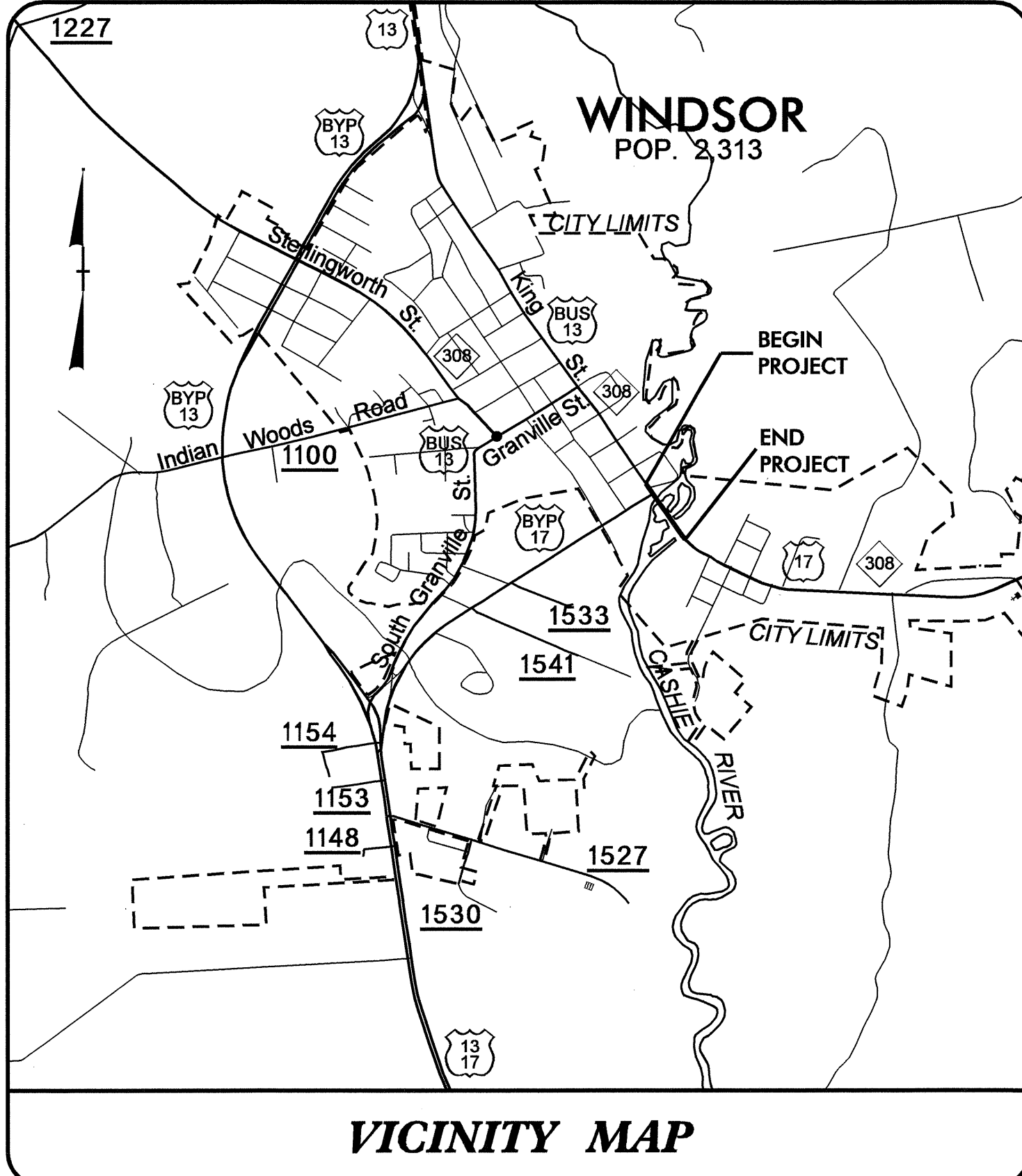


STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4434		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33700.1.1	BRNHS-17(35)	PE	
33700.2.1	BRNHS-17(35)	R/W	
33700.3.1	BRNHS-17(35)	CONST.	

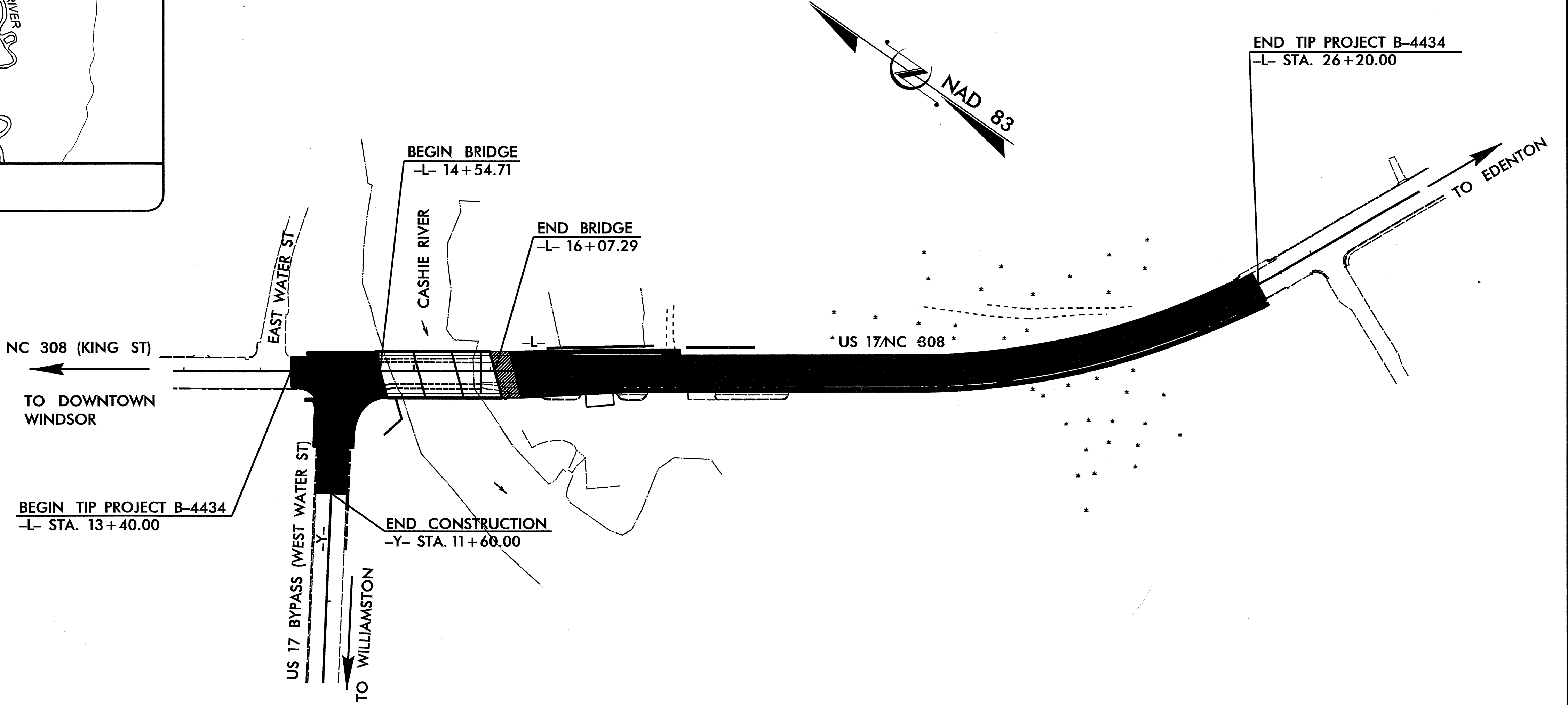
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BERTIE COUNTY

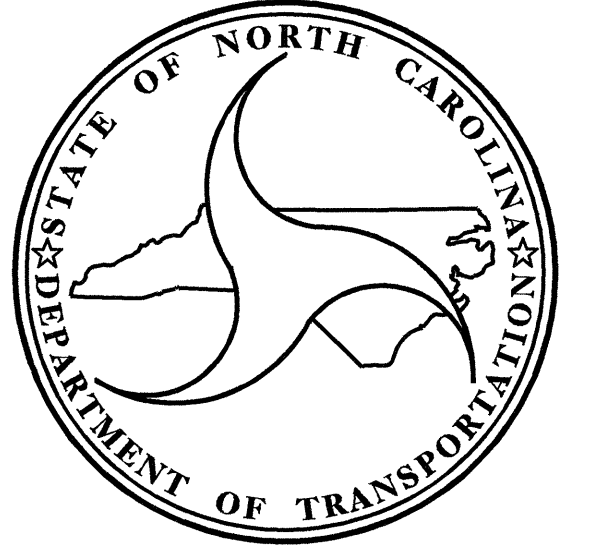
LOCATION: BRIDGE NO.14 OVER CASHIE RIVER ON US 17/NC 308
TYPE OF WORK: GRADING, DRAINAGE, PAVING, RETAINING WALLS, AND STRUCTURE



VICINITY MAP



STRUCTURES



DESIGN DATA	
ADT 2009 =	11,633
ADT 2029 =	9,717
DHV =	12 %
D =	60 %
T =	9 % *
V =	40 MPH
* (TTST 5% + DUAL 4%)	

PROJECT LENGTH	
LENGTH ROADWAY TIP PROJECT B-4434 =	0.213 MILES
LENGTH STRUCTURE TIP PROJECT B-4434 =	0.029 MILES
TOTAL LENGTH TIP PROJECT B-4434 =	0.242 MILES

Prepared In the Office of: DIVISION OF HIGHWAYS	
2006 STANDARD SPECIFICATIONS	R.M. GIROLAMI, PE PROJECT ENGINEER
LETTING DATE: JUNE 16, 2009	L.E. SUTTON, PE PROJECT DESIGN ENGINEER

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

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA	
P.E.	
STATE DESIGN ENGINEER	
DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION	
APPROVED	DATE
DIVISION ADMINISTRATOR	

CONTRACT: C202125 TIP PROJECT: B-4434

13+50

14+00

14+50

15+00

15+50

16+00

16+50

17+00

(+)-0.3000% (-)-0.3000%

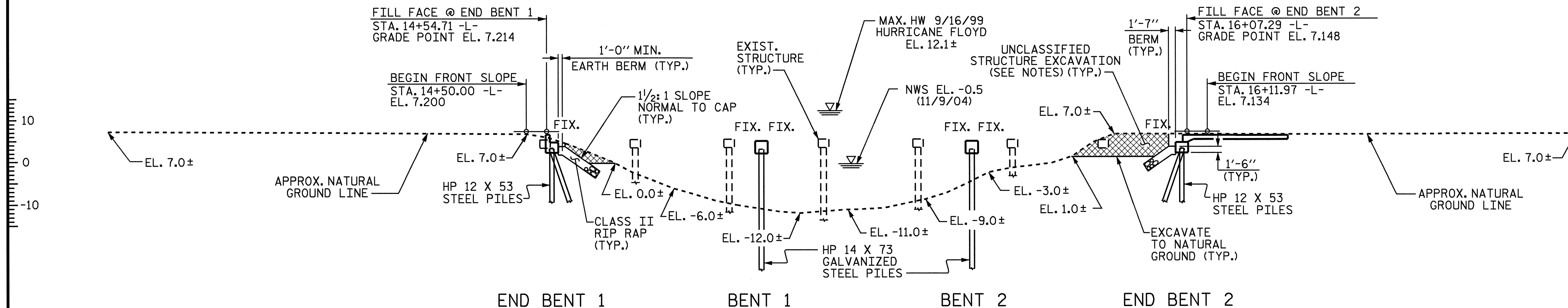
PI = 15+20.00 -L-
VC = 30.0 FT.
EL. = 7.410

GRADE DATA -L-

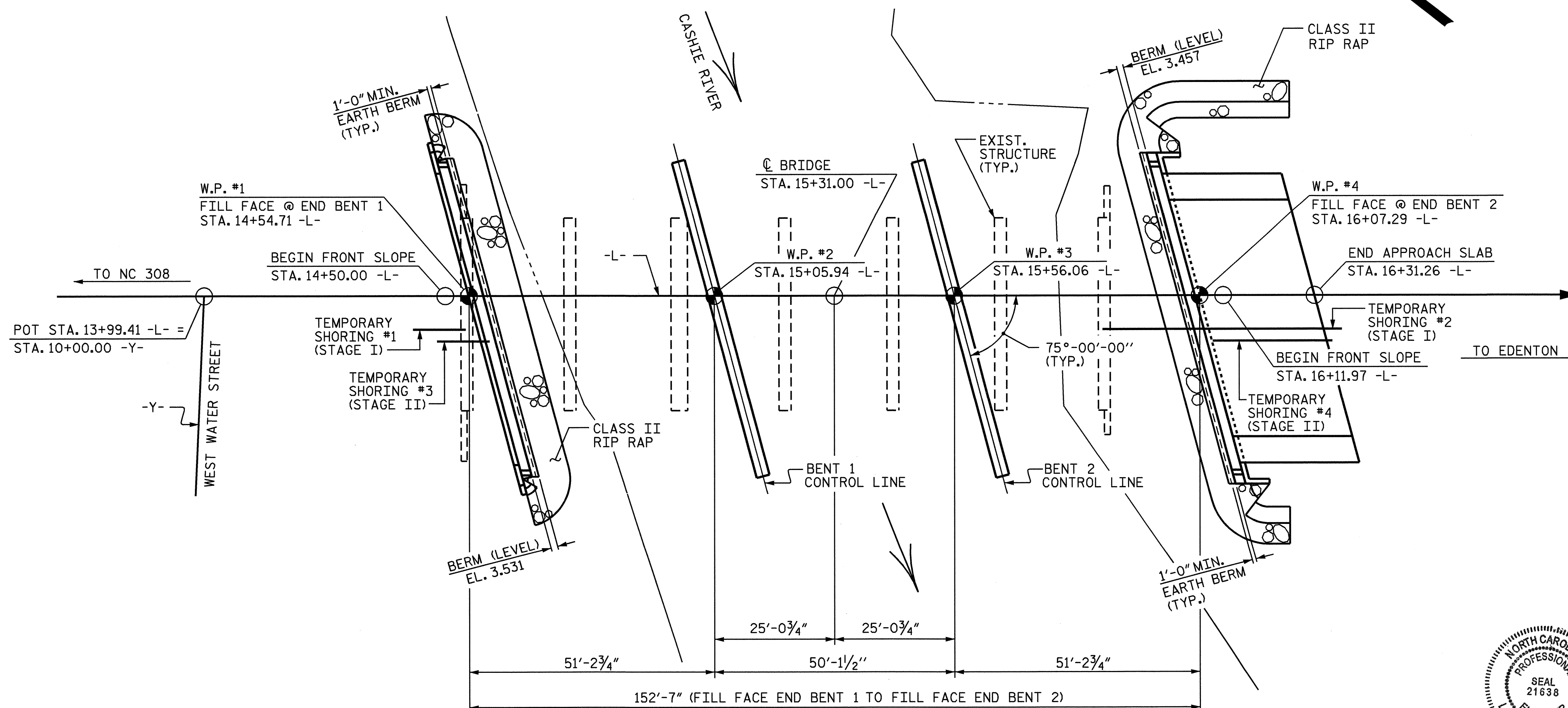
SPAN "A"

SPAN "B"

SPAN "C"



SECTION ALONG -L-



PLAN

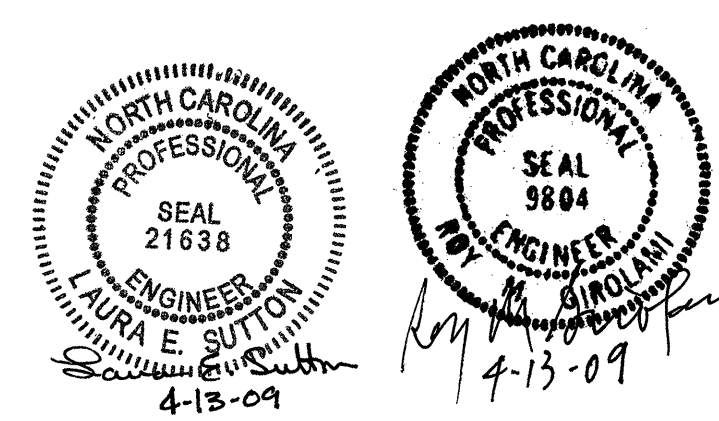
PILES NOT SHOWN FOR CLARITY.
FOR TEMPORARY SHORING, SEE NOTES.

PROJECT NO. B-4434
BERTIE COUNTY
STATION: 15+31.00 -L-

SHEET 1 OF 4 REPLACES BRIDGE NO. 14

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

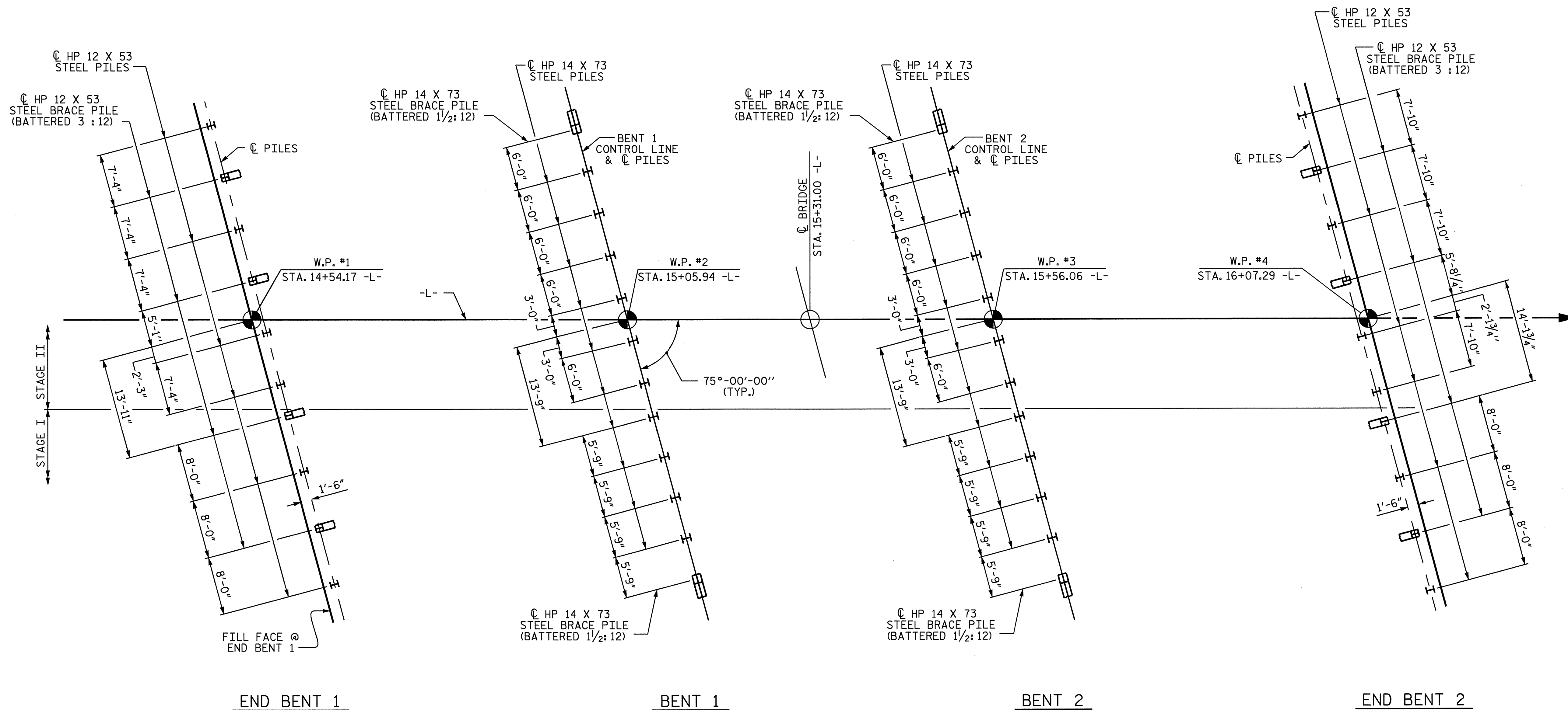
GENERAL DRAWING
FOR BRIDGE OVER
CASHIE RIVER ON
US 17 IN WINDSOR



DRAWN BY: A.S. CALLAWAY DATE: 1/9/09
CHECKED BY: L.E. SUTTON DATE: 2/12/09

09-MAR-2009 13:53
R:\Structures\scallaway\Microstation\B4434.sd.qd.01.dgn
lsutton

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			39



FOUNDATION LAYOUT

NOTES (CONTINUED ON SHEET 3 OF 4)

FOR PILES, SEE SPECIAL PROVISIONS.

PILES AT END BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 70 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 110 TONS PER PILE.

PILES AT BENTS 1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 125 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 210 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAW OR SCOUR.

PILES AT END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 75 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 125 TONS PER PILE.

INSTALL PILES AT BENT 1 TO A TIP ELEVATION NO HIGHER THAN -46.0 FT.

INSTALL PILES AT BENT 2 TO A TIP ELEVATION NO HIGHER THAN -41.0 FT.

SCOUR CRITICAL ELEVATION FOR BENT 1 IS ELEVATION -32.0 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

SCOUR CRITICAL ELEVATION FOR BENT 2 IS ELEVATION -27.0 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

TESTING THE FIRST PRODUCTION PILE WITH THE PILE DRIVING ANALYZER (PDA) DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT END BENT 1, BENT 1, BENT 2 OR END BENT 2.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 25-55 FT/KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENTS 1 AND 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH THE PILES PROVISION.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 40-70 FT/KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENTS 1 AND 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH THE PILES PROVISION.

PROJECT NO. B-4434
BERTIE COUNTY
 STATION: 15+31.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

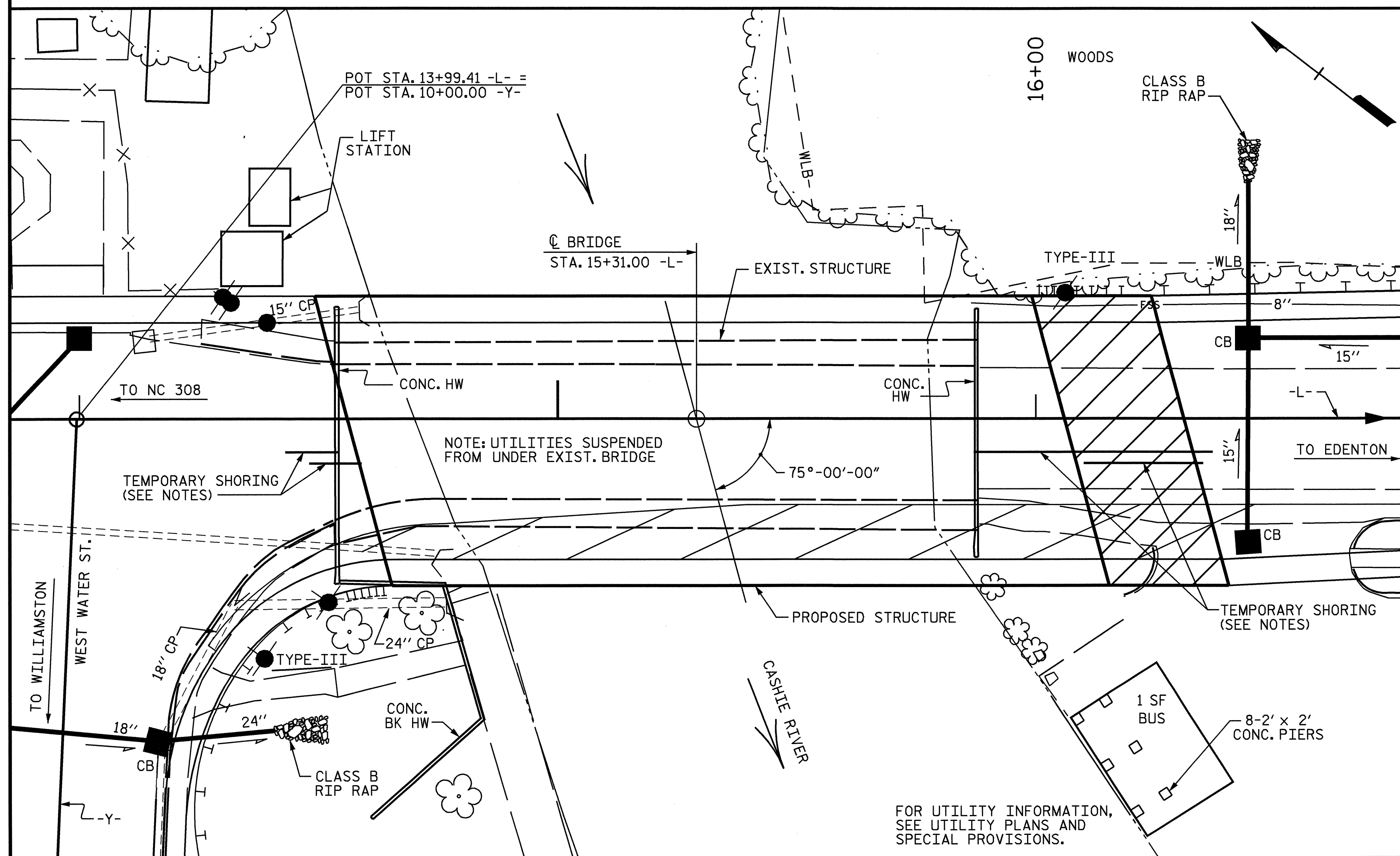
GENERAL DRAWING
 FOR BRIDGE OVER
 CASHIE RIVER ON
 US 17 IN WINDSOR



DRAWN BY: A.S. CALLAWAY DATE: 1/9/09
 CHECKED BY: L.E. SUTTON DATE: 2/12/09

REVISIONS						SHEET NO. S-2 TOTAL SHEETS 39
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

BENCHMARK #21: R/R SPIKE SET IN BASE OF 16" WALNUT TREE, 272.3' LT. OF STA. 27+92.00 -BL-, ELEV. 3.45.



LOCATION SKETCH

NOTES (CONTINUED FROM SHEET 2 OF 4)

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET 5N.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

AFTER SERVING AS A TEMPORARY STRUCTURE THE EXISTING STRUCTURE CONSISTING OF 6 SPANS (1 @ 21.25', 4 @ 22.5' & 1 @ 21.25') WITH A CLEAR ROADWAY WIDTH OF 28.0' AND HAVING A RCDG ON CONCRETE & TIMBER PILES SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 40' LEFT & 50' RIGHT OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE 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.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

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.

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

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.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

HYDRAULIC DATA

DESIGN DISCHARGE	= 7,900 CFS
FREQUENCY OF DESIGN FLOOD	= 50 YEARS
DESIGN HIGH WATER ELEVATION	= 8.3
DRAINAGE AREA	= 178 SQ. MI.
BASIC DISCHARGE (Q100)	= 9,800 CFS
BASIC HIGH WATER ELEVATION	= 9.4

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 5,600 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 10 YEARS
OVERTOPPING FLOOD ELEVATION	= 6.0

TOTAL BILL OF MATERIAL

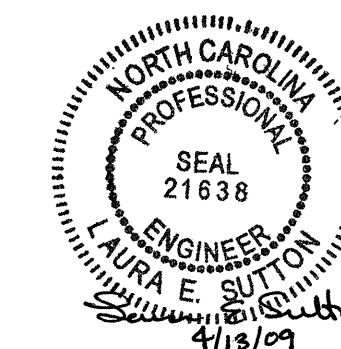
	REMOVAL OF EXISTING STRUCTURE	PDA TESTING	PDA ASSISTANCE	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS AA CONCRETE	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL	HP 12 X 53 STEEL PILES	HP 14 X 73 GALVANIZED STEEL PILES	PILE REDRIVES	THREE BAR METAL RAIL	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS				
	LUMP SUM	EACH	EACH	LUMP SUM	CU. YDS.	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	NO.	LIN. FT.	EACH	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.	
SUPERSTRUCTURE					71.3		LUMP SUM		2,916					284.90			LUMP SUM	63	3,150.00		
END BENT 1						25.4		4,078		10	700	10		106	118						
BENT 1						23.1		3,238				12	1,020	12							
BENT 2						23.1		3,238				12	1,020	12							
END BENT 2						23.0		3,550		10	600	10		111	123						
TOTAL	LUMP SUM	2	2	LUMP SUM	71.3	94.6	LUMP SUM	14,104	2,916	20	1,300	24	2,040	44	284.90	217	241	LUMP SUM	63	3,150.00	

PROJECT NO. B-4434
BERTIE COUNTY
 STATION: 15+31.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER
 CASHIE RIVER ON
 US 17 IN WINDSOR



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			39

DRAWN BY : A.S. CALLAWAY DATE : 1/9/09
 CHECKED BY : L.E. SUTTON DATE : 2/12/09

LOAD FACTORS:

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

LEGAL LOAD RATING FACTORS	YEAR	ADTT	γ_L
	2008	633	1.56
	2028	530	N/A

NOTES:

MINIMUM RATING FACTORS FOR DESIGN LOAD RATING ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

MINIMUM RATING FACTORS FOR LEGAL LOAD RATING ARE BASED ON THE STRENGTH I LIMIT STATE.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

1. RATING FACTOR FOR SHEAR WAS ADJUSTED FOR ACTUAL STIRRUP SPACINGS AT END OF SPAN.

2. ALL SPANS ARE IDENTICAL.

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																								
LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER		
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γ_L)	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_L)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.06	--	1.75	0.276	1.45	A	ER	24.482	0.609	1.13	A	ER	2.448	0.80	0.276	1.06	A	ER	24.482	1	
	HL-93 (OPERATING)	N/A		1.30	--	1.35	0.276	1.88	A	ER	24.482	0.609	1.30	A	ER	2.448	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.00	②	1.13	40.68	1.80	0.276	2.17	A	ER	24.482	0.609	1.40	A	ER	2.448	1.00	0.276	1.13	A	ER	24.482		
	HS-20 (OPERATING)	36.00		1.61	57.96	1.35	0.276	2.49	A	ER	24.482	0.609	1.61	A	ER	2.448	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.50		3.17	42.80	1.56	0.276	4.41	A	ER	24.482	0.609	3.17	A	ER	2.448	1.00	0.276	2.29	A	ER	24.482	
		NGARBS2	20.00		2.31	46.20	1.56	0.276	3.48	A	ER	24.482	0.609	2.31	A	ER	2.448	1.00	0.276	1.81	A	ER	24.482	
		NAGRIS2	22.00		2.16	47.52	1.56	0.276	3.37	A	ER	24.482	0.609	2.16	A	ER	2.448	1.00	0.276	1.76	A	ER	24.482	
		NCOTTS3	27.25		1.59	43.33	1.56	0.276	2.20	A	ER	24.482	0.609	1.59	A	ER	2.448	1.00	0.276	1.14	A	ER	24.482	
		NAGGRS4	34.93		1.35	47.16	1.56	0.276	1.91	A	ER	24.482	0.609	1.35	A	ER	2.448	1.00	0.276	0.99	A	ER	24.482	
		NS5A	35.55		1.39	49.42	1.56	0.276	1.87	A	ER	24.482	0.609	1.39	A	ER	2.448	1.00	0.276	0.97	A	ER	24.482	
		NS6A	39.95		1.29	51.54	1.56	0.276	1.74	A	ER	24.482	0.609	1.29	A	ER	2.448	1.00	0.276	0.91	A	ER	24.482	
		NS7B	42.00		1.29	54.18	1.56	0.276	1.66	A	ER	24.482	0.609	1.29	A	ER	2.448	1.00	0.276	0.86	A	ER	24.482	
	TRUCK TRACTOR SEMI-TRAILER (TTS)	NAGRIT3	33.00		1.52	50.16	1.56	0.276	2.14	A	ER	24.482	0.609	1.52	A	ER	2.448	1.00	0.276	1.11	A	ER	24.482	
		NT4A	33.08		1.46	48.30	1.56	0.276	2.16	A	ER	24.482	0.609	1.46	A	ER	2.448	1.00	0.276	1.12	A	ER	24.482	
		NT6A	41.60		1.40	58.24	1.56	0.276	1.80	A	ER	24.482	0.609	1.40	A	ER	2.448	1.00	0.276	0.93	A	ER	24.482	
		NT7A	42.00		1.31	55.02	1.56	0.276	1.82	A	ER	24.482	0.609	1.31	A	ER	2.448	1.00	0.276	0.95	A	ER	24.482	
		NT7B	42.00		1.24	52.08	1.56	0.276	1.90	A	ER	24.482	0.609	1.24	A	ER	2.448	1.00	0.276	0.99	A	ER	24.482	
		NAGRIT4	43.00		1.19	51.17	1.56	0.276	1.80	A	ER	24.482	0.609	1.19	A	ER	2.448	1.00	0.276	0.94	A	ER	24.482	
		NAGRIT5A	45.00		1.21	54.45	1.56	0.276	1.68	A	ER	24.482	0.609	1.21	A	ER	2.448	1.00	0.276	0.87	A	ER	24.482	
NAGRIT5B	45.00	③	1.13	50.85	1.56	0.276	1.65	A	ER	24.482	0.609	1.13	A	ER	2.448	1.00	0.276	0.86	A	ER	24.482			

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

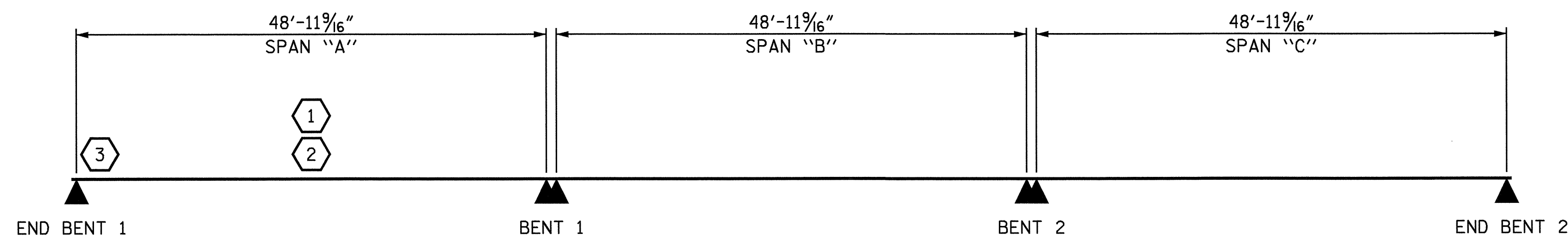
② DESIGN LOAD RATING (HS-20)

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-4434
BERTIE COUNTY
 STATION: 15+31.00 -L-

SHEET 4 OF 4

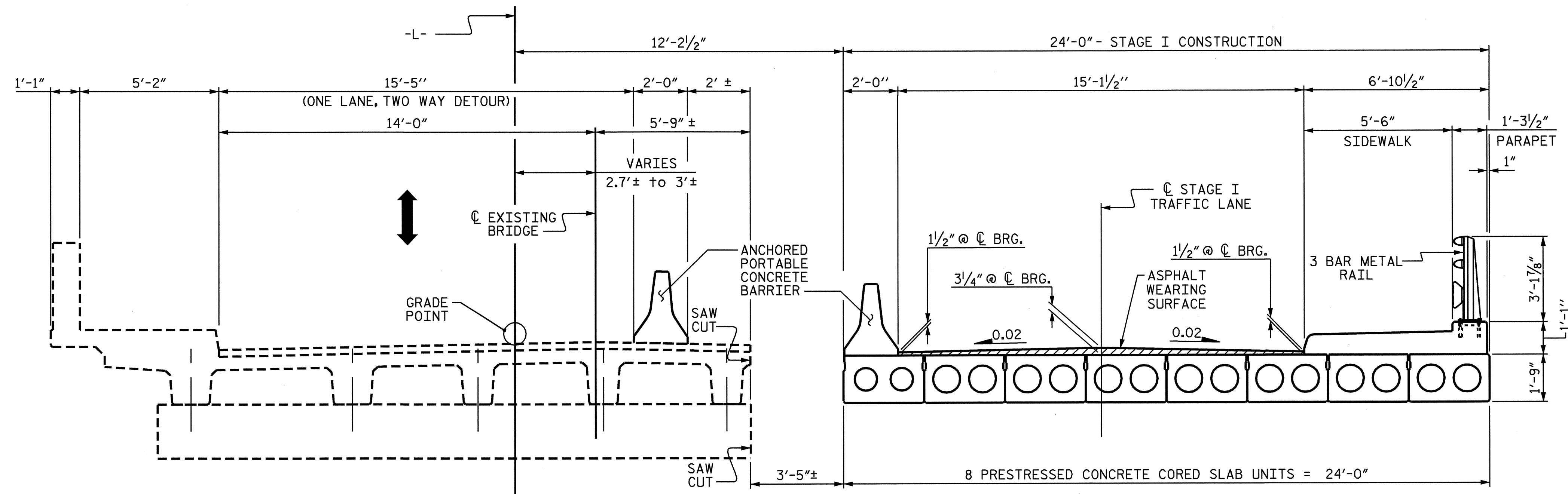


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 LRFR SUMMARY FOR
 PRESTRESSED
 CONCRETE GIRDERS
 (NON-INTERSTATE TRAFFIC)

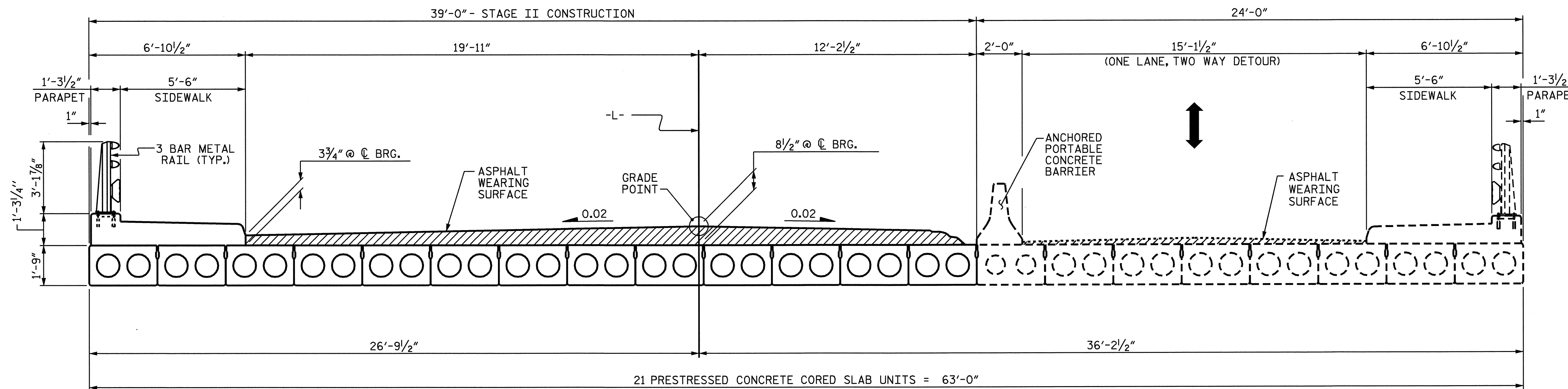
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			39

ASSEMBLED BY : L.E. SUTTON DATE : 2/02/09
 CHECKED BY : T.L. CLELLAND DATE : 2/13/09
 DRAWN BY : MAA I/08 REV. 11/12/08R MAA/GM
 CHECKED BY : GM/DI 2/08



STAGE I CONSTRUCTION

PLACE TEMPORARY ANCHORED PORTABLE CONCRETE BARRIER AS SHOWN ON EXISTING STRUCTURE. REMOVE EXISTING STRUCTURE TO SAW CUT LINE AS SHOWN. CONSTRUCT STAGE I CONSTRUCTION, ATTACH ANCHORED PORTABLE CONCRETE BARRIER USING FERRULE INSERTS ON CORED SLAB UNITS, AND PLACE FIRST ASPHALT WEARING SURFACE COURSE ON STAGE I.



STAGE II CONSTRUCTION

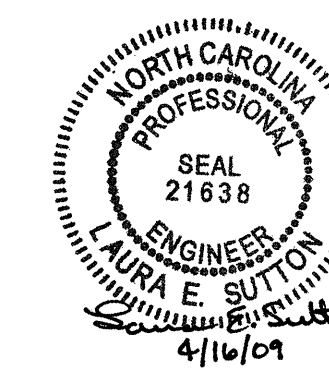
REMOVE REMAINING PORTION OF EXISTING STRUCTURE. CONSTRUCT STAGE II CONSTRUCTION AND PLACE FIRST ASPHALT WEARING SURFACE COURSE ON STAGE II.

PROJECT NO. B-4434
BERTIE COUNTY
 STATION: 15+31.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

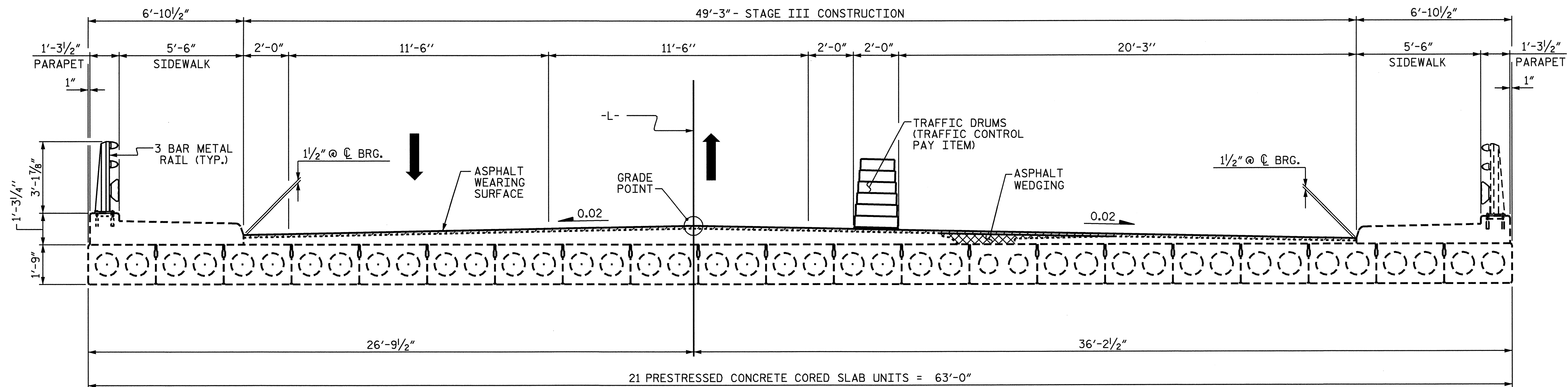
CONSTRUCTION
 SEQUENCE



DRAWN BY: A.S. CALLAWAY DATE: 12/1/08
 CHECKED BY: L.E. SUTTON DATE: 1/8/09

09-APR-2009 09:44
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 lsutton

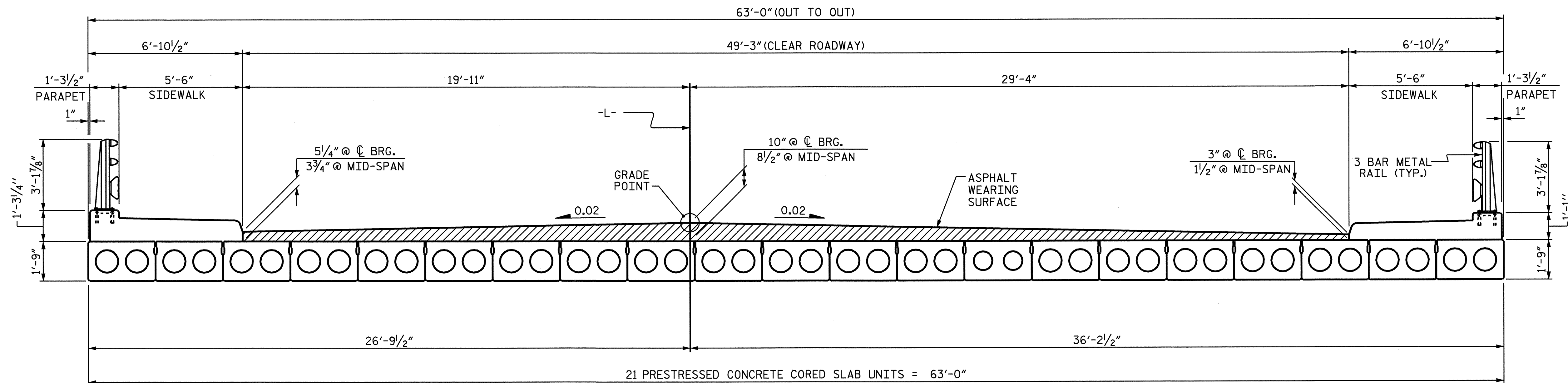
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			39



STAGE III CONSTRUCTION

PLACE TRAFFIC DRUMS AS SHOWN AND REMOVE TEMPORARY ANCHORED PORTABLE CONCRETE BARRIER IN STAGE I. FILL CONCRETE INSERTS WITH GROUT. COMPLETE ASPHALT WEDGING.

RELOCATE DRUMS AS NECESSARY TO PLACE FINAL 1/2" ASPHALT SURFACE COURSE. OPEN STRUCTURE TO TRAFFIC.



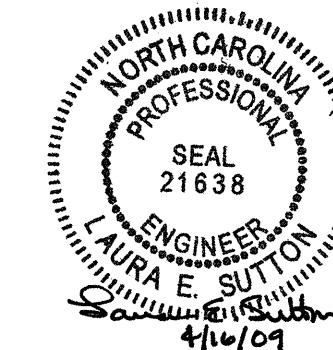
FINAL TYPICAL SECTION

PROJECT NO. B-4434
BERTIE COUNTY
 STATION: 15+31.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

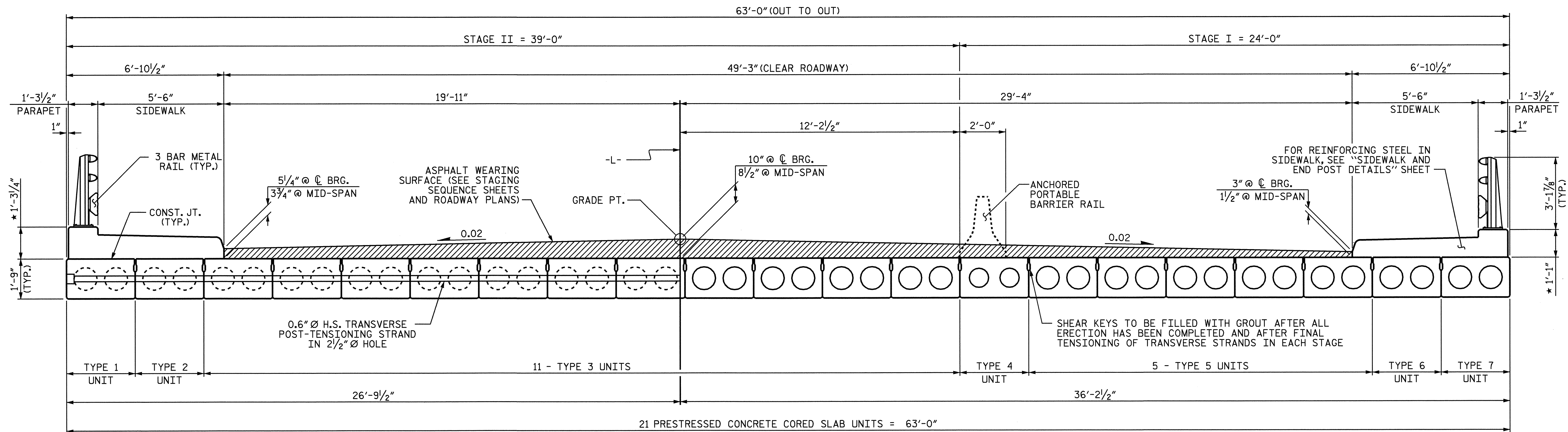
CONSTRUCTION SEQUENCE



DRAWN BY: A.S. CALLAWAY DATE: 12/1/08
 CHECKED BY: L.E. SUTTON DATE: 1/8/09

09-APR-2009 09:44
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 lsutton

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			39

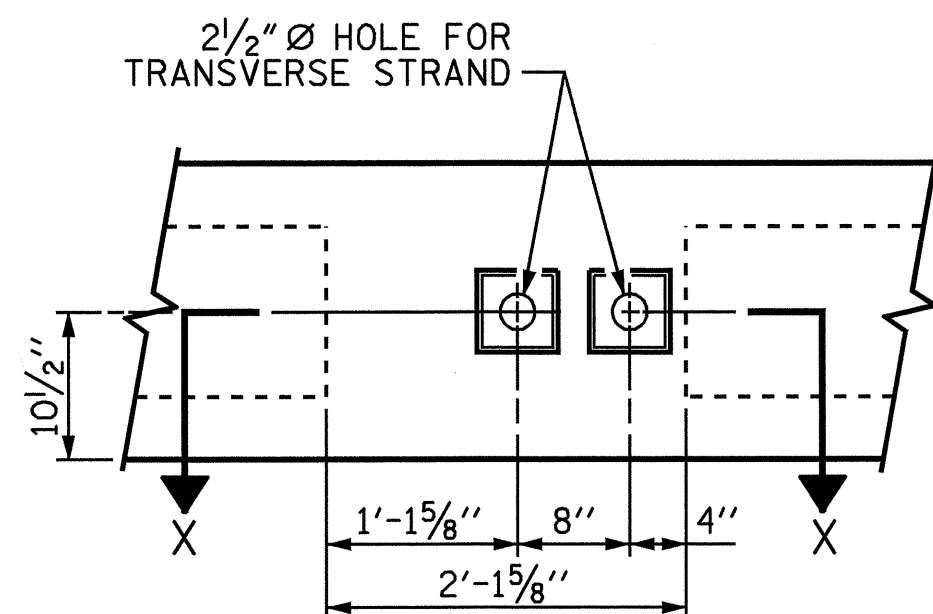


HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

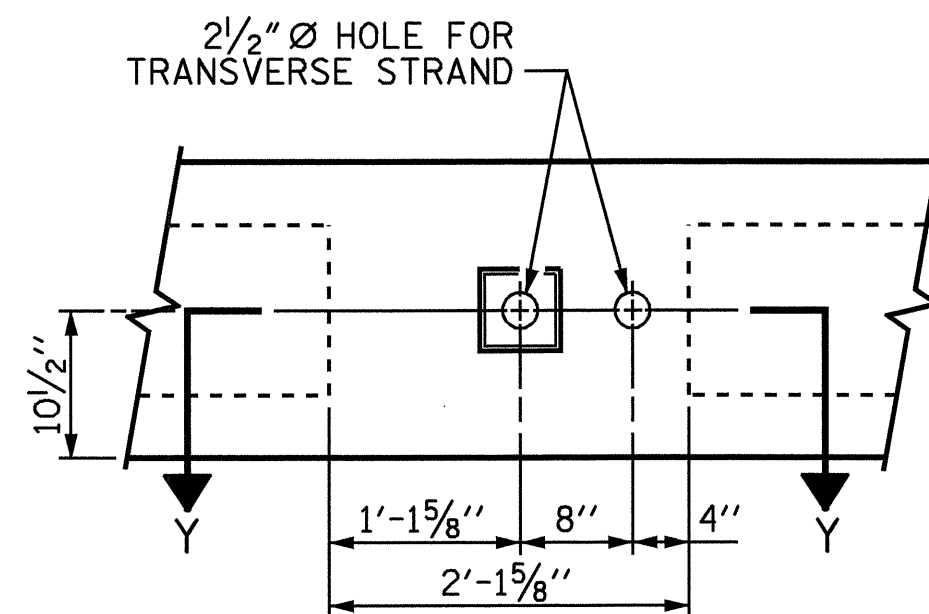
TYPICAL SECTION

HALF SECTION
THROUGH VOIDS

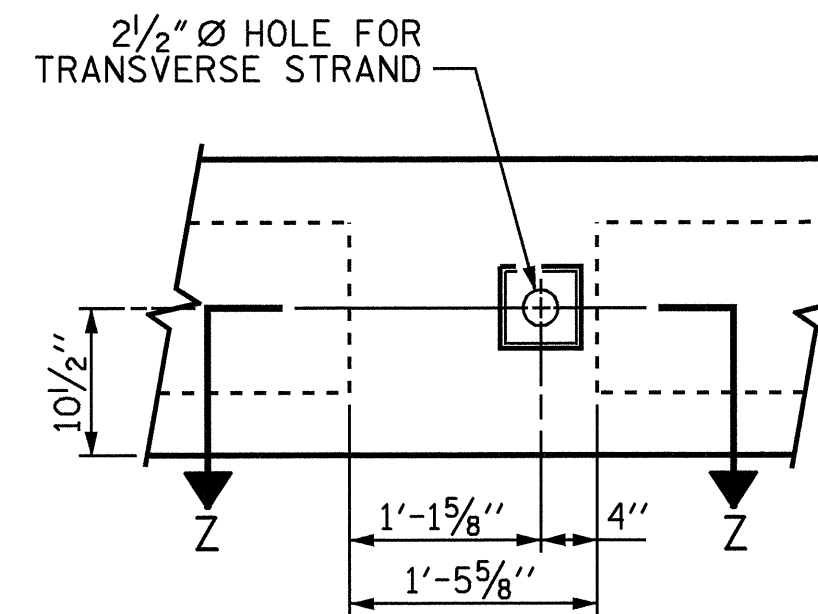
* THE MINIMUM HEIGHT OF THE PARAPET IS SHOWN. THE HEIGHT OF THE PARAPET VARIES WHILE THE TOP OF THE PARAPET FOLLOWS THE PROFILE OF THE GUTTERLINE.



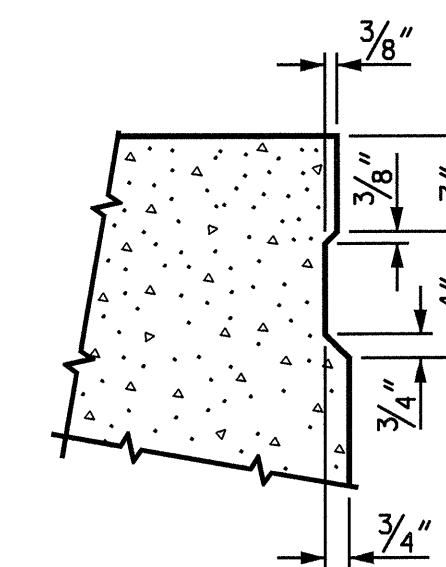
ELEVATION VIEW A



ELEVATION VIEW B

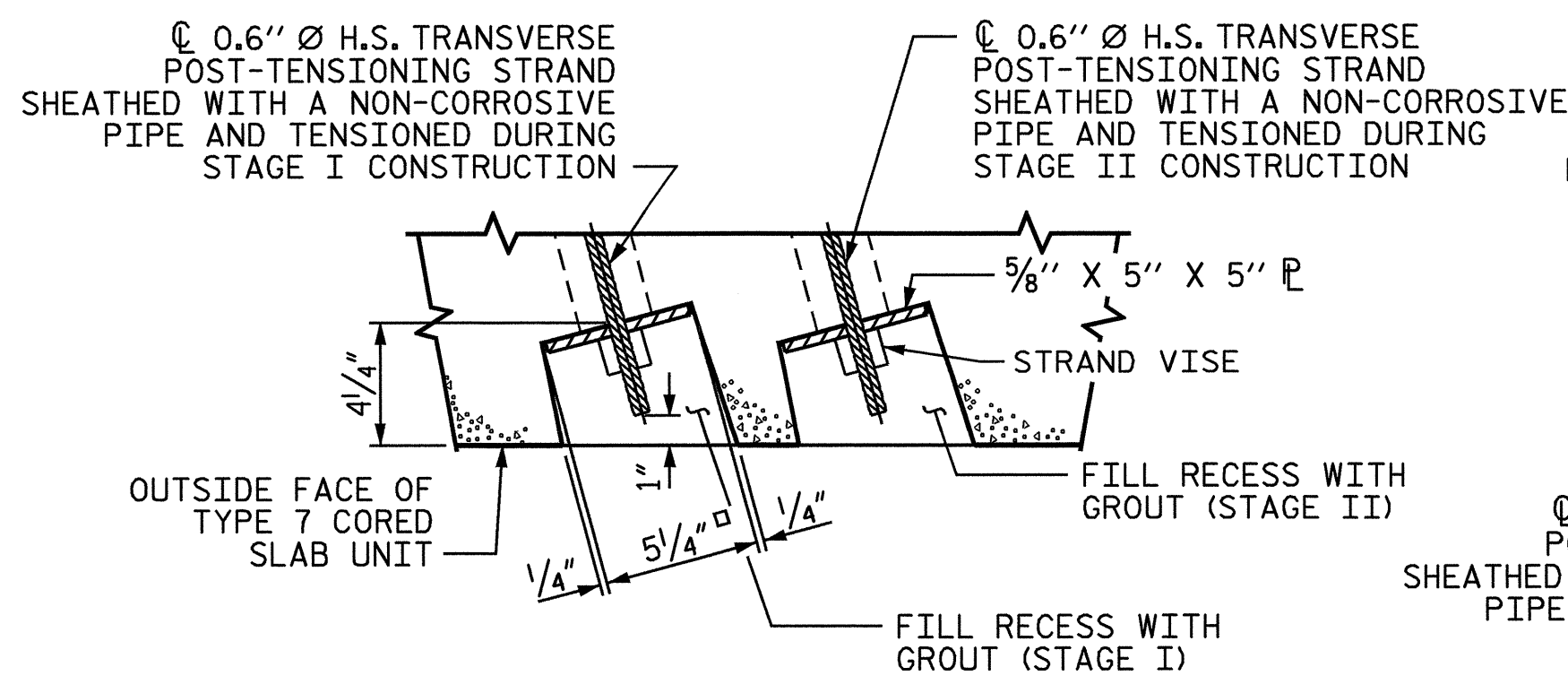


ELEVATION VIEW C

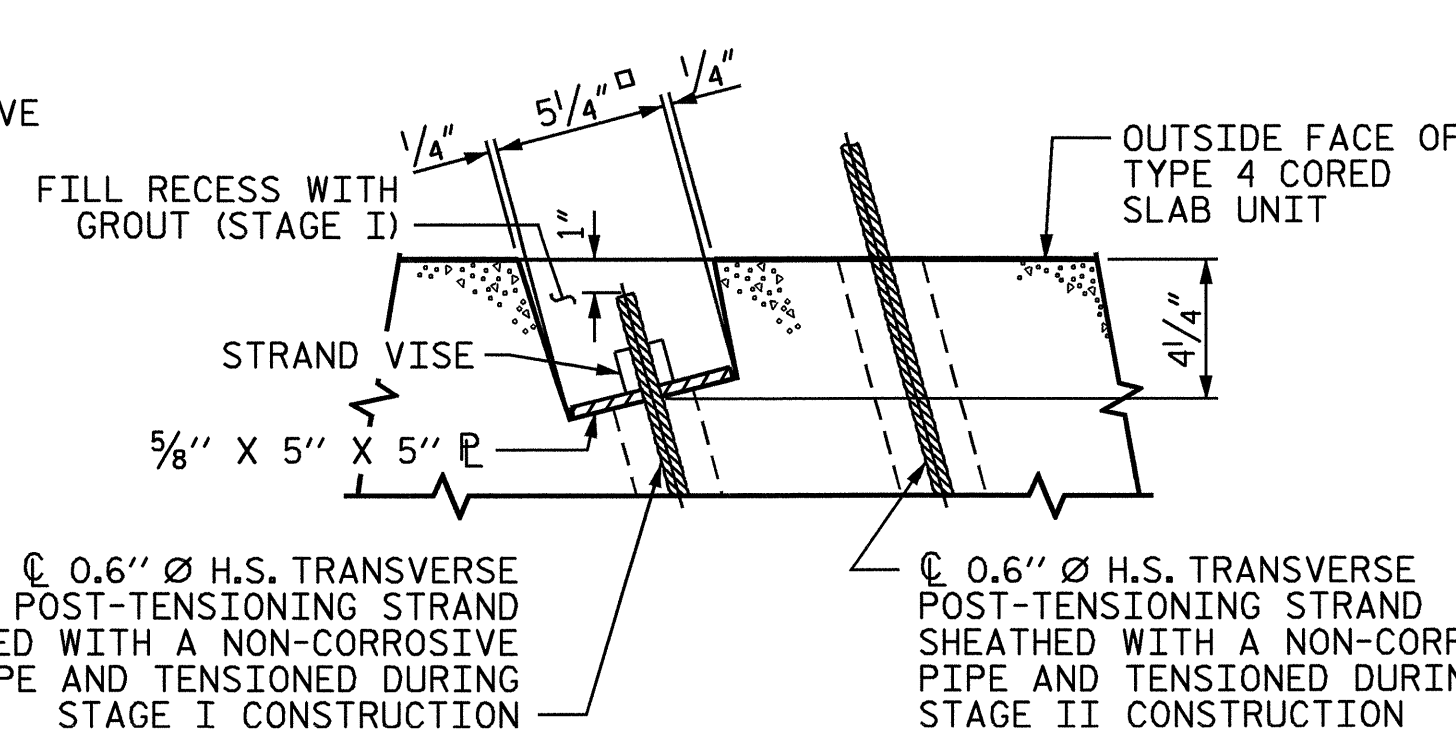


SHEAR KEY DETAIL

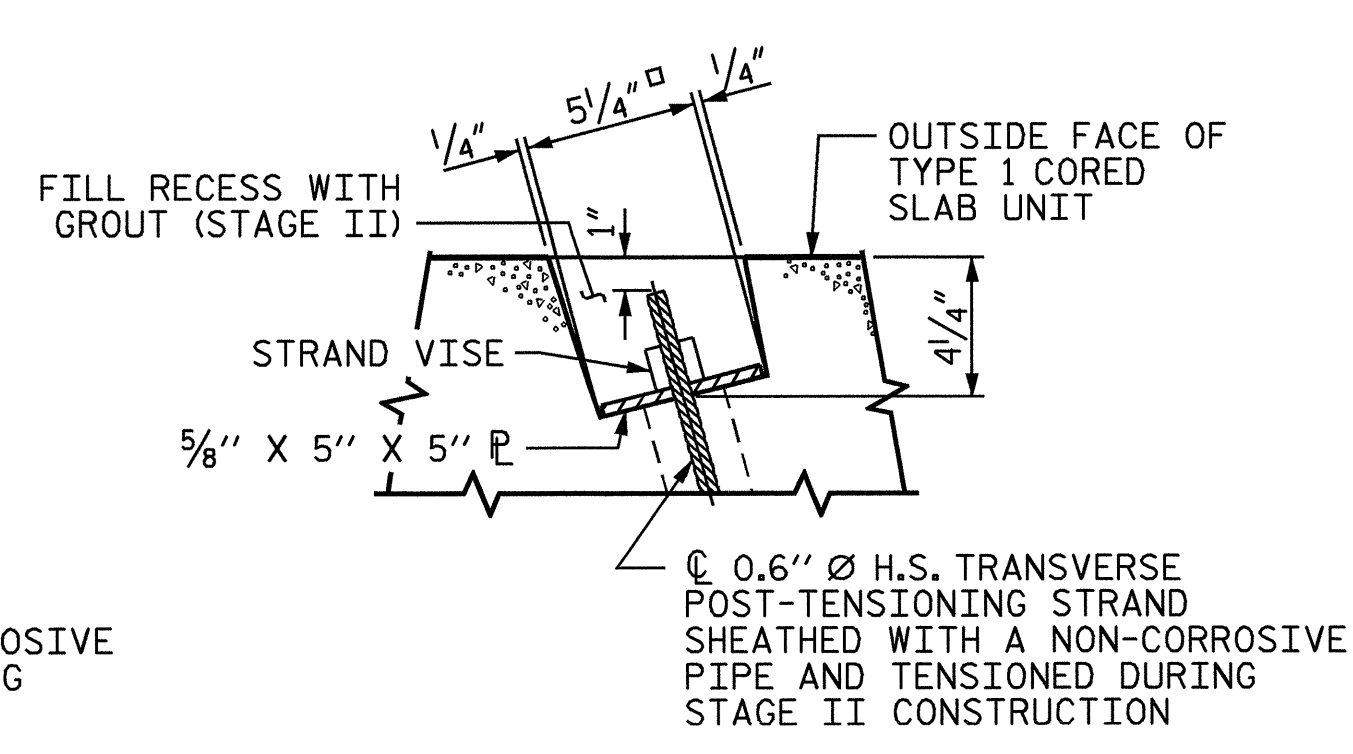
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



SECTION X-X



SECTION Y-Y



SECTION Z-Z

GRAUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS

ASSEMBLED BY : L.E. SUTTON DATE : 1/02/09
 CHECKED BY : A.S. CALLAWAY DATE : 1/08/09
 DRAWN BY : WJH 4/89 REV. 10/17/00 RWW/LES
 CHECKED BY : FCJ 5/89 REV. 7/10/01RR RWW/LES
 REV. 5/1/06 TLA/GM

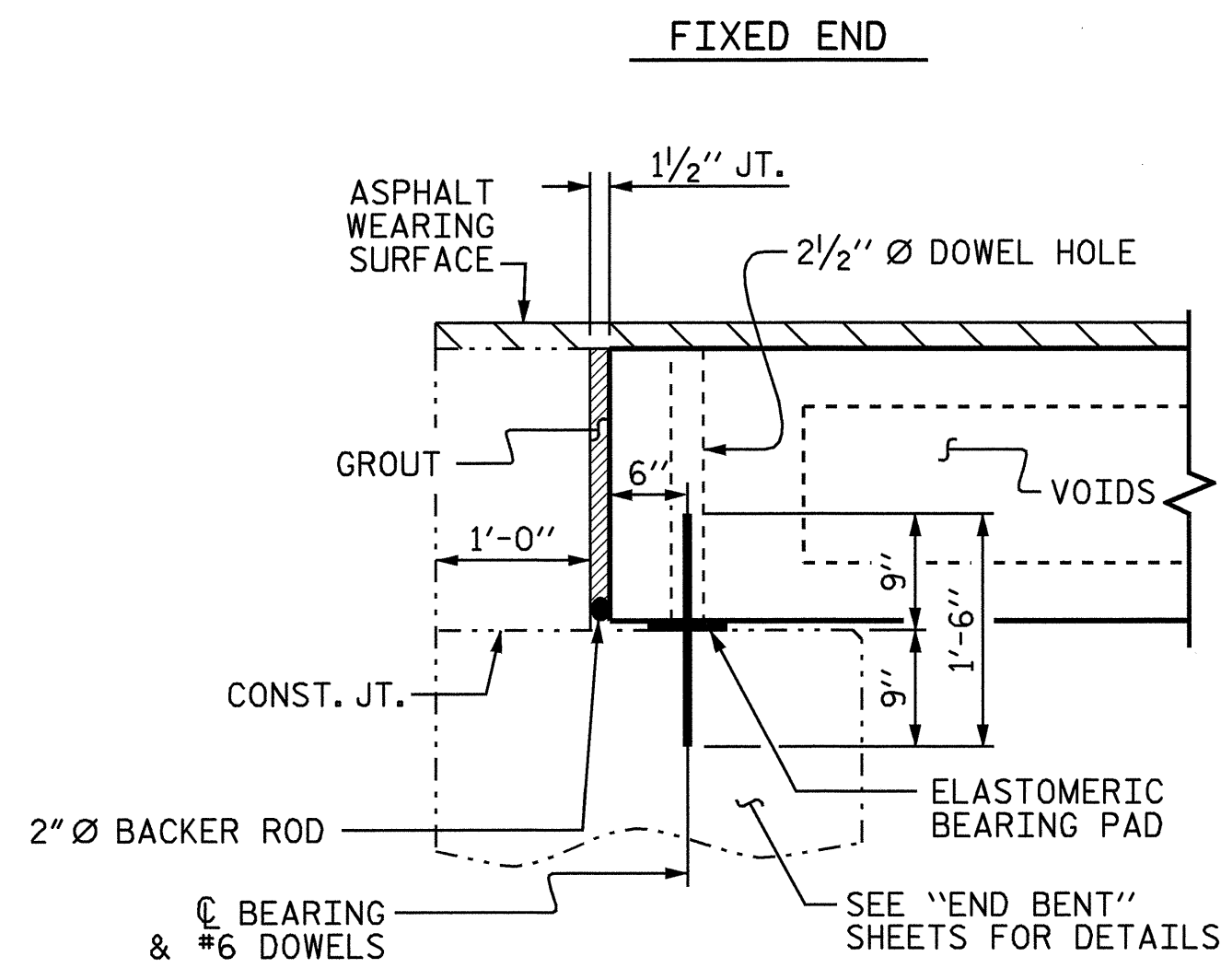
13-FEB-2009 14:37
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 lsutton

PROJECT NO. B-4434
 BERTIE COUNTY
 STATION: 15+31.00 -L-

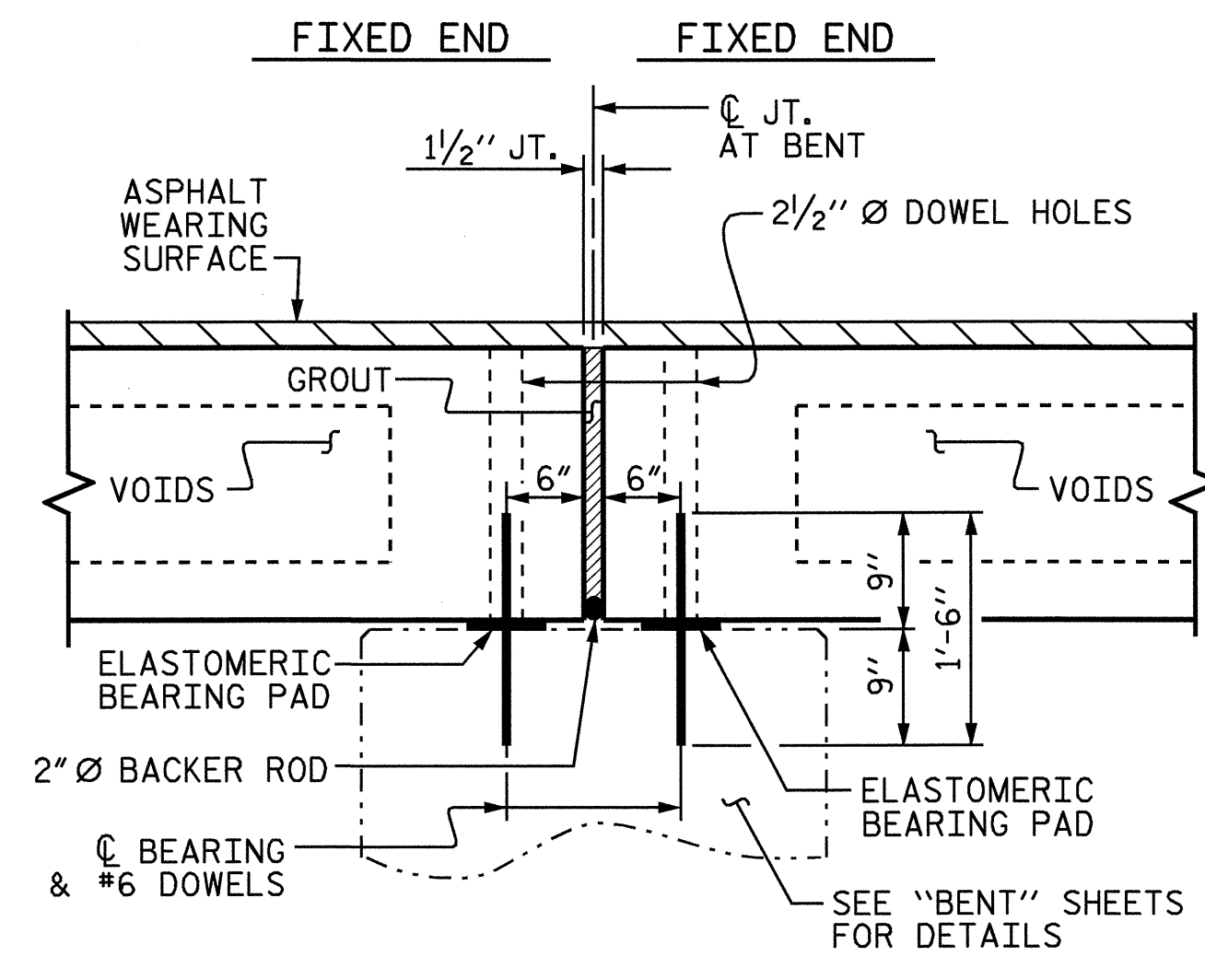


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT 75° SKEW - 50' UNIT					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-7
					TOTAL SHEETS 39

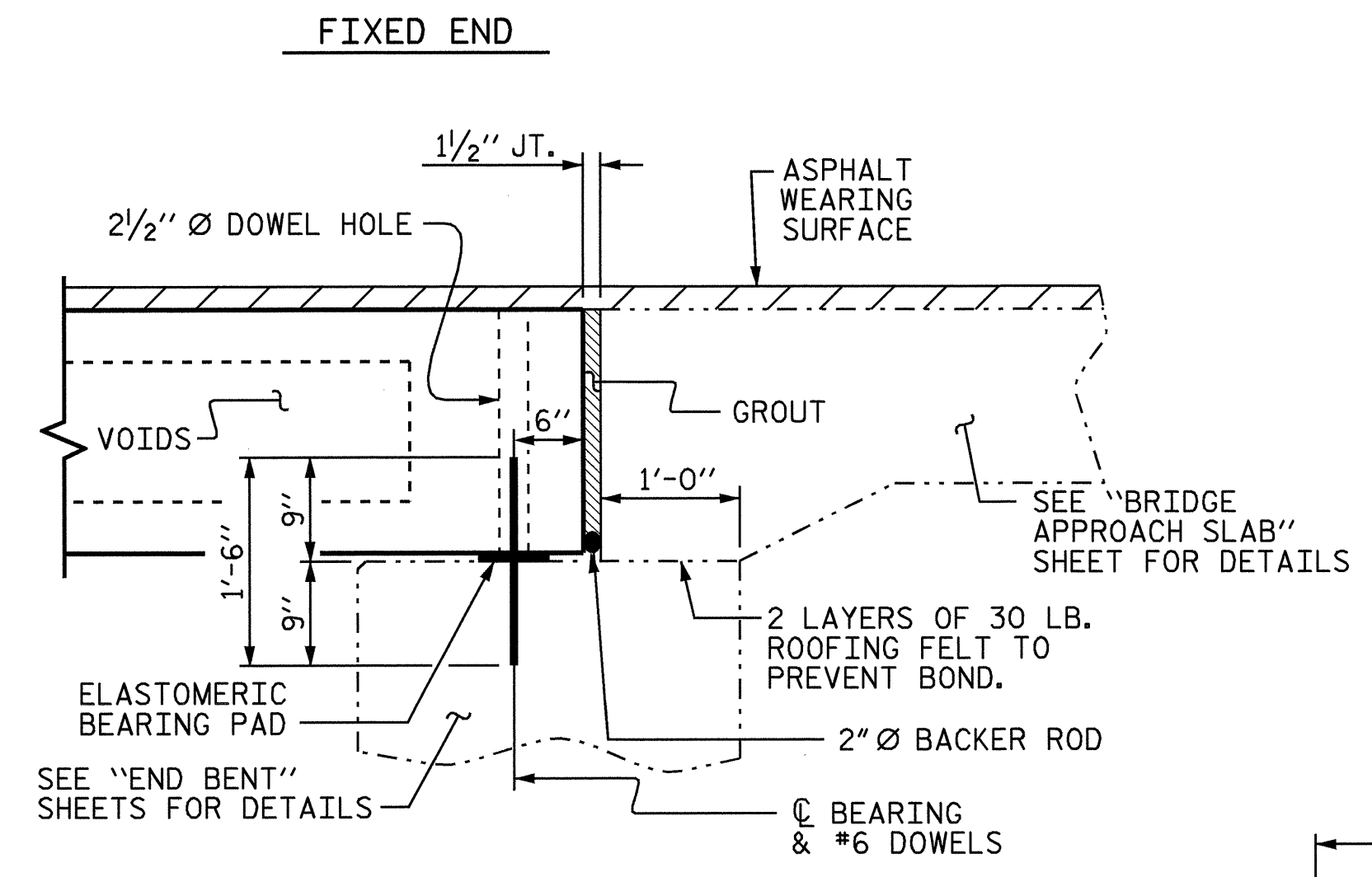
STD. NO. PCS2



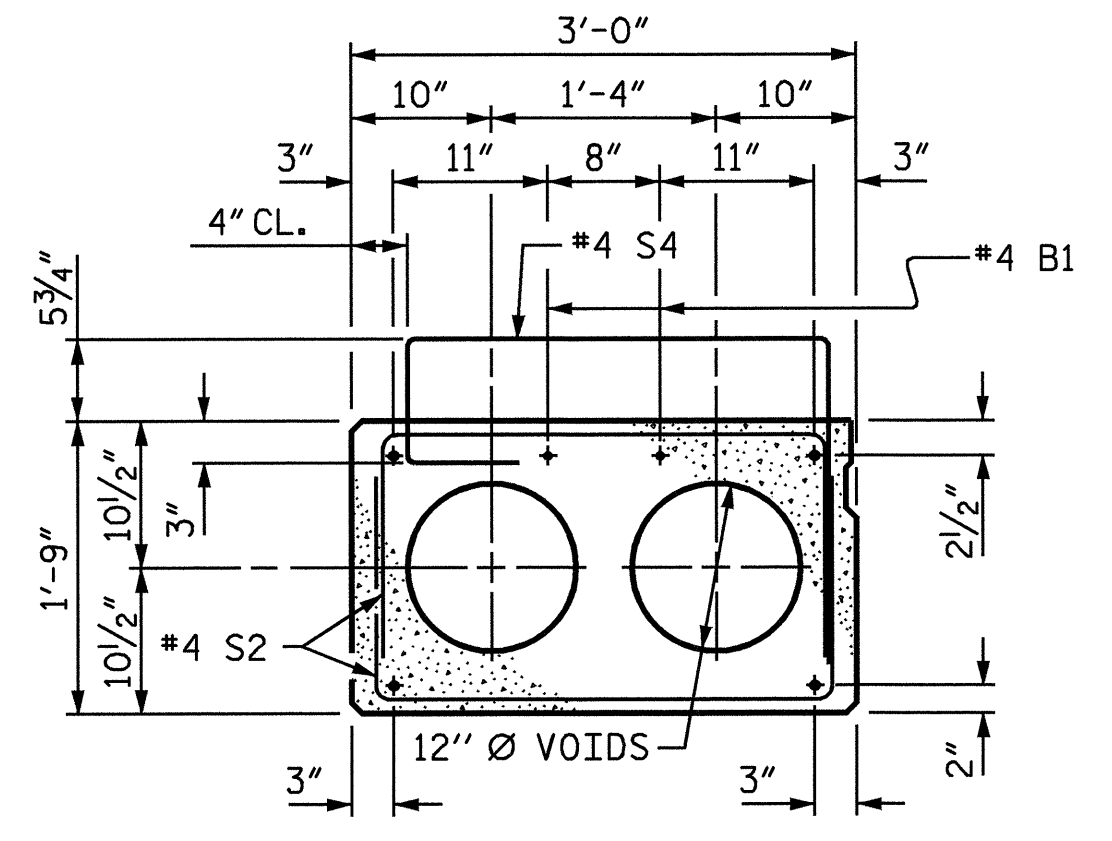
SECTION AT END BENT 1



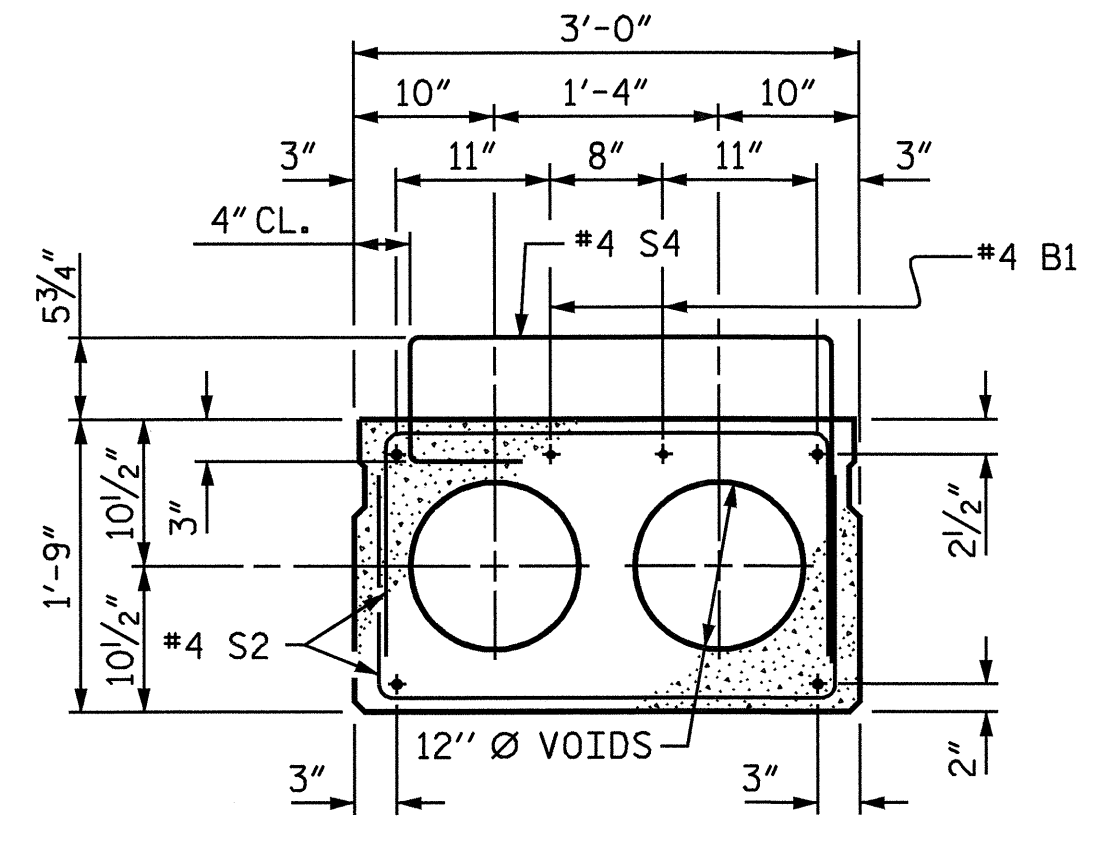
SECTION AT BENT



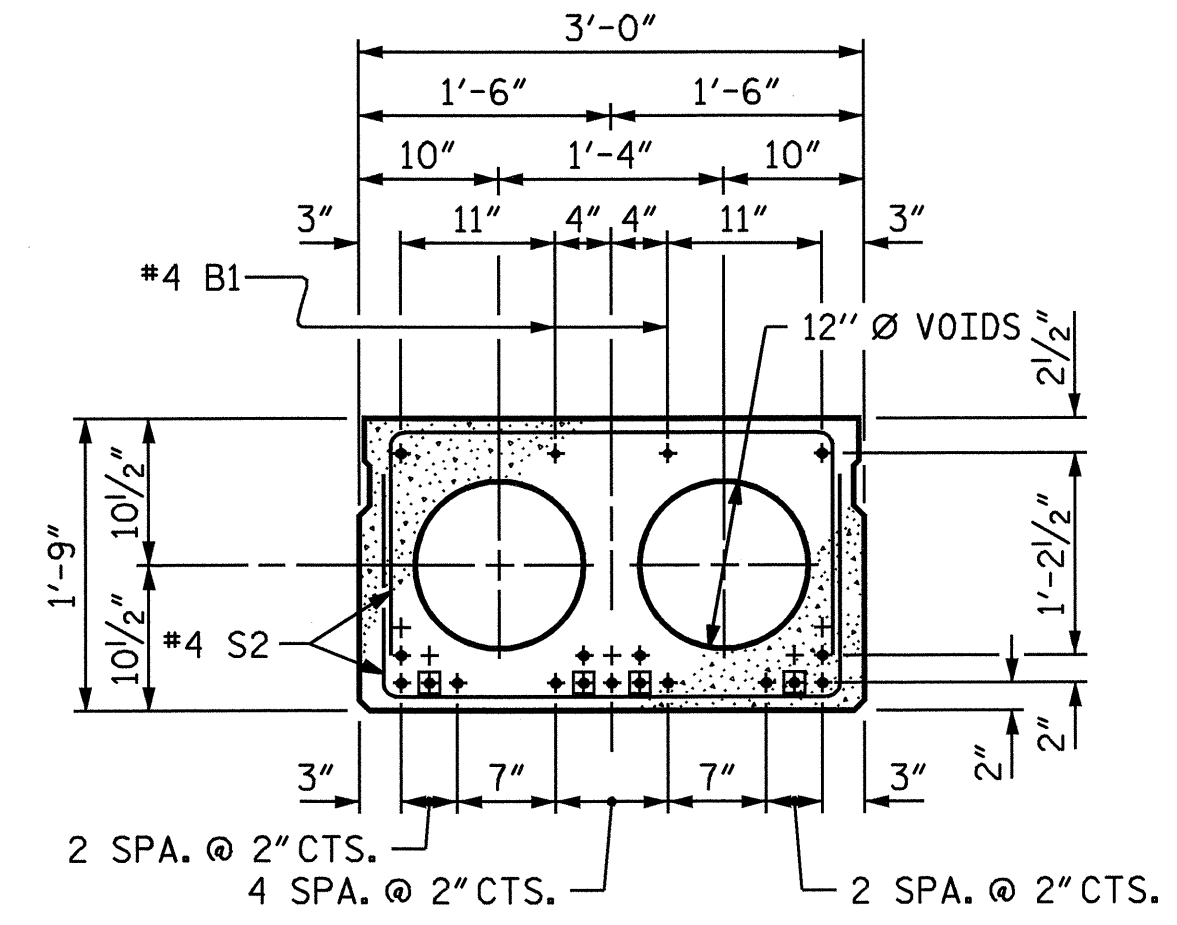
SECTION AT END BENT 2



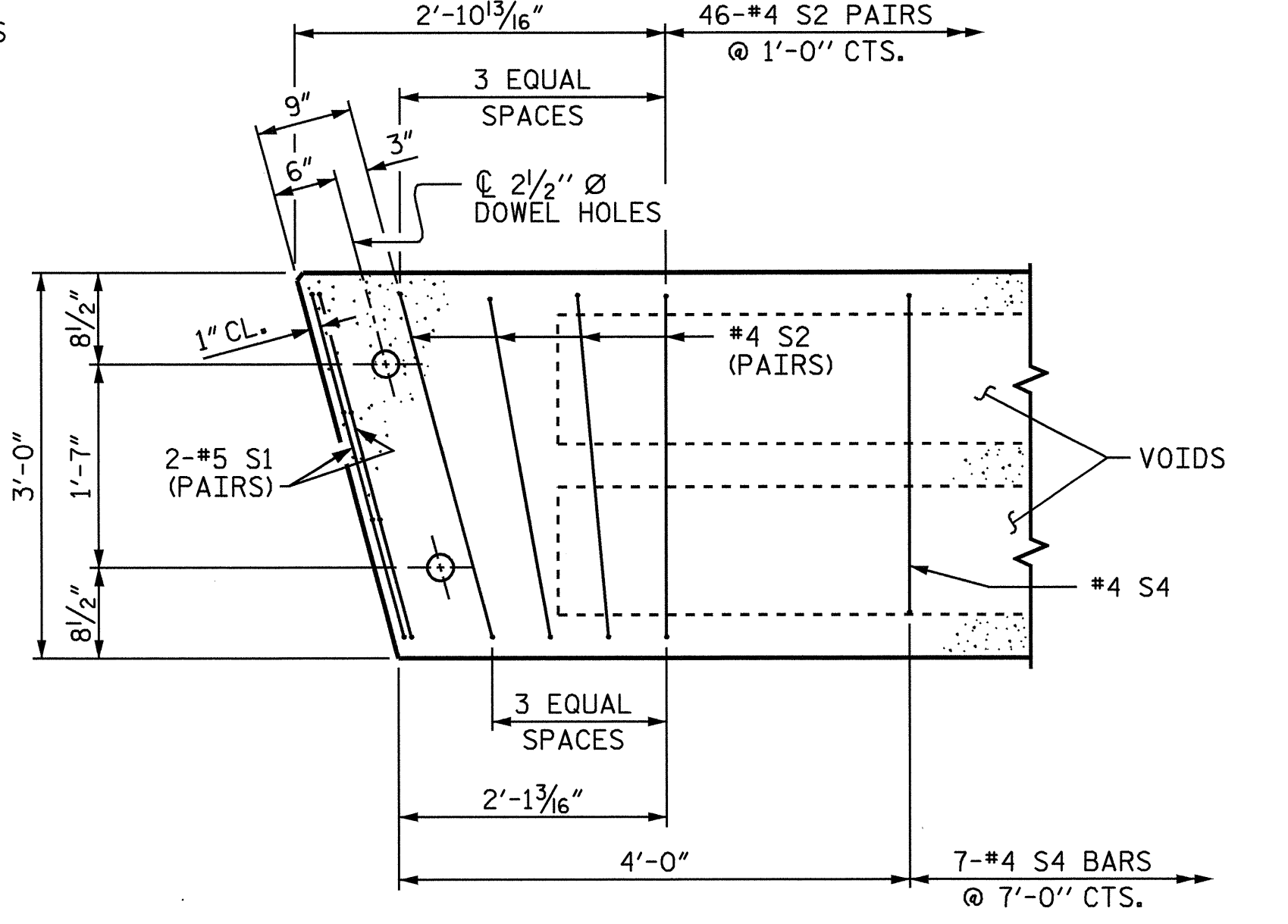
TYPE 1 UNIT
(FOR PRESTRESSED STRAND LAYOUT, SEE TYPE 3 & 5 UNITS.)



TYPE 2 UNIT
(FOR PRESTRESSED STRAND LAYOUT, SEE TYPE 3 & 5 UNITS.)

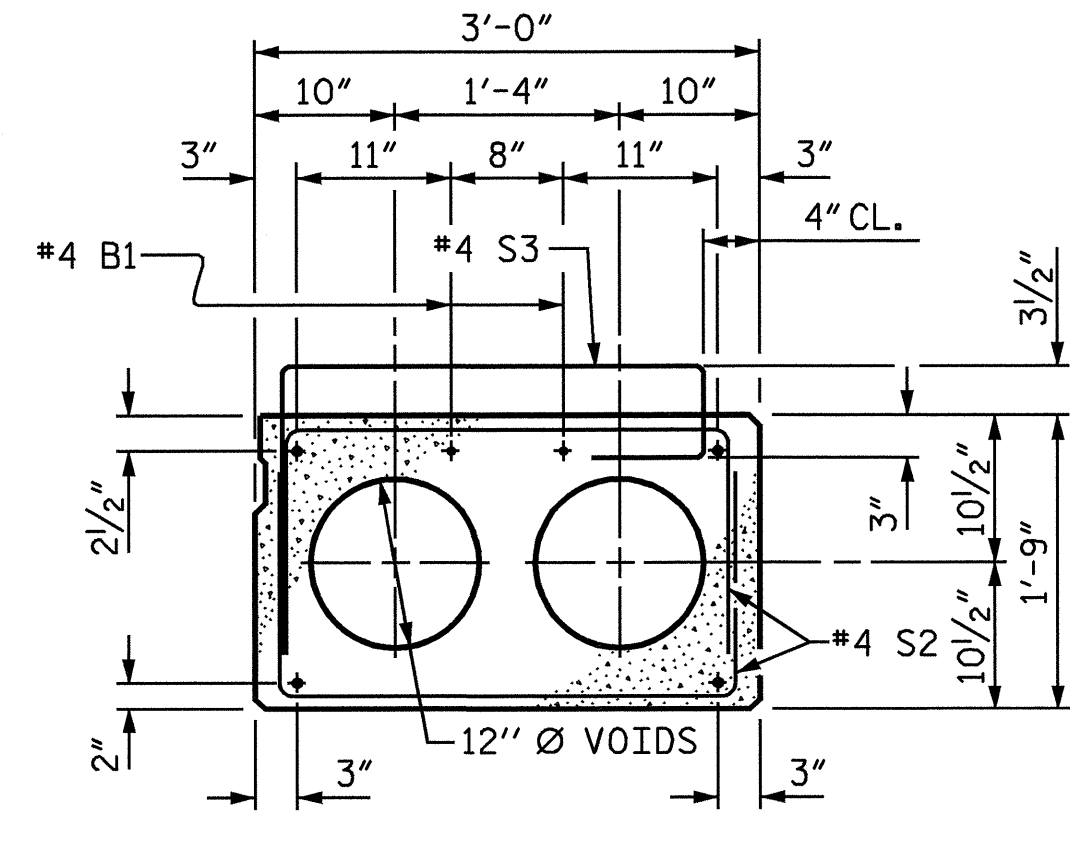


TYPE 3 & 5 UNITS
0.6" Ø LOW RELAXATION STRAND LAYOUT
17 STRANDS

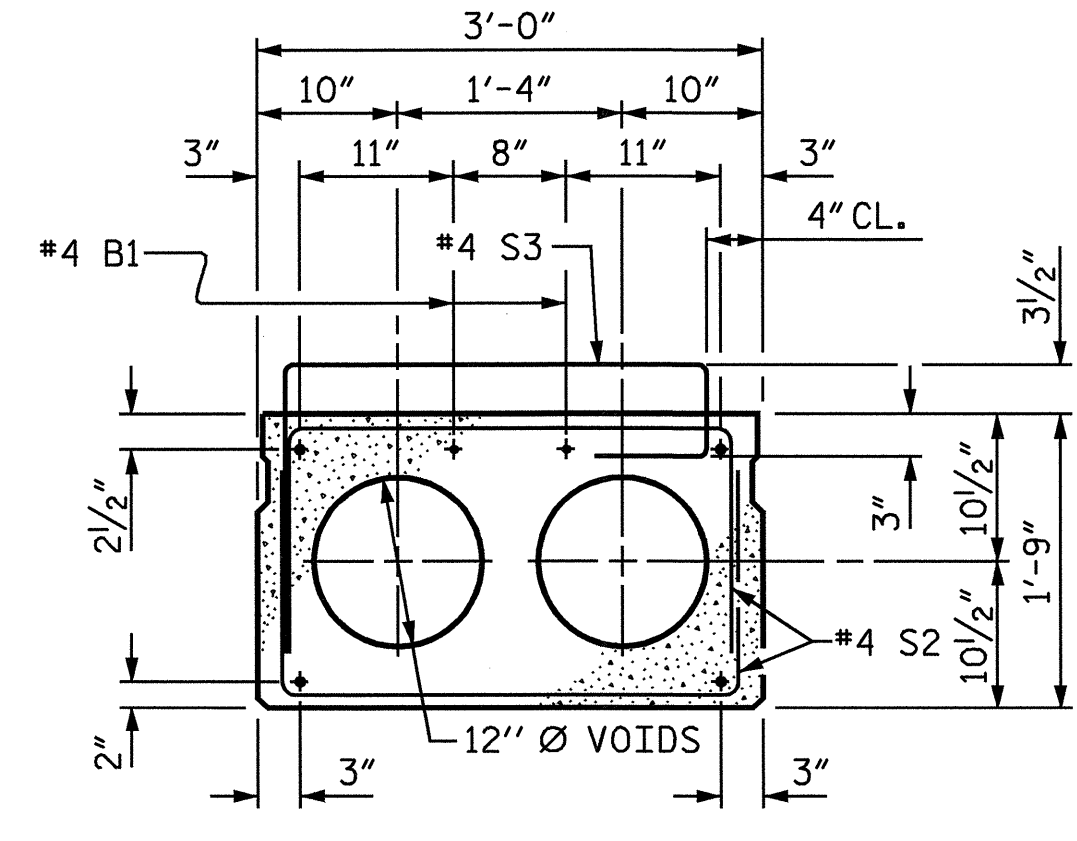


PART PLAN - SLAB SECTION

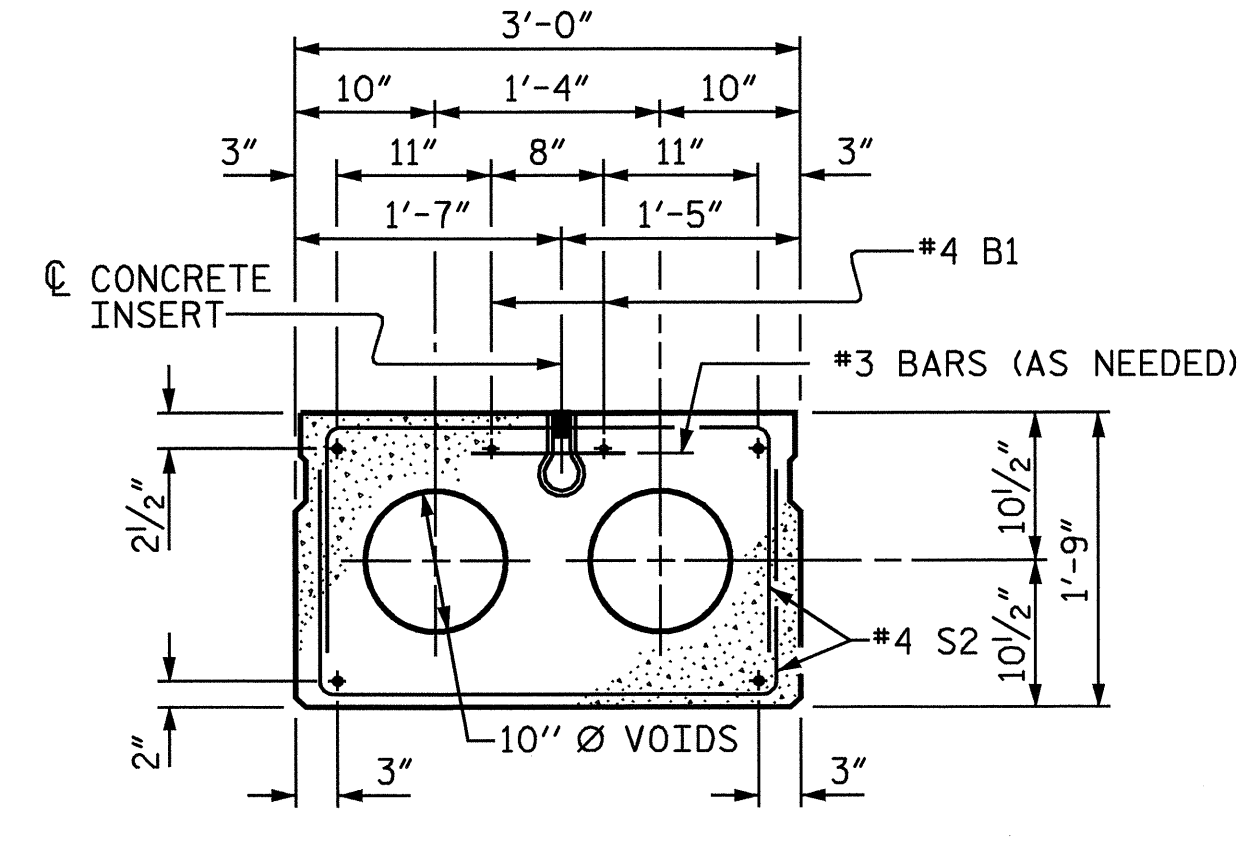
NOTE: TYPE 1 & 2 SIDEWALK UNIT SHOWN - TYPE 6 & 7 SIDEWALK UNIT SIMILAR EXCEPT USE #4 S3 IN PLACE OF #4 S4 BARS, TYPE 3-5 INTERIOR UNIT SIMILAR EXCEPT OMIT #4 S4 BARS.



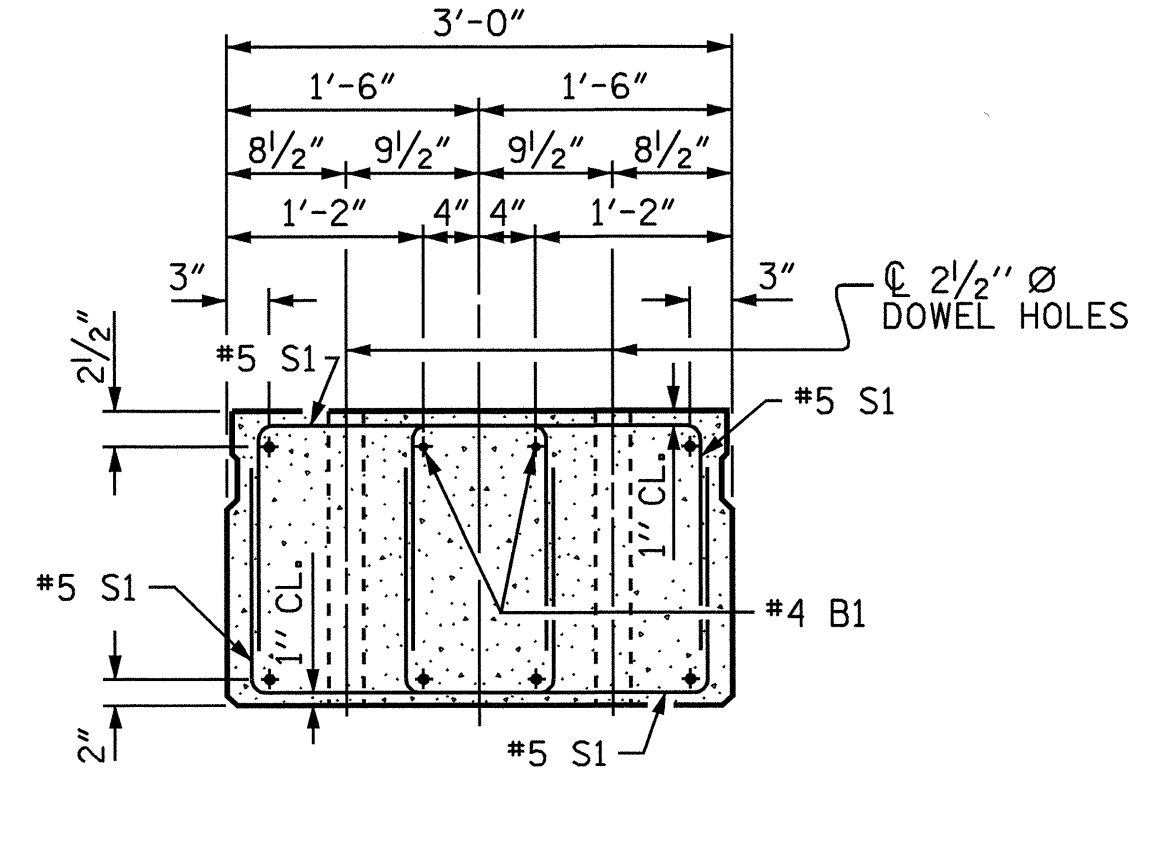
TYPE 7 UNIT
(FOR PRESTRESSED STRAND LAYOUT, SEE TYPE 3 & 5 UNITS.)



TYPE 6 UNIT
(FOR PRESTRESSED STRAND LAYOUT, SEE TYPE 3 & 5 UNITS.)

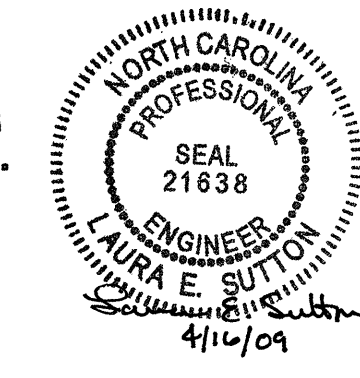


TYPE 4 UNIT
(FOR PRESTRESSED STRAND LAYOUT, SEE TYPE 3 & 5 UNITS. FOR LOCATION OF CONCRETE INSERTS, SEE "ANCHORED PORTABLE CONCRETE BARRIER DETAILS" SHEET.)



END ELEVATION

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES (STRAND LAYOUT NOT SHOWN). INTERIOR SLAB SECTION SHOWN-EXTERIOR SLAB SECTION SIMILAR EXCEPT SHEAR KEY LOCATION.

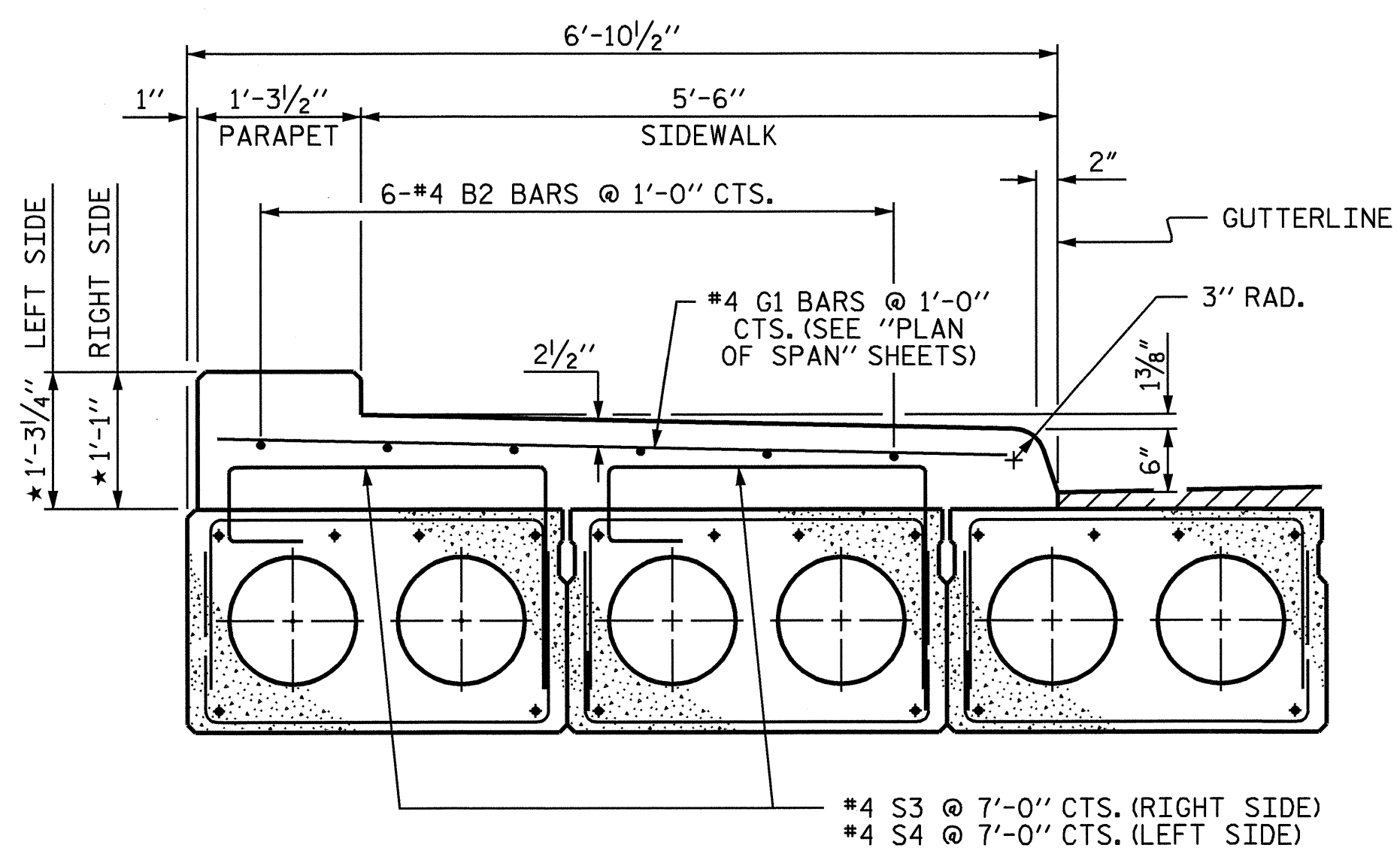


PROJECT NO. B-4434
BERTIE COUNTY
STATION: 15+31.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO.	
SUPERSTRUCTURE 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT DETAILS						S-8	
REVISIONS						TOTAL SHEETS	
NO.	BY:	DATE:	NO.	BY:	DATE:	39	
1			3				
2			4				

DRAWN BY: L.E. SUTTON DATE: 1/02/09
CHECKED BY: A.S. CALLAWAY DATE: 1/08/09

THE BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 4'-0" FROM END OF THE CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.



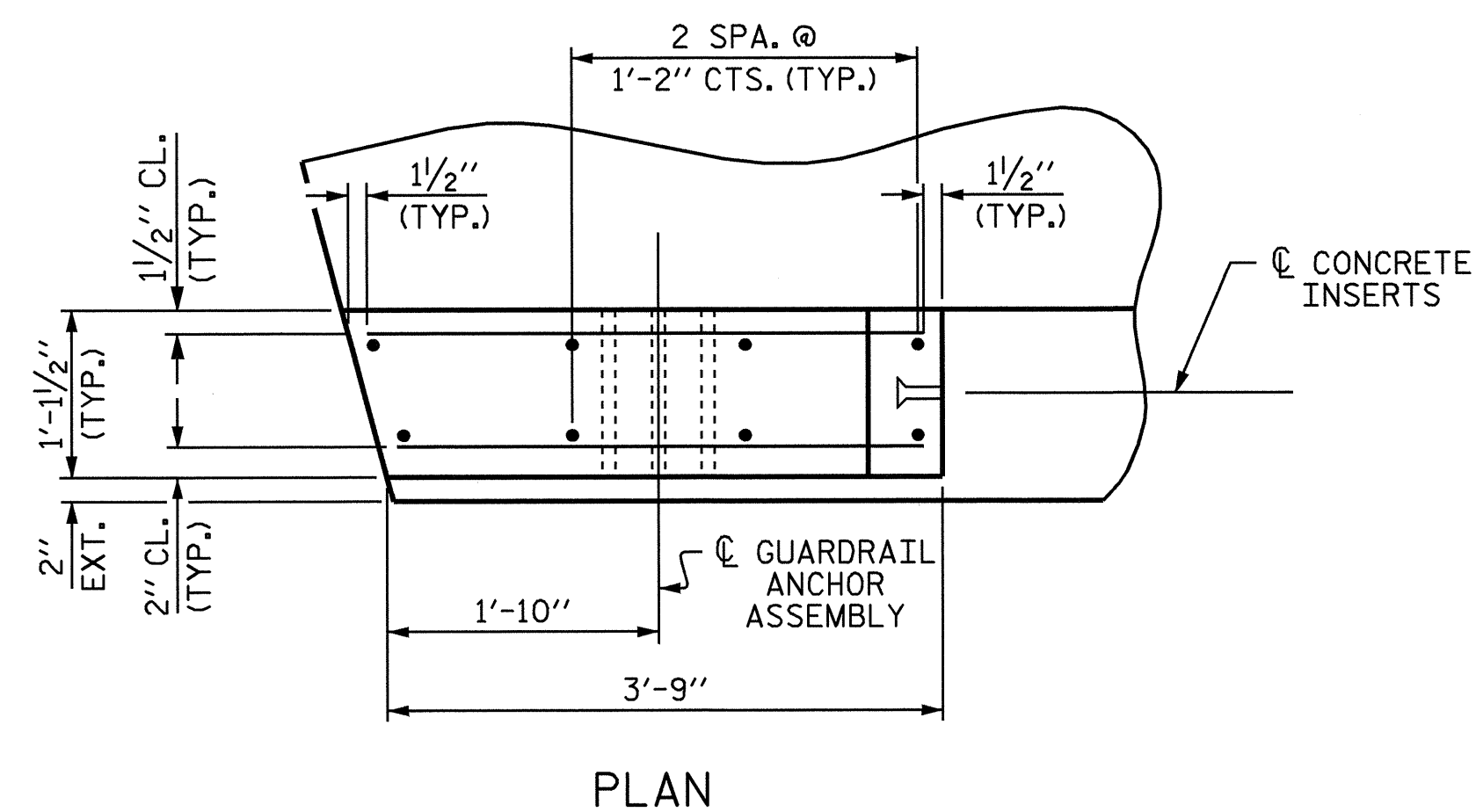
SECTION THROUGH SIDEWALK

* THE MINIMUM HEIGHT OF THE PARAPET IS SHOWN. THE HEIGHT OF THE PARAPET VARIES WHILE THE TOP OF THE PARAPET FOLLOWS THE PROFILE OF THE GUTTERLINE.

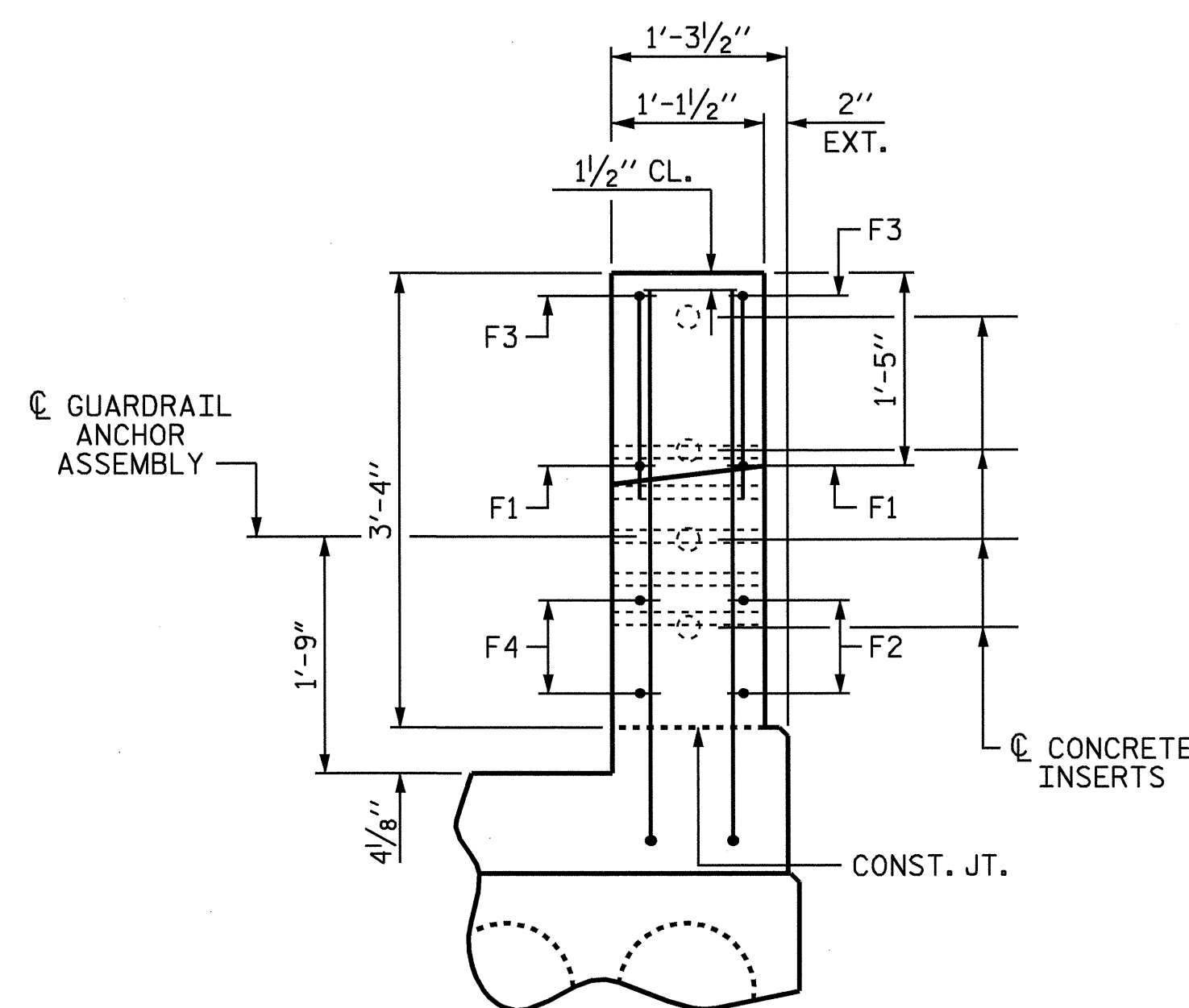
BAR TYPES						BILL OF MATERIAL - SIDEWALK AND END POSTS					
						STAGE I			STAGE II		
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B2	36	#4	STR	26'-3"	631	*B2	36	#4	STR	26'-3"	631
*E1	4	#7	1	3'-5"	28	*E1	4	#7	1	3'-5"	28
*E2	4	#7	1	4'-0"	33	*E2	4	#7	1	4'-0"	33
*E3	4	#7	1	4'-7"	37	*E3	4	#7	1	4'-7"	37
*E4	4	#7	1	5'-1"	42	*E4	4	#7	1	5'-1"	42
*F1	4	#6	STR	3'-2"	19	*F1	4	#6	STR	3'-2"	19
*F2	4	#6	STR	3'-6"	21	*F2	4	#6	STR	3'-6"	21
*F3	4	#6	STR	3'-10"	23	*F3	4	#6	STR	3'-10"	23
*F4	4	#6	STR	3'-9"	23	*F4	4	#6	STR	3'-9"	23
*G1	144	#4	STR	6'-3"	601	*G1	144	#4	STR	6'-3"	601
EPOXY COATED REINFORCING STEEL						EPOXY COATED REINFORCING STEEL					
LBS. 1,458						LBS. 1,458					
CLASS AA CONCRETE BREAKDOWN:						CLASS AA CONCRETE BREAKDOWN:					
SIDEWALK CU. YDS. 31.2						SIDEWALK CU. YDS. 38.3					
END POSTS CU. YDS. 0.9						END POSTS CU. YDS. 0.9					
TOTAL CU. YDS. 32.1						TOTAL CU. YDS. 39.2					

ALL BAR DIMENSIONS ARE OUT TO OUT.

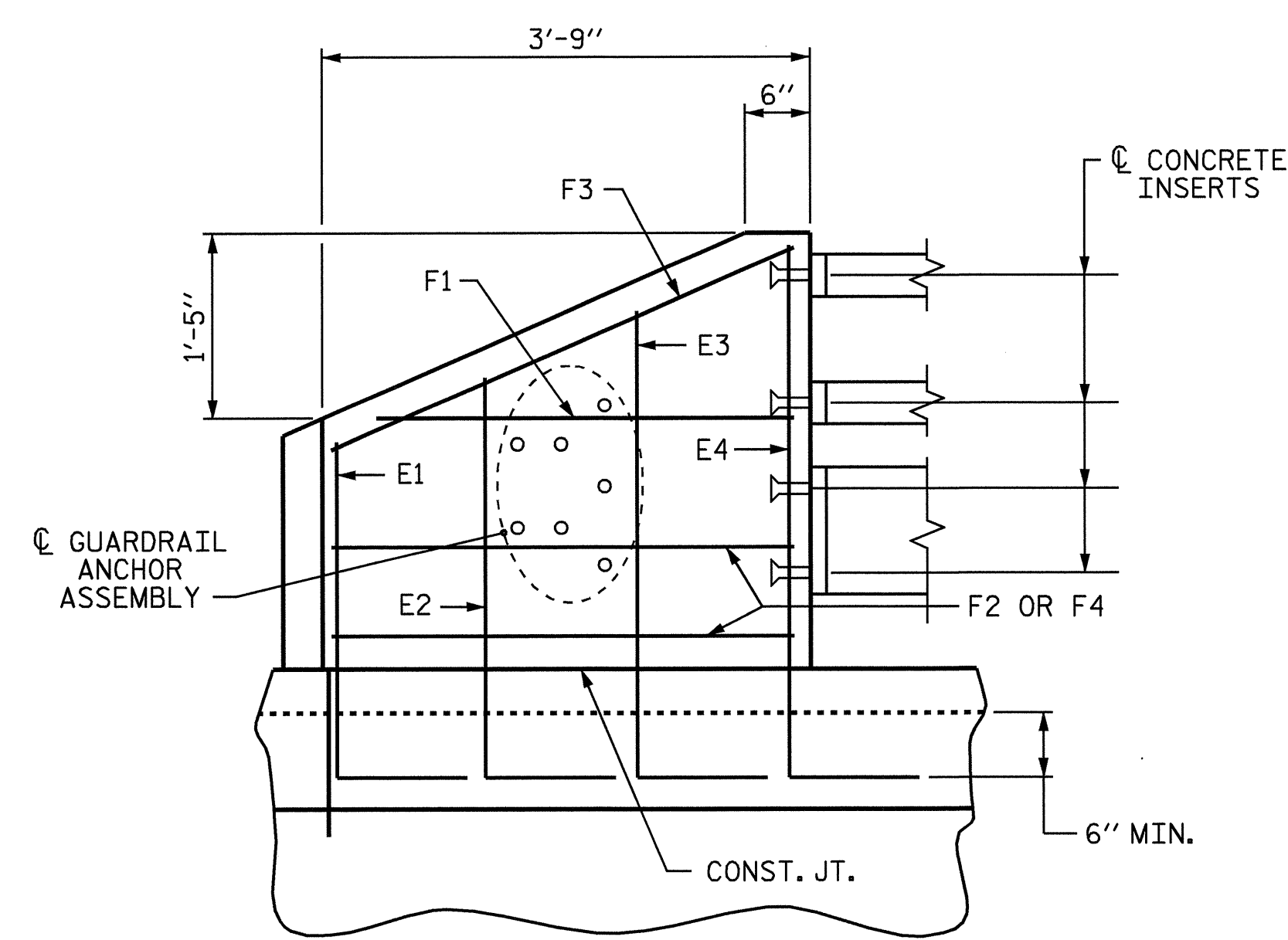
QUANTITIES SHOWN ARE FOR SPANS "A", "B" & "C".



PLAN



END VIEW



ELEVATION

END POST DETAILS

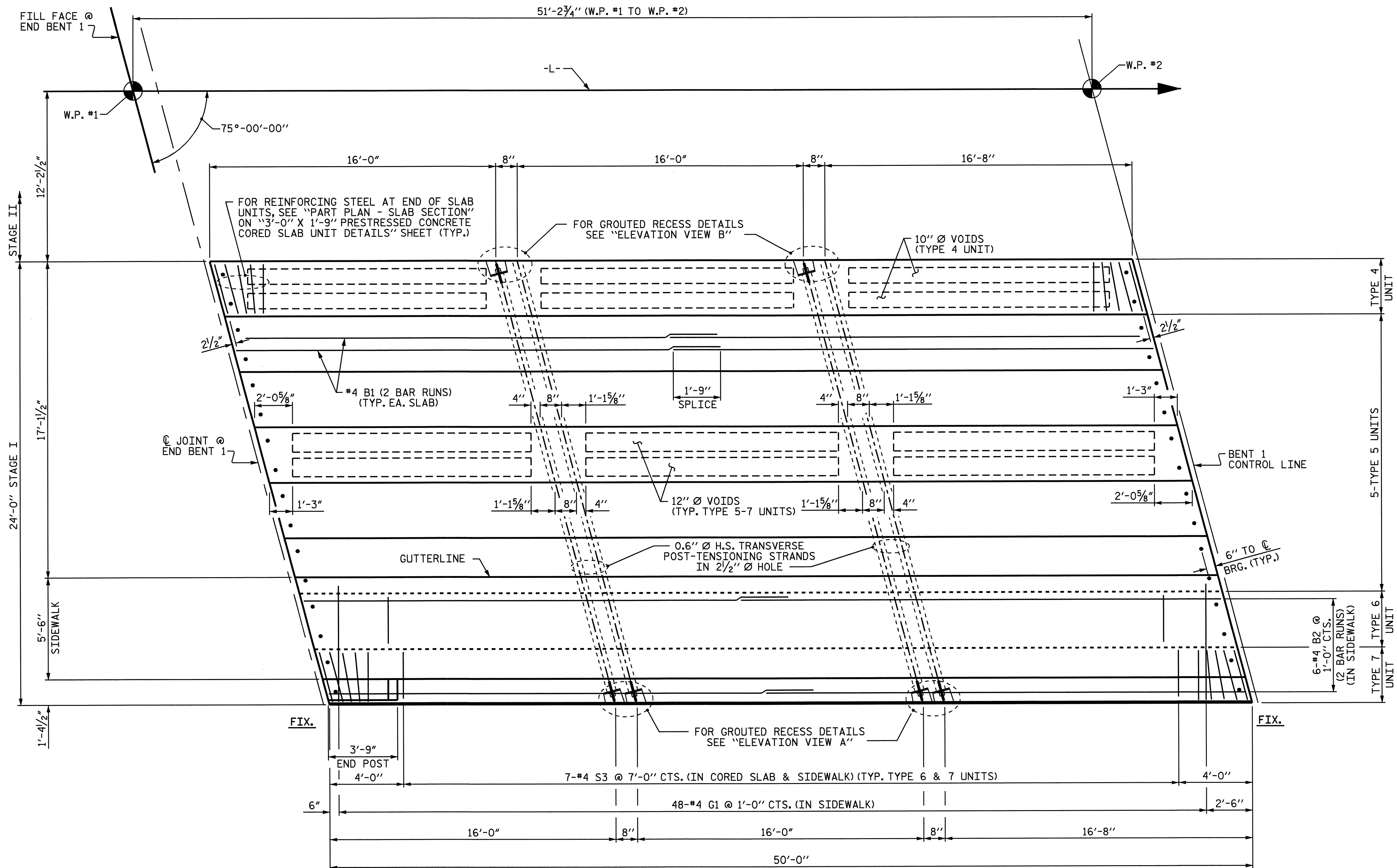
PROJECT NO. B-4434
BERTIE COUNTY
 STATION: 15+31.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 SIDEWALK AND
 END POST DETAILS



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-9
2			4			TOTAL SHEETS 39

DRAWN BY: L.E. SUTTON DATE: 1/05/09
 CHECKED BY: A.S. CALLAWAY DATE: 1/08/09

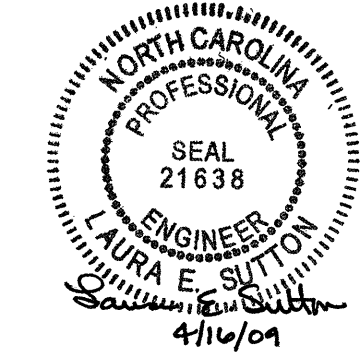


PLAN OF SPAN "A" - STAGE I

PROJECT NO. B-4434
BERTIE COUNTY
 STATION: 15+31.00 -L-

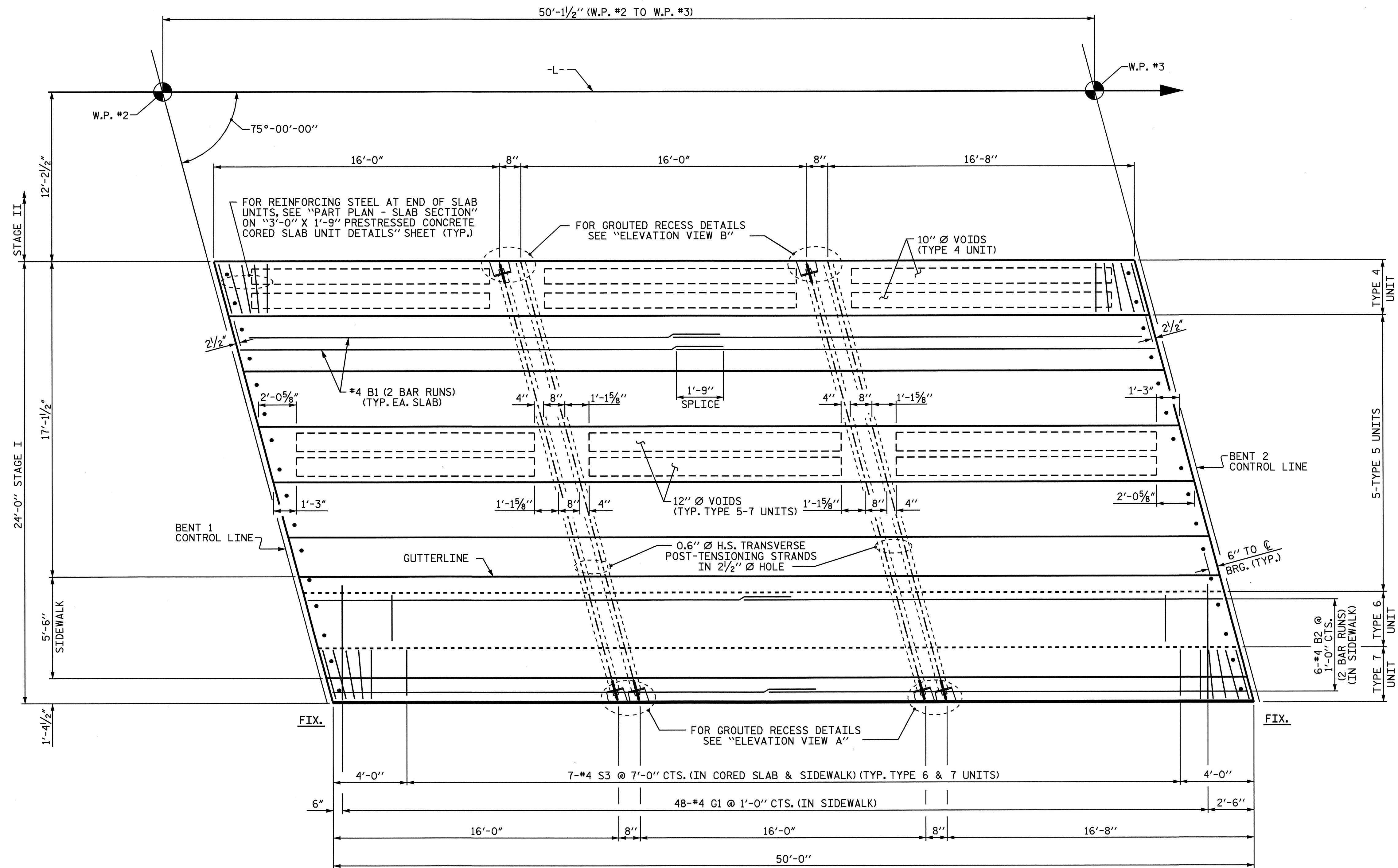
SHEET 1 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN
 STAGE I
 75° SKEW - 50' UNIT



DRAWN BY: A.S. CALLAWAY DATE: 10/10/08
 CHECKED BY: L.E. SUTTON DATE: 12/1/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			10
2			4			39



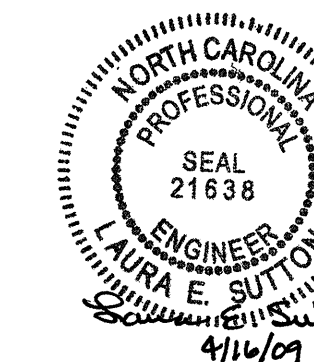
PLAN OF SPAN "B" - STAGE I

PROJECT NO. B-4434
BERTIE COUNTY
 STATION: 15+31.00 -L-

SHEET 2 OF 6

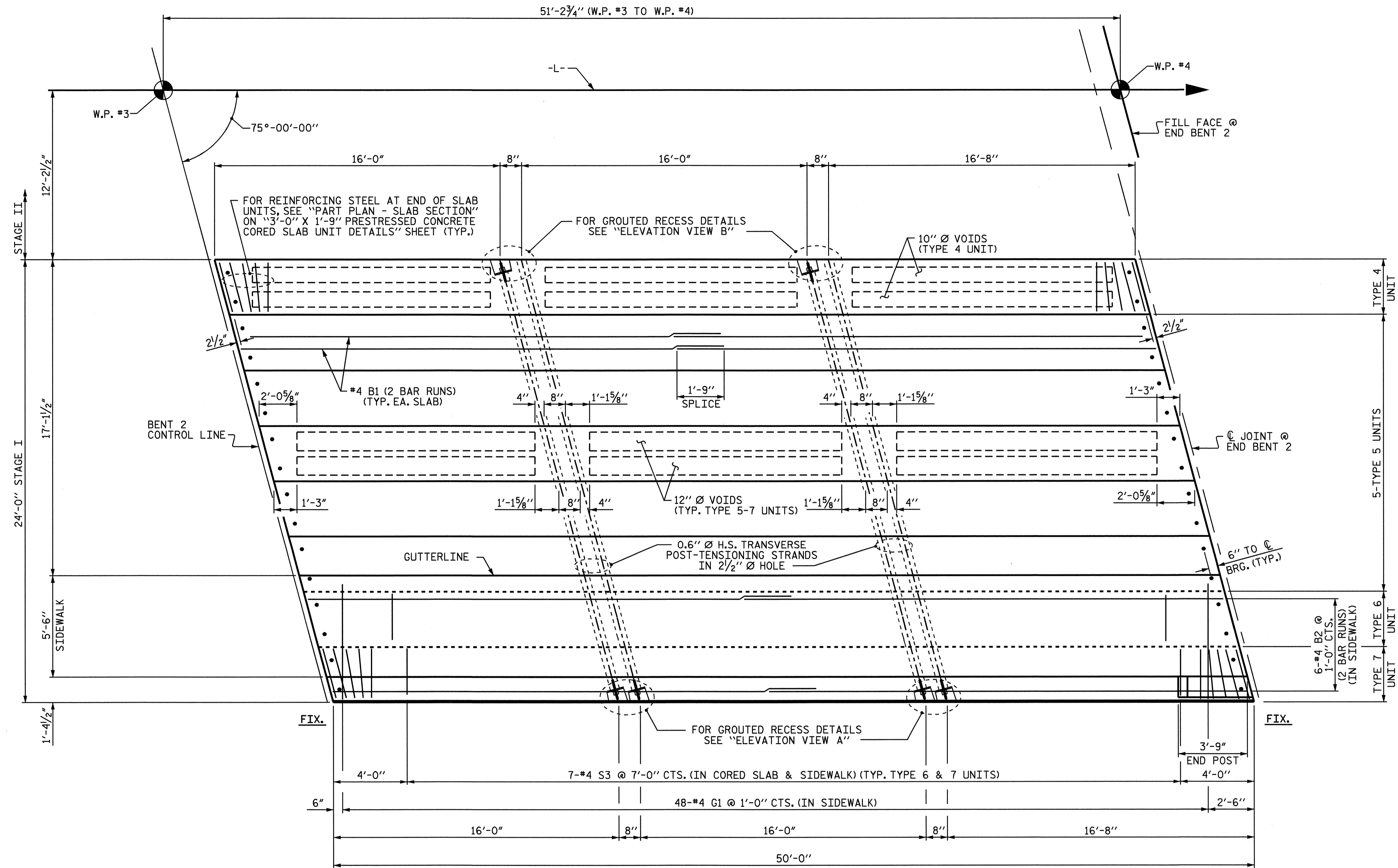
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN
 STAGE I
 75° SKEW - 50' UNIT



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			39

DRAWN BY: A.S. CALLAWAY DATE: 10/10/08
 CHECKED BY: L.E. SUTTON DATE: 12/1/08

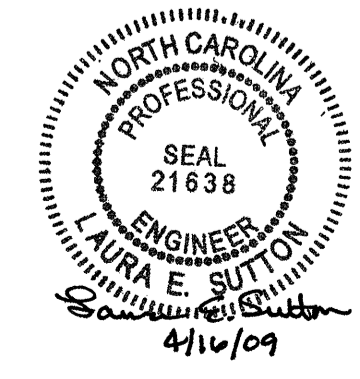


PLAN OF SPAN "C" - STAGE I

PROJECT NO. B-4434
BERTIE COUNTY
 STATION: 15+31.00 -L-

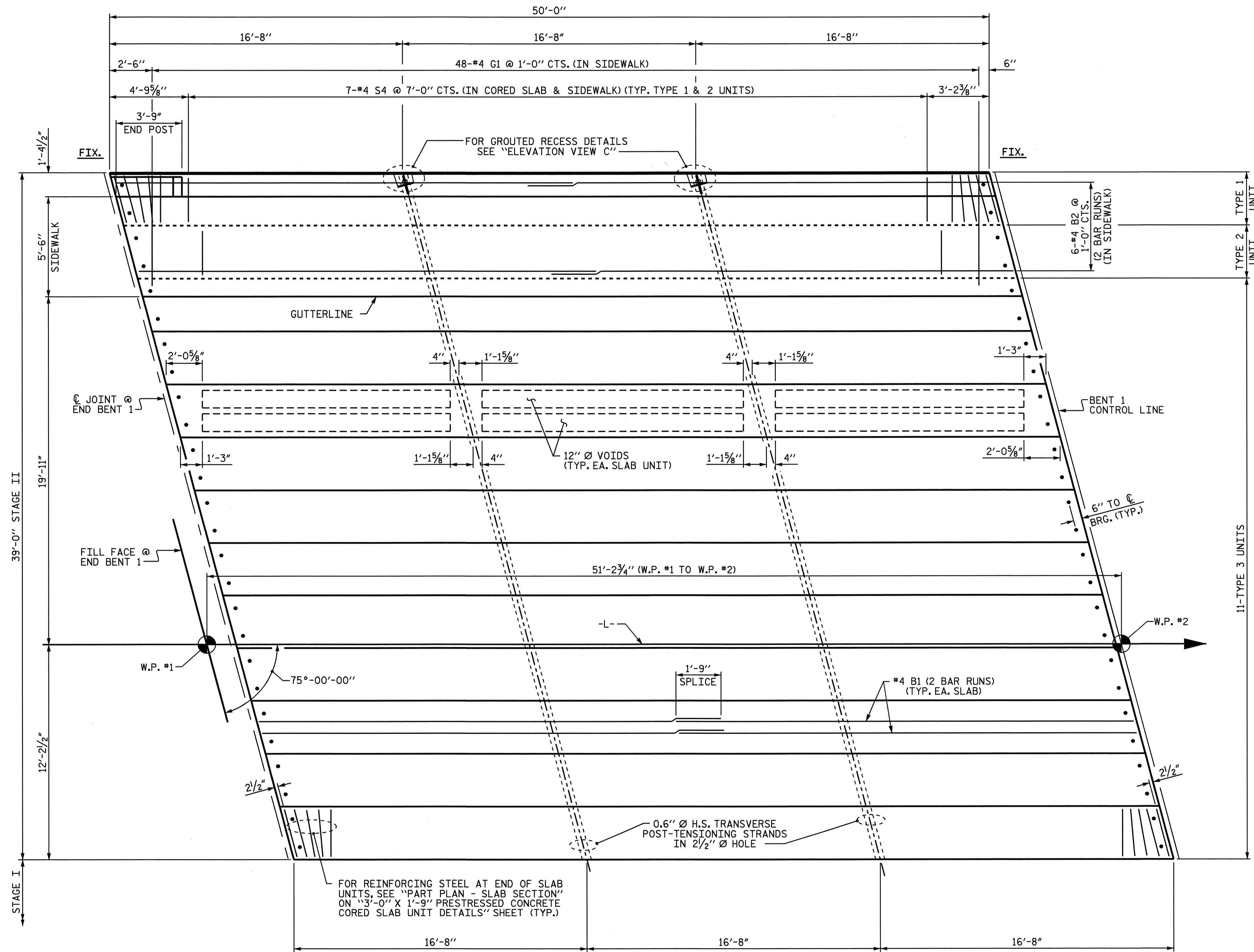
SHEET 3 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN
 STAGE I
 75° SKEW - 50' UNIT



DRAWN BY : A.S. CALLAWAY DATE : 10/10/08
 CHECKED BY : L.E. SUTTON DATE : 12/1/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			39



PLAN OF SPAN "A" - STAGE II

PROJECT NO. B-4434
BERTIE COUNTY
 STATION: 15+31.00 -L-

SHEET 4 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

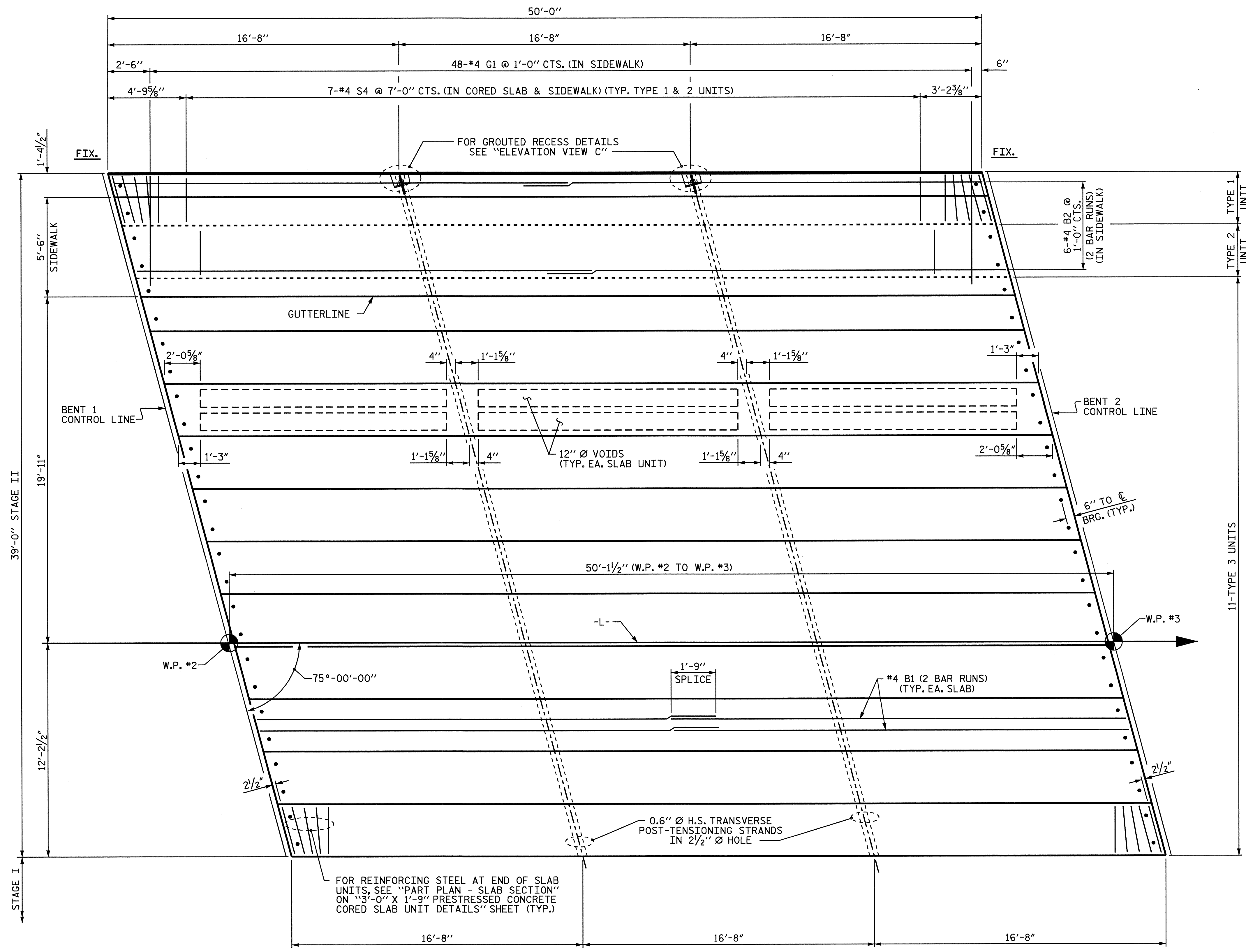
SUPERSTRUCTURE
 PLAN OF SPAN
 STAGE II
 75° SKEW - 50' UNIT



DRAWN BY: A.S. CALLAWAY DATE: 10/10/08
 CHECKED BY: L.E. SUTTON DATE: 12/1/08

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			39

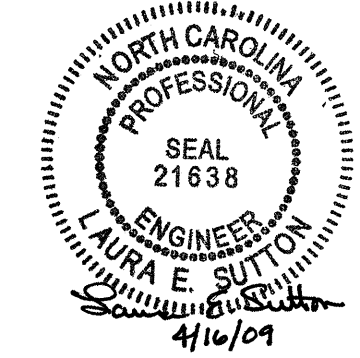


PLAN OF SPAN "B" - STAGE II

PROJECT NO. B-4434
BERTIE COUNTY
 STATION: 15+31.00 -L-

SHEET 5 OF 6

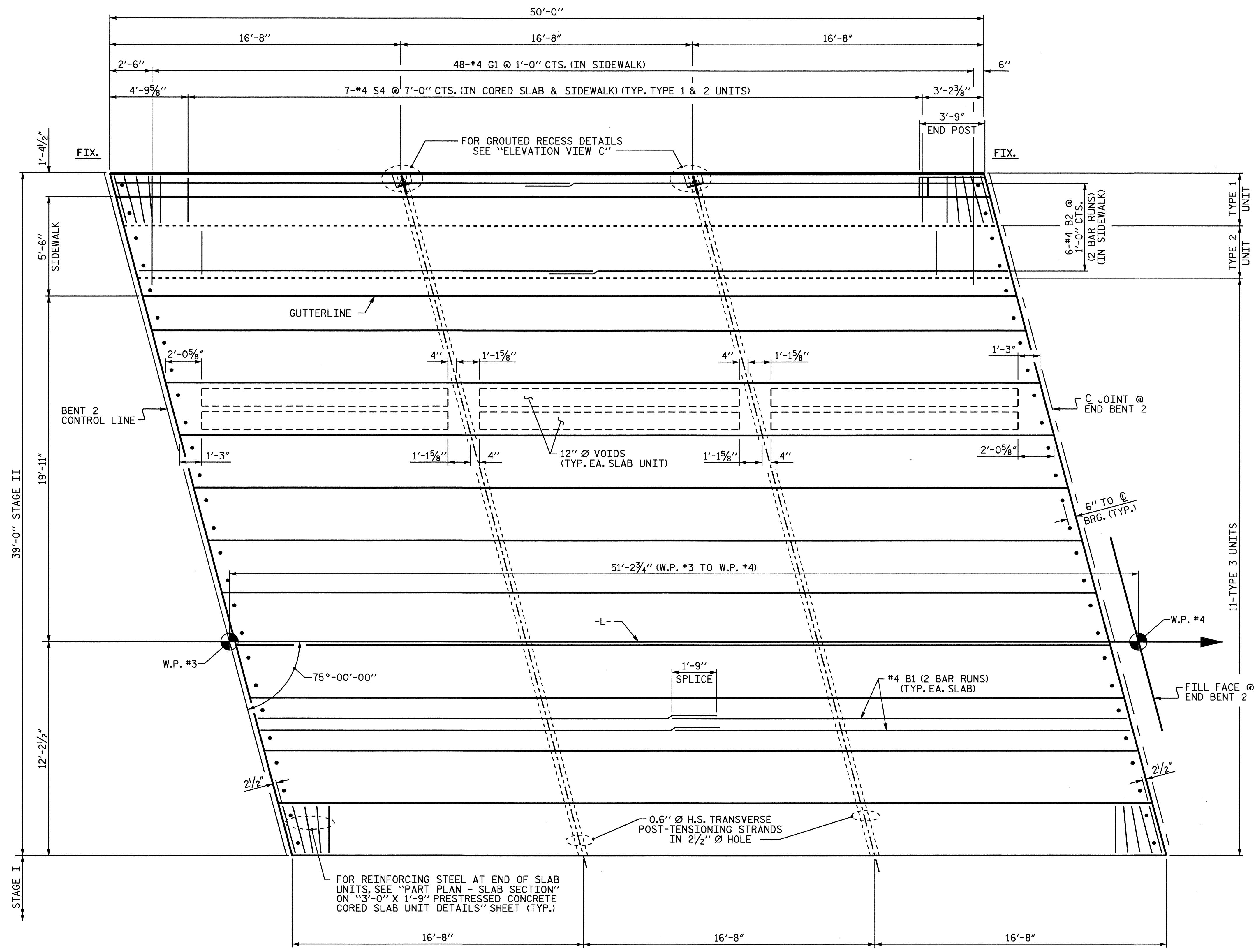
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN
 STAGE II
 75° SKEW - 50' UNIT



DRAWN BY : A.S. CALLAWAY DATE : 10/10/08
 CHECKED BY : L.E. SUTTON DATE : 12/1/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			39

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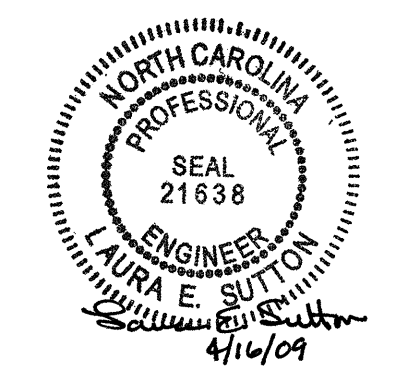


PLAN OF SPAN "C" - STAGE II

PROJECT NO. B-4434
 BERTIE COUNTY
 STATION: 15+31.00 -L-

SHEET 6 OF 6

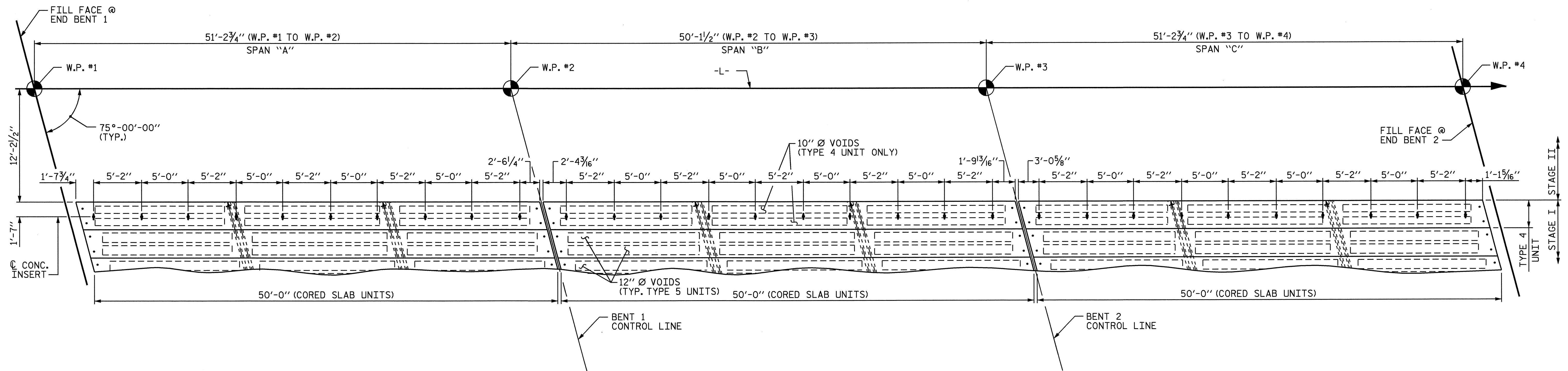
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN
 STAGE II
 75° SKEW - 50' UNIT



DRAWN BY : A.S. CALLAWAY DATE : 10/10/08
 CHECKED BY : L.E. SUTTON DATE : 12/1/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			39

13-FEB-2009 14:36
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 lsutton



CONCRETE INSERT SPACING FOR ANCHORED PORTABLE CONCRETE BARRIER - STAGE I

NOTES

THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 5/8".
- B. 1 - 7/8" Ø X 8 1/2" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. AT THE CONTRACTORS OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø X 8 1/2" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI.
- D. STRUCTURAL CONCRETE INSERT ASSEMBLIES SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

THE COST OF THE STRUCTURAL CONCRETE INSERT ASSEMBLY, COMPLETE IN PLACE, SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS.

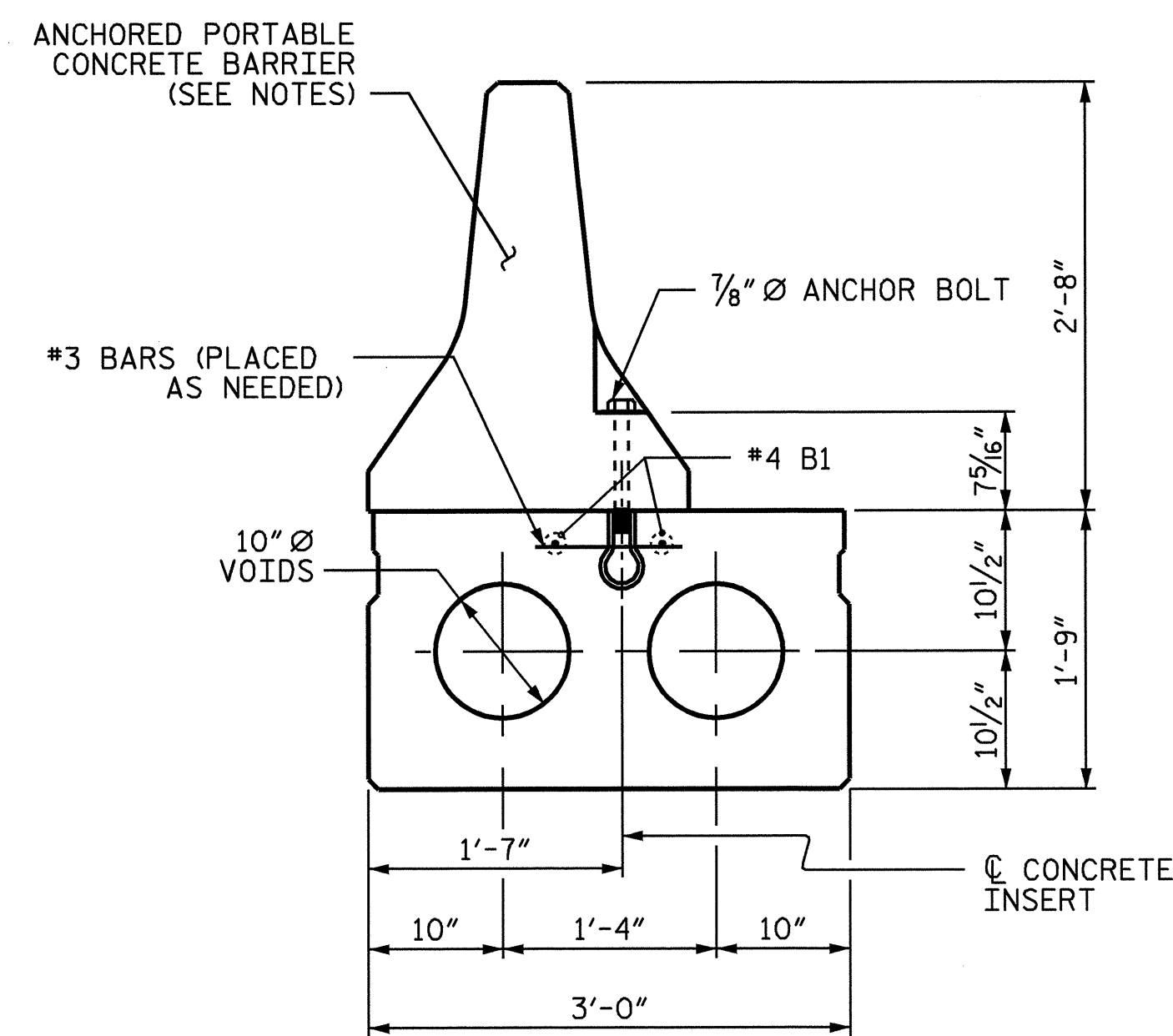
TO FACILITATE PLACEMENT OF STRUCTURAL CONCRETE INSERT ASSEMBLIES, #3 BARS MAY BE TIED TO THE #4 B1 BARS IN THE CORED SLAB UNITS. THE COST OF THE #3 BARS SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS.

STIRRUPS IN THE CORED SLAB UNITS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR STRUCTURAL CONCRETE INSERT ASSEMBLIES.

FERRULES TO BE PLUGGED DURING CASTING OF THE CORED SLAB UNITS AS RECOMMENDED BY THE MANUFACTURER.

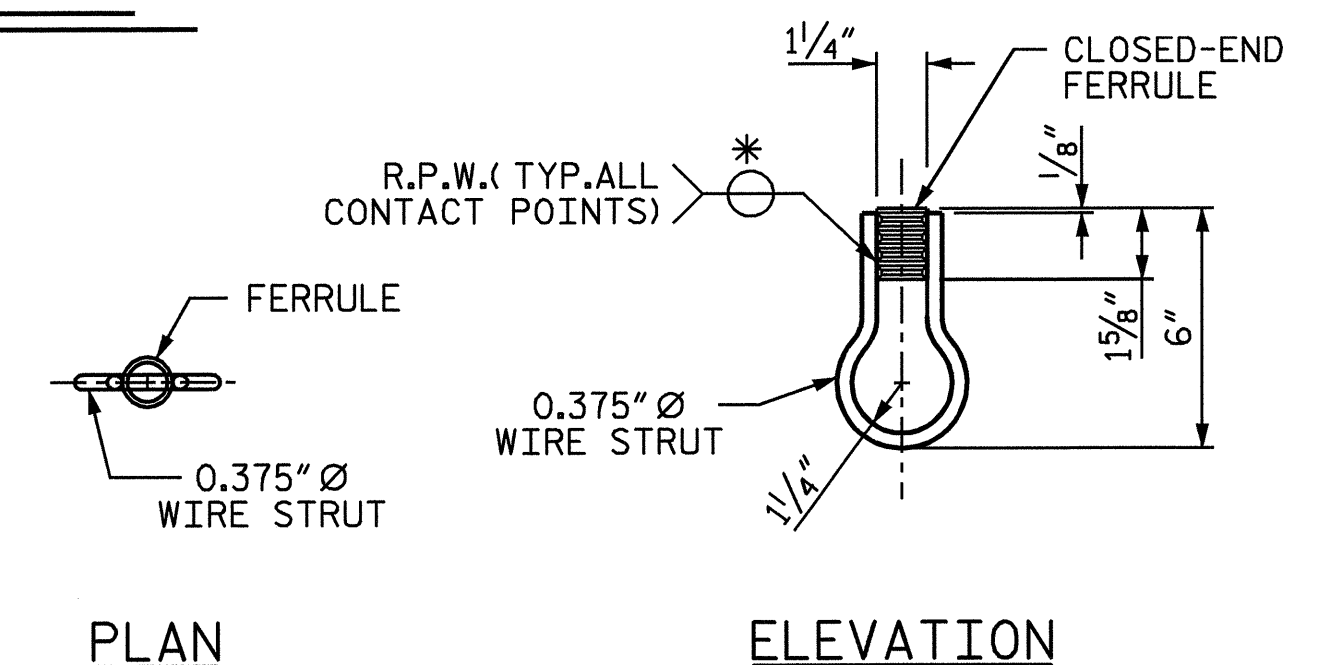
ANCHORED PORTABLE CONCRETE BARRIER SHALL BE AS SPECIFIED IN ROADWAY STANDARD NO. 1170.01. SEE TRAFFIC CONTROL PLANS.

AFTER REMOVAL OF ANCHORED PORTABLE CONCRETE BARRIER, THE STRUCTURAL CONCRETE INSERTS SHALL BE FILLED WITH GROUT.



CONCRETE INSERT LOCATION

(TYPE 4 UNIT, STAGE I)

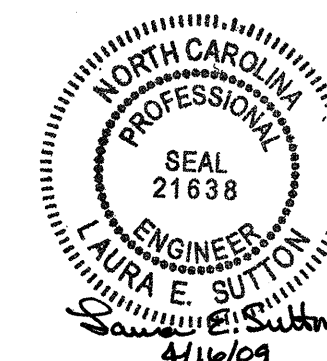


STRUCTURAL CONCRETE INSERT

* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PROJECT NO. B-4434
BERTIE COUNTY
 STATION: 15+31.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE ANCHORED PORTABLE CONCRETE BARRIER DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-16
TOTAL SHEETS					39



DRAWN BY: A.S. CALLAWAY DATE: 12/1/08
 CHECKED BY: L.E. SUTTON DATE: 1/5/09

NOTES

AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER, THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B221 ALLOY 6061-T6. MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS : AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.

RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS. PLACE ONE JOINT SPLICE JUST BEYOND THE 3RD RAIL POST FROM EACH END, TYPICALLY 14' FROM THE END. PLACE OTHER JOINTS AS NEEDED.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR7.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS FOR RAIL ATTACHMENT SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

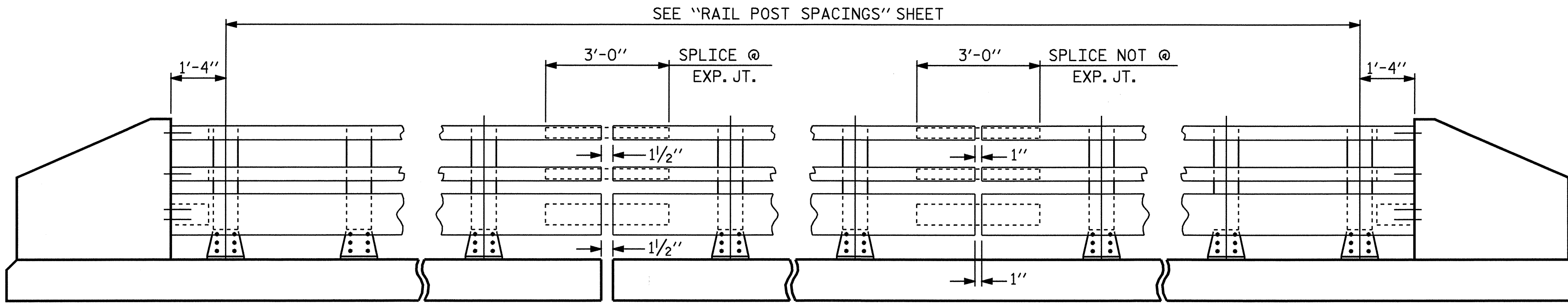
TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAIN VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

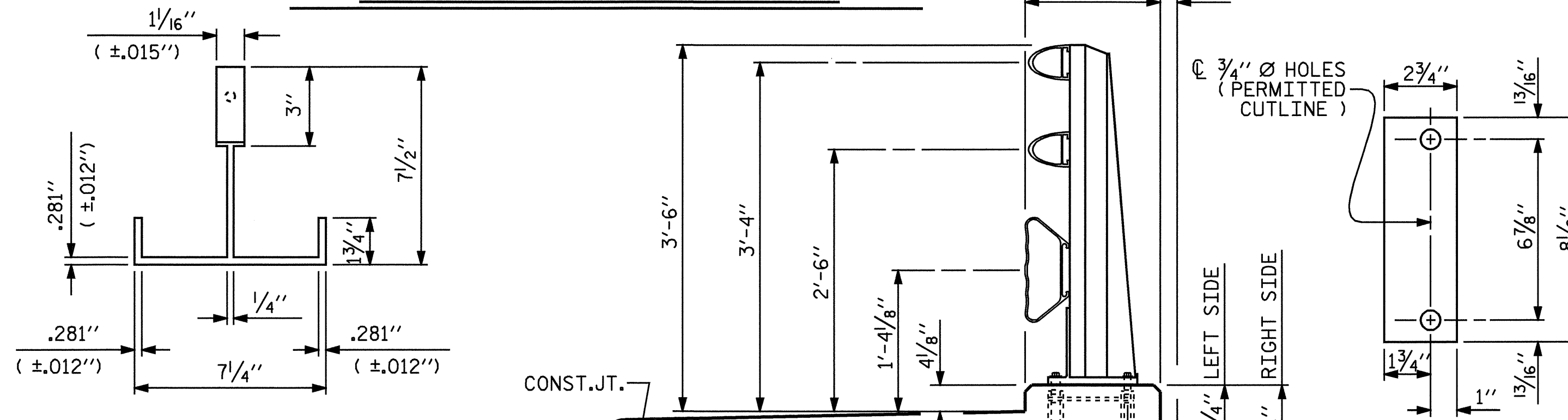
MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

	PAY LENGTH LIN. FT.
STAGE I	142.45
STAGE II	142.45
TOTAL	284.90

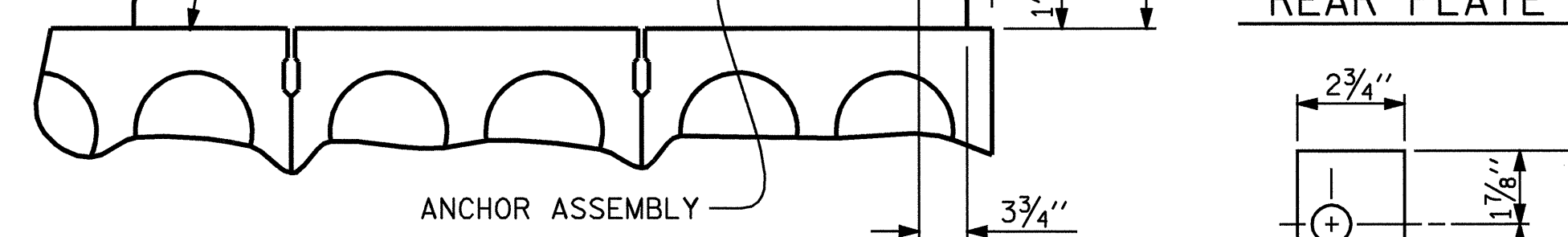
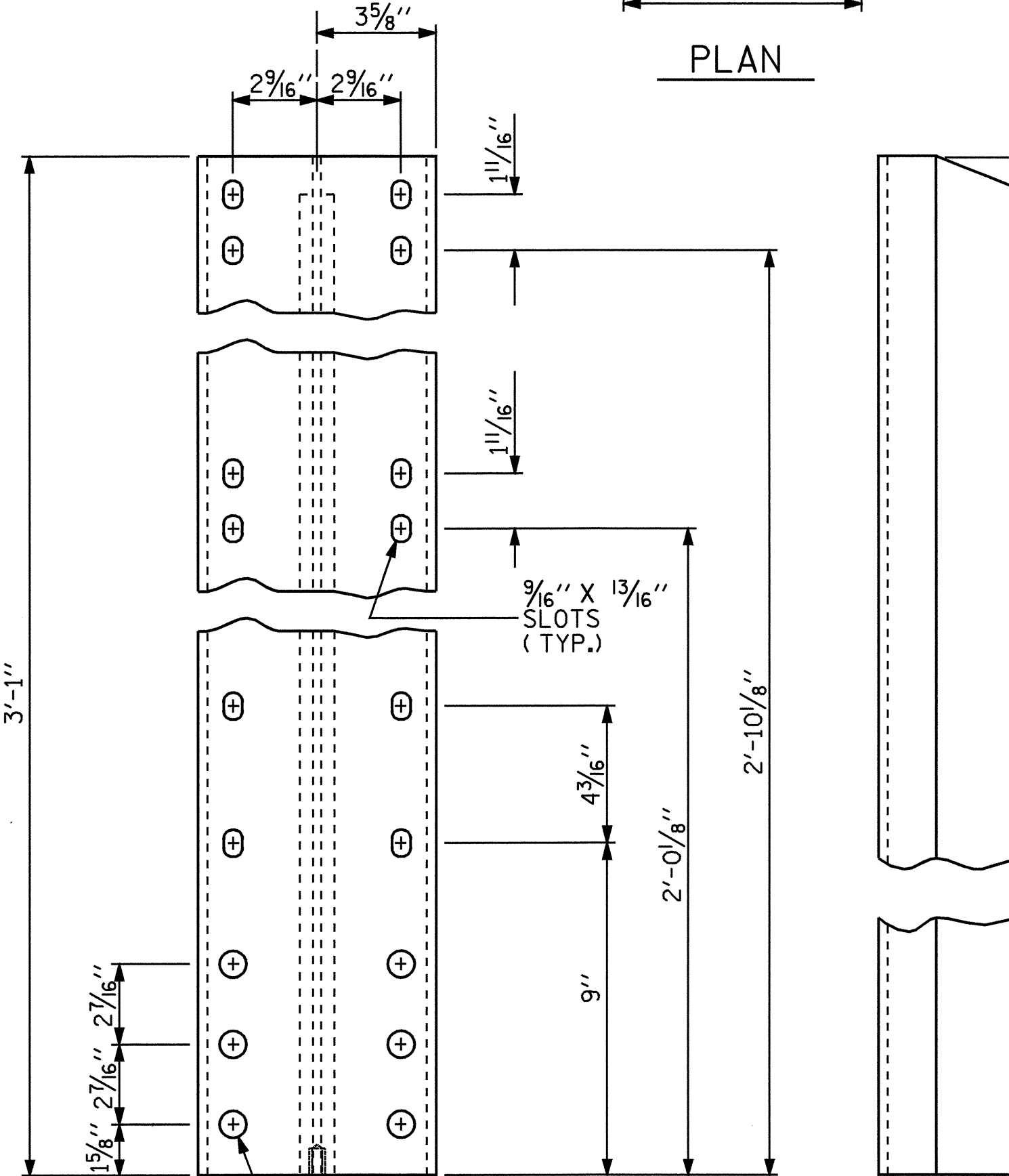


NOTE:
FOR ATTACHMENT OF METAL RAIL TO END
POST, SEE STANDARD NO. BMR7.

ELEVATION



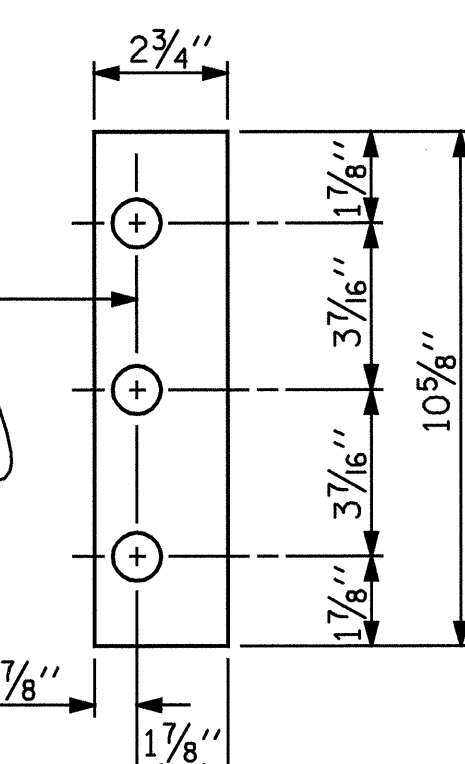
PLAN



SECTION THRU RAIL

FOR ANCHOR ASSEMBLY, SEE "3 BAR METAL RAIL"
STD.No.BMR6

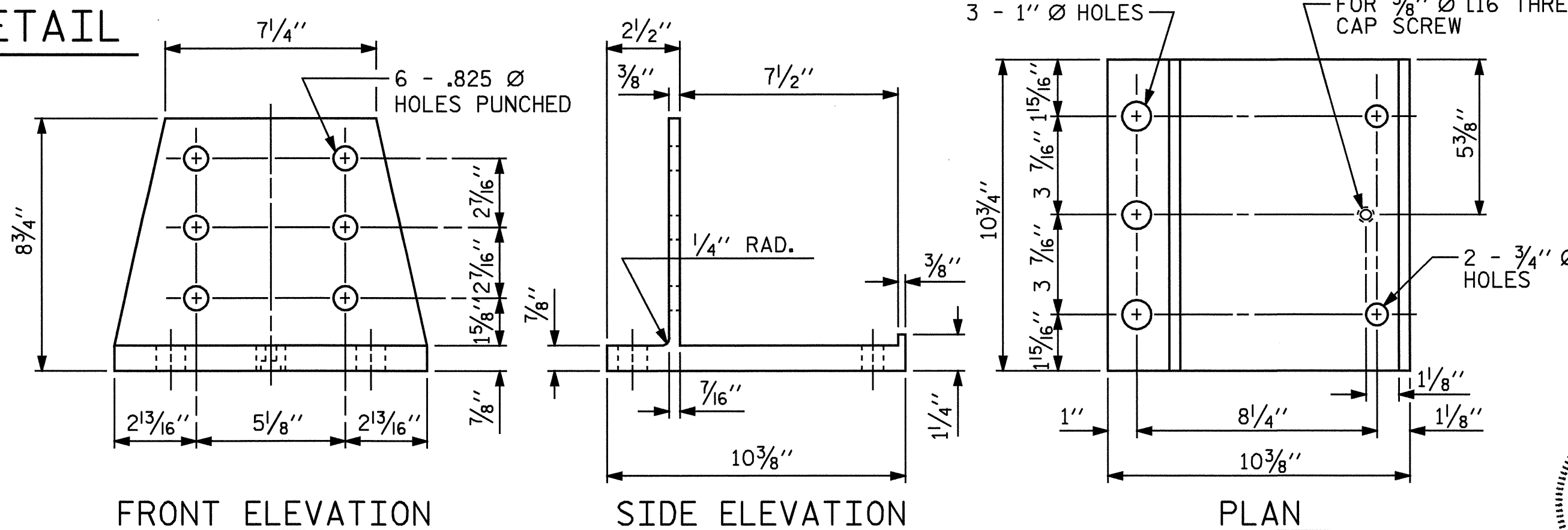
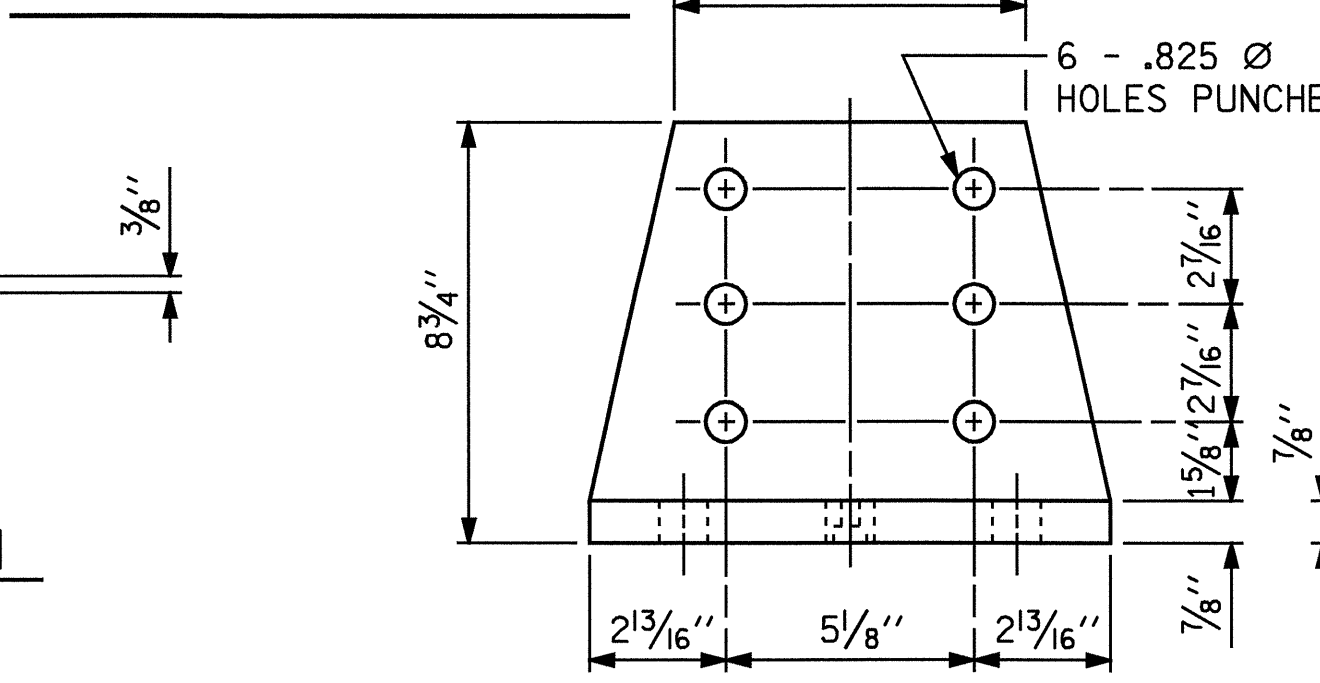
REAR PLATE



FRONT PLATE SHIM DETAILS

NOTE:
SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR
SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.

RIVET DETAIL



FRONT ELEVATION

SIDE ELEVATION

PLAN

POST BASE DETAILS

FRONT ELEVATION

SIDE ELEVATION

DETAILS OF POST

ASSEMBLED BY : A.S. CALLAWAY DATE : 10/9/08
CHECKED BY : L.E. SUTTON DATE : 11/21/08
DRAWN BY : JMB 1/88 REV. 10/17/00 RWW/LES
CHECKED BY : GGH 1/88 REV. 5/7/03 RWW/JTE
REV. 5/1/06 TLA/GM

09-MAR-2009 13:53
R:\Structures\scallaway\Microstation\b4434.ed_3mr_01.dgn
lsutton

PROJECT NO. B-4434
BERTIE COUNTY
STATION: 15+31.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3 BAR METAL RAIL



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-17
2			4			TOTALS 39

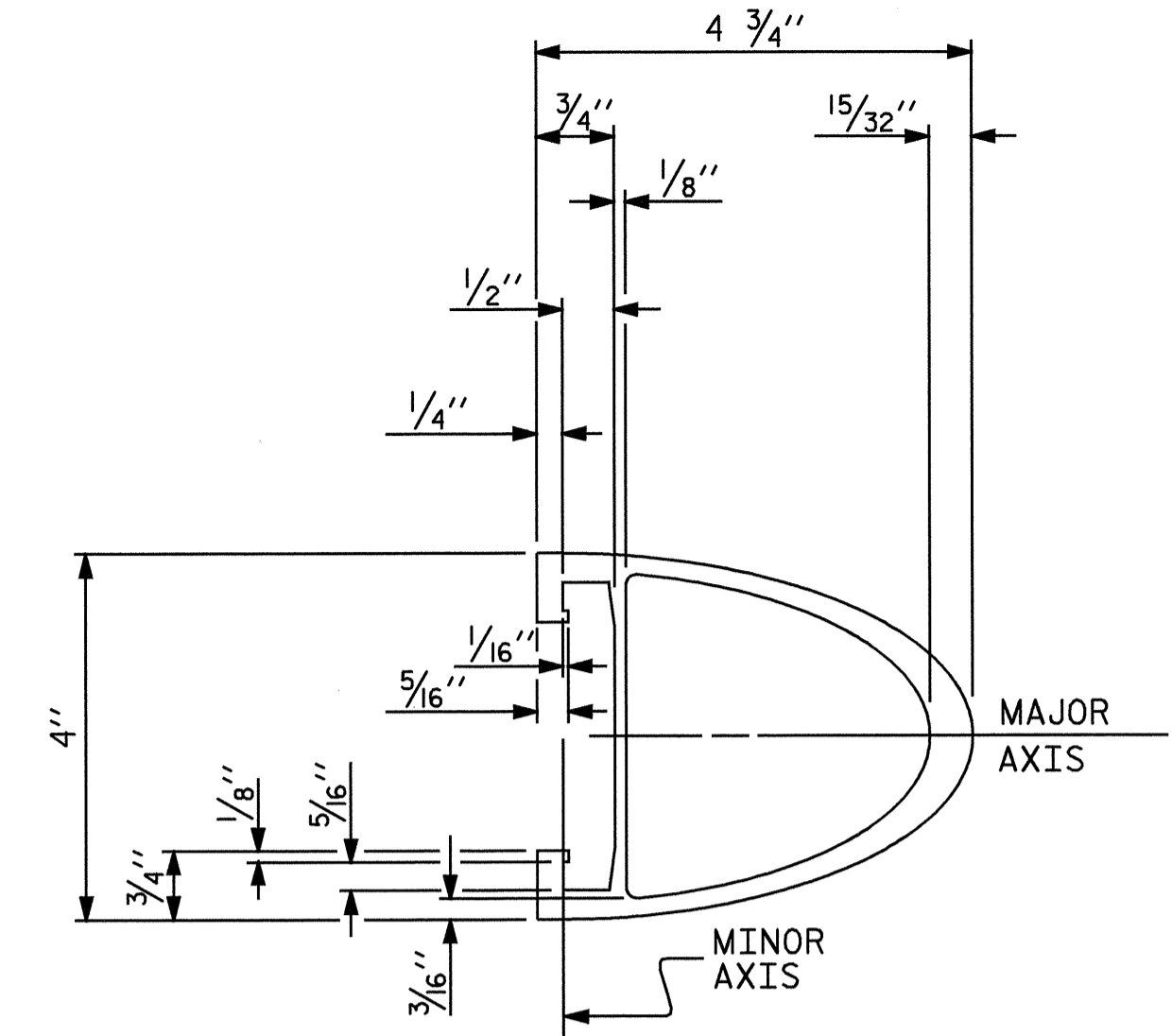
STD. NO. BMR5

NOTES

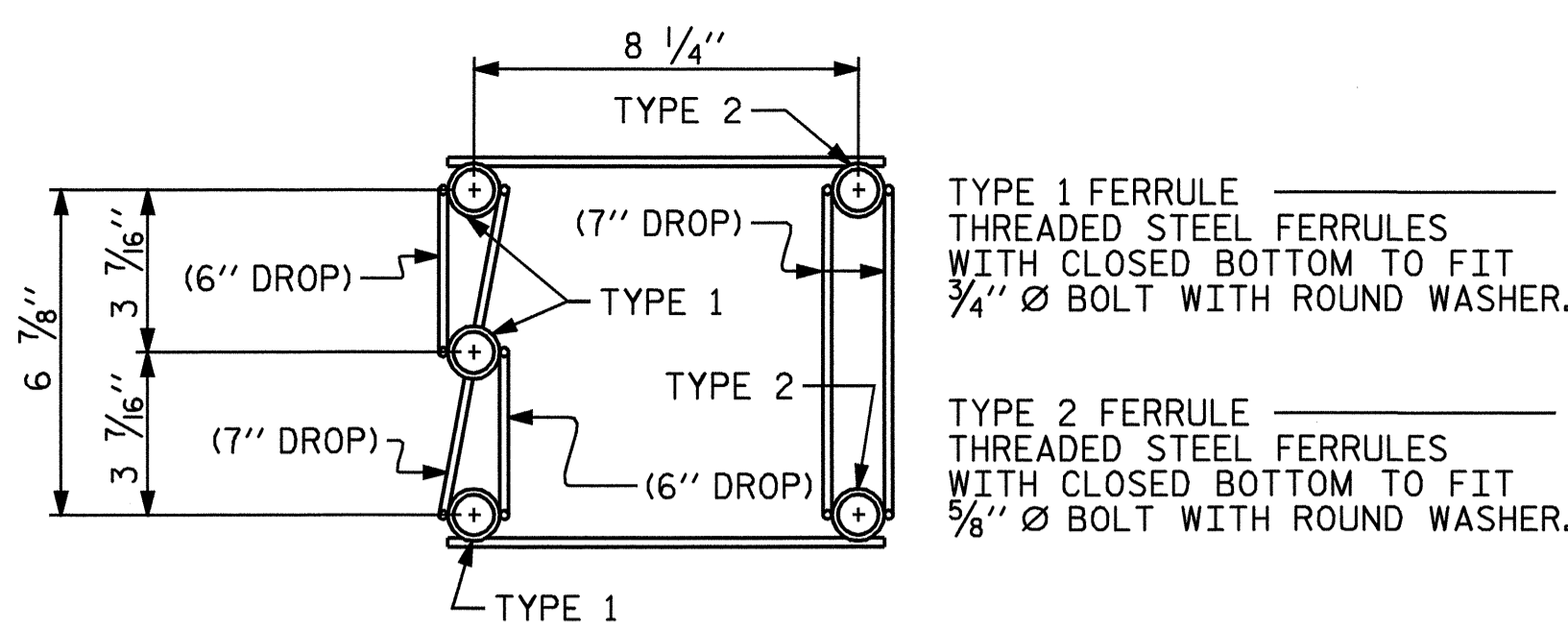
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES AND 1 3/4" FOR 5/8" FERRULES.
- B. 3 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS, BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 2 1/2" GALVANIZED BOLTS 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.
- C. 2 - 5/8" Ø X 2 1/4" BOLTS WITH WASHERS, BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 5/8" Ø X 2 1/4" GALVANIZED BOLTS 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.
- D. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- E. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
- F. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
- G. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

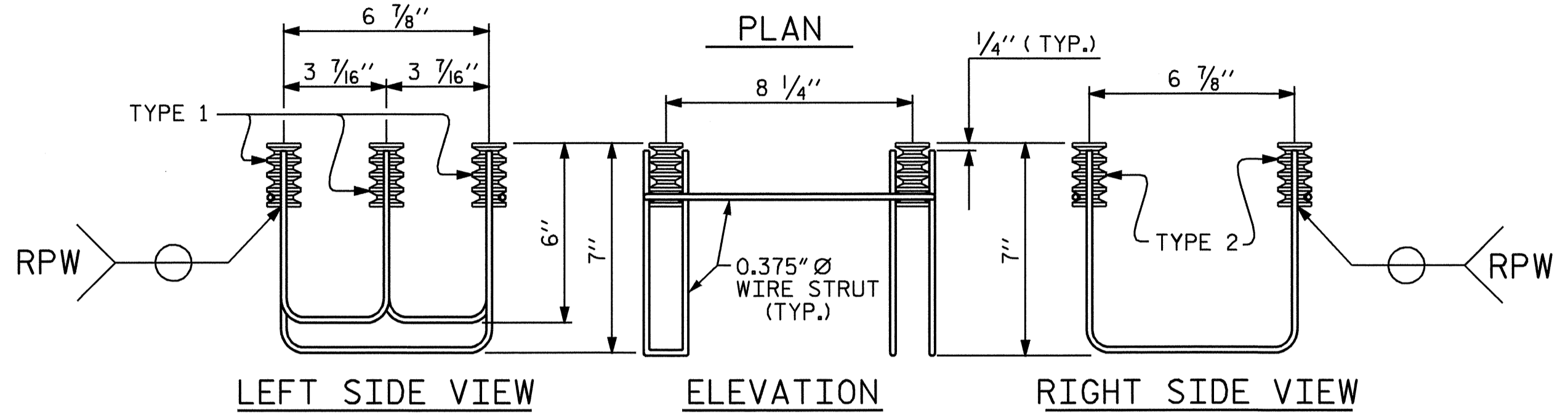


TOP & MIDDLE RAIL SECTION



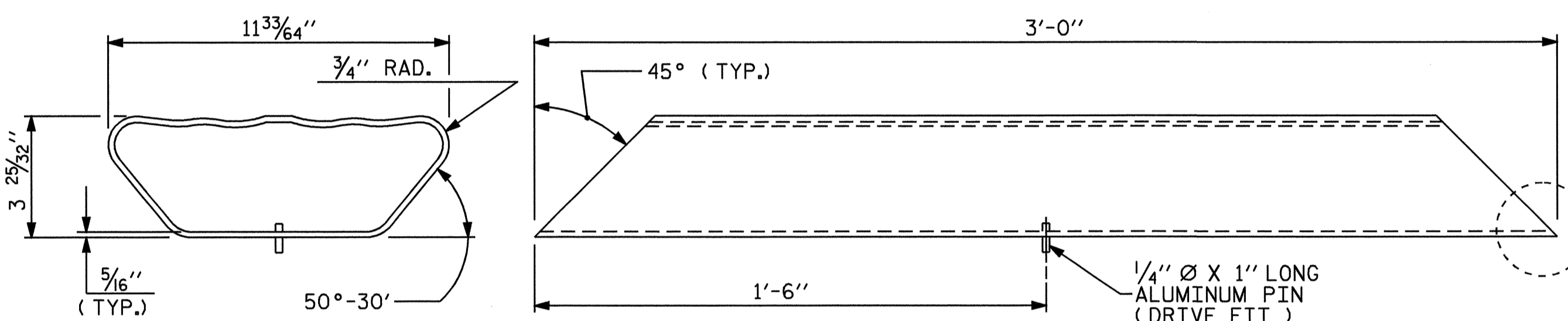
TYPE 1 FERRULE
THREADED STEEL FERRULES
WITH CLOSED BOTTOM TO FIT
3/4" Ø BOLT WITH ROUND WASHER.

TYPE 2 FERRULE
THREADED STEEL FERRULES
WITH CLOSED BOTTOM TO FIT
5/8" Ø BOLT WITH ROUND WASHER.

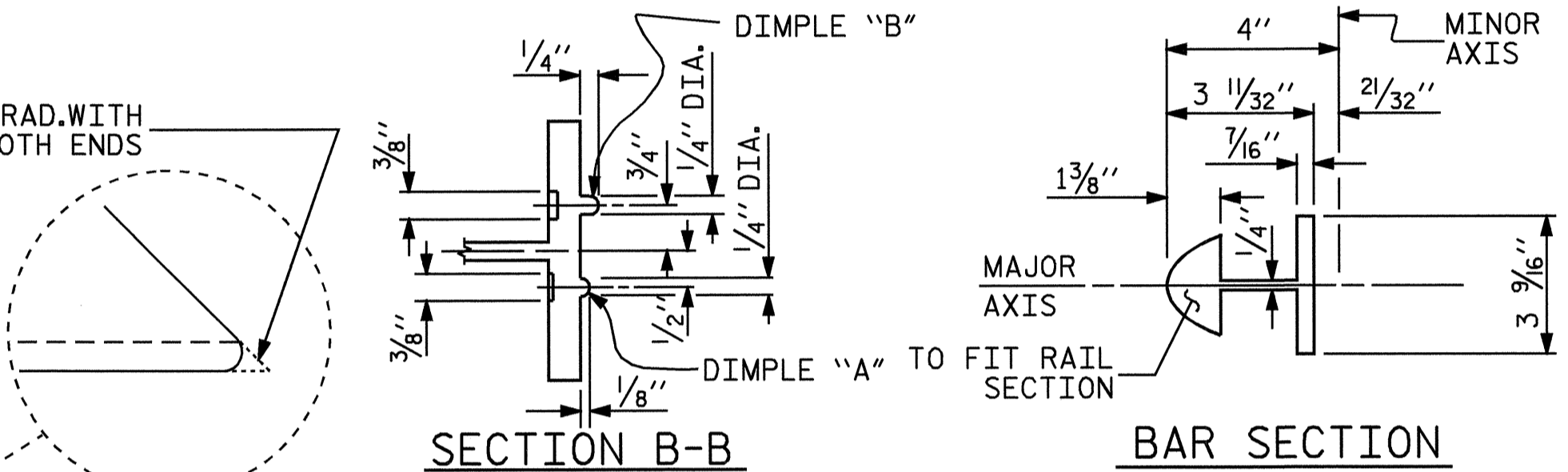


5-BOLT METAL RAIL ANCHOR ASSEMBLY

(52 ASSEMBLIES REQUIRED)

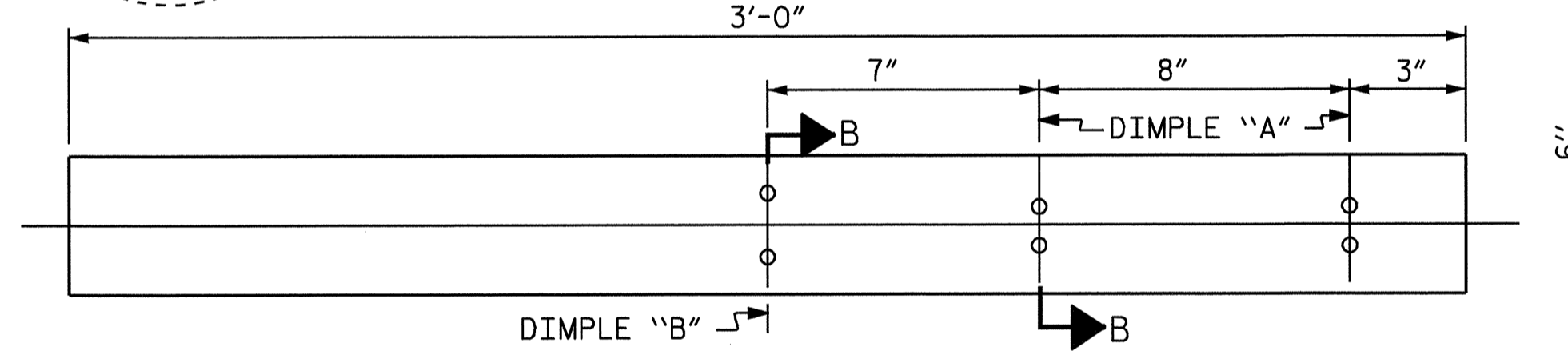


BOTTOM RAIL EXPANSION BAR



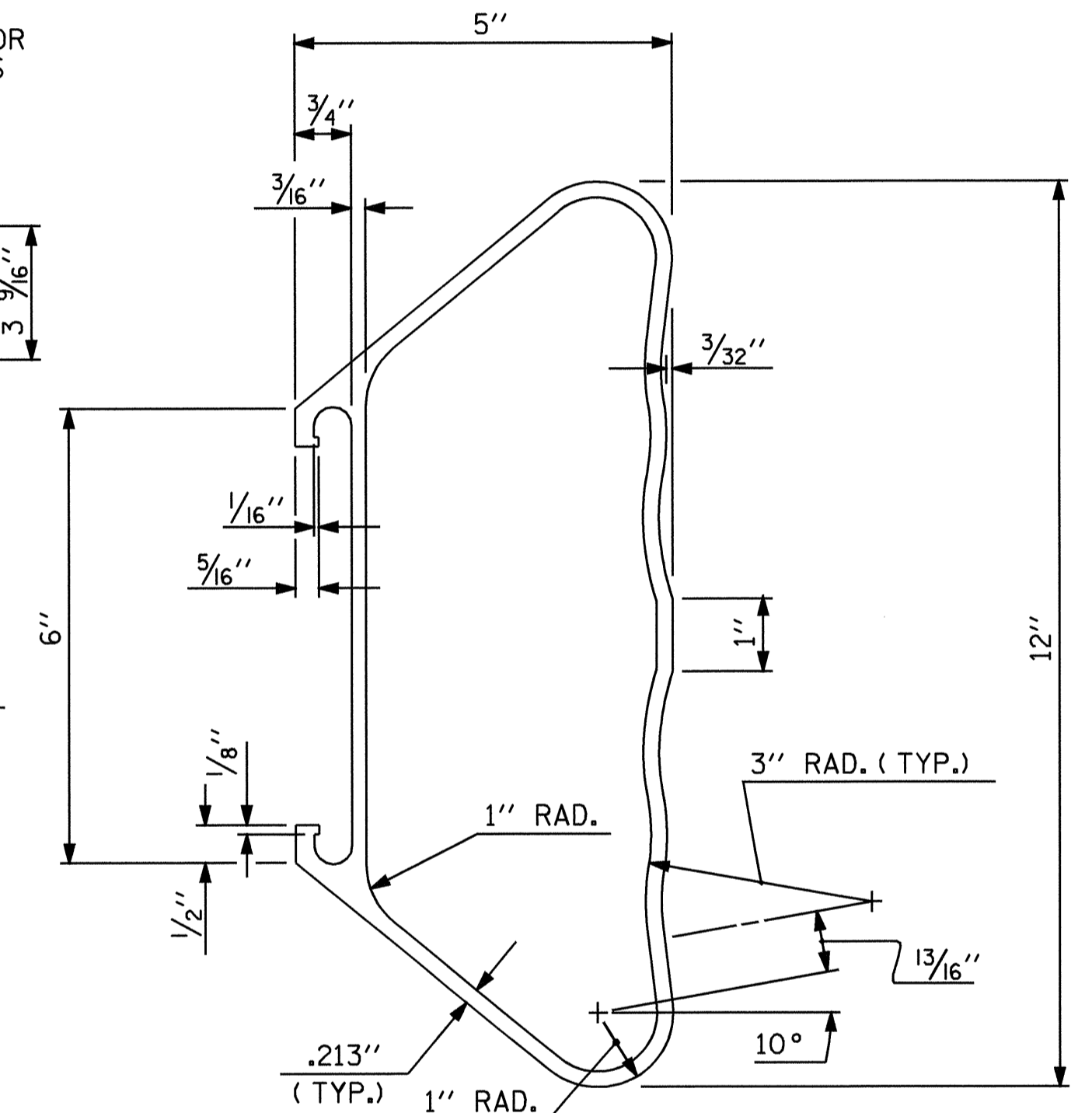
SECTION B-B

BAR SECTION

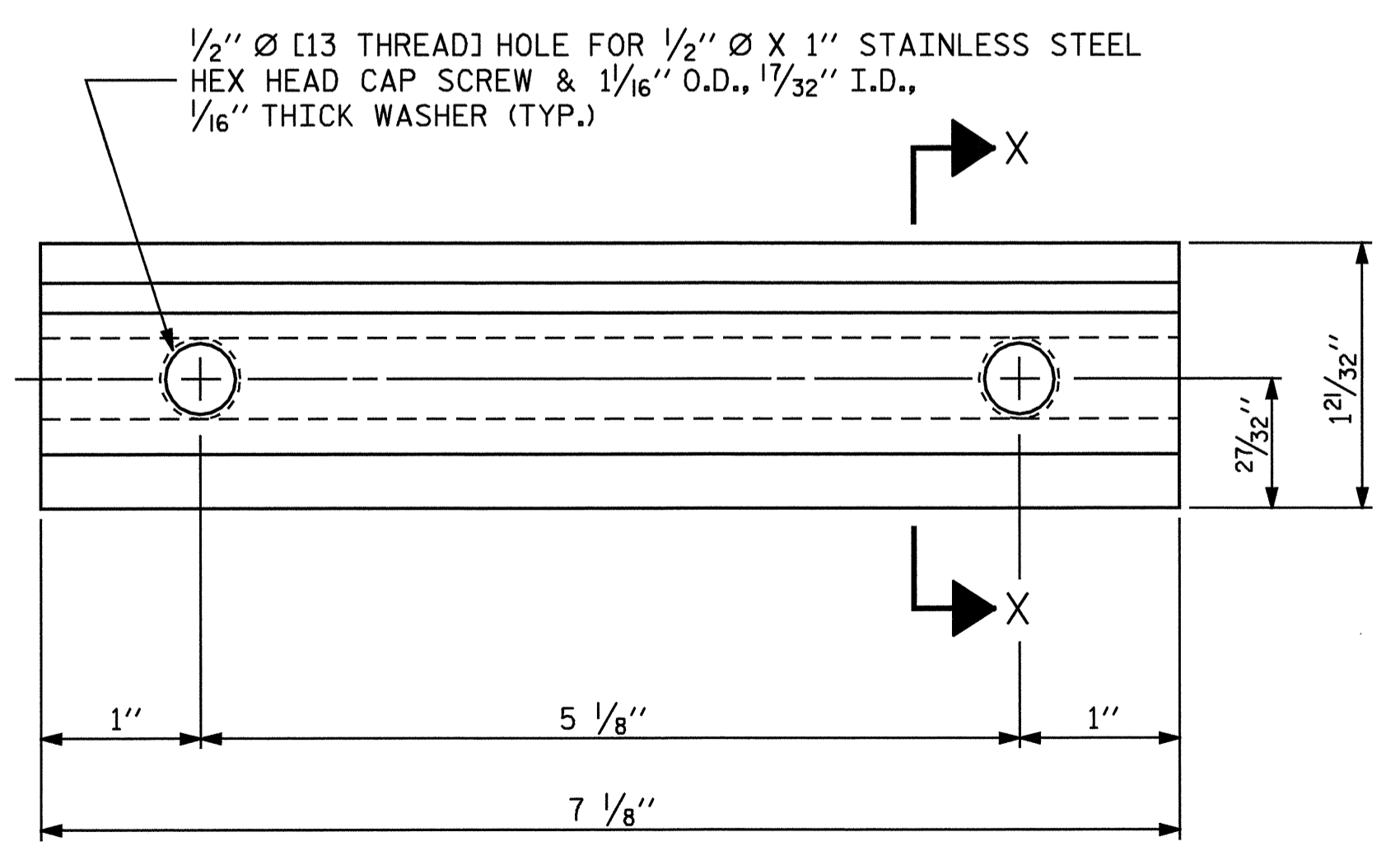


BACK ELEVATION

TOP & MIDDLE RAIL EXPANSION BAR

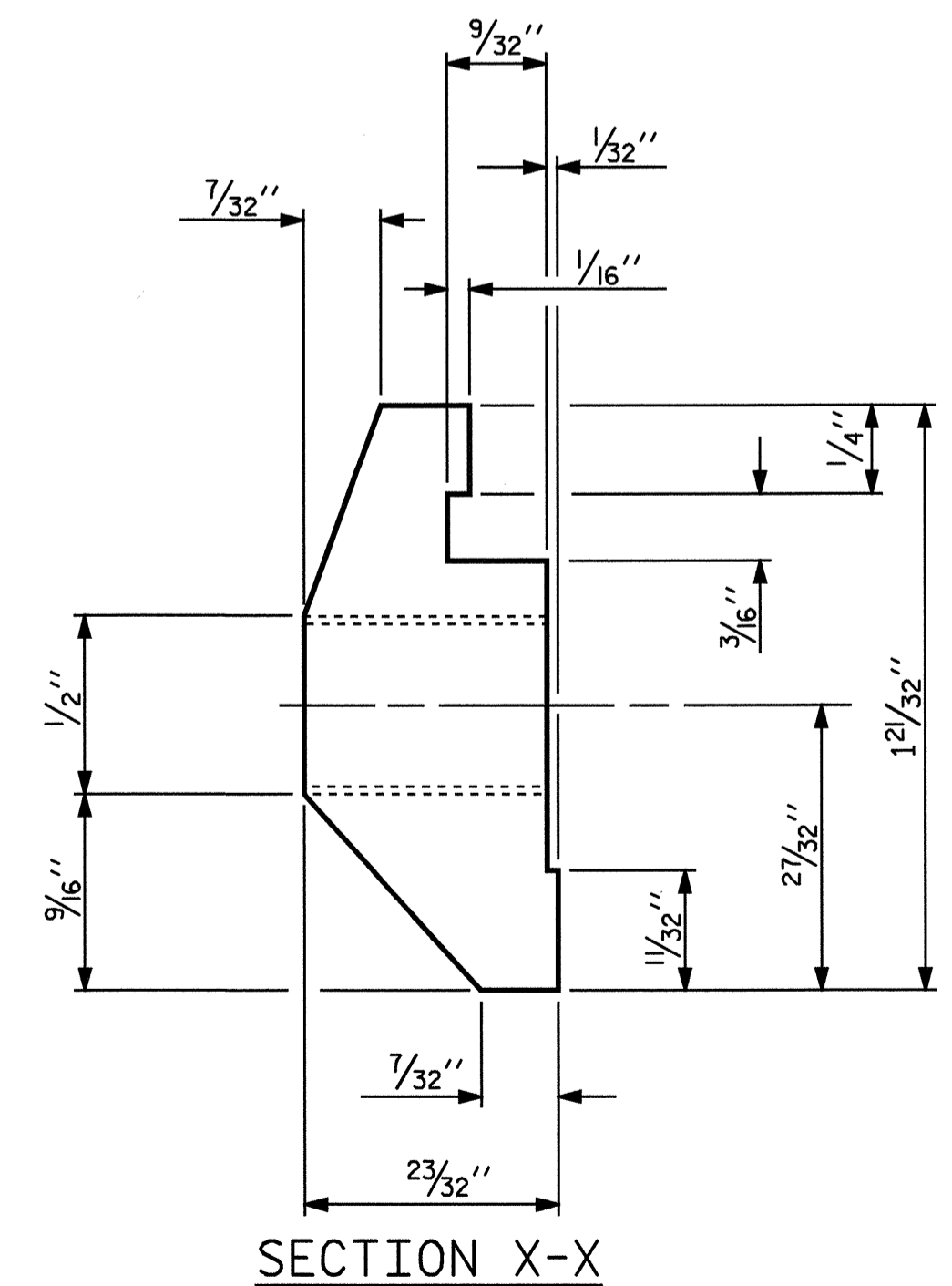


BOTTOM RAIL SECTION

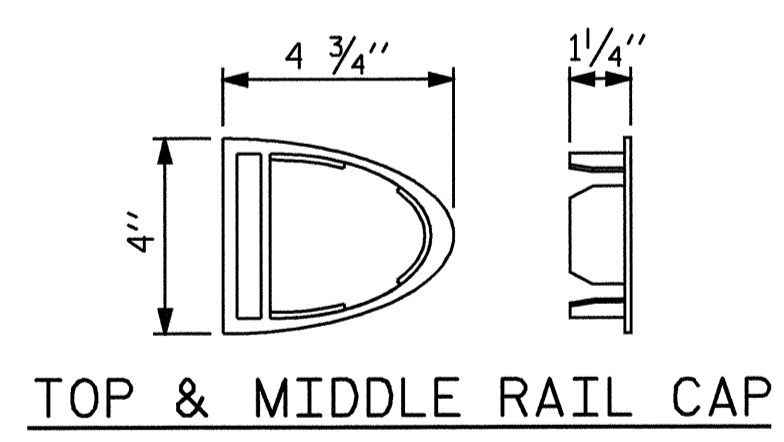


CLAMP BAR DETAIL

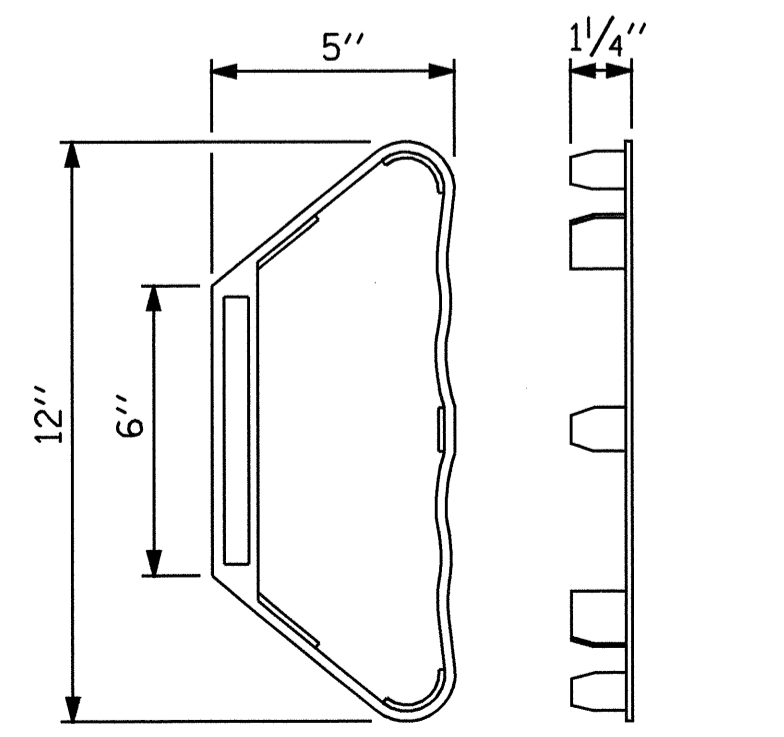
(6 REQUIRED PER POST)



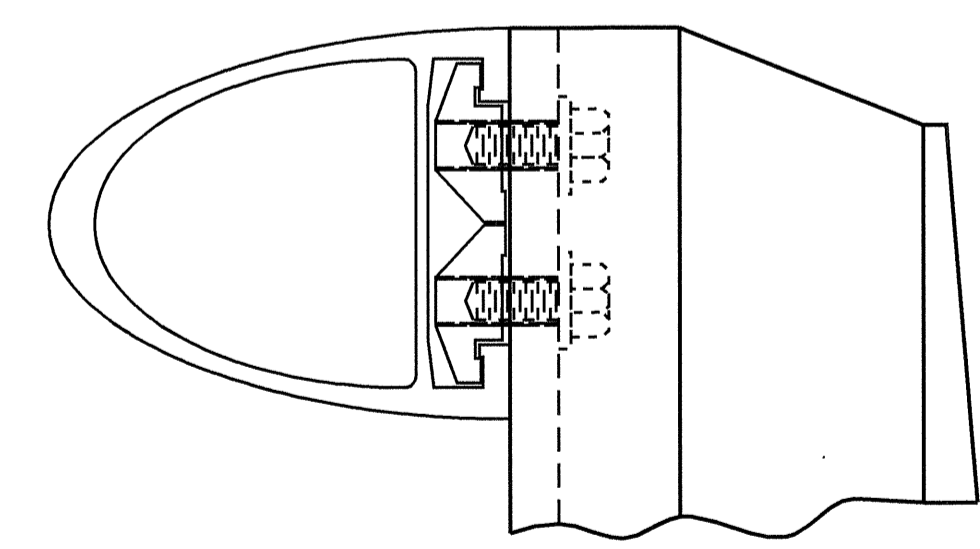
SECTION X-X



TOP & MIDDLE RAIL CAP



BOTTOM RAIL CAP



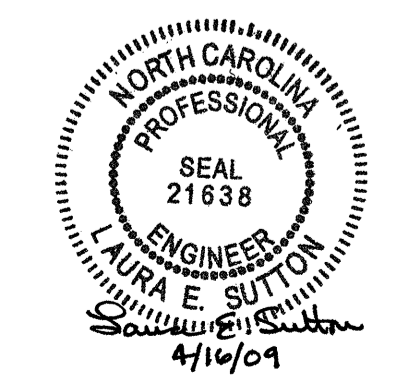
CLAMP ASSEMBLY

TOP RAIL SHOWN
(MIDDLE & BOTTOM RAIL ARE SIMILAR)

PROJECT NO. B-4434
BERTIE COUNTY
 STATION: 15+31.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD 3 BAR METAL RAIL					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		



ASSEMBLED BY : A.S. CALLAWAY	DATE : 10/9/08
CHECKED BY : L.E. SUTTON	DATE : 11/21/08
DRAWN BY : JMB 1/88	REV. 7/10/01 RWW/LES
CHECKED BY : GGH 1/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

NOTES

METAL RAIL TO END POST CONNECTION

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

- A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 1/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 1/8" BOLT SHALL HAVE N. C. THREADS.
- C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F. WASHERS FOR RAIL ATTACHMENT SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.
- D. STANDARD CLAMP BARS (STD. No. BMR6).

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 3 BAR METAL RAIL.

THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

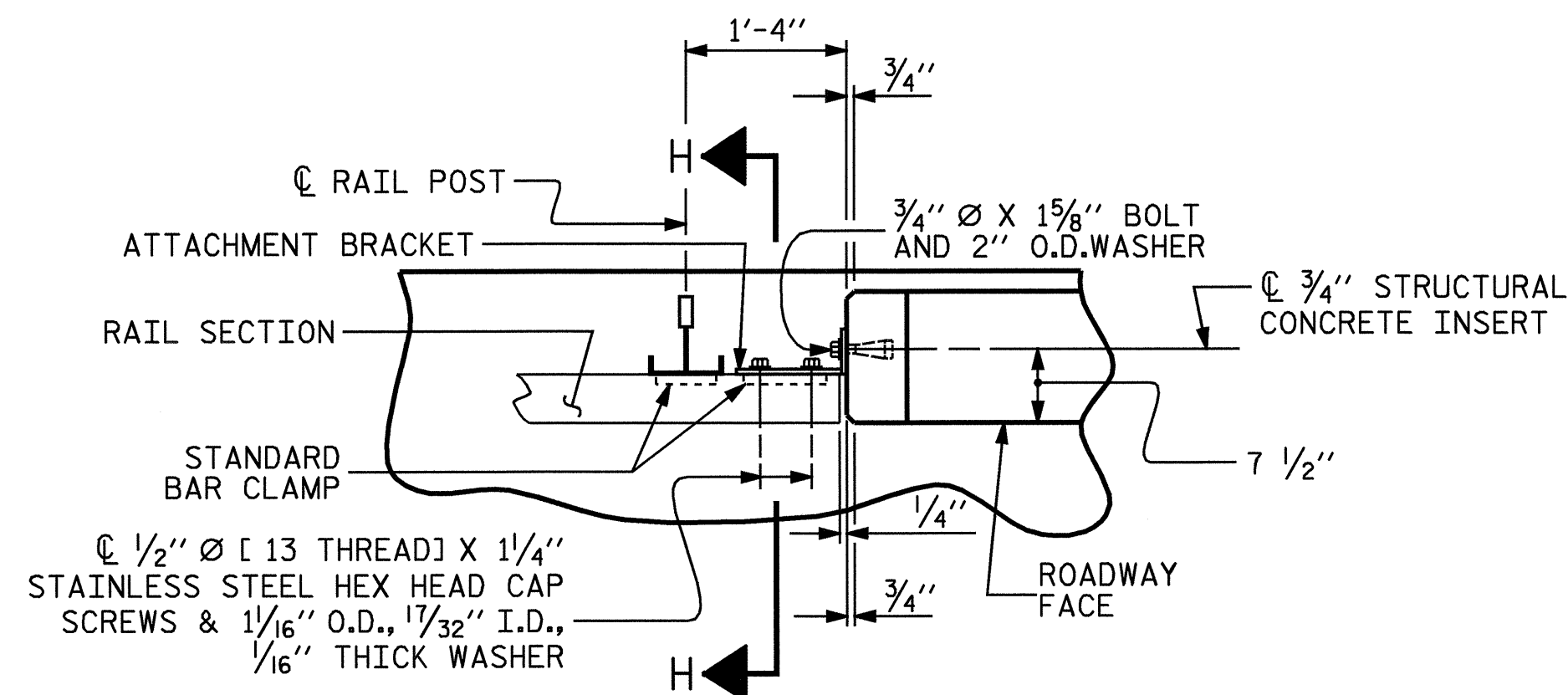
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 1/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 1/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. NO FIELD TESTING IS REQUIRED. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

NOTES

STRUCTURAL CONCRETE INSERT

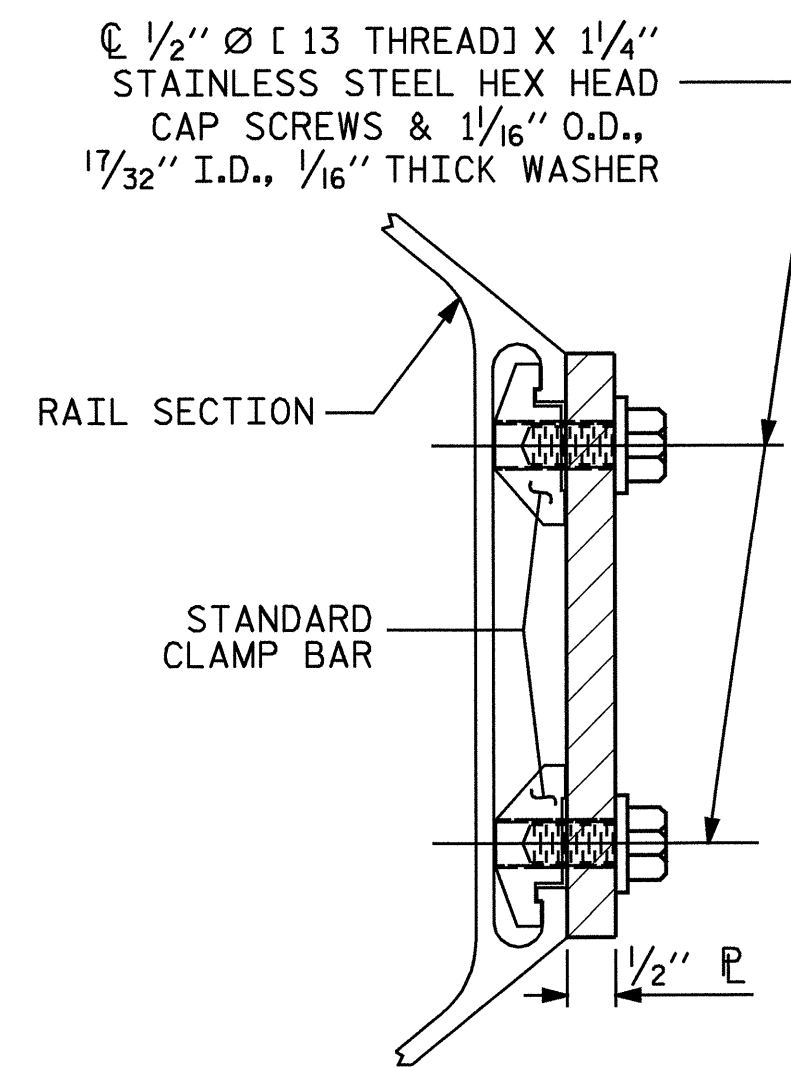
THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".
- B. 1 - 3/4" Ø X 1 1/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. AT THE CONTRACTORS OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 1 1/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.



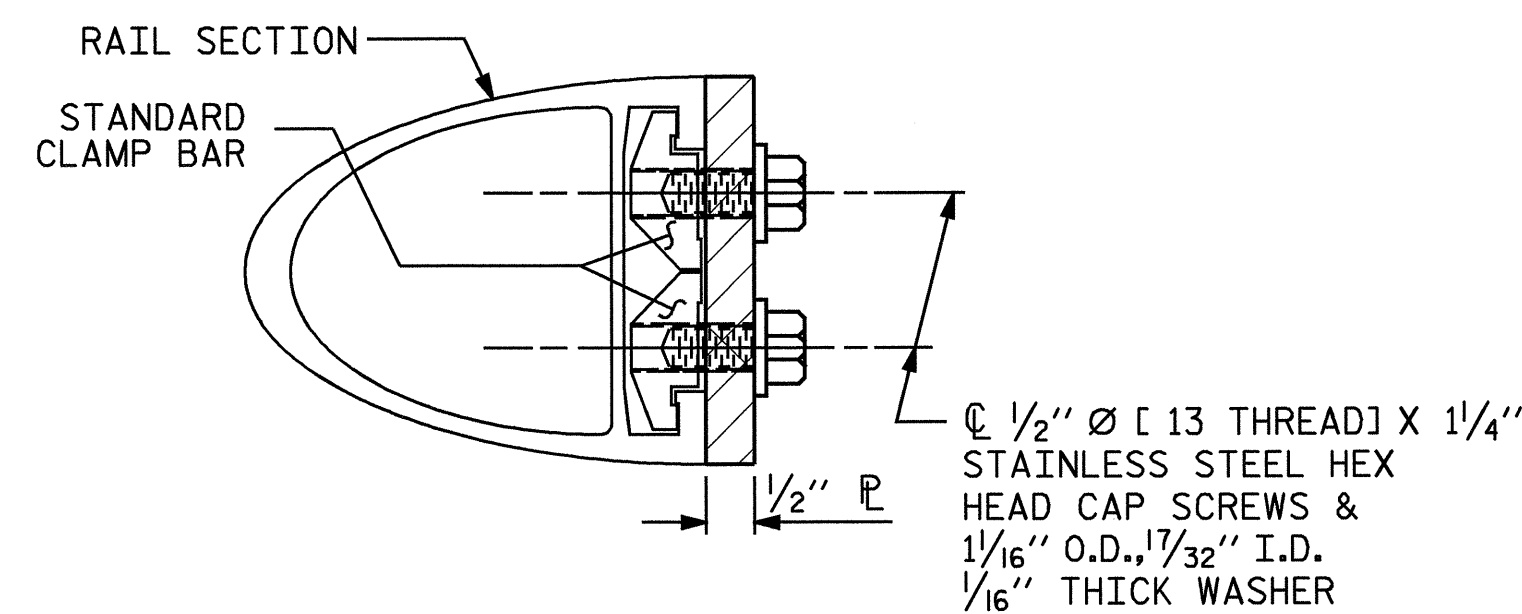
PLAN OF RAIL AND END POST

(STIFFENER ON 1/2" P NOT SHOWN FOR CLARITY)



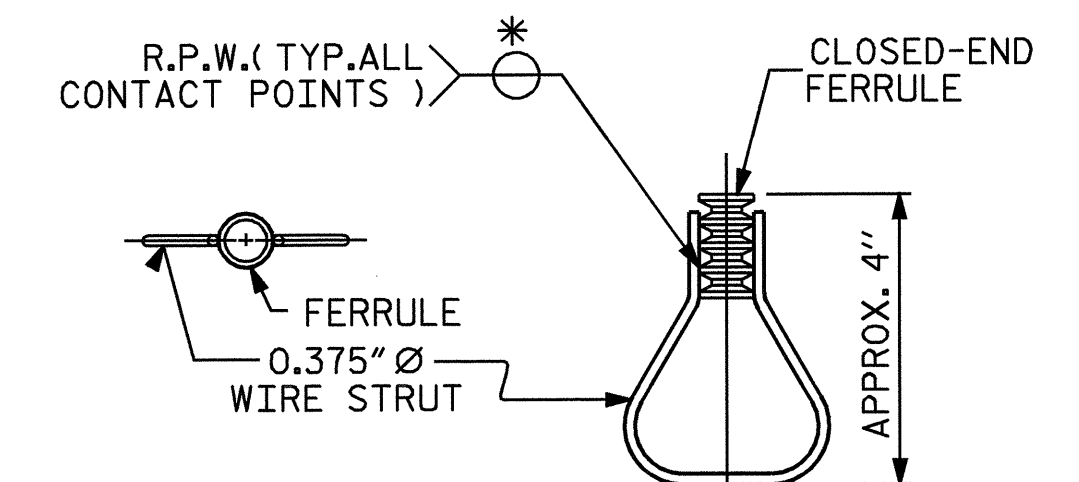
SECTION H-H

(FOR BOTTOM RAIL)



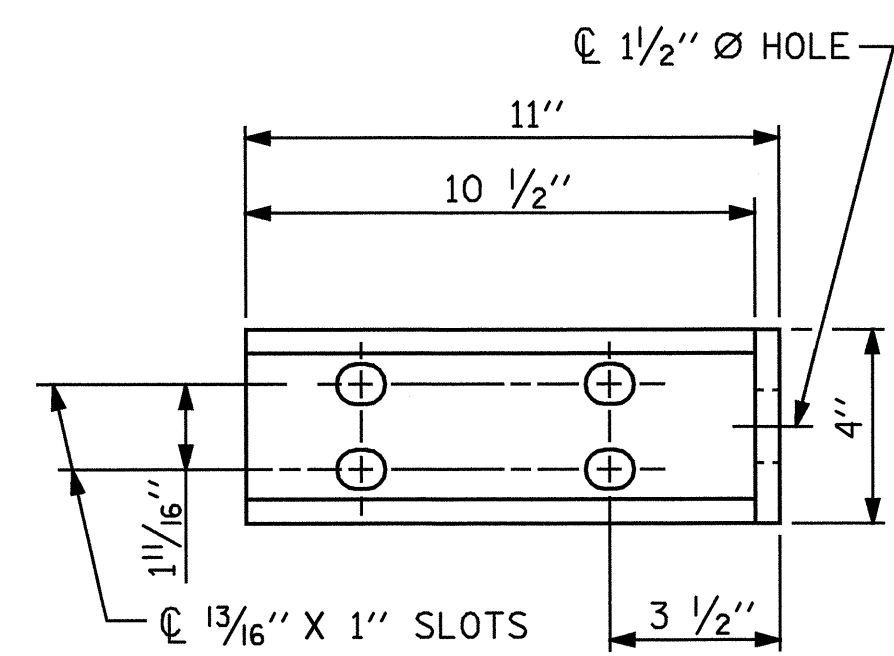
SECTION H-H

(FOR TOP & MIDDLE RAIL)

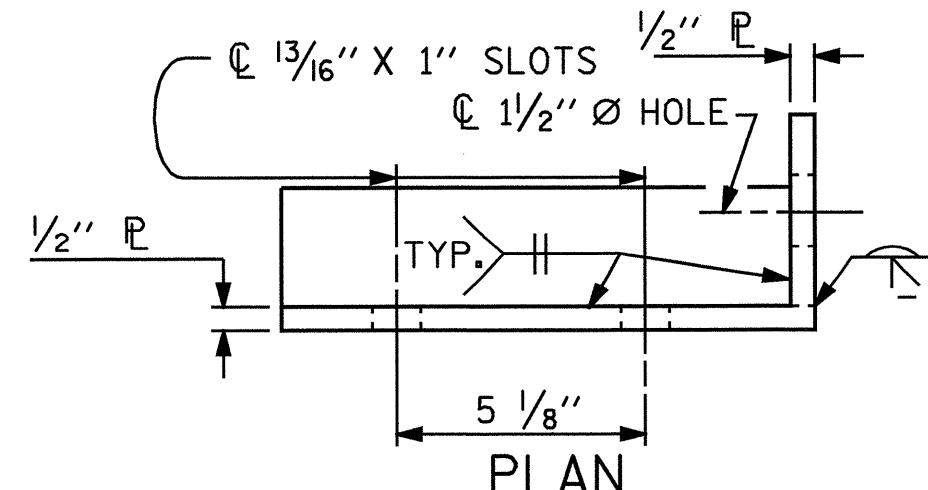


PLAN ELEVATION
STRUCTURAL CONCRETE INSERT

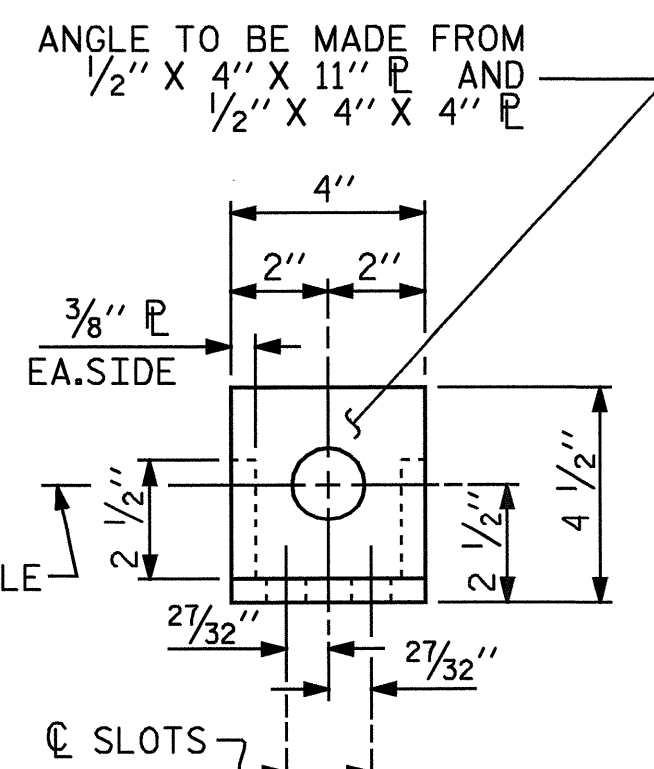
* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.



ELEVATION



PLAN

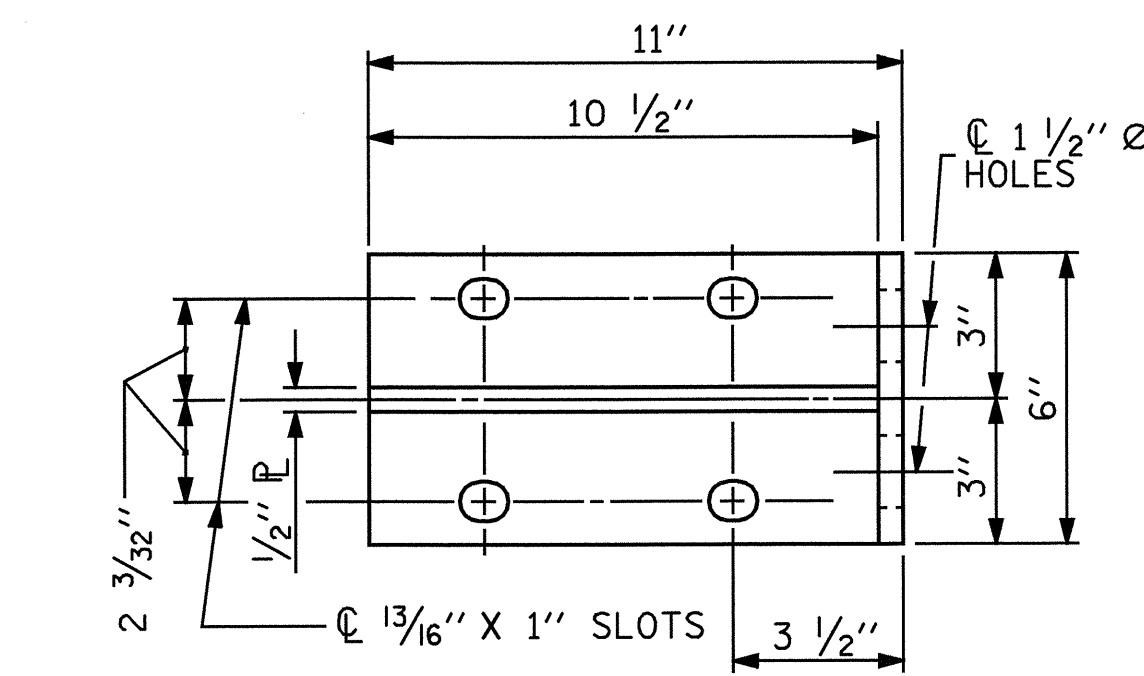


END VIEW

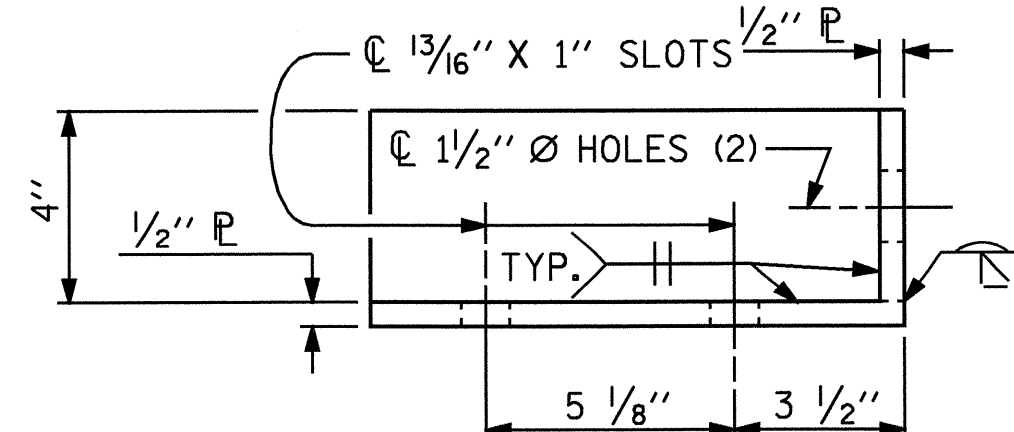
(FIX. AND EXP.)

DETAILS FOR ATTACHMENT BRACKET

(TOP & MIDDLE RAIL ONLY)



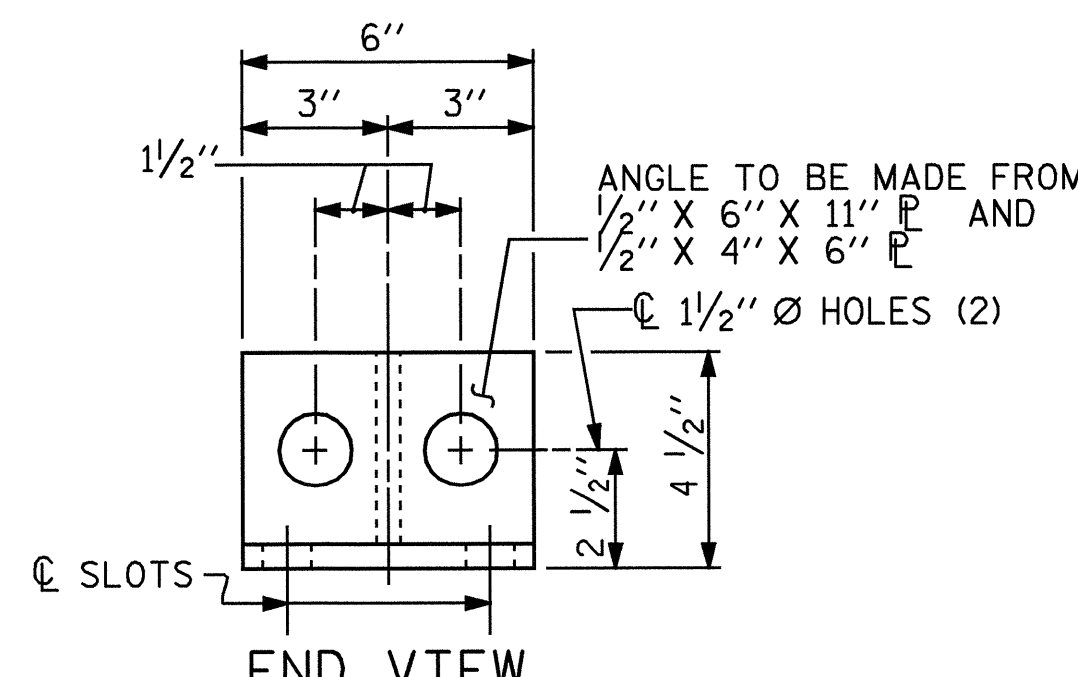
ELEVATION



PLAN

DETAILS FOR ATTACHMENT BRACKET

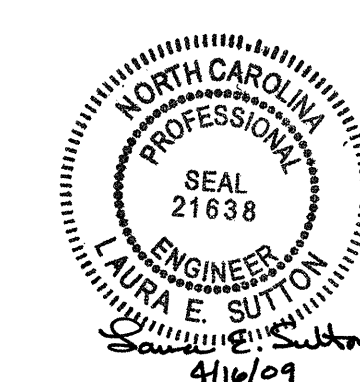
(BOTTOM RAIL ONLY)



END VIEW

ASSEMBLED BY : A.S. CALLAWAY	DATE : 10/9/08
CHECKED BY : L.E. SUTTON	DATE : 11/21/08
DRAWN BY : JMB 1/88	REV. 7/10/01 RWW/LES
CHECKED BY : GGH 1/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

13-FEB-2009 14:36
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PROJECT NO. B-4434
BERTIE COUNTY
STATION: 15+31.00 -L-

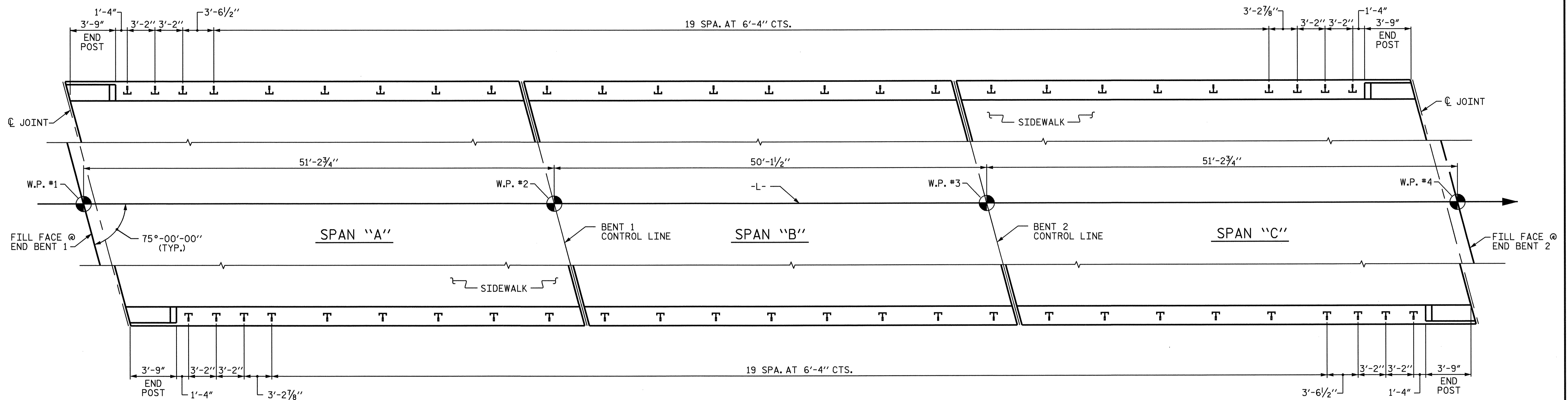
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3 BAR METAL RAIL

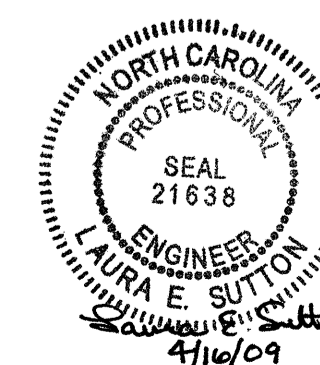
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			39

STD. NO. BMR7



PLAN OF RAIL POST SPACINGS

PROJECT NO. B-4434
BERTIE COUNTY
 STATION: 15+31.00 -L-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE RAIL POST SPACINGS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-20
TOTAL SHEETS					39

DRAWN BY: A.S. CALLAWAY DATE: 10/8/08
 CHECKED BY: L.E. SUTTON DATE: 11/21/08

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" Ø BOLTS WITH NUTS AND WASHERS.

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

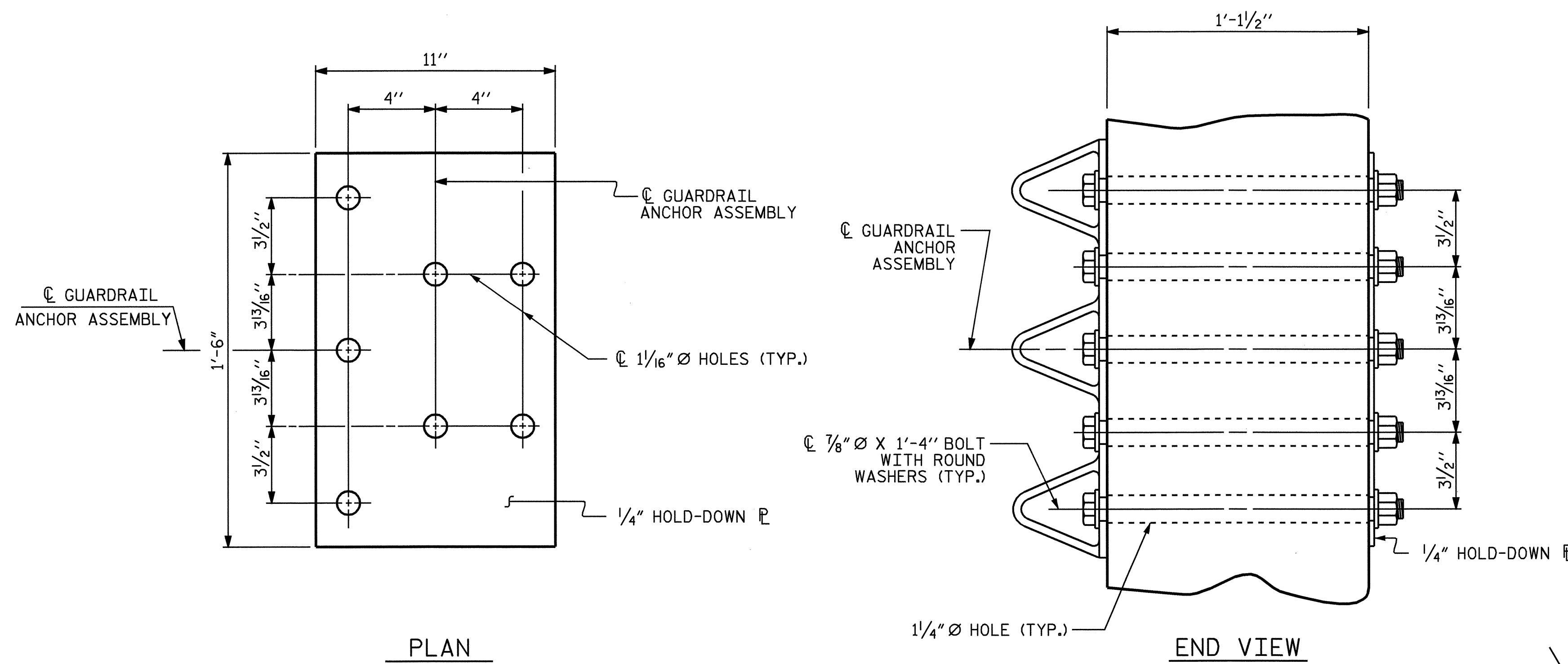
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS.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

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

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

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

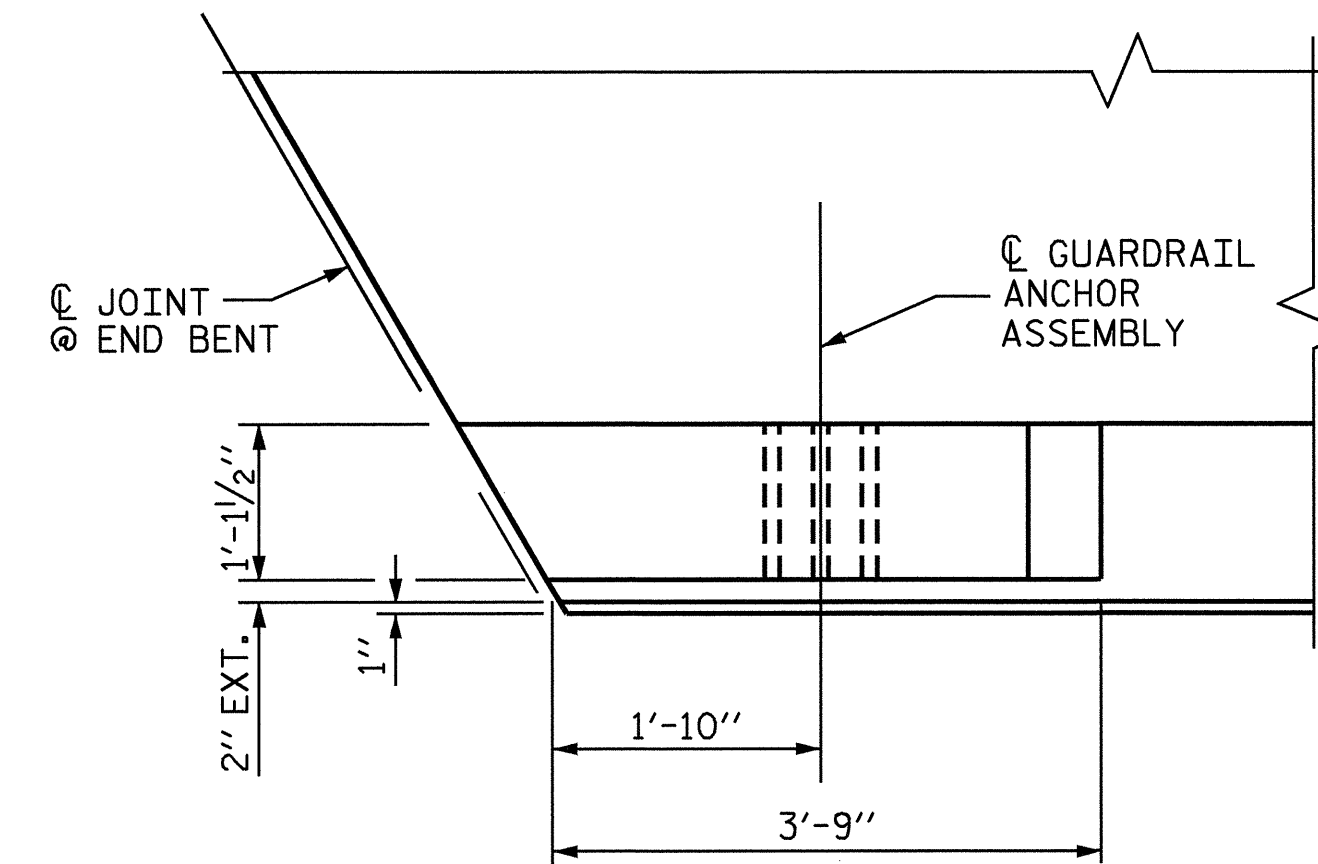
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



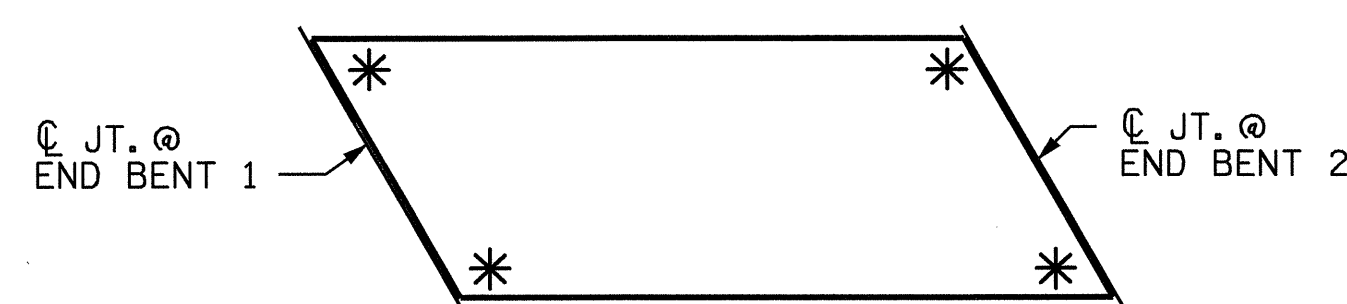
PLAN

END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS

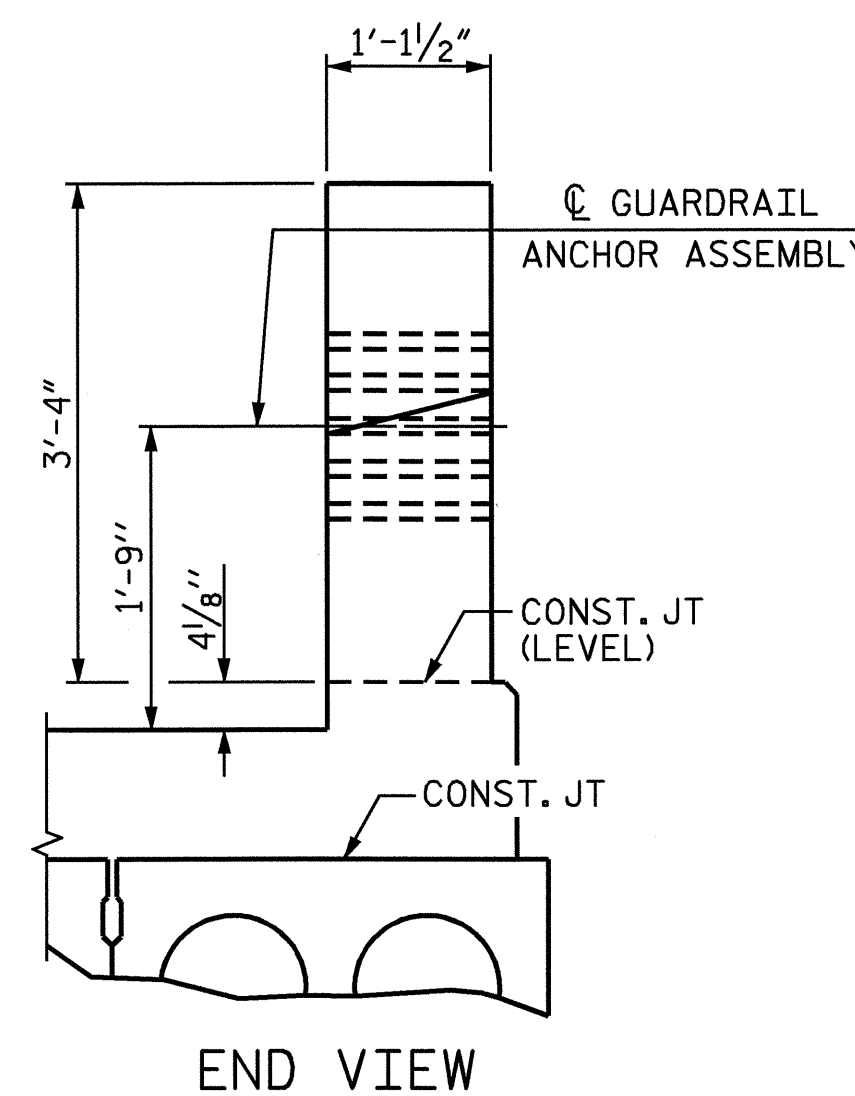


PLAN

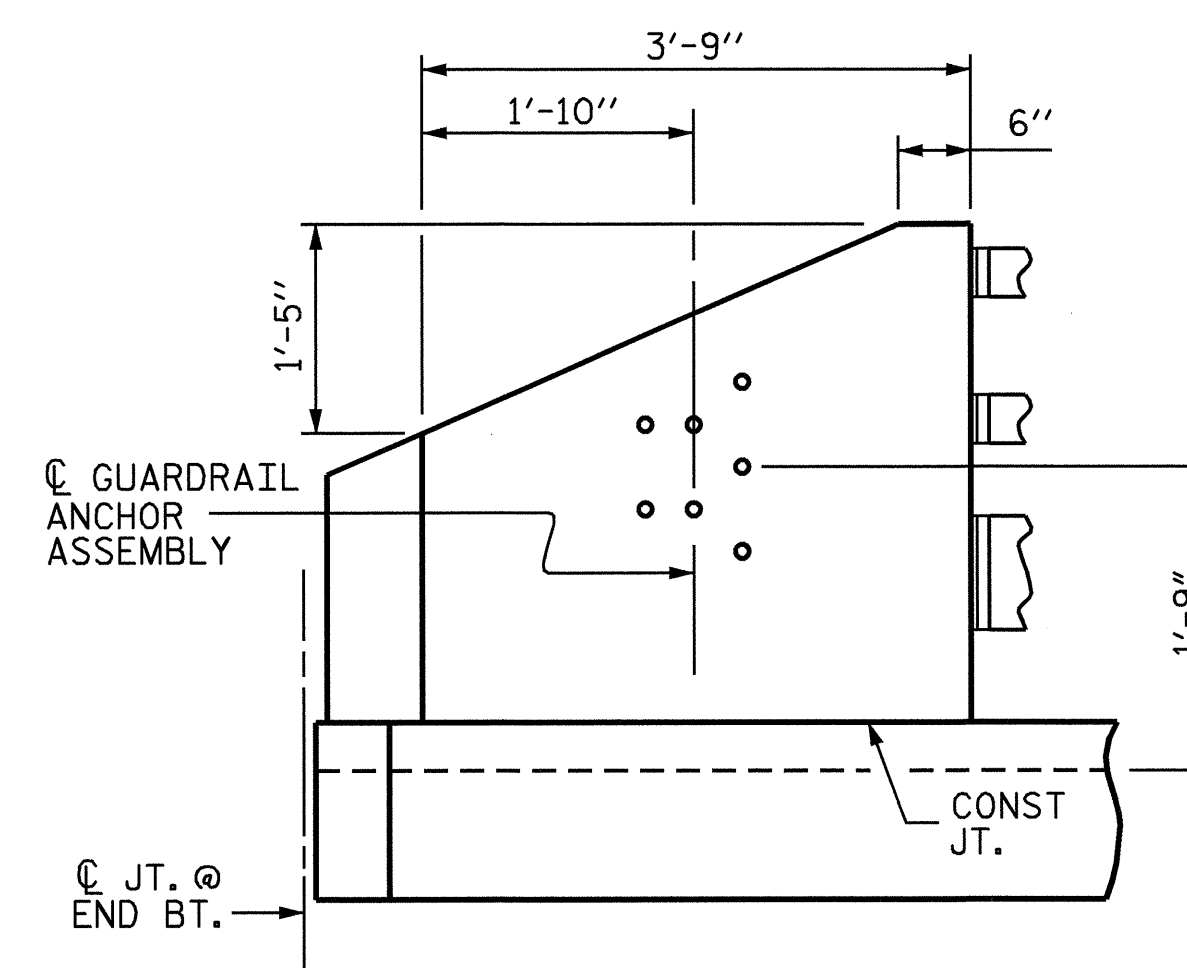


SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



END VIEW

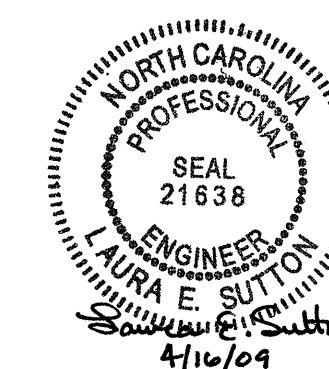


ELEVATION

LOCATION OF GUARDRAIL ANCHOR AT END POST

(END BENT 1 SHOWN, END BENT 2 SIMILAR.)

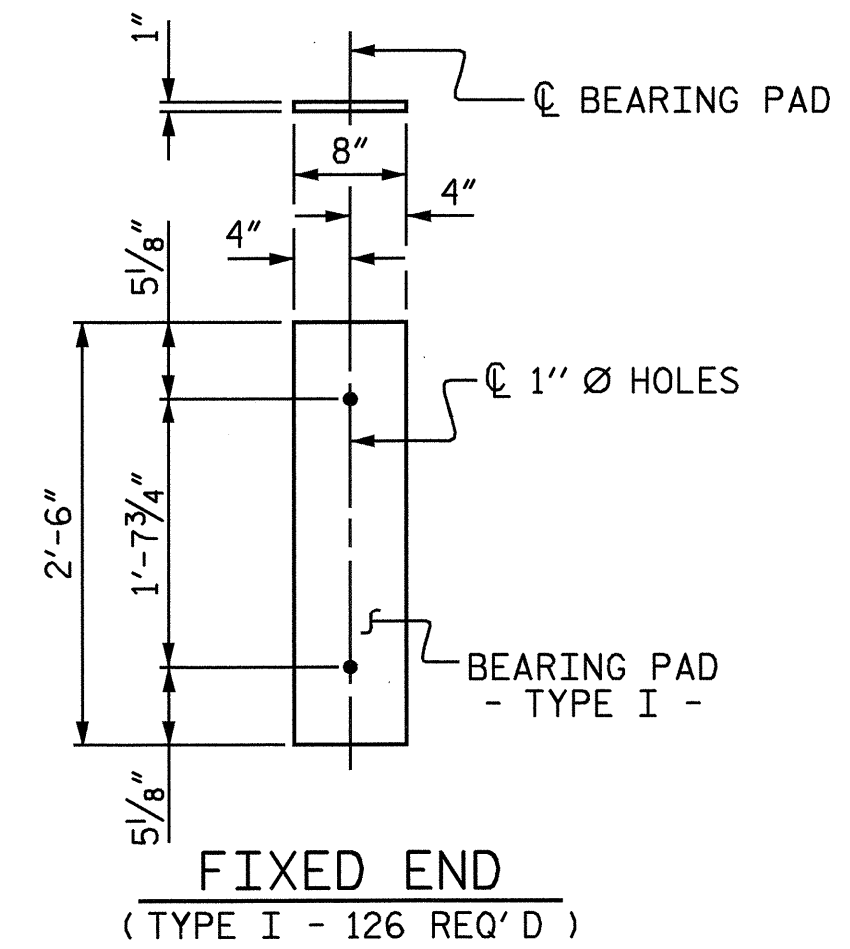
PROJECT NO. B-4434
BERTIE COUNTY
 STATION: 15+31.00 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 DETAILS
 FOR METAL RAILS

ASSEMBLED BY : A.S. CALLAWAY	DATE : 10/9/08
CHECKED BY : L.E. SUTTON	DATE : 11/21/08
DRAWN BY : EEM 6/94	REV. 10/17/00 RWW/LES
CHECKED BY : RGW 6/94	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

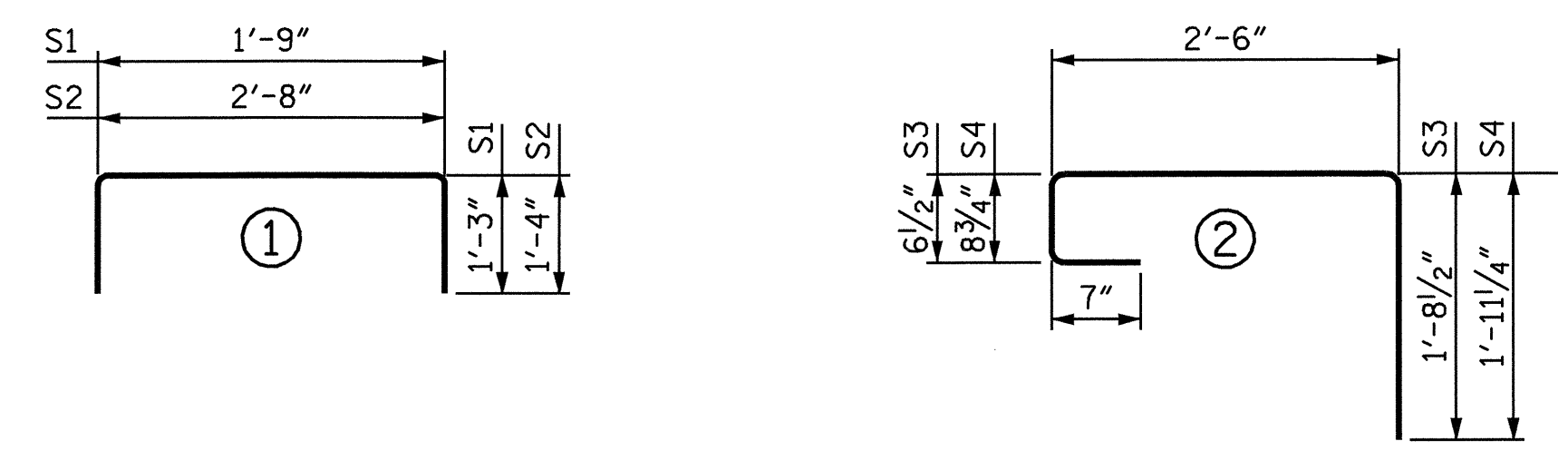
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS 39
2			4			



ELASTOMERIC BEARING DETAILS

FIXED END
(TYPE I - 126 REQ'D)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL FOR ONE 50' CORED SLAB UNIT

STAGE I											
BAR	NO.	SIZE	TYPE	TYPE 4 UNIT		TYPE 5 UNIT		TYPE 6 UNIT		TYPE 7 UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT
B1	4	#4	STR	25'-9"	69	25'-9"	69	25'-9"	69	25'-9"	69
S1	8	#5	1	4'-3"	35	4'-3"	35	4'-3"	35	4'-3"	35
S2	104	#4	1	5'-4"	371	5'-4"	371	5'-4"	371	5'-4"	371
*S3	7	#4	2	---	---	---	---	5'-4"	25	5'-4"	25
REINFORCING STEEL				LBS.	475	LBS.	475	LBS.	475	LBS.	475
*EPOXY COATED REINFORCING STEEL				LBS.	---	LBS.	---	LBS.	25	LBS.	25
7500 P.S.I. CONCRETE				CU. YDS.	7.9	CU. YDS.	7.2	CU. YDS.	7.2	CU. YDS.	7.2
0.6" Ø L.R. STRANDS				NO.	17	NO.	17	NO.	17	NO.	17
STAGE II											
BAR	NO.	SIZE	TYPE	TYPE 1 UNIT		TYPE 2 UNIT		TYPE 3 UNIT			
				LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT		
B1	4	#4	STR	25'-9"	69	25'-9"	69	25'-9"	69		
S1	8	#5	1	4'-3"	35	4'-3"	35	4'-3"	35		
S2	104	#4	1	5'-4"	371	5'-4"	371	5'-4"	371		
*S4	7	#4	2	5'-9"	27	5'-9"	27				
REINFORCING STEEL				LBS.	475	LBS.	475	LBS.	475		
*EPOXY COATED REINFORCING STEEL				LBS.	27	LBS.	27	LBS.	---		
7500 P.S.I. CONCRETE				CU. YDS.	7.1	CU. YDS.	7.1	CU. YDS.	7.1		
0.6" Ø L.R. STRANDS				NO.	17	NO.	17	NO.	17		

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE 2" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, A POSITIVE HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. THIS SYSTEM SHALL BE DESIGNED TO BE LEFT IN PLACE UNTIL THE CONCRETE HAS REACHED RELEASE STRENGTH. AT LEAST THREE WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4500 PSI.

ALL REINFORCING STEEL IN SIDEWALKS SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE SIDEWALK IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FT. TO 10 FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

THE MINIMUM HEIGHT OF THE PARAPET IS SHOWN. THE HEIGHT OF THE PARAPET VARIES WHILE THE TOP OF THE PARAPET FOLLOWS THE PROFILE OF THE GUTTERLINE.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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"			

DEAD LOAD DEFLECTION AND CAMBER

3'-0" x 1'-9" 0.6" Ø L.R. STRAND

	TYPE 1-3 UNITS	TYPE 4 UNIT	TYPE 5-7 UNITS
CAMBER (SLAB ALONE IN PLACE) ↑	1 7/8"	1 1/16"	1 13/16"
DEFLECTION DUE TO ASPHALT WEARING SURFACE ** ↓	3/8"	5/16"	3/8"
FINAL CAMBER ↑	1 1/2"	1 3/8"	1 1/16"

** INCLUDES FUTURE WEARING SURFACE.

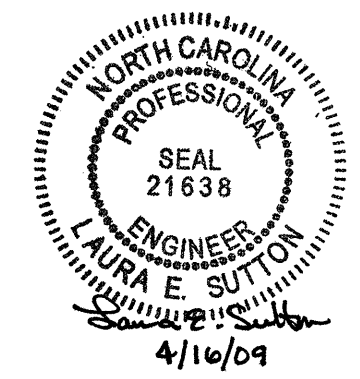
CORED SLAB UNITS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
STAGE I - 50' UNIT			
TYPE 4 UNIT	3	50'-0"	150'-0"
TYPE 5 UNIT	15	50'-0"	750'-0"
TYPE 6 UNIT	3	50'-0"	150'-0"
TYPE 7 UNIT	3	50'-0"	150'-0"
STAGE II - 50' UNIT			
TYPE 1 UNIT	3	50'-0"	150'-0"
TYPE 2 UNIT	3	50'-0"	150'-0"
TYPE 3 UNIT	33	50'-0"	1650'-0"
TOTAL	63	---	3150'-0"

0.6" Ø L.R. GRADE 270 STRANDS

AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

PROJECT NO. B-4434
BERTIE COUNTY
 STATION: 15+31.00 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 1'-9"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT
 75° SKEW - 50' UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-22
2			4			39

ASSEMBLED BY : L.E. SUTTON DATE : 1/02/09
 CHECKED BY : A.S. CALLAWAY DATE : 1/08/09
 DRAWN BY : WJH 4/89 REV. 7/10/01 RWW/LES
 CHECKED BY : FCJ 5/89 REV. 5/7/03RRR RWW/JTE
 REV. 5/1/06 TLA/GM

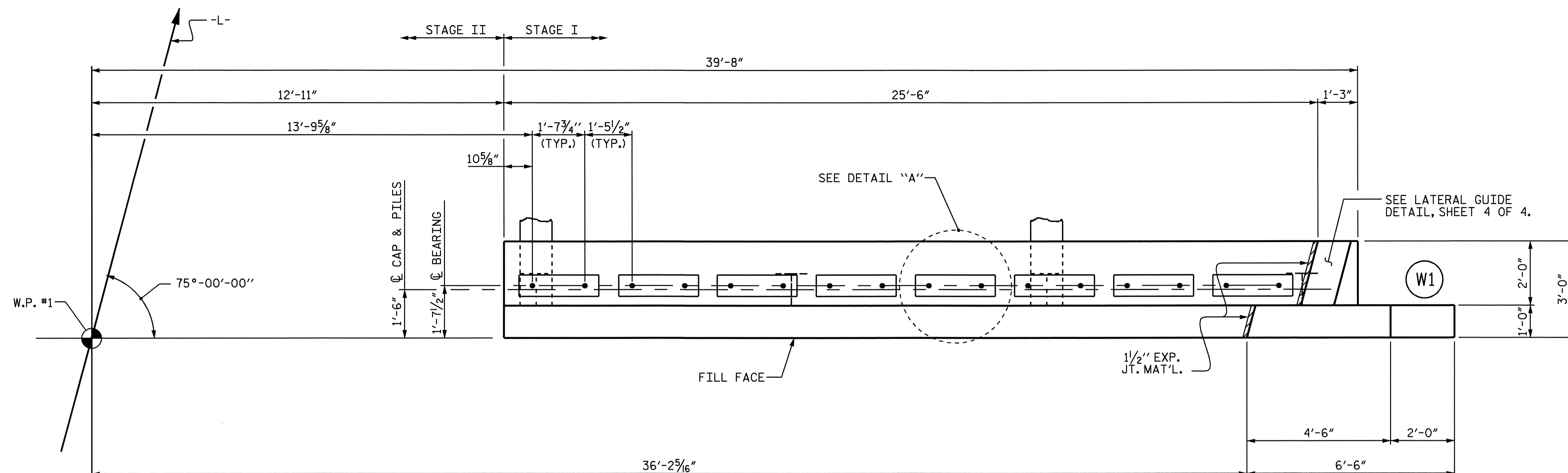
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

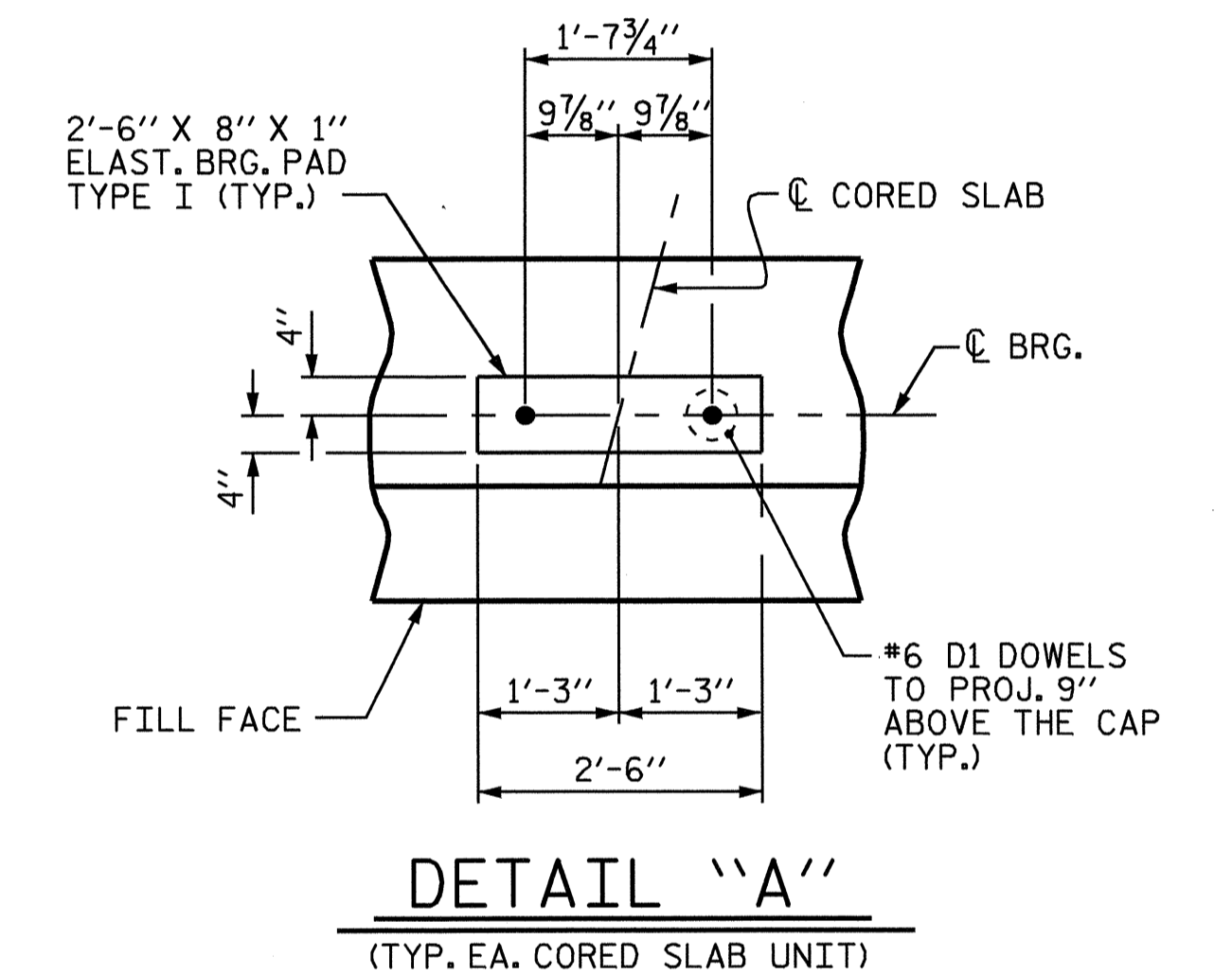
FOR PILE SPLICE DETAILS, SEE END BENT 2 SHEET 4 OF 4.

THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS IN THAT STAGE ARE IN PLACE.

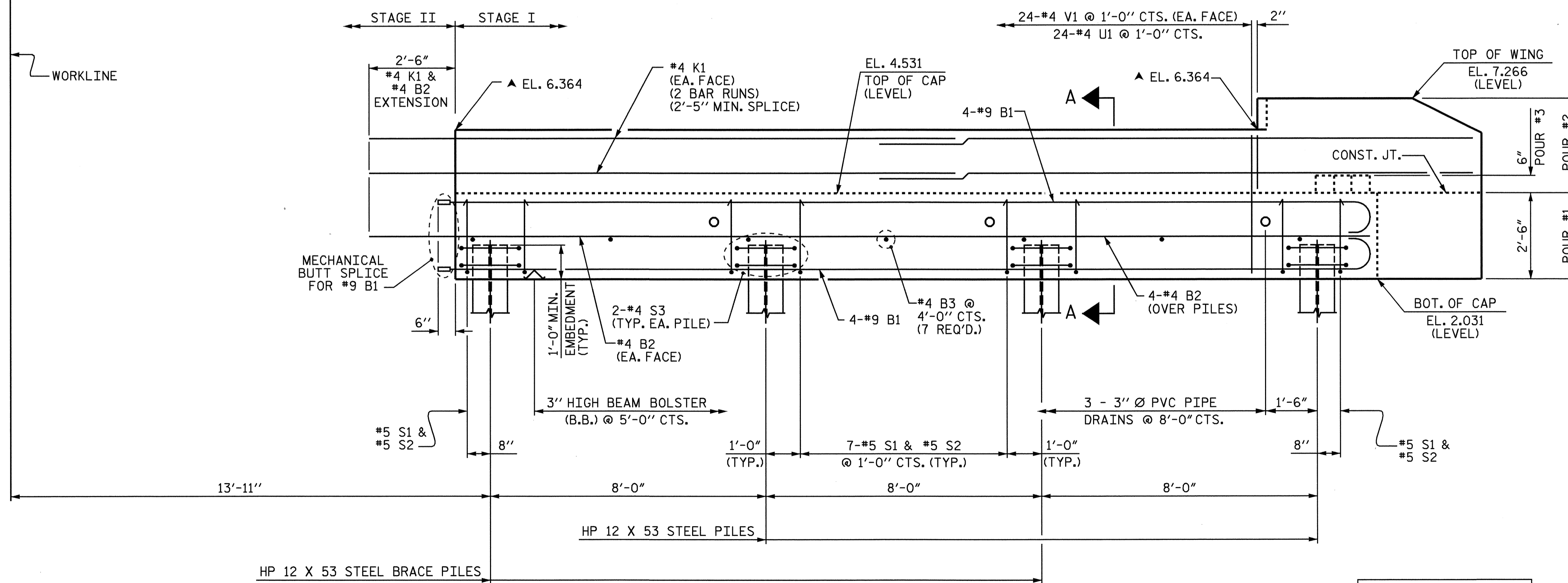
THE USE OF DRILLED OR CORED HOLES IS NOT PERMITTED WHEN SETTING THE DOWELS ADJACENT TO THE CONSTRUCTION JOINT BETWEEN STAGES. INSTEAD, THESE DOWELS SHALL BE PUSHED INTO GREEN CONCRETE. ALL OTHER DOWEL HOLES MAY BE FORMED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.



PLAN



DETAIL "A"
(TYP. EA. CORED SLAB UNIT)



ELEVATION

▲ ELEVATION TAKEN AT FILL FACE

PROJECT NO. B-4434
BERTIE COUNTY
 STATION: 15+31.00 -L-

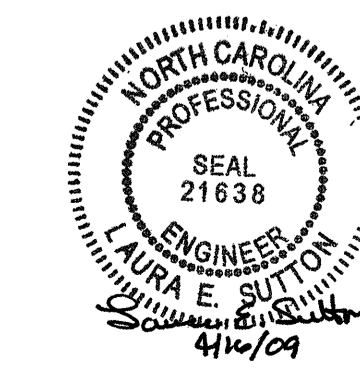
SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1
 STAGE I

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23	
1			3			TOTAL	39
2			4				

DRAWN BY: A.S. CALLAWAY DATE: 12/17/08
 CHECKED BY: L.E. SUTTON DATE: 2/3/09



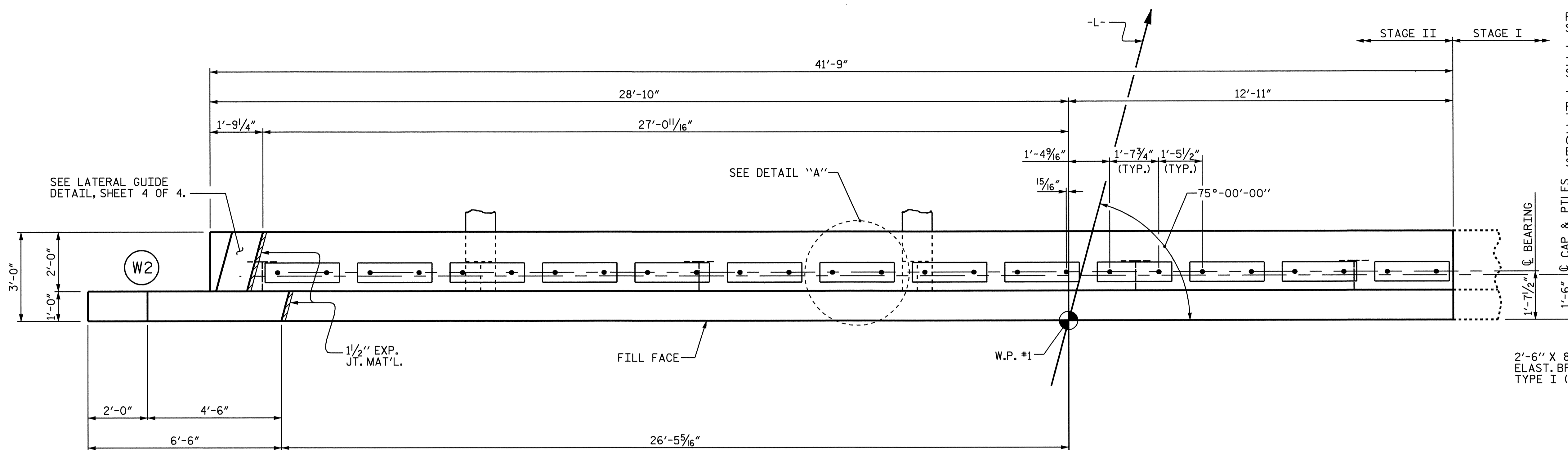
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

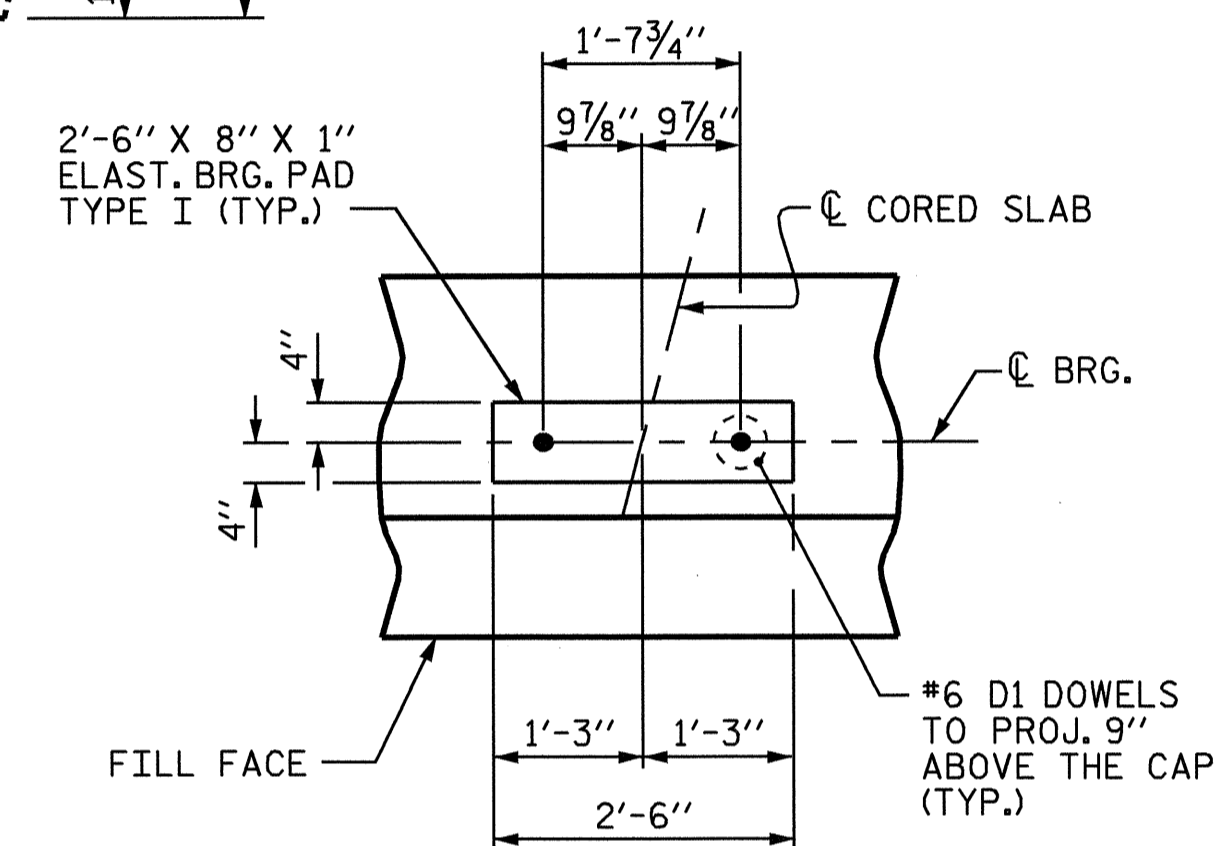
FOR PILE SPLICE DETAILS, SEE END BENT 2 SHEET 4 OF 4.

THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS IN THAT STAGE ARE IN PLACE.

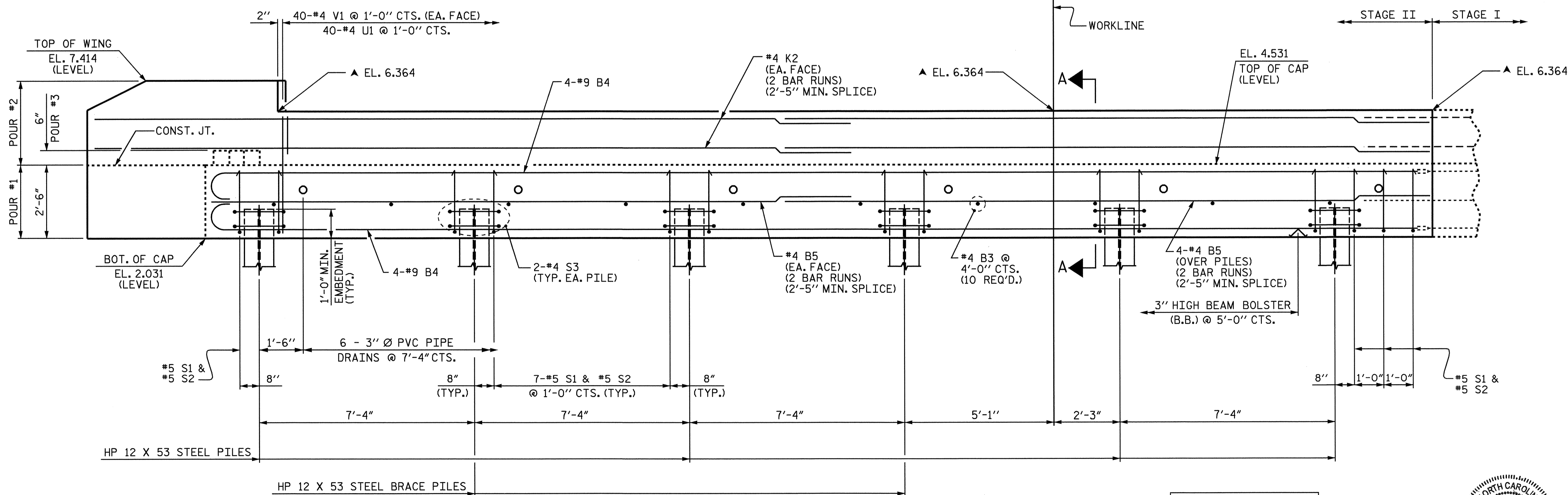
THE USE OF DRILLED OR CORED HOLES IS NOT PERMITTED WHEN SETTING THE DOWELS ADJACENT TO THE CONSTRUCTION JOINT BETWEEN STAGES. INSTEAD, THESE DOWELS SHALL BE PUSHED INTO GREEN CONCRETE. ALL OTHER DOWEL HOLES MAY BE FORMED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.



PLAN



DETAIL "A"
(TYP. EA. CORED SLAB UNIT)



ELEVATION

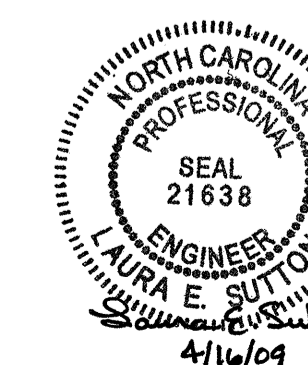
▲ ELEVATION TAKEN AT FILL FACE

PROJECT NO. B-4434
BERTIE COUNTY
 STATION: 15+31.00 -L-

SHEET 2 OF 4

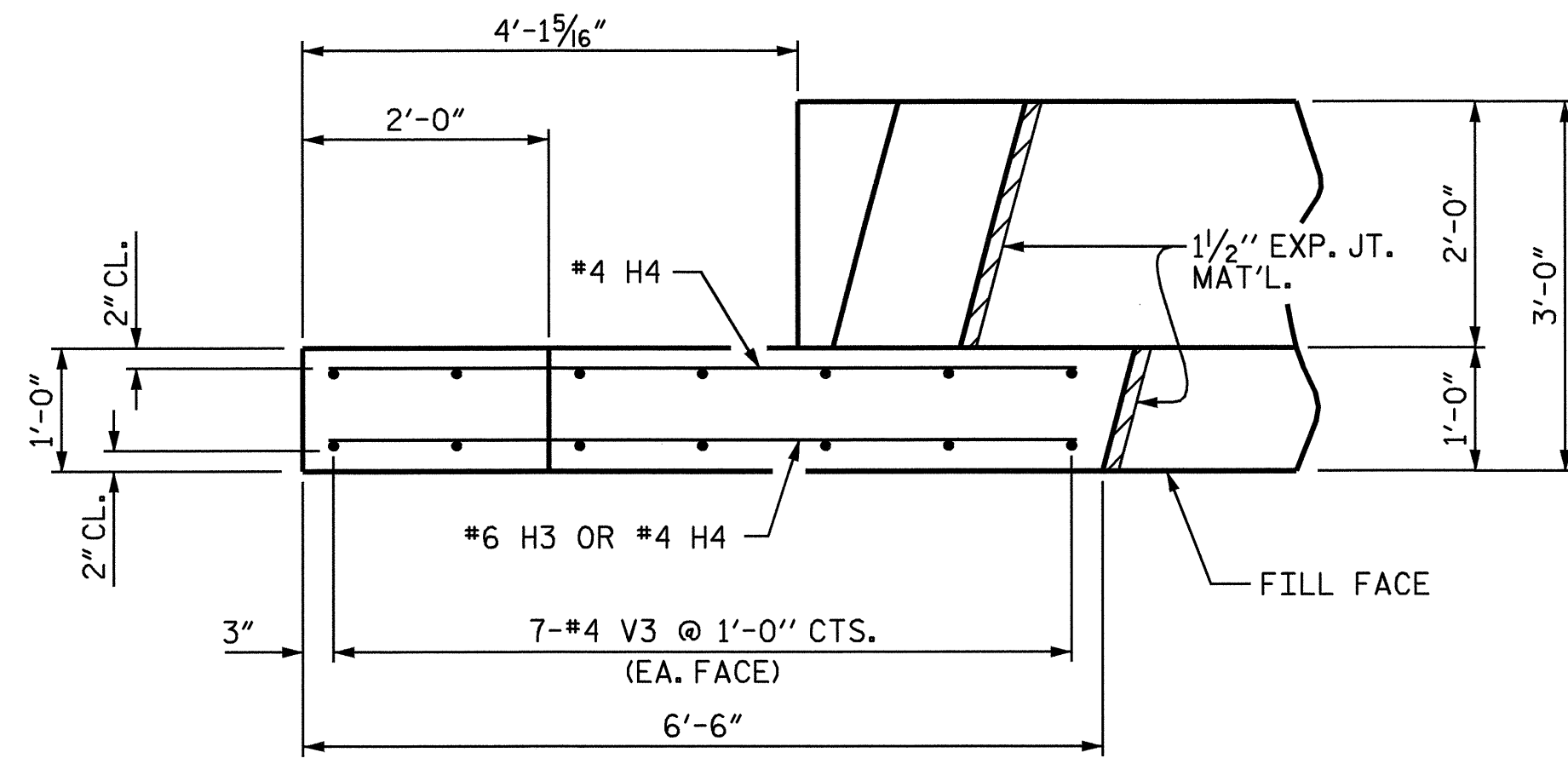
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1
 STAGE II

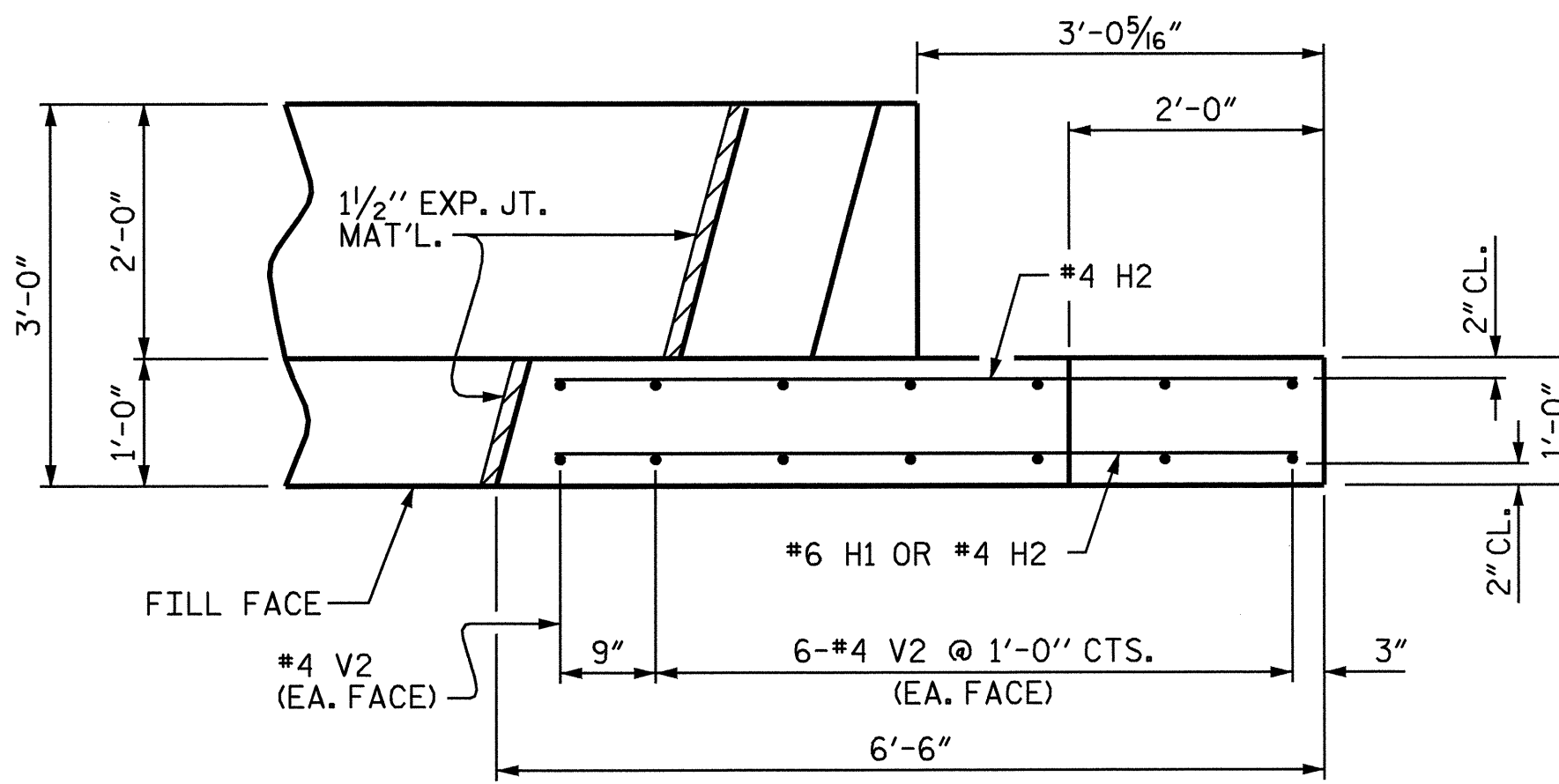


DRAWN BY: A.S. CALLAWAY DATE: 12/17/08
 CHECKED BY: L.E. SUTTON DATE: 2/3/09

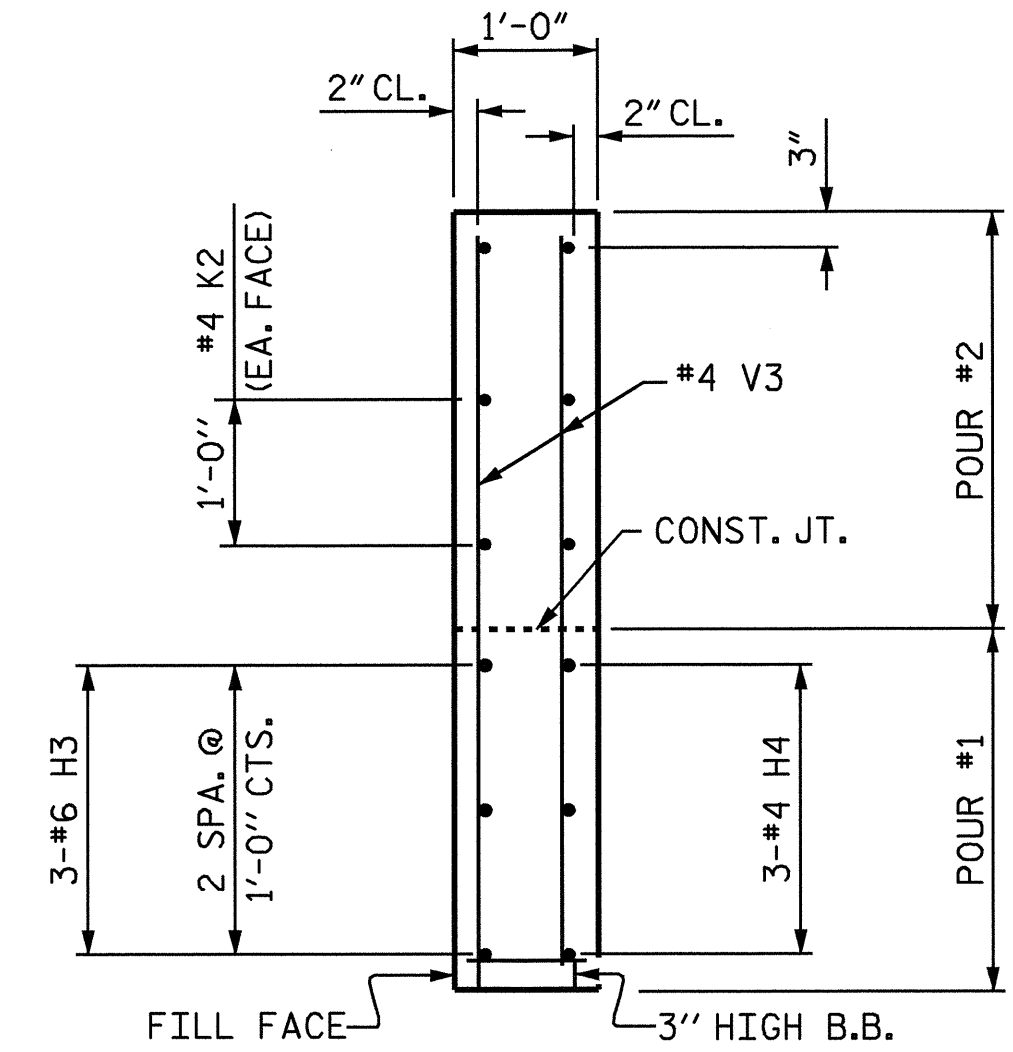
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			39



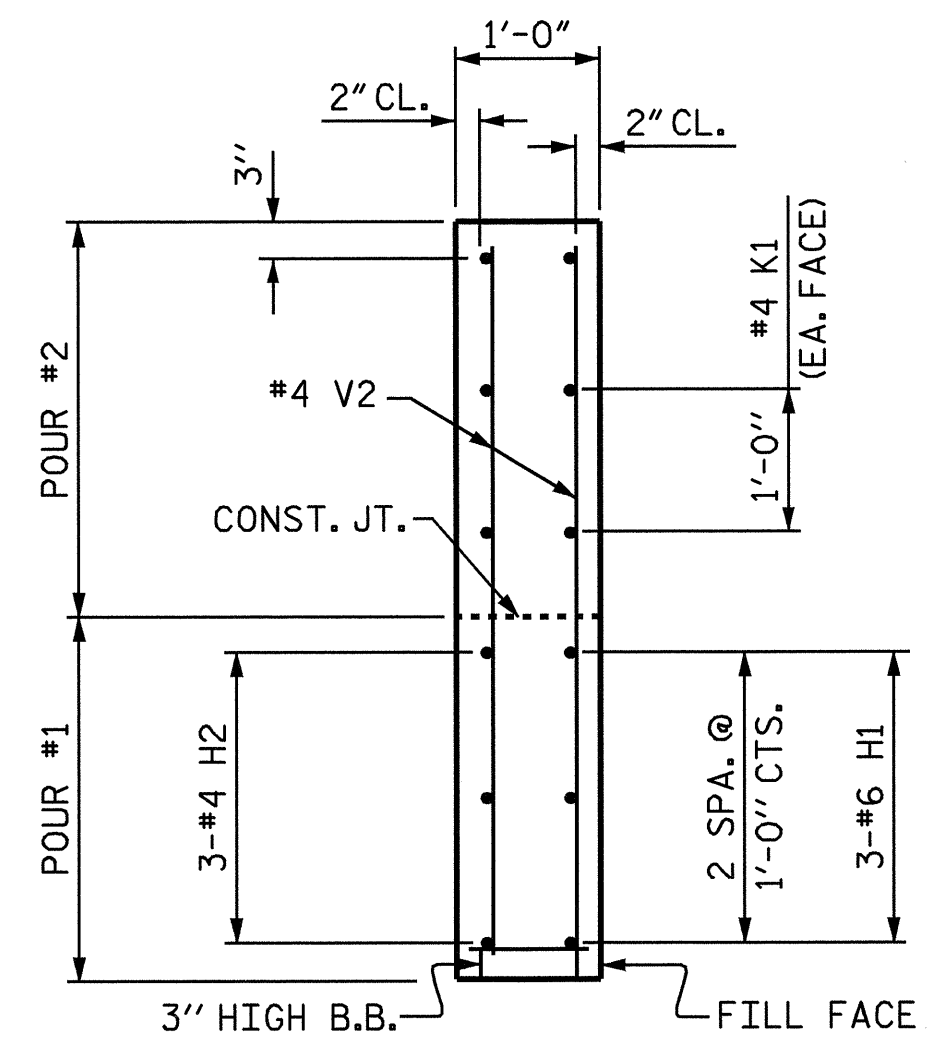
PLAN OF WING (W2)



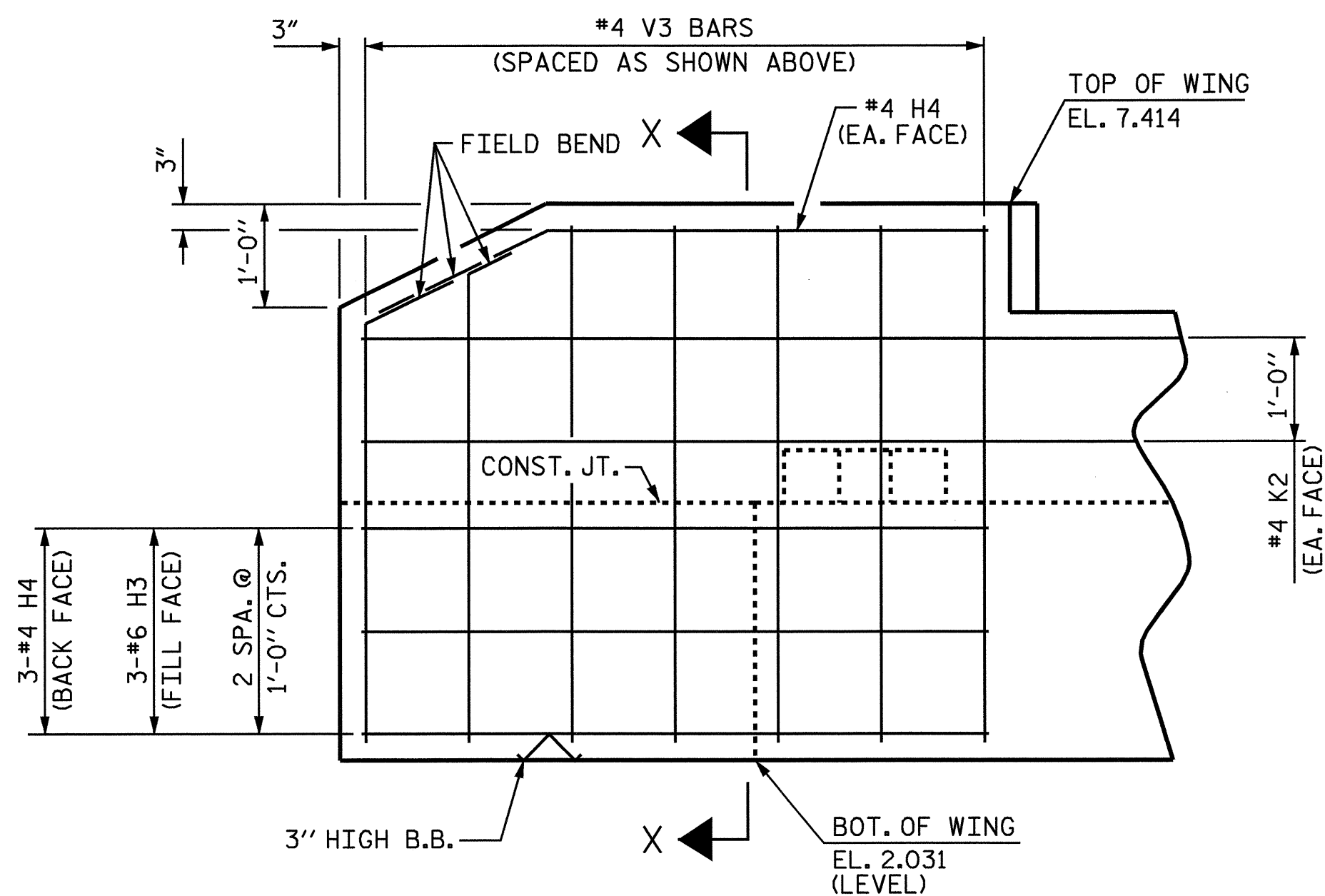
PLAN OF WING (W1)



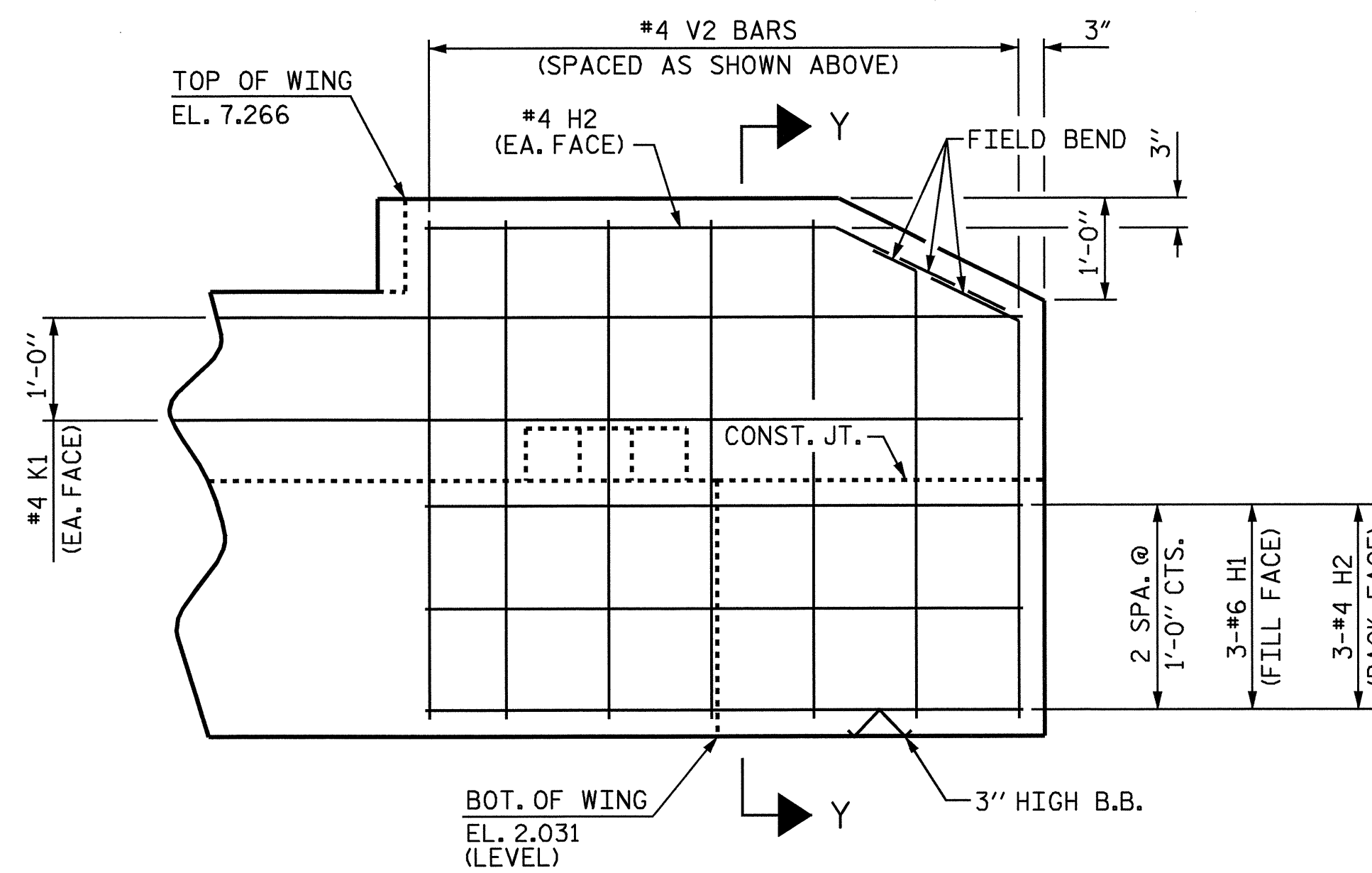
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W2)



ELEVATION OF WING (W1)

PROJECT NO. B-4434
BERTIE COUNTY
 STATION: 15+31.00 -L-

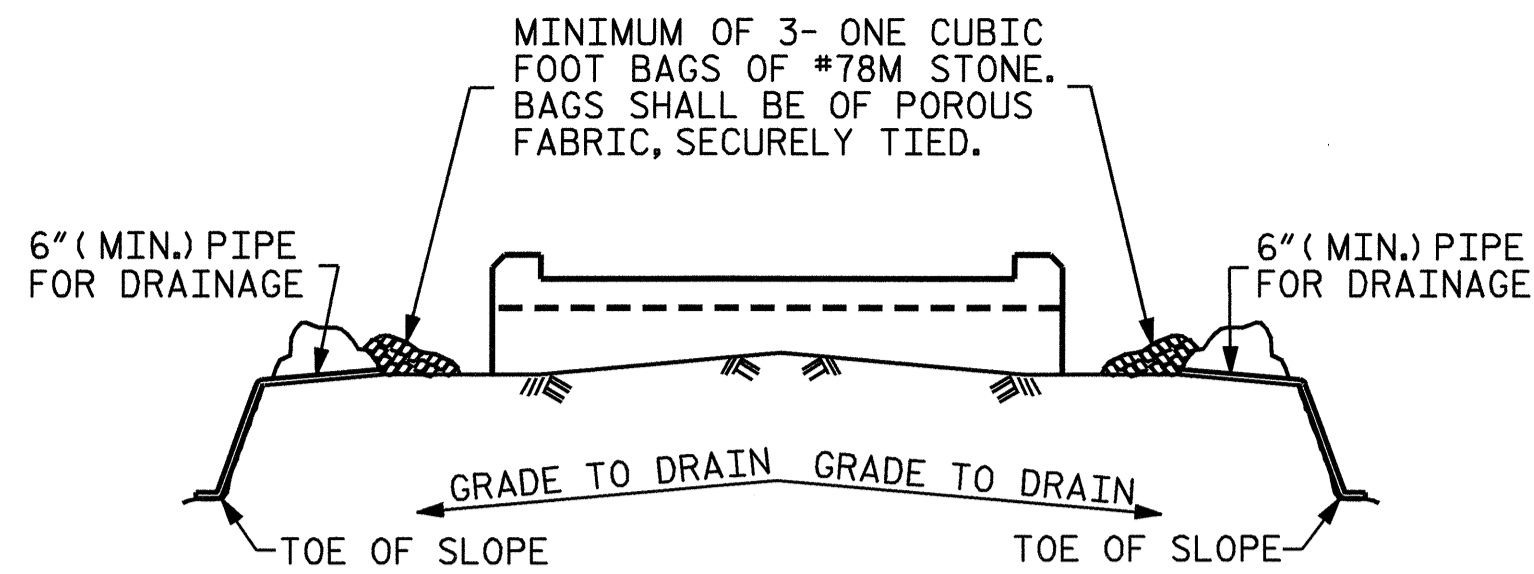
SHEET 3 OF 4

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



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			39

DRAWN BY: A.S. CALLAWAY DATE: 12/16/08
 CHECKED BY: L.E. SUTTON DATE: 2/3/09

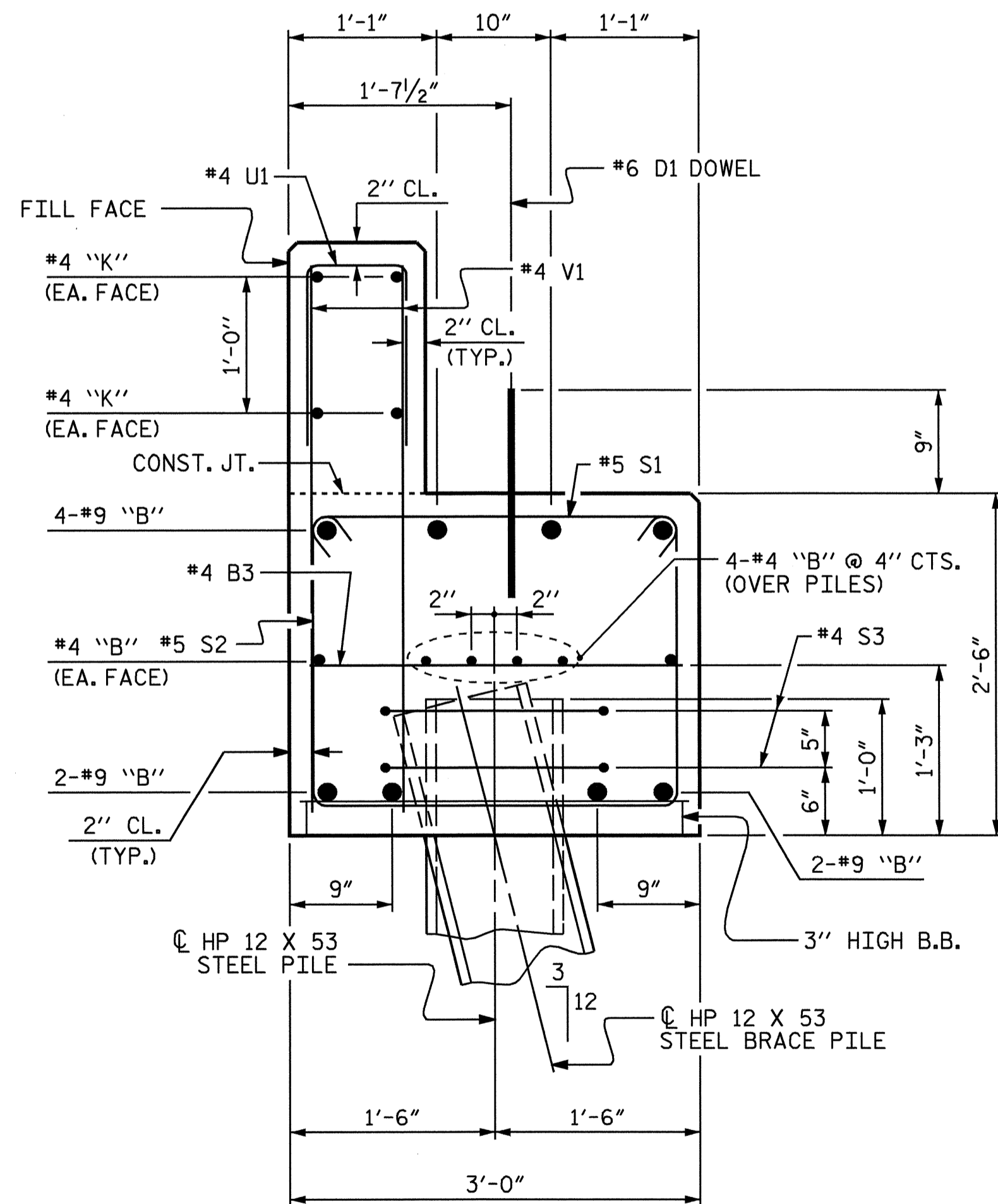


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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



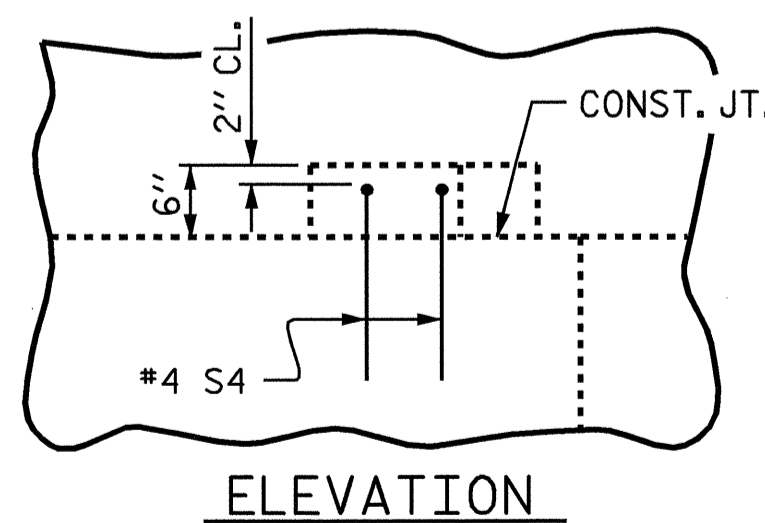
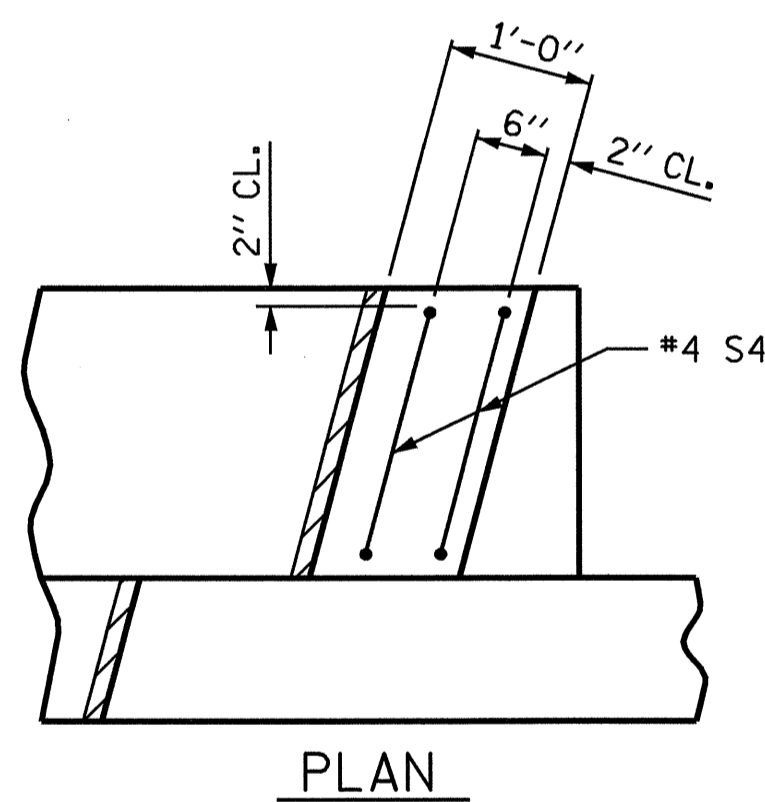
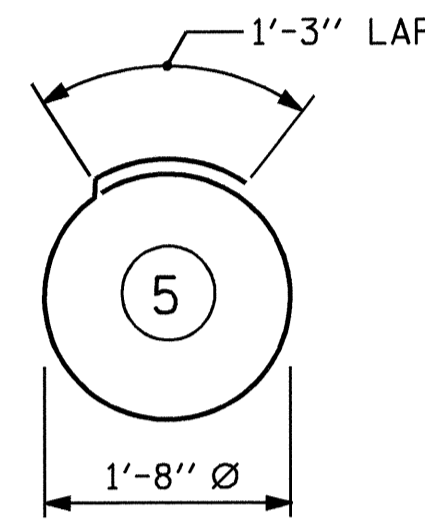
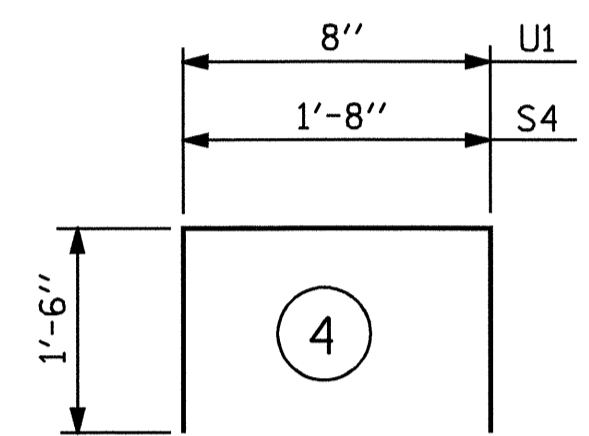
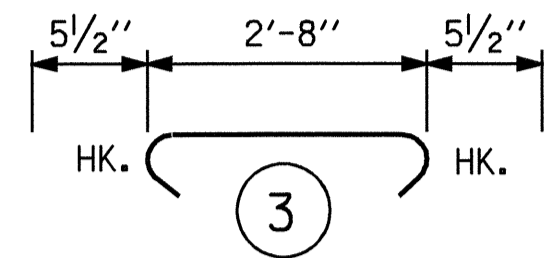
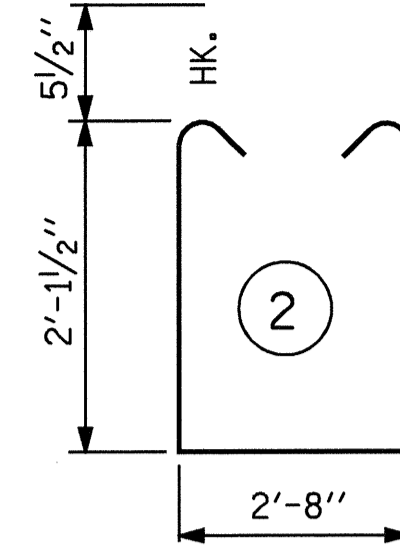
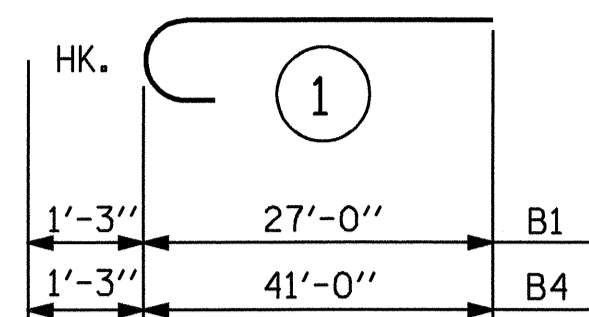
SECTION A-A

DRAWN BY : A.S. CALLAWAY DATE : 12/16/08
 CHECKED BY : L.E. SUTTON DATE : 2/3/09

09-MAR-2009 13:53
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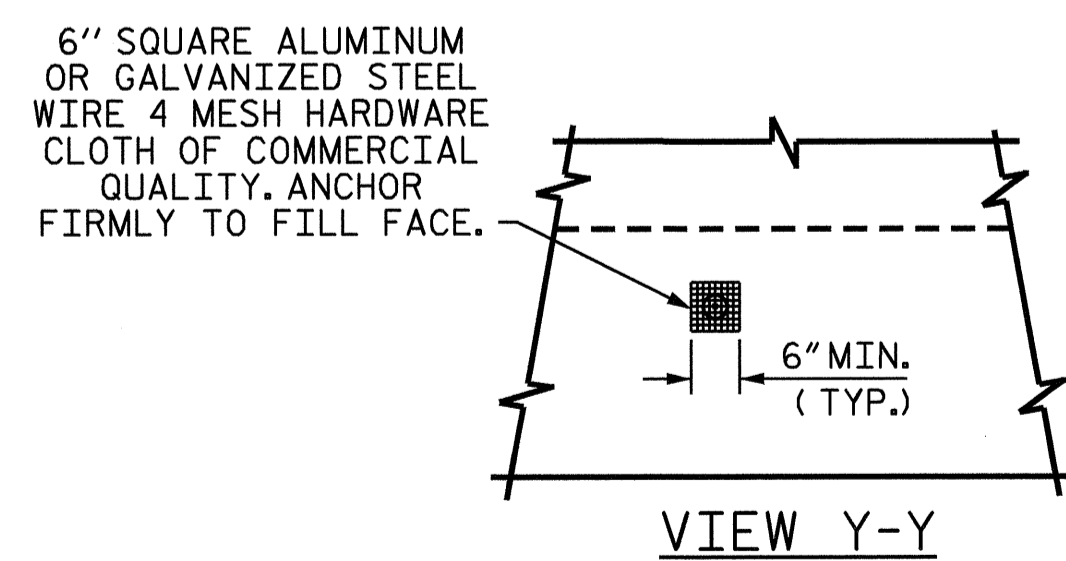
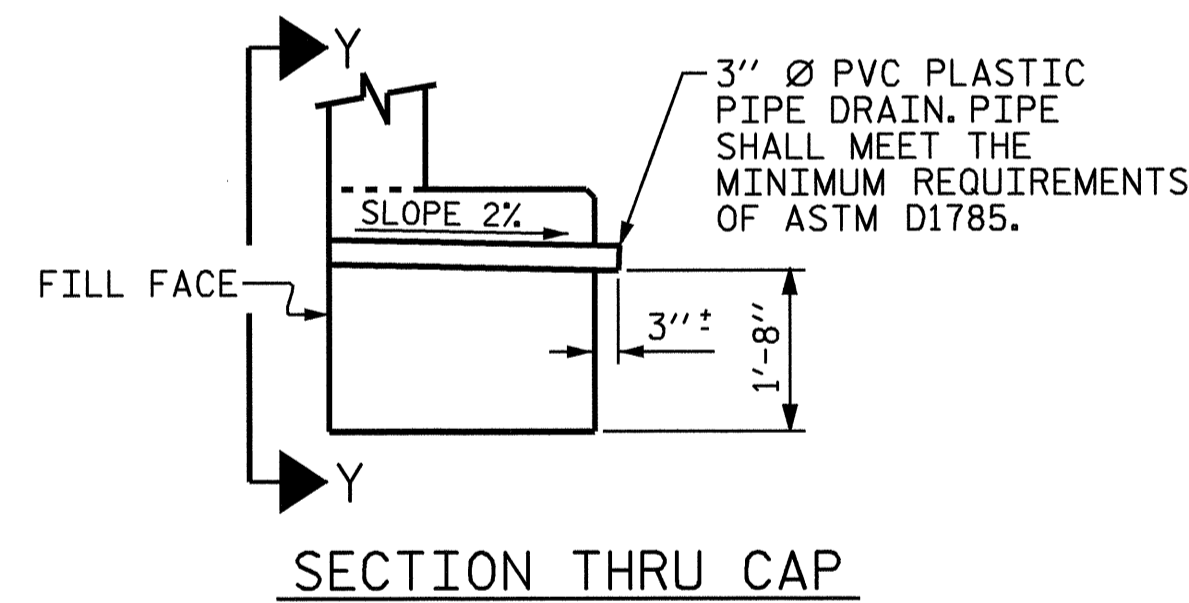
BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.



LATERAL GUIDE DETAIL

(RIGHT SIDE SHOWN, LEFT SIDE SIMILAR)



PIPE DRAIN DETAILS

NOTE: NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE PVC PLASTIC PIPE DRAINS, HARDWARE CLOTH AND FASTENERS. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

BILL OF MATERIAL - END BENT 1

STAGE I						STAGE II									
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT				
B1	8	#9	1	28'-3"	768	B3	10	#4	STR	2'-8"	18				
B2	6	#4	STR	29'-1"	117	B4	8	#9	1	42'-3"	1149				
B3	7	#4	STR	2'-8"	12	B5	12	#4	STR	22'-0"	176				
D1	16	#6	STR	1'-6"	36	D1	26	#6	STR	1'-6"	59				
H1	3	#6	STR	5'-11"	27	H3	3	#6	STR	6'-1"	27				
H2	5	#4	STR	5'-11"	20	H4	5	#4	STR	6'-1"	20				
K1	8	#4	STR	17'-3"	92	K2	8	#4	STR	24'-0"	128				
S1	23	#5	3	3'-7"	86	S1	39	#5	3	3'-7"	146				
S2	23	#5	2	7'-10"	188	S2	39	#5	2	7'-10"	319				
S3	8	#4	5	6'-6"	35	S3	12	#4	5	6'-6"	52				
S4	2	#4	4	4'-8"	6	S4	2	#4	4	4'-8"	6				
U1	24	#4	4	3'-8"	59	U1	40	#4	4	3'-8"	98				
V1	48	#4	STR	4'-0"	128	V1	80	#4	STR	4'-0"	214				
V2	14	#4	STR	4'-10"	45	V3	14	#4	STR	5'-0"	47				
REINFORCING STEEL					LBS.	1,619	REINFORCING STEEL					LBS.	2,459		
CLASS A CONCRETE BREAKDOWN :						CLASS A CONCRETE BREAKDOWN :									
POUR #1 - CAP & LOWER WING						CU. YDS.	7.7	POUR #1 - CAP & LOWER WING						CU. YDS.	12.0
POUR #2 - BACKWALL & UPPER WING						CU. YDS.	2.2	POUR #2 - BACKWALL & UPPER WING						CU. YDS.	3.3
POUR #3 - LATERAL GUIDE						CU. YDS.	0.1	POUR #3 - LATERAL GUIDE						CU. YDS.	0.1
TOTAL						CU. YDS.	10.0	TOTAL						CU. YDS.	15.4
HP 12 x 53 STEEL PILES						LIN. FT.	280	HP 12 x 53 STEEL PILES						LIN. FT.	420
NO. = 4								NO. = 6							
PILE REDRIVES						EA.	4	PILE REDRIVES						EA.	6

PROJECT NO. B-4434
 BERTIE COUNTY
 STATION: 15+31.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			39

NOTES

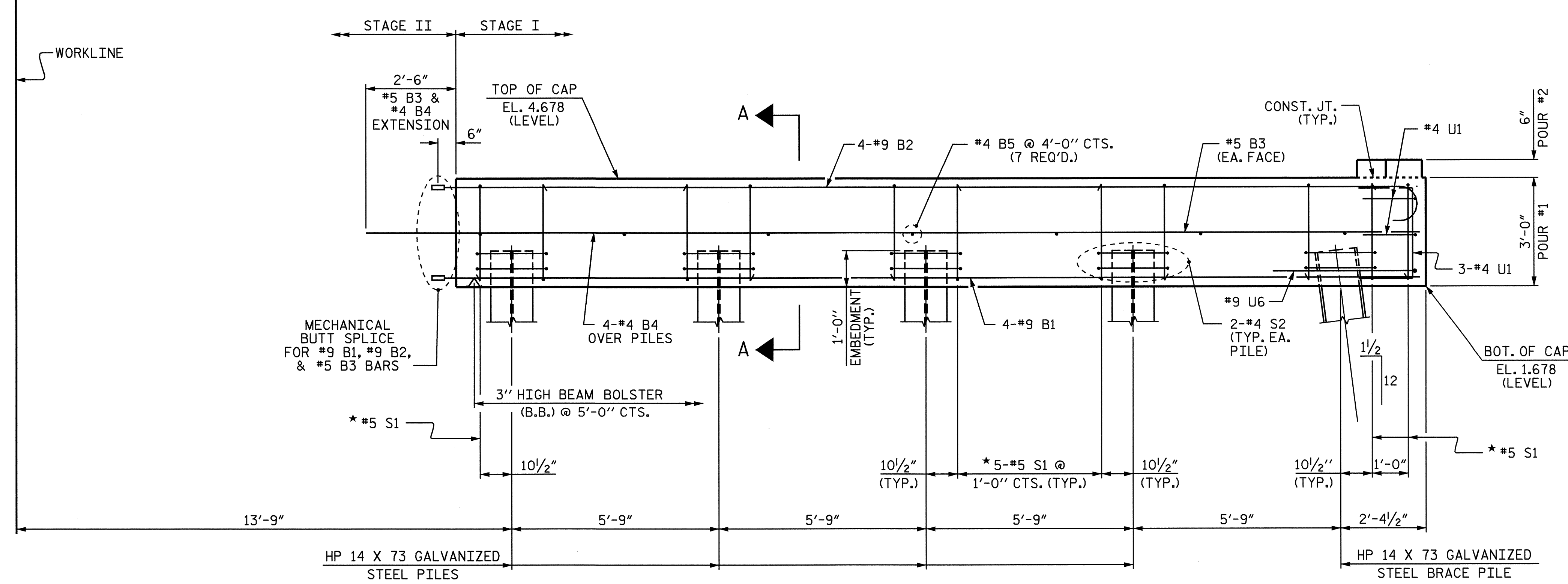
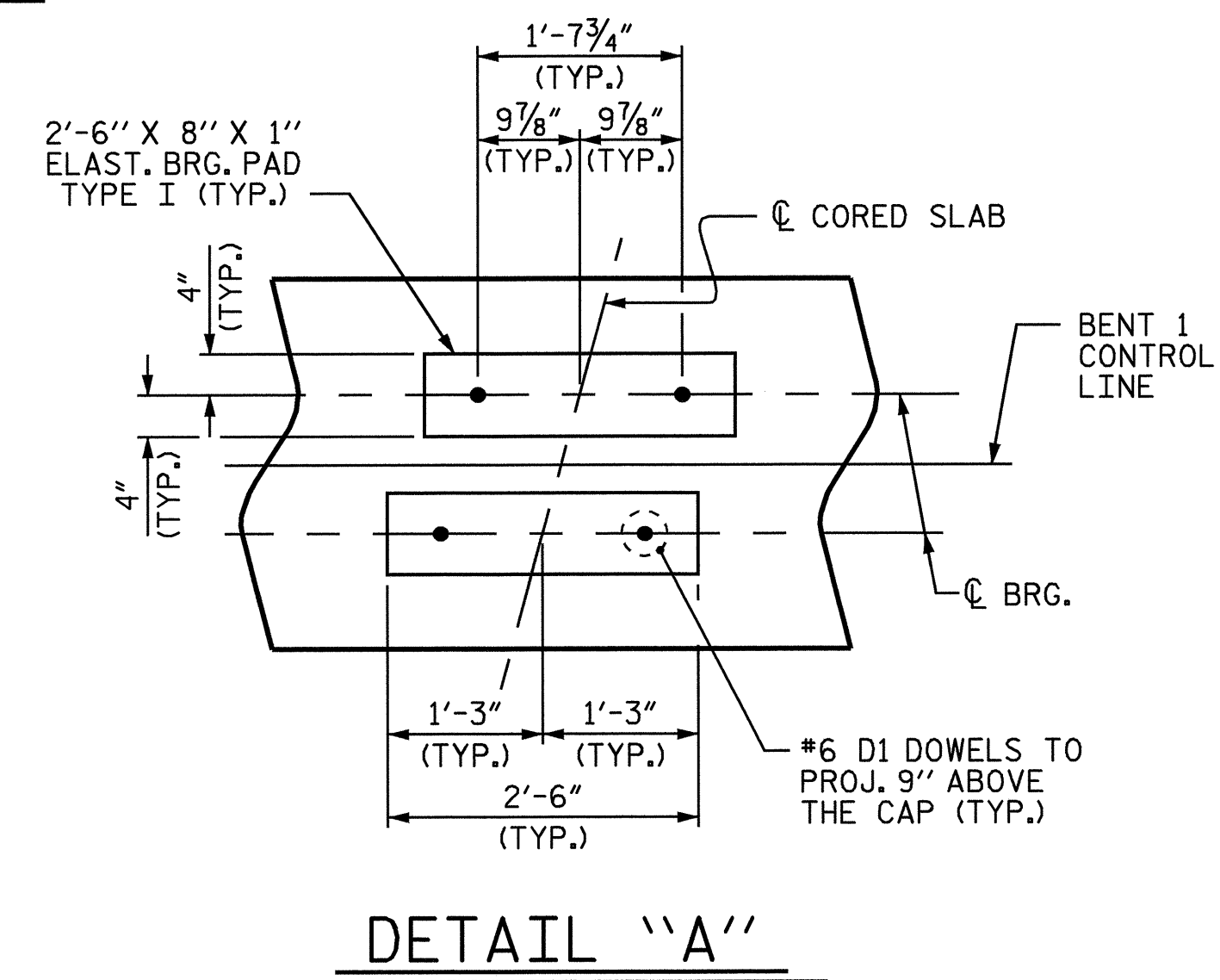
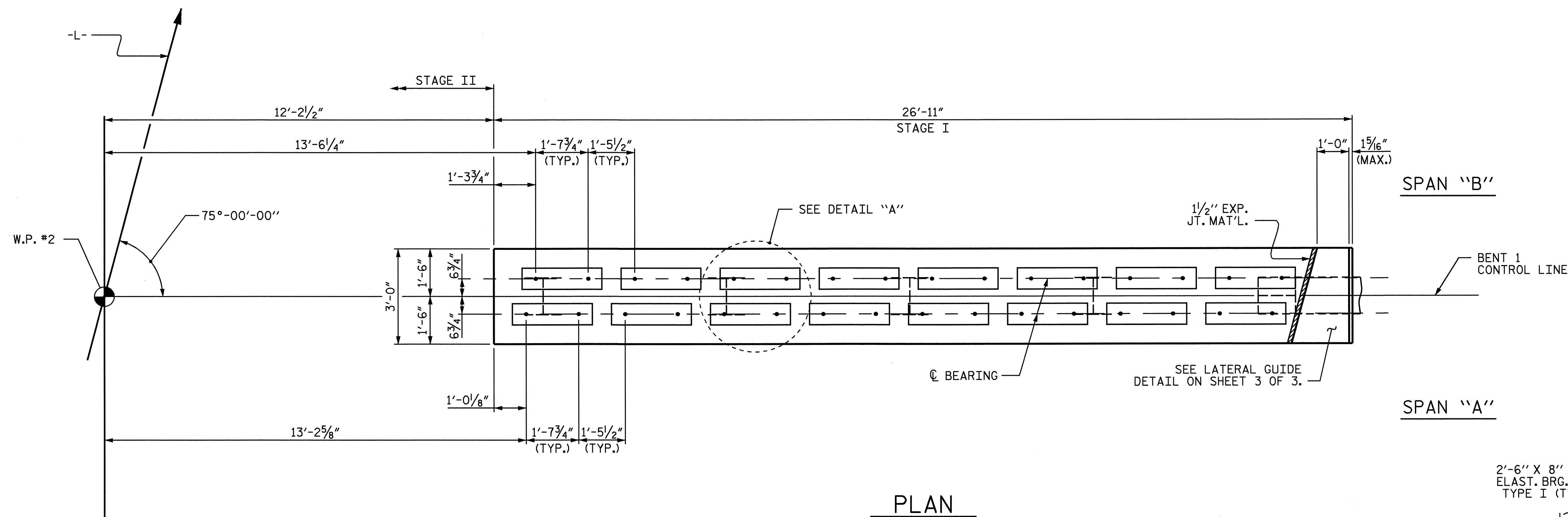
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

FOR PILE SPLICE DETAILS, SEE END BENT 2 SHEET 4 OF 4.

THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS IN THAT STAGE ARE IN PLACE.

THE USE OF DRILLED OR CORED HOLES IS NOT PERMITTED WHEN SETTING THE DOWELS ADJACENT TO THE CONSTRUCTION JOINT BETWEEN STAGES. INSTEAD, THESE DOWELS SHALL BE PUSHED INTO GREEN CONCRETE. ALL OTHER DOWEL HOLES MAY BE FORMED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

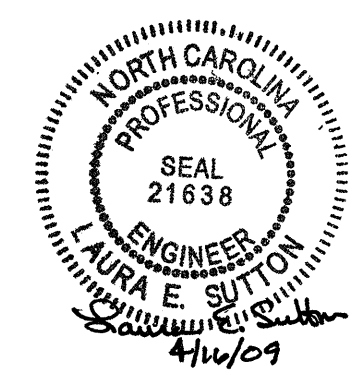
THE TOP 30 FEET OF EACH PILE, AT A MINIMUM, SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



ELEVATION
 * INVERT ALTERNATE STIRRUPS AS SHOWN.

PROJECT NO. B-4434
BERTIE COUNTY
 STATION: 15+31.00 -L-

SHEET 1 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 1
 STAGE I



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			39

DRAWN BY: L.E. SUTTON DATE: 1/29/09
 CHECKED BY: A.S. CALLAWAY DATE: 1/30/09

NOTES

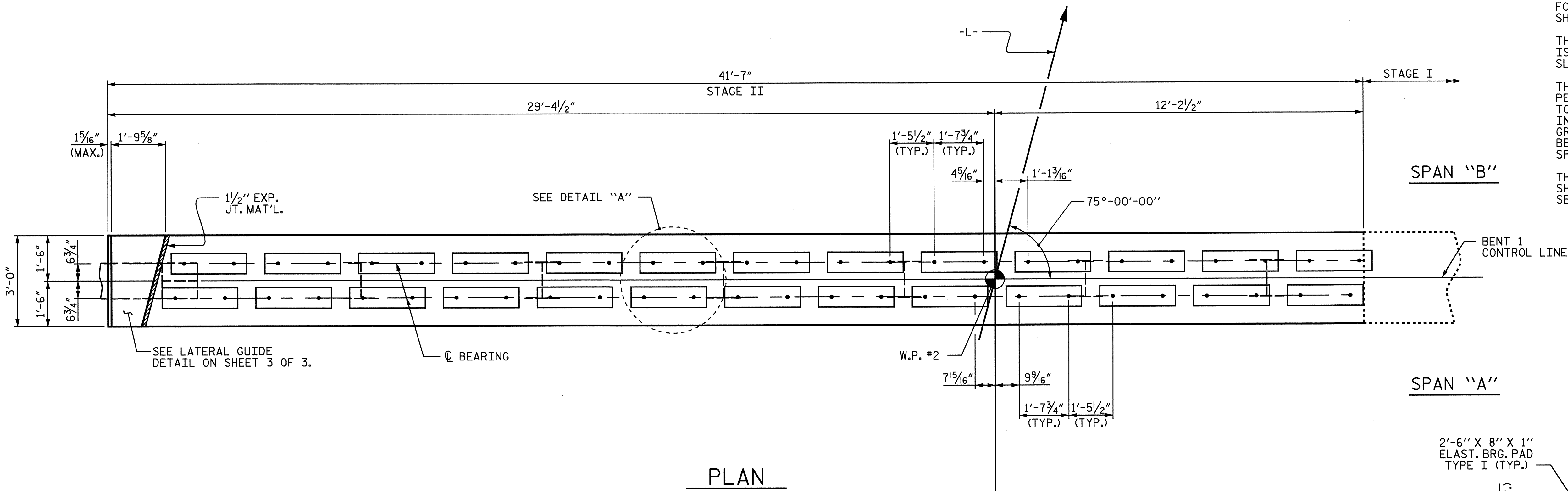
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

FOR PILE SPLICE DETAILS, SEE END BENT 2 SHEET 4 OF 4.

THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS IN THAT STAGE ARE IN PLACE.

THE USE OF DRILLED OR CORED HOLES IS NOT PERMITTED WHEN SETTING THE DOWELS ADJACENT TO THE CONSTRUCTION JOINT BETWEEN STAGES. INSTEAD, THESE DOWELS SHALL BE PUSHED INTO GREEN CONCRETE. ALL OTHER DOWEL HOLES MAY BE FORMED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

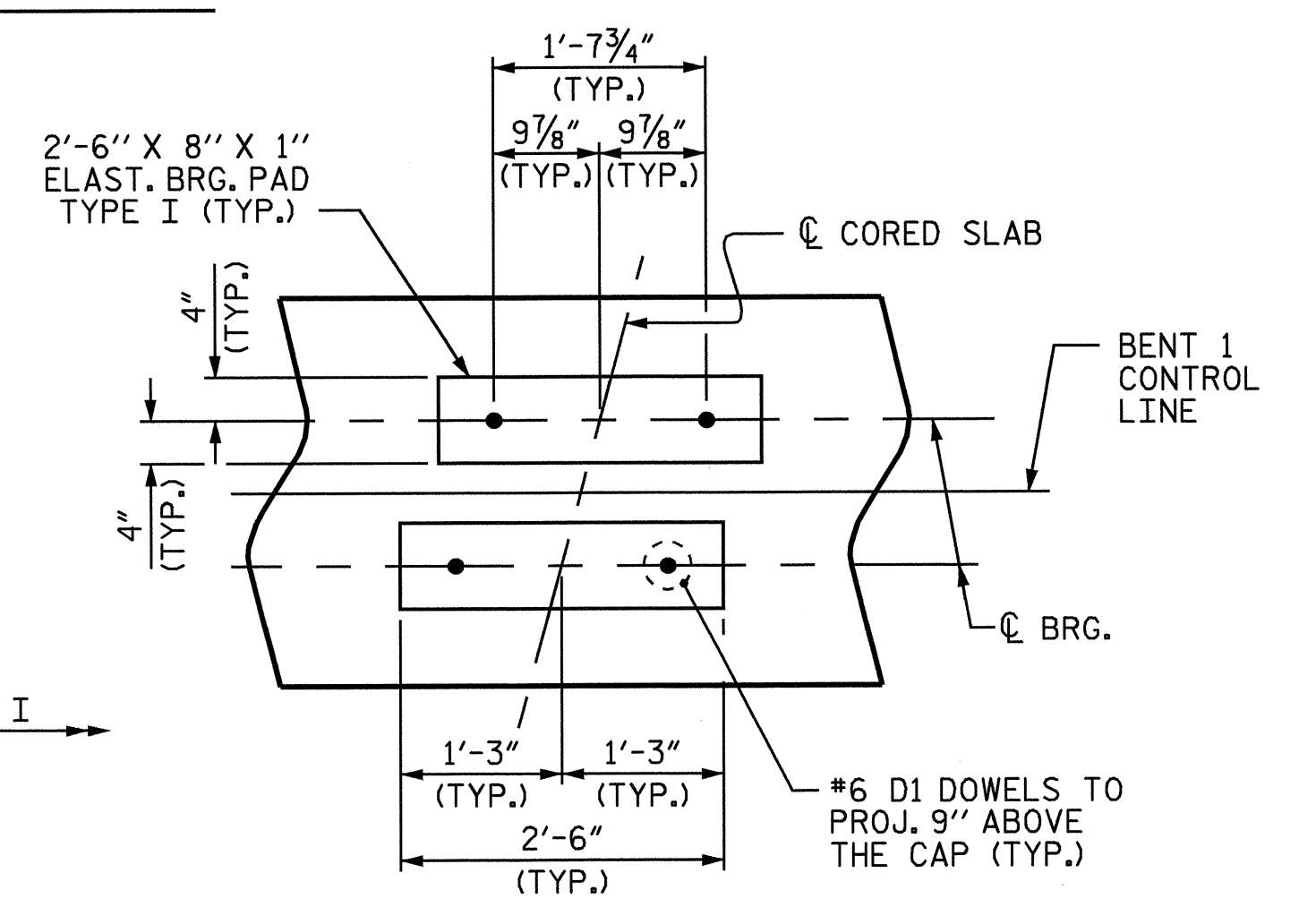
THE TOP 30 FEET OF EACH PILE, AT A MINIMUM, SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



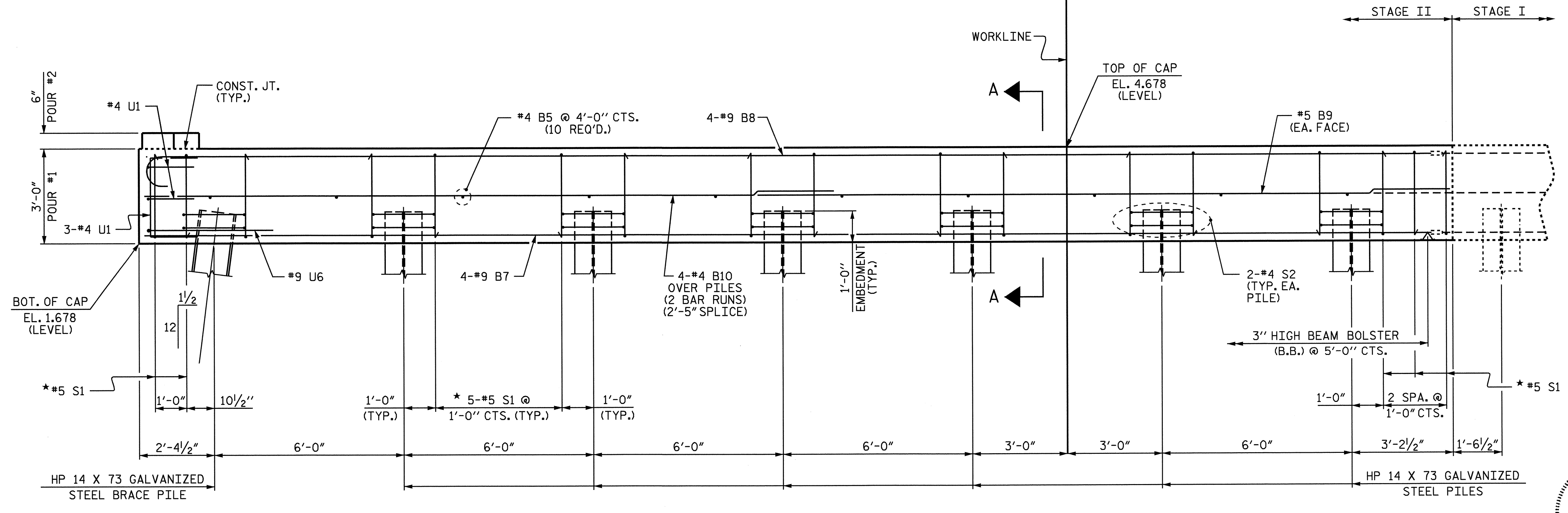
SPAN "B"

SPAN "A"

PLAN



DETAIL "A"



ELEVATION

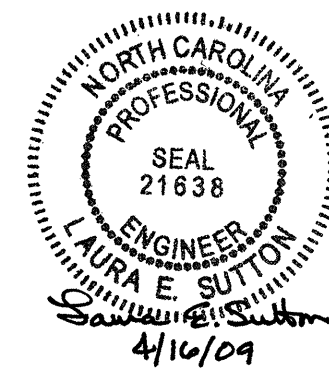
* INVERT ALTERNATE STIRRUPS AS SHOWN.

PROJECT NO. B-4434
 BERTIE COUNTY
 STATION: 15+31.00 -L-

SHEET 2 OF 3

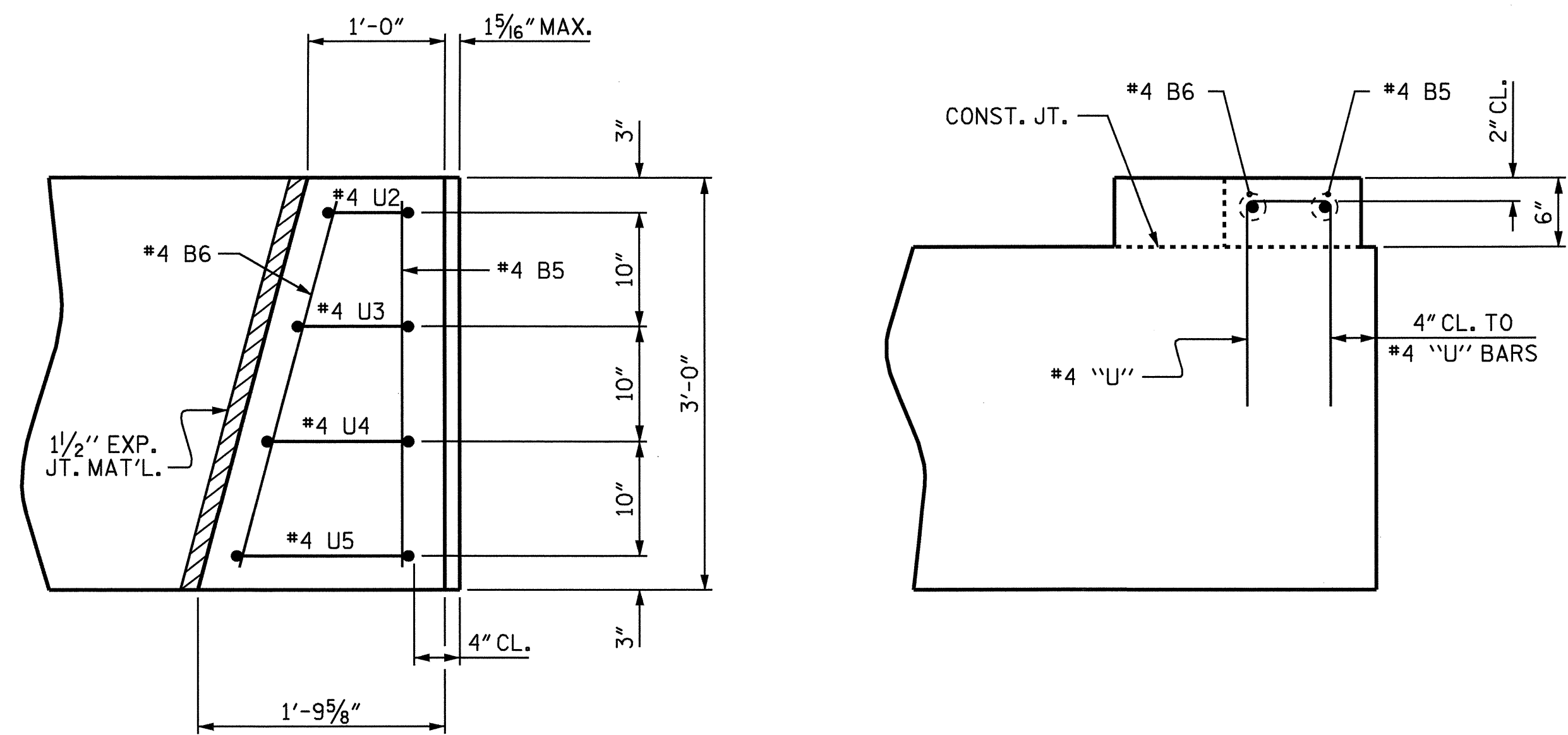
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT 1
 STAGE II



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:		
1			3			S-28	TOTAL SHEETS 39
2			4				

DRAWN BY : L.E. SUTTON DATE : 1/29/09
 CHECKED BY : A.S. CALLAWAY DATE : 1/30/09



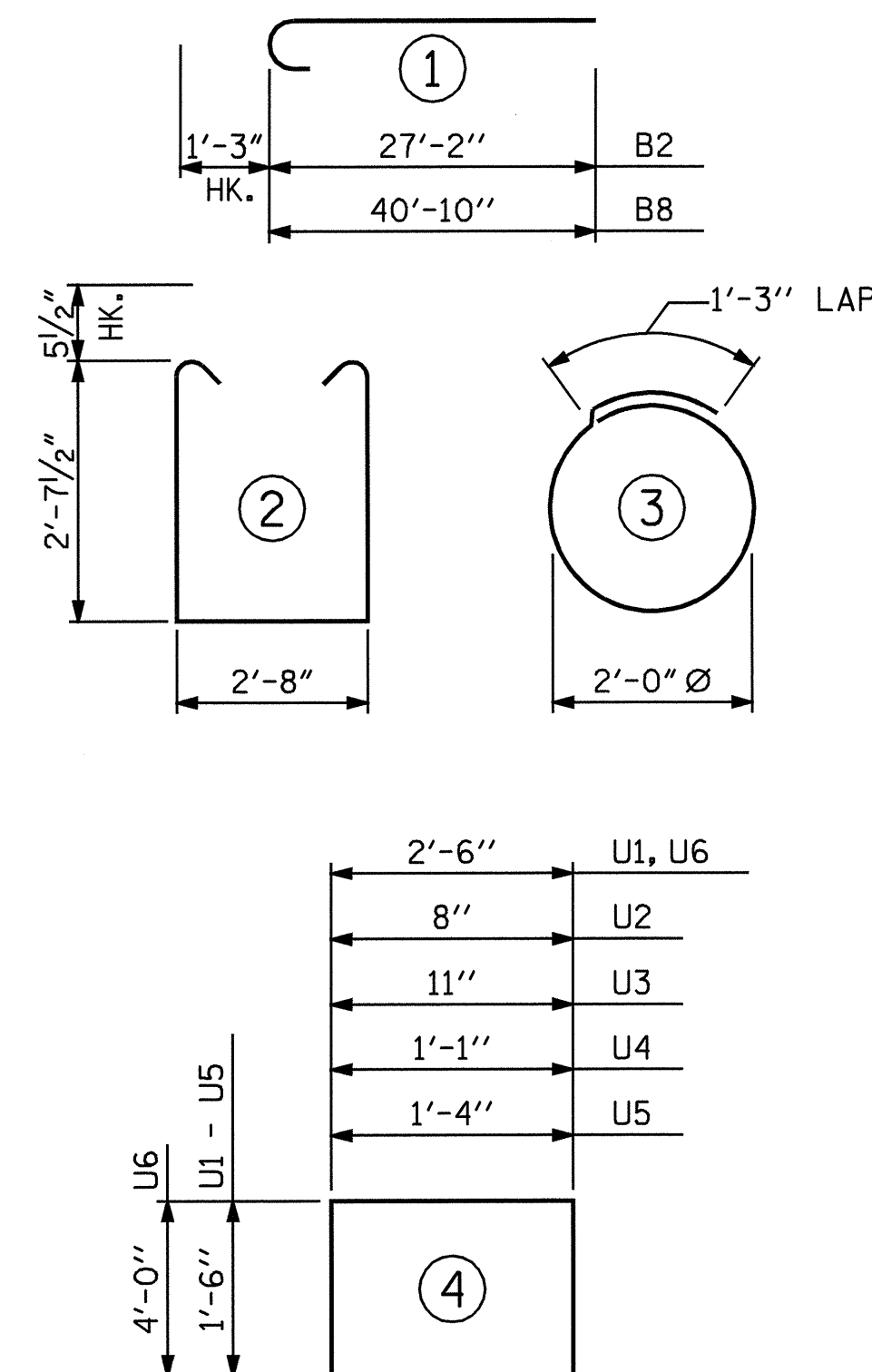
PLAN

ELEVATION

LATERAL GUIDE DETAIL

(RIGHT SIDE SHOWN, LEFT SIDE SIMILAR)

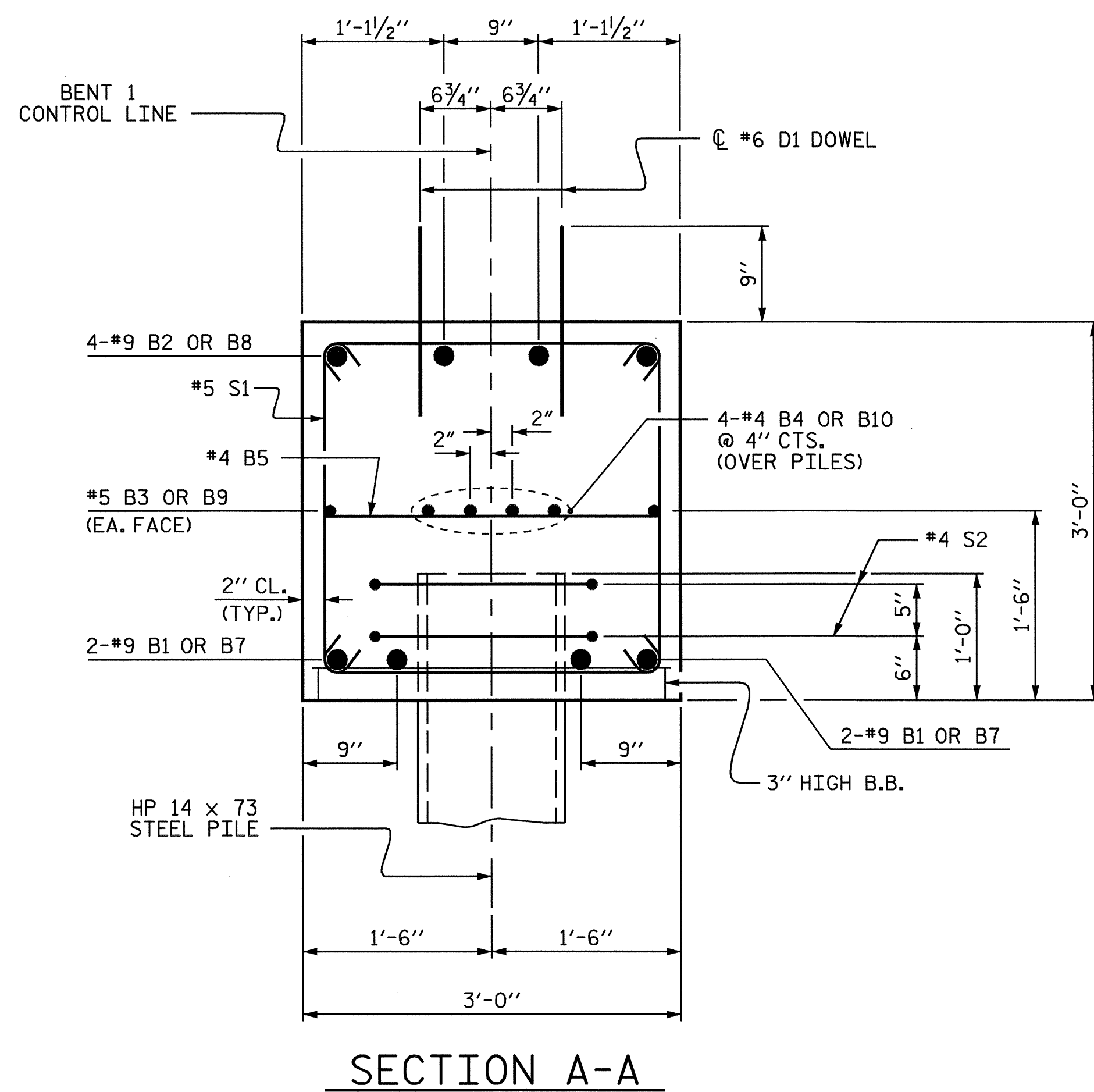
BAR TYPES



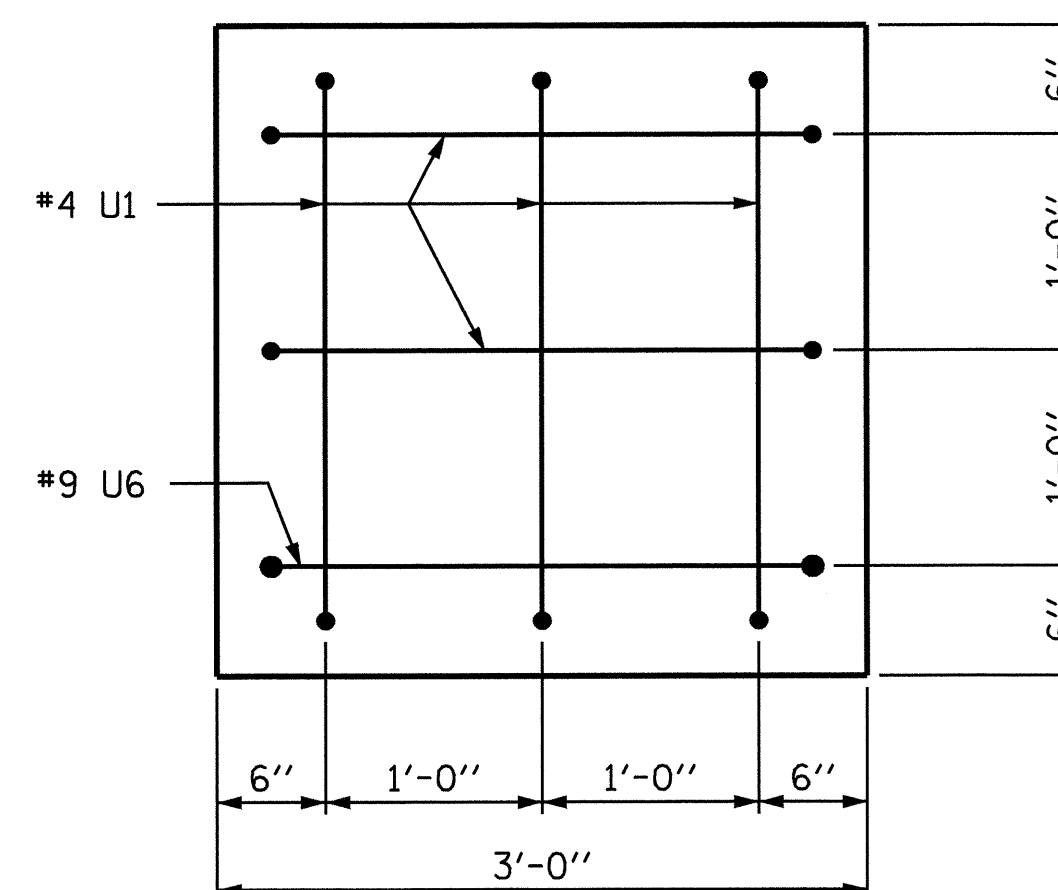
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL - BENT 1

STAGE I						STAGE II									
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT				
B1	4	#9	STR	27'-3"	371	B5	11	#4	STR	2'-8"	20				
B2	4	#9	1	28'-5"	386	B6	1	#4	STR	2'-9"	2				
B3	2	#5	STR	29'-3"	61	B7	4	#9	STR	40'-11"	556				
B4	4	#4	STR	29'-3"	78	B8	4	#9	1	42'-1"	572				
B5	8	#4	STR	2'-8"	14	B9	2	#5	STR	41'-4"	86				
B6	1	#4	STR	2'-9"	2	B10	8	#4	STR	21'-11"	117				
D1	32	#6	STR	1'-6"	72	D1	52	#6	STR	1'-6"	117				
S1	23	#5	2	8'-10"	212	S1	35	#5	2	8'-10"	322				
S2	10	#4	3	7'-6"	50	S2	14	#4	3	7'-6"	70				
U1	5	#4	4	5'-6"	18	U1	5	#4	4	5'-6"	18				
U2	1	#4	4	3'-8"	2	U2	1	#4	4	3'-8"	2				
U3	1	#4	4	3'-11"	3	U3	1	#4	4	3'-11"	3				
U4	1	#4	4	4'-1"	3	U4	1	#4	4	4'-1"	3				
U5	1	#4	4	4'-4"	3	U5	1	#4	4	4'-4"	3				
U6	1	#9	4	10'-6"	36	U6	1	#9	4	10'-6"	36				
REINFORCING STEEL					LBS.	1,311	REINFORCING STEEL					LBS.	1,927		
CLASS A CONCRETE BREAKDOWN:						CLASS A CONCRETE BREAKDOWN:									
POUR #1 - CAP						CU. YDS.	9.0	POUR #1 - CAP						CU. YDS.	13.9
POUR #2 - LATERAL GUIDES						CU. YDS.	0.1	POUR #2 - LATERAL GUIDES						CU. YDS.	0.1
TOTAL						CU. YDS.	9.1	TOTAL						CU. YDS.	14.0
HP 14 x 73 GALVANIZED STEEL PILES						HP 14 x 73 GALVANIZED STEEL PILES									
NO. = 5						LIN. FT.	425	NO. = 7						LIN. FT.	595
PILE REDRIVES						EA.	5	PILE REDRIVES						EA.	7



SECTION A-A



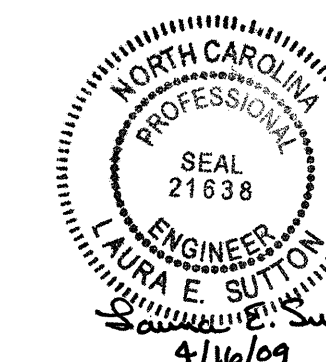
END VIEW

(TYP. BOTH ENDS)

PROJECT NO. B-4434
BERTIE COUNTY
 STATION: 15+31.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 1



DRAWN BY: L.E. SUTTON DATE: 1/29/09
 CHECKED BY: A.S. CALLAWAY DATE: 1/30/09

09-APR-2009 09:44
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 lsutton

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			39

NOTES

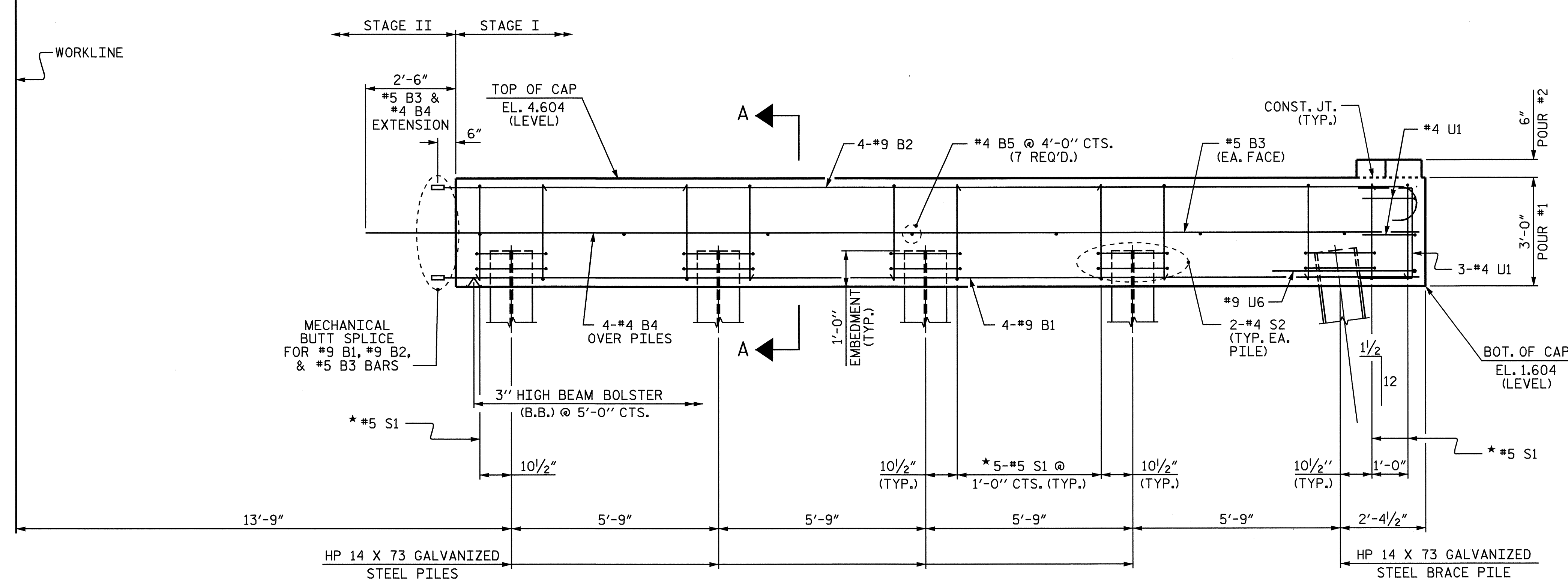
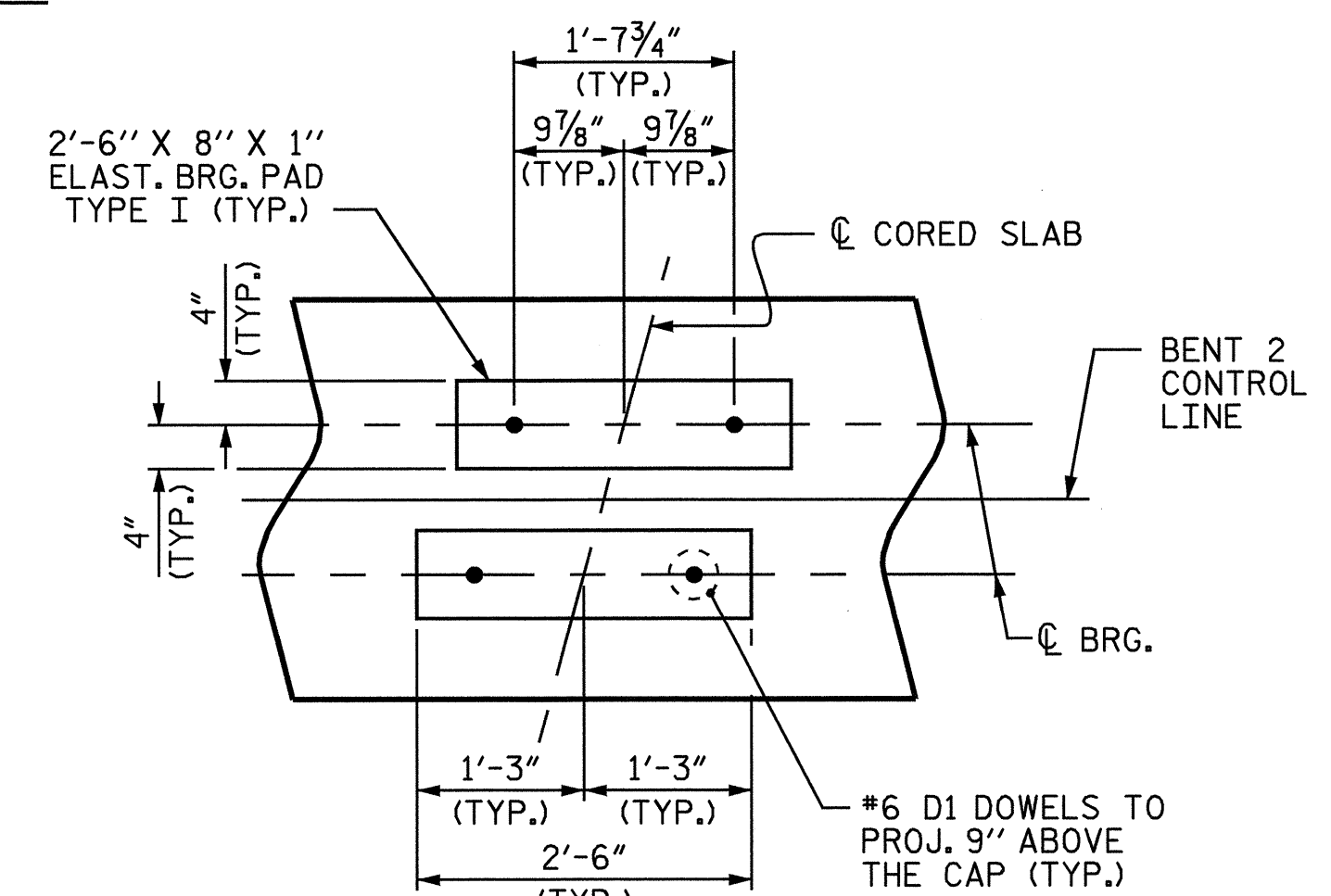
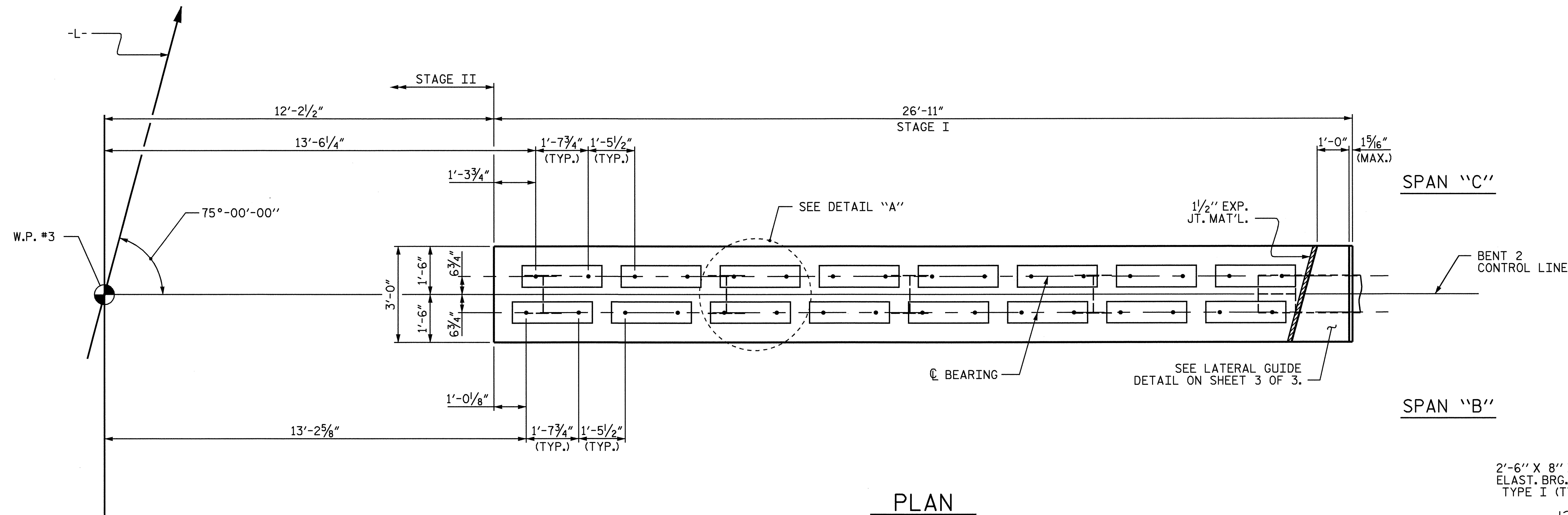
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

FOR PILE SPLICE DETAILS, SEE END BENT 2 SHEET 4 OF 4.

THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS IN THAT STAGE ARE IN PLACE.

THE USE OF DRILLED OR CORED HOLES IS NOT PERMITTED WHEN SETTING THE DOWELS ADJACENT TO THE CONSTRUCTION JOINT BETWEEN STAGES. INSTEAD, THESE DOWELS SHALL BE PUSHED INTO GREEN CONCRETE. ALL OTHER DOWEL HOLES MAY BE FORMED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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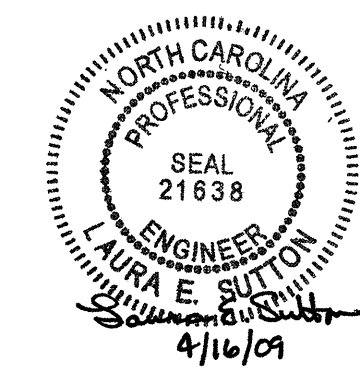


ELEVATION
* INVERT ALTERNATE STIRRUPS AS SHOWN.

PROJECT NO. B-4434
BERTIE COUNTY
STATION: 15+31.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENT 2
STAGE I



DRAWN BY : L.E. SUTTON DATE : 1/29/09
CHECKED BY : A.S. CALLAWAY DATE : 1/30/09

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS
2			4			39

NOTES

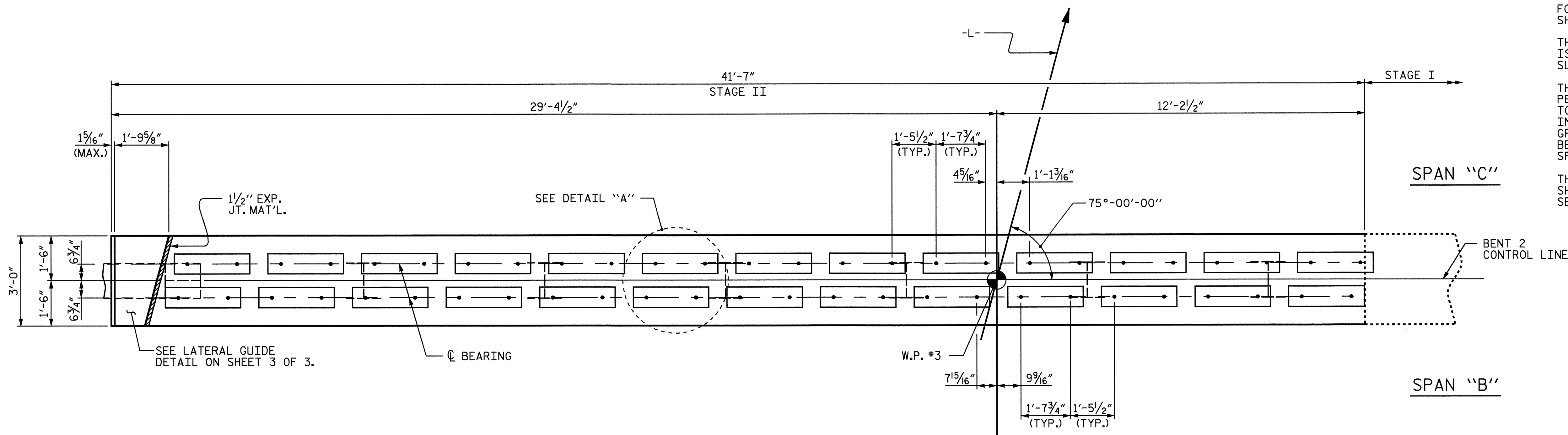
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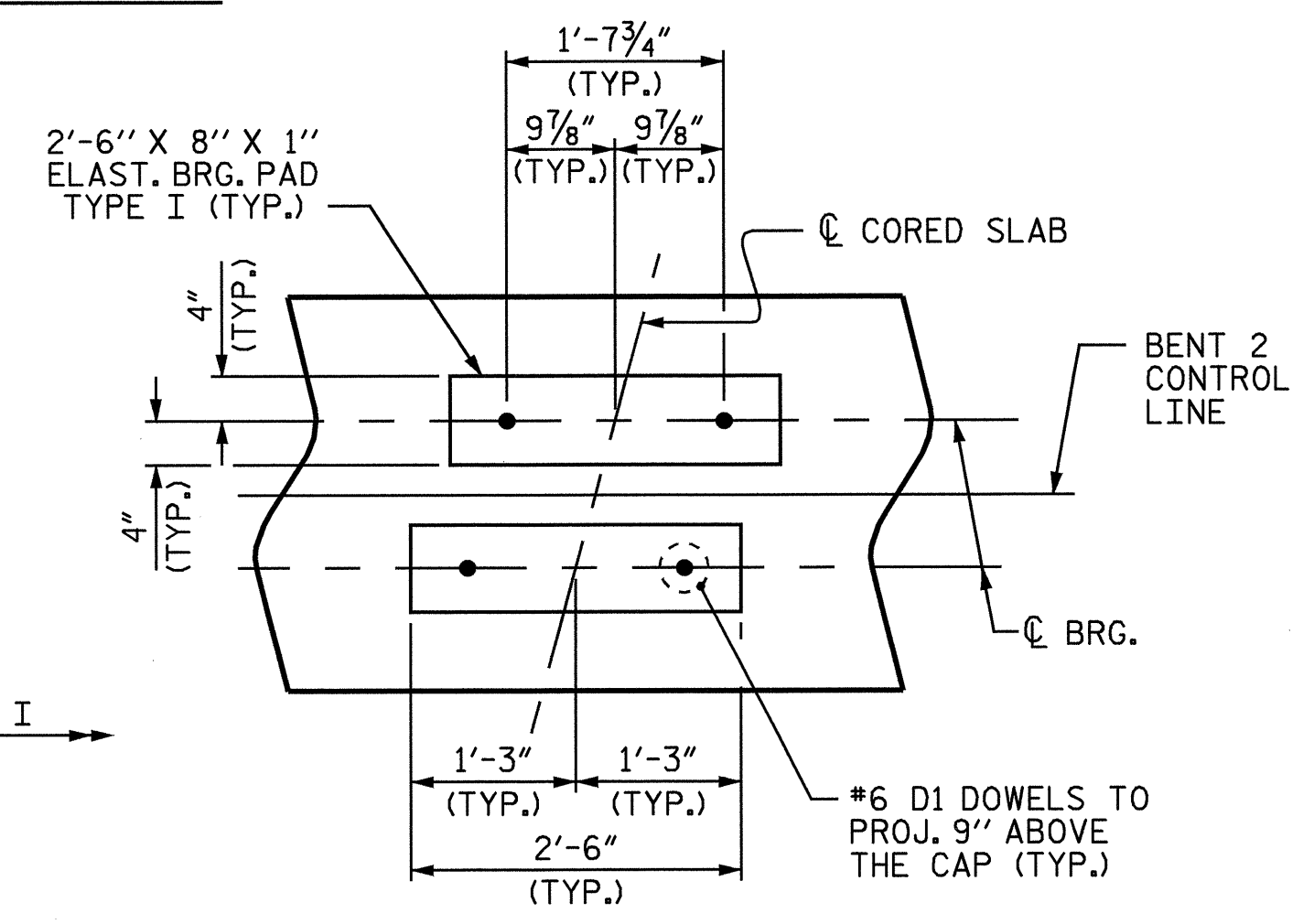
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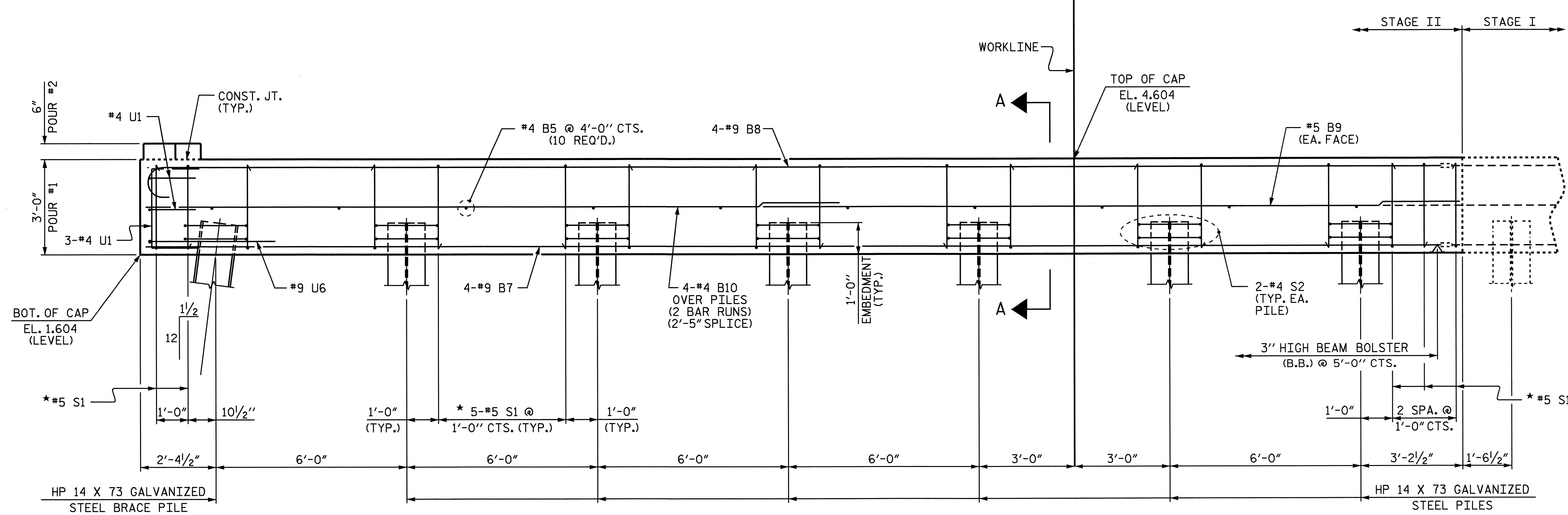


PLAN

SPAN "B"



DETAIL "A"



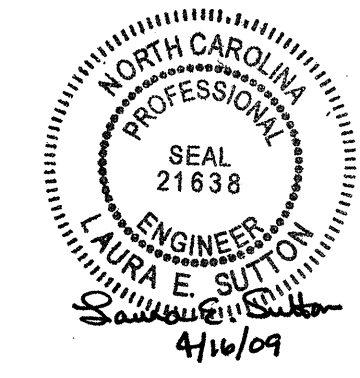
ELEVATION

* INVERT ALTERNATE STIRRUPS AS SHOWN.

PROJECT NO. B-4434
BERTIE COUNTY
 STATION: 15+31.00 -L-

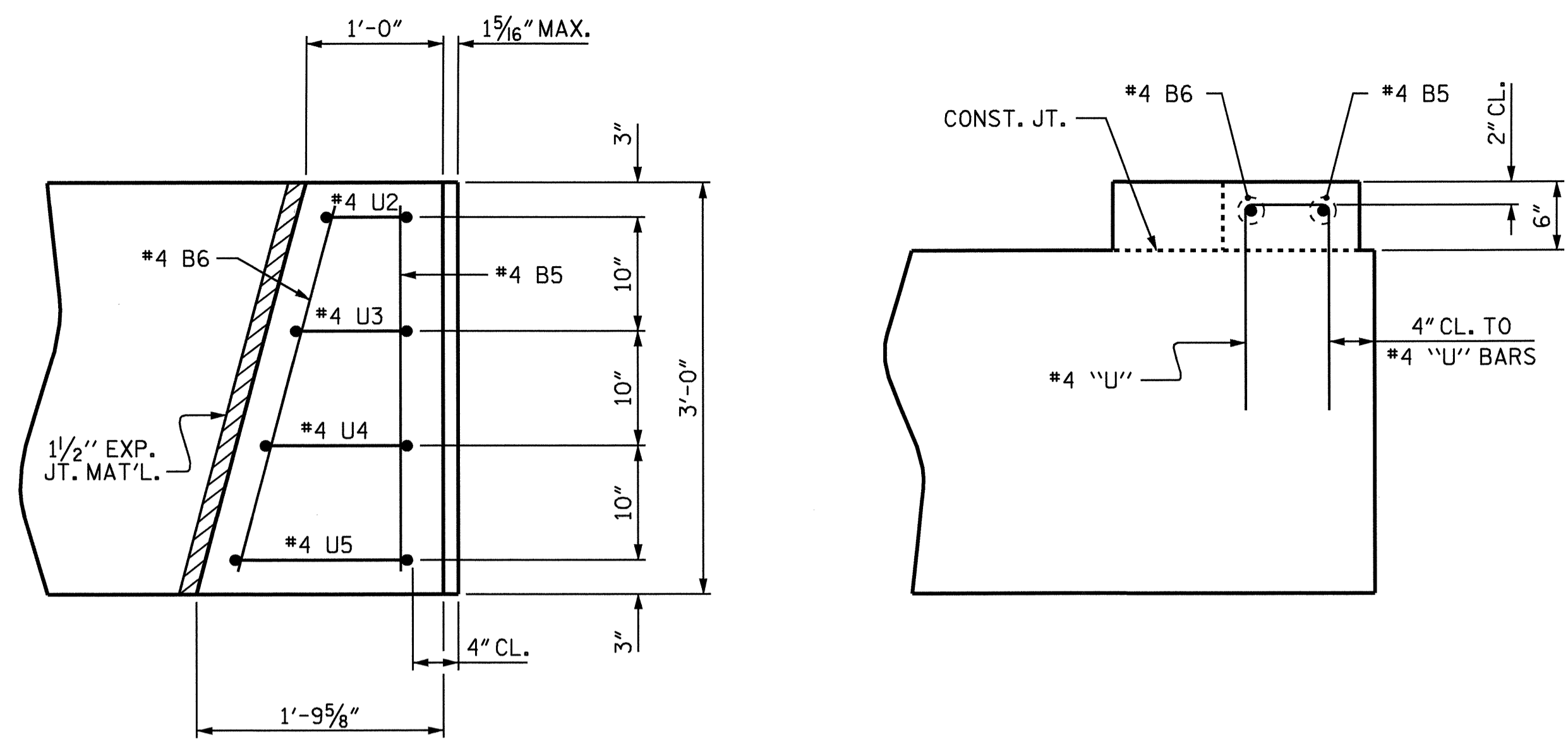
SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
BENT 2
STAGE II



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-31
1			3			TOTAL SHEETS
2			4			39

DRAWN BY: L.E. SUTTON DATE: 1/29/09
 CHECKED BY: A.S. CALLAWAY DATE: 1/30/09

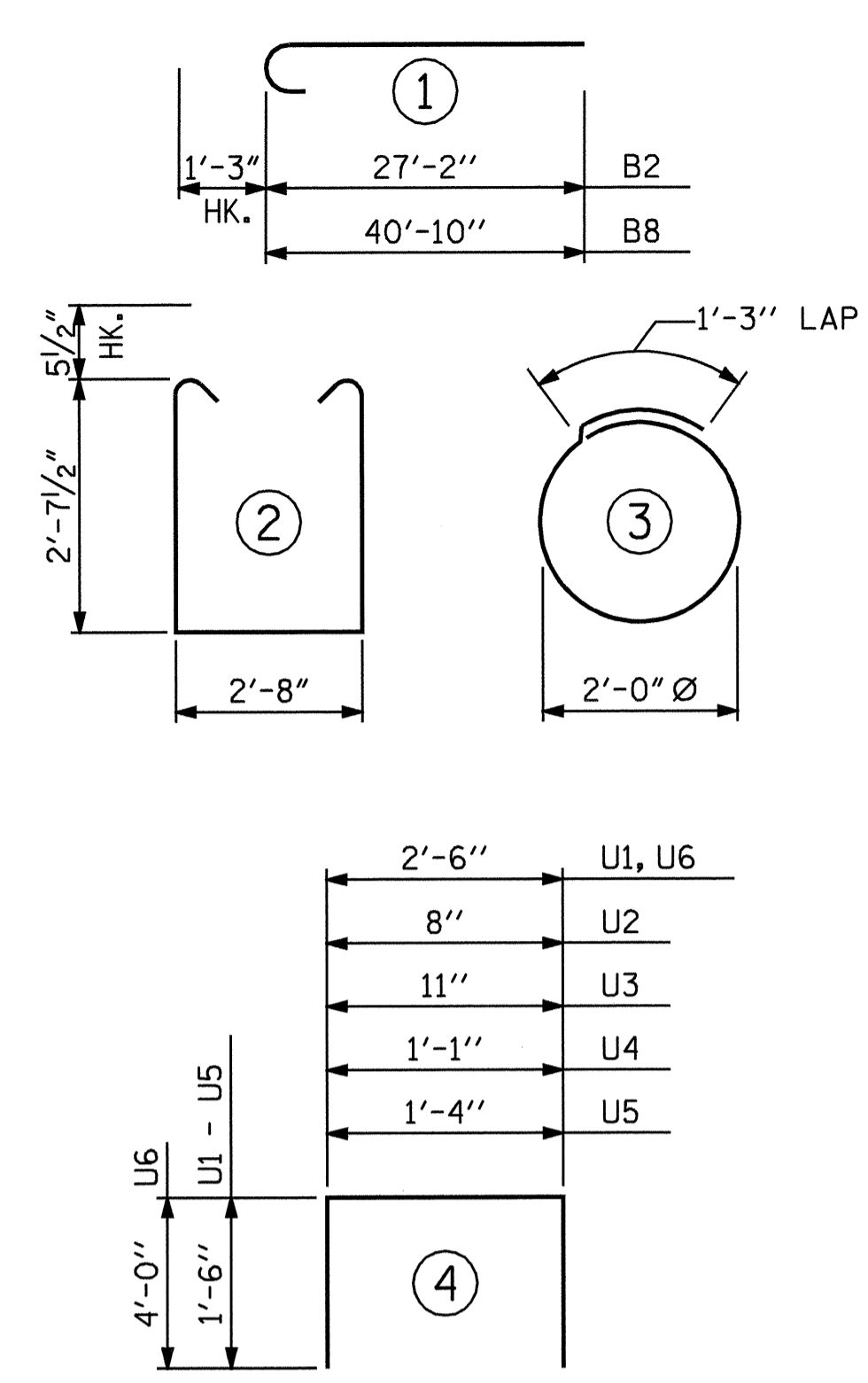


PLAN

ELEVATION

LATERAL GUIDE DETAIL
(RIGHT SIDE SHOWN, LEFT SIDE SIMILAR)

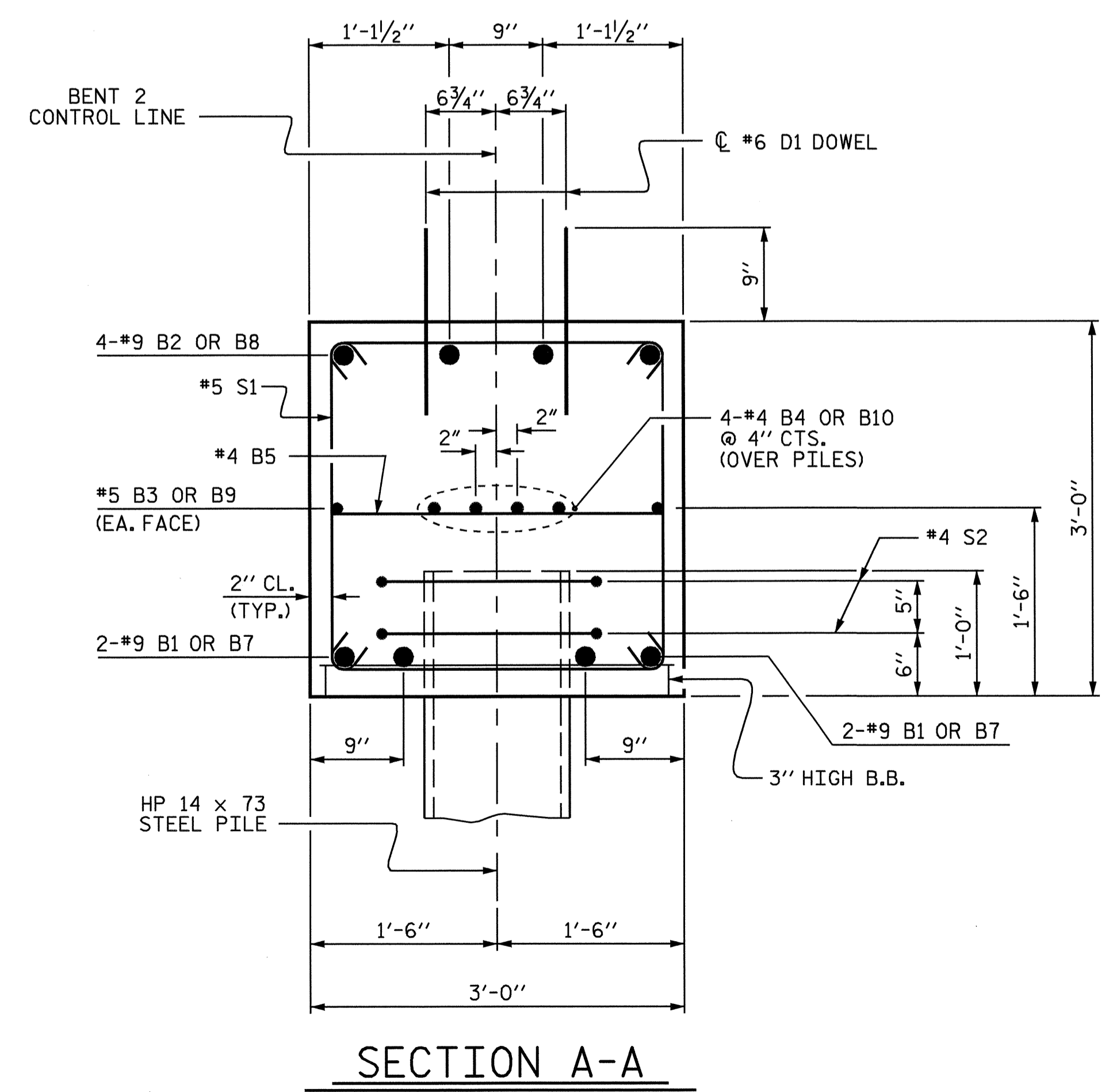
BAR TYPES



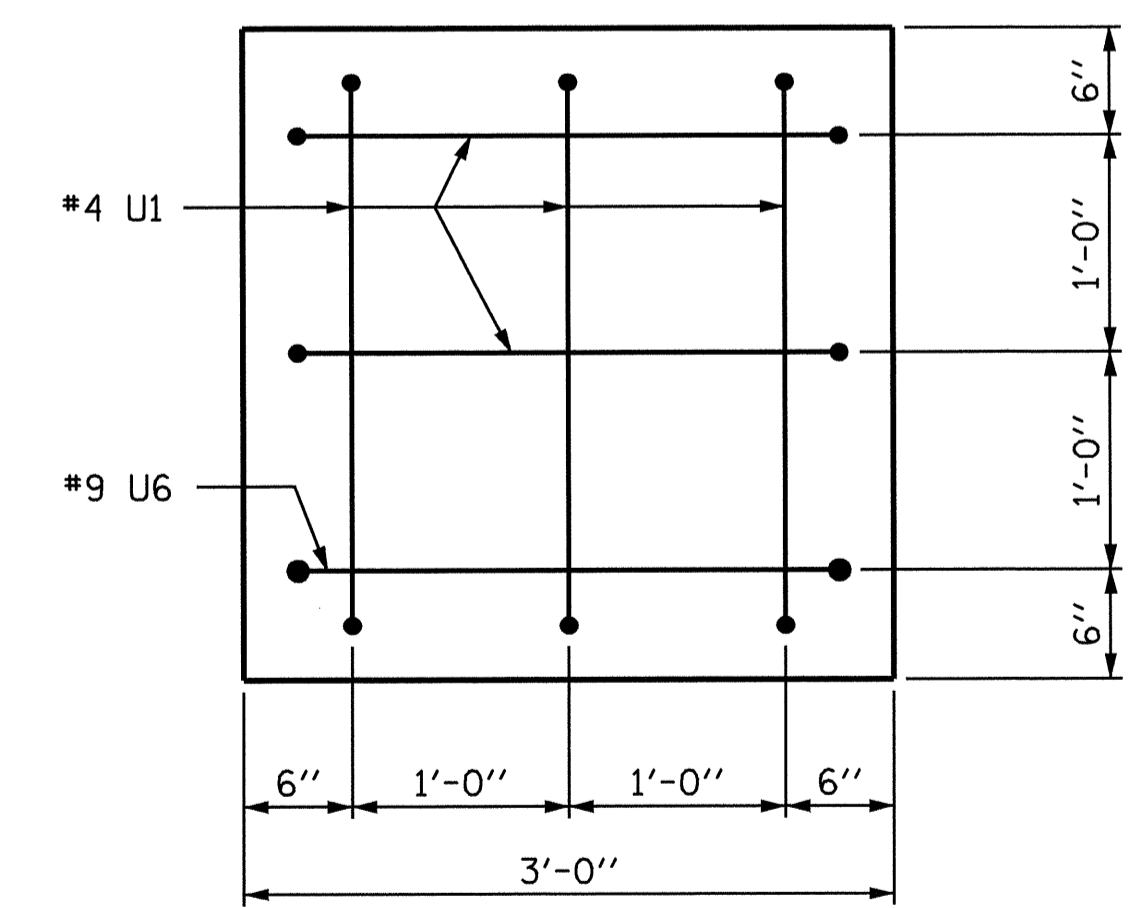
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL - BENT 2

STAGE I						STAGE II									
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT				
B1	4	#9	STR	27'-3"	371	B5	11	#4	STR	2'-8"	20				
B2	4	#9	1	28'-5"	386	B6	1	#4	STR	2'-9"	2				
B3	2	#5	STR	29'-3"	61	B7	4	#9	STR	40'-11"	556				
B4	4	#4	STR	29'-3"	78	B8	4	#9	1	42'-1"	572				
B5	8	#4	STR	2'-8"	14	B9	2	#5	STR	41'-4"	86				
B6	1	#4	STR	2'-9"	2	B10	8	#4	STR	21'-11"	117				
D1	32	#6	STR	1'-6"	72	D1	52	#6	STR	1'-6"	117				
S1	23	#5	2	8'-10"	212	S1	35	#5	2	8'-10"	322				
S2	10	#4	3	7'-6"	50	S2	14	#4	3	7'-6"	70				
U1	5	#4	4	5'-6"	18	U1	5	#4	4	5'-6"	18				
U2	1	#4	4	3'-8"	2	U2	1	#4	4	3'-8"	2				
U3	1	#4	4	3'-11"	3	U3	1	#4	4	3'-11"	3				
U4	1	#4	4	4'-1"	3	U4	1	#4	4	4'-1"	3				
U5	1	#4	4	4'-4"	3	U5	1	#4	4	4'-4"	3				
U6	1	#9	4	10'-6"	36	U6	1	#9	4	10'-6"	36				
REINFORCING STEEL					LBS.	1,311	REINFORCING STEEL					LBS.	1,927		
CLASS A CONCRETE BREAKDOWN:						CLASS A CONCRETE BREAKDOWN:									
POUR #1 - CAP						CU. YDS.	9.0	POUR #1 - CAP						CU. YDS.	13.9
POUR #2 - LATERAL GUIDES						CU. YDS.	0.1	POUR #2 - LATERAL GUIDES						CU. YDS.	0.1
TOTAL						CU. YDS.	9.1	TOTAL						CU. YDS.	14.0
HP 14 x 73 GALVANIZED STEEL PILES						HP 14 x 73 GALVANIZED STEEL PILES									
NO. = 5						LIN. FT.	425	NO. = 7						LIN. FT.	595
PILE REDRIVES						EA.	5	PILE REDRIVES						EA.	7



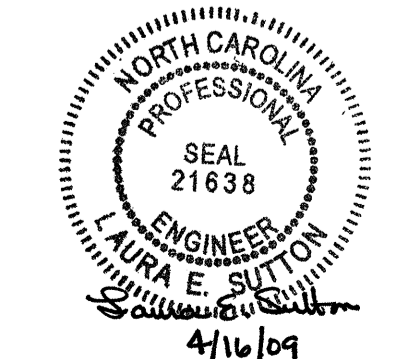
SECTION A-A



END VIEW
(TYP. BOTH ENDS)

PROJECT NO. B-4434
BERTIE COUNTY
STATION: 15+31.00 -L-
SHEET 3 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-32 TOTAL SHEETS 39



DRAWN BY: L.E. SUTTON DATE: 1/29/09
CHECKED BY: A.S. CALLAWAY DATE: 1/30/09

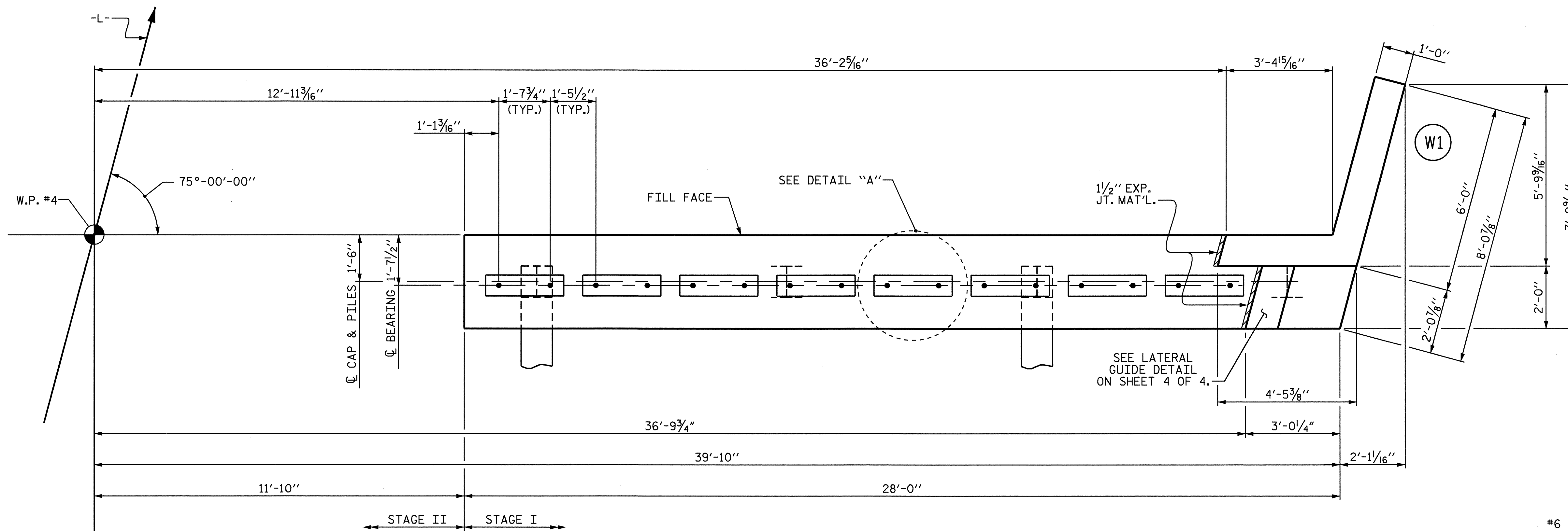
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

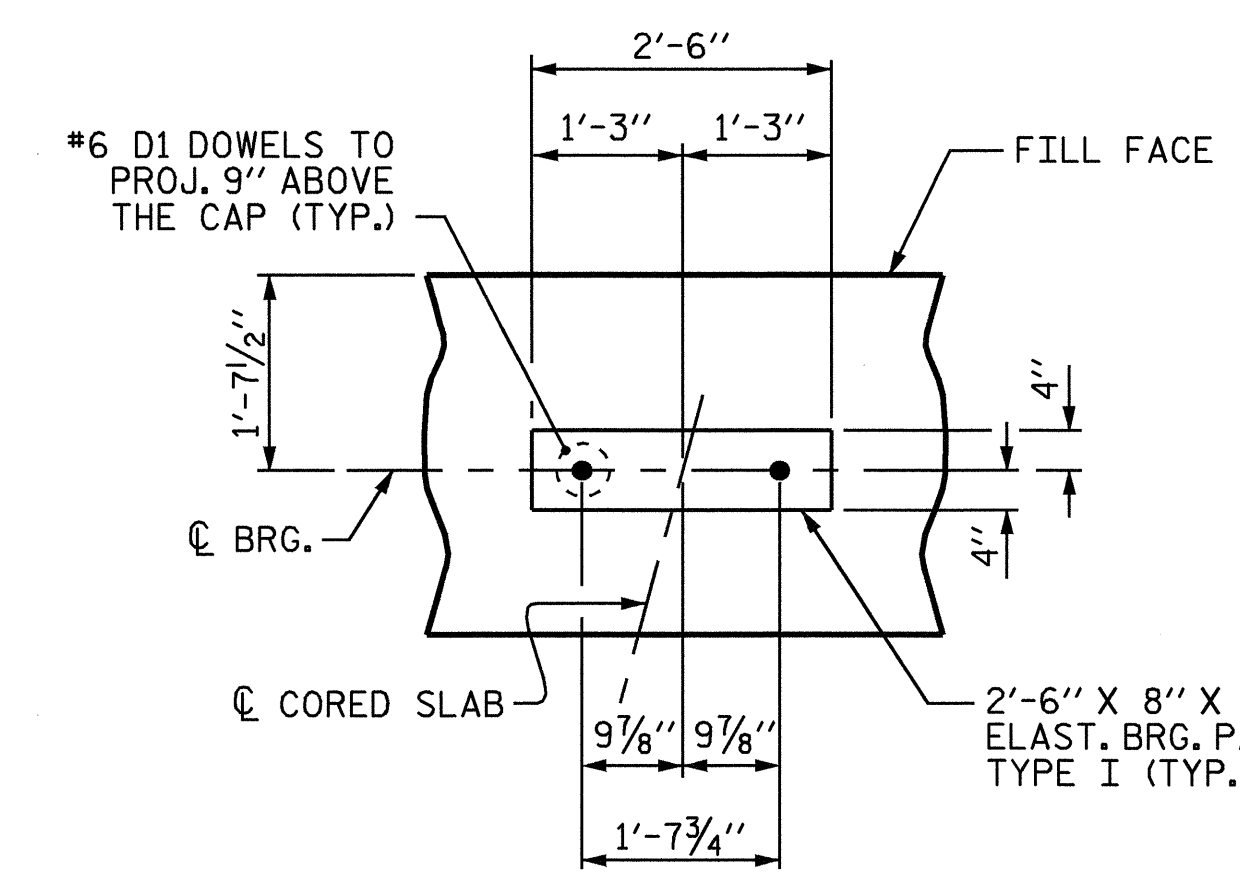
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS IN THAT STAGE ARE IN PLACE.

THE USE OF DRILLED OR CORED HOLES IS NOT PERMITTED WHEN SETTING THE DOWELS ADJACENT TO THE CONSTRUCTION JOINT BETWEEN STAGES. INSTEAD, THESE DOWELS SHALL BE PUSHED INTO GREEN CONCRETE. ALL OTHER DOWEL HOLES MAY BE FORMED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

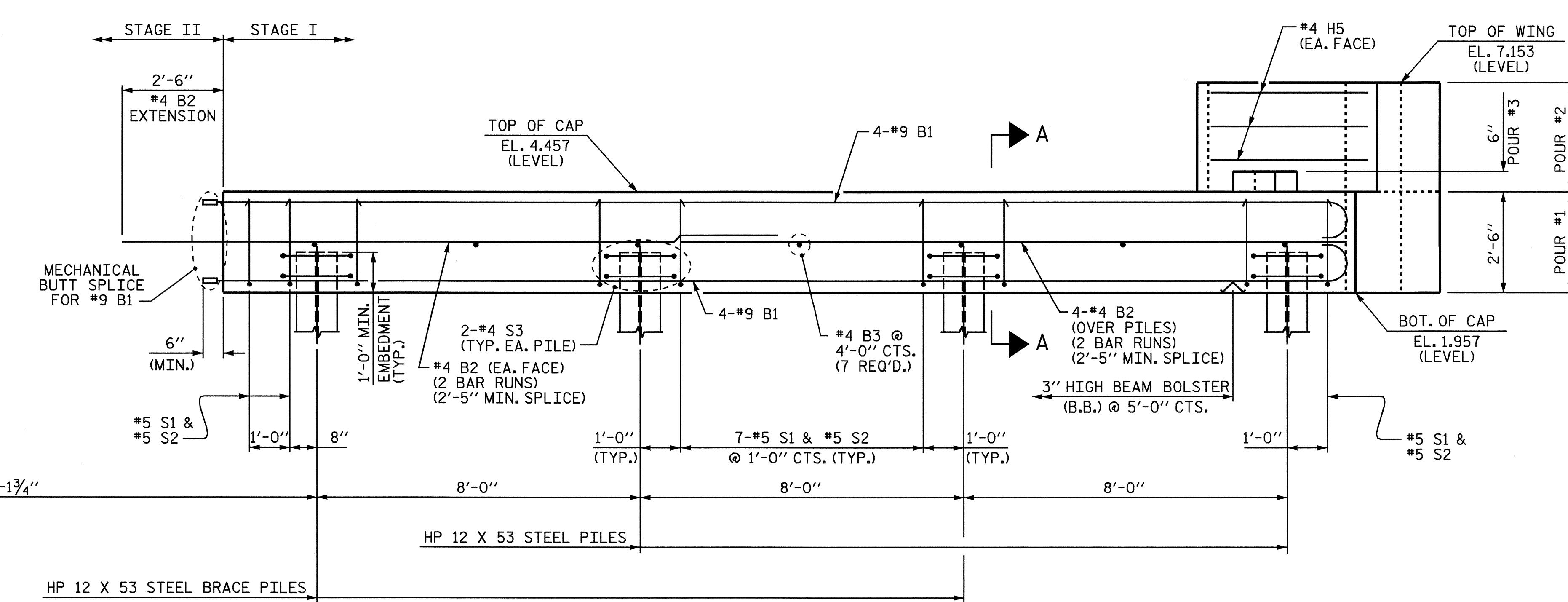
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.



PLAN



DETAIL "A"
(TYP. EA. CORED SLAB UNIT)

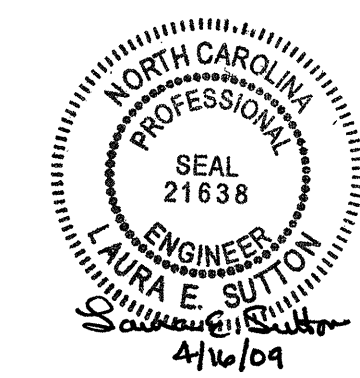


ELEVATION

PROJECT NO. B-4434
BERTIE COUNTY
 STATION: 15+31.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
END BENT 2 STAGE I					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-33
TOTAL SHEETS					39



DRAWN BY: A.S. CALLAWAY DATE: 12/17/08
 CHECKED BY: L.E. SUTTON DATE: 1/23/09

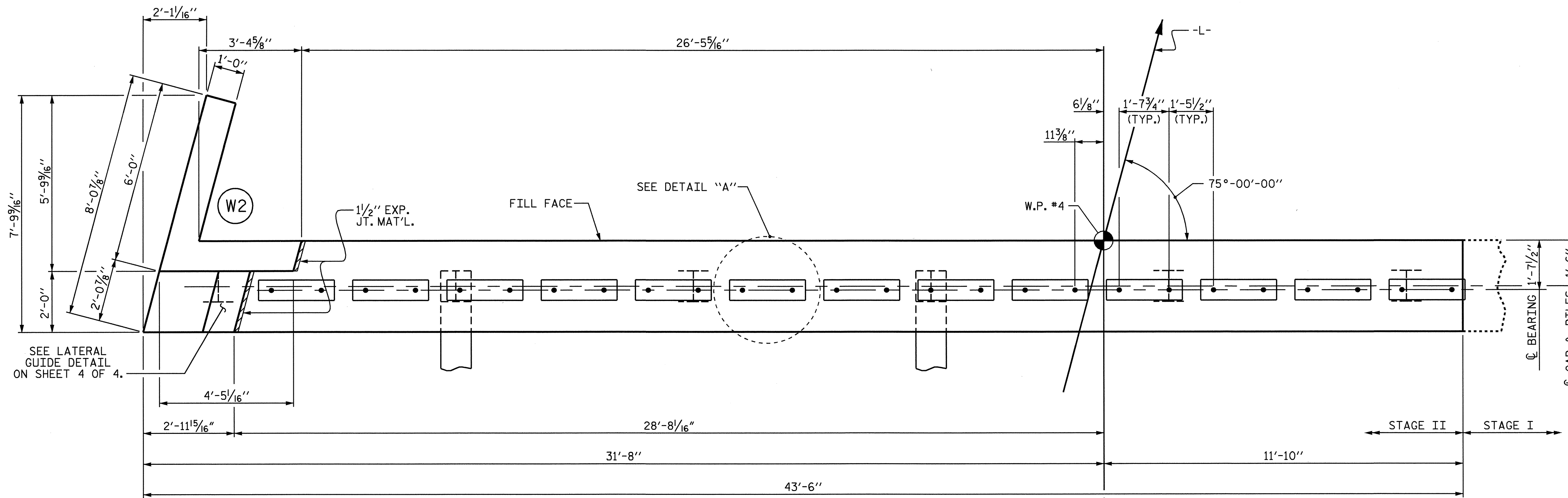
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

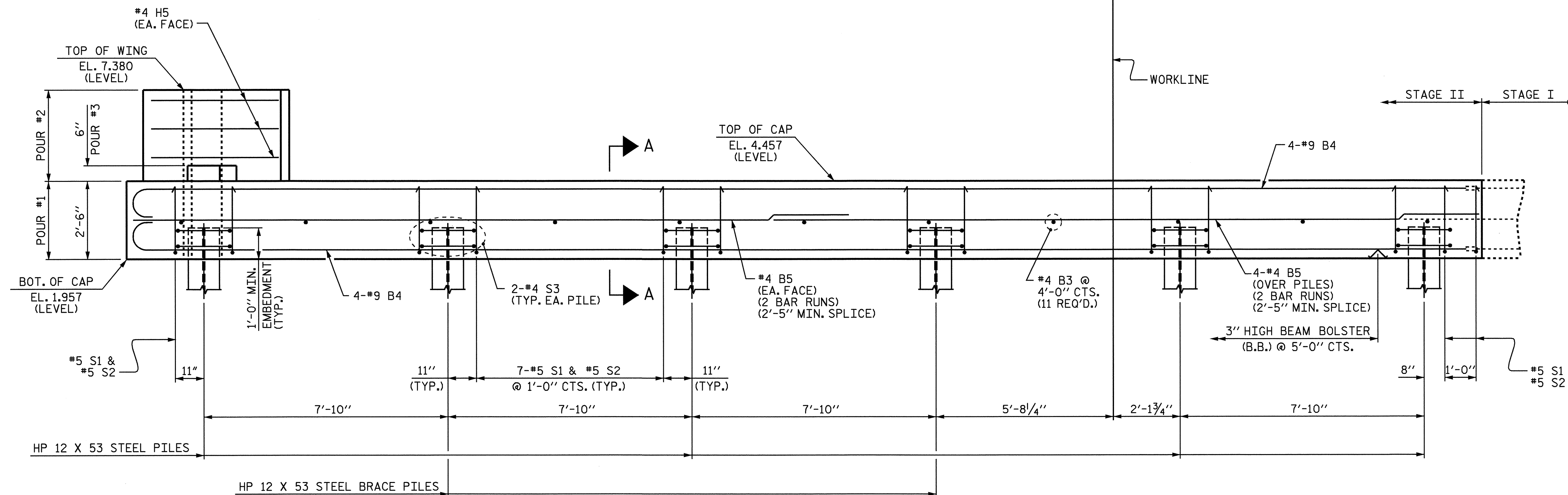
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS IN THAT STAGE ARE IN PLACE.

THE USE OF DRILLED OR CORED HOLES IS NOT PERMITTED WHEN SETTING THE DOWELS ADJACENT TO THE CONSTRUCTION JOINT BETWEEN STAGES. INSTEAD, THESE DOWELS SHALL BE PUSHED INTO GREEN CONCRETE. ALL OTHER DOWEL HOLES MAY BE FORMED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

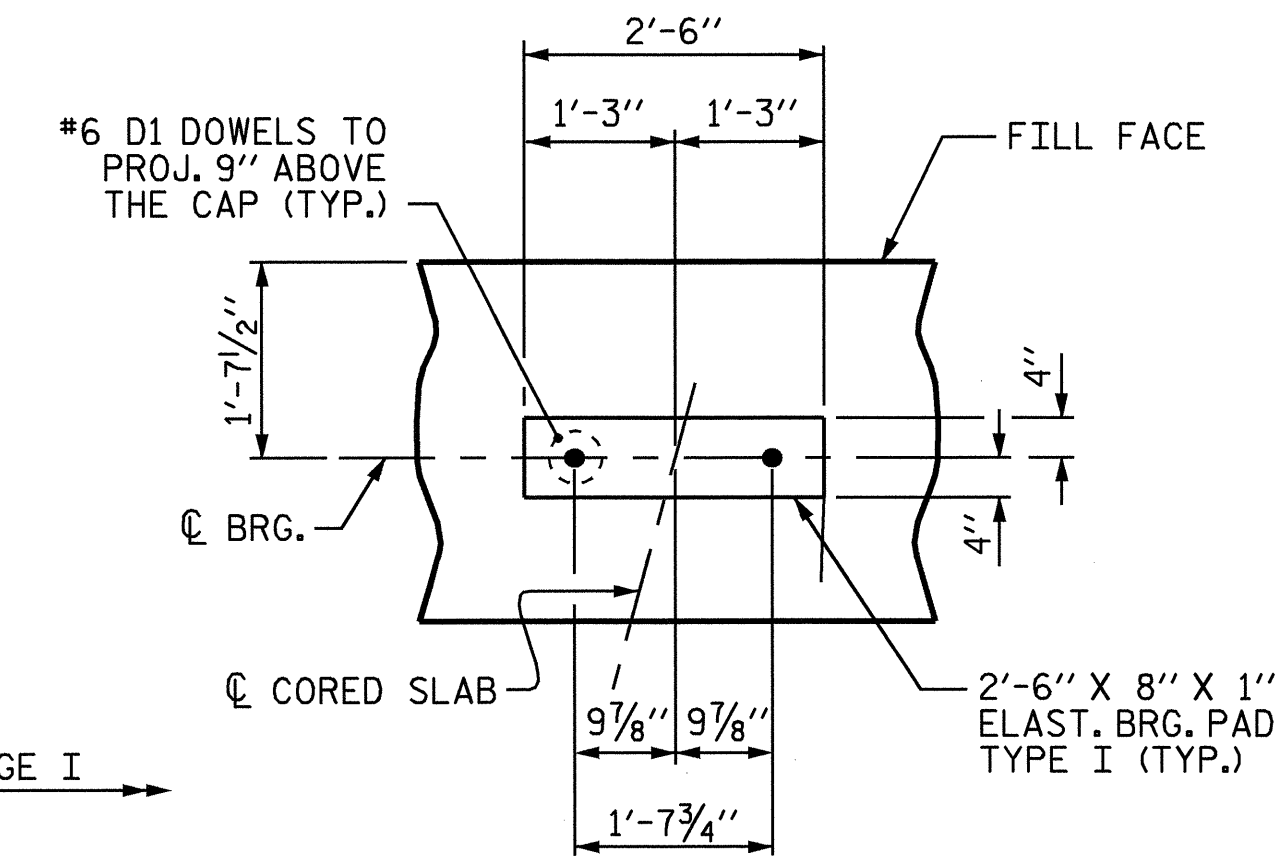
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.



PLAN



ELEVATION



DETAIL "A"
(TYP. EA. CORED SLAB UNIT)

PROJECT NO. B-4434
BERTIE COUNTY
 STATION: 15+31.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

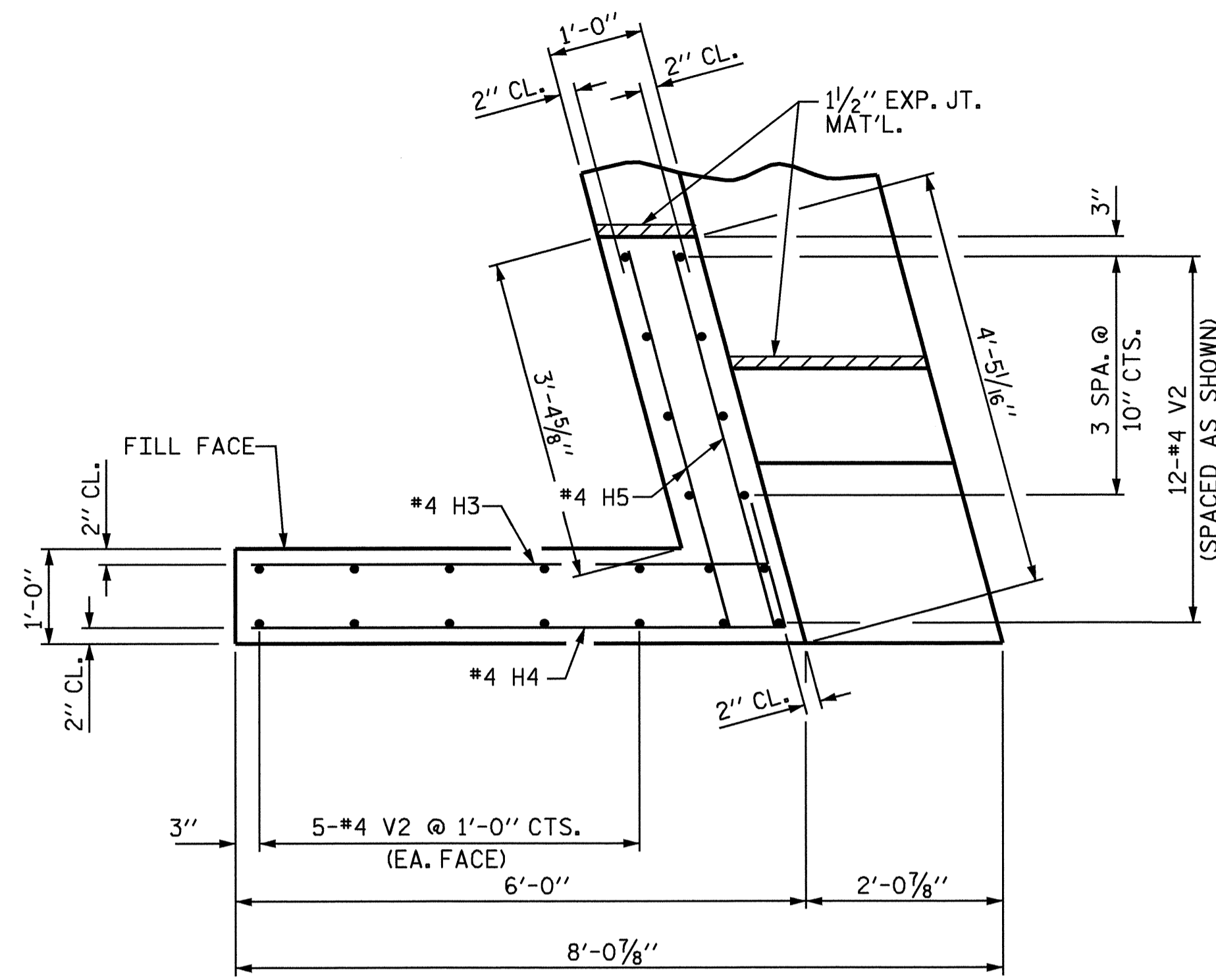
SUBSTRUCTURE
 END BENT 2
 STAGE II



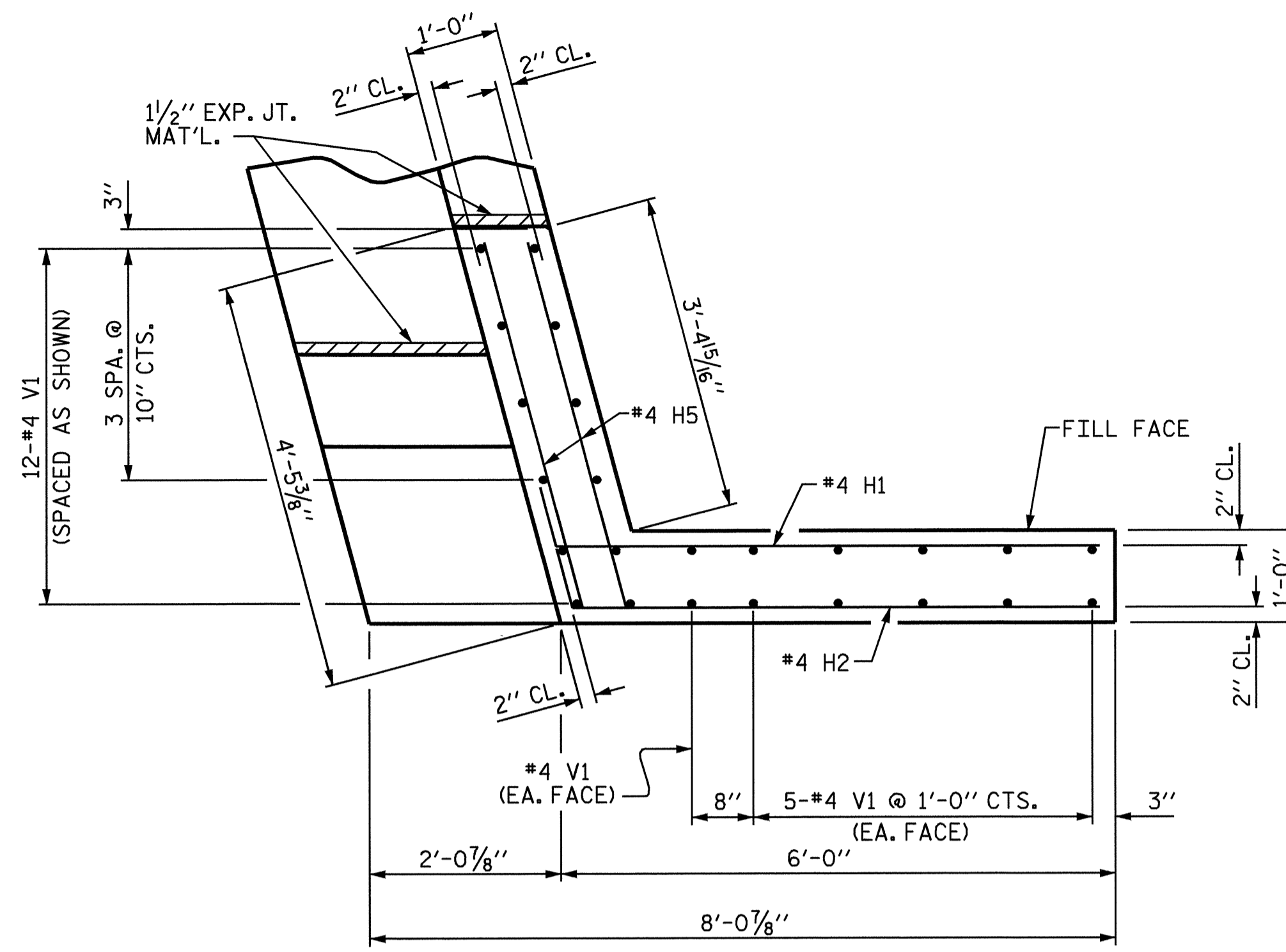
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 CHECKED BY: L.E. SUTTON DATE: 1/27/09

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 lsutton

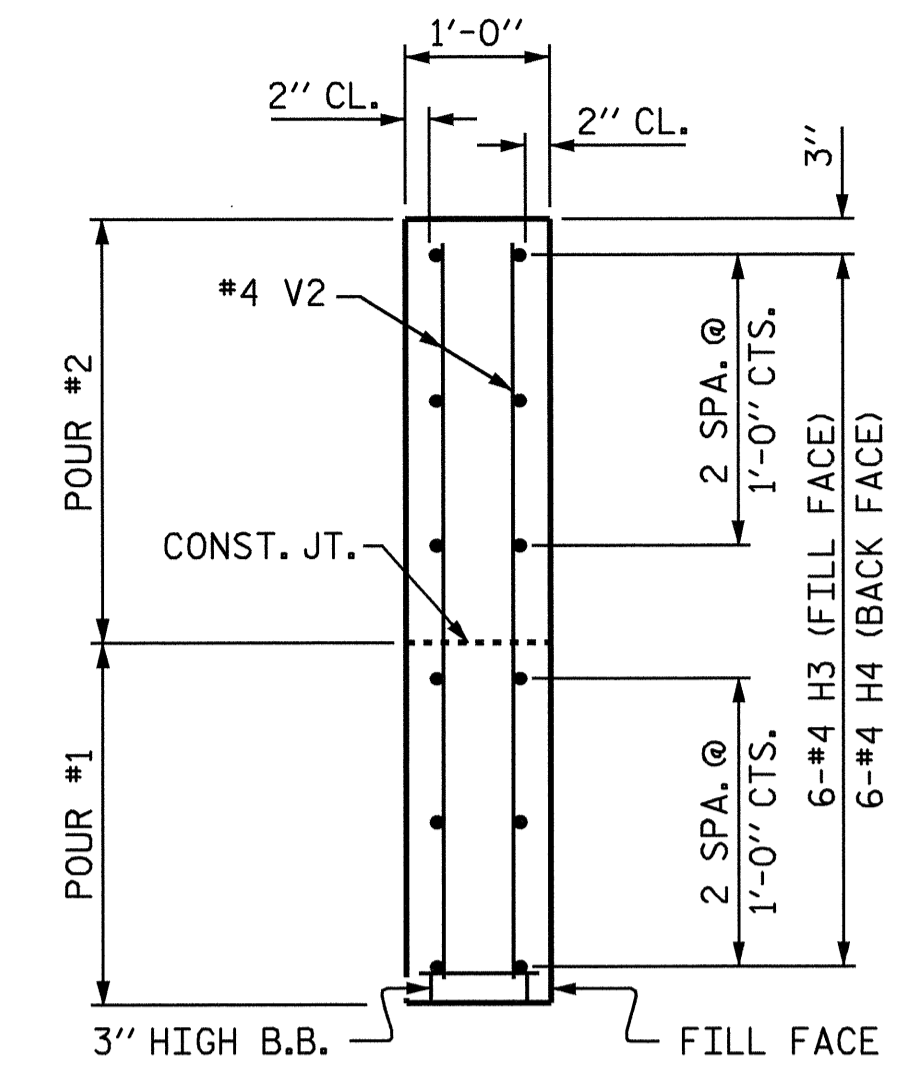
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-34
1			3			TOTAL SHEETS
2			4			39



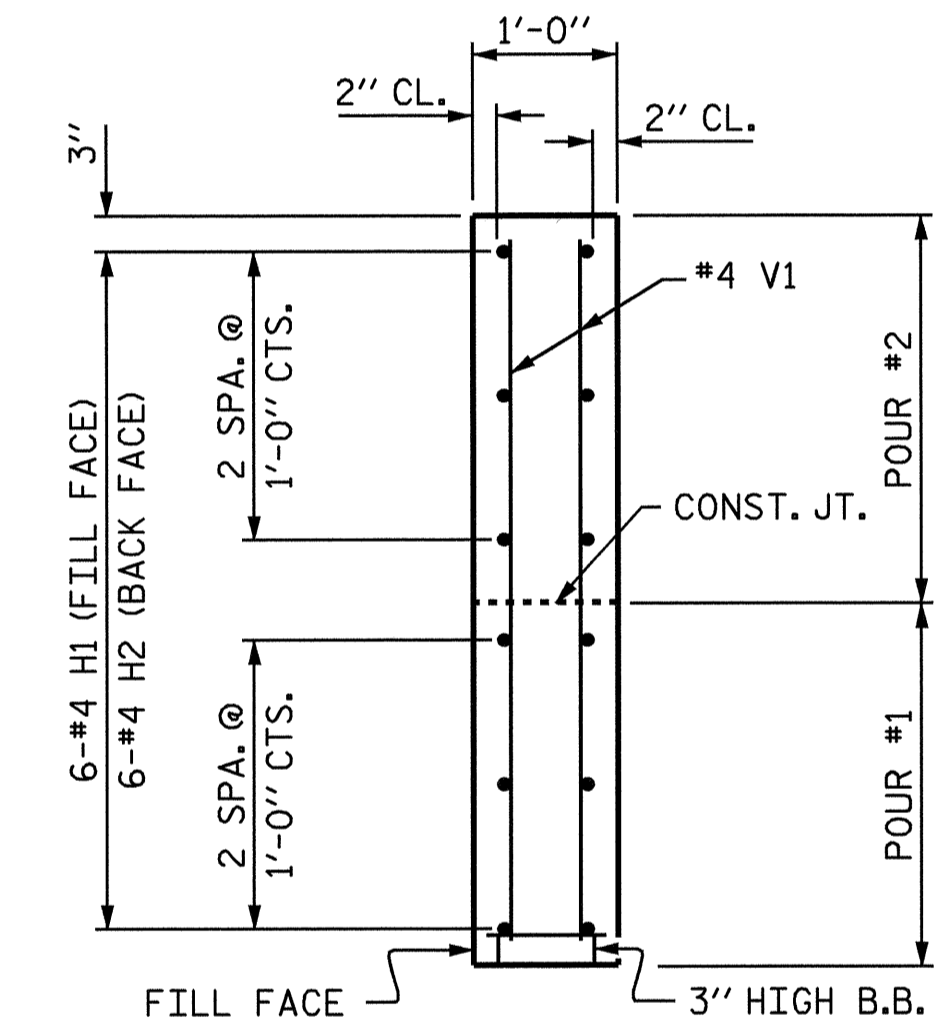
PLAN OF WING (W2)



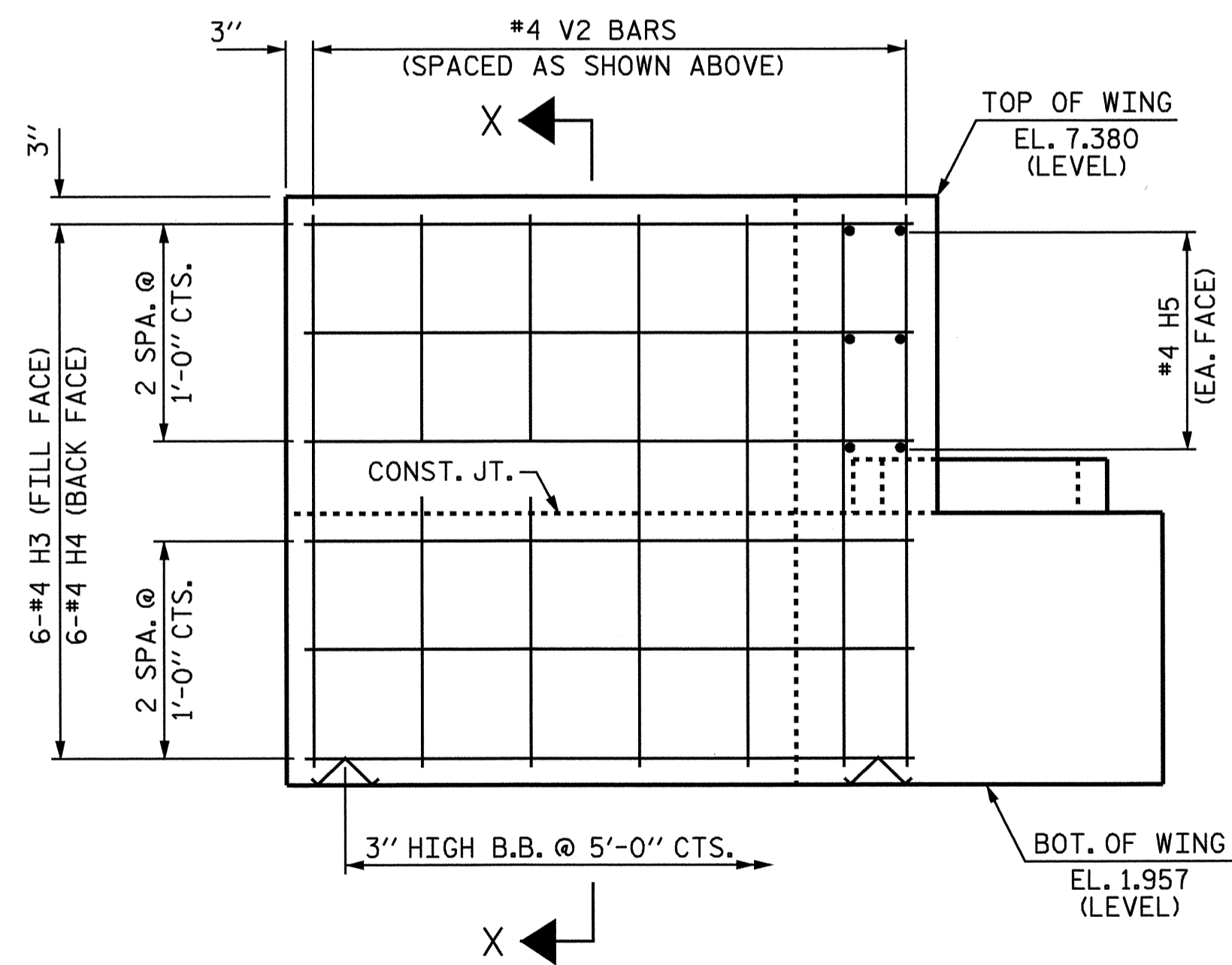
PLAN OF WING (W1)



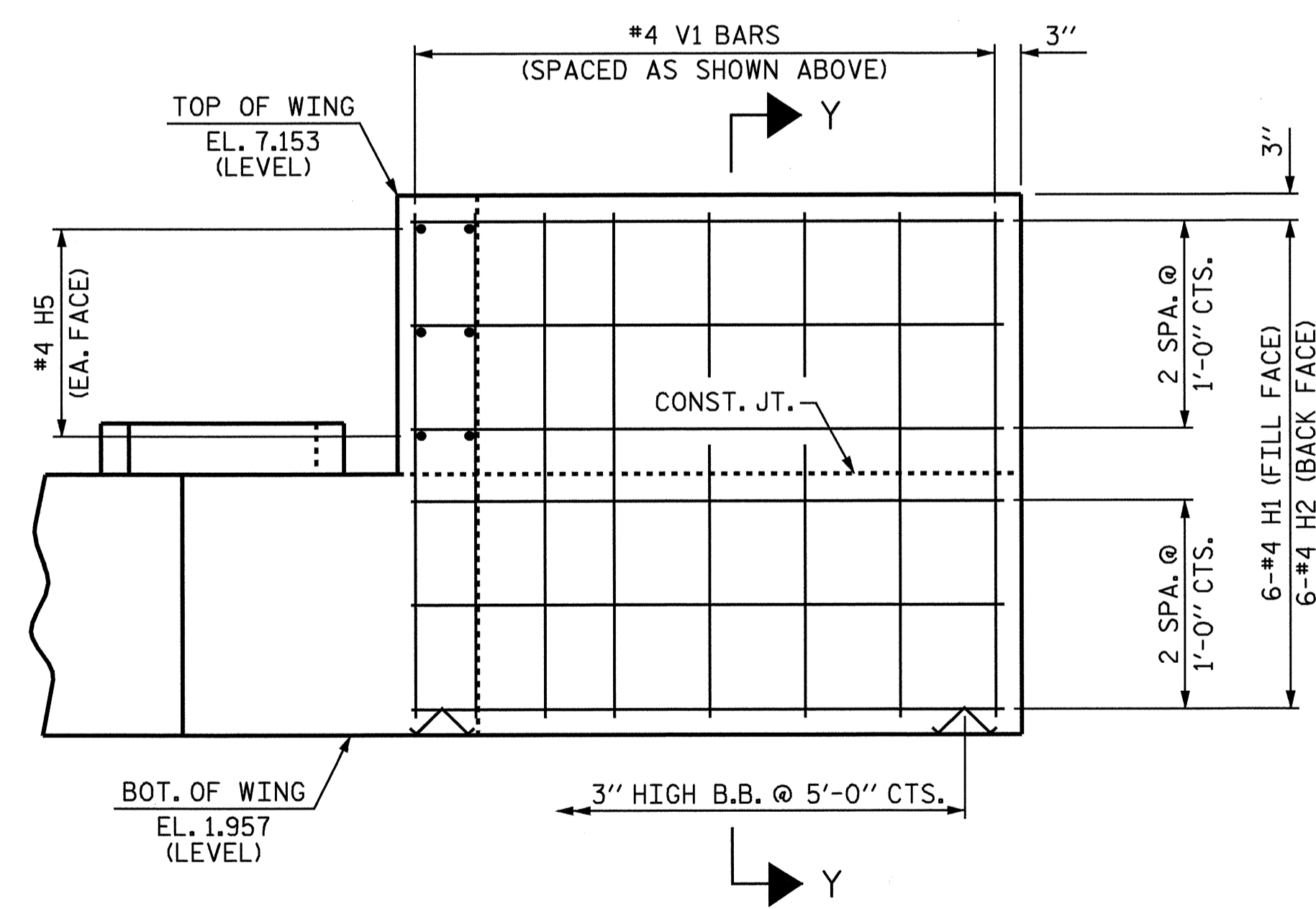
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W2)



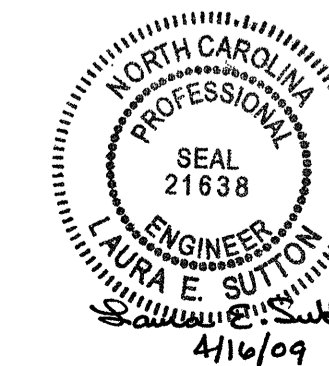
ELEVATION OF WING (W1)

PROJECT NO. B-4434
 BERTIE COUNTY
 STATION: 15+31.00 -L-

SHEET 3 OF 4

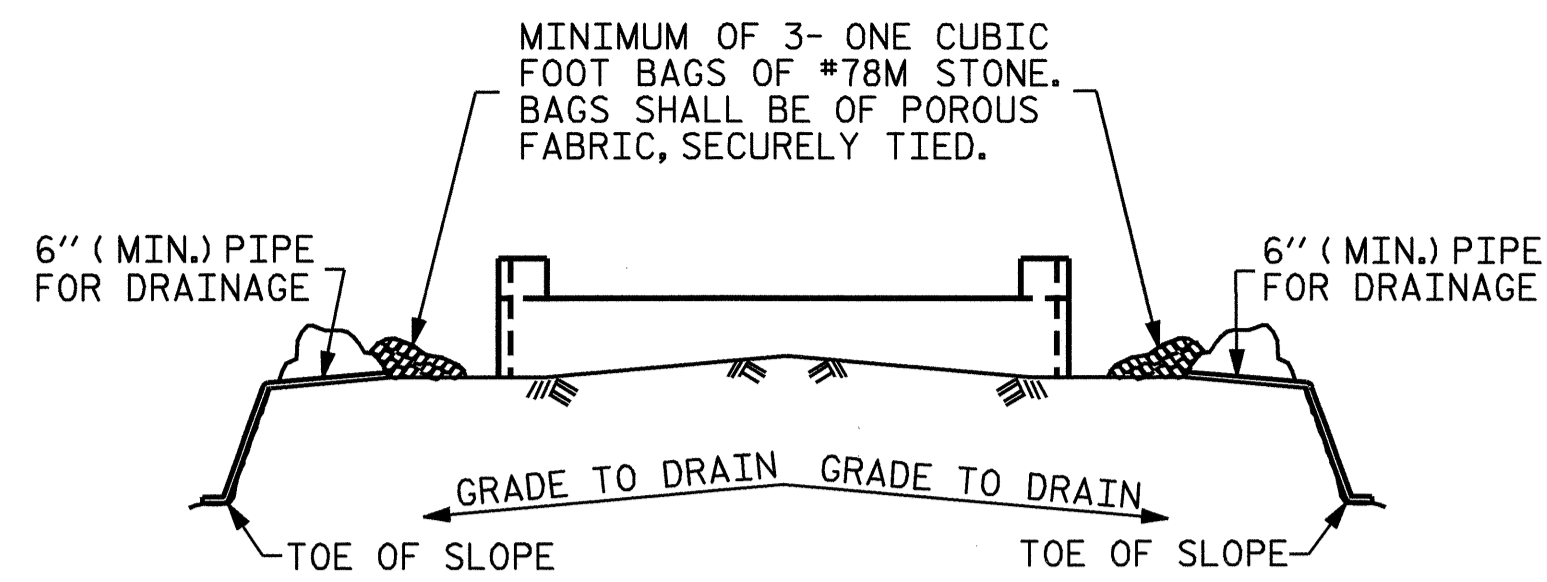
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-35	
1			3			TOTAL SHEETS	
2			4			39	

DRAWN BY: A.S. CALLAWAY DATE: 12/16/08
 CHECKED BY: L.E. SUTTON DATE: 1/23/09



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.

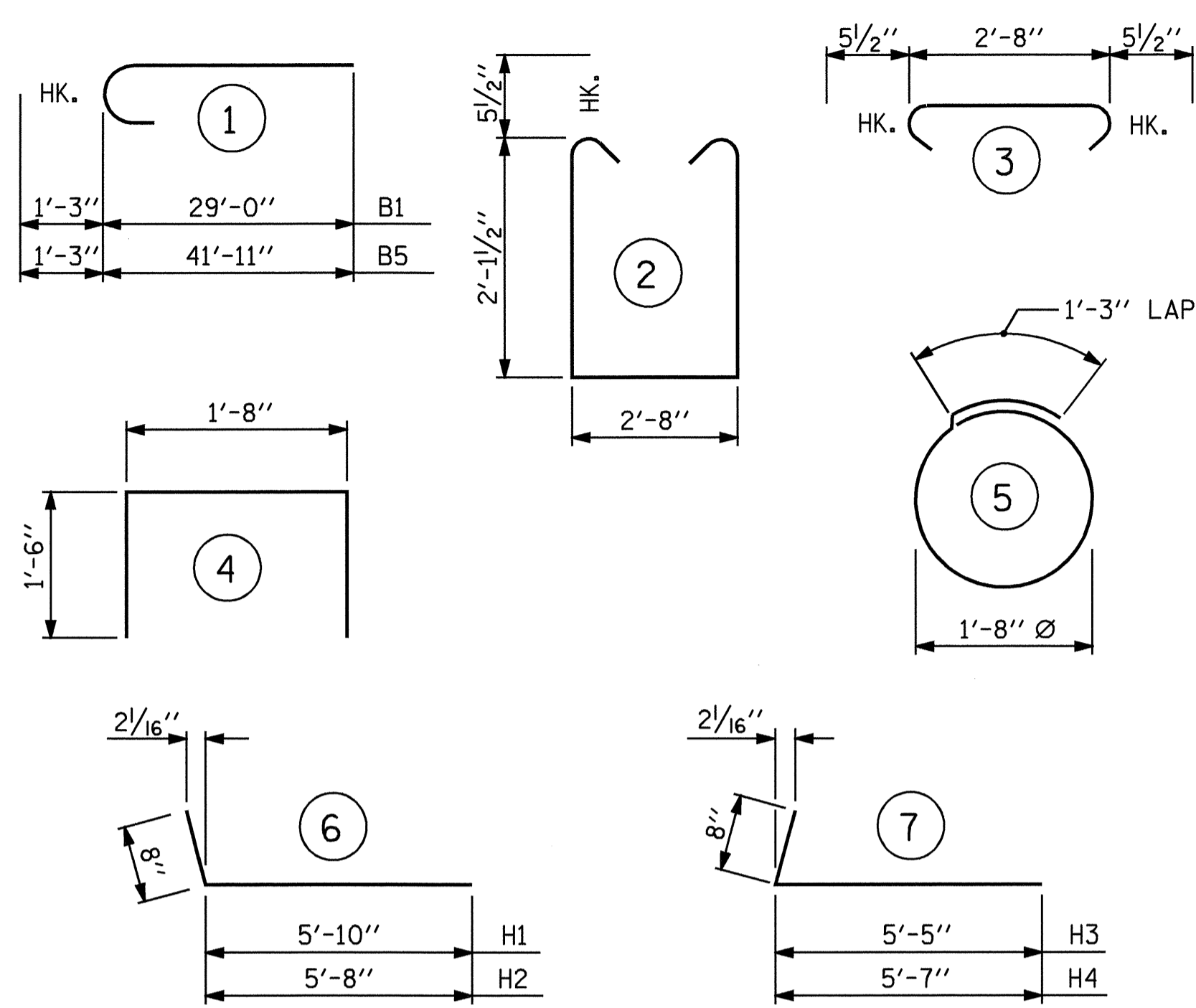
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

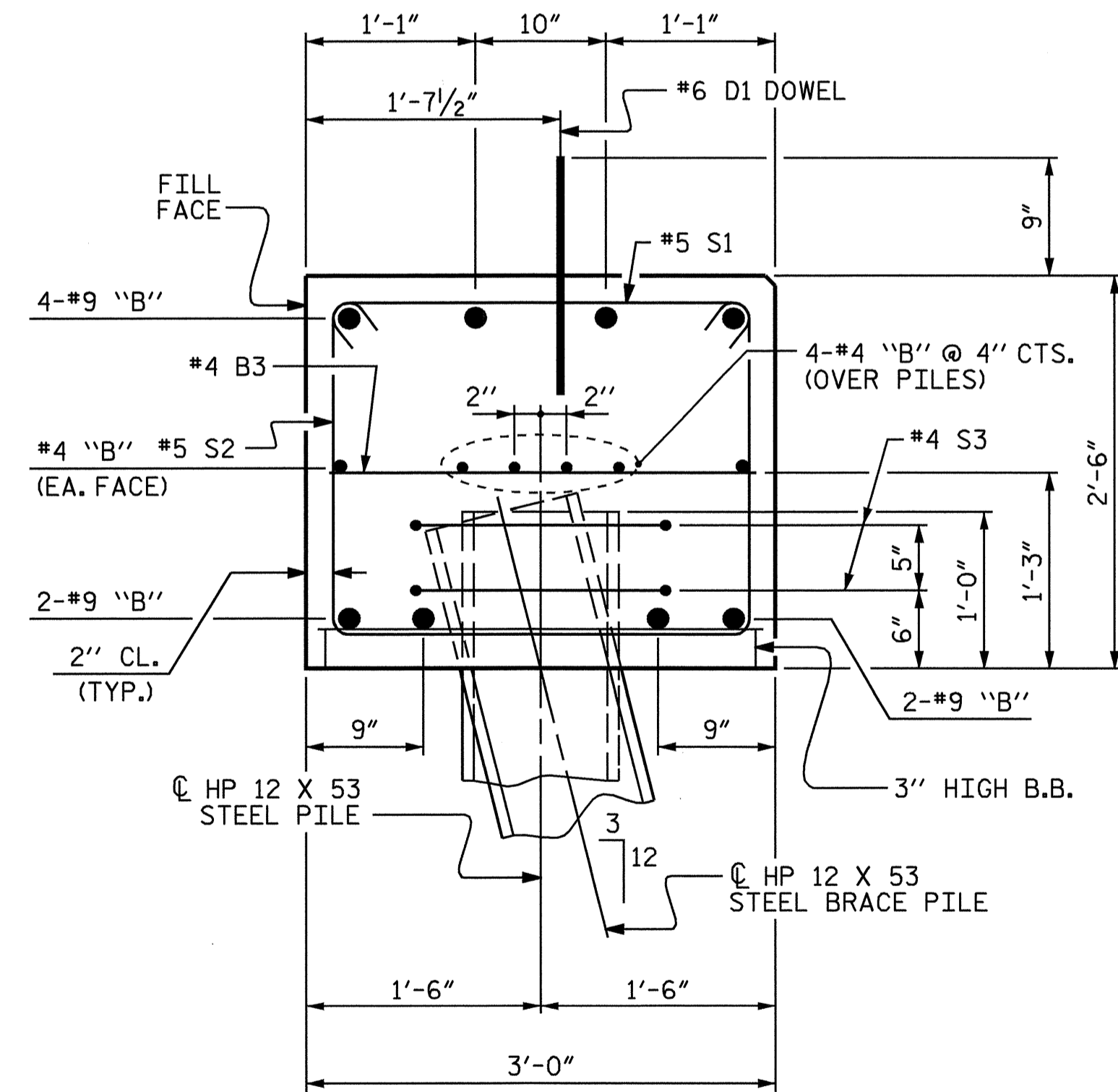
BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.

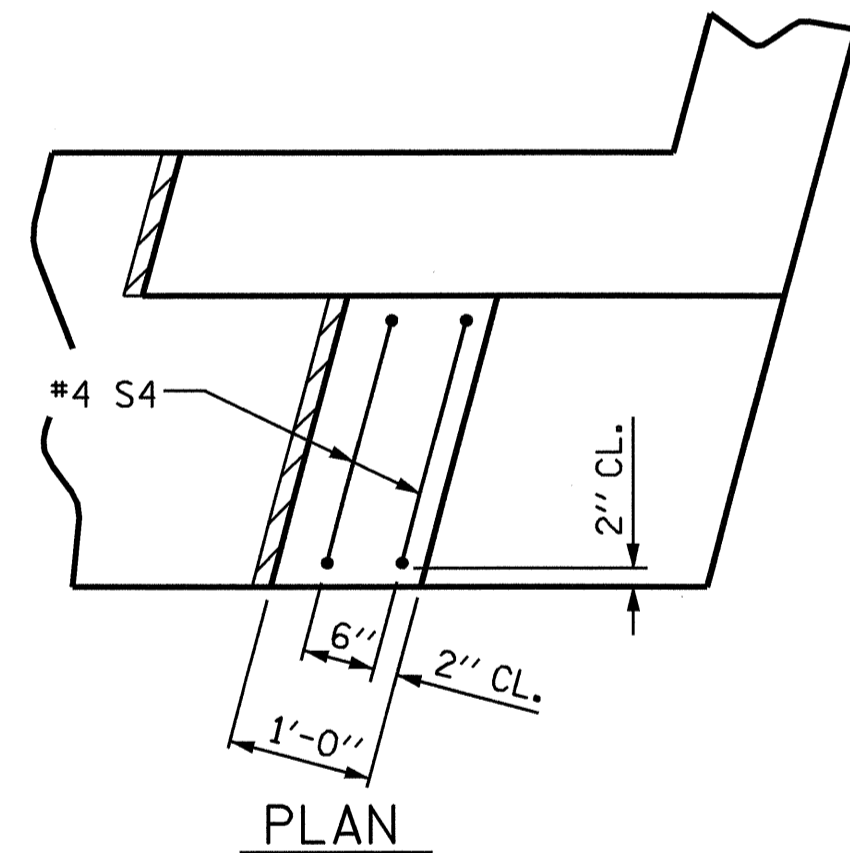


BILL OF MATERIAL - END BENT 2

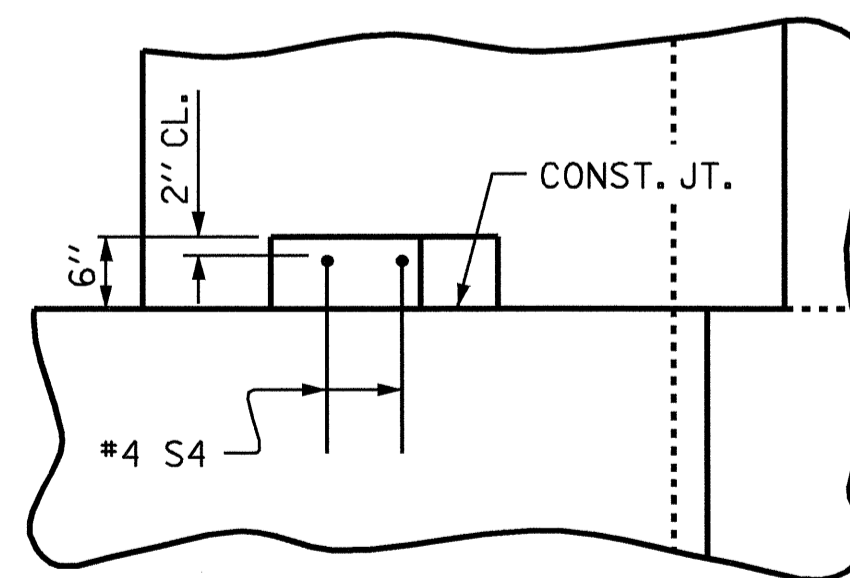
STAGE I						STAGE II							
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT		
B1	8	#9		30'-3"	823	B3	11	#4	STR	2'-8"	20		
B2	12	#4	STR	16'-9"	134	B4	8	#9		43'-2"	1174		
B3	7	#4	STR	2'-8"	12	B5	12	#4	STR	21'-4"	171		
D1	16	#6	STR	1'-6"	36	D1	26	#6	STR	1'-6"	59		
H1	6	#4		6'-6"	26	H3	6	#4		6'-1"	24		
H2	6	#4		6'-4"	25	H4	6	#4		6'-3"	25		
H5	6	#4	STR	4'-1"	16	H5	6	#4	STR	4'-1"	16		
S1	24	#5		3'-7"	90	S1	38	#5		3'-7"	142		
S2	24	#5		7'-10"	196	S2	38	#5		7'-10"	310		
S3	8	#4		6'-6"	35	S3	12	#4		6'-6"	52		
S4	2	#4		4'-8"	6	S4	2	#4		4'-8"	6		
V1	24	#4	STR	4'-10"	77	V2	22	#4	STR	5'-1"	75		
REINFORCING STEEL					LBS.	1,476	REINFORCING STEEL					LBS.	2,074
CLASS A CONCRETE BREAKDOWN :						CLASS A CONCRETE BREAKDOWN :							
POUR #1-CAP & LOWER WING				CU. YDS.	8.4	POUR #1-CAP & LOWER WING				CU. YDS.	12.4		
POUR #2-UPPER WING				CU. YDS.	1.0	POUR #2-UPPER WING				CU. YDS.	1.0		
POUR #3-LATERAL GUIDE				CU. YDS.	0.1	POUR #3-LATERAL GUIDE				CU. YDS.	0.1		
TOTAL				CU. YDS.	9.5	TOTAL				CU. YDS.	13.5		
HP 12 x 53 STEEL PILES							HP 12 x 53 STEEL PILES						
NO. = 4				LIN. FT.	240	NO. = 6				LIN. FT.	360		
PILE REDRIVES					EA.	4	PILE REDRIVES					EA.	6



SECTION A-A



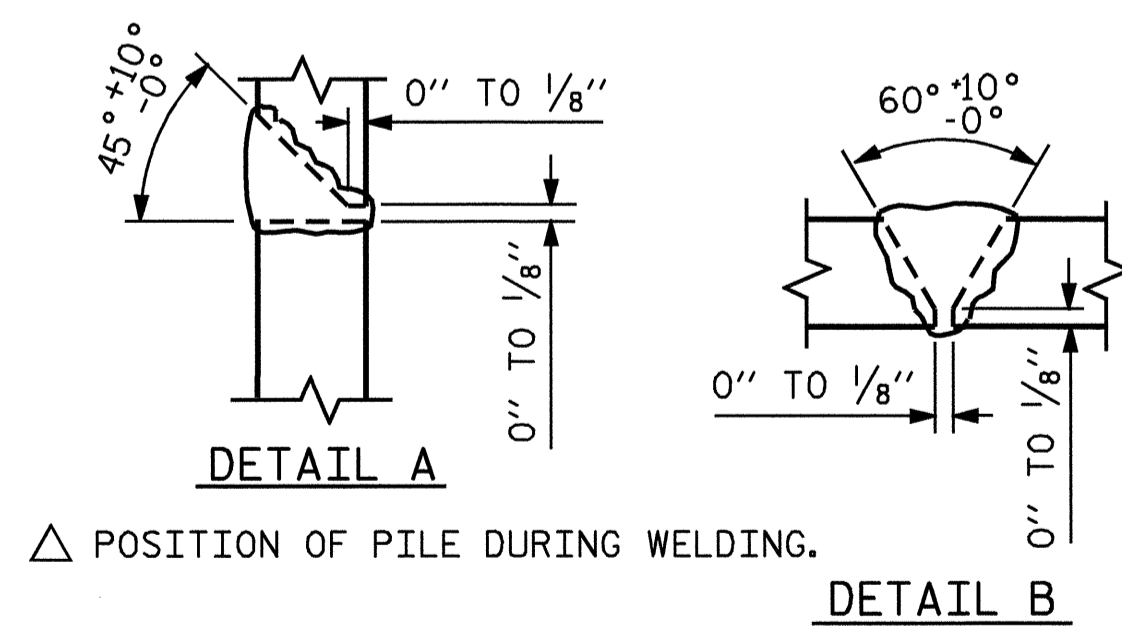
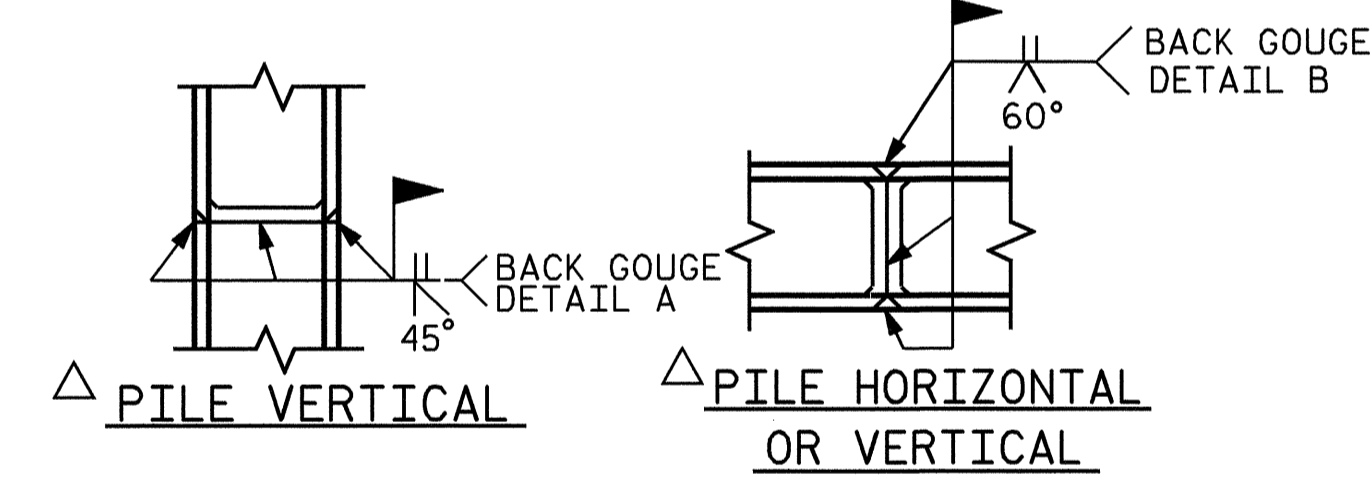
PLAN



ELEVATION

LATERAL GUIDE DETAIL

(RIGHT SIDE SHOWN, LEFT SIDE SIMILAR)



PILE SPlice DETAILS

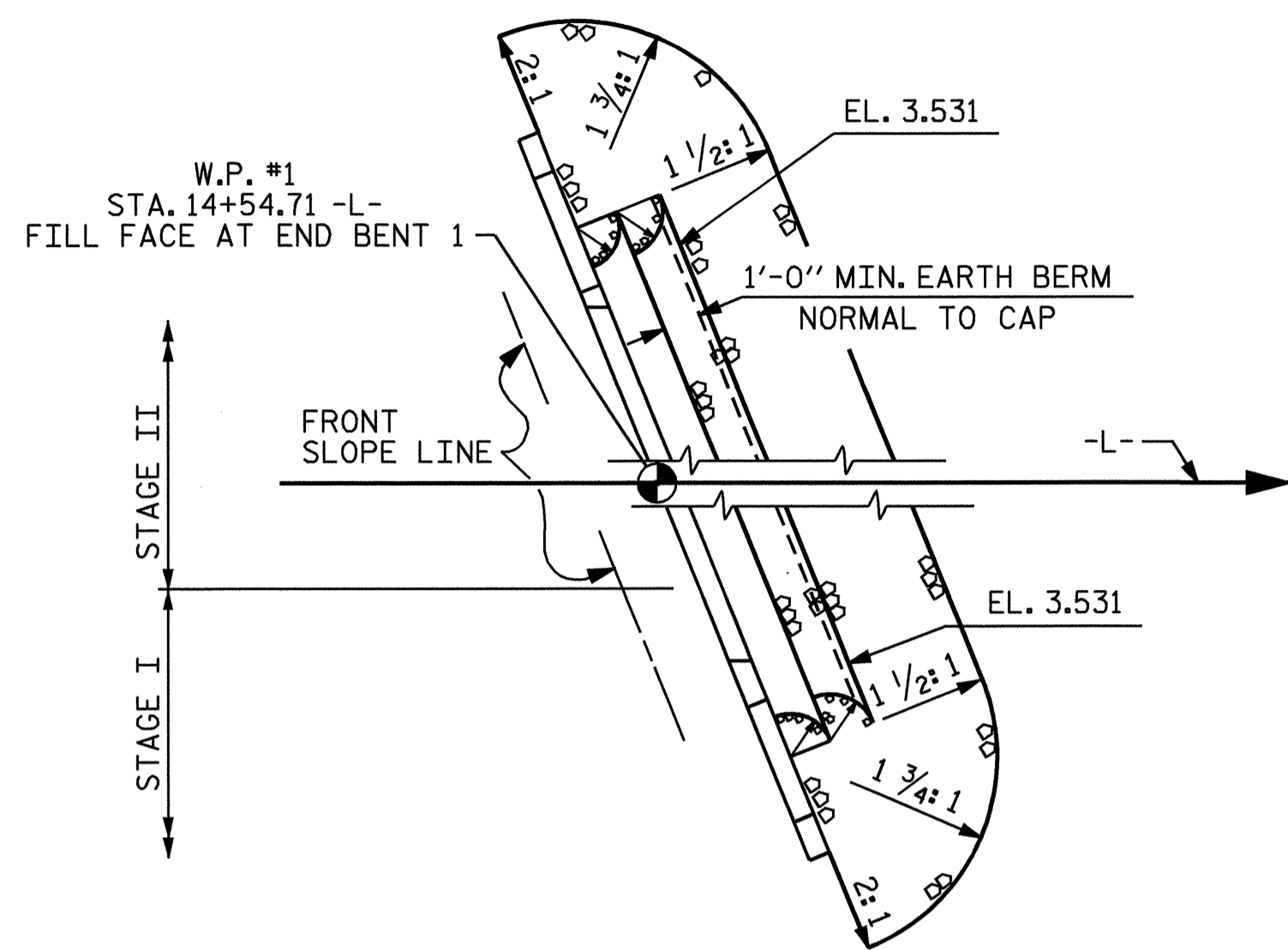
PROJECT NO. B-4434
BERTIE COUNTY
STATION: 15+31.00 -L-

SHEET 4 OF 4
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT 2

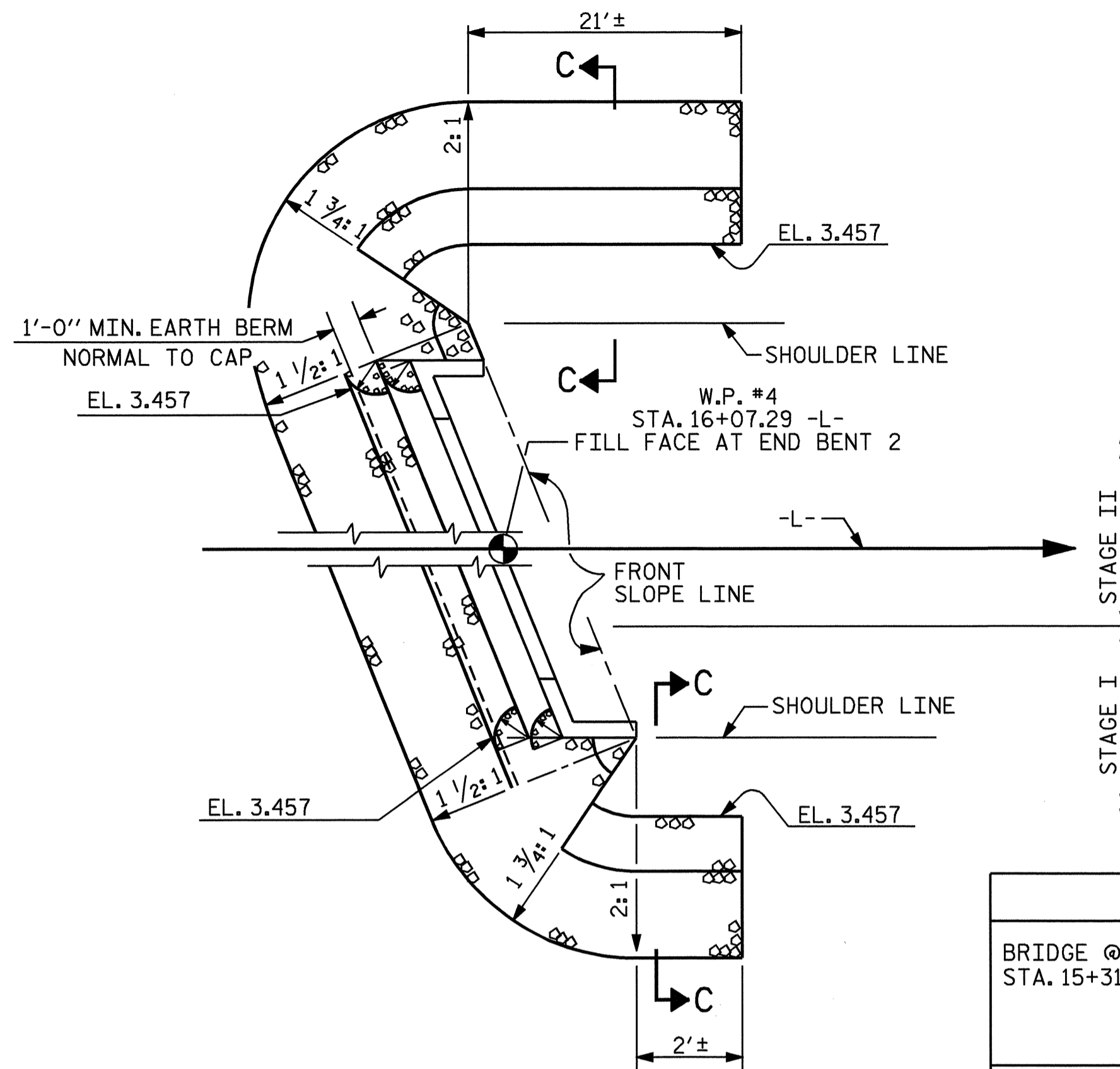


DRAWN BY : A.S. CALLAWAY DATE : 12/16/08
CHECKED BY : L.E. SUTTON DATE : 1/23/09

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-36
1			3			TOTAL SHEETS
2			4			39



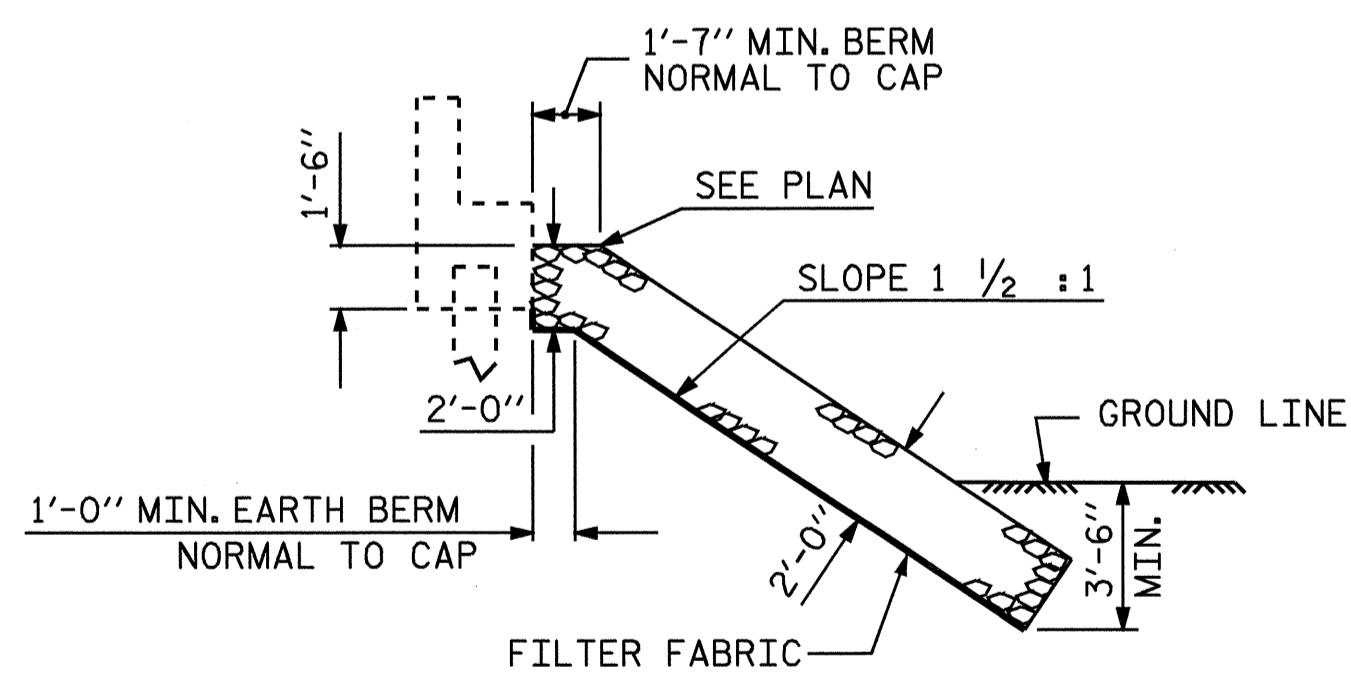
AT END BENT 1



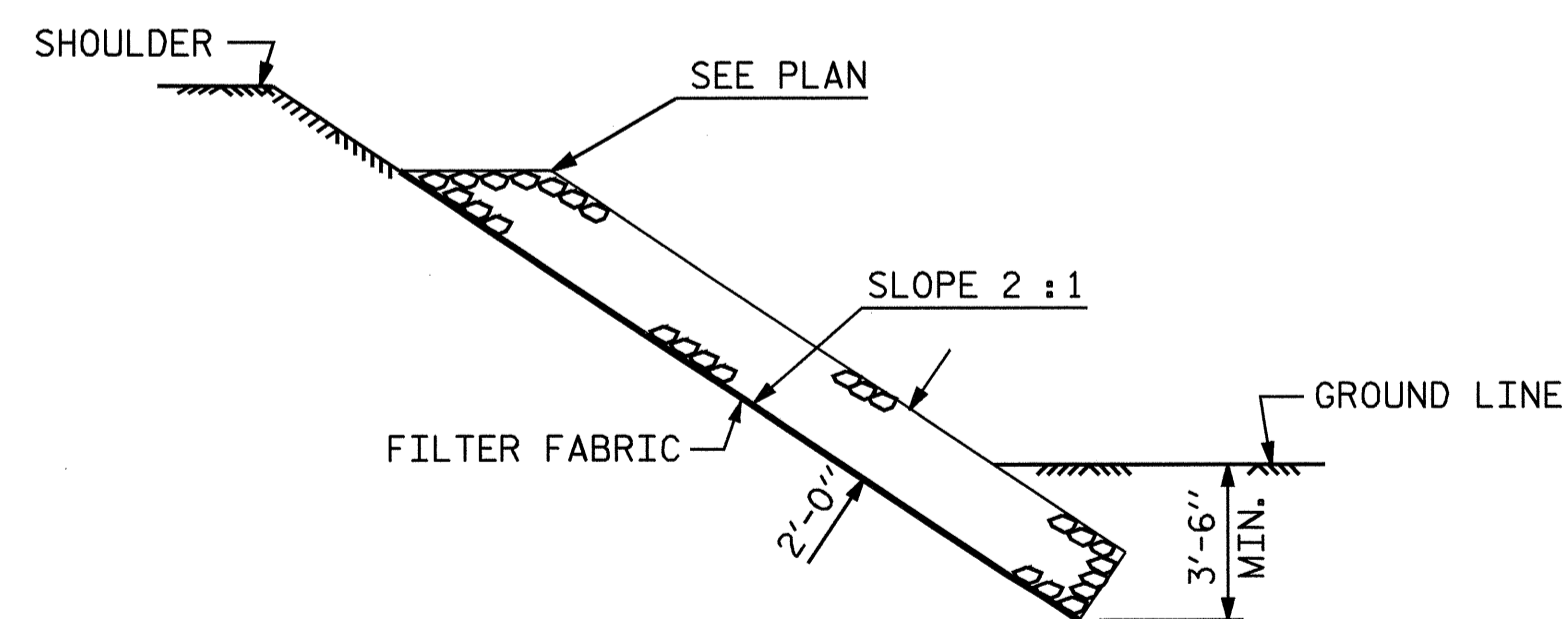
AT END BENT 2

ESTIMATED QUANTITIES - STAGE I		
BRIDGE @ STA. 15+31.00 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	47	52
END BENT 2	37	41

ESTIMATED QUANTITIES - STAGE II		
BRIDGE @ STA. 15+31.00 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	59	66
END BENT 2	74	82

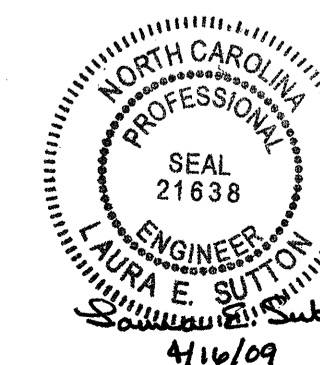


SECTION C-C
BERM RIP RAPPED



SECTION C-C

PROJECT NO. B-4434
BERTIE COUNTY
 STATION: 15+31.00 -L-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD = <u>RIP RAP DETAILS</u> =					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-37
					TOTAL SHEETS 39

ASSEMBLED BY : R. WITHROW DATE : 11/25/08
 CHECKED BY : A.S. CALLAWAY DATE : 02/16/09
 DRAWN BY : REK 1/84 REV. 8/16/99 RWW/LES
 CHECKED BY : RDU 1/84 REV. 10/17/00 RWW/LES
 REV. 5/1/06 TLA/GM

BILL OF MATERIAL

STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	25'-4"	440
A2	26	#4	STR	25'-1"	436
*B1	45	#5	STR	24'-2"	1134
B2	45	#6	STR	24'-7"	1662
*B3	4	#4	STR	24'-7"	66
*D1	20	#4	STR	1'-1"	14
*G1	25	#4	STR	5'-2"	86

REINFORCING STEEL LBS. 2098

*EPOXY COATED REINFORCING STEEL LBS. 1740

CLASS AA CONCRETE			
POUR 1 (SLAB)	C. Y.	22.8	
POUR 2 (SIDEWALK)	C. Y.	4.1	
TOTAL	C. Y.	26.9	

STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A3	52	#4	STR	20'-4"	706
A4	52	#4	STR	20'-3"	703
*B1	75	#5	STR	24'-2"	1890
B2	75	#6	STR	24'-7"	2769
*B3	4	#4	STR	24'-7"	66
*D2	20	#4	STR	1'-3"	17
*G1	25	#4	STR	5'-1"	86

REINFORCING STEEL LBS. 3472

*EPOXY COATED REINFORCING STEEL LBS. 2765

CLASS AA CONCRETE			
POUR 1 (SLAB)	C. Y.	37.8	
POUR 2 (SIDEWALK)	C. Y.	5.0	
TOTAL	C. Y.	42.8	

NOTES

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.

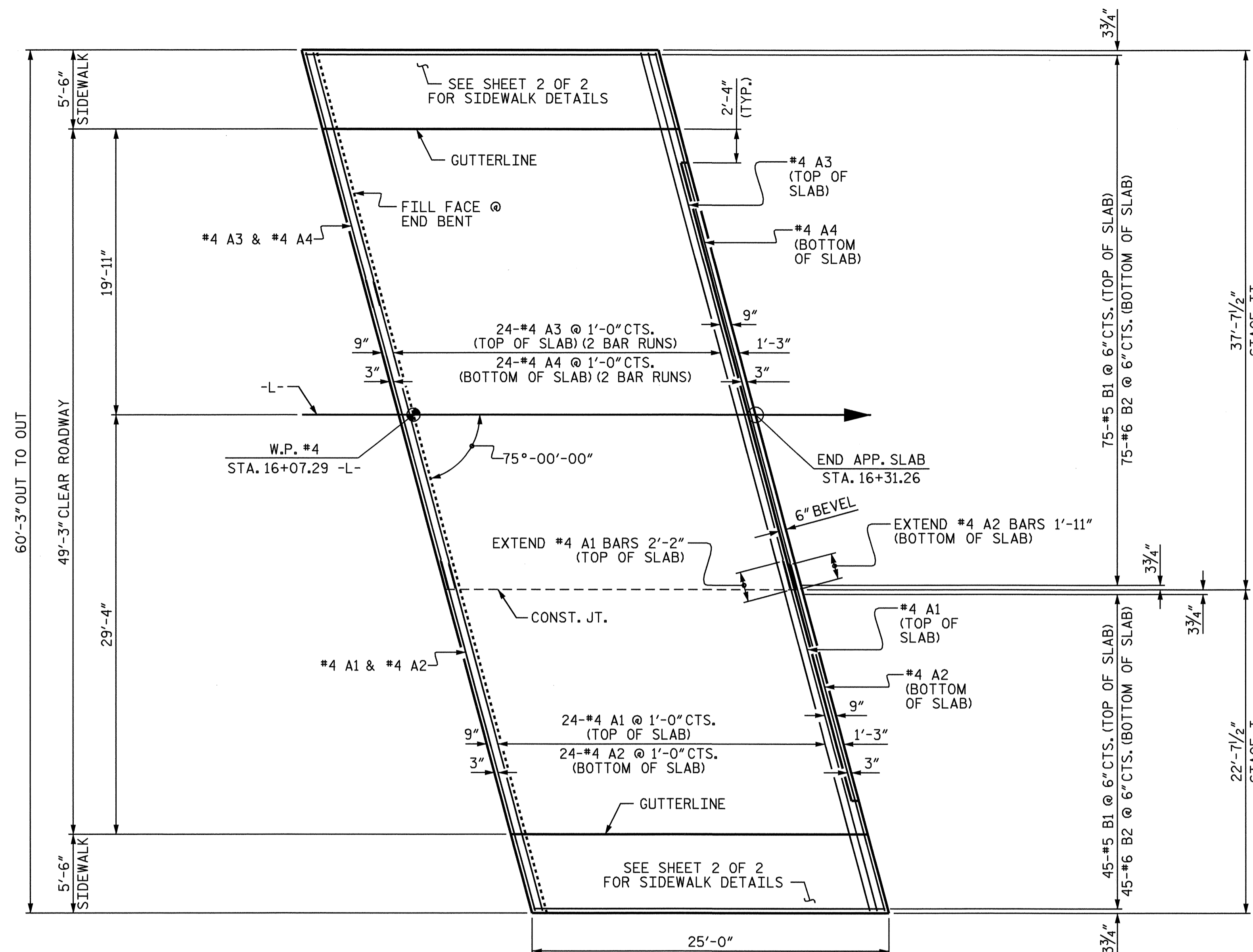
THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

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.

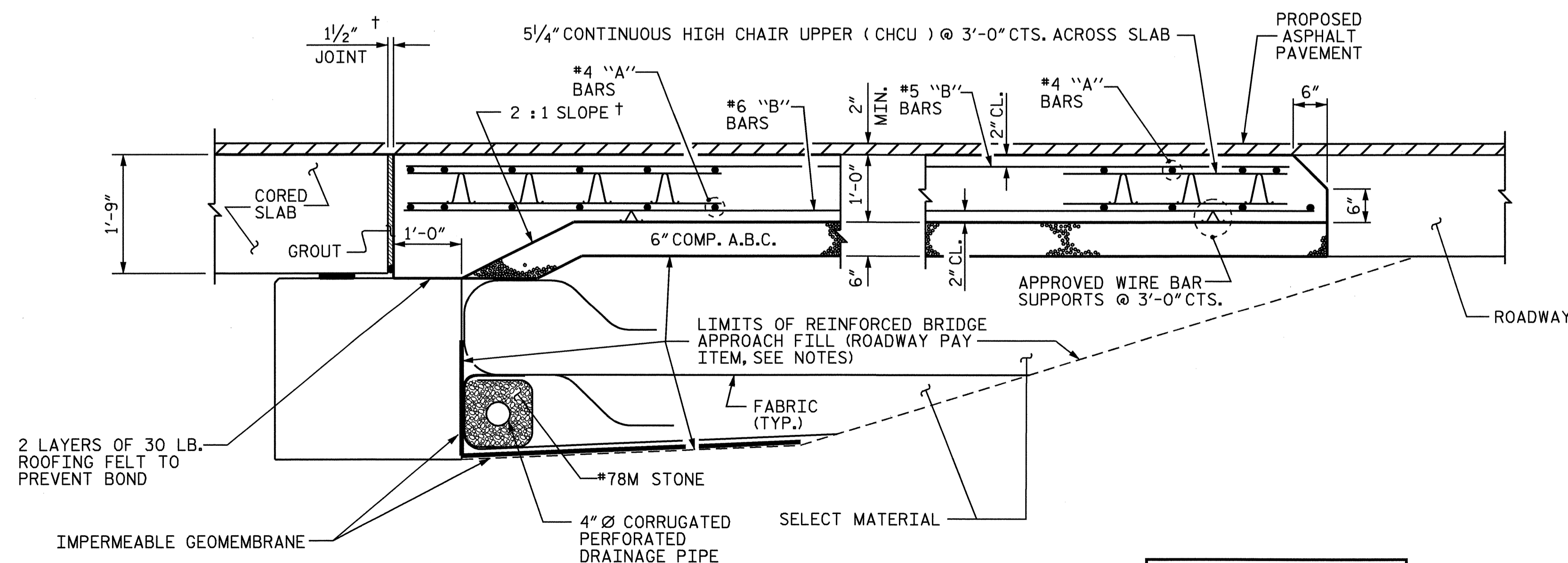
FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE CORED SLAB UNIT" SHEETS.

THE JOINT AT THE END BENT SHALL BE GROUTED AS SOON AS PRACTICAL AFTER THE CONSTRUCTION OF THE APPROACH SLAB.

APPROACH SLAB GROOVING IS NOT REQUIRED.



PLAN OF APPROACH SLAB
(@ END BENT 2)



SECTION THRU SLAB

† NORMAL TO END BENT

PROJECT NO. B-4434
BERTIE COUNTY
STATION: 15+31.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH SLAB
FOR
PRESTRESSED CONCRETE
CORED SLAB

REVISIONS

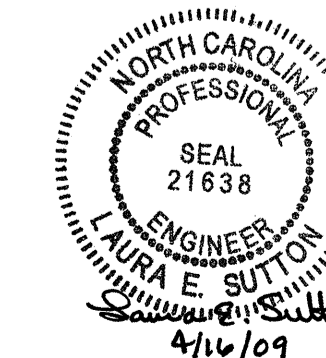
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.

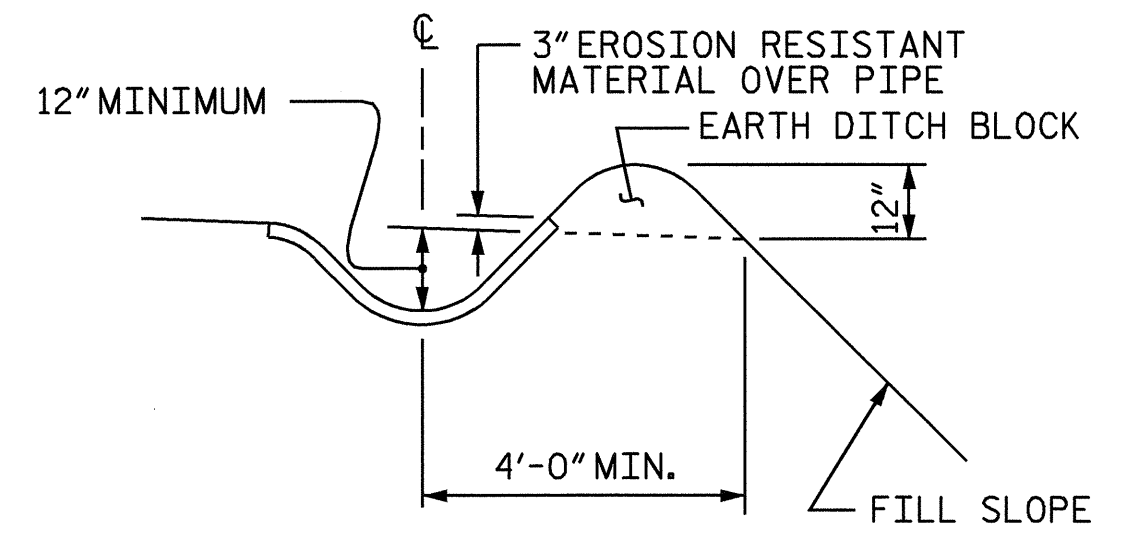
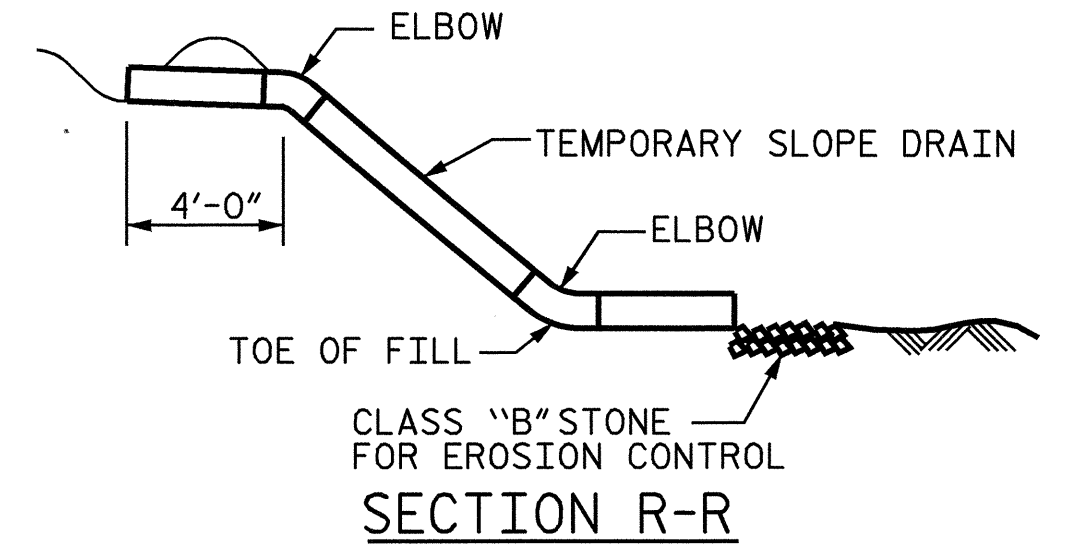
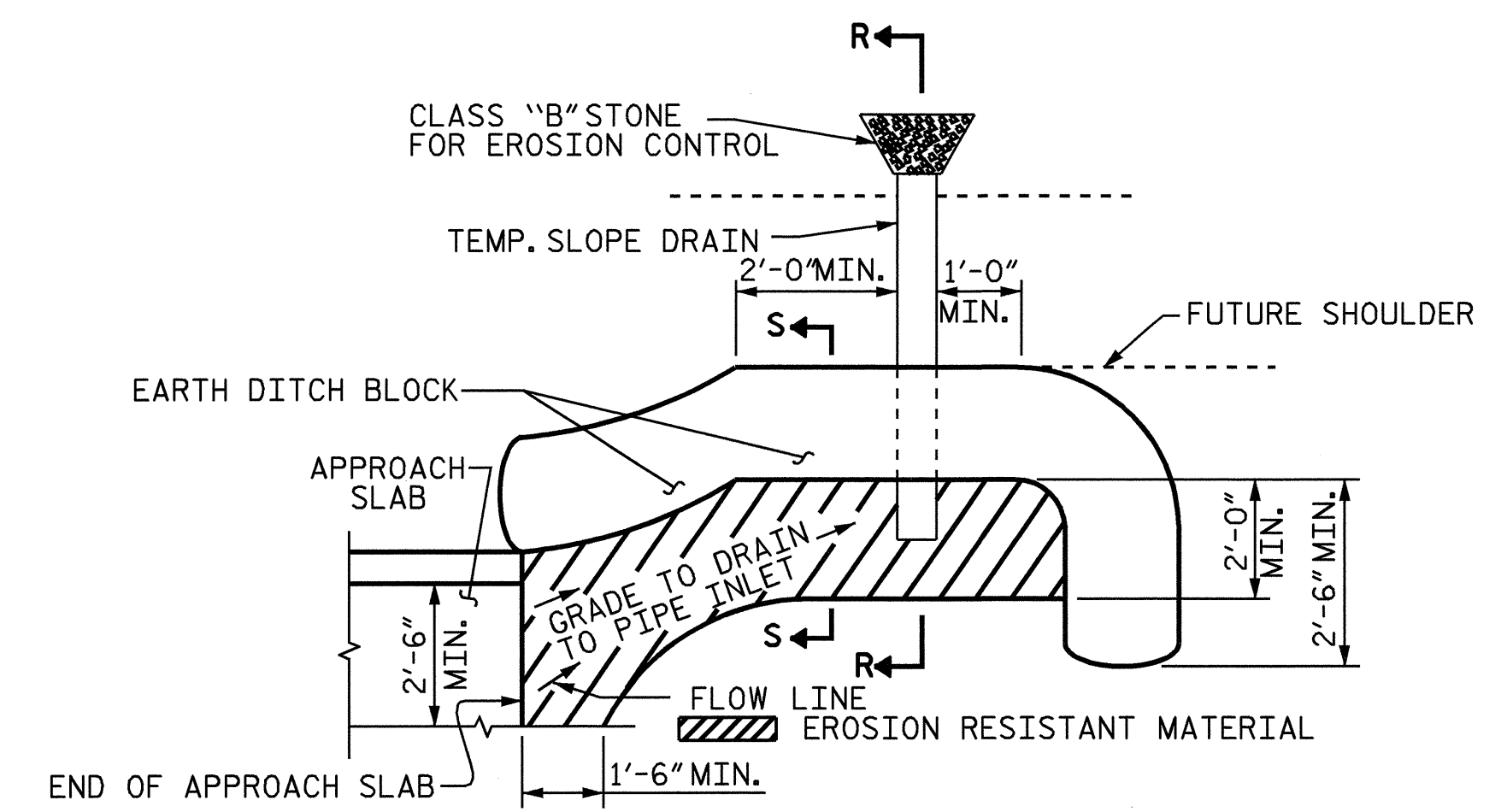
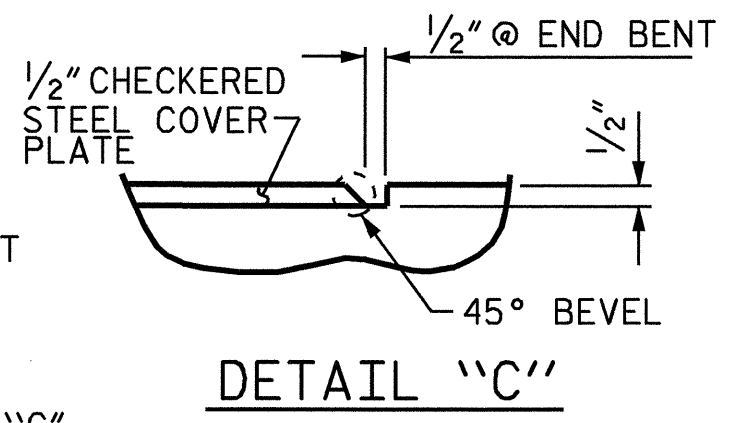
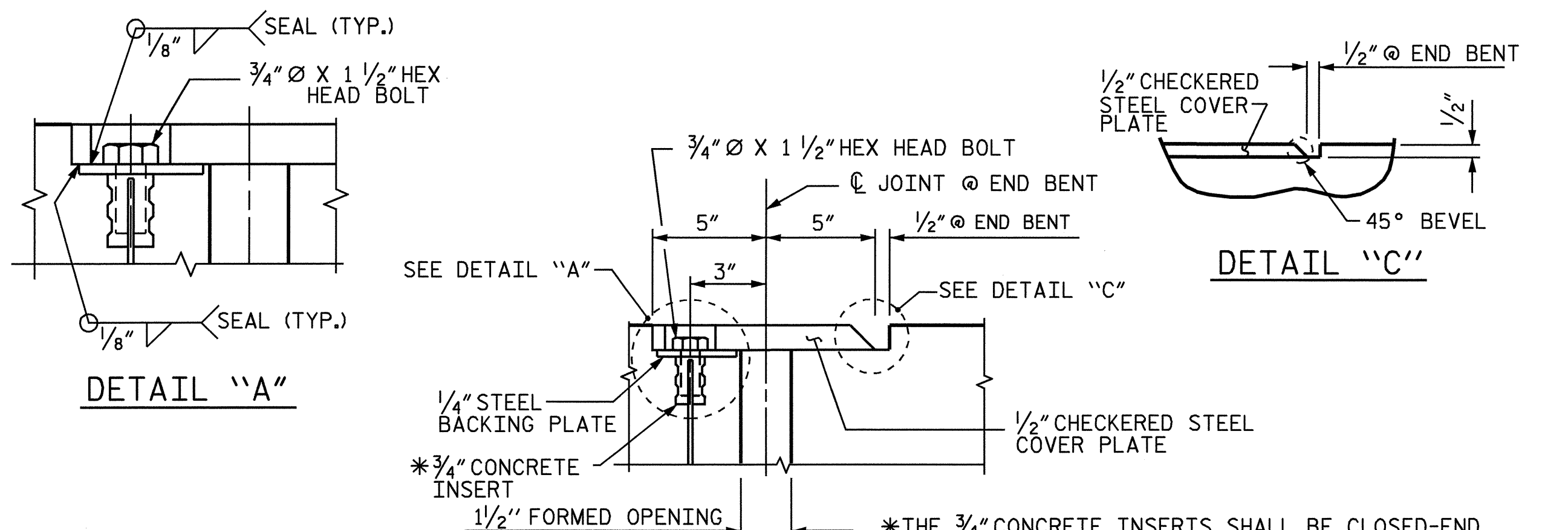
S-38

TOTAL SHEETS

39

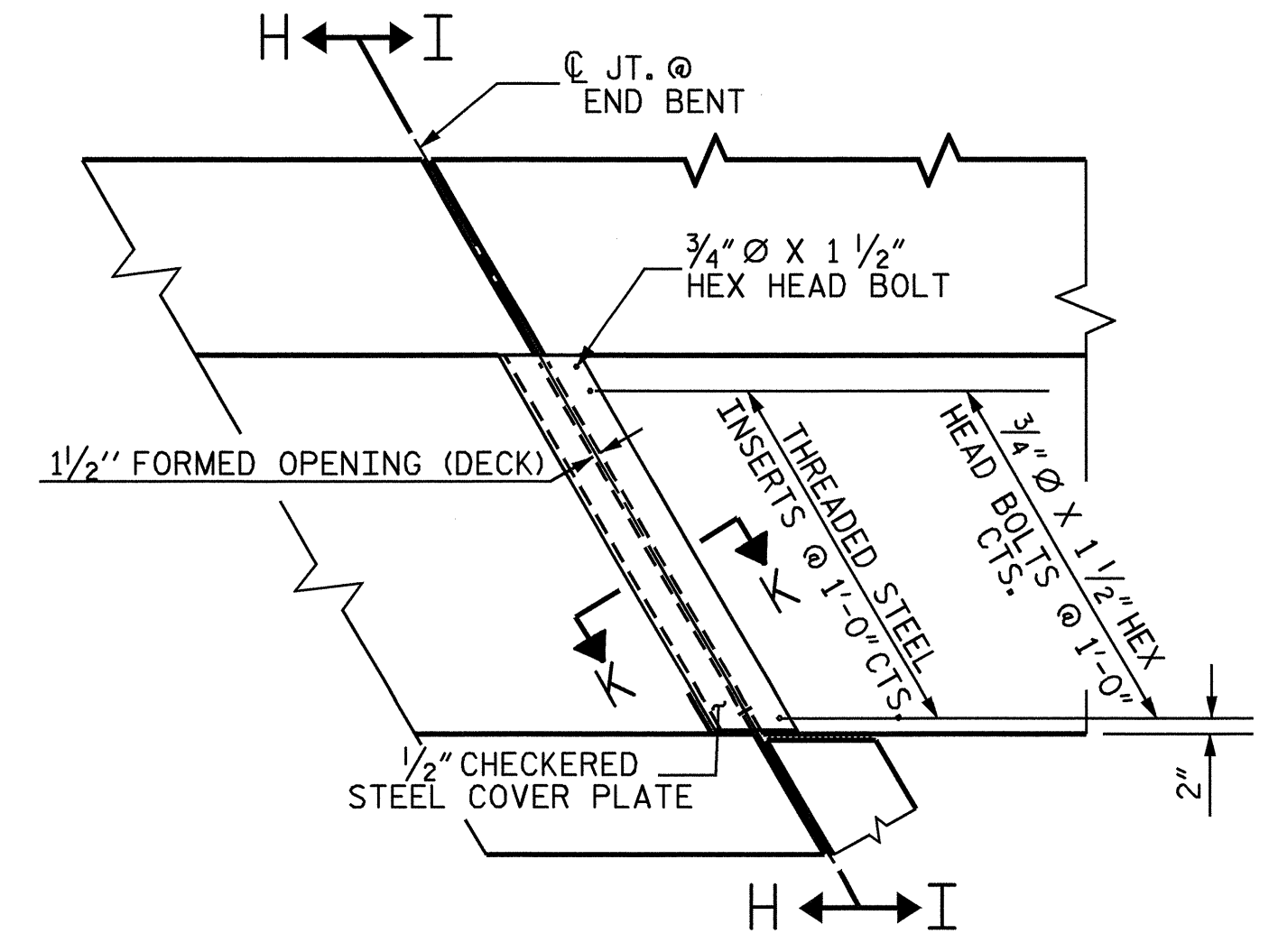
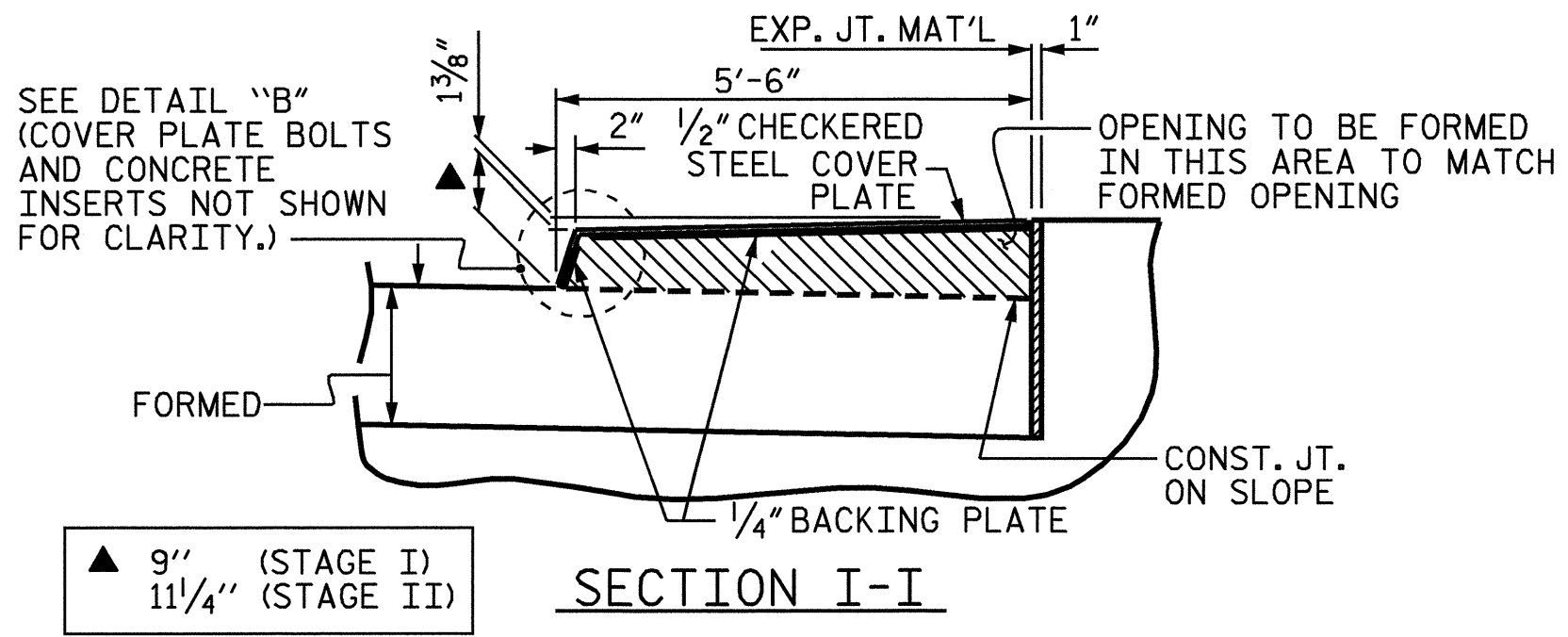
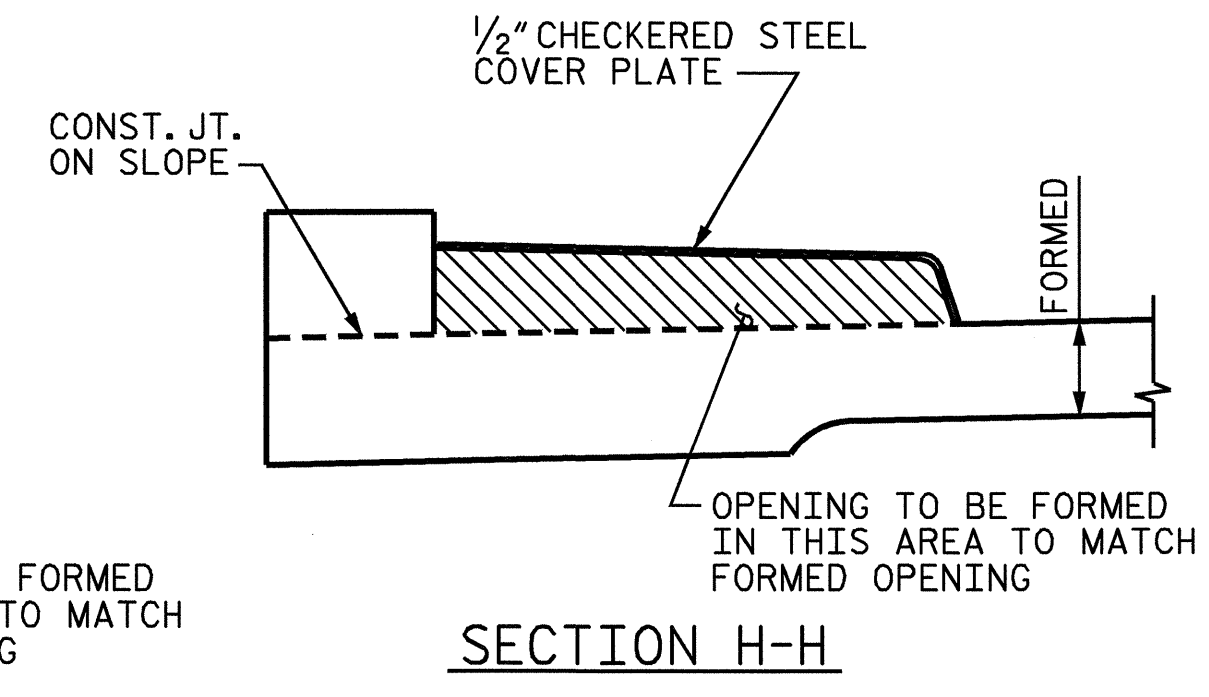
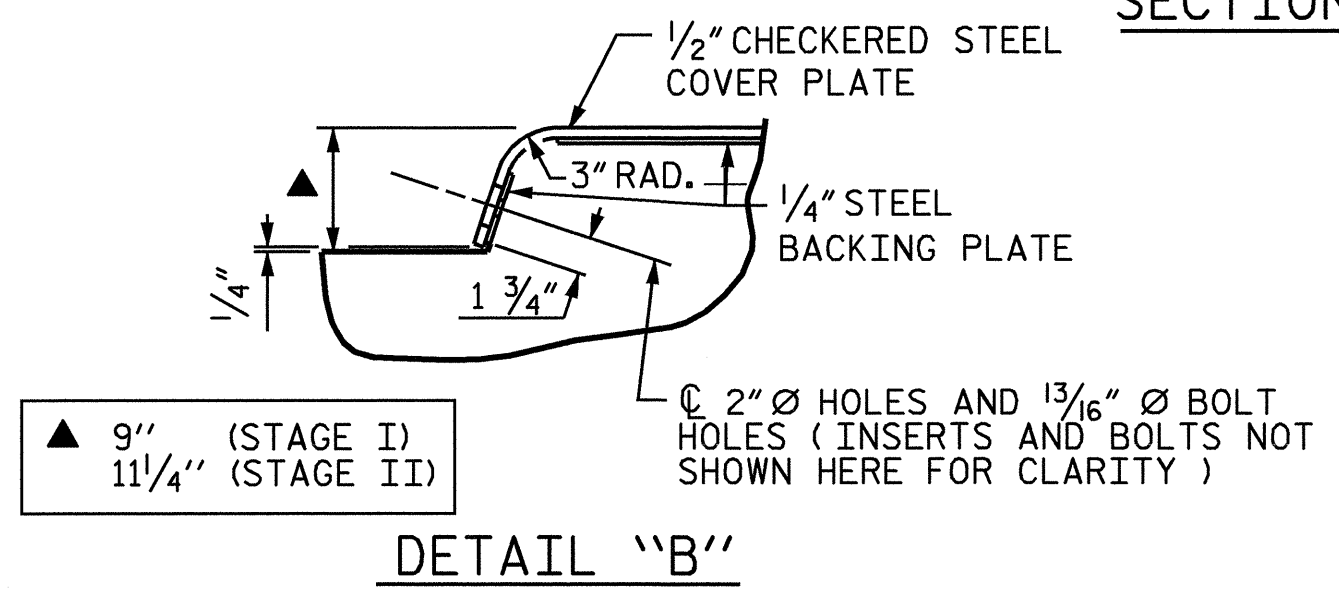


ASSEMBLED BY : R. WITHROW	DATE : 11/25/08
CHECKED BY : A.S. CALLAWAY	DATE : 12/10/08
DRAWN BY : FCJ 11/88	REV. 10/17/00 RWW/LES
CHECKED BY : ARB 11/88	REV. 5/17/03 RWW/JTE
	REV. 5/1/06R MAA/KMM

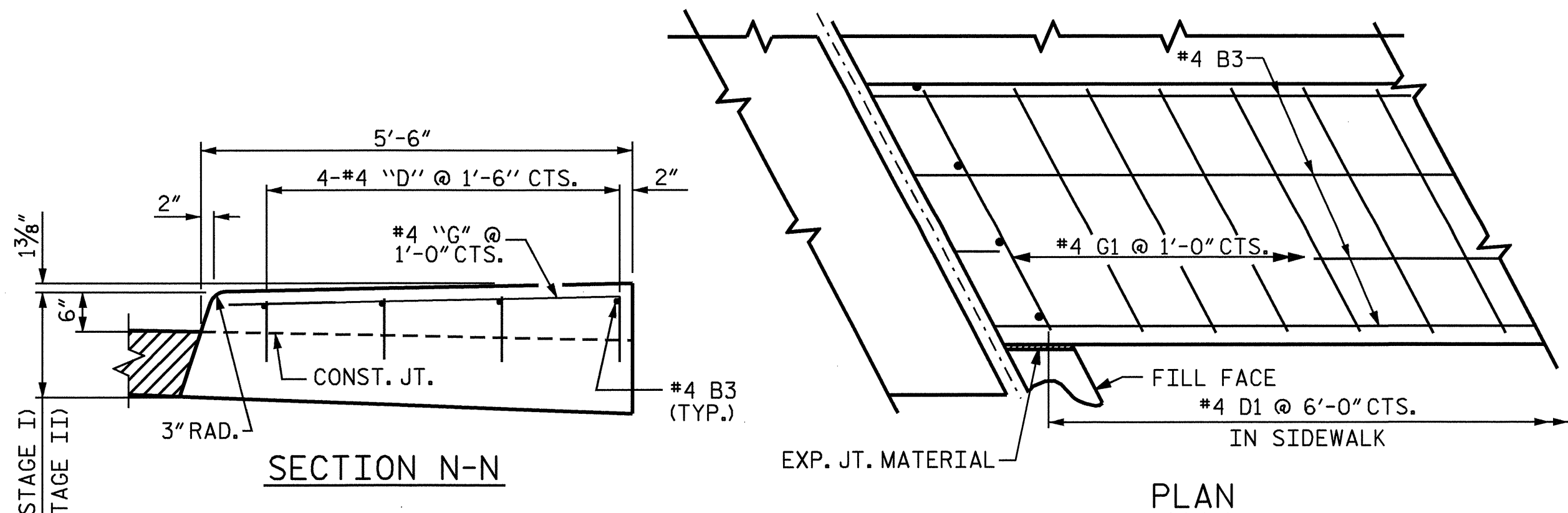
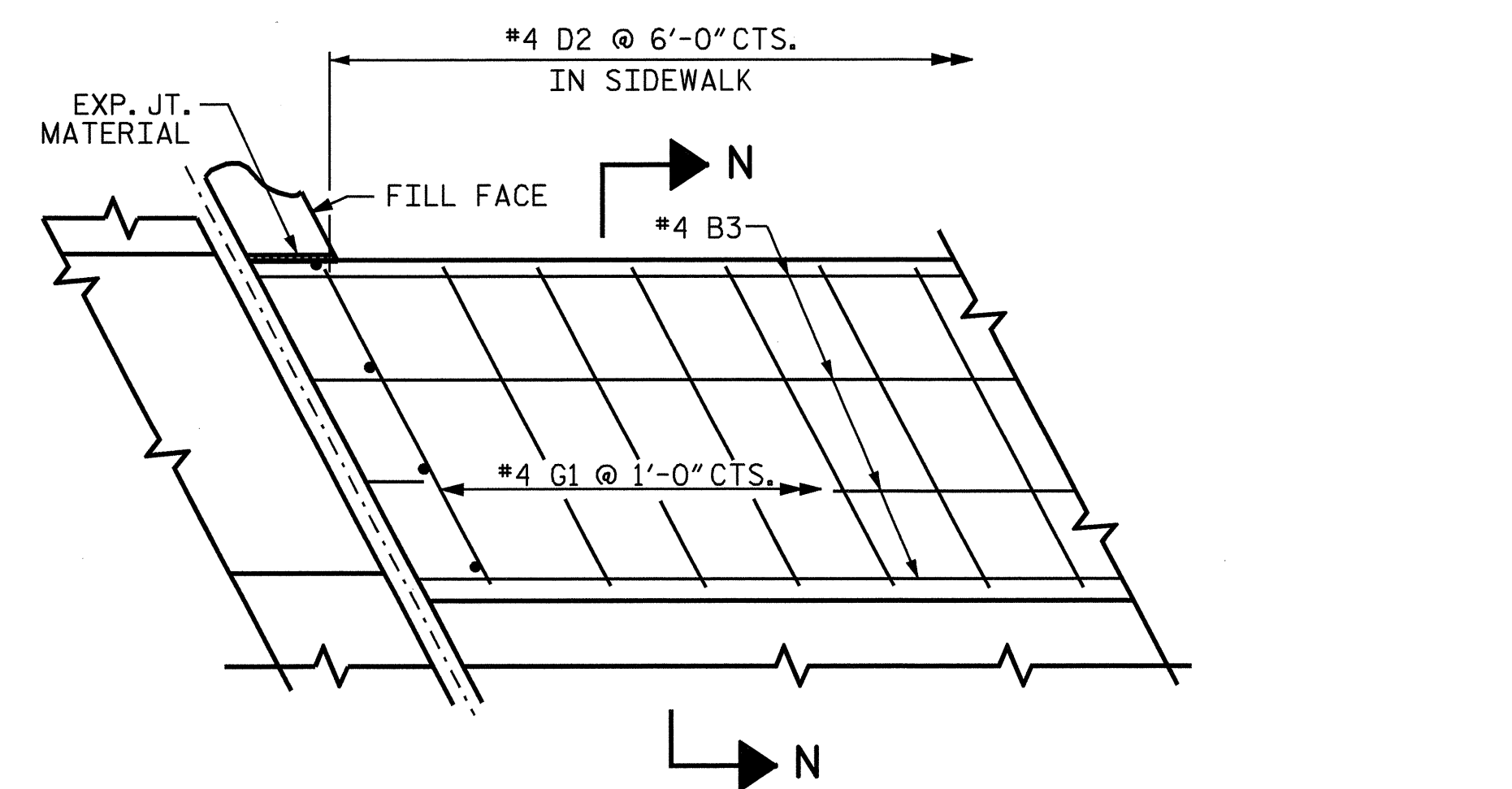


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

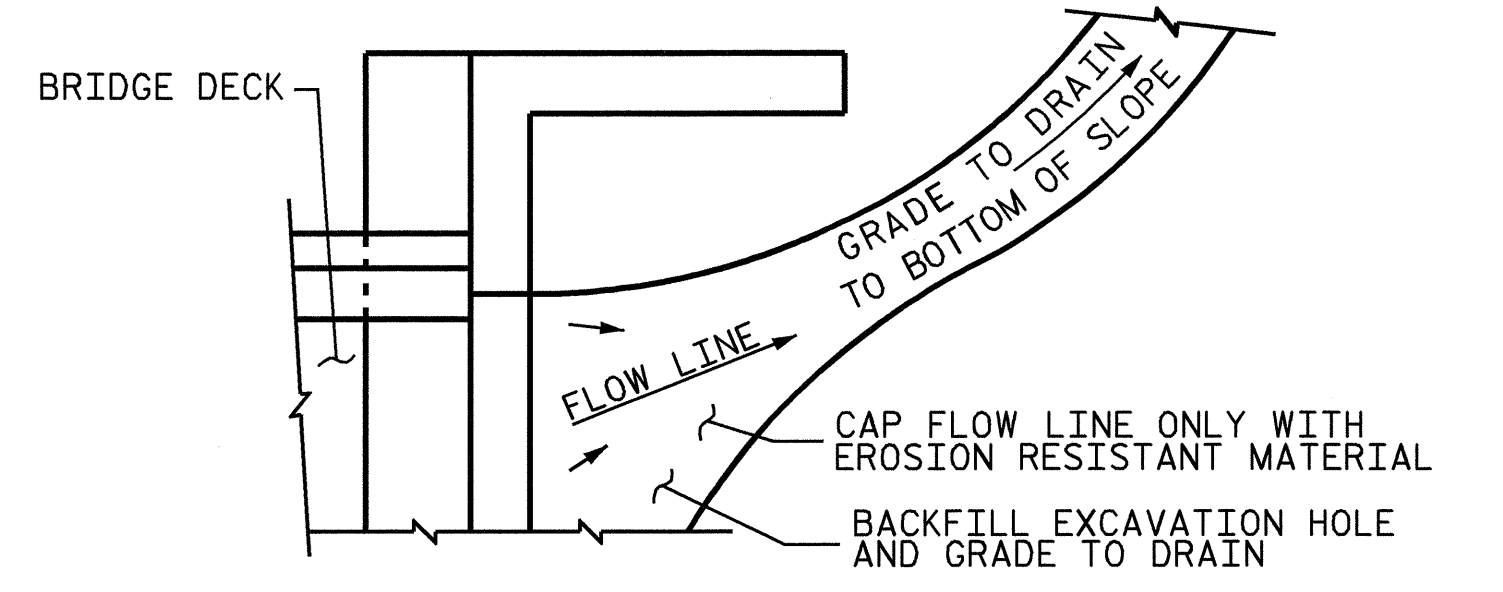
TEMPORARY BERM AND SLOPE DRAIN DETAILS
 (TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



JOINT COVER @ END BENT
 (ASPHALT WEARING SURFACE NOT SHOWN FOR CLARITY)



DETAILS OF SIDEWALK ON APPROACH SLAB



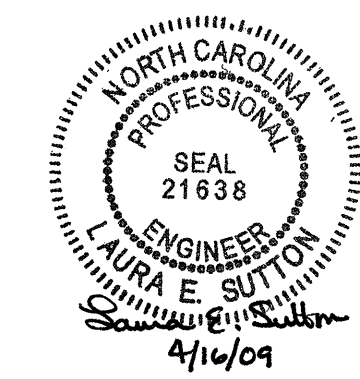
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

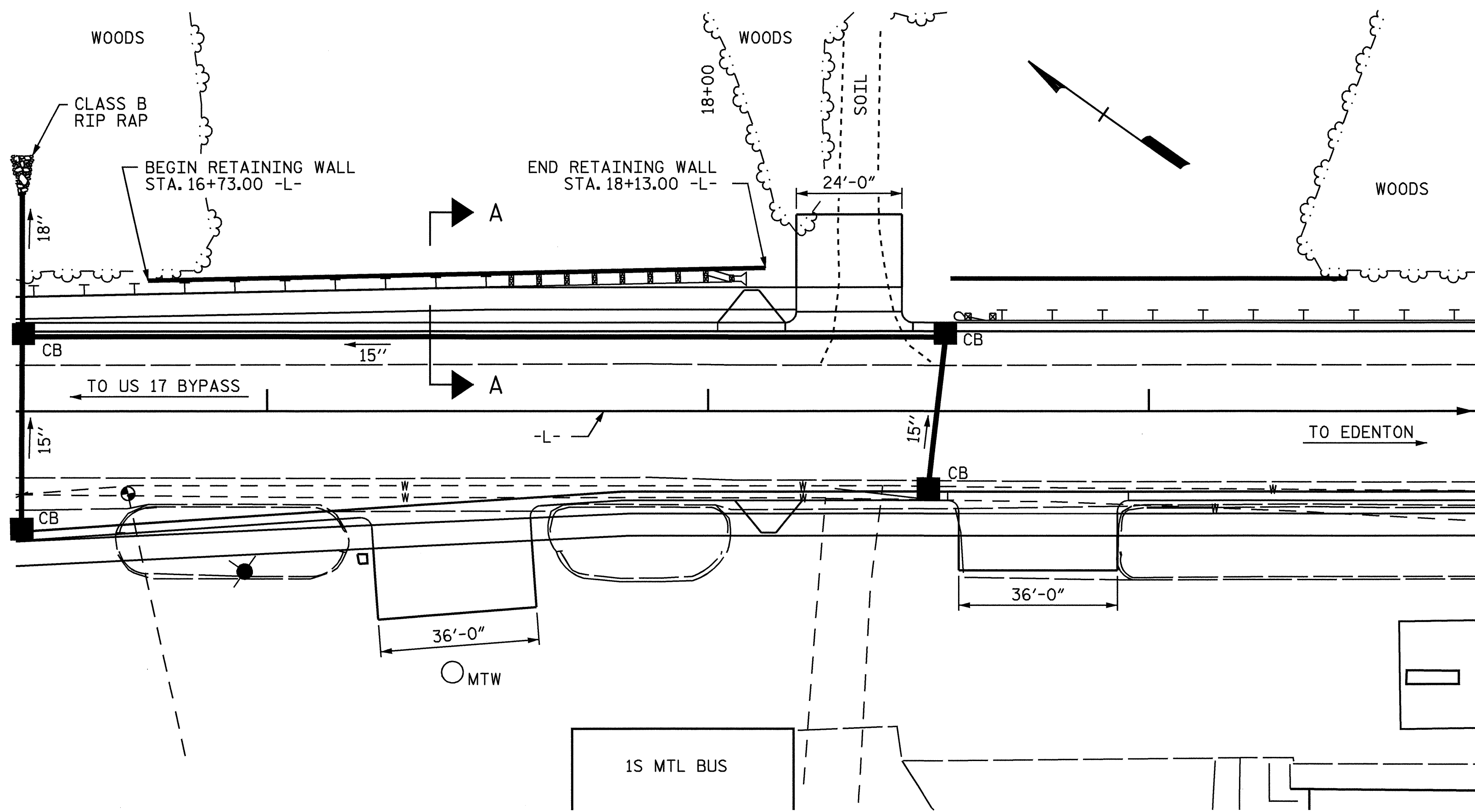
PROJECT NO. B-4434
BERTIE COUNTY
 STATION: 15+31.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD BRIDGE APPROACH SLAB DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-39
					TOTAL SHEETS 39

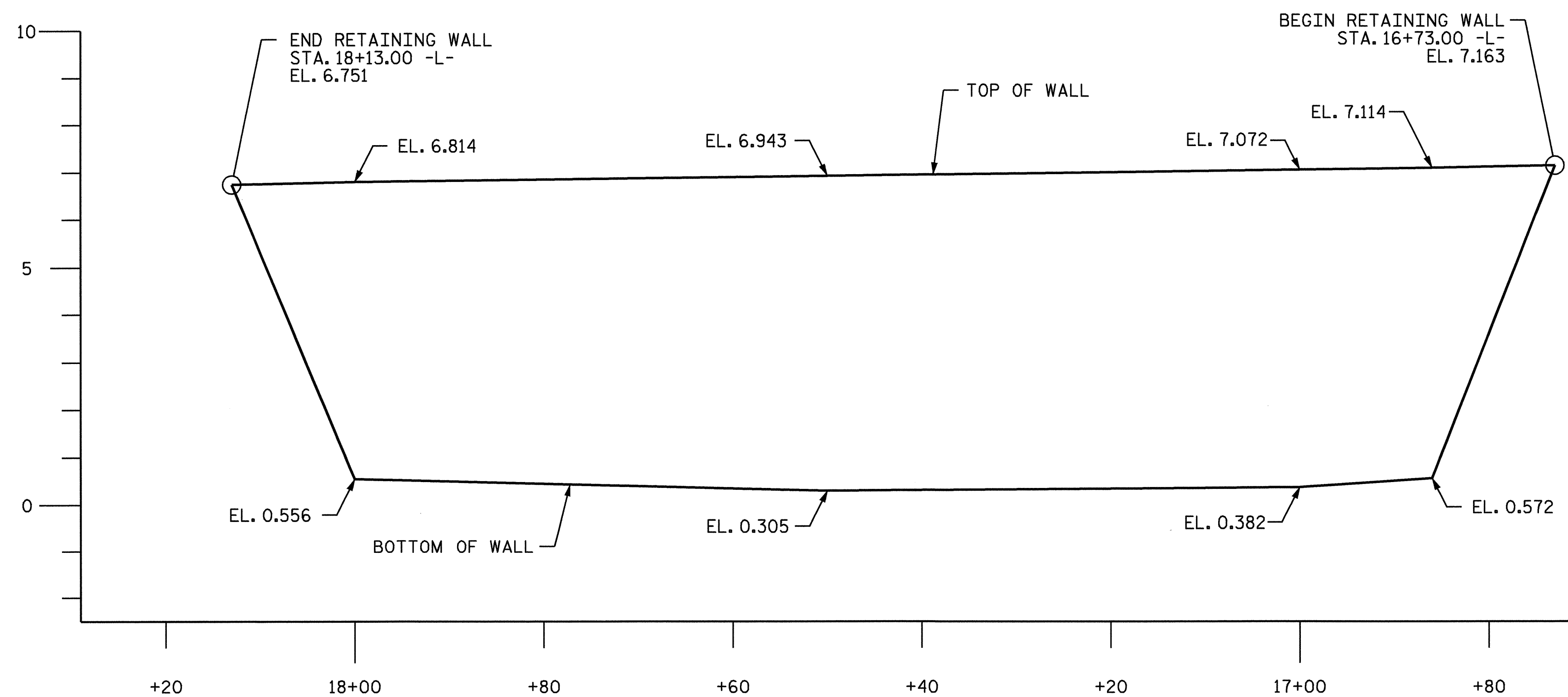


ASSEMBLED BY : R. WITHROW	DATE : 11/25/08
CHECKED BY : A.S. CALLAWAY	DATE : 12/10/08
DRAWN BY : FCJ 11/88	REV. 10/17/00 RWW/LES
CHECKED BY : ARB 11/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06R MAA/KMM



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH



ELEVATION
(LOOKING AT FACE OF WALL)

NOTES

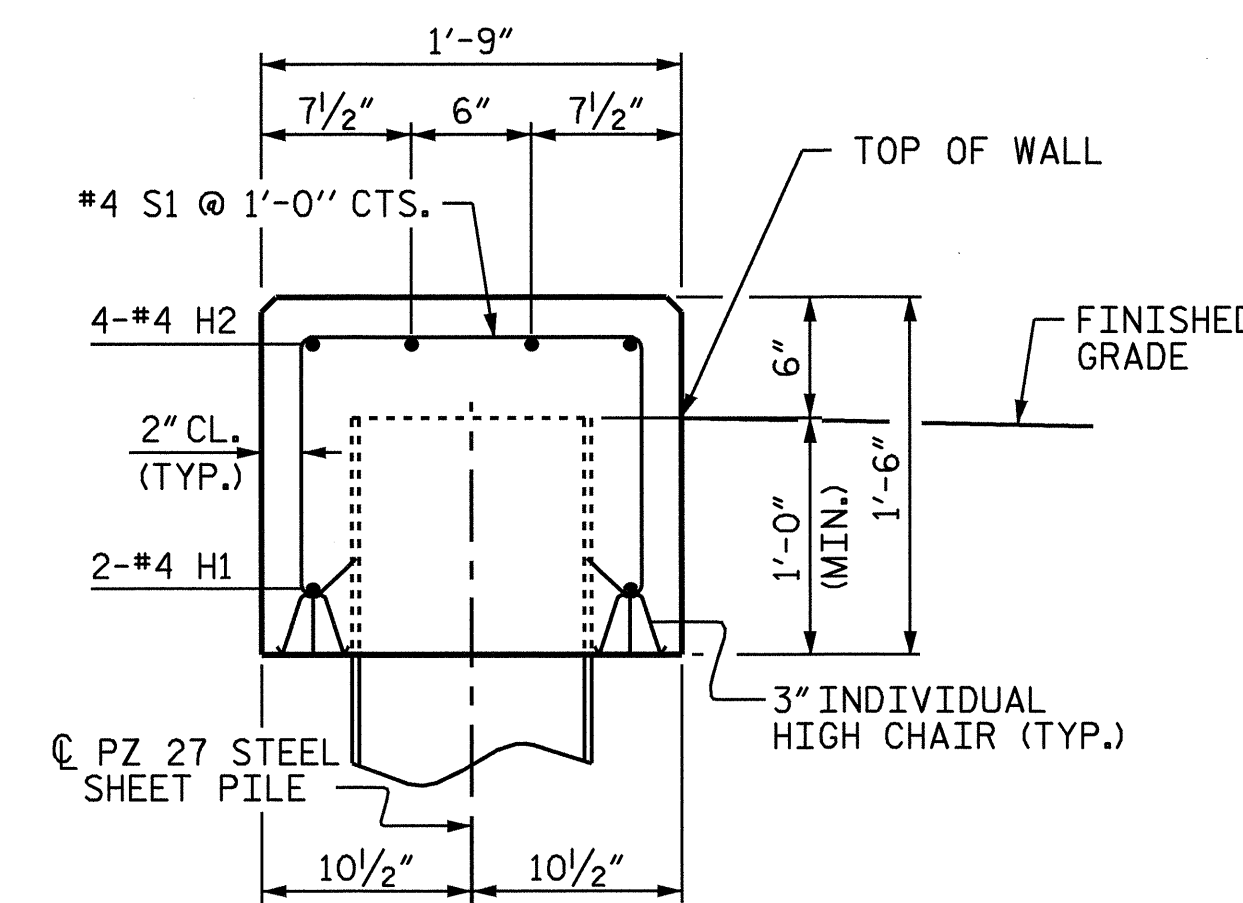
FOR SHEET PILE RETAINING WALLS, SEE SECTION 452 OF THE STANDARD SPECIFICATIONS.
STEEL SHEET PILES SHALL BE PZ 27 SECTIONS, OR EQUIVALENT, AND SHALL CONFORM TO ASTM A690. SEE SECTION 1084 OF THE STANDARD SPECIFICATIONS.
INSTALL SHEET PILES TO A TIP ELEVATION NO HIGHER THAN -19.0 FEET.
CONSTRUCT COPING IN ACCORDANCE WITH SECTION 825 OF THE STANDARD SPECIFICATIONS. THE REINFORCING STEEL AND CLASS A CONCRETE REQUIRED FOR COPING ARE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE BID PER SQUARE FOOT FOR SHEET PILE RETAINING WALLS.
BE AWARE THAT RIP RAP MAYBE PRESENT AT THE RETAINING WALL LOCATIONS. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING RIP RAP, IF NECESSARY, TO ENSURE CORRECT INSTALLATION OF THE SHEET PILE RETAINING WALLS.

WALL 1 ELEVATIONS				
STATION	OFFSET TO FACE OF WALL (FT.)	TOP OF WALL ELEV.	BOTTOM OF WALL ELEV.	WALL HEIGHT (FT.)
16+73 -L-	29.60 (LT.)	7.163	7.163	0
16+86 -L-	29.87 (LT.)	7.114	0.572	6.542
17+00 -L-	30.14 (LT.)	7.072	0.382	6.690
17+50 -L-	31.14 (LT.)	6.943	0.305	6.638
18+00 -L-	32.14 (LT.)	6.814	0.556	6.258
18+13 -L-	32.40 (LT.)	6.751	6.751	0

ALL ELEVATIONS ARE SHOWN IN FEET.

TOTAL BILL OF MATERIAL	
SHEET PILE RETAINING WALLS	831 SQ. FT.

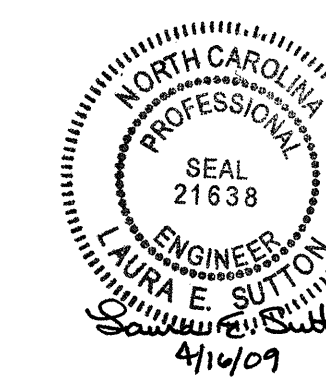
BAR TYPES					
DIMENSIONS ARE OUT TO OUT.					
COPING BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	10	#4	STR	29'-4"	196
H2	20	#4	STR	29'-11"	400
S1	140	#4	1	4'-2"	390
REINFORCING STEEL				LBS.	986
CLASS A CONCRETE				CU. YDS.	13.6



SECTION A-A

PROJECT NO. B-4434
BERTIE COUNTY
STATION: 16+73.00 -L-

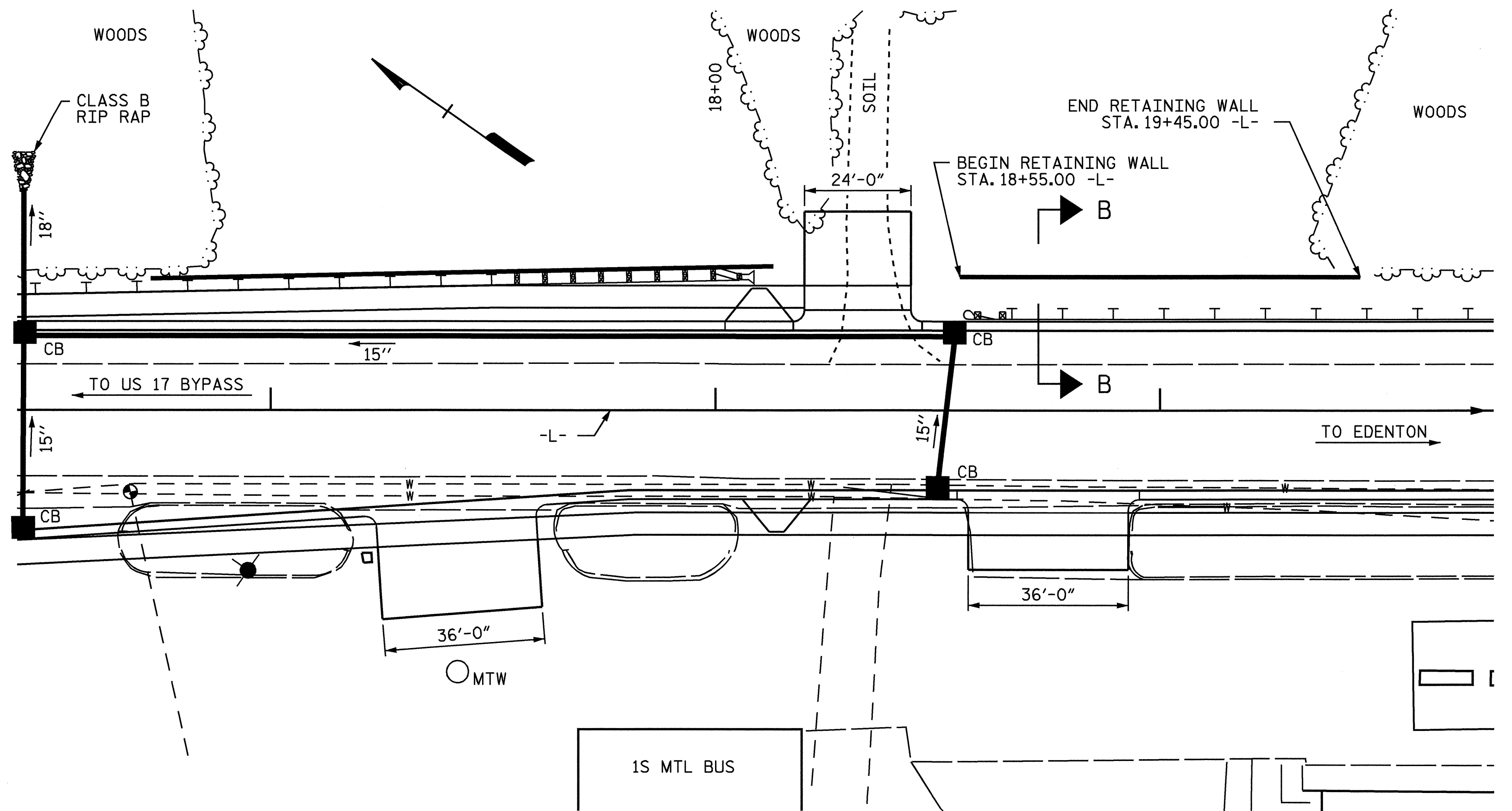
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SHEET PILE
RETAINING WALL 1



DRAWN BY: A.S. CALLAWAY DATE: 2/03/09
CHECKED BY: L.E. SUTTON DATE: 2/06/09

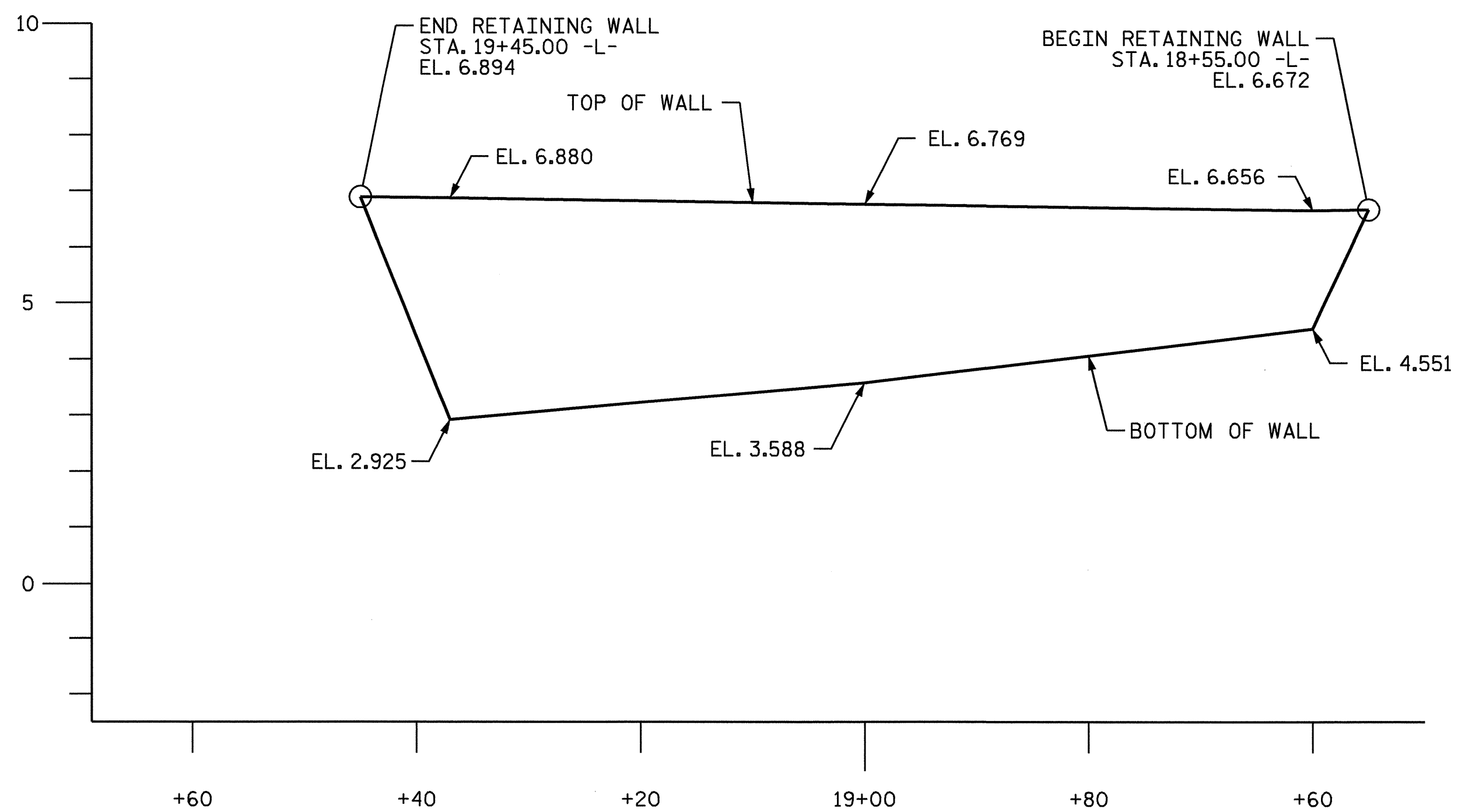
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R:\Structures\walls\b4434.sd.rw.02.dgn
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	W-1
1			3			TOTAL SHEETS
2			4			2



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH



ELEVATION
(LOOKING AT FACE OF WALL)

NOTES

FOR SHEET PILE RETAINING WALLS, SEE SECTION 452 OF THE STANDARD SPECIFICATIONS.

STEEL SHEET PILES SHALL BE PZ 22 SECTIONS, OR EQUIVALENT, AND SHALL CONFORM TO ASTM A690. SEE SECTION 1084 OF THE STANDARD SPECIFICATIONS.

INSTALL SHEET PILES TO A TIP ELEVATION NO HIGHER THAN -12.0 FEET.

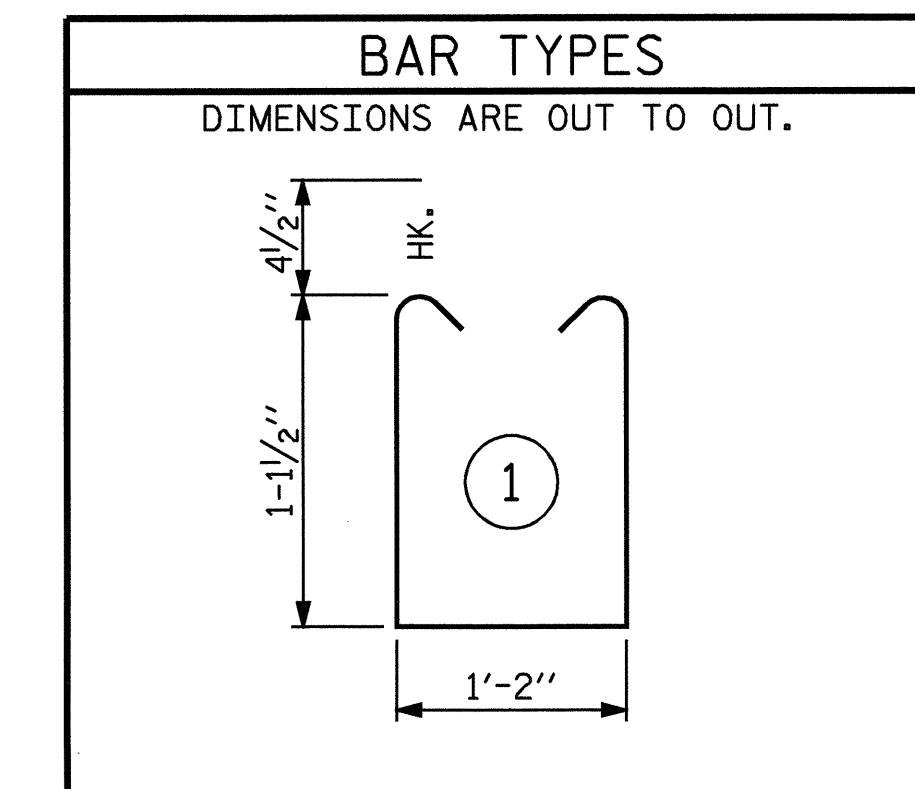
CONSTRUCT COPING IN ACCORDANCE WITH SECTION 825 OF THE STANDARD SPECIFICATIONS. THE REINFORCING STEEL AND CLASS A CONCRETE REQUIRED FOR COPING ARE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE BID PER SQUARE FOOT FOR SHEET PILE RETAINING WALLS.

BE AWARE THAT RIP RAP MAYBE PRESENT AT THE RETAINING WALL LOCATIONS. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING RIP RAP, IF NECESSARY, TO ENSURE CORRECT INSTALLATION OF THE SHEET PILE RETAINING WALLS.

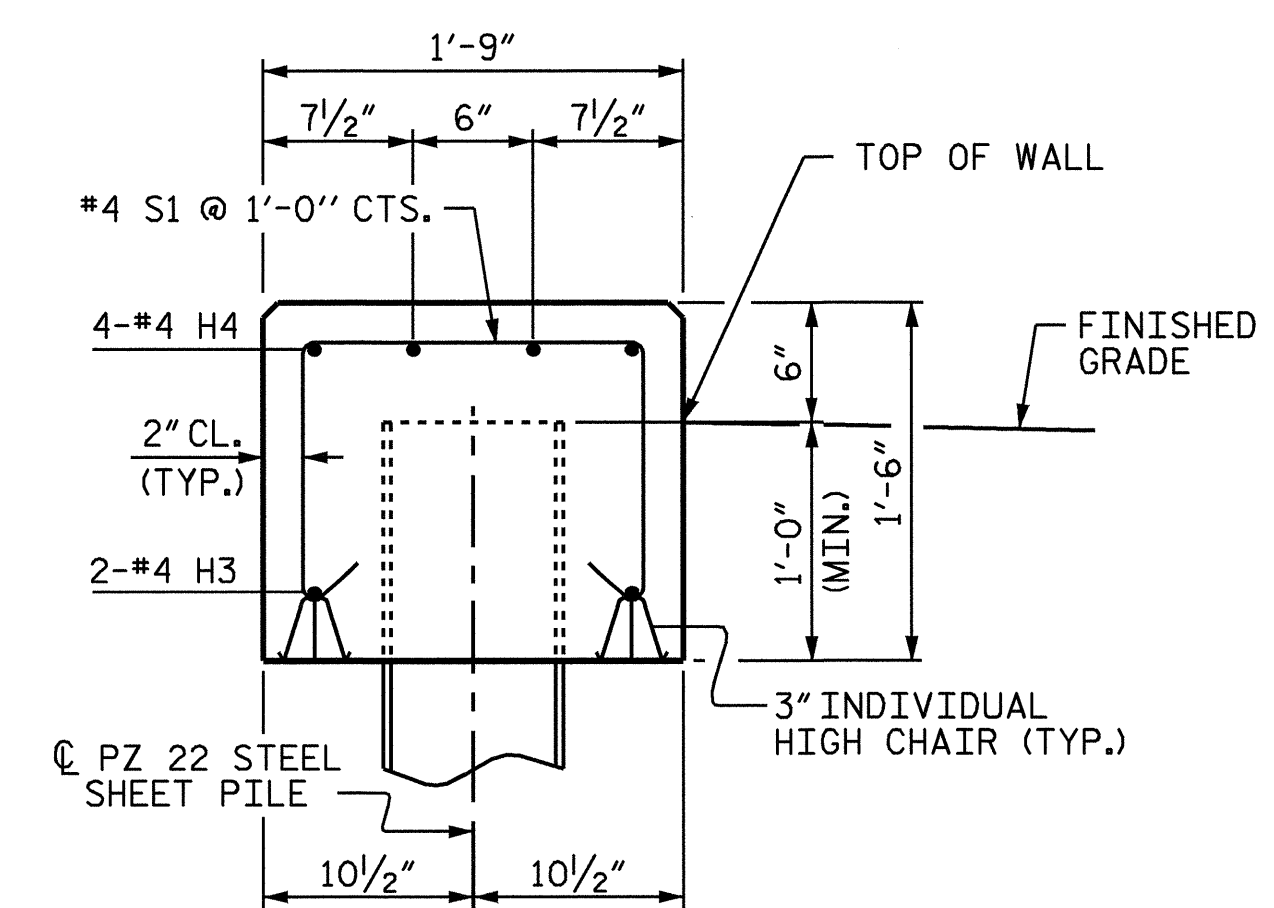
WALL 2 ELEVATIONS				
STATION	OFFSET TO FACE OF WALL (FT.)	TOP OF WALL ELEV.	BOTTOM OF WALL ELEV.	WALL HEIGHT (FT.)
18+55 -L-	30.00 (LT.)	6.672	6.672	0
18+60 -L-	30.00 (LT.)	6.656	4.551	2.105
19+00 -L-	30.00 (LT.)	6.769	3.588	3.181
19+37 -L-	30.00 (LT.)	6.880	2.925	3.955
19+45 -L-	30.00 (LT.)	6.894	6.894	0

ALL ELEVATIONS ARE SHOWN IN FEET.

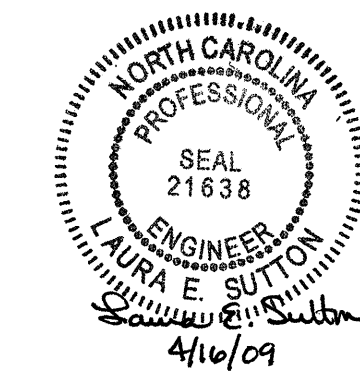
TOTAL BILL OF MATERIAL	
SHEET PILE RETAINING WALLS	259 SQ. FT.



COPING BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H3	8	#4	STR	23'-9"	127
H4	16	#4	STR	24'-3"	259
S1	90	#4	1	4'-2"	251
REINFORCING STEEL				LBS.	637
CLASS A CONCRETE				CU. YDS.	8.8



SECTION B-B



PROJECT NO. B-4434
BERTIE COUNTY
STATION: 18+55.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SHEET PILE
RETAINING WALL 2

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

DRAWN BY: A.S. CALLAWAY DATE: 2/03/09
CHECKED BY: L.E. SUTTON DATE: 2/06/09

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN