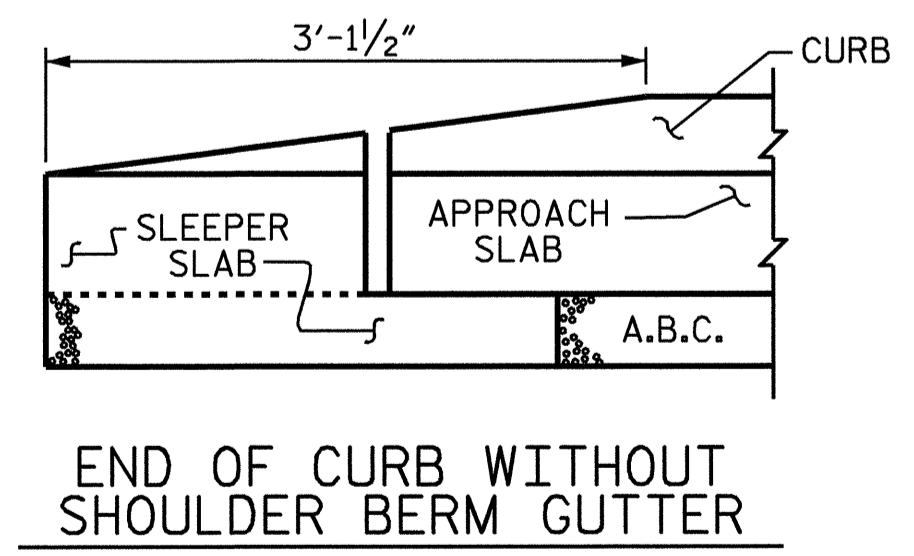
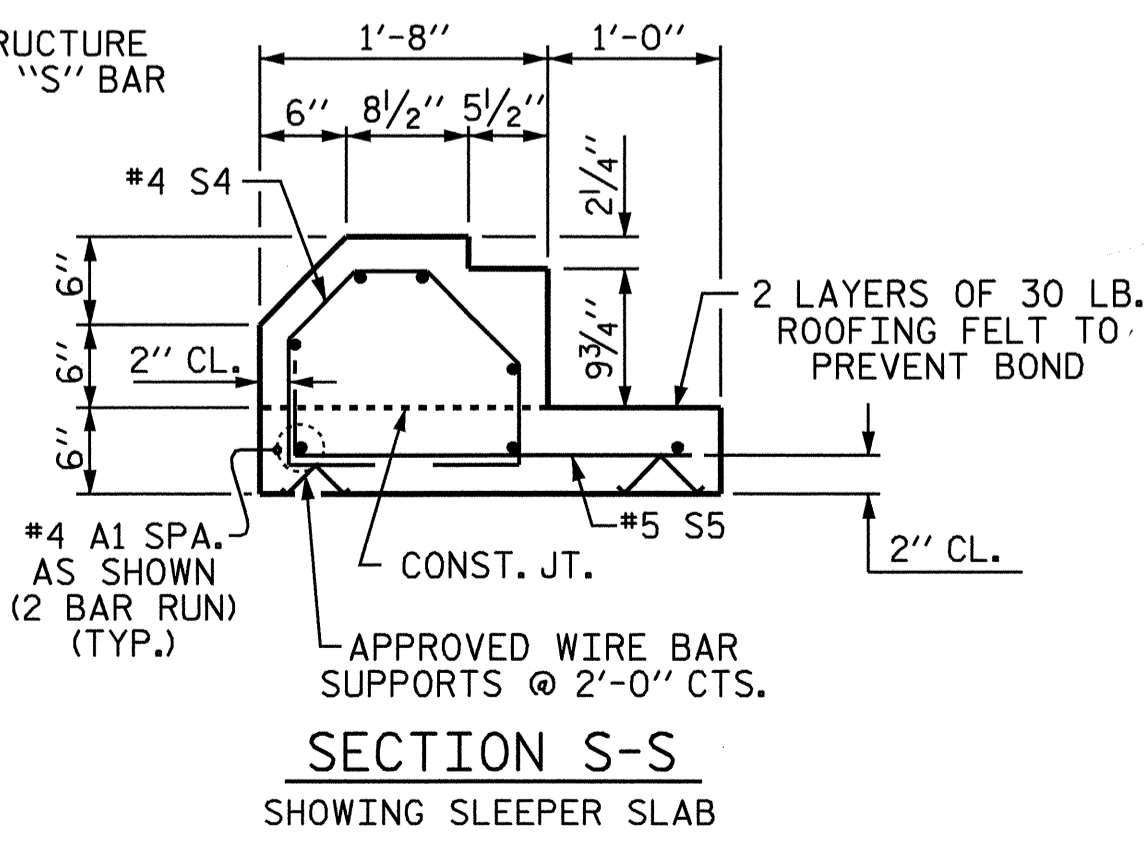
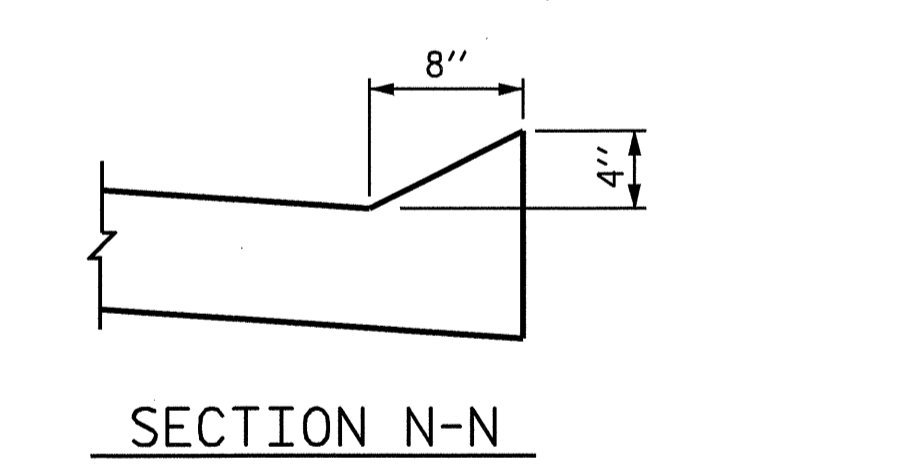
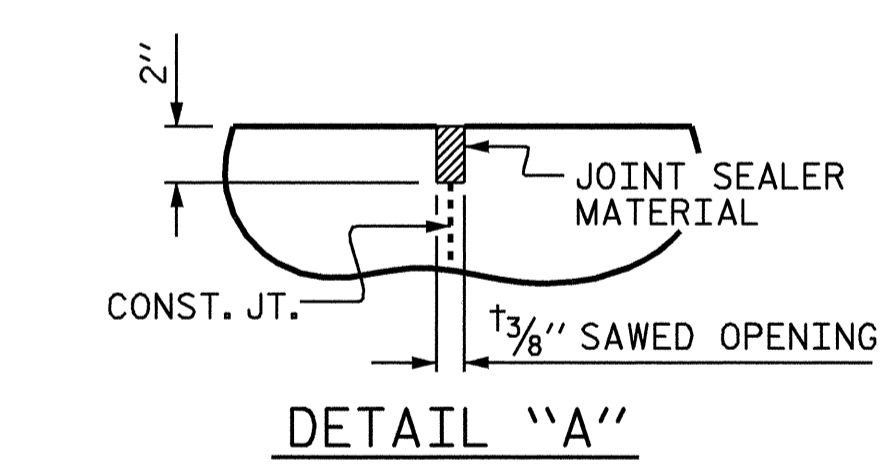
FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL
FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	62	#4	STR	16'-6"	688
A2	48	#4	STR	16'-5"	526
* B1	59	#5	STR	22'-5"	1379
B2	59	#6	STR	22'-11"	2031
* B3	4	#5	STR	21'-7"	90
B4	4	#6	STR	22'-1"	133
* S4	32	#4	1	3'-11"	84
S5	32	#5	2	2'-11"	97
REINFORCING STEEL				LBS.	2,690
* EPOXY COATED REINFORCING STEEL				LBS.	2,236
CLASS AA CONCRETE					
POUR #1 - SLEEPER SLAB				CU. YDS.	3.3
POUR #2 - SLAB & CURB				CU. YDS.	27.0
TOTAL				CU. YDS.	30.3



PLAN



ASSEMBLED BY : S. M. RASHIDI DATE : 2/12/09
 CHECKED BY : L. E. SUTTON DATE : 6/19/09
 DRAWN BY : TLA 10/05
 CHECKED BY : GM 5/06

ADDED 5/1/06R KMM/GM
 03-SEP-2009 10:46
 R:\Structures\srashidi\B4622.sd..AS..01.dgn
 lsutton

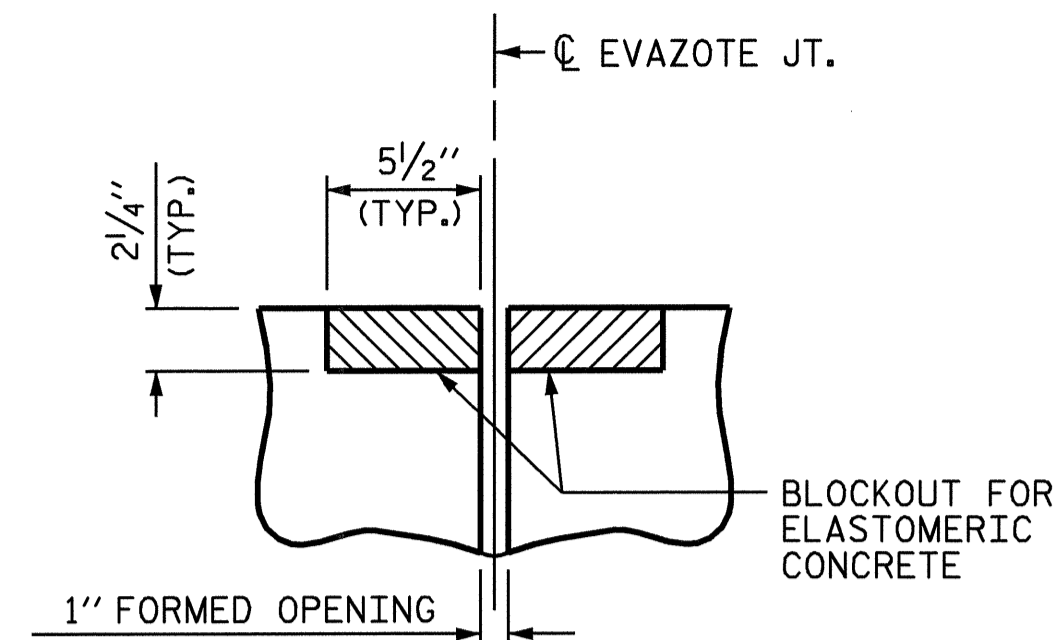


PROJECT NO. B-4622
ROCKINGHAM COUNTY
 STATION: 16+80.00 -L-
 SHEET 1 OF 2

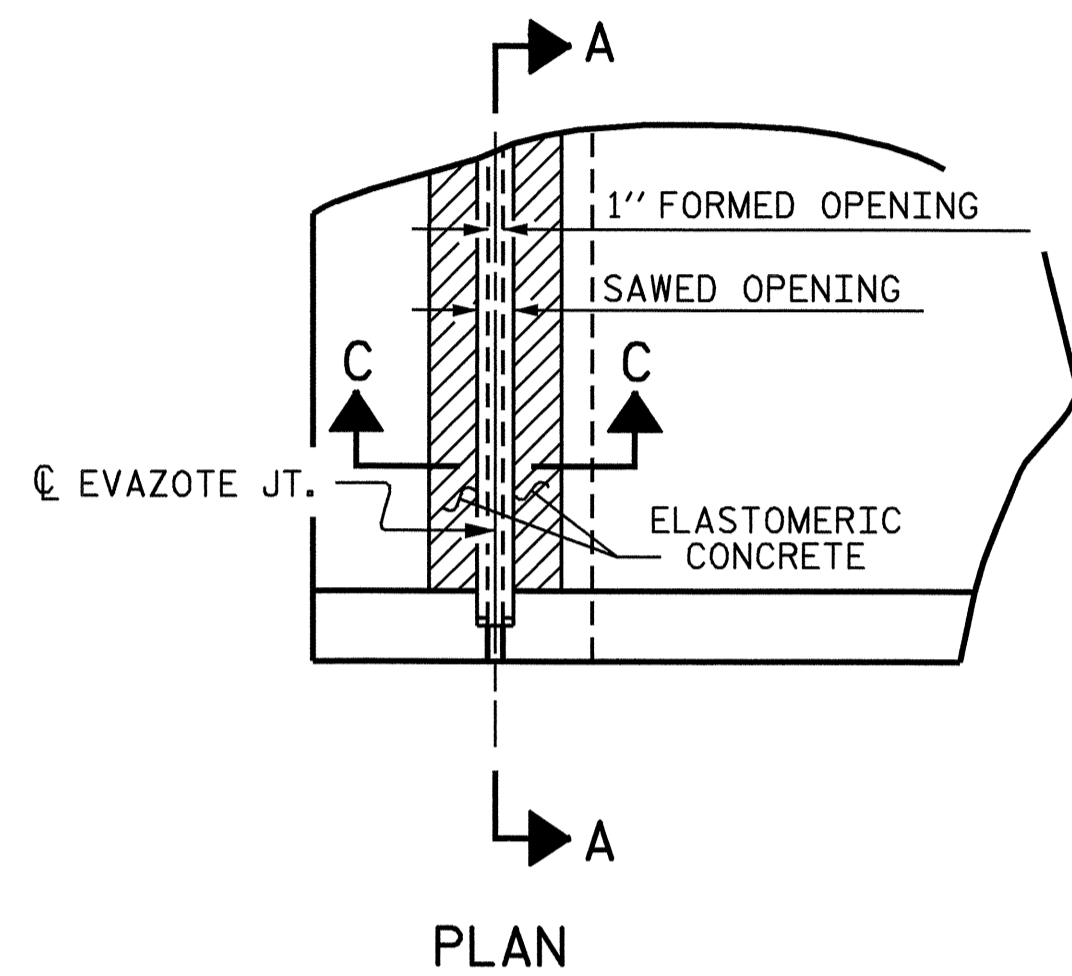
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH
 SLAB FOR
 INTEGRAL ABUTMENT

REVISIONS			SHEET NO.		
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-23
					TOTAL SHEETS 24

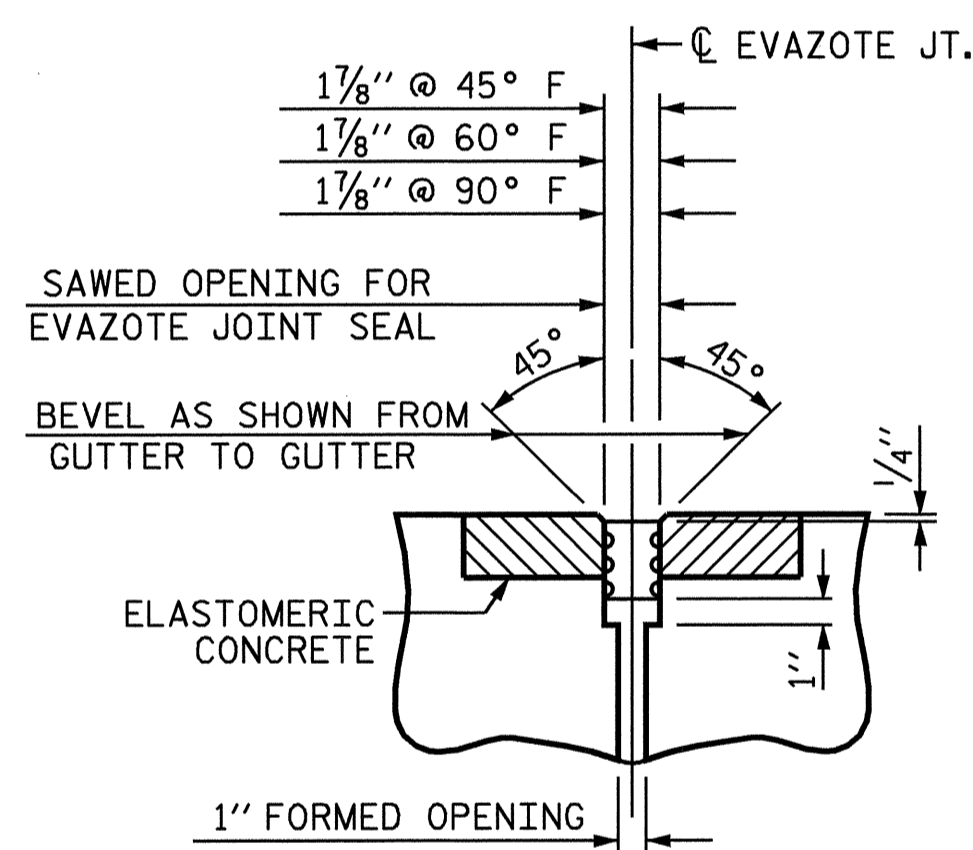
STD. NO. BAS11



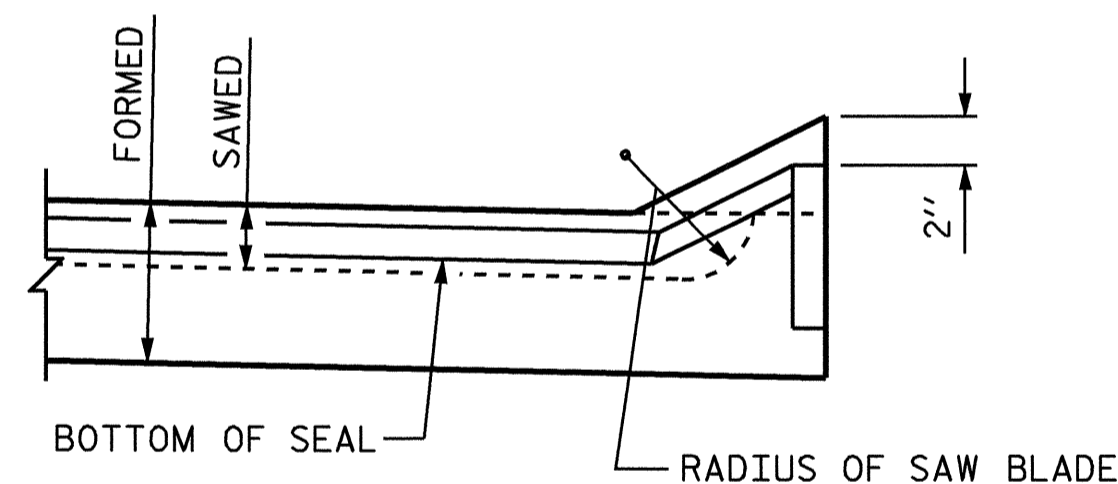
SECTION C-C
EVAZOTE JOINT SEAL
(PRE-SAWED ELASTOMERIC
CONCRETE DIMENSIONS)



PLAN



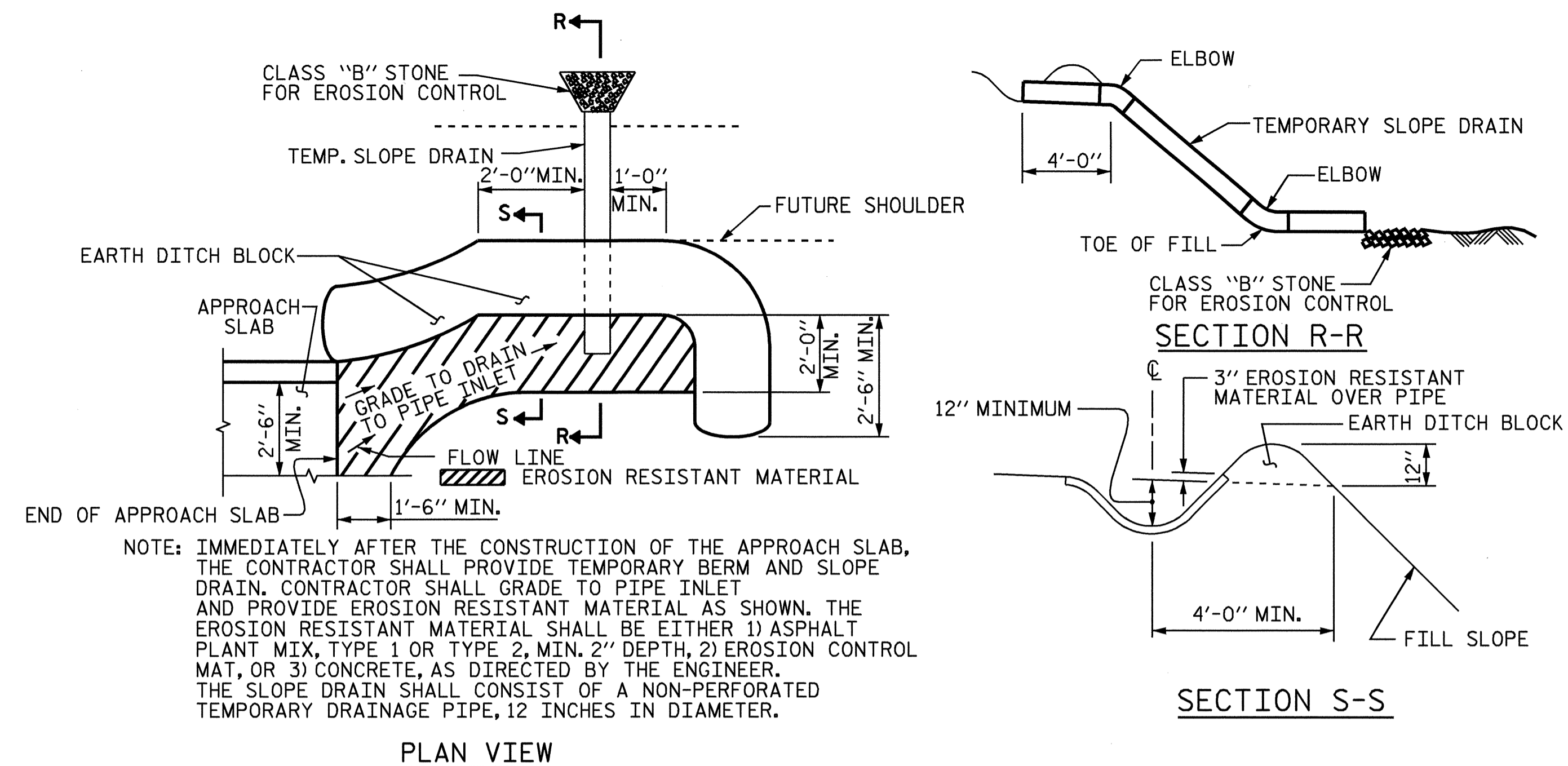
SECTION C-C
EVAZOTE JOINT SEAL



SECTION A-A

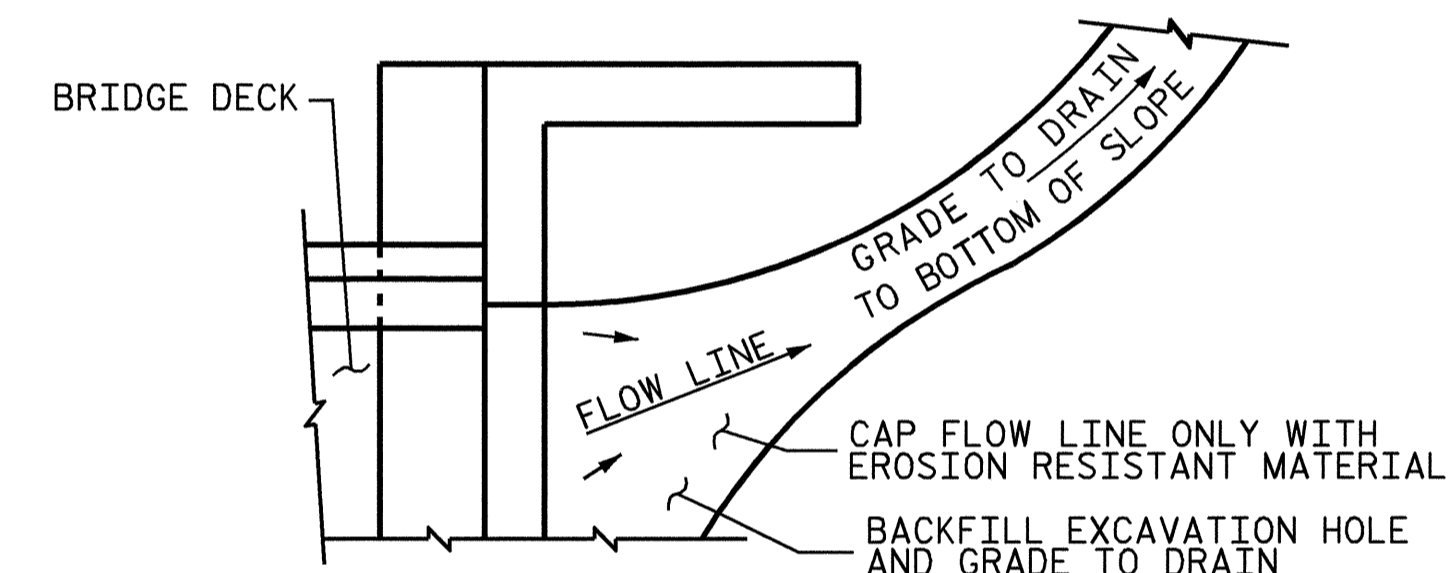
ELASTOMERIC CONCRETE	
END BENT	ELASTOMERIC CONCRETE * (CU. FT.)
1	5.2
2	5.2
TOTAL	10.4

* BASED ON THE MINIMUM BLOCKOUT SHOWN.



TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



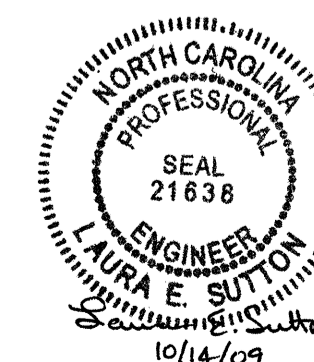
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT 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-4622
ROCKINGHAM COUNTY
STATION: 16+80.00 -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-24
1			3			TOTAL SHEETS
2			4			24

ASSEMBLED BY :	S. M. RASHIDI	DATE :	2/12/09
CHECKED BY :	L. E. SUTTON	DATE :	6/19/09
DRAWN BY :	FCJ	11/88	REV. 10/17/00 RWW/LES
CHECKED BY :	ARB	11/88	REV. 5/7/03 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 2006 "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; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

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. 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.

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