

09/08/09

TIP PROJECT: B-4762

CONTRACT: C203364

STRUCTURE

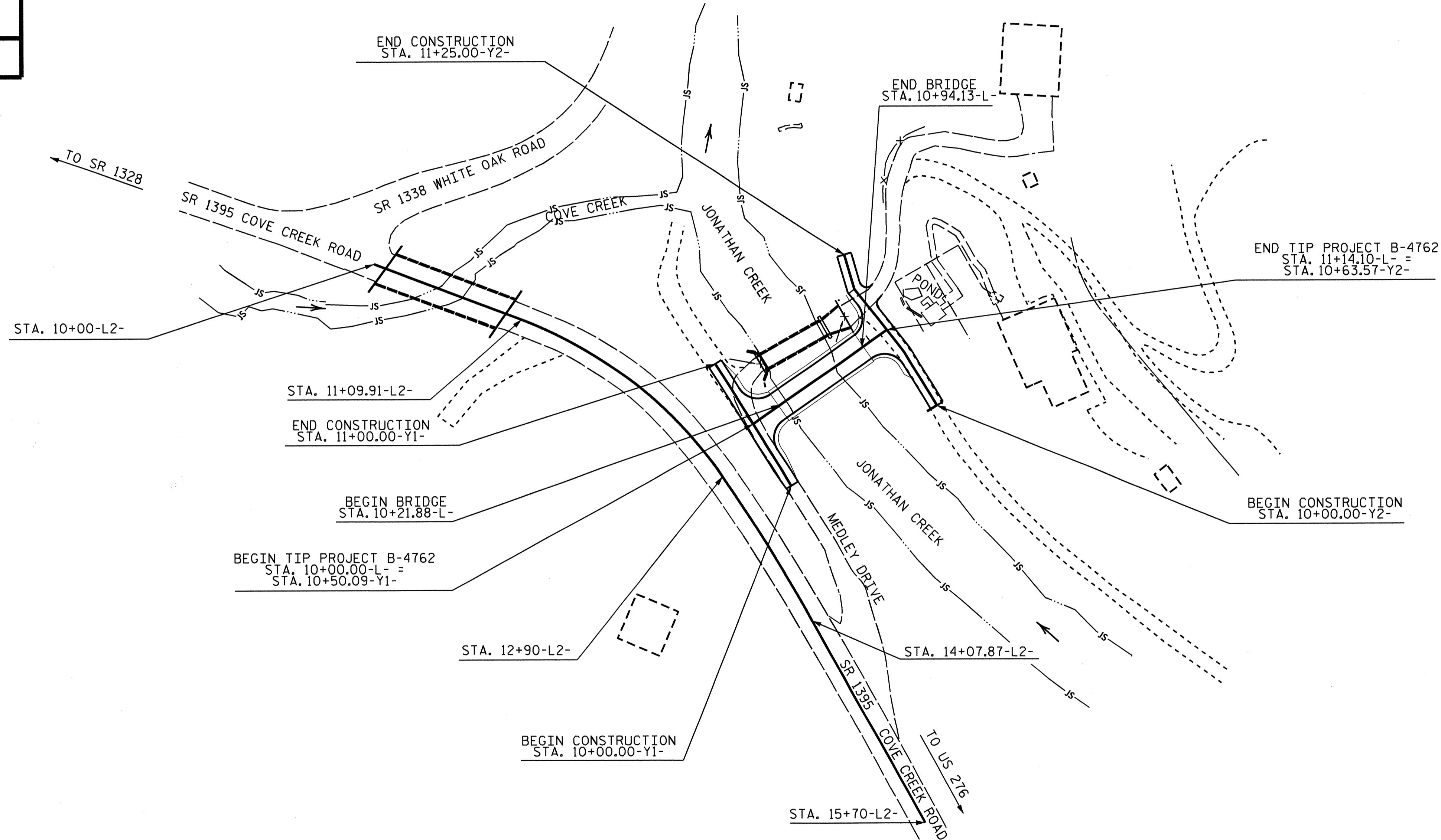
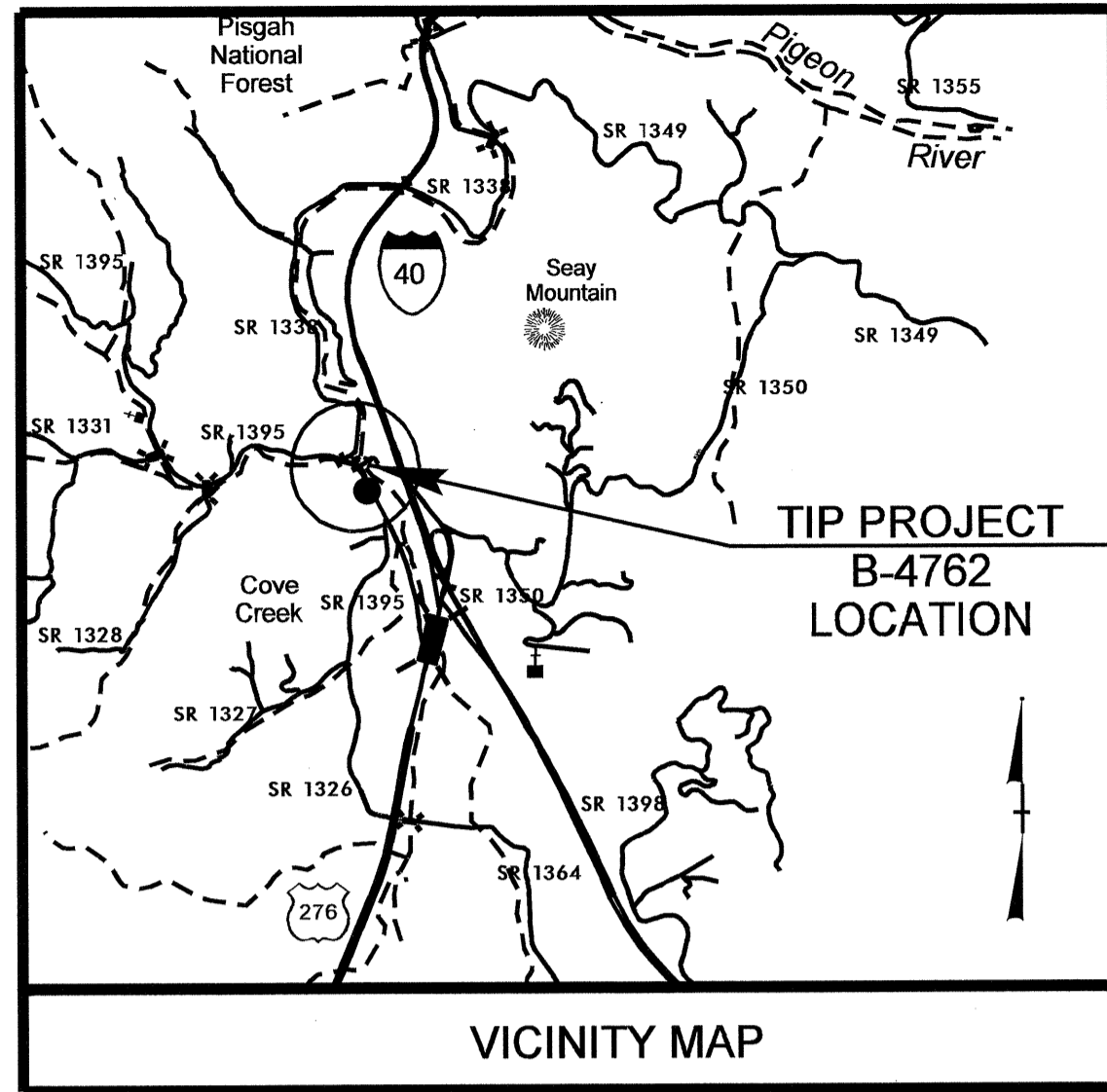
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HAYWOOD COUNTY

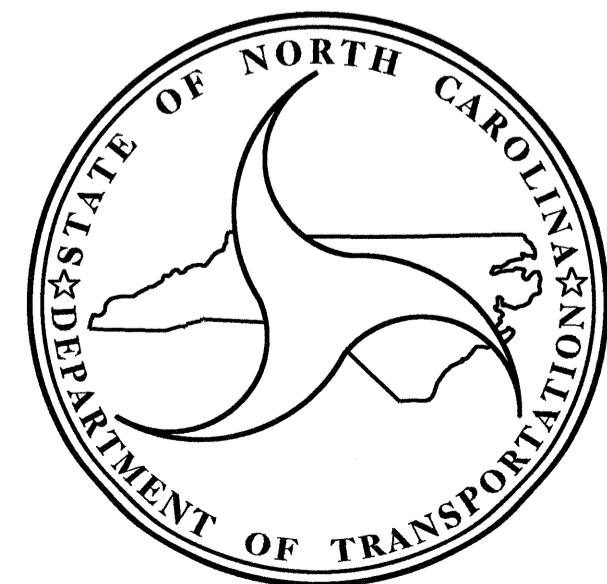
**LOCATION: REPLACE BRIDGE 72 OVER JONATHAN CREEK
ON SR 1407 (MEDLEY DRIVE).**

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE.

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4762		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
38534.1.1	BRZ-1407(5)	P.E.	
38534.2.1	BRZ-1407(5)	R/W, UTILITIES	
38534.3.FD1	BRZ-1407(5)	CONSTRUCTION	



NAD 83/95



DESIGN DATA

ADT 2014 = 100
 ADT 2034 = 100
 DHV = 11 %
 D = 85 %
 T = 8 % *
 V = 15 MPH
 * TTST = 1% DUAL 7%
 FUNC CLASS = LOCAL
 SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT No. B-4762 = 0.008 Miles.
 LENGTH STRUCTURE TIP PROJECT No. B-4762 = 0.014 Miles.

TOTAL LENGTH TIP PROJECT No. B-4762 = 0.022 Miles.

THIS PROJECT DESIGNED USING SUB-TIER DESIGN GUIDELINES.

Prepared in the Office of:
DIVISION OF HIGHWAYS
 1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

LETTING DATE:
 MARCH 18, 2014

QUANG NGUYEN, P.E.
 PROJECT ENGINEER

Wael S. Arafat, P.E.
 PROJECT DESIGN ENGINEER

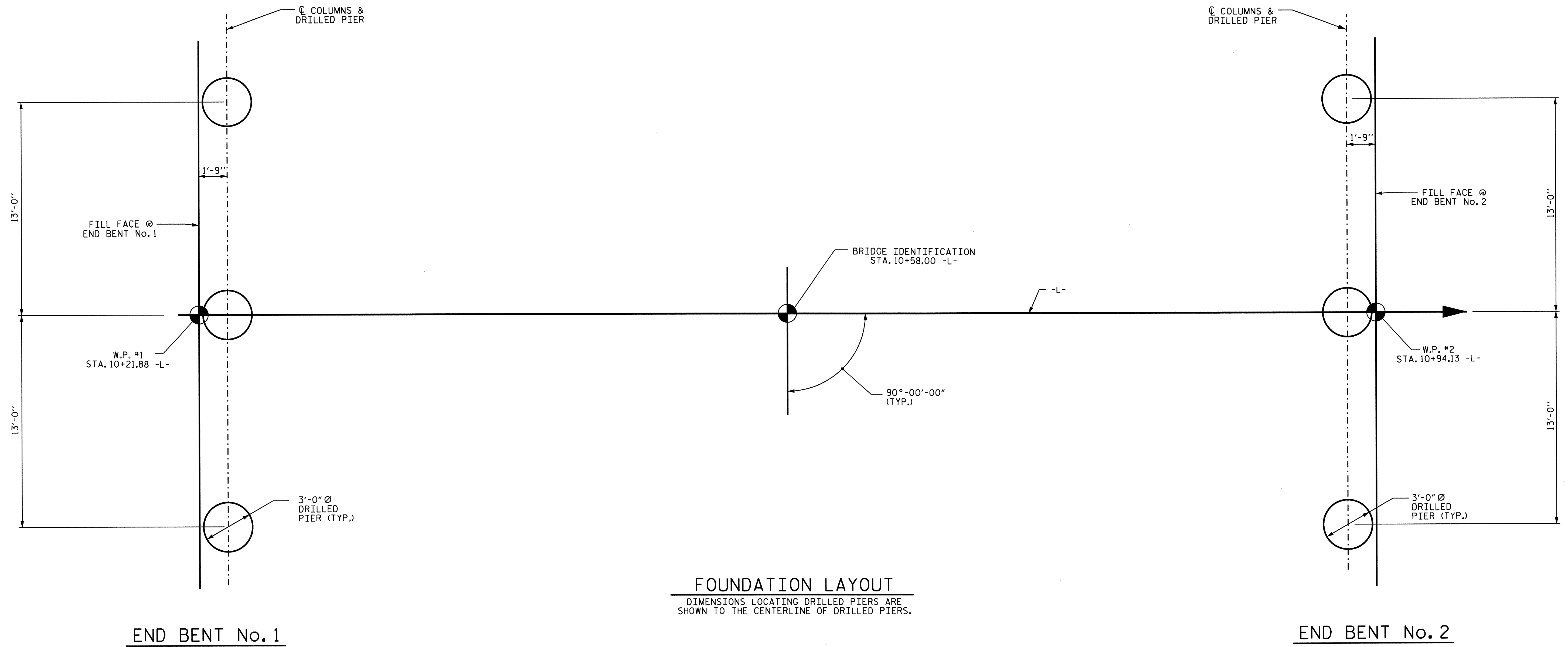
STRUCTURE MANAGEMENT UNIT
 1000 BIRCH RIDGE DR.
 RALEIGH, N.C. 27610

DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED ENGINEER DIVISION ADMINISTRATION DATE

07-FEB-2014 09:38
\$\$\$\$\$\$\$\$\$DGN\$\$\$\$\$\$\$\$\$
am/e



FOUNDATION LAYOUT
 DIMENSIONS LOCATING DRILLED PIERS ARE SHOWN TO THE CENTERLINE OF DRILLED PIERS.

NOTES

- FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
- DRILLED PIERS AT END BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 264.0 TONS PER PIER, CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30 TSF.
- INSTALL DRILLED PIERS AT END BENT NO.1 TO A TIP ELEVATION NO HIGHER THAN 2459.0 FT AND WITH THE REQUIRED TIP RESISTANCE AND PENETRATION OF AT LEAST 6 FT INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.
- THE SCOUR CRITICAL ELEVATION FOR END BENT NO.1 IS ELEVATION 2465.0 FT. THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
- DRILLED PIERS AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 263.0 TONS PER PIER, CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30 TSF.
- INSTALL DRILLED PIERS AT END BENT NO.2 TO A TIP ELEVATION NO HIGHER THAN 2461.0 FT AND WITH THE REQUIRED TIP RESISTANCE AND PENETRATION OF AT LEAST 6 FT INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.
- THE SCOUR CRITICAL ELEVATION FOR END BENT NO.2 IS ELEVATION 2467.0 FT. THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
- SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS, FOR SID INSPECTIONS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
- CSL TUBES ARE REQUIRED AND CSL MAY BE REQUIRED FOR THE DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING, FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
- SPT MAY BE REQUIRED FOR THE DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SPT TESTING, FOR SPT TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

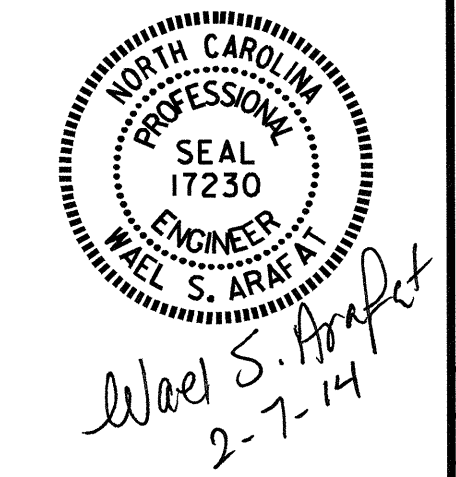
PROJECT NO. B-4762
HAYWOOD COUNTY
 STATION: 10+58.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

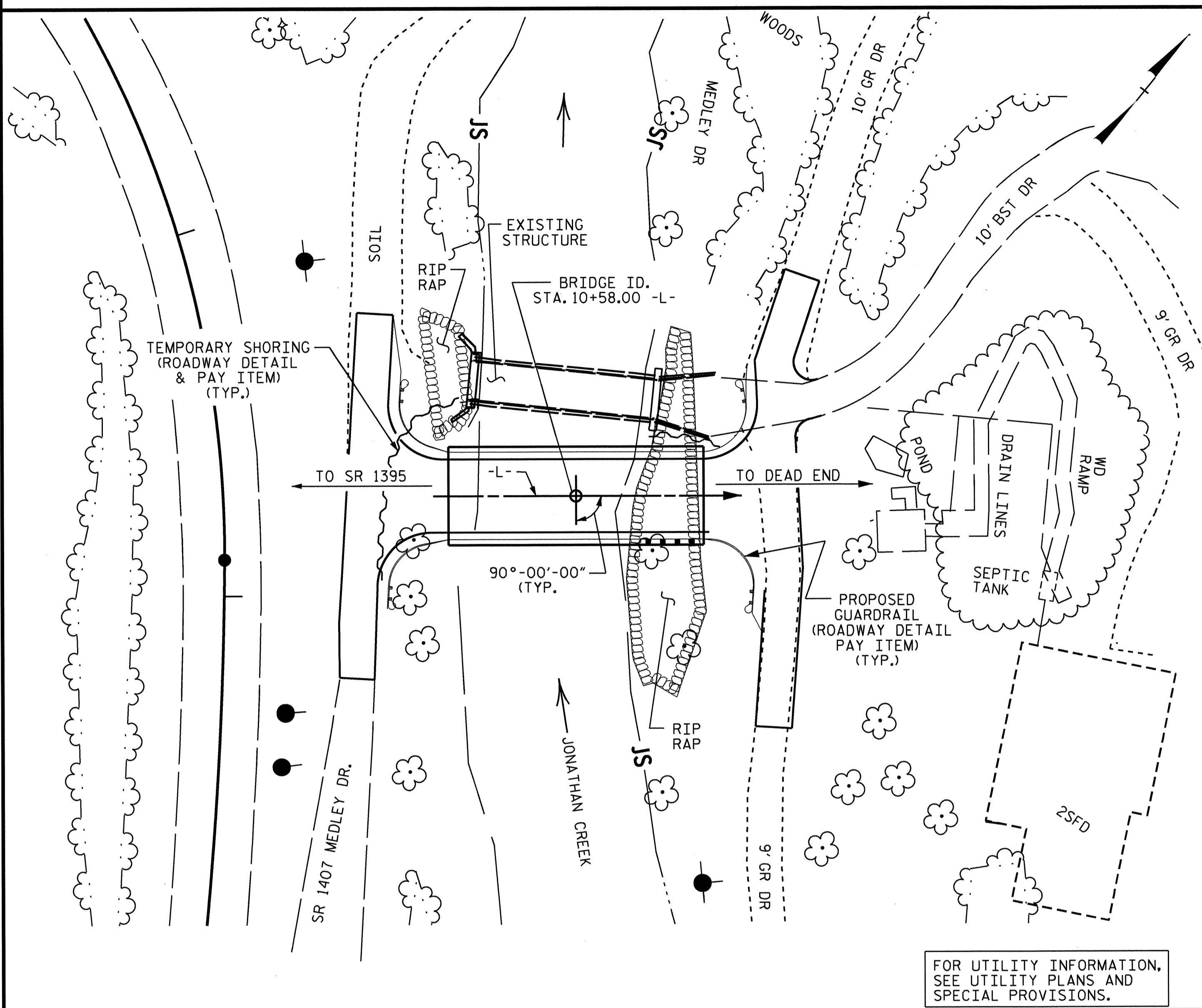
GENERAL DRAWING
 FOR
 BRIDGE ON SR 1407
 OVER JONATHAN CREEK
 BETWEEN SR 1338 AND SR 1326

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



DRAWN BY : V. X. NGUYEN DATE : 11-18-13
 CHECKED BY : T. BARBOUR DATE : 11-20-13
 DESIGN ENGINEER OF RECORD: H. KIM DATE : 12-13

BENCHMARK #3- 8" SPIKE SET IN BASE OF 16" MAPLE TREE, -BL- STA. 14+13.86, 107.4 LEFT, ELEV. 2471.74, NAVD 88.



LOCATION SKETCH

NOTES

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 10+58.00 -L-

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 10+58.00 -L-."

TEMPORARY SHORING WILL BE REQUIRED IN THE AREA INDICATED IN THE PLAN VIEW.

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

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE DESCRIBED BELOW SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURE INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

EXISTING SUPERSTRUCTURE:
SPAN A: 51'-7" CONSISTING OF LOW STEEL TRUSS
SPAN B: 16'-0" CONSISTING OF 9 LINES OF 6 X 12 TIMBER JOIST AT VARIABLE SPACING.
CLEAR ROADWAY WIDTH: 11'-0" WITH 4 X 8 TIMBER FLOOR WITH AN ASPHALT OVERLAY.

EXISTING SUBSTRUCTURE:
END BENT No. 1 : ABUTMENT
BENT No. 1 : REINFORCED CONCRETE BENT
END BENT No. 2 : TIMBER CAP WITH TIMBER P. & S.

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

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

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 55 FT. LEFT @ END BENT No. 1 & 45 FT. LEFT & 60 FT. RIGHT @ END BENT No. 2 OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

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

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

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. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

FOR "CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS", SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

HYDRAULIC DATA

DESIGN DISCHARGE	= 4,340 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 25 YRS.
DESIGN HIGH WATER ELEVATION	= 2477.5
DRAINAGE AREA	= 56.9 SQ. MI.
BASE DISCHARGE (Q100)	= 5,770 C.F.S.
BASE HIGH WATER ELEVATION	= 2478.9

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 7,800 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	= 500 YRS.+
OVERTOPPING FLOOD ELEVATION	= 2480.3

TOTAL BILL OF MATERIAL

	CONSTRUCTION MAINTENANCE & REMOVAL OF TEMP. ACCESS	REMOVAL OF EXISTING STRUCTURE	FOUNDATION EXCAVATION	3'-0" Ø DRILLED PIER NOT IN SOIL	S I D INSPECTION	SPT TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEX-TILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS
	LUMP SUM	LUMP SUM	CU. YDS.	LIN.FT.	EACH	EACH	EACH	LUMP SUM	CU. YDS.	LBS.	LBS.	LIN.FT.	TONS	SO.YDS.	LUMP SUM	NO. LIN.FT.
SUPERSTRUCTURE												140.25			LUMP SUM	9 630.0
END BENT NO. 1			41	21.0					43.1	8031	834		55	60		
END BENT NO. 2			51	21.0				LUMP SUM	35.5	7247	714		165	180		
TOTAL	LUMP SUM	LUMP SUM	92	42.0	1	1	1	LUMP SUM	78.6	15278	1548	140.25	220	240	LUMP SUM	9 630.0

DRAWN BY : V. X. NGUYEN DATE : 11-13-13
CHECKED BY : T. BARBOUR DATE : 11-18-13

07-FEB-2014 11:22
R:\Structures\Plans\FINAL PLANS\B-4762.SD.GD.dgn
omlee

PROJECT NO. B-4762
HAYWOOD COUNTY
STATION: 10+58.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
FOR
BRIDGE ON SR 1407
OVER JONATHAN CREEK
BETWEEN SR 1338 AND SR 1326



Noel S. Arrieta
2-7-14

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

LOAD AND RESISTANCE FACTOR RATING (LRFD) 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								
						LIVELOAD FACTORS	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)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Invr)	N/A	1	1.006	--	1.75	0.273	1.03	70'	EL	34.5	0.507	1.32	70'	EL	6.9	0.80	0.273	1.01	70'	EL	34.5		
	HL-93(0pr)	N/A	--	1.341	--	1.35	0.273	1.34	70'	EL	34.5	0.507	1.72	70'	EL	6.9	N/A	--	--	--	--	--		
	HS-20(Invr)	36.000	2	1.306	47.02	1.75	0.273	1.34	70'	EL	34.5	0.507	1.65	70'	EL	6.9	0.80	0.273	1.31	70'	EL	34.5		
	HS-20(0pr)	36.000	--	1.74	62.64	1.35	0.273	1.74	70'	EL	34.5	0.507	2.14	70'	EL	6.9	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.917	39.379	1.4	0.273	3.75	70'	EL	34.5	0.507	4.87	70'	EL	6.9	0.80	0.273	2.92	70'	EL	34.5	
		SNGARBS2	20.000	--	2.187	43.741	1.4	0.273	2.81	70'	EL	34.5	0.507	3.47	70'	EL	6.9	0.80	0.273	2.19	70'	EL	34.5	
		SNAGRIS2	22.000	--	2.077	45.69	1.4	0.273	2.67	70'	EL	34.5	0.507	3.23	70'	EL	6.9	0.80	0.273	2.08	70'	EL	34.5	
		SNCOTTS3	27.250	--	1.452	39.565	1.4	0.273	1.87	70'	EL	34.5	0.507	2.43	70'	EL	6.9	0.80	0.273	1.45	70'	EL	34.5	
		SNAGGRS4	34.925	--	1.218	42.554	1.4	0.273	1.57	70'	EL	34.5	0.507	2.03	70'	EL	6.9	0.80	0.273	1.22	70'	EL	34.5	
		SNS5A	35.550	--	1.191	42.346	1.4	0.273	1.53	70'	EL	34.5	0.507	2.06	70'	EL	6.9	0.80	0.273	1.19	70'	EL	34.5	
		SNS6A	39.950	--	1.095	43.747	1.4	0.273	1.41	70'	EL	34.5	0.507	1.88	70'	EL	6.9	0.80	0.273	1.10	70'	EL	34.5	
	TTST	SNS7B	42.000	--	1.043	43.801	1.4	0.273	1.34	70'	EL	34.5	0.507	1.85	70'	EL	6.9	0.80	0.273	1.04	70'	EL	34.5	
		TNAGRIT3	33.000	--	1.336	44.087	1.4	0.273	1.72	70'	EL	34.5	0.507	2.23	70'	EL	6.9	0.80	0.273	1.34	70'	EL	34.5	
		TNT4A	33.075	--	1.342	44.401	1.4	0.273	1.72	70'	EL	34.5	0.507	2.17	70'	EL	6.9	0.80	0.273	1.34	70'	EL	34.5	
		TNT6A	41.600	--	1.1	45.746	1.4	0.273	1.41	70'	EL	34.5	0.507	1.98	70'	EL	6.9	0.80	0.273	1.10	70'	EL	34.5	
		TNT7A	42.000	--	1.106	46.462	1.4	0.273	1.42	70'	EL	34.5	0.507	1.94	70'	EL	6.9	0.80	0.273	1.11	70'	EL	34.5	
		TNT7B	42.000	--	1.147	48.18	1.4	0.273	1.47	70'	EL	34.5	0.507	1.8	70'	EL	6.9	0.80	0.273	1.15	70'	EL	34.5	
		TNAGRIT4	43.000	--	1.089	46.838	1.4	0.273	1.4	70'	EL	34.5	0.507	1.74	70'	EL	6.9	0.80	0.273	1.09	70'	EL	34.5	
TNAGT5A	45.000	--	1.026	46.175	1.4	0.273	1.32	70'	EL	34.5	0.507	1.74	70'	EL	6.9	0.80	0.273	1.03	70'	EL	34.5			
TNAGT5B	45.000	3	1.013	45.579	1.4	0.273	1.3	70'	EL	34.5	0.507	1.66	70'	EL	6.9	0.80	0.273	1.01	70'	EL	34.5			

LOAD FACTORS:

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

NOTES:

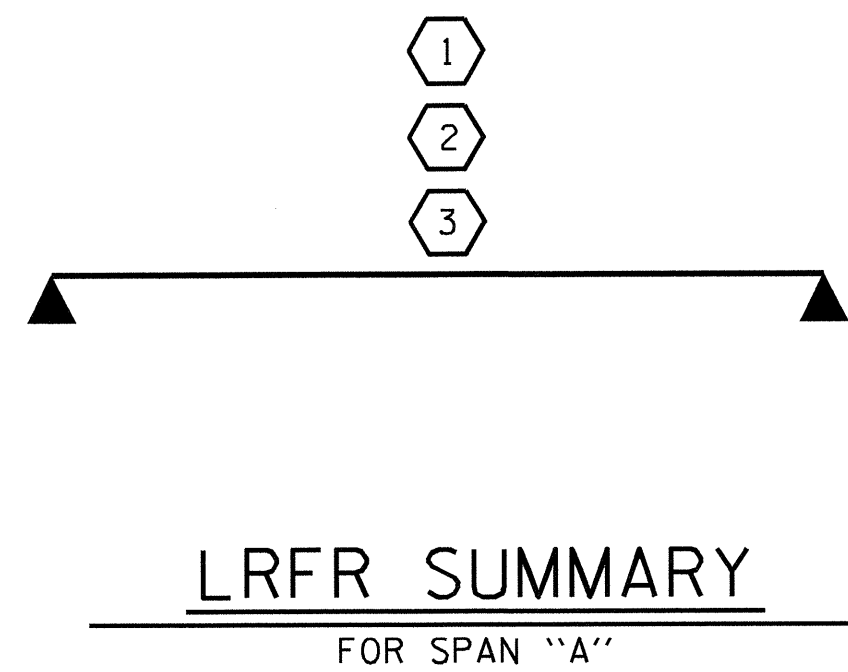
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

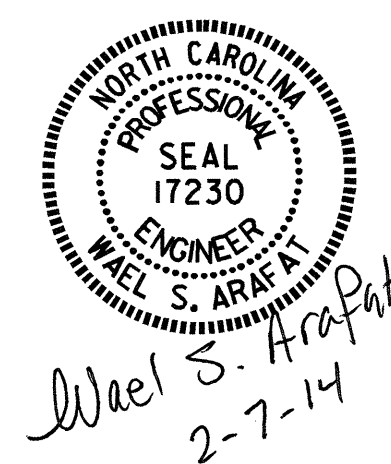
COMMENTS:

- 1.
- 2.
- 3.
- 4.

#	CONTROLLING LOAD RATING
1	DESIGN LOAD RATING (HL-93)
2	DESIGN LOAD RATING (HS-20)
3	LEGAL LOAD RATING **
** SEE CHART FOR VEHICLE TYPE	
GIRDER LOCATION	
I - INTERIOR GIRDER EL - EXTERIOR LEFT GIRDER ER - EXTERIOR RIGHT GIRDER	



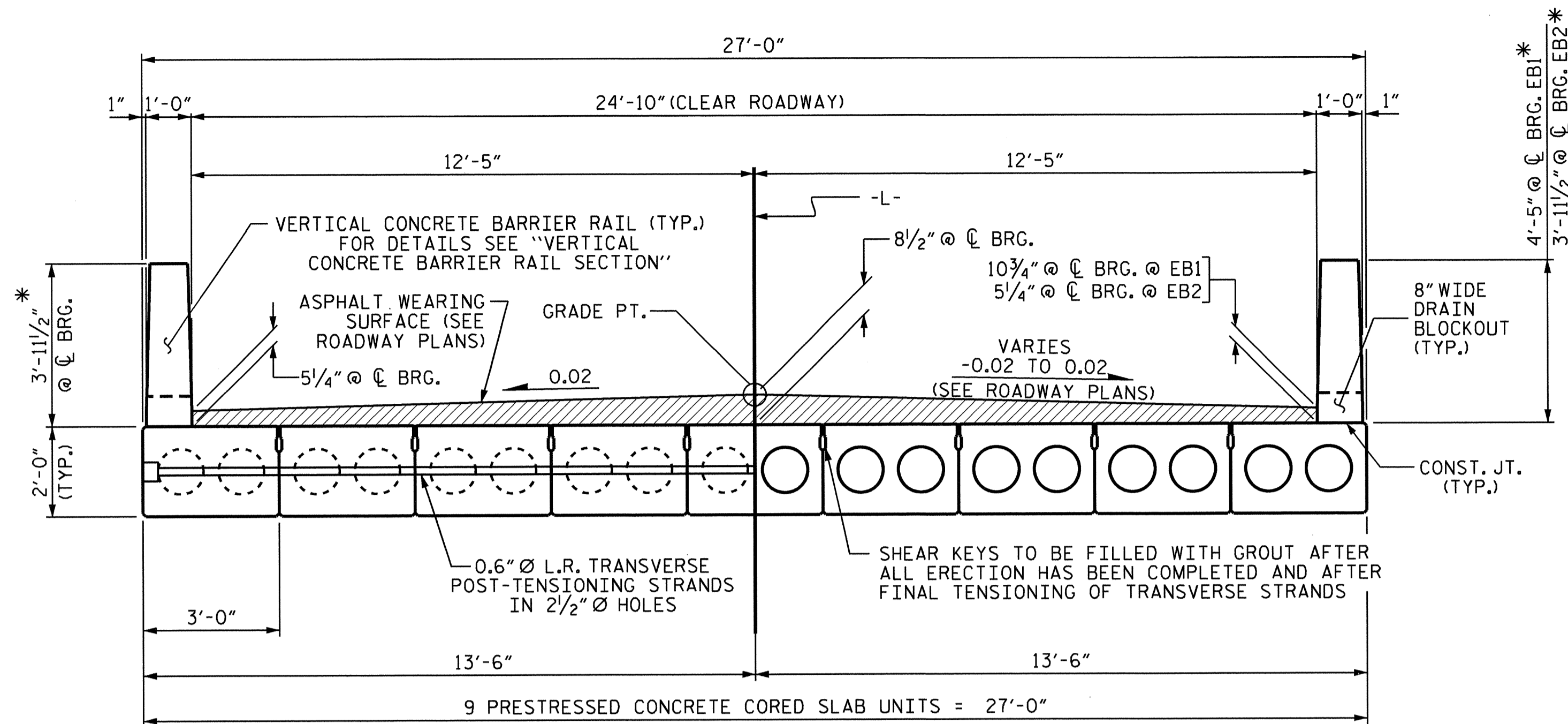
PROJECT NO. B-4762
HAYWOOD COUNTY
 STATION: 10+58.00 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 LRFR SUMMARY FOR
 70' CORED SLAB UNIT
 90° SKEW
 (NON-INTERSTATE TRAFFIC)

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

ASSEMBLED BY : V.X. NGUYEN DATE : 11-12-13
 CHECKED BY : T. BARBOUR DATE : 11-18-13
 DRAWN BY : CVC 6/10
 CHECKED BY : DNS 6/10

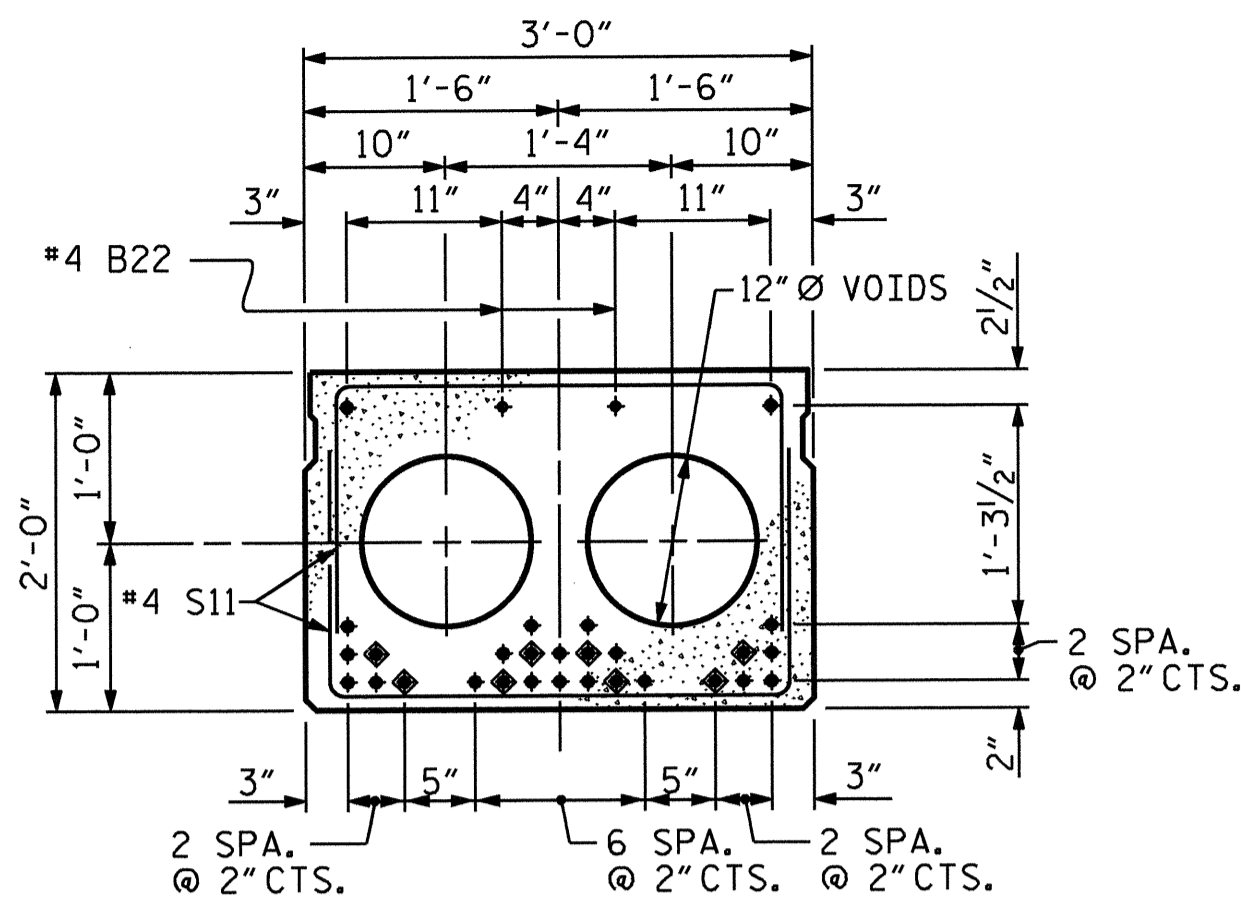


HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

TYPICAL SECTION

HALF SECTION
THROUGH VOIDS

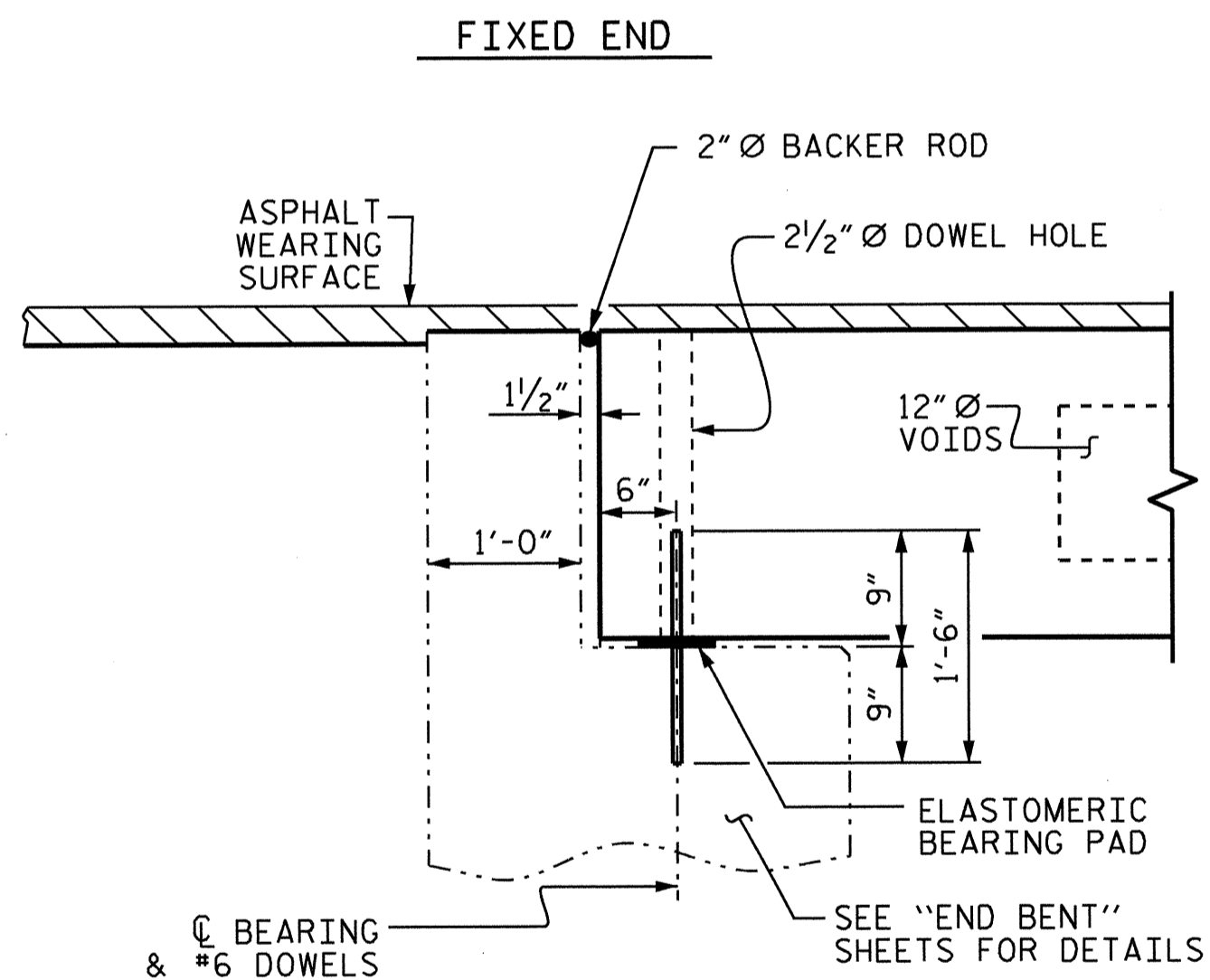
* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL, SHEET 3 OF 3.



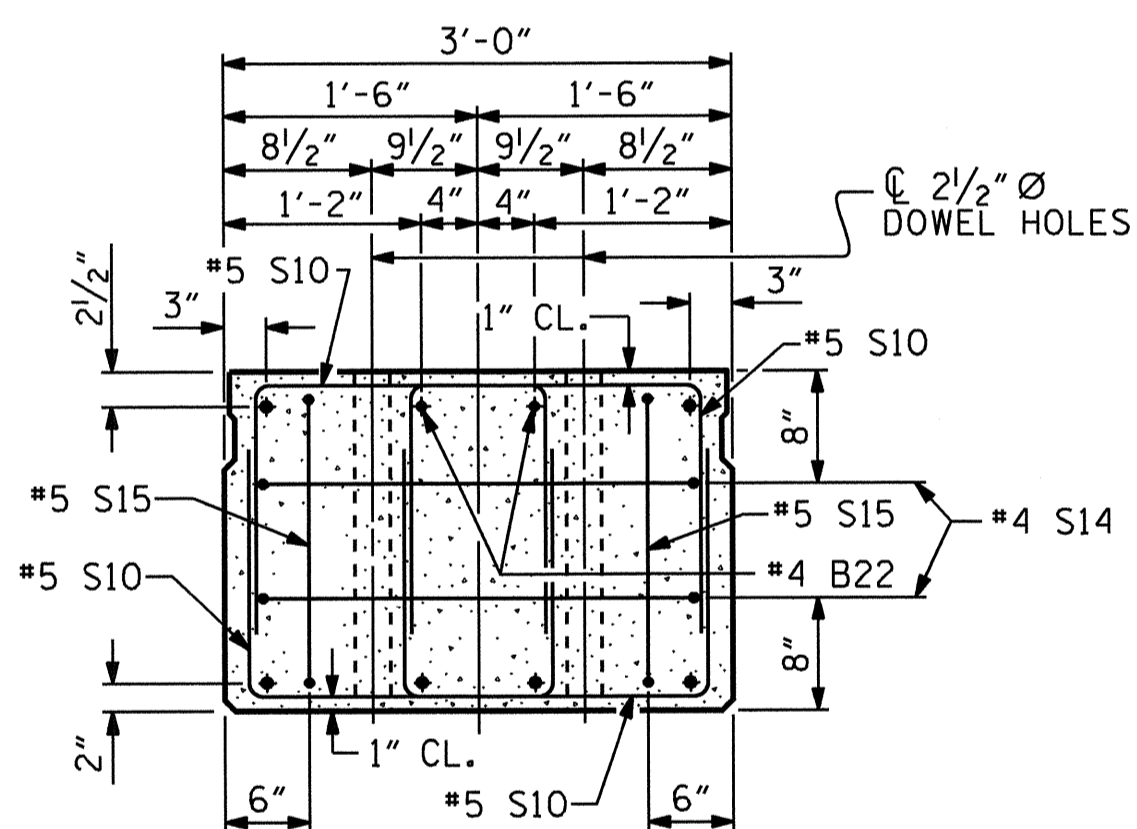
INTERIOR SLAB SECTION
(28 STRANDS REQUIRED)
0.6" Ø LOW
RELAXATION STRAND LAYOUT

◆ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



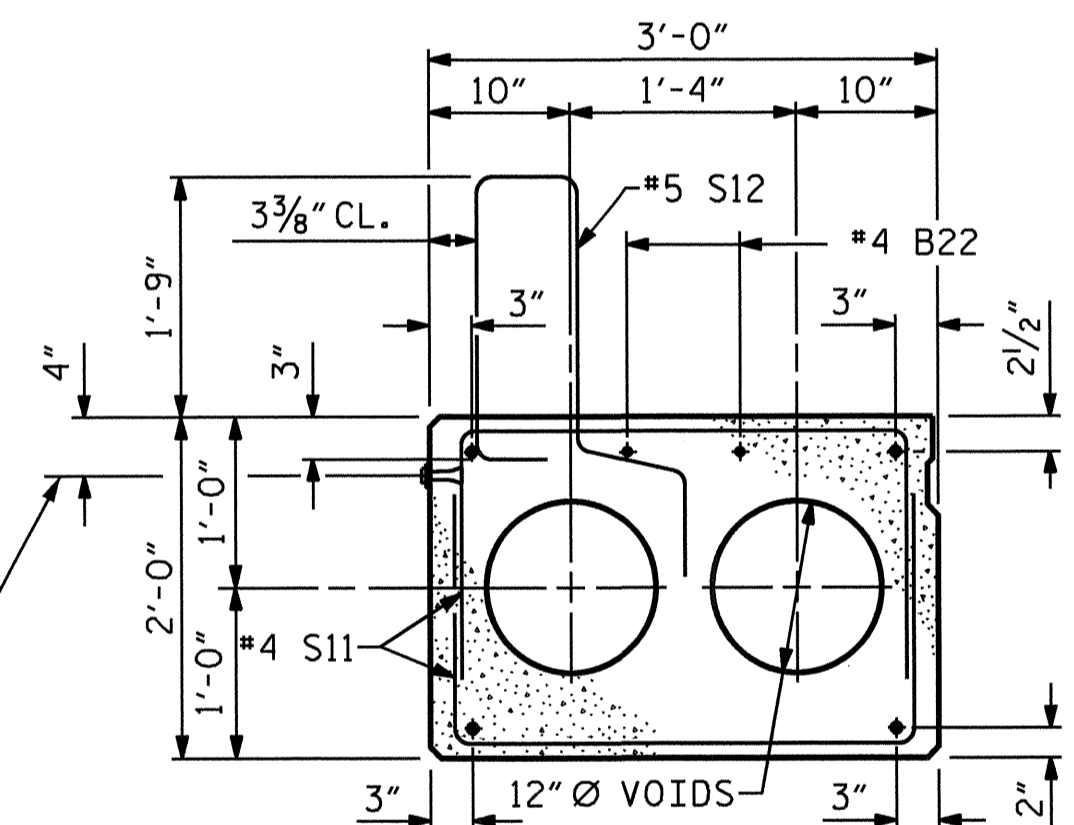
SECTION AT END BENT



END ELEVATION

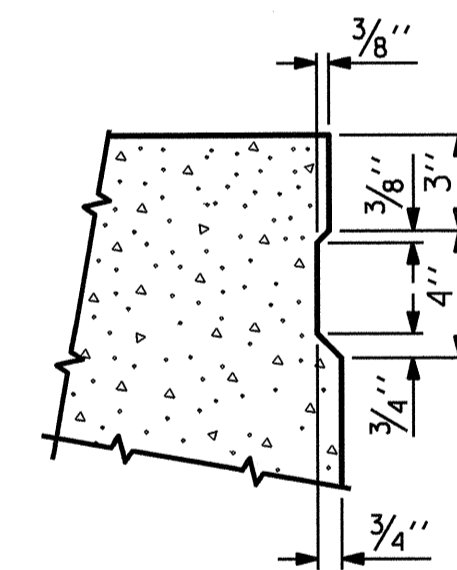
SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.

☐ 3/4" Ø BOLTS WITH WASHERS IN APPROVED CONCRETE INSERTS CAST IN EXTERIOR CORED SLAB UNITS @ 10'-0" CTS. (SEE NOTES, SHEET 3 OF 3)



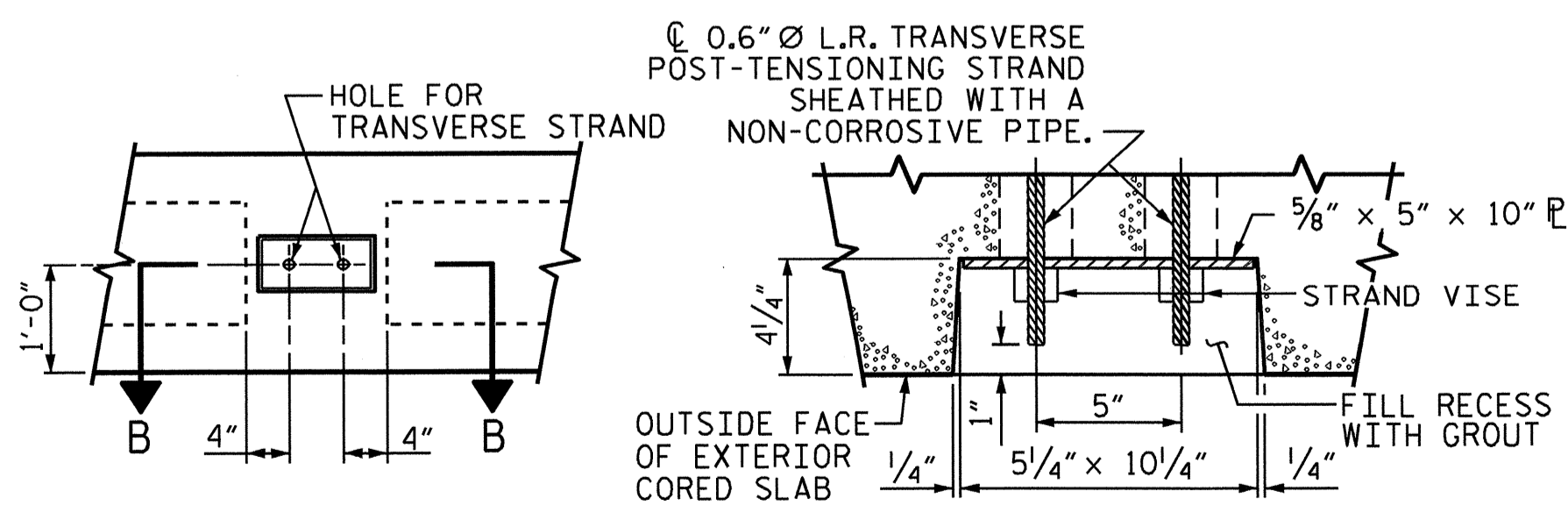
EXTERIOR SLAB SECTION

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



SHEAR KEY DETAIL

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



ELEVATION VIEW

SECTION B-B

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

PROJECT NO. B-4762
HAYWOOD COUNTY
STATION: 10+58.00 -L-

SHEET 1 OF 3

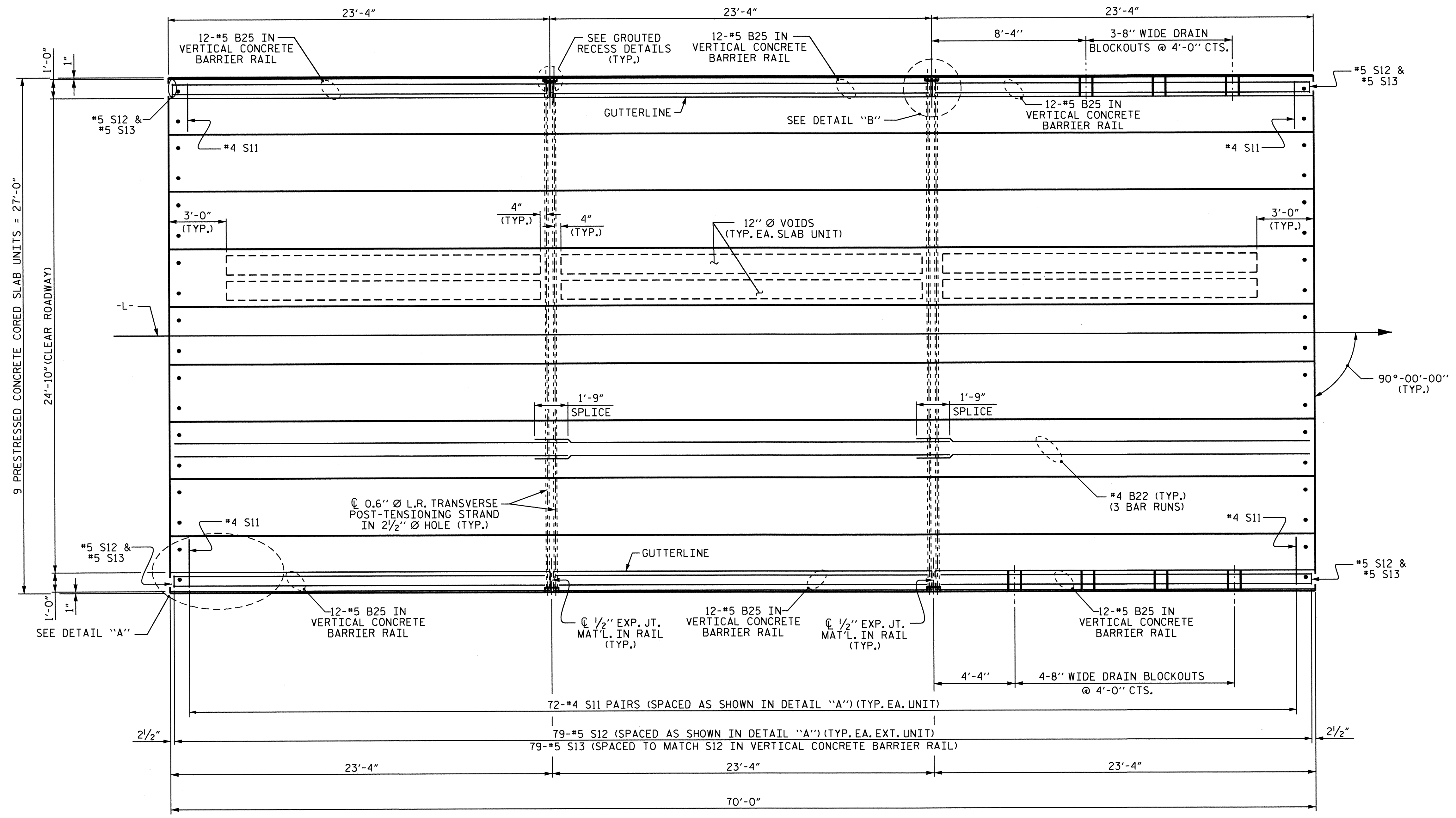
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 2'-0"
PRESTRESSED CONCRETE
CORED SLAB UNIT

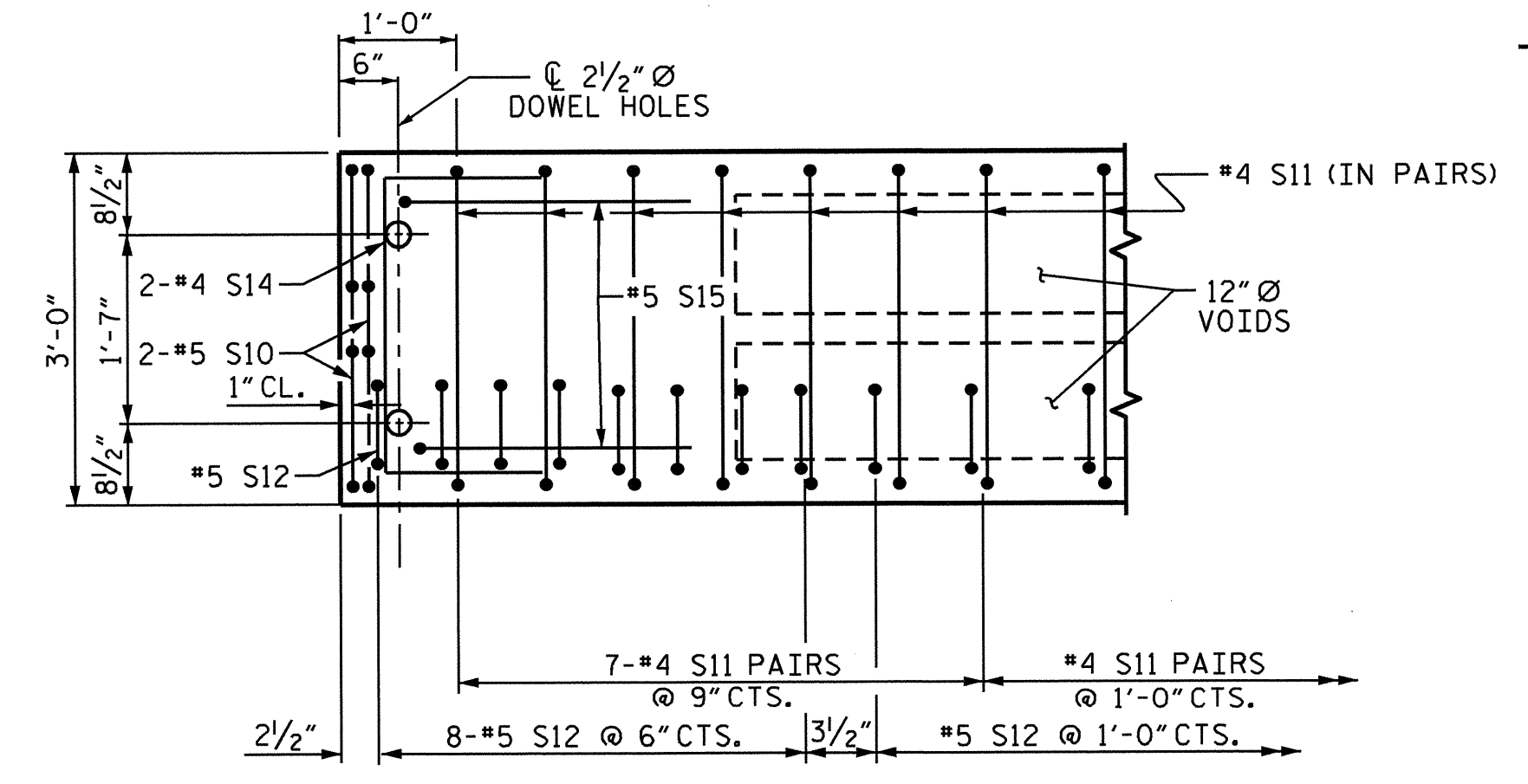
NORTH CAROLINA
PROFESSIONAL
SEAL
17230
ENGINEER
Wael S. Arif
2-7-14

ASSEMBLED BY : V.X. NGUYEN DATE : 11-12-13
CHECKED BY : T. BARBOUR DATE : 11-18-13
DRAWN BY : MAA 6/10 REV. 12/11 MAA/AAC
CHECKED BY : MKT 7/10

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			19

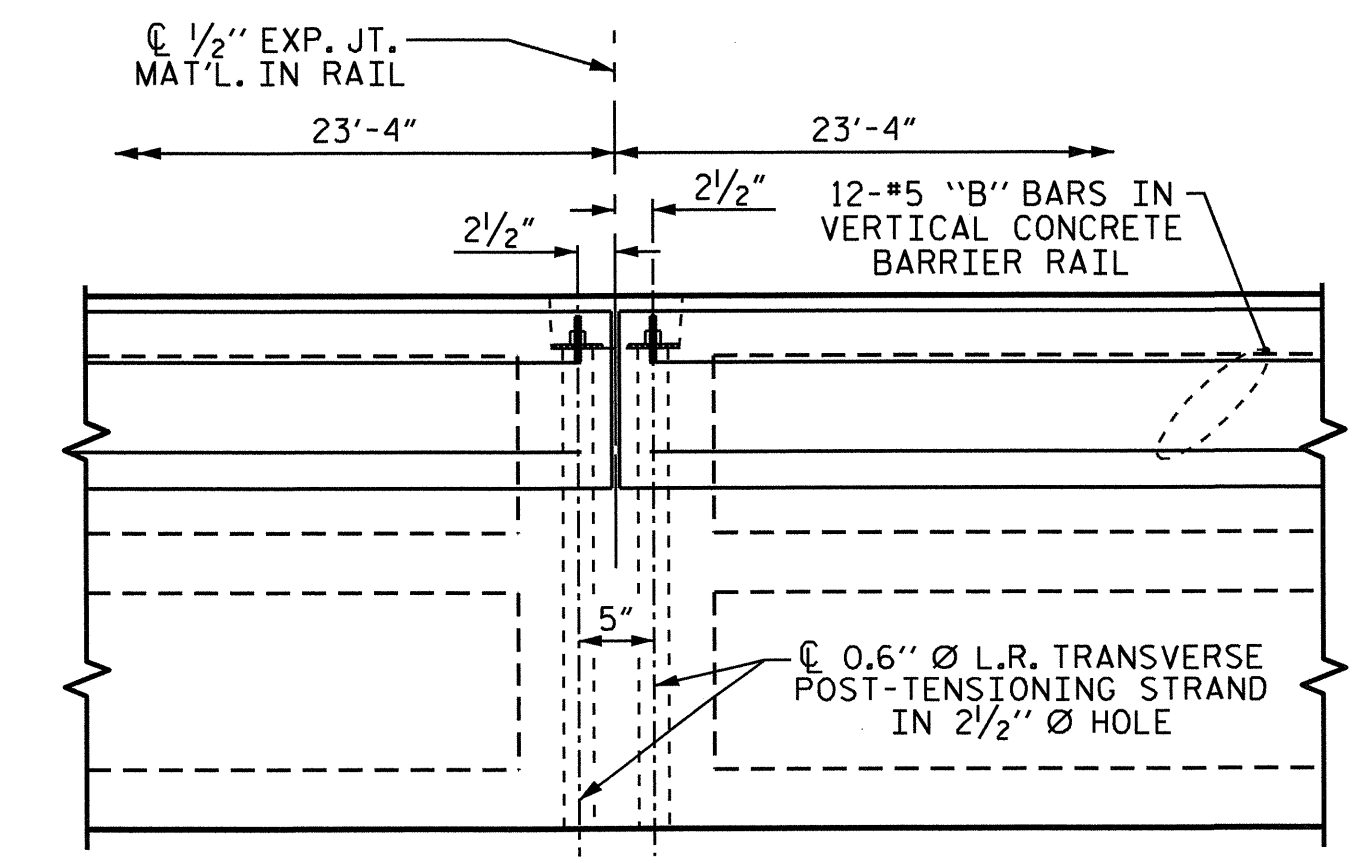


PLAN OF UNIT



DETAIL "A"

NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S12 BARS.



DETAIL "B"

PROJECT NO. B-4762
 HAYWOOD COUNTY
 STATION: 10+58.00 -L-
 SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
PLAN OF 70' UNIT 24'-10" CLEAR ROADWAY 90° SKEW					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-6
TOTAL SHEETS					19

NORTH CAROLINA
 PROFESSIONAL
 SEAL
 17230
 ENGINEER
 Wael S. Arafat
 2-7-14

ASSEMBLED BY : V.X. NGUYEN DATE : 11-12-13
 CHECKED BY : T. BARBOUR DATE : 11-18-13
 DRAWN BY : MAA 6/10 REV. 12/5/11 MAA/AAC
 CHECKED BY : MKT 7/10

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	
	3'-0" x 2'-0"
70' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	4 5/16" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1 3/16" ↓
FINAL CAMBER	3 1/2" ↑

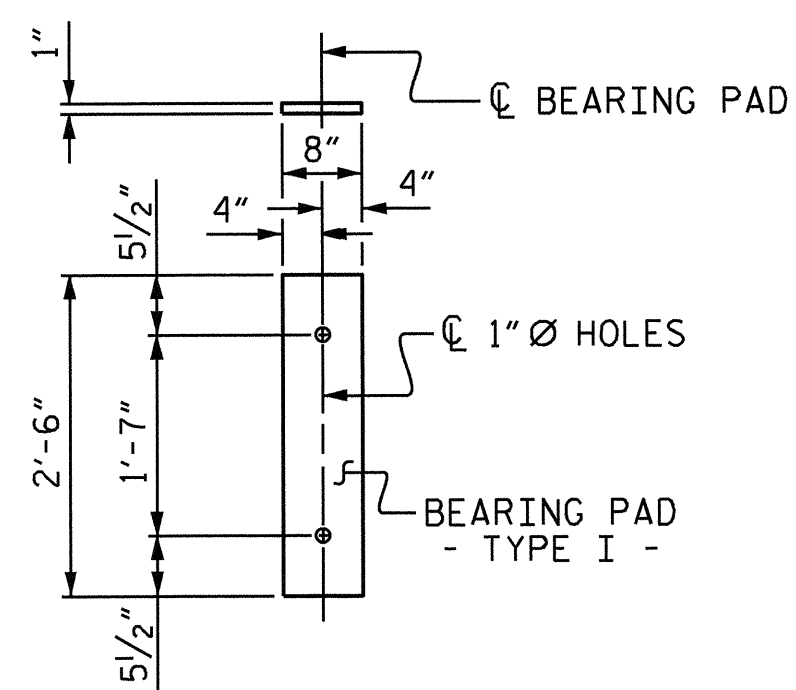
** INCLUDES FUTURE WEARING SURFACE

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
70' UNIT			
EXTERIOR C.S.	2	70'-0"	140'-0"
INTERIOR C.S.	7	70'-0"	490'-0"
TOTAL	9		630'-0"

CONCRETE RELEASE STRENGTH	
UNIT	PSI
70' UNITS	5500

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	70' UNIT					
*B25	72	72	#5	STR	22'-11"	1721
*S13	158	158	#5	2	7'-2"	1181
* EPOXY COATED REINFORCING STEEL						LBS. 2902
CLASS AA CONCRETE						CU.YDS. 18.9
TOTAL VERTICAL CONCRETE BARRIER RAIL						LN. FT. 140.25

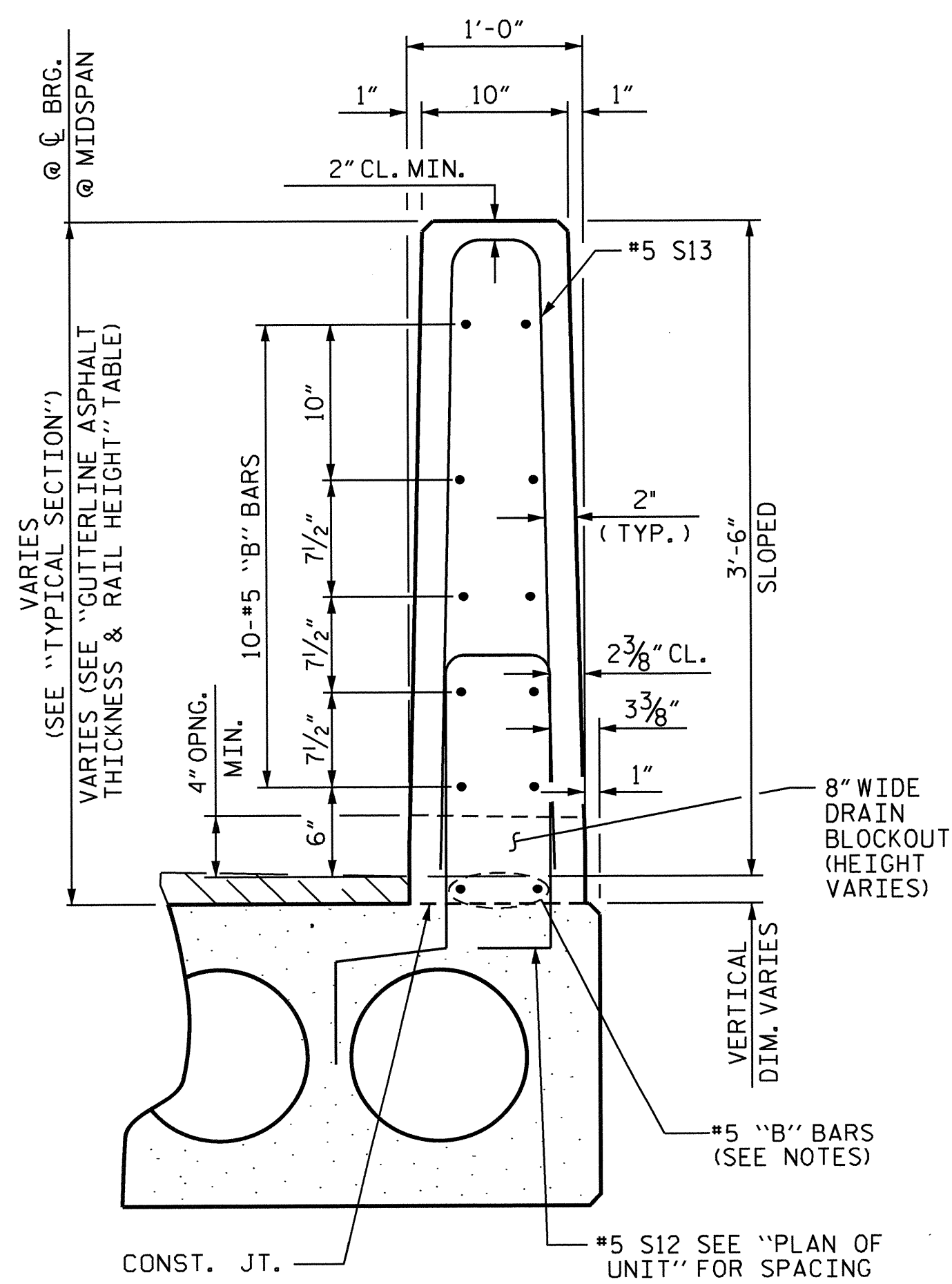
GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
70' UNITS	1 3/4"	3'-8"



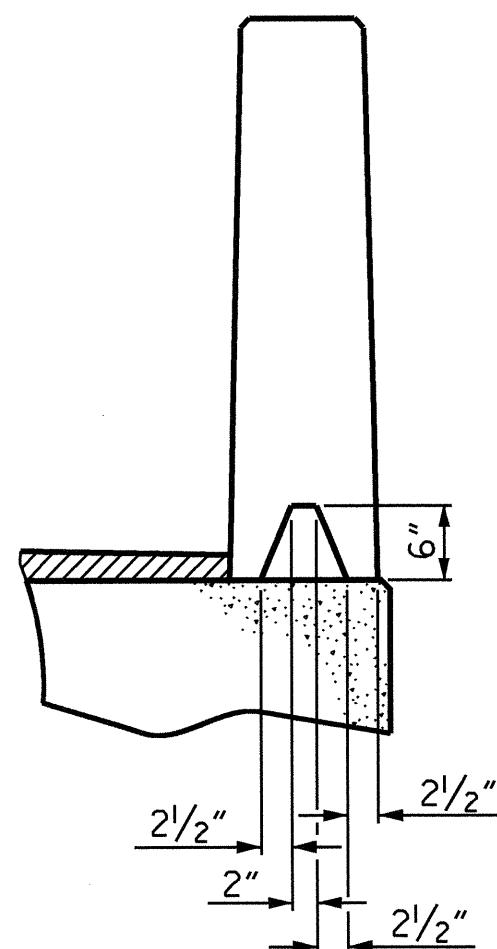
FIXED END
(TYPE I - 18 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

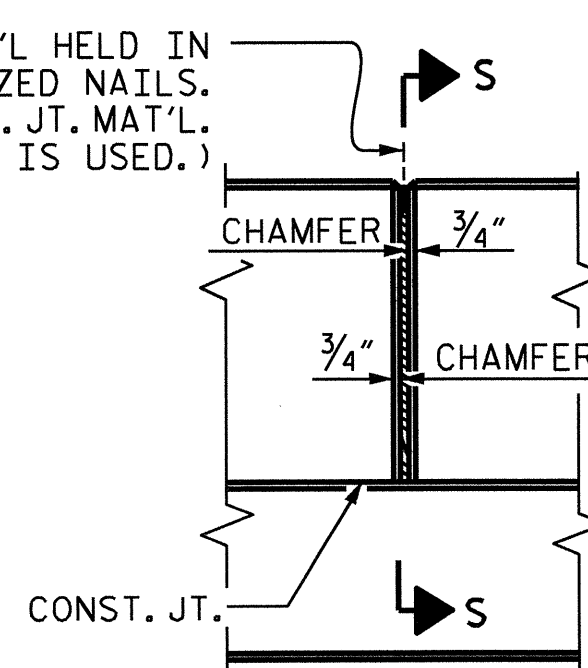


SECTION THRU RAIL

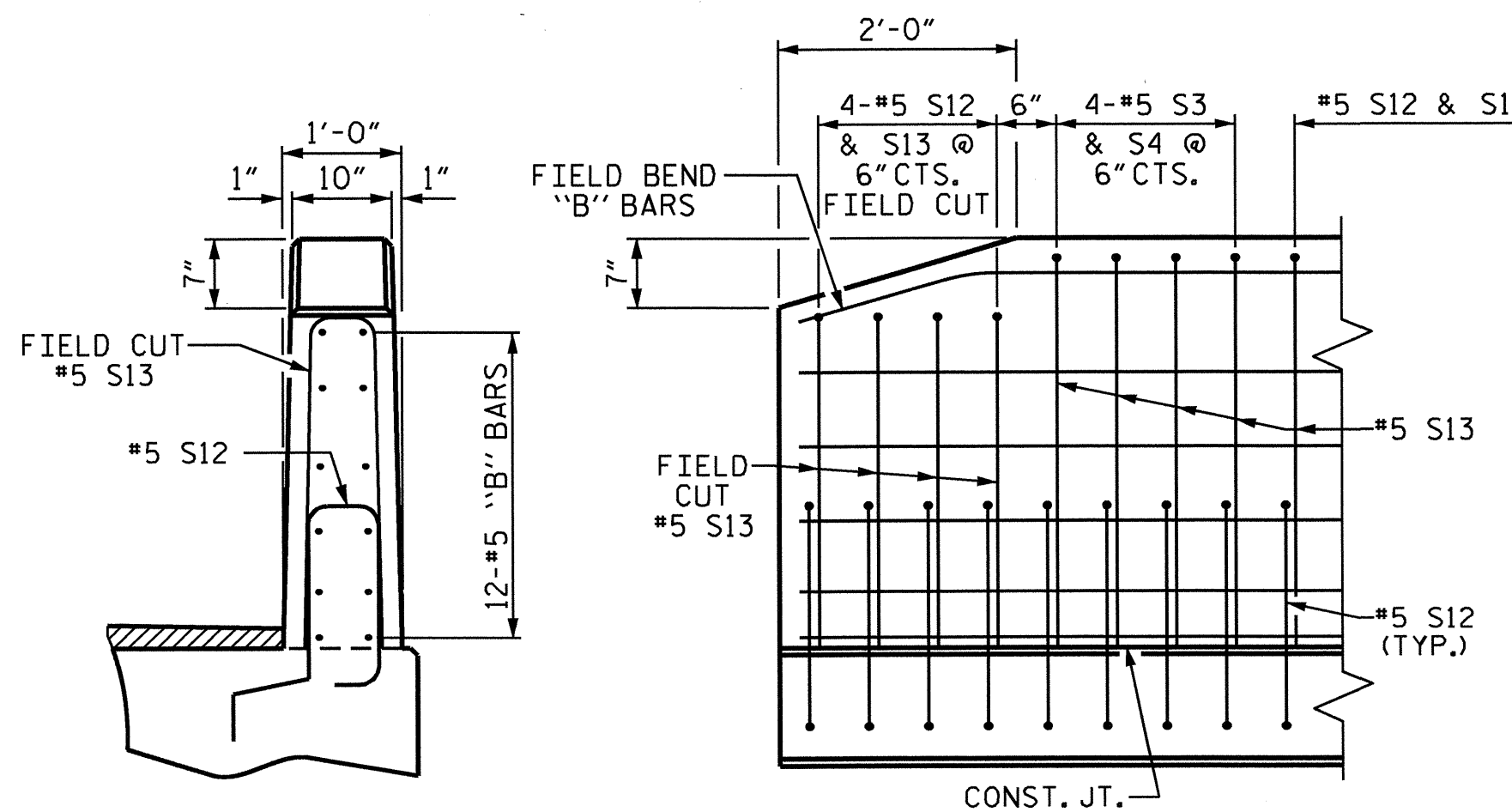


SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY
WHEN SLIP FORM IS USED)

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



ELEVATION AT EXPANSION JOINTS



END VIEW

SIDE VIEW

END OF RAIL DETAILS

BILL OF MATERIAL FOR ONE 70' CORED SLAB UNIT							
				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B22	6	#4	STR	24'-6"	98	24'-6"	98
S10	8	#5	3	4'-9"	40	4'-9"	40
S11	144	#4	3	5'-10"	561	5'-10"	561
*S12	79	#5	1	6'-4"	522		
S14	4	#4	3	5'-7"	15	5'-7"	15
S15	4	#5	3	7'-1"	30	7'-1"	30
REINFORCING STEEL				LBS.	744		744
* EPOXY COATED REINFORCING STEEL				LBS.	522		
7000 P.S.I. CONCRETE				CU. YDS.	11.8		11.8
0.6" Ø L.R. STRANDS				No.	28		28

NOTES

TRANSVERSE POST TENSIONING OF THE CORED SLAB UNITS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

MAINTAIN A SYMMETRIC TENSION FORCE BETWEEN EACH PAIR OF TRANSVERSE POST TENSIONING STRANDS IN THE DIAPHRAGM.

THE #4 S11 STIRRUPS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO THE GROUTED RECESS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

CONCRETE INSERTS SHALL HAVE A MINIMUM WORKING LOAD SHEAR CAPACITY OF 2.5 KIPS.

THE 3/4" Ø BOLTS, WASHERS AND CONCRETE INSERTS SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

THE BOLTS, WASHERS AND CONCRETE INSERTS ARE PROVIDED AS AN OPTION FOR THE CONTRACTOR TO ATTACH MATERIALS TO PREVENT DEBRIS FROM DROPPING INTO THE WATER DURING CONSTRUCTION OF THE VERTICAL CONCRETE BARRIER RAILS.

UPON COMPLETION OF THE BRIDGE CONSTRUCTION, THE 3/4" Ø BOLTS, AND WASHERS SHALL BE REMOVED AND THE CONCRETE INSERTS SHALL BE GROUTED.

THE COST OF THE 3/4" Ø BOLTS, WASHERS, AND INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

THE DRAIN OPENING AT THE GUTTERLINE SHALL BE 4" X 8". THE HEIGHT OF THE BLOCKOUT IN THE VERTICAL CONCRETE BARRIER RAIL SHALL EXTEND FROM THE TOP OF THE CORED SLAB UNIT TO THE TOP OF THE DRAIN OPENING.

APPLY EPOXY PROTECTIVE COATING TO EXTERIOR FACE OF THE EXTERIOR CORED SLAB UNITS THAT REQUIRE DRAINS IN THE BARRIER RAIL.

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

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

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

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

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

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

ALL REINFORCING STEEL IN VERTICAL CONCRETE BARRIER RAILS SHALL BE EPOXY COATED.

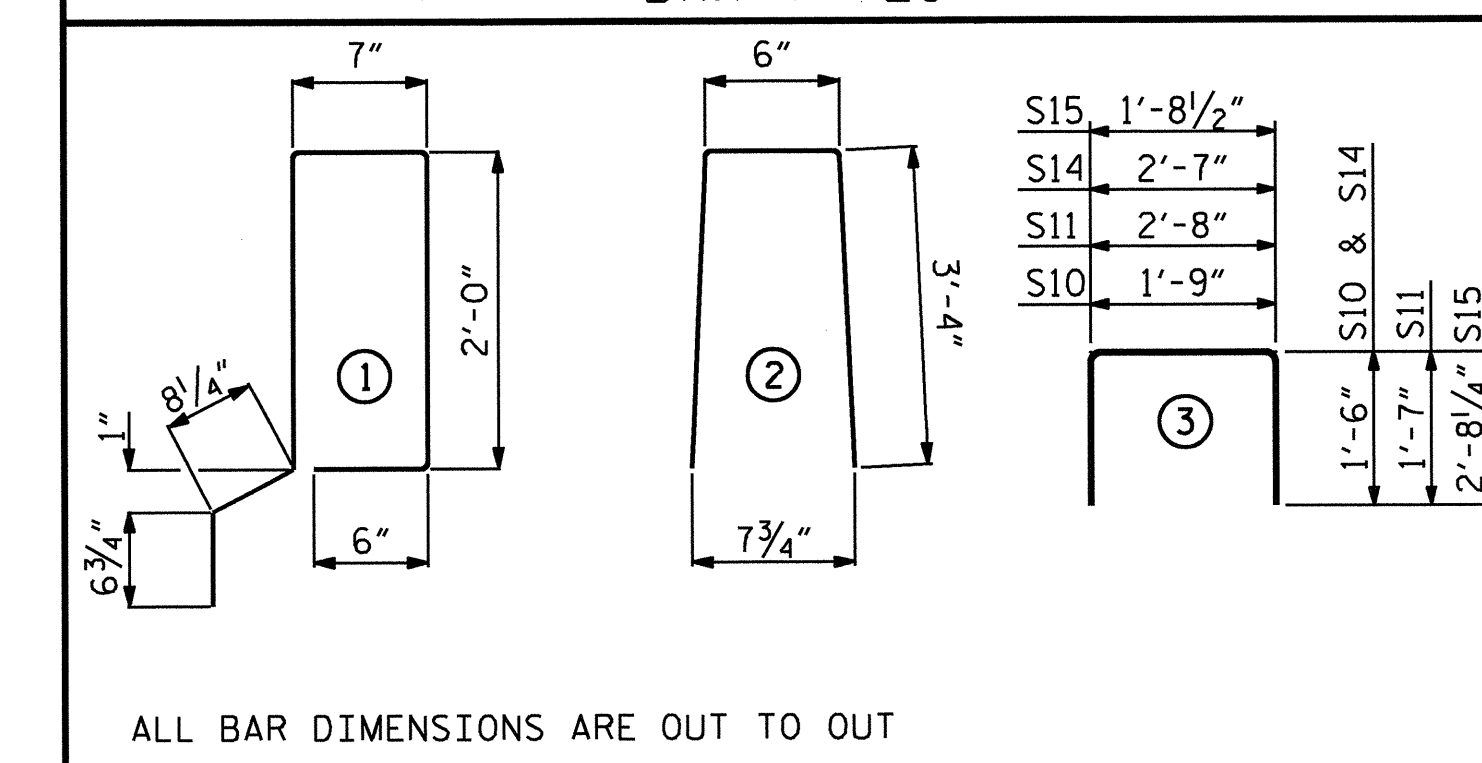
PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

THE BOTTOM TWO #5 "B" BARS IN THE VERTICAL CONCRETE BARRIER RAIL MAY BE FIELD CUT TO AVOID DRAINS.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. B-4762
HAYWOOD COUNTY
STATION: 10+58.0 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 2'-0"
PRESTRESSED CONCRETE
CORED SLAB UNIT

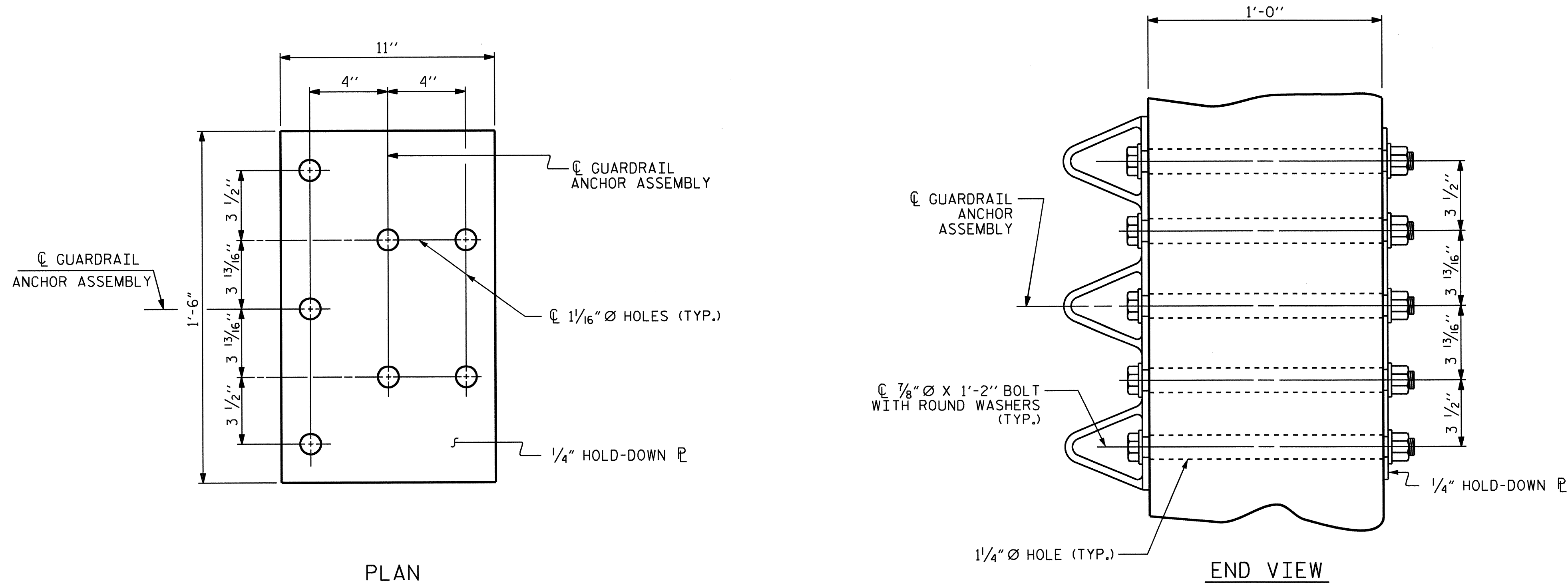


Wael S. Arak
2-7-14

ASSEMBLED BY :	V.X. NGUYEN	DATE :	11-26-13
CHECKED BY :	T. BARBOUR	DATE :	11-18-13
DRAWN BY :	MAA 6/10	REV.	12/11
CHECKED BY :	MKT 7/10		MAA/AAC

VERTICAL CONCRETE BARRIER RAIL DETAILS

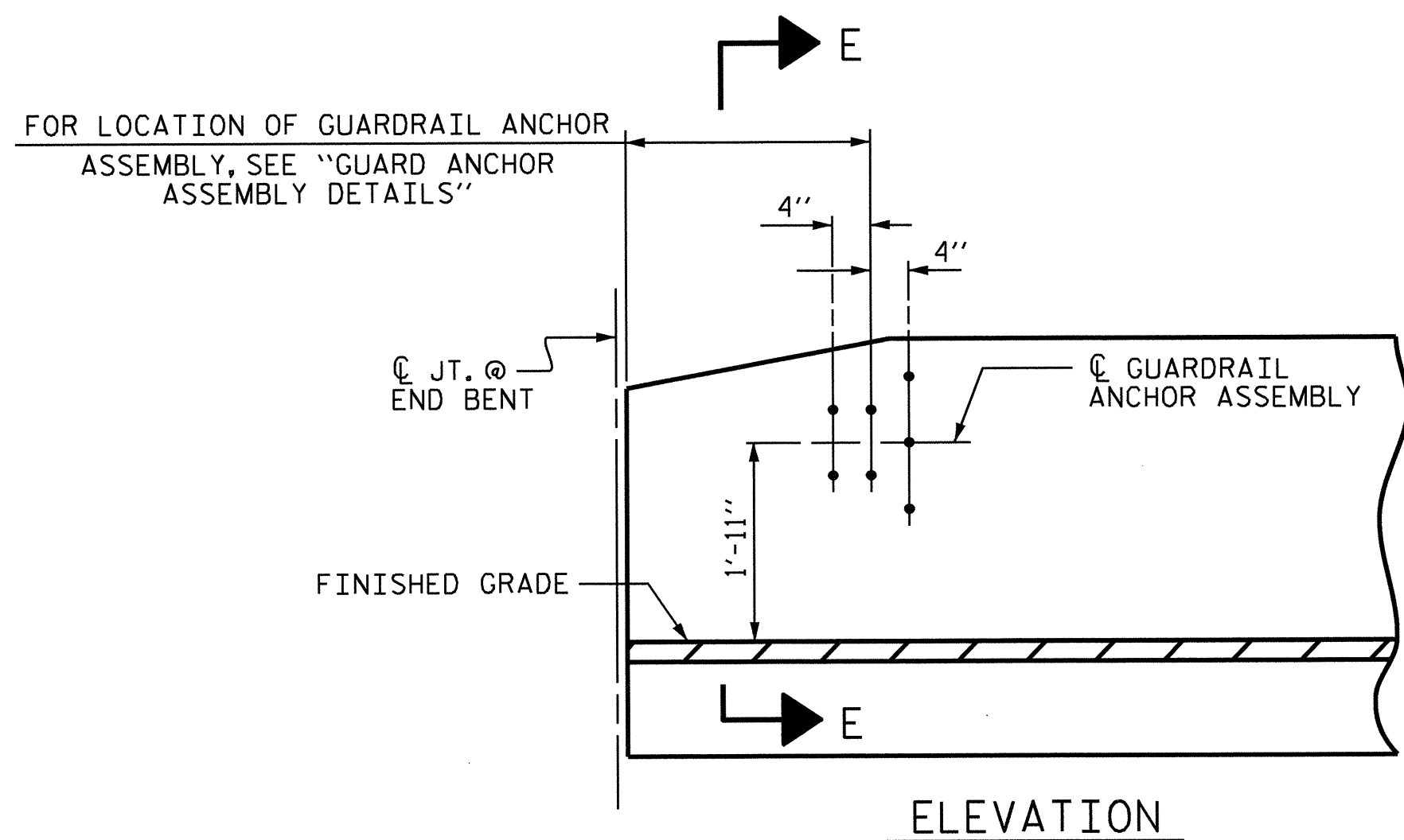
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			19



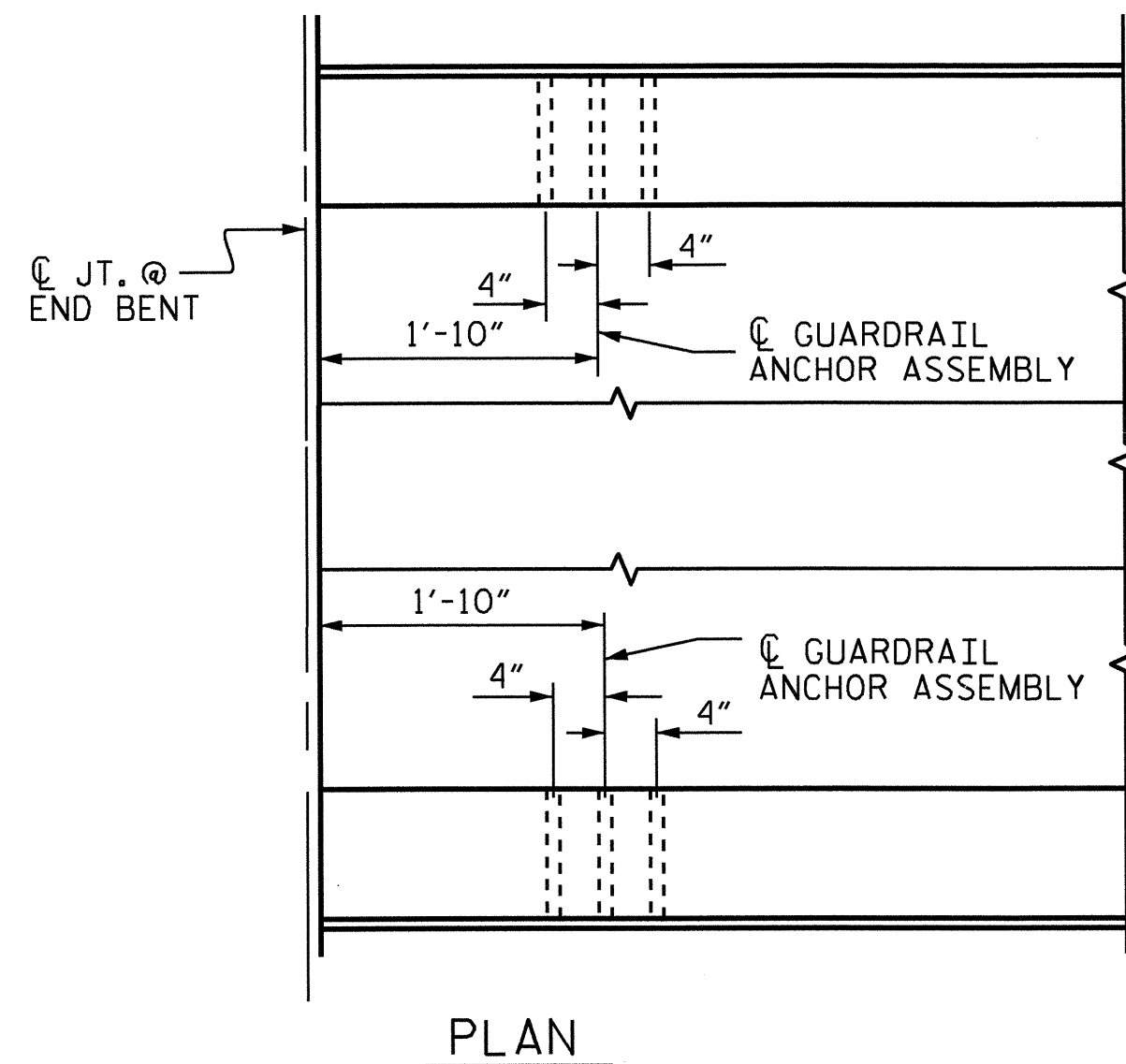
PLAN

END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS



ELEVATION



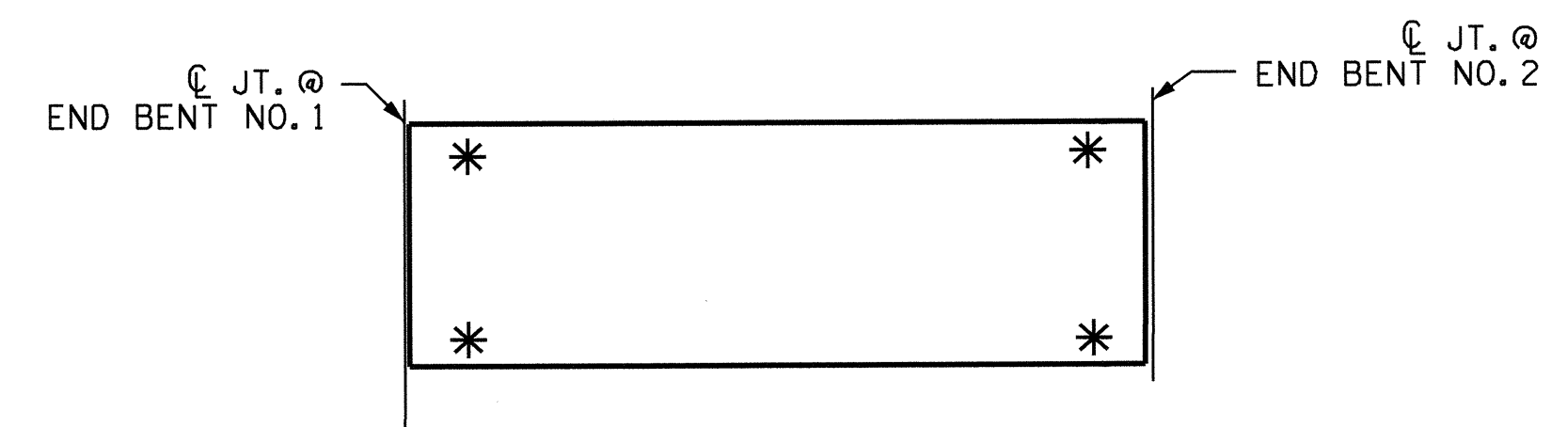
PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT NO. 1 SHOWN, END BENT NO. 2 SIMILAR.

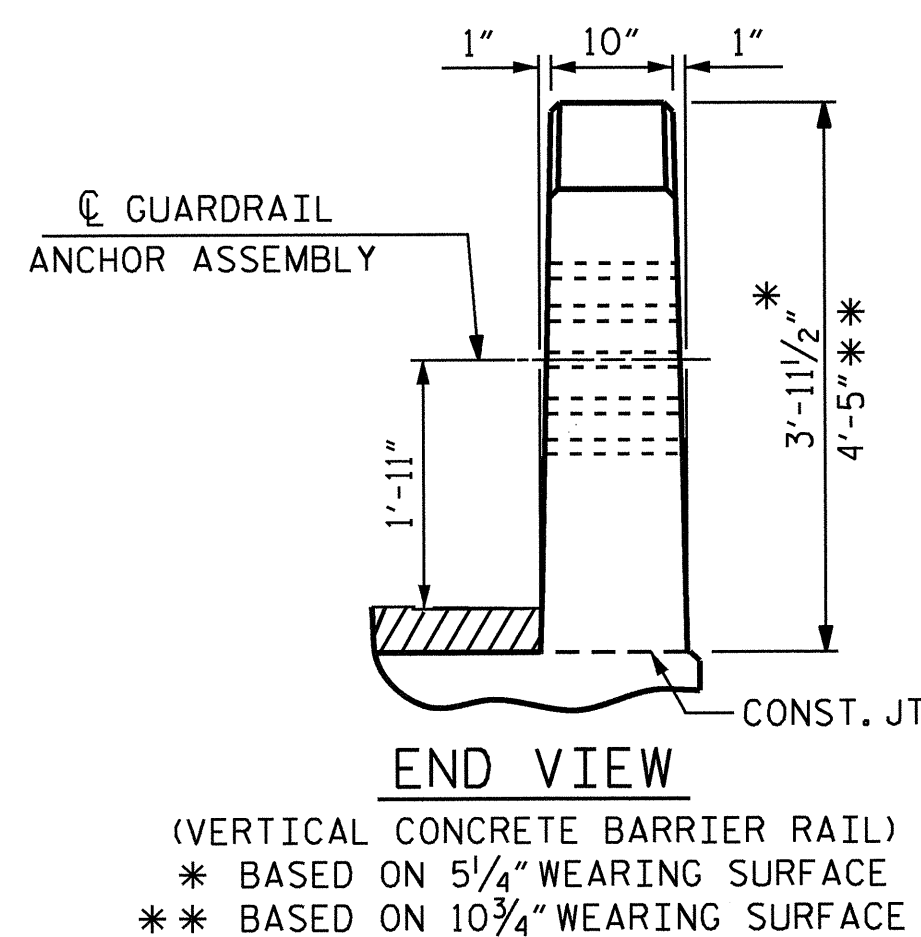
NOTES

- 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.)
- THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.
- AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.
- THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.
- THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL 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.



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

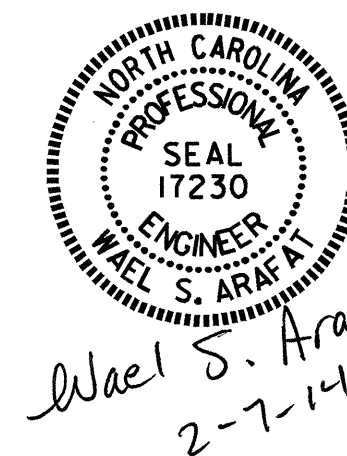


END VIEW

(VERTICAL CONCRETE BARRIER RAIL)
 * BASED ON 5/4" WEARING SURFACE
 ** BASED ON 10 3/4" WEARING SURFACE

LOCATION OF GUARDRAIL ANCHOR AT END POST

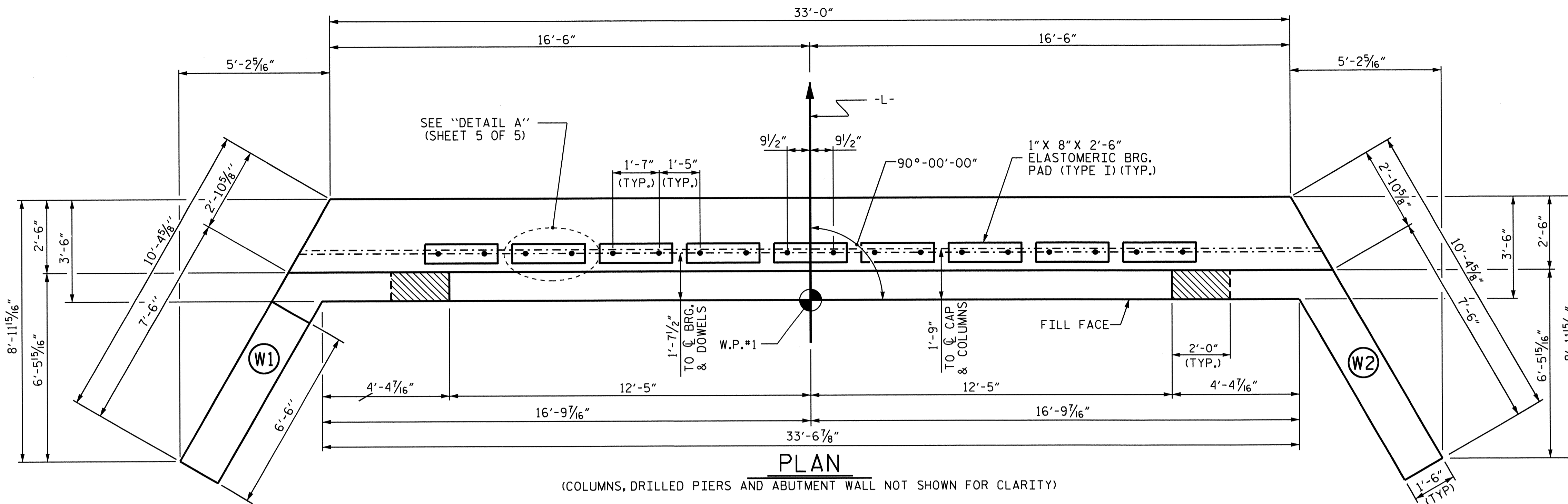
ASSEMBLED BY : V.X. NGUYEN	DATE : 11-15-13
CHECKED BY : T. BARBOUR	DATE : 11-18-13
DRAWN BY : MAA 5/10	REV. 10/1/11 MAA/GM
CHECKED BY : GM 5/10	REV. 12/5/11 MAA/GM
	REV. 6/13 MAA/GM



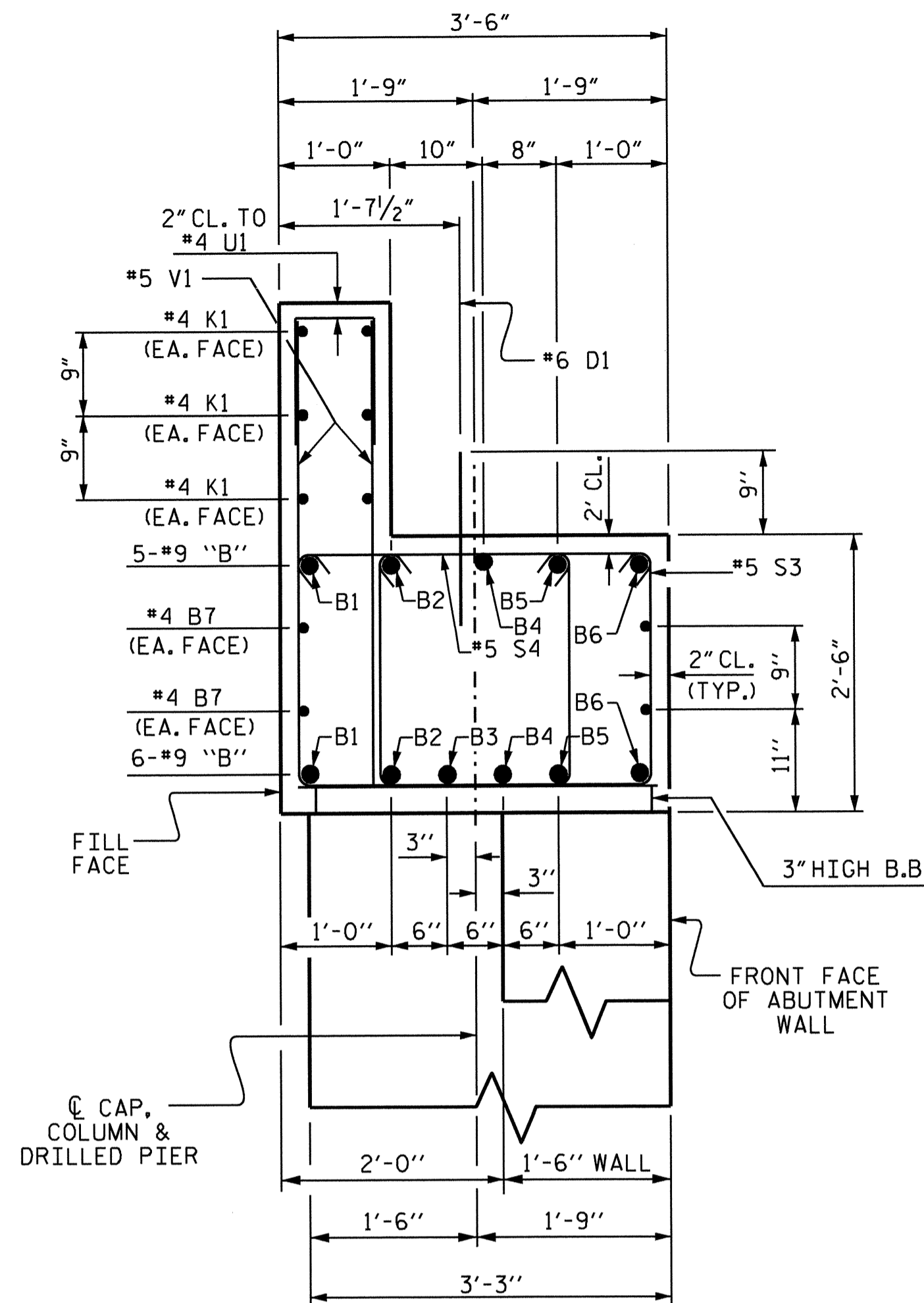
PROJECT NO. B-4762
HAYWOOD COUNTY
 STATION: 10+58.0 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD					
GUARDRAIL ANCHORAGE FOR VERTICAL CONCRETE BARRIER RAIL					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-8 TOTAL SHEETS 19

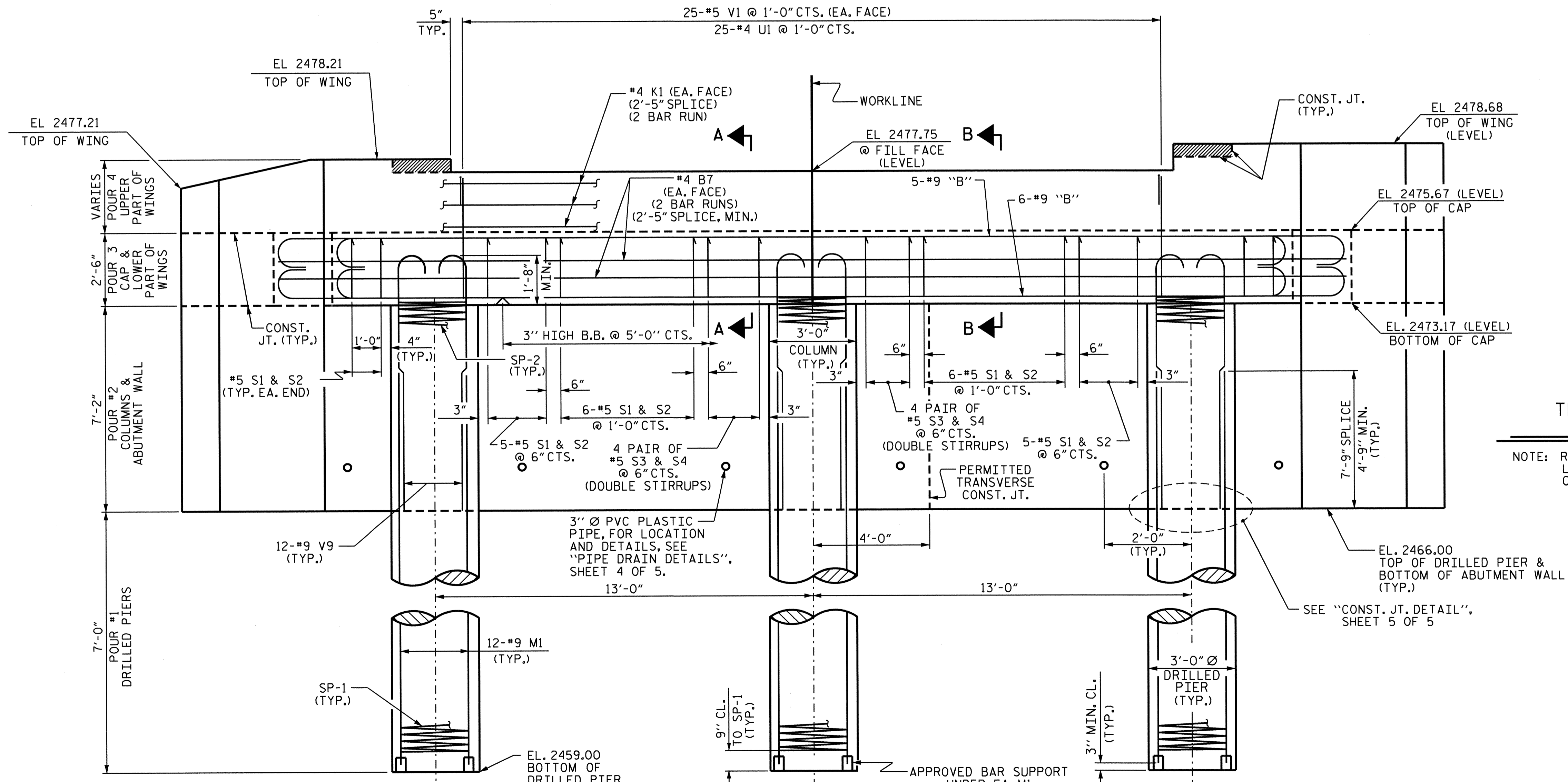
STD. NO. GRA3



PLAN
(COLUMNS, DRILLED PIERS AND ABUTMENT WALL NOT SHOWN FOR CLARITY)

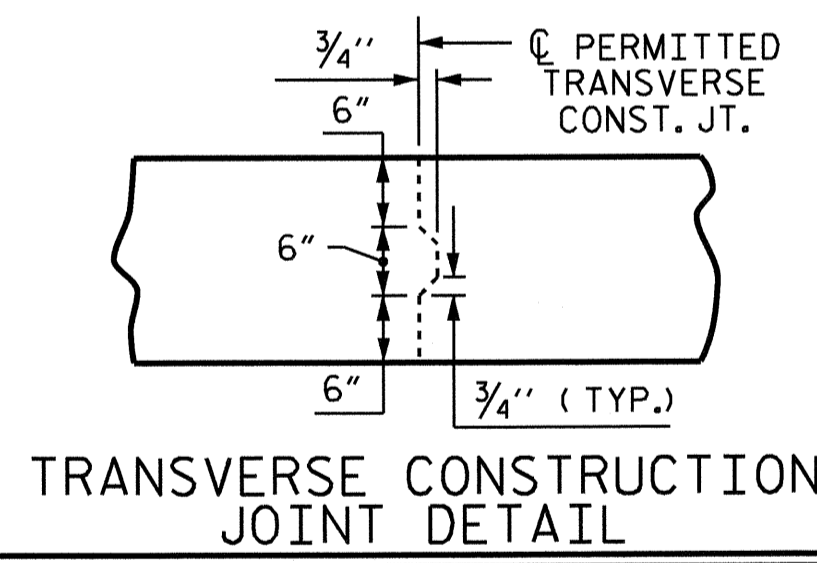


SECTION A-A
FOR SECTION B-B, SEE SHEET 4 OF 5.



ELEVATION

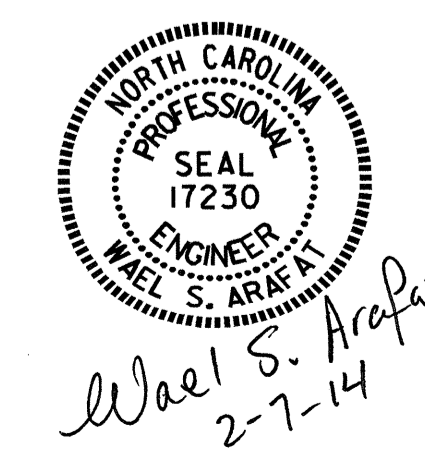
FOR REINFORCING STEEL IN ABUTMENT WALL AND ADDITIONAL REINFORCING STEEL IN COLUMNS, SEE SHEET 2 OF 5.



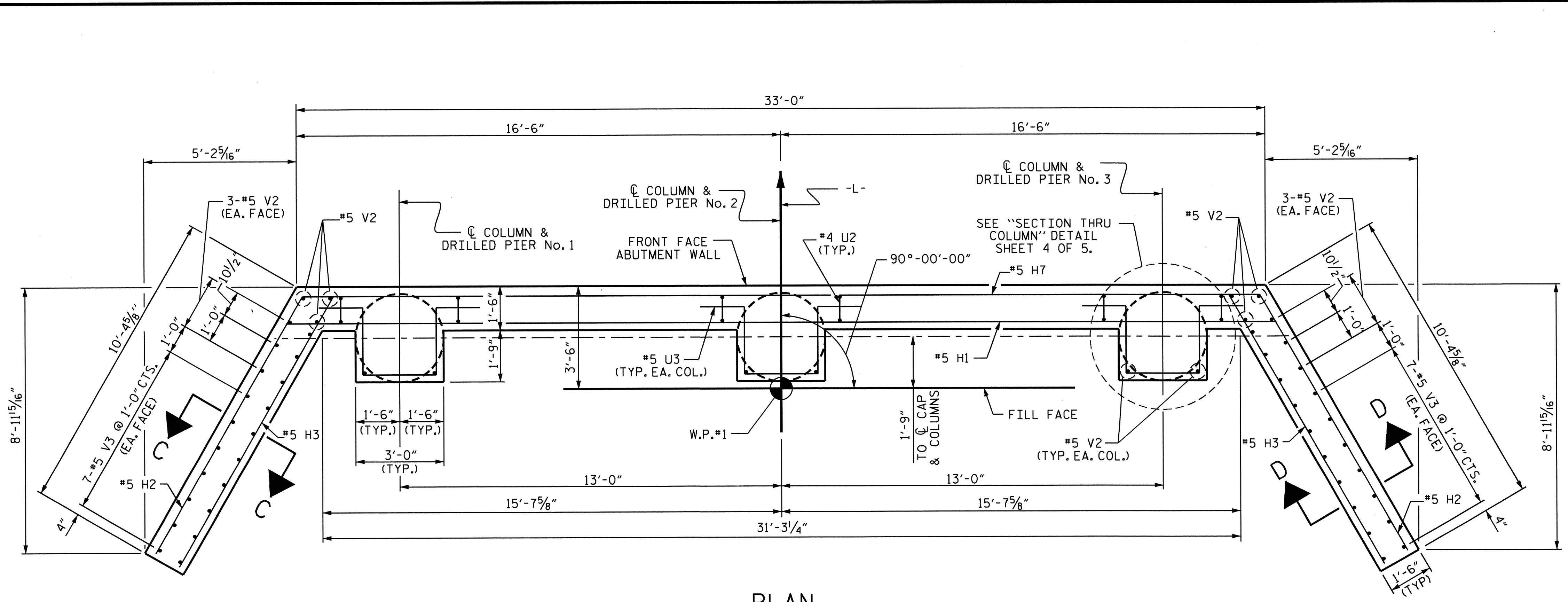
TRANSVERSE CONSTRUCTION JOINT DETAIL
NOTE: REINFORCING STEEL IN WALL NOT SHOWN. LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT

PROJECT NO. B-4762
HAYWOOD COUNTY
 STATION: 10+58.00 -L-
 SHEET 1 OF 5

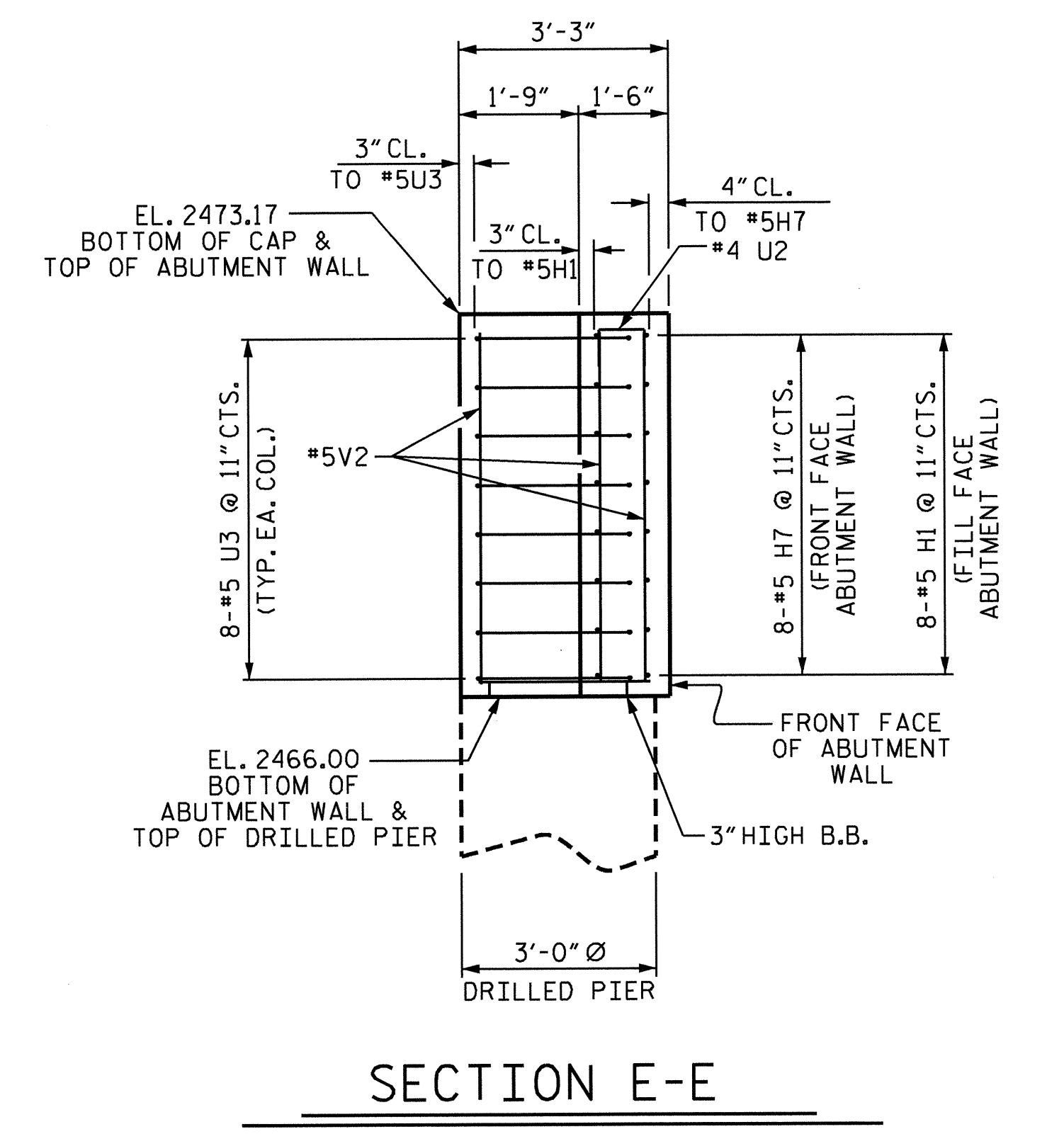
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT No. 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-9 TOTAL SHEETS 19



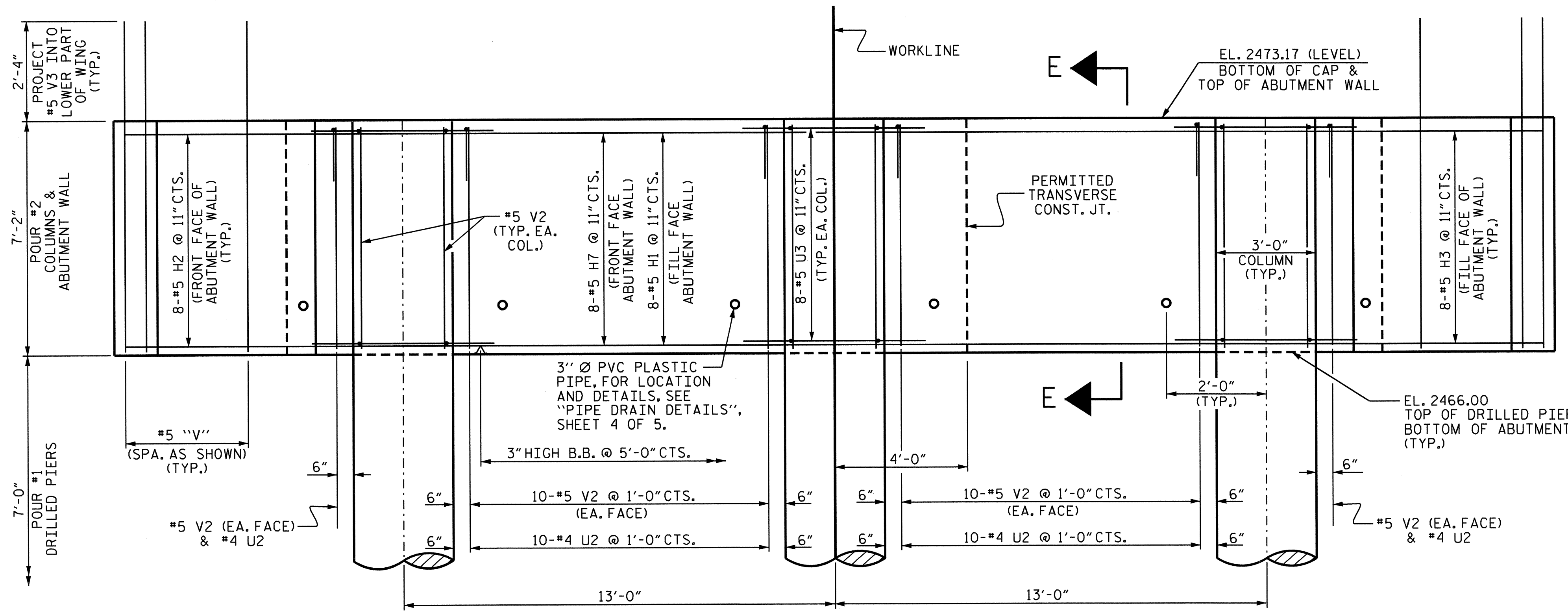
DRAWN BY: V.X. NGUYEN/DAH DATE: 11-20-13
 CHECKED BY: H. KIM DATE: 12/13
 DESIGN ENGINEER OF RECORD: H. KIM DATE: 12/13



PLAN
(CAP AND BACKWALL NOT SHOWN FOR CLARITY)

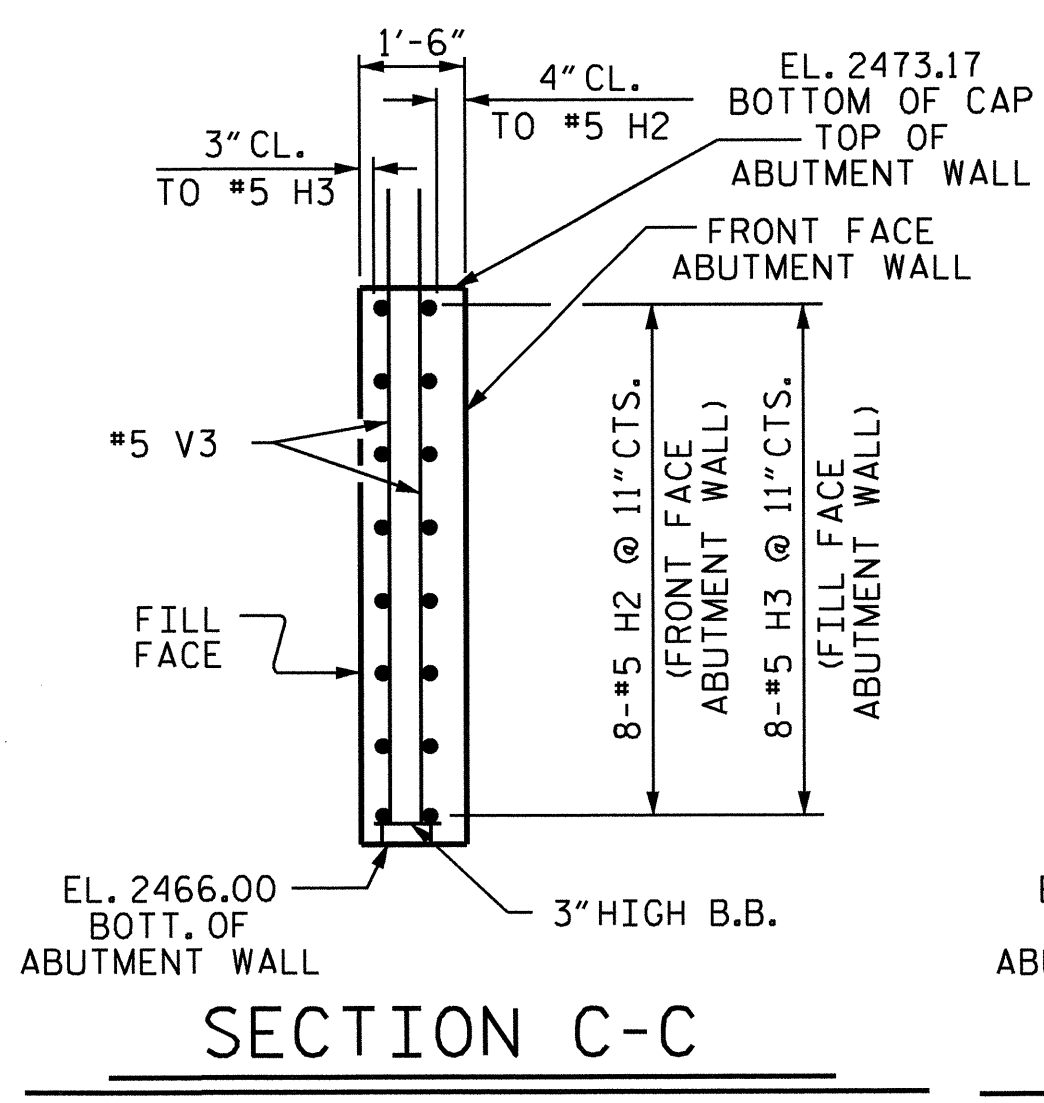


SECTION E-E

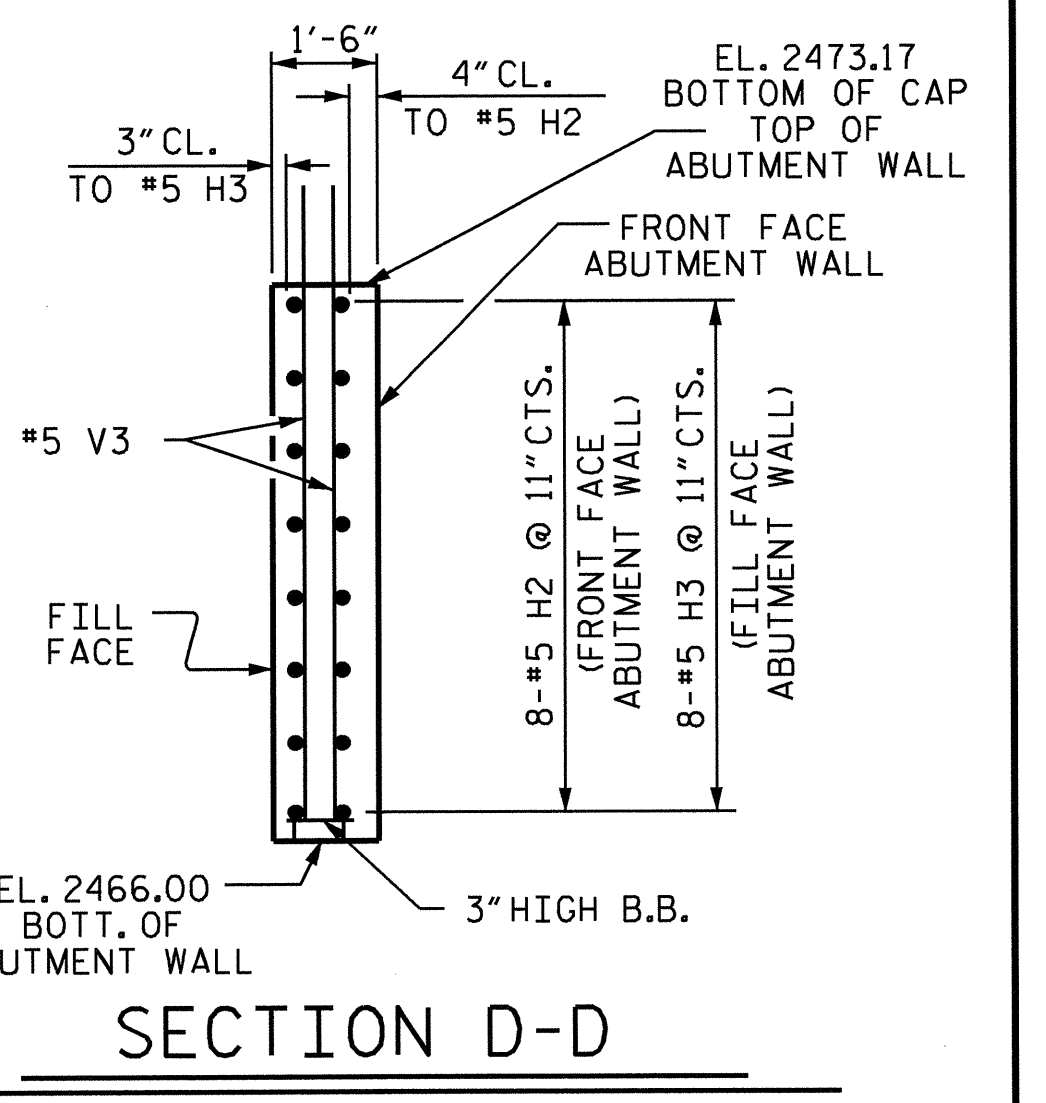


ELEVATION

FOR M1, V9 & SPIRAL STEEL, SEE SHEET 1 OF 5.



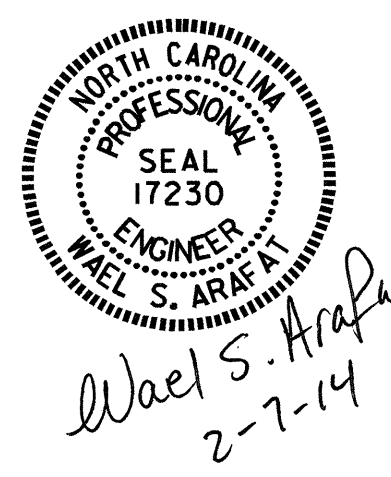
SECTION C-C



SECTION D-D

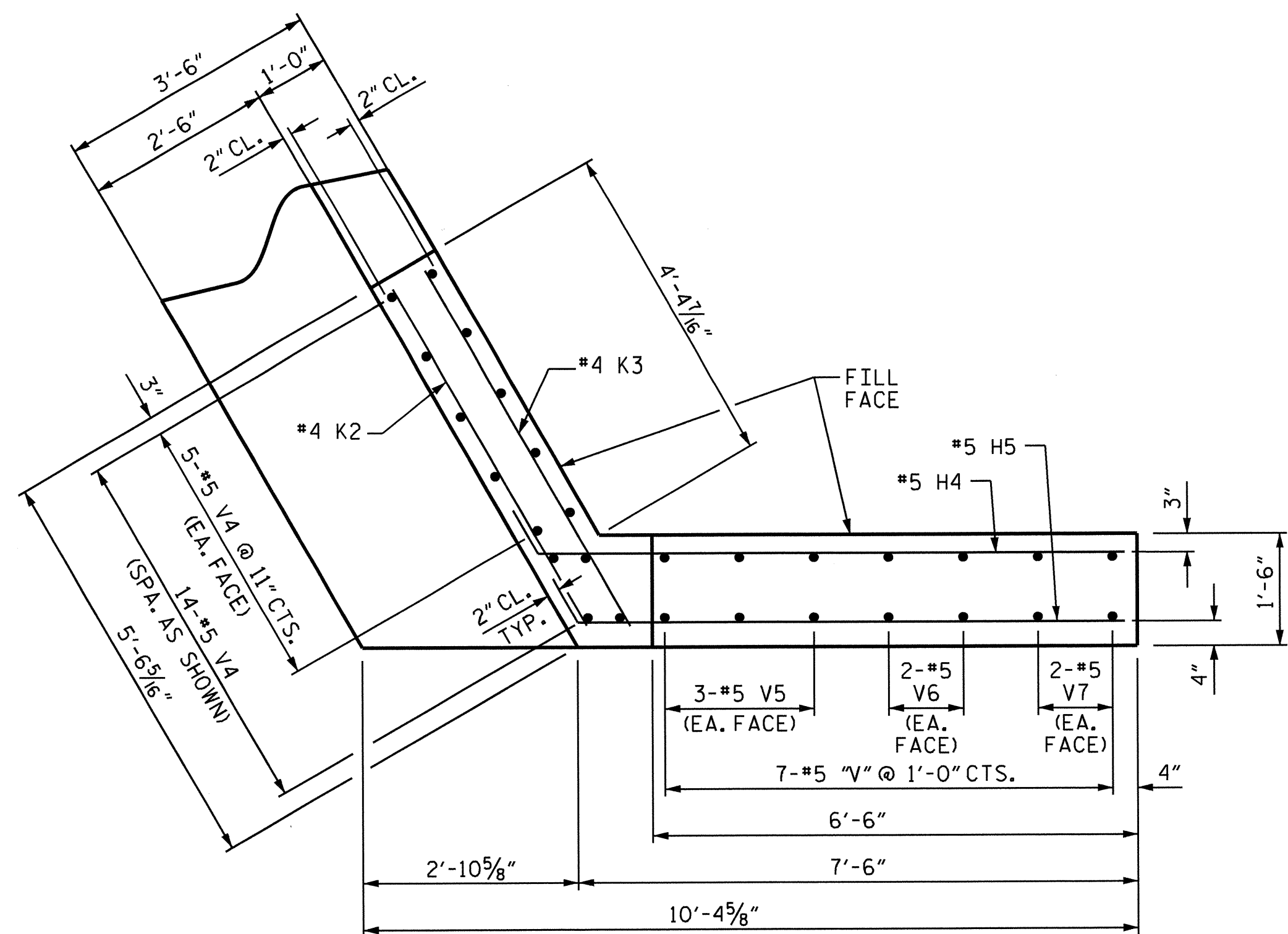
DRAWN BY: D. HODGE DATE: 11/13
 CHECKED BY: H. KIM DATE: 12/13
 DESIGN ENGINEER OF RECORD: H. KIM DATE: 12/13

07-FEB-2014 11:21
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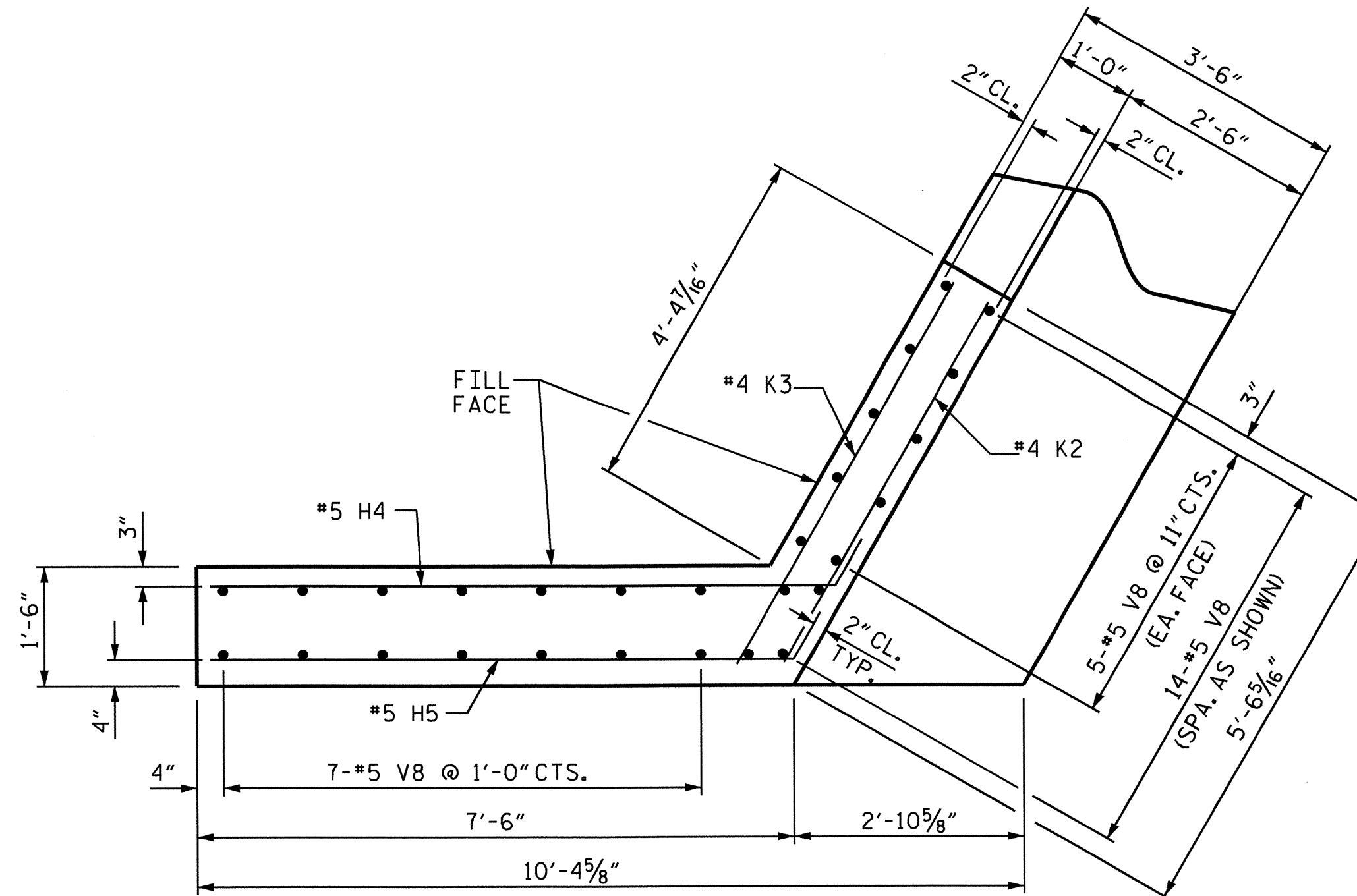


PROJECT NO. B-4762
 HAYWOOD COUNTY
 STATION: 10+58.00 -L-
 SHEET 2 OF 5

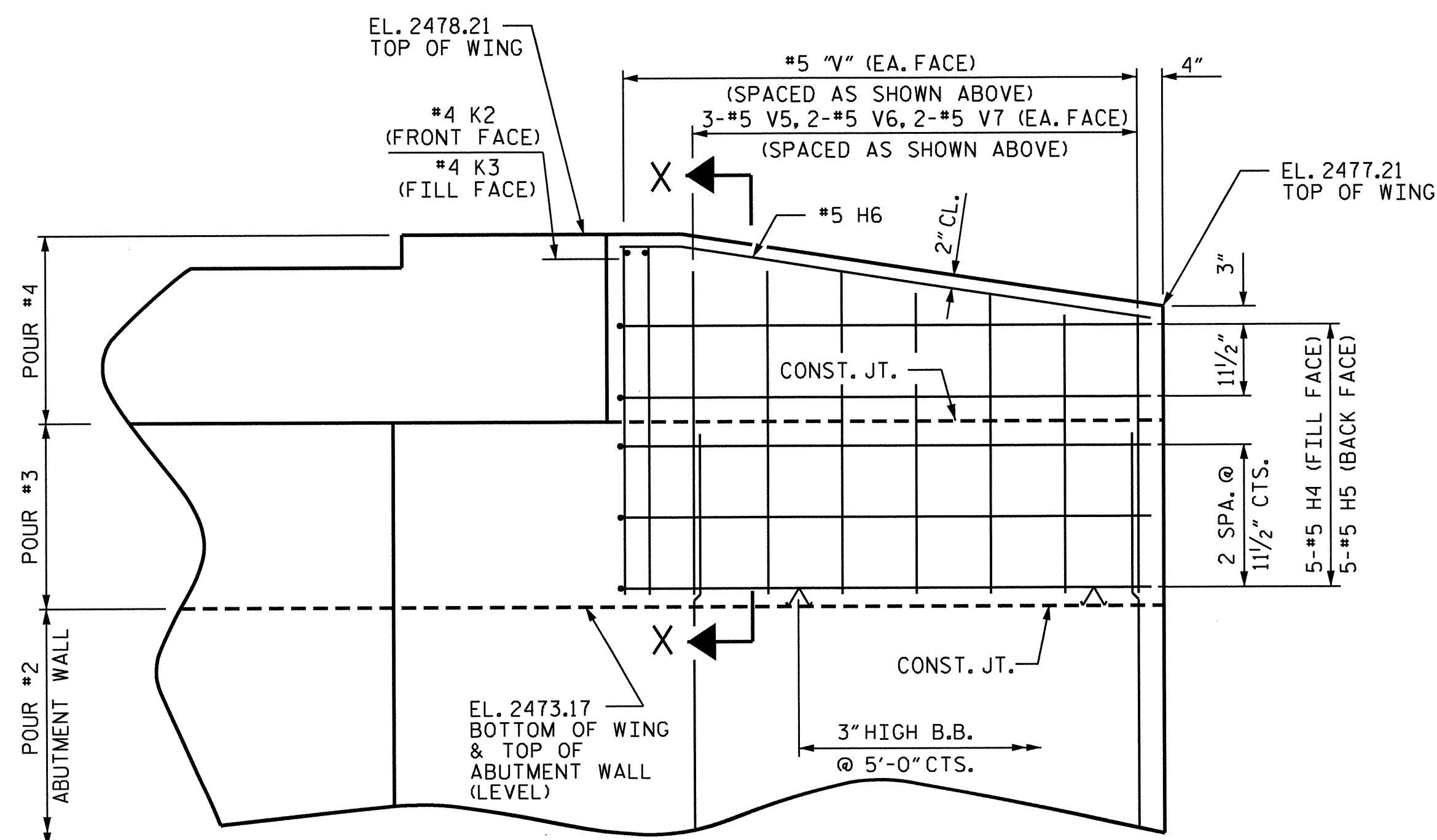
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT No. 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-10
					TOTAL SHEETS 19



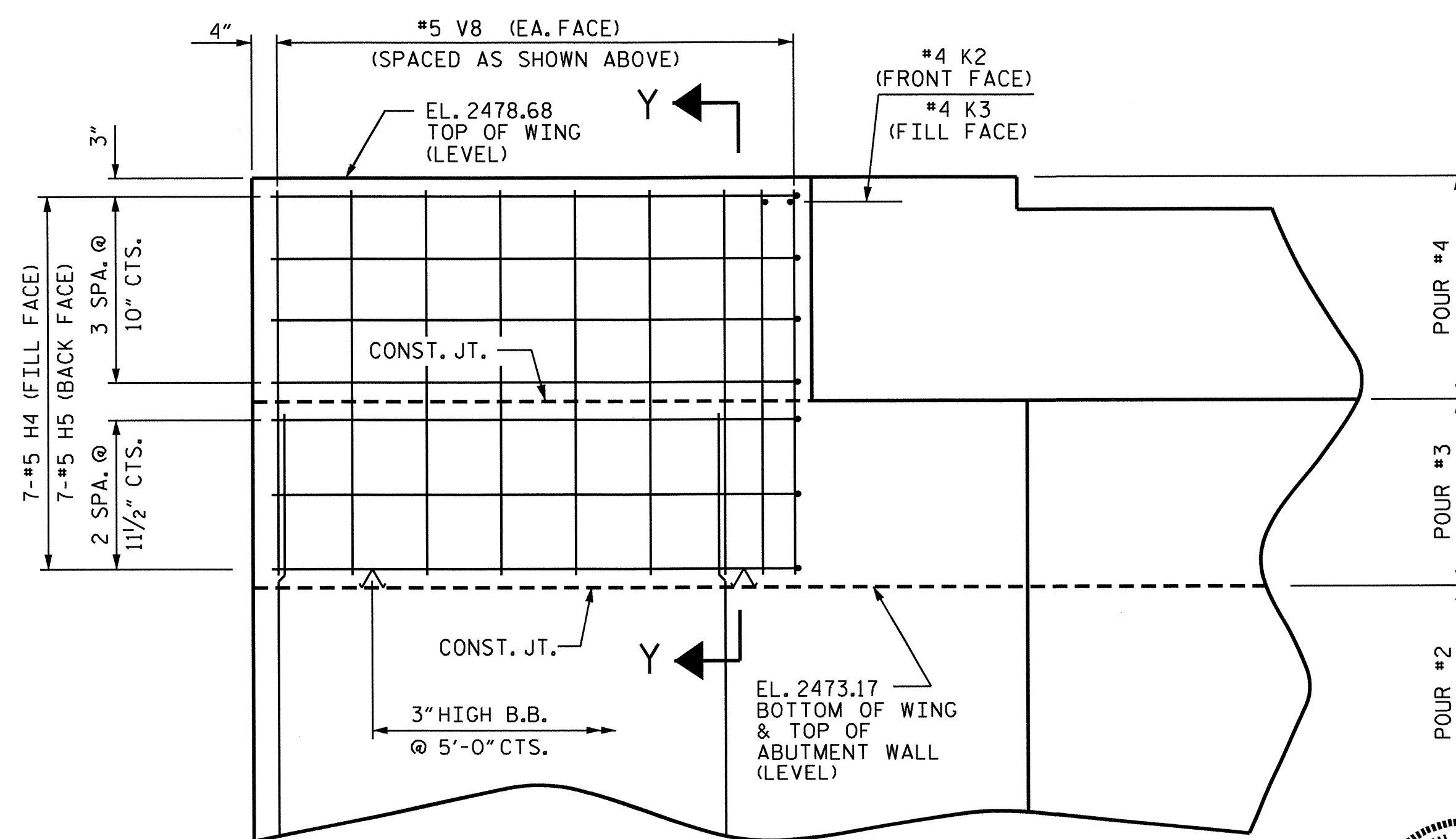
PLAN OF WING (W1)



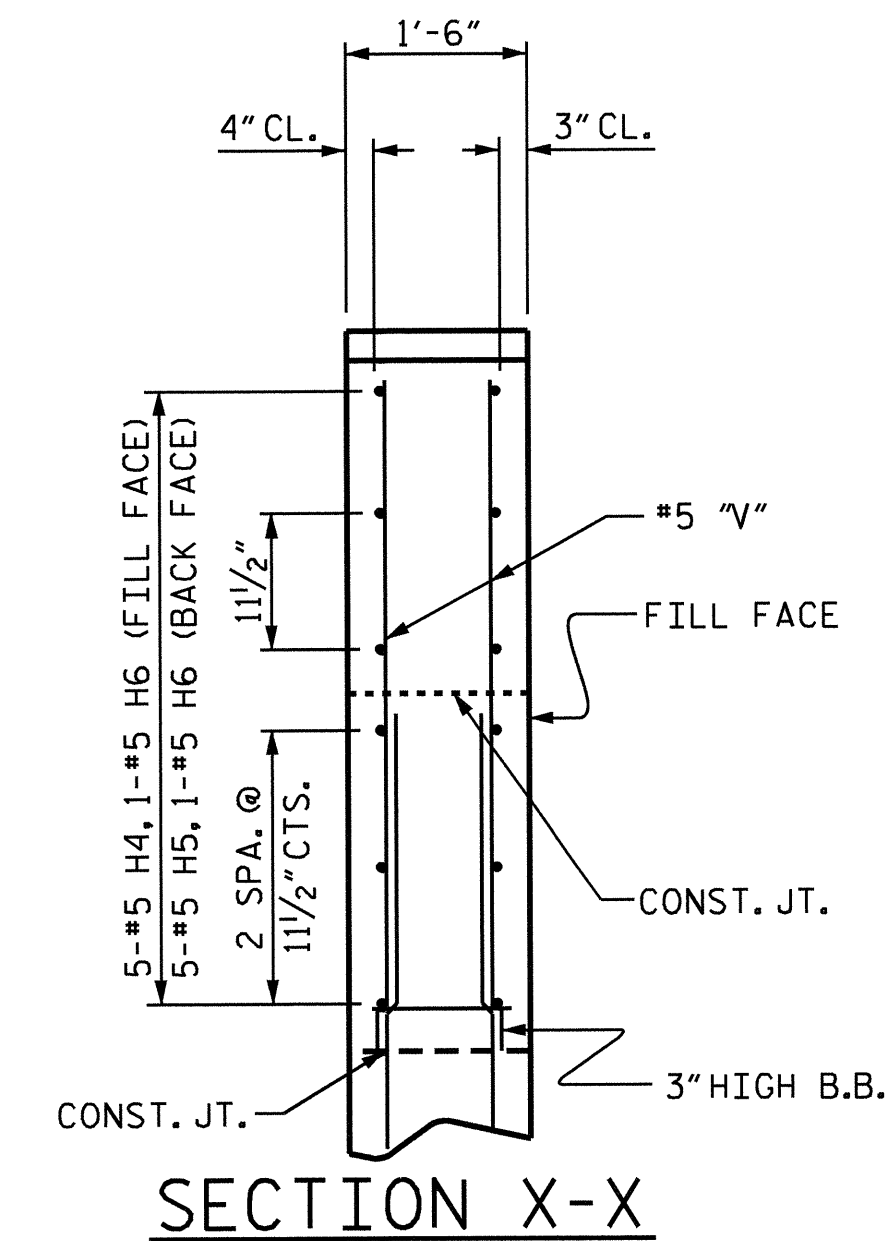
PLAN OF WING (W2)



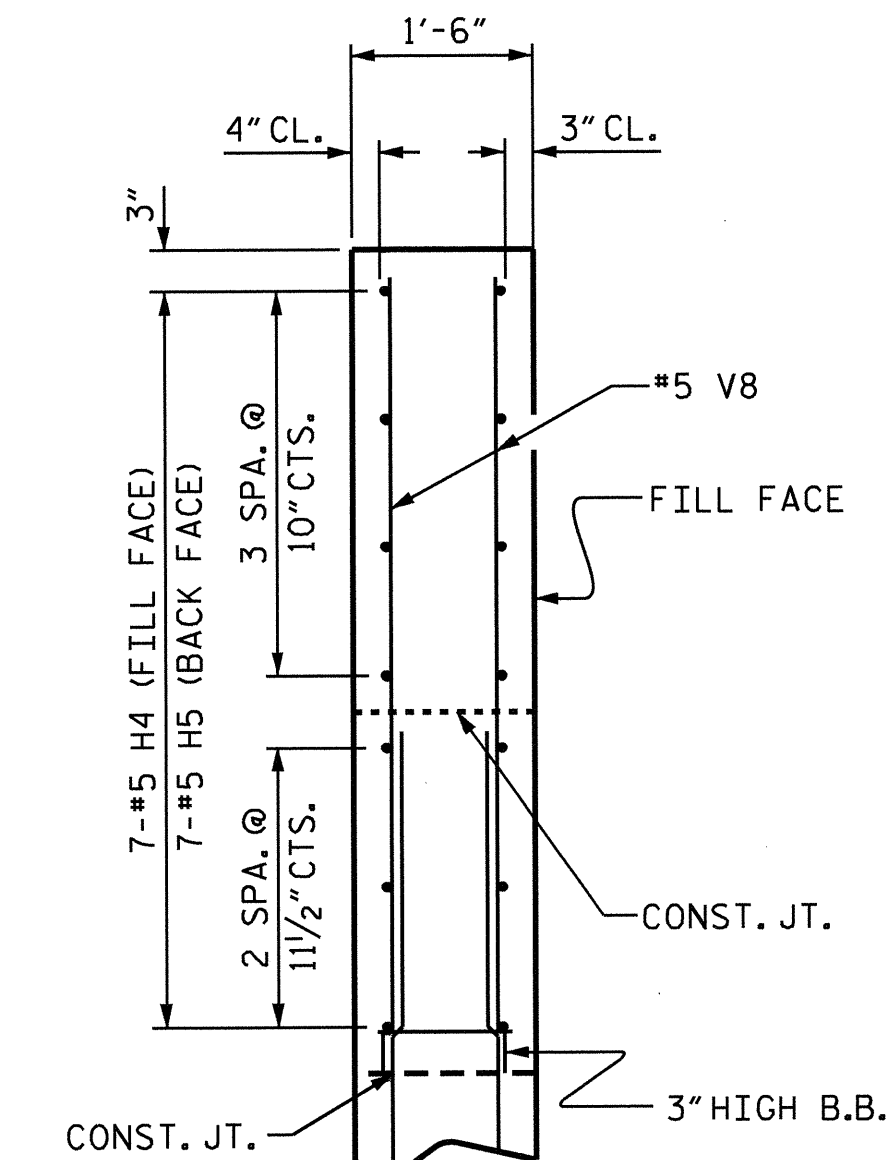
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION X-X



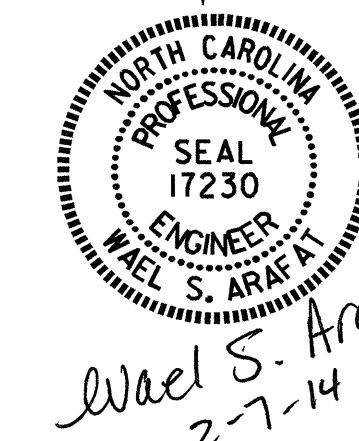
SECTION Y-Y

PROJECT NO. B-4762
 HAYWOOD COUNTY
 STATION: 10+58.00 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1



DRAWN BY : D. HODGE DATE : 11/13
 CHECKED BY : H. KIM DATE : 12/13
 DESIGN ENGINEER OF RECORD : H. KIM DATE : 12/13

07-FEB-2014 11:21
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS 19
2			4			

NOTES

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

HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

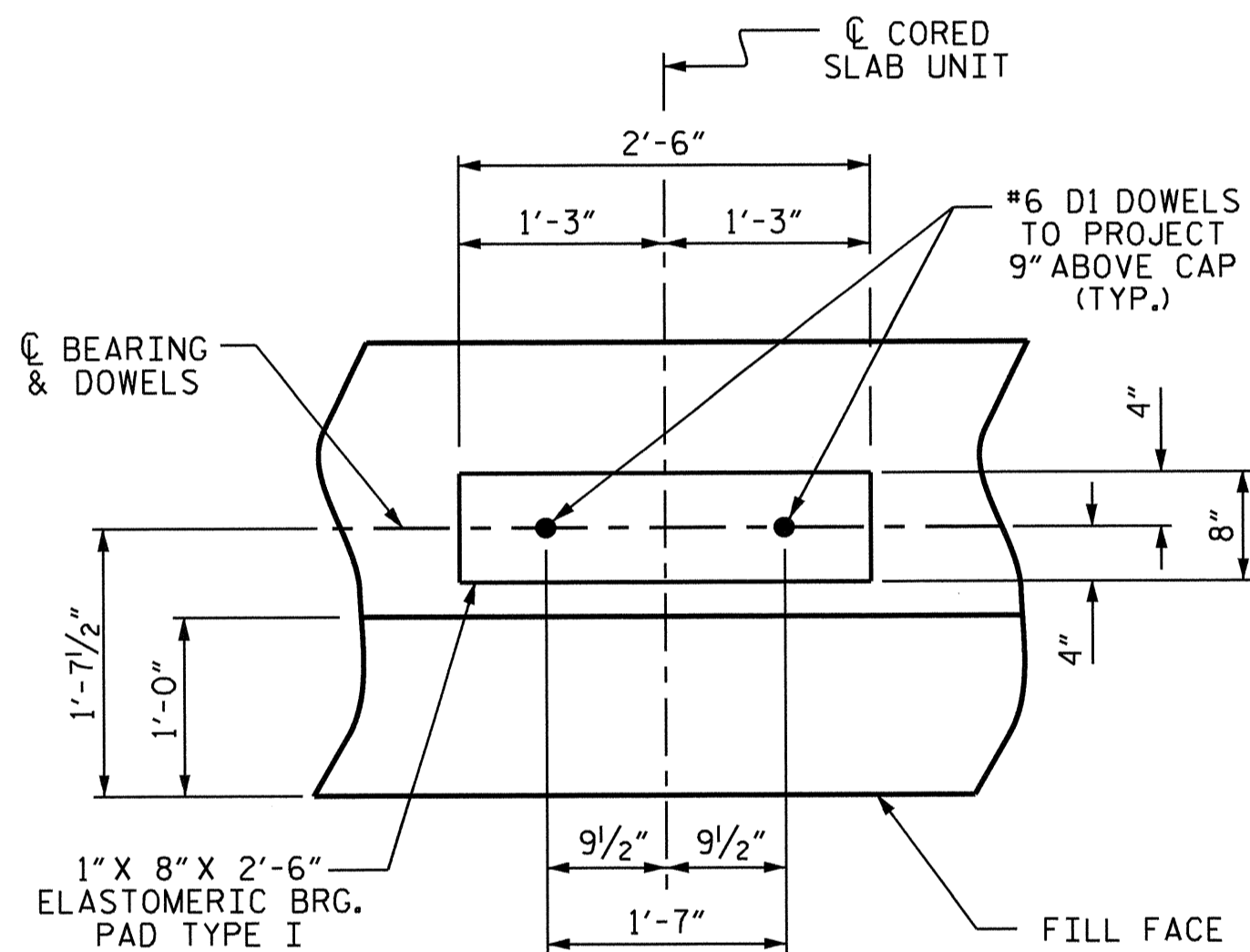
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE CONCRETE BARRIER RAILS ARE CAST IF SLIP FORMING IS USED.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL"

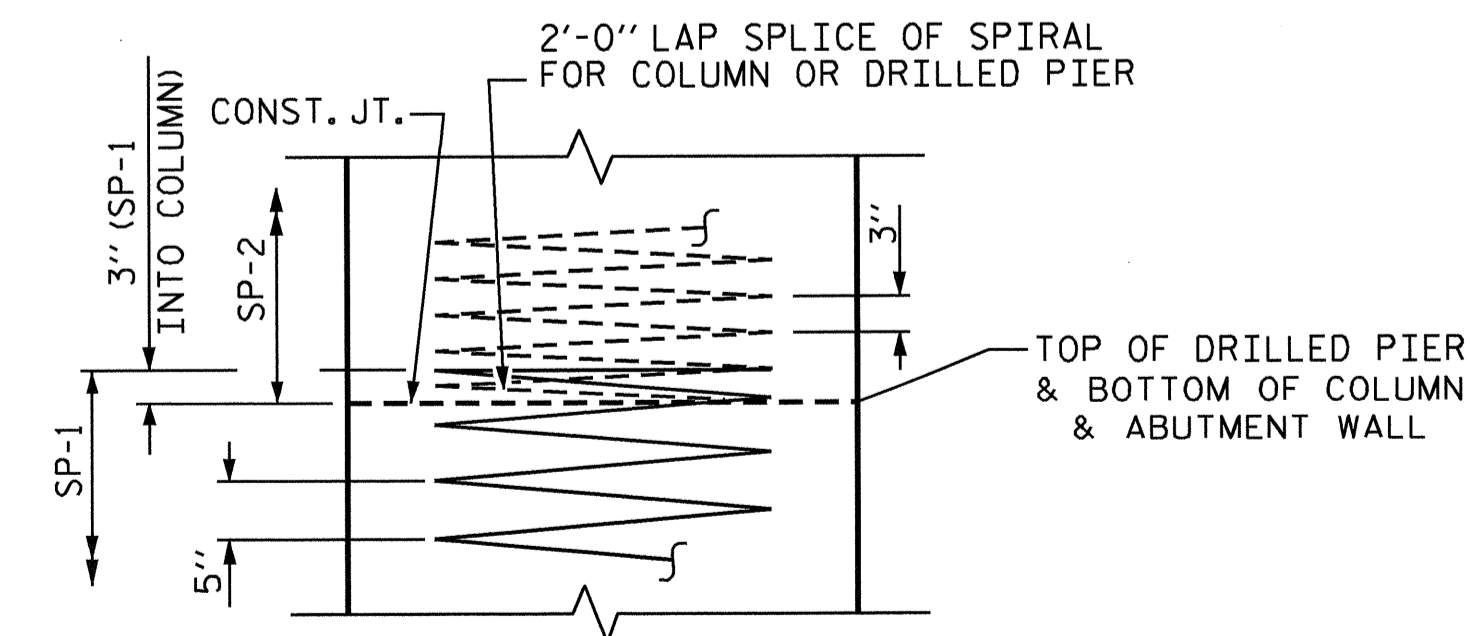
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.

NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE PVC DRAIN, FABRIC AND #78M STONE BACKFILL IN THE ABUTMENT WALL. THE ENTIRE COST OF THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE COST FOR CONSTRUCTION OF THE END BENT.



DETAIL "A"

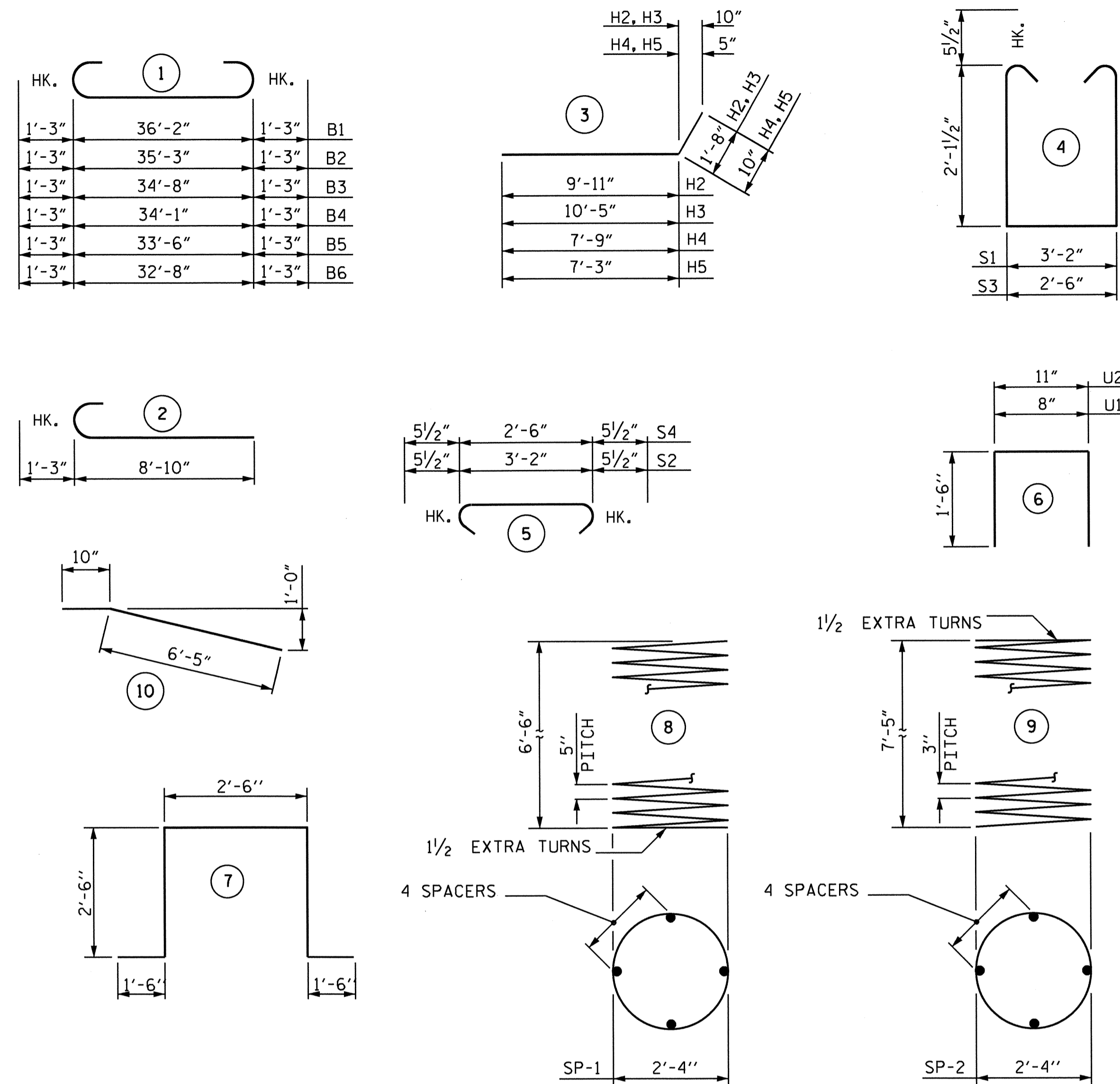


CONSTRUCTION JOINT DETAIL

DRAWN BY : D. HODGE DATE : 11/13
 CHECKED BY : H. KIM DATE : 12/13
 DESIGN ENGINEER OF RECORD : H. KIM DATE : 12/13

07-FEB-2014 09:48
 R:\Structures\Plans\FINAL PLANS\B-4762-SD.E*.dgn
 omlee

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL
END BENT No. 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	9	1	38'-8"	263
B2	2	9	1	37'-9"	257
B3	1	9	1	37'-2"	126
B4	2	9	1	36'-7"	249
B5	2	9	1	36'-0"	245
B6	2	9	1	35'-2"	239
B7	8	4	STR	19'-5"	104
D1	18	6	STR	1'-6"	41
H1	8	5	STR	33'-8"	281
H2	16	5	3	11'-7"	193
H3	16	5	3	12'-1"	202
H4	12	5	3	8'-7"	107
H5	12	5	3	8'-1"	101
H6	2	5	10	7'-3"	15
H7	8	5	STR	32'-7"	272
K1	12	4	STR	19'-5"	156
K2	2	4	STR	5'-2"	7
K3	2	4	STR	5'-6"	7
M1	36	9	STR	14'-6"	1775
S1	26	5	4	8'-4"	226
S2	26	5	5	4'-1"	111
S3	16	5	4	7'-8"	128
S4	16	5	5	3'-5"	57
U1	25	4	6	3'-8"	61
U2	22	4	6	3'-11"	58
U3	24	5	7	10'-6"	263
V1	50	5	STR	4'-2"	217
V2	68	5	STR	6'-10"	485
V3	28	5	STR	9'-4"	273
V4	14	5	STR	4'-8"	68
V5	6	5	STR	4'-4"	27
V6	4	5	STR	4'-0"	17
V7	4	5	STR	3'-8"	15
V8	28	5	STR	5'-2"	151
V9	36	9	2	10'-1"	1234
REINFORCING STEEL				LBS.	8,031
SP-1	3	*	8	122'-10"	384
SP-2	3	**	9	224'-7"	450
SPIRAL COLUMN REINFORCING STEEL				LBS.	834

DRILLED PIER QUANTITIES	
DRILLED PIER CONCRETE	
POUR 1 DRILLED PIERS	5.5 C.Y.
3'-0" Ø DRILLED PIER NOT IN SOIL:	21.0 LIN. FT.
3'-0" Ø DRILLED PIER IN SOIL:	0.0 LIN. FT.
▲ CSL TUBES	102.0 LIN. FT.
FOUNDATION EXCAVATION	41.0 C.Y.

CLASS A CONCRETE BREAKDOWN	
POUR 2 COLUMNS AND ABUTMENT WALL	24.9 C.Y.
POUR 3 CAP & LOWER PART OF WINGS	13.2 C.Y.
POUR 4 WINGS & BACKWALL	5.0 C.Y.
TOTAL CLASS A CONCRETE	43.1 C.Y.

- ▲ NO SEPARATE PAYMENT WILL BE MADE FOR CSL TUBES. CSL TUBES WILL BE INCLUDED IN THE UNIT PRICE BID FOR DRILLED PIERS.
- * THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.
- ** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

PROJECT NO. B-4762
HAYWOOD COUNTY
 STATION: 10+58.00 -L-

SHEET 5 OF 5

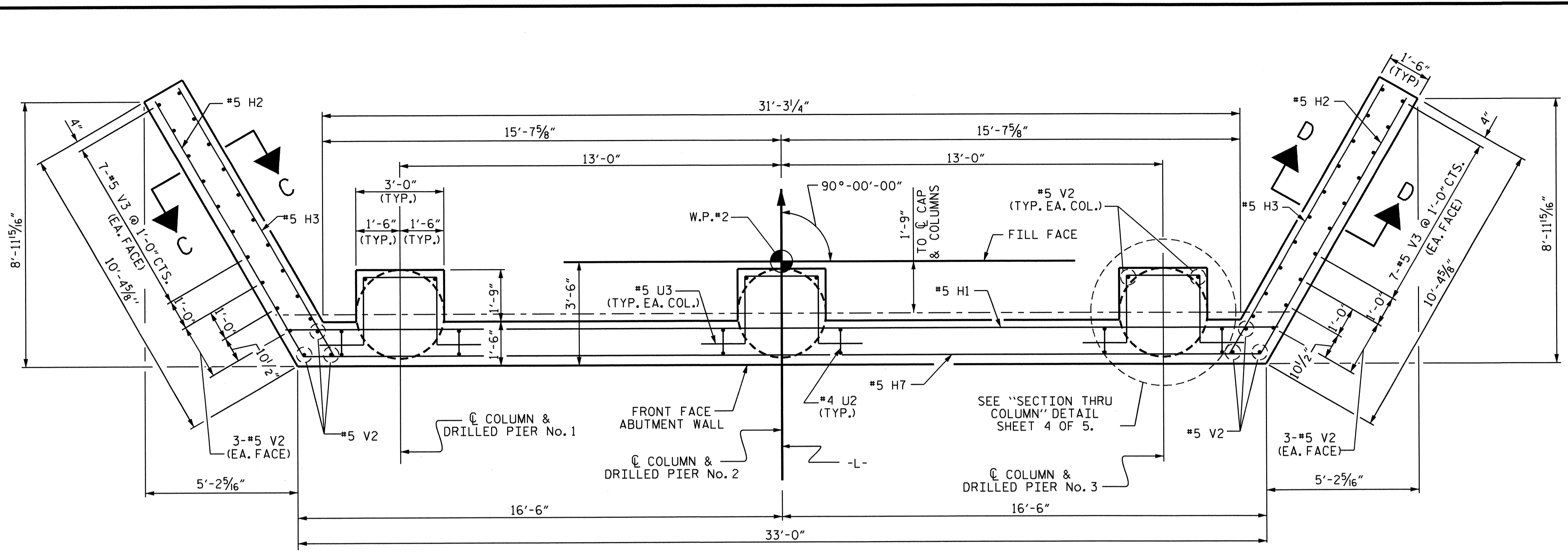
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1

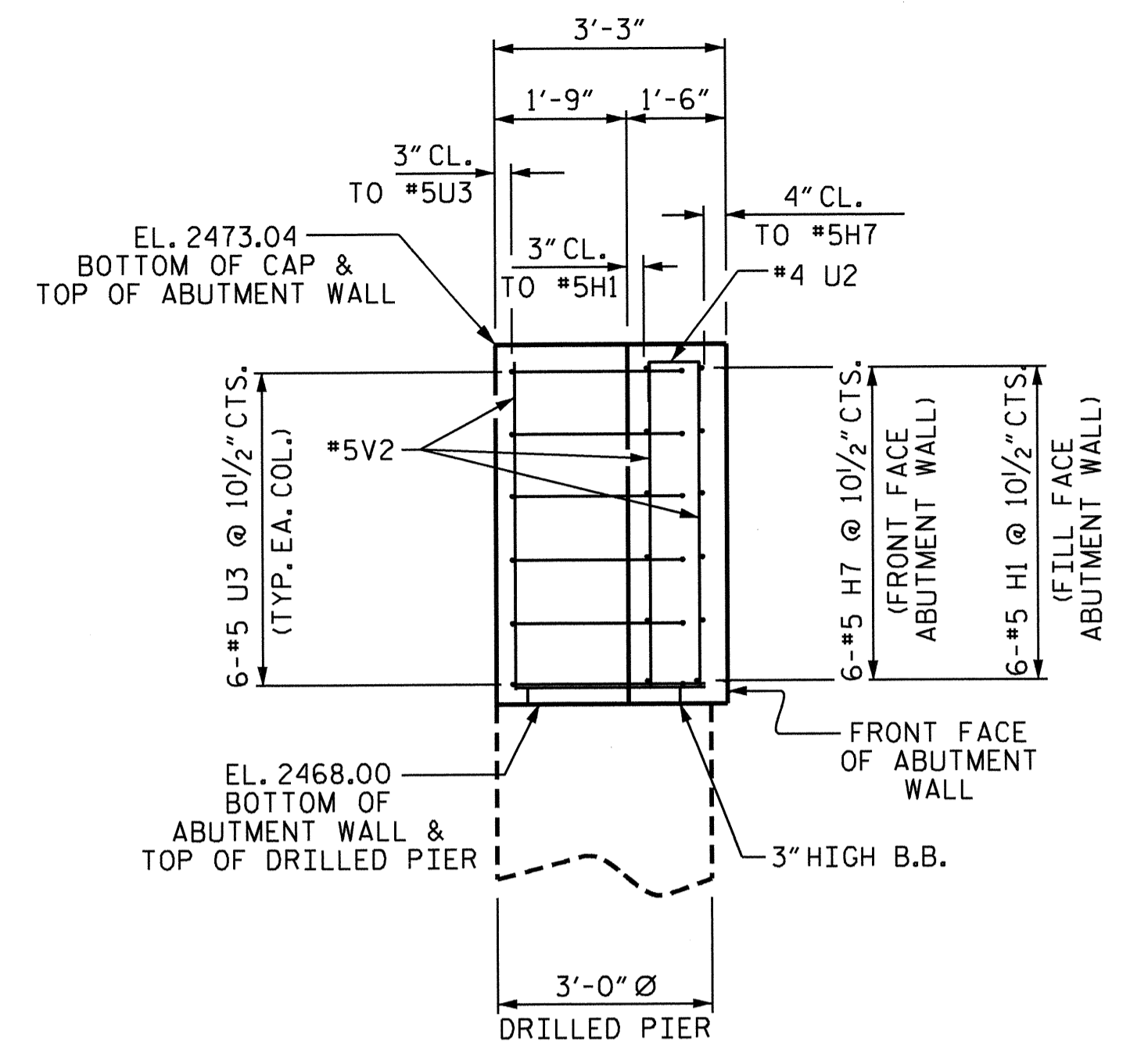


Wael S. Arap
 2-7-14

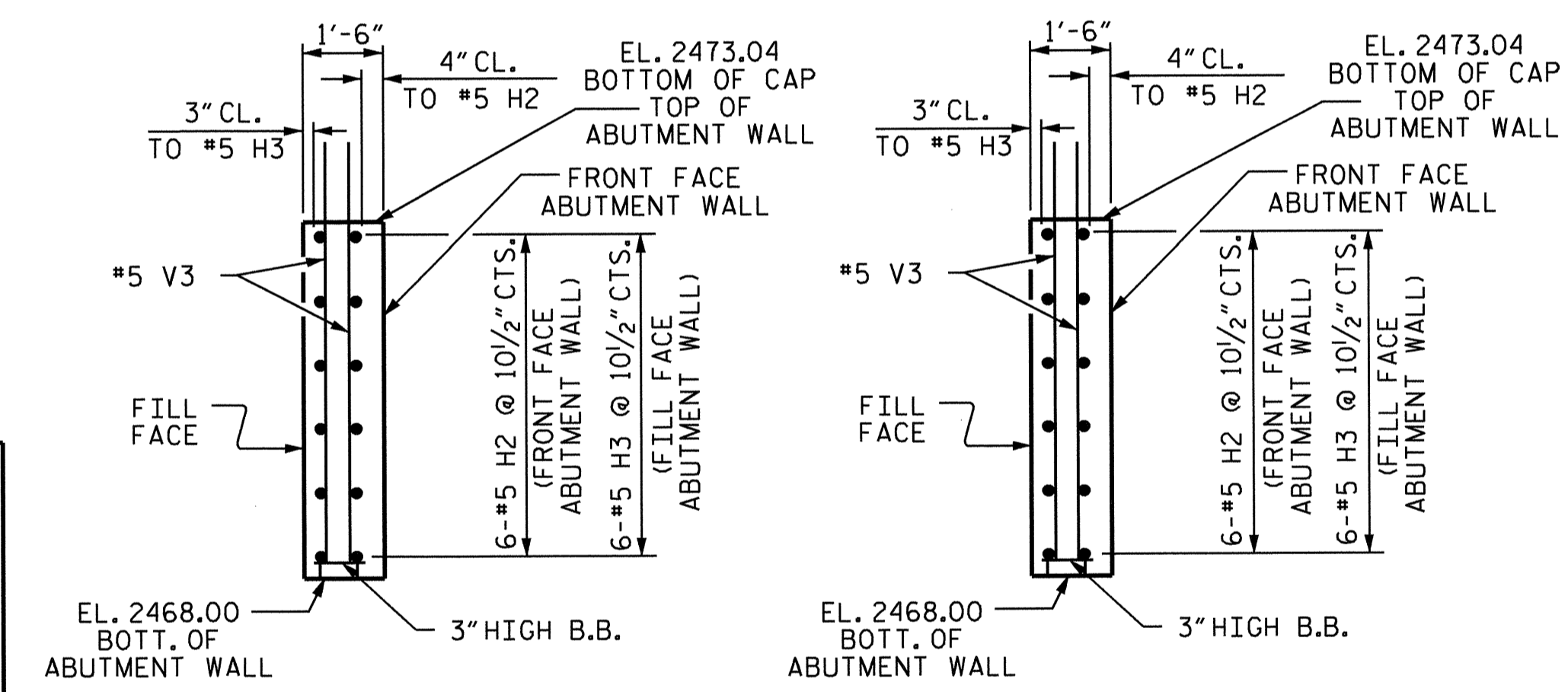
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			19



PLAN
(CAP AND BACKWALL NOT SHOWN FOR CLARITY)

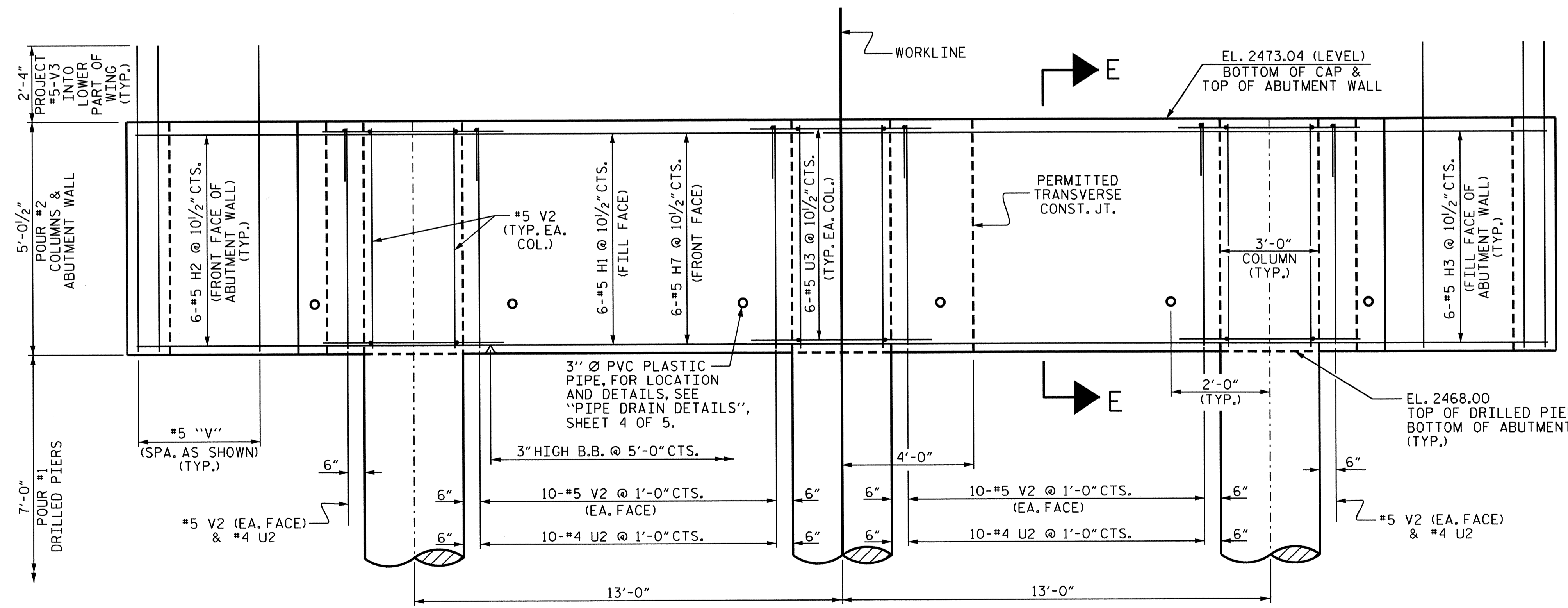


SECTION E-E



SECTION C-C

SECTION D-D



ELEVATION

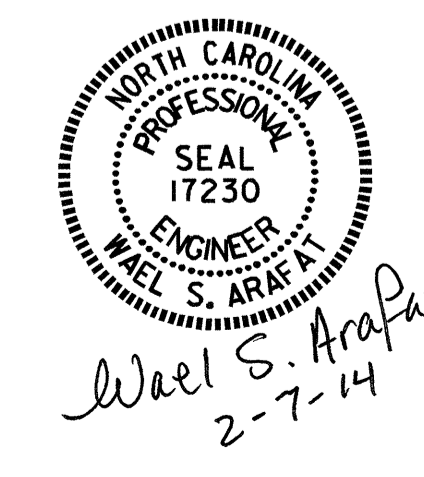
FOR M1, V8 & SPIRAL STEEL, SEE SHEET 1 OF 5.

PROJECT NO. B-4762
HAYWOOD COUNTY
 STATION: 10+58.00 -L-

SHEET 2 OF 5

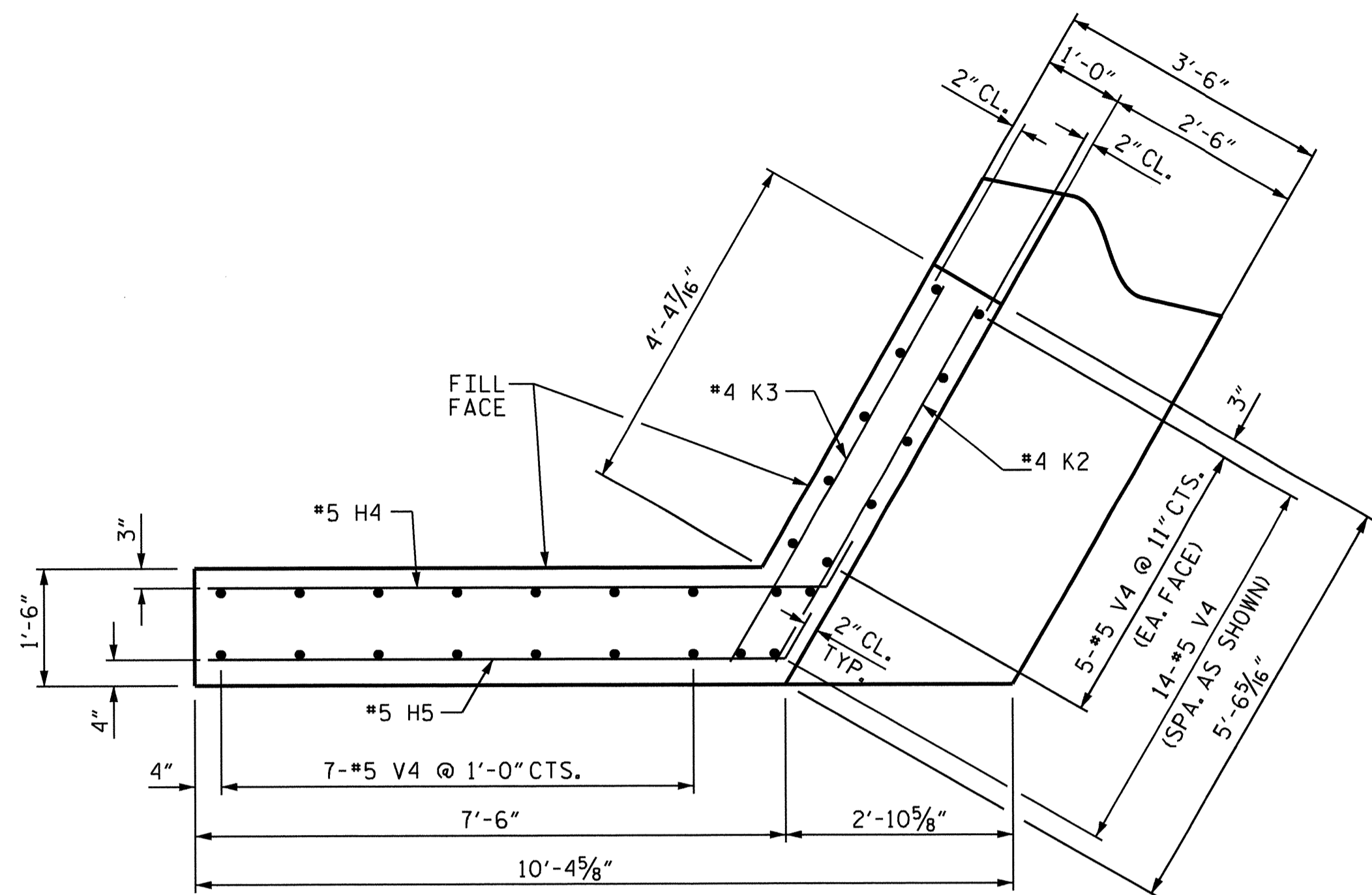
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 2

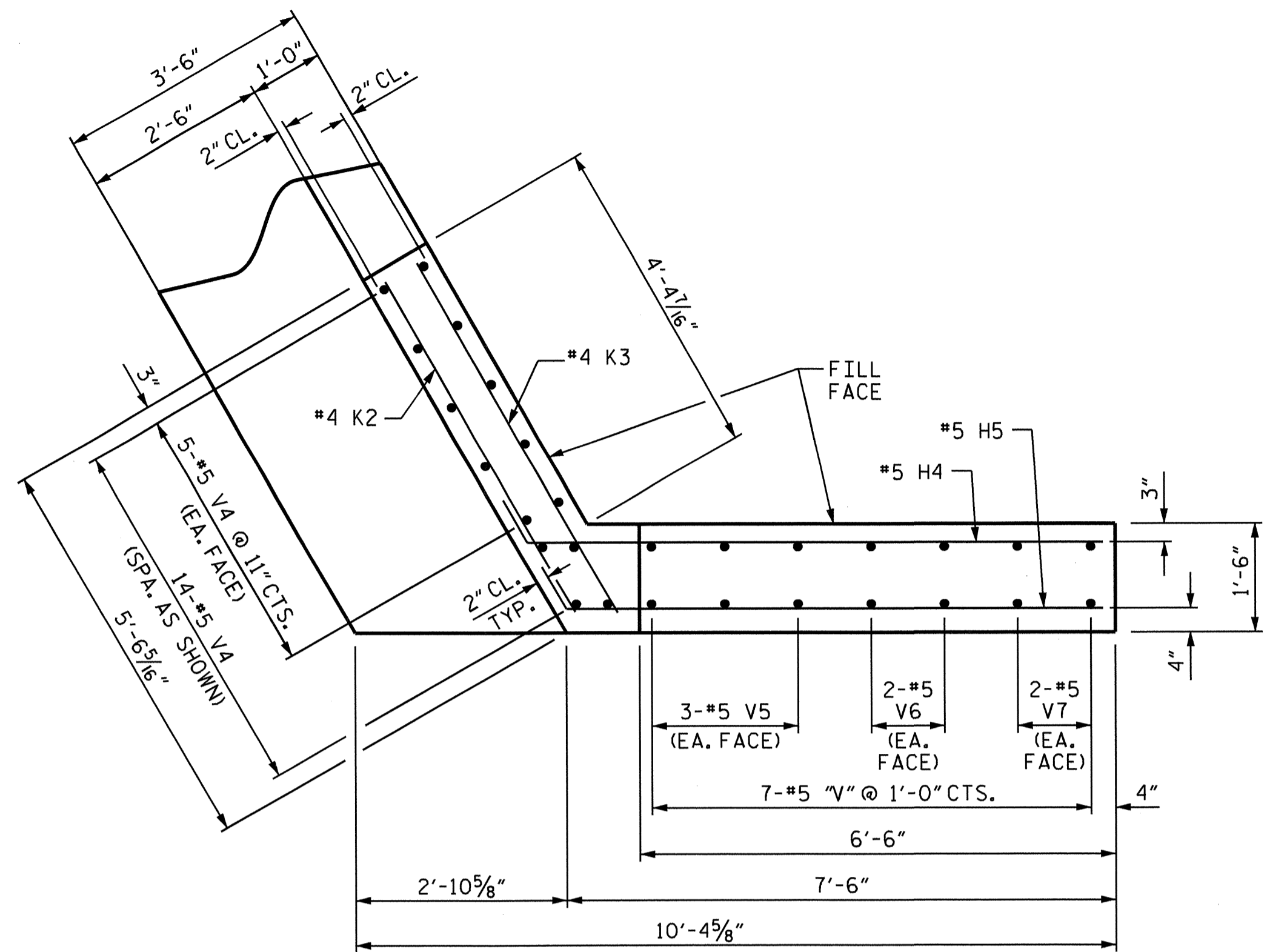


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			19

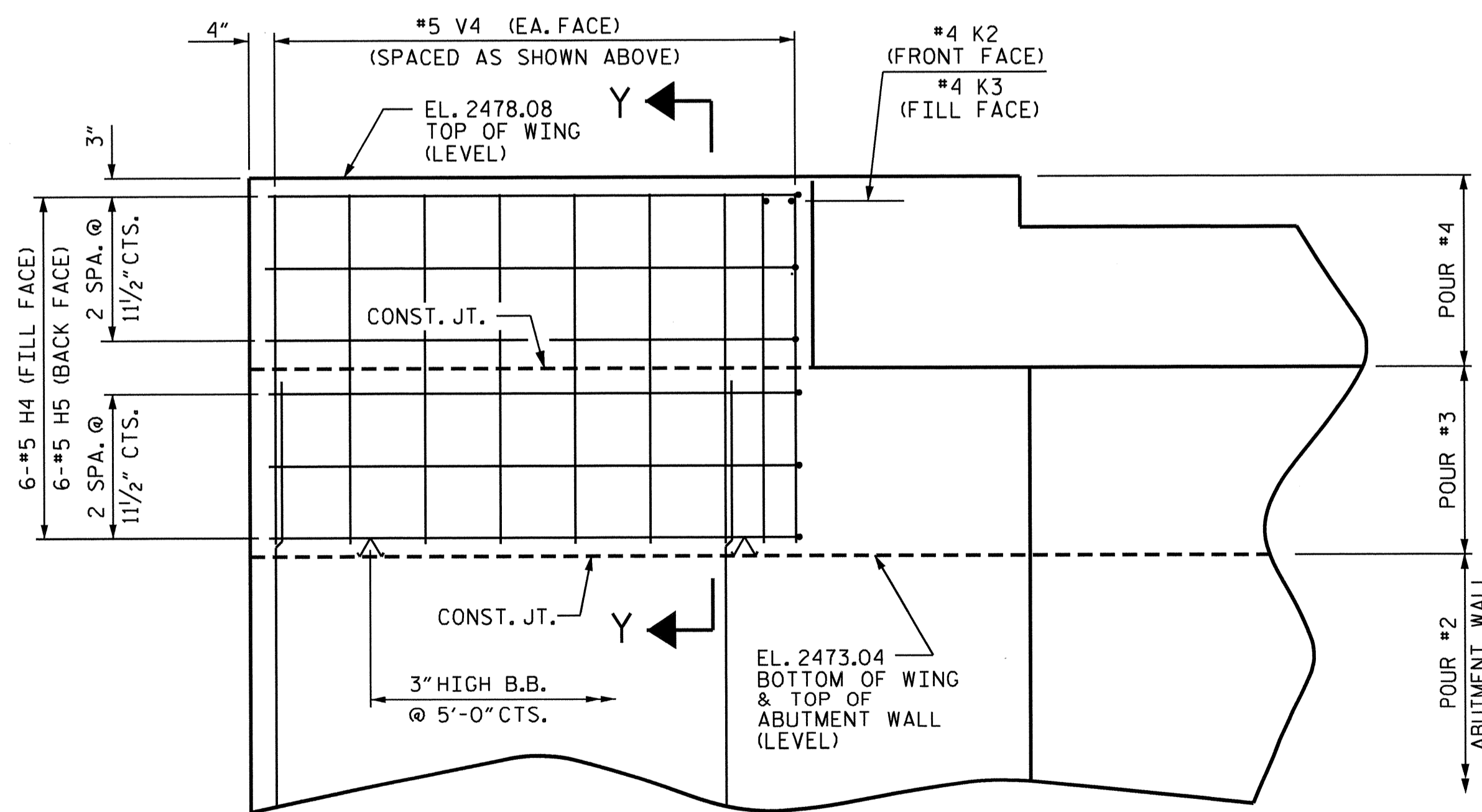
DRAWN BY: D. HODGE DATE: 11/13
 CHECKED BY: H. KIM DATE: 12/13
 DESIGN ENGINEER OF RECORD: H. KIM DATE: 12/13



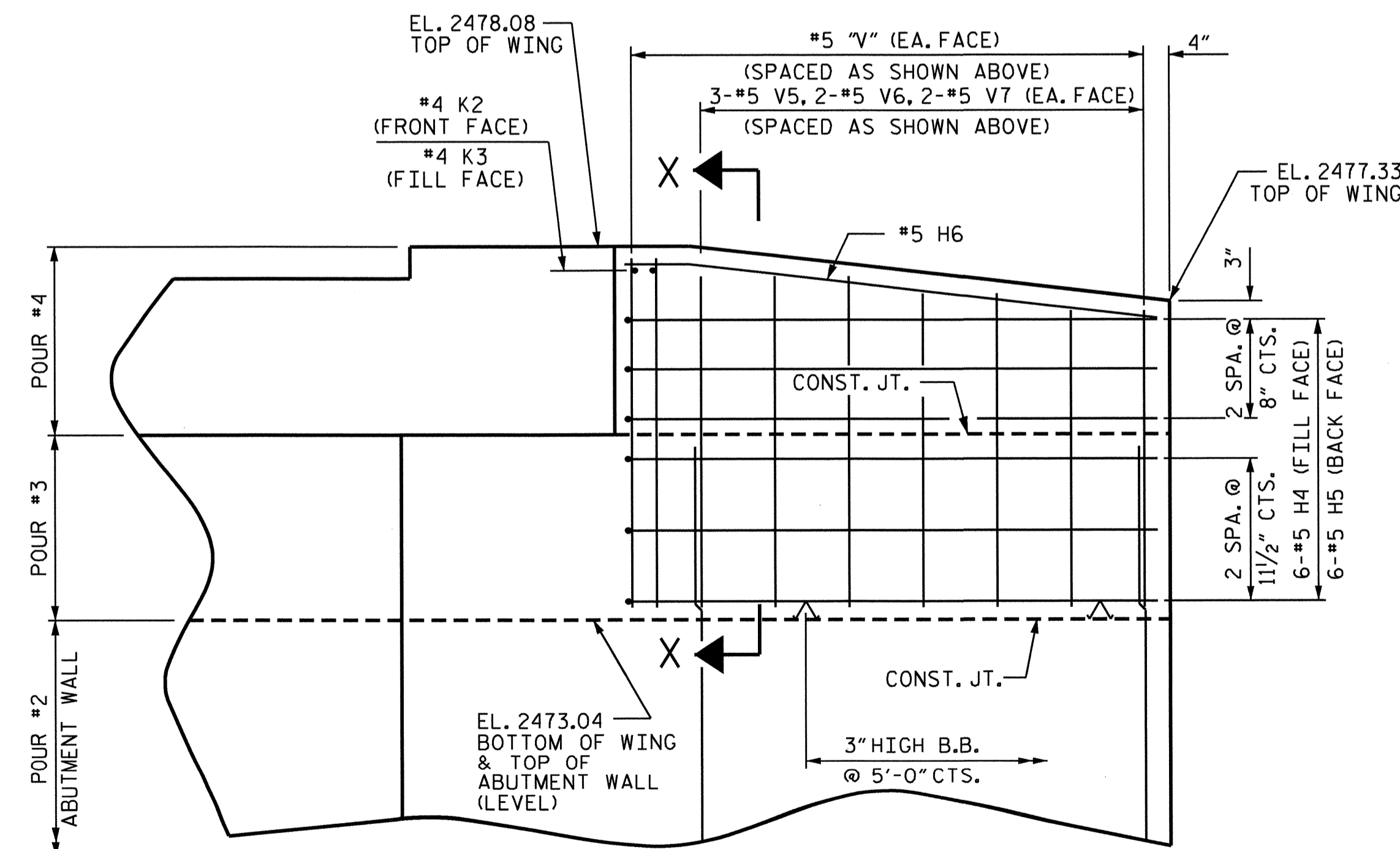
PLAN OF WING (W1)



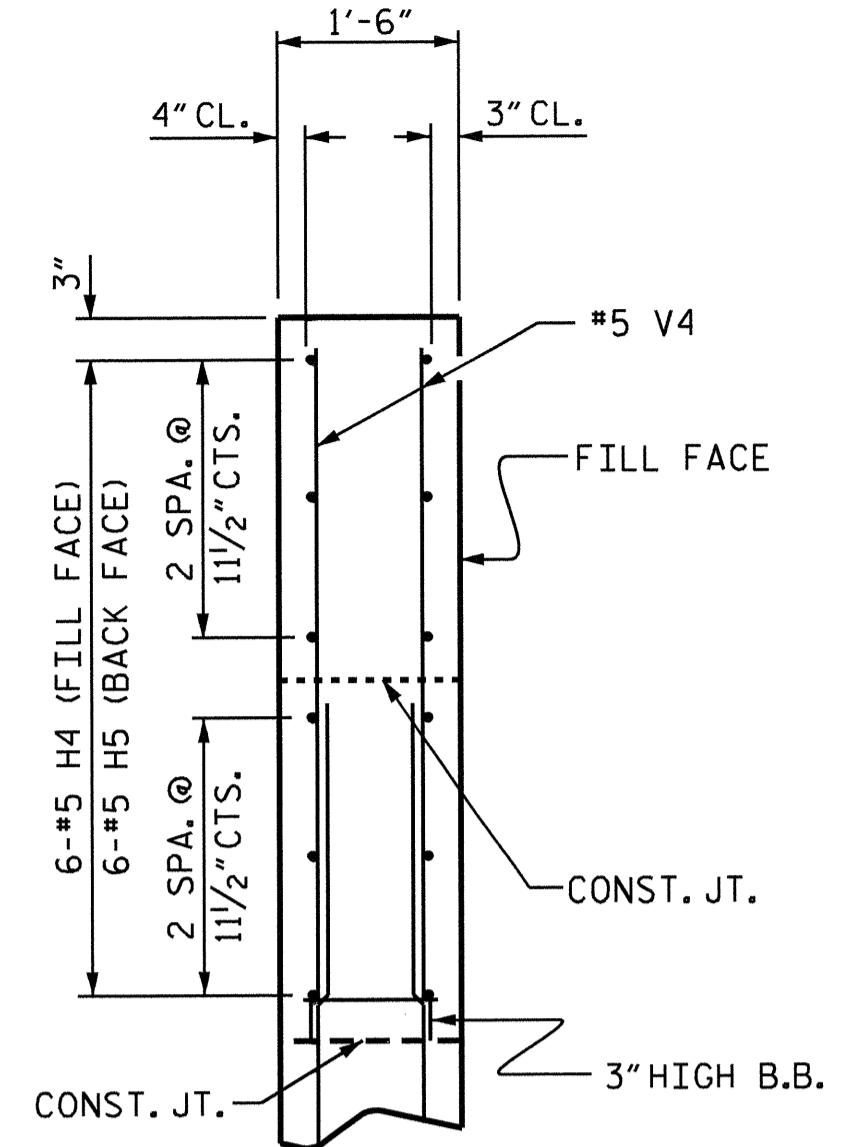
PLAN OF WING (W2)



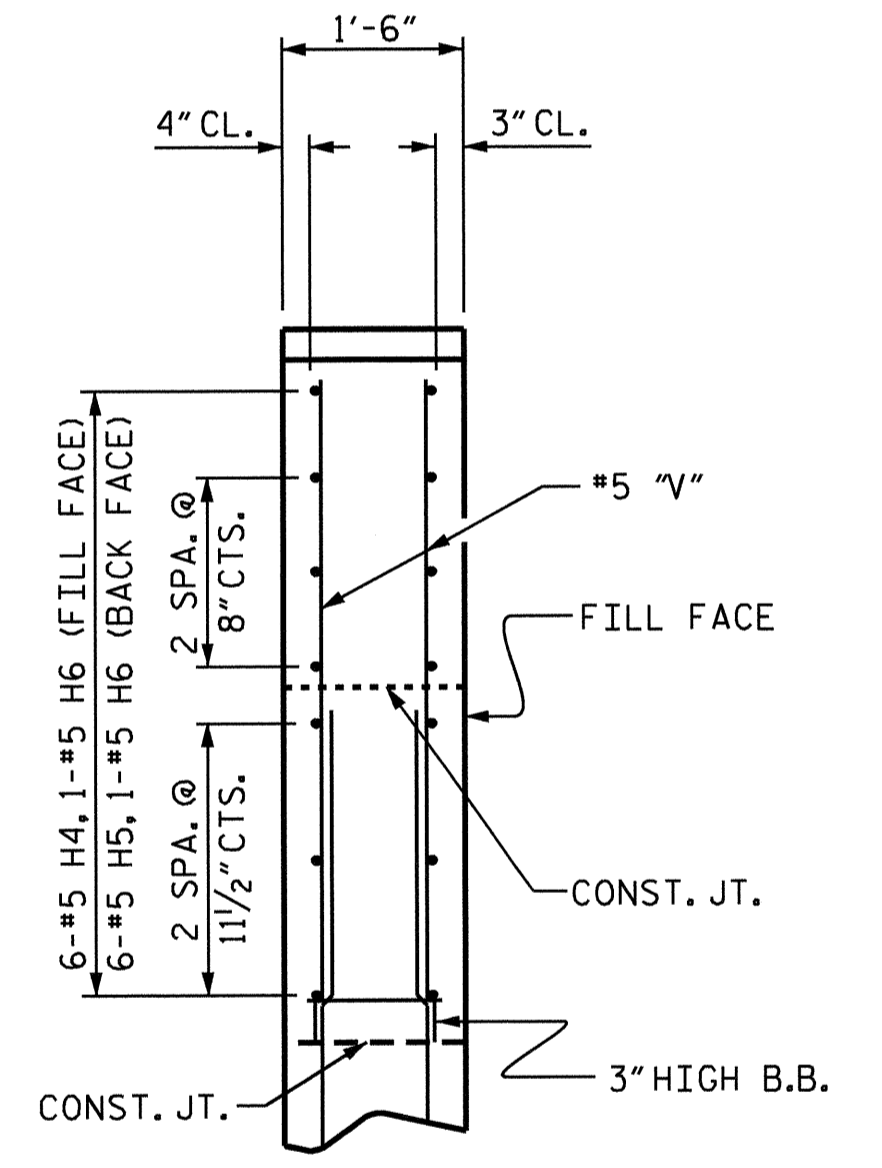
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION Y-Y



SECTION X-X

PROJECT NO. B-4762
 HAYWOOD COUNTY
 STATION: 10+58.00 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

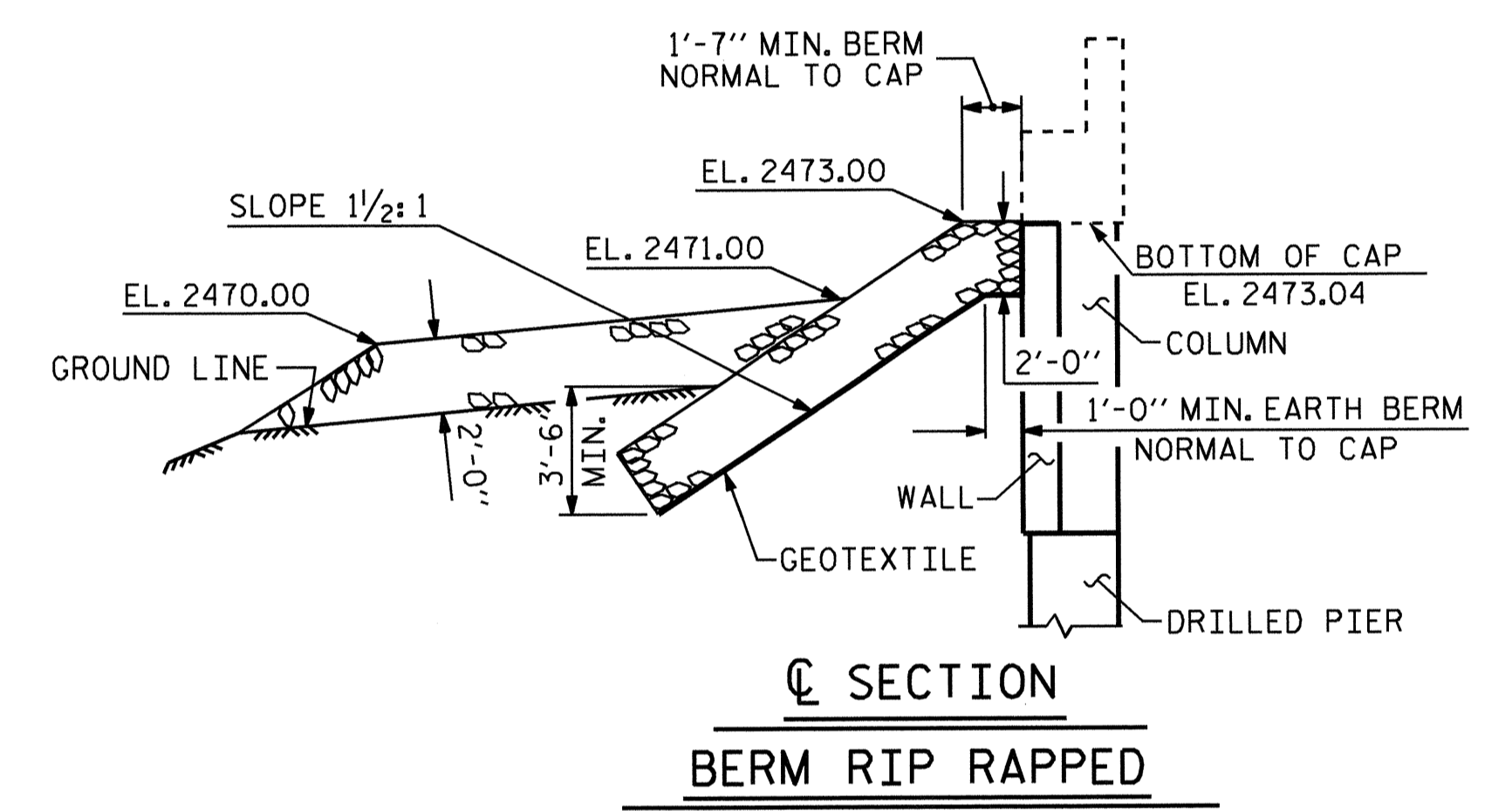
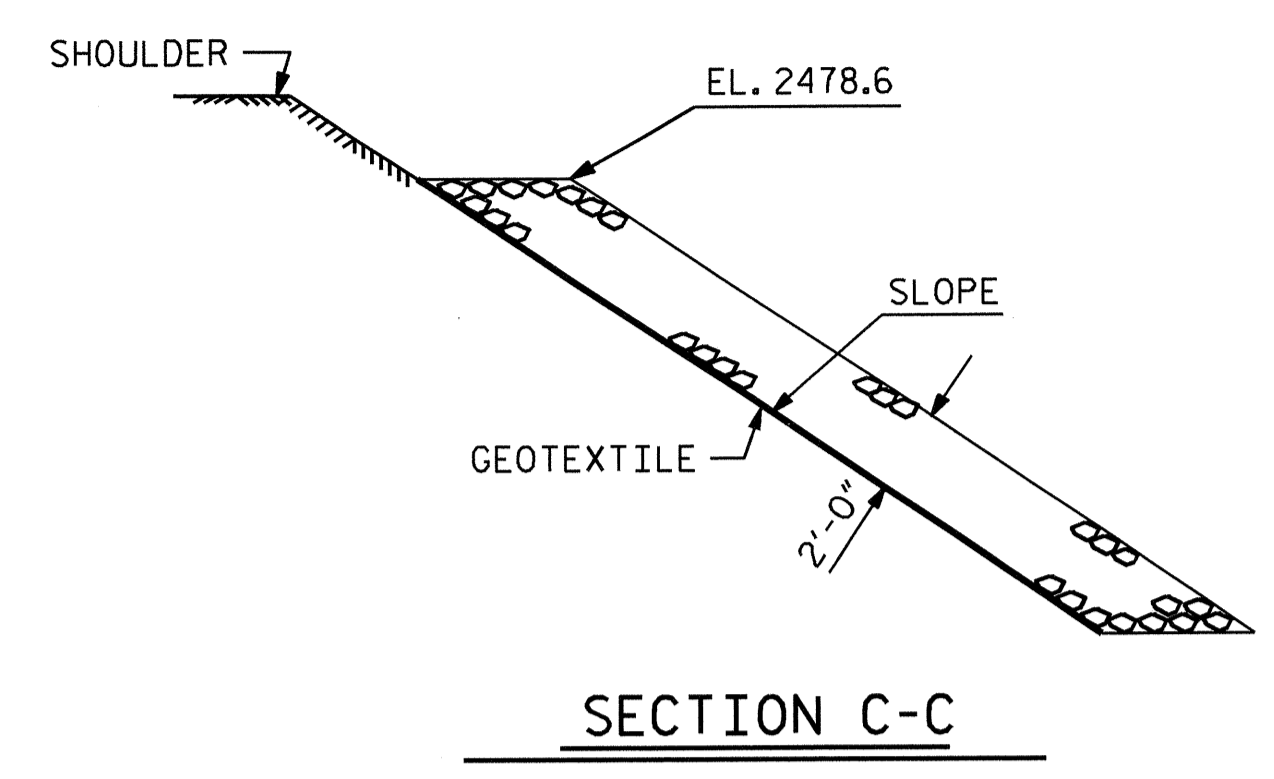
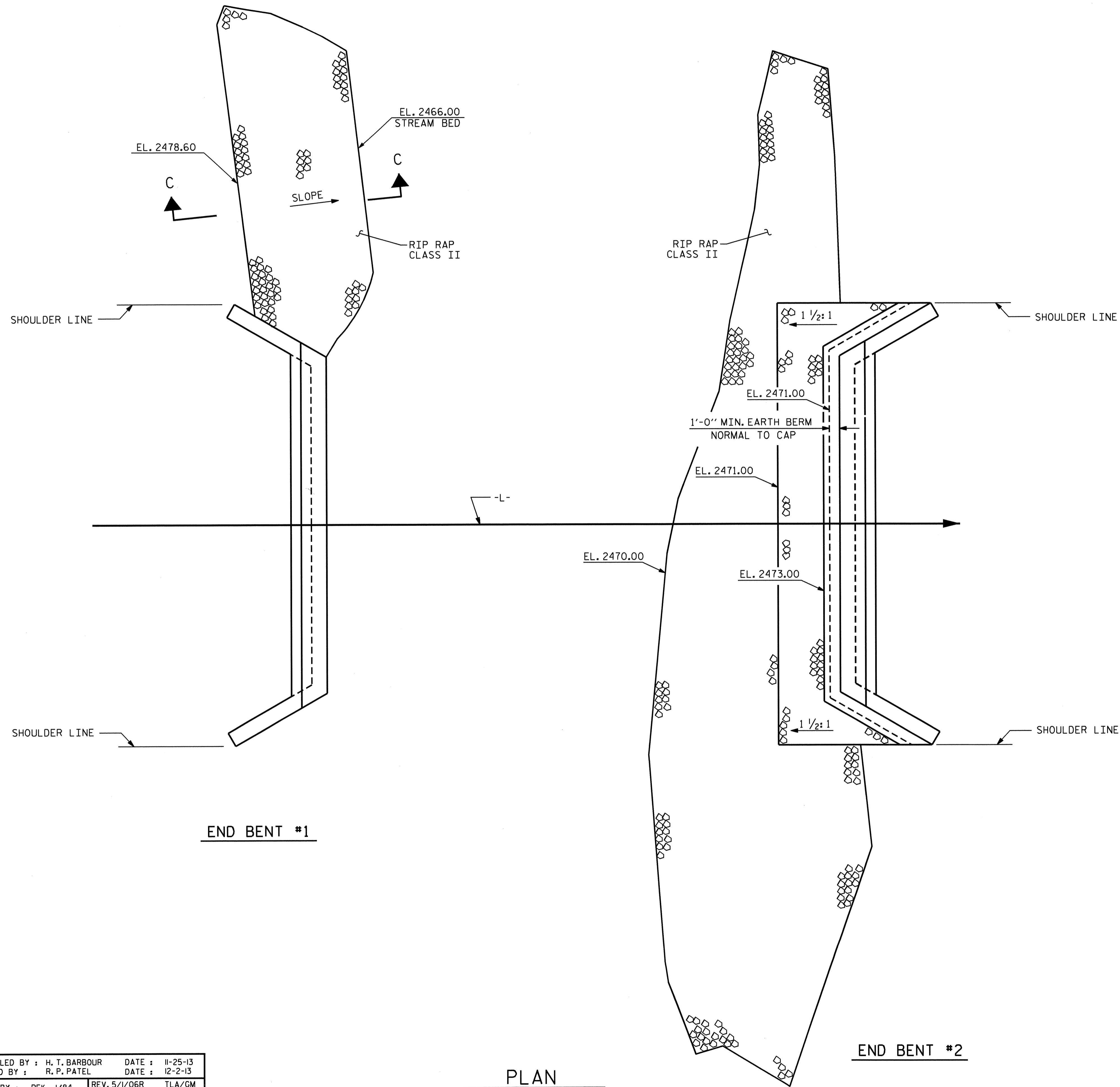
SUBSTRUCTURE
 END BENT No. 2



Mel S. Arapat
 2-7-14

DRAWN BY :	D. HODGE	DATE :	11/13
CHECKED BY :	H. KIM	DATE :	12/13
DESIGN ENGINEER OF RECORD :	H. KIM	DATE :	12/13

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16	
1			3			TOTAL SHEETS 19	
2			4				



ESTIMATED QUANTITIES		
BRIDGE @ STA. 10+58.00-L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	55	60
END BENT 2	165	180
TOTAL	220	240

PROJECT NO. B-4762
HAYWOOD COUNTY
 STATION: 10+58.00 -L-

Wael S. Arafa
 2-7-14



STATE OF NORTH CAROLINA
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 RALEIGH

== RIP RAP DETAILS ==

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

ASSEMBLED BY : H. T. BARBOUR DATE : 11-25-13
 CHECKED BY : R. P. PATEL DATE : 12-2-13
 DRAWN BY : REK 1/84 REV. 5/1/06R TLA/GM
 CHECKED BY : RDU 1/84 REV. 10/1/11 MAA/GM
 REV. 12/21/11 MAA/GM

PLAN

