

09/08/1999


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HENDERSON COUNTY

LOCATION: BRIDGE NO. 42 OVER SACONON CREEK
ON SR 1734 (STEEP MILL ROAD)

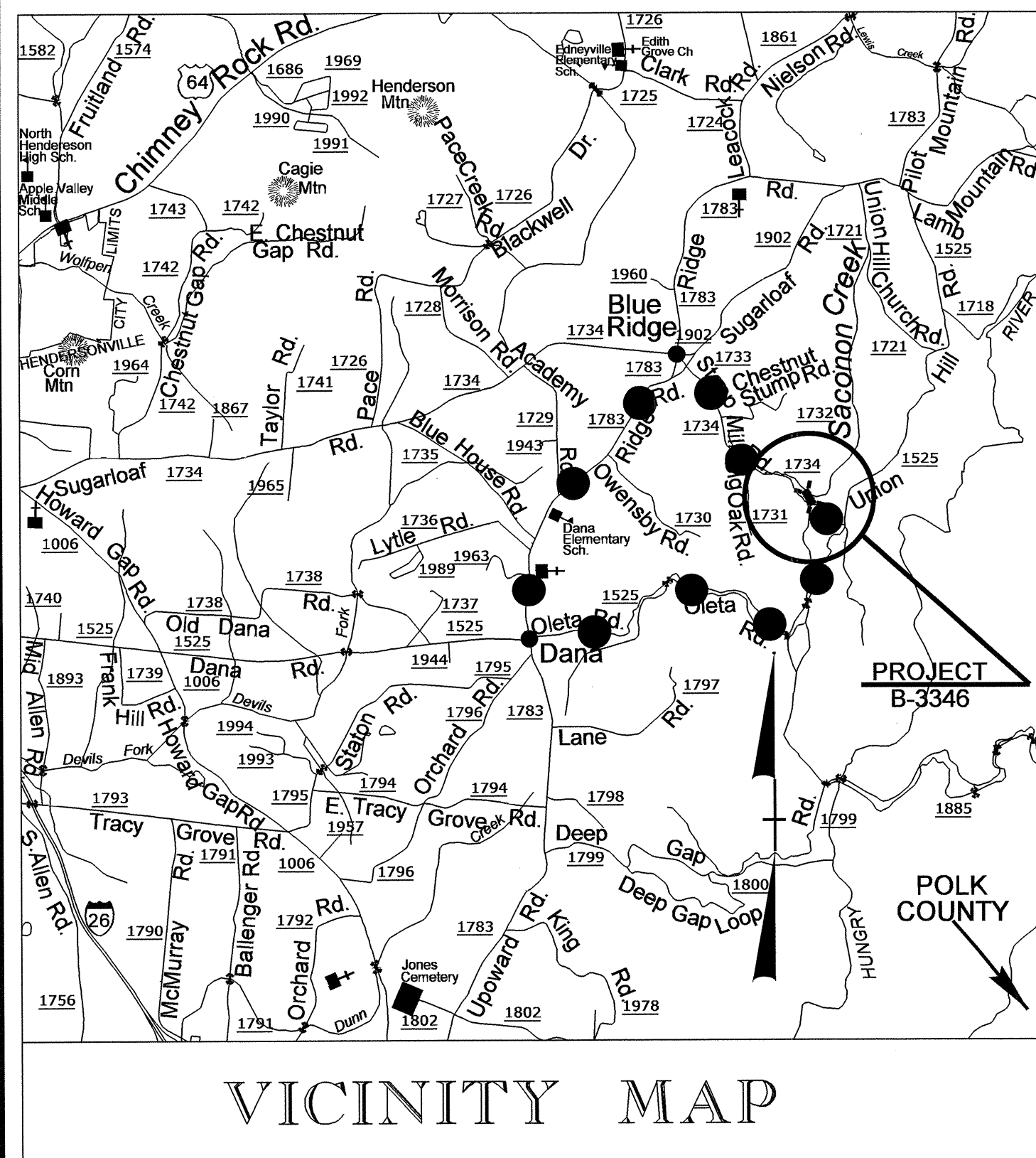
TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE,
RETAINING WALL, AND EXISTING STRUCTURE
RETROFIT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3346		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33004.1.1	BRZ-1734(3)	P.E.	
33004.2.1	BRZ-1734(3)	R/W & UTILITIES	
33004.3.FD1	BRZ-1734(3)	CONST.	



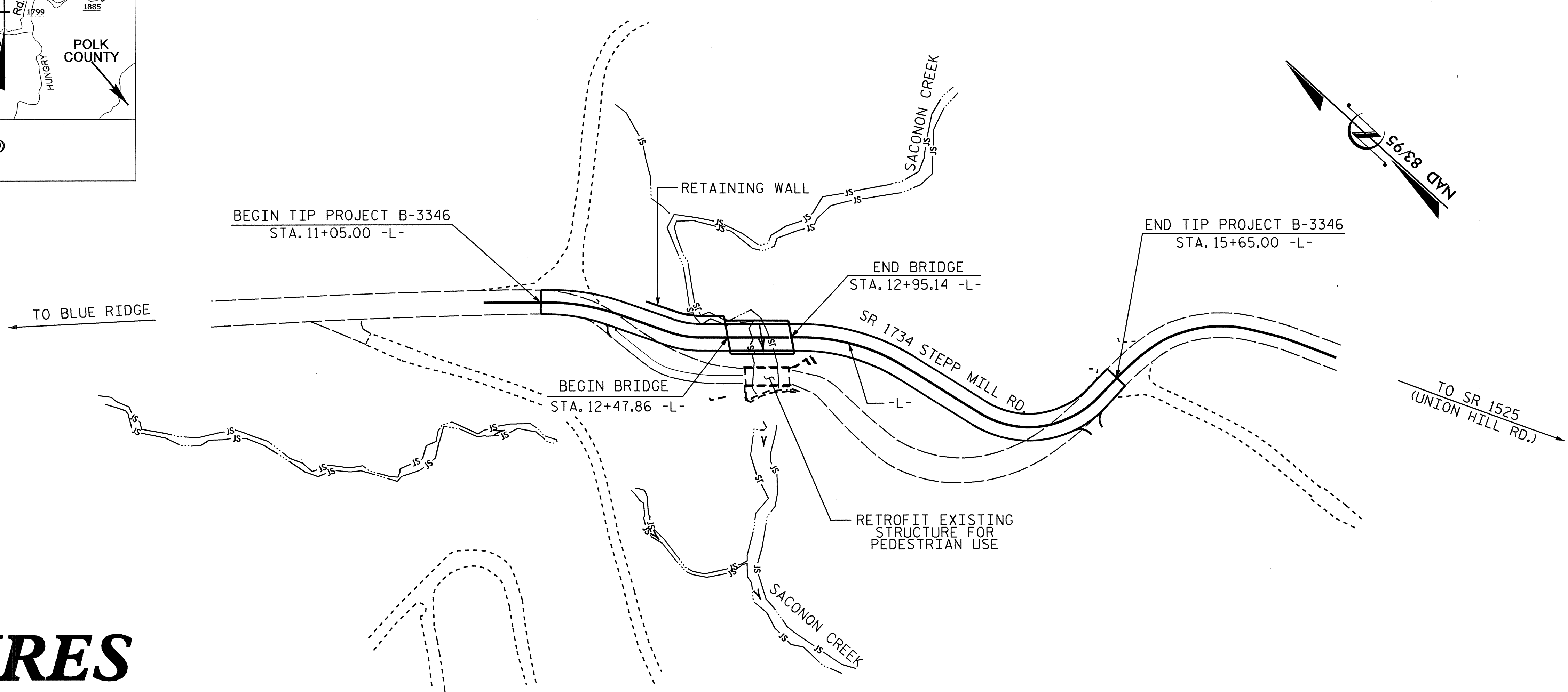
TIP PROJECT: B-3346

CONTRACT: C203347

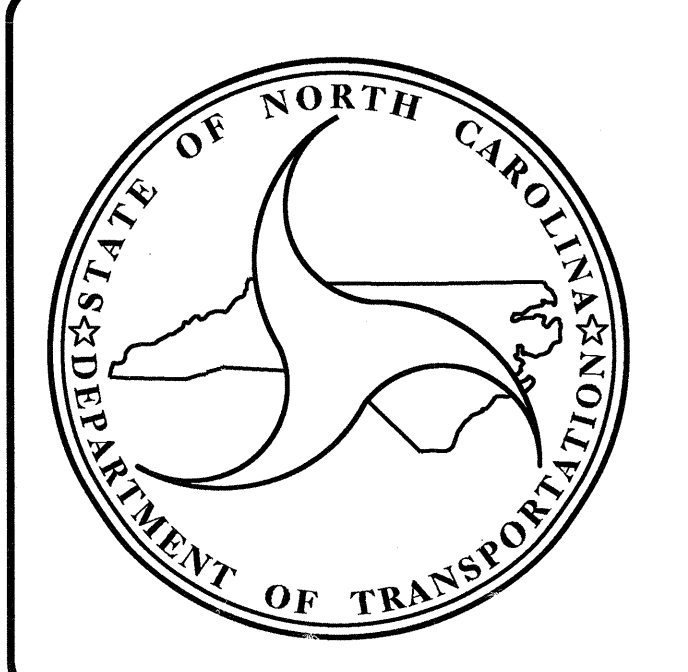


VICINITY MAP

● ● ● ● ● DETOUR ROUTE



STRUCTURES



DESIGN DATA

ADT 2014 = 580
 ADT 2035 = 900
 DHV = 12 %
 D = 60 %
 T = 12 % *
 V = 15 MPH
 *TTST 1% DUAL 11%

FUNC CLASS=RURAL LOCAL
 SUB REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3346 = 0.078 MILES
 LENGTH STRUCTURE TIP PROJECT B-3346 = 0.009 MILES
 TOTAL LENGTH OF TIP PROJECT B-3346 = 0.087 MILES

Prepared in the Office of:

DIVISION OF HIGHWAYS
 1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

LETTING DATE:
 FEBRUARY 18, 2014

QUANG NGUYEN, P.E.
 PROJECT ENGINEER

W. S. ARAFAT, PE
 PROJECT DESIGN ENGINEER

STRUCTURE MANAGEMENT UNIT

DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA

P.E.

STATE DESIGN ENGINEER

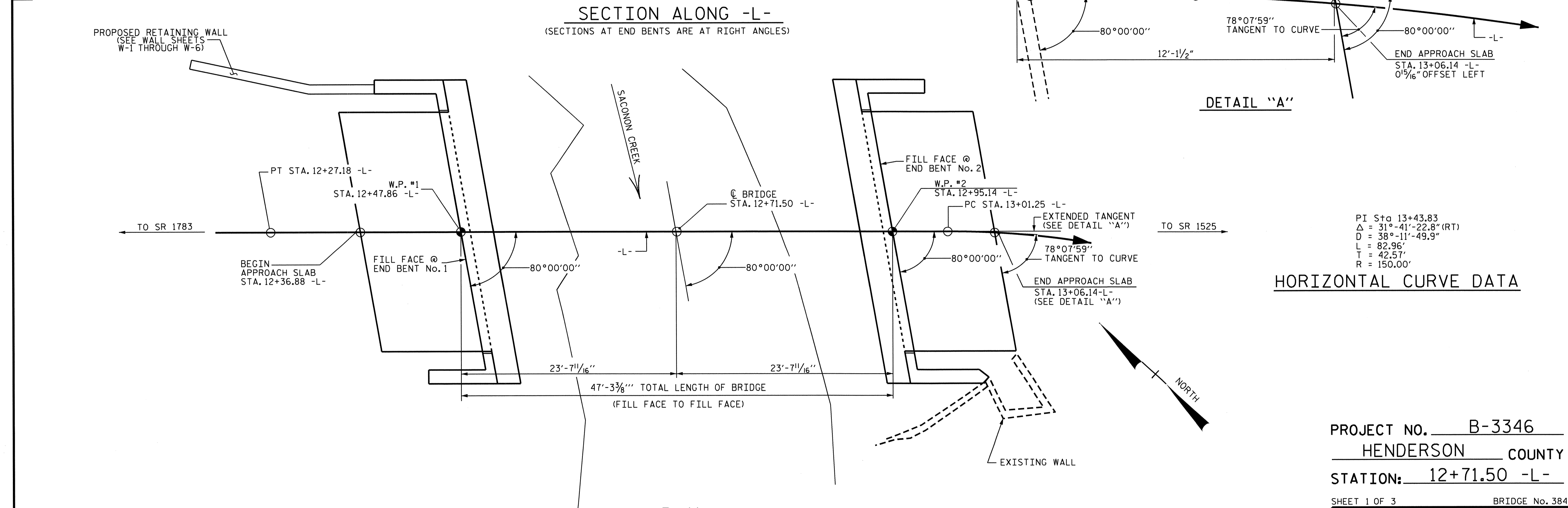
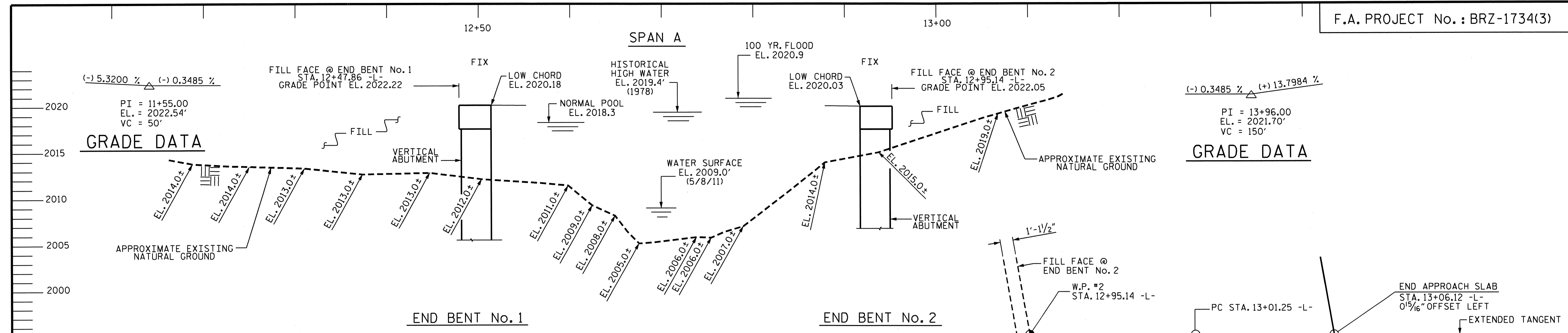
DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION

APPROVED

DIVISION ADMINISTRATOR

DATE

19-DEC-2013 15:03
\$\$\$\$\$\$\$\$\$DCNN\$\$\$\$\$\$\$\$\$
danhodg



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

HORIZONTAL CURVE DATA
 PI Sta 13+43.83
 Δ = 31°-41'-22.8" (RT)
 D = 38°-11'-49.9"
 L = 82.96'
 T = 42.57'
 R = 150.00'

PROJECT NO. B-3346
 HENDERSON COUNTY
 STATION: 12+71.50 -L-
 SHEET 1 OF 3 BRIDGE No. 384

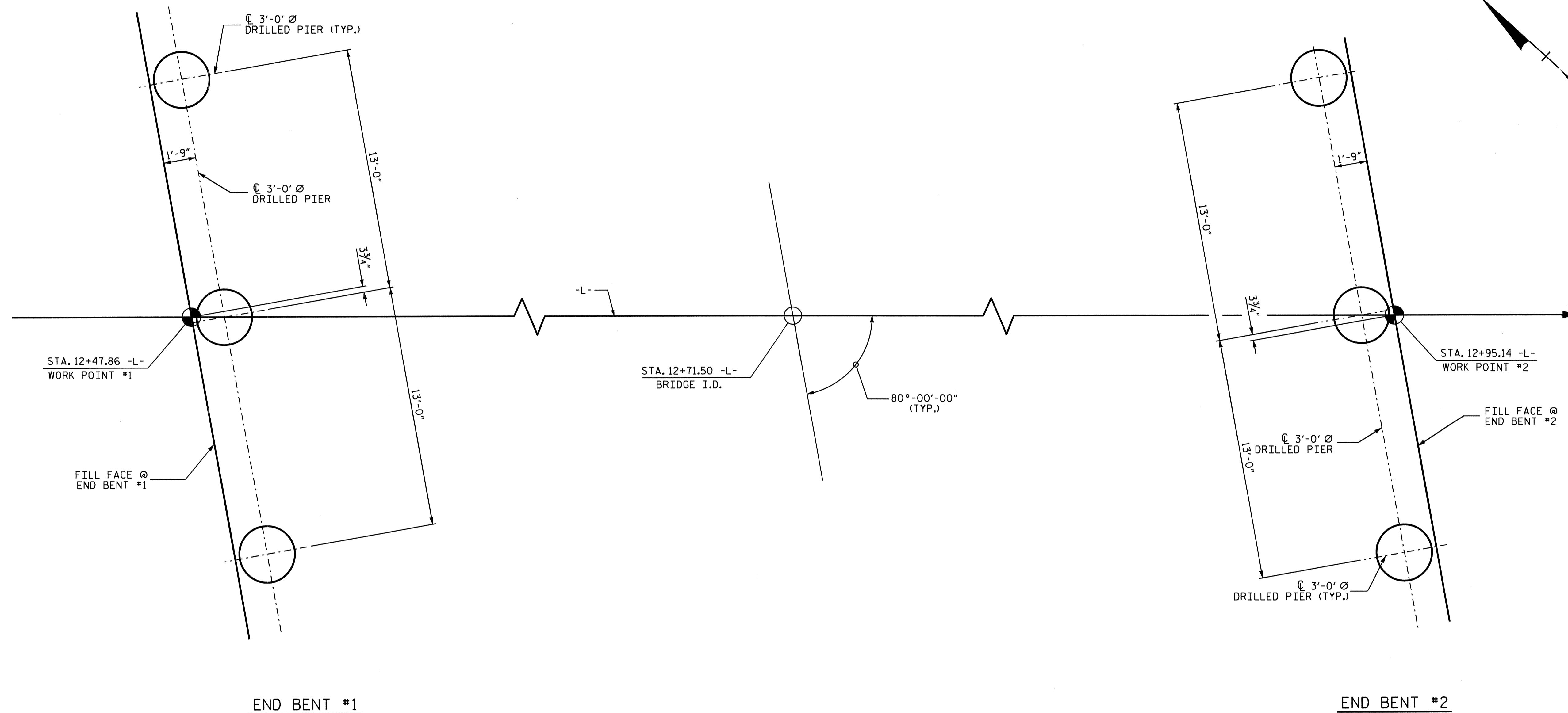
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE OVER SACNON CREEK
 ON SR 1734 (STAPP MILL RD.)
 BETWEEN SR 1783 AND SR 1525



Quang H. Nguyen 12-20-13
 Wael S. Arafa 12-20-13

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

DRAWN BY : V. NGUYEN/R. PATEL DATE : 08/30/13
 CHECKED BY : H. T. BARBOUR DATE : 10-04-13



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 200.0 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30.0 TSF.
- INSTALL DRILLED PIERS AT END BENT NO. 1 TO A TIP ELEVATION NO HIGHER THAN 1987.0 FT AND WITH THE REQUIRED TIP RESISTANCE.
- DRILLED PIERS AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 188.0 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30.0 TSF.
- INSTALL DRILLED PIERS AT END BENT NO. 2 TO A TIP ELEVATION NO HIGHER THAN 1998.0 FT (LT), 2001.0 FT (CT), 2004.0 (RT) AND WITH THE REQUIRED TIP RESISTANCE.
- 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 TESTING 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 TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SPT TESTING. FOR SPT TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. B-3346
HENDERSON COUNTY
 STATION: 12+71.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE OVER SACONON CREEK
 ON SR 1734 (STAPP MILL RD.)
 BETWEEN SR 1783 AND SR 1525



Wael S. Arafat
 12-20-13

DRAWN BY: R.P. PATEL DATE: 10-21-13
 CHECKED BY: H.T. BARBOUR DATE: 10-24-13
 DESIGN ENGINEER OF RECORD: H. KIM DATE: 10-13

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

B.M. #2 : 8" SPIKE SET IN POWER POLE NEAR EXISTING BRIDGE STA. 13+28.00 -L-, 59' RT.; EL. 2021.90 NGVD29

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS

HYDRAULIC DATA

DESIGN DISCHARGE.....415 CFS.
 FREQUENCY OF DESIGN FLOOD.....25 YEARS
 DESIGN HIGH WATER ELEVATION.....2020.50 FT.
 DRAINAGE AREA.....1.06 SQ. MI.
 BASE DISCHARGE (Q100).....600 CFS.
 BASE HIGH WATER ELEVATION.....2020.90 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE.....N/A
 FREQUENCY OF OVERTOPPING FLOOD.....500 YRS. +
 OVERTOPPING FLOOD ELEVATION.....2021.95 FT.

NOTES

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.

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

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

THIS BRIDGE IS LOCATED IN SEISMIC 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. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

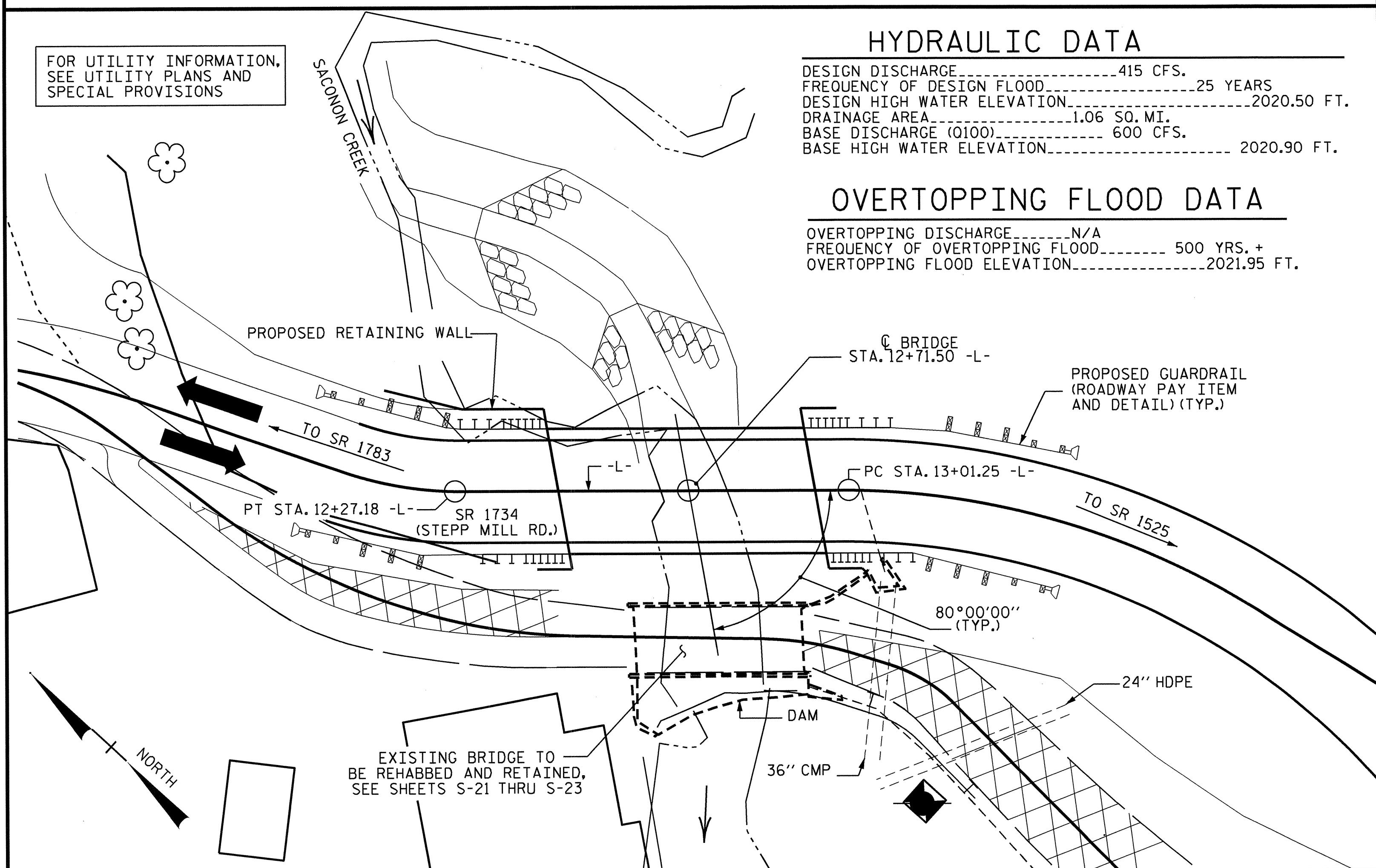
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR TYPE T101 RAIL, SEE SPECIAL PROVISIONS.

FOR APPLICATION OF BRIDGE COATING, SEE SPECIAL PROVISIONS.

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

FOR ARCHITECTURAL CONCRETE SURFACE TREATMENT, SEE GEOTECHNICAL SPECIAL PROVISIONS.



LOCATION SKETCH

TOTAL BILL OF MATERIAL

	FOUNDATION EXCAVATION	3'-0" Ø DRILLED PIER IN SOIL	3'-0" Ø DRILLED PIER NOT IN SOIL	SID INSPECTIONS	SPT TESTING	CSL TESTING	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	ELASTOMERIC BEARINGS	3'-0" X 1'-6" PRESTRESSED CONCRETE CORED SLABS		APPLICATION OF BRIDGE COATING	TYPE T101 RAIL	ARCHITECTURAL CONCRETE SURFACE TREATMENT
	CU. YDS.	LIN. FT.	LIN. FT.	EA.	EA.	EA.	CU. YDS.	LUMP SUM	LBS.	LBS.	LUMP SUM	NO.	LIN. FT.	LUMP SUM	LIN. FT.	SQ. FT.
SUPERSTRUCTURE								LUMP SUM			LUMP SUM	9	405.0	LUMP SUM	84.67	
END BENT NO. 1	129	21.0	27.0				59.0		10728	1751						194
END BENT NO. 2	72	3.0	24.0				40.4		7809	961						95
TOTAL	201	24.0	51.0	6	12	1	99.4	LUMP SUM	18537	2712	LUMP SUM	9	405.0	LUMP SUM	84.67	289

PROJECT NO. B-3346
 HENDERSON COUNTY
 STATION: 12+71.50 -L-

SHEET 3 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE OVER SACNON CREEK
 ON SR 1734 (STEPP MILL RD.)
 BETWEEN SR 1783 AND SR 1525

Wael S. Arafa
 12-20-13



DRAWN BY : V. NGUYEN/R. PATEL DATE : 08/30/13
 CHECKED BY : H. T. BARBOUR DATE : 10-04-13

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

LOAD FACTORS:

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

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(Inv)	N/A	1	1.15	--	1.75	0.277	1.43	A	EL	22	0.612	1.69	A	EL	2.2	0.80	0.277	1.15	A	EL	22.000		
	HL-93(Opr)	N/A	--	1.85	--	1.35	0.277	1.85	A	EL	22	0.612	2.19	A	EL	2.2	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.41	50.783	1.75	0.277	1.75	A	EL	22	0.612	2	A	EL	2.2	0.80	0.277	1.41	A	EL	22.000		
	HS-20(Opr)	36.000	--	2.27	81.666	1.35	0.277	2.27	A	EL	22	0.612	2.59	A	EL	2.2	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.76	37.215	1.4	0.277	4.27	A	EL	22	0.612	5.34	A	EL	8.8	0.80	0.277	2.76	A	EL	22.000	
		SNGARBS2	20.000	--	2.23	44.515	1.4	0.277	3.45	A	EL	22	0.612	4	A	EL	8.8	0.80	0.277	2.23	A	EL	22.000	
		SNAGRIS2	22.000	--	2.17	47.777	1.4	0.277	3.34	A	EL	17.6	0.612	3.79	A	EL	8.8	0.80	0.277	2.17	A	EL	22.000	
		SNCOTTS3	27.250	--	1.38	37.506	1.4	0.277	2.13	A	EL	22	0.612	2.69	A	EL	8.8	0.80	0.277	1.38	A	EL	22.000	
		SNAGRS4	34.925	--	1.22	42.419	1.4	0.277	1.88	A	EL	22	0.612	2.37	A	EL	8.8	0.80	0.277	1.21	A	EL	22.000	
		SNS5A	35.550	--	1.18	42.061	1.4	0.277	1.83	A	EL	22	0.612	2.47	A	EL	2.2	0.80	0.277	1.18	A	EL	22.000	
		SNS6A	39.950	--	1.11	44.524	1.4	0.277	1.73	A	EL	22	0.612	2.3	A	EL	2.2	0.80	0.277	1.11	A	EL	22.000	
	SNS7B	42.000	3	1.06	44.623	1.4	0.277	1.65	A	EL	22	0.612	2.31	A	EL	2.2	0.80	0.277	1.06	A	EL	22.000		
	TTST	TNAGRIT3	33.000	--	1.37	45.141	1.4	0.277	2.12	A	EL	22	0.612	2.7	A	EL	2.2	0.80	0.277	1.37	A	EL	22.000	
		TNT4A	33.075	--	1.38	45.717	1.4	0.277	2.14	A	EL	22	0.612	2.58	A	EL	8.8	0.80	0.277	1.38	A	EL	22.000	
		TNT6A	41.600	--	1.16	48.258	1.4	0.277	1.8	A	EL	22	0.612	2.51	A	EL	2.2	0.80	0.277	1.16	A	EL	22.000	
		TNT7A	42.000	--	1.18	49.664	1.4	0.277	1.83	A	EL	22	0.612	2.33	A	EL	2.2	0.80	0.277	1.18	A	EL	22.000	
		TNT7B	42.000	--	1.23	51.704	1.4	0.277	1.91	A	EL	22	0.612	2.22	A	EL	2.2	0.80	0.277	1.23	A	EL	22.000	
		TNAGRIT4	43.000	--	1.17	50.417	1.4	0.277	1.82	A	EL	22	0.612	2.13	A	EL	2.2	0.80	0.277	1.17	A	EL	22.000	
TNAGT5A		45.000	--	1.09	49.096	1.4	0.277	1.69	A	EL	22	0.612	2.18	A	EL	2.2	0.80	0.277	1.09	A	EL	22.000		
TNAGT5B	45.000	--	1.07	47.937	1.4	0.277	1.65	A	EL	22	0.612	2.02	A	EL	2.2	0.80	0.277	1.07	A	EL	22.000			

NOTES:

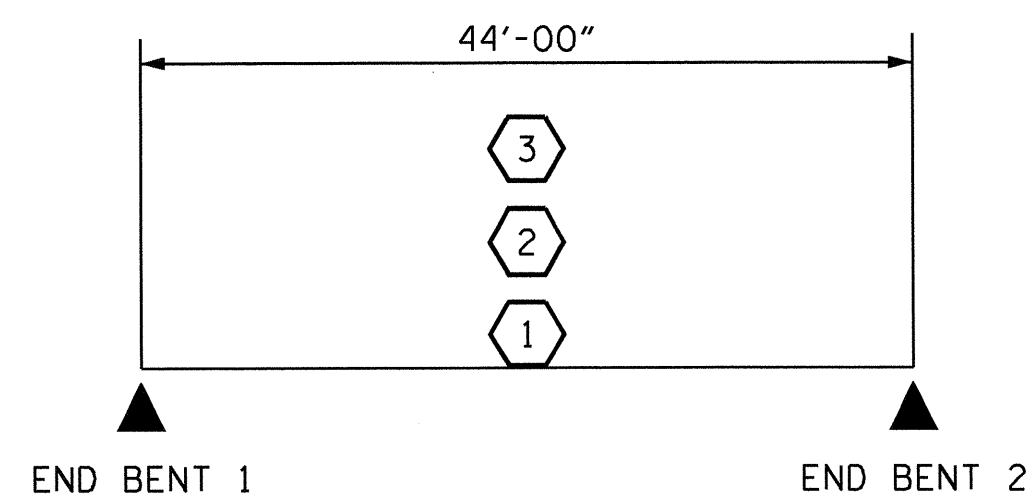
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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	



LRFR SUMMARY

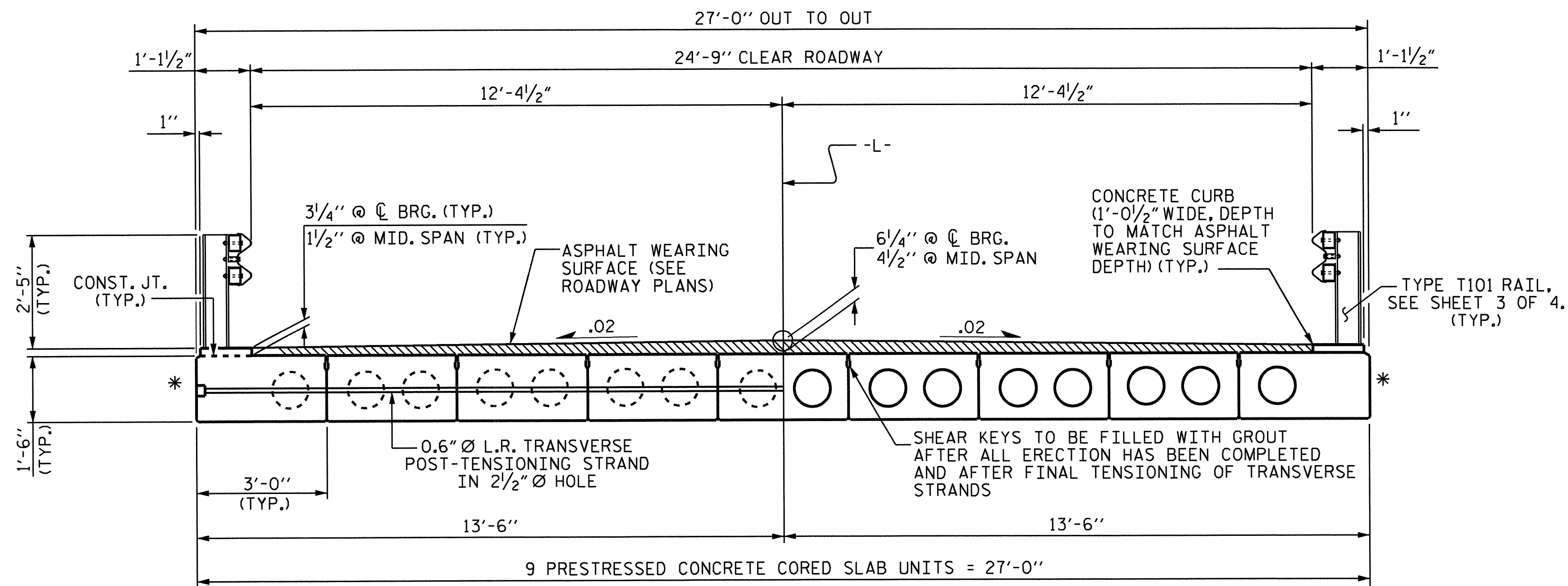
PROJECT NO. B-3346
HENDERSON COUNTY
 STATION: 12+71.50-L-



Wael S. Arafa
12-20-13

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-4
STANDARD LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS (NON-INTERSTATE TRAFFIC)						TOTAL SHEETS 23
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

ASSEMBLED BY : H. T. BARBOUR	DATE : 11-06-13
CHECKED BY : A. M. LEE	DATE : 11-6-13
DRAWN BY : MAA 1/08	REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM

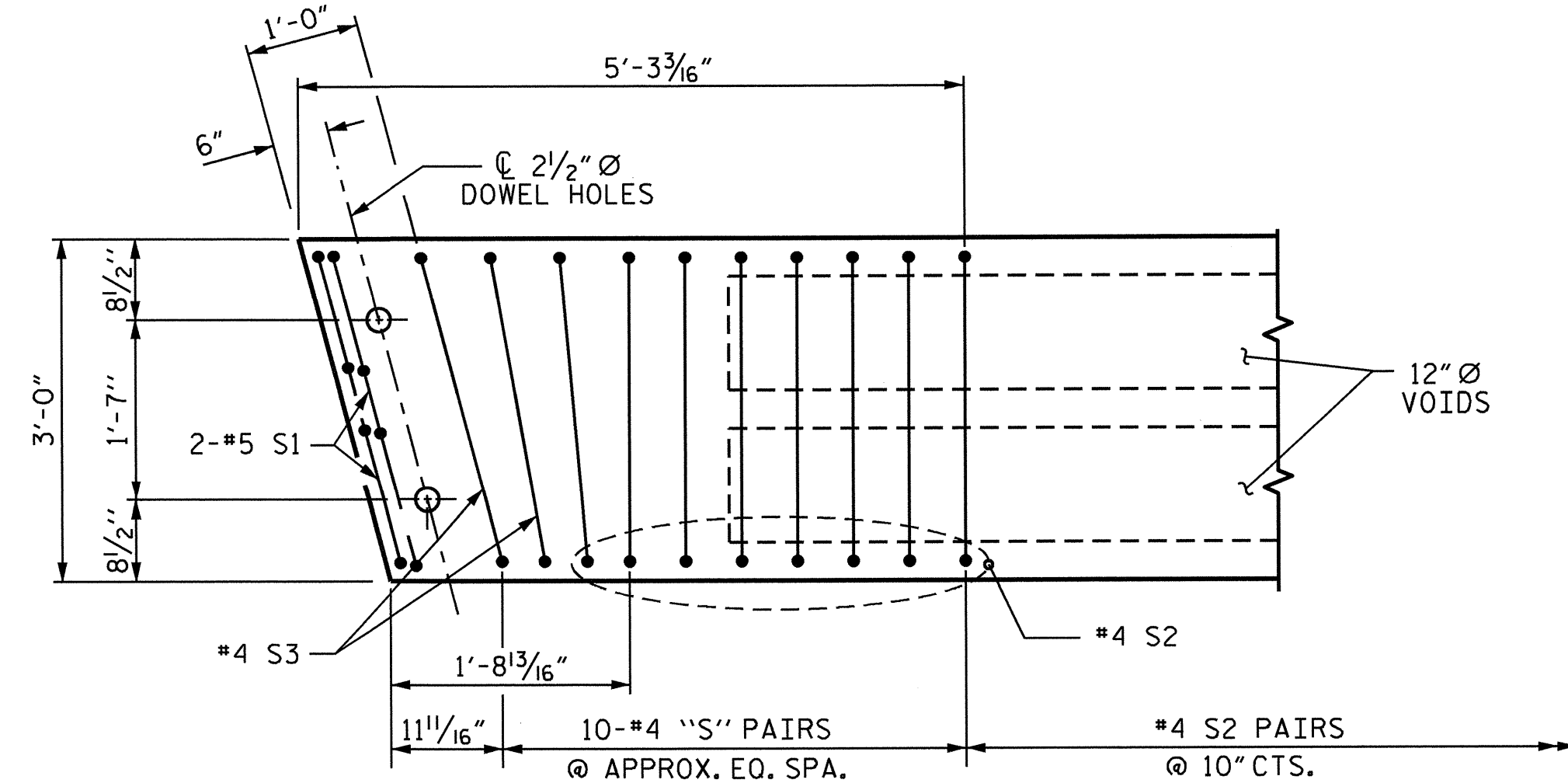


HALF SECTION @ INTERMEDIATE DIAPHRAGMS

HALF SECTION @ 10" VOIDS

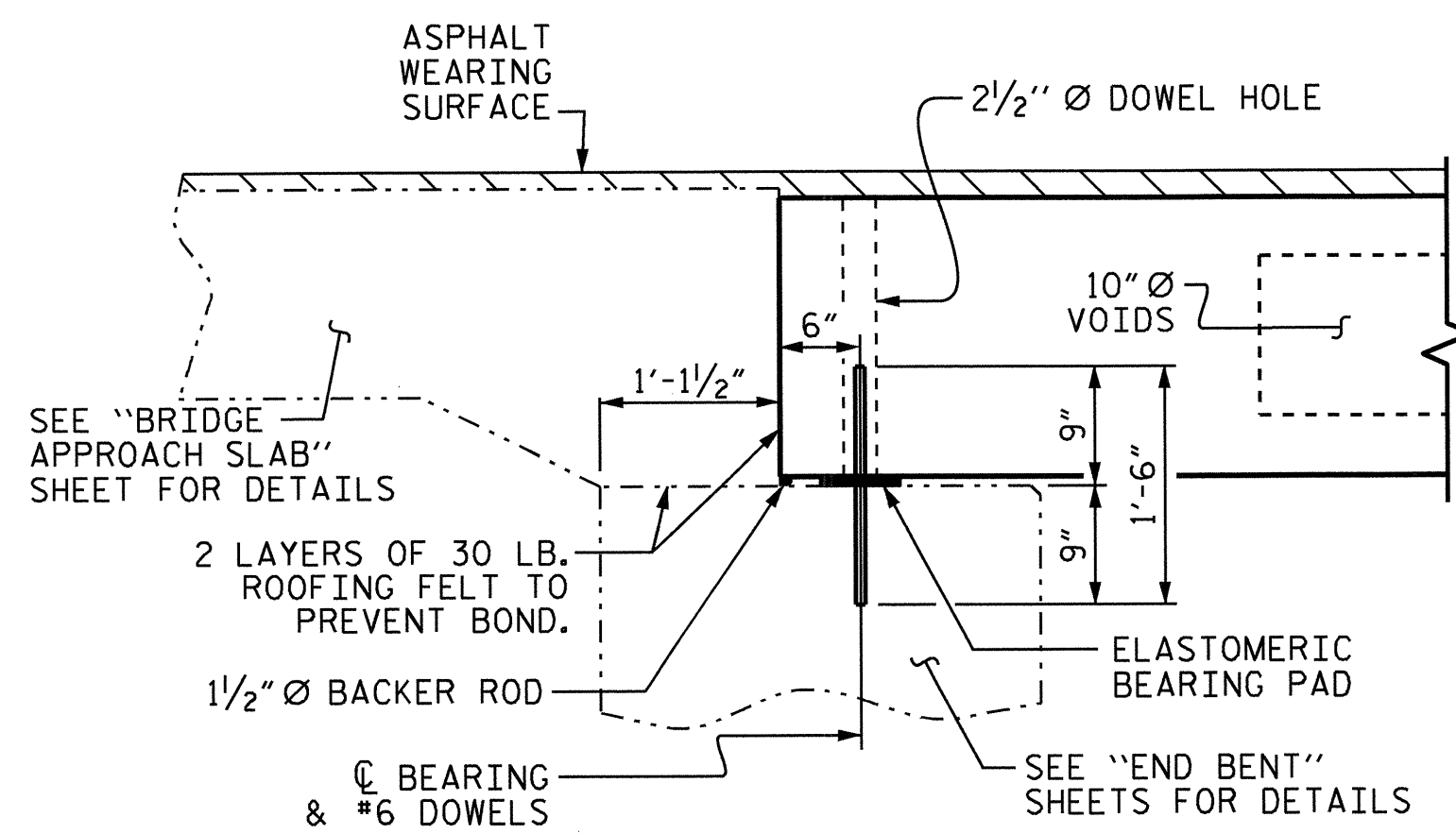
TYPICAL SECTION

* NOTE: EXPOSED SURFACES OF CORED SLAB UNITS WILL BE STAINED BROWN (SEE SPECIAL PROVISIONS)

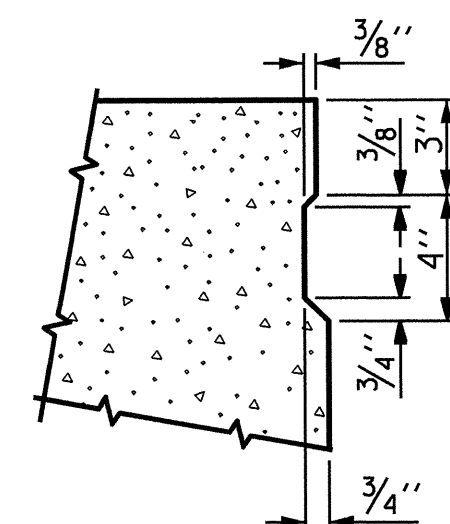


PART PLAN-EXTERIOR SECTION

NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR.

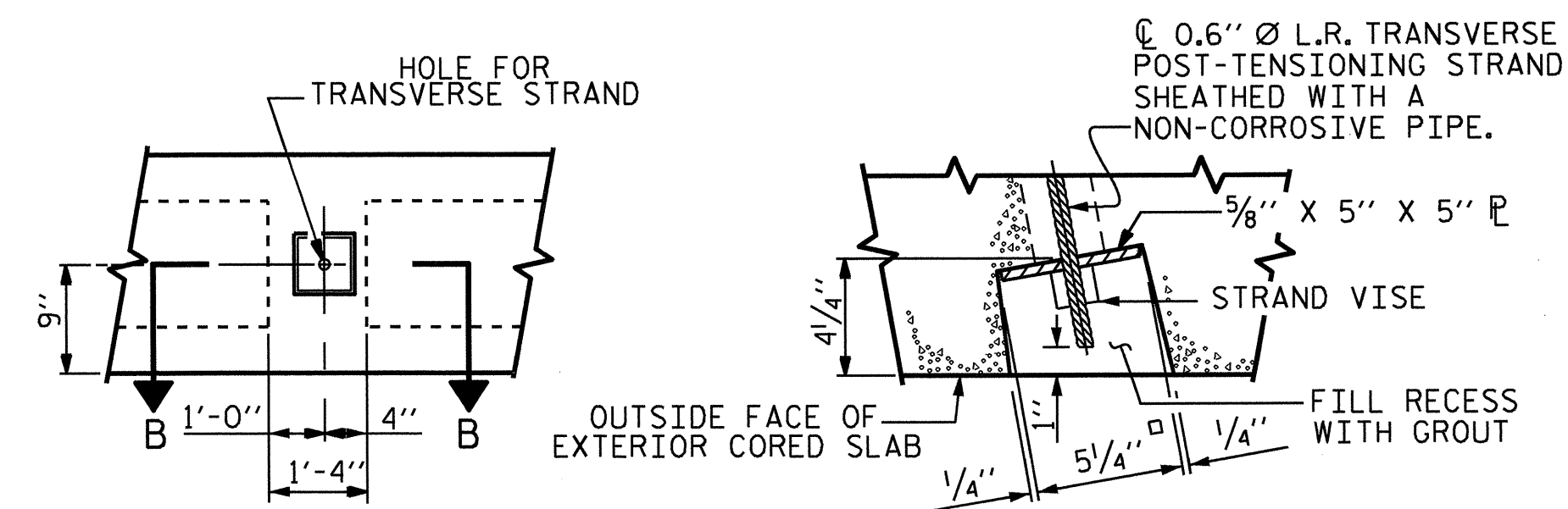


SECTION AT END BENT



SHEAR KEY DETAIL

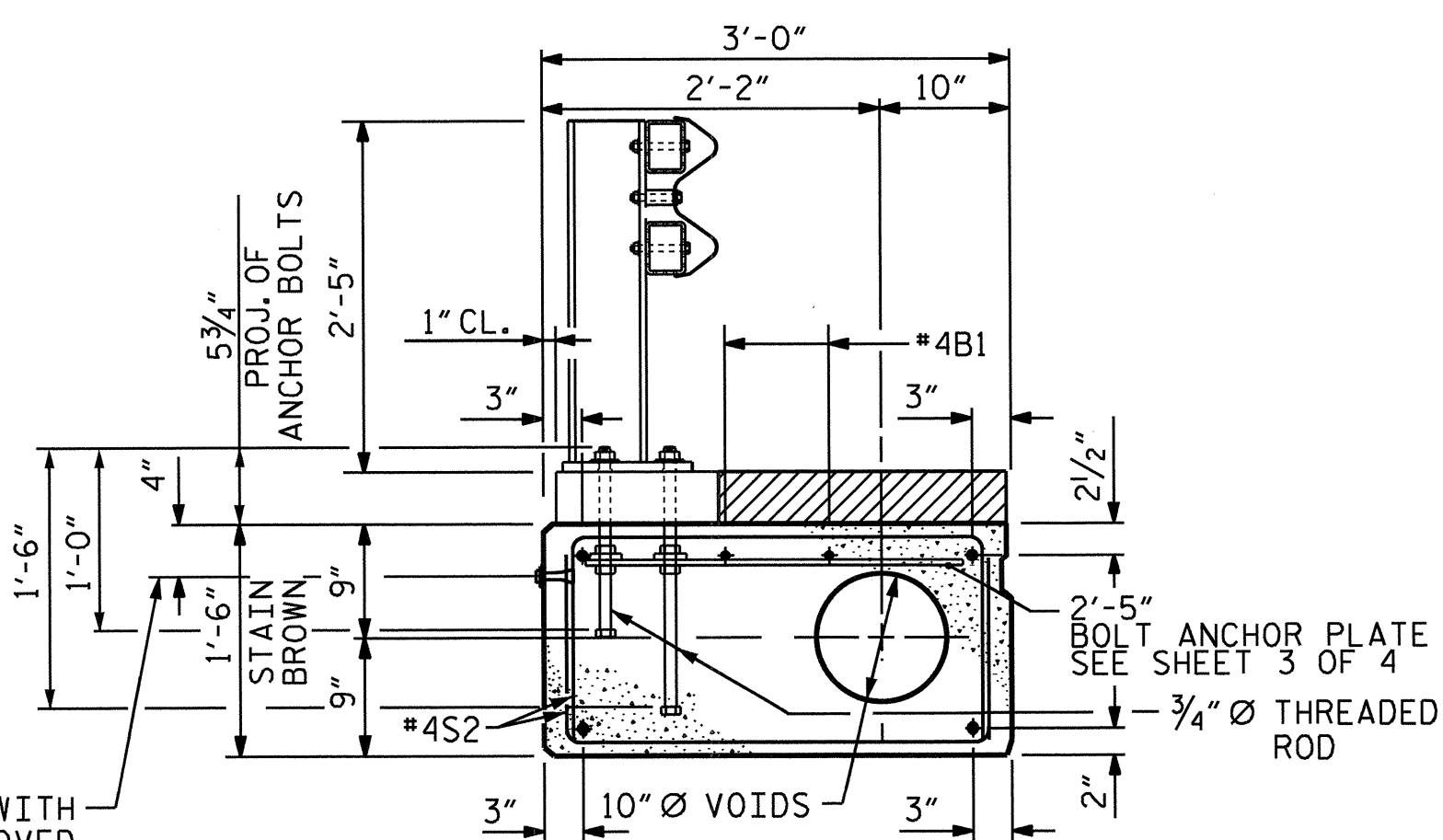
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



ELEVATION VIEW

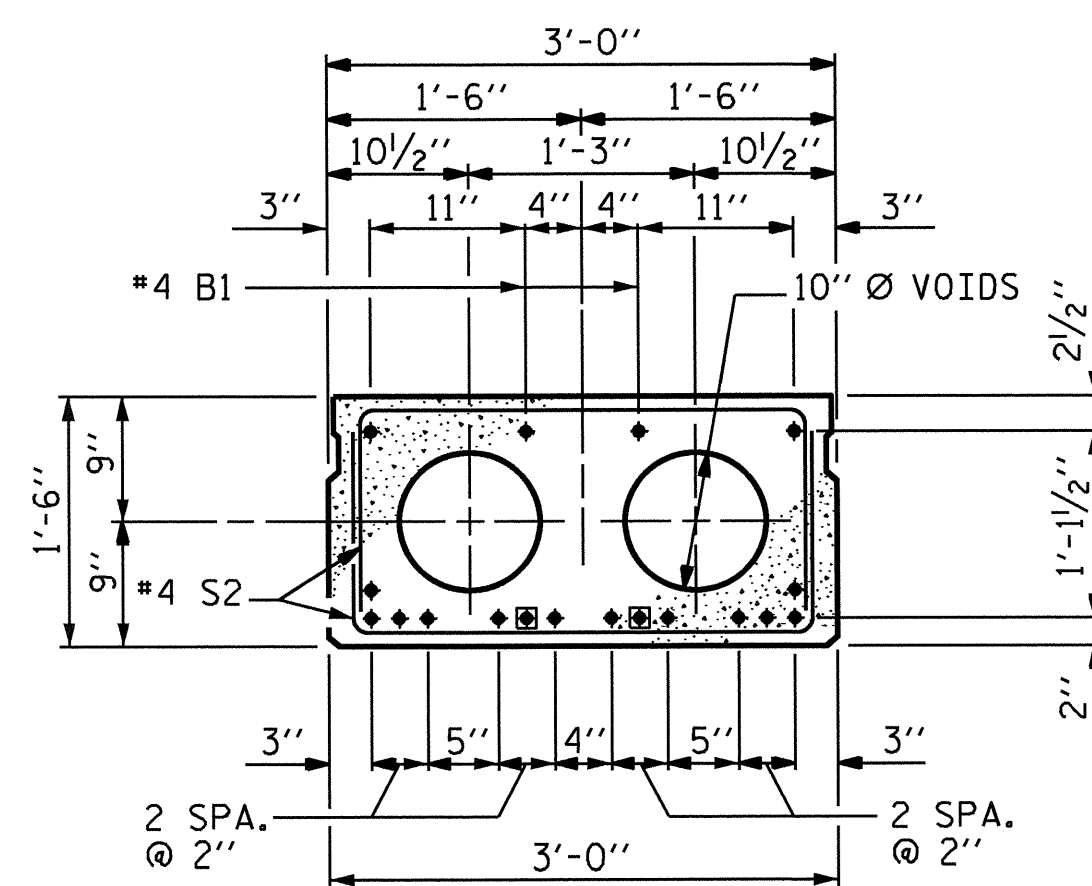
SECTION B-B

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



EXTERIOR SLAB SECTION

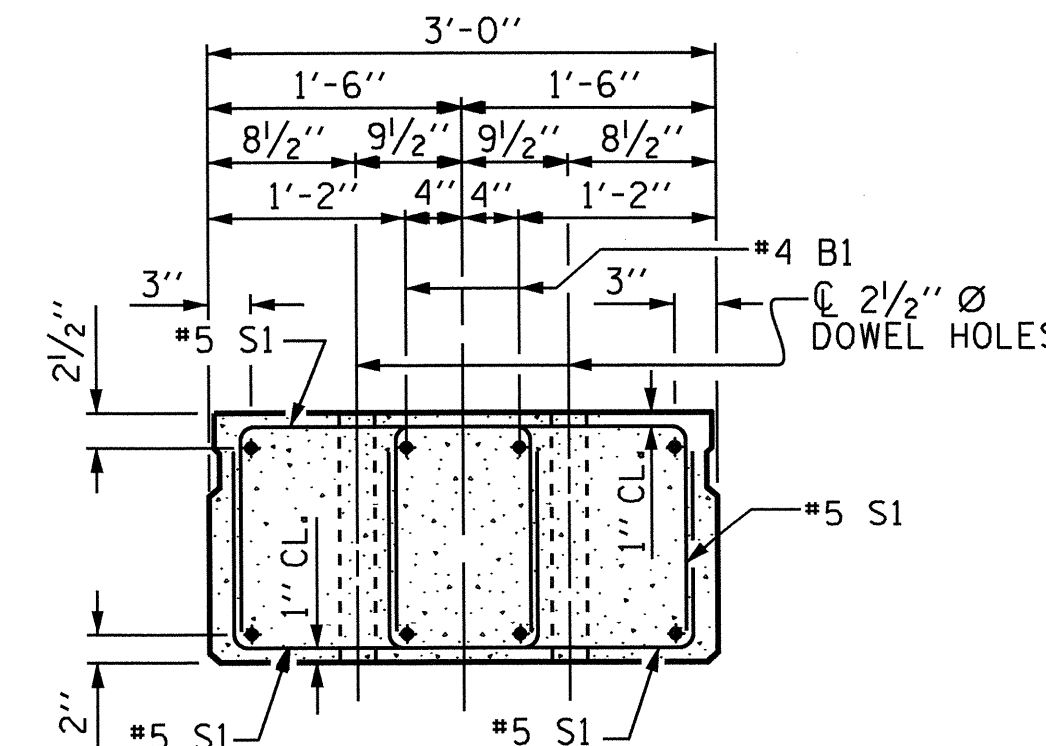
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



INTERIOR SLAB SECTION

16 STRANDS REQUIRED

0.6" Ø LOW RELAXATION STRAND LAYOUT



END ELEVATION

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES (STRAND LAYOUT NOT SHOWN) INTERIOR SLAB SECTION SHOWN.

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

Wael S. Arafat
12-20-13

PROJECT NO. B-3346
HENDERSON COUNTY
STATION: 12+71.50-L-

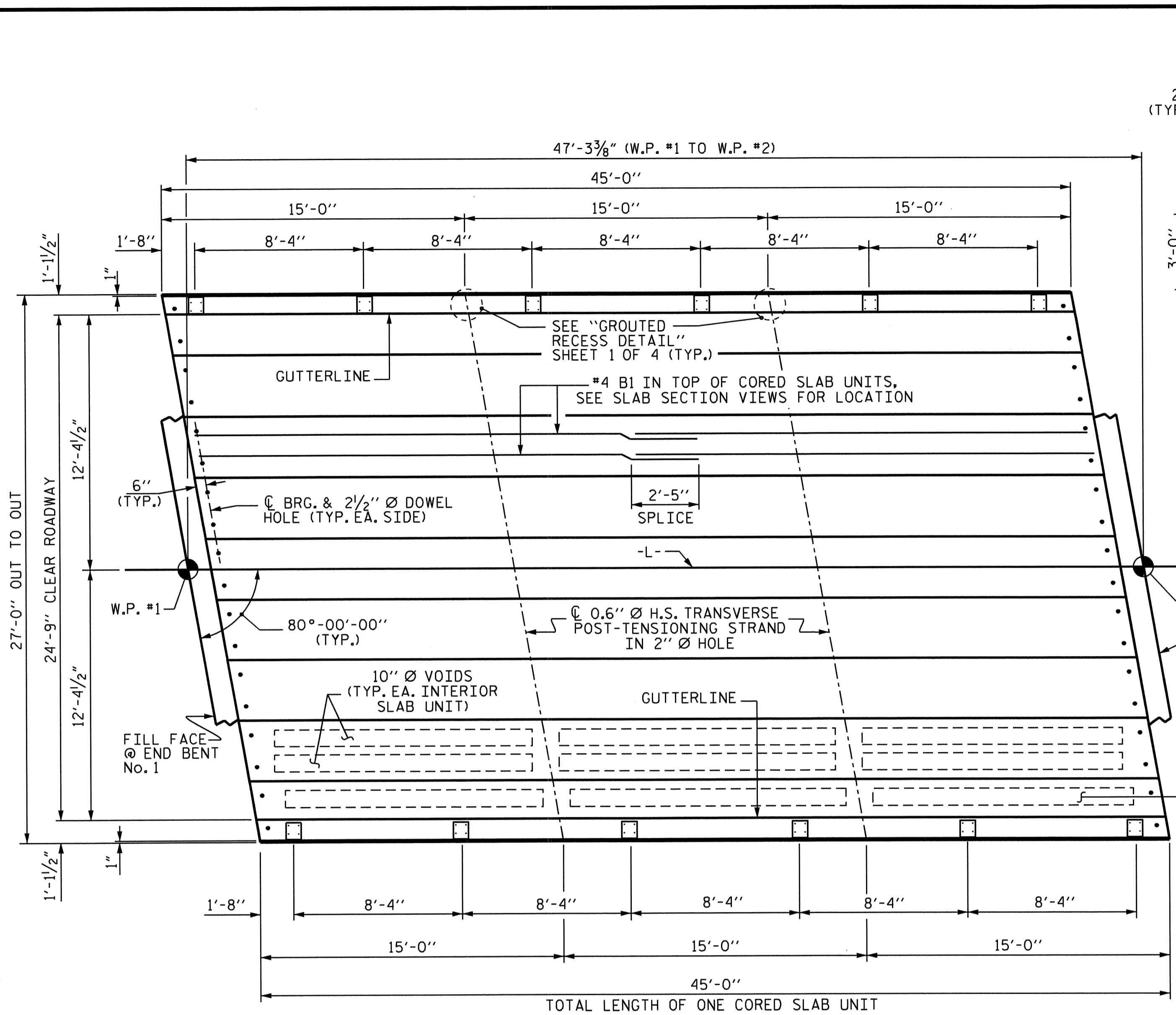
SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

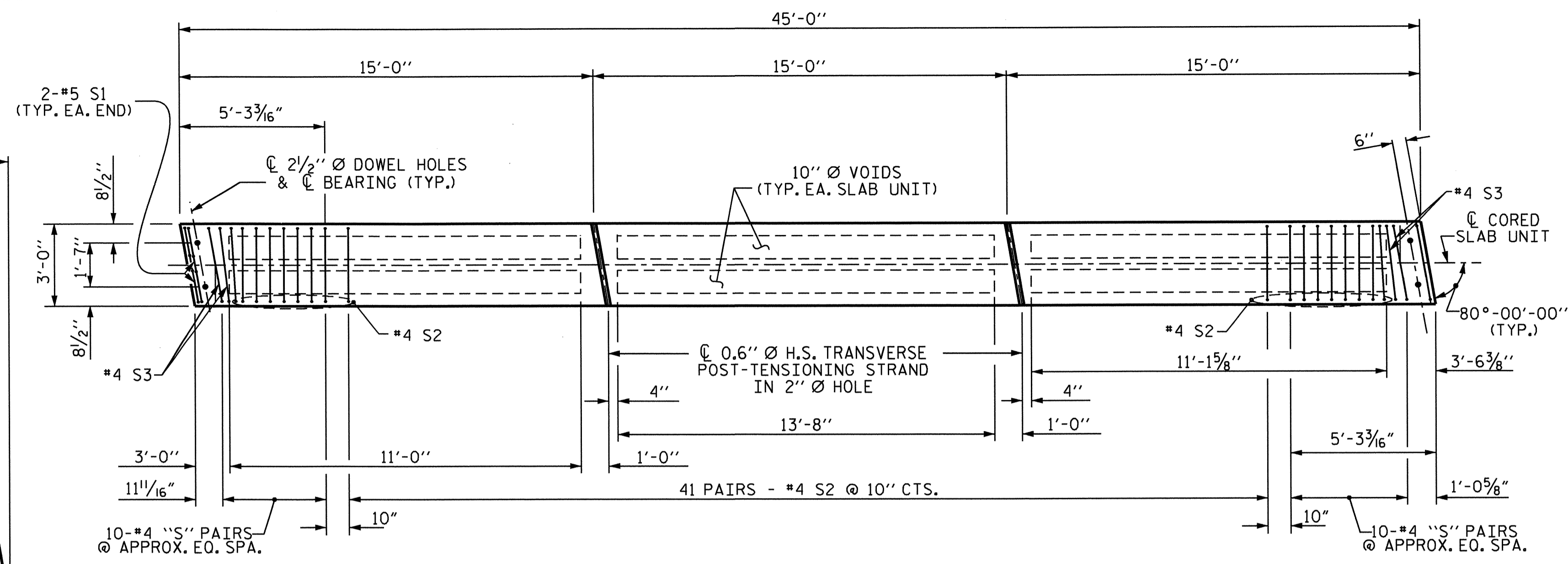
3'-0" X 1'-6" PRESTRESSED CONCRETE CORED SLAB UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			23

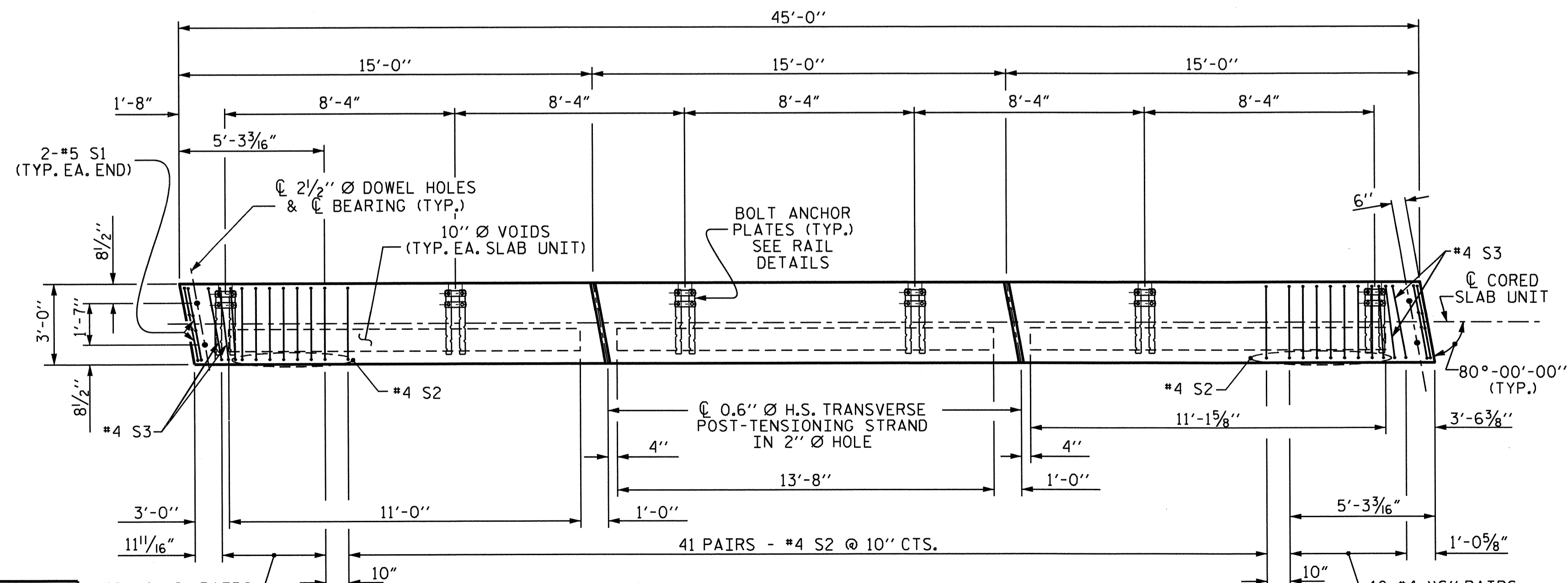
DRAWN BY: V. NGUYEN/R. PATEL DATE: 9-20-13
CHECKED BY: H. I. BARBOUR DATE: 10-04-13
DESIGN ENGINEER OF RECORD: R. PATEL DATE: 11-6-13



PLAN OF SPAN



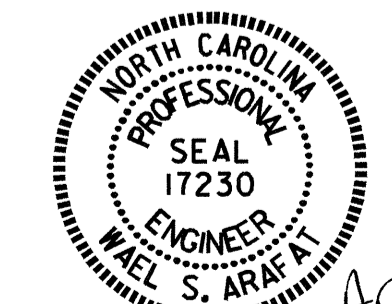
PLAN OF INTERIOR CORED SLAB UNIT



PLAN OF EXTERIOR CORED SLAB UNIT

DRAWN BY: V. NGUYEN/R. PATEL DATE: 10-4-13
 CHECKED BY: H. T. BARBOUR DATE: 10-18-13
 DESIGN ENGINEER OF RECORD: R. PATEL DATE: 11-6-13

10-#4 'S' PAIRS @ APPROX. EQ. SPA.



Wael S. Arafa
12-20-13

PROJECT NO. B-3346
 HENDERSON COUNTY
 STATION: 12+71.50-L-

SHEET 2 OF 4

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

REVISIONS						SHEET NO. S-6
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 23
2			4			

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 SLAB.

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

THE 2 1/2" Ø DOWEL HOLES SHALL BE FILLED WITH GROUT.

THE 1 1/2" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

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 5200 PSI.

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

THE CONCRETE CURB WILL BE INSTALLED ON SITE AFTER THE CORED SLAB UNITS ARE IN PLACE AND BEFORE THE ASPHALT WEARING SURFACE IS PLACED. THE CONCRETE CURB WILL BE INCLUDED IN THE COST OF THE TYPE T101 RAIL.

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.

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 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.

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE #4 S2 STIRRUPS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUTED RECESS.

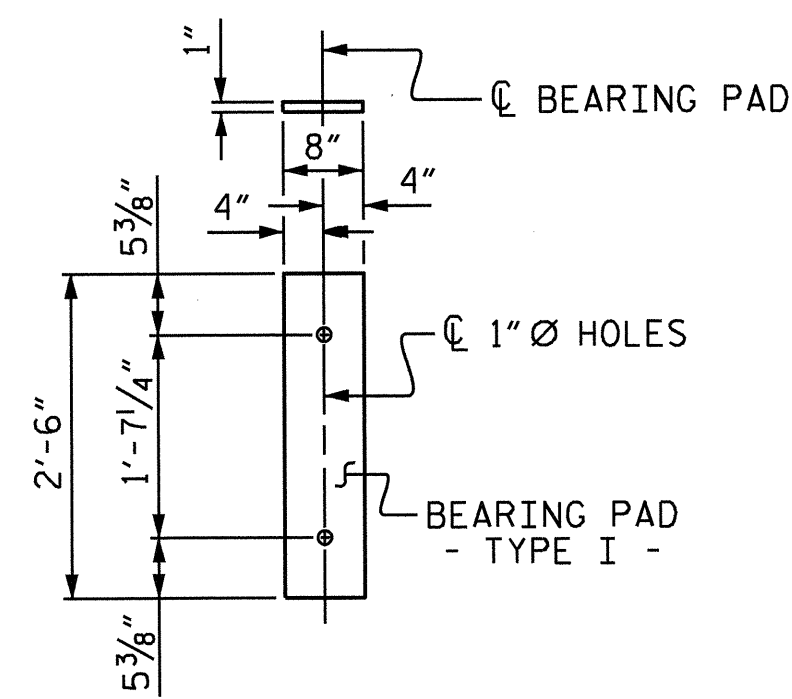
THE #4 S2 & S3 STIRRUPS MAY BE SHIFTED SLIGHTLY TO CLEAR THE ANCHOR PLATES AND BOLTS.

COST OF THE BOLTS, ANCHOR PLATES AND THREADED RODS SHALL BE INCLUDED IN THE PAY ITEM FOR THE "3'-0" X 1'-6" PRESTRESSED CONCRETE CORED SLABS."

BOLT ANCHOR PLATE SHALL BE ASTM A36.

INSTALL ONE ANCHORAGE PLATE ASSEMBLY IN EXTERIOR SLAB UNIT AT EACH RAIL POST. DO NOT GALVANIZE OR OIL THIS ASSEMBLY.

ANCHOR BOLTS SHALL BE 3/4" DIAMETER ASTM A321 THREADED RODS WITH ONE TACK WELDED HEX NUT AT EMBEDMENT END, TWO HEX NUTS AT ANCHOR PLATE ASSEMBLY AND ONE HEX NUT AND ONE 2" O.D. WASHER (0.153" MIN. THICK) PLUS ONE 1/2" O.D. HARDENED WASHER (0.122" MIN. THICK) AT EACH BOLT. NUTS SHALL CONFORM TO A563 REQUIREMENTS.



FIXED END
(TYPE I - 18 REQ'D)

ELASTOMERIC BEARING DETAILS

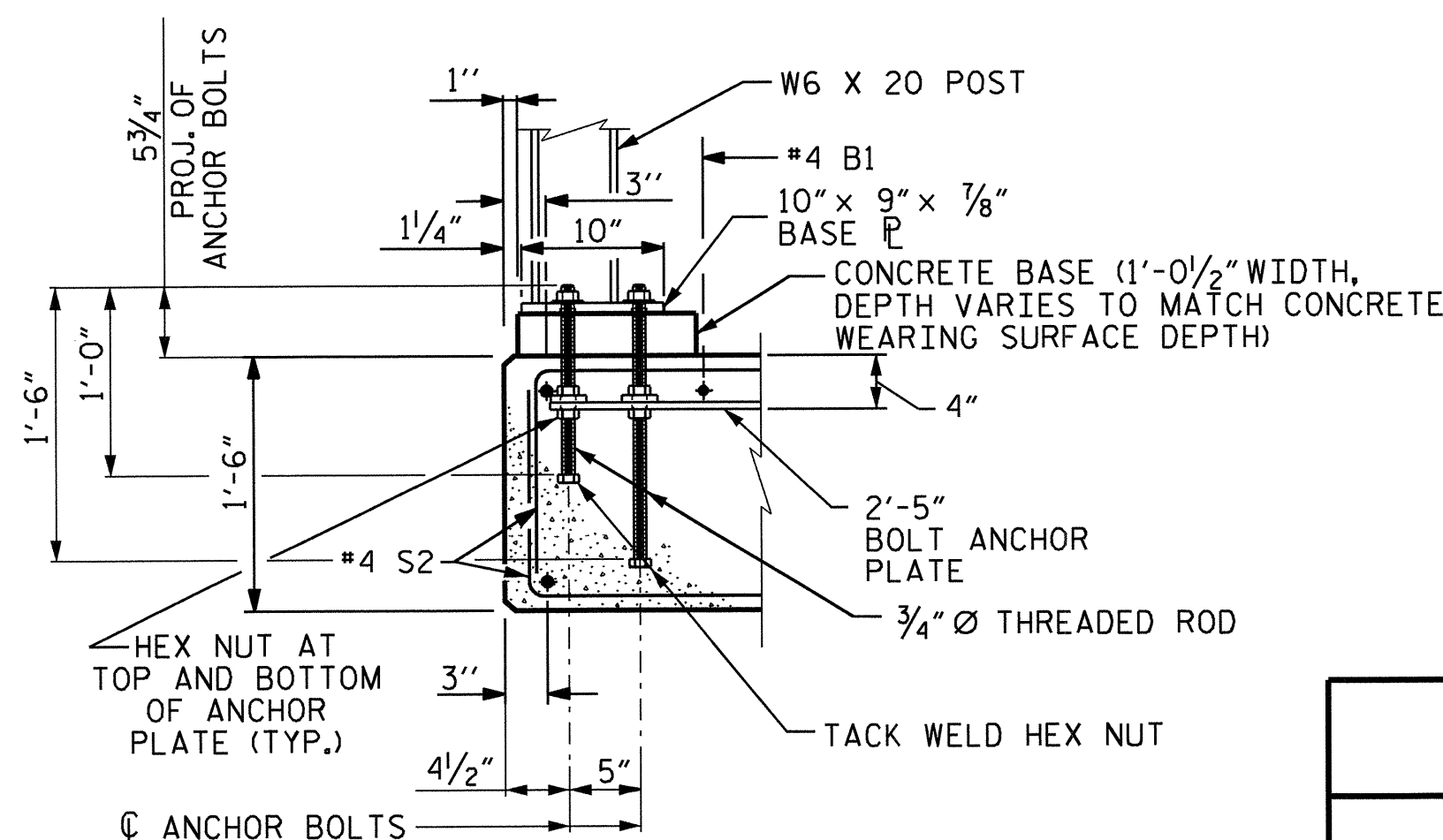
ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

CORED SLABS REQUIRED SPAN A			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	45'-0"	90'-0"
INTERIOR C.S.	7	45'-0"	315'-0"
TOTAL	9	45'-0"	405'-0"

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 1'-6"
45' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2 1/16" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	5/16" ↓
FINAL CAMBER	1 3/4" ↑

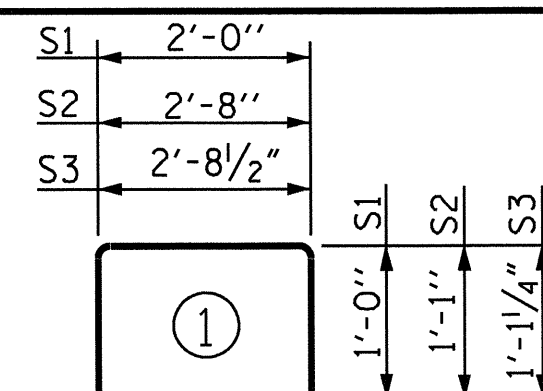
** INCLUDES FUTURE WEARING SURFACE

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



CONCRETE BASE DETAILS

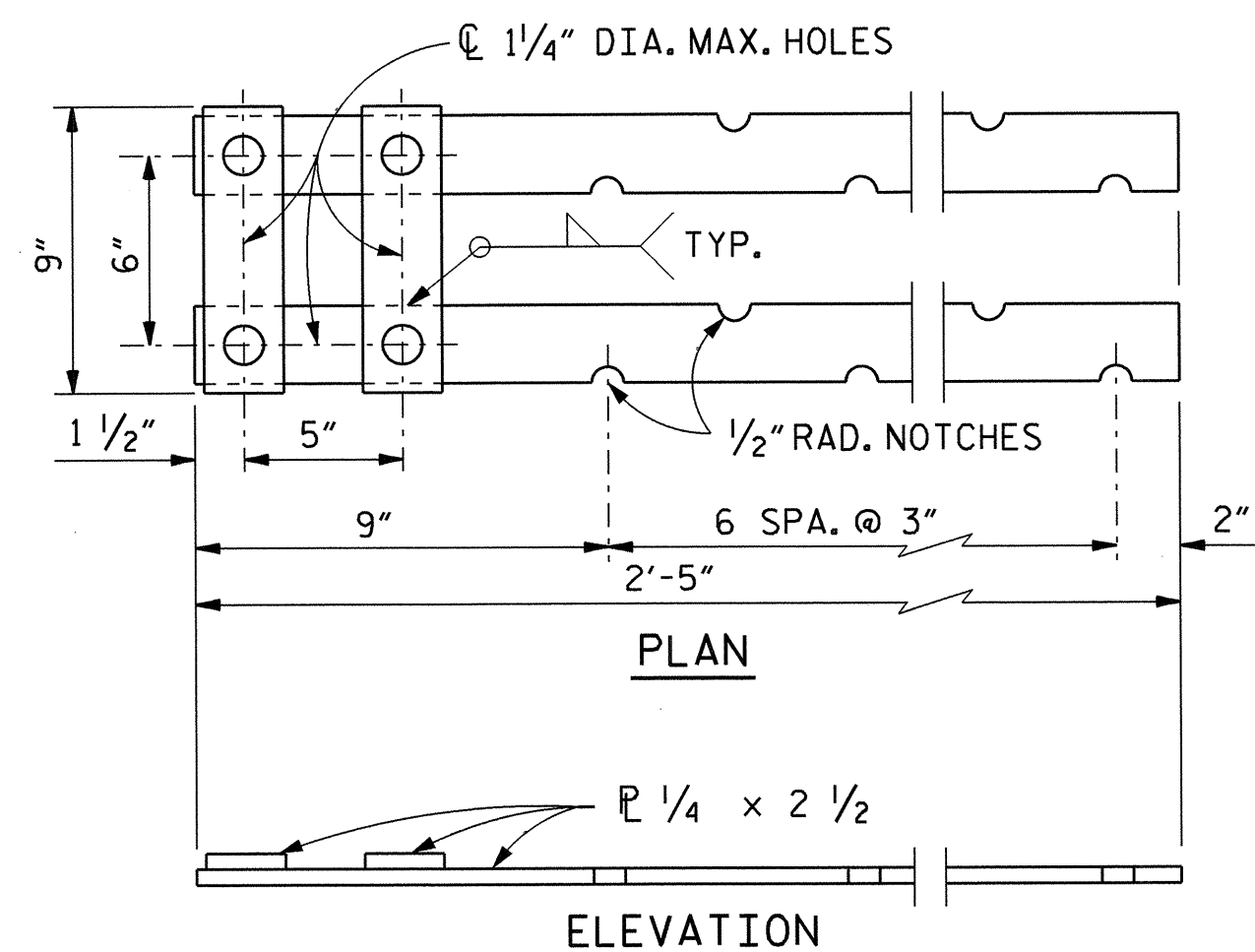
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE CORED SLAB SECTION
SPAN A

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B1	4	4	STR	23'-7"	63	23'-7"	63
S1	8	5	1	4'-0"	33	4'-0"	33
S2	114	4	1	4'-10"	368	4'-10"	368
S3	8	4	1	4'-11"	26	4'-11"	26
REINFORCING STEEL				LBS.	490	490	
6,500 P.S.I. CONCRETE				CJ. YDS.	6.7	6.0	
0.6" Ø L.R. STRANDS				No.	16	16	



BOLT ANCHOR PLATES

DRAWN BY : R. PATEL DATE : 10-4-13
 CHECKED BY : H. T. BARBOUR DATE : 10-18-13
 DESIGN ENGINEER OF RECORD : R. PATEL DATE : 11-06-13

20-DEC-2013 11:59
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PROJECT NO. B-3346
 HENDERSON COUNTY
 STATION: 12+71.50-L-

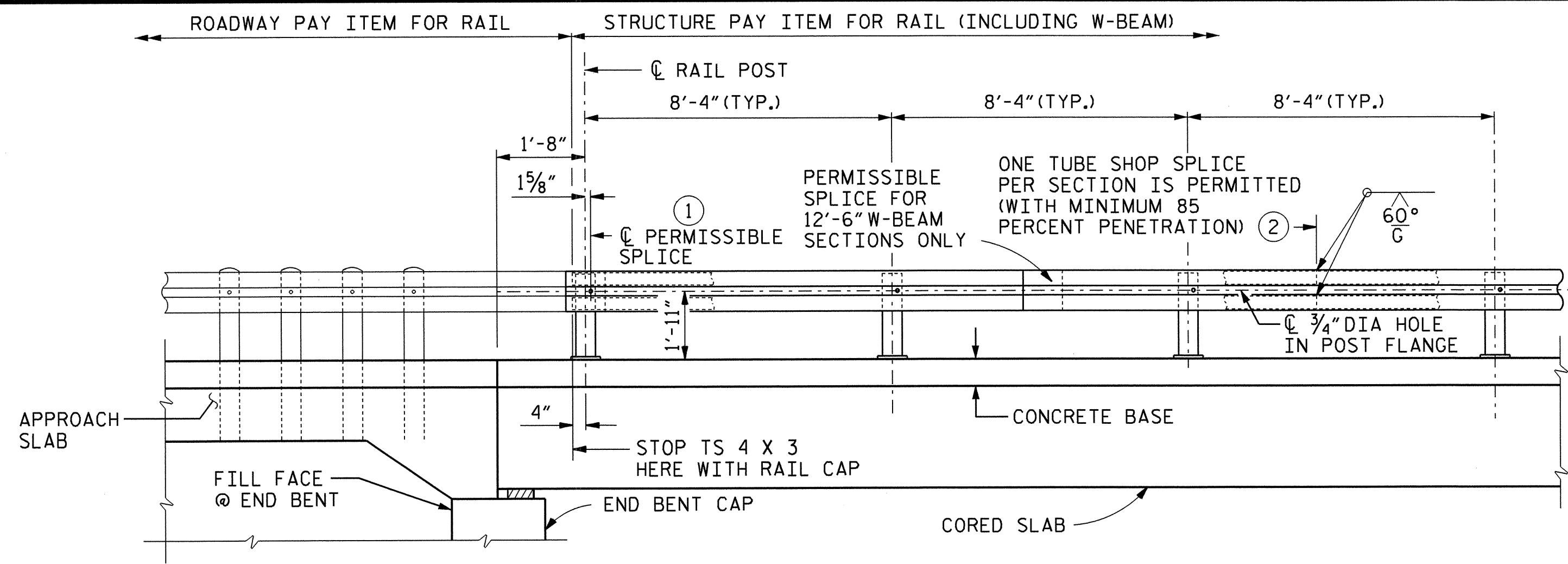
SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 3'-0" X 1'-6"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT

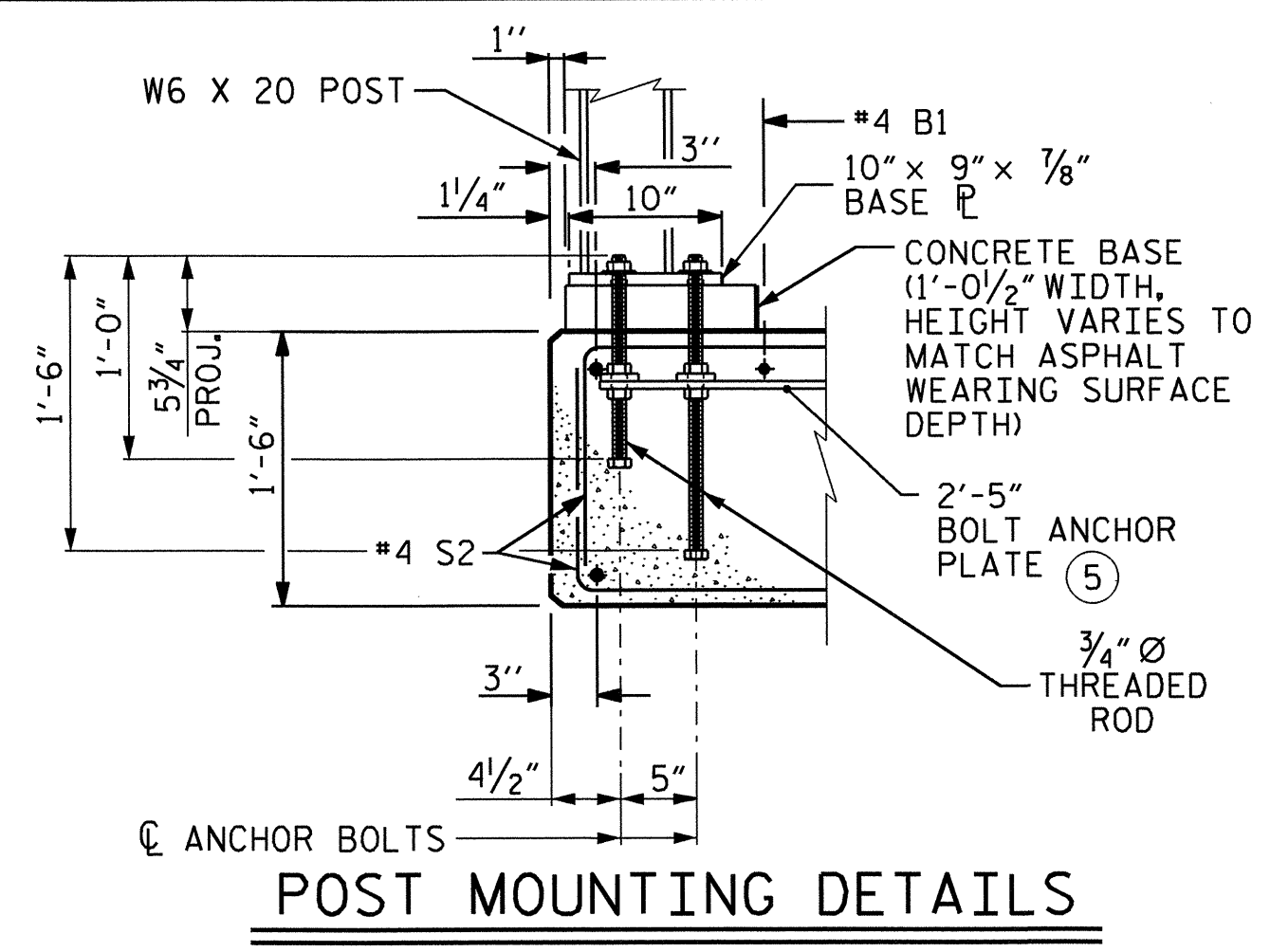


Wael S. Arafa
 12-20-13

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			23



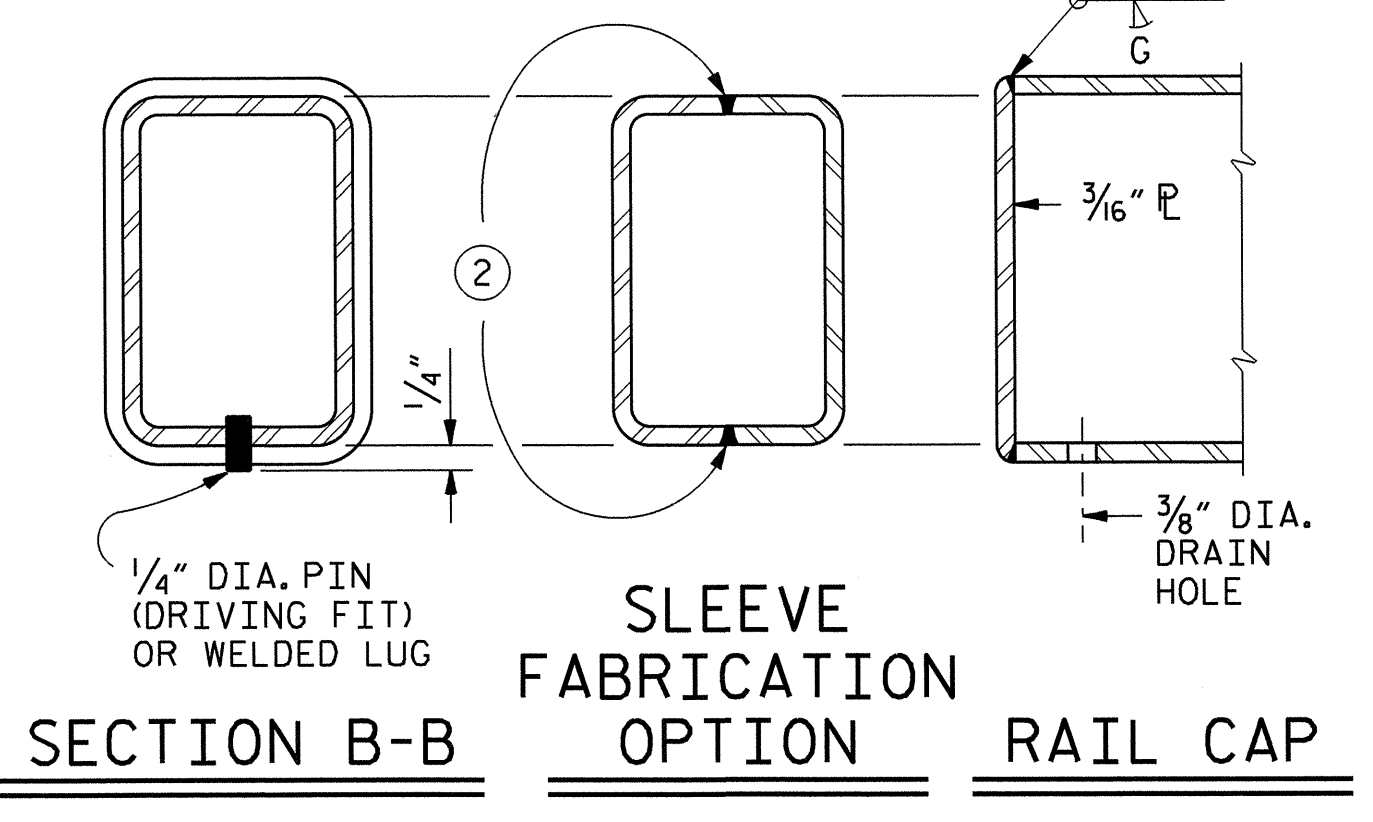
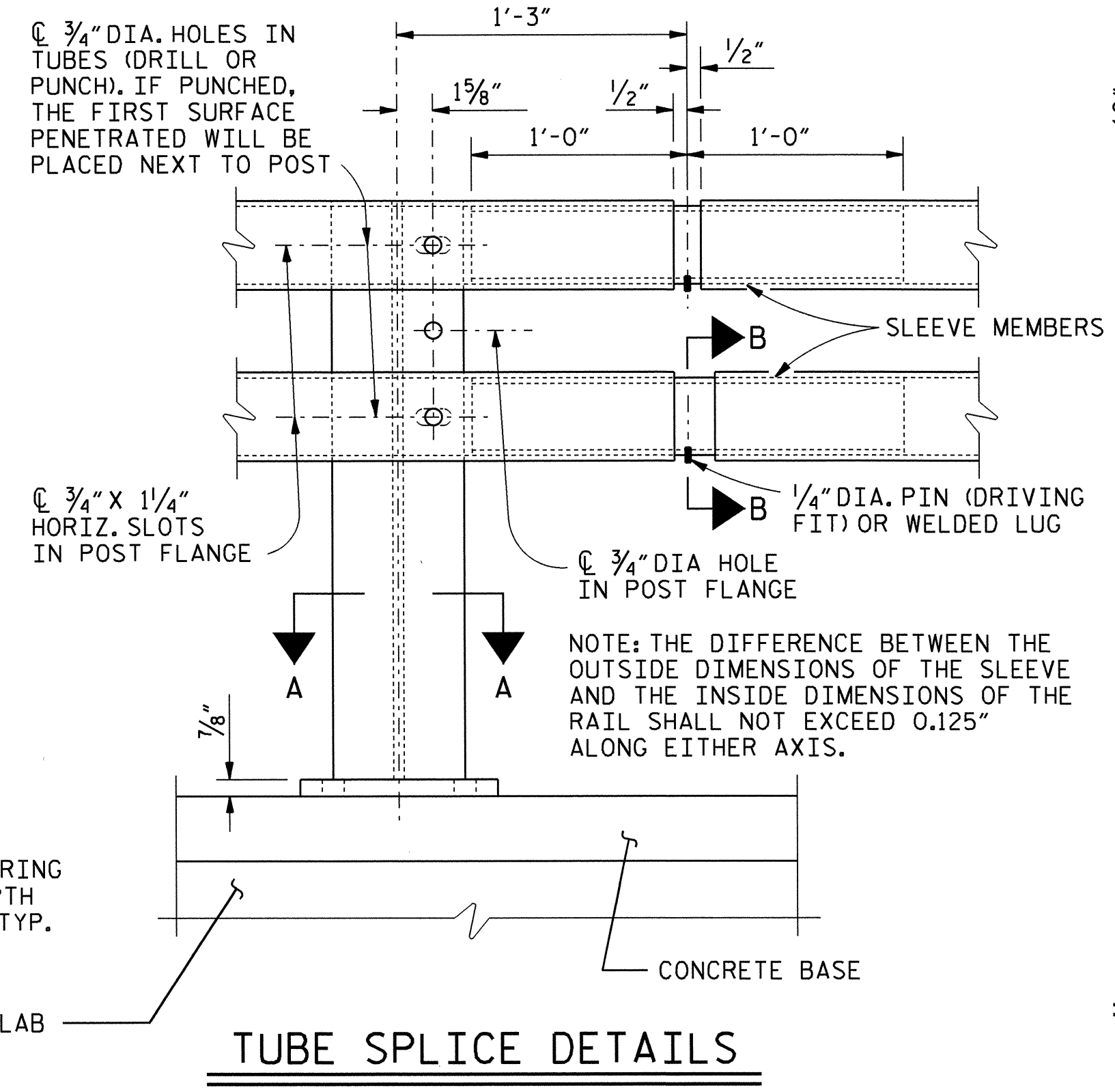
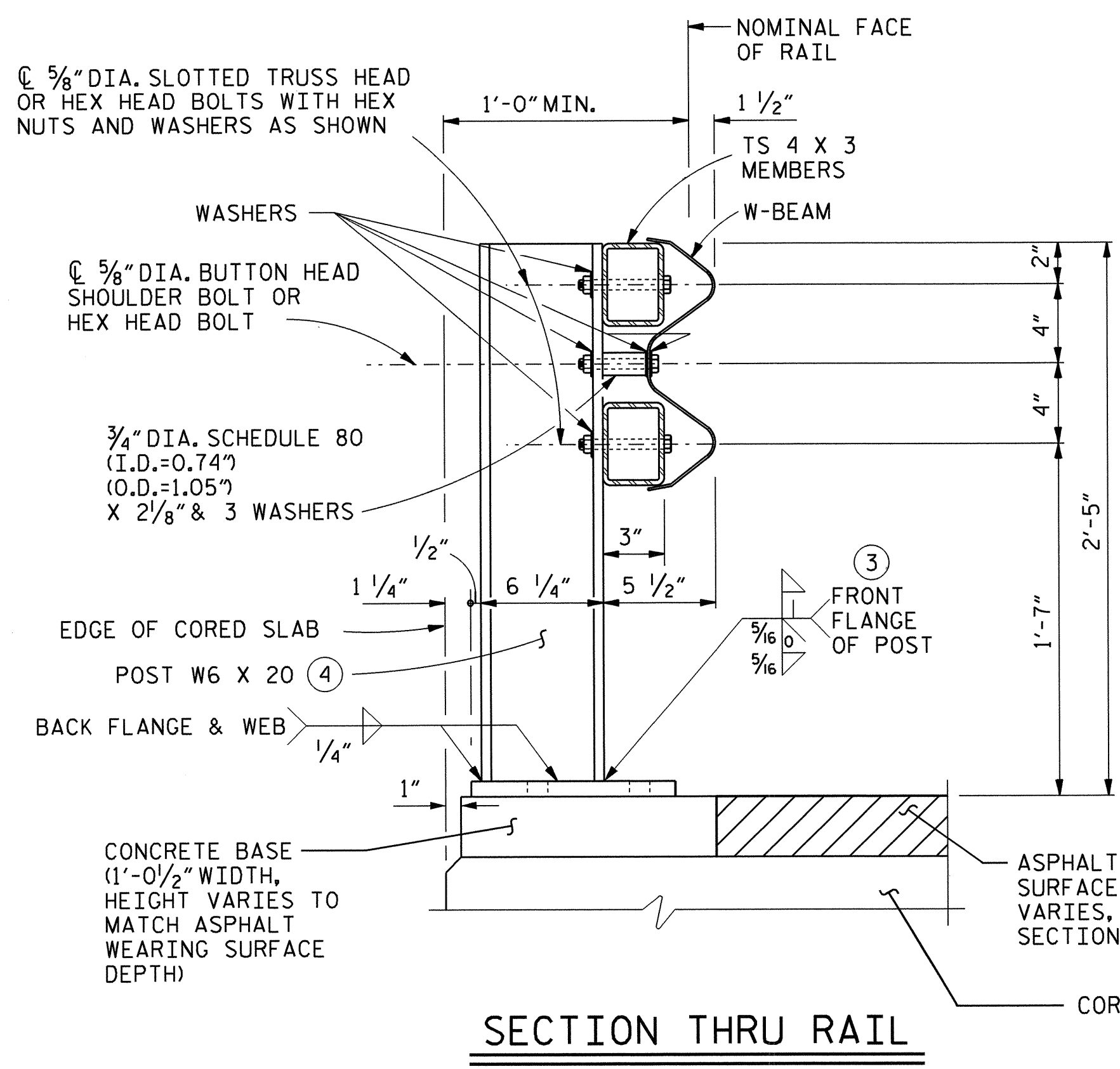
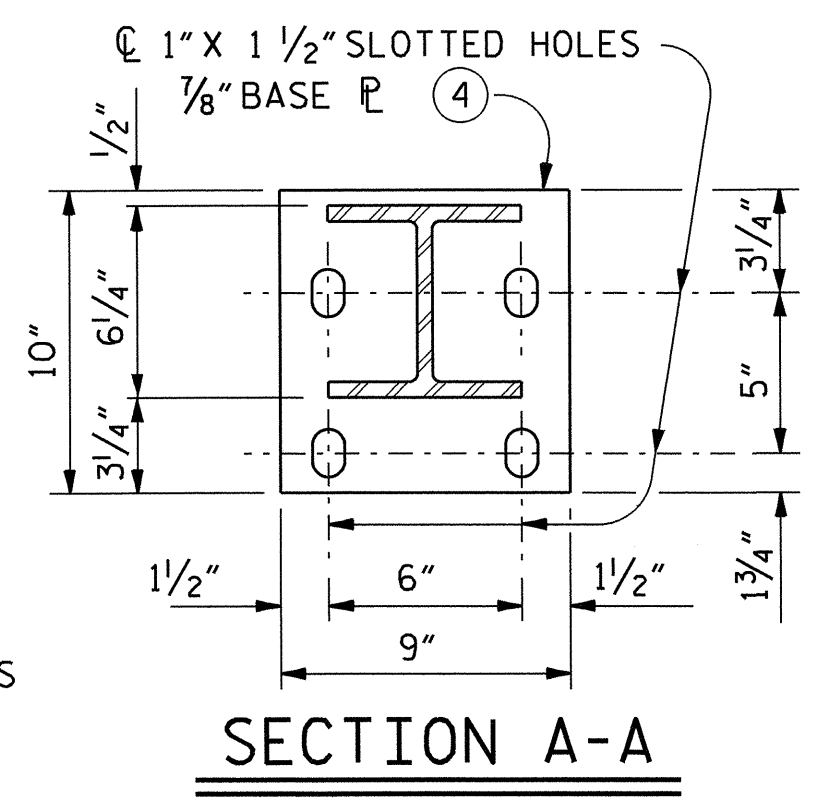
ELEVATION OF RAIL
(EACH END SIMILAR)



POST MOUNTING DETAILS

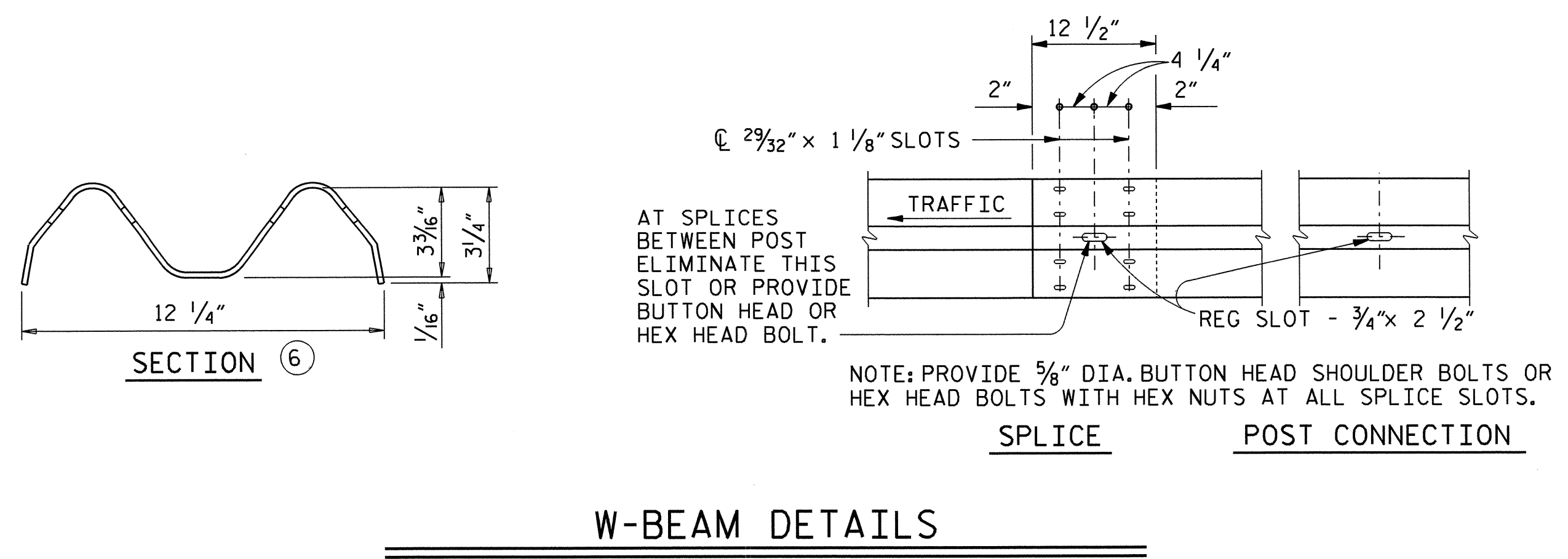
- NOTES:**
- SECTION LENGTHS OF TS 4 X 3 MEMBERS SHALL BE ATTACHED CONTINUOUSLY TO A MINIMUM OF THREE POSTS.
 - ALL STEEL COMPONENTS SHALL BE GALVANIZED UNLESS OTHERWISE SHOWN IN PLANS.
 - AT EXPANSION SLOTS IN W-BEAM RAIL, TIGHTEN BOLTS SNUGLY.
 - FOR ALL RAILS, ERECTION DRAWINGS SHOWING SECTION LENGTHS, SPLICE LOCATIONS, RAIL POST SPACING AND ANCHOR BOLT SETTING SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
 - NUTS FOR ANCHOR BOLTS SHALL BE TIGHTENED FINGER TIGHT AND GIVEN AN ADDITIONAL 1/4 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.
 - SPLICE MAY BE ON EITHER SIDE OF BRIDGE RAIL POST WEB.
 - THE WELD MAY BE SQUARE GROOVE OR SINGLE VEE GROOVE. GRIND SMOOTH
 - IN LIEU OF FRONT FLANGE WELD SHOWN, A 3/8" FILLET WELD ALL AROUND INCLUDING EDGES OF FLANGE MAY BE USED.
 - ALL STEEL POSTS AND PLATES SHALL BE ASTM A36.
 - INSTALL ONE ANCHORAGE PLATE ASSEMBLY IN SLAB AT EACH RAIL POST. SEE CORED SLAB DETAILS.
 - MEMBER SHALL BE 12 GAGE STEEL NOMINAL THICKNESS = 0.1046" EXCLUSIVE OF PROTECTIVE COATING. ACTUAL SECTION MAY VARY SLIGHTLY WITH THE MANUFACTURER AND CONFORMS TO AASHTO M-180

PAY LENGTH = 84.67 LIN. FT.

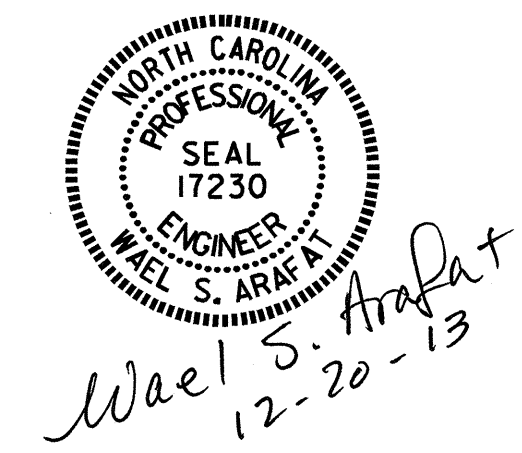


TUBE & SLEEVE MEMBERS		
RAIL MEMBER	SLEEVE THICKNESS	MATERIAL - A36
A 500 GRADE C	0.188"	0.188"
A 500 GRADE B	0.250"	0.250"
A 500 GRADE A OR A 501	0.313"	0.250"

NOTE: OTHER SECTIONS OF EQUAL OR GREATER STRENGTH ARE ACCEPTABLE FOR SLEEVES.



PROJECT NO. B-3346
HENDERSON COUNTY
STATION: 12+71.50-L-
SHEET 4 OF 4

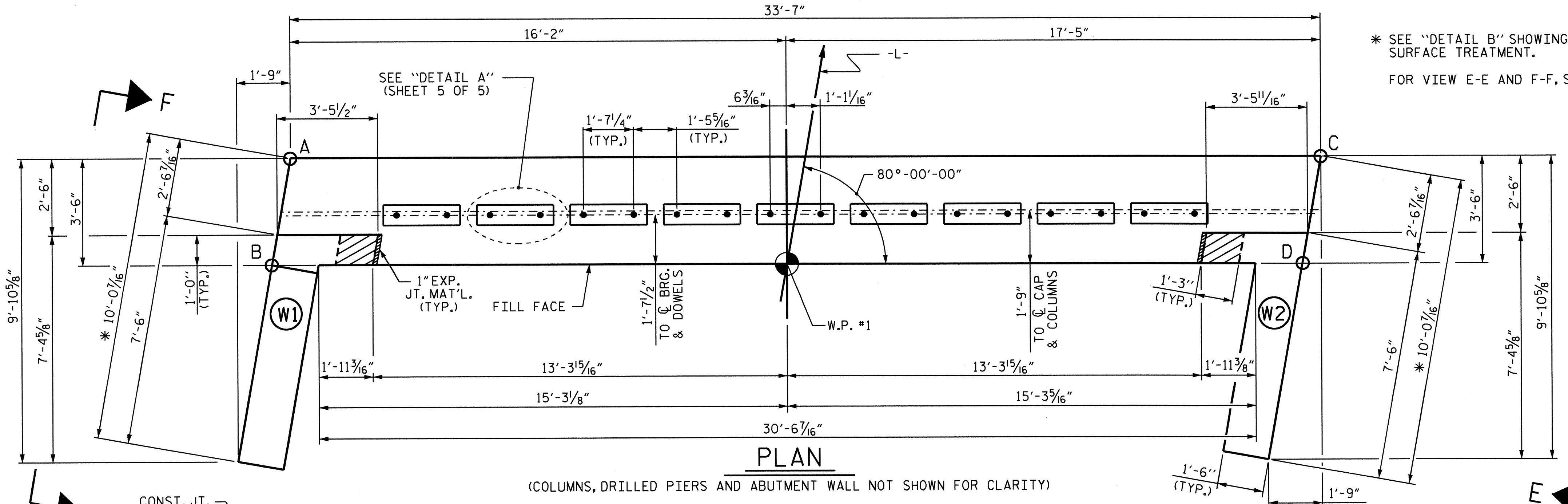


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUPERSTRUCTURE
RAIL DETAILS
(TYPE T101)**

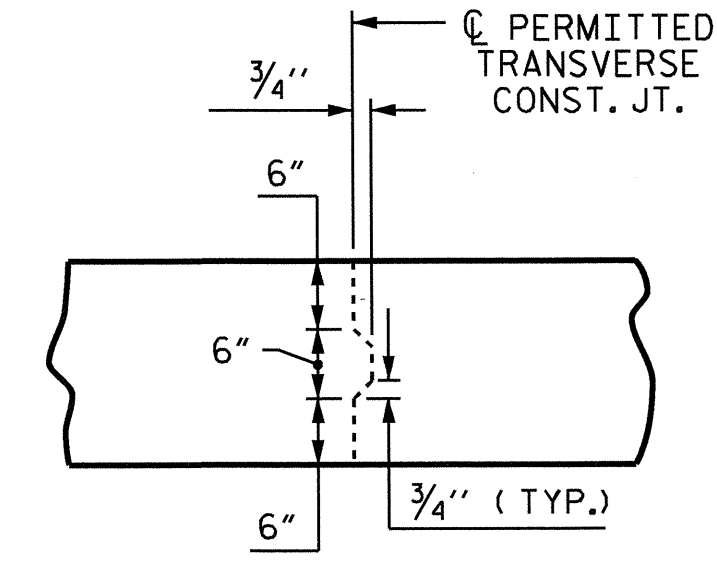
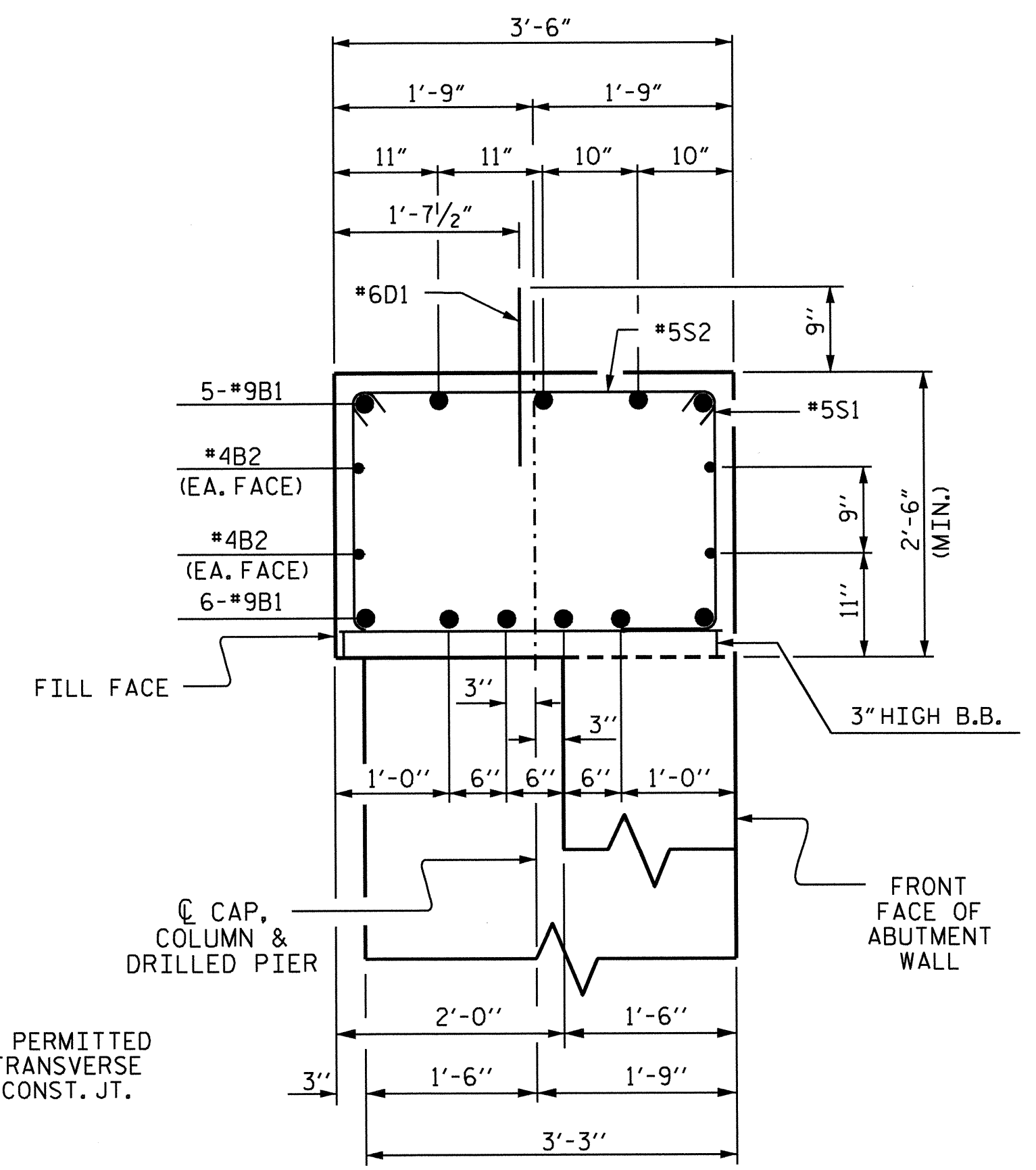
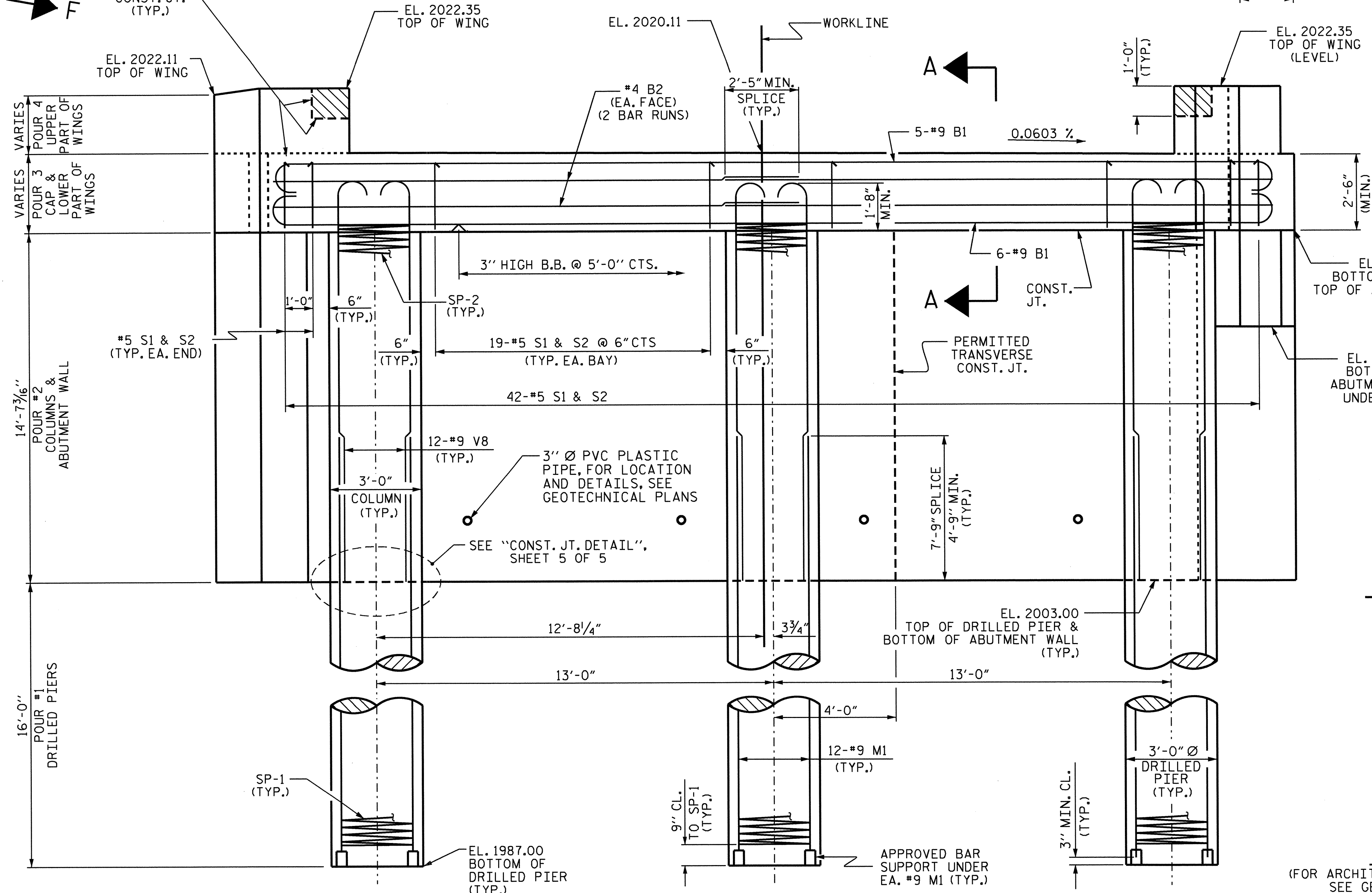
REVISIONS						SHEET NO. S-8
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 23
2			4			

DRAWN BY: R. PATEL DATE: 10-4-13
CHECKED BY: H. T. BARBOUR DATE: 10-18-13



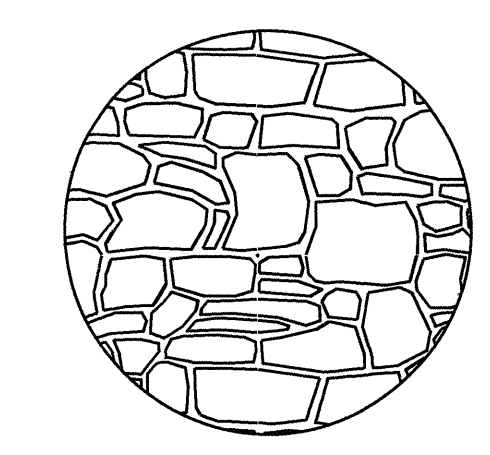
* SEE "DETAIL B" SHOWING ARCHITECTURAL CONCRETE SURFACE TREATMENT.
FOR VIEW E-E AND F-F, SEE SHEET 4 OF 5.

	TOP OF CAP ELEV.
(A)	2020.12
(B)	2020.12
(C)	2020.10
(D)	2020.10



TRANSVERSE CONSTRUCTION JOINT DETAIL

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



DETAIL B

(FOR ARCHITECTURAL CONCRETE SURFACE TREATMENT, SEE GEOTECHNICAL SPECIAL PROVISIONS)

PROJECT NO. B-3346
HENDERSON COUNTY
STATION: 12+71.50 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 1

REVISIONS						SHEET NO. S-9 TOTAL SHEETS 23
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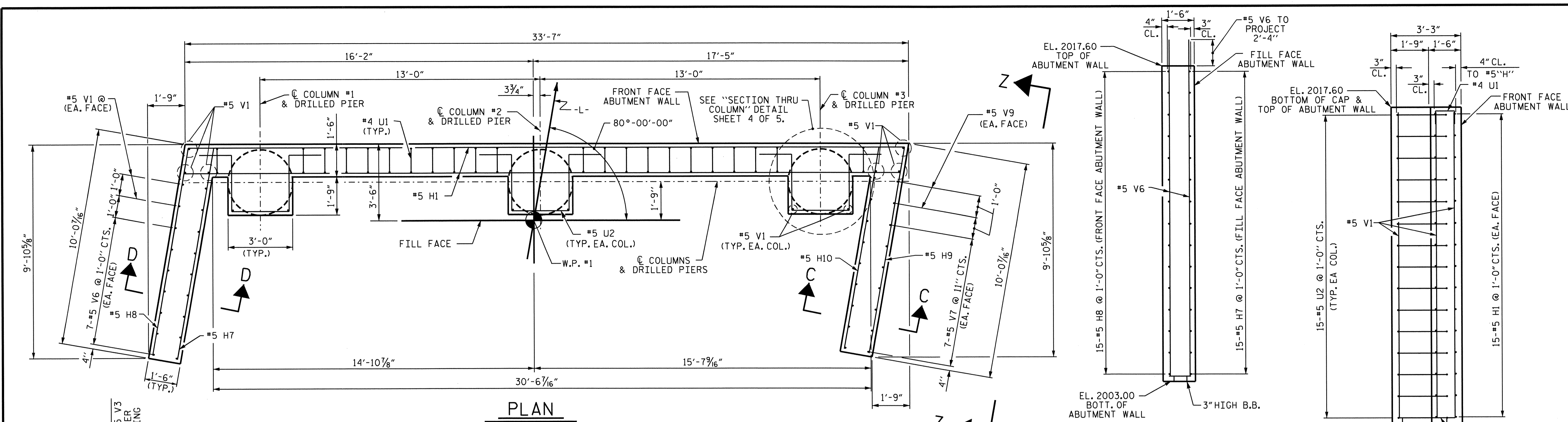
DRAWN BY: V.X. NGUYEN DATE: 9-30-13
CHECKED BY: D. HODGE DATE: 10-13
DESIGN ENGINEER OF RECORD: H. KIM DATE: 11/13

REINFORCING STEEL IN ABUTMENT WALL AND ADDITIONAL REINFORCING STEEL IN COLUMNS NOT SHOWN FOR CLARITY, SEE SHEET 2 OF 5.

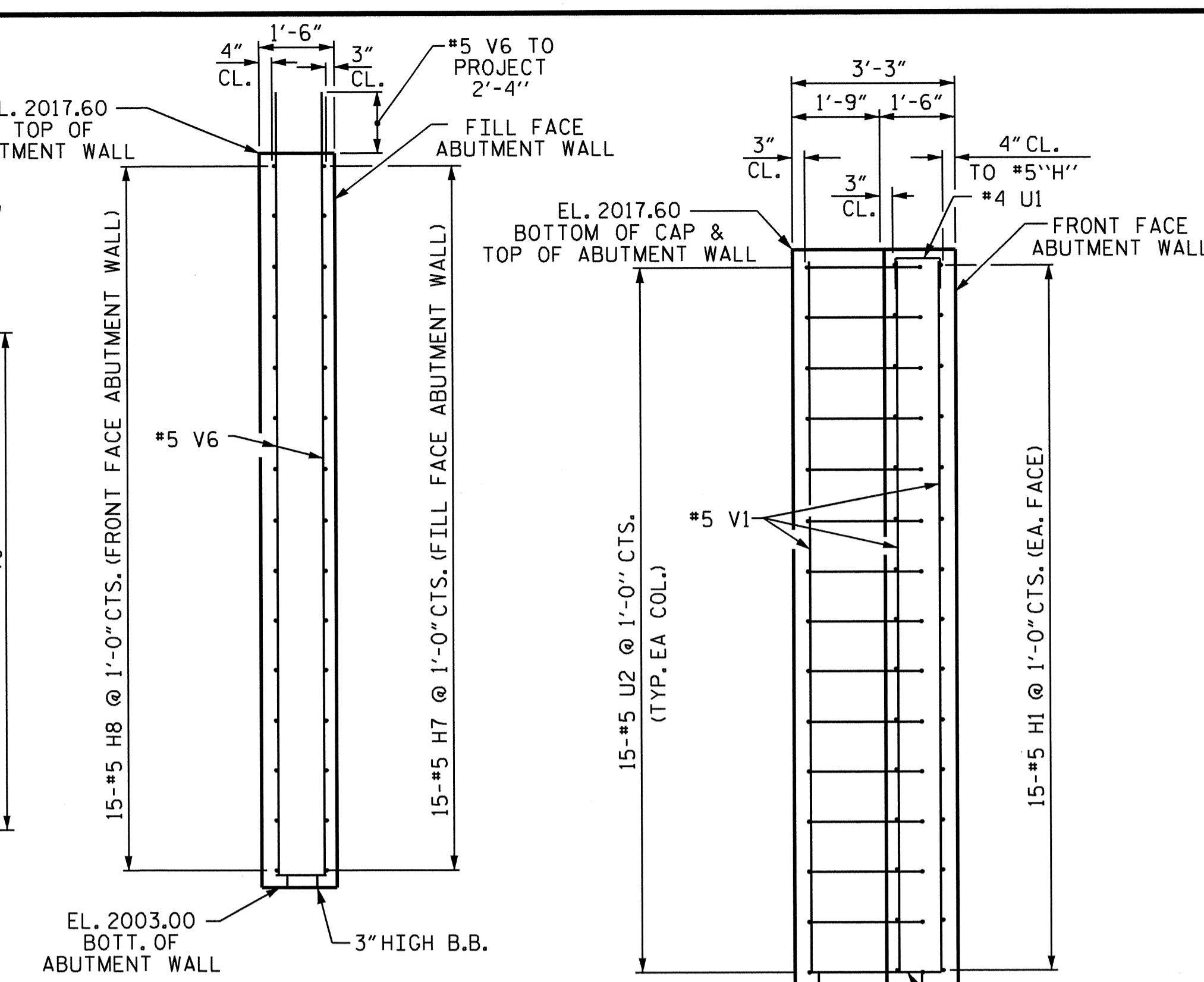
Wael S. Arafa
12-20-13

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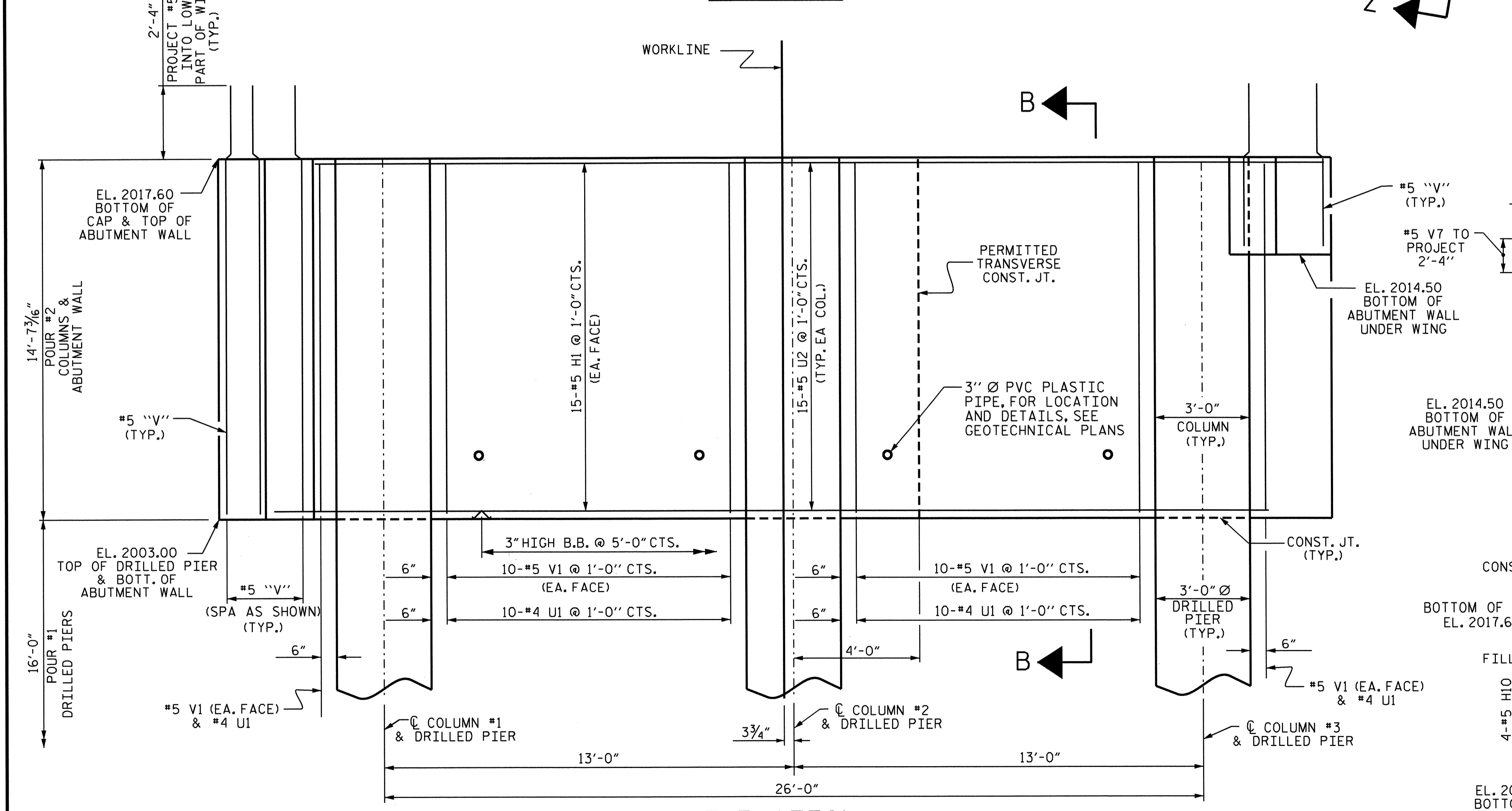


PLAN

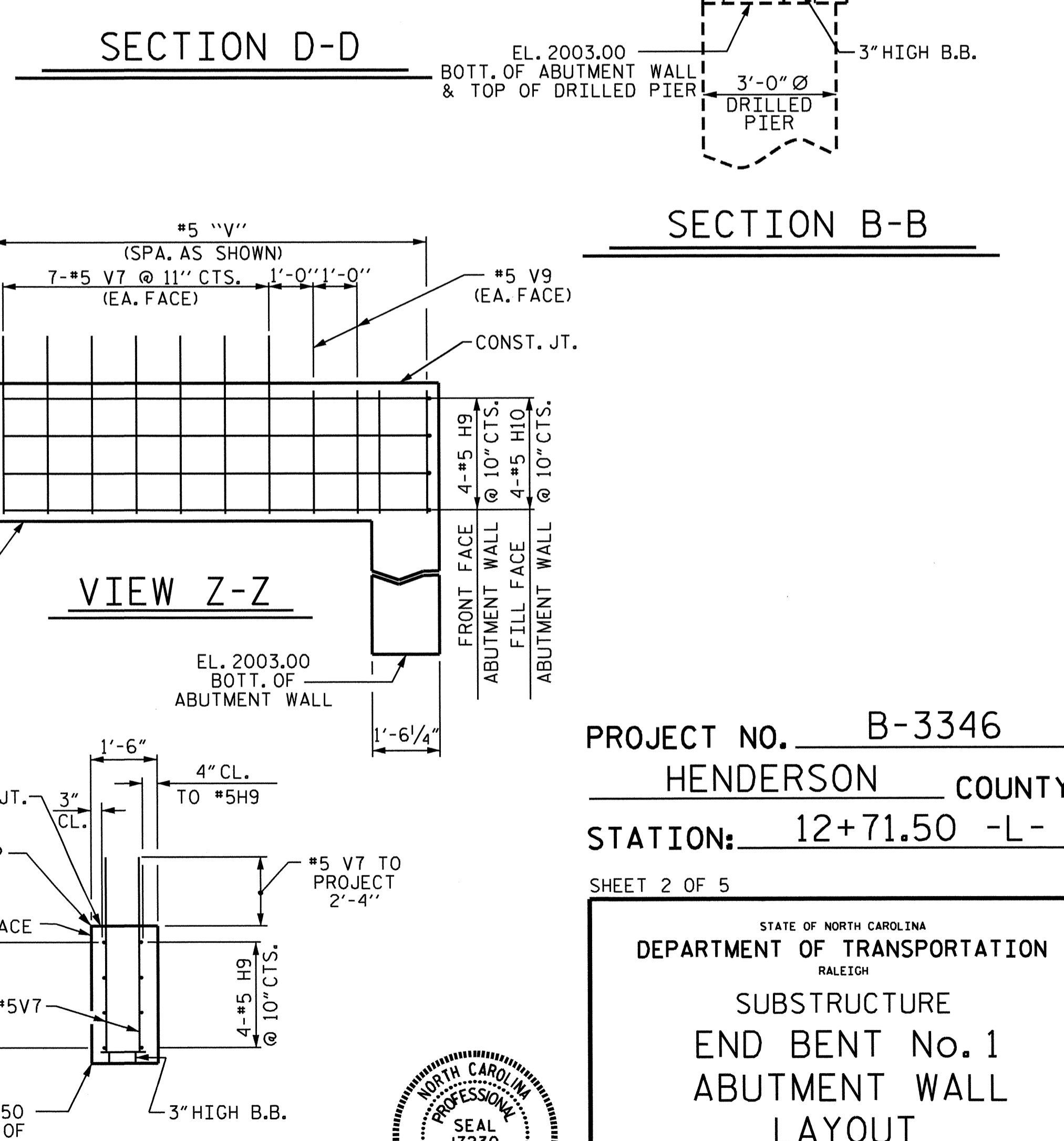


SECTION D-D

SECTION B-B



ELEVATION



VIEW Z-Z

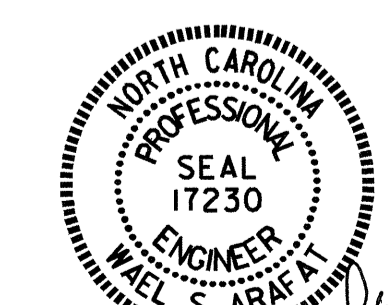
SECTION C-C

M1, V8 & SPIRAL STEEL NOT SHOWN
IN DRILLED PIERS & COLUMNS FOR CLARITY, SEE SHEET 1 OF 5.

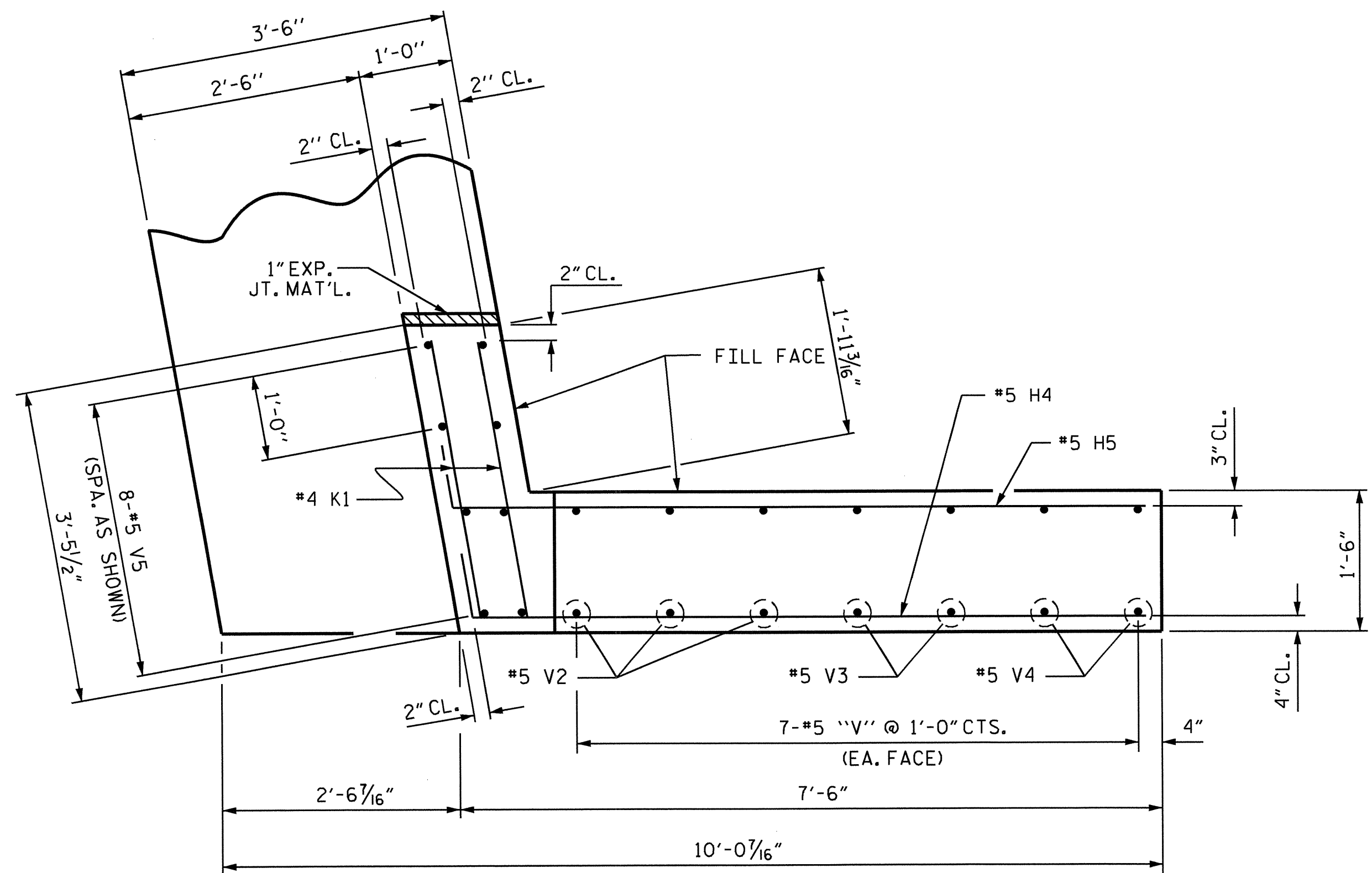
DRAWN BY: V.X. NGUYEN DATE: 9-30-13
 CHECKED BY: D. HODGE DATE: 10-13
 DESIGN ENGINEER OF RECORD: H. KIM DATE: 11/13

PROJECT NO. B-3346
 HENDERSON COUNTY
 STATION: 12+71.50 -L-
 SHEET 2 OF 5

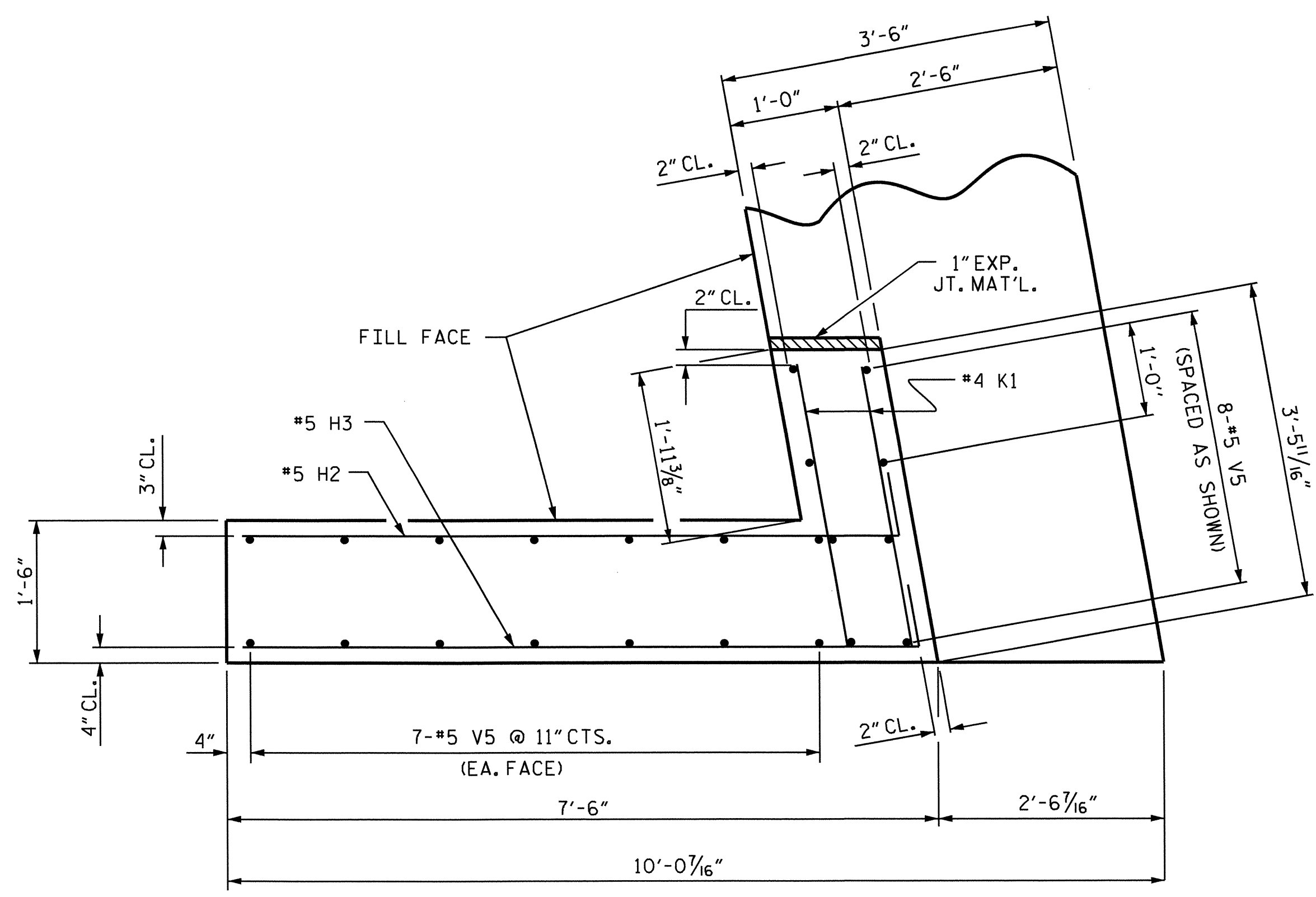
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT No. 1
 ABUTMENT WALL
 LAYOUT



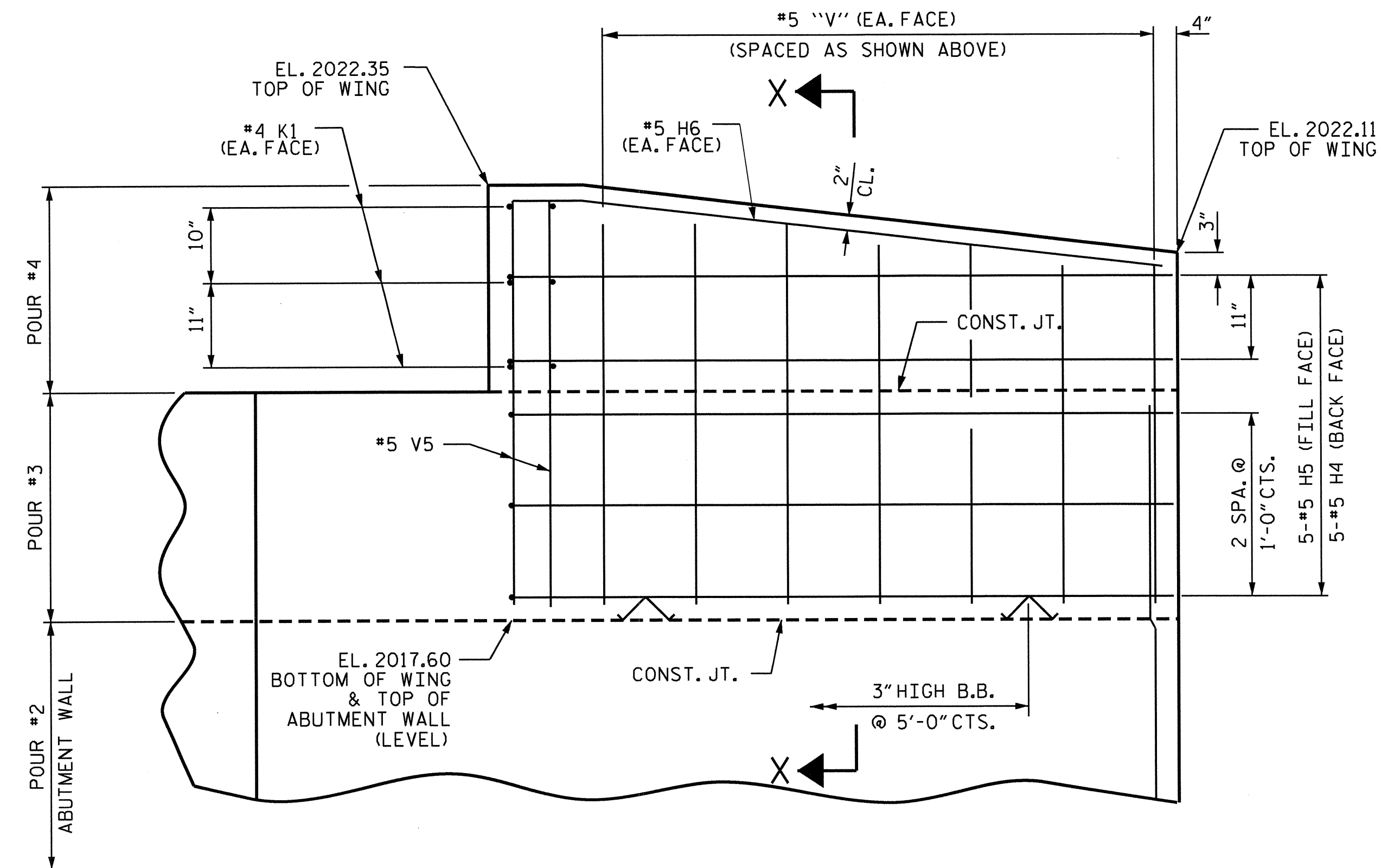
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10	
1			3			TOTAL SHEETS	
2			4			23	



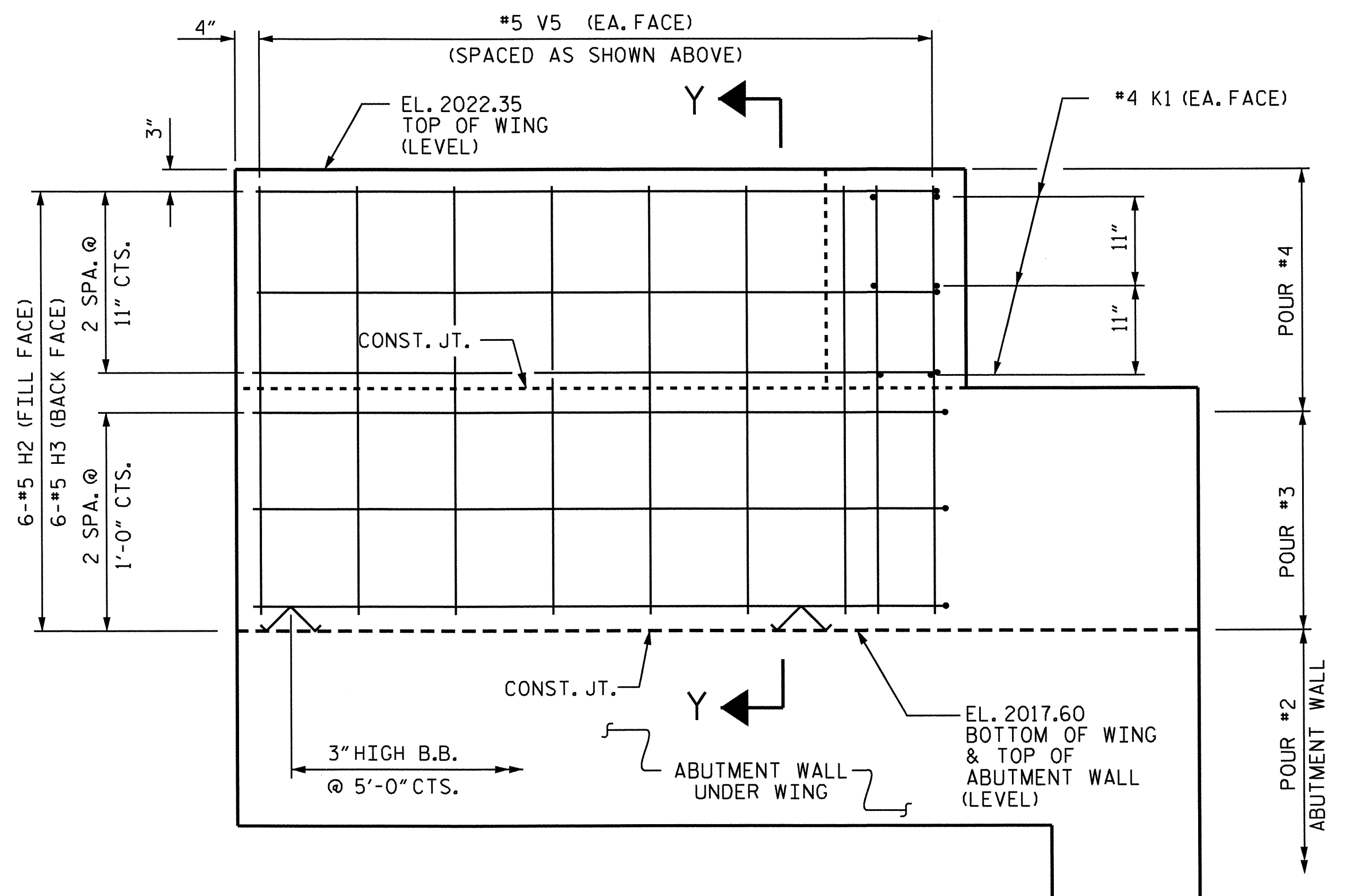
PLAN OF WING (W1)



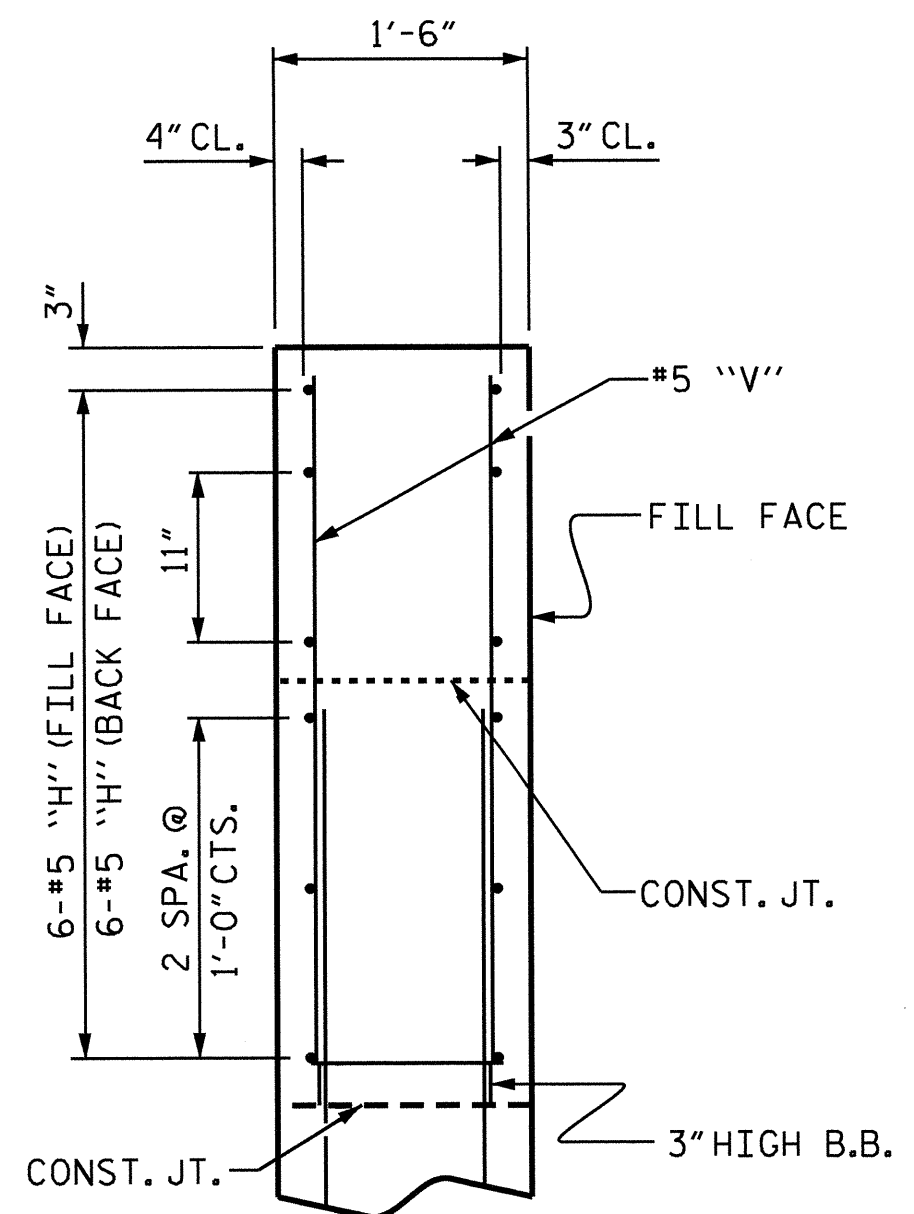
PLAN OF WING (W2)



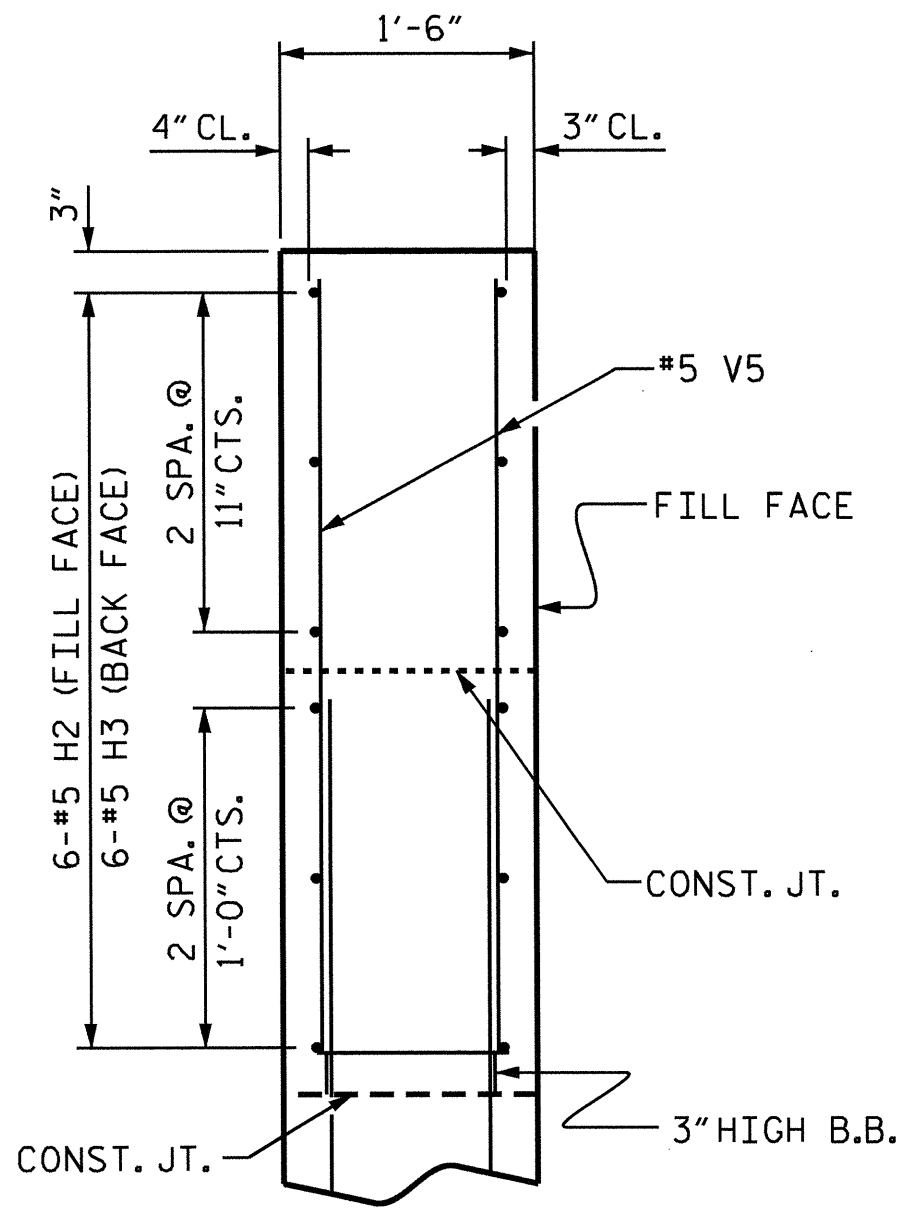
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



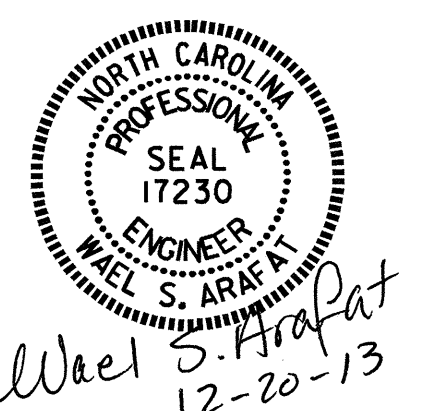
SECTION X-X



SECTION Y-Y

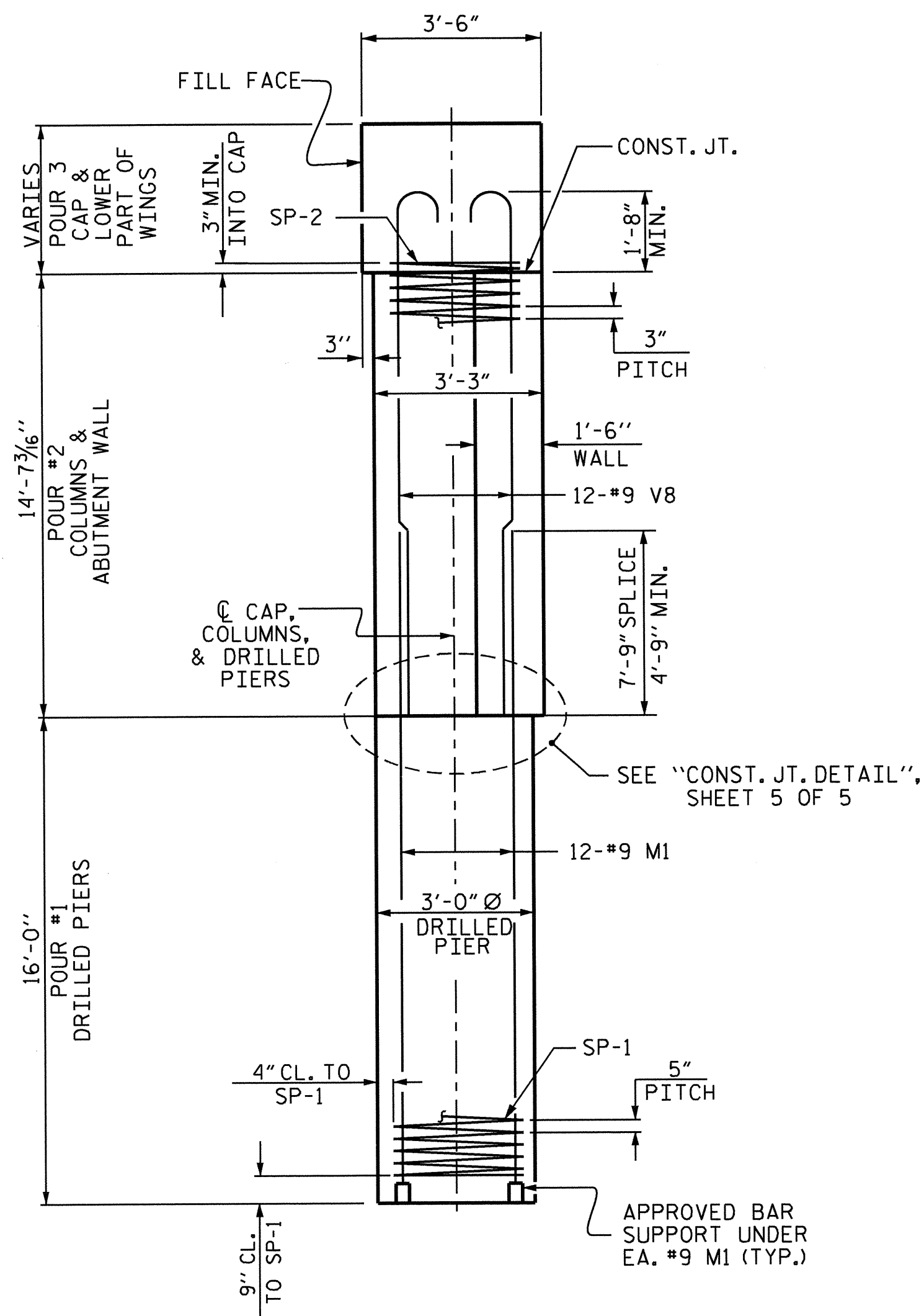
PROJECT NO. B-3346
 HENDERSON COUNTY
 STATION: 12+71.50 -L-

SHEET 3 OF 5
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT No. 1
 WING DETAILS

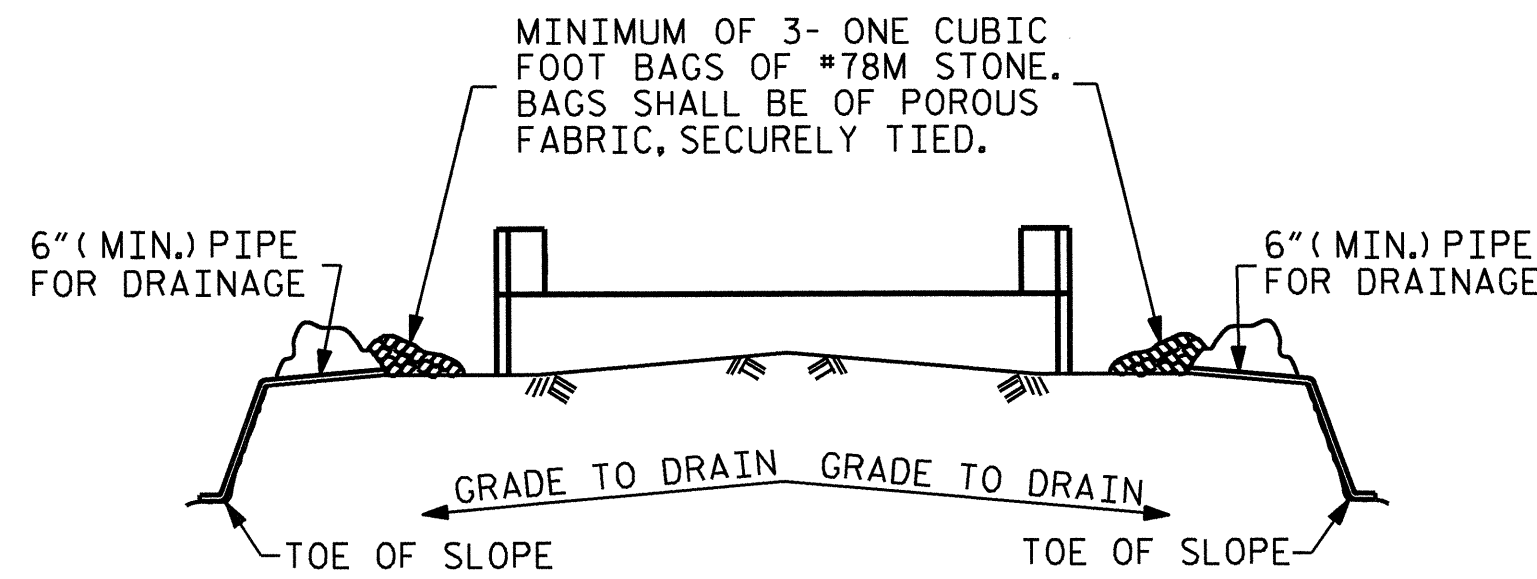


DRAWN BY: V.X. NGUYEN DATE: 9-30-13
 CHECKED BY: D. HODGE DATE: 10-13
 DESIGN ENGINEER OF RECORD: H. KIM DATE: 11/13

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
1			3			S-11	
2			4			23	



END ELEVATION

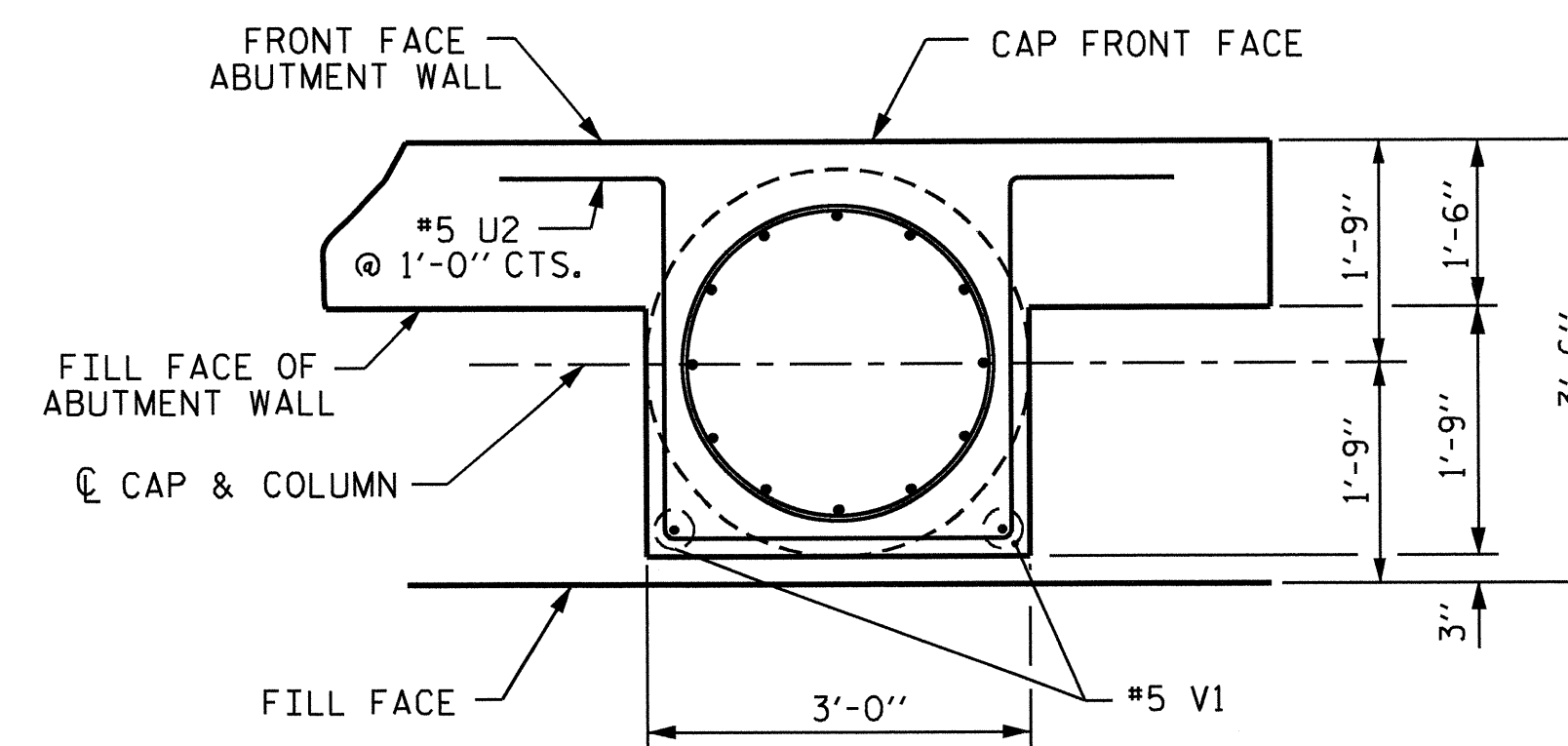


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

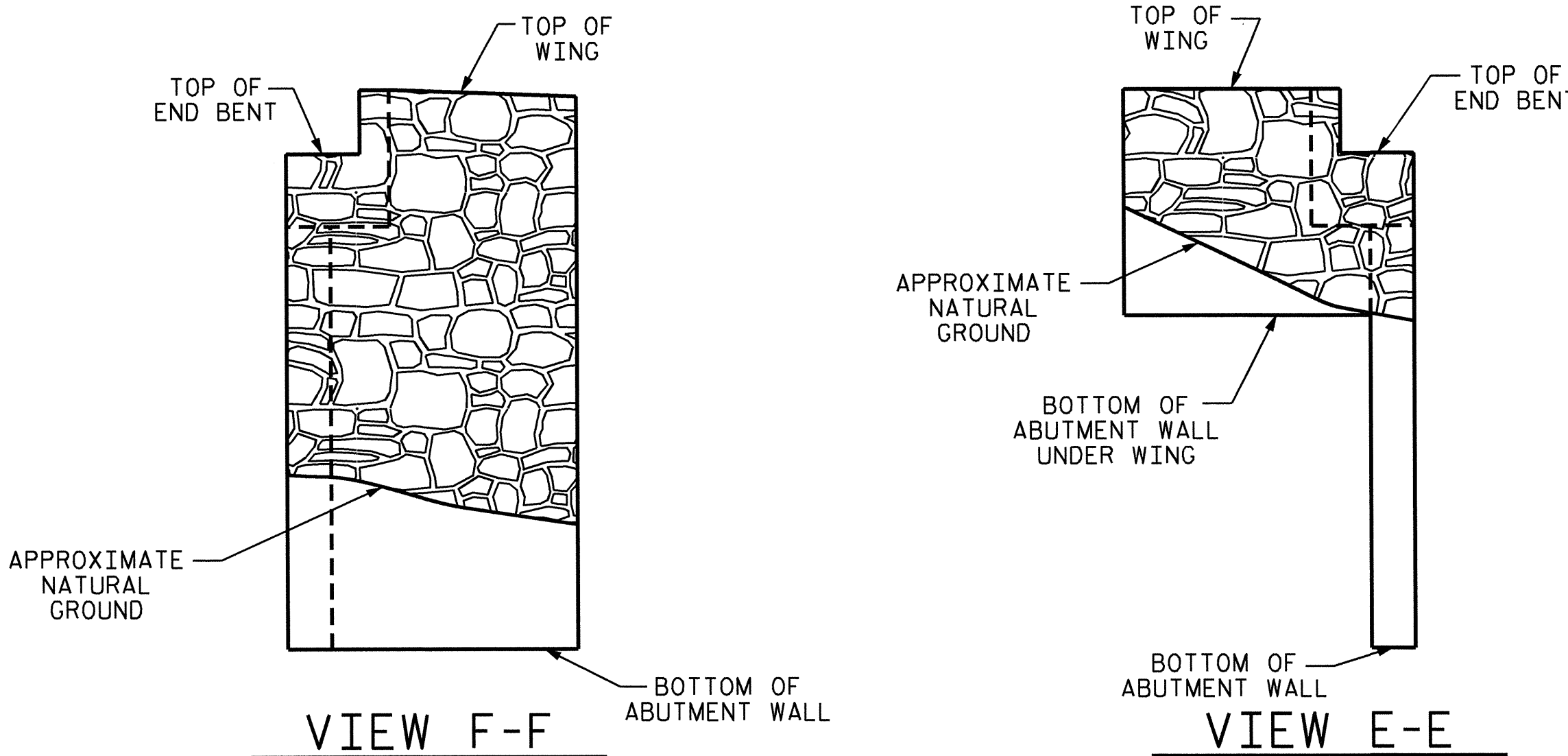
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

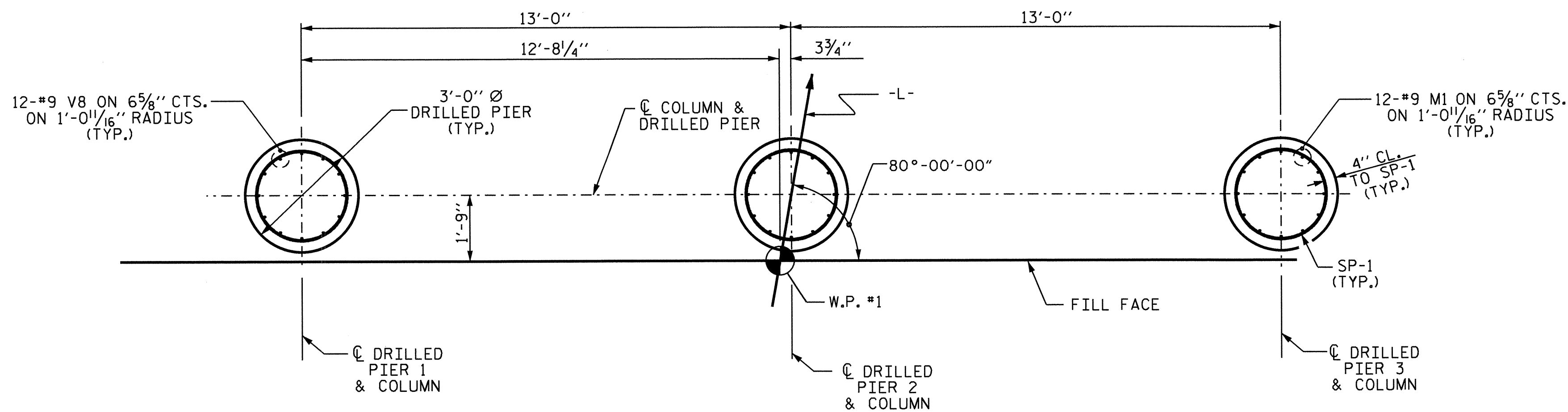
TEMPORARY DRAINAGE AT END BENT



SECTION THRU COLUMN



ARCHITECTURAL CONCRETE SURFACE TREATMENT



PLAN OF DRILLED PIERS

DRAWN BY: V.X. NGUYEN DATE: 10-10-13
 CHECKED BY: D. HODGE DATE: 10-13
 DESIGN ENGINEER OF RECORD: H. KIM DATE: 11/13

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PROJECT NO. B-3346
 HENDERSON COUNTY
 STATION: 12+71.50 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE

END BENT No. 1
 DETAILS



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 12-20-13

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			23

NOTES

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

HOOKE 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 CURBS ARE CAST IF SLIP FORMING IS USED.

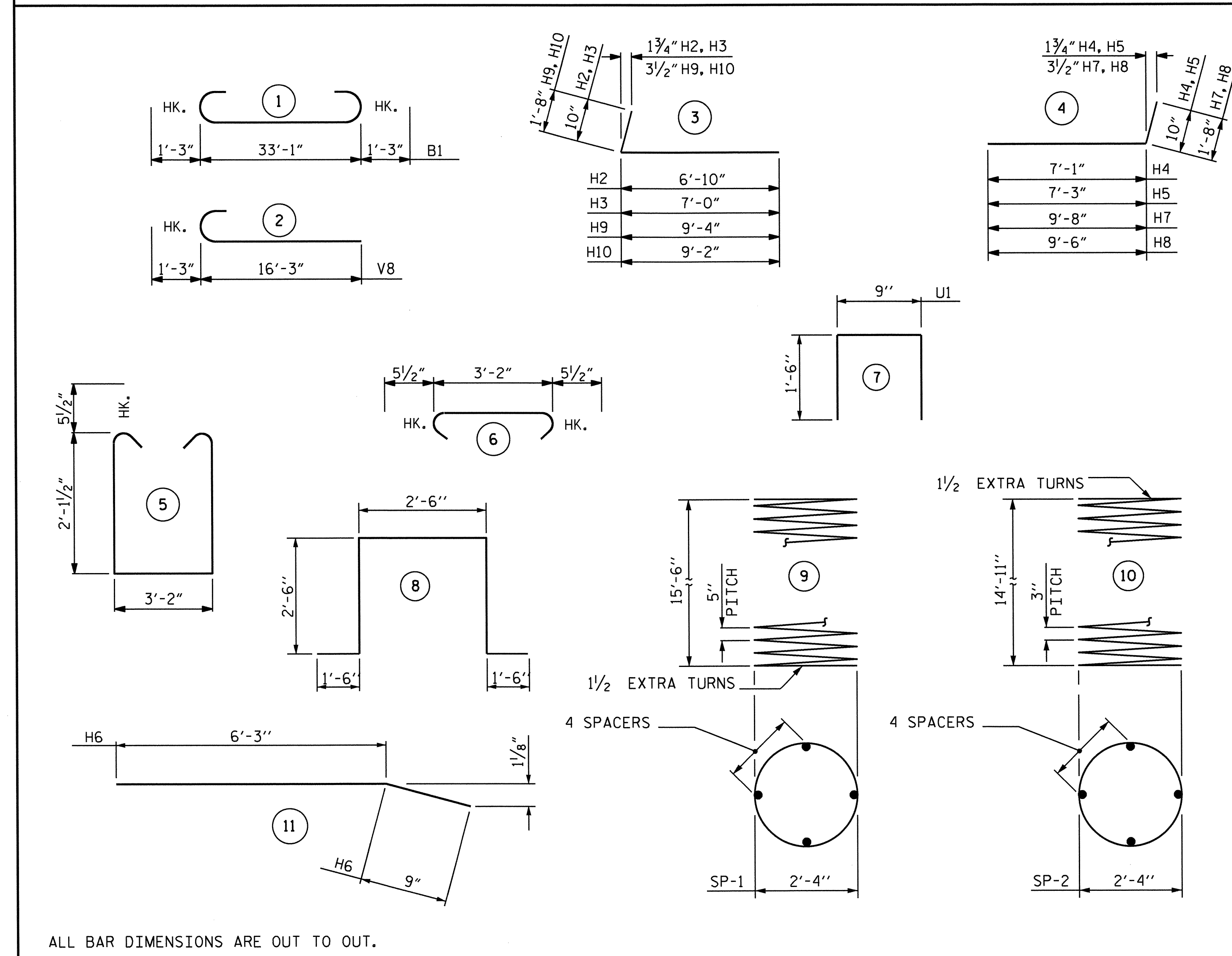
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL"

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.

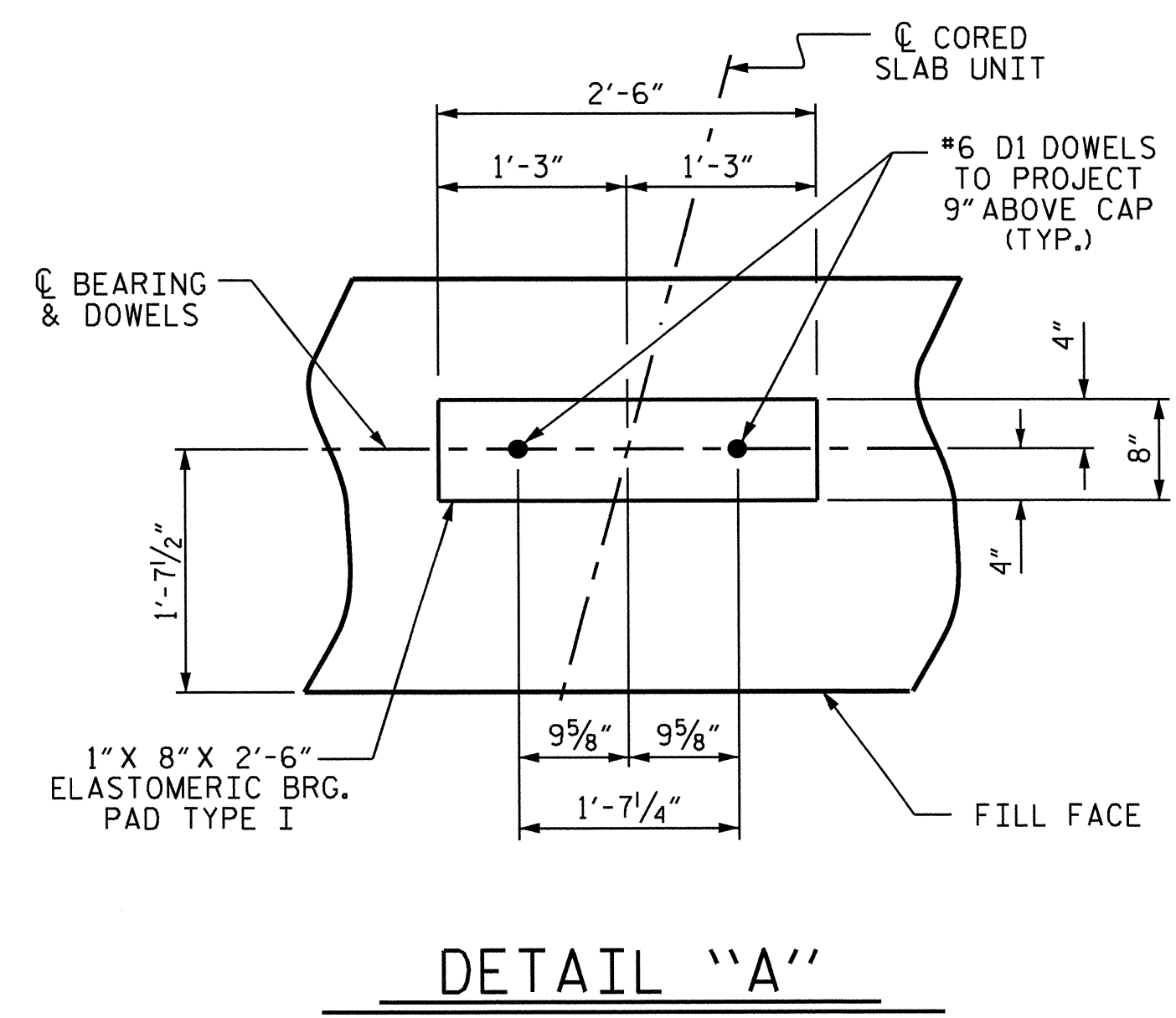
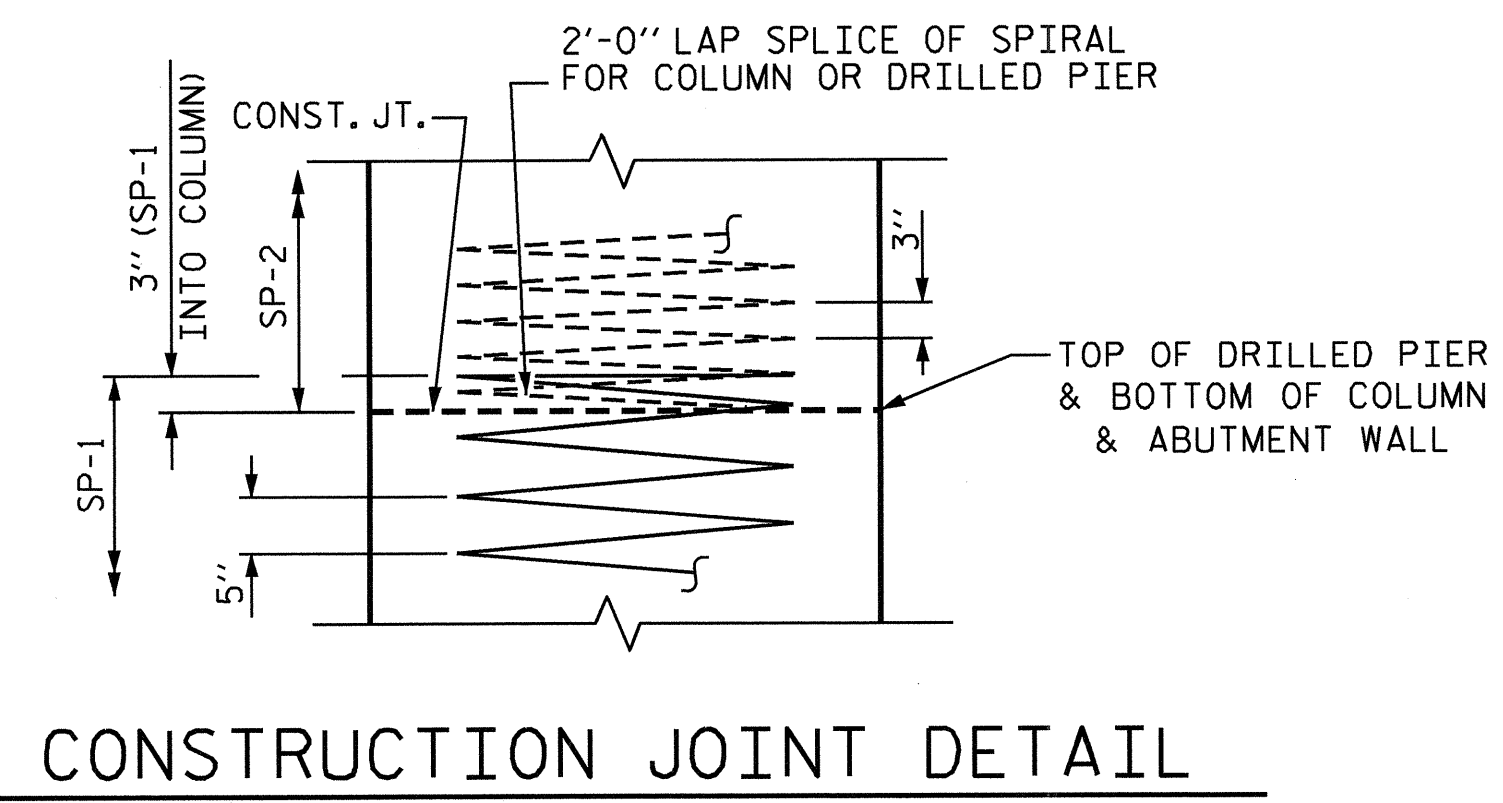
SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.

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

BAR TYPES



BILL OF MATERIAL					
END BENT No. 1					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	11	9	1	35'-7"	1331
B2	8	4	STR	17'-10"	95
D1	18	6	STR	1'-6"	41
H1	30	5	STR	33'-3"	1040
H2	6	5	3	7'-8"	48
H3	6	5	3	7'-10"	49
H4	5	5	4	7'-11"	41
H5	5	5	4	8'-1"	42
H6	2	5	11	7'-0"	15
H7	15	5	4	11'-4"	177
H8	15	5	4	11'-2"	175
H9	4	5	3	11'-0"	46
H10	4	5	3	10'-10"	45
K1	12	4	STR	3'-0"	24
M1	36	9	STR	23'-9"	2907
S1	42	5	5	8'-4"	365
S2	42	5	6	4'-1"	179
U1	22	4	7	3'-9"	55
U2	45	5	8	10'-6"	493
V1	60	5	STR	14'-3"	892
V2	6	5	STR	4'-1"	26
V3	4	5	STR	3'-11"	16
V4	4	5	STR	3'-8"	15
V5	30	5	STR	4'-5"	138
V6	14	5	STR	16'-9"	245
V7	14	5	STR	5'-2"	75
V8	36	9	2	17'-6"	2142
V9	4	5	STR	2'-8"	11
REINFORCING STEEL					LBS. 10728
SP-1	3	*	9	277'-7"	869
SP-2	3	**	10	440'-3"	882
SPIRAL COLUMN REINFORCING STEEL					LBS. 1,751
CLASS A CONCRETE BREAKDOWN					
POUR 2 ABUTMENT WALL AND COLUMNS					44.2 C.Y.
POUR 3 CAP & LOWER PART OF WINGS					12.7 C.Y.
POUR 4 UPPER PART OF WINGS					2.1 C.Y.
TOTAL CLASS A CONCRETE					59.0 C.Y.



DRILLED PIER QUANTITIES	
DRILLED PIER CONCRETE	
POUR 1 DRILLED PIERS	12.6 C.Y.
3'-0" Ø DRILLED PIER NOT IN SOIL:	27.0 LIN. FT.
3'-0" Ø DRILLED PIER IN SOIL:	21.0 LIN. FT.
▲ CSL TUBES	210.0 LIN. FT.
ARCHITECTURAL CONCRETE SURFACE TREATMENT	194 SQ. FT.

- ▲ 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.

Wael S. Arafa
12-20-13

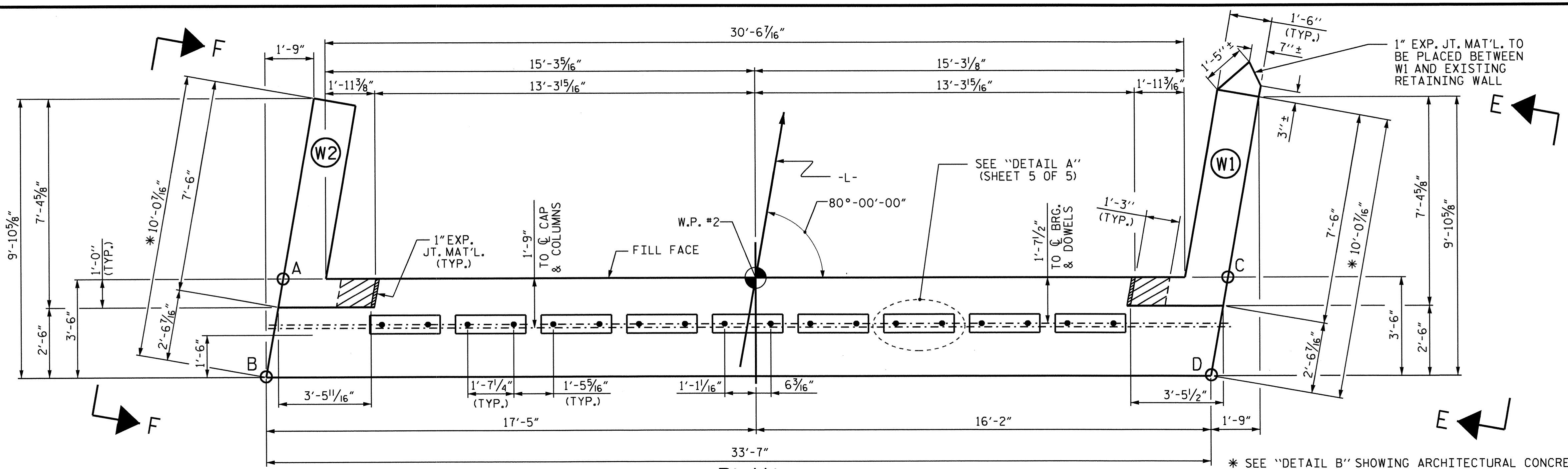
PROJECT NO. B-3346
HENDERSON COUNTY
 STATION: 12+71.50 -L-

SHEET 5 OF 5

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

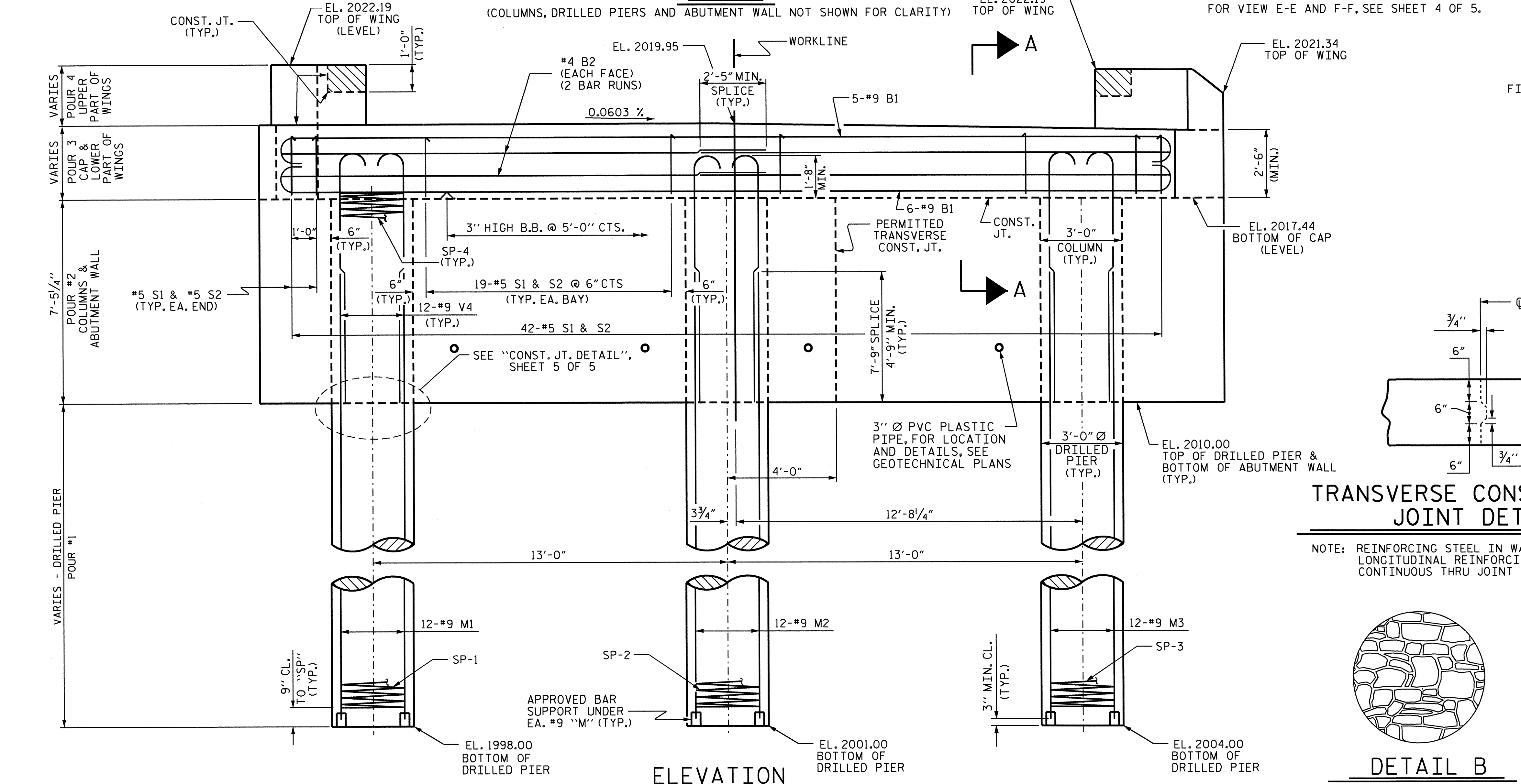
SHEET NO.				
S-13				
TOTAL SHEETS				
23				

DRAWN BY : V.X. NGUYEN DATE : 9-30-13
 CHECKED BY : D. HODGE DATE : 10-13
 DESIGN ENGINEER OF RECORD: H. KIM DATE : 11/13

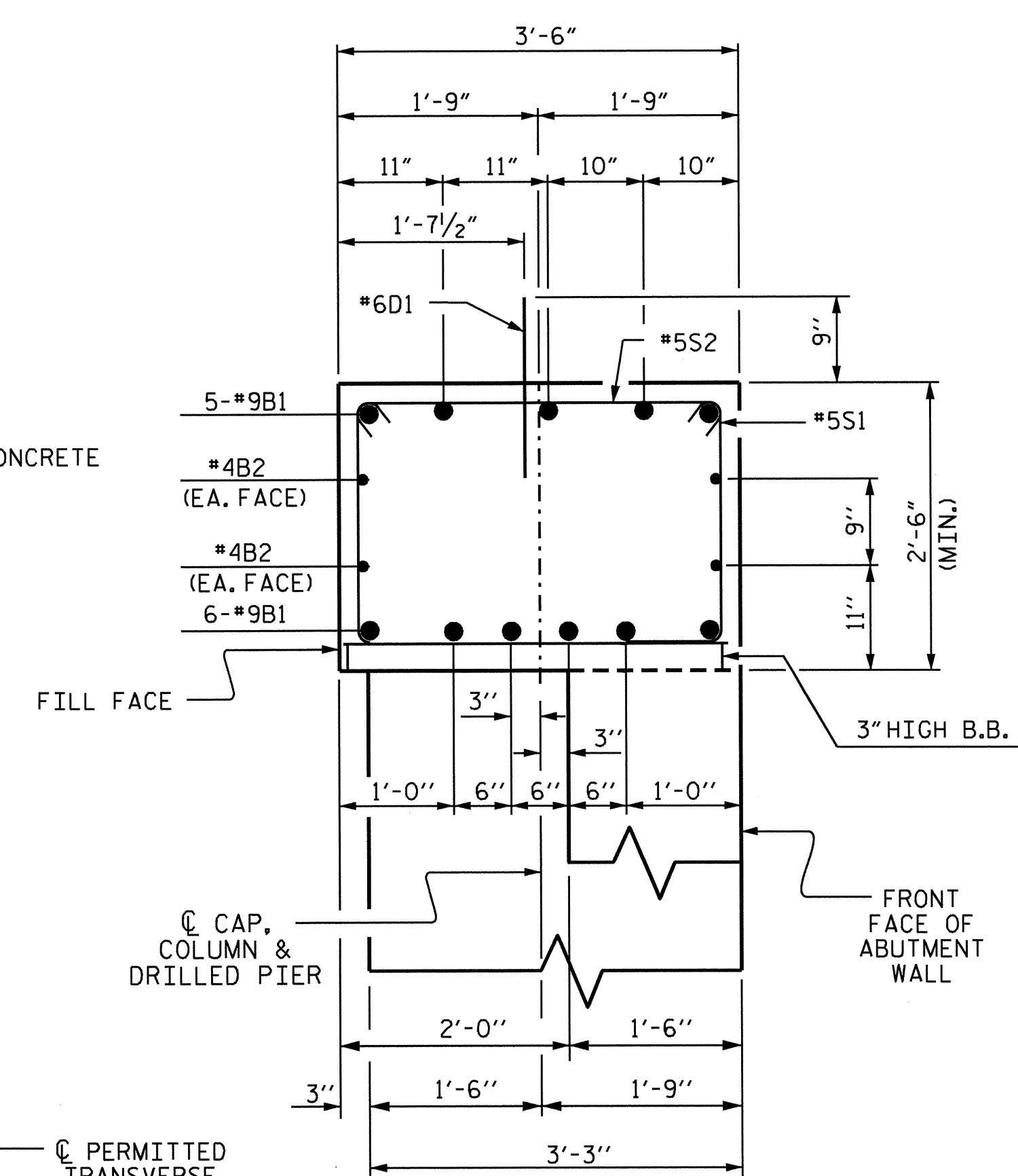


	TOP OF CAP ELEV.
(A)	2019.96
(B)	2019.96
(C)	2019.94
(D)	2019.94

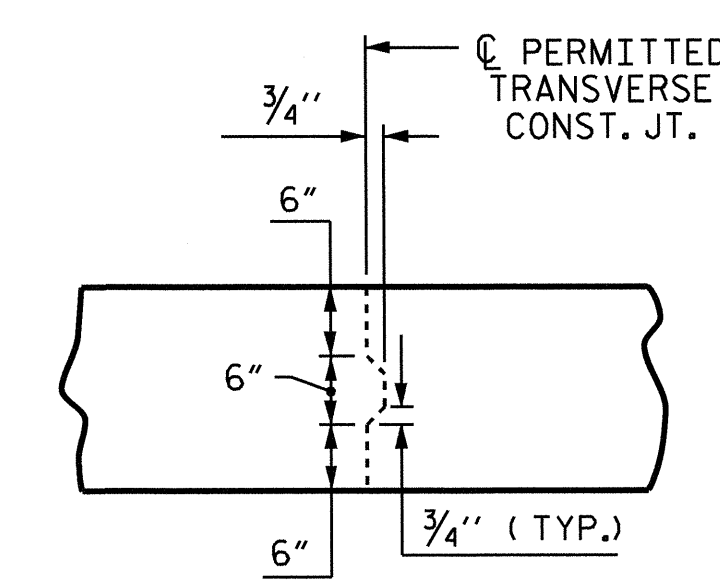
PLAN



ELEVATION

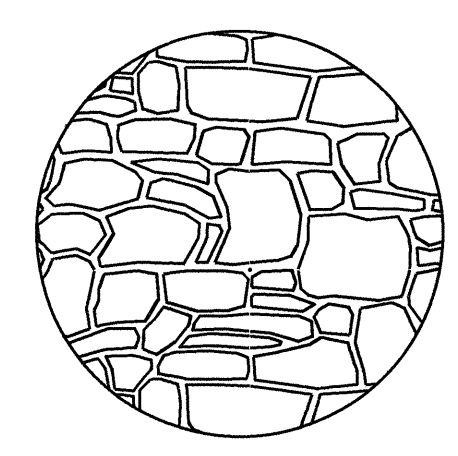


SECTION A-A



TRANSVERSE CONSTRUCTION JOINT DETAIL

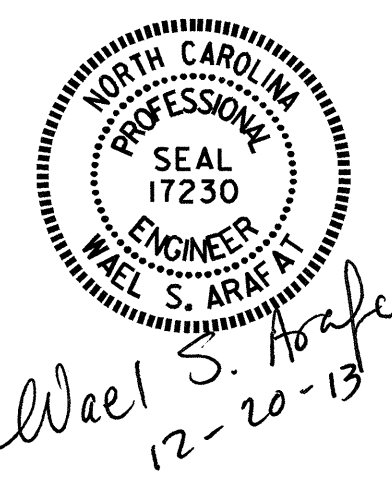
NOTE: REINFORCING STEEL IN WALL NOT SHOWN. LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT



DETAIL B

(FOR ARCHITECTURAL CONCRETE SURFACE TREATMENT, SEE GEOTECHNICAL SPECIAL PROVISIONS)

PROJECT NO. B-3346
 HENDERSON COUNTY
 STATION: 12+71.50 -L-
 SHEET 1 OF 5



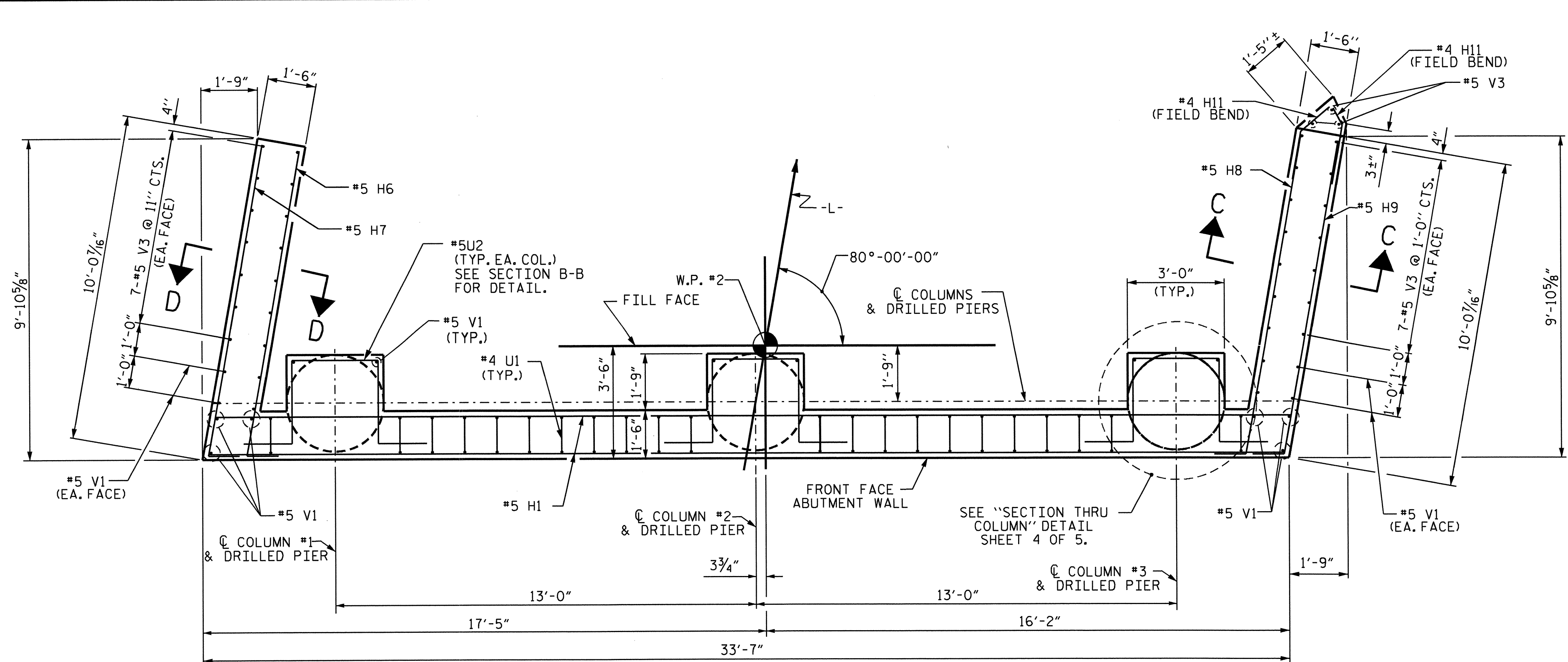
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT No. 2

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

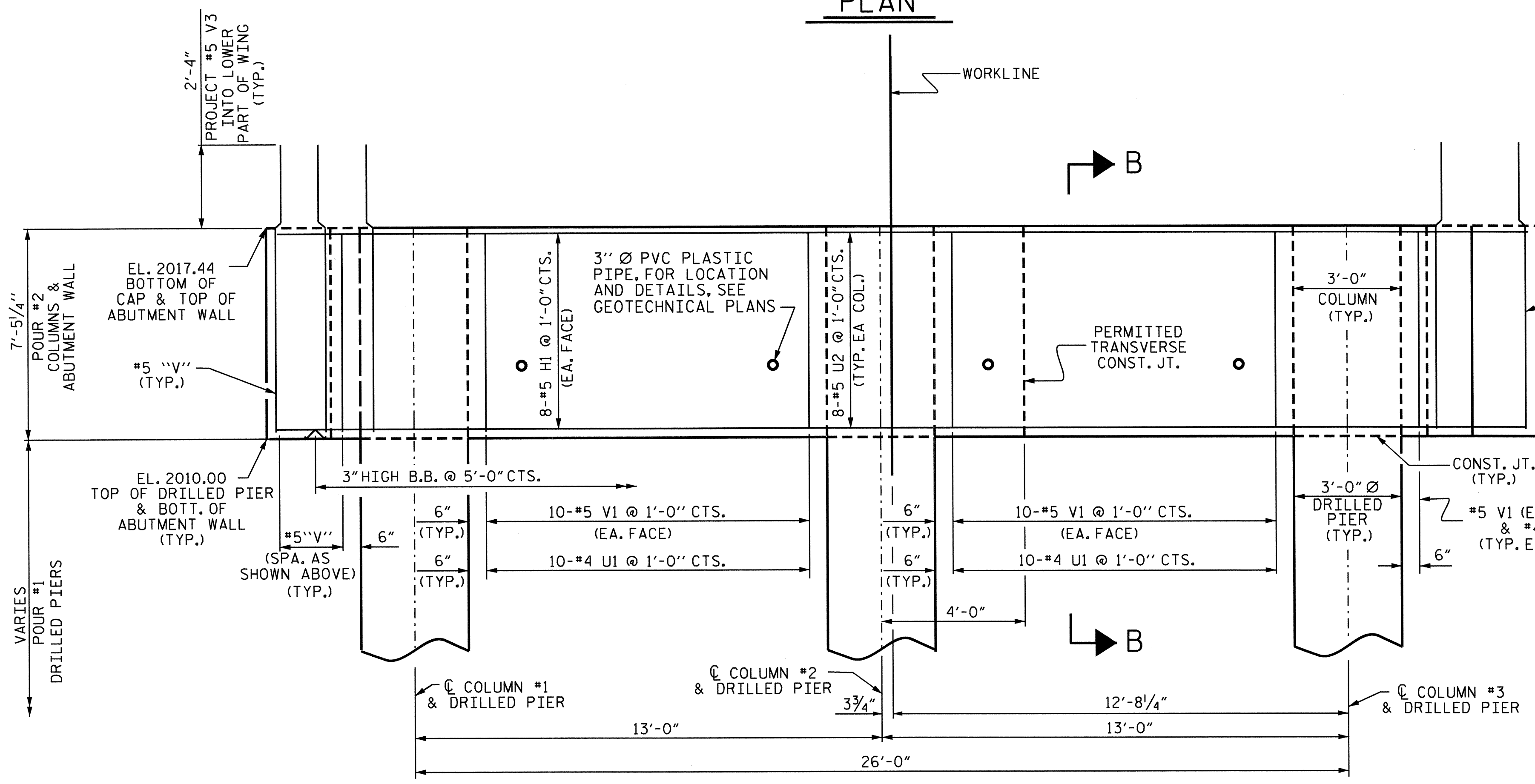
S-14
TOTAL SHEETS
23

DRAWN BY: V.X. NGUYEN DATE: 10-04-13
 CHECKED BY: D. HODGE DATE: 10-13
 DESIGN ENGINEER OF RECORD: H. KIM DATE: 11/13

REINFORCING STEEL IN ABUTMENT WALL AND ADDITIONAL REINFORCING STEEL IN COLUMNS NOT SHOWN FOR CLARITY, SEE SHEET 2 OF 5.

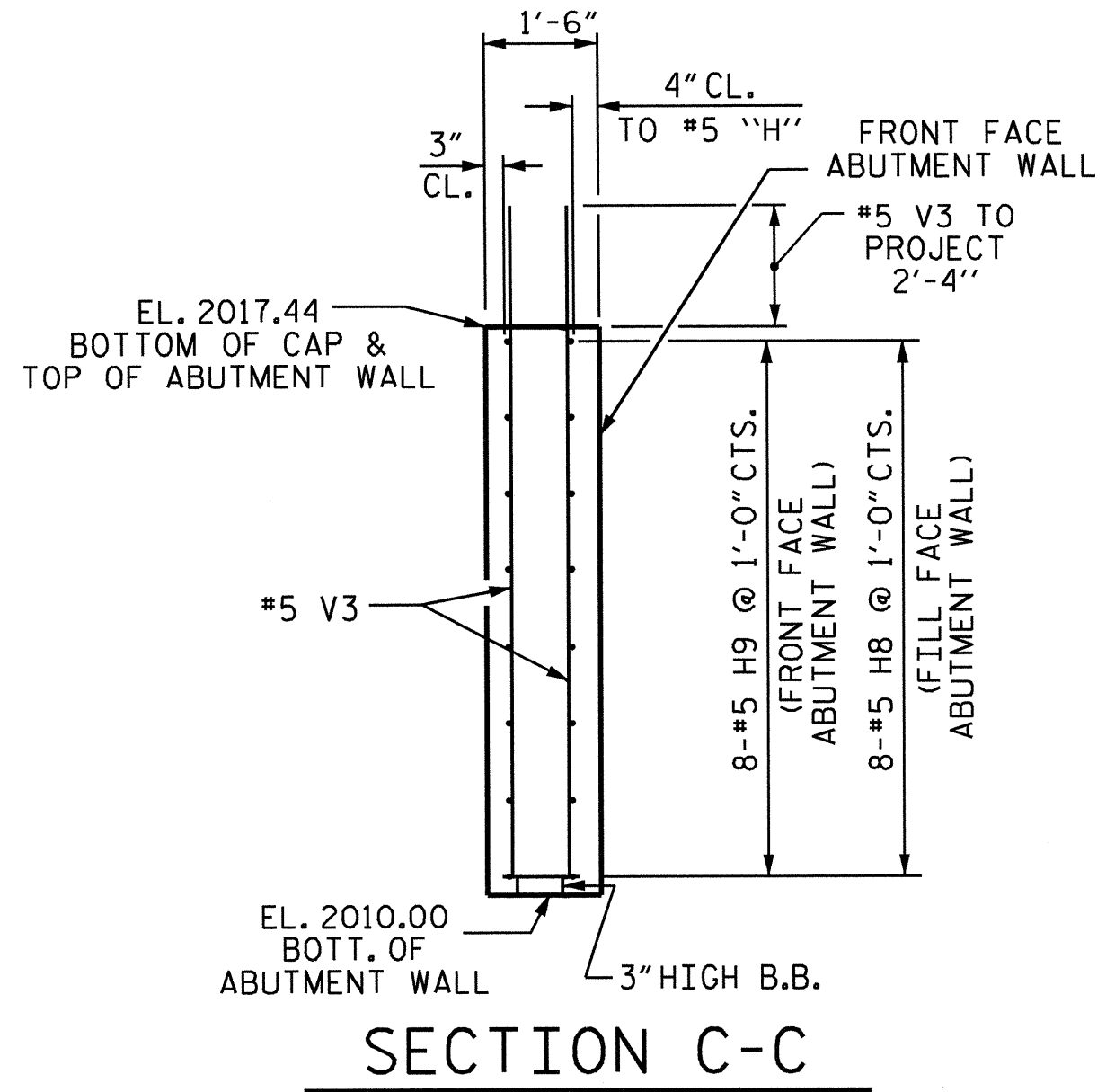


PLAN

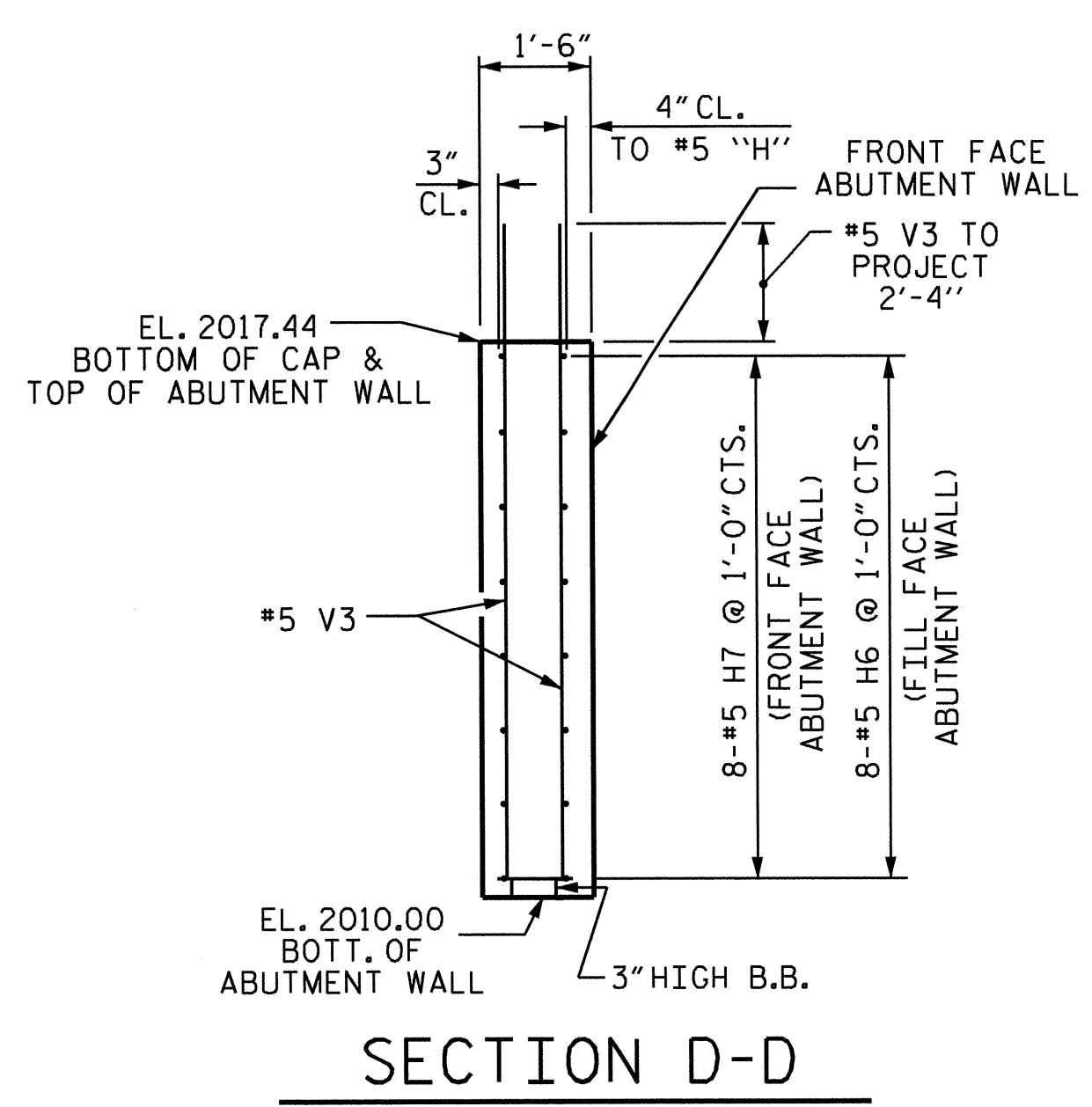


ELEVATION

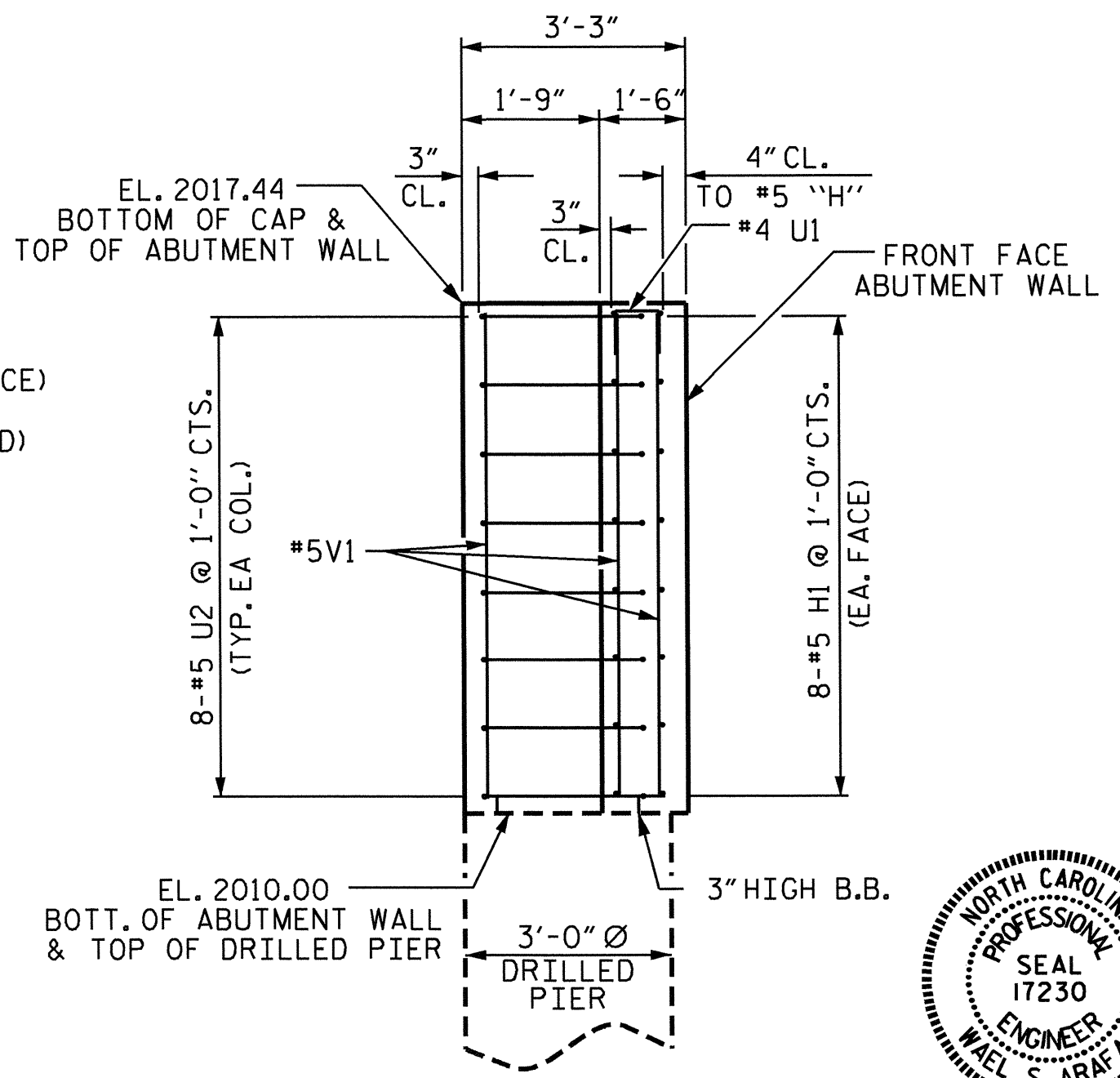
"M", V4 & SPIRAL STEEL NOT SHOWN
IN DRILLED PIERS & COLUMNS FOR CLARITY, SEE SHEET 1 OF 5.



SECTION C-C



SECTION D-D



SECTION B-B

PROJECT NO. B-3346
HENDERSON COUNTY
 STATION: 12+71.50 -L-

SHEET 2 OF 5

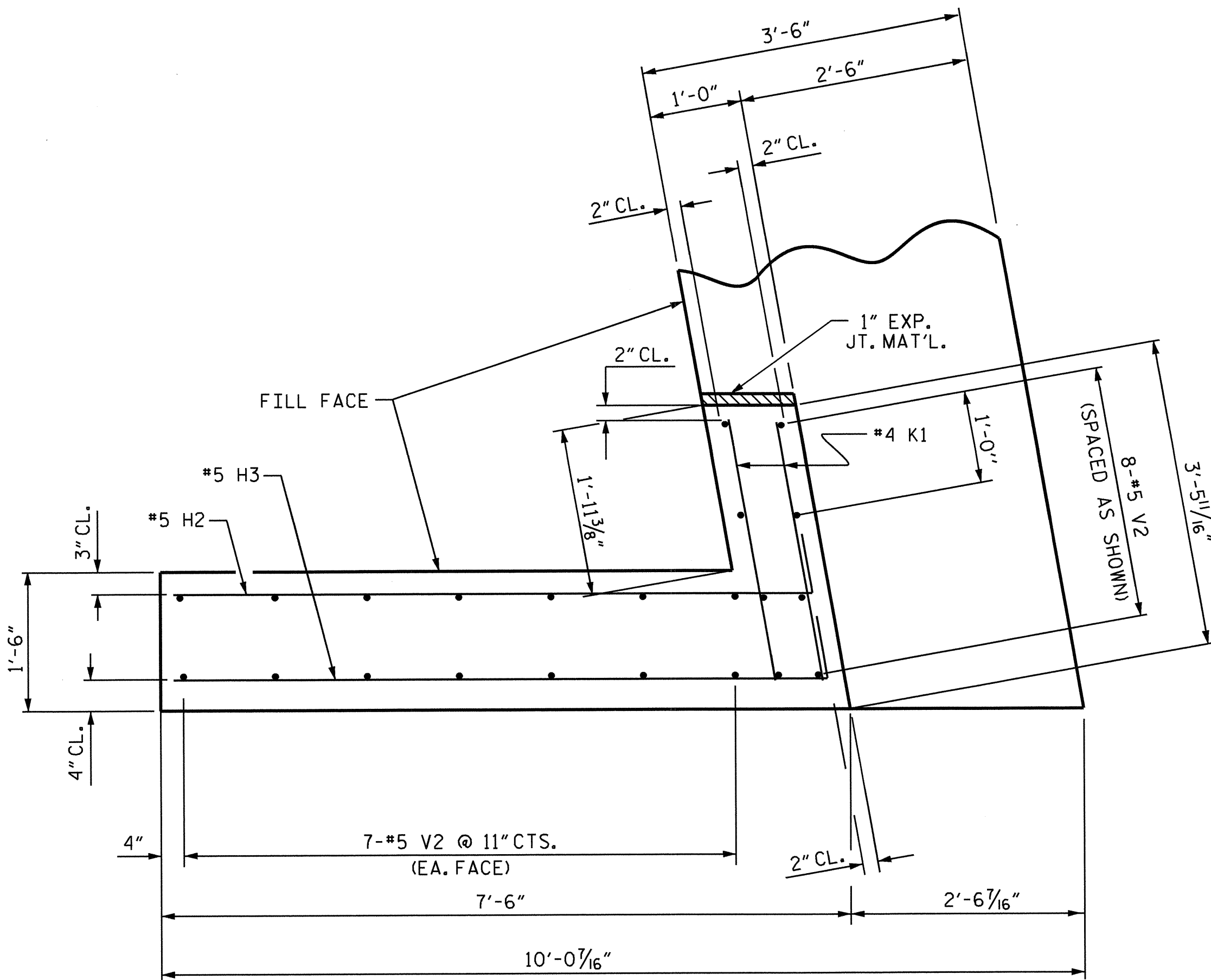
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 2
 ABUTMENT WALL
 LAYOUT

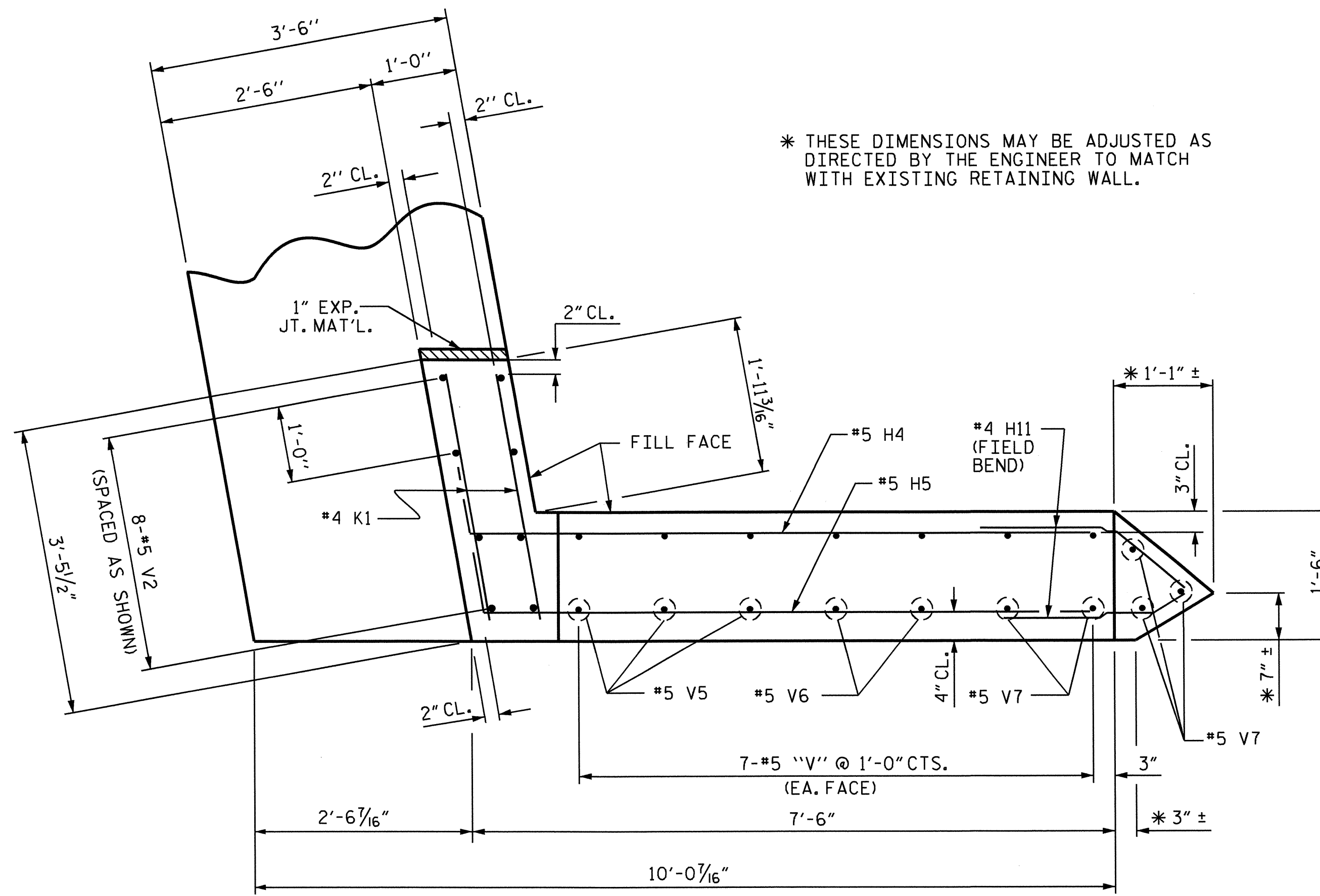


DRAWN BY: V.X. NGUYEN DATE: 10-04-13
 CHECKED BY: D. HODGE DATE: 10-13
 DESIGN ENGINEER OF RECORD: H. KIM DATE: 11/13

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15	
1			3			TOTAL SHEETS	23
2			4				

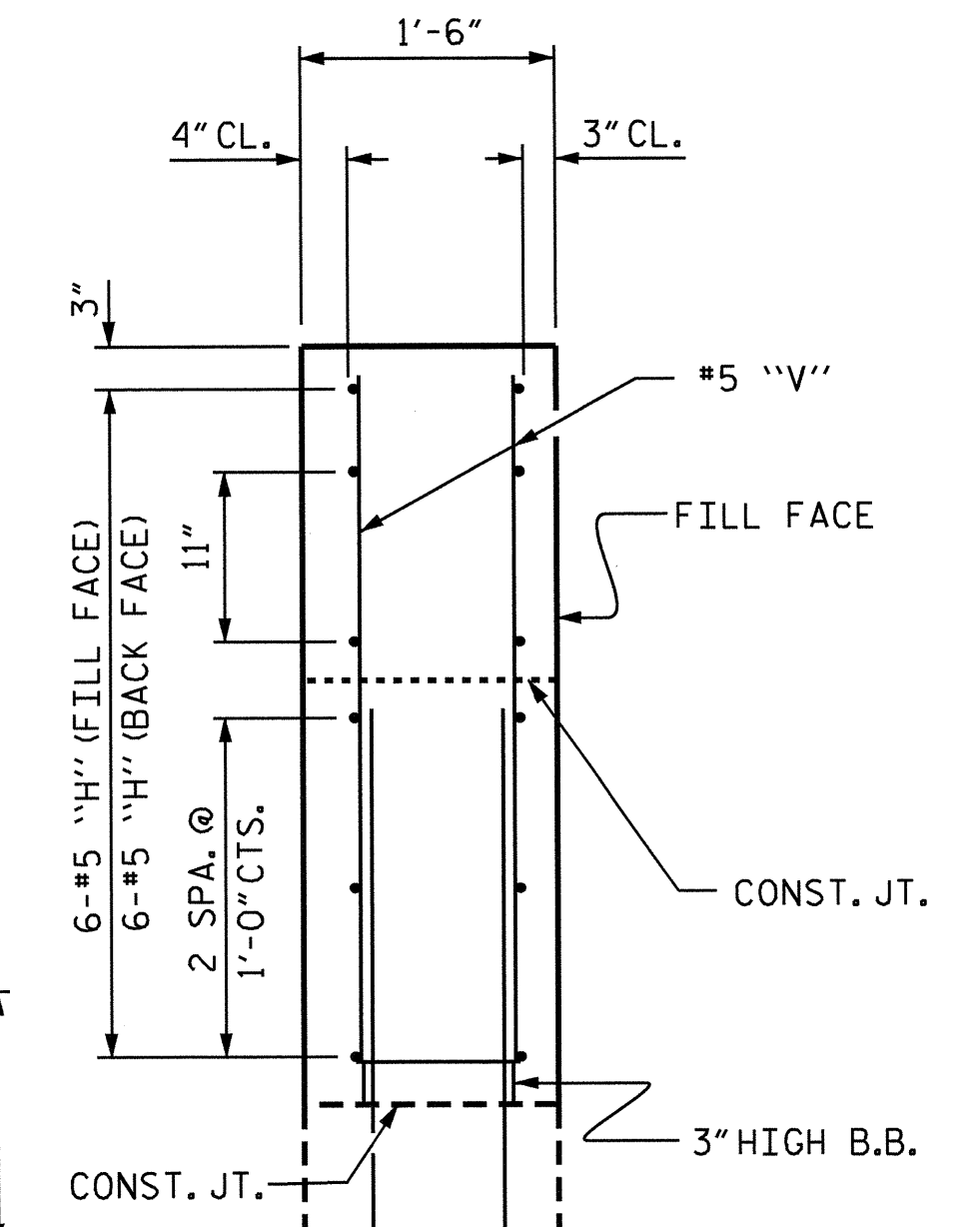


PLAN OF WING (W2)

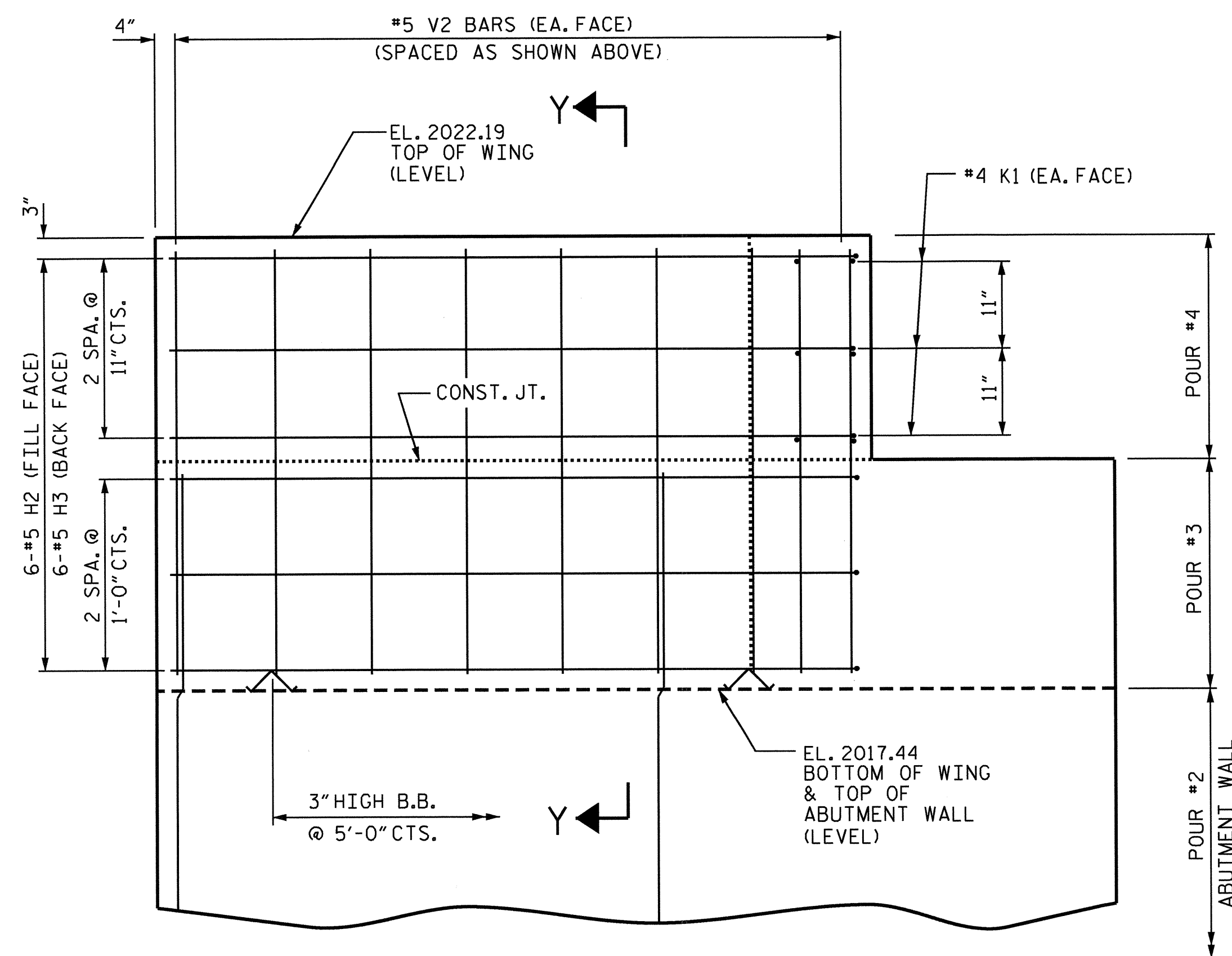


PLAN OF WING (W1)

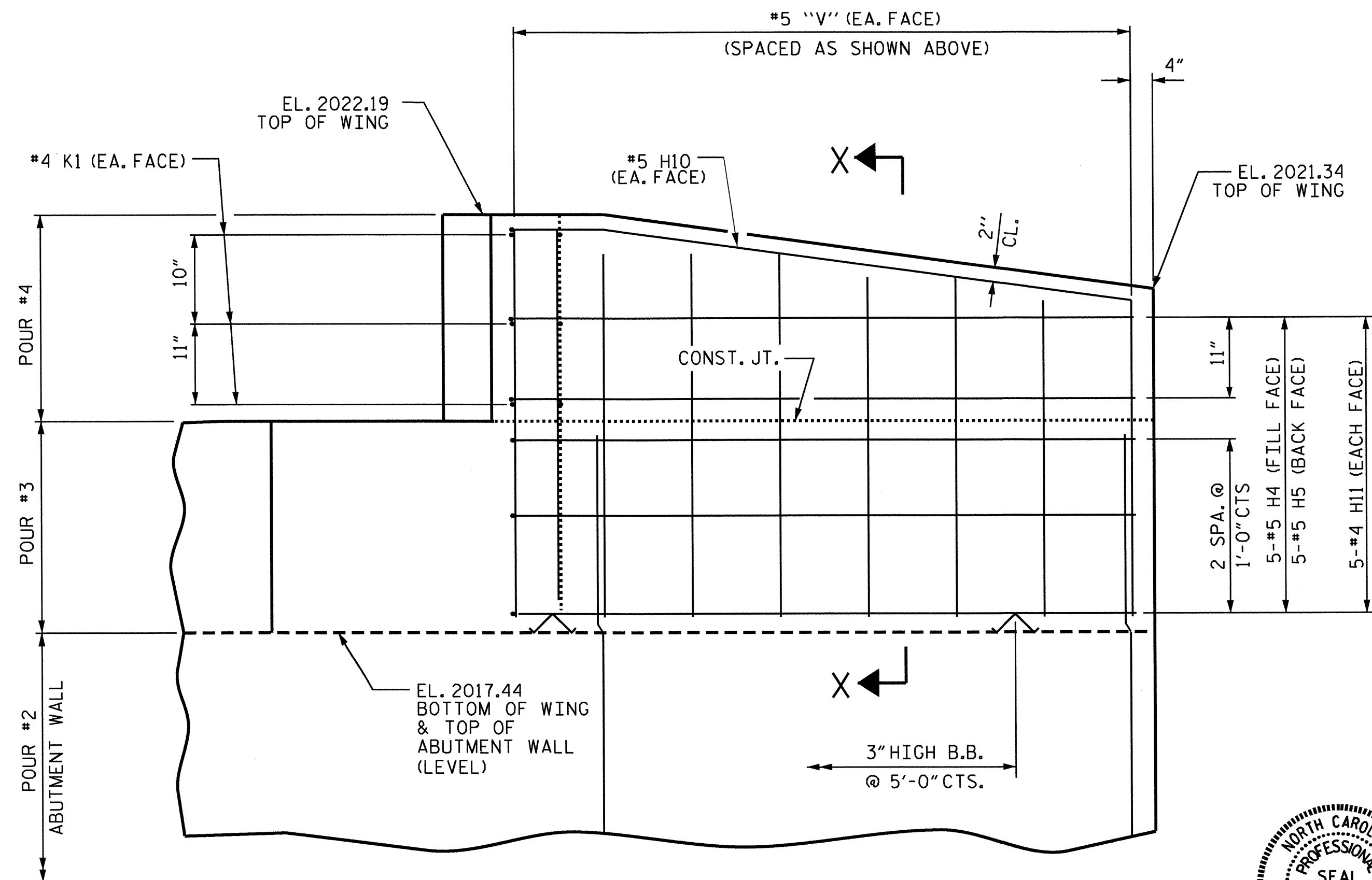
* THESE DIMENSIONS MAY BE ADJUSTED AS DIRECTED BY THE ENGINEER TO MATCH WITH EXISTING RETAINING WALL.



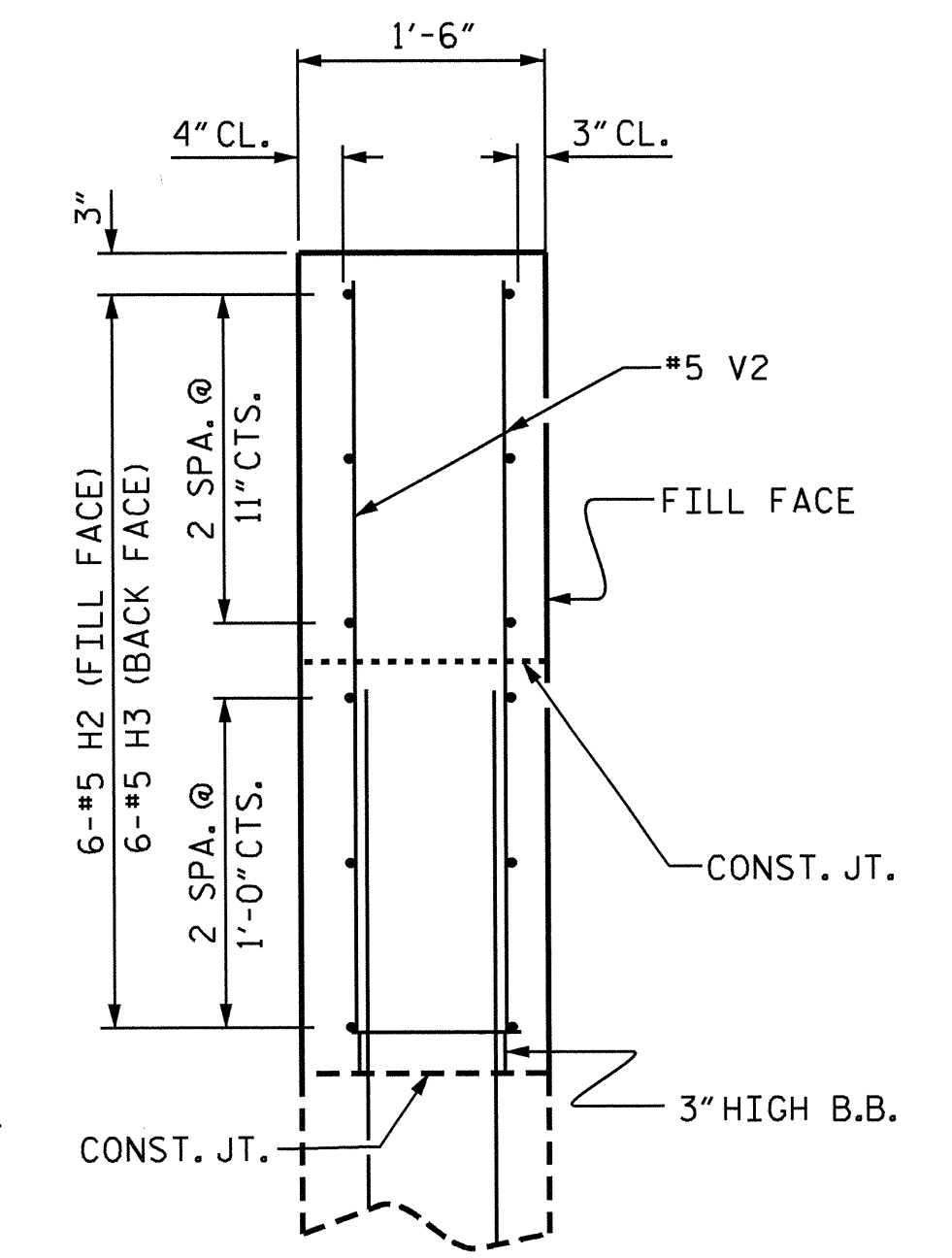
SECTION X-X



ELEVATION OF WING (W2)

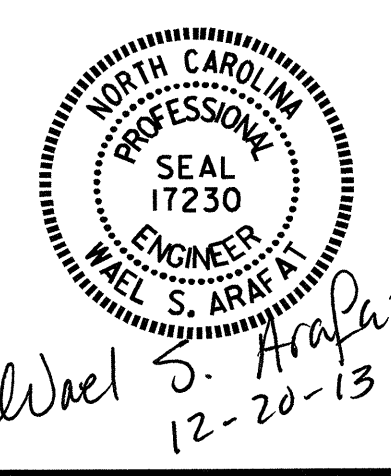


ELEVATION OF WING (W1)



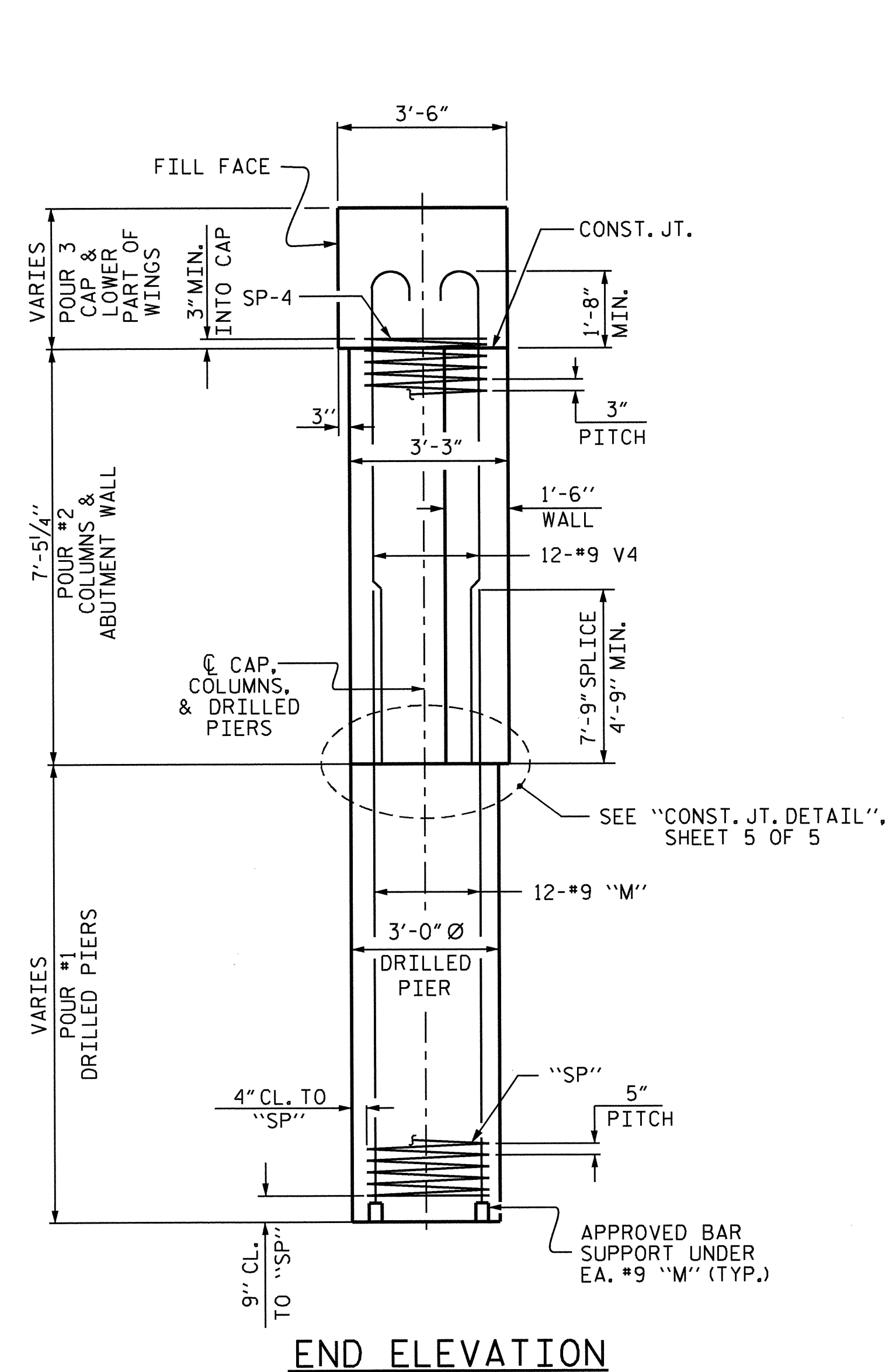
SECTION Y-Y

PROJECT NO. B-3346
 HENDERSON COUNTY
 STATION: 12+71.50 -L-
 SHEET 3 OF 5

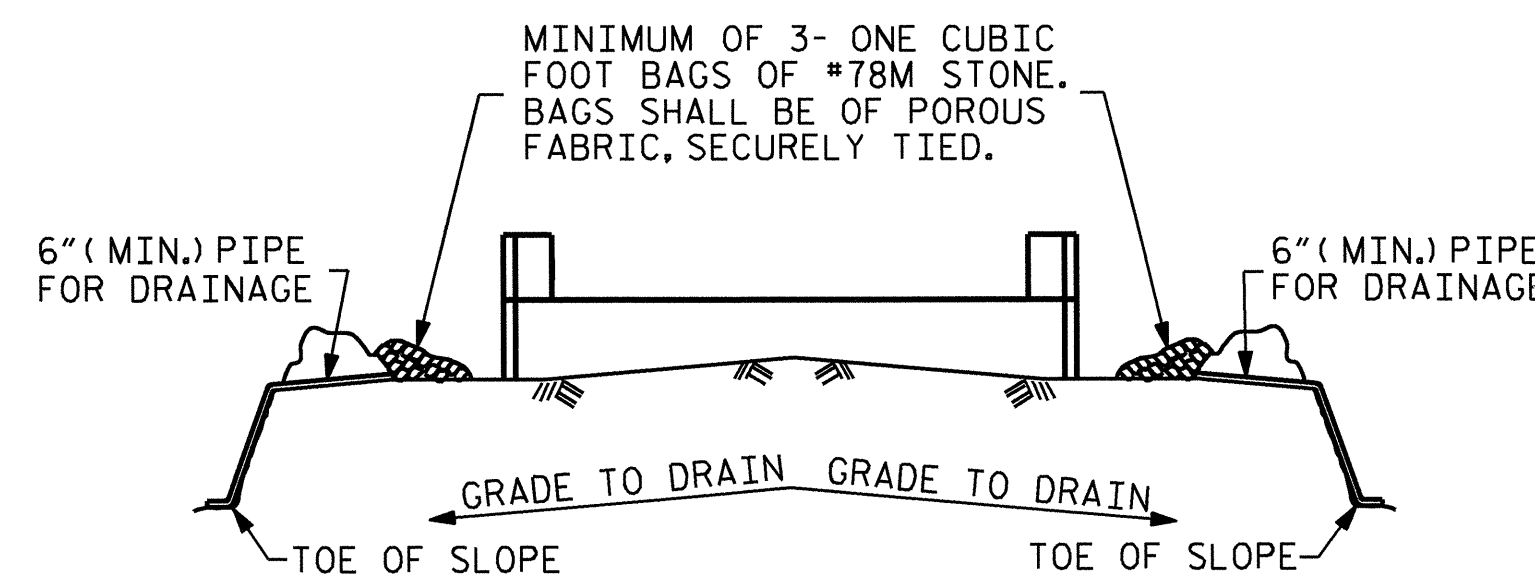


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT No. 2 WING DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

DRAWN BY : V.X. NGUYEN DATE : 10-02-13
 CHECKED BY : D. HODGE DATE : 10/13
 DESIGN ENGINEER OF RECORD : H. KIM DATE : 11/13



END ELEVATION



MINIMUM OF 3- ONE CUBIC FOOT BAGS OF #78M STONE. BAGS SHALL BE OF POROUS FABRIC, SECURELY TIED.

6\" (MIN.) PIPE FOR DRAINAGE

6\" (MIN.) PIPE FOR DRAINAGE

GRADE TO DRAIN

GRADE TO DRAIN

TOE OF SLOPE

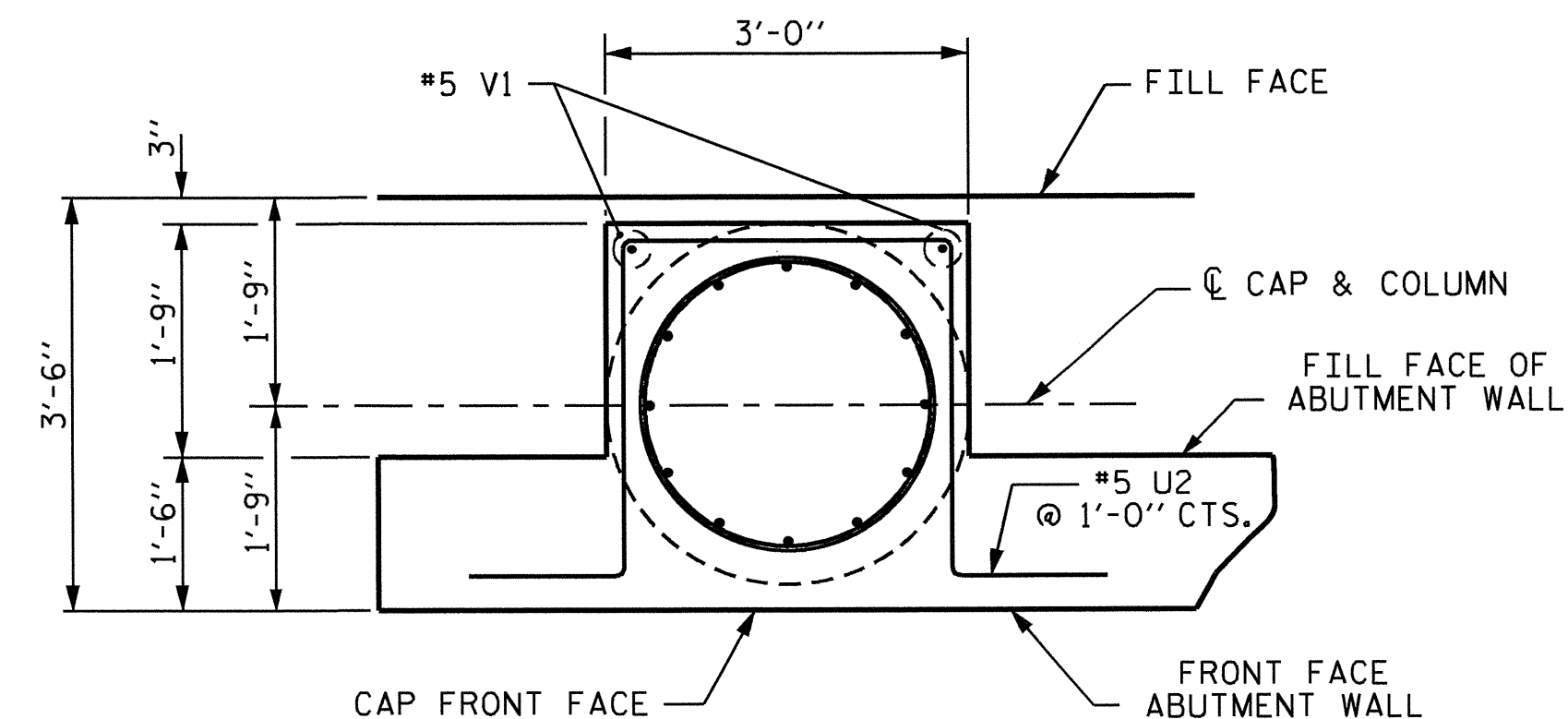
TOE OF SLOPE

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

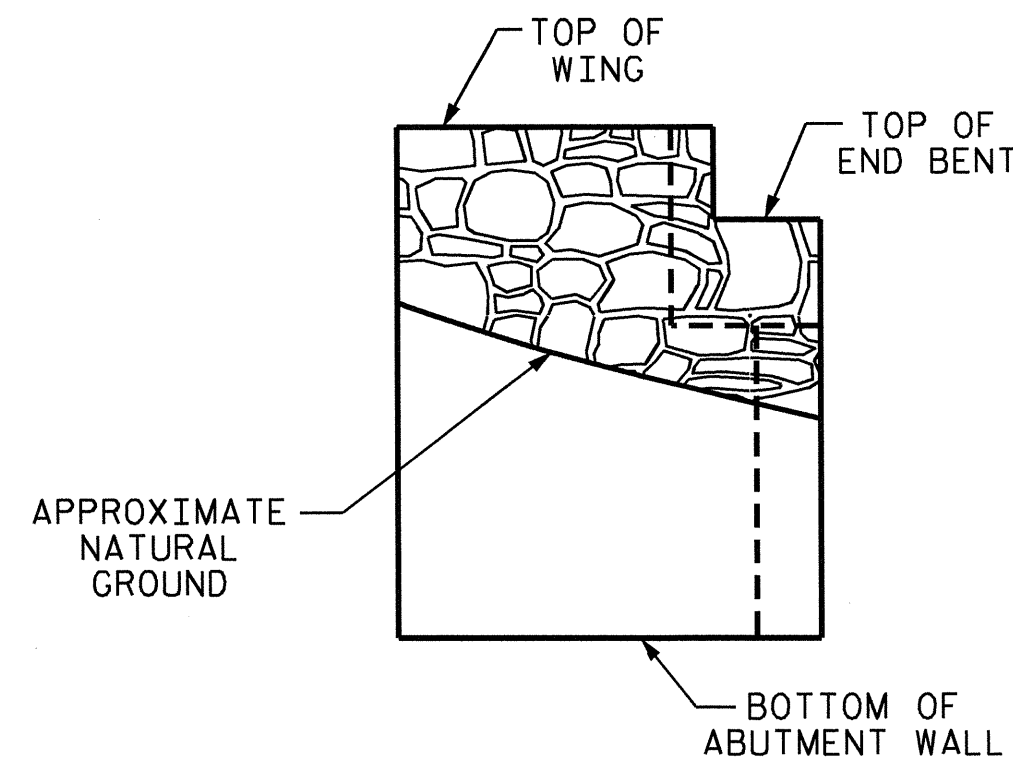
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

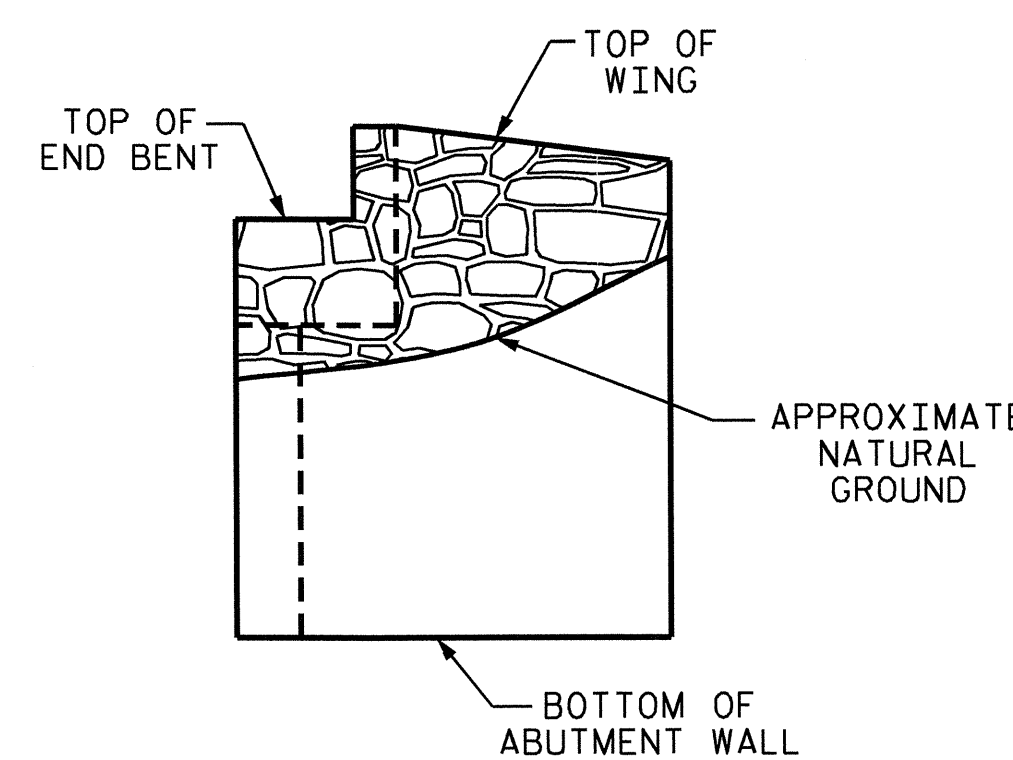
TEMPORARY DRAINAGE AT END BENT



SECTION THRU COLUMN

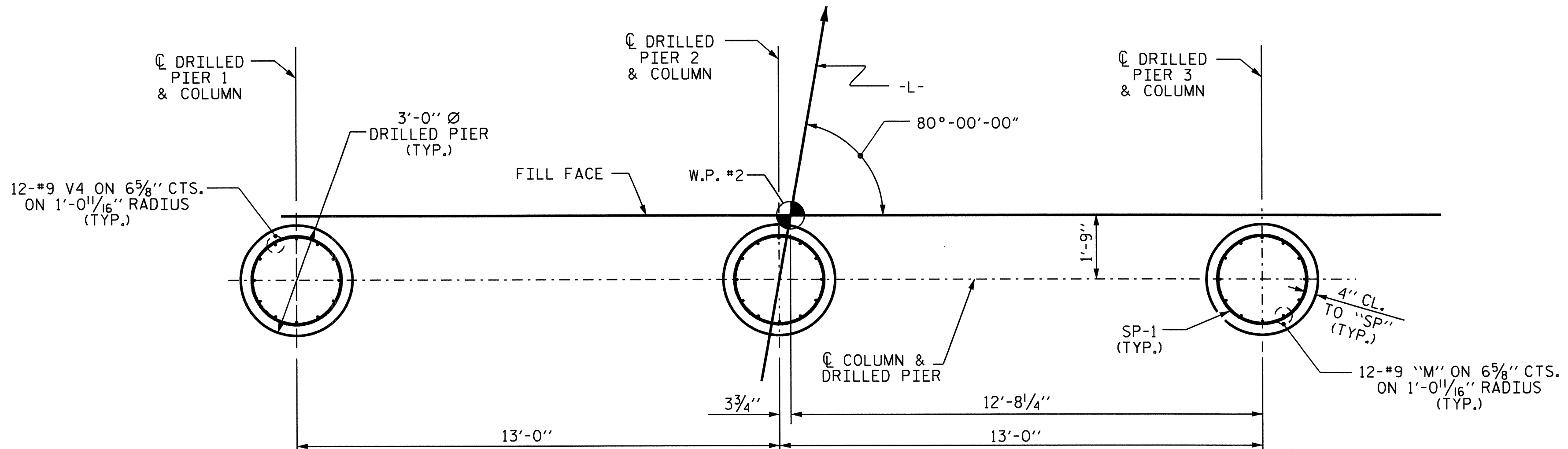


VIEW F-F



VIEW E-E

ARCHITECTURAL CONCRETE SURFACE TREATMENT



PLAN OF DRILLED PIERS

PROJECT NO. B-3346
HENDERSON COUNTY
 STATION: 12+71.50 -L-
 SHEET 4 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT No. 2
 DETAILS

Wael S. Arafa
 12-20-23

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			23

DRAWN BY: V.X. NGUYEN DATE: 10-10-13
 CHECKED BY: D. HODGE DATE: 10-13
 DESIGN ENGINEER OF RECORD: H. KIM DATE: 11/13

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 CURBS ARE CAST IF SLIP FORMING IS USED.

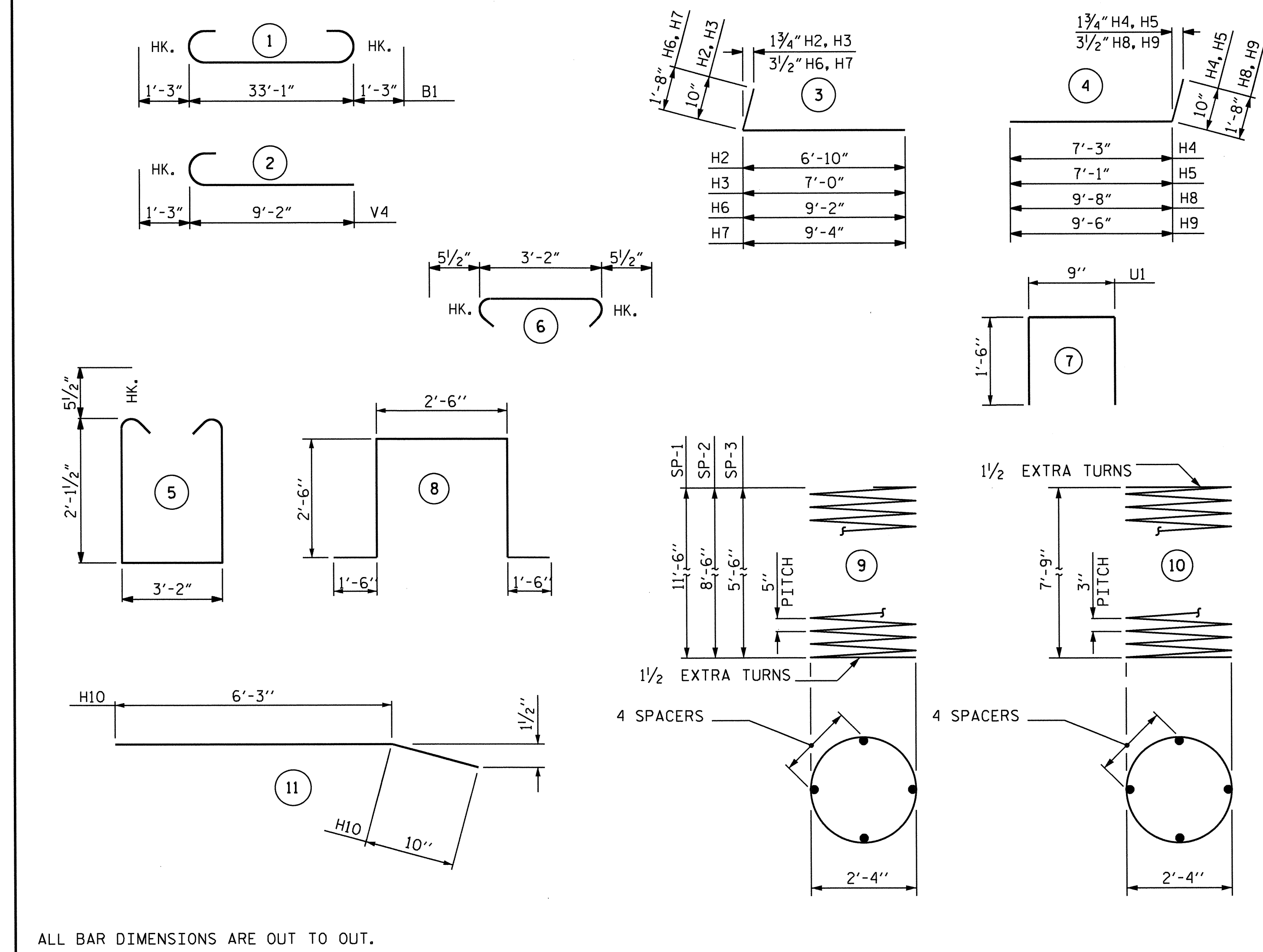
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL"

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 MAKE FOR FURNISHING AND INSTALLING THE PVC DRAIN, FABRIC AND #78M STONE BACKFILL IN THE RETAINING WALL. THE ENTIRE COST OF THIS WORK SHALL BE CONSIDER INCIDENTAL TO THE COST FOR CONSTRUCTION OF THE END BENT.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT No. 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	11	9	1	35'-7"	1331
B2	8	4	STR	17'-10"	95
D1	18	6	STR	1'-6"	41
H1	16	5	STR	33'-3"	555
H2	6	5	3	7'-8"	48
H3	6	5	3	7'-10"	49
H4	5	5	4	8'-1"	42
H5	5	5	4	7'-11"	41
H6	8	5	3	10'-10"	90
H7	8	5	3	11'-0"	92
H8	8	5	4	11'-4"	95
H9	8	5	4	11'-2"	93
H10	2	5	11	7'-1"	15
H11	26	4	STR	3'-0"	52

K1	12	4	STR	3'-0"	24
M1	12	9	STR	19'-6"	796
M2	12	9	STR	16'-6"	673
M3	12	9	STR	13'-6"	551
S1	42	5	5	8'-4"	365
S2	42	5	6	4'-1"	179
U1	22	4	7	3'-9"	55
U2	24	5	8	10'-6"	263
V1	64	5	STR	7'-1"	473
V2	30	5	STR	4'-5"	138
V3	31	5	STR	9'-7"	310
V4	36	9	2	10'-5"	1275
V5	6	5	STR	4'-1"	26
V6	4	5	STR	3'-10"	16
V7	7	5	STR	3'-7"	26

REINFORCING STEEL LBS. 7809

SP-1	1	*	9	209'-7"	219
SP-2	1	*	9	157'-7"	164
SP-3	1	*	9	105'-8"	110
SP-4	3	**	10	233'-8"	468

SPIRAL COLUMN REINFORCING STEEL LBS. 961

CLASS A CONCRETE BREAKDOWN

POUR 2	ABUTMENT WALL AND COLUMNS	25.5 C.Y.
POUR 3	CAP & LOWER PART OF WINGS	12.8 C.Y.
POUR 4	UPPER PART OF WINGS	2.1 C.Y.
TOTAL CLASS A CONCRETE		40.4 C.Y.

PROJECT NO. **B-3346**

HENDERSON COUNTY

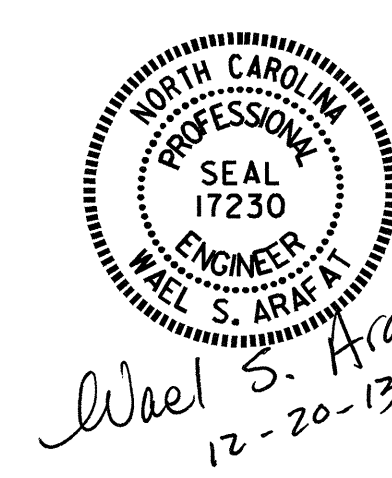
STATION: **12+71.50 -L-**

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 2
DETAILS

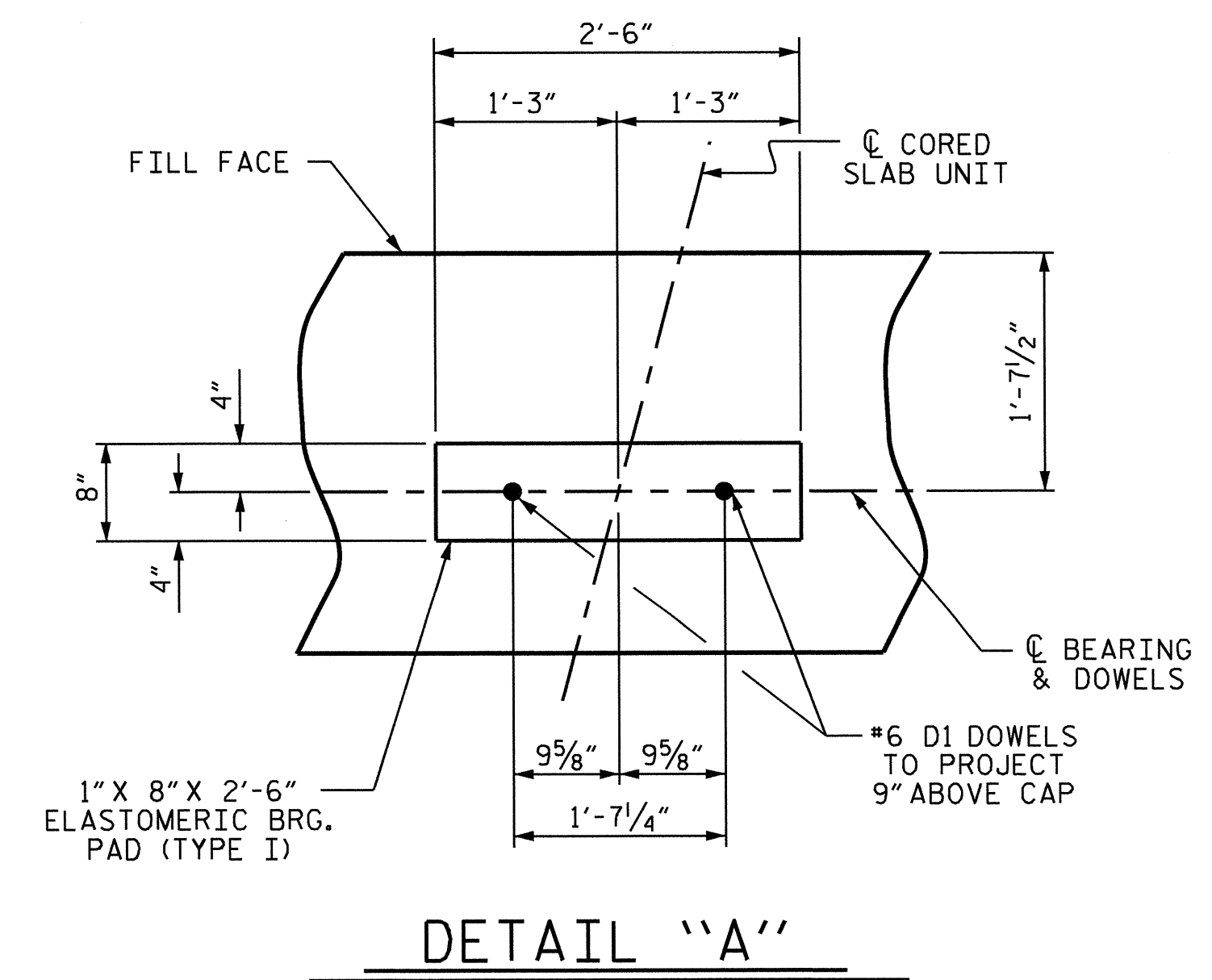
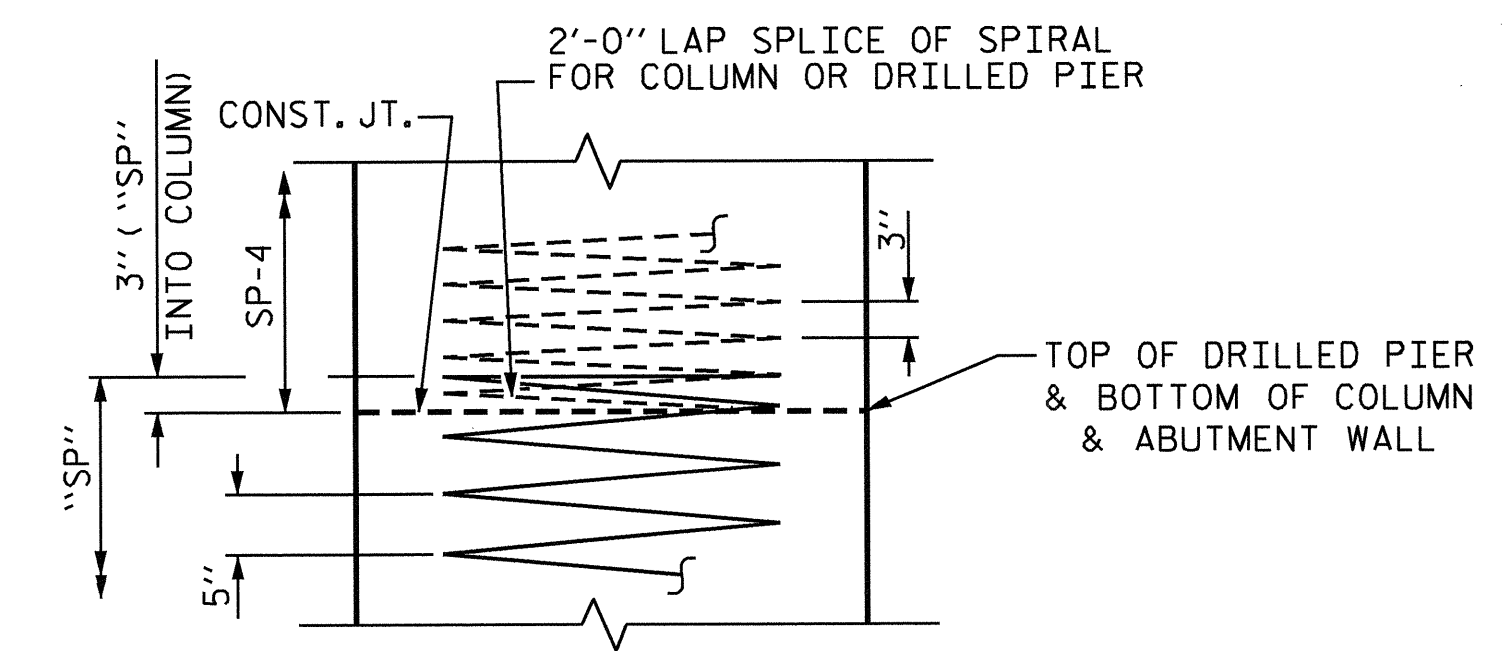


DRILLED PIER QUANTITIES

DRILLED PIER CONCRETE	
POUR 1	DRILLED PIERS 7.1 C.Y.
3'-0" Ø DRILLED PIER NOT IN SOIL:	24.0 LIN. FT.
3'-0" Ø DRILLED PIER IN SOIL:	3.0 LIN. FT.
▲ CSL TUBES	126.0 LIN. FT.
ARCHITECTURAL CONCRETE SURFACE TREATMENT	95 SQ.FT.

- ▲ 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 THRU SP-3 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.
- ** THE SP-4 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

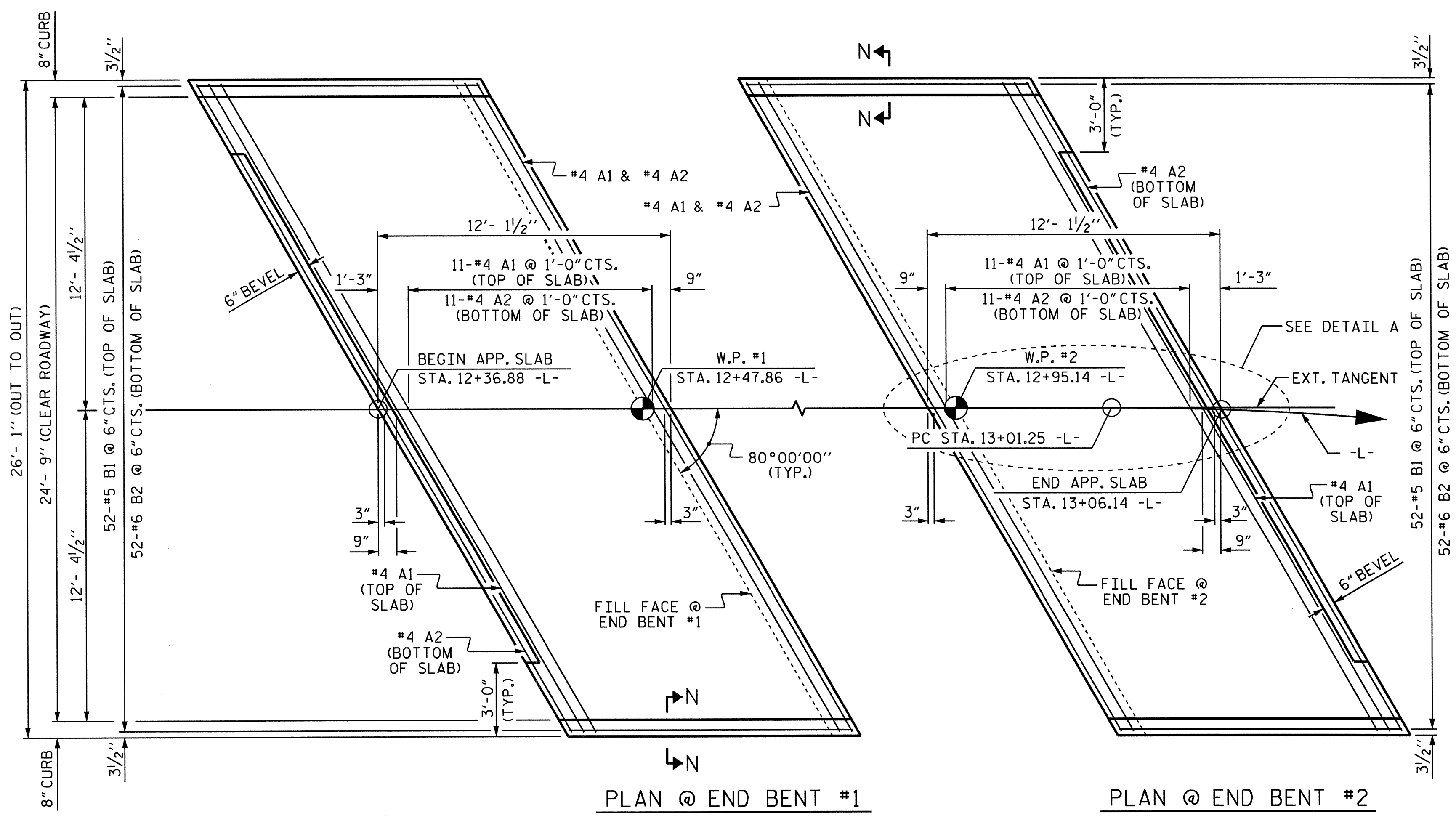
CONSTRUCTION JOINT DETAIL



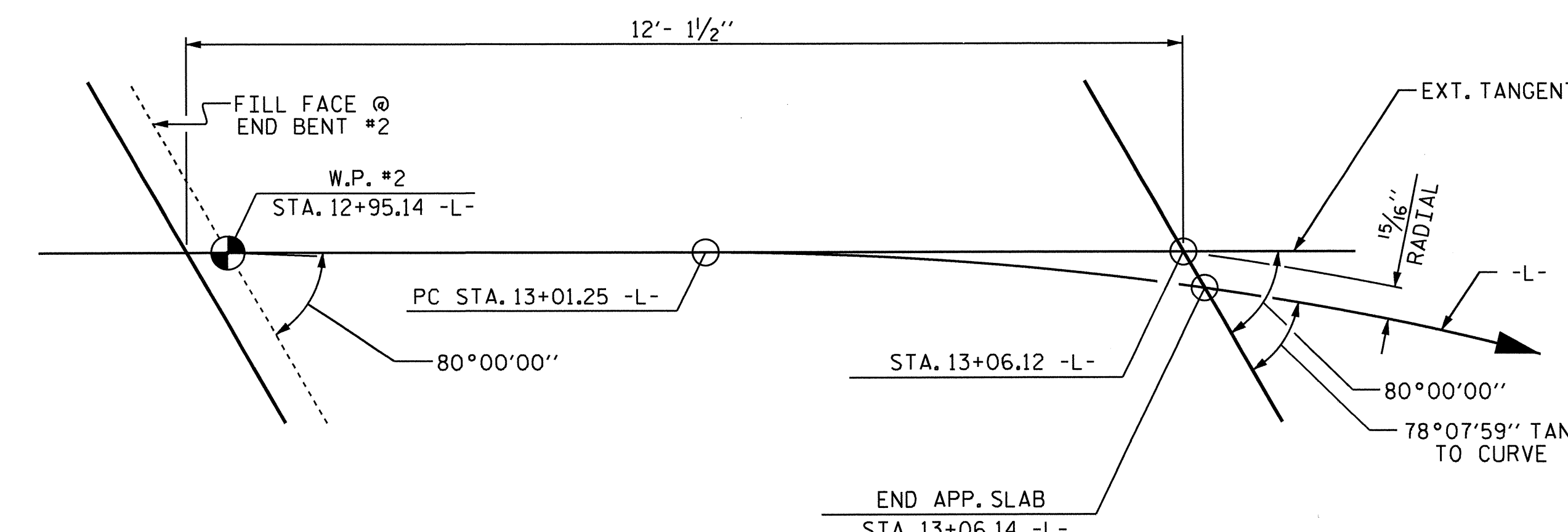
DETAIL "A"

DRAWN BY: V.X. NGUYEN DATE: 10-04-13
 CHECKED BY: D. HODGE DATE: 10-13
 DESIGN ENGINEER OF RECORD: H. KIM DATE: 11/13

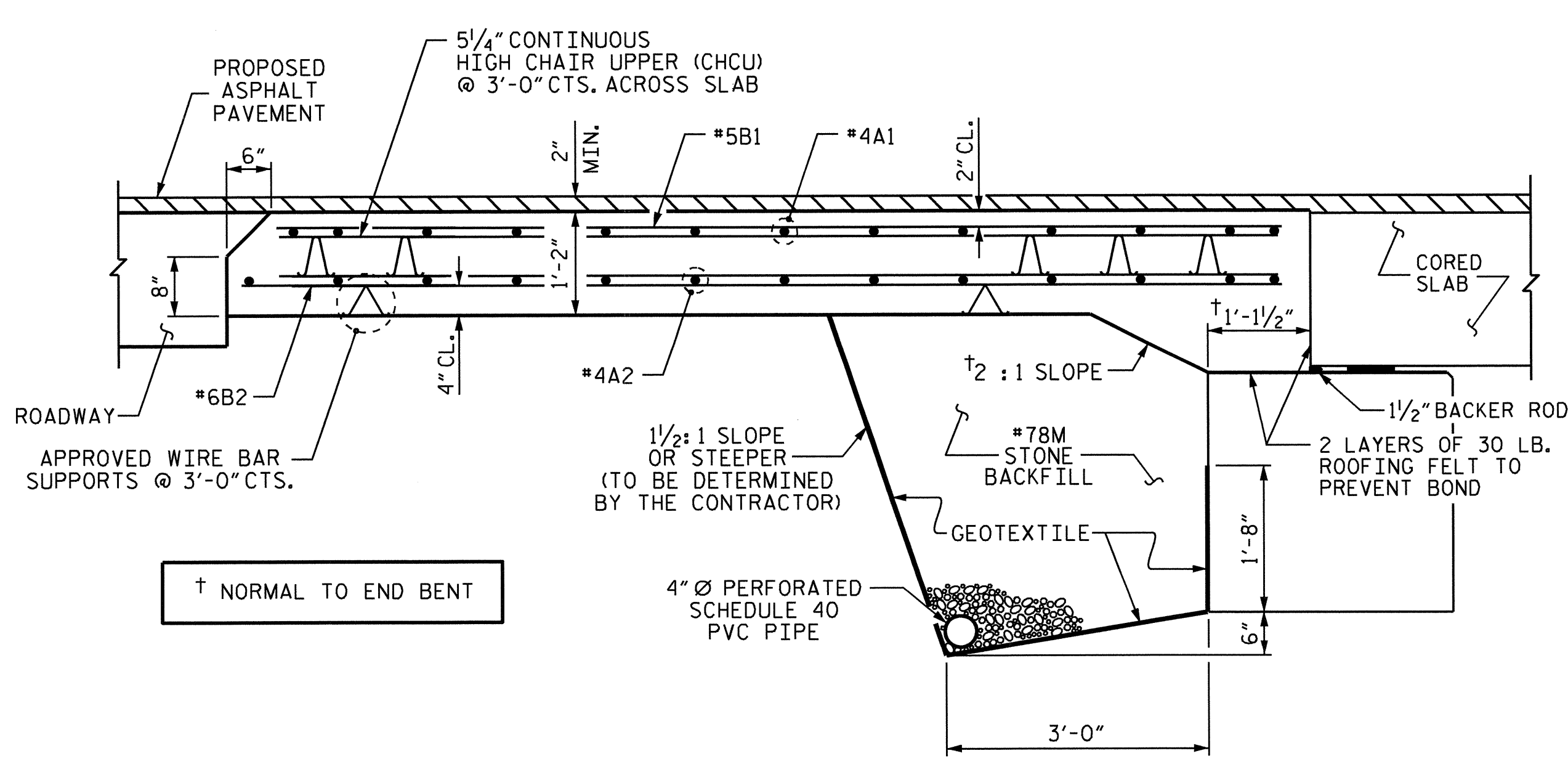
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18	
1			3			TOTAL SHEETS	
2			4			23	



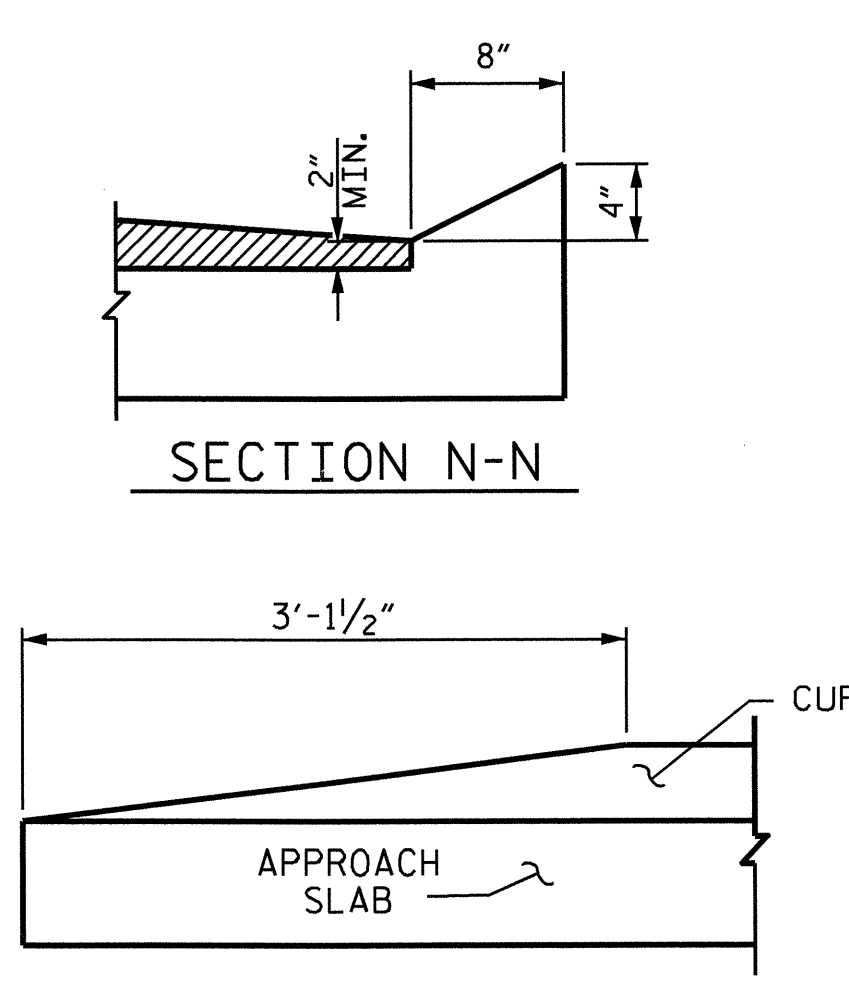
PLAN @ END BENT #1 PLAN @ END BENT #2
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



DETAIL A



SECTION THRU SLAB



END OF CURB WITHOUT SHOULDER BERM GUTTER
CURB DETAILS

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

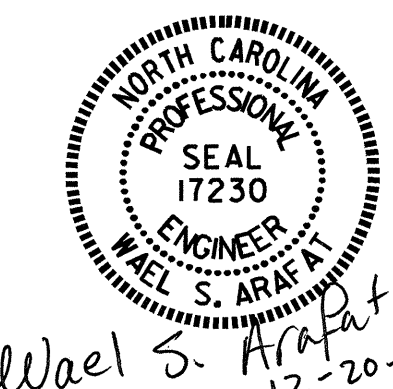
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED, SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	13	#4	STR	26'-1"	227
A2	13	#4	STR	26'-1"	227
*B1	52	#5	STR	11'-4"	615
B2	52	#6	STR	11'-9"	918
REINFORCING STEEL				LBS.	1145
*EPOXY COATED REINFORCING STEEL				LBS.	842
CLASS AA CONCRETE				C. Y.	14.5
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	13	#4	STR	26'-1"	227
A2	13	#4	STR	26'-1"	227
*B1	52	#5	STR	11'-4"	615
B2	52	#6	STR	11'-9"	918
REINFORCING STEEL				LBS.	1145
*EPOXY COATED REINFORCING STEEL				LBS.	842
CLASS AA CONCRETE				C. Y.	14.5

ASSEMBLED BY: D. A. GLADDEN DATE: 10-16-13
 CHECKED BY: R. P. PATEL DATE: 10-23-13
 DRAWN BY: FCJ 6/87
 CHECKED BY: EGA 6/87

REV. 10/11/11 MAA/GM
 REV. 12/21/11 MAA/GM
 REV. 6/13 MAA/GM

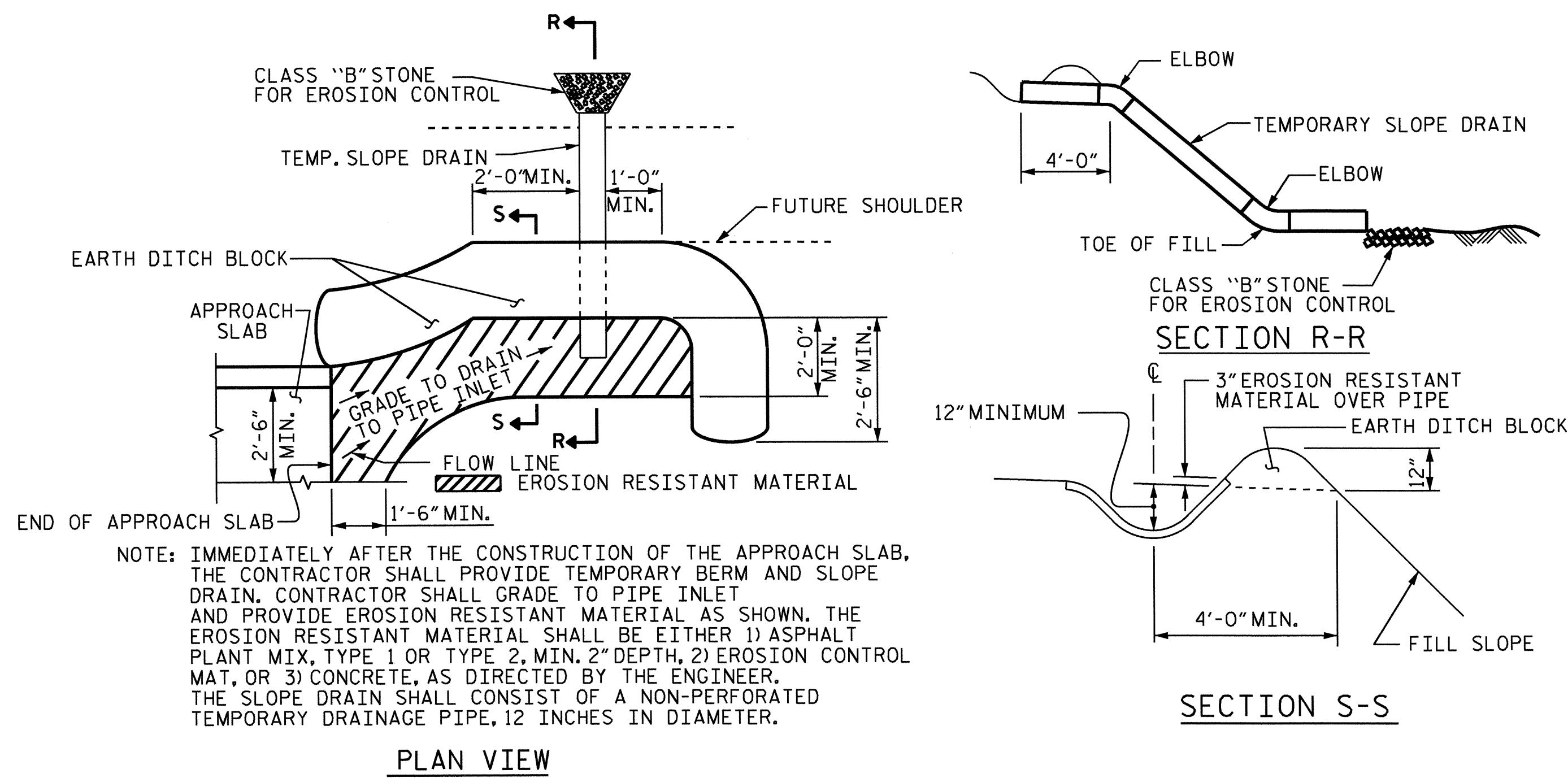


Wael S. Arif
12-20-13

PROJECT NO. B-3346
 HENDERSON COUNTY
 STATION: 12+71.50 -L-
 SHEET 1 OF 2

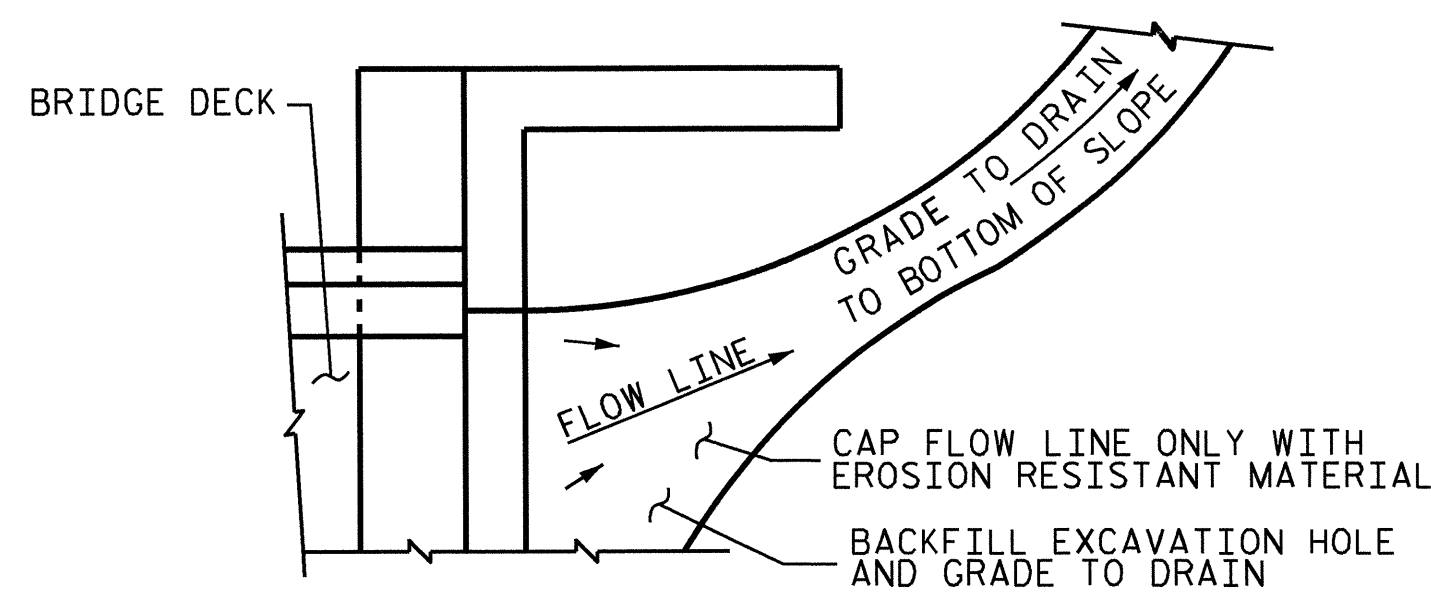
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-19
					TOTAL SHEETS 23

STD. NO. BAS3



TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



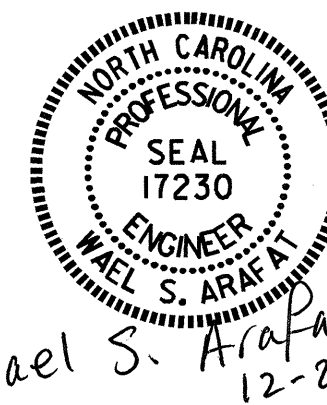
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

PROJECT NO. B-3346
HENDERSON COUNTY
STATION: 12+71.50 -L-

SHEET 2 OF 2

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



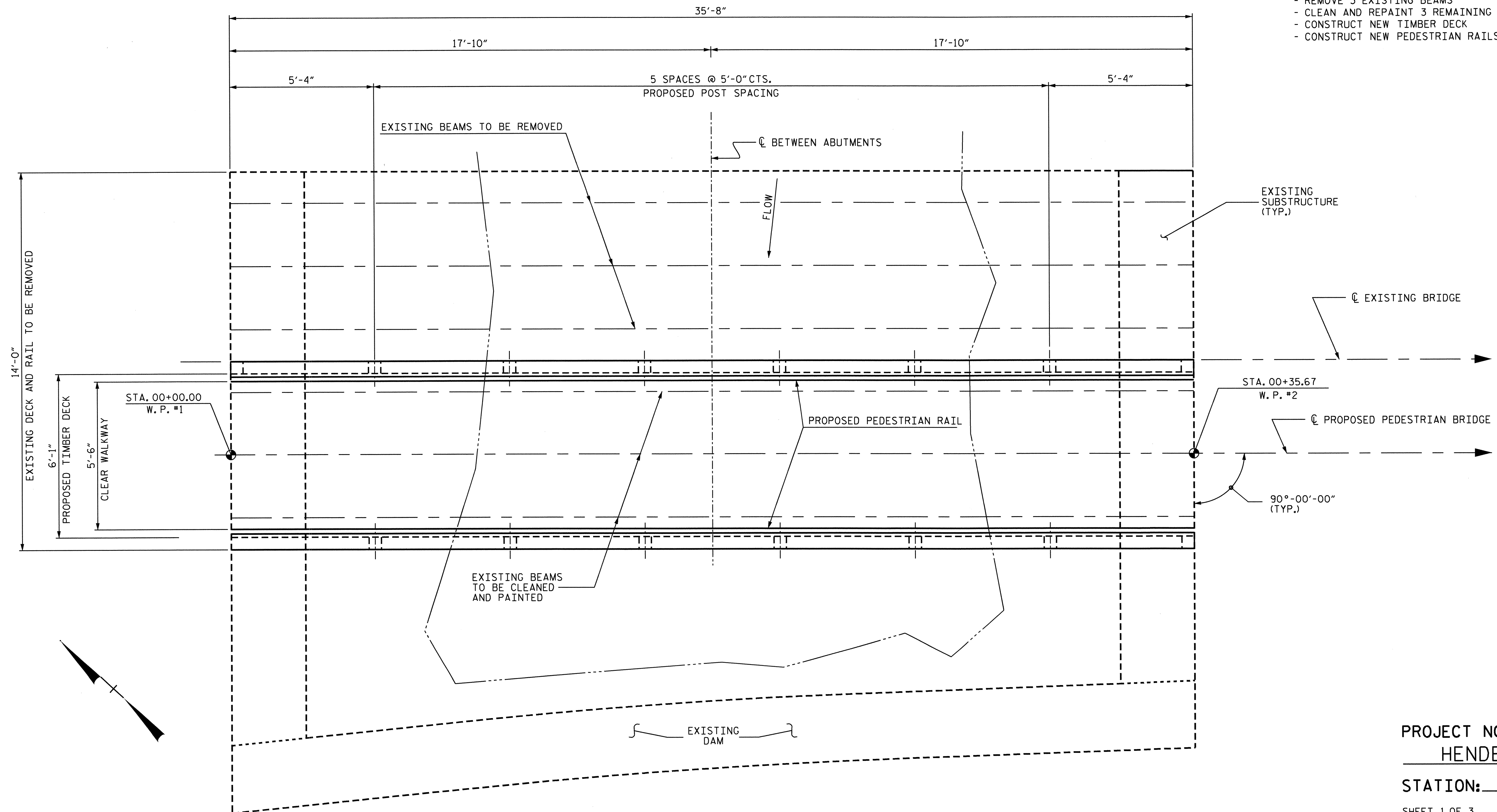
Wael S. Arafat
12-20-13

ASSEMBLED BY : <u>D. A. GLADDEN</u>	DATE : <u>10-16-13</u>
CHECKED BY : <u>R. P. PATEL</u>	DATE : <u>10-23-13</u>
DRAWN BY : FCJ 11/88	REV. 10/1/11 MAA/GM
CHECKED BY : ARB 11/88	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			23

SCOPE OF WORK

- REMOVE EXISTING DECK & RAILS
- REMOVE 3 EXISTING BEAMS
- CLEAN AND REPAINT 3 REMAINING BEAMS
- CONSTRUCT NEW TIMBER DECK
- CONSTRUCT NEW PEDESTRIAN RAILS



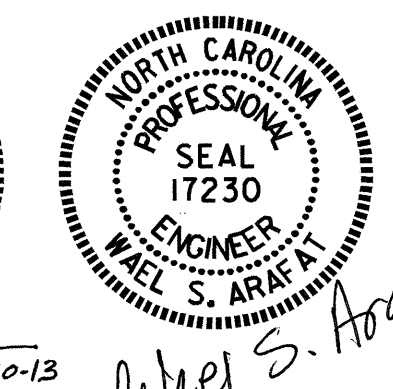
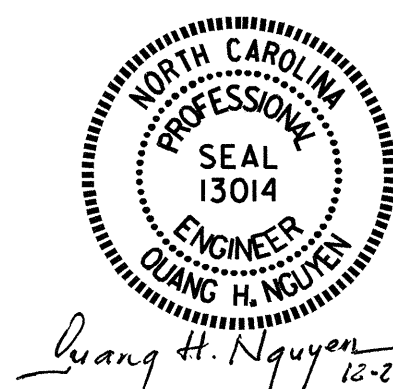
PLAN

PROJECT NO. B-3346
HENDERSON COUNTY

STATION: _____

SHEET 1 OF 3 BRIDGE No. 42

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**EXISTING BRIDGE
 CONVERSION TO
 NON-VEHICULAR
 TRAFFIC
 PEDESTRIAN BRIDGE**



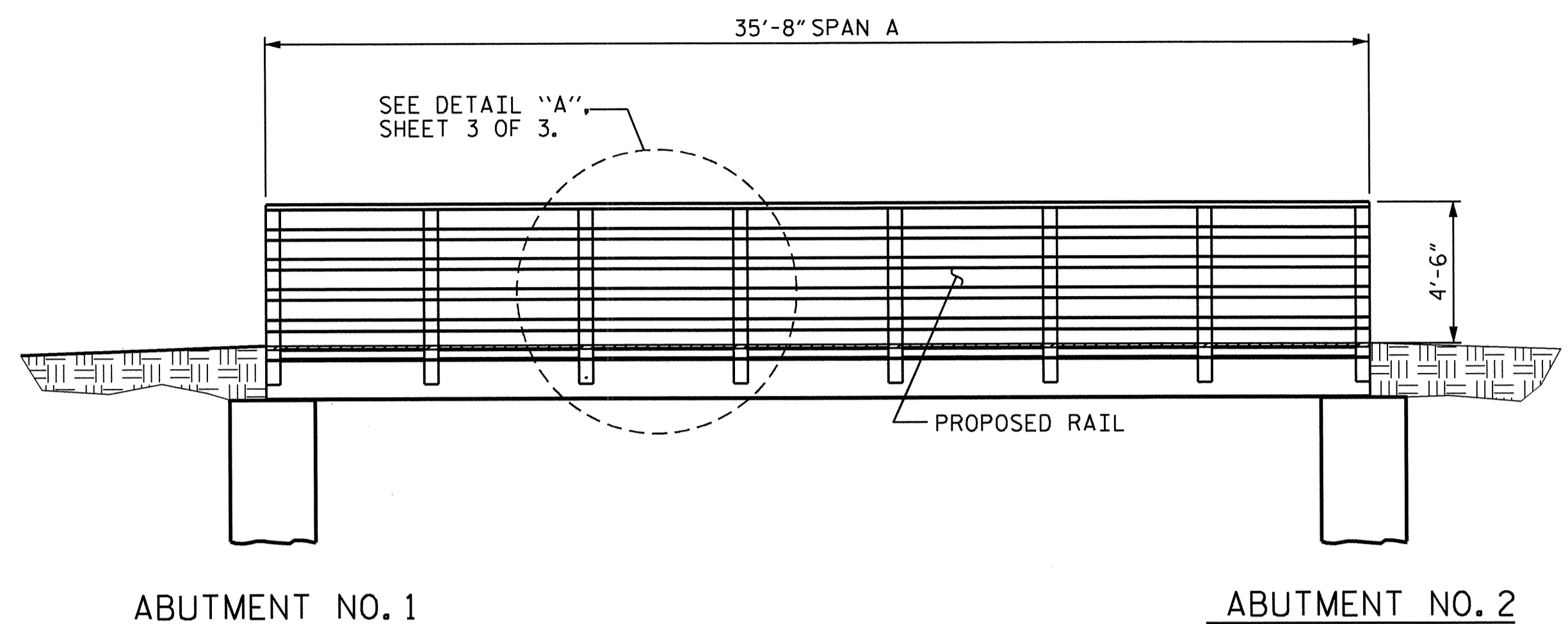
Quang H. Nguyen 12-20-13
Wael S. Arafat 12-20-13

REVISIONS

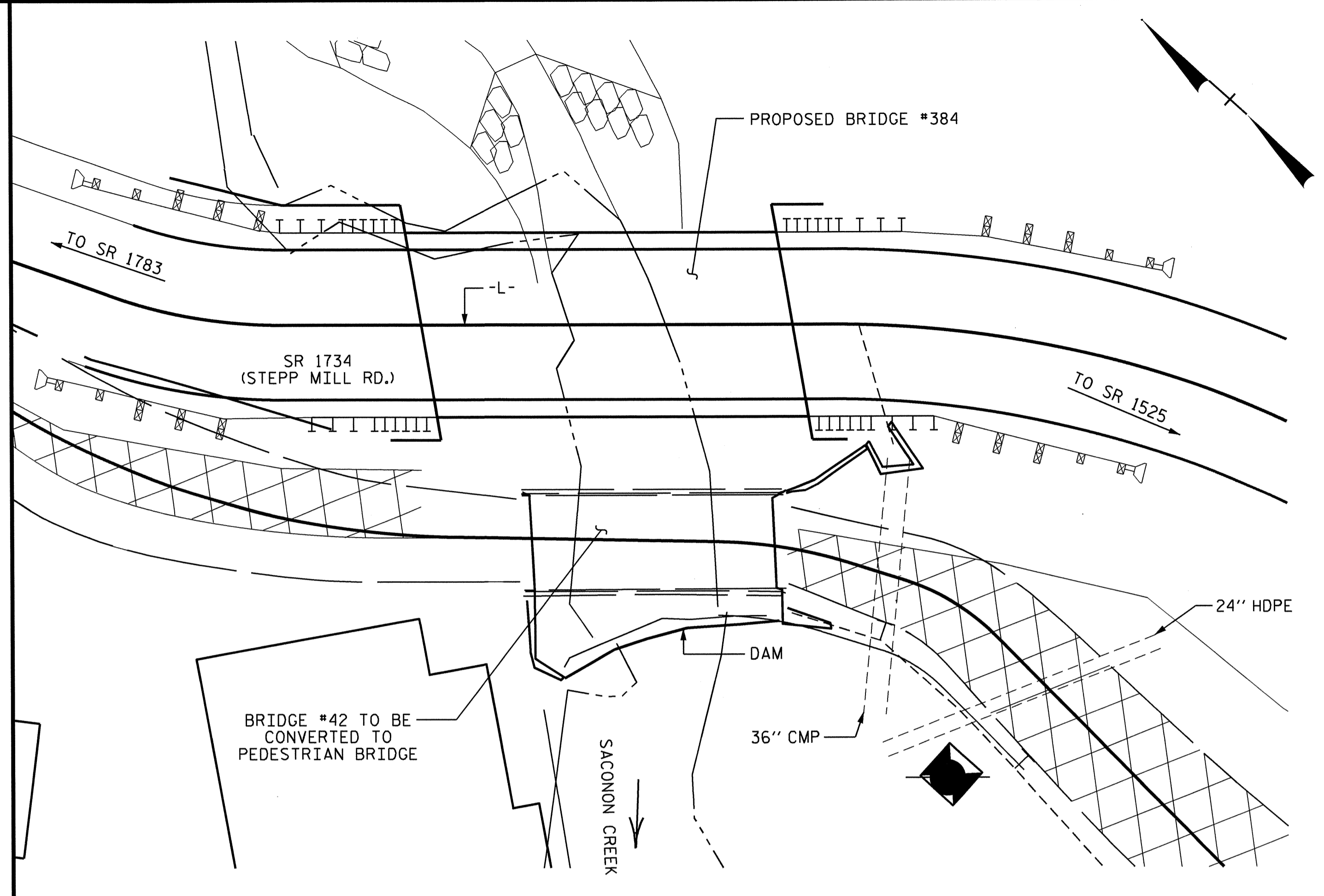
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
 S-21
 TOTAL SHEETS
 23

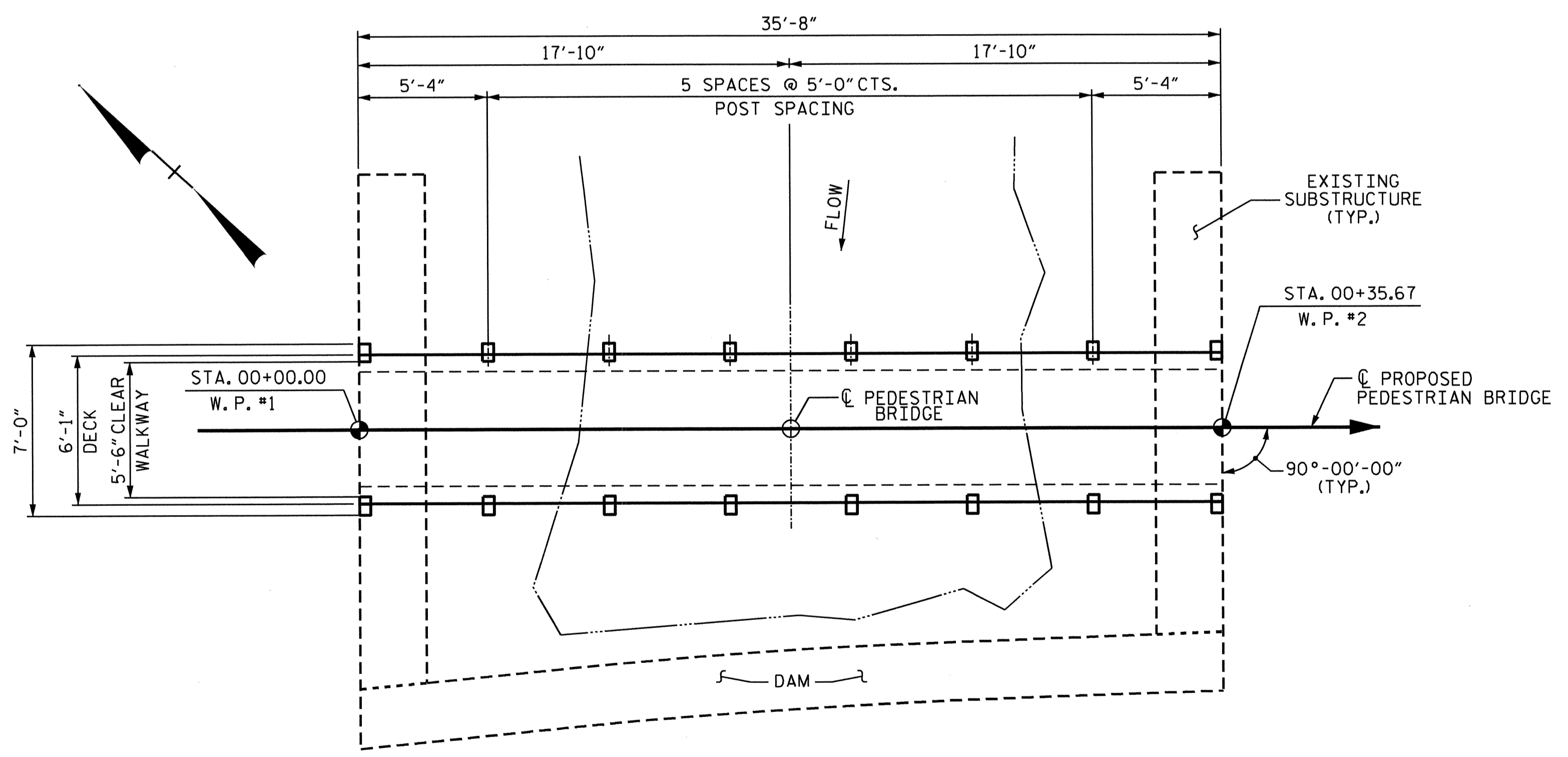
DRAWN BY : H. I. BARBOUR DATE : 10-23-13
 CHECKED BY : W. S. ARAFAT DATE : 10-13



ELEVATION



LOCATION SKETCH



PLAN
(RAIL NOT SHOWN FOR CLARITY)

TOTAL BILL OF MATERIAL	
REMOVAL OF EXISTING STRUCTURE #42	REHABILITATION OF EXISTING STRUCTURE
LUMP SUM	LUMP SUM

PROJECT NO. B-3346
HENDERSON COUNTY

STATION: _____

SHEET 2 OF 3

Wael S. Arafat
 12-20-13



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 PEDESTRIAN BRIDGE
 (NON-VEHICULAR TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			23

DRAWN BY : H. T. BARBOUR DATE : 10-23-13
 CHECKED BY : W. S. ARAFAT DATE : 10-29-13

NOTES

DIMENSIONS SHOWN ON THE PLANS ARE APPROXIMATE AND SHOULD BE VERIFIED BY THE CONTRACTOR IN THE FIELD AS NEEDED.

THE EXISTING STRUCTURE CONSISTING OF ONE 35'-8" SIMPLE SPAN, TIMBER DECK ON 6 LINES OF I-BEAMS @ 2'-4" CTS. WITH A CLEAR ROADWAY WIDTH OF 13'-1" ON REINFORCED CONCRETE ABUTMENTS AND SILLS, LOCATED APPROXIMATELY 27' SOUTH OF THE PROPOSED STRUCTURE SHALL BE PARTIALLY REMOVED AS NOTED ON THE SCOPE OF WORK AND SHOWN ON SHEET 1 OF 3. FOR REMOVAL OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

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

THE DEPICTIONS 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 AS SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

FOR STRUCTURAL TIMBER AND LUMBER, SEE SPECIAL PROVISIONS.

ALL TREATED LUMBER FOR THE RAIL & POSTS SHALL MEET THE REQUIREMENTS OF SECTION 1082 OF THE NCDOT STANDARD SPECIFICATIONS.

ALL SCREWS, BOLTS, NUTS AND WASHERS ARE TO BE HOT DIPPED GALVANIZED AND SHALL MEET THE REQUIREMENTS OF SECTION 1076 OF THE STANDARD SPECIFICATIONS.

STAGGER 2" X 6" END JOINTS SO THAT THERE ARE NO MORE THAN 2 JOINTS ON A POST.

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 COST RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

FOR REHABILITATION OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

FOR UNDER STRUCTURE WORK PLATFORM, SEE SPECIAL PROVISIONS.

THE THREE REMAINING I-BEAMS SHALL BE CLEANED AND PAINTED. THE APPROXIMATE STEEL AREA TO BE CLEANED AND PAINTED IS 457 SQUARE FEET. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE ACTUAL AREA TO BE CLEANED AND PAINTED.

FOR PAINTING EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

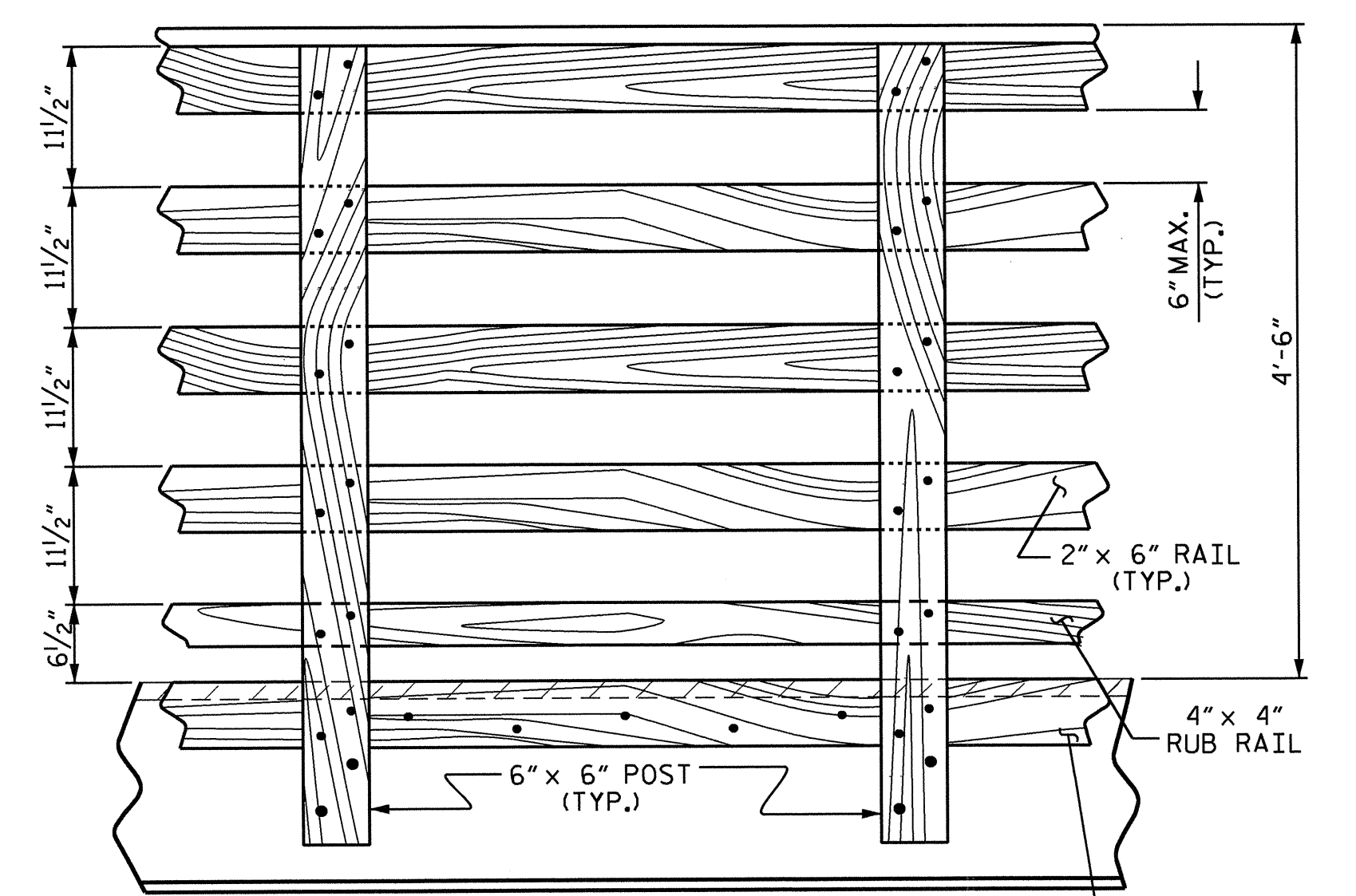
HIGH STRENGTH BOLTS, NUTS AND WASHERS SHALL BE USED IN ALL CONNECTIONS.

TENSION ON HIGH STRENGTH BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATORS IN ACCORDANCE WITH ARTICLE 440-8 OF THE STANDARD SPECIFICATIONS.

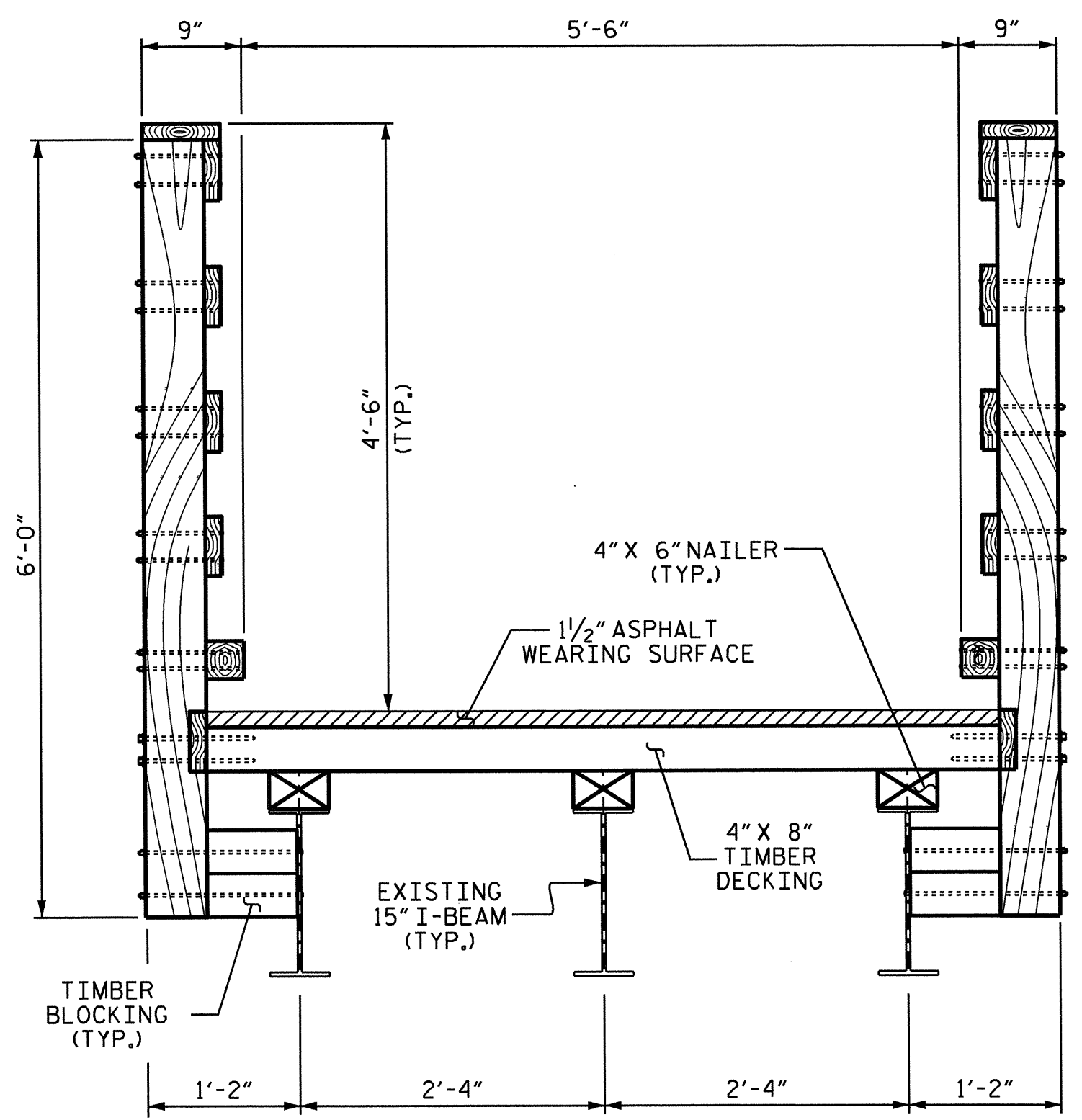
FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

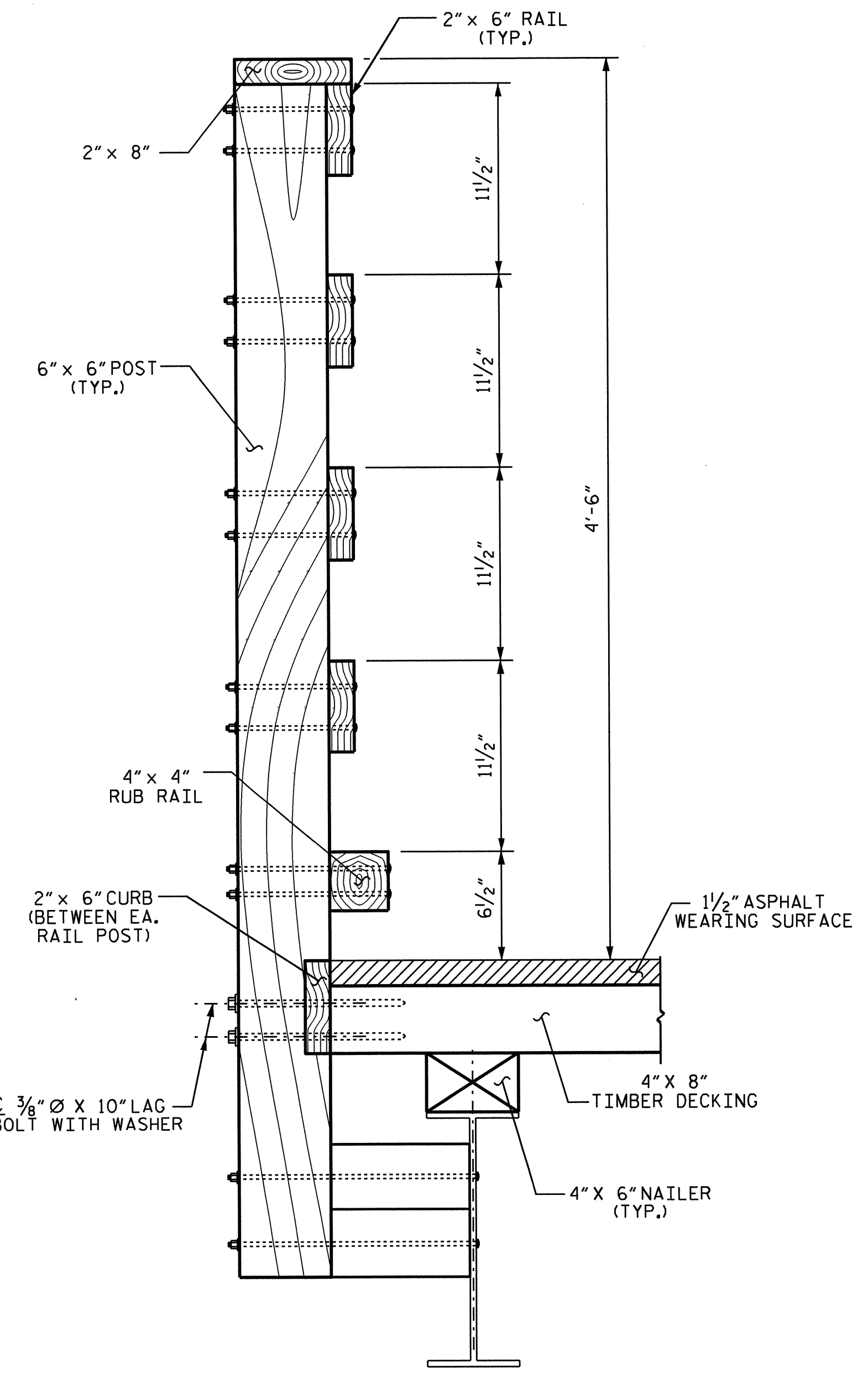
ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.



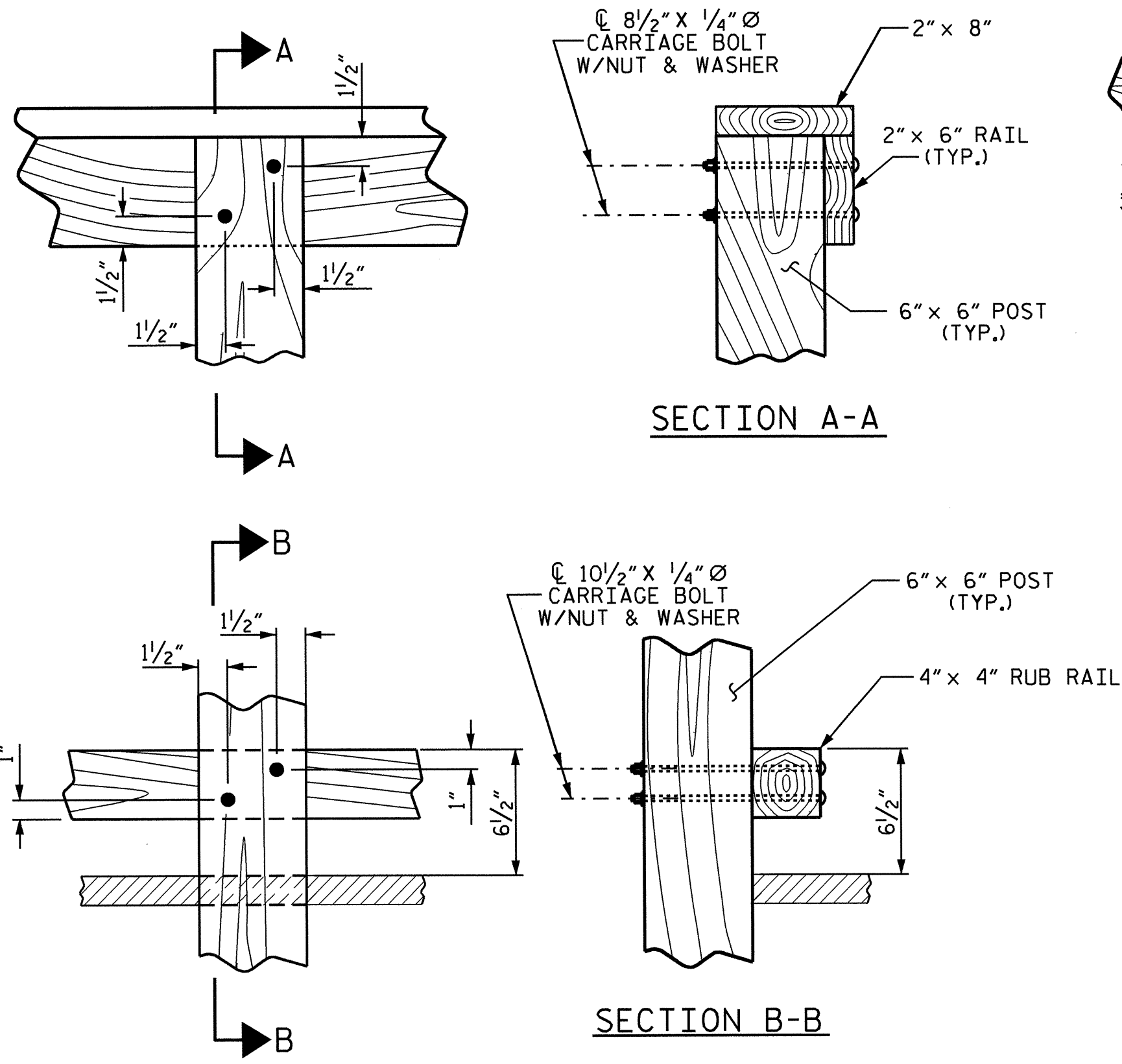
DETAIL "A"



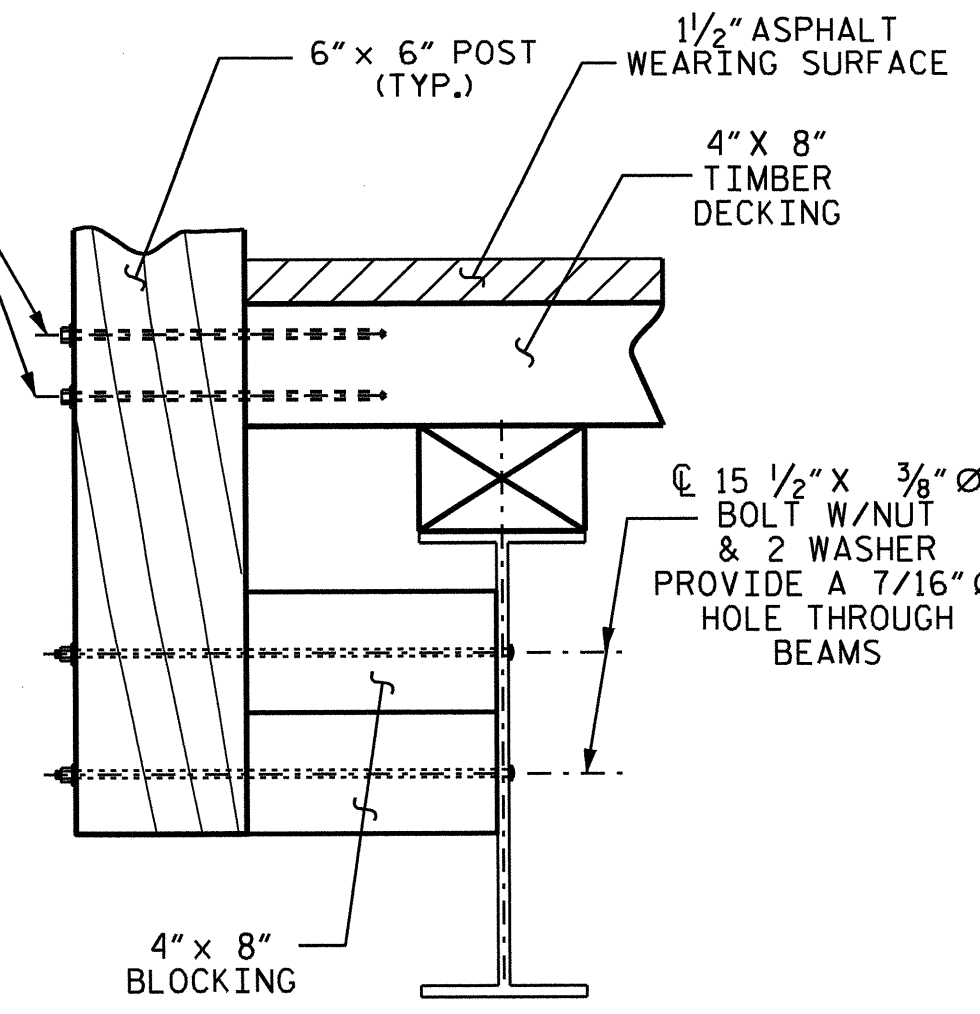
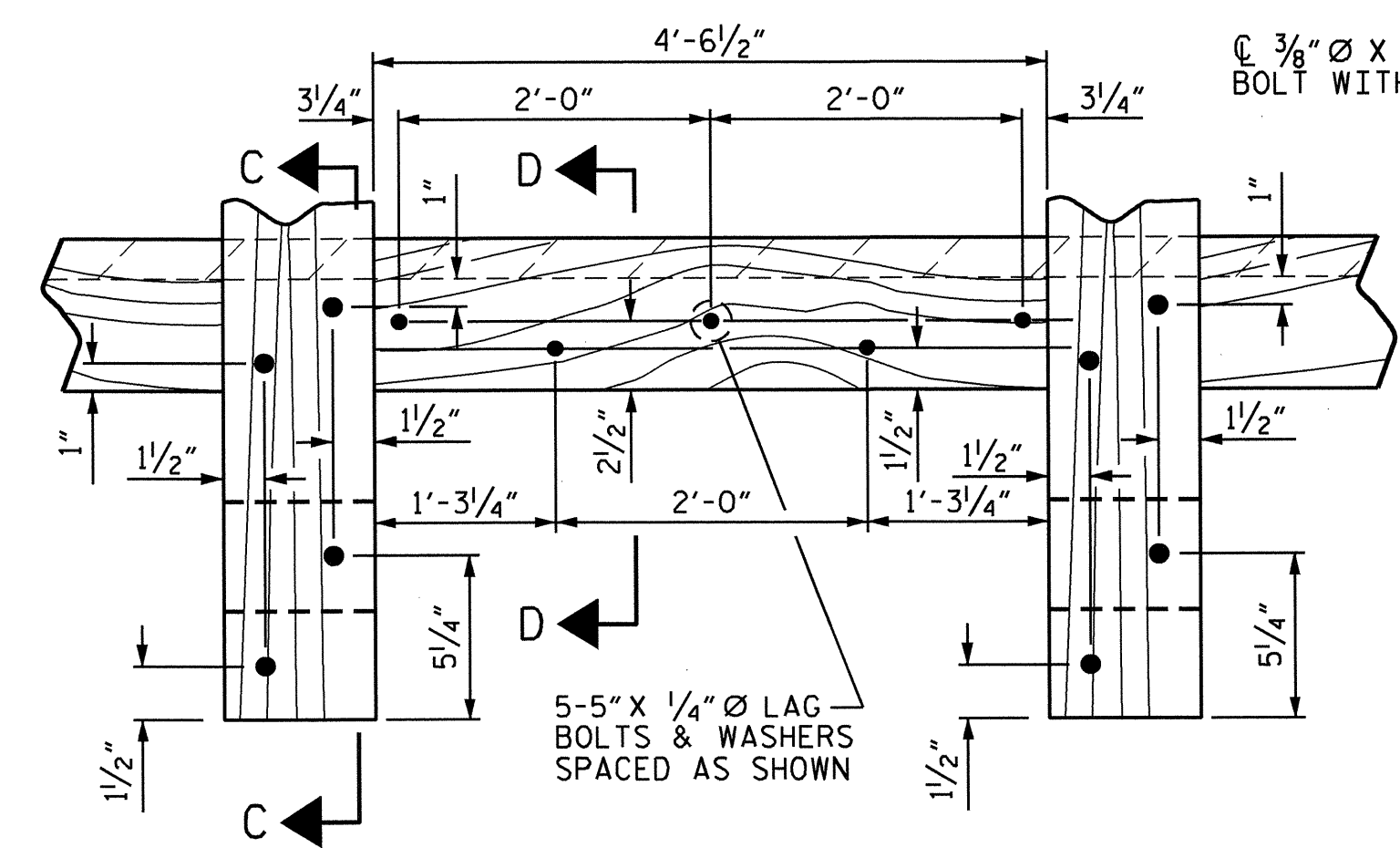
TYPICAL SECTION



RAIL SECTION



CONNECTION DETAILS



SECTION C-C

PROJECT NO. B-3346

HENDERSON COUNTY

STATION: _____

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

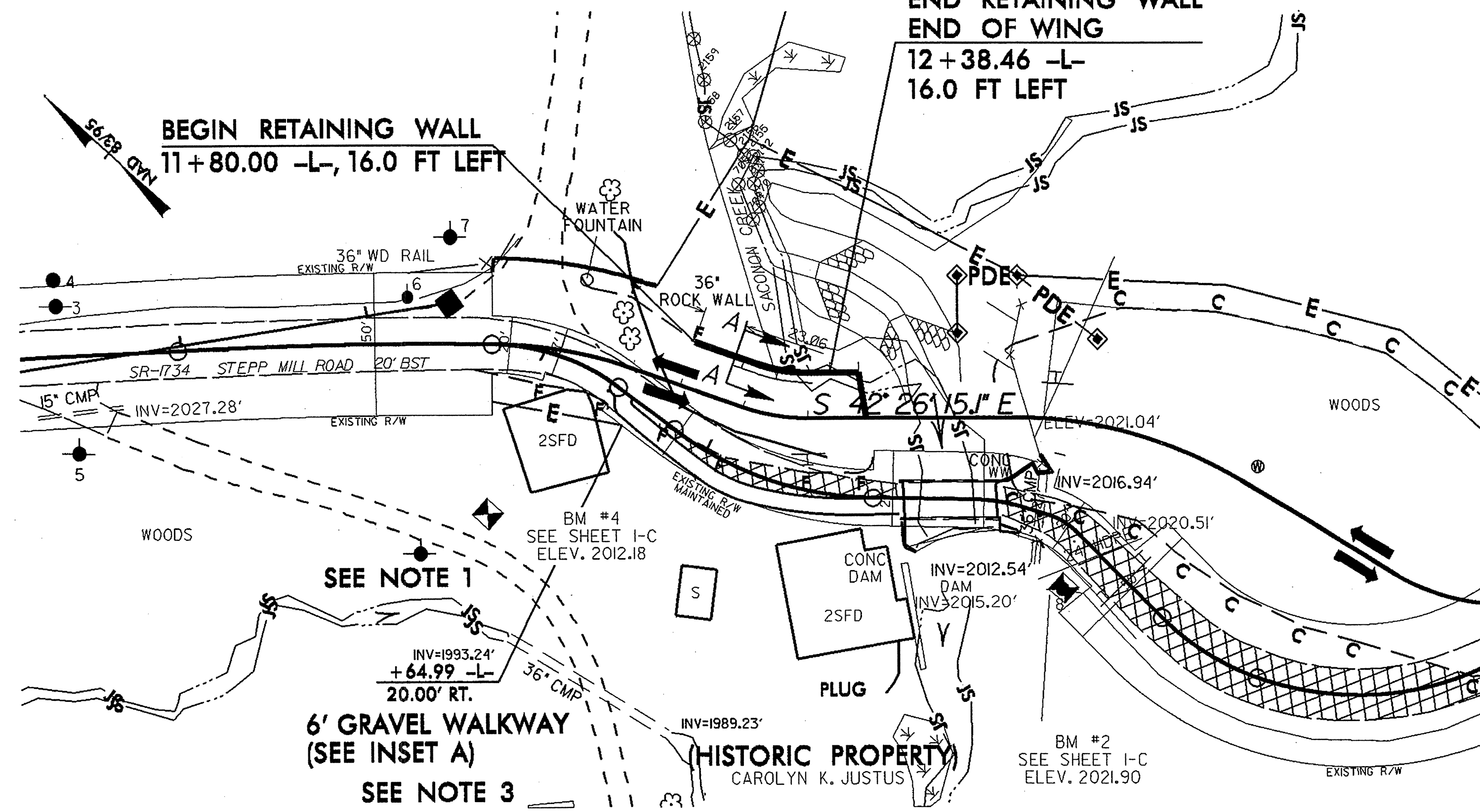
**PEDESTRIAN BRIDGE
(NON-VEHICULAR
TRAFFIC)**



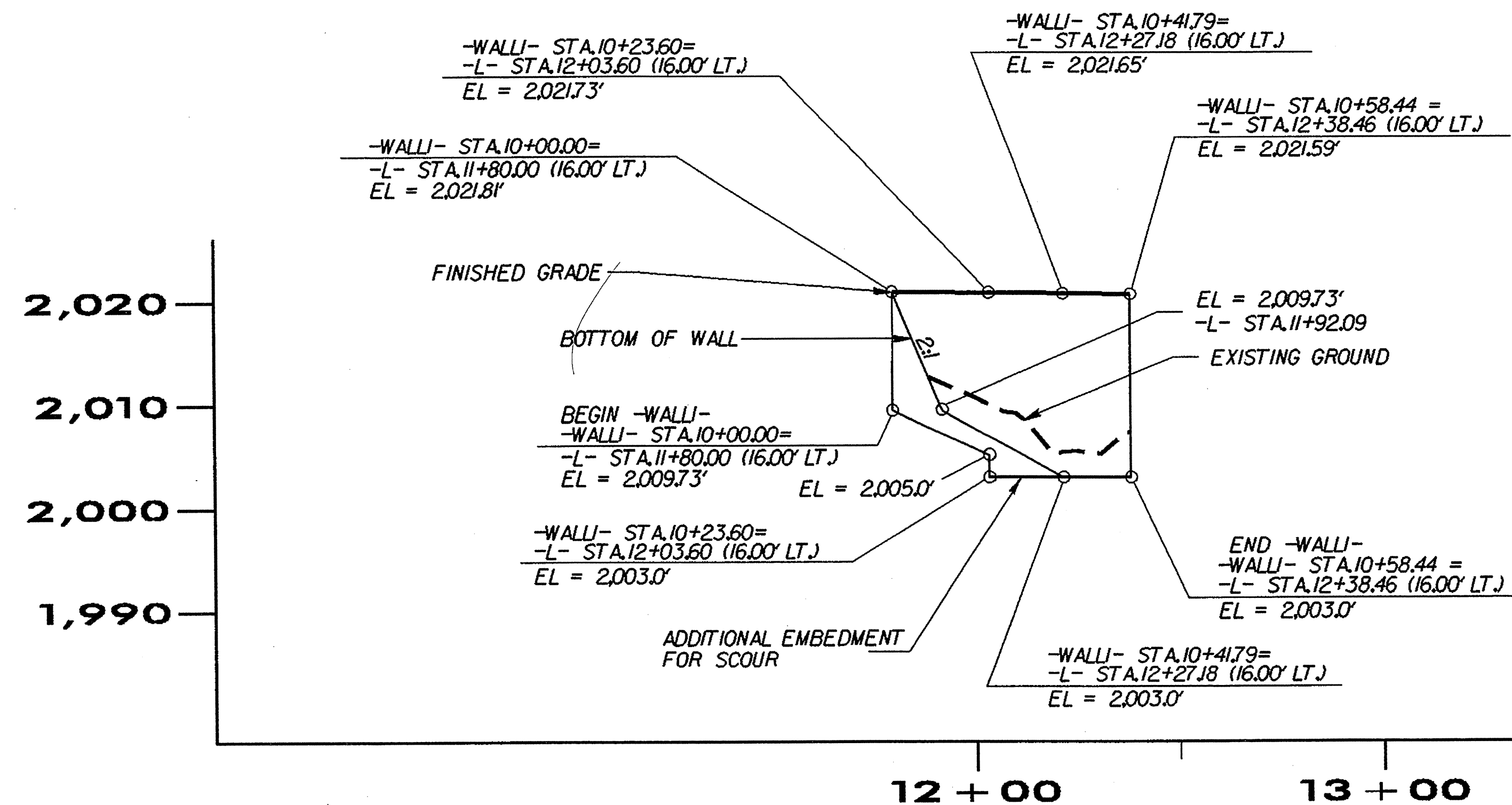
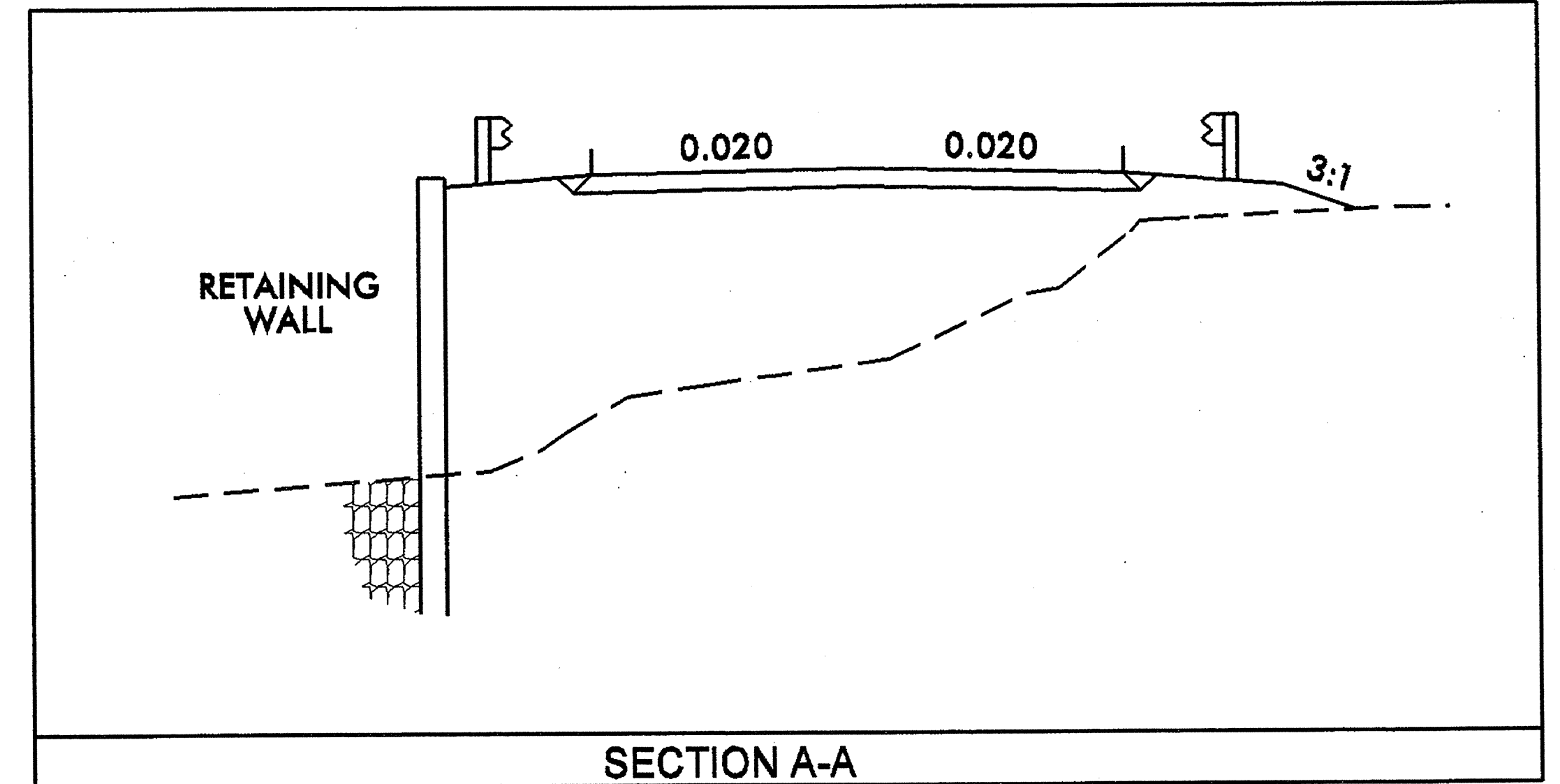
DRAWN BY: H. I. BARBOUR DATE: 10-23-13
CHECKED BY: W. S. ARAFAT DATE: 10-29-13

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1			3			TOTAL SHEETS
2			4			23

BM - 4 8 INCH SPIKE IN BASE OF BRIDGE 30 INCH WHITE OAK TREE STA. 11+10.00 -L- 60.00' RT.
 EL. = 2012.18' N 595859 E 1001030



LOCATION SKETCH



RETAINING WALL ENEVELOPE

ESTIMATED WALL QUANTITY		
RETAINING WALL NO.	ANCHORED SOLDIER PILE RETAINING WALL (SQ. FEET)	ARCHTECTURAL CONCRETE SURFACE TREATMENT (SQ. FEET)
1	800	675

PROJECT NO.: B-3346
 HENDERSON COUNTY
 STATION: 11+80.00 -L- TO 12+38.46 -L-
 SHEET 1 OF 6

PREPARED BY: EJS DATE: 9/13
 REVIEWED BY: SCC DATE: 12/13

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

ANCHORED SOLDIER PILE RETAINING WALL

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-1
1			3			TOTAL SHEETS
2			4			6

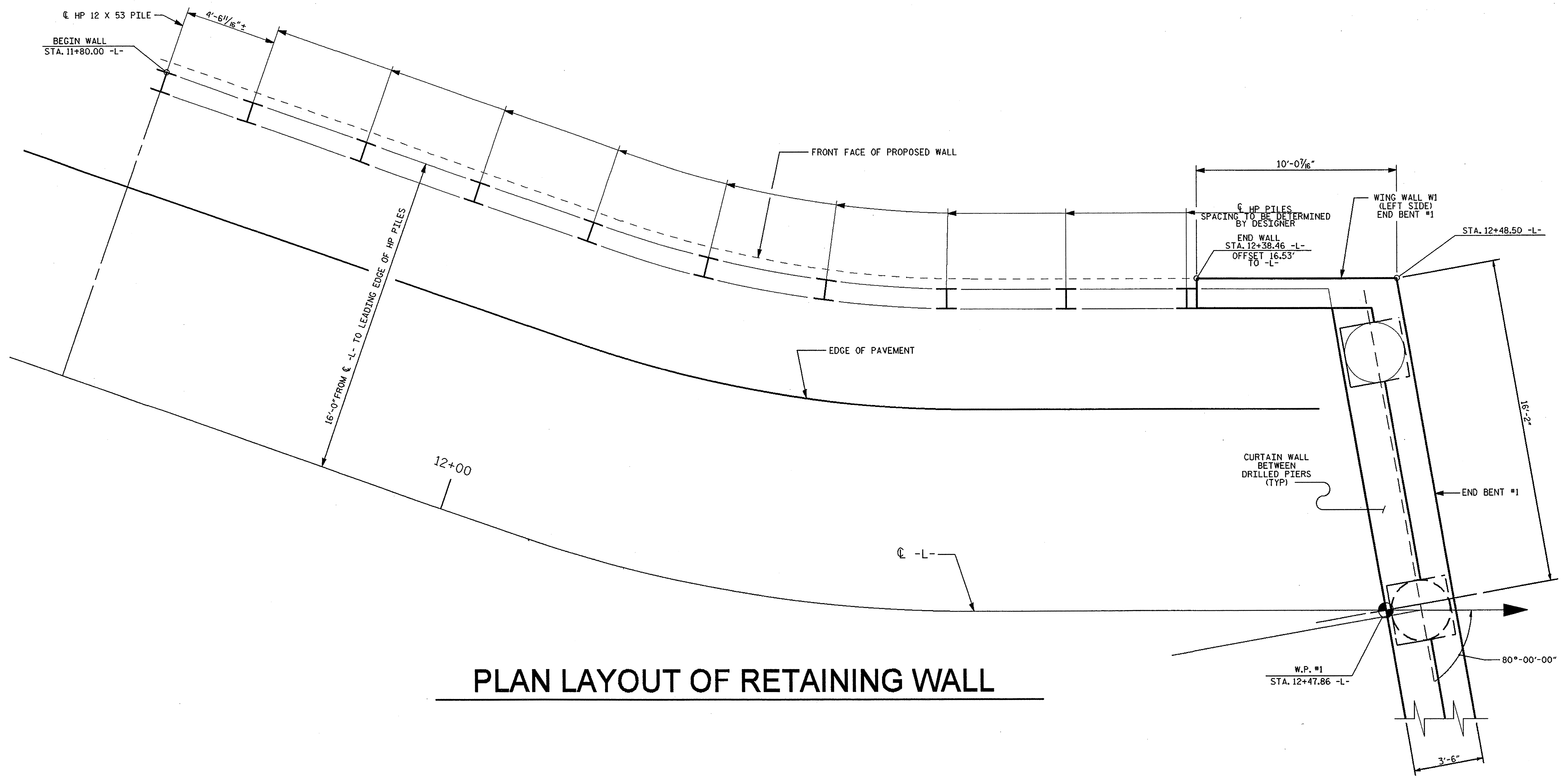
GEOTECHNICAL ENGINEER

ENGINEER

SEAL 29869

ENGINEER STALNE C. CLARK

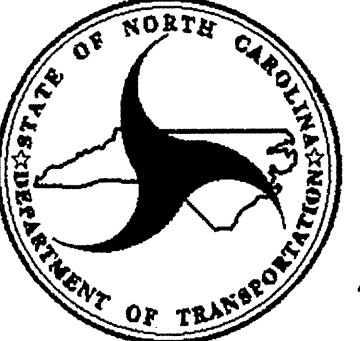
Signature: S. Clark DATE: 12/20/17



PLAN LAYOUT OF RETAINING WALL

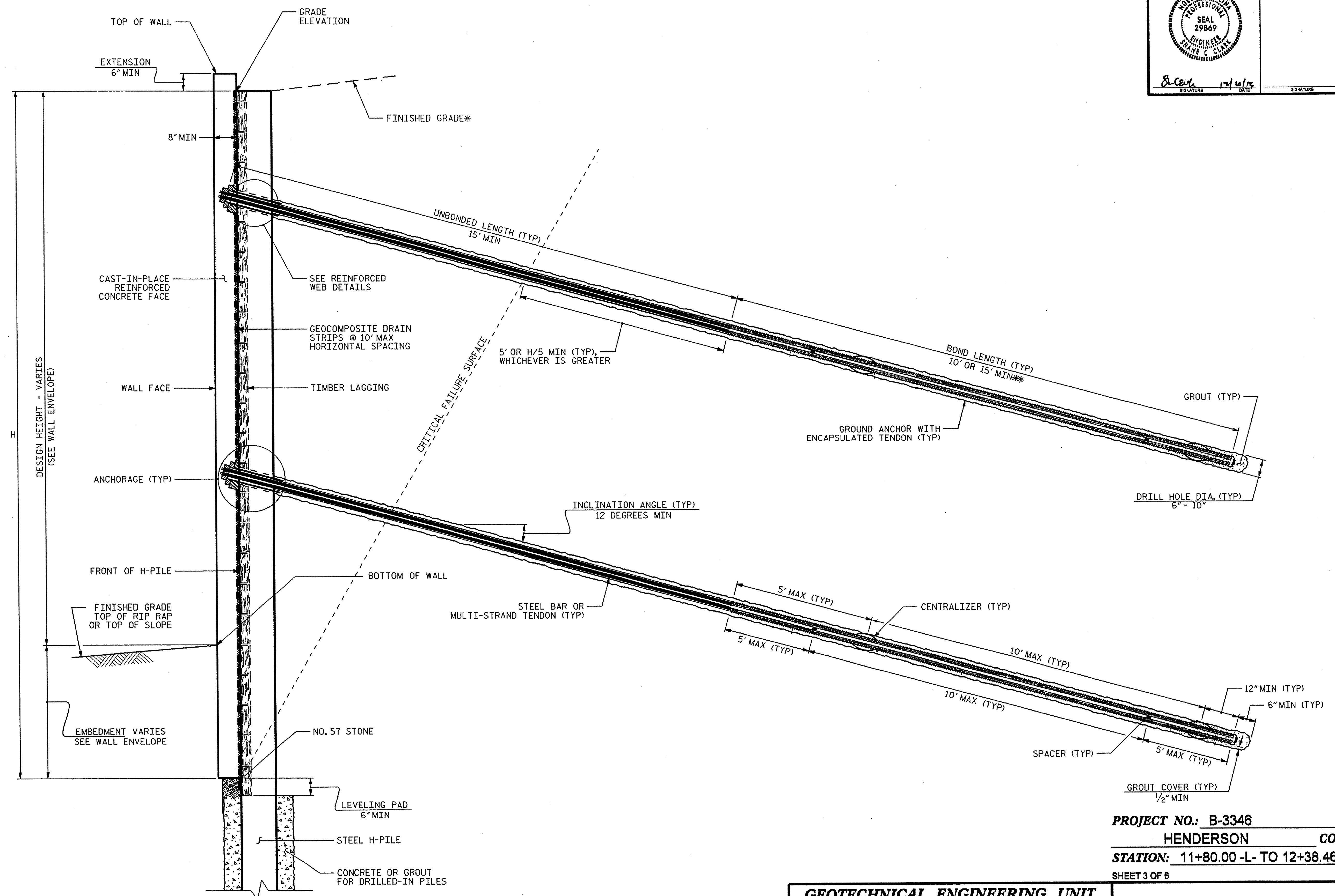
PROJECT NO.: B-3346
HENDERSON COUNTY
STATION: 11+80.00 -L- TO 12+38.46 -L-
 SHEET 2 OF 6

PREPARED BY: EJS DATE: 9/13
 REVIEWED BY: SCC DATE: 12/13

GEOTECHNICAL ENGINEERING UNIT
 EASTERN REGIONAL OFFICE
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 DEPARTMENT OF TRANSPORTATION
 RALEIGH

ANCHORED SOLDIER PILE RETAINING WALL

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			6



ANCHORED WALL - TYPICAL SECTION

(DOUBLE ROW OF GROUND ANCHORS SHOWN, AS NEEDED.)
 *SEE ROADWAY PLANS FOR FINISHED GRADE AND DITCH DETAILS.
 **SEE ANCHORED RETAINING WALLS PROVISION FOR BOND LENGTH REQUIREMENTS.

PROJECT NO.: B-3346
 HENDERSON COUNTY
 STATION: 11+80.00 -L- TO 12+38.46 -L-
 SHEET 3 OF 6

PREPARED BY: EJS	DATE: 9/13
REVIEWED BY: SCC	DATE: 12/13

GEOTECHNICAL ENGINEERING UNIT
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REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-3
1			3			TOTAL SHEETS
2			4			6

NOTES:

FOR ANCHORED RETAINING WALLS, SEE ANCHORED RETAINING WALLS PROVISION.

FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

DRILLED IN H-PILES ARE REQUIRED FOR RETAINING WALL NO. 1 DUE TO VIBRATION RESTRICTIONS ON THE PROJECT.

A ARCHITECTURAL FINISH SIMILAR TO THE EXISTING STRUCTURES ON THE PROJECT SITE IS REQUIRED FOR THE CAST-IN-PLACE REINFORCED CONCRETE FACE FOR RETAINING WALL NO. 1.

BEFORE BEGINNING ANCHORED WALL DESIGN FOR RETAINING WALL NO. 1, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL NO. 1 FOR THE FOLLOWING:

- 1) H = DESIGN HEIGHT + EMBEDMENT
- 2) DESIGN LIFE = 75 YEARS
- 3) MINIMUM EMBEDMENT ELEVATION = 2003 FT
- 4) IN-SITU ASSUMED MATERIAL PARAMETERS :
 UNIT WEIGHT, $\gamma = 120$ LB/CF
 FRICTION ANGLE, $\phi = 30$ DEGREES
 COHESION, $c = 0$ LB/SF

DESIGN RETAINING WALL NO. 1 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

THE MINIMUM EMBEDMENT ELEVATION FOR RETAINING WALL NO. 1 INCLUDES EMBEDMENT FOR SCOUR. SEE WALL ENVELOPE FOR ADJUSTMENTS TO THIS ELEVATION ALONG THE WALL.

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH GROUND ANCHORS FOR RETAINING WALL NO. 1.

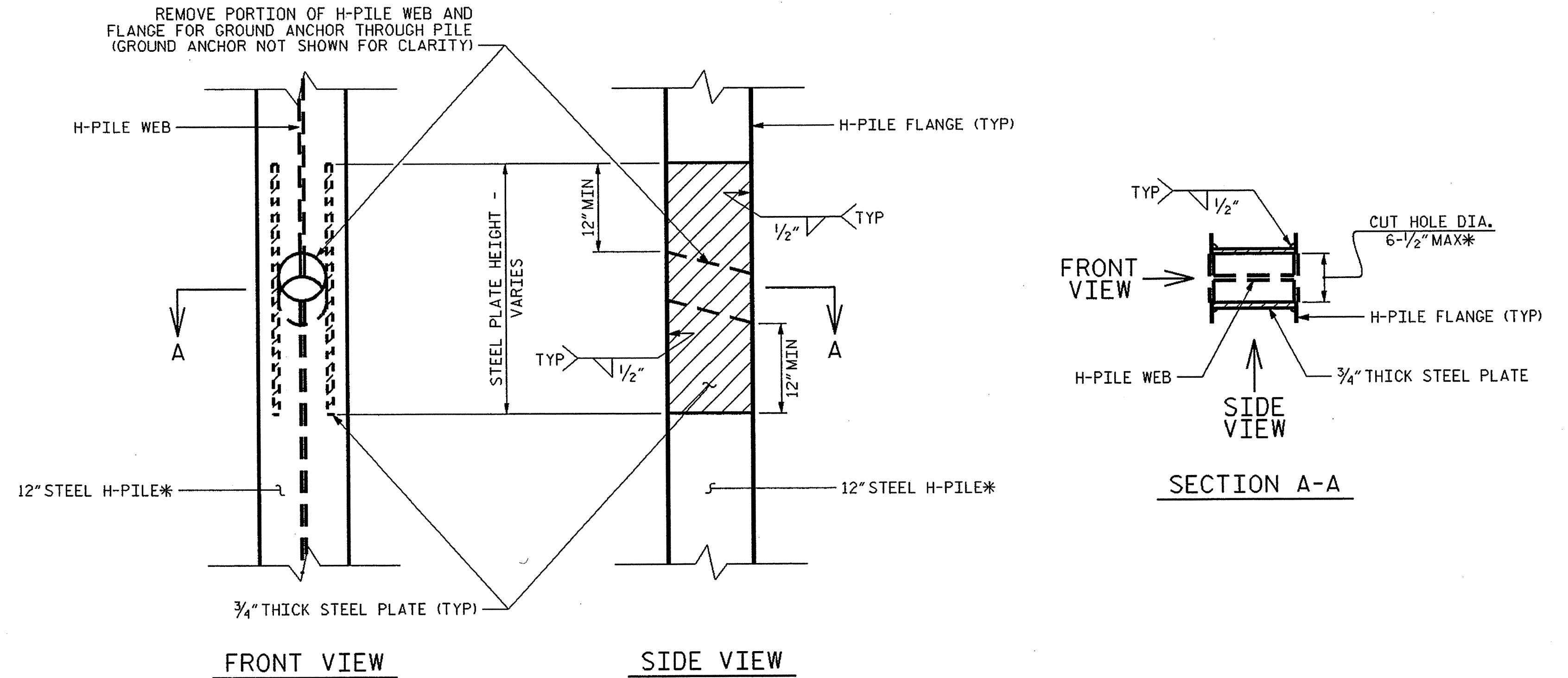
FOUNDATIONS FOR END BENT NO. 1 LOCATED AT STATION 12+47.85 -L- MAY INTERFERE WITH GROUND ANCHORS FOR RETAINING WALL NO. 1. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS.

"TEMPORARY SHORING" WILL BE REQUIRED FOR CONSTRUCTION OF ABUTMENT WALL NO. 1 IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. SEE ROADWAY PLANS.

PLACE CLASS 2 RIP RAP ALONG FACE OF WALL FOR ADDITIONAL SCOUR PROTECTION. RIP RAP CAN BE BURIED AS DIRECTED BY THE ENGINEER.

SEE SPECIAL PROVISIONS FOR RETAINING WALL MEASUREMENT AND PAYMENT DETAILS. FINISHED GRADE ALONG FRONT OF WALL WILL BE MEASURED FROM THE TOP OF RIP RAP.

WHERE THE RETAINING WALL AND WING WALL INTERSECT, THE TOP OF COPING OR WALL IS TO MATCH TOP OF WING WALL AS SHOWN ON THE STRUCTURE PLANS.



REINFORCED WEB DETAILS

*DETAILS SHOWN ARE FOR 12" H-PILES WITH 6" DIA. GROUND ANCHORS. FOR DIFFERENT DIAMETER ANCHORS, SUBMIT ALTERNATE REINFORCED WEB DETAILS FOR ACCEPTANCE.

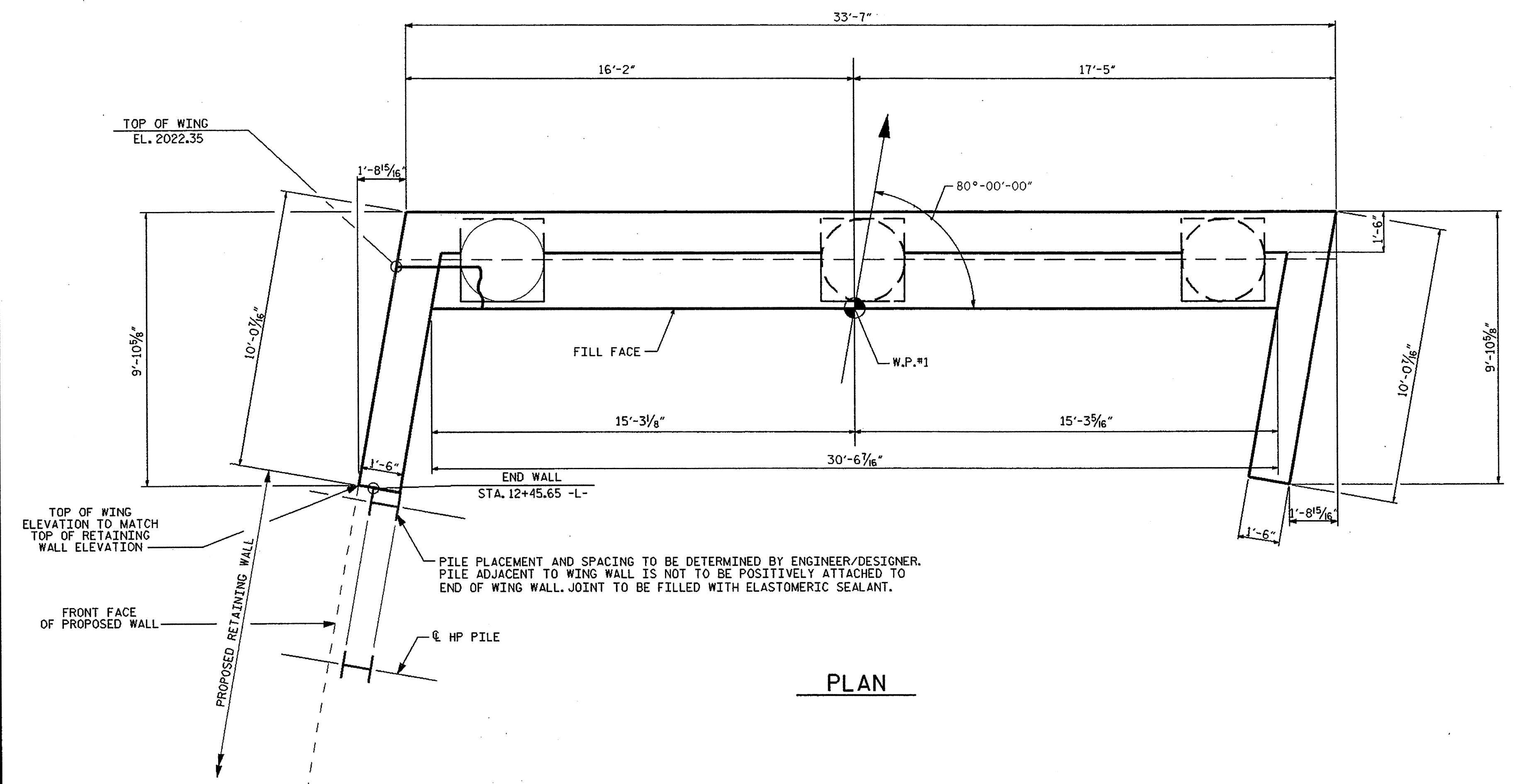
PROJECT NO.: B-3346
 HENDERSON COUNTY
 STATION: 11+80.00 -L- TO 12+38.46 -L-
 SHEET 4 OF 8

PREPARED BY: EJS DATE: 9/13
 REVIEWED BY: SCC DATE: 12/13

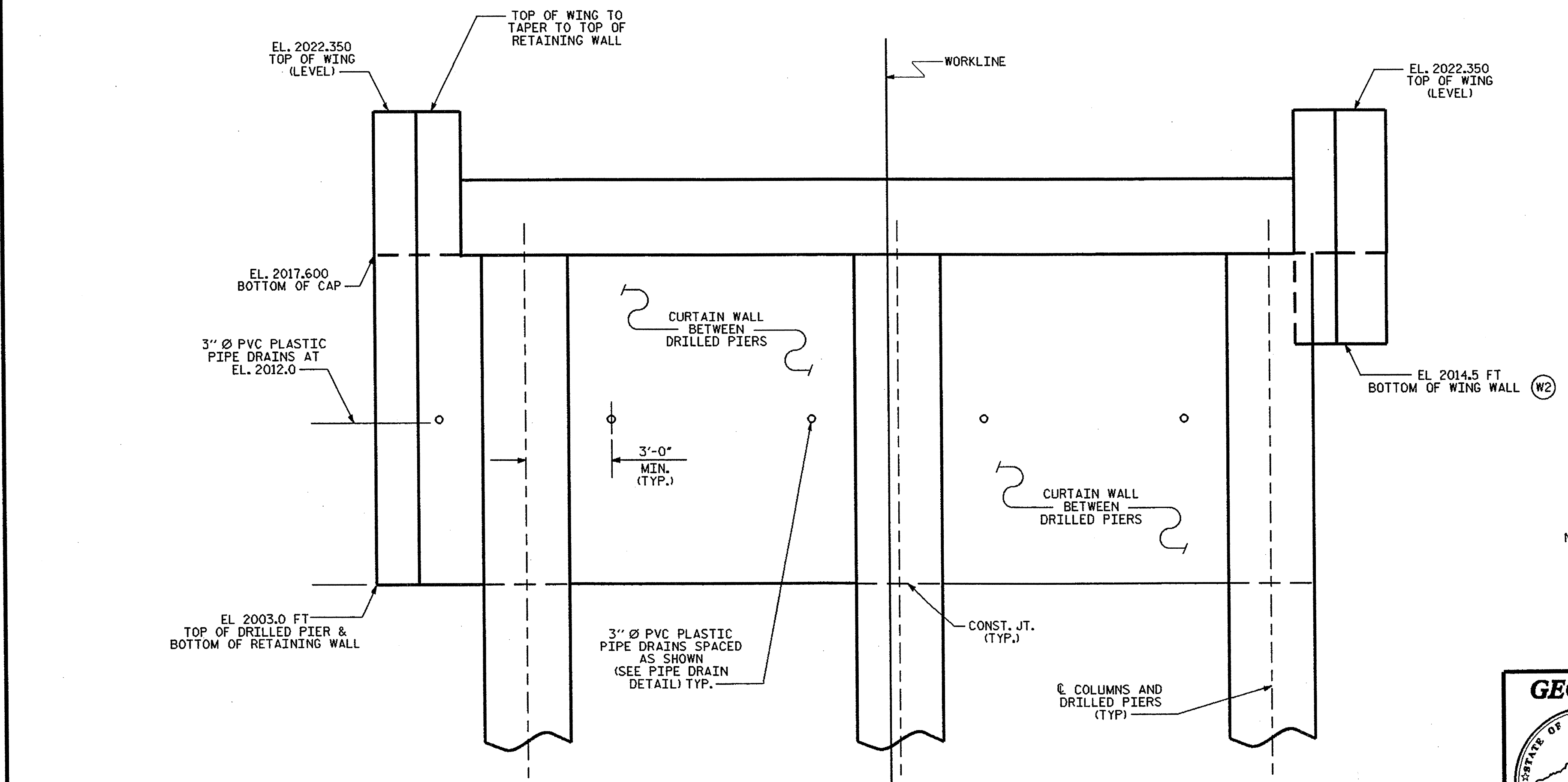
GEOTECHNICAL ENGINEERING UNIT
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 CONTRACT OFFICE
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

ANCHORED SOLDIER PILE RETAINING WALL

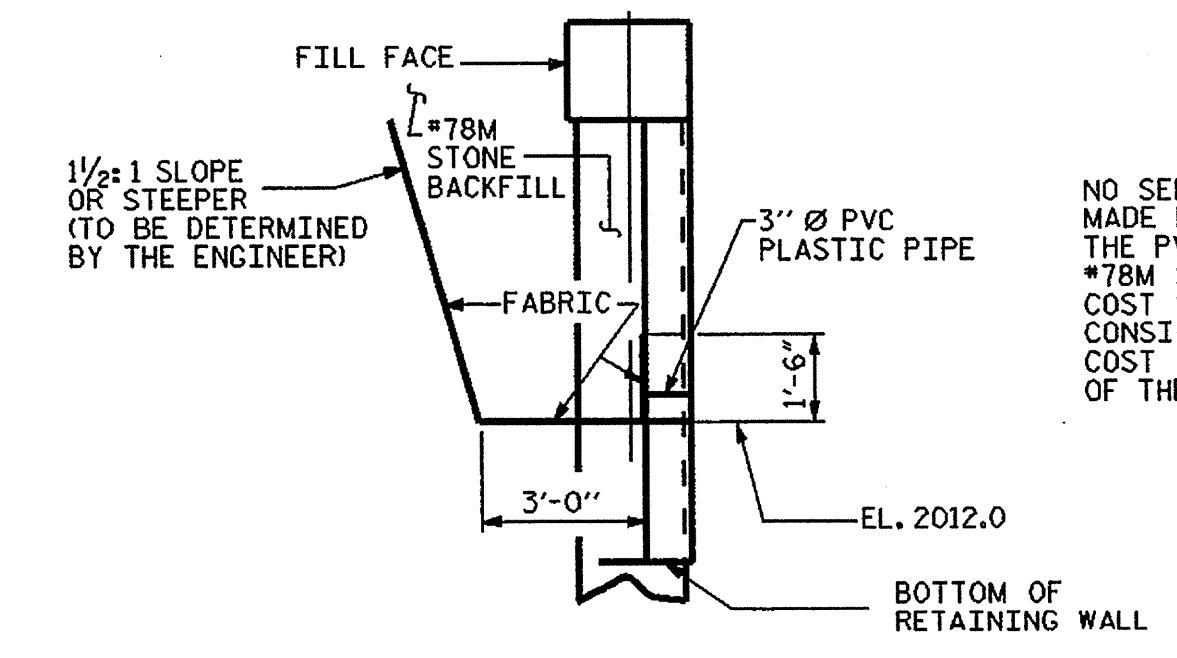
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-4
1			3			TOTAL SHEETS
2			4			8



PLAN



ELEVATION



PIPE DRAIN DETAIL

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

THE 3" Ø PVC PLASTIC PIPE SHALL MEET THE MINIMUM REQUIREMENTS OF ASTM D1785. FABRIC SHALL BE TYPE I ENGINEERING FABRIC IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

*78 STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

*78 STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE PIPE DRAIN TO OUTSIDE PIPE DRAIN.

PREPARED BY: EJS DATE: 9/13
 REVIEWED BY: SCC DATE: 12/13

GEOTECHNICAL ENGINEERING UNIT

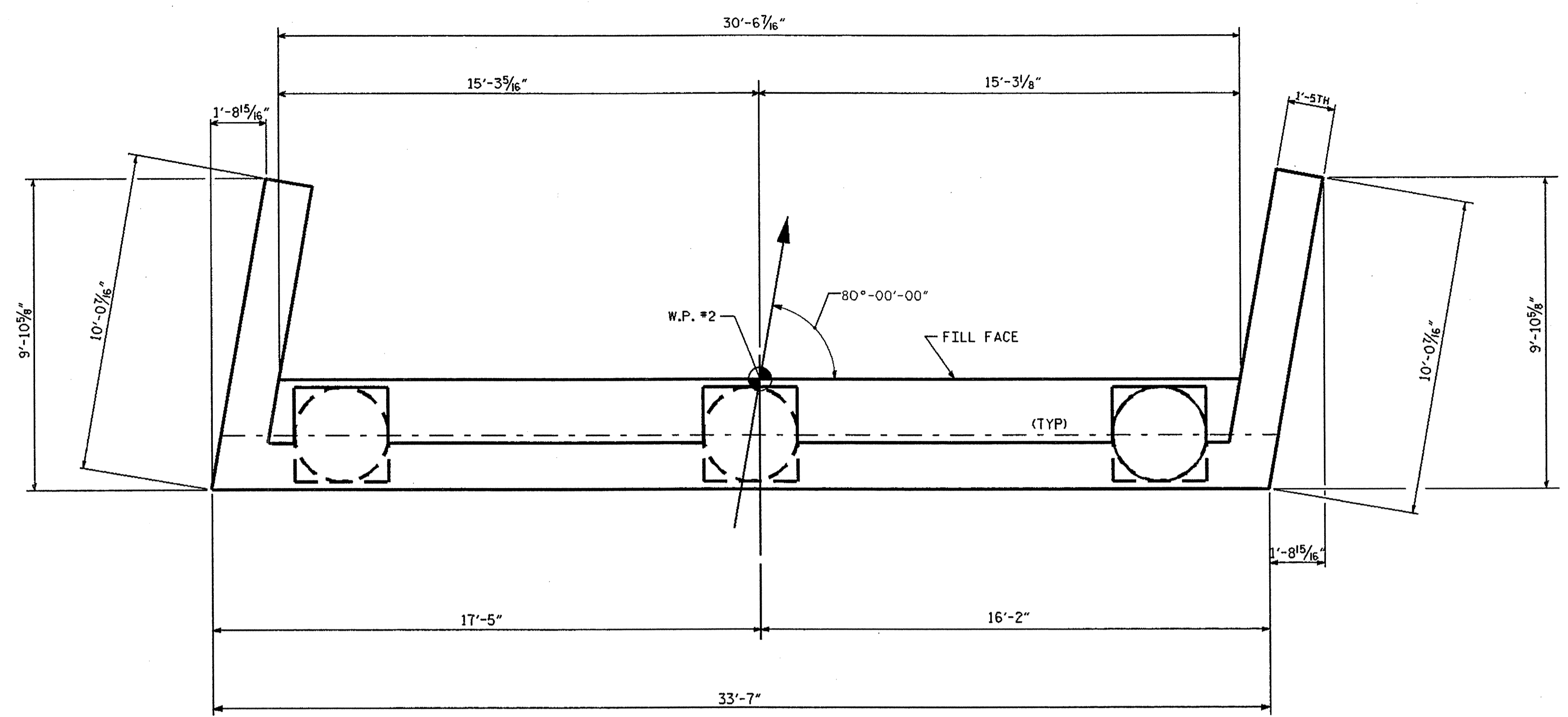
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 RALEIGH

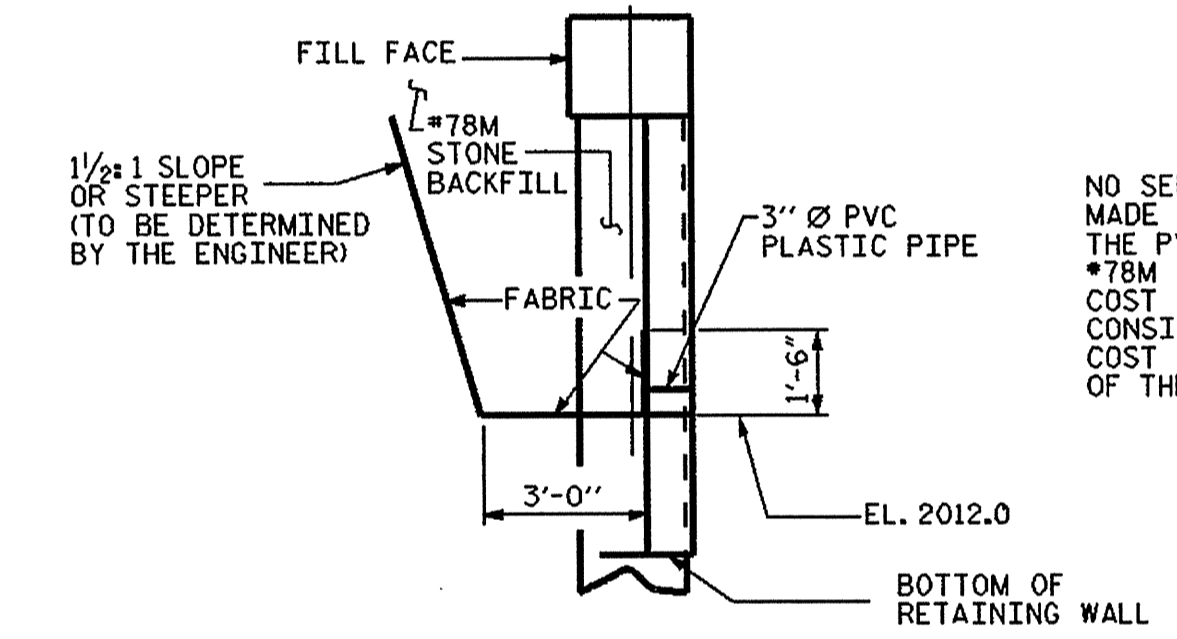
PROJECT NO.: B-3346
 HENDERSON COUNTY
 STATION: 11+80.00 -L- TO 12+38.46 -L-
 SHEET 5 OF 8

ABUTMENT WALL
 END BENT 1

REVISIONS						SHEET NO. W-5 TOTAL SHEETS 6
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			

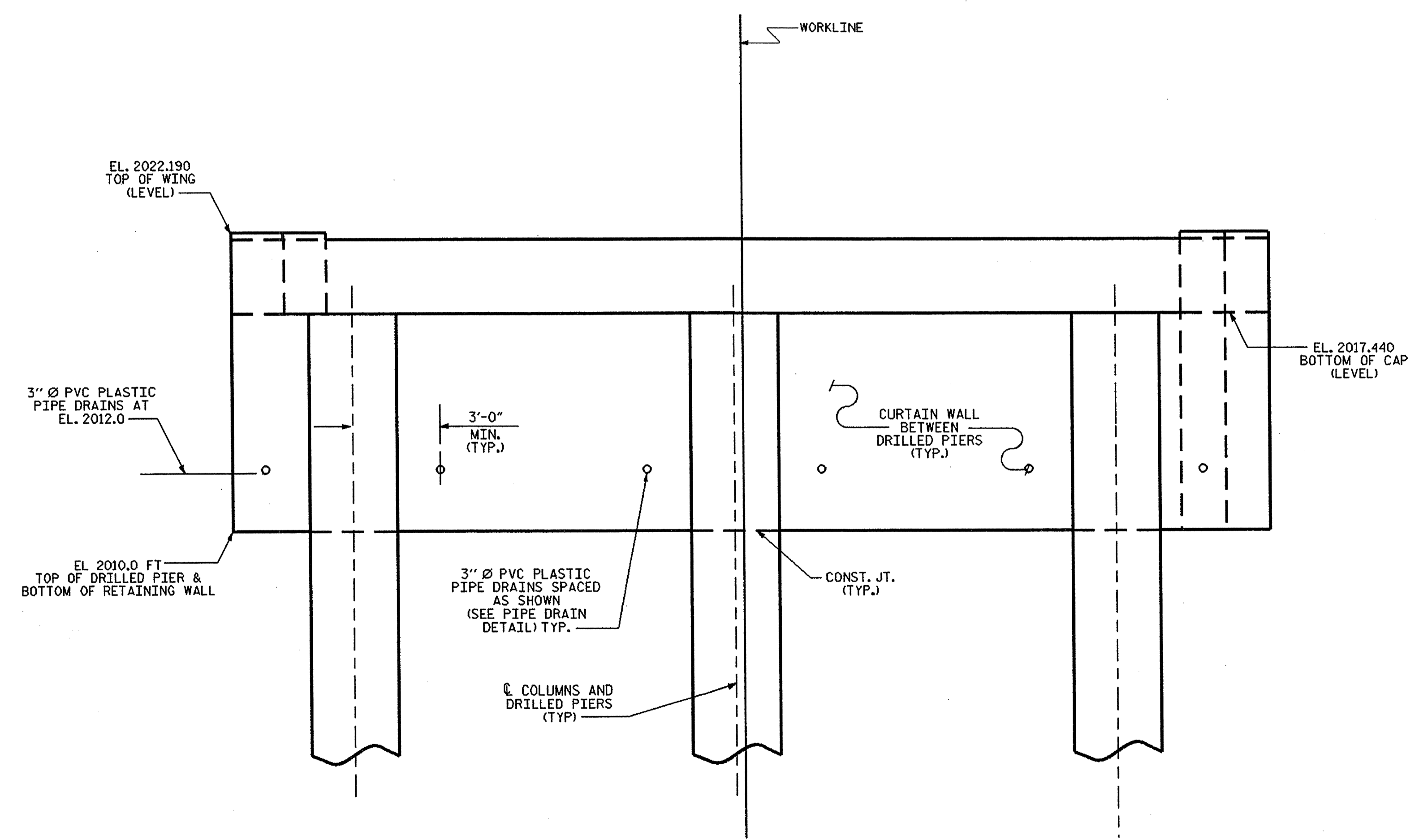


PLAN



PIPE DRAIN DETAIL

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



ELEVATION

THE 3" Ø PVC PLASTIC PIPE SHALL MEET THE MINIMUM REQUIREMENTS OF ASTM D1785
 FABRIC SHALL BE TYPE I ENGINEERING FABRIC IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.
 #78 STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.
 #78 STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE PIPE DRAIN TO OUTSIDE PIPE DRAIN

NOTE: FOR ADDITIONAL DETAILS ON CURTAIN WALL, SEE STRUCTURE PLANS

PROJECT NO.: B-3346
 HENDERSON COUNTY
 STATION: 11+80.00 -L- TO 12+38.46 -L-
 SHEET 6 OF 6

PREPARED BY: EJS DATE: 9/13
 REVIEWED BY: SCC DATE: 12/13

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REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-8
1			3			TOTAL SHEETS
2			4			6

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 2012 "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

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