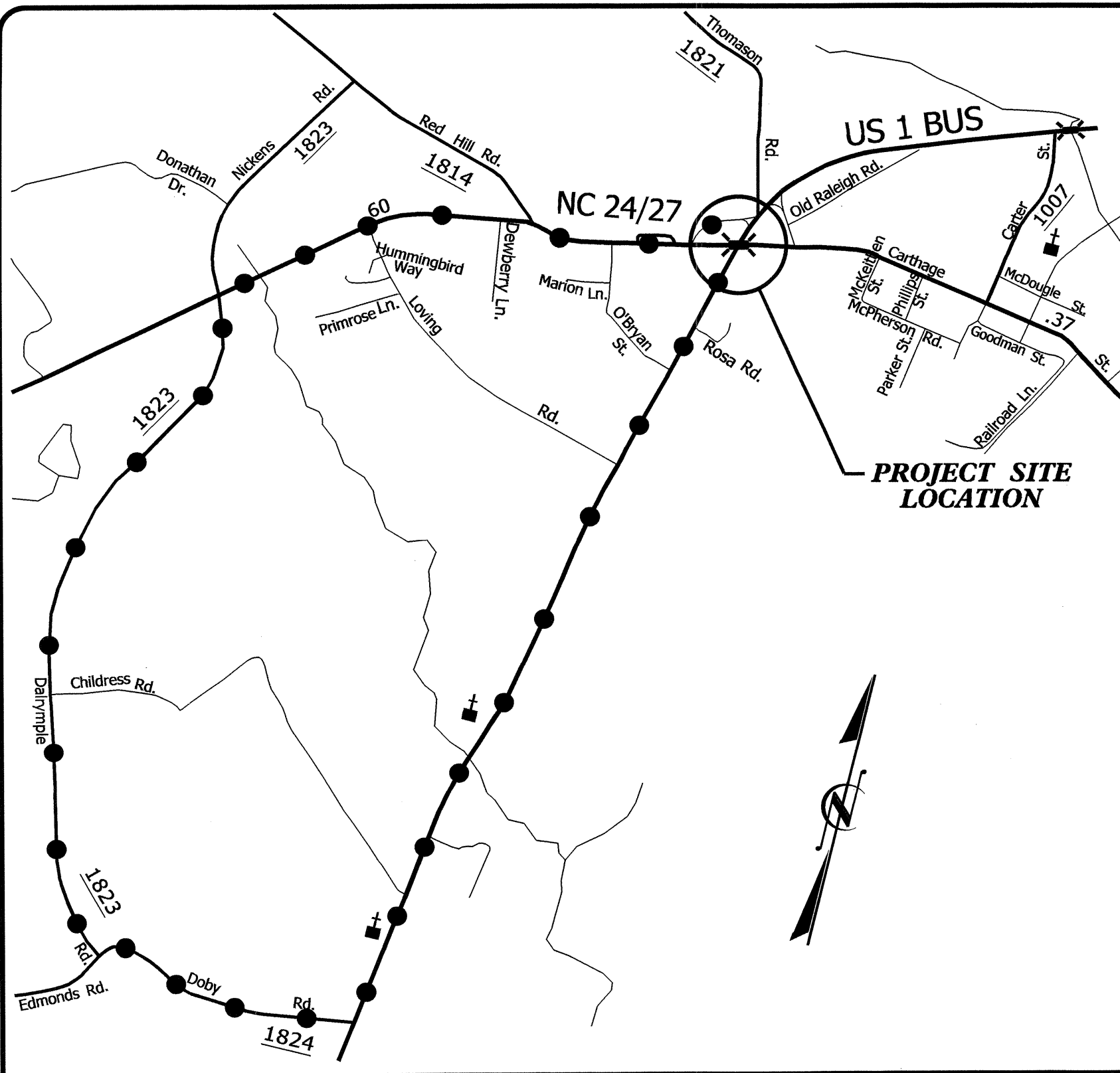


CONTRACT: C203380 TIP PROJECT: 41665.1A

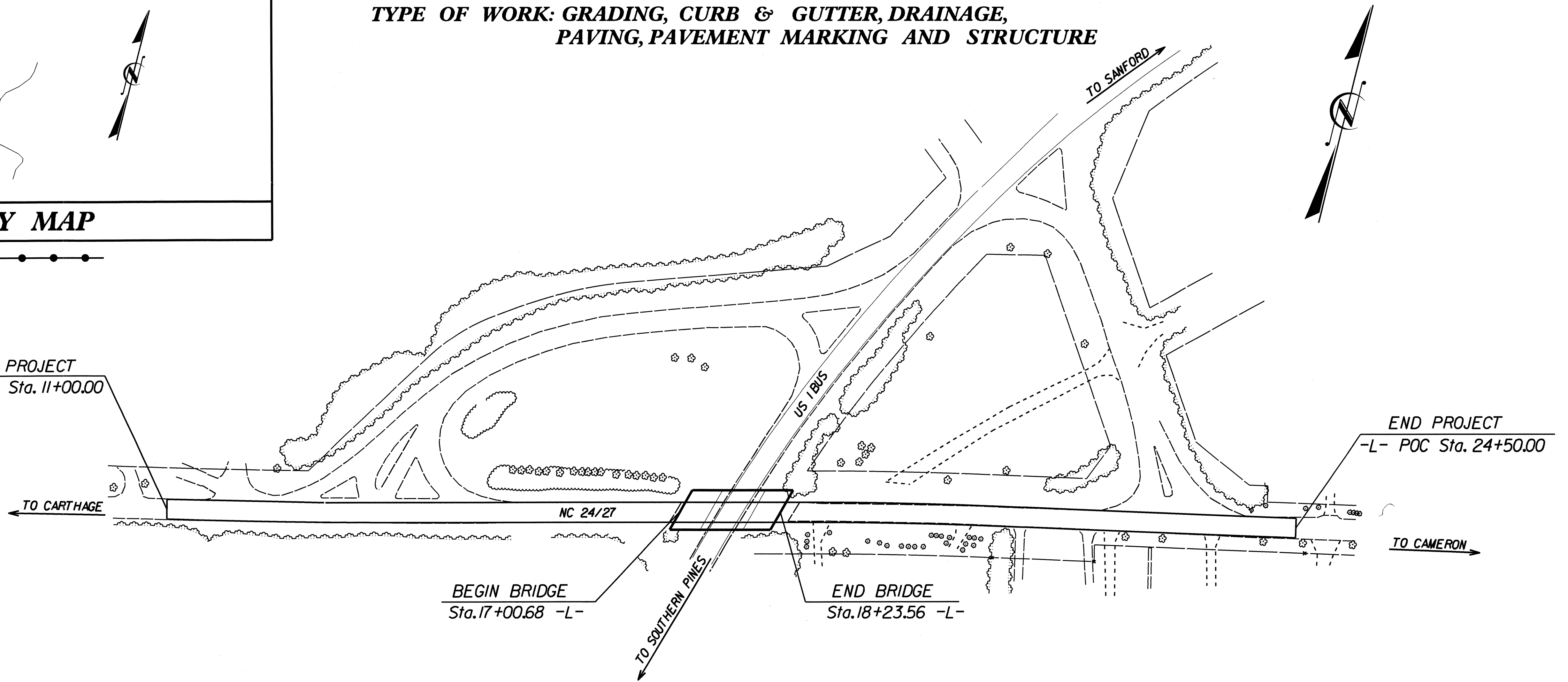


VICINITY MAP

DETOUR ROUTE ●●●●●

STRUCTURE

BEGIN PROJECT
-L- POT Sta. 11+00.00



TO CARTHAGE

BEGIN BRIDGE
Sta. 17+00.68 -L-

END BRIDGE
Sta. 18+23.56 -L-

END PROJECT
-L- POC Sta. 24+50.00

TO CAMERON

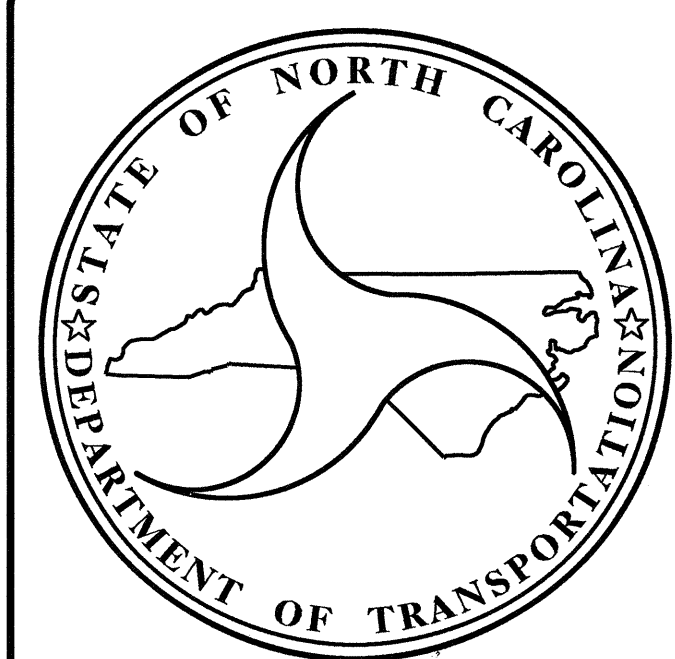
PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT 41665.1A = 0.233 mi.
 LENGTH STRUCTURE TIP PROJECT 41665.1A = 0.023 mi.
 TOTAL LENGTH TIP PROJECT 41665.1A = 0.256 mi.

DESIGN DATA

ADT 2011 = 3300 vpd
 DHV = N/A %
 D = 60 %
 T = 12 % *
 V = 40 MPH

FUNC. CLASS: RURAL LOCAL



STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
MOORE COUNTY

LOCATION: BRIDGE NO. 55 ON NC 24/27 OVER US 1 BUSINESS

**TYPE OF WORK: GRADING, CURB & GUTTER, DRAINAGE,
 PAVING, PAVEMENT MARKING AND STRUCTURE**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	41665.1A		
MOORE COUNTY #620055			
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
WBS 41665.1A			

Prepared In the Office of:

DIVISION OF HIGHWAYS

2012 STANDARD SPECIFICATIONS

LETTING DATE :
 AUGUST 20, 2013

J. M. BAILEY, P.E.
 PROJECT ENGINEER

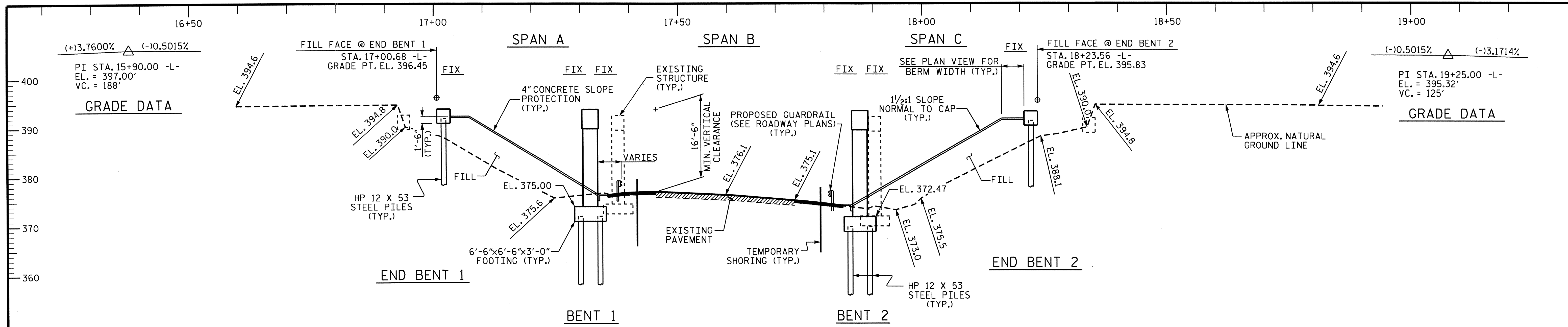
T. H. FANG, P.E.
 PROJECT DESIGN ENGINEER

STRUCTURES 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
 DIVISION ADMINISTRATOR DATE

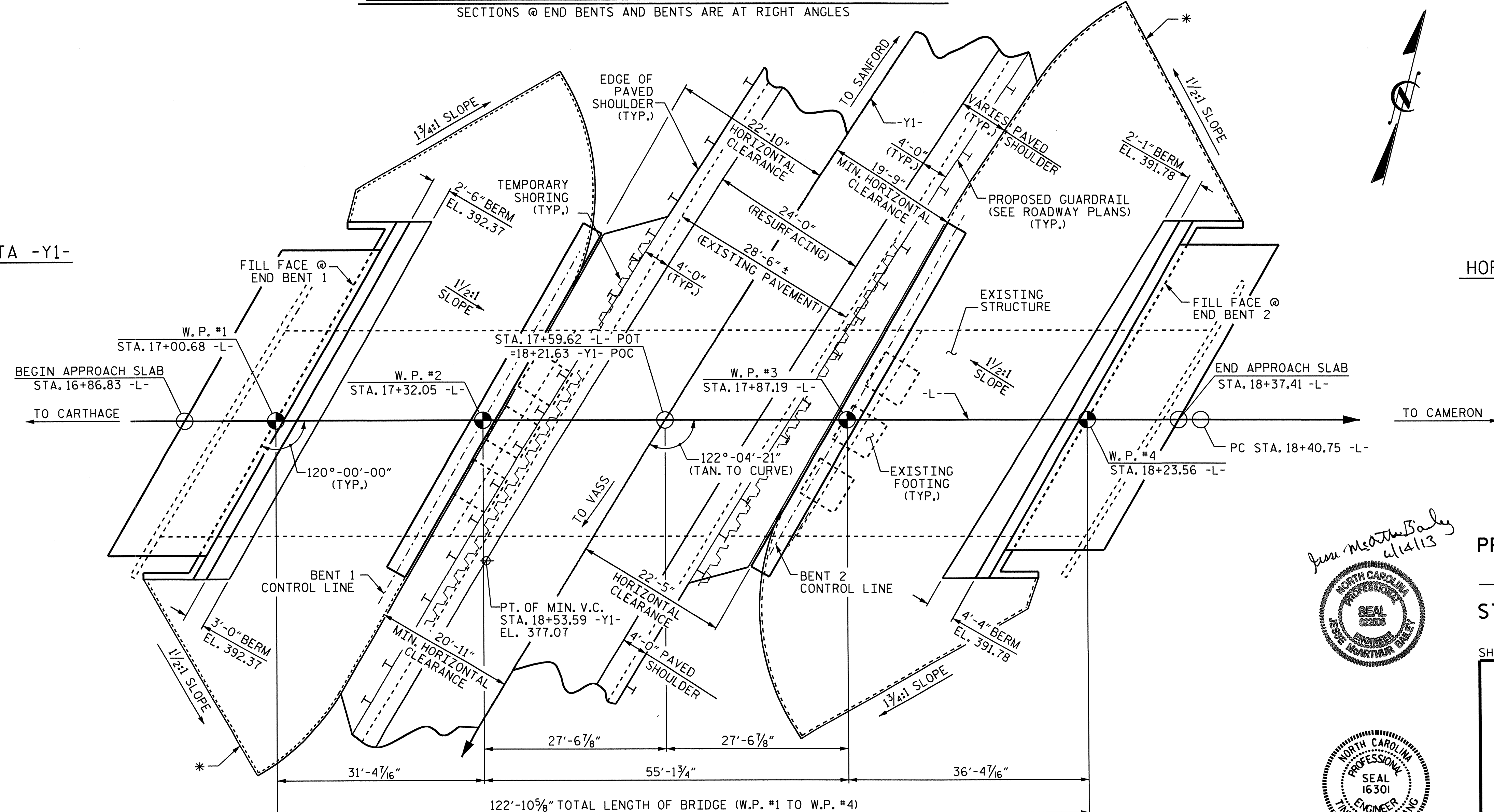


SECTION ALONG LEFT LANE CONTROL LINE

SECTIONS @ END BENTS AND BENTS ARE AT RIGHT ANGLES

HORIZONTAL CURVE DATA -Y1-

PI STA. 16+34.18 -Y1-
 $\Delta = 17^\circ-10'-41.8''$ (LT)
 $D = 2^\circ-50'-00.0''$
 $L = 606.29'$
 $T = 305.44'$
 $R = 2022.20'$



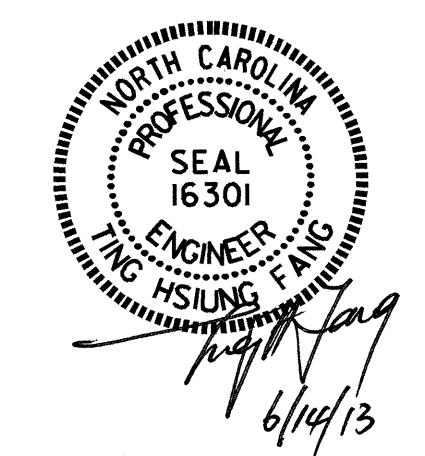
PLAN

PILES NOT SHOWN IN PLAN VIEW FOR CLARITY.
 * THE LIMIT OF THE SLOPE PROTECTION SHALL BE DETERMINED BY THE ENGINEER AT THESE LOCATIONS.

HORIZONTAL CURVE DATA -L-

PI STA. 19+57.48 -L-
 $\Delta = 2^\circ-20'-03.1''$ (RT)
 $D = 1^\circ-00'-00.0''$
 $L = 233.42'$
 $T = 116.73'$
 $R = 5729.58'$

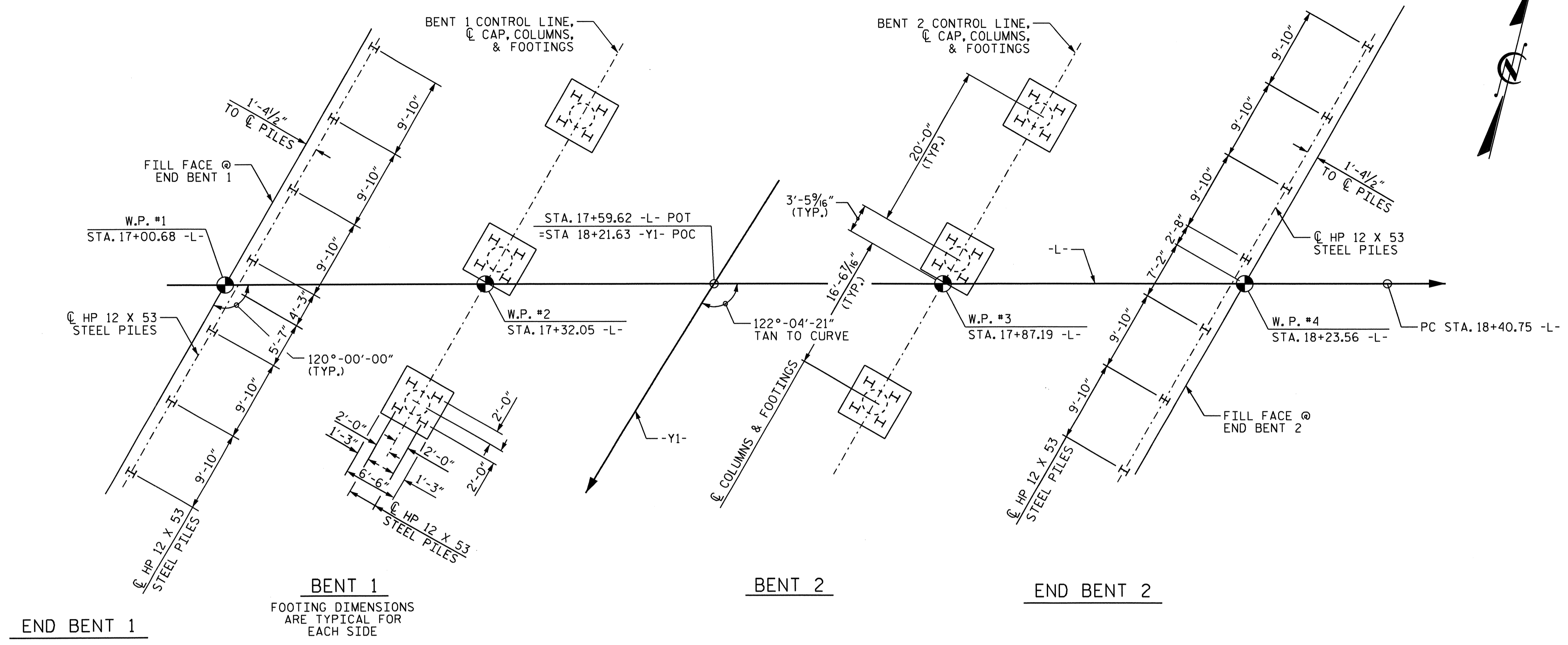
PROJECT NO. 41665.1A
MOORE COUNTY
 STATION: 17+59.62 -L- POT
=18+21.63 -Y- POC
 SHEET 1 OF 3 REPLACES BRIDGE NO. 55



DRAWN BY : S. B. WILLIAMS DATE : 12-19-12
 CHECKED BY : T. H. FANG DATE : 3-1-13
 DESIGN ENGINEER OF RECORD : P. K. NEWTON DATE : 3-1-13

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

S-1
TOTAL SHEETS 27



FOUNDATION LAYOUT

DIMENSIONS LOCATING FOOTINGS & PILES ARE SHOWN TO THE CENTERLINE
FOOTING DIMENSIONS ARE TYPICAL FOR EACH FOOTING AND EACH BENT

NOTES:

- FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- PILES AT END BENTS 1 & 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 75 TONS PER PILE.
- DRIVE PILES AT END BENTS 1 & 2 TO A REQUIRED DRIVING RESISTANCE OF 125 TONS PER PILE.
- PILES AT BENTS 1 & 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 100 TONS PER PILE.
- DRIVE PILES AT BENTS 1 & 2 TO A REQUIRED DRIVING RESISTANCE OF 170 TONS PER PILE.

PROJECT NO. 41665.1A
MOORE COUNTY
STATION: 17+59.62 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
FOR BRIDGE ON NC 24/27
OVER US 1 BUSINESS



DRAWN BY : S. B. WILLIAMS	DATE : 12/14/12
CHECKED BY : T. H. FANG	DATE : 3/1/13
DESIGN ENGINEER OF RECORD: P. K. NEWTON	DATE : 3/1/13

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

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	FOUNDATION EXCAVATION	CONCRETE WEARING SURFACE	GROOVING BRIDGE FLOORS	CLASS AA CONCRETE	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	HP 12 X 53 STEEL PILES	TWO BAR METAL RAIL	1'-2" X 3'-9 1/2" CONCRETE PARAPET	1'-2" X 3'-0 1/2" CONCRETE PARAPET	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS		
	LUMP SUM	LUMP SUM	SO.FT.	SO.FT.	CU.YDS.	CU.YDS.	LUMP SUM	LBS.	LBS.	LBS.	NO.	LIN.FT.	LIN.FT.	LIN.FT.	LIN.FT.	SO. YDS.	LUMP SUM	NO.	LIN.FT.
SUPERSTRUCTURE			4,812	5,591	30.1				1,130			224.2	120.3	120.3				48	1920
END BENT 1								3,497			7	350				395			
BENT 1		LUMP SUM						8,262		1,075	12	360							
BENT 2		LUMP SUM						8,537		1,224	12	600							
END BENT 2								3,497			7	245				465			
TOTAL	LUMP SUM	LUMP SUM	4,812	5,591	30.1	155.7	LUMP SUM	23,793	1,130	2,299	38	1,555	224.2	120.3	120.3	860	LUMP SUM	48	1920

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

THE ELEVATION AND CLEARANCE SHOWN ON THE PLANS AT THE POINT OF MINIMUM VERTICAL CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATION ON THE EXISTING PAVEMENT AND CHECK THE CLEARANCE. REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.

THE EXISTING STRUCTURE CONSISTING OF 3 SPANS: 1 @ 44'-9", 1 @ 52'-7", 1 @ 45'-0" WITH A CLEAR ROADWAY WIDTH OF 26'-1" WITH A 5/8" ASPHALT WEARING SURFACE AND REINFORCED CONCRETE DECK GIRDERS; SUBSTRUCTURE END BENTS CONSISTING OF RC CAPS ON TIMBER PILES, INTERIOR BENTS CONSISTING OF RC POST AND BEAM AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT.

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.

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.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

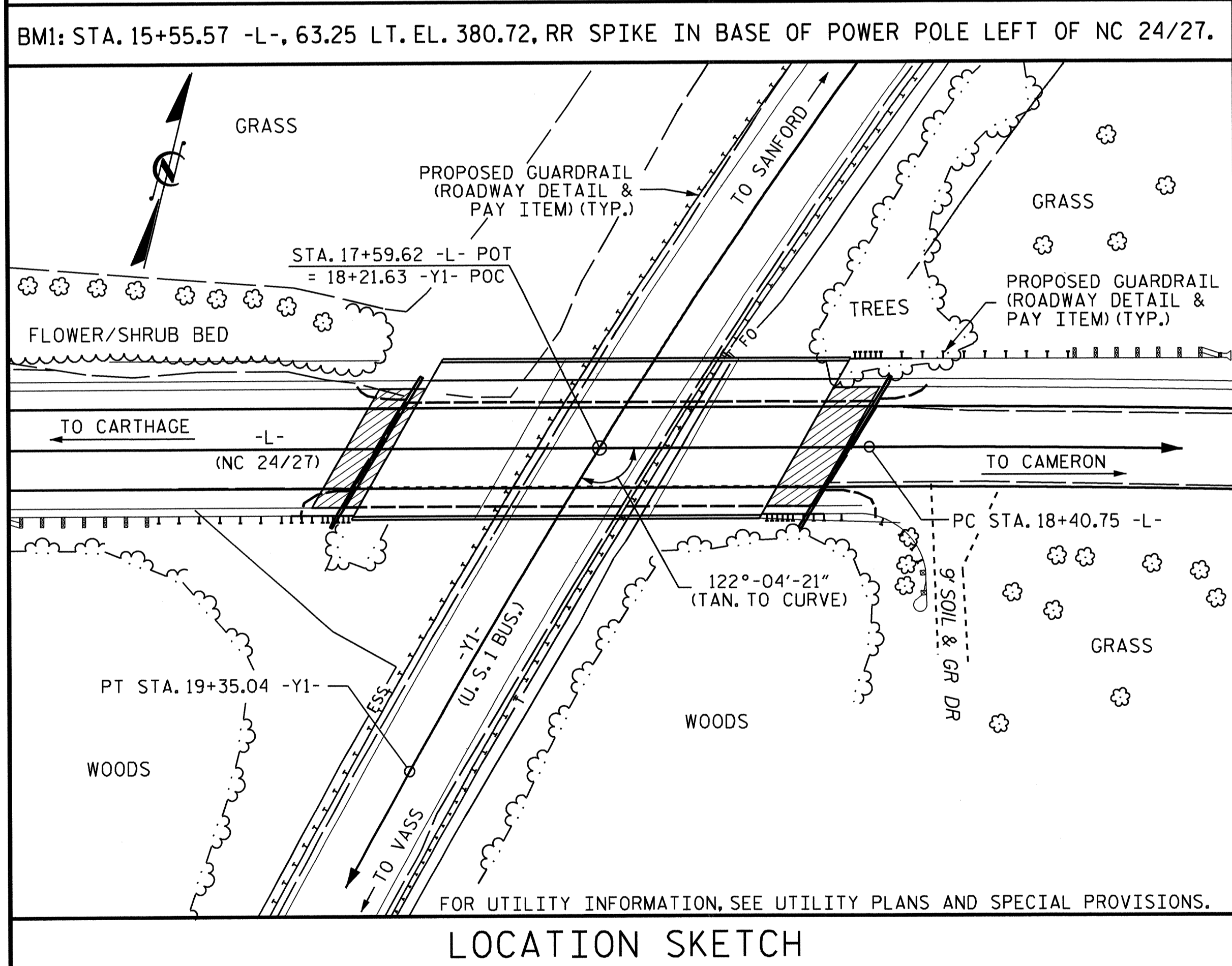
FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

ALL PAVEMENT MARKING WILL BE IN ACCORDANCE WITH THE PAVEMENT MARKING PLANS AND SHALL PROVIDE FOR BICYCLES.



LOCATION SKETCH

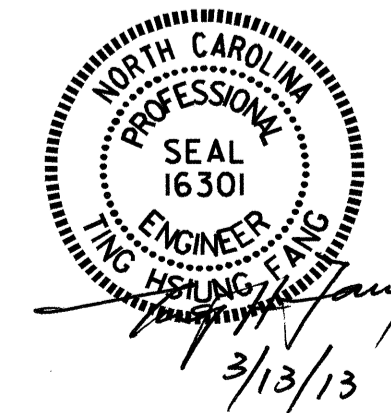
PROJECT NO. 41665.1A
MOORE COUNTY
 STATION: 17+59.62 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

FOR BRIDGE ON NC 24/27
 OVER US 1 BUSINESS



DRAWN BY : S. B. WILLIAMS DATE : 12/14/12
 CHECKED BY : T. H. FANG DATE : 3/1/13
 DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE : 3/1/13

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

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			
						LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
																								MOMENT
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.02	--	1.75	0.256	1.56	A	EL	14.423	0.650	1.02	A	EL	1.442	0.80	0.256	1.10	A	EL	14.423		
	HL-93(0pr)	N/A	--	1.33	--	1.35	0.256	2.02	A	EL	14.423	0.650	1.33	A	EL	1.442	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.16	41.769	1.75	0.256	2.10	C	EL	13.538	0.650	1.16	A	EL	1.442	0.80	0.252	1.54	B	EL	26.923		
	HS-20(0pr)	36.000	--	1.50	54.145	1.35	0.256	2.72	C	EL	13.538	0.650	1.50	A	EL	1.442	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.50	33.683	1.40	0.256	4.41	A	EL	14.423	0.650	2.83	A	EL	1.442	0.80	0.256	2.50	A	EL	14.423	
		SNGARBS2	20.000	--	2.20	43.895	1.40	0.256	3.85	C	EL	13.538	0.650	2.19	A	EL	1.442	0.80	0.256	2.26	A	EL	11.538	
		SNAGRIS2	22.000	--	2.12	46.531	1.40	0.256	3.82	C	EL	13.538	0.650	2.12	A	EL	1.442	0.80	0.256	2.29	A	EL	11.538	
		SNCOTTS3	27.250	--	1.25	34.117	1.40	0.256	2.21	A	EL	14.423	0.650	1.43	A	EL	1.442	0.80	0.256	1.25	A	EL	14.423	
		SNAGGRS4	34.925	--	1.21	42.170	1.40	0.256	2.10	C	EL	16.923	0.650	1.32	A	EL	1.442	0.80	0.256	1.21	A	EL	14.423	
		SNS5A	35.550	--	1.17	41.532	1.40	0.256	2.04	C	EL	16.923	0.650	1.40	A	EL	1.442	0.80	0.256	1.17	A	EL	14.423	
		SNS6A	39.950	--	1.10	44.106	1.40	0.256	1.95	A	EL	14.423	0.650	1.32	A	EL	1.442	0.80	0.256	1.10	A	EL	14.423	
	SNS7B	42.000	3	1.07	45.068	1.40	0.256	1.88	C	EL	16.923	0.650	1.34	A	EL	1.442	0.80	0.256	1.07	A	EL	14.423		
	TTST	TNAGRIT3	33.000	--	1.43	47.310	1.40	0.256	2.43	C	EL	16.923	0.650	1.56	A	EL	1.442	0.80	0.256	1.43	A	EL	14.423	
		TNT4A	33.075	--	1.36	44.897	1.40	0.256	2.40	A	EL	14.423	0.650	1.45	A	EL	1.442	0.80	0.256	1.36	A	EL	14.423	
		TNT6A	41.600	--	1.23	51.324	1.40	0.256	2.13	C	EL	16.923	0.650	1.40	A	EL	1.442	0.80	0.256	1.23	A	EL	14.423	
		TNT7A	42.000	--	1.28	53.572	1.40	0.256	2.20	C	EL	16.923	0.650	1.34	A	EL	1.442	0.80	0.256	1.28	A	EL	14.423	
		TNT7B	42.000	--	1.20	50.402	1.40	0.256	2.12	A	EL	14.423	0.650	1.31	A	EL	1.442	0.80	0.256	1.20	A	EL	14.423	
		TNAGRIT4	43.000	--	1.24	53.457	1.40	0.256	2.18	C	EL	13.538	0.650	1.26	A	EL	1.442	0.80	0.256	1.24	A	EL	14.423	
TNAGT5A		45.000	--	1.20	54.008	1.40	0.256	2.02	C	EL	16.923	0.650	1.36	A	EL	1.442	0.80	0.256	1.20	C	EL	16.923		
TNAGT5B	45.000	--	1.16	52.085	1.40	0.256	1.95	C	EL	16.923	0.650	1.19	A	EL	1.442	0.80	0.256	1.16	C	EL	16.923			

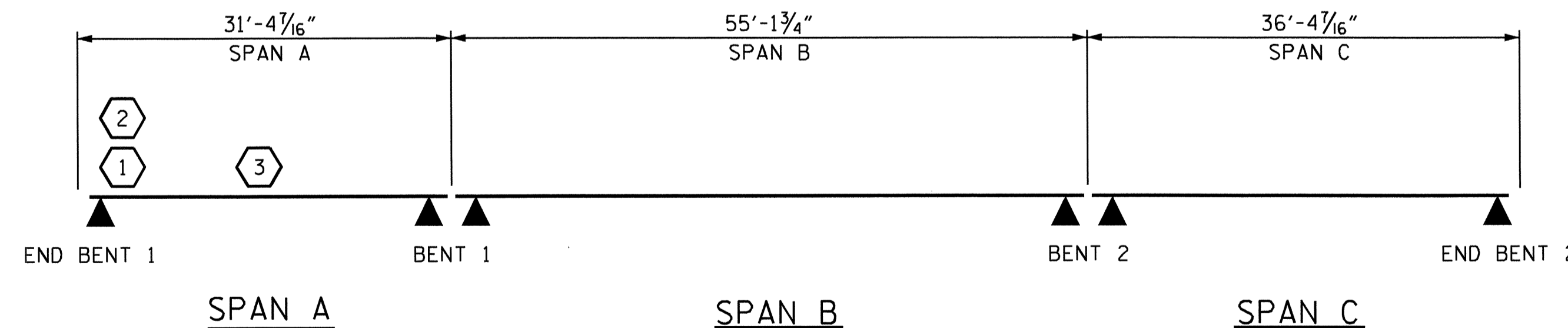
NOTES:

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:

-
-
-
-

#	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. 41665.1A
MOORE COUNTY
STATION: 17+59.62 -L-

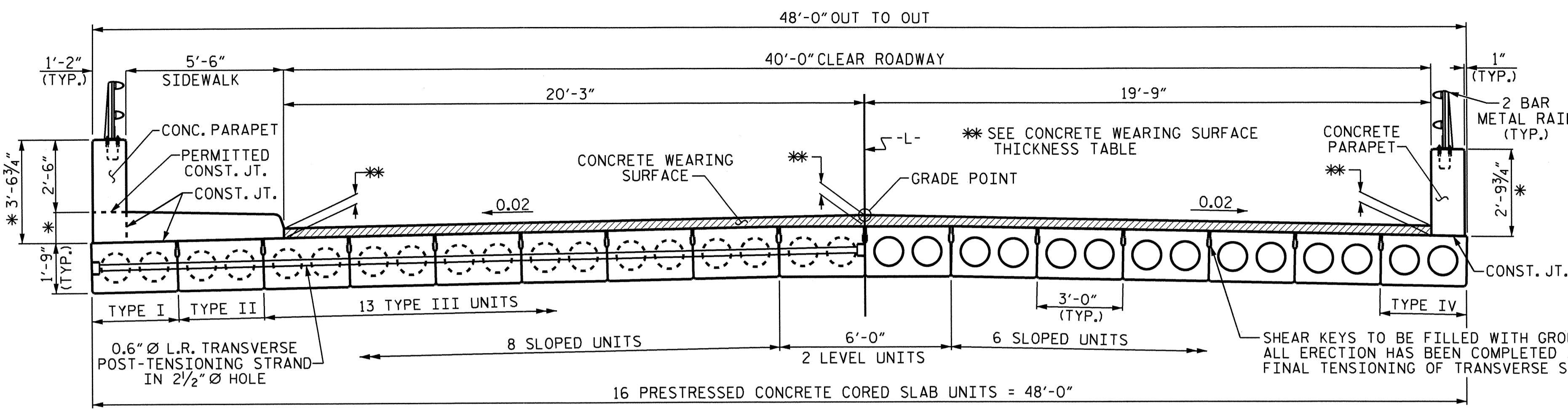


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR
CORED SLAB UNIT
(NON-INTERSTATE TRAFFIC)

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

DRAWN BY : P.K. NEWTON DATE : 3-7-13
CHECKED BY : S.L. WANCE DATE : 3-7-13
DESIGN ENGINEER OF RECORD: P.K. NEWTON DATE : 3-7-13



HALF SECTION AT INTERMEDIATE DIAPHRAGMS

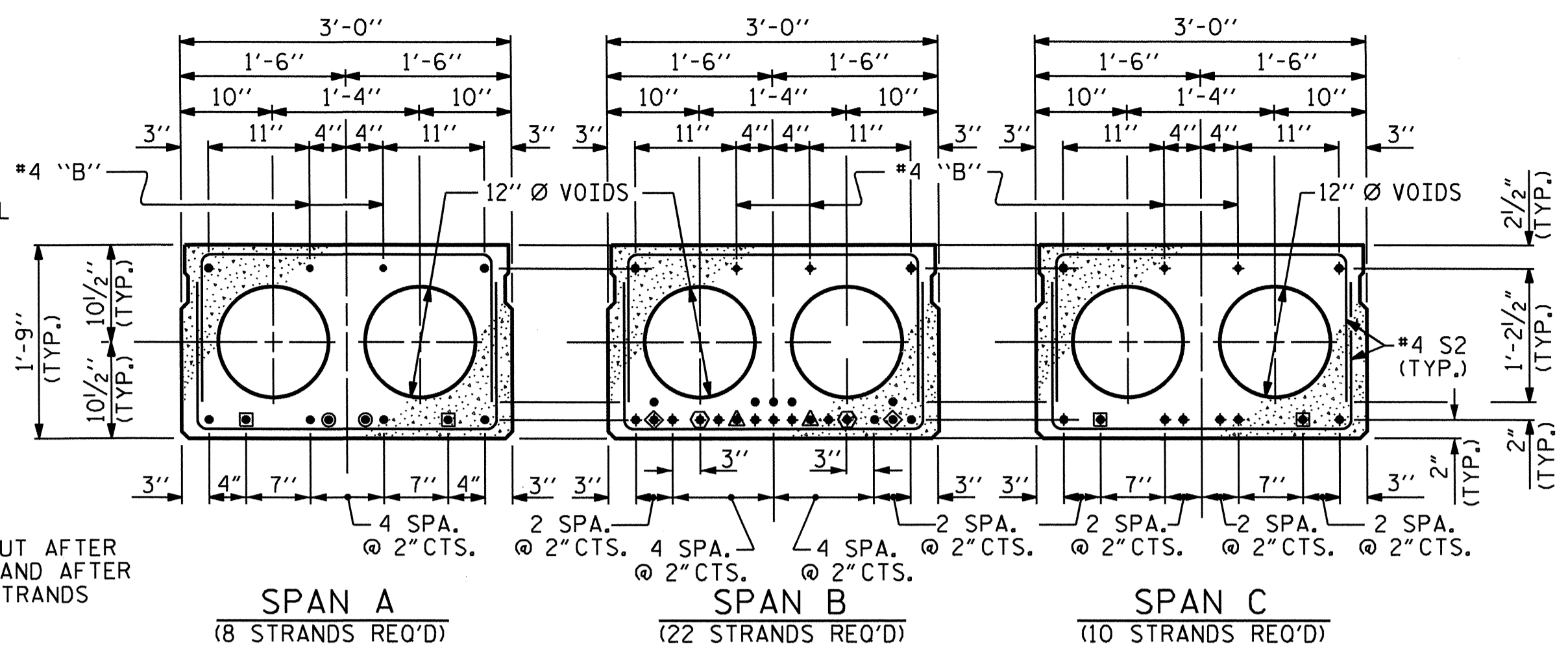
TYPICAL SECTION

HALF SECTION THROUGH VOIDS

* THE MINIMUM PARAPET HEIGHT IS SHOWN. THE HEIGHT OF PARAPETS, SIDEWALK AND CONCRETE WEARING SURFACE VARIES WHILE THE TOP OF THE PARAPET FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR SIDEWALK HEIGHT, SEE SHEET S-11. FOR PARAPET HEIGHT, SEE SHEETS S-15 & S-16.

* THICKNESS IS BASED ON PREDICTED FINAL CAMBER & THEORETICAL GRADE LINE ELEVATIONS AND VARIES BETWEEN \bar{C} BEARING AND MID-SPAN FOR ALL SPANS.

SPAN	* CONCRETE WEARING SURFACE THICKNESS			
	AT \bar{C} BEARINGS	AT MID-SPAN	GUTTERLINE	GRADE PT.
A	6 1/2"	7 1/4"	6 1/4"	7"
B	6 1/2"	7 1/4"	3 3/4"	4 1/2"
C	6 1/2"	7 1/4"	6"	6 3/4"



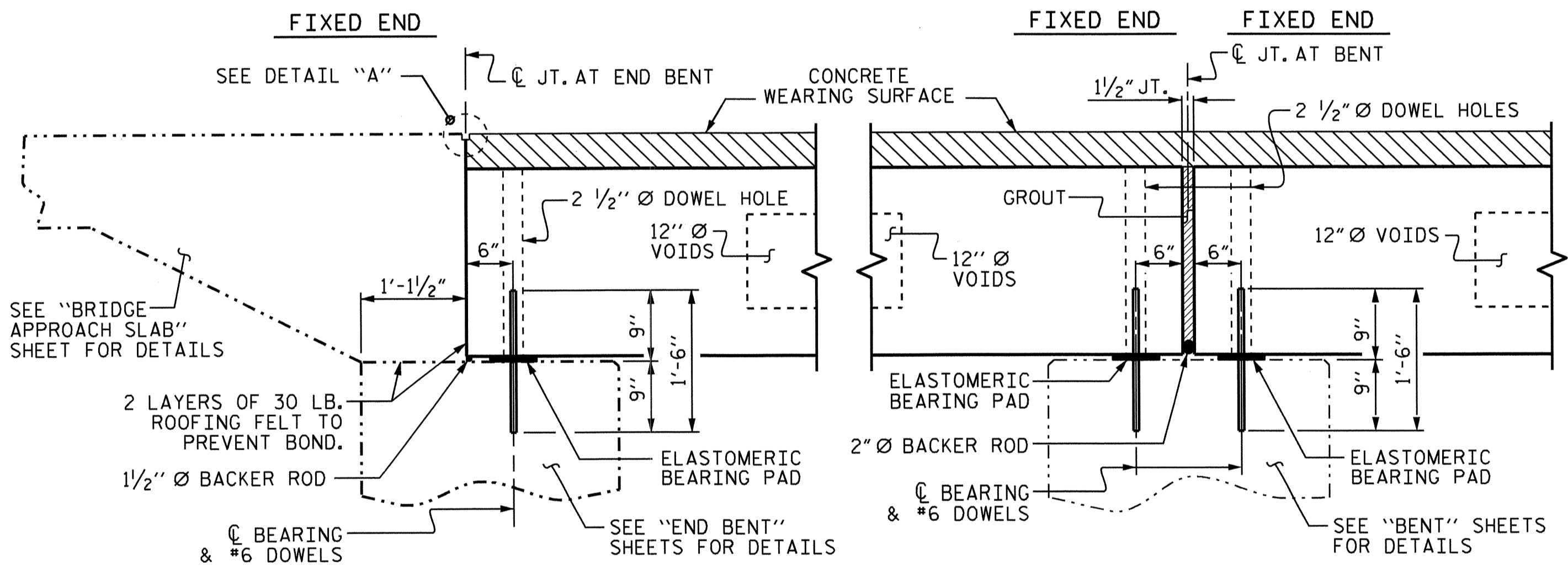
TYPE III UNIT SECTIONS - INTERIOR CORED SLAB

0.6" \bar{O} LOW RELAXATION STRAND LAYOUT

- OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST.
- BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 4'-0" FROM END OF CORED SLAB UNIT.
- BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 8'-0" FROM END OF CORED SLAB UNIT.
- BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12'-0" FROM END OF CORED SLAB UNIT.
- FULLY BONDED STRANDS.

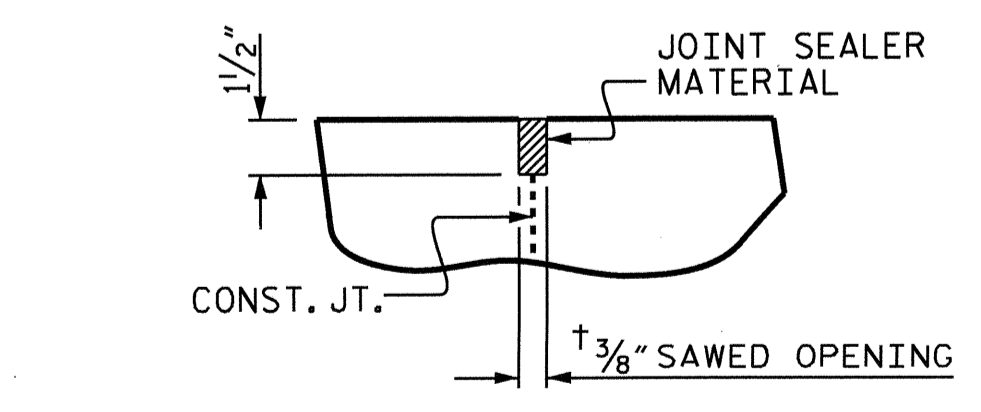
DEBONDING LEGEND

FOR DEBONDED STRANDS, SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.



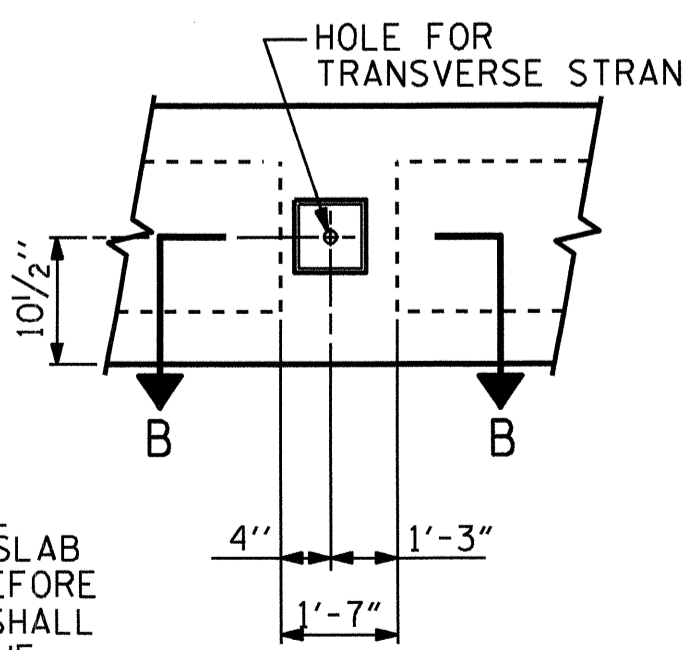
SECTION AT END BENT

SECTION AT BENT

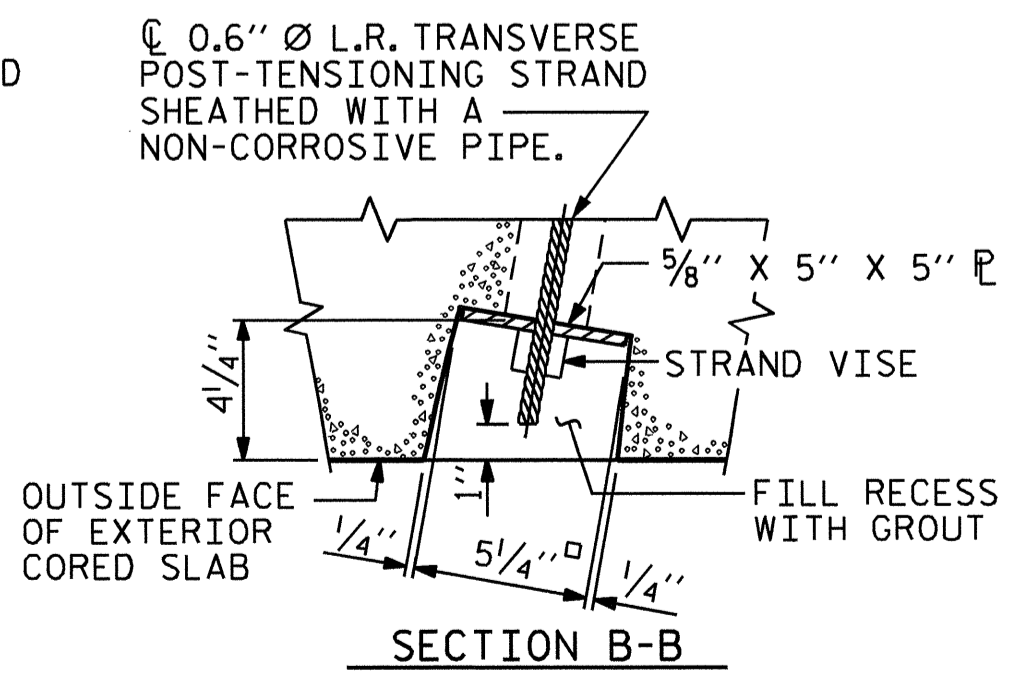


DETAIL "A"

A 1/2" DEEP CONTRACTION JOINT AT EACH END BENT SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

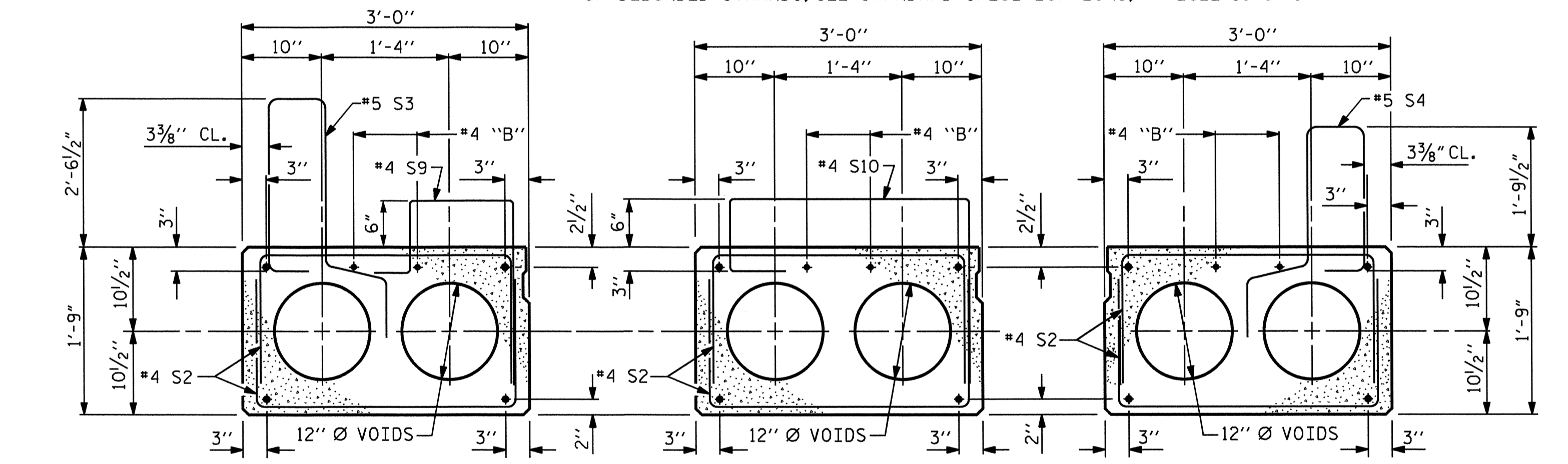


ELEVATION VIEW



SECTION B-B

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



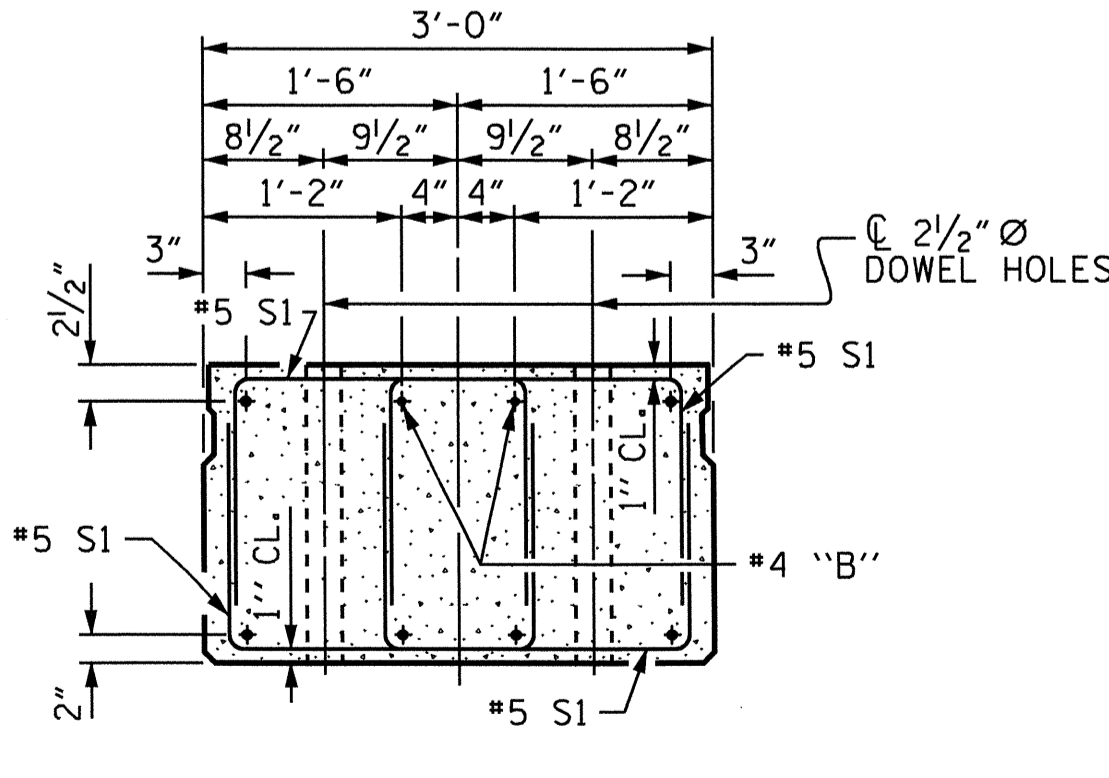
TYPE I (LEFT EXTERIOR UNIT)

TYPE II (INTERIOR UNIT UNDER SIDEWALK)

TYPE IV (RIGHT EXTERIOR UNIT)

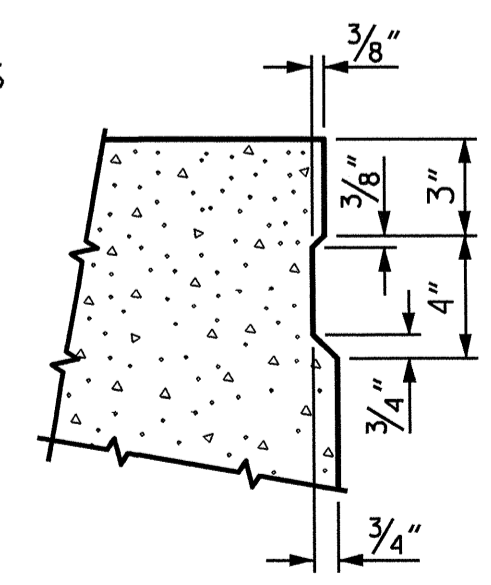
CORED SLAB UNIT SECTIONS

FOR PRESTRESSED STRAND LAYOUT, SEE TYPE III UNIT SECTIONS IN EACH SPAN.



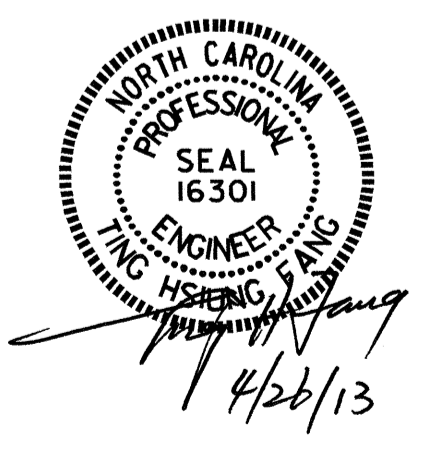
END ELEVATION

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.



SHEAR KEY DETAIL

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

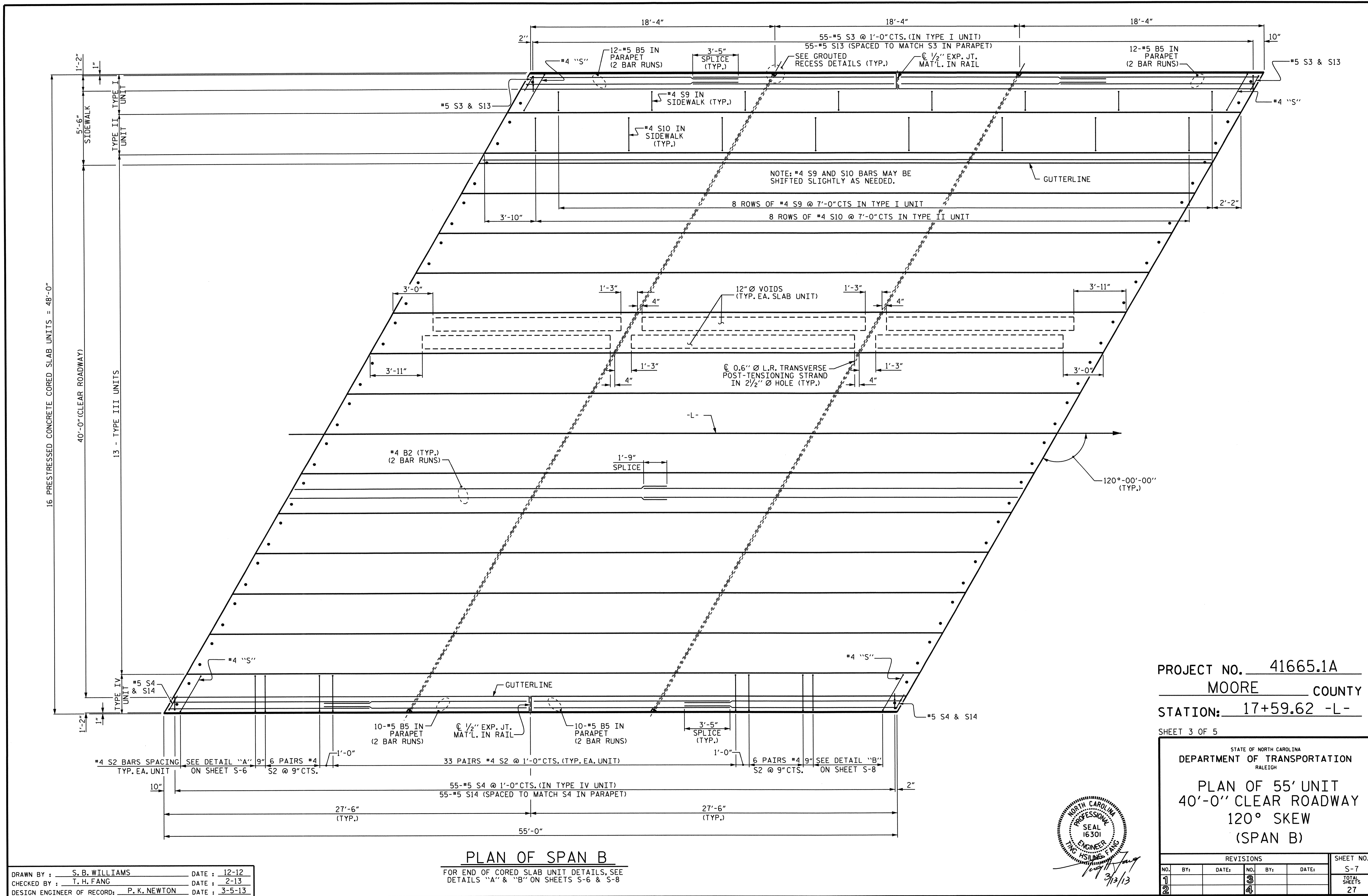


PROJECT NO. 41665.1A
 MOORE COUNTY
 STATION: 17+59.62 -L-

SHEET 1 OF 5
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 3'-0" X 1'-9"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT
 120° SKEW

ASSEMBLED BY : S. B. WILLIAMS	DATE : 1/4/13
CHECKED BY : T. H. FANG	DATE : 2/12/13
DRAWN BY : MAA	5/10
CHECKED BY : GM	5/10
ADDED	5/6/10
REV.	10/1/11
	MAA/GM

REVISIONS						SHEET NO. S-5
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 27
2			4			



PLAN OF SPAN B

FOR END OF CORED SLAB UNIT DETAILS, SEE DETAILS "A" & "B" ON SHEETS S-6 & S-8

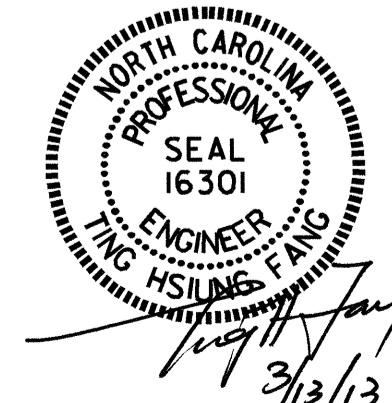
DRAWN BY : S. B. WILLIAMS DATE : 12-12
 CHECKED BY : T. H. FANG DATE : 2-13
 DESIGN ENGINEER OF RECORD : P. K. NEWTON DATE : 3-5-13

13-MAR-2013 09:18
 S:\DPG2\Ting\Div.projects\MooreBr55\Final plans\620055.sd.cs.dgn
 knewton

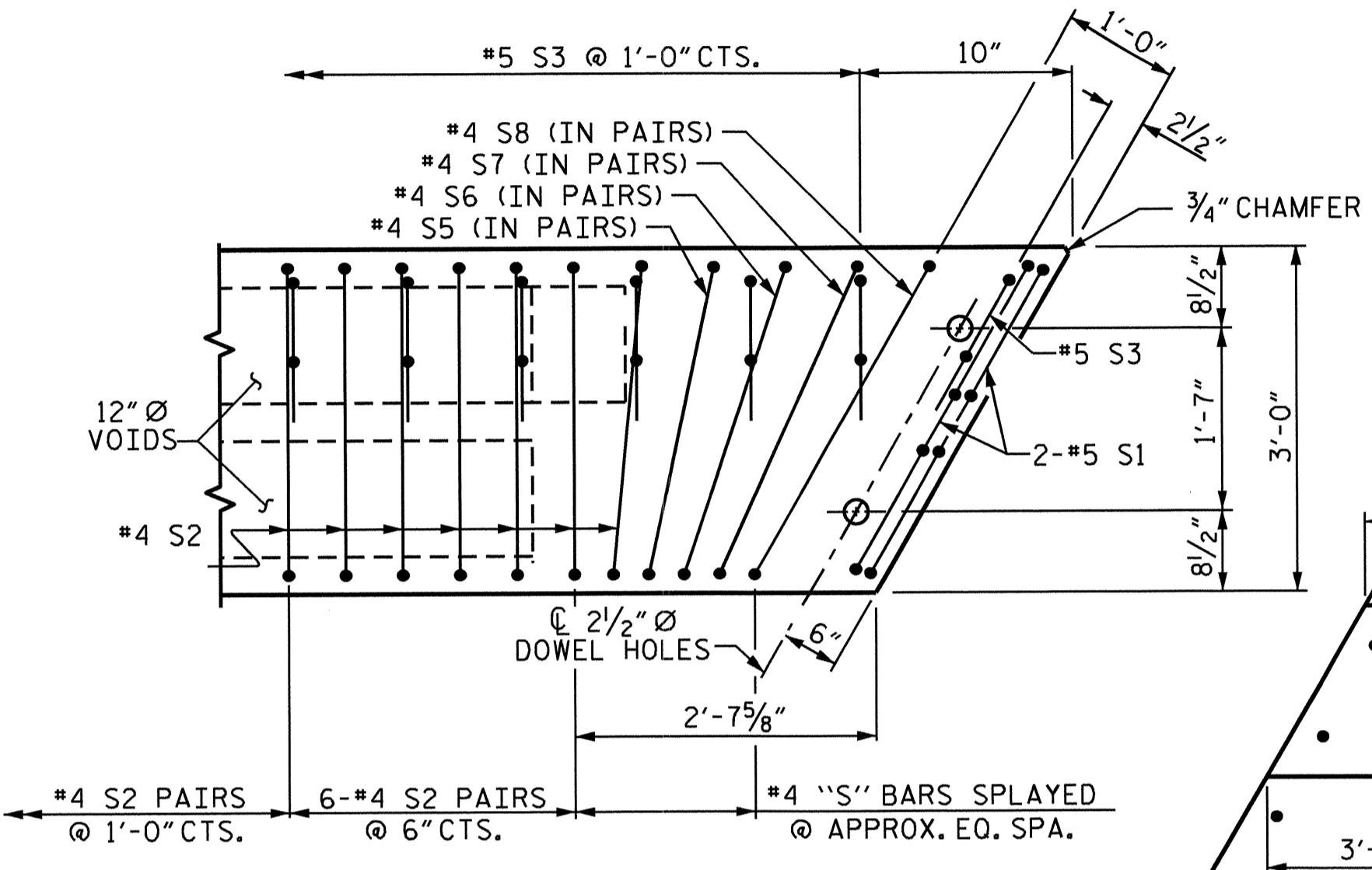
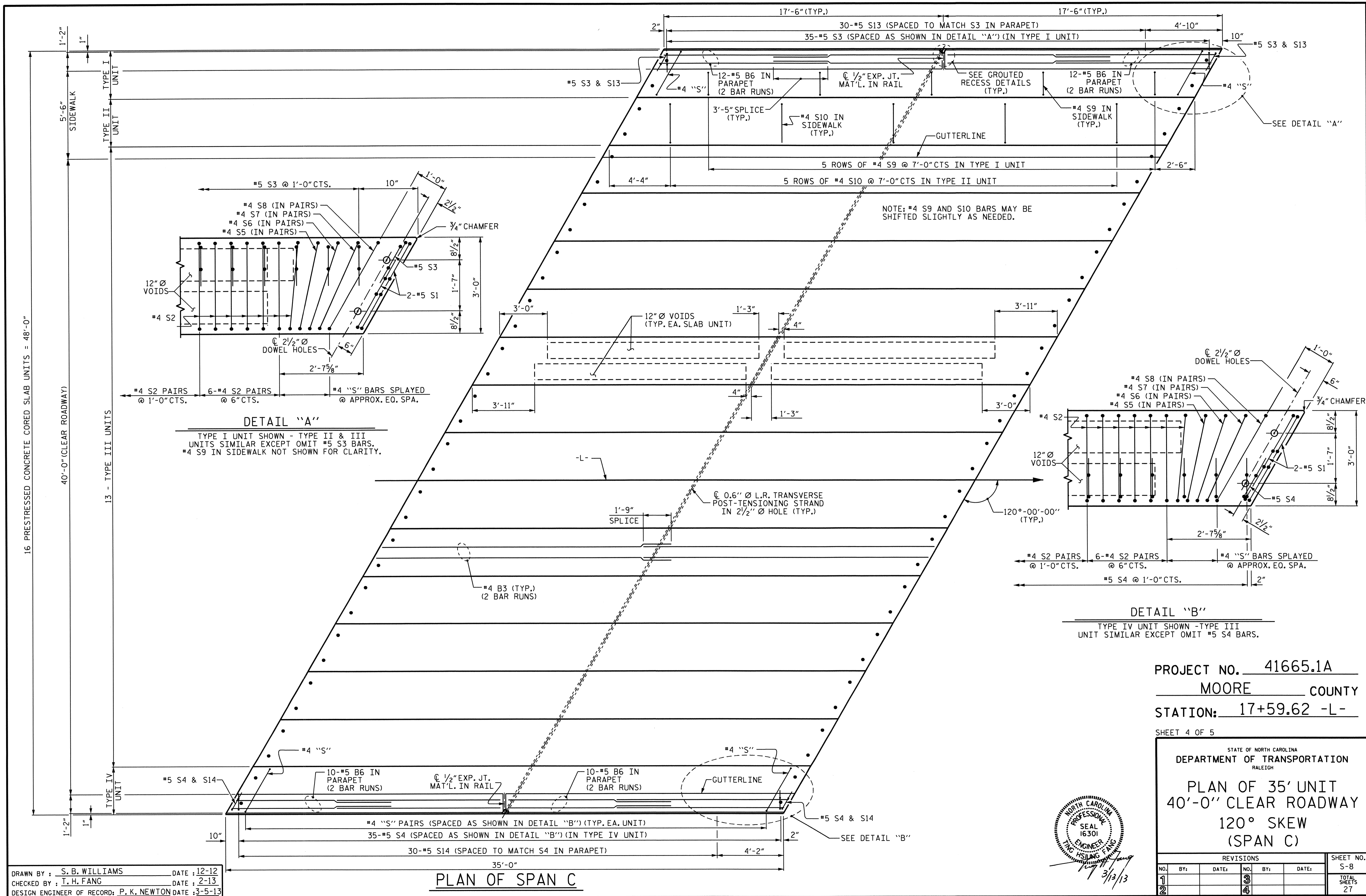
PROJECT NO. 41665.1A
 MOORE COUNTY
 STATION: 17+59.62 -L-

SHEET 3 OF 5

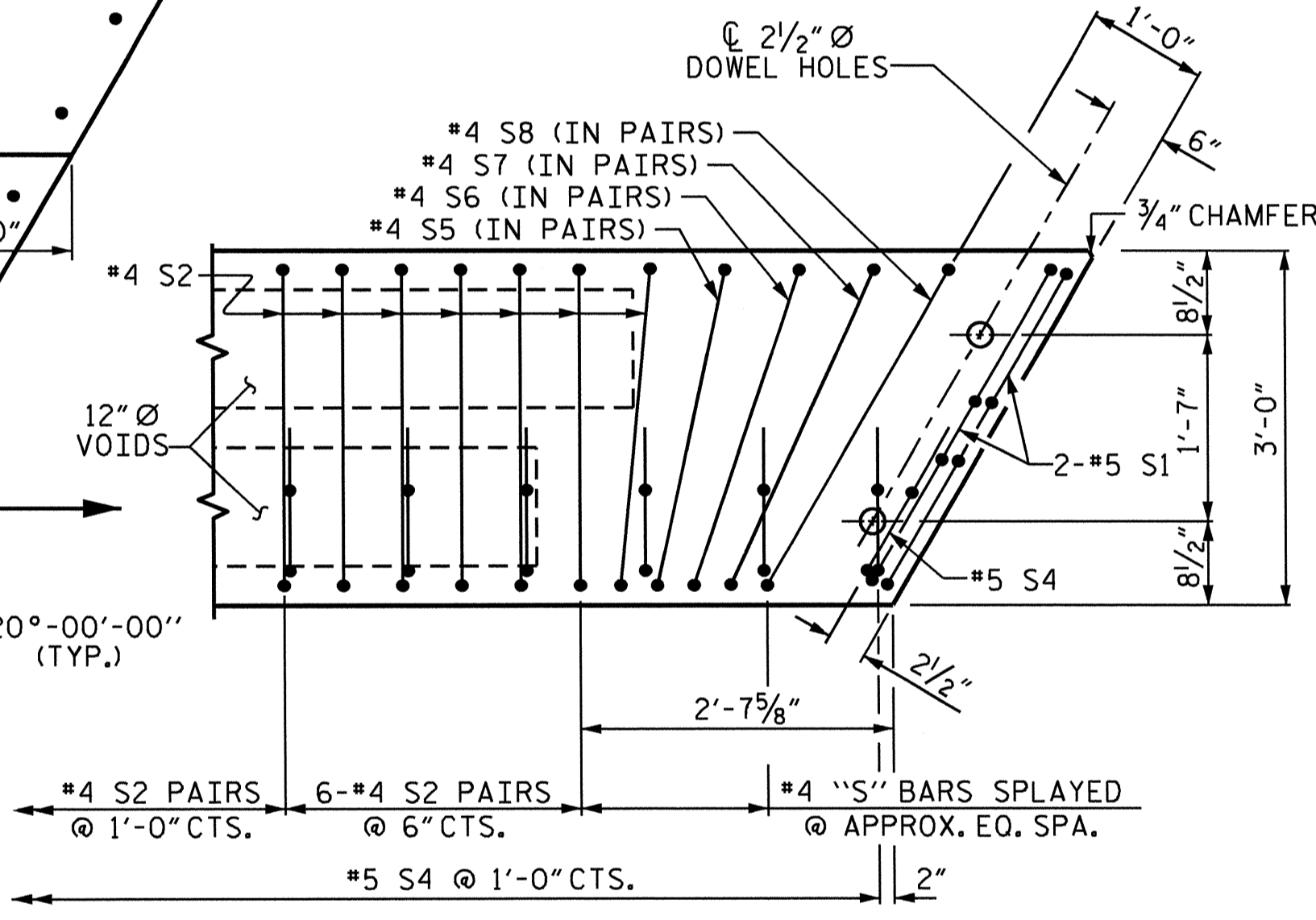
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 PLAN OF 55' UNIT
 40'-0" CLEAR ROADWAY
 120° SKEW
 (SPAN B)



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
1			3			S-7	
2			4			27	



DETAIL "A"
 TYPE I UNIT SHOWN - TYPE II & III
 UNITS SIMILAR EXCEPT OMIT #5 S3 BARS.
 #4 S9 IN SIDEWALK NOT SHOWN FOR CLARITY.



DETAIL "B"
 TYPE IV UNIT SHOWN - TYPE III
 UNIT SIMILAR EXCEPT OMIT #5 S4 BARS.

PLAN OF SPAN C

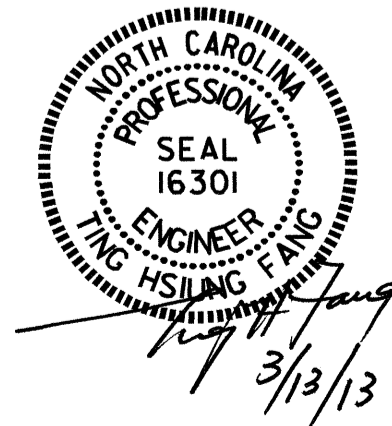
DRAWN BY: S. B. WILLIAMS DATE: 12-12
 CHECKED BY: T. H. FANG DATE: 2-13
 DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE: 3-5-13

13-MAR-2013 09:18
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 kpnewton

PROJECT NO. 41665.1A
 MOORE COUNTY
 STATION: 17+59.62 -L-

SHEET 4 OF 5

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8	
1			3			TOTAL SHEETS	
2			4			27	



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 PLAN OF 35' UNIT
 40'-0" CLEAR ROADWAY
 120° SKEW
 (SPAN C)

NOTES

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

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

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

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

THE BACKER RODS 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.

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

ALL REINFORCING STEEL IN PARAPETS, END POSTS, SIDEWALK AND CONCRETE WEARING SURFACE SHALL BE EPOXY COATED.

WHEN A CONCRETE WEARING SURFACE IS DETAILED ON THE CORED SLAB BRIDGE TYPICAL SECTION, THE TOP SURFACE OF THE CORED SLAB UNITS SHALL HAVE A 3/8" RAKED FINISH.

PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING PARAPETS AND SIDEWALK. THE COST OF THE REINFORCING STEEL CAST WITH THE CONCRETE WEARING SURFACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE WEARING SURFACE. FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

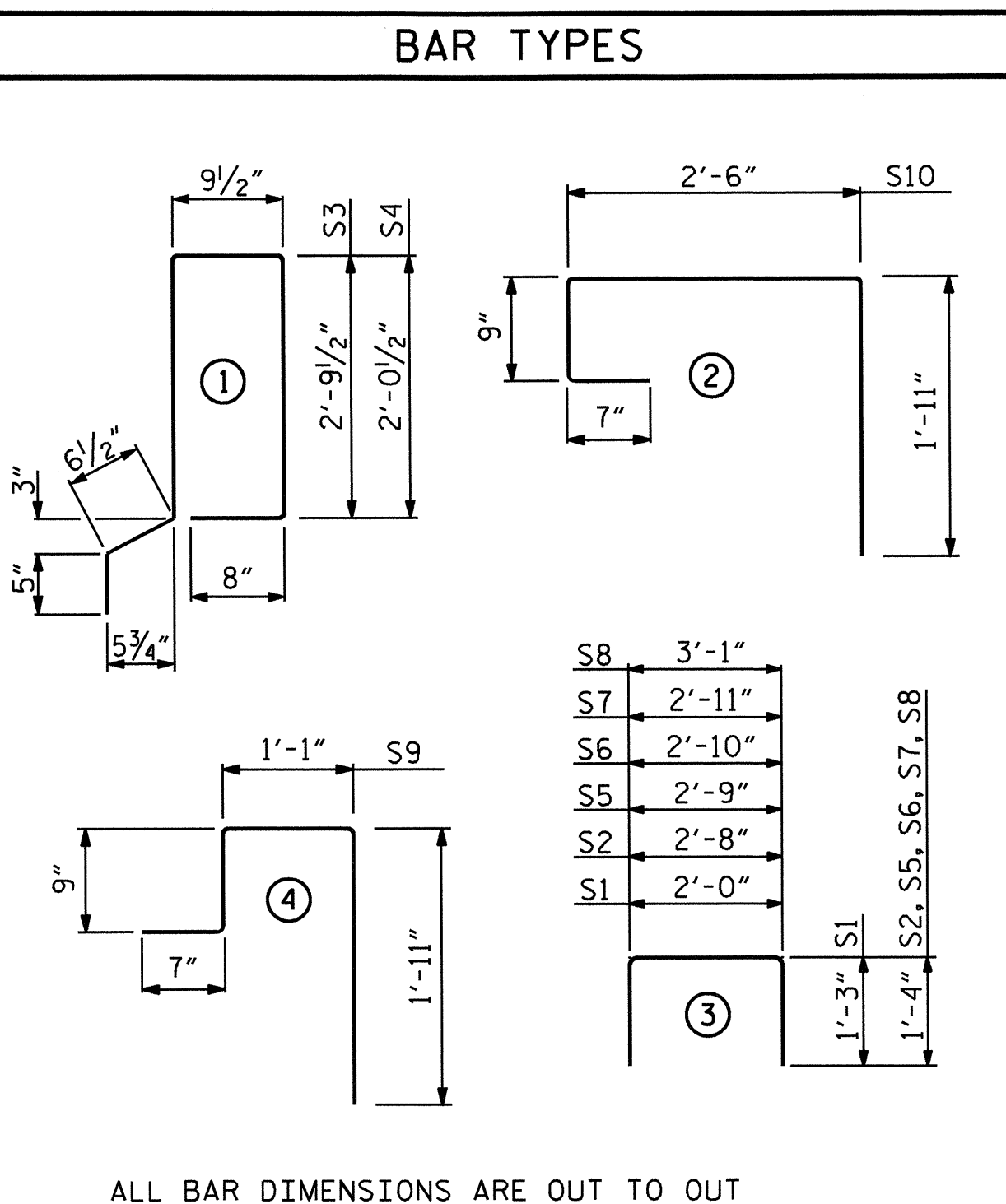
GROOVED CONTRACTION JOINTS 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPETS AND SIDEWALK IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT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

PAYMENT FOR SIDEWALK SHALL BE INCLUDED IN THE PAY ITEMS IN "TOTAL BILL OF MATERIAL" FOR CLASS AA CONCRETE AND EPOXY COATED REINFORCING STEEL.

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL FOR ONE CORED SLAB UNIT											
SPAN A (30' CORED SLAB UNIT)											
UNIT		TYPE I		TYPE II		TYPE III		TYPE IV			
BAR NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	
B1	2	#4	STR	29'-7"	40	29'-7"	40	29'-7"	40	29'-7"	40
S1	8	#5	3	4'-6"	38	4'-6"	38	4'-6"	38	4'-6"	38
S2	62	#4	3	5'-4"	221	5'-4"	221	5'-4"	221	5'-4"	221
*S3	32	#5	1	8'-0"	267						
*S4	32	#5	1						6'-6"	217	
S5	4	#4	3	5'-5"	14	5'-5"	14	5'-5"	14	5'-4"	14
S6	4	#4	3	5'-6"	15	5'-6"	15	5'-6"	15	5'-6"	15
S7	4	#4	3	5'-7"	15	5'-7"	15	5'-7"	15	5'-9"	15
S8	4	#4	3	5'-9"	15	5'-9"	15	5'-9"	15	5'-9"	15
*S9	5	#4	4	4'-4"	14						
*S10	5	#4	2			5'-9"	19				
REINFORCING STEEL		LBS.		358		358		358		358	
* EPOXY COATED REINFORCING STEEL		LBS.		281		19		217		217	
5000 P.S.I. CONCRETE		CU. YDS.		4.5		4.5		4.5		4.5	
0.6" Ø L.R. STRANDS		No.		10		10		10		10	
SPAN B (55' CORED SLAB UNIT)											
UNIT		TYPE I		TYPE II		TYPE III		TYPE IV			
BAR NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	
B2	4	#4	STR	28'-3"	75	28'-3"	75	28'-3"	75	28'-3"	75
S1	8	#5	3	4'-6"	38	4'-6"	38	4'-6"	38	4'-6"	38
S2	118	#4	3	5'-4"	420	5'-4"	420	5'-4"	420	5'-4"	420
*S3	57	#5	1	8'-0"	476						
*S4	57	#5	1						6'-6"	386	
S5	4	#4	3	5'-5"	14	5'-5"	14	5'-5"	14	5'-5"	14
S6	4	#4	3	5'-6"	15	5'-6"	15	5'-6"	15	5'-6"	15
S7	4	#4	3	5'-7"	15	5'-7"	15	5'-7"	15	5'-7"	15
S8	4	#4	3	5'-9"	15	5'-9"	15	5'-9"	15	5'-9"	15
*S9	8	#4	4	4'-4"	23						
*S10	8	#4	2			5'-9"	31				
REINFORCING STEEL		LBS.		592		592		592		592	
* EPOXY COATED REINFORCING STEEL		LBS.		499		31		386		386	
8500 P.S.I. CONCRETE		CU. YDS.		8.0		8.0		8.0		8.0	
0.6" Ø L.R. STRANDS		No.		22		22		22		22	
SPAN C (35' CORED SLAB UNIT)											
UNIT		TYPE I		TYPE II		TYPE III		TYPE IV			
BAR NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	
B3	4	#4	STR	18'-3"	49	18'-3"	49	18'-3"	49	18'-3"	49
S1	8	#5	3	4'-6"	38	4'-6"	38	4'-6"	38	4'-6"	38
S2	72	#4	3	5'-4"	257	5'-4"	257	5'-4"	257	5'-4"	257
*S3	37	#5	1	8'-0"	309						
*S4	37	#5	1						6'-6"	251	
S5	4	#4	3	5'-5"	14	5'-5"	14	5'-5"	14	5'-5"	14
S6	4	#4	3	5'-6"	15	5'-6"	15	5'-6"	15	5'-6"	15
S7	4	#4	3	5'-7"	15	5'-7"	15	5'-7"	15	5'-7"	15
S8	4	#4	3	5'-9"	15	5'-9"	15	5'-9"	15	5'-9"	15
*S9	6	#4	4	4'-4"	17						
*S10	6	#4	2			5'-9"	23				
REINFORCING STEEL		LBS.		403		403		403		403	
* EPOXY COATED REINFORCING STEEL		LBS.		326		23		251		251	
5000 P.S.I. CONCRETE		CU. YDS.		5.2		5.2		5.2		5.2	
0.6" Ø L.R. STRANDS		No.		10		10		10		10	



ALL BAR DIMENSIONS ARE OUT TO OUT

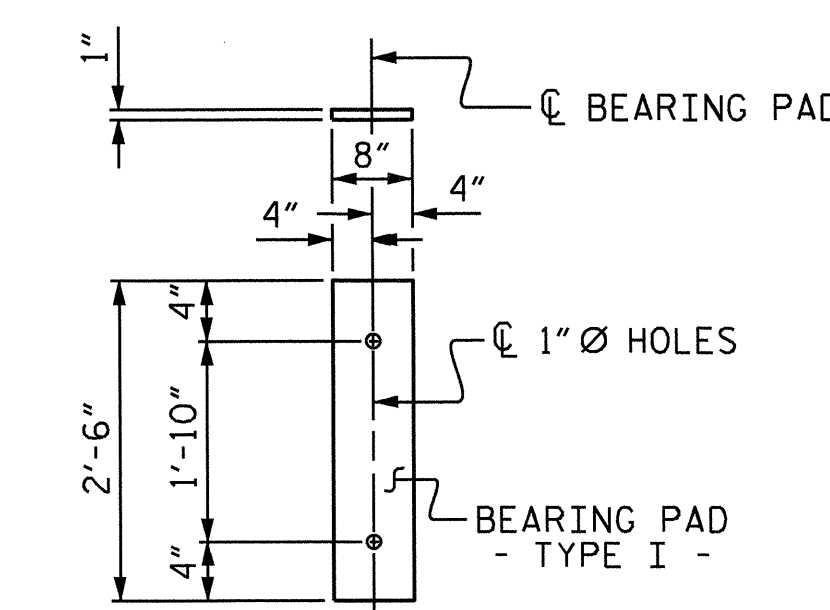
21" CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
SPAN A			
TYPE I	1	30'-0"	30'-0"
TYPE II	1	30'-0"	30'-0"
TYPE III	13	30'-0"	390'-0"
TYPE IV	1	30'-0"	30'-0"
TOTAL	16		480'-0"
SPAN B			
TYPE I	1	55'-0"	55'-0"
TYPE II	1	55'-0"	55'-0"
TYPE III	13	55'-0"	715'-0"
TYPE IV	1	55'-0"	55'-0"
TOTAL	16		880'-0"
SPAN C			
TYPE I	1	35'-0"	35'-0"
TYPE II	1	35'-0"	35'-0"
TYPE III	13	35'-0"	455'-0"
TYPE IV	1	35'-0"	35'-0"
TOTAL	16		560'-0"

GROOVING BRIDGE FLOORS	
APPROACH SLABS	1058 SQ.FT.
BRIDGE DECK	4533 SQ.FT.
TOTAL	5591 SQ.FT.

DEAD LOAD DEFLECTION AND CAMBER			
3'-0" x 1'-9" CORED SLAB	30' UNIT (SPAN A)	55' UNIT (SPAN B)	35' UNIT (SPAN C)
0.6" Ø L.R. STRAND			
CAMBER (SLAB ALONE IN PLACE)	1/4" ↑	3/8" ↑	9/16" ↑
DEFLECTION DUE TO PARAPETS & SIDEWALK	0" ↓	3/16" ↓	0" ↓
DEFLECTION DUE TO CONCRETE WEARING SURFACE	0" ↓	3/16" ↓	1/16" ↓
FINAL CAMBER	1/4" ↑	2 3/4" ↑	1/2" ↑

CONCRETE RELEASE STRENGTH	
UNIT	PSI
30' & 35' UNITS	4000
55' UNITS	5300

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



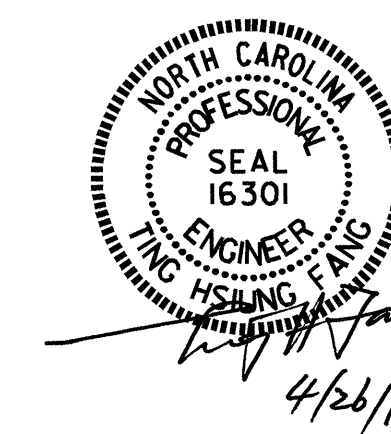
FIXED END (TYPE I - 96 REQ'D)

ELASTOMERIC BEARING DETAILS
ELASTOMER IN ALL BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI.

PROJECT NO. 41665.1A
MOORE COUNTY
STATION: 17+59.62 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		



DRAWN BY : S. B. WILLIAMS DATE : 2-13
CHECKED BY : T. H. FANG DATE : 2-13
DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE : 2-13

SHEET NO. S-9
TOTAL SHEETS 27

BILL OF MATERIAL

CONCRETE WEARING SURFACE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*R1	482	#3	STR	23'-7"	4274
*R2	400	#3	STR	25'-2"	3785
*R3	158	#4	STR	20'-0"	2111

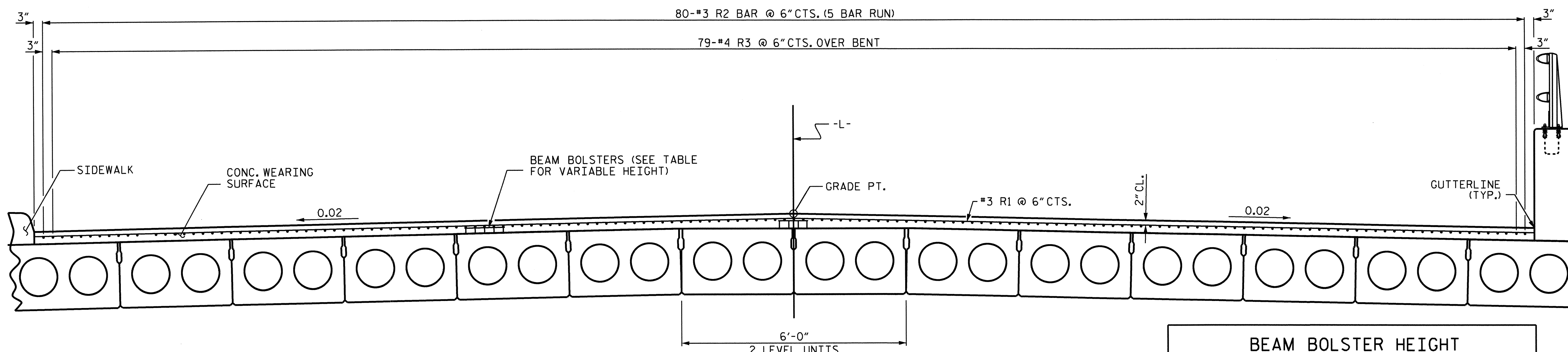
* EPOXY COATED REINF. STEEL = 10,170 LBS

CONCRETE WEARING SURFACE = 4,812 SO. FT.

FOR GROOVING BRIDGE FLOOR QUANTITY, SEE SHEET S-9.

SPLICE LENGTH CHART

BAR SIZE	EPOXY COATED
#3	1'-3"



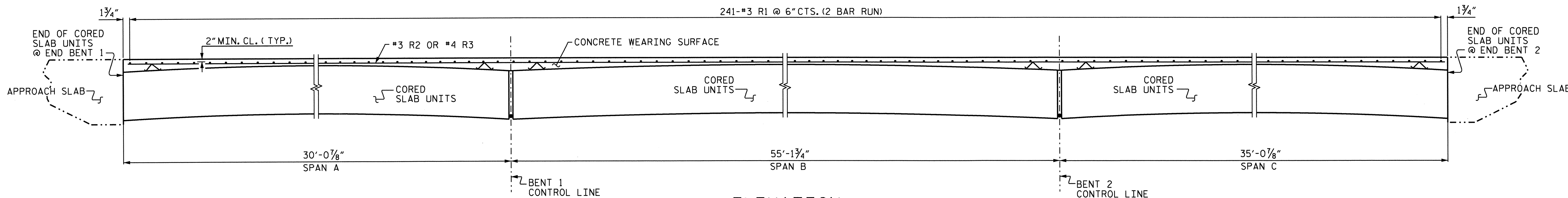
REINFORCING STEEL AND BEAM BOLSTER HEIGHTS

BEAM AND SLAB BOLSTER HEIGHTS BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATION AND VARY BETWEEN ϕ BEARING AND MID-SPAN FOR ALL SPANS.

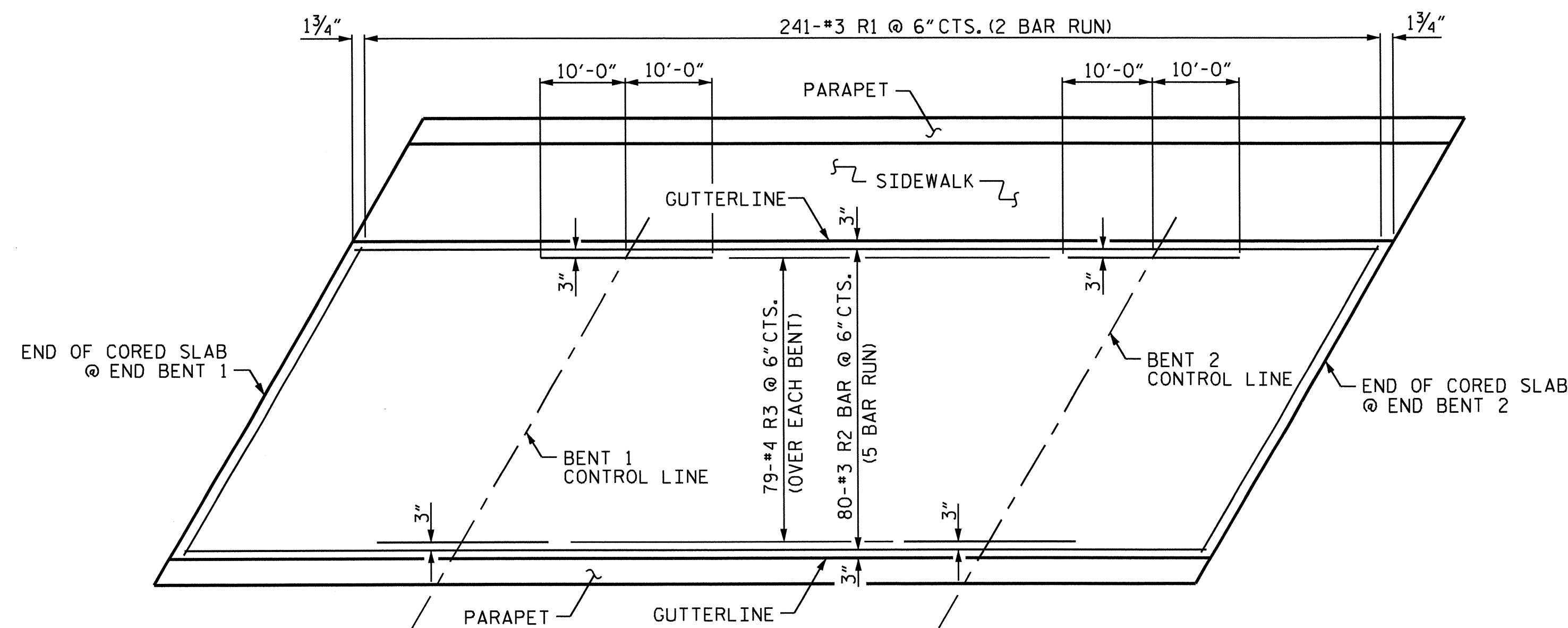
BEAM BOLSTER HEIGHT

SPAN	AT ϕ BEARINGS		AT MID-SPAN	
	GUTTERS	GRADE PT.	GUTTERS	GRADE PT.
A	3 1/2"	4 1/4"	3 1/4"	4"
B	3 1/2"	4 1/4"	3/4"*	1 1/2"
C	3 1/2"	4 1/4"	3"	3 3/4"

** USE SLAB BOLSTER



ELEVATION



PLAN

SHOWING CONTINUOUS CONCRETE OVERLAY OVER INTERIOR BENTS

NOTES:

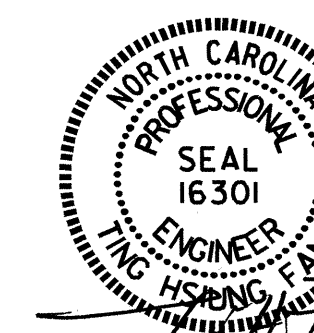
PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE PARAPETS AND SIDEWALK. THE COST OF THE REINFORCING STEEL CAST WITH THE CONCRETE WEARING SURFACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE WEARING SURFACE. FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

ALL REINFORCING STEEL FOR THE CONCRETE WEARING SURFACE SHALL BE EPOXY COATED.

PROJECT NO. 41665.1A
MOORE COUNTY
 STATION: 17+59.62 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE

CONCRETE WEARING SURFACE DETAILS



DRAWN BY: S. B. WILLIAMS DATE: 2-22-13
 CHECKED BY: T. H. FANG DATE: 2-25-13
 DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE: 3-5-13

13-MAR-2013 09:18
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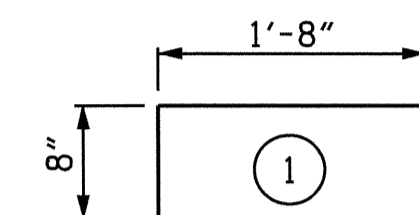
REVISIONS						SHEET NO. S-10
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 27
2			4			

BILL OF MATERIAL

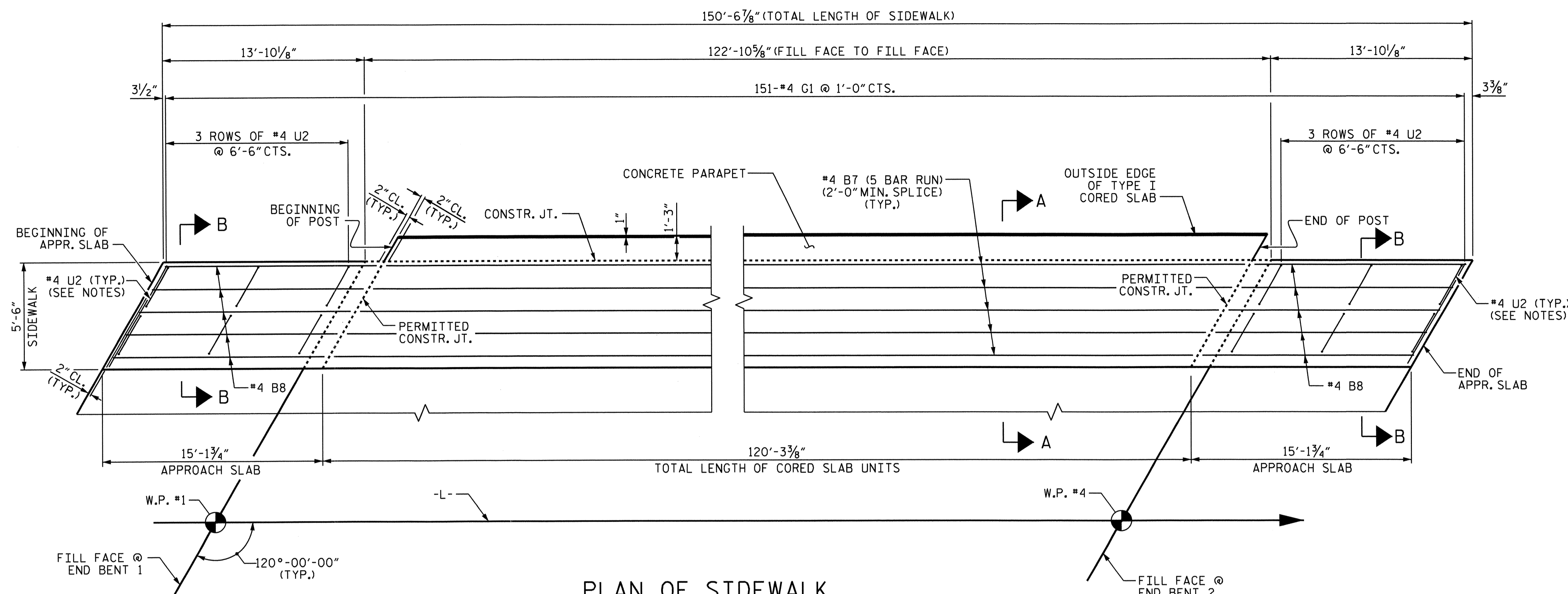
SIDEWALK						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
* B7	25	#4	STR	25'-7"	427	
* B8	10	#4	STR	14'-9"	99	
* G1	151	#4	STR	5'-9"	580	
* U2	12	#4	1	3'-0"	24	

* EPOXY COATED REINF. STEEL 1,130 LBS
 CLASS AA CONCRETE 30.1 C. Y.

BAR TYPE



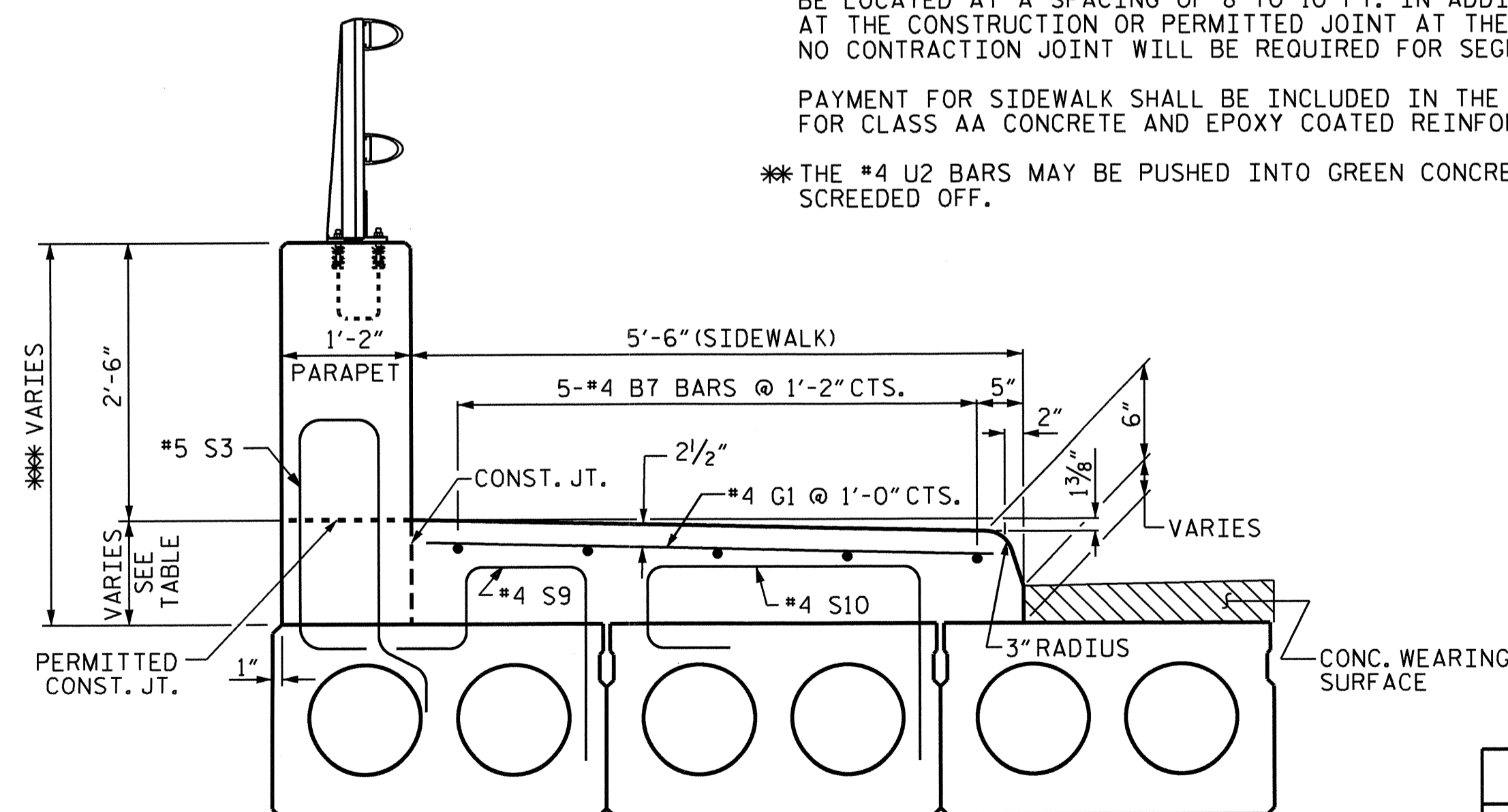
BAR DIMENSIONS ARE OUT TO OUT



PLAN OF SIDEWALK

NOTES:

- ALL REINFORCING STEEL IN THE SIDEWALK SHALL BE EPOXY COATED.
- GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE SIDEWALK IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS, EXCEPT THAT THE CONTRACTION JOINTS SHALL BE ORIENTED ALONG THE SKEW. THE CONTRACTION JOINT SHALL BE LOCATED AT A SPACING OF 8 TO 10 FT. IN ADDITION, A CONTRACTION JOINT SHALL BE LOCATED AT THE CONSTRUCTION OR PERMITTED JOINT AT THE END BENTS AND ALONG THE BENT CONTROL LINES. NO CONTRACTION JOINT WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.
- PAYMENT FOR SIDEWALK SHALL BE INCLUDED IN THE PAY ITEMS IN "TOTAL OF BILL OF MATERIAL" FOR CLASS AA CONCRETE AND EPOXY COATED REINFORCING STEEL.
- **THE #4 U2 BARS MAY BE PUSHED INTO GREEN CONCRETE AFTER APPROACH SLAB HAS BEEN SCREEDED OFF.

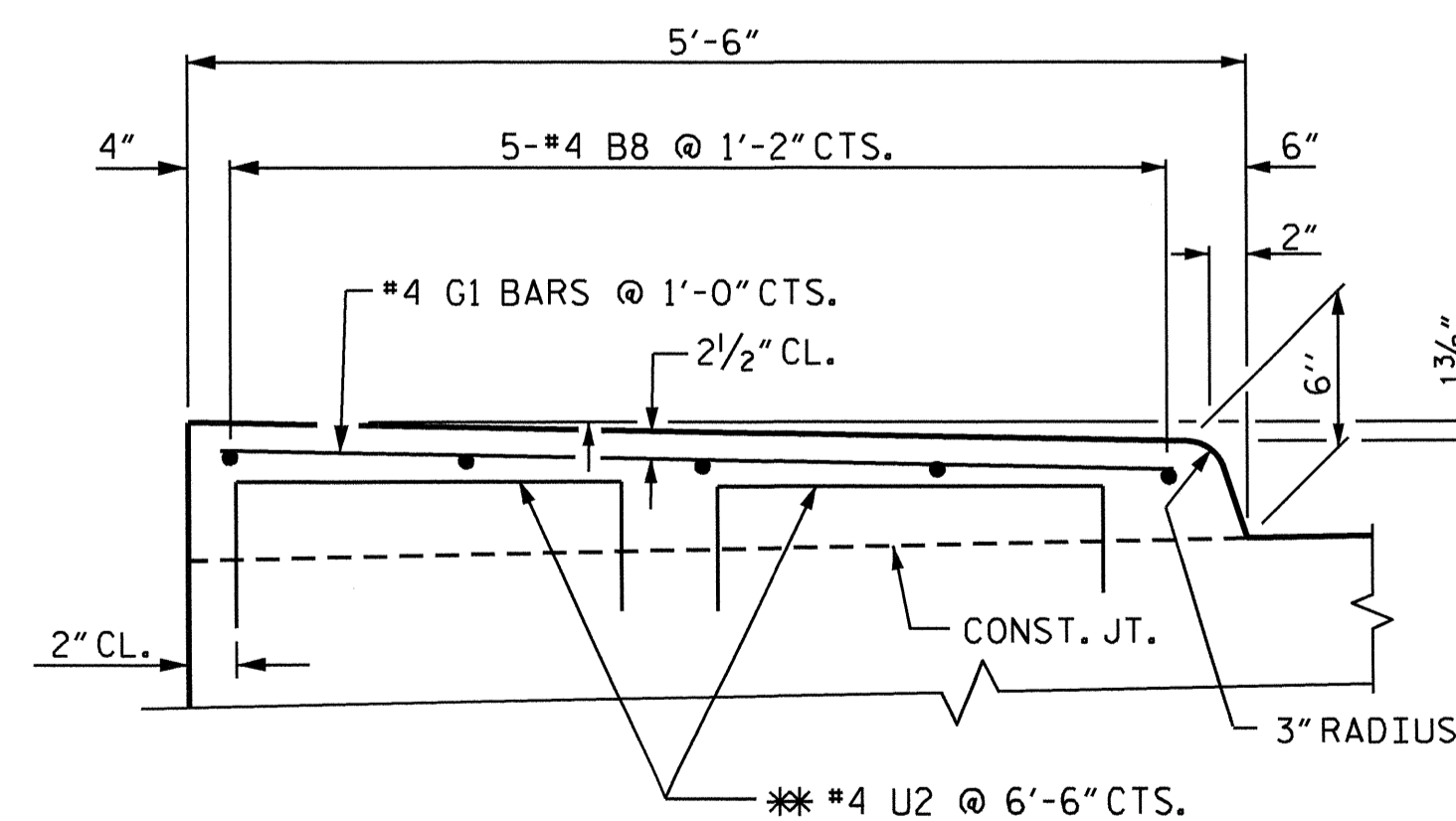


SECTION A-A

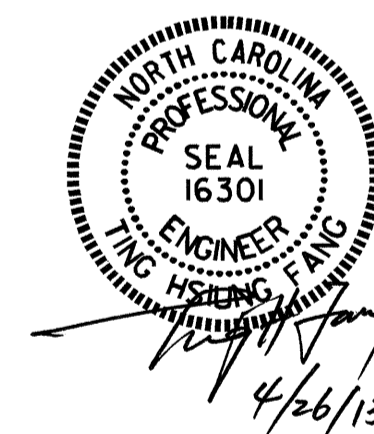
SECTION THRU PARAPET AND SIDEWALK
 **SEE PARAPET HEIGHT TABLE ON SHEET S-15

SIDEWALK HEIGHT TABLE		
SPAN	@ C BEARINGS	@ MID-SPAN
A	1'-3 1/2"	1'-3 1/4"
B	1'-3 1/2"	1'-0 3/4"
C	1'-3 1/2"	1'-3"

SIDEWALK HEIGHT IS BASED ON PREDICTED FINAL CAMBER & THEORETICAL GRADE LINE ELEVATIONS AND VARIES BETWEEN C BEARING AND MID-SPAN FOR ALL SPANS.



SECTION B-B
 ON APPROACH SLABS



PROJECT NO. 41665.1A
 MOORE COUNTY
 STATION: 17+59.62 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 SIDEWALK DETAILS

DRAWN BY: S. B. WILLIAMS DATE: 2-13
 CHECKED BY: T. H. FANG DATE: 2-13
 DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE: 3-5-13

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS 27
2			4			

NOTES

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

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6. MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY. MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

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

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

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

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

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

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

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

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

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

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

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

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

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

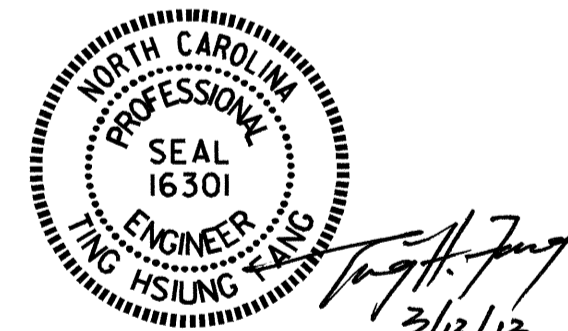
SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

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

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

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

PAY LENGTH = 224.2 LIN. FT.



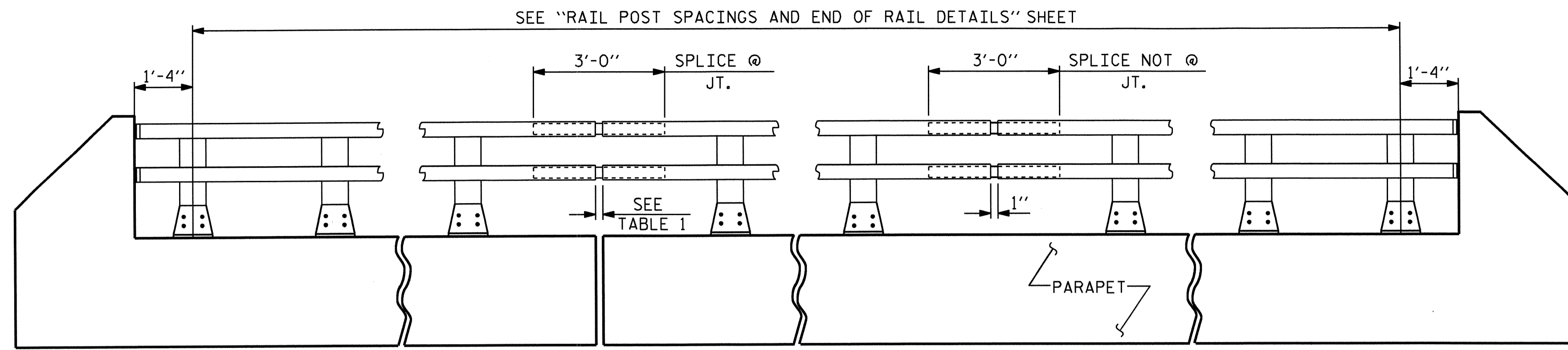
PROJECT NO. 41665.1A
MOORE COUNTY
 STATION: 17+59.62 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
2 BAR METAL RAIL

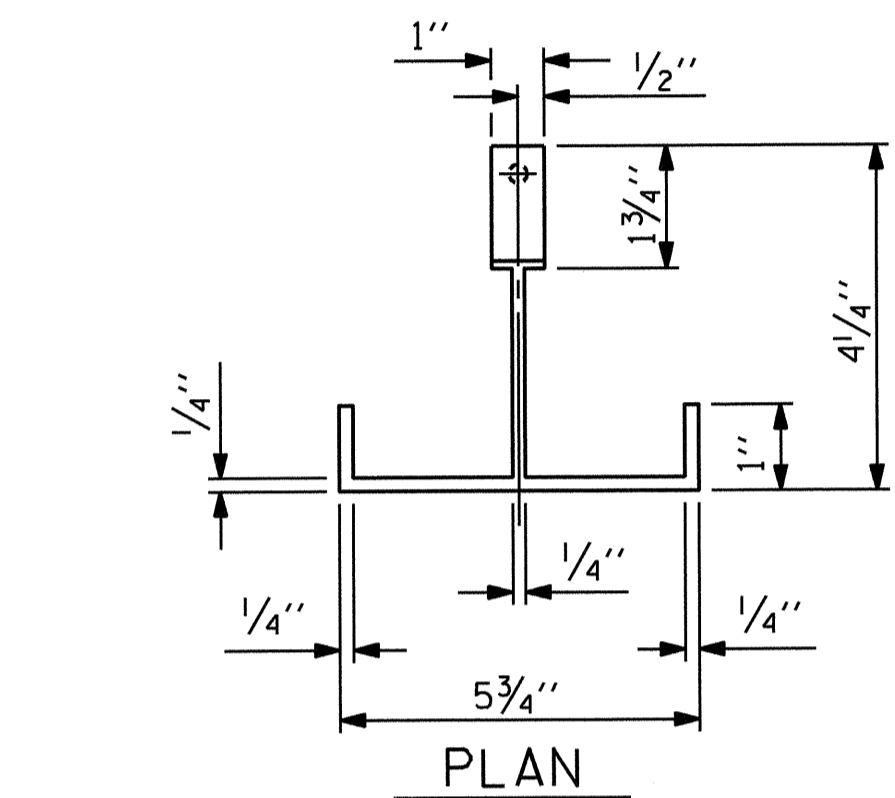
REVISIONS						SHEET NO. S-12
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 27
2			4			



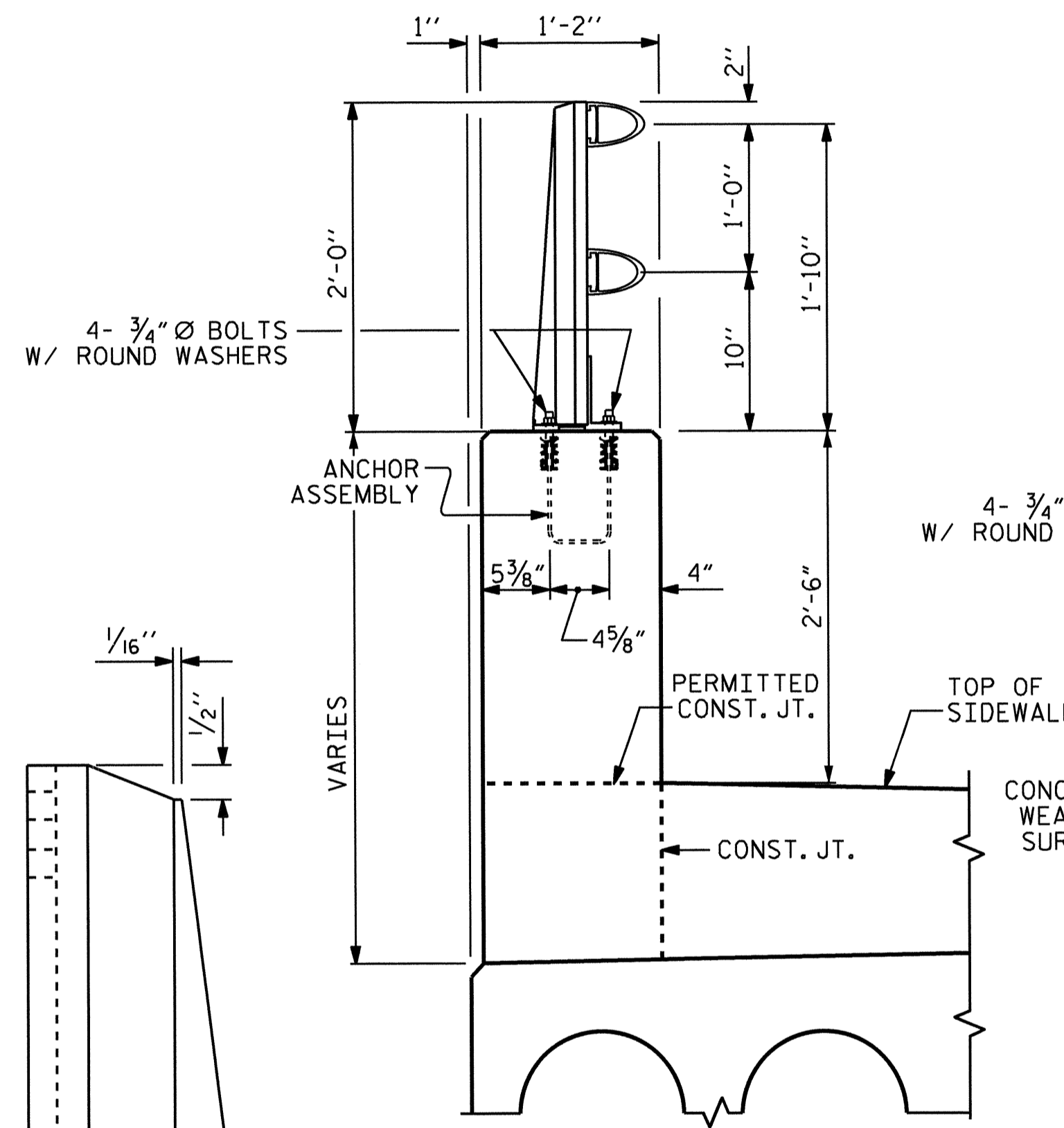
ELEVATION

NOTE: FOR ATTACHMENT OF METAL RAIL TO END POST, SEE SHEET S-13

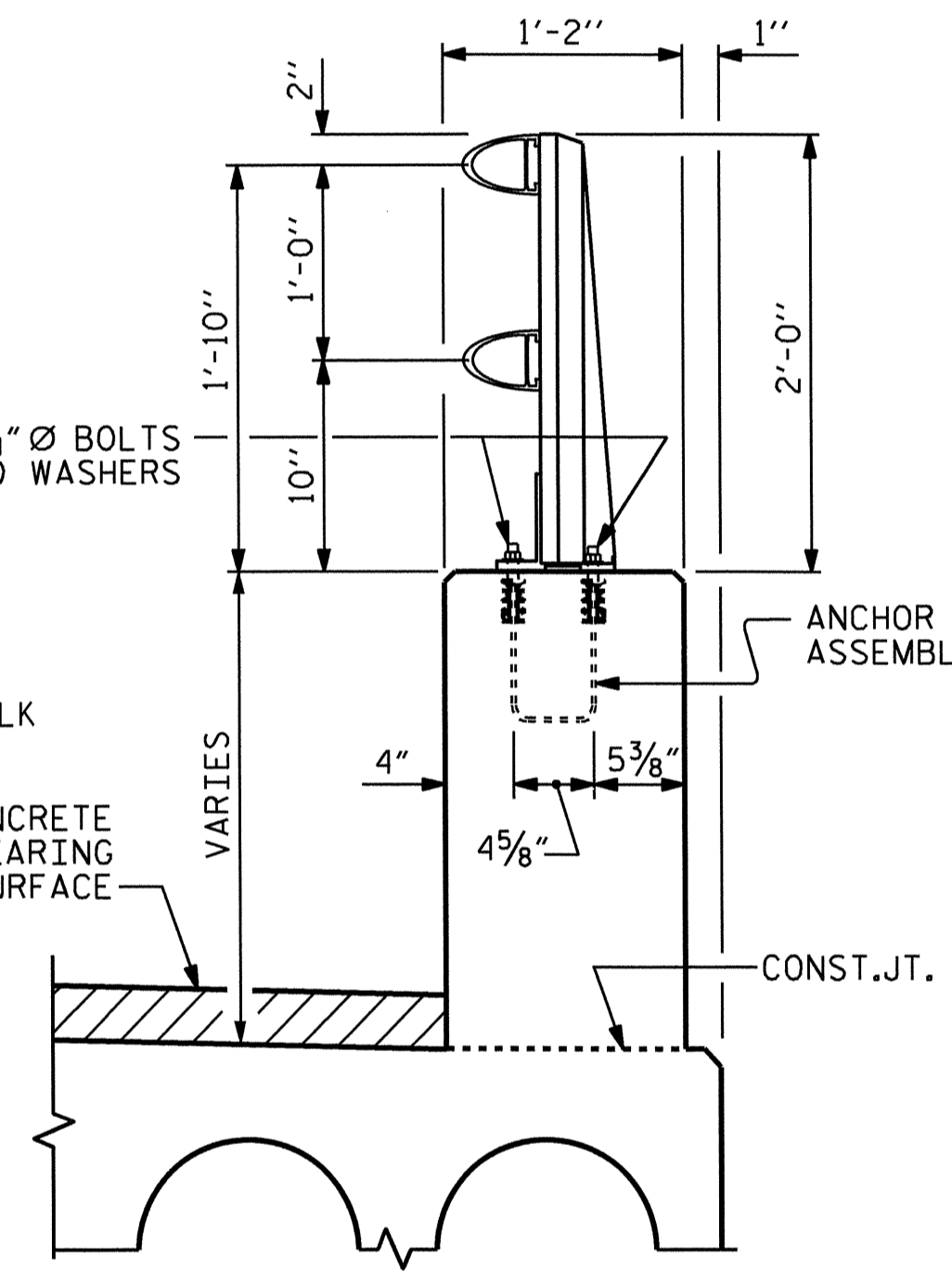
CL JT. @	RAIL OPENING
BENT 1	1 1/2"
BENT 2	1 1/2"



PLAN



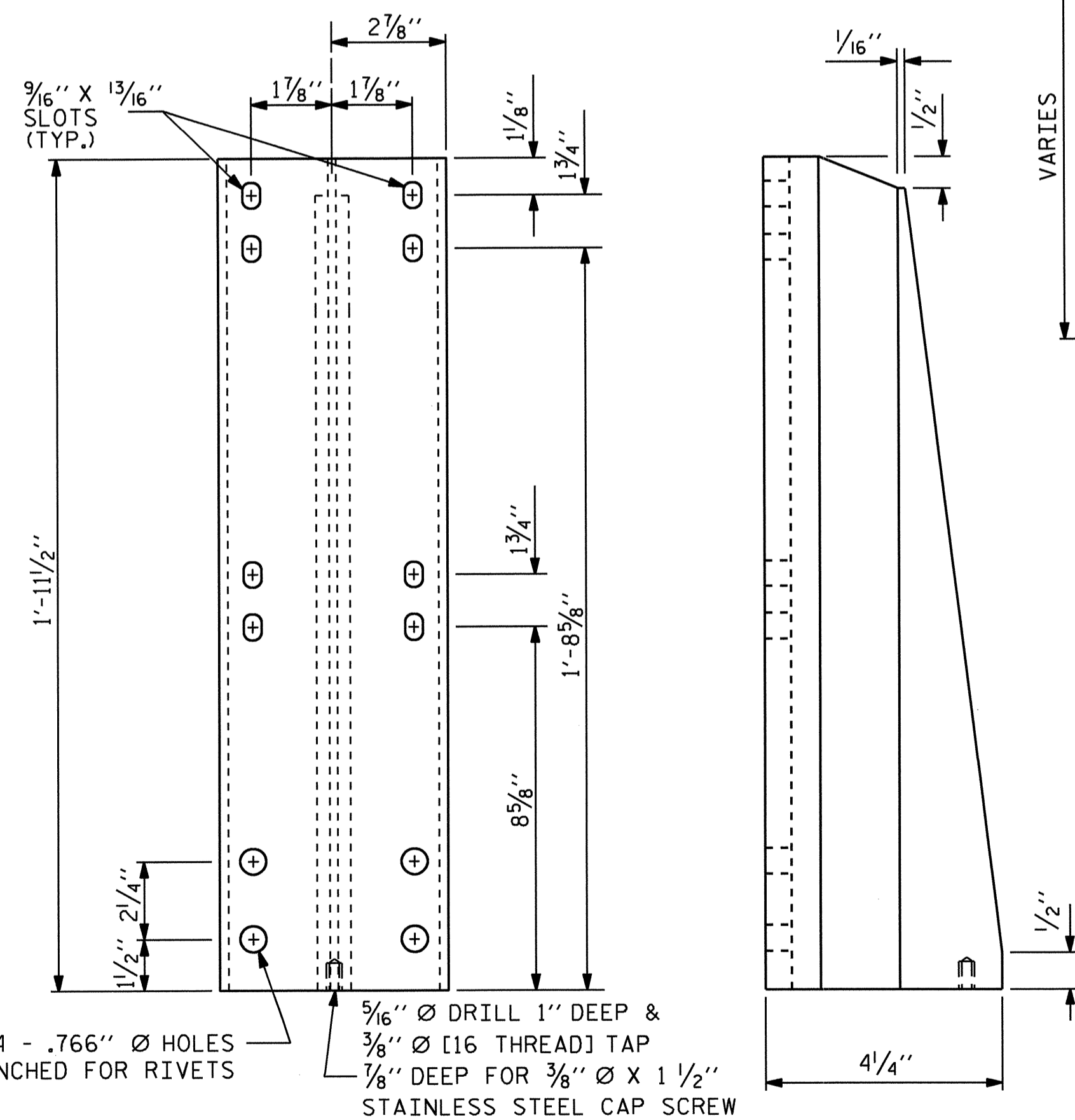
LEFT SIDE



RIGHT SIDE

SECTION THRU SIDEWALK AND PARAPET

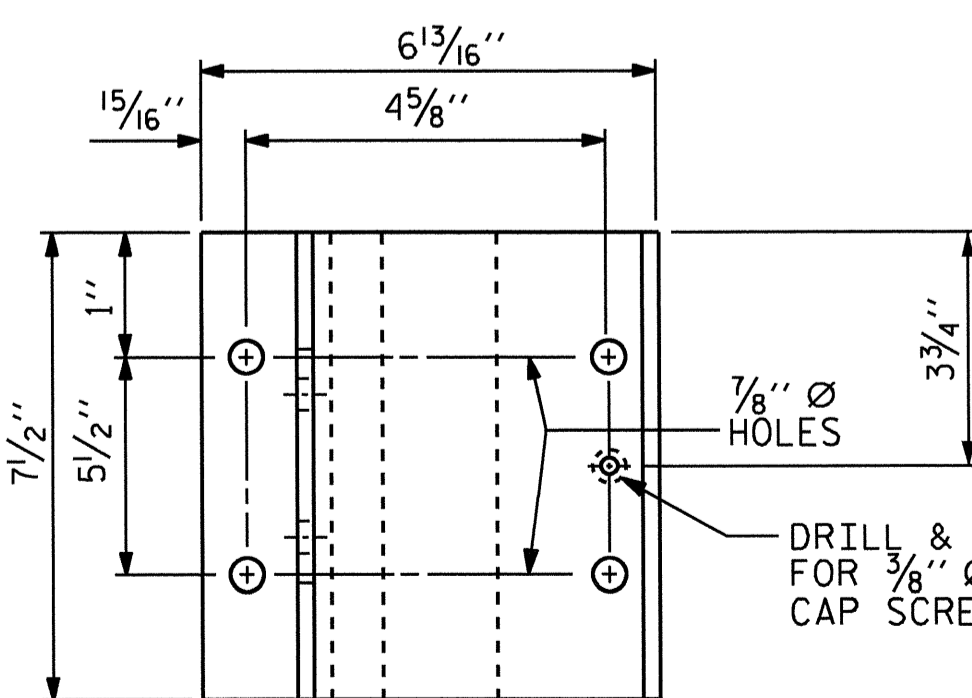
FOR PARAPET HEIGHT, SEE TABLES ON SHEETS S-15 & S-16



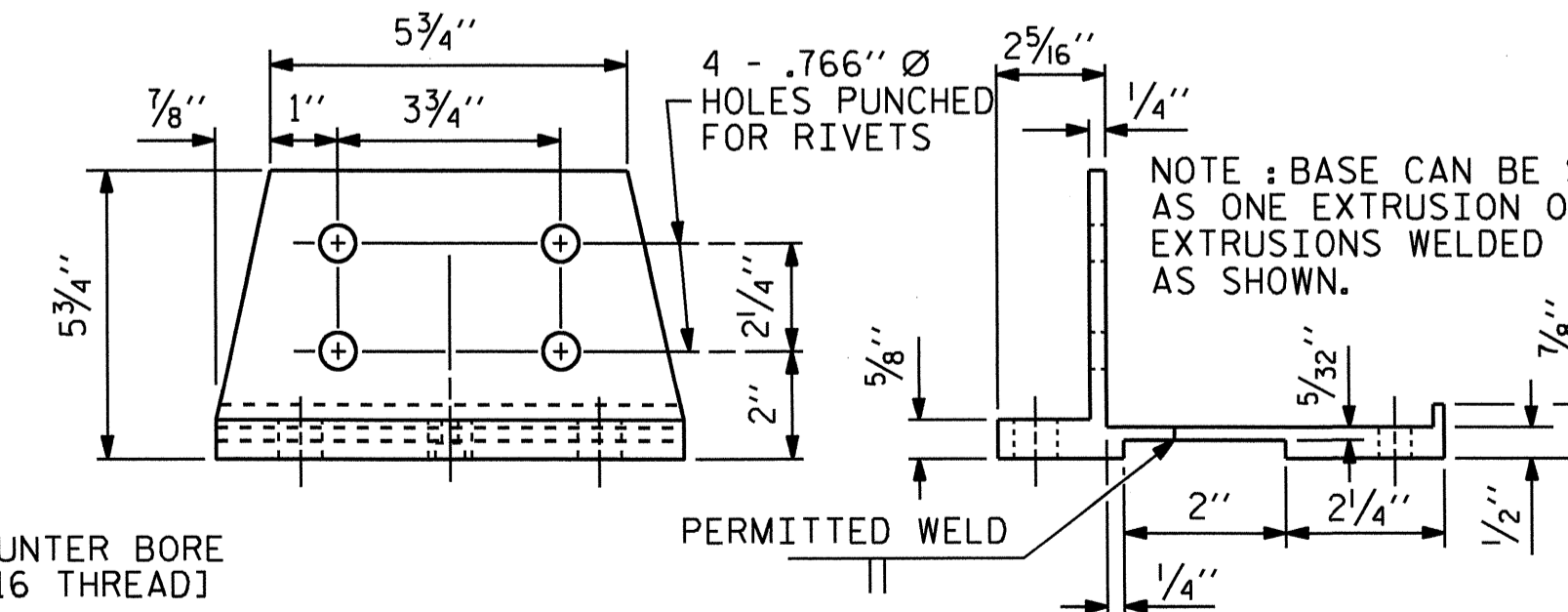
FRONT ELEVATION

SIDE ELEVATION

DETAILS OF POST



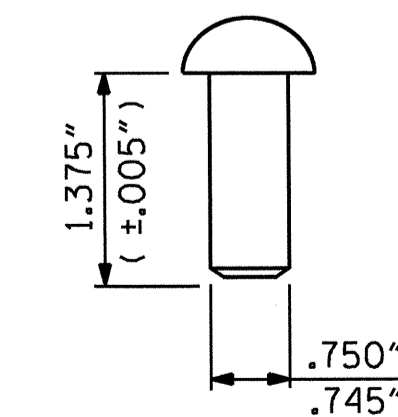
PLAN



FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS



RIVET DETAIL

ASSEMBLED BY: S. B. WILLIAMS DATE: 1-16-13
 CHECKED BY: T. H. FANG DATE: 2-13-13
 DRAWN BY: EEM 6/94
 CHECKED BY: RGW 6/94

REV. 5/7/03R RWW/JTE
 REV. 5/1/06 TLA/GM
 REV. 10/1/11 MAA/GM

NOTES

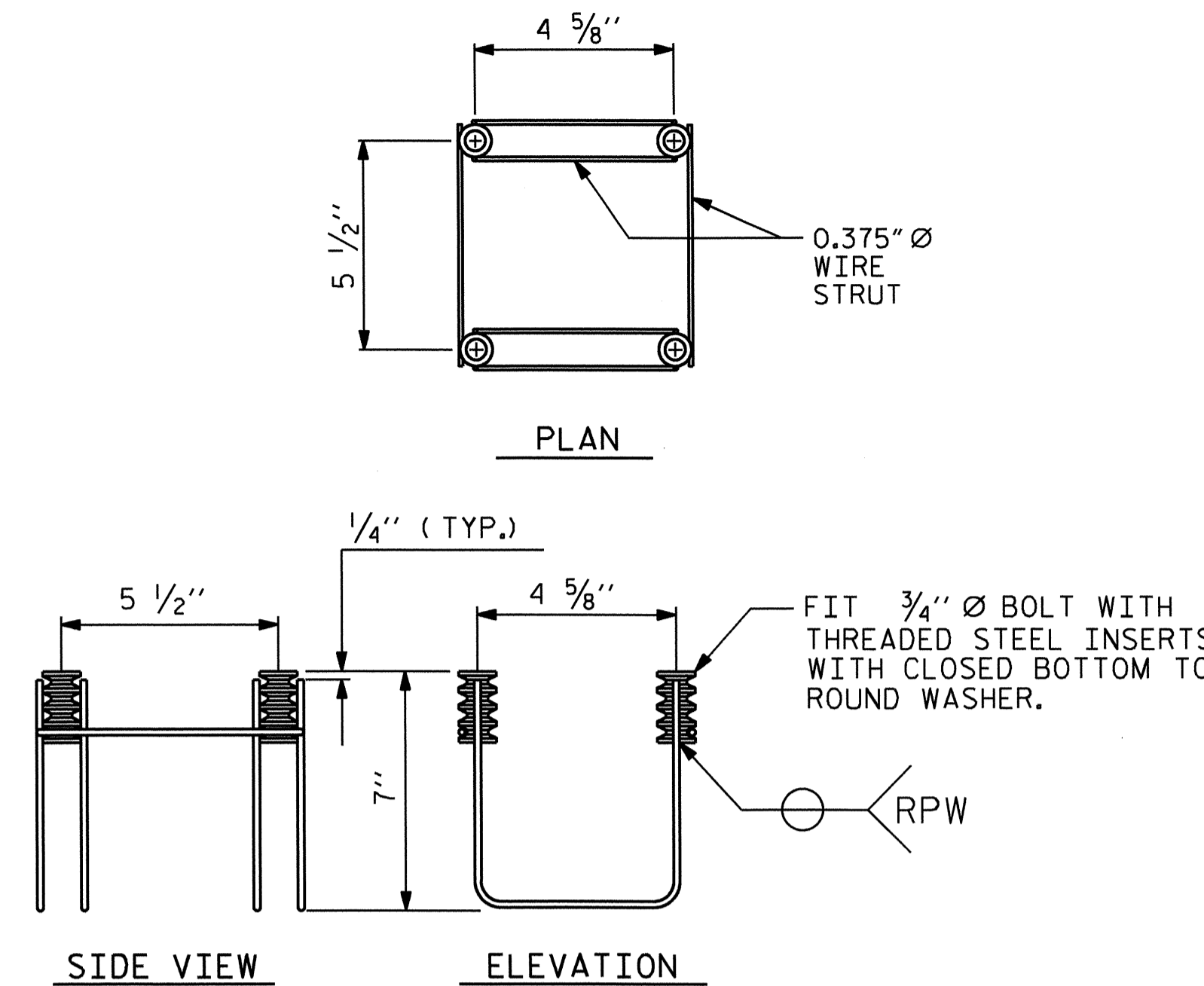
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 2 1/2" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
- E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
- F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

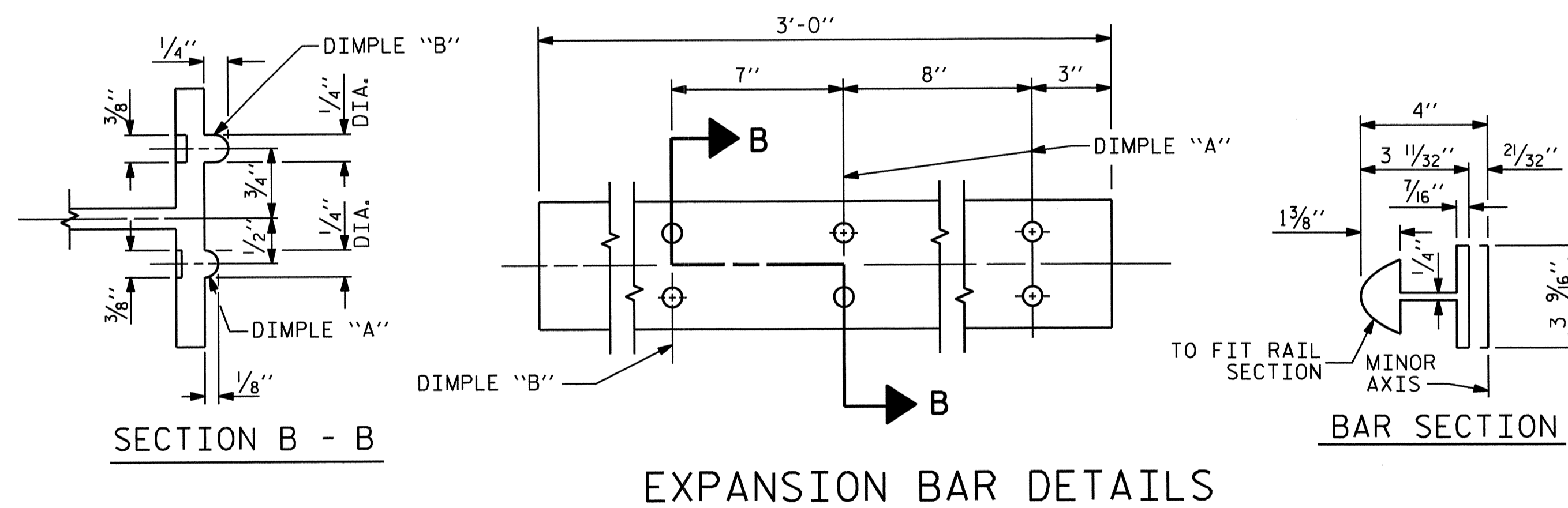
THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

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

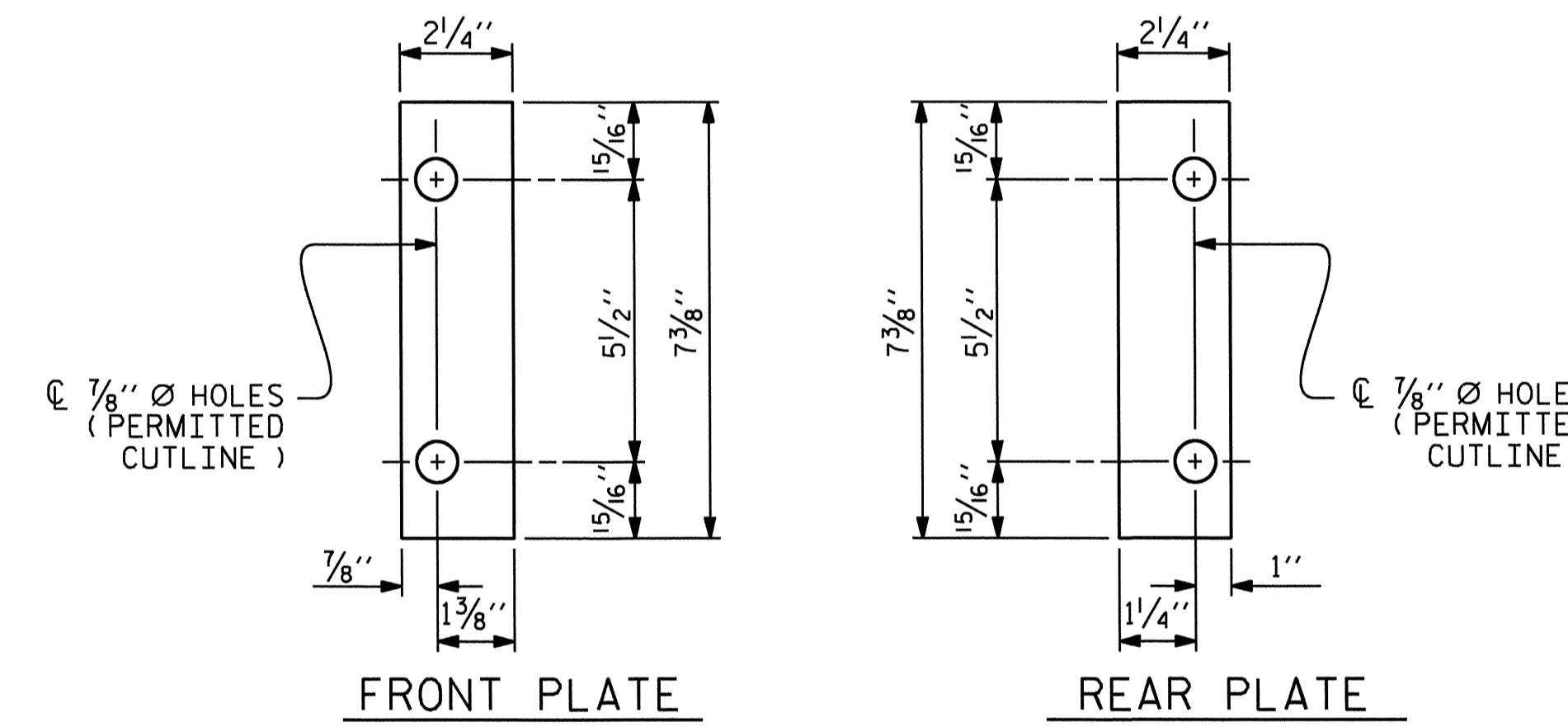


4-BOLT METAL RAIL ANCHOR ASSEMBLY

(40 ASSEMBLIES REQUIRED)

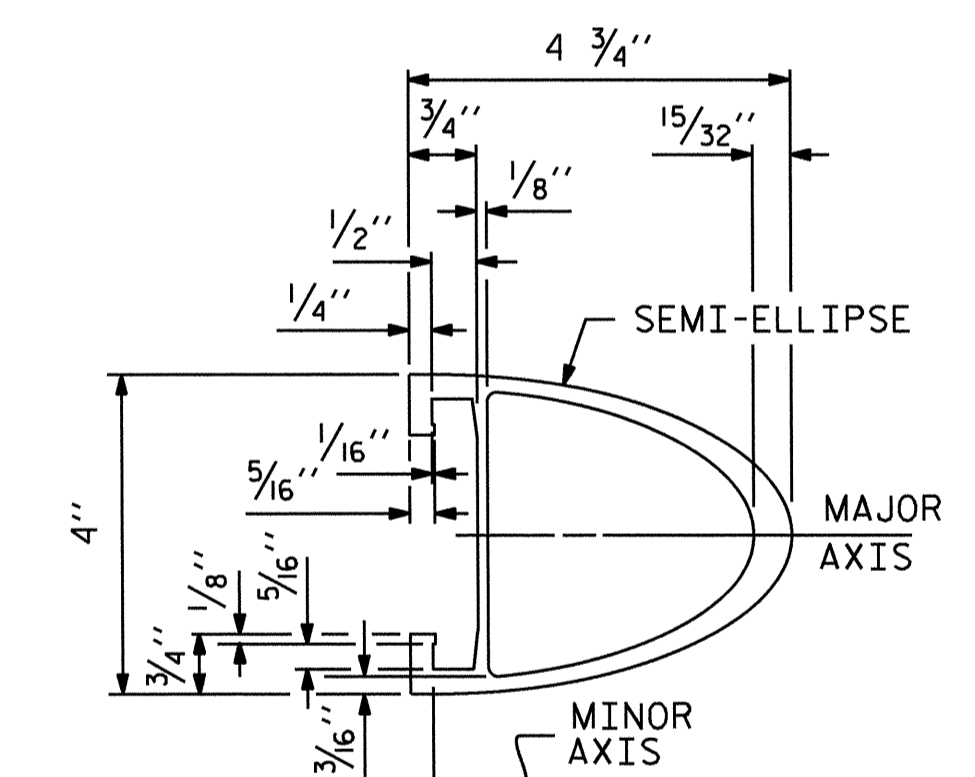


EXPANSION BAR DETAILS

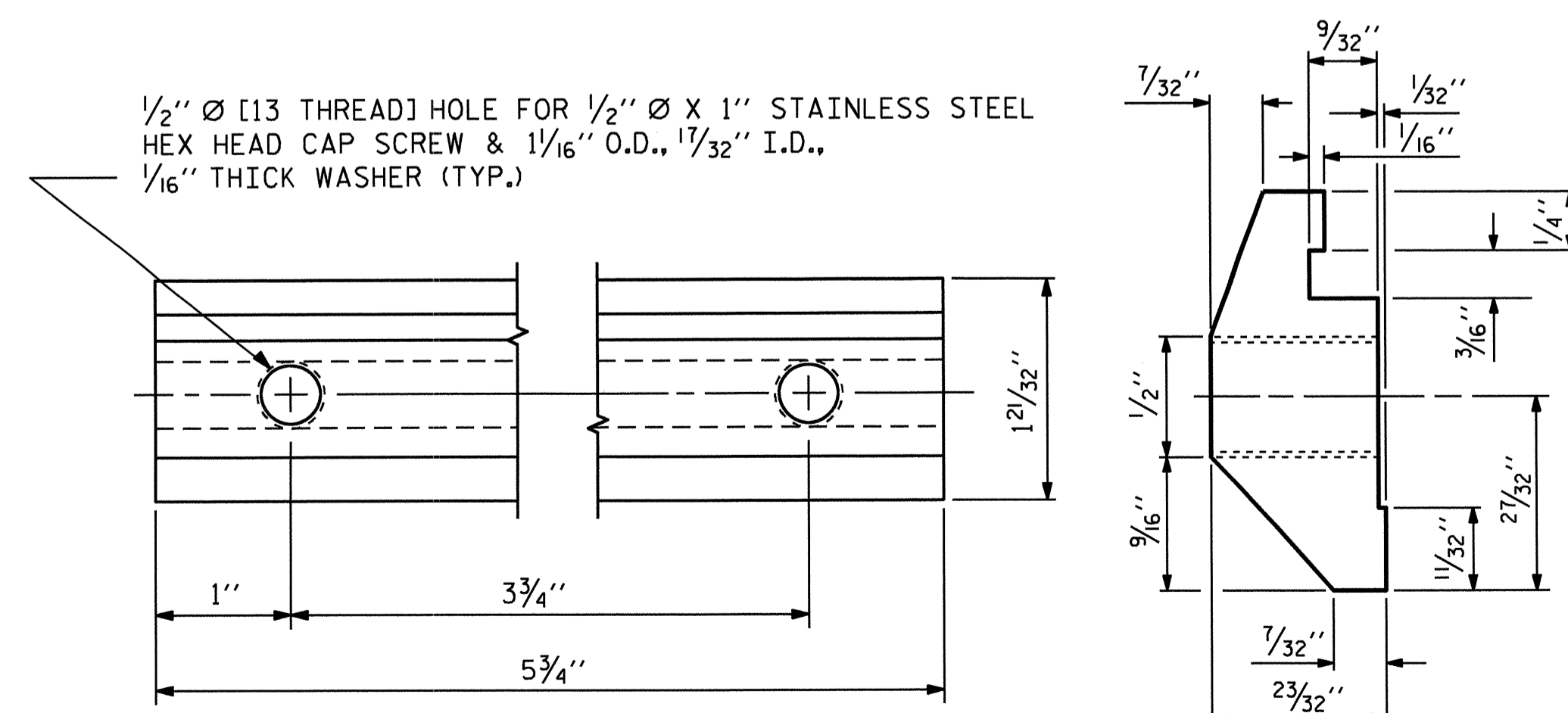


SHIM DETAILS

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

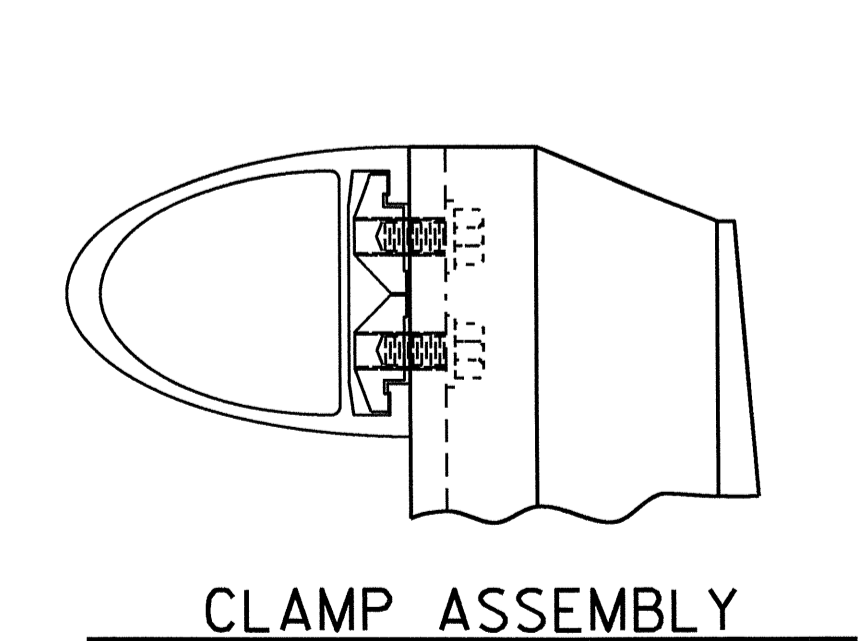


RAIL SECTION

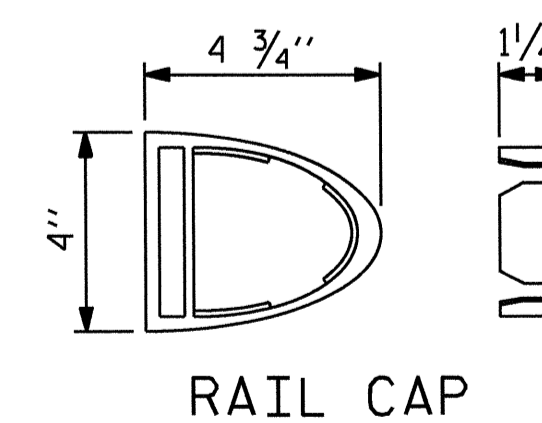


CLAMP BAR DETAIL

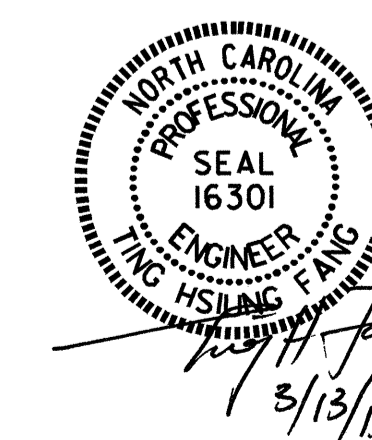
(4 REQUIRED PER POST)



CLAMP ASSEMBLY



RAIL CAP

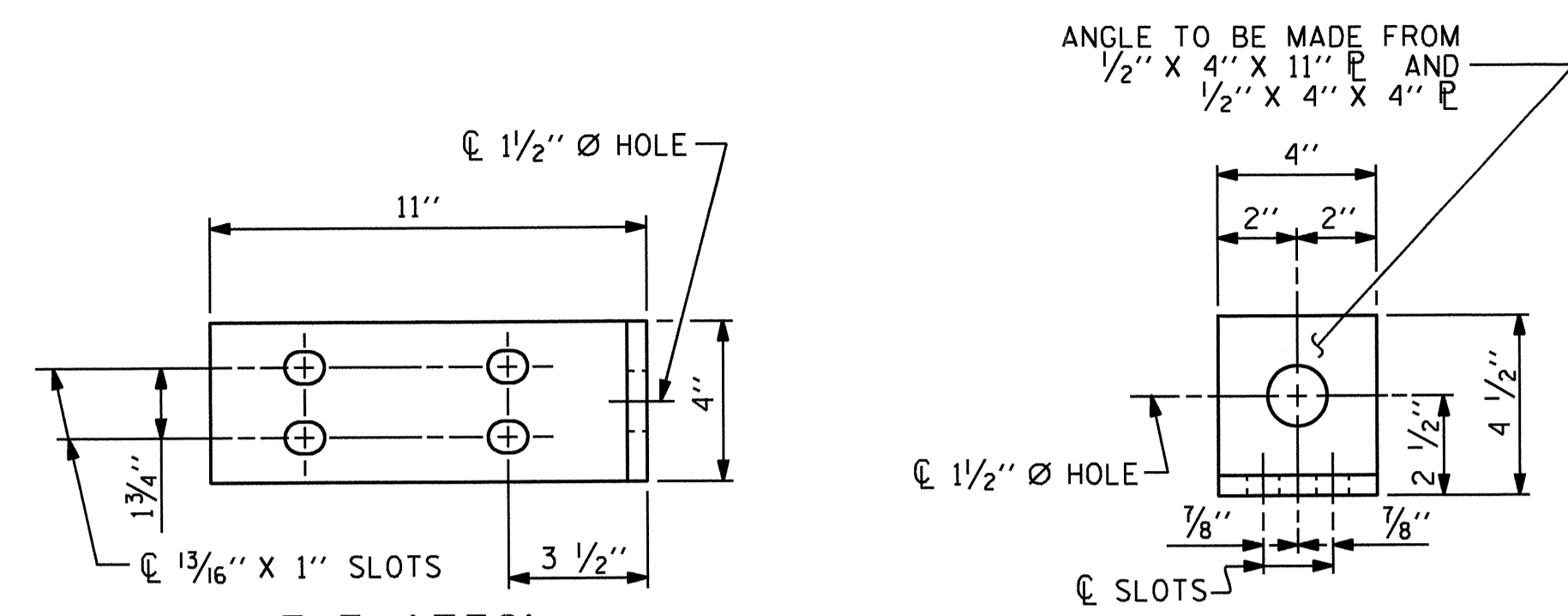


PROJECT NO. 41665.1A
MOORE COUNTY
STATION: 17+59.62 -L-

SHEET 2 OF 3

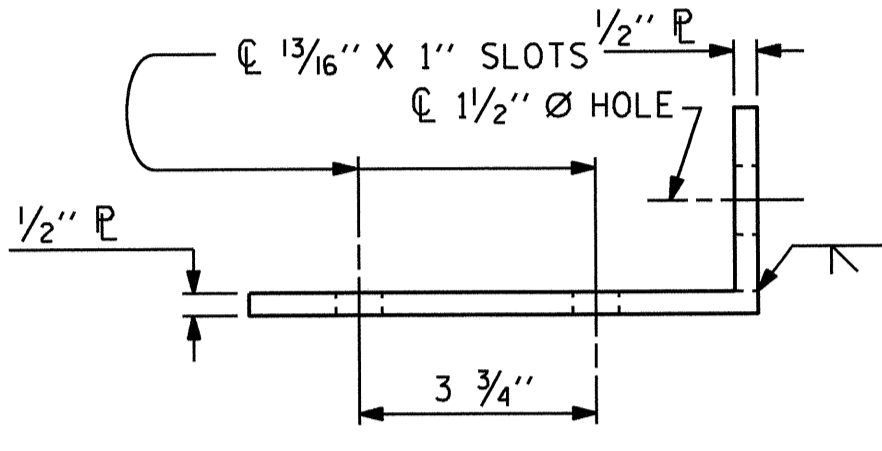
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-13
STANDARD						TOTAL SHEETS 27
2 BAR METAL RAIL						
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

ASSEMBLED BY : S. B. WILLIAMS	DATE : 1/16/13
CHECKED BY : T. H. FANG	DATE : 2-13-13
DRAWN BY : EEM	6/94
CHECKED BY : RGW	6/94
REV. 8/16/99	MAB/LES
REV. 5/1/06R	KMM/GM
REV. 10/1/11	MAA/GM

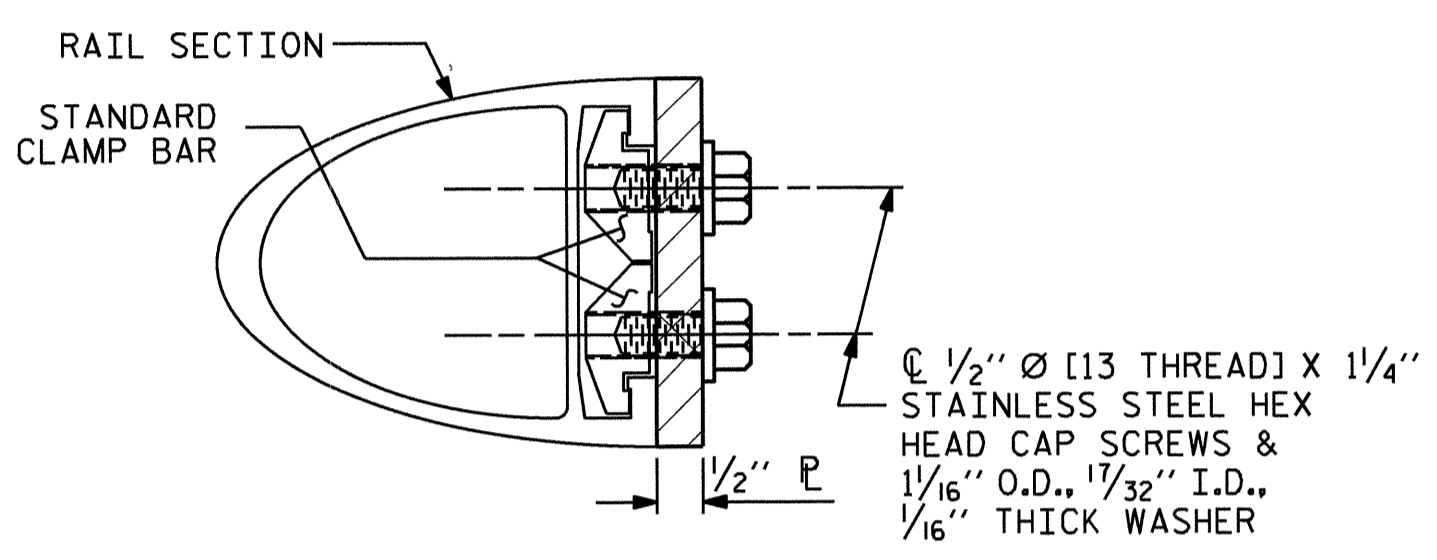


ELEVATION

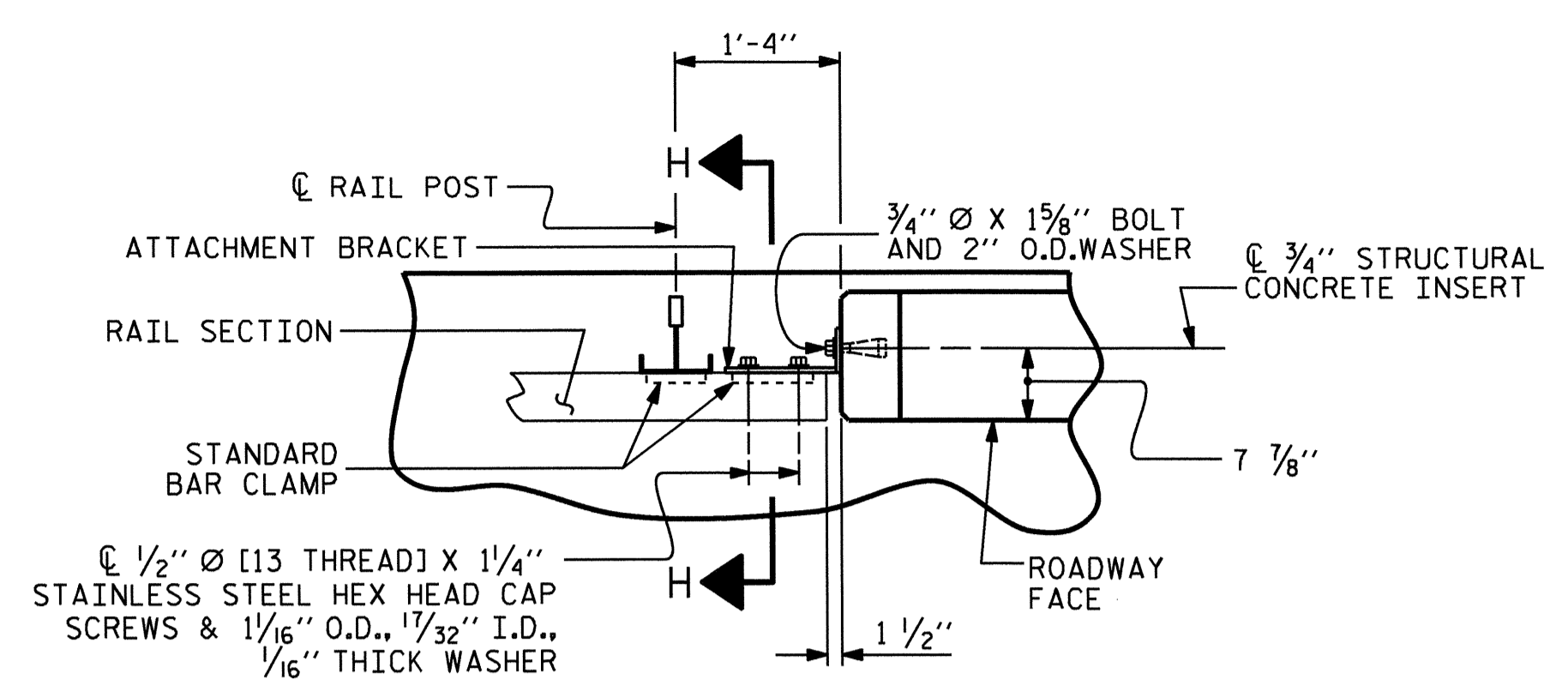
END VIEW



TOP VIEW

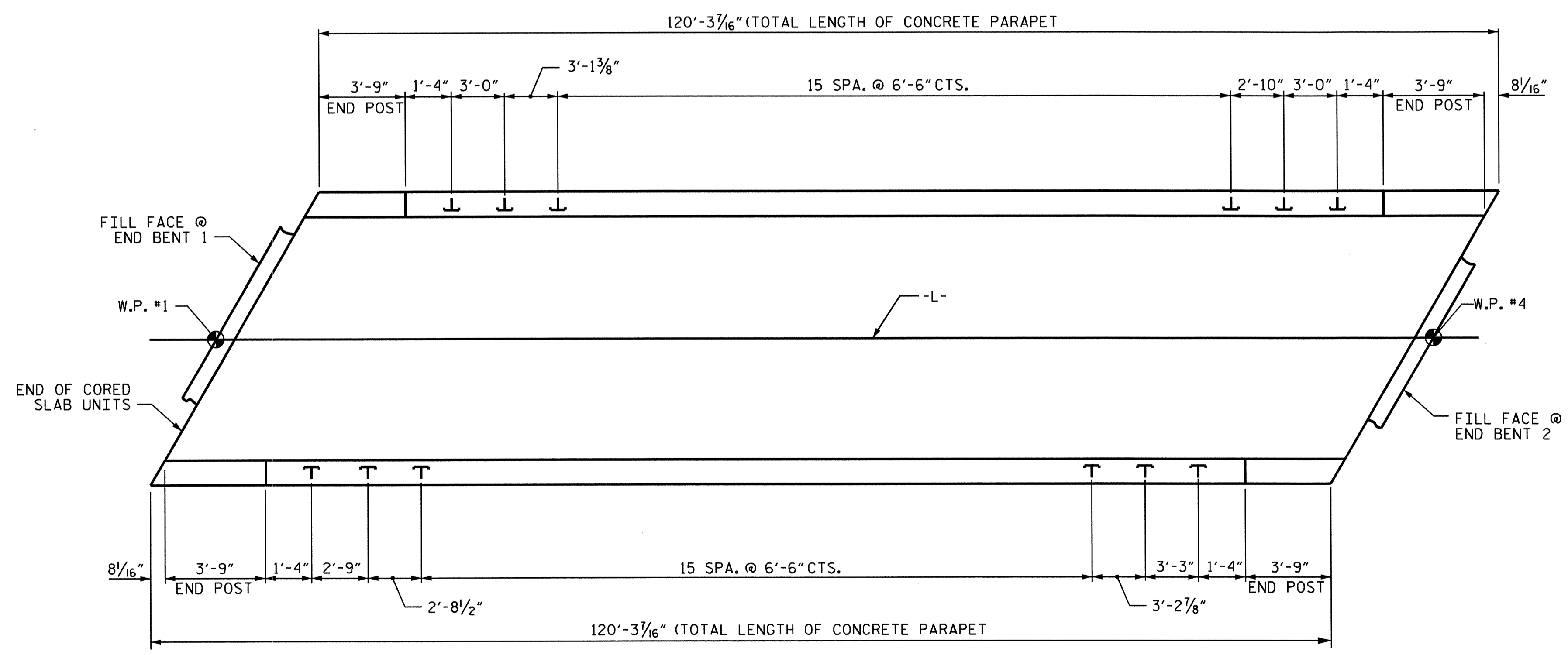


SECTION H-H



PLAN - RAIL AND END POST

DETAILS FOR ATTACHING METAL RAIL TO END POST



PLAN OF RAIL POST SPACINGS

TOTAL NUMBER OF RAIL POST = 40

NOTES

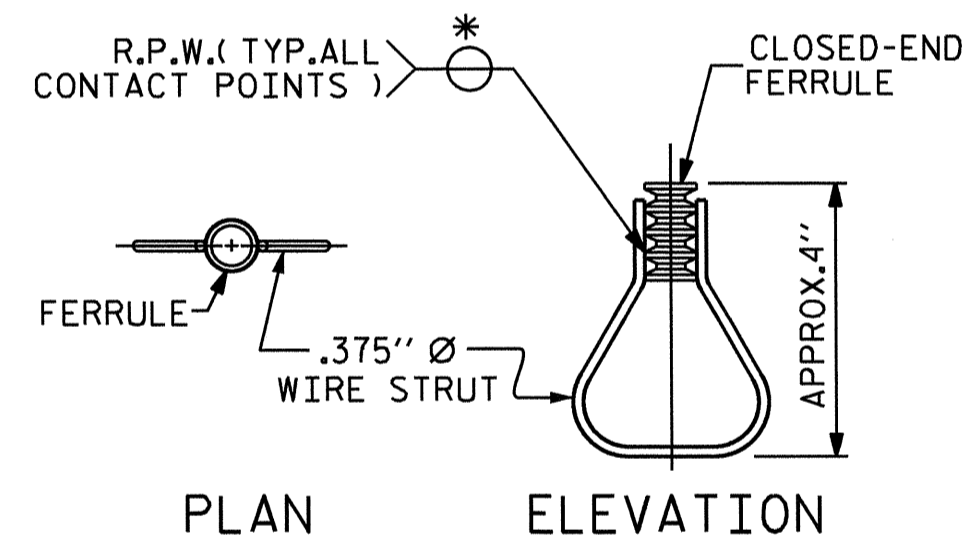
STRUCTURAL CONCRETE INSERT

- THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".
 - B. 1 - 3/4" Ø X 1 5/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 1 5/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
 - C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

- THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
 - B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 5/8" BOLT SHALL HAVE N.C. THREADS.
 - C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.
 - D. STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
 - E. 1/2" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.
- THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.
- THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.
- THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.
- THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 5/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

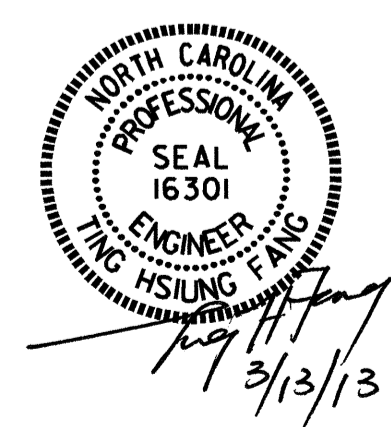


STRUCTURAL CONCRETE INSERT

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

PROJECT NO. 41665.1A
MOORE COUNTY
 STATION: 17+59.62 -L-

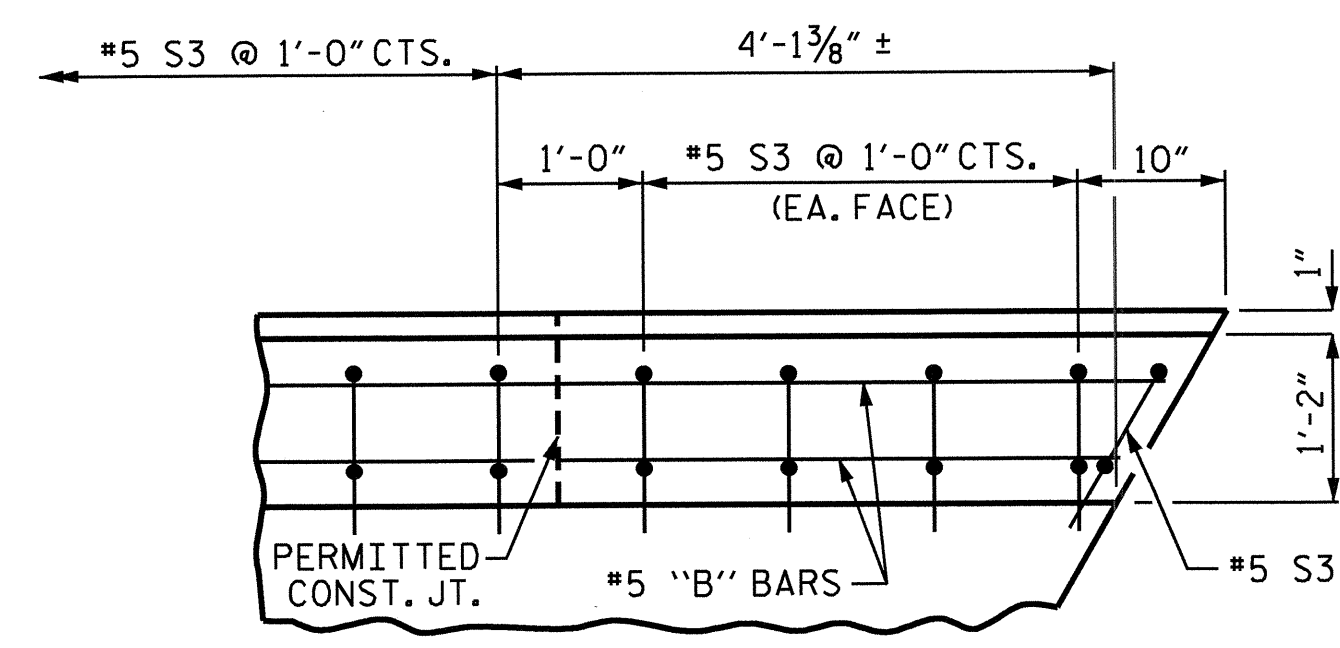
SHEET 3 OF 3



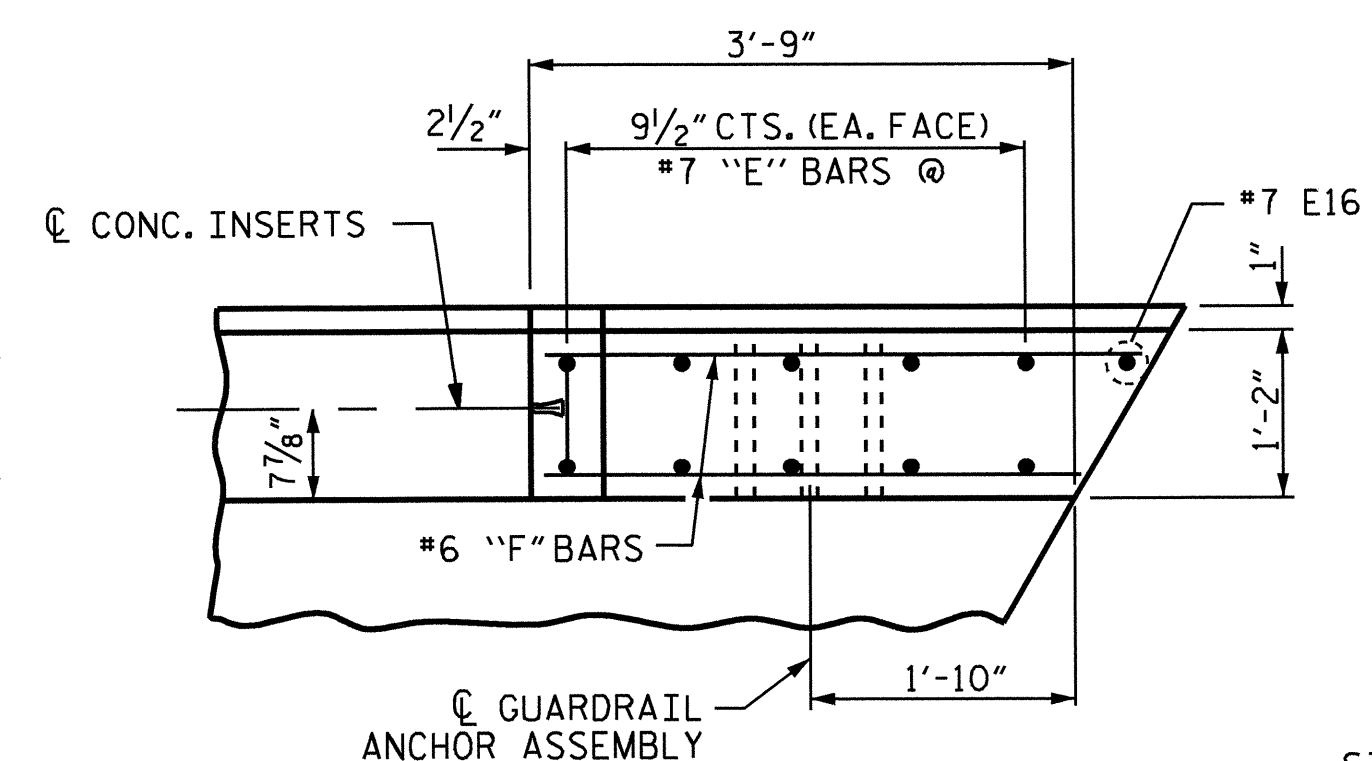
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 RAIL POST SPACINGS
 AND
 END OF RAIL DETAILS
 FOR TWO BAR METAL RAILS

REVISIONS						SHEET NO. S-14
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 27
2			4			

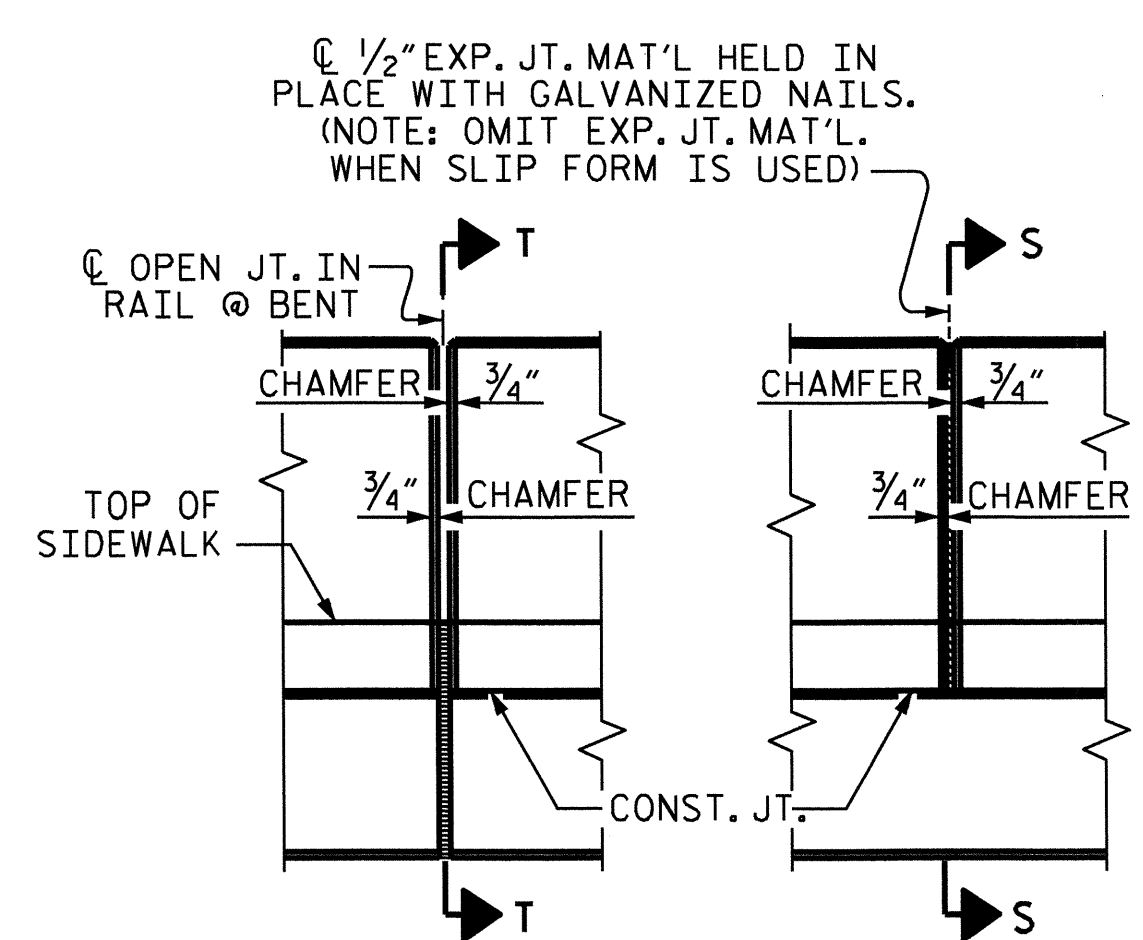
ASSEMBLED BY : S. B. WILLIAMS	DATE : 1-16-13
CHECKED BY : T. H. FANG	DATE : 2-8-13
DRAWN BY : FCJ 1/88	REV. 5/7/03 RWW/JTE
CHECKED BY : CRK 3/89	REV. 5/1/06 TLA/GM
	REV. 10/1/11 MAA/GM



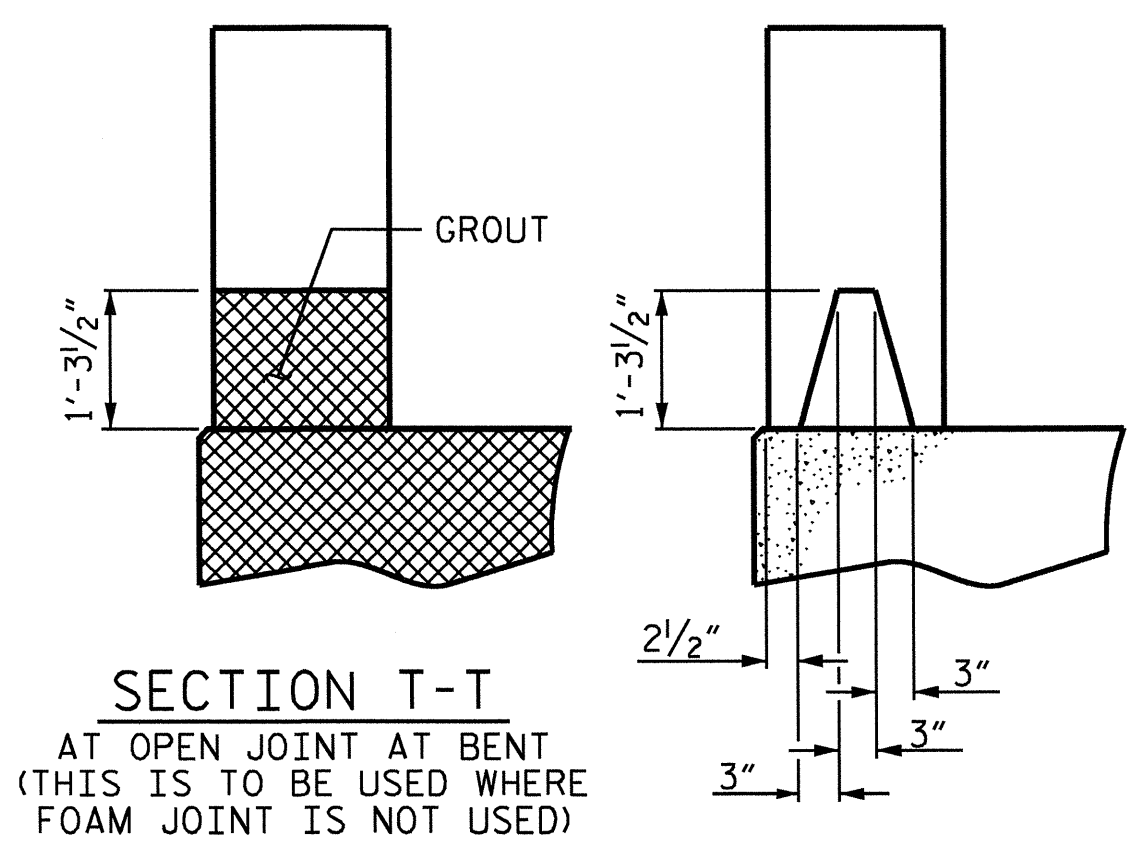
PLAN OF PARAPET
END BENT 2 LEFT SIDE SHOWN, SEE "PLAN OF SPANS" FOR DETAILS AT END BENT 1



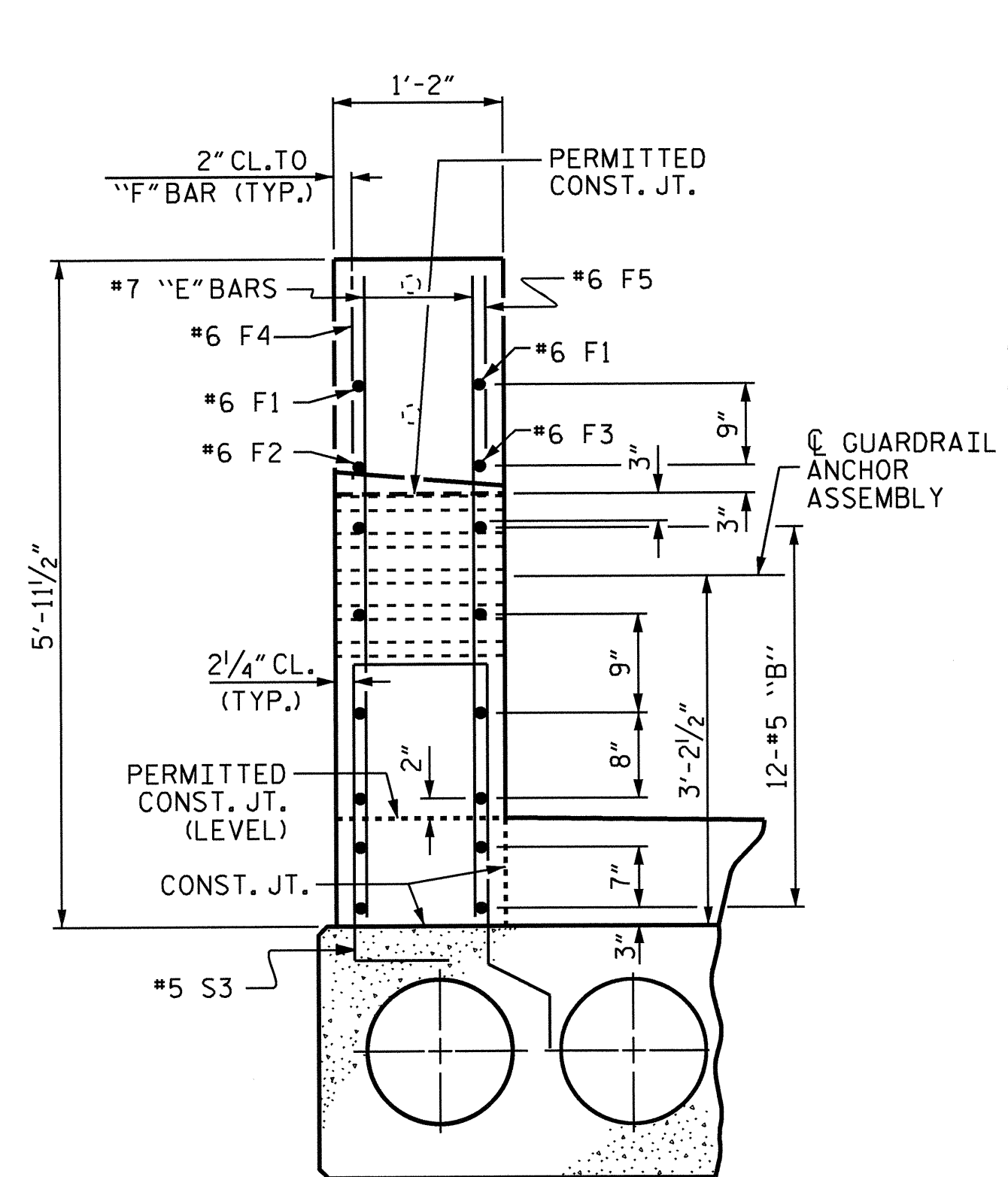
PLAN OF END POST



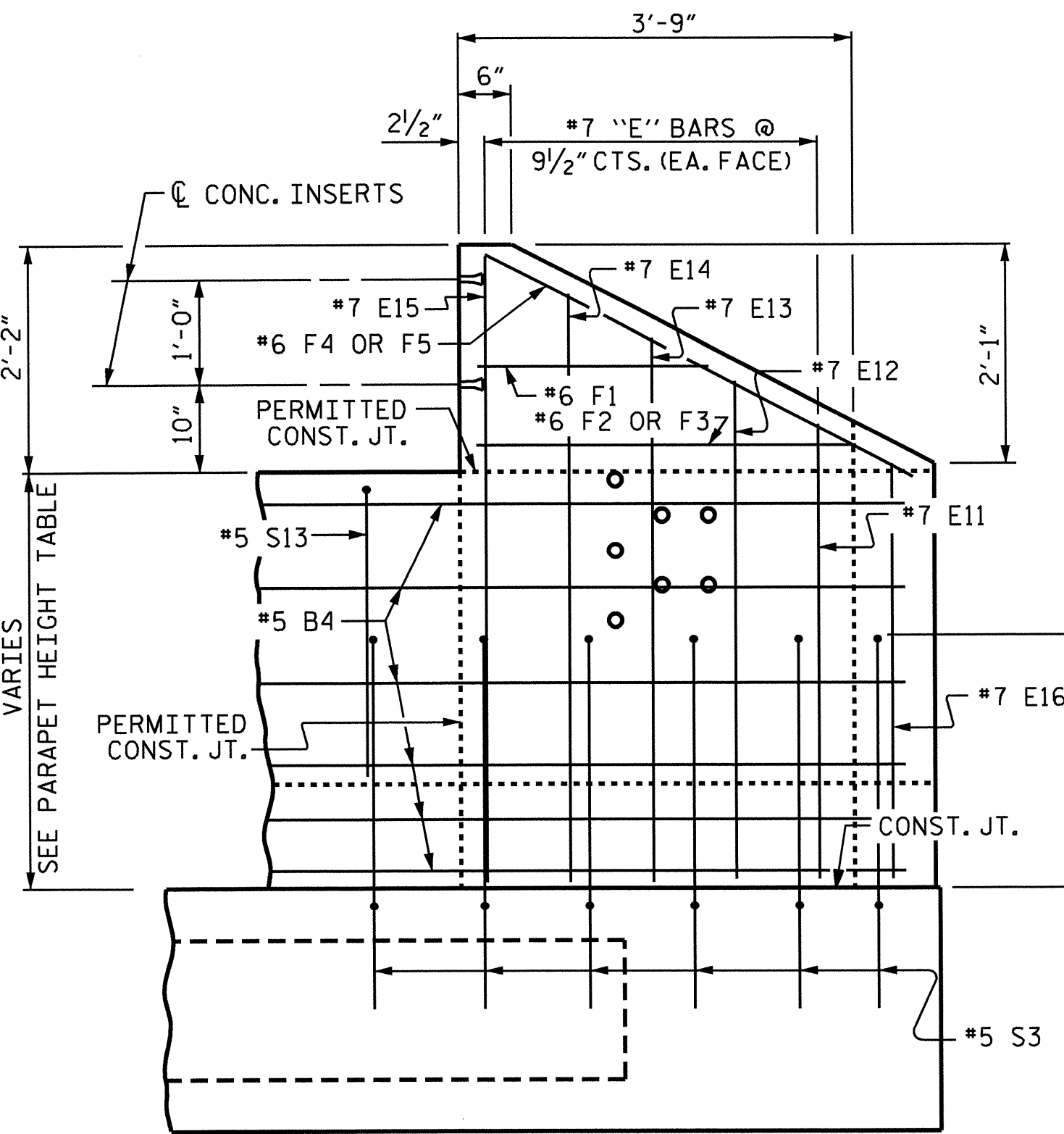
ELEVATION AT EXPANSION JOINTS
PARAPET WITH SIDEWALK



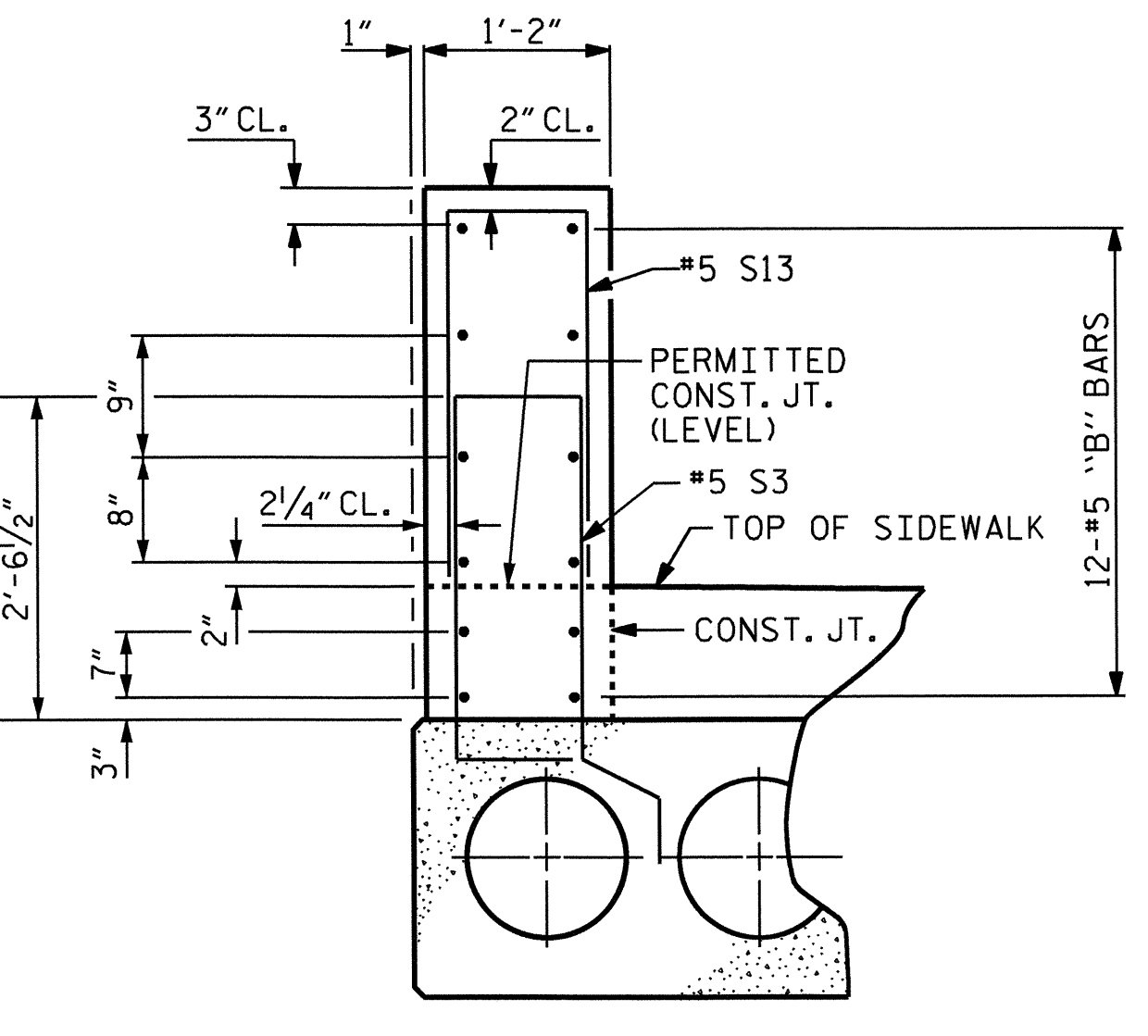
SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



END VIEW



ELEVATION
FIELD BEND #5 B4 BARS TO AVOID GUARDRAIL ANCHORAGE ASSEMBLY



SECTION THRU SIDEWALK & PARAPET

PARAPET AND END POST FOR TWO BAR RAIL

SEE "GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS" SHEET FOR LOCATION OF GUARDRAIL ATTACHMENT.

CONCRETE PARAPET DETAILS

FOR PLAN VIEW OF CONCRETE PARAPET, SEE "PLAN OF SPAN" SHEETS

NOTES

ALL REINFORCING STEEL IN PARAPETS AND END POSTS SHALL BE EPOXY COATED.

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

BILL OF MATERIAL

FOR 1 PARAPET & 2 END POSTS

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B4	12	#5	STR	29'-8"	371
*B5	48	#5	STR	15'-7"	780
*B6	48	#5	STR	10'-7"	530
*E11	4	#7	STR	3'-9"	31
*E12	4	#7	STR	4'-3"	35
*E13	4	#7	STR	4'-9"	39
*E14	4	#7	STR	5'-3"	43
*E15	4	#7	STR	5'-7"	46
*E16	2	#7	STR	3'-4"	27

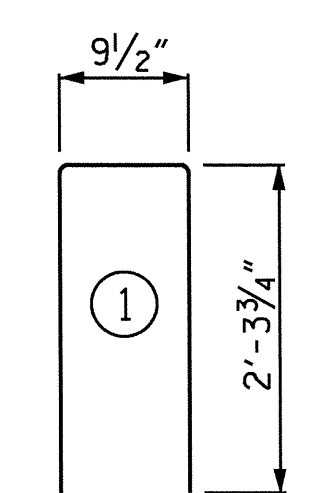
*F1	4	#6	STR	2'-1"	13
*F2	2	#6	STR	3'-5"	10
*F3	2	#6	STR	3'-6"	11
*F4	2	#6	STR	3'-7"	11
*F5	2	#6	STR	3'-9"	11
*S13	116	#5	1	5'-5"	655

* EPOXY COATED REINFORCING STEEL LBS. 2598

CLASS AA CONCRETE CU.YDS. 19.8

TOTAL LIN. FT. OF CONCRETE PARAPET 120.3

BAR TYPES

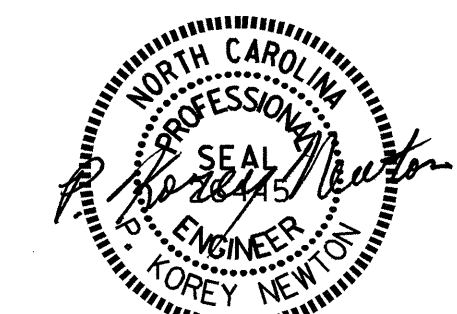


ALL BAR DIMENSIONS ARE OUT TO OUT

LEFT PARAPET HEIGHT

SPAN	@ BEARINGS	@ MID-SPAN
A	3'-9 1/2"	3'-9 1/4"
B	3'-9 1/2"	3'-6 3/4"
C	3'-9 1/2"	3'-9"

PROJECT NO. 41665.1A
MOORE COUNTY
STATION: 17+59.62 -L-



3/13/2013

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
1'-2" X 3'-9 1/2"
CONCRETE PARAPET
AND END POSTS
(LEFT SIDE)

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

ASSEMBLED BY: P. K. NEWTON	DATE: 3/6/13
CHECKED BY: T. H. FANG	DATE: 3/7/13
DRAWN BY: WJH 4/89	REV. 5/7/03RRR RWW/JTE
CHECKED BY: FCJ 5/89	REV. 5/1/06R TLA/GM
	REV. 10/1/11 MAA/GM

BILL OF MATERIAL

FOR 1 PARAPETS & 2 END POSTS

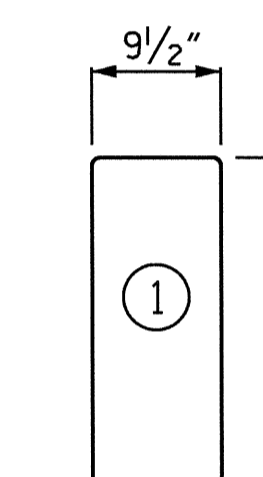
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B4	10	#5	STR	29'-8"	309
*B5	40	#5	STR	15'-7"	650
*B6	40	#5	STR	10'-7"	442
*E1	4	#7	STR	3'-0"	25
*E2	4	#7	STR	3'-6"	29
*E3	4	#7	STR	4'-0"	33
*E4	4	#7	STR	4'-6"	37
*E5	4	#7	STR	4'-10"	40
*E6	2	#7	STR	2'-7"	21
*F1	4	#6	STR	2'-1"	13
*F2	2	#6	STR	3'-5"	10
*F3	2	#6	STR	3'-6"	11
*F4	2	#6	STR	3'-7"	11
*F5	2	#6	STR	3'-9"	11
*S14	116	#5	1	5'-9"	696

* EPOXY COATED REINFORCING STEEL LBS. 2,335

CLASS AA CONCRETE CU.YDS. 15.9

TOTAL LIN. FT. OF CONCRETE PARAPET 120.3

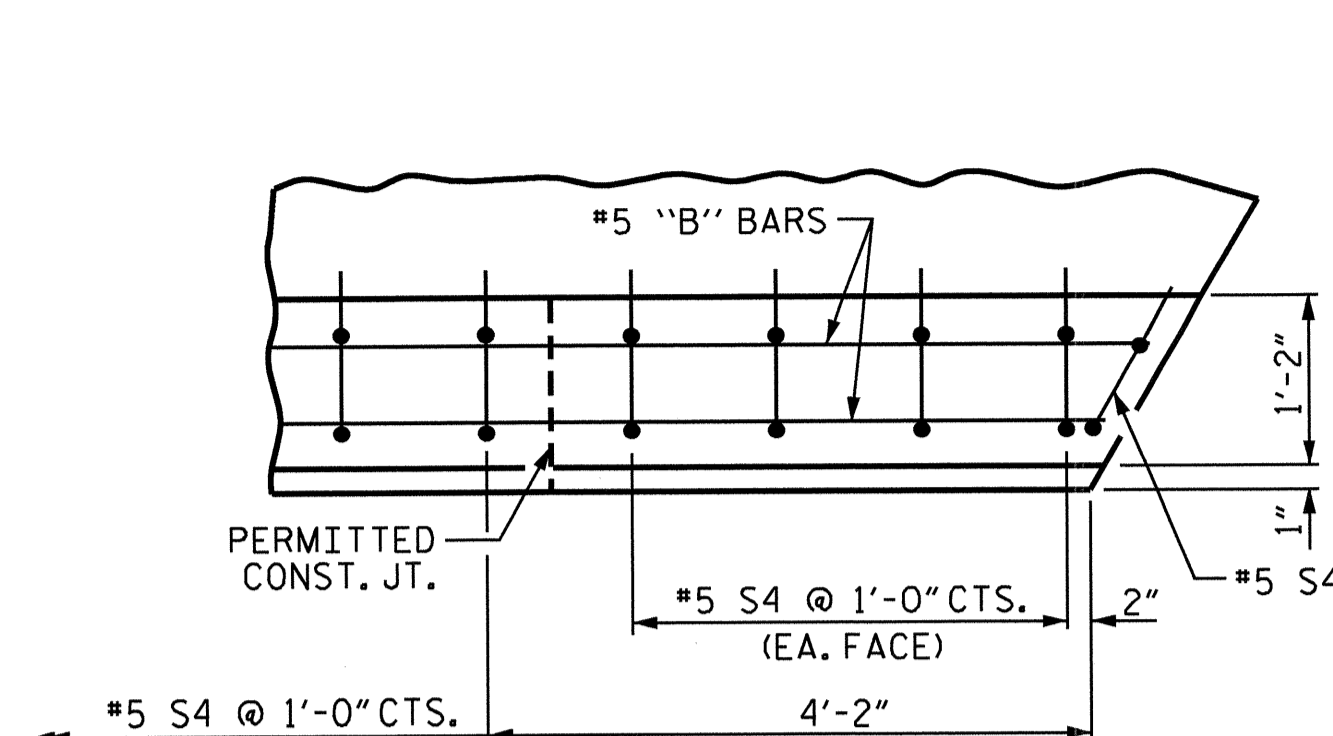
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

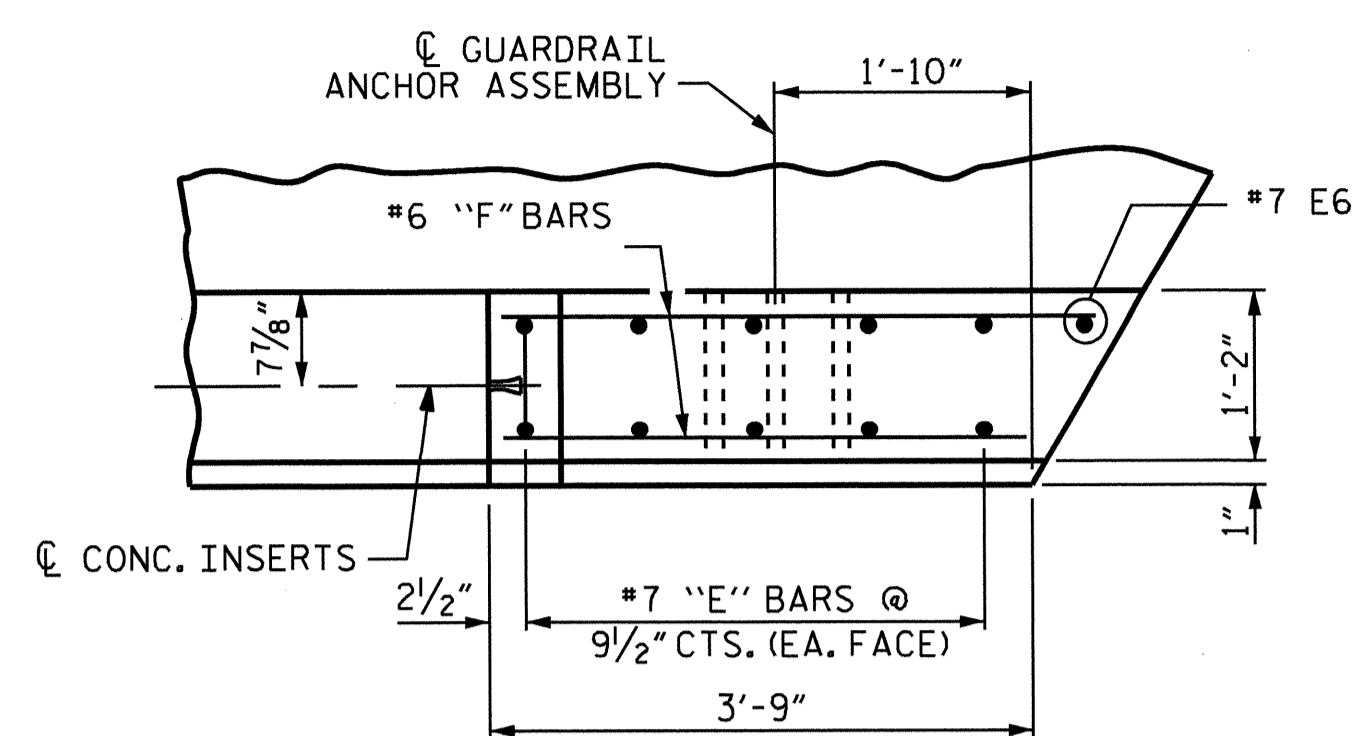
NOTES

FOR NOTES, SEE SHEET S-15.

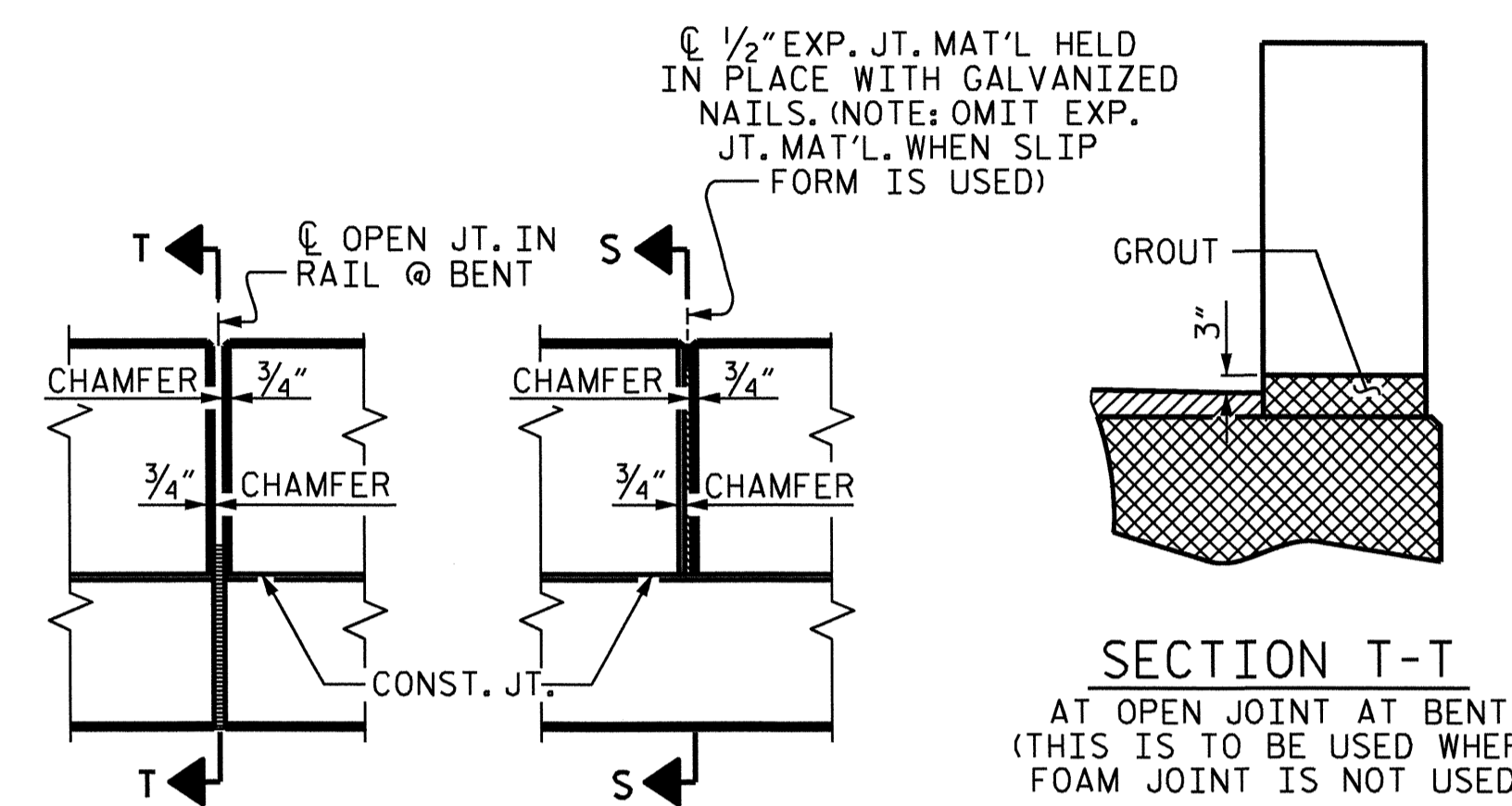


PLAN OF PARAPET

END BENT 2 RIGHT SIDE SHOWN, SEE "PLAN OF SPANS" FOR DETAILS AT END BENT 1

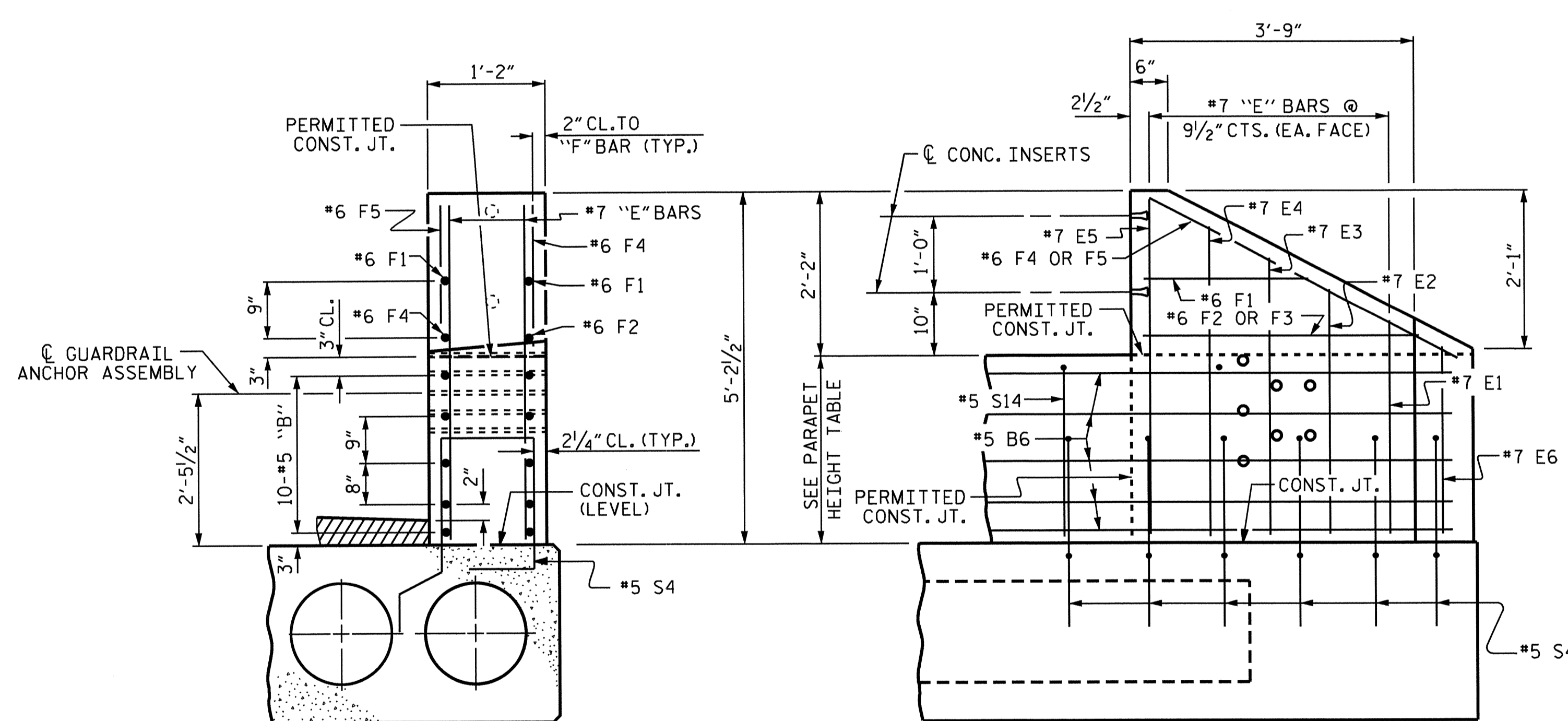


PLAN OF END POST



ELEVATION AT EXPANSION JOINTS

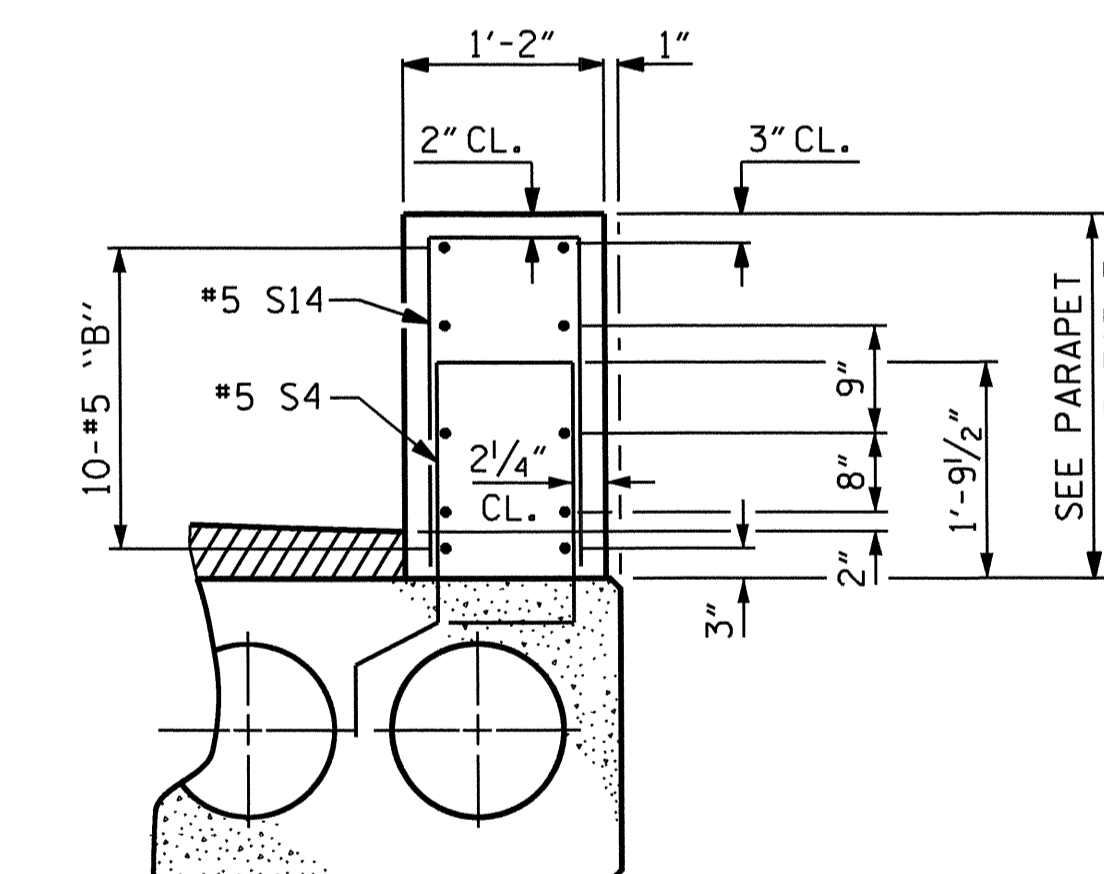
SECTION S-S AT DAM IN OPEN JOINT (THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



END VIEW

ELEVATION

FIELD BEND #5 B6 BARS TO AVOID GUARDRAIL ANCHORAGE ASSEMBLY



SECTION THRU PARAPET

PARAPET AND END POST FOR TWO BAR RAIL

CONCRETE PARAPET DETAILS

FOR PLAN VIEW OF CONCRETE PARAPET, SEE "PLAN OF SPAN" SHEETS

SPAN	@ BEARINGS	@ MID-SPAN
A	3'-0 1/2"	3'-0 1/4"
B	3'-0 1/2"	2'-9 3/4"
C	3'-0 1/2"	3'-0"

PROJECT NO. 41665.1A
MOORE COUNTY
STATION: 17+59.62 -L-



3/13/2013

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
1'-2" X 3'-0 1/2"
CONCRETE PARAPET
AND END POSTS
(RIGHT SIDE)

ASSEMBLED BY: P. K. NEWTON	DATE: 3/6/13
CHECKED BY: T. H. FANG	DATE: 3/7/13
DRAWN BY: WJH 4/89	REV. 5/7/03RRR RWW/JTE
CHECKED BY: FCJ 5/89	REV. 5/1/06R TLA/GM
	REV. 10/1/11 MAA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-16
2			4			27

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.

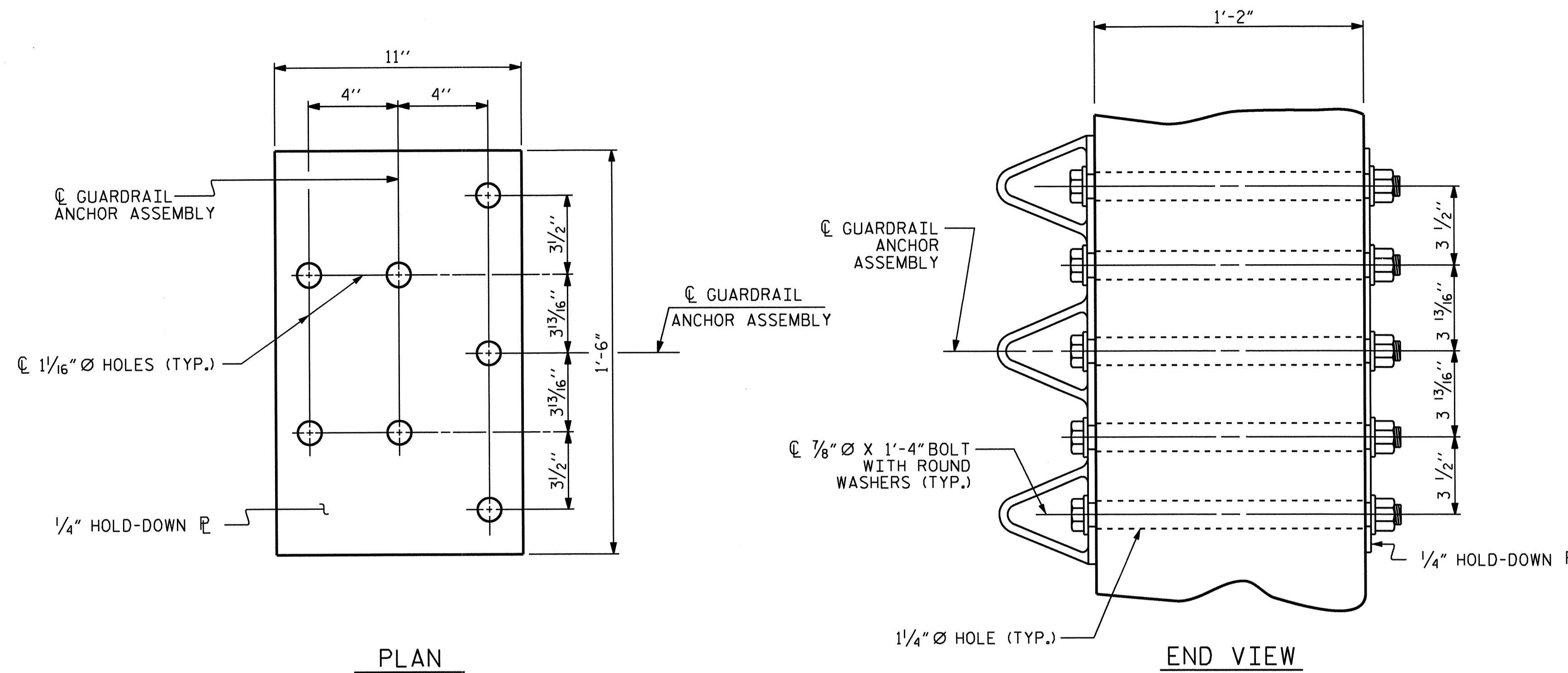
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

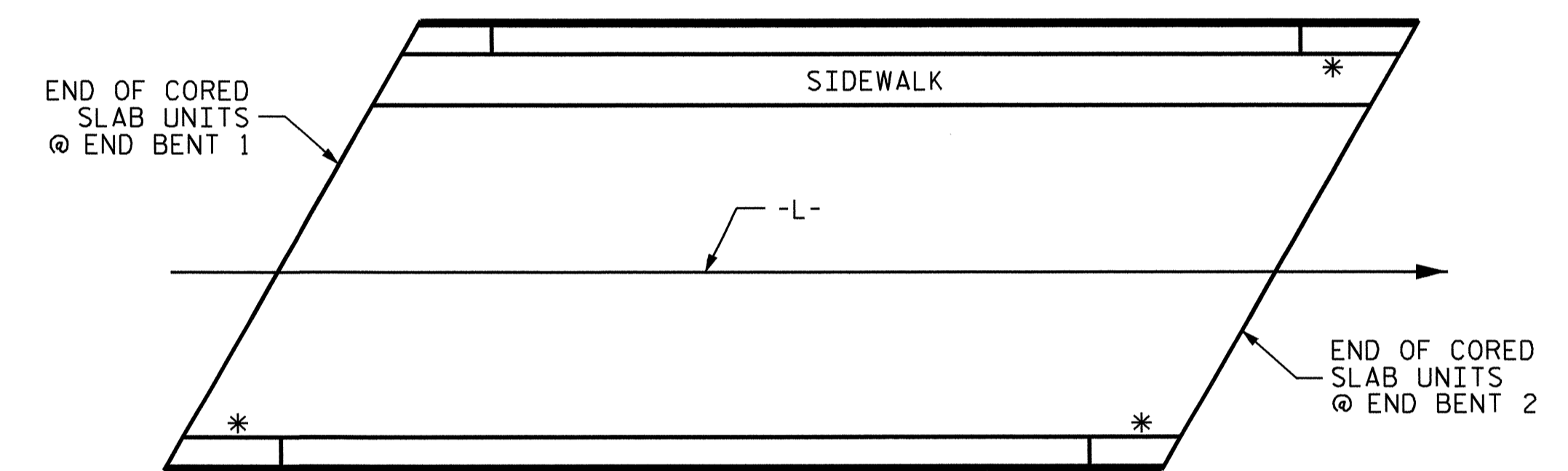
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



PLAN

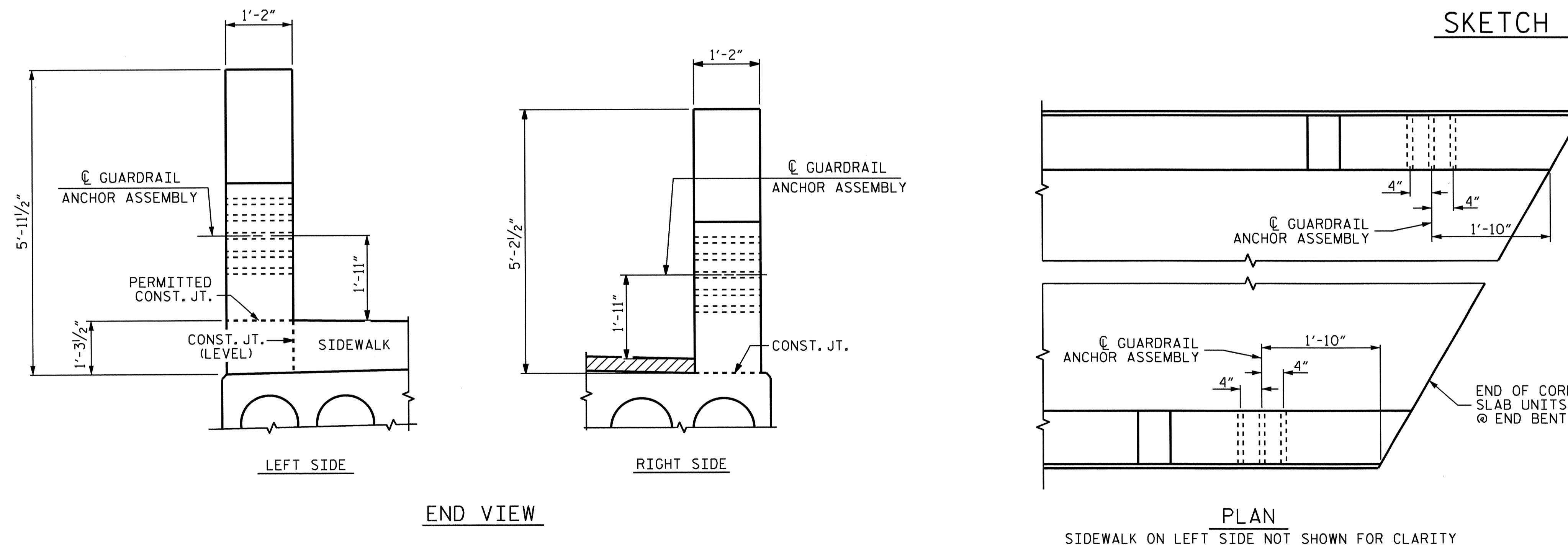
END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



END VIEW

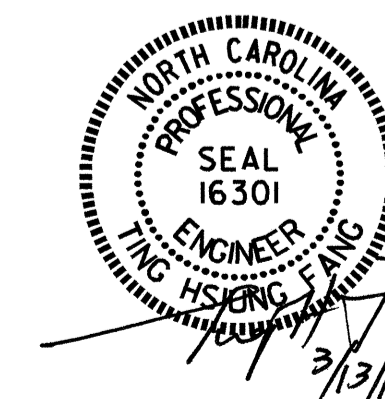
PLAN

SIDEWALK ON LEFT SIDE NOT SHOWN FOR CLARITY

LOCATION OF GUARDRAIL ANCHOR AT END POST

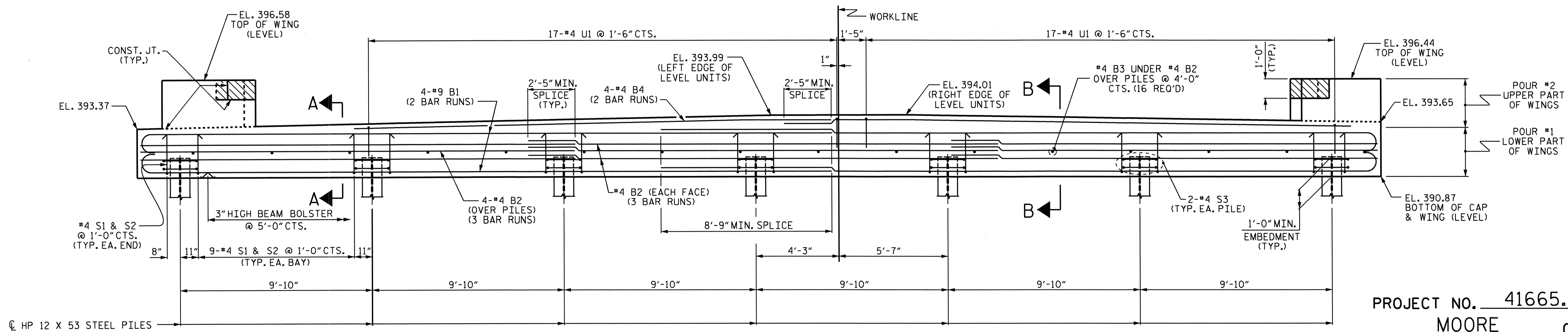
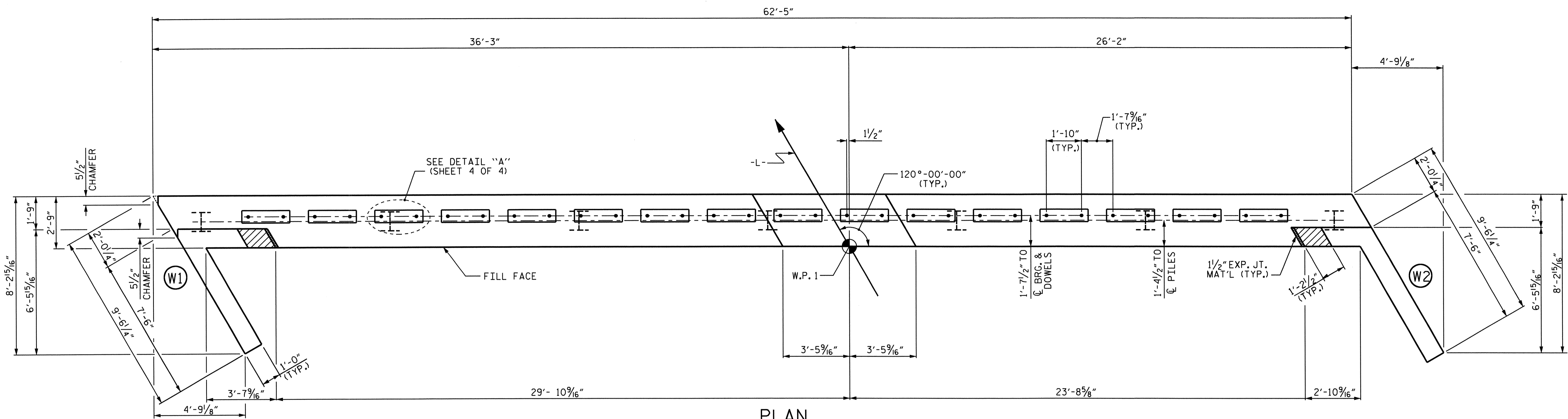
END BENT 2 SHOWN, END BENT 1 SIMILAR

PROJECT NO. 41665.1A
MOORE COUNTY
 STATION: 17+59.62 -L-



STATE OF NORTH CAROLINA						SHEET NO. S-17
DEPARTMENT OF TRANSPORTATION						
RALEIGH						
STANDARD						
GUARDRAIL ANCHORAGE						
DETAILS						
FOR METAL RAILS						
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			27
2			4			

ASSEMBLED BY : S. B. WILLIAMS	DATE : 1-17-13
CHECKED BY : T. H. FANG	DATE : 2-1-13
DRAWN BY : MAA 5/10	ADDED 5/6/10
CHECKED BY : CM 5/10	REV. 10/1/11
	REV. 12/5/11
	MAA/GM
	MAA/GM



WINGS NOT SHOWN FOR CLARITY.
 FOR SECTIONS A-A & B-B, SEE SHEET 4 OF 4.
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

PROJECT NO. 41665.1A
 MOORE COUNTY
 STATION: 17+59.62 -L-

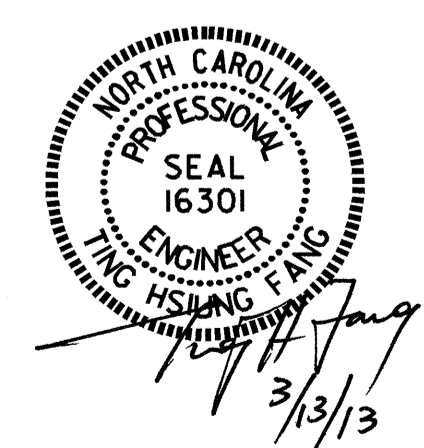
SHEET 1 OF 4

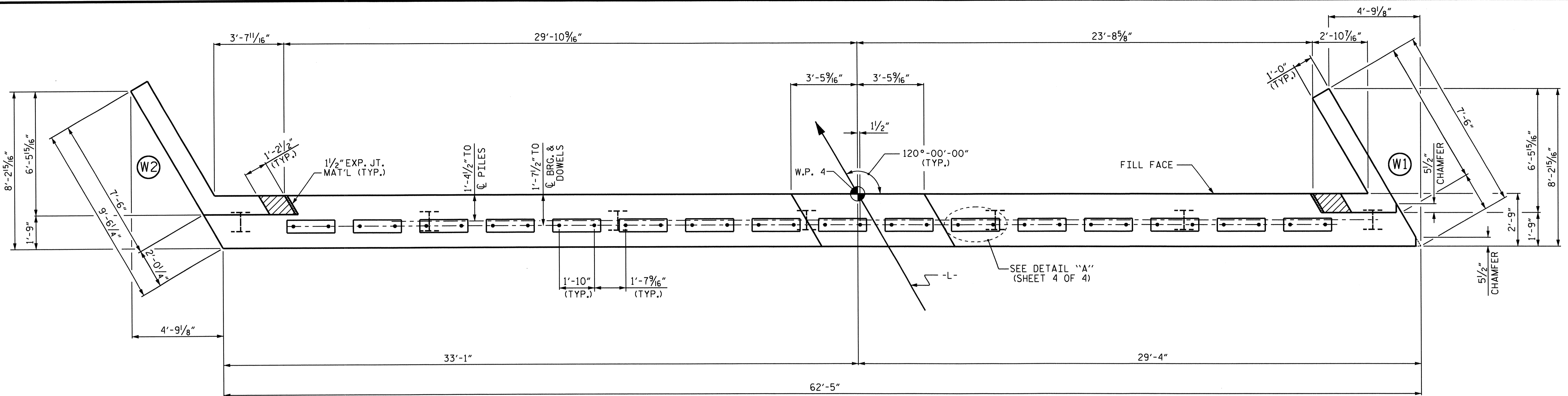
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1

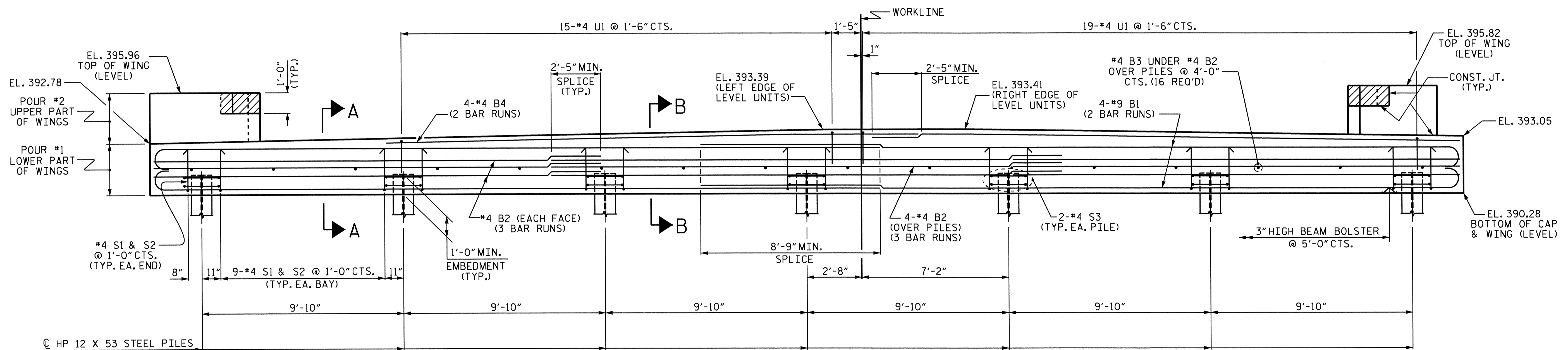
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			27

DRAWN BY: S. B. WILLIAMS DATE: 2-13
 CHECKED BY: T. H. FANG DATE: 2-13
 DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE: 3-4-13





PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
 FOR SECTIONS A-A & B-B, SEE SHEET 4 OF 4.
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

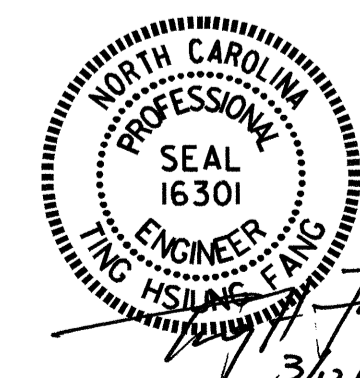
PROJECT NO. 41665.1A
 MOORE COUNTY
 STATION: 17+59.62 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

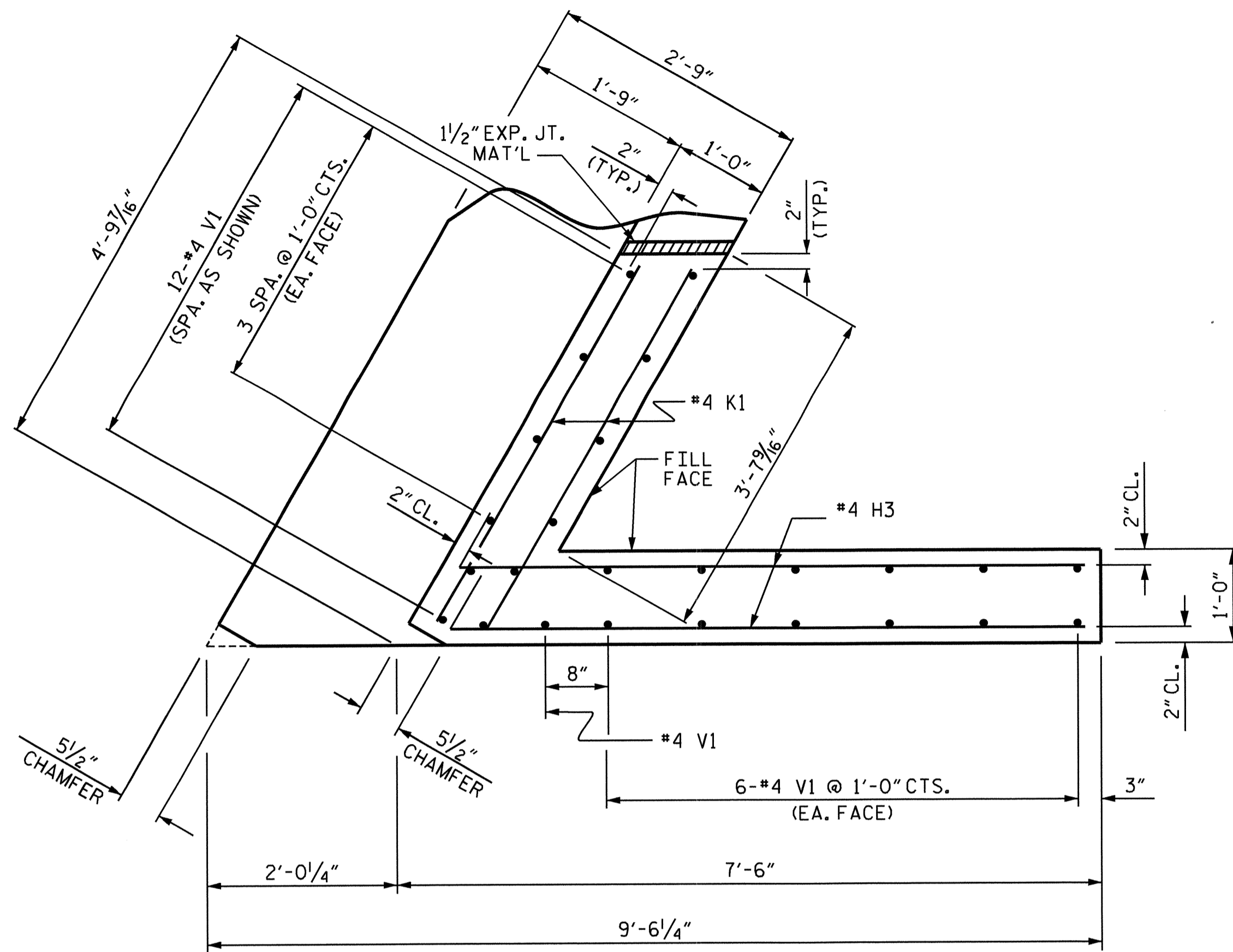
SUBSTRUCTURE

END BENT 2

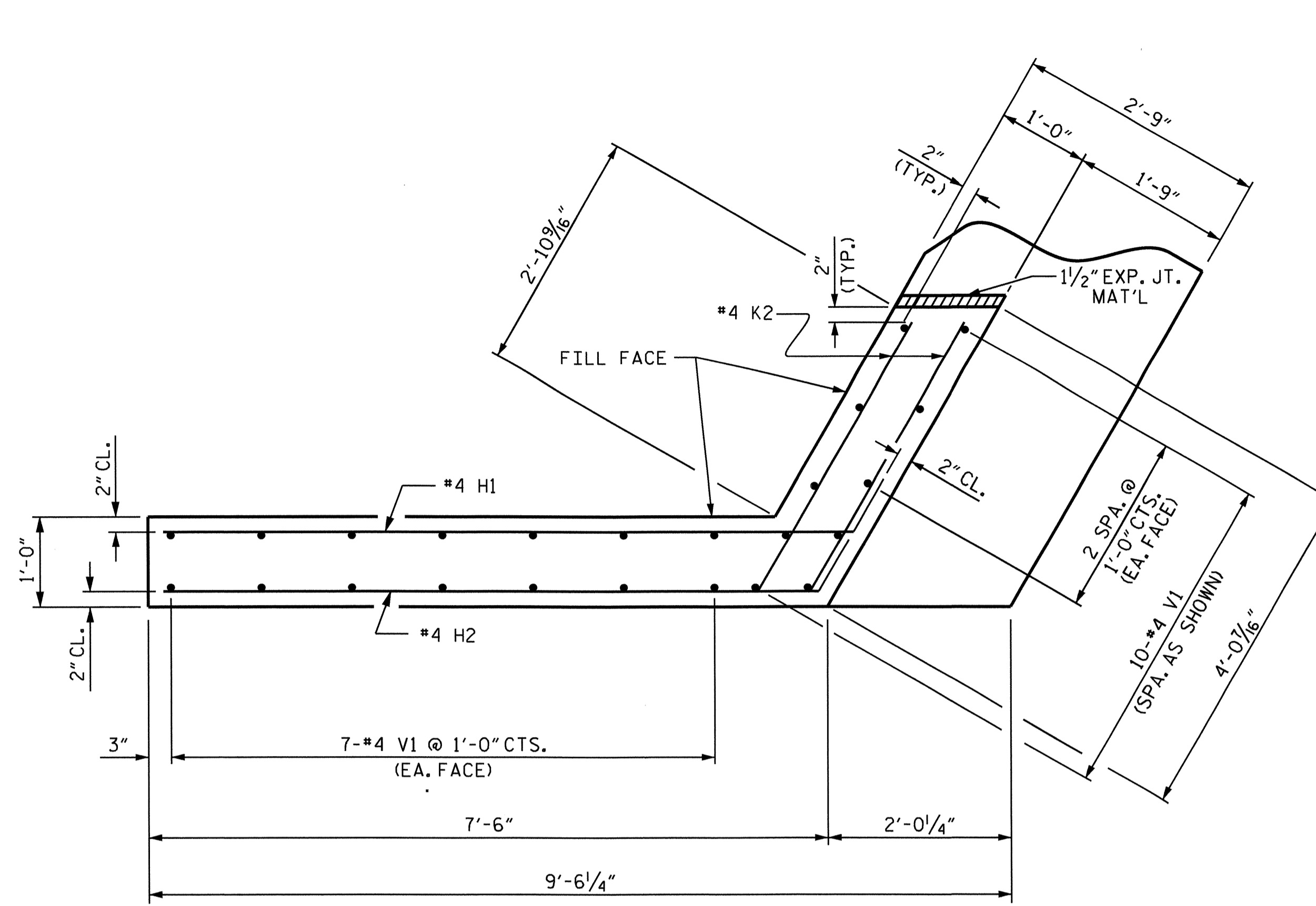


DRAWN BY: S. B. WILLIAMS DATE: 2-13
 CHECKED BY: T. H. FANG DATE: 2-13
 DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE: 3-4-13

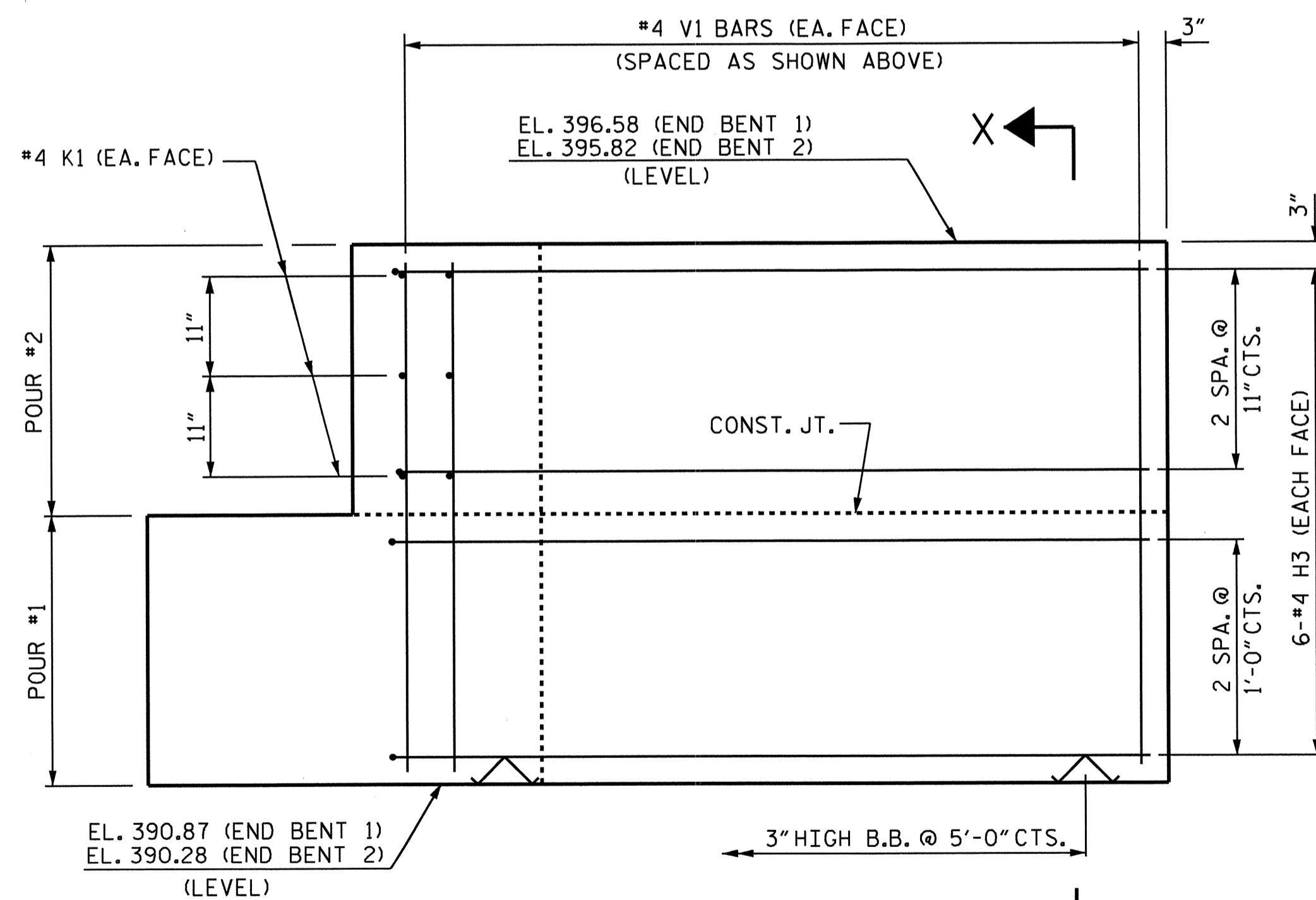
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19	
1			3			TOTAL SHEETS	27
2			4				



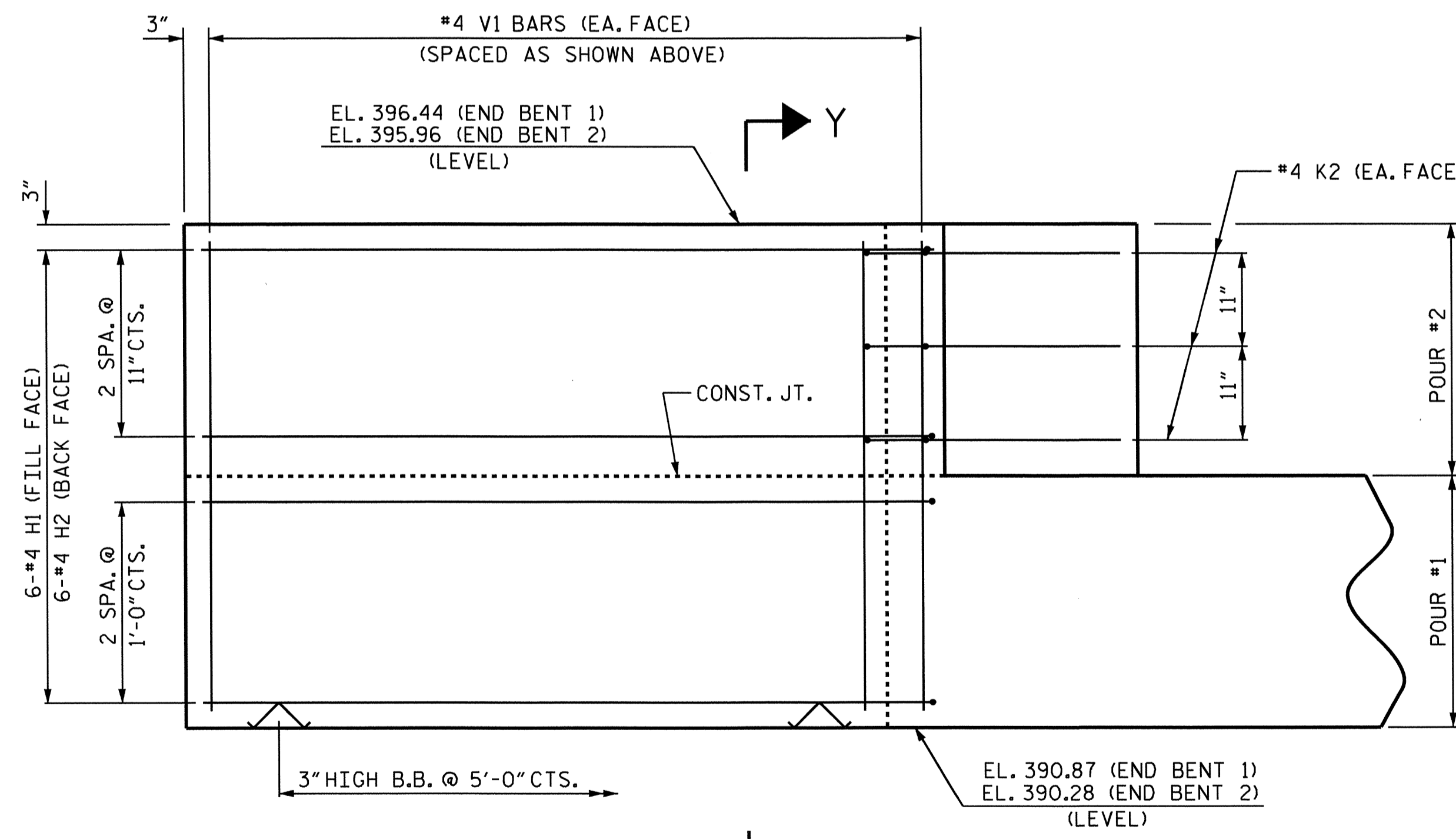
PLAN OF WING (W1)



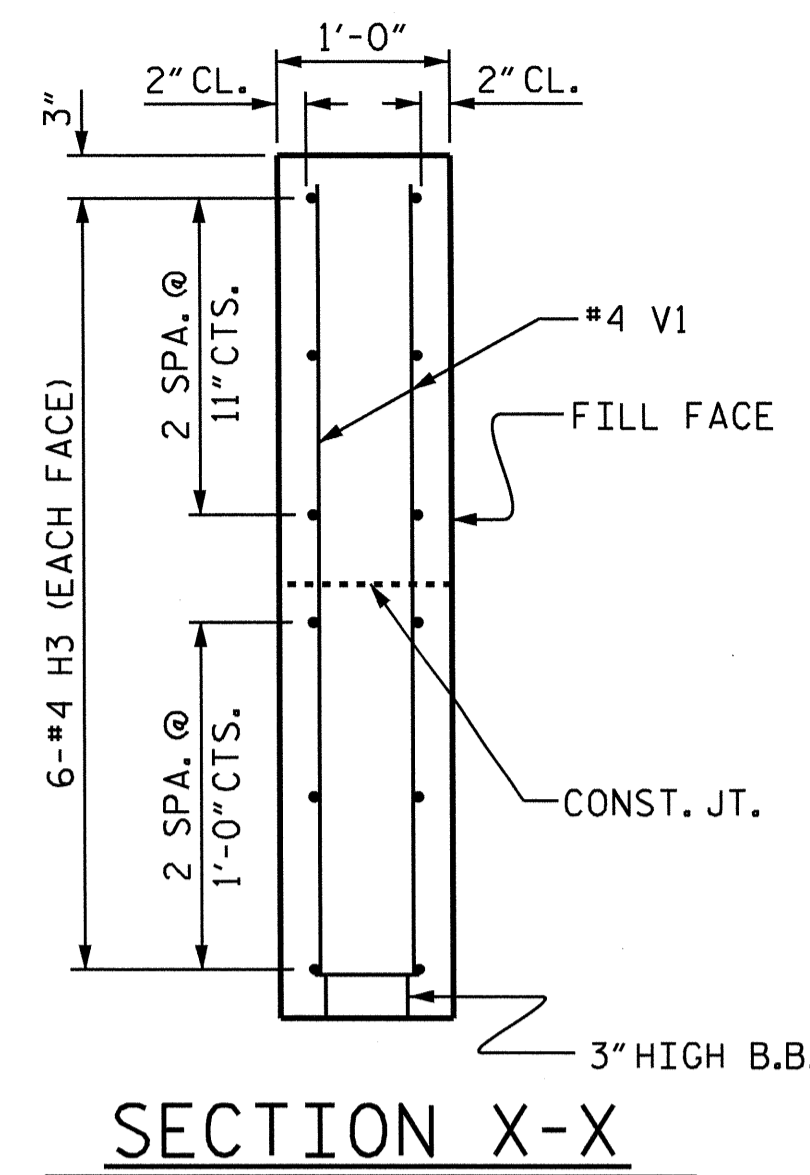
PLAN OF WING (W2)



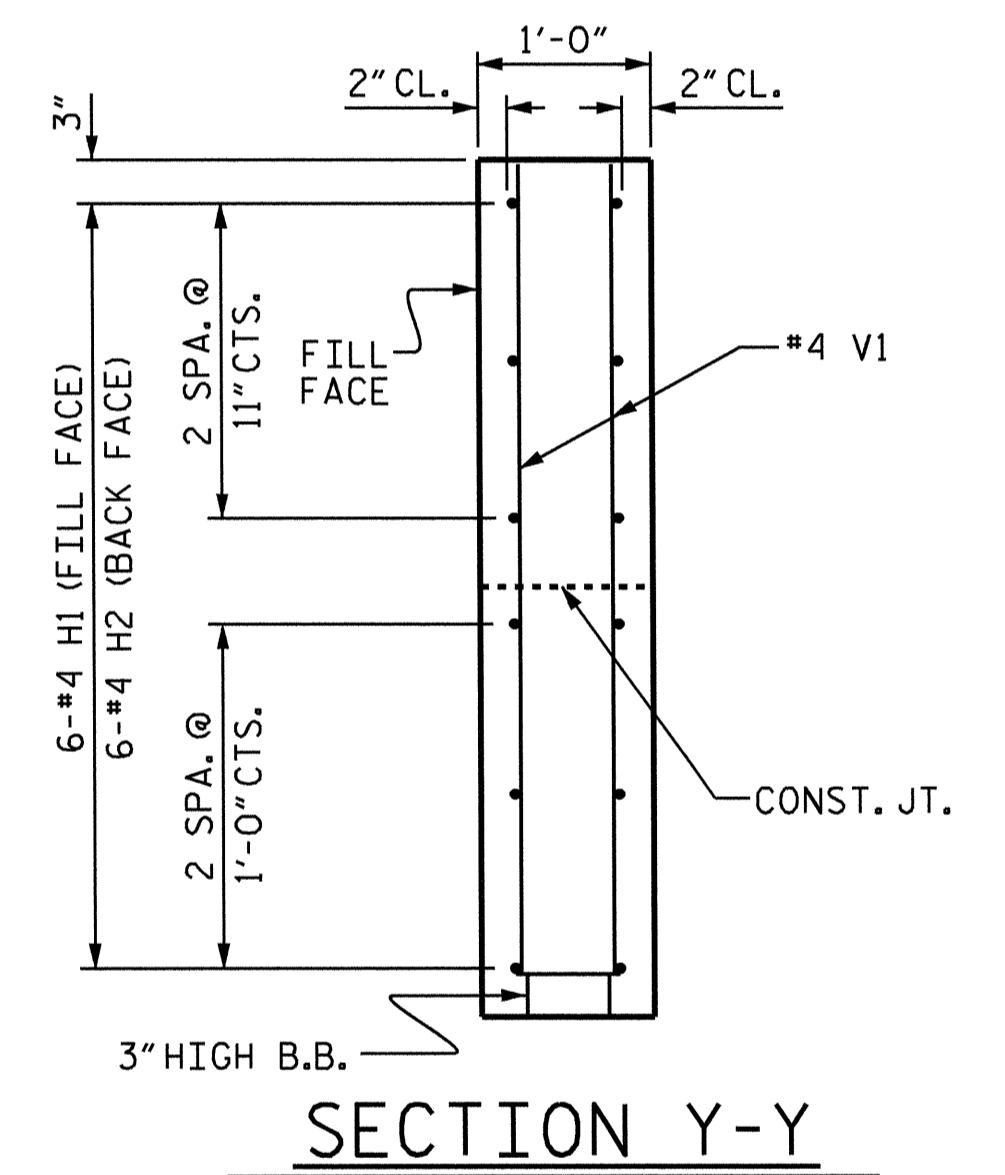
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION X-X

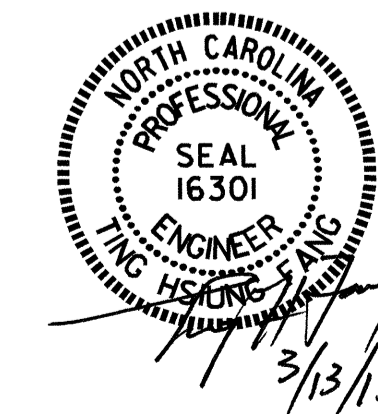


SECTION Y-Y

WING DETAILS

DRAWN BY: S. B. WILLIAMS DATE: 2-13
 CHECKED BY: T. H. FANG DATE: 2-13
 DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE: 3-5-13

13-MAR-2013 09:17
 S:\DPC2\Ting\div_projects\MooreBr55\Final plans\620055.sd_eb.dgn
 kpnewton



PROJECT NO. 41665.1A
 MOORE COUNTY
 STATION: 17+59.62 -L-

SHEET 3 OF 4

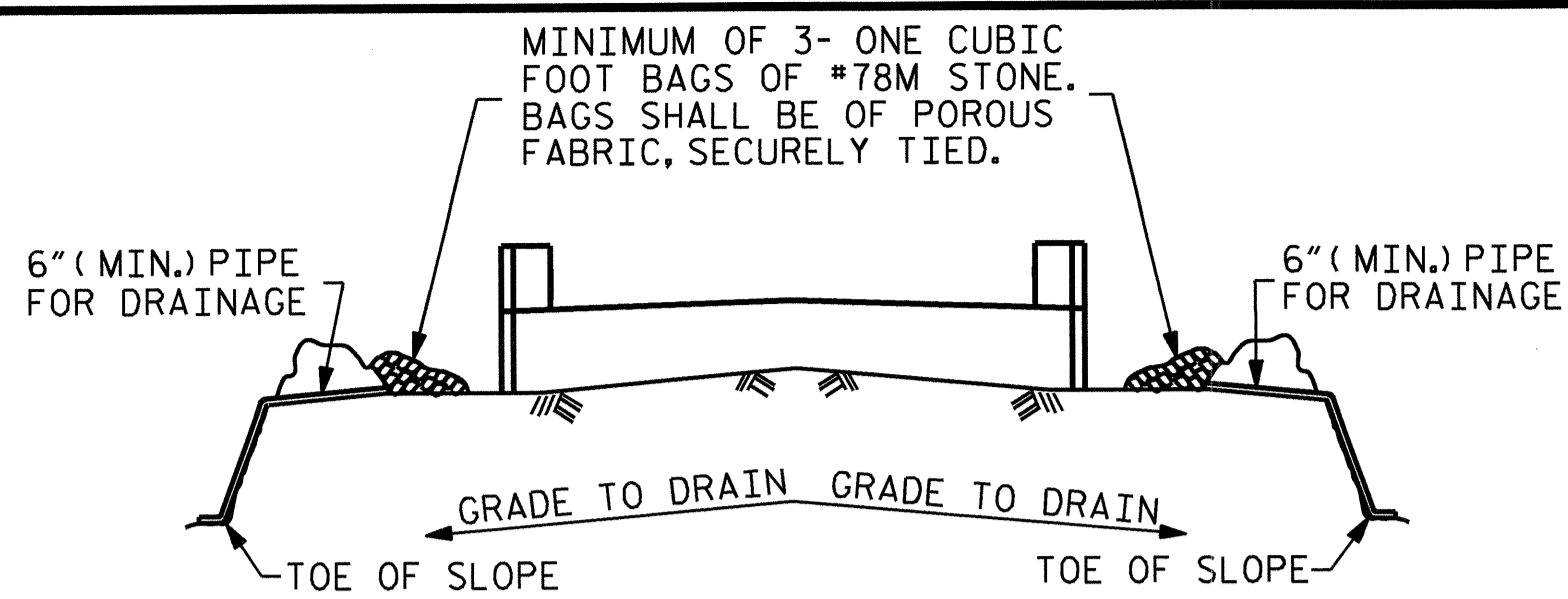
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE

END BENT
 WING DETAILS

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20	
1			3			TOTAL SHEETS	27
2			4				

STD. NO. EB_39_120S

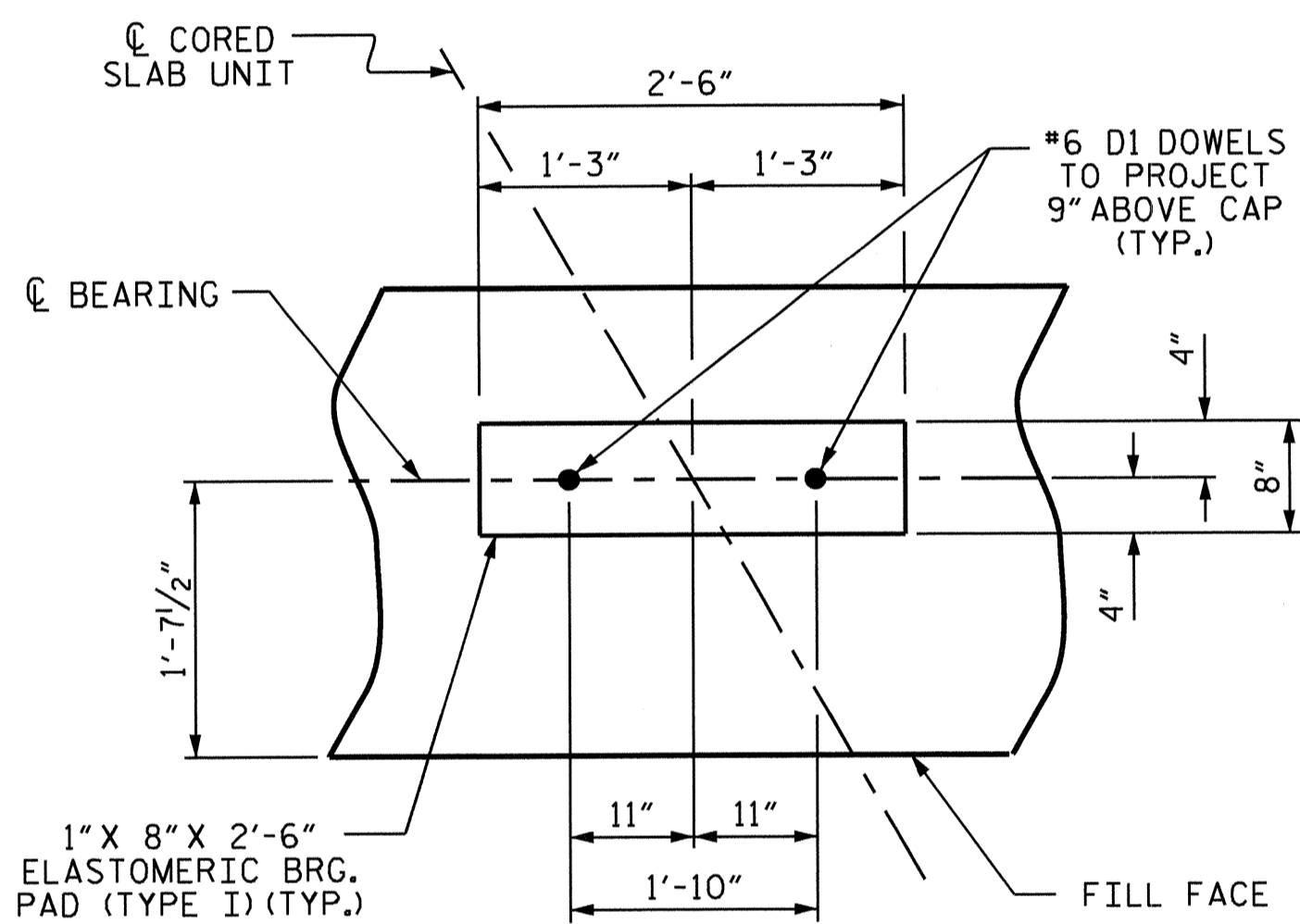


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

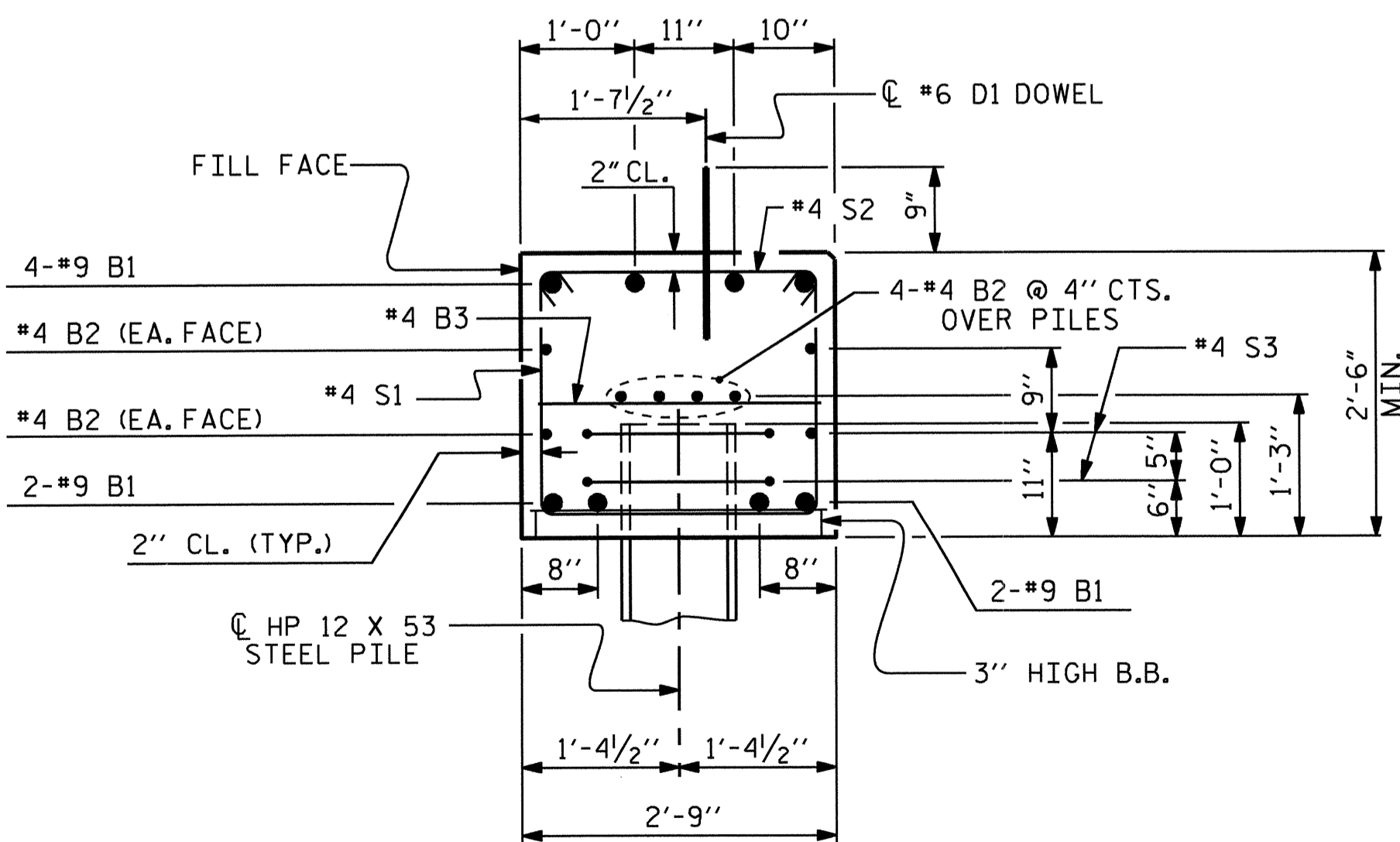
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



DETAIL "A"

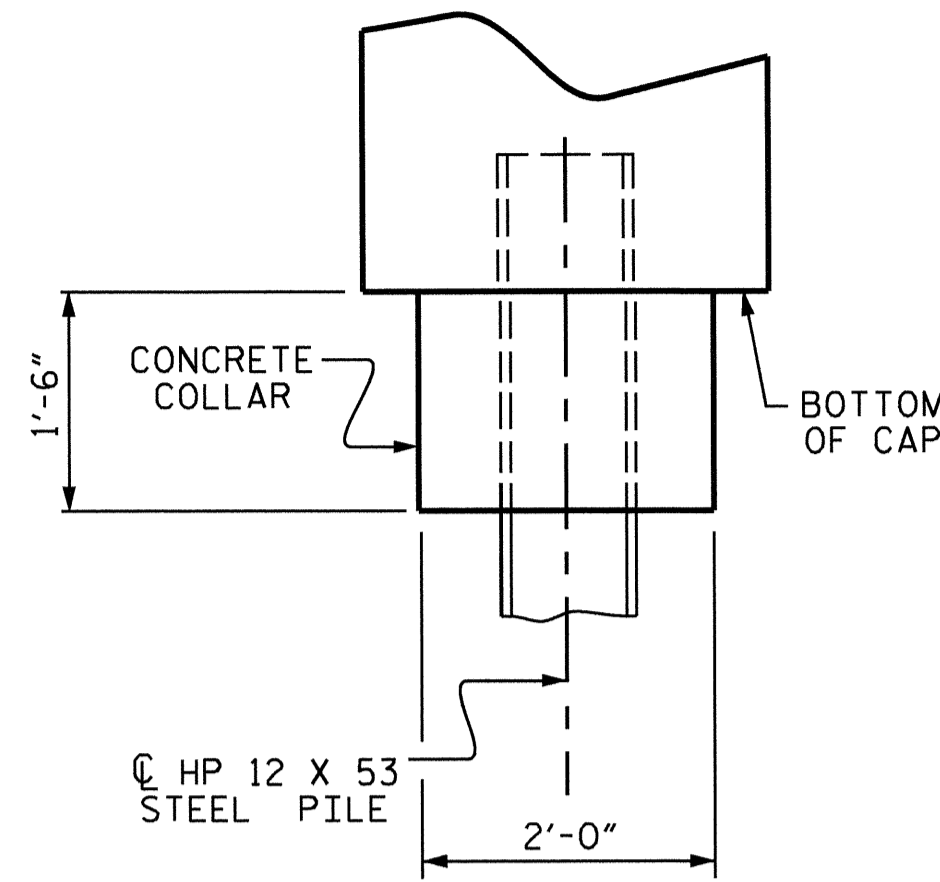
END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION



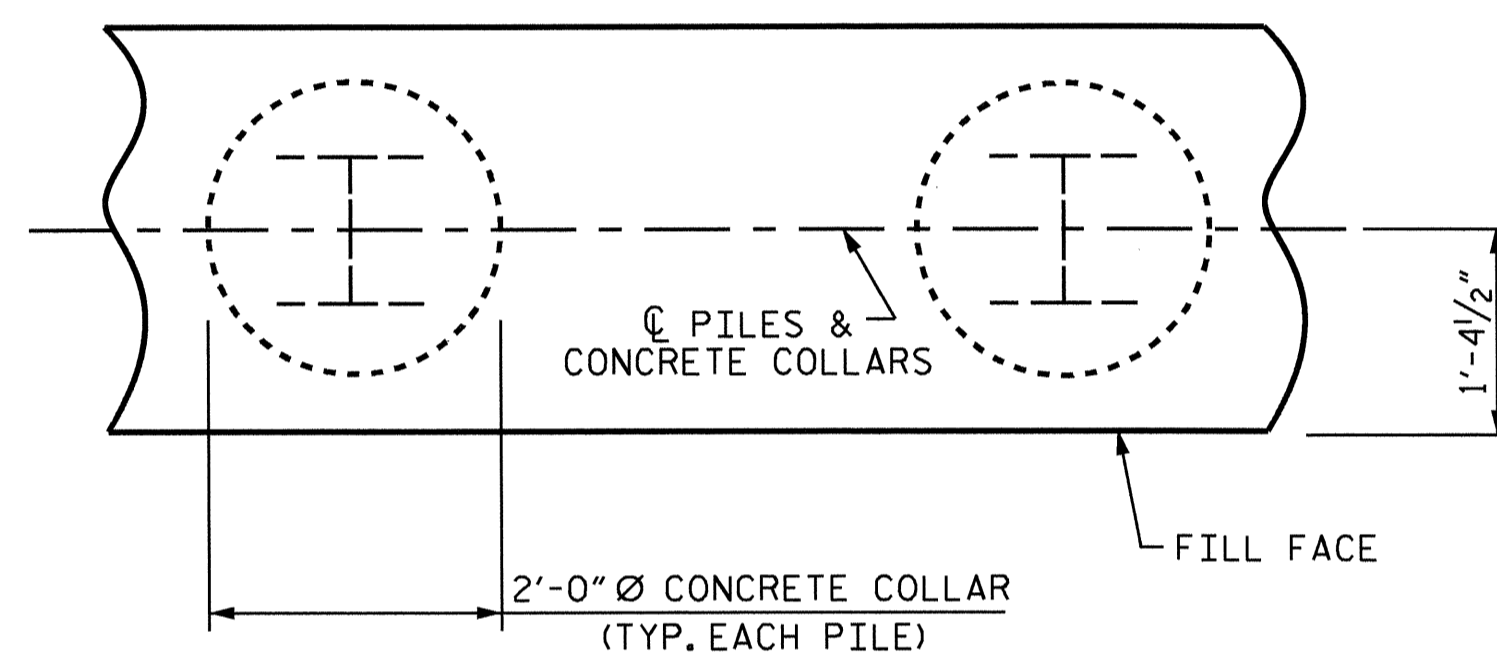
SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")

DRAWN BY: S. B. WILLIAMS DATE: 2-13
 CHECKED BY: T. H. FANG DATE: 2-13
 DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE: 3-5-13



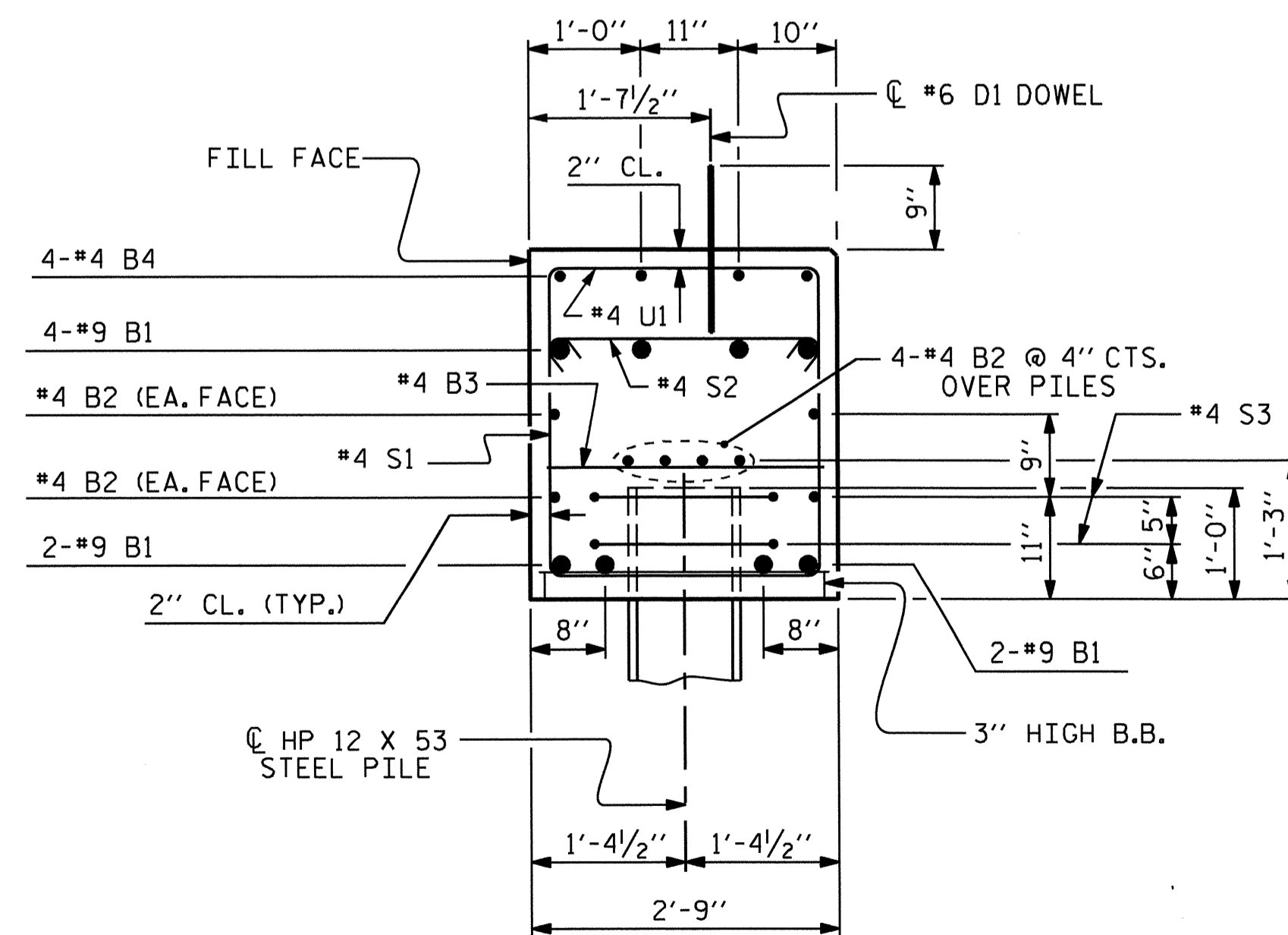
ELEVATION



PLAN

CORROSION PROTECTION FOR STEEL PILES DETAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION



SECTION B-B

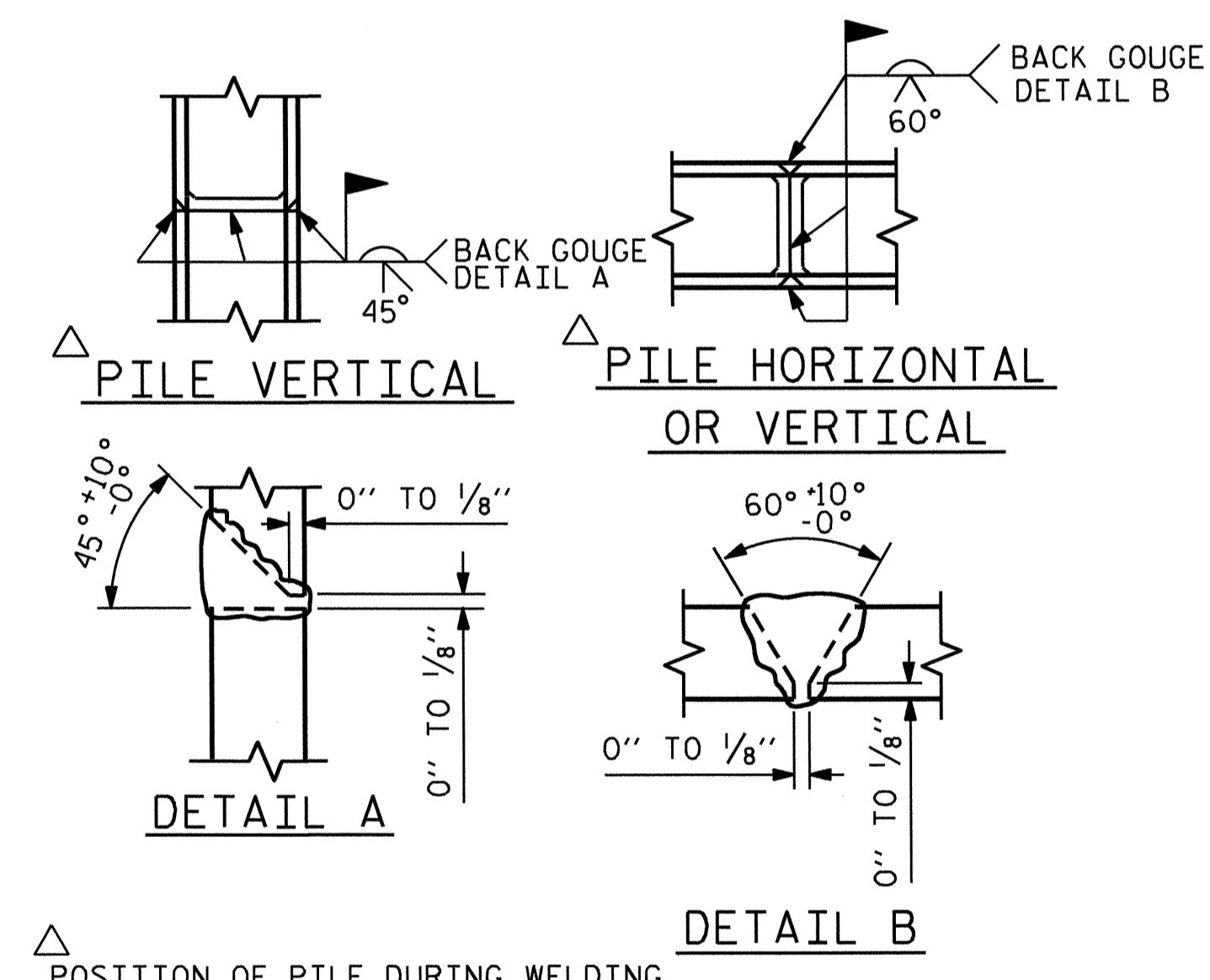
(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")

BAR TYPES	
①	HK. 1'-3" 35'-4"
②	4" 7'-7" 7'-2"
③	4" 6'-8" H3 4 1/2" 2'-5" 4 1/2" HK. 1'-3" LAP
④	4 1/2" 2'-1 1/2" HK. 2'-5"
⑤	HK. 1'-3" LAP
⑥	1'-8" Ø
⑦	1'-6" U1 2'-5"

ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT 1		END BENT 2	
HP 12 X 53 STEEL PILES	NO: 7	HP 12 X 53 STEEL PILES	NO: 7
LIN. FT. = 350		LIN. FT. = 245	

BILL OF MATERIAL FOR ONE END BENT					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	#9	1	36'-7"	1990	
B2	#4	STR	22'-4"	358	
B3	#4	STR	2'-5"	26	
B4	#4	STR	27'-3"	146	
D1	#6	STR	1'-6"	72	
H1	#4	2	8'-3"	33	
H2	#4	2	7'-10"	31	
H3	#4	3	7'-4"	59	
K1	#4	STR	4'-2"	17	
K2	#4	STR	3'-5"	14	
S1	#6	4	7'-5"	277	
S2	#6	5	3'-2"	118	
S3	#4	6	6'-6"	61	
U1	#4	STR	5'-5"	123	
V1	#4	STR	5'-3"	172	
REINFORCING STEEL				3497 LBS.	
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
POUR #1 CAP, LOWER PART OF WINGS & COLLARS				20.9 C.Y.	
POUR #2 UPPER PART OF WINGS				2.4 C.Y.	
TOTAL CLASS A CONCRETE				23.3 C.Y.	

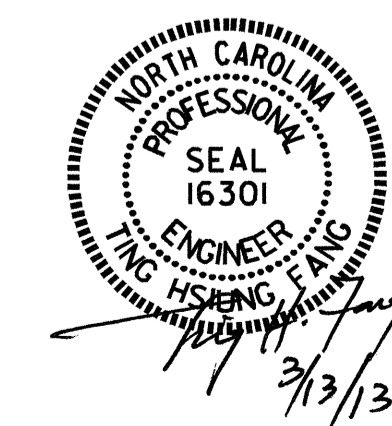


PILE SPLICE DETAILS

PROJECT NO. 41665.1A
 MOORE COUNTY
 STATION: 17+59.62 -L-

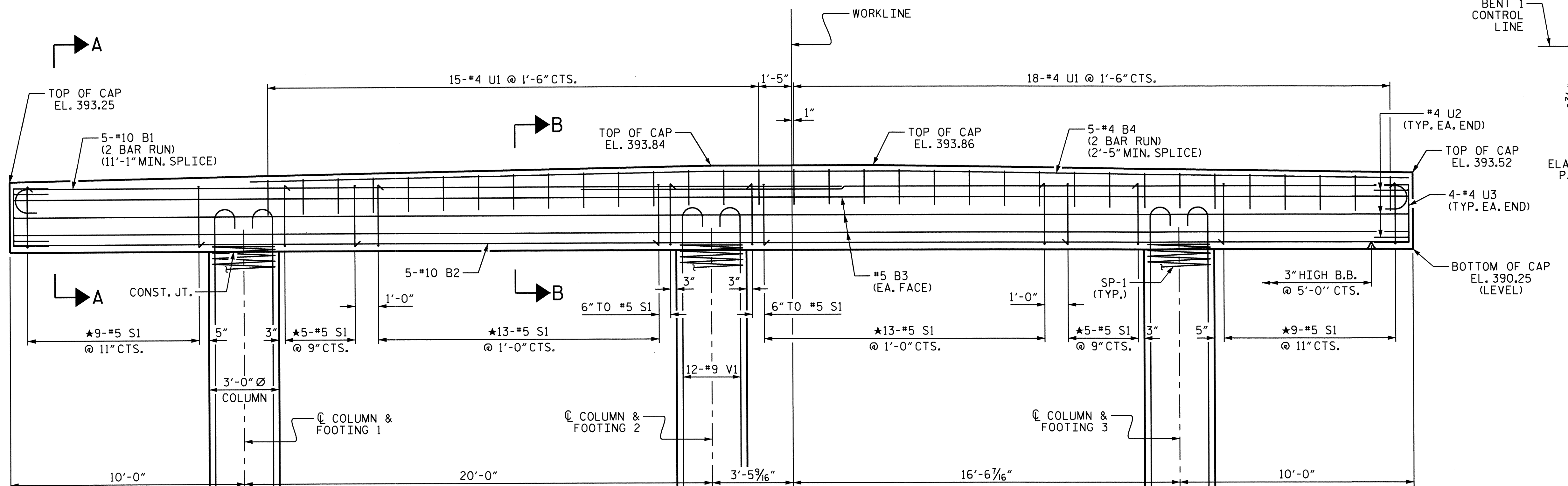
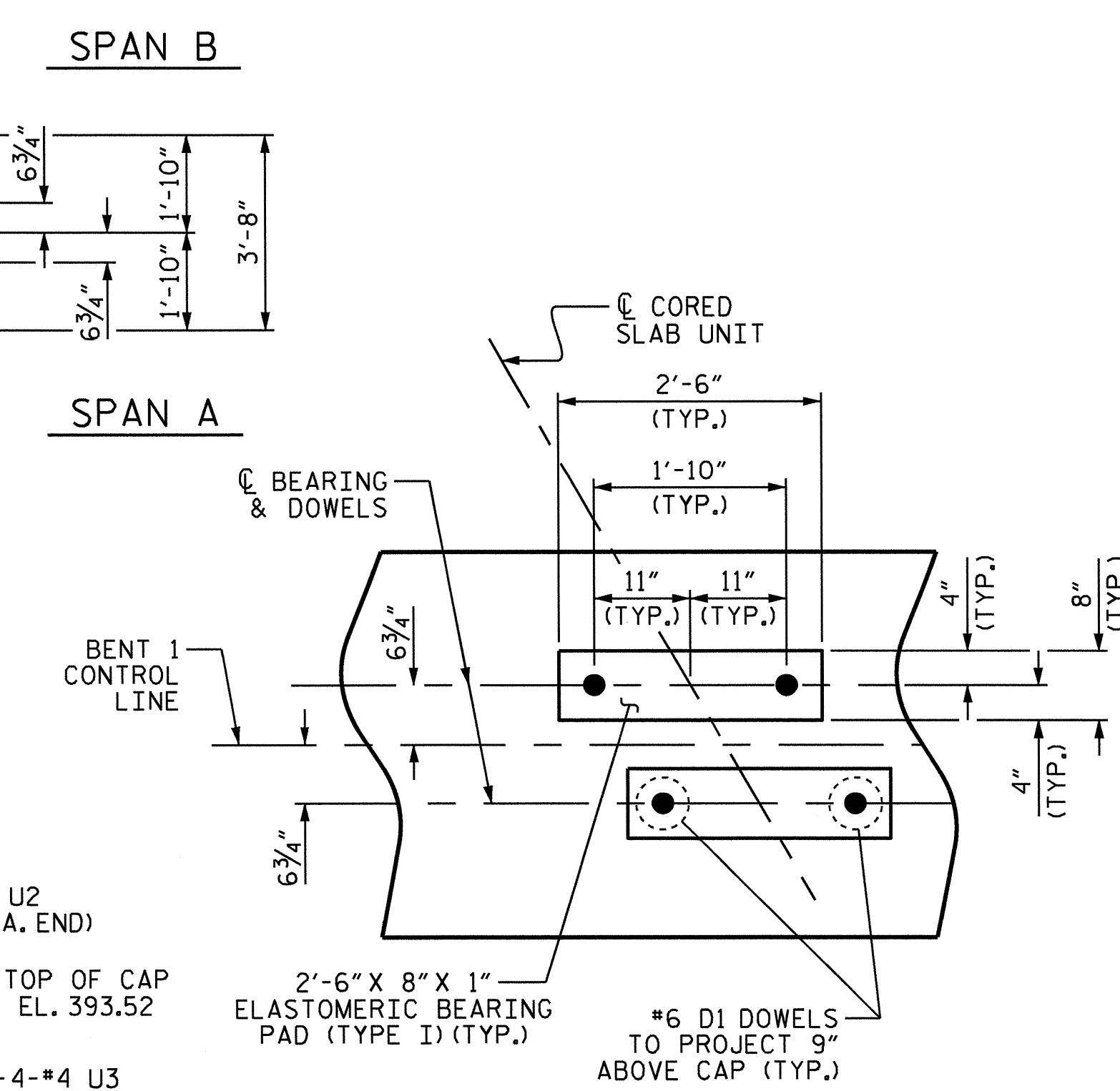
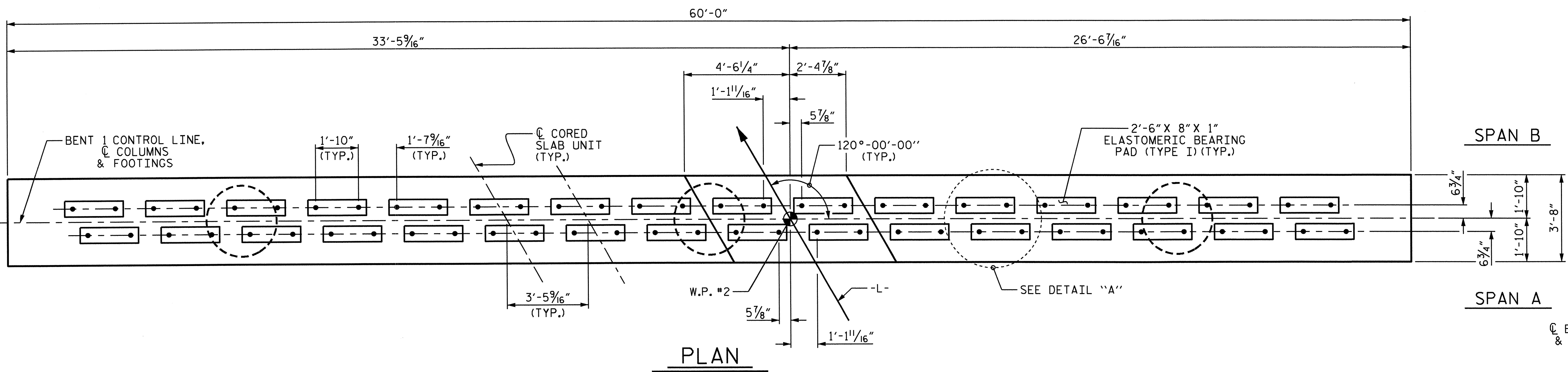
SHEET 4 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
END BENTS 1 & 2 DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-21
					TOTAL SHEETS 27



NOTES

STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
 HOOKS ON "V" AND "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
 FOR PILE SPLICE DETAILS, SEE SHEET 2 OF 2.



DETAIL "A"

PROJECT NO. 41665.1A
 MOORE COUNTY
 STATION: 17+59.62 -L-

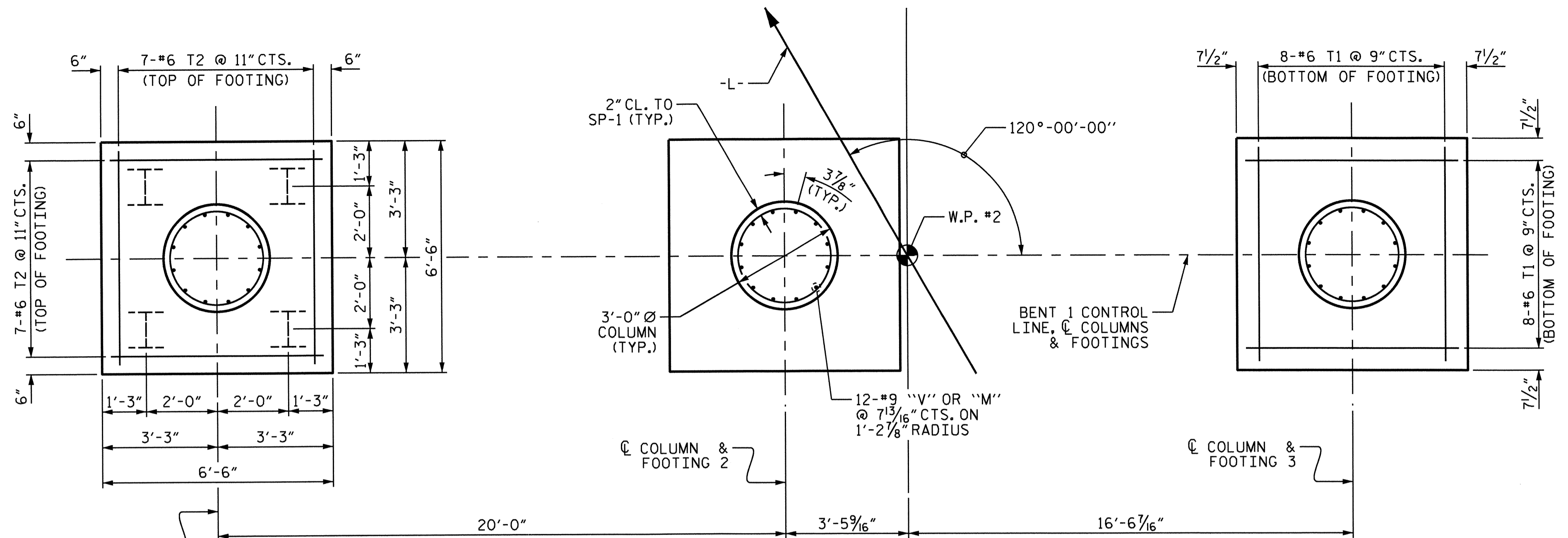
SHEET 1 OF 2



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

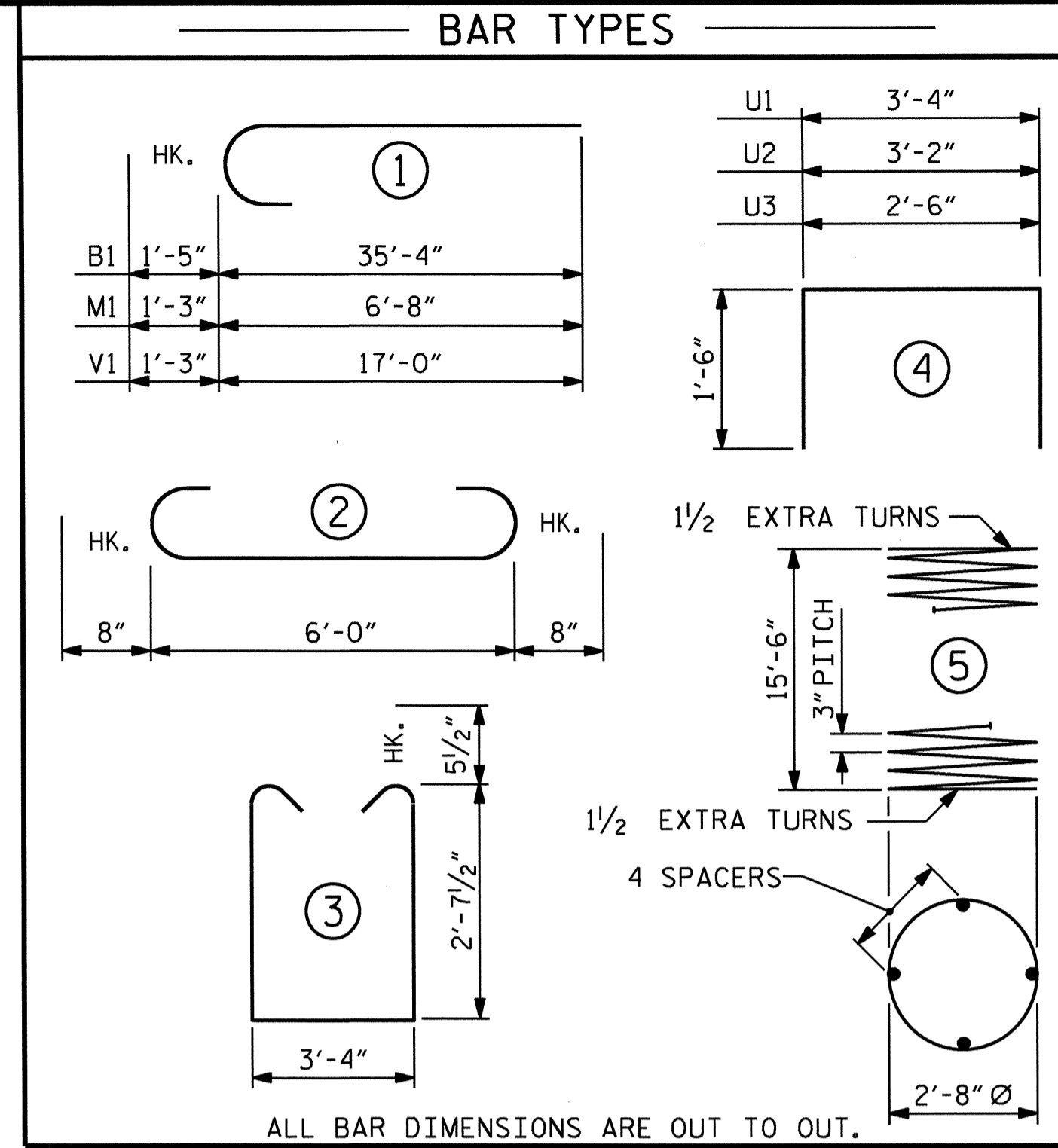
DRAWN BY: P. K. NEWTON DATE: 3/1/13
 CHECKED BY: I. H. FANG DATE: 3/4/13
 DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE: 3/4/13

ELEVATION
 DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & FOOTING, UNLESS OTHERWISE NOTED.



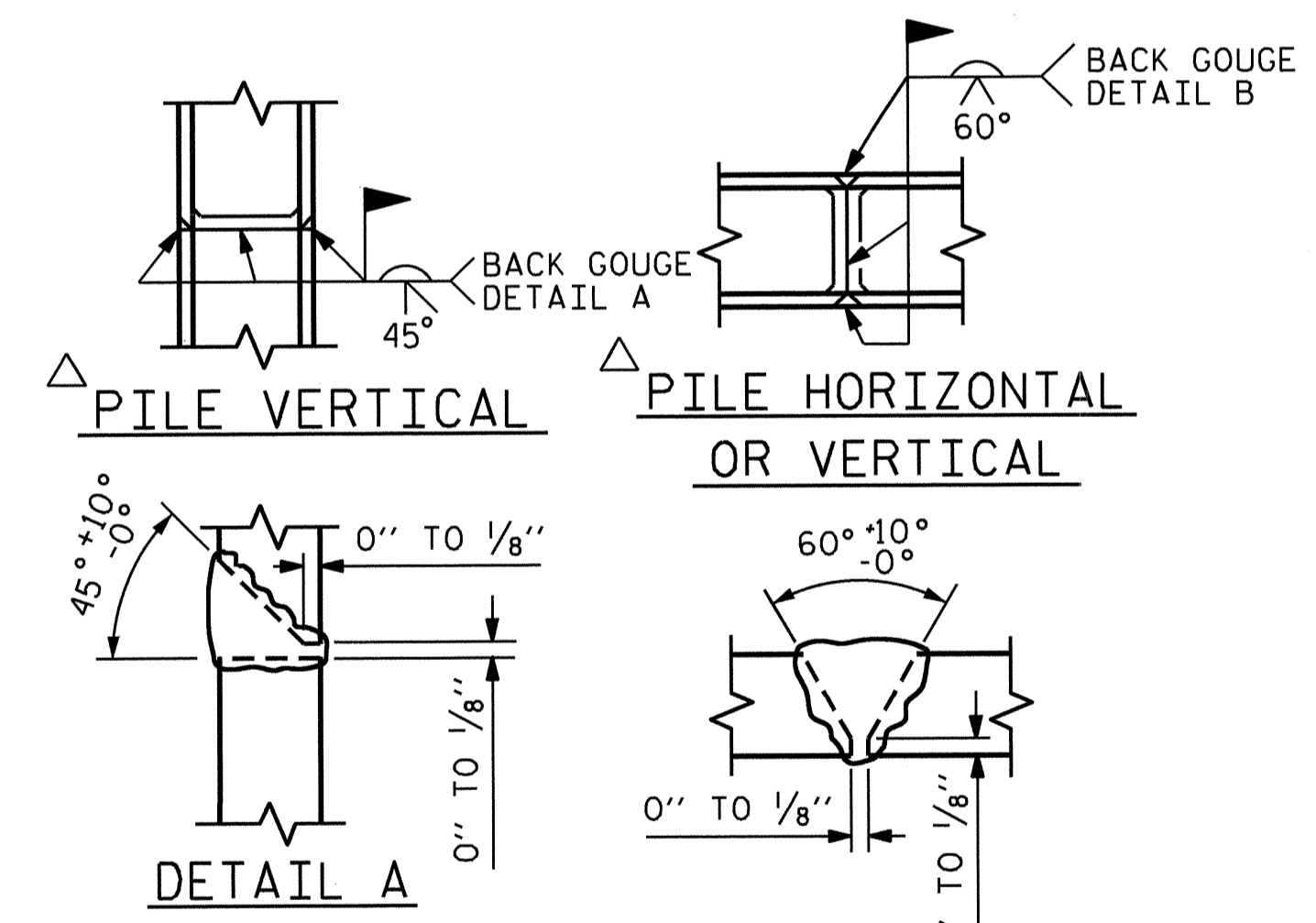
PLAN OF COLUMNS & FOOTINGS

DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & FOOTING.

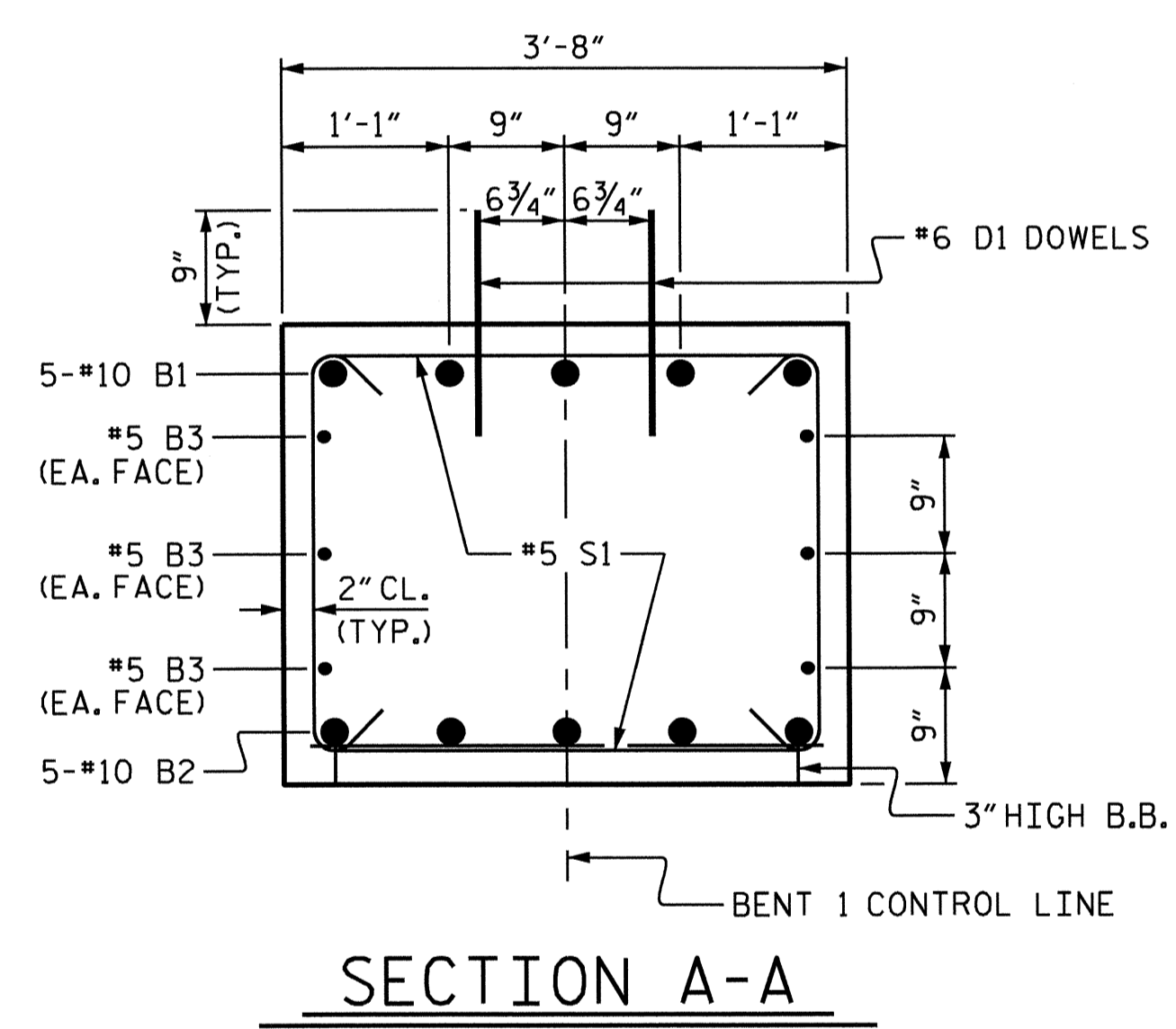


BILL OF MATERIAL						
BENT 1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	10	#10	1	36'-9"	1581	
B2	5	#10	STR	59'-8"	1284	
B3	6	#5	STR	59'-8"	373	
B4	10	#4	STR	26'-0"	174	
M1	36	#9	1	7'-11"	969	
S1	56	#5	3	9'-6"	555	
T1	48	#6	2	7'-4"	529	
T2	42	#6	STR	6'-0"	379	
U1	33	#4	4	6'-4"	140	
U2	6	#4	4	6'-2"	25	
U3	8	#4	4	5'-6"	29	
V1	36	#9	1	18'-2"	2224	
REINFORCING STEEL				LBS.	8262	
SP-1	3	*	5	536'-4"	1075	
SPIRAL COLUMN REINFORCING STEEL				LBS.	1075	
CLASS A CONCRETE BREAKDOWN						
POUR #1 - FOOTINGS				C.Y.	14.1	
POUR #2 - COLUMNS				C.Y.	12.0	
POUR #3 - CAP				C.Y.	27.6	
TOTAL				C.Y.	53.7	
HP 12 X 53 STEEL PILES						
No. 12				LIN. FT.	360	

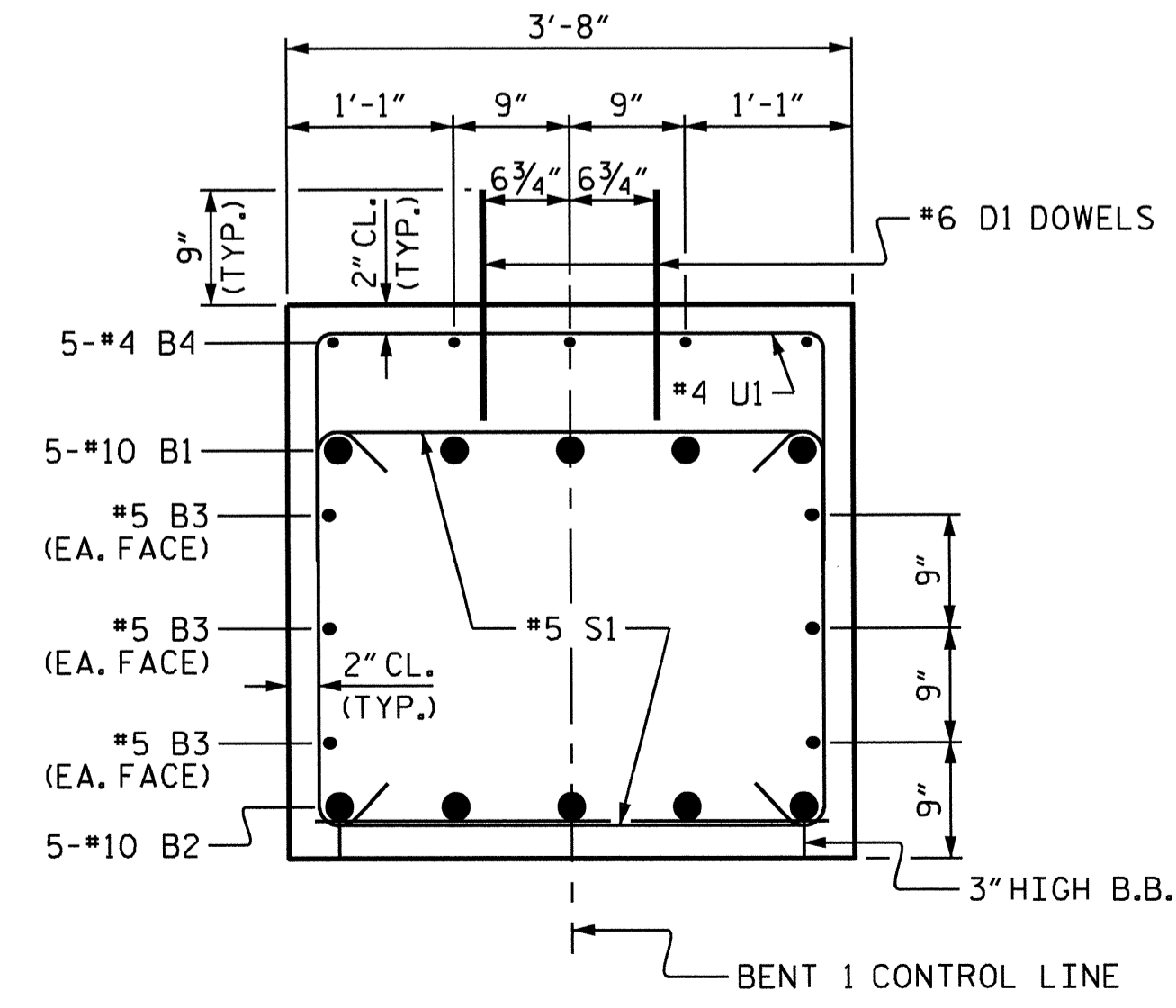
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.



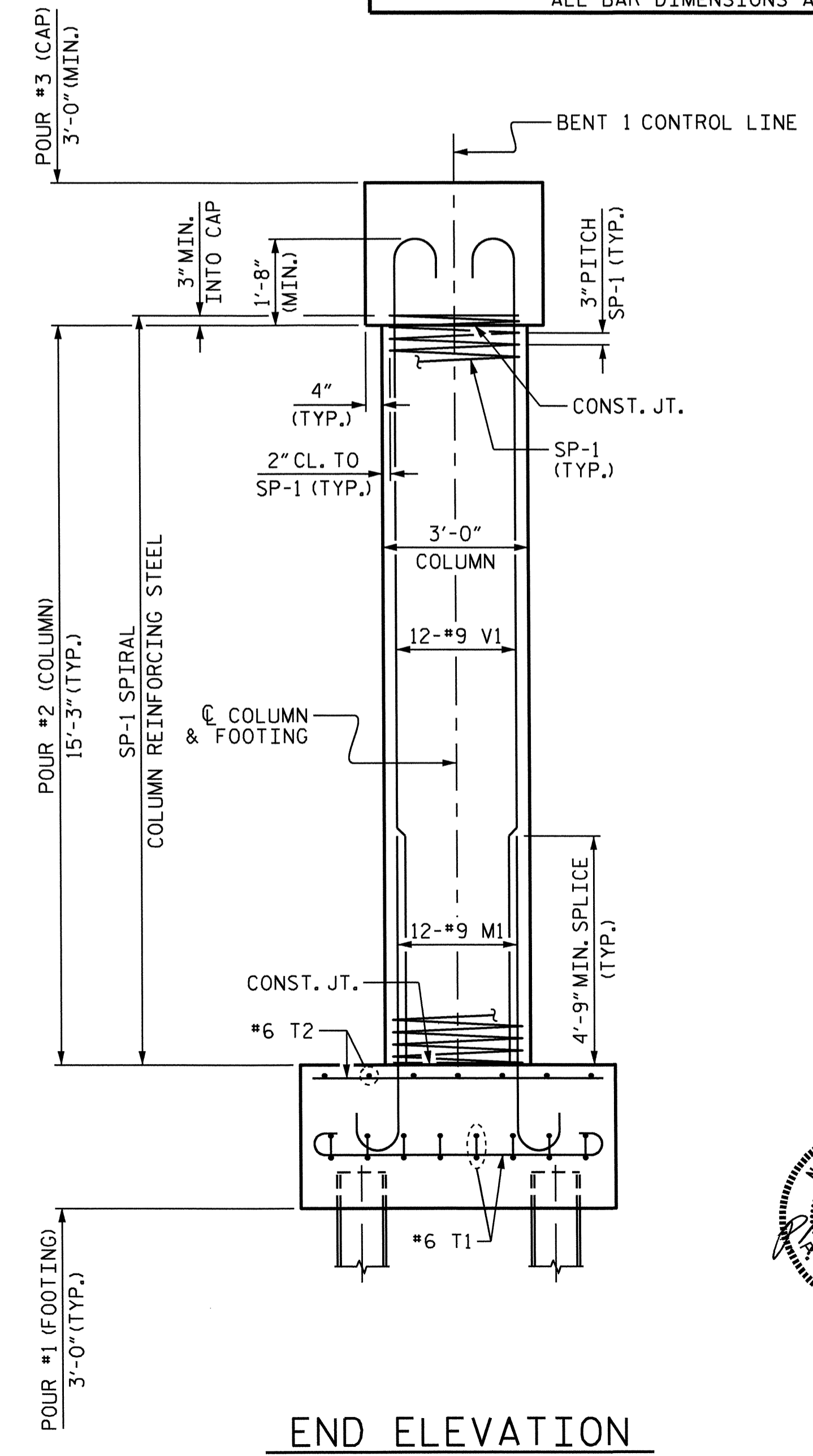
PILE SPLICE DETAILS



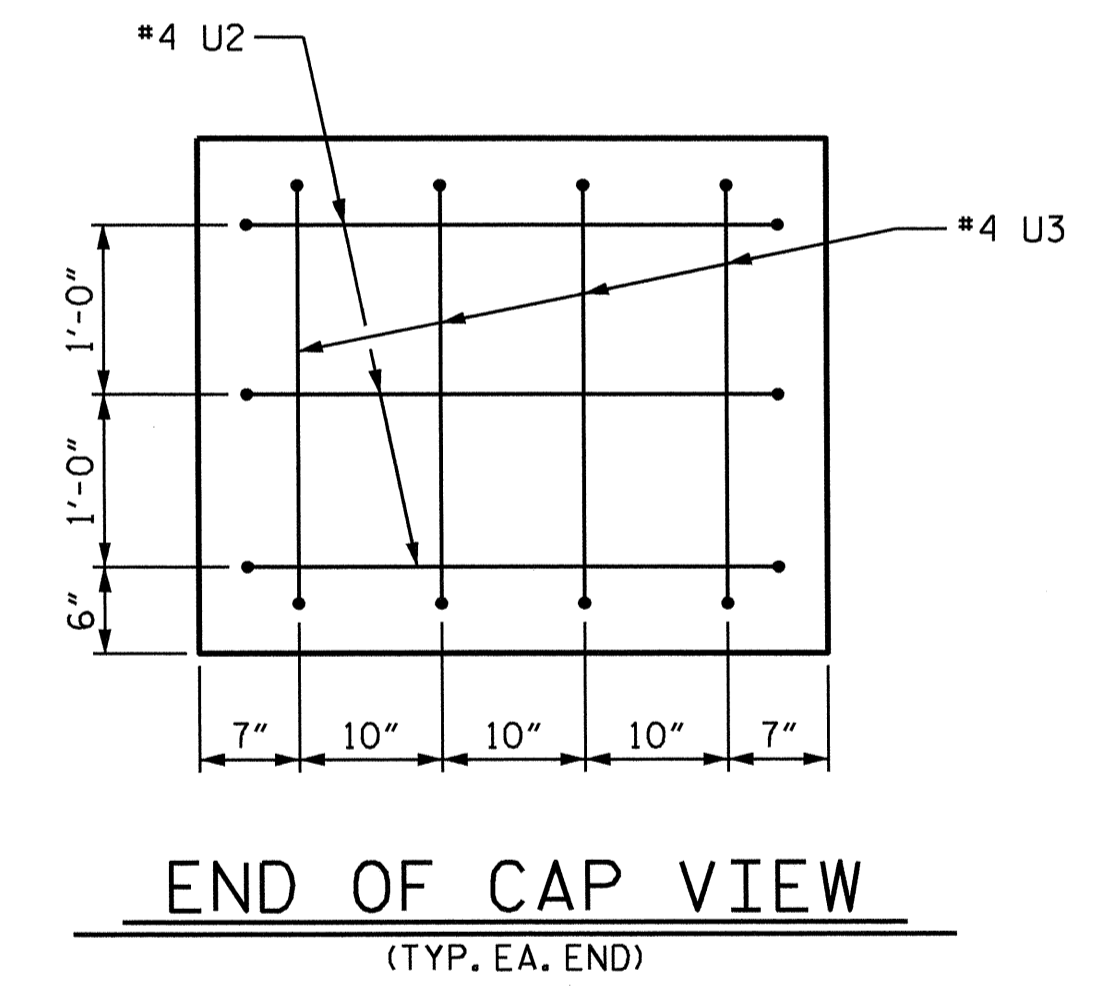
SECTION A-A



SECTION B-B



END ELEVATION



END OF CAP VIEW



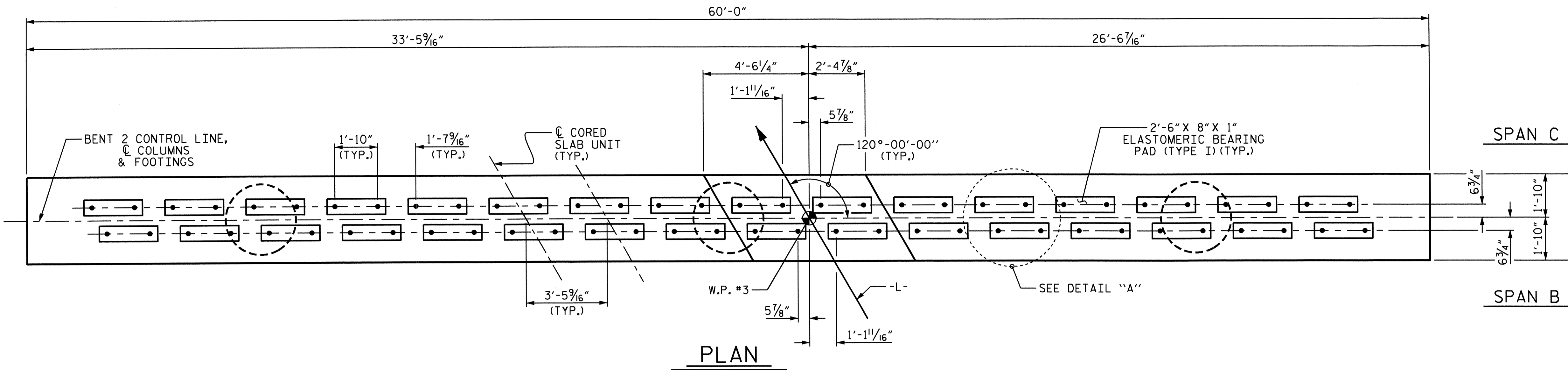
PROJECT NO. 41665.1A
 MOORE COUNTY
 STATION: 17+59.62 -L-
 SHEET 2 OF 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			27

DRAWN BY: P.K. NEWTON DATE: 3/4/13
 CHECKED BY: T.H. FANG DATE: 3/4/13
 DESIGN ENGINEER OF RECORD: P.K. NEWTON DATE: 3/4/13

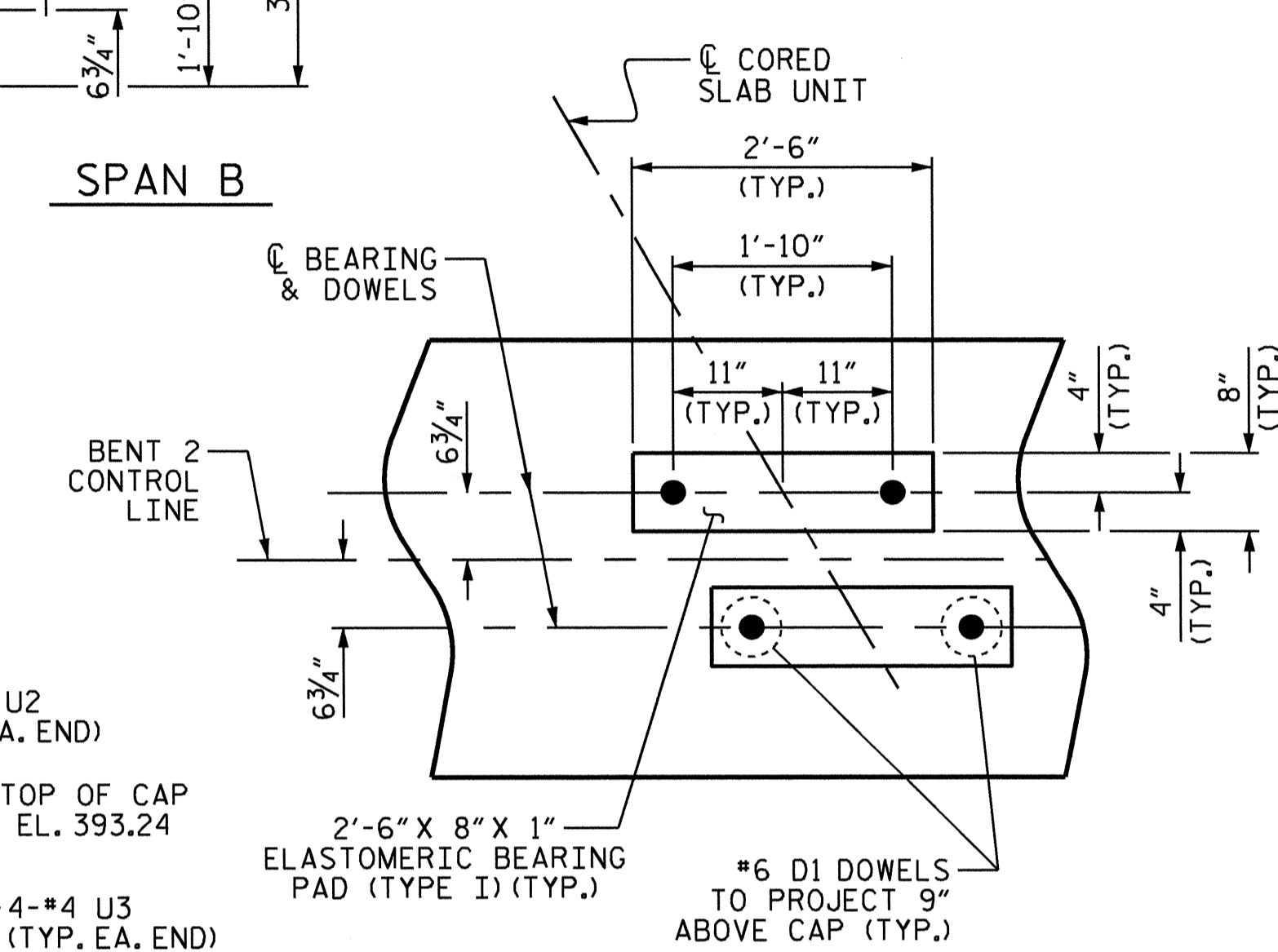
NOTES

STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
 HOOKS ON "V" AND "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
 FOR PILE SPLICE DETAILS, SEE SHEET 2 OF 2.

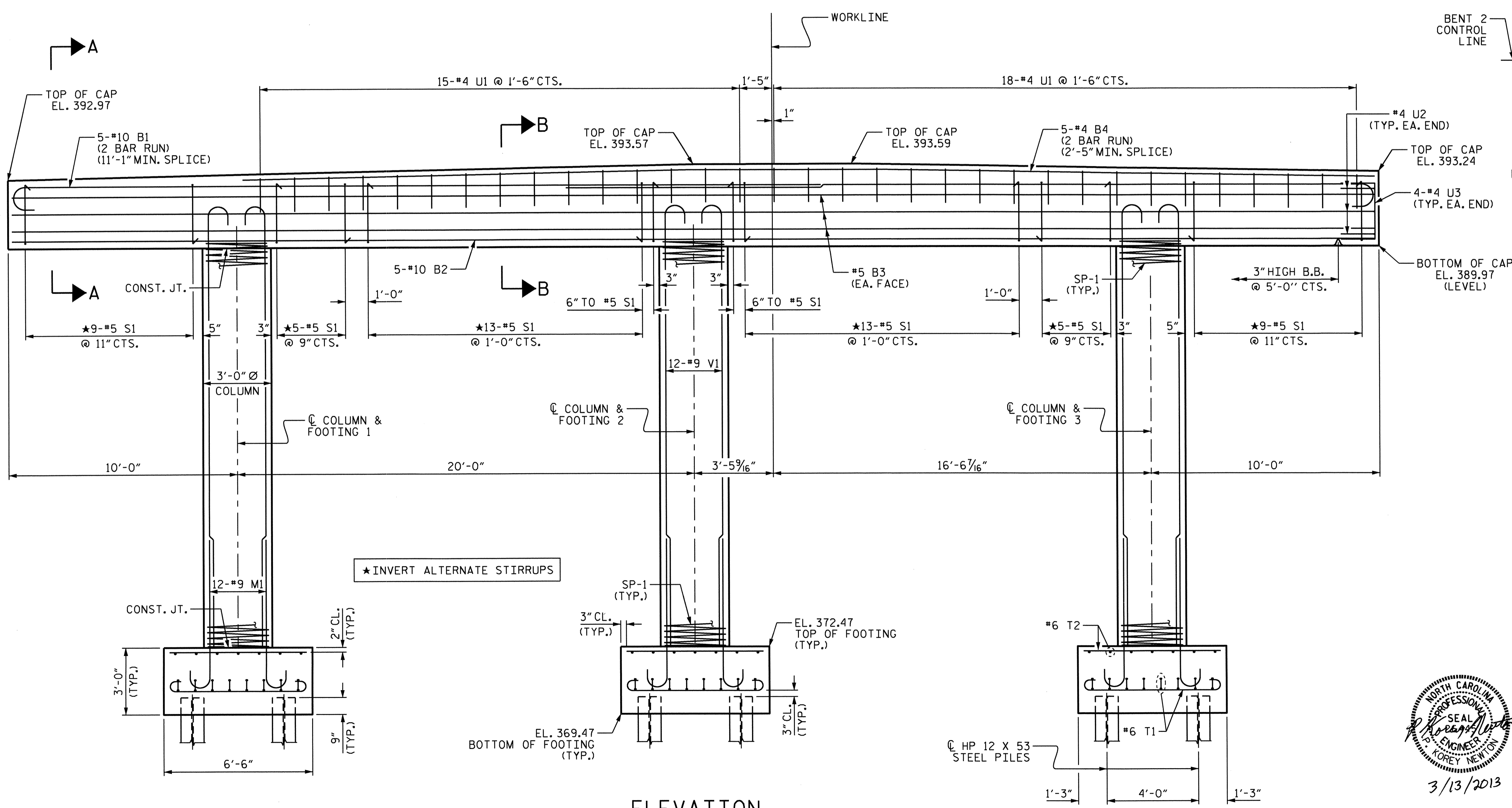


SPAN C
 SPAN B

PLAN



DETAIL "A"



ELEVATION

DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & FOOTING, UNLESS OTHERWISE NOTED.

PROJECT NO. 41665.1A
 MOORE COUNTY
 STATION: 17+59.62 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

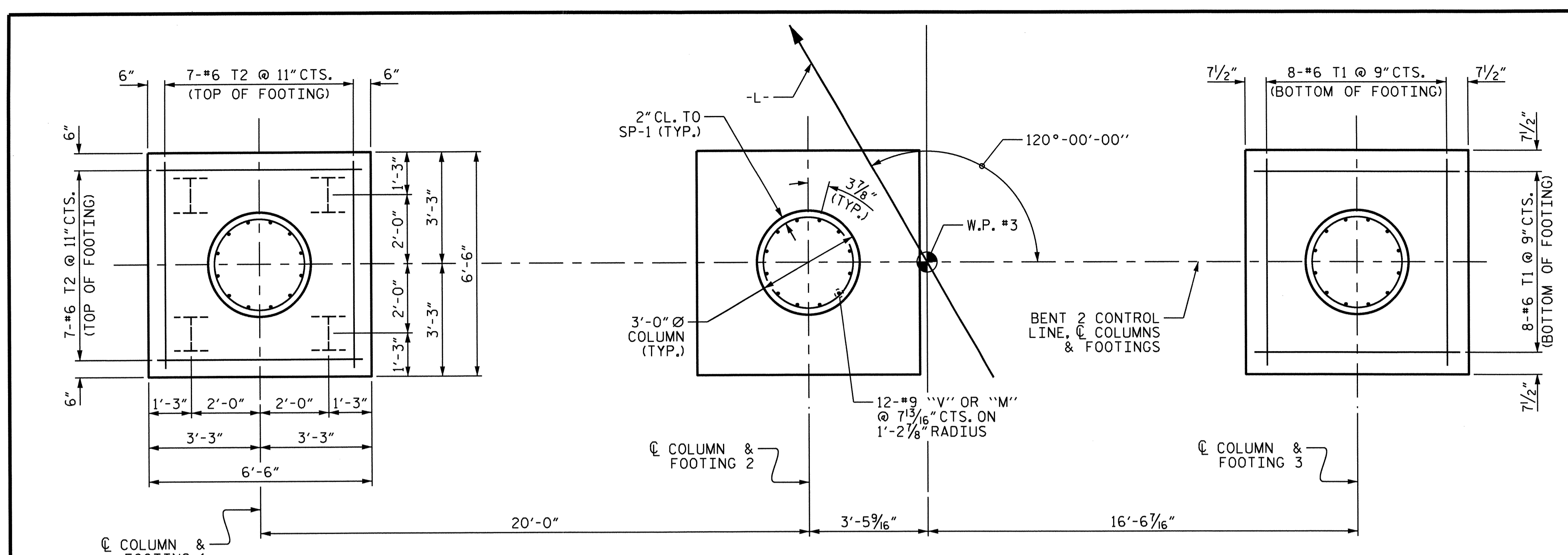
SUBSTRUCTURE

BENT 2

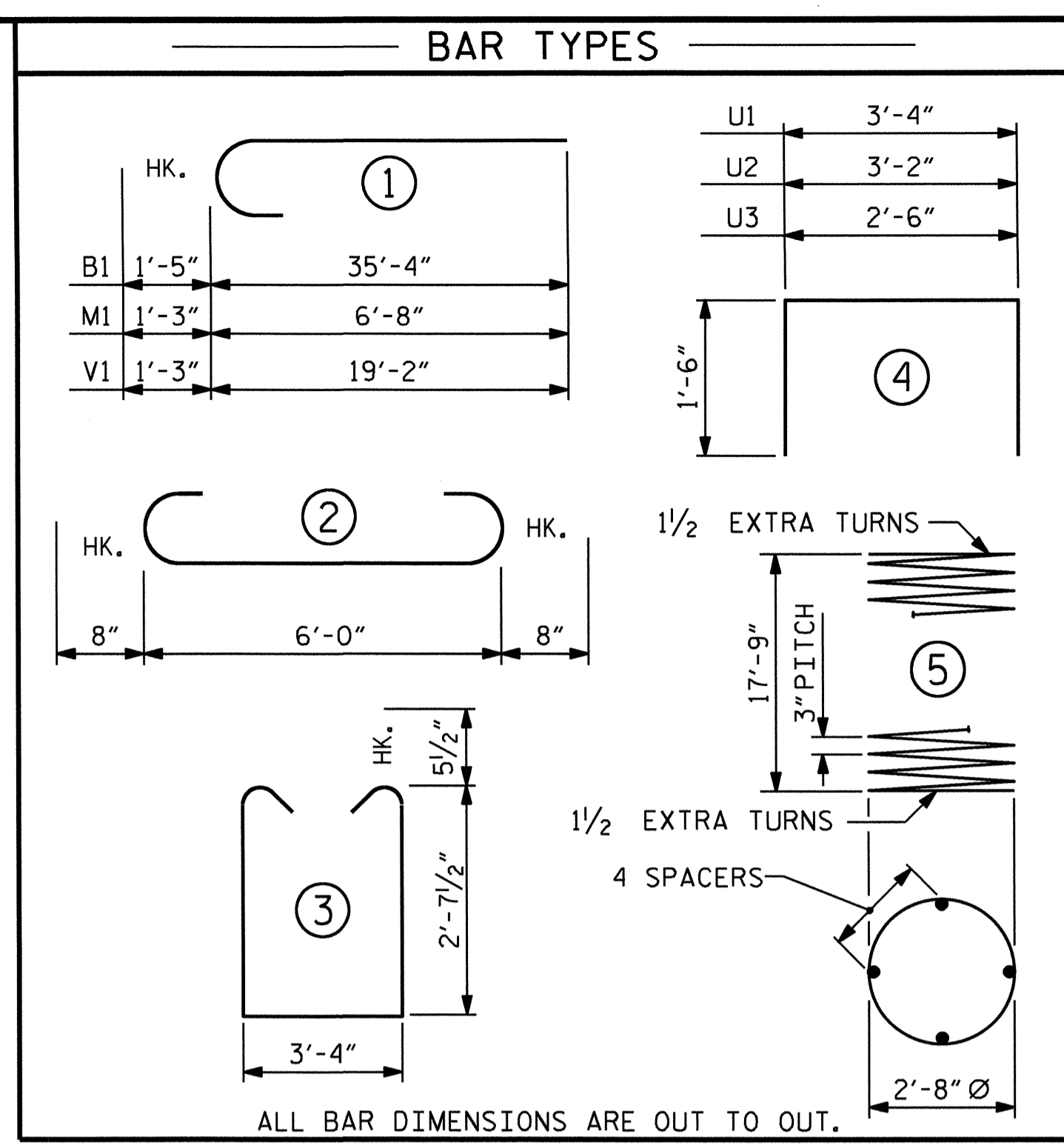


DRAWN BY: P. K. NEWTON DATE: 3/1/13
 CHECKED BY: T. H. FANG DATE: 3/4/13
 DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE: 3/4/13

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24	
1			3			TOTAL SHEETS	
2			4			27	

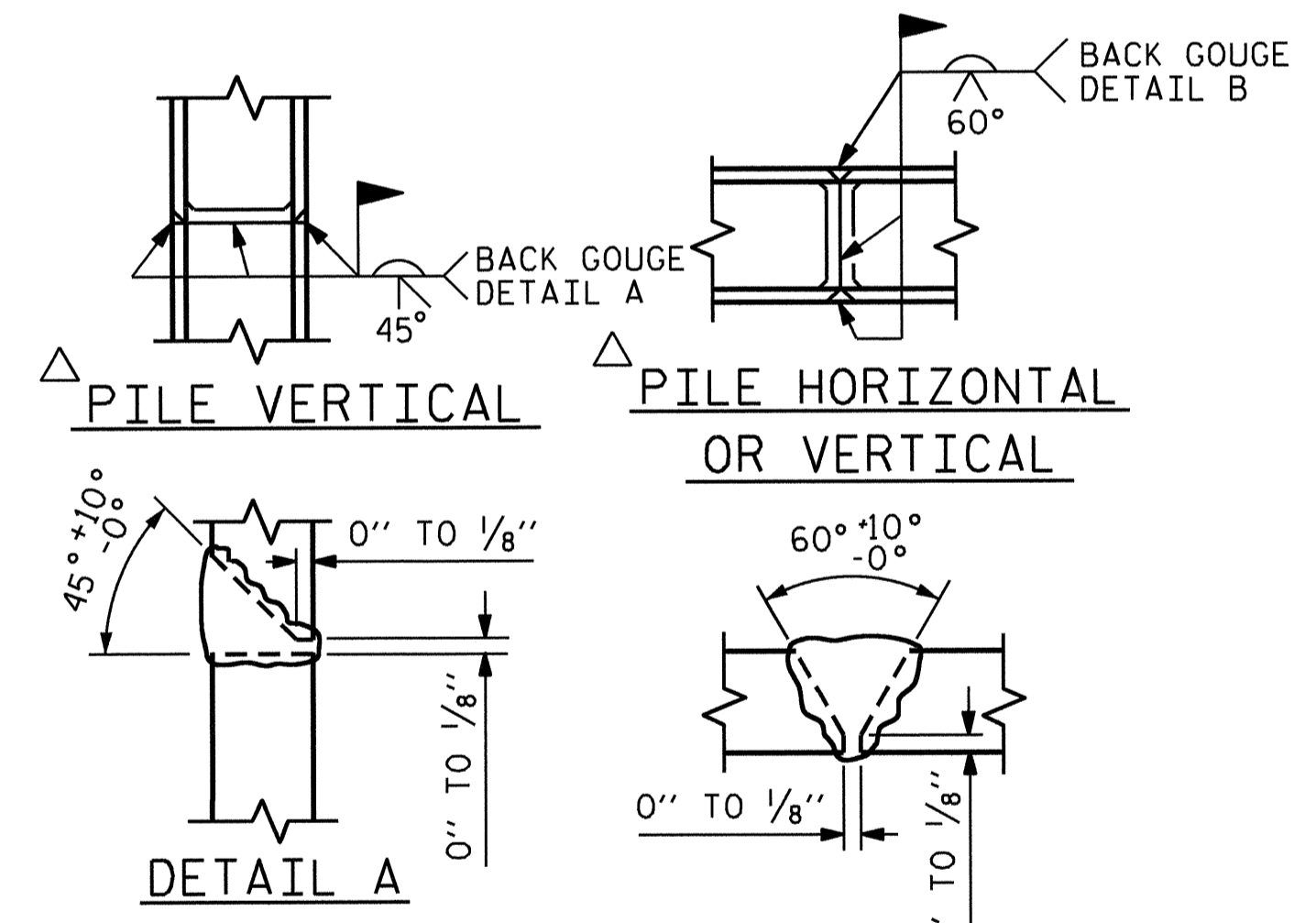


PLAN OF COLUMNS & FOOTINGS
 DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & FOOTING.

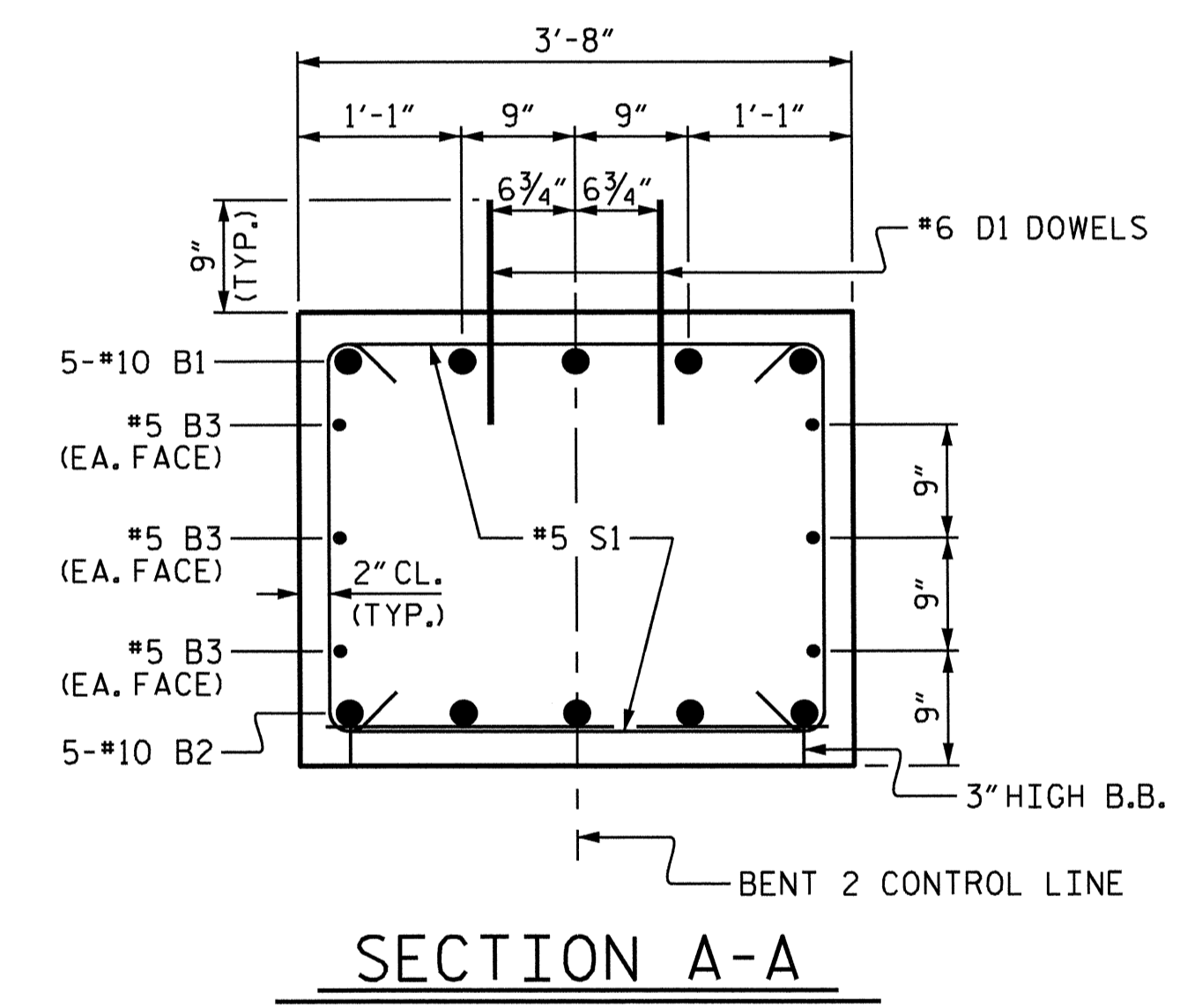


BILL OF MATERIAL					
BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#10		36'-9"	1581
B2	5	#10	STR	59'-8"	1284
B3	6	#5	STR	59'-8"	373
B4	10	#4	STR	26'-0"	174
M1	36	#9		7'-11"	969
S1	56	#5	3	9'-6"	555
T1	48	#6	2	7'-4"	529
T2	42	#6	STR	6'-0"	379
U1	33	#4	4	6'-4"	140
U2	6	#4	4	6'-2"	25
U3	8	#4	4	5'-6"	29
V1	36	#9		20'-5"	2499
REINFORCING STEEL					LBS. 8537
SP-1	3	*	5	610'-7"	1224
SPIRAL COLUMN REINFORCING STEEL					LBS. 1224
CLASS A CONCRETE BREAKDOWN					
POUR #1 - FOOTINGS					C.Y. 14.1
POUR #2 - COLUMNS					C.Y. 13.7
POUR #3 - CAP					C.Y. 27.6
TOTAL					C.Y. 55.4
HP 12 X 53 STEEL PILES					
No. 12					LIN. FT. 600

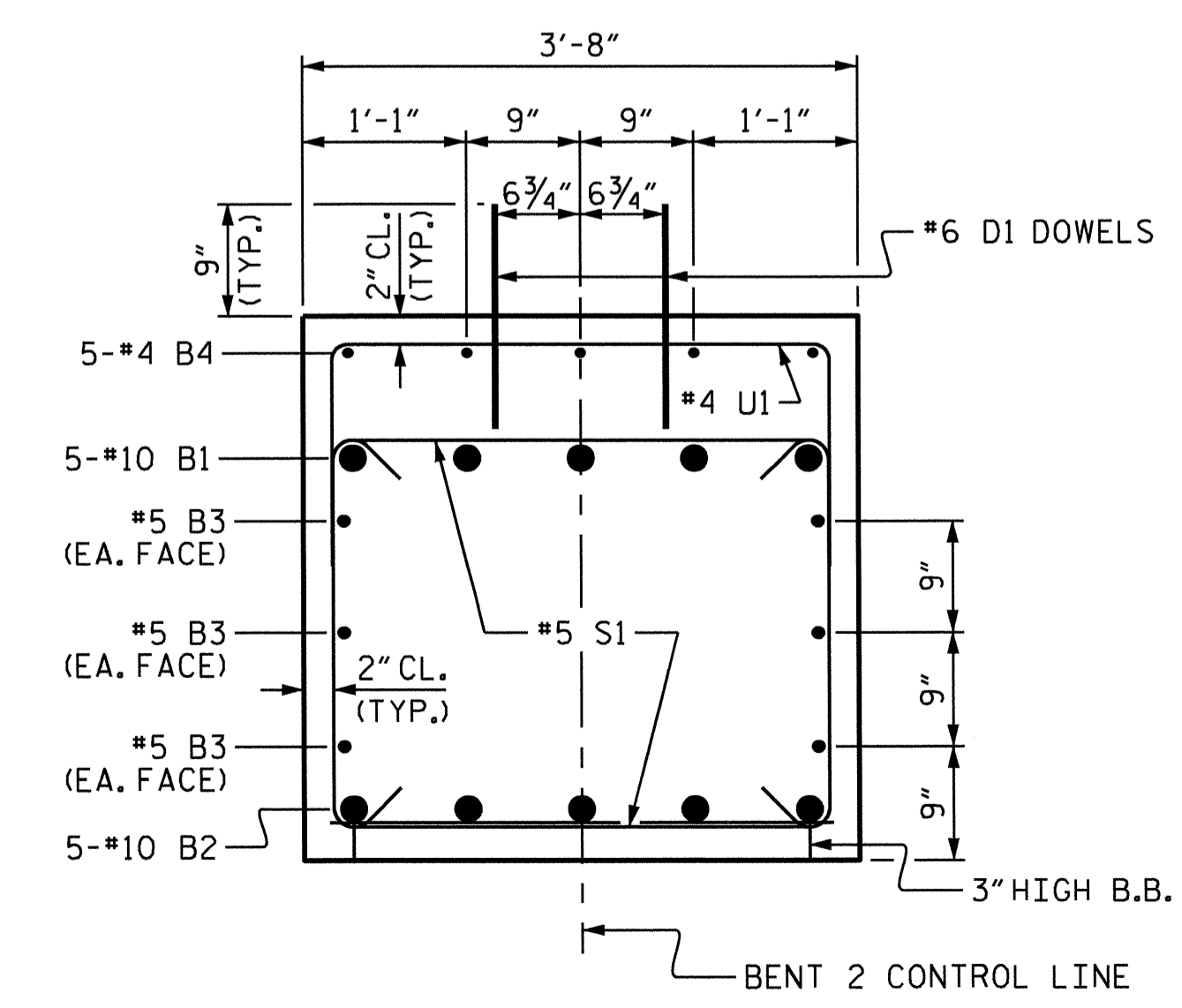
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.



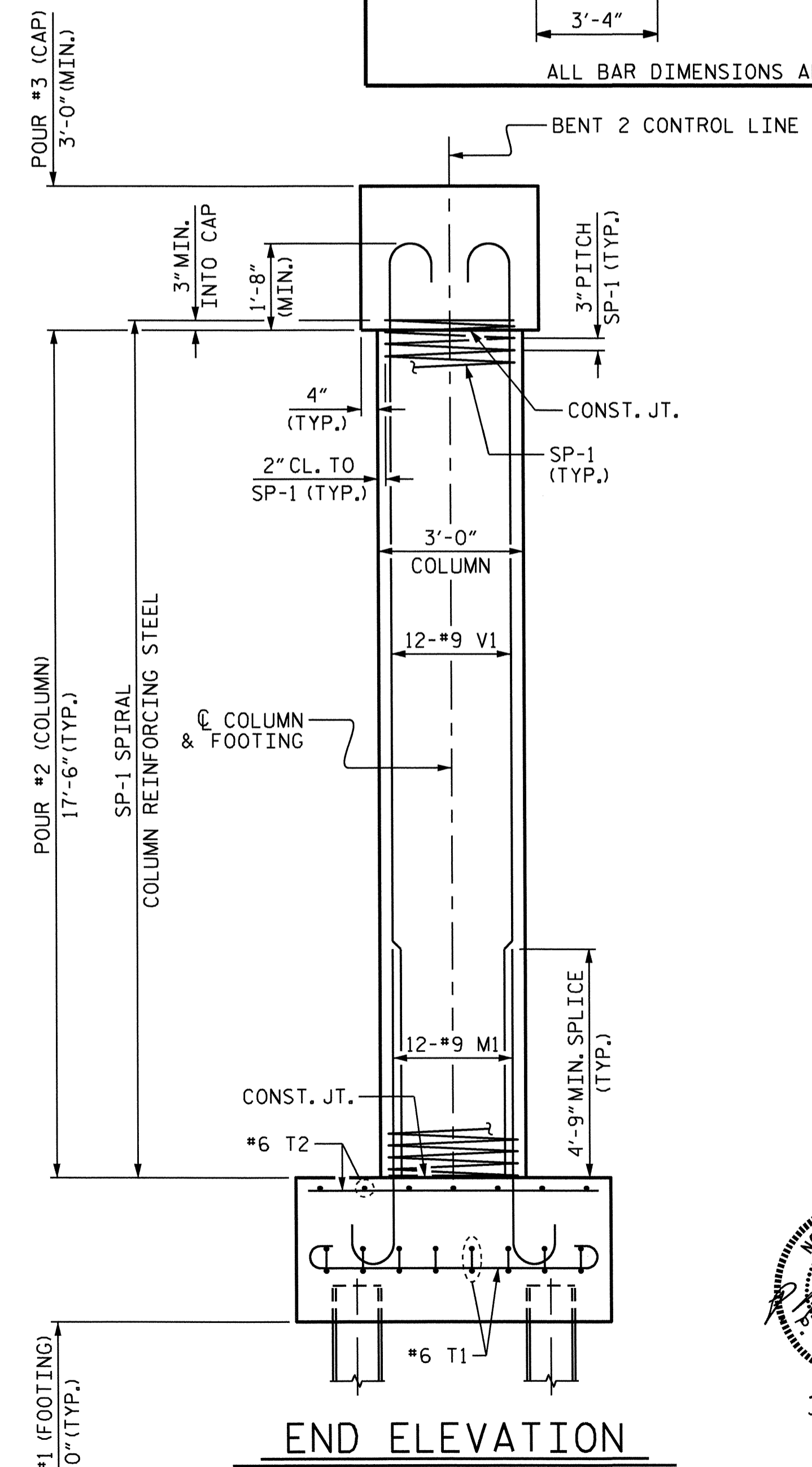
PILE SPLICE DETAILS
 POSITION OF PILE DURING WELDING.



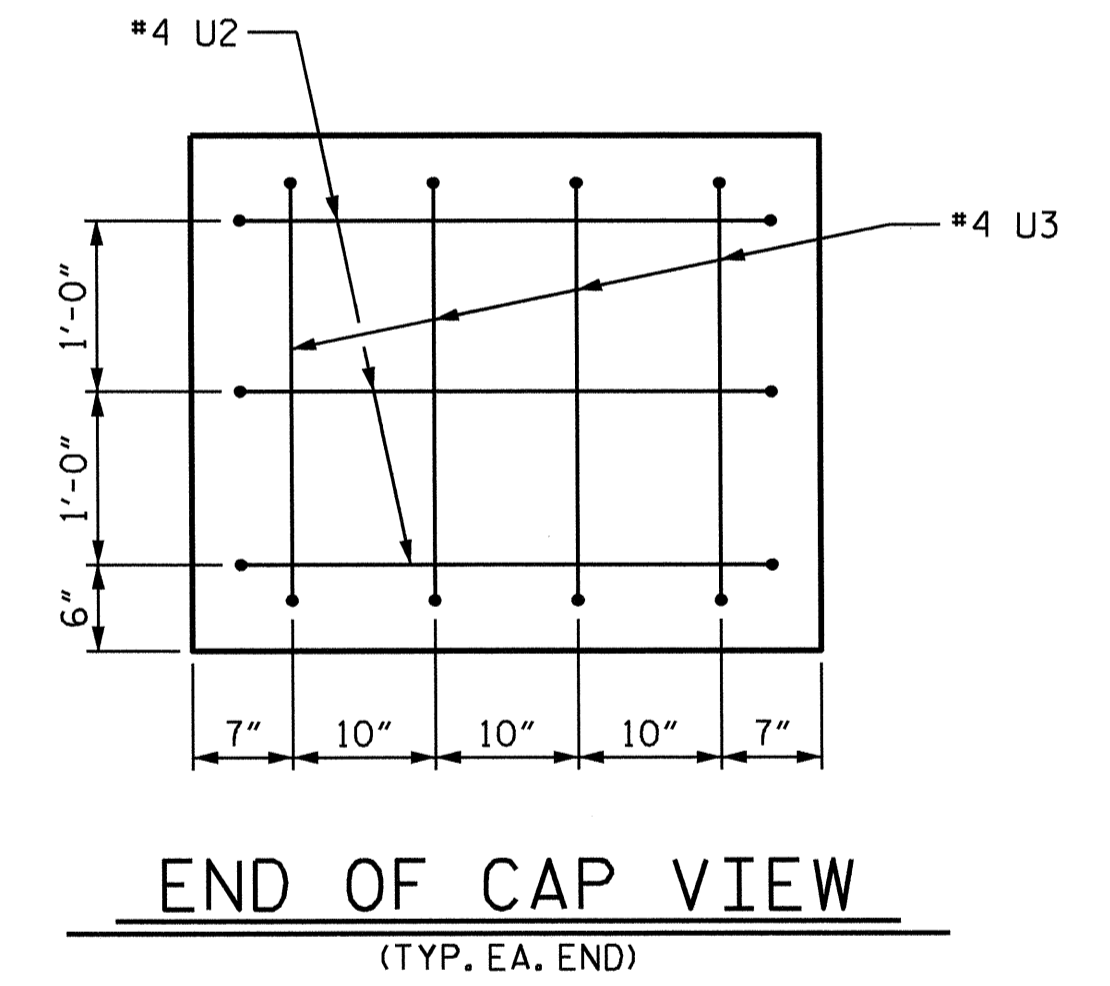
SECTION A-A



SECTION B-B



END ELEVATION



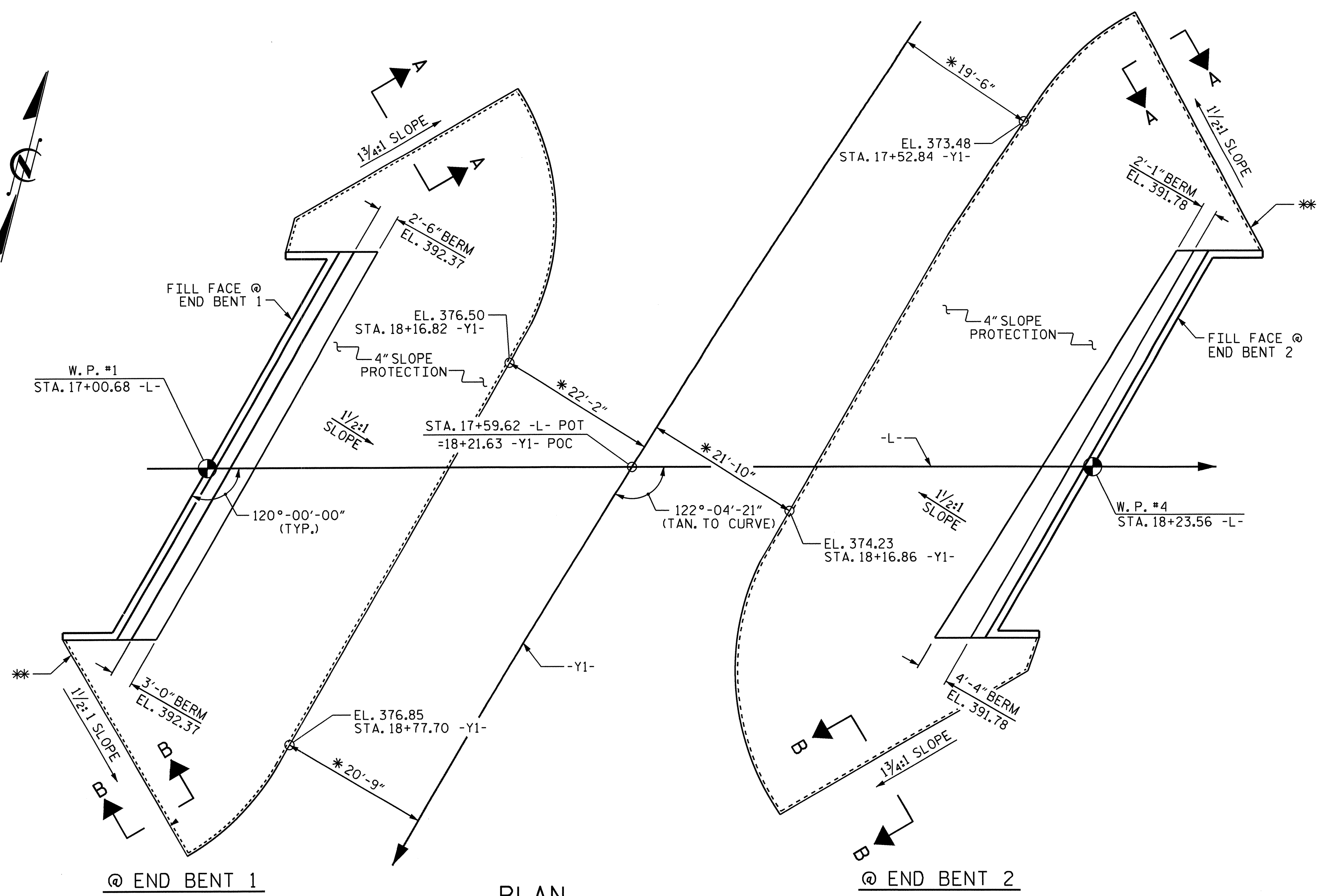
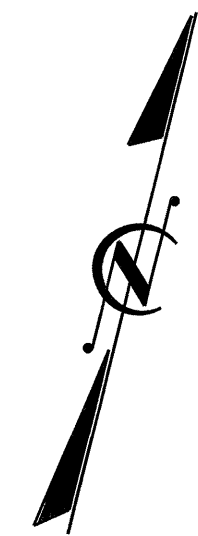
END OF CAP VIEW
 (TYP. EA. END)

Professional Engineer Seal
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL
 P. K. NEWTON
 3/13/2013

PROJECT NO. 41665.1A
 MOORE COUNTY
 STATION: 17+59.62 -L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
BENT 2					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-25
					TOTAL SHEETS 27

DRAWN BY: P. K. NEWTON DATE: 3/4/13
 CHECKED BY: T. H. FANG DATE: 3/4/13
 DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE: 3/4/13



END BENT 1

PLAN

END BENT 2

* MEASURED TO TOE OF SLOPE PROTECTION
 * THE LIMIT OF THE SLOPE PROTECTION SHALL BE DETERMINED BY THE ENGINEER AT THESE LOCATIONS.

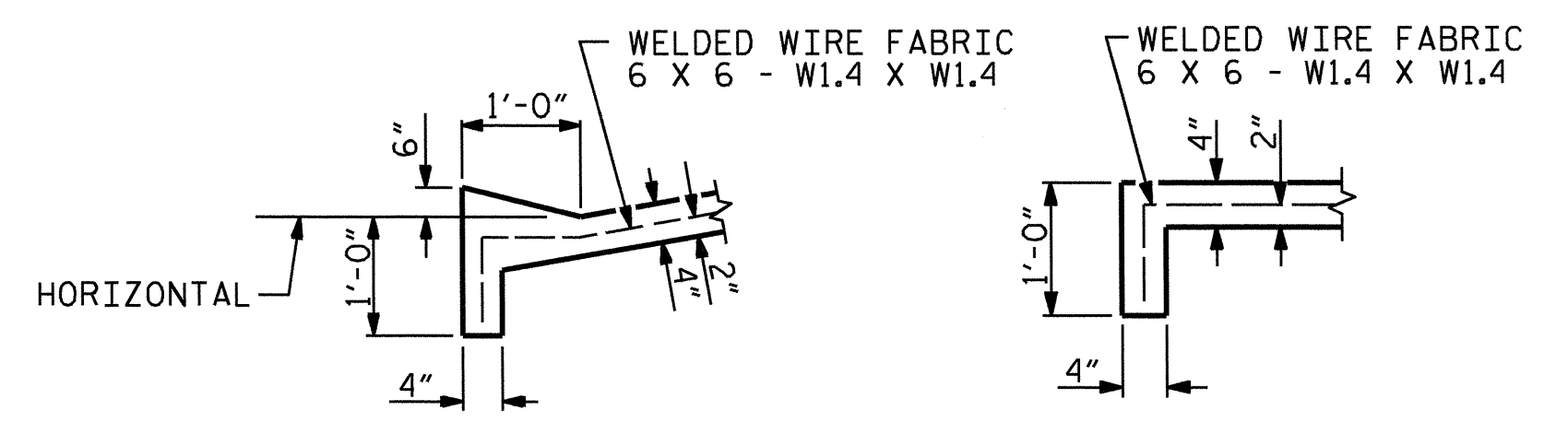
GENERAL NOTES

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS.

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

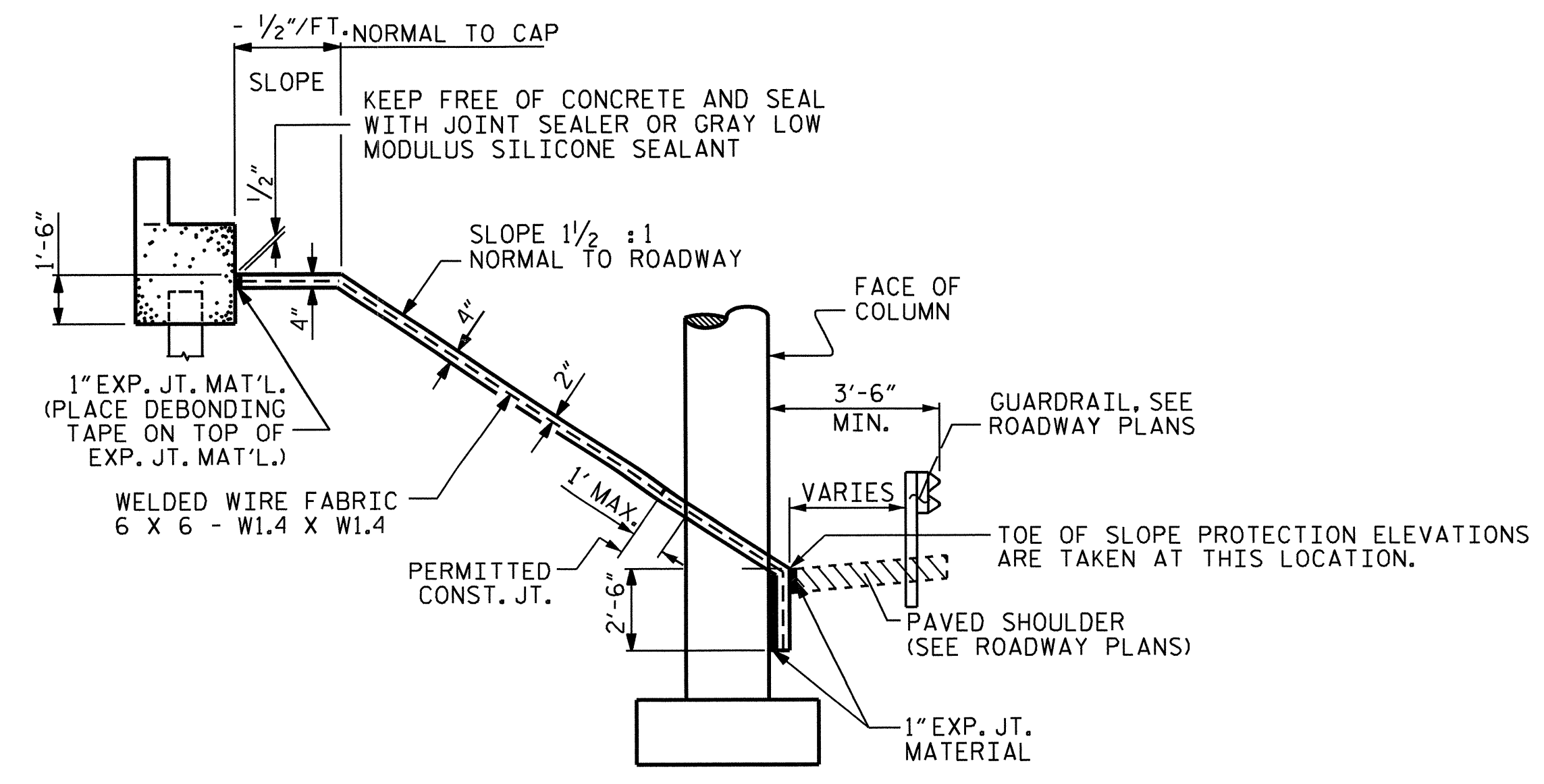
BRIDGE @ STA. 17+59.62 -L-	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	395	790
END BENT 2	465	930

* QUANTITY SHOWN IS BASED ON 5' POURS.

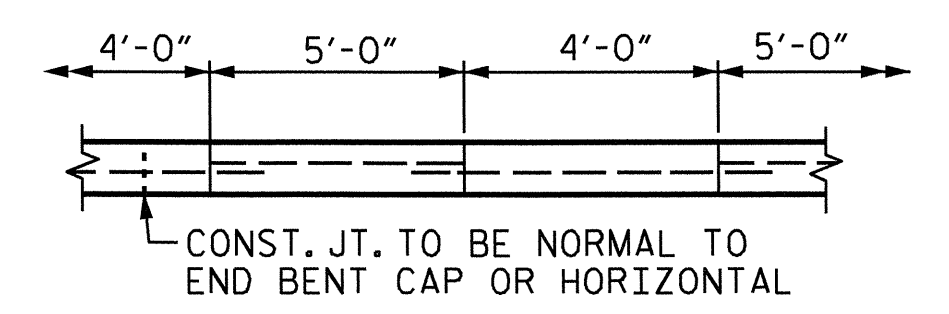


SECTION B-B

SECTION A-A

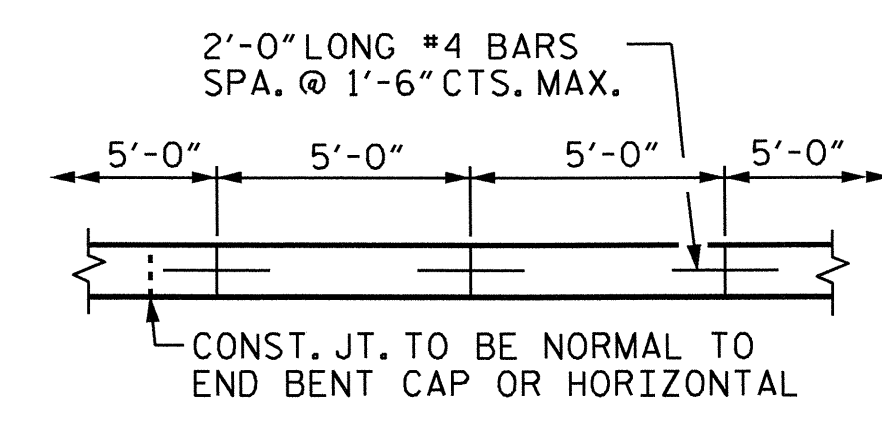


SECTION ALONG ROADWAY



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

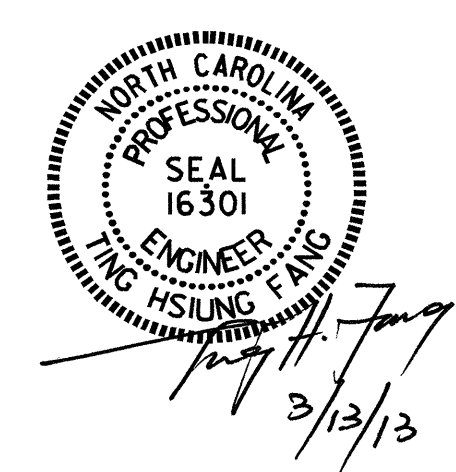
OPTIONAL POURING DETAIL



STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL

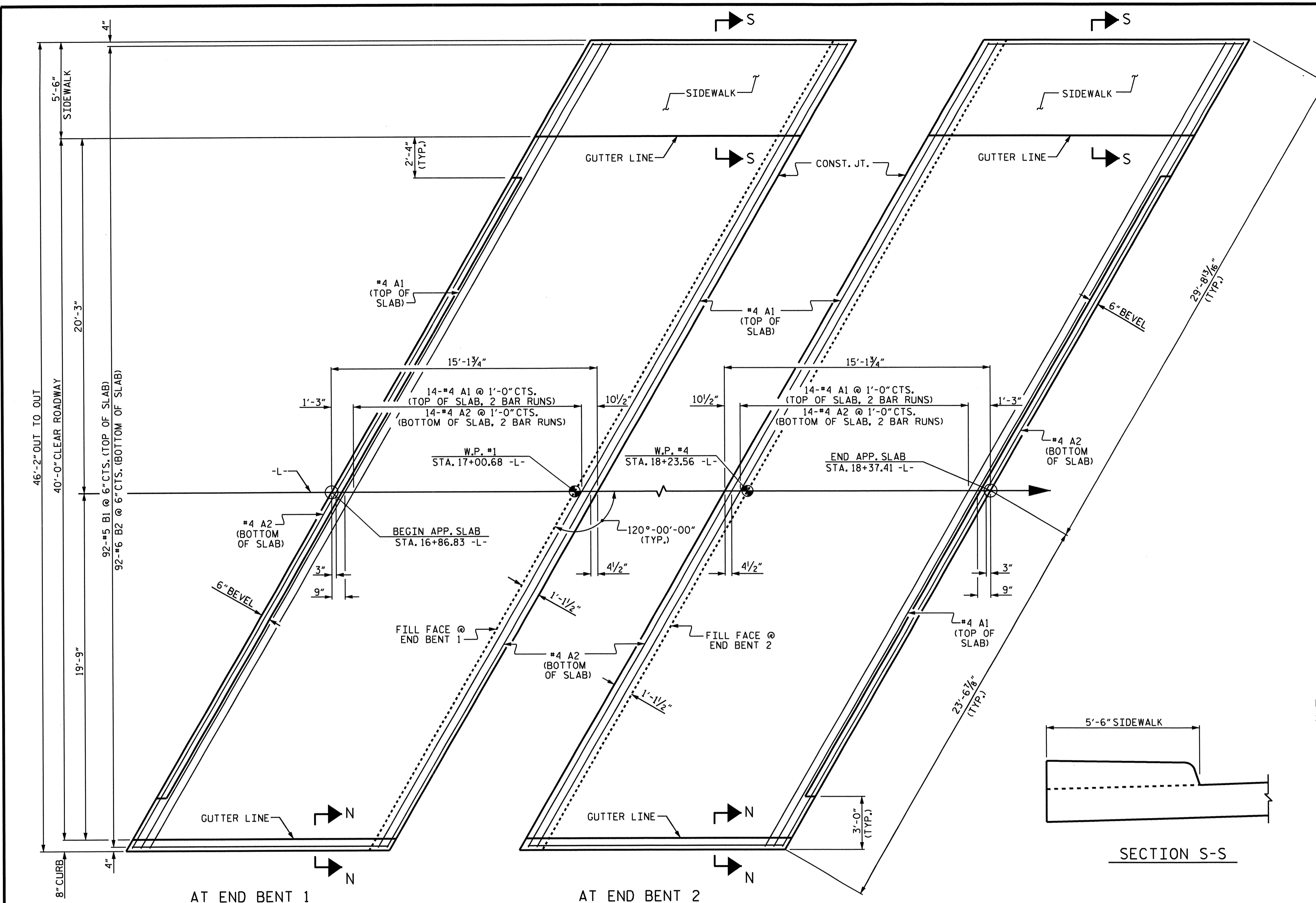
PROJECT NO. 41665.1A
 MOORE COUNTY
 STATION: 17+59.62 -L-



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

SHEET NO.	S-26
TOTAL SHEETS	27

ASSEMBLED BY : S. B. WILLIAMS	DATE : 2/28/13
CHECKED BY : T. H. FANG	DATE : 3/5/13
DRAWN BY : ELR 5/92	REV. 5/1/06 TLA/GM
CHECKED BY : GRP 6/92	REV. 10/1/11 MAA/GM
	REV. 12/21/11 MAA/GM



NOTES

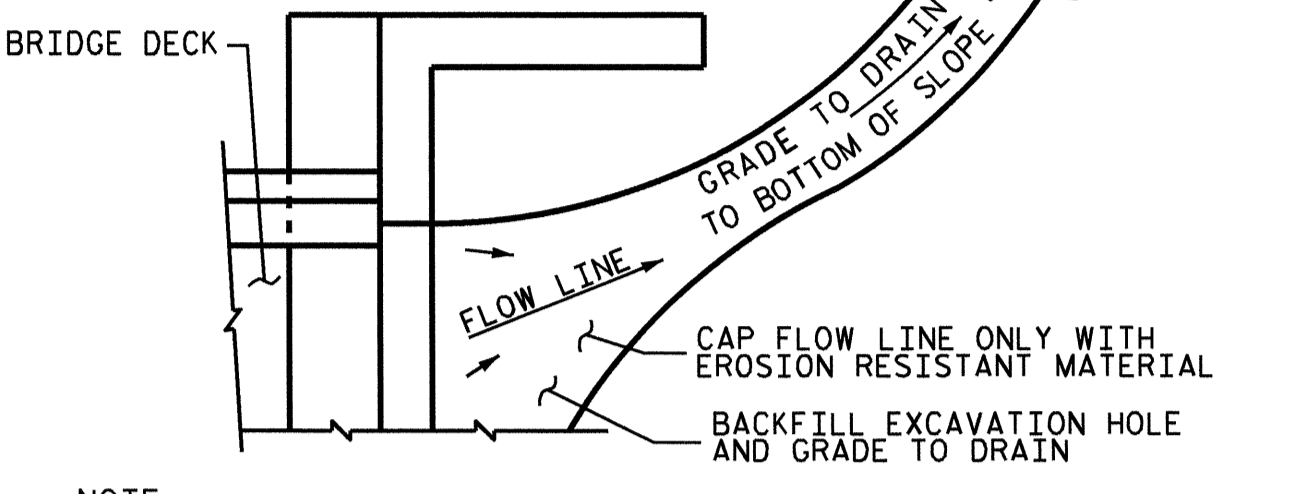
FOR REINFORCED BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, AND SELECT MATERIAL, SEE ROADWAY PLANS.

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

FOR SIDEWALK QUANTITIES AND DETAILS, SEE SHEET S-11.

BILL OF MATERIAL					
FOR ONE APPROACH SLAB (TWO REQUIRED)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	32	#4	STR	27'-6"	588
A2	32	#4	STR	27'-5"	586
*B1	92	#5	STR	14'-2"	1359
B2	92	#6	STR	14'-8"	2027
REINFORCING STEEL					2613 LBS.
*EPOXY COATED REINFORCING STEEL					1947 LBS.
CLASS AA CONCRETE					33.1 C.Y.

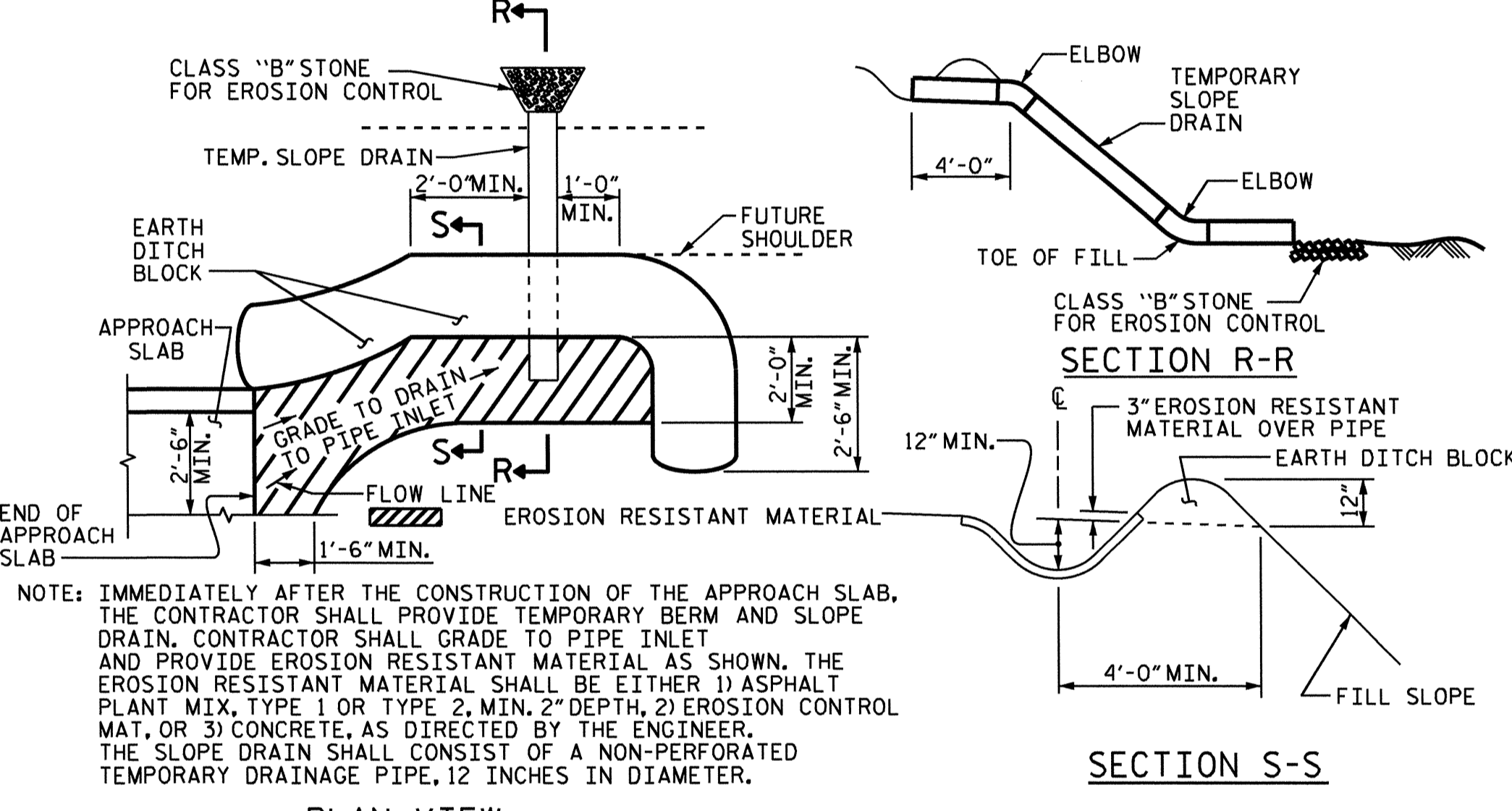
NOTE: QUANTITIES FOR SIDEWALK ARE NOT INCLUDED, FOR PAYMENT FOR SIDEWALK, SEE SHEET S-11.



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.

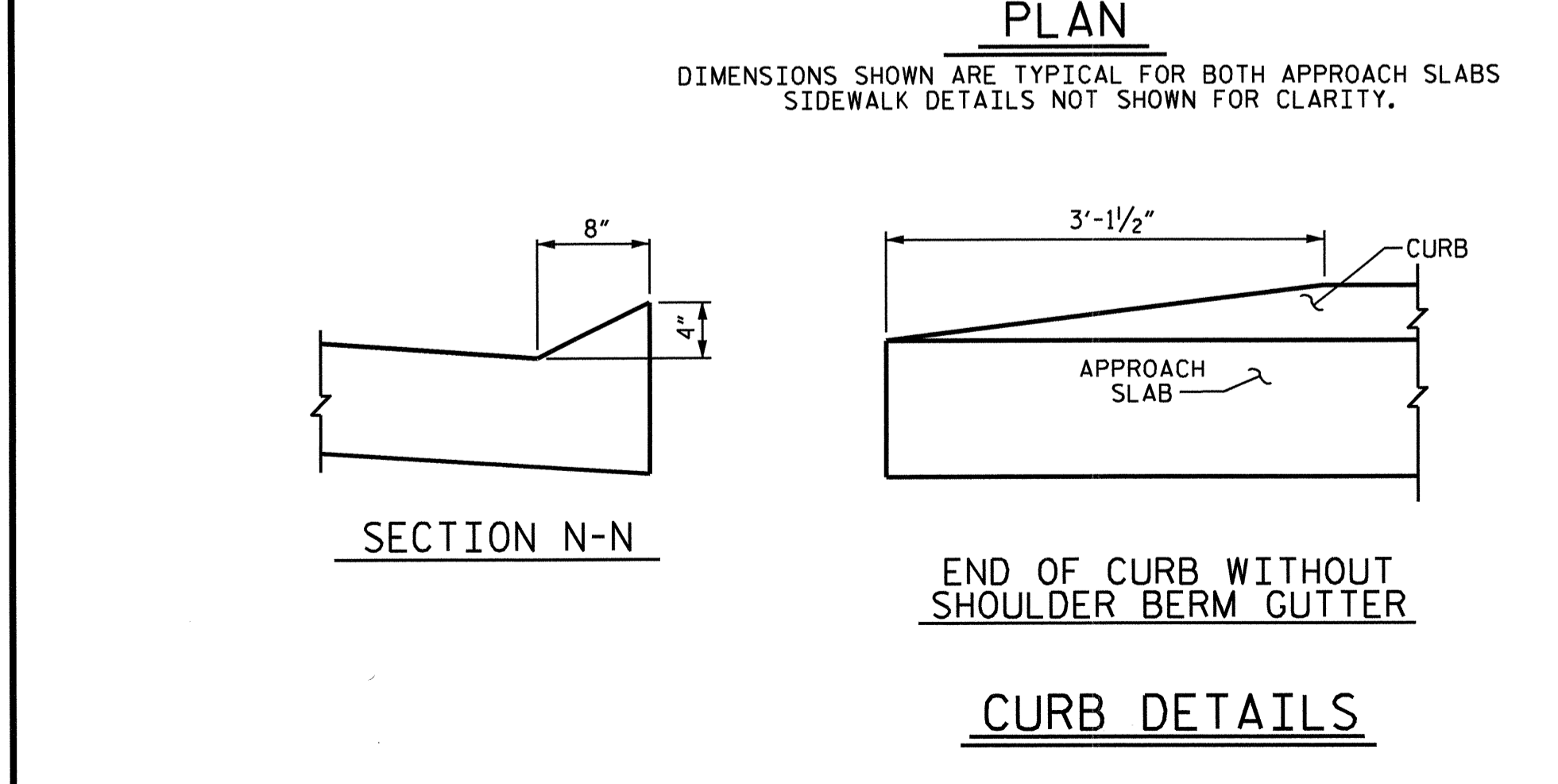
SPlice CHART		
BAR	SIZE	SPlice
*A1	#4	2'-0"
A2	#4	1'-9"

TEMPORARY DRAINAGE DETAIL



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

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

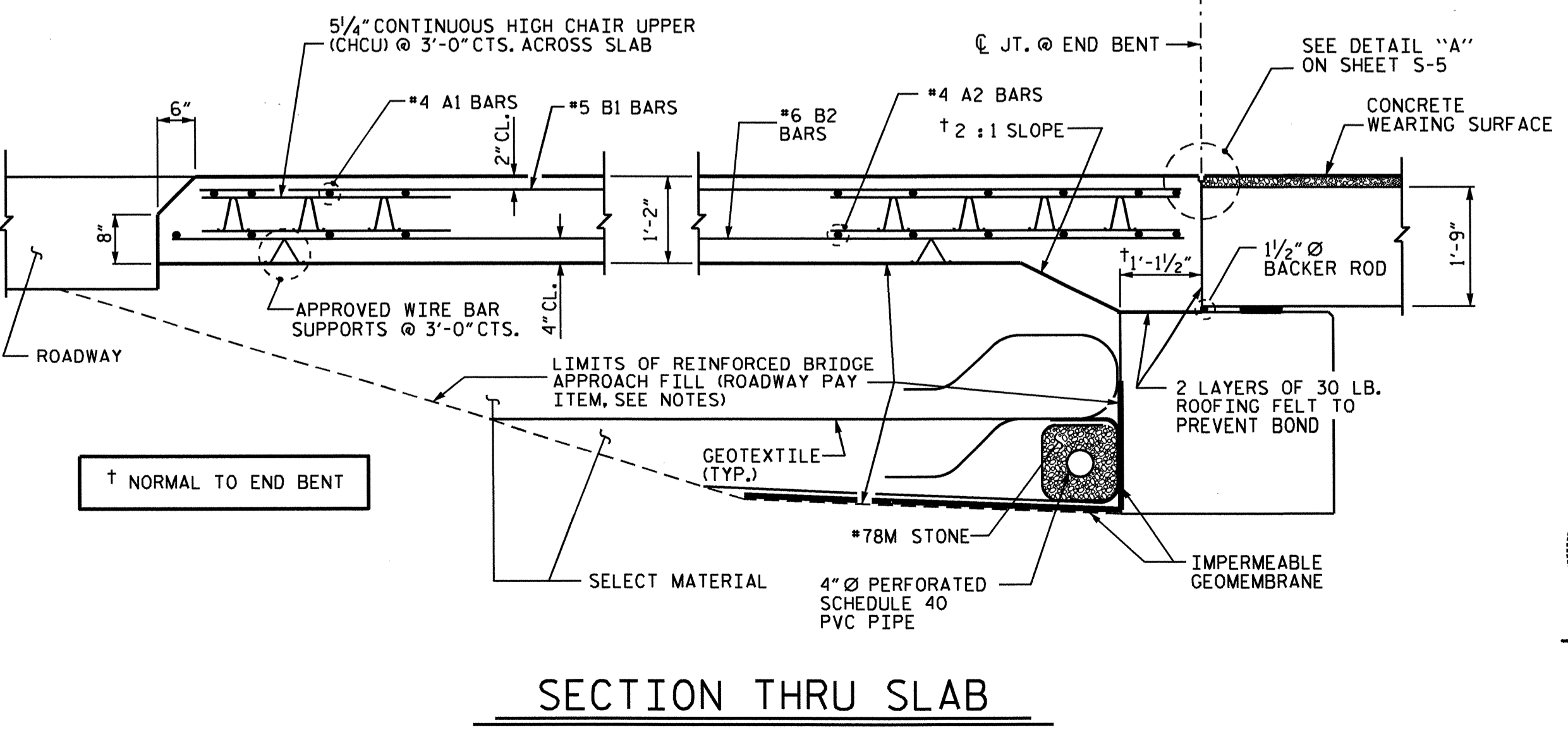


PLAN
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS
SIDEWALK DETAILS NOT SHOWN FOR CLARITY.

SECTION N-N

END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS



SECTION THRU SLAB

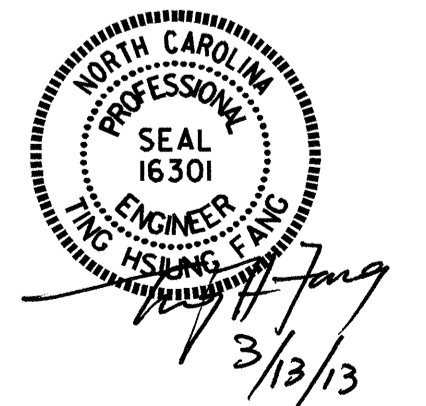
PROJECT NO. 41665.1A
MOORE COUNTY
STATION: 17+59.62 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BRIDGE APPROACH SLAB
FOR PRESTRESSED CONCRETE
CORED SLAB UNIT

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

DRAWN BY: S. B. WILLIAMS DATE: 2-13
CHECKED BY: T. H. FANG DATE: 2-13
DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE: 3-5-13

13-MAR-2013 09:17
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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

JANUARY, 1990

STD. NO. SN