

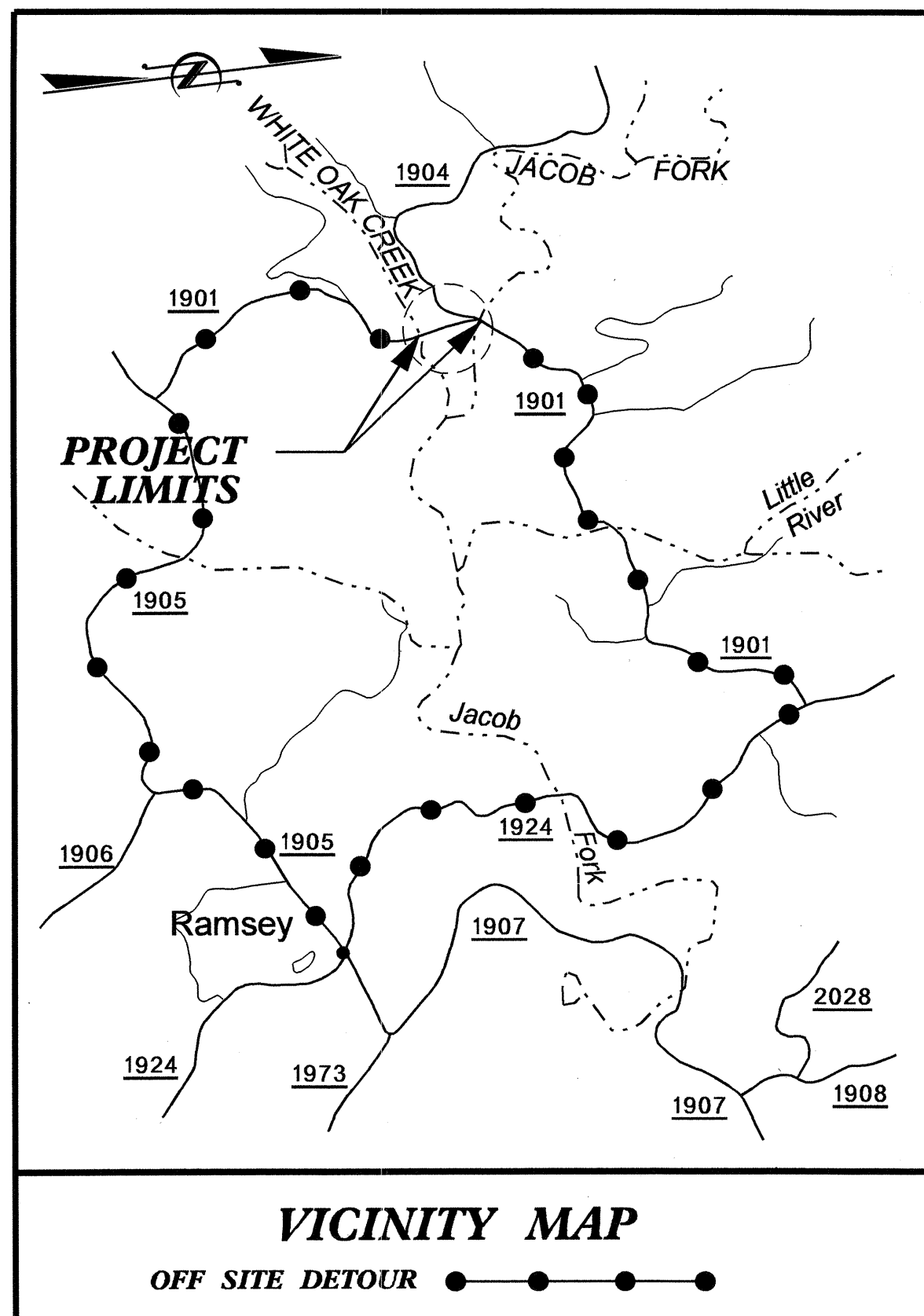
03/08/12

03-JAN-2012 11:04
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 ch04046

TIP PROJECT: B-4046

CONTRACT: C202809

STRUCTURES



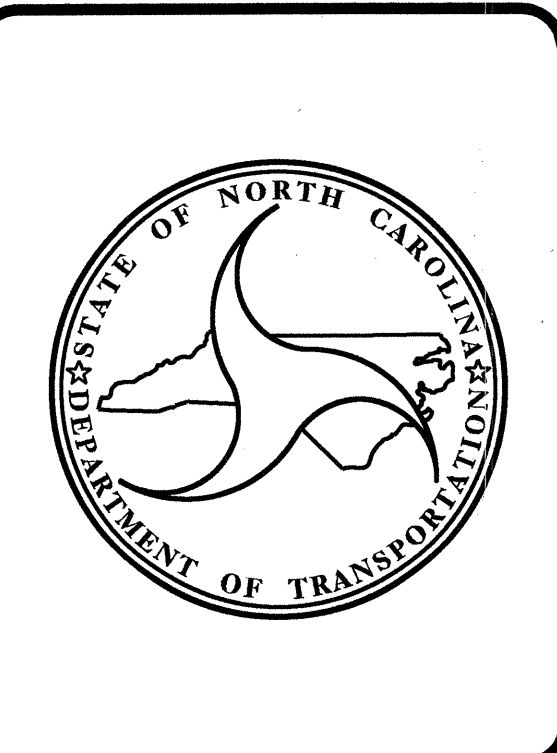
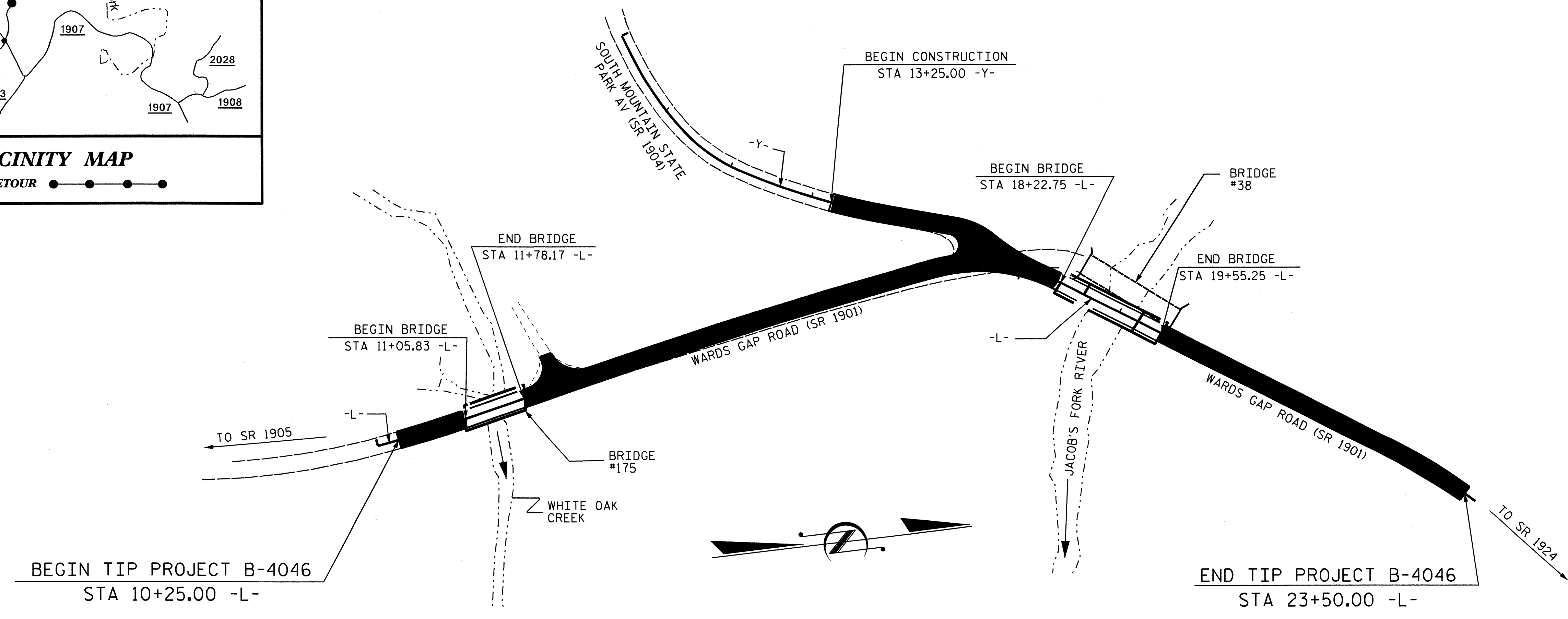
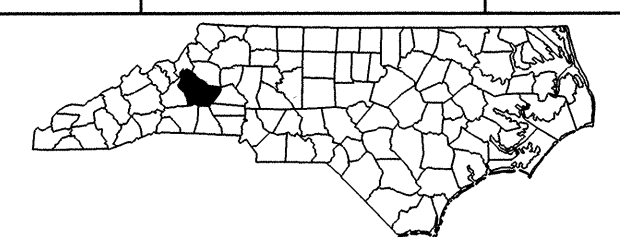
STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

BURKE COUNTY

**LOCATION: BRIDGE NO. 175 OVER WHITE OAK CREEK
 AND BRIDGE NO. 38 OVER JACOB'S FORK RIVER
 ON SR 1901 (WARDS GAP ROAD)**

TYPE OF WORK: GRADING, DRAINAGE, STRUCTURES AND PAVING

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4046		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33412.1.1	BRZ-1901 (2)	PE	
33412.2.1	BRZ-1901 (2)	R / W	
33412.3.1	BRZ-1901 (2)	CONSTRUCTION	



DESIGN DATA

ADT 2011 = 757
 ADT 2031 = 1,105
 DHV = 12 %
 D = 55 %
 * T = 3 %
 V = 40 MPH
 * TTST 1% DUAL 2%

FUNCTIONAL CLASSIFICATION
 RURAL LOCAL
 SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4046 = 0.212 MILES
 LENGTH STRUCTURE TIP PROJECT B-4046 = 0.039 MILES
 TOTAL LENGTH TIP PROJECT B-4046 = 0.251 MILES

PLANS PREPARED IN THE OFFICE OF:
 DIVISION OF HIGHWAYS

2012 STANDARD SPECIFICATIONS

LETTING DATE:
APRIL 17, 2012

Q. H. NGUYEN, P.E.
 PROJECT ENGINEER

MARC G. CHEEK, P.E.
 PROJECT DESIGN ENGINEER

STRUCTURES MANAGEMENT UNIT
 1000 BIRCH RIDGE DRIVE
 RALEIGH, N.C. 27610

DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER
 DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION

APPROVED
 DIVISION ADMINISTRATOR DATE

GENERAL NOTES

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
 FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

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 SPICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

THE EXISTING 1-SPAN STRUCTURE (1 @ 35'-10") WITH A ROADWAY WIDTH OF 24'-4" AND A 3" ASPHALT WEARING SURFACE ON A TIMBER FLOOR ON STEEL I-BEAMS, WITH A SUBSTRUCTURE CONSISTING OF TIMBER CAP/TIMBER POST AND SILLS AT THE END BENTS AND TIMBER CAPS/TIMBER POST & BEAM CRUTCH BENT, AND LOCATED AT THE LOCATION OF THE PROPOSED BRIDGE SHALL BE REMOVED. SEE SPECIAL PROVISIONS FOR "REMOVAL OF EXISTING STRUCTURES".
 REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT 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.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA (SEE SHEET 1 OF 2) SHALL BE EXCAVATED FOR A DISTANCE OF 20 FEET TO EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.
 FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
 FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
 FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
 FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
 THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

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

HYDRAULIC DATA

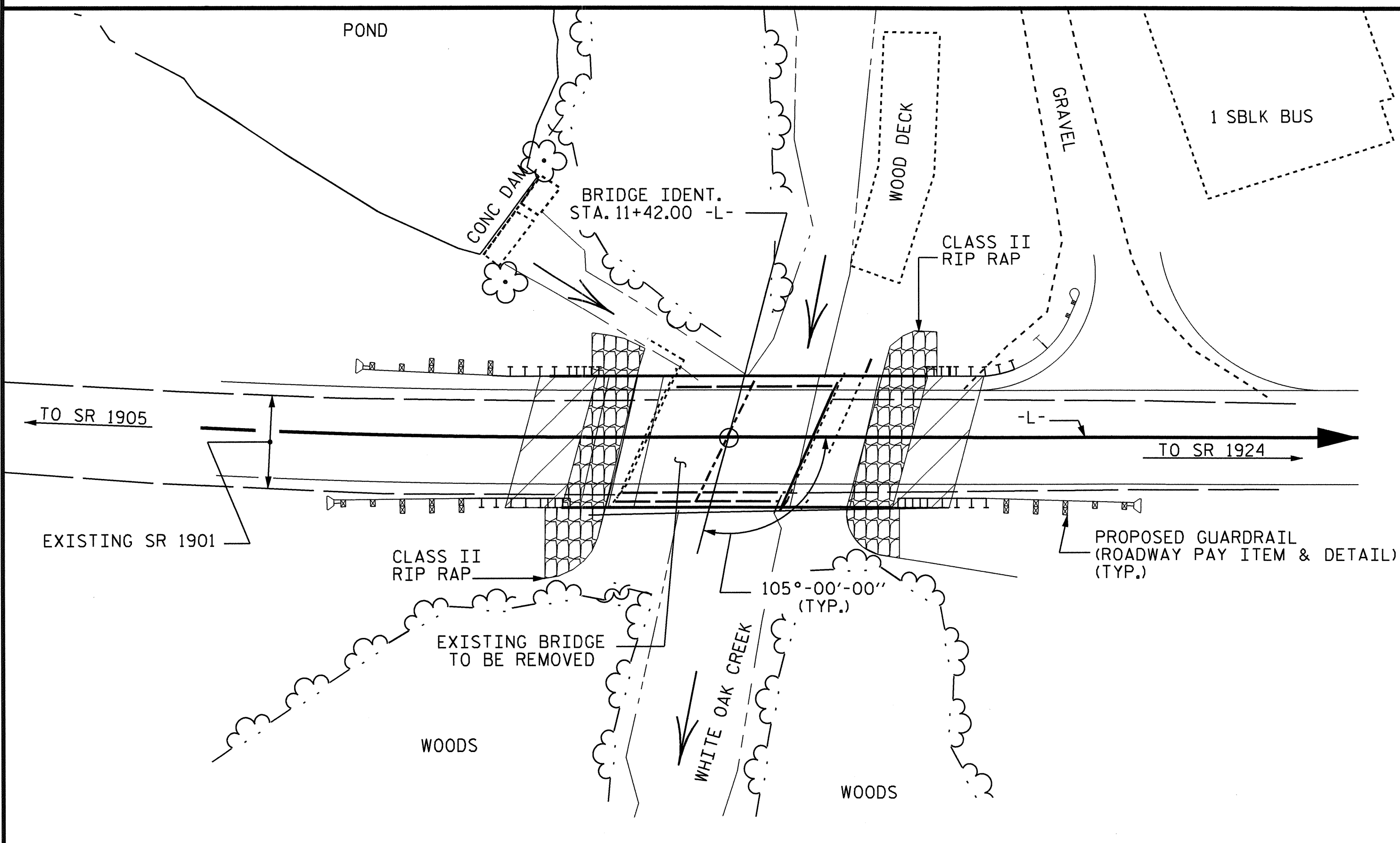
DESIGN DISCHARGE	= 1,200 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 25 YRS.
DESIGN HIGH WATER ELEVATION	= 1,140.0 FT.
DRAINAGE AREA	= 4.6 SQ. MI.
BASE DISCHARGE (Q100)	= 1,700 C.F.S.
BASE HIGH WATER ELEVATION	= 1,141.2 FT.

OVERTOPPING FLOOD DATA

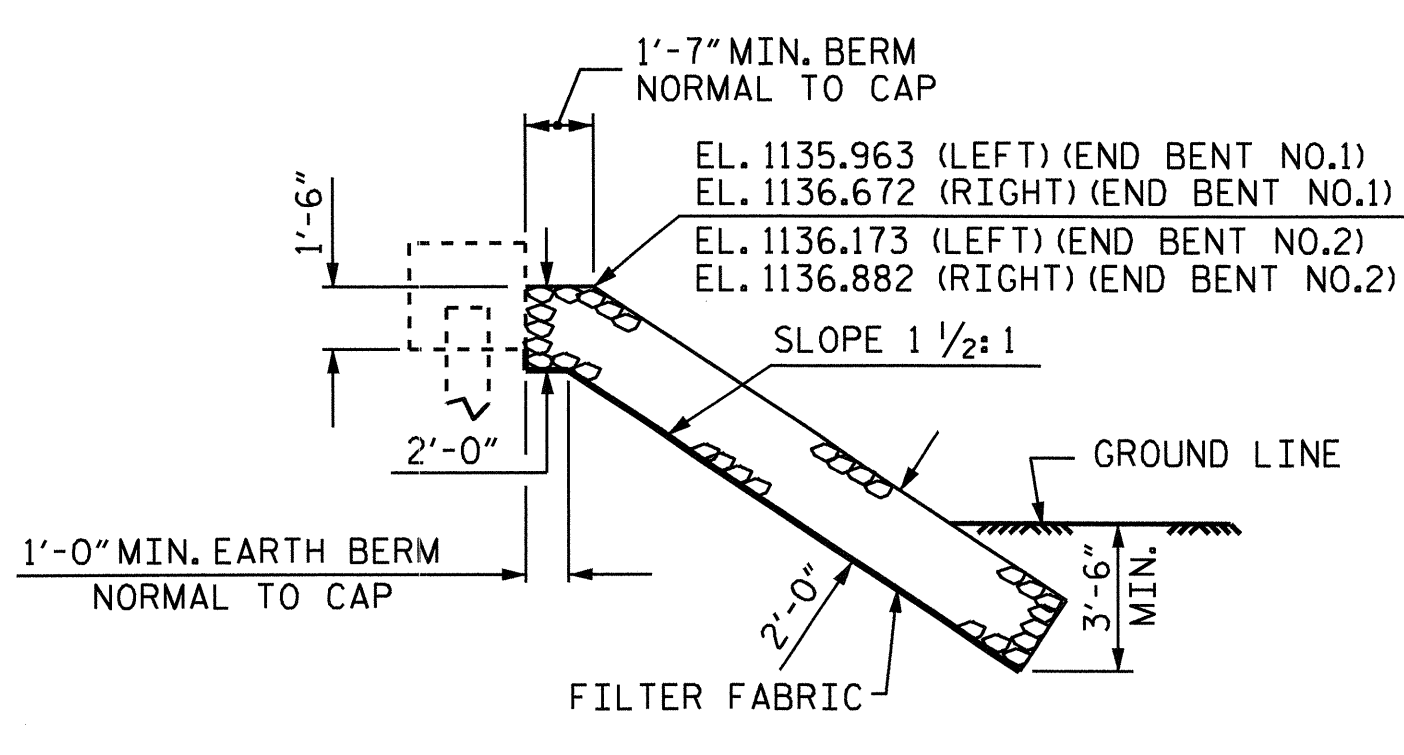
OVERTOPPING DISCHARGE	= 1,900 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	= 200+ YRS.
OVERTOPPING FLOOD ELEVATION	= 1,141.0 FT.

FOUNDATION NOTES

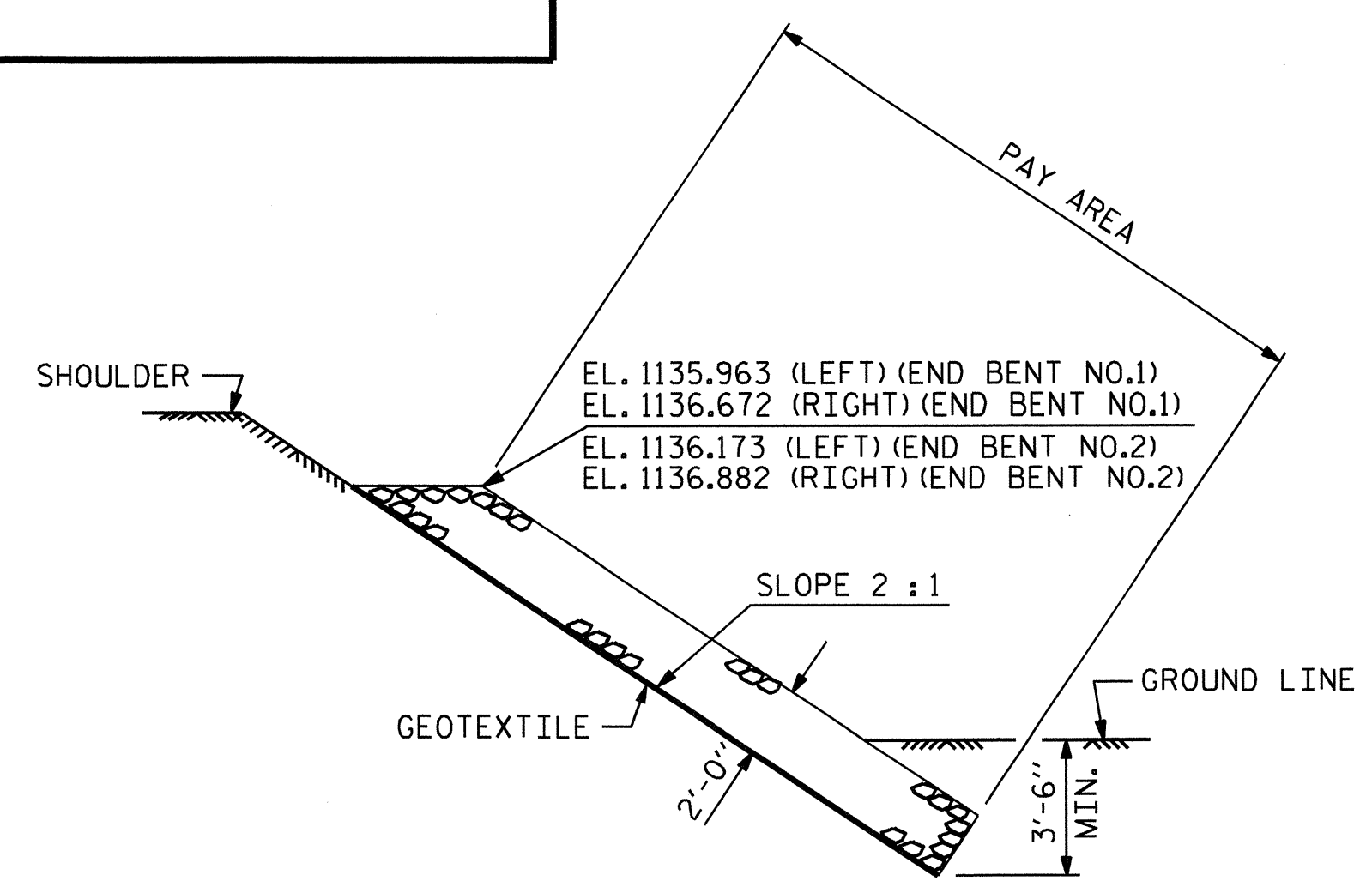
FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
 PILES AT END BENT NO.1 & END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 100 TONS PER PILE.
 DRIVE PILES AT END BENT NO.1 & END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 167 TONS PER PILE.



LOCATION SKETCH



SECTION BERM RIP RAPPED



SECTION C-C

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 12 X 53 STEEL PILES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS
	LUMP SUM	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	NO. LIN. FT.	LIN. FT.	TONS	SQ. YARDS	LUMP SUM	NO. LIN. FT.
SUPERSTRUCTURE	LUMP SUM			LUMP SUM			140.26			LUMP SUM	10 700.00
END BENT NO. 1		LUMP SUM	20.6		2525	5 125		135	150		
END BENT NO. 2		LUMP SUM	20.6		2525	5 175		140	155		
TOTAL	LUMP SUM	LUMP SUM	41.2	LUMP SUM	5050	10 300	140.26	275	305	LUMP SUM	10 700.00

PROJECT NO. B-4046
BURKE COUNTY
 STATION: 11+42.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON SR 1901 OVER
 WHITE OAK CREEK BETWEEN
 SR 1905 AND SR 1924



REVISIONS						SHEET NO. S-2
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 31
2			4			

DRAWN BY: A.L. FIGUEROA DATE: 03-08-11
 CHECKED BY: M.G. CHEEK DATE: 03-10-11

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	①	1.014	--	1.75	0.269	1.04	70'	EL	34.482	0.608	1.1	70'	EL	3.448	0.80	0.269	1.01	70'	EL	34.482		
	HL-93(0pr)	N/A	--	1.355	--	1.35	0.269	1.35	70'	EL	34.482	0.608	1.43	70'	EL	3.448	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	②	1.315	47.356	1.75	0.269	1.36	70'	EL	34.482	0.608	1.38	70'	EL	3.448	0.80	0.269	1.32	70'	EL	34.482		
	HS-20(0pr)	36.000	--	1.757	63.236	1.35	0.269	1.76	70'	EL	34.482	0.608	1.79	70'	EL	3.448	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.938	39.656	1.4	0.269	3.78	70'	EL	34.482	0.608	4.12	70'	EL	3.448	0.80	0.269	2.94	70'	EL	34.482	
		SNGARBS2	20.000	--	2.203	44.052	1.4	0.269	2.84	70'	EL	34.482	0.608	2.93	70'	EL	3.448	0.80	0.269	2.20	70'	EL	34.482	
		SNAGRIS2	22.000	--	2.092	46.016	1.4	0.269	2.69	70'	EL	34.482	0.608	2.72	70'	EL	3.448	0.80	0.269	2.09	70'	EL	34.482	
		SNCOTTS3	27.250	--	1.462	39.844	1.4	0.269	1.88	70'	EL	34.482	0.608	2.06	70'	EL	3.448	0.80	0.269	1.46	70'	EL	34.482	
		SNAGGRS4	34.925	--	1.227	42.856	1.4	0.269	1.58	70'	EL	34.482	0.608	1.71	70'	EL	3.448	0.80	0.269	1.23	70'	EL	34.482	
		SNS5A	35.550	--	1.2	42.646	1.4	0.269	1.54	70'	EL	34.482	0.608	1.73	70'	EL	3.448	0.80	0.269	1.20	70'	EL	34.482	
		SNS6A	39.950	--	1.103	44.058	1.4	0.269	1.42	70'	EL	34.482	0.608	1.58	70'	EL	3.448	0.80	0.269	1.10	70'	EL	34.482	
	SNS7B	42.000	--	1.05	44.113	1.4	0.269	1.35	70'	EL	34.482	0.608	1.55	70'	EL	3.448	0.80	0.269	1.05	70'	EL	34.482		
	TTST	TNAGRIT3	33.000	--	1.345	44.401	1.4	0.269	1.73	70'	EL	34.482	0.608	1.88	70'	EL	3.448	0.80	0.269	1.35	70'	EL	34.482	
		TNT4A	33.075	--	1.352	44.717	1.4	0.269	1.74	70'	EL	34.482	0.608	1.83	70'	EL	3.448	0.80	0.269	1.35	70'	EL	34.482	
		TNT6A	41.600	--	1.108	46.073	1.4	0.269	1.43	70'	EL	34.482	0.608	1.65	70'	EL	3.448	0.80	0.269	1.11	70'	EL	34.482	
		TNT7A	42.000	--	1.114	46.794	1.4	0.269	1.43	70'	EL	34.482	0.608	1.62	70'	EL	3.448	0.80	0.269	1.11	70'	EL	34.482	
		TNT7B	42.000	--	1.155	48.526	1.4	0.269	1.49	70'	EL	34.482	0.608	1.51	70'	EL	3.448	0.80	0.269	1.16	70'	EL	34.482	
		TNAGRIT4	43.000	--	1.097	47.174	1.4	0.269	1.41	70'	EL	34.482	0.608	1.46	70'	EL	3.448	0.80	0.269	1.10	70'	EL	34.482	
TNAGT5A		45.000	--	1.033	46.505	1.4	0.269	1.33	70'	EL	34.482	0.608	1.45	70'	EL	3.448	0.80	0.269	1.03	70'	EL	34.482		
TNAGT5B	45.000	③	1.02	45.905	1.4	0.269	1.31	70'	EL	34.482	0.608	1.39	70'	EL	3.448	0.80	0.269	1.02	70'	EL	34.482			

LOAD FACTORS:

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

NOTES:

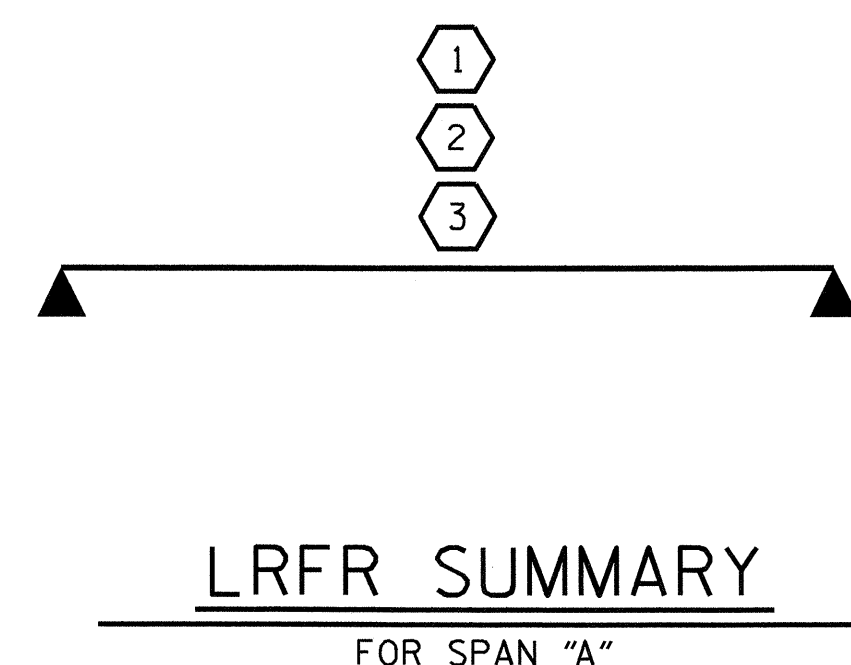
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

COMMENTS:

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

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



PROJECT NO. B-4046
BURKE COUNTY
STATION: 11+42.00 -L-

ASSEMBLED BY : A.L. FIGUEROA DATE : 03-07-11
CHECKED BY : M.G. CHEEK DATE : 03-15-11
DRAWN BY : CVC 6/10
CHECKED BY : DNS 6/10

03-JAN-2012 11:02
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dahodge

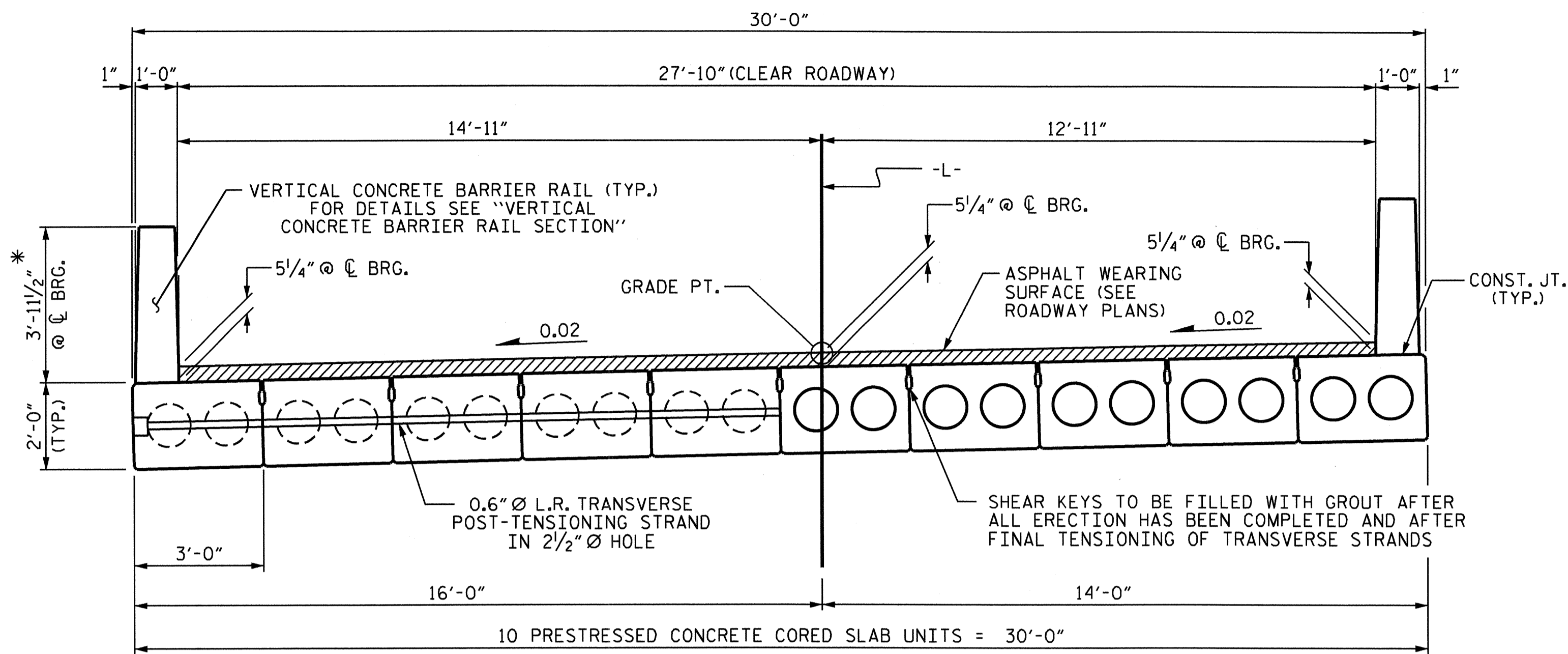


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR
70' CORED SLAB UNIT
75° SKEW & 105° SKEW
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			31

STR*1 STD. NO. 24LRFR1_75&105S_70L



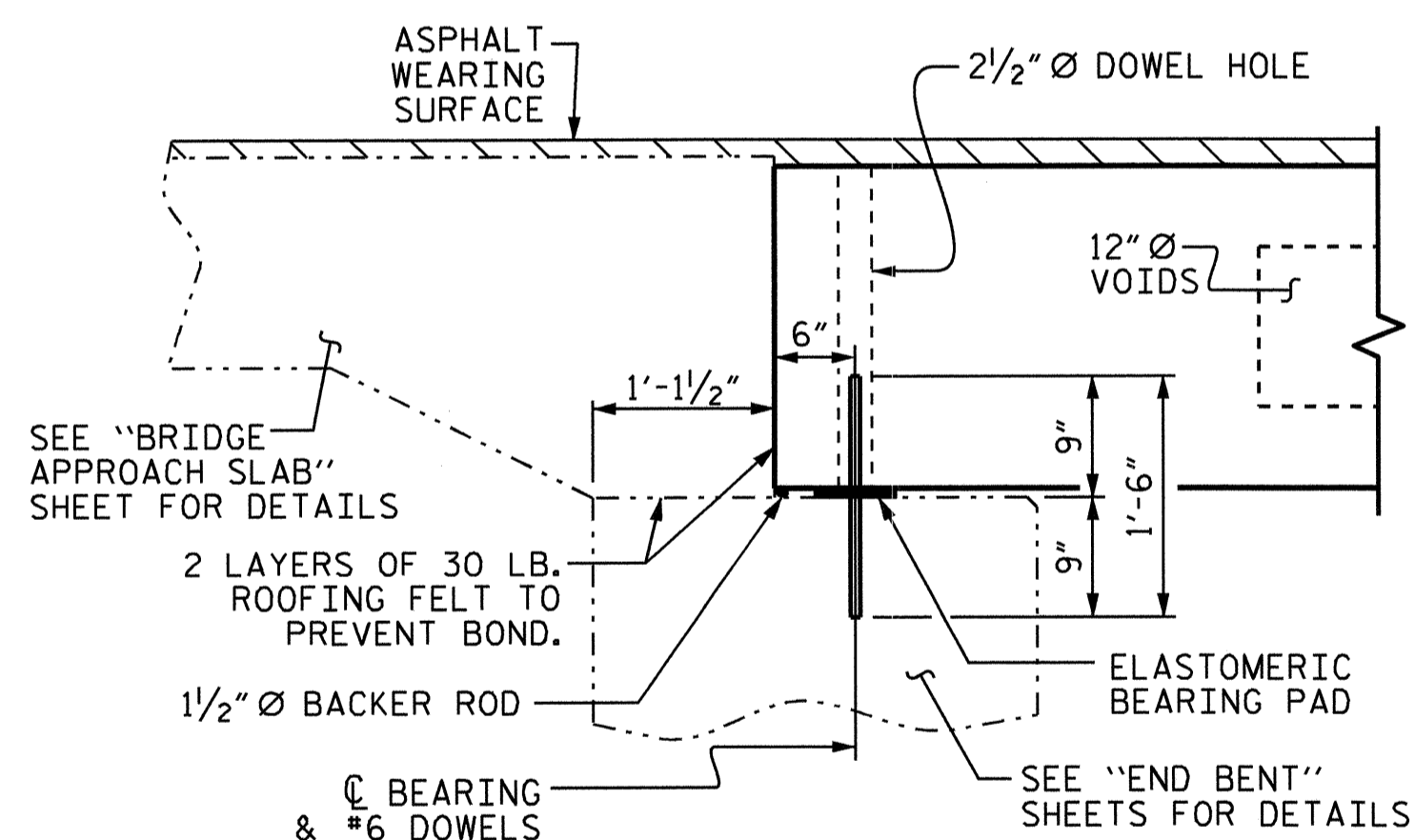
HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

TYPICAL SECTION

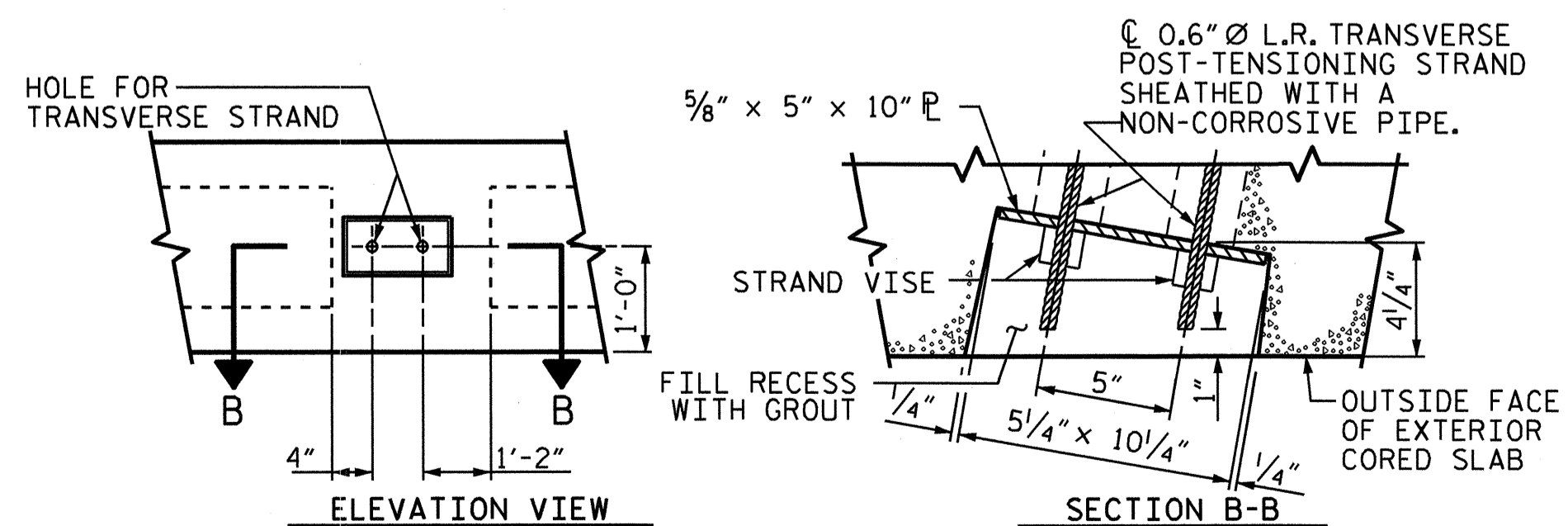
HALF SECTION
THROUGH VOIDS

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

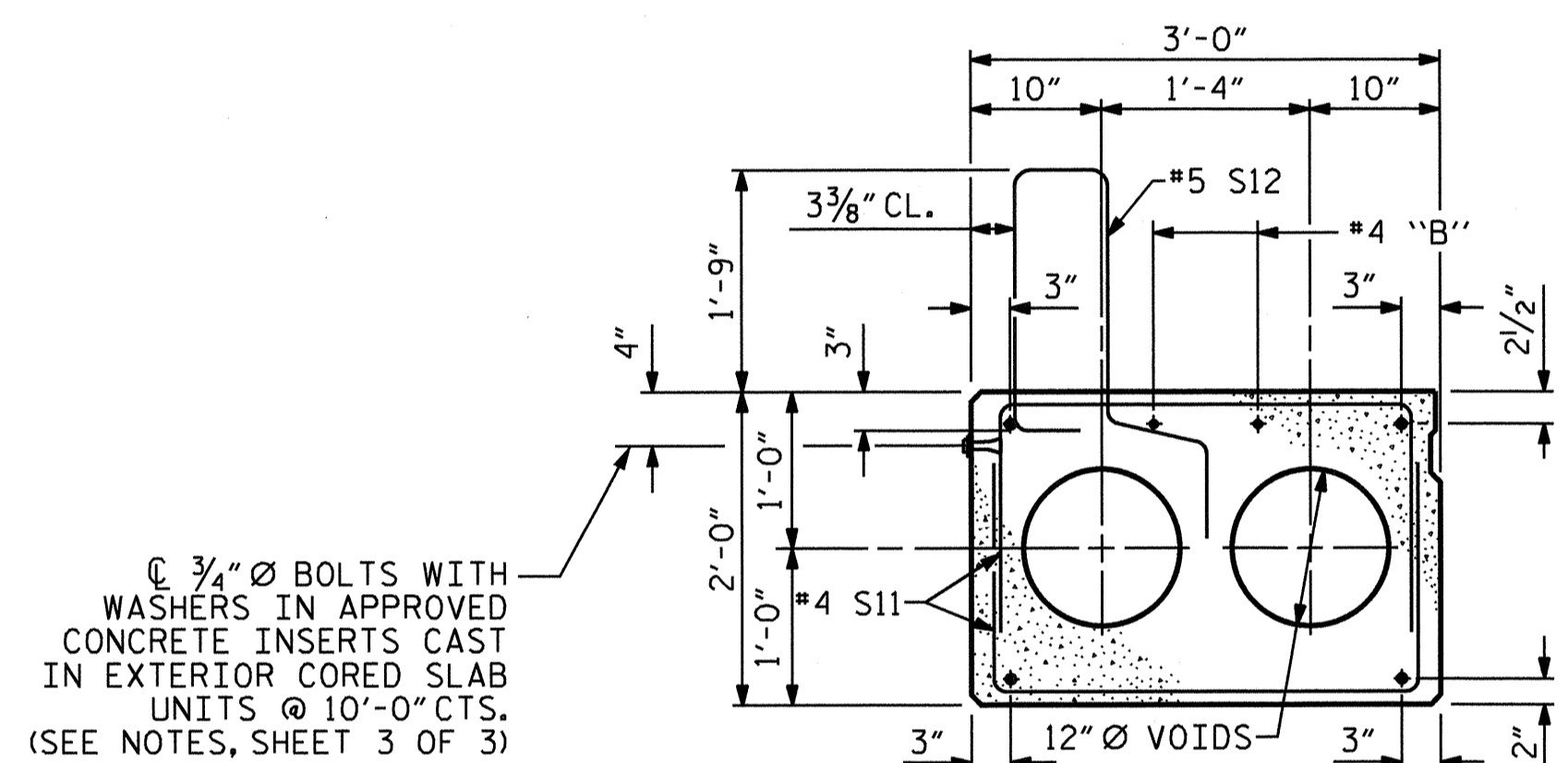
FIXED END



SECTION AT END BENT



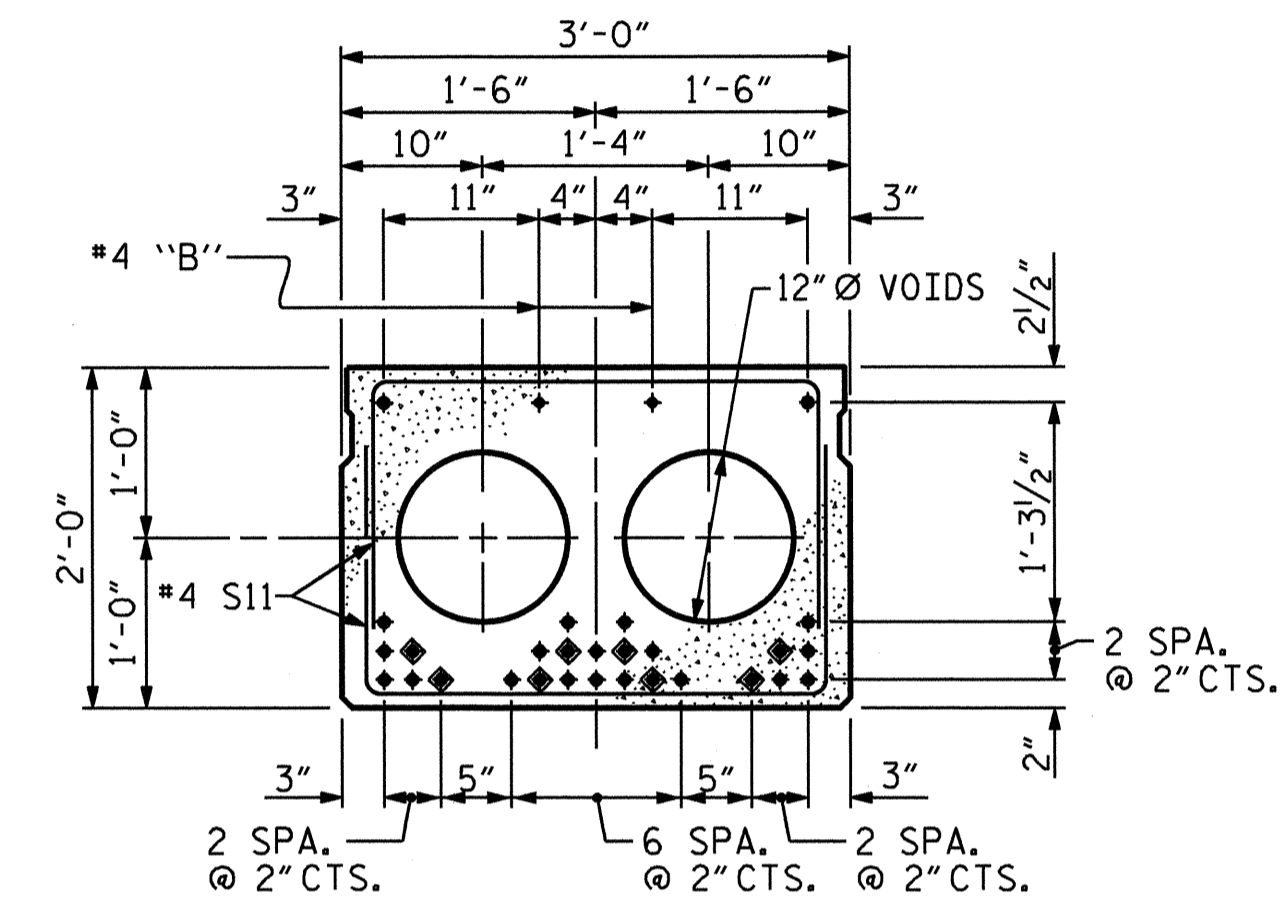
GROUTED RECESS AT END OF
POST-TENSIONED STRAND-CORED SLABS



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

EXTERIOR SLAB SECTION

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



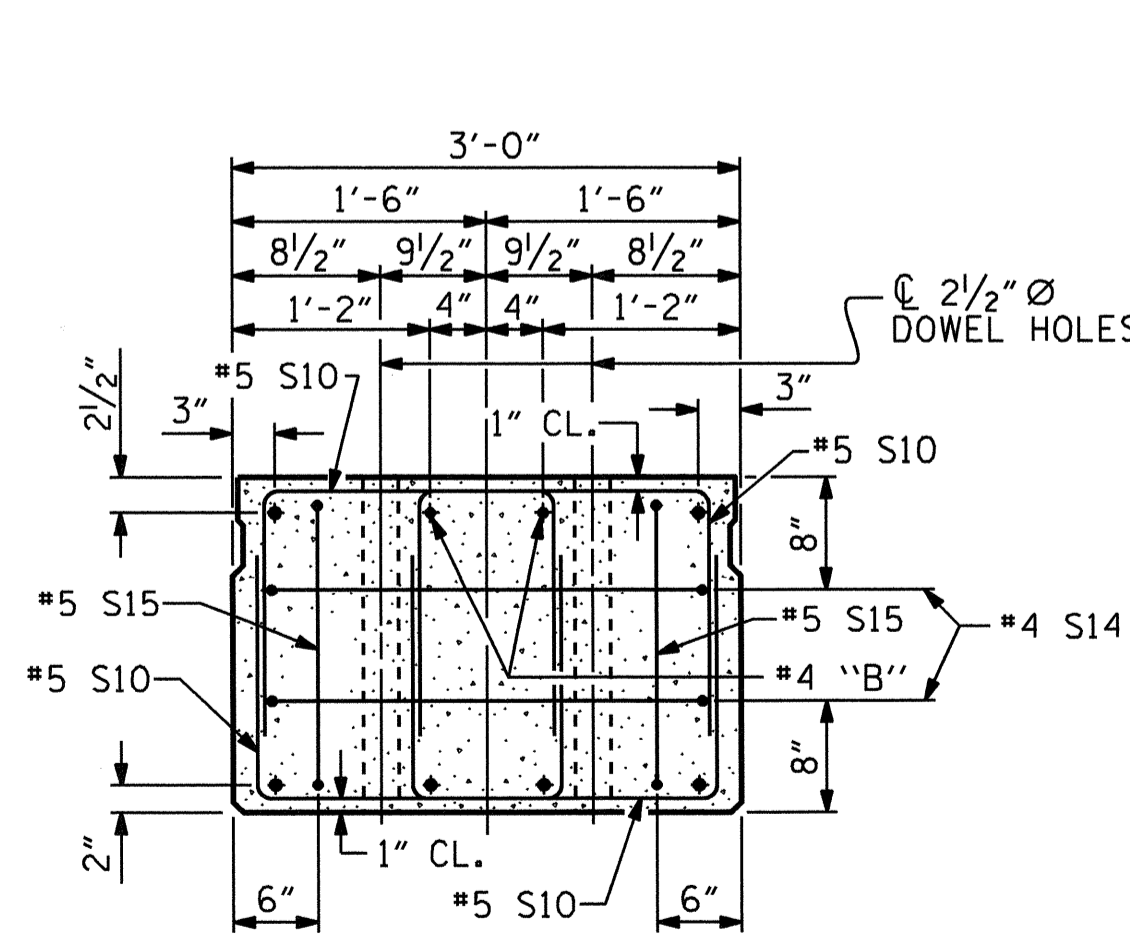
INTERIOR SLAB SECTION (70' UNIT)

(28 STRANDS REQUIRED)

0.6" Ø LOW
RELAXATION STRAND LAYOUT

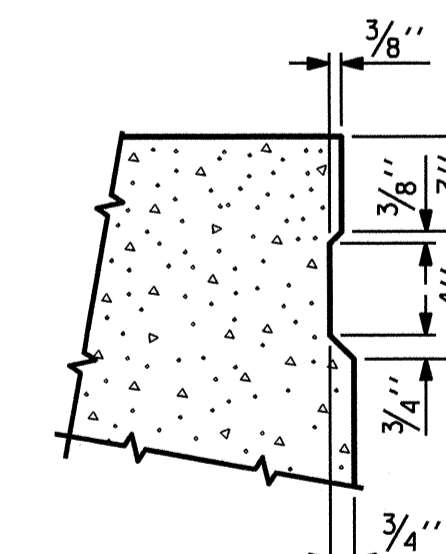
◆ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



END ELEVATION

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



SHEAR KEY DETAIL

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

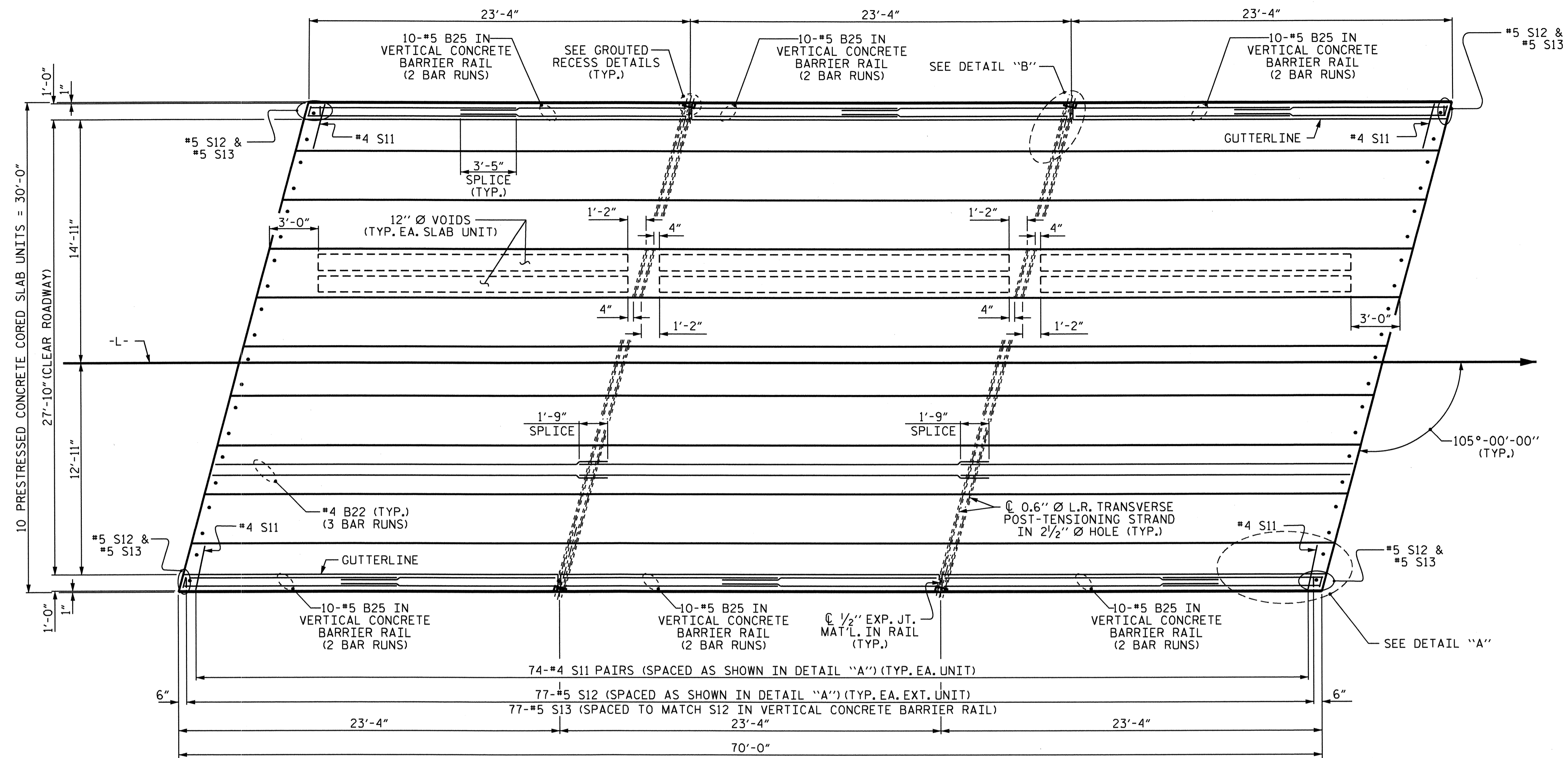
PROJECT NO. B-4046
BURKE COUNTY
STATION: 11+42.00 -L-

SHEET 1 OF 3

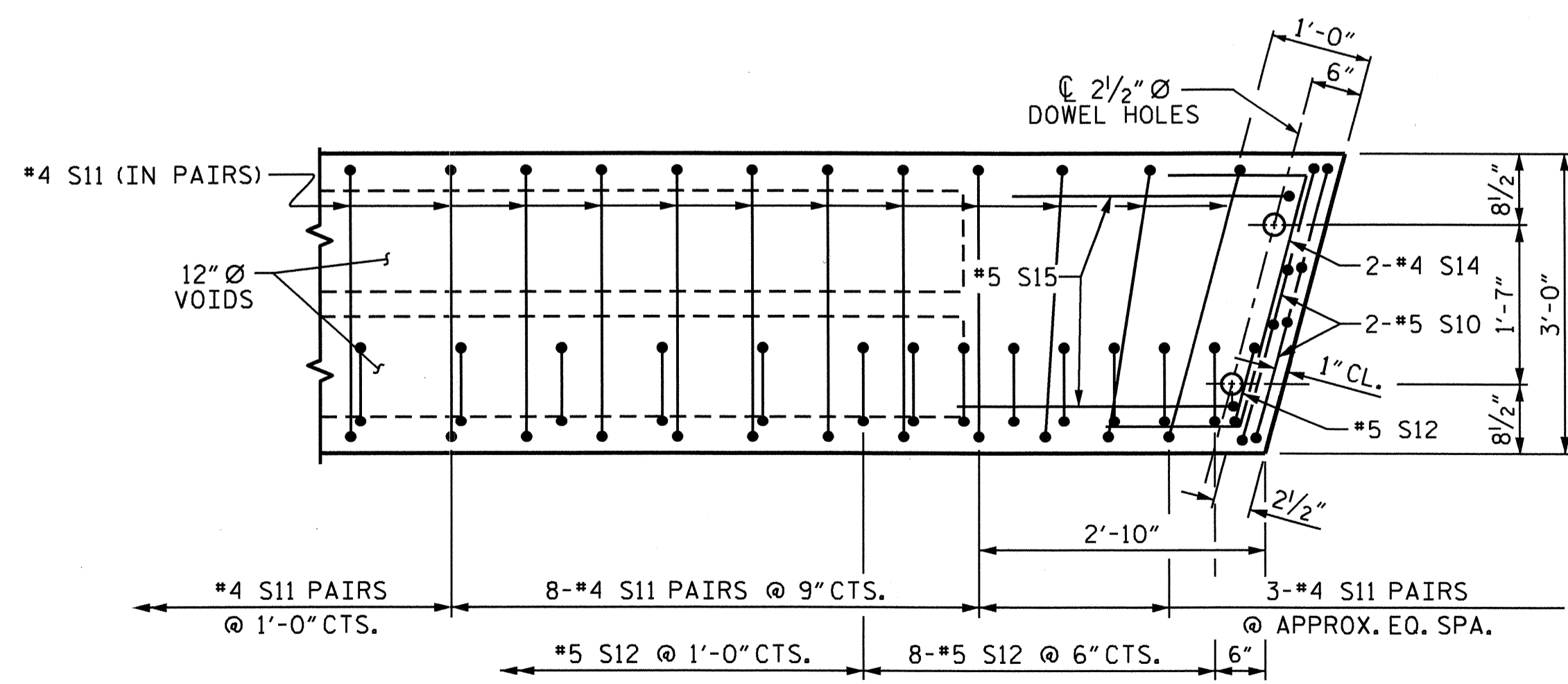
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 2'-0"
PRESTRESSED CONCRETE
CORED SLAB UNIT



ASSEMBLED BY: A.L. FIGUEROA/DAH DATE: 03-03-11
CHECKED BY: M.G. CHEEK DATE: 03-04-11
DRAWN BY: MAA 6/10 REV. 12/11 MAA/AAC
CHECKED BY: MKT 7/10

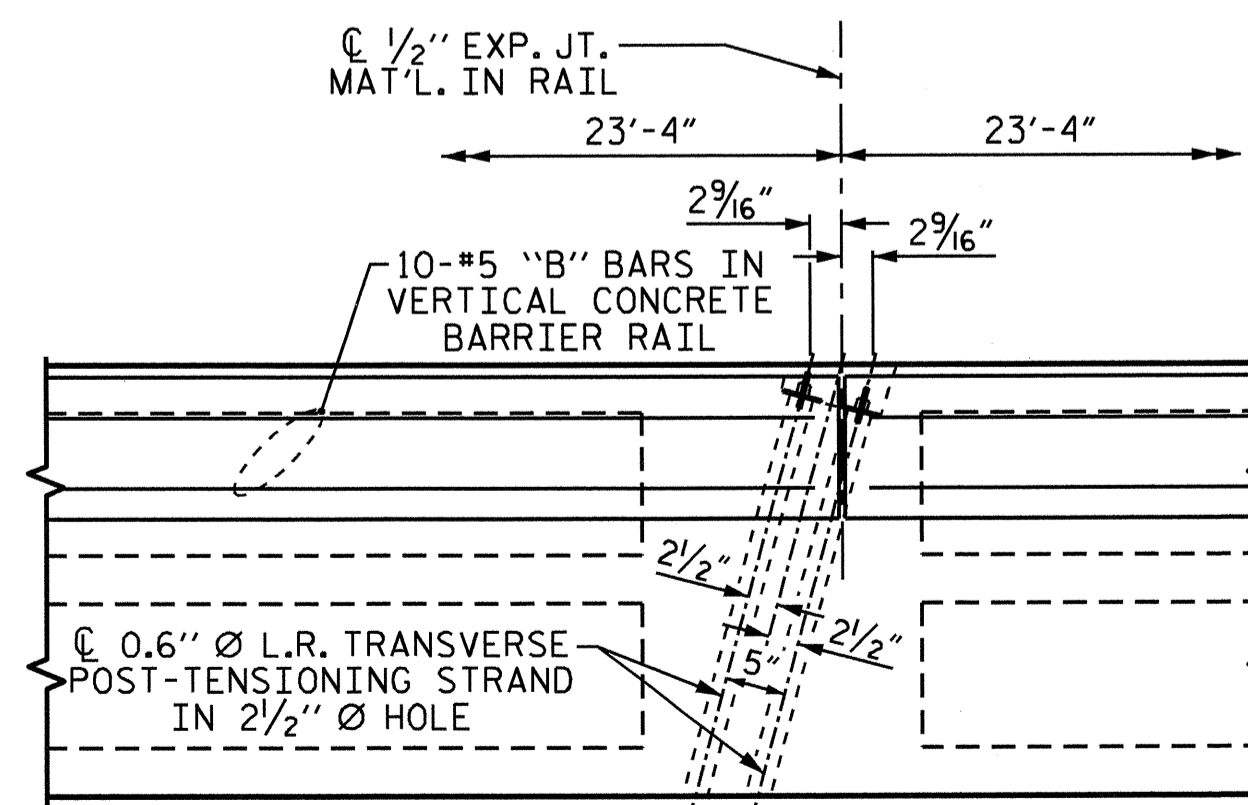


PLAN OF UNIT



DETAIL "A"

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



DETAIL "B"

#4 S11 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUDED RECESS AND 2 1/2" Ø TRANSVERSE POST-TENSIONING STRAND HOLES

PROJECT NO. B-4046
BURKE COUNTY
 STATION: 11+42.00 -L-

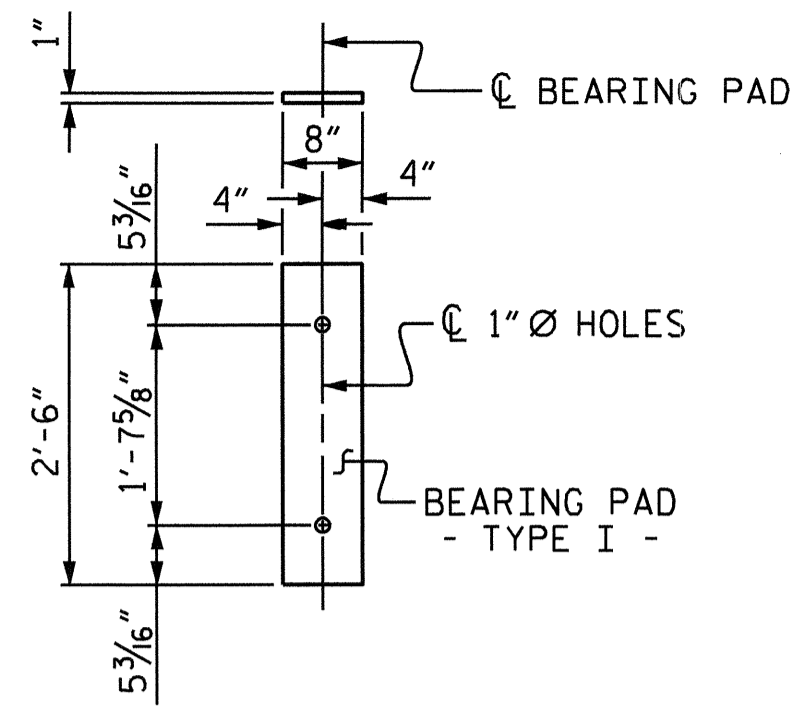
SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 PLAN OF 70' UNIT
 27'-10" CLEAR ROADWAY
 105° SKEW



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			31

ASSEMBLED BY : A.L. FIGUEROA/DAH DATE : 03-03-11
 CHECKED BY : M.G. CHEEK DATE : 03-04-11
 DRAWN BY : MAA 6/10 REV. 12/5/11 MAA/AAC
 CHECKED BY : MKT 7/10



FIXED END
(TYPE I - 20 REQ'D)

ELASTOMERIC BEARING DETAILS

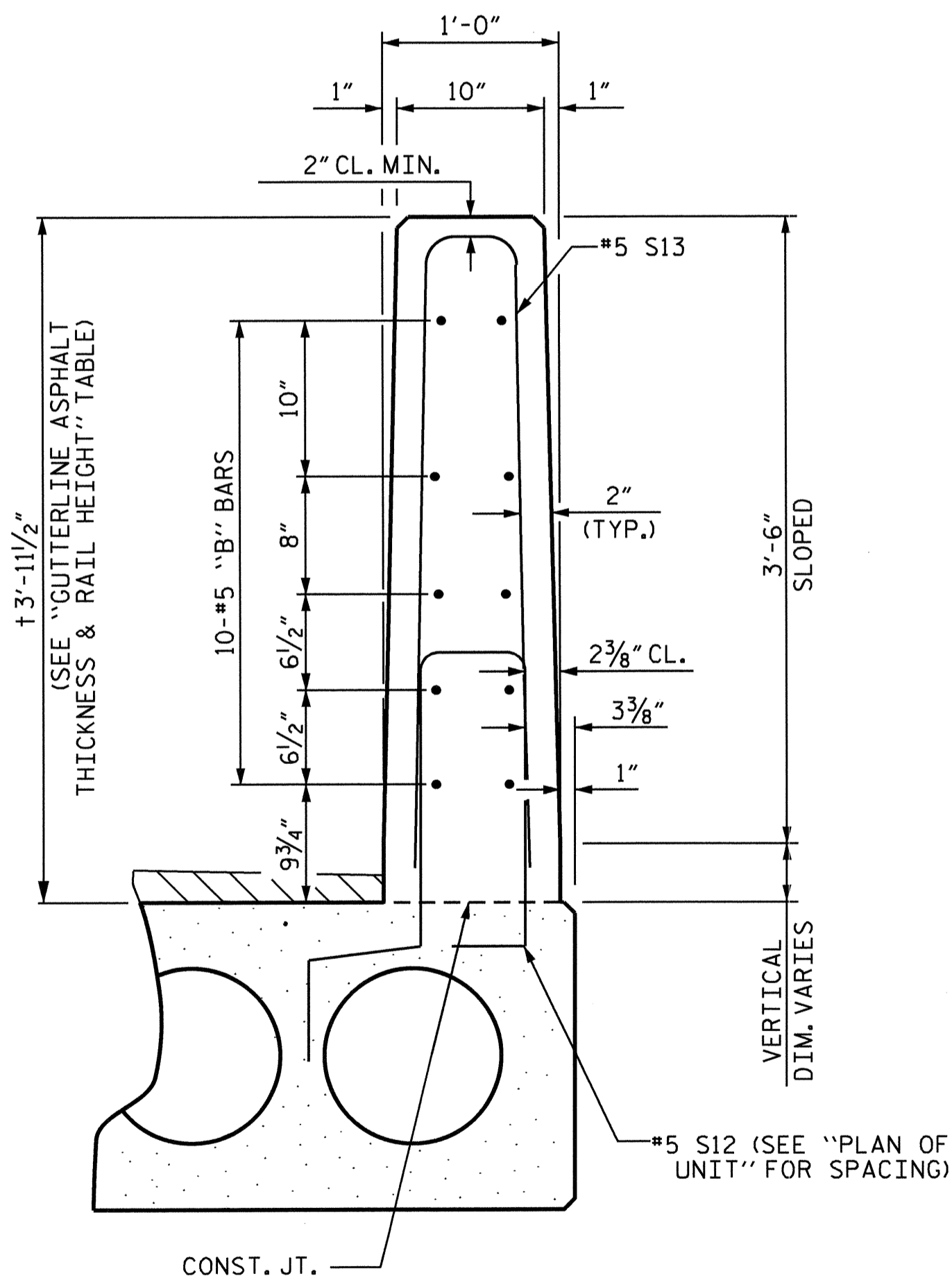
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

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

CORED SLABS REQUIRED			
70' UNIT	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	70'-0"	140'-0"
INTERIOR C.S.	8	70'-0"	560'-0"
TOTAL	10		700'-0"

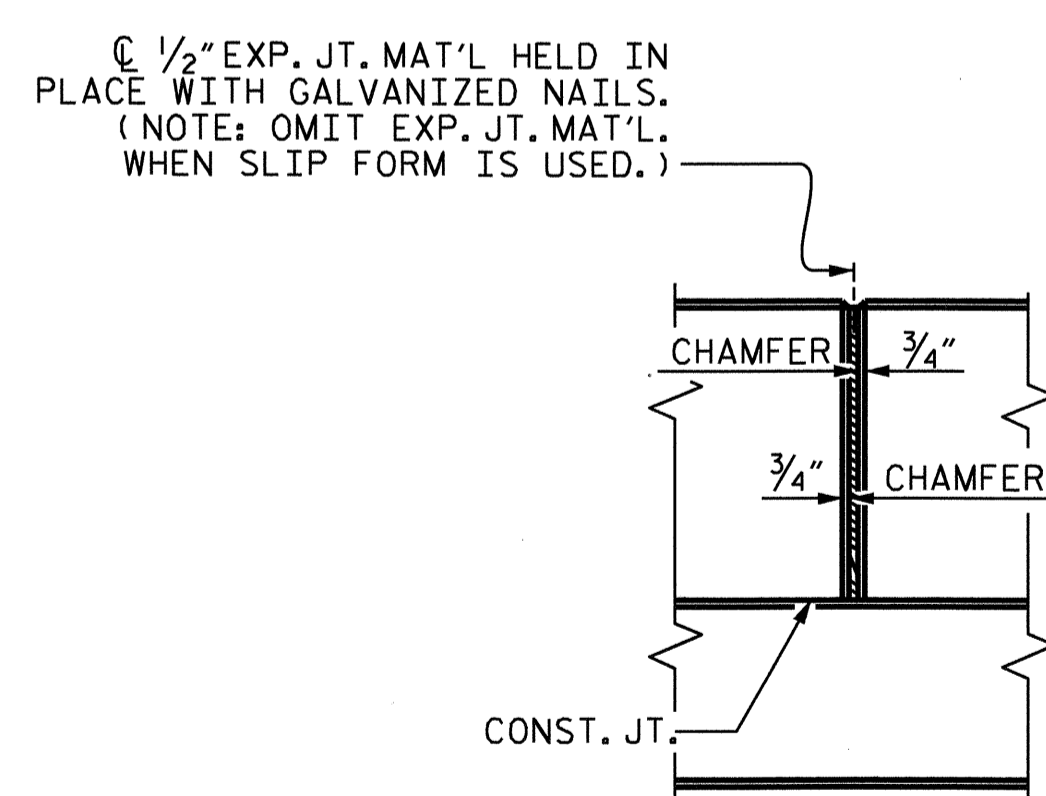
BILL OF MATERIAL FOR ONE 70' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
B22	6	#4	STR	24'-6"	98	24'-6"	98
S10	8	#5	3	4'-10"	40	4'-10"	40
S11	148	#4	3	5'-10"	577	5'-10"	577
*S12	79	#5	1	6'-4"	522		
S14	4	#4	4	5'-8"	15	5'-8"	15
S15	4	#5	3	7'-1"	30	7'-1"	30
REINFORCING STEEL				LBS.	760		760
* EPOXY COATED REINFORCING STEEL				LBS.	522		
7000 P.S.I. CONCRETE				CU. YDS.	12.0		12.0
0.6" Ø L.R. STRANDS				No.	28		28

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
70' UNIT						
*B25	120	120	#5	STR	13'-8"	1711
*S13	158	158	#5	2	7'-2"	1181
* EPOXY COATED REINFORCING STEEL				LBS.		2892
CLASS AA CONCRETE				CU. YDS.		18.9
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		140.26



SECTION THRU RAIL

† THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE.



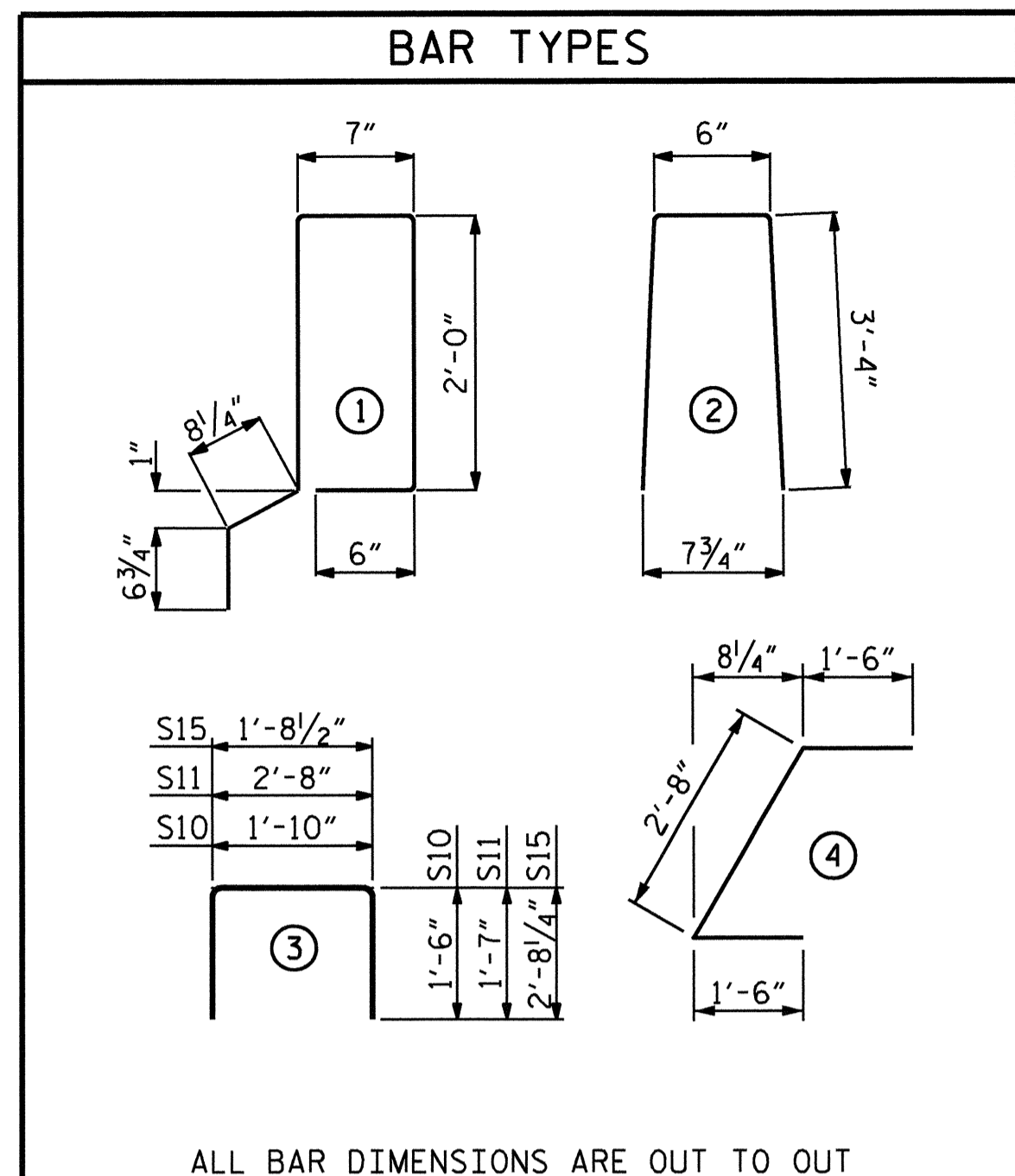
ELEVATION AT EXPANSION JOINTS

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

CONCRETE RELEASE STRENGTH	
UNIT	PSI
70' UNITS	5500

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

** INCLUDES FUTURE WEARING SURFACE



ALL BAR DIMENSIONS ARE OUT TO OUT

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, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.
- THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.
- ALL REINFORCING STEEL IN VERTICAL CONCRETE BARRIER RAILS SHALL BE EPOXY COATED.
- PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.
- APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.
- GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.
- TRANSVERSE POST TENSIONING OF THE CORED SLAB UNITS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- MAINTAIN A SYMMETRIC TENSION FORCE BETWEEN EACH PAIR OF TRANSVERSE POST TENSIONING STRANDS IN THE DIAPHRAGM.
- THE #4 S11 STIRRUPS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO THE GROUTED RECESS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- CONCRETE INSERTS SHALL HAVE A MINIMUM WORKING LOAD SHEAR CAPACITY OF 2.5 KIPS.
- THE 3/4" Ø BOLTS, WASHERS AND CONCRETE INSERTS SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.
- THE BOLTS, WASHERS AND CONCRETE INSERTS ARE PROVIDED AS AN OPTION FOR THE CONTRACTOR TO ATTACH MATERIALS TO PREVENT DEBRIS FROM DROPPING INTO THE WATER DURING CONSTRUCTION OF THE VERTICAL CONCRETE BARRIER RAILS.
- UPON COMPLETION OF THE BRIDGE CONSTRUCTION, THE 3/4" Ø BOLTS, AND WASHERS SHALL BE REMOVED AND THE CONCRETE INSERTS SHALL BE GROUTED.
- THE COST OF THE 3/4" Ø BOLTS, WASHERS, AND INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

PROJECT NO. B-4046
BURKE COUNTY
 STATION: 11+42.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 2'-0"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS 31
2			4			



ASSEMBLED BY : A.L. FIGUEROA/DAH	DATE : 03-03-11
CHECKED BY : M.G. CHEEK	DATE : 03-04-11
DRAWN BY : MAA 6/10	REV. 12/11 MAA/AAC
CHECKED BY : MKT 7/10	

VERTICAL CONCRETE BARRIER RAIL DETAILS

NOTES

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

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

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

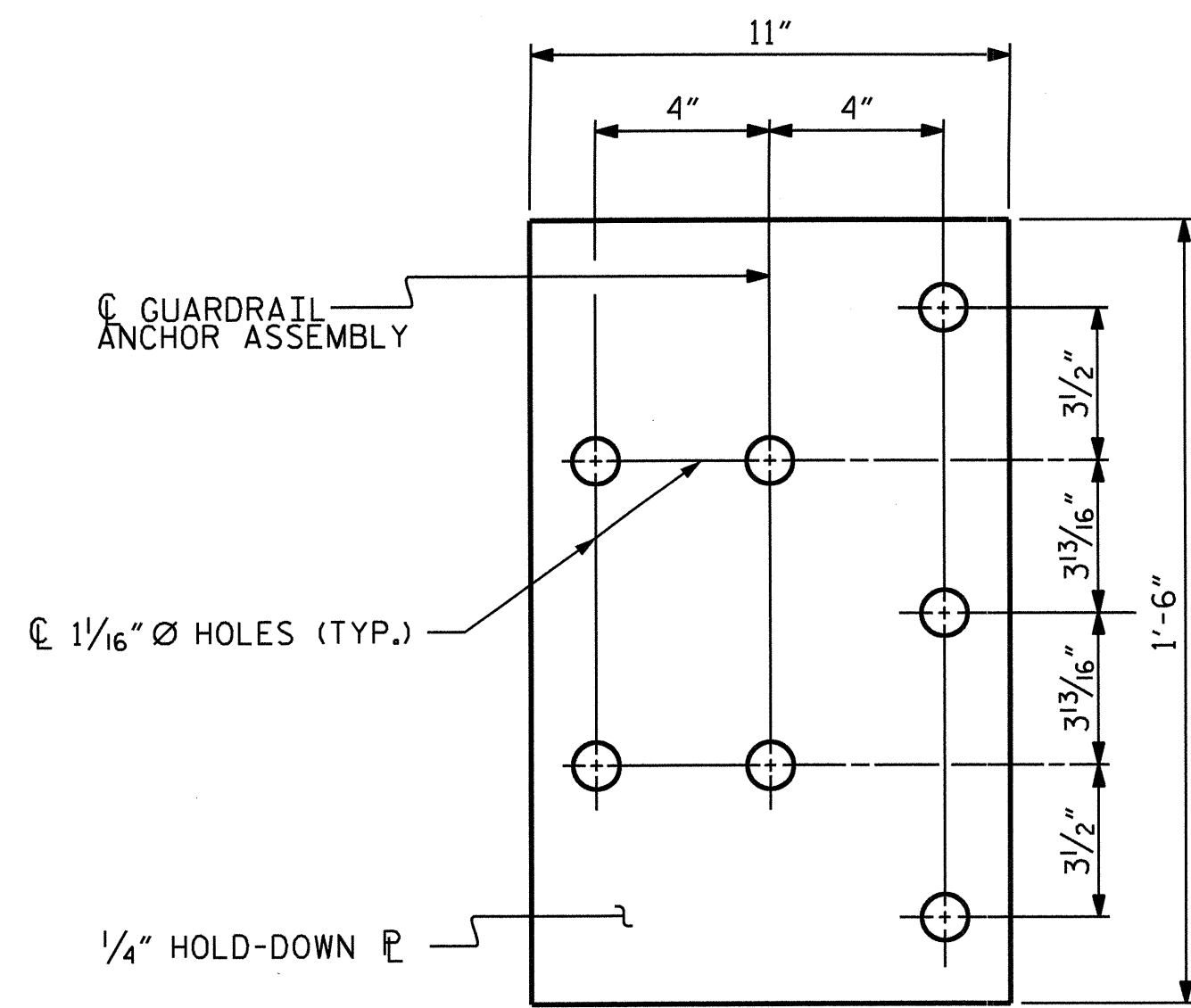
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

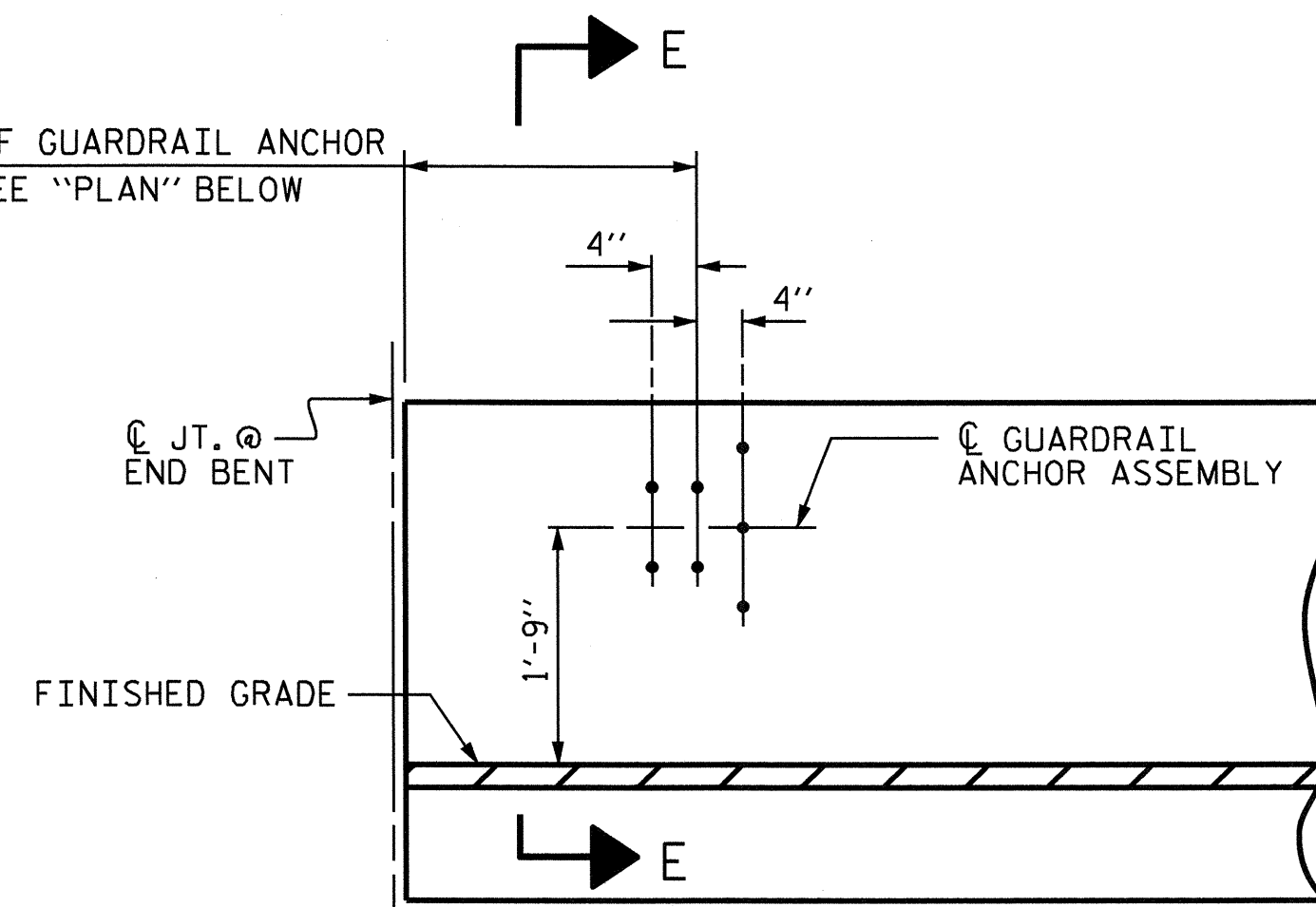
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

THE 1 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.

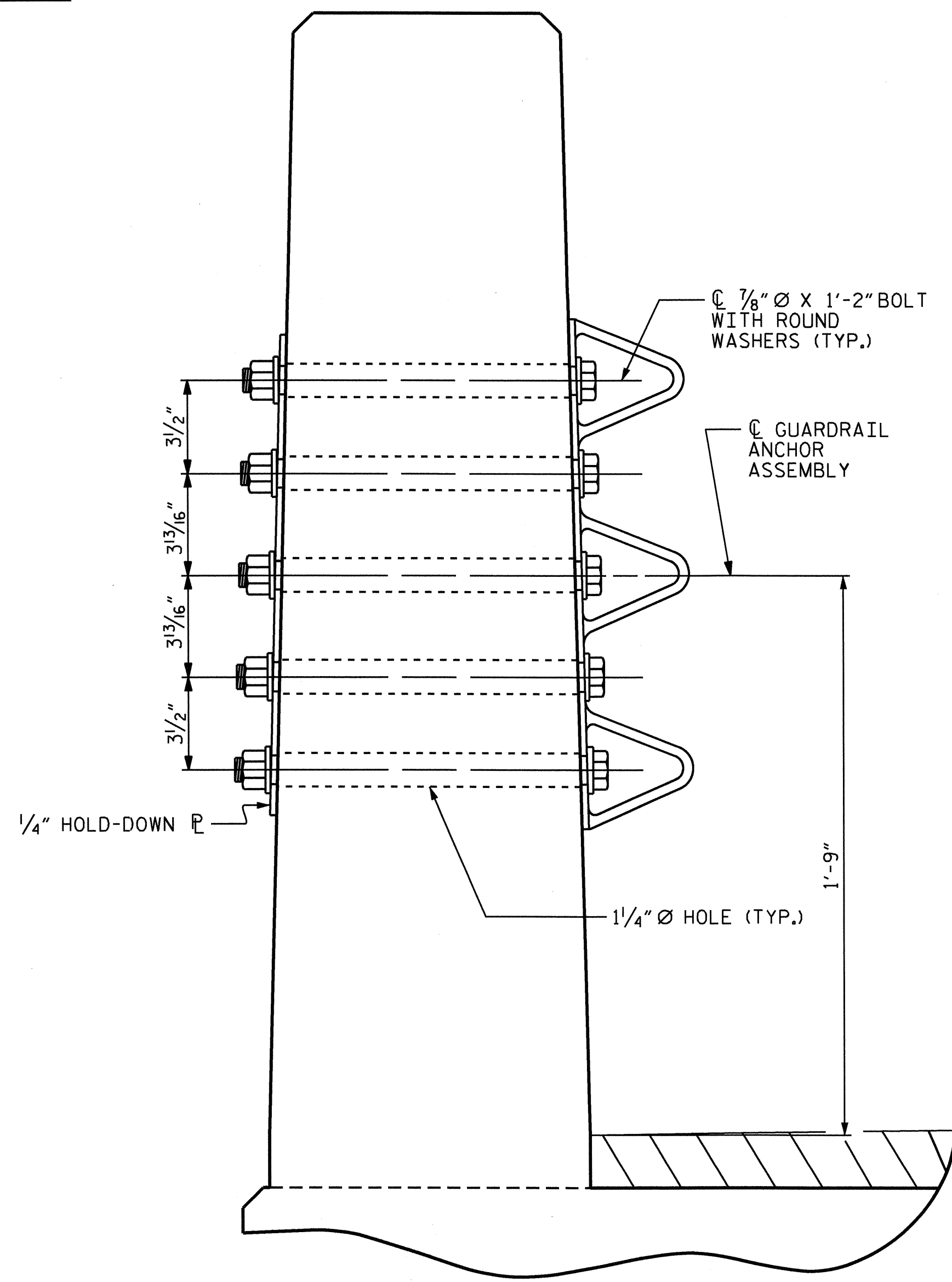


PLAN

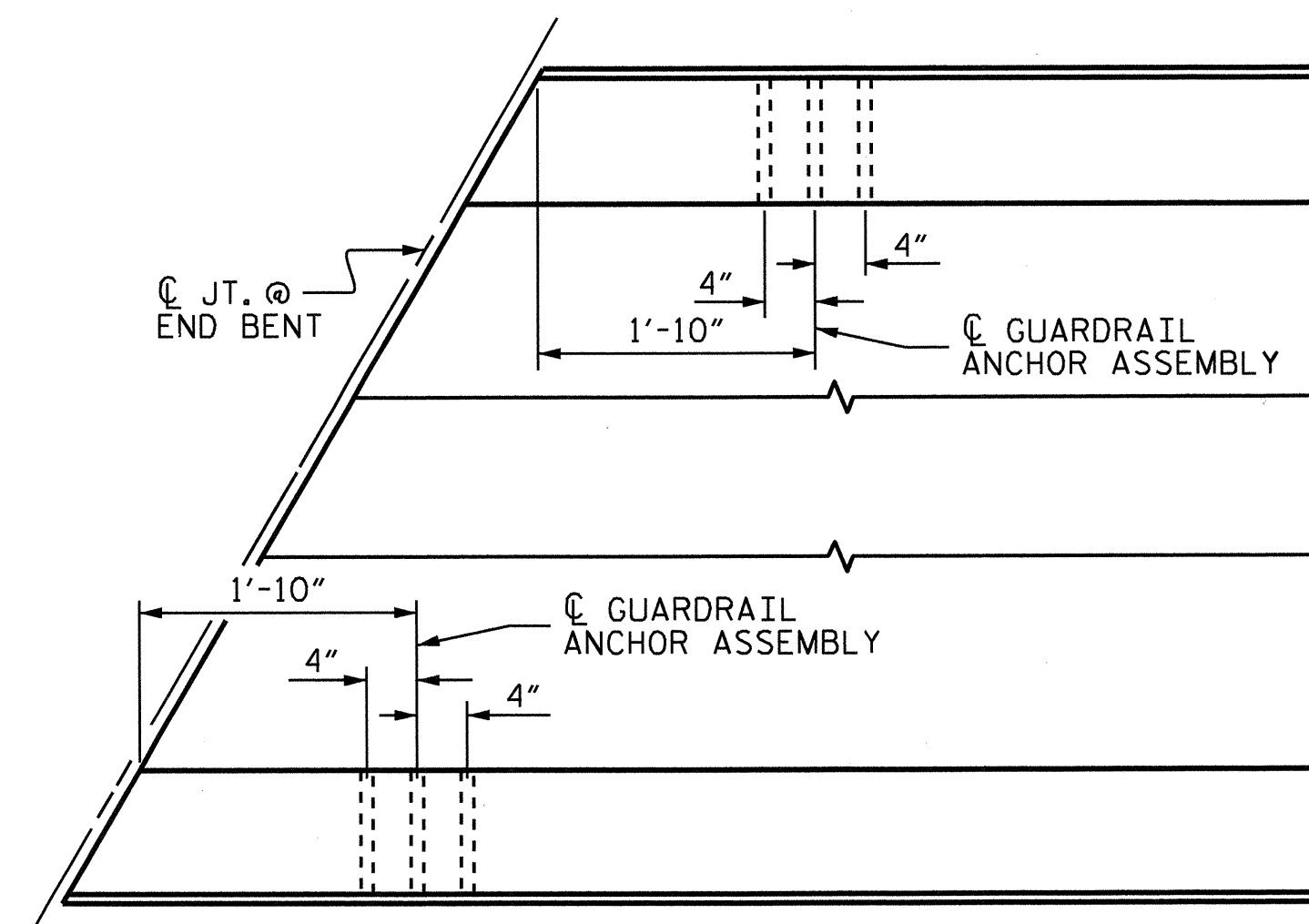
FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



ELEVATION



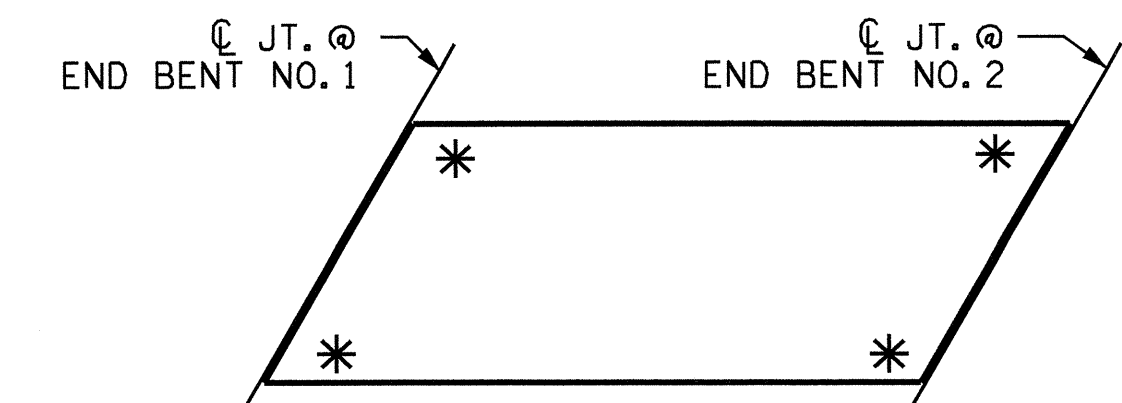
SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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

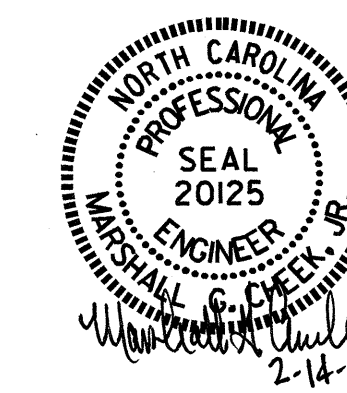


SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4046
BURKE COUNTY
STATION: 11+42.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-7
STANDARD GUARDRAIL ANCHORAGE FOR VERTICAL CONCRETE BARRIER RAIL						
REVISIONS						TOTAL SHEETS 31
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



STR#1

STD. NO. GRA3

ASSEMBLED BY : A.L. FIGUEROA/DAH	DATE : 03-03-11
CHECKED BY : M.G. CHEEK	DATE : 03-04-11
DRAWN BY : MAA 5/10	ADDED 5/6/10
CHECKED BY : GM 5/10	REV. 10/1/11
	REV. 12/5/11
	MAA/GM
	MAA/GM

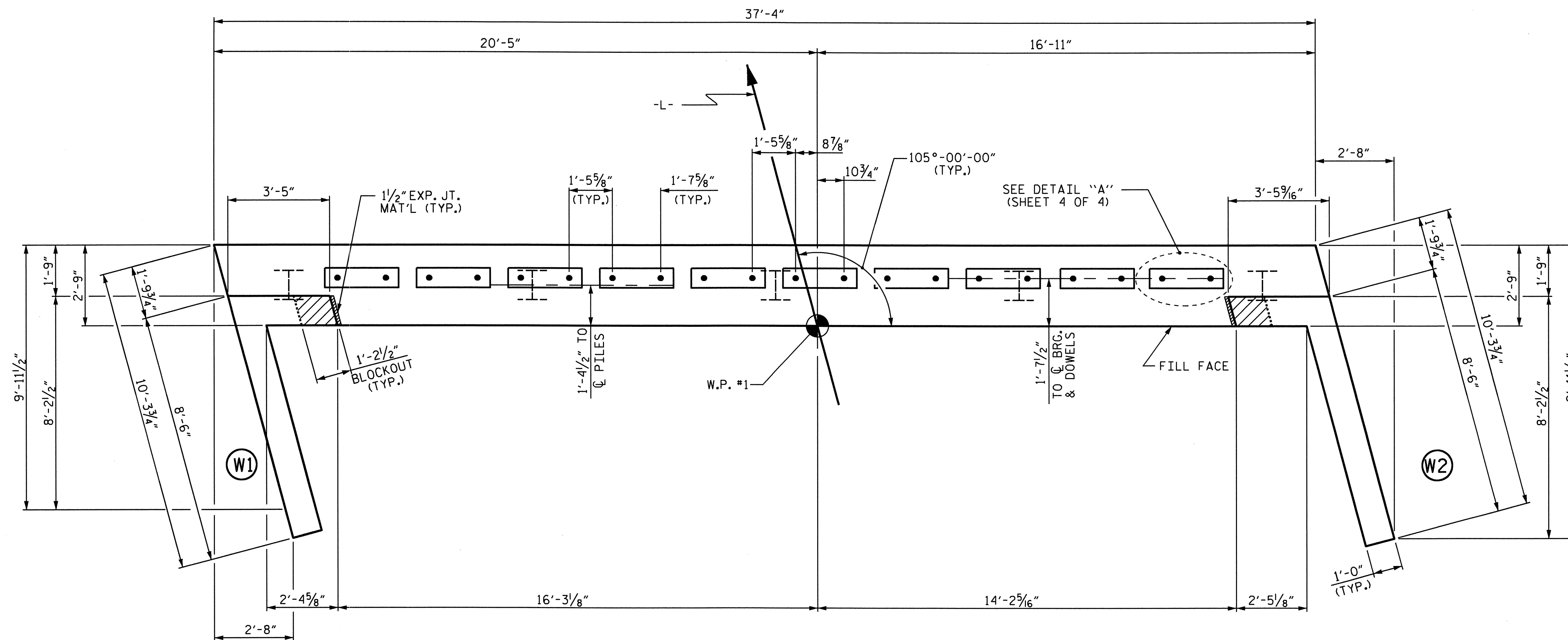
NOTES

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

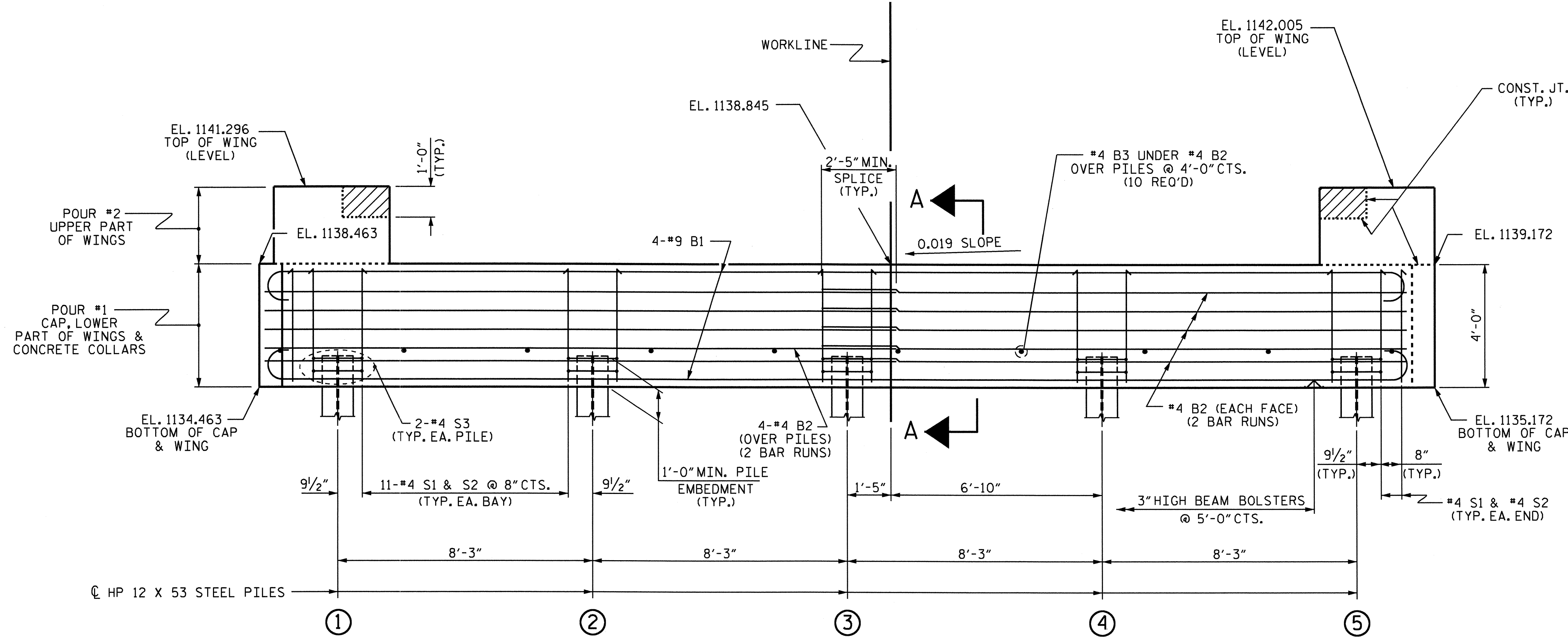
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

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

TOP OF PILE ELEVATIONS	
①	1135.515
②	1135.671
③	1135.828
④	1135.985
⑤	1136.142

PROJECT NO. B-4046
BURKE COUNTY
STATION: 11+42.00 -L-

SHEET 1 OF 4

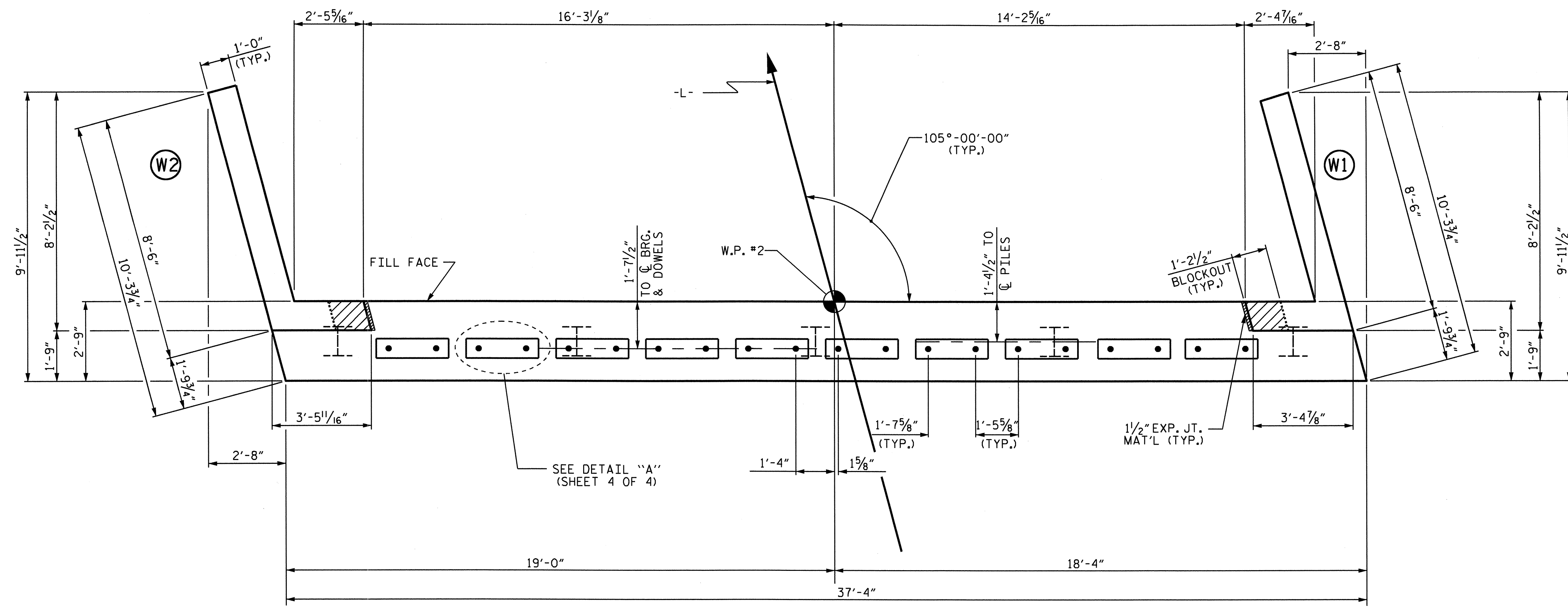
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 1

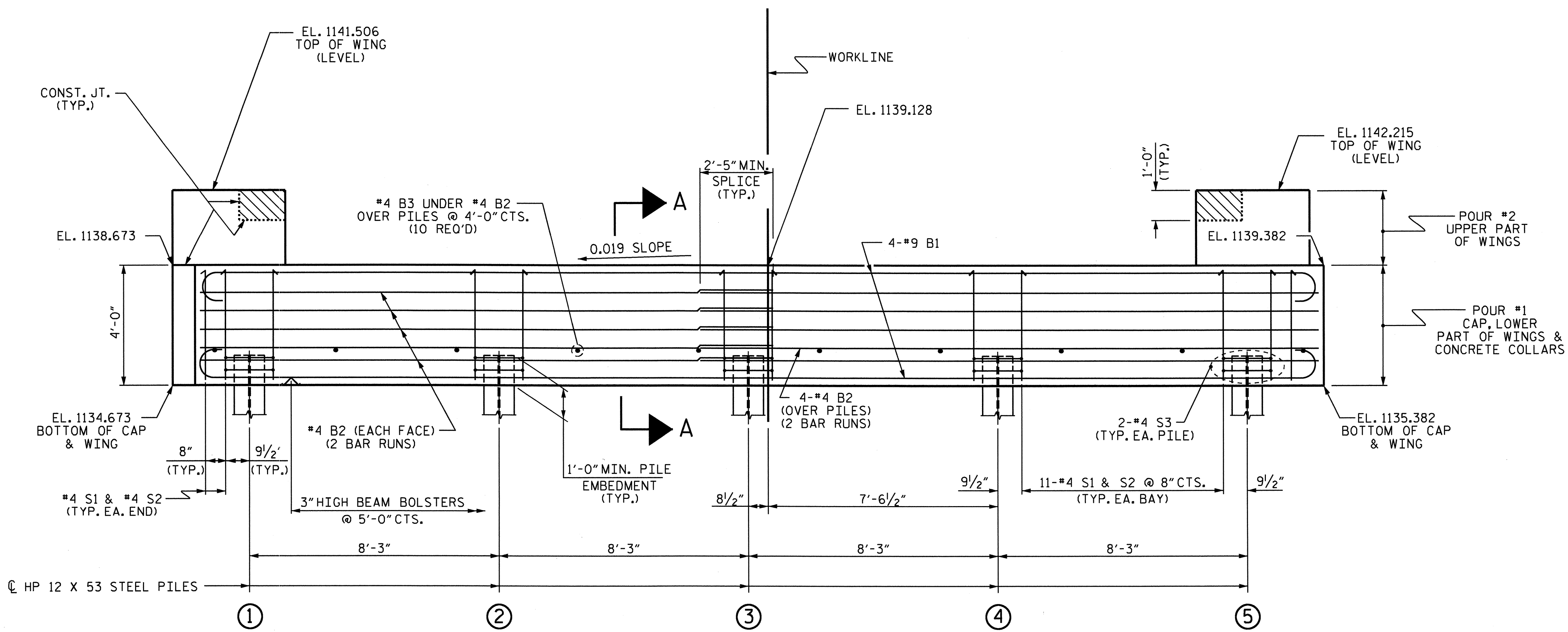


REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8	
1			3			TOTAL	31
2			4			SHEETS	

ASSEMBLED BY : A.L. FIGUEROA DATE : 03-15-11
CHECKED BY : M.G. CHEEK DATE : 03-15-11



PLAN



ELEVATION

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

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
 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.
 FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.
 FOR WING DETAILS, SEE SHEET 3 OF 4.

TOP OF PILE ELEVATIONS	
①	1135.726
②	1135.882
③	1136.039
④	1136.196
⑤	1136.358

PROJECT NO. B-4046
BURKE COUNTY
 STATION: 11+42.00 -L-

SHEET 2 OF 4

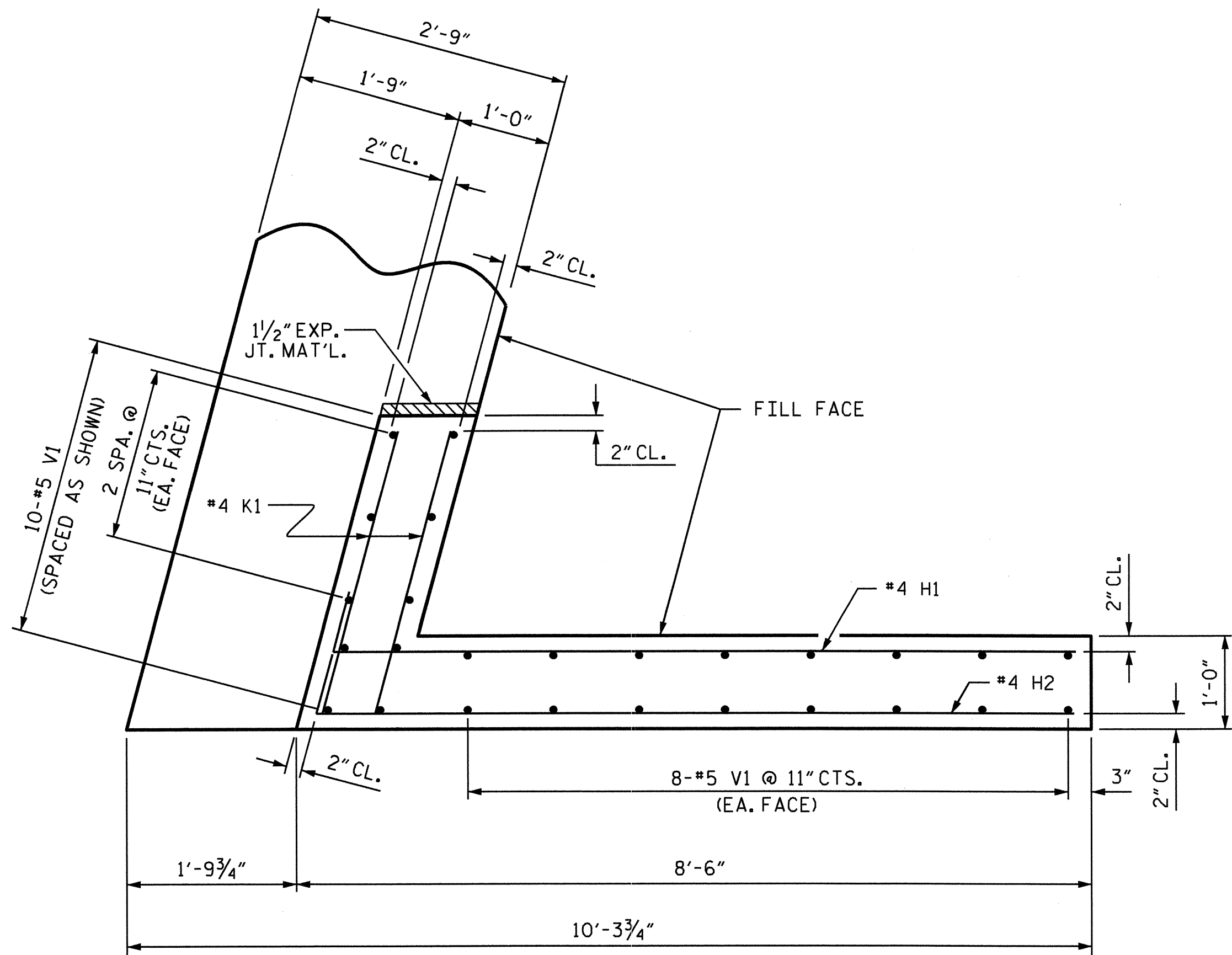
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 2

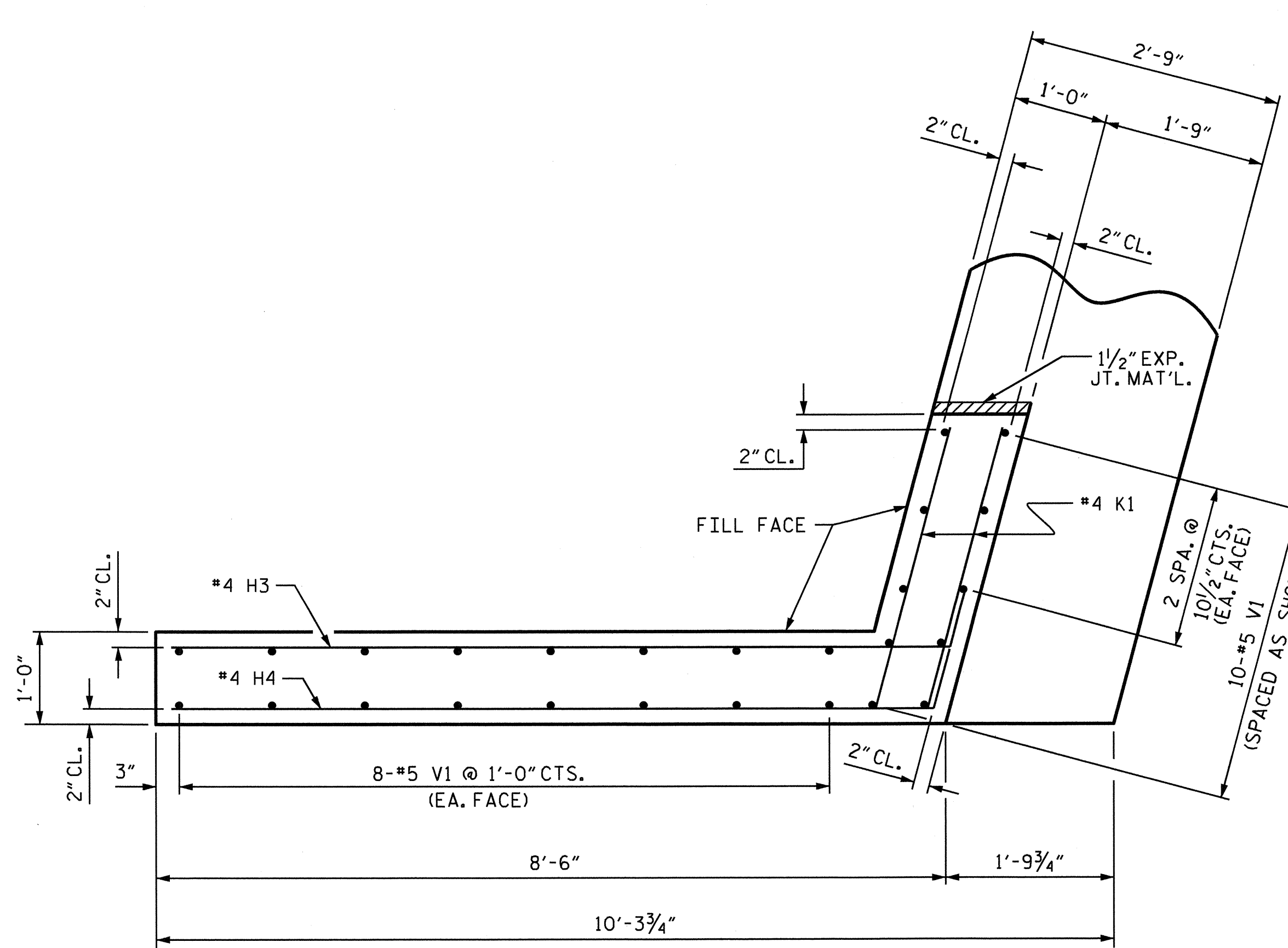
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS 31
2			4			



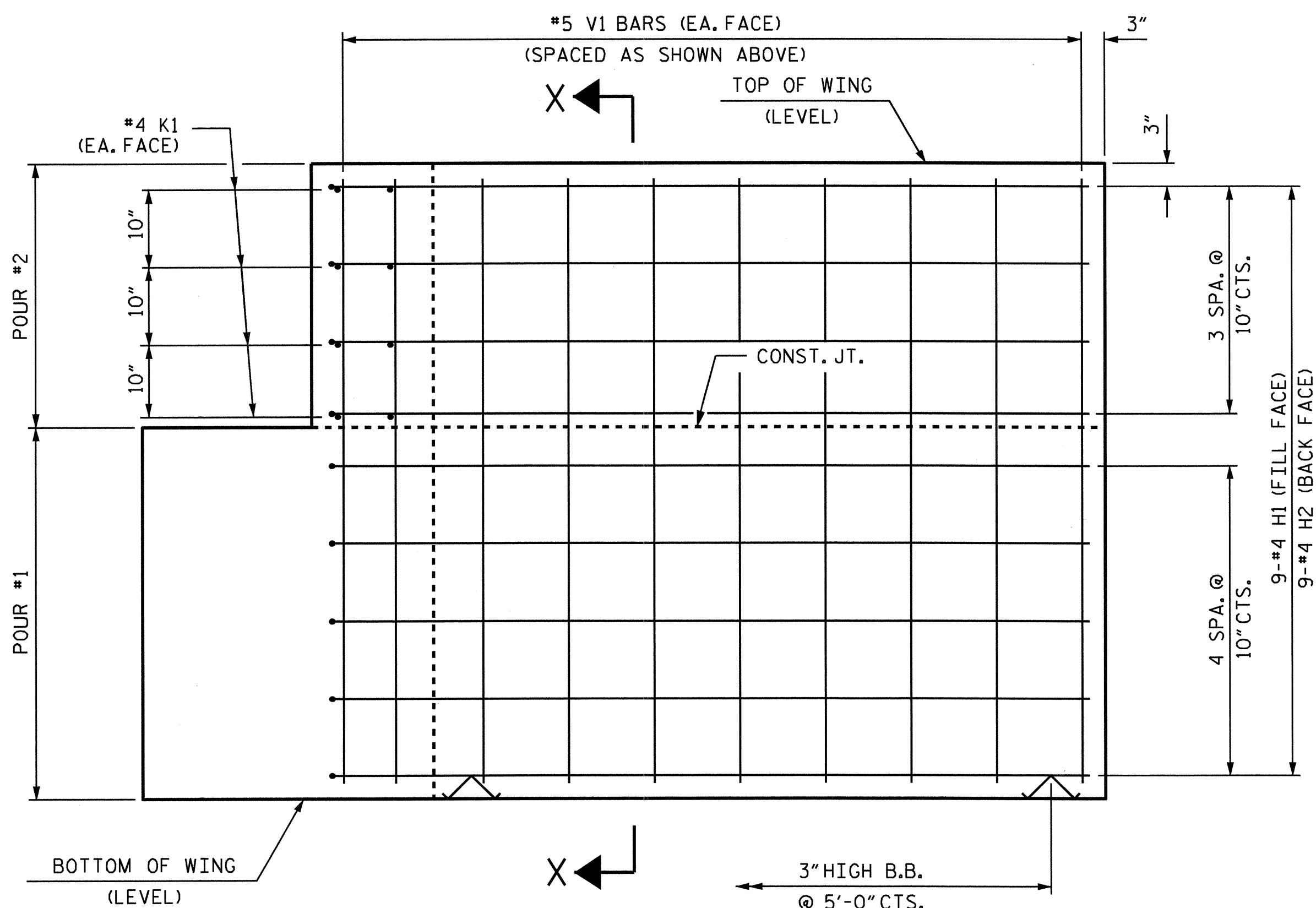
ASSEMBLED BY: A.L. FIGUEROA DATE: 03-15-11
 CHECKED BY: M.G. CHEEK DATE: 03-15-11



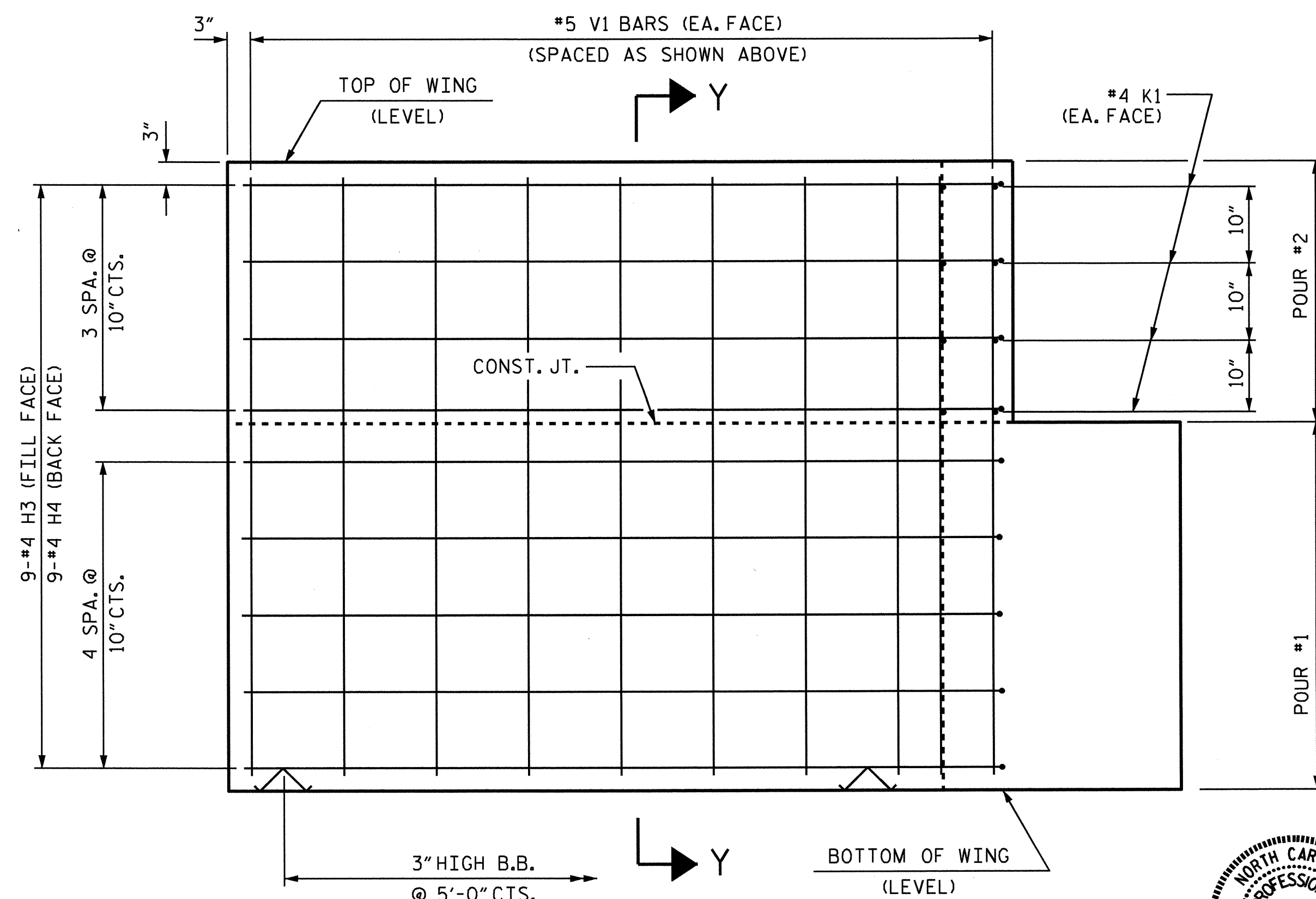
PLAN OF WING (W1)



PLAN OF WING (W2)

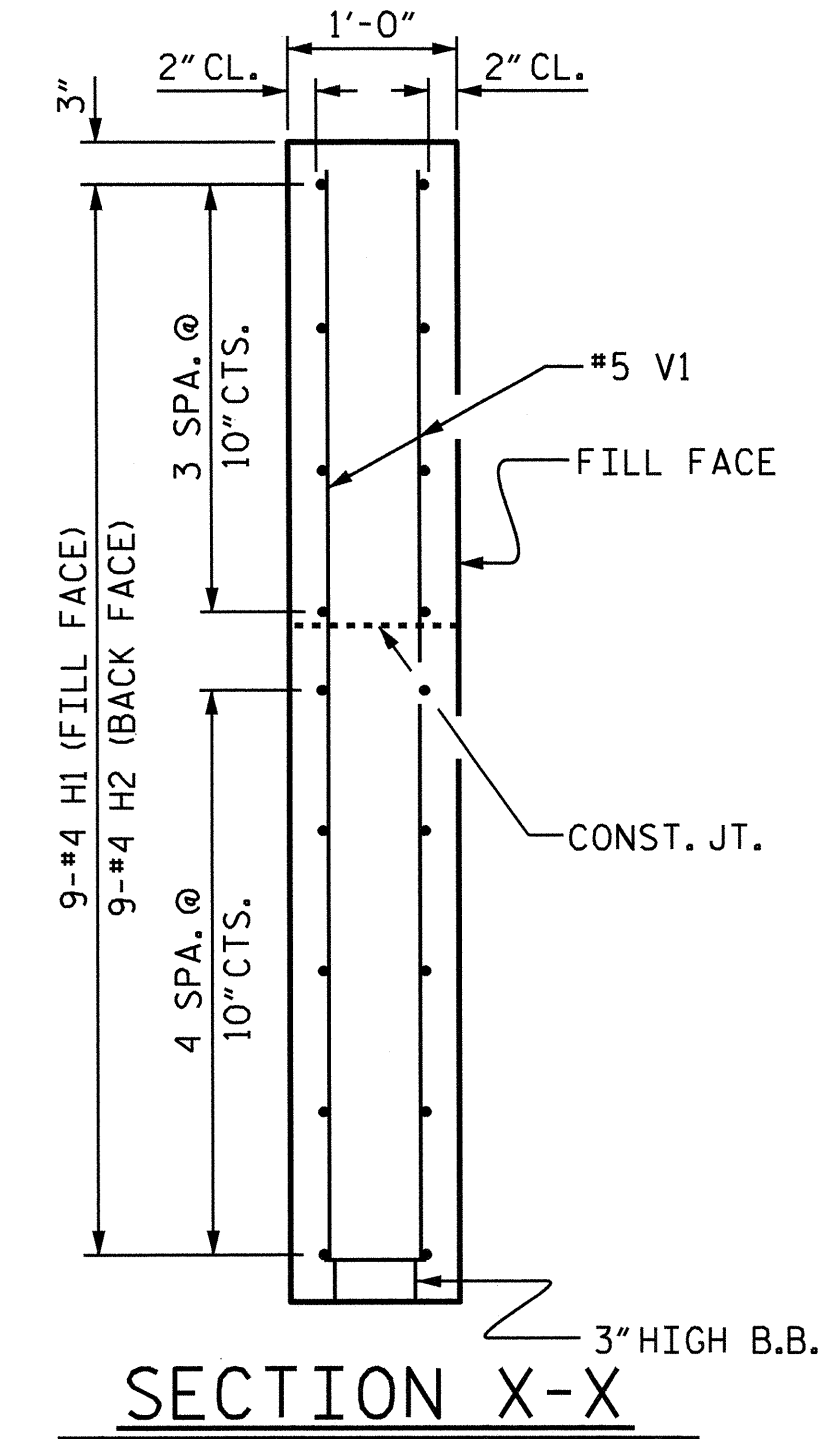


ELEVATION OF WING (W1)

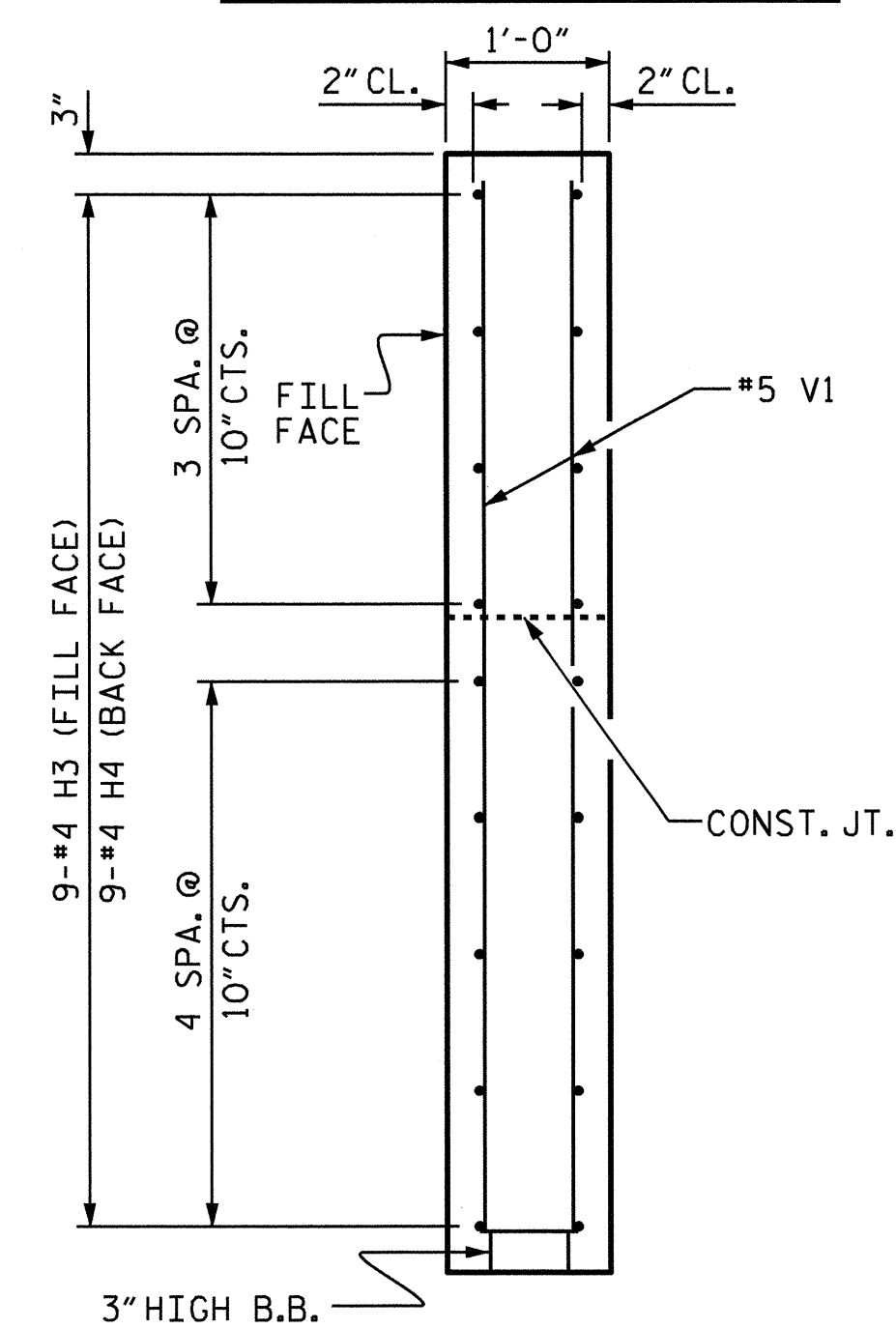


ELEVATION OF WING (W2)

WING DETAILS



SECTION X-X



SECTION Y-Y

PROJECT NO. B-4046
 BURKE COUNTY
 STATION: 11+42.00 -L-

SHEET 3 OF 4

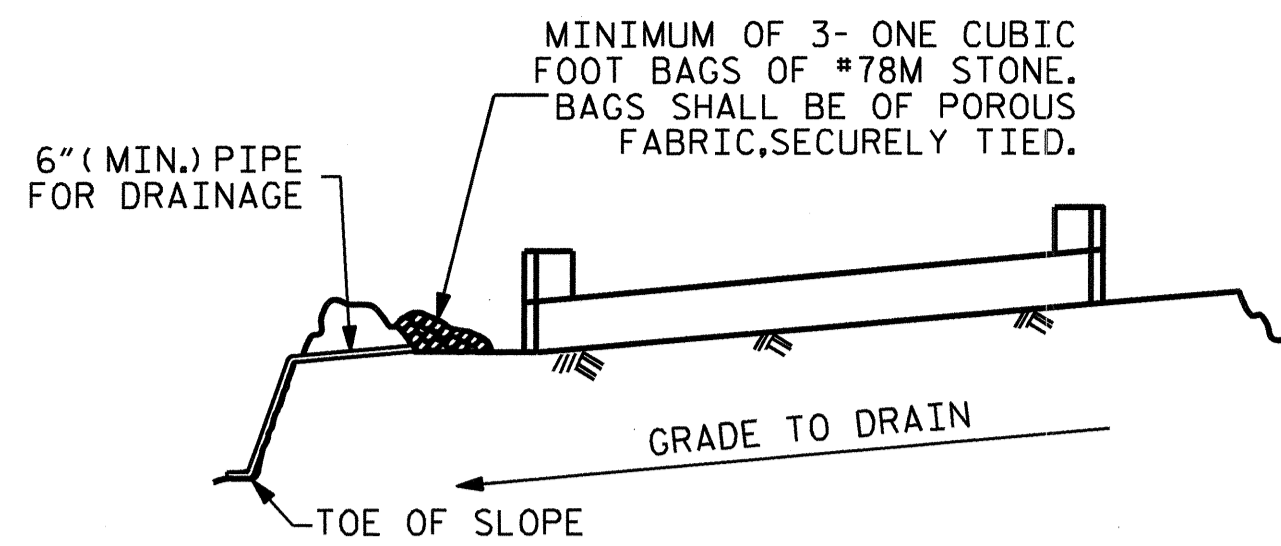
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT WING DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-10
					TOTAL SHEETS 31



ASSEMBLED BY: A.L. FIGUEROA DATE: 03-15-11
 CHECKED BY: M.G. CHEEK DATE: 03-15-11

03-JAN-2012 10:58
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STR #1

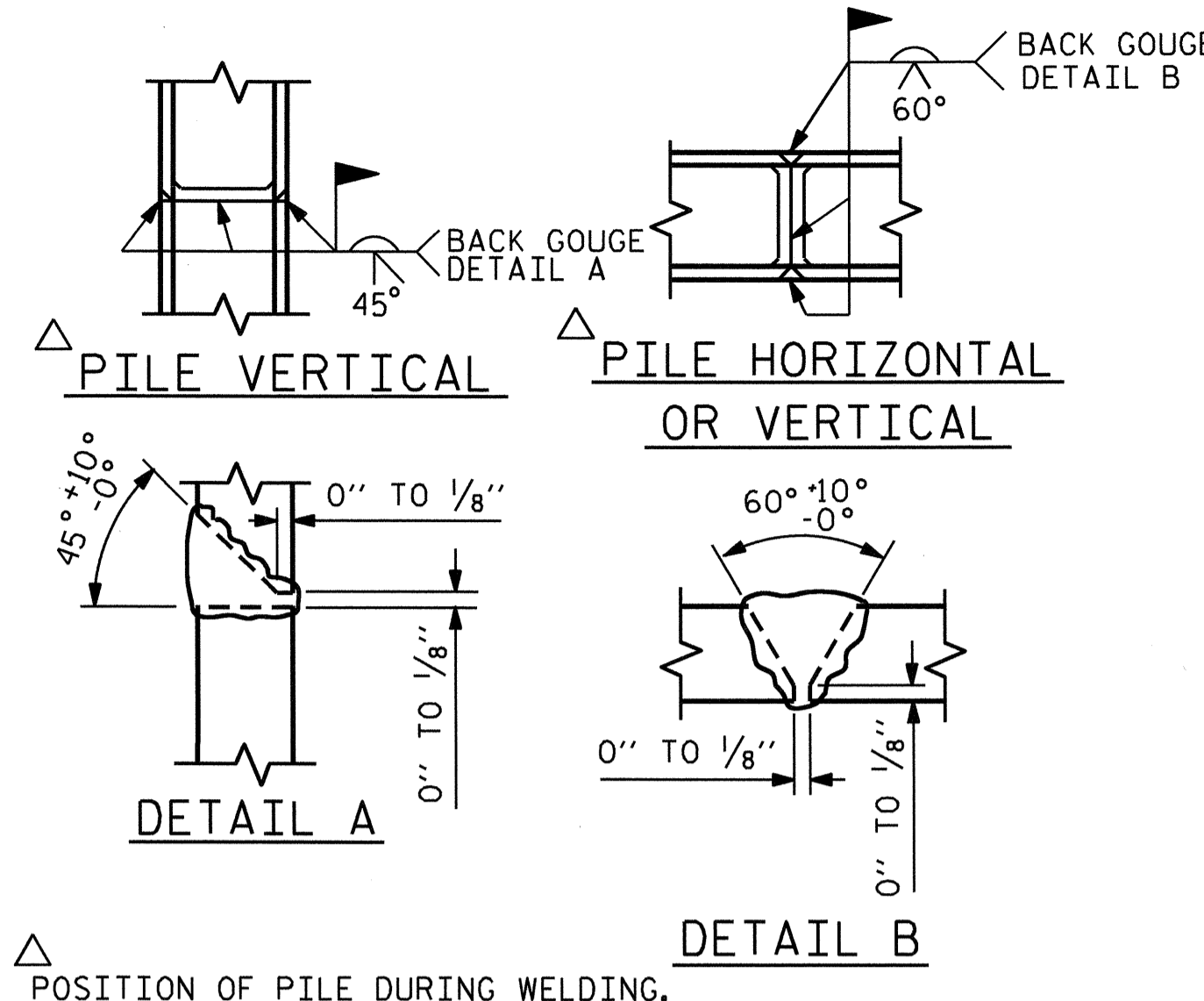


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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



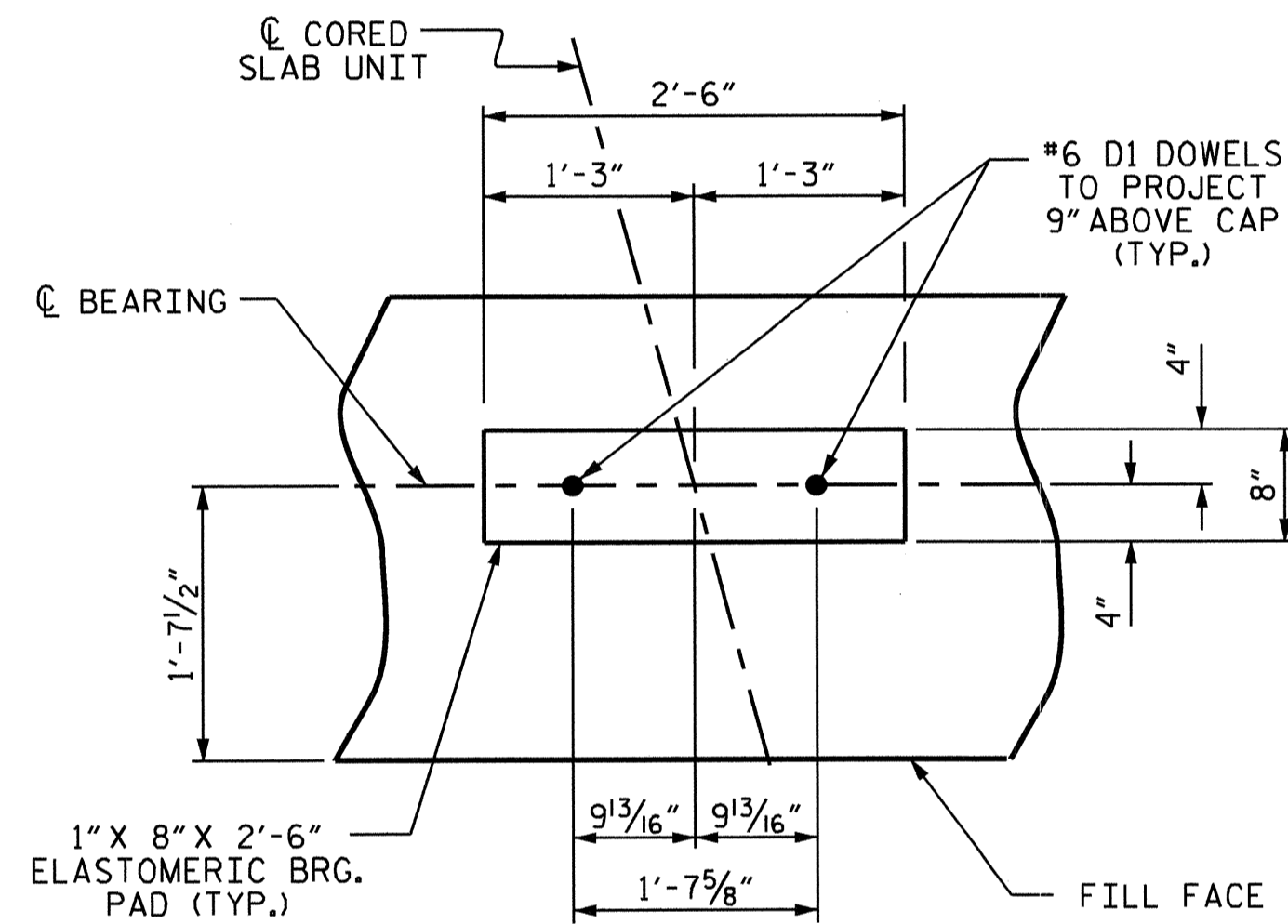
PILE SPLICE DETAILS

BILL OF MATERIAL FOR ONE END BENT					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	39'-4"	1070
B2	24	#4	STR	19'-9"	317
B3	10	#4	STR	2'-5"	16
D1	20	#6	STR	1'-6"	45
H1	9	#4	2	8'-7"	52
H2	9	#4	2	8'-9"	53
H3	9	#4	3	9'-0"	54
H4	9	#4	3	8'-10"	53
K1	16	#4	STR	3'-1"	33
S1	48	#4	4	10'-5"	334
S2	48	#4	5	3'-2"	102
S3	10	#4	6	6'-6"	43
V1	52	#5	STR	6'-6"	353
REINFORCING STEEL (FOR ONE END BENT)					2,525 LBS.
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
POUR #1 CAP, LOWER PART OF WINGS & COLLARS					18.3 C.Y.
POUR #2 UPPER PART OF WINGS					2.3 C.Y.
TOTAL CLASS A CONCRETE					20.6 C.Y.

BAR TYPES	
<p>①</p>	<p>②</p>
<p>③</p>	<p>④</p>
<p>⑤</p>	
<p>⑥</p>	

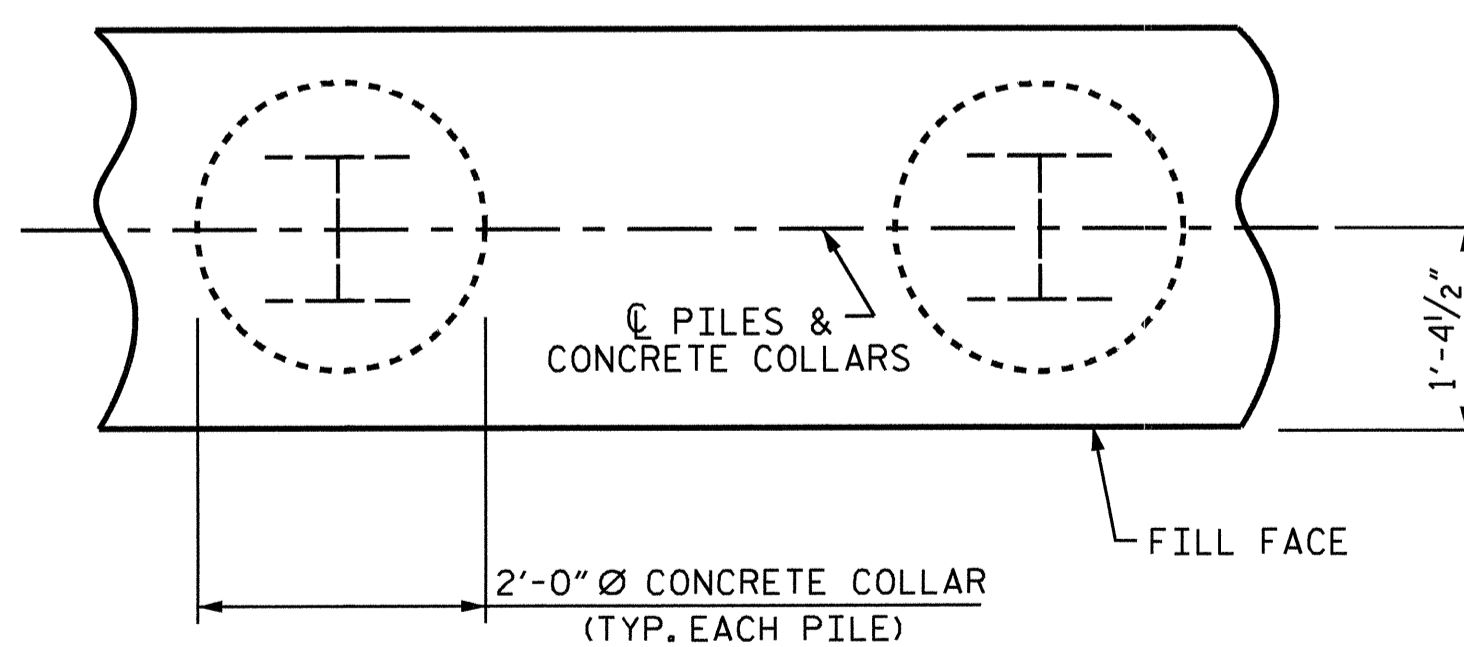
ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT NO. 1	END BENT NO. 2
HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES
NO: 5	NO: 5
LIN. FT. = 125	LIN. FT. = 175

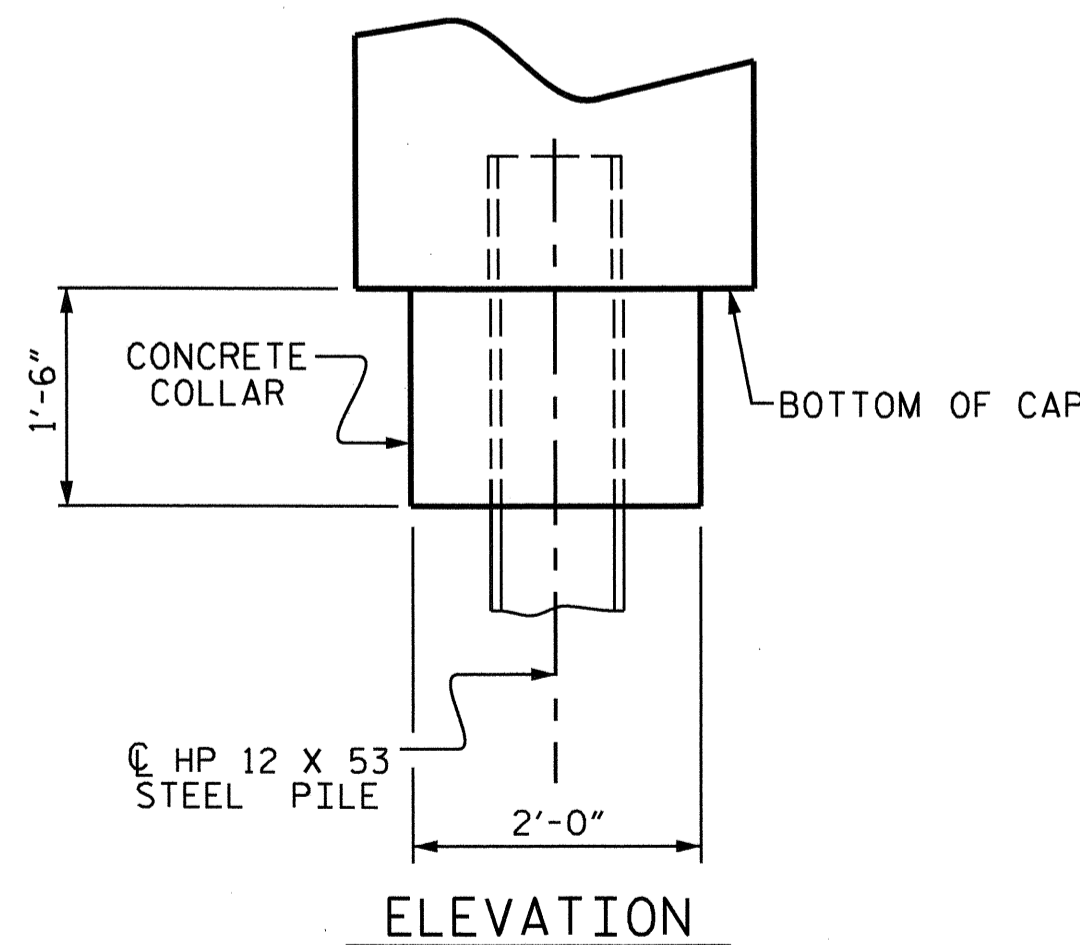


DETAIL "A"

(END BENT NO. 1 SHOWN, END BENT NO. 2 SIMILAR BY ROTATION)



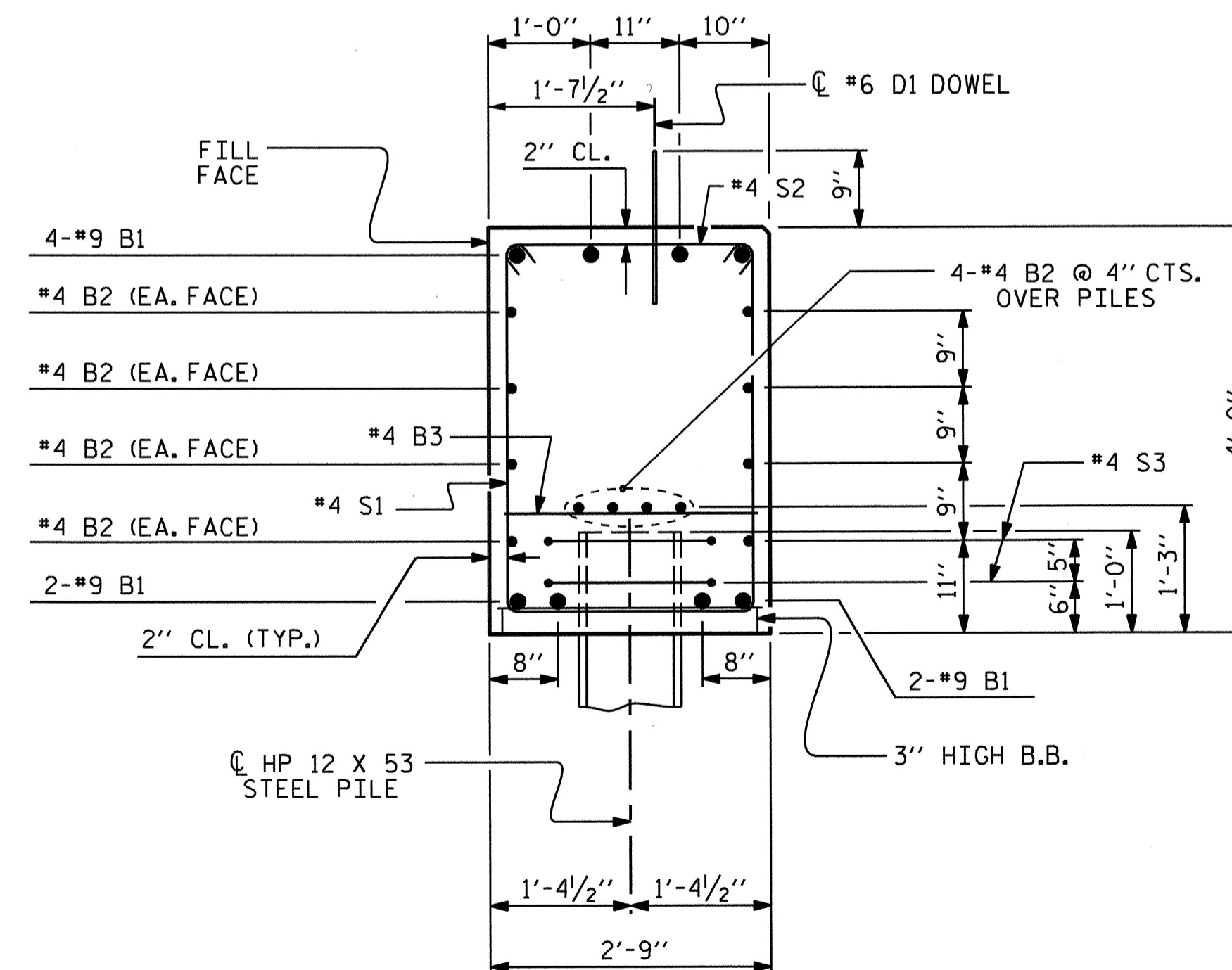
PLAN



ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

(END BENT NO. 1 SHOWN, END BENT NO. 2 SIMILAR BY ROTATION)



SECTION A-A

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

PROJECT NO. B-4046
BURKE COUNTY
STATION: 11+42.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT NO. 1 & 2
DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			31



ASSEMBLED BY: A.L. FIGUEROA DATE: 03-15-11
CHECKED BY: M.G. CHEEK DATE: 03-15-11

NOTES

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

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

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

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

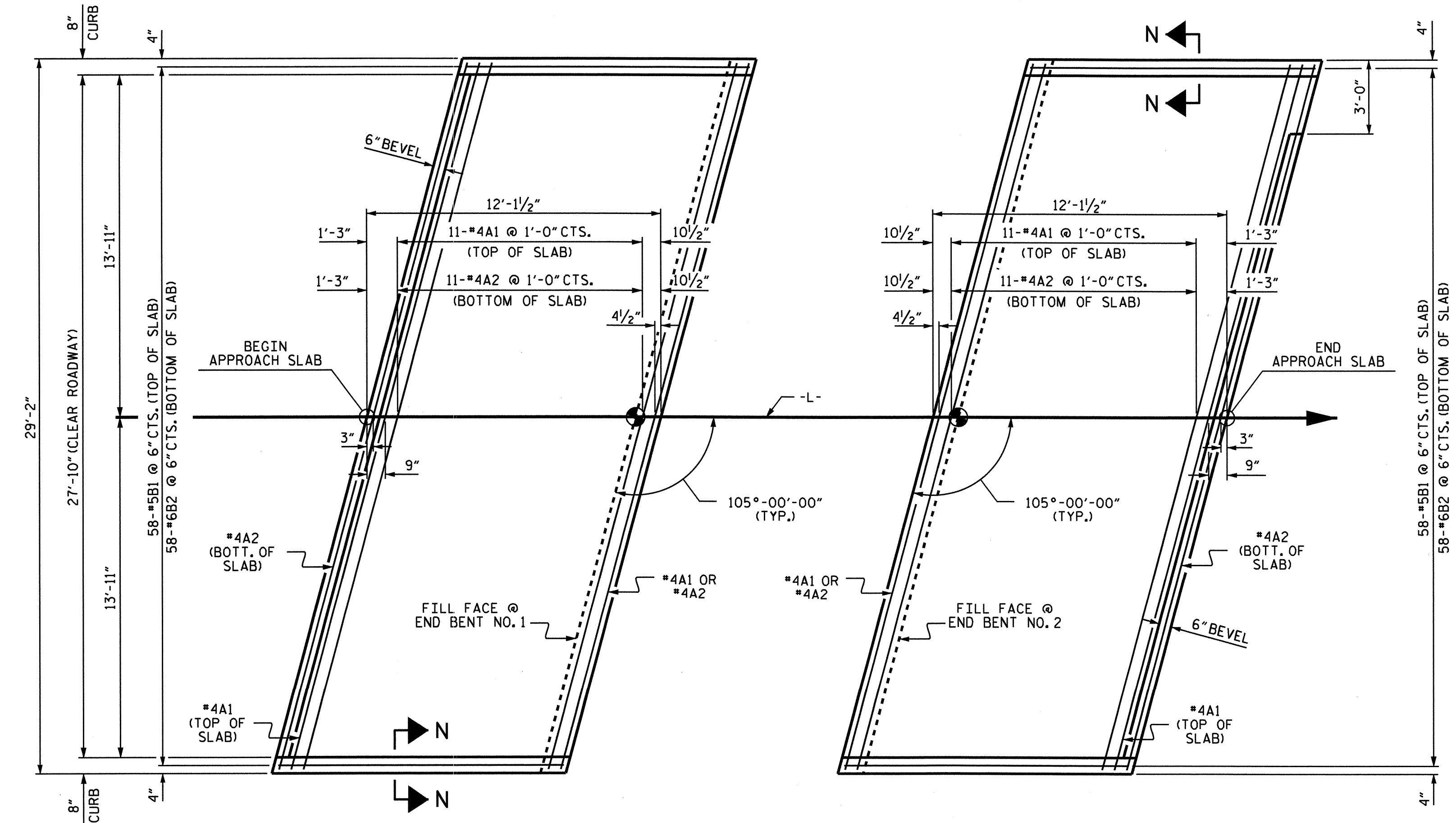
FOR THE 4"Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

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

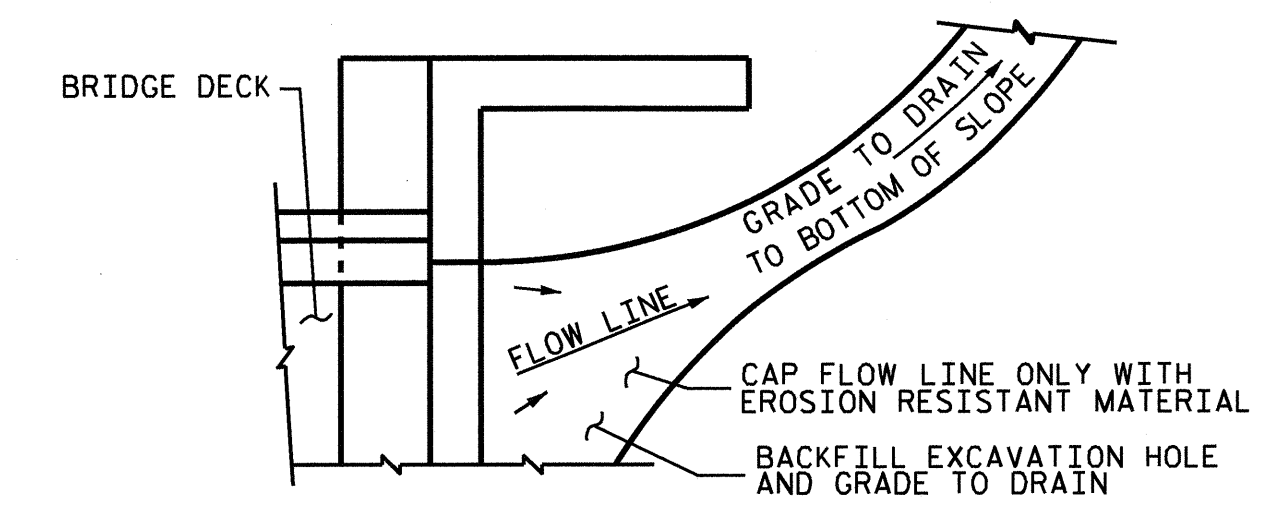
APPROACH SLAB GROOVING IS NOT REQUIRED.

BILL OF MATERIAL

APPROACH SLAB AT EB NO. 1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	13	#4	STR	29'-10"	259	
A2	13	#4	STR	29'-10"	259	
*B1	58	#5	STR	11'-1"	670	
B2	58	#6	STR	11'-7"	1009	
REINFORCING STEEL					LBS.	1268
* EPOXY COATED REINFORCING STEEL					LBS.	929
CLASS AA CONCRETE					C. Y.	18.2
APPROACH SLAB AT EB NO. 2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	13	#4	STR	29'-10"	259	
A2	13	#4	STR	29'-10"	259	
*B1	58	#5	STR	11'-1"	670	
B2	58	#6	STR	11'-7"	1009	
REINFORCING STEEL					LBS.	1268
* EPOXY COATED REINFORCING STEEL					LBS.	929
CLASS AA CONCRETE					C. Y.	18.2

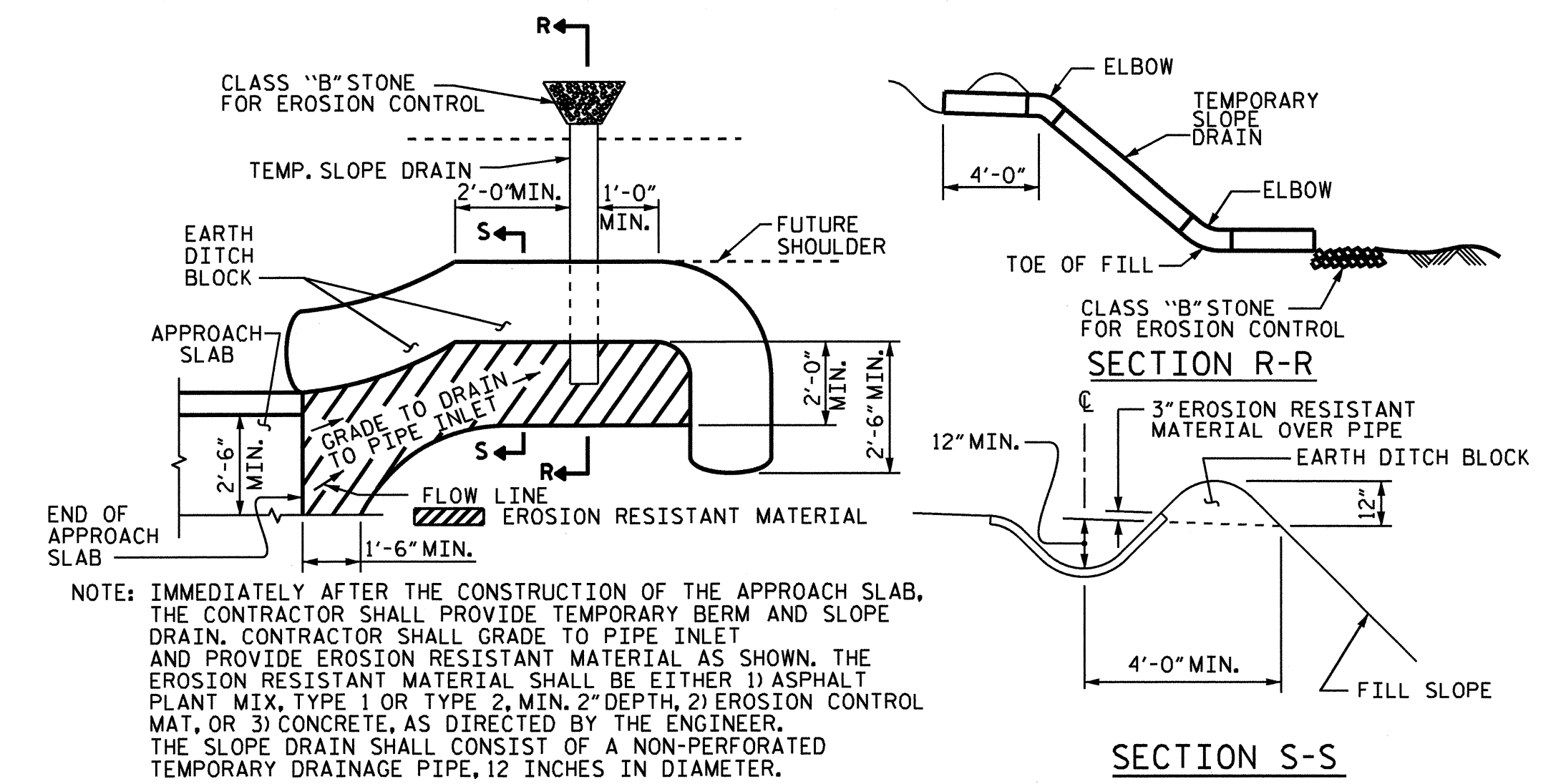


PLAN @ END BENT NO. 1 **PLAN @ END BENT NO. 2**
 DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



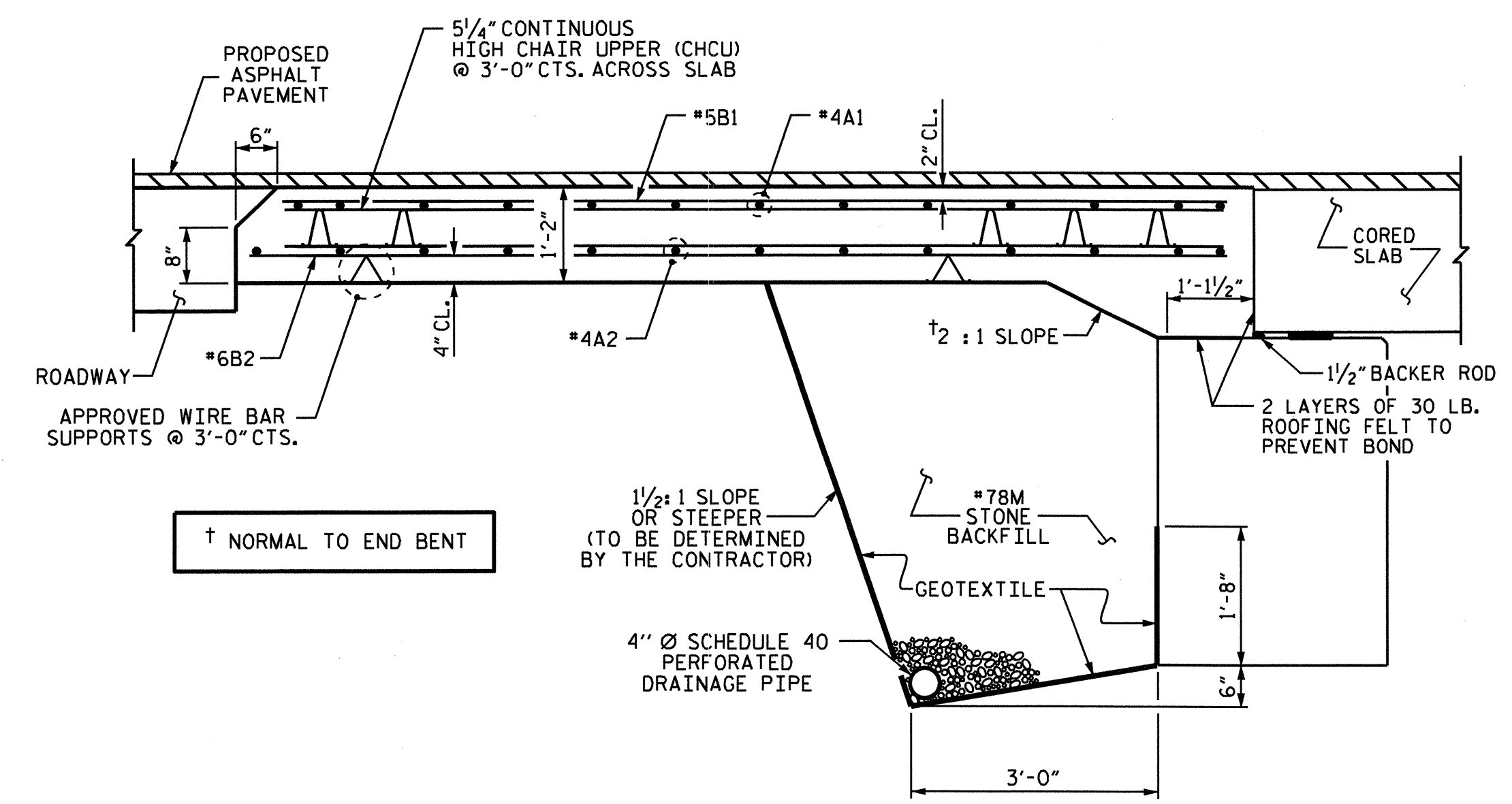
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

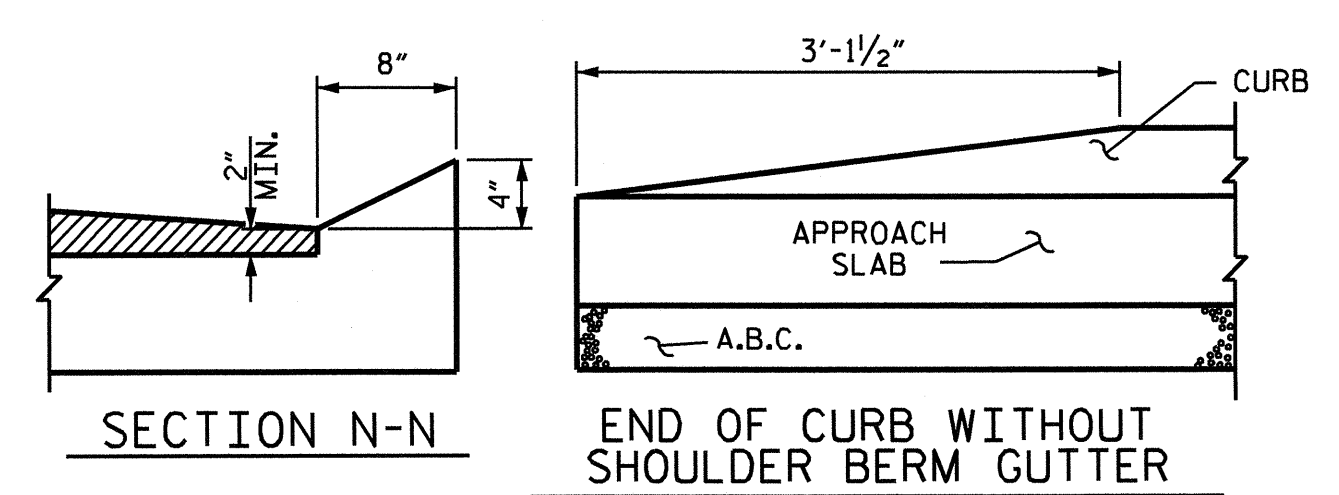


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

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

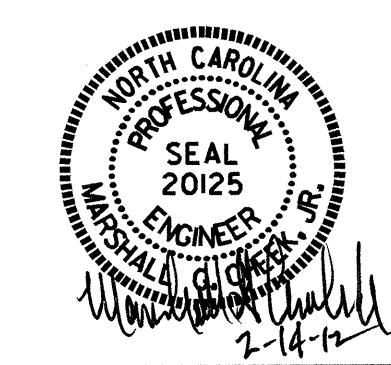


SECTION THRU SLAB



CURB DETAILS

SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"



PROJECT NO. B-4046
BURKE COUNTY
 STATION: 11+42.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR PRESTRESSED CONCRETE
 CORED SLAB UNIT
 (SUB-REGIONAL TIER)
 105° SKEW

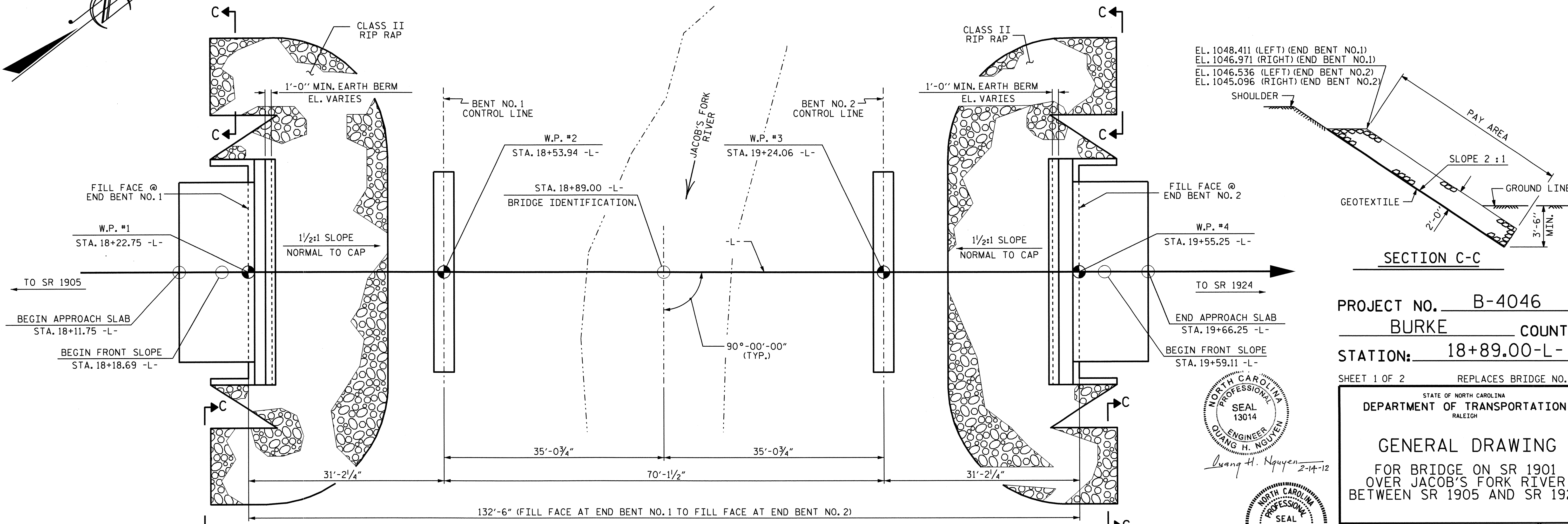
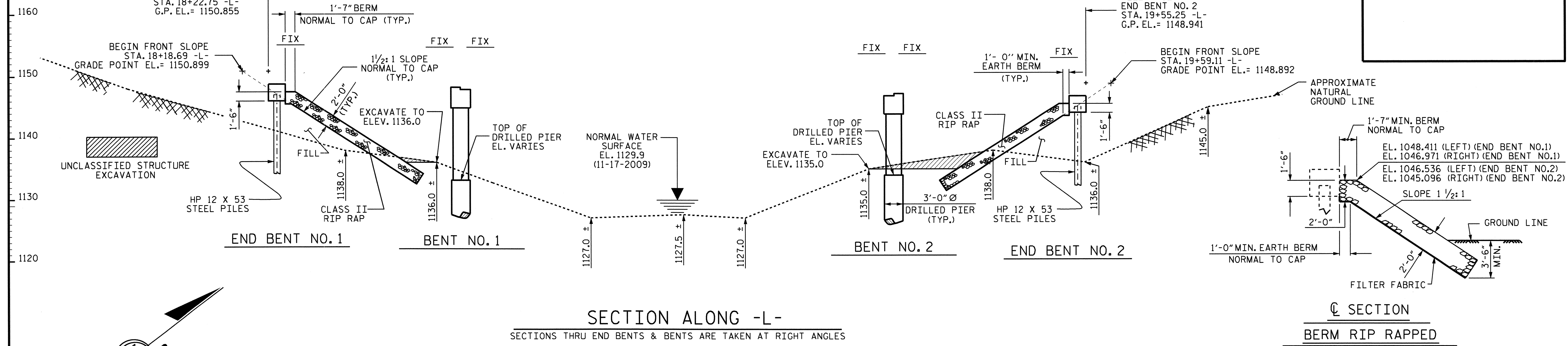
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			31

ASSEMBLED BY: A.L. FIGUEROA/DAH DATE: 03-07-11
 CHECKED BY: M.G. CHEEK DATE: 03-10-11
 DRAWN BY: SHS/MAA 5-09 REV. 12-11 MAA/AAC
 CHECKED BY: BCH 5-09

GRADE DATA
 P.I. STA. = 17+50.00 L-
 EL. = 1151.96'
 VC = 180.0'

GRADE DATA
 P.I. STA. = 21+00.00 L-
 EL. = 1146.79'
 VC = 315.0'

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS



DRAWN BY: A.L. FIGUEROA DATE: 8-24-10
 CHECKED BY: M.G. CHEEK DATE: 2-28-11

14-FEB-2012 13:54
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 danodge

NORTH CAROLINA PROFESSIONAL SEAL 13014
 QUANG H. NGUYEN
 2-14-12

NORTH CAROLINA PROFESSIONAL SEAL 20125
 ENGINEER

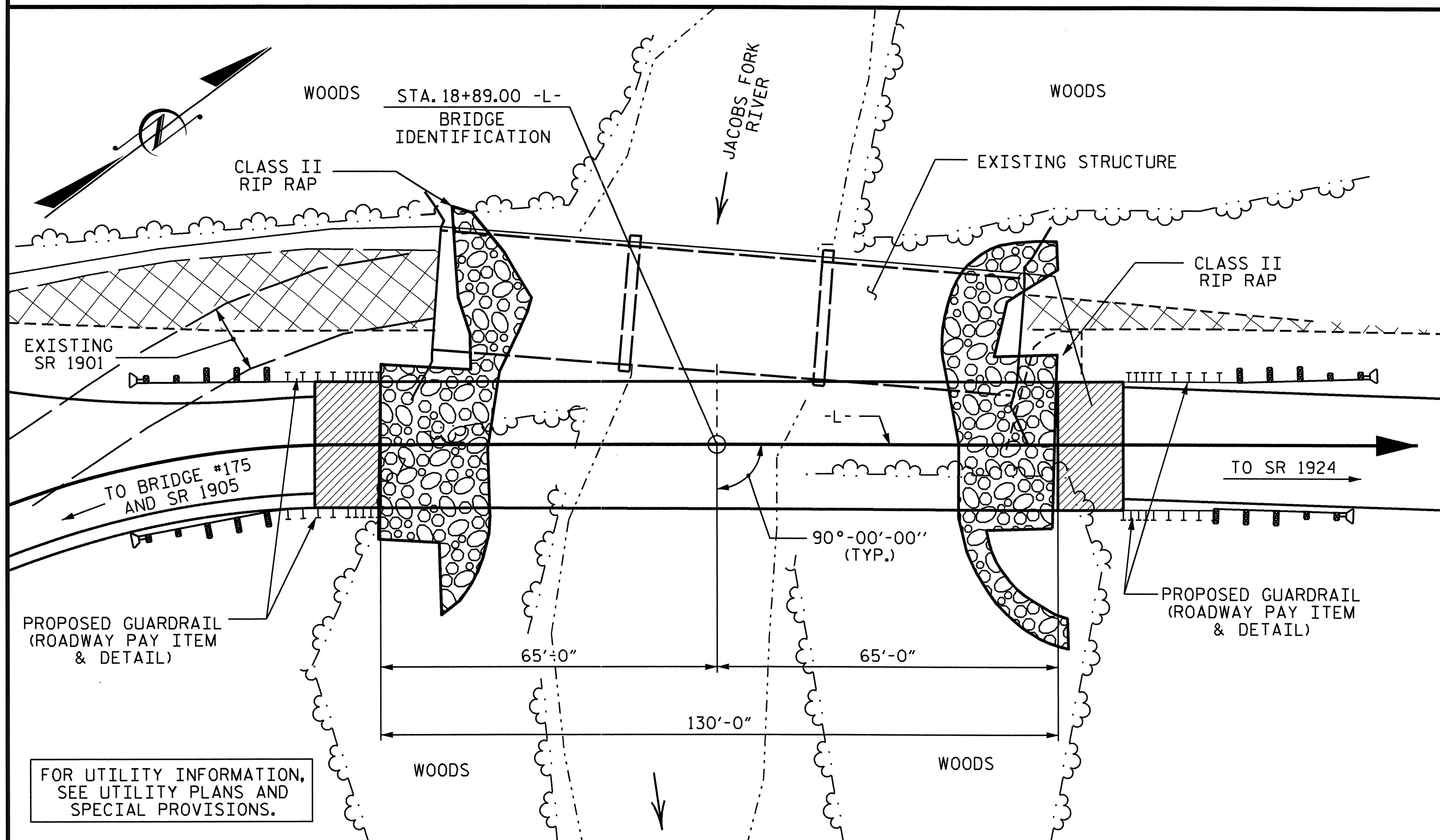
PROJECT NO. B-4046
 BURKE COUNTY
 STATION: 18+89.00-L-
 SHEET 1 OF 2 REPLACES BRIDGE NO. 38

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON SR 1901 OVER JACOB'S FORK RIVER BETWEEN SR 1905 AND SR 1924

REVISIONS						SHEET NO. S-13
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 31
2			4			

STR. #2



LOCATION SKETCH

TOTAL BILL OF MATERIAL										
	REMOVAL OF EXISTING STRUCTURE	3'-0" Ø DRILLED PIERS IN SOIL	3'-0" Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIERS	SID INSPECTION	SPT TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS
	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	EACH	LUMP SUM	CU. YDS.	LUMP SUM
SUPERSTRUCTURE	LUMP SUM									LUMP SUM
END BENT NO. 1								LUMP SUM	13.0	
BENT NO. 1		35.42	23.00	8.82		1			17.5	
BENT NO. 2		29.00	22.00	13.33		1			17.5	
END BENT NO. 2								LUMP SUM	13.0	
TOTAL	LUMP SUM	64.42	45.00	22.15	1	2	1	LUMP SUM	61.0	LUMP SUM

TOTAL BILL OF MATERIAL												
	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	HP 12 X 53 STEEL PILES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS			
	LBS.	LBS.	NO. LIN. FT.	LIN. FT.	TONS	SO. YARDS	LUMP SUM	NO. LIN. FT.	NO. LIN. FT.			
SUPERSTRUCTURE				260.75			LUMP SUM	20 600.00	10 700.00			
END BENT NO. 1	1,965		5 105		253	281						
BENT NO. 1	9,746	1,552										
BENT NO. 2	9,344	1,429										
END BENT NO. 2	1,965		5 140		231	257						
TOTAL	23,020	2,981	10 245	260.75	484	538	LUMP SUM	20 600.00	10 700.00			

DRAWN BY : A.L. FIGUEROA DATE : 03-03-11
 CHECKED BY : M.G. CHEEK DATE : 03-08-11

14-FEB-2012 13:54
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 dahodge

GENERAL NOTES

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

THE EXISTING 3-SPAN STRUCTURE (1 @ 40'-11", 1 @ 39'-6", 1 @ 40'-11") WITH A ROADWAY WIDTH OF 24'-3" AND AN ASPHALT WEARING SURFACE OF 3" ON A TIMBER FLOOR ON STEEL I-BEAMS, WITH A SUBSTRUCTURE CONSISTING OF YOUNG MASONRY ABUTMENTS AT THE END BENTS AND TIMBER CAPS/TIMBER POST & CONCRETE SILLS AT THE BENTS AND LOCATED UPSTREAM FROM THE PROPOSED BRIDGE SHALL BE REMOVED. SEE SPECIAL PROVISIONS FOR 'REMOVAL OF EXISTING STRUCTURES'.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA (SEE SHEET 1 OF 2) SHALL BE EXCAVATED FOR A DISTANCE OF 20 FEET TO EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, 'EVALUATING SCOUR AT BRIDGES', 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. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

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

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOUNDATION NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 65 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 108 TONS PER PILE.

DRILLED PIERS AT BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 350 TONS PER DRILLED PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30 TONS PER SQ. FOOT.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO. 1. IF REQUIRED, DO NOT EXTEND CASING BELOW ELEVATION 1132.0 FEET WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING.

INSTALL DRILLED PIERS AT BENT NO.1 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 1117.0 FEET (LT), 1115.5 FEET (CT), AND 1114.0 FEET (RT). DRILLED PIERS SHALL SATISFY THE TIP RESISTANCE AND HAVE A MINIMUM PENETRATION OF 6 FEET INTO ROCK.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.1 IS ELEVATION 1121.0 FEET. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

DRILLED PIERS AT BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 350 TONS PER DRILLED PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30 TONS PER SQ. FOOT.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO. 2. IF REQUIRED, DO NOT EXTEND CASING BELOW ELEVATION 1129.5 FEET WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING.

INSTALL DRILLED PIERS AT BENT NO.2 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 1120.0 FEET (LT), 1117.0 FEET (CT), AND 1114.0 FEET (RT). DRILLED PIERS SHALL SATISFY THE TIP RESISTANCE AND HAVE A MINIMUM PENETRATION OF 6 FEET INTO ROCK.

THE SCOUR CRITICAL ELEVATIONS FOR BENT NO. 2 IS ELEVATION 1122.0 FEET. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS.

CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR THE DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING.

SPT TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SPT TESTING.

PILES AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 65 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 108 TONS PER PILE.

HYDRAULIC DATA

DESIGN DISCHARGE	= 3,300 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 25 YRS.
DESIGN HIGH WATER ELEVATION	= 1138.7 FT.
DRAINAGE AREA	= 16.4 SQ. MI.
BASE DISCHARGE (Q100)	= 5,790 C.F.S.
BASE HIGH WATER ELEVATION	= 1141.2 FT.

OVERTOPPING FLOOD DATA

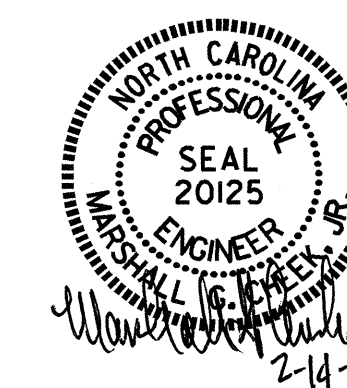
OVERTOPPING DISCHARGE	= > 6,300 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	= 500 YRS.
OVERTOPPING FLOOD ELEVATION	= 1,148.5 FT.

PROJECT NO. B-4046
BURKE COUNTY
 STATION: 18+89.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON SR 1901
 OVER JACOB'S FORK RIVER
 BETWEEN SR 1905 AND SR 1924



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			31

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	①	1.037	--	1.75	0.283	1.83	30'	EL	14.5	0.574	1.04	30'	EL	1.45	0.80	0.283	1.58	30'	EL	14.5		
	HL-93(0pr)	N/A	--	1.344	--	1.35	0.283	2.38	30'	EL	14.5	0.574	1.34	30'	EL	1.45	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	②	1.183	42.587	1.75	0.283	2.53	30'	EL	11.6	0.574	1.18	30'	EL	1.45	0.80	0.283	2.20	30'	EL	11.6		
	HS-20(0pr)	36.000	--	1.533	55.205	1.35	0.283	3.28	30'	EL	11.6	0.574	1.53	30'	EL	1.45	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.895	39.081	1.4	0.283	5.18	30'	EL	14.5	0.574	2.89	30'	EL	1.45	0.80	0.283	3.56	30'	EL	14.5	
		SNGARBS2	20.000	--	2.24	44.792	1.4	0.283	4.53	30'	EL	11.6	0.574	2.24	30'	EL	1.45	0.80	0.283	3.15	30'	EL	11.6	
		SNAGRIS2	22.000	--	2.157	47.463	1.4	0.283	4.6	30'	EL	11.6	0.574	2.16	30'	EL	1.45	0.80	0.283	3.20	30'	EL	11.6	
		SNCOTTS3	27.250	--	1.462	39.849	1.4	0.283	2.6	30'	EL	14.5	0.574	1.46	30'	EL	1.45	0.80	0.283	1.79	30'	EL	14.5	
		SNAGGRS4	34.925	--	1.346	46.999	1.4	0.283	2.5	30'	EL	14.5	0.574	1.35	30'	EL	1.45	0.80	0.283	1.72	30'	EL	14.5	
		SNS5A	35.550	--	1.427	50.733	1.4	0.283	2.42	30'	EL	14.5	0.574	1.43	30'	EL	1.45	0.80	0.283	1.67	30'	EL	14.5	
	TTST	SNS6A	39.950	--	1.341	53.59	1.4	0.283	2.29	30'	EL	14.5	0.574	1.34	30'	EL	1.45	0.80	0.283	1.58	30'	EL	14.5	
		SNS7B	42.000	--	1.369	57.505	1.4	0.283	2.23	30'	EL	14.5	0.574	1.37	30'	EL	1.45	0.80	0.283	1.53	30'	EL	14.5	
		TNAGRIT3	33.000	--	1.593	52.58	1.4	0.283	2.97	30'	EL	14.5	0.574	1.59	30'	EL	1.45	0.80	0.283	2.04	30'	EL	14.5	
		TNT4A	33.075	--	1.483	49.043	1.4	0.283	2.82	30'	EL	14.5	0.574	1.48	30'	EL	1.45	0.80	0.283	1.94	30'	EL	14.5	
		TNT6A	41.600	--	1.433	59.622	1.4	0.283	2.56	30'	EL	14.5	0.574	1.43	30'	EL	1.45	0.80	0.283	1.76	30'	EL	14.5	
		TNT7A	42.000	--	1.363	57.264	1.4	0.283	2.64	30'	EL	14.5	0.574	1.36	30'	EL	1.45	0.80	0.283	1.82	30'	EL	14.5	
		TNT7B	42.000	--	1.331	55.915	1.4	0.283	2.49	30'	EL	14.5	0.574	1.33	30'	EL	1.45	0.80	0.283	1.72	30'	EL	14.5	
TNAGRIT4	43.000	--	1.287	55.356	1.4	0.283	2.58	30'	EL	14.5	0.574	1.29	30'	EL	1.45	0.80	0.283	1.78	30'	EL	14.5			
TNAGT5A	45.000	--	1.381	62.151	1.4	0.283	2.5	30'	EL	14.5	0.574	1.38	30'	EL	1.45	0.80	0.283	1.72	30'	EL	14.5			
TNAGT5B	45.000	③	1.212	54.54	1.4	0.283	2.41	30'	EL	11.6	0.574	1.21	30'	EL	1.45	0.80	0.283	1.66	30'	EL	11.6			

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

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

⊛ CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

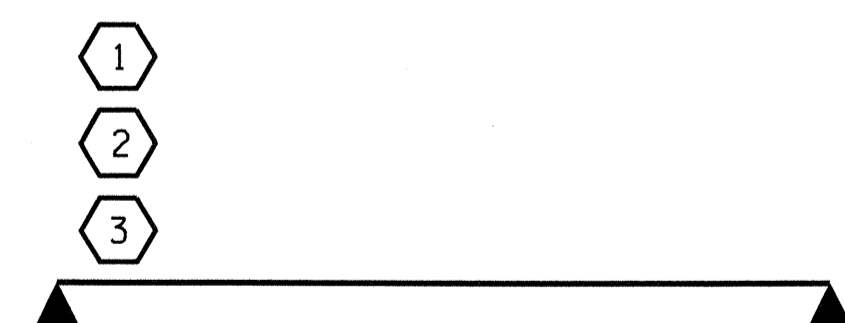
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY
FOR SPAN "A" AND "C"

PROJECT NO. B-4046
BURKE COUNTY
STATION: 18+89.00 -L-

ASSEMBLED BY : A.L. FIGUEROA DATE : 3-01-11
CHECKED BY : M.G. CHEEK DATE : 3-02-11
DRAWN BY : CVC 6/10
CHECKED BY : DNS 6/10

03-JAN-2012 10:54
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dahodge



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

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15	
1			3			TOTAL SHEETS 31	
2			4				

STR#2

STD. NO. 21LRFR1-90S_30L

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

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

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

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

⊛ CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

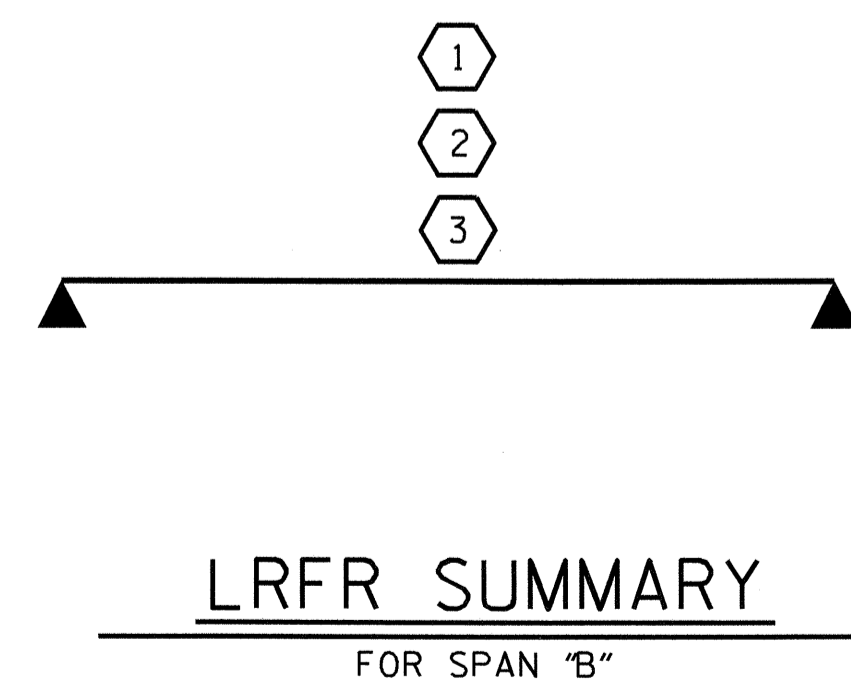
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

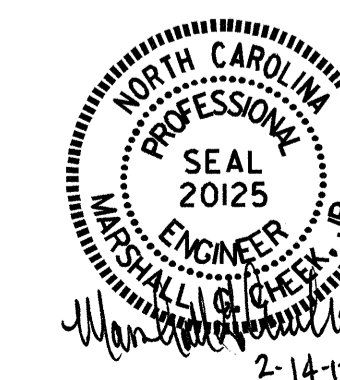
** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



PROJECT NO. B-4046
BURKE COUNTY
STATION: 18+89.00 -L-

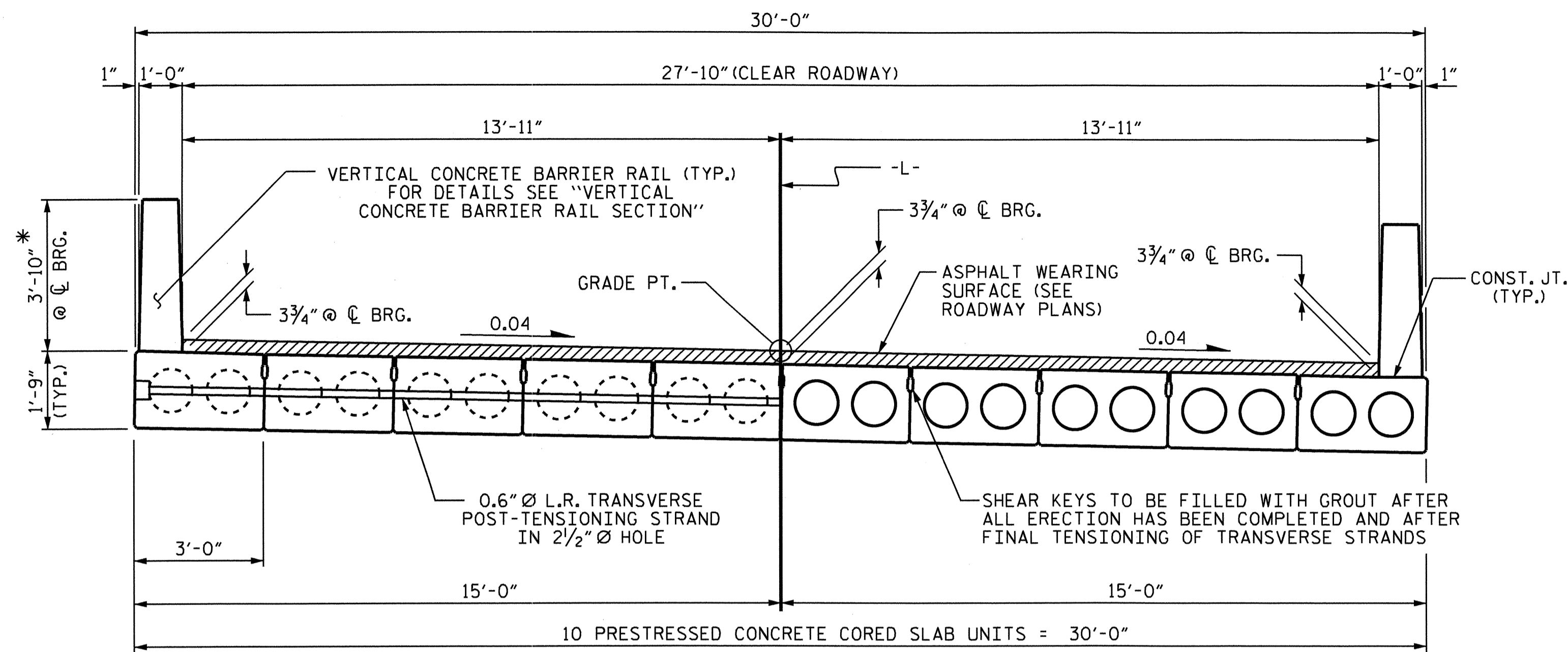


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR
70' CORED SLAB UNIT
90° SKEW
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16	
1			3			TOTAL SHEETS 31	
2			4				

ASSEMBLED BY : A.L. FIGUEROA DATE : 3-01-11
CHECKED BY : M.G. CHEEK DATE : 3-02-11
DRAWN BY : CVC 6/10
CHECKED BY : DNS 6/10

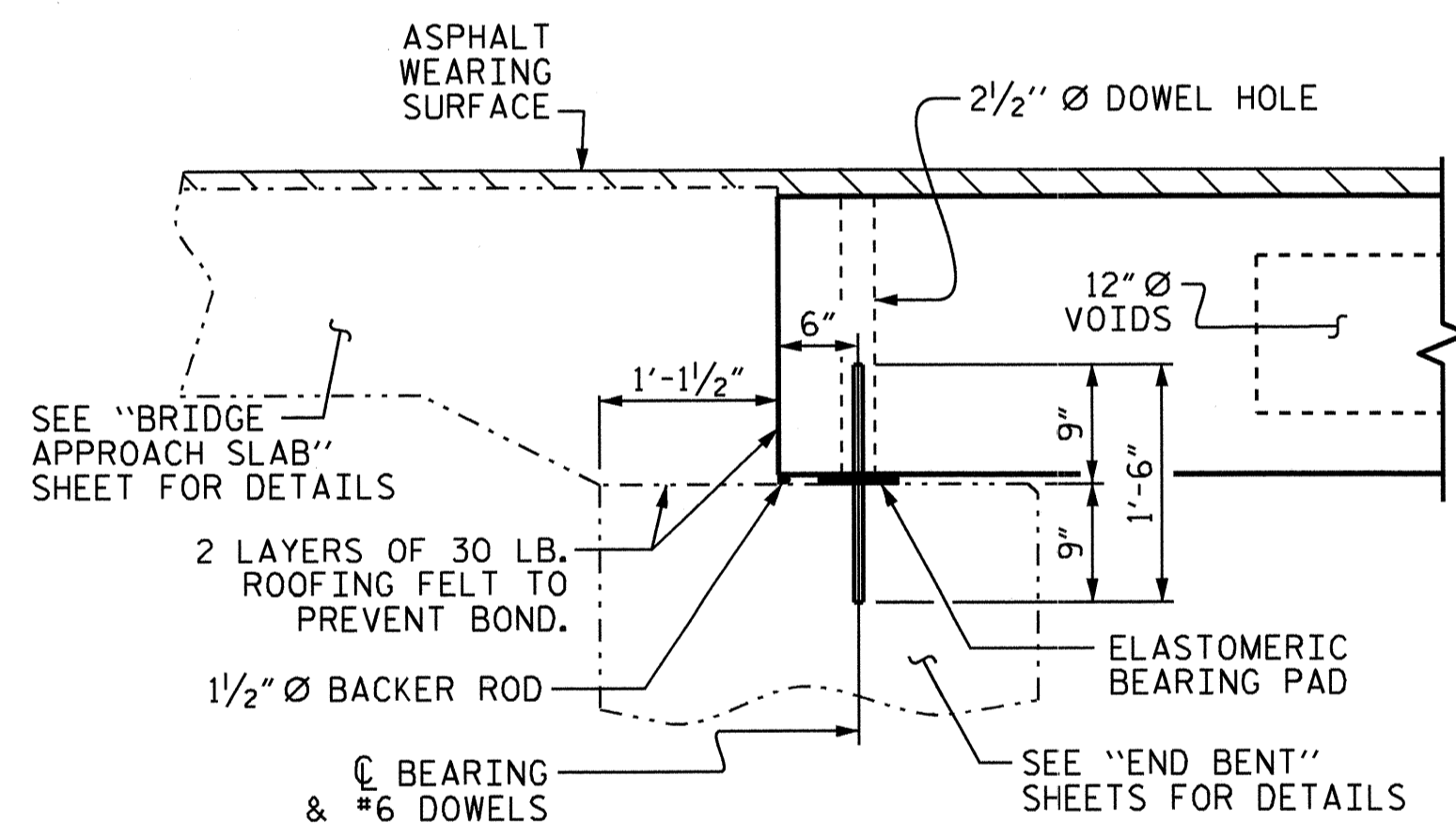


TYPICAL SECTION

* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL (SHEET 5 OF 6).

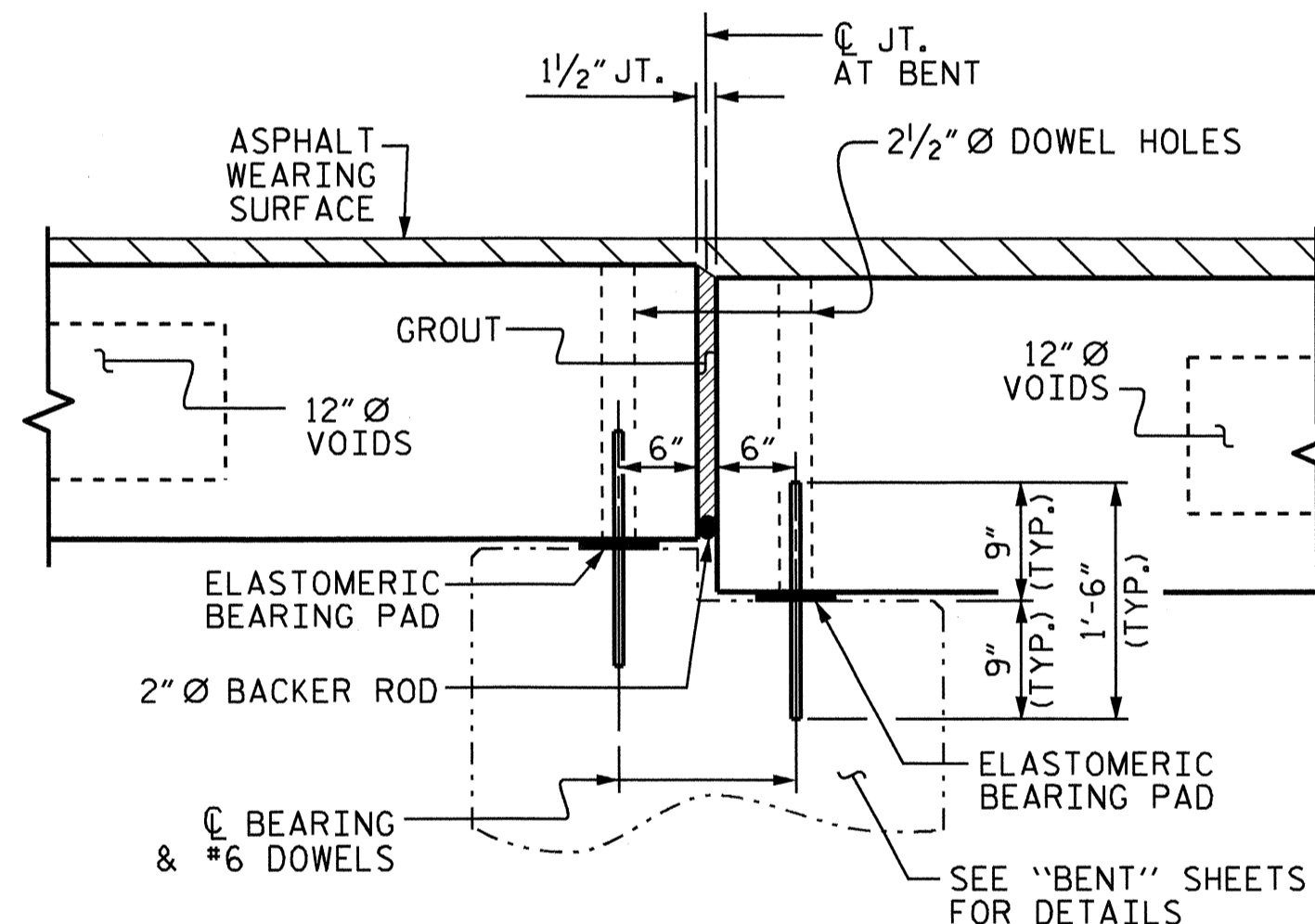
FIXED END

FIXED END



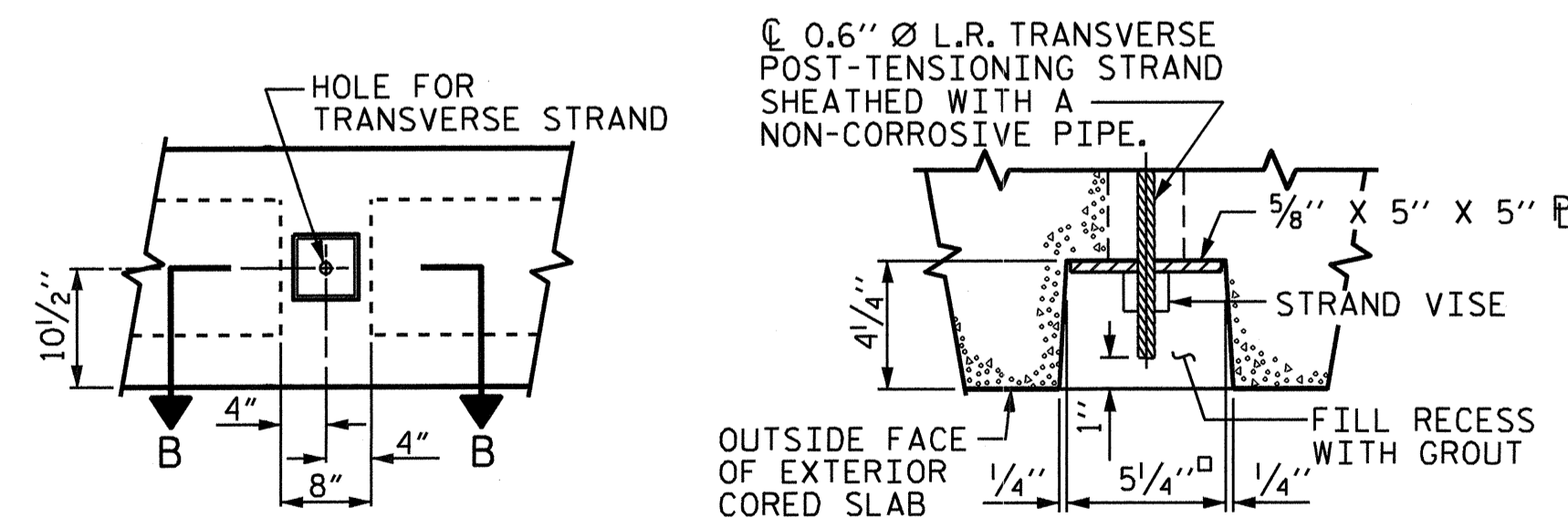
SECTION AT END BENT No. 1

(END BENT No. 2 SIM.)



SECTION AT BENT No. 1

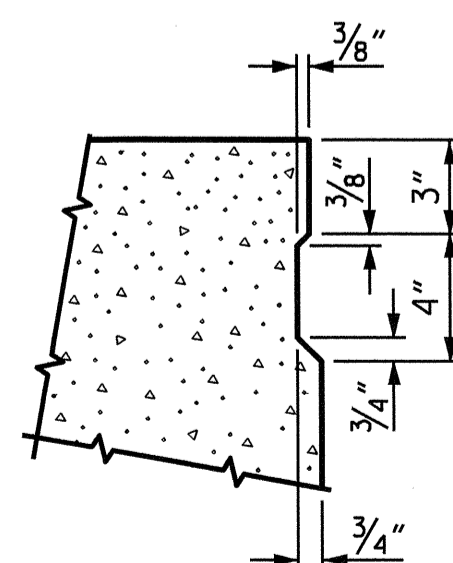
(BENT No. 2 SIM.)



ELEVATION VIEW

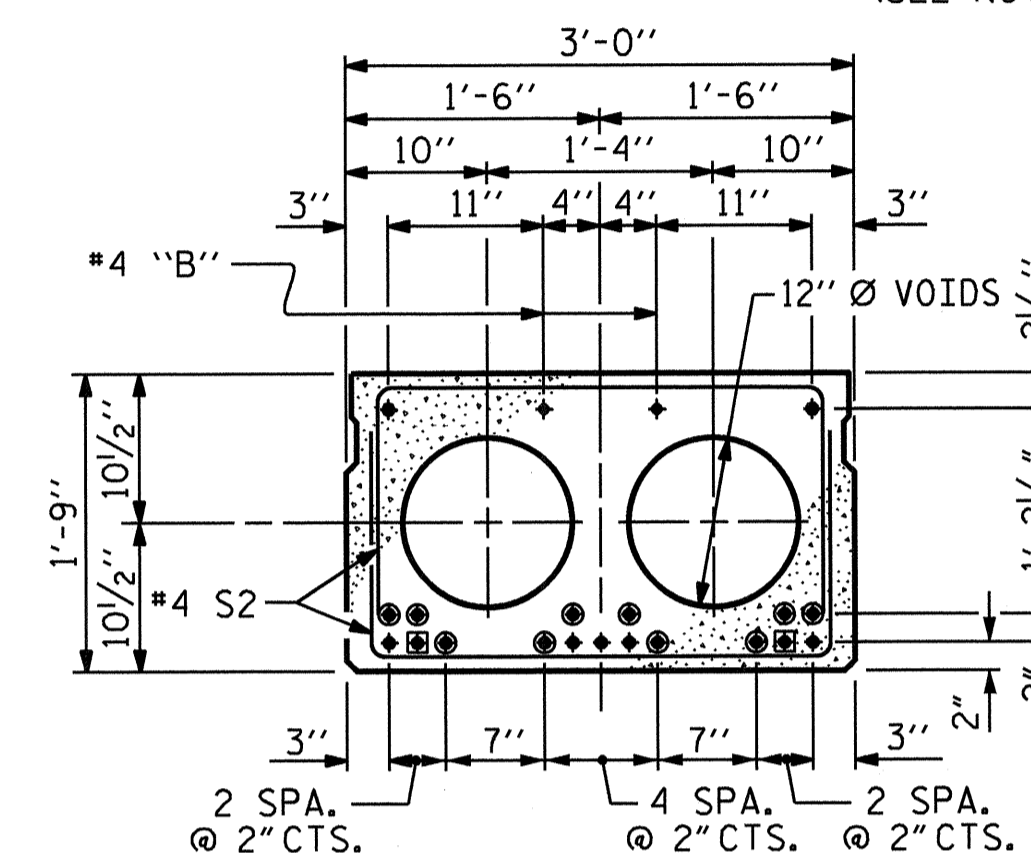
SECTION B-B

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



SHEAR KEY DETAIL

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

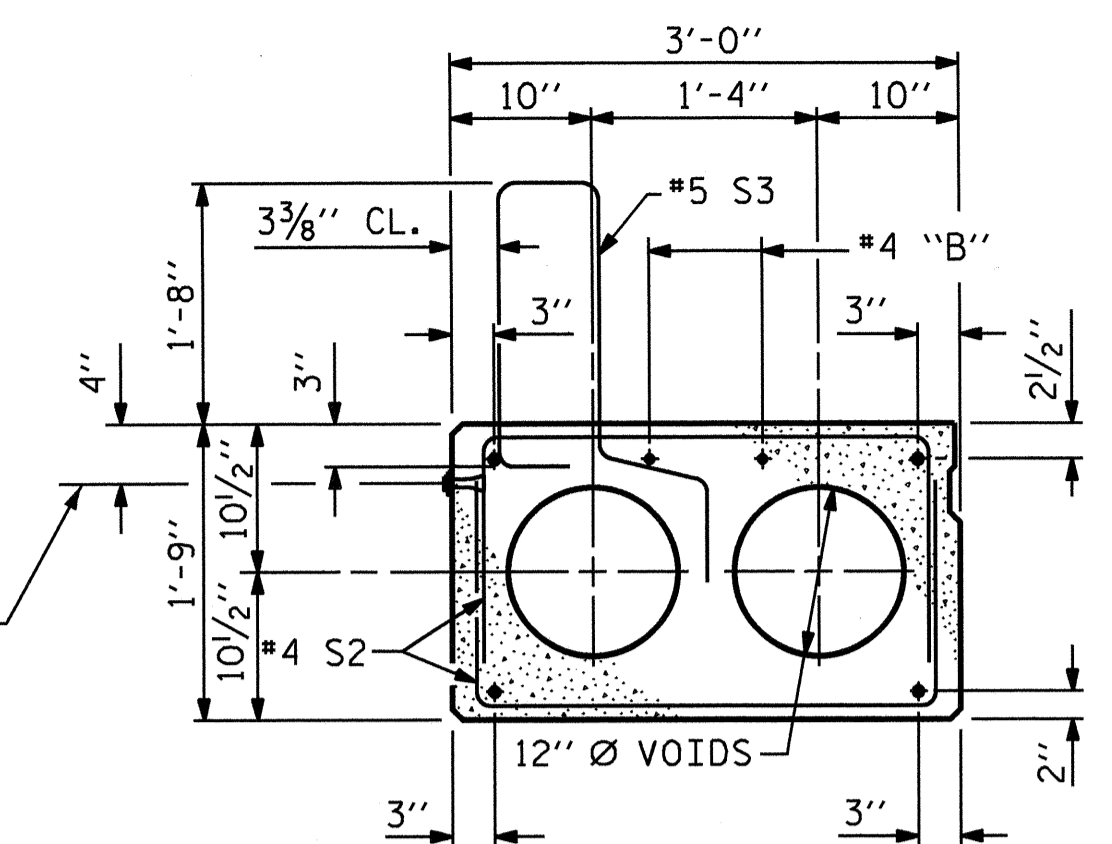


INTERIOR SLAB SECTION
(25', 30' & 35' UNIT)

(9 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT

Ø 3/4" BOLTS WITH WASHERS IN APPROVED CONCRETE INSERTS CAST IN EXTERIOR CORED SLAB UNITS @ 10'-0" CTS. (SEE NOTES, SHEET 5 OF 6)



EXT. SLAB SECTION

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

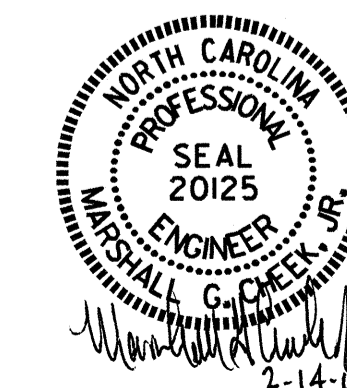
- BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND

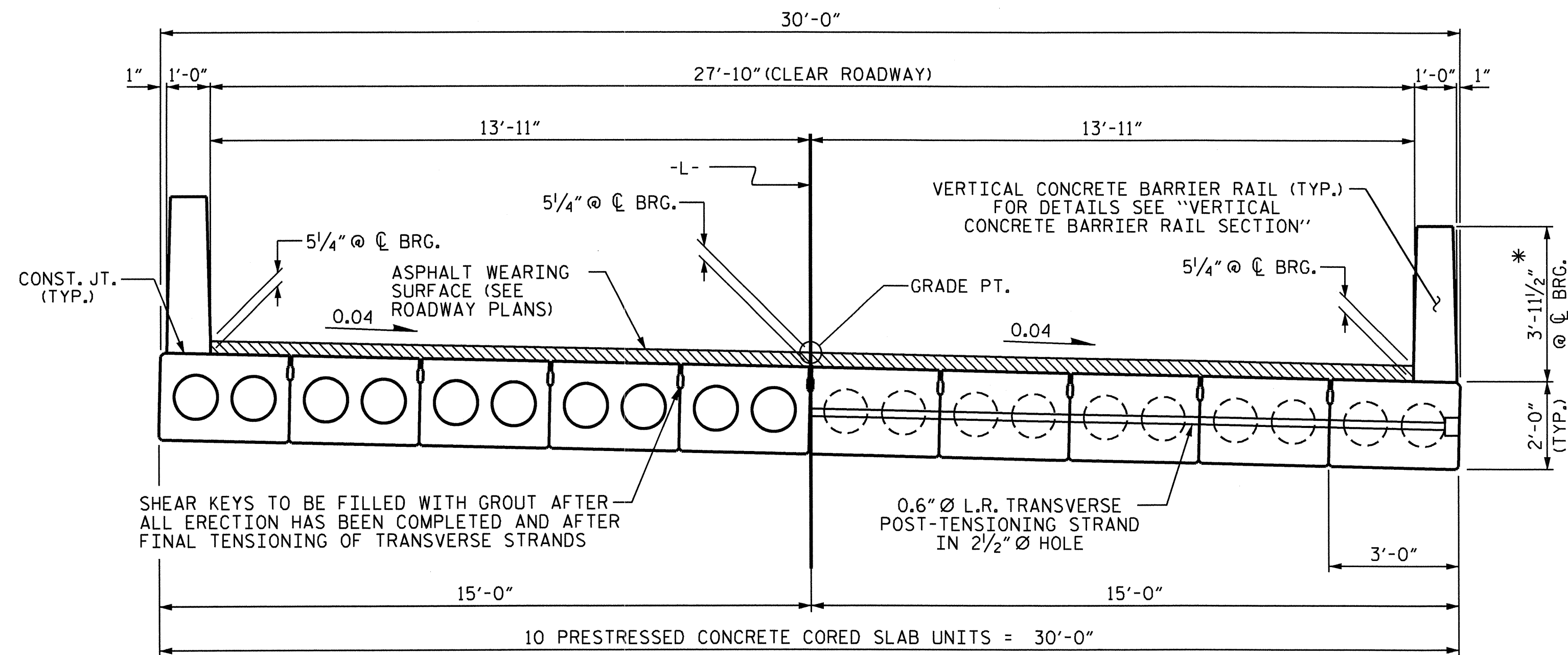
PROJECT NO. B-4046
BURKE COUNTY
STATION: 18+89.00 -L-

SHEET 1 OF 6

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-17					TOTAL SHEETS 31



ASSEMBLED BY : A.L. FIGUEROA/DAH DATE : 03-02-11
CHECKED BY : M.G. CHEEK DATE : 03-02-11
DRAWN BY : DGE 5/09 REV. 12/11 MAA/AAC
CHECKED BY : BCH 6/09

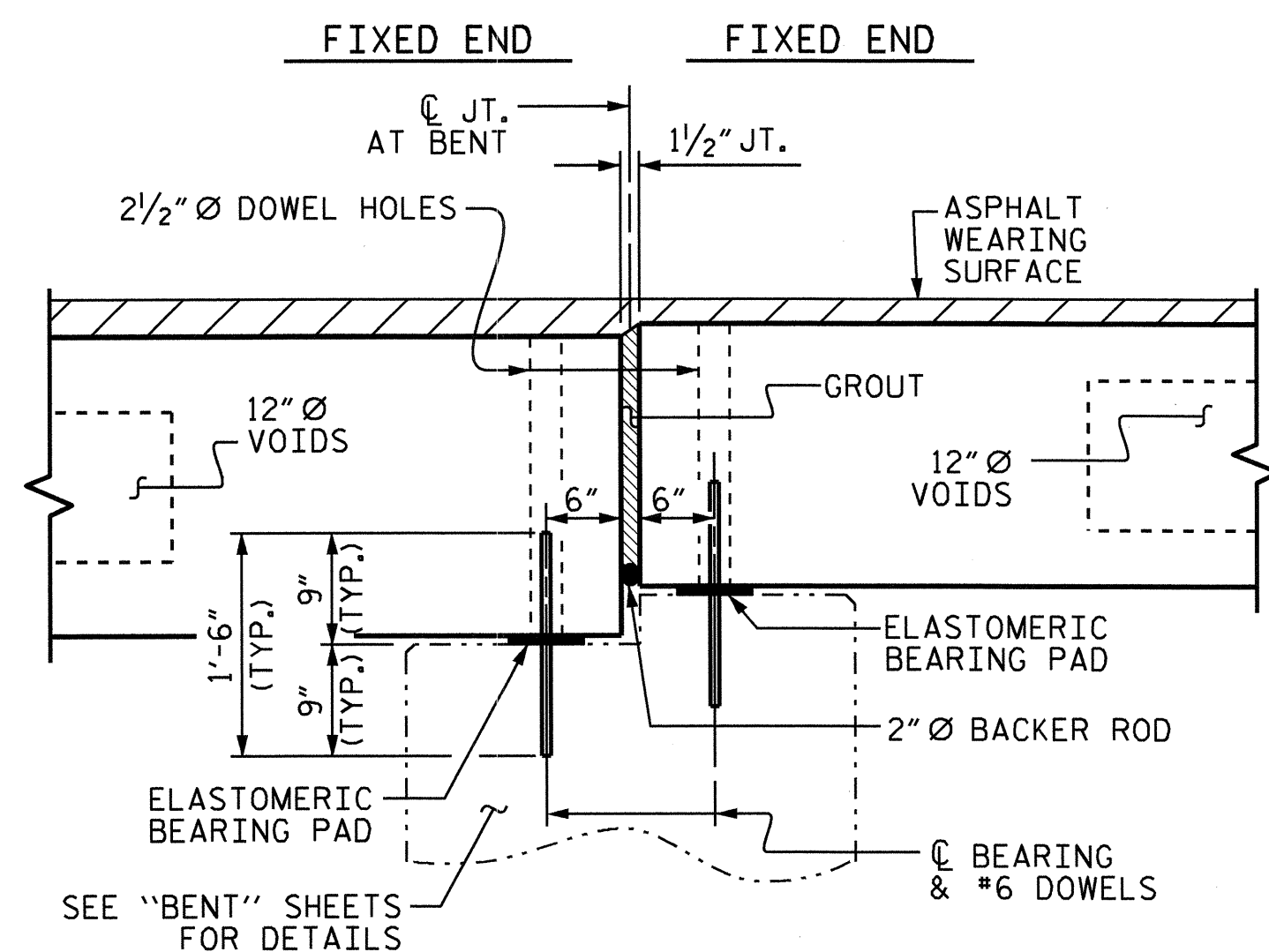


HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

TYPICAL SECTION

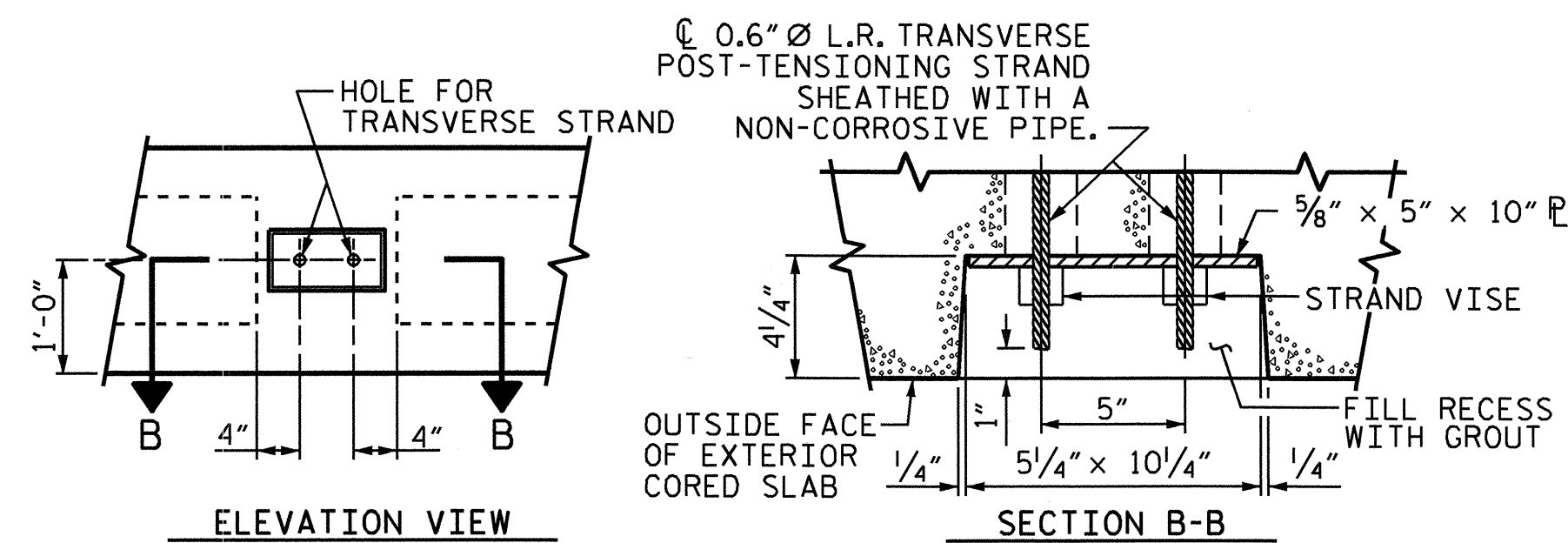
HALF SECTION
THROUGH VOIDS

* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL (SHEET 6 OF 6).

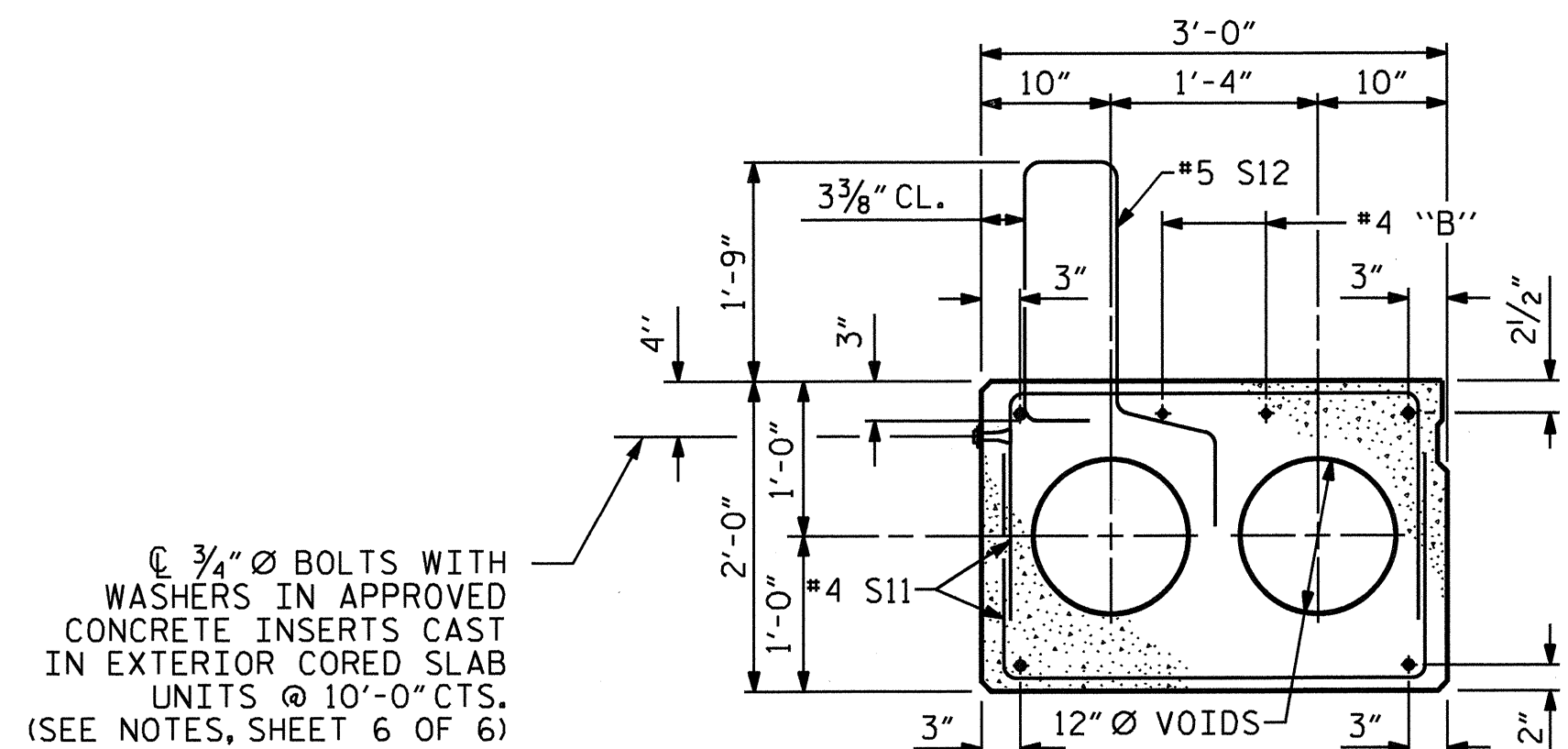


SECTION AT BENT No. 2

(BENT No. 1 SIM.)

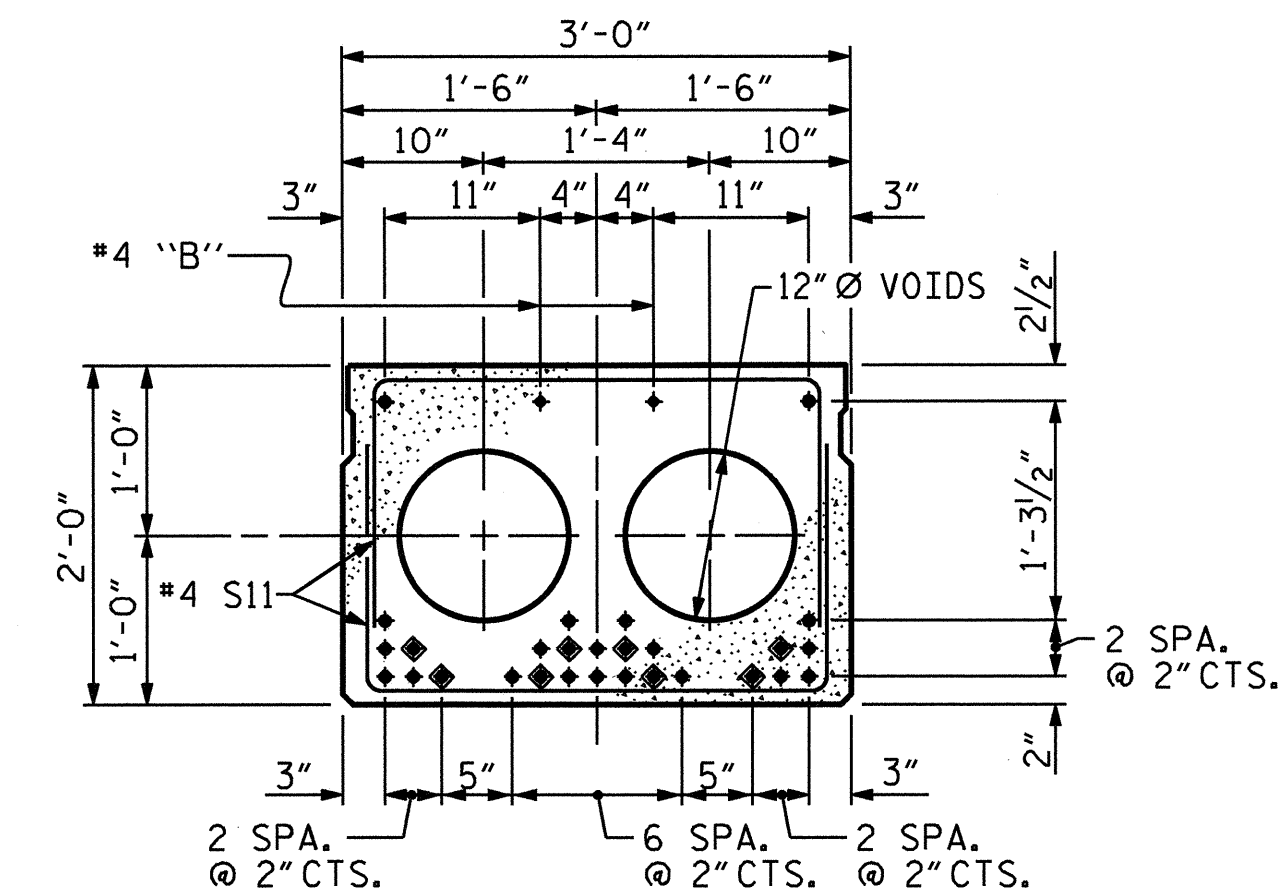


GRouted RECESS AT END OF
POST-TENSIONED STRAND-CORED SLABS



EXTERIOR SLAB SECTION

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



INTERIOR SLAB SECTION (70' UNIT)

(28 STRANDS REQUIRED)

0.6" Ø LOW
RELAXATION STRAND LAYOUT

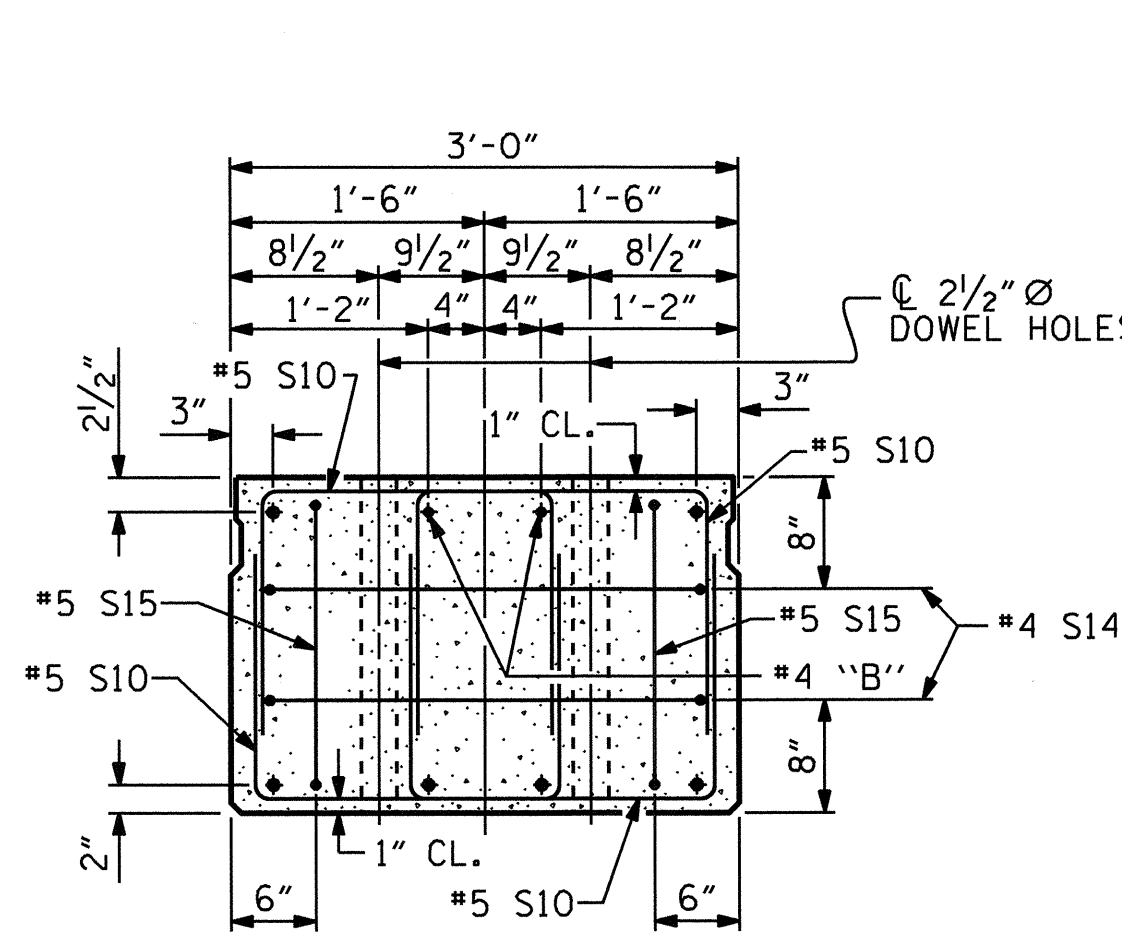
◆ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

● OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED, IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND

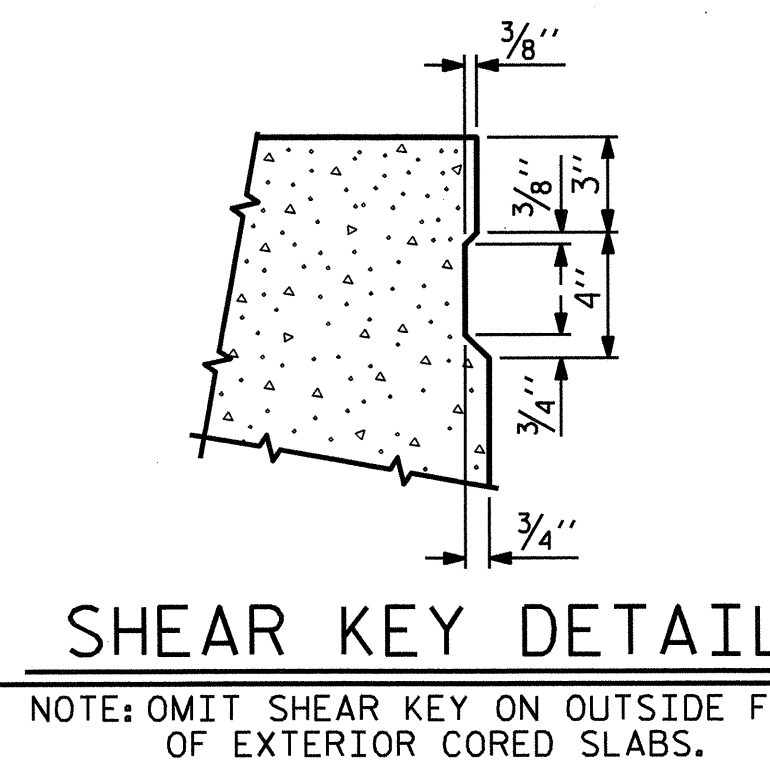
PROJECT NO. B-4046
BURKE COUNTY
STATION: 18+89.00 -L-

SHEET 2 OF 6



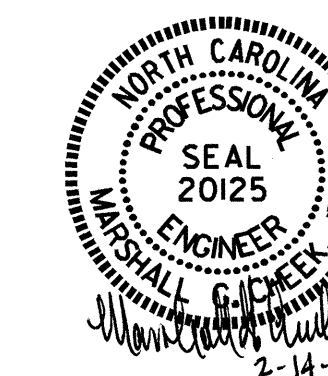
END ELEVATION

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



SHEAR KEY DETAIL

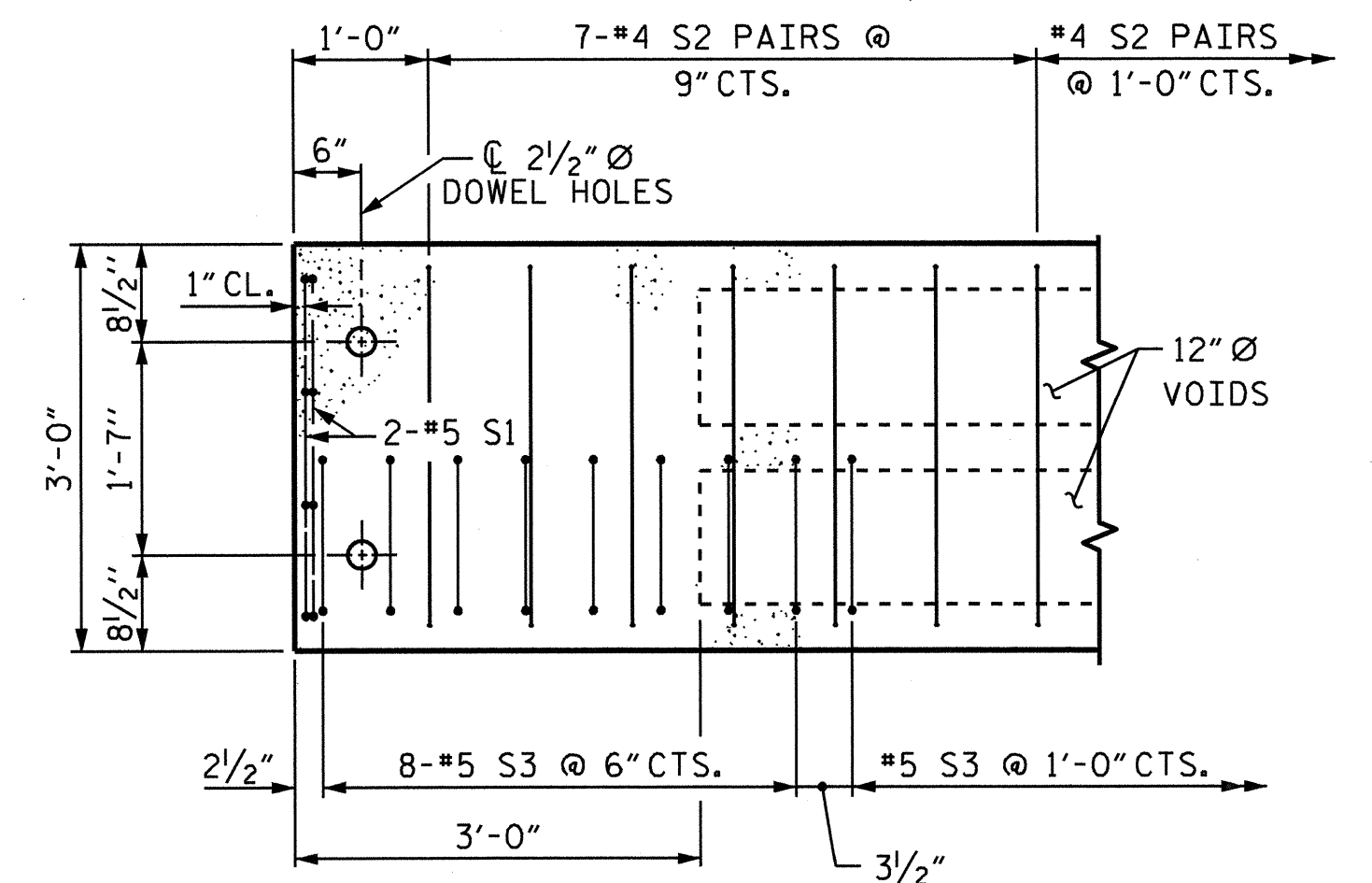
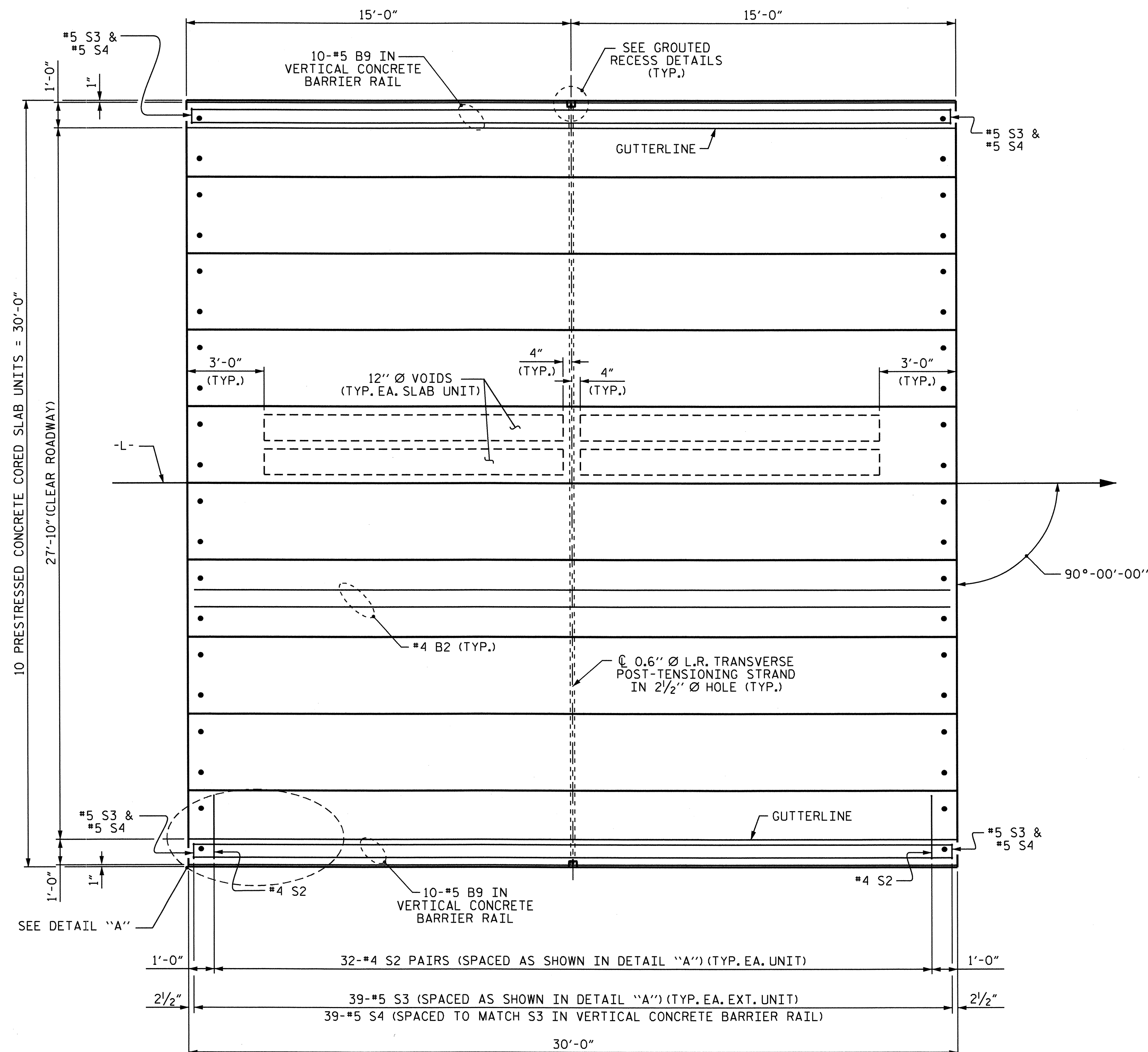
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 2'-0"
PRESTRESSED CONCRETE
CORED SLAB UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS 31
2			4			

ASSEMBLED BY: A.L. FIGUEROA/DAH DATE: 03-02-11
CHECKED BY: M.G. CHEEK DATE: 03-02-11
DRAWN BY: MAA 6/10 REV. 12/11 MAA/AAC
CHECKED BY: MKT 7/10



DETAIL "A"
 NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PLAN OF UNIT AT SPAN A AND SPAN C

PROJECT NO. B-4046
BURKE COUNTY
 STATION: 18+89.00 -L-

SHEET 3 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF 30' UNIT
 27'-10" CLEAR ROADWAY
 90° SKEW

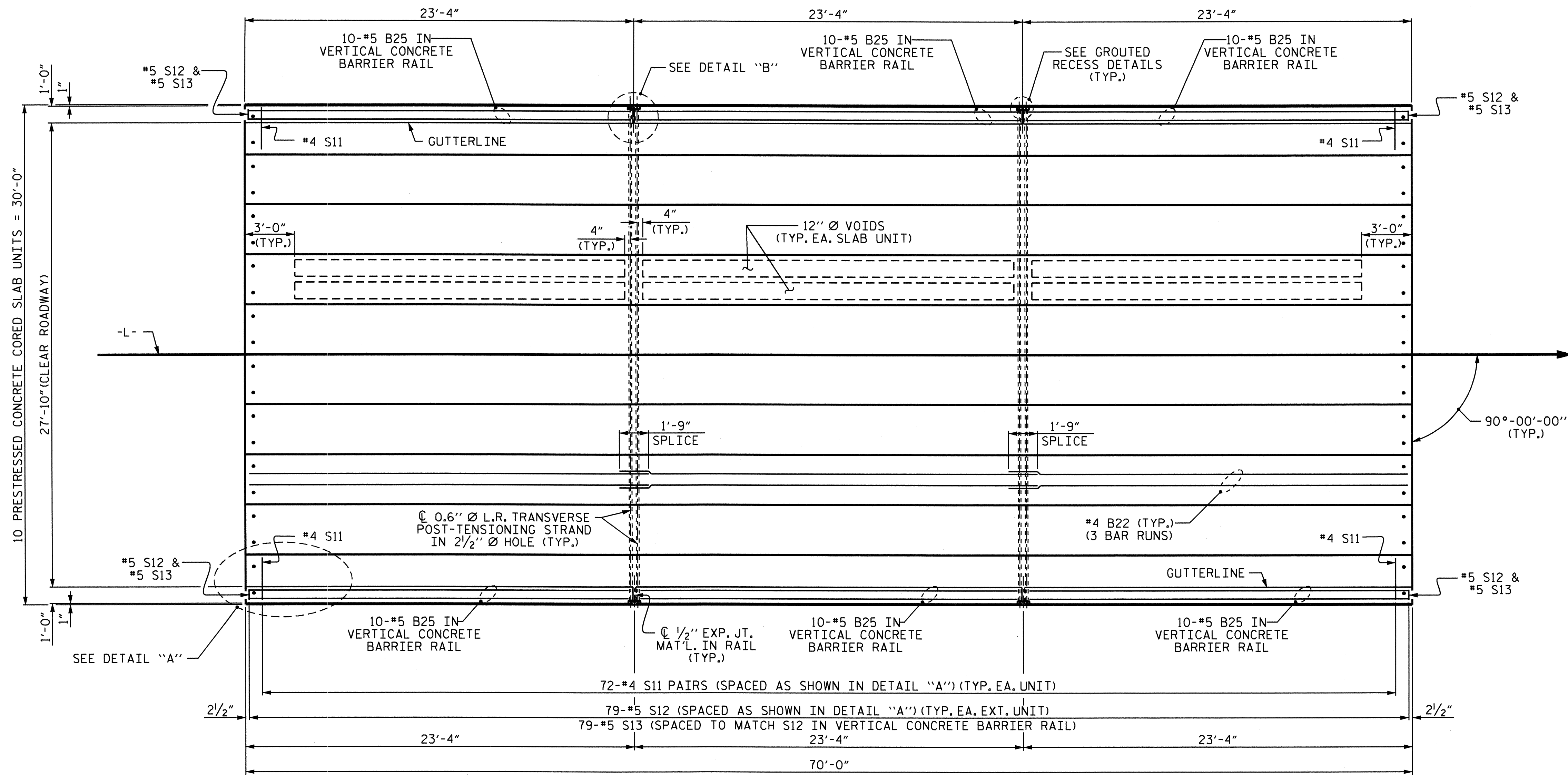


ASSEMBLED BY : A.L. FIGUEROA/DAH	DATE : 03-02-11
CHECKED BY : M.G. CHEEK	DATE : 03-02-11
DRAWN BY : DGE 3/09	REV. 12/5/11 MAA/AAC
CHECKED BY : BCH 3/09	

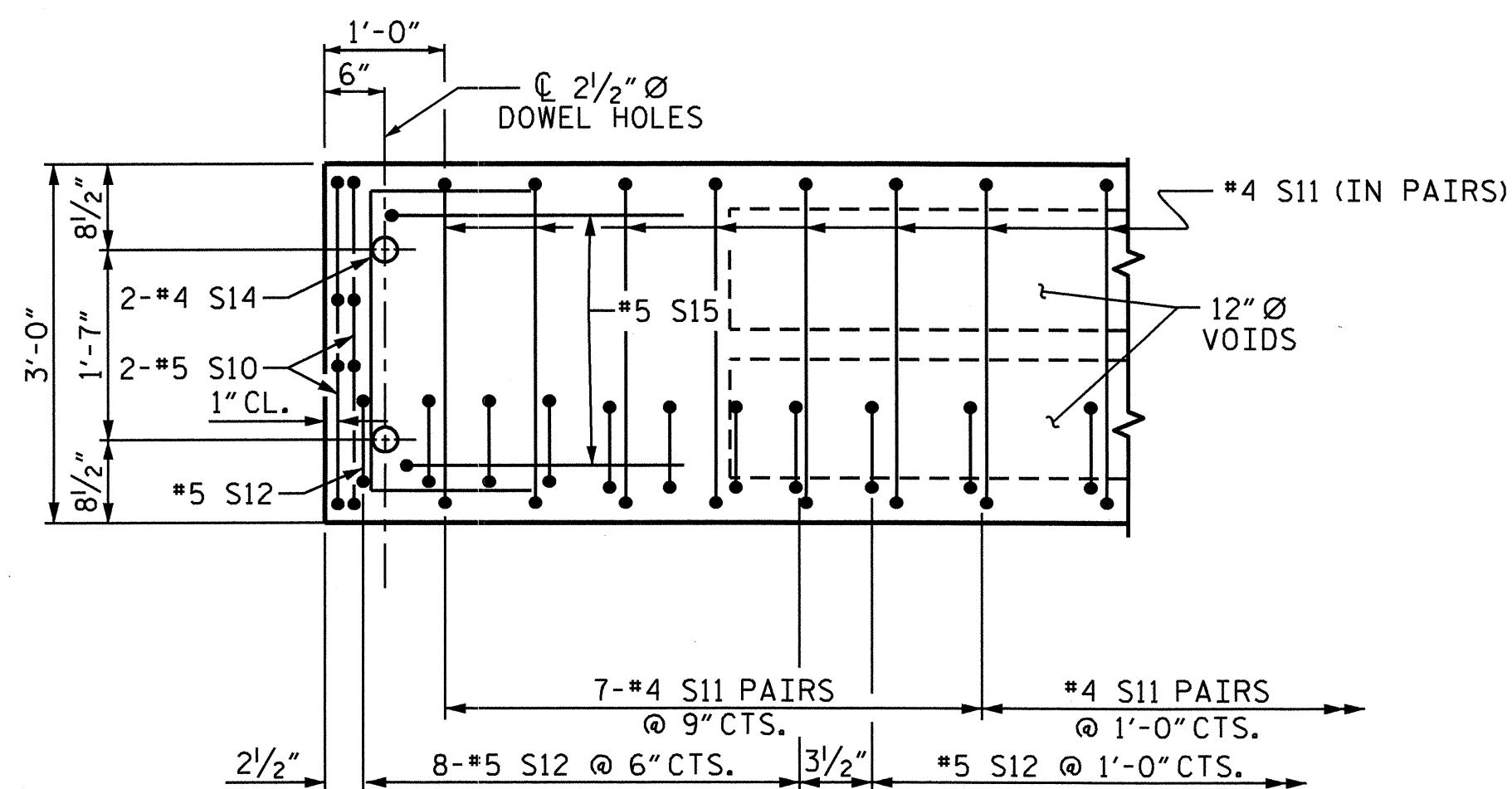
03-JAN-2012 10:51
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 dahodge

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19	
1			3			TOTAL SHEETS	31
2			4				

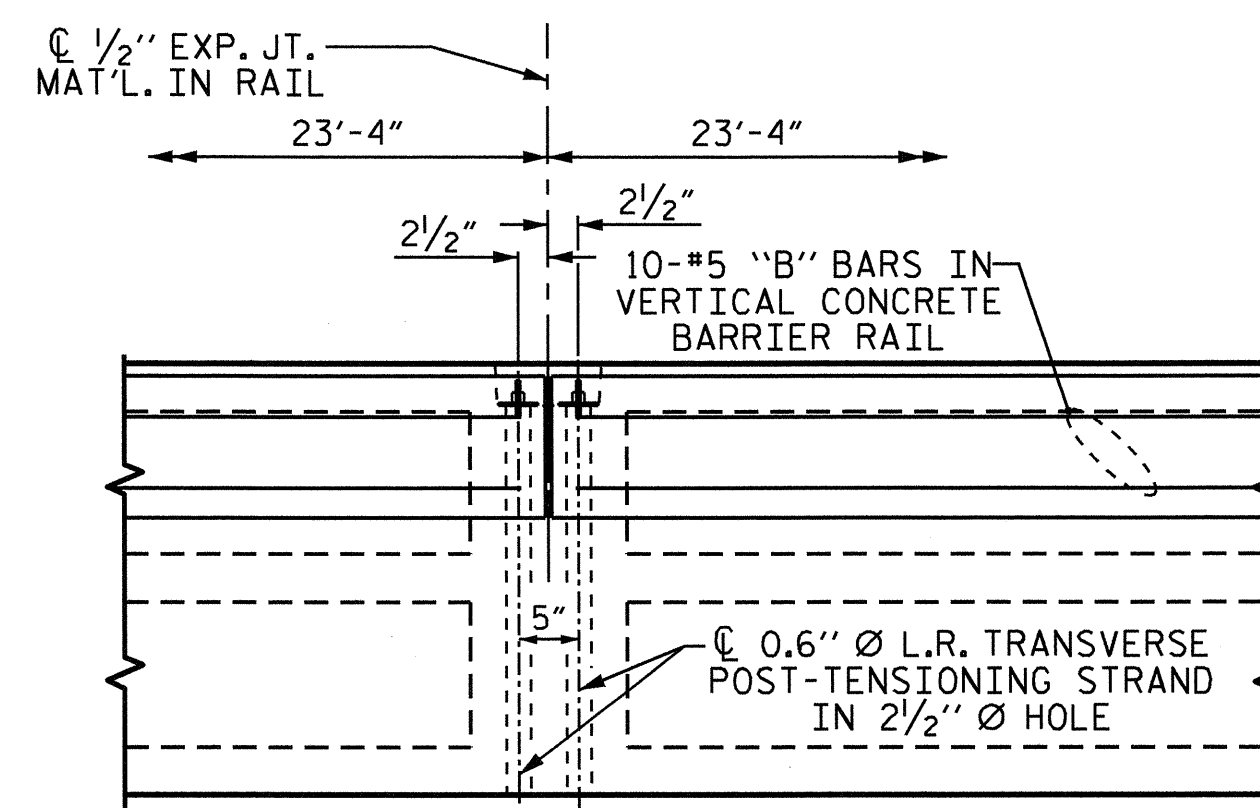
STR*2 STD. NO. 21" PCS_30_90S_30L



PLAN OF UNIT



DETAIL "A"



DETAIL "B"

#4 S11 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUDED RECESS AND 2 1/2" Ø TRANSVERSE POST-TENSIONING STRAND HOLES

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

ASSEMBLED BY : A.L.FIGUEROA/DAH DATE : 03-02-11
 CHECKED BY : M.G.CHEEK DATE : 03-02-11
 DRAWN BY : MAA 6/10 REV. 12/5/11 MAA/AAC
 CHECKED BY : MKT 7/10

03-JAN-2012 10:51
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 dahodge

PROJECT NO. B-4046
BURKE COUNTY
 STATION: 18+89.00 -L-

SHEET 4 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

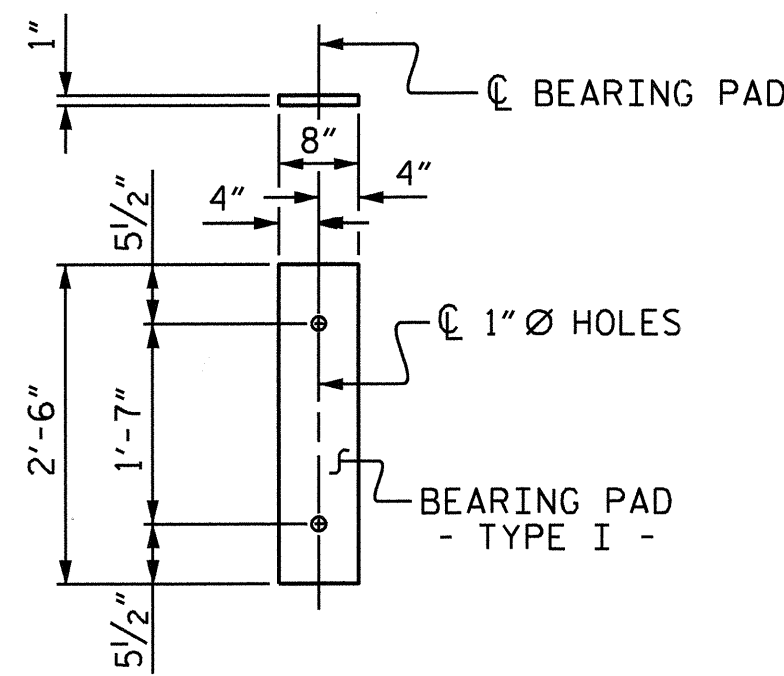
PLAN OF 70' UNIT
 27'-10" CLEAR ROADWAY
 90° SKEW



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20	
1			3			TOTAL	31
2			4			SHEETS	

STR#2

STD. NO. 24PCS_30_90S_70L



FIXED END
(TYPE I - 40 REQ'D)

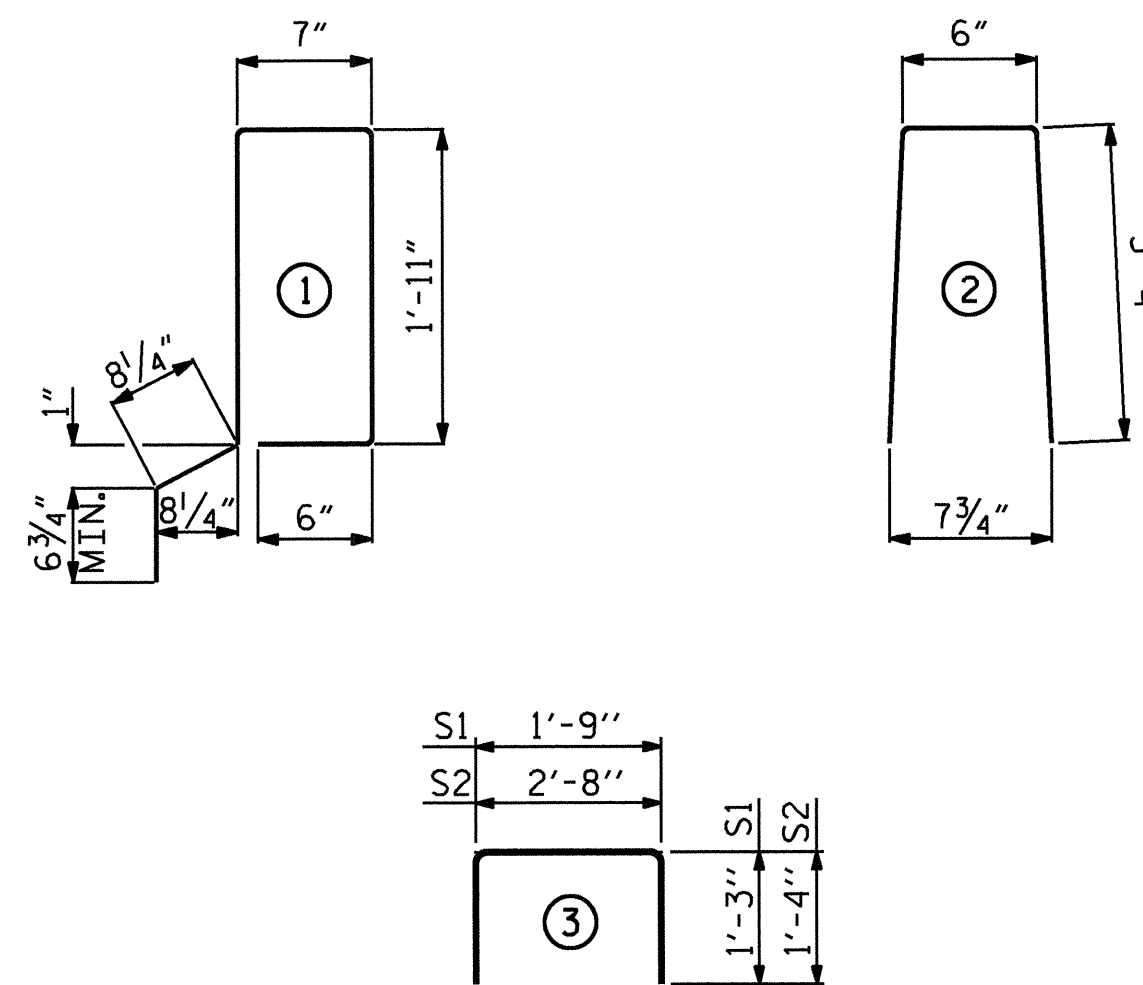
ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

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

CORED SLABS REQUIRED			
30' UNIT	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	4	30'-0"	120'-0"
INTERIOR C.S.	16	30'-0"	480'-0"
TOTAL	20		600'-0"

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

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

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

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

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

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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

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

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

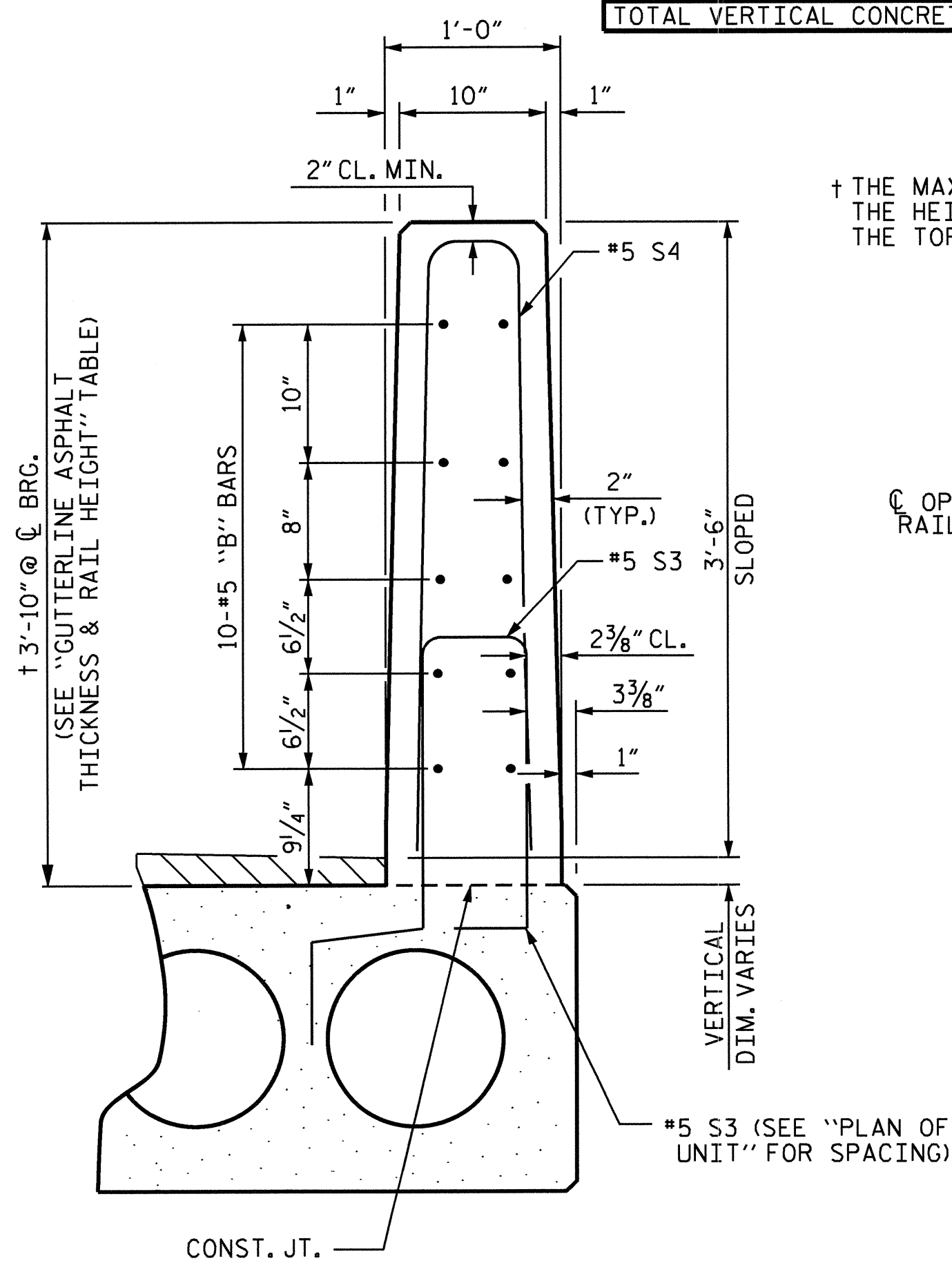
THE COST OF THE 3/4" Ø BOLTS, WASHERS, AND INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
30' UNIT						
* B9	20	40	#5	STR	29'-7"	1234
* S4	78	156	#5	2	7'-2"	1166
* EPOXY COATED REINFORCING STEEL				LBS.		2400
CLASS AA CONCRETE				CU. YDS.		15.8
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		120.50

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 1'-9"
30' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1/2" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/8" ↓
FINAL CAMBER	3/8" ↑

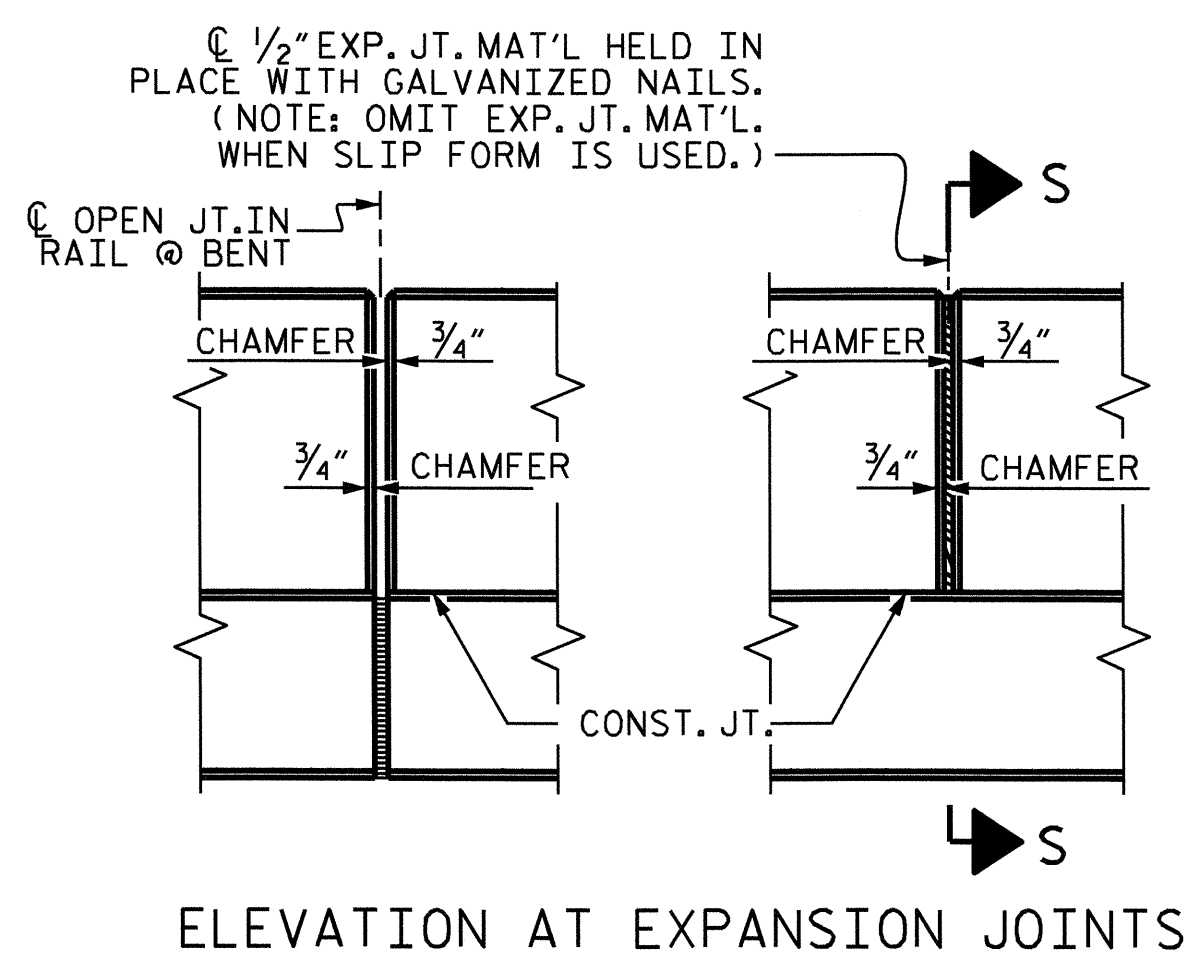
** INCLUDES FUTURE WEARING SURFACE

CONCRETE RELEASE STRENGTH	
UNIT	PSI
30' UNITS	4000

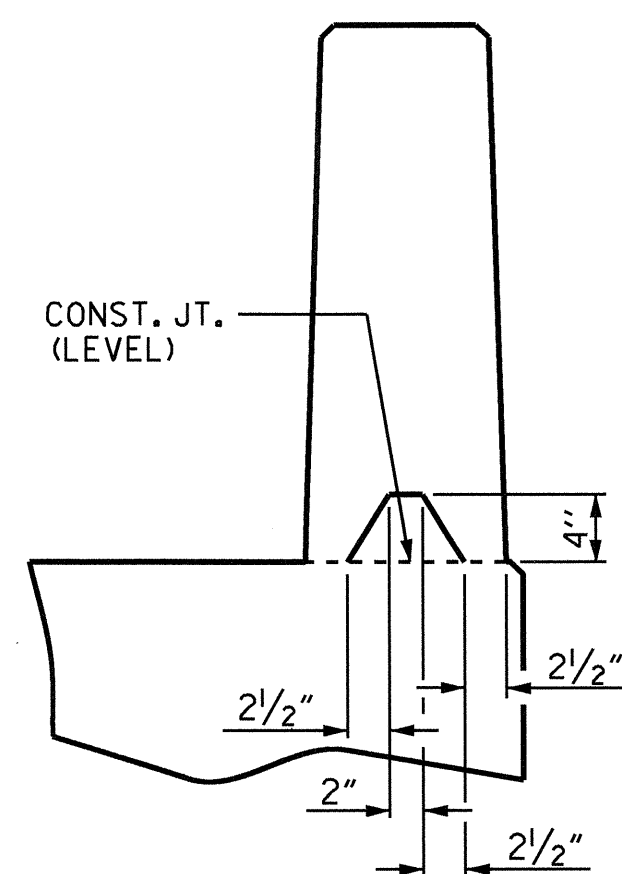


VERTICAL CONCRETE BARRIER RAIL SECTION

† THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE.



ELEVATION AT EXPANSION JOINTS



SECTION S-S

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

BILL OF MATERIAL FOR ONE 30' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
B2	2	#4	STR	29'-8"	40	29'-8"	40
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	64	#4	3	5'-4"	228	5'-4"	228
* S3	39	#5	1	6'-2"	251		
REINFORCING STEEL				LBS.	303		303
* EPOXY COATED REINFORCING STEEL				LBS.	251		
5000 P.S.I. CONCRETE				CU. YDS.	4.4		4.4
0.6" Ø L.R. STRANDS				No.	9		9

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
27'-10" CLEAR ROADWAY	ASPHALT OVERLAY THICKNESS	RAIL HEIGHT
	@ MID-SPAN	@ MID-SPAN
	SUPERED SECTION	
30' UNITS	3 3/8"	3'-9 5/8"

PROJECT NO. B-4046
BURKE COUNTY
STATION: 18+89.00 -L-

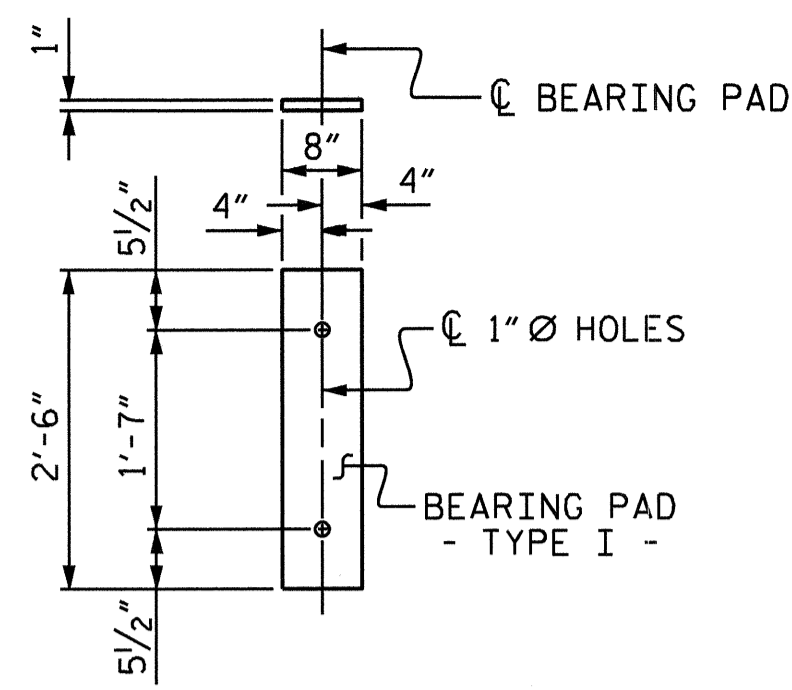
SHEET 5 OF 6



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 1'-9"
PRESTRESSED CONCRETE
CORED SLAB UNIT
90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS 31
2			4			

ASSEMBLED BY : A.L. FIGUEROA/DAH	DATE : 03-02-11
CHECKED BY : M.G. CHEEK	DATE : 03-02-11
DRAWN BY : DGE 5/09	REV. 12/11
CHECKED BY : BCH 6/09	MAA/AAC



FIXED END
(TYPE I - 20 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS IN SPAN B SHALL BE 60 DUROMETER HARDNESS.

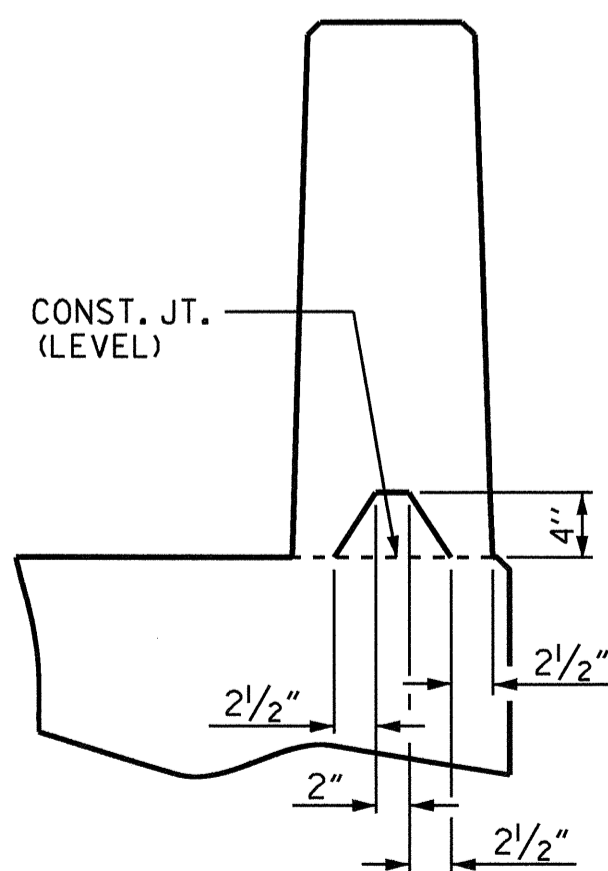
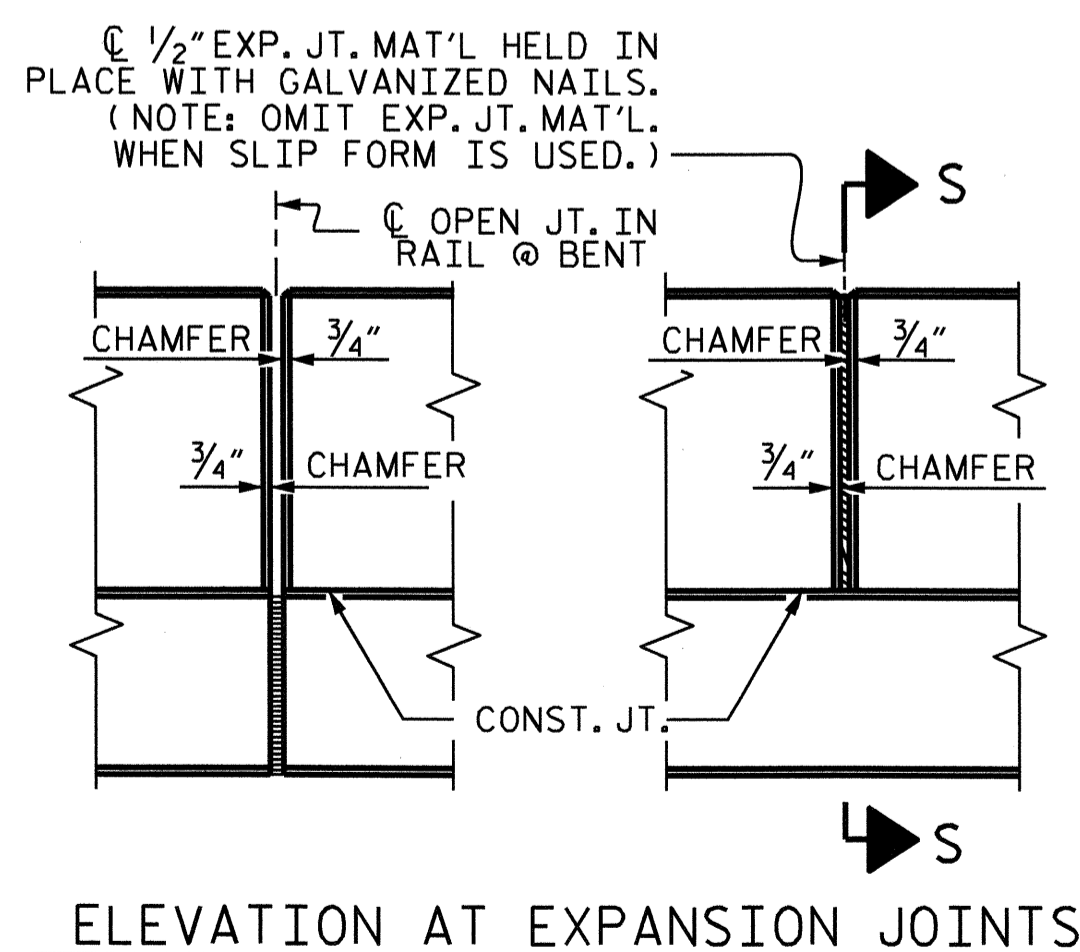
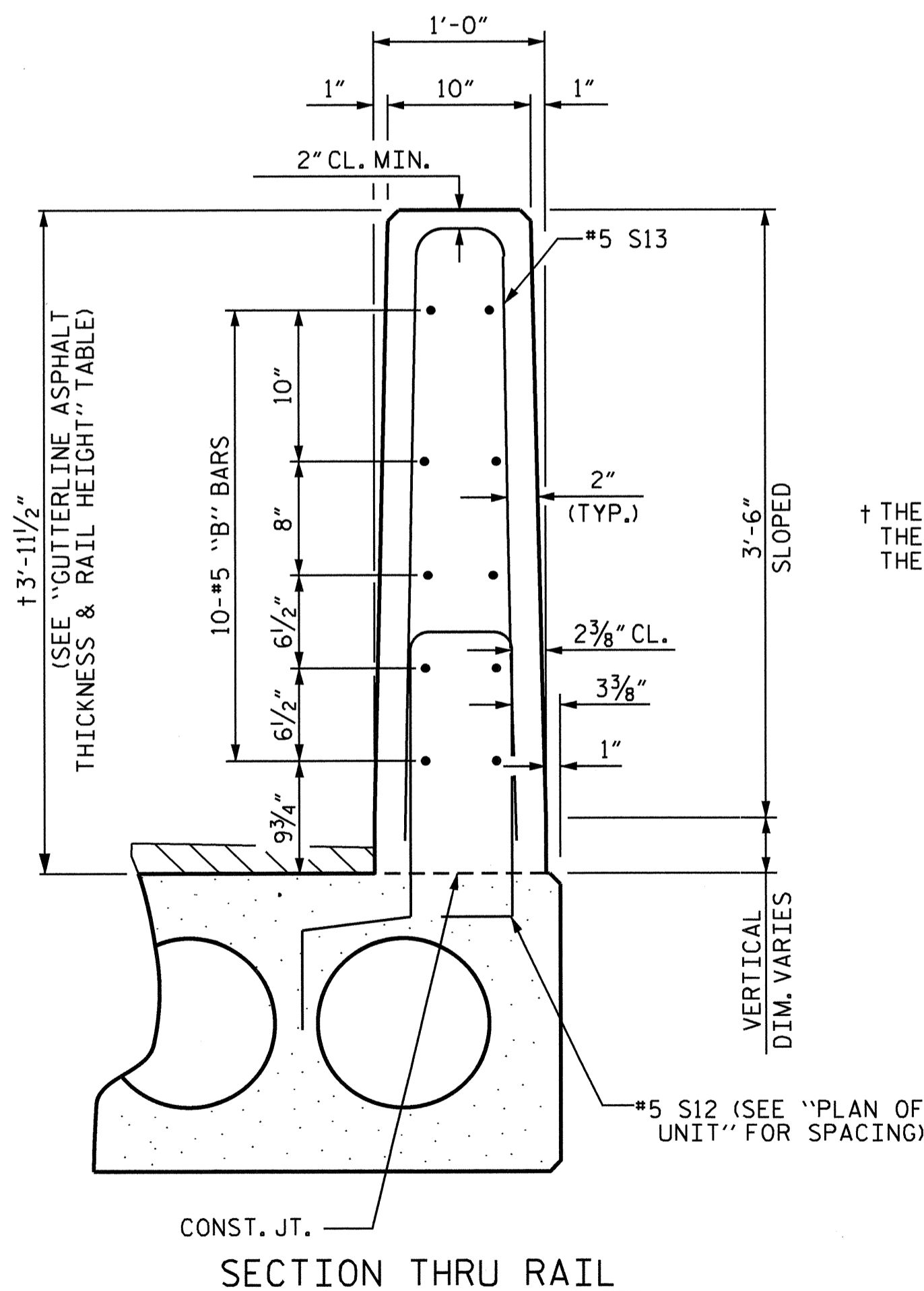
GRADE 270 STRANDS	
AREA (SQUARE INCHES)	0.6" Ø L.R.
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
70' UNIT			
EXTERIOR C.S.	2	70'-0"	140'-0"
INTERIOR C.S.	8	70'-0"	560'-0"
TOTAL	10		700'-0"

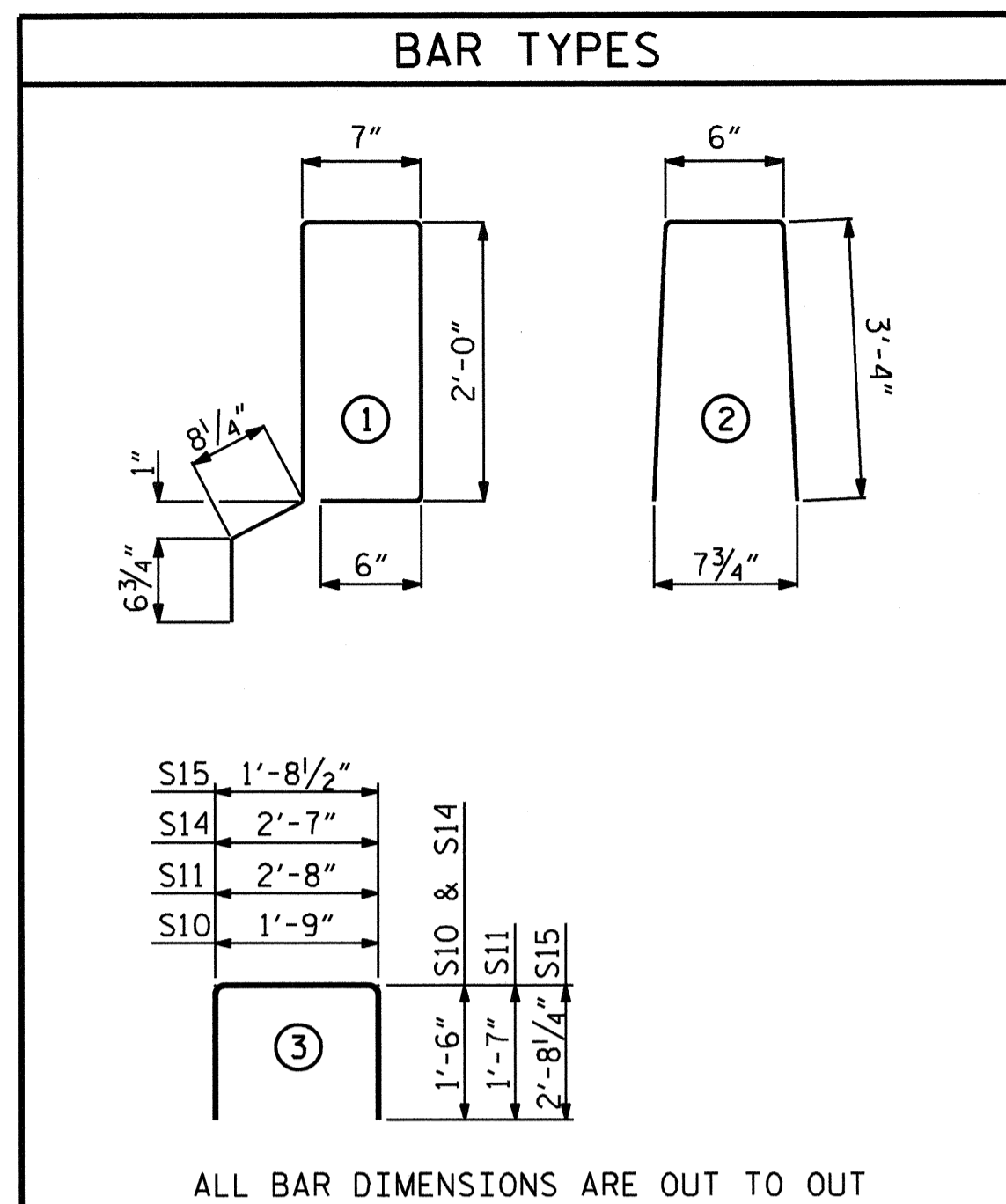
BILL OF MATERIAL FOR ONE 70' CORED SLAB UNIT							
		EXTERIOR UNIT			INTERIOR UNIT		
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B22	6	#4	STR	24'-6"	98	24'-6"	98
S10	8	#5	3	4'-9"	40	4'-9"	40
S11	144	#4	3	5'-10"	561	5'-10"	561
*S12	79	#5	1	6'-4"	522		
S14	4	#4	3	5'-7"	15	5'-7"	15
S15	4	#5	3	7'-1"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

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
70' UNIT						
*B25	60	60	#5	STR	22'-11"	1434
*S13	158	158	#5	2	7'-2"	1181
* EPOXY COATED REINFORCING STEEL				LBS.		2615
CLASS AA CONCRETE				CU. YDS.		18.9
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		140.25

† THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE.



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



ALL BAR DIMENSIONS ARE OUT TO OUT

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

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

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

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

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

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

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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

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

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

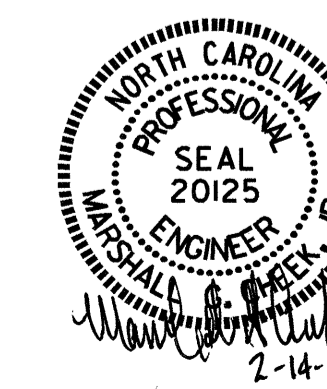
THE COST OF THE 3/4" Ø BOLTS, WASHERS, AND INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

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

CONCRETE RELEASE STRENGTH	
UNIT	PSI
70' UNITS	5500

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

** INCLUDES FUTURE WEARING SURFACE



PROJECT NO. B-4046
BURKE COUNTY
STATION: 18+89.00 -L-

SHEET 6 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 2'-0"
PRESTRESSED CONCRETE
CORED SLAB UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS 31
2			4			

ASSEMBLED BY : A.L. FIGUEROA/DAH	DATE : 03-02-11
CHECKED BY : M.G. CHEEK	DATE : 03-02-11
DRAWN BY : MAA 6/10	REV. 12/11
CHECKED BY : MKT 7/10	MAA/AAC

NOTES

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

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

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

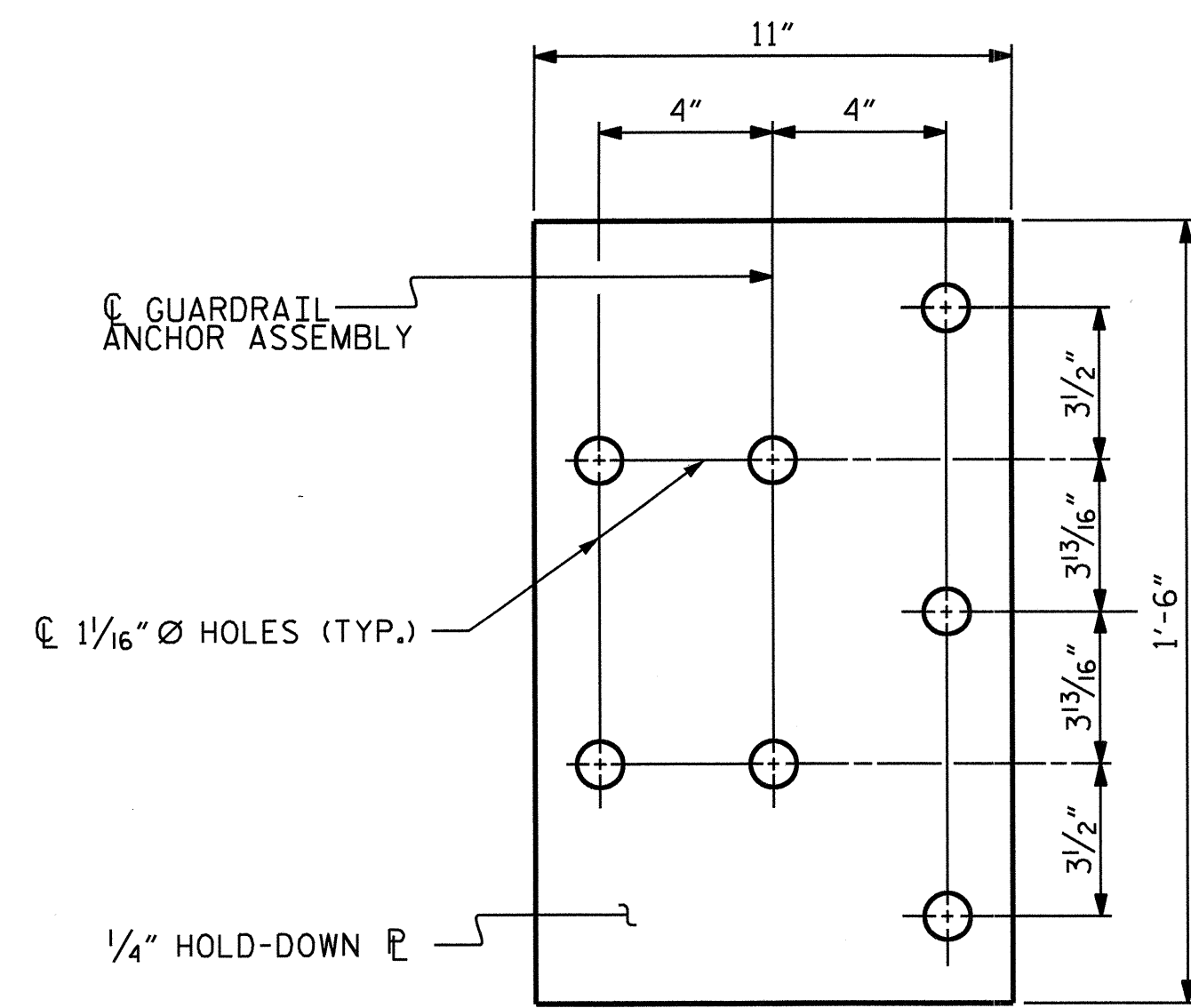
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

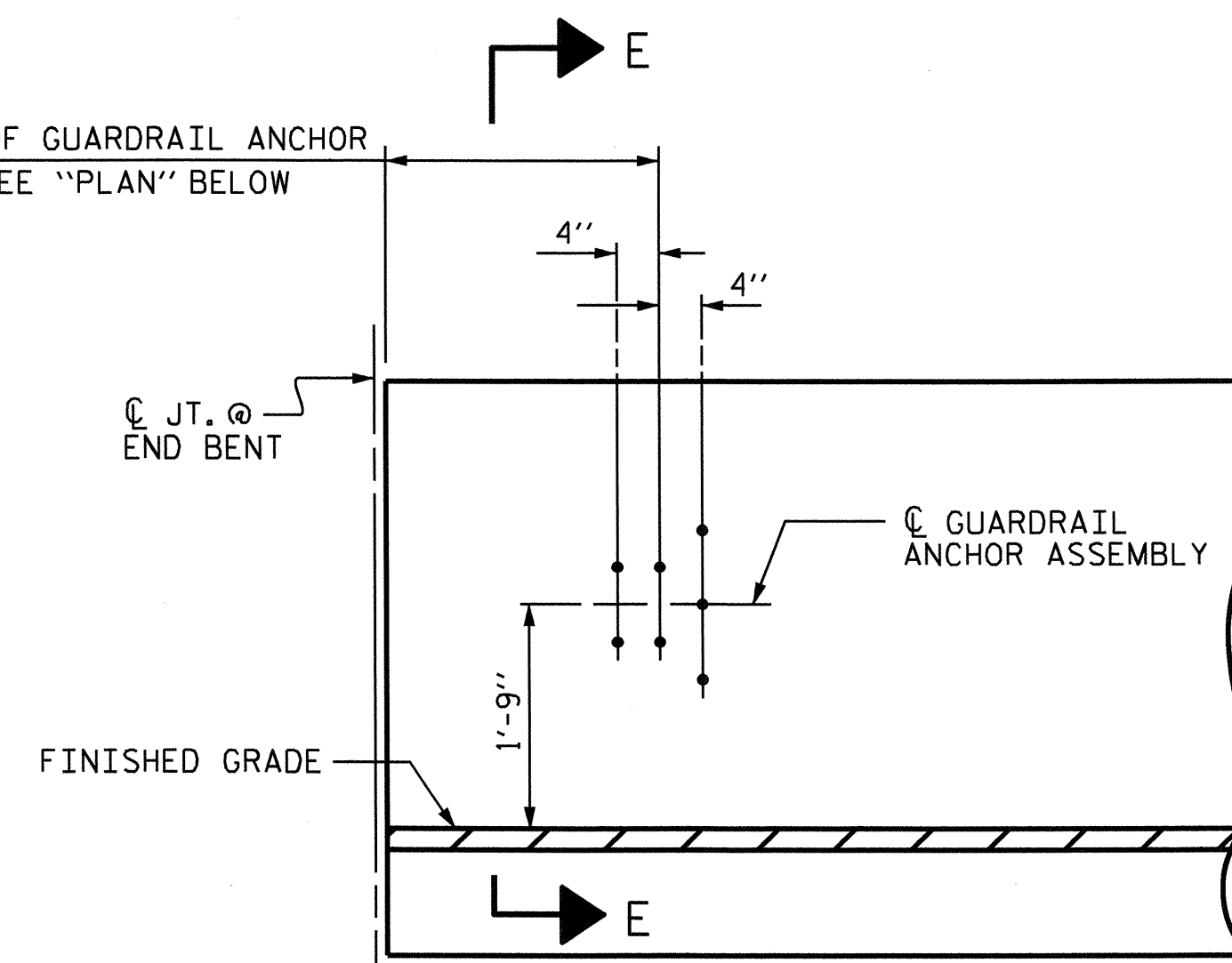
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

THE 1 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.

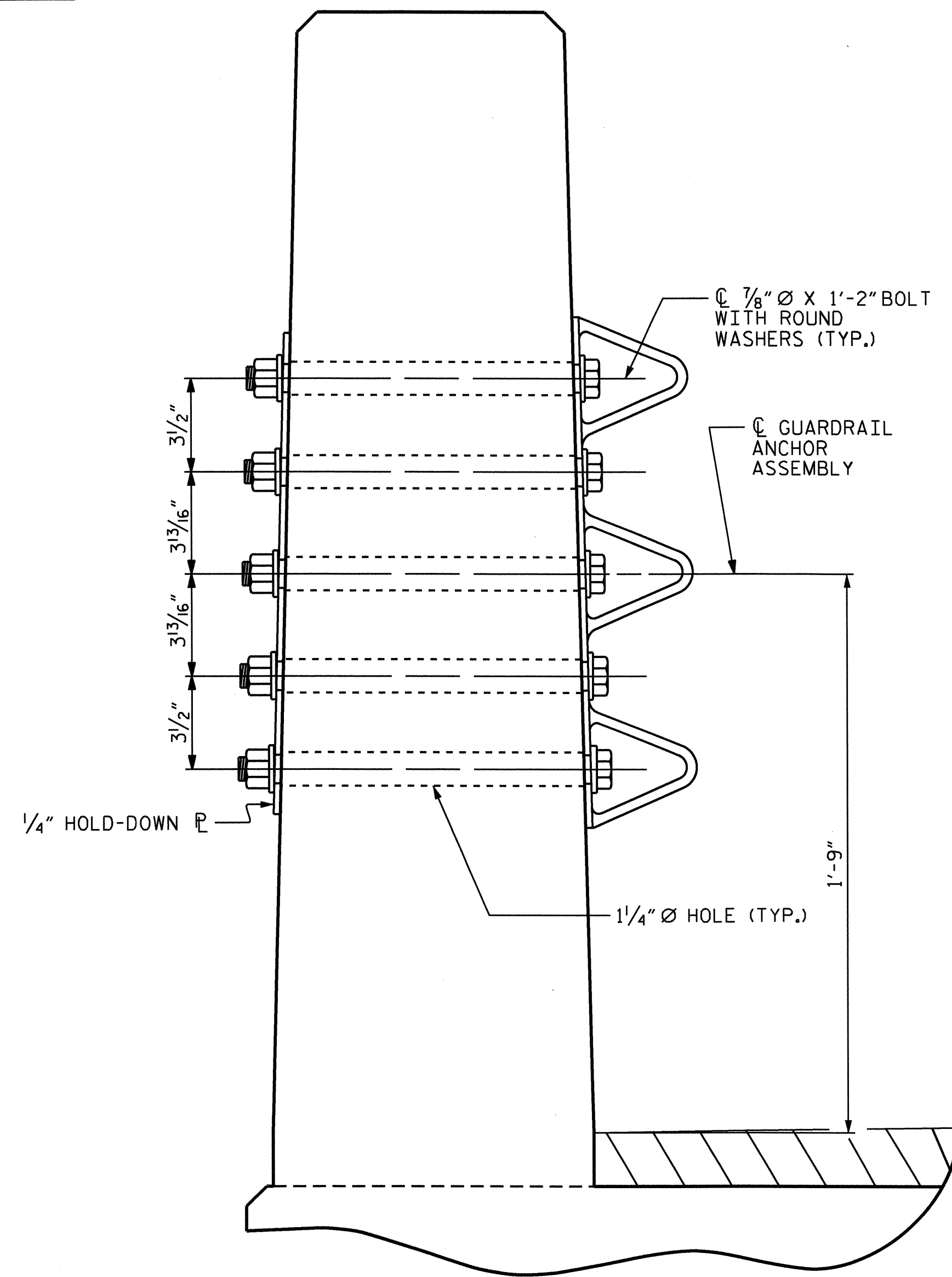


PLAN

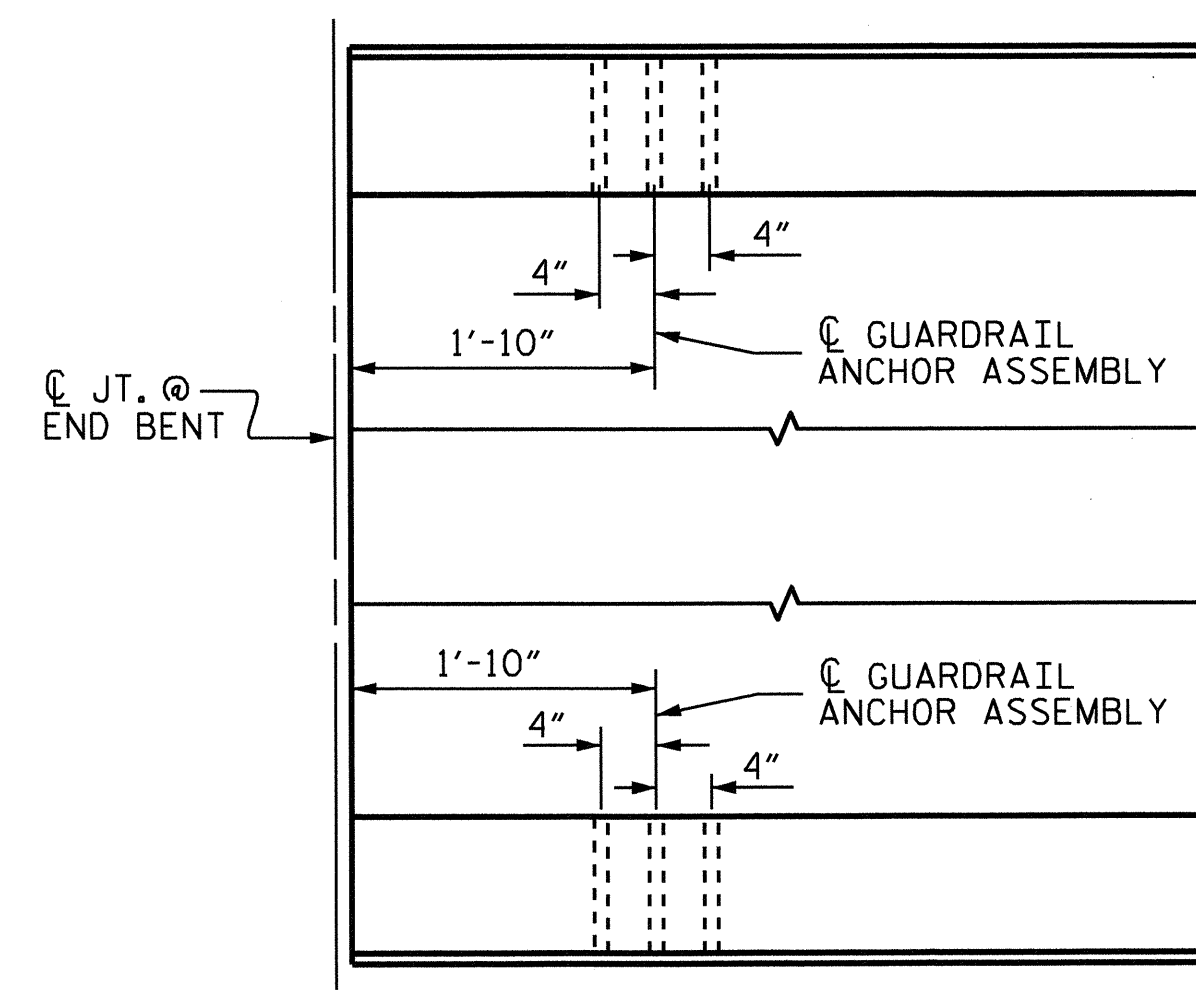
FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



ELEVATION



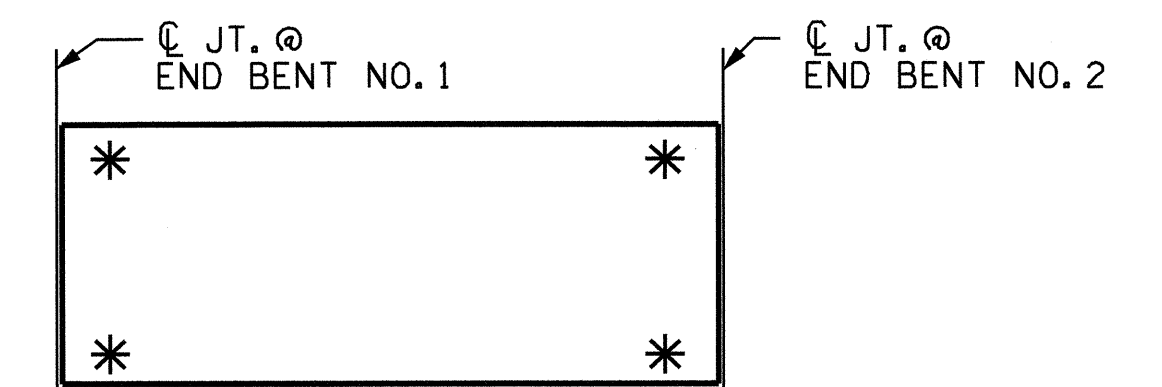
SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4046
BURKE COUNTY
 STATION: 18+89.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD GUARDRAIL ANCHORAGE FOR VERTICAL CONCRETE BARRIER RAIL					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-23
					TOTAL SHEETS 31



ASSEMBLED BY : A.L. FIGUEROA/DAH	DATE : 03-02-11
CHECKED BY : M.G. CHEEK	DATE : 03-02-11
DRAWN BY : MAA 5/10	ADDED 5/6/10
CHECKED BY : GM 5/10	REV. 10/1/11
	REV. 12/5/11
MAA/GM	MAA/GM

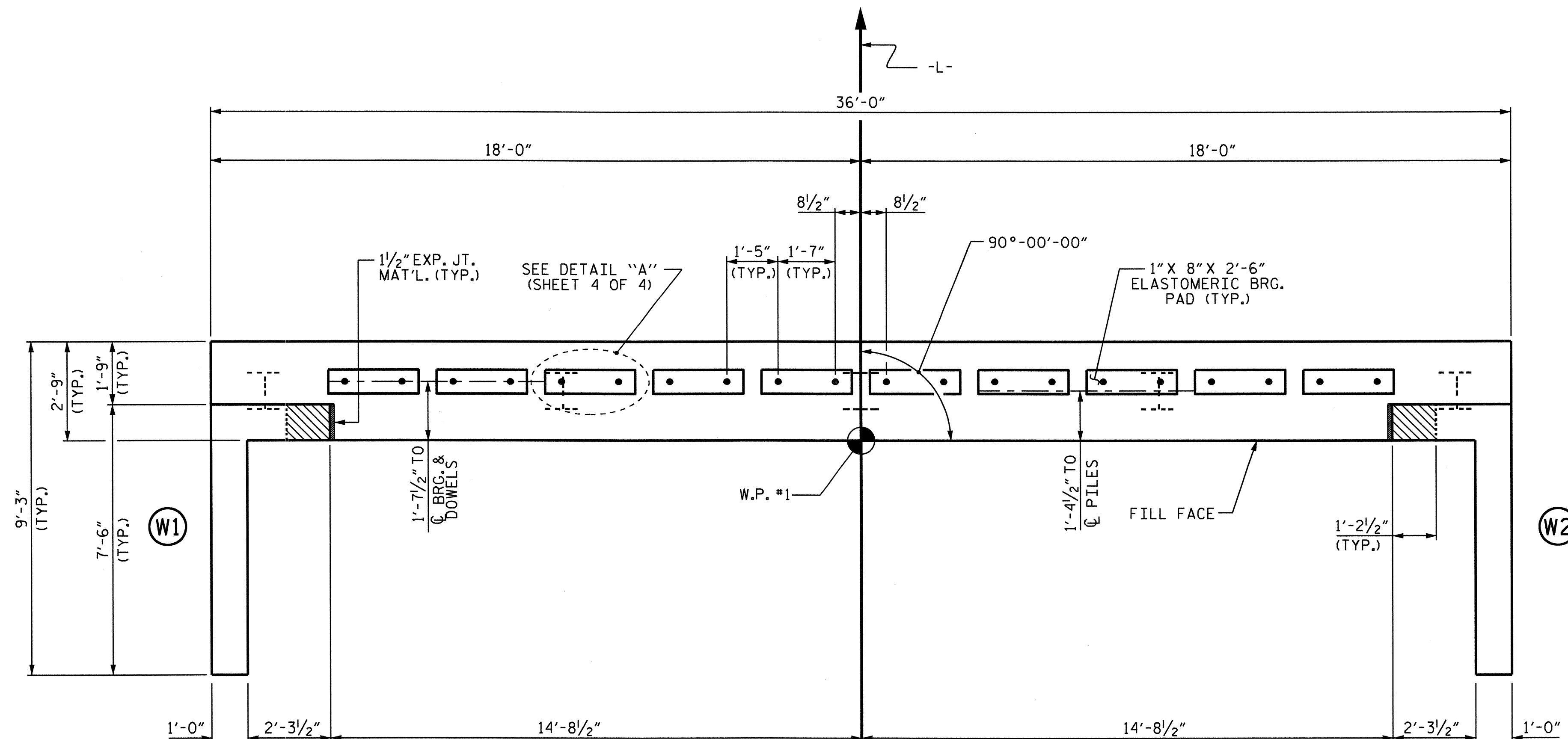
NOTES

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

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.

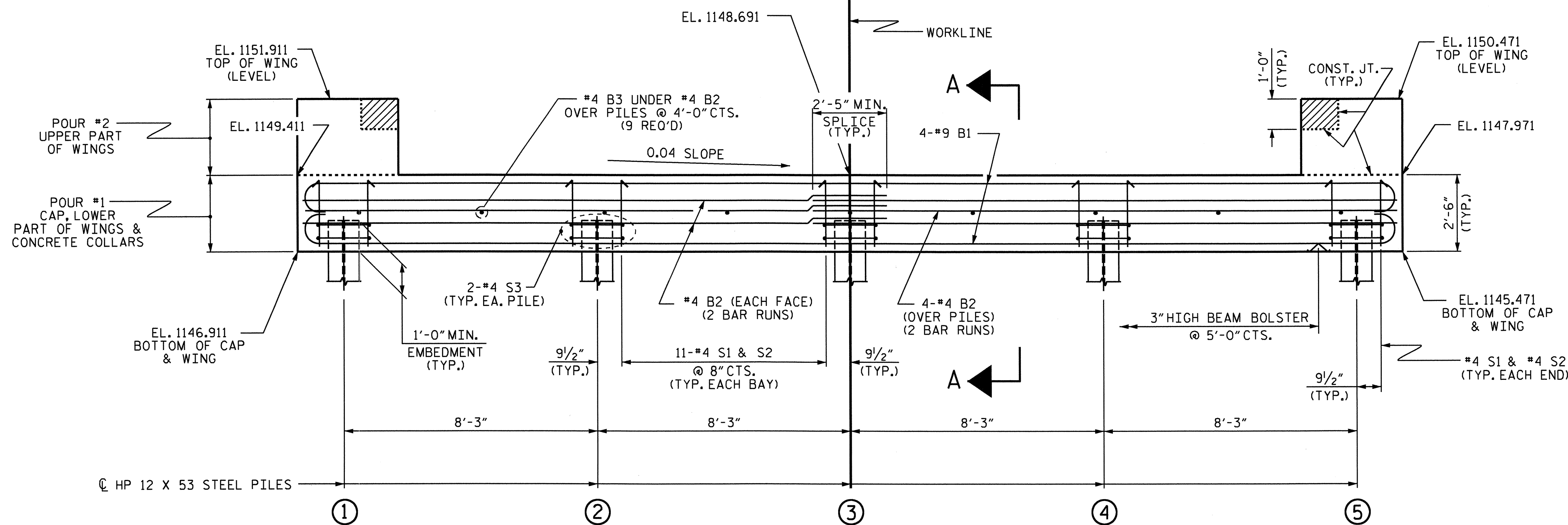
FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN

TOP OF PILE ELEVATIONS	
①	1147.871
②	1147.541
③	1147.211
④	1146.881
⑤	1146.551



ELEVATION

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

PROJECT NO. B-4046
BURKE COUNTY
STATION: 18+89.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-24	
SUBSTRUCTURE END BENT NO. 1						TOTAL SHEETS 31	
REVISIONS							
NO.	BY:	DATE:	NO.	BY:	DATE:		
1			3				
2			4				



ASSEMBLED BY : A.L. FIGUEROA DATE : 2-22-11
CHECKED BY : M.G. CHEEK DATE : 3-02-11
DRAWN BY : DGE 02/10
CHECKED BY : MKT 02/10

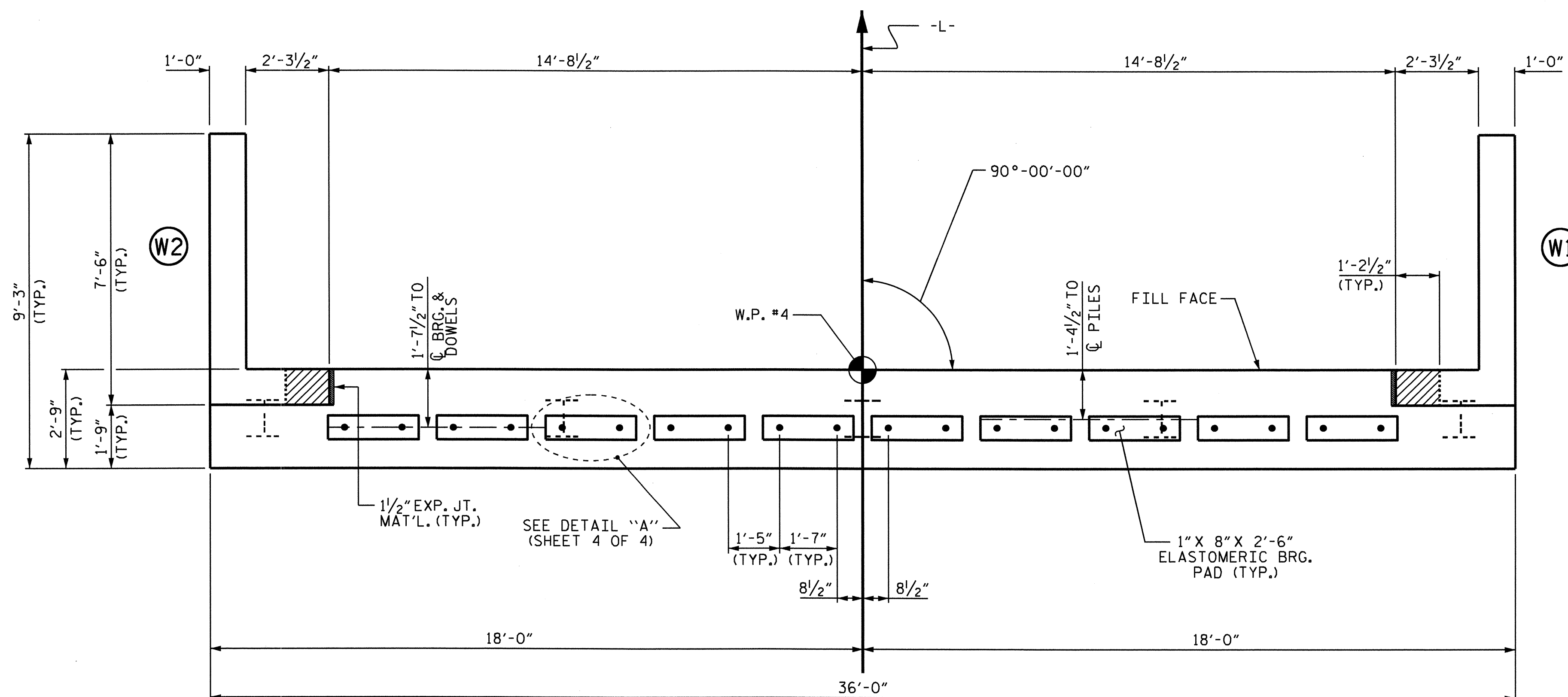
NOTES

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

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.

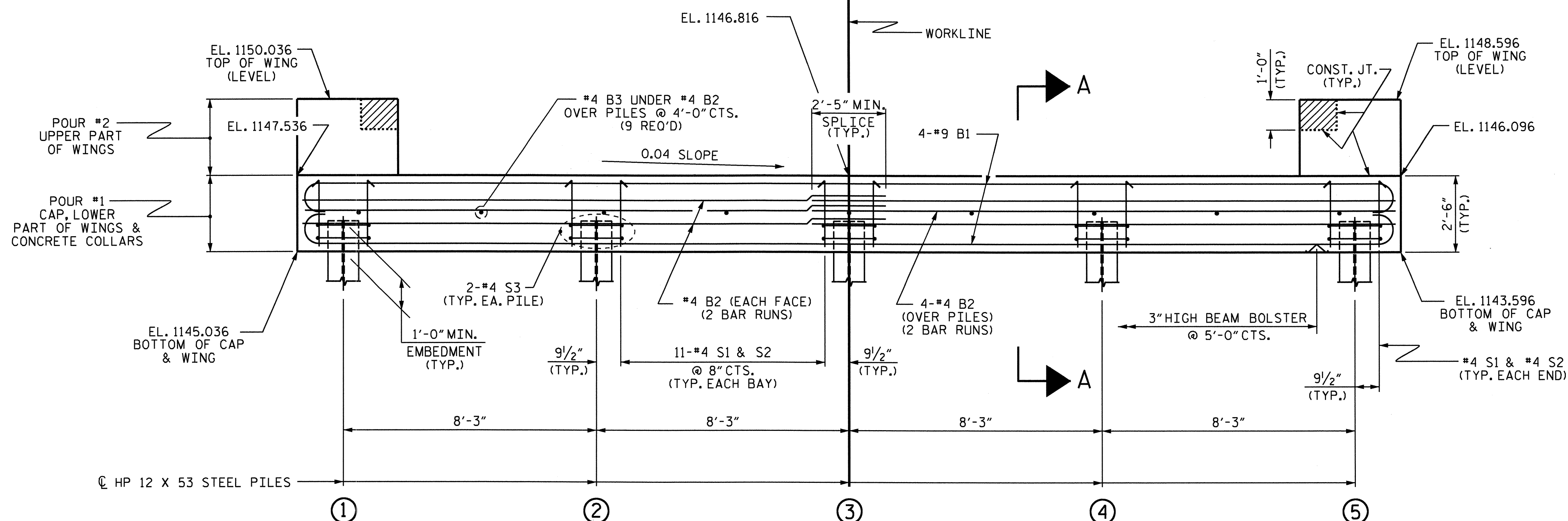
FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN

TOP OF PILE ELEVATIONS	
①	1145.996
②	1145.666
③	1145.336
④	1145.006
⑤	1144.676



ELEVATION

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

PROJECT NO. B-4046
BURKE COUNTY
STATION: 18+89.00 -L-

SHEET 2 OF 4

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

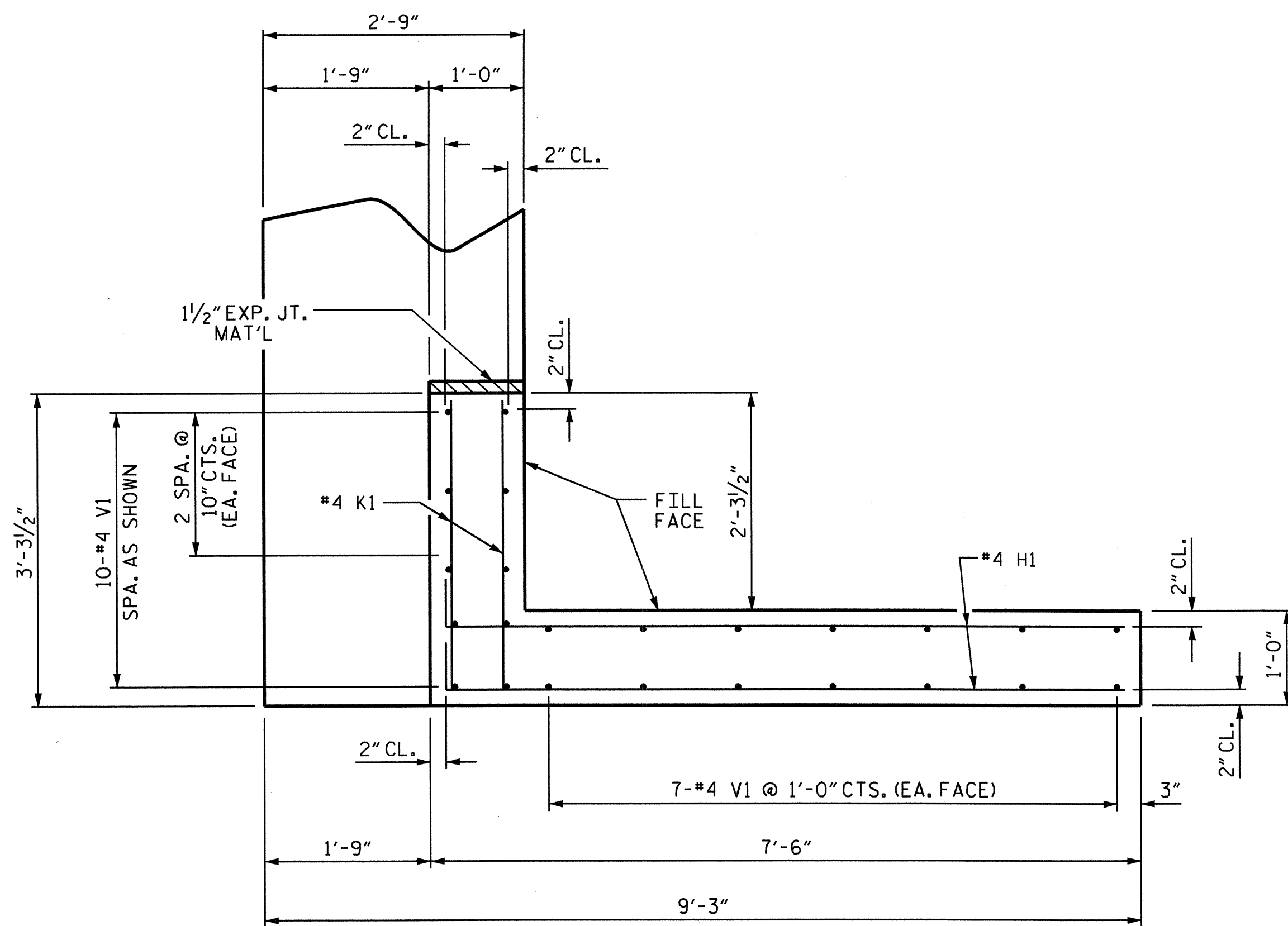


ASSEMBLED BY : A.L. FIGUEROA DATE : 2-22-11
CHECKED BY : M.G. CHEEK DATE : 3-02-11
DRAWN BY : DGE 02/10
CHECKED BY : MKT 02/10

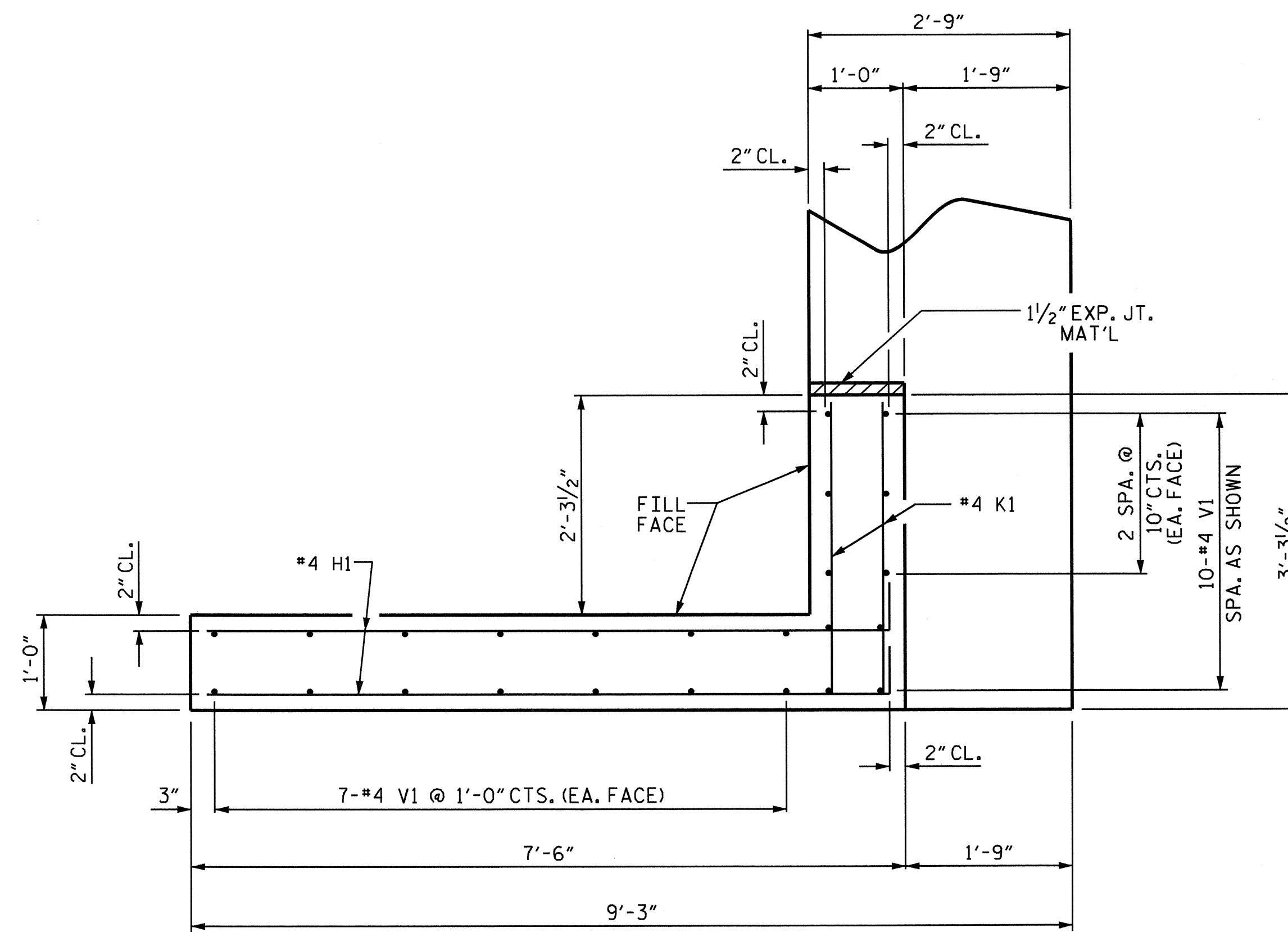
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STR#2

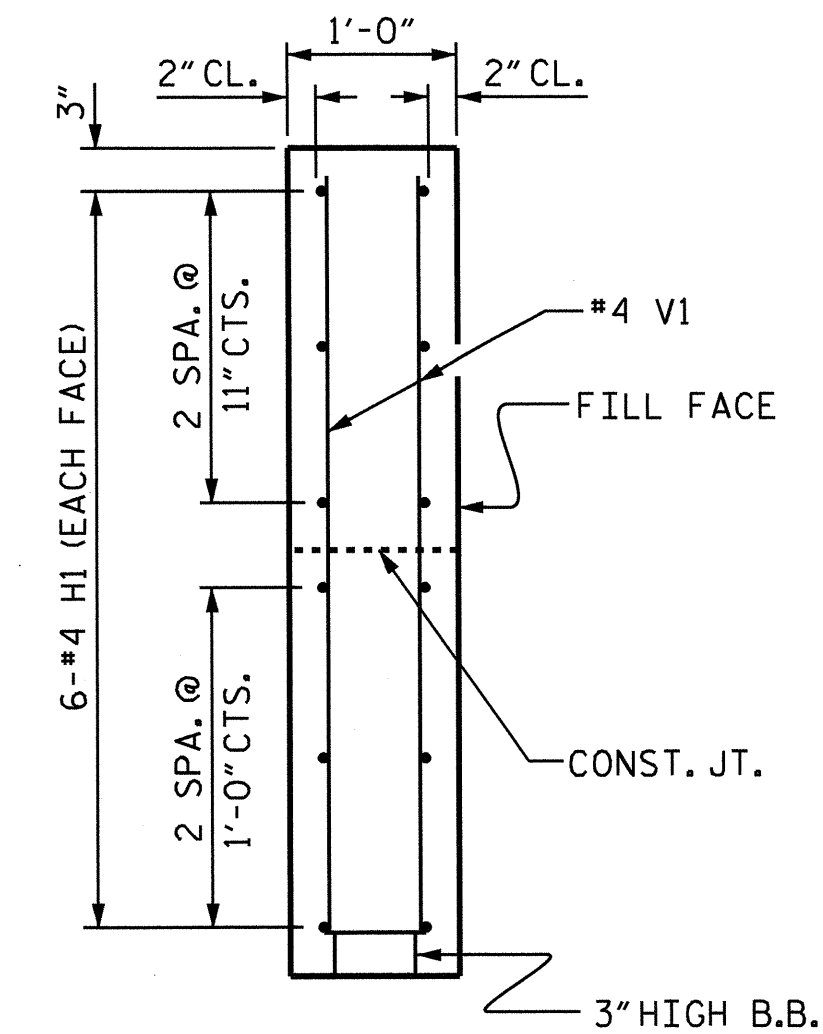
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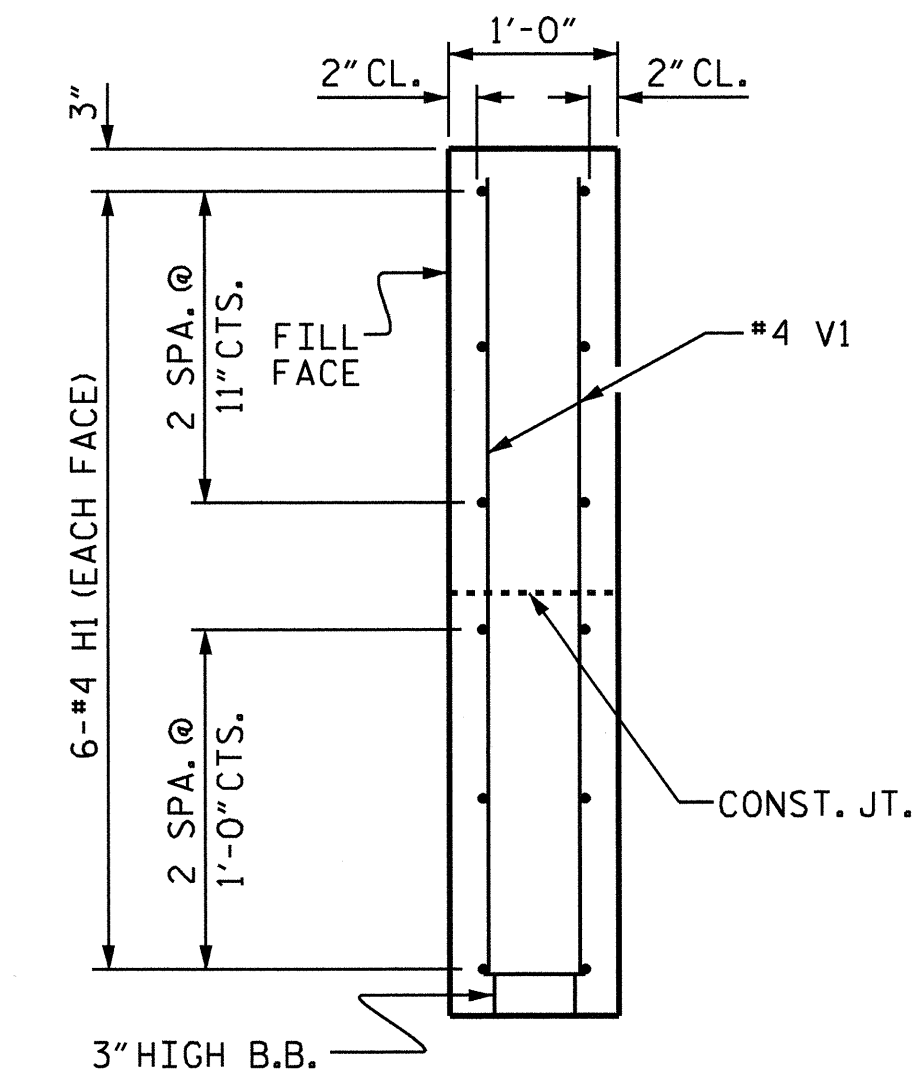
PLAN OF WING (W1)



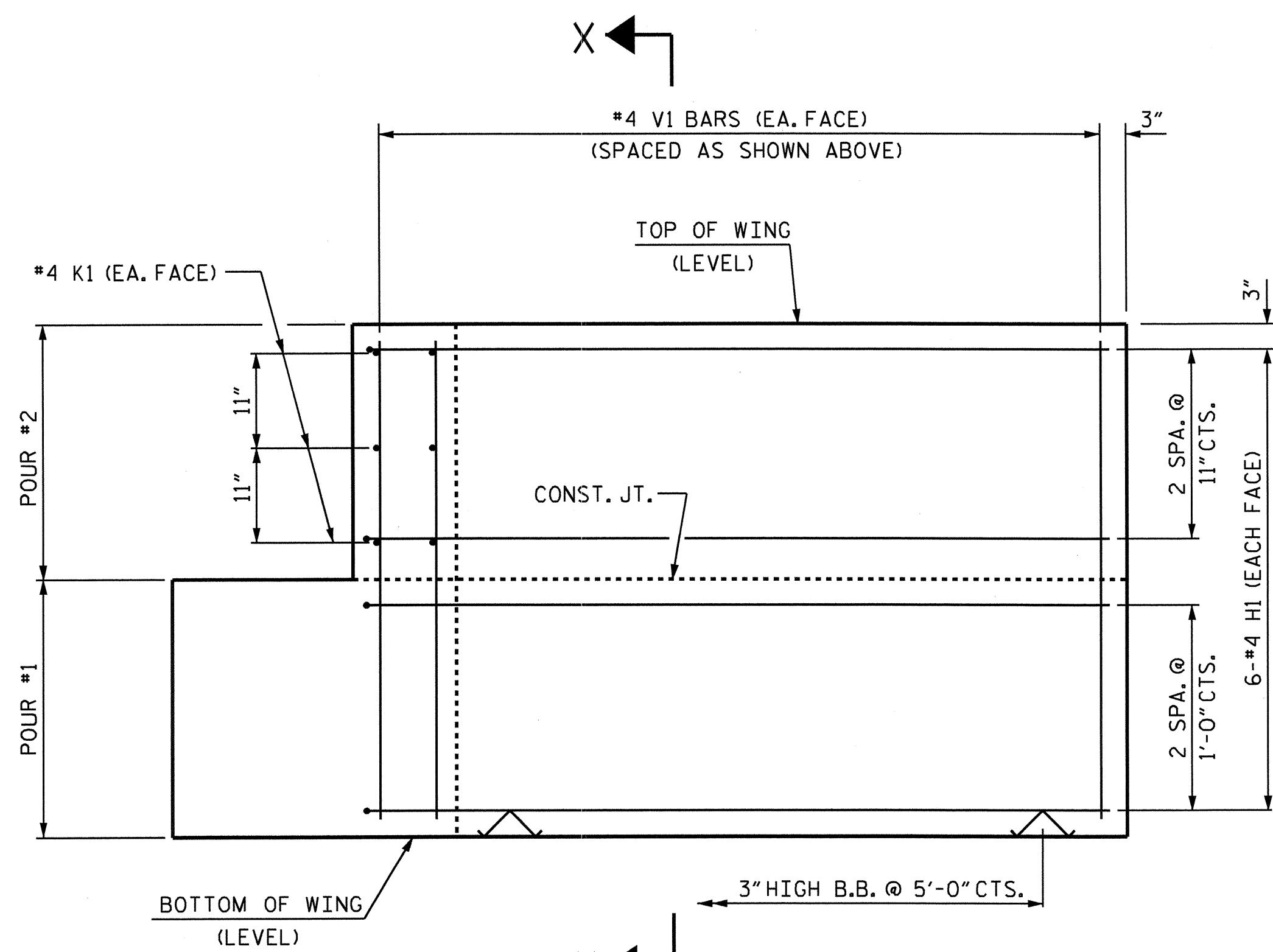
PLAN OF WING (W2)



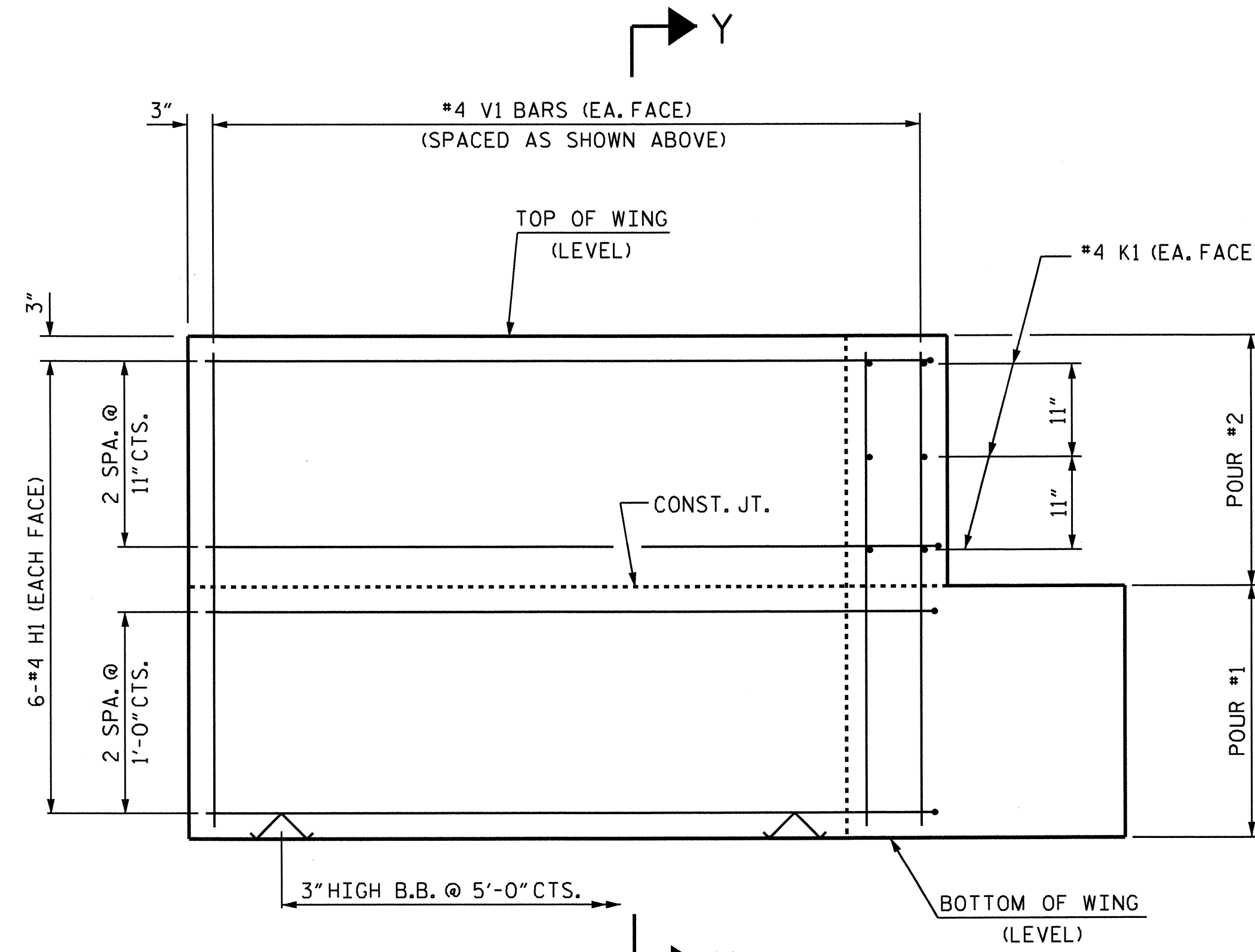
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



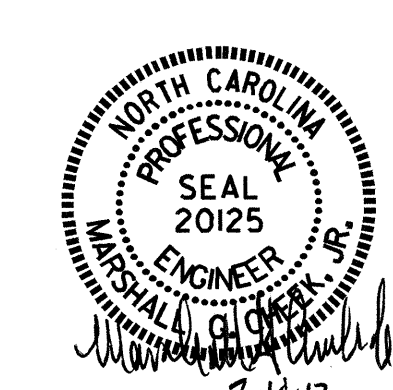
ELEVATION OF WING (W2)

WING DETAILS

PROJECT NO. B-4046
 BURKE COUNTY
 STATION: 18+89.00 -L-

SHEET 3 OF 4

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

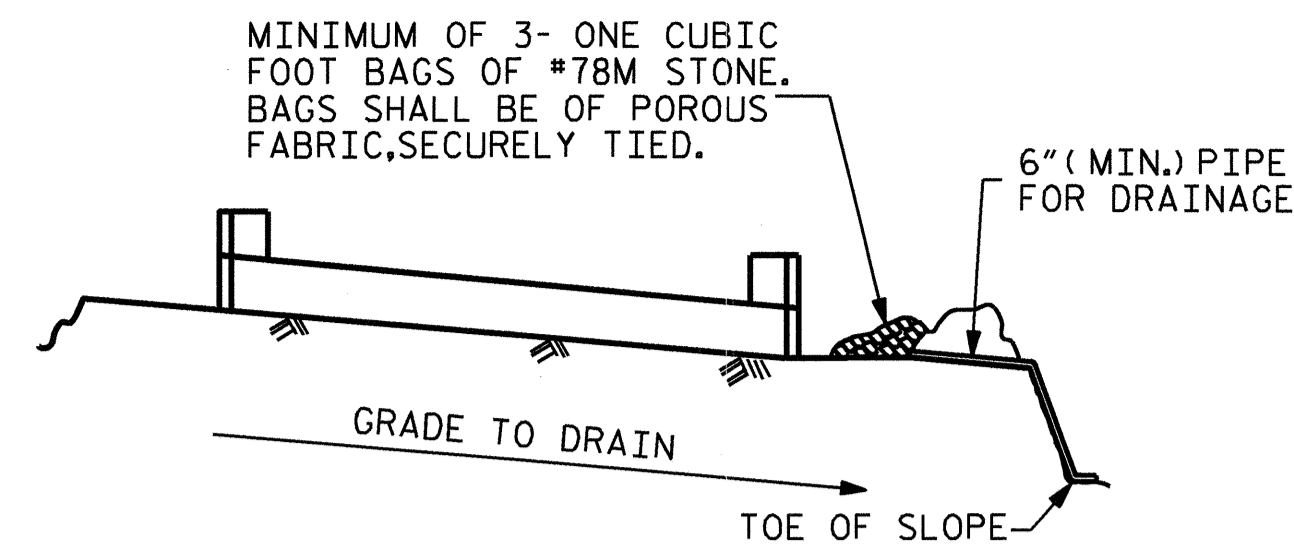


ASSEMBLED BY: A.L. FIGUEROA DATE: 2-22-11
 CHECKED BY: M.G. CHEEK DATE: 3-02-11
 DRAWN BY: DGE 02/10
 CHECKED BY: MKT 02/10

03-JAN-2012 10:47
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 dahodge

STR*2

STD. NO. EB_30_90S

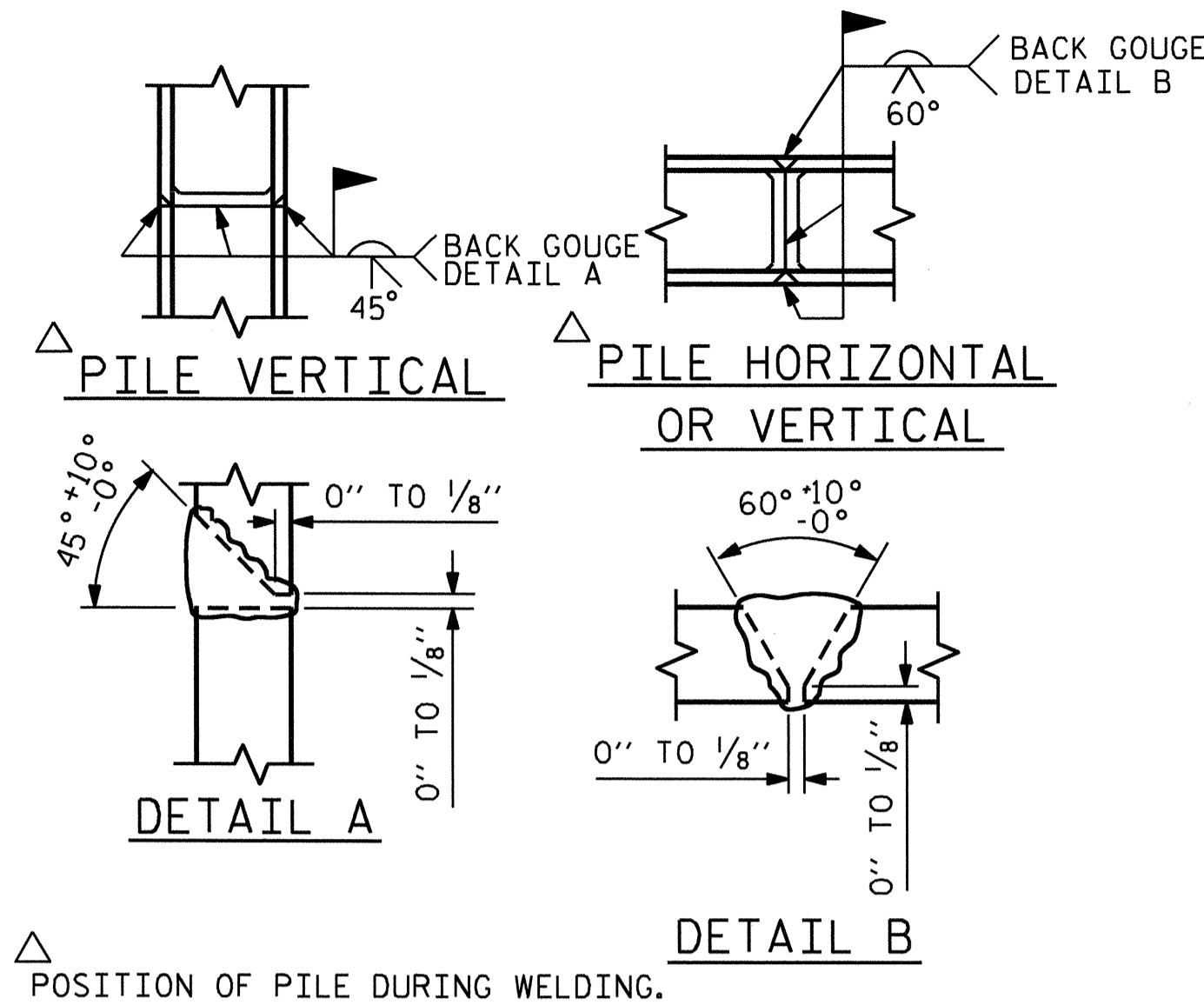


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

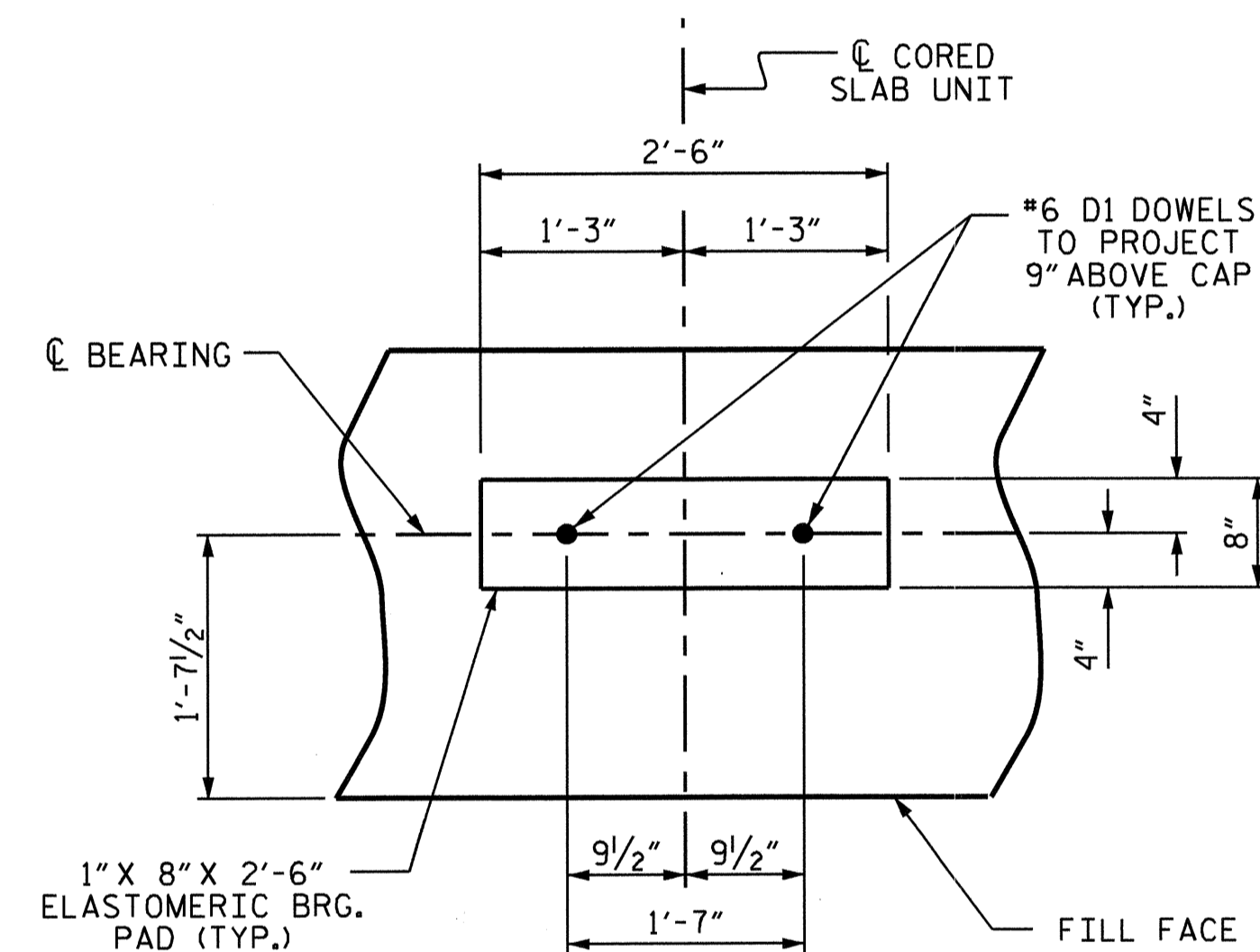
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

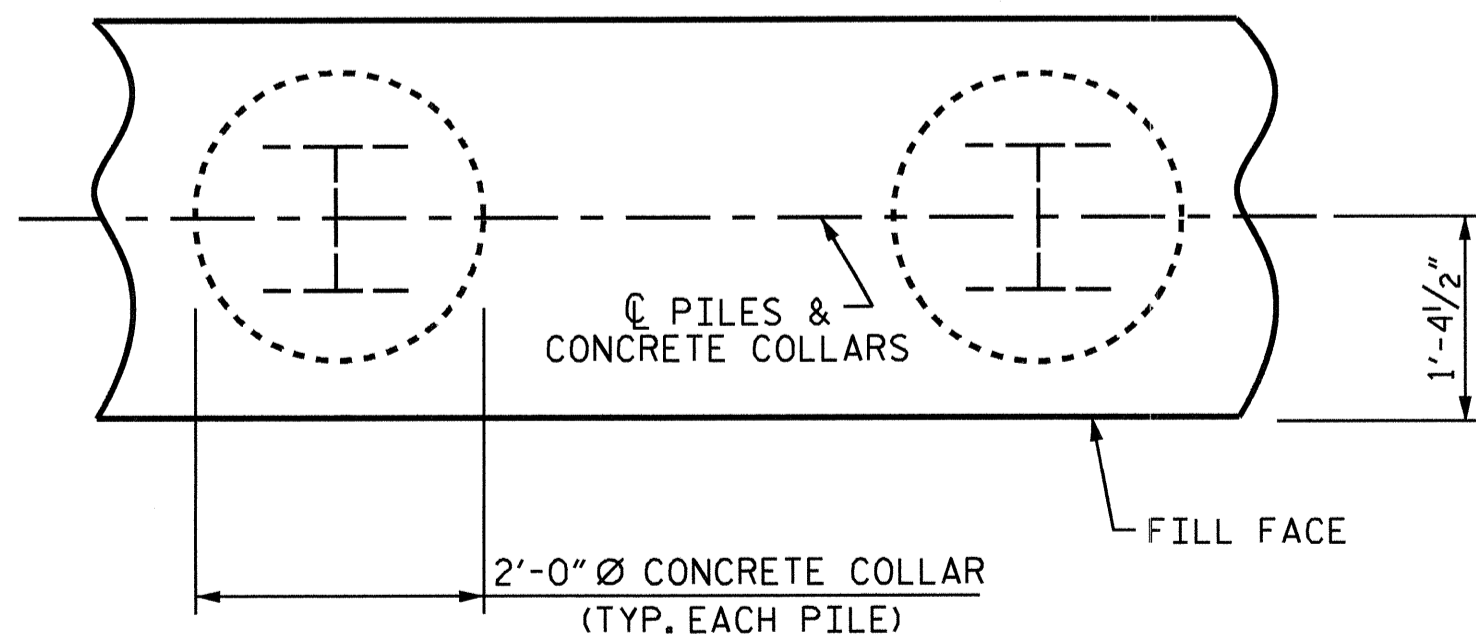
BAR TYPES					BILL OF MATERIAL	
FOR ONE END BENT						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	8	#9	1	38'-0"	1034	
B2	16	#4	STR	19'-1"	204	
B3	9	#4	STR	2'-5"	15	
D1	20	#6	STR	1'-6"	45	
H1	24	#4	2	7'-10"	126	
K1	12	#4	STR	2'-11"	23	
S1	46	#4	3	7'-5"	228	
S2	46	#4	4	3'-2"	97	
S3	10	#4	5	6'-6"	43	
V1	48	#4	STR	4'-8"	150	
REINFORCING STEEL (FOR ONE END BENT)					1965 LBS.	
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)						
POUR #1 CAP, LOWER PART OF WINGS & COLLARS					11.2 C.Y.	
POUR #2 UPPER PART OF WINGS					1.8 C.Y.	
TOTAL CLASS A CONCRETE					13.0 C.Y.	

END BENT NO. 1	END BENT NO. 2
HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES
NO: 5	NO: 5
LIN. FT. = 105	LIN. FT. = 140



DETAIL "A"

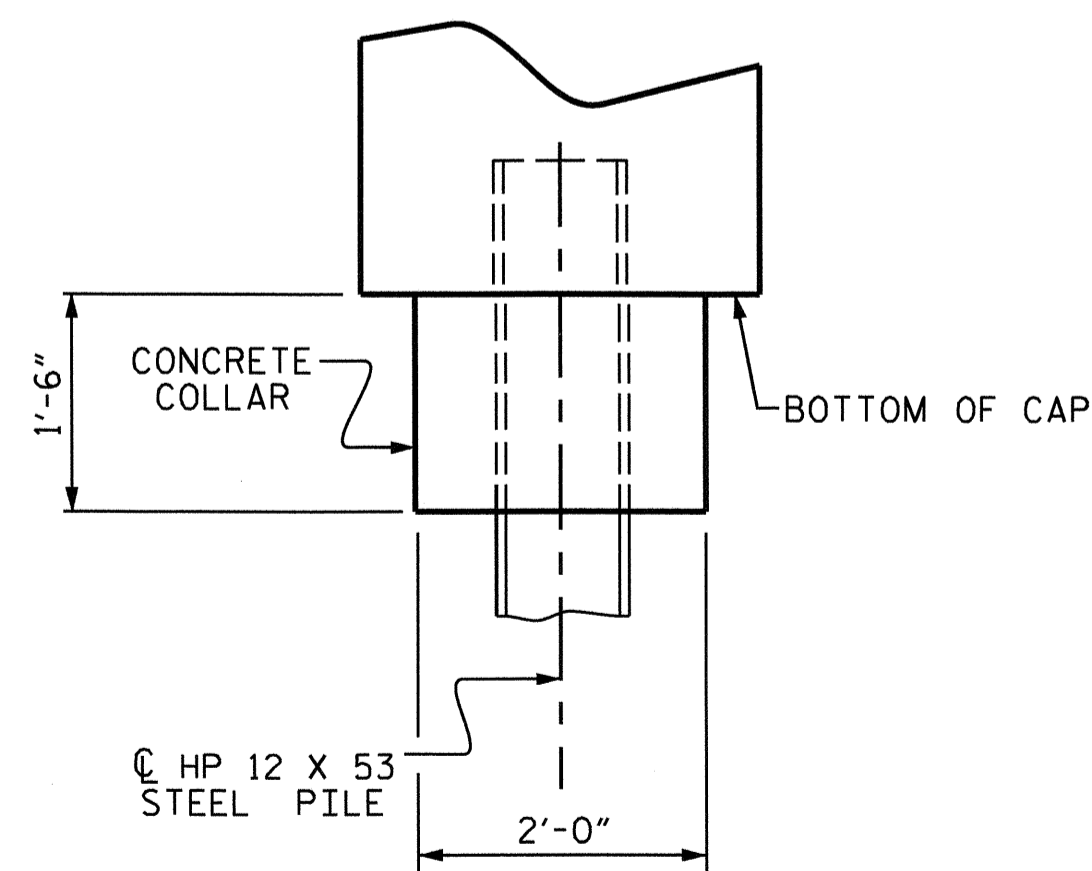
(END BENT NO. 1 SHOWN, END BENT NO. 2 SIMILAR BY ROTATION)



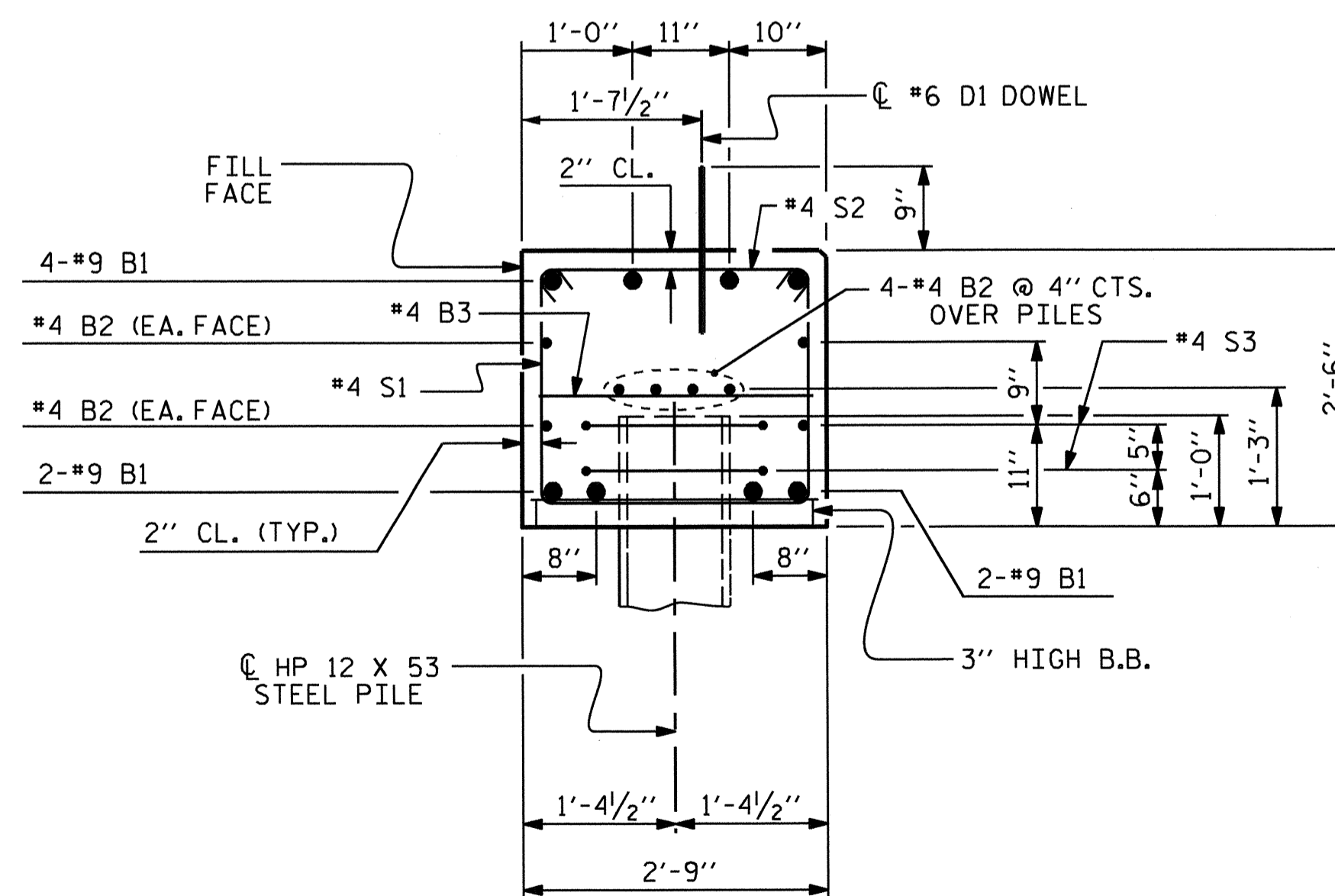
PLAN

CORROSION PROTECTION FOR STEEL PILES DETAIL

(END BENT NO. 1 SHOWN, END BENT NO. 2 SIMILAR BY ROTATION)



ELEVATION



SECTION A-A

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



PROJECT NO. B-4046
 BURKE COUNTY
 STATION: 18+89.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT NO. 1 & 2
 DETAILS

REVISIONS

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

SHEET NO. S-27

TOTAL SHEETS 31

ASSEMBLED BY : A.L. FIGUEROA	DATE : 2-22-11
CHECKED BY : M.G. CHEEK	DATE : 3-02-11
DRAWN BY : DGE	02/10
CHECKED BY : MKT	02/10

NOTES

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

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

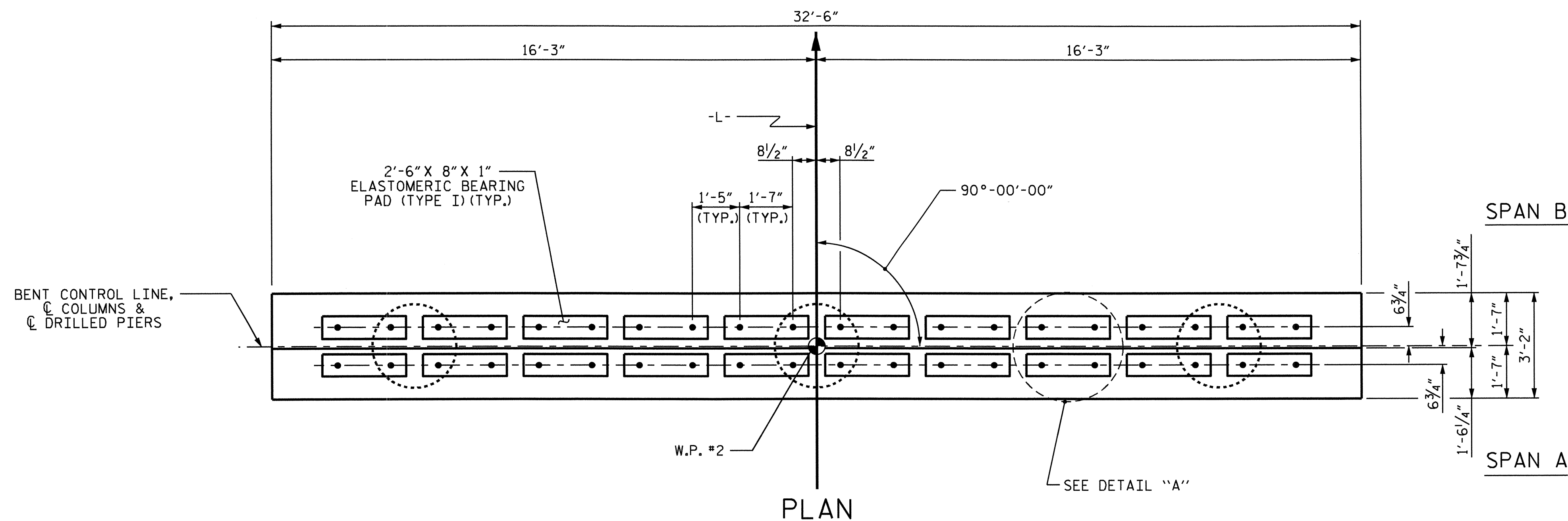
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

★ INVERT ALTERNATE STIRRUPS.

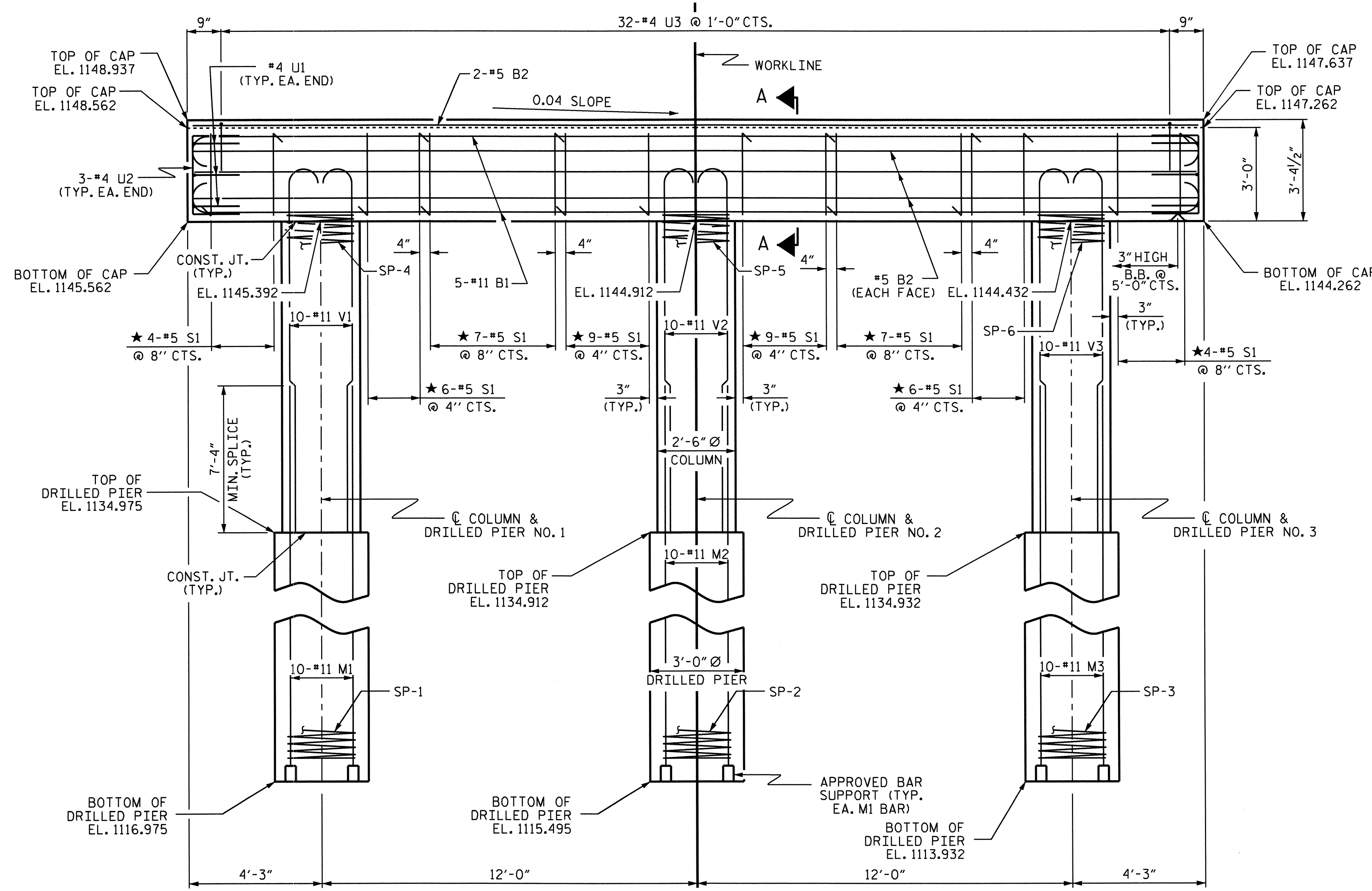
THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT ONE FOOT BELOW THE GROUND LINE.

DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.

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

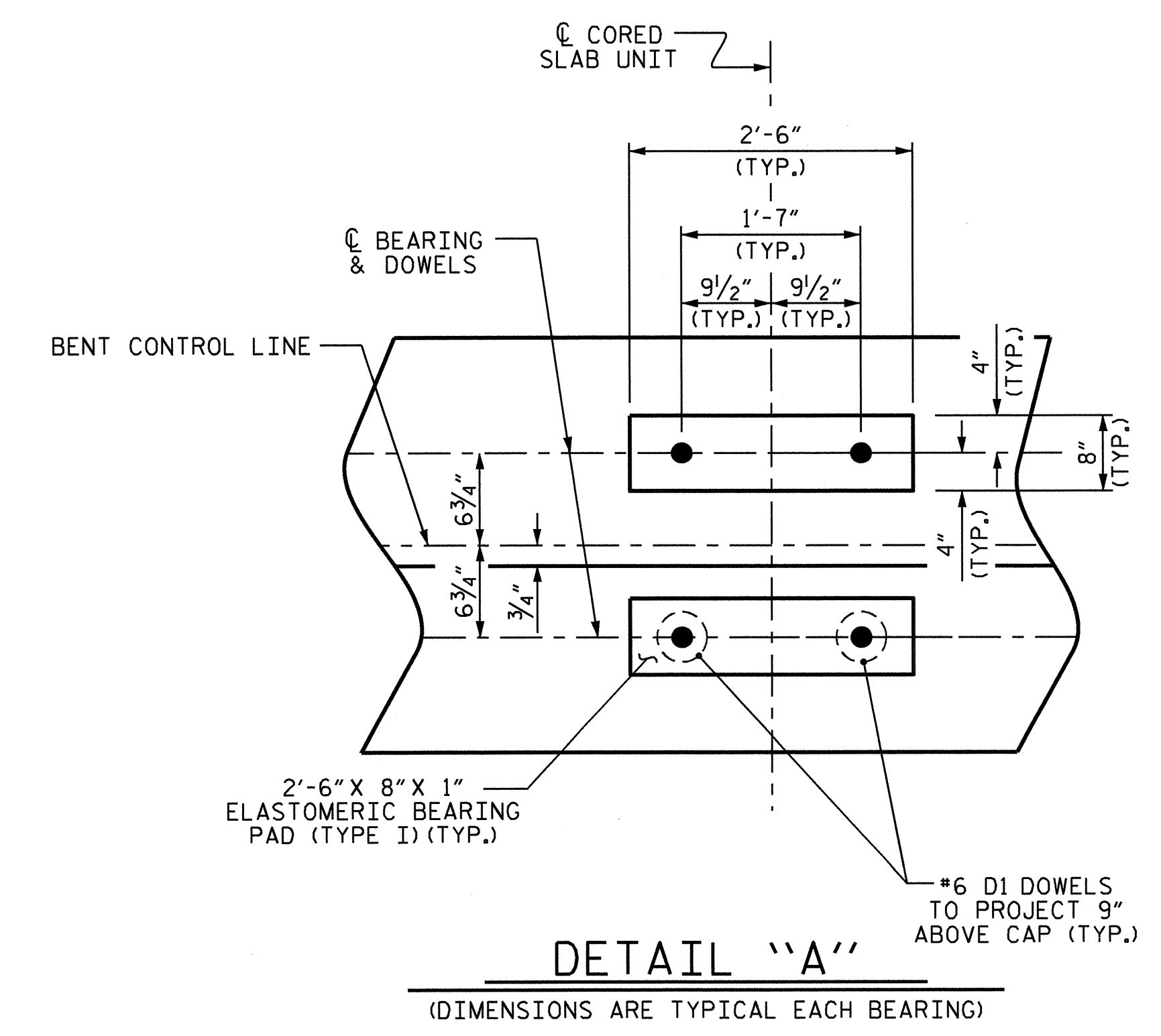


PLAN



ELEVATION

DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.



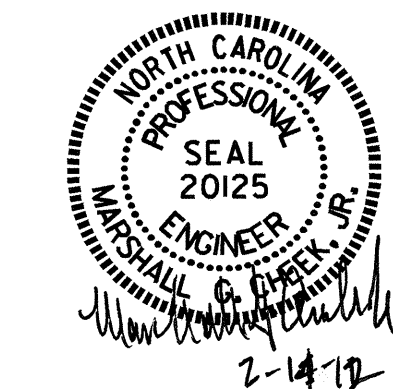
DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)

BRIDGE NO. B-4046
 COUNTY BURKE
 STATION: 18+89.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT NO. 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-28
					TOTAL SHEETS 31



ASSEMBLED BY : A.L. FIGUEROA DATE : 3-02-11
 CHECKED BY : M.G. CHEEK DATE : 3-08-11
 DRAWN BY : DGE 03/10
 CHECKED BY : MKT 03/10

NOTES

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

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

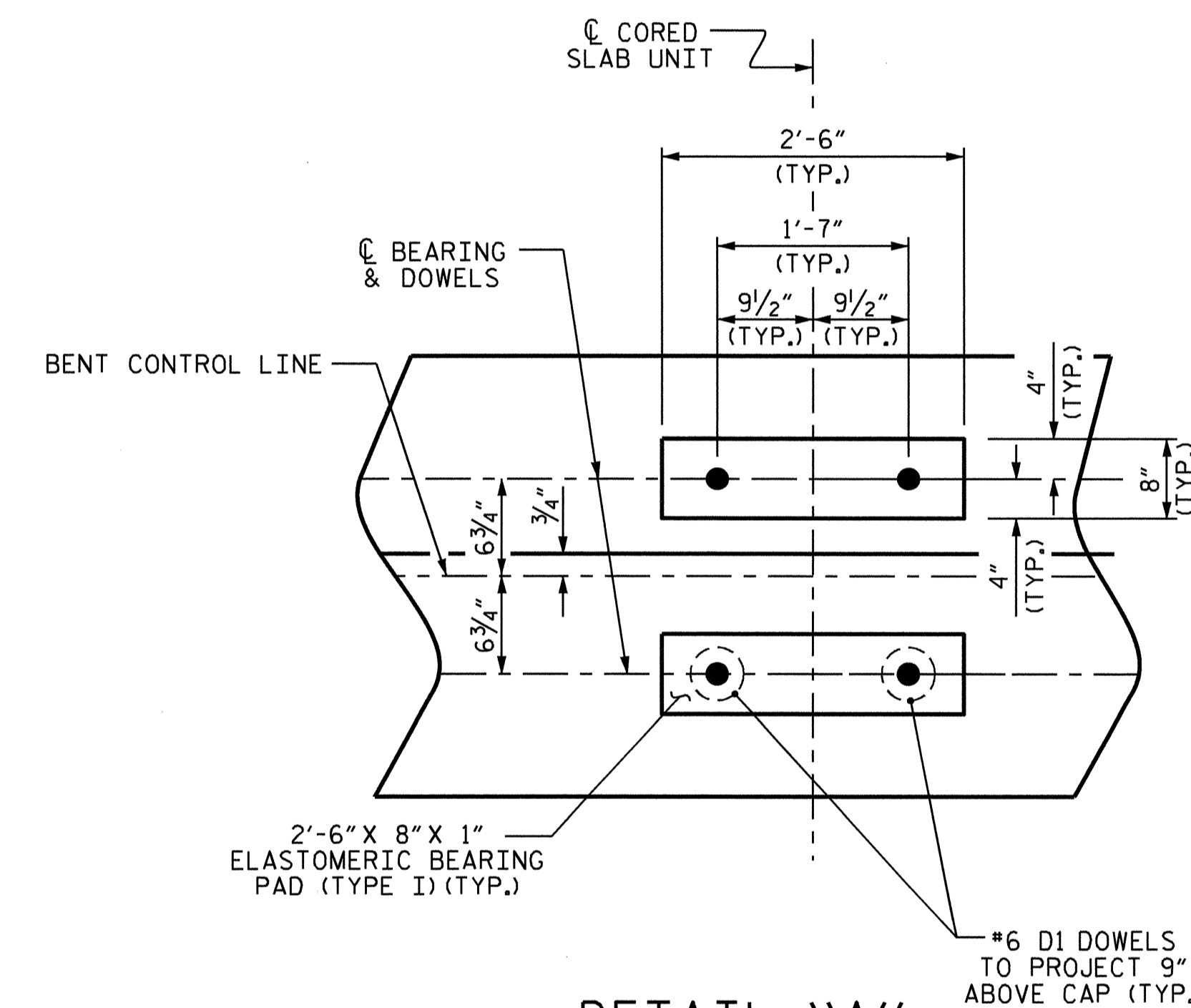
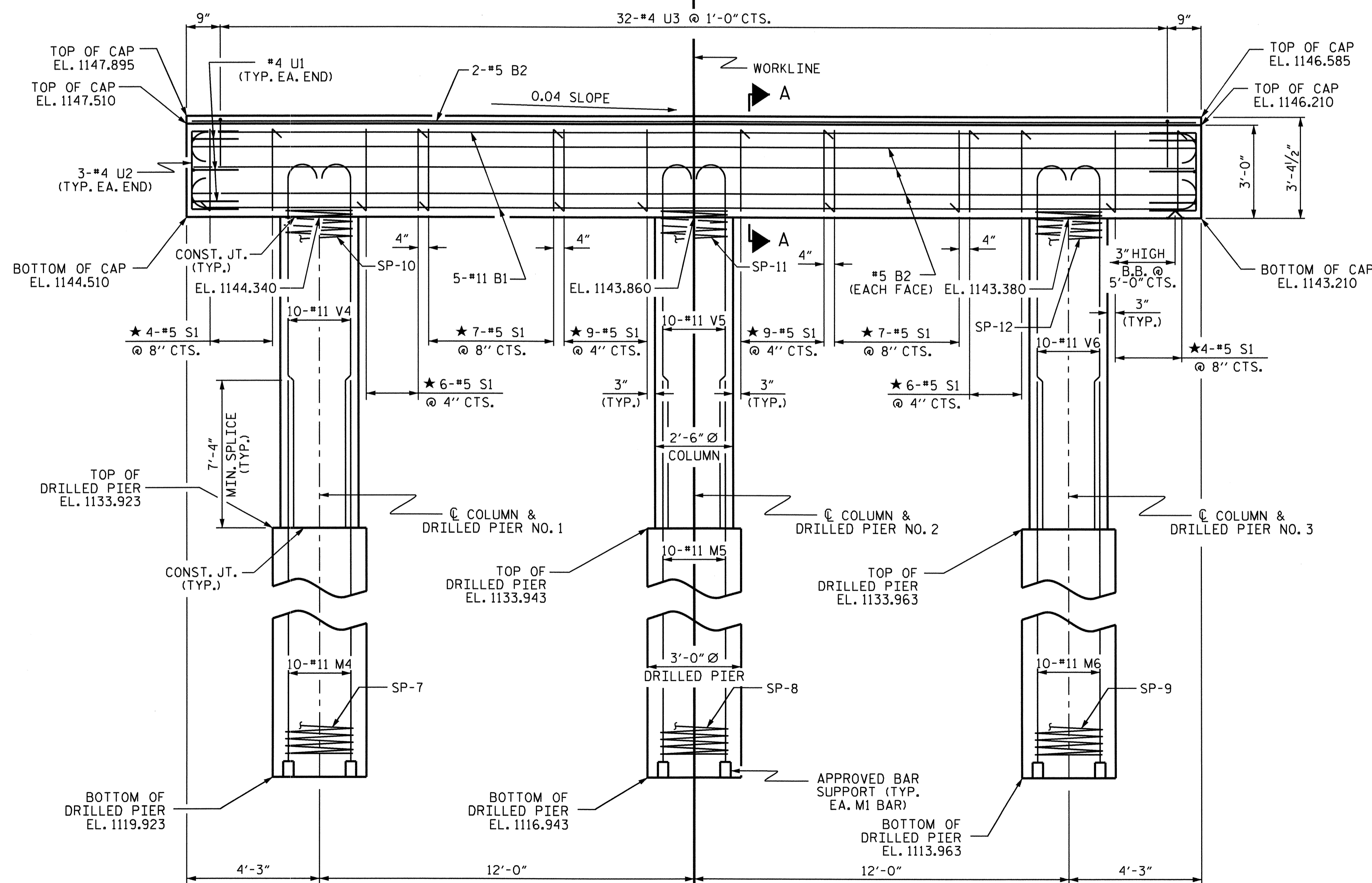
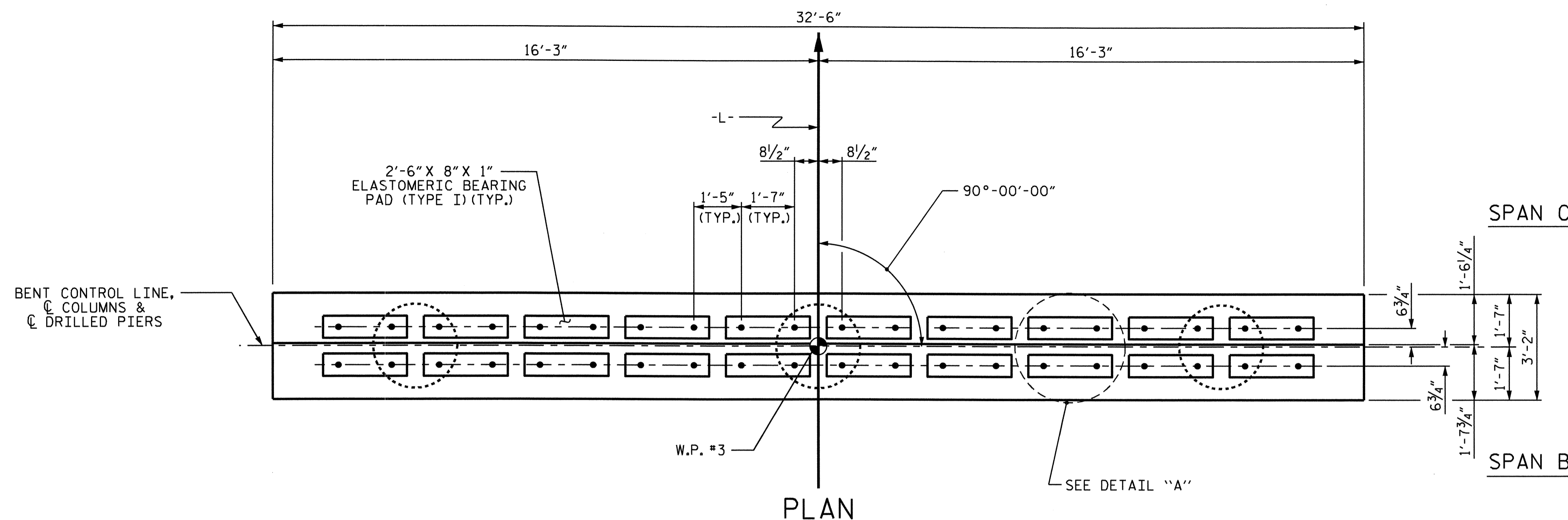
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

★ INVERT ALTERNATE STIRRUPS.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT ONE FOOT BELOW THE GROUND LINE.

DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.

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

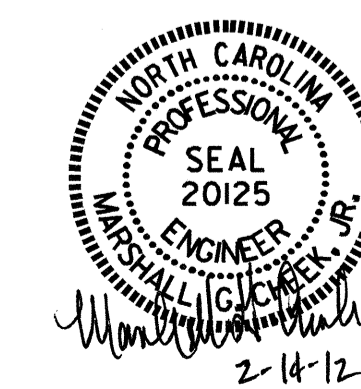


DETAIL "A"
(DIMENSIONS ARE TYPICAL EACH BEARING)

BRIDGE NO. B-4046
BURKE COUNTY
 STATION: 18+89.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**SUBSTRUCTURE
 BENT NO. 2**

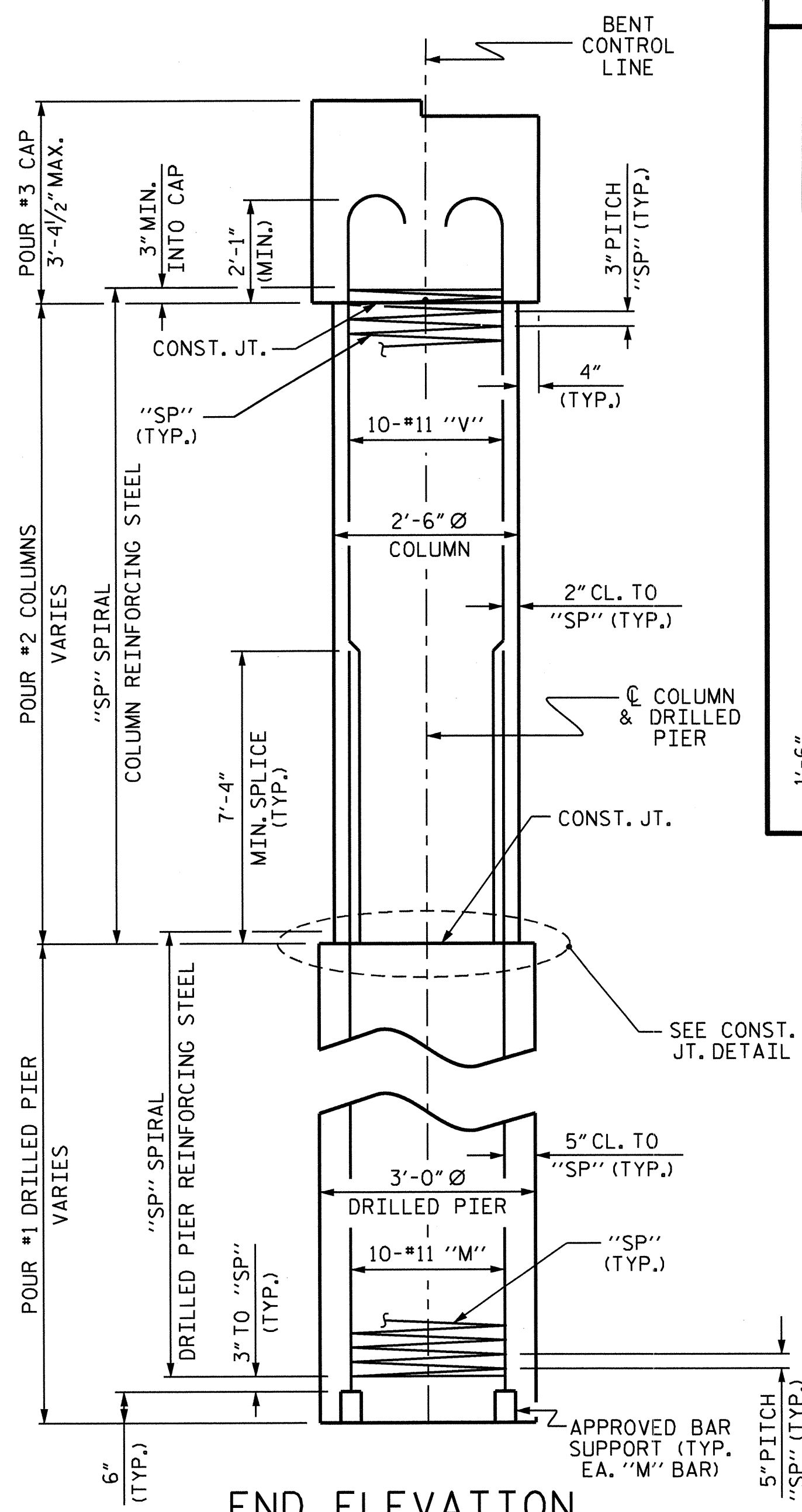


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			31

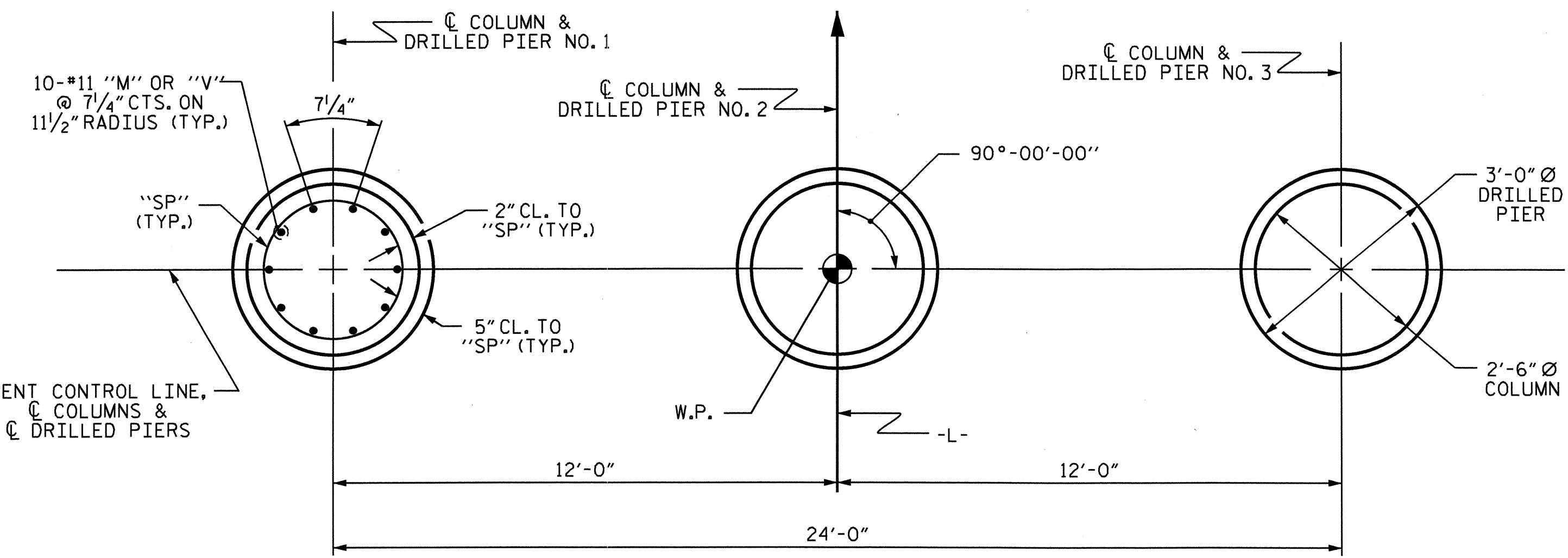
ELEVATION

DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.

ASSEMBLED BY : A.L. FIGUEROA DATE : 3-02-11
 CHECKED BY : M.G. CHEEK DATE : 3-08-11
 DRAWN BY : DGE 03/10
 CHECKED BY : MKT 03/10

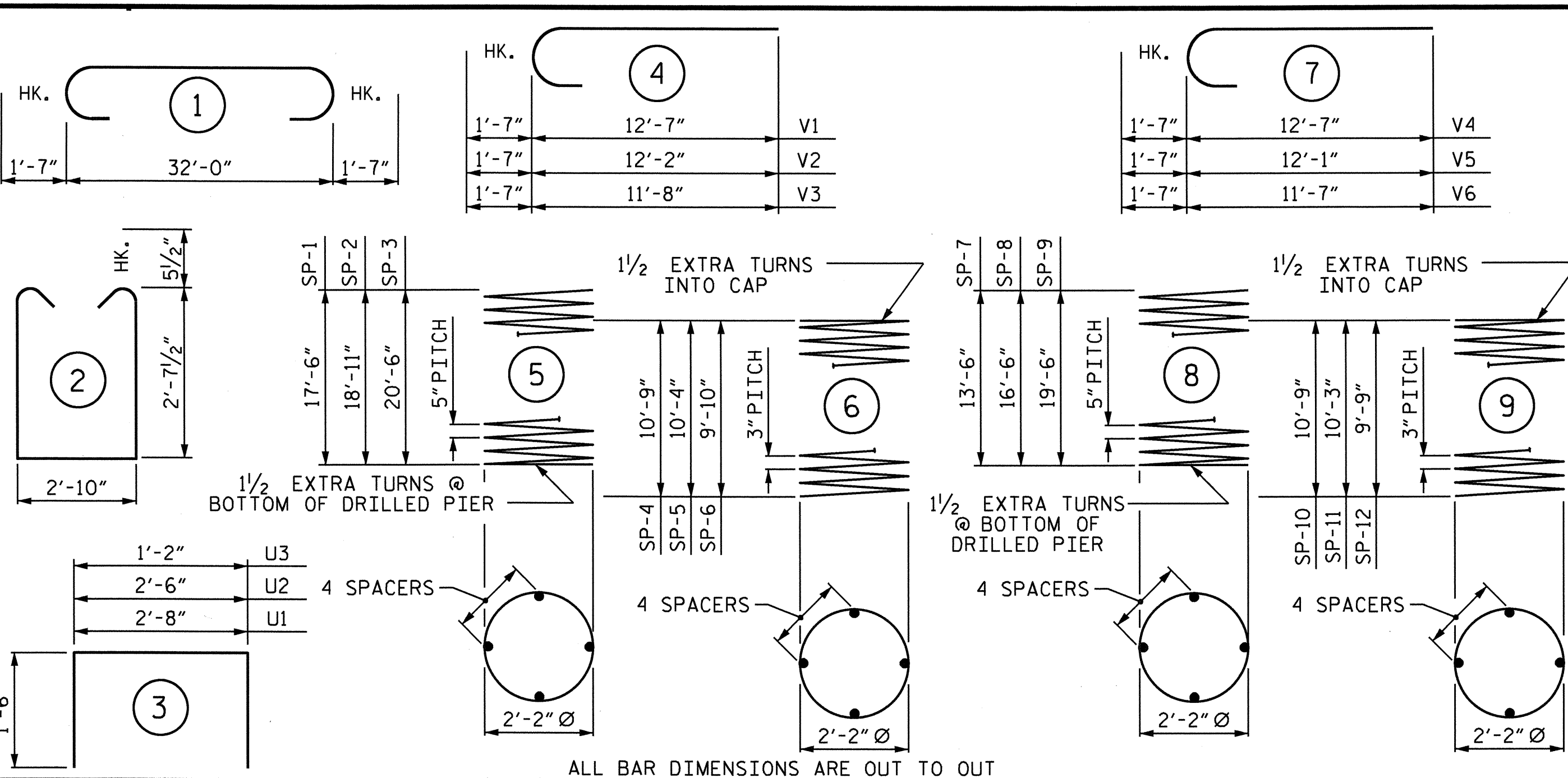


END ELEVATION

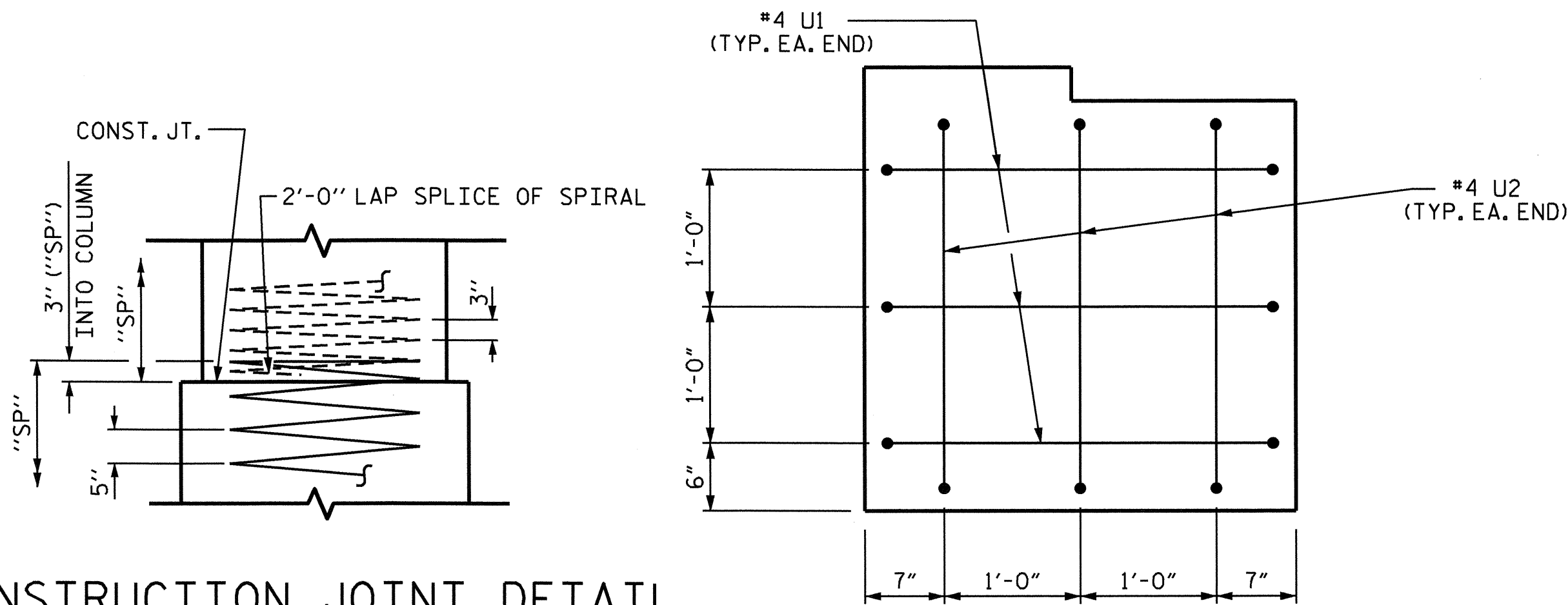


PLAN OF DRILLED PIERS & COLUMNS

BAR TYPES



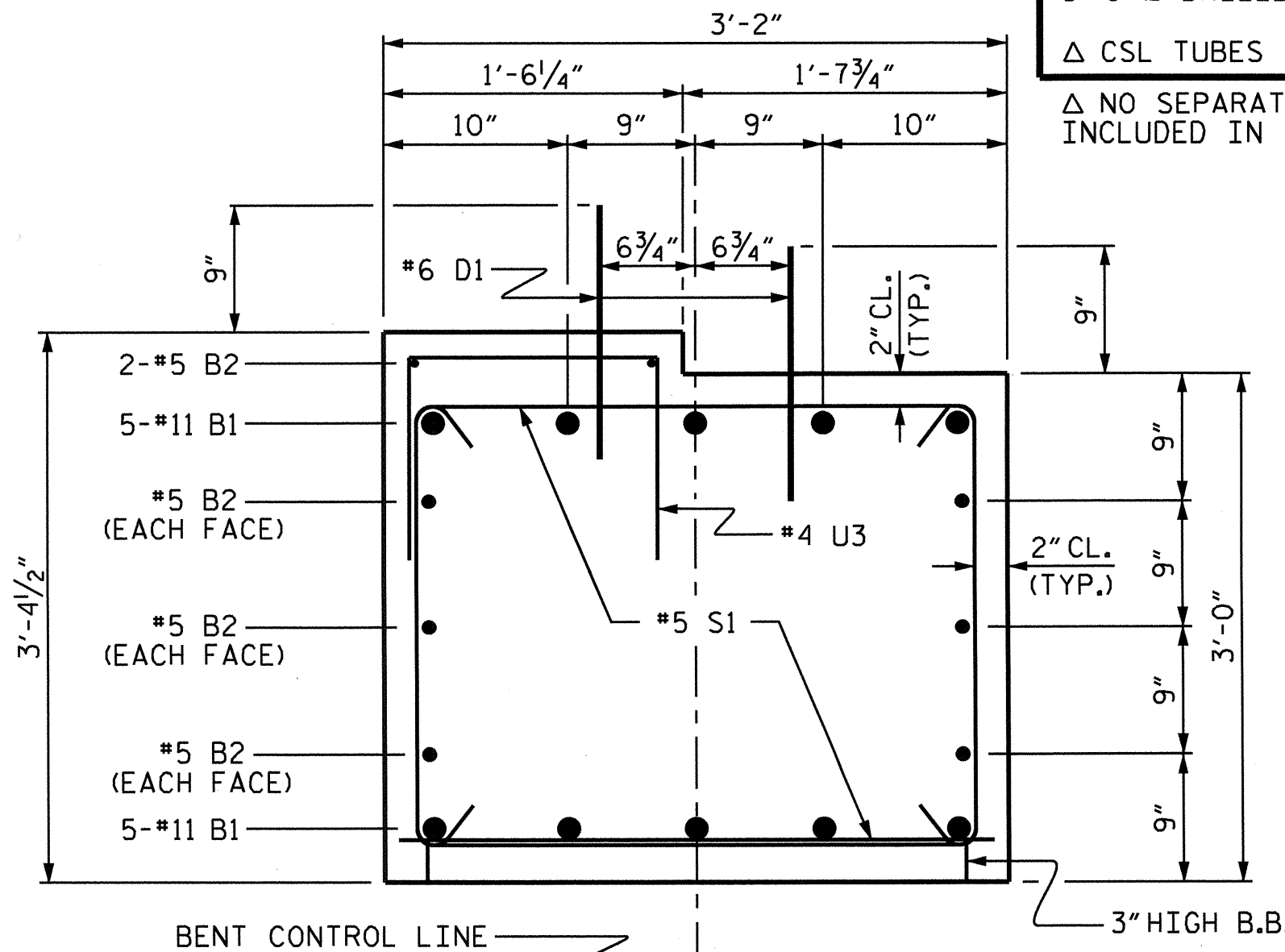
ALL BAR DIMENSIONS ARE OUT TO OUT



CONSTRUCTION JOINT DETAIL

END OF CAP VIEW

(TYPICAL BOTH ENDS)

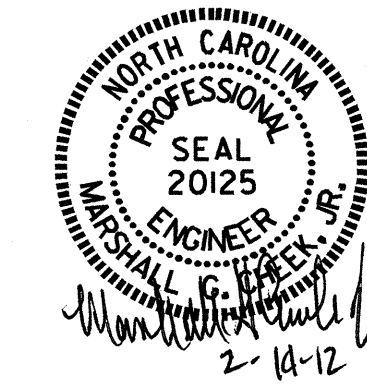


SECTION A-A

BILL OF MATERIAL FOR BENT NO. 1						BILL OF MATERIAL FOR BENT NO. 2					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	10	#11	1	35'-2"	1868	B1	10	#11	1	35'-2"	1868
B2	8	#5	STR	32'-2"	268	B2	8	#5	STR	32'-2"	268
D1	40	#6	STR	1'-6"	90	D1	40	#6	STR	1'-6"	90
M1	10	#11	STR	28'-1"	1492	M4	10	#11	STR	24'-1"	1280
M2	10	#11	STR	29'-6"	1567	M5	10	#11	STR	27'-1"	1439
M3	10	#11	STR	31'-1"	1651	M6	10	#11	STR	30'-1"	1598
S1	52	#5	2	9'-0"	488	S1	52	#5	2	9'-0"	488
U1	6	#4	3	5'-8"	23	U1	6	#4	3	5'-8"	23
U2	6	#4	3	5'-6"	22	U2	6	#4	3	5'-6"	22
U3	32	#4	3	4'-2"	89	U3	32	#4	3	4'-2"	89
V1	10	#11	4	14'-2"	753	V4	10	#11	7	14'-2"	753
V2	10	#11	4	13'-9"	731	V5	10	#11	7	13'-8"	726
V3	10	#11	4	13'-3"	704	V6	10	#11	7	13'-2"	700
REINFORCING STEEL 9,746 LBS.						REINFORCING STEEL 9,344 LBS.					
SP-1	1	*	5	289'-7"	302	SP-7	1	*	8	226'-4"	236
SP-2	1	*	5	312'-11"	326	SP-8	1	*	8	274'-7"	286
SP-3	1	*	5	337'-10"	352	SP-9	1	*	8	322'-10"	337
SP-4	1	**	6	297'-4"	199	SP-10	1	**	9	297'-4"	199
SP-5	1	**	6	285'-8"	191	SP-11	1	**	9	284'-0"	190
SP-6	1	**	6	272'-3"	182	SP-12	1	**	9	270'-7"	181
SPIRAL COLUMN REINFORCING STEEL 1,552 LBS.						SPIRAL COLUMN REINFORCING STEEL 1,429 LBS.					
* THE SP-1 TO SP-3 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR						* THE SP-7 TO SP-9 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR					
** THE SP-4 TO SP-6 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR						** THE SP-10 TO SP-12 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR					
CLASS A CONCRETE BREAKDOWN						CLASS A CONCRETE BREAKDOWN					
POUR #2 (COLUMNS) 5.4 C.Y.						POUR #2 (COLUMNS) 5.4 C.Y.					
POUR #3 (CAP) 12.1 C.Y.						POUR #3 (CAP) 12.1 C.Y.					
TOTAL CLASS A CONCRETE 17.5 C.Y.						TOTAL CLASS A CONCRETE 17.5 C.Y.					
DRILLED PIERS:						DRILLED PIERS:					
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS) 15.3 C.Y.						DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS) 13.4 C.Y.					
3'-0" DRILLED PIERS NOT IN SOIL 23.00 LIN. FT.						3'-0" DRILLED PIERS NOT IN SOIL 22.00 LIN. FT.					
3'-0" DRILLED PIERS IN SOIL 35.42 LIN. FT.						3'-0" DRILLED PIERS IN SOIL 29.00 LIN. FT.					
PERMANENT STEEL CASING FOR 3'-0" DRILLED PIERS 8.82 LIN. FT.						PERMANENT STEEL CASING FOR 3'-0" DRILLED PIERS 13.33 LIN. FT.					
Δ CSL TUBES 263.67 LIN. FT.						Δ CSL TUBES 234.00 LIN. FT.					
Δ NO SEPARATE PAYMENT WILL BE MADE FOR CSL TUBES. CSL TUBES WILL BE INCLUDED IN THE UNIT BID PRICE FOR DRILLED PIERS.											

BRIDGE NO. B-4046
 COUNTY BURKE
 STATION: 18+89.00 -L-

SHEET 3 OF 3
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT No. 1 & 2



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

ASSEMBLED BY: A.L. FIGUEROA DATE: 3-02-11
 CHECKED BY: M.G. CHEEK DATE: 3-08-11
 DRAWN BY: DGE 03/10
 CHECKED BY: MKT 03/10

NOTES

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

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

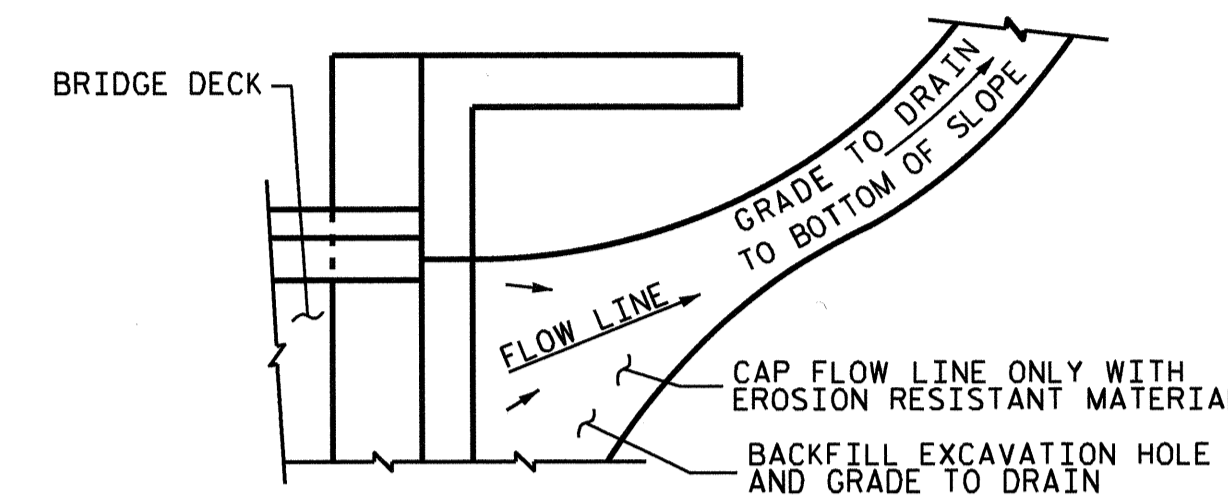
#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

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

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

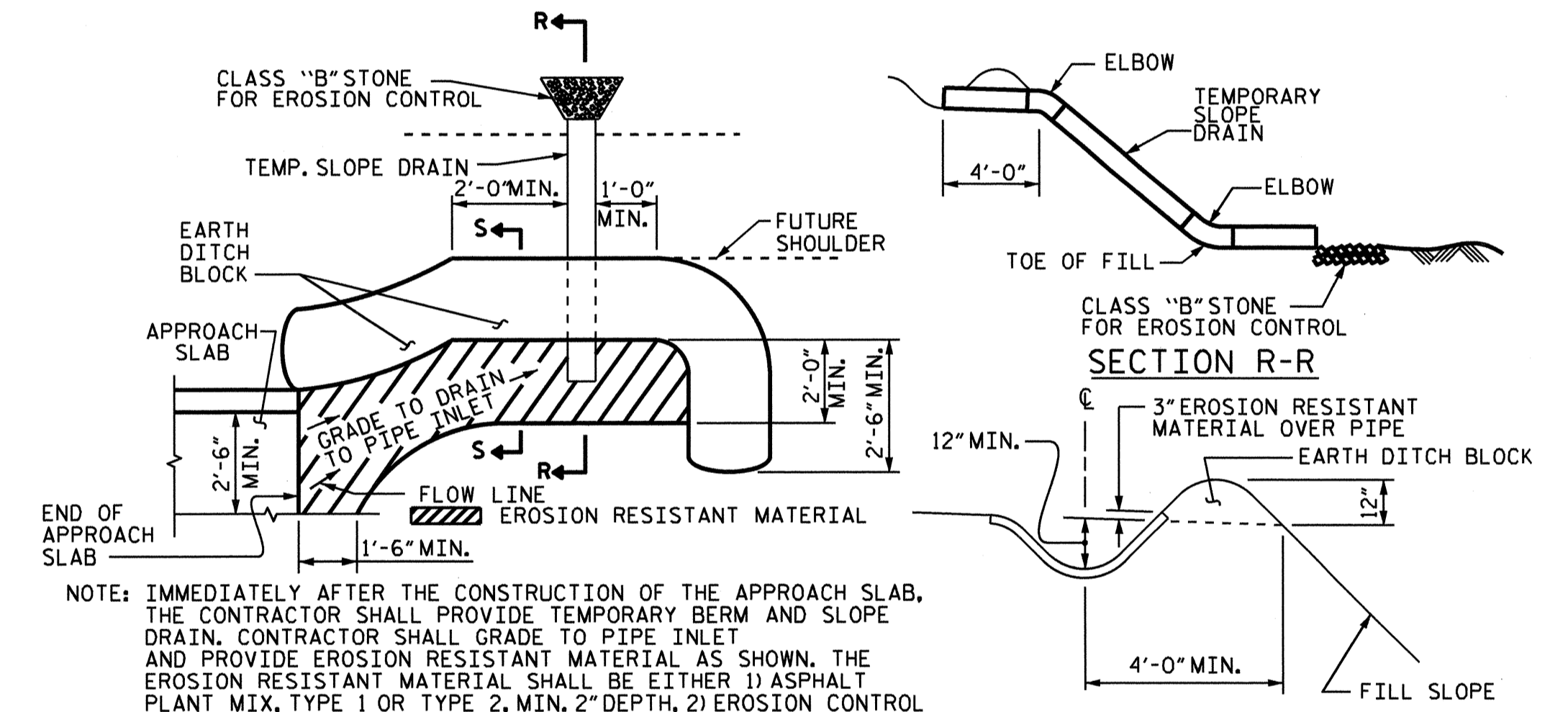
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



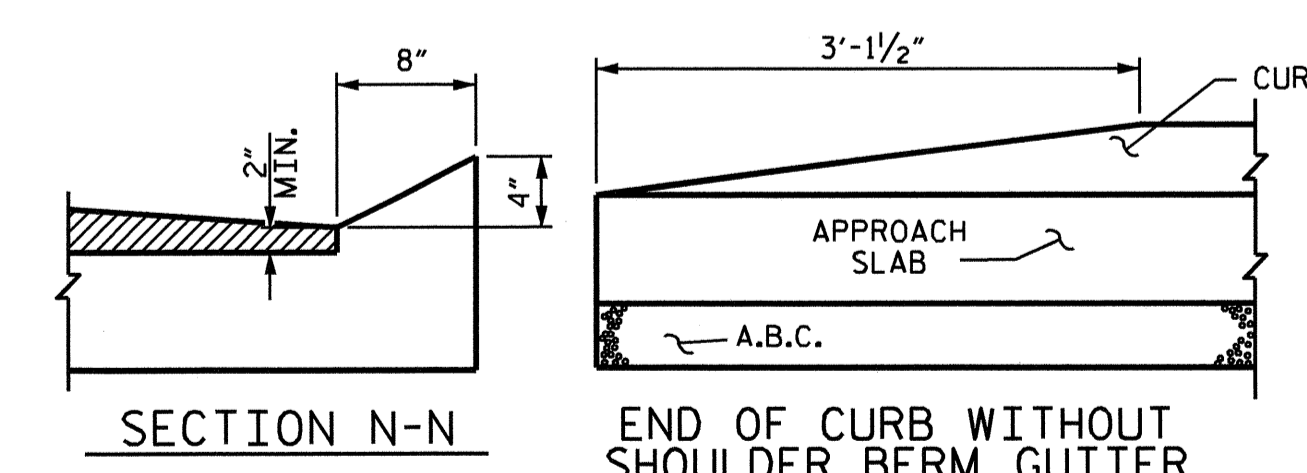
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL



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

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

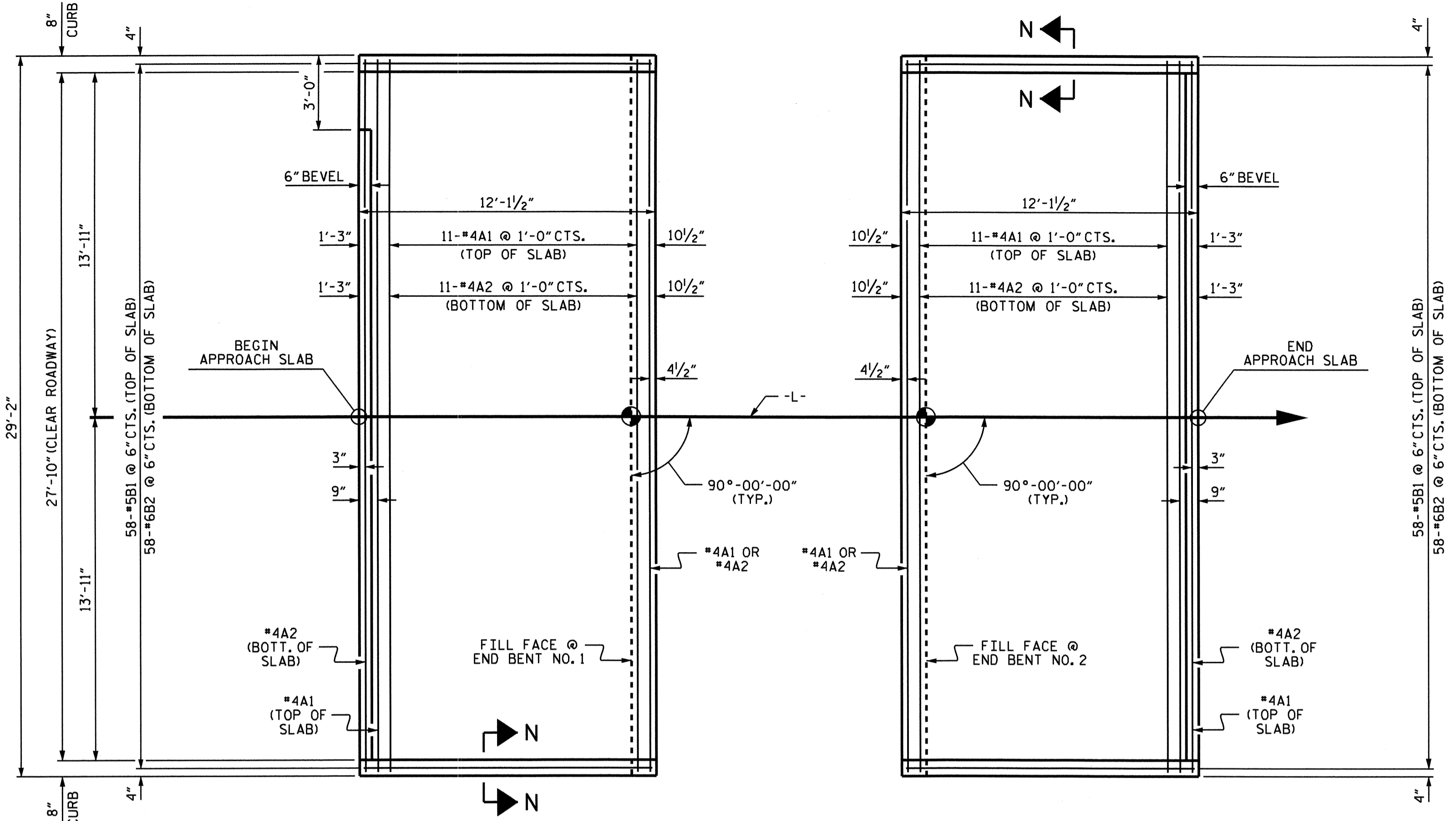


CURB DETAILS

SPlice LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"

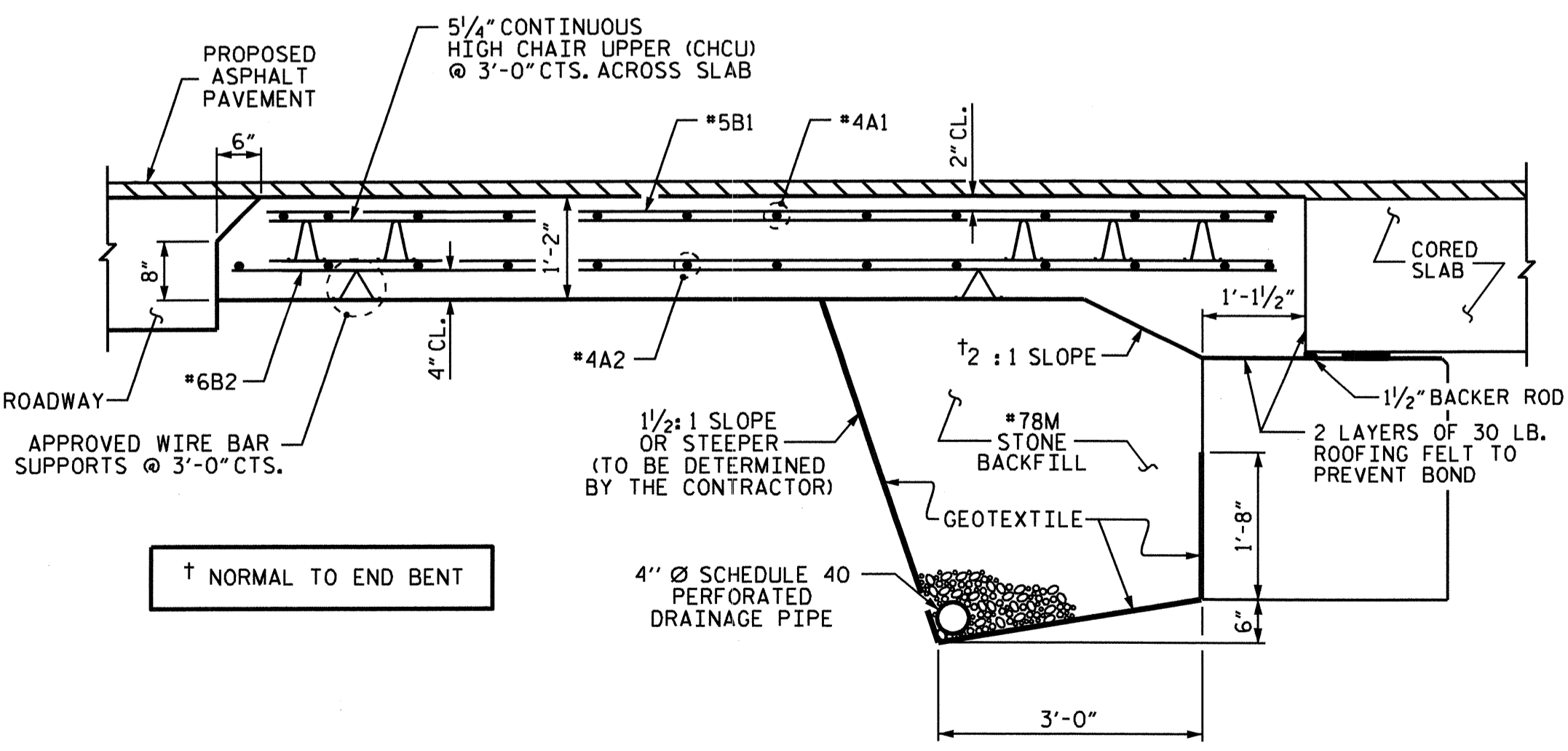


BILL OF MATERIAL						
APPROACH SLAB AT EB NO. 1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	13	#4	STR	28'-10"	250	
A2	13	#4	STR	28'-10"	250	
*B1	58	#5	STR	11'-2"	676	
B2	58	#6	STR	11'-8"	1016	
REINFORCING STEEL					LBS.	1266
* EPOXY COATED REINFORCING STEEL					LBS.	926
CLASS AA CONCRETE					C. Y.	16.9
APPROACH SLAB AT EB NO. 2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	13	#4	STR	28'-10"	250	
A2	13	#4	STR	28'-10"	250	
*B1	58	#5	STR	11'-2"	676	
B2	58	#6	STR	11'-8"	1016	
REINFORCING STEEL					LBS.	1266
* EPOXY COATED REINFORCING STEEL					LBS.	926
CLASS AA CONCRETE					C. Y.	16.9



PLAN @ END BENT NO. 1 PLAN @ END BENT NO. 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB

ASSEMBLED BY : A.L.FIGUEROA/DAH DATE : 02-23-11
 CHECKED BY : M.G.CHEEK DATE : 03-02-11
 DRAWN BY : SHS/MAA 5-09 REV. 12-11 MAA/AAC
 CHECKED BY : BCH 5-09

13-FEB-2012 15:04
 R:\Structures\Final Plans\Str#2\B-4046.SD_STR#2.15.AS.dgn
 dahodge

BRIDGE NO. B-4046
 BURKE COUNTY
 STATION: 18+89.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 CORED SLAB UNIT
 (SUB-REGIONAL TIER)
 90° SKEW

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-31	
1			3			TOTAL SHEETS	
2			4			31	

STR #2

STD. NO. BAS.30.90S

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

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