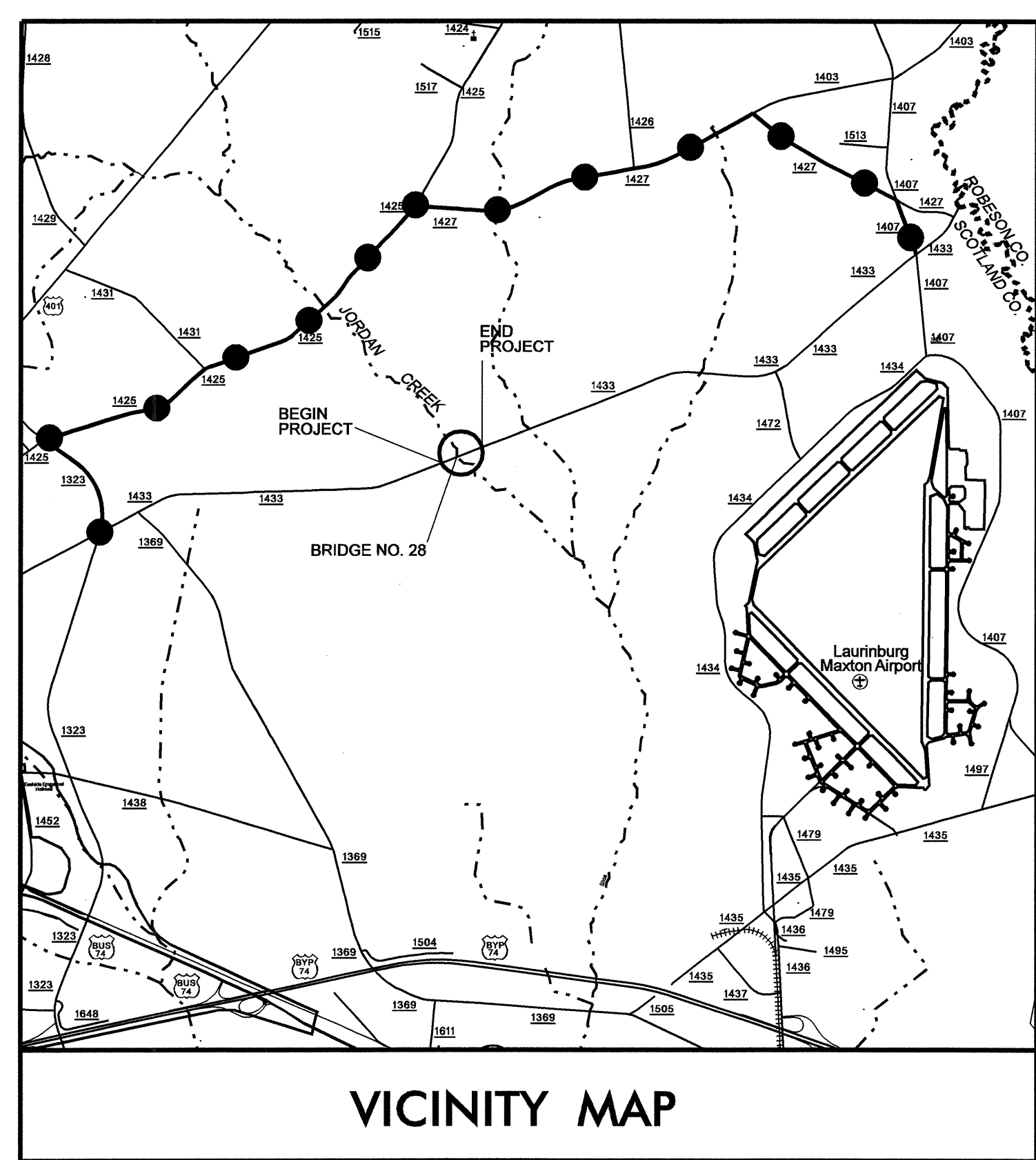


CONTRACT: C202329 TIP PROJECT: B-4642

STRUCTURE



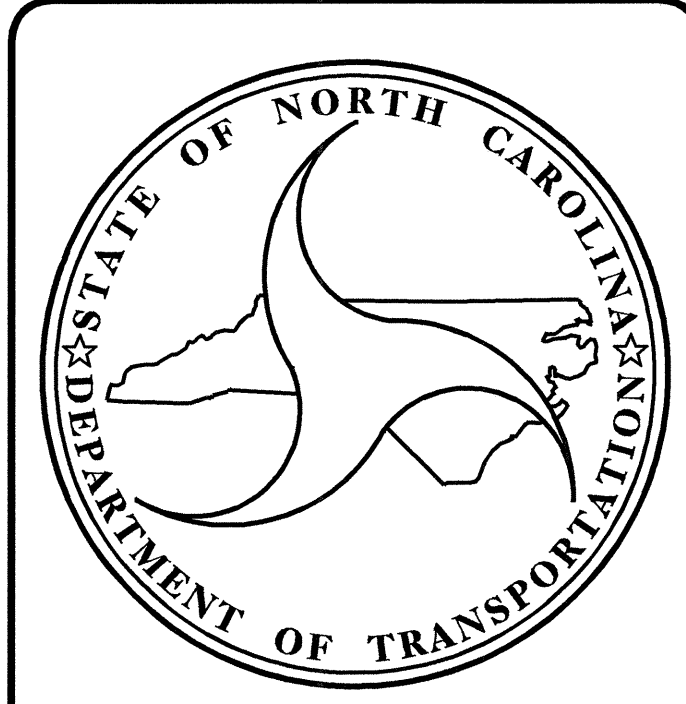
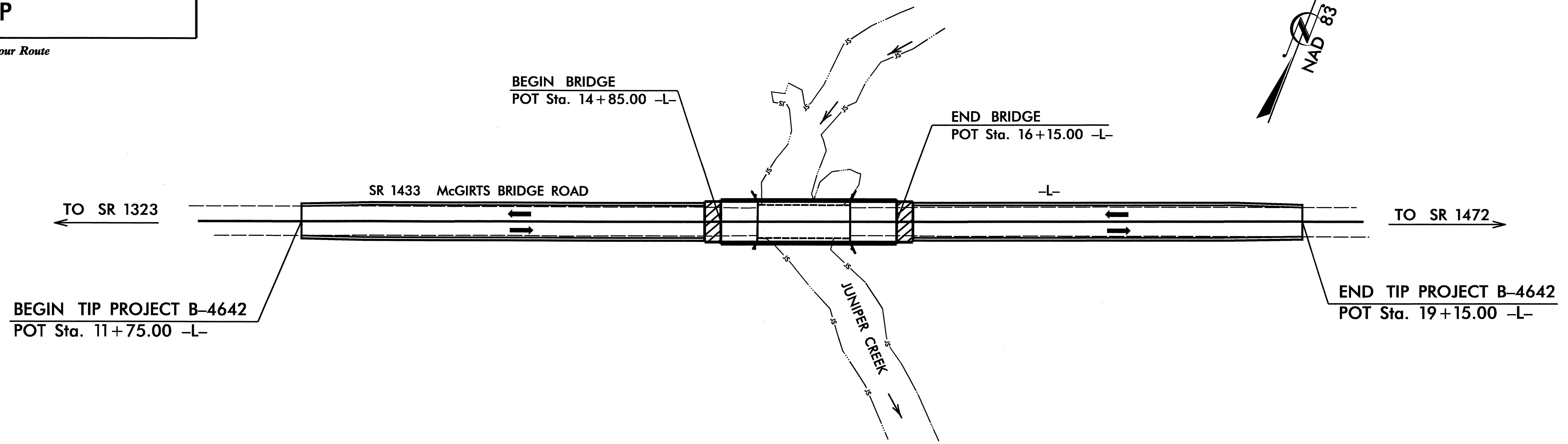
VICINITY MAP

●●●● Offsite Detour Route

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
SCOTLAND COUNTY

LOCATION: BRIDGE NO. 28 OVER JUNIPER CREEK ON SR 1433
TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4642		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33810.1.1	BRSTP-1433(2)	P.E.	
33810.2.1	BRSTP-1433(2)	UTIL. & RW	
33810.3.1	BRSTP-1433(2)	CONST.	



DESIGN DATA

ADT 2010 =	3,300
ADT 2030 =	5,100
DHV =	10 %
D =	60 %
T =	3 %
V =	60 MPH
FUNC. CLASS =	RURAL MAJOR COLLECTOR
TTST 1 %	DUAL 2 %

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4642	=	0.115 mi.
LENGTH STRUCTURE TIP PROJECT B-4642	=	0.025 mi.
TOTAL LENGTH TIP PROJECT B-4642	=	0.140 mi.

Prepared In the Office of:
DIVISION OF HIGHWAYS
2006 STANDARD SPECIFICATIONS

LETTING DATE :
FEBRUARY 16, 2010

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

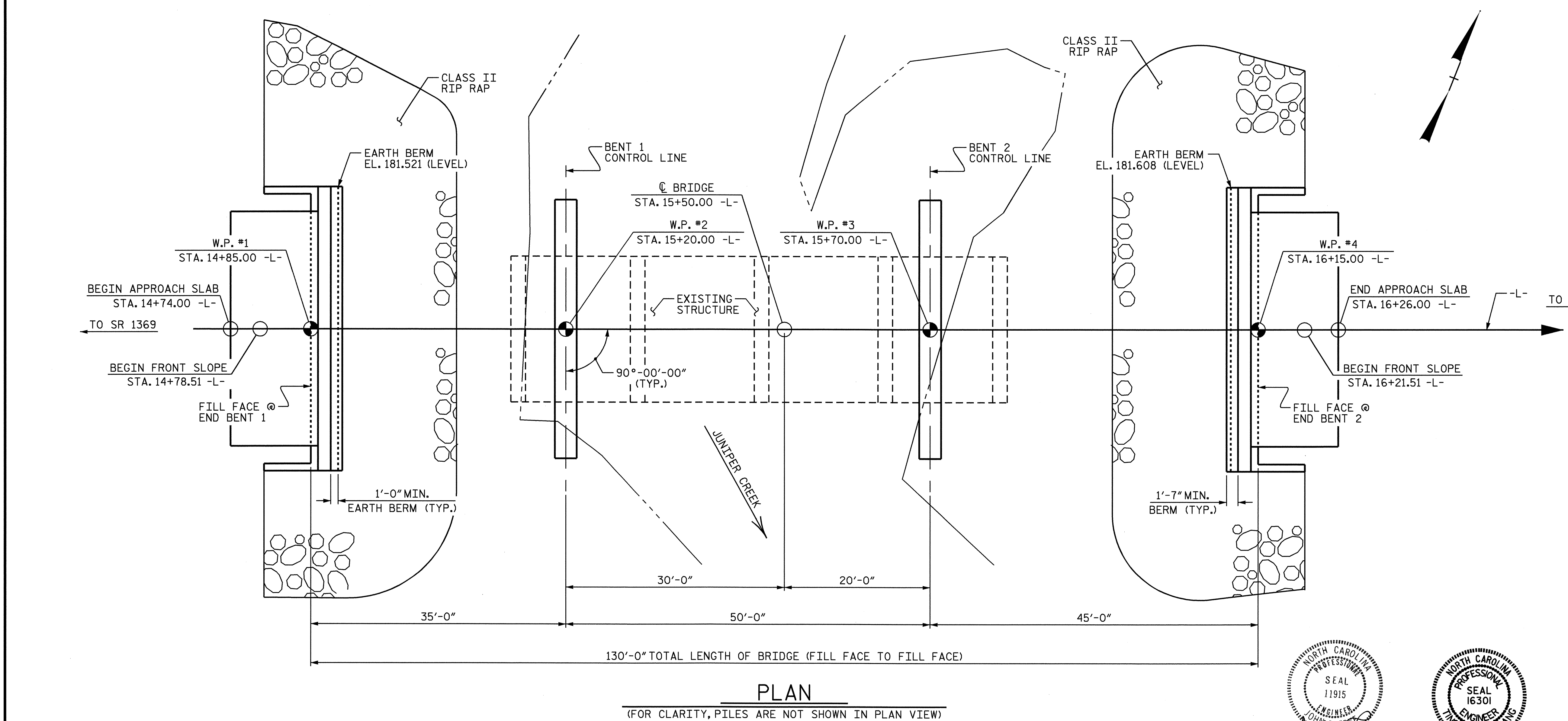
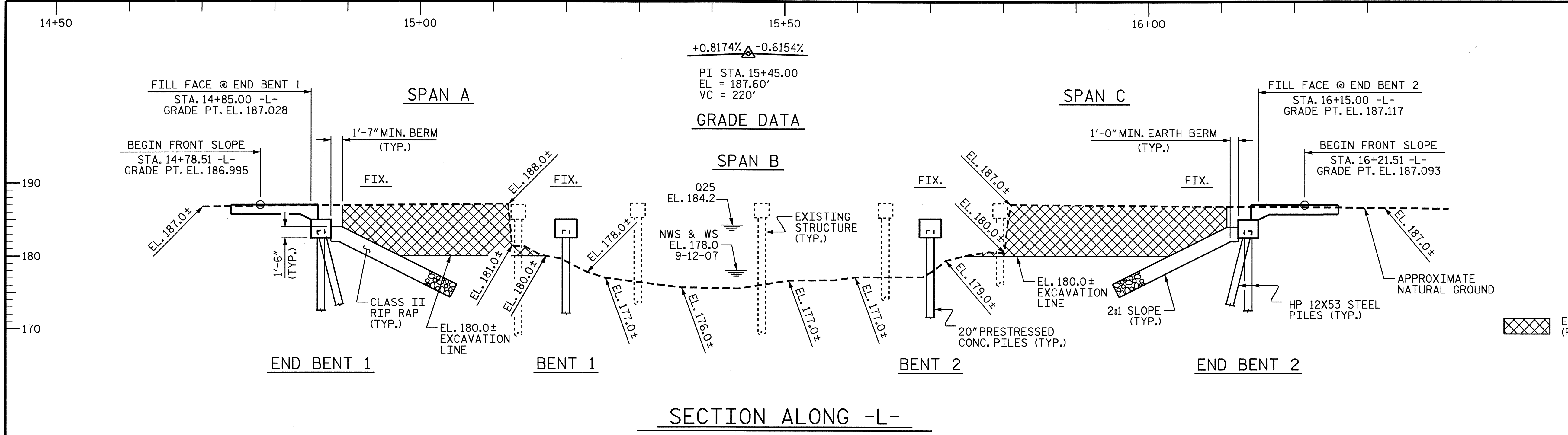
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

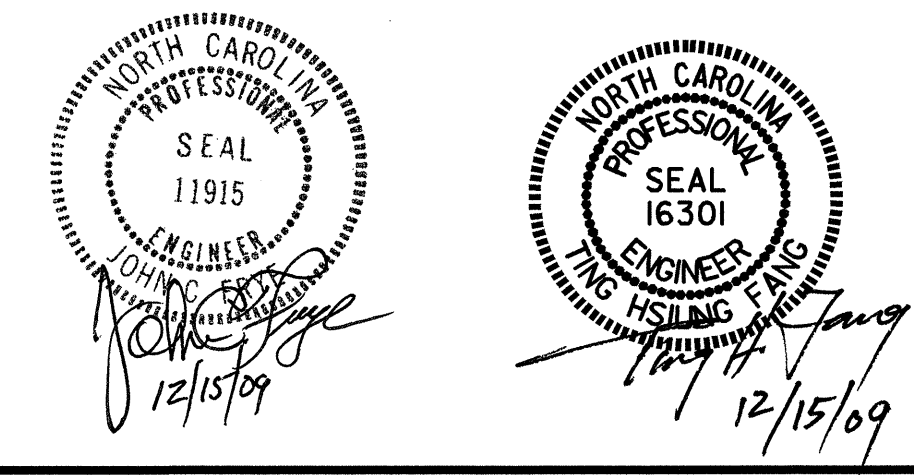
APPROVED _____
DIVISION ADMINISTRATOR

DATE _____



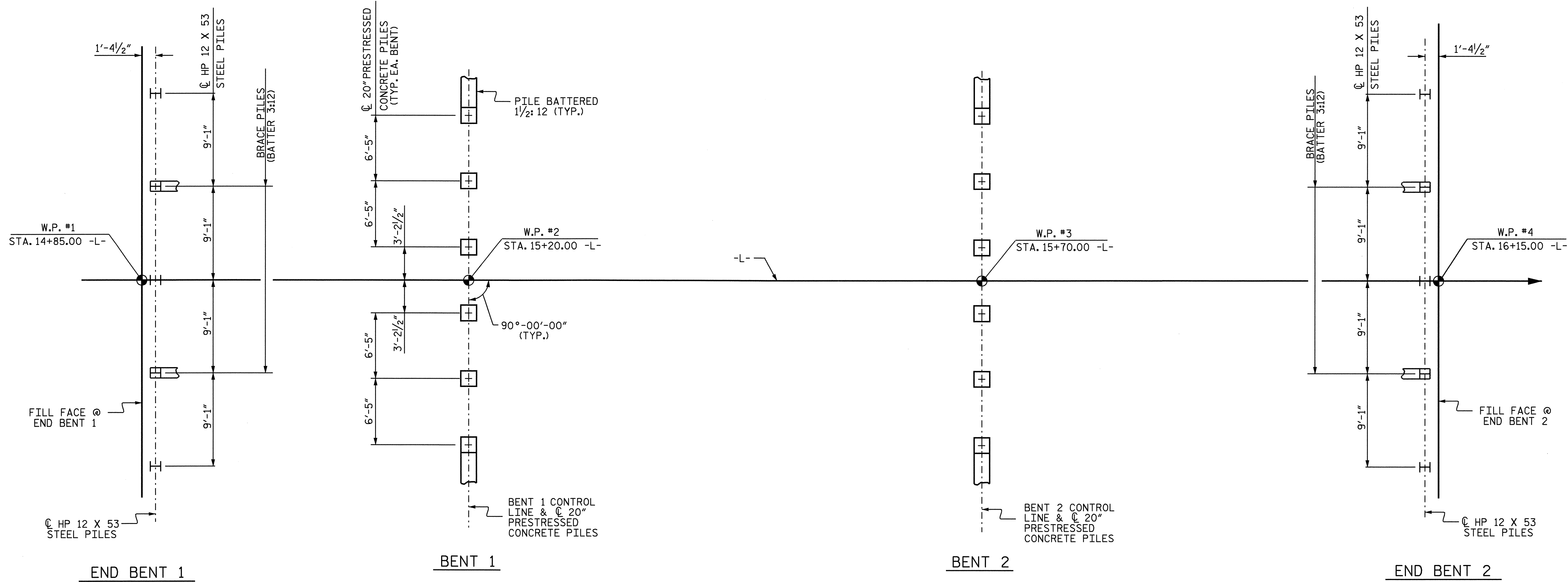
PROJECT NO. B-4642
SCOTLAND COUNTY
 STATION: 15+50.00 -L-
 SHEET 1 OF 3 REPLACES BRIDGE #28

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE OVER JUNIPER CREEK
 ON SR 1433 BETWEEN
 SR 1369 AND SR 1472



DRAWN BY : E.C. LOCKLEAR DATE : 10-31-08
 CHECKED BY : T.H. FANG DATE : 11-3-08

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



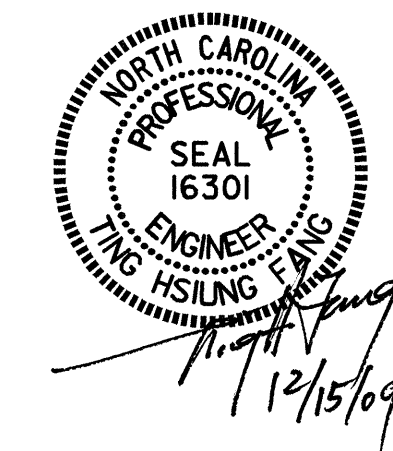
FOUNDATION LAYOUT
 DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES.

NOTES

- FOR PILES, SEE SPECIAL PROVISIONS.
- PILES AT END BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 70 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 117 TONS PER PILE.
- PILES AT BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 125 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 280 TONS PER PILE.
- PILES AT BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 130 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 285 TONS PER PILE.
- BASED ON THE BORING LOGS, DRIVE BENTS 1 & 2 PILES TO ROCK OR REFUSAL.
- PILES AT END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 80 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 133 TONS PER PILE.
- INSTALL PILES AT BENTS 1 & 2 TO A TIP ELEVATION NO HIGHER THAN 112 FT.
- TESTING THE FIRST PRODUCTION PILE WITH THE PILE DRIVING ANALYZER DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT END BENTS 1 & 2, BENTS 1 & 2. FOR PILE DRIVING ANALYZER, SEE PILES SPECIAL PROVISION.
- IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 70,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENTS 1 & 2. THIS ESTIMATED ENERGY DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH THE PILES PROVISION.
- THE SCOUR CRITICAL ELEVATION FOR BENT 1 IS ELEVATION 152.5 FT AND BENT 2 IS ELEVATION 152 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

PROJECT NO. B-4642
SCOTLAND COUNTY
 STATION: 15+50.00 -L-

SHEET 2 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE OVER JUNIPER CREEK
 ON SR 1433 BETWEEN
 SR 1369 AND SR 1472

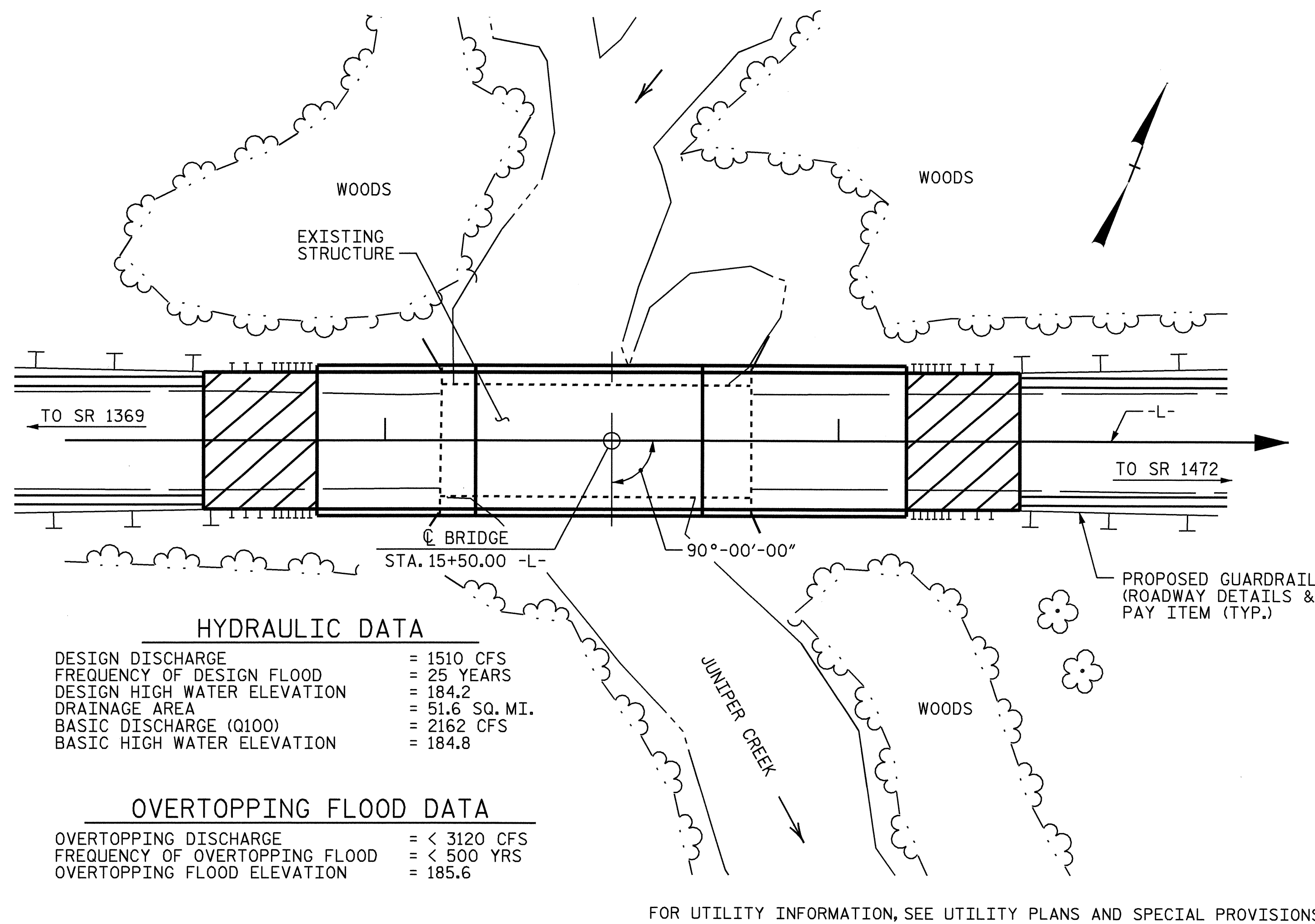
DRAWN BY : J. E. JONES DATE : 3/10/09
 CHECKED BY : T. H. FANG DATE : 5/17/09

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

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	PDA TESTING	PDA ASSISTANCE	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	20" PRESTRESSED CONCRETE PILES	HP 12 X 53 STEEL PILES	PILE REDRIVES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS
	LUMP SUM	EACH	EACH	CU. YDS.	LUMP SUM	LBS.	NO. LIN. FT.	NO. LIN. FT.	EACH	LINE FT.	TONS	SQ. YDS.	LUMP SUM	NO. LIN. FT.
SUPERSTRUCTURE					LUMP SUM					255.5			LUMP SUM	33 1402.5
END BENT 1				15.1		2,117		5 375			100 110			
BENT 1		2	2	12.4		2,165	6 420		2					
BENT 2		2	2	12.4		2,165	6 420		2					
END BENT 2		1	1	15.1		2,117		5 475	1		105 115			
TOTAL	LUMP SUM	5	5	55.0	LUMP SUM	8,564	12 840	10 850	5	255.5	205	225	LUMP SUM	33 1402.5

BENCH MARK #2: RR SPIKE IN BASE OF 10" HOLLY, 99.70' RIGHT OF STA. 15+77.78 -L- POT, EL. 182.120.



HYDRAULIC DATA

DESIGN DISCHARGE = 1510 CFS
 FREQUENCY OF DESIGN FLOOD = 25 YEARS
 DESIGN HIGH WATER ELEVATION = 184.2
 DRAINAGE AREA = 51.6 SQ. MI.
 BASIC DISCHARGE (Q100) = 2162 CFS
 BASIC HIGH WATER ELEVATION = 184.8

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = < 3120 CFS
 FREQUENCY OF OVERTOPPING FLOOD = < 500 YRS
 OVERTOPPING FLOOD ELEVATION = 185.6

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

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 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.

IN AS MUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 15+50.00 -L-".

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF 4 SPANS: 1 @ 17'-10", 2 @ 17'-0" & 1 @ 17'-2 1/2' 23'-2" CLEAR ROADWAY WIDTH AND A TIMBER DECK ON STEEL I-BEAMS; SUBSTRUCTURE CONSISTING OF TIMBER CAPS ON TIMBER PILES; BENTS, BENT 1 IS REINFORCED BY STEEL CROSS CAP & CRUTCH PILES AND LOCATED ON THE PROPOSED STRUCTURE SITE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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 STANDARD SPECIFICATIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 32 FT. EACH SIDE AT END BENT 1, 30 FT. LEFT SIDE AND 40 FT. RIGHT SIDE AT END BENT 2 OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK IS INCLUDED IN THE ROADWAY PAY ITEM, LUMP SUM GRADING.

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

FOR VERTICAL CONCRETE BARRIER RAIL, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

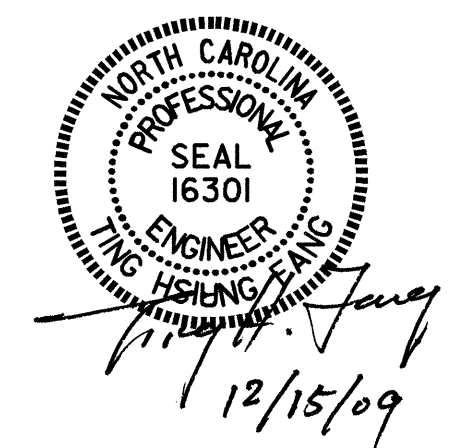
FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

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

FOR CURING CONCRETE, SEE SPECIAL PROVISIONS.

PILES FOR BENTS 1 AND 2 SHALL BE DRIVEN FROM THE ROADWAY APPROACHES. THE REMAINING ELEMENTS OF THE BRIDGE SHALL BE CONSTRUCTED USING TOP-DOWN CONSTRUCTION METHODS. THE USE OF A TEMPORARY CAUSEWAY OR WORK BRIDGE IS NOT PERMITTED.



PROJECT NO. B-4642
 SCOTLAND COUNTY
 STATION: 15+50.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER
 JUNIPER CREEK
 ON SR 1433 BETWEEN
 SR 1369 AND SR 1472

REVISIONS

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

DRAWN BY: E. C. LOCKLEAR DATE: 10/08
 CHECKED BY: T. H. FANG DATE: 09/09

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE CORED SLAB 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								
						LIVE-LOAD FACTORS (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.037	--	1.75	0.275	1.22	B	EL	24.438	0.542	1.04	C	EL	2.141	0.80	0.278	1.14	C	EL	21.406		
	HL-93 (OPERATING)	N/A	--	1.344	--	1.35	0.275	1.59	B	EL	24.438	0.542	1.34	C	EL	2.141	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.218	43.846	1.75	0.275	1.52	B	EL	24.438	0.542	1.22	C	EL	2.141	0.80	0.278	1.40	C	EL	21.406		
	HS-20 (OPERATING)	36.000	--	1.579	56.837	1.35	0.275	1.97	B	EL	24.438	0.542	1.58	C	EL	2.141	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500	--	2.71	36.586	1.40	0.275	3.86	B	EL	24.438	0.564	3.32	A	EL	1.641	0.80	0.278	2.71	C	EL	21.406	
		SNGARBS2	20.000	--	2.2	44.007	1.40	0.275	3.05	B	EL	24.438	0.542	2.46	C	EL	2.141	0.80	0.278	2.20	C	EL	21.406	
		SNAGRIS2	22.000	--	2.147	47.227	1.40	0.275	2.95	B	EL	19.55	0.542	2.32	C	EL	2.141	0.80	0.278	2.15	C	EL	17.125	
		SNCOTTS3	27.250	--	1.353	36.882	1.40	0.275	1.92	B	EL	24.438	0.564	1.67	A	EL	1.641	0.80	0.278	1.35	C	EL	21.406	
		SNAGGRS4	34.925	--	1.199	41.887	1.40	0.275	1.67	B	EL	24.438	0.542	1.45	C	EL	2.141	0.80	0.278	1.20	C	EL	21.406	
		SNS5A	35.550	--	1.168	41.521	1.40	0.275	1.63	B	EL	24.438	0.542	1.5	C	EL	2.141	0.80	0.278	1.17	C	EL	21.406	
		SNS6A	39.950	--	1.103	44.045	1.40	0.275	1.53	B	EL	24.438	0.542	1.4	C	EL	2.141	0.80	0.278	1.10	C	EL	21.406	
		SNS7B	42.000	③	1.051	44.146	1.40	0.275	1.45	B	EL	24.438	0.542	1.41	C	EL	2.141	0.80	0.278	1.05	C	EL	21.406	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000	--	1.354	44.678	1.40	0.275	1.87	B	EL	24.438	0.542	1.64	C	EL	2.141	0.80	0.278	1.35	C	EL	21.406	
		TNT4A	33.075	--	1.369	45.271	1.40	0.275	1.89	B	EL	24.438	0.542	1.57	C	EL	2.141	0.80	0.278	1.37	C	EL	21.406	
		TNT6A	41.600	--	1.151	47.891	1.40	0.275	1.57	B	EL	24.438	0.542	1.53	C	EL	2.141	0.80	0.278	1.15	C	EL	21.406	
		TNT7A	42.000	--	1.175	49.345	1.40	0.275	1.59	B	EL	24.438	0.542	1.42	C	EL	2.141	0.80	0.278	1.17	C	EL	21.406	
		TNT7B	42.000	--	1.221	51.264	1.40	0.275	1.66	B	EL	24.438	0.542	1.35	C	EL	2.141	0.80	0.278	1.22	C	EL	21.406	
		TNAGRIT4	43.000	--	1.166	50.126	1.40	0.275	1.58	B	EL	24.438	0.542	1.3	C	EL	2.141	0.80	0.278	1.17	C	EL	21.406	
TNAGT5A	45.000	--	1.083	48.757	1.40	0.275	1.47	B	EL	24.438	0.542	1.33	C	EL	2.141	0.80	0.278	1.08	C	EL	21.406			
TNAGT5B	45.000	--	1.057	47.559	1.40	0.275	1.44	B	EL	24.438	0.542	1.23	C	EL	2.141	0.80	0.278	1.06	C	EL	21.406			

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	2010	60
FUTURE	2030	92

NOTES:
 MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.
 ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:
 1.
 2.
 3.
 4.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

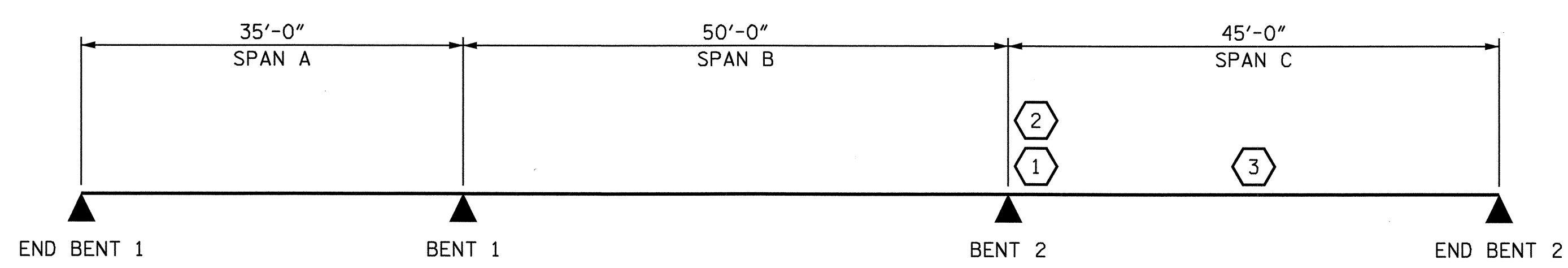
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

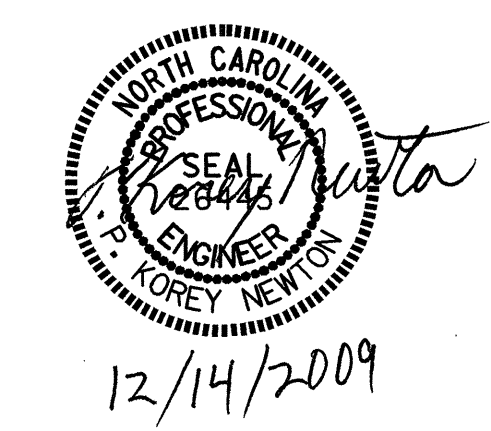
PROJECT NO. B-4642
SCOTLAND COUNTY
 STATION: 15+50.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

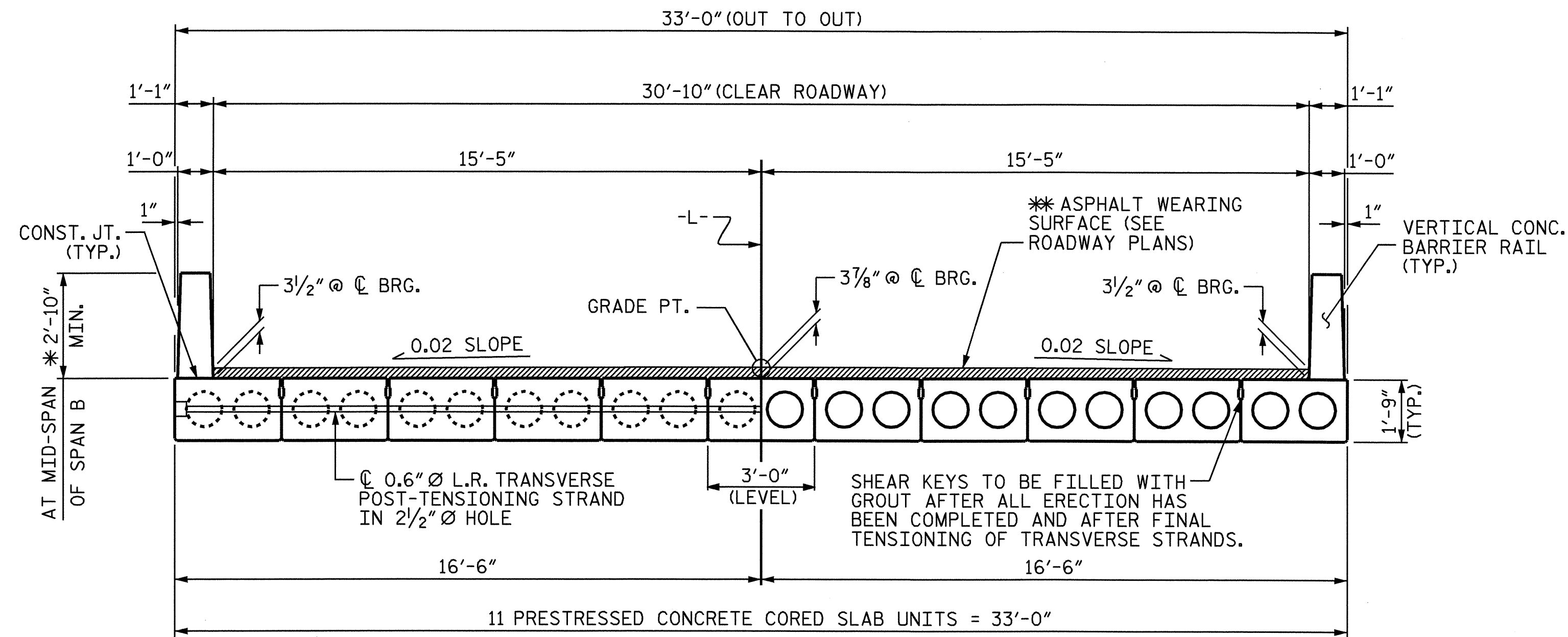
STANDARD
 LRFR SUMMARY FOR
 PRESTRESSED CONCRETE
 CORED SLAB UNITS
 (NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-4
1			3			TOTAL SHEETS
2			4			22



ASSEMBLED BY : P. K. NEWTON DATE : 12/11/09
 CHECKED BY : T. H. FANG DATE : 12/11/09
 DRAWN BY : MAA 1/08 REV. 11/12/08RR MAA/GM
 CHECKED BY : GM/DI 2/08

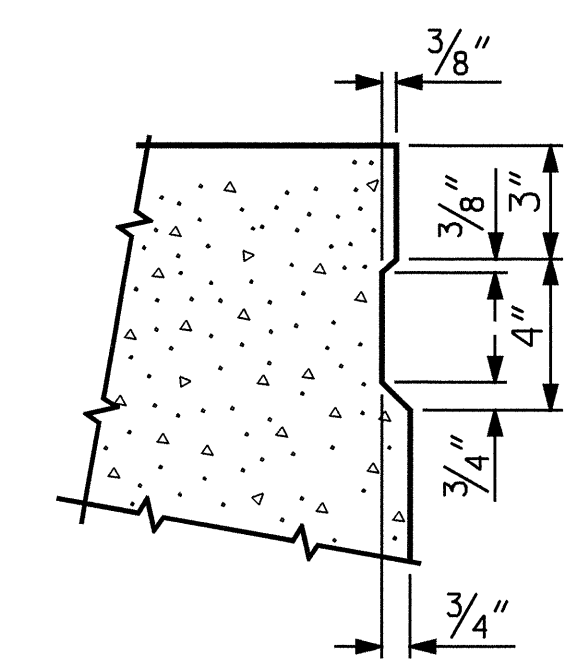
14-DEC-2009 15:48
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 rfang



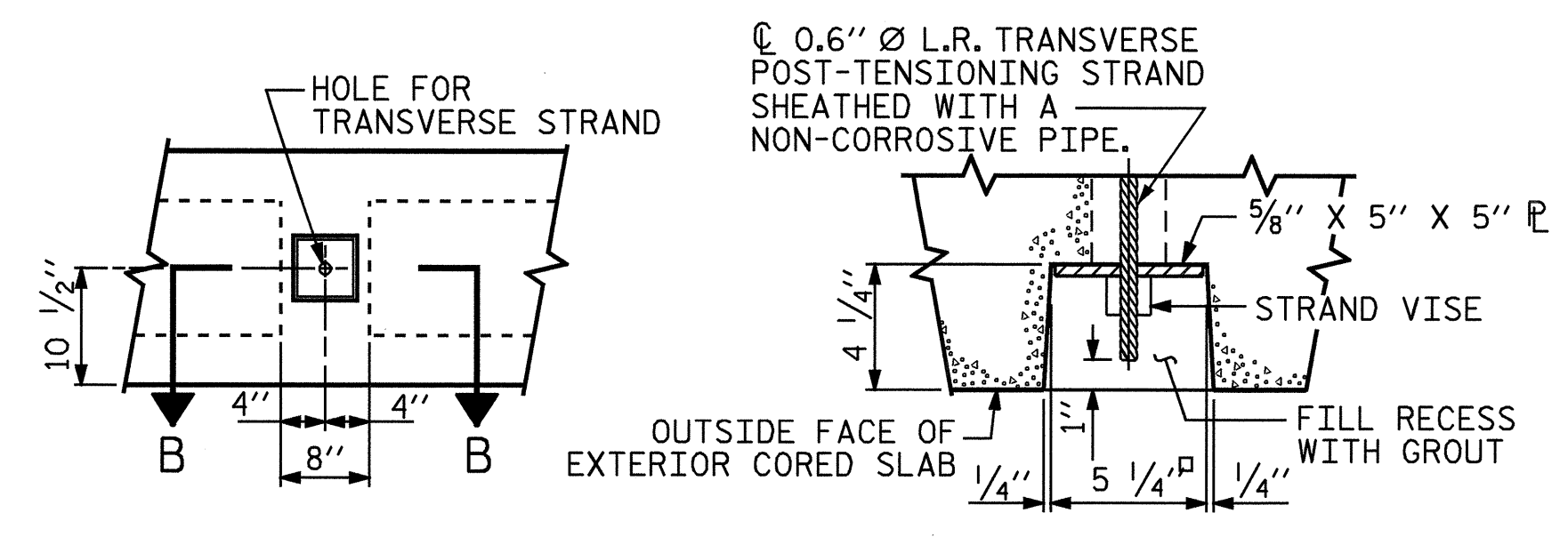
TYPICAL SECTION

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

* SEE RAIL HEIGHT TABLE
 ** SEE ASPHALT WEARING SURFACE THICKNESS TABLE



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



ELEVATION VIEW
SECTION B-B
GROUTED RECESS AT END OF POST-TENSIONED STRAND CORED SLABS

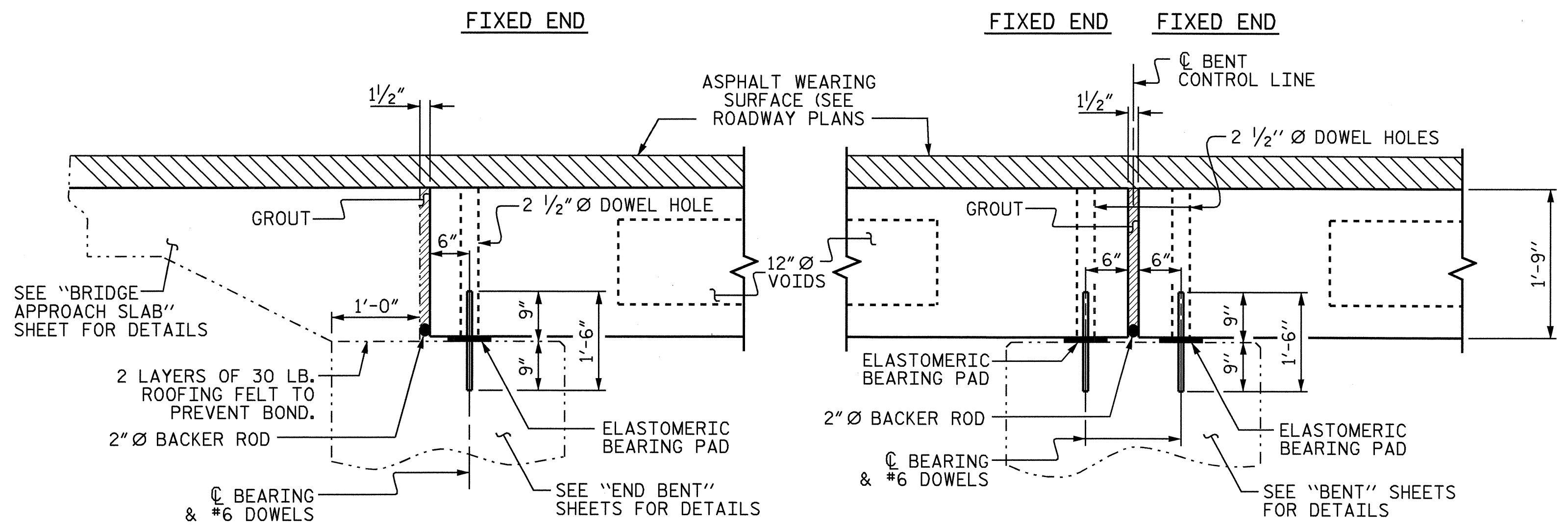
RAIL HEIGHT TABLE
 BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS.

SPAN	* AT C BEARINGS	* AT MID-SPAN
A	2'-11 1/2"	2'-11 1/4"
B	2'-11 1/2"	2'-10"
C	2'-11 1/2"	2'-10 3/4"

ASPHALT WEARING SURFACE THICKNESS TABLE
 BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS.

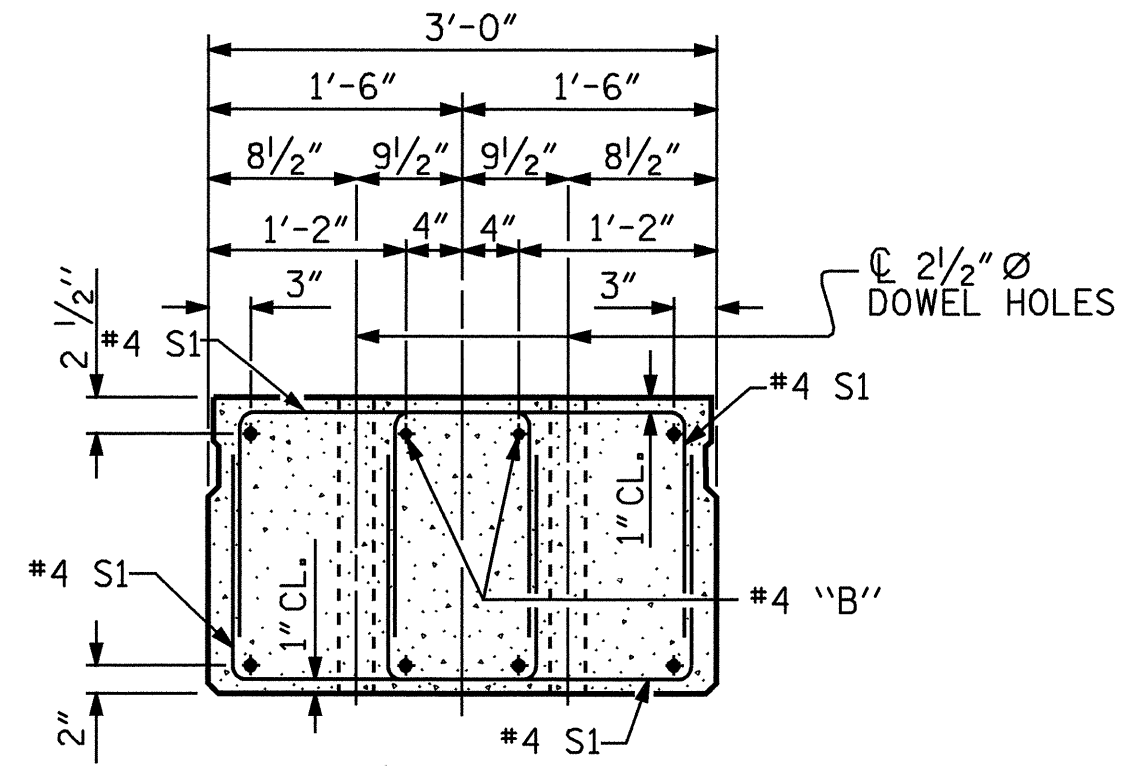
SPAN	** AT C BEARINGS		** AT MID-SPAN	
	GUTTERS	GRADE PT.	GUTTERS	GRADE PT.
A	3/2"	3/8"	3/4"	3/8"
B	3/2"	3/8"	2"	2 3/8"
C	3/2"	3/8"	2 3/4"	3/8"

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

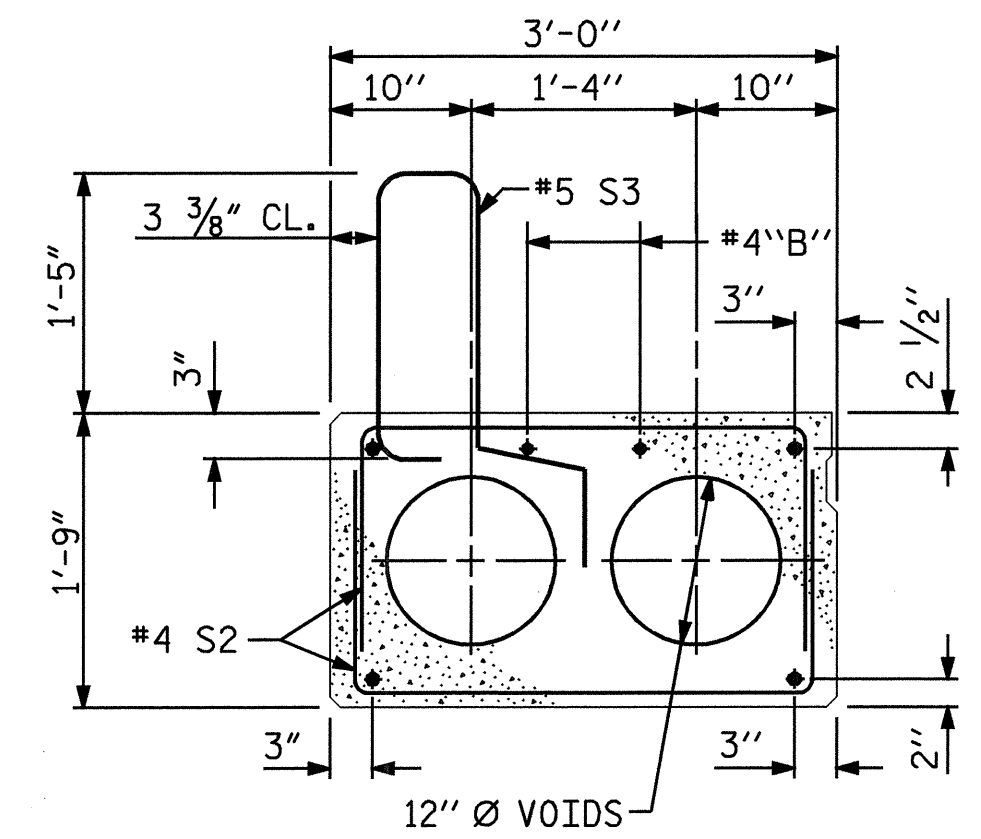


SECTION AT END BENTS

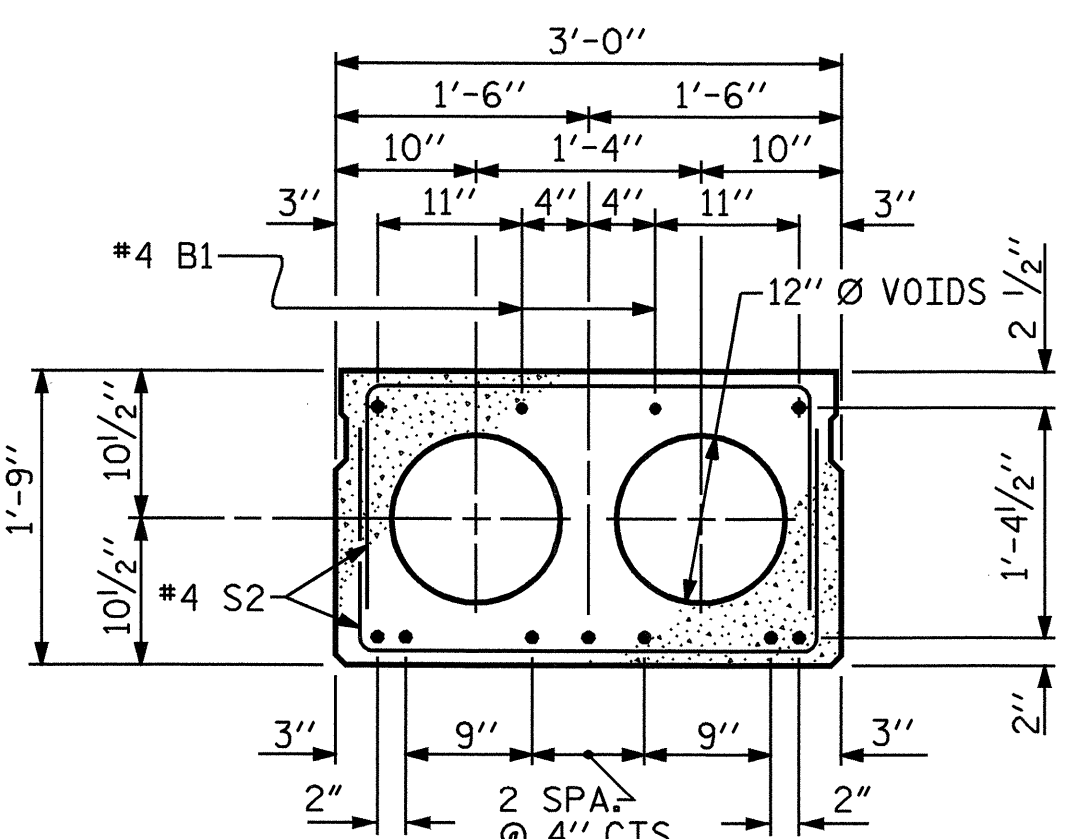
SECTION AT BENTS



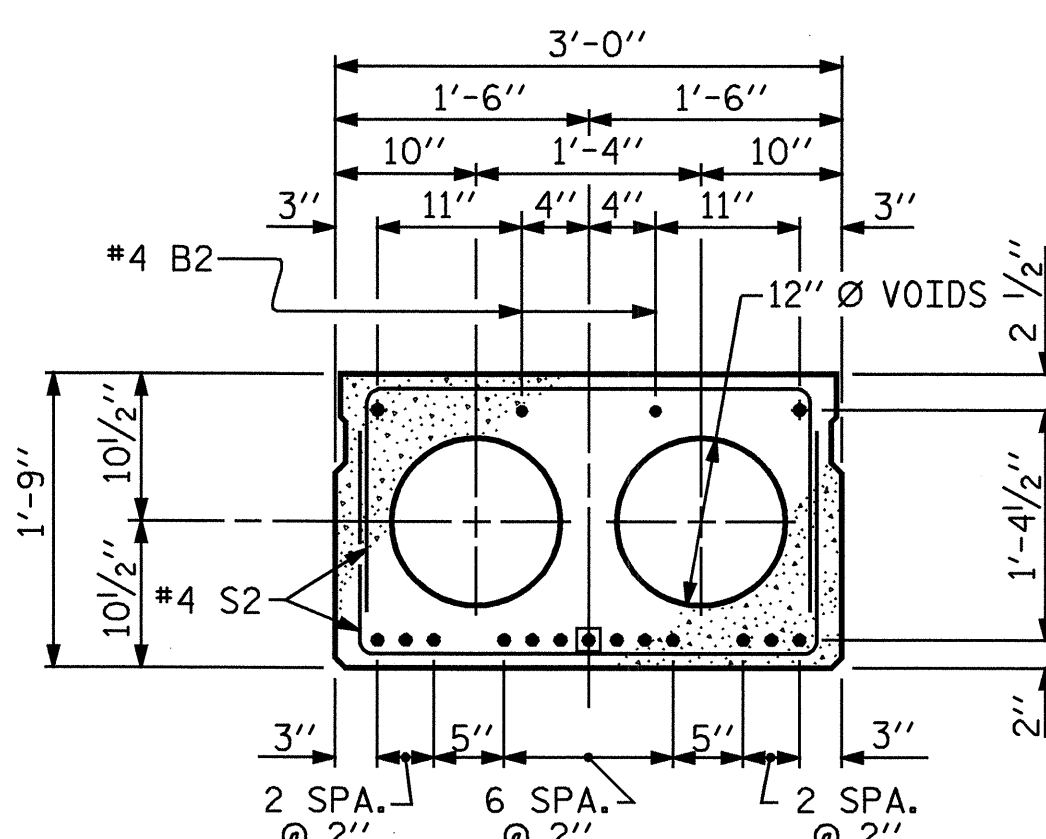
END ELEVATION
 SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN). INTERIOR SLAB SECTION SHOWN-EXTERIOR SLAB SECTION SIMILAR EXCEPT SHEAR KEY.



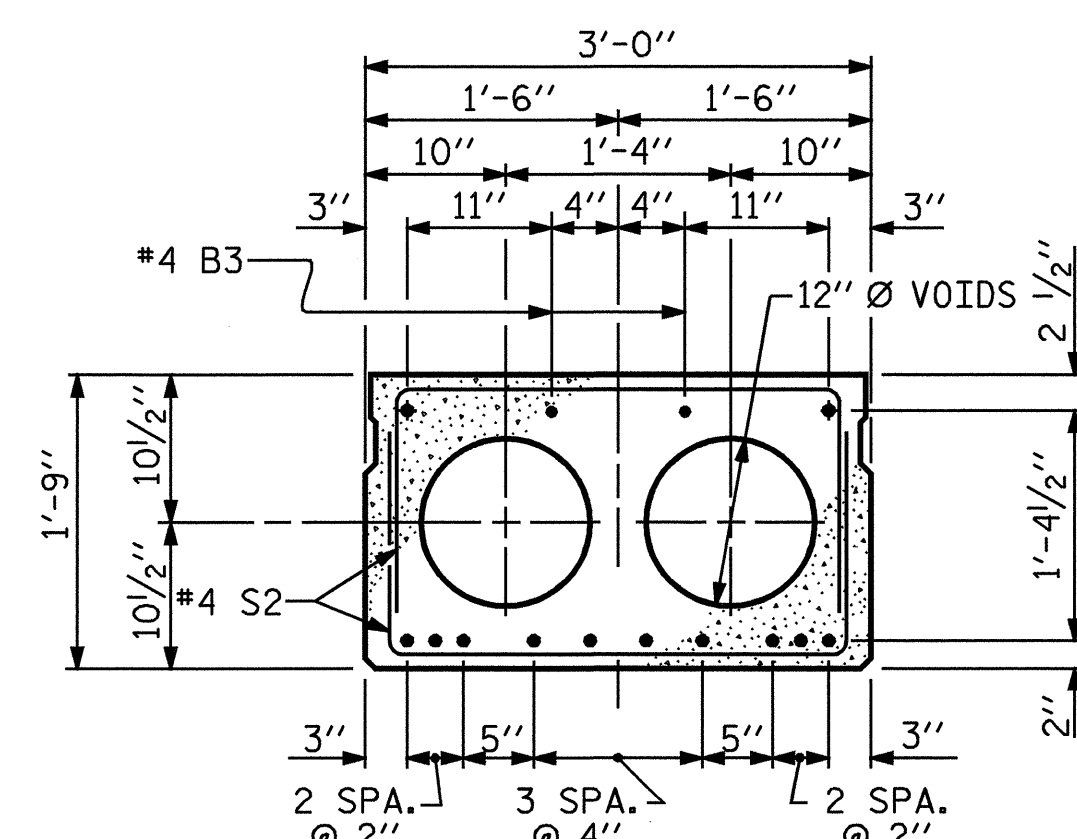
EXTERIOR SLAB SECTION
 (FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



INTERIOR SLAB SECTION (9 STRANDS) (SPAN A)



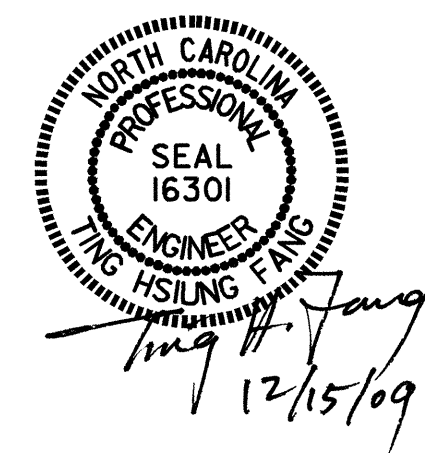
INTERIOR SLAB SECTION (15 STRANDS, 1 SHEATHED) (SPAN B)



INTERIOR SLAB SECTION (12 STRANDS) (SPAN C)

0.6" Ø LOW RELAXATION STRAND LAYOUT

BOND SHALL BE BROKEN ON THIS STRAND FOR A DISTANCE OF 3'-0" FROM END OF CORED SLAB UNIT, SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.

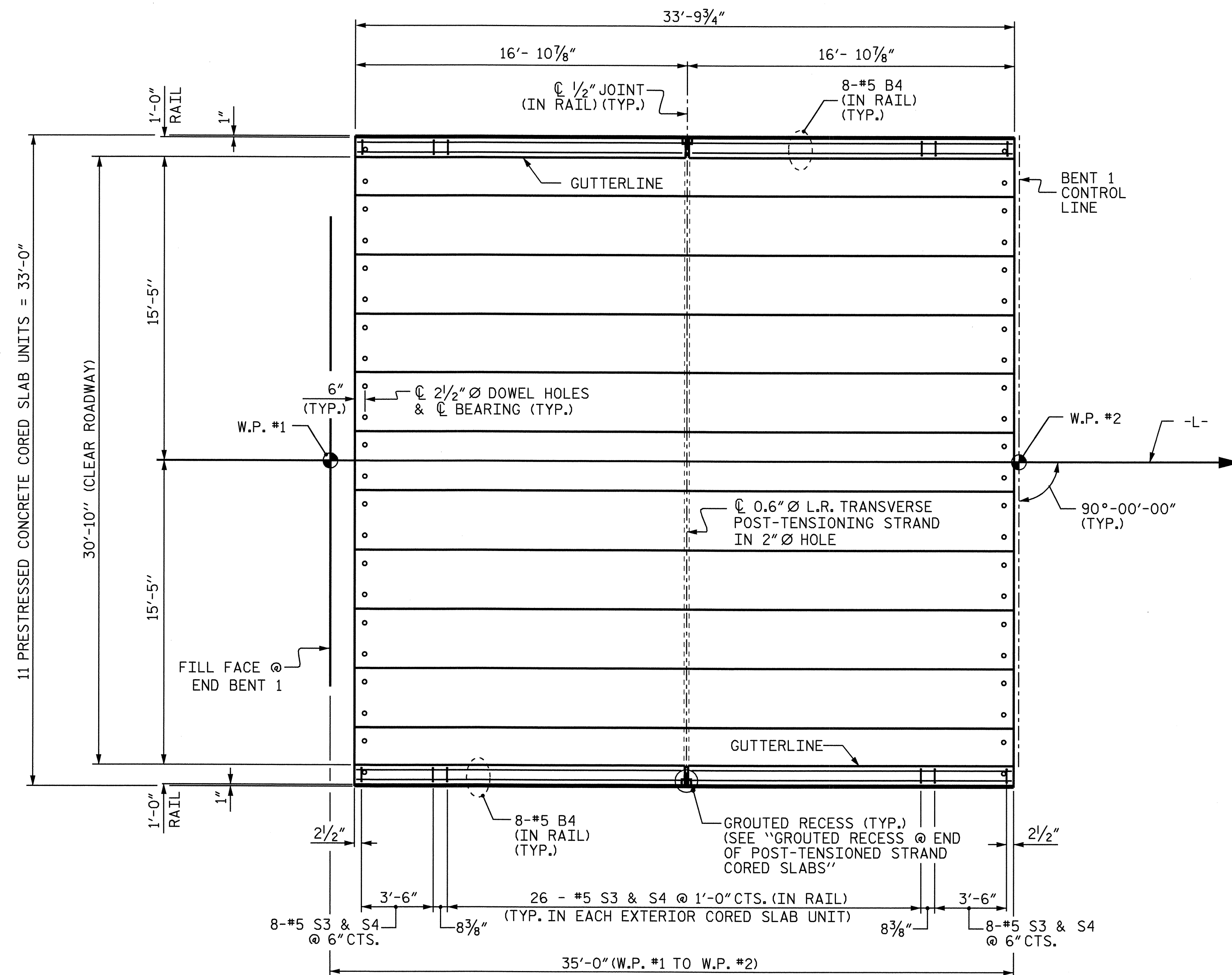


PROJECT NO. B-4642
SCOTLAND COUNTY
 STATION: 15+50.00 -L-

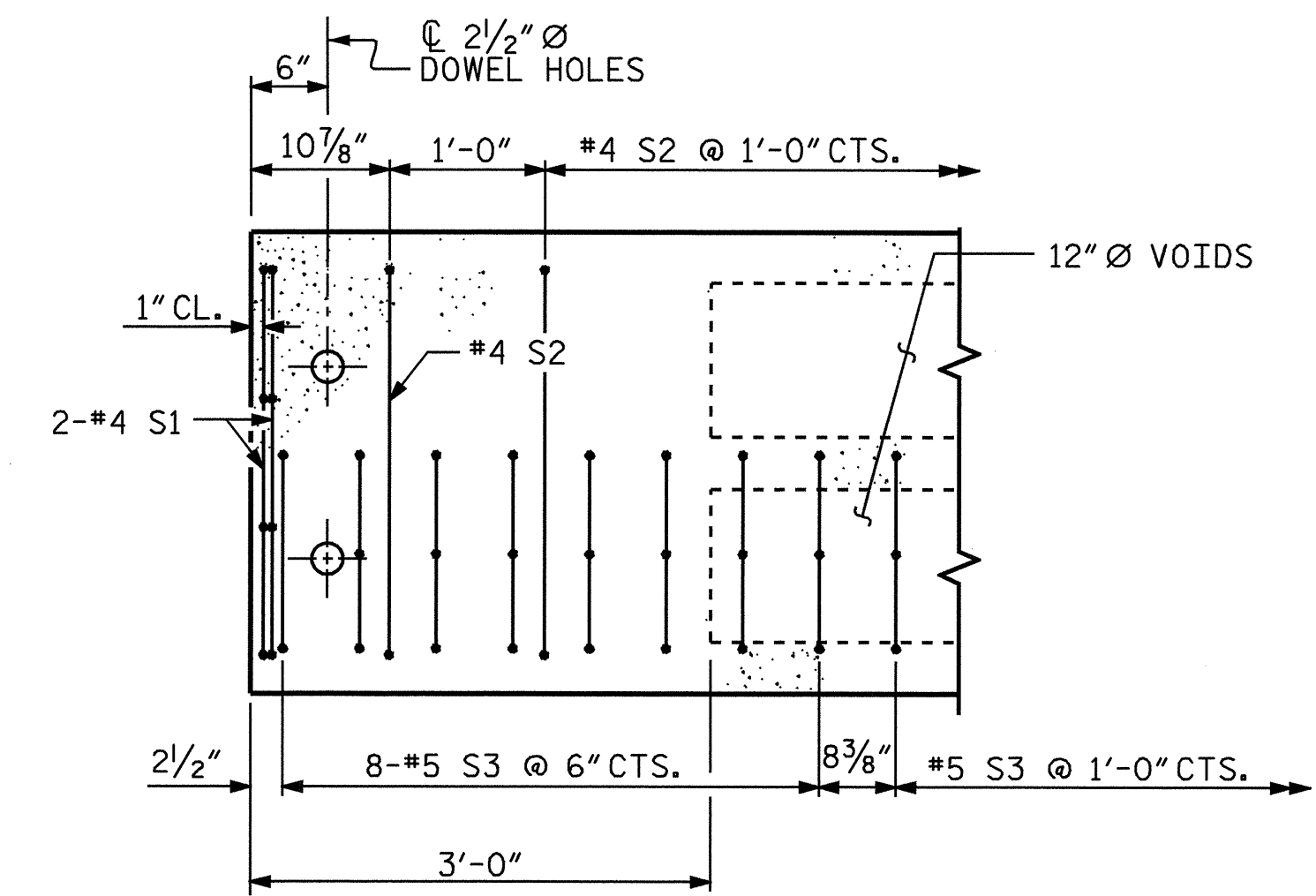
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 1'-9"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT

ASSEMBLED BY : J. E. JONES DATE : 3/24/09
 CHECKED BY : T. H. FANG DATE : 9/14/09
 DRAWN BY : WJH 4/89 REV. 10/17/00 RWW/LES
 CHECKED BY : FCJ 5/89 REV. 7/10/01RR RWW/LES
 REV. 5/1/06 TLG/GM

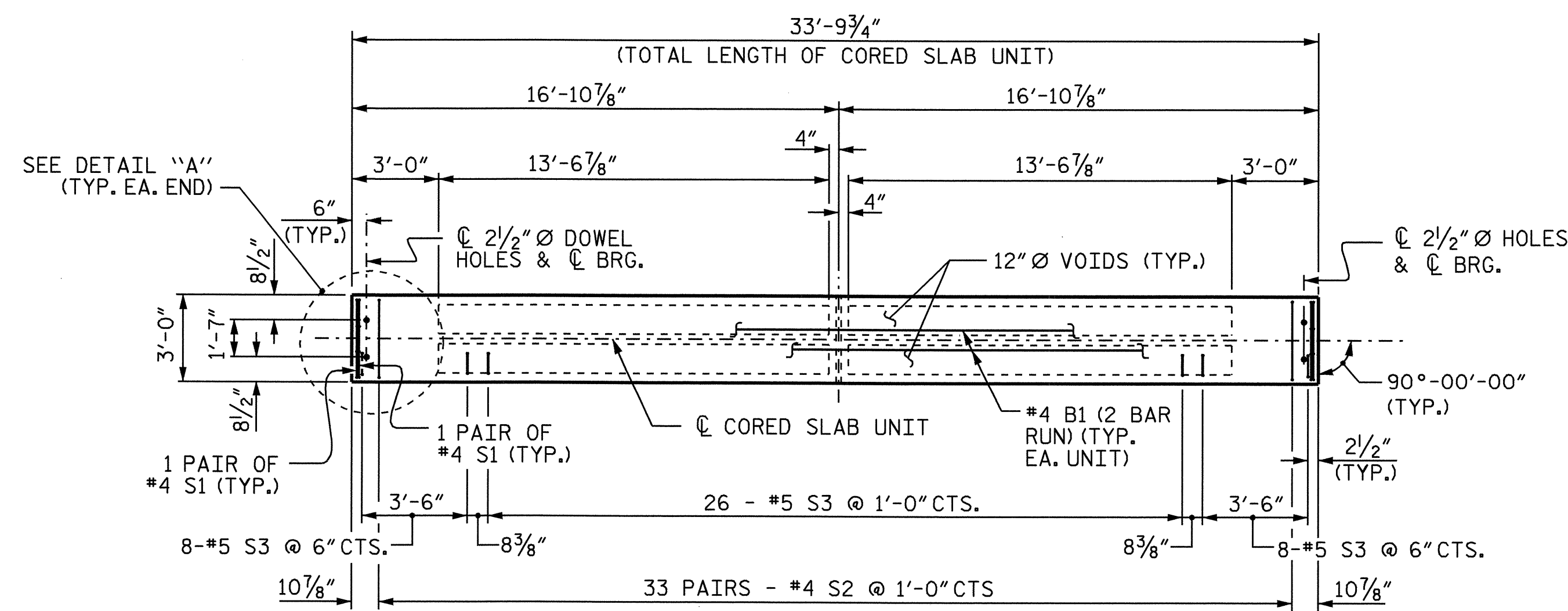
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			22



PLAN OF SPAN A



DETAIL "A"
PART PLAN-EXTERIOR SECTION
NOTE: EXTERIOR SECTION SHOWN-INTERIOR SECTION SIMILAR EXCEPT OMIT S3 BARS.



PLAN OF EXTERIOR CORED SLAB UNIT
PLAN FOR INTERIOR CORED SLAB IDENTICAL EXCEPT OMIT #5 S3 BARS.

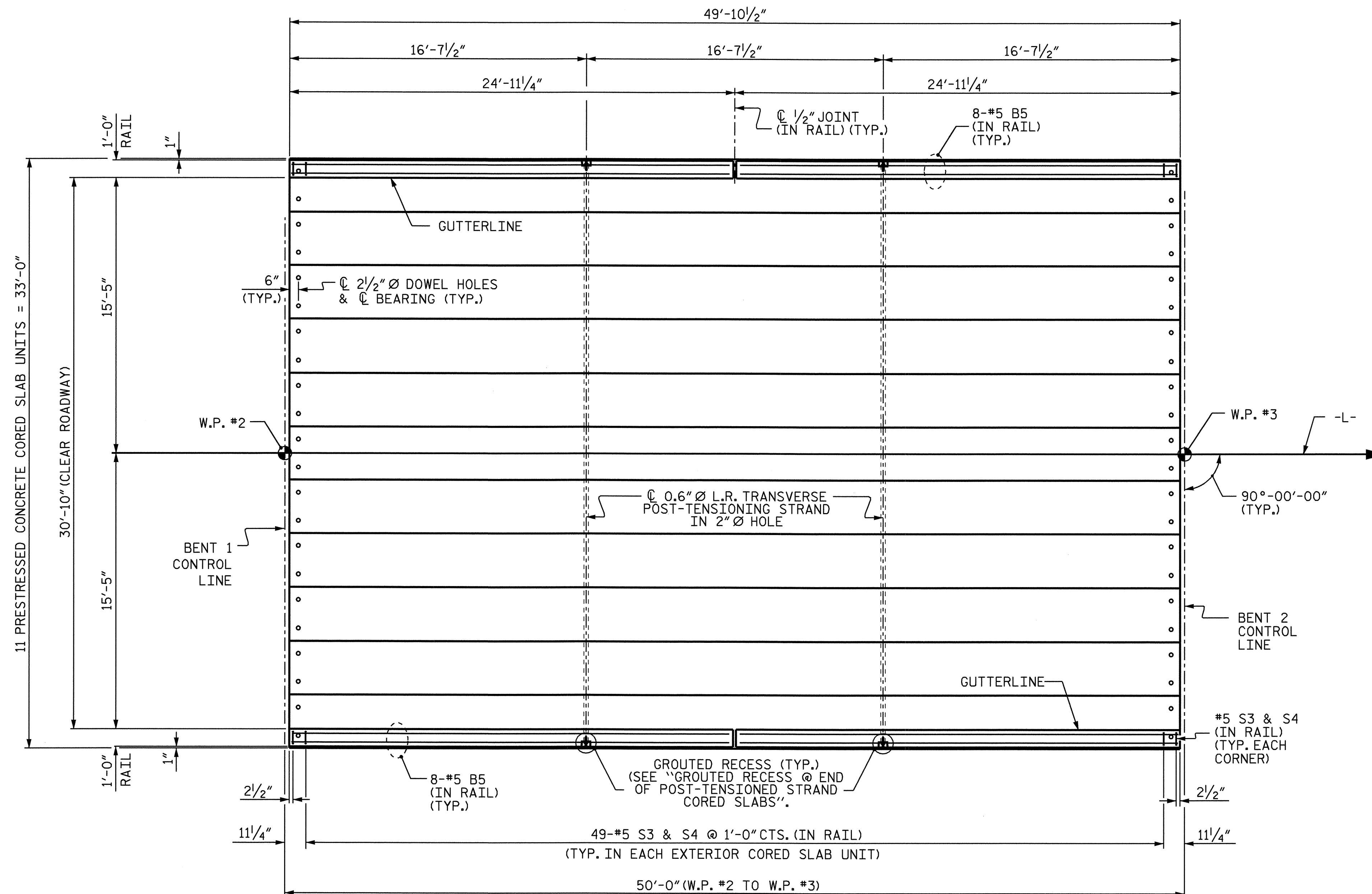
PROJECT NO. B-4642
SCOTLAND COUNTY
STATION: 15+50.00 -L-

SHEET 1 OF 3

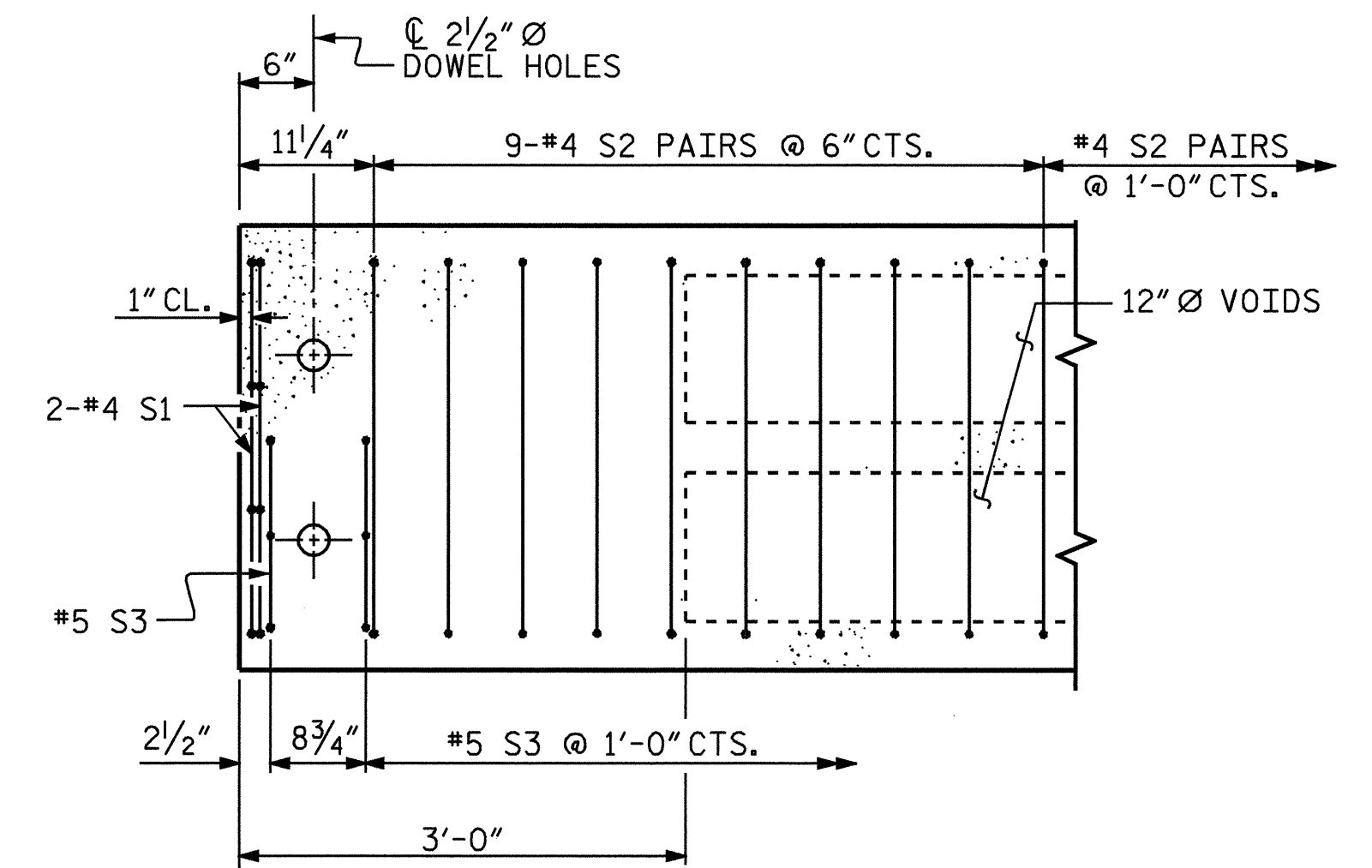
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-6
SUPERSTRUCTURE PLAN OF SPAN SPAN A						
REVISIONS						TOTAL SHEETS 22
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

PROFESSIONAL SEAL
16301
TUNG HSILUNG FANG
12/15/09

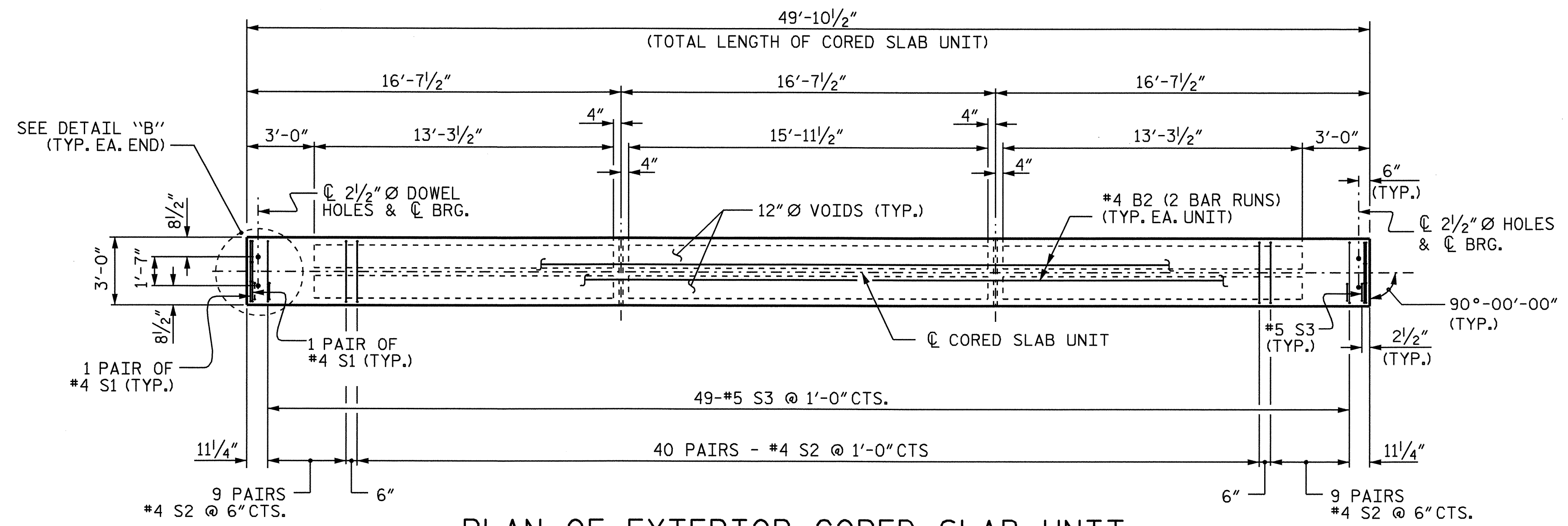
DRAWN BY: J. E. JONES DATE: 3/17/09
CHECKED BY: T. H. FANG DATE: 9/17/09



PLAN OF SPAN B

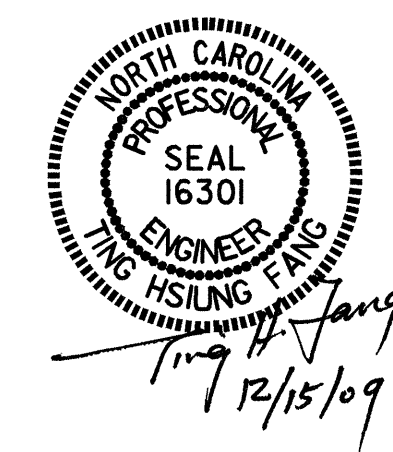


DETAIL "B"
PART PLAN-EXTERIOR SECTION
NOTE: EXTERIOR SECTION SHOWN-INTERIOR SECTION SIMILAR EXCEPT OMIT S3 BARS.



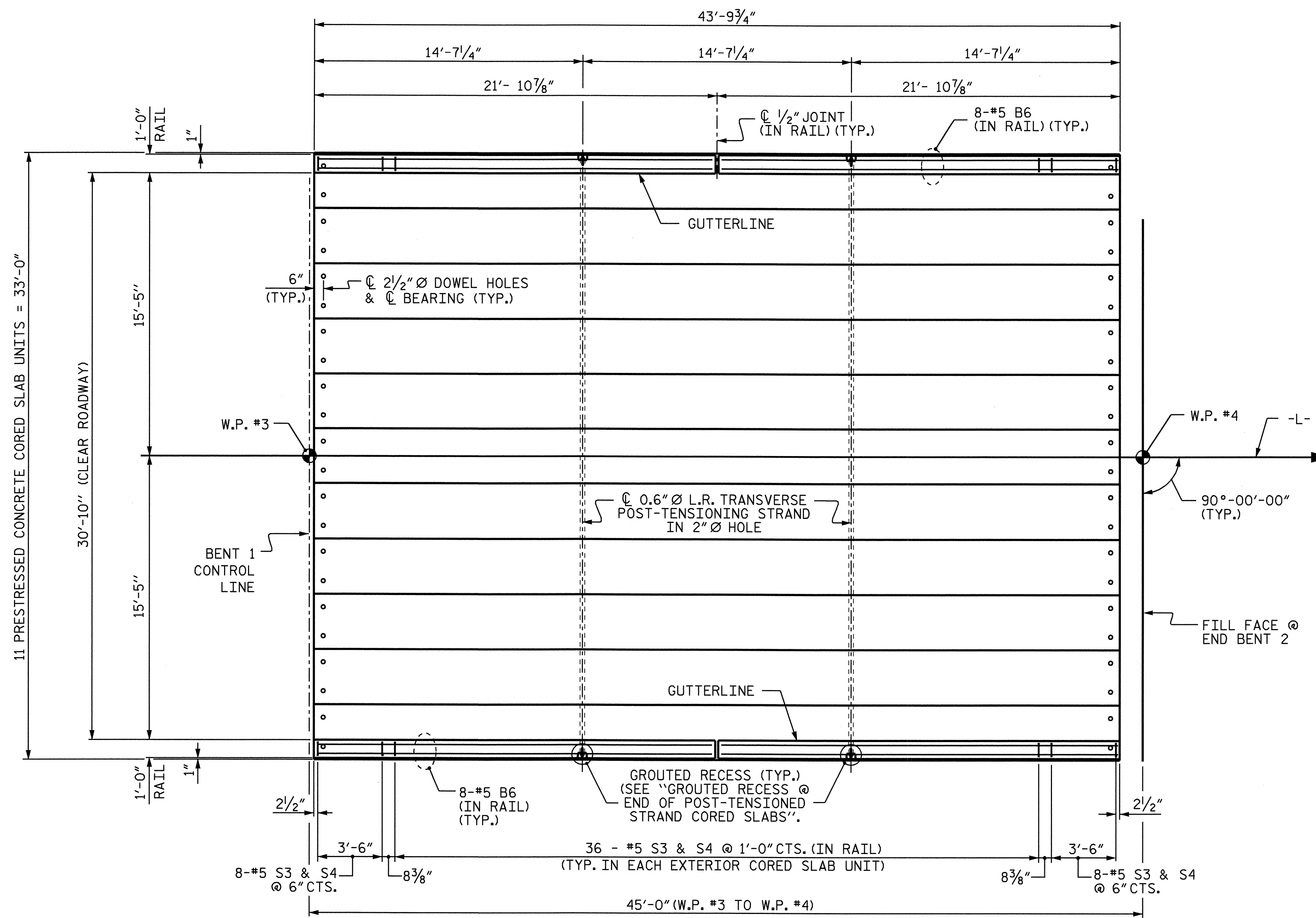
PLAN OF EXTERIOR CORED SLAB UNIT
PLAN FOR INTERIOR CORED SLAB IDENTICAL EXCEPT OMIT #5 S3 BARS

PROJECT NO. B-4642
SCOTLAND COUNTY
STATION: 15+50.00 -L-
SHEET 2 OF 3

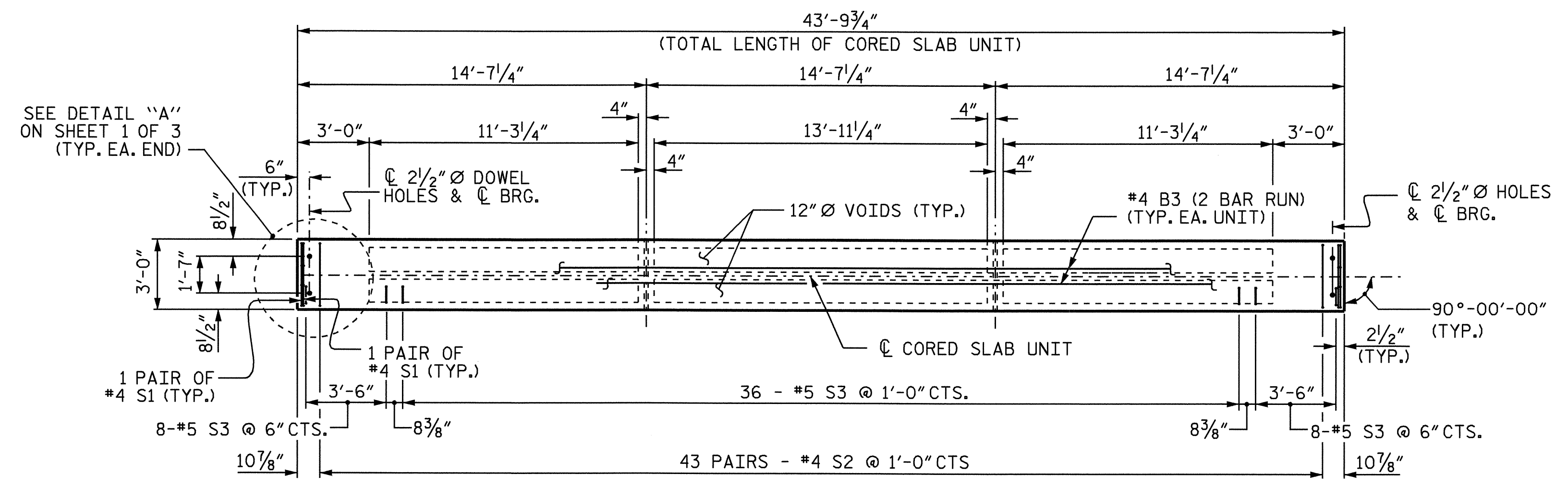


REVISIONS						SHEET NO. S-7
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 22
2			4			

DRAWN BY: J. E. JONES DATE: 3/17/09
CHECKED BY: T. H. FANG DATE: 9/17/09



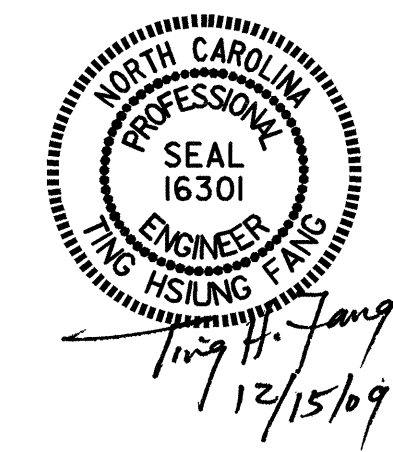
PLAN OF SPAN C



PLAN OF EXTERIOR CORED SLAB UNIT
 PLAN FOR INTERIOR CORED SLAB IDENTICAL EXCEPT OMIT #5 S3 BARS.

PROJECT NO. B-4642
SCOTLAND COUNTY
 STATION: 15+50.00 -L-
 SHEET 3 OF 3

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



DRAWN BY : J. E. JONES DATE : 3/17/09
 CHECKED BY : T. H. FANG DATE : 9/17/09

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			22

NOTES

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

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

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

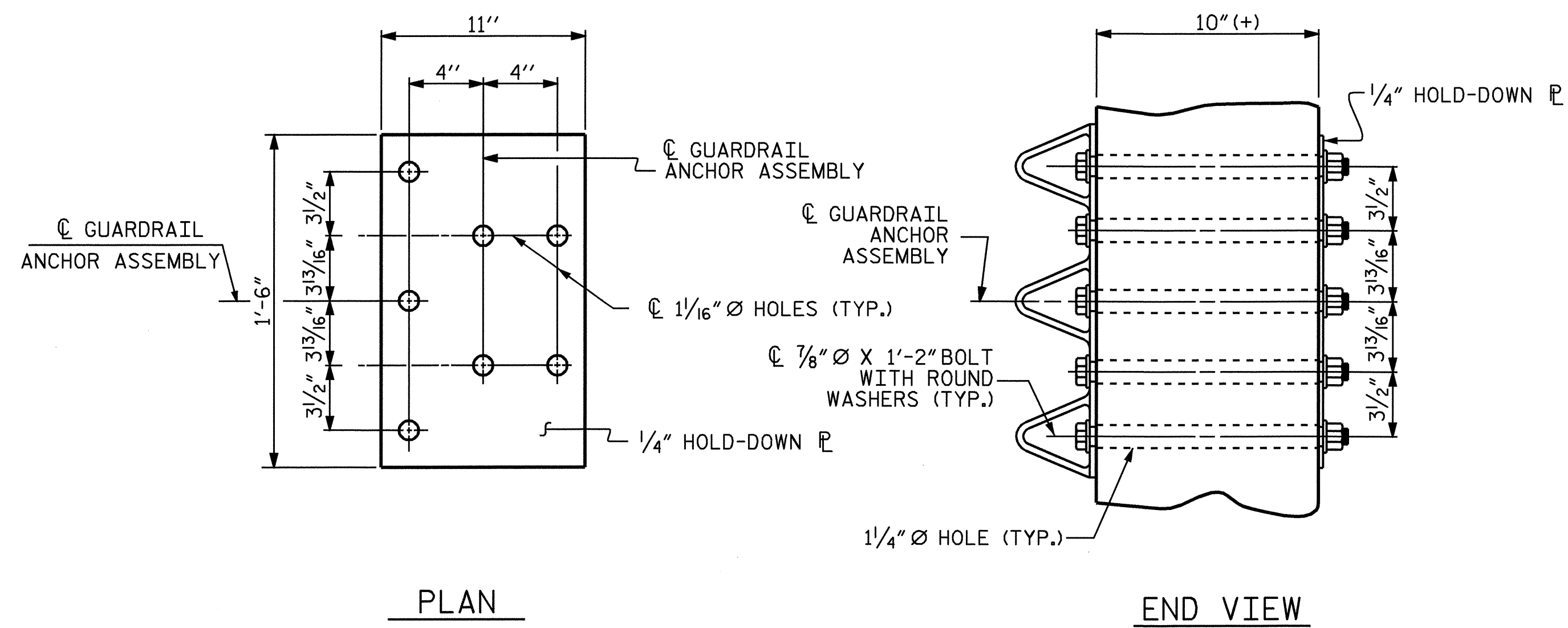
AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

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

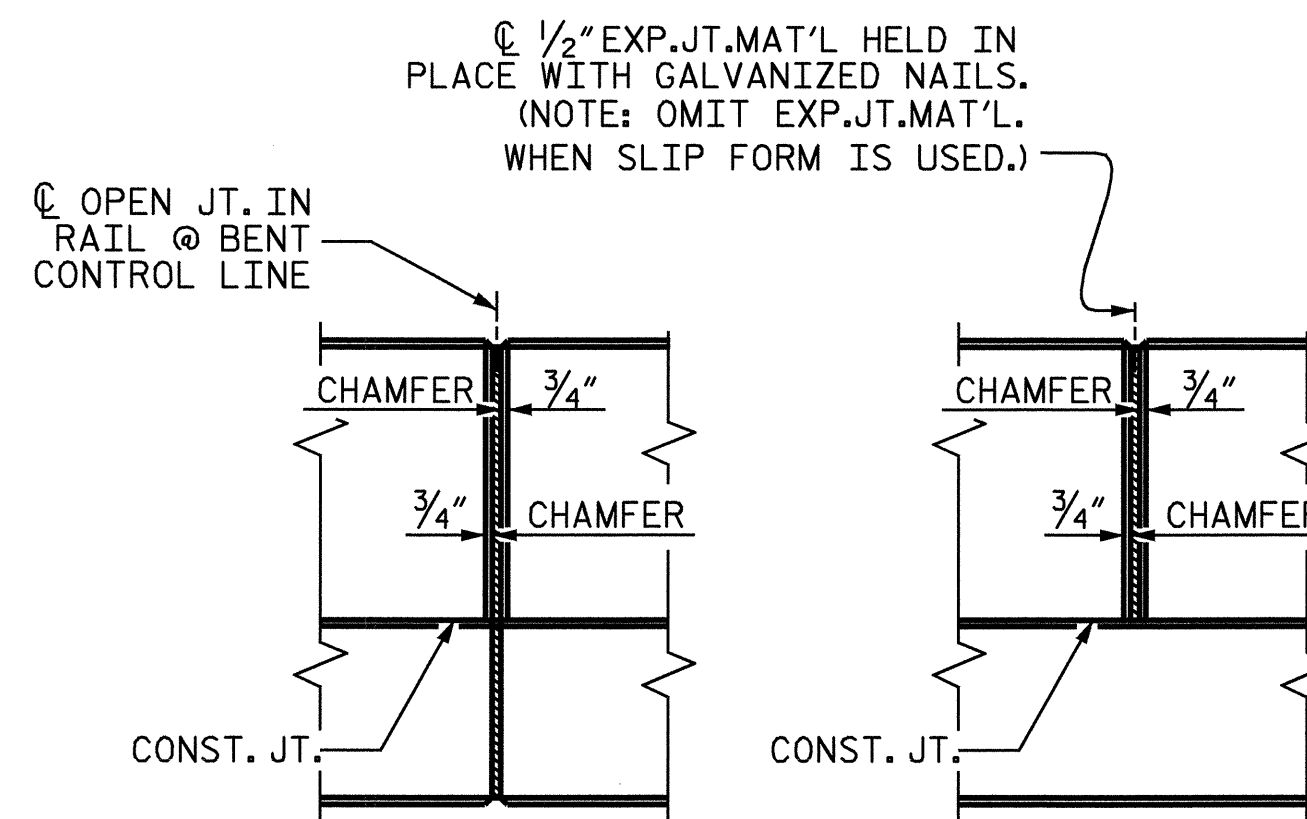
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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

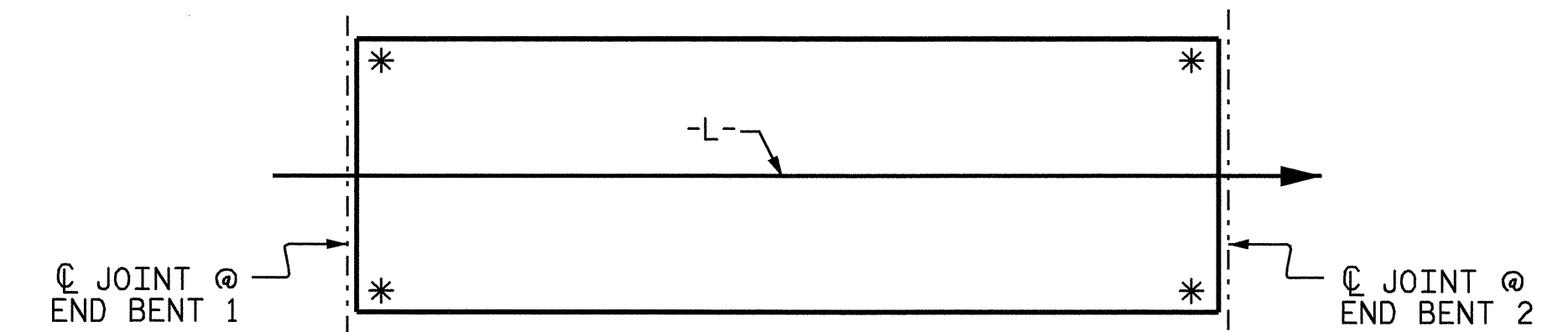
FOR VERTICAL CONCRETE BARRIER RAIL, SEE SPECIAL PROVISIONS.



PLAN
END VIEW
GUARDRAIL ANCHOR ASSEMBLY DETAILS

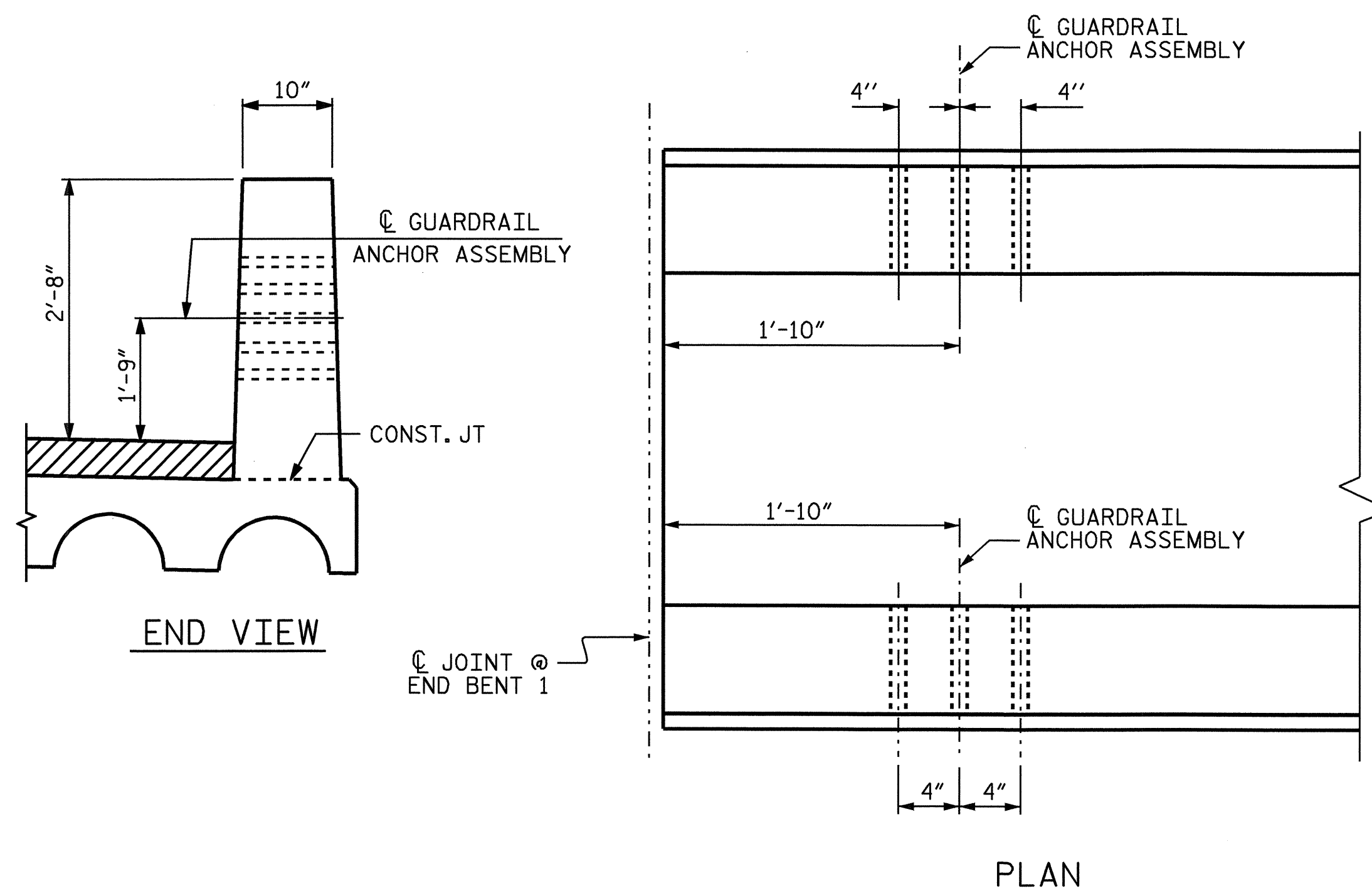


ELEVATION AT EXPANSION JOINTS

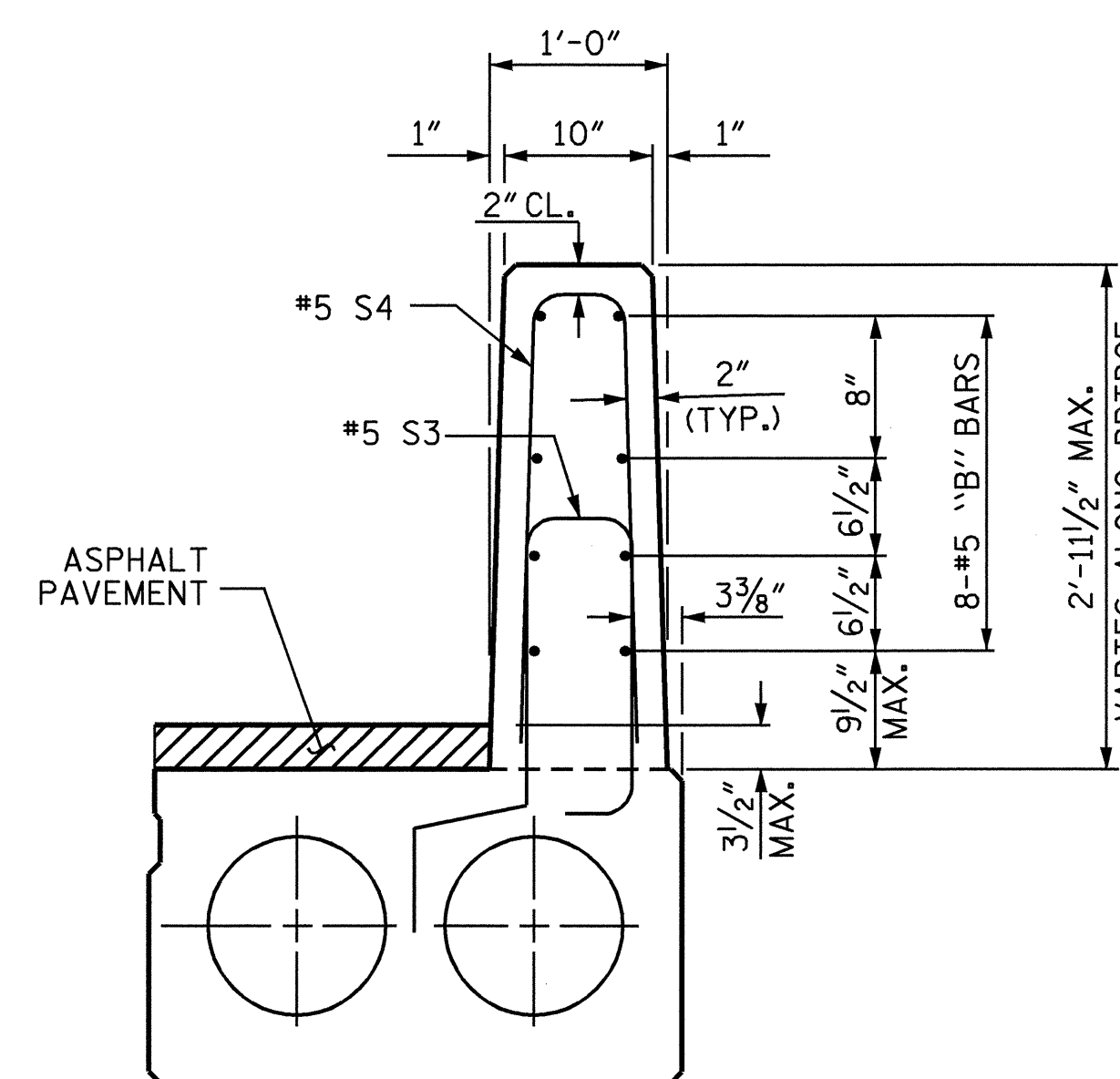


SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



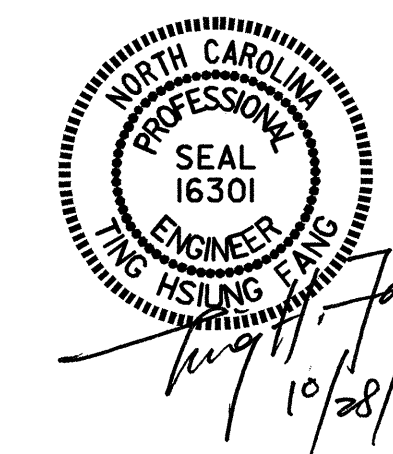
LOCATION OF GUARDRAIL ANCHOR
END BENT 1 SHOWN, END BENT 2 SIMILAR.



SECTION THRU RAIL
SHOWN AT CL BEARINGS

VERTICAL CONCRETE BARRIER RAIL DETAILS

FOR PLAN VIEW OF VERTICAL CONCRETE BARRIER RAIL, SEE "PLAN OF SPAN" SHEETS.



PROJECT NO. B-4642
SCOTLAND COUNTY
STATION: 15+50.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
VERTICAL CONCRETE BARRIER RAIL AND GUARDRAIL ANCHORAGE DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-9
					TOTAL SHEETS 22

ASSEMBLED BY : J. E. JONES	DATE: 3-09
CHECKED BY : T. H. FANG	DATE: 4-09
DRAWN BY : EEM 6/94	REV. 8/16/99 RWW/LES
CHECKED BY : RGW 6/94	REV. 10/17/00 RWW/LES
	REV. 5/7/03 RWW/JTE

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	NUMBER PER SPAN			SIZE	TYPE	LENGTH	WEIGHT	
	SPAN A	SPAN B	SPAN C					
*B4	32			#5	STR	16'-6"	551	
*B5		32		#5	STR	24'-7"	820	
*B6			32	#5	STR	21'-6"	718	
*S4	84	102	104	#5	3	5'-6"	1,664	
* EPOXY COATED REINFORCING STEEL							3,753	LBS.
CLASS AA CONCRETE							26.30	CU. YDS.
TOTAL LN. FT. OF VERTICAL CONCRETE BARRIER RAIL							255.5	LIN. FT.

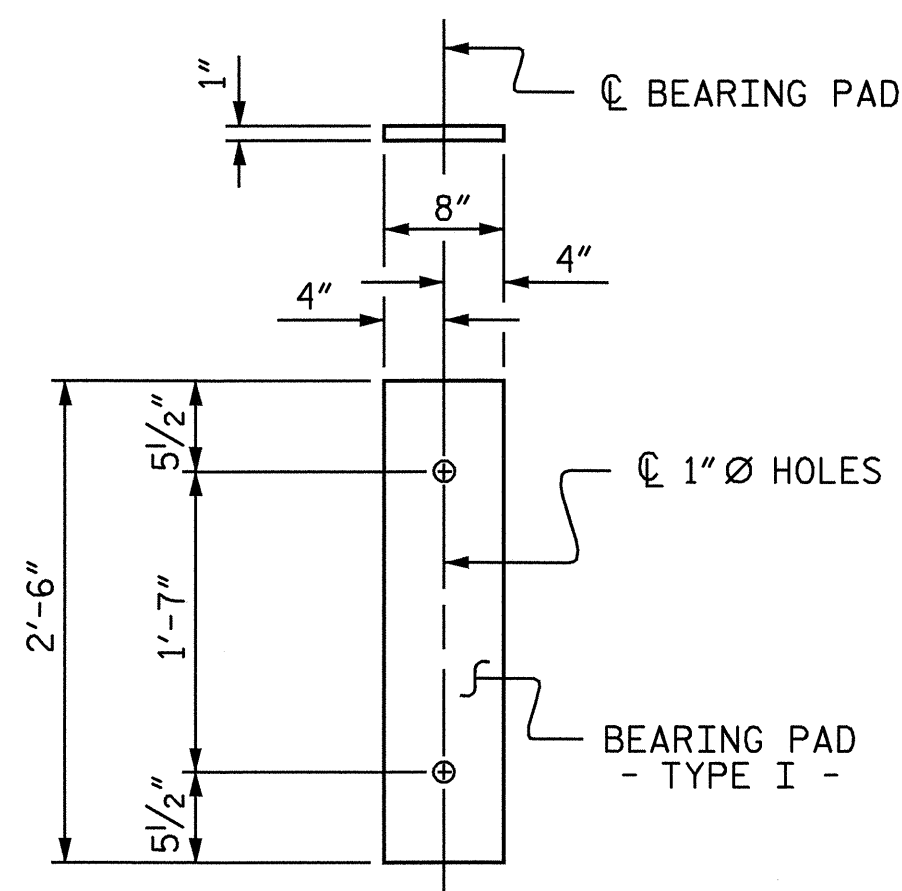
DEAD LOAD DEFLECTION AND CAMBER

	SPAN A	SPAN B	SPAN C
CAMBER (SLAB ALONE IN PLACE)	7/16" ↑	2" ↑	1/8" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD **	1/16" ↓	1/4" ↓	1/8" ↓
FINAL CAMBER	3/8" ↑	1 3/4" ↑	1" ↑

** INCLUDES FUTURE WEARING SURFACE

CORED SLABS REQUIRED

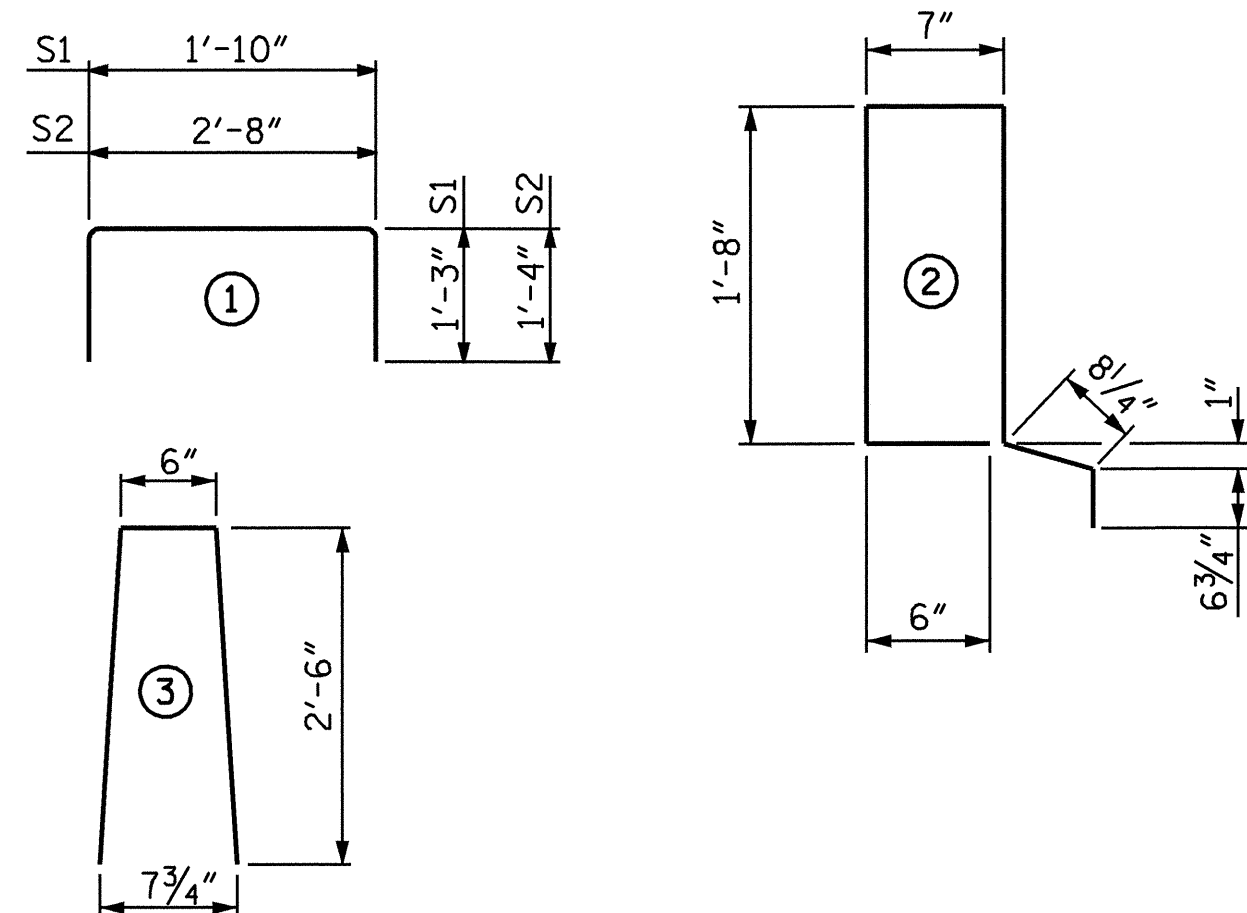
SPAN A			
UNIT TYPE	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR	2	33'-9 3/4"	67'-7 1/2"
INTERIOR	9	33'-9 3/4"	304'-3 3/4"
TOTAL	11	33'-9 3/4"	371'-11 1/4"
SPAN B			
UNIT TYPE	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR	2	49'-10 1/2"	99'-9"
INTERIOR	9	49'-10 1/2"	448'-10 1/2"
TOTAL	11	49'-10 1/2"	548'-7 1/2"
SPAN C			
UNIT TYPE	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR	2	43'-9 3/4"	87'-7 1/2"
INTERIOR	9	43'-9 3/4"	394'-3 3/4"
TOTAL	11	43'-9 3/4"	481'-11 1/4"
TOTAL CORED SLAB UNITS NO. 33 1402'-6" LIN. FT.			



FIXED END
(TYPE I - 66 REQ'D)

ELASTOMERIC BEARING DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE CORED SLAB UNIT

SPAN A							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B1	4	#4	STR	17'-8"	47	17'-8"	47
S1	8	#4	1	4'-4"	23	4'-4"	23
S2	66	#4	1	5'-4"	235	5'-4"	235
* S3	42	#5	2	5'-8"	248		
REINFORCING STEEL				305 LBS.		305 LBS.	
* EPOXY COATED REINFORCING STEEL				248 LBS.			
5000 P.S.I. CONCRETE				5.0 CU. YDS.		5.0 CU. YDS.	
0.6" Ø L.R. STRANDS No. 9							
SPAN B							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B2	4	#4	STR	25'-8"	69	25'-8"	69
S1	8	#4	1	4'-4"	23	4'-4"	23
S2	116	#4	1	5'-4"	413	5'-4"	413
* S3	51	#5	2	5'-8"	301		
REINFORCING STEEL				505 LBS.		505 LBS.	
* EPOXY COATED REINFORCING STEEL				301 LBS.			
5000 P.S.I. CONCRETE				7.2 CU. YDS.		7.2 CU. YDS.	
0.6" Ø L.R. STRANDS No. 15							
SPAN C							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B3	4	#4	STR	22'-8"	61	22'-8"	61
S1	8	#4	1	4'-4"	23	4'-4"	23
S2	86	#4	1	5'-4"	306	5'-4"	306
* S3	52	#5	2	5'-8"	307		
REINFORCING STEEL				390 LBS.		390 LBS.	
* EPOXY COATED REINFORCING STEEL				307 LBS.			
5000 P.S.I. CONCRETE				6.4 CU. YDS.		6.4 CU. YDS.	
0.6" Ø L.R. STRANDS No. 12							

NOTES

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

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

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

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

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

WHEN CORED SLABS ARE CAST, A POSITIVE HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. THIS SYSTEM SHALL BE DESIGNED TO BE LEFT IN PLACE UNTIL THE CONCRETE HAS REACHED RELEASE STRENGTH. AT LEAST THREE WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI.

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

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

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

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

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

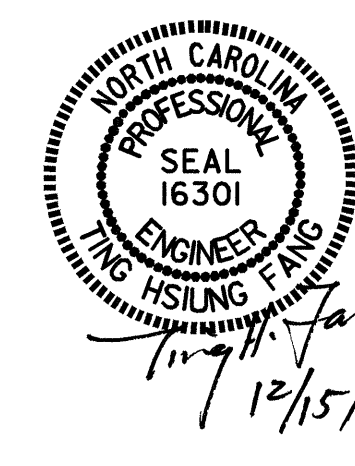
SPLICE LENGTH CHART

BAR SIZE	SPLICE LENGTH
#4	1'-9"

GRADE 270 STRANDS

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

PROJECT NO. B-4642
SCOTLAND COUNTY
STATION: 15+50.00 -L-



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

ASSEMBLED BY : J. E. JONES	DATE : 3/14/09
CHECKED BY : T. H. FANG	DATE : 09/15/09
DRAWN BY : WJH 4/89	REV. 7/10/01 RWW/LES
CHECKED BY : FCJ 5/89	REV. 5/7/03RRR RWW/JTE
	REV. 5/1/06 TLA/GM

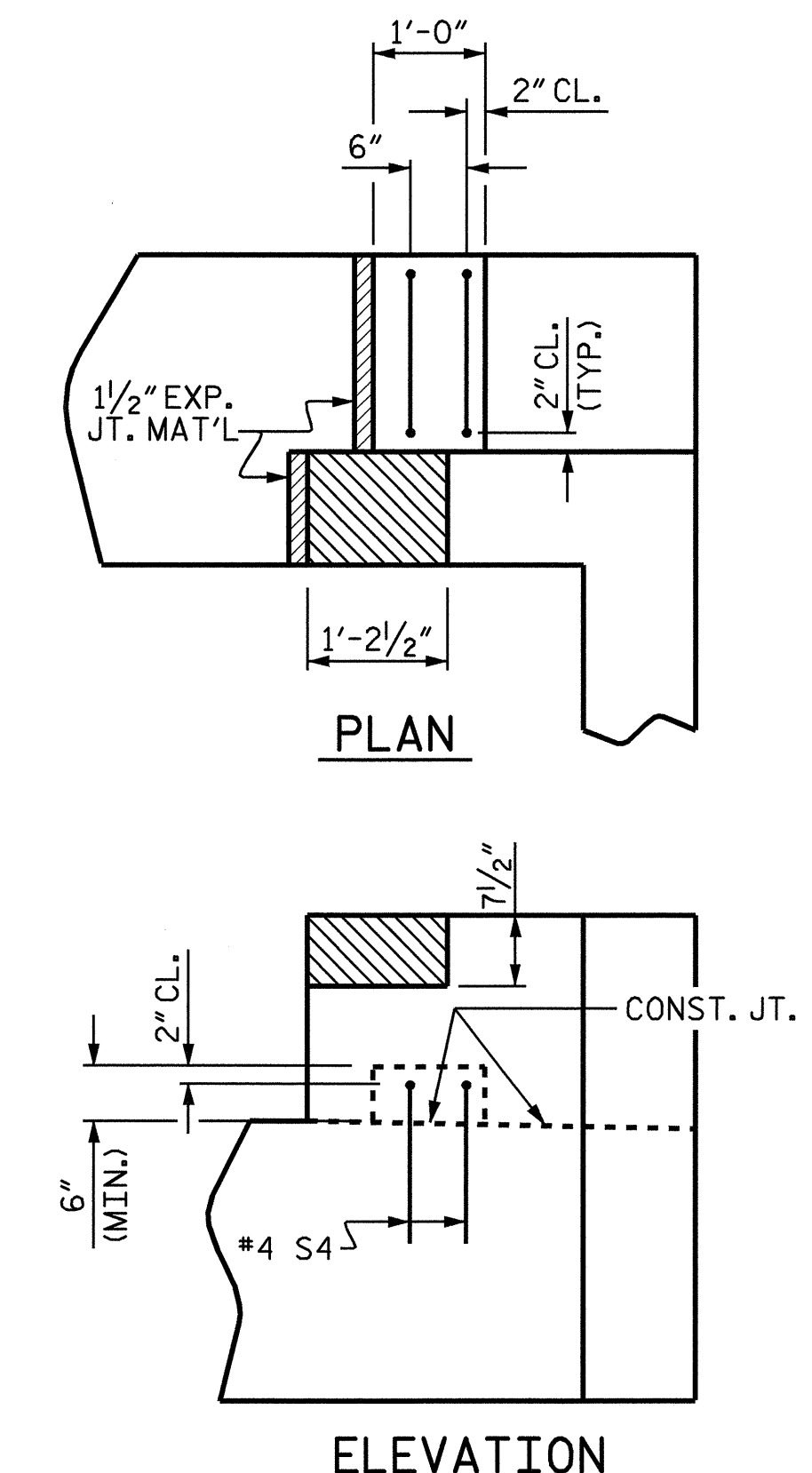
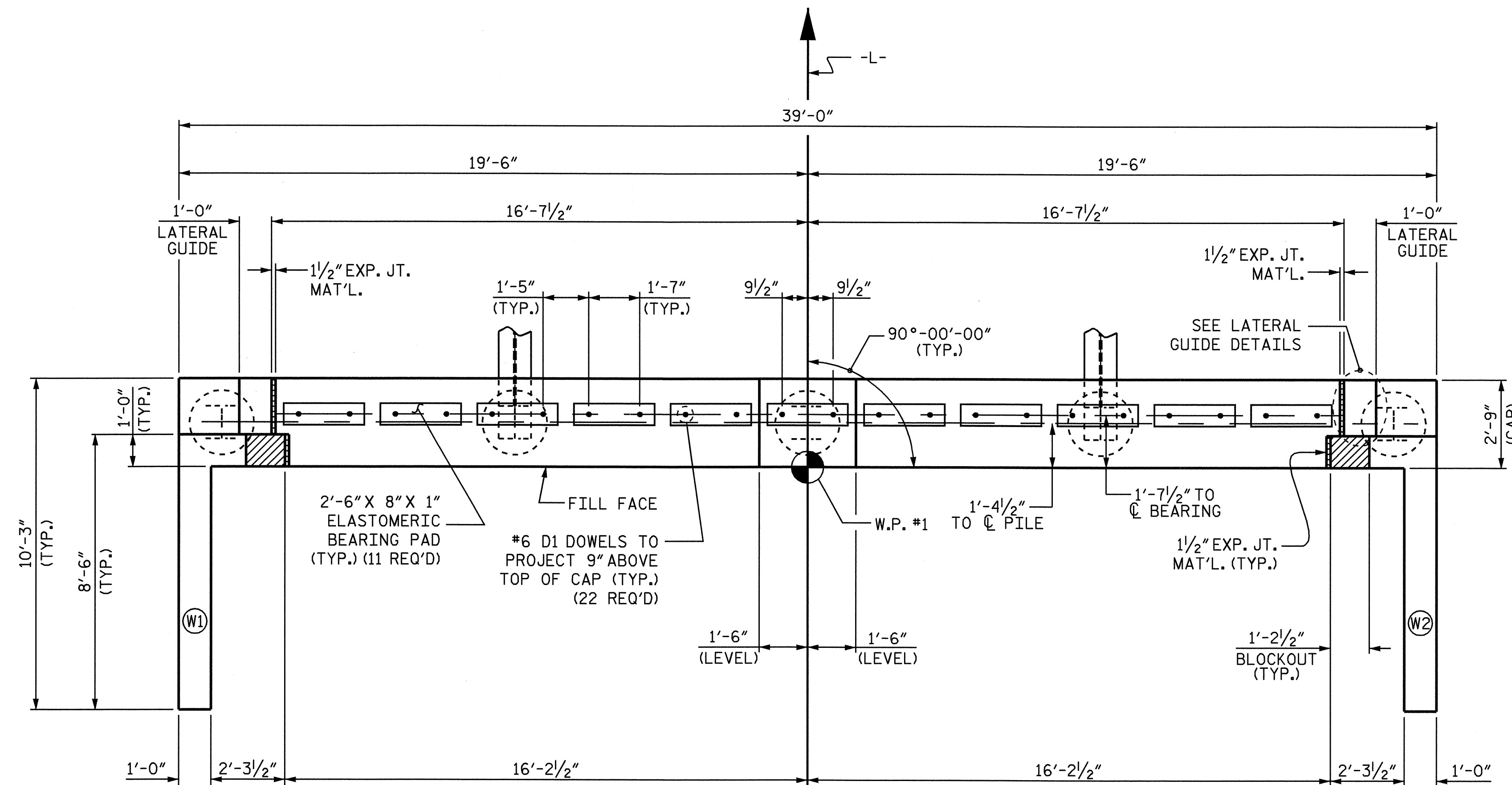
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			22

NOTES

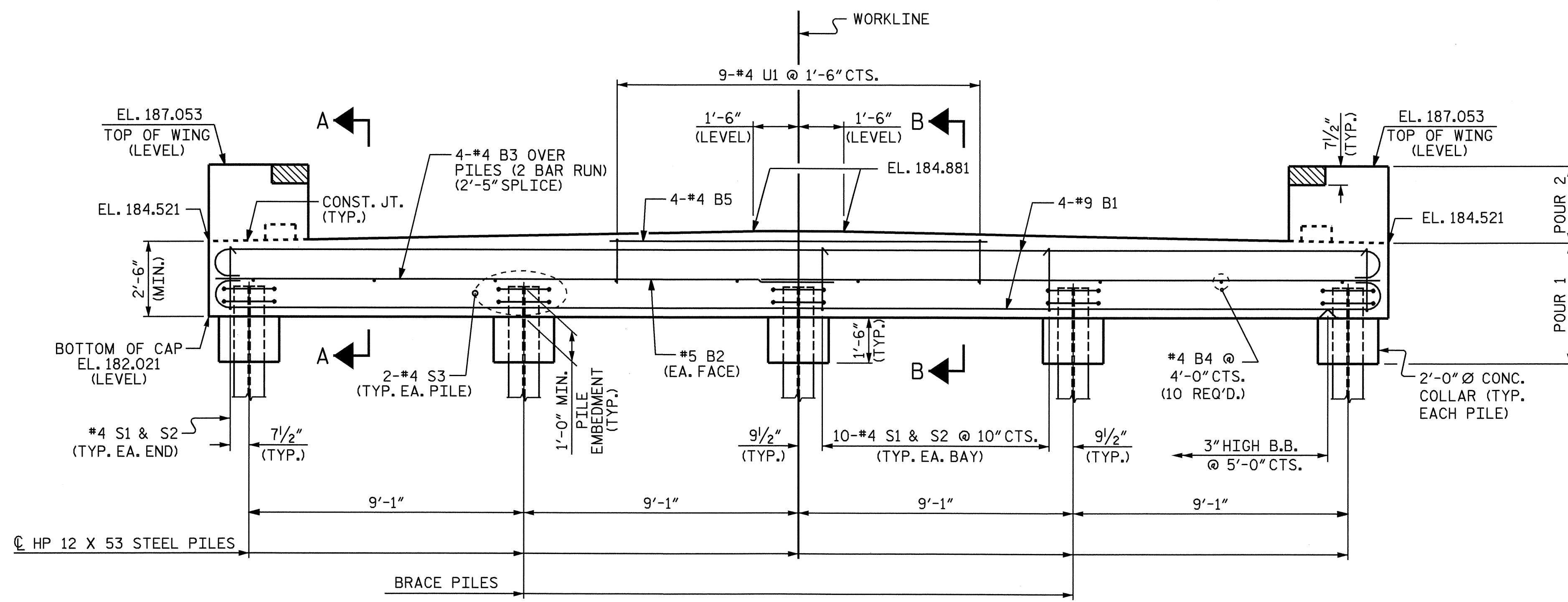
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6 DI DOWELS.

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

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



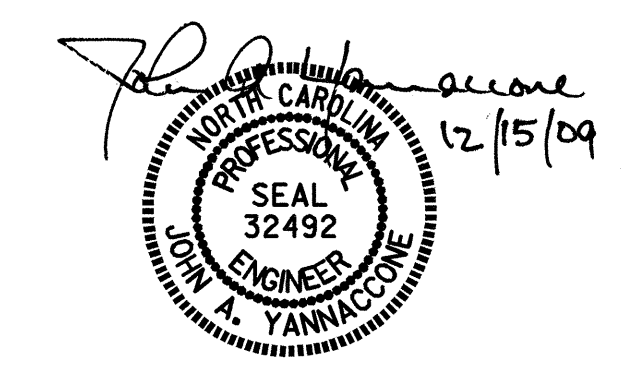
LATERAL GUIDE DETAILS
(EACH END SIMILAR)



ELEVATION
 WINGS NOT SHOWN FOR CLARITY
 FOR REINFORCING STEEL & DETAILS OF WINGS, SEE SHEET 2 OF 3.

PROJECT NO. B-4642
SCOTLAND COUNTY
 STATION: 15+50.00 -L-

SHEET 1 OF 3

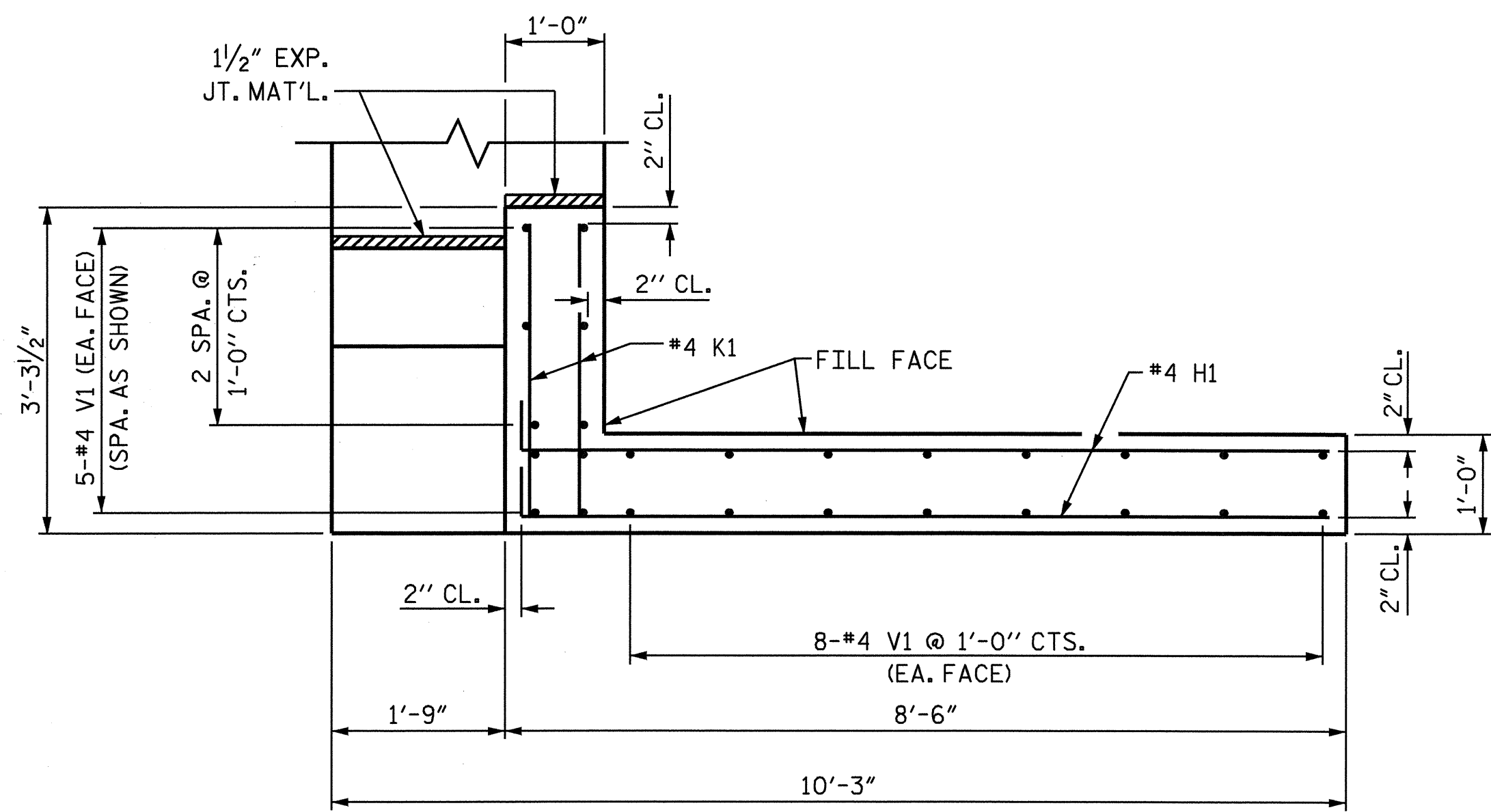


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

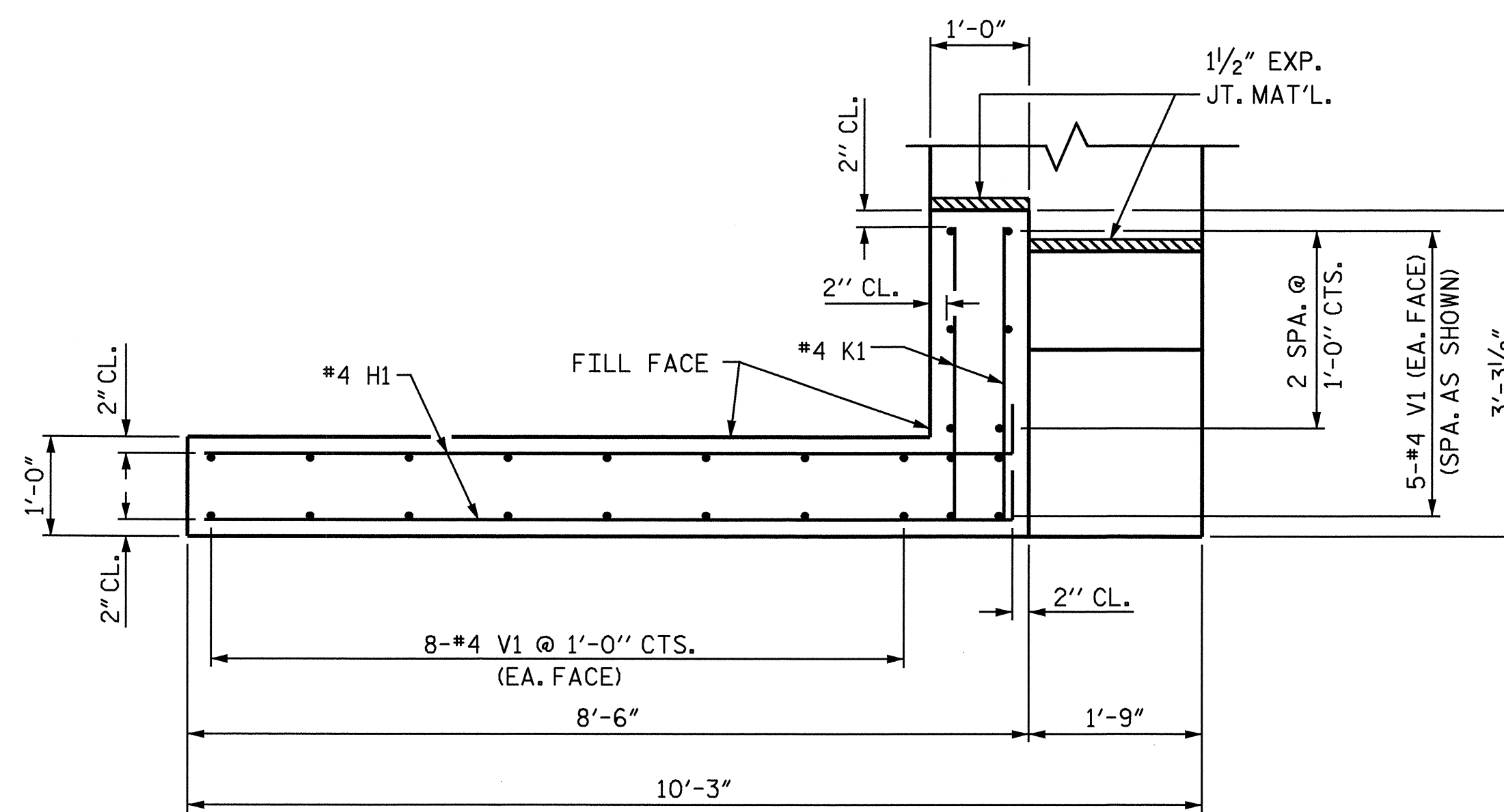
**SUBSTRUCTURE
 END BENT 1**

REVISIONS						SHEET NO. S-11
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 22
2			4			

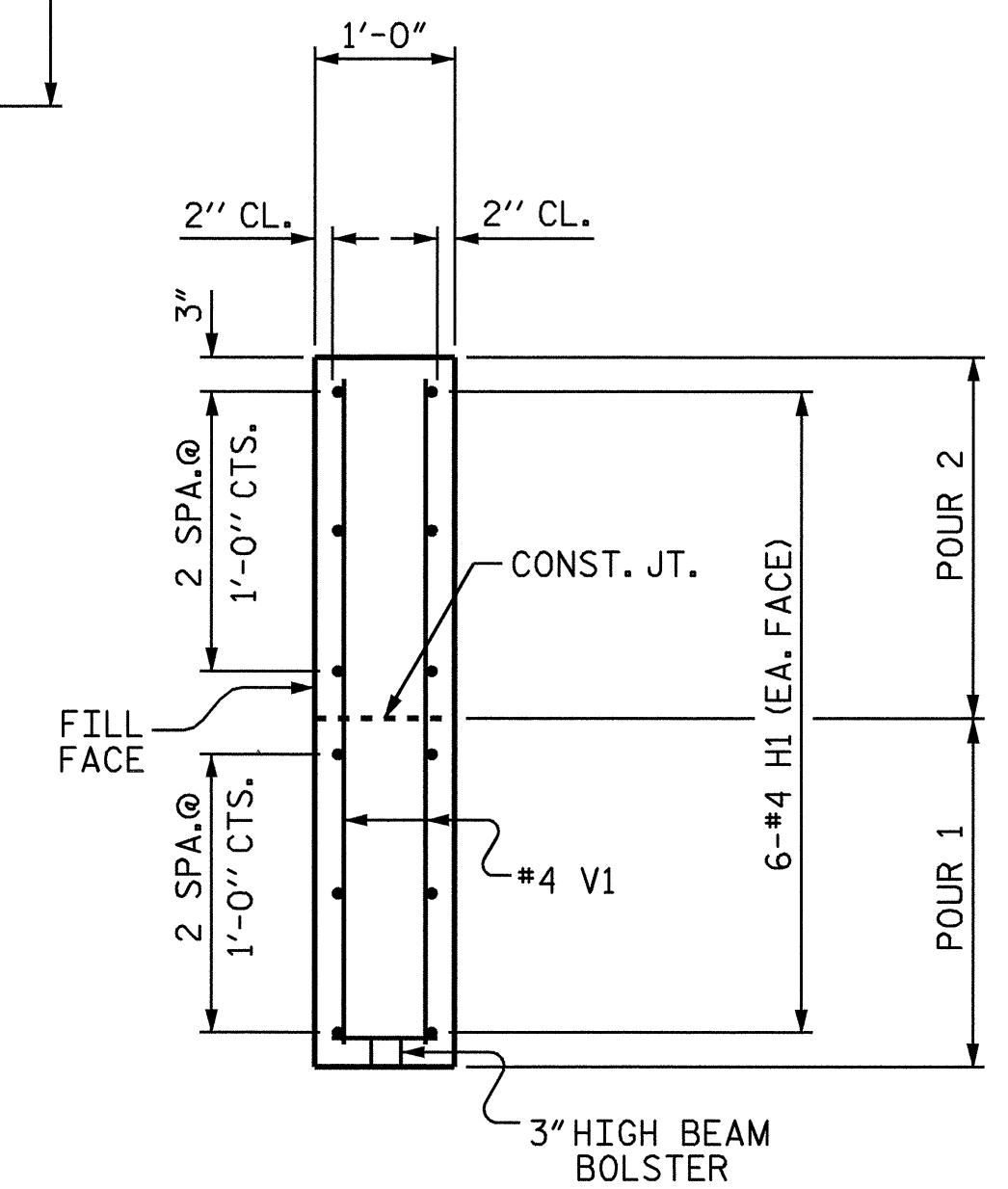
DRAWN BY: J. YANNACONE DATE: 3/23/09
 CHECKED BY: T.H. FANG DATE: 9/23/09



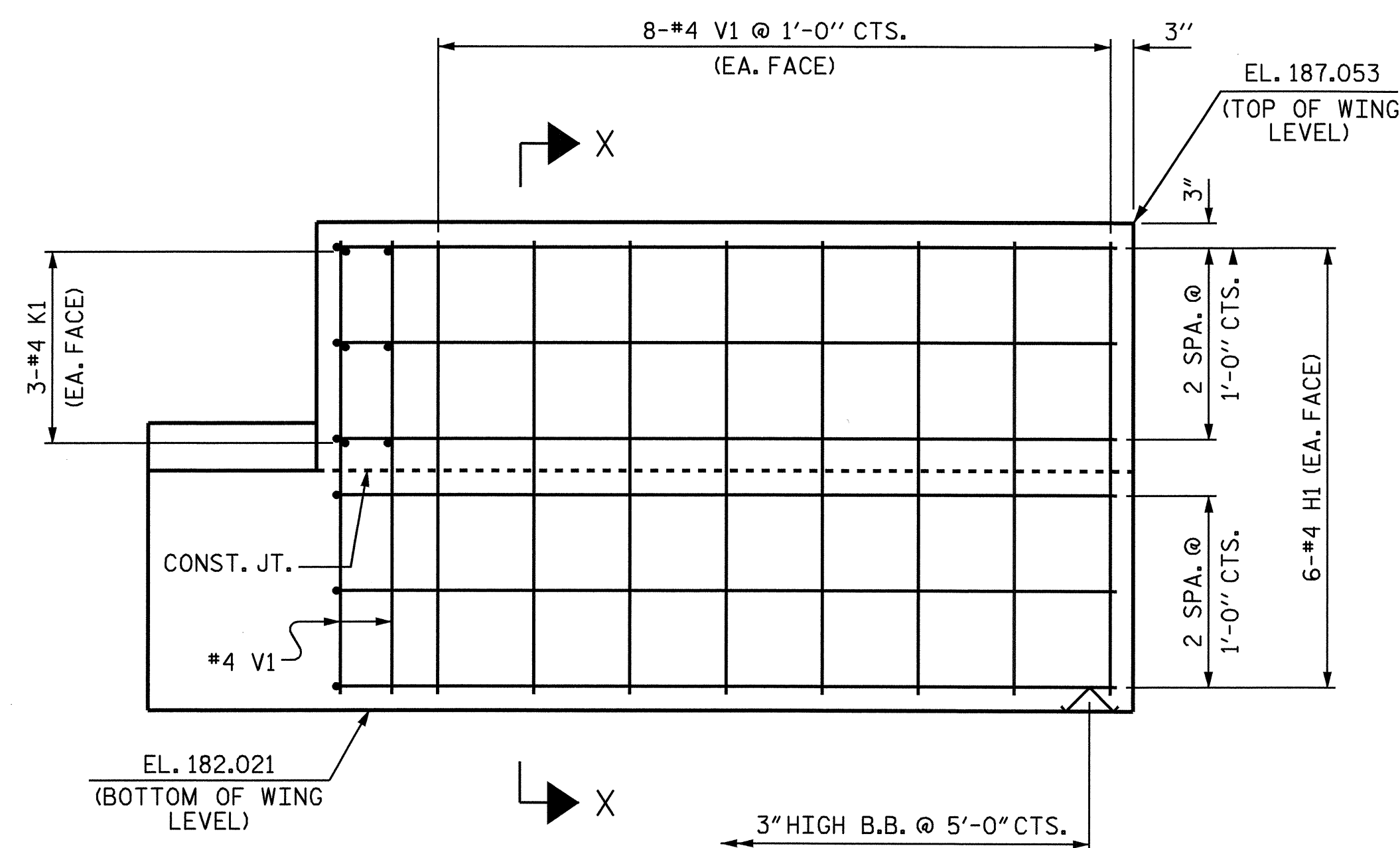
PLAN OF WING W1



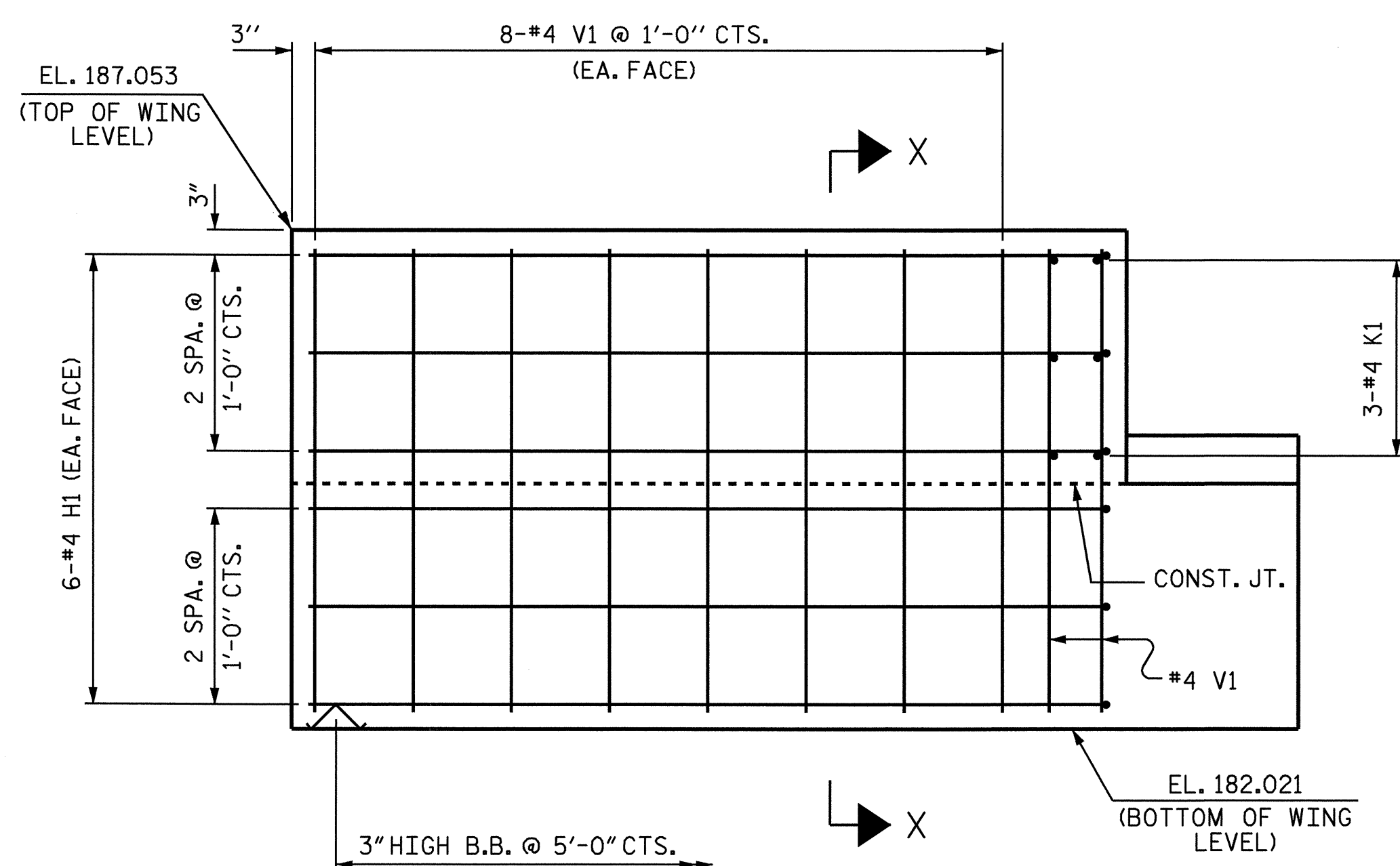
PLAN OF WING W2



SECTION X-X



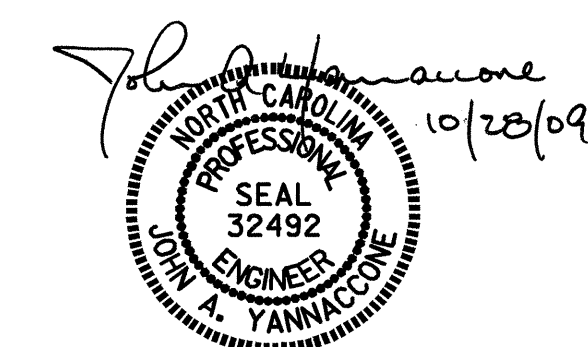
ELEVATION OF WING W1



ELEVATION OF WING W2

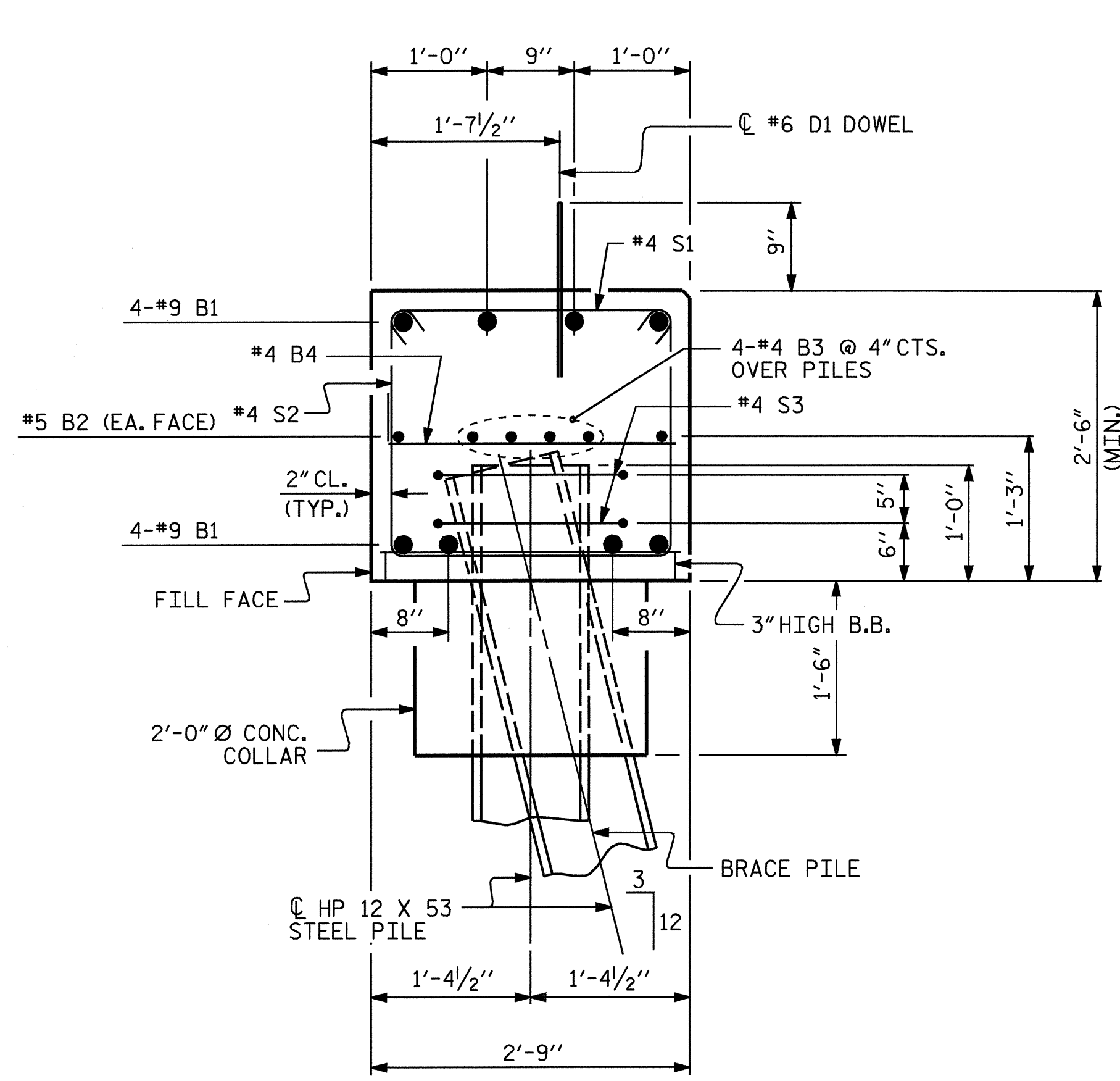
PROJECT NO. B-4642
SCOTLAND COUNTY
 STATION: 15+50.00 -L-

SHEET 2 OF 3

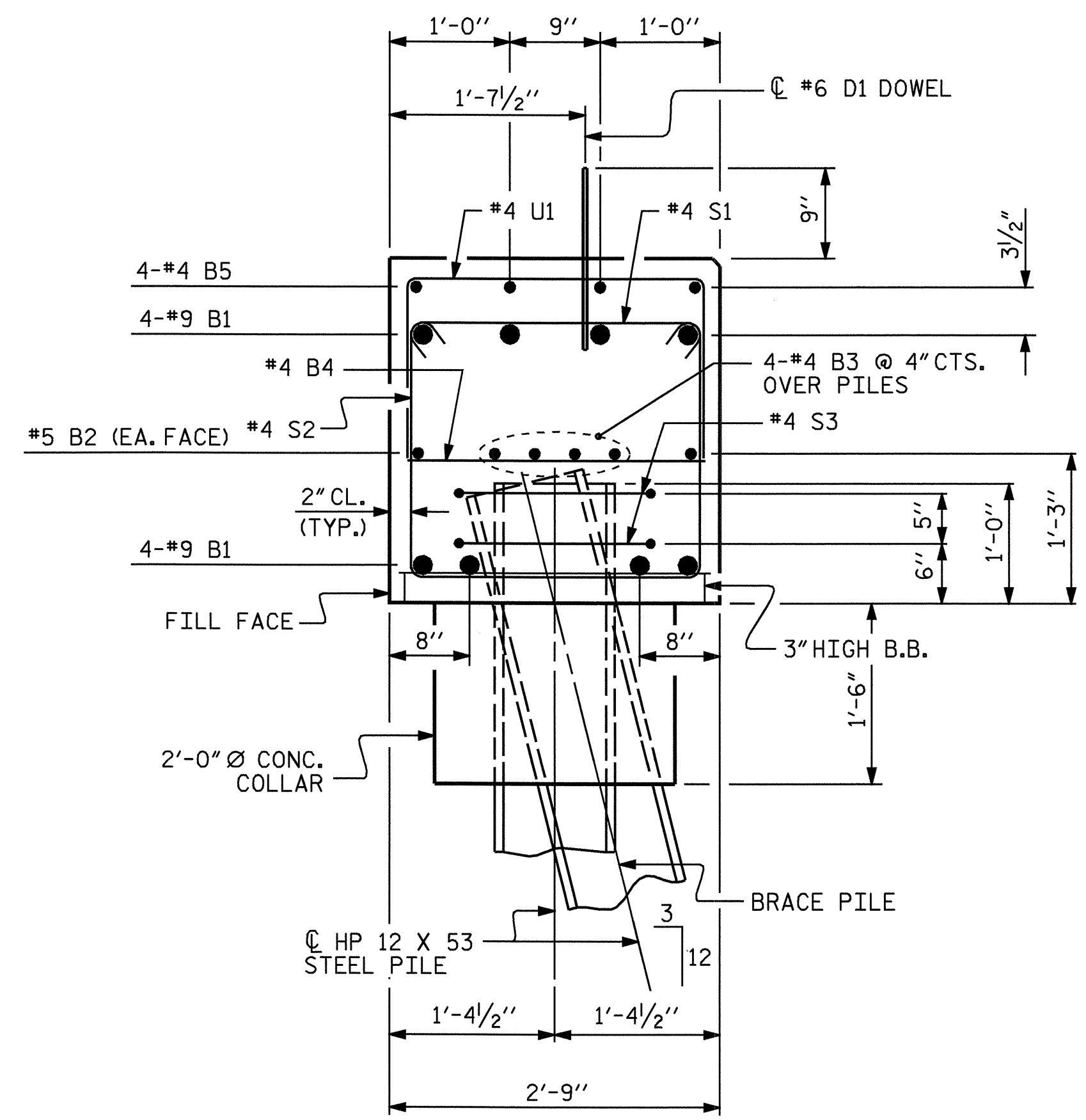


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-12
TOTAL SHEETS					22

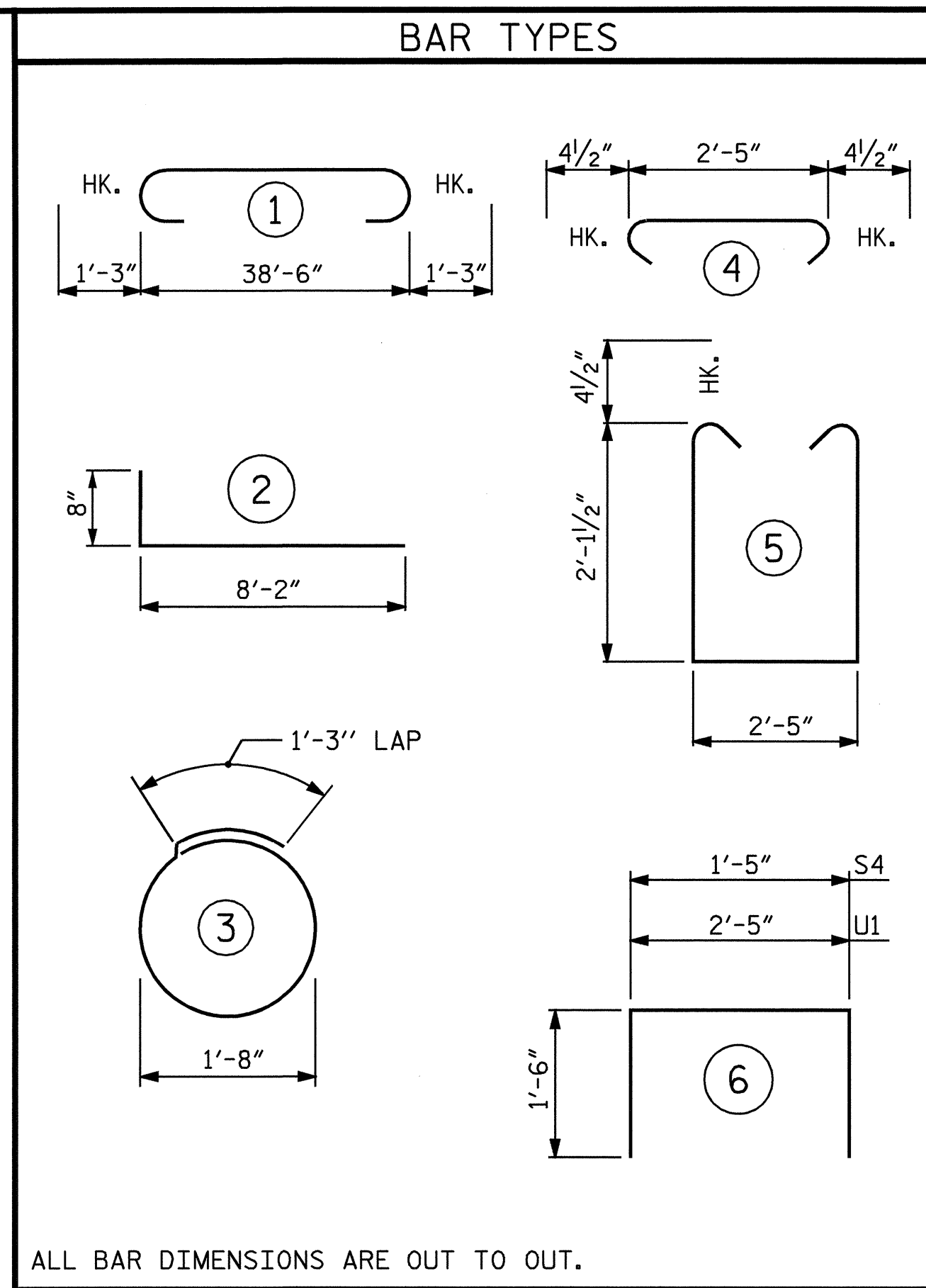
DRAWN BY : J. YANNAACONE DATE : 3/23/09
 CHECKED BY : T. H. FANG DATE : 9/23/09



SECTION A-A

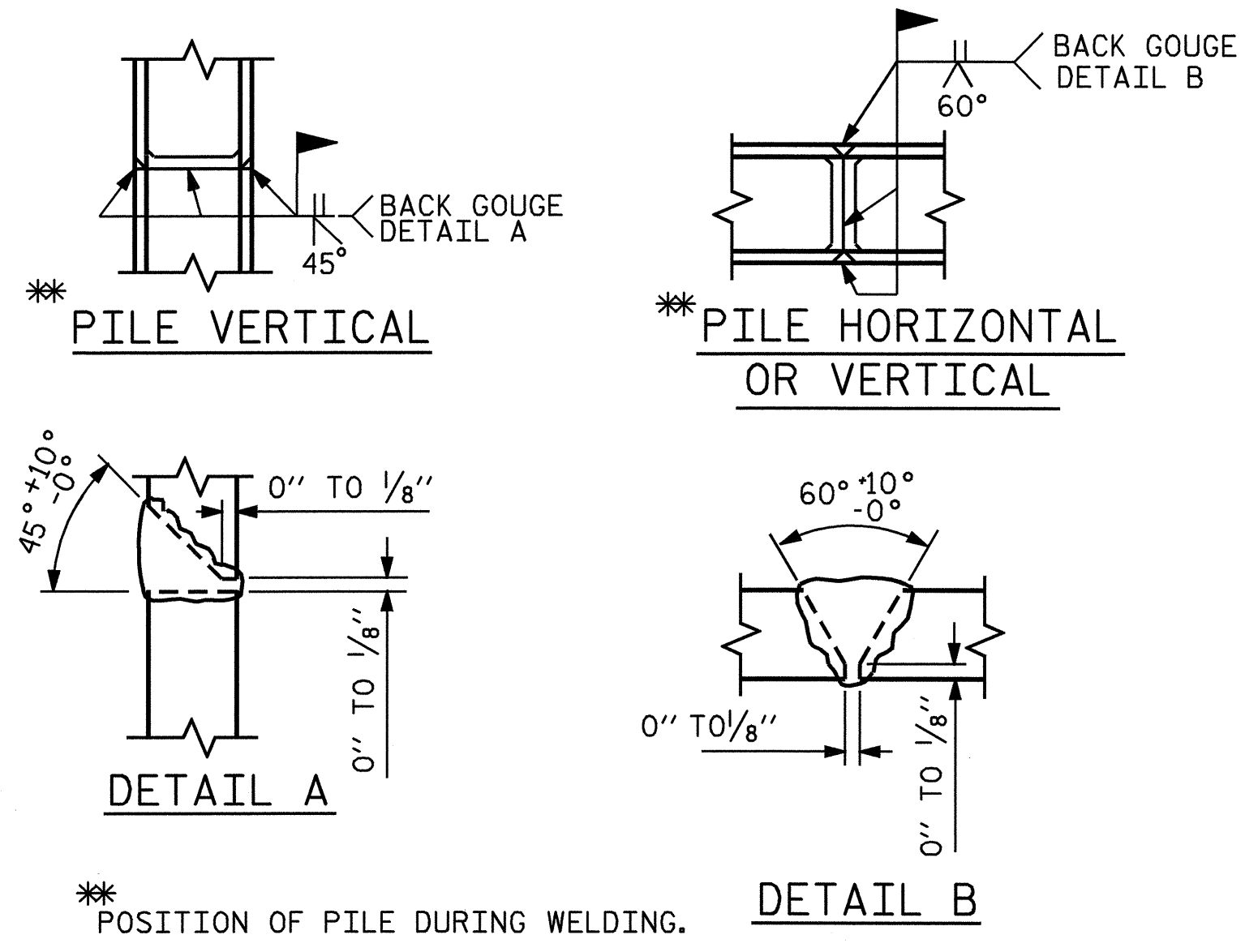


SECTION B-B

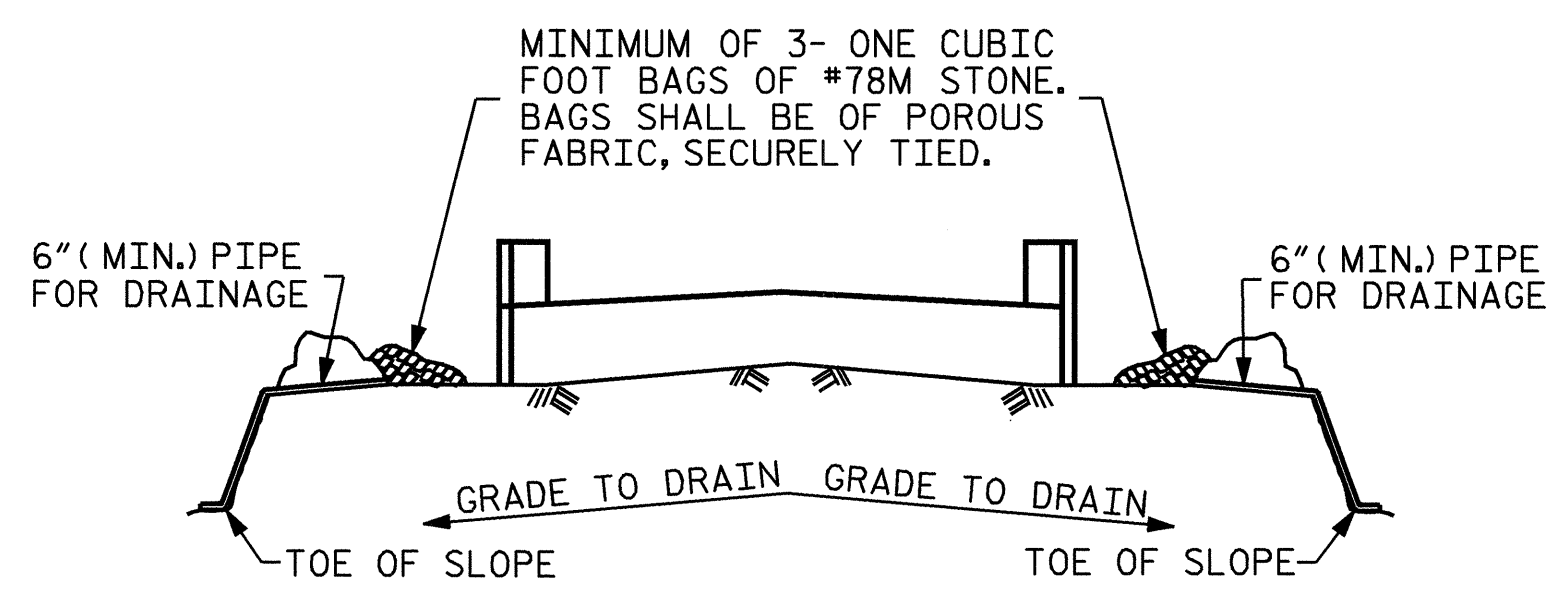


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		41'-0"	1115
B2	2	#5	STR	38'-8"	81
B3	8	#4	STR	20'-7"	110
B4	10	#4	STR	2'-5"	16
B5	4	#4	STR	12'-6"	33
D1	22	#6	STR	1'-6"	50
H1	24	#4		8'-10"	142
K1	12	#4	STR	2'-11"	23
S1	42	#4		3'-2"	89
S2	42	#4		7'-5"	208
S3	10	#4		6'-6"	43
S4	4	#4		4'-5"	12
U1	9	#4		5'-5"	33
V1	52	#4	STR	4'-8"	162
REINFORCING STEEL					LBS. 2117
CLASS A CONCRETE BREAKDOWN					
POUR 1 (CONCRETE COLLARS, CAP & LOWER WINGS)				C.Y.	13.0
POUR 2 (UPPER WINGS)				C.Y.	2.0
POUR 3 (LATERAL GUIDES)				C.Y.	0.1
TOTAL				C.Y.	15.1
HP 12 X 53 STEEL PILES					
NO. 5				LIN. FT. =	375



PILE SPLICE DETAILS



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

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

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

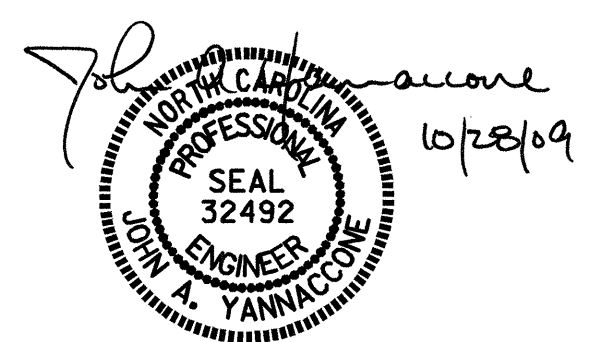
TEMPORARY DRAINAGE AT END BENT

PROJECT NO. B-4642
SCOTLAND COUNTY
 STATION: 15+50.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1



DRAWN BY : J. YANNAACONE DATE : 3/23/09
 CHECKED BY : T. H. FANG DATE : 9/23/09

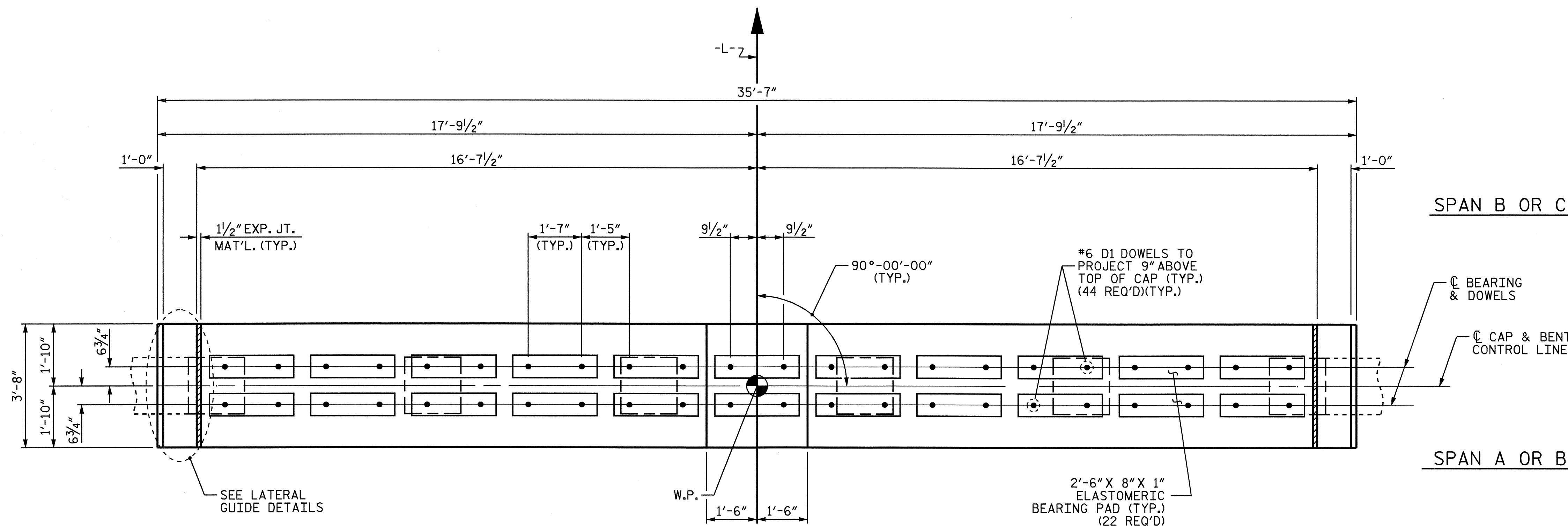
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			22

NOTES

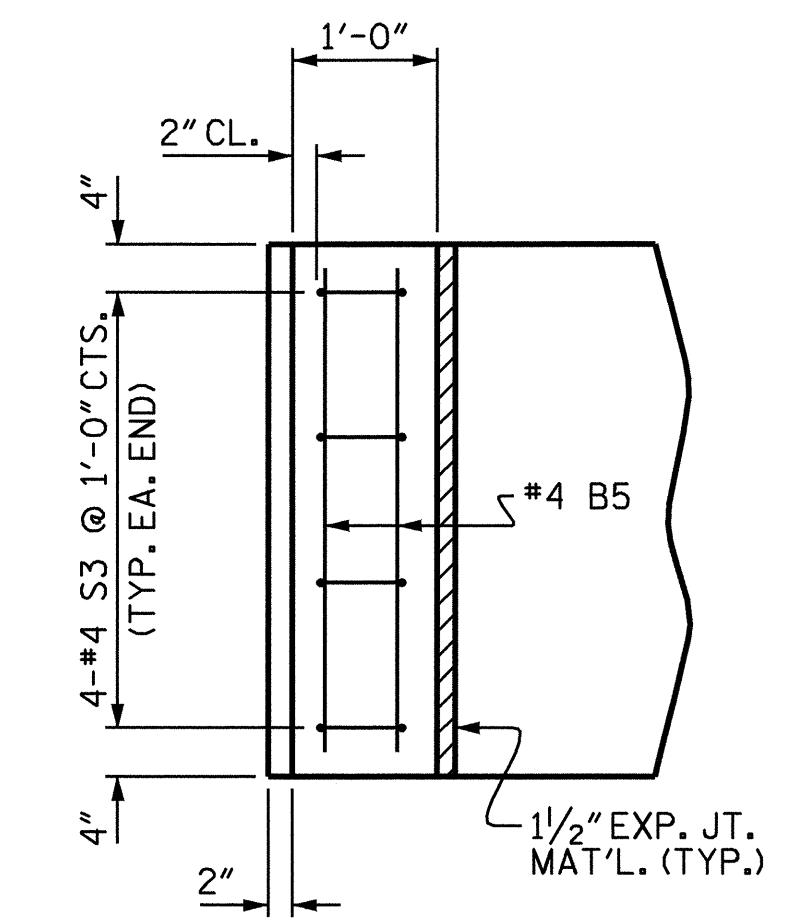
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6 D1 DOWELS.

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

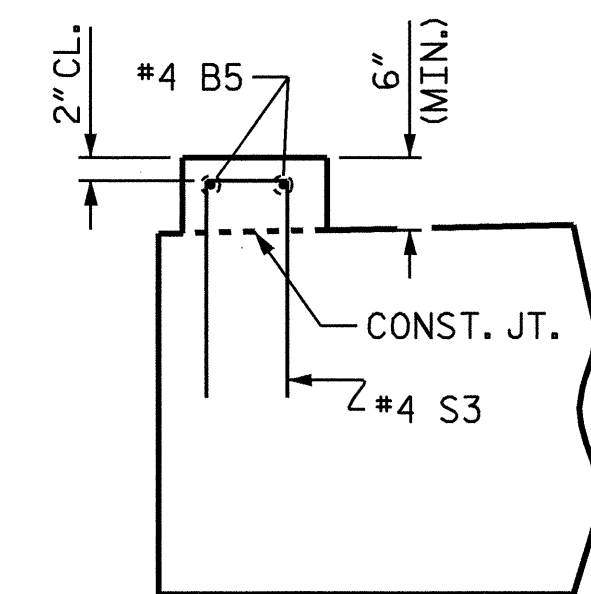
FOR 20" PRESTRESSED CONCRETE PILE, SEE SHEET 3 OF 3.



PLAN

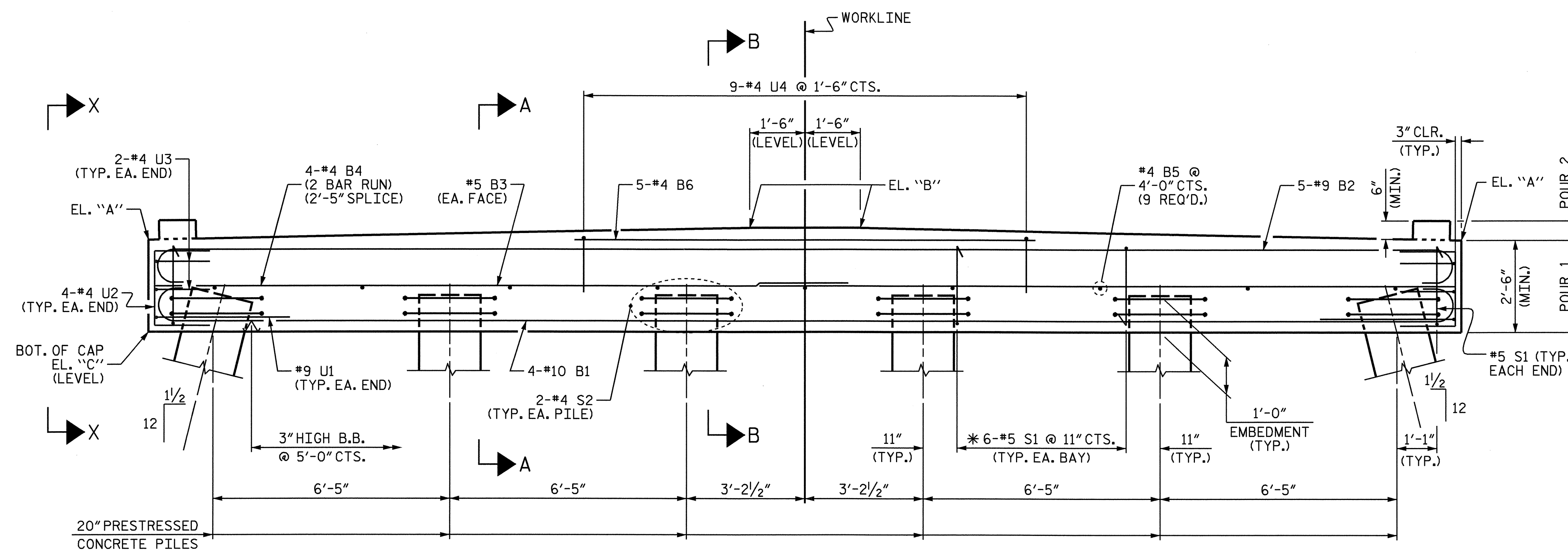


PLAN



ELEVATION

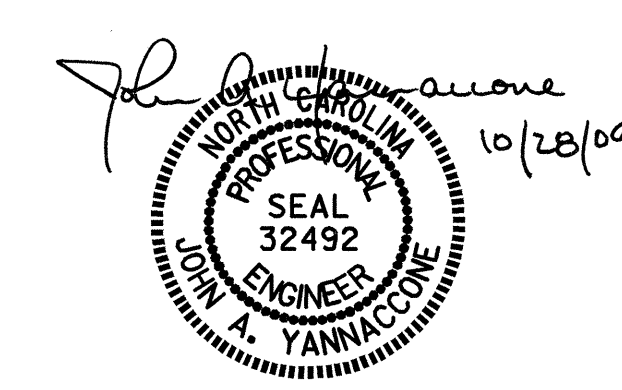
LATERAL GUIDE DETAILS



ELEVATION

ELEVATION		
ELEVATION	BENT 1	BENT 2
"A"	184.678	184.730
"B"	185.004	185.056
"C"	182.178	182.230

* INVERT ALTERNATE STIRRUPS AS SHOWN.



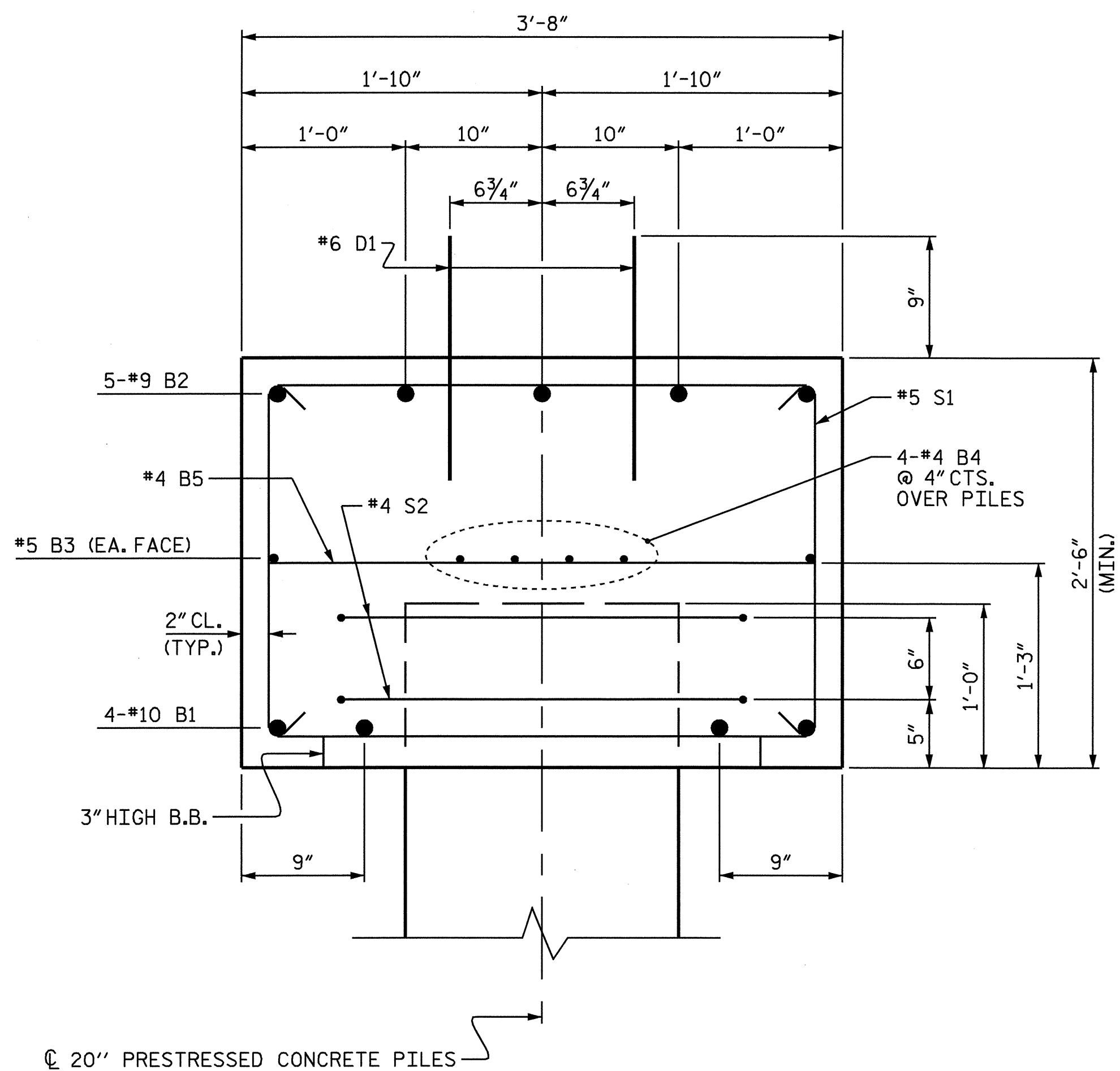
PROJECT NO. B-4642
SCOTLAND COUNTY
 STATION: 15+50.00 -L-

SHEET 1 OF 3

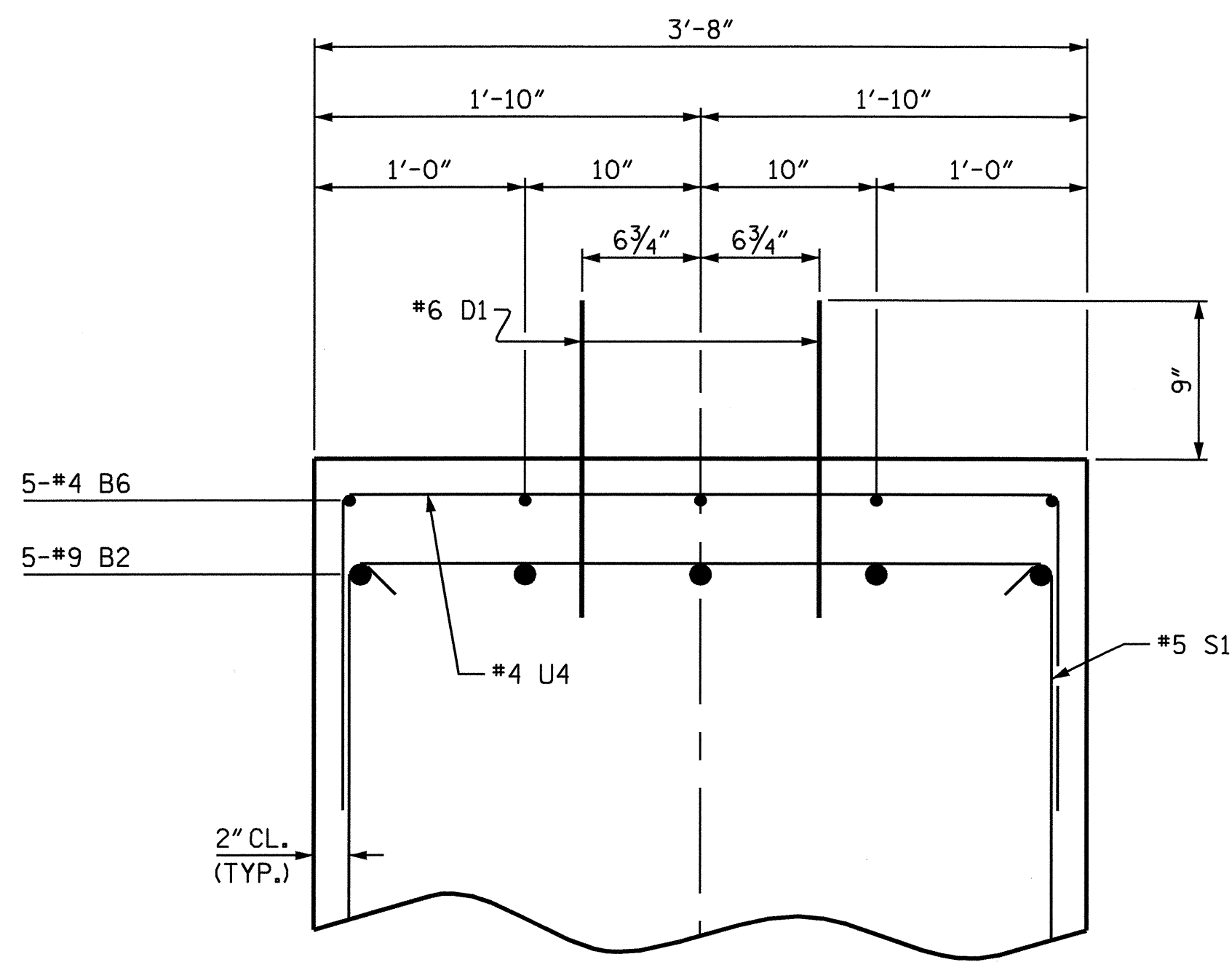
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
BENTS 1 & 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-14
TOTAL SHEETS 22

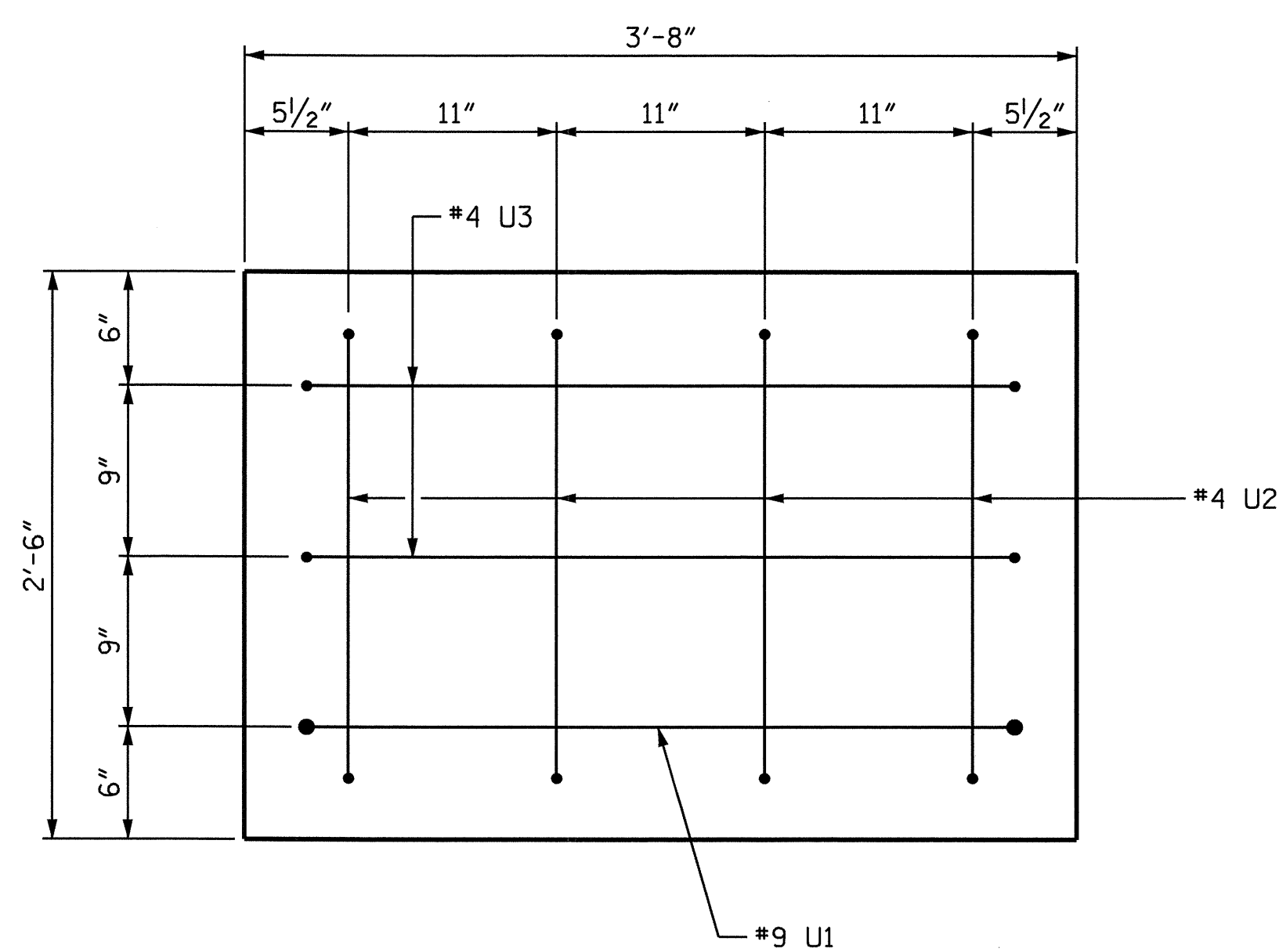
DRAWN BY : E.C. LOCKLEAR DATE : 9-30-09
 CHECKED BY : T. H. FANG DATE : 10-16-09



SECTION A-A



PARTIAL SECTION B-B

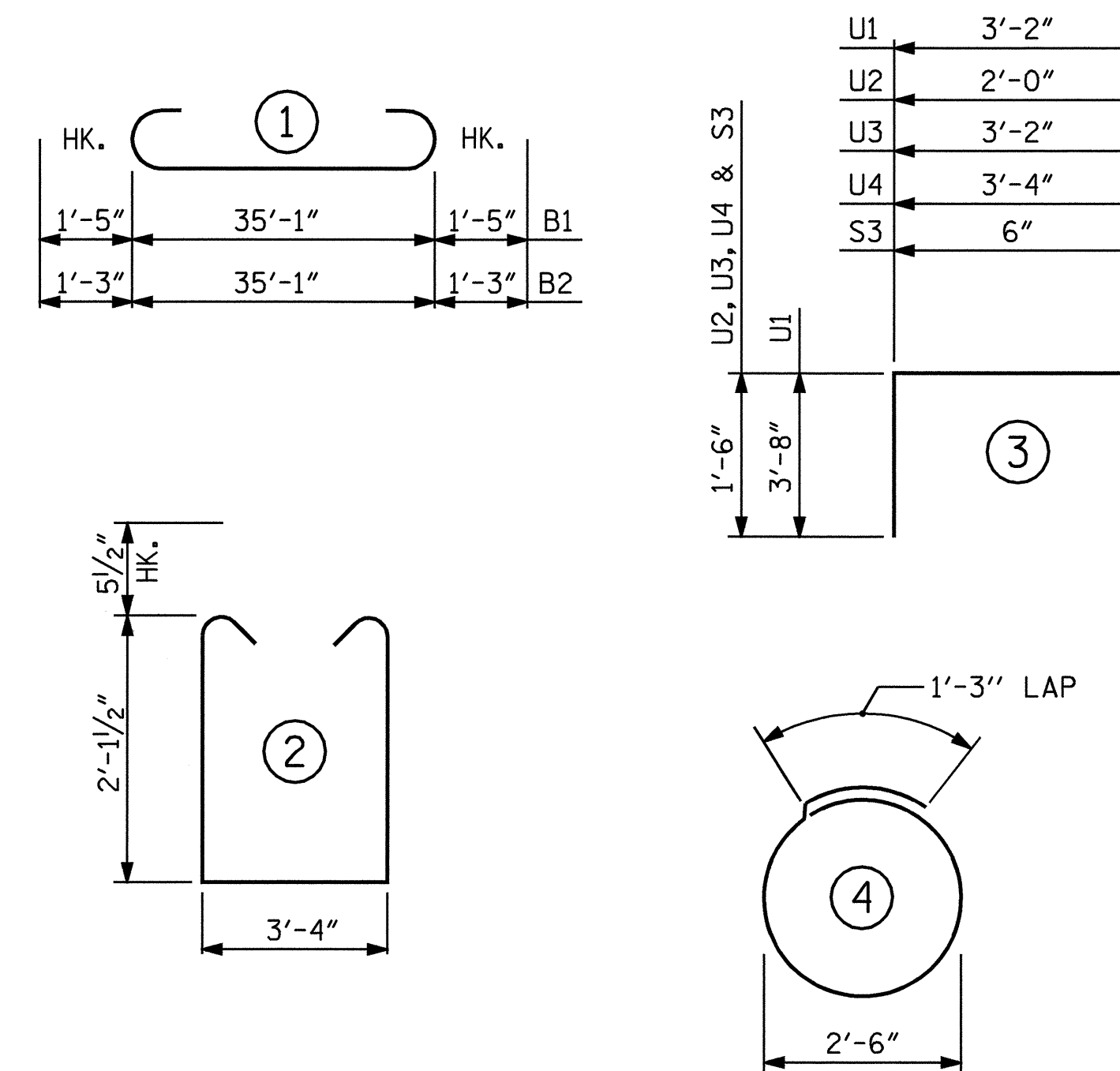


VIEW X-X

BILL OF MATERIAL

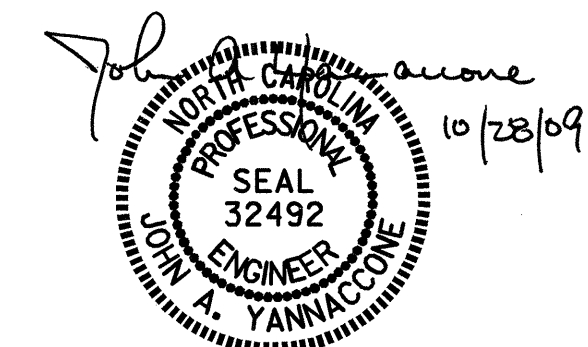
BENT 1						BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	37'-11"	653	B1	4	#10	1	37'-11"	653
B2	5	#9	1	37'-7"	639	B2	5	#9	1	37'-7"	639
B3	2	#5	STR	35'-3"	74	B3	2	#5	STR	35'-3"	74
B4	8	#4	STR	18'-10"	101	B4	8	#4	STR	18'-10"	101
B5	13	#4	STR	3'-4"	29	B5	13	#4	STR	3'-4"	29
B6	5	#4	STR	12'-6"	42	B6	5	#4	STR	12'-6"	42
D1	44	#6	STR	1'-6"	99	D1	44	#6	STR	1'-6"	99
S1	32	#5	2	8'-6"	284	S1	32	#5	2	8'-6"	284
S2	12	#4	4	9'-2"	73	S2	12	#4	4	9'-2"	73
S3	8	#4	3	3'-6"	19	S3	8	#4	3	3'-6"	19
U1	2	#9	3	10'-6"	71	U1	2	#9	3	10'-6"	71
U2	8	#4	3	5'-0"	27	U2	8	#4	3	5'-0"	27
U3	4	#4	3	6'-2"	16	U3	4	#4	3	6'-2"	16
U4	9	#4	3	6'-4"	38	U4	9	#4	3	6'-4"	38
REINFORCING STEEL = 2165 LBS						REINFORCING STEEL = 2165 LBS					
CLASS A CONCRETE BREAKDOWN						CLASS A CONCRETE BREAKDOWN					
POUR #1 (CAP) C.Y. 12.3						POUR #1 (CAP) C.Y. 12.3					
POUR #2 (LAT. GUIDES) C.Y. 0.1						POUR #2 (LAT. GUIDES) C.Y. 0.1					
TOTAL C.Y. 12.4						TOTAL C.Y. 12.4					
20" PRESTRESSED CONCRETE PILES						20" PRESTRESSED CONCRETE PILES					
NO. 6 LIN. FT. 420						NO. 6 LIN. FT. 420					

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. B-4642
SCOTLAND COUNTY
 STATION: 15+50.00 -L-
 SHEET 2 OF 3



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENTS 1 & 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-15					TOTAL SHEETS 22

DRAWN BY : E.C. LOCKLEAR DATE : 9-30-09
 CHECKED BY : T. H. FANG DATE : 10-16-09

NOTES

CONCRETE DESIGN DATA : $f'_c = 5,000$ PSI ; $f_c = 2,000$ PSI

IMPACT IN HANDLING = 50%

IN DRIVING PILES, A METHOD APPROVED BY THE ENGINEER SHALL BE USED, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

THE CONTRACTOR SHALL USE THE FOLLOWING STRAND TYPE:

SIZE	GRADE	NUMBER OF STRANDS	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
1/2"	270 L.R.	12	0.153	41,300* PER STRAND	30,980* PER STRAND

STRANDS SHALL BE EQUALLY SPACED AS SHOWN IN THE "TYPICAL SECTION".

A CIRCULAR STRAND PATTERN SHALL NOT BE PERMITTED.

THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

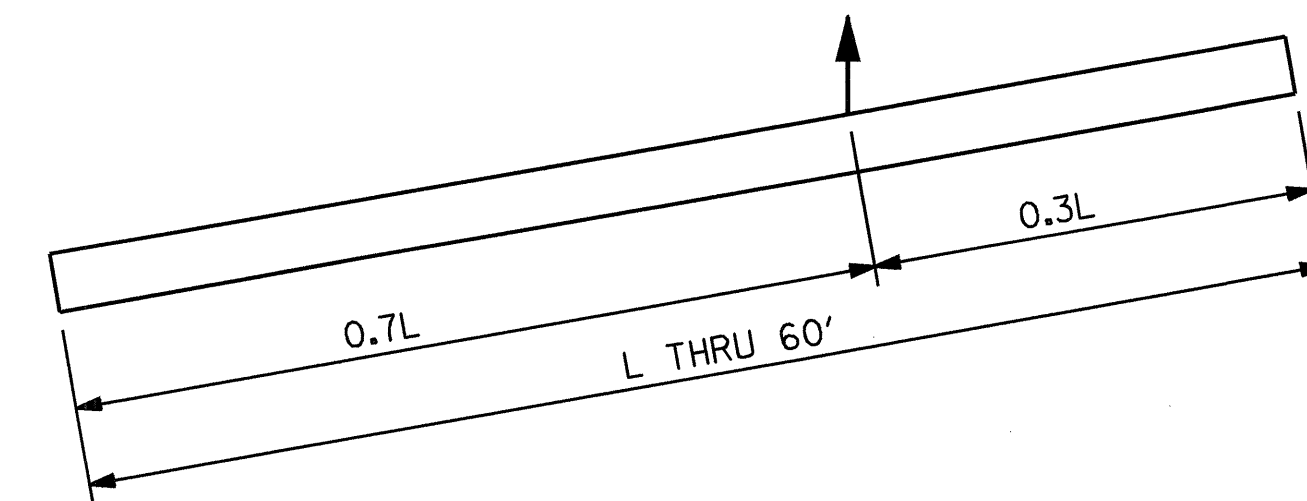
IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN OPPOSITE PAIRS AS INDICATED IN THE TYPICAL PATTERN SHOWN. FOR ANY NUMBER OF STRANDS BURN IN OPPOSITE PAIRS AND SYMMETRICAL ABOUT BOTH VERTICAL AND HORIZONTAL AXES, STRANDS 1-1 SHALL BE BURNED BEFORE 2-2, ETC. NOT MORE THAN 4 STRANDS, SAY 5-5 AND 6-6, MAY BE BURNED AT ANY ONE SECTION BEFORE THESE SAME PAIRS OF STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

BUILD-UPS SHALL BE OF 'CLASS A' CONCRETE WITH 20% ADDITIONAL CEMENT. NO DRIVING OF THE BUILT-UP PILE WILL BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 3,000 P.S.I. AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

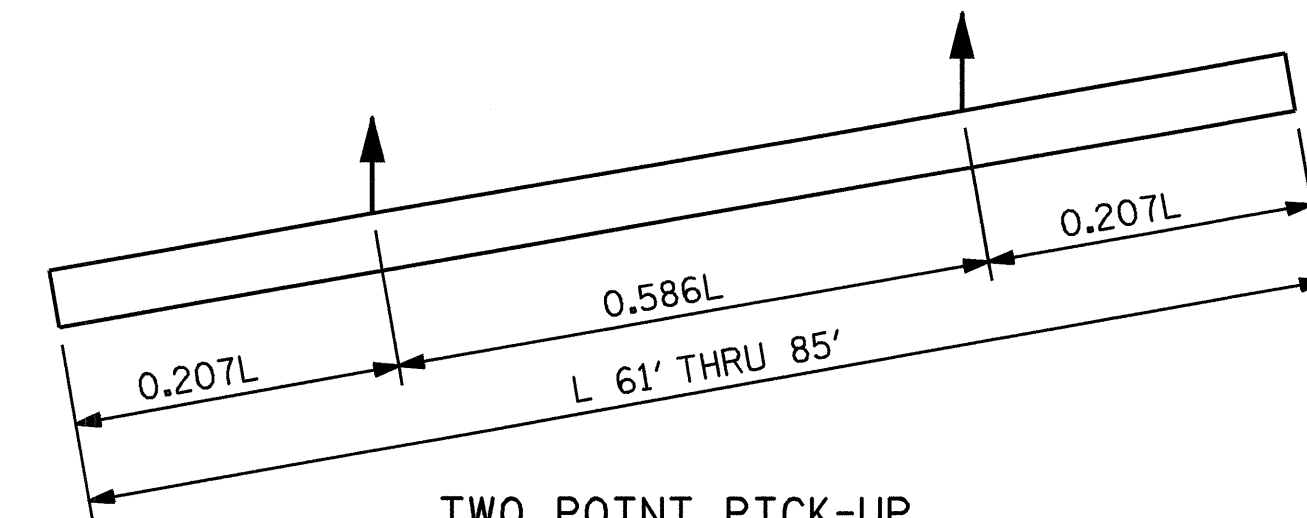
ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE PILE SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 3500 PSI.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

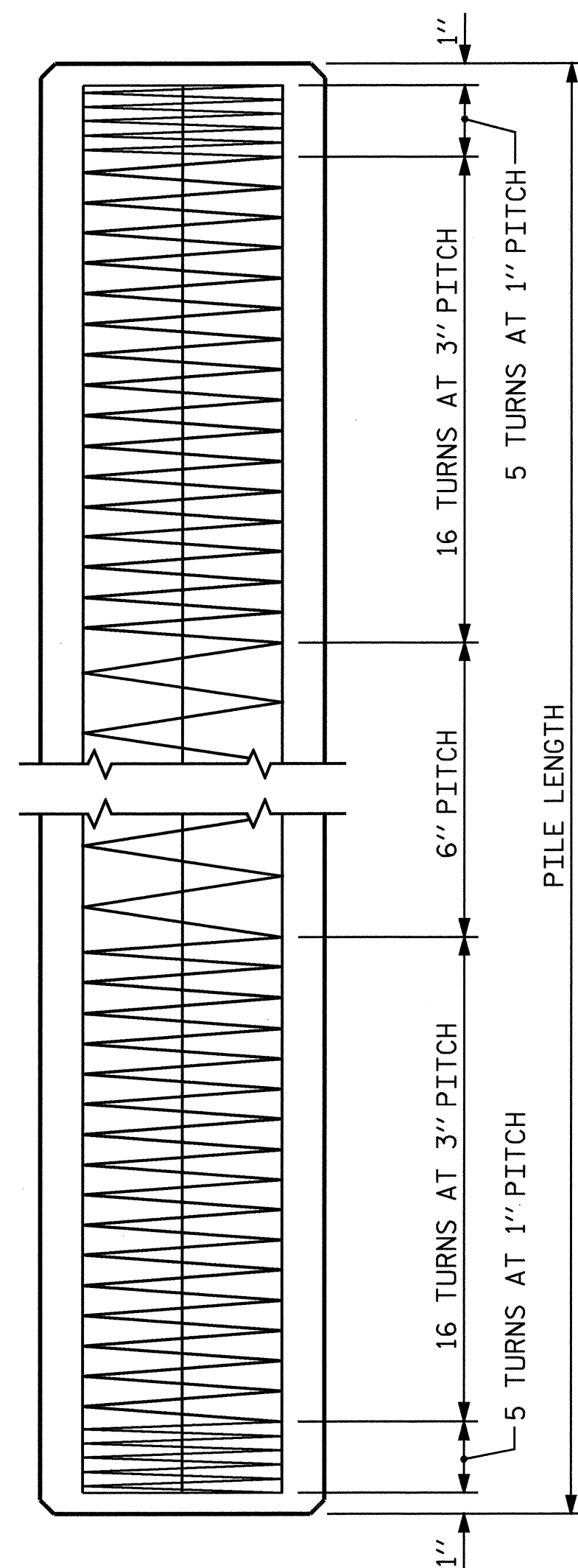


ONE POINT PICK-UP

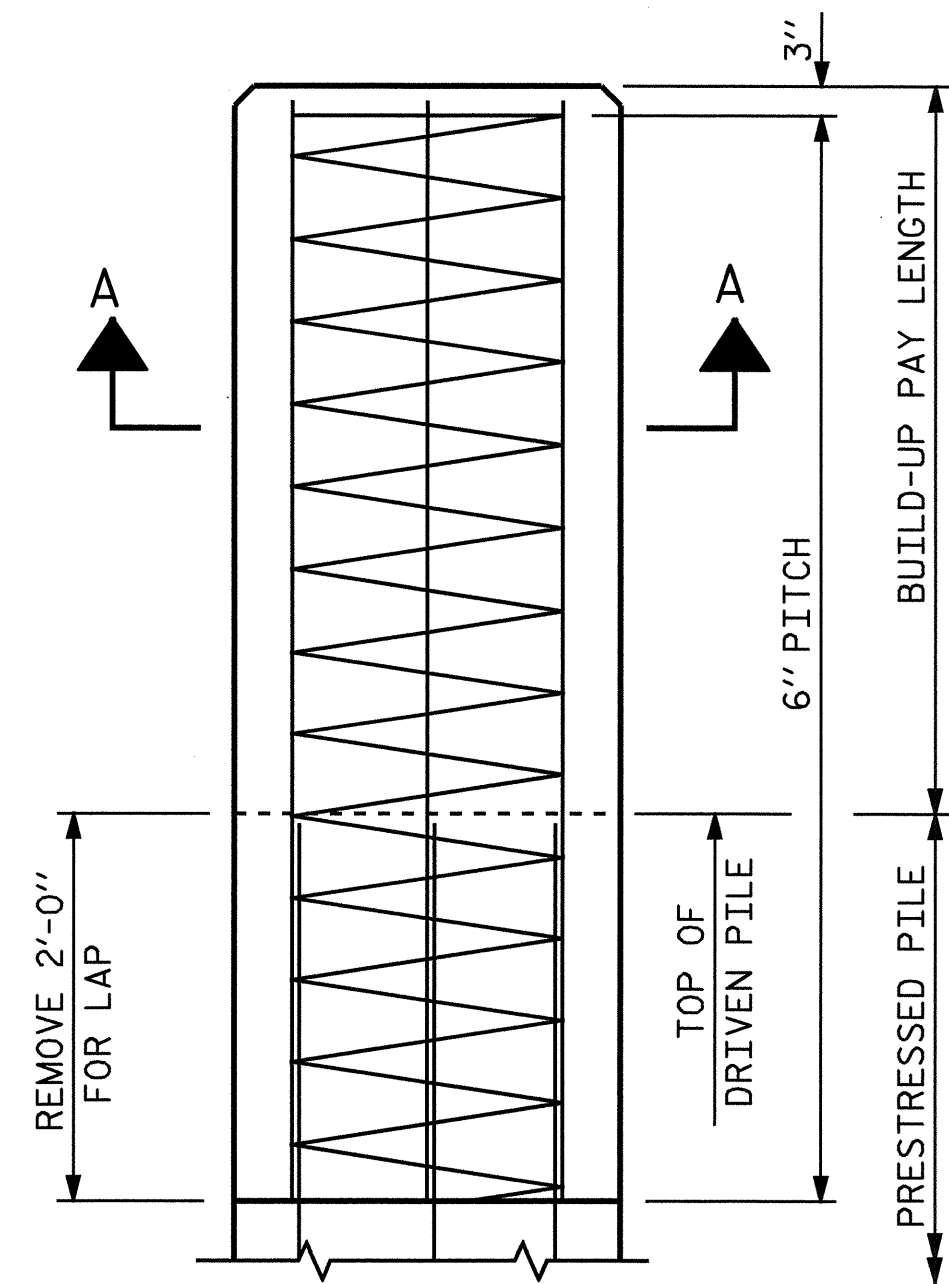


TWO POINT PICK-UP

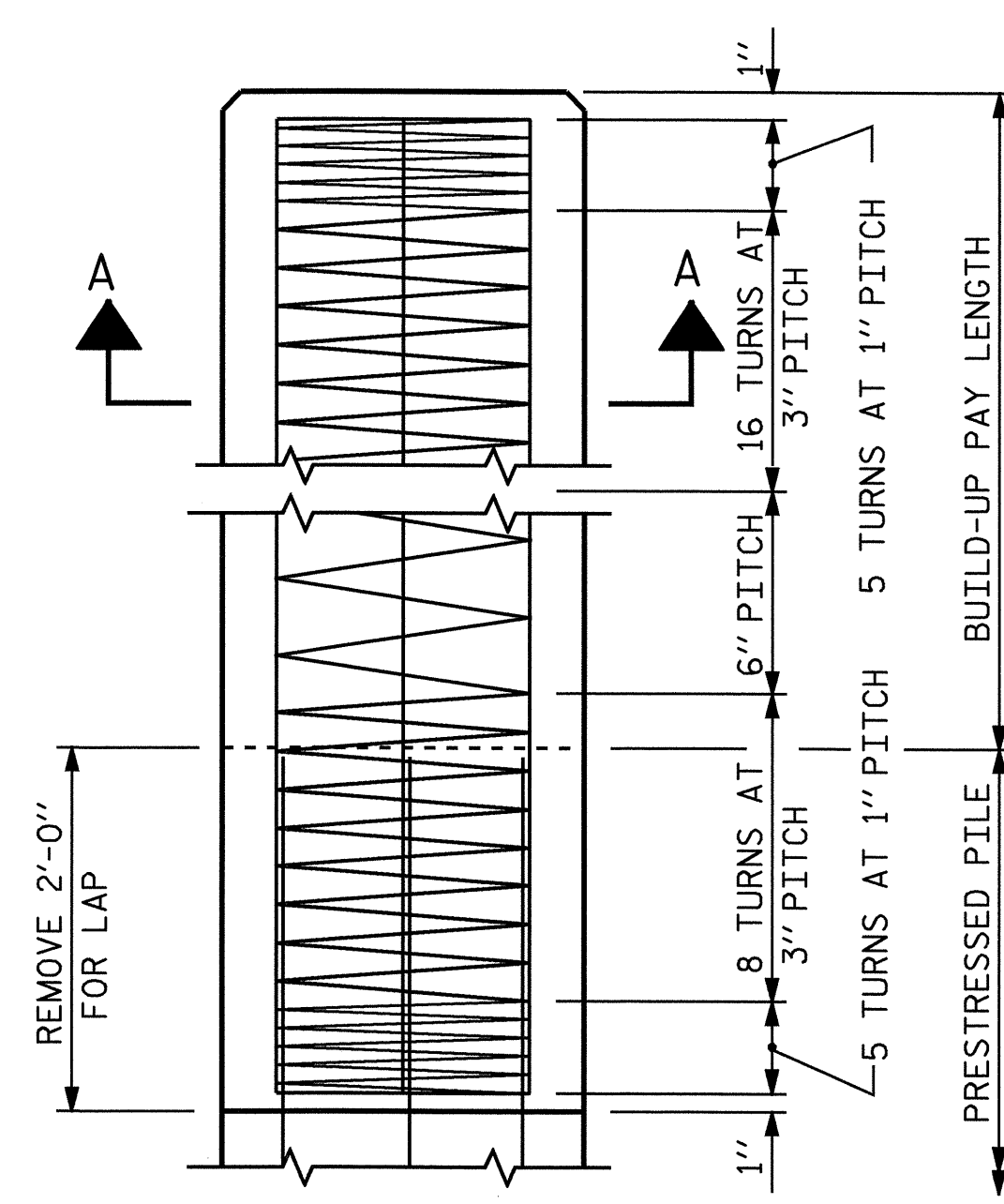
PICK-UP POINTS



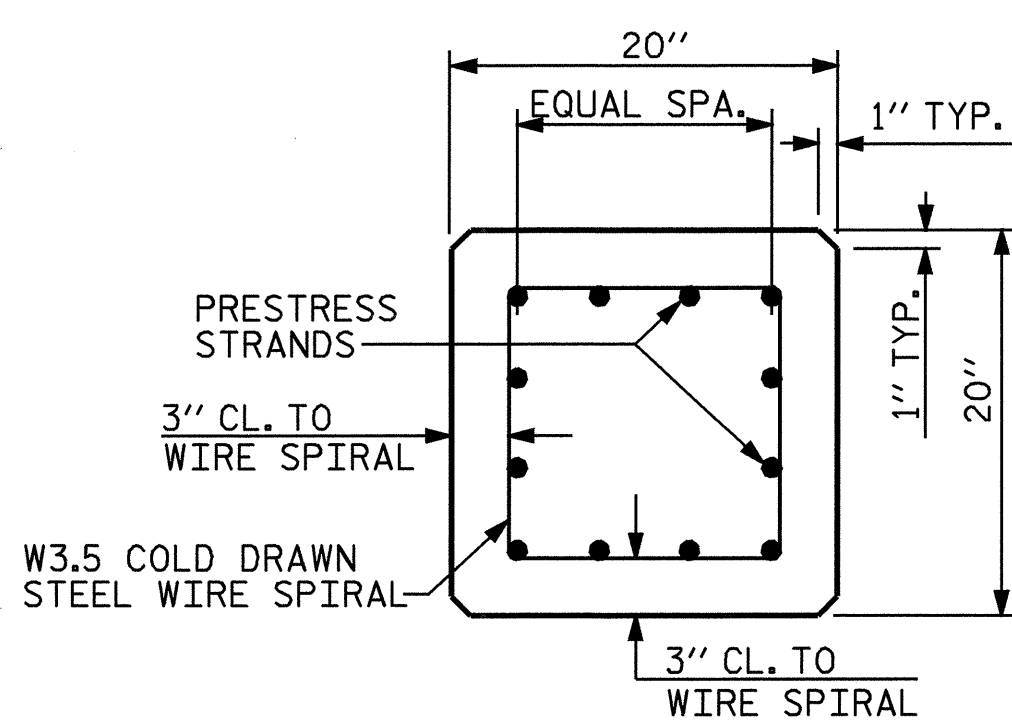
ELEVATION



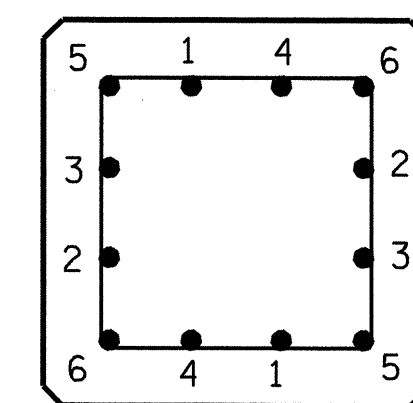
BUILD-UP WITHOUT DRIVING



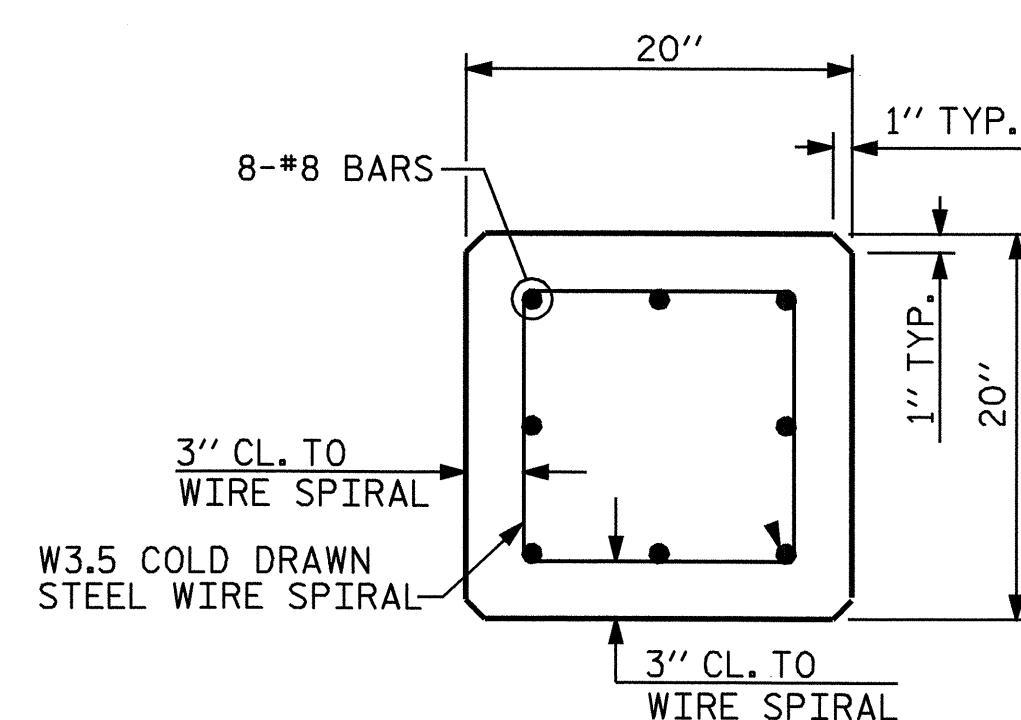
BUILD-UP WITH DRIVING



TYPICAL SECTION



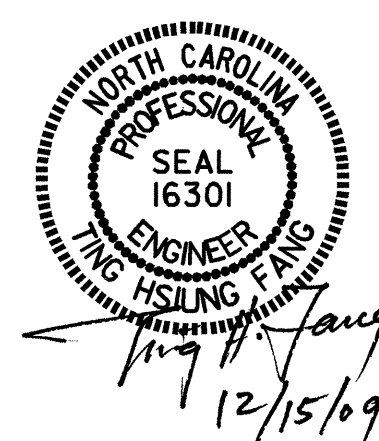
TYPICAL PATTERN FOR BURNING STRANDS



SECTION A-A

1/2" Ø GRADE 270 L.R. PRESTRESS STRANDS

LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE PICK-UP POINTS		TWO PICK-UP POINTS	
			0.3L	0.7L	0.207L	0.586L
25'-0"	2.56	5.18	7'-6"	17'-6"		
30'-0"	3.07	6.22	9'-0"	21'-0"		
35'-0"	3.58	7.26	10'-6"	24'-6"		
40'-0"	4.09	8.29	12'-0"	28'-0"		
45'-0"	4.61	9.33	13'-6"	31'-6"		
50'-0"	5.12	10.36	15'-0"	35'-0"		
55'-0"	5.63	11.40	16'-6"	38'-6"		
60'-0"	6.14	12.44	18'-0"	42'-0"		
65'-0"	6.65	13.47			13'-5/2"	38'-1"
70'-0"	7.17	14.51			14'-6"	41'-0"
75'-0"	7.68	15.55			15'-6/2"	43'-11"
80'-0"	8.19	16.58			16'-6/2"	46'-11"
85'-0"	8.70	17.62			17'-7"	49'-10"



PROJECT NO. B-4642
SCOTLAND COUNTY
 STATION: 15+50.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-16 TOTAL SHEETS 22
STANDARD 20" PRESTRESSED CONCRETE PILE FOR BENTS 1 & 2						
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

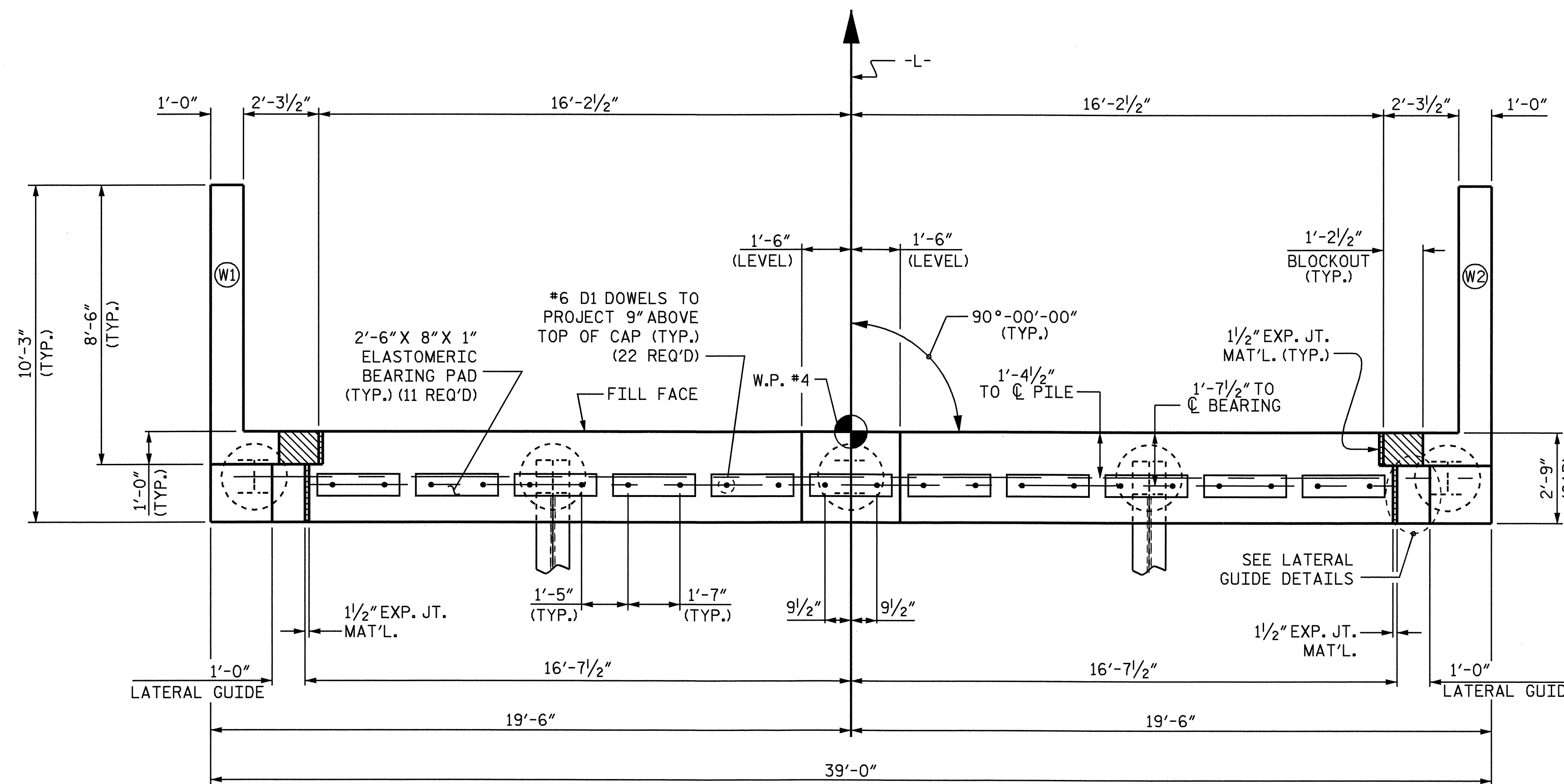
ASSEMBLED BY : E. C. LOCKLEAR DATE : 9/15/09
 CHECKED BY : T. H. FANG DATE : 9/16/09
 DRAWN BY : WJH 1/89 REV. 6/1/94 EEM/GRP
 CHECKED BY : CRK 3/89 REV. 8/16/99R RAL/LES
 REV. 5/1/06 TLA/GM

NOTES

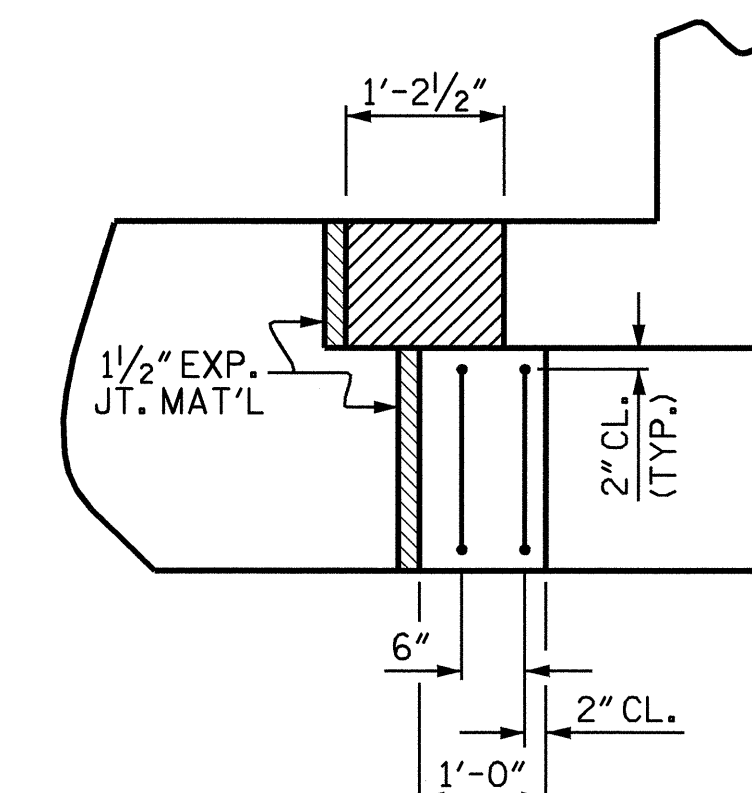
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6 DI DOWELS.

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

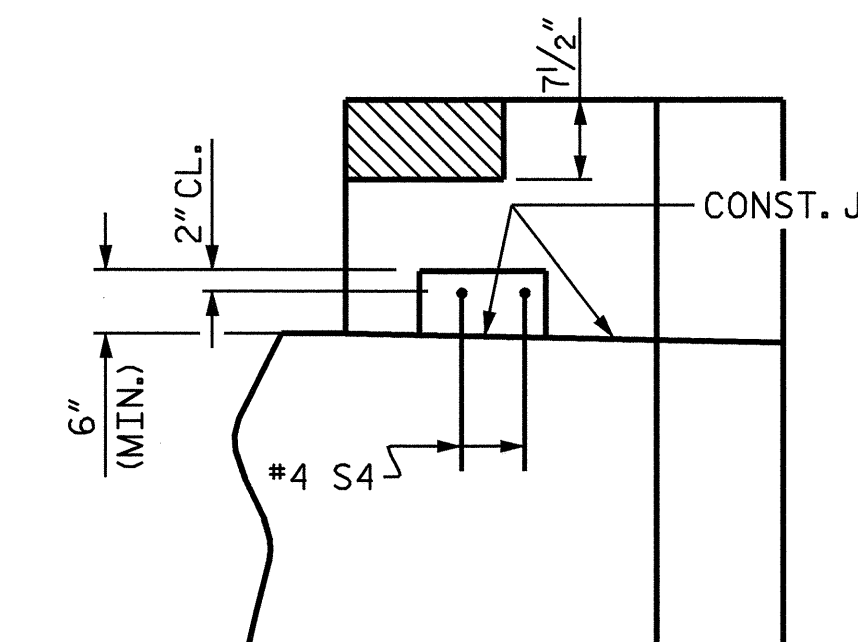
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.



PLAN



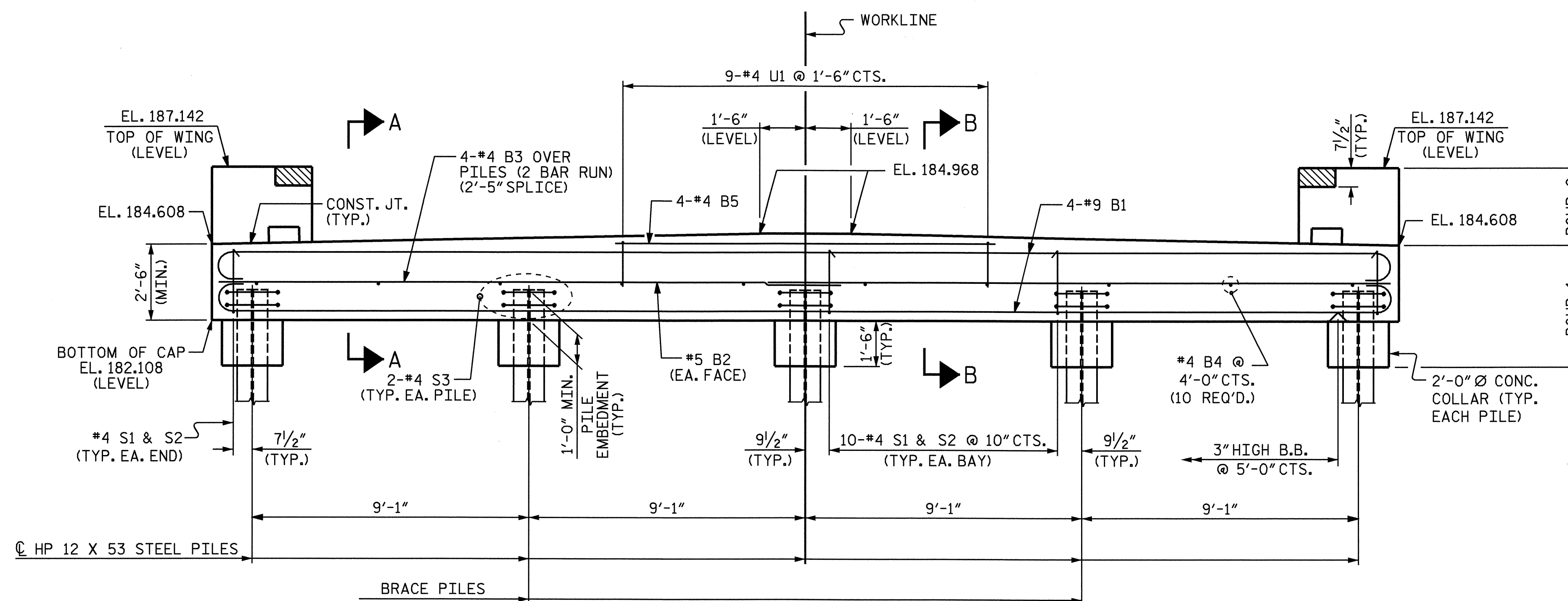
PLAN



ELEVATION

LATERAL GUIDE DETAILS

(EACH END SIMILAR)



ELEVATION

WINGS NOT SHOWN FOR CLARITY FOR REINFORCING STEEL & DETAILS OF WINGS, SEE SHEET 2 OF 3.

PROJECT NO. B-4642

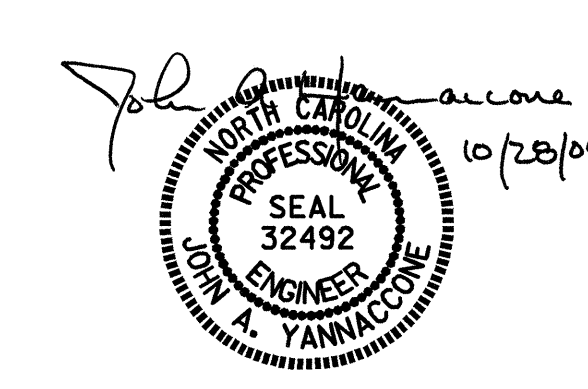
SCOTLAND COUNTY

STATION: 15+50.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2

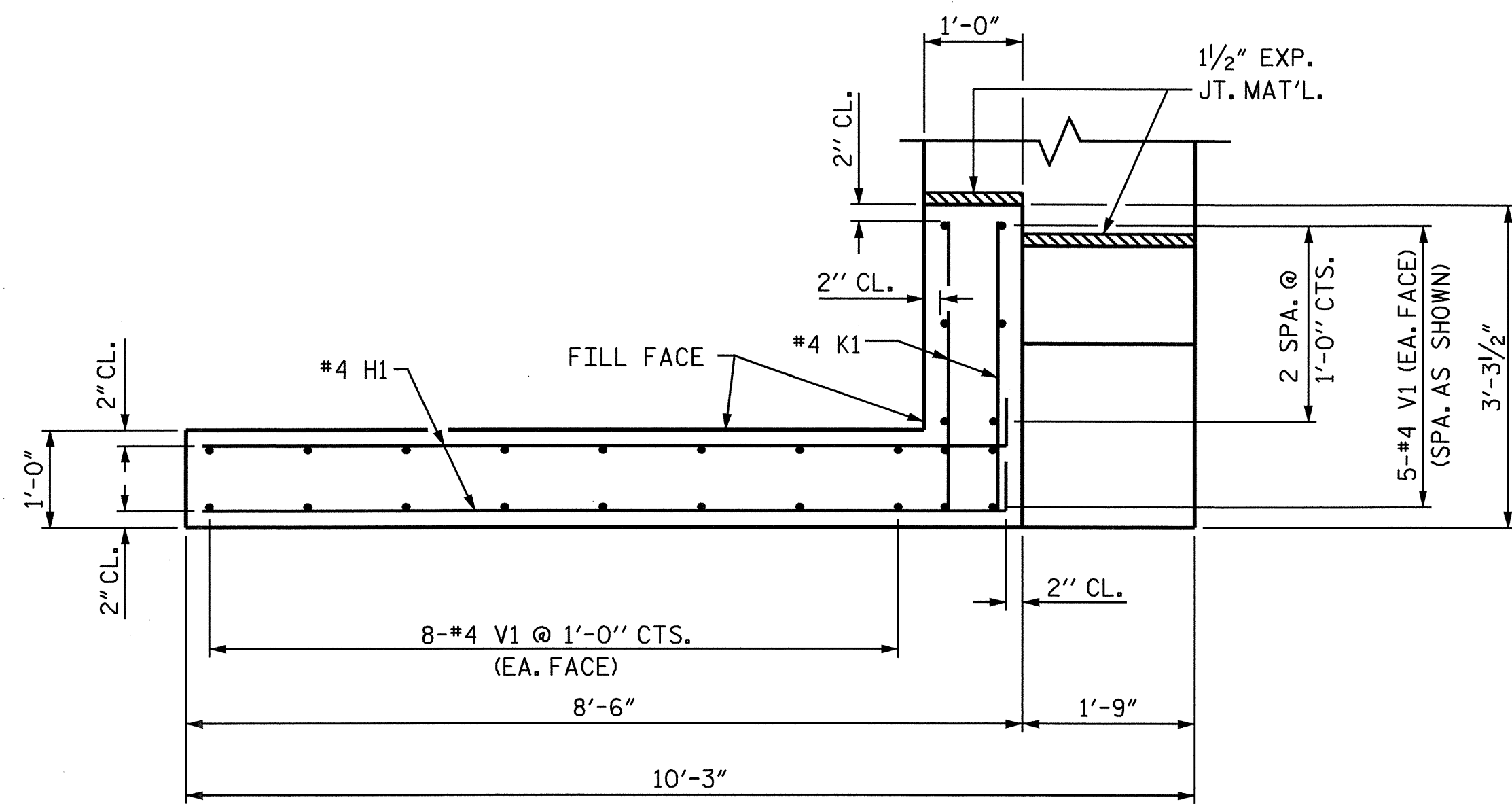


DRAWN BY: J. YANNAACONE DATE: 3/23/09
CHECKED BY: T. H. FANG DATE: 9/23/09

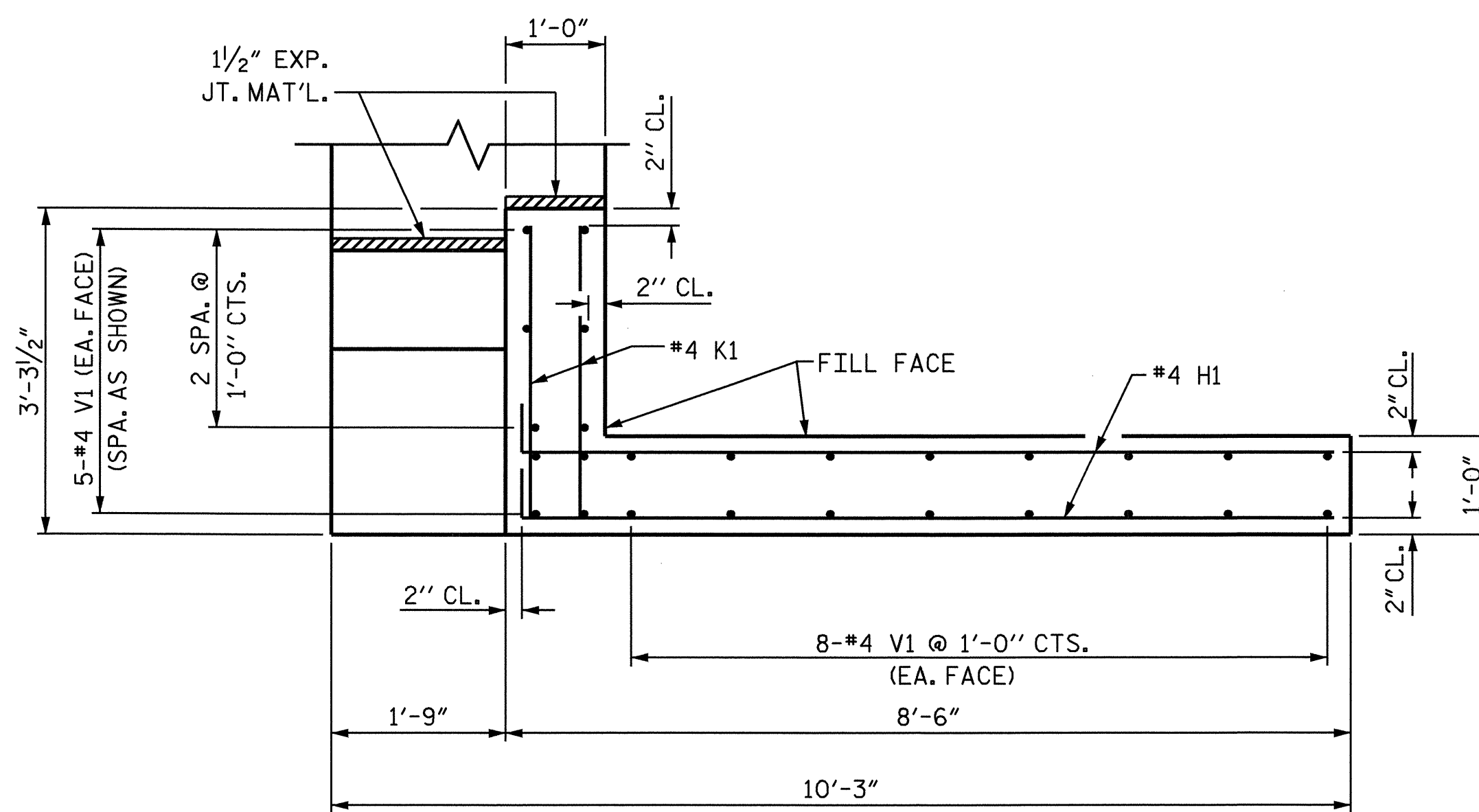
28-OCT-2009 11:18
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K:\newton

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17	
1			3			TOTAL SHEETS	
2			4			22	

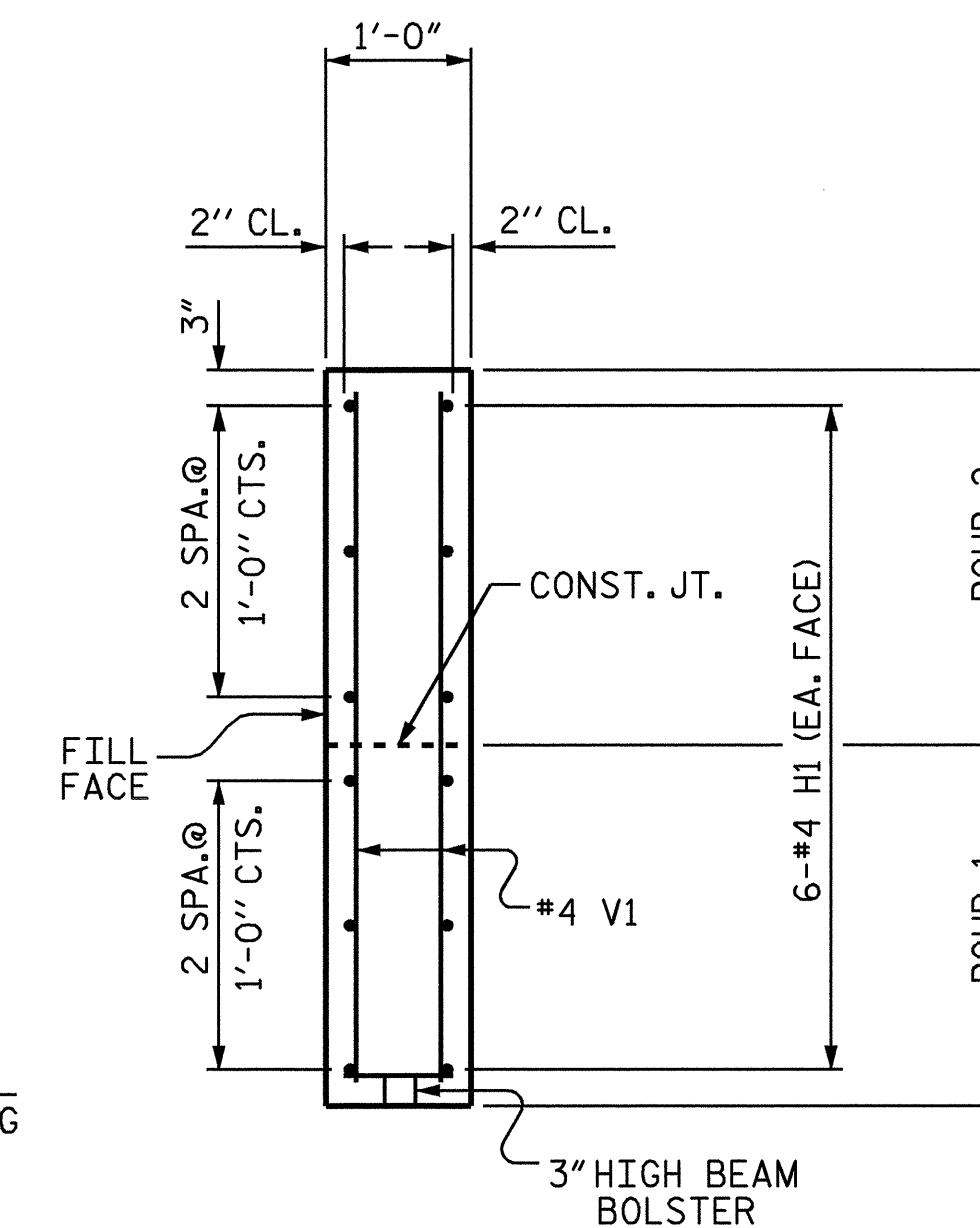
NCBDS



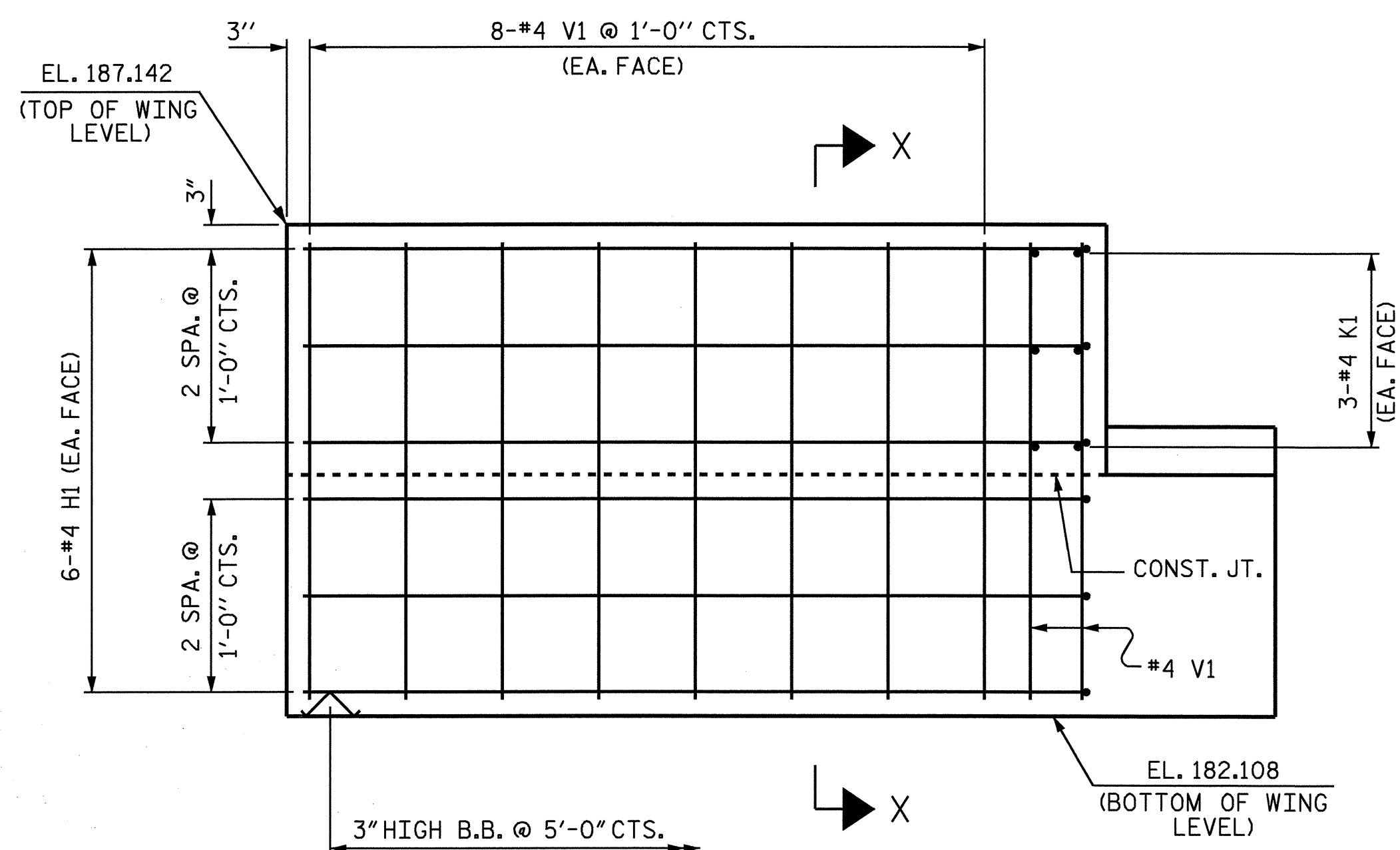
PLAN OF WING W1



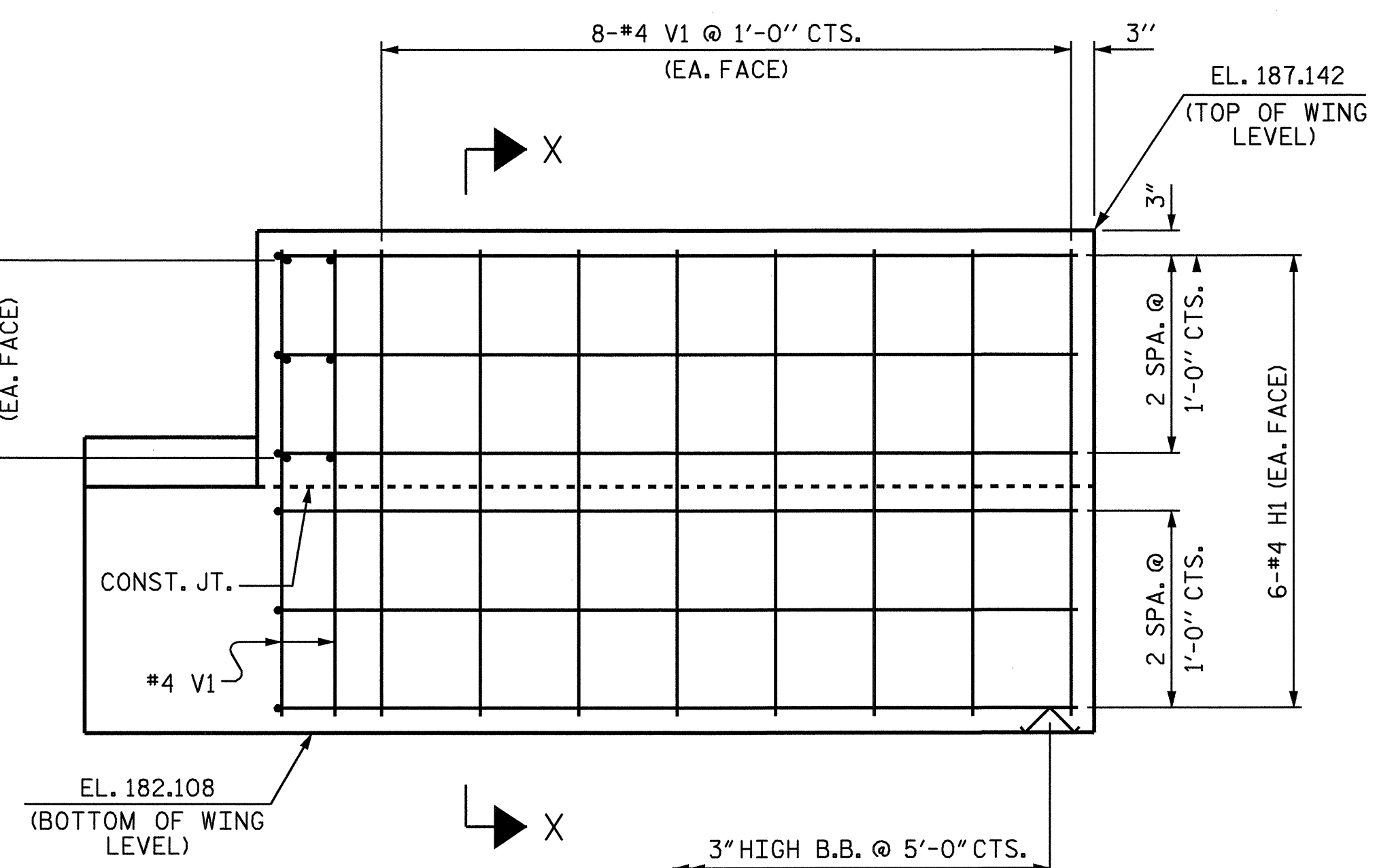
PLAN OF WING W2



SECTION X-X



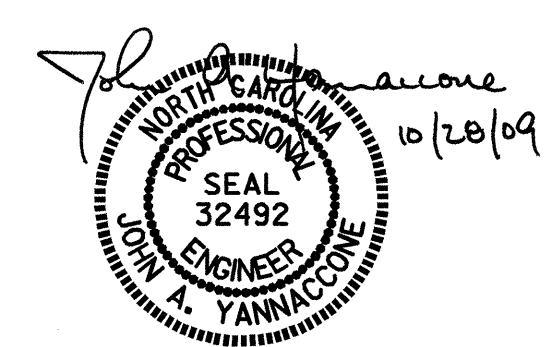
ELEVATION OF WING W1



ELEVATION OF WING W2

PROJECT NO. B-4642
 SCOTLAND COUNTY
 STATION: 15+50.00 -L-

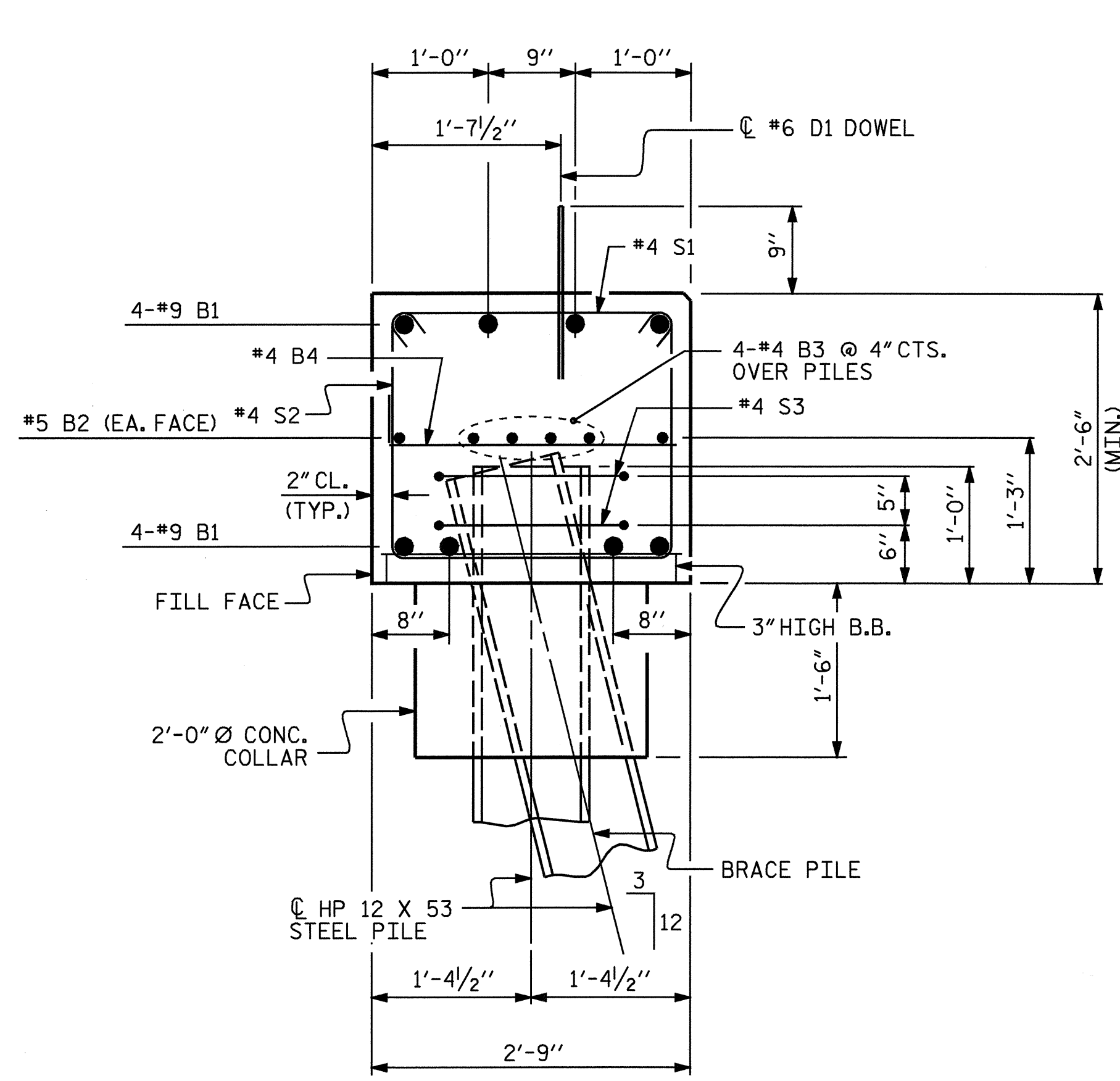
SHEET 2 OF 3



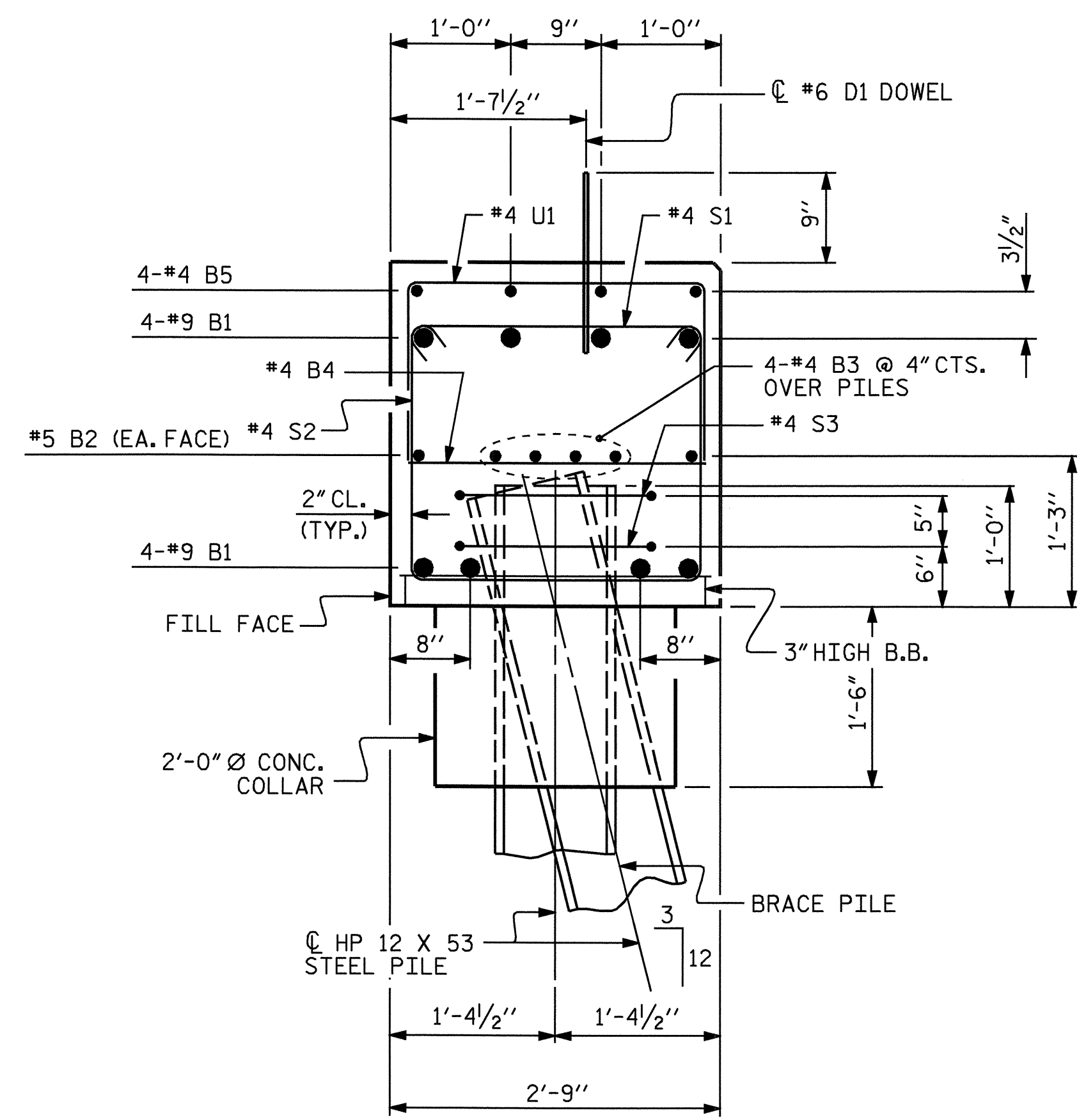
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 2

DRAWN BY: J. YANNAACONE DATE: 3/23/09
 CHECKED BY: T. H. FANG DATE: 9/23/09

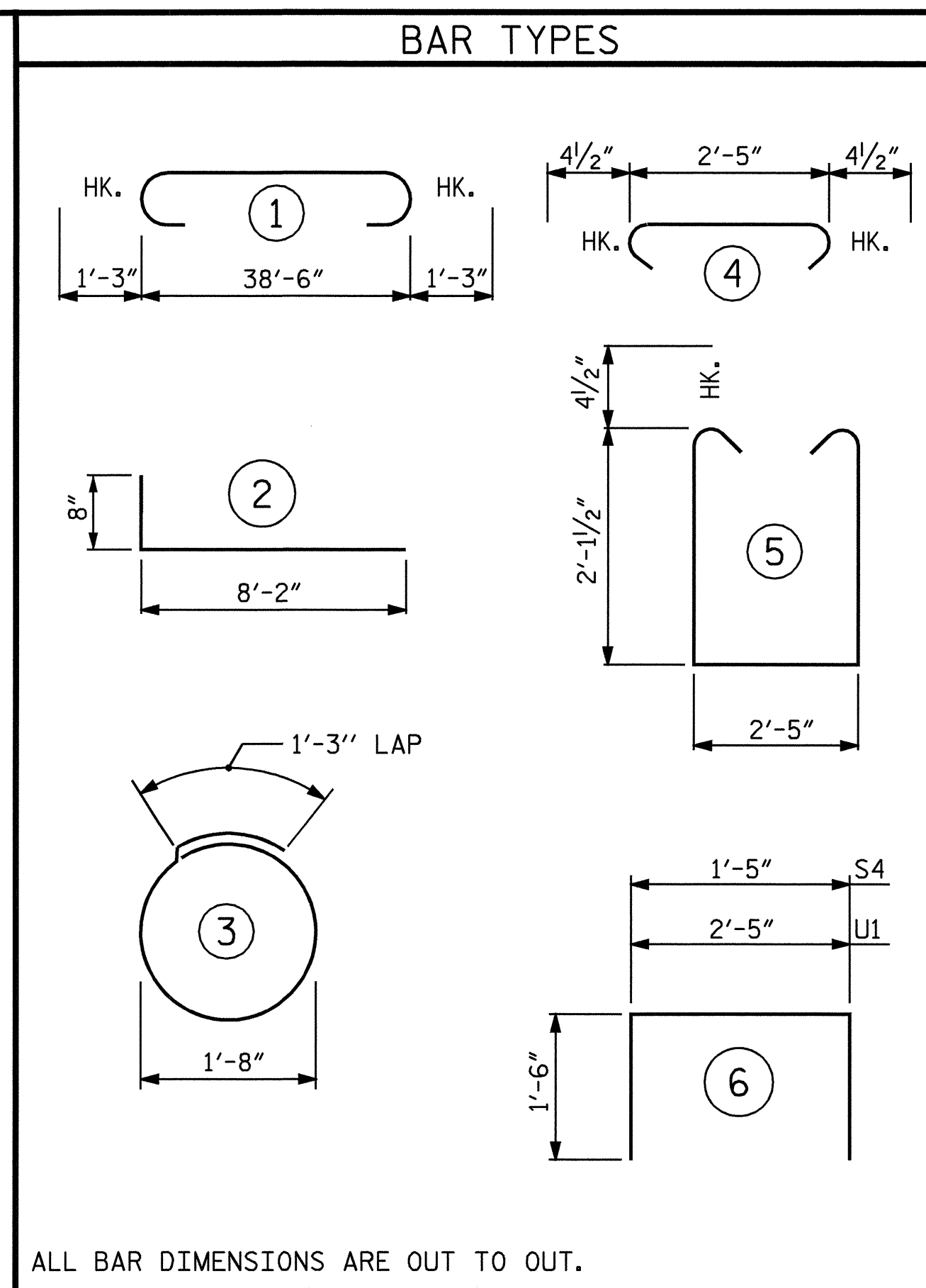
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18	
1			3			TOTAL SHEETS 22	
2			4				



SECTION A-A

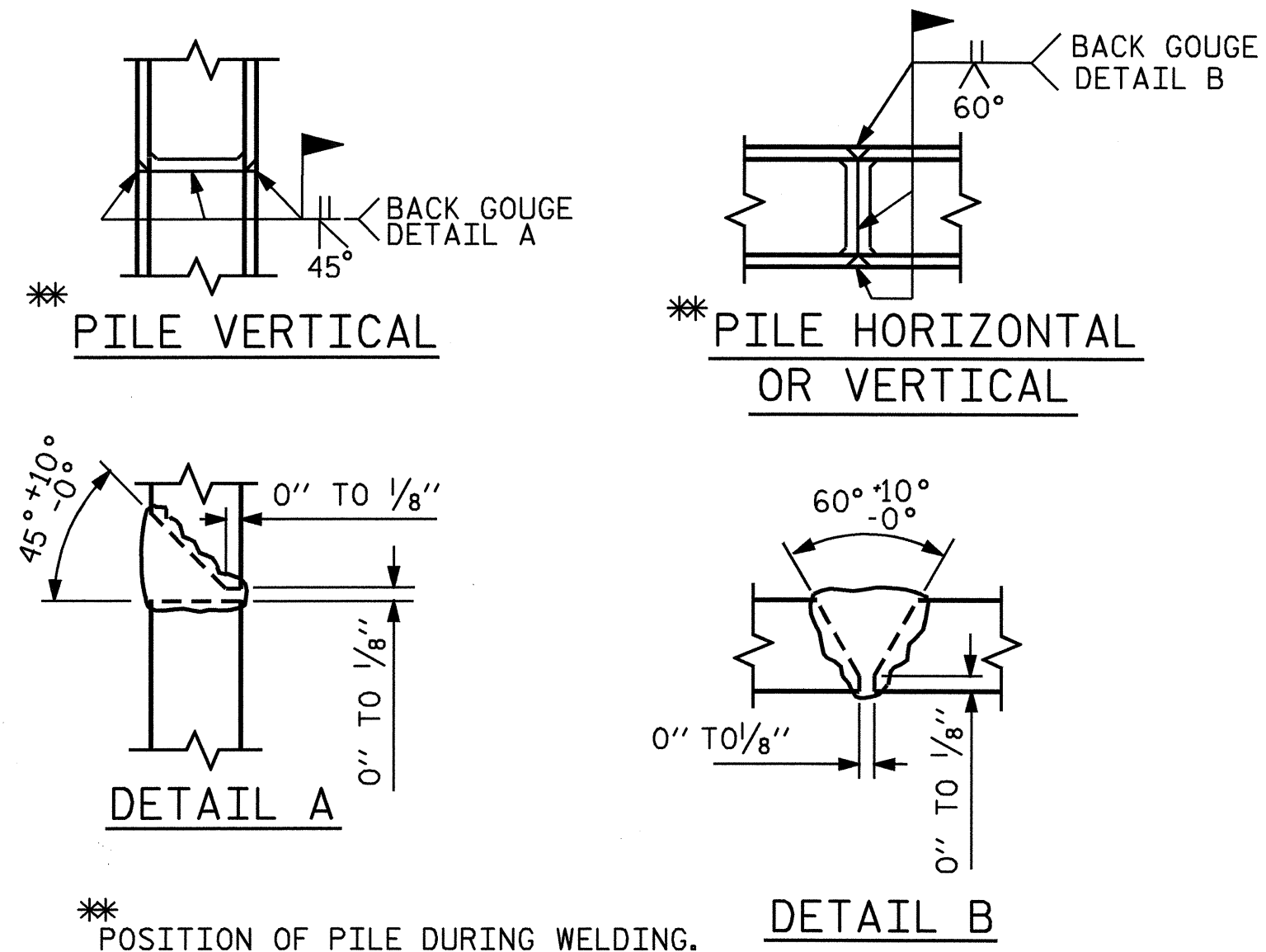


SECTION B-B

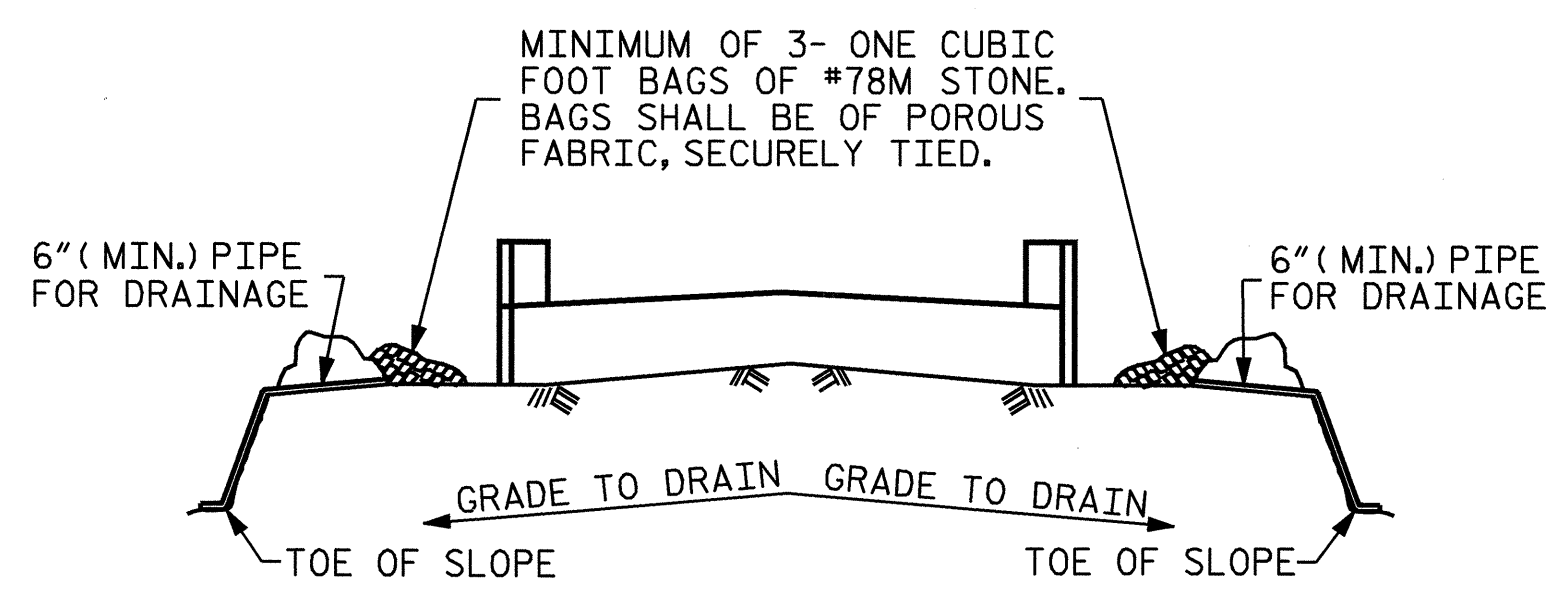


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		41'-0"	1115
B2	2	#5	STR	38'-8"	81
B3	8	#4	STR	20'-7"	110
B4	10	#4	STR	2'-5"	16
B5	4	#4	STR	12'-6"	33
D1	22	#6	STR	1'-6"	50
H1	24	#4		8'-10"	142
K1	12	#4	STR	2'-11"	23
S1	42	#4		3'-2"	89
S2	42	#4		7'-5"	208
S3	10	#4		6'-6"	43
S4	4	#4		4'-5"	12
U1	9	#4		5'-5"	33
V1	52	#4	STR	4'-8"	162
REINFORCING STEEL					LBS. 2117
CLASS A CONCRETE BREAKDOWN					
POUR 1 (CONCRETE COLLARS, CAP & LOWER WINGS)				C.Y.	13.0
POUR 2 (UPPER WINGS)				C.Y.	2.0
POUR 3 (LATERAL GUIDES)				C.Y.	0.1
TOTAL				C.Y.	15.1
HP 12 X 53 STEEL PILES					
NO. 5				LIN. FT. =	475



PILE SPLICE DETAILS



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

6" (MIN.) PIPE FOR DRAINAGE

GRADE TO DRAIN

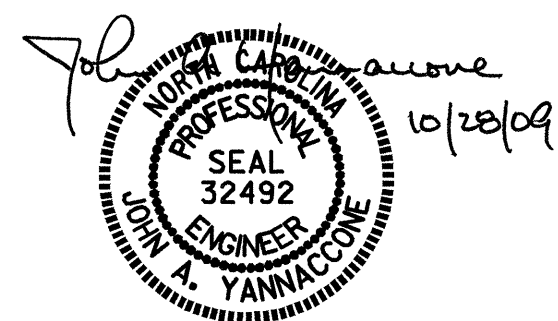
TOE OF SLOPE

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

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

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TEMPORARY DRAINAGE AT END BENT



PROJECT NO. B-4642
SCOTLAND COUNTY
 STATION: 15+50.00 -L-

SHEET 3 OF 3

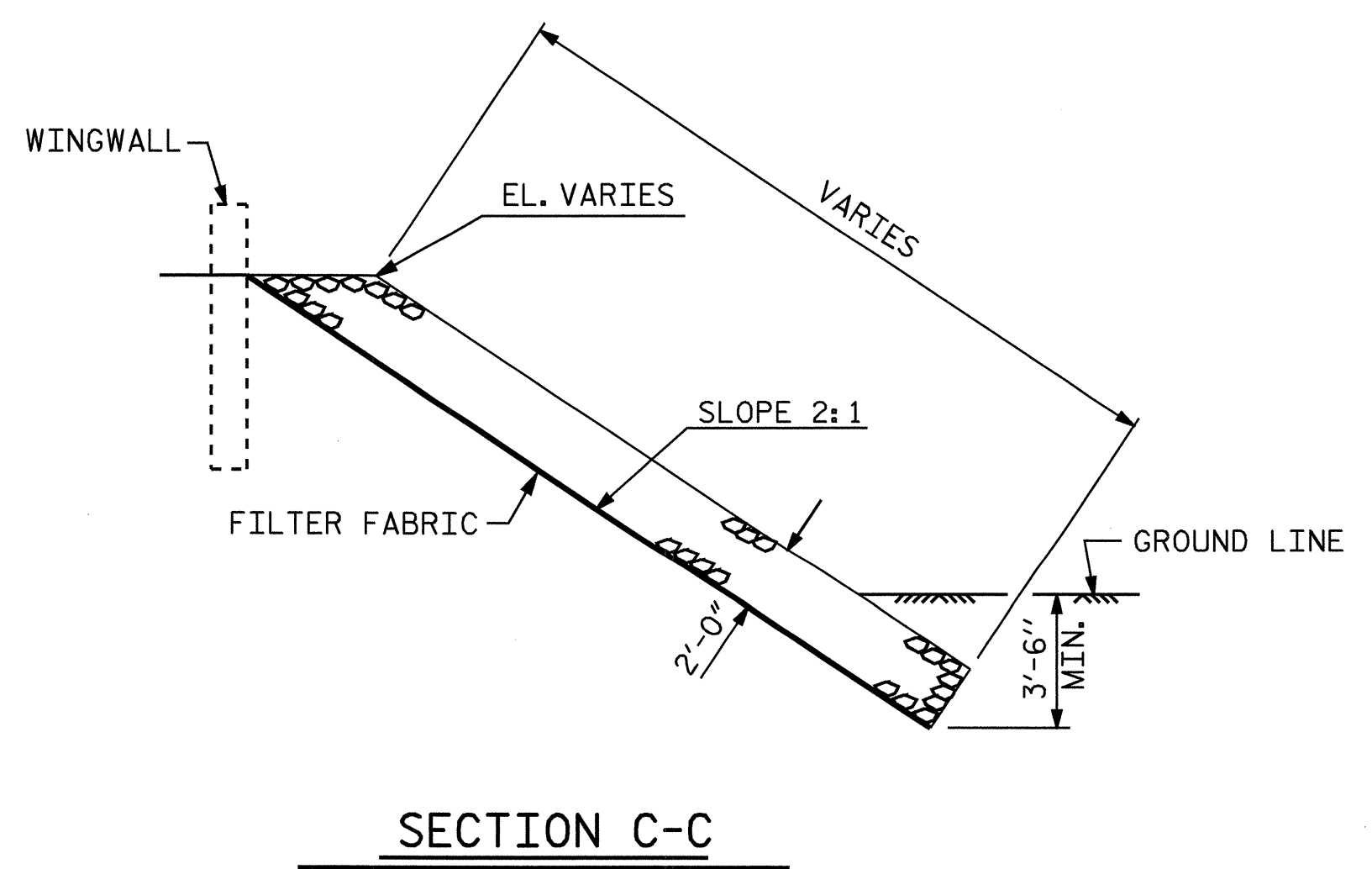
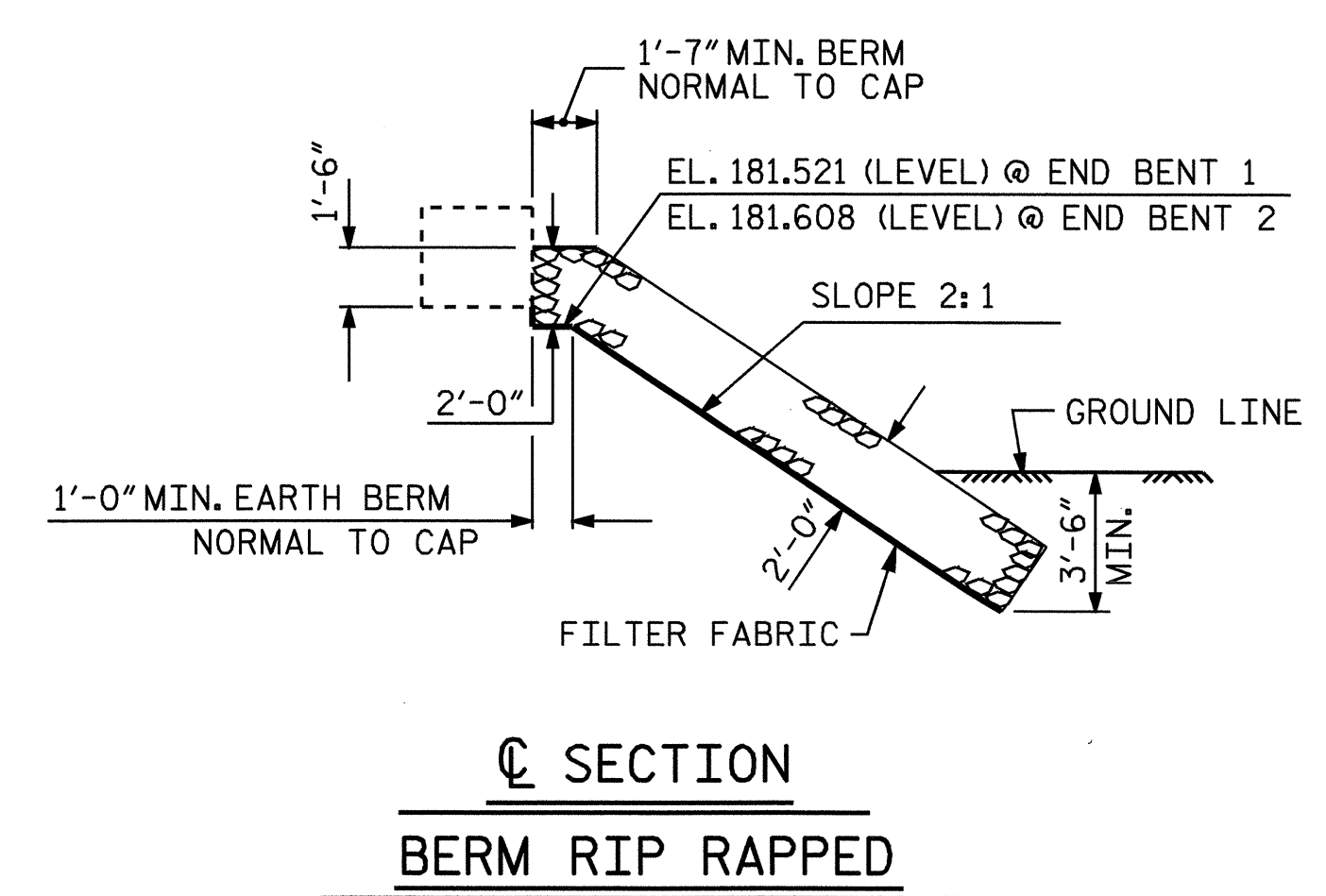
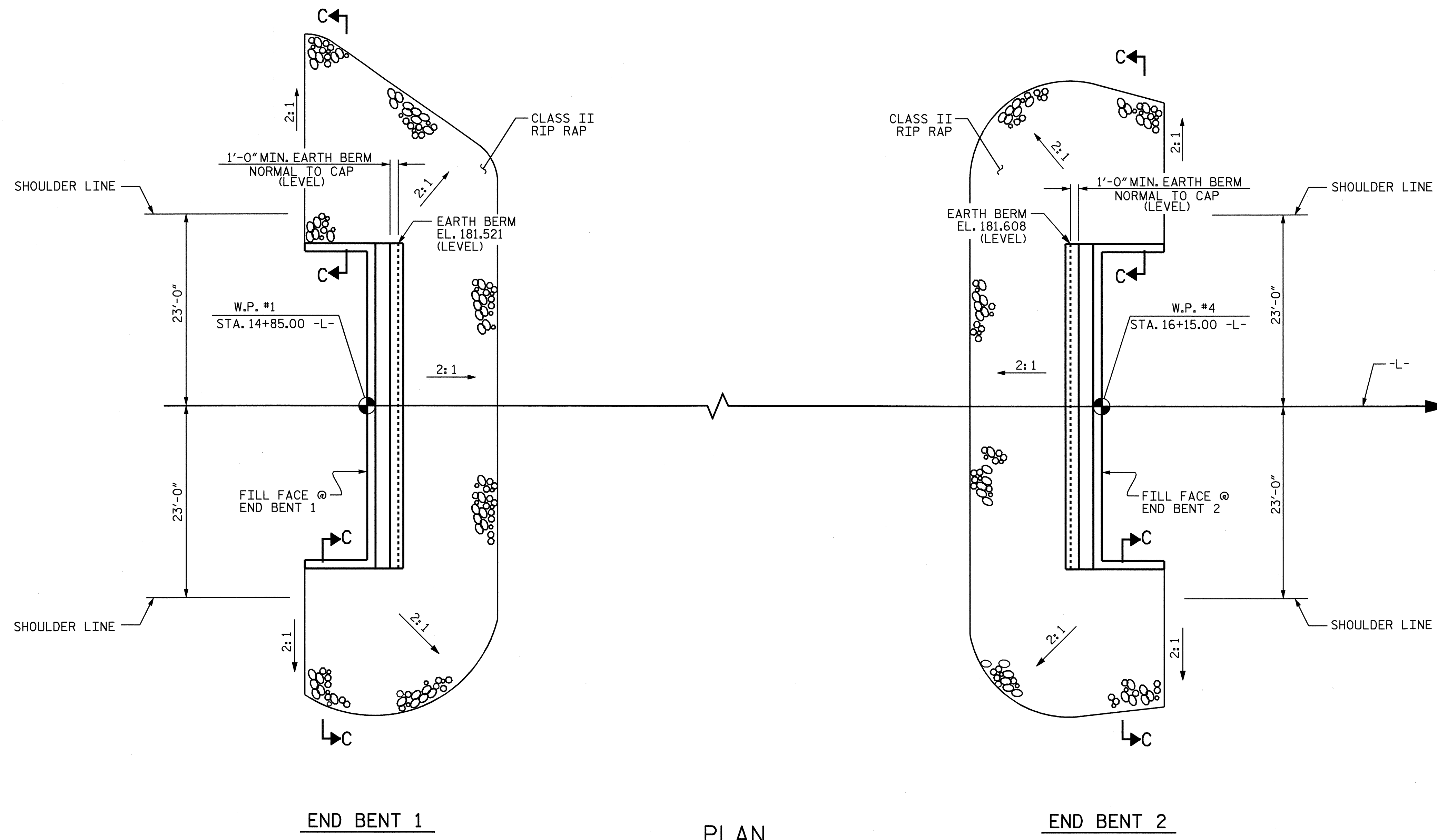
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2

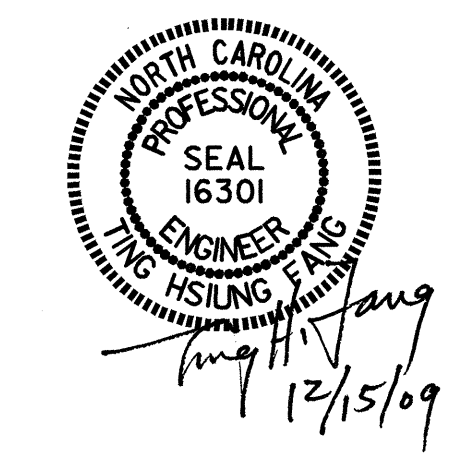
DRAWN BY : J. YANNAKONE DATE : 3/23/09
 CHECKED BY : T. H. FANG DATE : 9/23/09

REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	DATE:	S-19
1			3		TOTAL SHEETS
2			4		22

ESTIMATED QUANTITIES		
BRIDGE @ STA. 15+50.00 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	100	110
END BENT 2	105	115
TOTAL	205	225



PROJECT NO. B-4642
SCOTLAND COUNTY
STATION: 15+50.00 -L-



REVISIONS						SHEET NO. S-20
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			22

ASSEMBLED BY : J. E. JONES DATE : 3-09
CHECKED BY : T. H. FANG DATE : 9/16/09
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

14-DEC-2009 15:37
K:\tpp\projects-b\4642\structures\finalplans\4642.sd.rr.dgn
tffang

BILL OF MATERIAL

FOR ONE APPROACH SLAB
(2 REQUIRED)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	17'-0"	295
A2	26	#4	STR	16'-10"	292
*B1	64	#5	STR	11'-2"	745
B2	64	#6	STR	11'-8"	1121
REINFORCING STEEL				LBS.	1413
* EPOXY COATED REINFORCING STEEL				LBS.	1040
CLASS AA CONCRETE				C. Y.	16.3

NOTES

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

APPROACH SLABS SHALL NOT BE CONSTRUCTED UNTIL AFTER CORED SLAB UNITS ARE IN PLACE.

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

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

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

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

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

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.

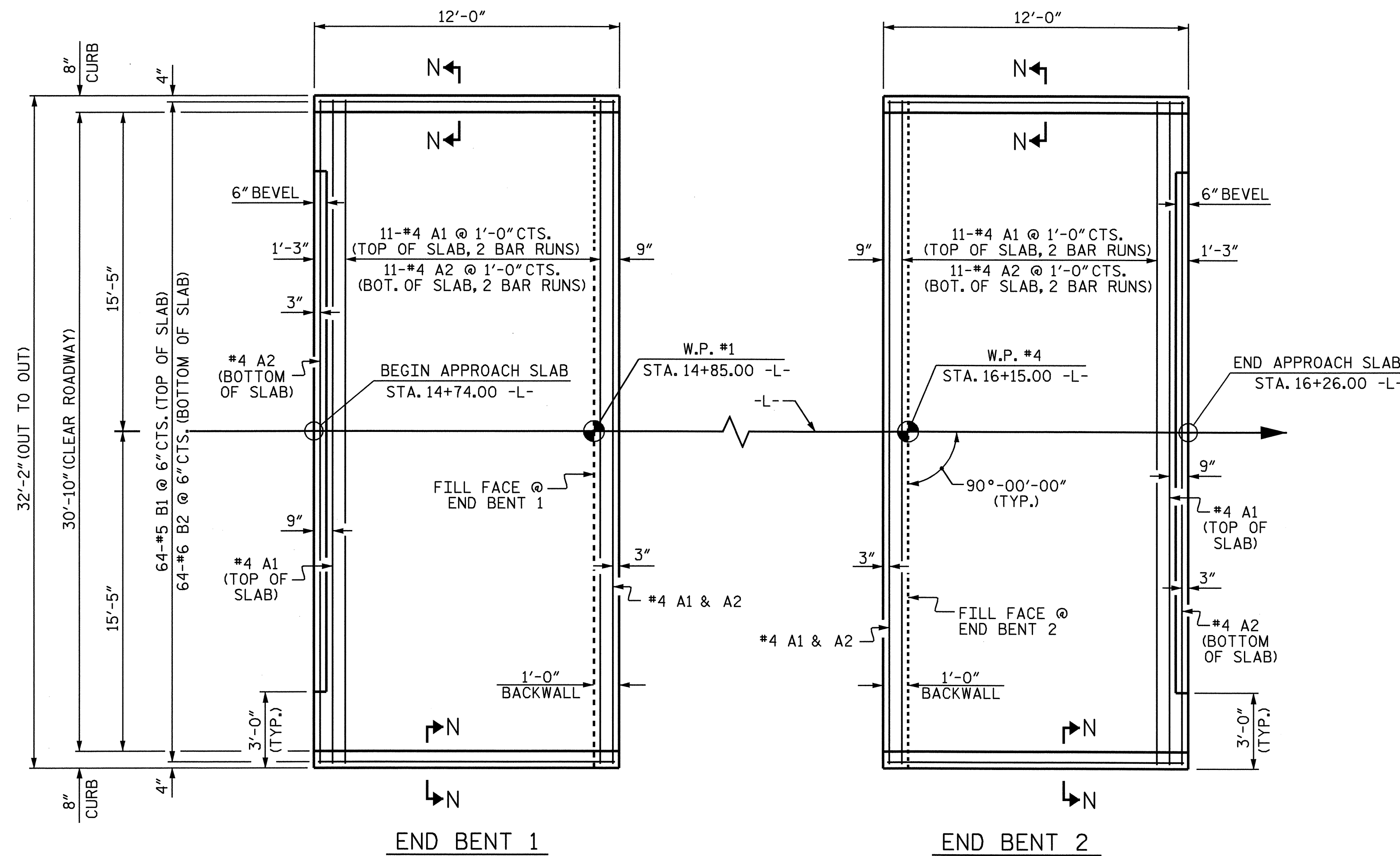
FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE CORED SLAB UNIT" SHEETS.

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

APPROACH SLAB GROOVING IS NOT REQUIRED.

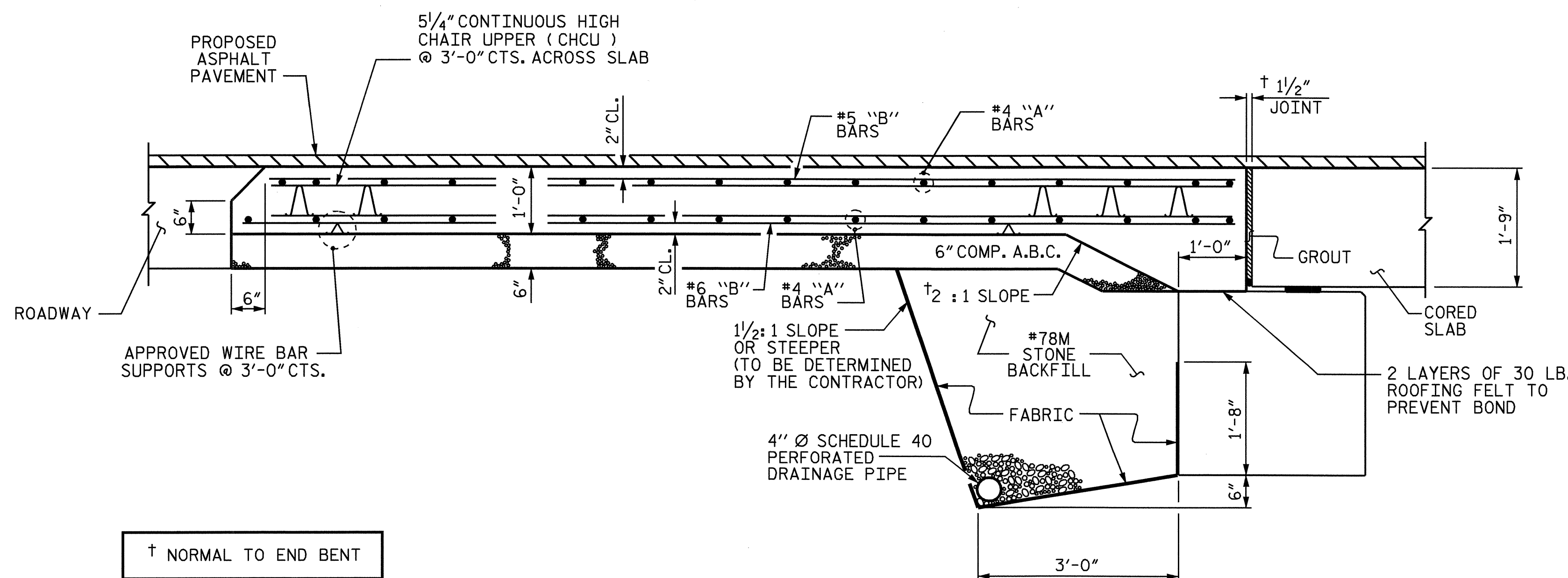
SPLICE CHART

#4 A1	2'-0"
#4 A2	1'-9"

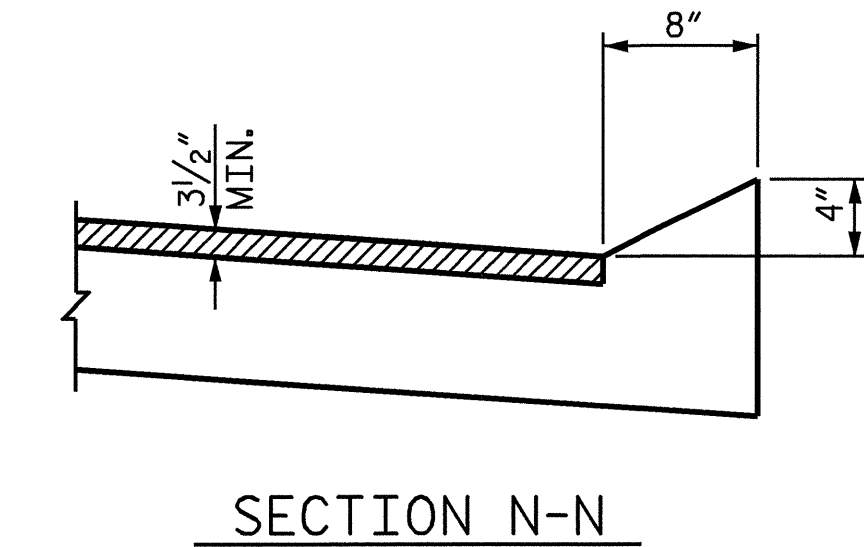


PLAN

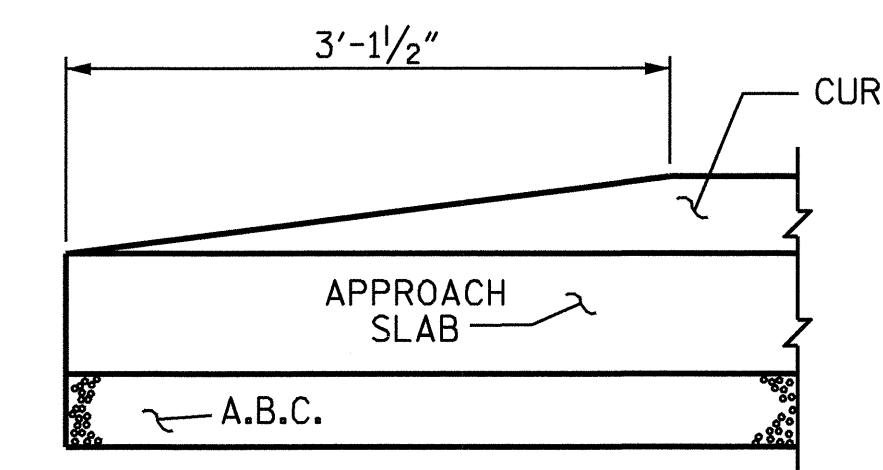
DIMENSIONS & REINFORCING STEEL SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS.



SECTION THRU SLAB

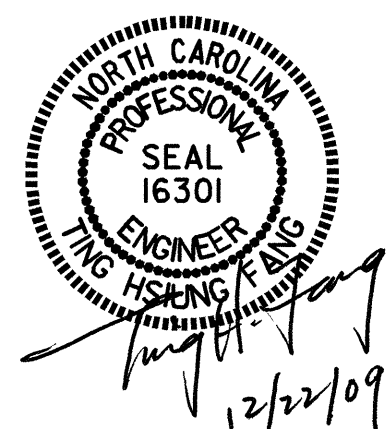


SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS



PROJECT NO. B-4642
SCOTLAND COUNTY
STATION: 15+15.00 -L-

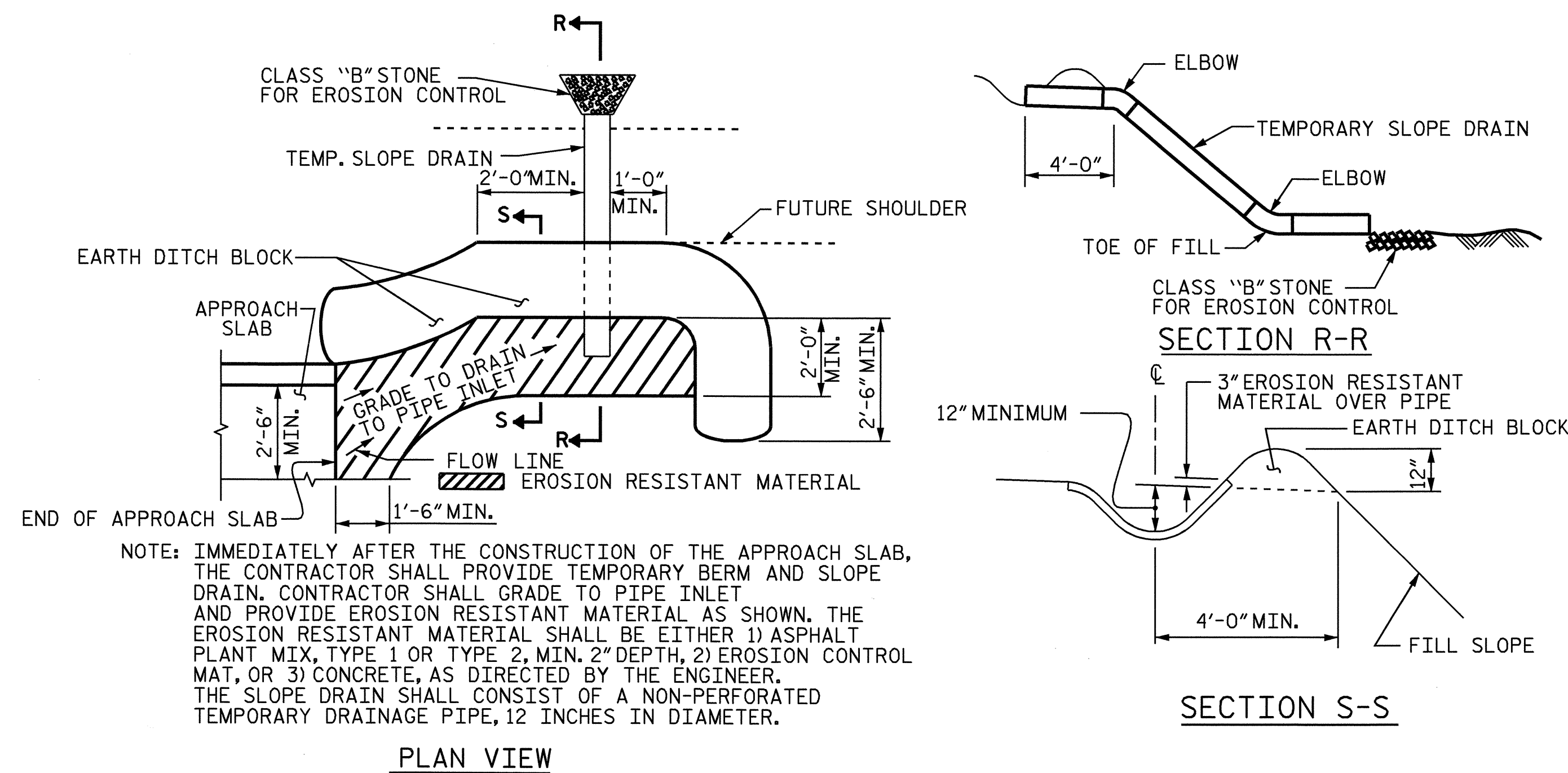
SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BRIDGE APPROACH SLAB
FOR PRESTRESSED CONCRETE
CORED SLAB UNIT
(SUB-REGIONAL TIER)

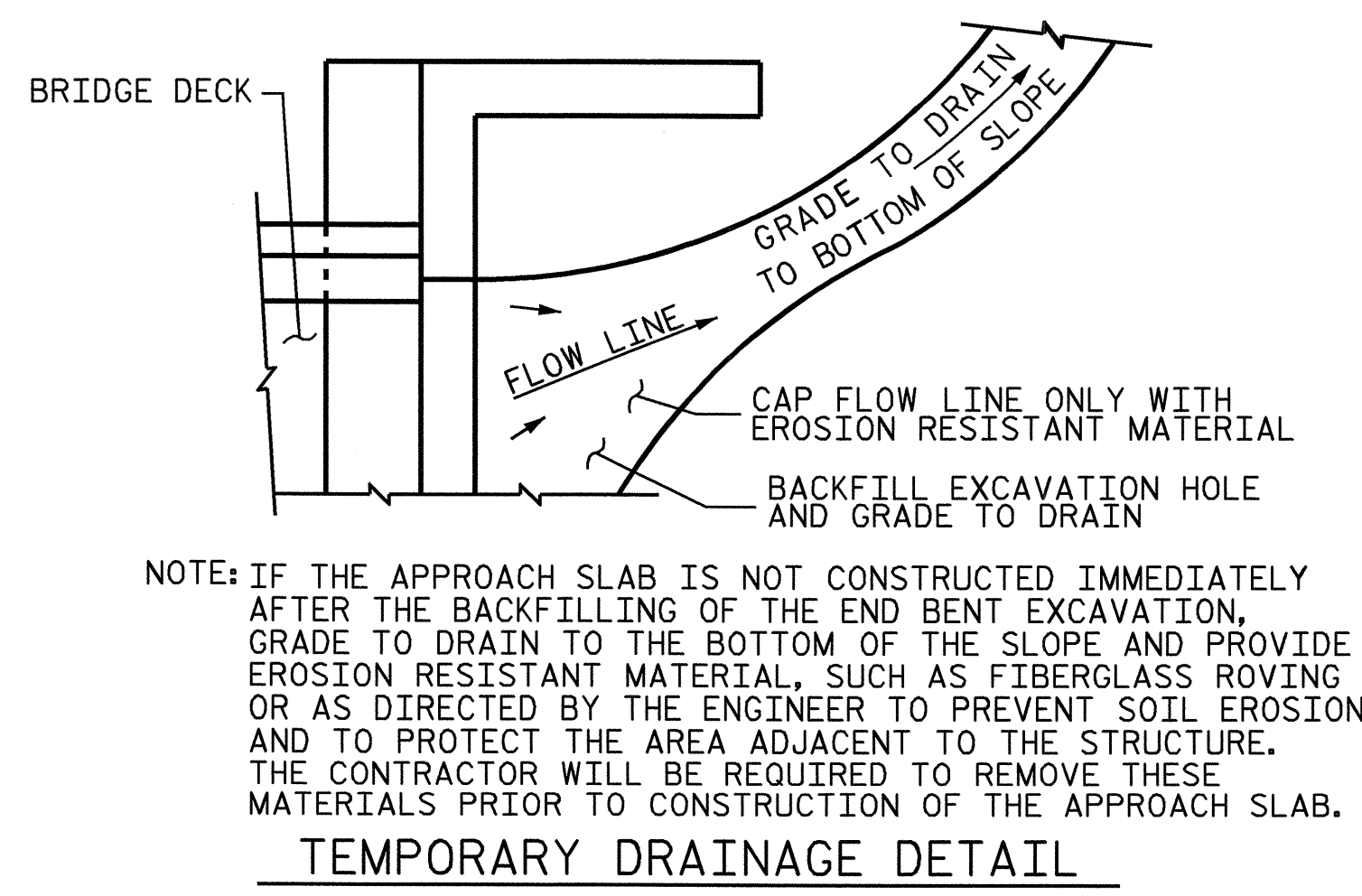
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21	
1			3			TOTAL SHEETS 22	
2			4				

STD. NO. BAS13

ASSEMBLED BY : J. E. JONES	DATE : 3/10/09
CHECKED BY : T. H. FANG	DATE : 9/16/09
DRAWN BY : KMM 3-08	
CHECKED BY : GM 3-08	



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



PROJECT NO. B-4642
SCOTLAND COUNTY
 STATION: 15+50.00 -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		
SHEET NO.					S-22
TOTAL SHEETS					22

ASSEMBLED BY :	J. E. JONES	DATE :	2/03/09
CHECKED BY :	T. H. FANG	DATE :	9/16/09
DRAWN BY :	FCJ	11/88	REV. 10/17/00 RWW/LES
CHECKED BY :	ARB	11/88	REV. 5/7/03 RWW/JTE
			REV. 5/1/06R MAA/KMM

