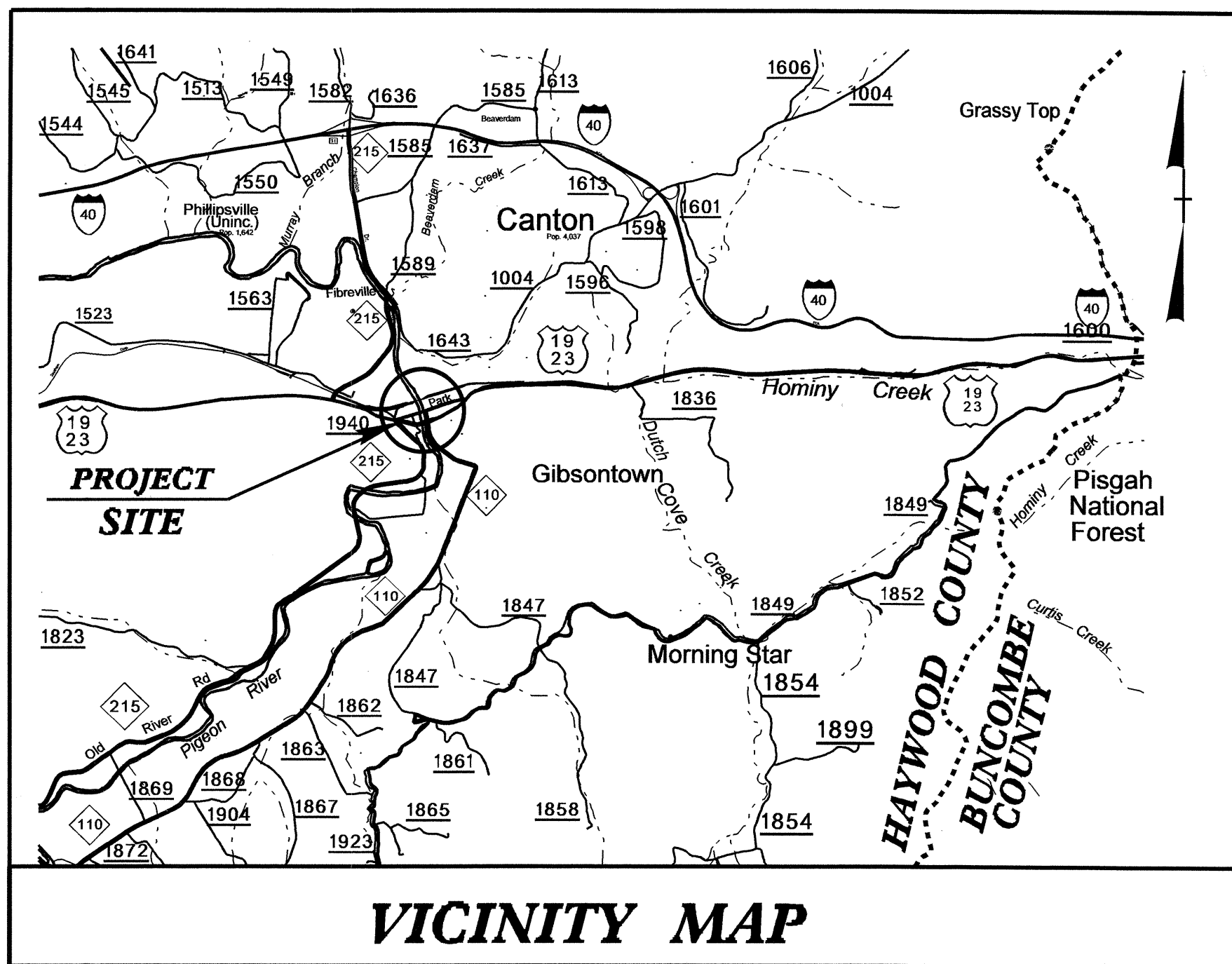


CONTRACT: C202566 TIP PROJECT: B-3656

STRUCTURES



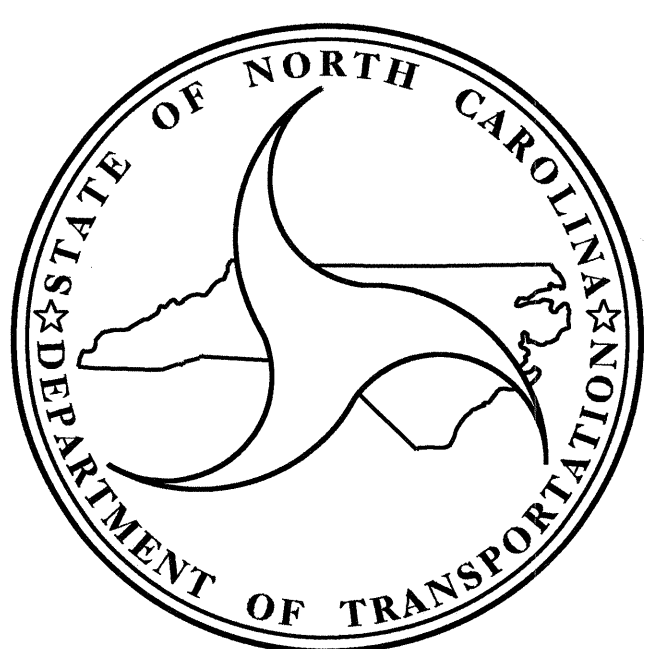
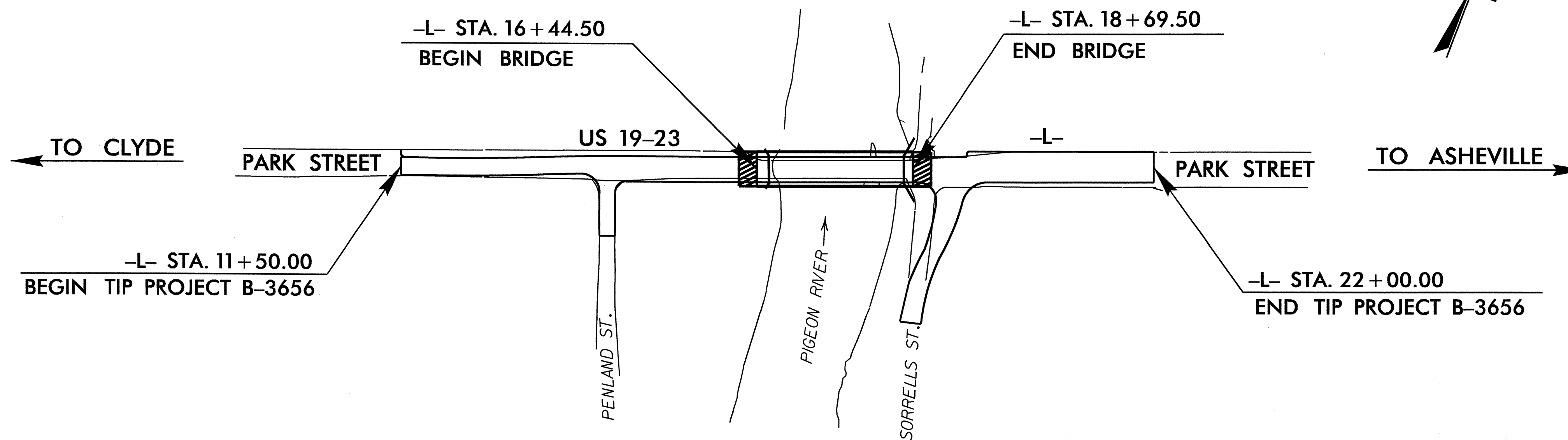
VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HAYWOOD COUNTY

LOCATION: BRIDGE NO. 419 ON US 19-23 OVER PIGEON RIVER IN CANTON
TYPE OF WORK: GRADING, DRAINAGE, PAVING, BRIDGE & RETAINING WALL

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3656		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33202.1.2	BRSTP-0019(28)	P.E.	
33202.2.1	BRSTP-0019(28)	UTIL. & RW	
33202.3.1	BRSTP-0019(36)	CONST.	



DESIGN DATA

ADT 2009 =	11700
ADT 2030 =	19800
DHV =	12 %
D =	100 %
T =	4 % *
V =	30 MPH
* TTST 3%	DUAL 1%

FUNCTIONAL CLASSIFICATION
ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3656 =	0.157 mi.
LENGTH STRUCTURE TIP PROJECT B-3656 =	0.042 mi.
TOTAL LENGTH TIP PROJECT B-3656 =	0.199 mi.

Prepared In the Office of:

DIVISION OF HIGHWAYS

2006 STANDARD SPECIFICATIONS

LETTING DATE :
JULY 19, 2011

J. C. FRYE, P.E.
PROJECT ENGINEER

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

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

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER

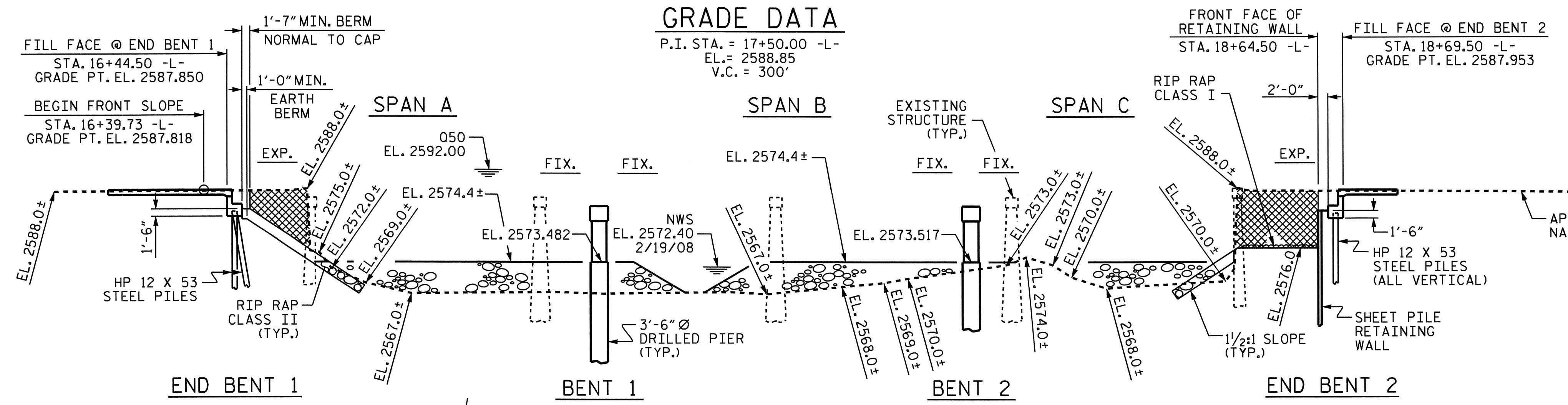
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR

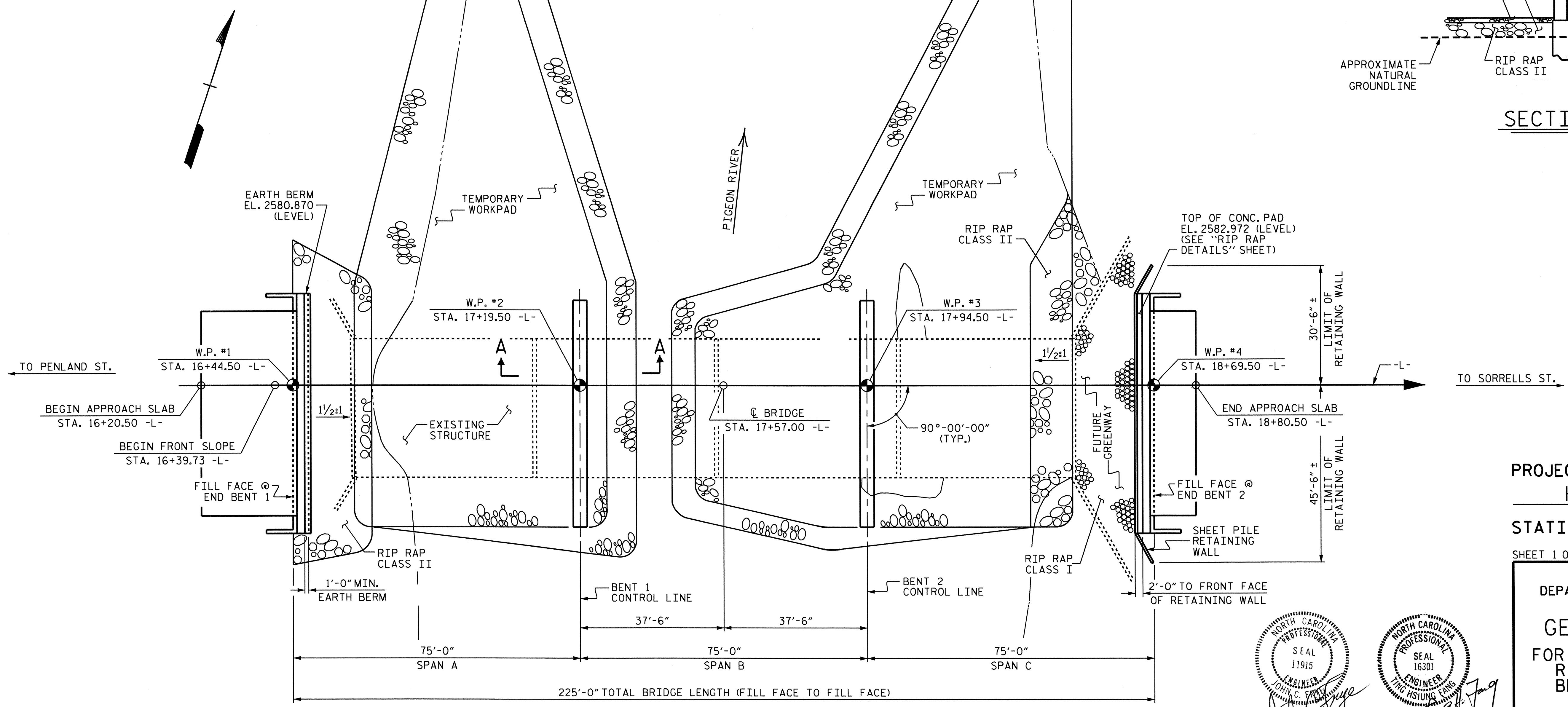
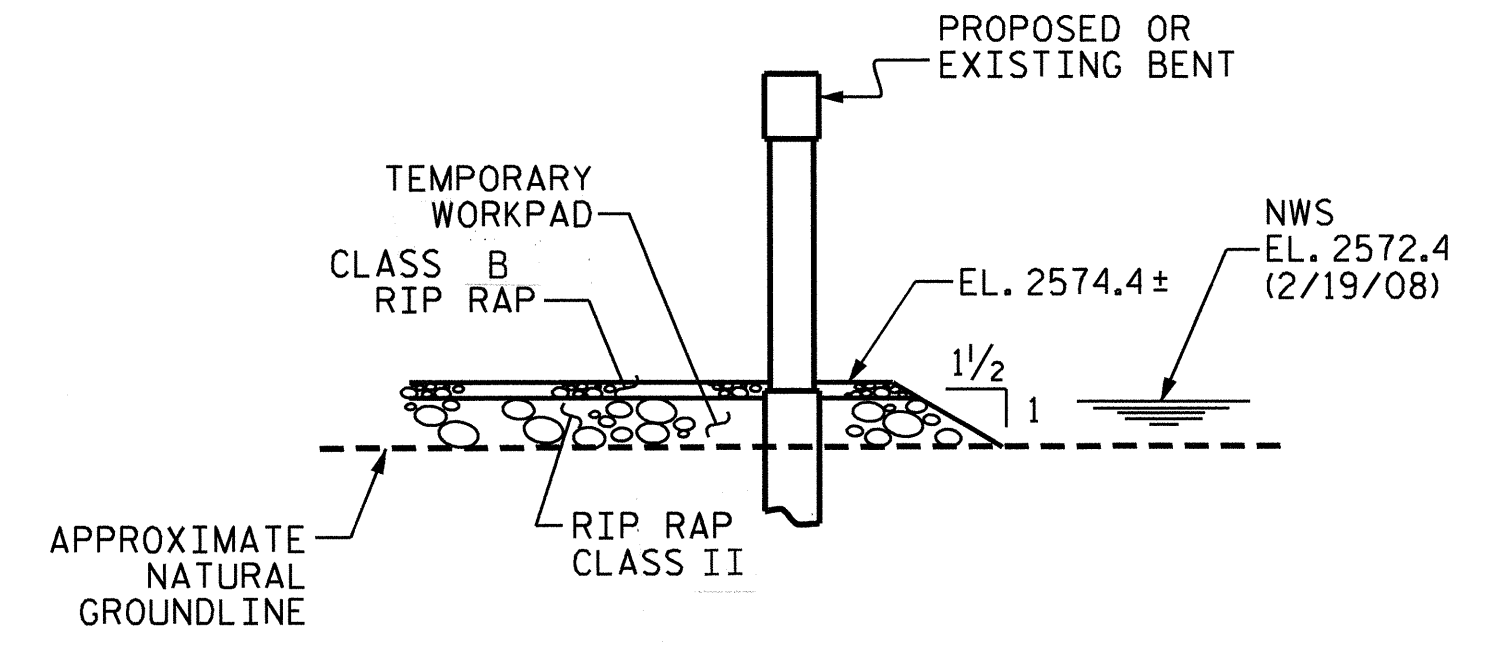
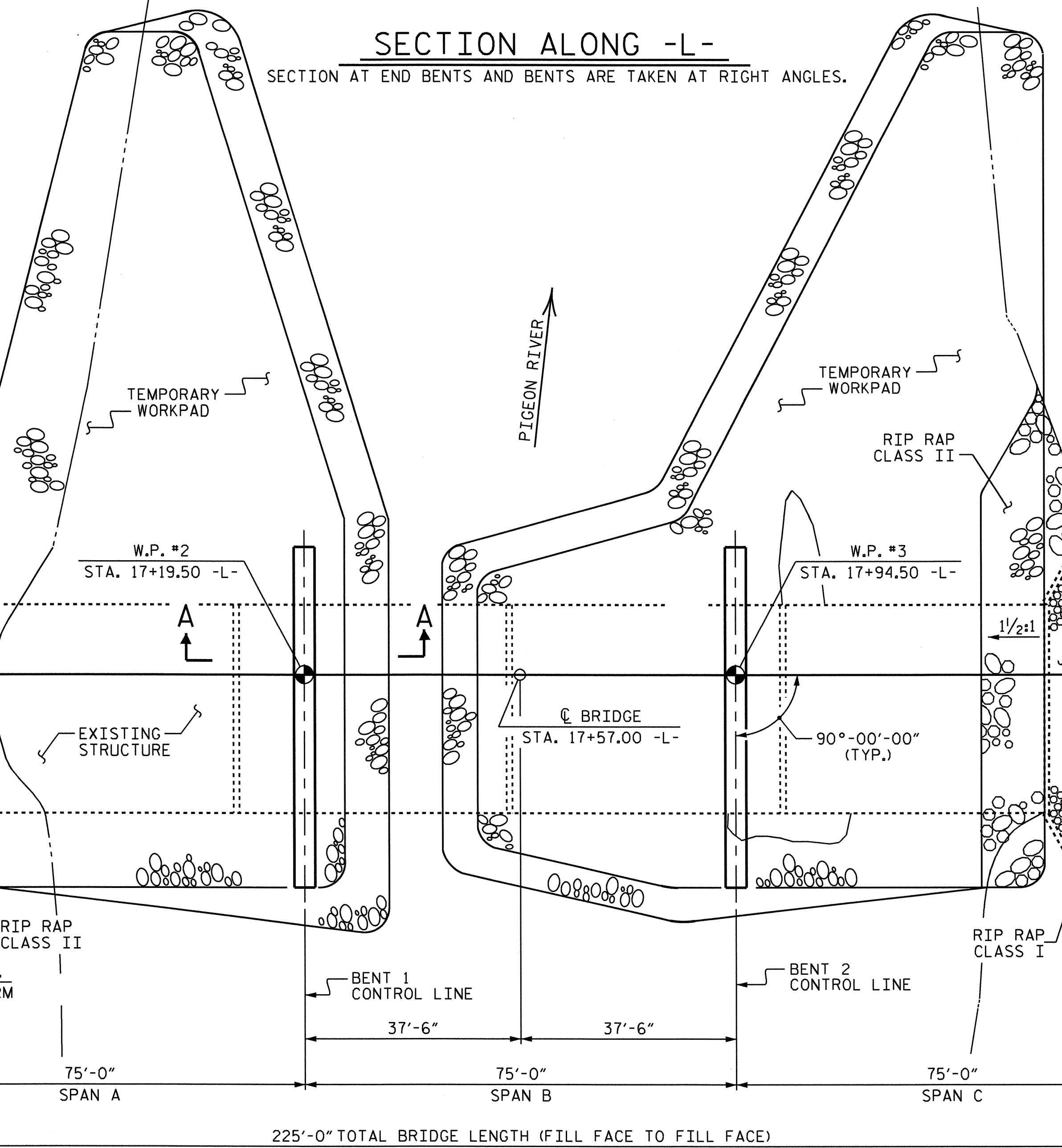
DATE

16+00 16+50 17+00 17+50 18+00 18+50 19+00

GRADE DATA
 0.8972% -0.7296%
 P.I. STA. = 17+50.00 -L-
 EL. = 2588.85
 V.C. = 300'



SECTION ALONG -L-
 SECTION AT END BENTS AND BENTS ARE TAKEN AT RIGHT ANGLES.



PROJECT NO. B-3656
HAYWOOD COUNTY
 STATION: 17+57.00 -L-

SHEET 1 OF 3 REPLACES BRIDGE #419

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER PIGEON
 RIVER ON US 19/23
 BETWEEN PENLAND ST.
 AND SORRELLS ST.

Professional Engineer Seal for John C. [Signature] and Ting Hsiung Fang. Includes dates 5/24/11 and 5/20/11.

DRAWN BY: E.C. LOCKLEAR DATE: 10-7-09
 CHECKED BY: I.H. FANG DATE: 10-12-09

20-MAY-2011 15:16
 K:\TIP\Projects-B\B3656\Structures\FinalPlans\b3656.sd.gdn
 kfang

PLAN
 PILES & DRILLED PIERS NOT SHOWN FOR CLARITY.

* FOR DETAILS AND QUANTITY OF
 RETAINING WALL, SEE "SHEET
 PILE RETAINING WALL" SHEETS
 NO. W-1 & W-2.

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

NC005

NOTES

FOR PILES, SEE SPECIAL PROVISIONS.

PILES AT END BENTS 1 & 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 105 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 175 TONS PER PILE.

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

DRILLED PIERS AT BENTS 1 & 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 555.0 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 15.0 TSF.

PERMANENT STEEL CASING IS REQUIRED FOR DRILLED PIERS AT BENT 1. DO NOT EXTEND CASING BELOW ELEVATION 2559.0 WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

INSTALL DRILLED PIERS AT BENT 1 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 2514.0 (LT), 2514.0 (CT) AND 2516.0 (RT) AND SATISFY THE REQUIRED TIP RESISTANCE.

SPT TESTING IS REQUIRED FOR DRILLED PIERS AT BENTS 1 & 2.

SID INSPECTIONS ARE REQUIRED FOR DRILLED PIERS AT BENTS 1 & 2.

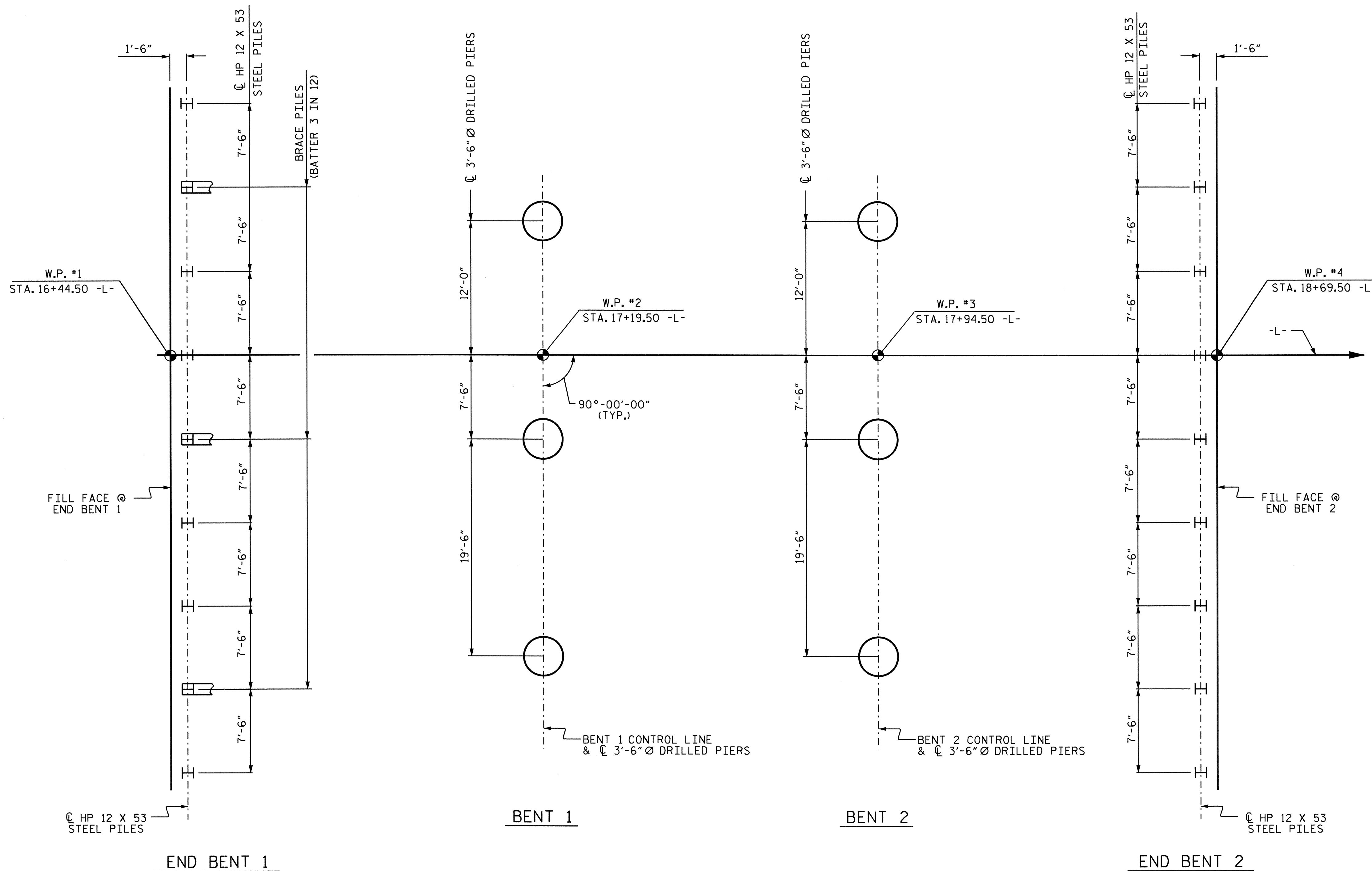
THE SCOUR CRITICAL ELEVATION FOR BENT 1 IS 2537.0. SCOUR CRITICAL ELEVATION IS USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

PERMANENT STEEL CASING IS REQUIRED FOR DRILLED PIERS AT BENT 2. DO NOT EXTEND CASING BELOW ELEVATION 2559.5 WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

INSTALL DRILLED PIERS AT BENT 2 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 2510.0 AND SATISFY THE REQUIRED END RESISTANCE.

THE SCOUR CRITICAL ELEVATION FOR BENT 2 IS 2540.0. SCOUR CRITICAL ELEVATION IS USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR THE DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CSL TESTING, SEE DRILLED PIER SPECIAL PROVISION.



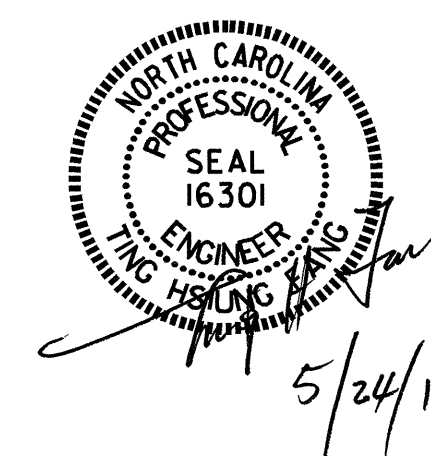
FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES & DRILLED PIERS ARE SHOWN TO THE PILE AND DRILLED PIER CENTERLINE.

PROJECT NO. B-3656
HAYWOOD COUNTY
 STATION: 17+57.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE OVER PIGEON
 RIVER ON US 19/23
 BETWEEN PENLAND ST.
 AND SORRELLS ST.



DRAWN BY : HARISH SHAH DATE : 01-20-10
 CHECKED BY : T. H. FANG DATE : 07-07-10

24-MAY-2011 13:41
 K:\TIP\Projects-B\B3656\Structures\FinalPlans\B3656.sd.gdn
 tfang

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

TOTAL BILL OF MATERIAL

	CONST., MAINT. & REMOVAL OF TEMP. ACCESS	REMOVAL OF EXISTING STRUCTURE	3'-6" DIA. DRILLED PIERS IN SOIL	3'-6" DIA. DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-6" DIA. DRILLED PIER	SID INSPECTION	SPT TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE 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	1'-5" X 3'-6" CONCRETE BRIDGE RAIL	RIP RAP CLASS I	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-9" PRESTRESSED CONCRETE BOX BEAMS	EVAZOTE JOINT SEALS			
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	CU. YDS.	LUMP SUM	LBS.	LBS.	LBS.	NO.	LIN. FT.	LIN. FT.	TONS	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.	LUMP SUM	
SUPERSTRUCTURE										9,500	10,234	124.9				4,157			445.50					LUMP SUM	57	4,227.50		
END BENT 1													30.9	4,886				9	565			180	200					
BENT 1			131.50	45.00	43.50	3	3						44.6	14,880		4,075												
BENT 2			133.50	57.00	42.00	3	3						44.6	15,461		4,363												
END BENT 2													30.9	4,886				9	500	100	130	145						
TOTAL	LUMP SUM	LUMP SUM	265.00	102.00	85.50	6	6	1	LUMP SUM	9,500	10,234	124.9	151.0	LUMP SUM	40,113	4,157	8,438	18	1,065	445.50	100	310	345	LUMP SUM	57	4,227.50	LUMP SUM	

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.

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES", MAY, 2001.

THE EXISTING STRUCTURE CONSISTING OF 4 SPANS; 1 @ 47'-1", 1 @ 47'-6", 1 @ 47'-7", 1 @ 47'-3", 24'-0" CLEAR ROADWAY WIDTH ON 4 REINFORCED CONCRETE DECK GIRDERS @ 8'-0" CENTERS; SUBSTRUCTURE CONSISTING OF REINFORCED CONCRETE ABUTMENTS AND PIERS FOUNDED ON TIMBER PILES, AND LOCATED AT THE CENTERLINE OF THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

REMOVE THE EXISTING ABUTMENT AT END BENT 2 TO AN ELEVATION OF 2576.0 OR AS DIRECTED BY THE ENGINEER.

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

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 35 FT LEFT AND 45 FT RIGHT AT END BENT 1; 35 FT EACH SIDE AT END BENT 2 OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION.

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.

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS B & II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 17+57.00 -L-.

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

FOR CONCRETE BRIDGE RAIL, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CURING CONCRETE, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

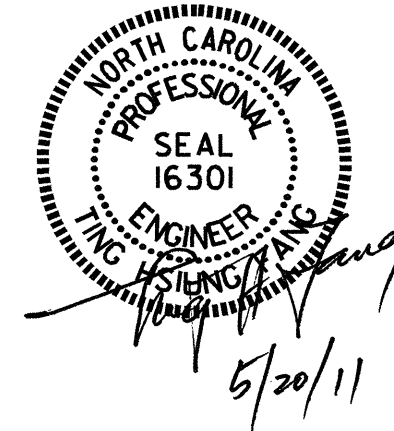
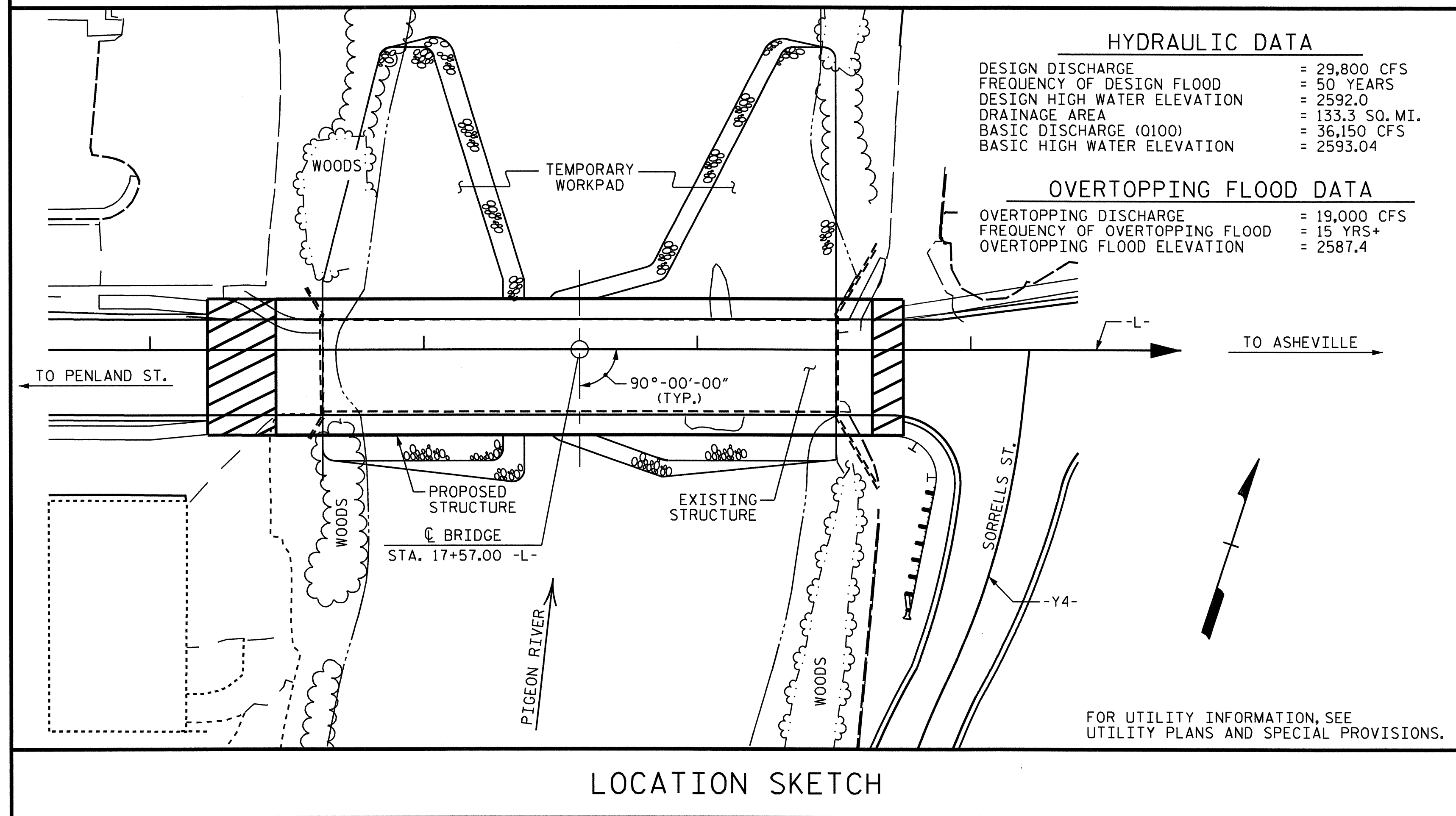
FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

PAYMENT FOR THE SIDEWALK ON THE BRIDGE DECK IS MADE UNDER THE PAY ITEMS CLASS AA CONCRETE AND EPOXY COATED REINFORCING STEEL.

BENCH MARK #3: 8" SPIKE IN ROOT OF 18" MAPLE, 29.76' LEFT OF STA. 21+41.19 -L-, EL. 2585.68.



PROJECT NO. B-3656
HAYWOOD COUNTY
 STATION: 17+57.00 -L-
 SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

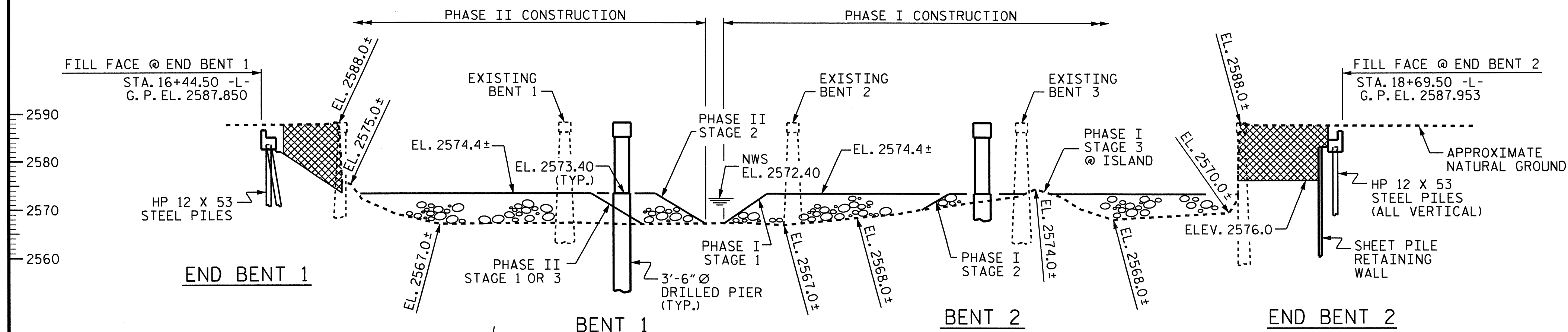
BRIDGE OVER PIGEON RIVER
 ON US 19/23 BETWEEN
 PENLAND ST. & SORRELLS ST.

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

DRAWN BY: E.C. LOCKLEAR DATE: 10-7-09
 CHECKED BY: T.H. FANG DATE: 10-12-09

16+50 17+00 17+50 18+00 18+50

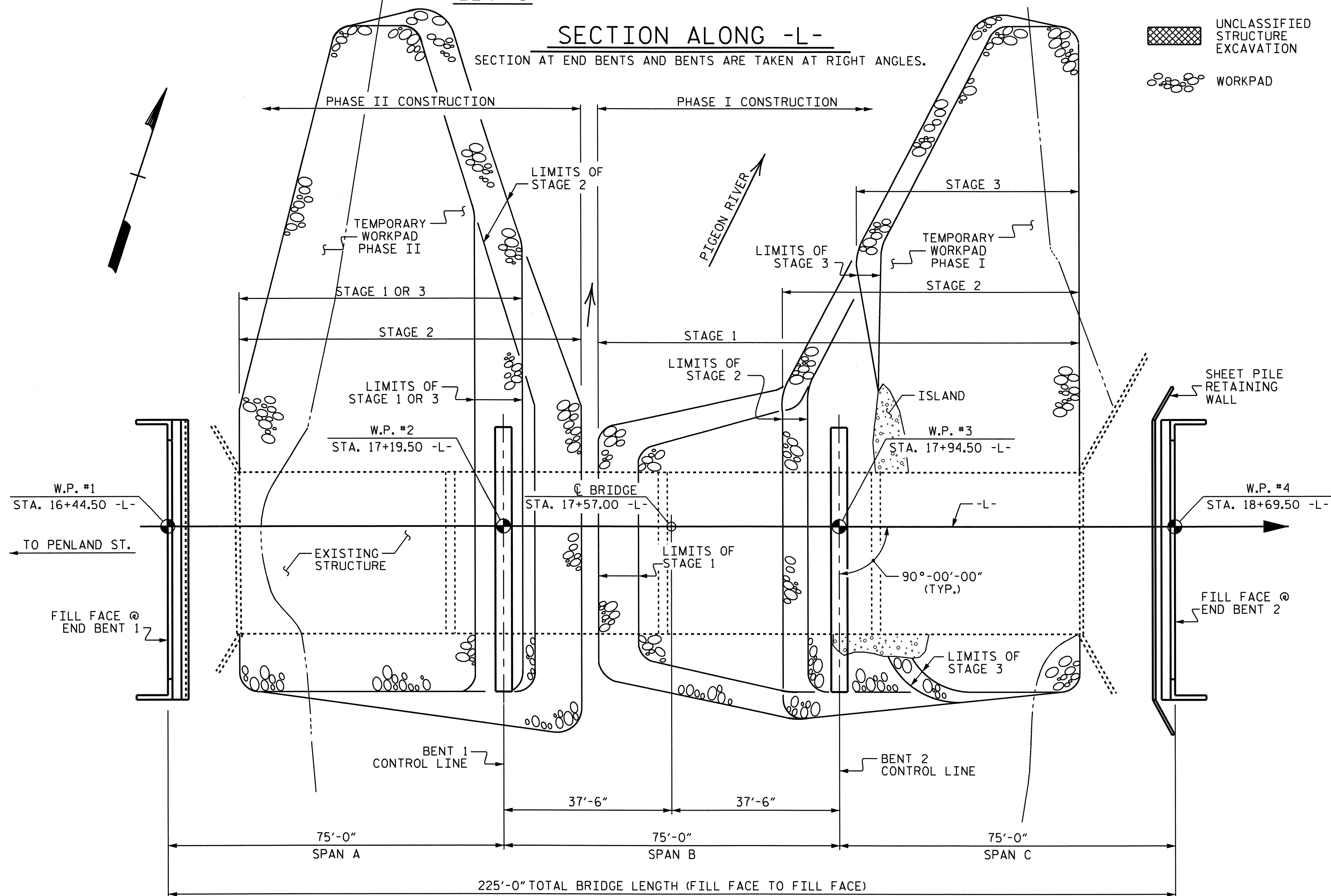
SPAN A SPAN B SPAN C



SECTION ALONG -L-

SECTION AT END BENTS AND BENTS ARE TAKEN AT RIGHT ANGLES.

UNCLASSIFIED STRUCTURE EXCAVATION
WORKPAD



PLAN

CONSTRUCTION SEQUENCE

1. PHASE I AND PHASE II TEMPORARY WORKPADS MAY BE USED FOR REMOVING EXISTING SUPERSTRUCTURE.
2. PHASE I TEMPORARY WORKPAD HAS THREE STAGES:
STAGE 1 - REMOVE EXISTING BENTS 2 AND 3.
STAGE 2 - CONSTRUCT PROPOSED BENT 2.
STAGE 3 - SET BOX BEAMS IN SPAN C.
3. PHASE I STAGE 1 WORKPAD SHALL NOT BE IN PLACE MORE THAN FOURTEEN (14) CALENDAR DAYS BEFORE IT IS REDUCED TO STAGE 2 LIMITS.
4. PHASE II TEMPORARY WORKPAD HAS THREE STAGES:
STAGE 1 - REMOVE EXISTING BENT 1.
STAGE 2 - CONSTRUCT PROPOSED BENT 1.
STAGE 3 - SET BOX BEAMS IN SPANS A AND B.
5. DO NOT CONSTRUCT PHASE II WORKPAD UNTIL AFTER PHASE I WORKPAD IS REDUCED TO STAGE 3 OR REMOVED.

PROJECT NO. B-3656
HAYWOOD COUNTY
STATION: 17+57.00 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TEMPORARY
WORKPAD
CONSTRUCTION
SEQUENCE

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

DRAWN BY : T. H. FANG DATE : 11-17-09
CHECKED BY : J. C. FRYE DATE : 11-19-09

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE BOX BEAM UNITS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.007	--	1.75	0.274	1.2	B	EL	36.688	0.492	1.03	B	EL	7.338	0.80	0.274	1.01	B	EL	36.688		
	HL-93(0pr)	N/A	--	1.333	--	1.35	0.274	1.56	B	EL	36.688	0.492	1.33	B	EL	7.338	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.299	46.776	1.75	0.274	1.57	B	EL	36.688	0.492	1.30	B	EL	7.338	0.80	0.274	1.32	B	EL	36.688		
	HS-20(0pr)	36.000	--	1.684	60.635	1.35	0.274	2.04	B	EL	36.688	0.492	1.68	B	EL	7.338	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.985	40.299	1.40	0.274	4.45	B	EL	36.688	0.492	3.87	B	EL	7.338	0.80	0.274	2.99	B	EL	36.688	
		SNGARBS2	20.000	--	2.222	44.448	1.40	0.274	3.31	B	EL	36.688	0.492	2.75	B	EL	7.338	0.80	0.274	2.22	B	EL	36.688	
		SNAGRIS2	22.000	--	2.104	46.282	1.40	0.274	3.14	B	EL	36.688	0.492	2.55	B	EL	7.338	0.80	0.274	2.10	B	EL	36.688	
		SNCOTTS3	27.250	--	1.485	40.478	1.40	0.274	2.21	B	EL	36.688	0.492	1.93	B	EL	7.338	0.80	0.274	1.49	B	EL	36.688	
		SNAGGRS4	34.925	--	1.241	43.325	1.40	0.274	1.85	B	EL	36.688	0.492	1.60	B	EL	7.338	0.80	0.274	1.24	B	EL	36.688	
		SNS5A	35.550	--	1.213	43.127	1.40	0.274	1.81	B	EL	36.688	0.492	1.62	B	EL	7.338	0.80	0.274	1.21	B	EL	36.688	
		SNS6A	39.950	--	1.113	44.453	1.40	0.274	1.66	B	EL	36.688	0.492	1.48	B	EL	7.338	0.80	0.274	1.11	B	EL	36.688	
	SNS7B	42.000	--	1.06	44.505	1.40	0.274	1.58	B	EL	36.688	0.492	1.45	B	EL	7.338	0.80	0.274	1.06	B	EL	36.688		
	TTST	TNAGRIT3	33.000	--	1.357	44.774	1.40	0.274	2.02	B	EL	36.688	0.492	1.76	B	EL	7.338	0.80	0.274	1.36	B	EL	36.688	
		TNT4A	33.075	--	1.363	45.07	1.40	0.274	2.03	B	EL	36.688	0.492	1.72	B	EL	7.338	0.80	0.274	1.36	B	EL	36.688	
		TNT6A	41.600	--	1.114	46.335	1.40	0.274	1.66	B	EL	36.688	0.492	1.55	B	EL	7.338	0.80	0.274	1.11	B	EL	36.688	
		TNT7A	42.000	--	1.119	47.006	1.40	0.274	1.67	B	EL	36.688	0.492	1.52	B	EL	7.338	0.80	0.274	1.12	B	EL	36.688	
		TNT7B	42.000	--	1.157	48.609	1.40	0.274	1.73	B	EL	36.688	0.492	1.42	B	EL	7.338	0.80	0.274	1.16	B	EL	36.688	
TNAGRIT4		43.000	--	1.101	47.358	1.40	0.274	1.64	B	EL	36.688	0.492	1.37	B	EL	7.338	0.80	0.274	1.10	B	EL	36.688		
TNAGT5A	45.000	--	1.039	46.737	1.40	0.274	1.55	B	EL	36.688	0.492	1.37	B	EL	7.338	0.80	0.274	1.04	B	EL	36.688			
TNAGT5B	45.000	3	1.026	46.178	1.40	0.274	1.53	B	EL	36.688	0.492	1.31	B	EL	7.338	0.80	0.274	1.03	B	EL	36.688			

LOAD FACTORS:

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

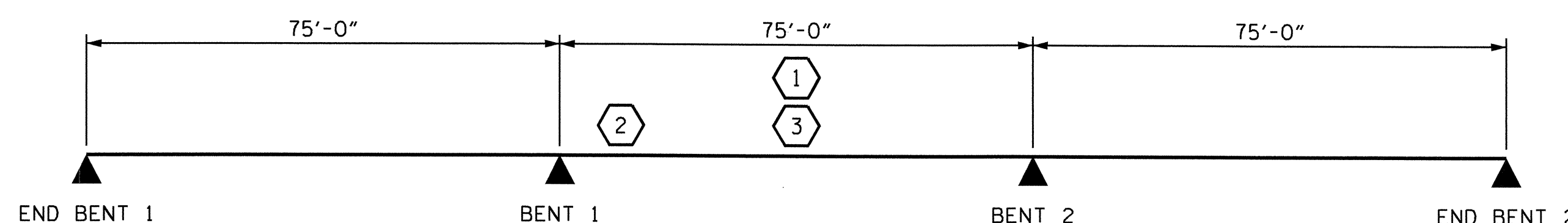
	YEAR	ADTT
CURRENT	2009	468
FUTURE	2030	792

NOTES:

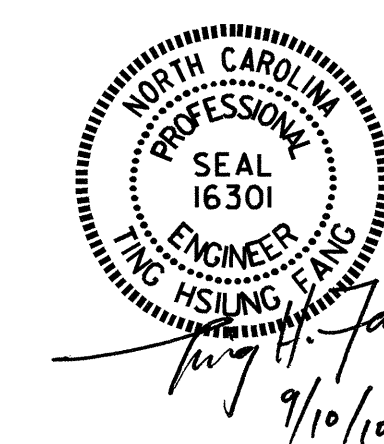
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

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



PROJECT NO. B-3656
HAYWOOD COUNTY
 STATION: 17+57.00 -L-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD LRFR SUMMARY FOR PRESTRESSED CONCRETE BOX BEAM UNITS (NON-INTERSTATE TRAFFIC)					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 30

ASSEMBLED BY : S. DOMBROWSKI DATE : 5/18/10
 CHECKED BY : T. H. FANG DATE : 7/28/10
 DRAWN BY : MAA 1/08 REV. 11/2/08R MAA/GM
 CHECKED BY : GM/DI 2/08

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 BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

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

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT. THE 2 1/2" Ø DOWEL HOLES AT EXPANSION ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH JOINT SEALER MATERIAL TO 1/2" ABOVE THE TOP OF DOWELS AND THEN FILLED WITH GROUT.

THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE SL LOW MODULUS SILICONE SEALANT. THE 2" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4,000 PSI.

ALL REINFORCING STEEL IN CONCRETE BRIDGE RAILS, SIDEWALK AND CONCRETE WEARING SURFACE SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS AT END BENTS 1 & 2.

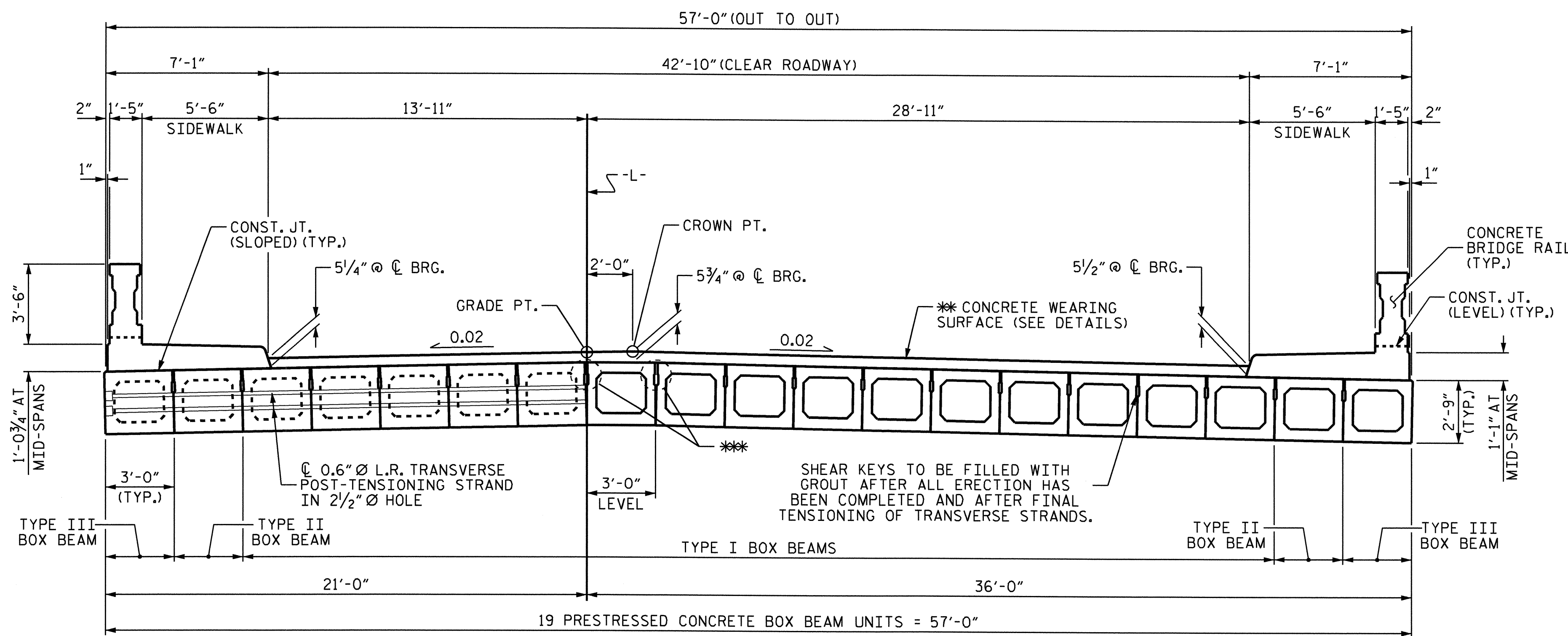
THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

USE THREADED INSERTS IN THE EXTERIOR FACES OF THE EXTERIOR BOX BEAMS FOR FORMING OF SIDEWALK AND CONCRETE RAIL. INSERTS MUST BE CAST IN BOX BEAMS, RECESSED AND FILLED WITH GROUT AFTER REMOVAL OF FORMS. COORDINATE WITH BOX BEAM FABRICATOR BEFORE BOX BEAMS ARE CAST FOR NUMBER AND LOCATION OF THREADED INSERTS.

FOR PLACEMENT OF CONCRETE WEARING SURFACE, SEE CONCRETE WEARING SURFACE DETAILS.

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



TYPICAL SECTION

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

*** THESE SHEAR KEYS SHALL BE FILLED WITH GROUT AND GROUT SHALL HAVE OBTAINED STRENGTH BEFORE TENSIONING OF TRANSVERSE STRANDS.

** SEE CONCRETE WEARING SURFACE THICKNESS TABLE

SIDEWALK HEIGHT TABLE

BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS.

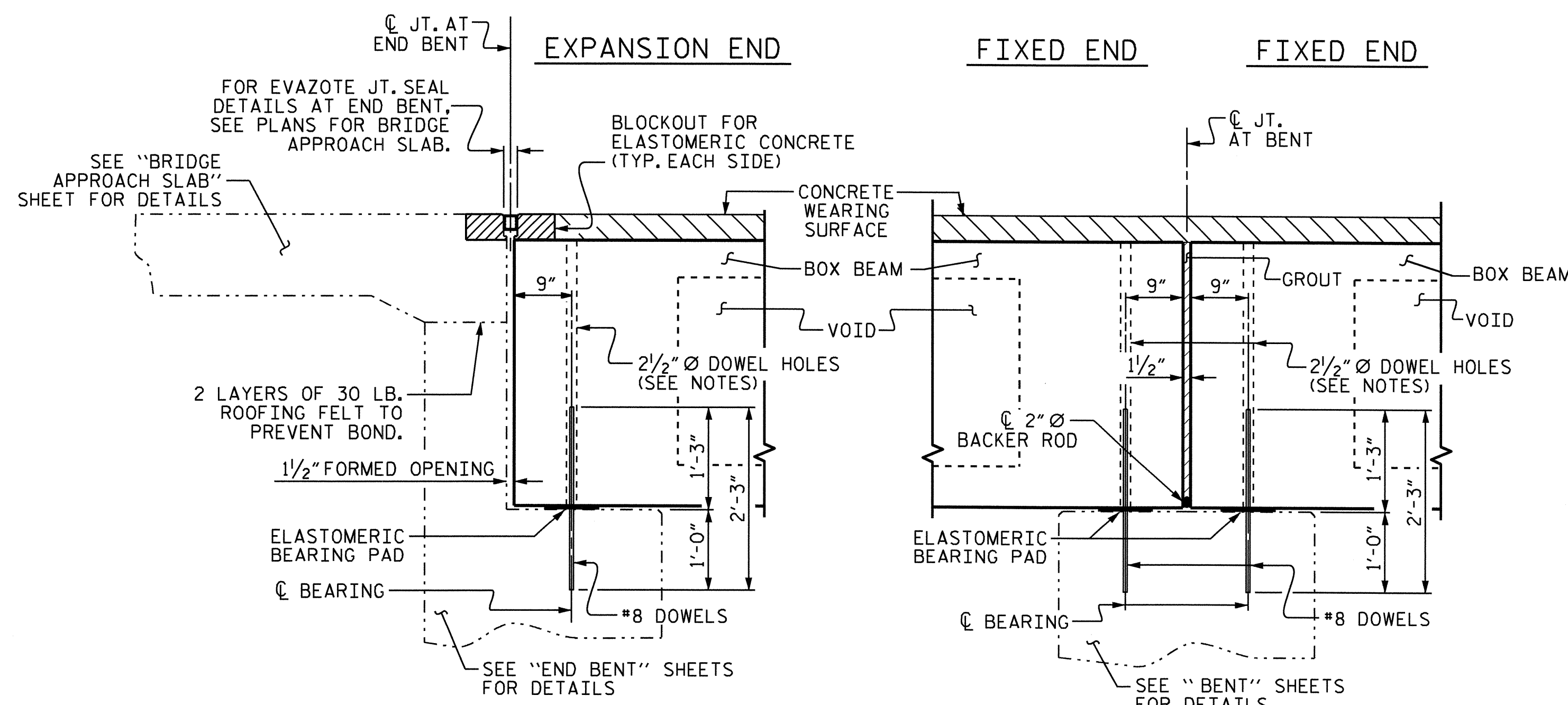
SPAN	AT \odot BEARINGS		AT MID-SPAN	
	LEFT SIDE	RIGHT SIDE	LEFT SIDE	RIGHT SIDE
A	1'-2 3/8"	1'-2 5/8"	1'-0 3/4"	1'-1"
B	1'-2 3/8"	1'-2 5/8"	1'-0 3/4"	1'-1"
C	1'-2 3/8"	1'-2 5/8"	1'-0 3/4"	1'-1"

CONCRETE WEARING SURFACE THICKNESS TABLE

BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS.

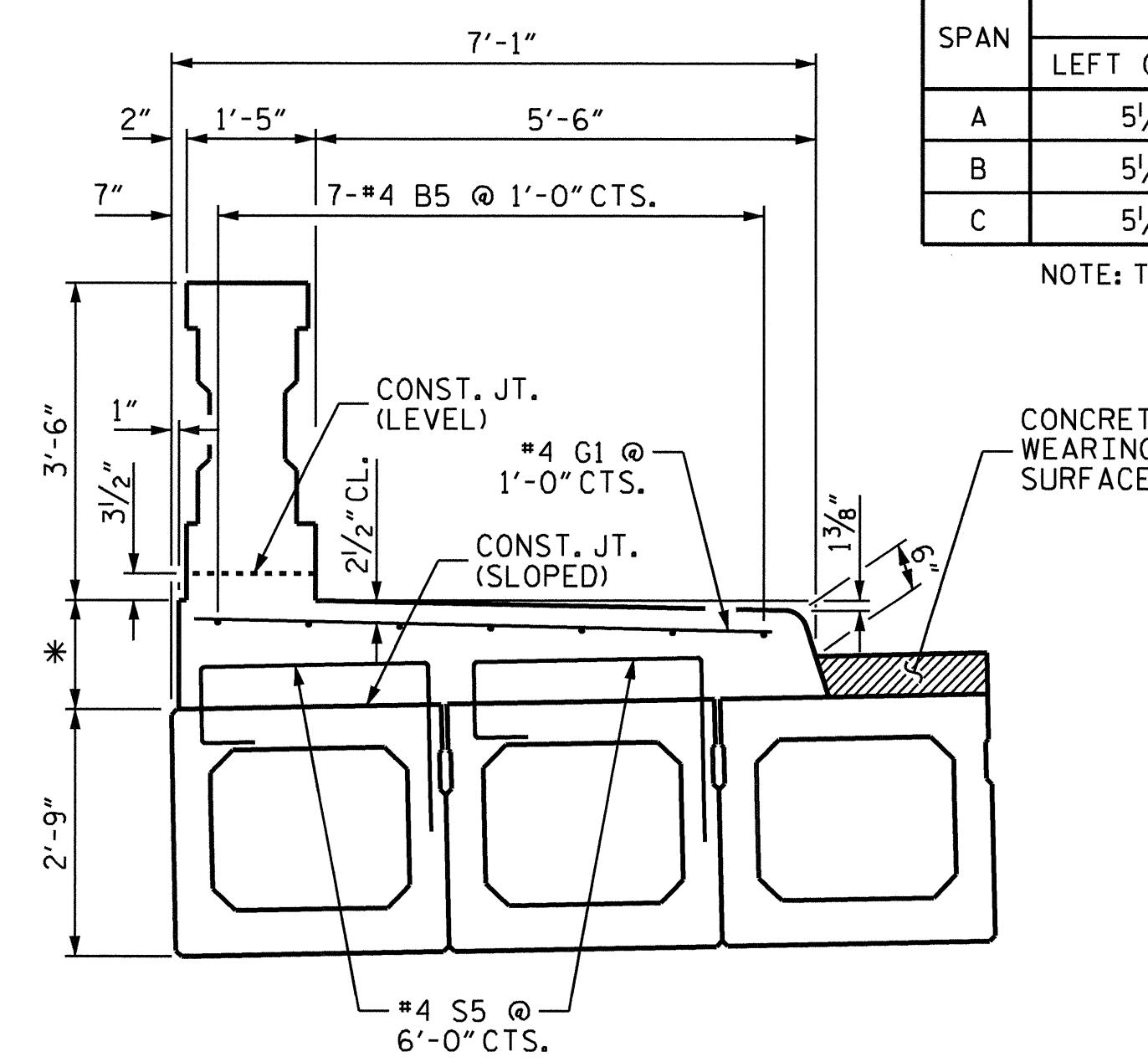
SPAN	AT \odot BEARINGS			AT MID-SPAN		
	LEFT GUTTER	CROWN PT.	RIGHT GUTTER	LEFT GUTTER	CROWN PT.	RIGHT GUTTER
A	5/4"	5 3/4"	5/2"	3 1/16"	4 3/16"	3 5/16"
B	5/4"	5 3/4"	5/2"	3 1/16"	4 3/16"	3 5/16"
C	5/4"	5 3/4"	5/2"	3 1/16"	4 3/16"	3 5/16"

NOTE: THICKNESS VARIES BETWEEN \odot BEARING AND MID-SPAN FOR ALL SPANS.



SECTION AT END BENT

SECTION AT BENT



SECTION THRU SIDEWALK

FOR LAYOUT OF #4 G1 BARS, SEE PLAN OF SPANS A, B & C. FOR SIDEWALK QUANTITIES, SEE SHEET No. S-15.

* SEE SIDEWALK HEIGHT TABLE

PROJECT NO. B-3656
HAYWOOD COUNTY
 STATION: 17+57.00 -L-

SHEET 1 OF 7

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD

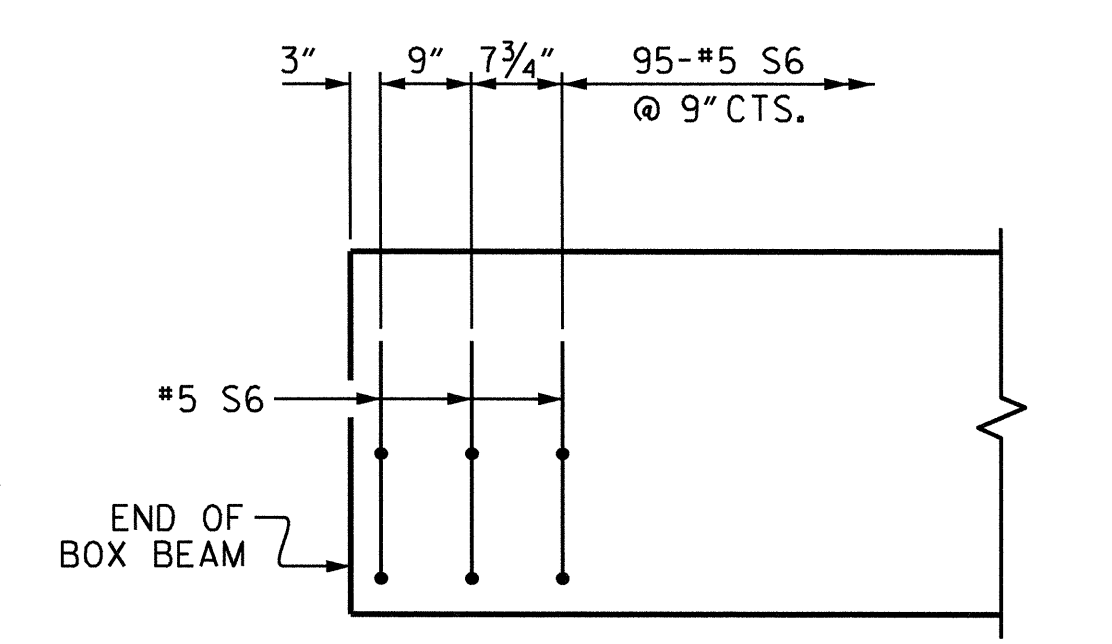
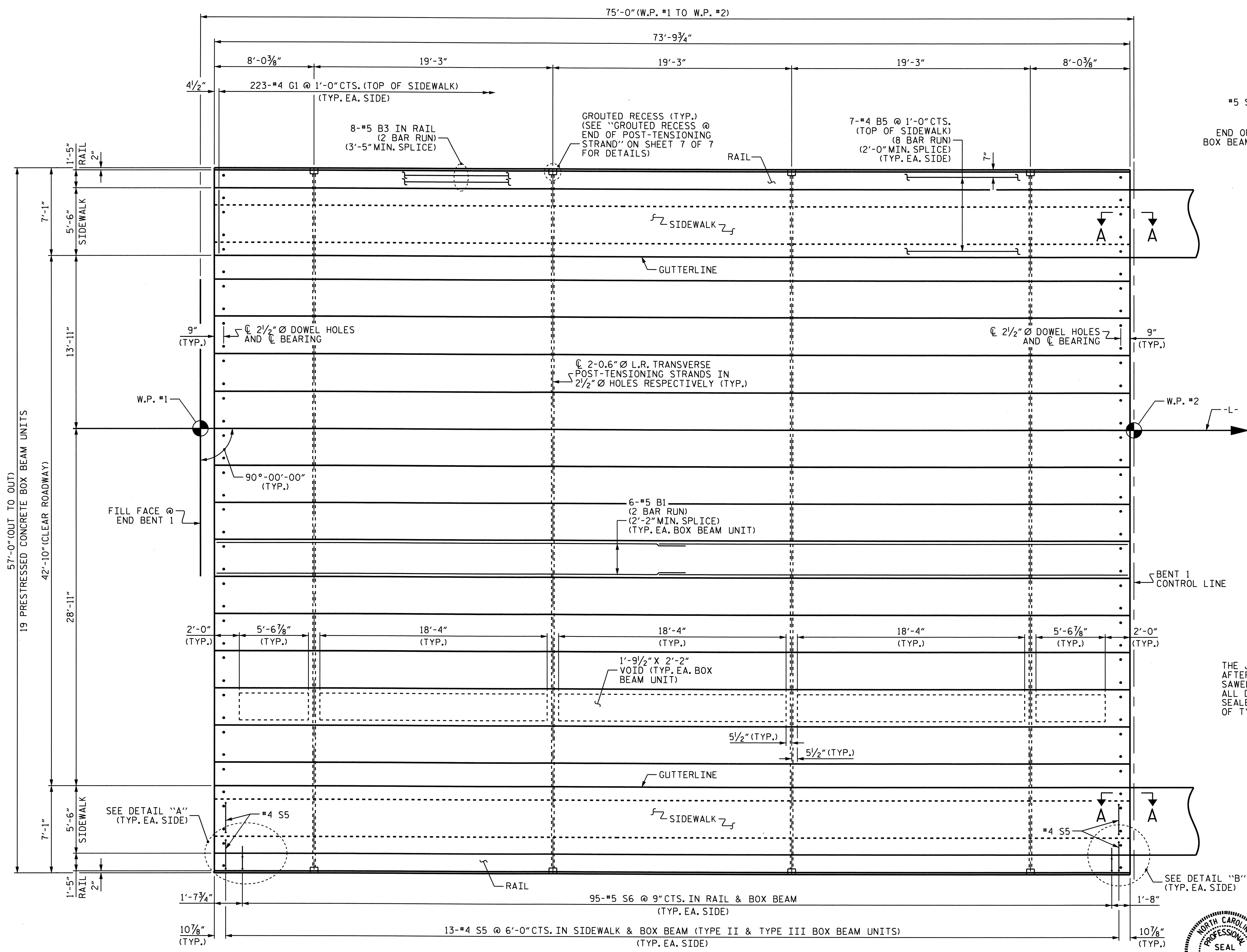
3'-0" X 2'-9"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT



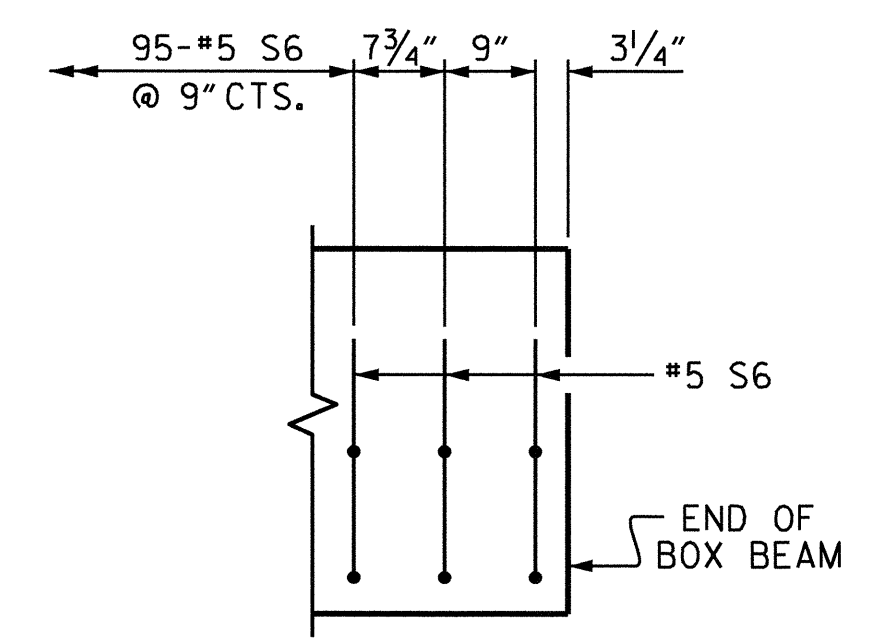
ASSEMBLED BY : E.C. LOCKLEAR DATE : 10-21-09
 CHECKED BY : T.H. FANG DATE : 7-20-10
 DRAWN BY : TLA 5/05
 CHECKED BY : GM 6/05

ADDED 7/11/05R
 REV. 5/1/06R KMM/GM

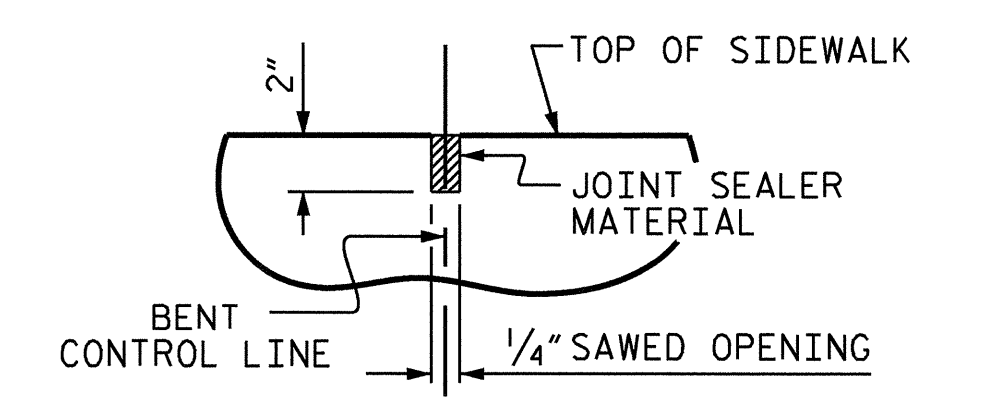
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			30



DETAIL "A"



DETAIL "B"



SECTION A-A

THE JOINT SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE SIDEWALK IS CAST. THE JOINT SHALL BE SAWED IN ONE PASS. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE SL LOW MODULUS SILICONE SEALANT.

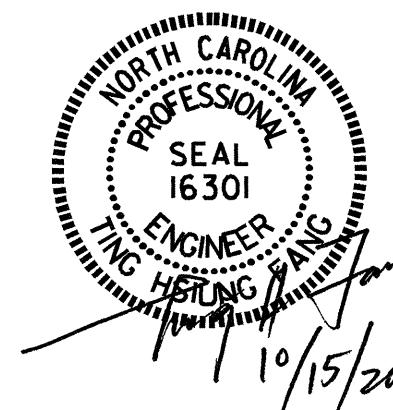
PROJECT NO. B-3656
 HAYWOOD COUNTY
 STATION: 17+57.00 -L-
 SHEET 2 OF 7

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN
 SPAN A

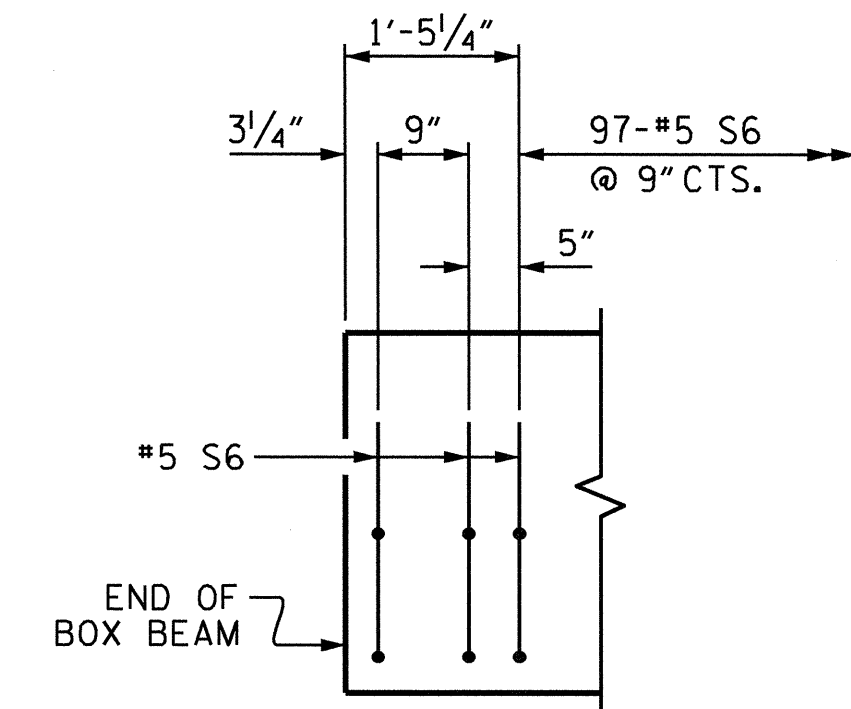
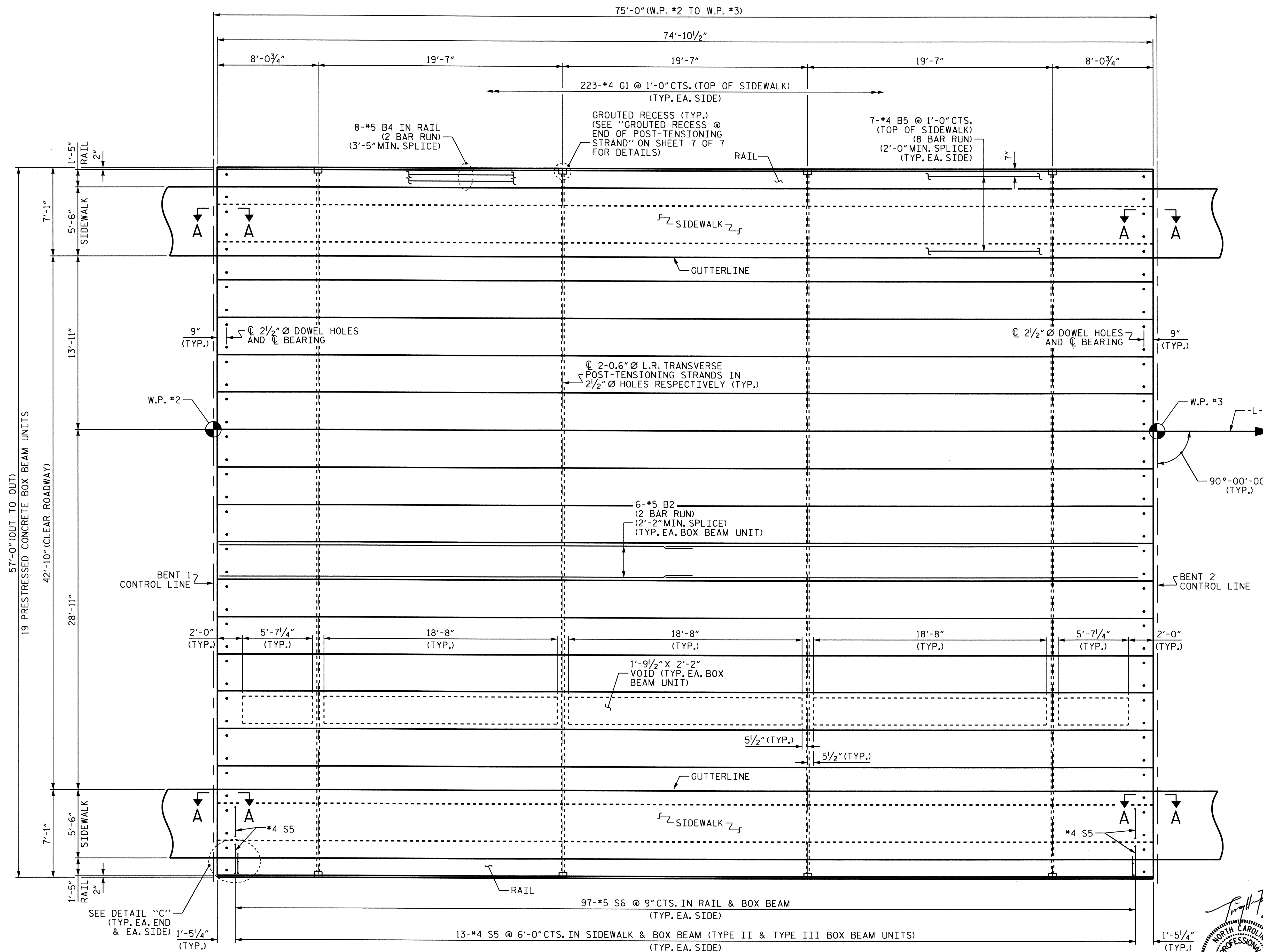
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 30



DRAWN BY: E.C. LOCKLEAR DATE: 5-17-10
 CHECKED BY: T.H. FANG DATE: 7-15-10

PLAN OF SPAN A
 RAIL POSTS & END POSTS NOT SHOWN FOR CLARITY.
 FOR ADDITIONAL RAIL REINFORCING & DETAILS, SEE "RAIL AND POSTS DETAILS" SHEETS.



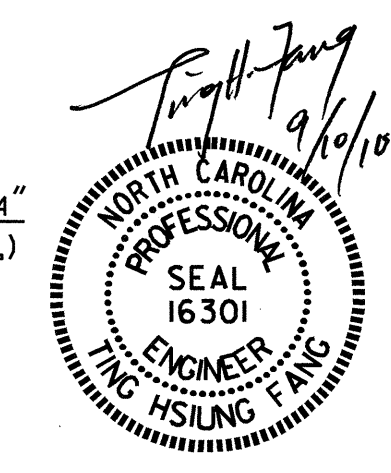
DETAIL "C"

PLAN OF SPAN B

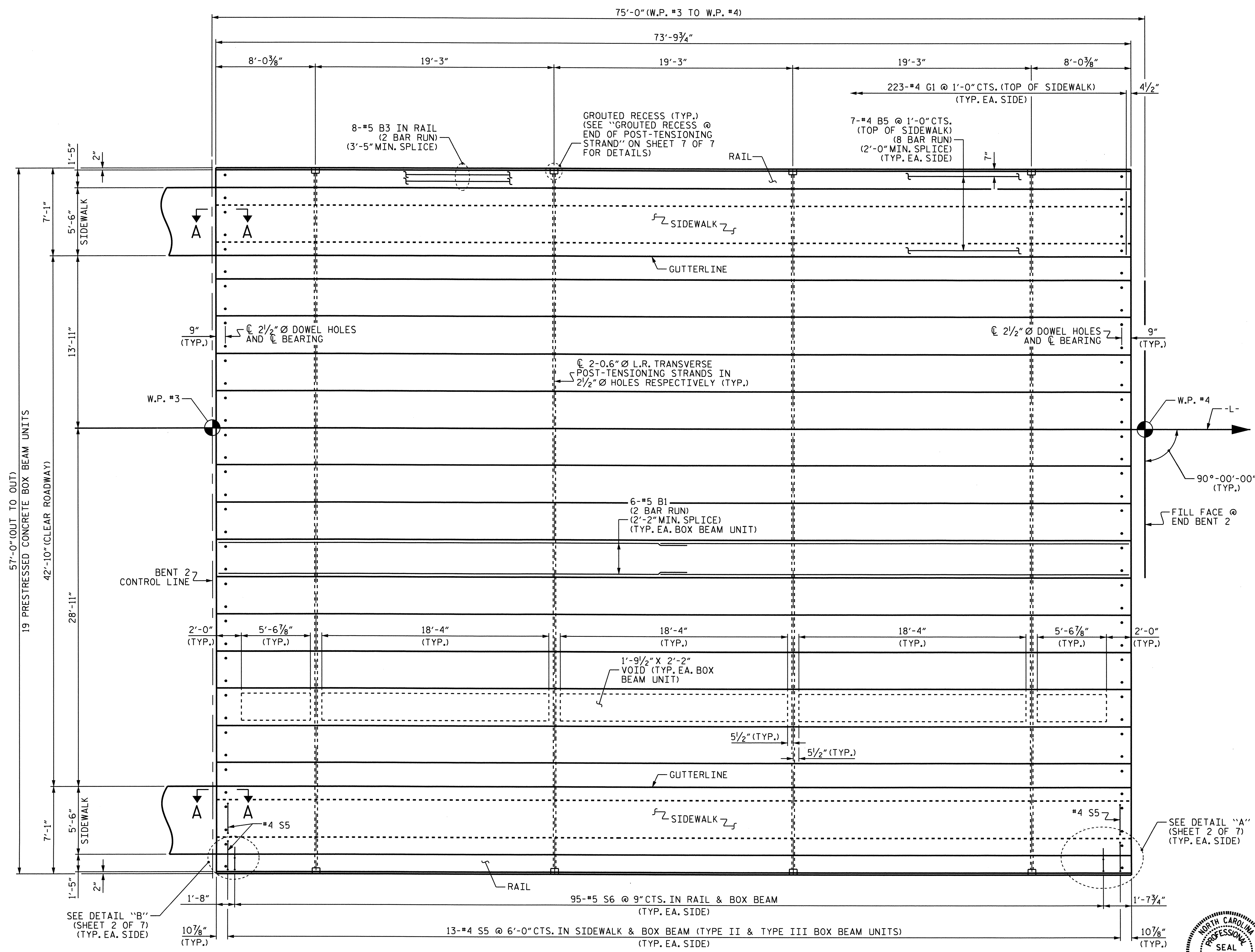
RAIL POSTS & END POSTS NOT SHOWN FOR CLARITY.
 FOR ADDITIONAL RAIL REINFORCING & DETAILS, SEE "RAIL AND POSTS DETAILS" SHEETS.
 SEE SECTION A-A ON SHEET 2 OF 7.

PROJECT NO. B-3656
HAYWOOD COUNTY
 STATION: 17+57.00 -L-
 SHEET 3 OF 7

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPAN SPAN B					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-8
					TOTAL SHEETS 30



DRAWN BY: E.C. LOCKLEAR DATE: 5-17-10
 CHECKED BY: T.H. FANG DATE: 7-15-10

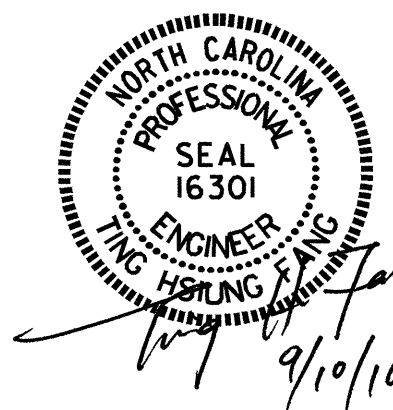


PROJECT NO. B-3656
HAYWOOD COUNTY
 STATION: 17+57.00 -L-
 SHEET 4 OF 7

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

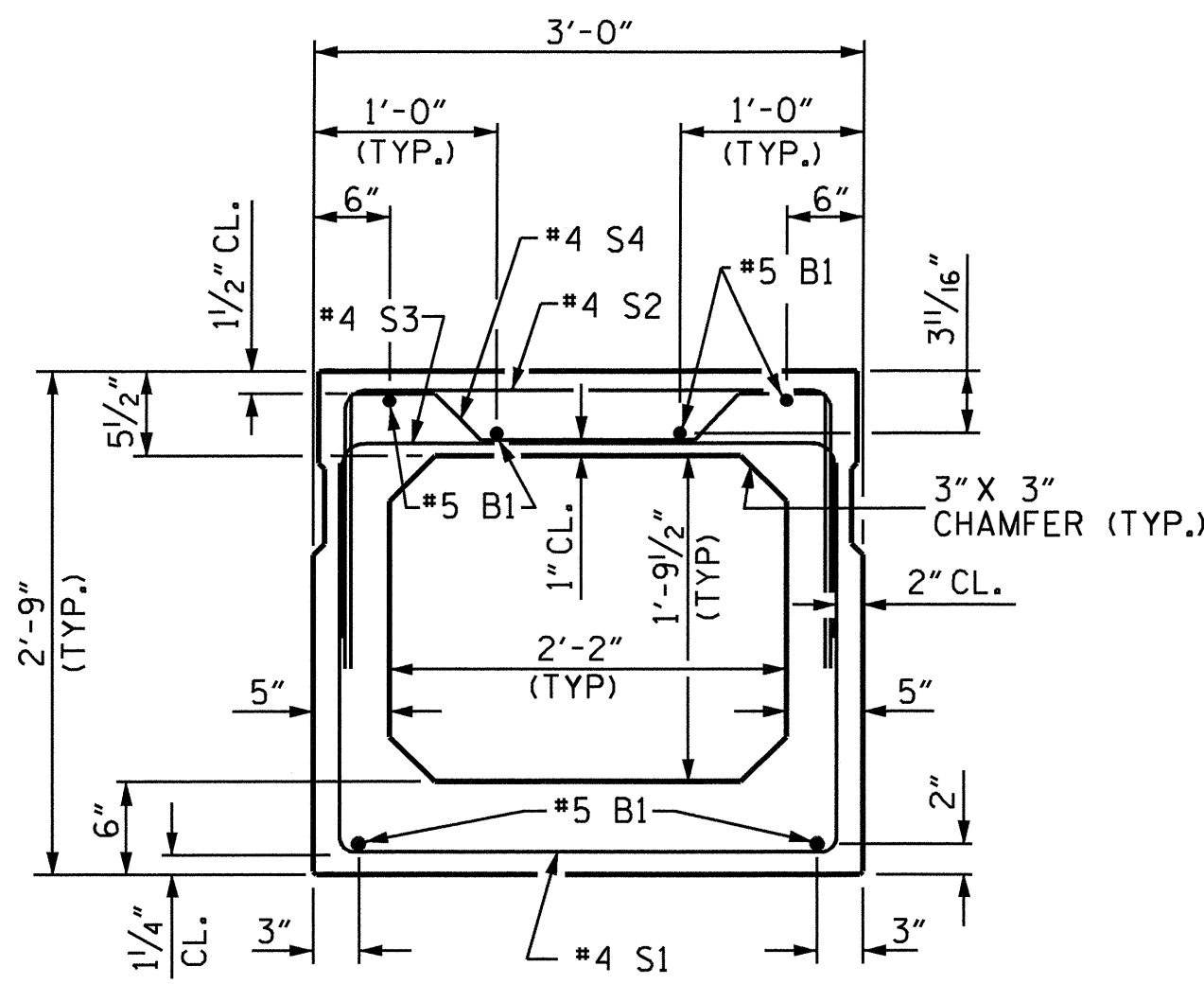
SUPERSTRUCTURE
 PLAN OF SPAN
 SPAN C

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			30



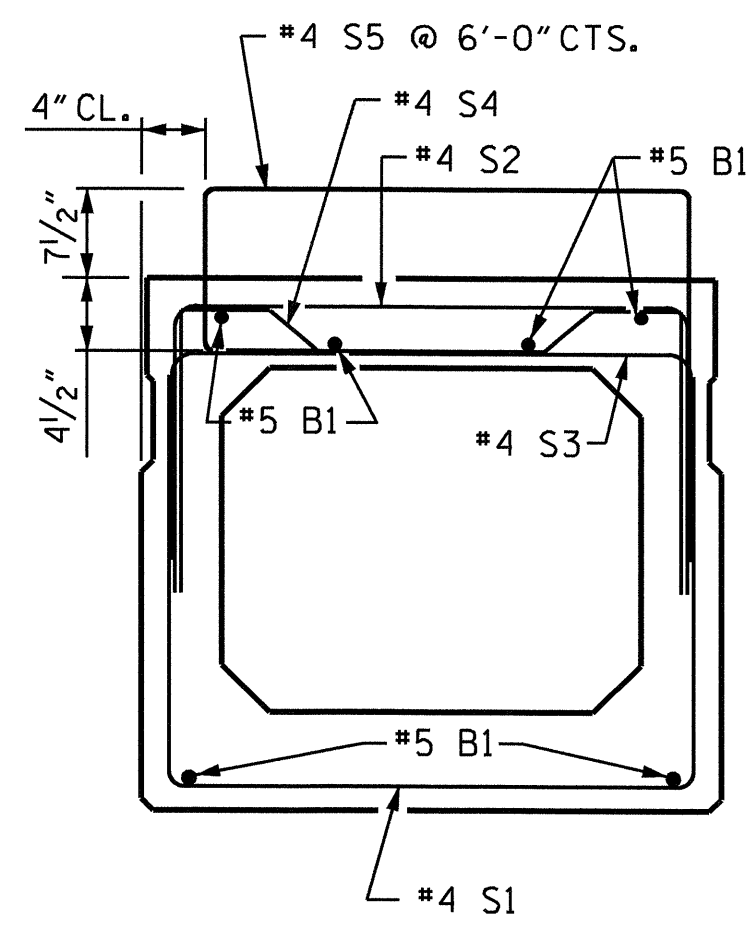
DRAWN BY: E.C. LOCKLEAR DATE: 5-17-10
 CHECKED BY: T.H. FANG DATE: 7-15-10

PLAN OF SPAN C
 RAIL POSTS & END POSTS NOT SHOWN FOR CLARITY.
 FOR ADDITIONAL RAIL REINFORCING & DETAILS, SEE "RAIL AND POSTS DETAILS" SHEETS.
 SEE SECTION A-A ON SHEET 2 OF 7.



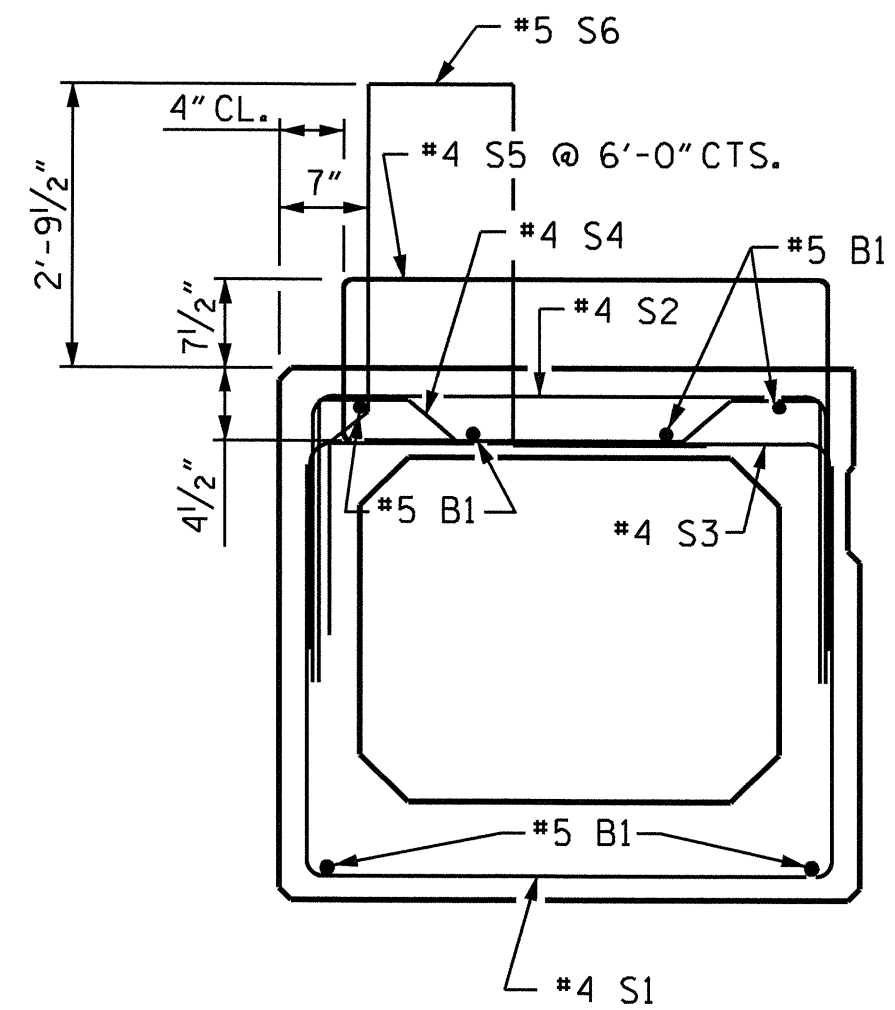
TYPE I
WITHOUT SIDEWALK

INTERIOR BOX BEAM SECTION
(STRAND LAYOUT NOT SHOWN)



TYPE II
WITH SIDEWALK

INTERIOR BOX BEAM SECTION
(STRAND LAYOUT NOT SHOWN)

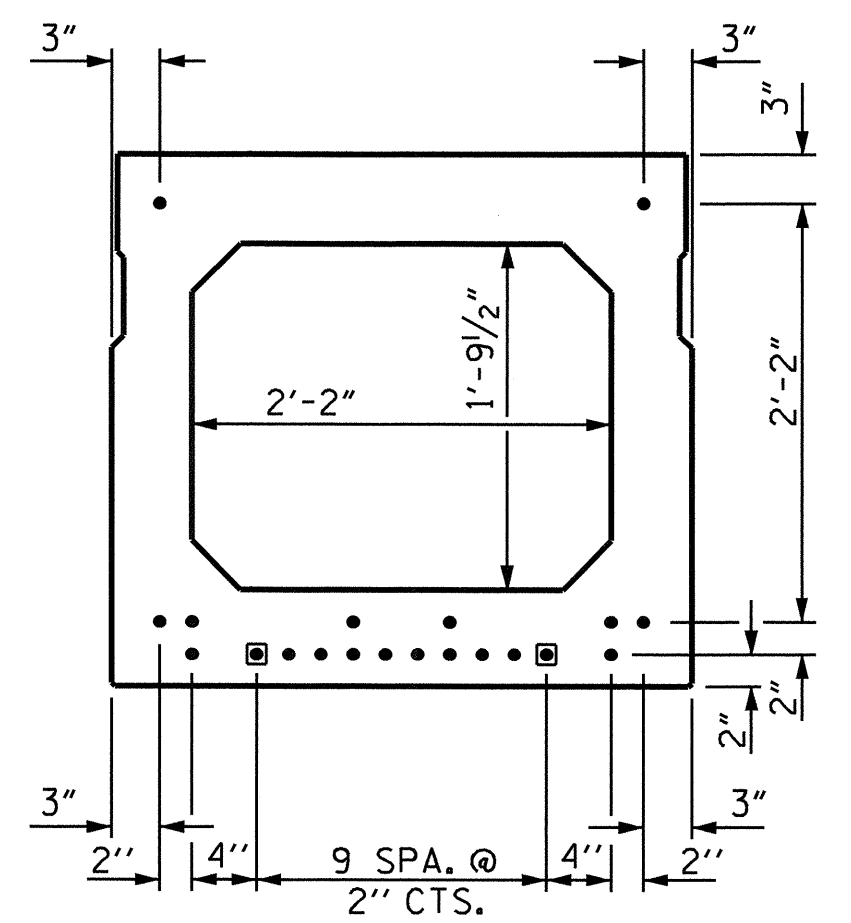


TYPE III
WITH RAIL

EXTERIOR BOX BEAM SECTION
(STRAND LAYOUT NOT SHOWN)

NOTE: DIMENSIONS AND CLEARANCES SHOWN FOR TYPE I ARE TYPICAL FOR ALL BOX BEAM TYPES.

0.6" Ø LOW RELAXATION STRAND LAYOUT



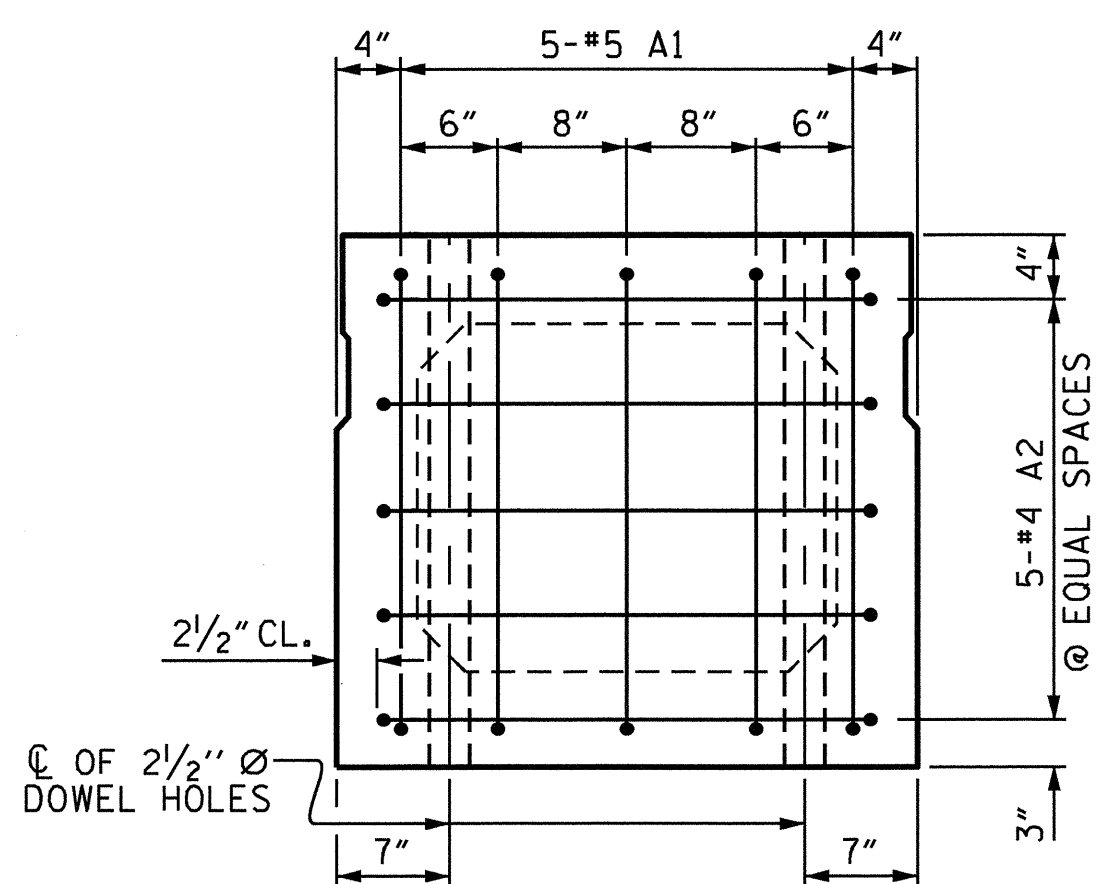
TYPICAL STRAND LOCATION
(20 STRANDS REQUIRED)
(INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION)

DEBONDING LEGEND

● STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER

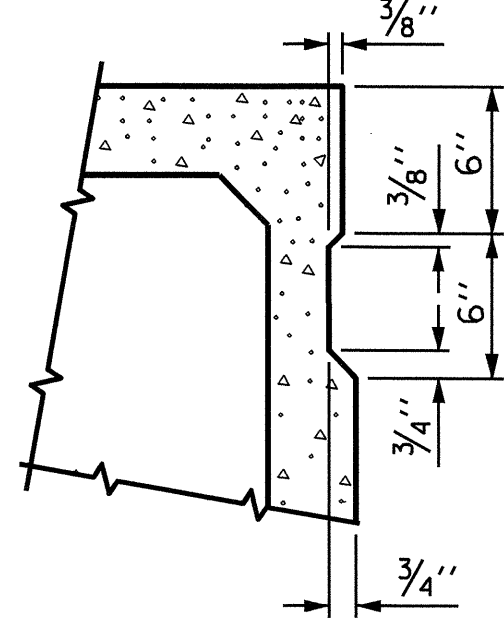
GRADE 270 STRANDS

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



END ELEVATION

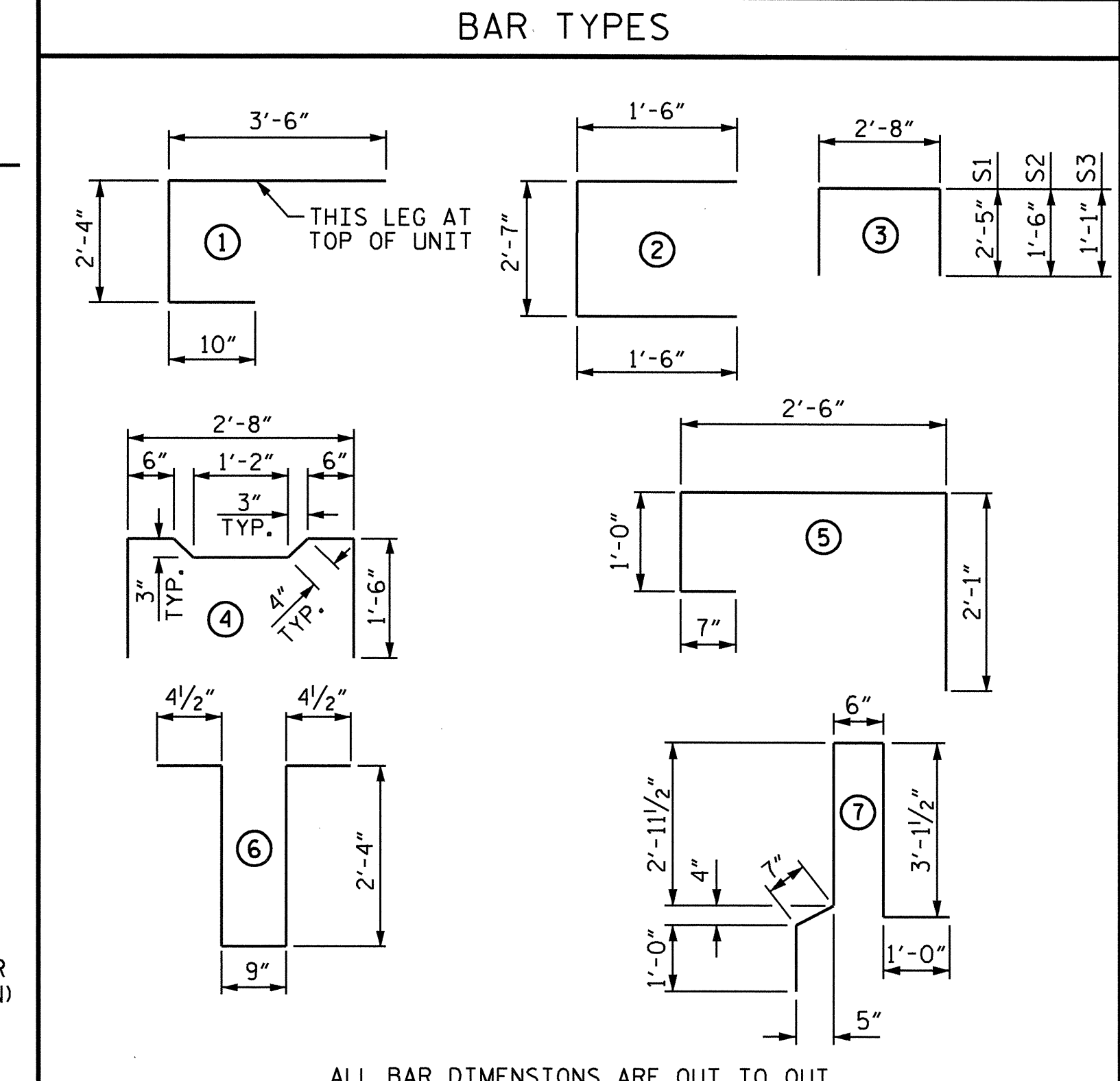
SHOWING PLACEMENT OF #5 & #4 "A" BARS AND LOCATION OF DOWEL HOLES. (INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION. STRAND LAYOUT NOT SHOWN.)



SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.

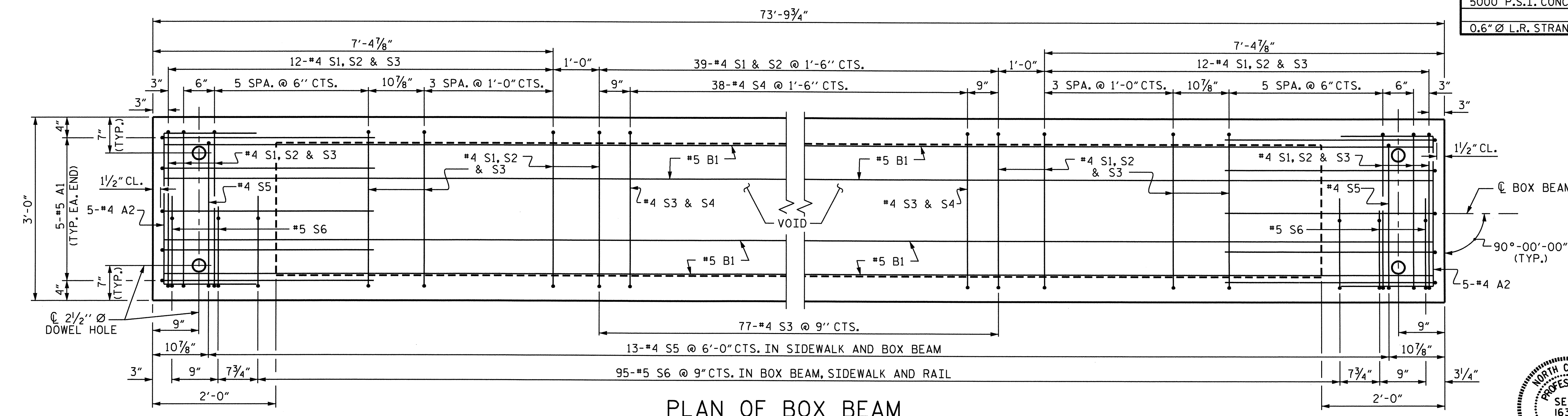
BOX BEAM UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
SPAN A			
INTERIOR B.B. (TYPE I)	15	73'-9 3/4"	1107'-2 1/4"
INTERIOR B.B. (TYPE II)	2	73'-9 3/4"	147'-7 1/2"
EXTERIOR B.B. (TYPE III)	2	73'-9 3/4"	147'-7 1/2"
SPAN C			
INTERIOR B.B. (TYPE I)	15	73'-9 3/4"	1107'-2 1/4"
INTERIOR B.B. (TYPE II)	2	73'-9 3/4"	147'-7 1/2"
EXTERIOR B.B. (TYPE III)	2	73'-9 3/4"	147'-7 1/2"
TOTAL	38		2804'-10 1/2"



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE BOX BEAM SECTION

BAR	NUMBER	SIZE	TYPE	INTERIOR UNITS		EXTERIOR UNITS			
				TYPE I	TYPE II	TYPE III	TYPE III		
				LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	6'-8"	70	6'-8"	70	6'-8"	70
A2	34	#4	2	5'-7"	127	5'-7"	127	5'-7"	127
B1	12	#5	STR	37'-10"	474	37'-10"	631	37'-10"	474
K1	12	#4	6	6'-2"	49	6'-2"	49	6'-2"	49
K2	8	#4	STR	2'-7"	14	2'-7"	14	2'-7"	14
S1	63	#4	3	7'-6"	316	7'-6"	316	7'-6"	316
S2	63	#4	3	5'-8"	238	5'-8"	238	5'-8"	238
S3	101	#4	3	4'-10"	326	4'-10"	326	4'-10"	326
S4	38	#4	4	5'-10"	148	5'-10"	148	5'-10"	148
* S5	13	#4	5	--	--	6'-2"	54	6'-2"	54
* S6	99	#5	7	--	--	--	--	9'-2"	947
REINFORCING STEEL					1762 LBS.		1762 LBS.		1762 LBS.
* EPOXY COATED REINF. STEEL					--		54 LBS.		1001 LBS.
5000 P.S.I. CONCRETE					13.1 CU. YDS.		13.1 CU. YDS.		13.2 CU. YDS.
0.6" Ø L.R. STRANDS					No. 20		No. 20		No. 20

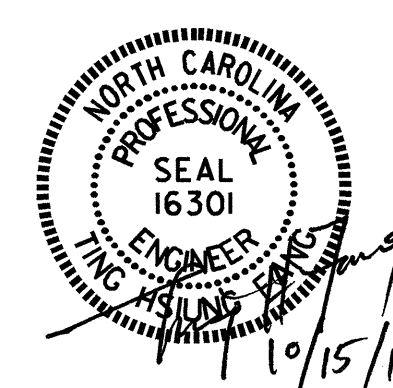


PLAN OF BOX BEAM

TYPE III (EXTERIOR) UNIT SHOWN, TYPE II (INTERIOR) UNIT SIMILAR EXCEPT OMIT #5 S6 BARS. TYPE I (INTERIOR) UNIT OMIT #4 S5 & #5 S6 BARS. FOR LOCATION OF DIAPHRAGMS, SEE PLAN OF SPAN. FOR REINFORCING STEEL IN DIAPHRAGMS, SEE DIAPHRAGM DETAILS.

ASSEMBLED BY: E.C. LOCKLEAR DATE: 5-19-10
 CHECKED BY: T.H. FANG DATE: 7-15-10
 DRAWN BY: TLA 5/05
 CHECKED BY: GM 6/05

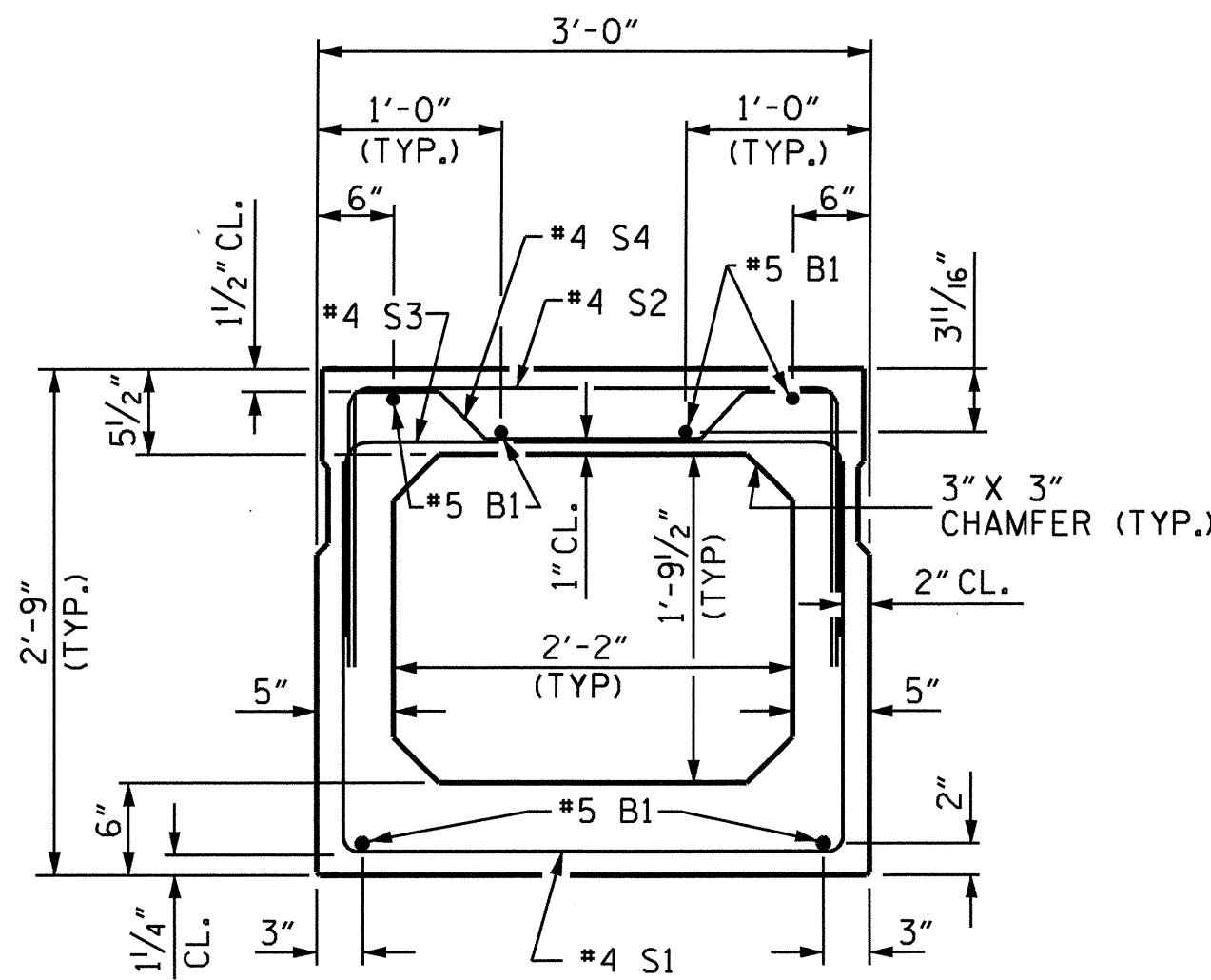
ADDED 7/11/05
 REV. 5/11/06 TLA/GM



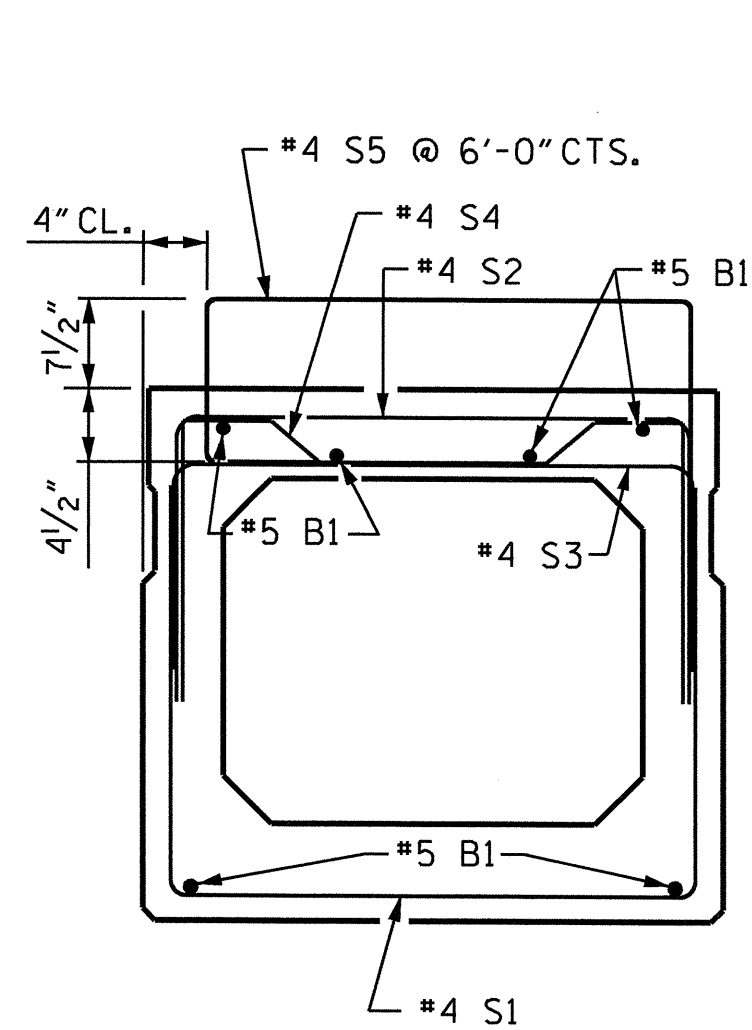
PROJECT NO. B-3656
HAYWOOD COUNTY
 STATION: 17+57.00 -L-
 SHEET 5 OF 7

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

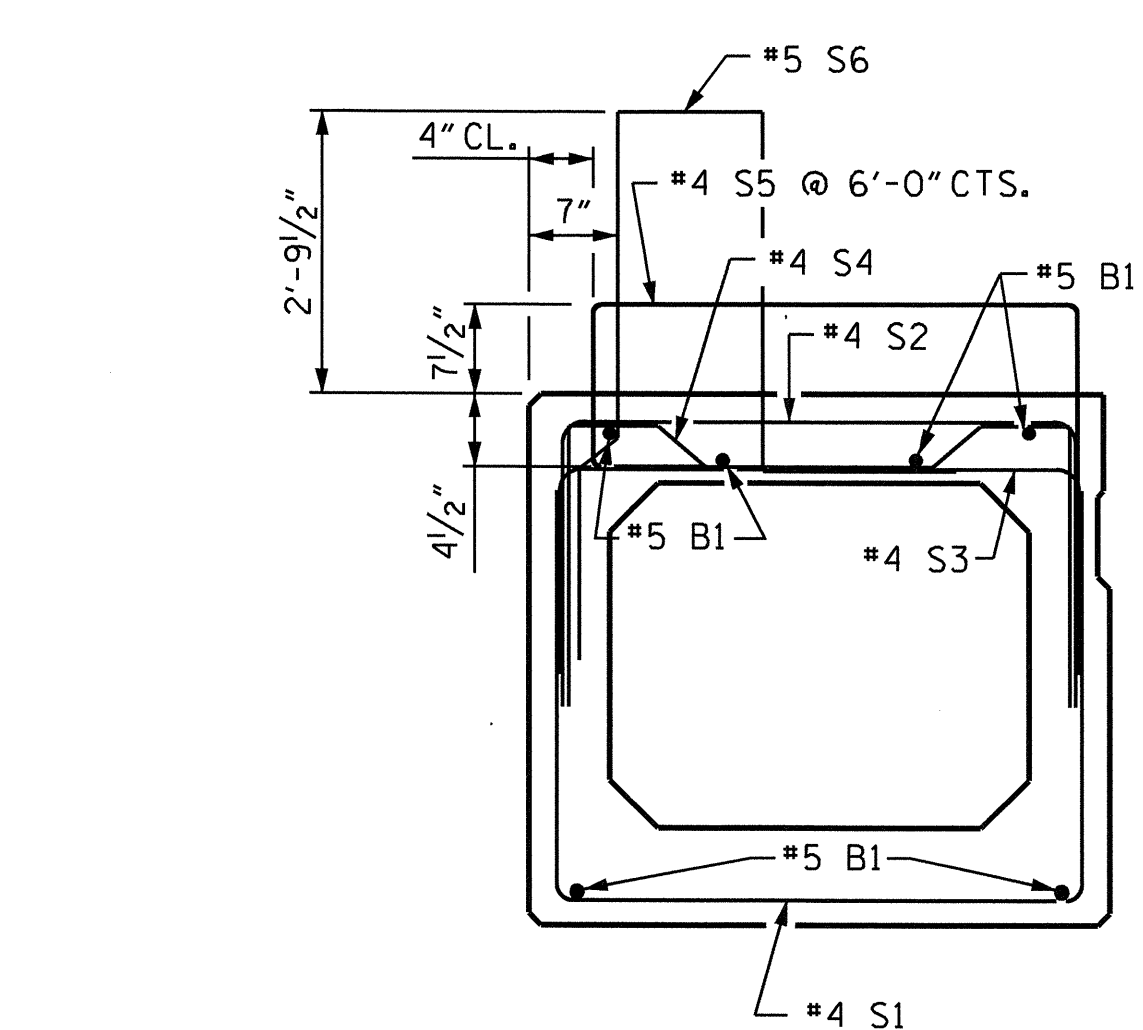
TOTAL SHEETS 30



TYPE I
WITHOUT SIDEWALK
INTERIOR BOX BEAM SECTION
(STRAND LAYOUT NOT SHOWN)



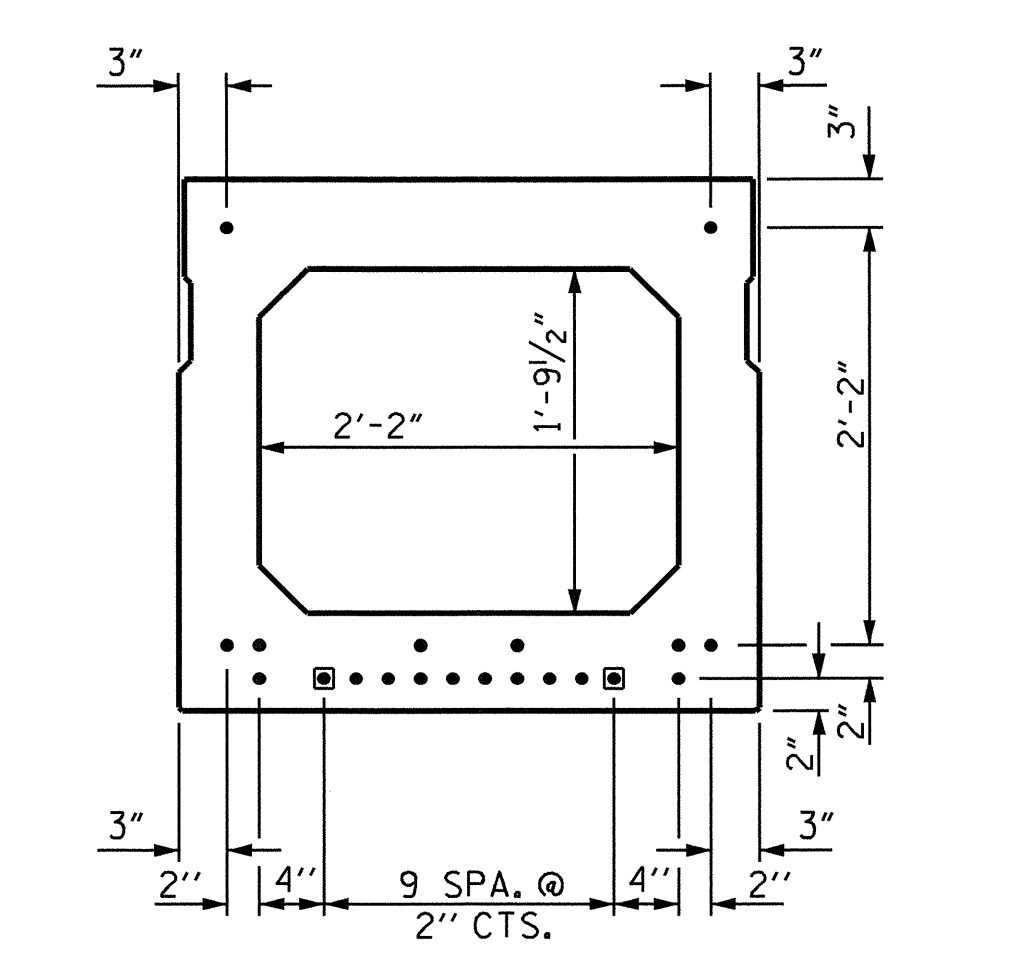
TYPE II
WITH SIDEWALK
INTERIOR BOX BEAM SECTION
(STRAND LAYOUT NOT SHOWN)



TYPE III
WITH RAIL
EXTERIOR BOX BEAM SECTION
(STRAND LAYOUT NOT SHOWN)

NOTE: DIMENSIONS AND CLEARANCES SHOWN FOR TYPE I ARE TYPICAL FOR ALL BOX BEAM TYPES.

0.6" Ø LOW RELAXATION STRAND LAYOUT



TYPICAL STRAND LOCATION
(20 STRANDS REQUIRED)
(INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION)

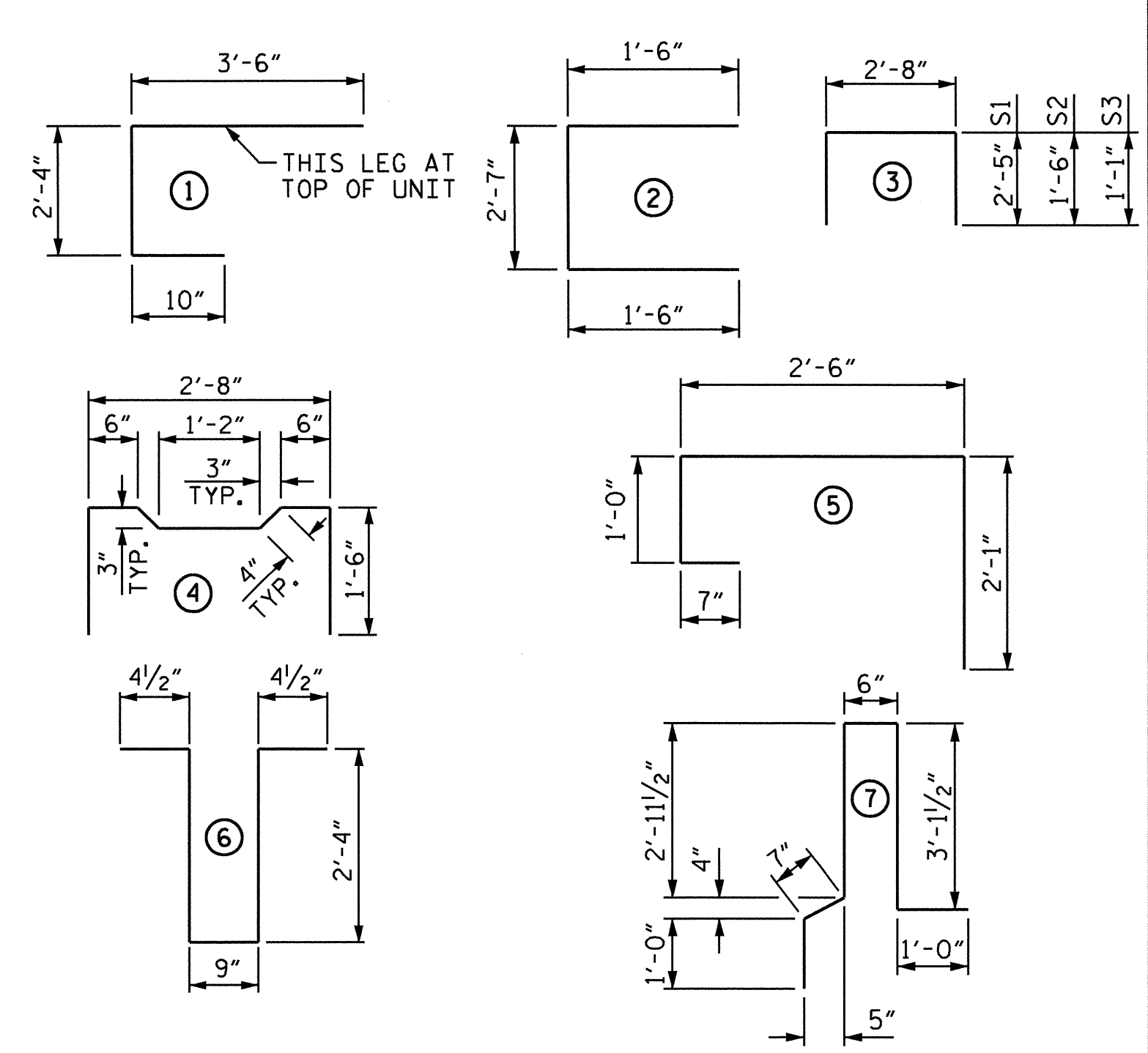
DEBONDING LEGEND

● STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER

GRADE 270 STRANDS

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

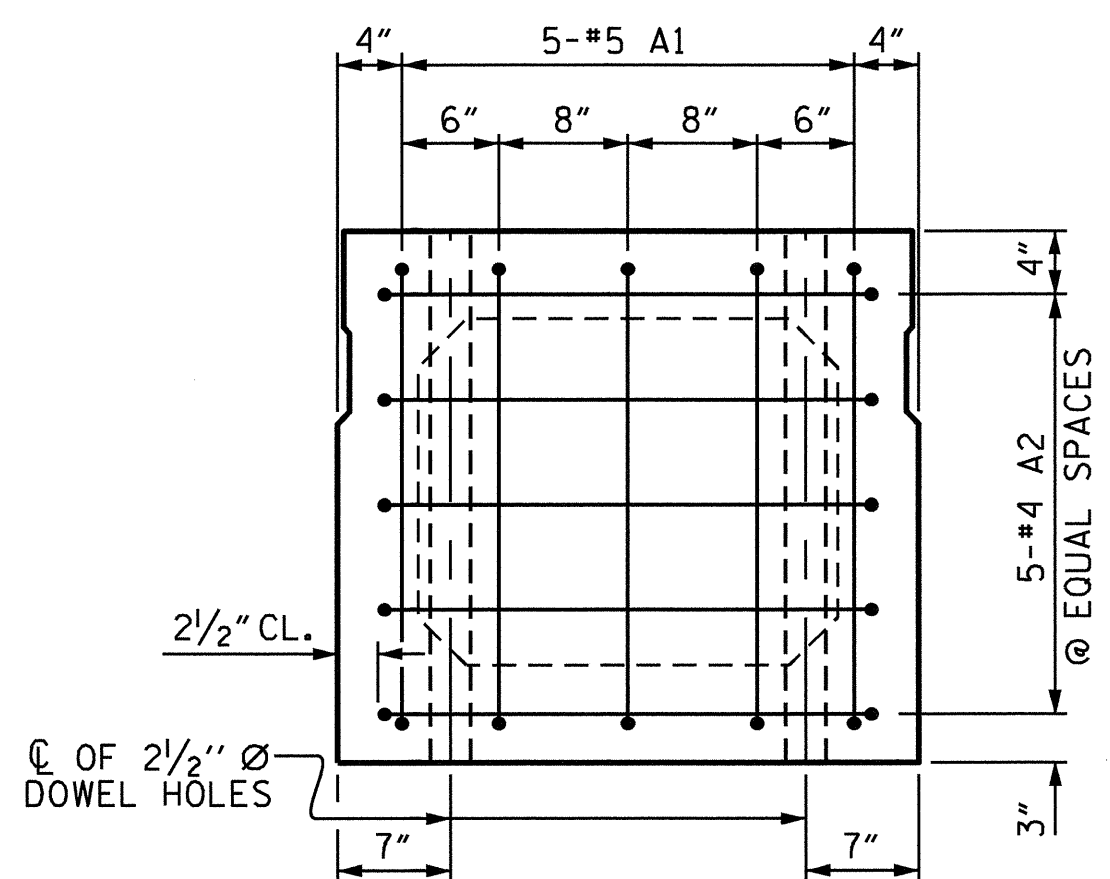
BAR TYPES



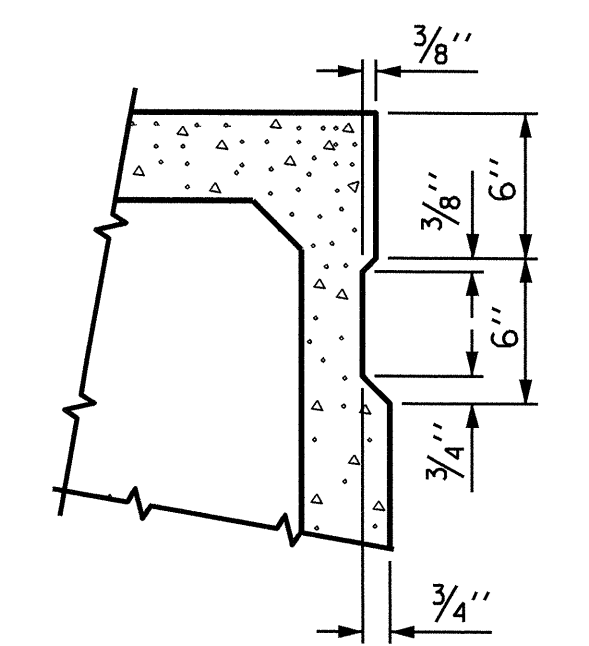
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE BOX BEAM SECTION

BAR	NUMBER	SIZE	TYPE	INTERIOR UNITS		EXTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	6'-8"	70	6'-8"	70
A2	34	#4	2	5'-7"	127	5'-7"	127
B2	12	#5	STR	38'-5"	481	38'-5"	481
K1	12	#4	6	6'-2"	49	6'-2"	49
K2	8	#4	STR	2'-7"	14	2'-7"	14
S1	63	#4	3	7'-6"	316	7'-6"	316
S2	63	#4	3	5'-8"	238	5'-8"	238
S3	103	#4	3	4'-10"	333	4'-10"	333
S4	40	#4	4	5'-10"	156	5'-10"	156
* S5	13	#4	5	--	--	6'-2"	54
* S6	101	#5	7	--	--	9'-2"	966
REINFORCING STEEL					1784 LBS.		1784 LBS.
* EPOXY COATED REINF. STEEL					--		54 LBS.
5000 P.S.I. CONCRETE					13.1 CU. YDS.		13.3 CU. YDS.
0.6" Ø L.R. STRANDS				No.	20	No.	20

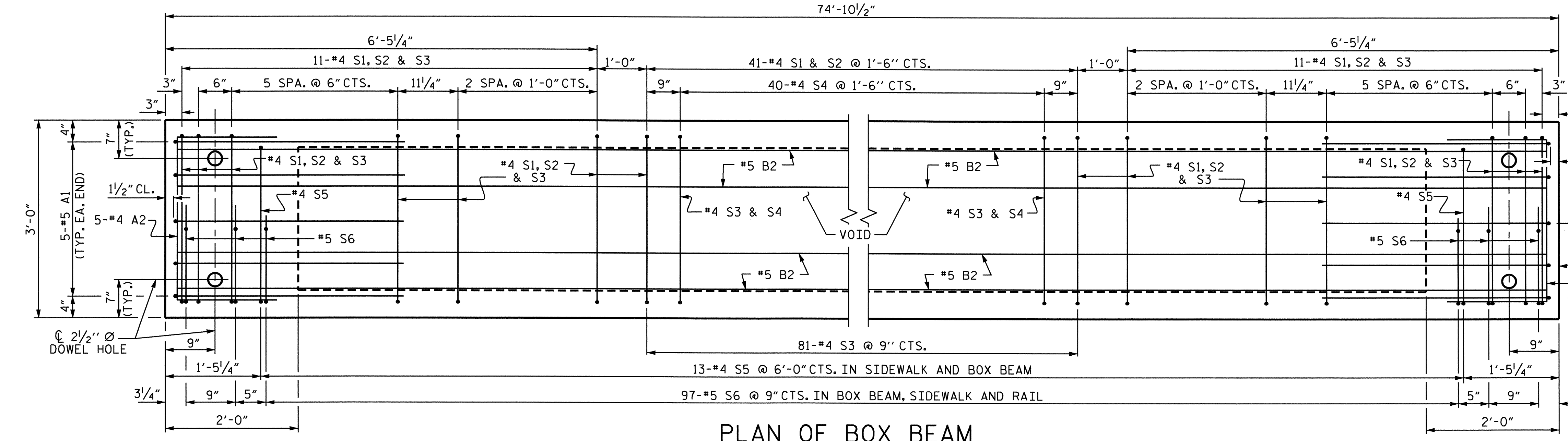


END ELEVATION
SHOWING PLACEMENT OF #5 & #4 "A" BARS AND LOCATION OF DOWEL HOLES.
(INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION. STRAND LAYOUT NOT SHOWN.)



SHEAR KEY DETAIL
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.

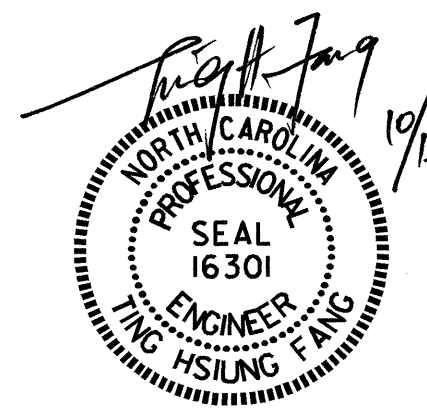
BOX BEAM UNITS REQUIRED			
SPAN B	NUMBER	LENGTH	TOTAL LENGTH
INTERIOR B.B. (TYPE I)	15	74'-10 1/2"	1123'-1 1/2"
INTERIOR B.B. (TYPE II)	2	74'-10 1/2"	149'-9"
EXTERIOR B.B. (TYPE III)	2	74'-10 1/2"	149'-9"
TOTAL	19		1422'-7 1/2"



PLAN OF BOX BEAM

TYPE III (EXTERIOR) UNIT SHOWN, TYPE II (INTERIOR) UNIT SIMILAR EXCEPT OMIT #5 S6 BARS. TYPE I (INTERIOR) UNIT OMIT #4 S5 & #5 S6 BARS. FOR LOCATION OF DIAPHRAGMS, SEE PLAN OF SPAN. FOR REINFORCING STEEL IN DIAPHRAGMS, SEE DIAPHRAGM DETAILS.

ASSEMBLED BY : E.C. LOCKLEAR	DATE : 5-19-10
CHECKED BY : T.H. FANG	DATE : 7-15-10
DRAWN BY : TLA 5/05	ADDED 7/11/05
CHECKED BY : GM 6/05	REV. 5/1/06 TLA/GM

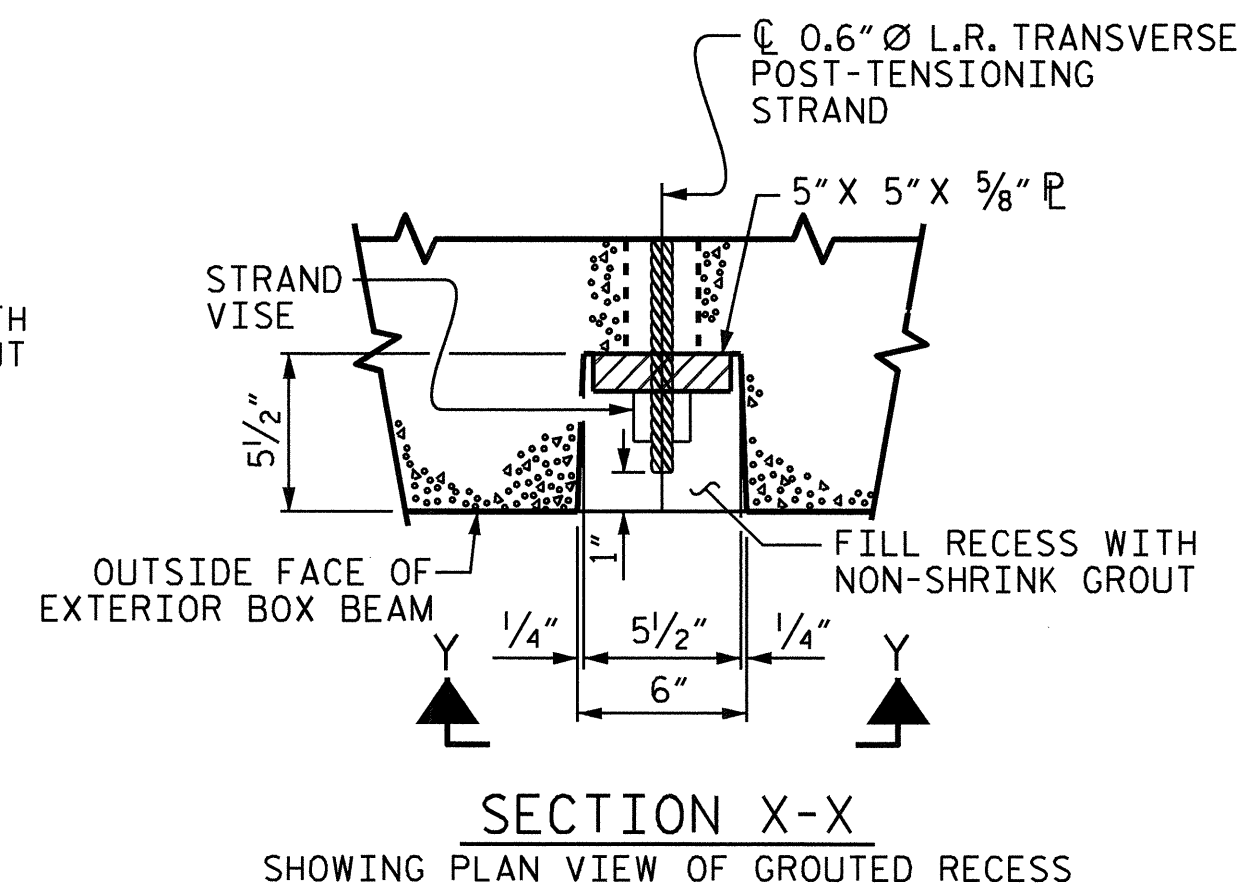
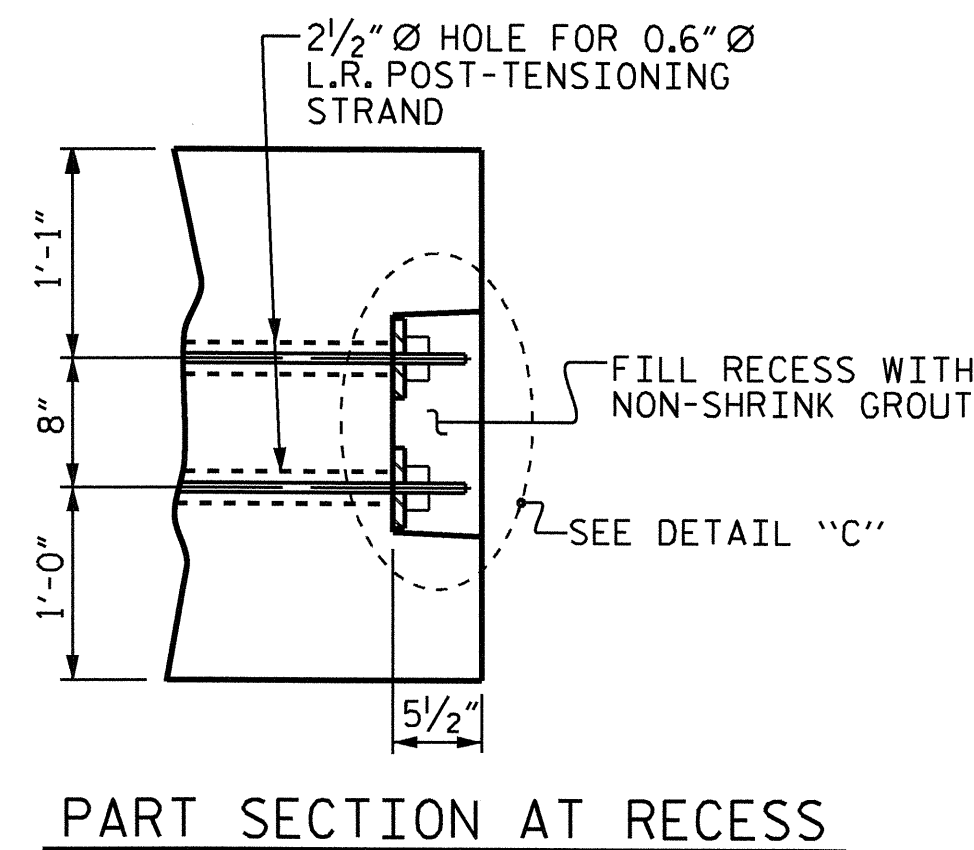
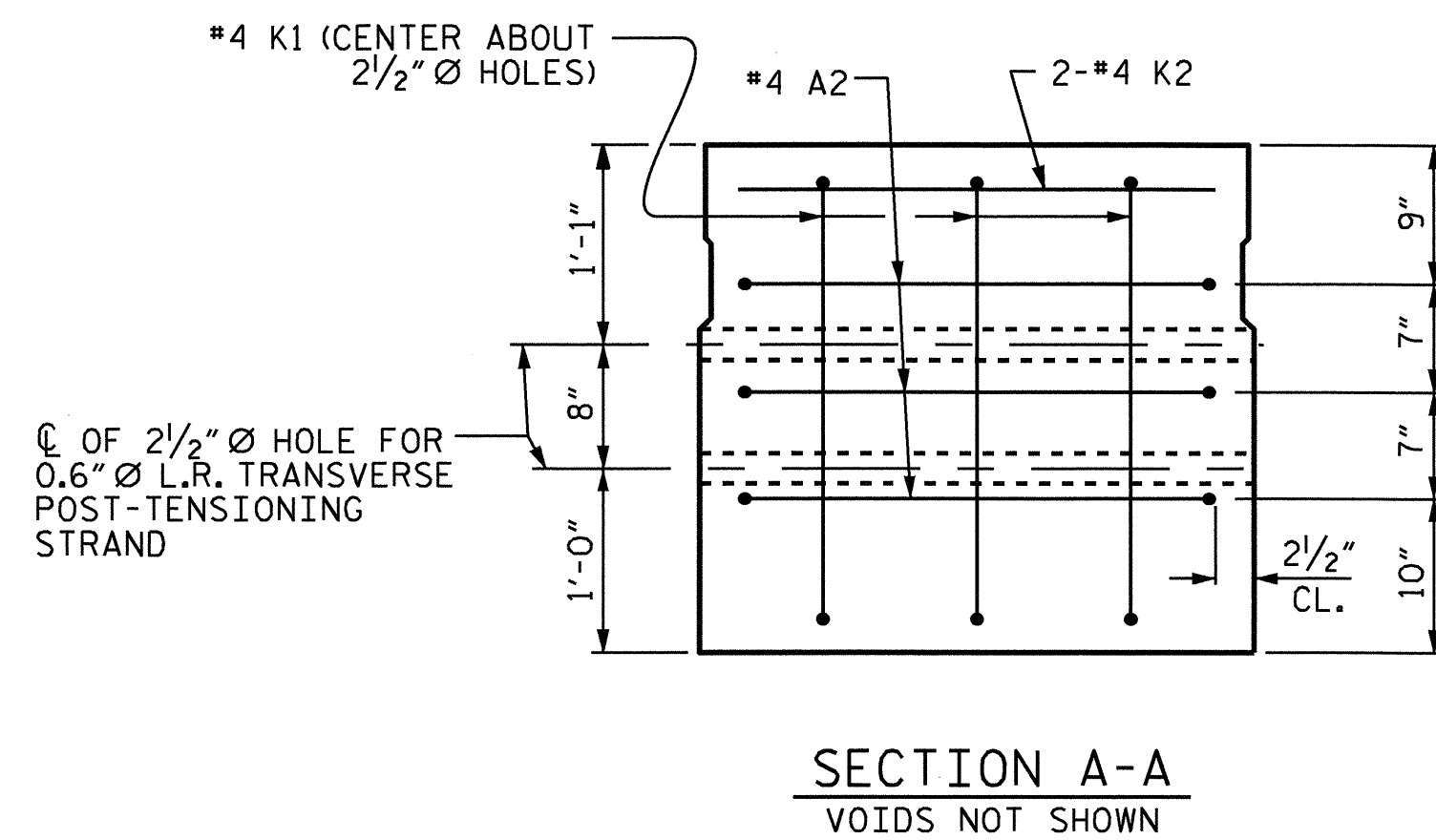
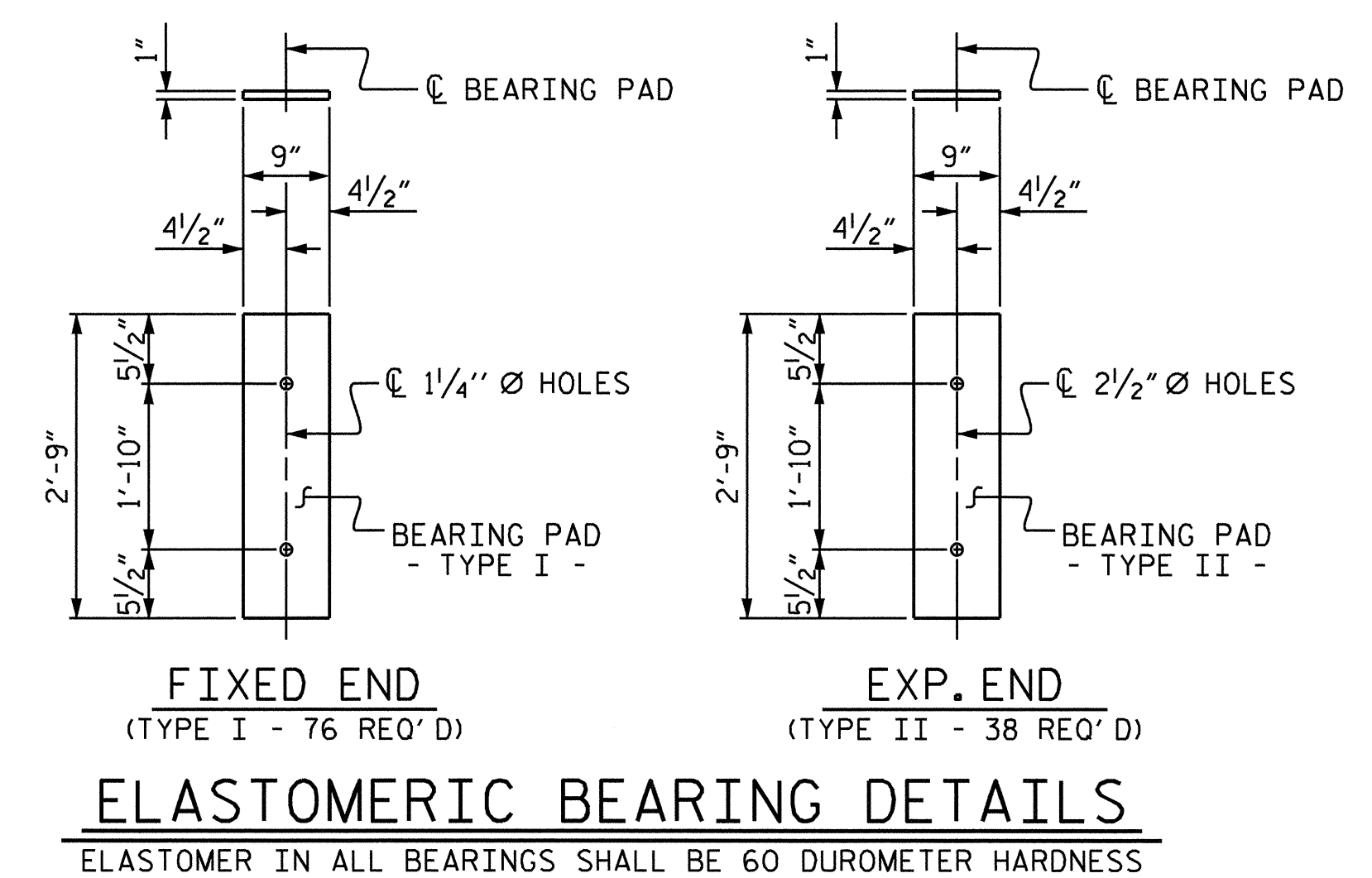
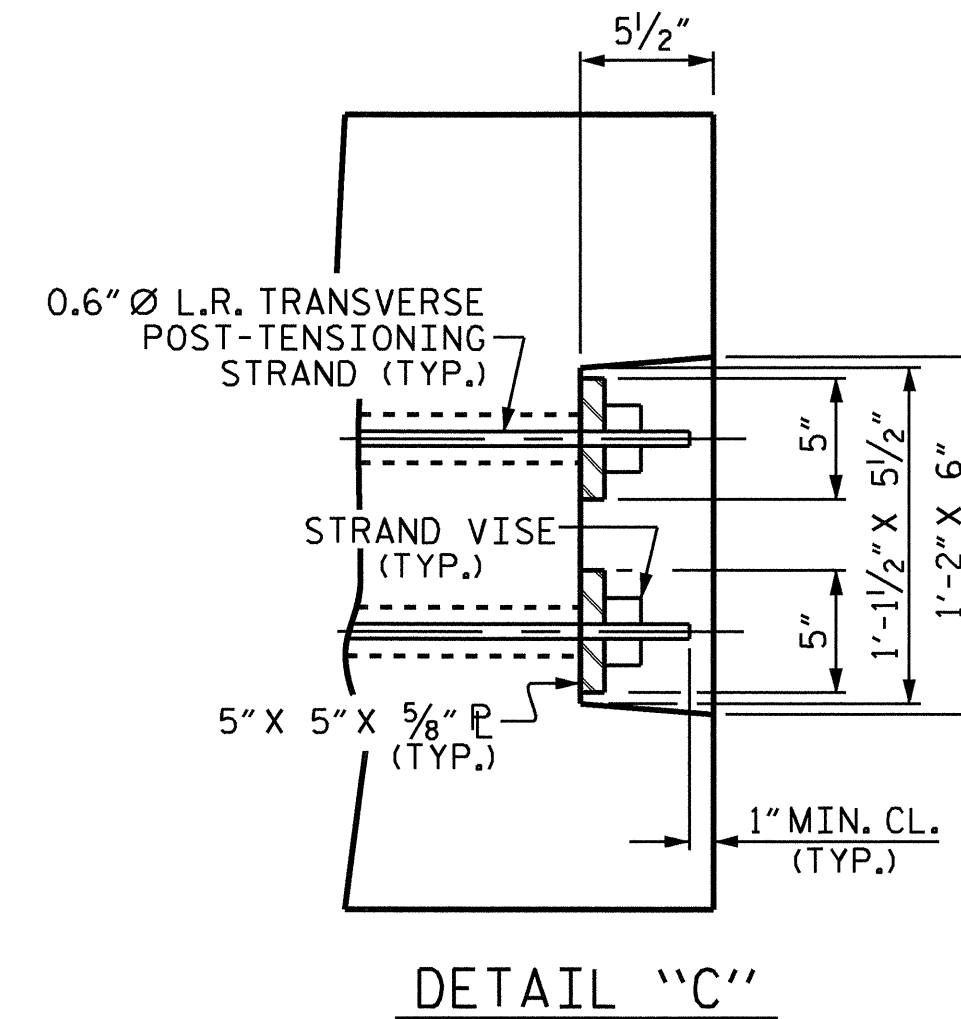
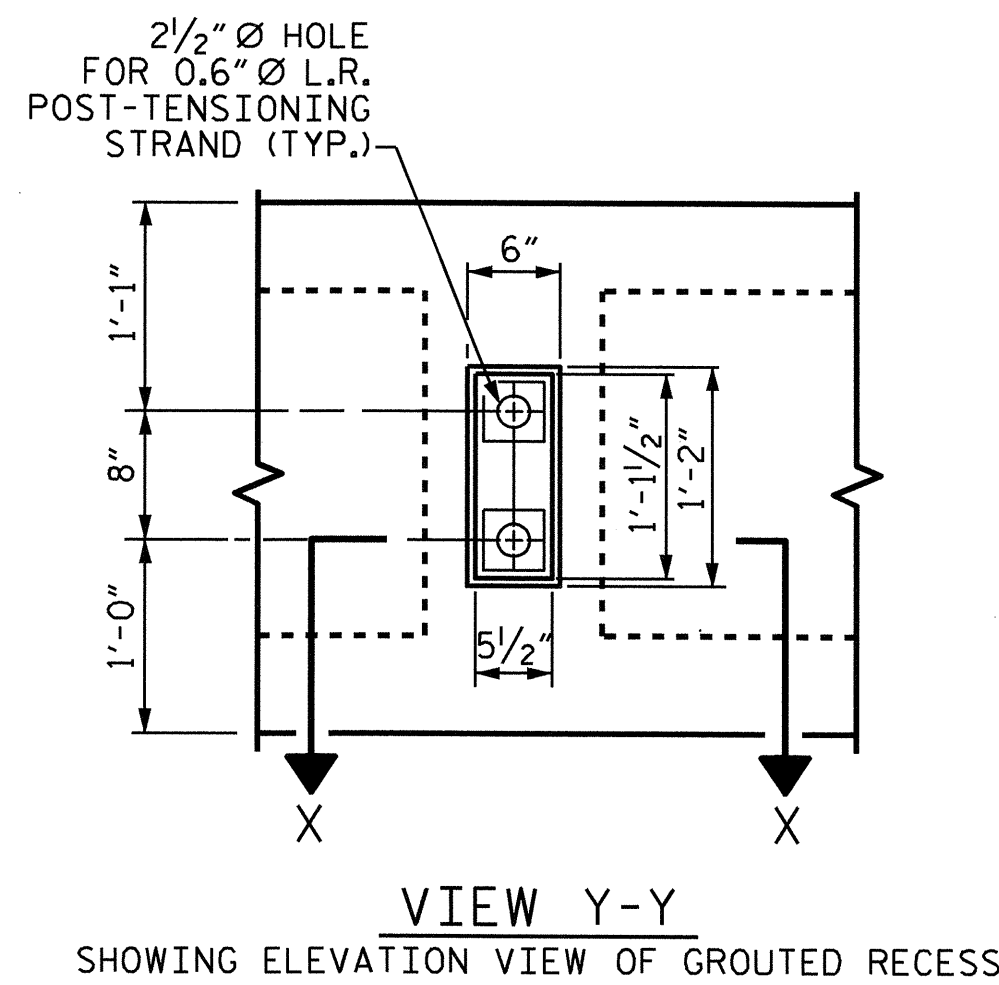
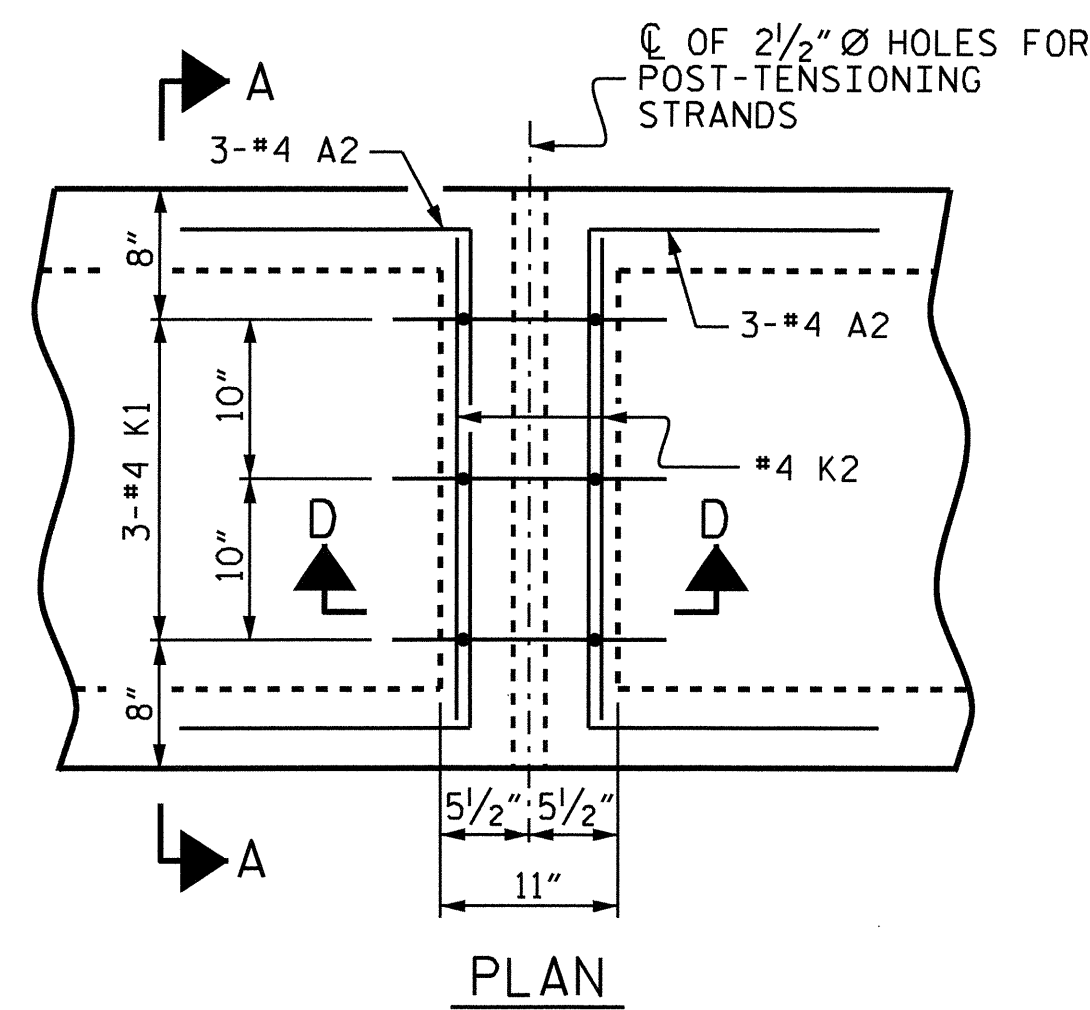


PROJECT NO. B-3656
HAYWOOD COUNTY
STATION: 17+57.00 -L-
SHEET 6 OF 7

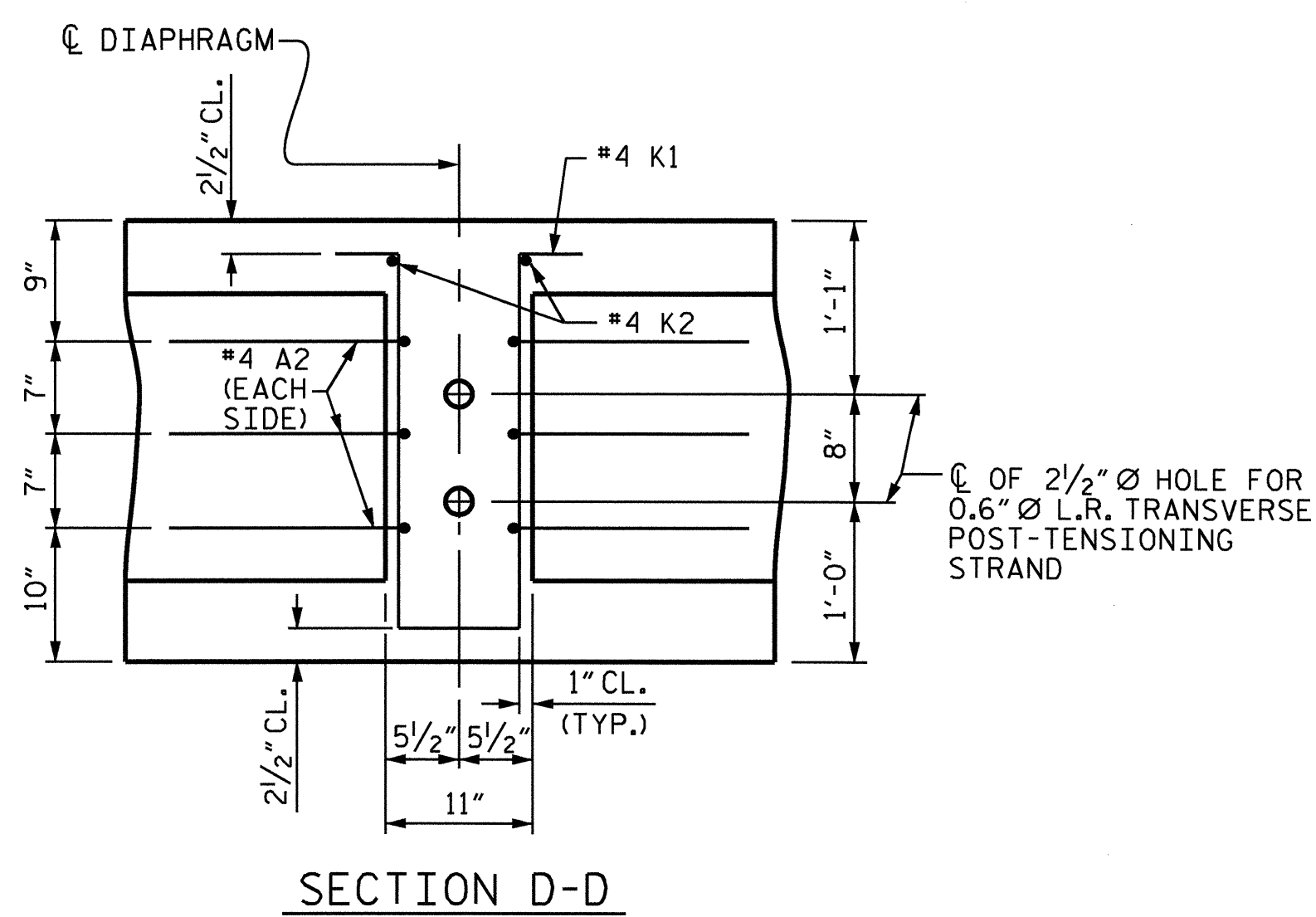
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 2'-9"
PRESTRESSED CONCRETE
BOX BEAM UNIT
SPAN B

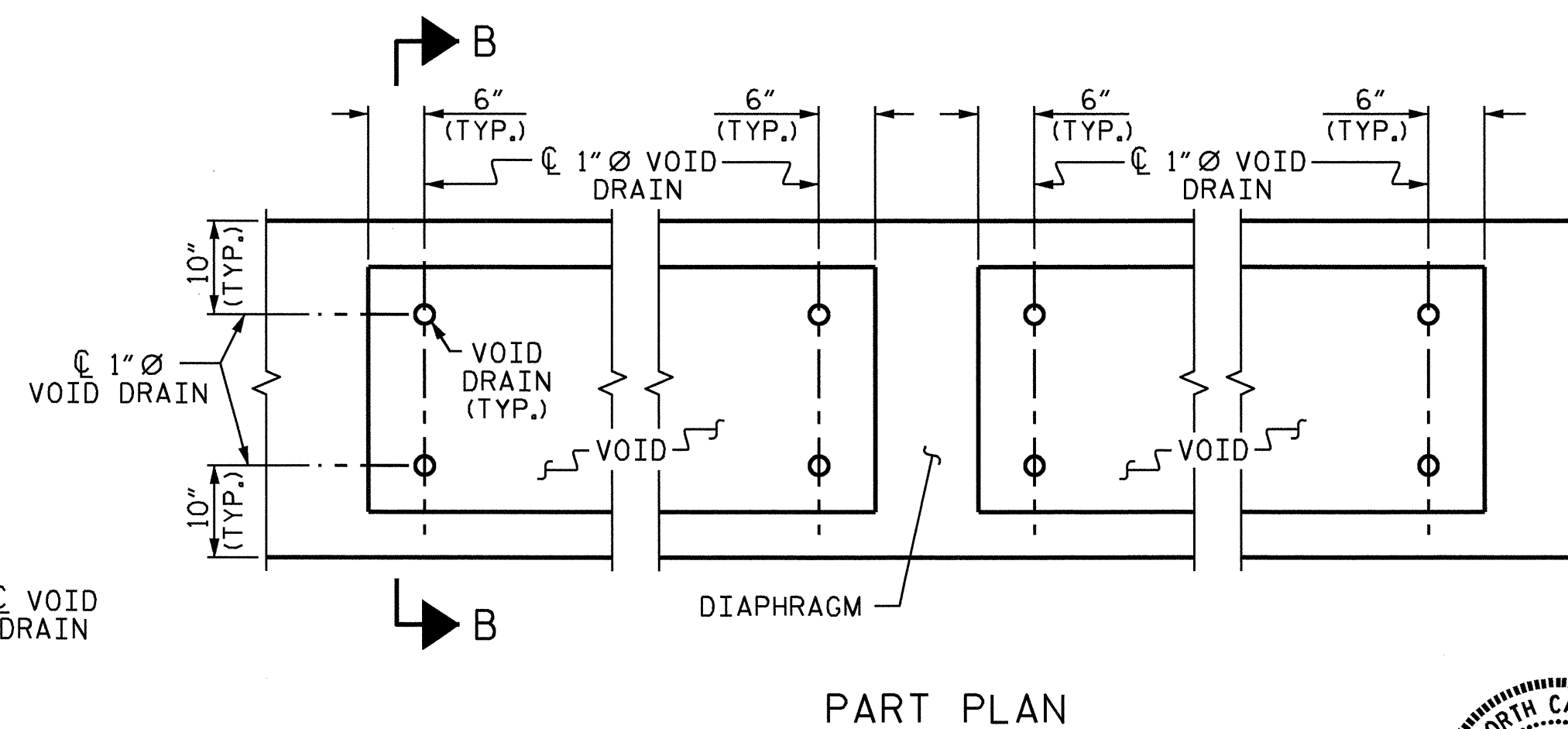
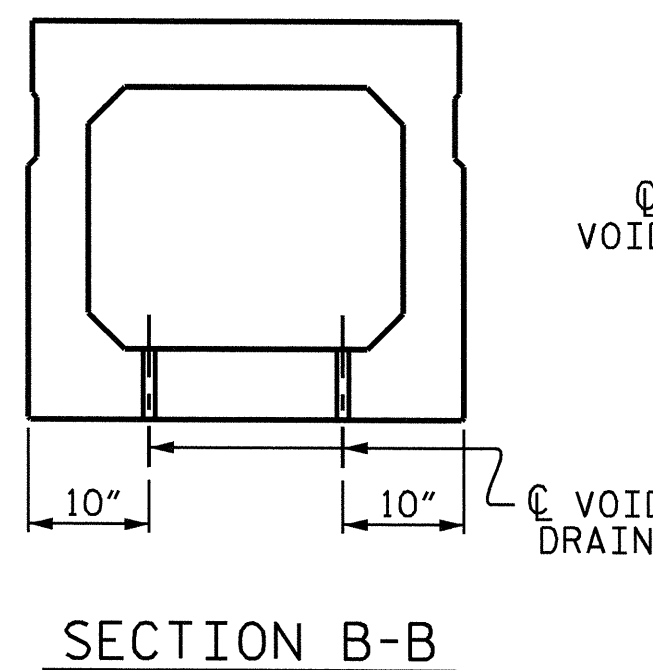
TOTAL SHEETS	S-11
	30



DEAD LOAD DEFLECTION AND CAMBER			
3'-0" x 2'-9"			
0.6" Ø L.R. STRAND			
	SPAN A	SPAN B	SPAN C
CAMBER (BEAM ALONE IN PLACE)	↑ 2 1/2"	↑ 2 1/2"	↑ 2 1/2"
DEFLECTION DUE TO CONCRETE WEARING SURFACE	↓ 7/16"	↓ 1/2"	↓ 7/16"
FINAL CAMBER	↑ 2 1/16"	↑ 2"	↑ 2 1/16"



GRouted RECESS DETAIL AT END OF POST-TENSIONED STRANDS OF EXTERIOR BOX BEAM

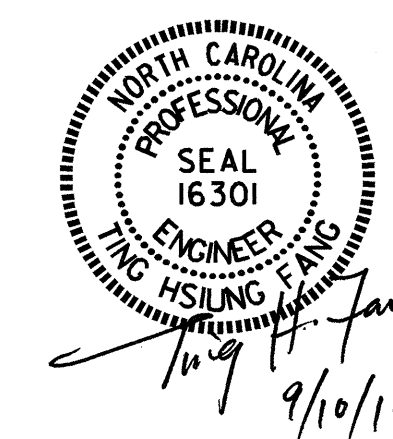


DOUBLE DIAPHRAGM DETAILS
 #4 "S" BARS NOT SHOWN. #4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2 1/2" Ø HOLE.

VOID DRAIN DETAILS
 (DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

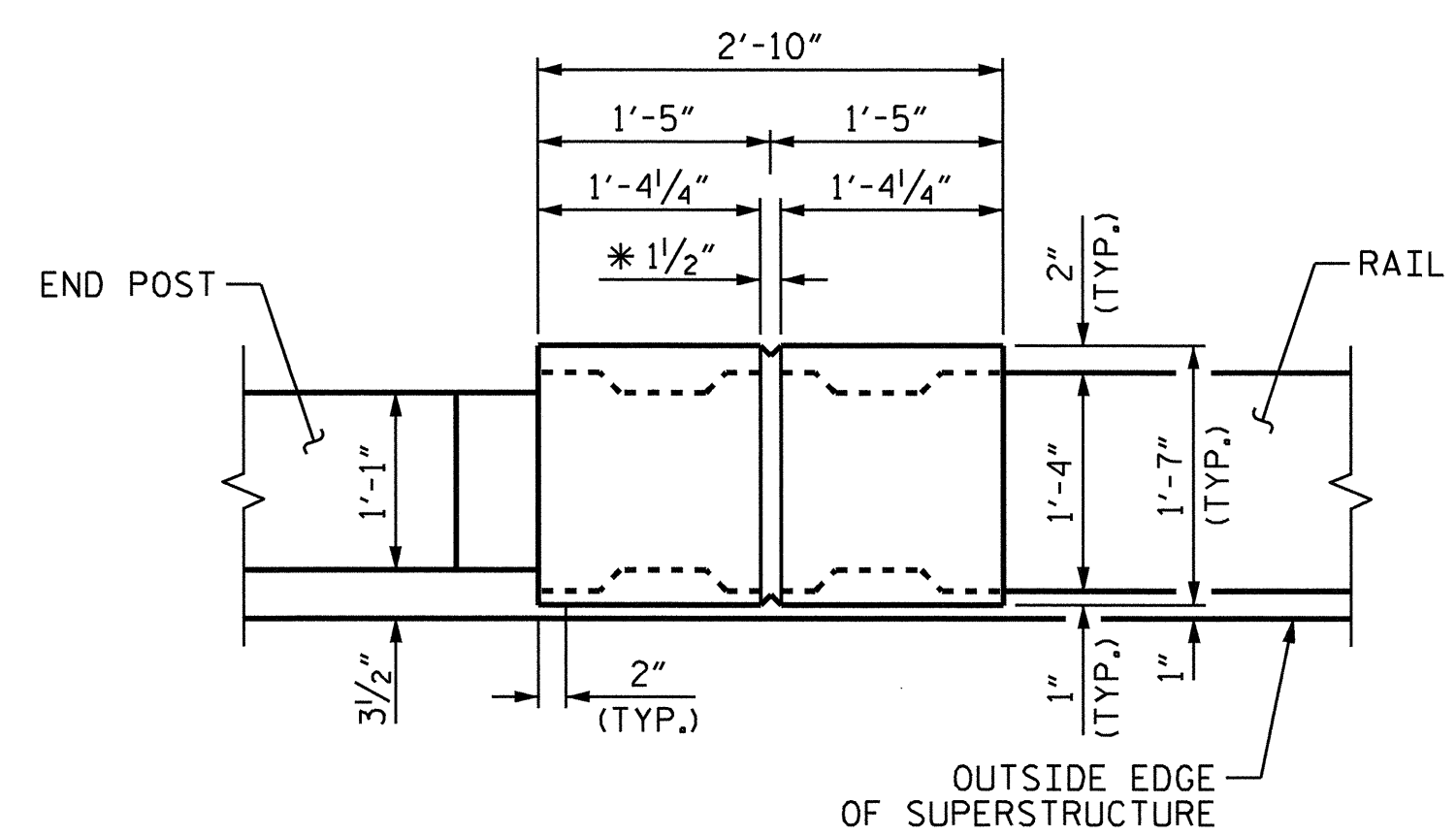
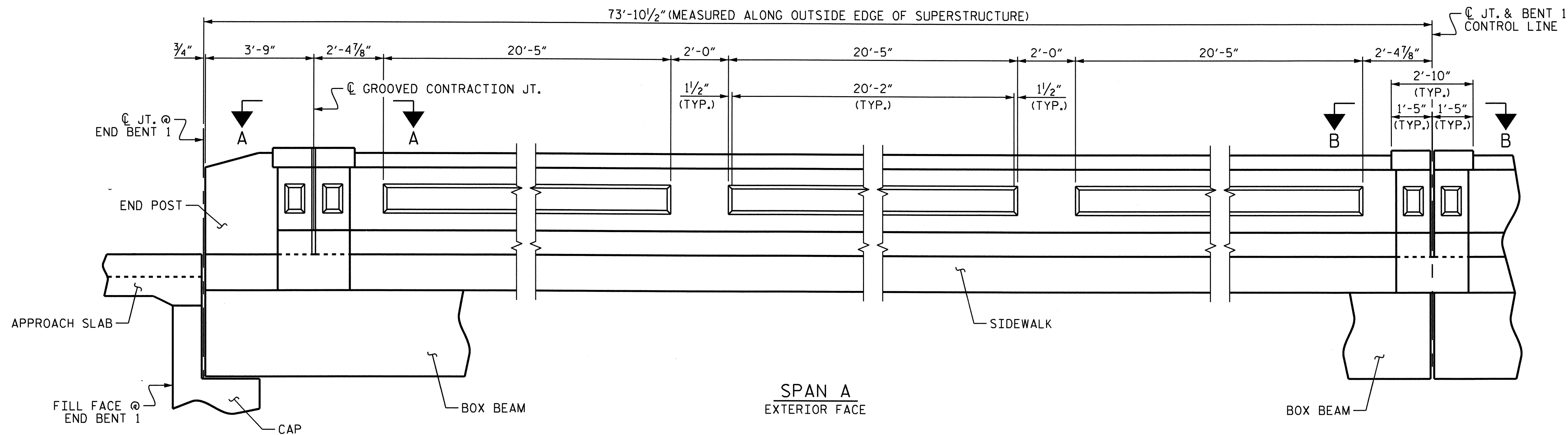
PROJECT NO. B-3656
HAYWOOD COUNTY
 STATION: 17+57.00 -L-
 SHEET 7 OF 7

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO.
STANDARD						S-12
3'-0" X 2'-9" PRESTRESSED CONCRETE BOX BEAM UNIT						TOTAL SHEETS
REVISIONS						30
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



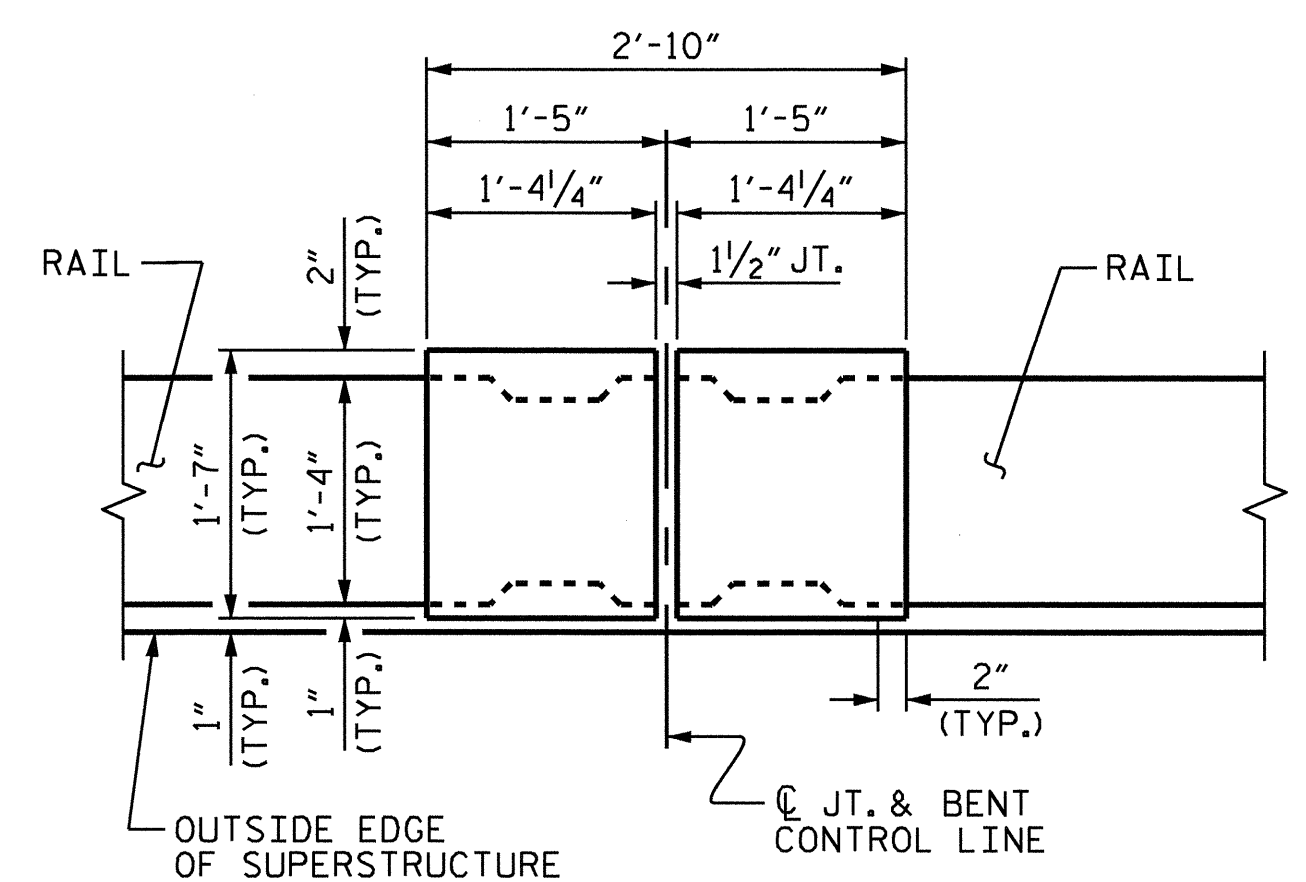
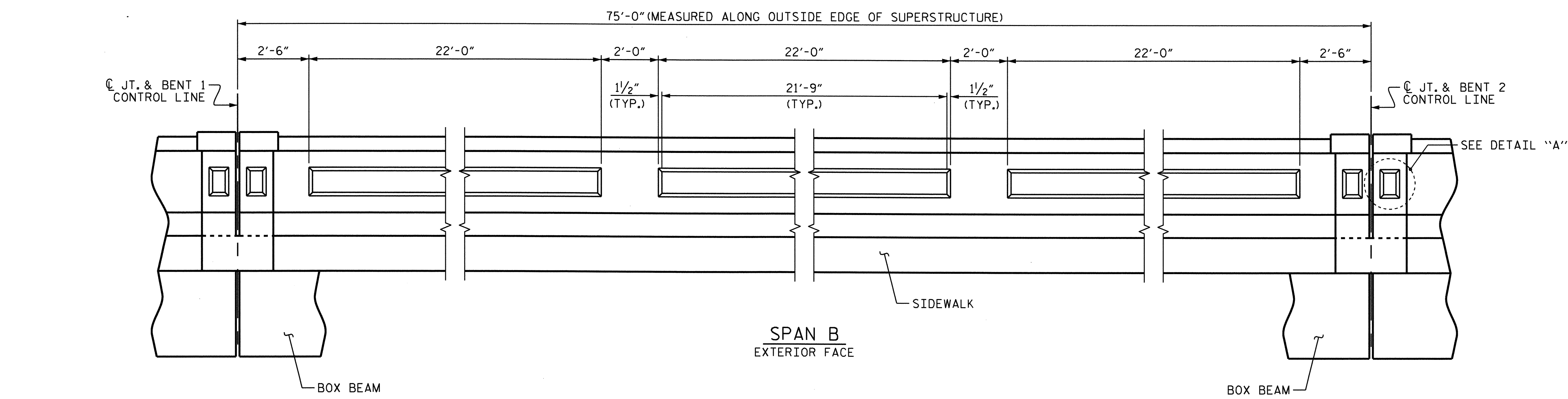
ASSEMBLED BY : E.C. LOCKLEAR DATE : 5-20-10
 CHECKED BY : T.H. FANG DATE : 6-28-10
 DRAWN BY : TLA 5/05
 CHECKED BY : GM 6/05

ADDED 7/11/05
 REV. 5/1/06 TLA/GM

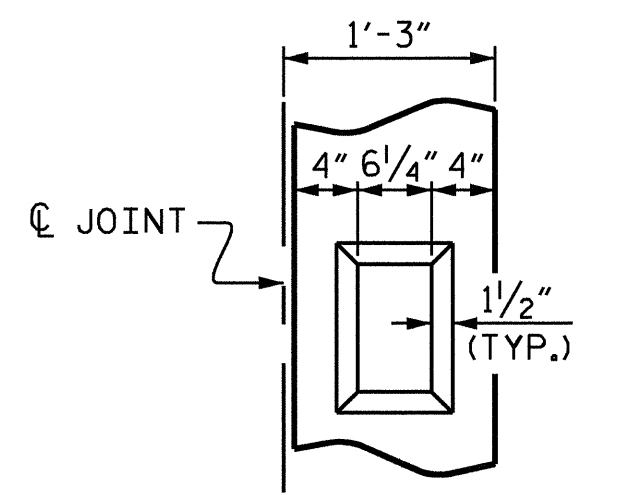


VIEW A-A
TYPICAL AT END POST

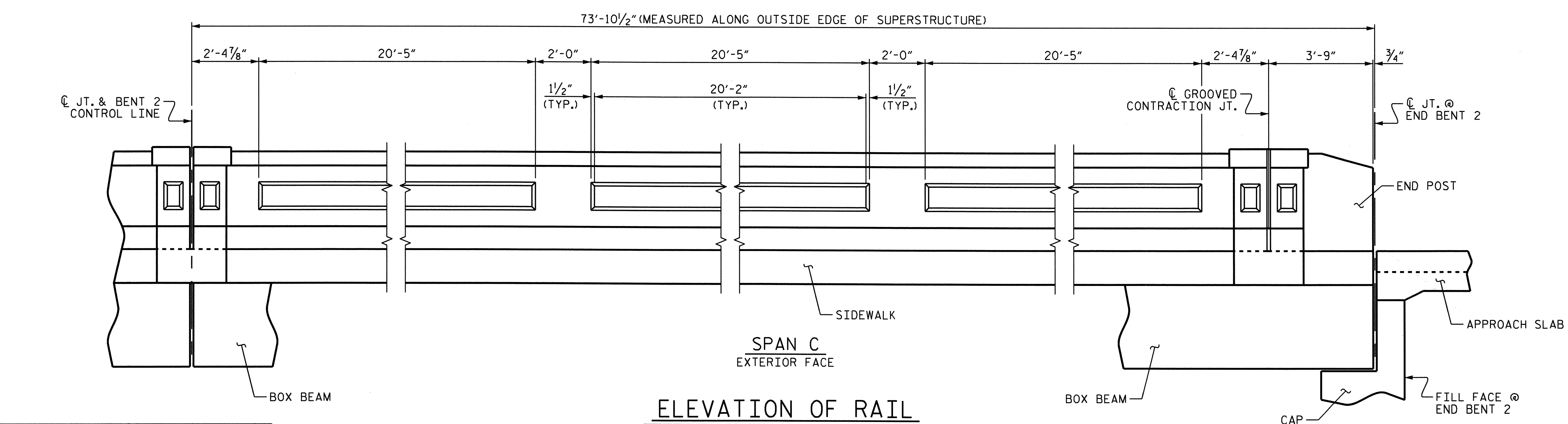
* THE 1/2" GROOVED CONTRACTION JOINT, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE POST AT END BENTS.



VIEW B-B
TYPICAL AT INTERIOR BENT



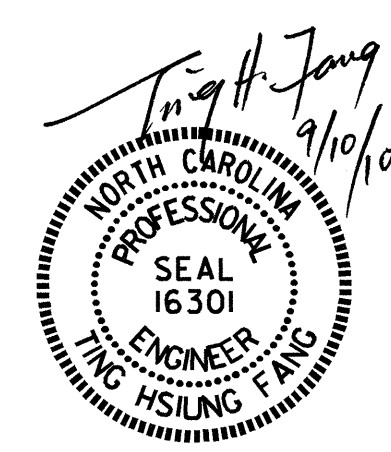
DETAIL "A"
TYPICAL EACH POST



PROJECT NO. B-3656
HAYWOOD COUNTY
 STATION: 17+57.00 -L-

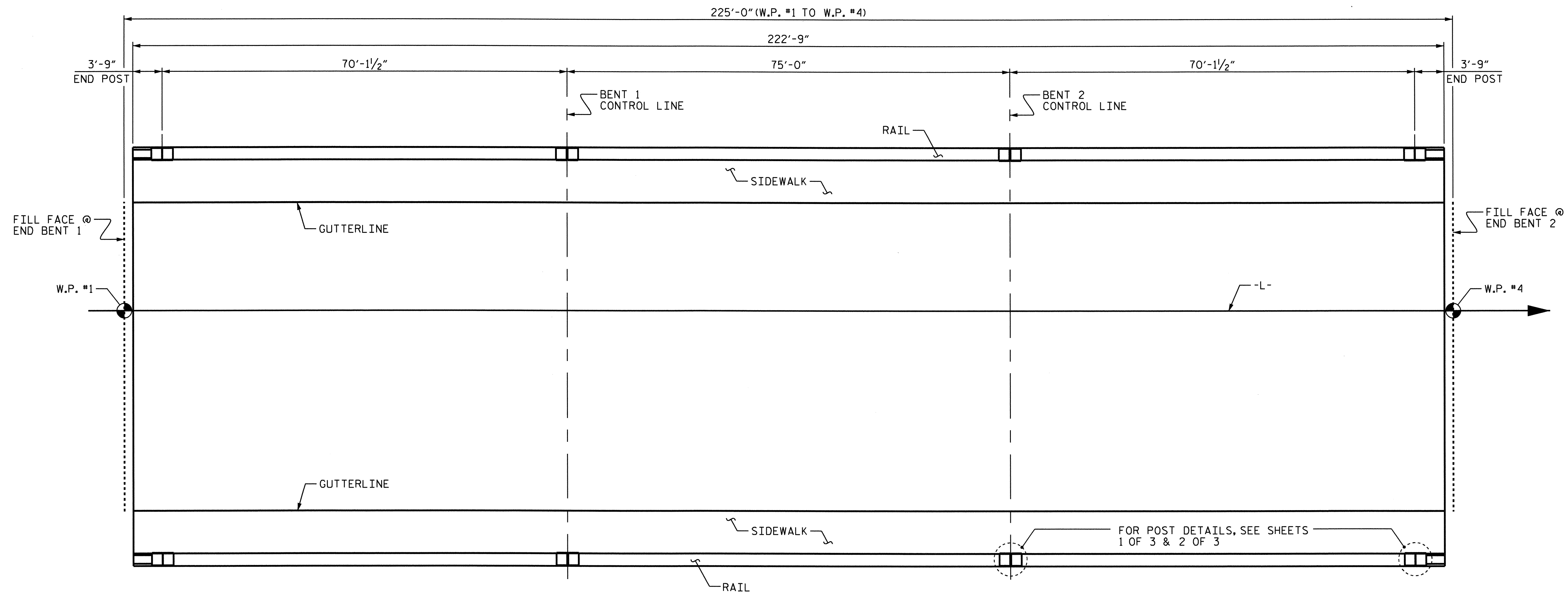
SHEET 1 OF 3

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			30

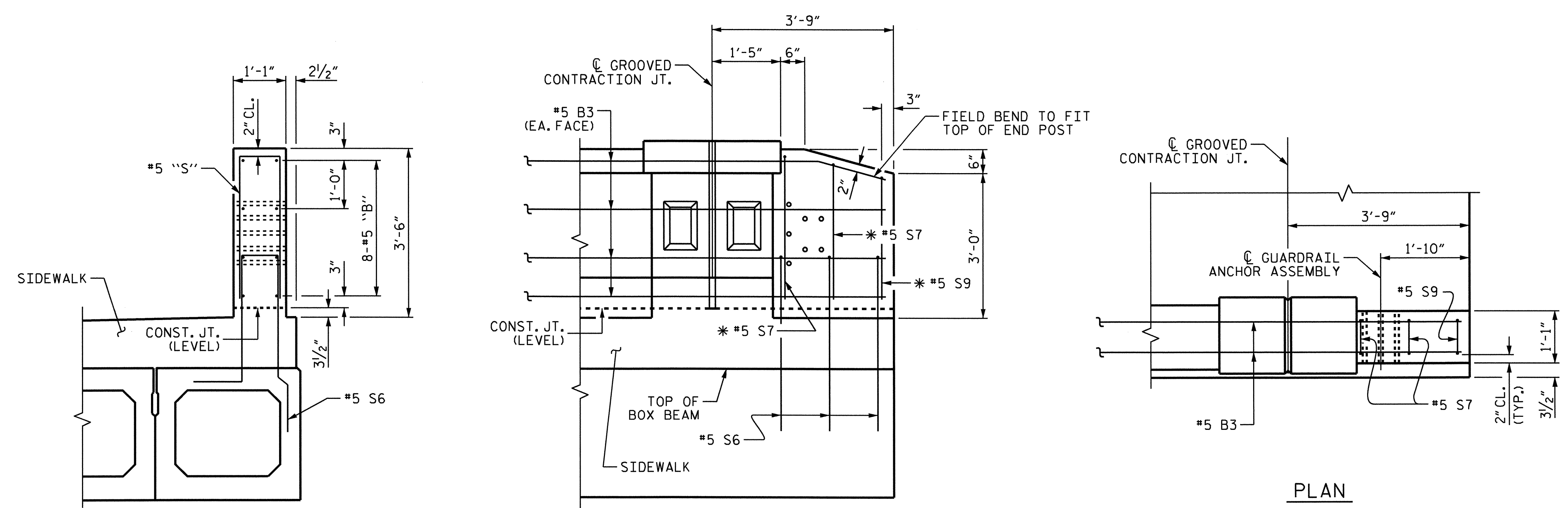


DRAWN BY : E.C. LOCKLEAR DATE : 12-17-09
 CHECKED BY : T.H. FANG DATE : 7-14-10

10-SEP-2010 15:12
 Y:\TIP\Projects-B\B3656\Structures\Final Plans\B3656_SD_cr.dgn
 sdombrowski



PLAN OF RAIL POST



END POST DETAILS

REINFORCING STEEL IN POSTS & RAIL NOT SHOWN FOR CLARITY.
* S7 AND S9 BARS TO MATCH WITH S6 BARS.

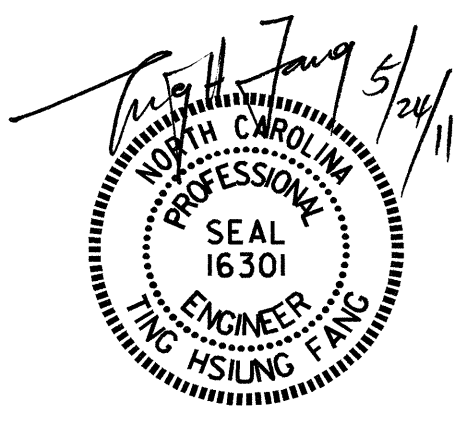
BILL OF MATERIAL					
RAILS & POSTS					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B3	64	#5	STR	38'-6"	2570
* B4	32	#5	STR	39'-0"	1302
* B6	24	#4	STR	2'-2"	35
* B7	8	#4	STR	2'-6"	13
* B8	48	#4	STR	10"	27
* B9	16	#4	STR	1'-0"	11
* S7	594	#5	1	6'-4"	3924
* S8	32	#4	1	7'-3"	155
* S9	4	#5	1	5'-8"	24
* EPOXY COATED REINFORCING STEEL				=	8061 LBS.
CLASS AA CONCRETE				=	65.1 C.Y.
BAR TYPES					
ALL BAR DIMENSIONS ARE OUT TO OUT					
SIDEWALK					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B5	112	#4	STR	29'-8"	2220
* G1	446	#4	STR	6'-6"	1937
* EPOXY COATED REINFORCING STEEL				=	4157 LBS.
CLASS AA CONCRETE				=	124.9 C.Y.

CONCRETE BRIDGE RAIL
PAY LENGTH (INCLUDING END POSTS)
PAY LENGTH = 445.50 LIN. FT.

PROJECT NO. B-3656
HAYWOOD COUNTY
STATION: 17+57.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
RAIL POSTS SPACINGS,
END POST DETAILS &
SIDEWALK QUANTITIES



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

TOTAL SHEETS: 30

DRAWN BY: E.C. LOCKLEAR DATE: 5-13-10
CHECKED BY: T.H. FANG DATE: 7-14-10

NOTES

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

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

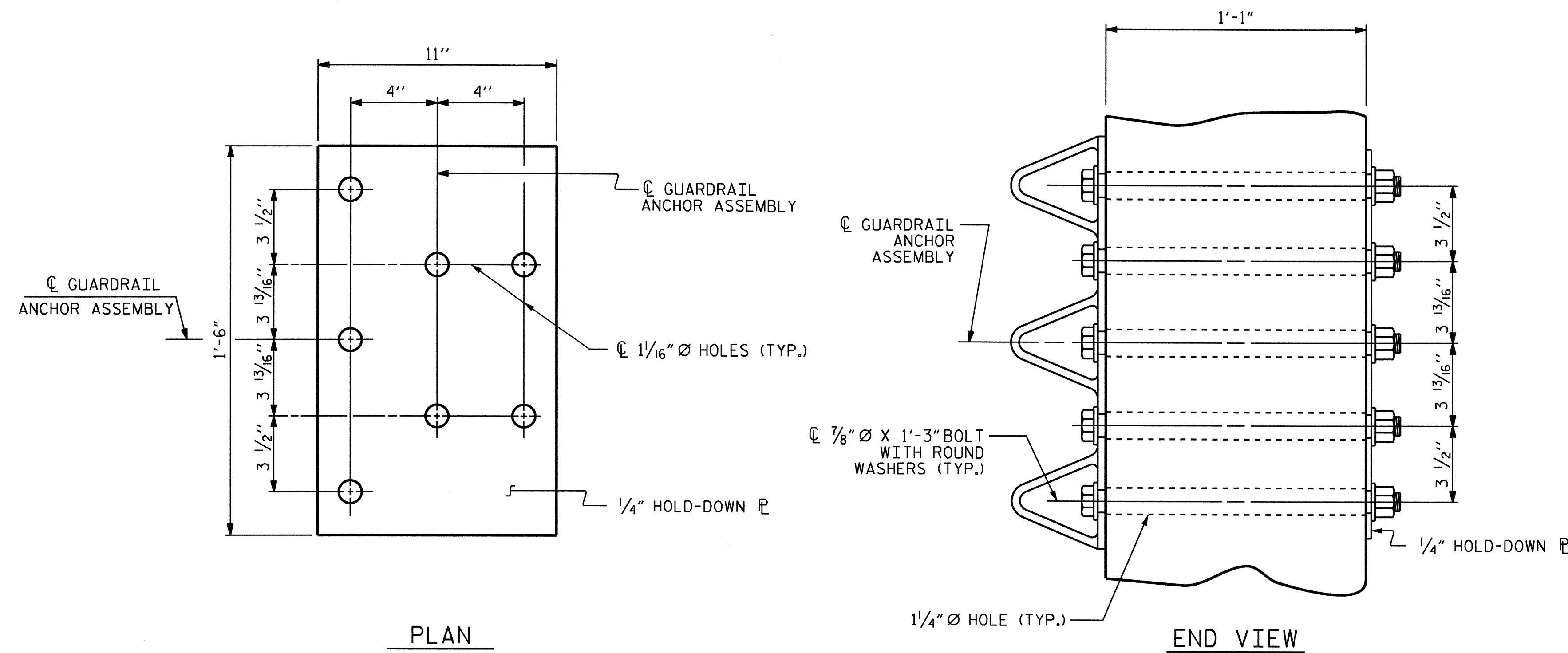
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS.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

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

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

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

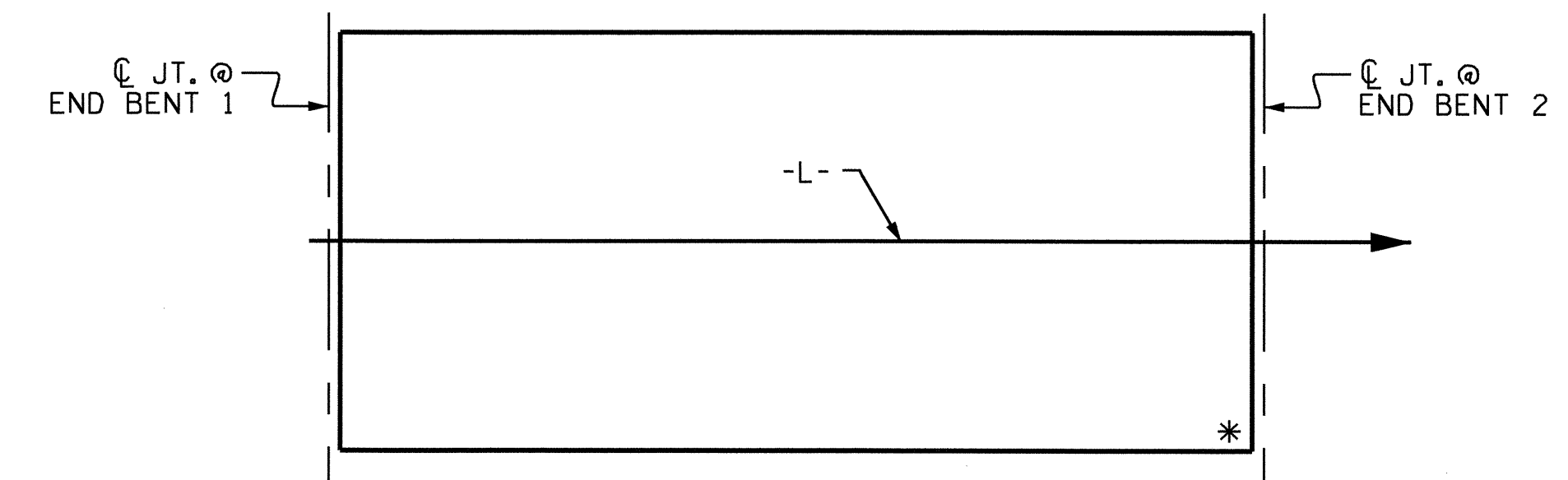
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



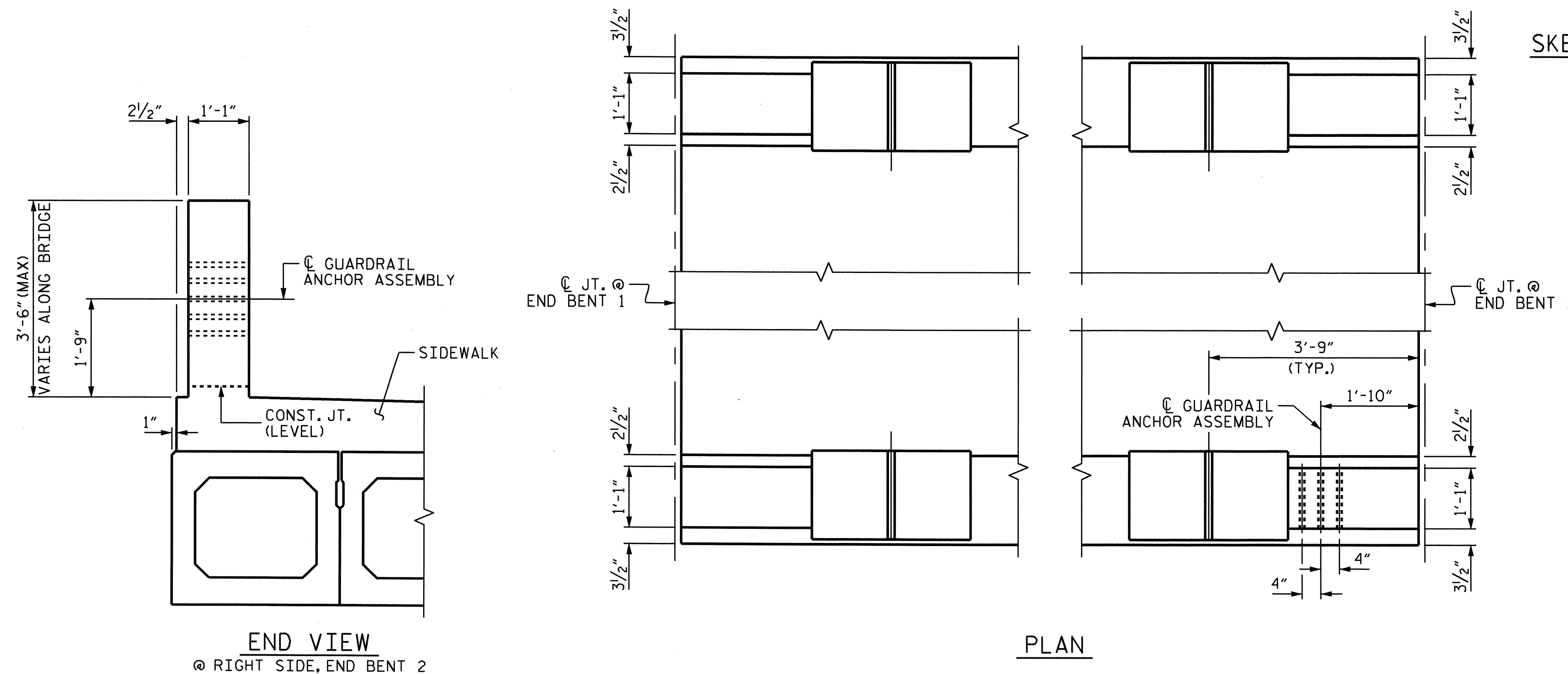
PLAN

END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT
* LOCATION OF GUARDRAIL ATTACHMENT.

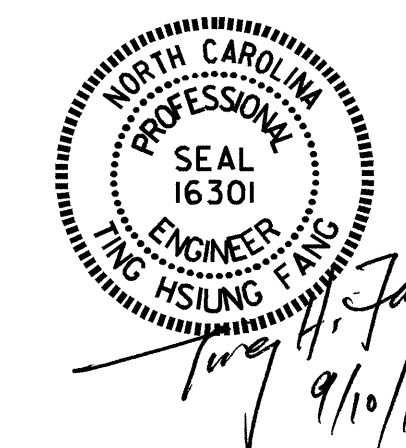


END VIEW
@ RIGHT SIDE, END BENT 2

PLAN

LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. B-3656
HAYWOOD COUNTY
STATION: 17+57.00 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
GUARDRAIL ANCHORAGE
DETAILS FOR
CONCRETE BRIDGE RAIL

ASSEMBLED BY : E.C. LOCKLEAR	DATE : 5-27-10
CHECKED BY : T.H. FANG	DATE : 7-14-10
DRAWN BY : EEM 6/94	REV. 10/17/00 RWW/LES
CHECKED BY : RGW 6/94	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			30

BILL OF MATERIAL

CONCRETE WEARING SURFACE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*R1	888	#3	STR	21'-11"	7318
*R2	680	#3	STR	28'-11"	7393
*R3	168	#4	STR	20'-0"	2244

EPOXY COATED REINF. STEEL = 16,955 LBS

CONCRETE WEARING SURFACE = 9,500 SQ. FT.

GROOVING BRIDGE FLOOR QUANTITY

	AREA (SQ. FT.)
BRIDGE DECK	8,823
APPROACH SLABS	1,411
TOTAL	10,234

SPLICE LENGTH CHART

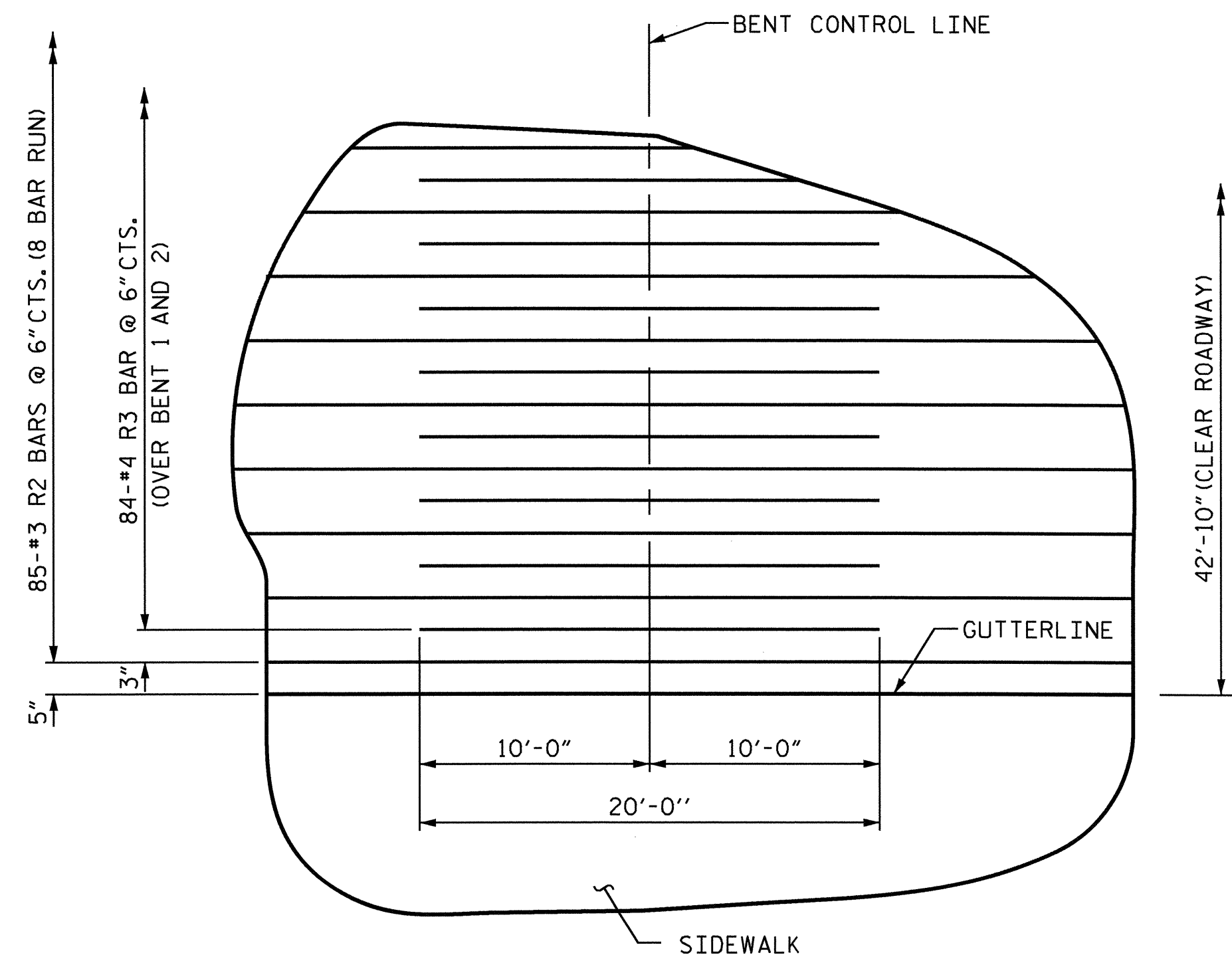
BAR SIZE	EPOXY COATED
#3	1'-3"

NOTES:

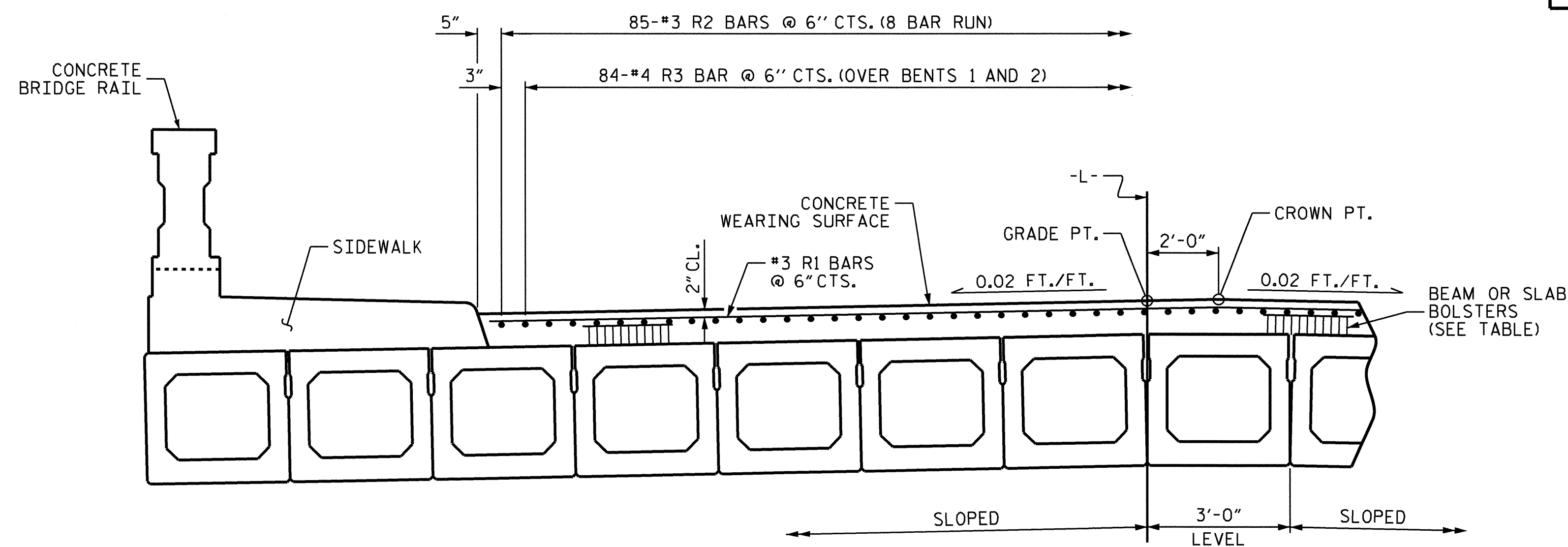
PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE SIDEWALK. THE COST OF THE REINFORCING STEEL CAST WITH THE CONCRETE WEARING SURFACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE WEARING SURFACE. FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

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

FOR ELASTOMERIC CONCRETE, SEE "BRIDGE APPROACH SLAB DETAILS" SHEET.



PLAN @ BENTS 1 & 2

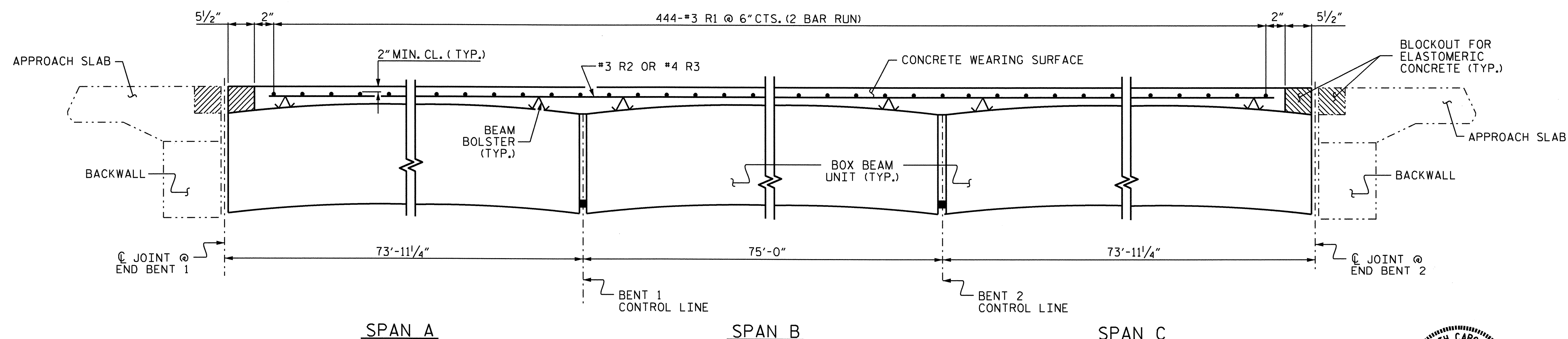


REINFORCING STEEL AND BEAM BOLSTER HEIGHTS

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

BEAM OR SLAB BOLSTER HEIGHT

SPAN	AT Q BEARINGS			AT MID-SPAN		
	LT. GUTTER	CROWN PT.	RT. GUTTER	LT. GUTTER	CROWN PT.	RT. GUTTER
A	2 1/4"	2 3/4"	2 1/2"	3/4"	1 1/4"	1"
B	2 1/4"	2 3/4"	2 1/2"	3/4"	1 1/4"	1"
C	2 1/4"	2 3/4"	2 1/2"	3/4"	1 1/4"	1"



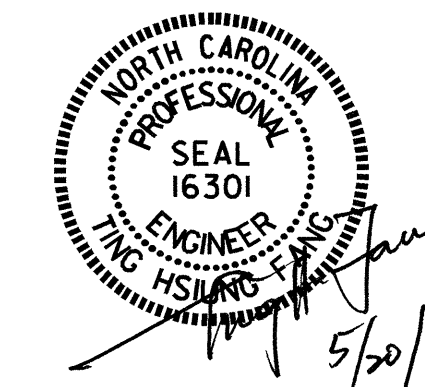
ELEVATION OF THE CONCRETE WEARING SURFACE

PROJECT NO. B-3656
HAYWOOD COUNTY
 STATION: 17+57.00 -L-

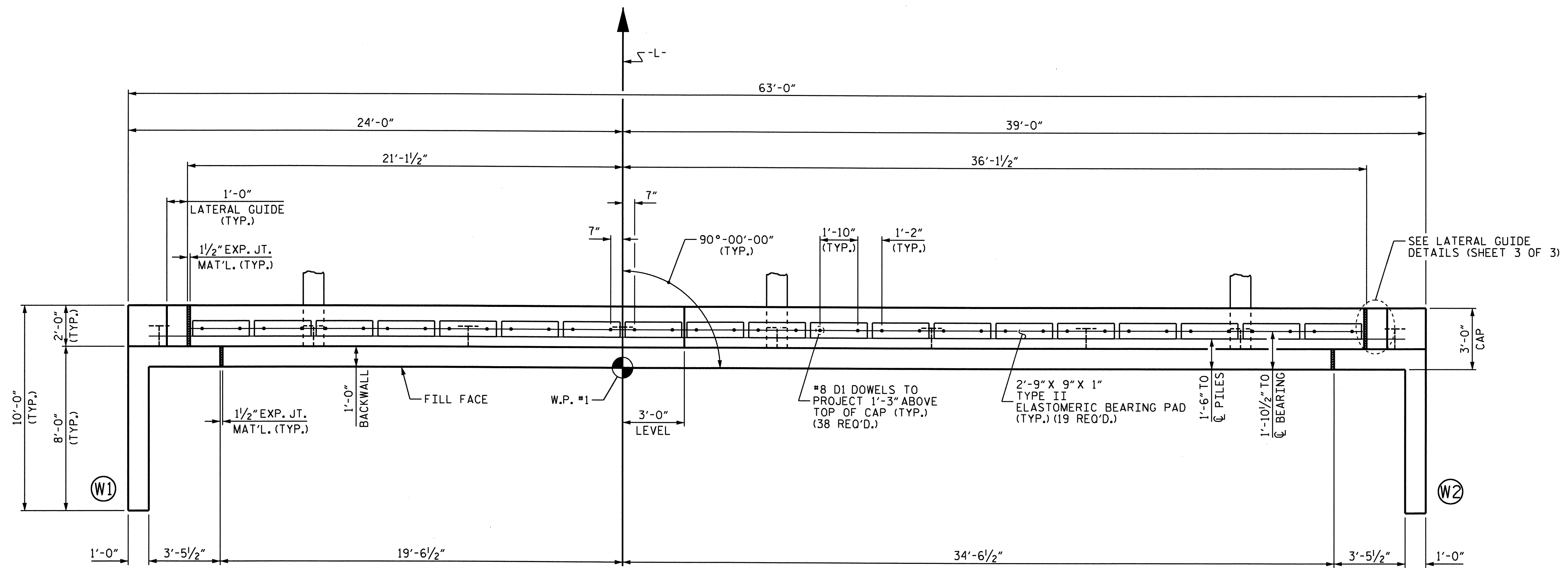
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE

CONCRETE WEARING SURFACE DETAILS

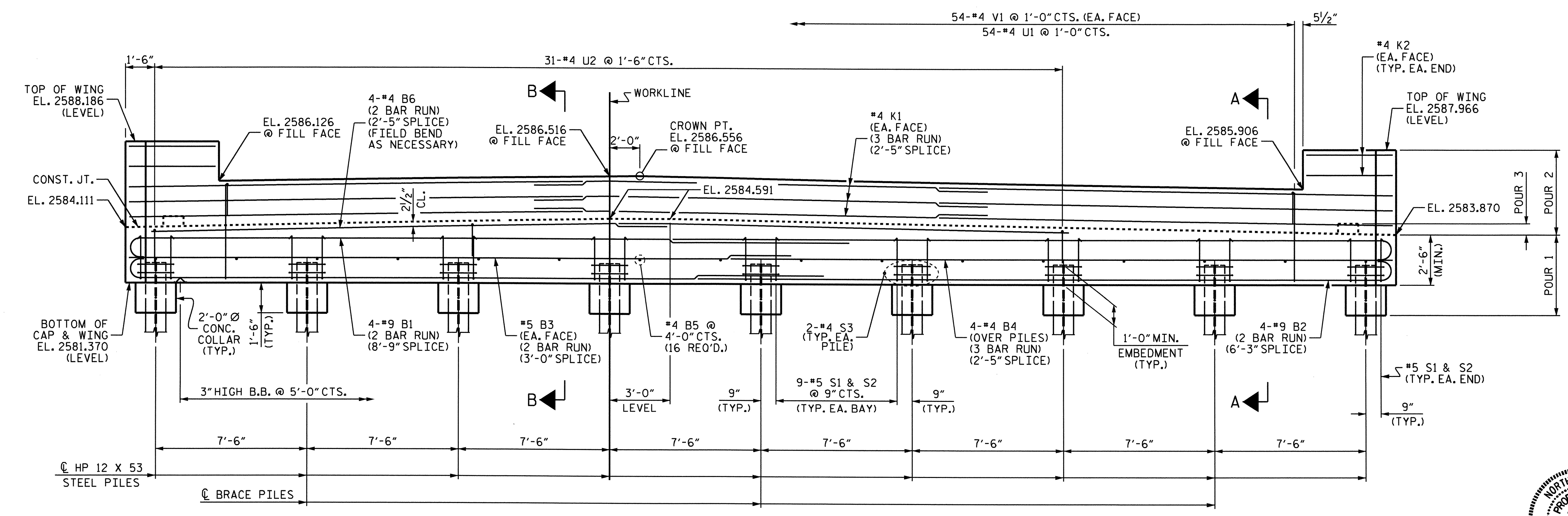
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS 30
2			4			



DRAWN BY: E. C. LOCKLEAR DATE: 10-21-09
 CHECKED BY: T. H. FANG DATE: 7-13-10



PLAN



ELEVATION

NOTES

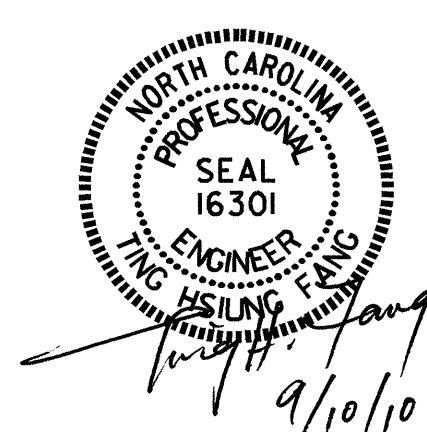
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #8 D1 DOWELS.

THE LATERAL GUIDE AT EACH END OF CAP IS NOT TO BE POURED UNTIL AFTER BOX BEAM UNITS ARE IN PLACE.

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

PROJECT NO. B-3656
HAYWOOD COUNTY
 STATION: 17+57.00 -L-
 SHEET 1 OF 3

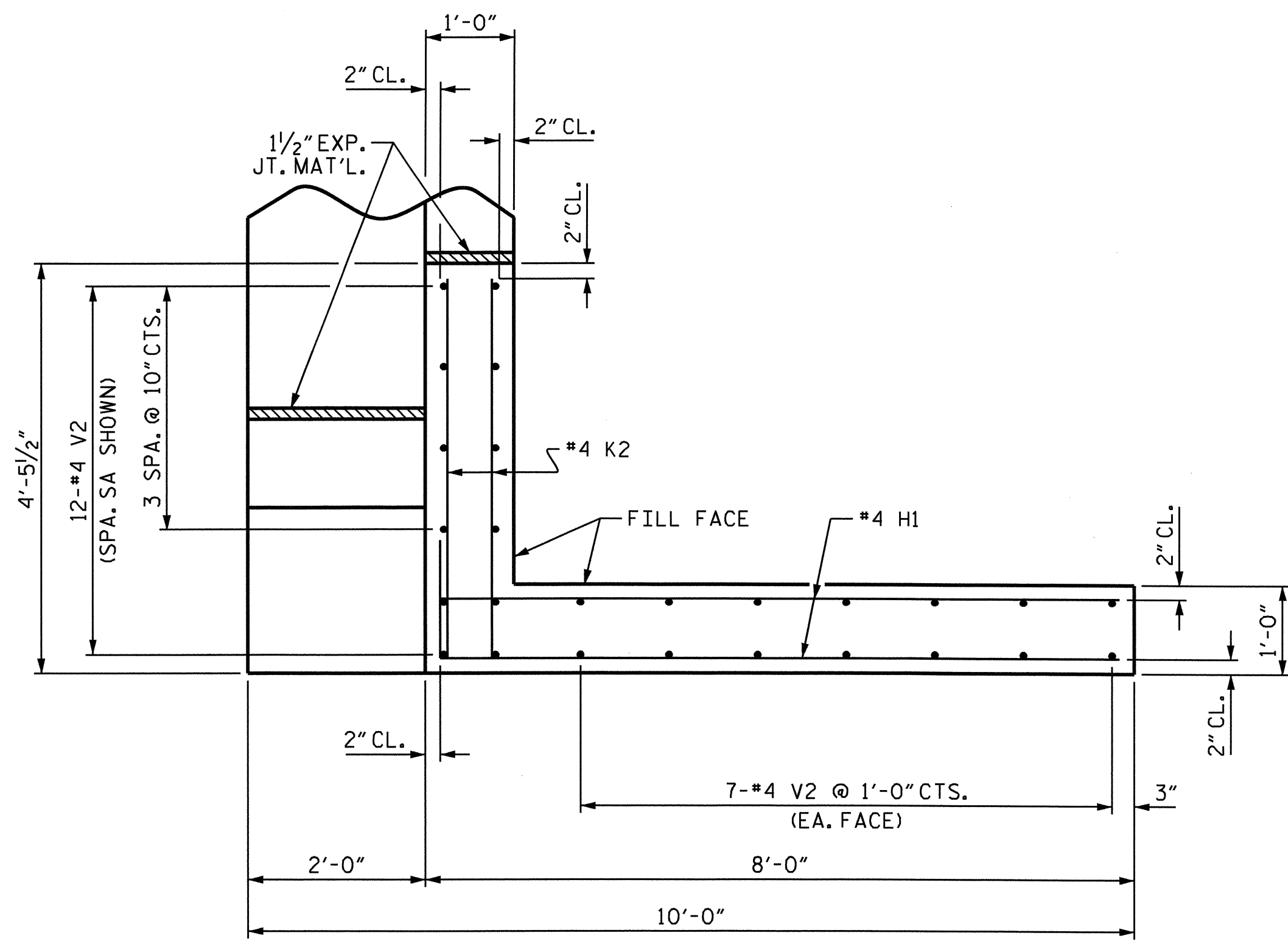
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
END BENT 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-18
					TOTAL SHEETS 30



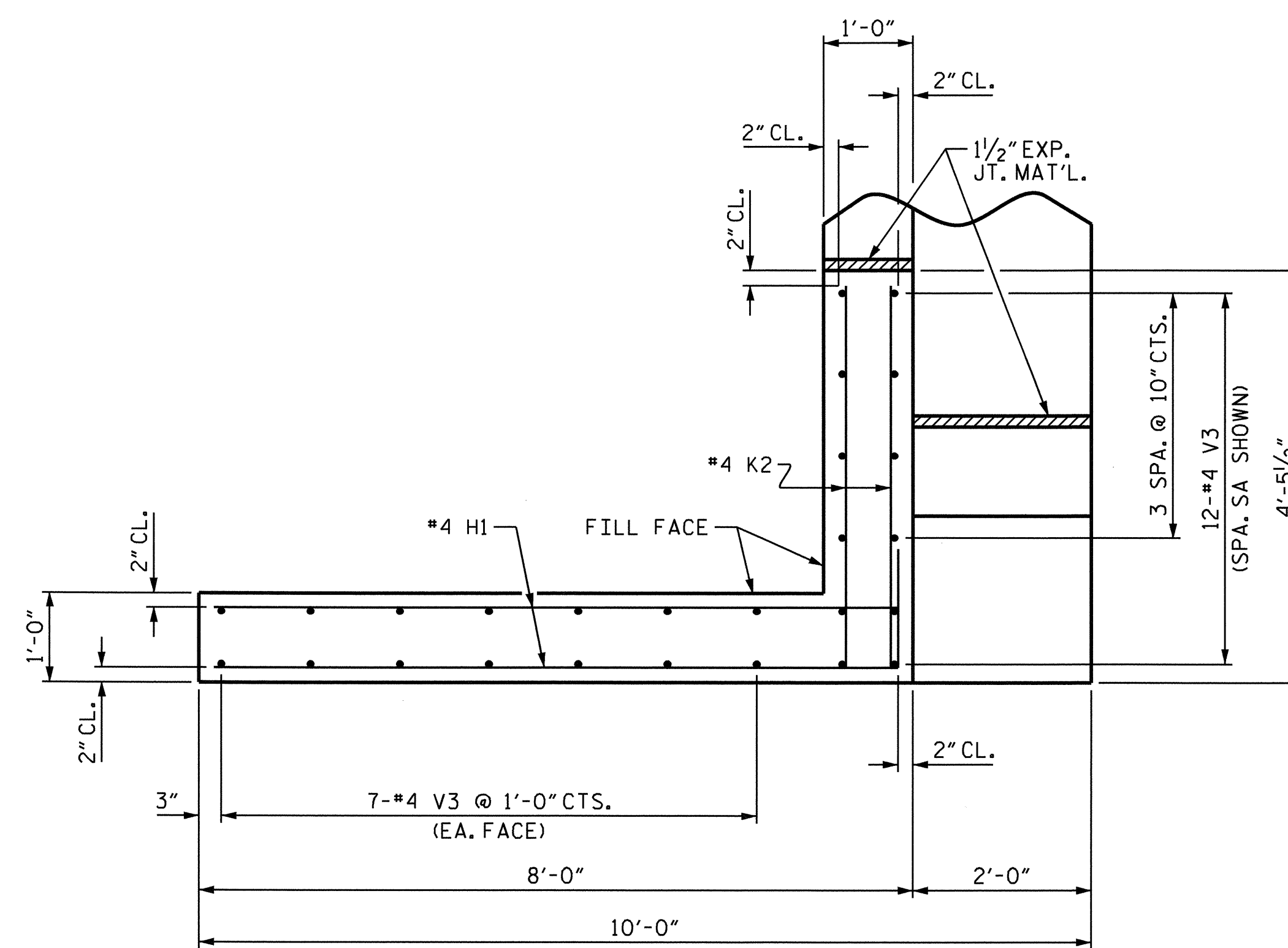
DRAWN BY: E.C. LOCKLEAR DATE: 11-17-09
 CHECKED BY: T.H. FANG DATE: 7-20-10

10-SEP-2010 15:12
 Y:\TIPProjects-B\B3656\Structures\Final Plans\b3656.sd.e.dgn
 sdbrowski

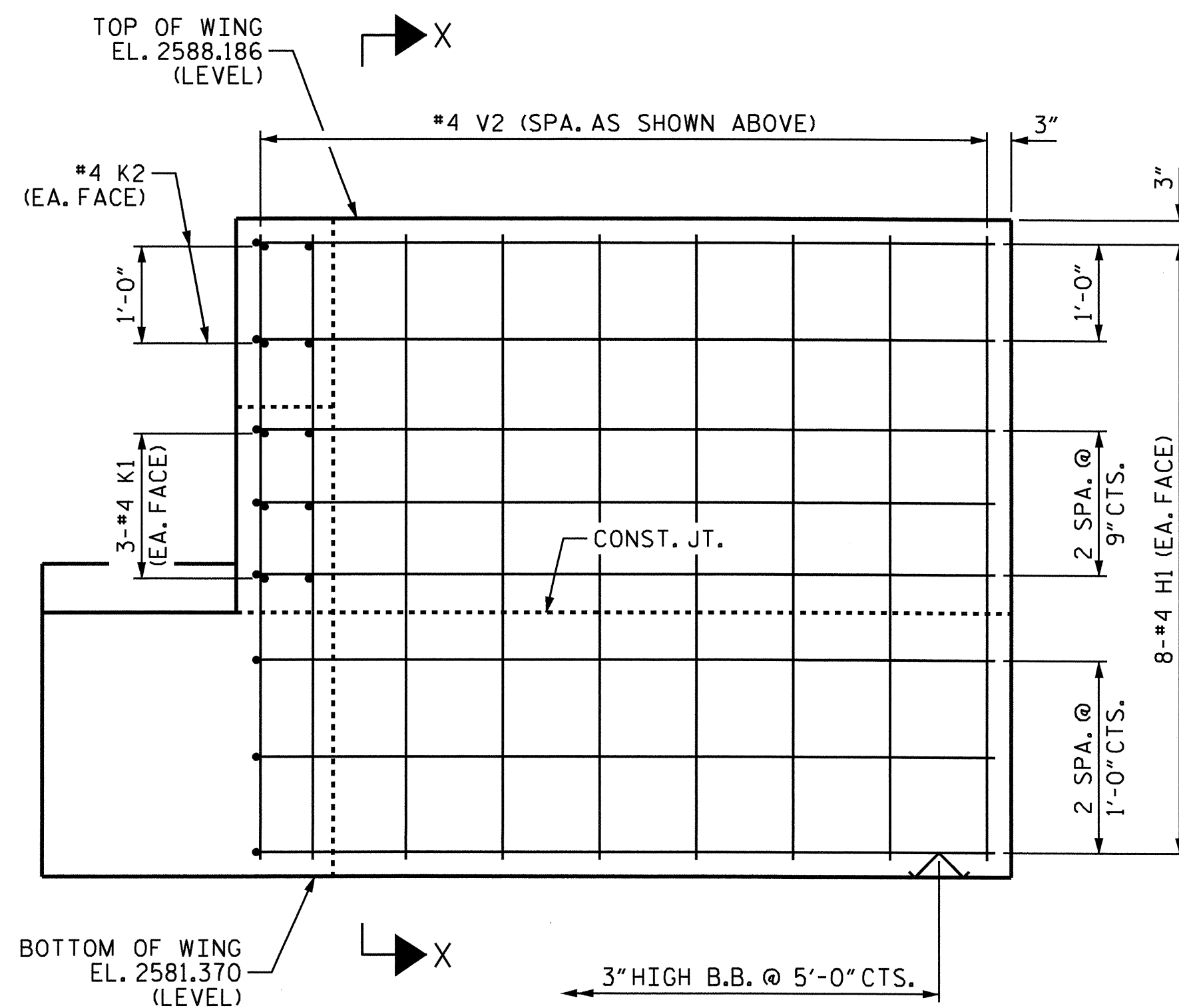
NCBDS



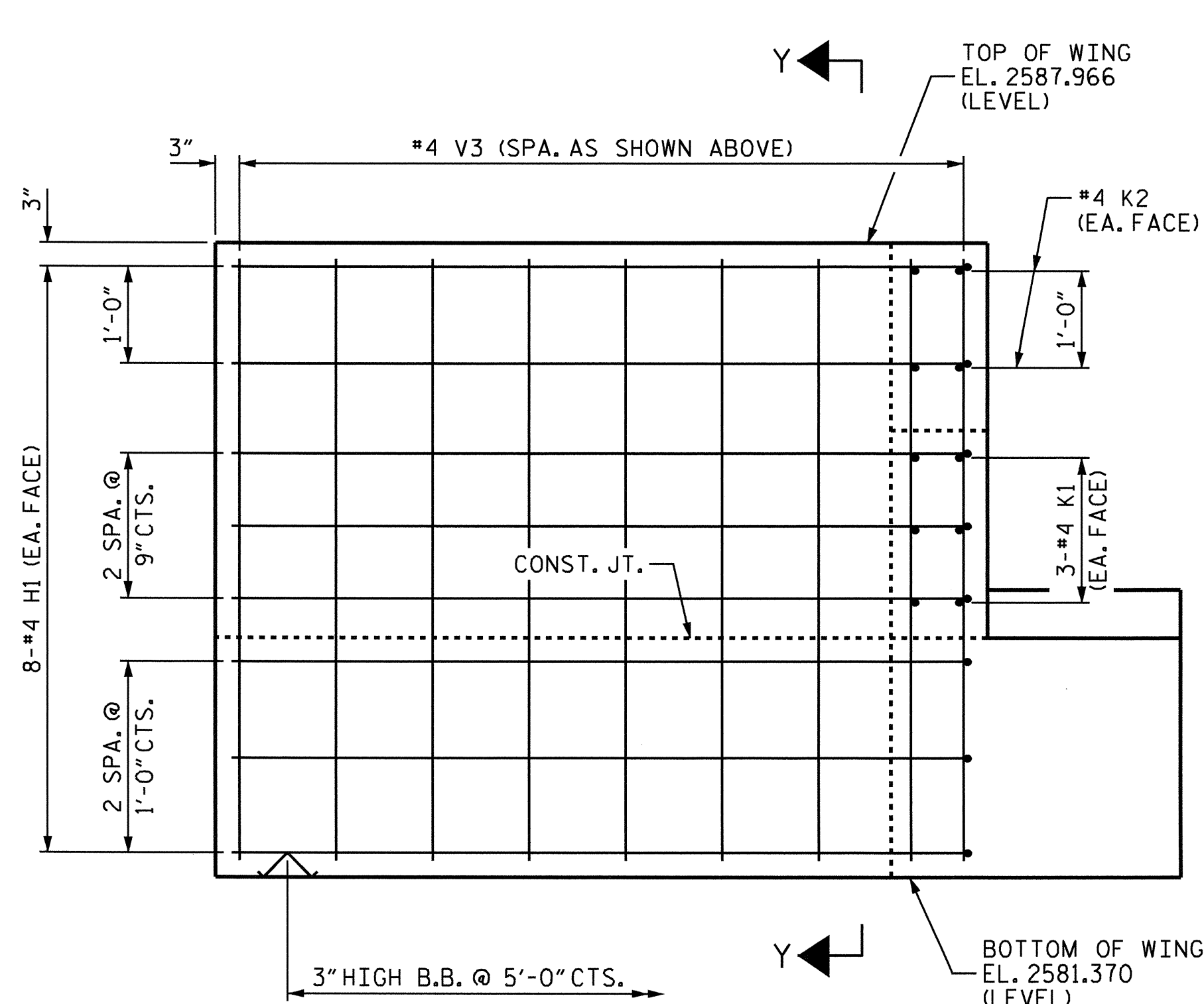
PLAN OF WING (W1)



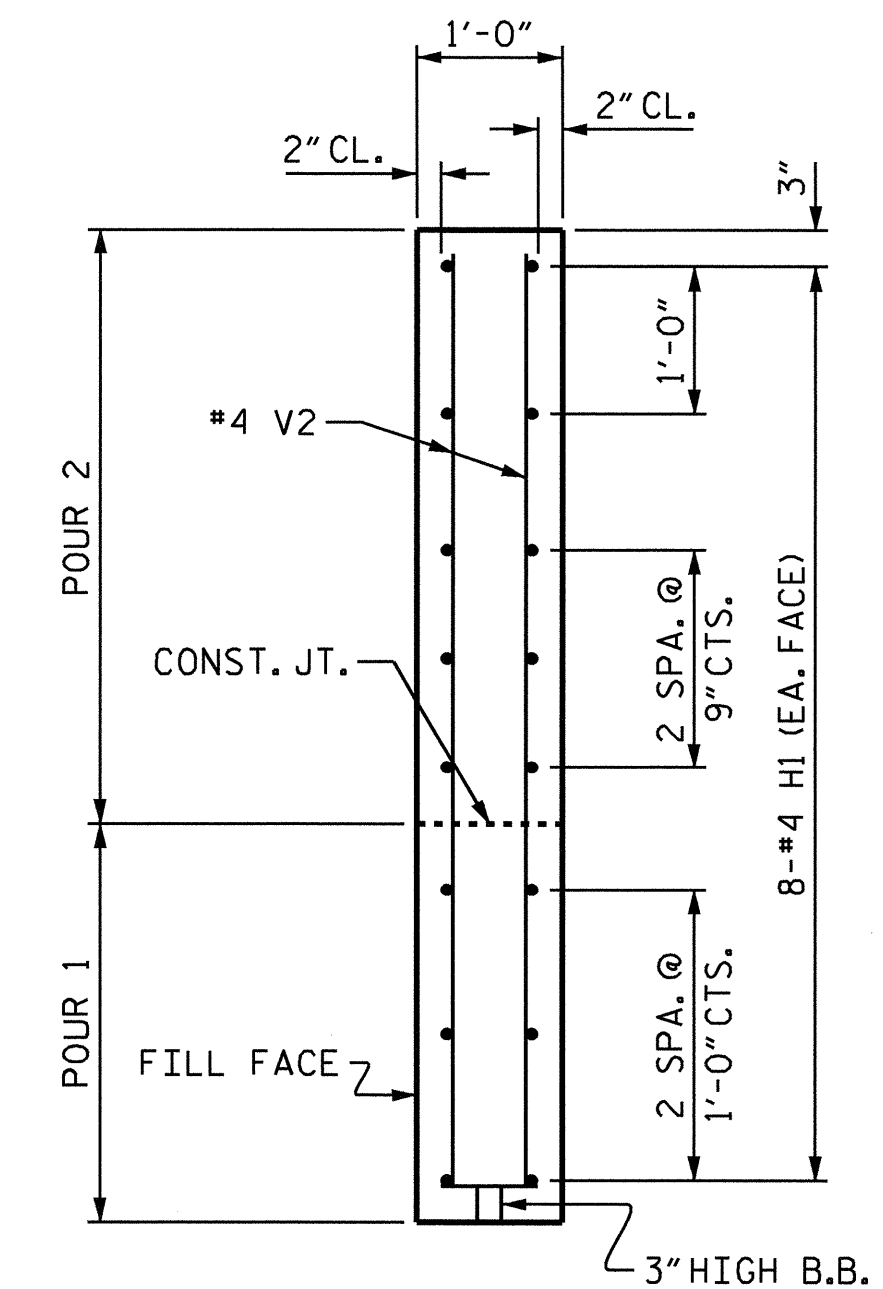
PLAN OF WING (W2)



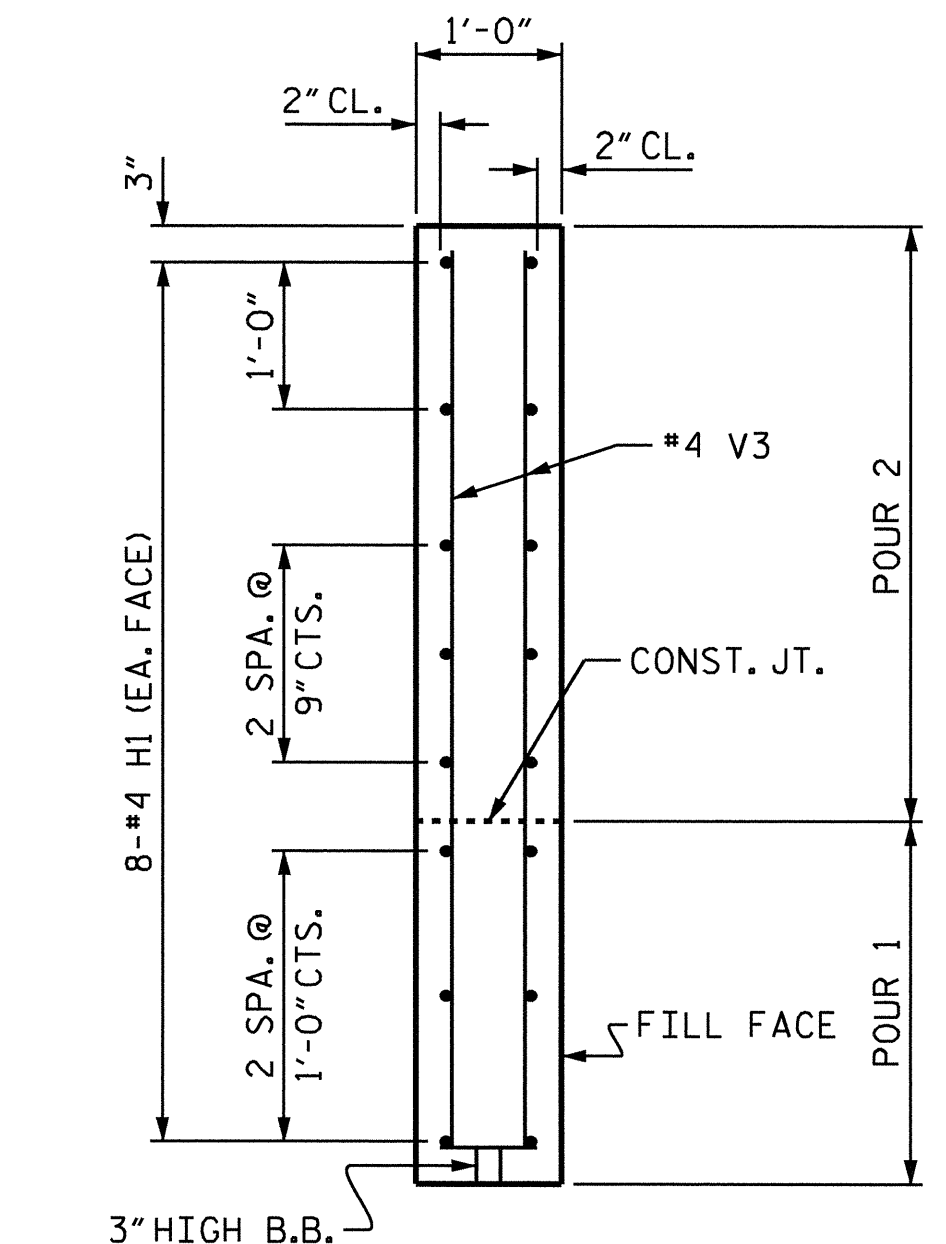
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION X-X

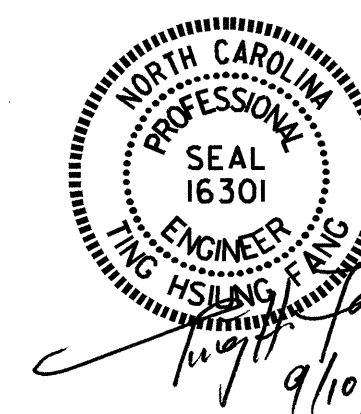


SECTION Y-Y

PROJECT NO. B-3656
HAYWOOD COUNTY
 STATION: 17+57.00 -L-

SHEET 2 OF 3

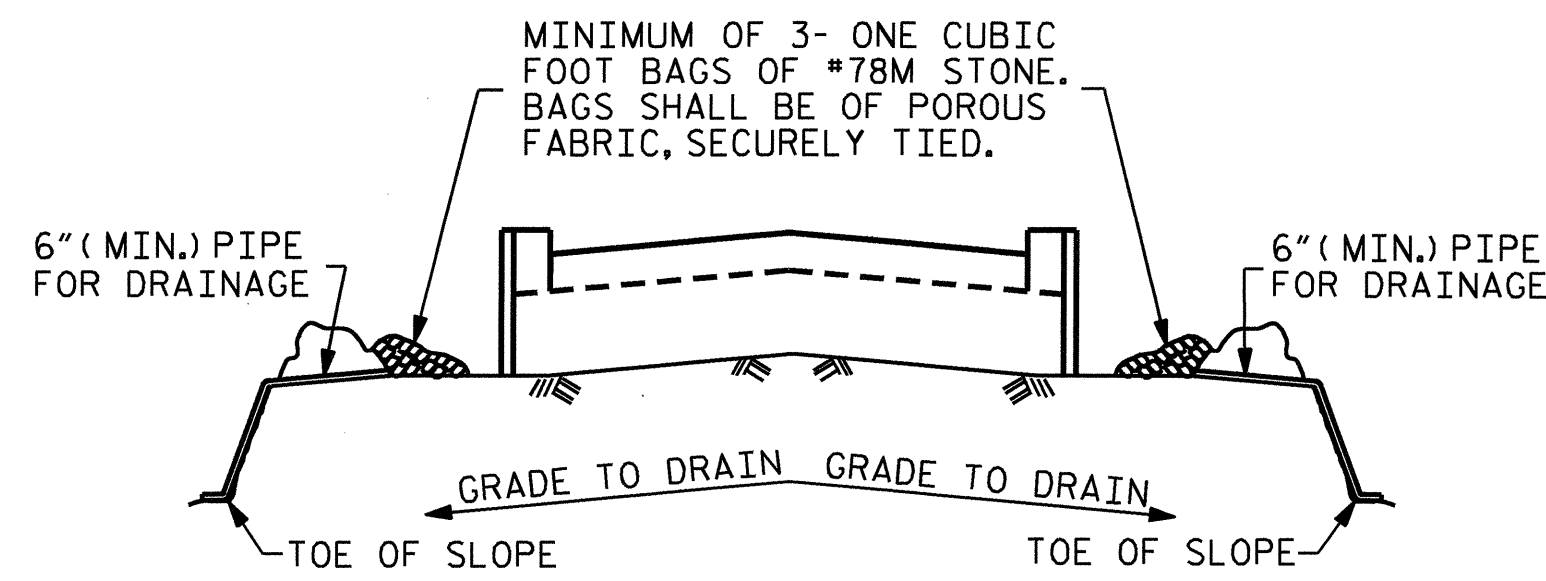
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1



DRAWN BY: E.C. LOCKLEAR DATE: 11-13-09
 CHECKED BY: T.H. FANG DATE: 7-20-10

10-SEP-2010 15:12
 Y:\TIPProjects-B\B3656\Structures\Final Plans\b3656.sd.e*.dgn
 sdbrowski

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			30

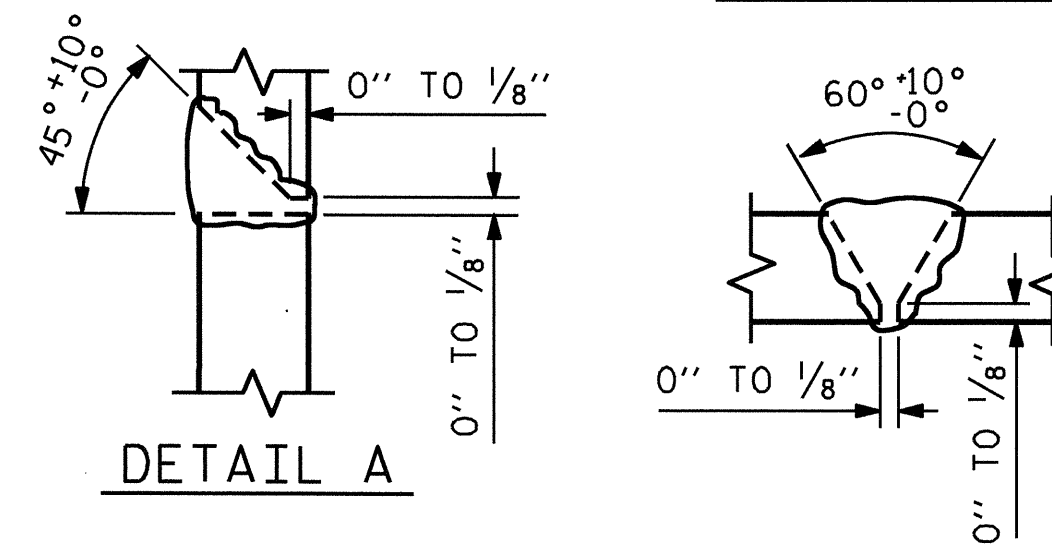
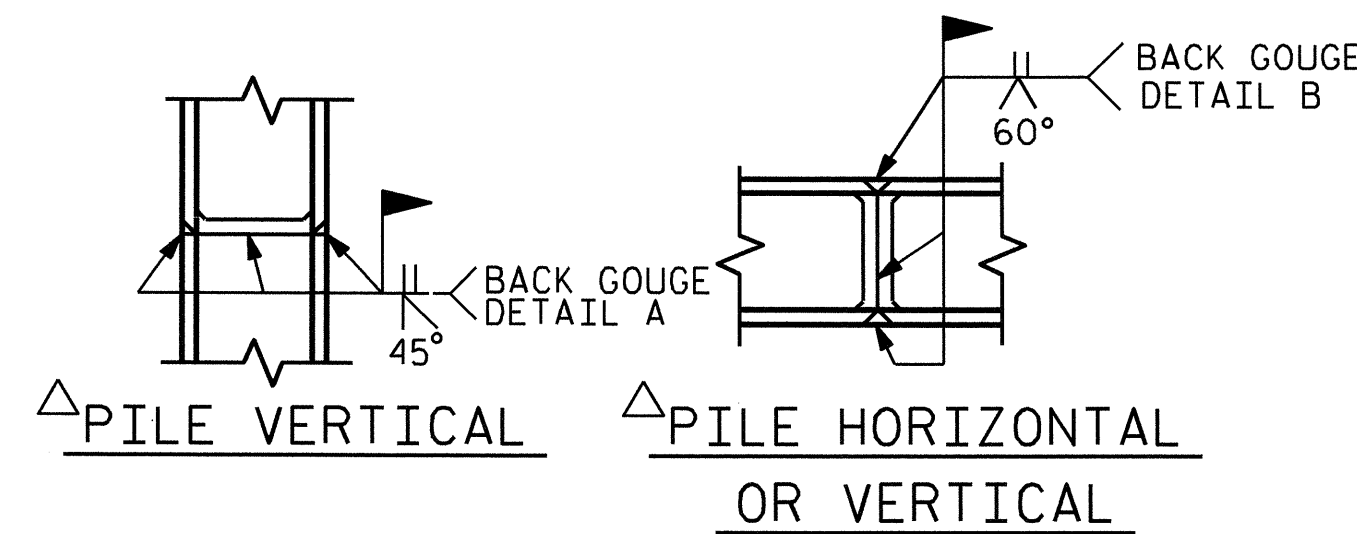


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

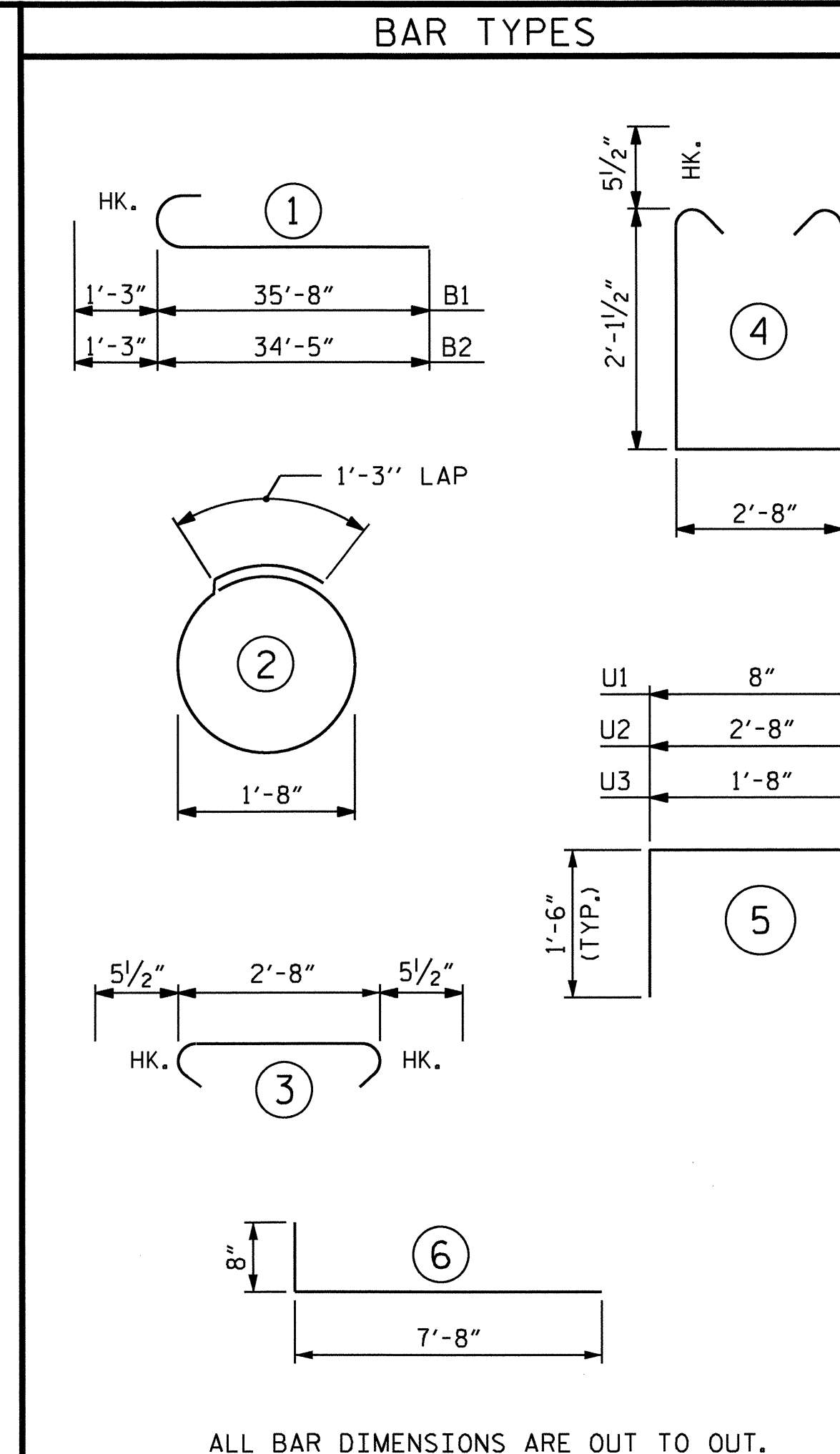
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

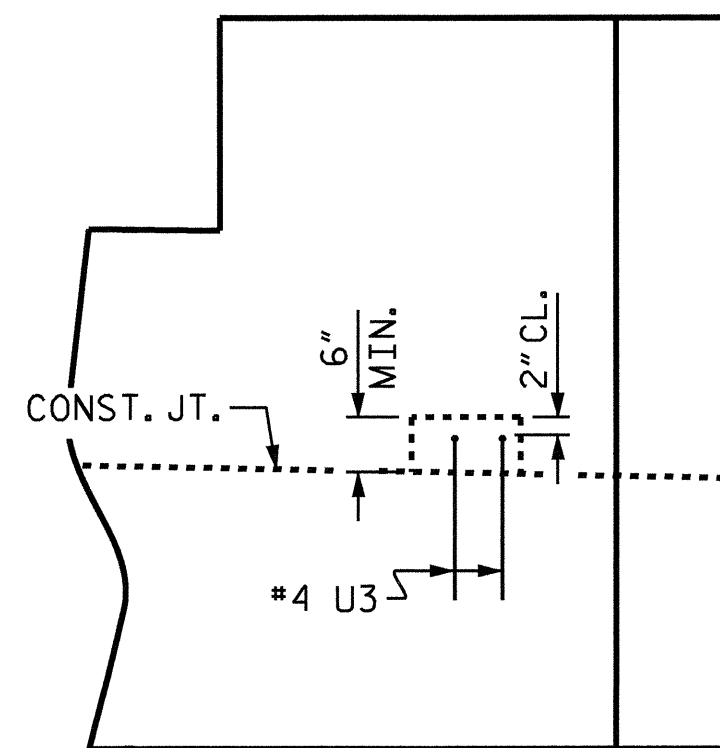
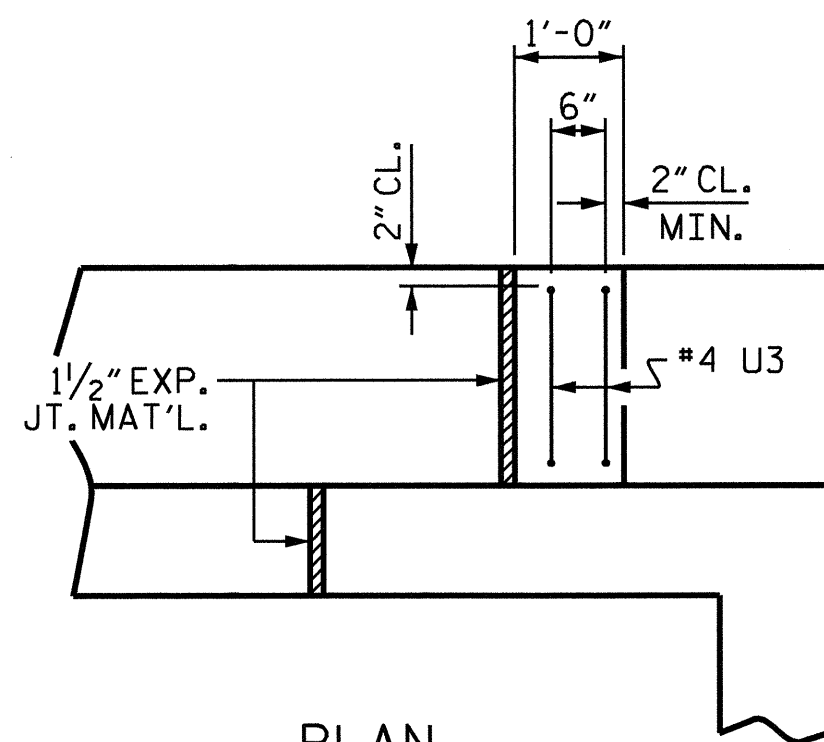
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

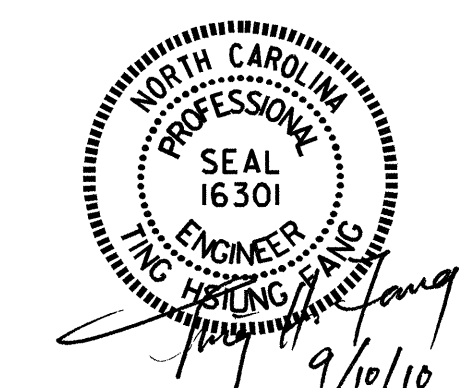
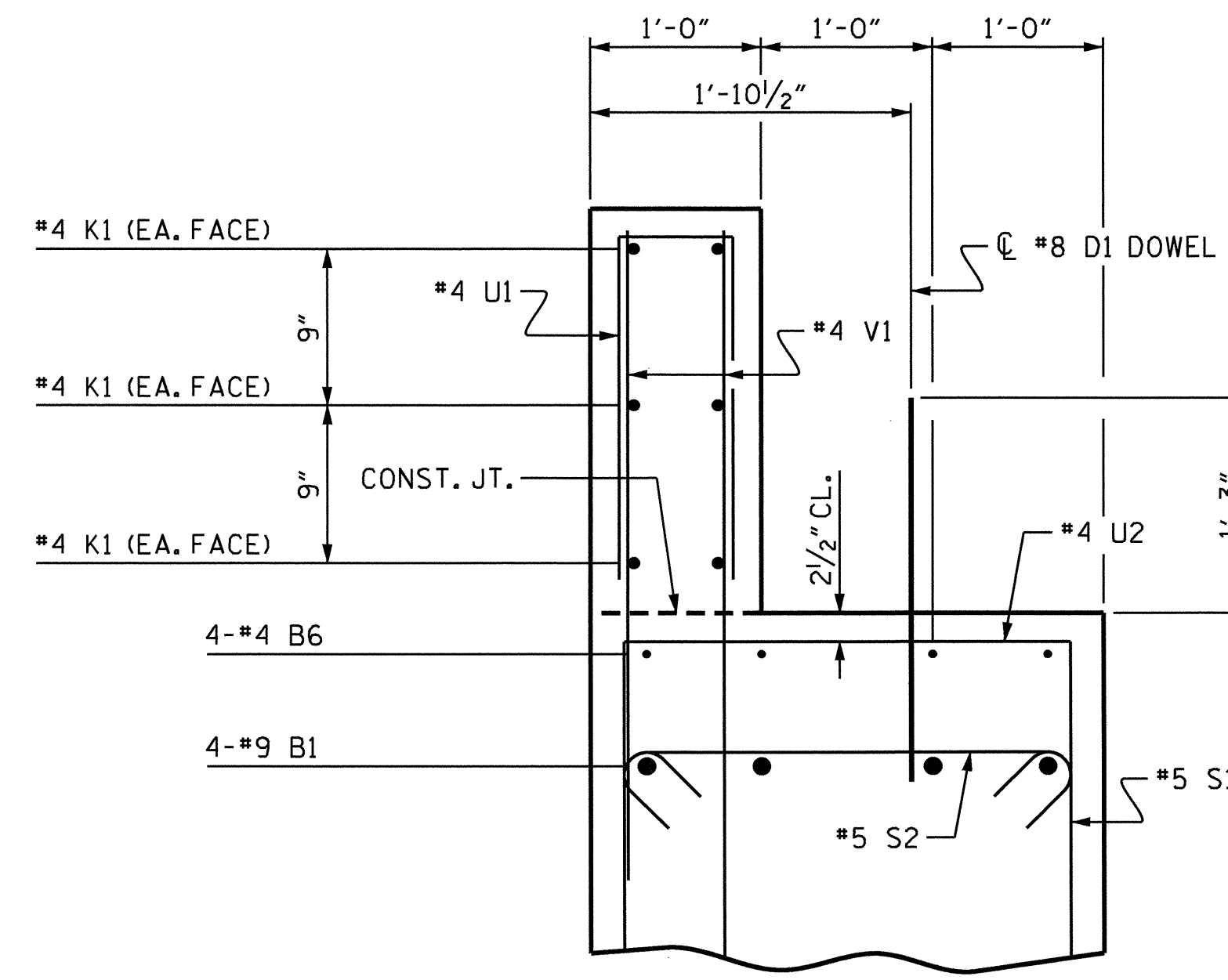
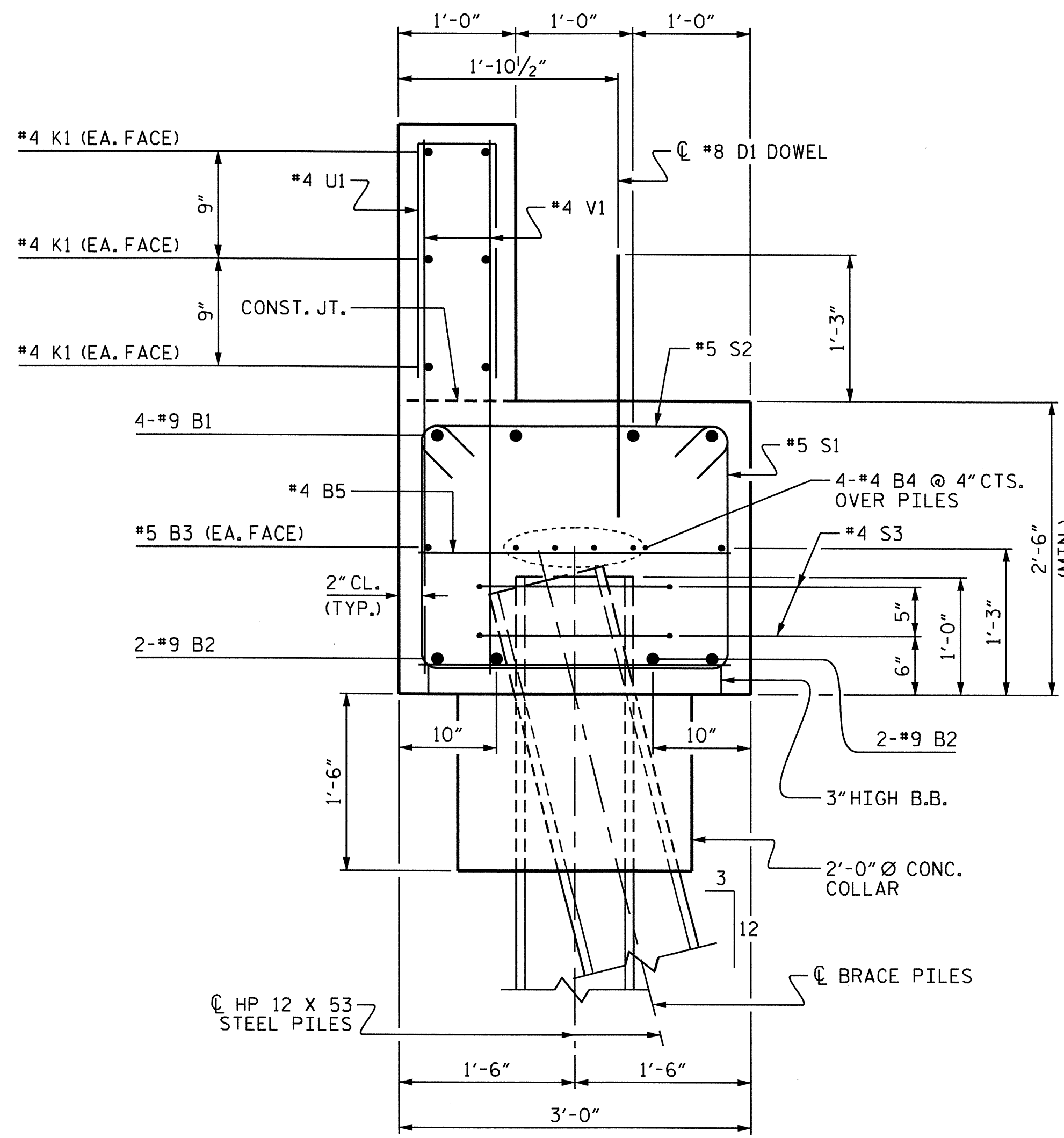


BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	36'-11"	1004
B2	8	#9	1	35'-8"	970
B3	4	#5	STR	32'-10"	137
B4	12	#4	STR	22'-6"	180
B5	16	#4	STR	2'-8"	29
B6	8	#4	STR	24'-0"	128
D1	38	#8	STR	2'-3"	228
H1	32	#4	6	8'-4"	178
K1	18	#4	STR	22'-6"	271
K2	8	#4	STR	4'-1"	22
S1	74	#5	4	7'-10"	605
S2	74	#5	3	3'-7"	277
S3	18	#4	2	6'-6"	78
U1	54	#4	5	3'-8"	132
U2	31	#4	5	5'-8"	117
U3	4	#4	5	4'-8"	12
V1	108	#4	STR	4'-2"	301
V2	26	#4	STR	6'-4"	110
V3	26	#4	STR	6'-2"	107
REINFORCING STEEL				LBS.	4886
CLASS A CONC. BREAKDOWN					
POUR 1: CONCRETE COLLARS, CAP & LOWER WINGS				C.Y.	23.4
POUR 2: UPPER WINGS & BACKWALL				C.Y.	7.4
POUR 3: LATERAL GUIDES				C.Y.	0.1
TOTAL				C.Y.	30.9
HP 12 X 53 STEEL PILES				No. 9	LIN. FT. = 565



LATERAL GUIDE DETAILS

(EACH END SIMILAR)



PROJECT NO. B-3656
HAYWOOD COUNTY
STATION: 17+57.00 -L-

SHEET 3 OF 3

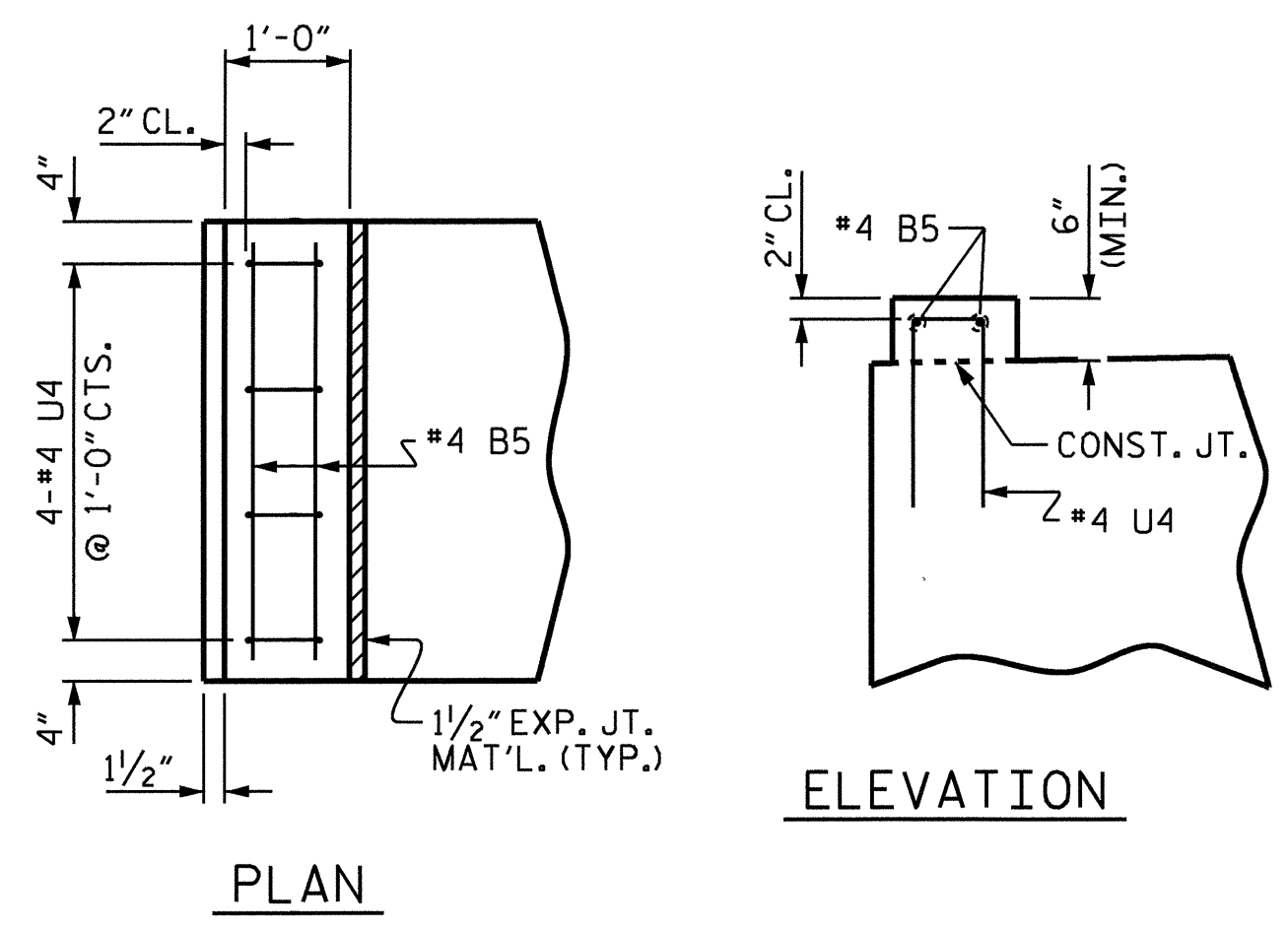
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT 1

DRAWN BY: E.C. LOCKLEAR DATE: 11-6-09
CHECKED BY: T.H. FANG DATE: 7-20-10

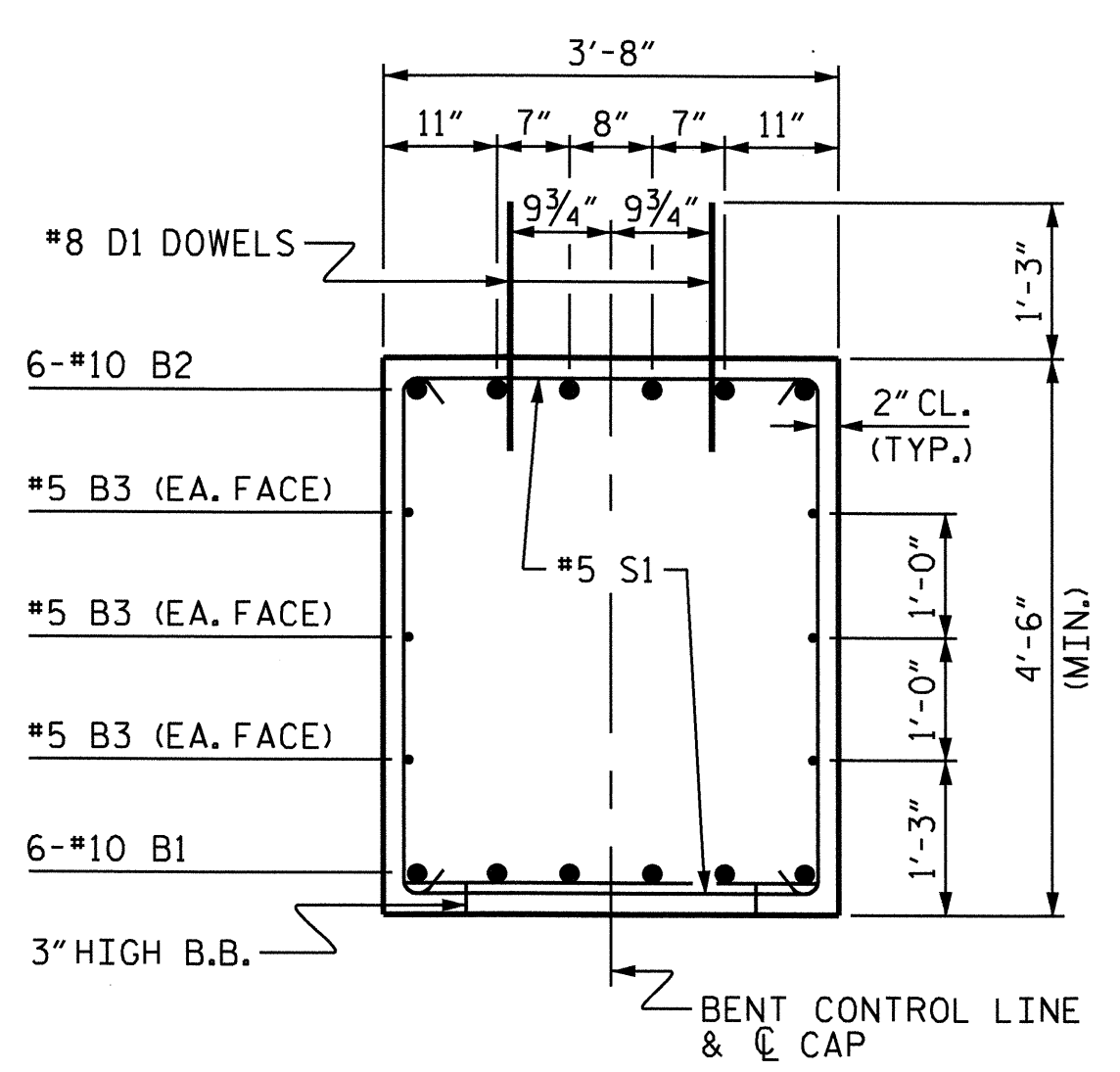
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sdombrowski

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			30

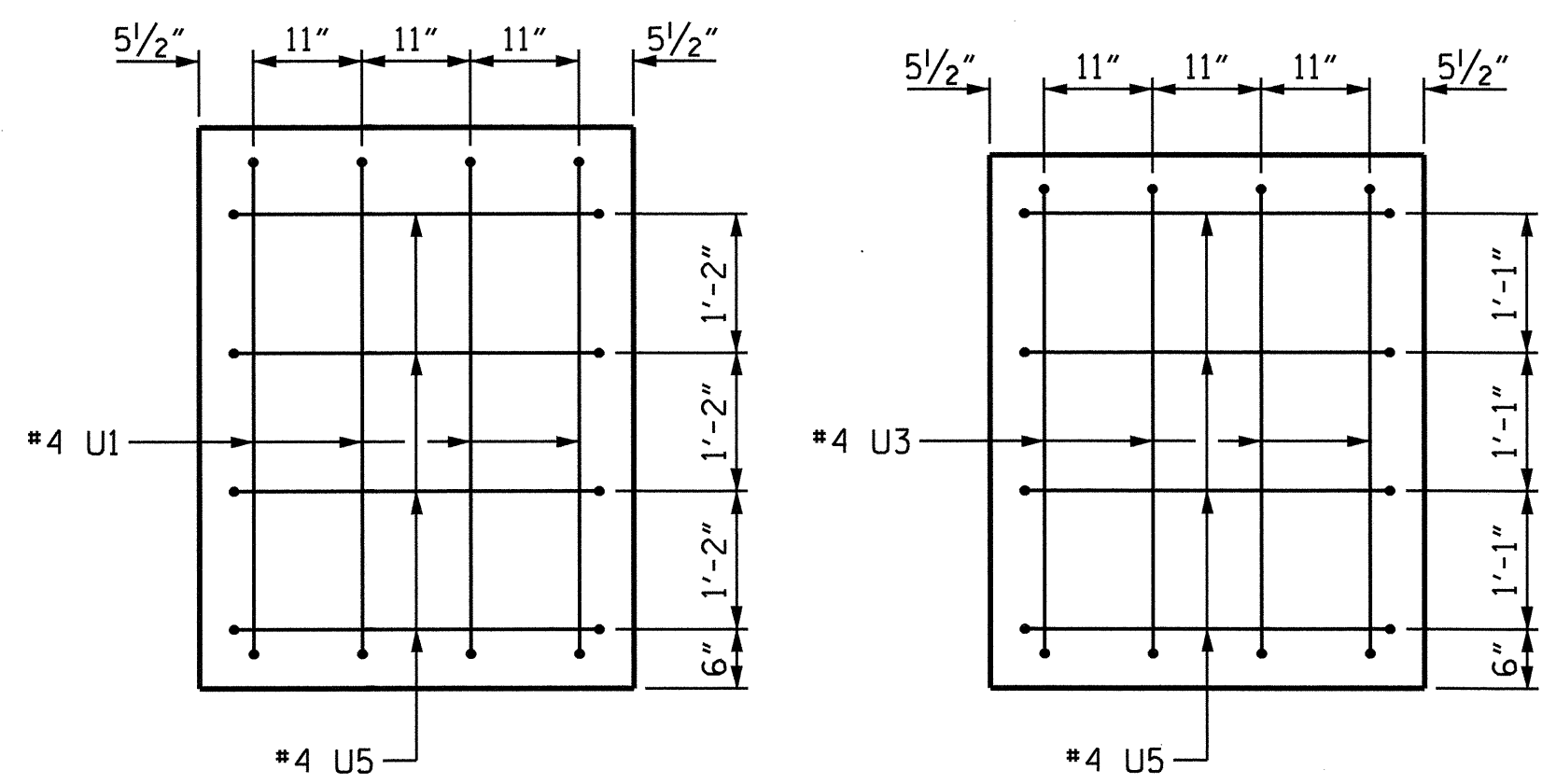
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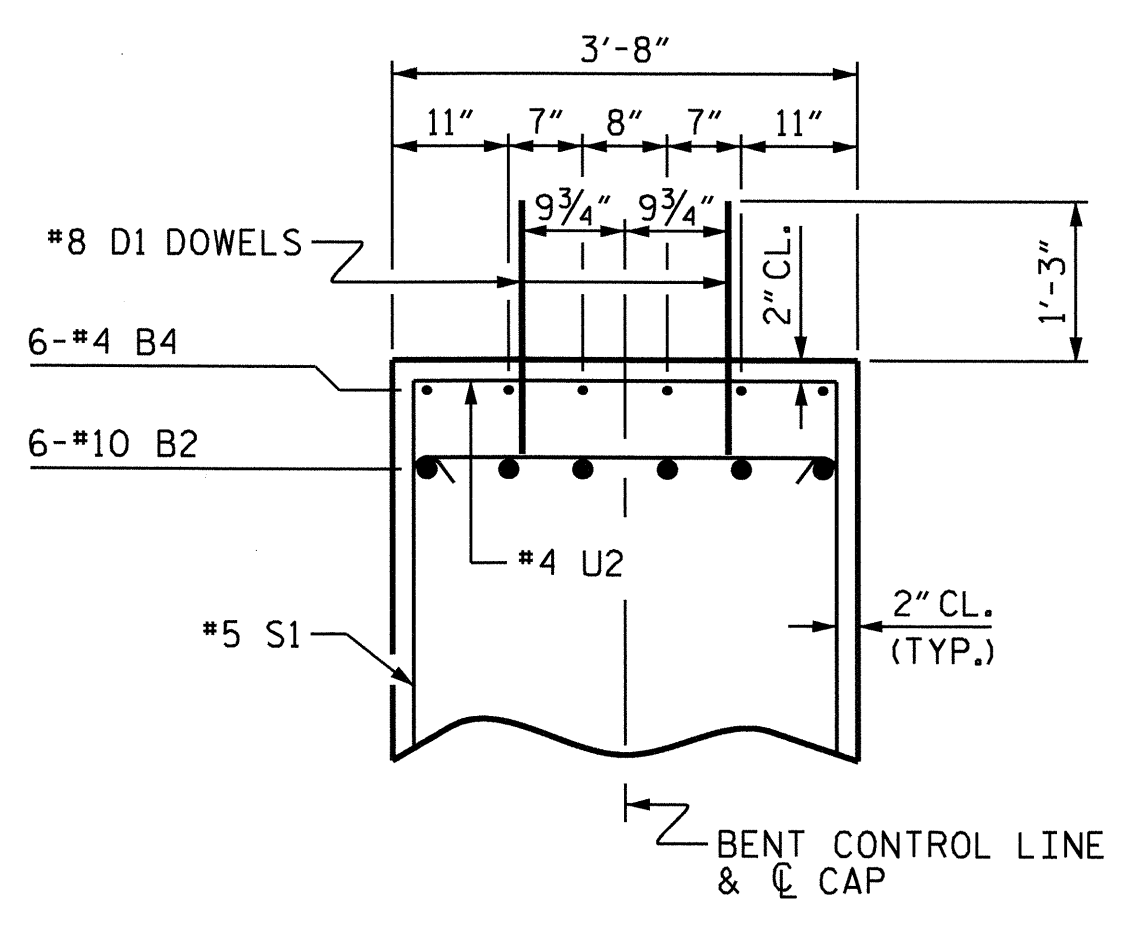
LATERAL GUIDE DETAILS
(EACH END SIMILAR)



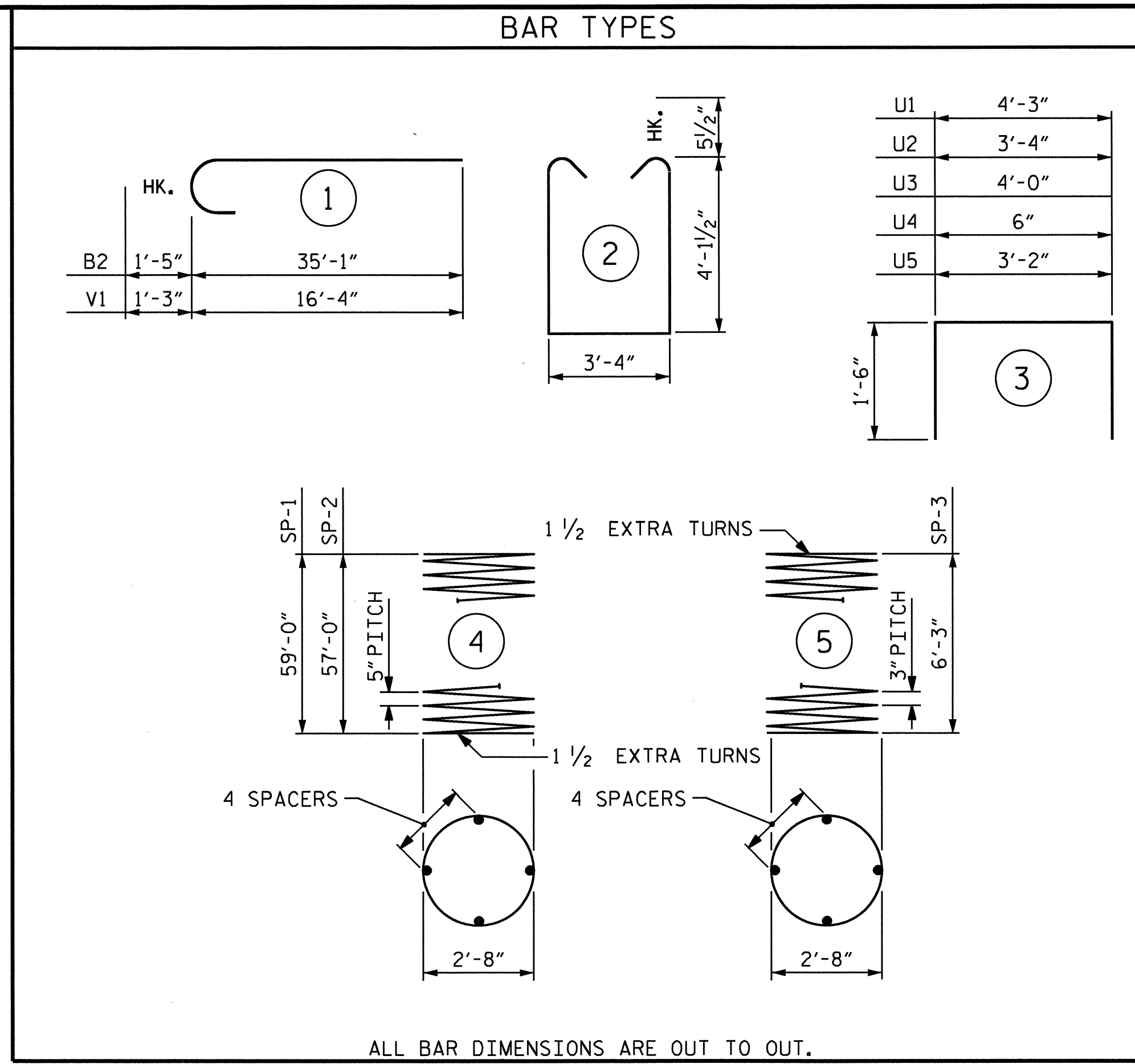
SECTION A-A



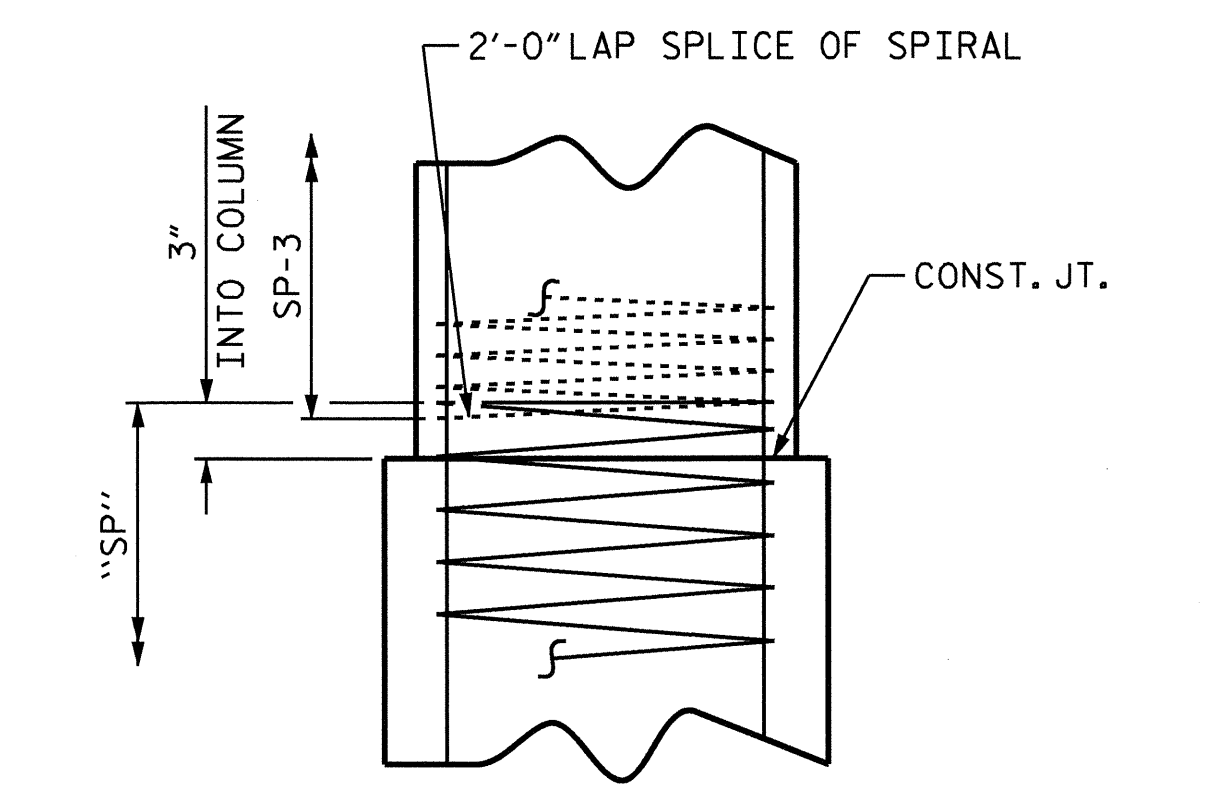
VIEW X-X **VIEW Y-Y**



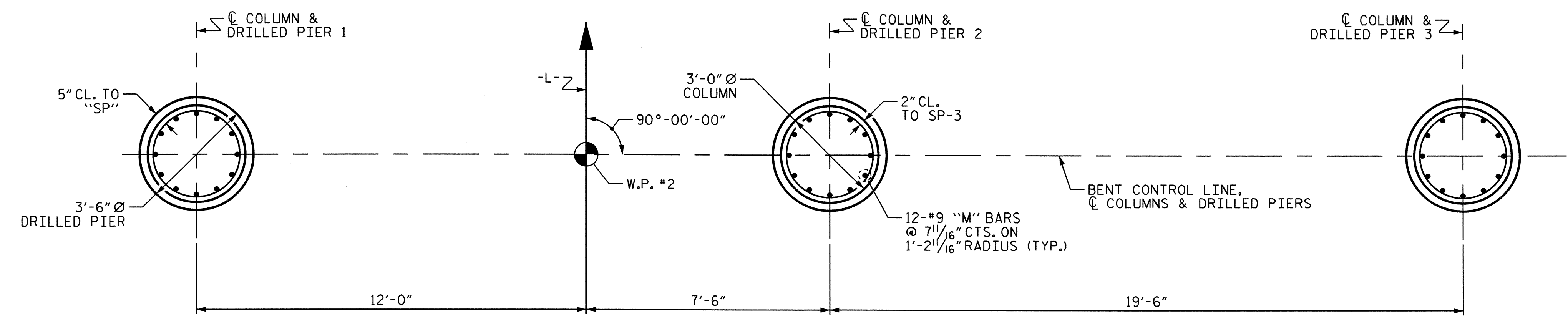
PARTIAL SECTION B-B



ALL BAR DIMENSIONS ARE OUT TO OUT.



CONSTRUCTION JOINT DETAIL



PLAN OF DRILLED PIERS
(REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR EACH DRILLED PIER AND COLUMN)

BAR TYPES

BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	STR	59'-2"	1528
B2	12	#10	1	36'-6"	1885
B3	6	#5	STR	59'-2"	370
B4	12	#4	STR	26'-9"	214
B5	4	#4	STR	3'-4"	9
D1	76	#8	STR	2'-3"	457
M1	24	#9	STR	59'-3"	4835
M2	12	#9	STR	57'-3"	2336
S1	66	#5	2	12'-6"	860
U1	4	#4	3	7'-3"	19
U2	34	#4	3	6'-4"	144
U3	4	#4	3	7'-0"	19
U4	8	#4	3	3'-6"	19
U5	8	#4	3	6'-2"	33
V1	36	#9	1	17'-7"	2152

REINFORCING STEEL	LBS.	14,880			
SP-1	2	*	4	1174'-6"	2450
SP-2	1	*	4	1135'-2"	1184
SP-3	3	**	5	220'-2"	441

SPIRAL COLUMN REINFORCING STEEL	LBS.	4075
---------------------------------	------	------

CLASS A CONCRETE	CU. YDS.	
POUR #2 - COLUMNS	4.9	
POUR #3 - CAP	39.6	
POUR #4 - LATERAL GUIDE	0.1	
TOTAL	44.6	

DRILLED PIER QUANTITIES:	CU. YDS.	62.9
DRILLED PIER CONCRETE		
POUR #1 - DRILLED PIERS	62.9	
3'-6" Ø DRILLED PIERS IN SOIL	131.50	
3'-6" Ø DRILLED PIERS NOT IN SOIL	45.00	
PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIERS	43.50	
CSL TUBES	736.00	

* THE SP-1 & SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

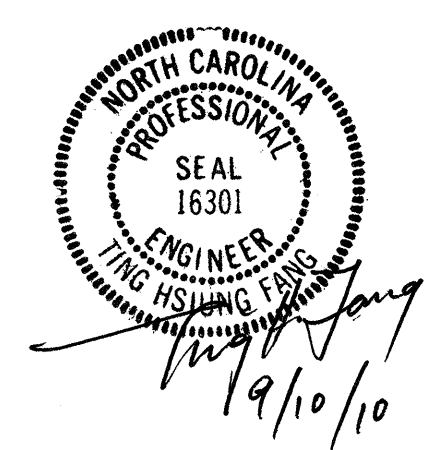
** THE SP-3 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

PROJECT NO. B-3656
HAYWOOD COUNTY
 STATION: 17+57.00 -L-

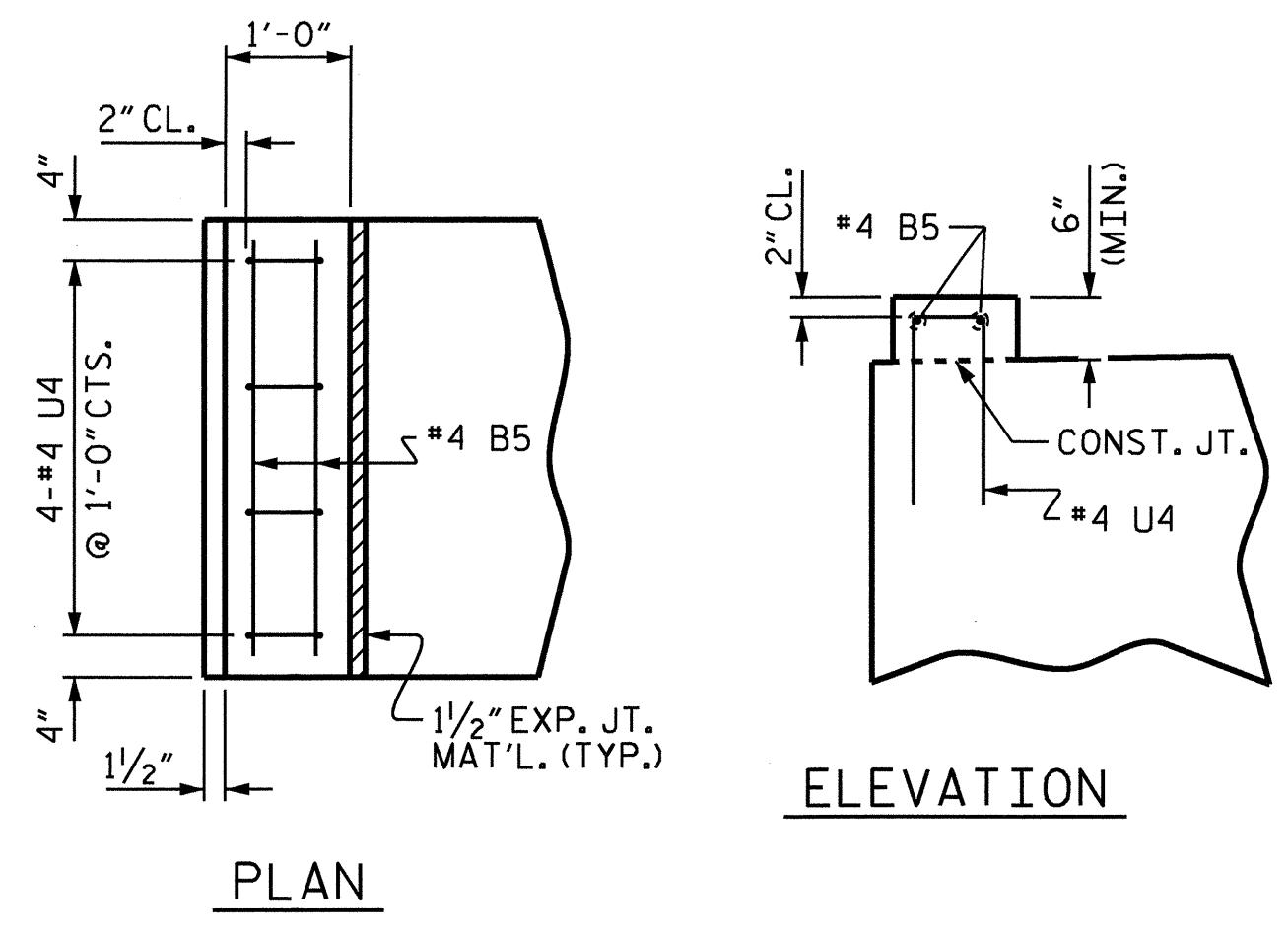
SHEET 2 OF 2

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

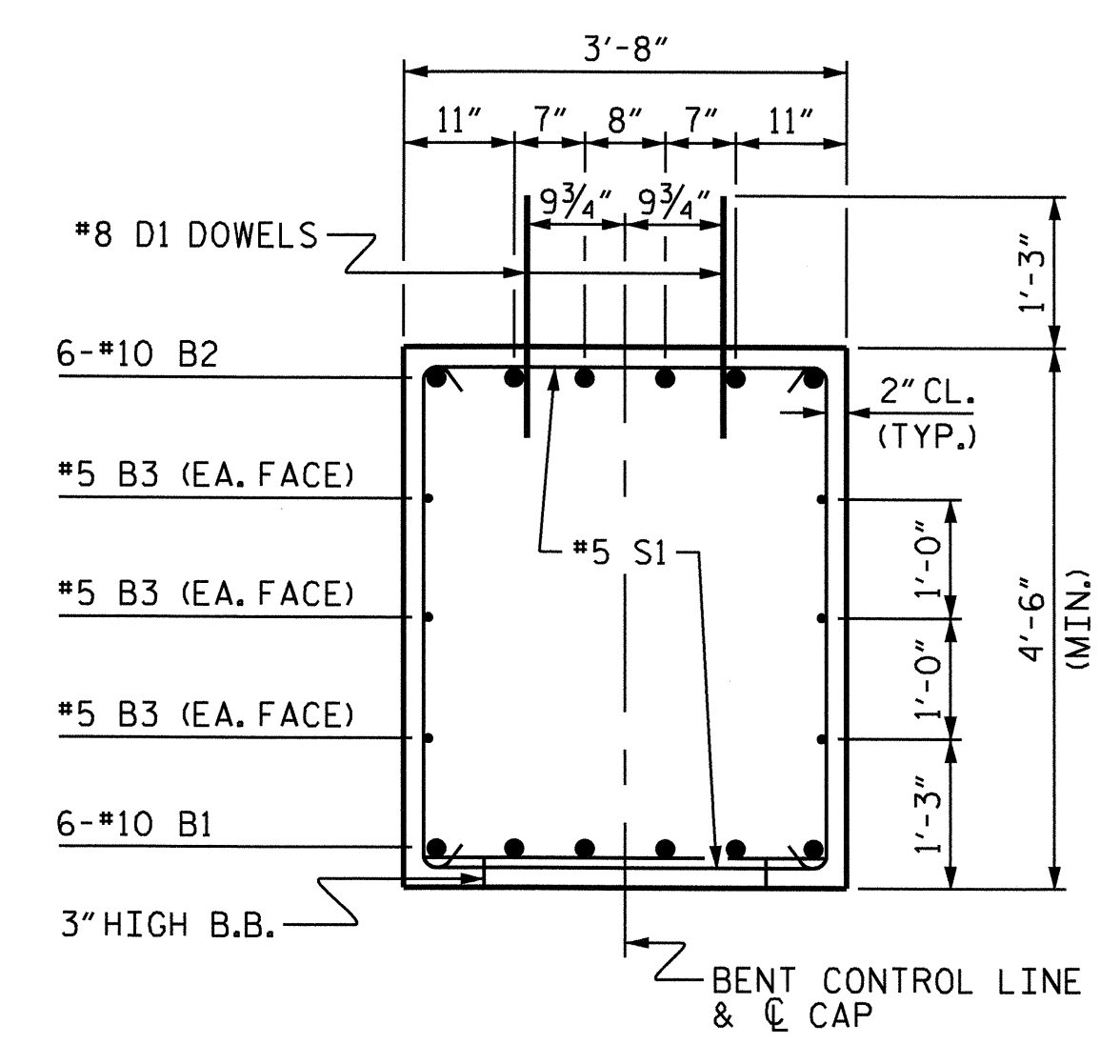
TOTAL SHEETS: 30



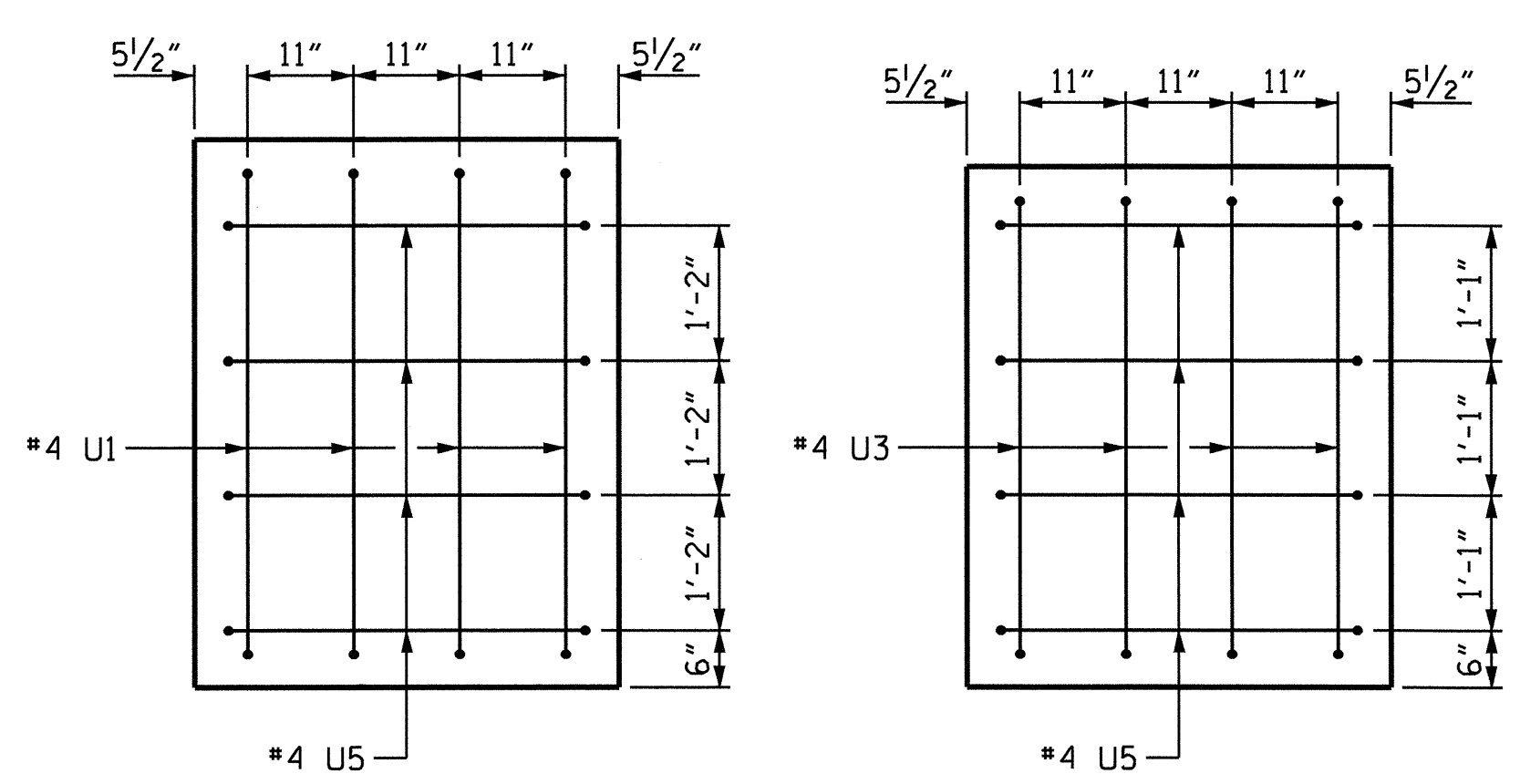
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 CHECKED BY: T.H. FANG DATE: 7-20-10



LATERAL GUIDE DETAILS
(EACH END SIMILAR)

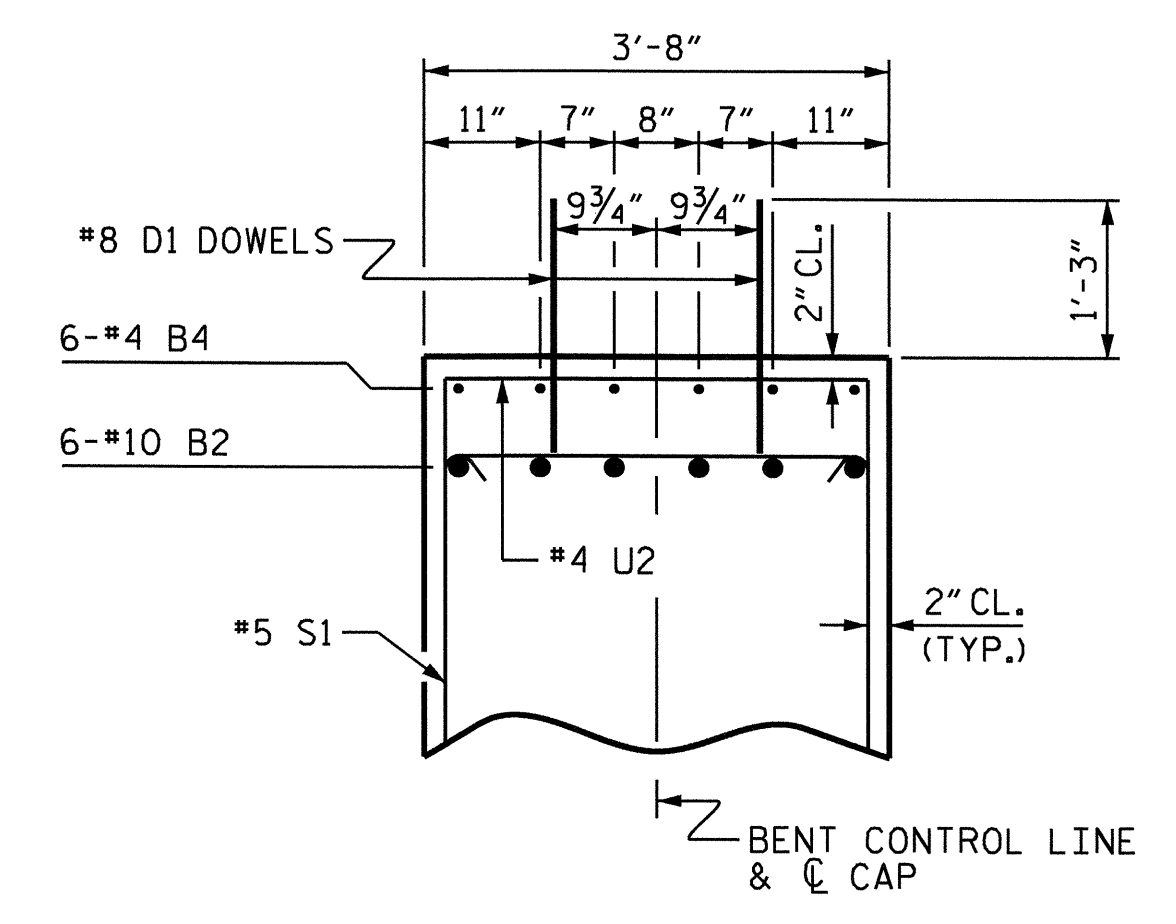


SECTION A-A

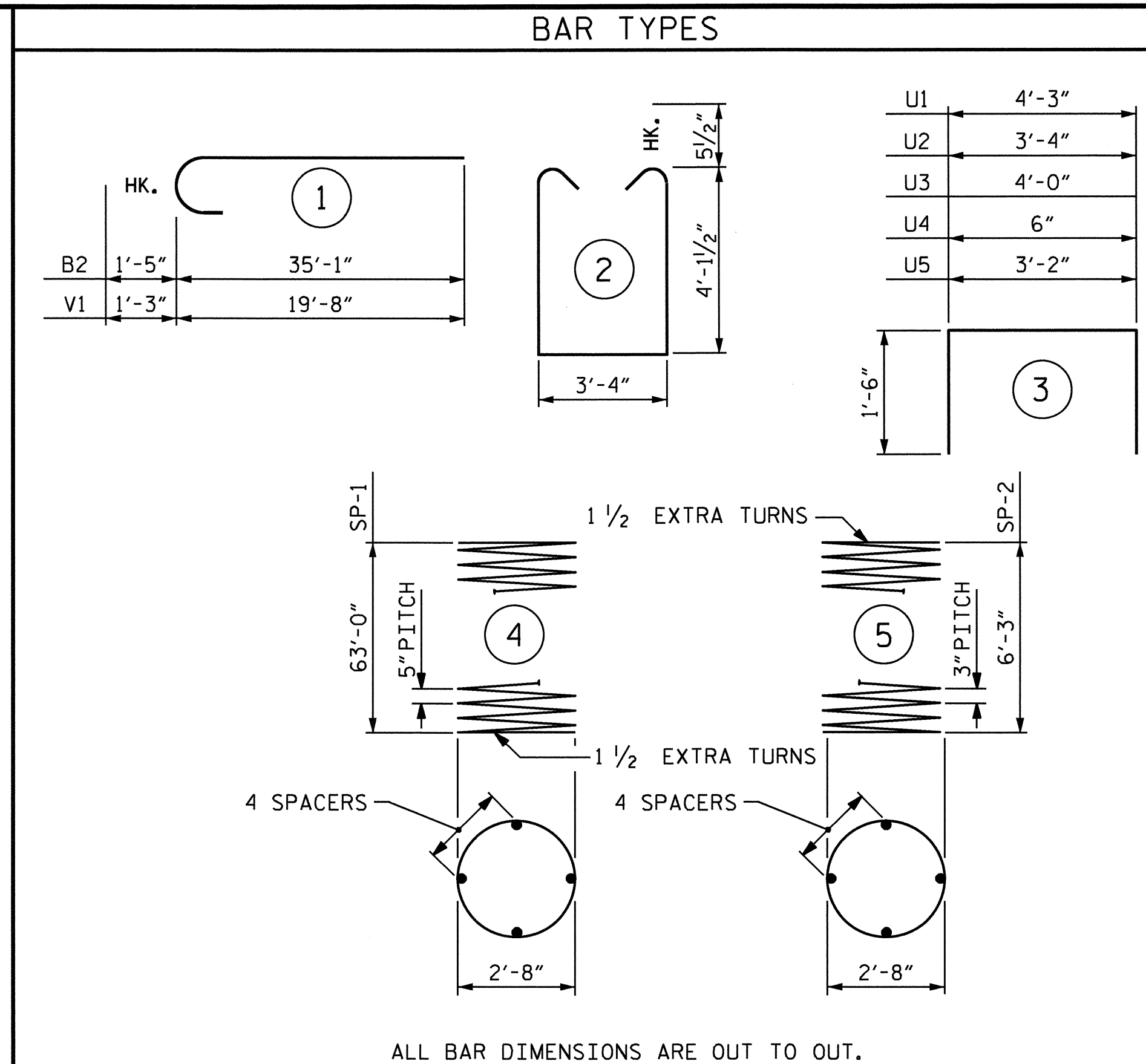


VIEW X-X

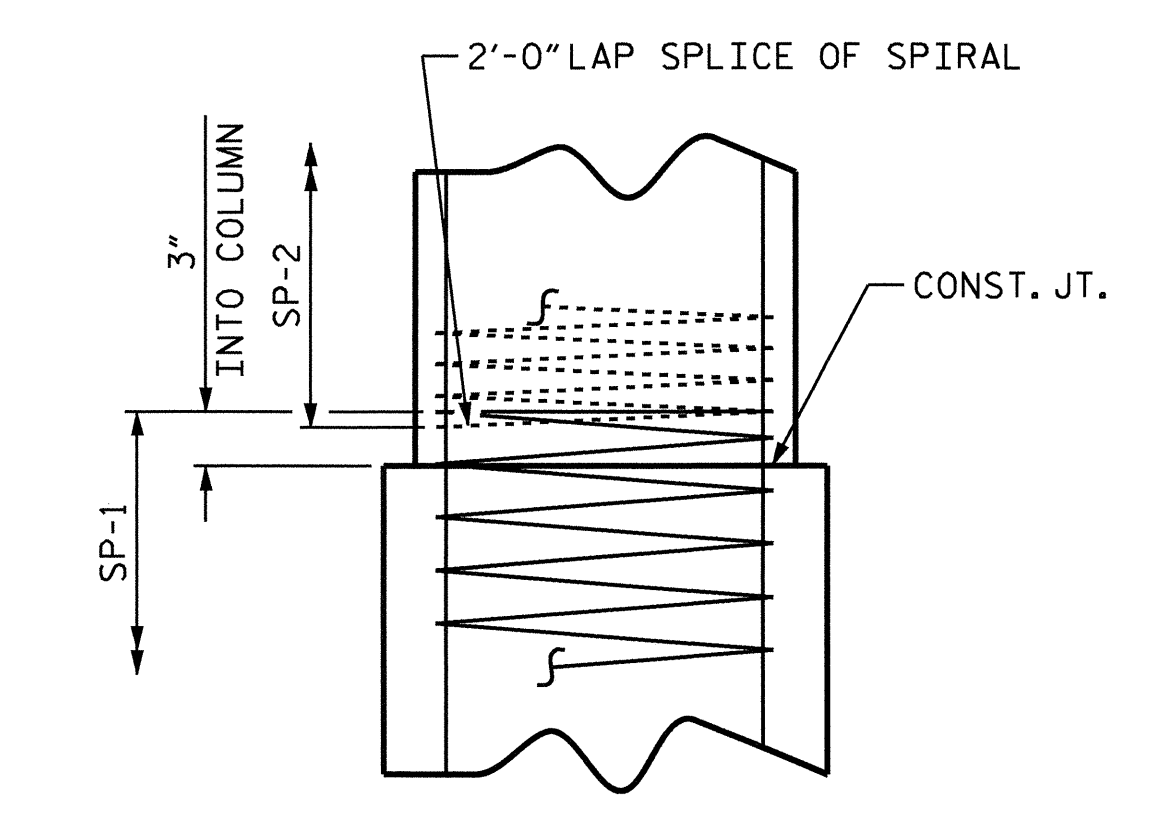
VIEW Y-Y



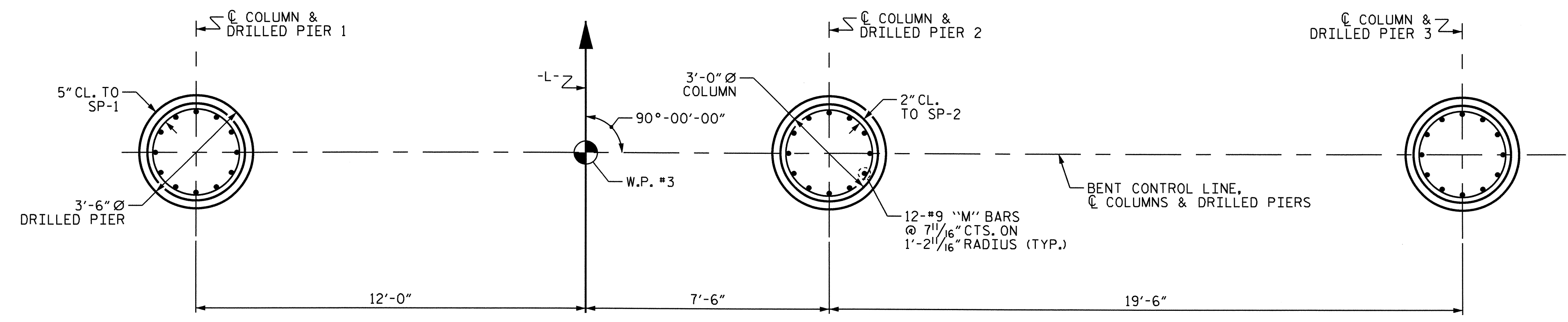
PARTIAL SECTION B-B



ALL BAR DIMENSIONS ARE OUT TO OUT.



CONSTRUCTION JOINT DETAIL



PLAN OF DRILLED PIERS
(REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR EACH DRILLED PIER AND COLUMN)

BILL OF MATERIAL					
BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	STR	59'-2"	1528
B2	12	#10	1	36'-6"	1885
B3	6	#5	STR	59'-2"	370
B4	12	#4	STR	26'-9"	214
B5	4	#4	STR	3'-4"	9
D1	76	#8	STR	2'-3"	457
M1	36	#9	STR	60'-0"	7344
S1	66	#5	2	12'-6"	860
U1	4	#4	3	7'-3"	19
U2	34	#4	3	6'-4"	144
U3	4	#4	3	7'-0"	19
U4	8	#4	3	3'-6"	19
U5	8	#4	3	6'-2"	33
V1	36	#9	1	20'-11"	2560
REINFORCING STEEL				LBS.	15,461
SP-1	3	*	4	1253'-4"	3921
SP-2	3	**	5	220'-2"	441
SPIRAL COLUMN REINFORCING STEEL				LBS.	4363
CLASS A CONCRETE					
POUR #2 - COLUMNS				CU. YDS.	4.9
POUR #3 - CAP				CU. YDS.	39.6
POUR #4 - LATERAL GUIDE				CU. YDS.	0.1
TOTAL				CU. YDS.	44.6

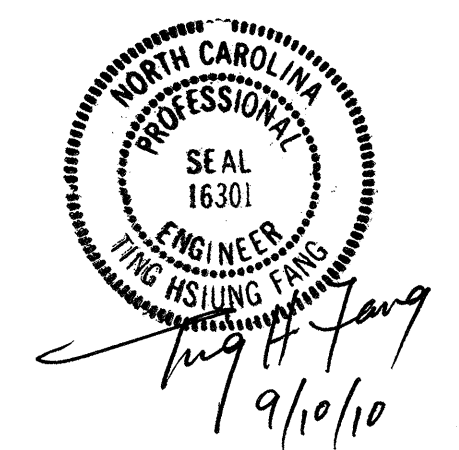
DRILLED PIER QUANTITIES:

DRILLED PIER CONCRETE		
POUR #1 - DRILLED PIERS	CU. YDS.	67.9
3'-6" Ø DRILLED PIERS IN SOIL	LIN. FT.	133.50
3'-6" Ø DRILLED PIERS NOT IN SOIL	LIN. FT.	57.00
PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIERS	LIN. FT.	42.0
CSL TUBES	LIN. FT.	792.00

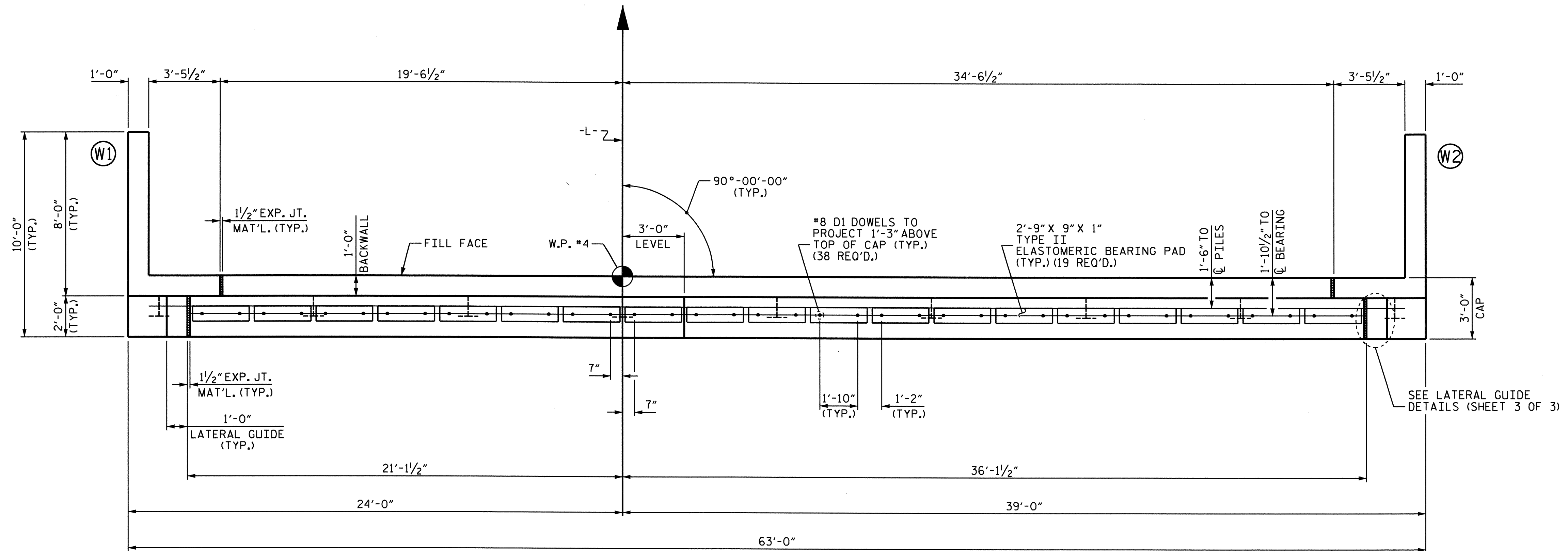
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.
** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

PROJECT NO. B-3656
HAYWOOD COUNTY
 STATION: 17+57.00 -L-
 SHEET 2 OF 2

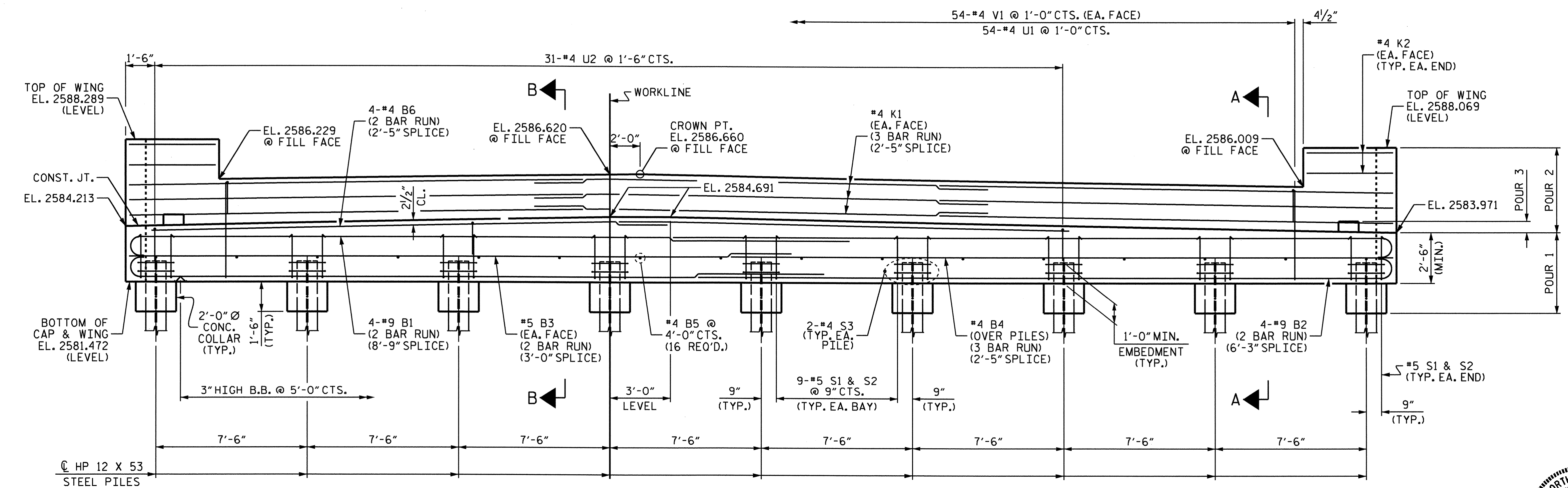
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SUBSTRUCTURE					
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1			3		
2			4		
					S-24
					TOTAL SHEETS
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DRAWN BY: E.C. LOCKLEAR DATE: 7-2-10
 CHECKED BY: T.H. FANG DATE: 7-20-10



PLAN



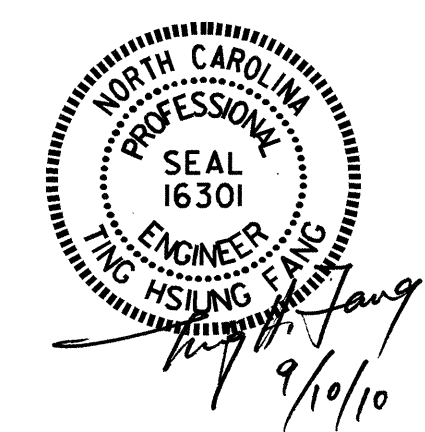
ELEVATION

NOTES
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #8 D1 DOWELS.
 THE LATERAL GUIDE AT EACH END OF CAP IS NOT TO BE POURED UNTIL AFTER BOX BEAM UNITS ARE IN PLACE.
 THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

PROJECT NO. B-3656
HAYWOOD COUNTY
 STATION: 17+57.00 -L-

SHEET 1 OF 3

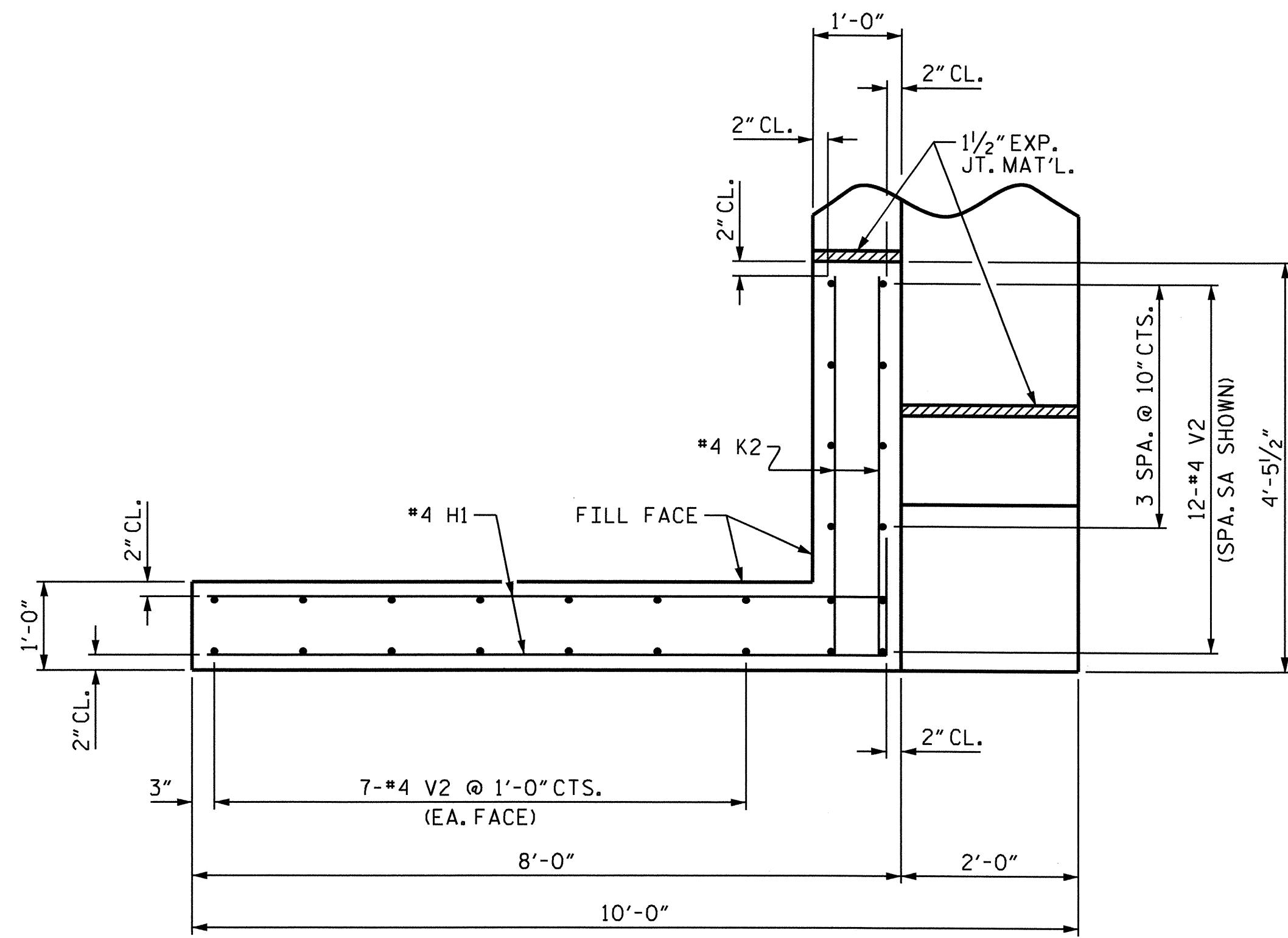
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2			4		
					SHEET NO. S-25
					TOTAL SHEETS 30



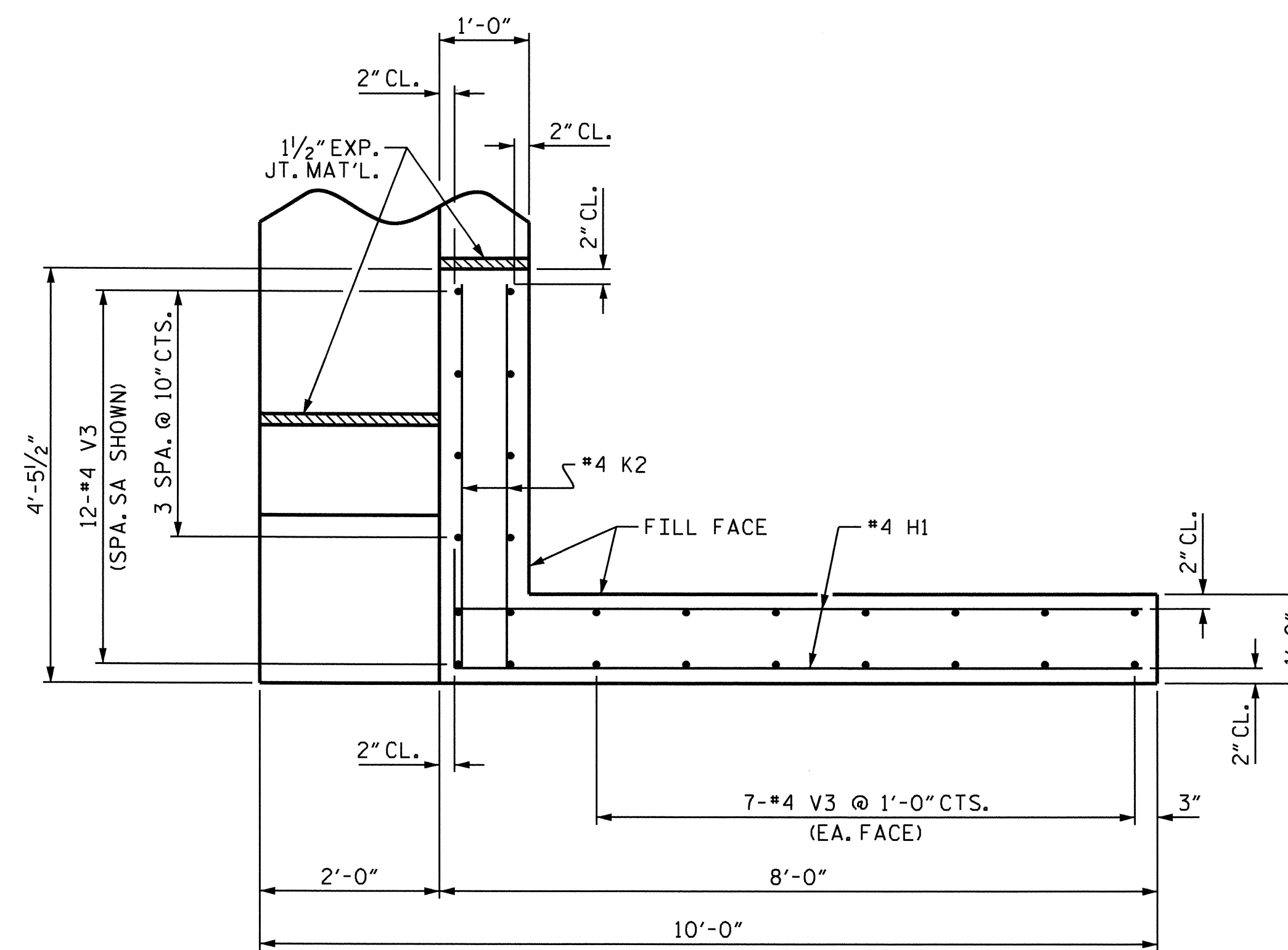
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 CHECKED BY: T.H. FANG DATE: 7-20-10

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 sdombrowski

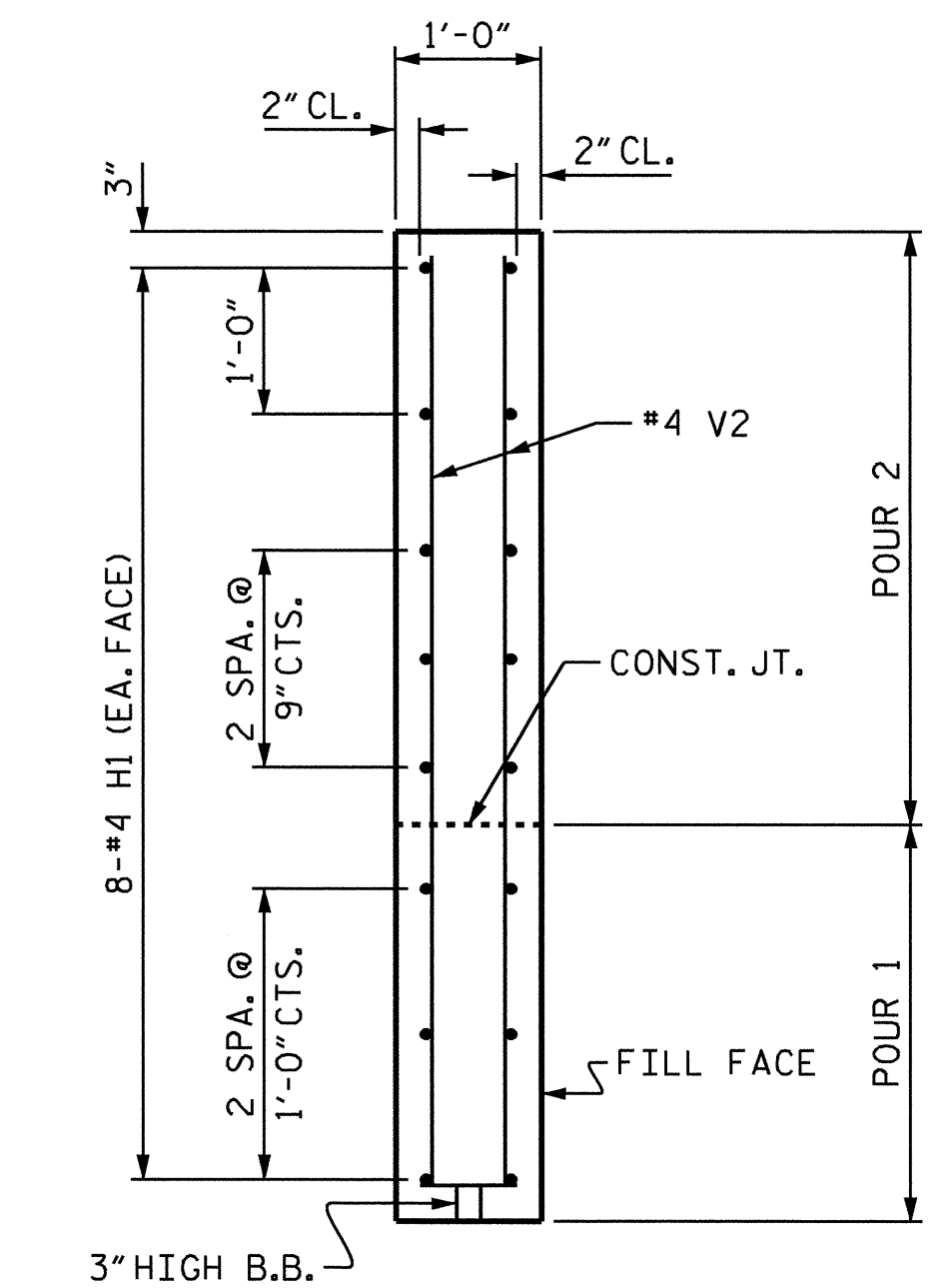
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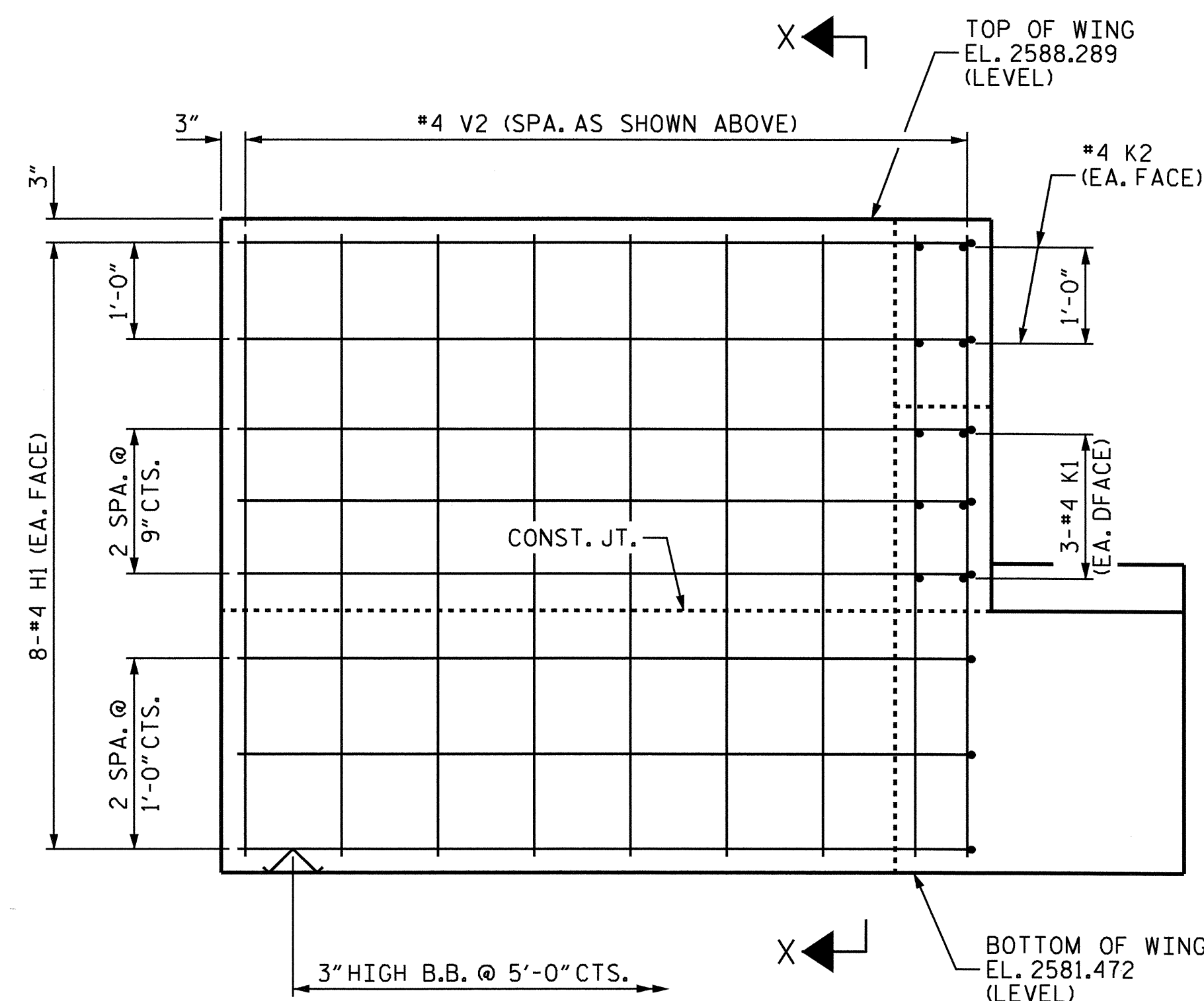
PLAN OF WING (W1)



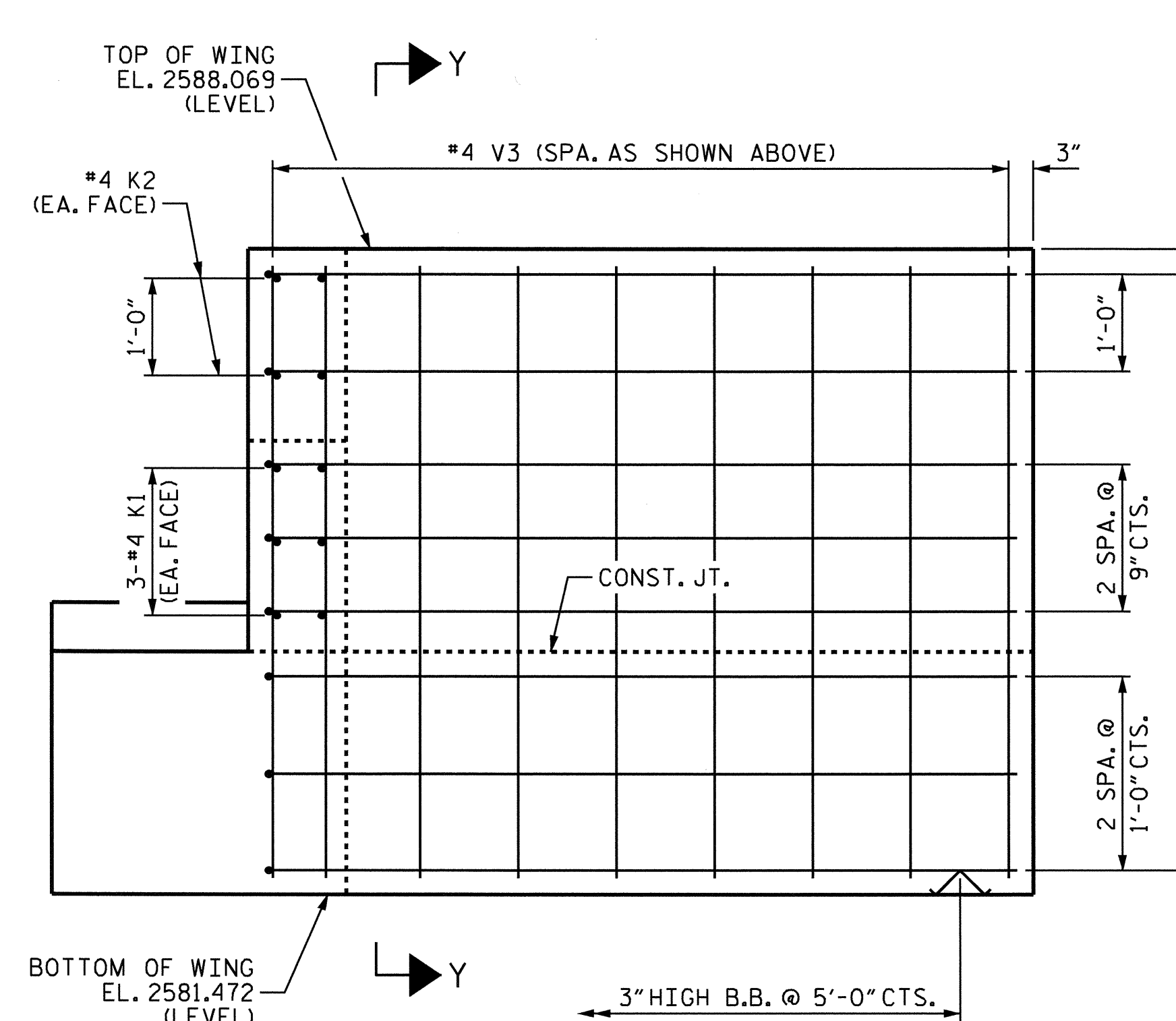
PLAN OF WING (W2)



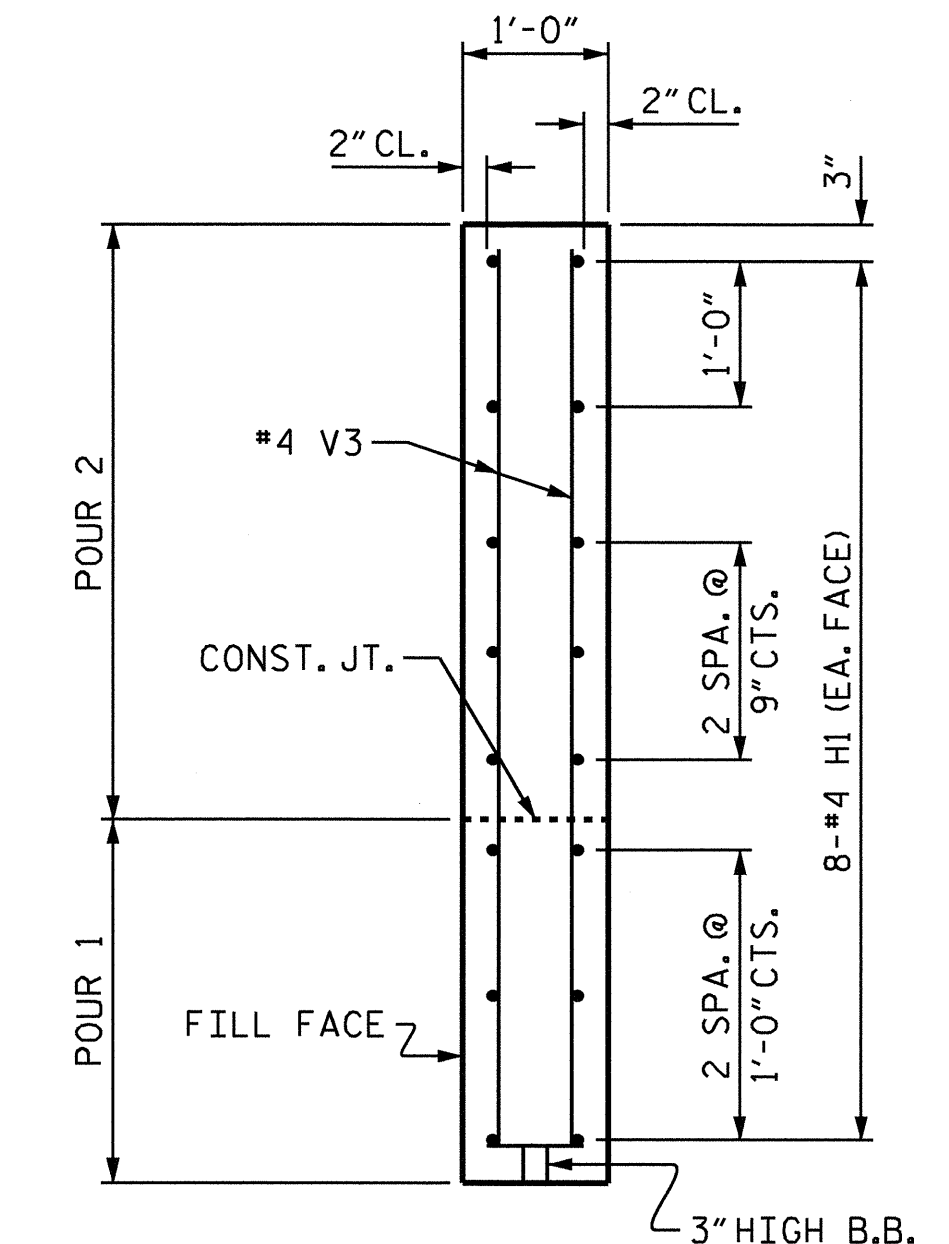
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

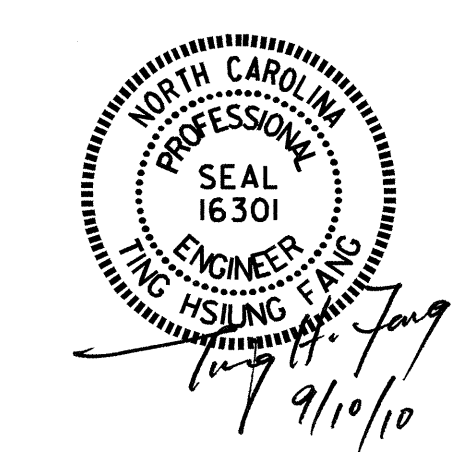


SECTION Y-Y

PROJECT NO. B-3656
 HAYWOOD COUNTY
 STATION: 17+57.00 -L-

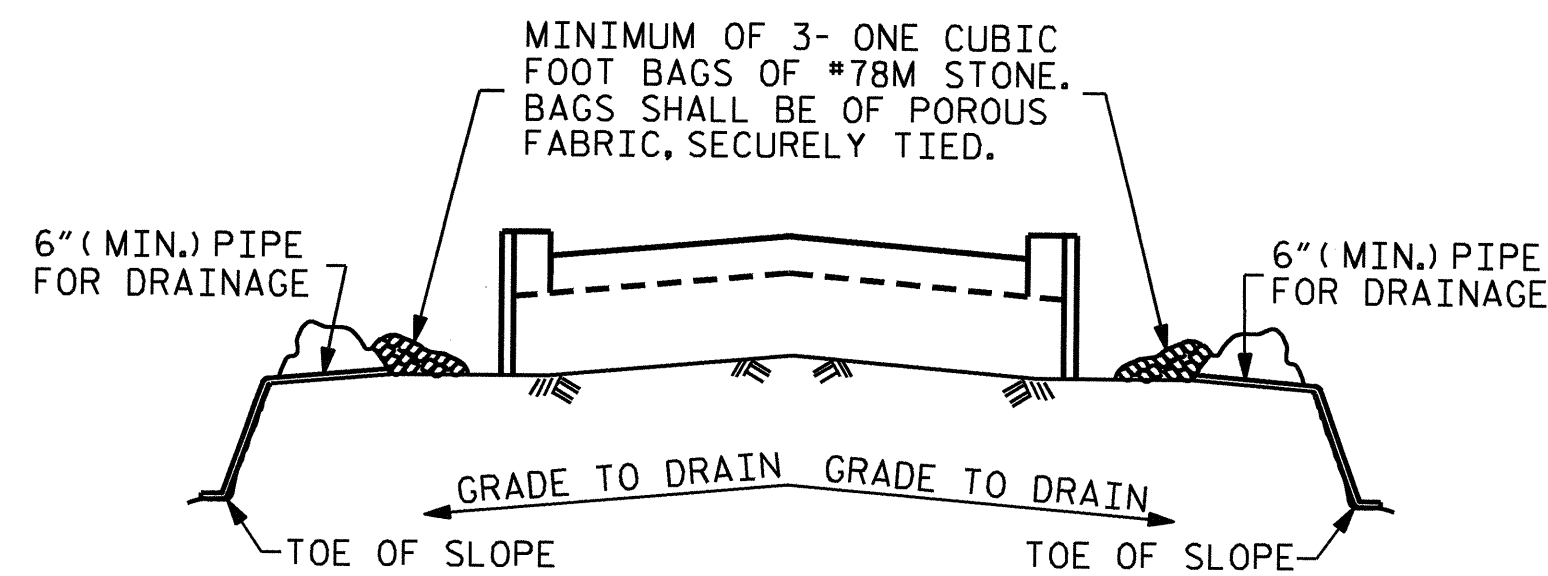
SHEET 2 OF 3

REVISIONS						SHEET NO.
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2			4			30



DRAWN BY: E.C. LOCKLEAR DATE: 11-13-09
 CHECKED BY: T.H. FANG DATE: 7-20-10

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 sdombrowski

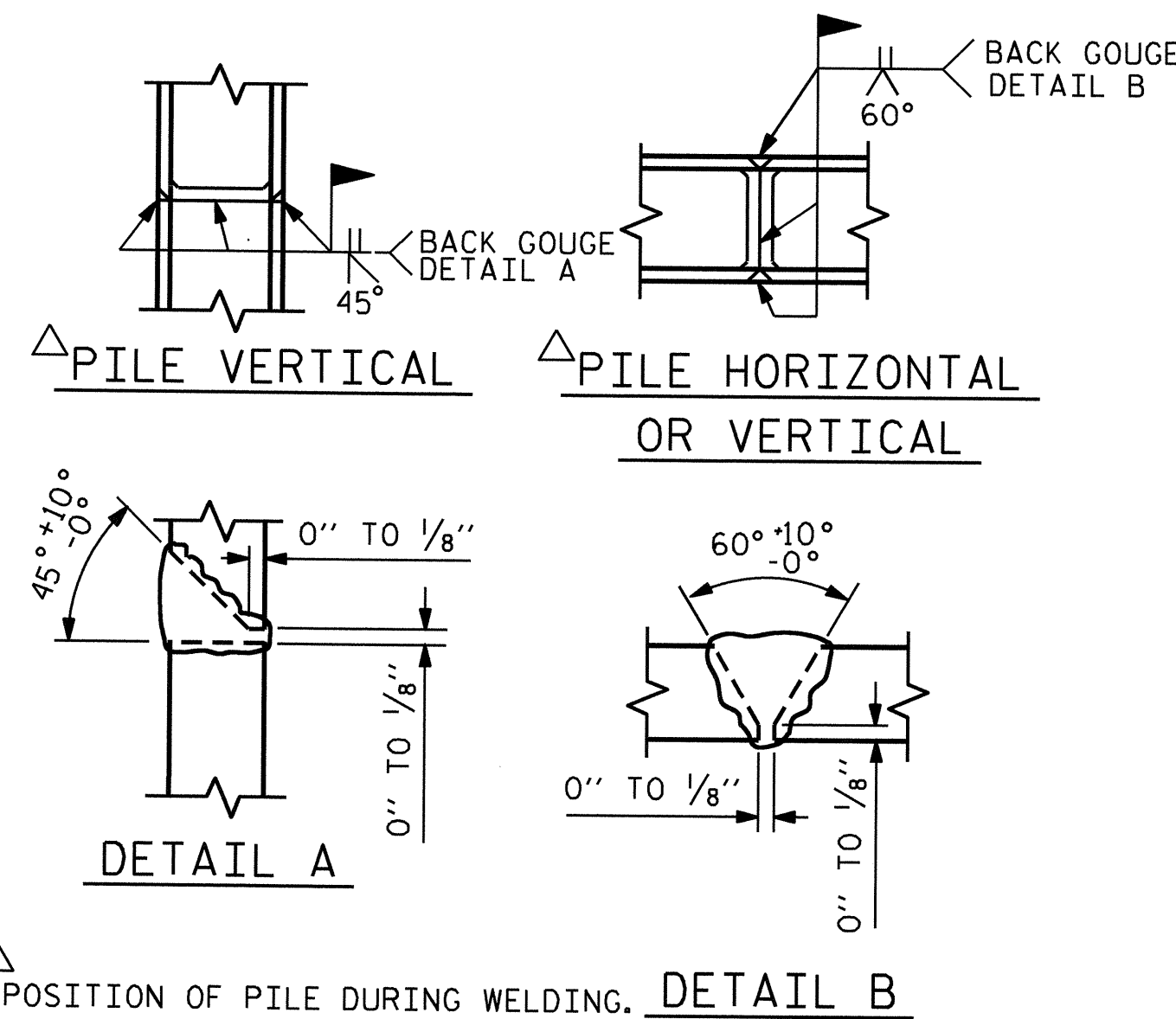


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

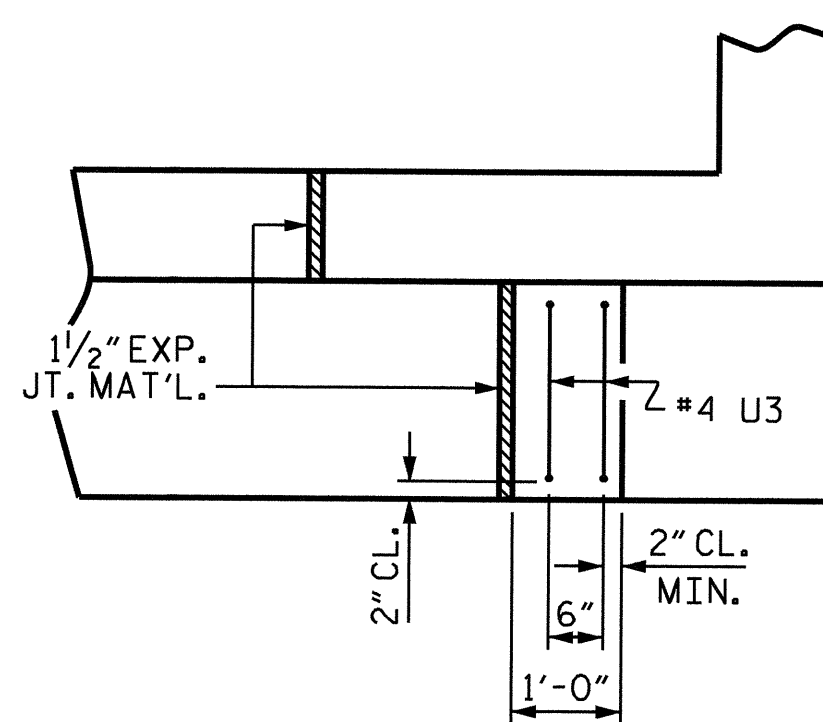
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



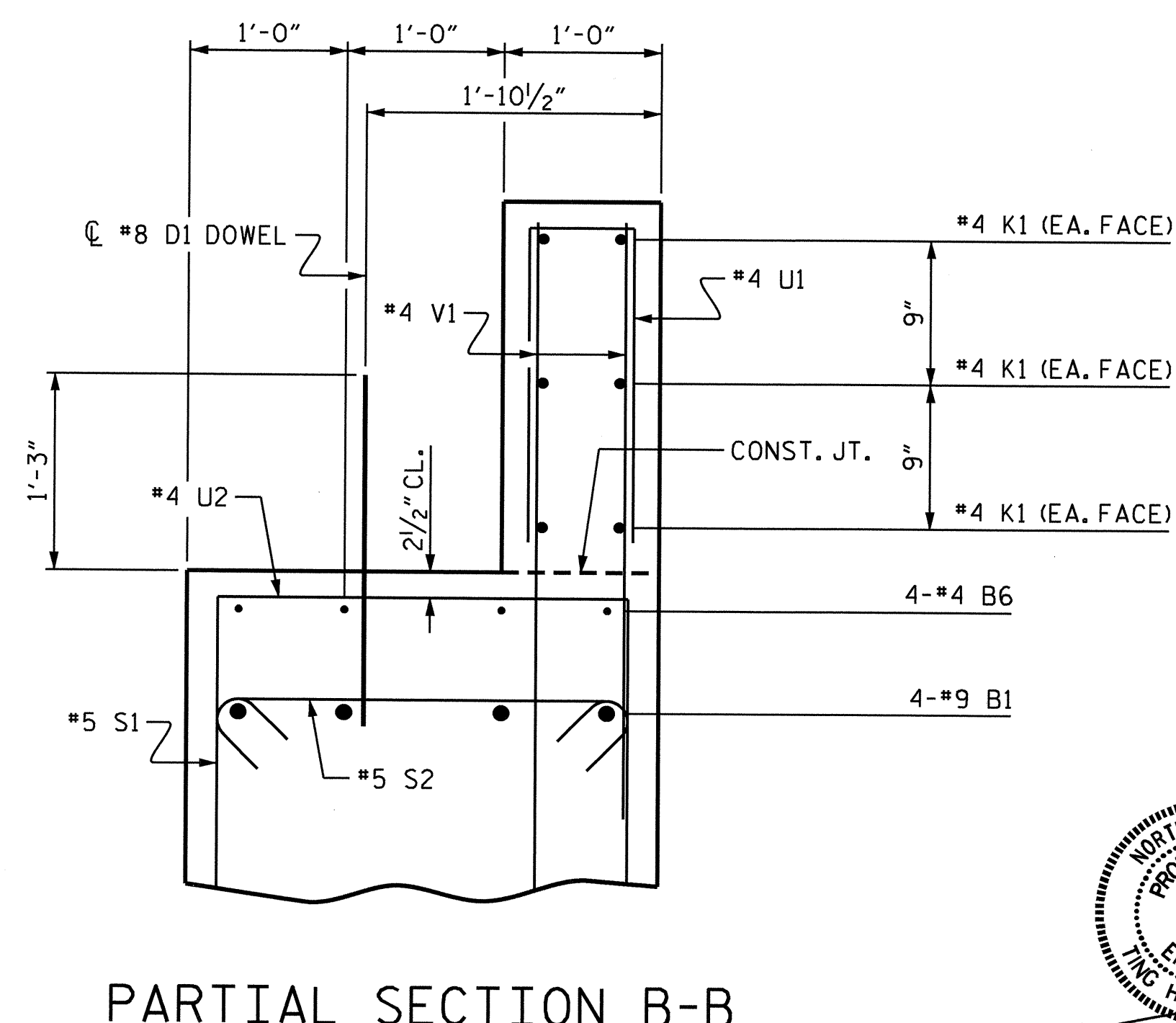
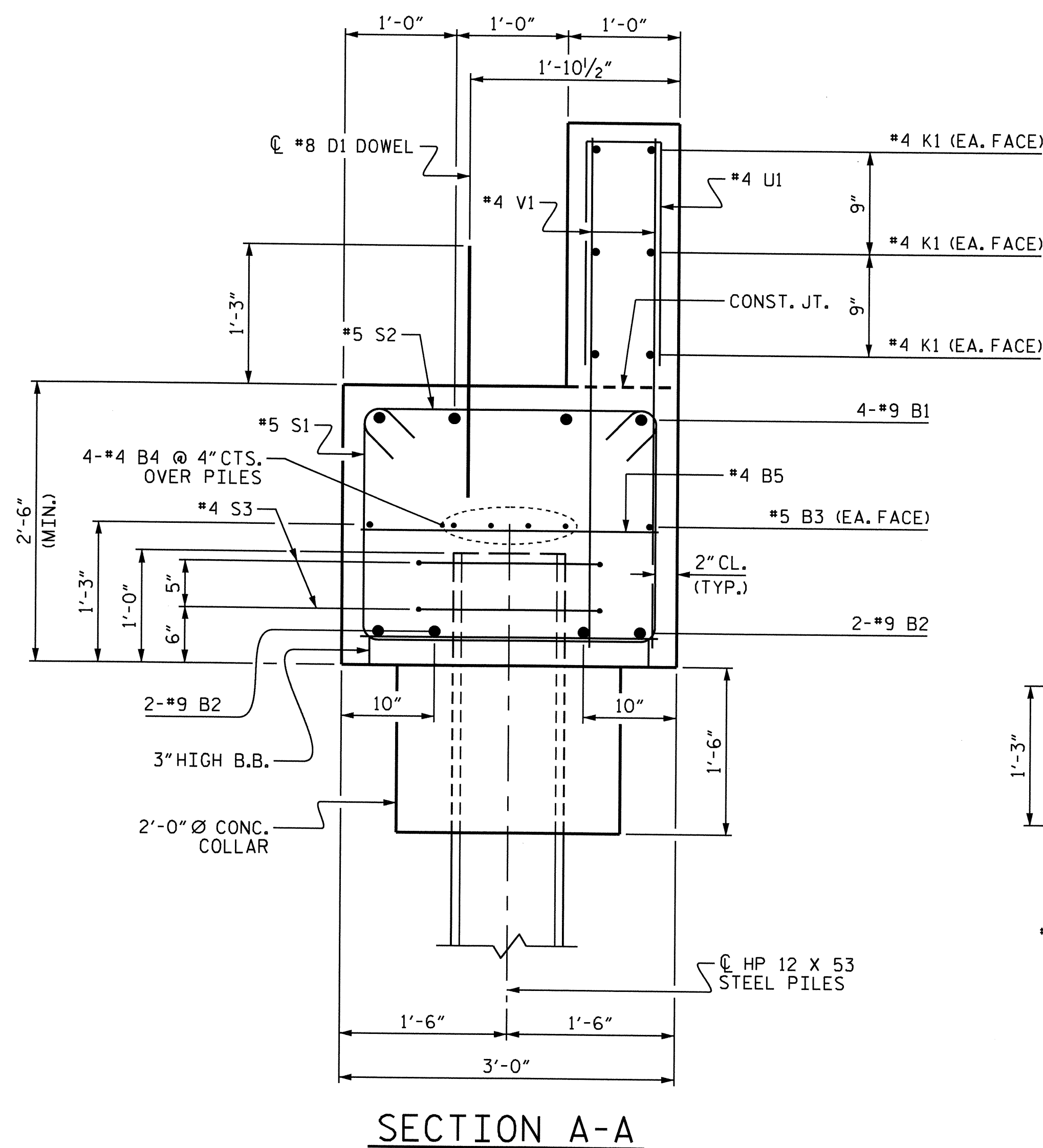
PILE SPLICE DETAILS

BAR TYPES						BILL OF MATERIAL					
						END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	36'-11"	1004	D1	38	#8	STR	2'-3"	228
B2	8	#9	1	35'-8"	970	H1	32	#4	6	8'-4"	178
B3	4	#5	STR	32'-10"	137	K1	18	#4	STR	22'-6"	271
B4	12	#4	STR	22'-6"	180	K2	8	#4	STR	4'-1"	22
B5	16	#4	STR	2'-8"	29	S1	74	#5	4	7'-10"	605
B6	8	#4	STR	24'-0"	128	S2	74	#5	3	3'-7"	277
						S3	18	#4	2	6'-6"	78
						U1	54	#4	5	3'-8"	132
						U2	31	#4	5	5'-8"	117
						U3	4	#4	5	4'-8"	12
						V1	108	#4	STR	4'-2"	301
						V2	26	#4	STR	6'-4"	110
						V3	26	#4	STR	6'-2"	107
REINFORCING STEEL						LBS. 4886					
CLASS A CONC. BREAKDOWN											
POUR 1: CONCRETE COLLARS, CAP & LOWER WINGS						C.Y. 23.4					
POUR 2: UPPER WINGS & BACKWALL						C.Y. 7.4					
POUR 3: LATERAL GUIDES						C.Y. 0.1					
TOTAL						C.Y. 30.9					
HP 12 X 53 STEEL PILES						LIN. FT. = 500					
No. 9											



LATERAL GUIDE DETAILS

(EACH END SIMILAR)



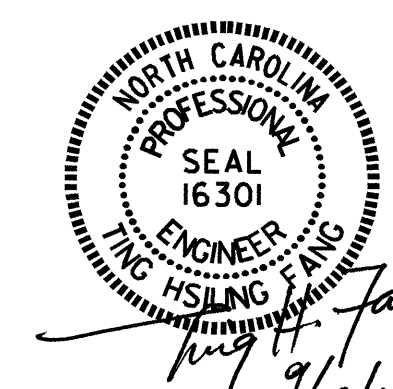
PROJECT NO. B-3656
 HAYWOOD COUNTY
 STATION: 17+57.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27	
1			3			TOTAL SHEETS 30	
2			4				



DRAWN BY: E.C. LOCKLEAR DATE: 11-6-09
 CHECKED BY: T.H. FANG DATE: 7-20-10

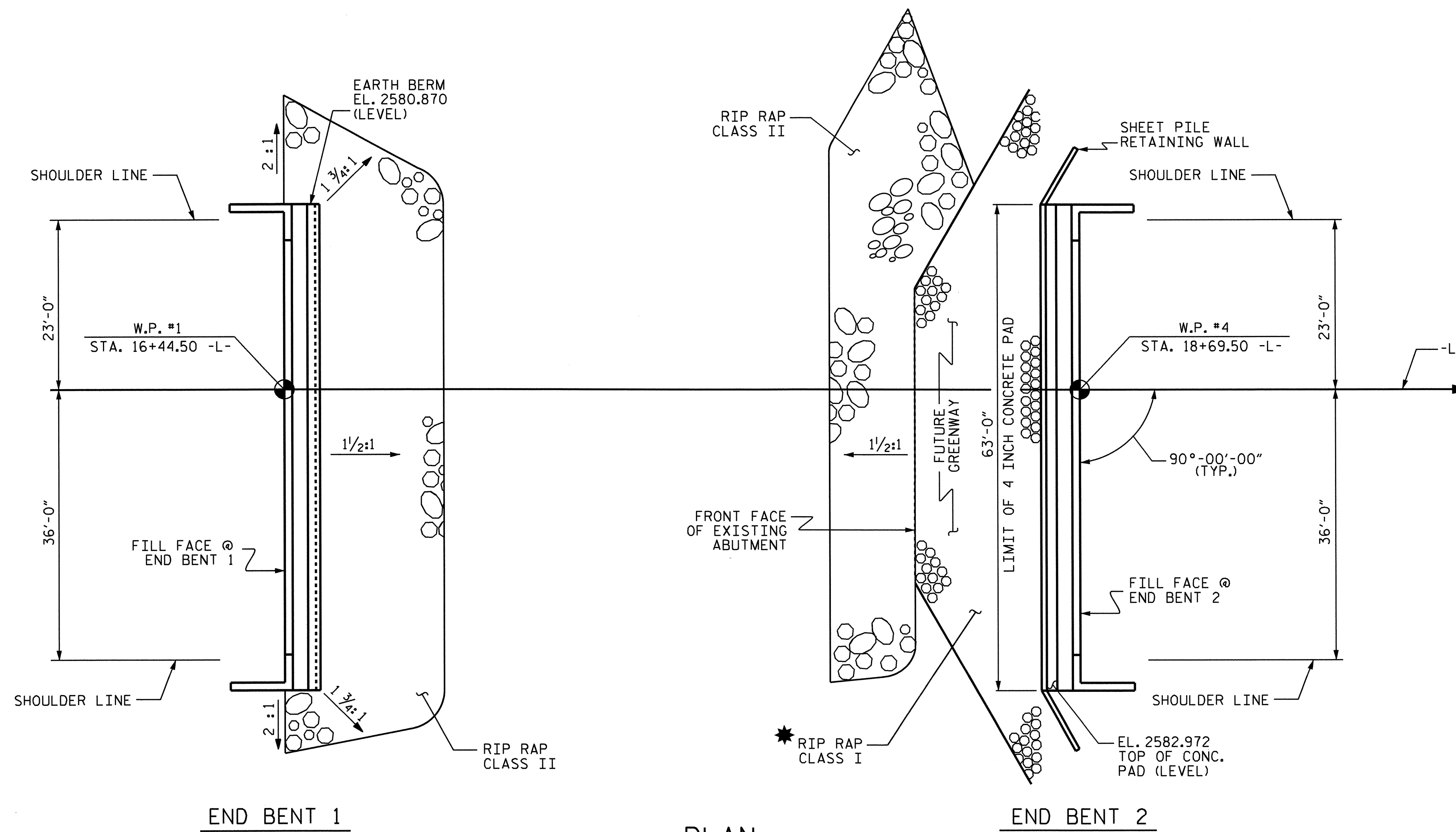
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 sdombrowski

NCBDS

ESTIMATED QUANTITIES				
BRIDGE @ STA. 17+57.00 -L-	RIP RAP CLASS I	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE	* 4 INCH CONCRETE PAD
	TONS	TONS	SQ. YARDS	SQ. YARDS
END BENT 1	---	180	200	
END BENT 2	100	130	145	10.5

* THE 4 INCH CONCRETE PAD AND WELDED WIRE FABRIC 6 X 6 - W1.4 X W1.4 SHALL BE INCIDENTAL TO THE CONSTRUCTION OF RIP RAP.

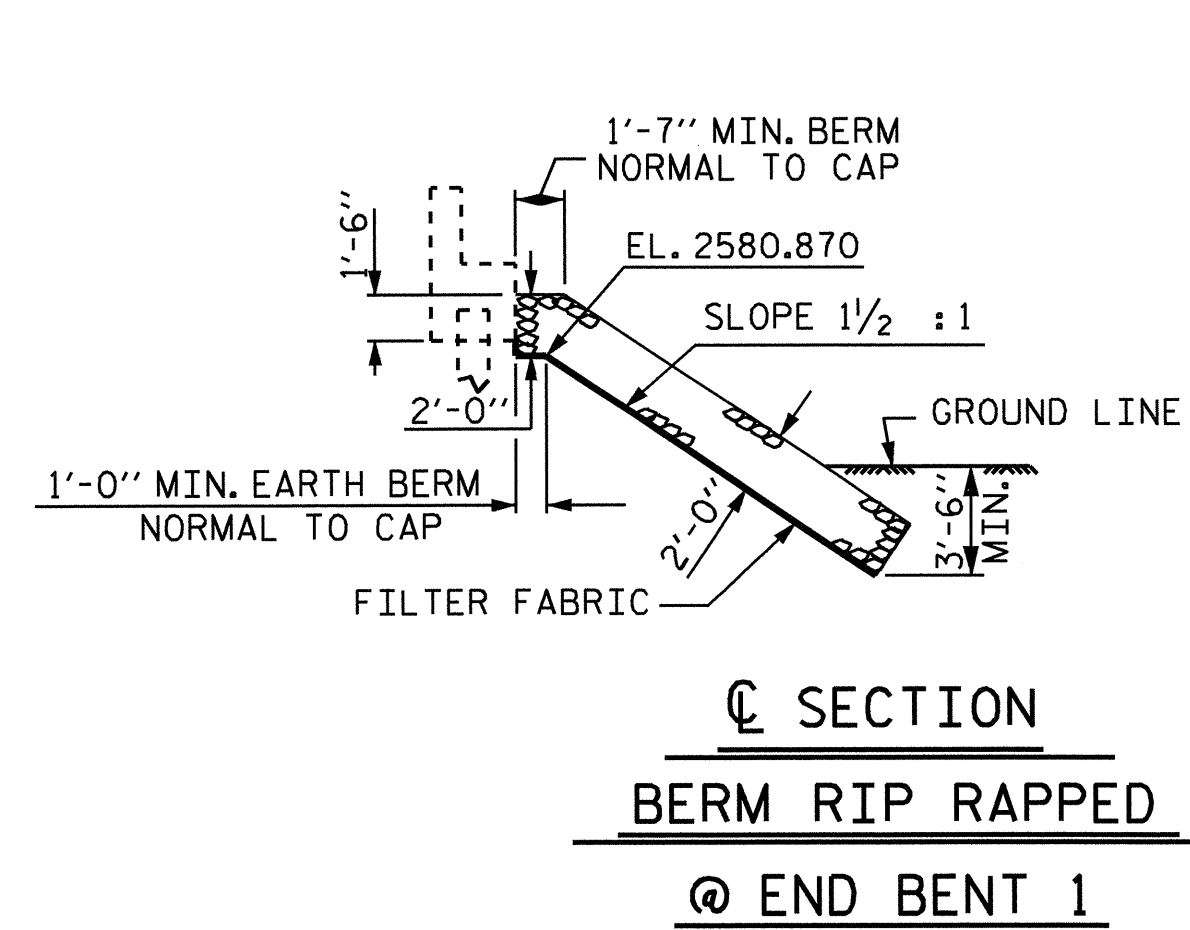
* EVENLY SPREAD RIP RAP, CLASS I OVER THE EXCAVATED AREA.



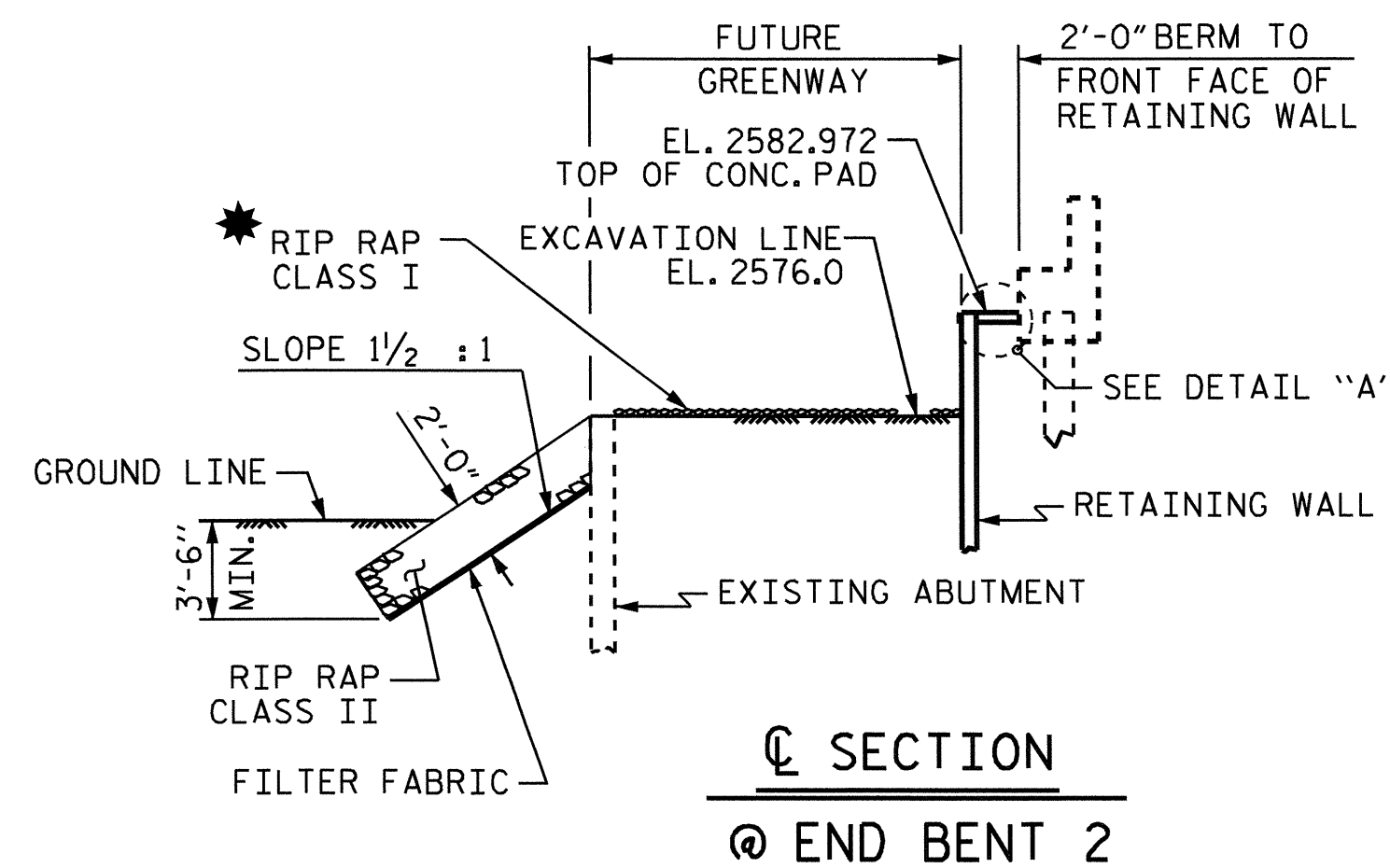
END BENT 1

PLAN

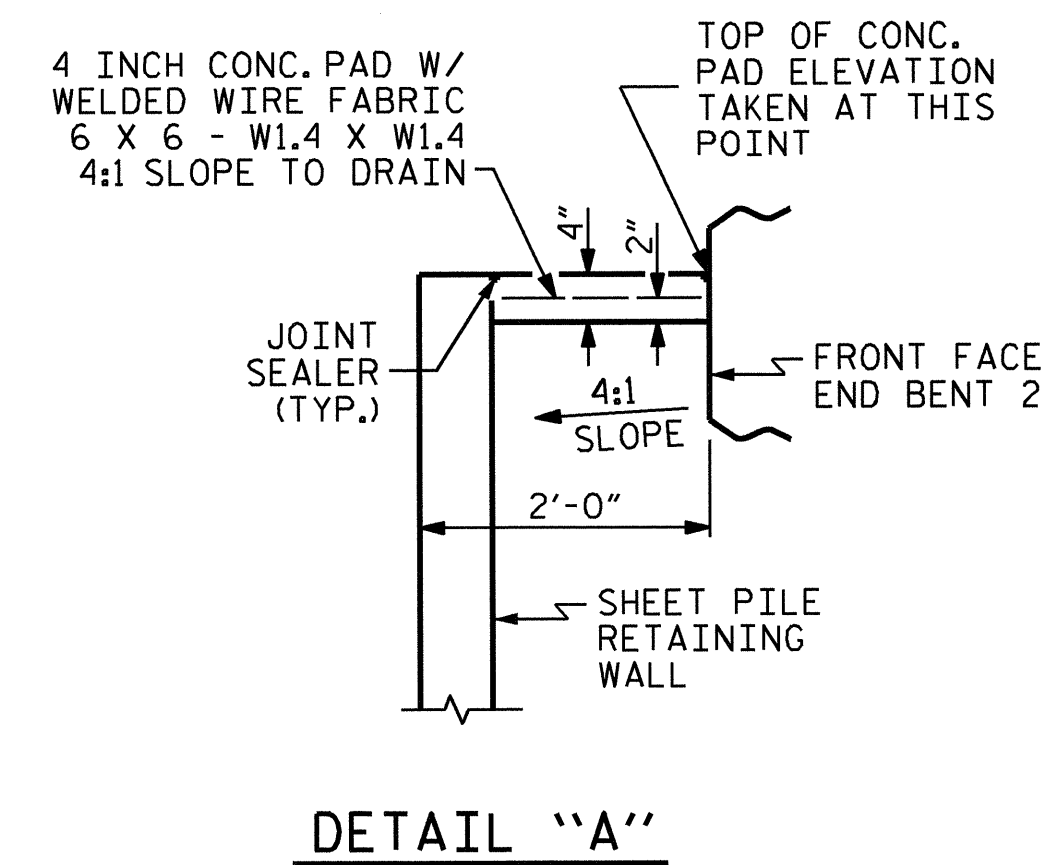
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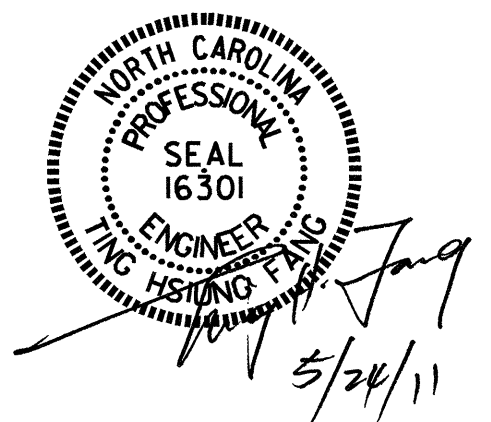
SECTION
BERM RIP RAPPED
@ END BENT 1



SECTION
@ END BENT 2



DETAIL "A"



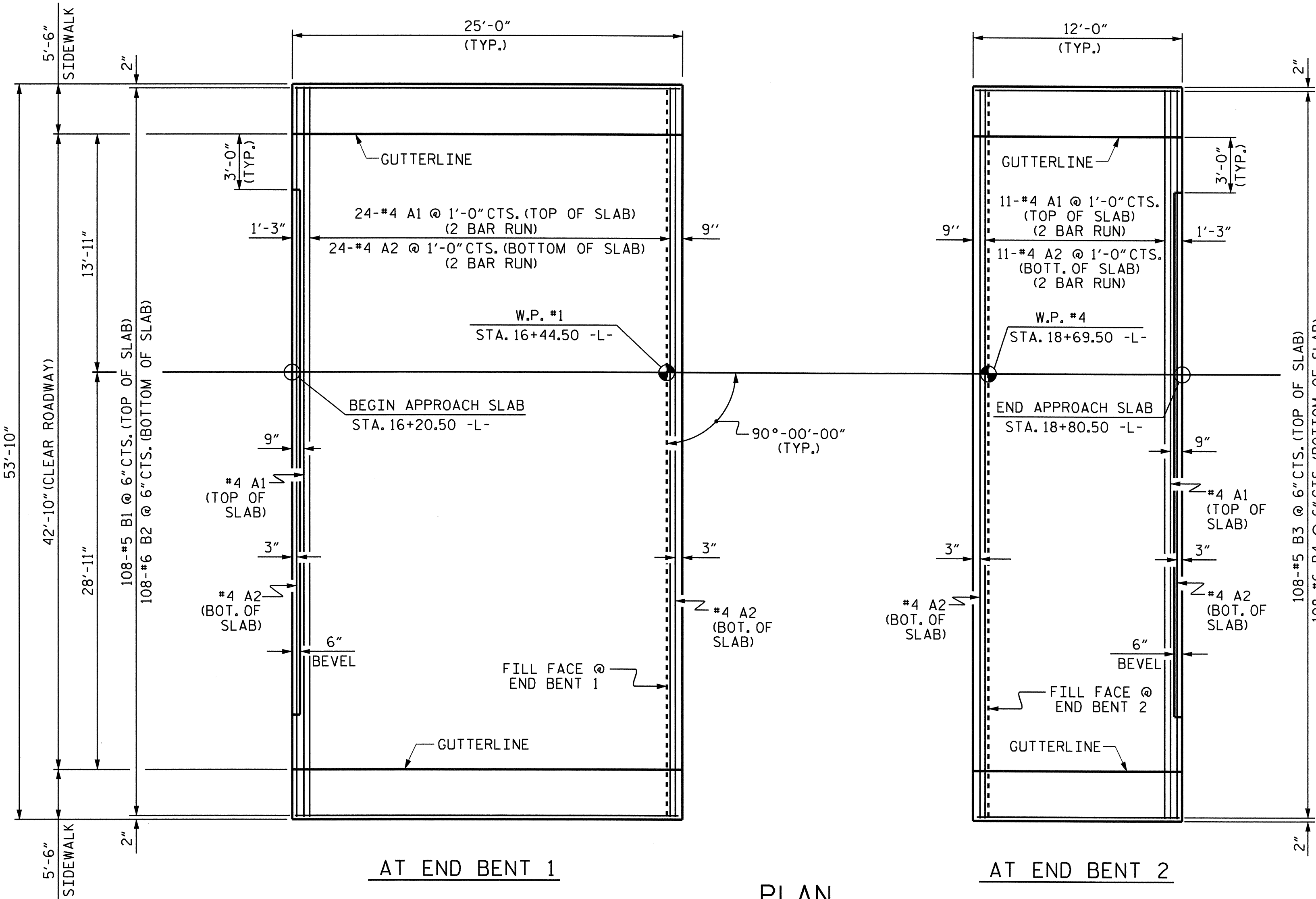
PROJECT NO. B-3656
HAYWOOD COUNTY
 STATION: 17+57.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD					
= RIP RAP DETAILS =					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-28					TOTAL SHEETS 30

ASSEMBLED BY : QT NGUYEN DATE : 7-10
 CHECKED BY : T. H. FANG DATE : 7-22-10
 DRAWN BY : FCJ 2/88 REV. 8/16/99 RWW/LES
 CHECKED BY : ARB 8/88 REV. 10/17/00 RWW/LES
 REV. 5/1/06 TLA/GM

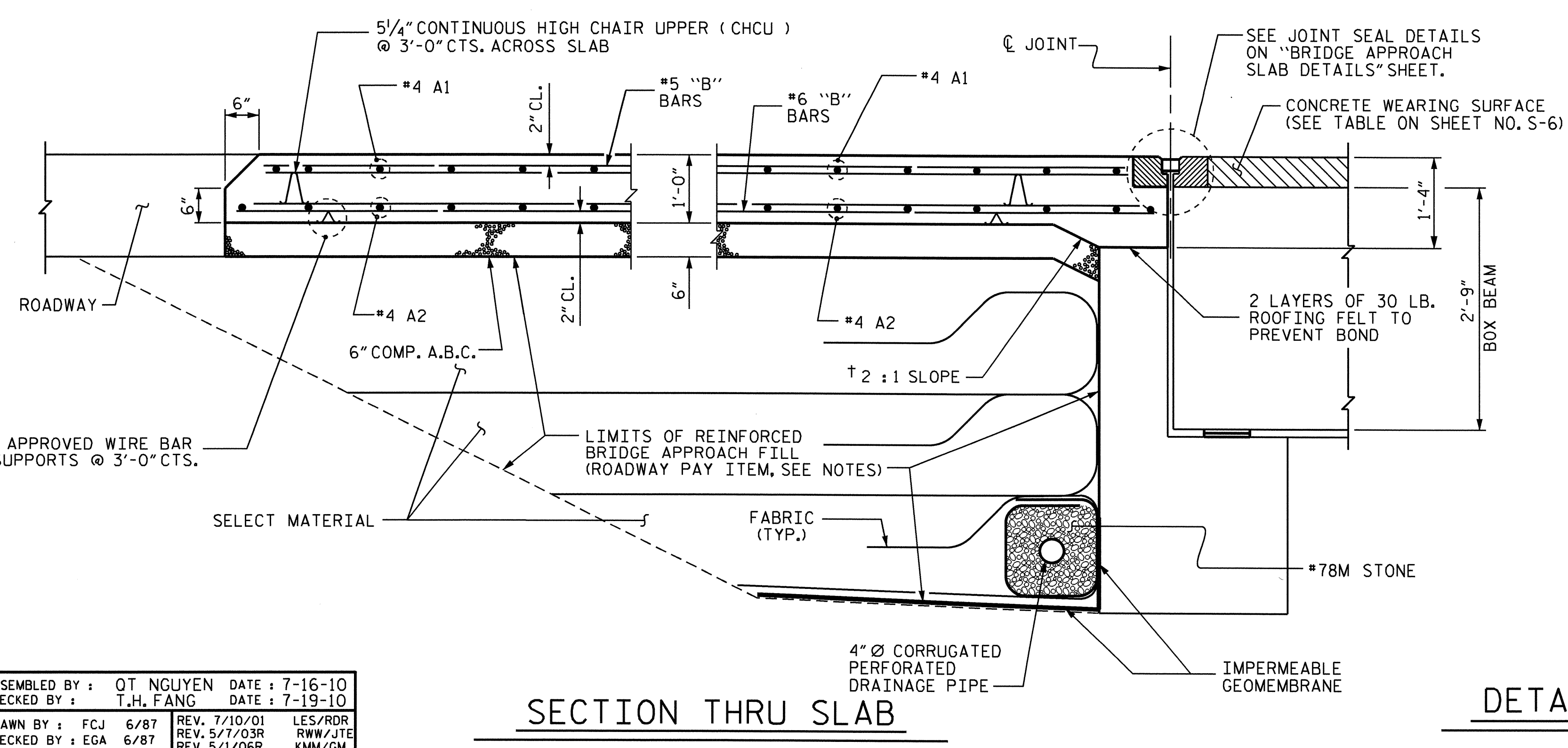
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 tfang

STD. NO. RR2

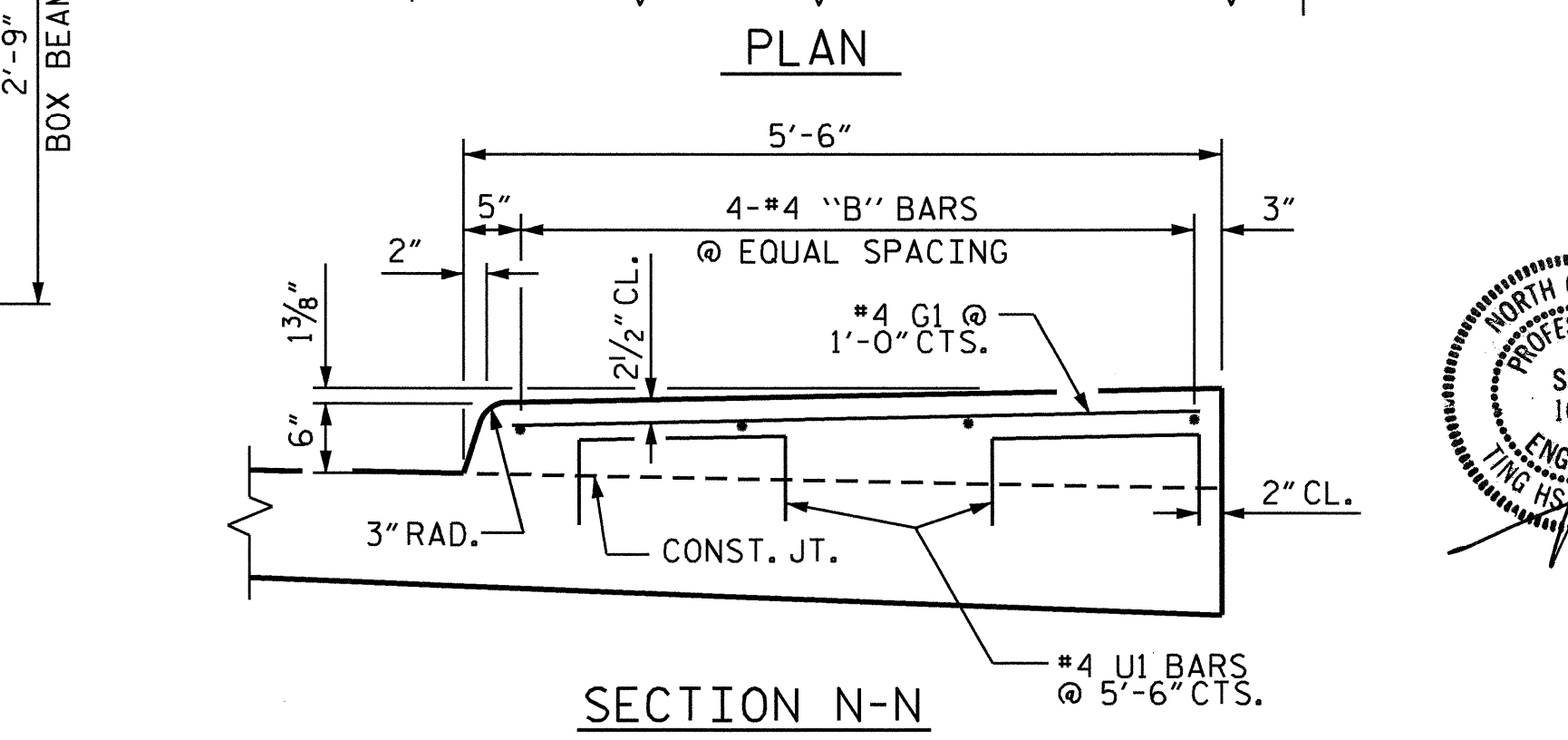
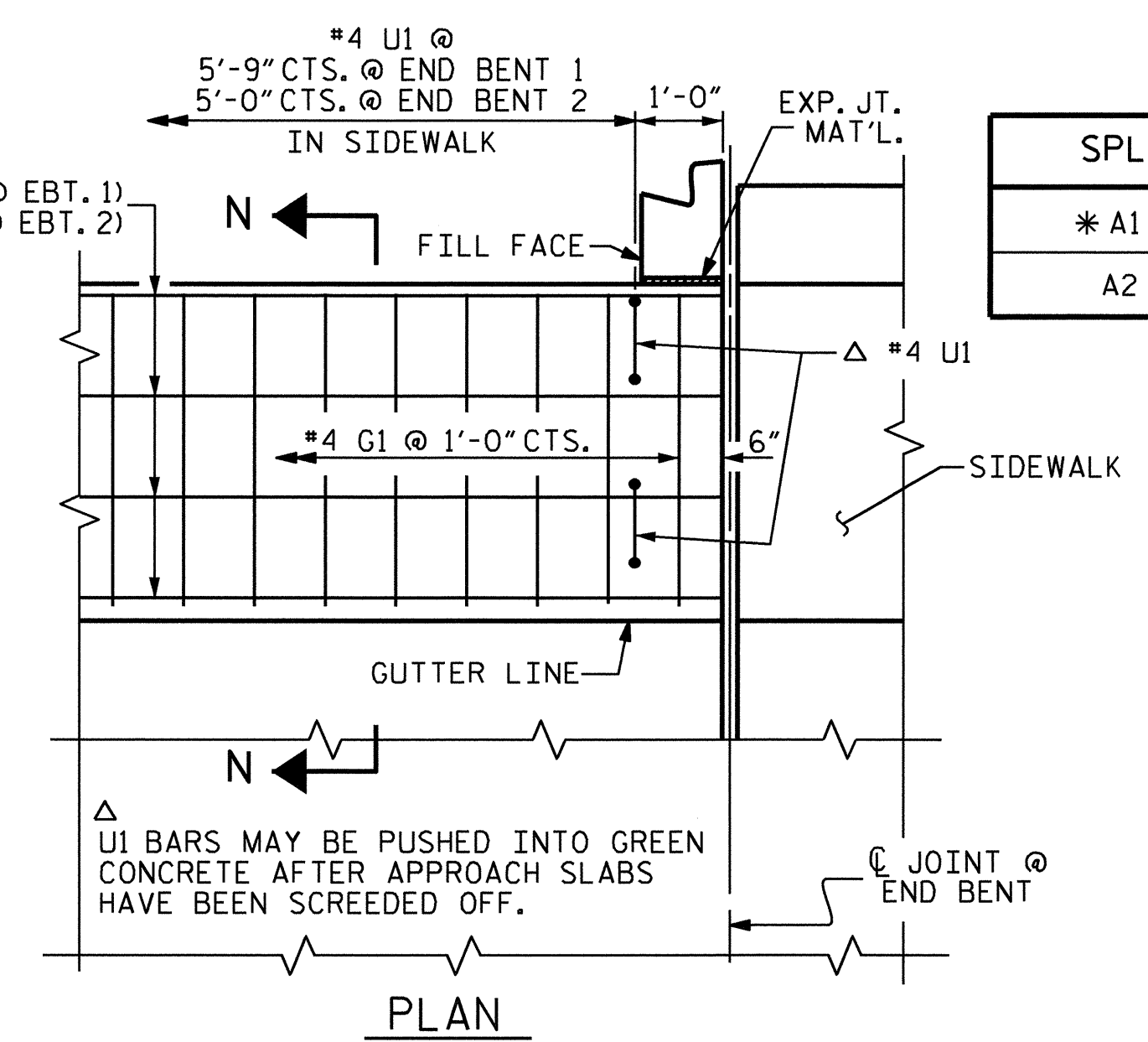


AT END BENT 1
 AT END BENT 2
 PLAN

DIMENSIONS EXCEPT AS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS. REINFORCING STEEL IN SIDEWALKS NOT SHOWN FOR CLARITY.



SECTION THRU SLAB



DETAILS OF SIDEWALK ON APPROACH SLAB

NOTES

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

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

THE 6" COMP. A.B.C. SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB AND SHALL EXTEND 1'-0" OUTSIDE OF EACH EDGE OF THE APPROACH SLAB.

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

THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE BOX BEAM UNIT" SHEETS.

WITH EVAZOTE JOINT SEAL

FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 2 1/2".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

WITH CONCRETE WEARING SURFACE

APPROACH SLABS SHALL BE POURED AFTER CONCRETE WEARING SURFACE IS POURED.

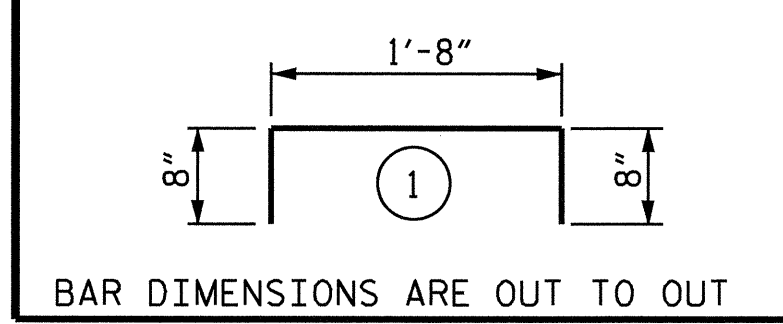
SPLICE CHART	
* A1	2'-0"
A2	1'-9"

BILL OF MATERIAL

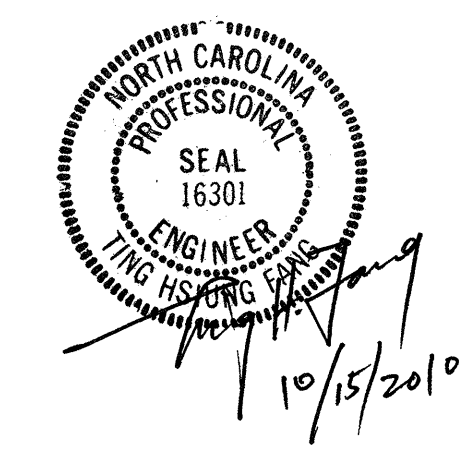
AT END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	50	#4	STR	27'-9"	927
A2	52	#4	STR	27'-8"	961
* B1	108	#5	STR	23'-8"	2666
B2	108	#6	STR	24'-8"	4001
* B5	8	#4	STR	24'-8"	132
* U1	20	#4	1	3'-0"	40
* G1	50	#4	STR	5'-0"	167
REINFORCING STEEL				LBS.	4962
* EPOXY COATED REINFORCING STEEL				LBS.	3932
CLASS AA CONCRETE					
POUR #1 - SLAB				50.1 C.Y.	
POUR #2 - SIDEWALK				6.2 C.Y.	
TOTAL				56.3 C.Y.	

AT END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	24	#4	STR	27'-9"	445
A2	26	#4	STR	27'-8"	481
* B3	108	#5	STR	10'-8"	1202
B4	108	#6	STR	11'-8"	1893
* B6	8	#4	STR	11'-8"	62
* U1	12	#4	1	3'-0"	24
* G1	24	#4	STR	5'-0"	80
REINFORCING STEEL				LBS.	2374
* EPOXY COATED REINFORCING STEEL				LBS.	1813
CLASS AA CONCRETE					
POUR #1 - SLAB				24.1 C.Y.	
POUR #2 - SIDEWALK				3.0 C.Y.	
TOTAL				27.1 C.Y.	



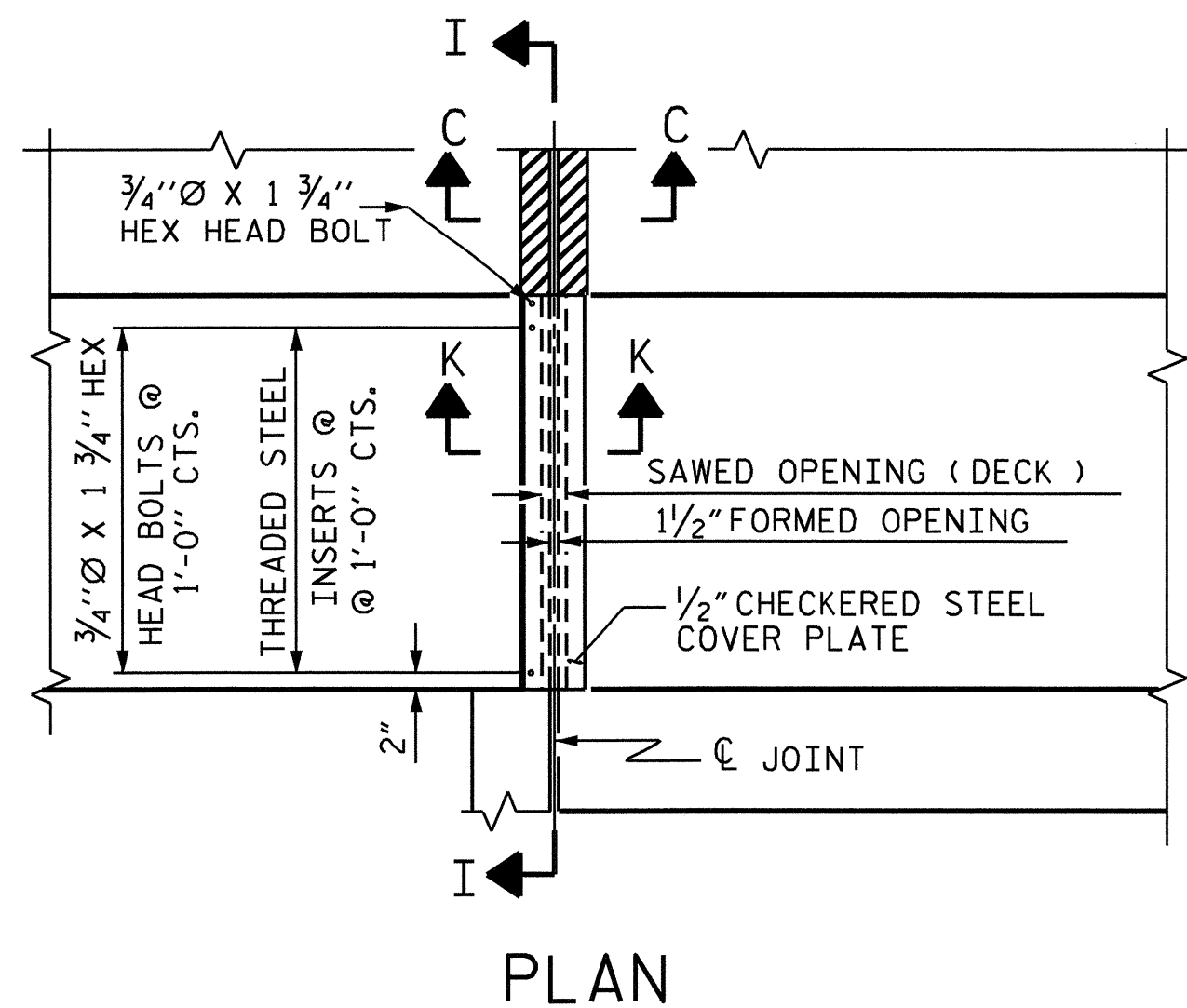
PROJECT NO. B-3656
 HAYWOOD COUNTY
 STATION: 17+57.00 -L-
 SHEET 1 OF 2



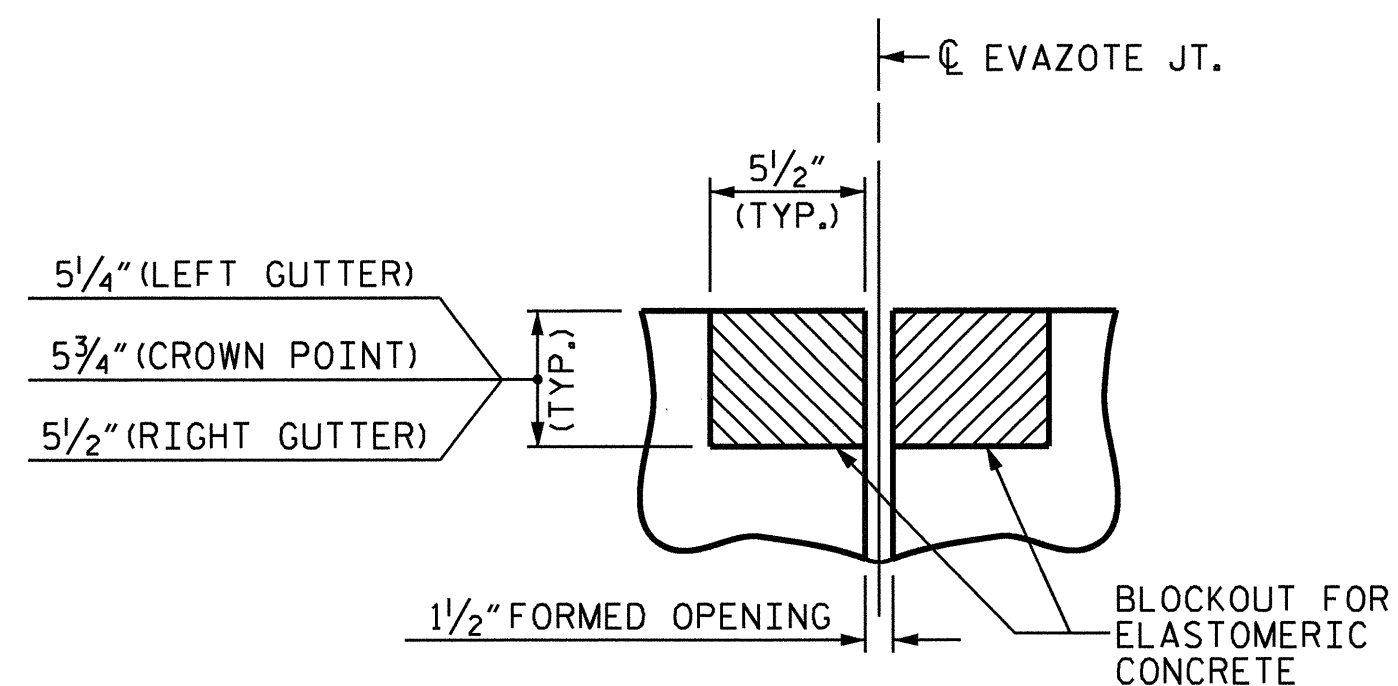
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR PRESTRESSED CONCRETE
 BOX BEAM

ASSEMBLED BY :	OT NGUYEN	DATE :	7-16-10
CHECKED BY :	T.H. FANG	DATE :	7-19-10
DRAWN BY :	FCJ 6/87	REV. 7/10/01	LES/RDR
CHECKED BY :	EGA 6/87	REV. 5/7/03R	RWW/JTE
		REV. 5/1/06R	KMM/GM

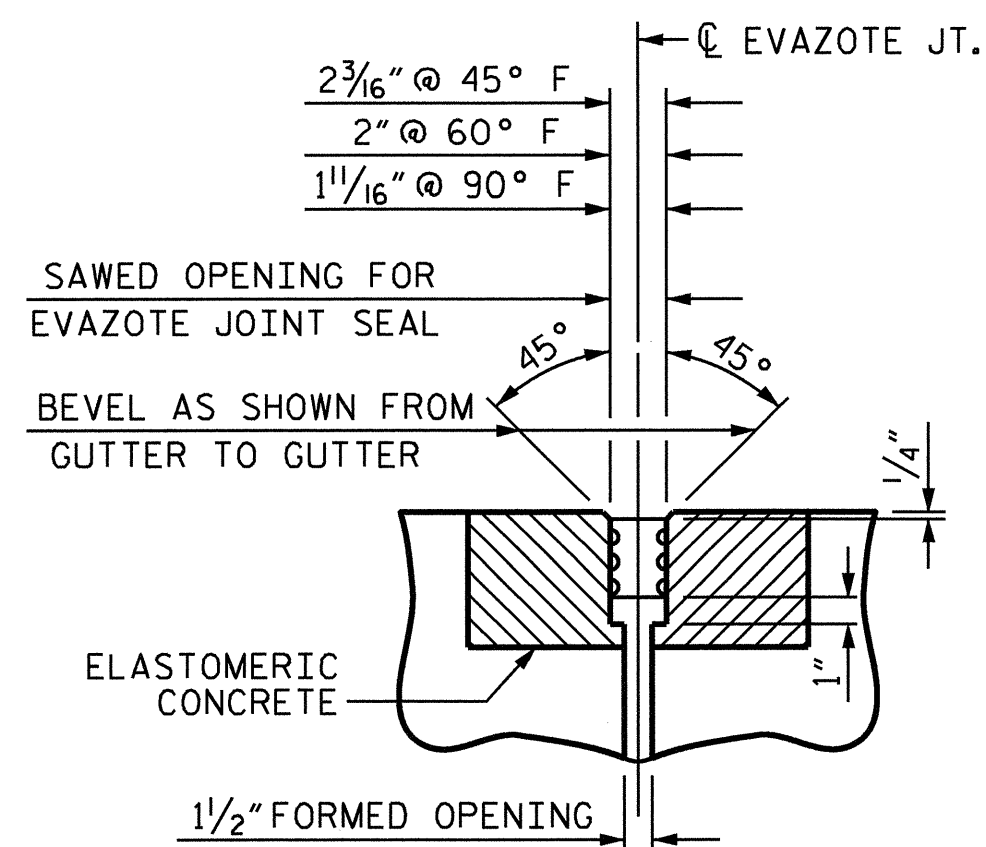
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			30



PLAN



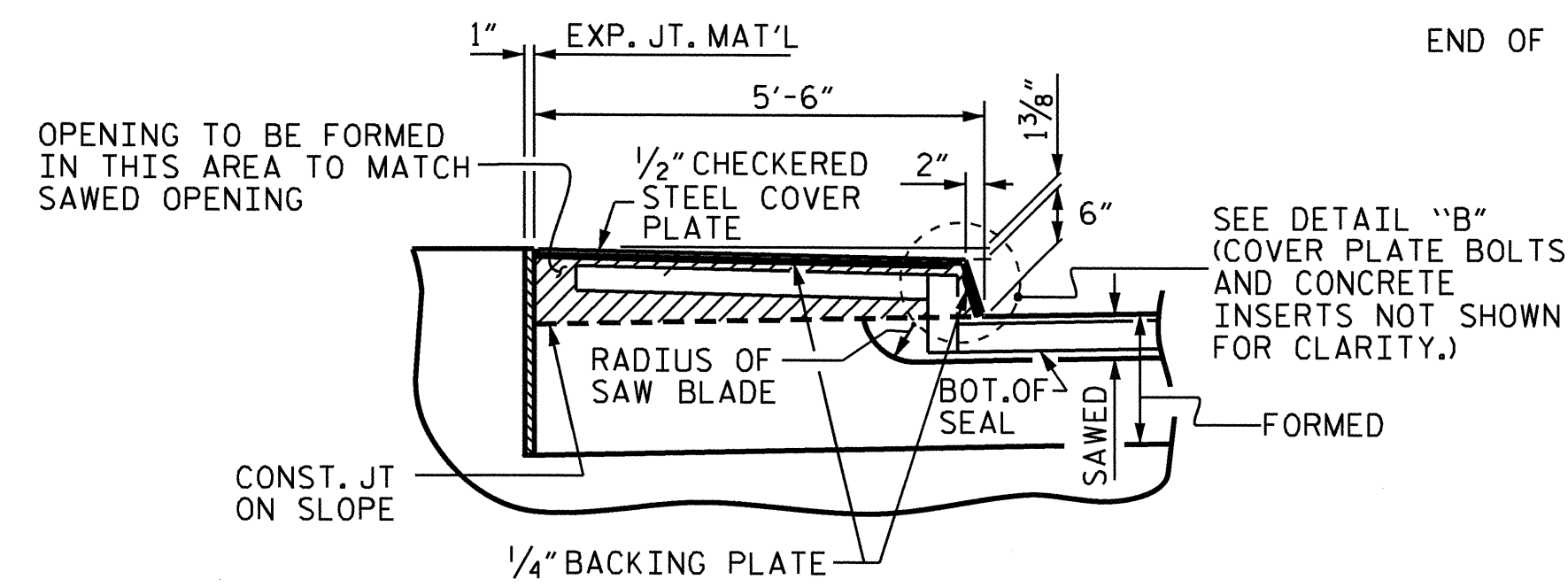
SECTION C-C
EVAZOTE JOINT SEAL
(PRE-SAWED ELASTOMERIC
CONCRETE DIMENSIONS)



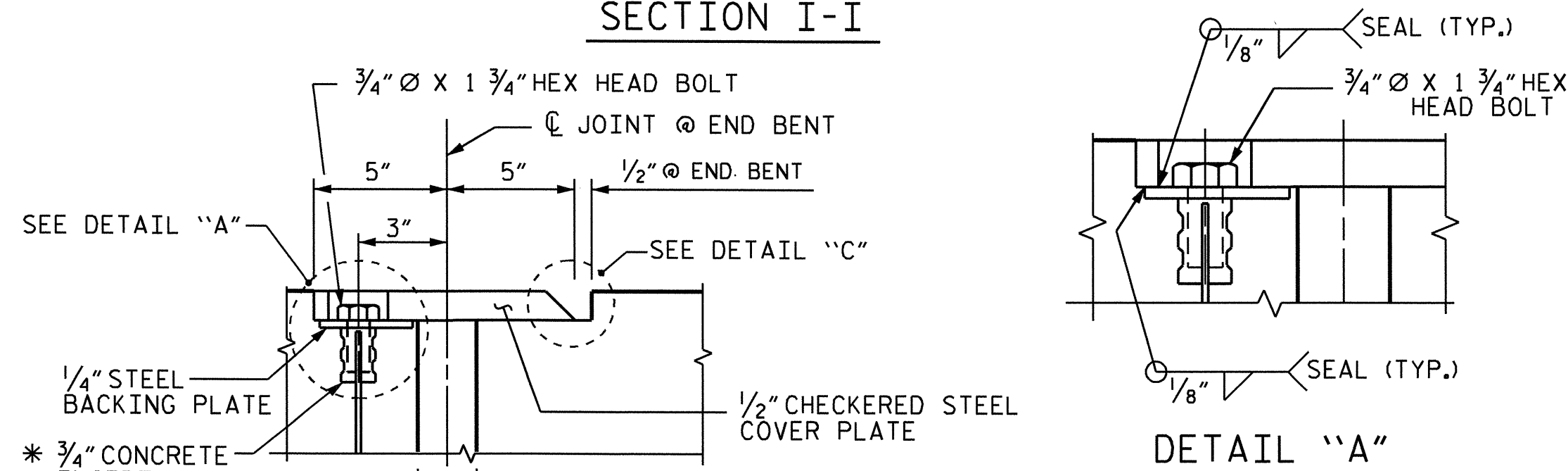
SECTION C-C
EVAZOTE JOINT SEAL IN
BOTH APPROACH SLABS

ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE ** (CU. FT.)
1	18.0
2	18.0
TOTAL	36.0

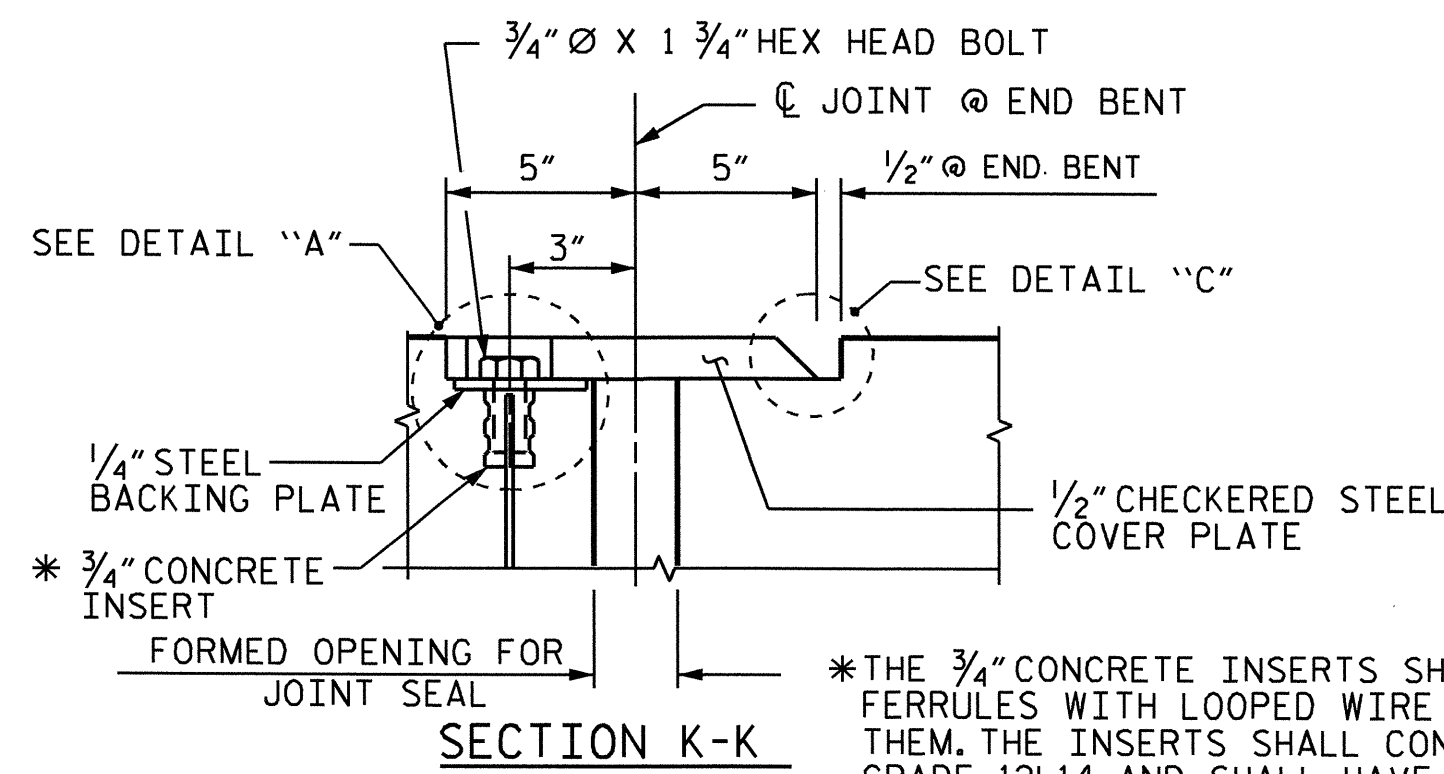
** BASED ON THE BLOCKOUT SHOWN.



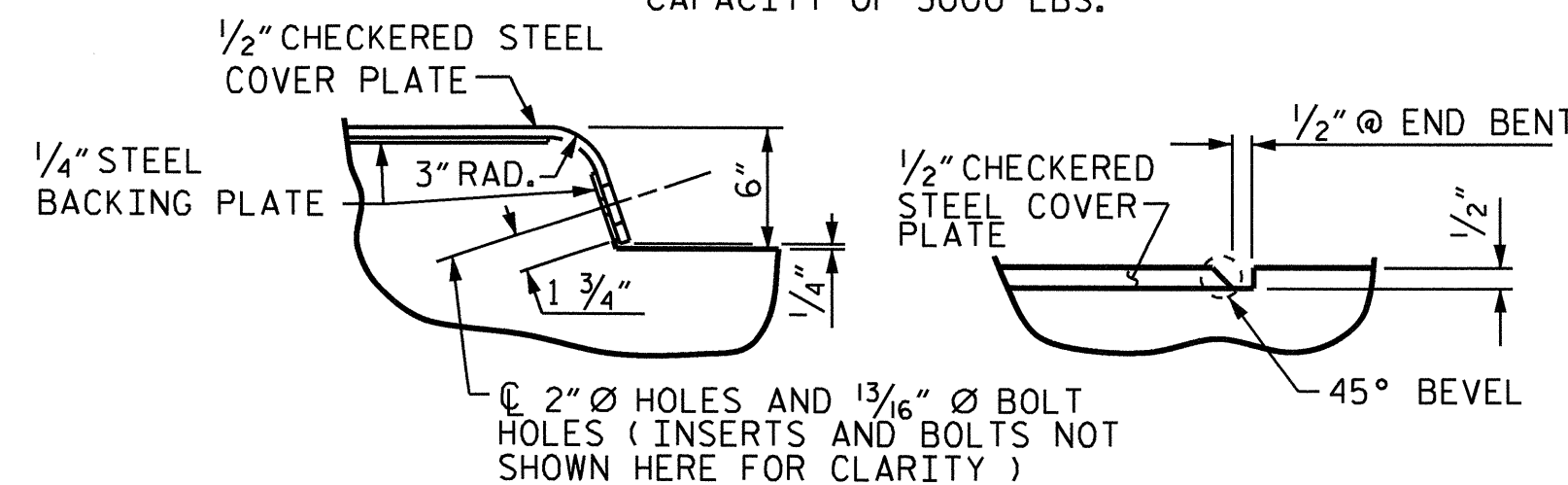
SECTION I-I



DETAIL "A"



SECTION K-K



DETAIL "B"

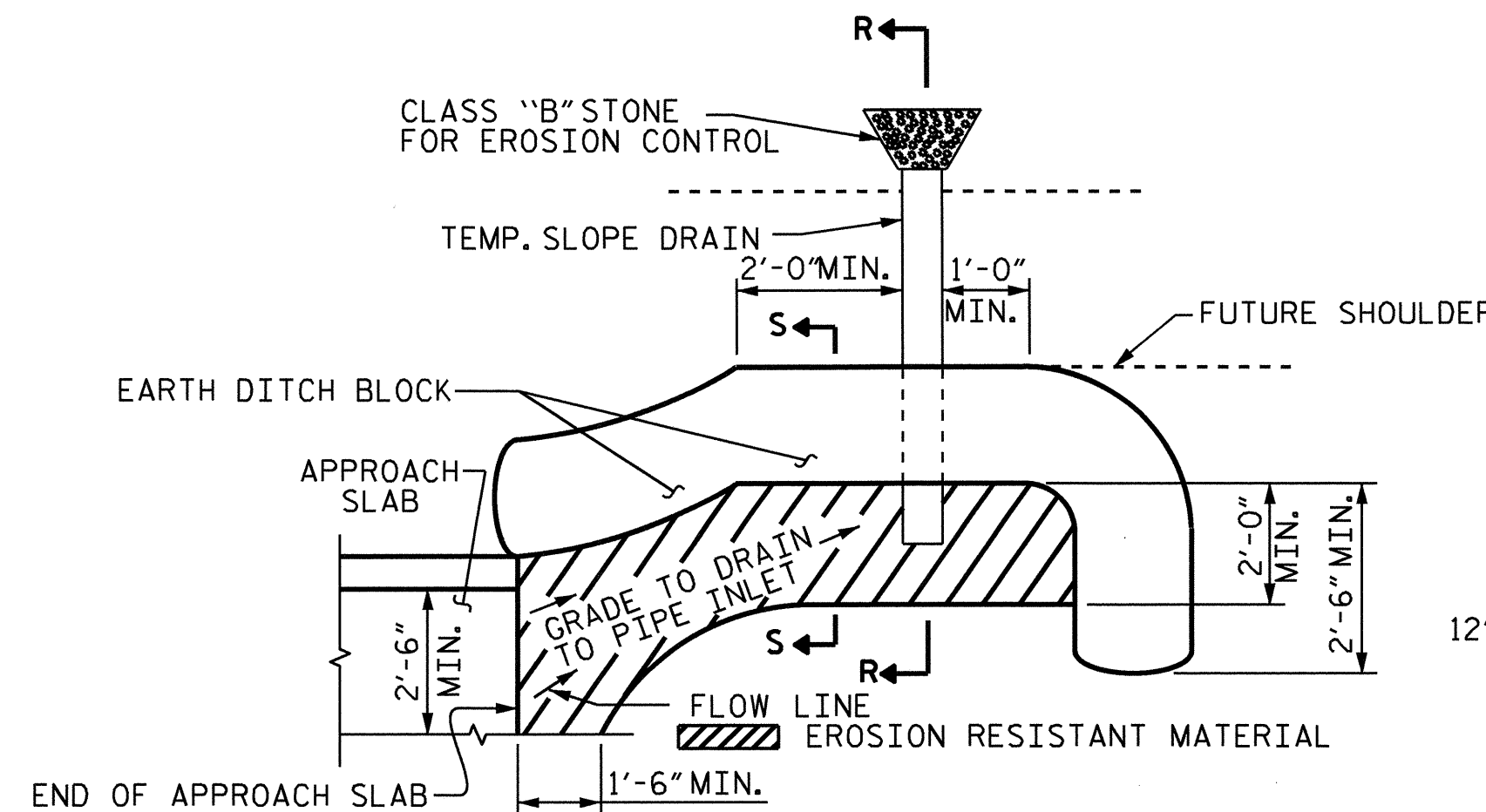
DETAIL "C"

JOINT SEAL DETAILS @ END BENT

THE STEEL PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 OR APPROVED EQUAL. AFTER FABRICATION, THE PLATES SHALL BE COMMERCIALY BLAST CLEANED AND EITHER COATED WITH A MINIMUM THICKNESS OF 4 MILS (DRY) OF ZINC-RICH PAINT, GALVANIZED OR METALLIZED TO A MINIMUM THICKNESS OF 6 MILS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

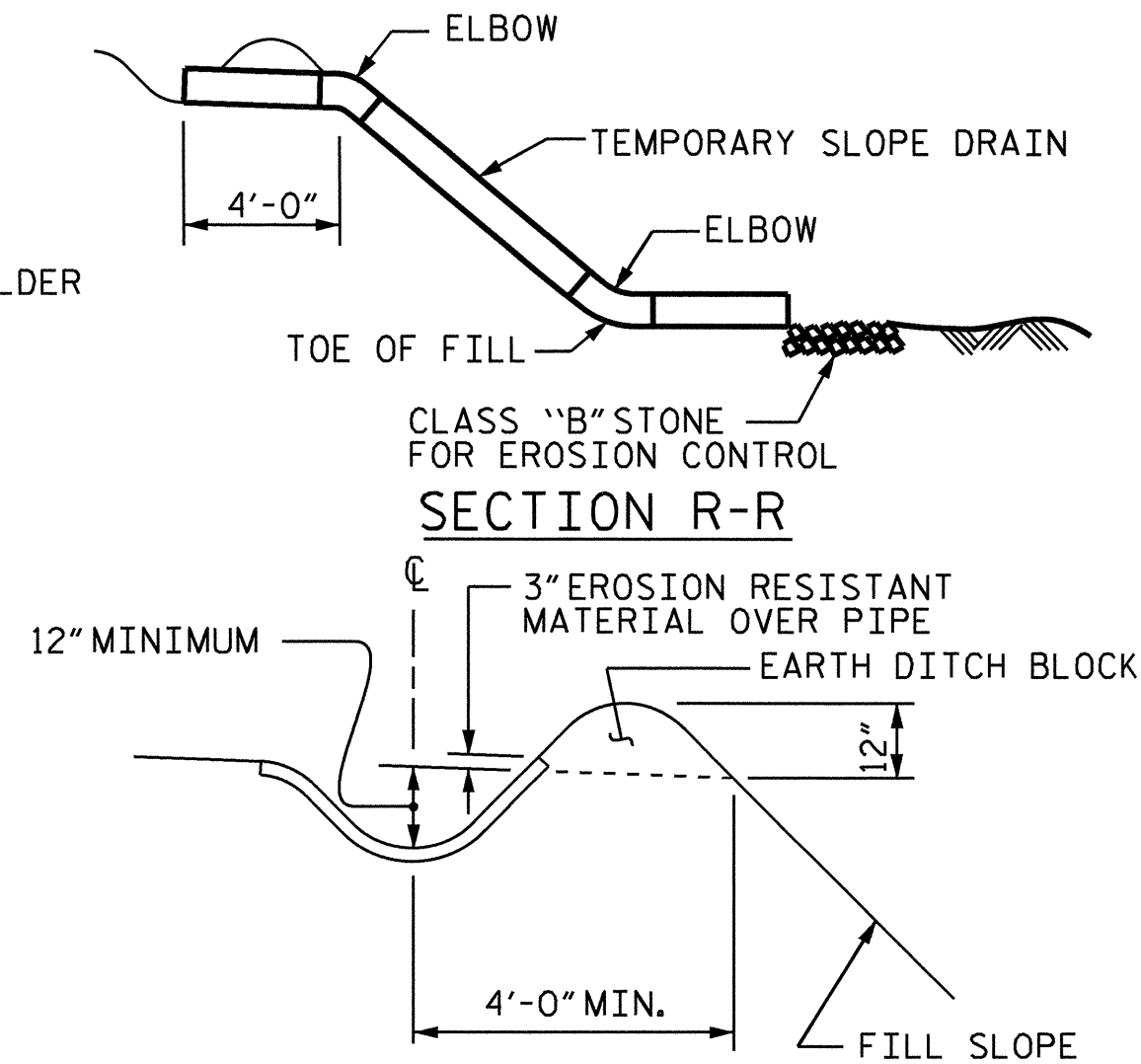
THE 3/4" DIAMETER HEX HEAD BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL.

NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE COVER PLATE. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR "EVAZOTE JOINT SEALS".



PLAN VIEW

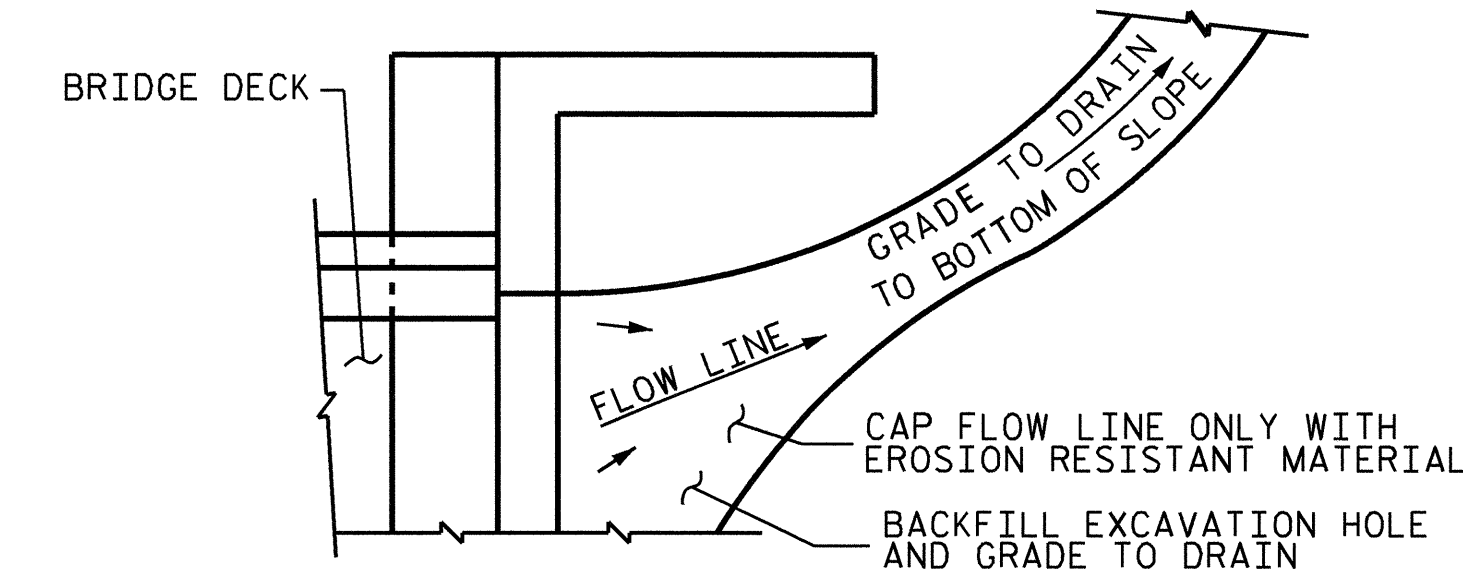
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 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.



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



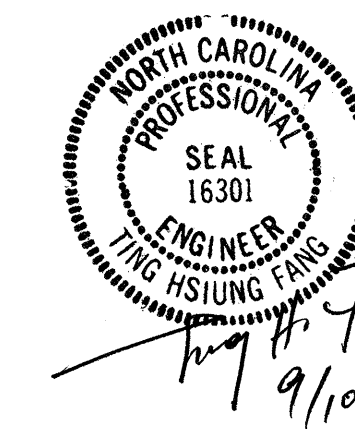
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

PROJECT NO. B-3656
HAYWOOD COUNTY
STATION: 17+57.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD					
BRIDGE APPROACH SLAB DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		



ASSEMBLED BY :	QT NGUYEN	DATE :	7-16-10
CHECKED BY :	T.H. FANG	DATE :	7-19-10
DRAWN BY :	FCJ 11/88	REV. 10/17/00	RWW/LES
CHECKED BY :	ARB 11/88	REV. 5/7/03	RWW/JTE
		REV. 5/1/06RR	MAA/KMM

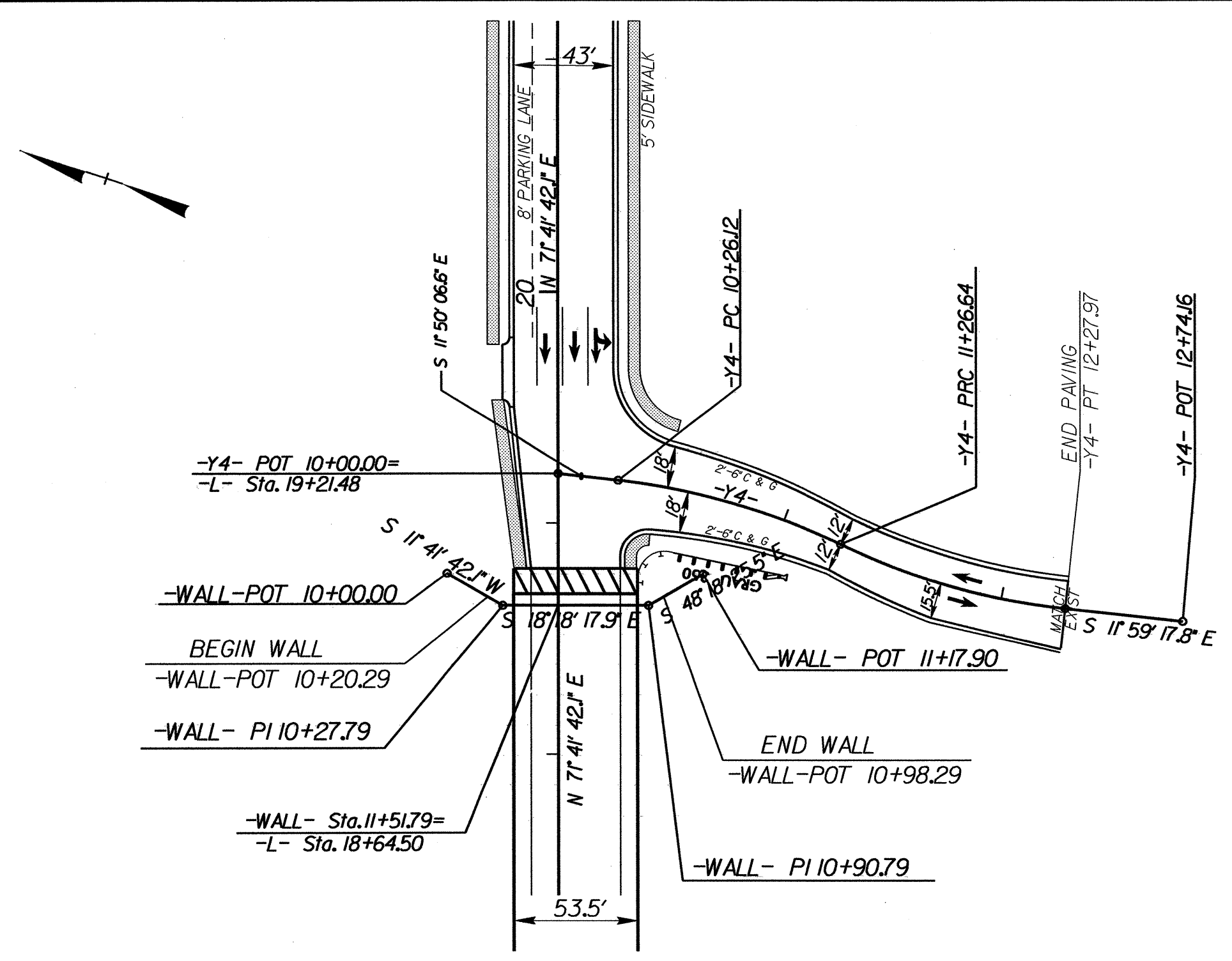
GEOTECHNICAL ENGINEER

ENGINEER

SEAL 029889

SHANE C. CLARK

5/11/11



LOCATION SKETCH

NOTES:

INSTALL PZ 27 SHEET PILES MEETING THE REQUIREMENTS OF ASTM A690 TO A DEPTH OF 20 FEET BELOW THE BOTTOM OF WALL ELEVATION SHOWN ON THE WALL ENVELOPE.

CONTACT THE ENGINEER IF MINIMUM REQUIRED EMBEDMENT IS NOT ACHIEVED.

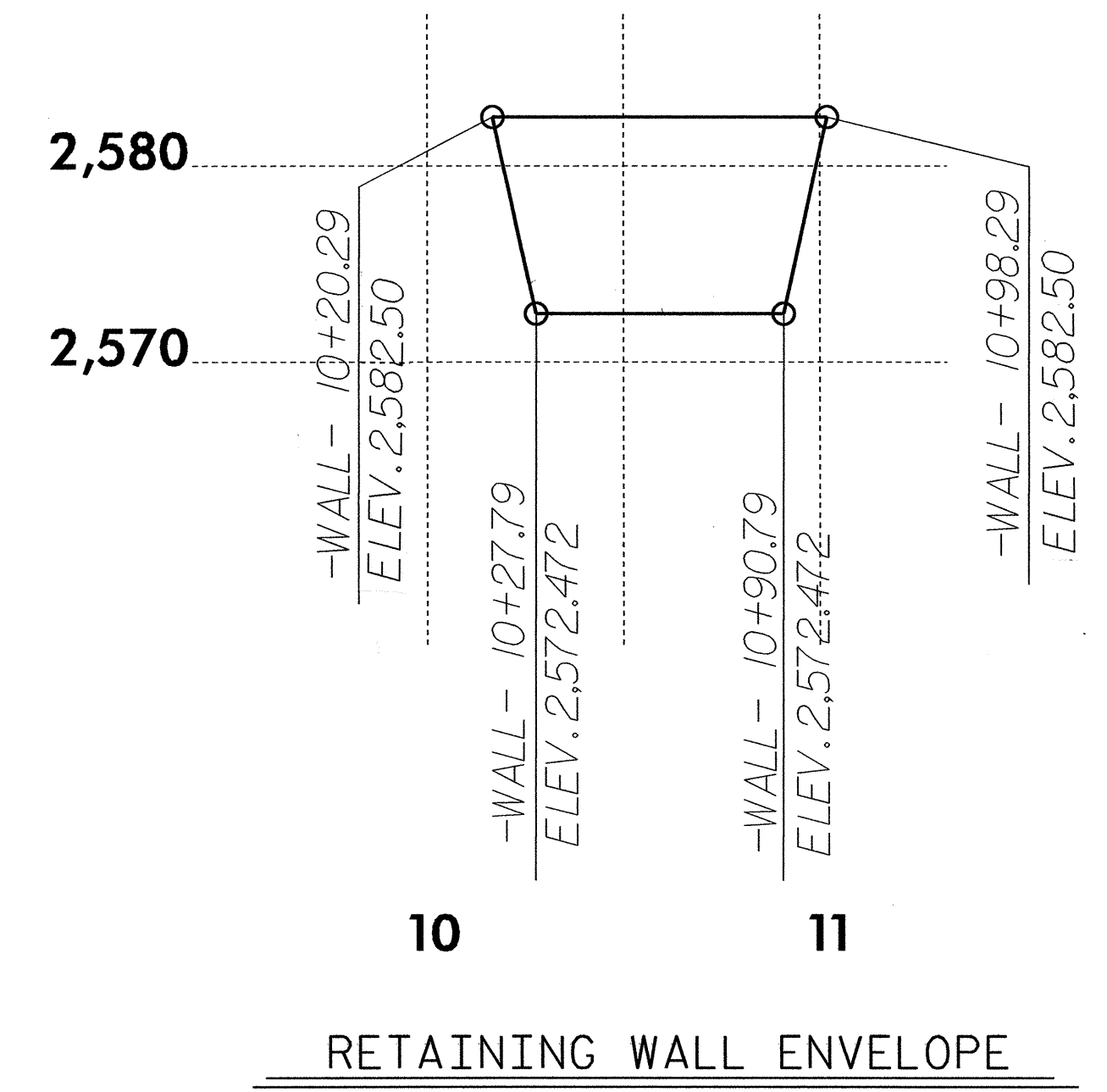
AFTER CONFIRMING ELEVATIONS, CUT THE TOPS OF THE SHEET PILES TO APPROXIMATE THE FINISH GRADE AND CONSTRUCT A CAST-IN-PLACE COPING AS SHOWN ON PLANS.

TOP OF WALL SHOWN ON ENVELOPE IS THE TOP OF COPING

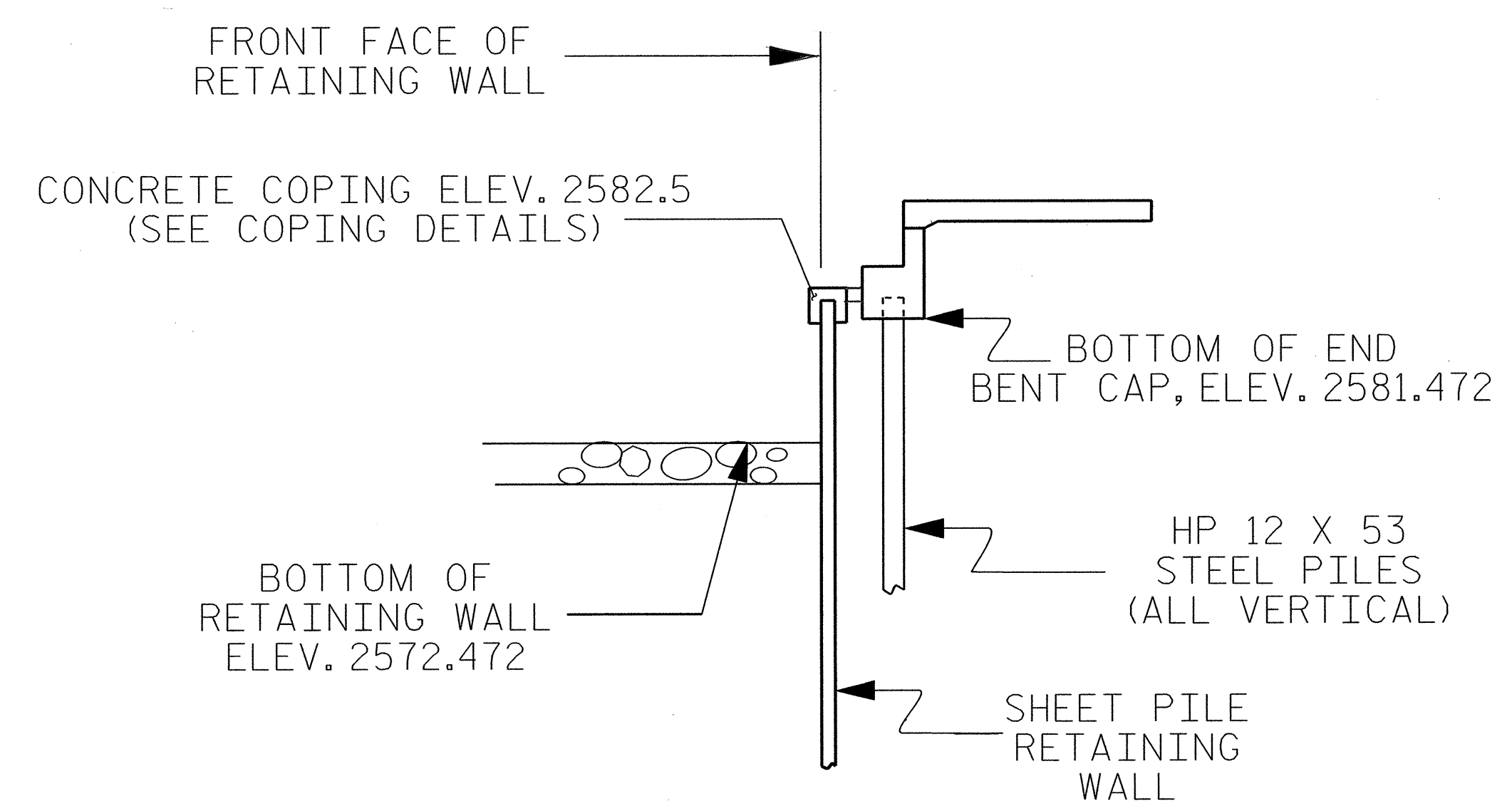
CONSTRUCT ROCK PLATED SLOPE PROTECTION AS SHOWN IN DETAILS AND FILL AREA BETWEEN TOP OF COPING AND END BENT 2 CAP WITH 12 INCHES OF SELECT CLASS VI MATERIAL.

WALL DRAINS TO BE PLACED APPROXIMATELY 18" ABOVE FINISH GRADE ALONG THE FRONT OF WALL. DRAINS SHOULD BE LOCATED IN A LEVEL LINE AND ON A 6 FT C-C SPACING.

SHEET PILE RETAINING WALL 743 SQ. FT.



RETAINING WALL ENVELOPE



TYPICAL SECTION AT ABUTMENT

APPROX CENTER OF END BENT WING WALLS NOT SHOWN FOR CLARITY

PROJECT NO.: B-3656

HAYWOOD COUNTY

STATION: 10+20.29 TO 10+98.29 -WALL-

SHEET 1 OF 2

PREPARED BY: JTW DATE: 9/10

REVIEWED BY: SCC DATE: 5/11

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE

WESTERN REGIONAL OFFICE

CONTRACT OFFICE

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

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

SHEET NO. W-1

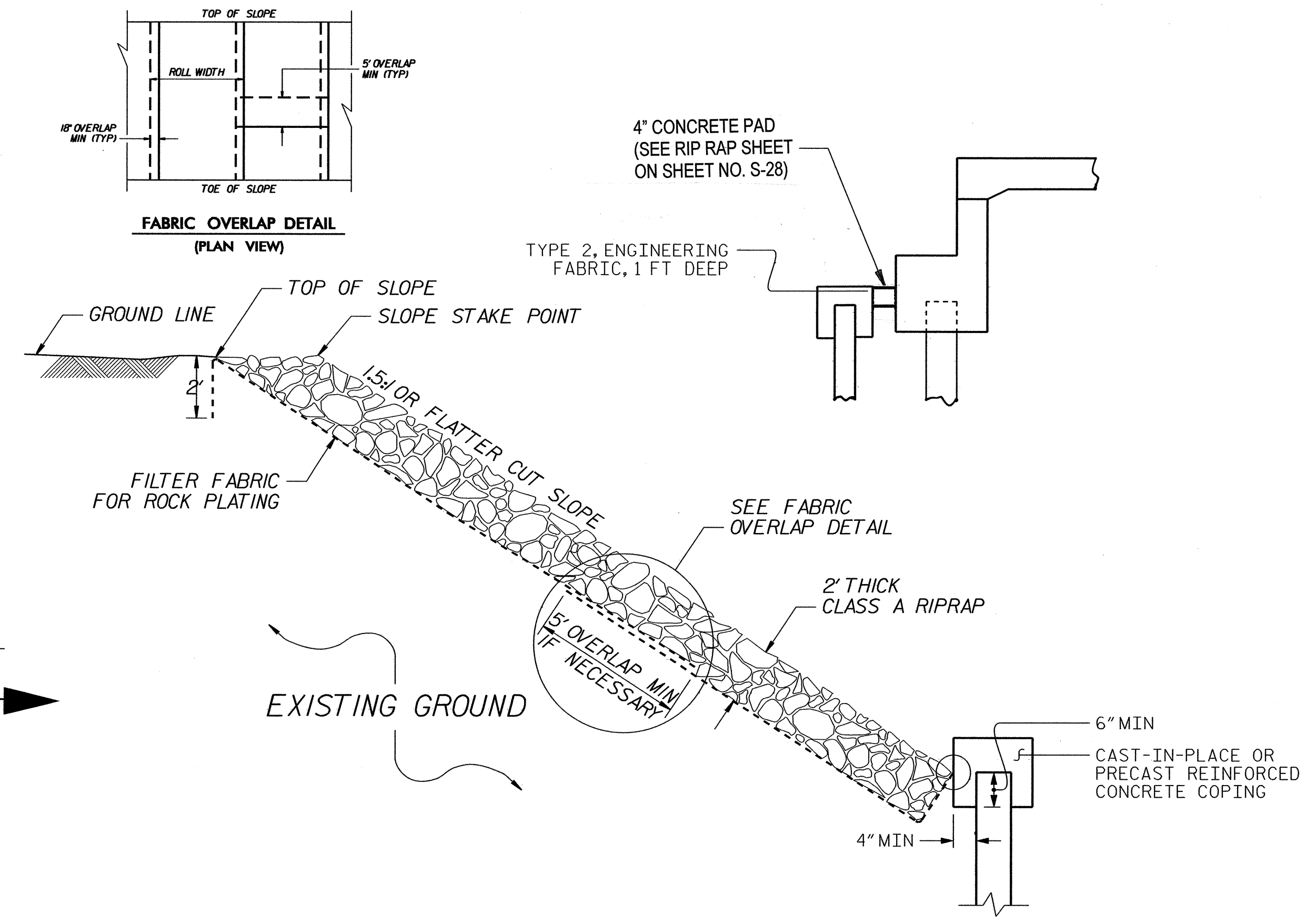
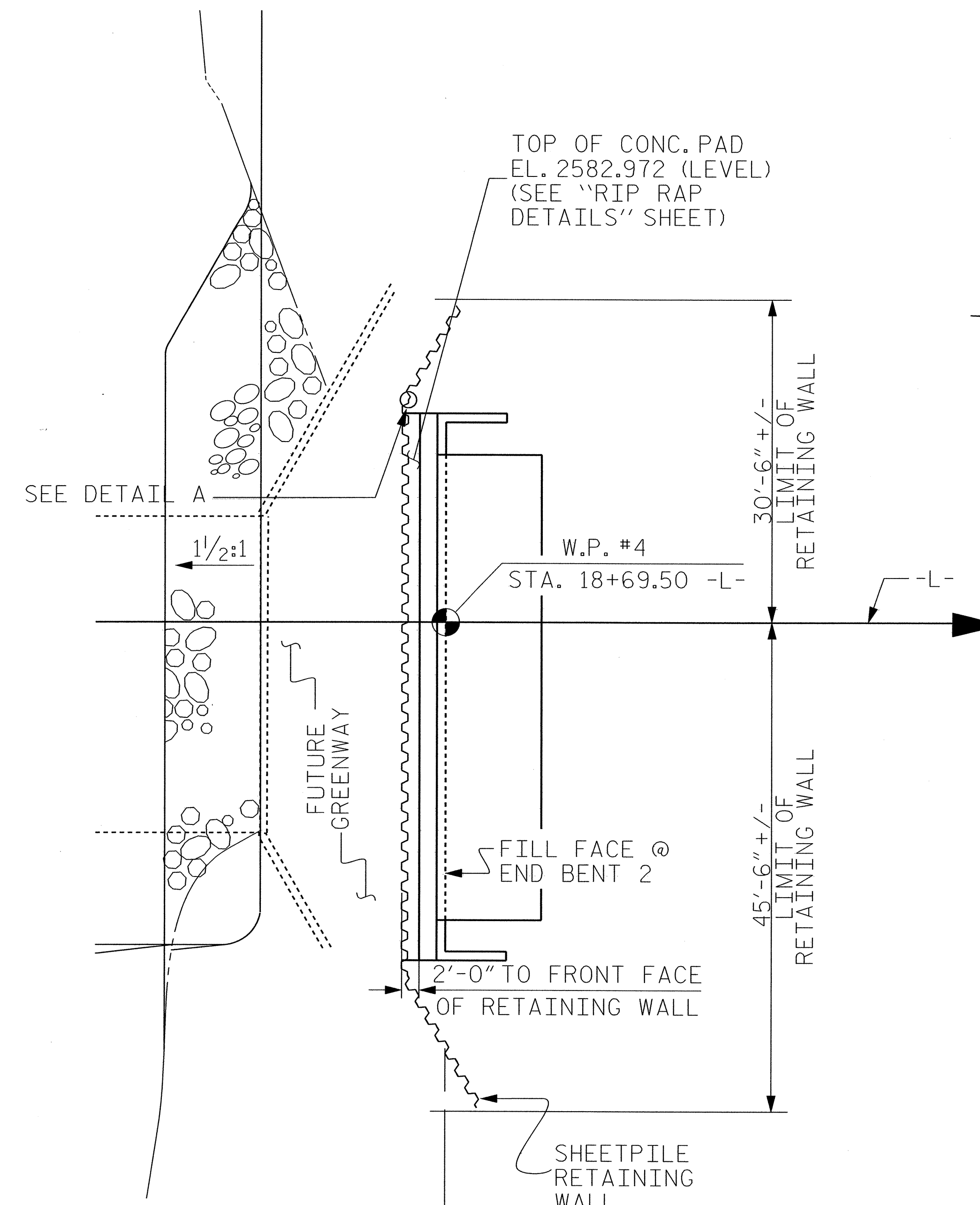
TOTAL SHEETS 2

GEOTECHNICAL ENGINEER

ENGINEER

STATE OF NORTH CAROLINA
PROFESSIONAL SEAL
029869
SHANE G. CLARK

SIGNATURE DATE SIGNATURE DATE



MATERIAL ESTIMATES

SHEET PILE WALL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	4	STR	78'-0"	366
B2	78	4	1	2'-10"	148
REINFORCING STEEL					514 LBS.

CLASS "A" CONCRETE BREAKDOWN
POUR #1 COPING 6.5 CU. YDS.

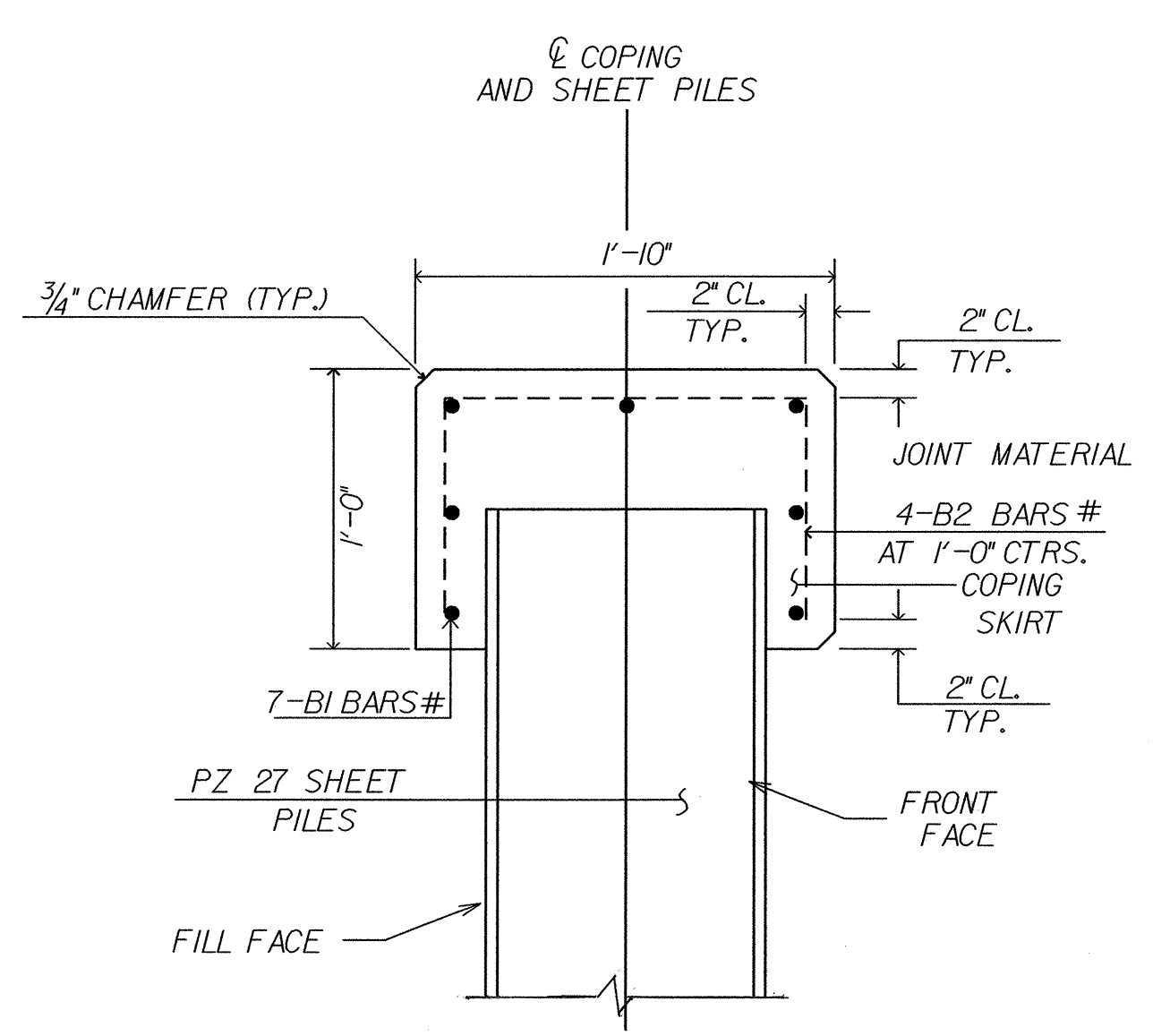
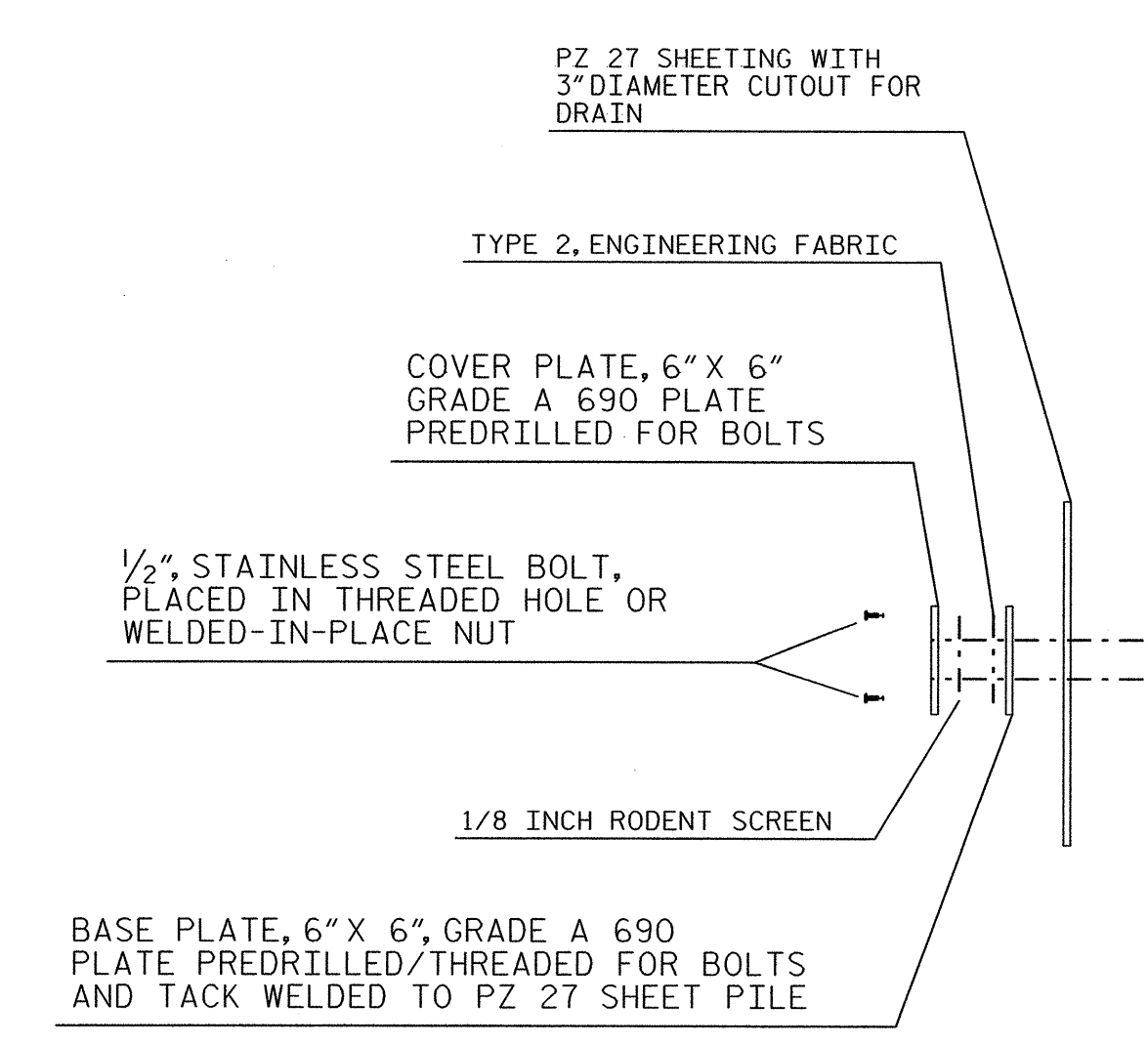
CLASS "A" CONCRETE TOTAL 6.5 CU. YDS.

SELECT CLASS A RIPRAP 30 TONS
TYPE 2 ENGINEERING FABRIC 30 SQ YDS.

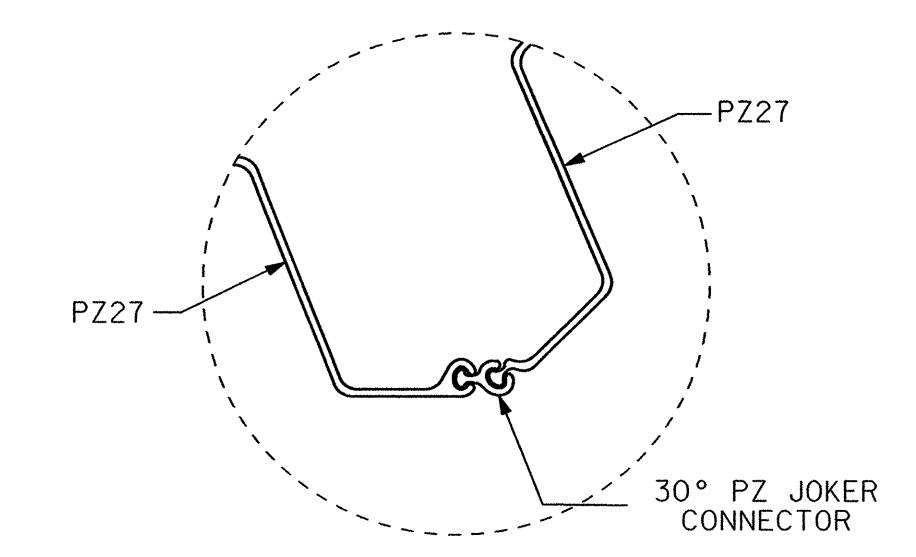
18" STEEL SHEET PILES
NO. PZ27 52
TOTAL NO. 52
NO. PZ JOKERS 2
EXPOSED SQ. FT. 743

COPING TYPICALS

CLASS A RIP RAP SLOPE PROTECTION TO EXTEND FROM BACK OF COPING AND UP THE SLOPE, AS SHOWN, OR AS DIRECTED BY THE ENGINEER.



COPING DETAILS



DETAIL "A"

COPING BAR TYPES

ALL DIMENSIONS OUT TO OUT

BAR	COPING TYPE	PILE SIZE	DIMENSION a	DIMENSION b
B	FULL COPING	ALL PILES	8"	1'-6"

NOTE: ALL BAR DIMENSIONS ARE SHOWN IN INCHES.

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PROJECT NO.: B-3656
HAYWOOD COUNTY
STATION: 10+20.29 TO 10+98.29 -WALL-
SHEET 2 OF 2

SHEET PILE RETAINING WALL DETAILS

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

PREPARED BY: JTW DATE: 9/10
REVIEWED BY: SCC DATE: 5/11

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	-----	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	-----	SEE PLANS
IMPACT ALLOWANCE	-----	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF		
STRUCTURAL STEEL - AASHTO M270 GRADE 36	-	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	-	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	-	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION		
GRADE 60	--	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION		
-----	-----	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR		
-----	-----	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR		
UNTREATED - EXTREME FIBER STRESS	-----	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN		
OF TIMBER	-----	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH		
-----	-----	30 LBS. PER CU. FT.
		(MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2006 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE. ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER. DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS. WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0". EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED. WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB. METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN