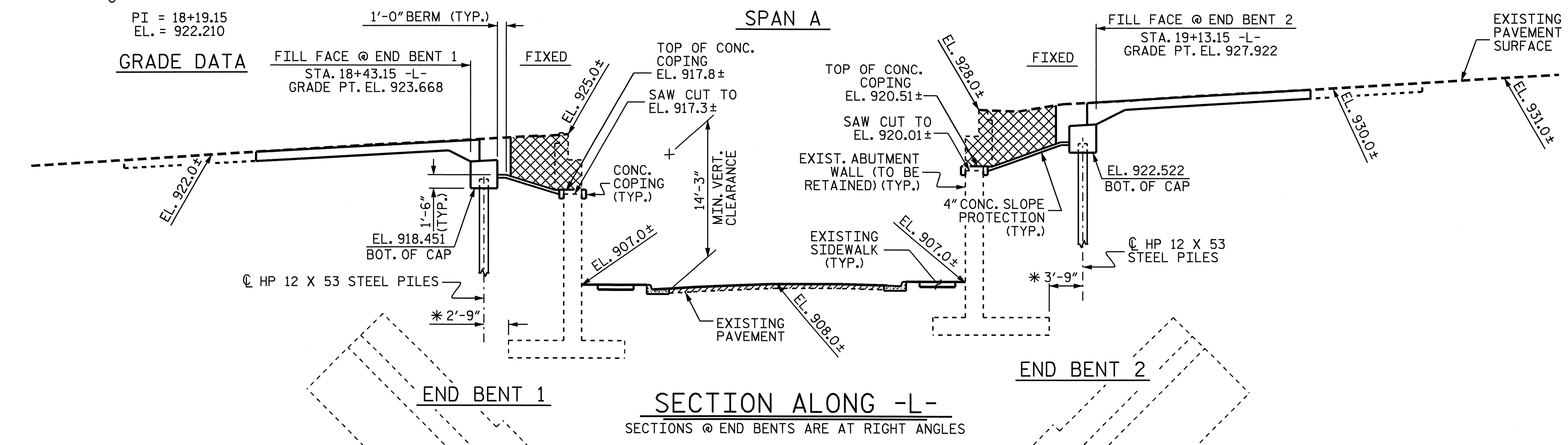




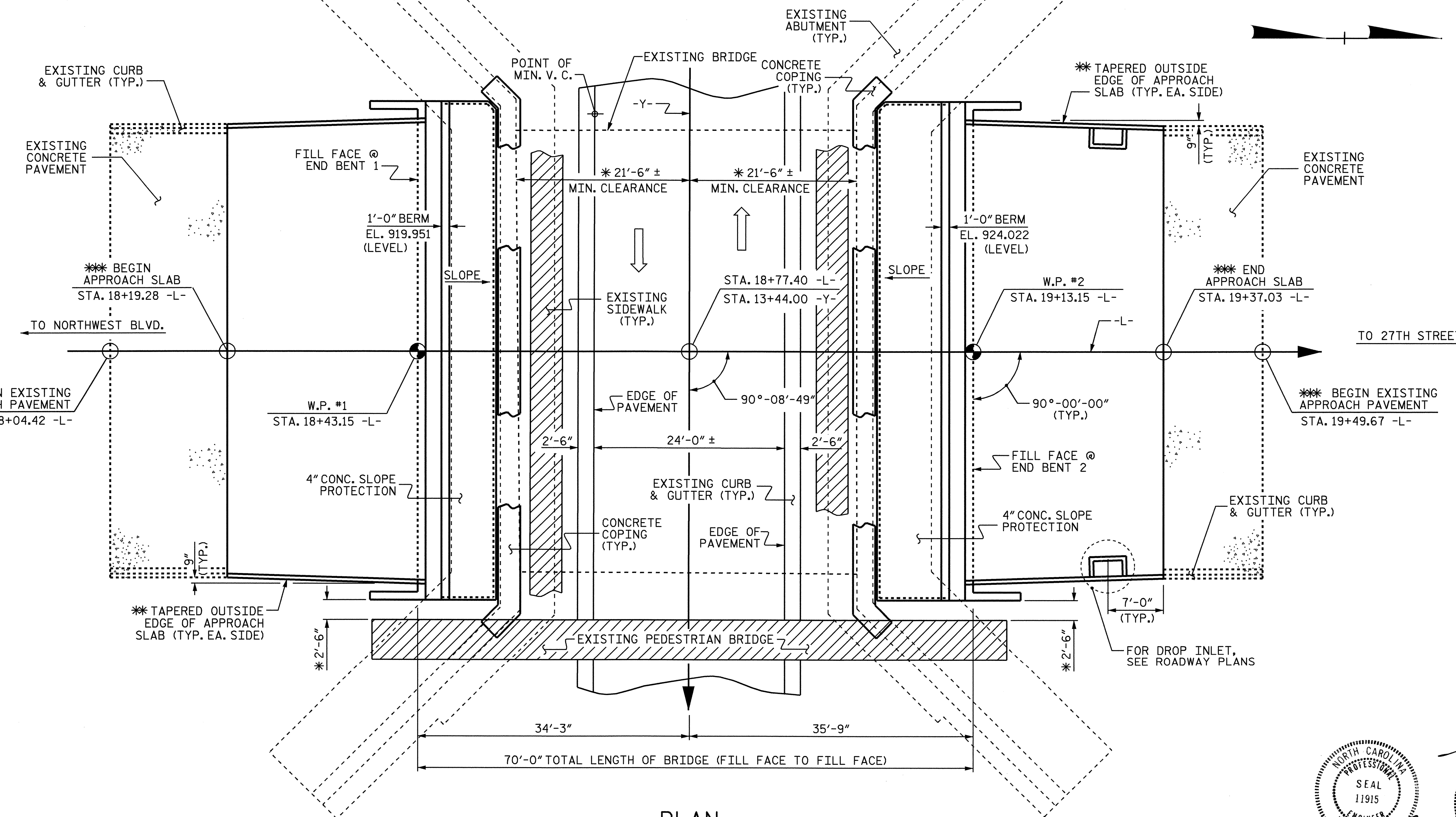
18+00 19+00 19+50

GRADE DATA  
 + 6.0763%  
 PI = 18+19.15  
 EL. = 922.210



UNCLASSIFIED STRUCTURE  
 EXCAVATION & PARTIAL  
 REMOVAL OF EXISTING ABUTMENT.

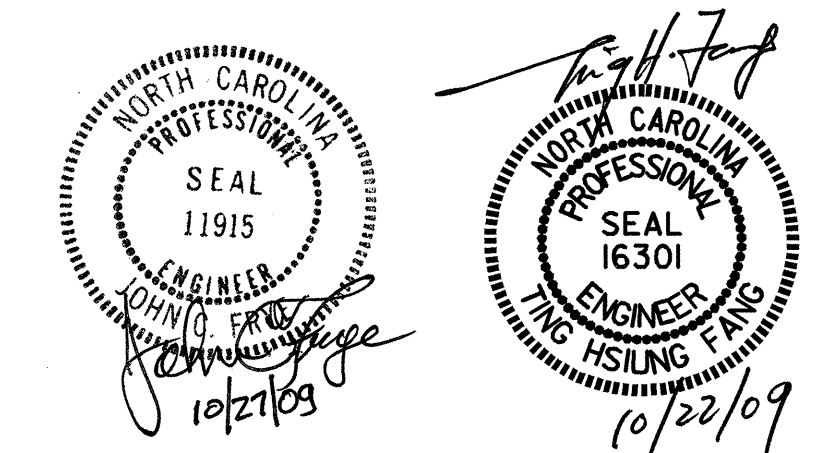
- \* DIMENSIONS ARE ESTIMATED VALUES, BASED ON THE BEST KNOWLEDGE OF THE EXISTING BRIDGE DATA.
- \*\* APPROACH SLAB IS TAPERED 9"± ON EACH CORNER TO TRANSITION TO EXISTING PAVEMENT WIDTH.
- \*\*\* APPROACH SLAB LENGTH MAY BE ADJUSTED TO FIT JOINTED CONCRETE PAVEMENT APPROACHES AS DIRECTED BY ENGINEER.



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

PROJECT NO. B-4745  
FORSYTH COUNTY  
 STATION: 18+77.40 -L- =  
13+44.00 -Y-  
 SHEET 1 OF 3 REPLACES BRIDGE #322

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE ON SR 1725  
 (UNIVERSITY PARKWAY)  
 OVER 20TH STREET



DRAWN BY : E.C. LOCKLEAR DATE : 4-13-09  
 CHECKED BY : T.H. FANG DATE : 4-16-09

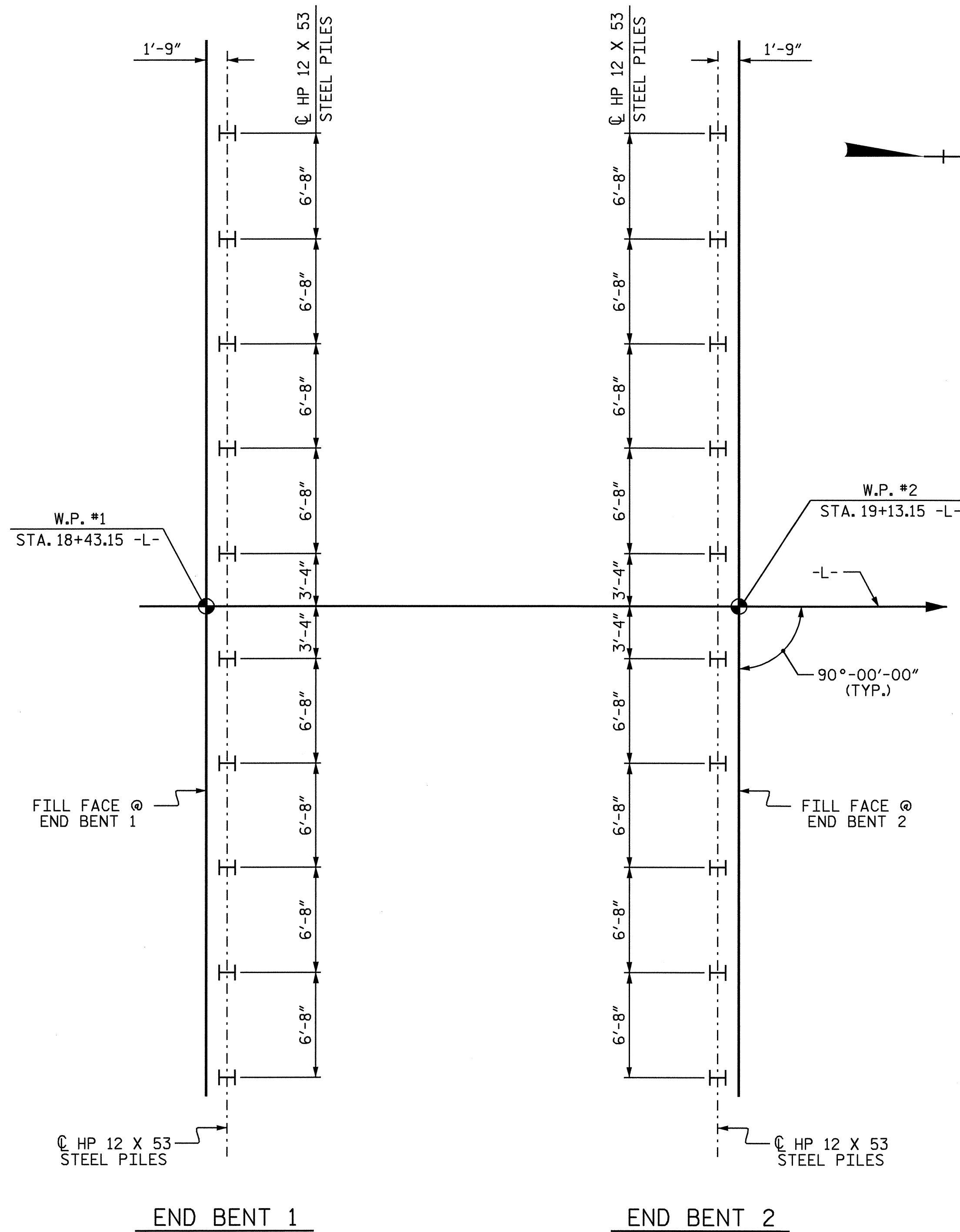
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			38

**NOTES**

PILES AT END BENTS 1 & 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 100 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 167 TONS PER PILE.

STEEL H-PILE POINTS ARE REQUIRED FOR H-PILES AT END BENTS 1 & 2. FOR STEEL PILE POINTS, SEE STANDARD SPECIFICATIONS 450-7(D) AND SPECIAL PROVISIONS FOR "PILES".

FOR PILES, SEE SPECIAL PROVISIONS.

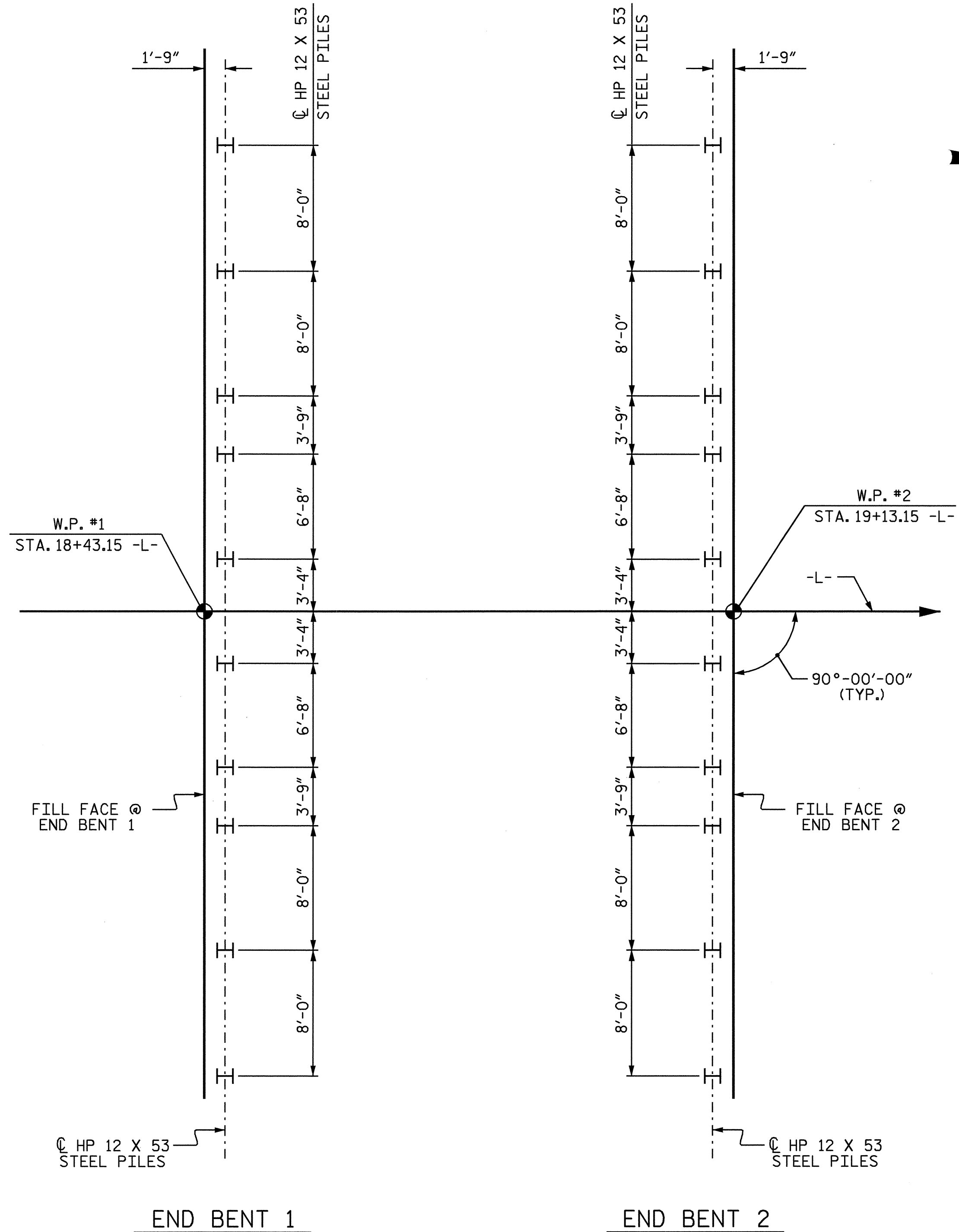


END BENT 1

END BENT 2

**FOUNDATION LAYOUT FOR CAST-IN-PLACE END BENTS**

DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES. ALL HP 12 X 53 STEEL PILES ARE VERTICAL AND SPACED AT 6'-8"CTS.



END BENT 1

END BENT 2

**FOUNDATION LAYOUT FOR PRECAST END BENTS**

DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES. ALL HP 12 X 53 STEEL PILES ARE VERTICAL AND SPACED AT VARIOUS DIMENSIONS SHOWN.



PROJECT NO. B-4745  
FORSYTH COUNTY  
 STATION: 18+77.40 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE ON SR 1725  
 (UNIVERSITY PARKWAY)  
 OVER 20TH STREET

DRAWN BY : E. C. LOCKLEAR DATE : 6/14/09  
 CHECKED BY : T.H. FANG DATE : 6/22/09

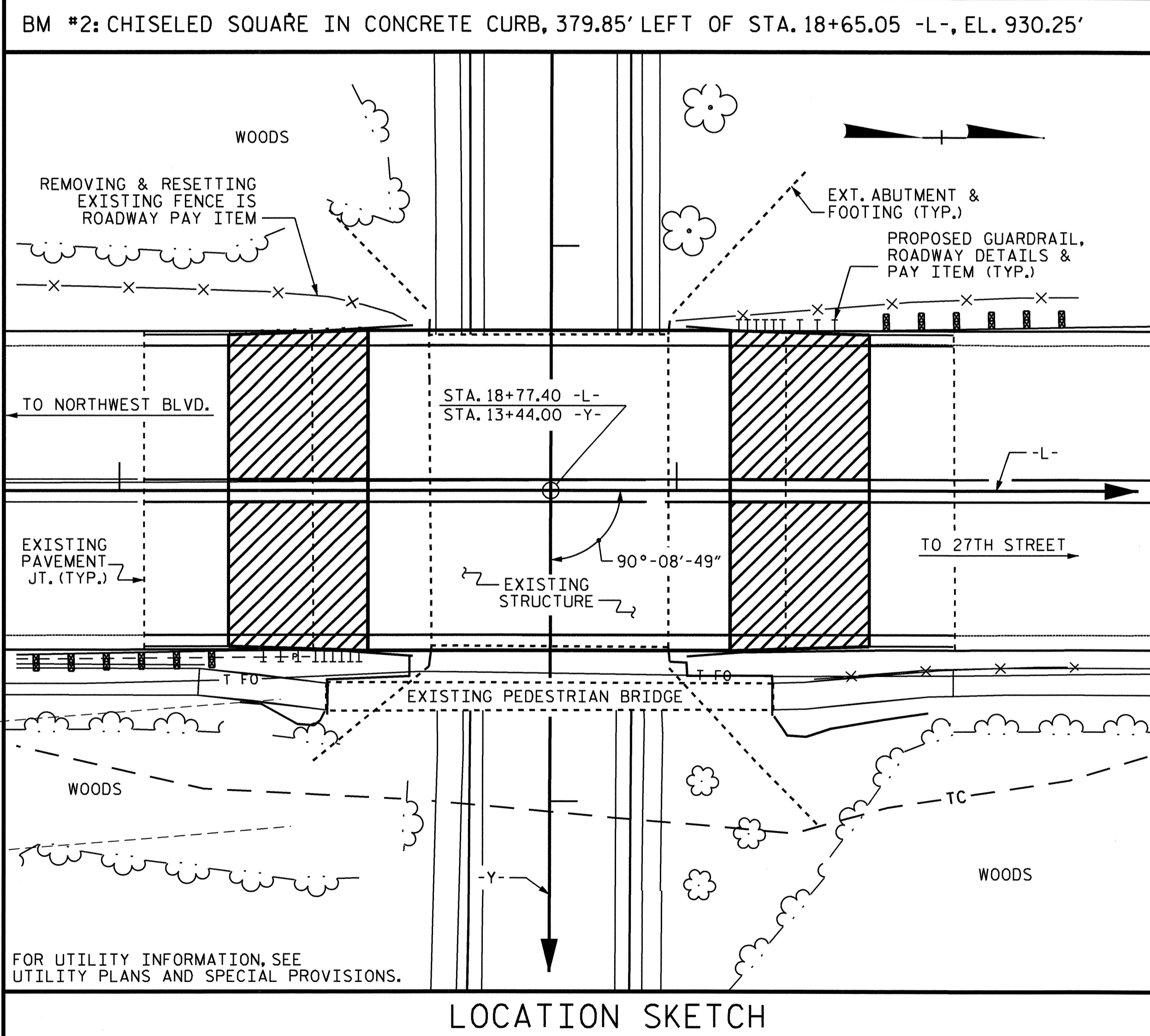
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-2
1			3			TOTAL SHEETS
2			4			38

**TOTAL BILL OF MATERIAL**

	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS AA CONCRETE	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL	HP 12 X 53 STEEL PILES	STEEL PILE POINTS	2-BAR METAL RAIL	1'-2" X 2'-6" CONCRETE PARAPET	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	3'-0" X 2'-2" PRESTRESSED CONCRETE CORED SLABS	BRIDGE DECK GRINDING	VIBRATION MONITORING		
	LUMP SUM	LUMP SUM	CU. YDS.	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	EACH	LIN. FT.	SO. YDS.	LUMP SUM	NO.	LIN. FT.	LUMP SUM	LUMP SUM	
SUPERSTRUCTURE			6.5				397				120.5	135.3		LUMP SUM	20	1355.0	LUMP SUM	LUMP SUM
END BENT 1				22.2		3,301		10	200	10		62.0						
END BENT 2				22.3		3,308		10	200	10		77.0						
<b>TOTAL</b>	<b>LUMP SUM</b>	<b>LUMP SUM</b>	<b>6.5</b>	<b>44.5</b>	<b>LUMP SUM</b>	<b>6,609</b>	<b>397</b>	<b>20</b>	<b>400</b>	<b>20</b>	<b>120.5</b>	<b>135.3</b>	<b>139.0</b>	<b>LUMP SUM</b>	<b>20</b>	<b>1355.0</b>	<b>LUMP SUM</b>	<b>LUMP SUM</b>

**NOTES**

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.
- PRESTRESSED CONCRETE CORED SLAB UNITS SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR, AS REQUIRED IN SECTION 1078 OF THE STANDARD SPECIFICATIONS.
- THE CONCRETE IN THE CORED SLAB UNITS SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB. OF FLY ASH PER 1.0 LB. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR SEISMIC PERFORMANCE ZONE 1.
- THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS.
- INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 18+77.40 -L-".
- THE EXISTING STRUCTURE CONSISTING OF ONE SPAN @ 45'-0"; 56'-0" CLEAR ROADWAY WIDTH CONSISTING OF CONCRETE DECK ON I-BEAMS ATOP FULL HEIGHT REINFORCED CONCRETE ABUTMENTS AND LOCATED AT THE CENTERLINE OF THE PROPOSED STRUCTURE SHALL BE REMOVED AS HEREIN NOTED AND ON THE PLANS. THE SUPERSTRUCTURE SHALL BE REMOVED IN ITS ENTIRETY. THE ABUTMENTS SHALL BE REMOVED AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER TO CONFORM TO SITE SPECIFIC CONDITIONS. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
- THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 40 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION.
- THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
- ANODIZE THE TWO BAR METAL RAIL. SEE THE TWO BAR METAL RAIL SHEET FOR ANODIZING NOTES.
- COMPLETE ALL BRIDGE DECK GRINDING BEFORE BRIDGE IS OPENED TO TRAFFIC.
- CASTING OF CONCRETE MEDIAN IS NOT REQUIRED PREVIOUS TO OPENING BRIDGE TO TRAFFIC.
- FOR GRINDING OF CORED SLAB UNITS, APPROACH SLABS AND EXISTING APPROACH CONCRETE PAVEMENTS, SEE SPECIAL PROVISION "BRIDGE DECK GRINDING".
- FOR CURING CONCRETE, SEE SPECIAL PROVISIONS.
- FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.
- FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR GROUT, SEE SPECIAL PROVISIONS.
- FOR EXISTING PEDESTRIAN BRIDGE, SEE SPECIAL PROVISIONS.
- FOR PROGRESS OF SUBMITTALS AND PRECASTING, SEE SPECIAL PROVISIONS.
- FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR POSITIVE HOLD DOWN SYSTEM FOR VOIDS IN CORED SLABS, SEE SPECIAL PROVISIONS.
- FOR CONTROL OF VIBRATION, SEE SPECIAL PROVISIONS.

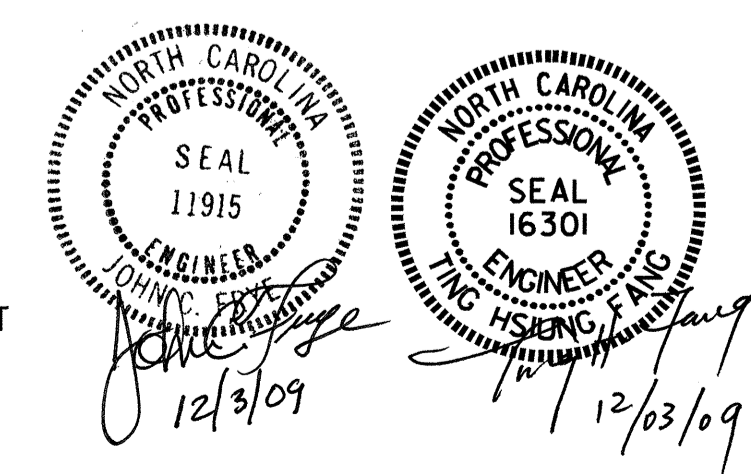


THE CONTRACTOR MAY CHOOSE PRECAST END BENTS OVER CAST-IN-PLACE END BENTS IN ACCORDANCE WITH THE INCLUDED PLANS (S-26 THRU S-38) AT NO ADDITIONAL COST TO THE DEPARTMENT AND THE PAYMENT WILL BE MADE AT THE CONTRACT PRICES BID FOR ITEMS ASSOCIATED WITH THE CAST-IN-PLACE END BENTS.

PROJECT NO. B-4745  
FORSYTH COUNTY  
 STATION: 18+77.40 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE ON SR 1725  
 (UNIVERSITY PARKWAY)  
 OVER 29TH STREET



DRAWN BY : E. C. LOCKLEAR DATE : 6/09  
 CHECKED BY : T. H. FANG DATE : 7/09

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			38

03-DEC-2009 15:10  
 q:\structures\b4745\final.plans\b4745.sd.gdgn  
 elocklear

LOAD FACTORS:

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

	YEAR	ADTT
CURRENT	2010	1357
FUTURE	2030	2239

NOTES:

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

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

COMMENTS:

1. THIS BRIDGE HAS BEEN DESIGNED AND RATED WITHOUT THE WEIGHT OF FUTURE WEARING SURFACE.

- 2.
- 3.
- 4.

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 ( $\gamma_{LL}$ )	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	LIVE-LOAD FACTORS ( $\gamma_{LL}$ )	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.02	--	1.75	0.280	1.38	A	ER	33.313	0.507	1.13	A	ER	3.331	0.80	0.280	1.02	A	ER	33.313		
	HL-93 (OPERATING)	N/A		1.46	--	1.35	0.280	1.79	A	ER	33.313	0.507	1.46	A	ER	3.331	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.31	47.16	1.75	0.280	1.73	A	ER	33.313	0.507	1.37	A	ER	3.331	0.80	0.280	1.31	A	ER	33.313		
	HS-20 (OPERATING)	36.000		1.83	65.88	1.35	0.280	2.31	A	ER	33.313	0.507	1.83	A	ER	3.331	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		2.91	39.29	1.40	0.280	3.84	A	ER	33.313	0.507	3.25	A	ER	3.331	0.80	0.280	2.91	A	ER	33.313	
		SNGARBS2	20.000		2.19	43.80	1.40	0.280	2.89	A	ER	33.313	0.507	2.31	A	ER	3.331	0.80	0.280	2.19	A	ER	33.313	
		SNAGRIS2	22.000		2.09	45.98	1.40	0.280	2.75	A	ER	33.313	0.507	2.15	A	ER	3.331	0.80	0.280	2.09	A	ER	33.313	
		SNCOTTS3	27.250		1.45	39.51	1.40	0.280	1.91	A	ER	33.313	0.507	1.62	A	ER	3.331	0.80	0.280	1.45	A	ER	33.313	
		SNAGGRS4	34.925		1.21	42.26	1.40	0.280	1.61	A	ER	33.313	0.507	1.35	A	ER	3.331	0.80	0.280	1.21	A	ER	33.313	
		SNS5A	35.550		1.19	42.30	1.40	0.280	1.57	A	ER	33.313	0.507	1.37	A	ER	3.331	0.80	0.280	1.19	A	ER	33.313	
		SNS6A	39.950		1.10	43.95	1.40	0.280	1.45	A	ER	33.313	0.507	1.25	A	ER	3.331	0.80	0.280	1.10	A	ER	33.313	
		SNS7B	42.000		1.04	43.68	1.40	0.280	1.38	A	ER	33.313	0.507	1.23	A	ER	3.331	0.80	0.280	1.04	A	ER	33.313	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.34	44.22	1.40	0.280	1.77	A	ER	33.313	0.507	1.49	A	ER	3.331	0.80	0.280	1.34	A	ER	33.313	
		TNT4A	33.075		1.35	44.65	1.40	0.280	1.77	A	ER	33.313	0.507	1.45	A	ER	3.331	0.80	0.280	1.35	A	ER	33.313	
		TNT6A	41.600		1.10	45.76	1.40	0.280	1.46	A	ER	33.313	0.507	1.31	A	ER	3.331	0.80	0.280	1.10	A	ER	33.313	
		TNT7A	42.000		1.11	46.62	1.40	0.280	1.47	A	ER	33.313	0.507	1.28	A	ER	3.331	0.80	0.280	1.11	A	ER	33.313	
		TNT7B	42.000		1.15	48.30	1.40	0.280	1.52	A	ER	33.313	0.507	1.20	A	ER	3.331	0.80	0.280	1.15	A	ER	33.313	
		TNAGRIT4	43.000		1.09	46.87	1.40	0.280	1.44	A	ER	33.313	0.507	1.16	A	ER	3.331	0.80	0.280	1.09	A	ER	33.313	
TNAGT5A	45.000		1.03	46.35	1.40	0.280	1.36	A	ER	33.313	0.507	1.15	A	ER	3.331	0.80	0.280	1.03	A	ER	33.313			
TNAGT5B	45.000	③	1.01	45.45	1.40	0.280	1.34	A	ER	33.313	0.507	1.10	A	ER	3.331	0.80	0.280	1.01	A	ER	33.313			

# CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

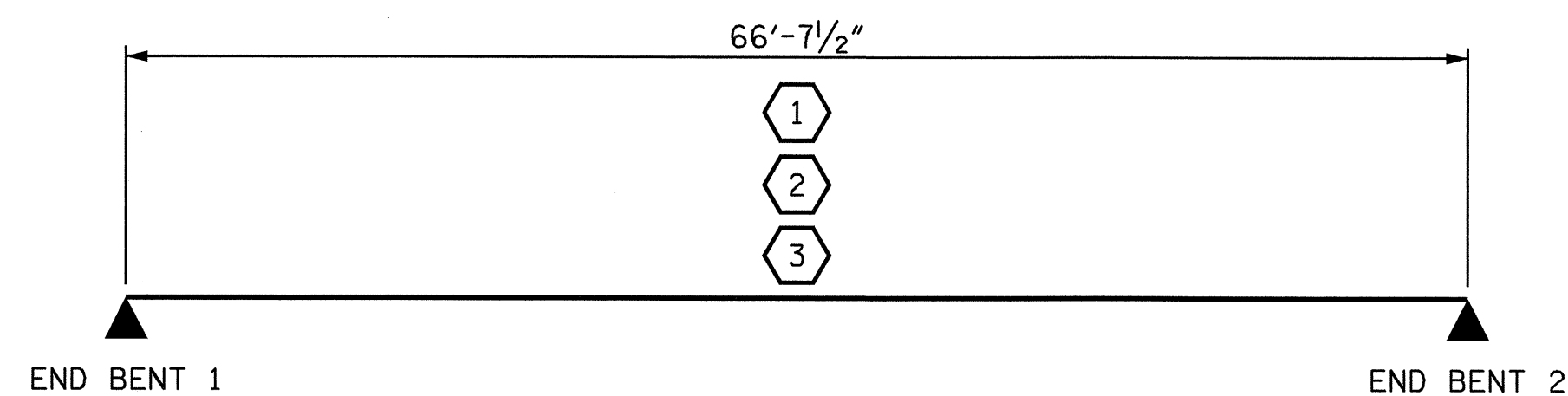
③ LEGAL LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

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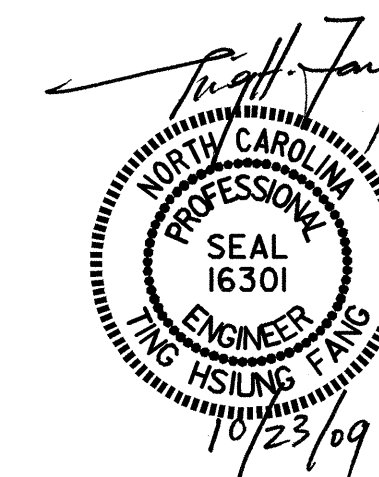
GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. B-4745  
FORSYTH COUNTY  
 STATION: 18+77.40 -L-



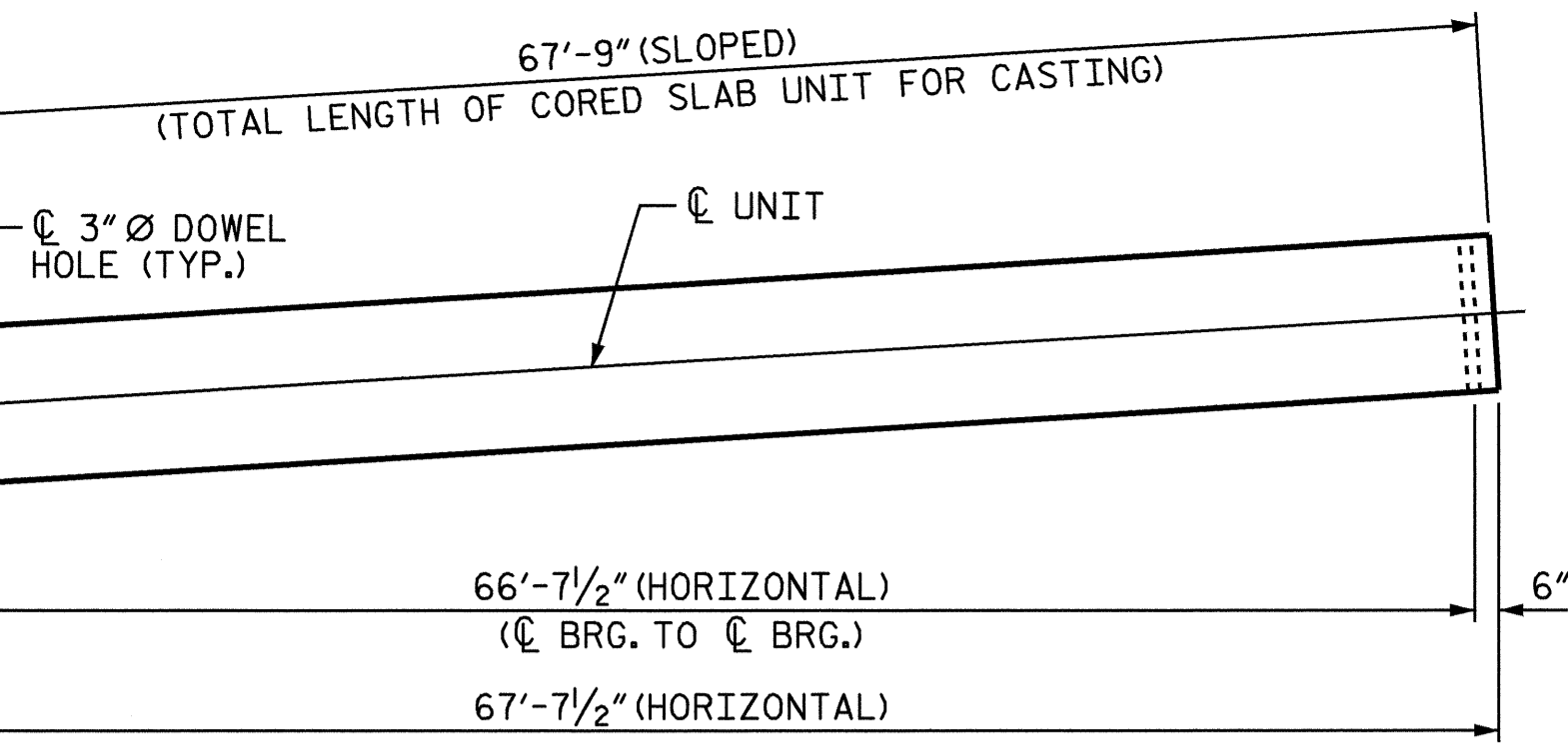
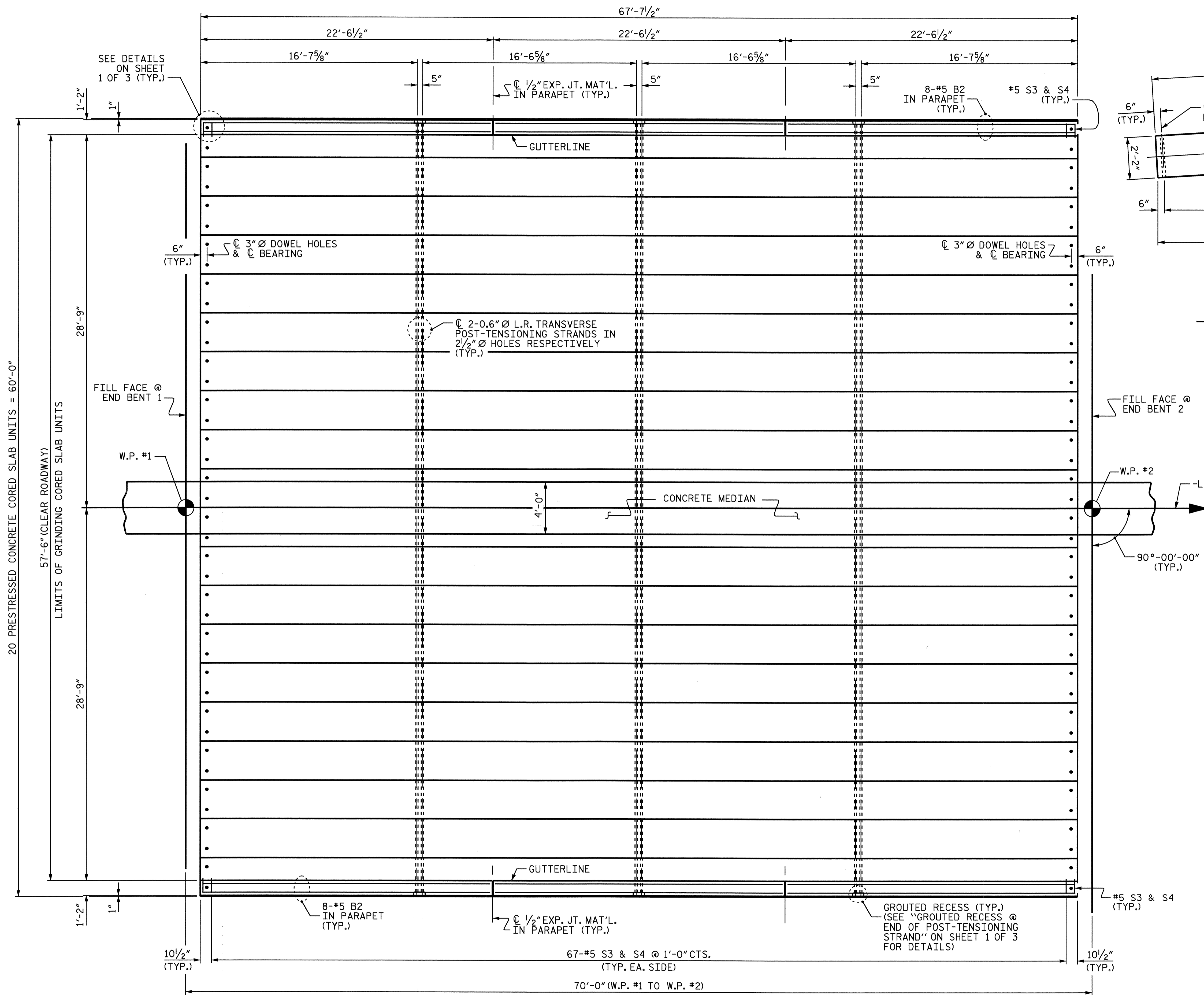
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

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			38

ASSEMBLED BY : S. DOMBROWSKI	DATE : 8/21/09
CHECKED BY : T.H. FANG	DATE : 8/22/09
DRAWN BY : MAA I/08	REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08	





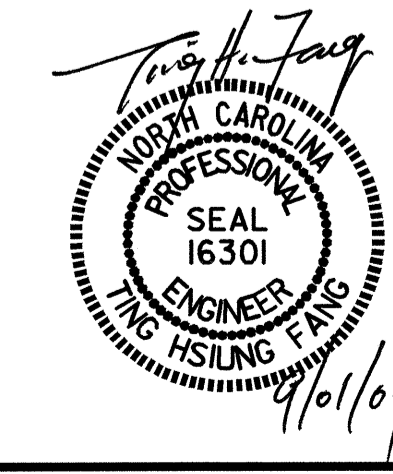
ELEVATION  
CORED SLAB UNIT DIMENSIONS

**SPAN A**

ALL DIMENSIONS SHOWN ARE HORIZONTAL DISTANCE.

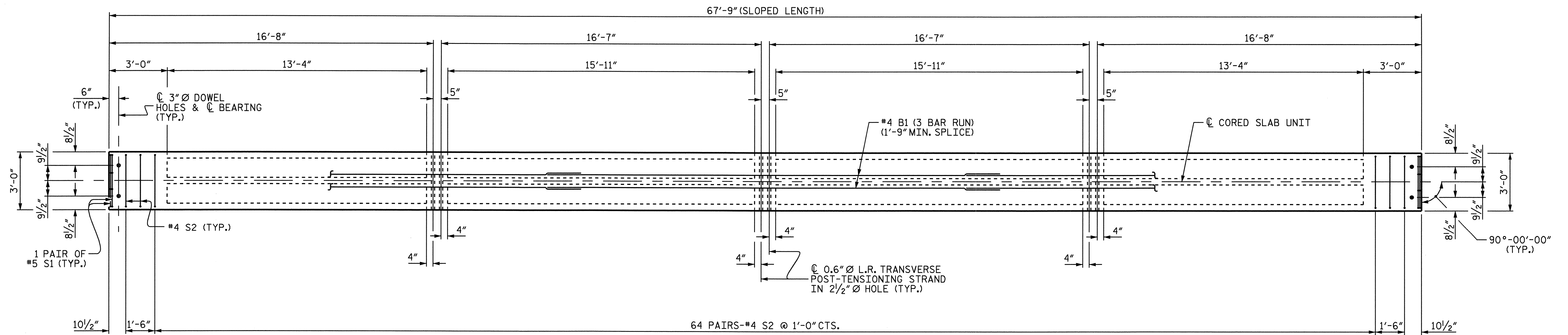
PROJECT NO. B-4745  
FORSYTH COUNTY  
 STATION: 18+77.40 -L-  
 SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE PLAN OF SPAN A					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-6
TOTAL SHEETS					38

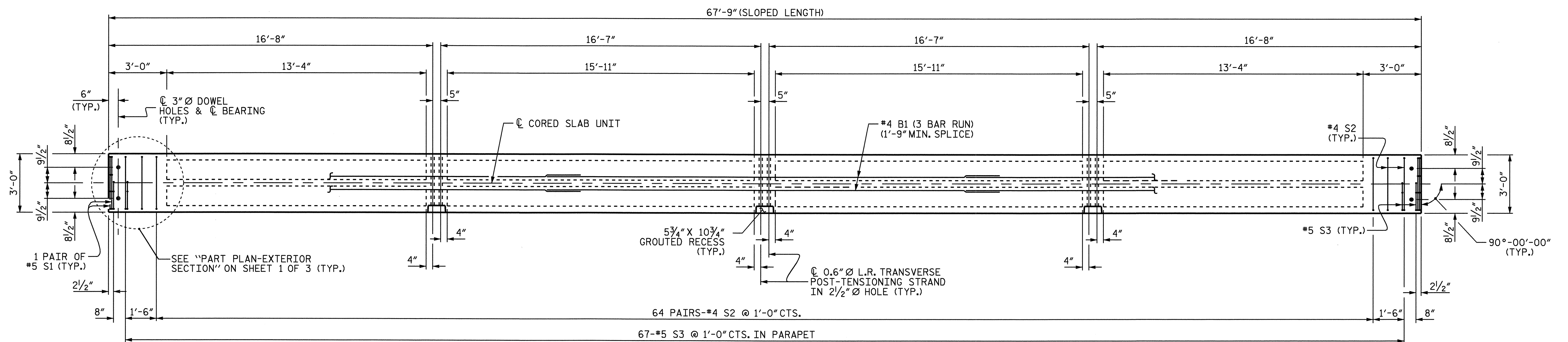


DRAWN BY: E.C. LOCKLEAR DATE: 5-5-09  
 CHECKED BY: T. H. FANG DATE: 7-2-09

01-SEP-2009 13:57  
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 sdombrowski



PLAN OF INTERIOR CORED SLAB UNIT



PLAN OF EXTERIOR CORED SLAB UNIT

#4 S2 BAR AT EDGES OF GROUTED RECESSES SHOULD BE SHIFTED TO KEEP A MIN. CONCRETE COVER OF 1".

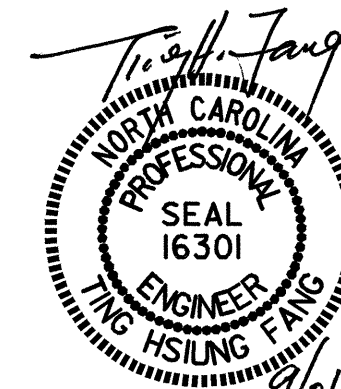
#5 S3 BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR #4 S2 BAR.

ALL DIMENSIONS SHOWN ARE FOR CASTING OF CORED SLAB UNITS.

PROJECT NO. B-4745  
 FORSYTH COUNTY  
 STATION: 18+77.40-L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 CORED SLAB UNIT  
 DIMENSIONS & DETAILS  
 FOR CASTING

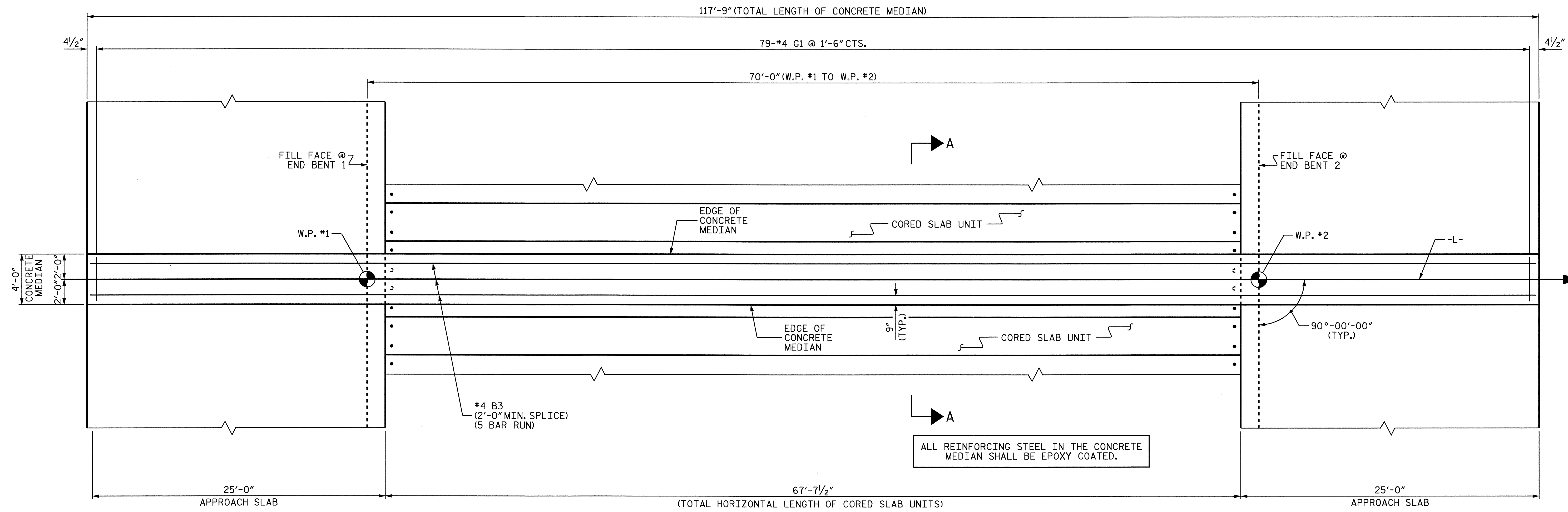


DRAWN BY: E.C. LOCKLEAR DATE: 5-5-09  
 CHECKED BY: T.H. FANG DATE: 7-1-09

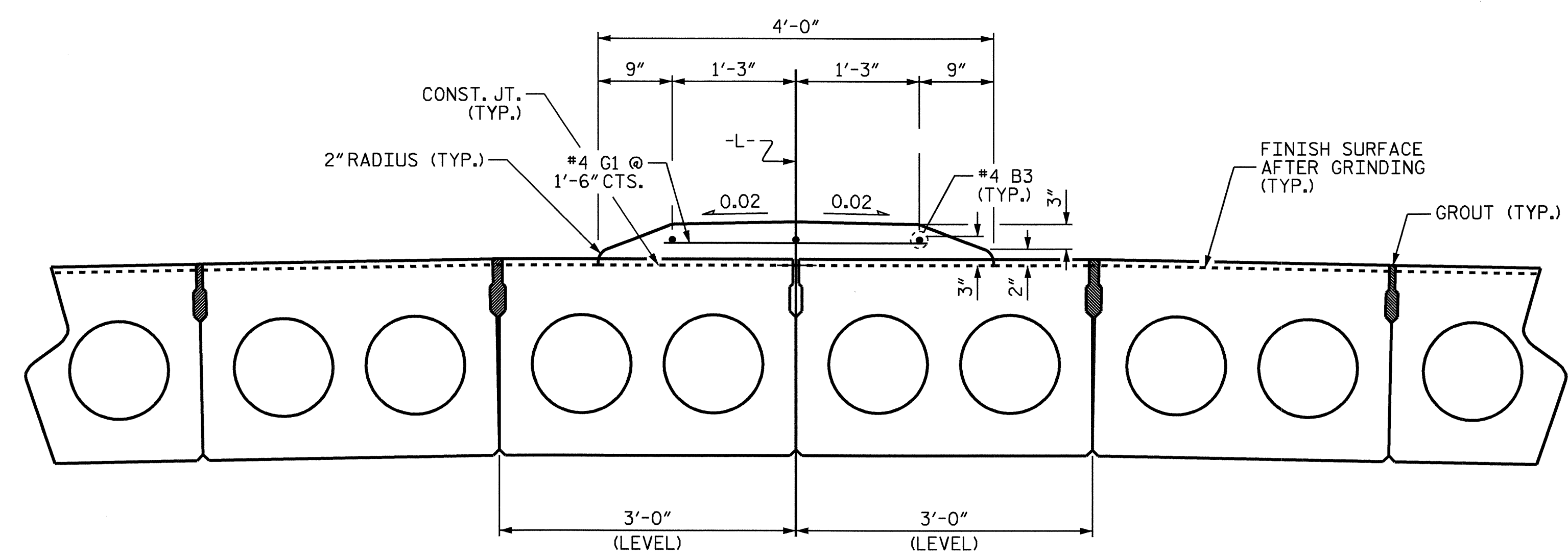
01-SEP-2009 13:57  
 Z:\B4745\Structures\B4745\FINAL\_PLANS\B4745\_sd.cs.dgn  
 sdombrowski

REVISIONS						SHEET NO. S-7
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 38
2			4			





**PLAN**



**SECTION A-A**

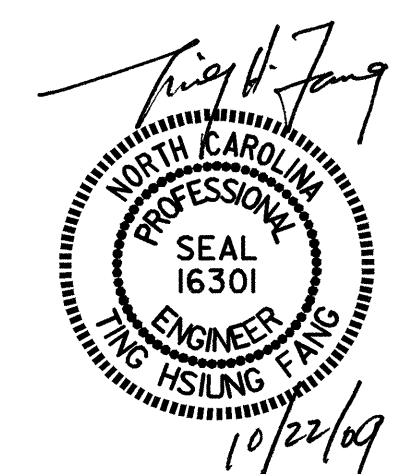
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE CONCRETE MEDIAN IN ACCORDANCE WITH ARTICLE B25-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FEET TO 10 FEET BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINT WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

ALL BRIDGE DECK GRINDING SHALL BE COMPLETED PRIOR TO THE CASTING OF THE CONCRETE MEDIAN.

CASTING OF CONCRETE MEDIAN IS NOT REQUIRED PREVIOUS TO OPENING BRIDGE TO TRAFFIC.

BILL OF MATERIAL FOR CONCRETE MEDIAN					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
*B3	15	#4	STR	25'-2"	252
*G1	79	#4	STR	2'-9"	145
* EPOXY COATED REINFORCING STEEL				397	LBS.
CLASS AA CONCRETE				6.5	CU. YDS.

PROJECT NO. B-4745  
FORSYTH COUNTY  
 STATION: 18+77.40 -L-

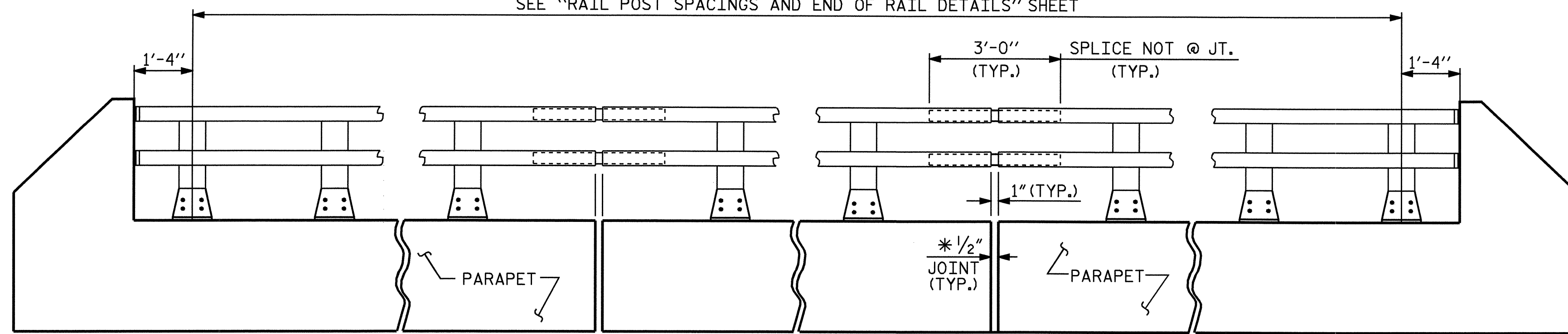


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE CONCRETE MEDIAN					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

DRAWN BY : E.C. LOCKLEAR DATE : 5-8-09  
 CHECKED BY : T. H. FANG DATE : 7-6-09

SHEET NO.  
 S-8  
 TOTAL SHEETS  
 38

SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET



**ELEVATION**

NOTE: FOR ATTACHMENT OF METAL RAIL TO END POST, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS".  
\* FOR LOCATION OF PARAPET JOINTS, SEE "PLAN OF SPAN A."

**NOTES**

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 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.

**ANODIZING**

ANODIZE ALUMINUM FOR POSTS, BASES, RAILS, EXPANSION BARS, CLAMP BARS, RIVETS, CAPS, SHIMS, ATTACHMENT BRACKETS AND HOLD-DOWN PLATES. SUBMIT A SAMPLE OF ASTM B-221 6061-T6 ALUMINUM ANODIZED BLACK TO THE ENGINEER.

AT THE DIRECTION OF THE ENGINEER, REPAIR ANY DAMAGE TO THE ANODIZED SURFACE OF THE RAIL OR COMPONENTS DURING CONSTRUCTION ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS. REPAIRS MADE ARE AT THE CONTRACTOR'S EXPENSE.

AFTER A FINAL COLOR AND FINISH HAS BEEN SELECTED FOR THE RAILING, SUBMIT A SAMPLE OF COMPATIBLE COLOR ACRYLIC HOUSE PAINT TO THE ENGINEER FOR APPROVAL. MATCH THE PAINT WITH THE ANODIZED RAIL COLOR AS CLOSELY AS POSSIBLE. AFTER ERECTION OF THE ANODIZED RAIL, PAINT WITH A MINIMUM OF TWO COATS ALL EXPOSED ANCHOR BOLTS, NUTS, WASHERS, MACHINE SCREWS, CAP SCREWS, BOLTS, BUILT UP ANGLES AND ANY OTHER NON-BLACK METAL IN THE RAIL ASSEMBLIES. SUPPLYING PAINT AND PAINTING MISCELLANEOUS ELEMENTS OF METAL RAIL IS CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE METAL RAIL.

**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.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS 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 REMAINS VISIBLE AFTER RAIL PLACEMENT.

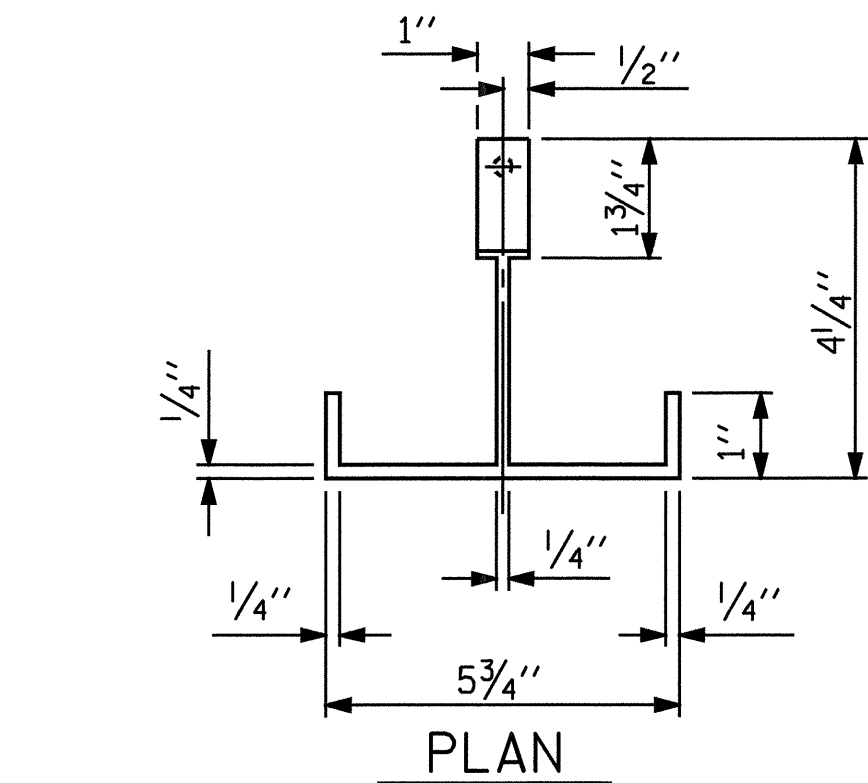
SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

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

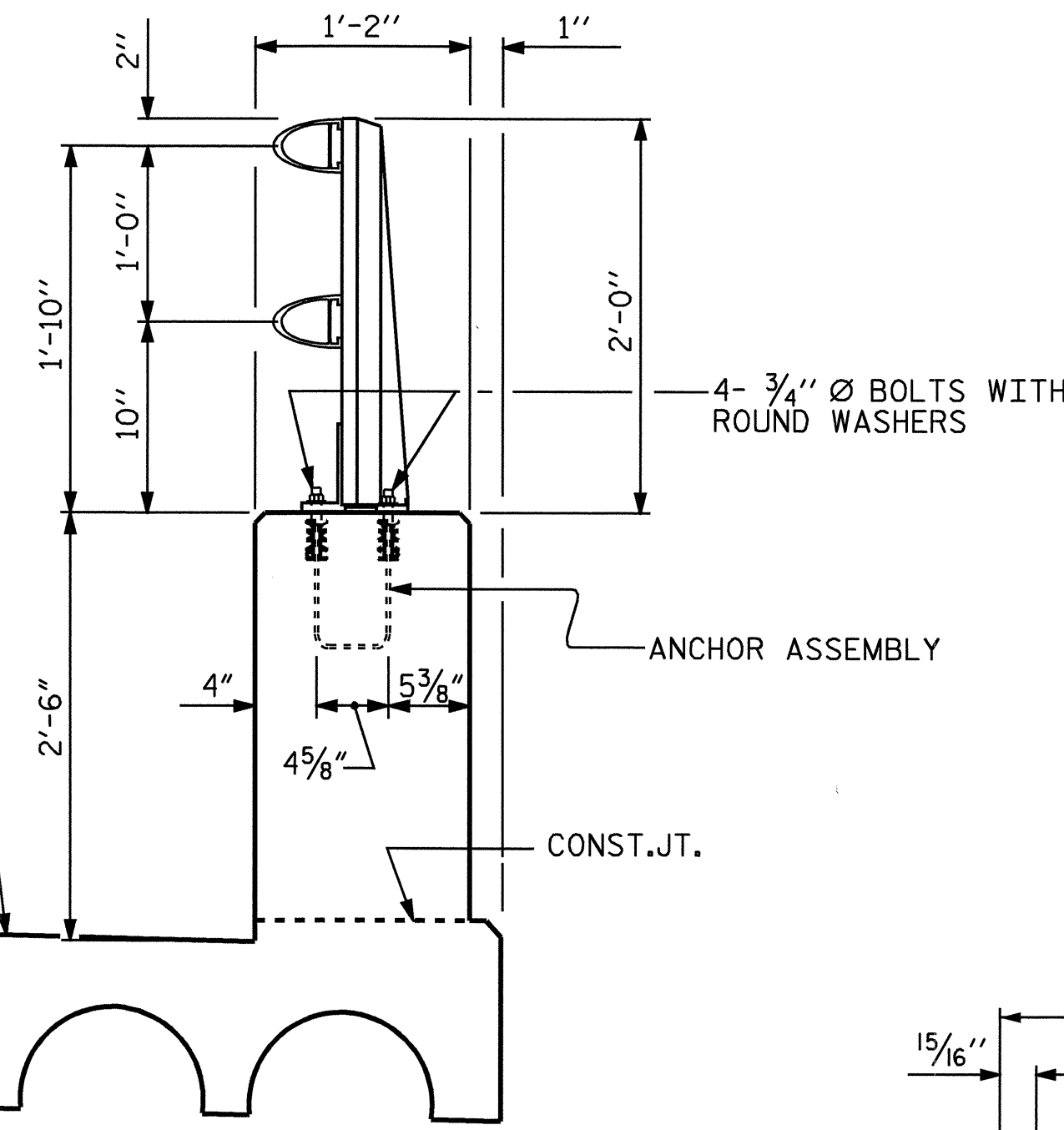
MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

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

PAY LENGTH = 120.5 LIN. FT.

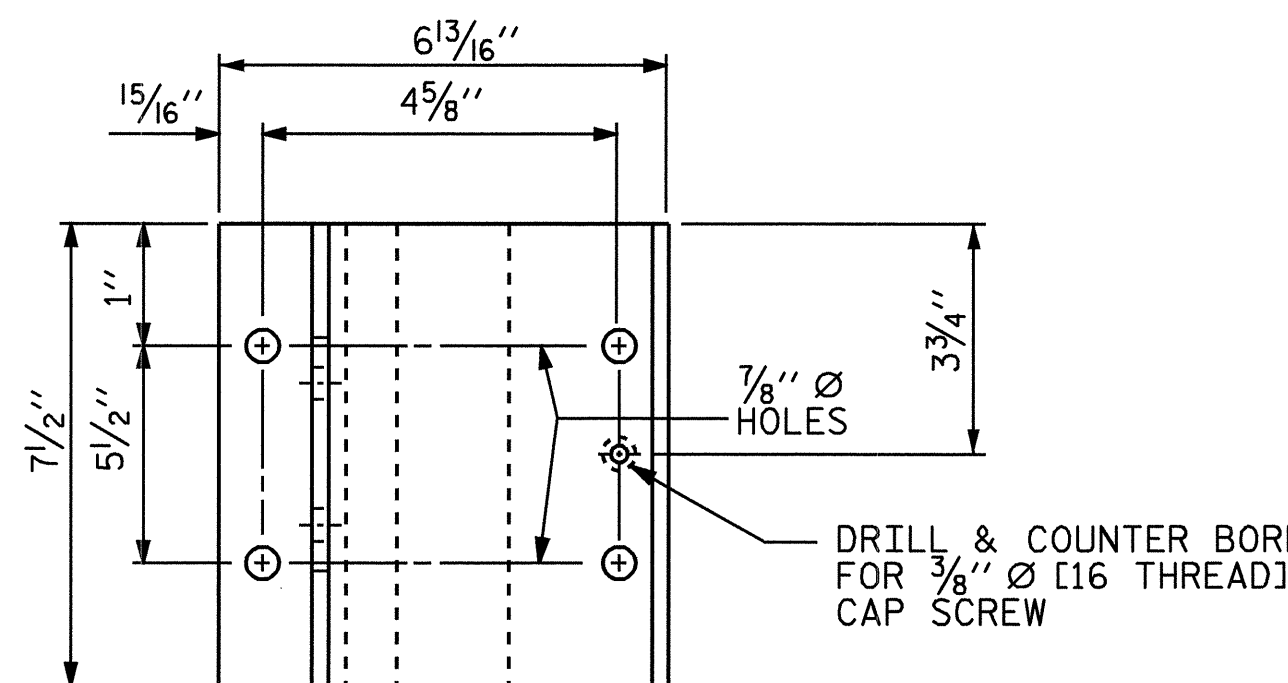


**PLAN**

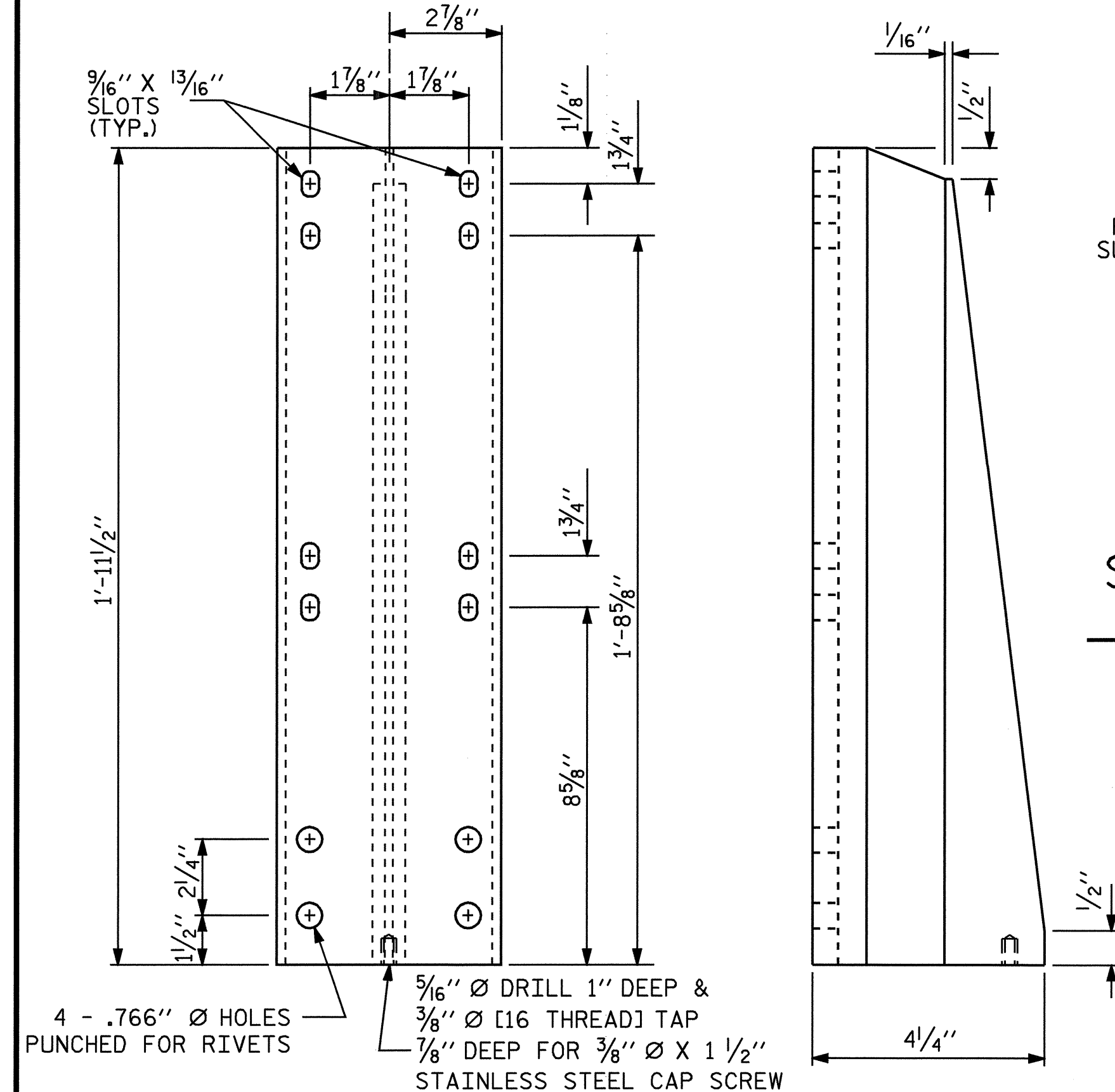


**SECTION THRU PARAPET AND RAIL**

THE CASTING HEIGHT OF THE PARAPET VARIES FROM 2'-4" (MIN.) TO 2'-5 5/16" (MAX.)



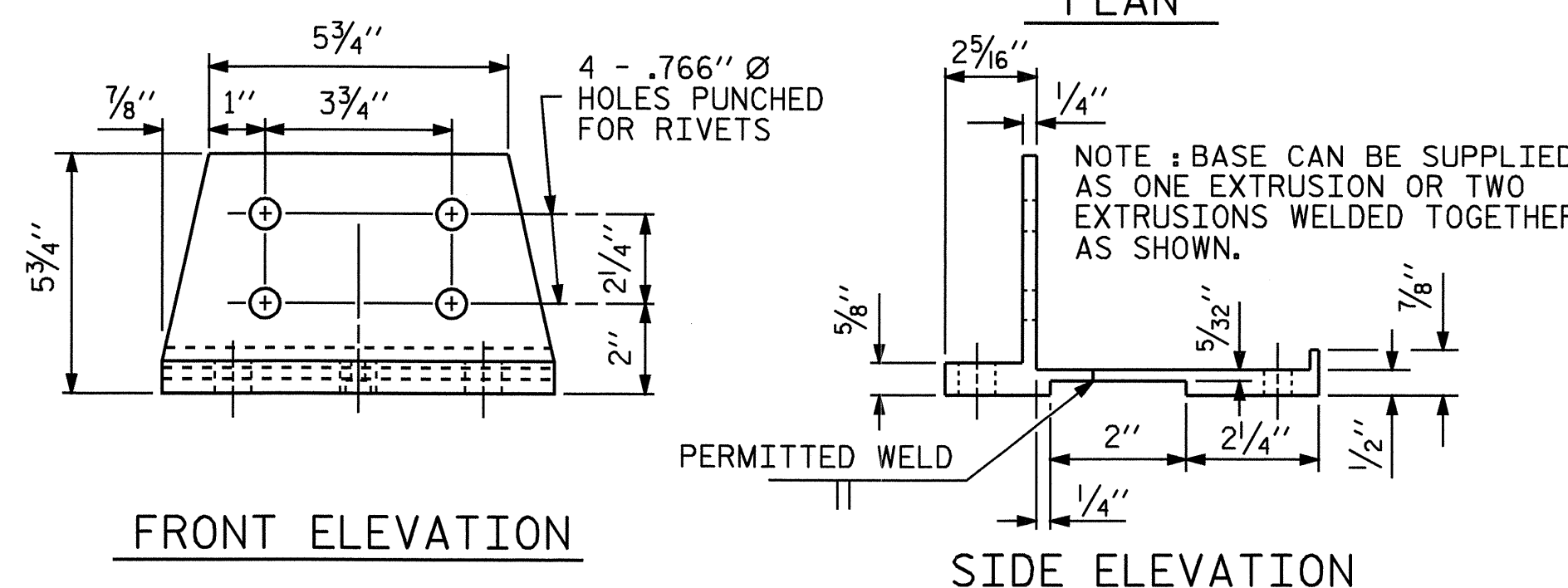
**PLAN**



**FRONT ELEVATION**

**SIDE ELEVATION**

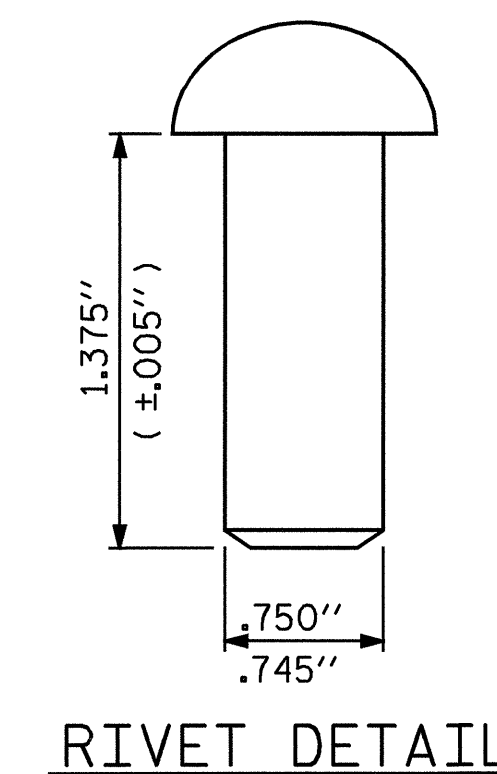
**DETAILS OF POST**



**FRONT ELEVATION**

**SIDE ELEVATION**

**POST BASE DETAILS**



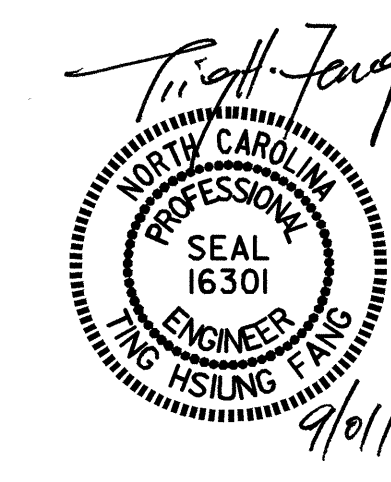
**RIVET DETAIL**

ASSEMBLED BY : E. C. LOCKLEAR	DATE : 05/09
CHECKED BY : T. H. FANG	DATE : 06/09
DRAWN BY : EEM 6/94	REV. 10/17/00 LRS/RDR
CHECKED BY : RGW 6/94	REV. 5/17/03R RWW/JTE
	REV. 5/1/06 TLA/GM

PROJECT NO. B-4745  
FORSYTH COUNTY  
STATION: 18+77.40 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
2 BAR METAL RAIL  
DETAILS



REVISIONS					SHEET NO.
NO.	BY	DATE	NO.	DATE	S-9
1			3		TOTAL SHEETS
2			4		38

NOTES

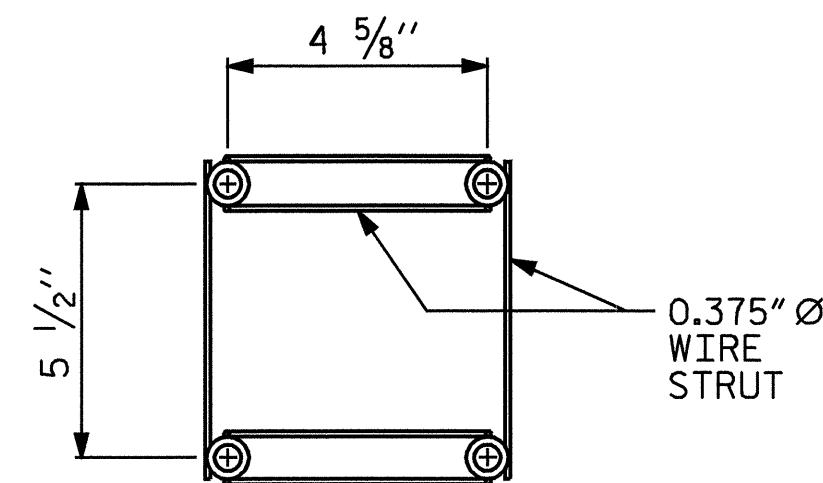
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

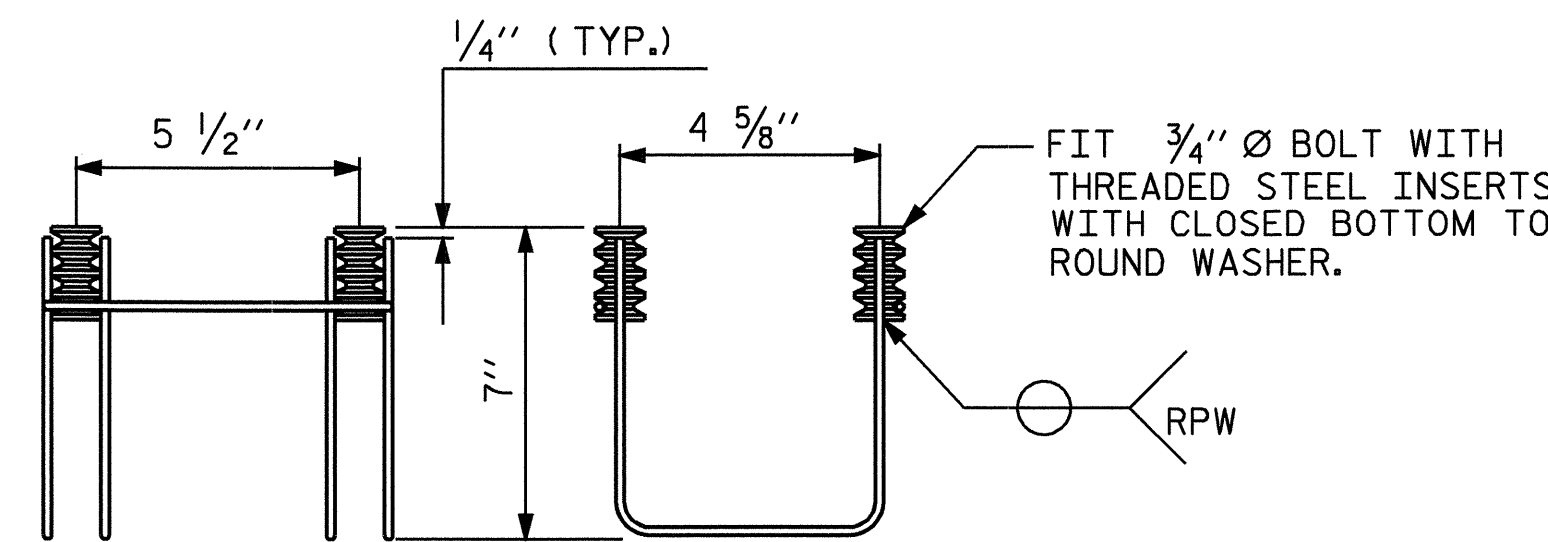
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT 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. 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 1/8" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
- E. 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.
- F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.



PLAN



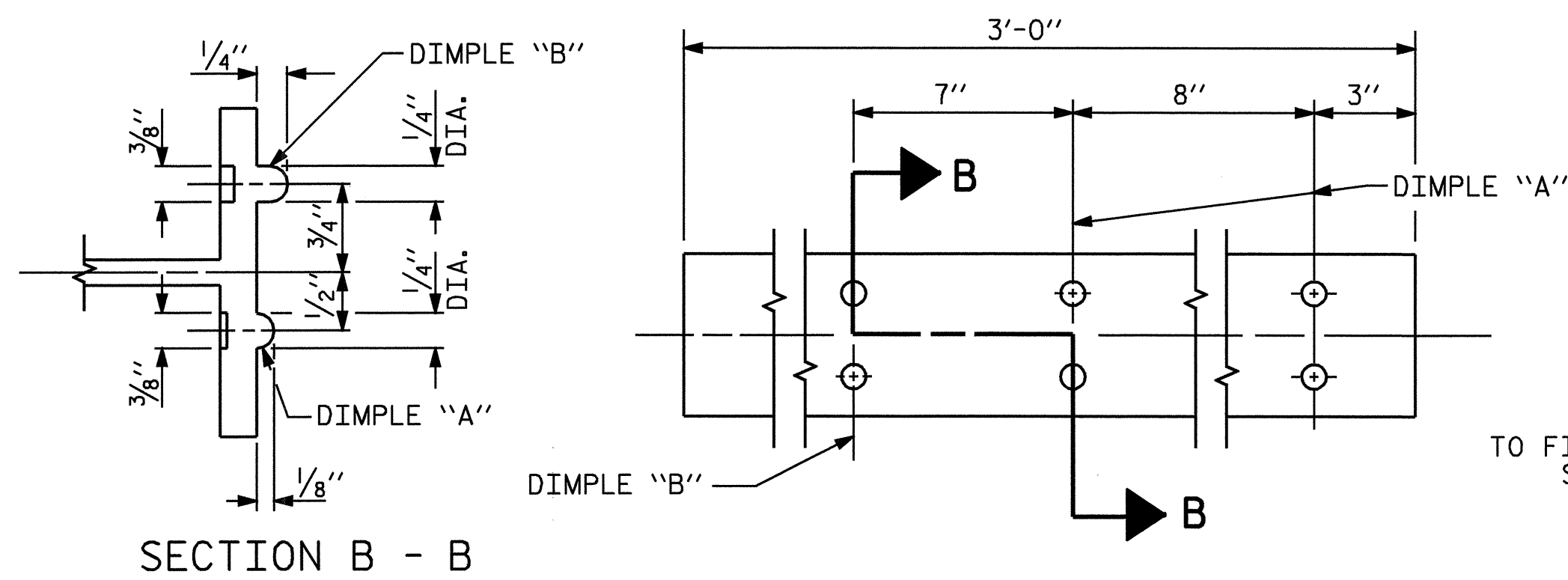
SIDE VIEW

ELEVATION

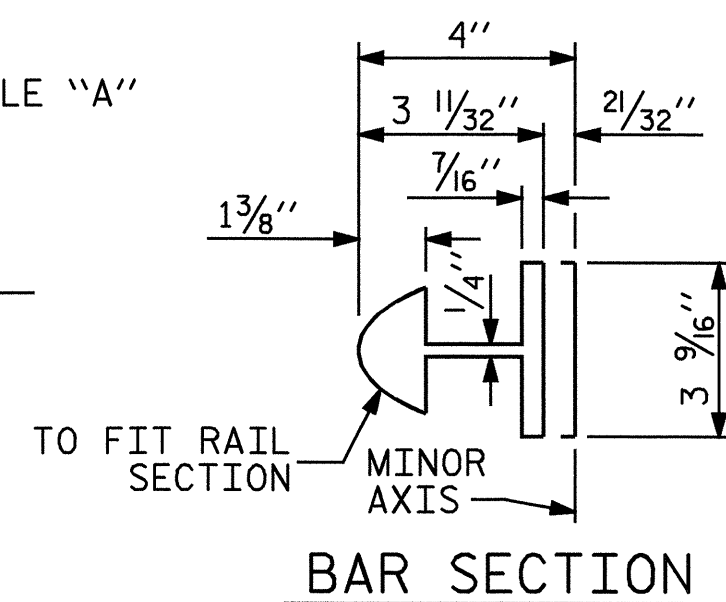
MINIMUM LENGTH OF THREADS IN INSERT (FERRULE) : 1 3/4"

4-BOLT METAL RAIL ANCHOR ASSEMBLY

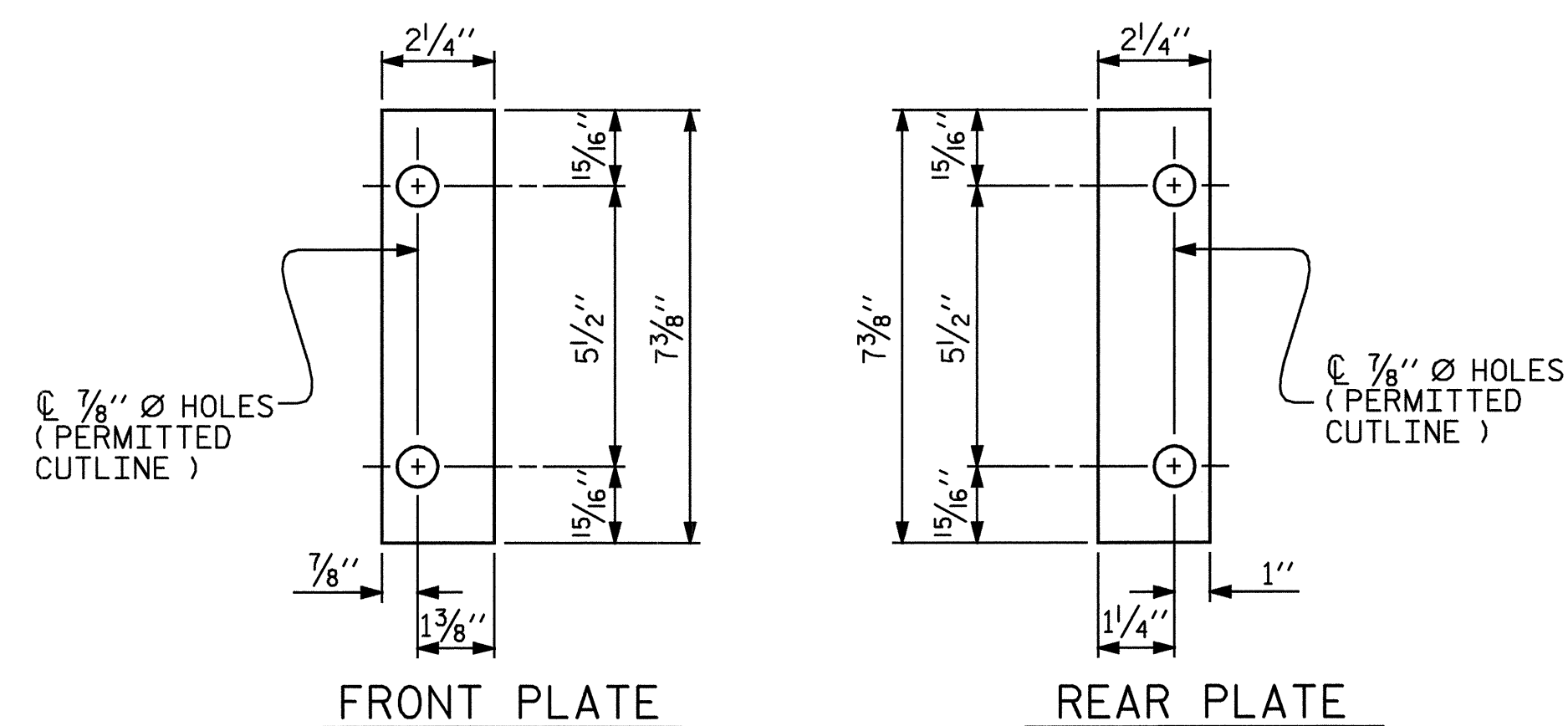
(22 ASSEMBLIES REQUIRED)



EXPANSION BAR DETAILS



BAR SECTION

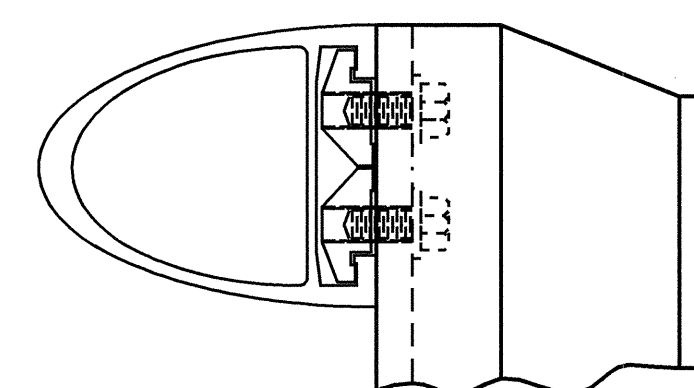


FRONT PLATE

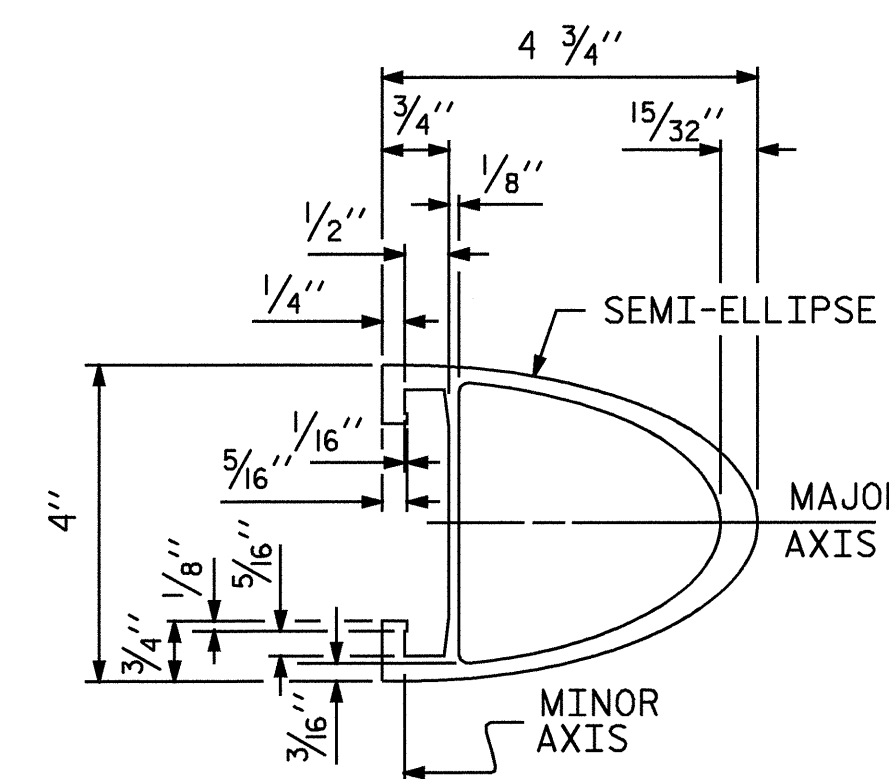
REAR PLATE

SHIM DETAILS

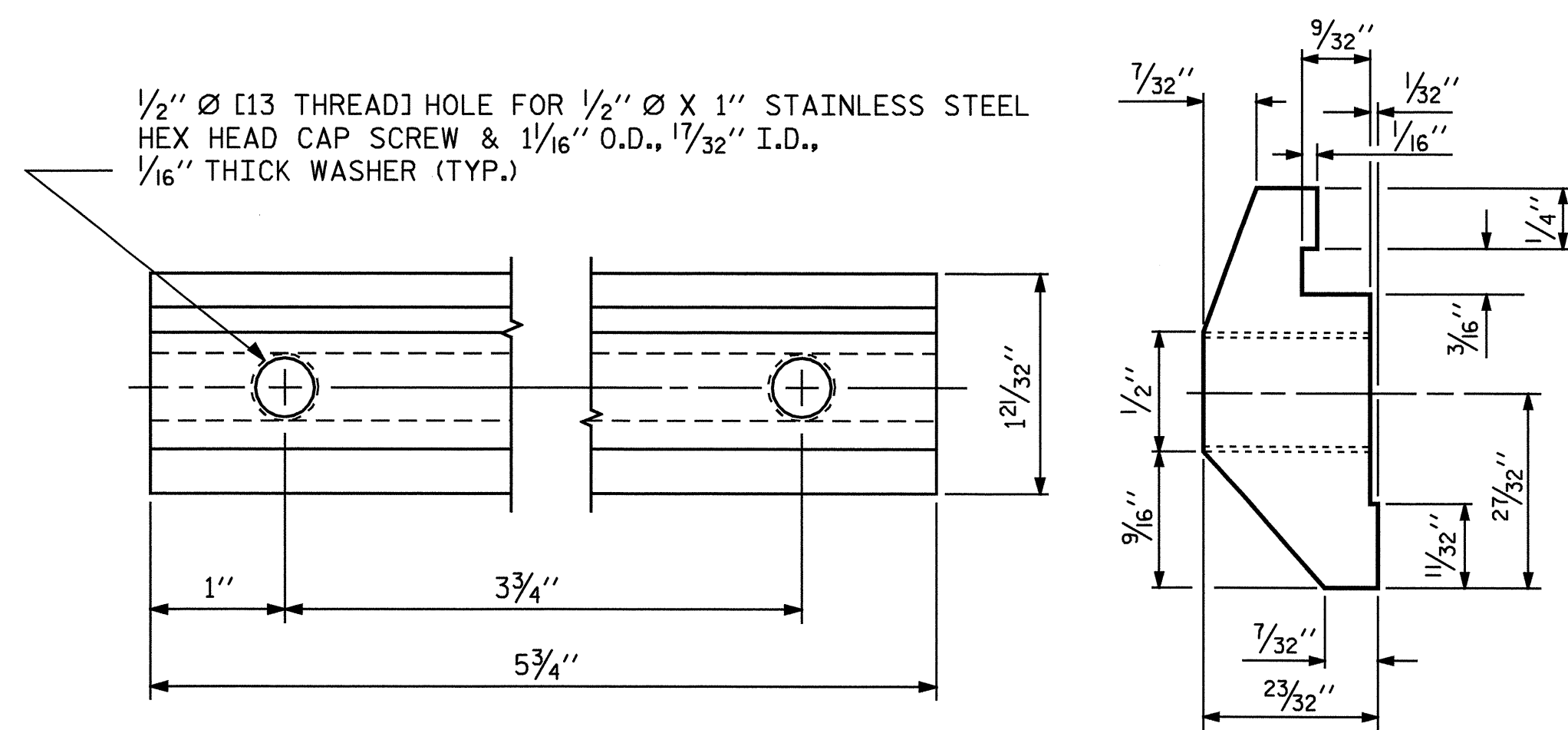
NOTE : SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



CLAMP ASSEMBLY

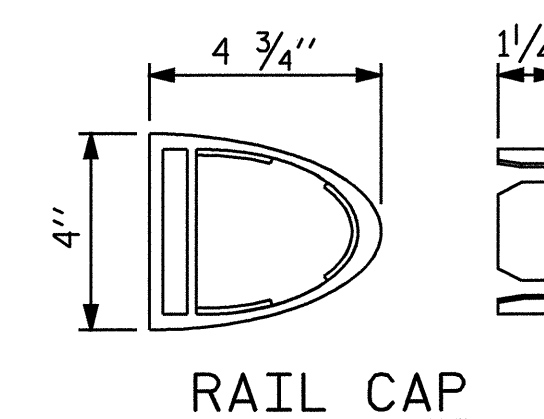


RAIL SECTION



CLAMP BAR DETAIL

( 4 REQUIRED PER POST )

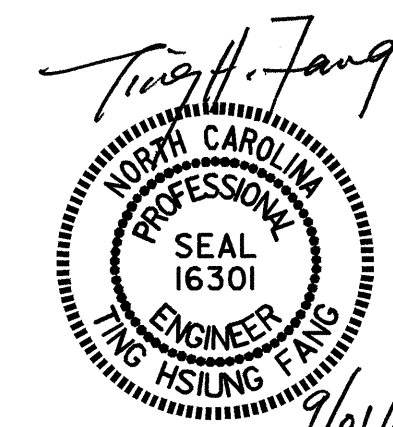


RAIL CAP

PROJECT NO. B-4745  
 FORSYTH COUNTY  
 STATION: 18+77.40 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD					
2 BAR METAL RAIL					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					38



ASSEMBLED BY : E. C. LOCKLEAR	DATE : 05/09
CHECKED BY : T. H. FANG	DATE : 06/09
DRAWN BY : EEM	6/94
CHECKED BY : RGW	6/94
REV. 2/6/97	EEM/RGW
REV. 8/16/99	MAB/LES
REV. 5/7/03	RWW/JTE

**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 1/2".
- 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 CONTRACTOR'S 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.

**NOTES**

METAL RAIL TO END POST CONNECTION

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

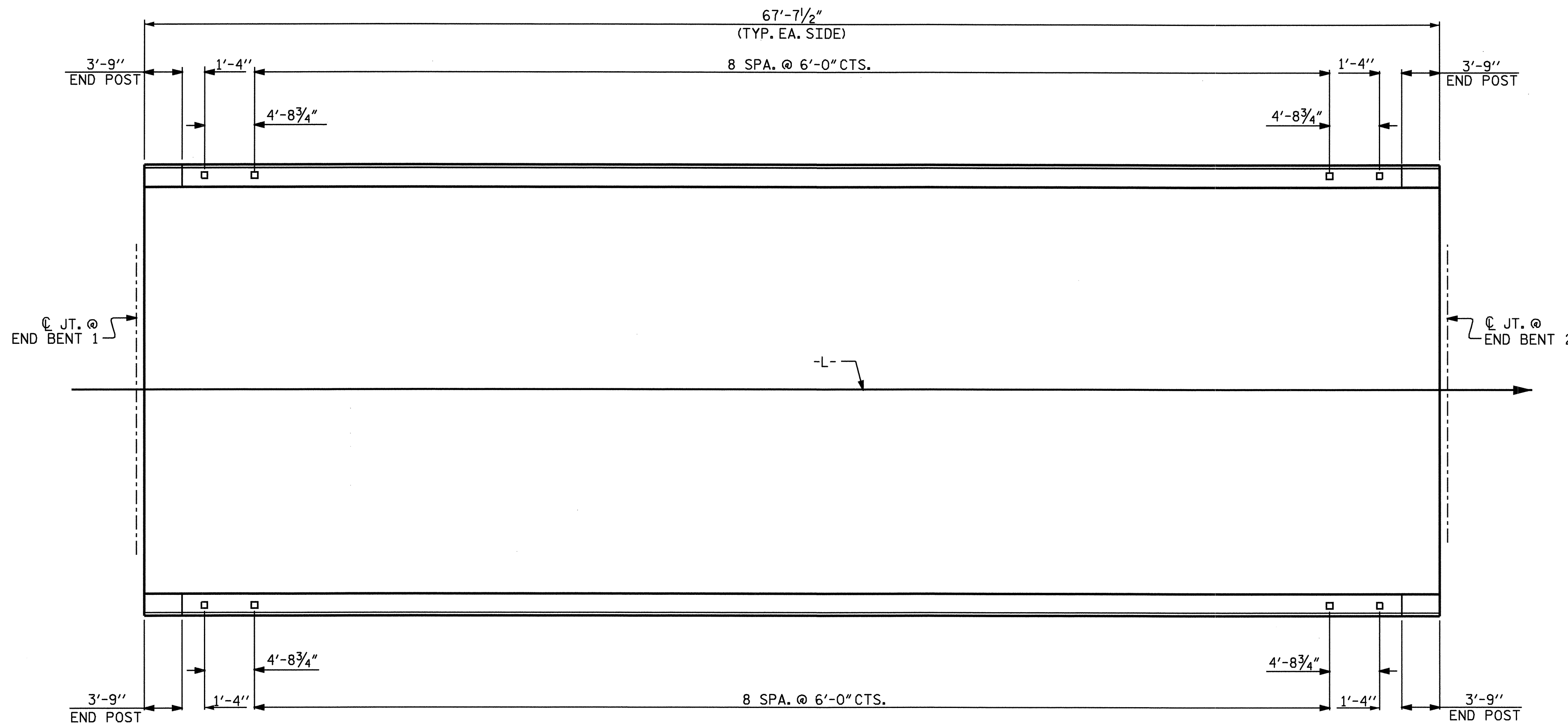
- A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 1/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 1/8" BOLT SHALL HAVE 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.
- D. STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
- E. 1/2" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

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 2 BAR METAL RAILS.

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

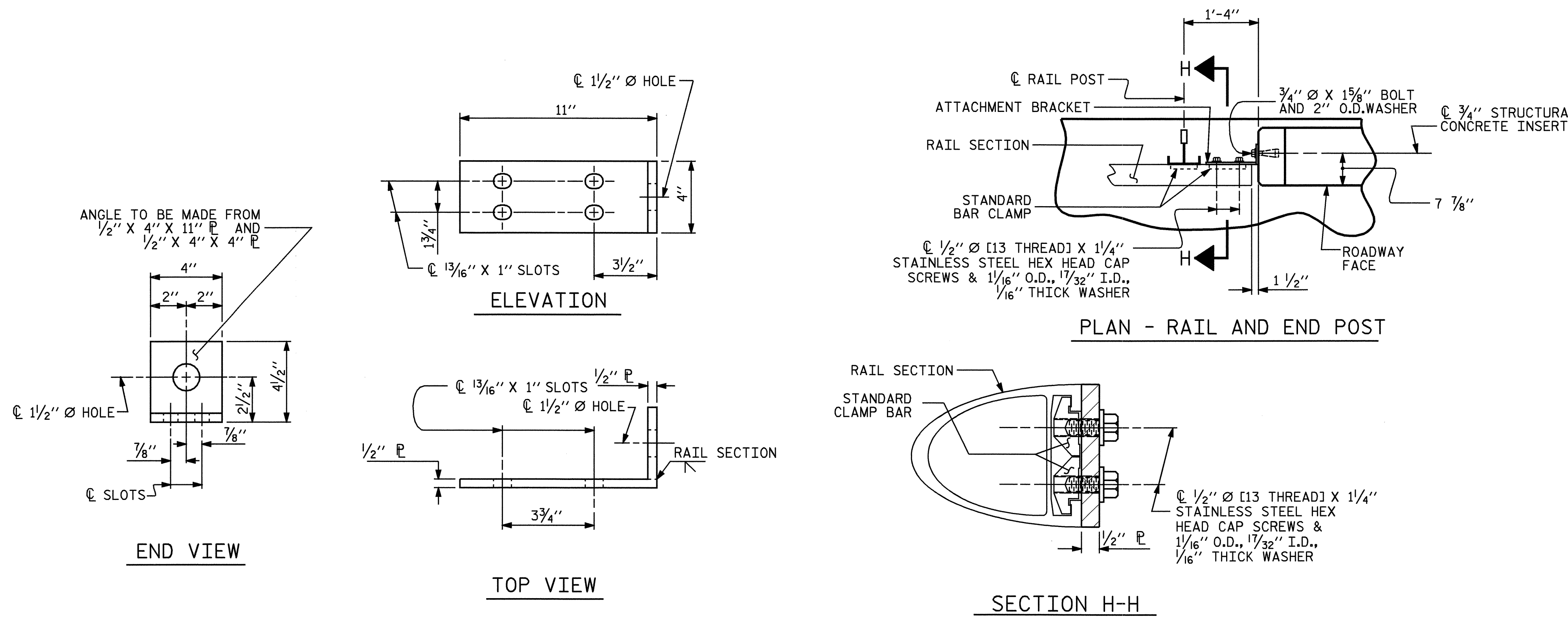
THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

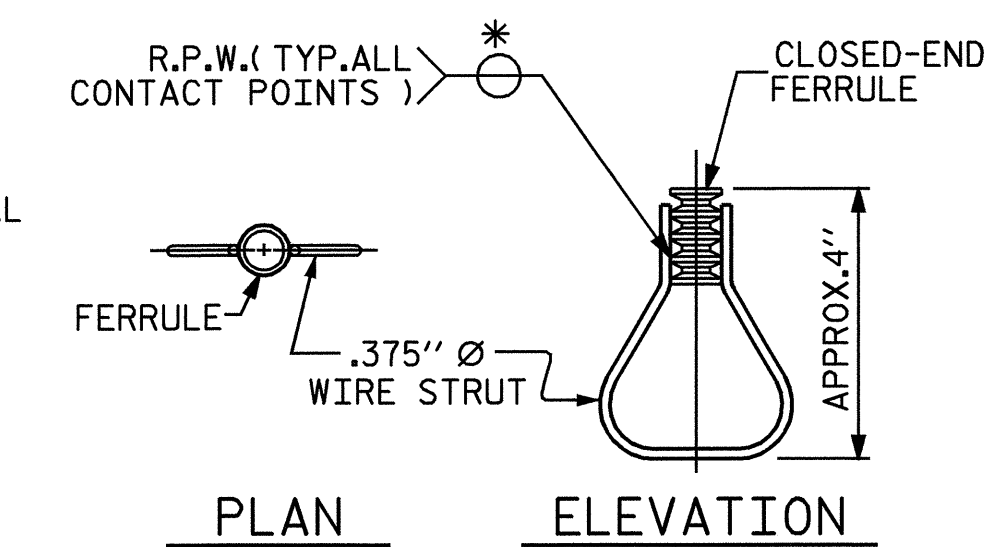


**PLAN OF RAIL POST SPACINGS**

ALL DIMENSIONS SHOWN ARE HORIZONTAL DISTANCE



**DETAILS FOR ATTACHING METAL RAIL TO END POST**

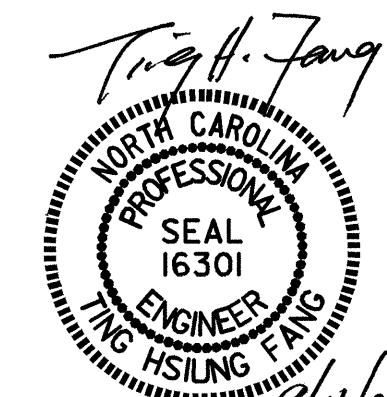


**STRUCTURAL CONCRETE INSERT**

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

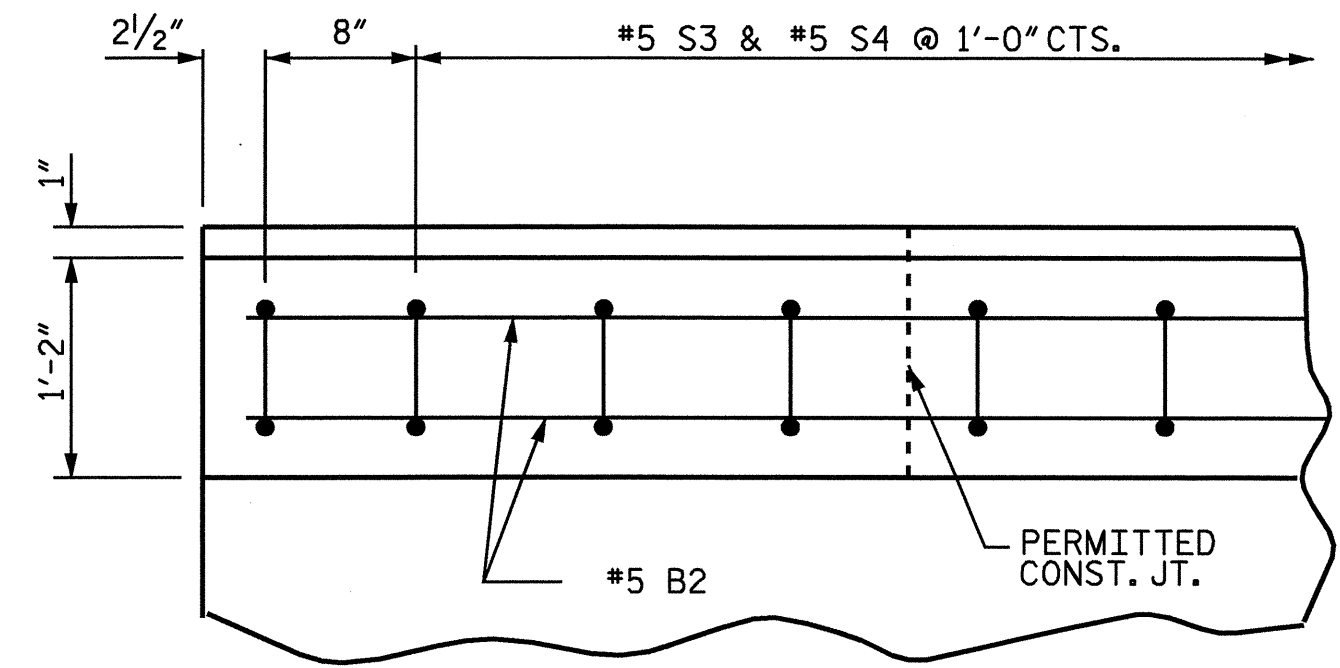
PROJECT NO. B-4745  
FORSYTH COUNTY  
STATION: 18+77.40 -L-

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
RAIL POST SPACINGS  
AND  
END OF RAIL DETAILS  
FOR TWO BAR METAL RAILS

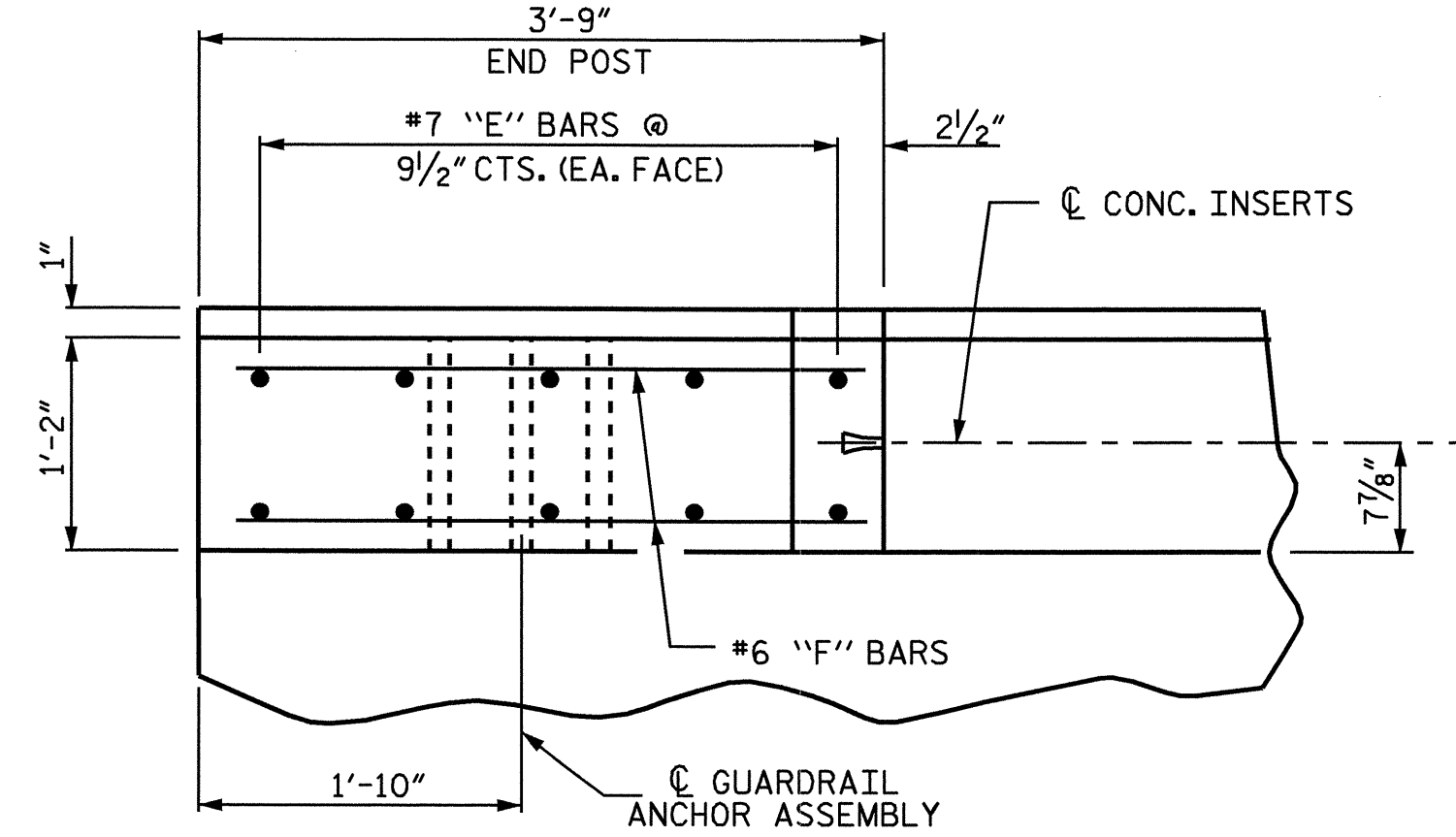


ASSEMBLED BY : E. C. LOCKLEAR	DATE : 05/09
CHECKED BY : T. H. FANG	DATE : 06/09
DRAWN BY : FCJ 1/88	REV. 10/17/00 LES/RDR
CHECKED BY : CRK 3/89	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

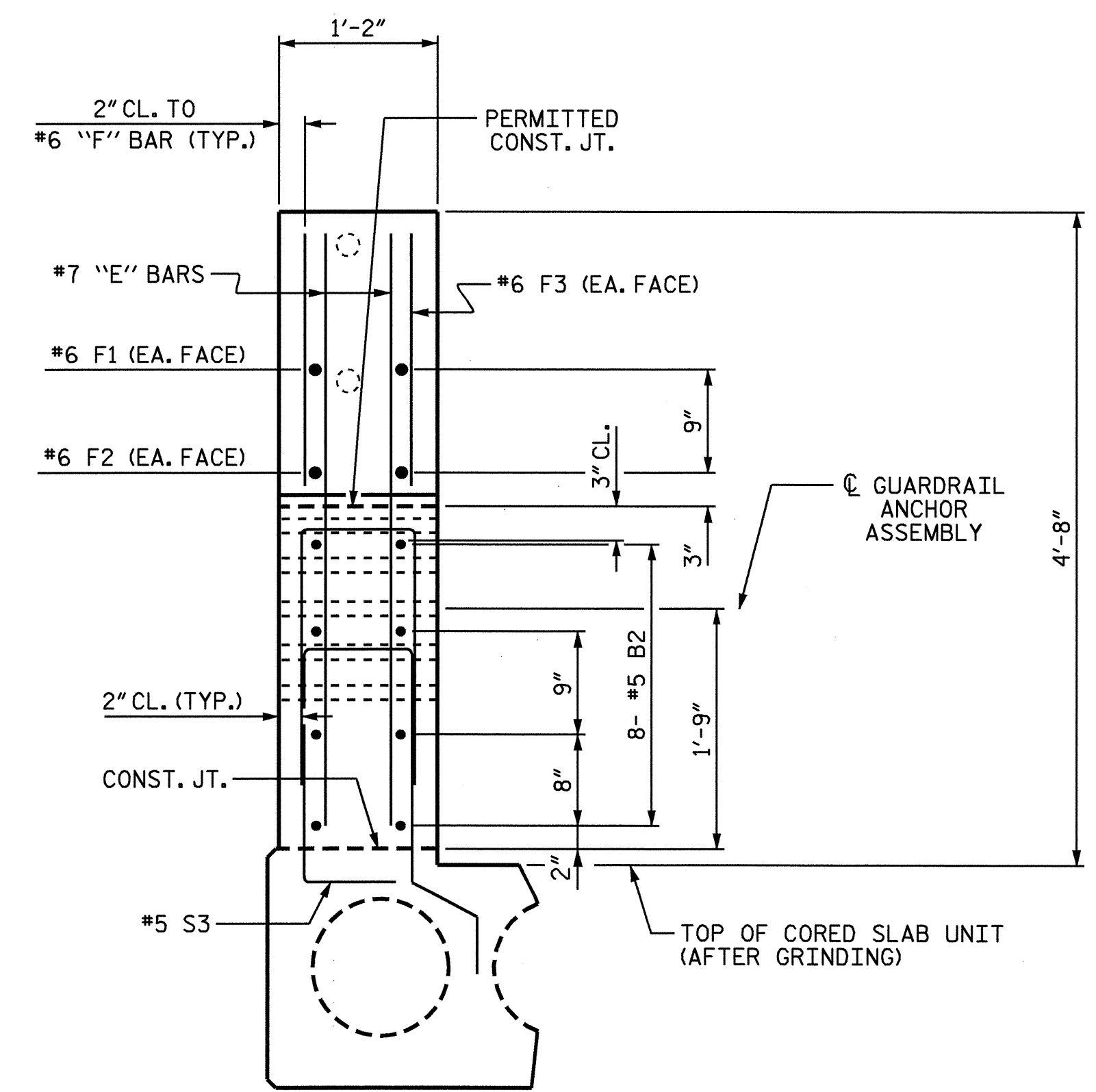
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			38



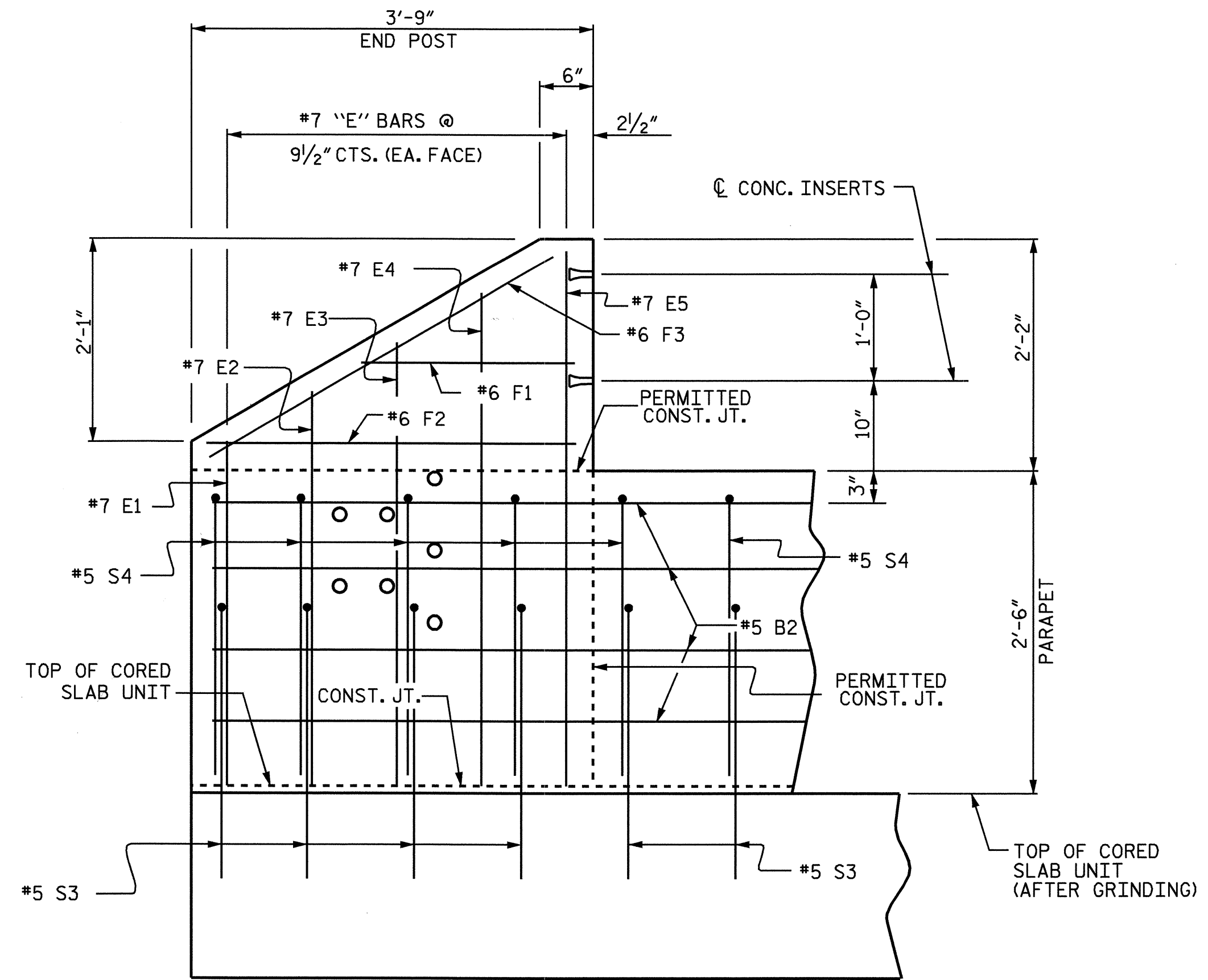
PLAN OF PARAPET



PLAN OF END POST



END VIEW



ELEVATION

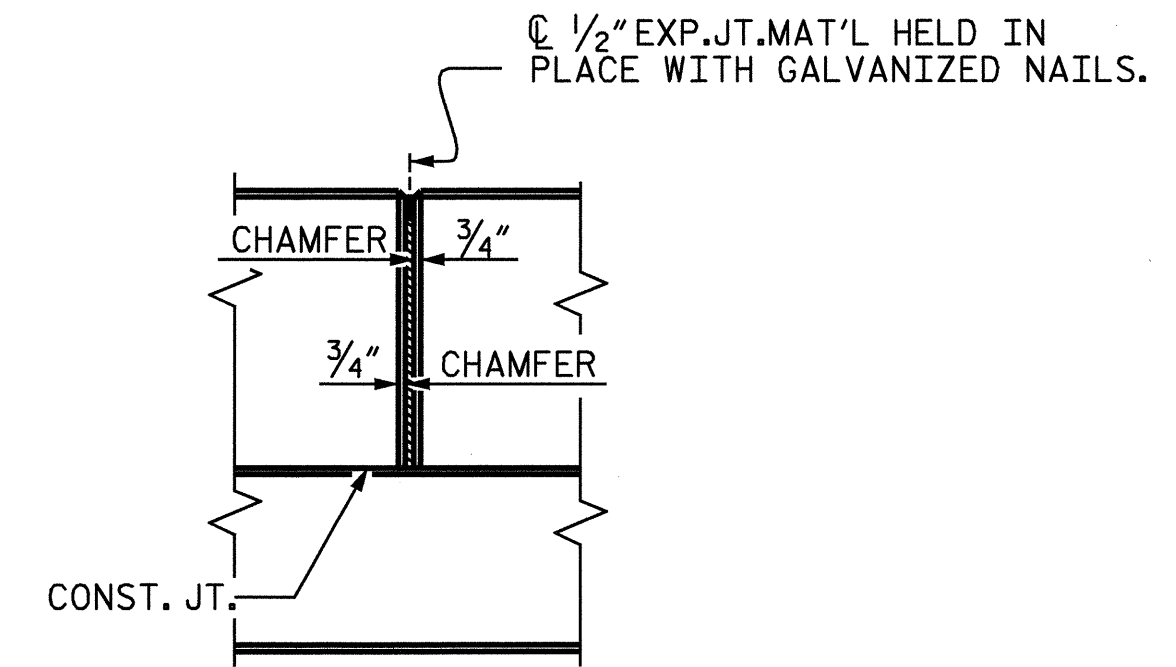
BAR TYPE		BILL OF MATERIAL					
		2 PARAPETS AND 4 END POSTS					
		BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
ALL BAR DIMENSIONS ARE OUT TO OUT		* B2	48	#5	STR	22'-2"	1110
		* E1	8	#7	STR	2'-5"	40
		* E2	8	#7	STR	2'-11"	48
		* E3	8	#7	STR	3'-5"	56
		* E4	8	#7	STR	3'-11"	64
		* E5	8	#7	STR	4'-4"	71
		* F1	8	#6	STR	1'-9"	21
		* F2	8	#6	STR	2'-11"	35
		* F3	8	#6	STR	3'-6"	42
		* S4	138	#5	1	5'-1"	732
		* EPOXY COATED REINFORCING STEEL		LBS	2,219		
		CLASS AA CONCRETE		CU. YDS	15.2		
		1'-2" X 2'-6" CONCRETE PARAPET		LIN. FT.	135.3		

NOTES

FOR DETAIL OF CONCRETE INSERT AND GUARDRAIL ANCHOR ASSEMBLY, SEE "RAIL POST SPACINGS AND END OF RAIL DETAIL" SHEET.

ALL BAR SUPPORTS USED IN THE PARAPET AND ALL INCIDENTAL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

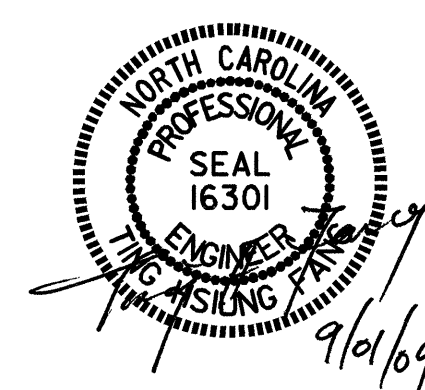
GROOVED CONTRACTION JOINTS 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF PARAPET IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FEET TO 10 FEET BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR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



ELEVATION AT EXPANSION JOINTS  
PARAPET DETAILS

PROJECT NO. B-4745  
 FORSYTH COUNTY  
 STATION: 18+77.40 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 1'-2" X 2'-6"  
 CONCRETE PARAPET  
 AND END POST



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-12
1			3			TOTAL SHEETS
2			4			38

DRAWN BY: P. K. NEWTON DATE: 07/30/09  
 CHECKED BY: T. H. FANG DATE: 07/30/09

01-SEP-2009 13:57  
 Z:\B4745\Structures\B4745\FINAL\_PLANS\B4745\_ed\_2bmr.dgn  
 sdombrowski

PARAPET AND END POST FOR TWO BAR RAIL  
 END BENT 1 SHOWN, END BENT 2 SIMILAR.

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.

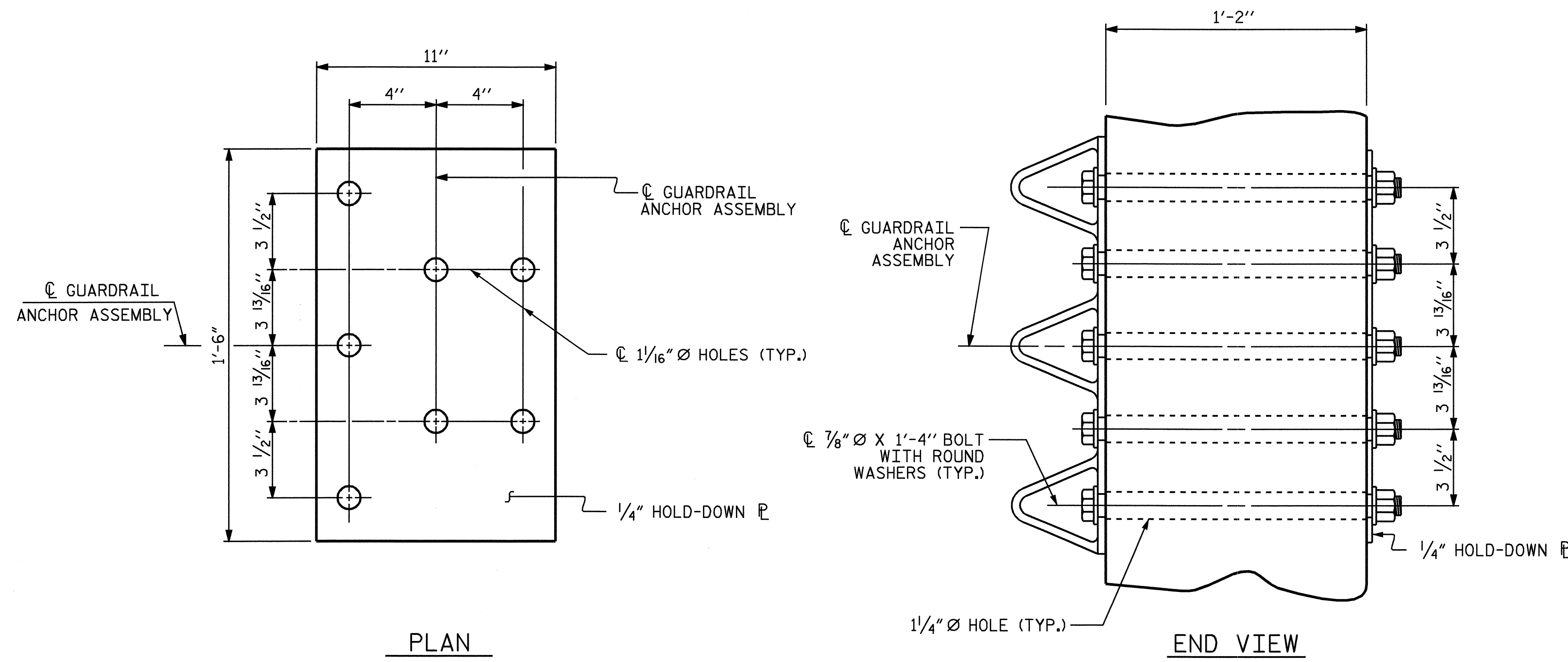
AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

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

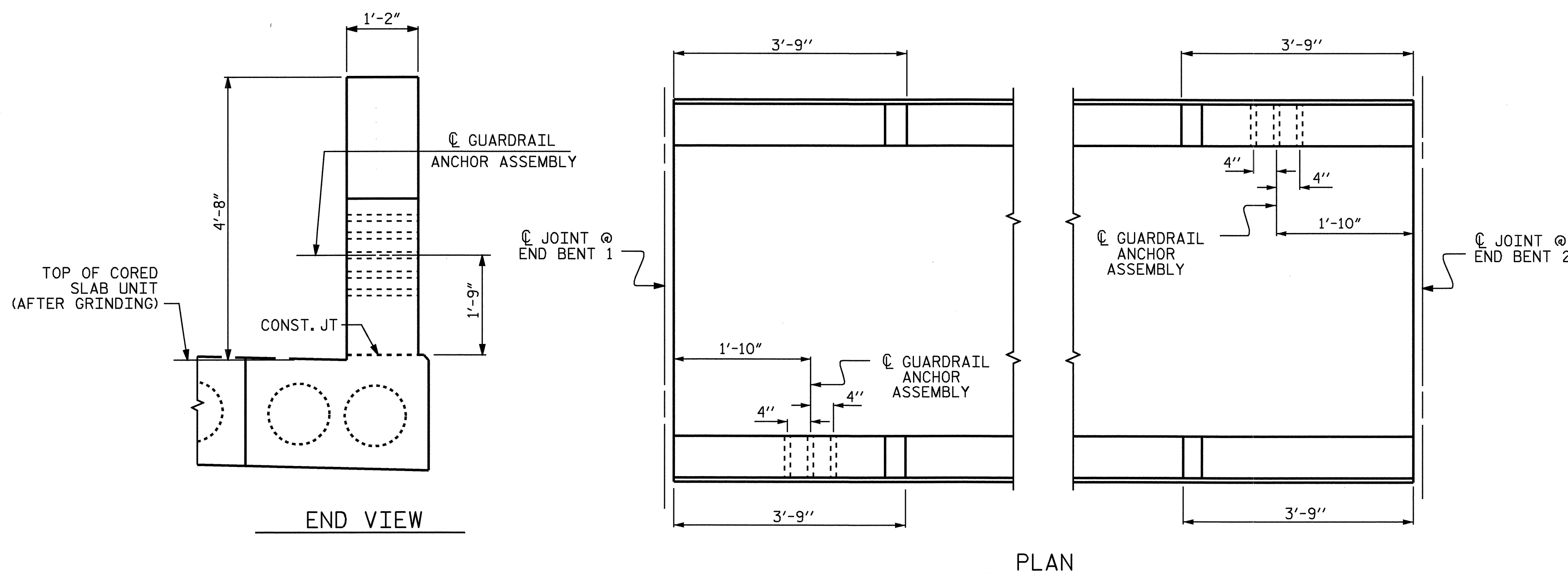
THE HOLD DOWN PLATE, BOLTS NUTS AND WASHERS SHALL BE PAINTED TO MATCH THE ANODIZED RAIL. SEE ANODIZED RAIL NOTES FOR COLOR OF PAINT. AFTER GUARDRAIL ERECTION AND ATTACHMENT TO ANCHORAGE, PAINT WITH A MINIMUM OF TWO COATS ALL EXPOSED SURFACES OF THE HOLD DOWN PLATE, BOLTS, NUTS AND WASHERS. SUPPLYING PAINT AND PAINTING GUARDRAIL ANCHORAGE IS CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE ANCHORAGE.



PLAN

END VIEW

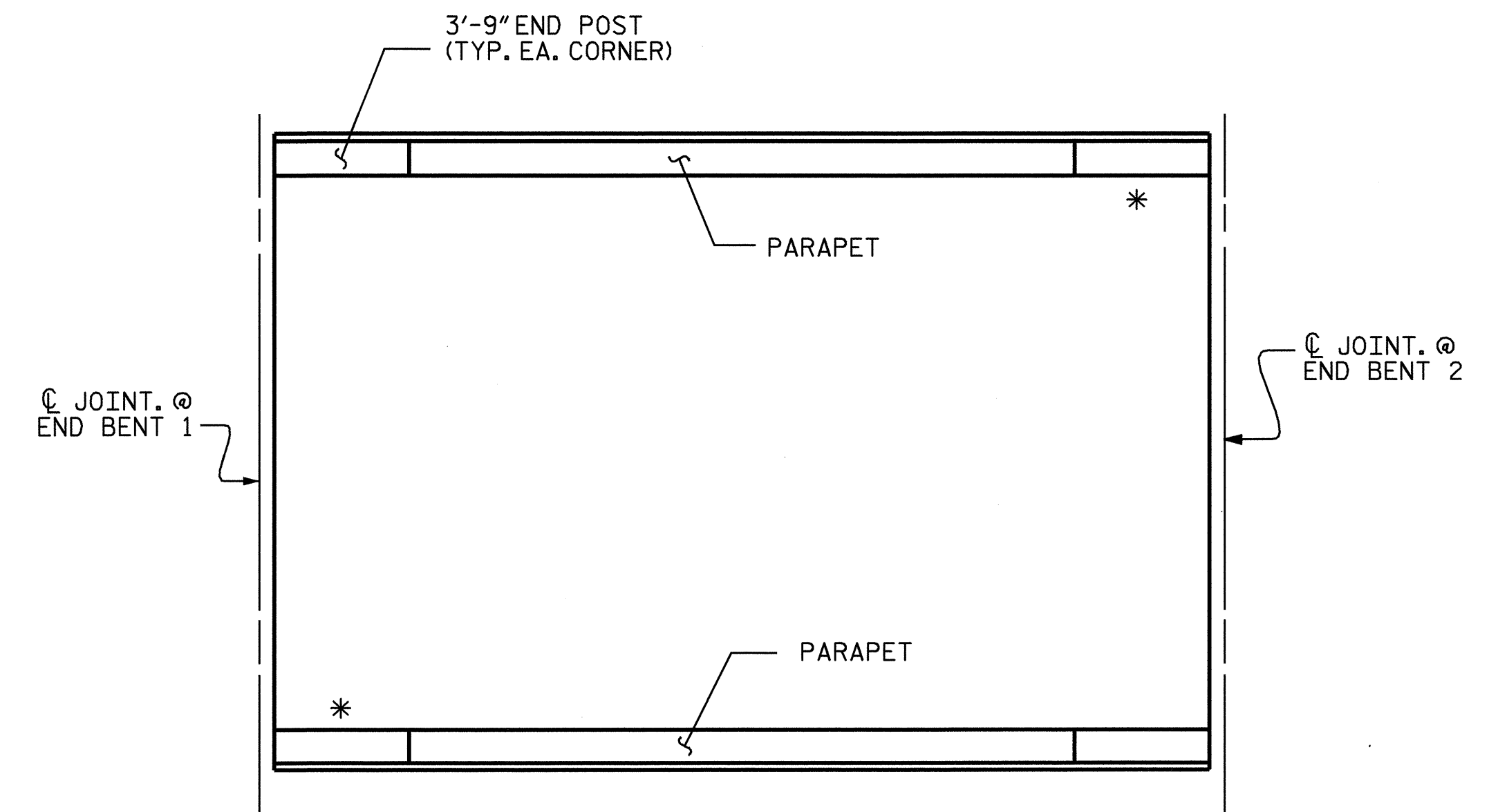
GUARDRAIL ANCHOR ASSEMBLY DETAILS



END VIEW

PLAN

LOCATION OF GUARDRAIL ANCHOR AT END POST

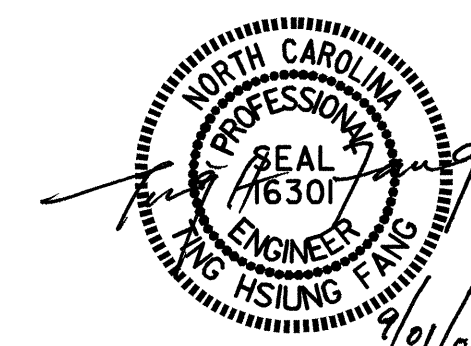


SKETCH SHOWING POINTS OF ATTACHMENT

\* LOCATION OF GUARDRAIL ATTACHMENT

PROJECT NO. B-4745  
FORSYTH COUNTY  
 STATION: 18+77.40 -L-

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



ASSEMBLED BY : E. C. LOCKLEAR	DATE : 05/09
CHECKED BY : T. H. FANG	DATE : 06/09
DRAWN BY : EEM 6/94	REV. 10/17/00 RWW/LES
CHECKED BY : RGW 6/94	REV. 5/7/03 RWW/JTE
	REV. 5/11/06 TLA/GM

01-SEP-2009 13:57  
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 adombrowski

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS 38
2			4			

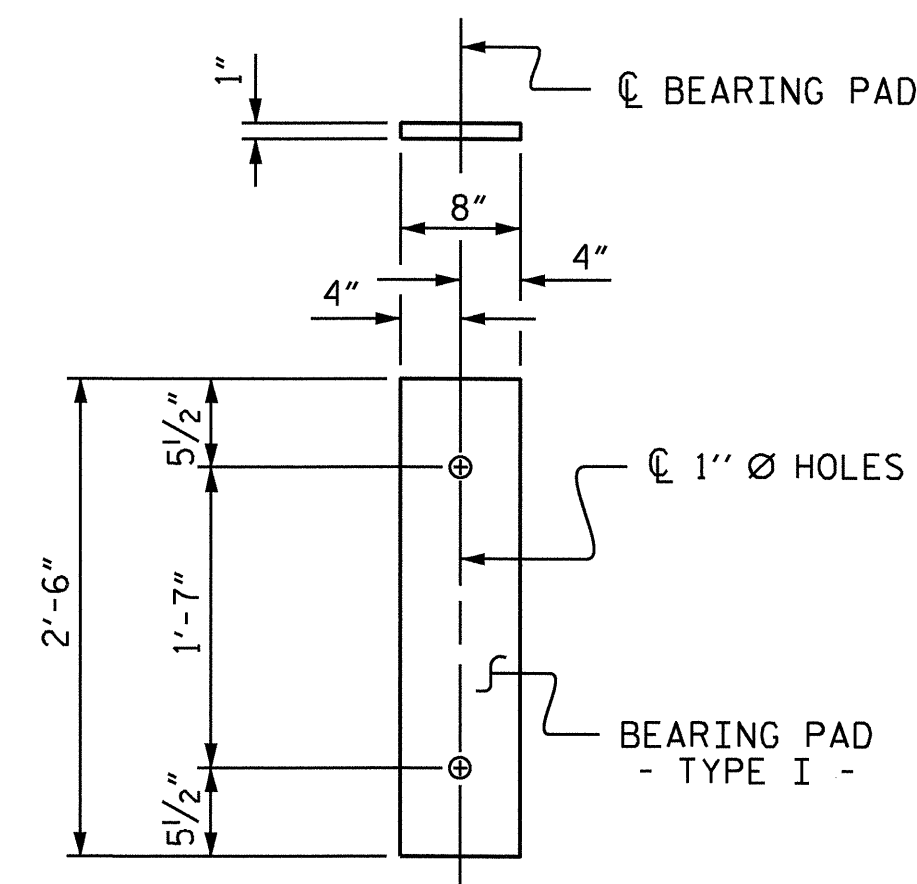
STD. NO. BMR8

GRADE 270 STRANDS	
	0.6" Ø L.R.
AREA ( SQUARE INCHES )	0.217
ULTIMATE STRENGTH ( LBS. PER STRAND )	58,600
APPLIED PRESTRESS ( LBS. PER STRAND )	43,950

DEAD LOAD DEFLECTION AND CAMBER	
	SPAN A
CAMBER (SLAB ALONE IN PLACE)	2 1/4" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD	1/8" ↓
FINAL CAMBER	2 1/8" ↑

BRIDGE DECK GRINDING		
** APPROACH PAVEMENTS	1,539	SO.FT.
APPROACH SLABS	2,838	SO.FT.
BRIDGE DECK	3,896	SO.FT.
TOTAL	8,273	SO.FT.

\*\* THE BRIDGE DECK GRINDING QUANTITY SHOWN FOR APPROACH PAVEMENTS IS THE MAXIMUM QUANTITY ANTICIPATED. BRIDGE DECK GRINDING OF THE APPROACH PAVEMENTS SHALL BE DONE AT THE DIRECTION OF THE ENGINEER SO AS TO OBTAIN A SMOOTH TRANSITION FROM APPROACH PAVEMENTS TO APPROACH SLABS AND TO OBTAIN A SMOOTH RIDING SURFACE OF UNIFORM TEXTURE.



FIXED END  
(TYPE I - 40 REQ'D)

### ELASTOMERIC BEARING DETAILS

ELASTOMERIC BEARINGS SHALL BE 60 DUROMETER HARDNESS

**BAR TYPES**

ALL BAR DIMENSIONS ARE OUT TO OUT

**BILL OF MATERIAL FOR ONE CORED SLAB UNIT**

SPAN A							
				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B1	6	#4	STR	23'-8"	95	23'-8"	95
S1	8	#5	1	4'-9"	40	4'-9"	40
S2	136	#4	1	5'-10"	530	5'-10"	530
* S3	69	#5	2	5'-9"	414		
S5	4	#5	1	7'-1"	30	7'-1"	30
S6	4	#4	1	5'-6"	15	5'-6"	15
REINFORCING STEEL				710 LBS.		710 LBS.	
* EPOXY COATED REINFORCING STEEL				414 LBS.			
8000 P.S.I. CONCRETE				10.8 CU. YDS.		10.8 CU. YDS.	
0.6" Ø L.R. STRANDS				No. 22			

CORED SLABS REQUIRED				
SPAN A				
UNIT TYPE	NUMBER	LENGTH	TOTAL LENGTH	
EXTERIOR	2	67'-9"	135'-6"	
INTERIOR	18	67'-9"	1219'-6"	
TOTAL	20	67'-9"	1355'-0"	
TOTAL CORED SLAB UNITS		NO. 20	1,355'-0" LIN. FT.	

### 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 3" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH GROUT. FOR GROUT, SEE SPECIAL PROVISIONS.

THE 1" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER, SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

FOR POSITIVE HOLD DOWN SYSTEM FOR VOIDS IN CORED SLABS, SEE SPECIAL PROVISIONS.

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 5000 PSI.

ALL REINFORCING STEEL IN CONCRETE PARAPETS AND POSTS 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.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

APPLY EPOXY PROTECTIVE COATING TO THE EXTERIOR FACE OF EXTERIOR CORED SLAB UNITS.

PRESTRESSED CONCRETE CORED SLAB UNITS SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR, AS REQUIRED IN SECTION 1078 OF THE STANDARD SPECIFICATIONS.

THE CONCRETE IN THE CORED SLAB UNITS SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB. OF FLY ASH PER 1.0 LB. OF CEMENT. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.

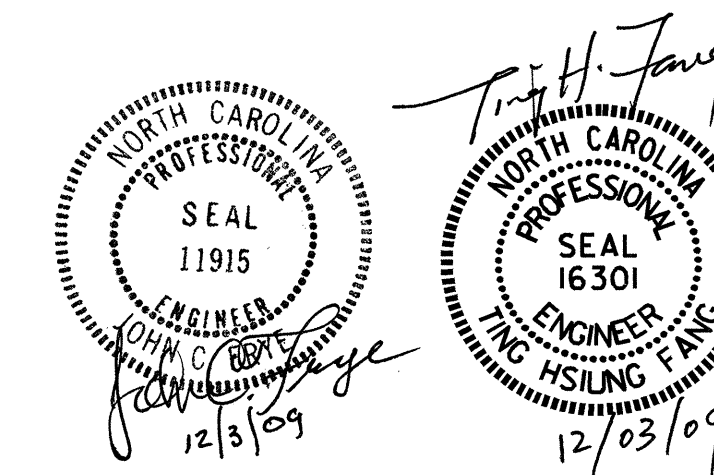
TRANSVERSE POST TENSIONING OF THE CORED SLAB SECTIONS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, EXCEPT THAT THE 0.6" Ø STRANDS SHALL BE TENSIONED TO 43,950 POUNDS.

AT EACH DIAPHRAGM LOCATION, MAINTAIN A SYMMETRIC TENSION FORCE BETWEEN EACH PAIR OF STRANDS IN THE DIAPHRAGM.

PROJECT NO. B-4745  
FORSYTH COUNTY  
 STATION: 18+77.40 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 BILL OF MATERIAL

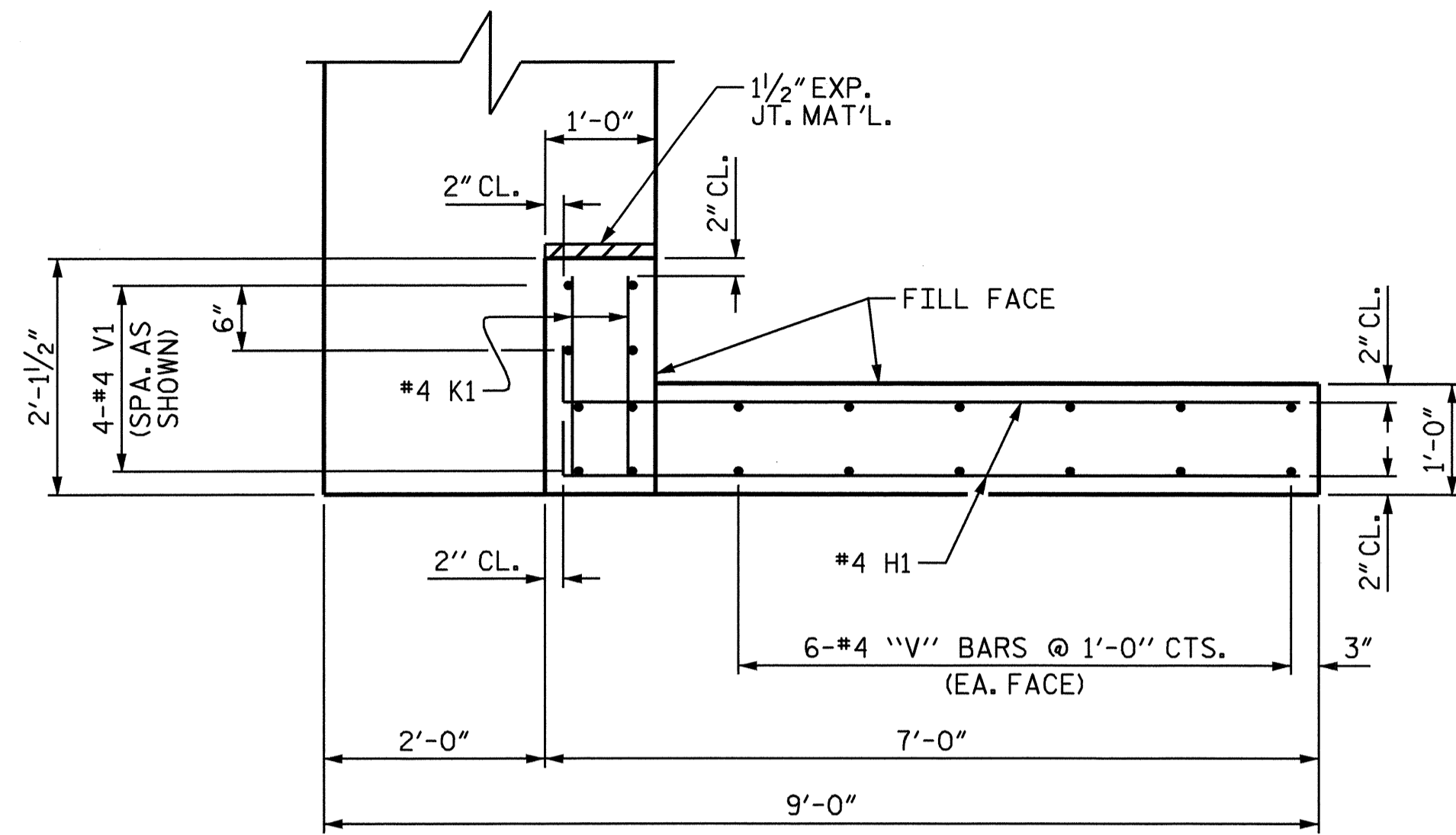
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-14	
1			3			TOTAL SHEETS	
2			4			38	



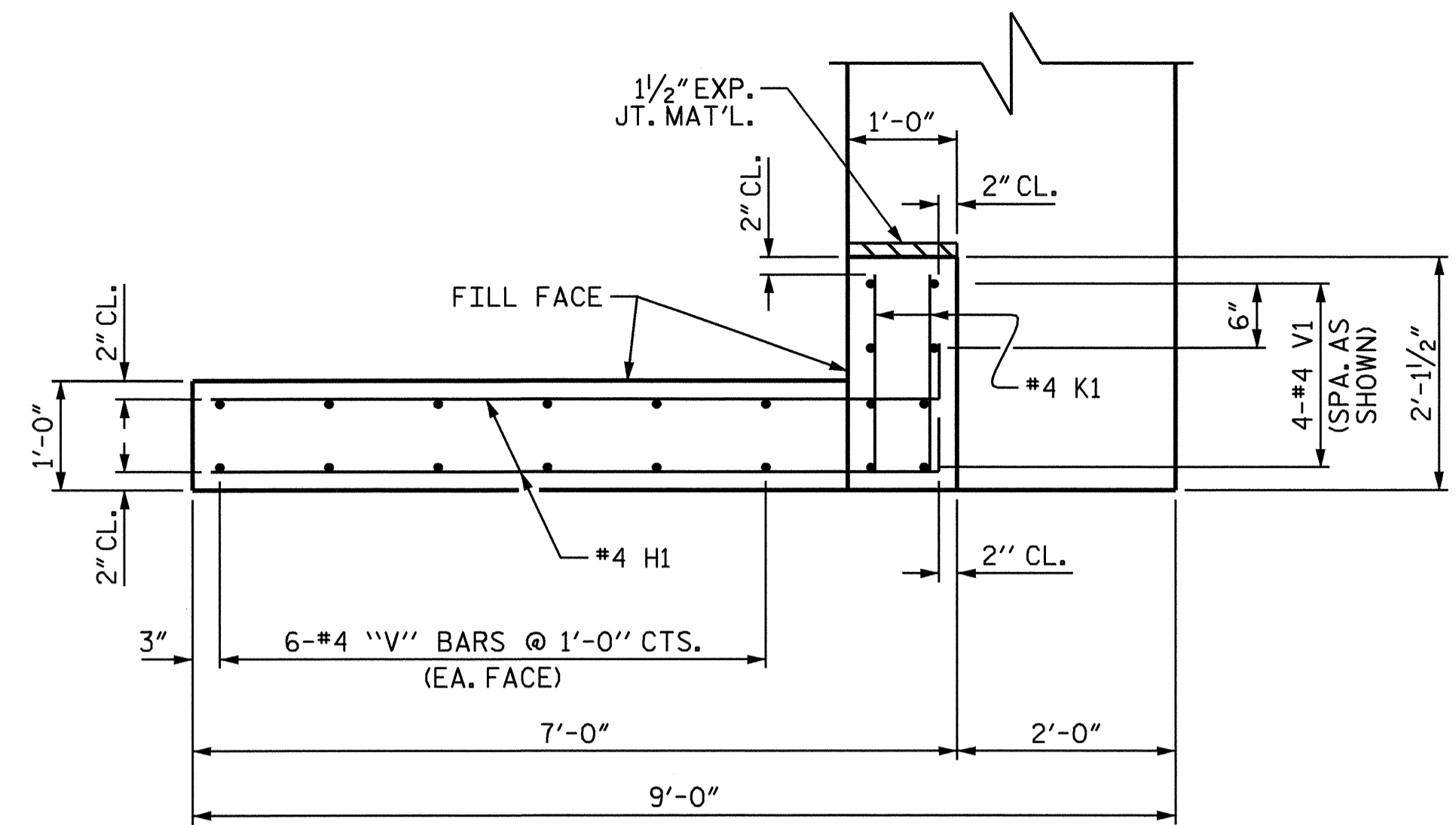
ASSEMBLED BY : E.C. LOCKLEAR	DATE : 5-09-09
CHECKED BY : T. H. FANG	DATE : 6-26-09
DRAWN BY : WJH 4/89	REV. 7/10/01 RWW/LJS
CHECKED BY : FCJ 5/89	REV. 5/1/03RRR RWW/JTE
	REV. 5/1/06 TLA/GM



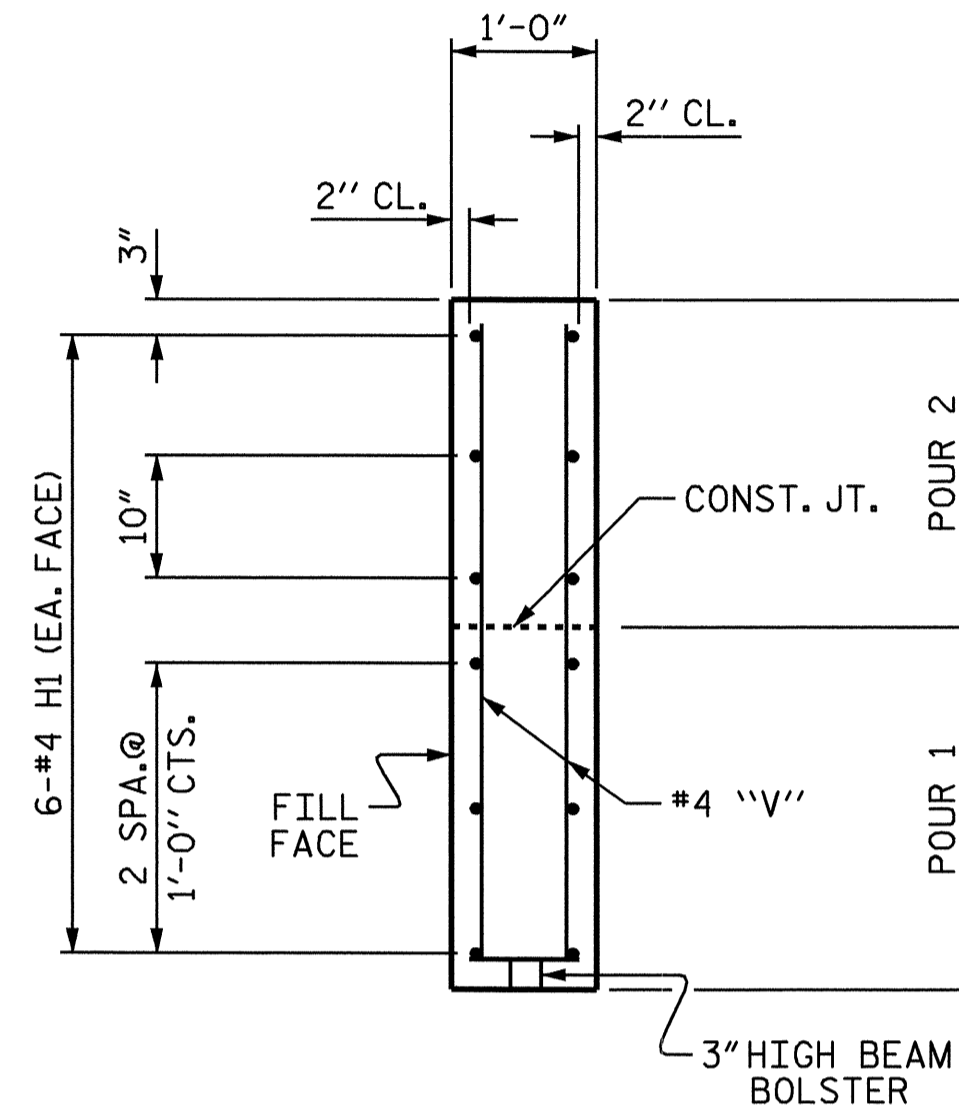




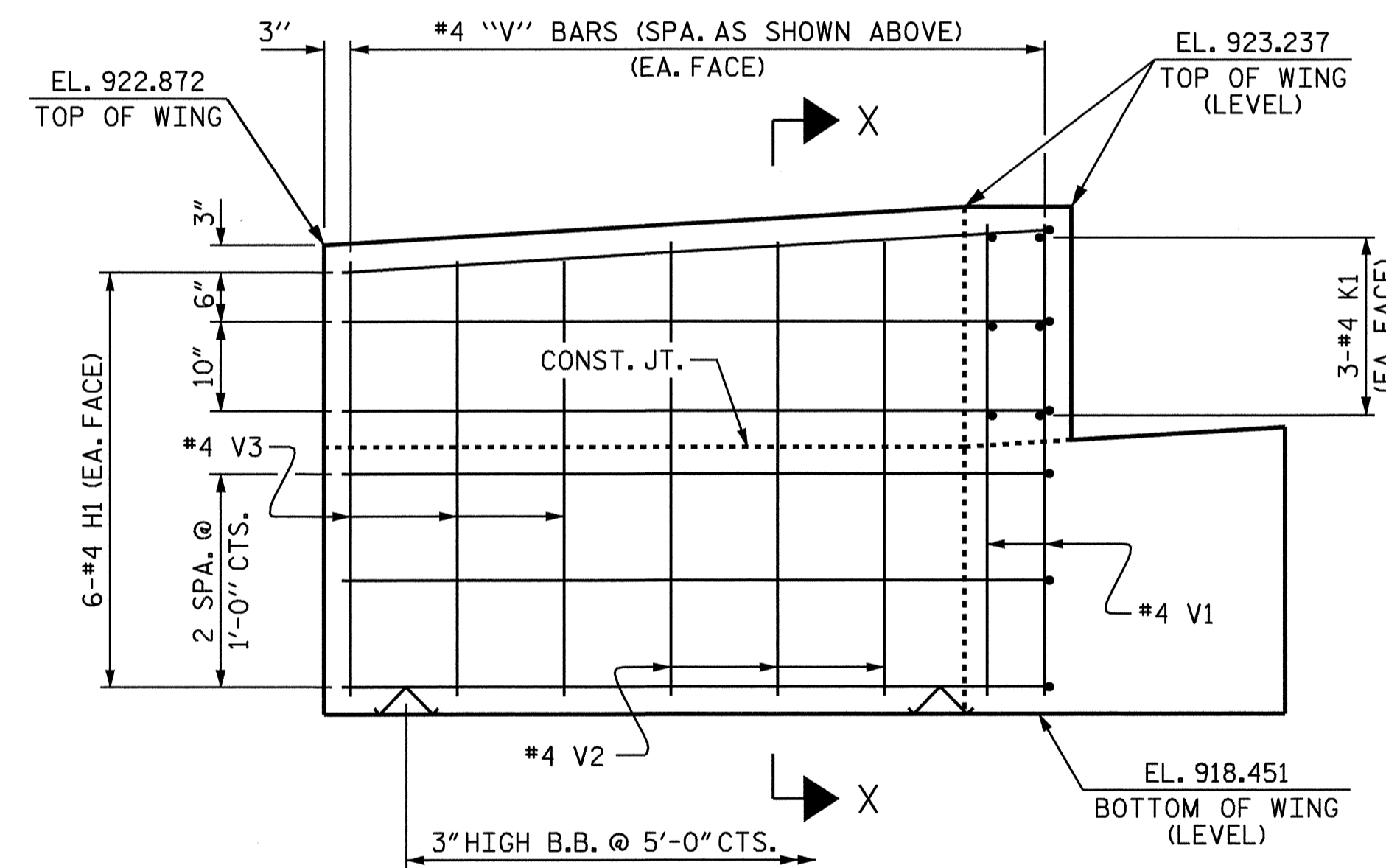
PLAN OF WING W1



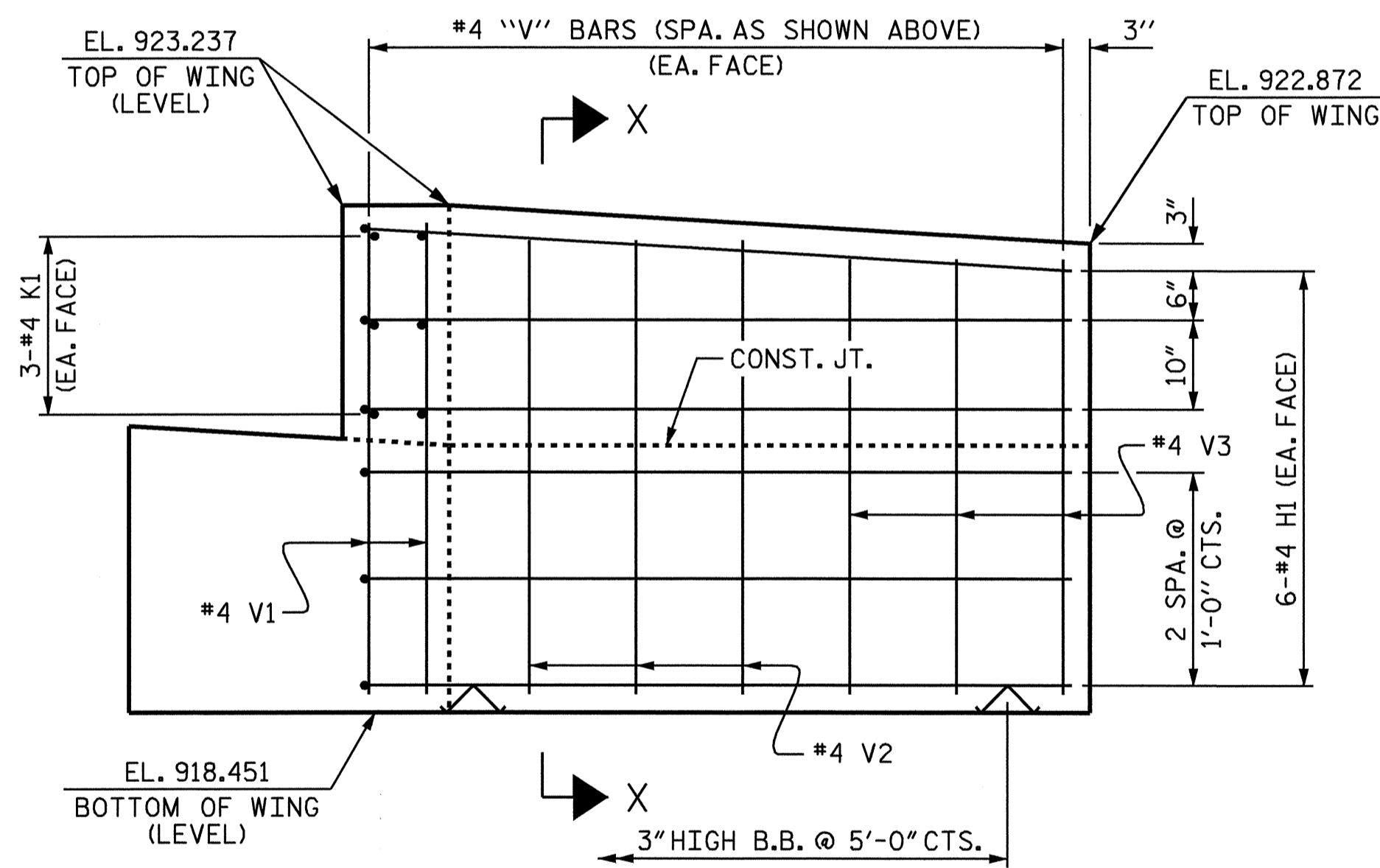
PLAN OF WING W2



SECTION X-X



ELEVATION OF WING W2



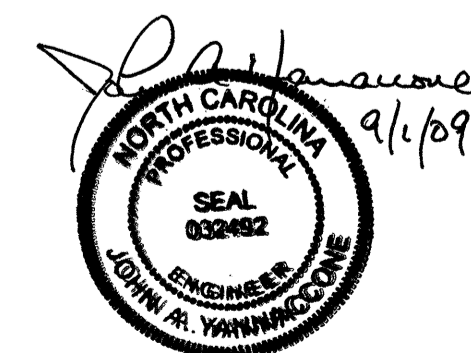
ELEVATION OF WING W1

PROJECT NO. B-4745  
FORSYTH COUNTY  
 STATION: 18+77.40 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

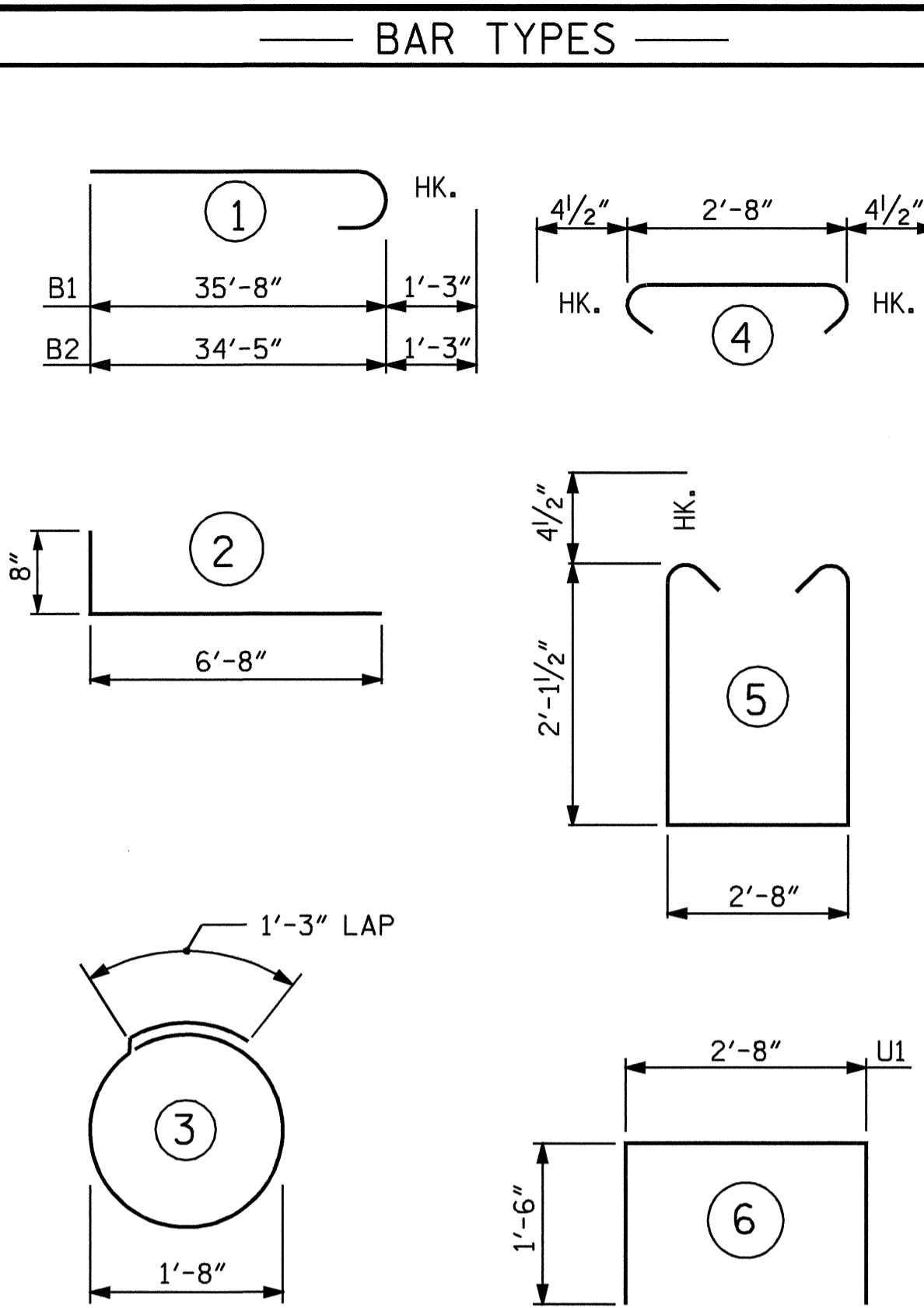
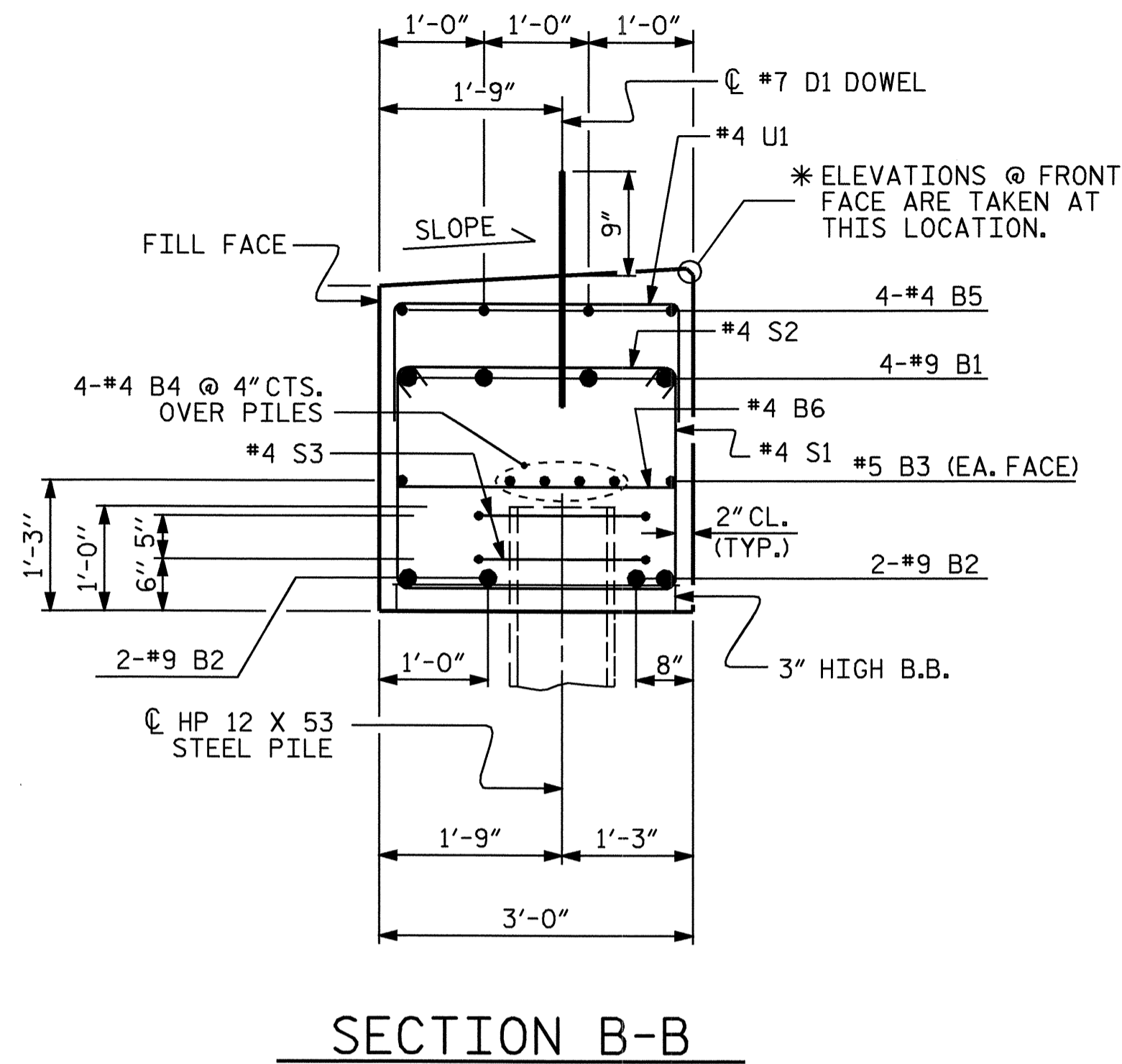
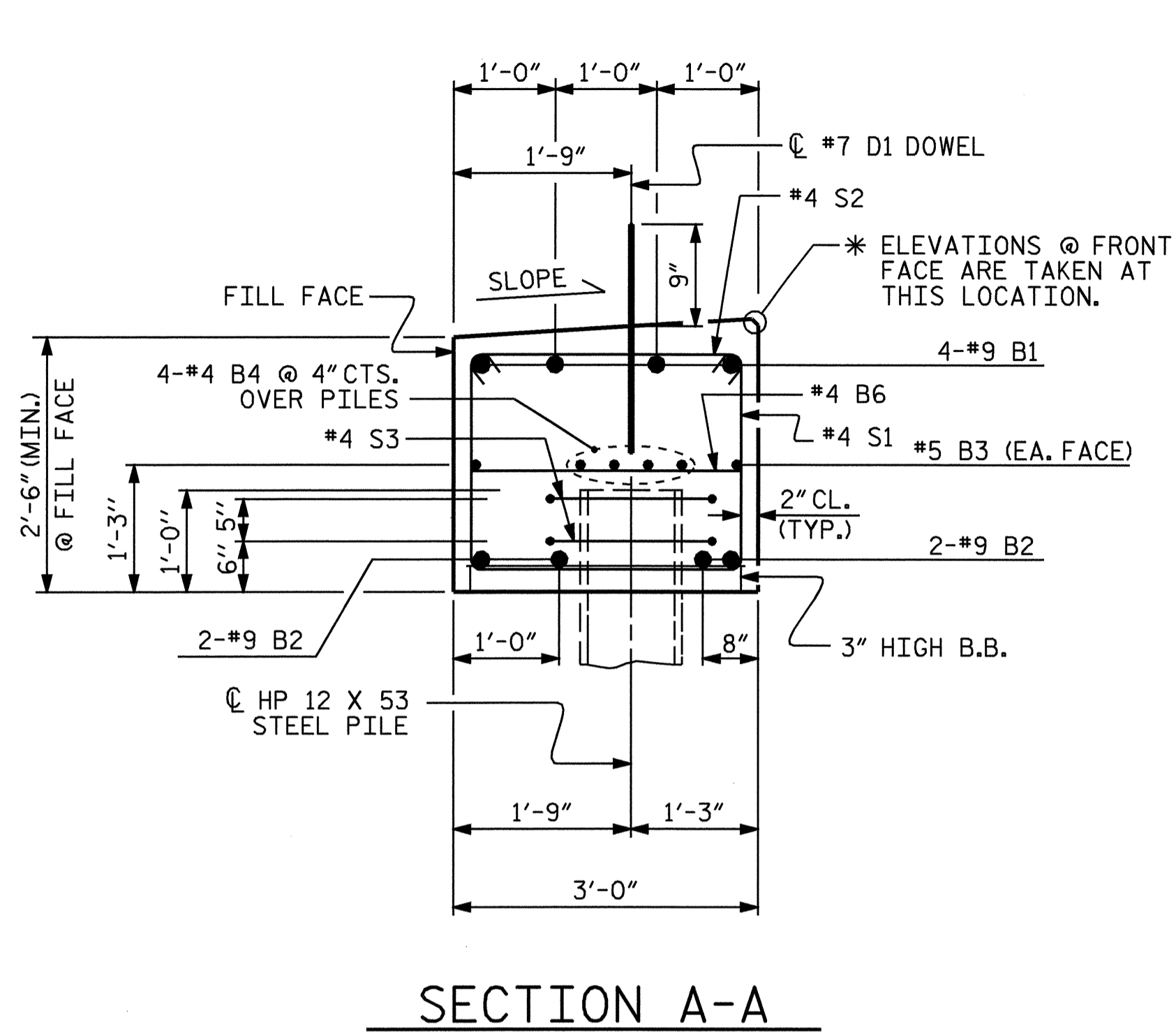
SUBSTRUCTURE  
 END BENT 1



DRAWN BY: E.C. LOCKLEAR DATE: 7-9-09  
 CHECKED BY: T.H. FANG DATE: 7-15-09

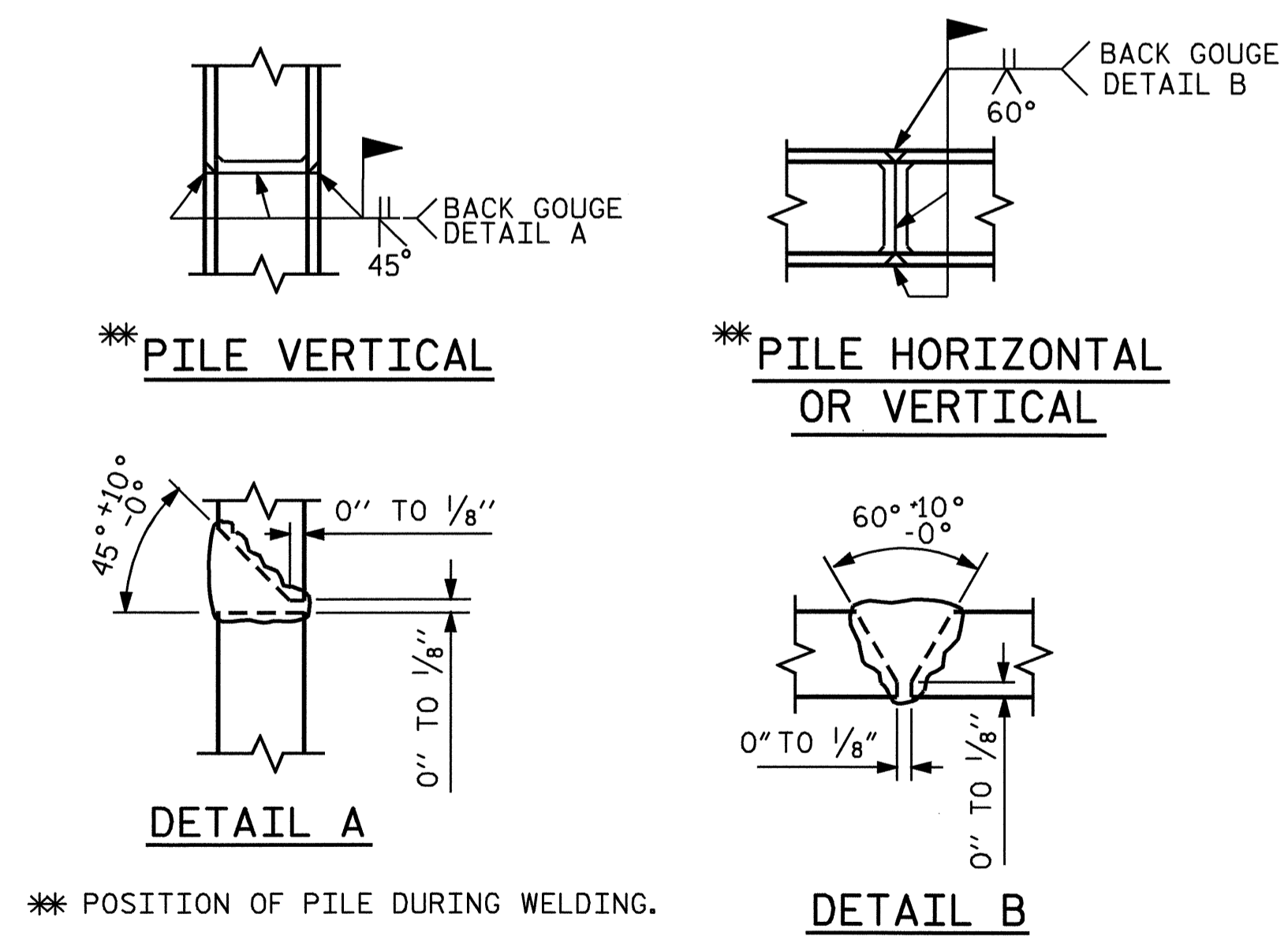
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 sdombrowski

REVISIONS						SHEET NO. S-16
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 38
2			4			



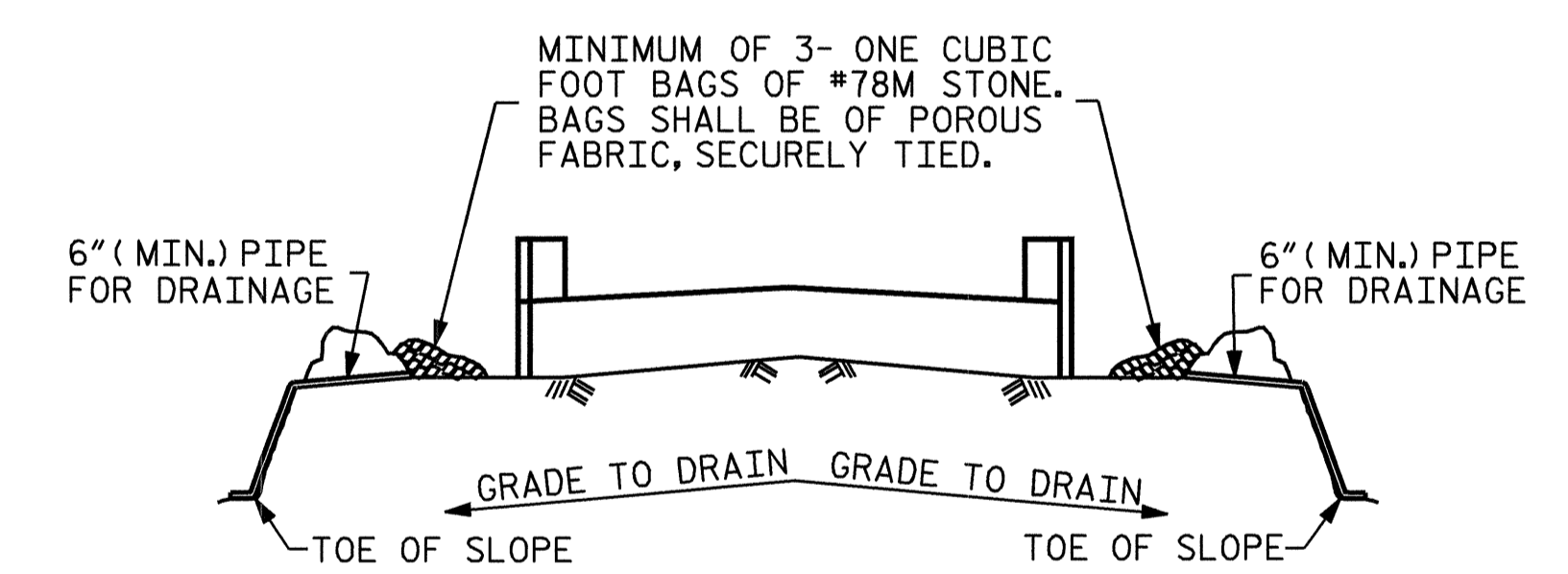
BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	36'-11"	1004
B2	8	#9	1	35'-8"	970
B3	4	#5	STR	32'-10"	137
B4	12	#4	STR	22'-6"	180
B5	4	#4	STR	21'-0"	56
B6	16	#4	STR	2'-9"	29
D1	40	#7	STR	1'-6"	123
H1	24	#4	2	7'-4"	118
K1	12	#4	STR	1'-10"	15
S1	56	#4	5	7'-8"	287
S2	56	#4	4	3'-5"	128
S3	20	#4	3	6'-6"	87
U1	14	#4	6	5'-8"	53
V1	16	#4	STR	4'-5"	47
V2	12	#4	STR	4'-3"	34
V3	12	#4	STR	4'-1"	33
REINFORCING STEEL					LBS. 3301
CLASS A CONCRETE BREAKDOWN					
POUR 1 (CAP & LOWER WINGS) C.Y.				20.9	
POUR 2 (UPPER WINGS) C.Y.				1.3	
TOTAL				C.Y. 22.2	
HP 12 X 53 STEEL PILES					
NO. 10				LIN. FT. = 200.0	
STEEL PILE POINTS					
NO. 10				EACH	

ALL BAR DIMENSIONS ARE OUT TO OUT.



\* POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



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.

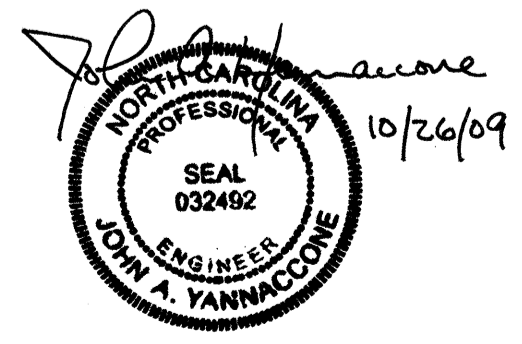
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

PROJECT NO. B-4745  
FORSYTH COUNTY  
 STATION: 18+77.40 -L-

SHEET 3 OF 3

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



DRAWN BY: J. YANNAKONE DATE: 3/23/09  
 CHECKED BY: T.H. FANG DATE: 7/15/09

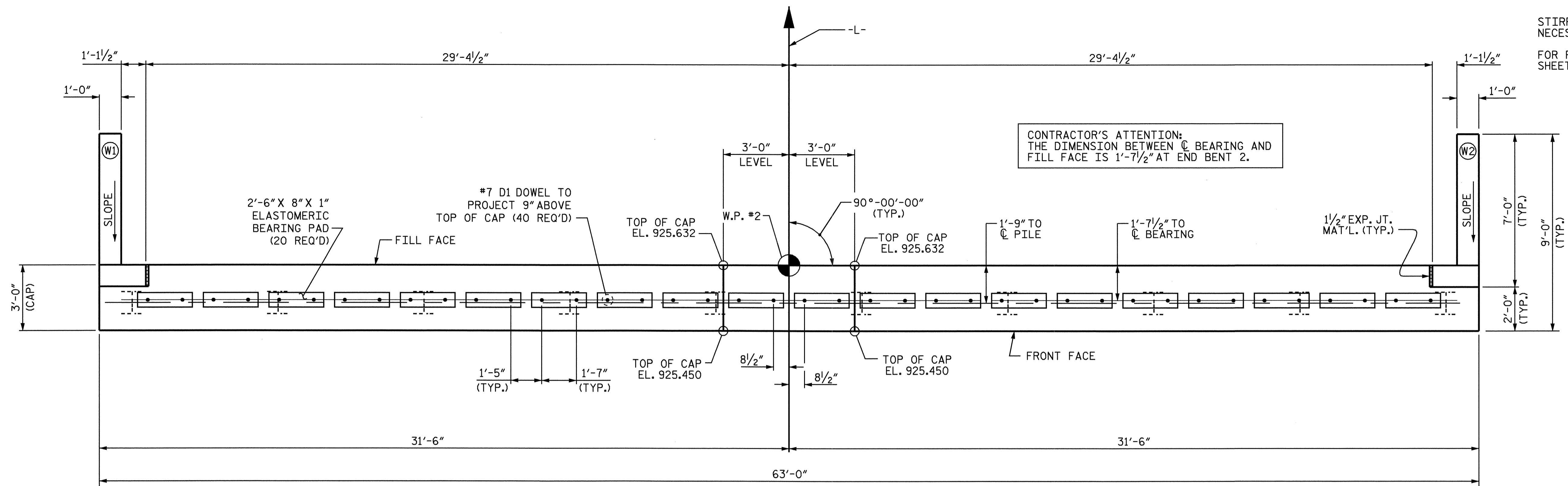
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2			4			SHEETS	38

**NOTES**

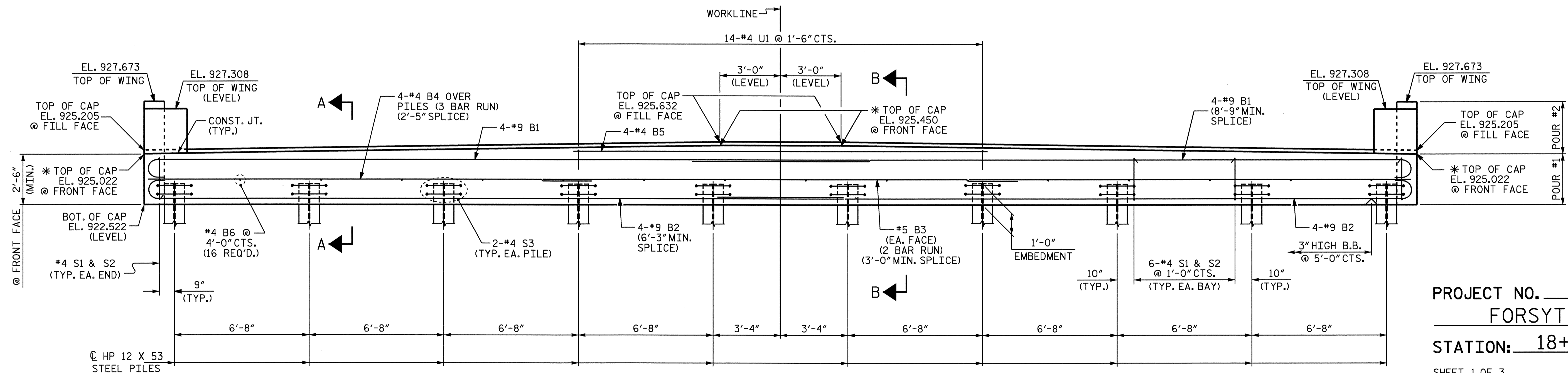
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #7 D1 DOWELS.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

CONTRACTOR'S ATTENTION:  
THE DIMENSION BETWEEN C BEARING AND FILL FACE IS 1'-7 1/2" AT END BENT 2.



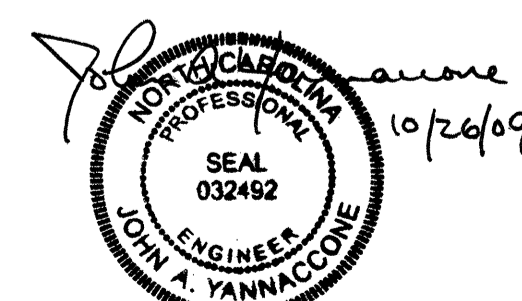
**PLAN**



**ELEVATION**

WING DETAILS NOT SHOWN FOR CLARITY

\* FOR LOCATION OF ELEVATION AT FRONT FACE, SEE SECTIONS A-A AND B-B, SHEET 2 OF 3.



PROJECT NO. B-4745  
FORSYTH COUNTY  
STATION: 18+77.40 -L-

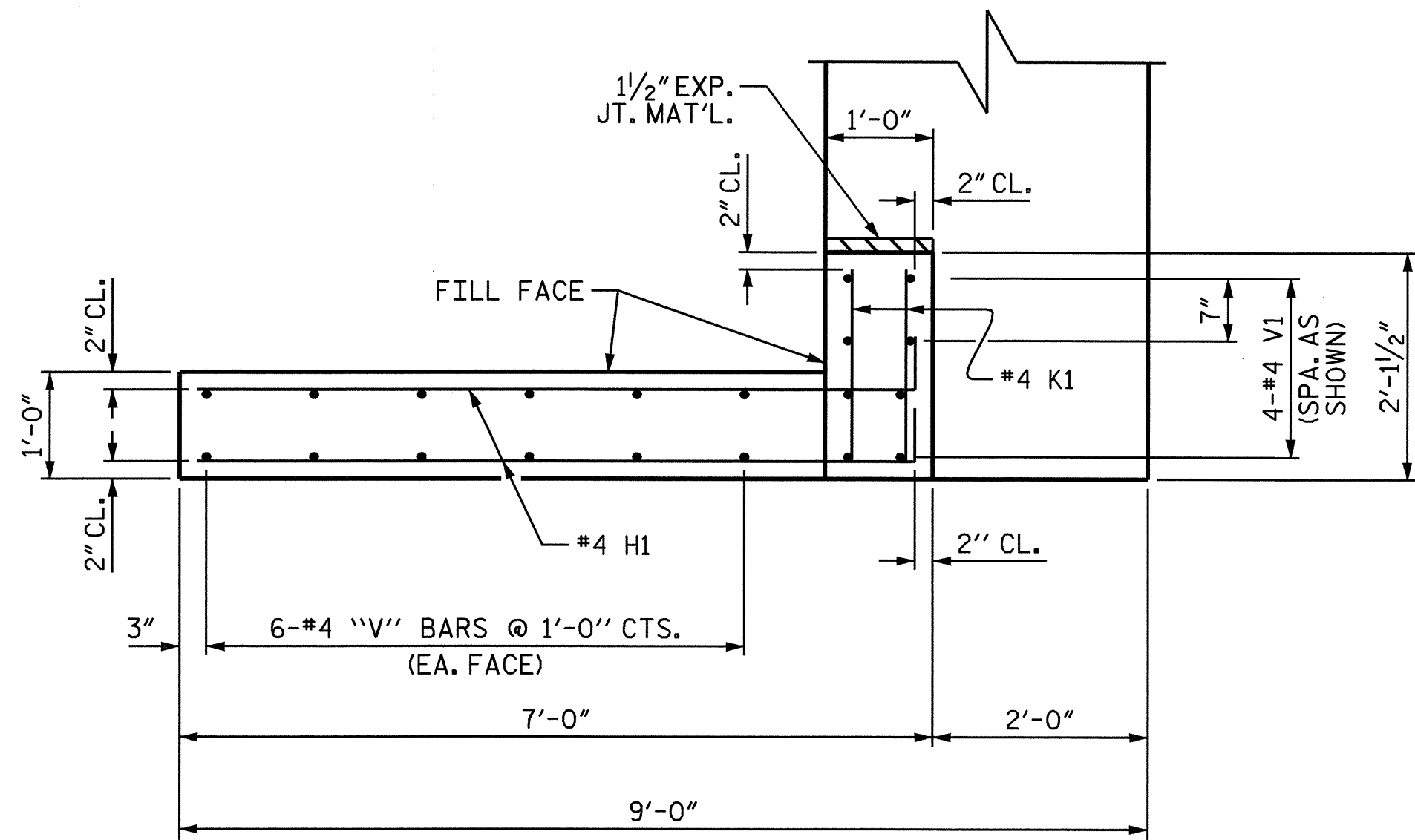
SHEET 1 OF 3

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUBSTRUCTURE

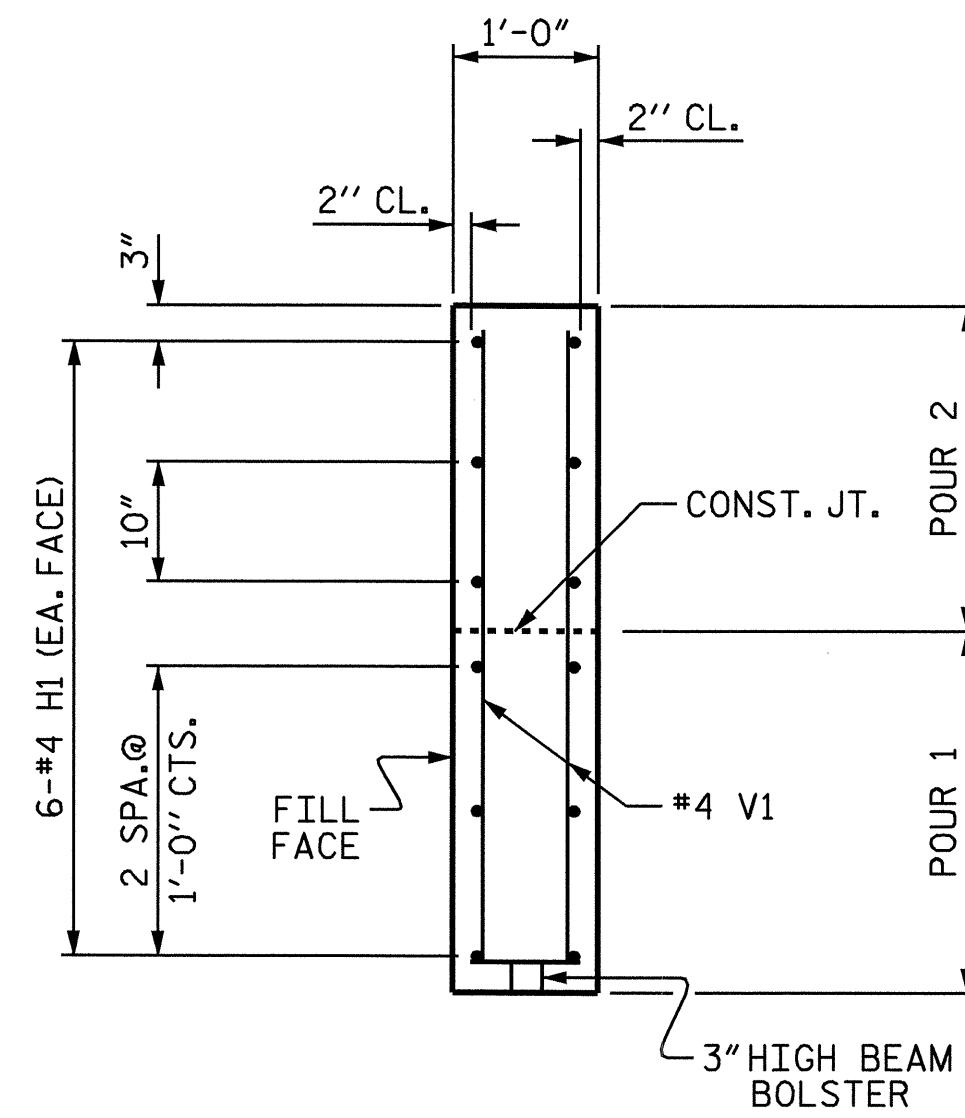
END BENT 2

DRAWN BY : J. YANNACCONE DATE : 6/18/09  
CHECKED BY : T. H. FANG DATE : 7/08/09

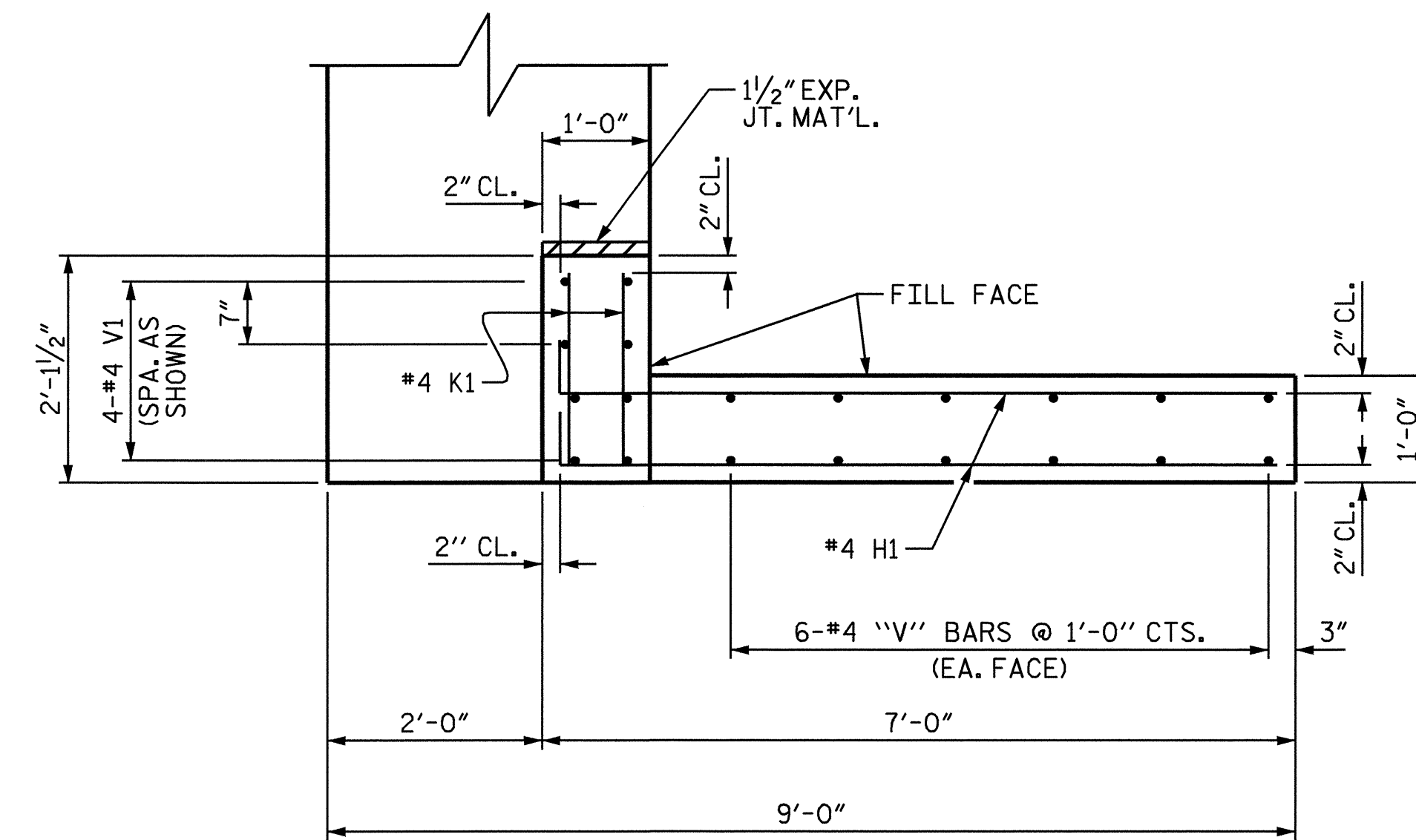
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2			4				



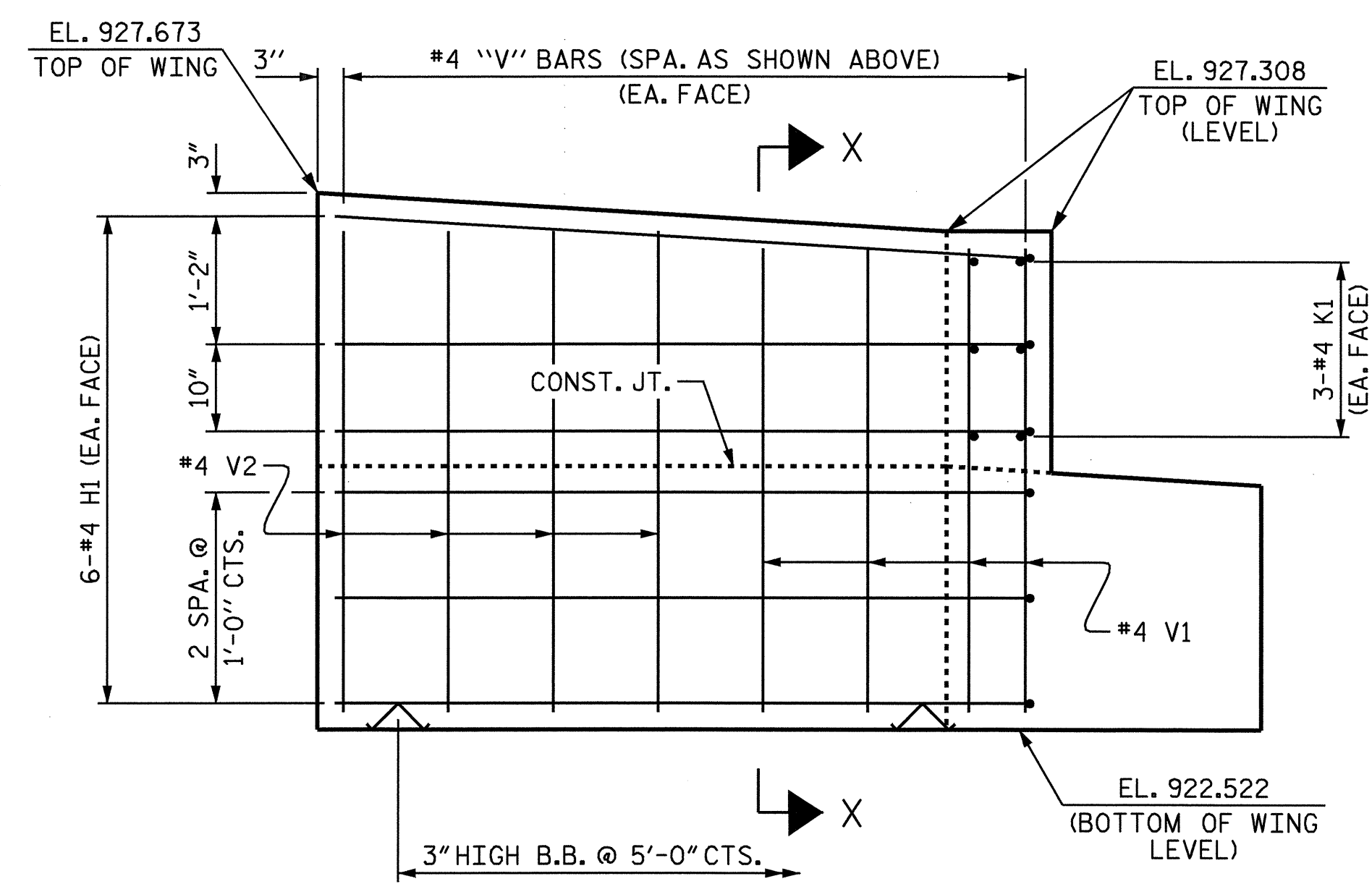
PLAN OF WING W1



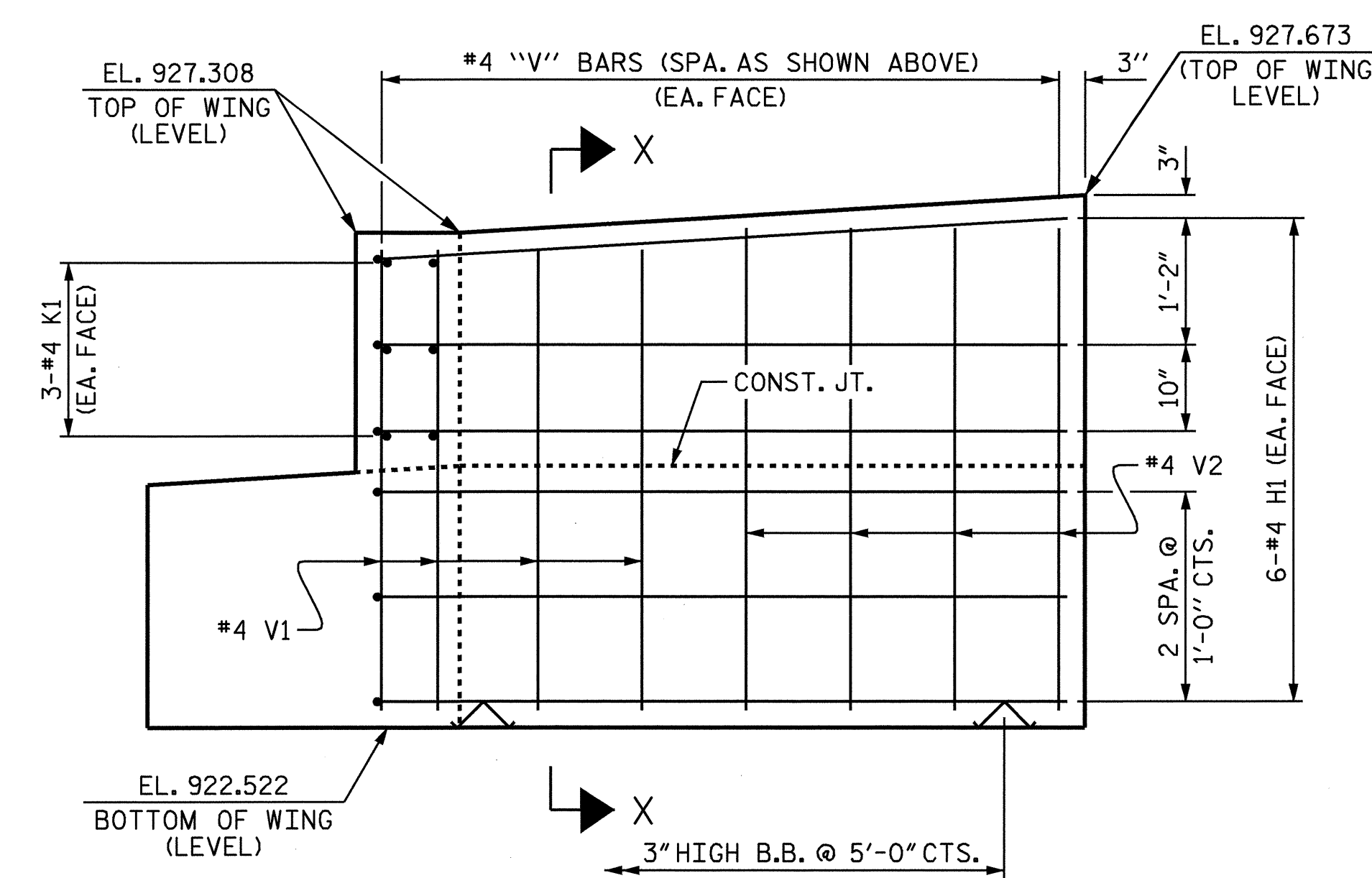
SECTION X-X



PLAN OF WING W2



ELEVATION OF WING W1



ELEVATION OF WING W2

PROJECT NO. B-4745  
FORSYTH COUNTY  
 STATION: 18+77.40 -L-

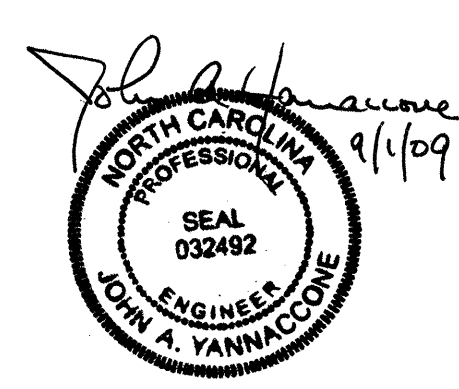
SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT 2

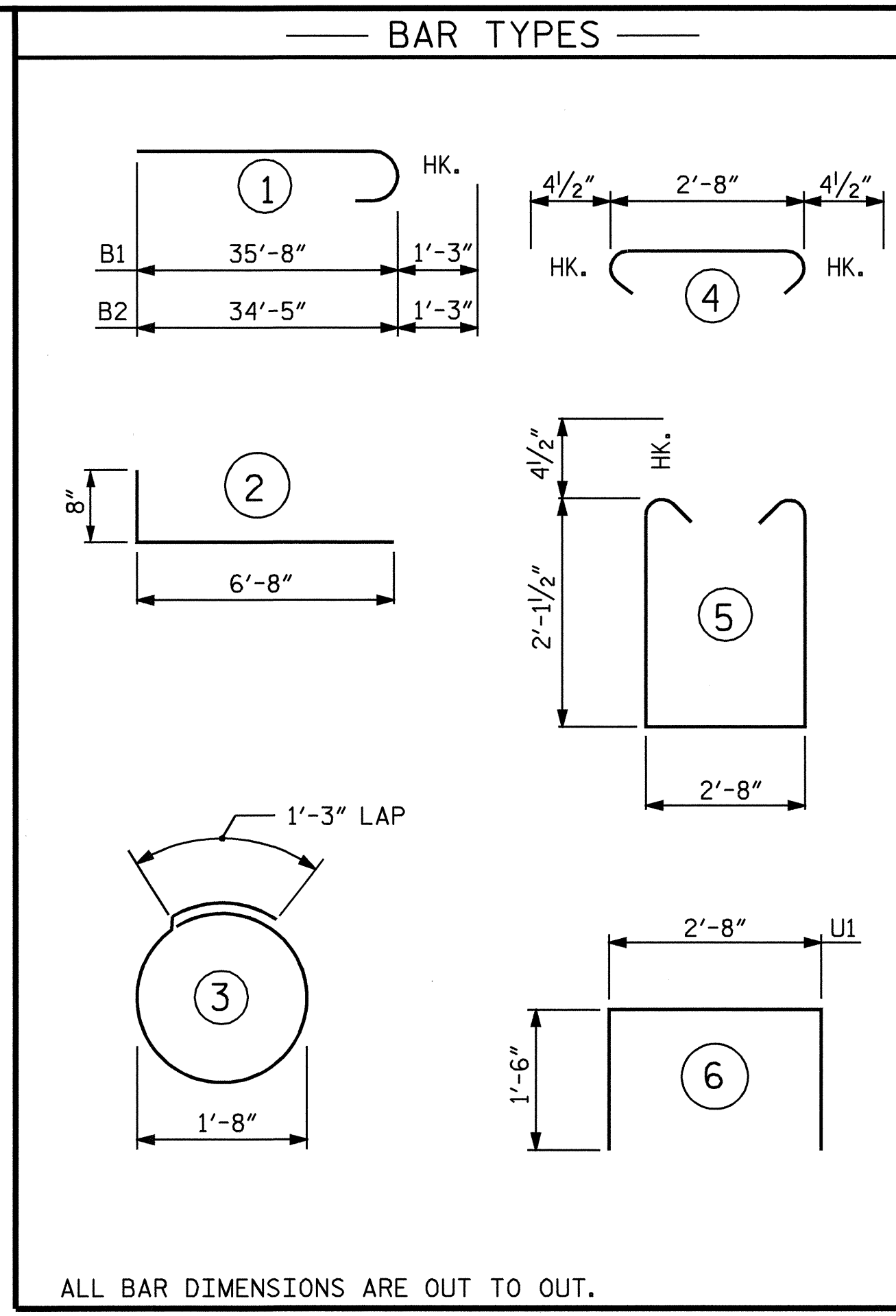
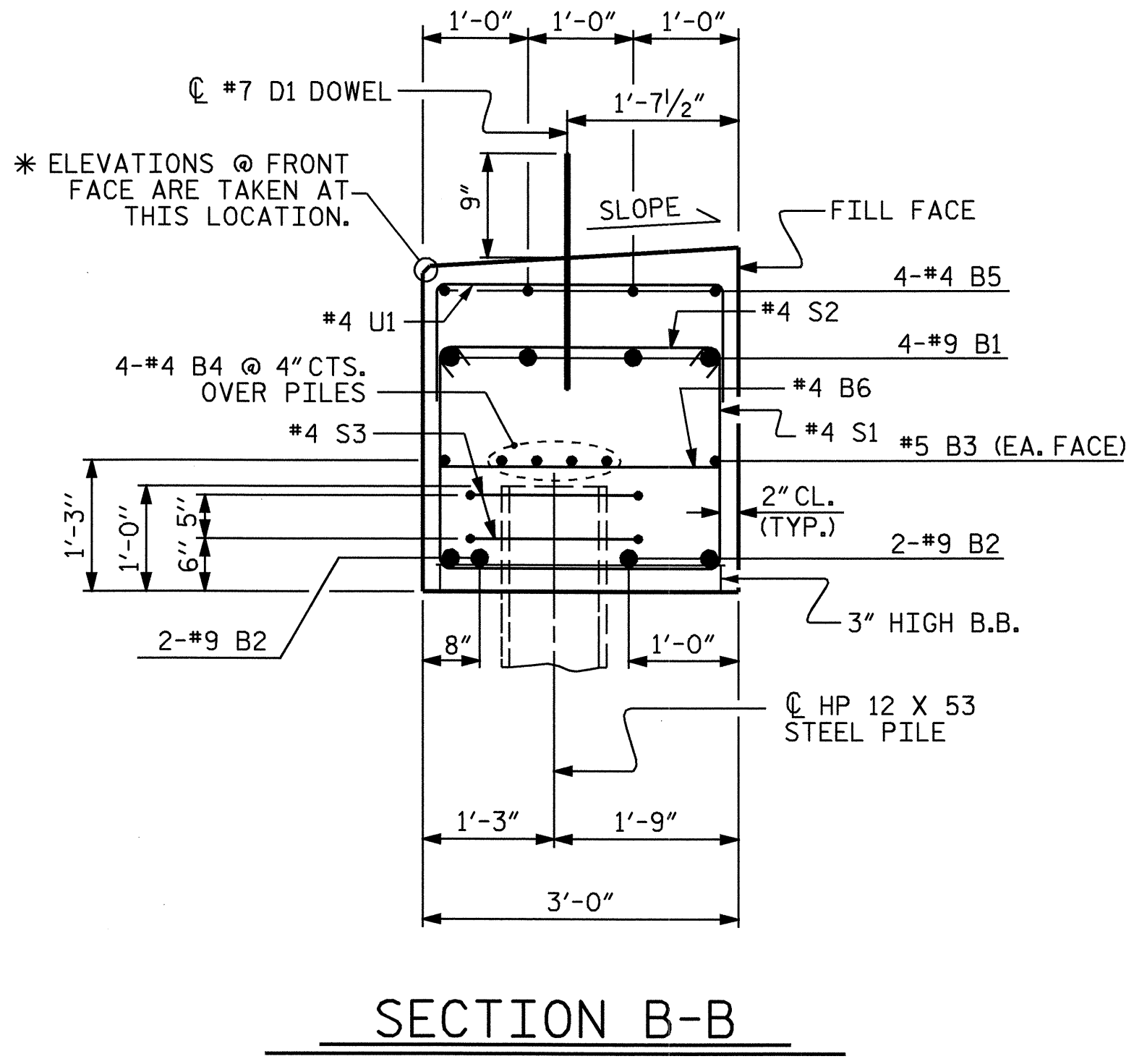
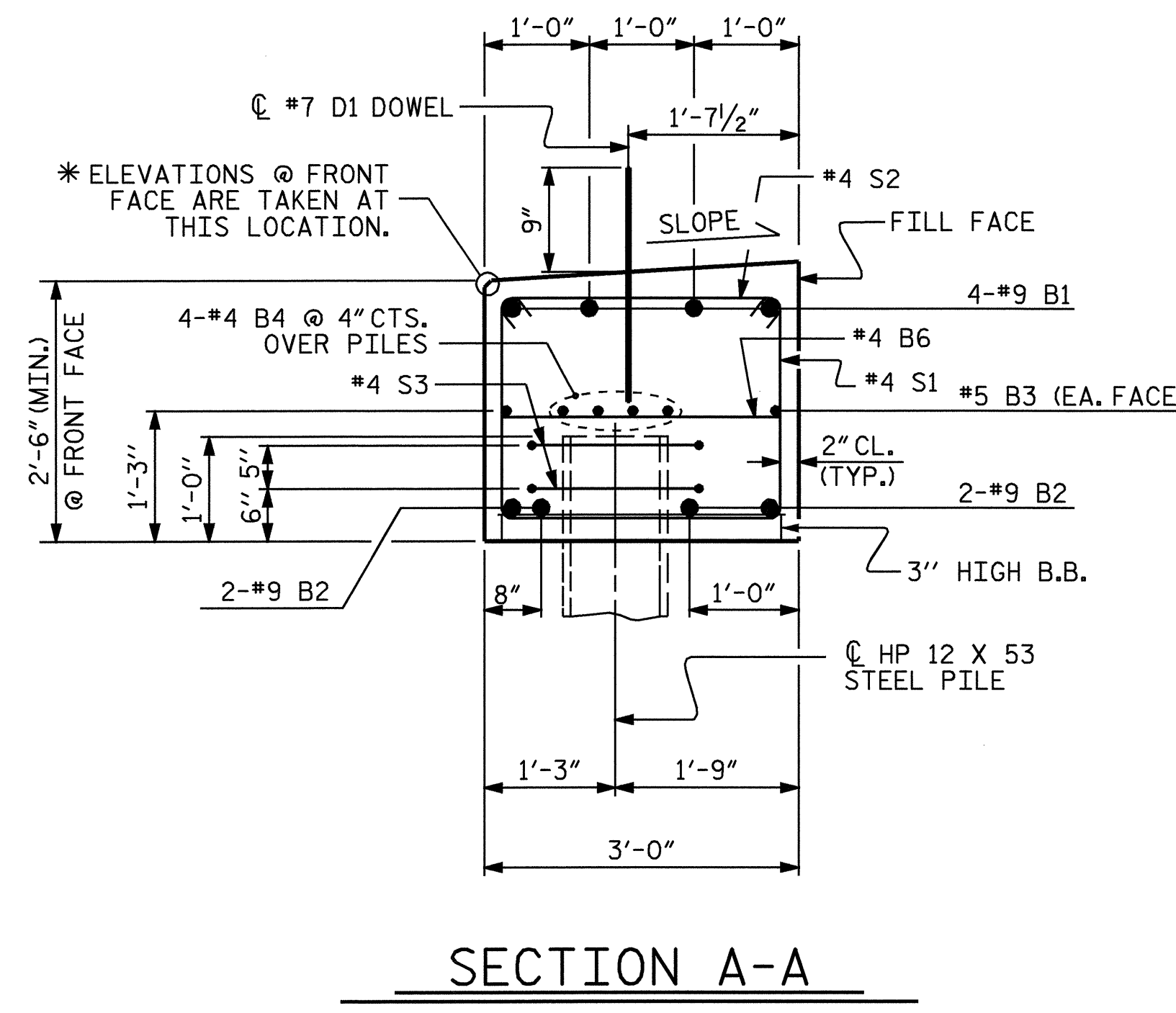
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NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 38



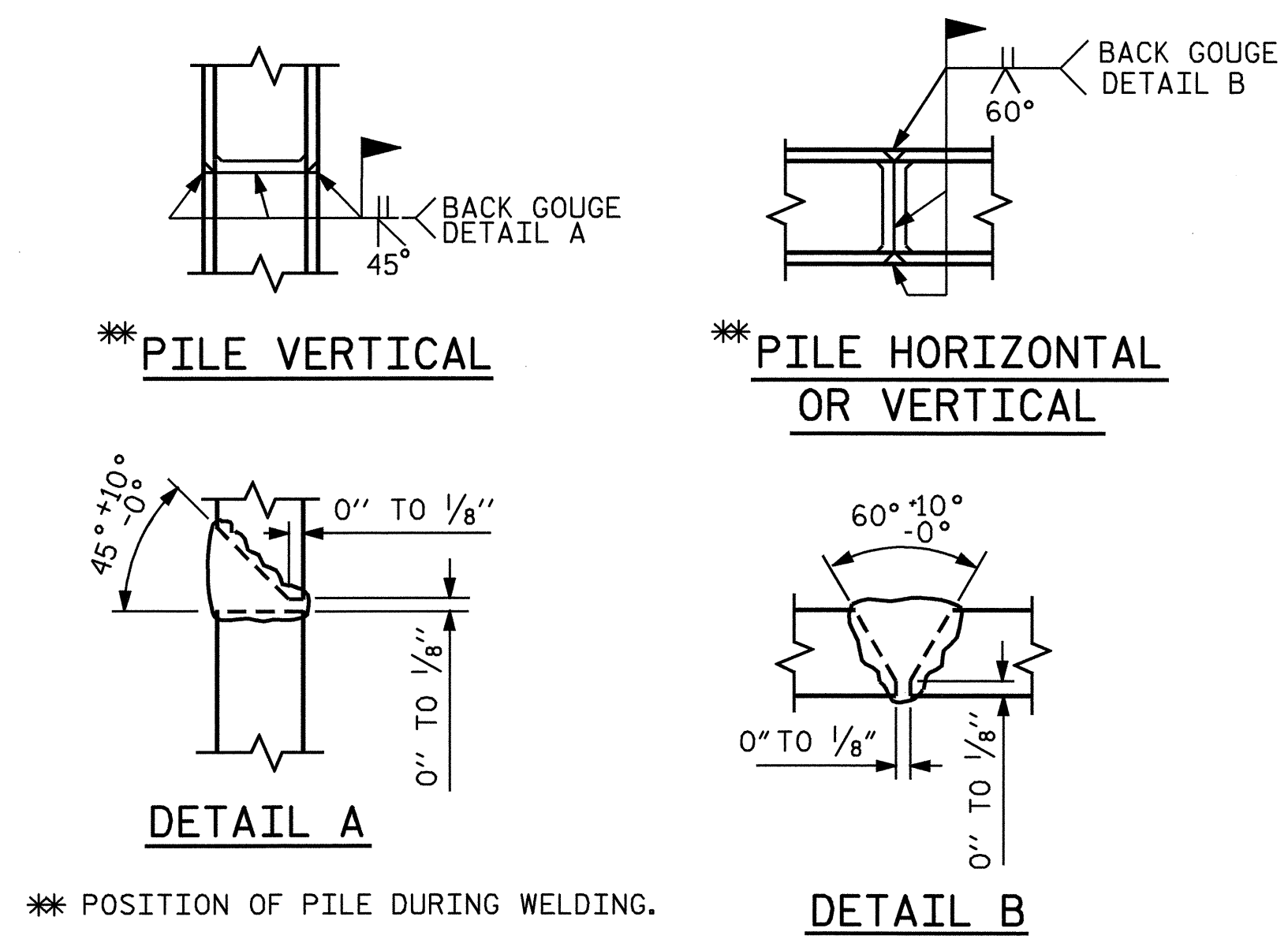
DRAWN BY: E.C. LOCKLEAR DATE: 7-9-09  
 CHECKED BY: T.H. FANG DATE: 7-15-09

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 sdombrowski

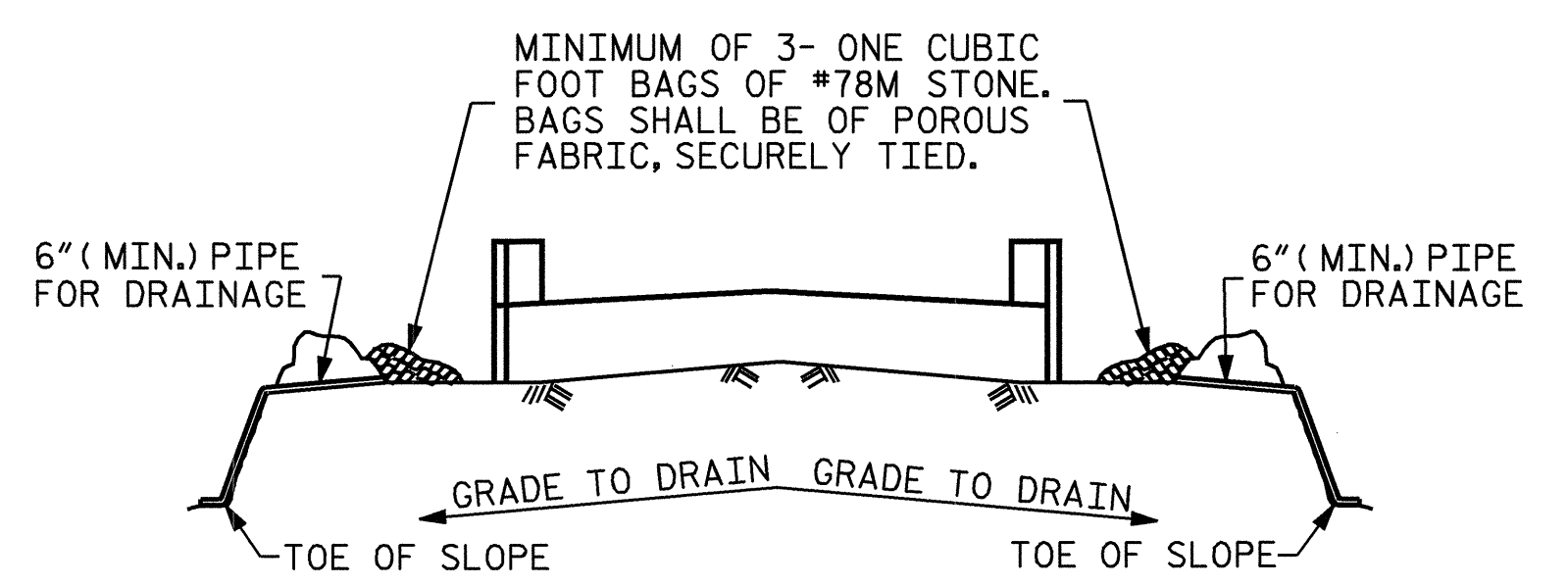


BILL OF MATERIAL					
END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	36'-11"	1004
B2	8	#9	1	35'-8"	970
B3	4	#5	STR	32'-10"	137
B4	12	#4	STR	22'-6"	180
B5	4	#4	STR	21'-0"	56
B6	16	#4	STR	2'-9"	29
D1	40	#7	STR	1'-6"	123
H1	24	#4	2	7'-4"	118
K1	12	#4	STR	1'-10"	15
S1	56	#4	5	7'-8"	287
S2	56	#4	4	3'-5"	128
S3	20	#4	3	6'-6"	87
U1	14	#4	6	5'-8"	53
V1	24	#4	STR	4'-5"	71
V2	16	#4	STR	4'-8"	50
REINFORCING STEEL					LBS. 3308
CLASS A CONCRETE BREAKDOWN					
POUR 1 (CAP & LOWER WINGS)				C.Y.	20.9
POUR 2 (UPPER WINGS)				C.Y.	1.4
TOTAL				C.Y.	22.3
HP 12 X 53 STEEL PILES					
NO. 10				LIN. FT. =	200.0
STEEL PILE POINTS					
NO. 10				EACH	

ALL BAR DIMENSIONS ARE OUT TO OUT.



PILE SPLICE DETAILS



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.

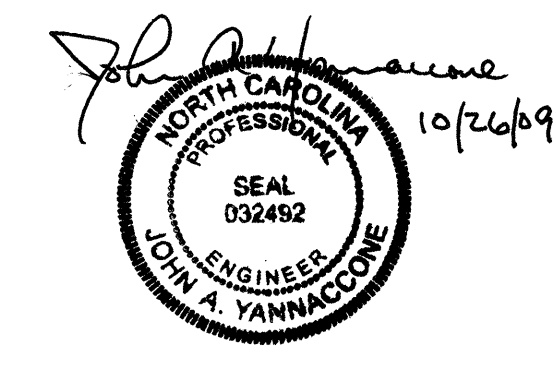
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

PROJECT NO. B-4745  
FORSYTH COUNTY  
 STATION: 18+77.40 -L-  
 SHEET 3 OF 3

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



DRAWN BY: J. YANNAACONE DATE: 3/23/09  
 CHECKED BY: T.H. FANG DATE: 7/15/09

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20	
1			3			TOTAL SHEETS	38
2			4				

**GENERAL NOTES**

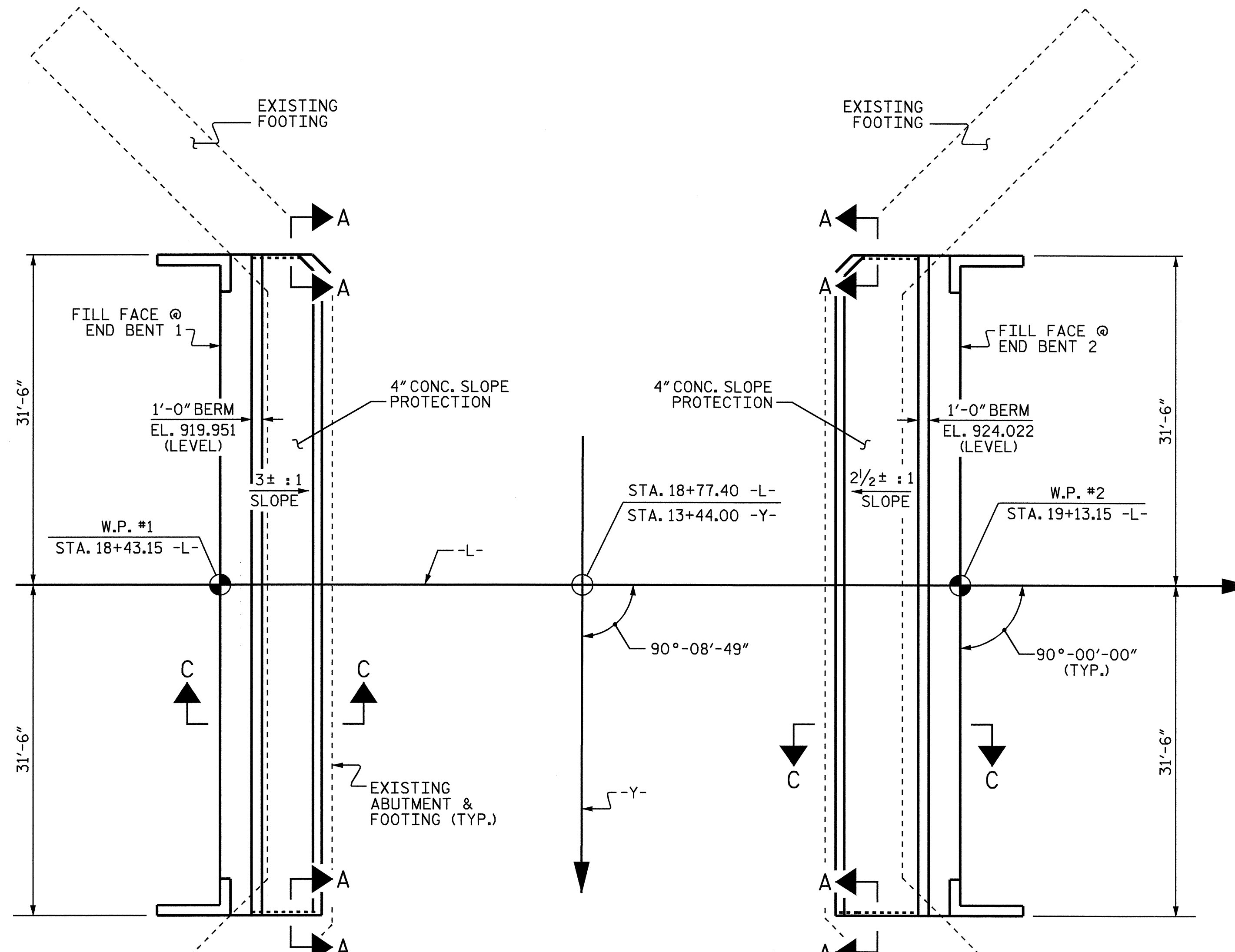
SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. THE CONTRACTOR, AT HIS OPTION, MAY USE ALTERNATE "B" ONLY FOR HIGHWAY OVER HIGHWAY GRADE SEPARATIONS WITH 2:1 END BENT SLOPE IN RURAL, UNPOPULATED AREAS. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS. FOR BERM WIDTH, SEE GENERAL DRAWING.

**ALTERNATE "A"**

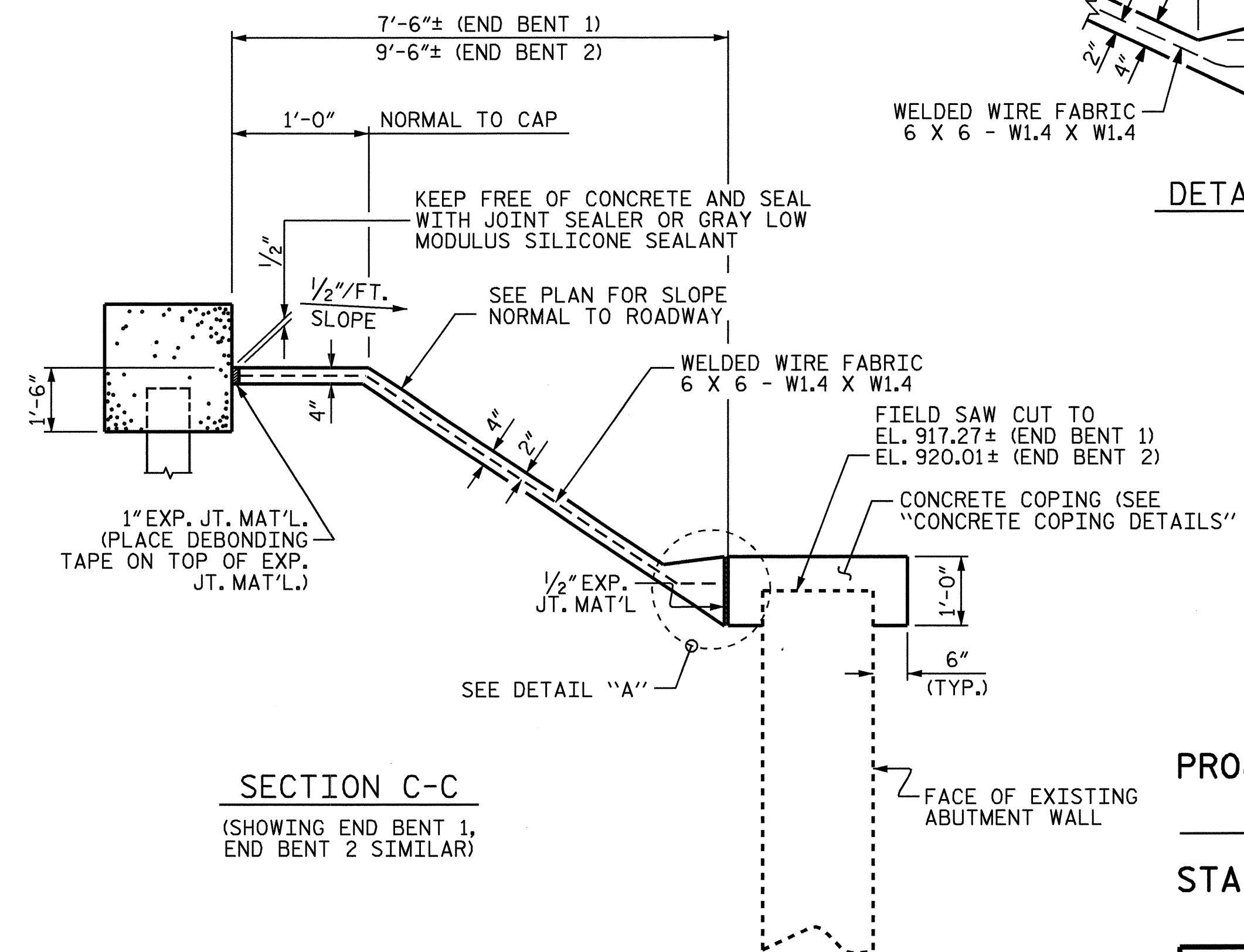
ALTERNATE "A" SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60" WIDE. SLOPE PROTECTION SHALL BE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

BRIDGE @ STA. 18+77.40 -L-	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. LIN. FT.
END BENT 1	62.0	140.0
END BENT 2	77.0	160.0

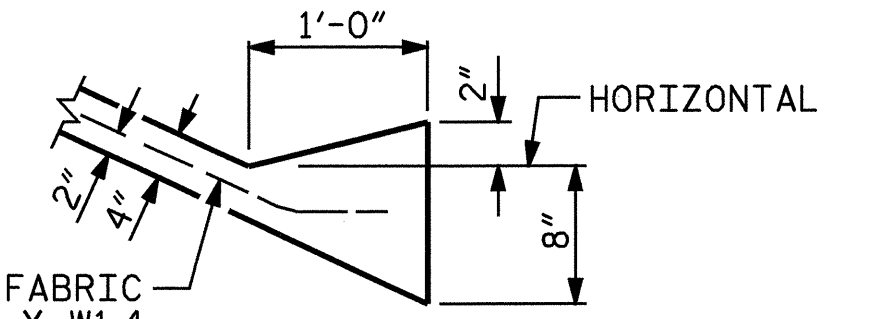
\* QUANTITY SHOWN IS BASED ON 5' POURS.



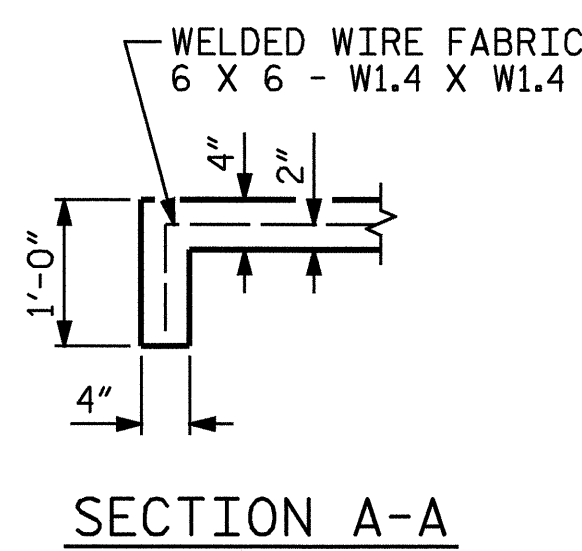
**PLAN**  
EXISTING ABUTMENTS AND CONCRETE COPINGS NOT SHOWN FOR CLARITY.



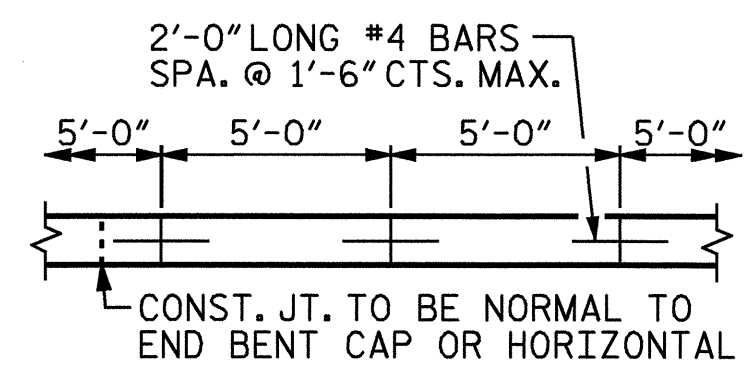
**SECTION C-C**  
(SHOWING END BENT 1, END BENT 2 SIMILAR)



**DETAIL "A"**

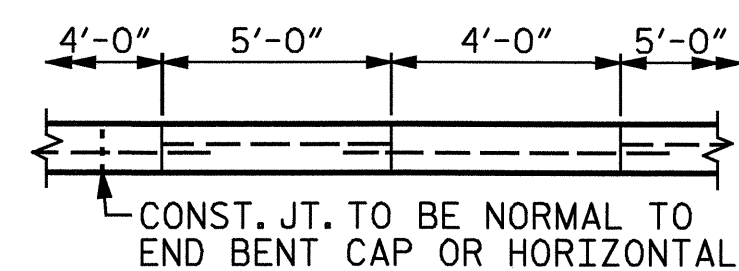


**SECTION A-A**



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

**POURING DETAIL**

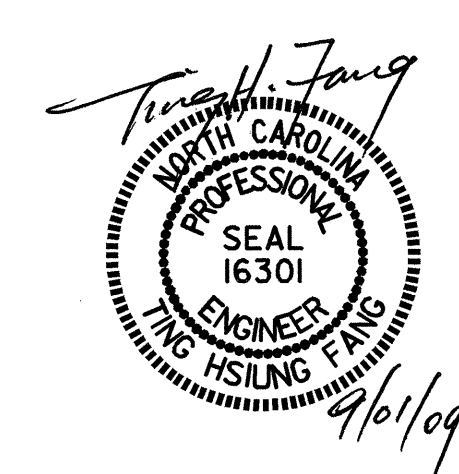


CONST. JT. TO BE NORMAL TO END BENT CAP OR HORIZONTAL  
POUR A 4'-0" STRIP FIRST. STRIP WIDTHS MAY VARY IN CURVED PORTION.

**OPTIONAL POURING DETAIL**

PROJECT NO. B-4745  
FORSYTH COUNTY  
STATION: 18+77.40 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD					
SLOPE PROTECTION DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 38



DRAWN BY: E.C. LOCKLEAR DATE: 5-12-09  
CHECKED BY: T. H. FANG DATE: 7-15-09

01-SEP-2009 13:56  
Z:\B4745\Structures\B4745\FINAL\_PLANS\B4745.ed.sp.dgn  
sdombrowski

BILL OF MATERIAL

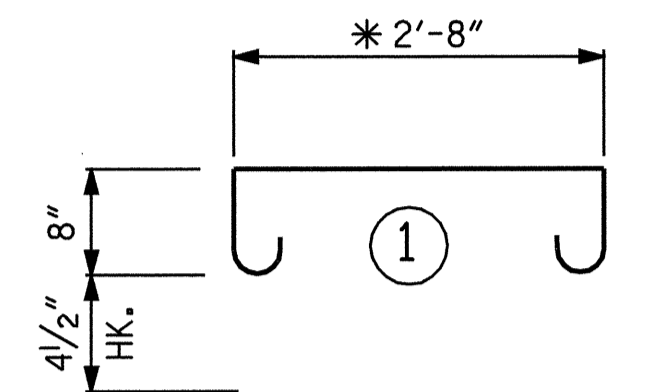
FOR ONE CONCRETE COPING  
(2 REQUIRED)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	18	#4	STR	22'-9"	274
B2	12	#4	STR	10'-6"	84
S1	50	#4	1	* 4'-9"	159

REINFORCING STEEL LBS. 441

CLASS A CONCRETE C.Y. 5.8

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

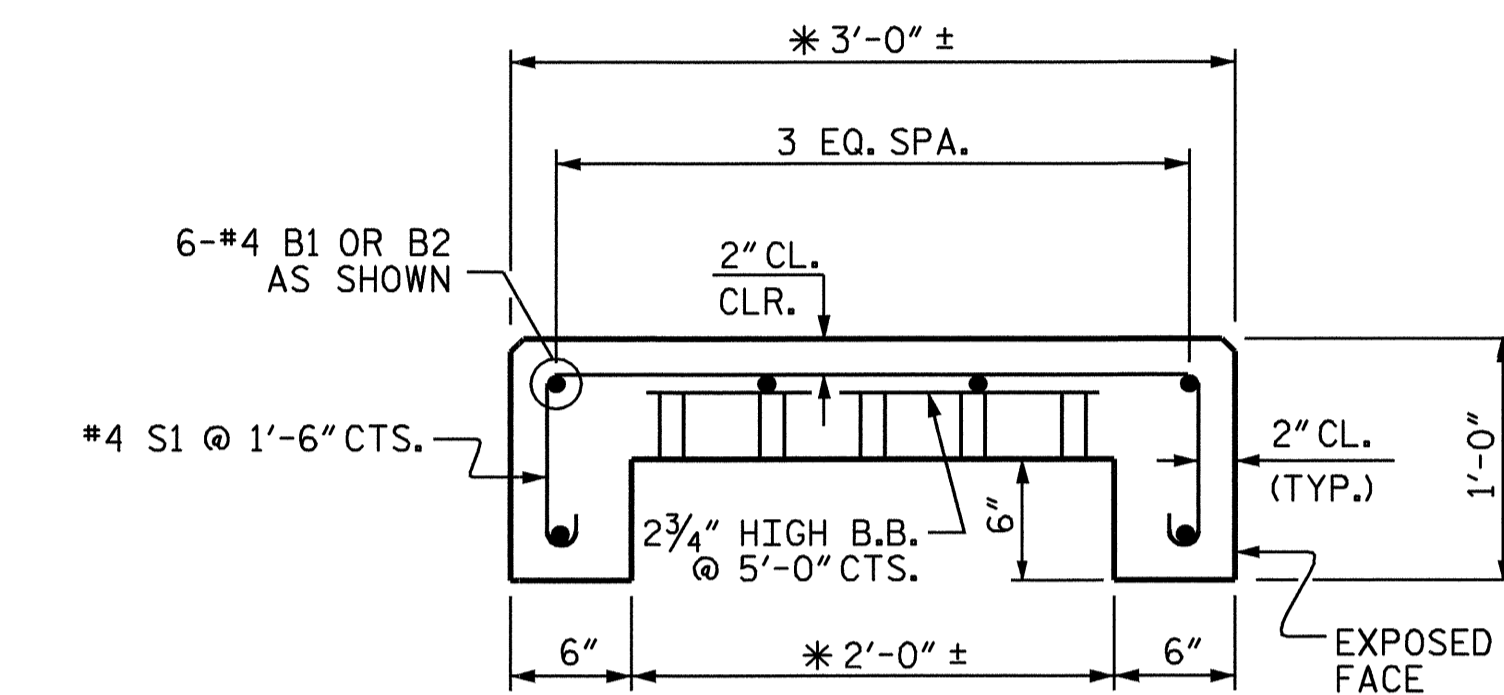
CONCRETE COPING PAY ITEMS SHALL BE LUMP SUM AND PAID FOR AS PART OF THE SLOPE PROTECTION QUANTITIES.

CONCRETE COPING NOTES

THE CONCRETE COPING SHALL BE CAST-IN-PLACE AND HAVE A SMOOTH FINISH. CONCRETE COPING IS REQUIRED ALONG THE TOE OF 4" SLOPE PROTECTION AT BOTH END BENTS.

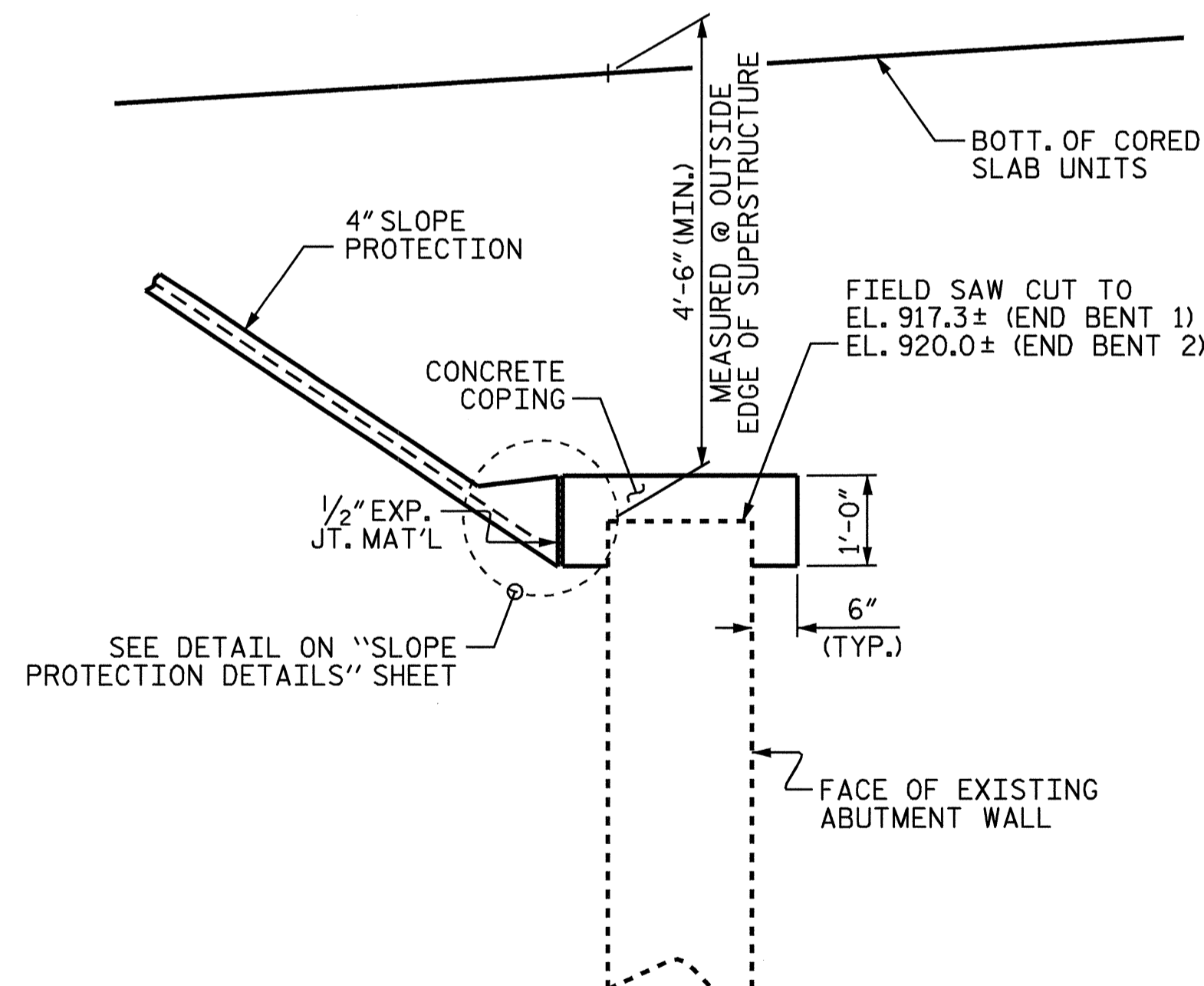
THE CONCRETE COPING MAY BE CAST CONCURRENTLY WITH SLOPE PROTECTION.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE CONSTRUCTED IN ALL EXPOSED FACES OF THE COPING AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A JOINT SHALL BE LOCATED AT THIRD POINTS.



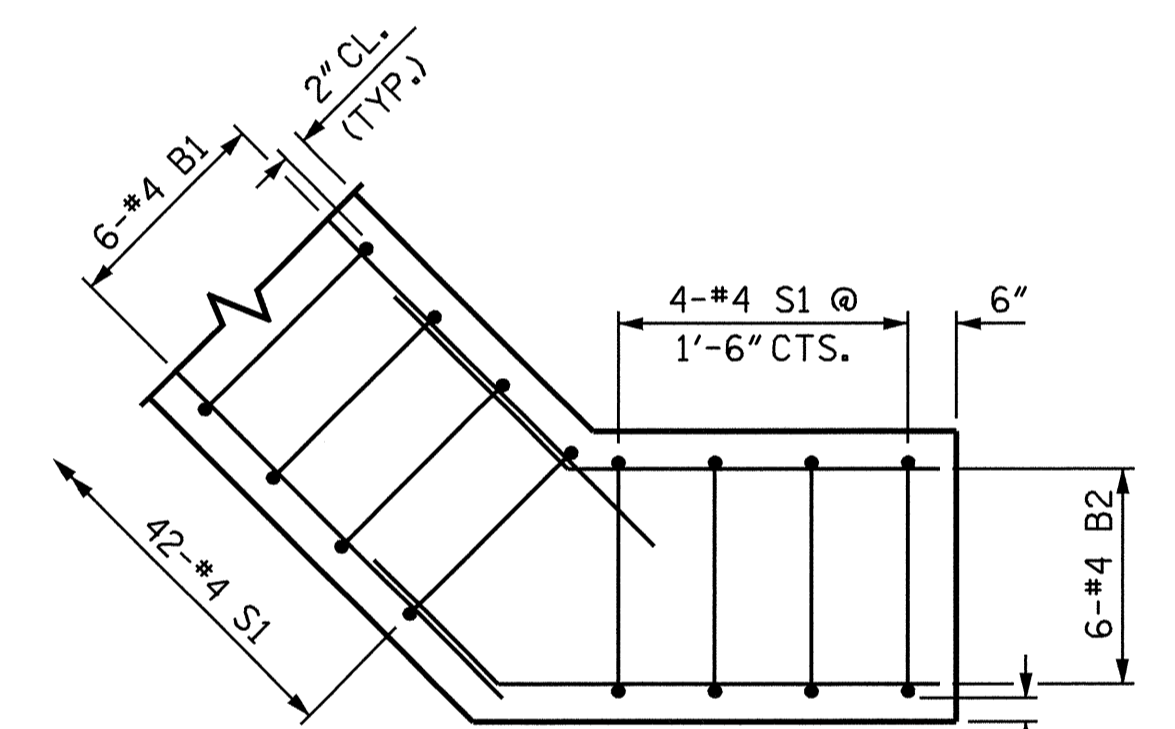
CONCRETE COPING DETAILS

\* DIMENSION BASED ON THE BEST KNOWLEDGE OF THE EXISTING ABUTMENT. FIELD ADJUSTMENT MAY BE REQUIRED AS APPROVED BY THE ENGINEER.



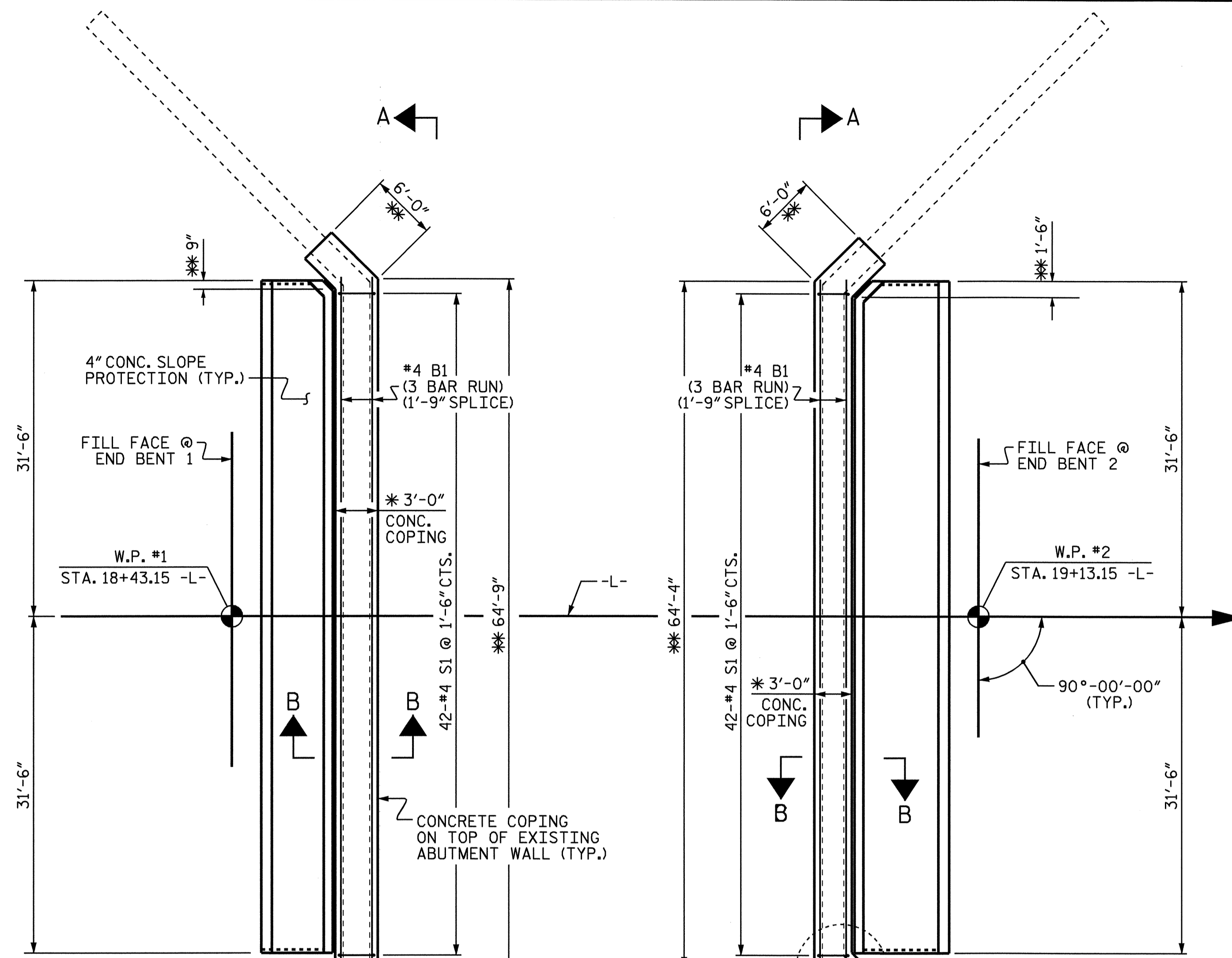
SECTION B-B

(SHOWING END BENT 1, END BENT 2 SIMILAR)



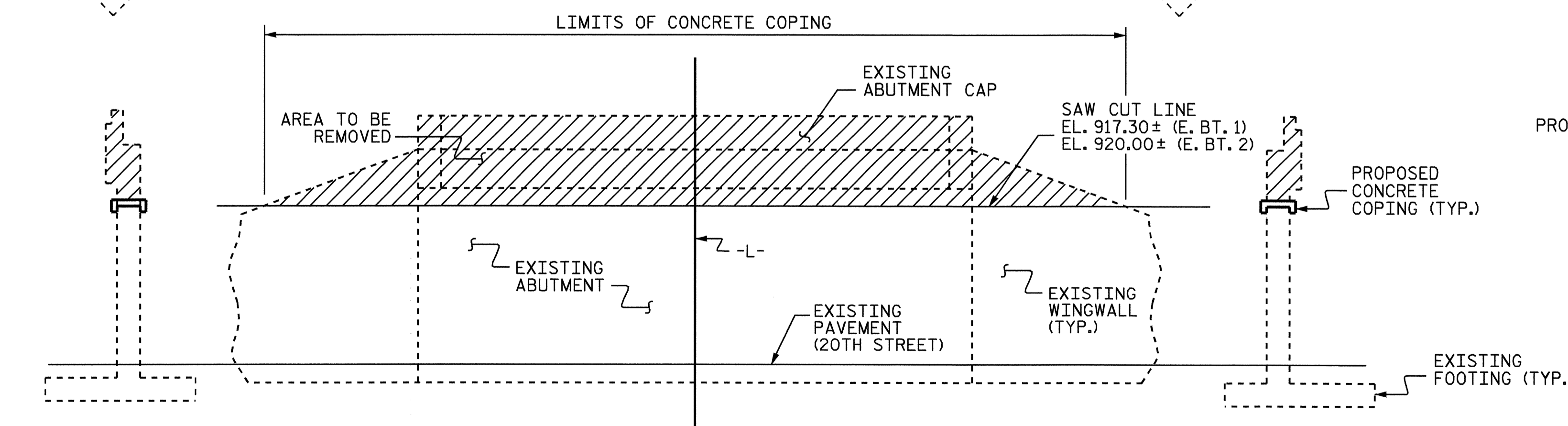
DETAIL "A"

FIELD BEND #4 B2 BARS TO MATCH WITH #4 B1 BARS. THE #4 B2 BARS ARE DETAILED WITH 3 FEET OF EXTRA LENGTH FOR FIELD ADJUSTMENT OF COPING LENGTH. CUT BARS AS NECESSARY.



PLAN

EXISTING FOOTINGS NOT SHOWN FOR CLARITY.  
\*\* ESTIMATED DIMENSION SHOULD BE FIELD ADJUSTED BY THE ENGINEER.



SECTION VIEW AT END BENT 1

VIEW A-A EXISTING ABUTMENT ELEVATION

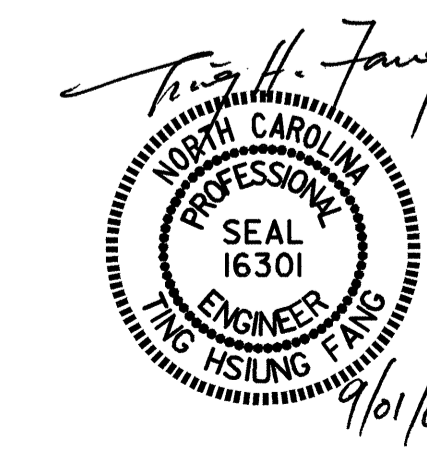
SECTION VIEW AT END BENT 2

PROJECT NO. B-4745  
FORSYTH COUNTY  
STATION: 18+77.40 -L-

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

CONCRETE COPING DETAILS

REVISIONS						SHEET NO. S-22
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 38
2			4			



DRAWN BY: E.C. LOCKLEAR DATE: 5-12-09  
CHECKED BY: J.A. YANNACCONE DATE: 7-28-09

**BILL OF MATERIAL**

**AT END BENT 1**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	50	#4	STR	30'-0"	1002
A2	50	#4	STR	30'-0"	1002
*B1	114	#5	STR	24'-8"	2933
B2	114	#6	STR	24'-8"	4224
*B3	2	#5	STR	9'-10"	21
B4	2	#6	STR	9'-10"	30

REINFORCING STEEL	LBS.	5,256
*EPOXY COATED REINFORCING STEEL	LBS.	3,956

CLASS AA CONCRETE	C. Y.	60.0
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**AT END BENT 2**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	50	#4	STR	30'-0"	1002
A2	50	#4	STR	30'-0"	1002
*B1	114	#5	STR	24'-8"	2933
B2	114	#6	STR	24'-8"	4224
*B3	2	#5	STR	9'-10"	21
B4	2	#6	STR	9'-10"	30

REINFORCING STEEL	LBS.	5,256
*EPOXY COATED REINFORCING STEEL	LBS.	3,977

CLASS AA CONCRETE	C. Y.	60.0
-------------------	-------	------

**NOTES**

FOR SUB-REGIONAL TIER BRIDGE APPROACH FILL INCLUDING FABRIC, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, AND #78M STONE BACKFILL, 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 SECTION D-D ON SHEET S-20 AND 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 BETWEEN APPROACH SLAB AND CORED SLAB UNITS, SEE "PRESTRESSED CONCRETE CORED SLAB UNIT" SHEETS.

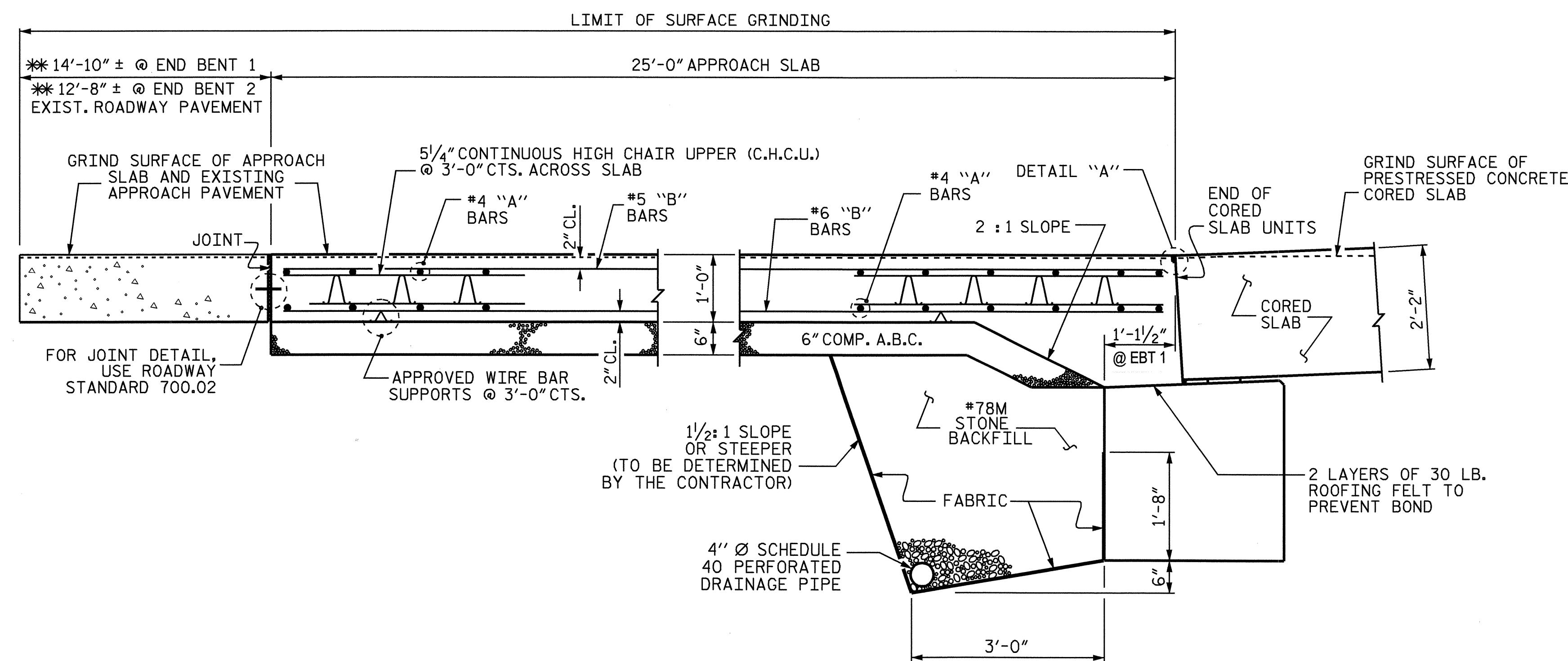
THE JOINT AT THE END BENT SHALL BE GROUTED AS SOON AS PRACTICAL AFTER THE CONSTRUCTION OF THE APPROACH SLABS.

DO NOT BEGIN BRIDGE DECK GRINDING UNTIL APPROACH SLABS ARE FULLY CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR GRINDING OF APPROACH SLABS AND EXISTING APPROACH CONCRETE PAVEMENTS, SEE SPECIAL PROVISIONS FOR BRIDGE DECK GRINDING.

FOR JOINTS BETWEEN APPROACH SLABS AND EXISTING CONCRETE PAVEMENT, USE ROADWAY STANDARD DRAWING 700.02 WITH ASSOCIATED STANDARD DRAWINGS 700.01 AND 700.03 WITH THE FOLLOWING EXCEPTION: PLACE ALL EXPANSION SLEEVES IN APPROACH SLABS.

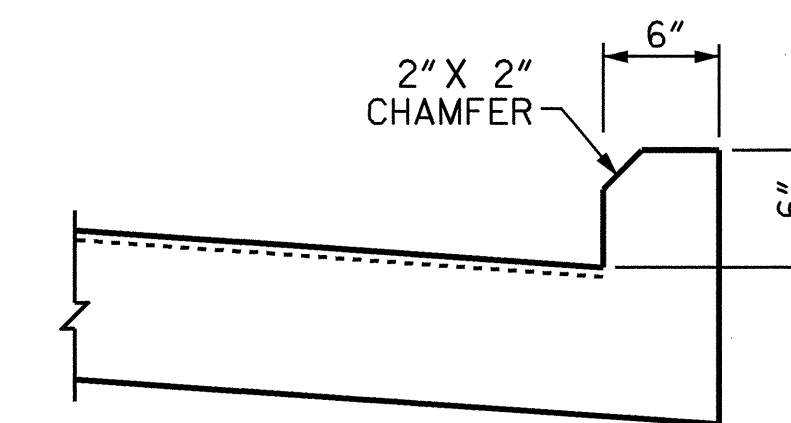
THE JOINT OPENING AT THE APPROACH SLAB/CORED SLAB INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE SL LOW MODULUS SILICONE SEALANT.

SEE PLAN OF APPROACH SLABS & APPROACH PAVEMENTS ON SHEET 2 OF 3

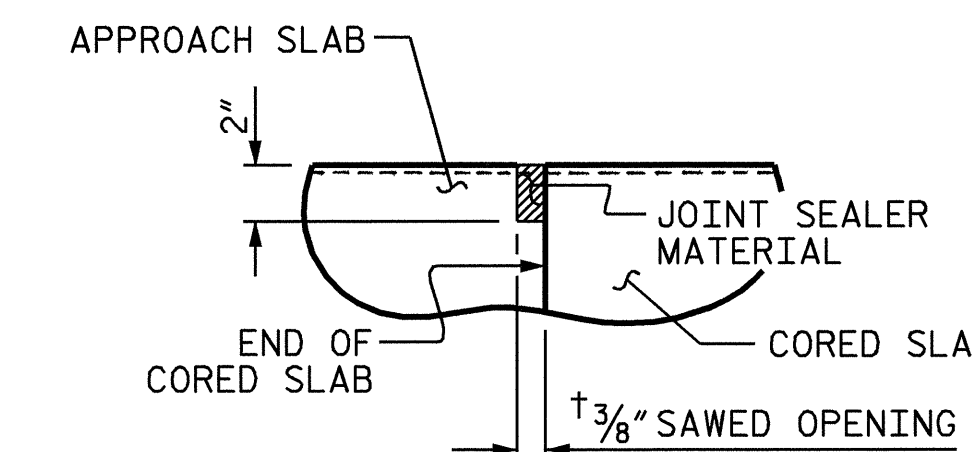


**SECTION THRU APP. SLAB & EXIST. PAVEMENT**

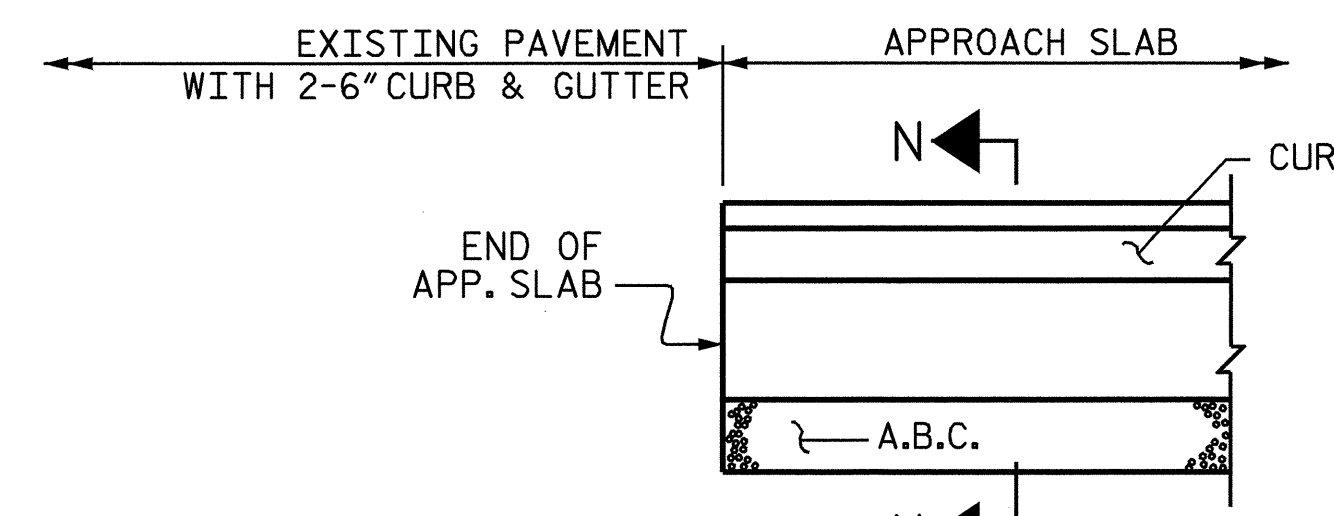
\*\* DIMENSION MAY BE FIELD ADJUSTED BY THE ENGINEER.



**SECTION N-N**



**DETAIL "A"**  
† NORMAL TO END BENT



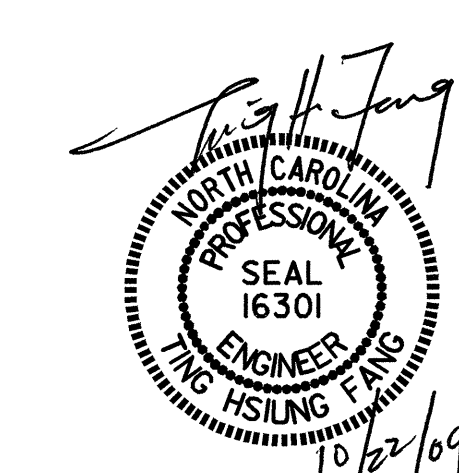
**END OF CURB ELEVATION**

**CURB DETAILS**

PROJECT NO. B-4745  
FORSYTH COUNTY  
 STATION: 18+77.40 -L-

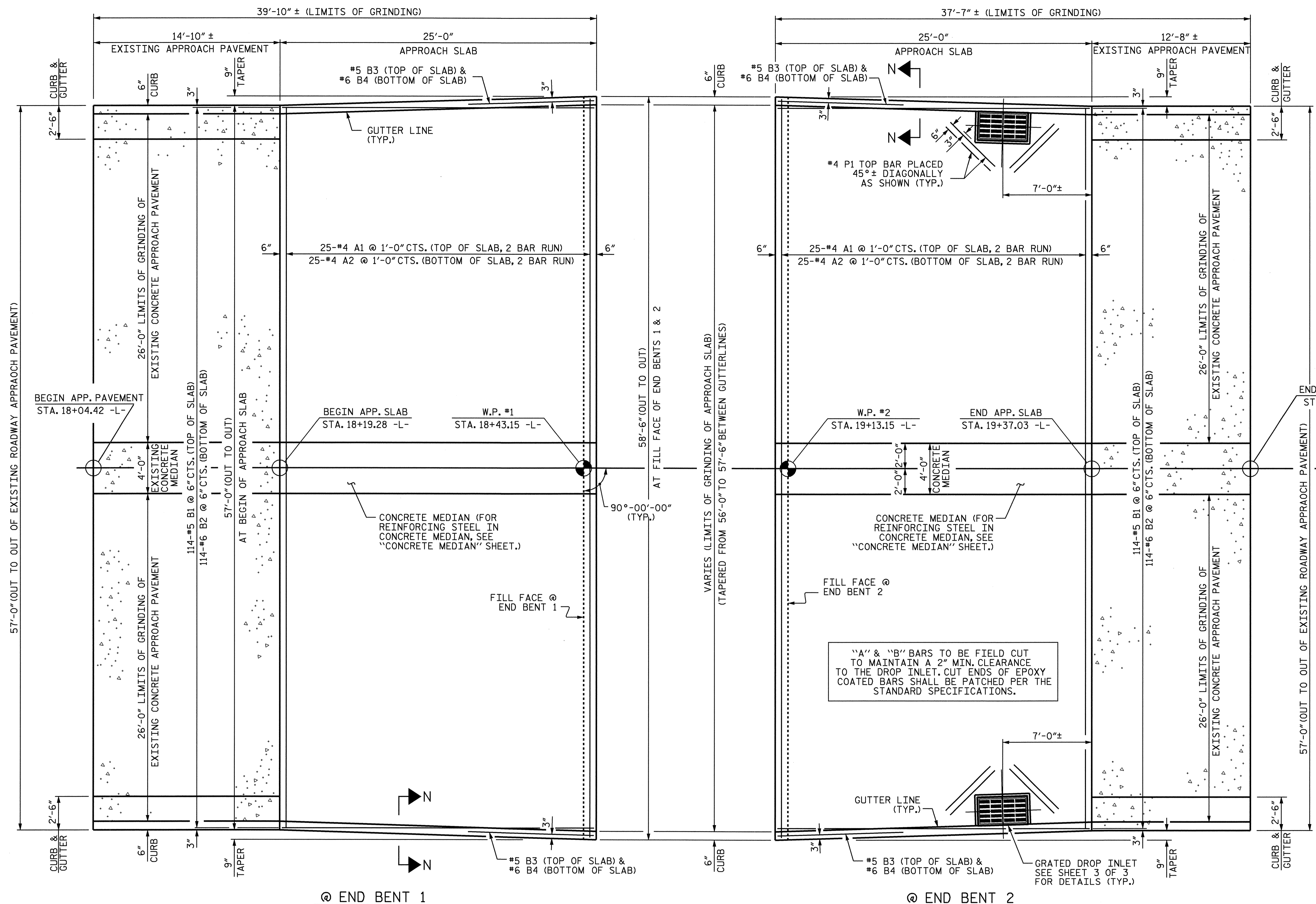
SHEET 1 OF 3

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-23
TOTAL SHEETS					38



ASSEMBLED BY: E.C. LOCKLEAR	DATE: 5-12-09
CHECKED BY: T.H. FANG	DATE: 7-2-09
DRAWN BY: FCJ	6/87
CHECKED BY: EGA	6/87
REV. 7/10/01	LES/RDR
REV. 5/7/03R	RWW/JTE
REV. 5/1/06R	KMM/JM





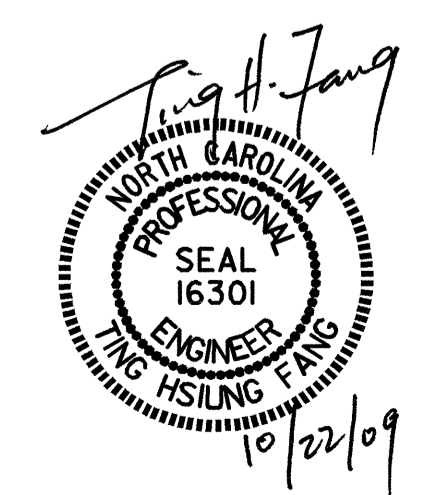
@ END BENT 1

@ END BENT 2

PLAN

ALL DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS.

SPlice CHART		
#4	TOP BAR	2'-0" MIN.
#4	BOTTOM BAR	1'-9" MIN.



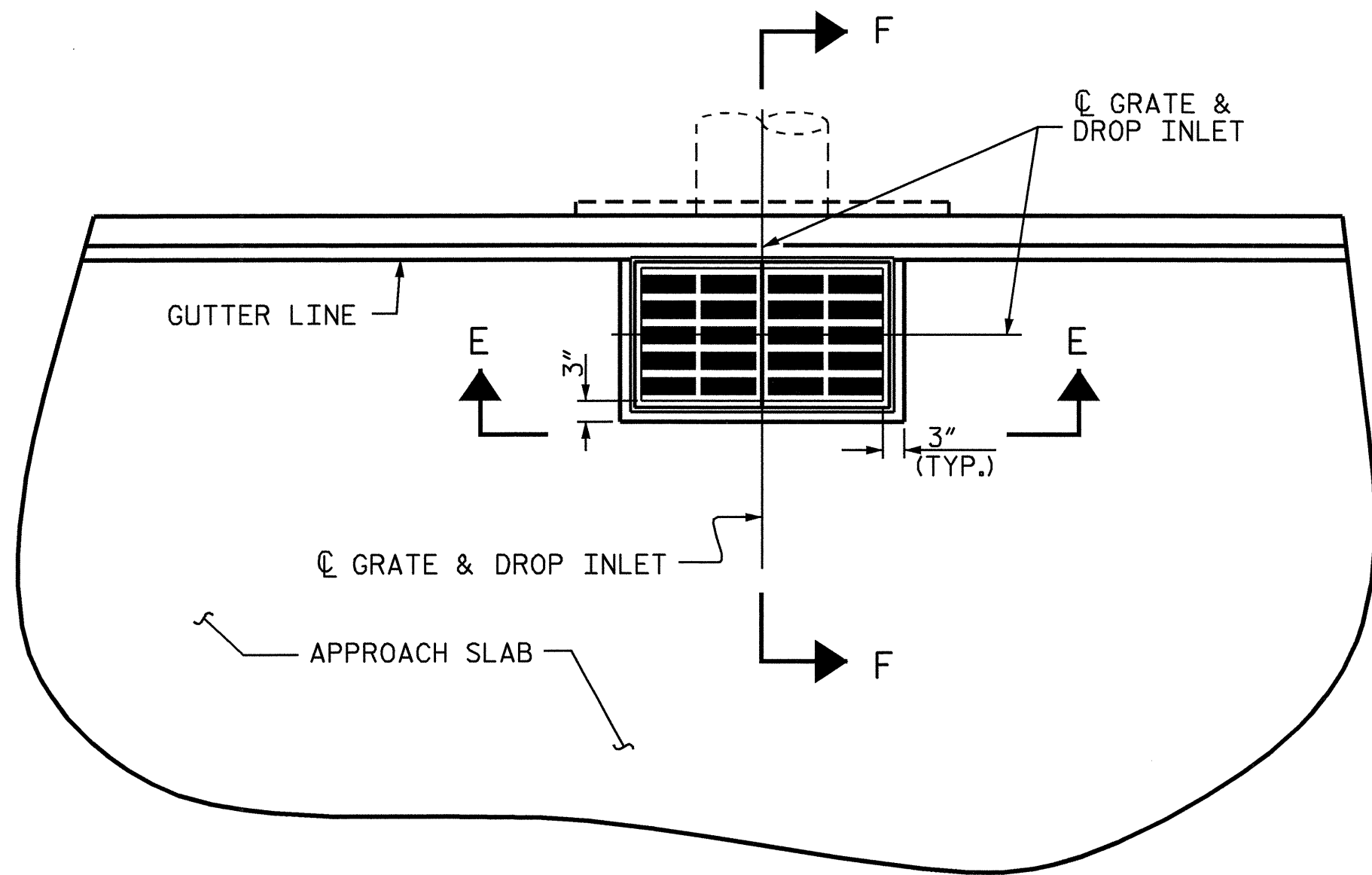
PROJECT NO. B-4745  
FORSYTH COUNTY  
 STATION: 18+77.40 -L-

SHEET 2 OF 3

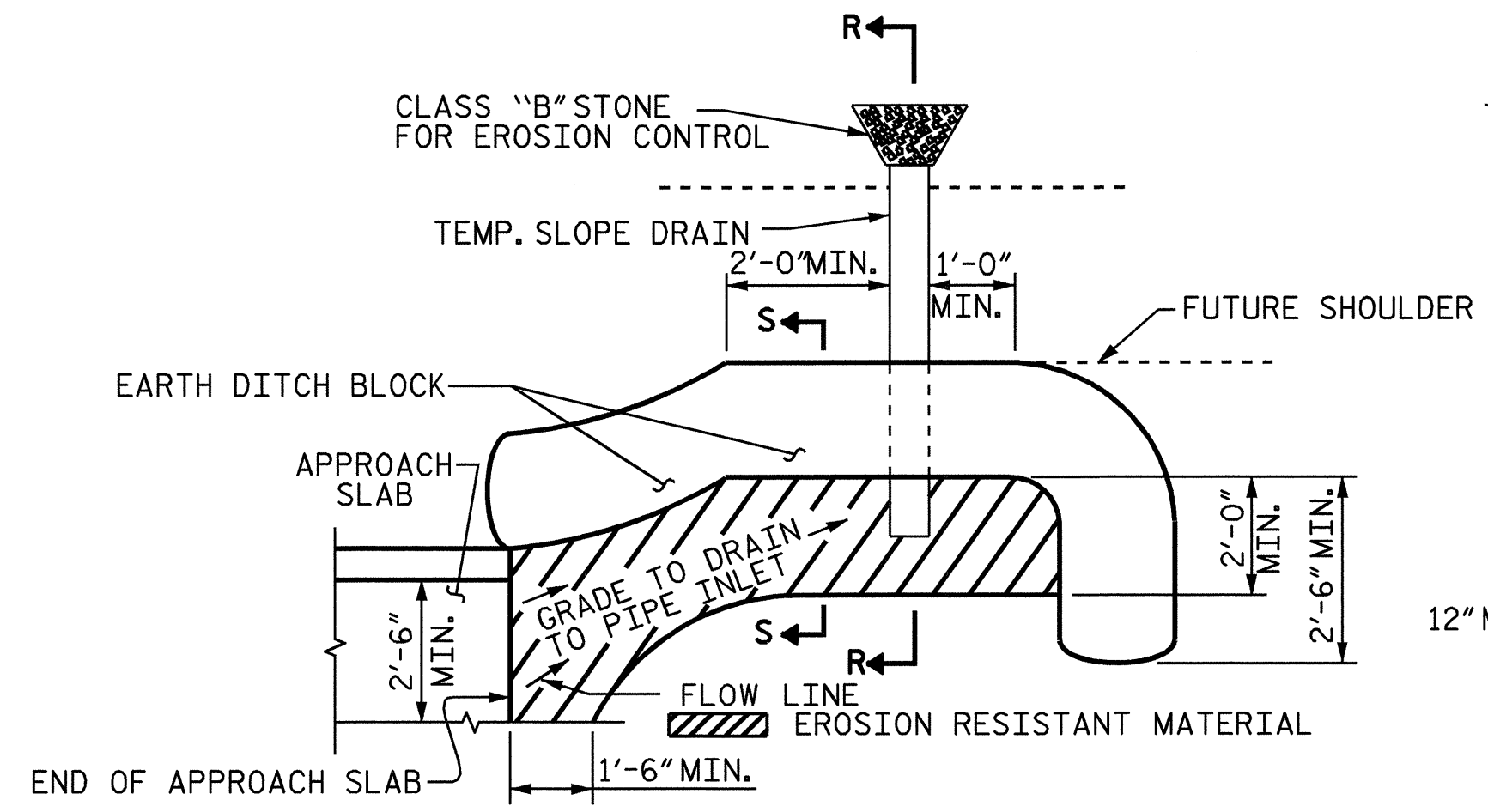
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			38

DRAWN BY : E.C. LOCKLEAR DATE : 5-8-09  
 CHECKED BY : T. H. FANG DATE : 7-8-09

22-OCT-2009 14:42  
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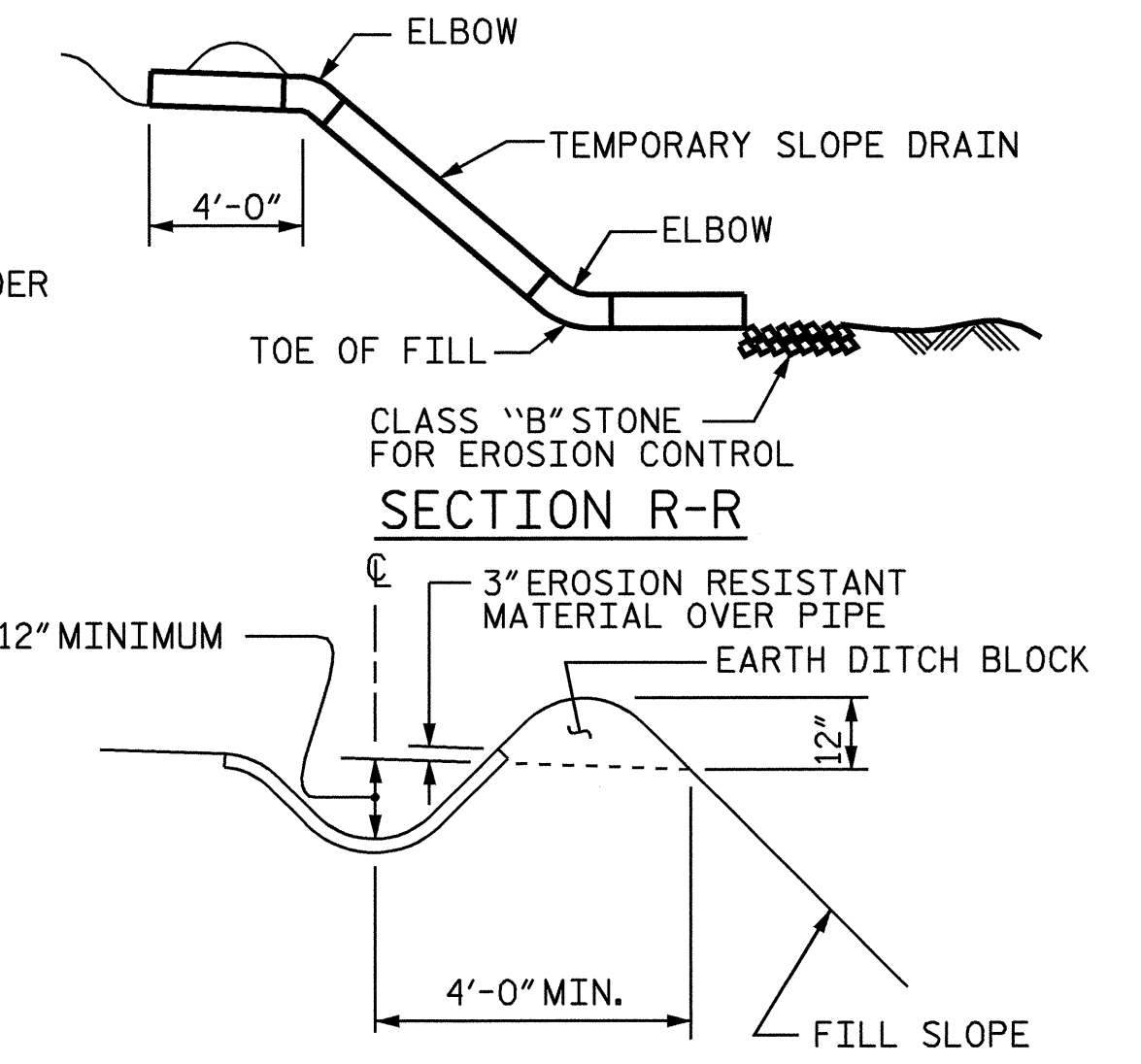


PLAN



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 DRAINAGE SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

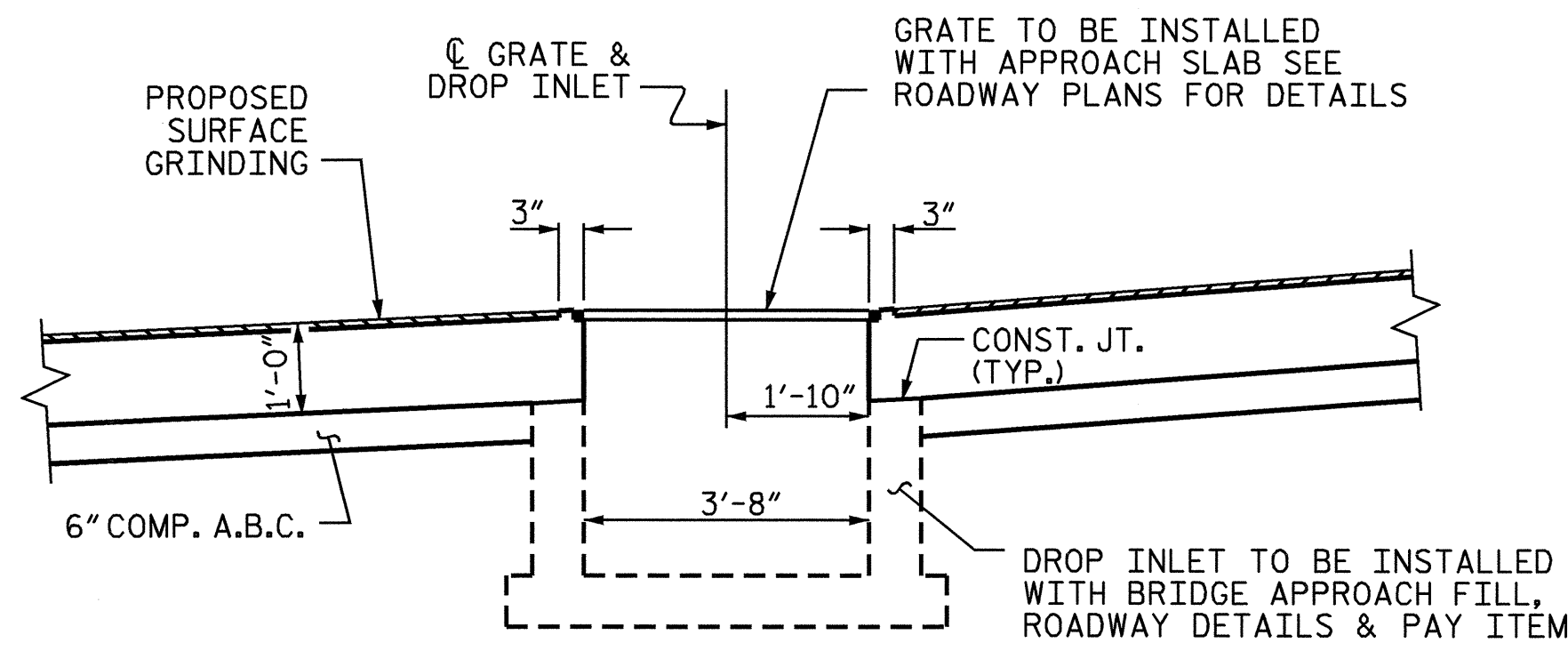
PLAN VIEW



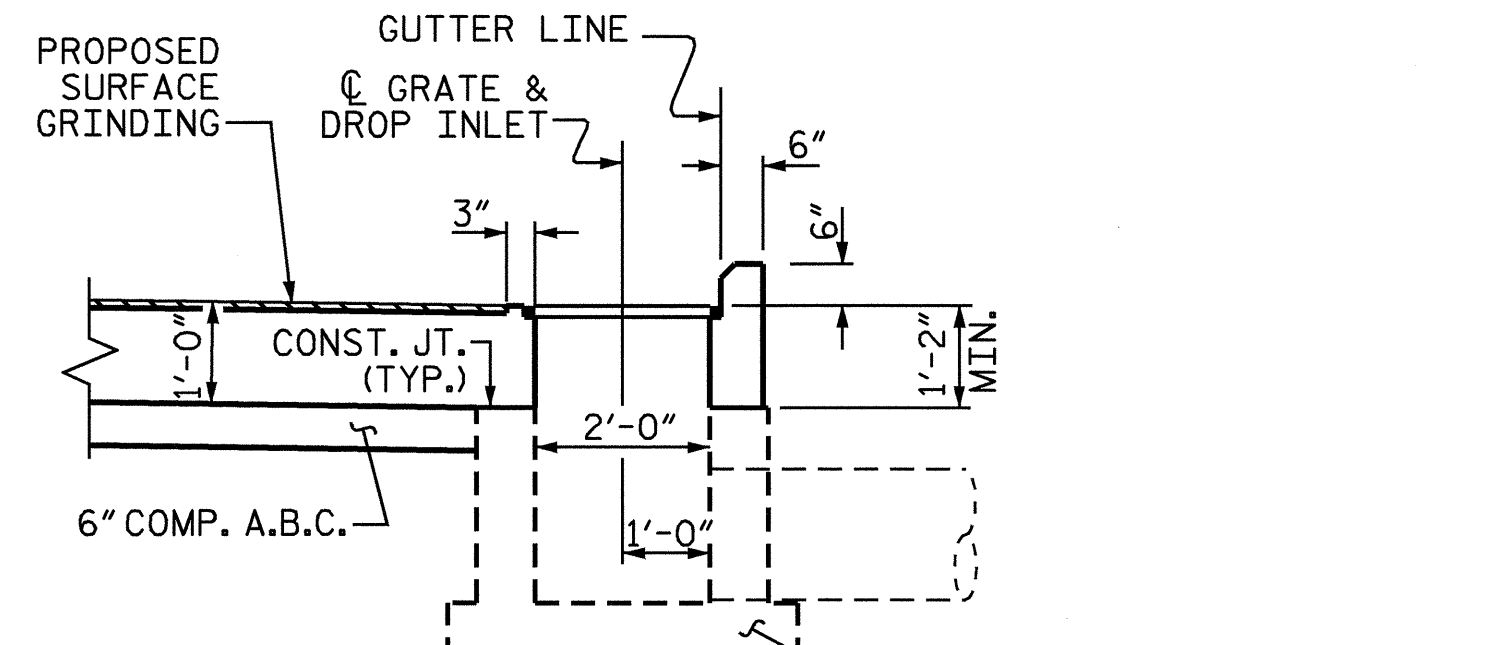
SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



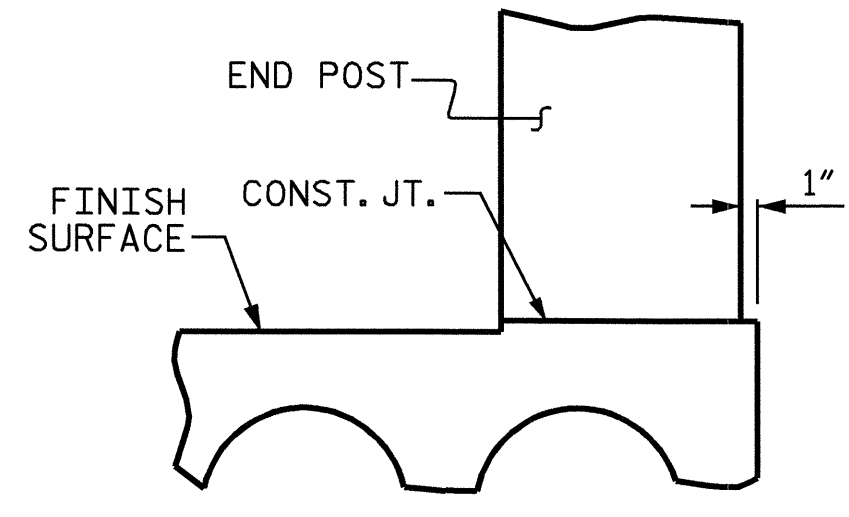
SECTION E-E



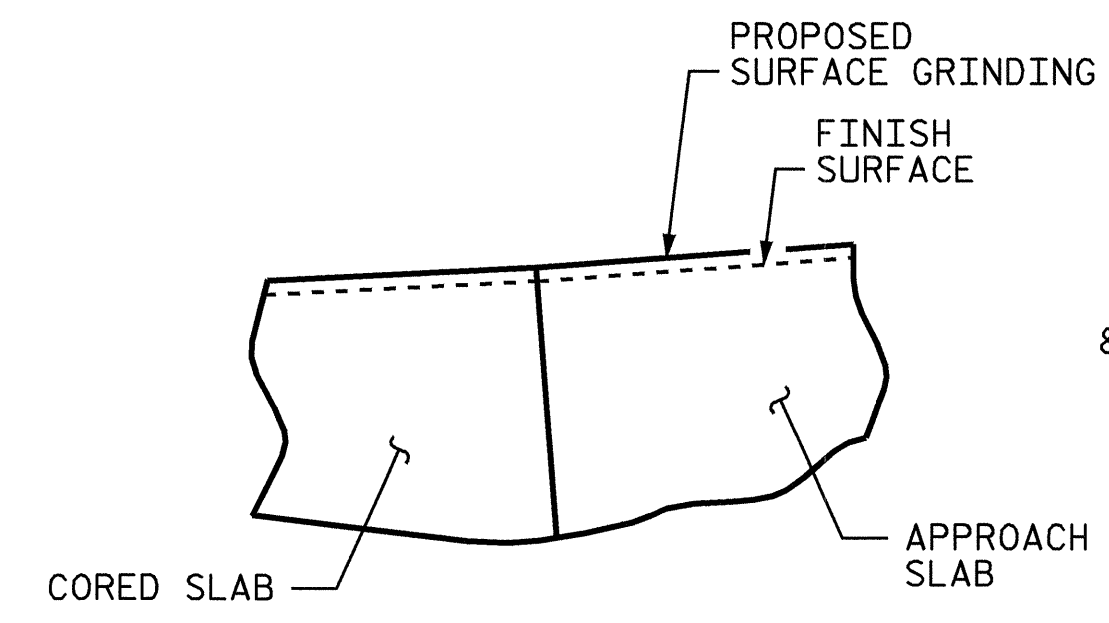
SECTION F-F

GRATED DROP INLET DETAILS

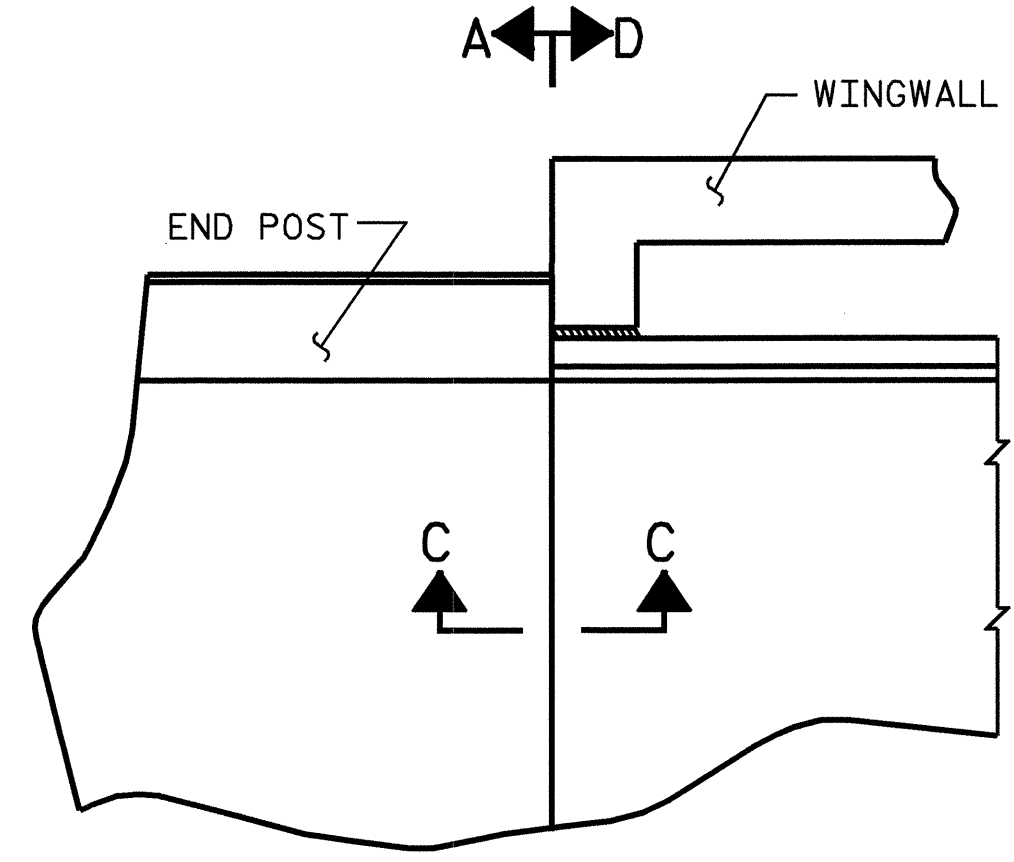
NOTE: DROP INLET AND GRATE ARE ROADWAY PAY ITEMS. SEE ROADWAY PLANS FOR DETAILS.



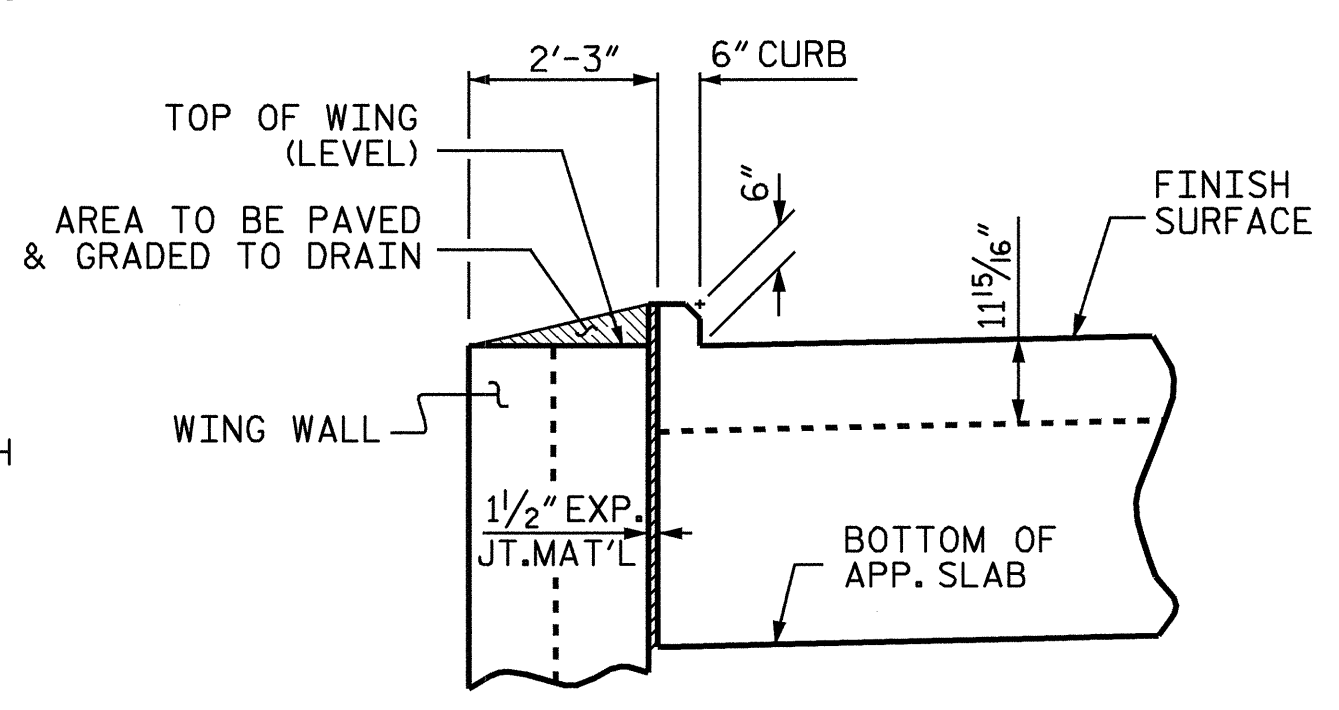
SECTION A-A



SECTION C-C



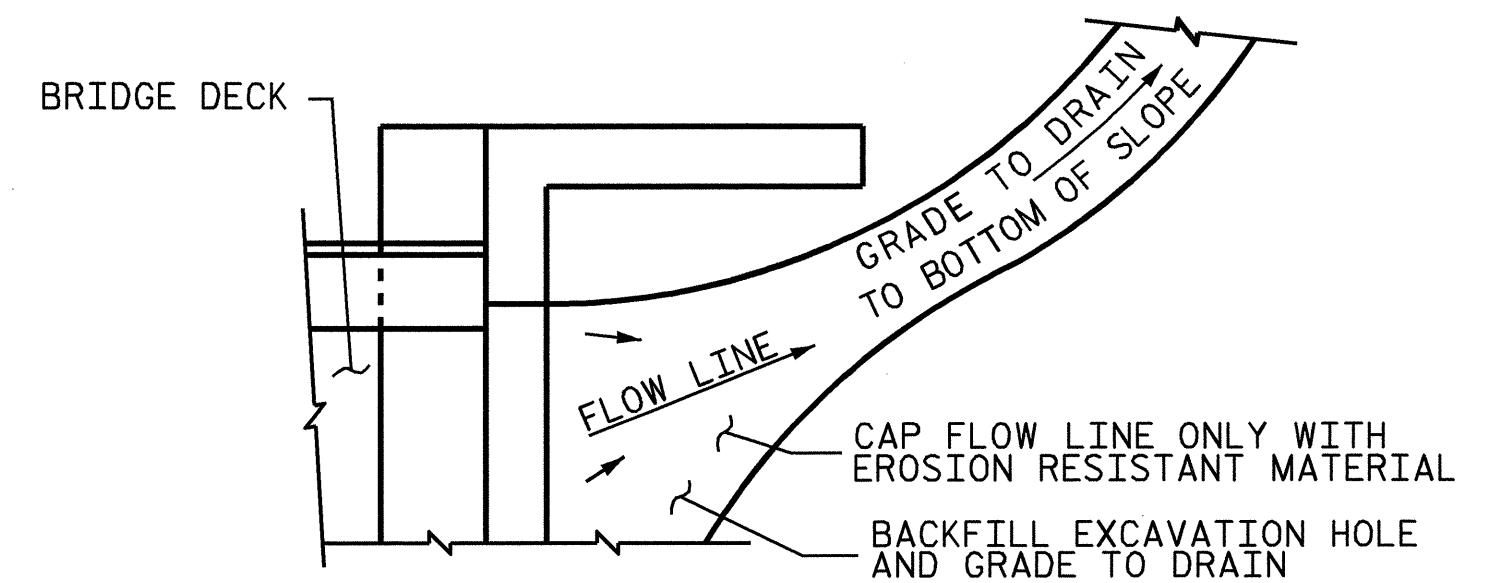
PLAN @ END BENT 2



SECTION D-D

JOINT & WING DETAILS @ END BENT

END BENT 2 SHOWN, END BENT 1 SIMILAR.



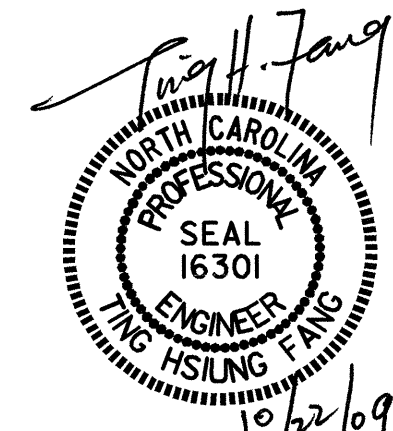
TEMPORARY DRAINAGE DETAIL

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.

PROJECT NO. B-4745  
 FORSYTH COUNTY  
 STATION: 18+77.40 -L-

SHEET 3 OF 3  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BRIDGE APPROACH SLAB DETAILS



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS 38
2			4			

ASSEMBLED BY : E.C. LOCKLEAR	DATE : 5-12-09
CHECKED BY : T. H. FANG	DATE : 7-08-09
DRAWN BY : FCJ 11/88	REV. 10/17/00 RWW/LES
CHECKED BY : ARB 11/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06R MAA/KMM

**GENERAL PRECAST END BENT NOTES**

THIS PRECAST END BENT OPTION CONTAINS THE FOLLOWING PRECAST ELEMENTS: PRECAST END BENT CAPS, PRECAST END BENT WINGS AND PRECAST END BENT WING FOOTINGS. EACH PRECAST PIECE SHALL BE STENCILED WITH ITS PIECEMARK PER THESE PLANS. PIECEMARKS SHALL BE PLACED ON THE FILL FACE OF THE PIECES.

FOR PRECAST END BENTS, SEE STANDARD SPECIFICATIONS SECTION 1077.

CLASS AA (4500 PSI) CONCRETE SHALL BE USED IN ALL PRECAST PIECES.

FOR GROUT, SEE SPECIAL PROVISIONS.

COVER ALL HORIZONTAL AND VERTICAL JOINTS BETWEEN PRECAST END BENT PIECES ON THE FILL FACE SIDES OF PIECES USING GEO-FABRIC AS SPECIFIED FOR BRIDGE APPROACH FILL. COVER JOINTS THE ENTIRE LENGTH OF JOINT. USE A MINIMUM 3'-0" WIDTH OF FABRIC TO COVER JOINTS WITH A MINIMUM OF 1'-6" OF FABRIC EACH SIDE OF JOINT. OVERLAP FABRIC 1'-6" AT JOINTS BETWEEN WINGS AND CAP.

STIRRUPS IN PRECAST PIECES MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS AND GROUT PIPES.

THE ERECTION SUPPORT SYSTEM FOR THE PRECAST CAP SHALL NOT BE REMOVED, CORED SLAB UNITS SHALL NOT BE PLACED ON THE PRECAST CAP. BACKFILLING AGAINST THE PRECAST CAP SHALL NOT BE ALLOWED, AND VEHICLES OR CONSTRUCTION EQUIPMENT SHALL NOT BE ALLOWED ON THE PRECAST CAP UNTIL THE GROUT USED TO FILL THE PILE BLOCKOUTS HAS OBTAINED A COMPRESSIVE STRENGTH OF AT LEAST 4000 PSI.

THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL A METHOD TO SUPPORT THE PRECAST CAP PIECES IN THE PROPER LOCATION AND ELEVATION AS SHOWN ON THE PLANS PRIOR TO PLACEMENT OF AND CURING OF THE GROUT IN THE PILE BLOCKOUTS. GRADED COMPACTED SOIL IS NOT CONSIDERED ADEQUATE SUPPORT OR ELEVATION CONTROL FOR PRECAST CAP PIECES. PROVIDE A SEAL FOR PILE BLOCKOUTS AT THE BOTTOM OF CAP TO PREVENT LOSS OF GROUT.

BACKFILLING AGAINST THE PRECAST WINGWALLS SHALL NOT BE ALLOWED, AND CONSTRUCTION EQUIPMENT SHALL NOT BE ALLOWED ON THE PRECAST WINGWALLS UNTIL THE GROUT IN THE 2 1/2" DIAMETER HOLES IN THE PRECAST WING PIECES HAS OBTAINED A COMPRESSIVE STRENGTH OF AT LEAST 4000 PSI.

AT THE CONTRACTOR'S OPTION, #7 D1 DOWELS MAY BE ADHESIVELY ANCHORED. SEE STANDARD SPECIFICATIONS FOR EPOXY AND ADHESIVES. IF DOWELS ARE ADHESIVELY ANCHORED, THEN DOWELS MAY BE INSTALLED PERPENDICULAR TO CAP SURFACE. NO FIELD TESTING IS REQUIRED.

TWO 2 INCH Ø GROUT PIPES SHALL BE PROVIDED AT EACH PILE BLOCKOUT. THE 2 INCH Ø GROUT PIPES SHALL BE CUT FROM SCHEDULE 40 PVC PIPE.

THE TOP OF THE PILE BLOCKOUT SHALL BE CHAMFERED 2" ALL AROUND.

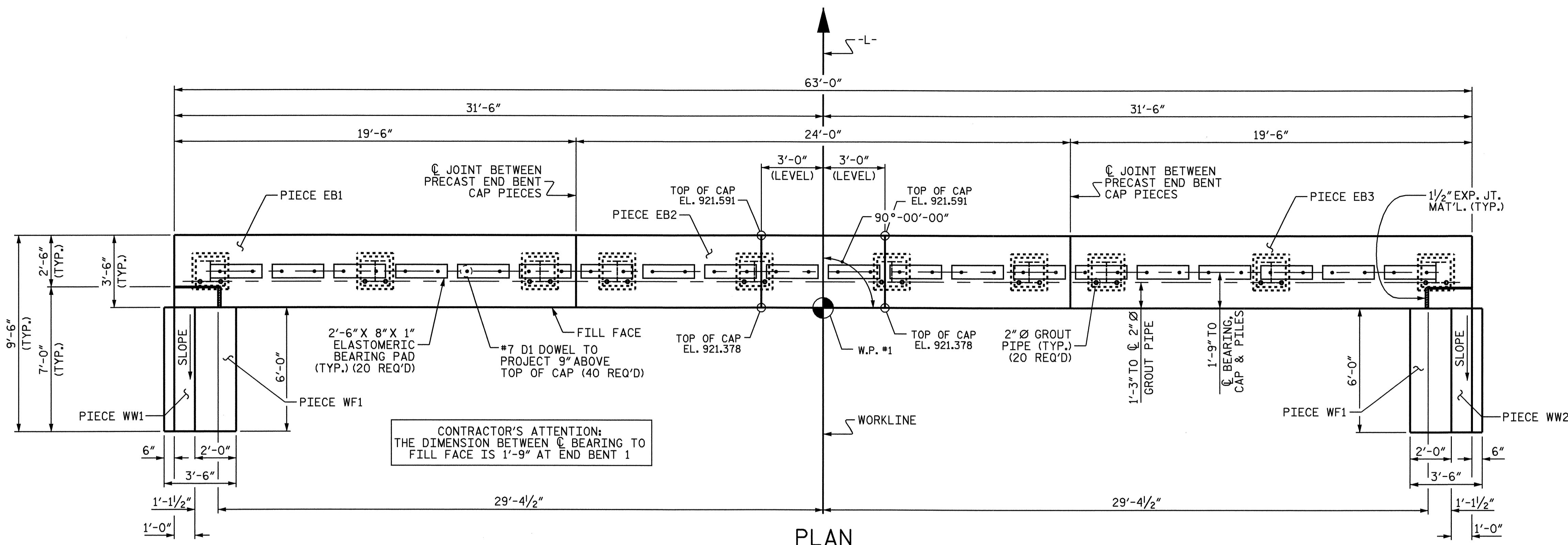
TO FACILITATE FORM REMOVAL, A DRAFT OF 1/4" PER FOOT WILL BE ALLOWED IN THE PILE BLOCKOUT.

ANY VARIATIONS TO THE CONTRACT PLAN DETAILS SHALL BE SUBMITTED FOR ENGINEER'S APPROVAL WELL IN ADVANCE OF THE CASTING. SEE STANDARD SPECIFICATIONS SECTION 1077.

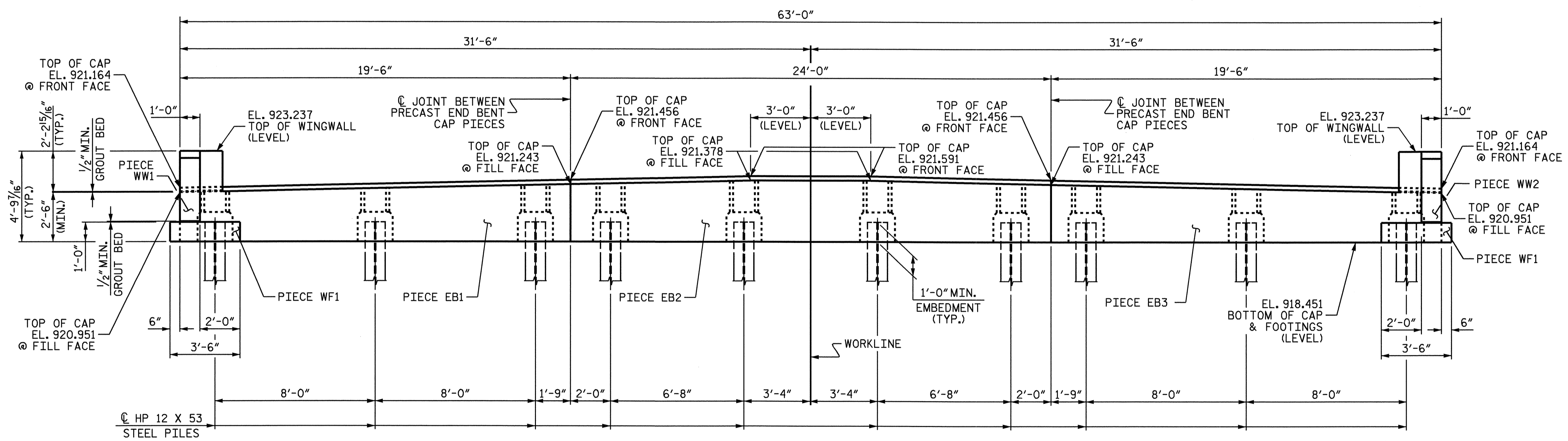
FOR DETAILS & BILL OF MATERIAL OF PRECAST PIECES IN END BENT 1, SEE SHEETS 2 THRU 6 OF 6.

FOR LIFTING LOOPS, SEE SHEET 5 OF 6.

FOR PILE SPLICE DETAIL, SEE SHEET 6 OF 6.



**PLAN**

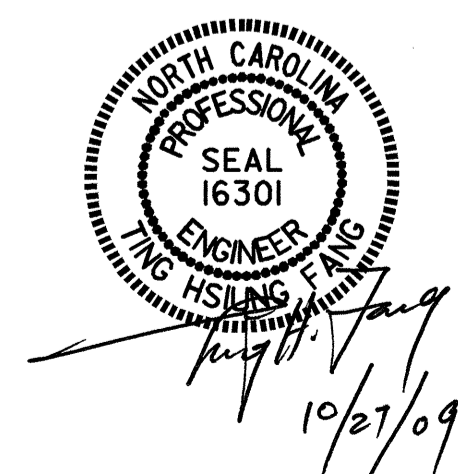


**ELEVATION**

PRECAST PIECE SUMMARY						
	PIECE EB1	PIECE EB2	PIECE EB3	PIECE WF1	PIECE WW1	PIECE WW2
UNIT	EACH	EACH	EACH	EACH	EACH	EACH
END BENT 1	1	1	1	2	1	1

PROJECT NO. B-4745  
FORSYTH COUNTY  
 STATION: 18+77.40 -L-

SHEET 1 OF 6

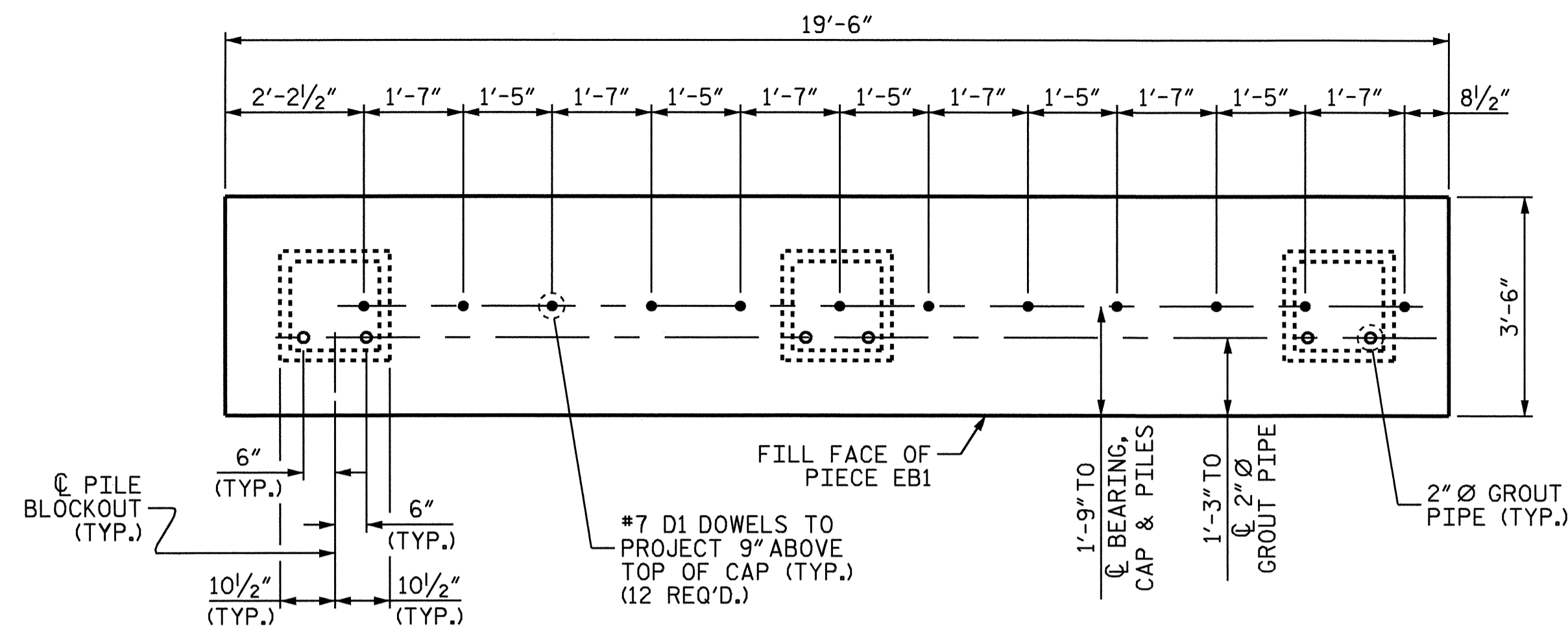


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
END BENT 1					
PRECAST OPTION					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

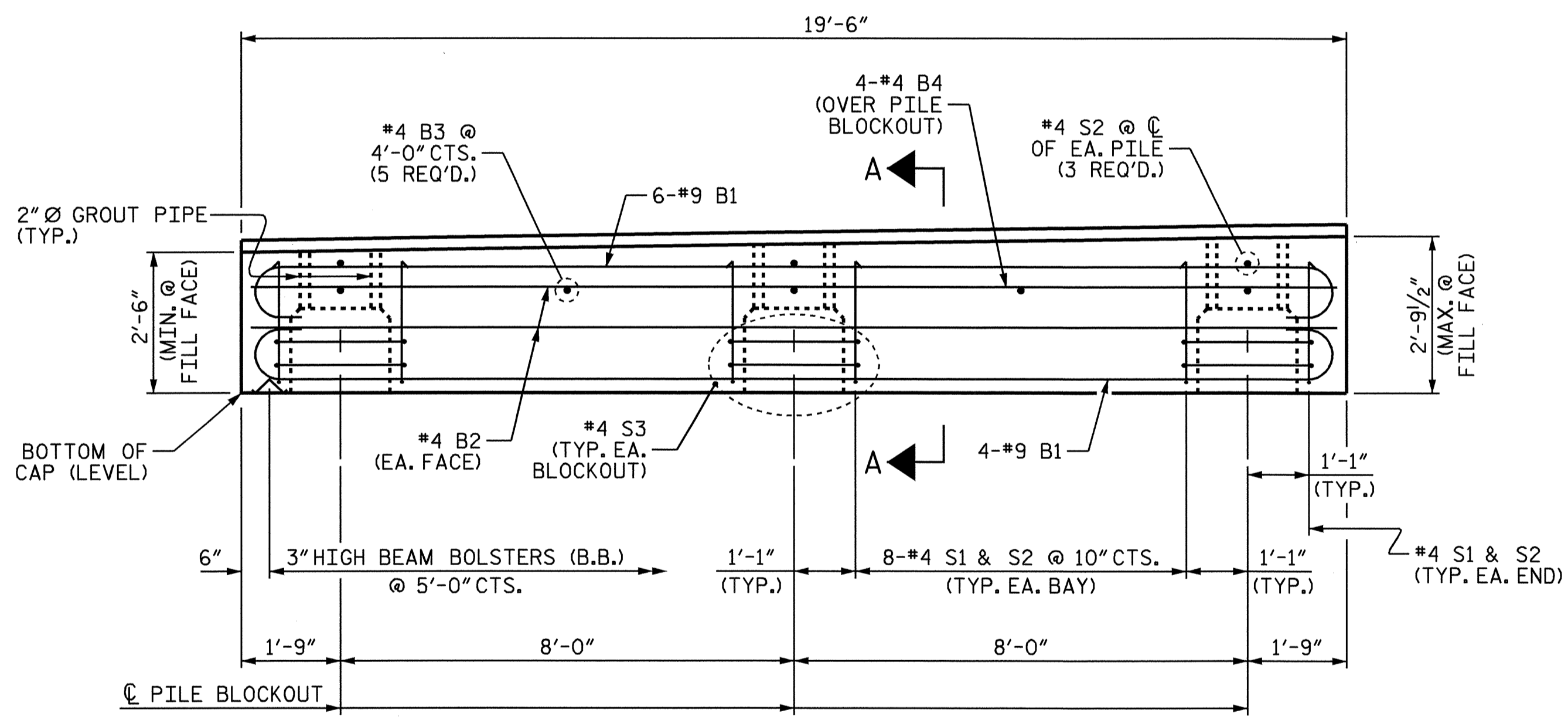
DRAWN BY : E.C. LOCKLEAR DATE : 6-25-09  
 CHECKED BY : T. H. FANG DATE : 7-08-09

27-OCT-2009 15:01  
 K:\projects\4745\structures\4745\final\plans\4745-sd-eb1-pc.dgn  
 ttfang

SHEET NO.  
 S-26  
 TOTAL SHEETS  
 38



PLAN - PRECAST PIECE EB1

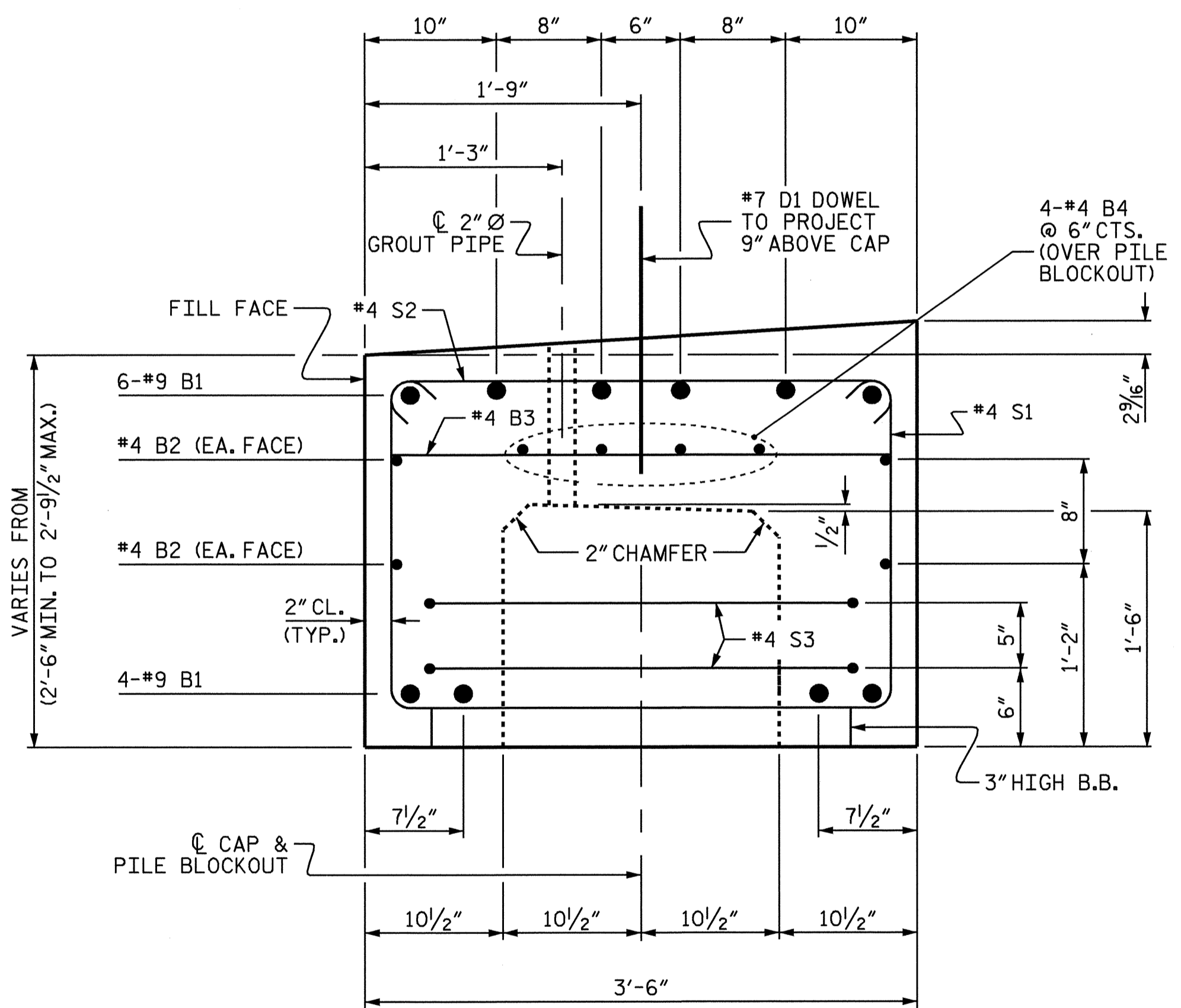


ELEVATION - PRECAST PIECE EB1

BAR TYPES					BILL OF MATERIAL				
PIECE EB1									
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT				
B1	10	#9		21'-6"	731				
B2	4	#4	STR	19'-2"	51				
B3	5	#4	STR	3'-2"	11				
B4	4	#4	STR	19'-2"	51				
D1	12	#7	STR	1'-6"	37				
S1	18	#4		8'-2"	98				
S2	21	#4		3'-11"	55				
S3	6	#4		9'-5"	38				
REINFORCING STEEL					LBS.	1072			
CLASS AA CONCRETE					C.Y.	6.5			
GROUT FOR PILE BLOCKOUTS					C.Y.	0.5			

ALL BAR DIMENSIONS ARE OUT TO OUT.

FOR THE "GENERAL PRECAST END BENT NOTES" SEE SHEET 1 OF 6.

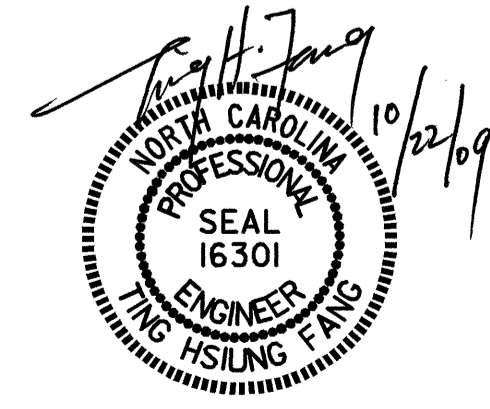


SECTION A-A

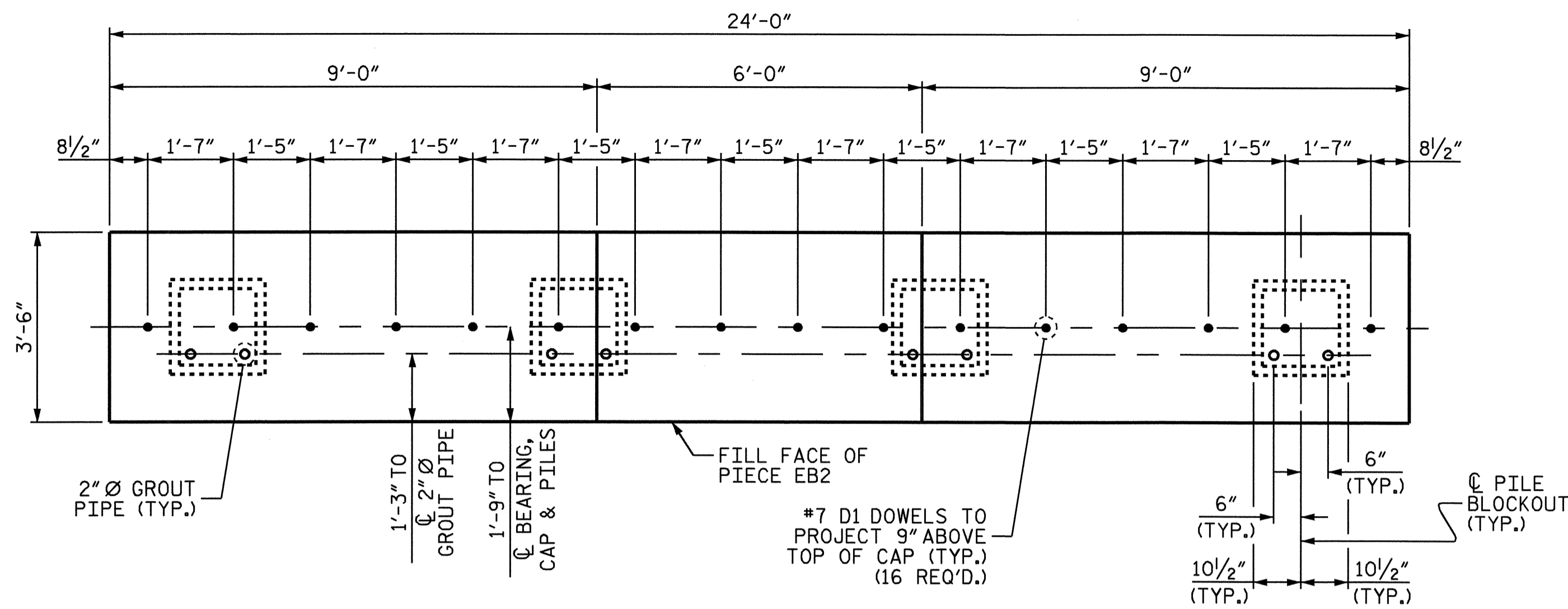
PROJECT NO. B-4745  
FORSYTH COUNTY  
 STATION: 18+77.40 -L-

SHEET 2 OF 6

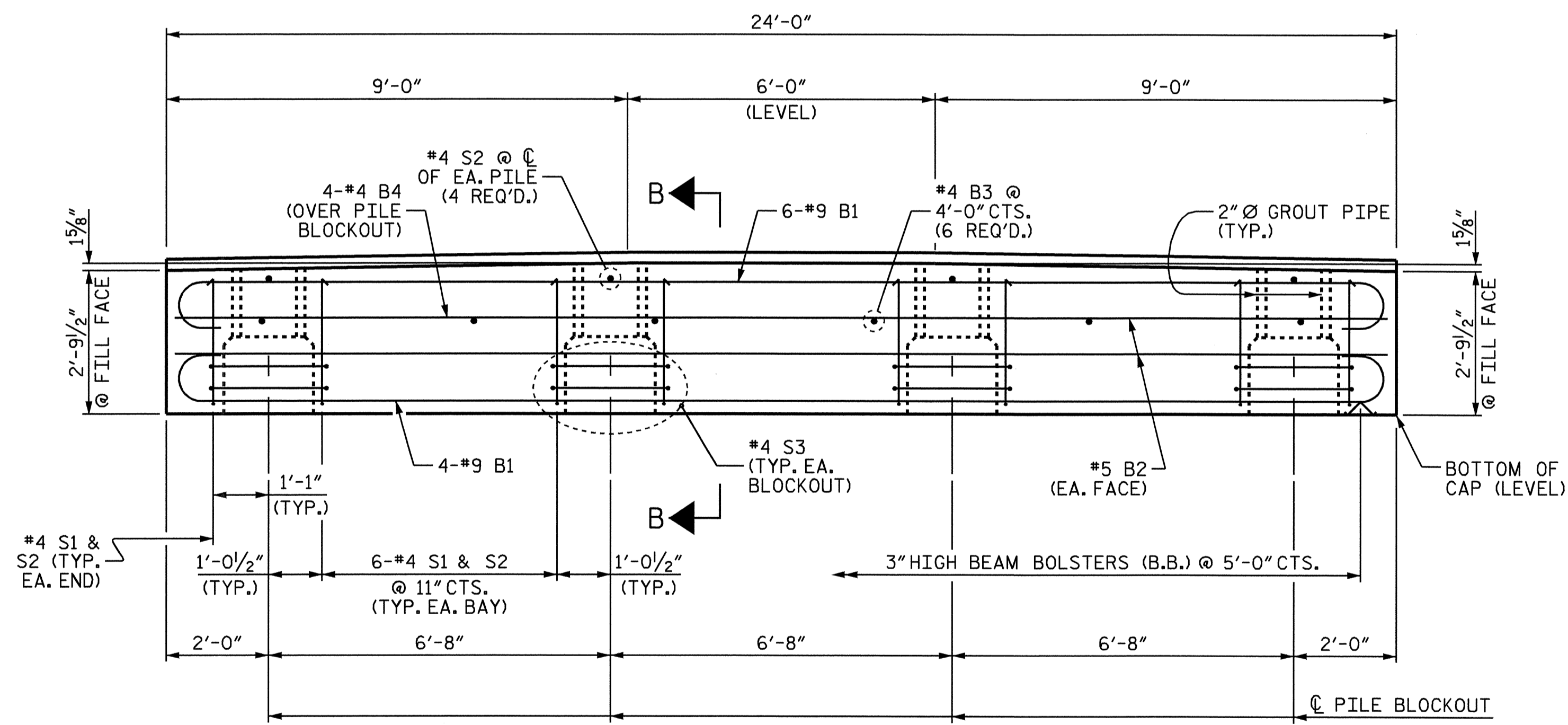
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
END BENT 1 PRECAST PIECE EB1					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 38



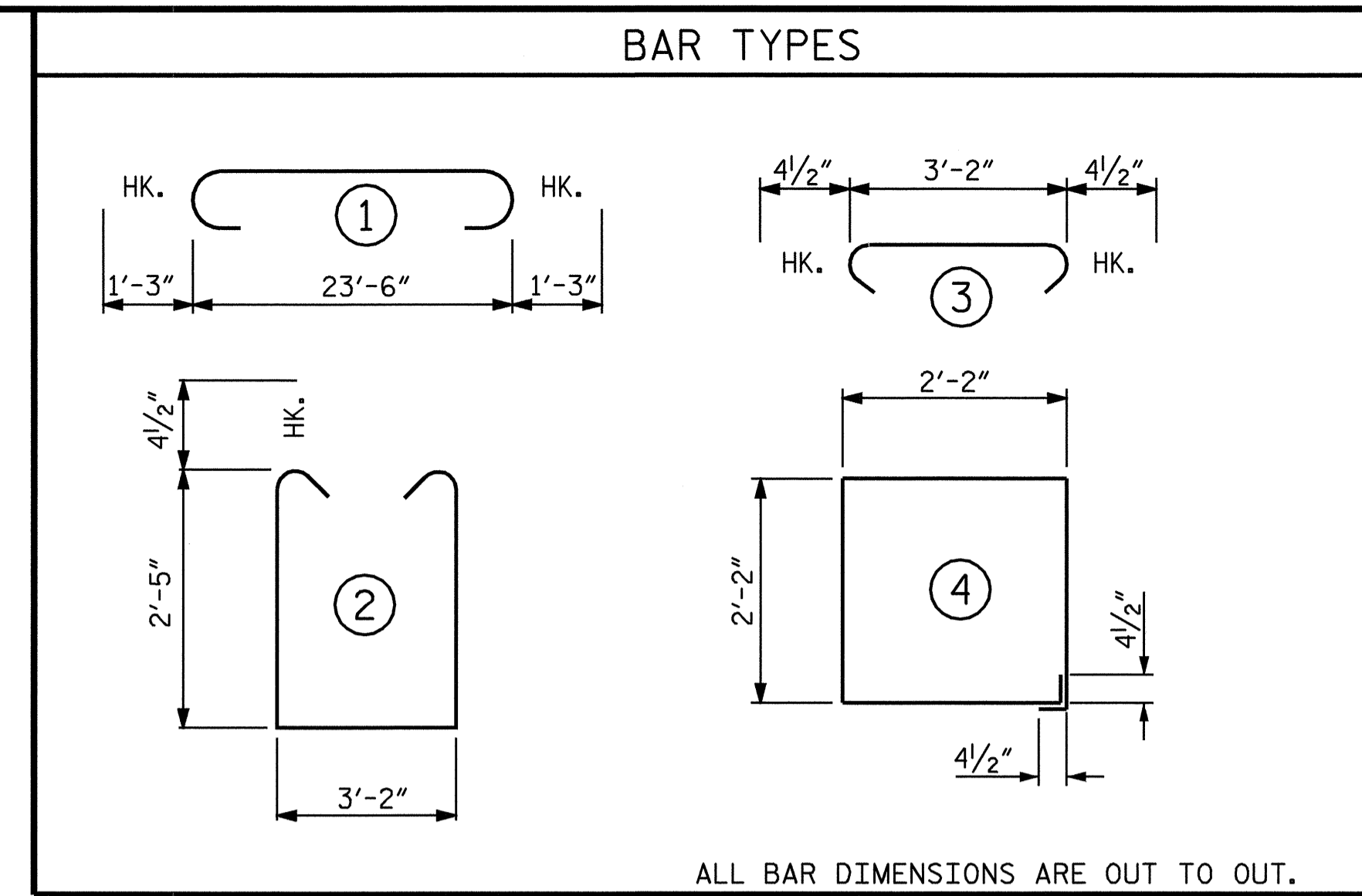
DRAWN BY: E.C. LOCKLEAR DATE: 6-17-09  
 CHECKED BY: T.H. FANG DATE: 7-15-09



PLAN - PRECAST PIECE EB2



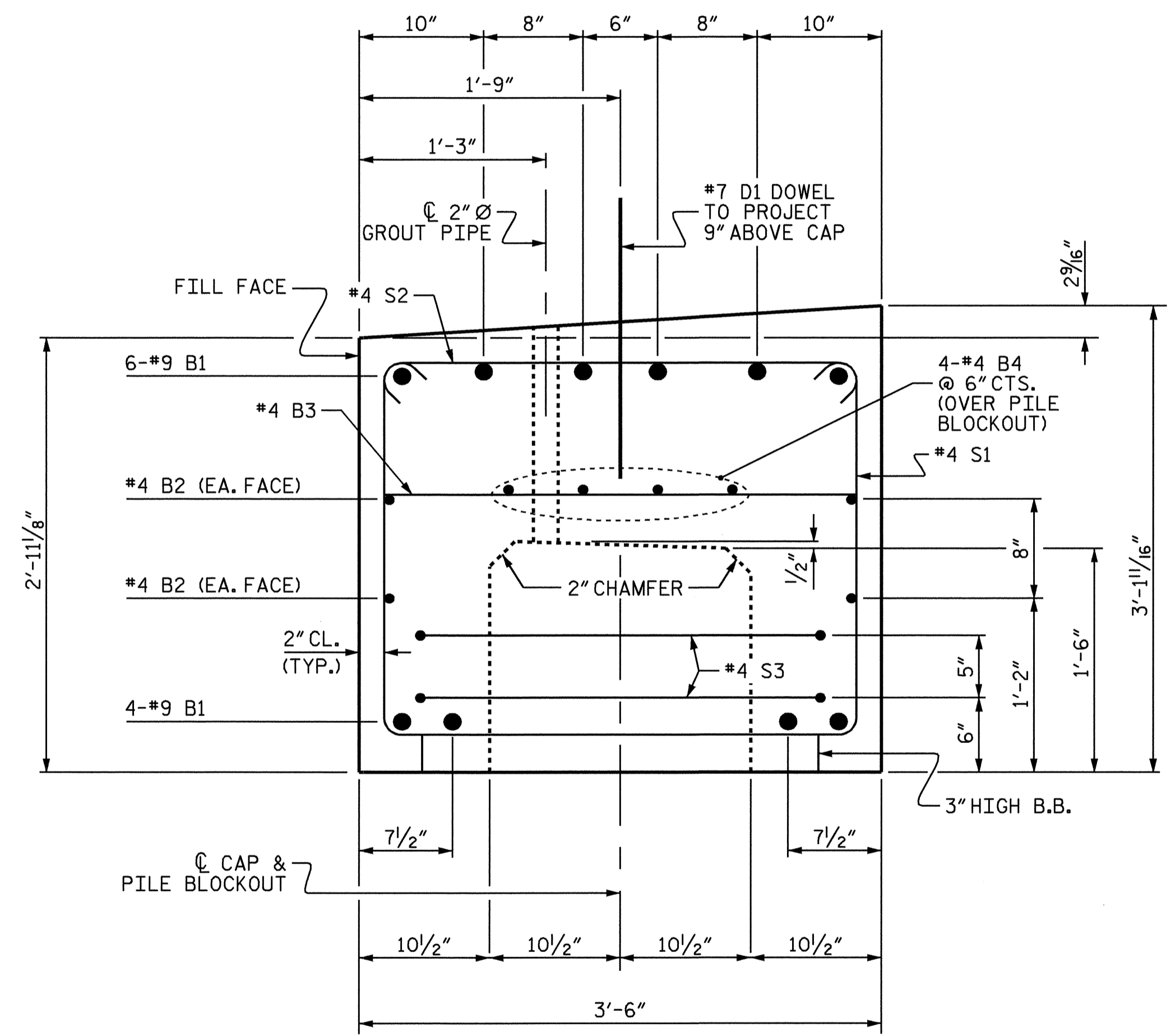
ELEVATION - PRECAST PIECE EB2



ALL BAR DIMENSIONS ARE OUT TO OUT.

FOR THE "GENERAL PRECAST END BENT NOTES" SEE SHEET 1 OF 6.

BILL OF MATERIAL						
PIECE EB2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	10	#9	1	26'-0"	884	
B2	4	#4	STR	23'-8"	63	
B3	6	#4	STR	3'-2"	13	
B4	4	#4	STR	23'-8"	63	
D1	16	#7	STR	1'-6"	49	
S1	20	#4	2	8'-9"	117	
S2	24	#4	3	3'-11"	63	
S3	8	#4	4	9'-5"	50	
REINFORCING STEEL					LBS.	1302
CLASS AA CONCRETE					C.Y.	8.6
GROUT FOR PILE BLOCKOUTS					C.Y.	0.7



SECTION B-B

PROJECT NO. B-4745  
FORSYTH COUNTY  
 STATION: 18+77.40 -L-

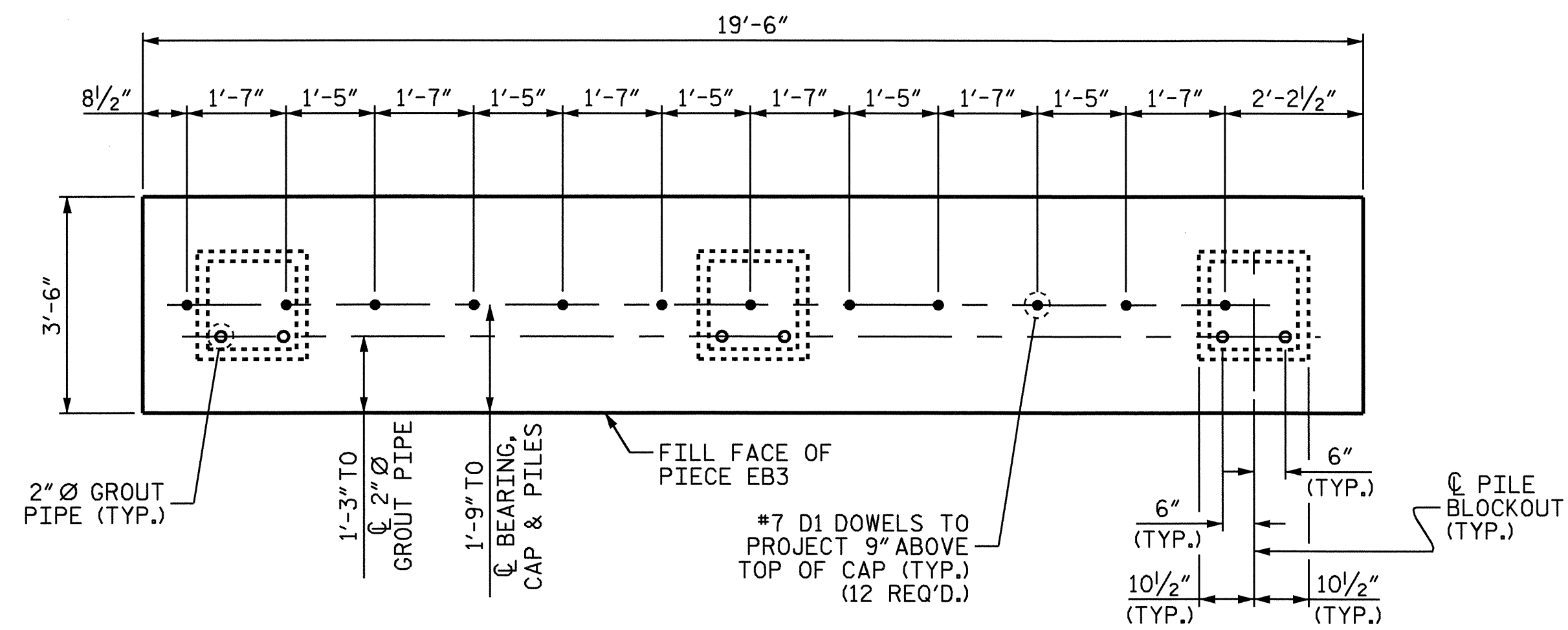
SHEET 3 OF 6

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT 1  
 PRECAST PIECE EB2

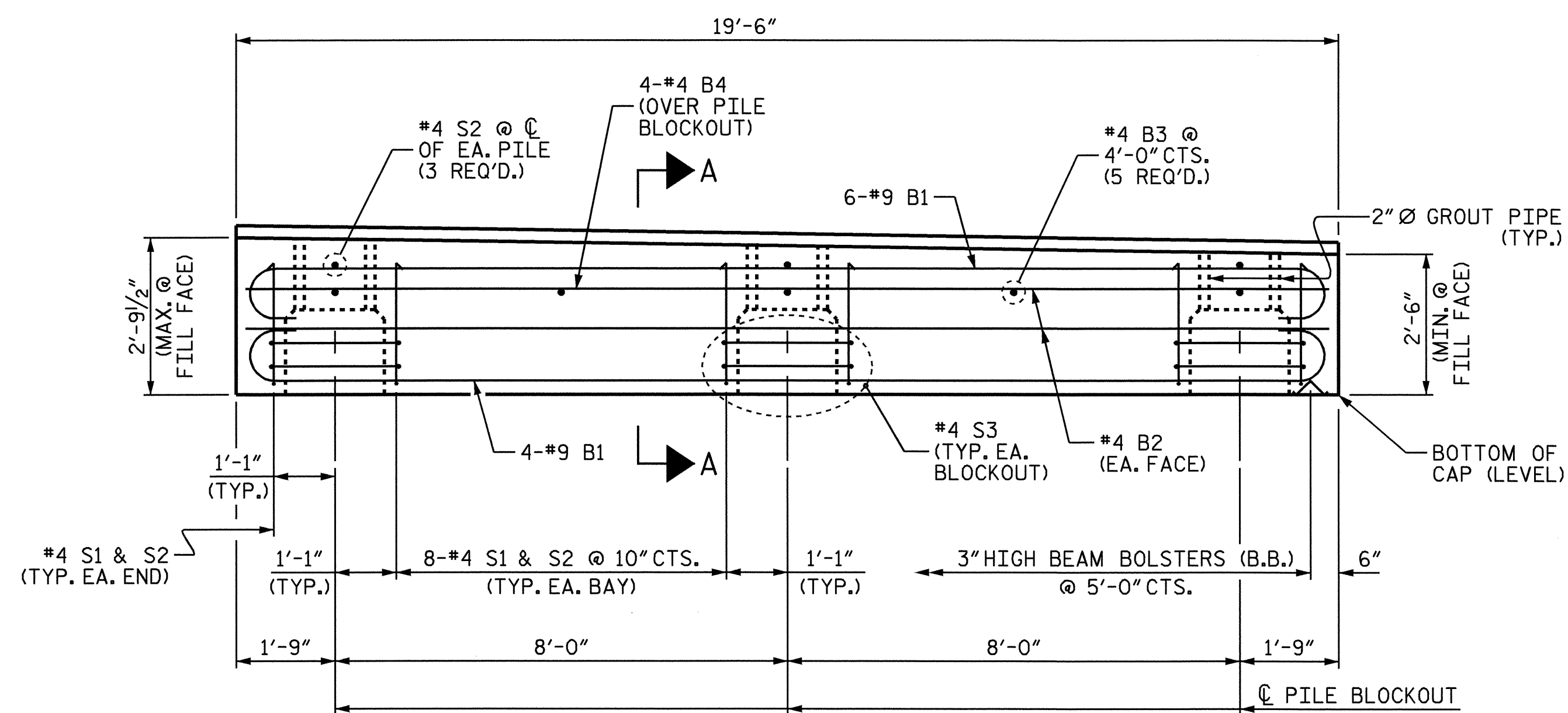


DRAWN BY: E.C. LOCKLEAR DATE: 6-17-09  
 CHECKED BY: T.H. FANG DATE: 7-15-09

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			38



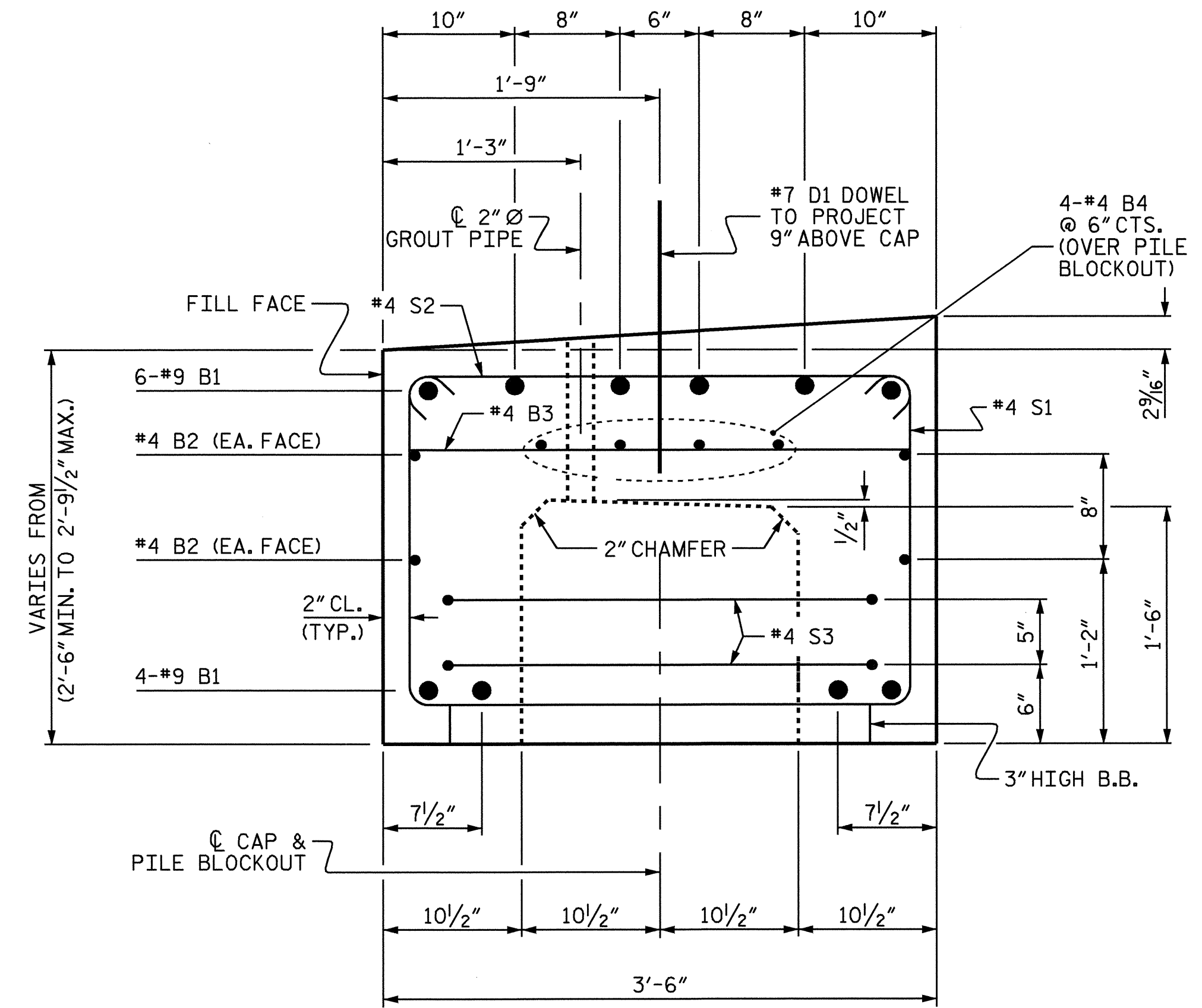
PLAN - PRECAST PIECE EB3



ELEVATION - PRECAST PIECE EB3

BAR TYPES						BILL OF MATERIAL						
PIECE EB3												
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT							
B1	10	#9		21'-6"	731							
B2	4	#4	STR	19'-2"	51							
B3	5	#4	STR	3'-2"	11							
B4	4	#4	STR	19'-2"	51							
D1	12	#7	STR	1'-6"	37							
S1	18	#4		8'-2"	98							
S2	21	#4		3'-11"	55							
S3	6	#4		9'-5"	38							
REINFORCING STEEL					LBS.	1072						
CLASS AA CONCRETE					C.Y.	6.5						
GROUT FOR PILE BLOCKOUTS					C.Y.	0.5						

FOR THE "GENERAL PRECAST END BENT NOTES" SEE SHEET 1 OF 6.



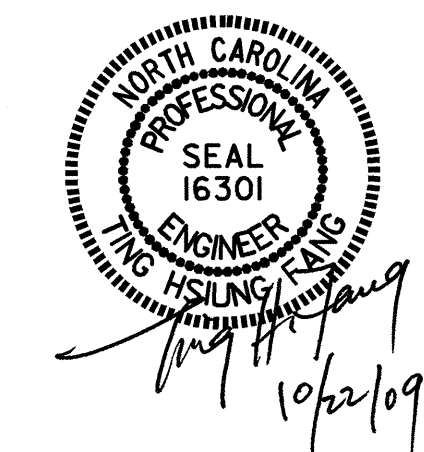
SECTION A-A

PROJECT NO. B-4745  
FORSYTH COUNTY  
 STATION: 18+77.40 -L-

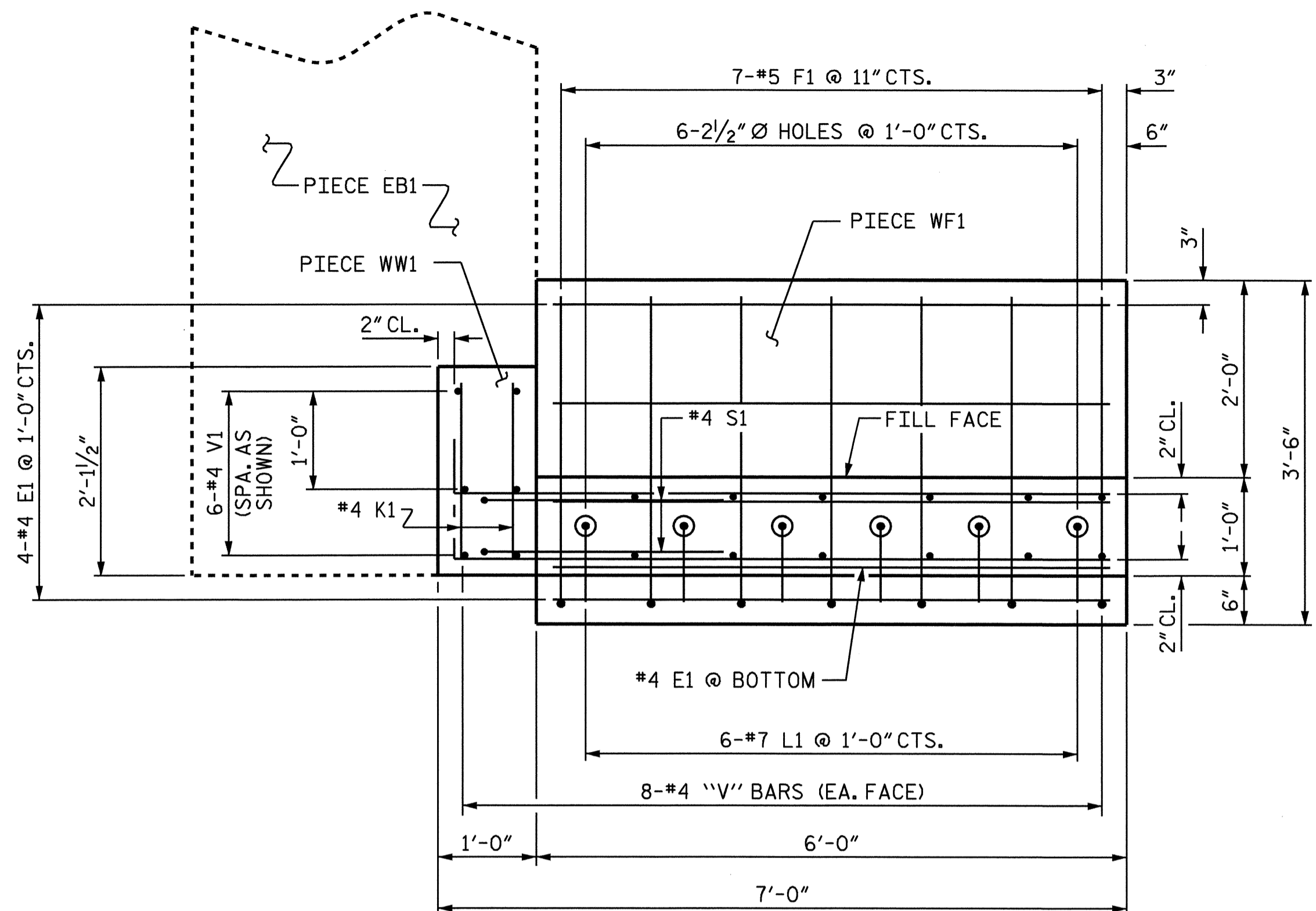
SHEET 4 OF 6

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT 1  
 PRECAST PIECE EB3

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29	
1			3			TOTAL SHEETS	38
2			4				



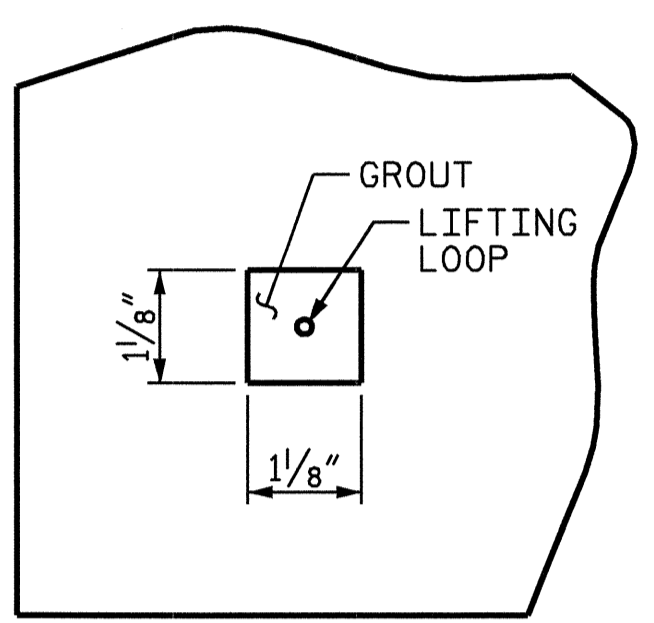
DRAWN BY: E.C. LOCKLEAR DATE: 6-17-09  
 CHECKED BY: T.H. FANG DATE: 7-15-09



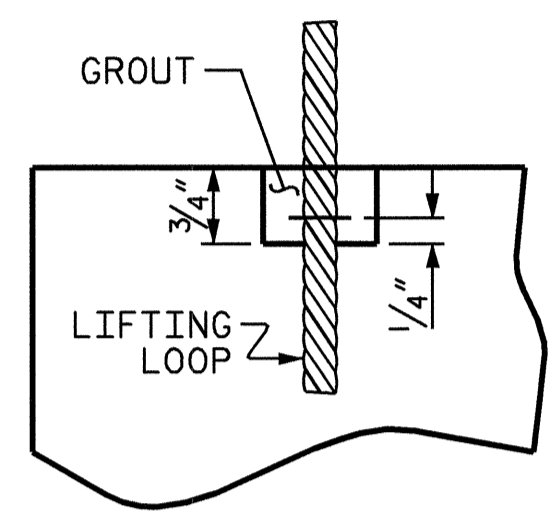
PLAN

NOTE

TWO LIFTING LOOPS SHALL BE ALLOWED IN EACH PRECAST PIECE IN ACCORDANCE WITH ARTICLE 1077-10 OF THE STANDARD SPECIFICATIONS WITH THE FOLLOWING ADDITIONS. THE LIFTING LOOPS SHALL BE BURNED OFF AND RECESSES GROUTED PRIOR TO PLACING THE ELASTOMERIC BEARING PADS. SEE DETAIL FOR GROUTED RECESS FOR LIFTING LOOPS. GROUT SHALL BE NON-METALLIC AND NON-SHRINK ACCORDING TO THE STANDARD SPECIFICATIONS. PROPOSED DEVICES FOR LIFTING LOOPS SHALL BE DETAILED IN THE SHOP DRAWINGS.



PLAN



ELEVATION

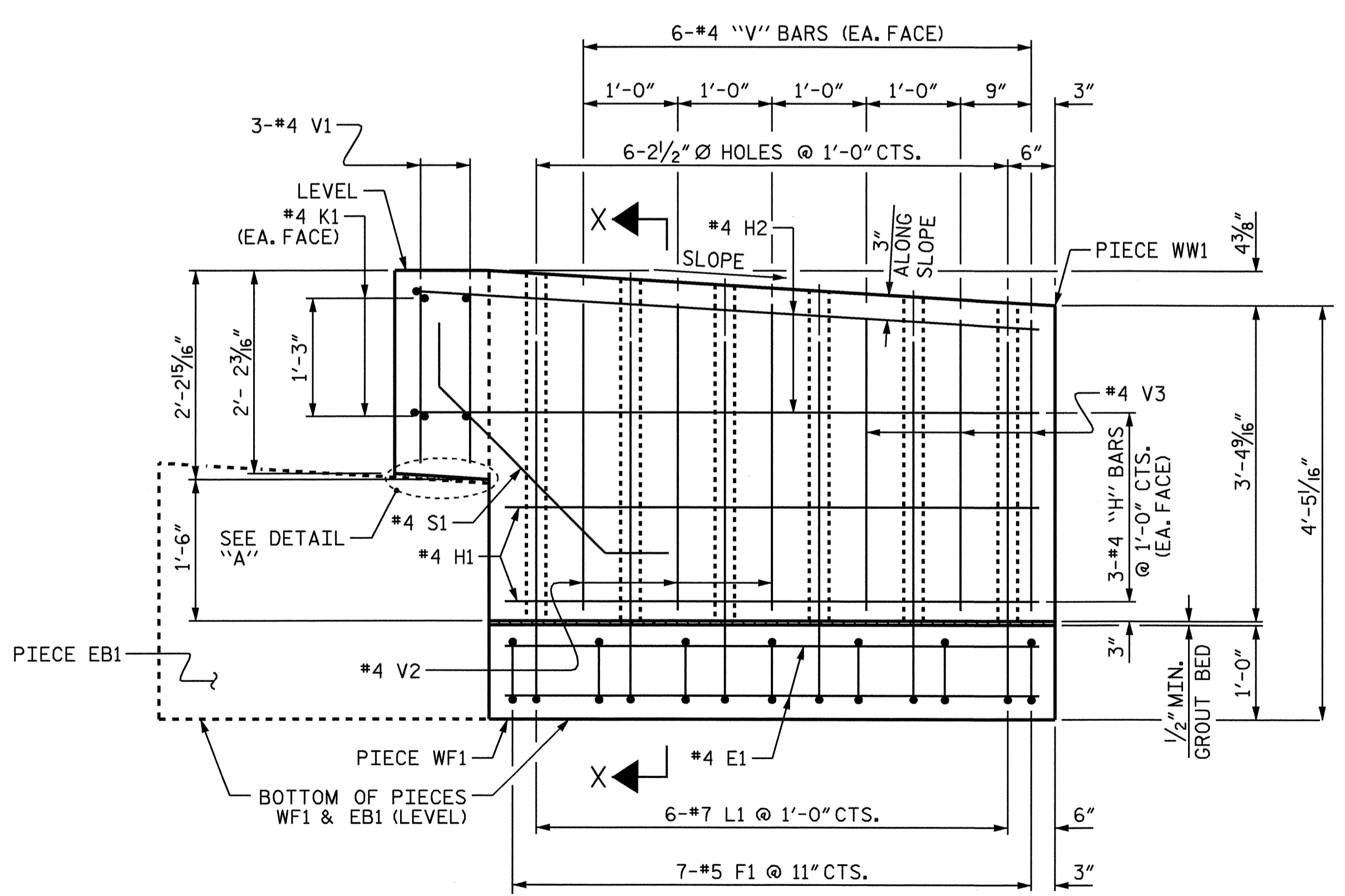
GROUTED RECESS FOR LIFTING LOOPS

LIFTING LOOPS TO BE CUT 1/4" ABOVE BOTTOM OF RECESS.

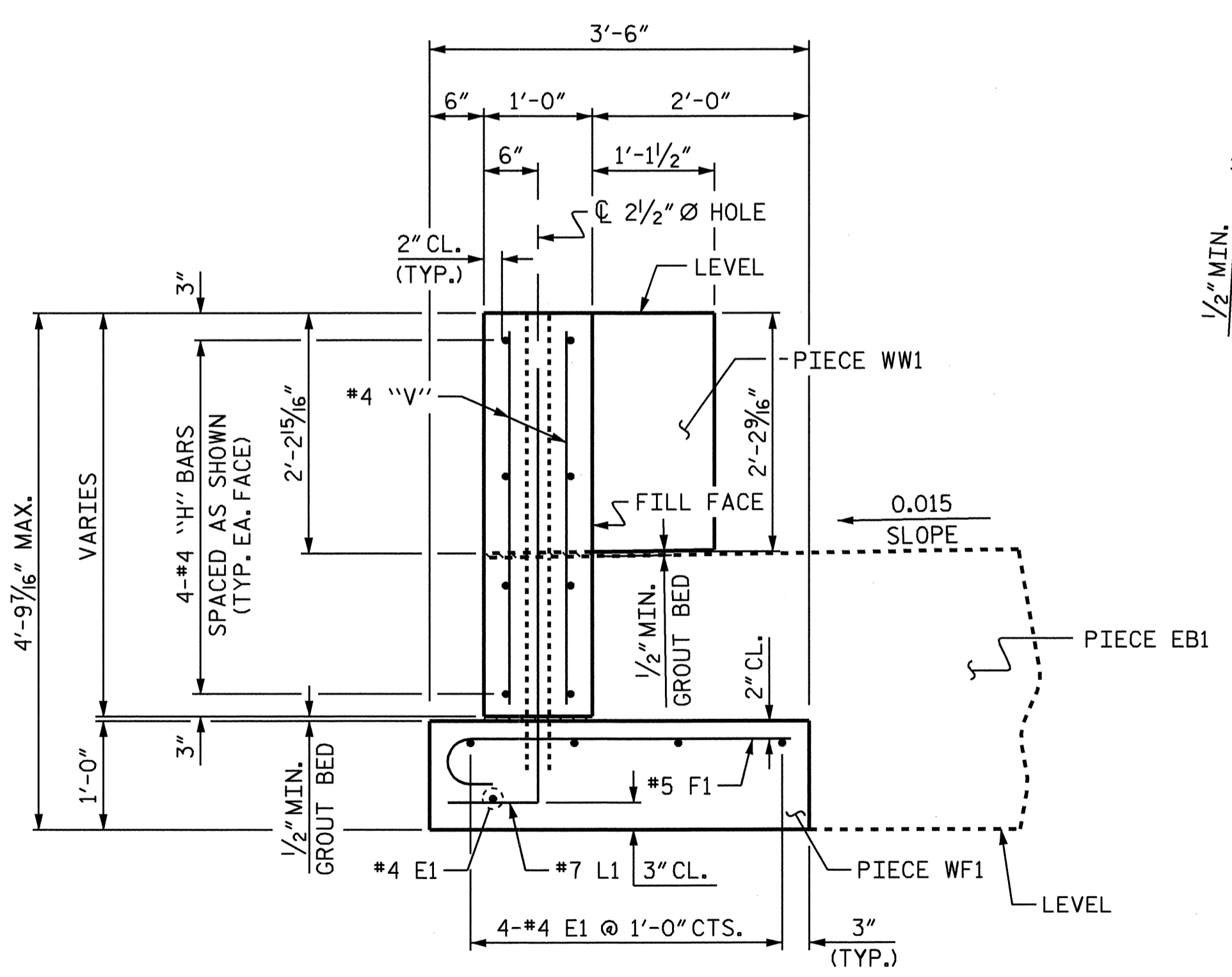
BAR TYPES		BILL OF MATERIAL FOR ONE PIECE WF1				
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
E1	5	#4	STR	5'-8"	19	
F1	7	#5	1	3'-9"	27	
L1	6	#7	2	4'-10"	59	
REINFORCING STEEL				LBS.	105	
CLASS AA CONCRETE				C.Y.	0.8	
BAR TYPES		BILL OF MATERIAL FOR ONE PIECE WW1				
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
H1	4	#4	STR	5'-8"	15	
H2	4	#4	2	7'-3"	19	
K1	4	#4	STR	1'-9"	5	
S1	2	#4	3	3'-10"	5	
V1	6	#4	STR	1'-10"	7	
V2	6	#4	STR	3'-2"	13	
V3	6	#4	STR	3'-0"	12	
REINFORCING STEEL				LBS.	76	
CLASS AA CONCRETE				C.Y.	1.0	

ALL BAR DIMENSIONS ARE OUT TO OUT.

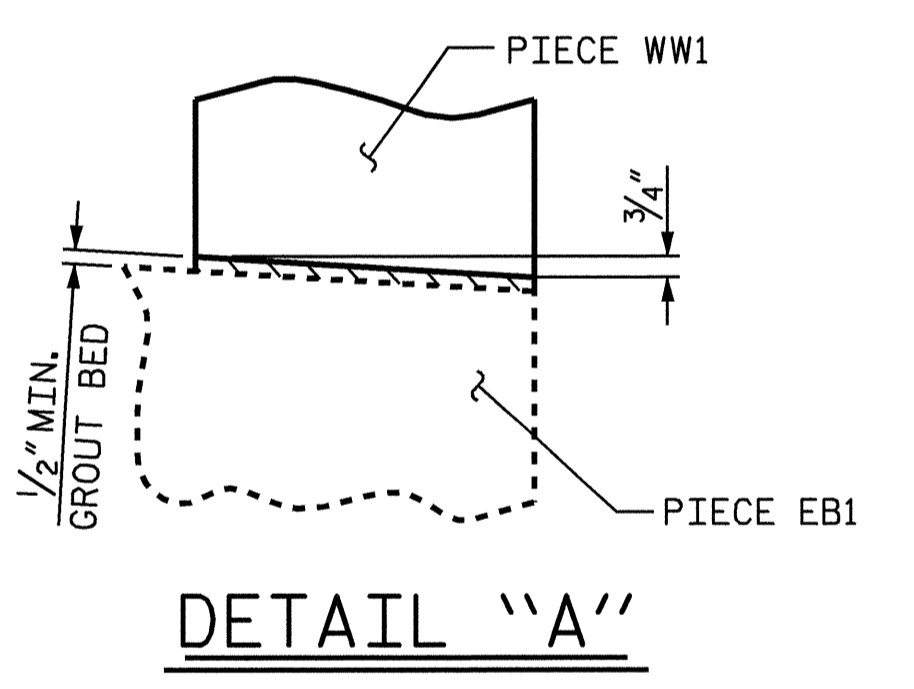
FOR THE "GENERAL PRECAST END BENT NOTES", SEE SHEET 1 OF 6.



END ELEVATION

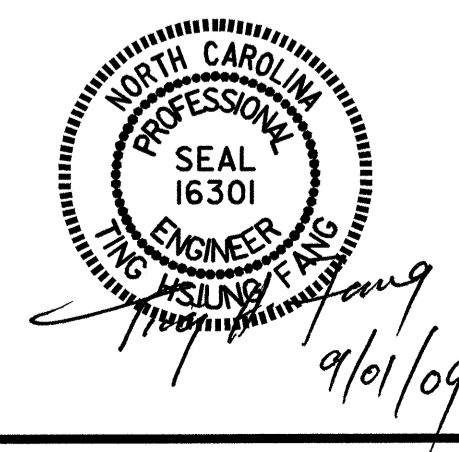


SECTION X-X



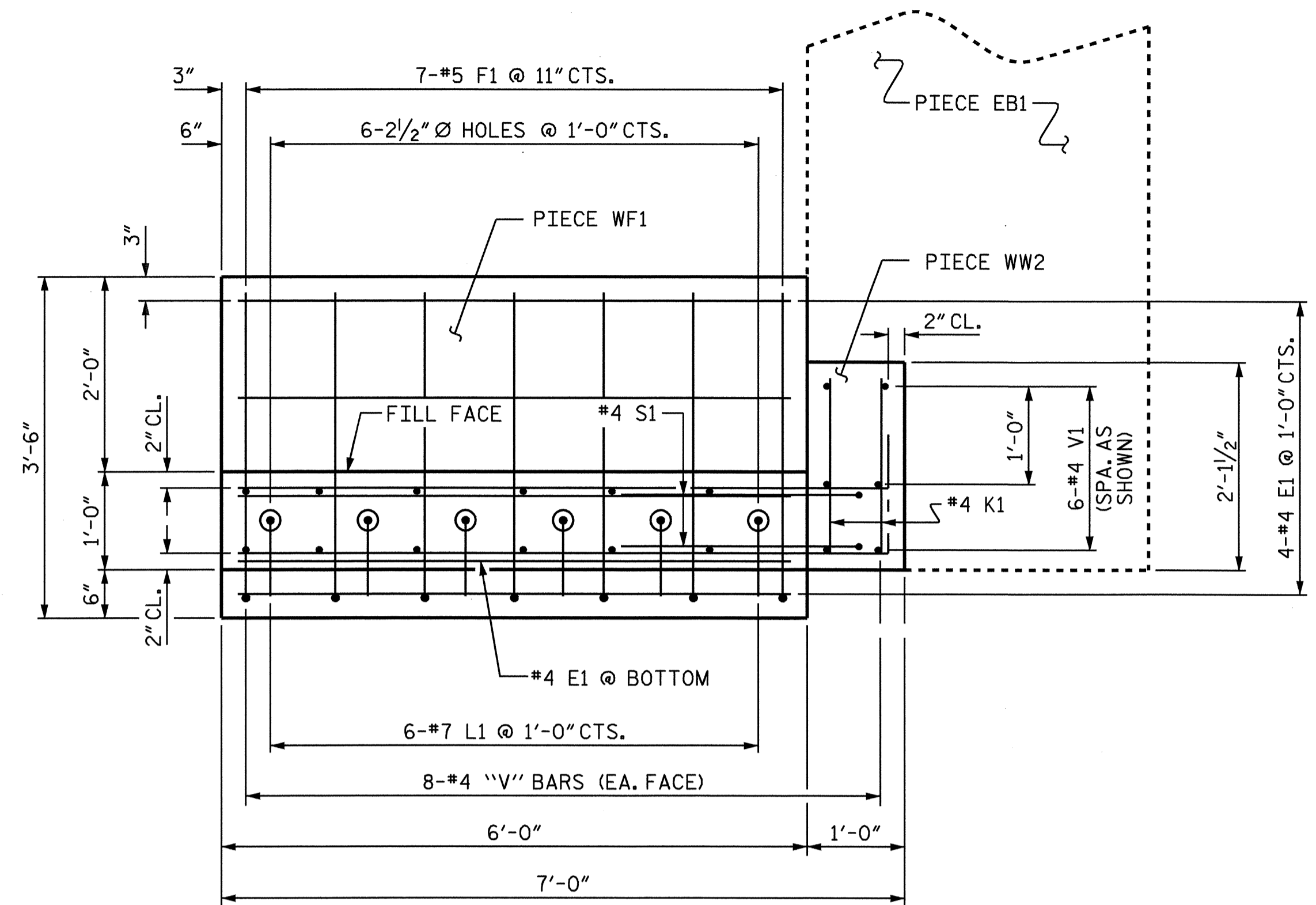
DETAIL "A"

PROJECT NO. B-4745  
 FORSYTH COUNTY  
 STATION: 18+77.40 -L-  
 SHEET 5 OF 6

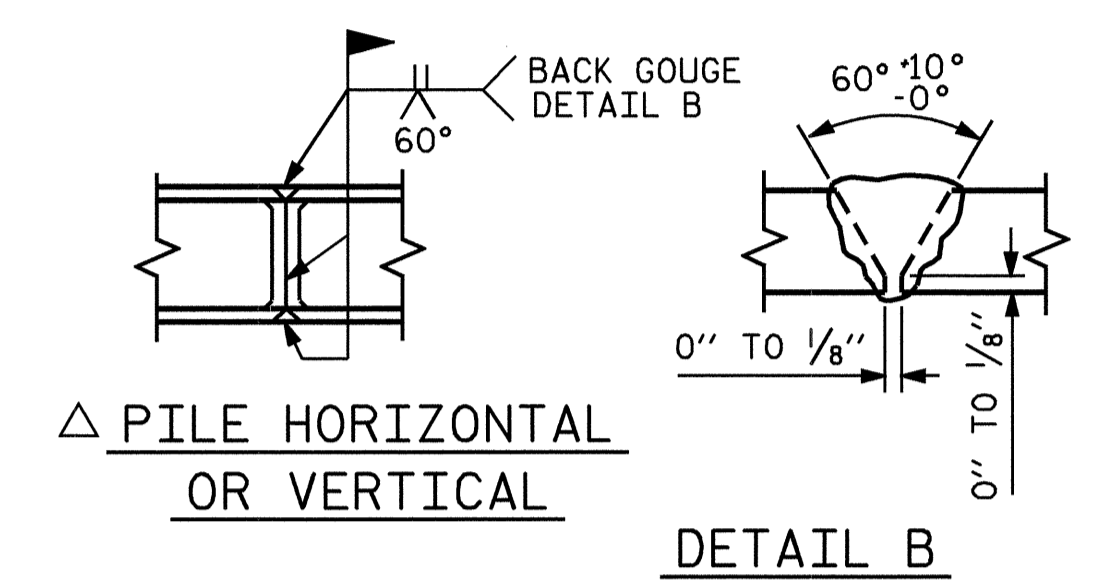
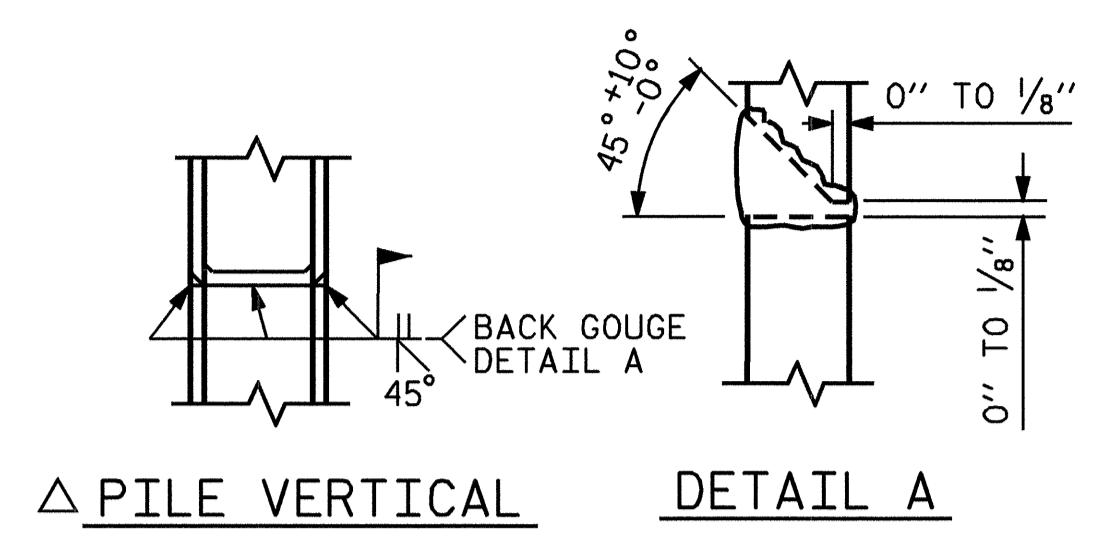


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUBSTRUCTURE END BENT 1 PRECAST PIECES WW1 & WF1					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 38

DRAWN BY: E.C. LOCKLEAR DATE: 6-23-09  
 CHECKED BY: T.H. FANG DATE: 7-15-09



**PLAN**  
#4 S1 NOT SHOWN FOR CLARITY.



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

BAR TYPES					
HK.	①	7"	3'-2"		
L1	②	10"	8"	4'-0"	L1
				6'-7"	H2
	③	6" (TYP.)	2'-6"		

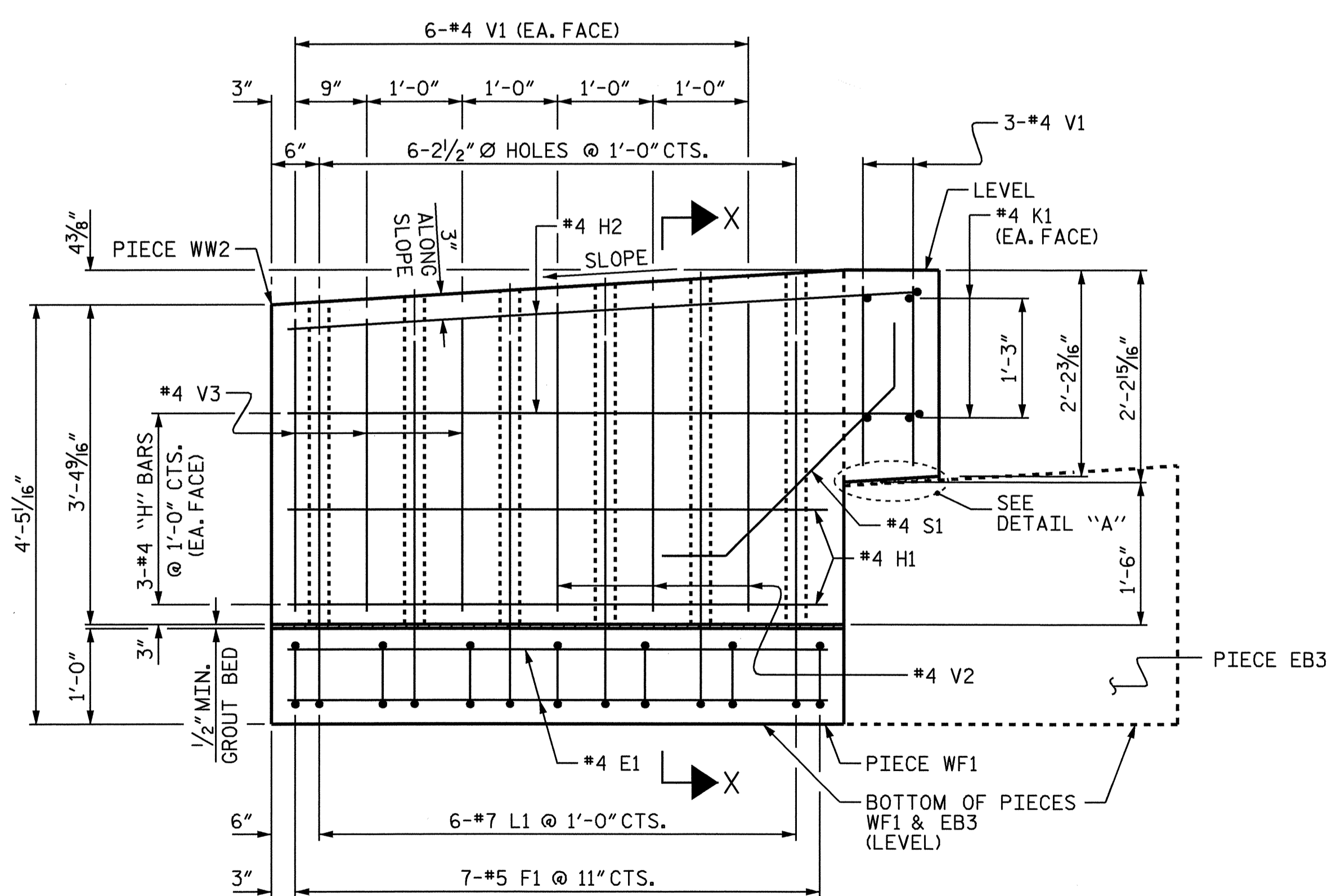
  

BILL OF MATERIAL FOR ONE PIECE WF1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
E1	5	#4	STR	5'-8"	19
F1	7	#5	1	3'-9"	27
L1	6	#7	2	4'-10"	59
REINFORCING STEEL				LBS.	105
CLASS AA CONCRETE				C.Y.	0.8

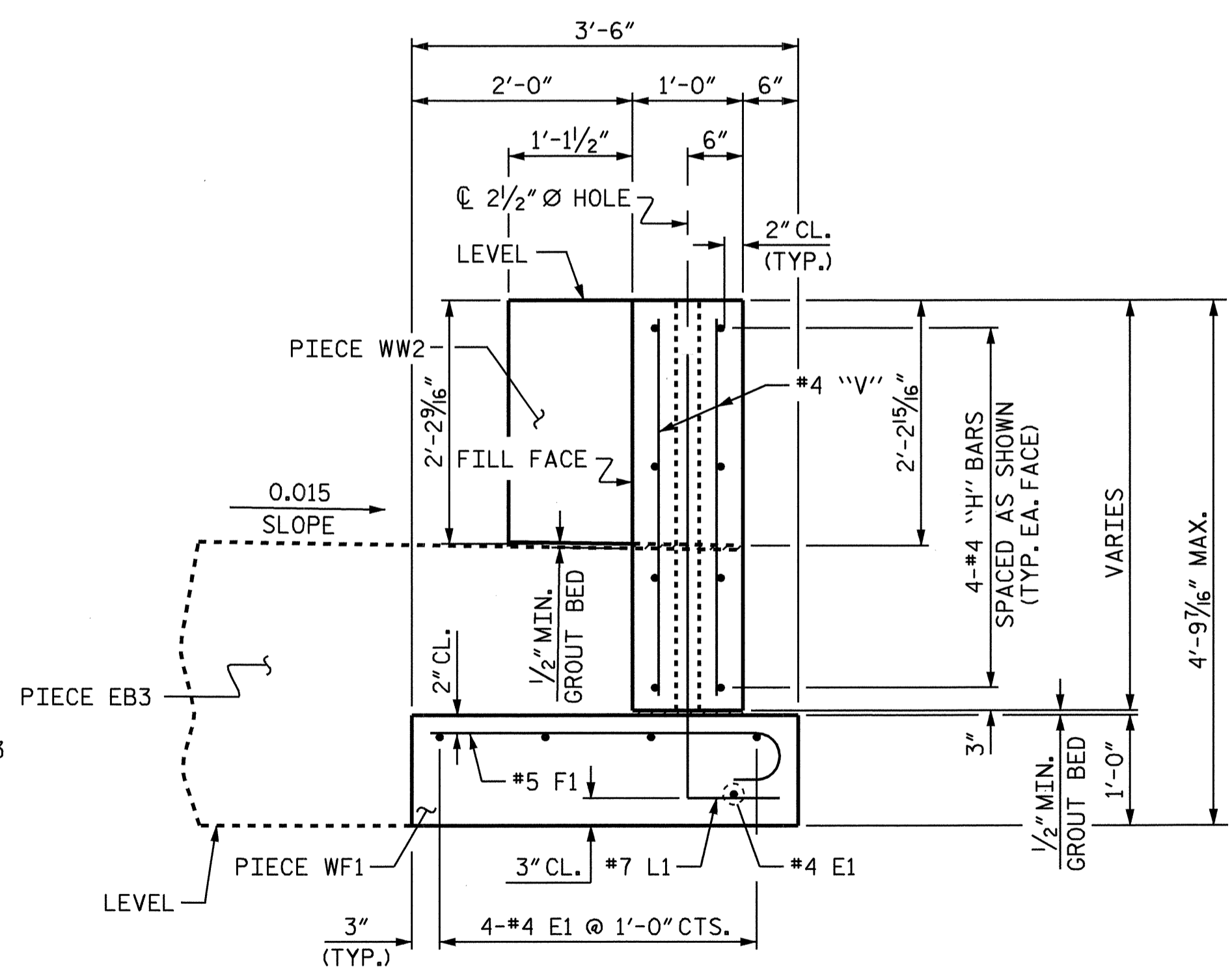
  

BILL OF MATERIAL FOR ONE PIECE WW2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	4	#4	STR	5'-8"	15
H2	4	#4	2	7'-3"	19
K1	4	#4	STR	1'-9"	5
S1	2	#4	3	3'-10"	5
V1	6	#4	STR	1'-10"	7
V2	6	#4	STR	3'-2"	13
V3	6	#4	STR	3'-0"	12
REINFORCING STEEL				LBS.	76
CLASS AA CONCRETE				C.Y.	1.0

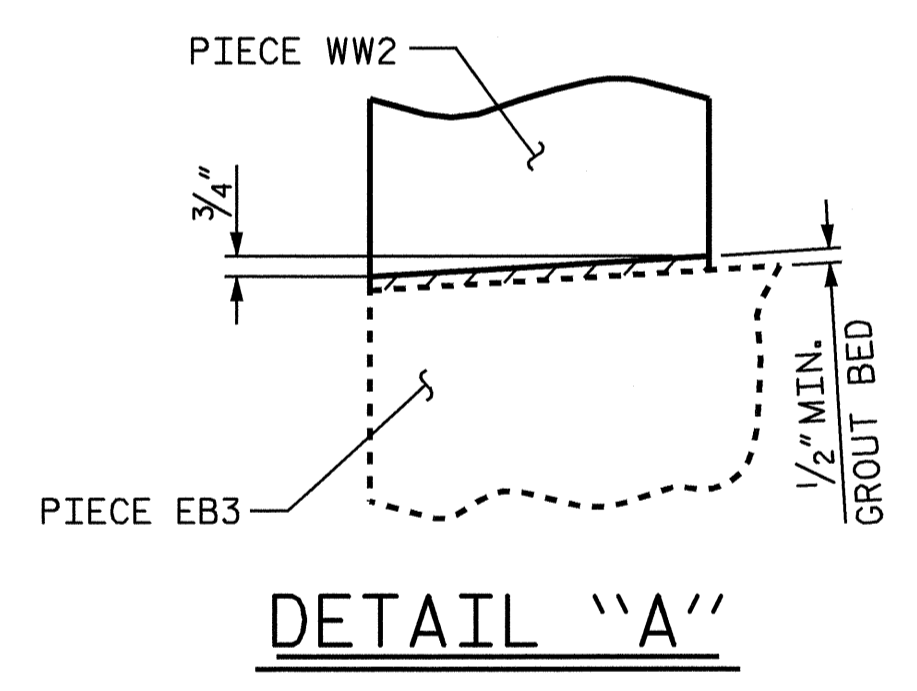
ALL BAR DIMENSIONS ARE OUT TO OUT.  
FOR THE "GENERAL PRECAST END BENT NOTES", SEE SHEET 1 OF 6.



**END ELEVATION**



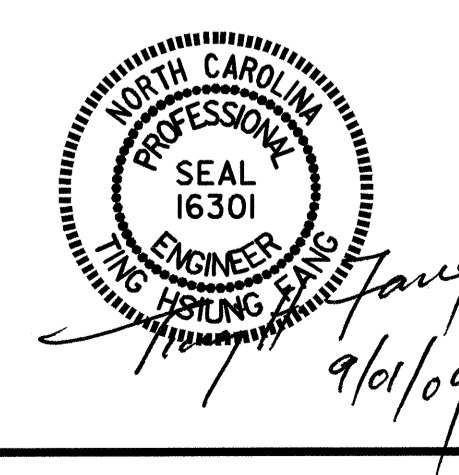
**SECTION X-X**



**DETAIL "A"**

PROJECT NO. B-4745  
FORSYTH COUNTY  
 STATION: 18+77.40 -L-  
 SHEET 6 OF 6

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT 1  
 PRECAST PIECES  
 WW2 & WF1



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

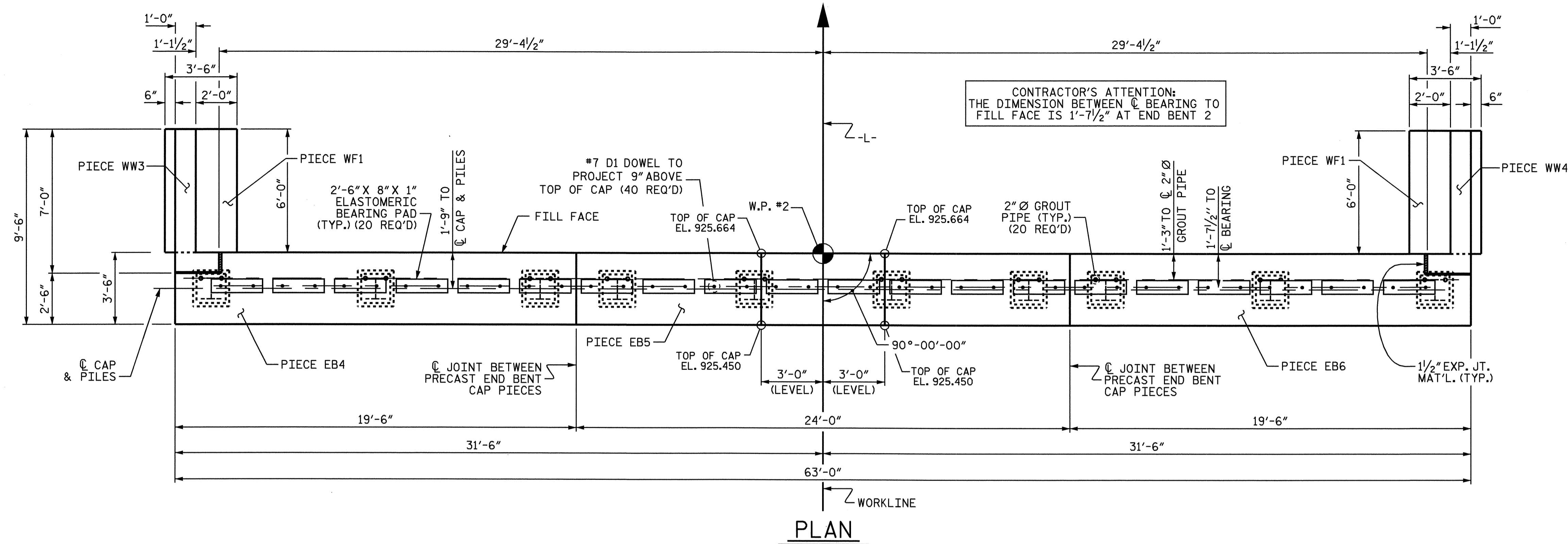
SHEET NO. S-31  
 TOTAL SHEETS 38

DRAWN BY: E.C. LOCKLEAR DATE: 6-23-09  
 CHECKED BY: T.H. FANG DATE: 7-15-09

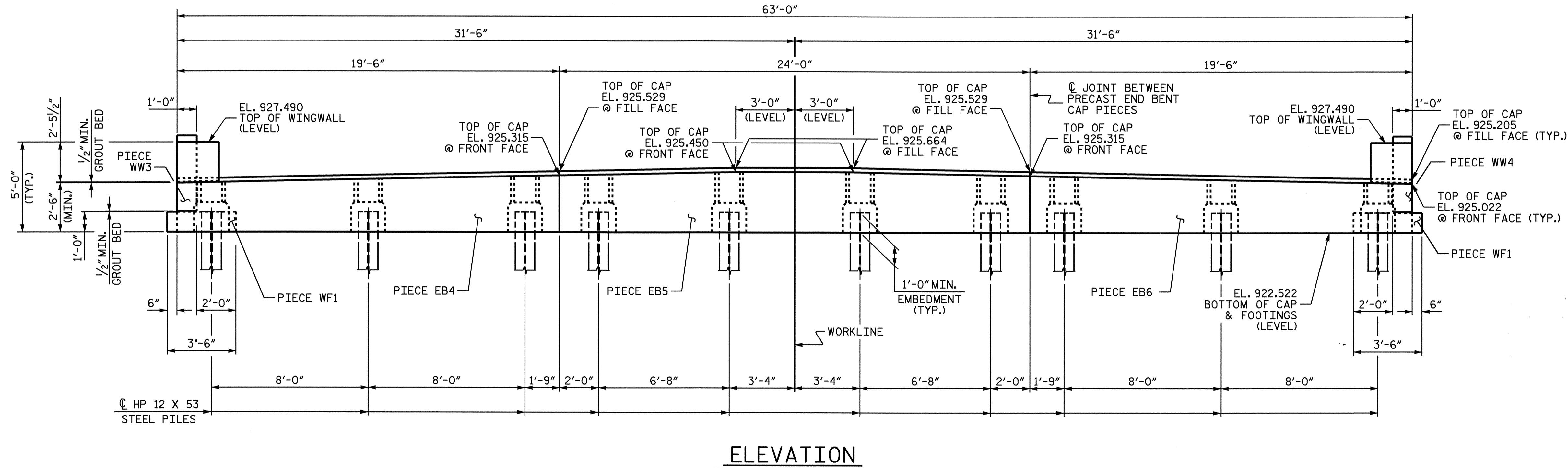


**NOTES**

FOR GENERAL PRECAST END BENT NOTES, SEE SHEET 'END BENT 1, PRECAST OPTION'.  
 FOR DETAILS & BILL OF MATERIAL OF PRECAST PIECES IN END BENT 2, SEE SHEETS 2 THRU 6 OF 6.  
 FOR LIFTING LOOPS, SEE SHEET 6 OF 6.  
 FOR PILE SPLICE DETAIL, SEE SHEET 5 OF 6.



**PLAN**



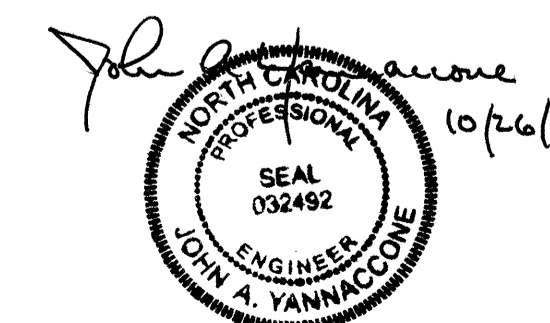
**ELEVATION**

PRECAST PIECE SUMMARY						
	PIECE EB4	PIECE EB5	PIECE EB6	PIECE WF1	PIECE WW3	PIECE WW4
UNIT	EACH	EACH	EACH	EACH	EACH	EACH
END BENT 2	1	1	1	2	1	1

PROJECT NO. B-4745  
FORSYTH COUNTY  
 STATION: 18+77.40 -L-

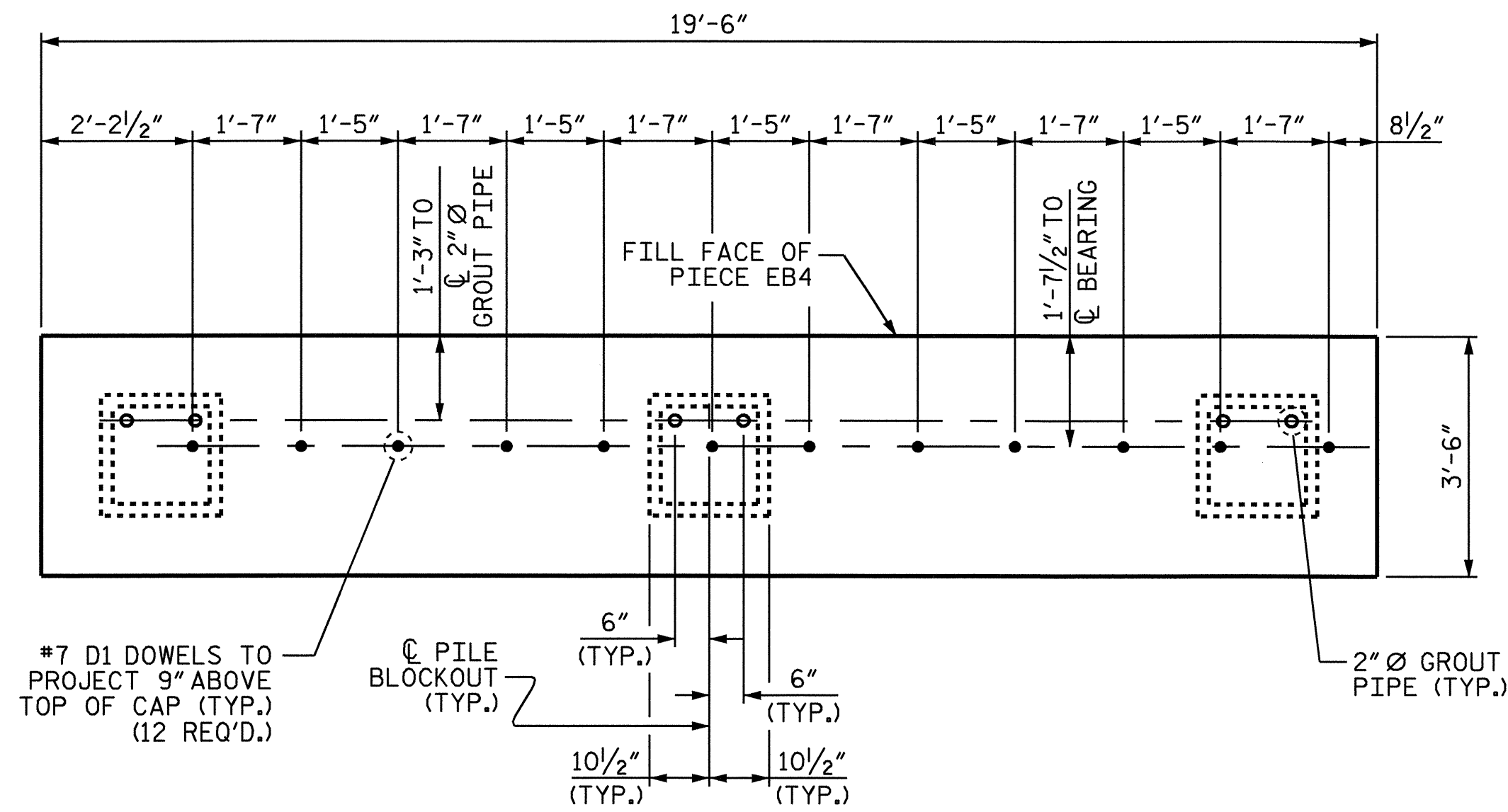
SHEET 1 OF 6

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT 2  
 PRECAST OPTION

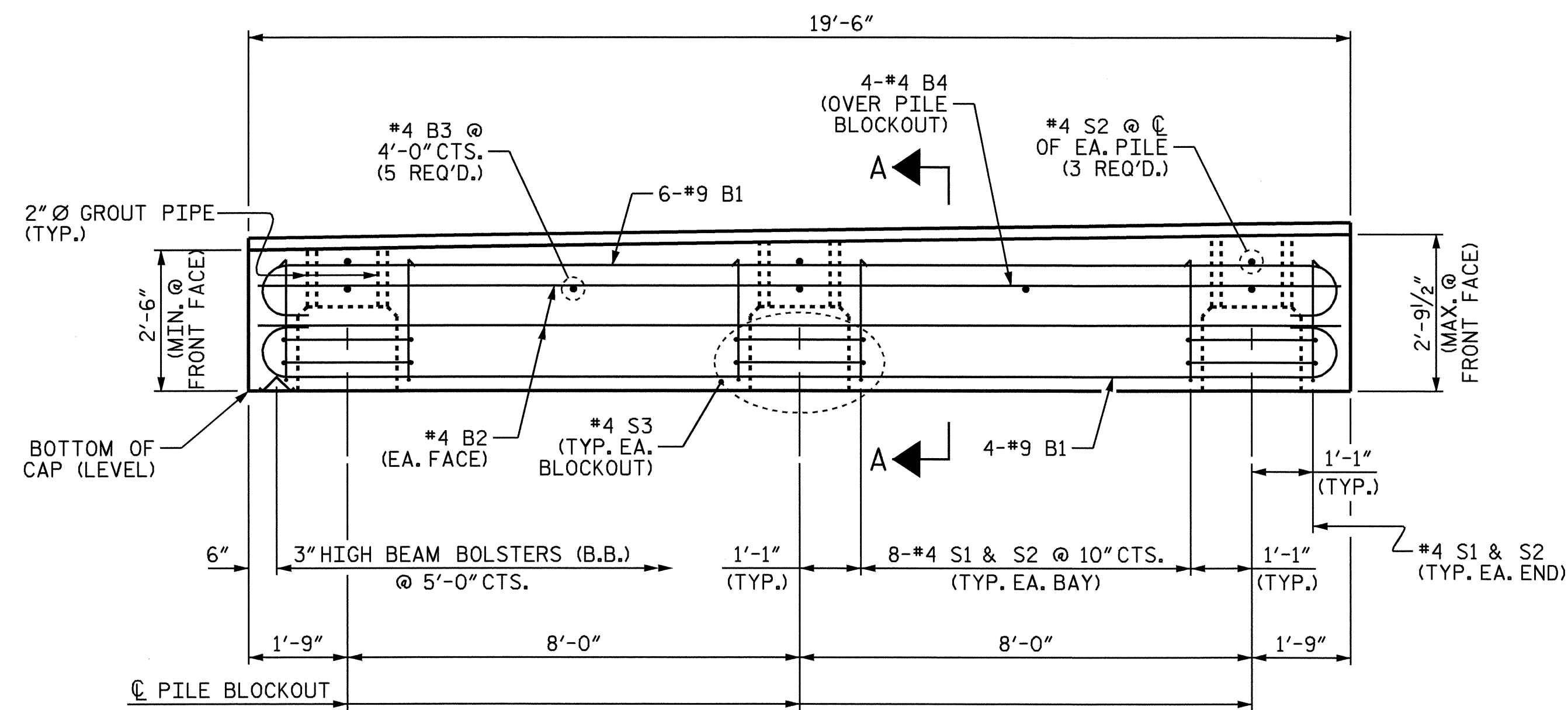


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			38

DRAWN BY: E.C. LOCKLEAR DATE: 6-25-09  
 CHECKED BY: J. A. YANNACCONE DATE: 7-31-09



PLAN - PRECAST PIECE EB4

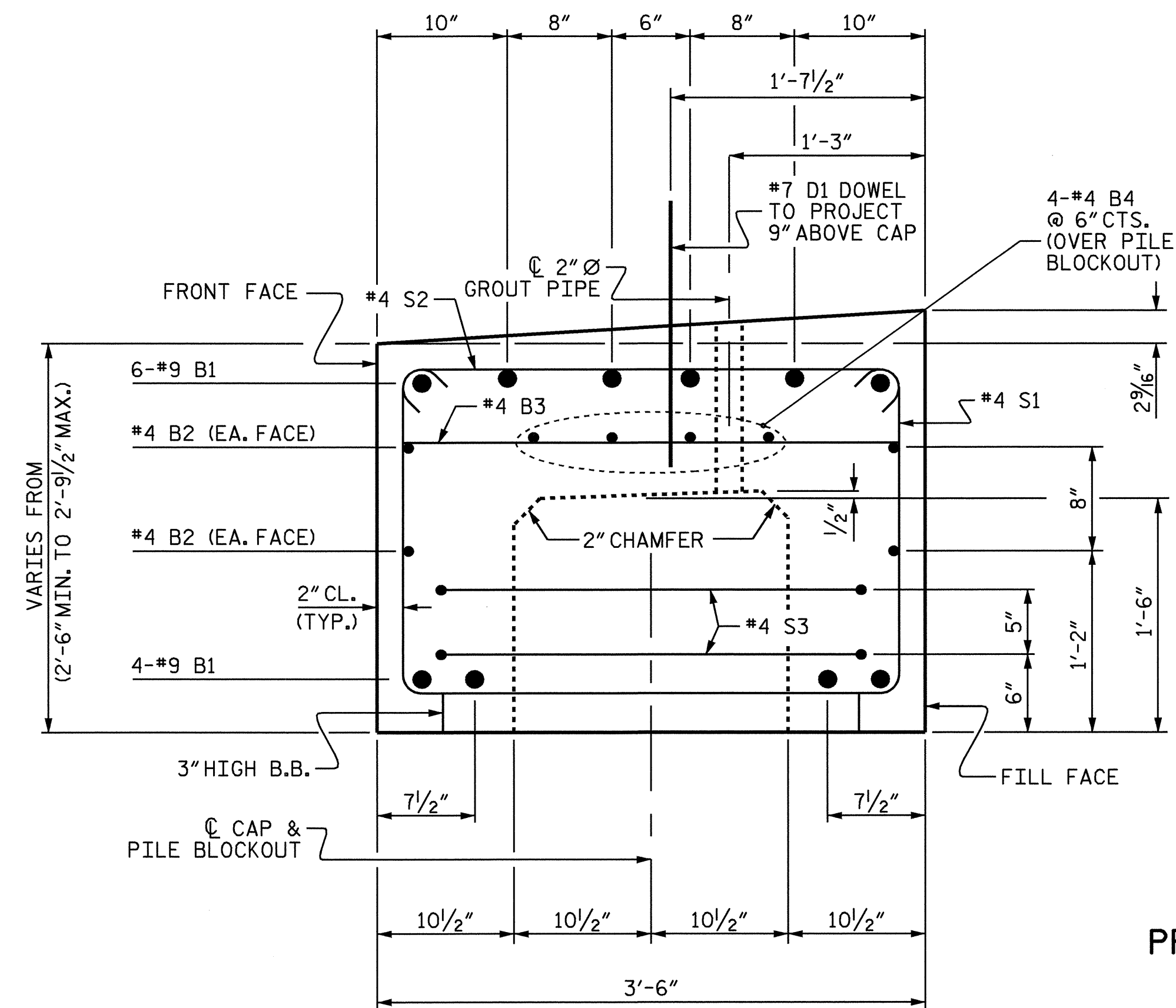


ELEVATION - PRECAST PIECE EB4

BAR TYPES					BILL OF MATERIAL						
					PIECE EB4						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#9		21'-6"	731	B1	10	#9		21'-6"	731
B2	4	#4	STR	19'-2"	51	B2	4	#4	STR	19'-2"	51
B3	5	#4	STR	3'-2"	11	B3	5	#4	STR	3'-2"	11
B4	4	#4	STR	19'-2"	51	B4	4	#4	STR	19'-2"	51
D1	12	#7	STR	1'-6"	37	D1	12	#7	STR	1'-6"	37
S1	18	#4		8'-2"	98	S1	18	#4		8'-2"	98
S2	21	#4		3'-11"	55	S2	21	#4		3'-11"	55
S3	6	#4		9'-5"	38	S3	6	#4		9'-5"	38
REINFORCING STEEL										LBS.	1072
CLASS AA CONCRETE										C.Y.	6.5
GROUT FOR PILE BLOCKOUTS										C.Y.	0.5

ALL BAR DIMENSIONS ARE OUT TO OUT.

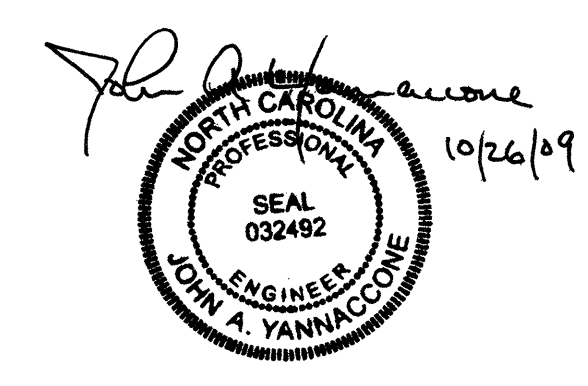
FOR THE "GENERAL PRECAST END BENT NOTES" SEE SHEET 1 OF 6.



SECTION A-A

PROJECT NO. B-4745  
FORSYTH COUNTY  
 STATION: 18+77.40 -L-

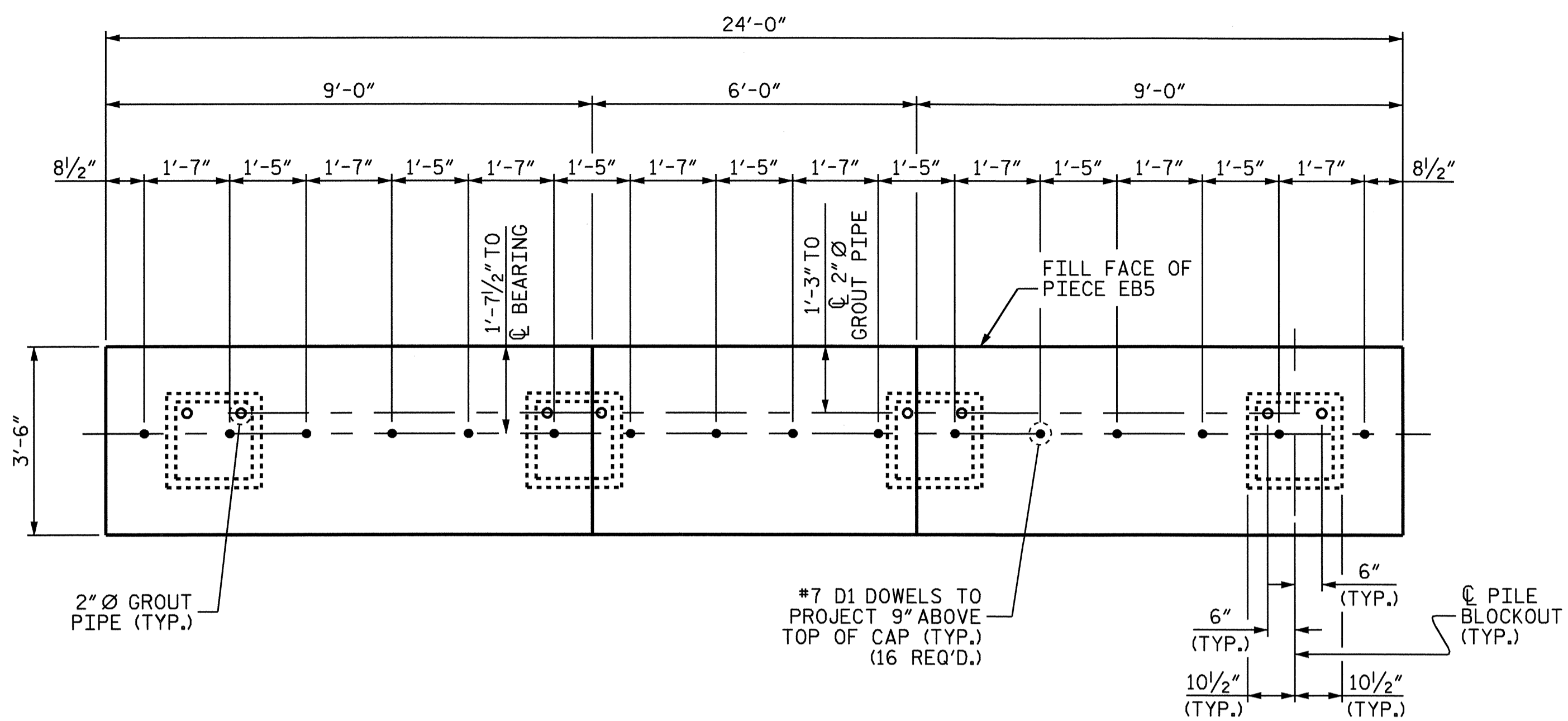
SHEET 2 OF 6



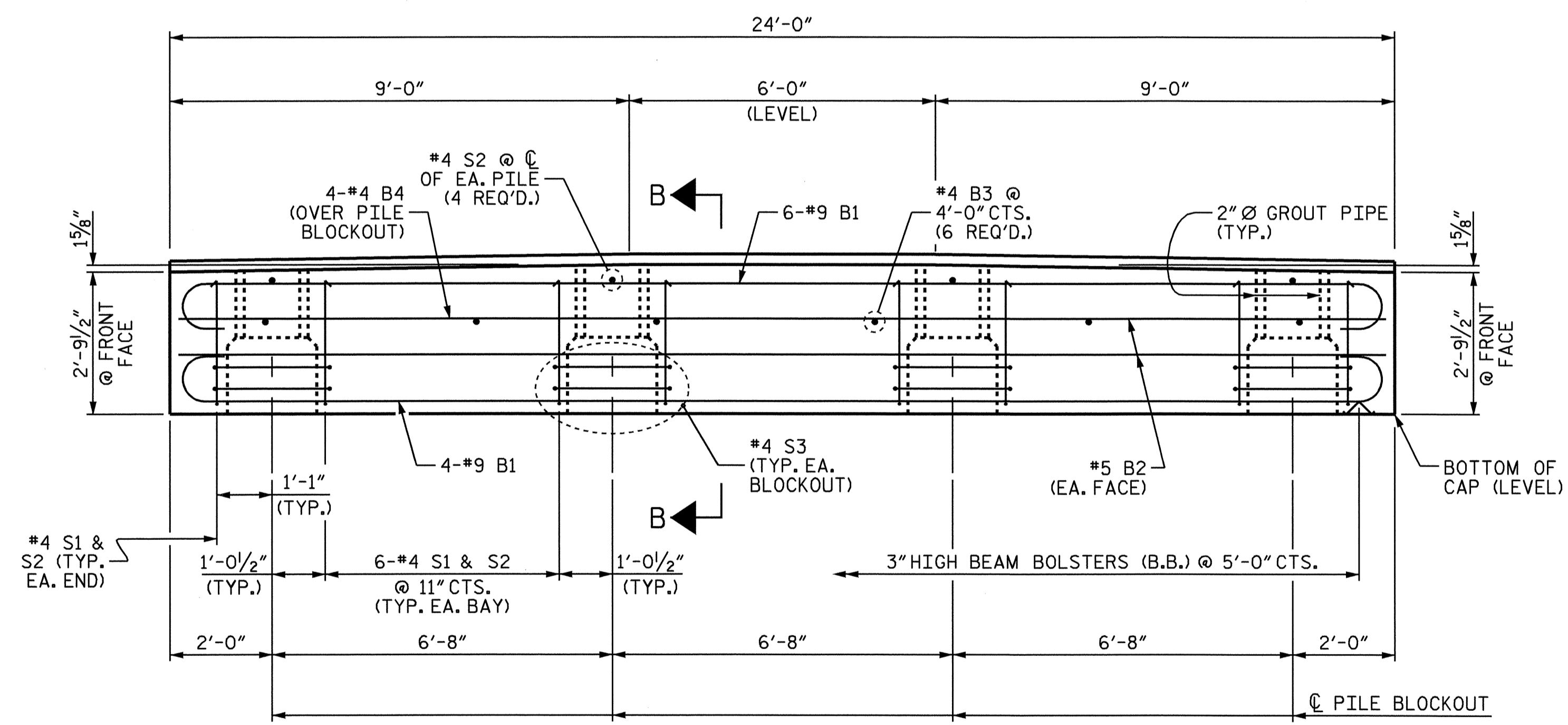
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUBSTRUCTURE					
END BENT 2 PRECAST PIECE EB4					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

DRAWN BY : E.C. LOCKLEAR DATE : 6-17-09  
 CHECKED BY : J. A. YANNACCONE DATE : 7-31-09

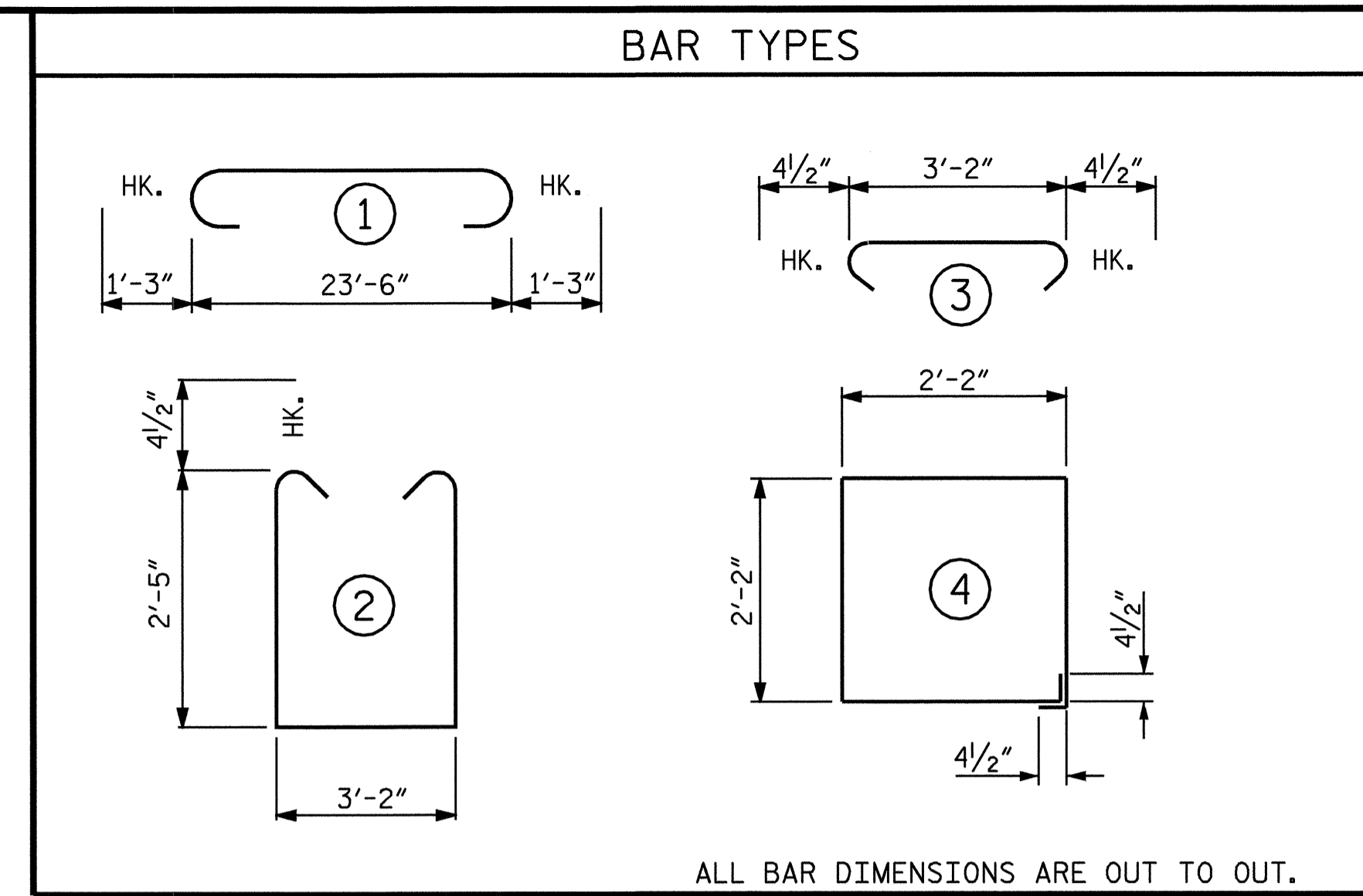
SHEET NO.  
 S-33  
 TOTAL SHEETS  
 38



PLAN - PRECAST PIECE EB5



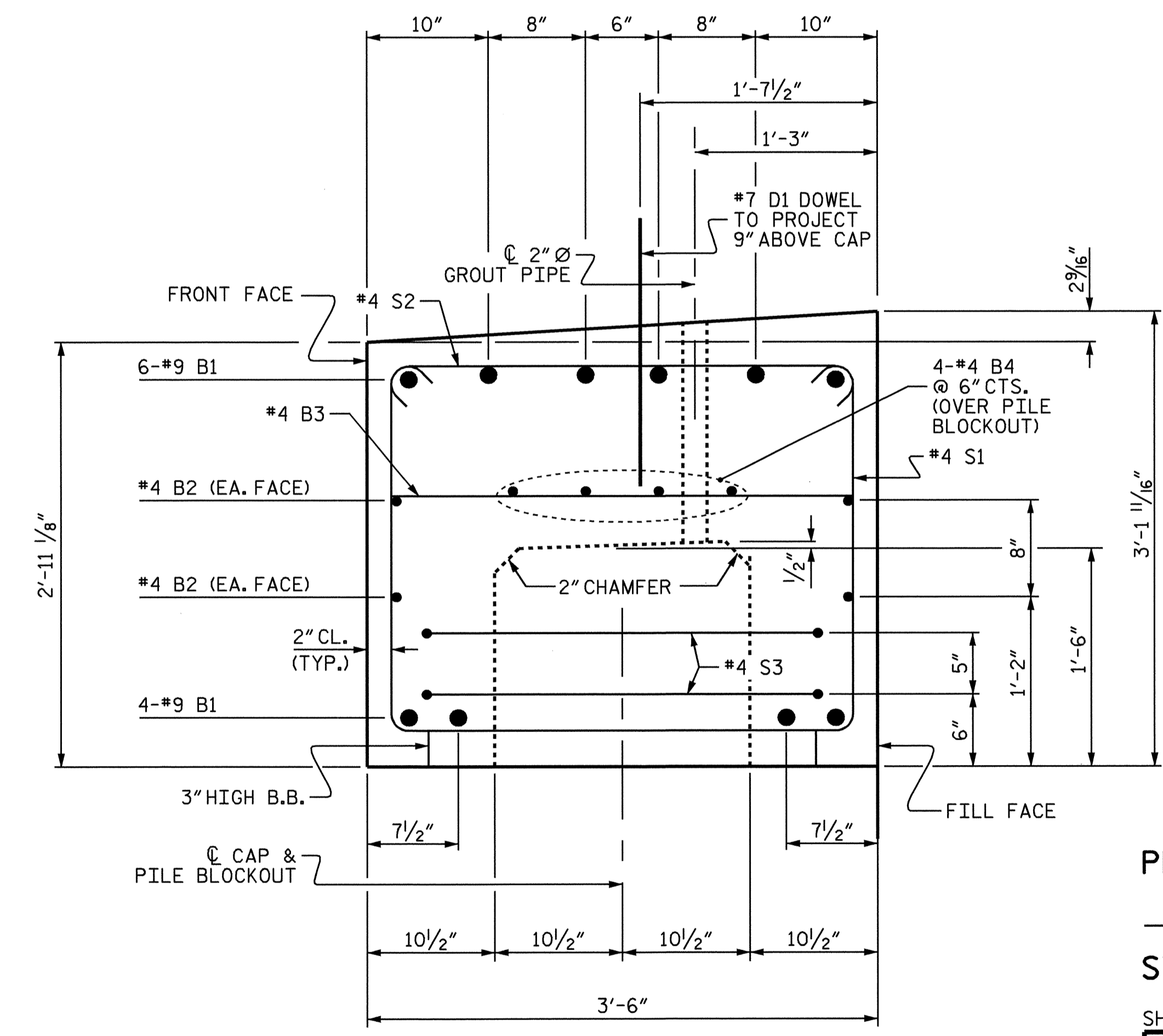
ELEVATION - PRECAST PIECE EB5



ALL BAR DIMENSIONS ARE OUT TO OUT.

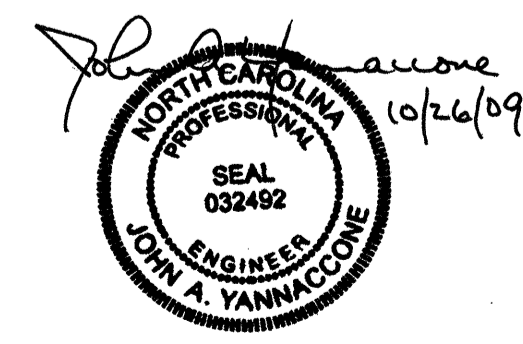
BILL OF MATERIAL					
PIECE EB5					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#9	1	26'-0"	884
B2	4	#4	STR	23'-8"	63
B3	6	#4	STR	3'-2"	13
B4	4	#4	STR	23'-8"	63
D1	16	#7	STR	1'-6"	49
S1	20	#4	2	8'-9"	117
S2	24	#4	3	3'-11"	63
S3	8	#4	4	9'-5"	50
REINFORCING STEEL				LBS.	1302
CLASS AA CONCRETE				C.Y.	8.6
GROUT FOR PILE BLOCKOUTS				C.Y.	0.7

FOR THE "GENERAL PRECAST END BENT NOTES" SEE SHEET 1 OF 6.



SECTION B-B

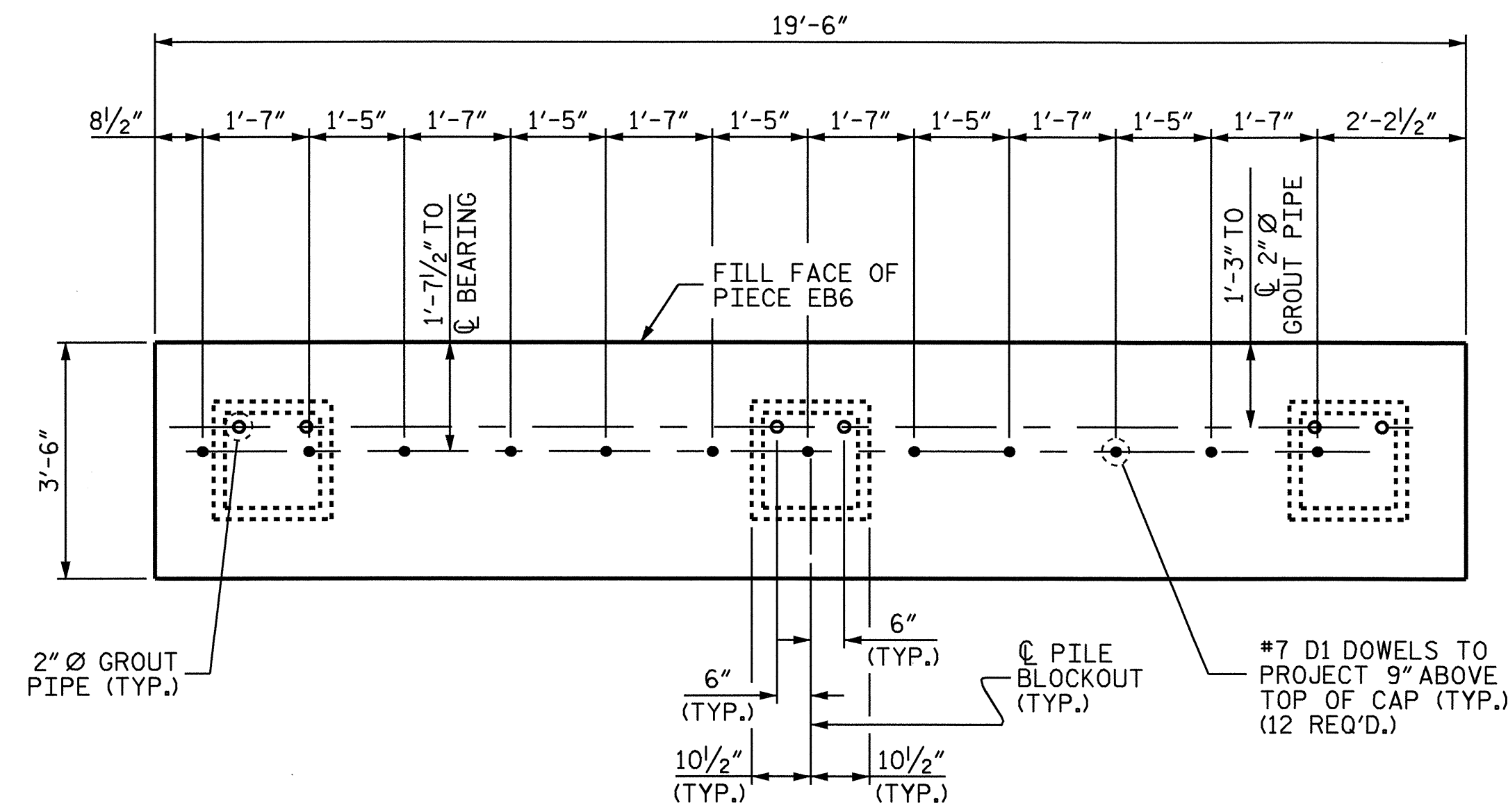
PROJECT NO. B-4745  
FORSYTH COUNTY  
 STATION: 18+77.40 -L-  
 SHEET 3 OF 6



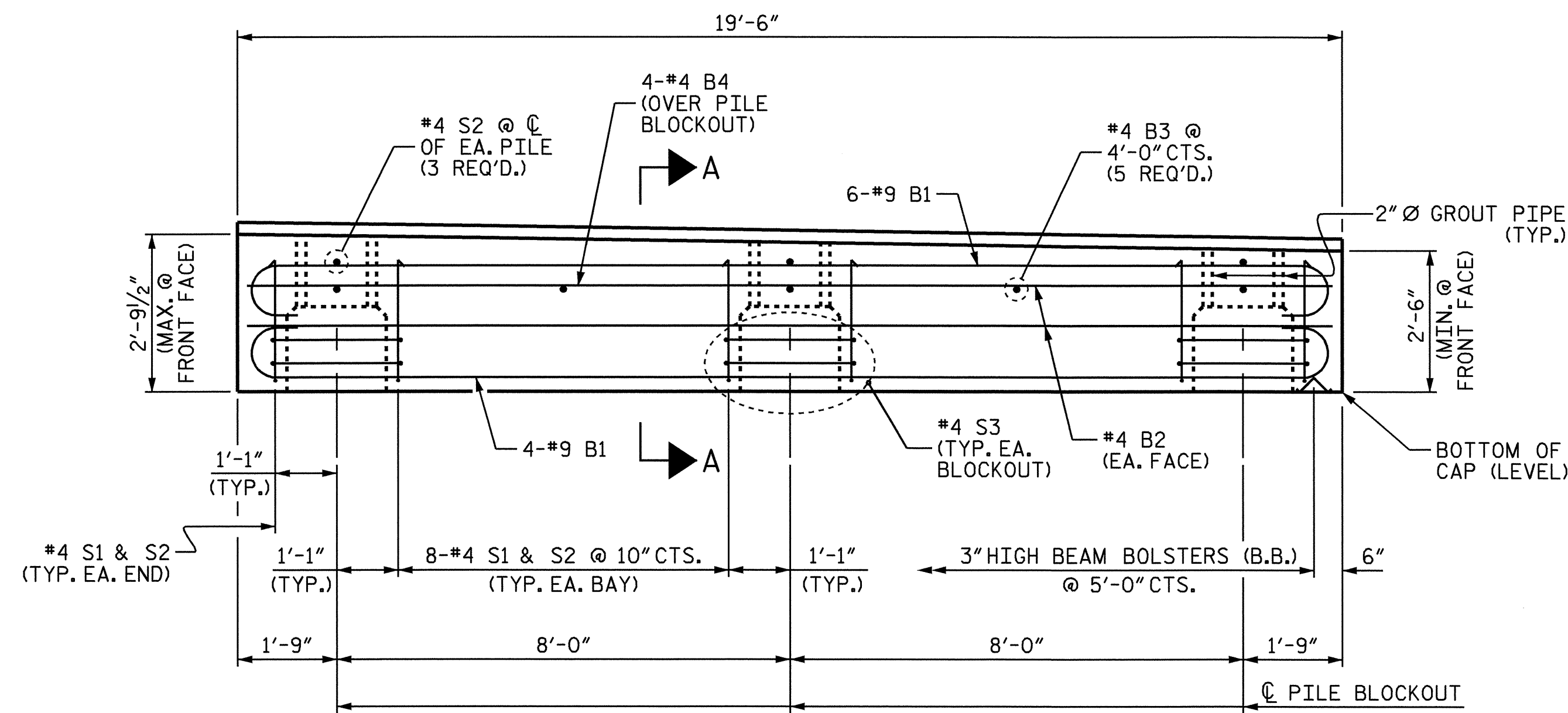
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUBSTRUCTURE					
END BENT 2 PRECAST PIECE EB5					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.				
S-34				
TOTAL SHEETS				
38				

DRAWN BY : E.C. LOCKLEAR DATE : 6-17-09  
 CHECKED BY : J. A. YANNACCONE DATE : 7-31-09

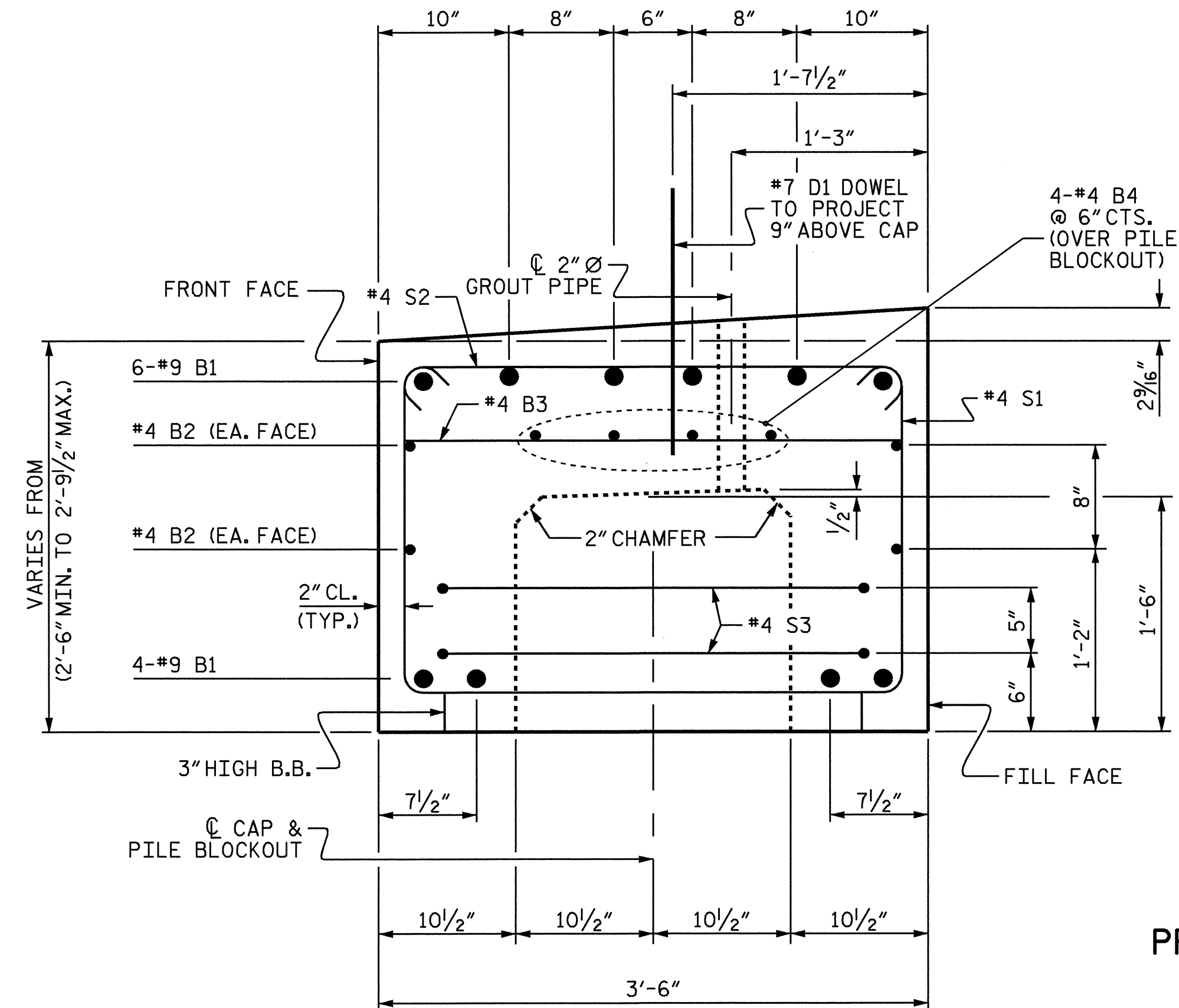


PLAN - PRECAST PIECE EB6



ELEVATION - PRECAST PIECE EB6

BAR TYPES					BILL OF MATERIAL				
ALL BAR DIMENSIONS ARE OUT TO OUT.					FOR THE "GENERAL PRECAST END BENT NOTES" SEE SHEET 1 OF 6.				
PIECE EB6									
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT				
B1	10	#9		21'-6"	731				
B2	4	#4	STR	19'-2"	51				
B3	5	#4	STR	3'-2"	11				
B4	4	#4	STR	19'-2"	51				
D1	12	#7	STR	1'-6"	37				
S1	18	#4		8'-2"	98				
S2	21	#4		3'-11"	55				
S3	6	#4		9'-5"	38				
REINFORCING STEEL						LBS.	1072		
CLASS AA CONCRETE						C.Y.	6.5		
GROUT FOR PILE BLOCKOUTS						C.Y.	0.5		

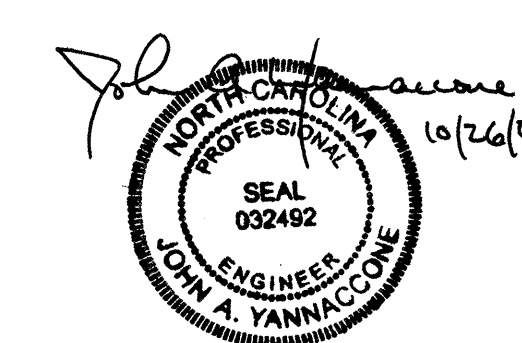


SECTION A-A

PROJECT NO. B-4745  
FORSYTH COUNTY  
 STATION: 18+77.40 -L-

SHEET 4 OF 6

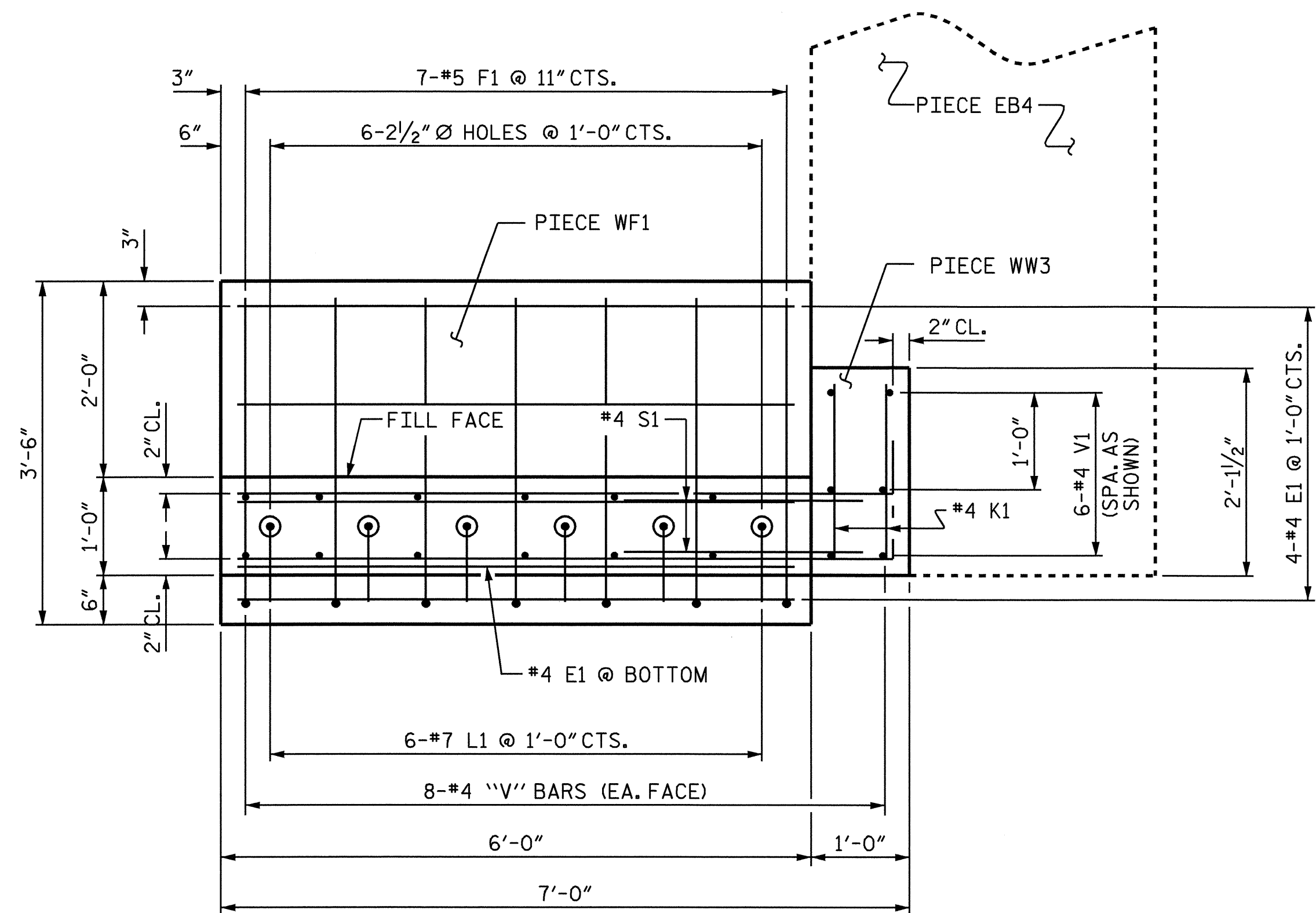
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT 2  
 PRECAST PIECE EB6



DRAWN BY : E.C. LOCKLEAR DATE : 6-17-09  
 CHECKED BY : J. A. YANNACCONE DATE : 7-31-09

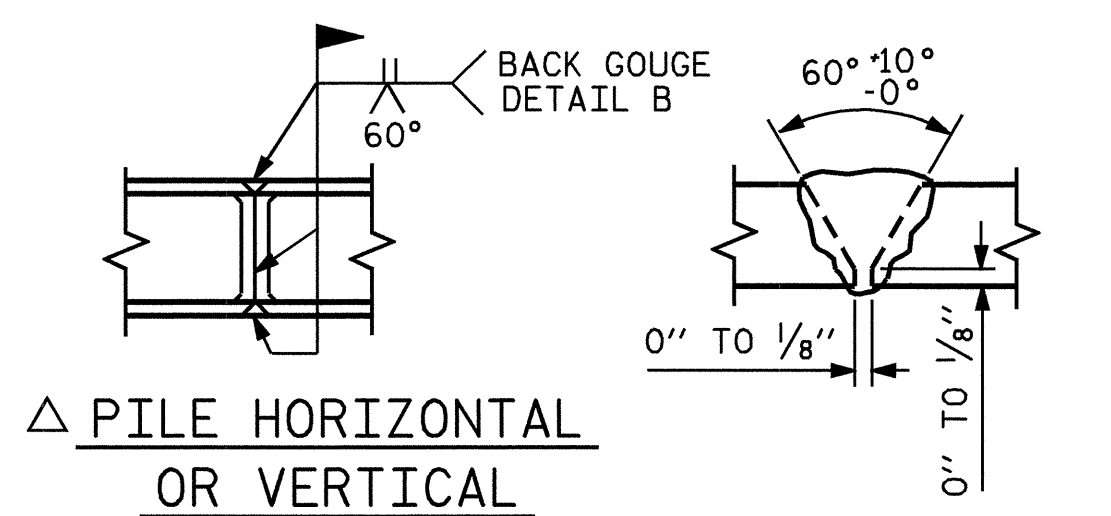
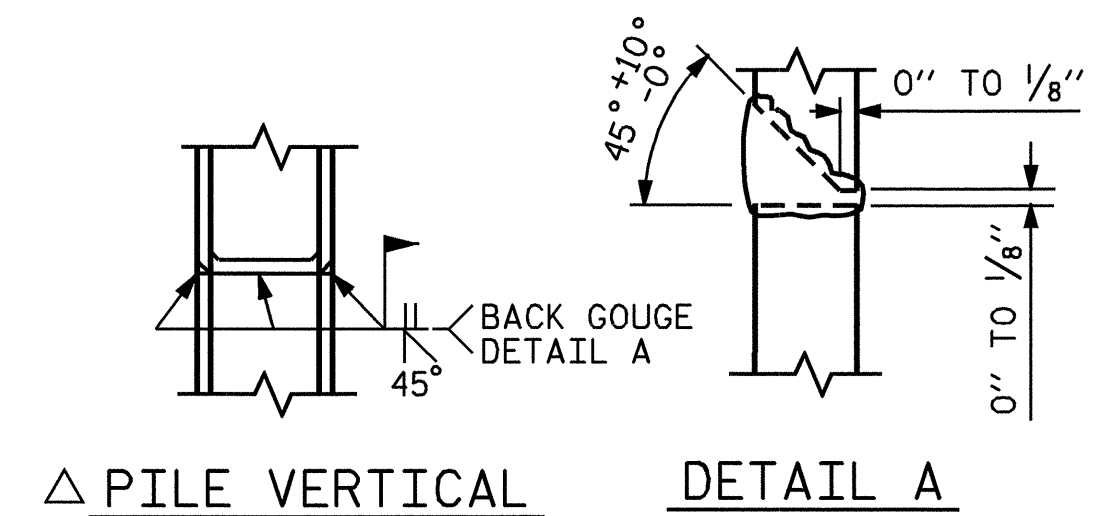
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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-35	
1			3			TOTAL SHEETS	
2			4			38	



**PLAN**

#4 S1 NOT SHOWN FOR CLARITY.



**PILE SPLICE DETAILS**

△ POSITION OF PILE DURING WELDING.

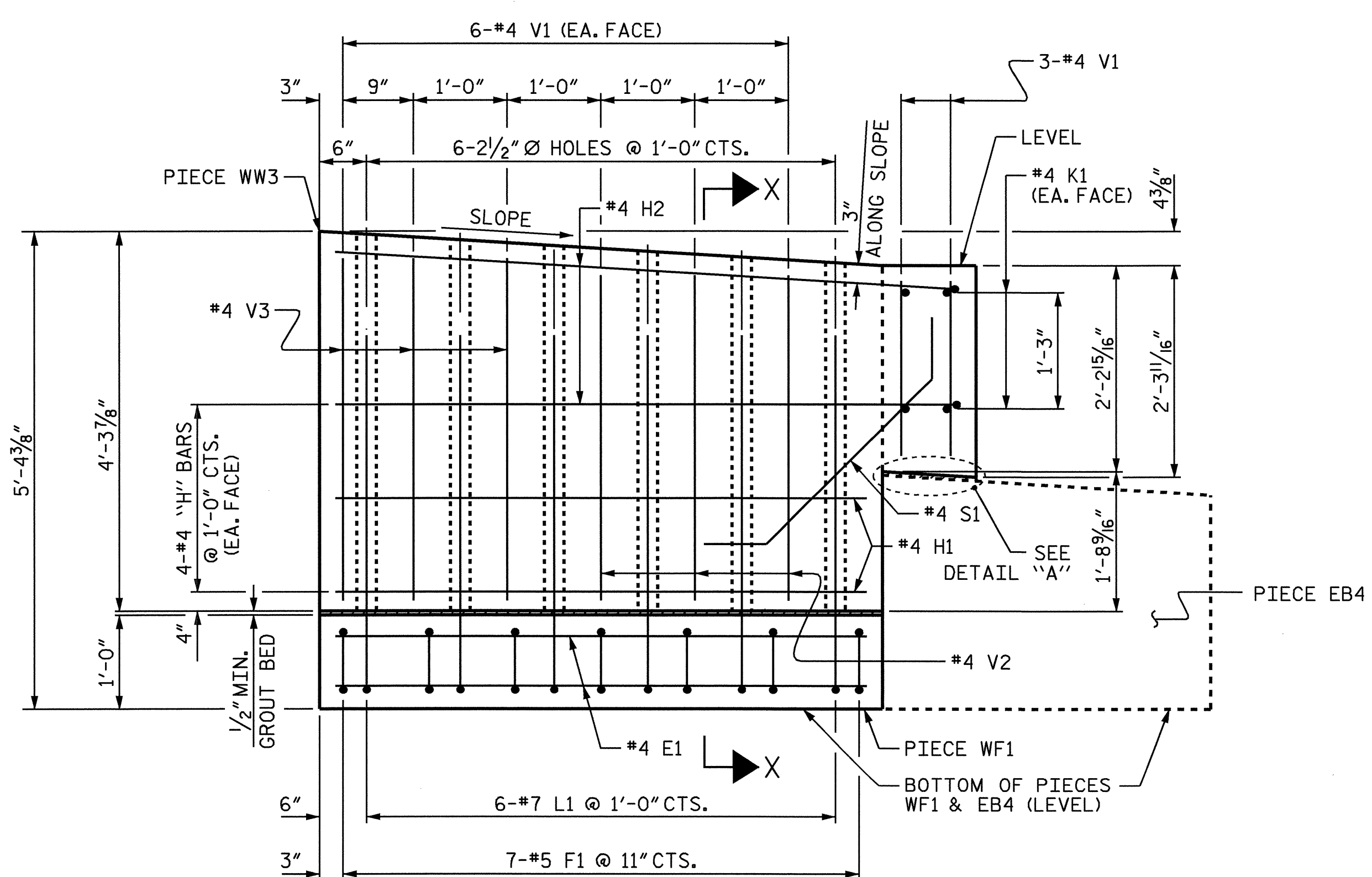
BILL OF MATERIAL FOR ONE PIECE WF1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
E1	5	#4	STR	5'-8"	19
F1	7	#5	1	3'-9"	27
L1	6	#7	2	4'-10"	59
REINFORCING STEEL					LBS. 105
CLASS AA CONCRETE					C.Y. 0.8

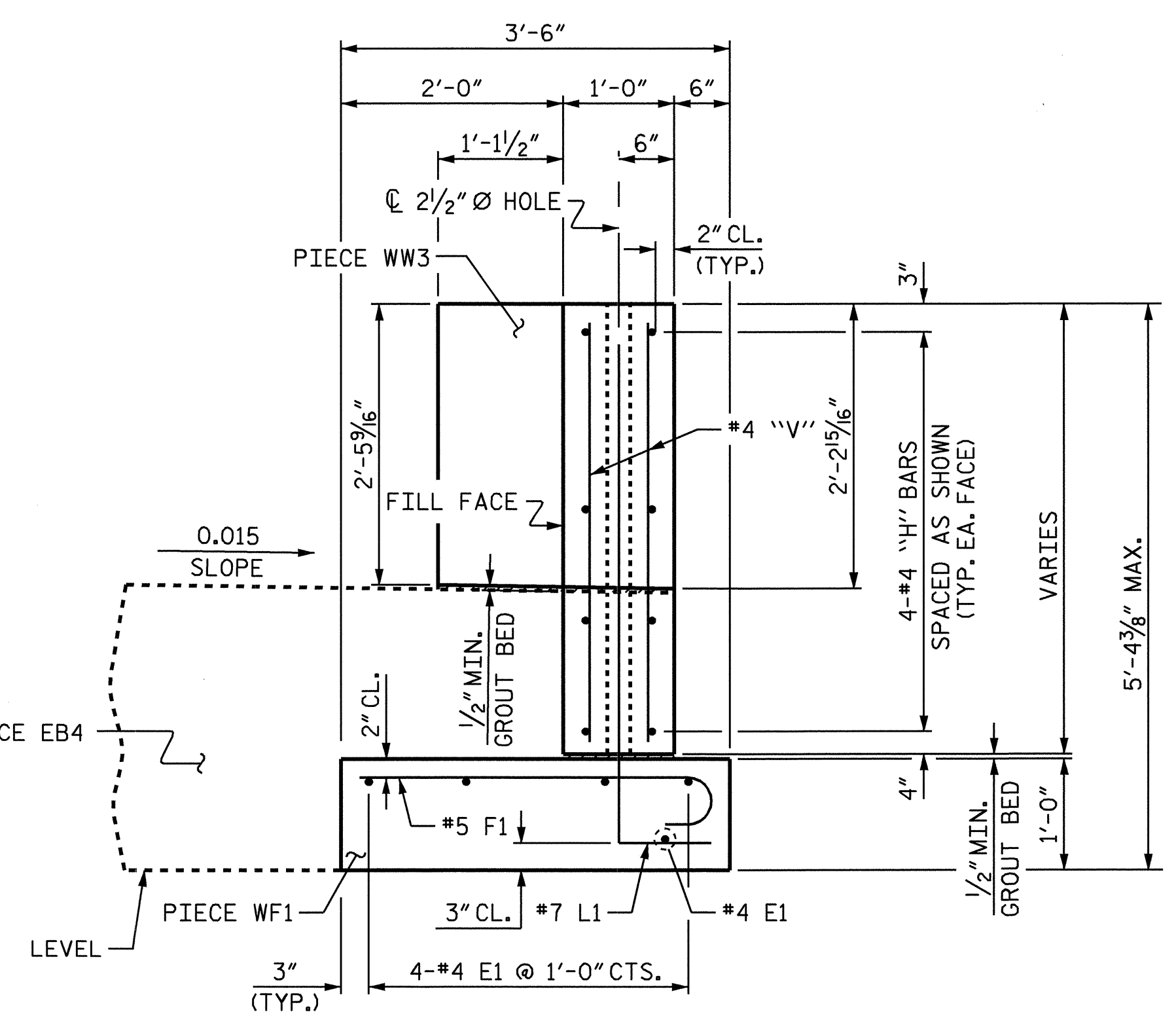
BILL OF MATERIAL FOR ONE PIECE WW3					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	4	#4	STR	5'-8"	15
H2	4	#4	2	7'-3"	19
K1	4	#4	STR	1'-9"	5
S1	2	#4	3	3'-10"	5
V1	6	#4	STR	1'-10"	7
V2	6	#4	STR	3'-6"	14
V3	6	#4	STR	3'-10"	15
REINFORCING STEEL					LBS. 81
CLASS AA CONCRETE					C.Y. 1.1

ALL BAR DIMENSIONS ARE OUT TO OUT.

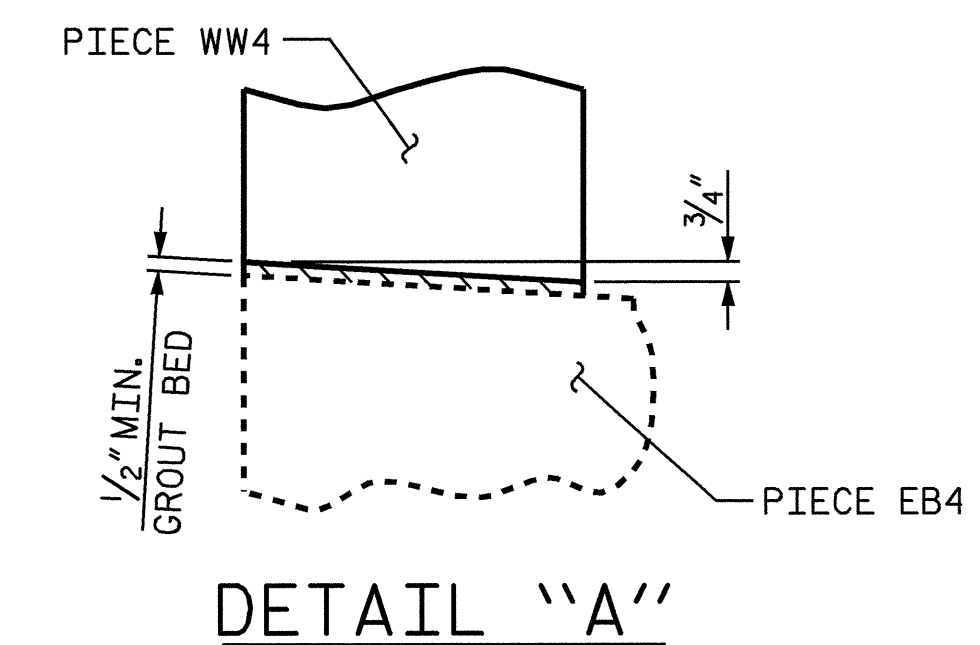
FOR "GENERAL PRECAST END BENT NOTES", SEE END BENT 1, SHEET 1 OF 6.



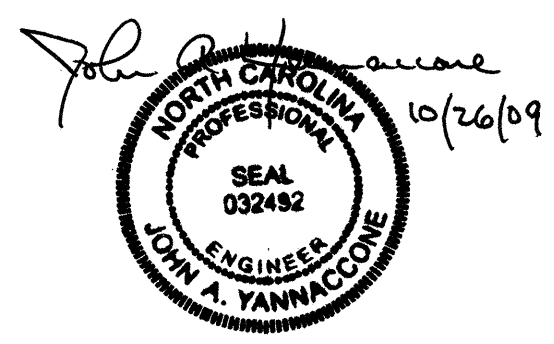
**END ELEVATION**



**SECTION X-X**



PROJECT NO. B-4745  
FORSYTH COUNTY  
 STATION: 18+77.40 -L-  
 SHEET 5 OF 6

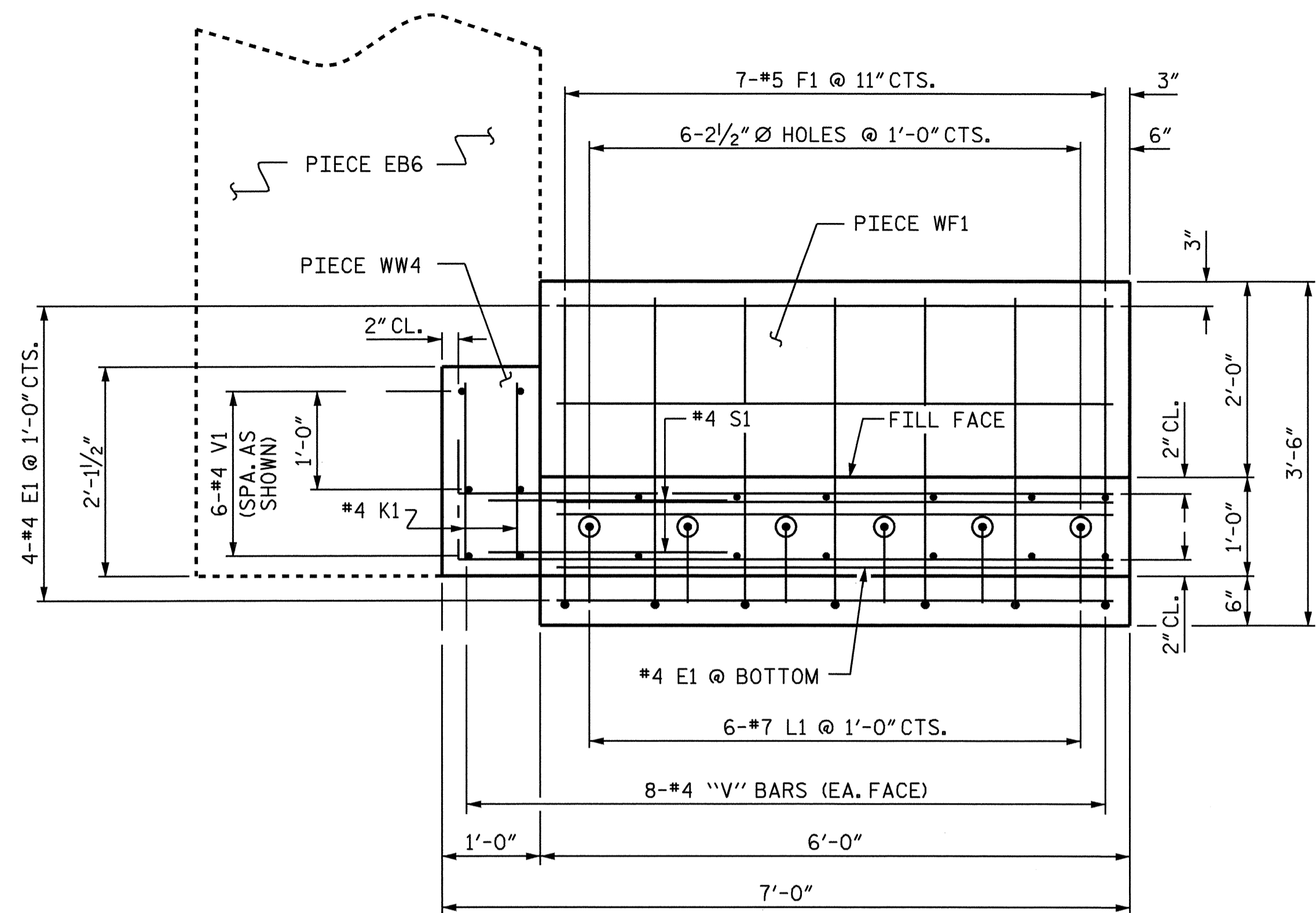


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT 2  
 PRECAST PIECES  
 WW3 & WF1

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-36	
1			3			TOTAL SHEETS	38
2			4				

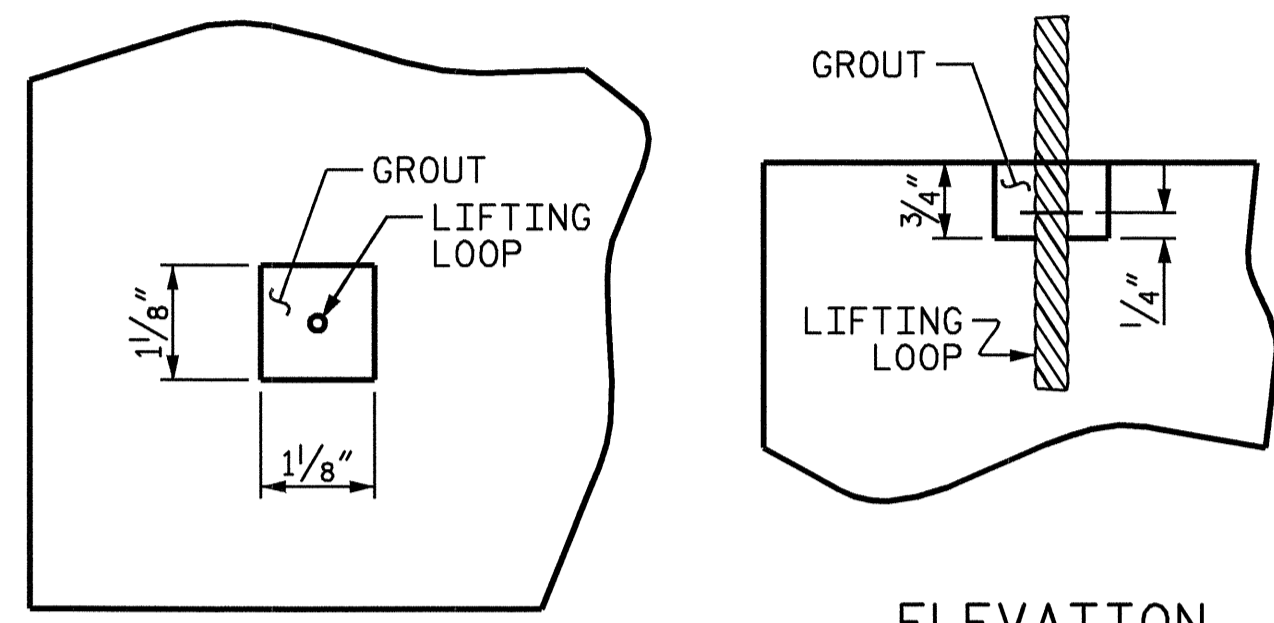
DRAWN BY : E.C. LOCKLEAR DATE : 6-23-09  
 CHECKED BY : J. A. YANNACCONE DATE : 7-31-09

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PLAN

**NOTES**  
 TWO LIFTING LOOPS SHALL BE ALLOWED IN EACH PRECAST PIECE IN ACCORDANCE WITH ARTICLE 1077-10 OF THE STANDARD SPECIFICATIONS WITH THE FOLLOWING ADDITIONS. THE LIFTING LOOPS SHALL BE BURNED OFF AND RECESSES GROUTED PRIOR TO PLACING THE ELASTOMERIC BEARING PADS. SEE DETAIL FOR GROUTED RECESS FOR LIFTING LOOPS. GROUT SHALL BE NON-METALLIC AND NON-SHRINK ACCORDING TO THE STANDARD SPECIFICATIONS. PROPOSED DEVICES FOR LIFTING LOOPS SHALL BE DETAILED IN THE SHOP DRAWINGS.



PLAN

ELEVATION

**GROUTED RECESS FOR LIFTING LOOPS**

LIFTING LOOPS TO BE CUT 1/4" ABOVE BOTTOM OF RECESS.

**BAR TYPES**

**BILL OF MATERIAL FOR ONE PIECE WF1**

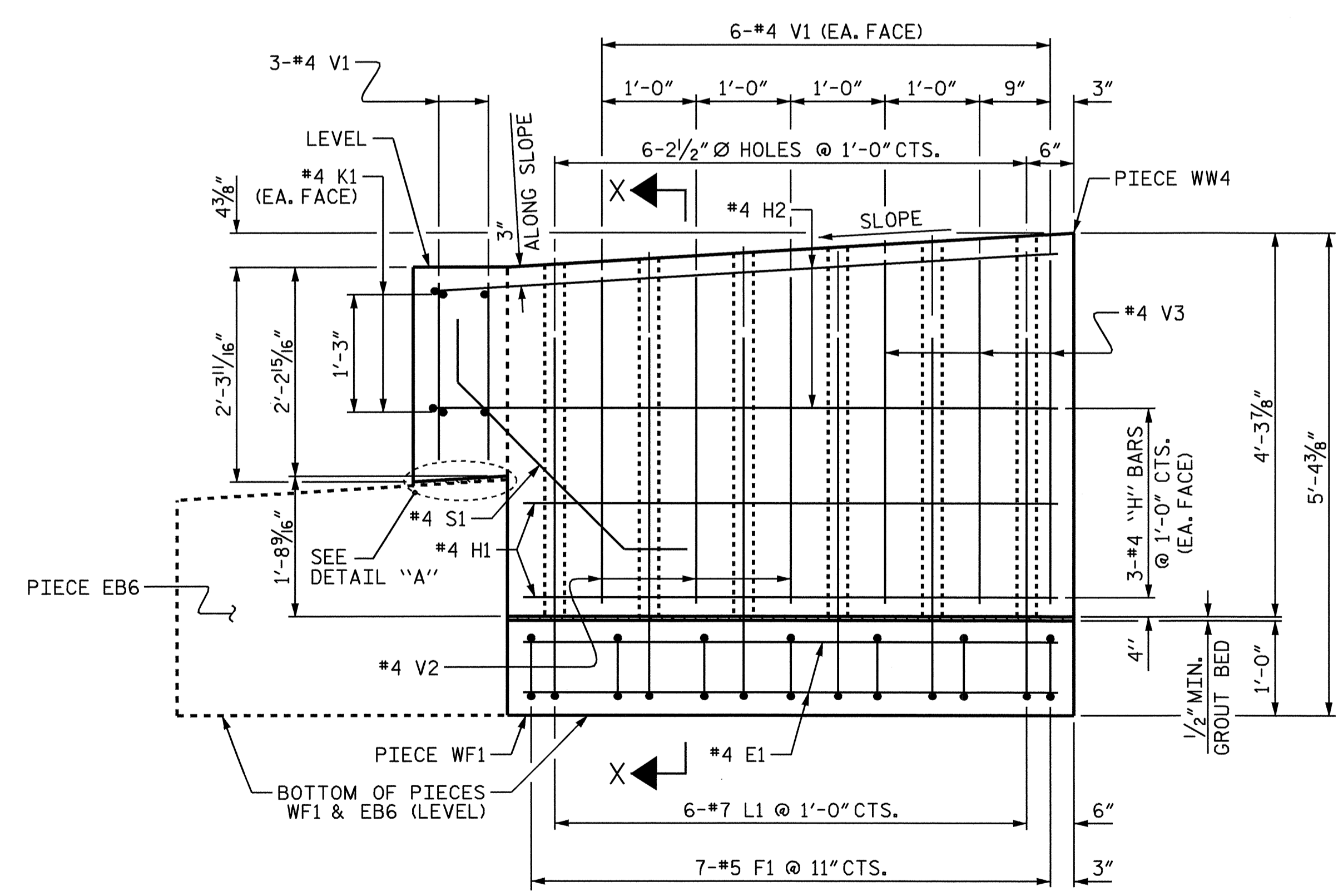
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
E1	5	#4	STR	5'-8"	19
F1	7	#5	1	3'-9"	27
L1	6	#7	2	4'-10"	59
REINFORCING STEEL				LBS.	105
CLASS AA CONCRETE				C.Y.	0.8

**PIECE WW4**

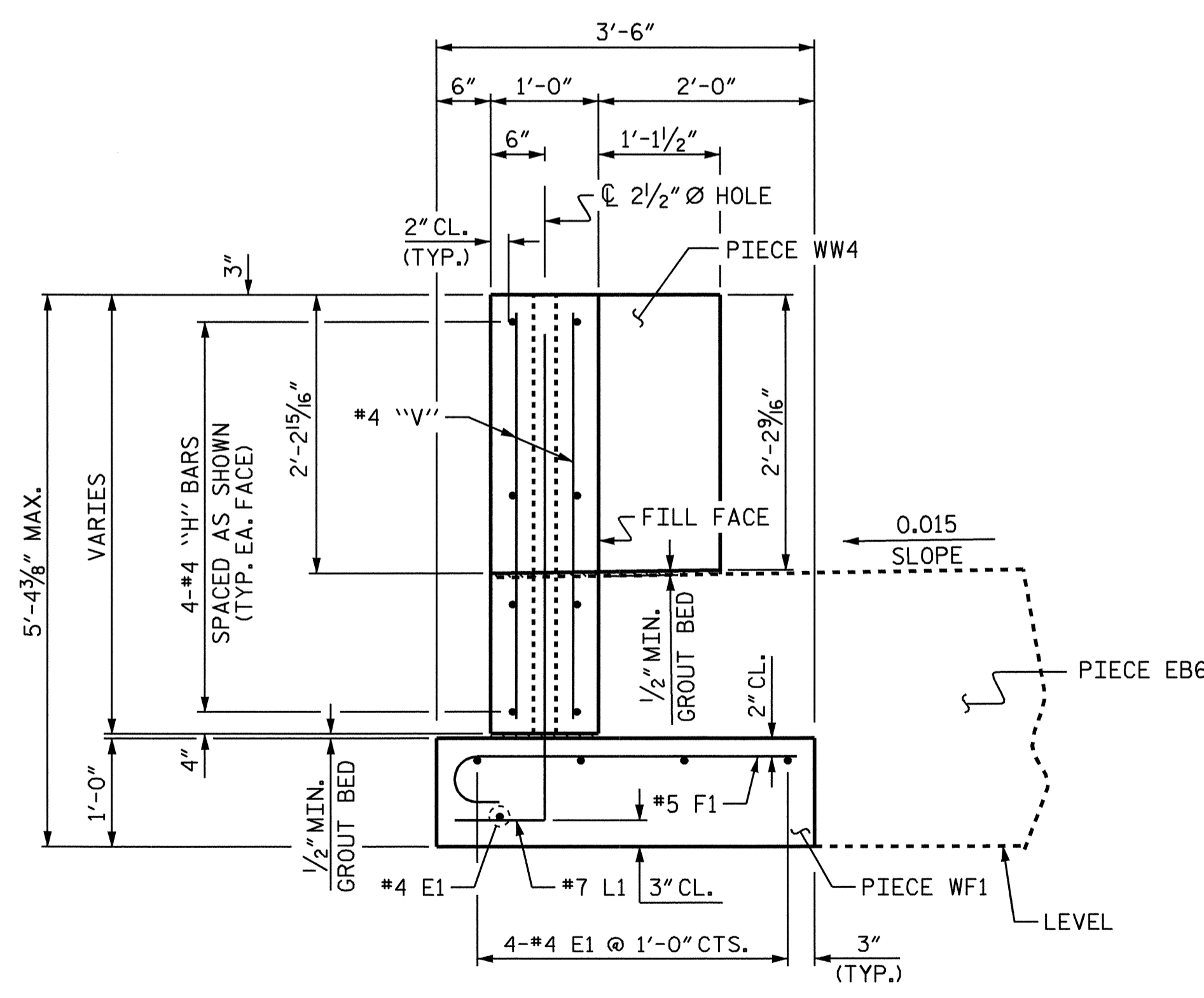
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	4	#4	STR	5'-8"	15
H2	4	#4	2	7'-3"	19
K1	4	#4	STR	1'-9"	5
S1	2	#4	3	3'-10"	5
V1	6	#4	STR	1'-10"	7
V2	6	#4	STR	3'-6"	14
V3	6	#4	STR	3'-10"	15
REINFORCING STEEL				LBS.	81
CLASS AA CONCRETE				C.Y.	1.1

ALL BAR DIMENSIONS ARE OUT TO OUT.

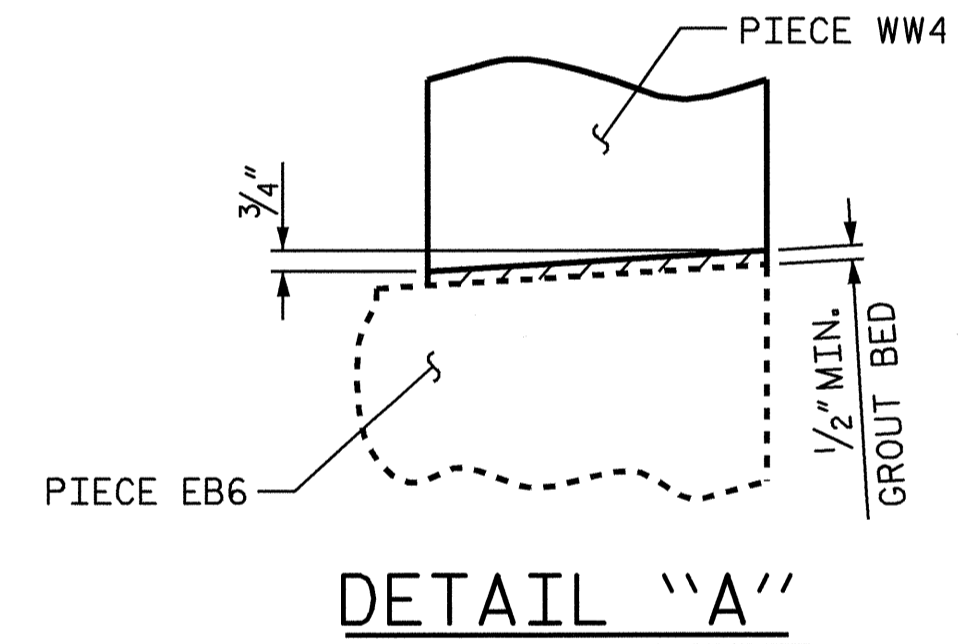
FOR "GENERAL PRECAST END BENT NOTES", SEE END BENT 1, SHEET 1 OF 6.



END ELEVATION



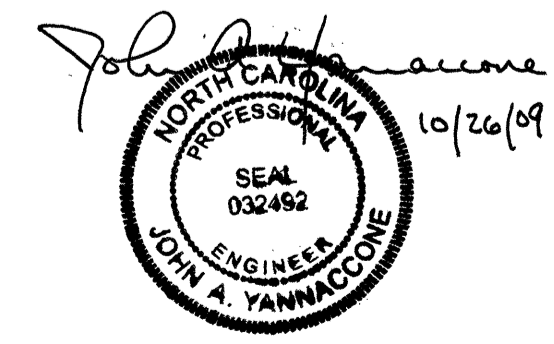
SECTION X-X



DETAIL "A"

PROJECT NO. B-4745  
FORSYTH COUNTY  
 STATION: 18+77.40 -L-  
 SHEET 6 OF 6

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT 2  
 PRECAST PIECES  
 WW4 & WF1

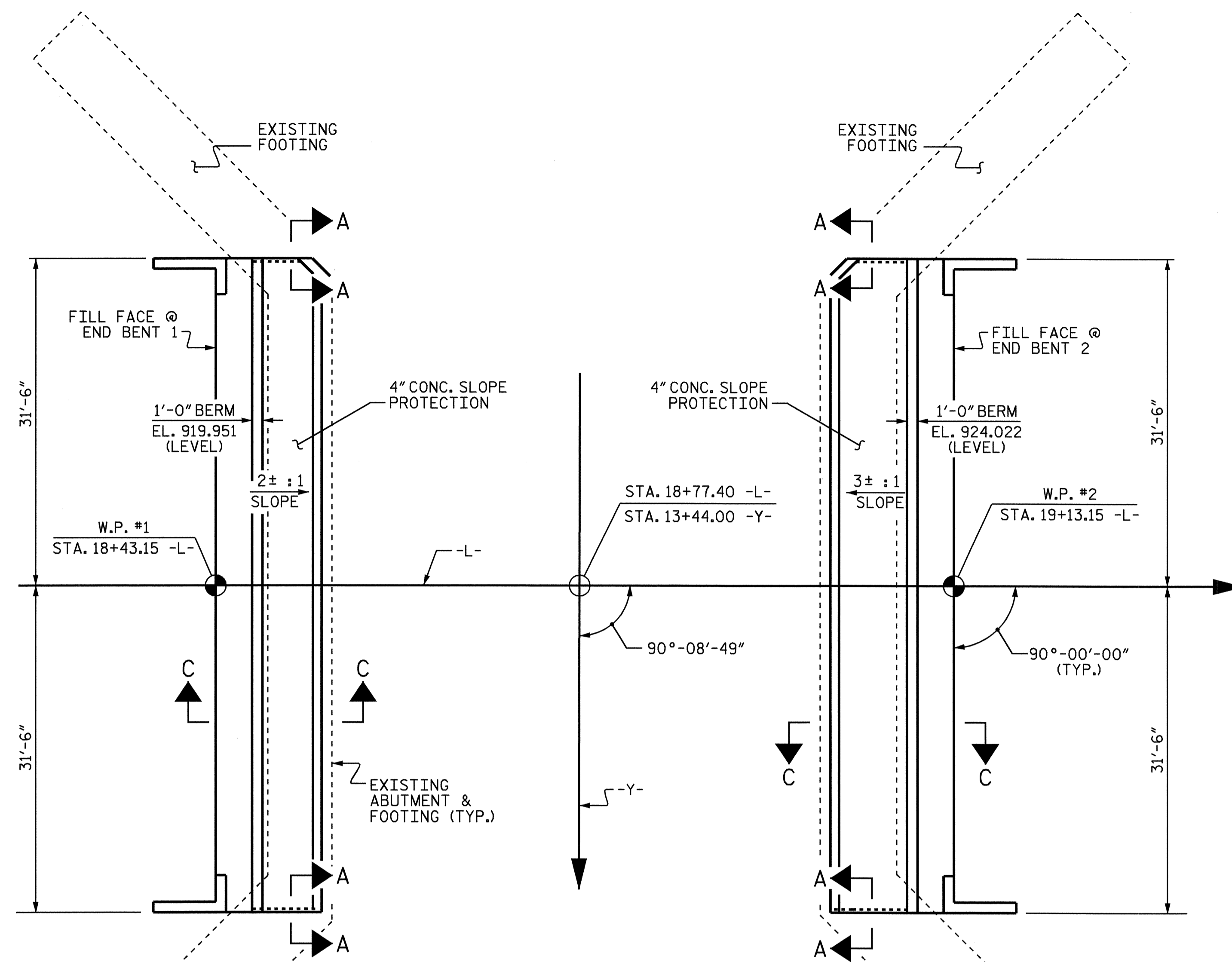


DRAWN BY : E.C. LOCKLEAR DATE : 6-23-09  
 CHECKED BY : J. A. YANNACCONE DATE : 7-31-09

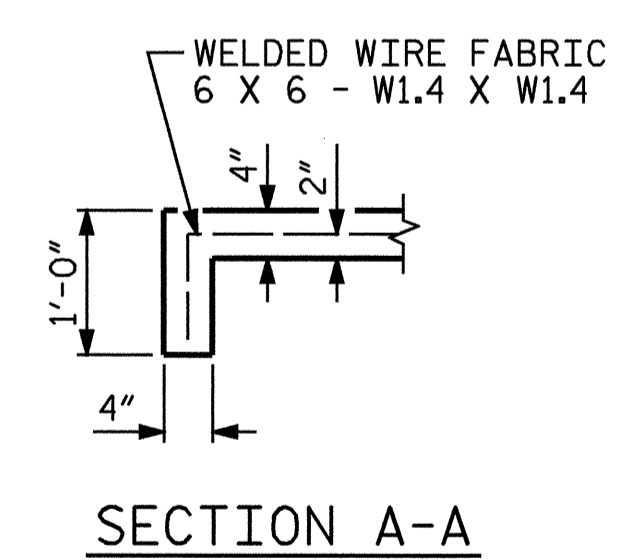
**REVISIONS**

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

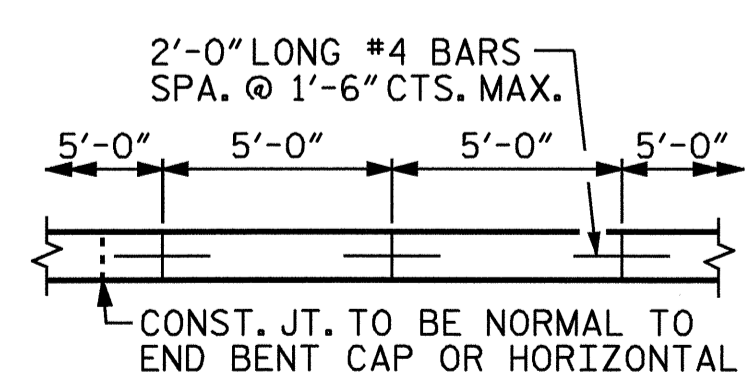
SHEET NO. S-37  
 TOTAL SHEETS 38



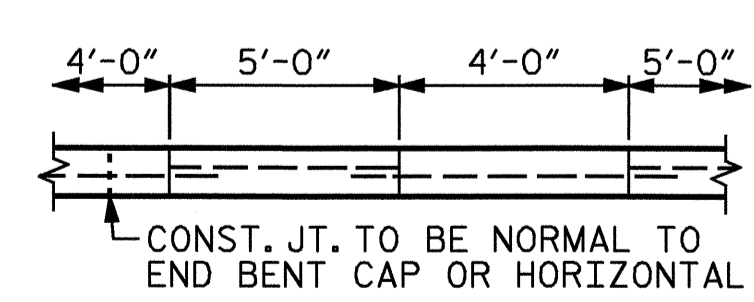
**PLAN**  
EXISTING ABUTMENTS AND CONCRETE COPINGS NOT SHOWN FOR CLARITY.



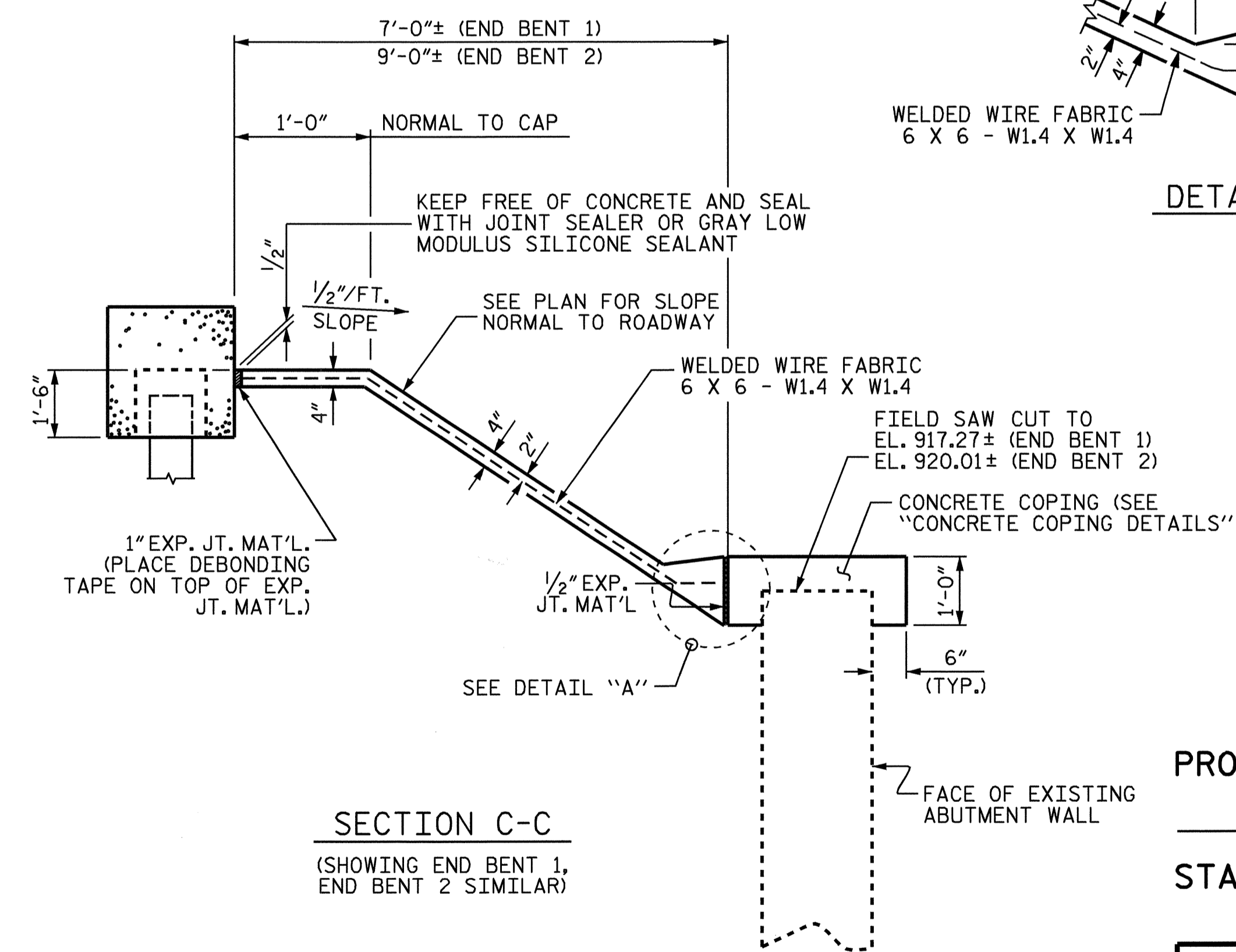
**SECTION A-A**



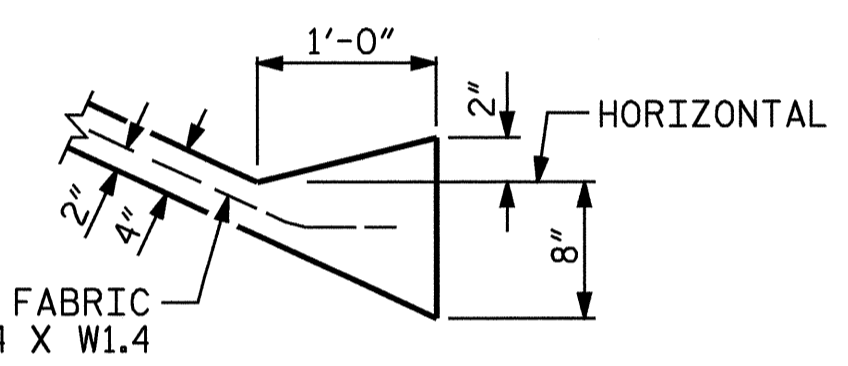
**POURING DETAIL**  
STRIP WIDTHS MAY VARY IN CURVED PORTION.



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



**SECTION C-C**  
(SHOWING END BENT 1, END BENT 2 SIMILAR)



**DETAIL "A"**

**GENERAL NOTES**

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. THE CONTRACTOR, AT HIS OPTION, MAY USE ALTERNATE "B" ONLY FOR HIGHWAY OVER HIGHWAY GRADE SEPARATIONS WITH 2:1 END BENT SLOPE IN RURAL, UNPOPULATED AREAS. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS. FOR BERM WIDTH, SEE GENERAL DRAWING.

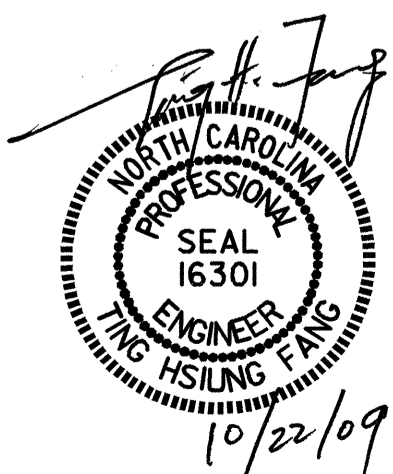
**ALTERNATE "A"**

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

BRIDGE @ STA. 18+77.40 -L-	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. LIN. FT.
END BENT 1	62.0	140.0
END BENT 2	74.0	155.0

\* QUANTITY SHOWN IS BASED ON 5' POURS.

PROJECT NO. B-4745  
FORSYTH COUNTY  
 STATION: 18+77.40 -L-



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 SLOPE PROTECTION  
 DETAILS  
 PRECAST OPTION

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-38	
1			3			TOTAL	38
2			4			SHEETS	38

DRAWN BY : E.C. LOCKLEAR DATE : 5-12-09  
 CHECKED BY : T. H. FANG DATE : 7-15-09

## 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