

GRADE DATA -L- (SR 1100)

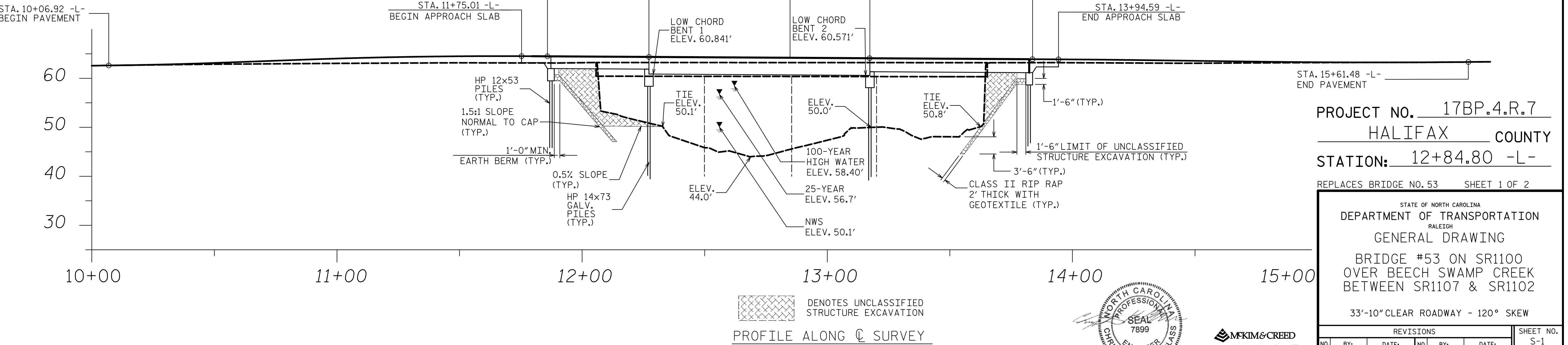
PI = 10+30.00 EL = 62.77' VC = 46'	PI = 11+32.30 EL = 64.66' VC = 94'	PI = 14+12.30 EL = 63.82' VC = 21.5'	PI = 15+17.42 EL = 63.13' VC = 88'
(+).05994%	(+).18470%	(-).03000%	(-).06529%
STA. 10+06.92 -L- EL. 62.59			STA. 15+61.48 -L- EL. 63.38

HYDROGRAPHIC DATA

DESIGN DISCHARGE -	5500 CFS
FREQUENCY OF DESIGN FLOOD -	25 YEARS
DESIGN HIGH WATER ELEVATION -	56.7'
DRAINAGE AREA -	169 SQ. MI.
BASE DISCHARGE (Q100) -	8000 CFS
BASE HIGH WATER ELEVATION -	58.40'

OVERTOPPING DATA

OVERTOPPING DISCHARGE -	12000 CFS
FREQUENCY OF OVERTOPPING FLOOD -	>500 YRS
OVERTOPPING FLOOD ELEVATION -	58.1'

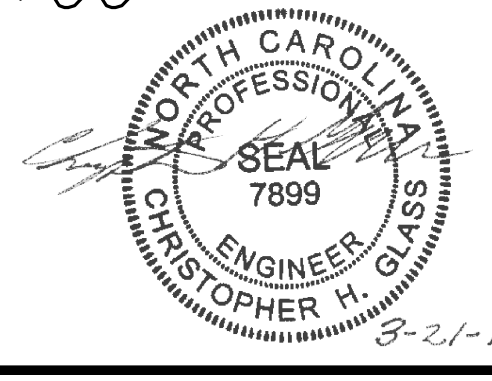


● DENOTES GEO-TECH BORE HOLE LOCATIONS.
 * DENOTES TYPE III GUARDRAIL CONNECTION REQUIRED. SEE 'GUARDRAIL ANCHORAGE FOR VERTICAL CONCRETE BARRIER RAIL SHEET.'
 NOTE: GUARDRAIL LENGTHS AS SHOWN INCLUDE ANCHOR UNITS.
 U.O.N. - UNLESS OTHERWISE NOTED
 FOR PAVEMENT LAYOUT SEE 'ROADWAY DETAILS SHEET'.

DRAWN BY : KE DATE : 07/13
 CHECKED BY : RAM/CG DATE : 07/13

*****SYTIME*****
 *****SDGN*****
 *****USERNAME*****

DENOTES UNCLASSIFIED STRUCTURE EXCAVATION
 PROFILE ALONG C SURVEY

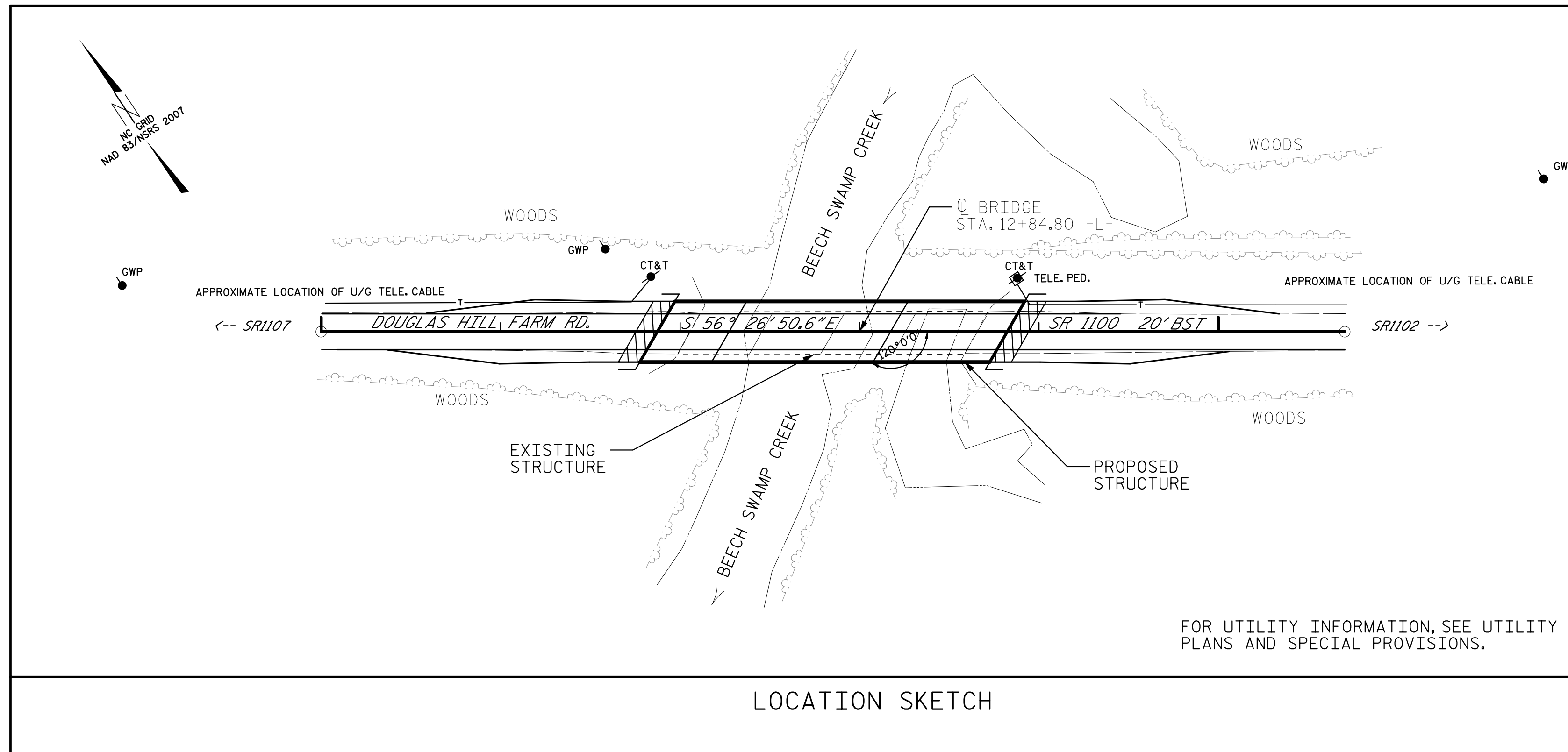


MCKIM+CREED
 243 NORTH FRONT STREET
 WILMINGTON, NC 28401
 TEL. (910) 343-1049 FAX. (910) 790-8282
 NC LICENSE F-1222

PROJECT NO. 17BP.4.R.7
 HALIFAX COUNTY
 STATION: 12+84.80 -L-
 REPLACES BRIDGE NO. 53 SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 BRIDGE #53 ON SR1100
 OVER BEECH SWAMP CREEK
 BETWEEN SR1107 & SR1102
 33'-10" CLEAR ROADWAY - 120° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			28



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

FOUNDATION NOTES:

- 1) FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- 2) PILES AT END BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 61 TONS PER PILE.
- 3) DRIVE PILES AT END BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 105 TONS PER PILE.
- 4) PILES AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 82 TONS PER PILE.
- 5) DRIVE PILES AT END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 140 TONS PER PILE.
- 6) PILES AT BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 140 TONS PER PILE.
- 7) DRIVE PILES AT BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 215 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAG OR SCOUR.
- 8) PILES AT BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 155 TONS PER PILE.
- 9) DRIVE PILES AT BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 235 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAG OR SCOUR.
- 10) INSTALL PILES AT BENTS NO.1 AND 2 TO A TIP ELEVATION NO HIGHER THAN 23 FT.
- 11) THE SCOUR CRITICAL ELEVATION AT BENT NO.1 AND 2 IS ELEVATION 42 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
- 12) TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT BENTS NO.1 AND 2. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS (AND FOR PILE DRIVING CRITERIA, SEE PILE DRIVING CRITERIA PROVISION).

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.
- REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
- THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 30 FT. 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.
- 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.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES".
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- ADT = 380 FOR YEAR 2010
- ROADWAY APPROACH EMBANKMENT SHALL BE WIDENED AS NECESSARY FOR GUARDRAIL INSTALLATIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY.
- 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 COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 12+84.80."
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE I

TOTAL BILL OF MATERIAL

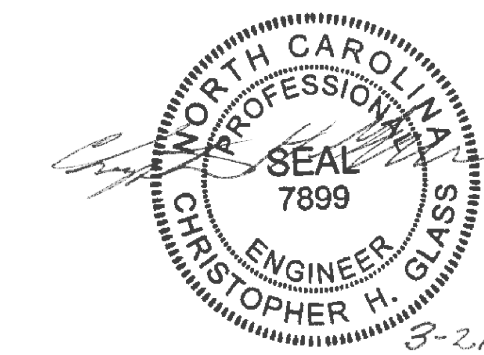
	REMOVAL OF EXISTING STRUCTURE	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 12 X 53 STEEL PILES		HP 14 X 73 GALVANIZED STEEL PILES		PILE REDRIVES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS		3'-0" X 2'-9" PRESTRESSED CONCRETE BOX BEAM UNITS		3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS		
							NO.	LIN.FT.	NO.	LIN.FT.						NO.	LIN.FT.	NO.	LIN.FT.	NO.	LIN.FT.	NO.
	LUMP SUM	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS.									LUMP SUM							
SUPERSTRUCTURE	LUMP SUM				LUMP SUM							390.58			LUMP SUM	12	480	12	1080	12	780	
END BENT NO. 1			LUMP SUM	17.0		2527	7	280			4		317	352								
BENT NO. 1				17.9		3105			8	520	4											
BENT NO. 2				17.2		3090			8	520	4											
END BENT NO. 2			LUMP SUM	17.2		2527	7	385			4		261	290								
TOTAL	LUMP SUM	3	LUMP SUM	69.3	LUMP SUM	11,249	14	665	16	1040	16	390.58	578	642	LUMP SUM	12	480.00	12	1080.00	12	780.00	

PROJECT NO. 17BP.4.R.7
HALIFAX COUNTY
 STATION: 12+84.80 -L-

REPLACES BRIDGE NO. 53 SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 BRIDGE #53 ON SR1100
 OVER BEECH SWAMP CREEK
 BETWEEN SR1107 & SR1102



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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			28

DRAWN BY: KE DATE: 07/13
 CHECKED BY: RAM/CG DATE: 07/13

*****SYTIME*****
 *****SDGN*****
 *****USERNAME*****

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

LOAD FACTORS:

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

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			
						LIVELOAD FACTORS	MOMENT					SHEAR					LIVELOAD FACTORS	MOMENT						
							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)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.352	--	1.75	0.252	1.95	40'	EL	19.423	0.653	1.35	40'	EL	7.769	0.80	0.252	1.72	40'	EL	19.423		
	HL-93(0pr)	N/A	--	1.753	--	1.35	0.252	2.52	40'	EL	19.423	0.653	1.75	40'	EL	7.769	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.544	55.583	1.75	0.252	2.45	40'	EL	19.423	0.653	1.54	40'	EL	7.769	0.80	0.252	2.14	40'	EL	19.423		
	HS-20(0pr)	36.000	--	2.001	72.053	1.35	0.252	3.17	40'	EL	19.423	0.653	2	40'	EL	7.769	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.929	53.037	1.4	0.252	5.64	40'	EL	19.423	0.653	3.93	40'	EL	7.769	0.80	0.252	3.99	40'	EL	19.423	
		SNGARBS2	20.000	--	2.985	59.708	1.4	0.252	4.63	40'	EL	15.538	0.653	2.99	40'	EL	7.769	0.80	0.252	3.28	40'	EL	19.423	
		SNAGRIS2	22.000	--	2.852	62.746	1.4	0.252	4.53	40'	EL	15.538	0.653	2.85	40'	EL	7.769	0.80	0.252	3.23	40'	EL	15.538	
		SNCOTTS3	27.250	--	1.98	53.947	1.4	0.252	2.82	40'	EL	19.423	0.653	1.98	40'	EL	7.769	0.80	0.252	1.99	40'	EL	19.423	
		SNAGGRS4	34.925	--	1.782	62.222	1.4	0.252	2.54	40'	EL	19.423	0.653	1.78	40'	EL	7.769	0.80	0.252	1.79	40'	EL	19.423	
		SNS5A	35.550	--	1.746	62.059	1.4	0.252	2.47	40'	EL	19.423	0.653	1.89	40'	EL	7.769	0.80	0.252	1.75	40'	EL	19.423	
		SNS6A	39.950	--	1.662	66.381	1.4	0.252	2.35	40'	EL	19.423	0.653	1.79	40'	EL	7.769	0.80	0.252	1.66	40'	EL	19.423	
		SNS7B	42.000	--	1.585	66.556	1.4	0.252	2.24	40'	EL	19.423	0.653	1.86	40'	EL	7.769	0.80	0.252	1.58	40'	EL	19.423	
	TTST	TNAGRIT3	33.000	--	2.045	67.476	1.4	0.252	2.89	40'	EL	19.423	0.653	2.07	40'	EL	7.769	0.80	0.252	2.04	40'	EL	19.423	
		TNT4A	33.075	--	1.951	64.52	1.4	0.252	2.93	40'	EL	19.423	0.653	1.95	40'	EL	7.769	0.80	0.252	2.07	40'	EL	19.423	
		TNT6A	41.600	--	1.757	73.106	1.4	0.252	2.49	40'	EL	19.423	0.653	1.91	40'	EL	7.769	0.80	0.252	1.76	40'	EL	19.423	
		TNT7A	42.000	--	1.795	75.386	1.4	0.252	2.55	40'	EL	19.423	0.653	1.79	40'	EL	7.769	0.80	0.252	1.80	40'	EL	19.423	
		TNT7B	42.000	--	1.729	72.638	1.4	0.252	2.61	40'	EL	19.423	0.653	1.73	40'	EL	7.769	0.80	0.252	1.84	40'	EL	19.423	
		TNAGRIT4	43.000	--	1.661	71.441	1.4	0.252	2.53	40'	EL	15.538	0.653	1.66	40'	EL	7.769	0.80	0.252	1.79	40'	EL	19.423	
		TNAGT5A	45.000	--	1.659	74.644	1.4	0.252	2.35	40'	EL	19.423	0.653	1.77	40'	EL	7.769	0.80	0.252	1.66	40'	EL	19.423	
		TNAGT5B	45.000	3	1.568	70.561	1.4	0.252	2.28	40'	EL	19.423	0.653	1.57	40'	EL	7.769	0.80	0.252	1.61	40'	EL	19.423	

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:

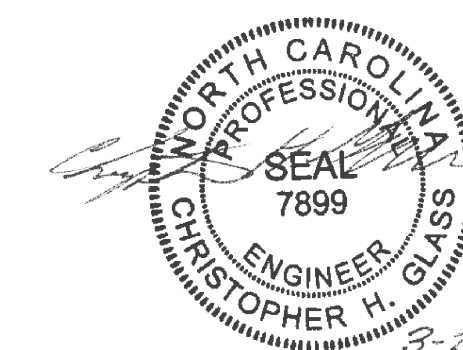
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#	CONTROLLING LOAD RATING
1	DESIGN LOAD RATING (HL-93)
2	DESIGN LOAD RATING (HS-20)
3	LEGAL LOAD RATING **
** SEE CHART FOR VEHICLE TYPE	
GIRDER LOCATION	
I - INTERIOR GIRDER EL - EXTERIOR LEFT GIRDER ER - EXTERIOR RIGHT GIRDER	



LRFR SUMMARY
FOR SPAN A

PROJECT NO. 17BP.4.R.7
HALIFAX COUNTY
STATION: 12+84.80 -L-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD LRFR SUMMARY FOR 40' CORED SLAB UNIT 60° SKEW & 120° SKEW (NON-INTERSTATE TRAFFIC)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-3					TOTAL SHEETS 28

ASSEMBLED BY : JBS DATE : 10/13
CHECKED BY : CG DATE : 10/13
DRAWN BY : CVC 6/10
CHECKED BY : DNS 6/10

*****SYTIME*****
*****SDGN*****
*****USERNAME*****

STD. NO. 21LRFR1_60&120S_40L

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

LOAD FACTORS:

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

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			
						LIVELOAD FACTORS	MOMENT					SHEAR					LIVELOAD FACTORS	MOMENT						
							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)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.034	--	1.75	0.246	1.63	A	ER	44.134	0.627	1.03	A	ER	8.827	0.80	0.246	1.23	A	ER	44.134		
	HL-93(0pr)	N/A	--	1.34	--	1.35	0.246	2.11	A	ER	44.134	0.627	1.34	A	ER	8.827	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.343	48.336	1.75	0.246	2.21	A	ER	44.134	0.627	1.34	A	ER	8.827	0.80	0.246	1.67	A	ER	44.134		
	HS-20(0pr)	36.000	--	1.741	62.658	1.35	0.246	2.87	A	ER	44.134	0.627	1.74	A	ER	8.827	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.909	52.766	1.4	0.246	6.46	A	ER	44.134	0.627	4.08	A	ER	8.827	0.80	0.246	3.91	A	ER	44.134	
		SNGARBS2	20.000	--	2.857	57.143	1.4	0.246	4.72	A	ER	44.134	0.627	2.88	A	ER	8.827	0.80	0.246	2.86	A	ER	44.134	
		SNAGRIS2	22.000	--	2.658	58.474	1.4	0.246	4.44	A	ER	44.134	0.627	2.66	A	ER	8.827	0.80	0.246	2.68	A	ER	44.134	
		SNCOTTS3	27.250	--	1.943	52.958	1.4	0.246	3.21	A	ER	44.134	0.627	2.04	A	ER	8.827	0.80	0.246	1.94	A	ER	44.134	
		SNAGGRS4	34.925	--	1.603	55.974	1.4	0.246	2.65	A	ER	44.134	0.627	1.67	A	ER	8.827	0.80	0.246	1.60	A	ER	44.134	
		SNS5A	35.550	--	1.569	55.767	1.4	0.246	2.59	A	ER	44.134	0.627	1.68	A	ER	8.827	0.80	0.246	1.57	A	ER	44.134	
		SNS6A	39.950	--	1.431	57.149	1.4	0.246	2.36	A	ER	44.134	0.627	1.53	A	ER	8.827	0.80	0.246	1.43	A	ER	44.134	
		SNS7B	42.000	--	1.362	57.202	1.4	0.246	2.25	A	ER	44.134	0.627	1.49	A	ER	8.827	0.80	0.246	1.36	A	ER	44.134	
	TTST	TNAGRIT3	33.000	--	1.742	57.481	1.4	0.246	2.88	A	ER	44.134	0.627	1.82	A	ER	8.827	0.80	0.246	1.74	A	ER	44.134	
		TNT4A	33.075	--	1.747	57.786	1.4	0.246	2.89	A	ER	44.134	0.627	1.78	A	ER	8.827	0.80	0.246	1.75	A	ER	44.134	
		TNT6A	41.600	--	1.42	59.082	1.4	0.246	2.35	A	ER	44.134	0.627	1.57	A	ER	8.827	0.80	0.246	1.42	A	ER	44.134	
		TNT7A	42.000	--	1.423	59.764	1.4	0.246	2.35	A	ER	44.134	0.627	1.54	A	ER	8.827	0.80	0.246	1.42	A	ER	44.134	
		TNT7B	42.000	--	1.461	61.373	1.4	0.246	2.42	A	ER	44.134	0.627	1.46	A	ER	8.827	0.80	0.246	1.46	A	ER	44.134	
		TNAGRIT4	43.000	--	1.398	60.12	1.4	0.246	2.31	A	ER	44.134	0.627	1.42	A	ER	8.827	0.80	0.246	1.40	A	ER	44.134	
		TNAGT5A	45.000	--	1.322	59.491	1.4	0.246	2.19	A	ER	44.134	0.627	1.4	A	ER	8.827	0.80	0.246	1.32	A	ER	44.134	
		TNAGT5B	45.000	3	1.309	58.923	1.4	0.246	2.16	A	ER	44.134	0.627	1.35	A	ER	8.827	0.80	0.246	1.31	A	ER	44.134	

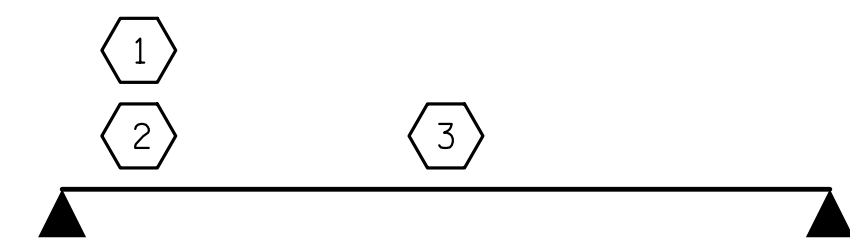
NOTES:

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:

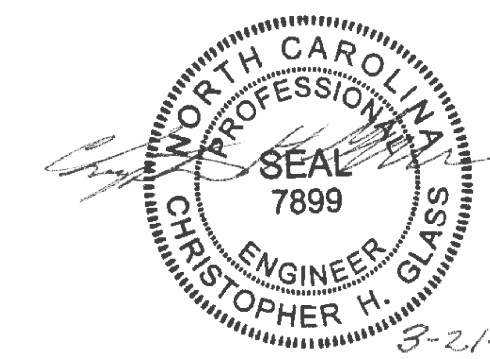
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#	CONTROLLING LOAD RATING
1	DESIGN LOAD RATING (HL-93)
2	DESIGN LOAD RATING (HS-20)
3	LEGAL LOAD RATING **
** SEE CHART FOR VEHICLE TYPE	
GIRDER LOCATION	
I - INTERIOR GIRDER EL - EXTERIOR LEFT GIRDER ER - EXTERIOR RIGHT GIRDER	



LRFR SUMMARY
FOR SPAN B

PROJECT NO. 17BP.4.R.7
HALIFAX COUNTY
STATION: 12+84.80 -L-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO.
STANDARD LRFR SUMMARY FOR 90' BOX BEAM UNIT 60° SKEW & 120° SKEW (NON-INTERSTATE TRAFFIC)						S-4
REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	28
1			3			
2			4			

ASSEMBLED BY : JBS DATE : 10/13
CHECKED BY : CG DATE : 10/13
DRAWN BY : TMG II/II
CHECKED BY : AAC II/II

*****SYTIME*****
*****SDGN*****
*****USERNAME*****

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

LOAD FACTORS:

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

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	1.013	--	1.75	0.248	1.16	65'	EL	31.923	0.652	1.01	65'	EL	6.385	0.80	0.248	1.12	65'	EL	31.923		
	HL-93(Opr)	N/A	--	1.313	--	1.35	0.248	1.5	65'	EL	31.923	0.652	1.31	65'	EL	6.385	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.246	44.865	1.75	0.248	1.48	65'	EL	31.923	0.652	1.25	65'	EL	6.385	0.80	0.248	1.44	65'	EL	31.923		
	HS-20(Opr)	36.000	--	1.616	58.159	1.35	0.248	1.92	65'	EL	31.923	0.652	1.62	65'	EL	6.385	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.163	42.696	1.4	0.248	4.07	65'	EL	31.923	0.652	3.64	65'	EL	6.385	0.80	0.248	3.16	65'	EL	31.923	
		SNGARBS2	20.000	--	2.395	47.893	1.4	0.248	3.08	65'	EL	31.923	0.652	2.61	65'	EL	6.385	0.80	0.248	2.39	65'	EL	31.923	
		SNAGRIS2	22.000	--	2.284	50.247	1.4	0.248	2.94	65'	EL	31.923	0.652	2.43	65'	EL	6.385	0.80	0.248	2.28	65'	EL	31.923	
		SNCOTTS3	27.250	--	1.575	42.917	1.4	0.248	2.03	65'	EL	31.923	0.652	1.82	65'	EL	6.385	0.80	0.248	1.57	65'	EL	31.923	
		SNAGGRS4	34.925	--	1.331	46.469	1.4	0.248	1.71	65'	EL	31.923	0.652	1.53	65'	EL	6.385	0.80	0.248	1.33	65'	EL	31.923	
		SNS5A	35.550	--	1.3	46.22	1.4	0.248	1.67	65'	EL	31.923	0.652	1.55	65'	EL	6.385	0.80	0.248	1.30	65'	EL	31.923	
		SNS6A	39.950	--	1.199	47.899	1.4	0.248	1.54	65'	EL	31.923	0.652	1.42	65'	EL	6.385	0.80	0.248	1.20	65'	EL	31.923	
	TTST	SNS7B	42.000	--	1.142	47.965	1.4	0.248	1.47	65'	EL	31.923	0.652	1.4	65'	EL	6.385	0.80	0.248	1.14	65'	EL	31.923	
		TNAGRIT3	33.000	--	1.464	48.309	1.4	0.248	1.89	65'	EL	31.923	0.652	1.69	65'	EL	6.385	0.80	0.248	1.46	65'	EL	31.923	
		TNT4A	33.075	--	1.472	48.688	1.4	0.248	1.9	65'	EL	31.923	0.652	1.64	65'	EL	6.385	0.80	0.248	1.47	65'	EL	31.923	
		TNT6A	41.600	--	1.209	50.315	1.4	0.248	1.56	65'	EL	31.923	0.652	1.51	65'	EL	6.385	0.80	0.248	1.21	65'	EL	31.923	
		TNT7A	42.000	--	1.219	51.186	1.4	0.248	1.57	65'	EL	31.923	0.652	1.46	65'	EL	6.385	0.80	0.248	1.22	65'	EL	31.923	
		TNT7B	42.000	--	1.269	53.286	1.4	0.248	1.63	65'	EL	31.923	0.652	1.37	65'	EL	6.385	0.80	0.248	1.27	65'	EL	31.923	
		TNAGRIT4	43.000	--	1.201	51.645	1.4	0.248	1.55	65'	EL	31.923	0.652	1.32	65'	EL	6.385	0.80	0.248	1.20	65'	EL	31.923	
TNAGT5A	45.000	--	1.13	50.836	1.4	0.248	1.45	65'	EL	31.923	0.652	1.32	65'	EL	6.385	0.80	0.248	1.13	65'	EL	31.923			
TNAGT5B	45.000	3	1.114	50.113	1.4	0.248	1.43	65'	EL	31.923	0.652	1.25	65'	EL	6.385	0.80	0.248	1.11	65'	EL	31.923			

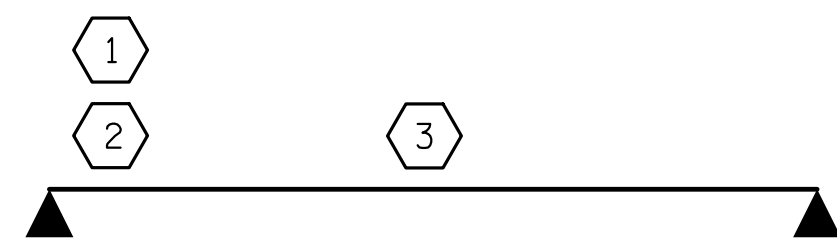
NOTES:

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

COMMENTS:

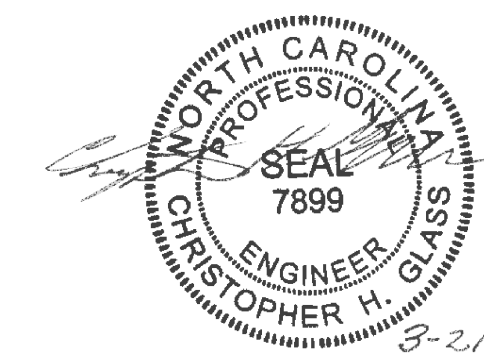
- 1.
- 2.
- 3.
- 4.

#	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 C

PROJECT NO. 17BP.4.R.7
HALIFAX COUNTY
STATION: 12+84.80 -L-

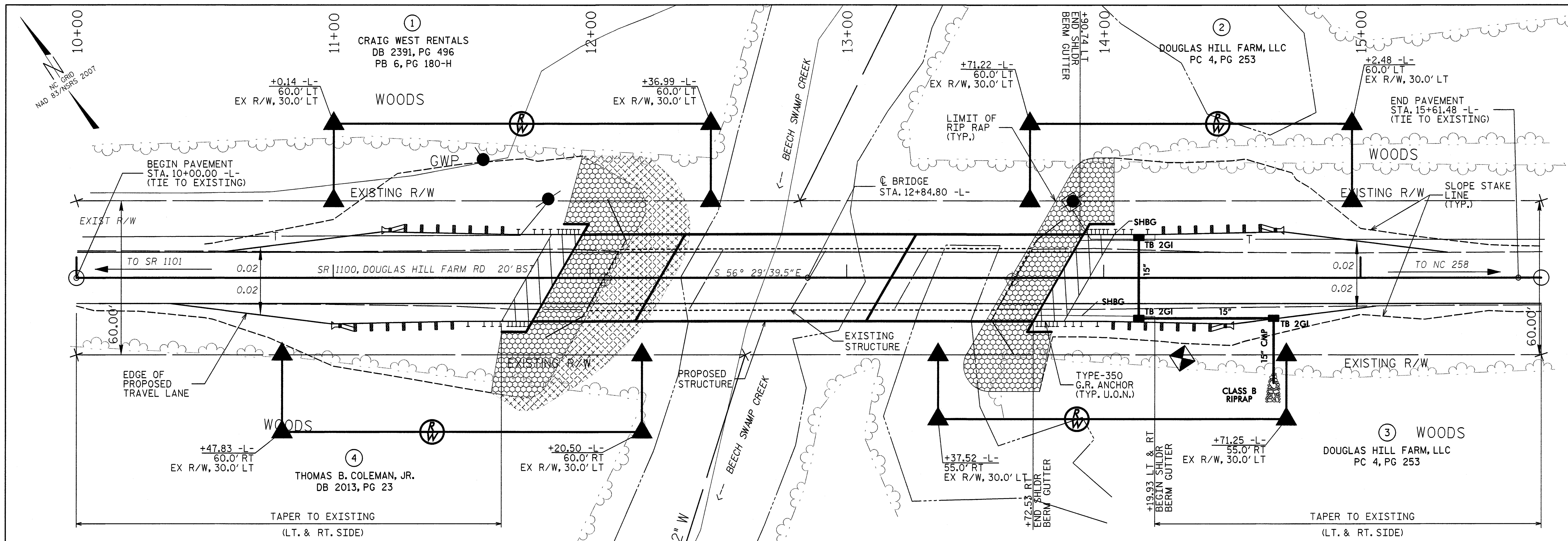


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD LRFR SUMMARY FOR 65' CORED SLAB UNIT 60° SKEW & 120° SKEW (NON-INTERSTATE TRAFFIC)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-5					TOTAL SHEETS 28

ASSEMBLED BY : JBS/KE DATE : 10/13
CHECKED BY : CG DATE : 10/13
DRAWN BY : CVC 6/10
CHECKED BY : DNS 6/10

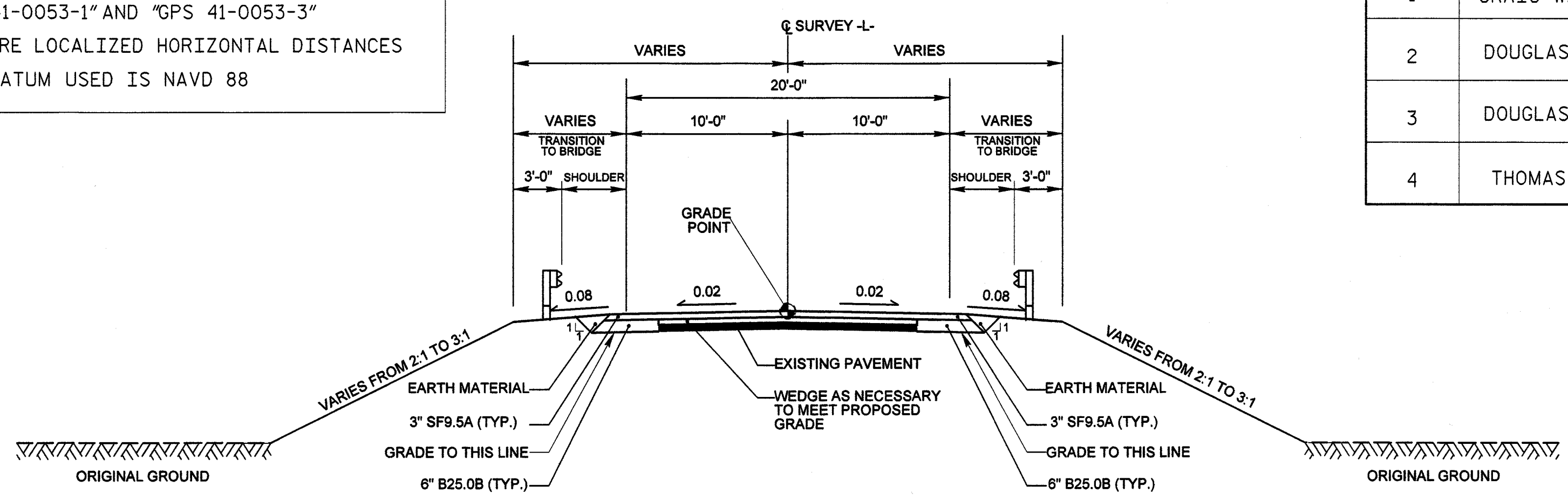
*****SYSTEM*****
*****SDGN*****
*****USERNAME*****

STD. NO. 24LRFR1_60&120S_65L



DATUM DESCRIPTION
 THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS 41-0053-2" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 854474.369(ft) EASTING: 2437205.450(ft) GROUND DISTANCES IN FIELD WERE USED TO DETERMINE COORDINATES FOR "GPS 41-0053-1" AND "GPS 41-0053-3" ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

PAVEMENT LAYOUT DETAIL
 SCALE: 1"=20'



FROM -L- STA. 10+00.00 TO -L- STA. 11+86.05
 FROM -L- STA. 13+83.55 TO -L- STA. 15+61.48

TYPICAL ROADWAY SECTION

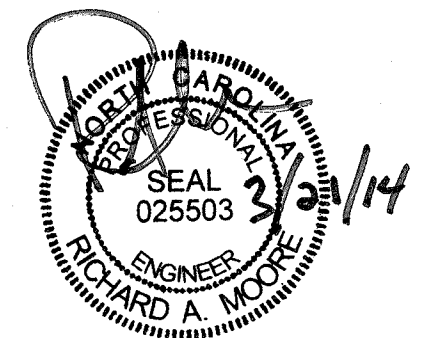
WITHIN CONSTRUCTION LIMITS

RIGHT OF WAY AREA DATA

PARCEL NO.	PROPERTY OWNERS NAMES	TOTAL AREA	AREA TAKEN	AREA REMAINING RT.	AREA REMAINING LT.	CONST. EASE.	PERM. DRAIN. EASE.	TEMP. DRAIN. EASE.
1	CRAIG WEST RENTALS, LLC	53.1 AC	4405 SF		53.0 AC			
2	DOUGLAS HILL FARM, LLC	1000 AC	3764 SF		999.9 AC			
3	DOUGLAS HILL FARM, LLC	1000 AC	3391 SF	999.9 AC				
4	THOMAS B. COLEMAN, JR.	467 AC	4208 SF	466.9 AC				

PROJECT NO. 17BP.4.R.07
 HALIFAX COUNTY
 STATION: 12+84.80 -L-

REPLACES BRIDGE NO. 53 SHEET OF



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 ROADWAY DETAILS
 BRIDGE #53 ON SR1100
 OVER BEECH SWAMP CREEK
 BETWEEN SR1108 & SR1102

DRAWN BY: KE DATE: 07/13
 CHECKED BY: RAM/CG DATE: 07/13

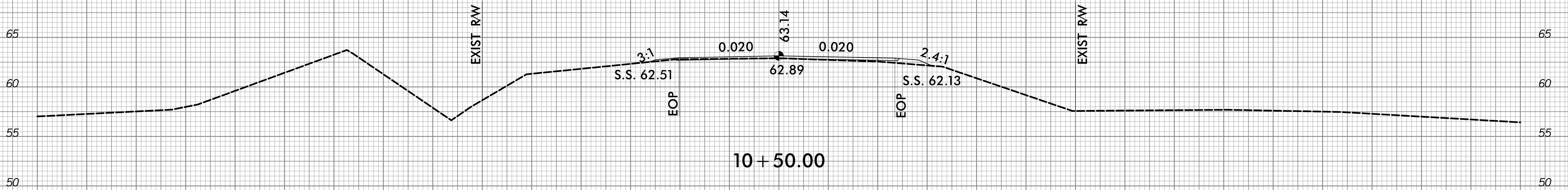
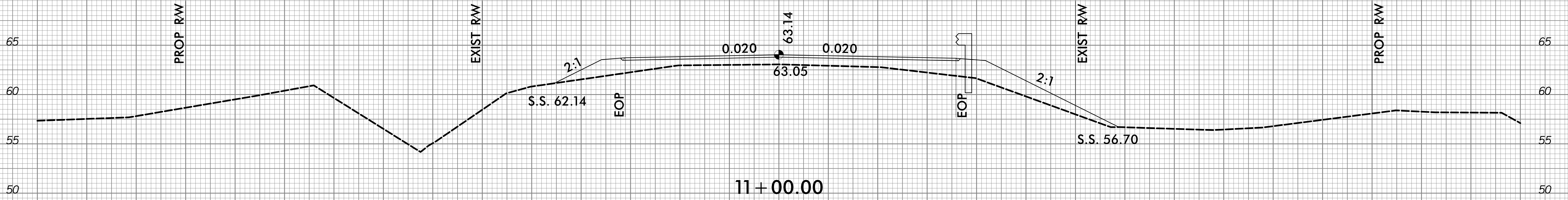
MCKIM & CREED
 243 NORTH FRONT STREET
 WILMINGTON, NC 28401
 TEL. (910) 343-1048 FAX. (910) 790-8282
 NC LICENSE F-1222

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			28

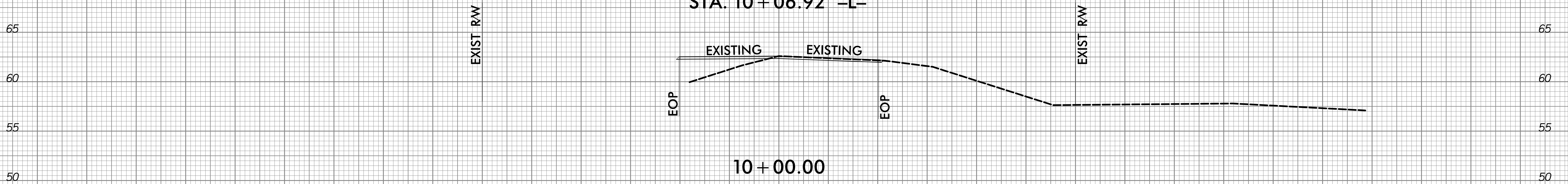
*****SYTIME*****
 *****DG*****
 *****USER*****



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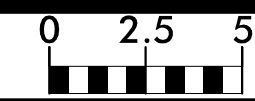
BEGIN PAVEMENT
STA. 10 + 06.92 -L-



-A-

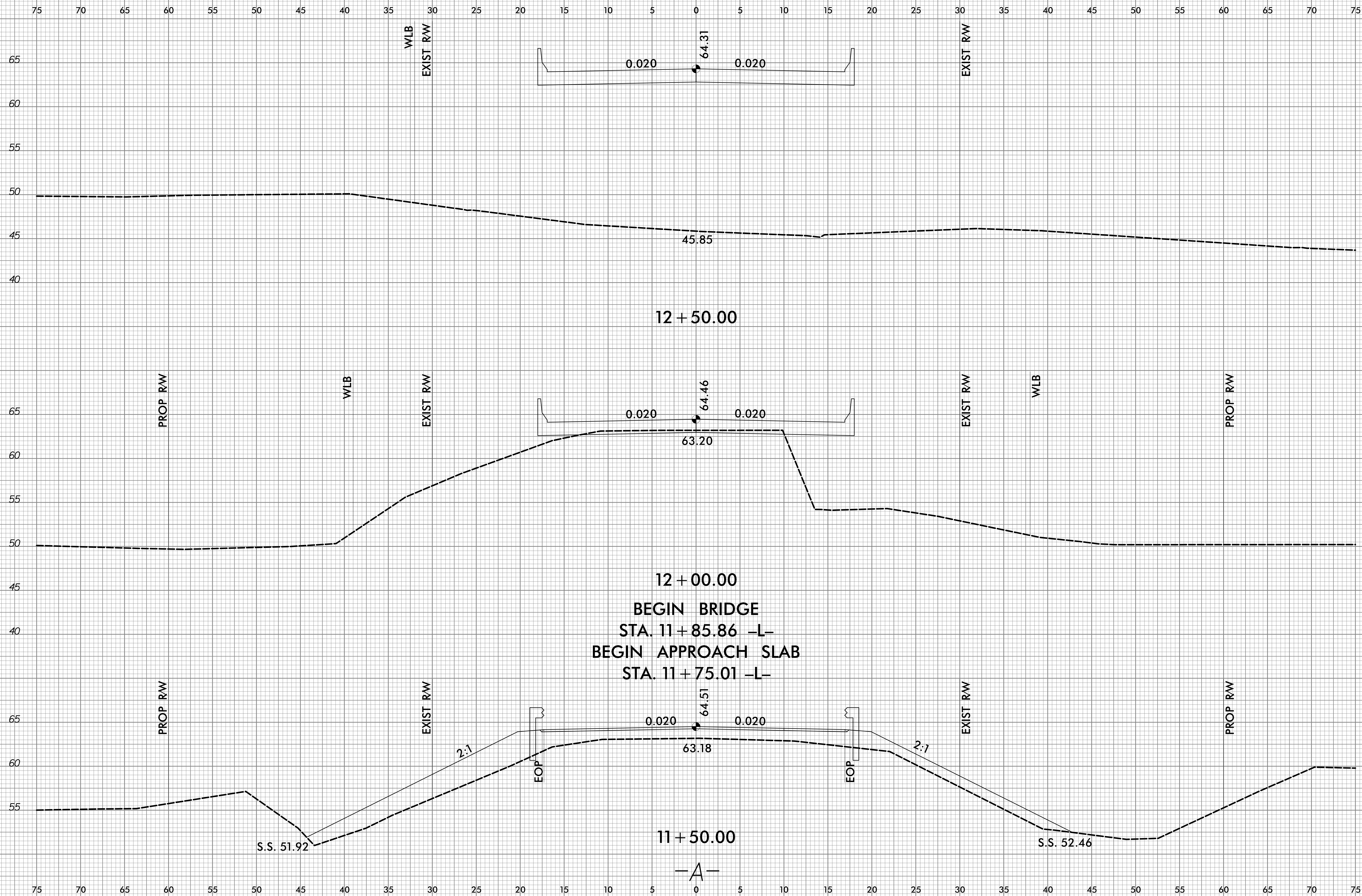
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8/23/99



PROJ. REFERENCE NO.
17.BP.4.R.07

SHEET NO.
X-8



SYSTEM TIME: 8/23/99 10:00:00 AM
DRAWN BY: J. G. ...
CHECKED BY: ...

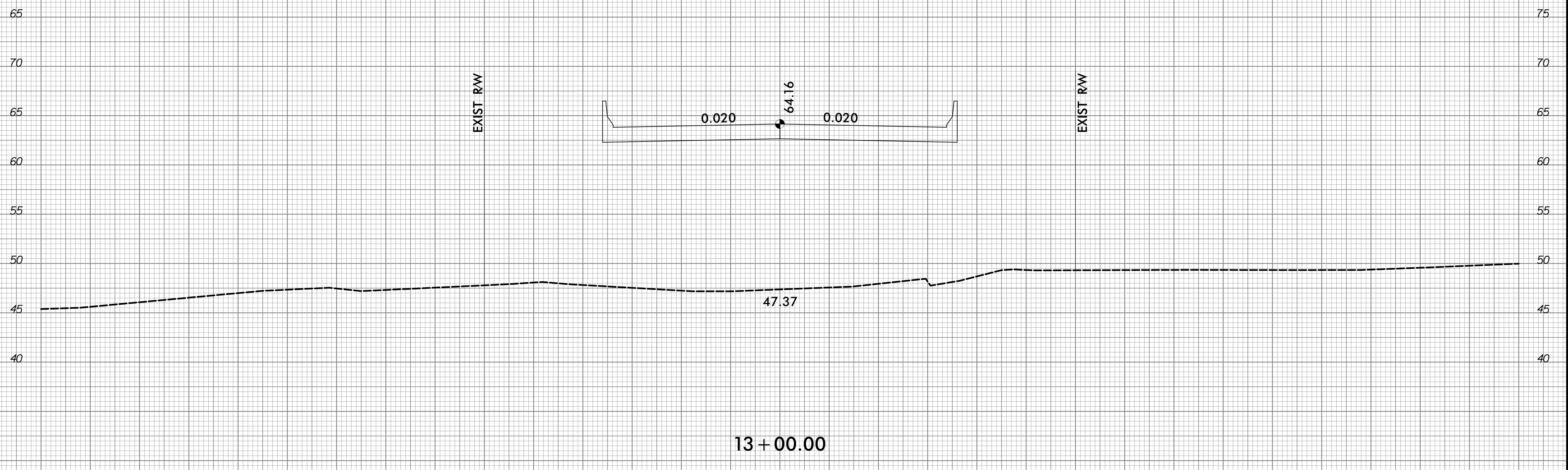
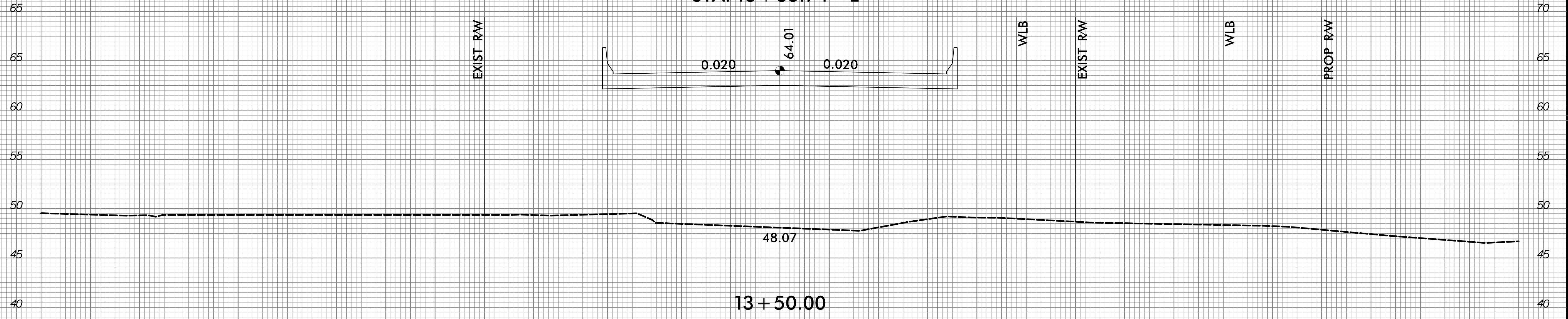
8/23/99



PROJ. REFERENCE NO.	SHEET NO.
17.BP.4.R.07	X-9

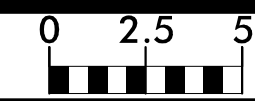
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END APPROACH SLAB
 STA. 13+94.59 -L-
 END BRIDGE
 STA. 13+83.74 -L-

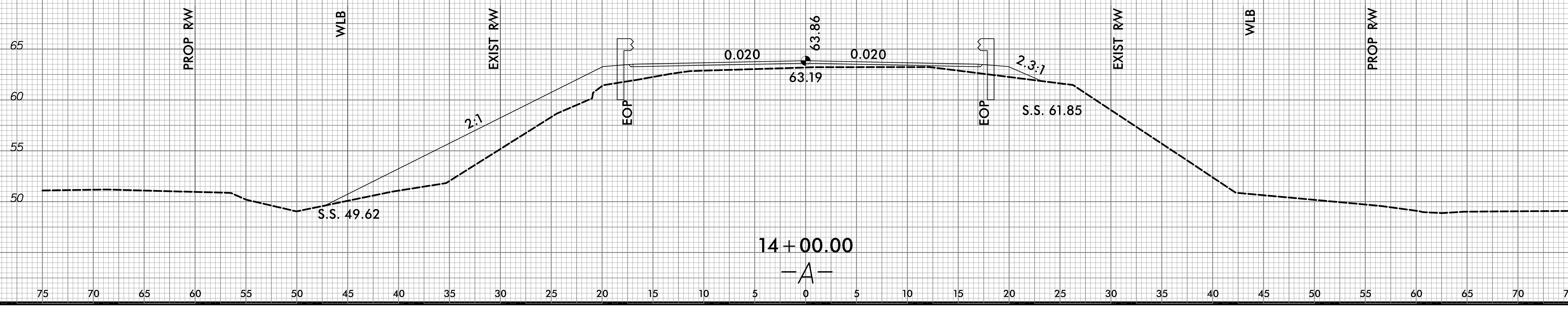
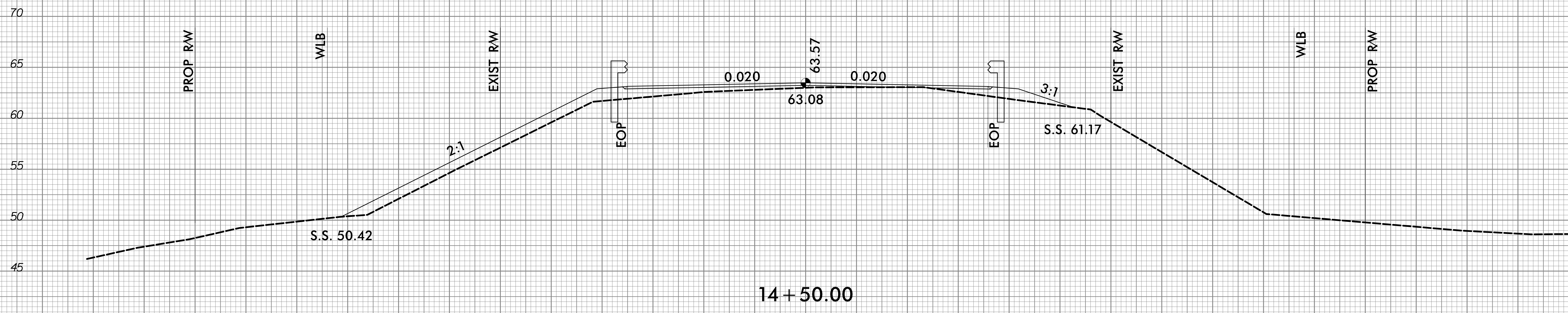
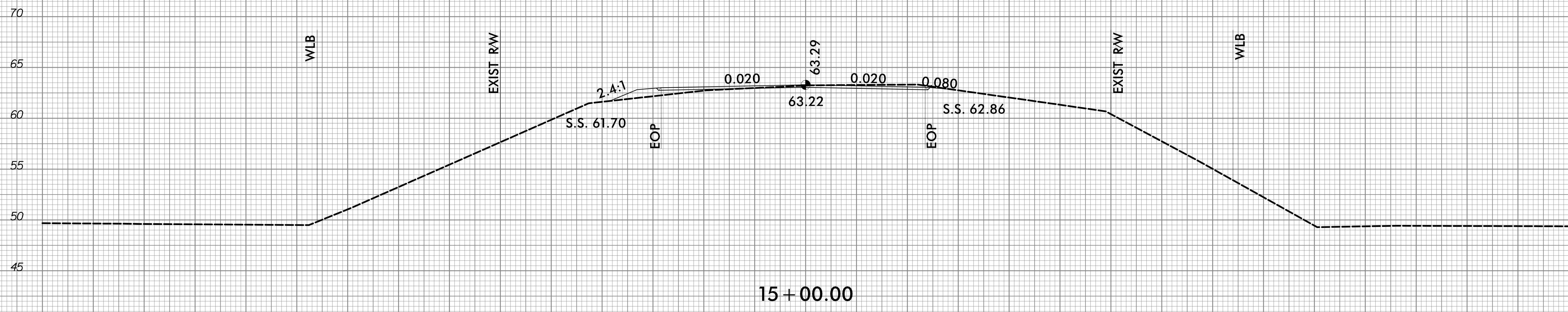


-A-

SYSTEMS TIME: 8/23/99 10:00:00 AM
 PROJECT: 17.BP.4.R.07
 SHEET: X-9



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SYSTEMS TIME: 8/23/99 10:00 AM

8/23/99

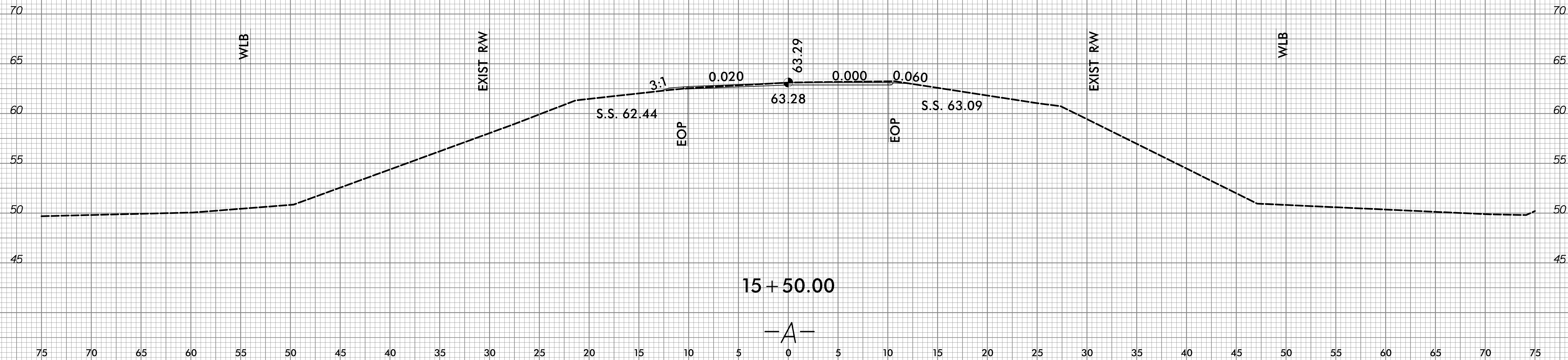


PROJ. REFERENCE NO.
17.BP.4.R.07

SHEET NO.
X-11

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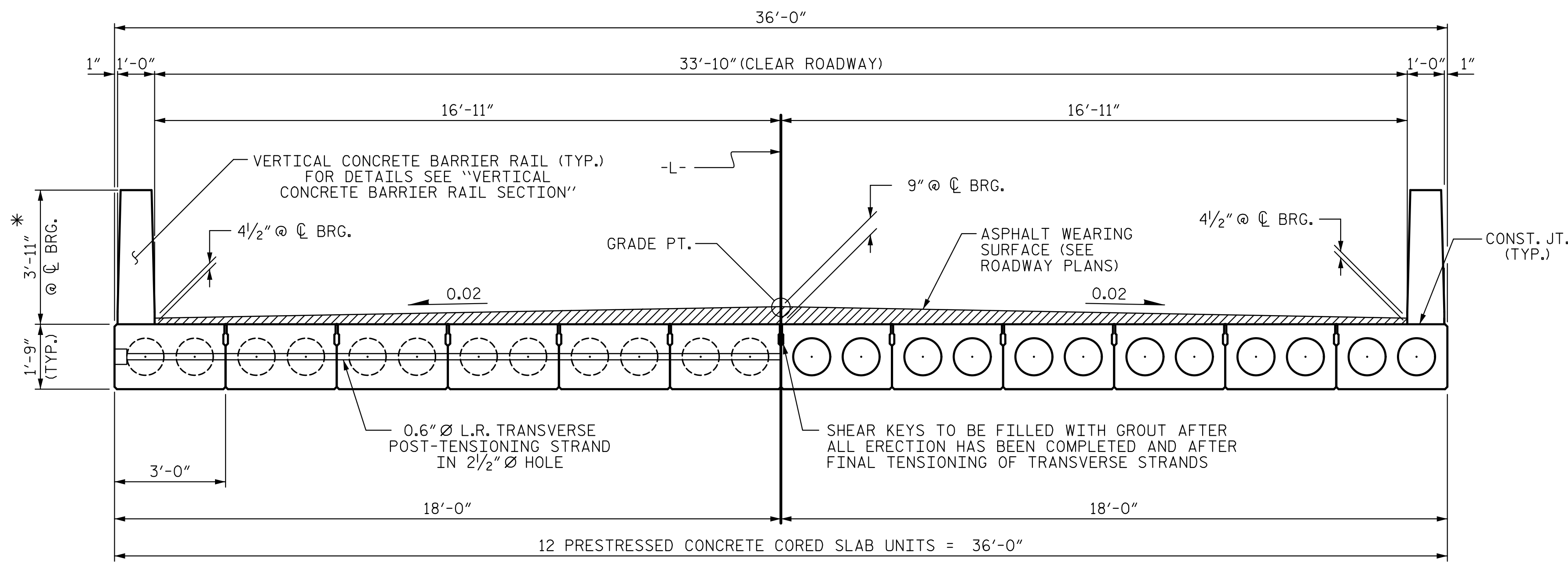
END PAVEMENT
STA. 15+61.48 -L-



15+50.00

-A-

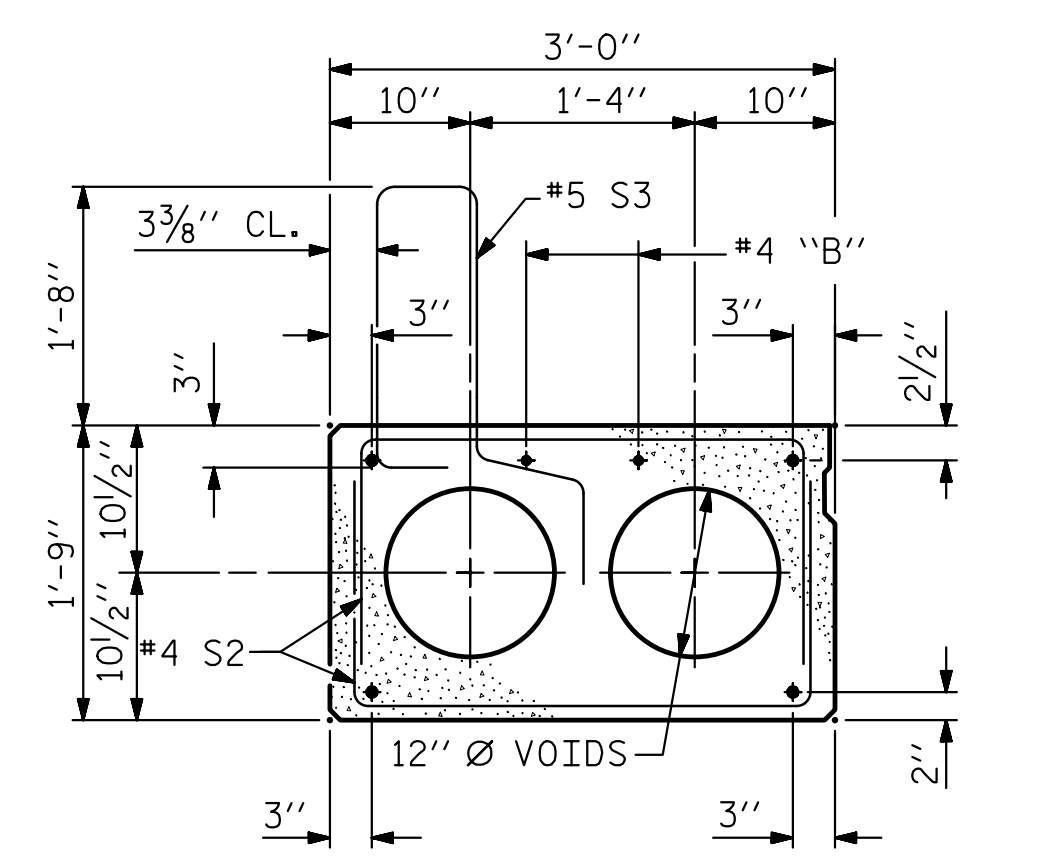
SYSTEMS TIME: 8/23/99 10:00:00 AM
 USER: J. B. GIBSON
 PROJECT: 17.BP.4.R.07
 SHEET: X-11



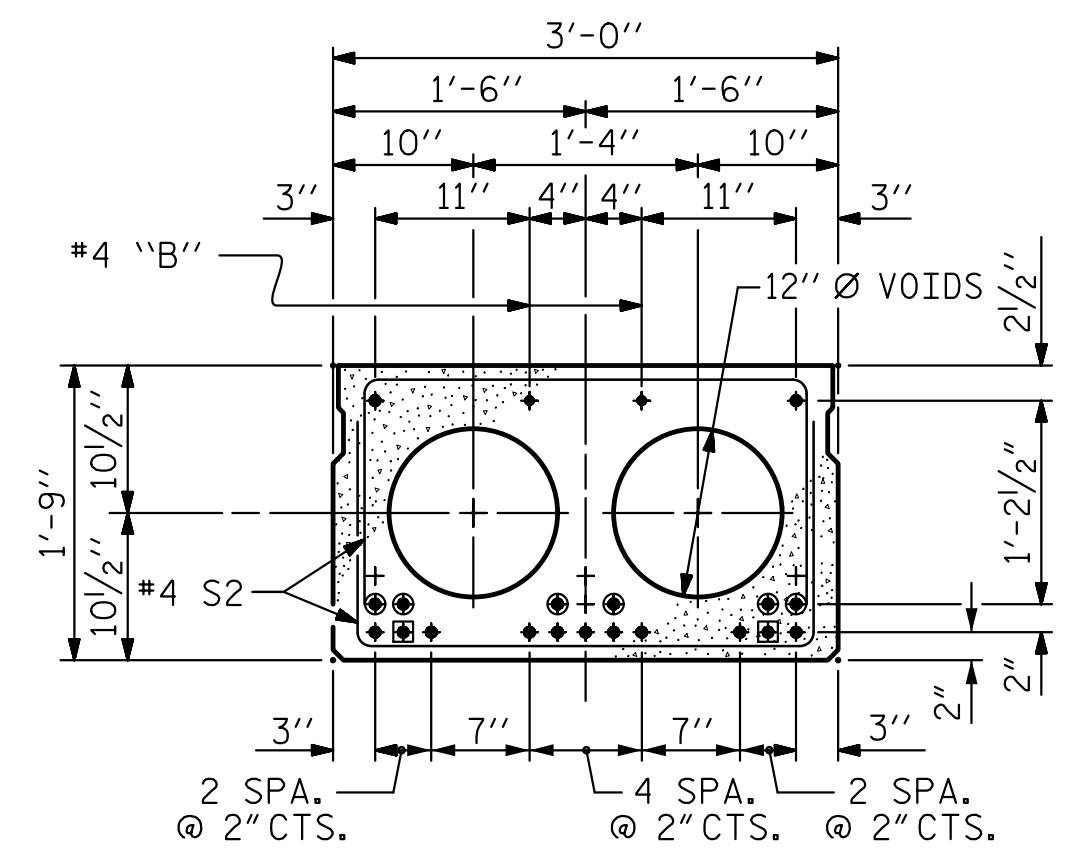
HALF SECTION AT INTERMEDIATE DIAPHRAGMS HALF SECTION THROUGH VOIDS

TYPICAL SECTION - SPAN A

* - 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.



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

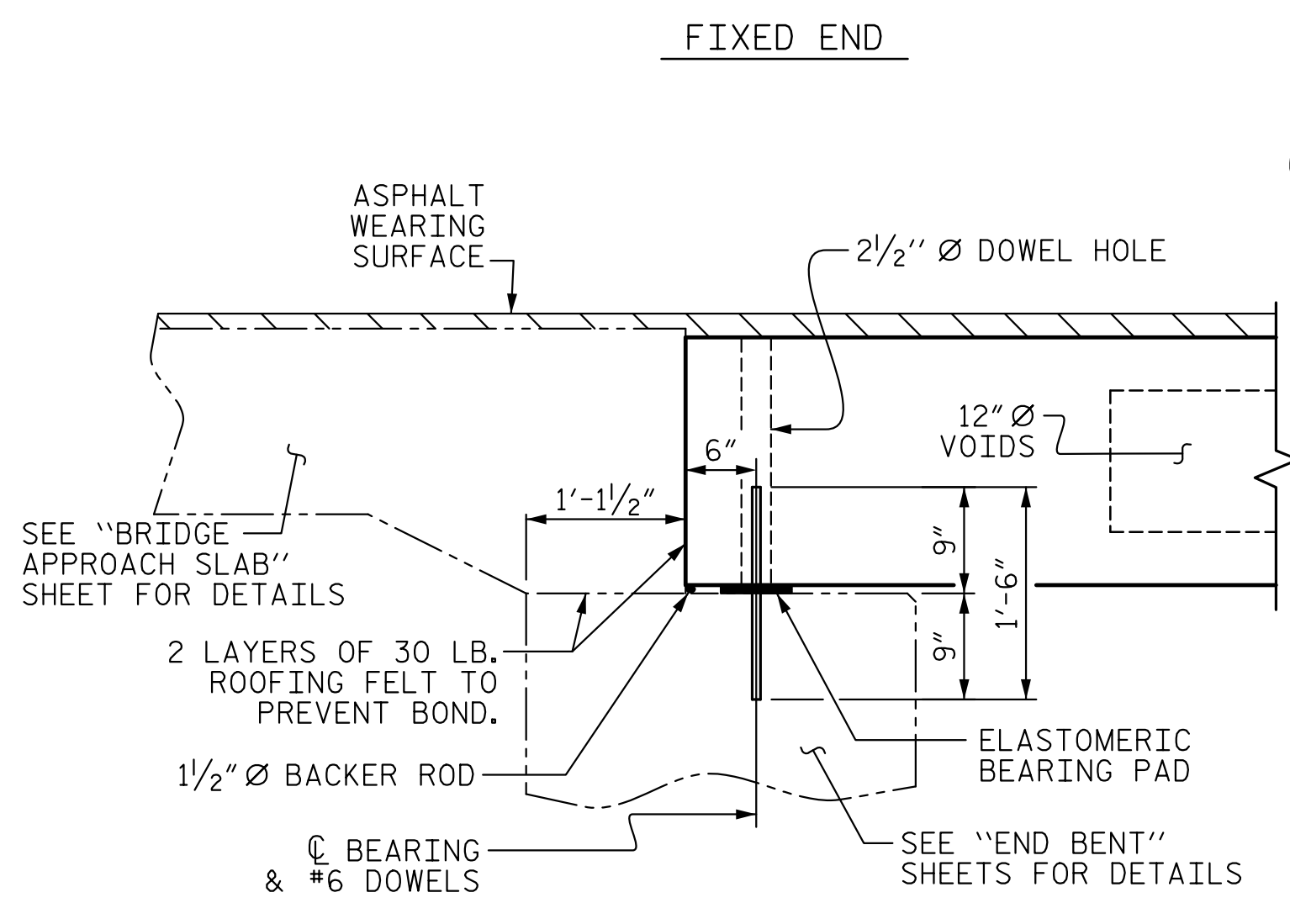


INTERIOR SLAB SECTION
(40' & 45' UNIT)
(13 STRANDS REQUIRED)

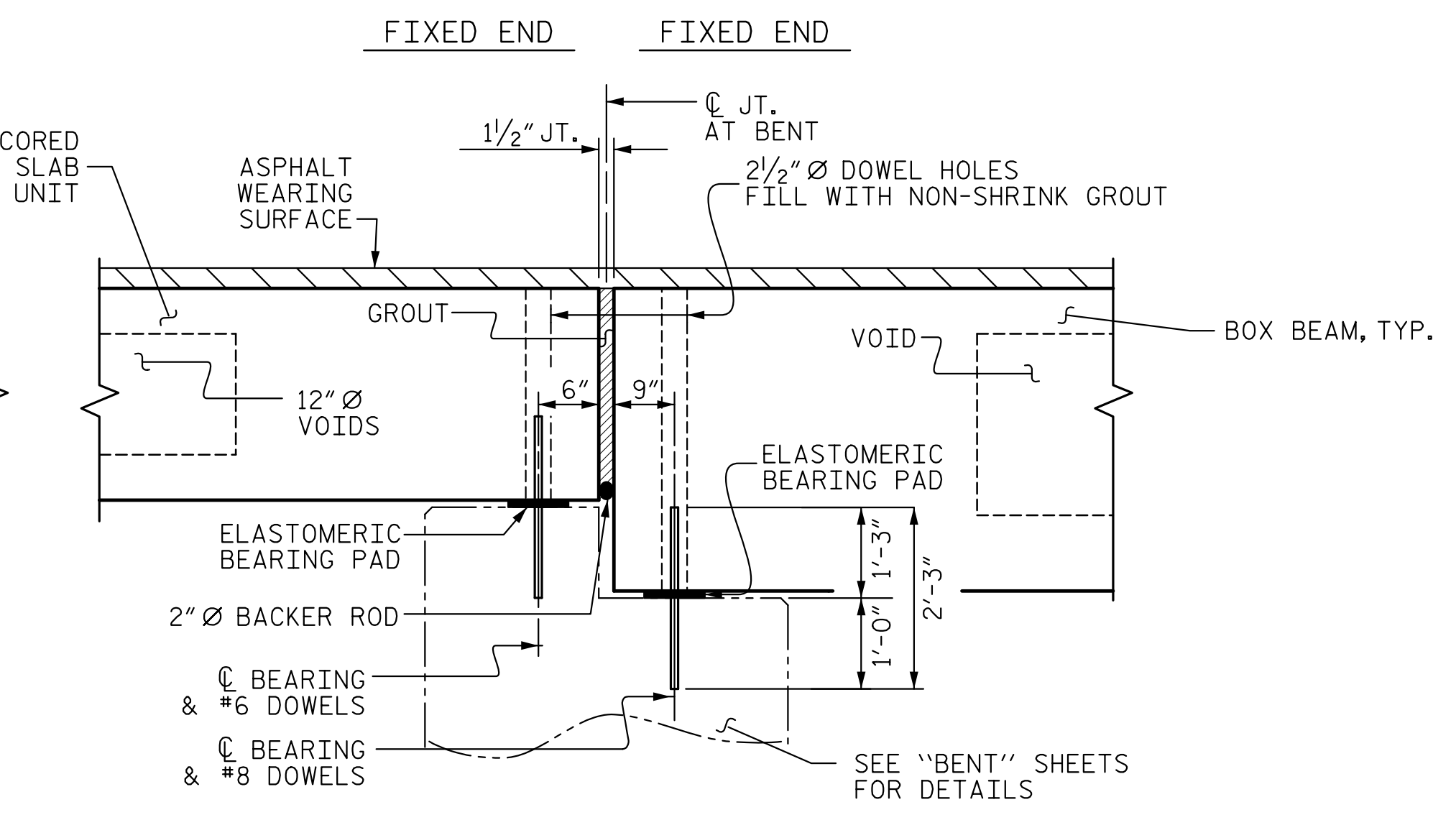
- BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL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

DEBONDING LEGEND

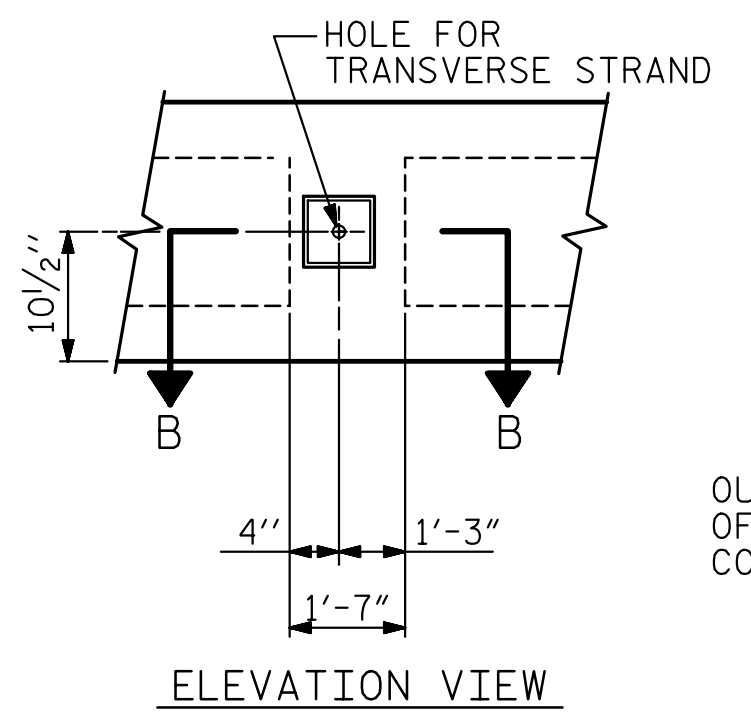
0.6" Ø LOW RELAXATION STRAND LAYOUT



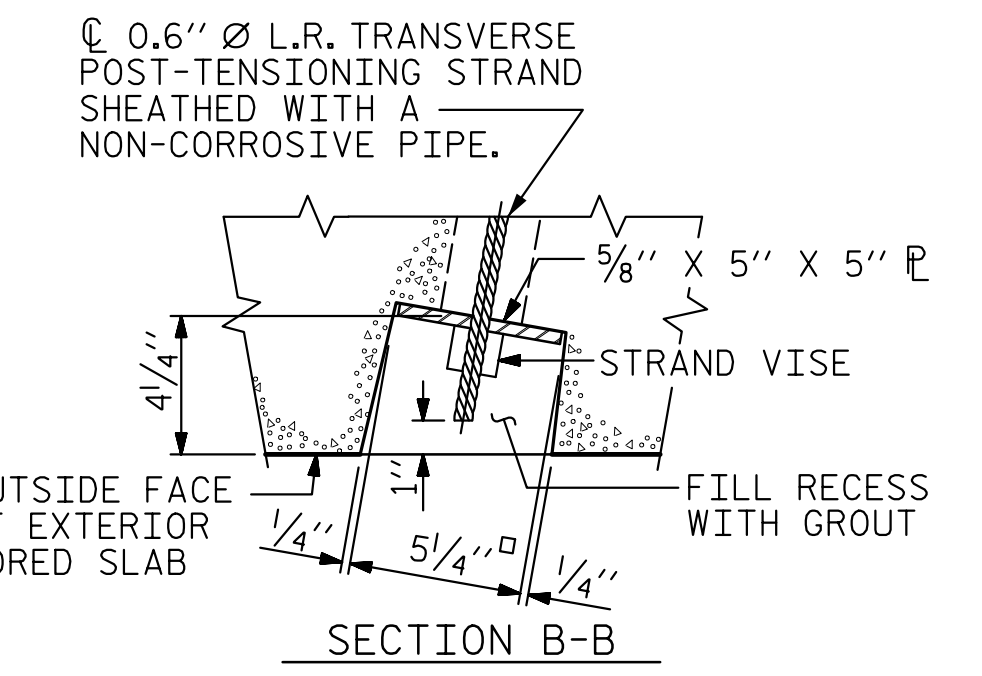
SECTION AT END BENT



SECTION AT BENT 1

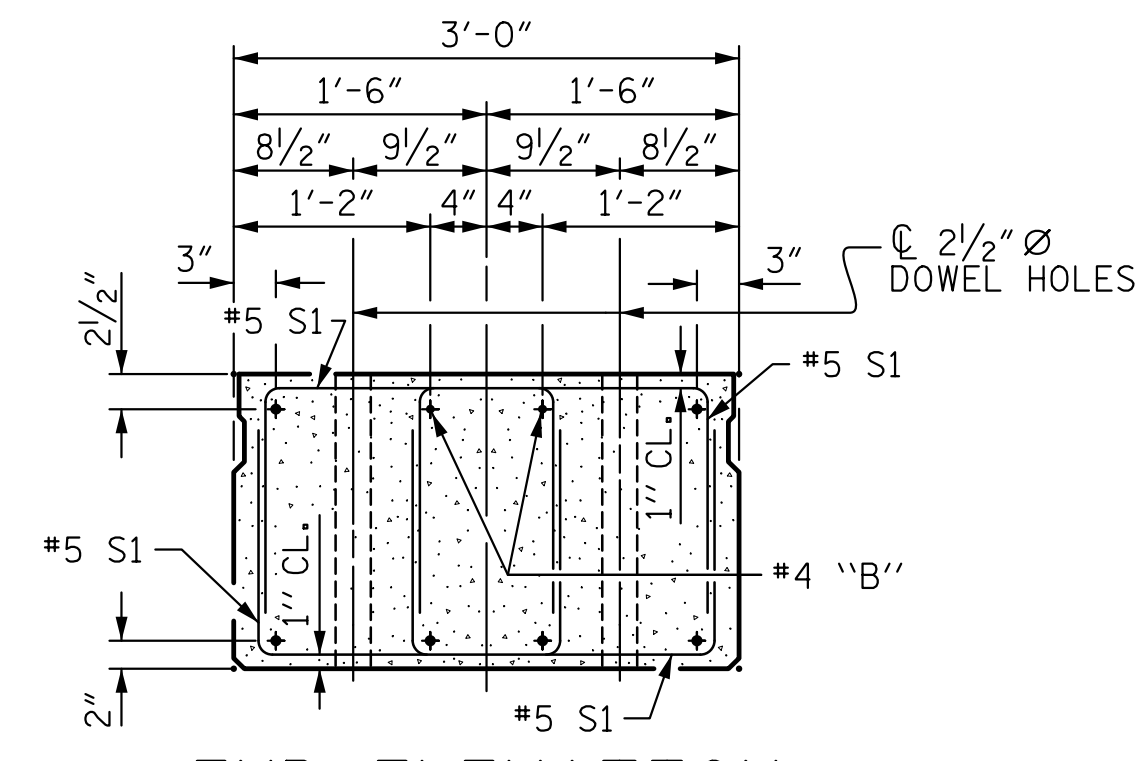


ELEVATION VIEW



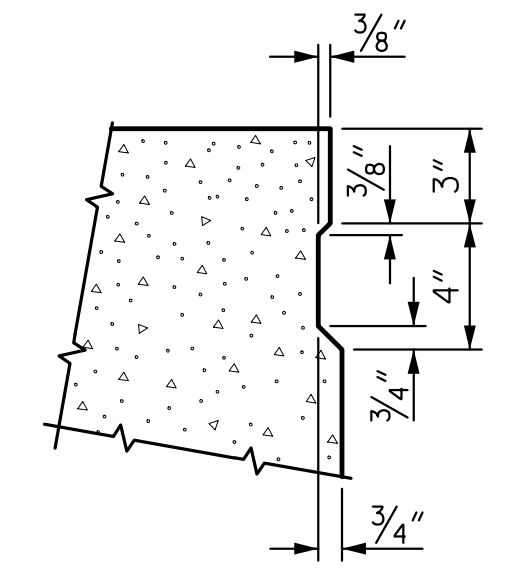
SECTION B-B

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



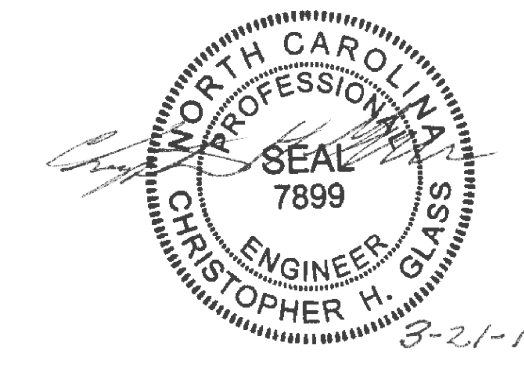
END ELEVATION

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. 17BP.4.R.7
HALIFAX COUNTY
 STATION: 12+84.80 -L-

SHEET 1 OF 11

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

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12	
1			3			TOTAL SHEETS	
2			4			33	

ASSEMBLED BY :	JBS/KE	DATE :	10/13
CHECKED BY :	CG	DATE :	10/13
DRAWN BY :	DGE	5/09	REV. 12/11
CHECKED BY :	BCH	6/09	MAA/AAC

*****SYTIME*****
 *****DGN*****
 *****USER*****

NOTES

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

ALL REINFORCING STEEL CAST WITH THE BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

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

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

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6000 PSI.

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

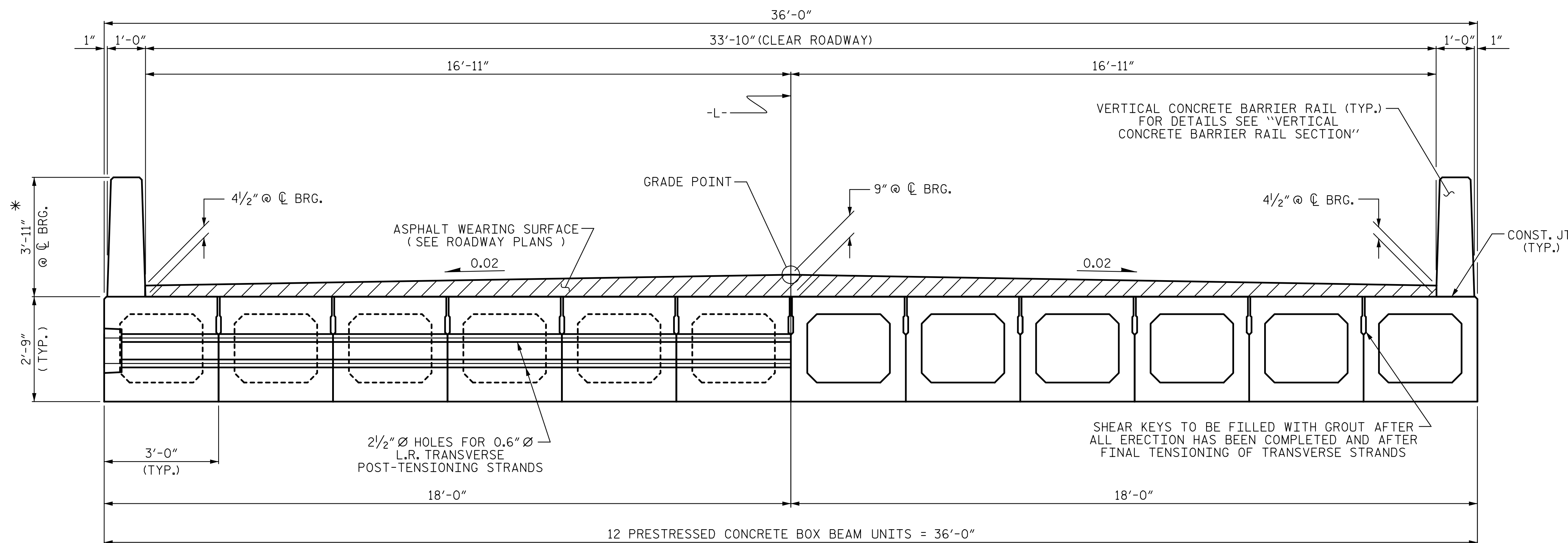
PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

VERTICAL 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 VERTICAL 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.

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

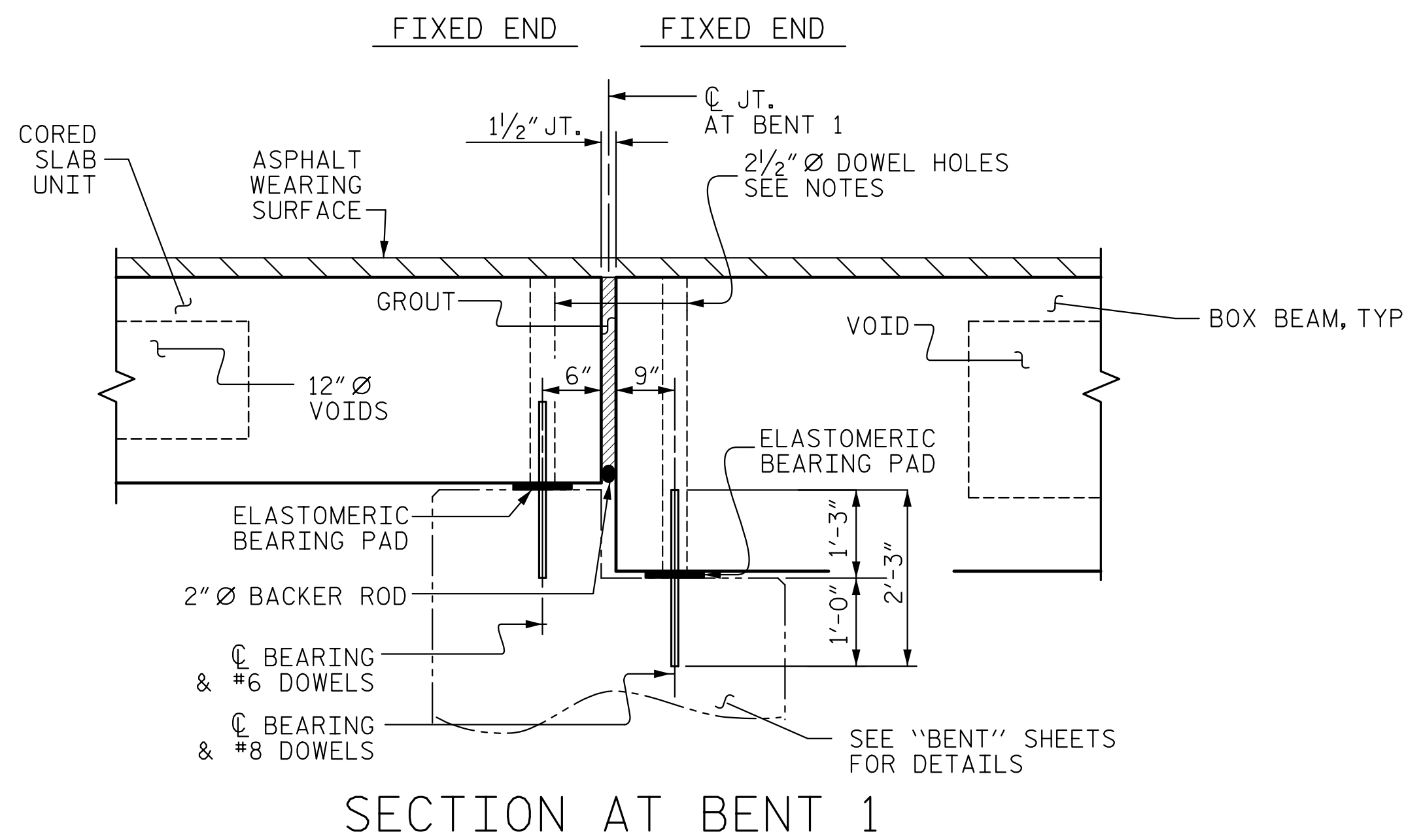


HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

HALF SECTION
THROUGH VOIDS

TYPICAL SECTION - SPAN B

*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.

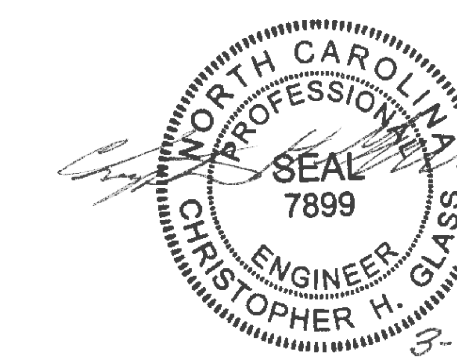


SECTION AT BENT 1

PROJECT NO. 17BP.4.R.7
HALIFAX COUNTY
STATION: 12+84.80 -L-

SHEET 2 OF 11

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

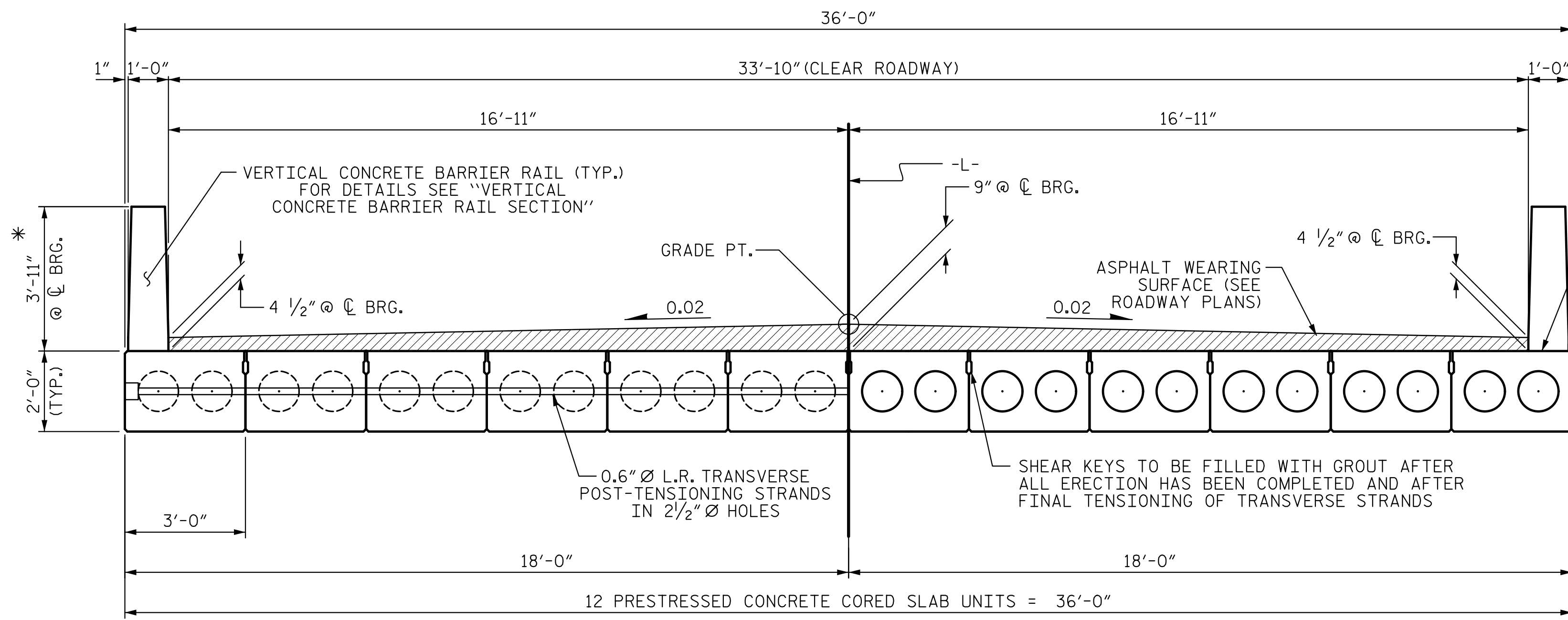


ASSEMBLED BY : JBS/KE DATE : 10/2013
CHECKED BY : CG DATE : 10/2013
DRAWN BY : DGE 8/II
CHECKED BY : TMG 11/II

*****SYSTEM*****
*****SDGN*****
*****USERNAME*****

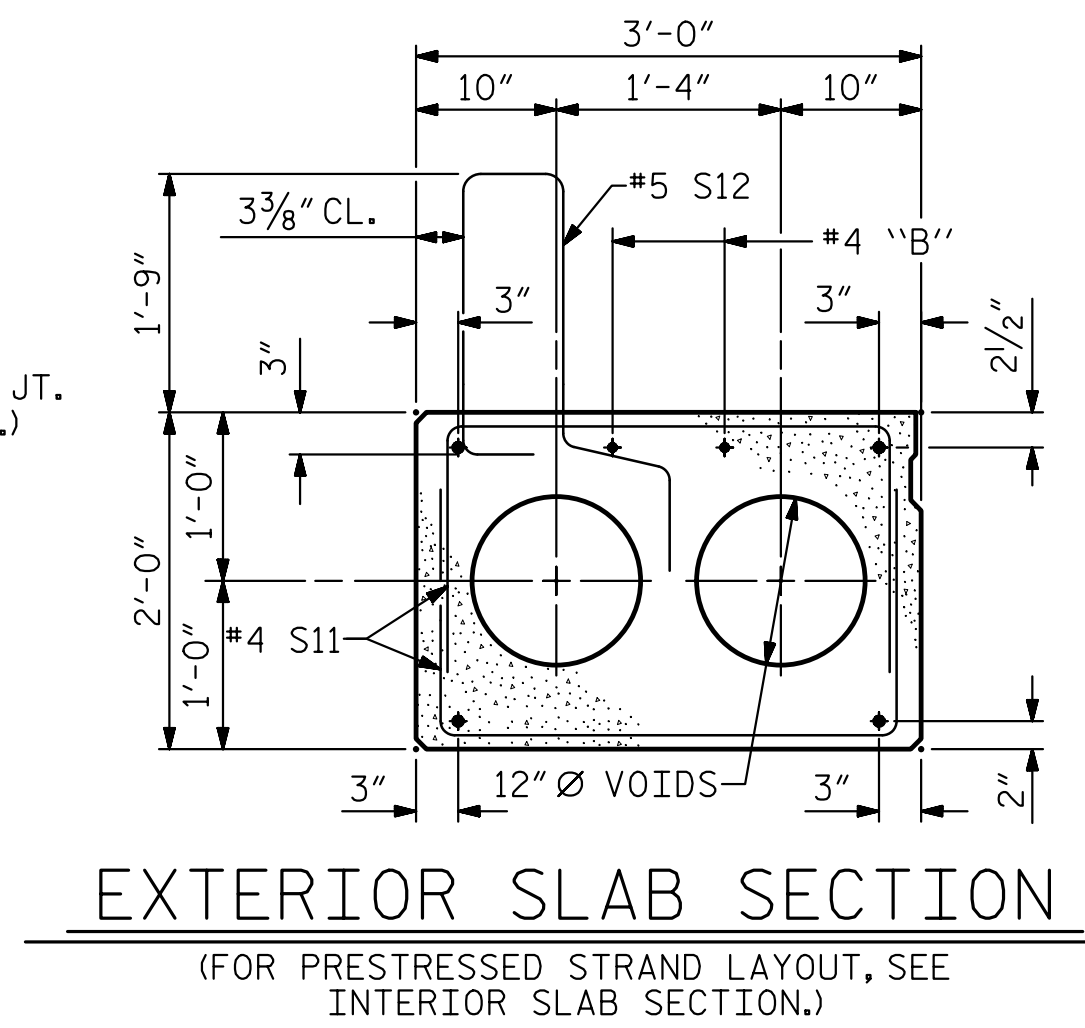
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			33

STD. NO. STD.33PCBB_36_90S

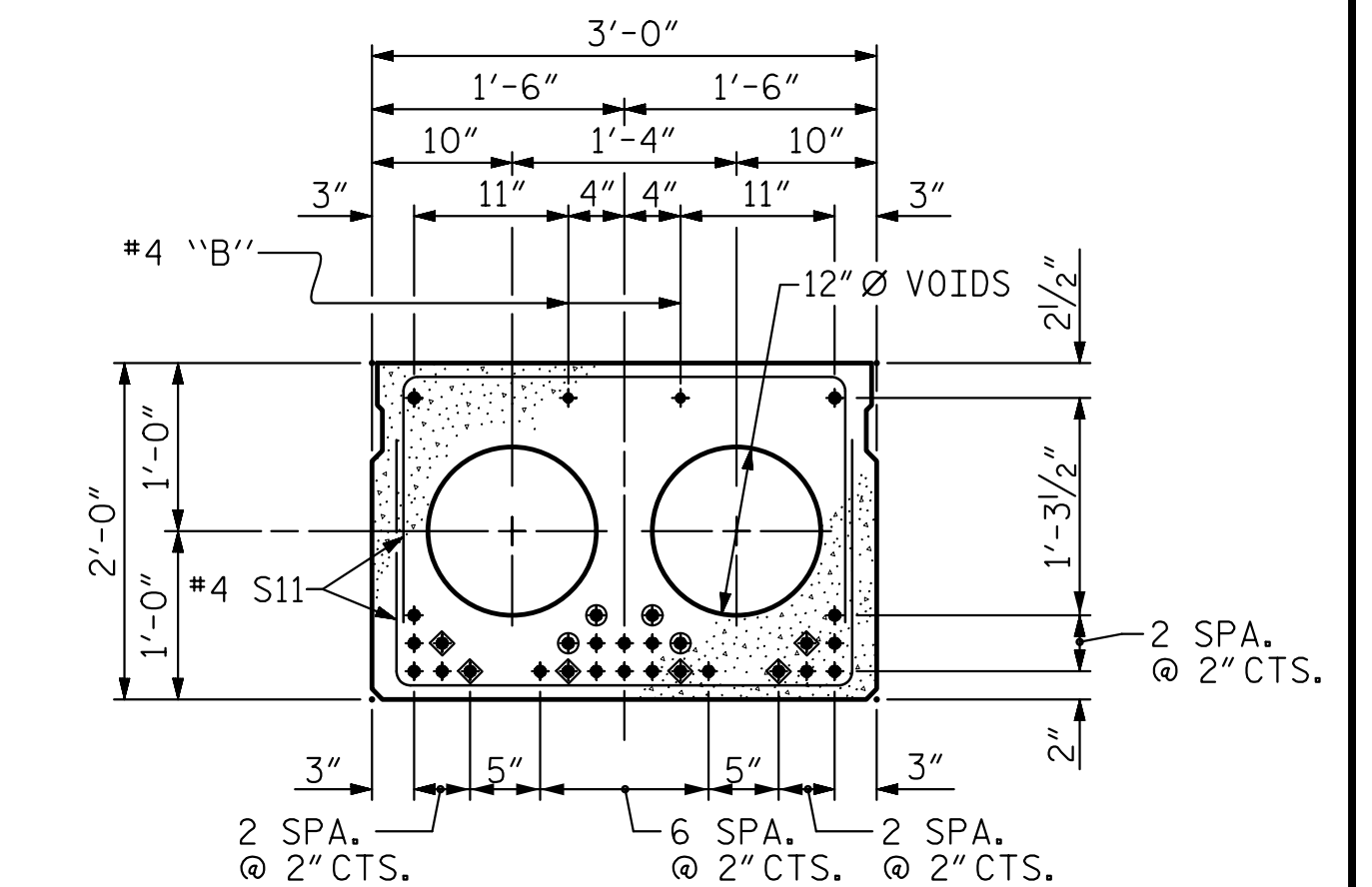


HALF SECTION AT INTERMEDIATE DIAPHRAGMS
TYPICAL SECTION - SPAN C
 HALF SECTION THROUGH VOIDS

* - 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.



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

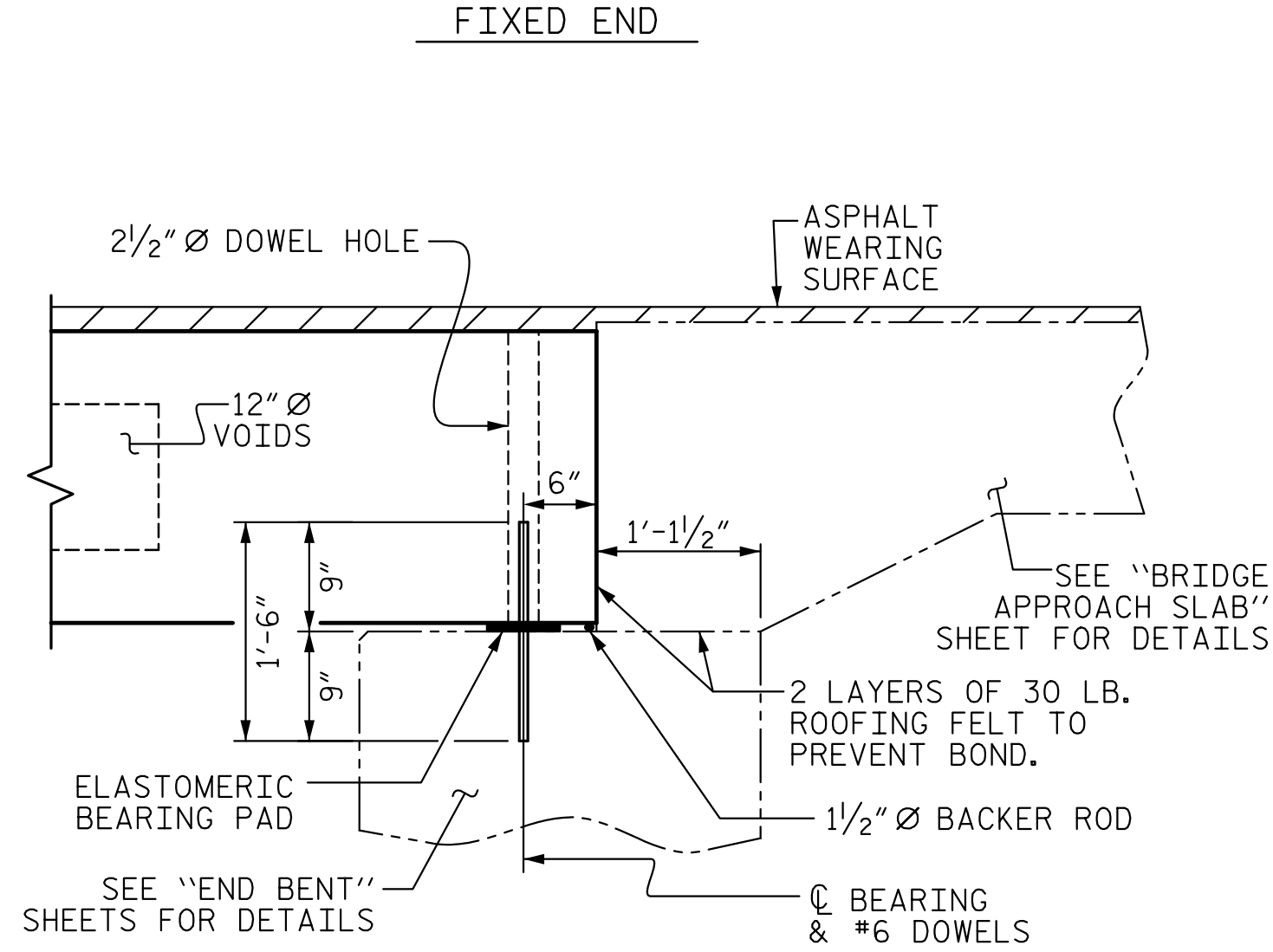


INTERIOR SLAB SECTION (60' & 65' UNIT)
 (24 STRANDS REQUIRED)

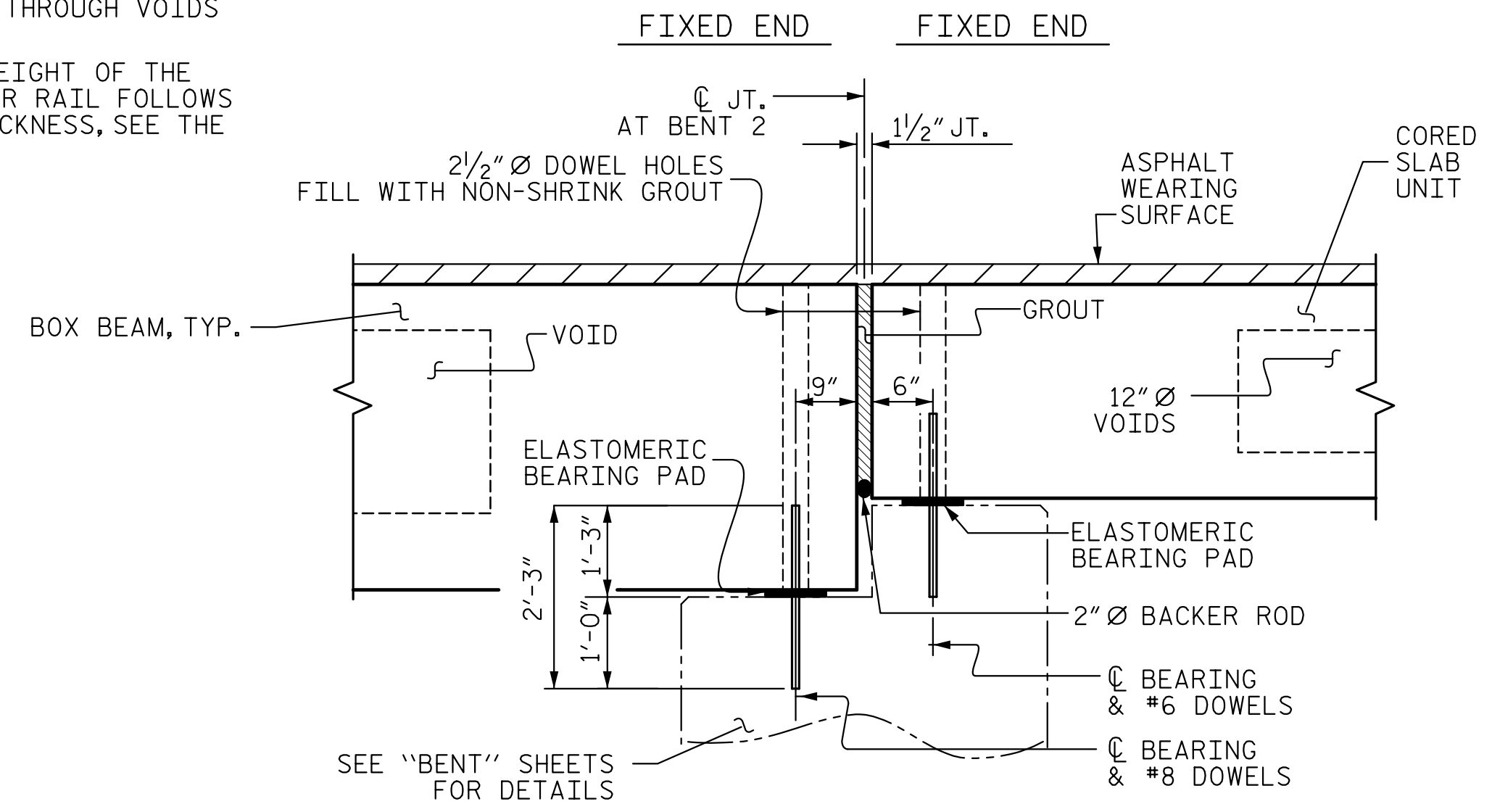
0.6" Ø LOW RELAXATION STRAND LAYOUT

- ◆ 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.

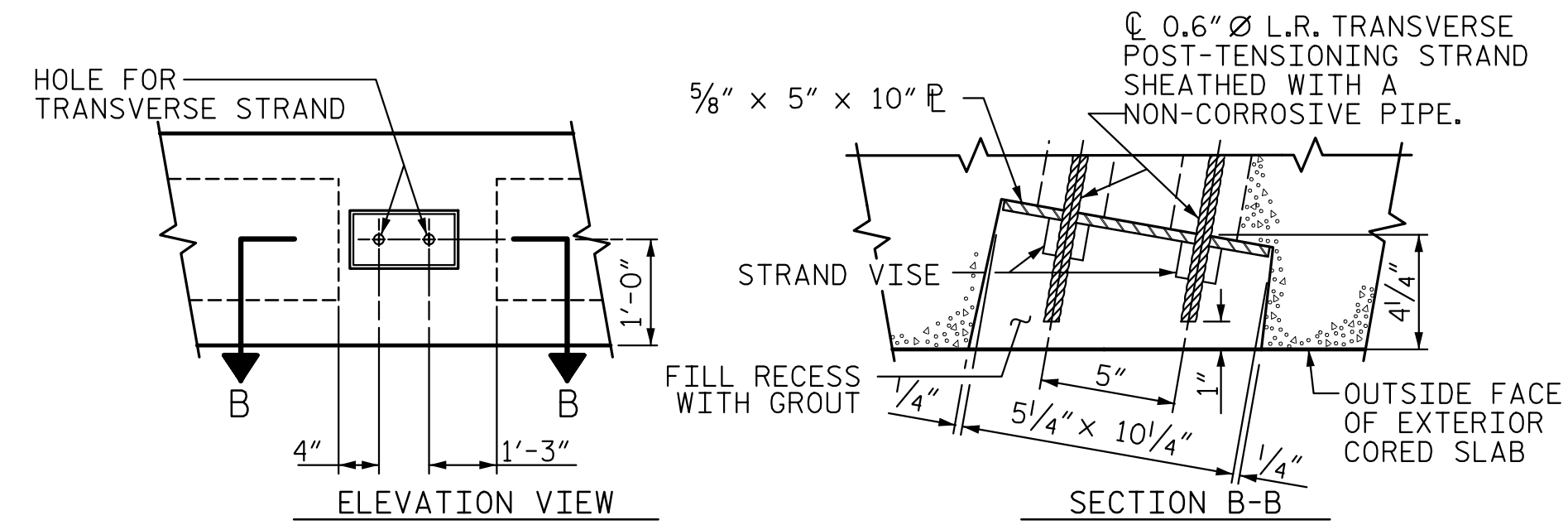
DEBONDING LEGEND



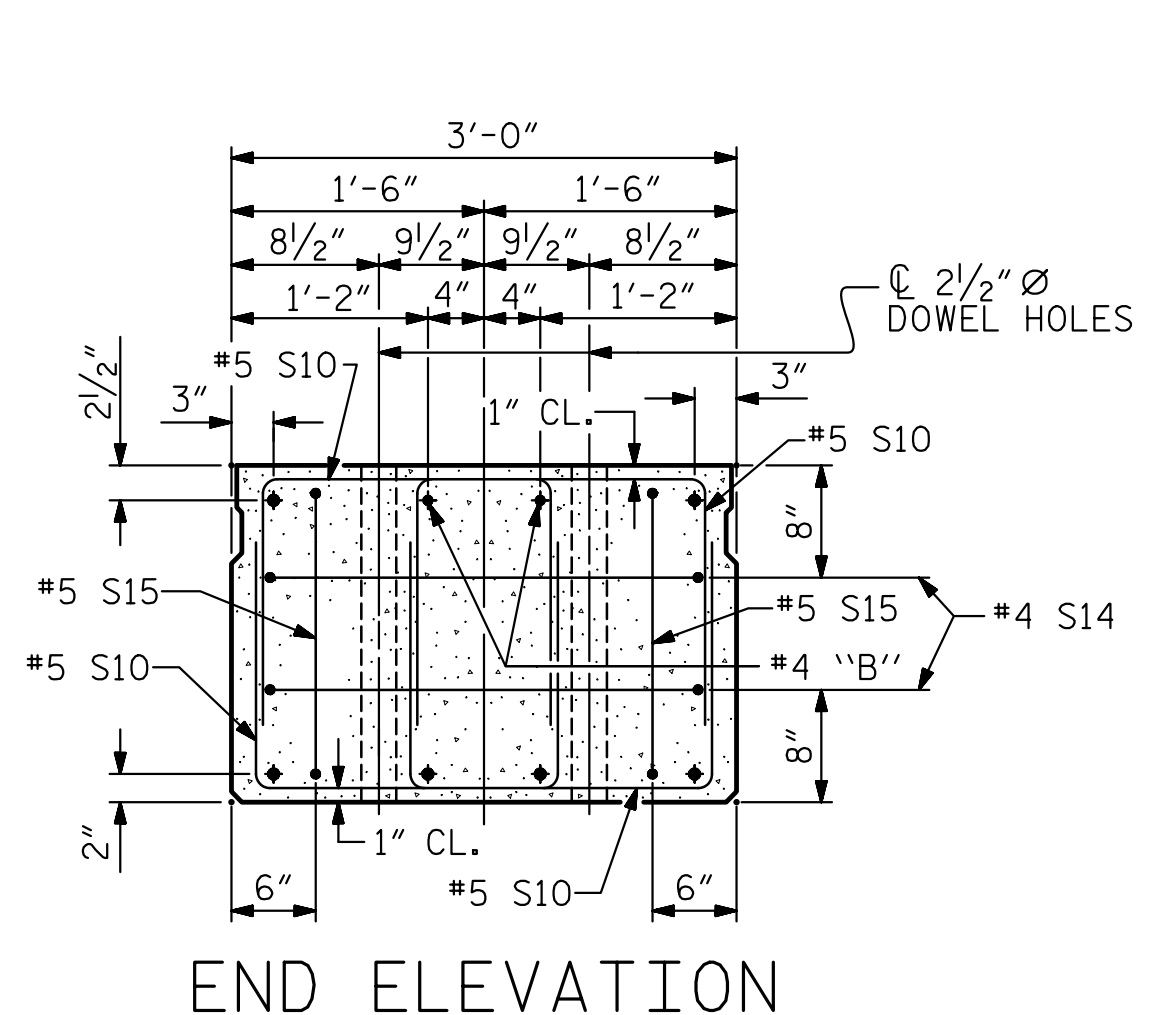
SECTION AT END BENT 2



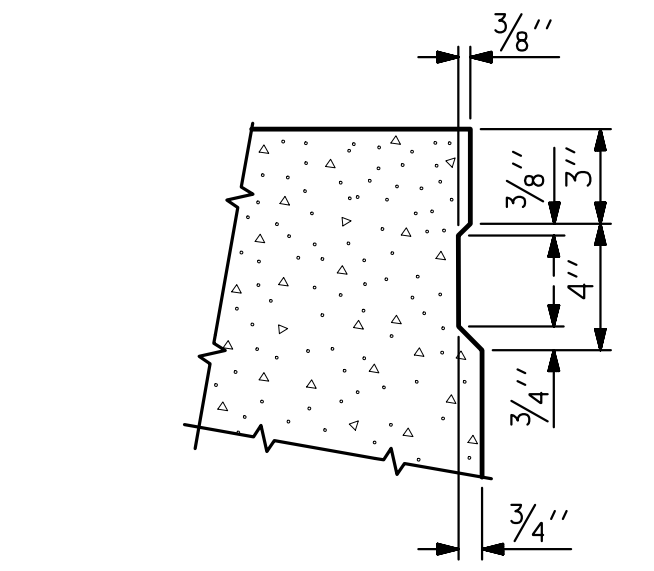
SECTION AT BENT 2



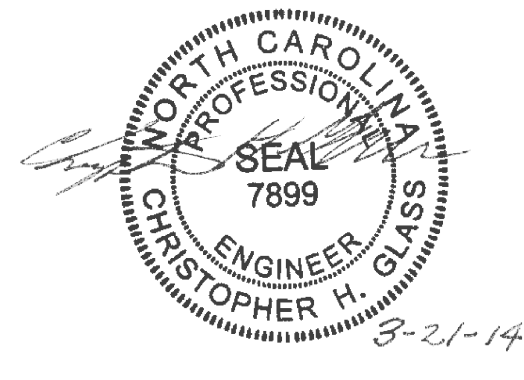
GROUTED RECESS AT END OF POST-TENSIONED STRAND CORED SLABS



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.



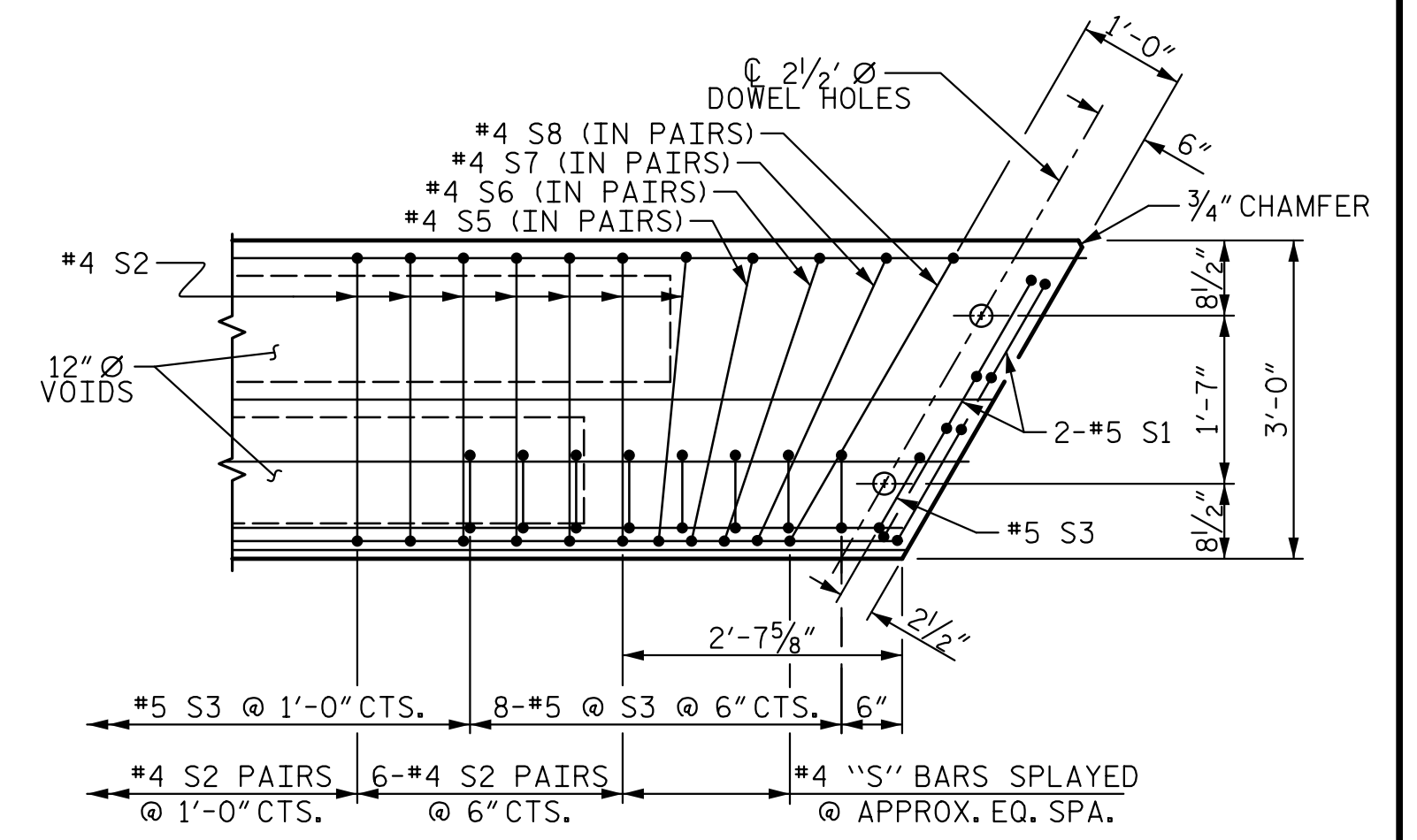
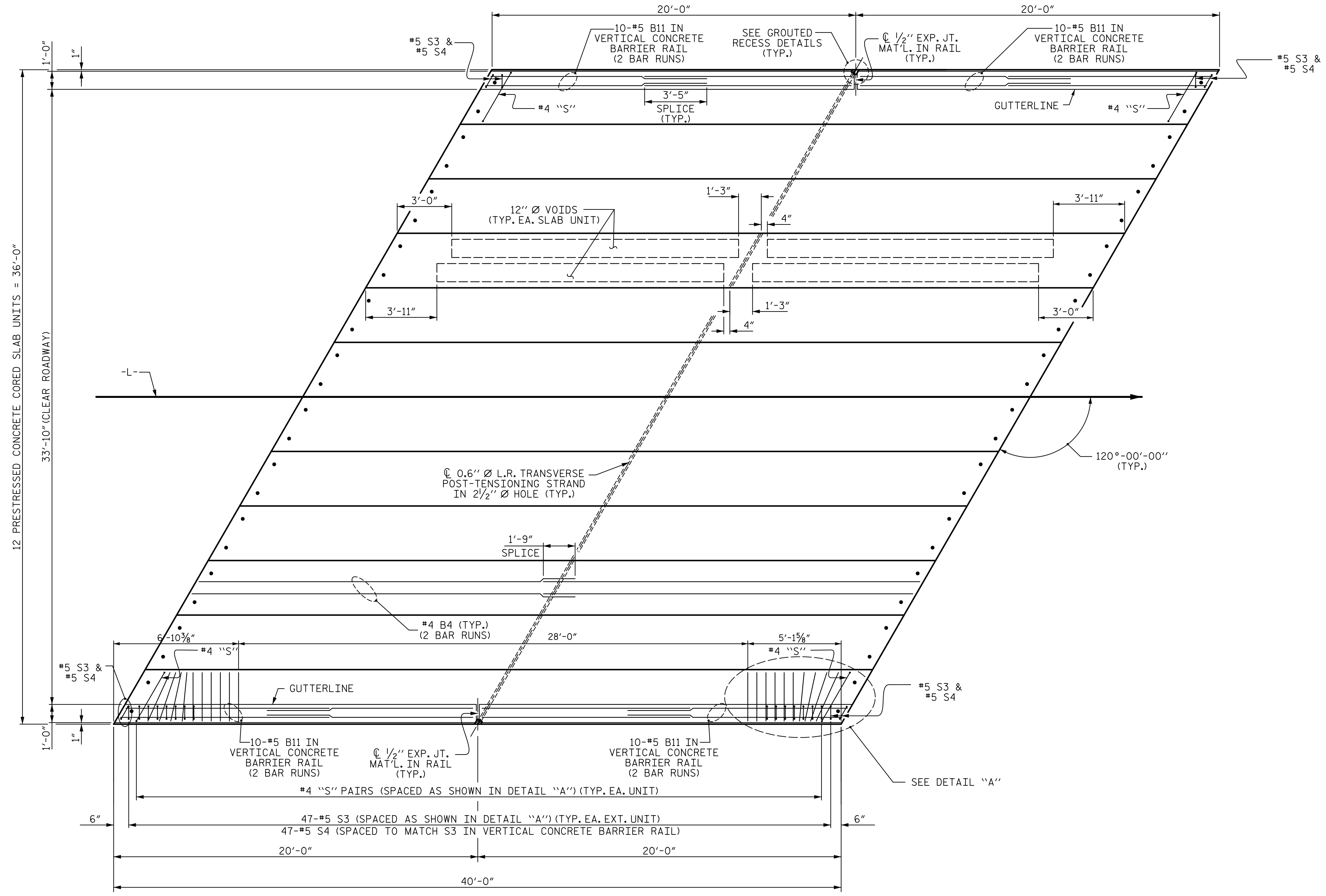
PROJECT NO. 17BP.4.R.7
 HALIFAX COUNTY
 STATION: 12+84.80 -L-

SHEET 3 OF 11

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD					
3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLAB UNIT					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-14					TOTAL SHEETS 33

ASSEMBLED BY : JBS/KE	DATE :10/13
CHECKED BY : CG	DATE :10/13
DRAWN BY : MAA 6/10	REV. 12/11 MAA/AAC
CHECKED BY : MKT 7/10	

*****SYTIME*****
 *****SDGN*****
 *****USER*****



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

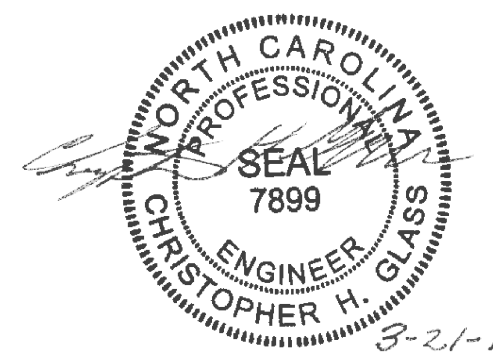
PLAN OF UNIT - SPAN A

PROJECT NO. 17BP.4.R.7
 HALIFAX COUNTY
 STATION: 12+84.80 -L-

SHEET 4 OF 11

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF 40' UNIT
 33'-10" CLEAR ROADWAY
 120° SKEW

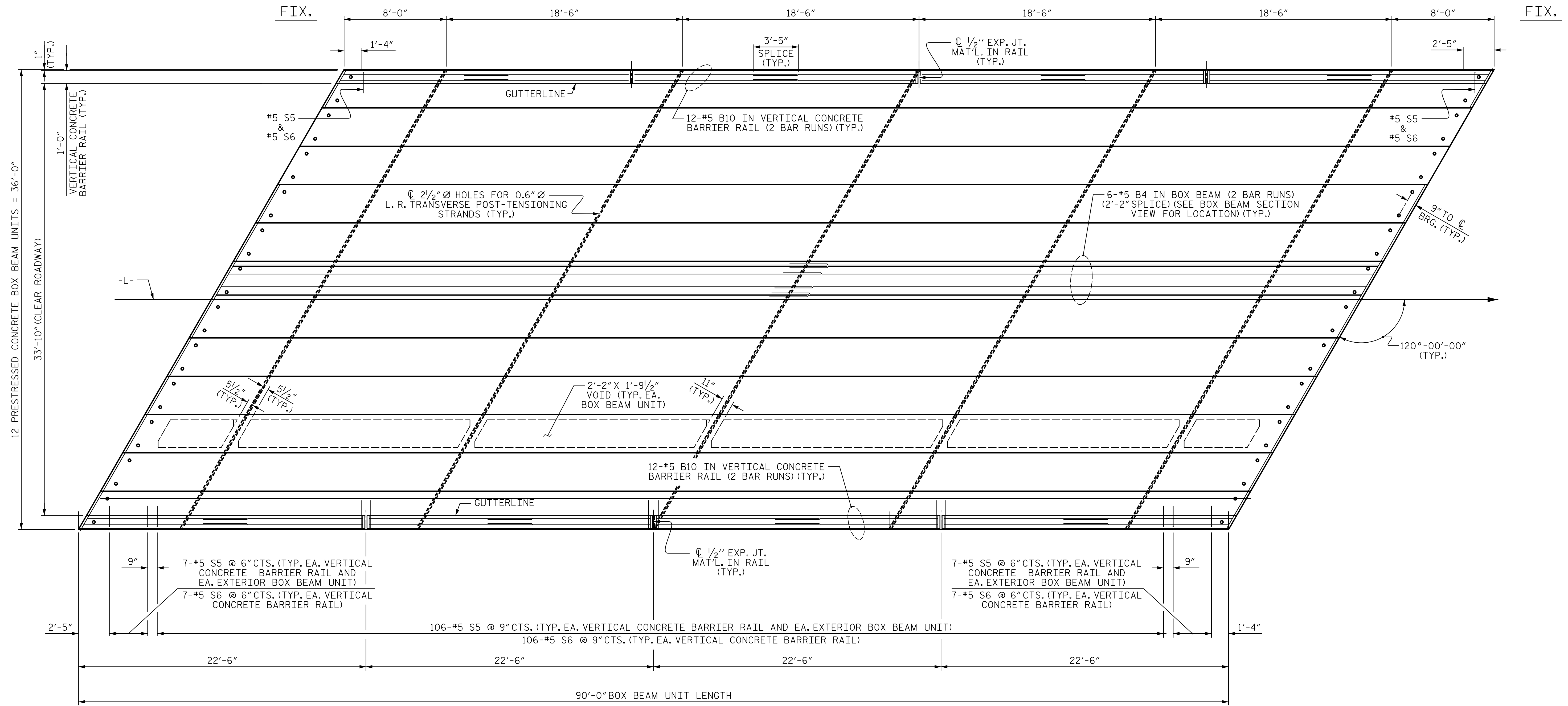


ASSEMBLED BY :	JBS	DATE :	10/13
CHECKED BY :	CG	DATE :	10/13
DRAWN BY :	DGE 5/09	REV. 12/5/11	MAA/AAC
CHECKED BY :	BCH 6/09		

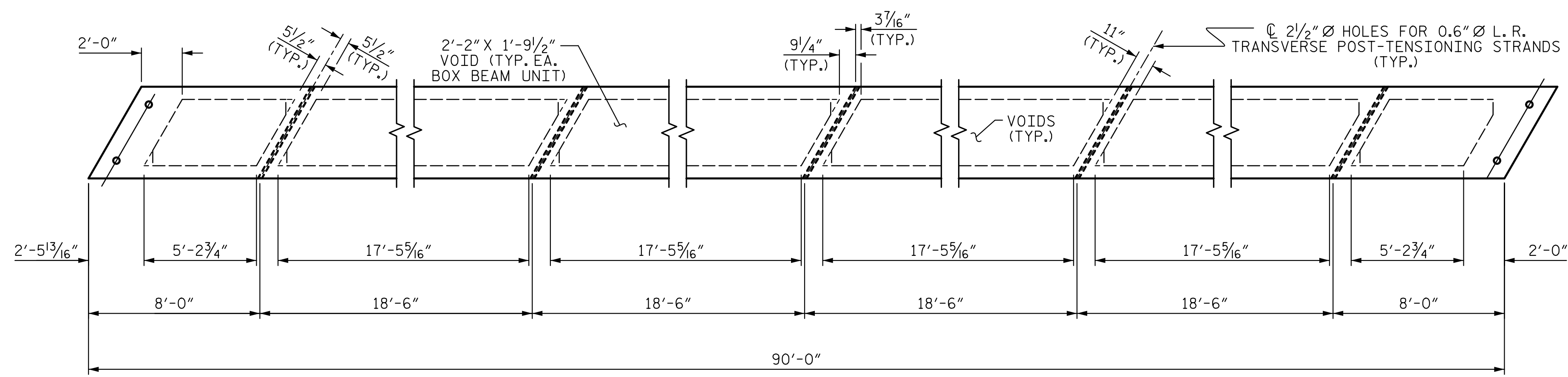
*****SYTIME*****
 *****SDGN*****
 *****USERNAME*****

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			33

STD. NO. 21" PCS_36_120S_40L



PLAN OF UNIT - SPAN B

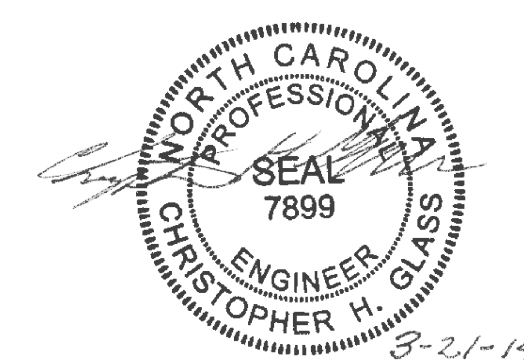


DIAPHRAGM AND VOID LAYOUT

PROJECT NO. 17BP.4.R.7
 HALIFAX COUNTY
 STATION: 12+84.80 -L-

SHEET 5 OF 11

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 PLAN OF 90' UNIT
 33'-10" CLEAR ROADWAY
 120° SKEW

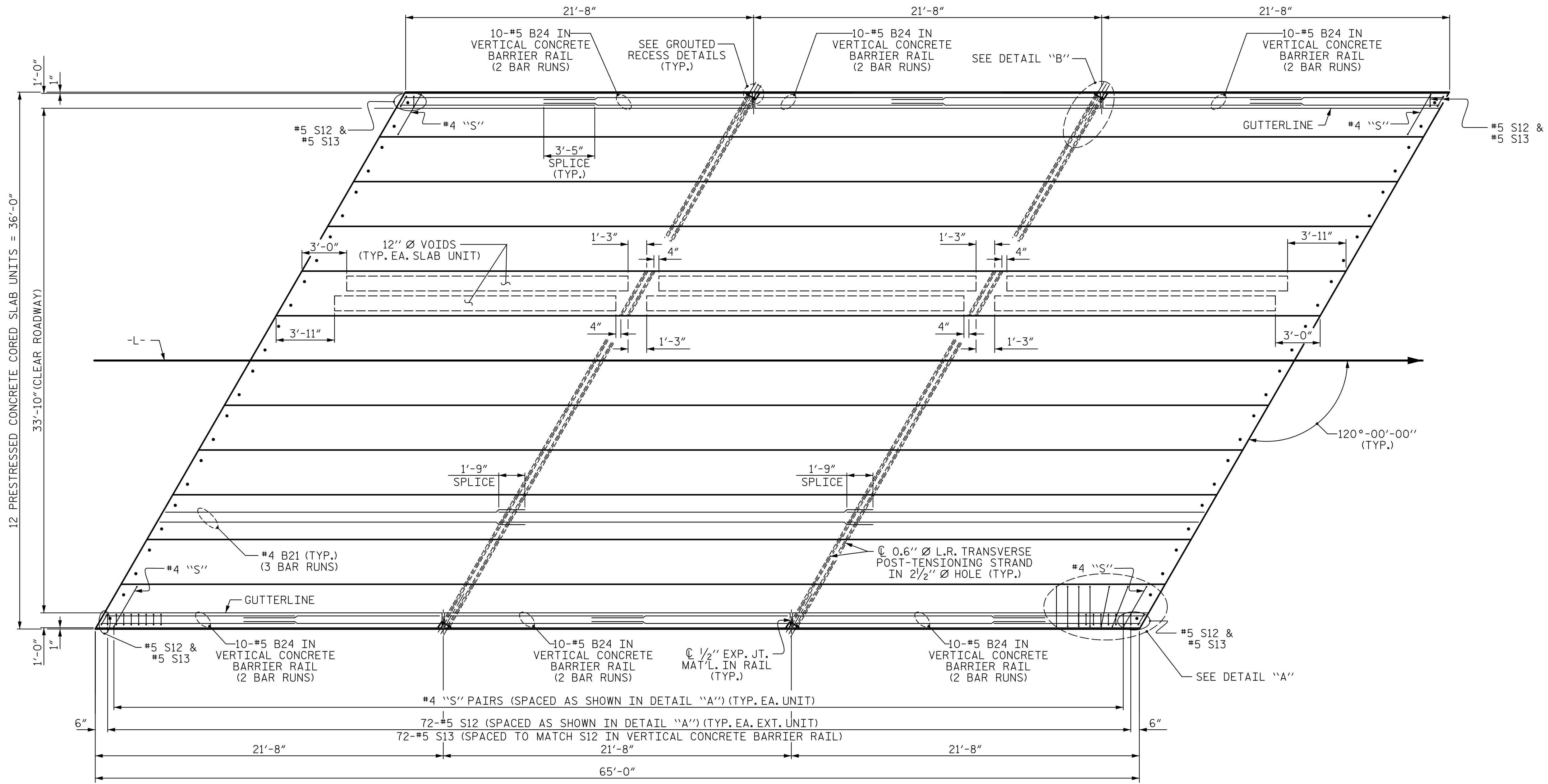


ASSEMBLED BY :	JBS/KE	DATE :	10/13
CHECKED BY :	CG	DATE :	10/13
DRAWN BY :	DCE 8/II		
CHECKED BY :	TMG II/II		

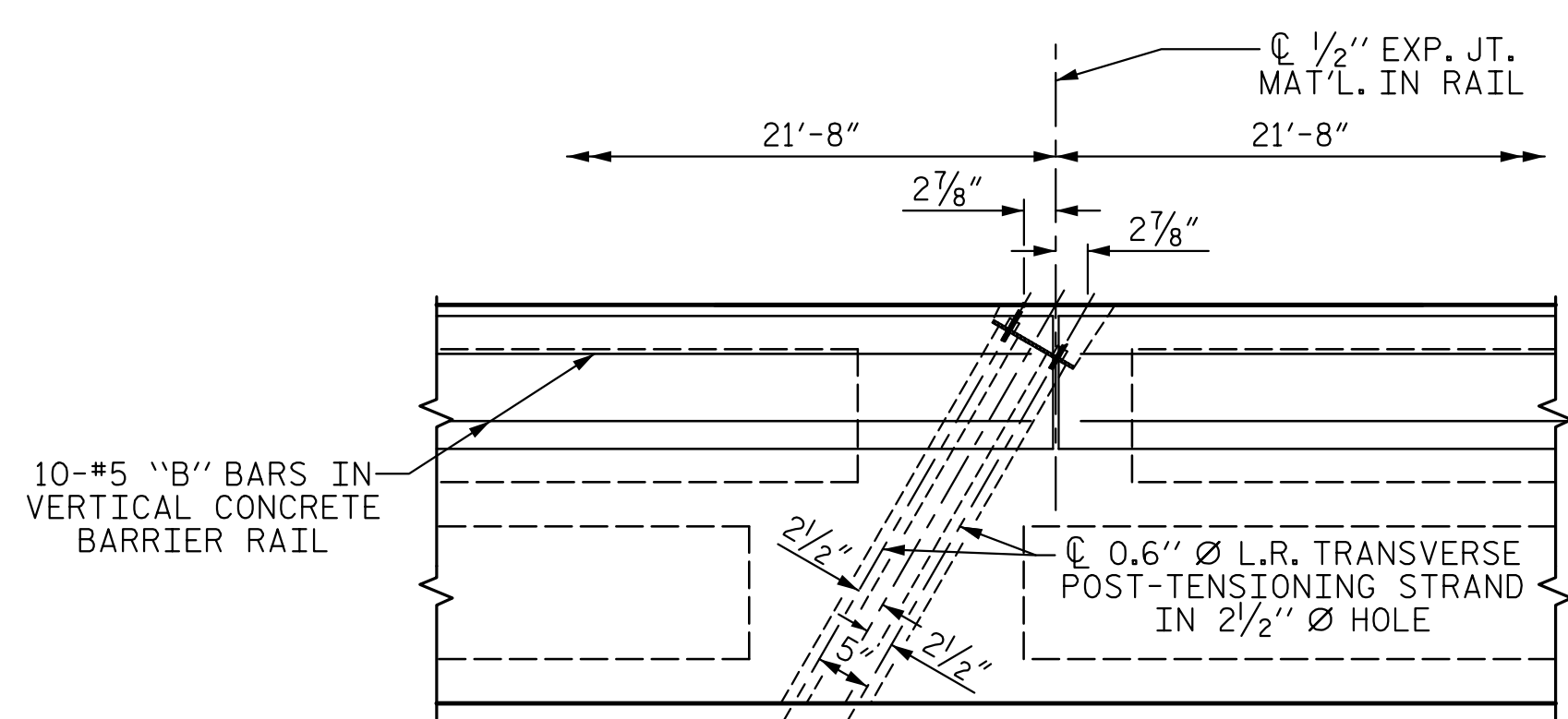
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			33

STD.NO.33PCBB_36_120S_90L

*****SYTIME*****
 *****SDGN*****
 *****USERNAME*****

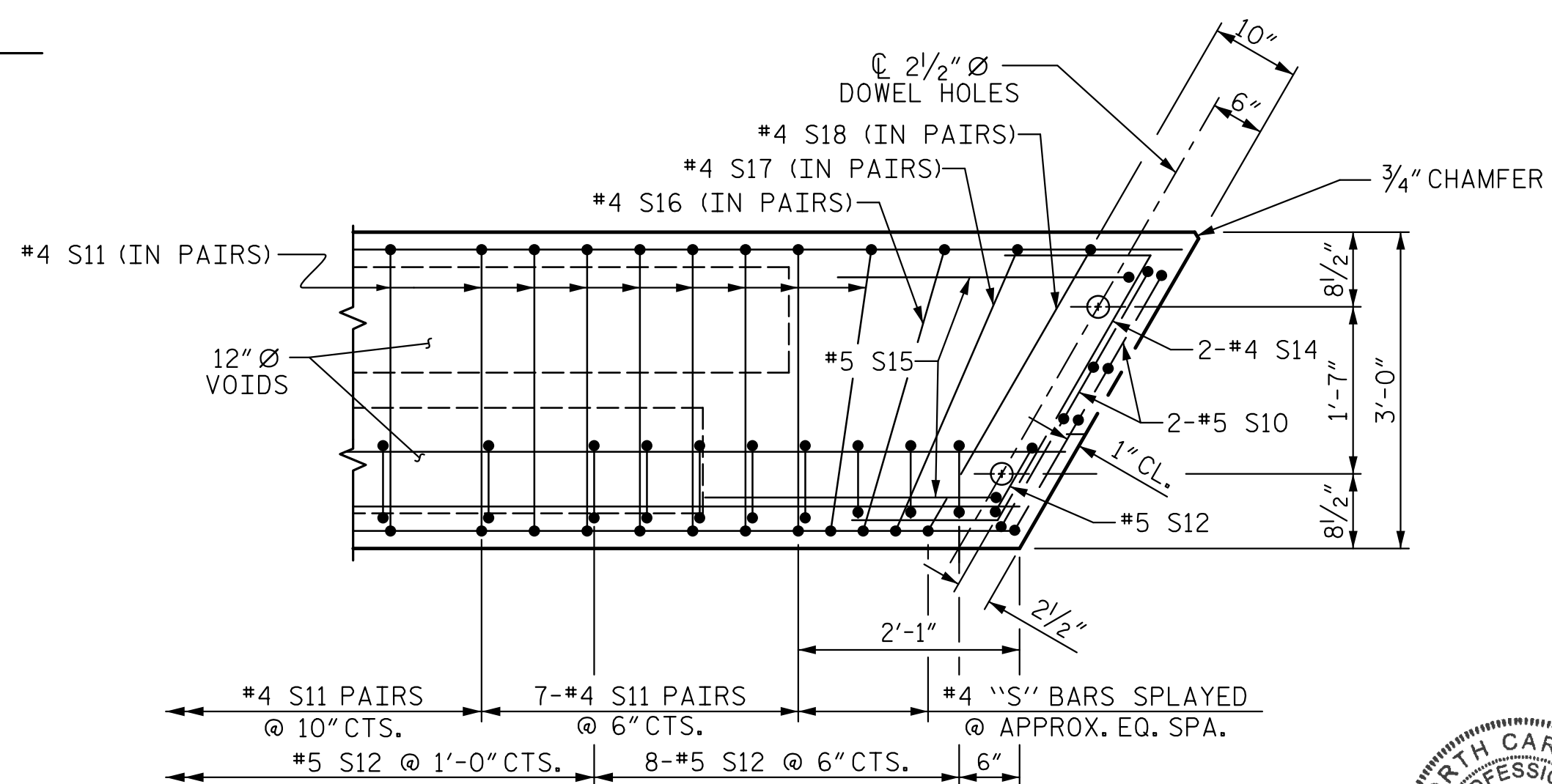


PLAN OF UNIT - SPAN C



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



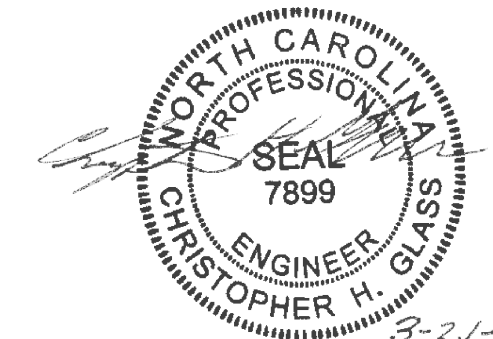
DETAIL "A"

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

PROJECT NO. 17BP.4.R.7
 HALIFAX COUNTY
 STATION: 12+84.80 -L-

SHEET 6 OF 11

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 PLAN OF 65' UNIT
 33'-10" CLEAR ROADWAY
 120° SKEW



ASSEMBLED BY :	JBS	DATE :	10/13
CHECKED BY :	CG	DATE :	10/13
DRAWN BY :	MAA	6/10	REV. 12/5/11
CHECKED BY :	MKT	7/10	MAA/AAC

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			33

*****SYTIME*****
 *****SDGN*****
 *****USERNAME*****

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
40' UNIT						
* B11	80	80	#5	STR	11'-9"	980
* S4	98	98	#5	2	7'-2"	733
* EPOXY COATED REINFORCING STEEL					LBS.	1713
CLASS AA CONCRETE					CU.YDS.	10.5
TOTAL VERTICAL CONCRETE BARRIER RAIL					LN.FT.	80.29

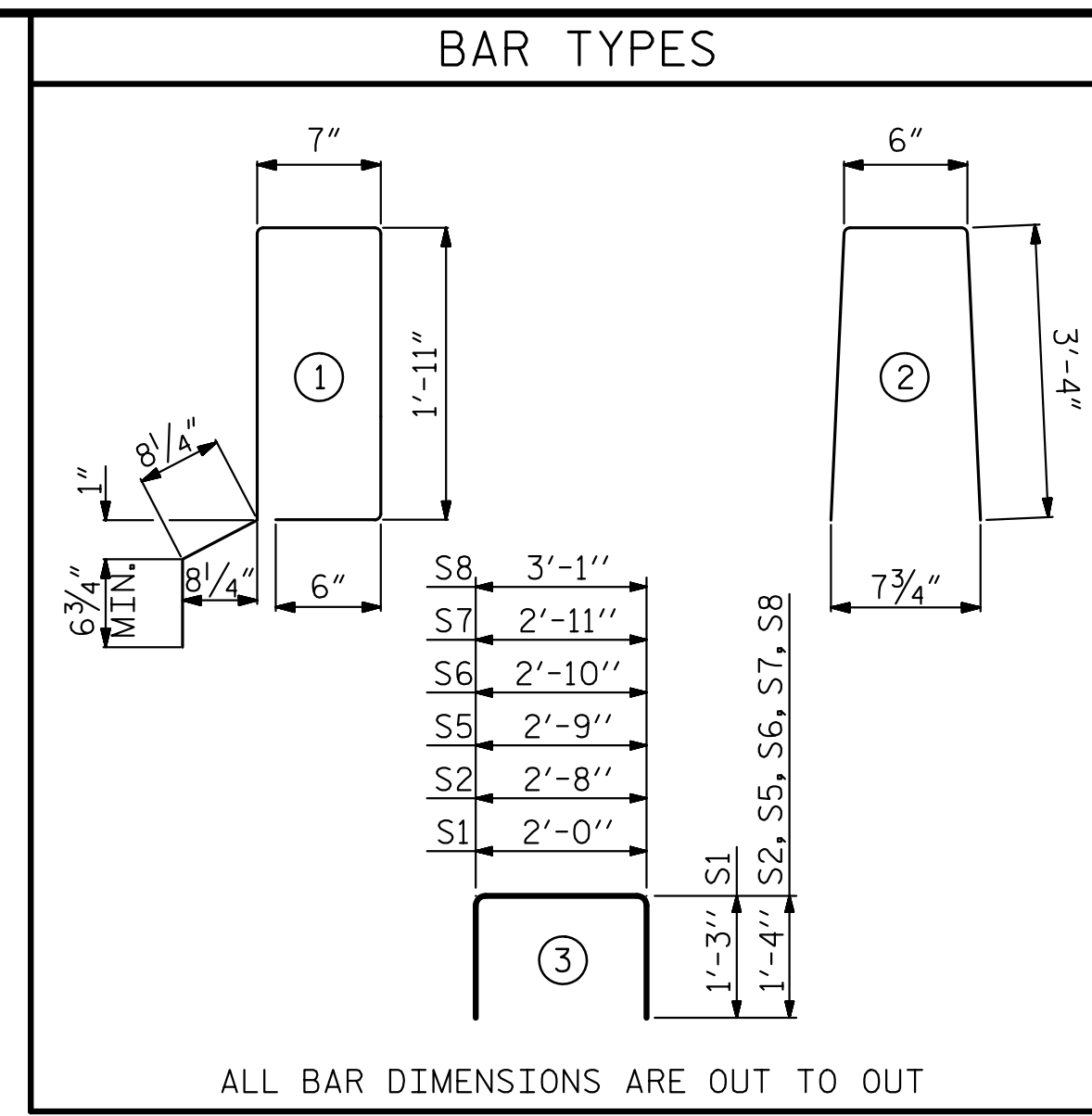
BILL OF MATERIAL FOR ONE 40' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B4	4	#4	STR	20'-9"	55	20'-9"	55
S1	8	#5	3	4'-6"	38	4'-6"	38
S2	82	#4	3	5'-4"	292	5'-4"	292
* S3	49	#5	1	6'-2"	315		
S5	4	#4	3	5'-5"	14	5'-5"	14
S6	4	#4	3	5'-6"	15	5'-6"	15
S7	4	#4	3	5'-7"	15	5'-7"	15
S8	4	#4	3	5'-9"	15	5'-9"	15
REINFORCING STEEL				LBS.	444		444
* EPOXY COATED REINFORCING STEEL				LBS.	315		
6500 P.S.I. CONCRETE				CU.YDS.	5.9		5.9
0.6" Ø L.R. STRANDS				No.	13		13

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
40' UNIT			
EXTERIOR C.S.	2	40'-0"	80'-0"
INTERIOR C.S.	10	40'-0"	400'-0"
TOTAL	12		480'-0"

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 1'-9"
40' & 45' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1/4" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/8" ↓
FINAL CAMBER	1/8" ↑

** INCLUDES FUTURE WEARING SURFACE

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
33'-10" CLEAR ROADWAY	ASPHALT OVERLAY THICKNESS	RAIL HEIGHT
	@ MID-SPAN	@ MID-SPAN
	NORMAL CROWN SECTION	
-25', 30' & 35' UNITS	3 1/8"	3'-9 5/8"
40' & 45' UNITS	2 3/8"	3'-8 7/8"
-50' & 55' UNITS	1 1/4"	3'-7 3/4"



NOTES

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

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

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

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

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

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

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.

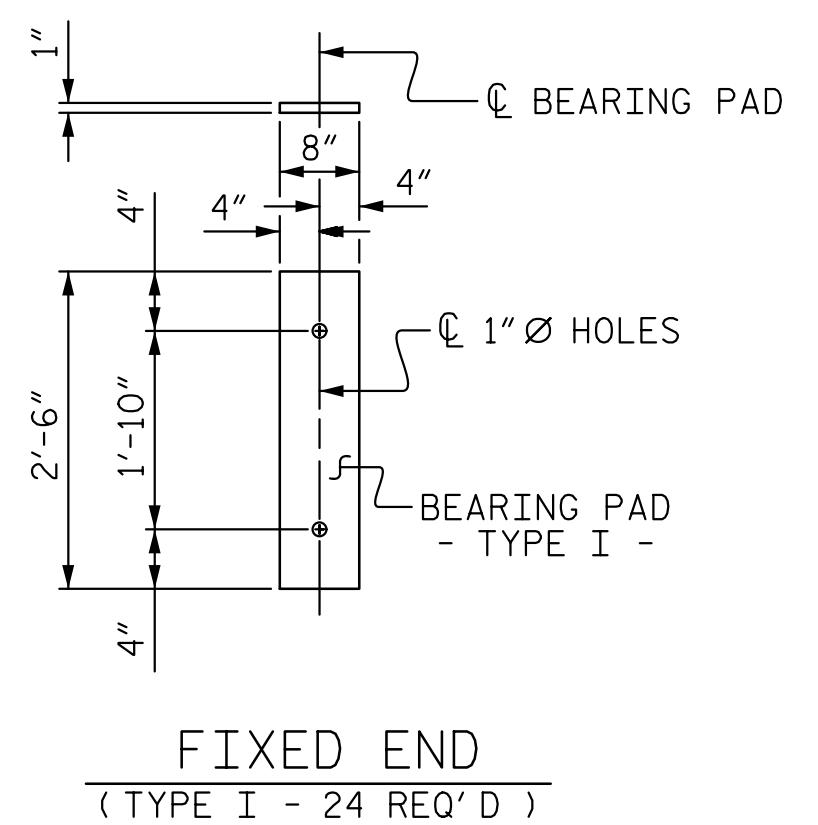
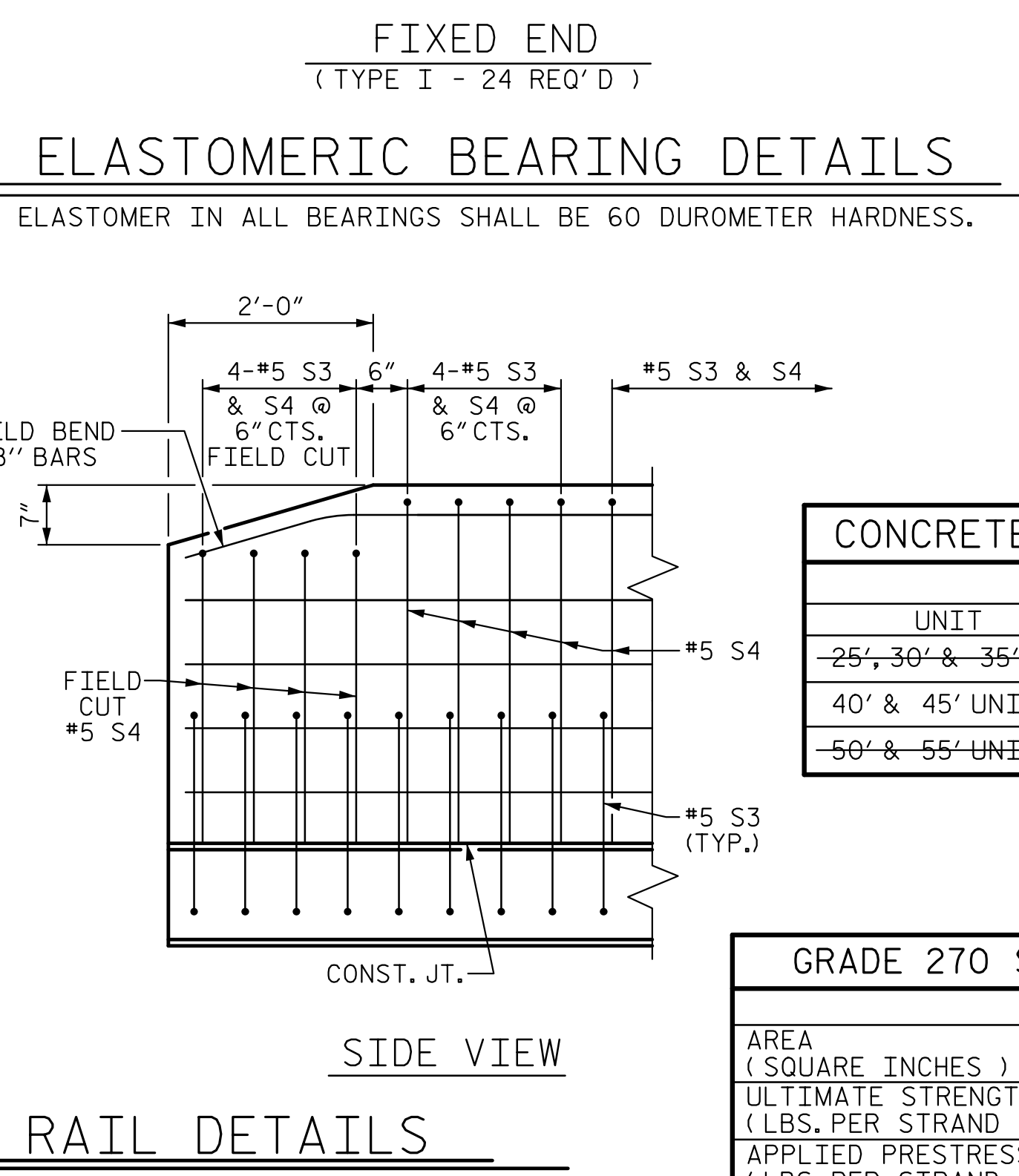
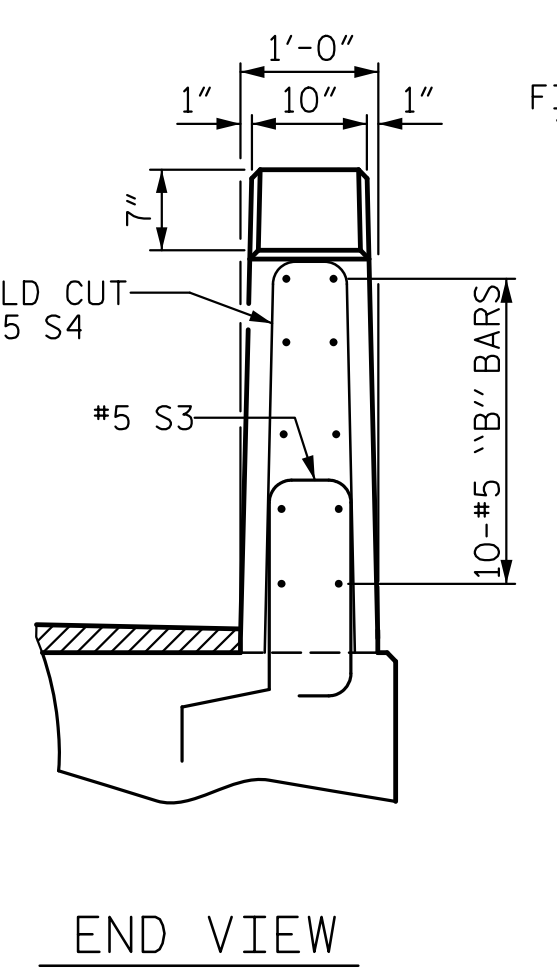
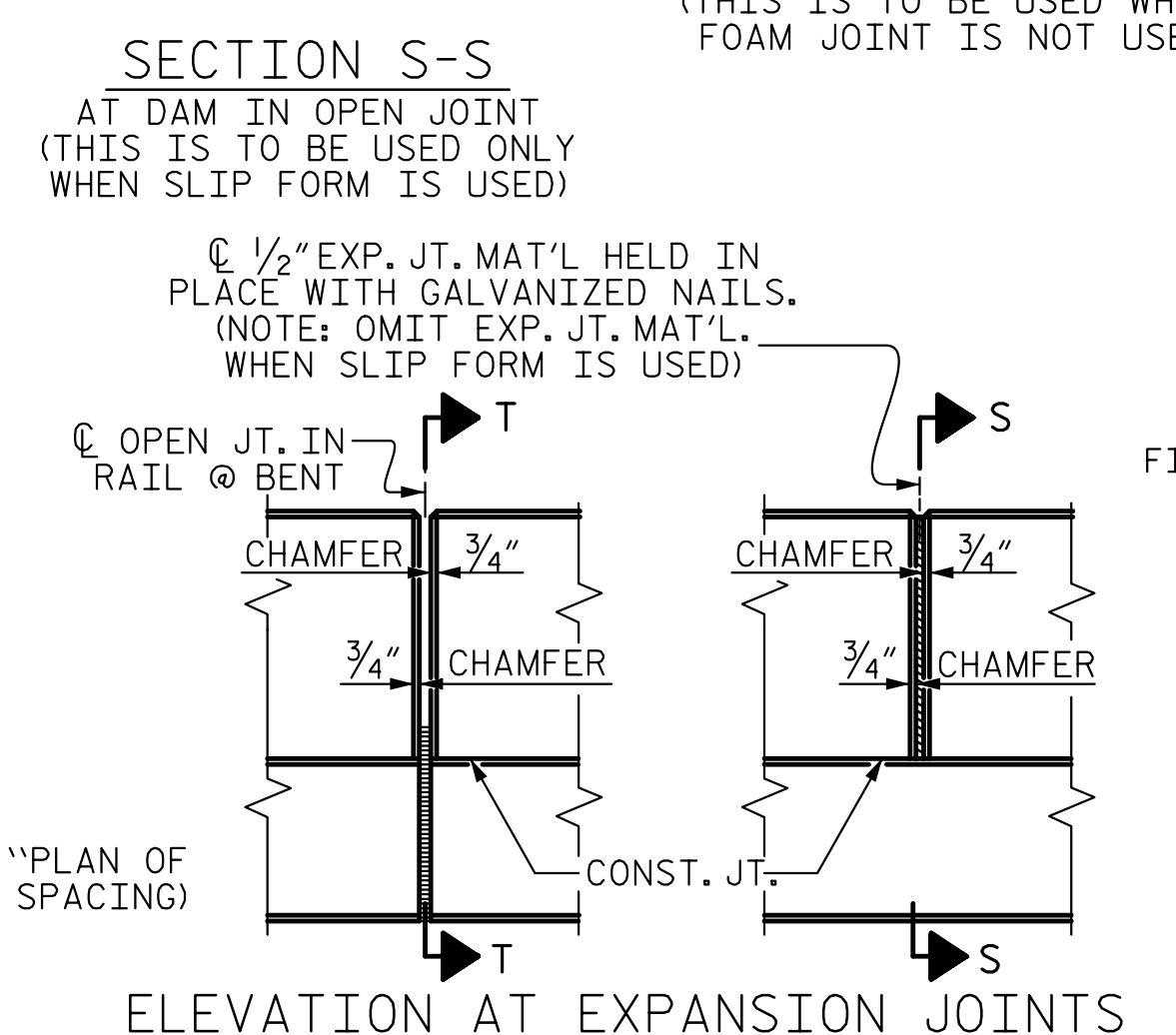
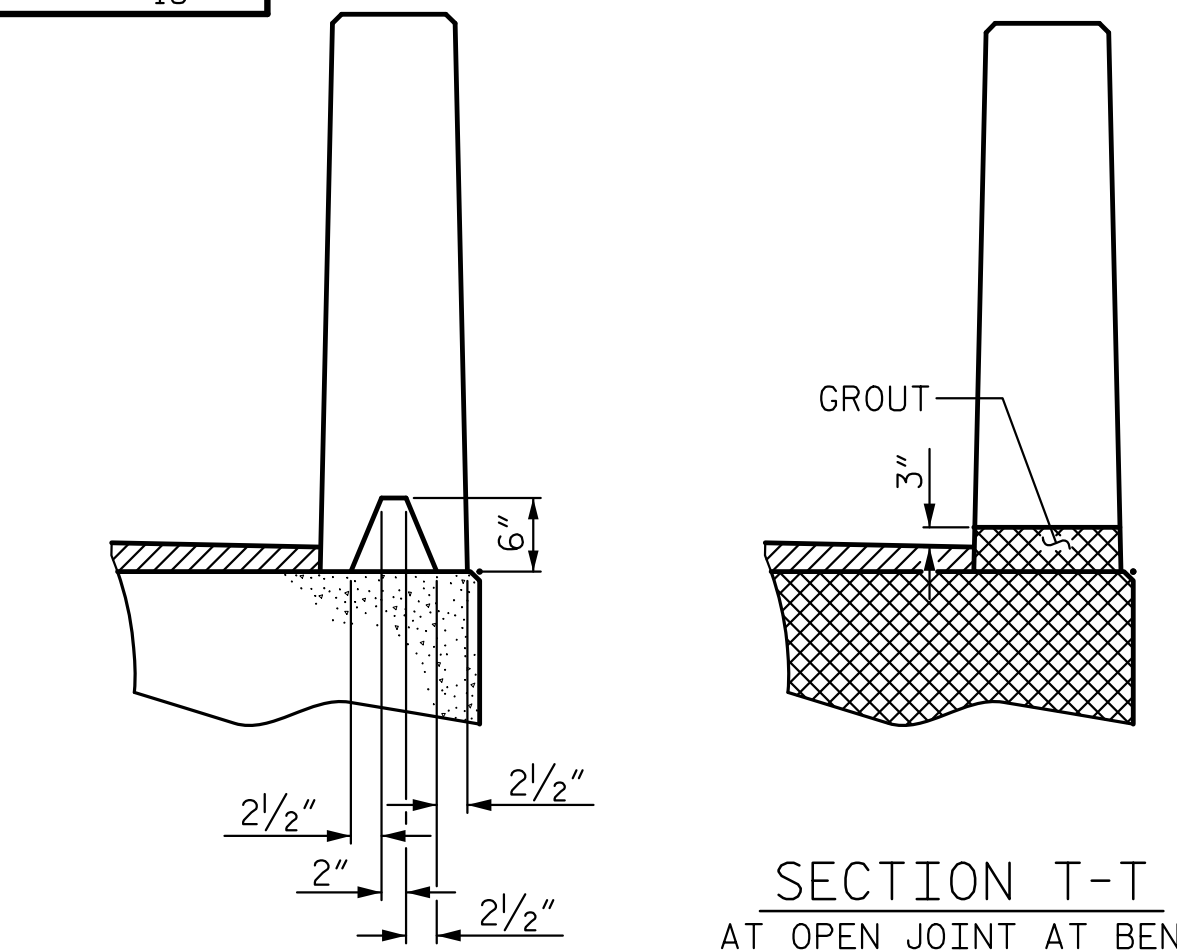
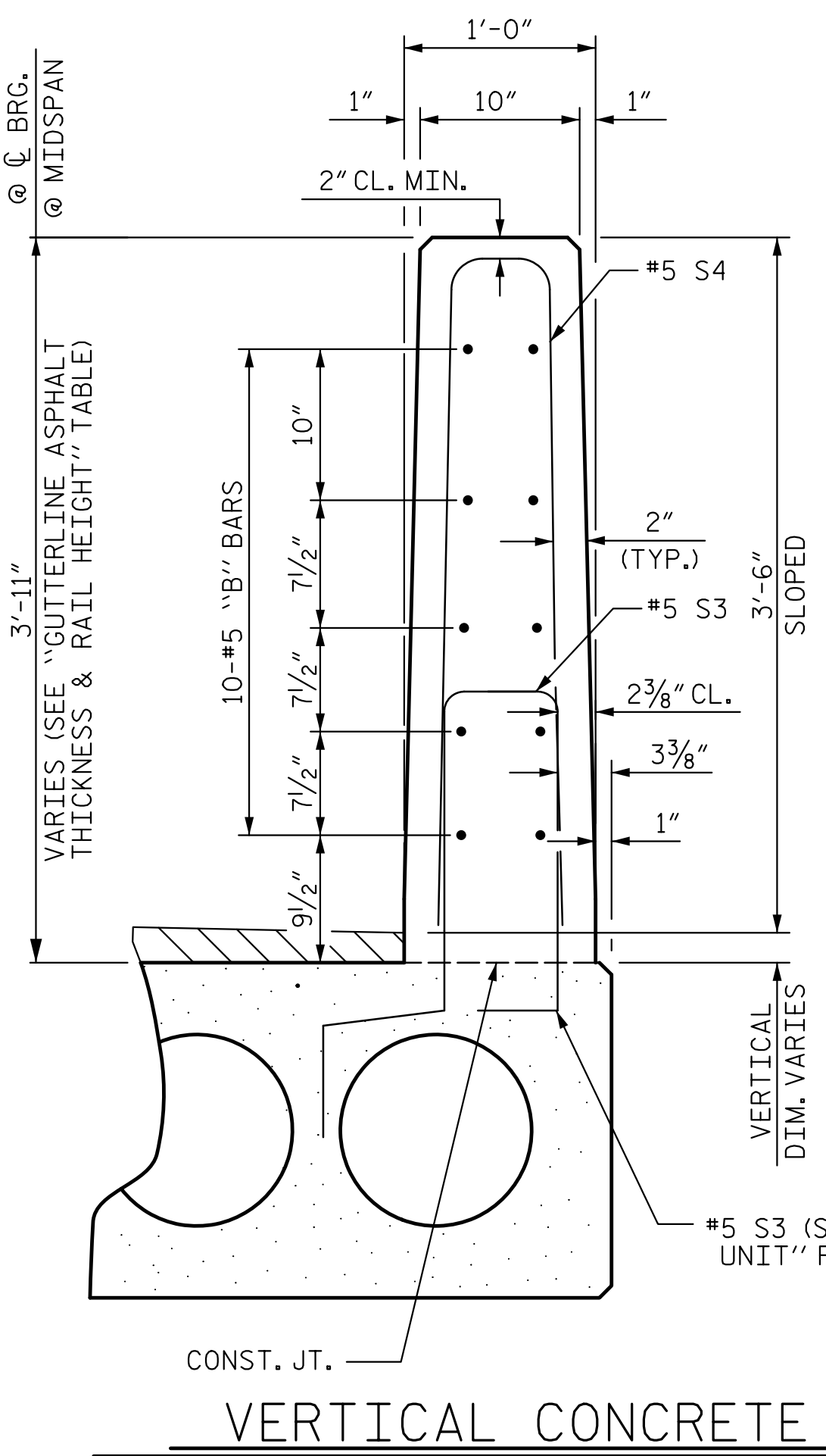
APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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.

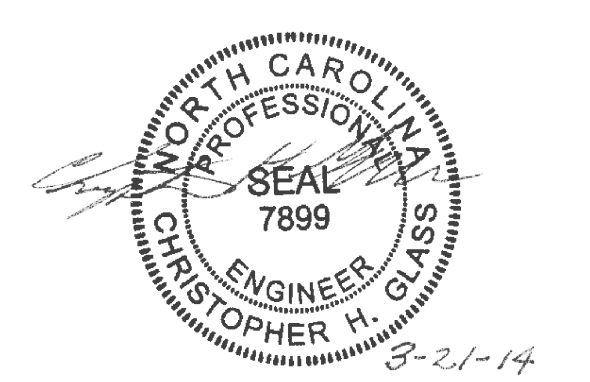
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.



CONCRETE RELEASE STRENGTH	
UNIT	PSI
-25', 30' & 35' UNITS	4000
40' & 45' UNITS	4000
-50' & 55' UNITS	4900

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

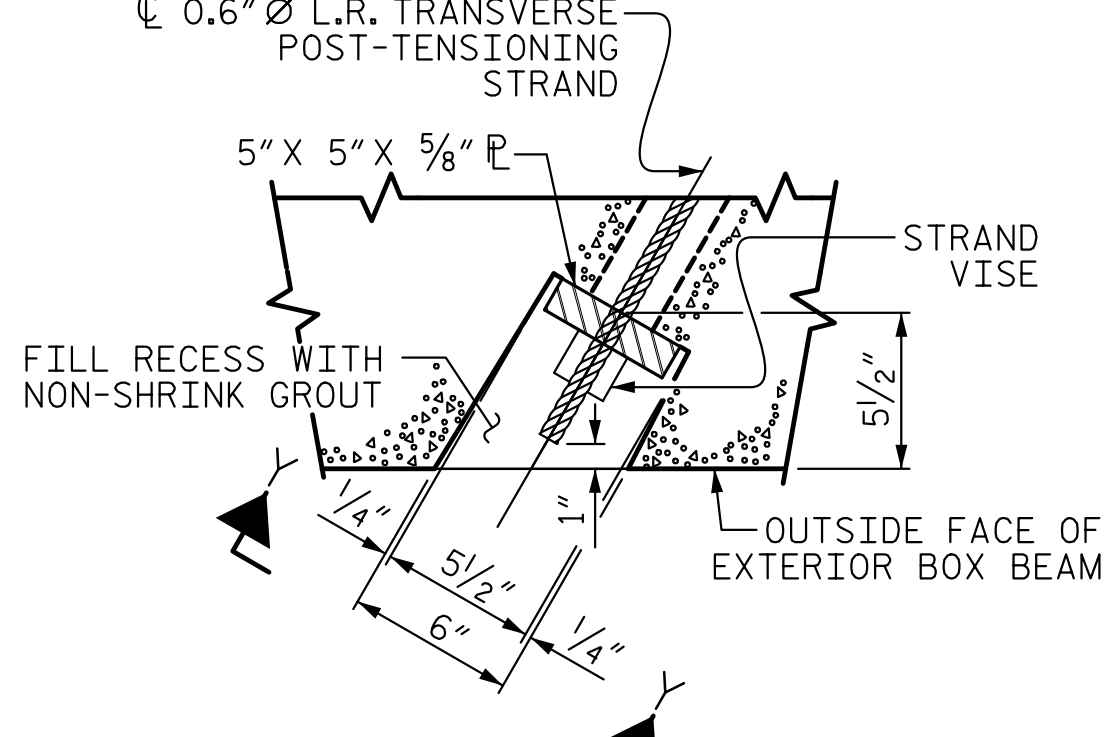
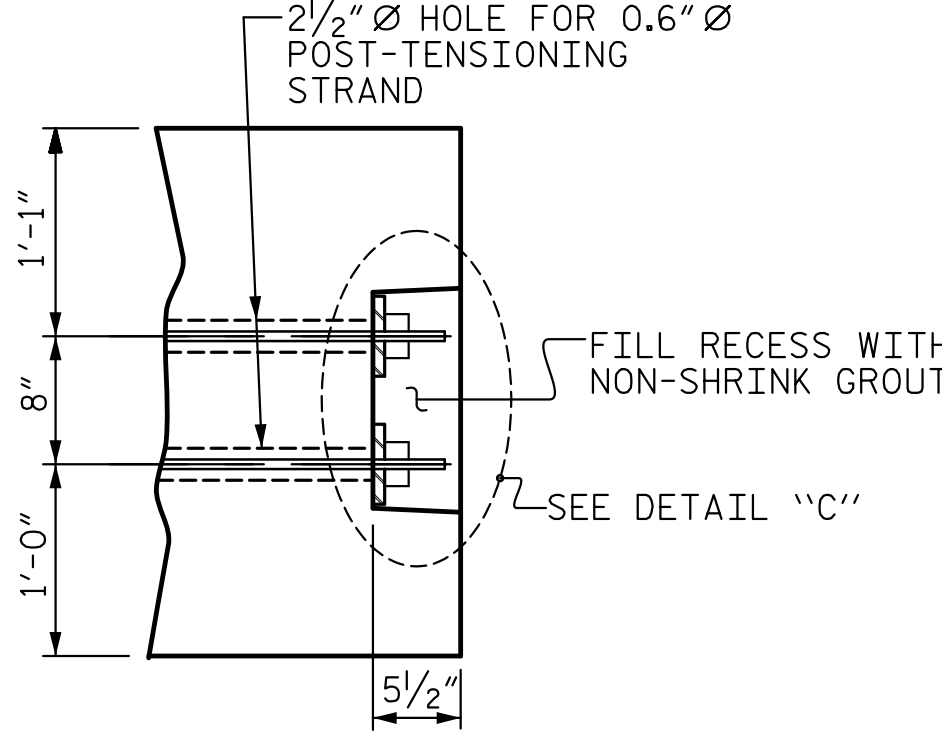
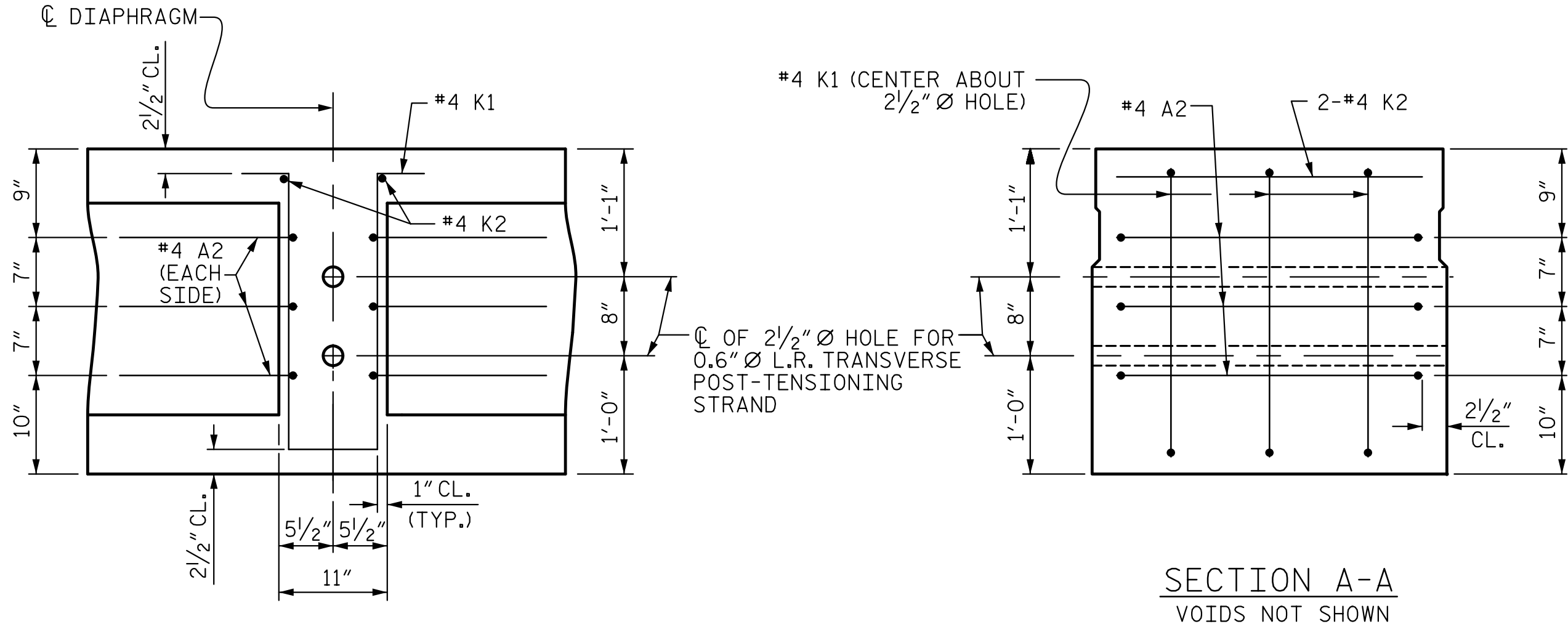
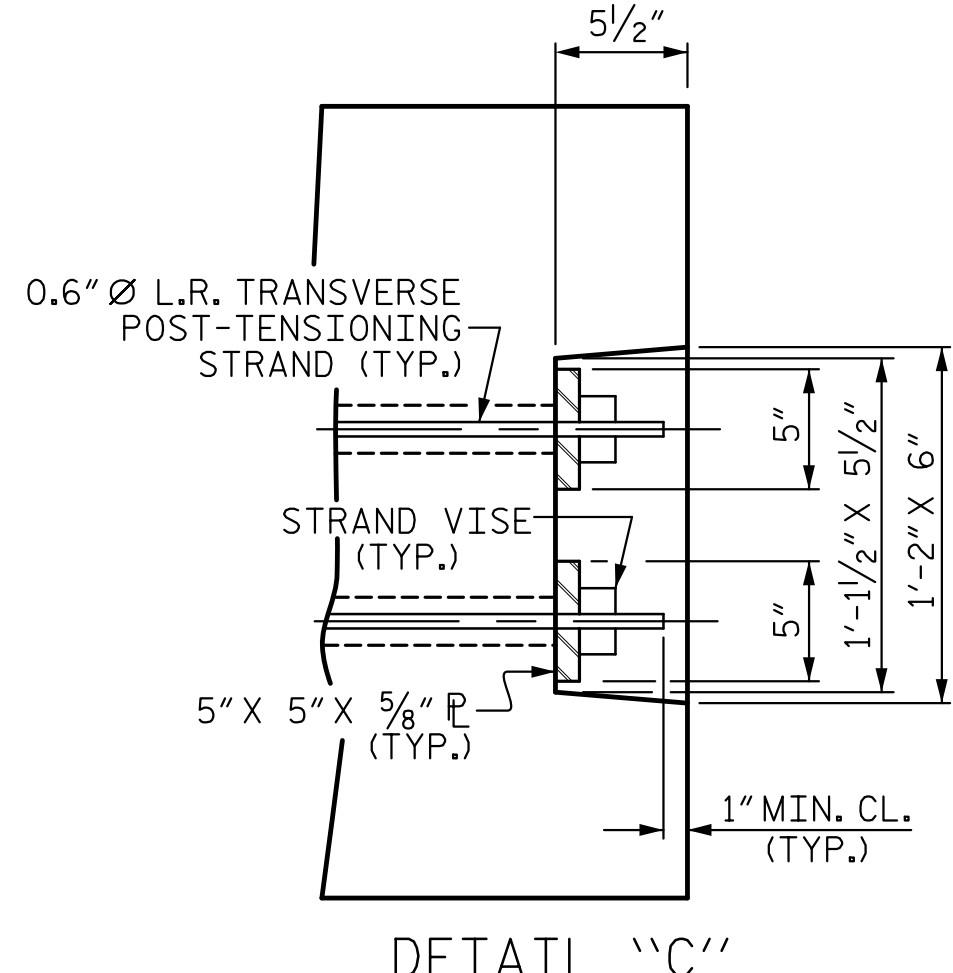
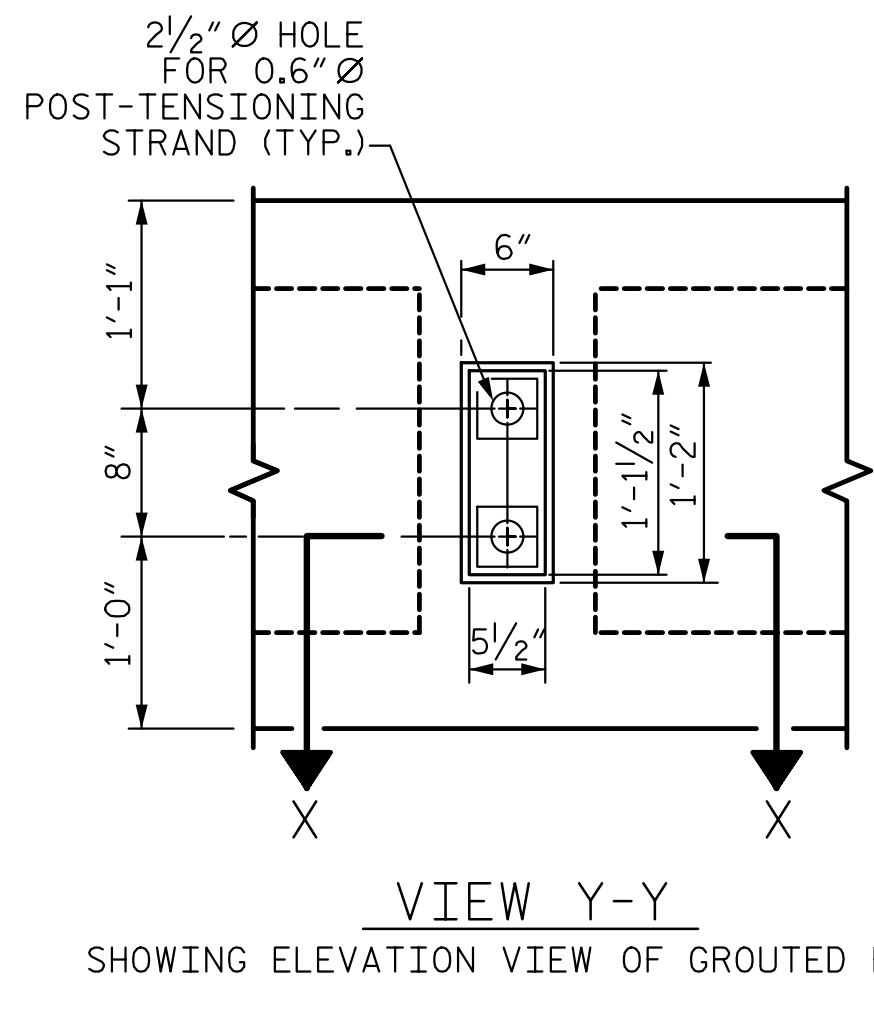
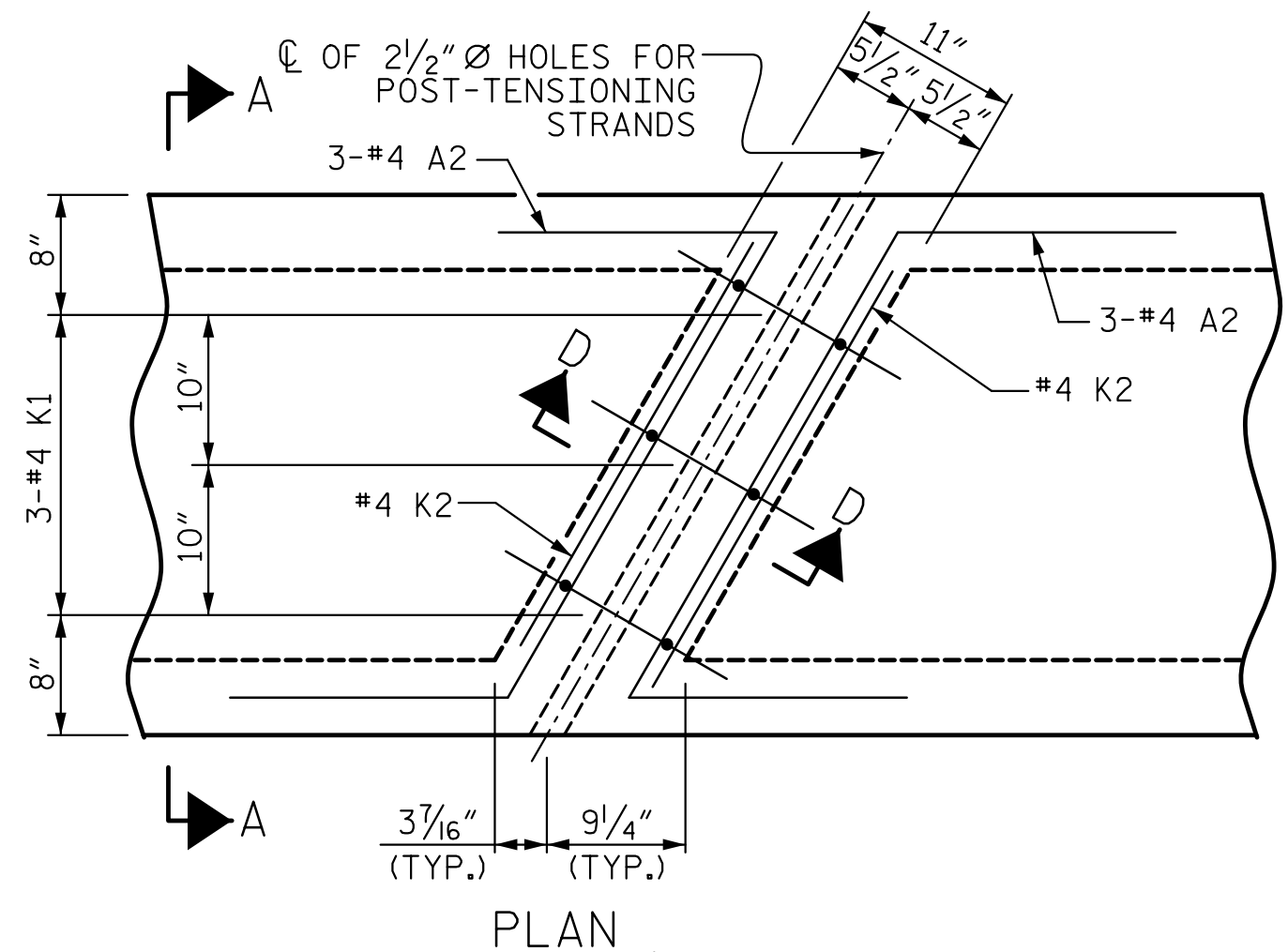


PROJECT NO. 17BP.4.R.7
 HALIFAX COUNTY
 STATION: 12+84.80 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT 120° SKEW					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-18
					TOTAL SHEETS 33

ASSEMBLED BY: JBS/KE DATE: 10/13
 CHECKED BY: CG DATE: 10/13
 DRAWN BY: DGE 5/09 REV. 12/11 MAA/AAC
 CHECKED BY: BCH 6/09

*****SYSTEM*****
 *****DGN*****
 *****USER*****



SECTION D-D

SECTION A-A
VOIDS NOT SHOWN

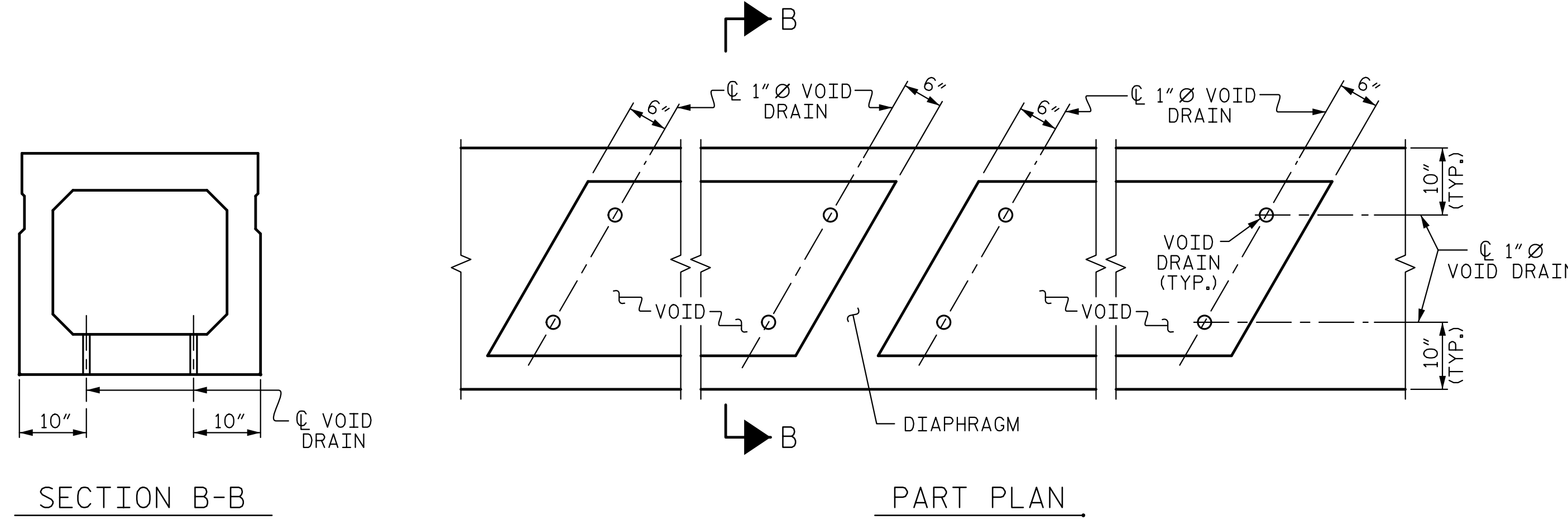
PART SECTION AT RECESS

SECTION X-X
SHOWING PLAN VIEW OF GROUDED RECESS

DOUBLE DIAPHRAGM DETAILS

*#4 "S" BARS NOT SHOWN. #4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2" Ø HOLE.

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

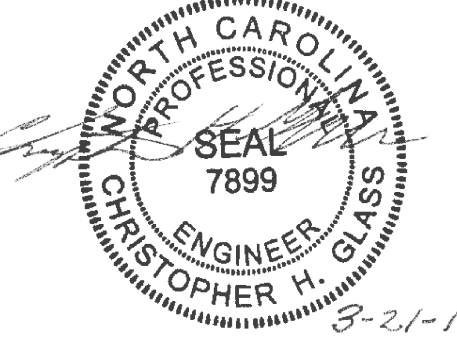


DEAD LOAD DEFLECTION AND CAMBER	
3'-0" x 2'-9"	
85' & 90' BOX BEAM UNIT (NC & SE)	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	3 3/4" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD*	3/4" ↓
FINAL CAMBER	3" ↑

* INCLUDES FUTURE WEARING SURFACE

PROJECT NO. 17BP.4.R.7
HALIFAX COUNTY
STATION: 12+84.80 -L-

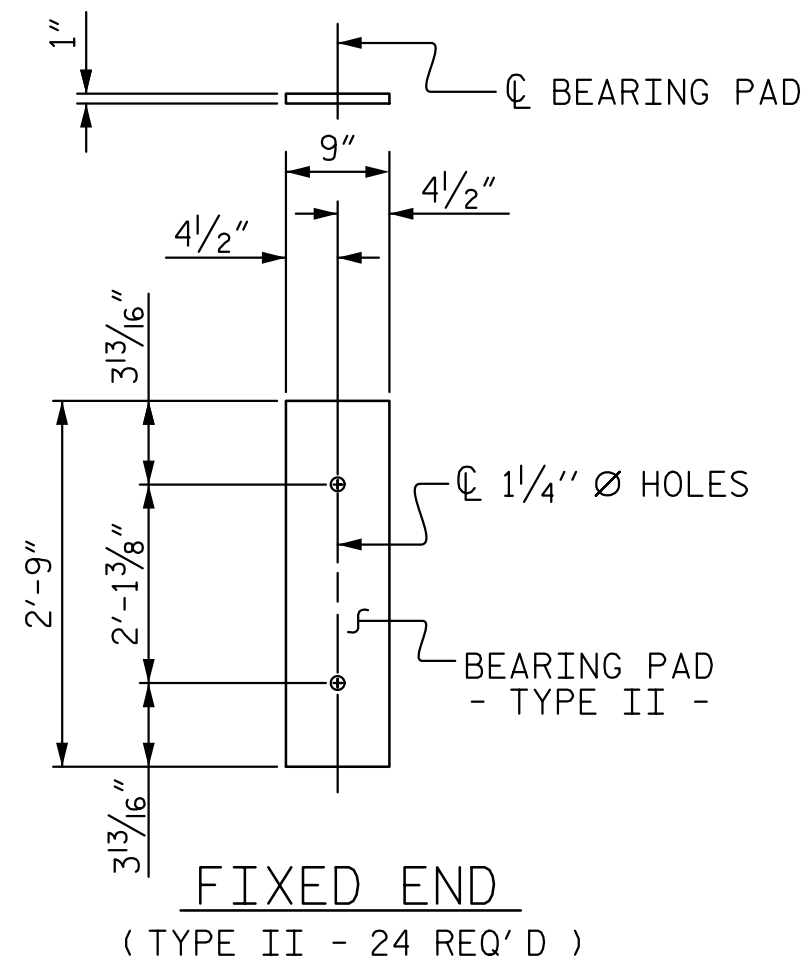
SHEET 9 OF 11
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 2'-9"
PRESTRESSED CONCRETE
BOX BEAM UNIT



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS 33
2			4			

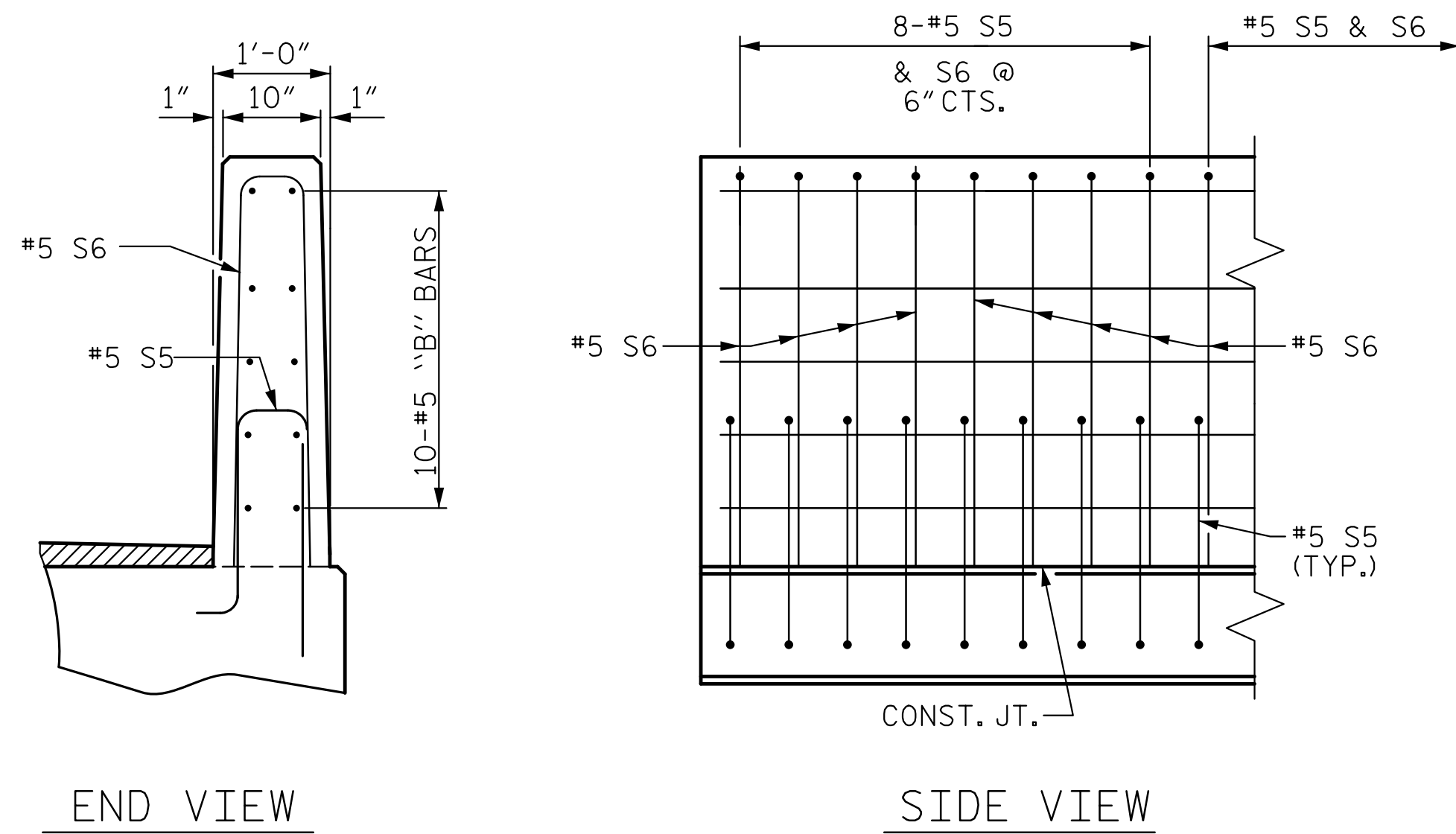
ASSEMBLED BY : JBS/KE DATE : 10/13
CHECKED BY : CG DATE : 10/13
DRAWN BY : DGE II/II
CHECKED BY : TMG II/II

*****SYSTEMS*****
*****SDGN*****
*****USERNAME*****



ELASTOMERIC BEARING DETAILS

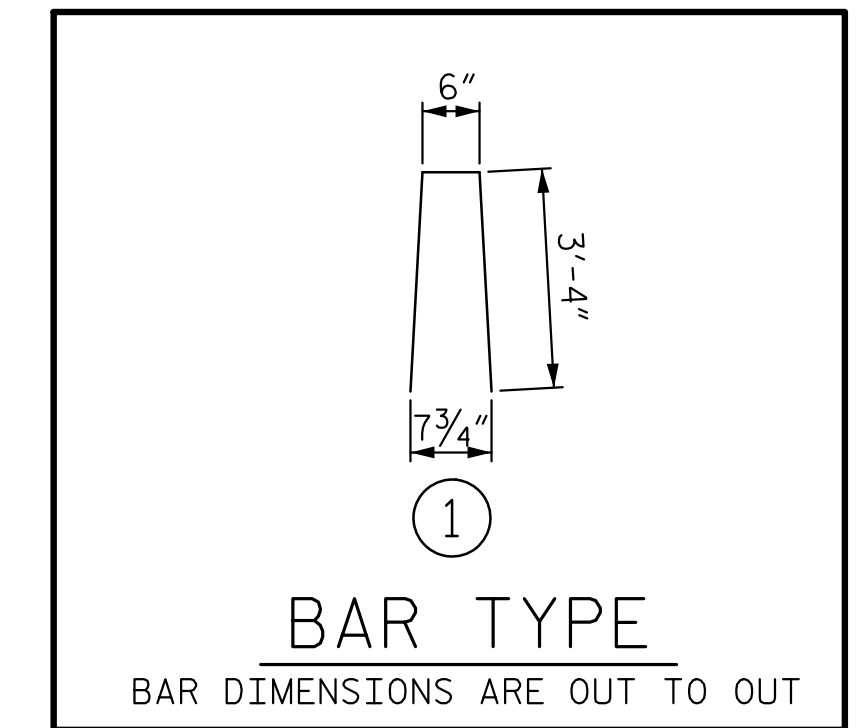
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



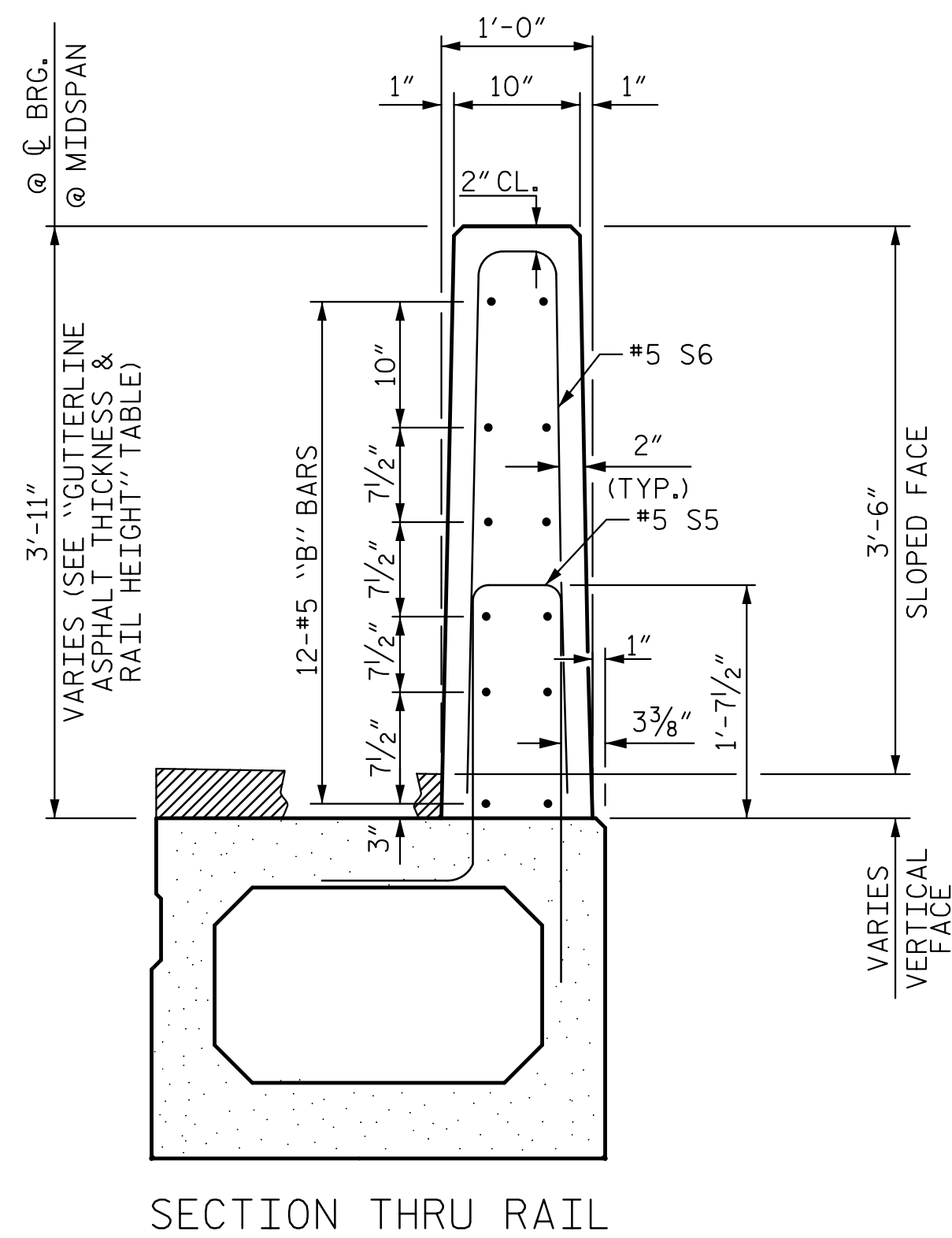
END OF RAIL DETAILS

BOX BEAM UNITS REQUIRED

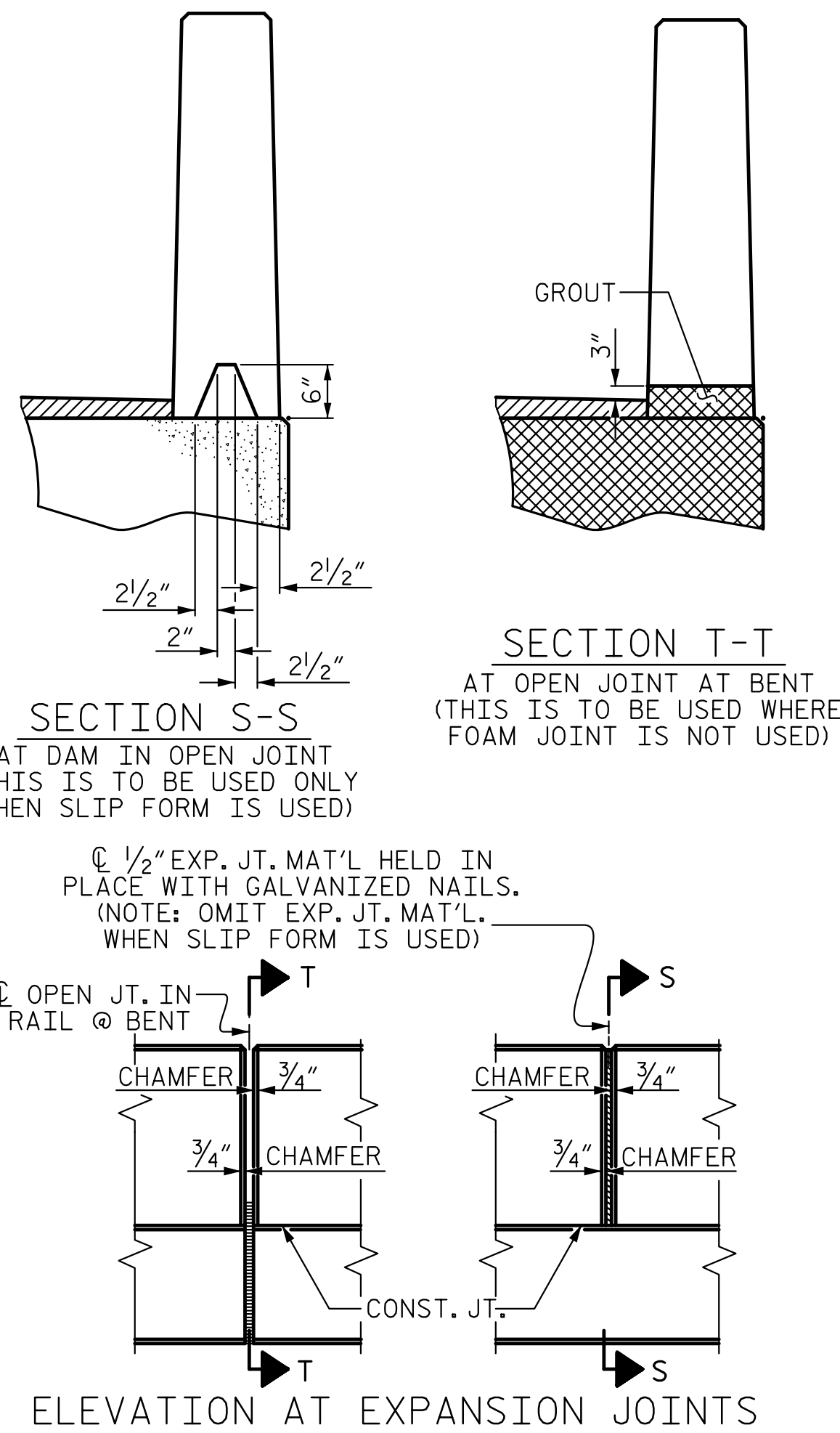
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR B.B.	2	90'-0"	180'-0"
INTERIOR B.B.	10	90'-0"	900'-0"
TOTAL	12		1080'-0"



BAR TYPE
BAR DIMENSIONS ARE OUT TO OUT



VERTICAL CONCRETE BARRIER RAIL DETAILS



BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS	SIZE	TYPE	LENGTH	WEIGHT
	90' UNIT				
*B10	192	#5	STR	13'-0"	2603
*S6	240	#5	1	7'-2"	1794
* EPOXY COATED REINFORCING STEEL				LBS.	4397
CLASS AA CONCRETE				CU.YDS.	24.2
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.	180.0

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

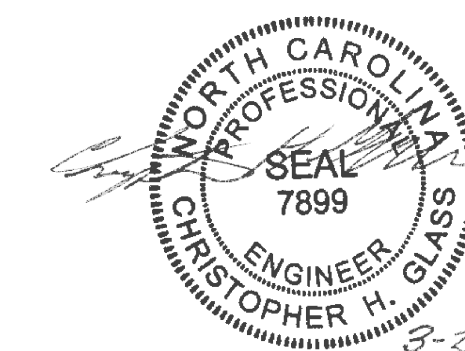
33' NC AND SE	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
75' UNITS	2"	3'-8 1/2"
80' UNITS	2"	3'-8 1/2"
85' UNITS	1 1/2"	3'-8"
90' UNITS	1 1/2"	3'-8"

PROJECT NO. 17BP.4.R.7
HALIFAX COUNTY
STATION: 12+84.80 -L-

SHEET 10 OF 11

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS 33
2			4			

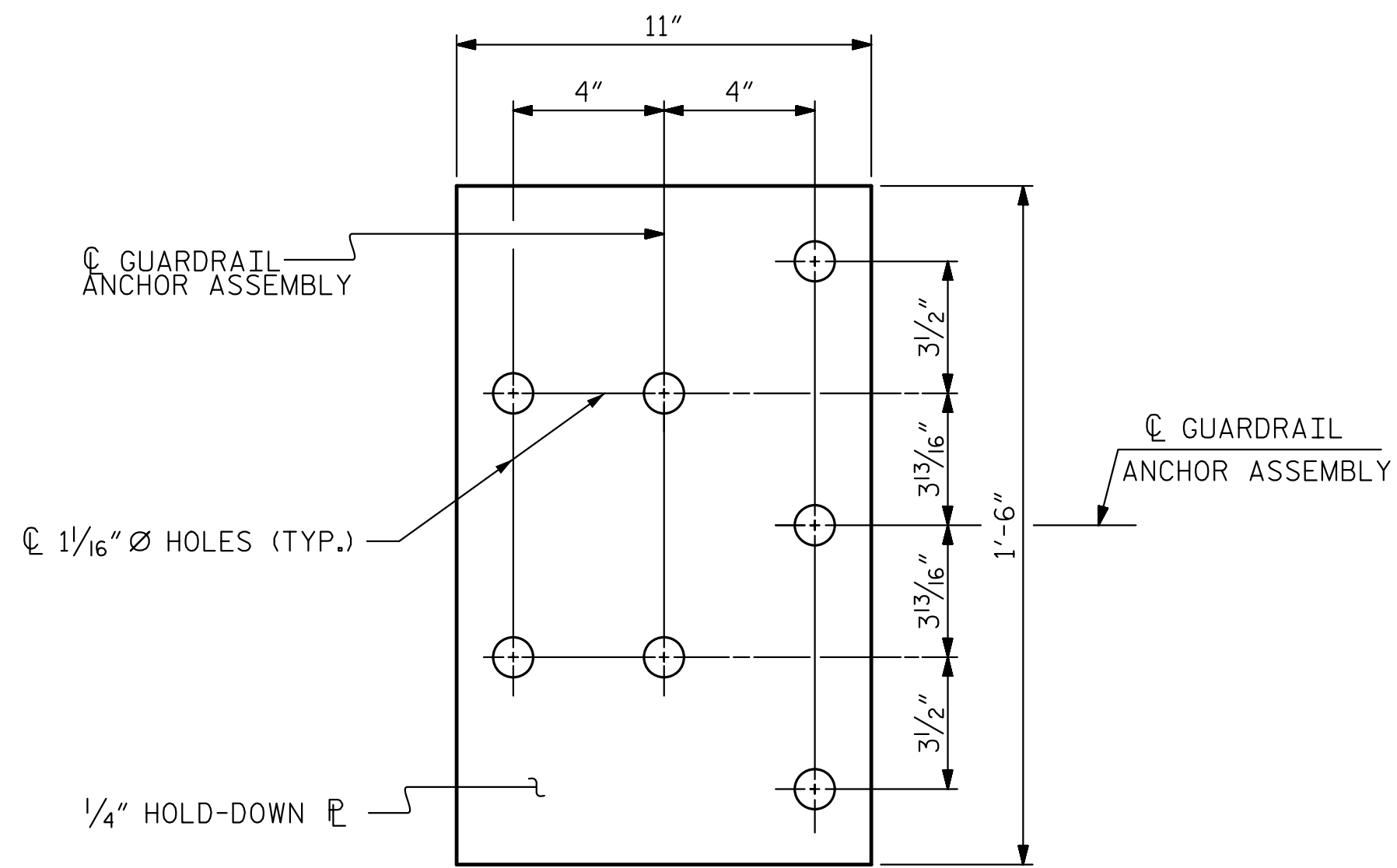
ASSEMBLED BY :	JBS/KE	DATE :	10/13
CHECKED BY :	CG	DATE :	10/13
DRAWN BY :	DGE 10/11		
CHECKED BY :	TMG 11/11		

*****SYTIME*****
*****SDGN*****
*****USERNAME*****

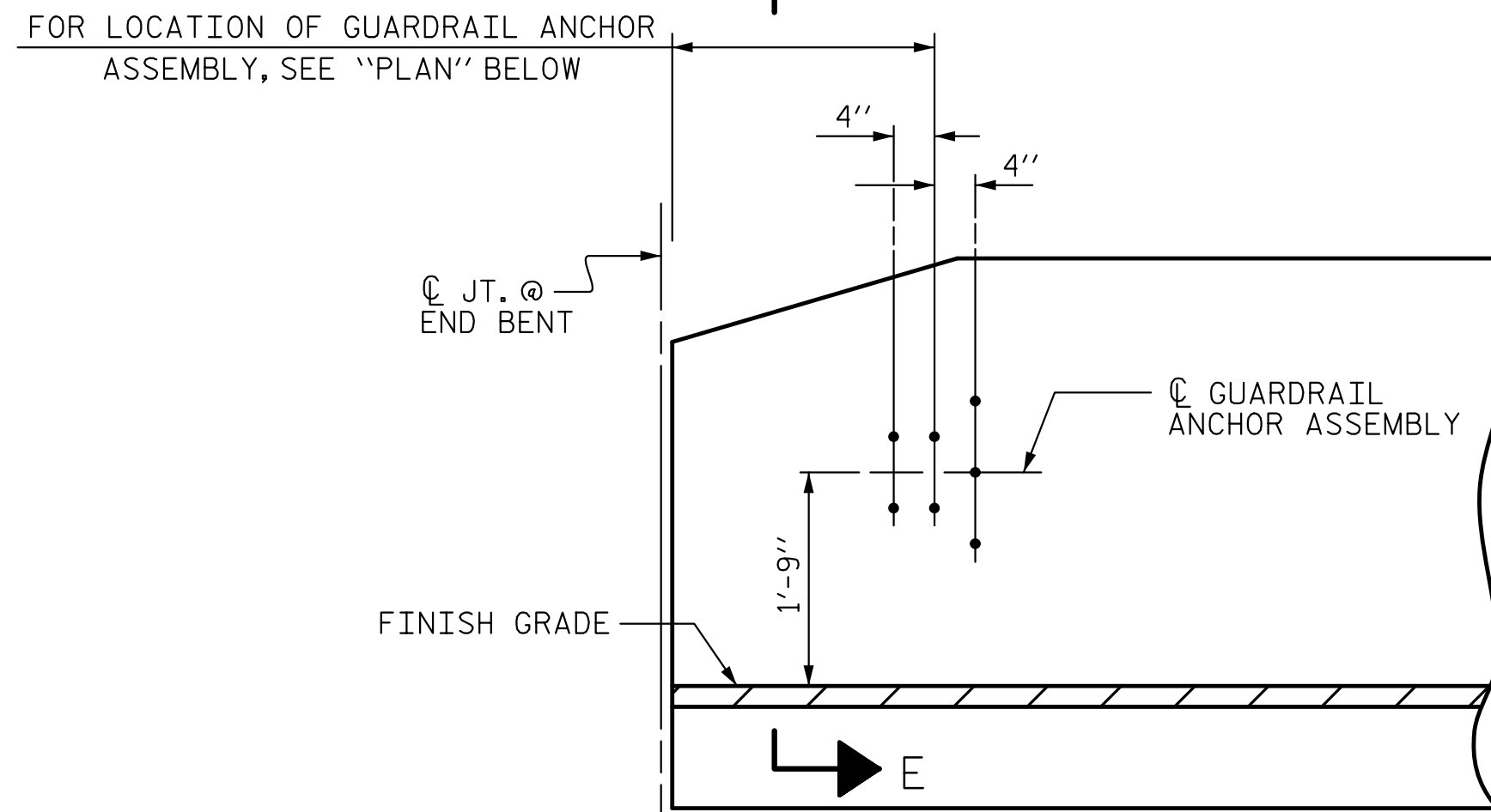
STD. NO. 33PCBB8_60&120S

NOTES

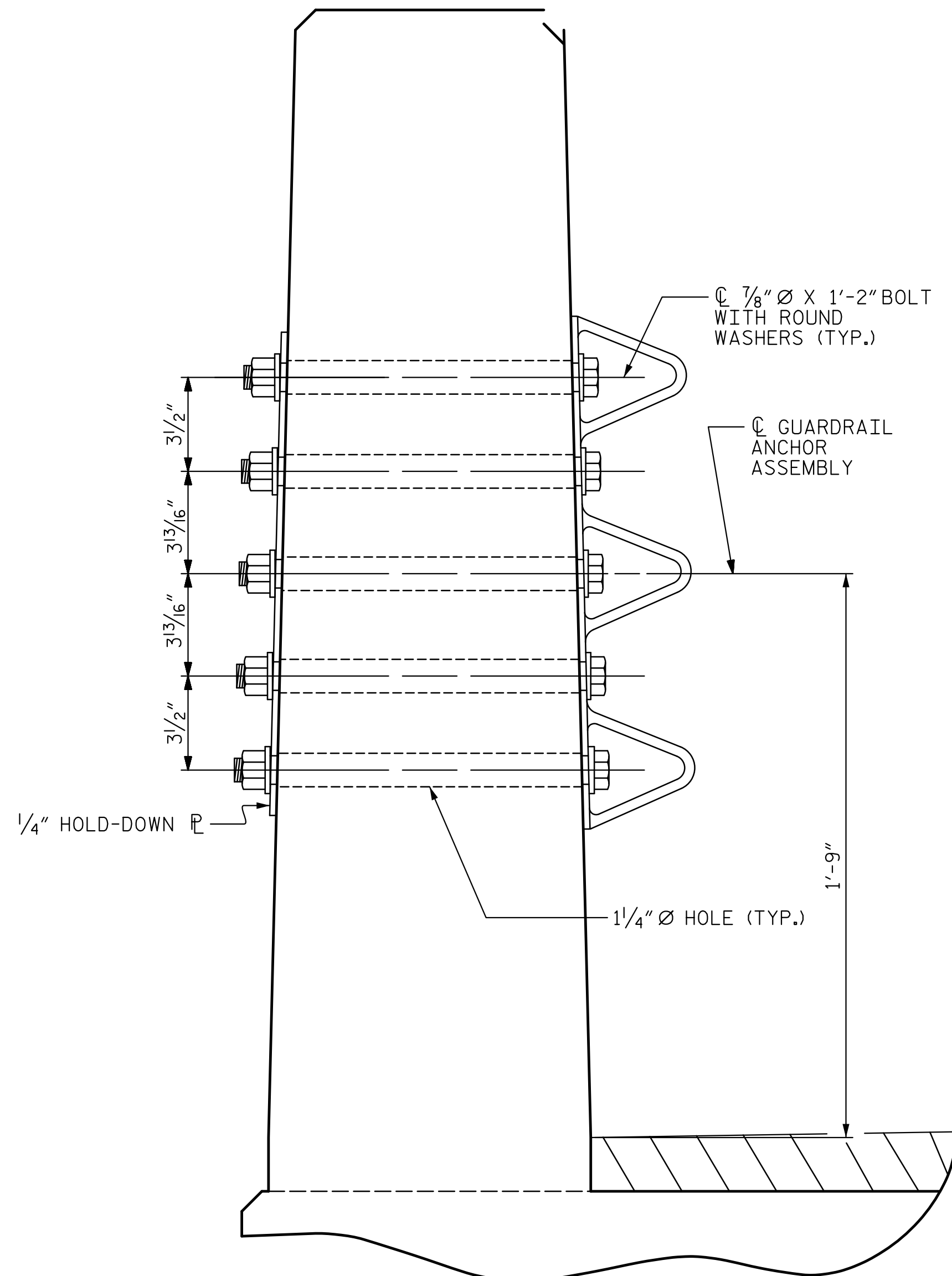
- THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" Ø BOLTS WITH NUTS AND WASHERS.
- THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.
- BOLTS SHALL CONFORM TO 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.



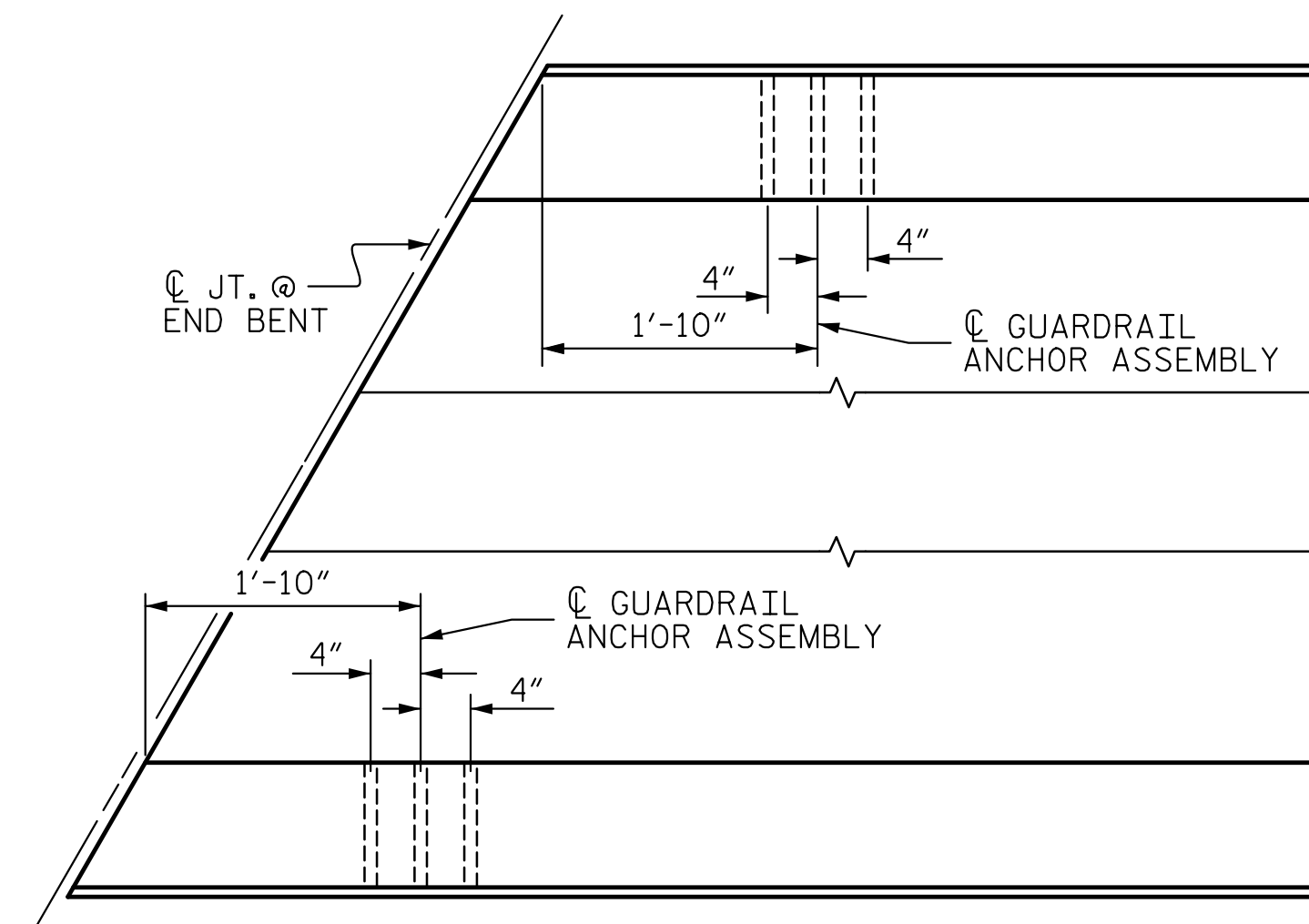
PLAN



ELEVATION

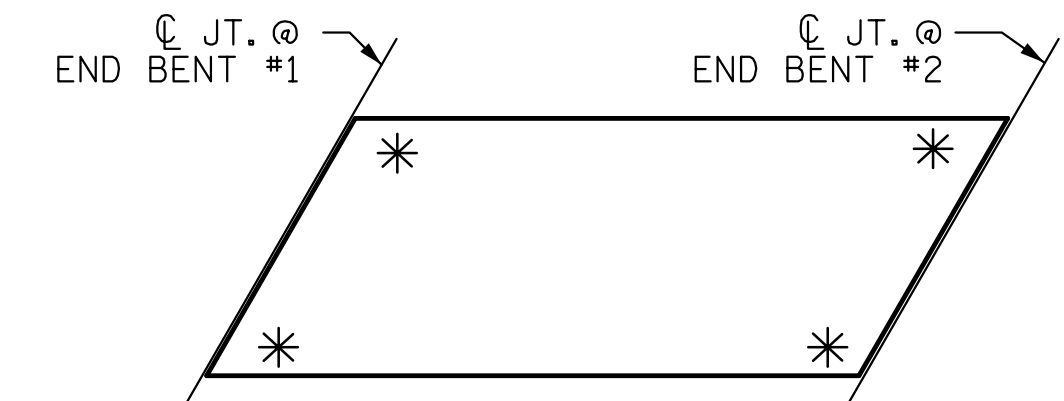


SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR.

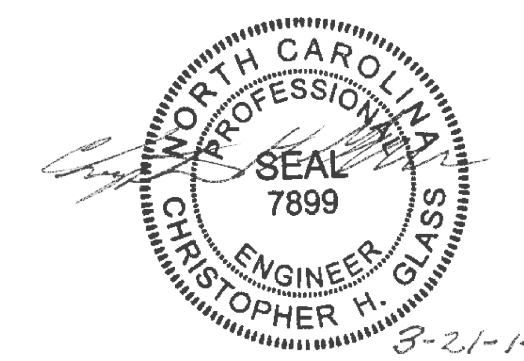


SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. 17BP.4.R.17
HALIFAX COUNTY
 STATION: 12+84.80 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 FOR VERTICAL CONCRETE
 BARRIER RAIL



ASSEMBLED BY : JBS	DATE : 01/14
CHECKED BY : C. GLASS	DATE : 01/14
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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			33

*****SYTIME*****
 *****SDGN*****
 *****USERNAME*****

STD. NO. GRA3

NOTES

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

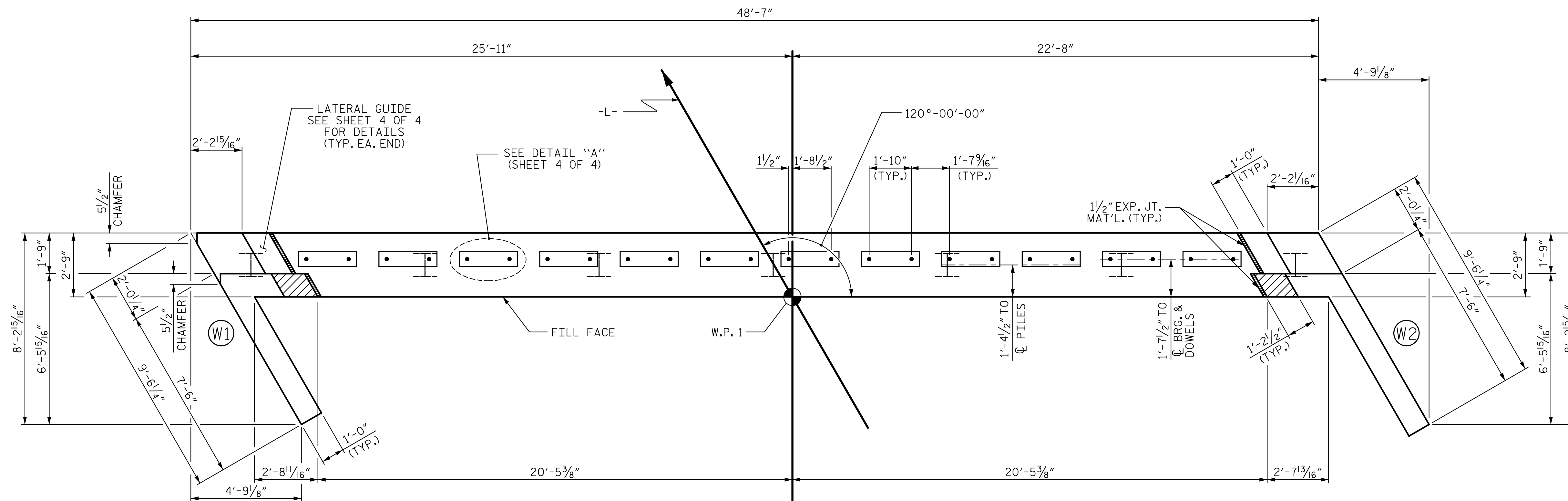
THE LATERAL GUIDES ARE NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

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

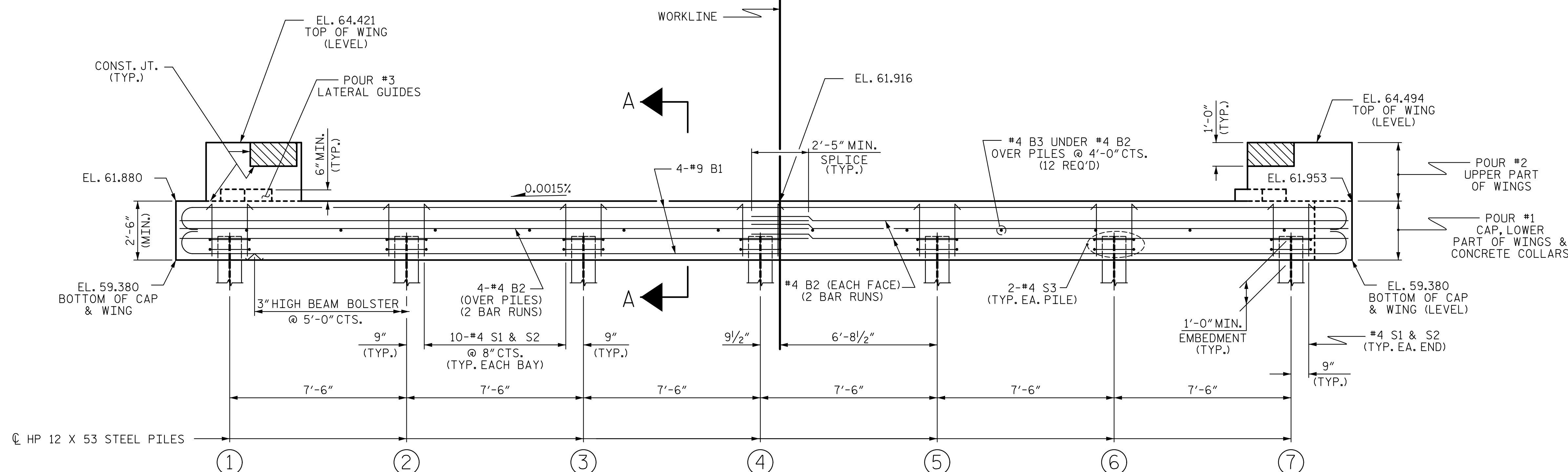
FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDE IF APPROVED BY THE ENGINEER.



PLAN



ELEVATION

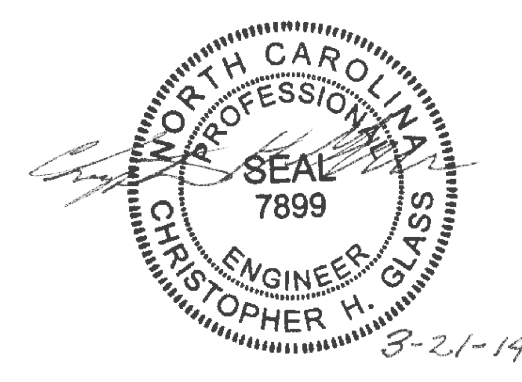
WINGS NOT SHOWN FOR CLARITY.
 FOR SECTION A-A, SEE SHEET 4 OF 4.
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

PROJECT NO. 17BP.4.R.7
 HALIFAX COUNTY
 STATION: 12+84.80 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

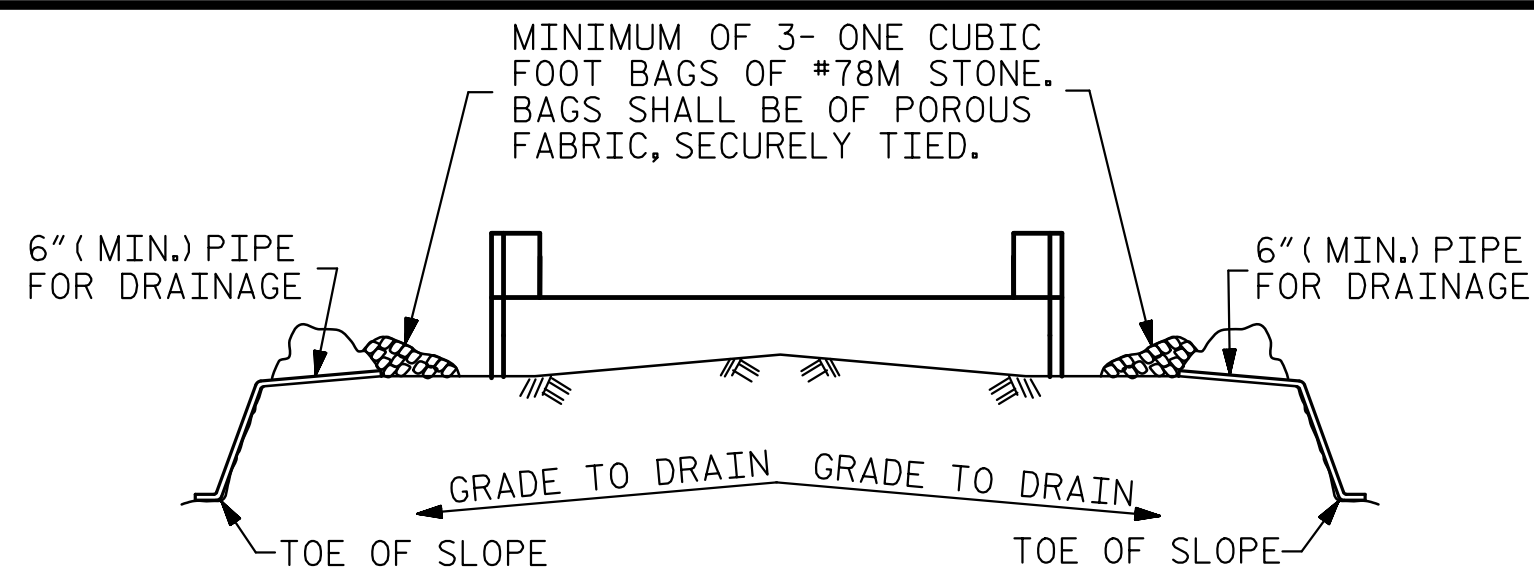
SUBSTRUCTURE
 END BENT No. 1



ASSEMBLED BY : JBS/KE	DATE : 10/13
CHECKED BY : CG	DATE : 10/13
DRAWN BY : DGE 02/10	
CHECKED BY : MKT 02/10	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			33

*****SYTIME*****
 *****SDGN*****
 *****USERNAME*****

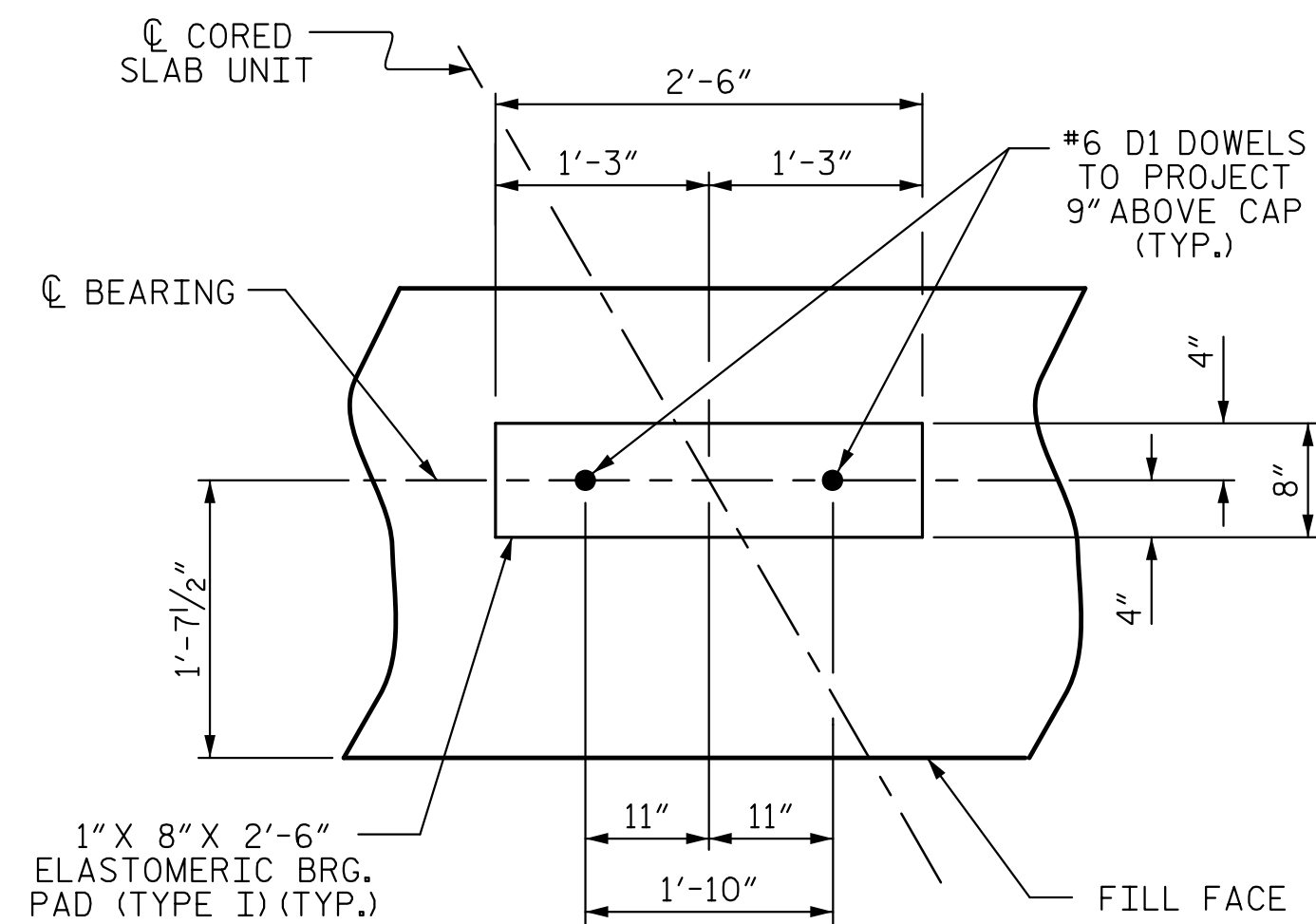


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

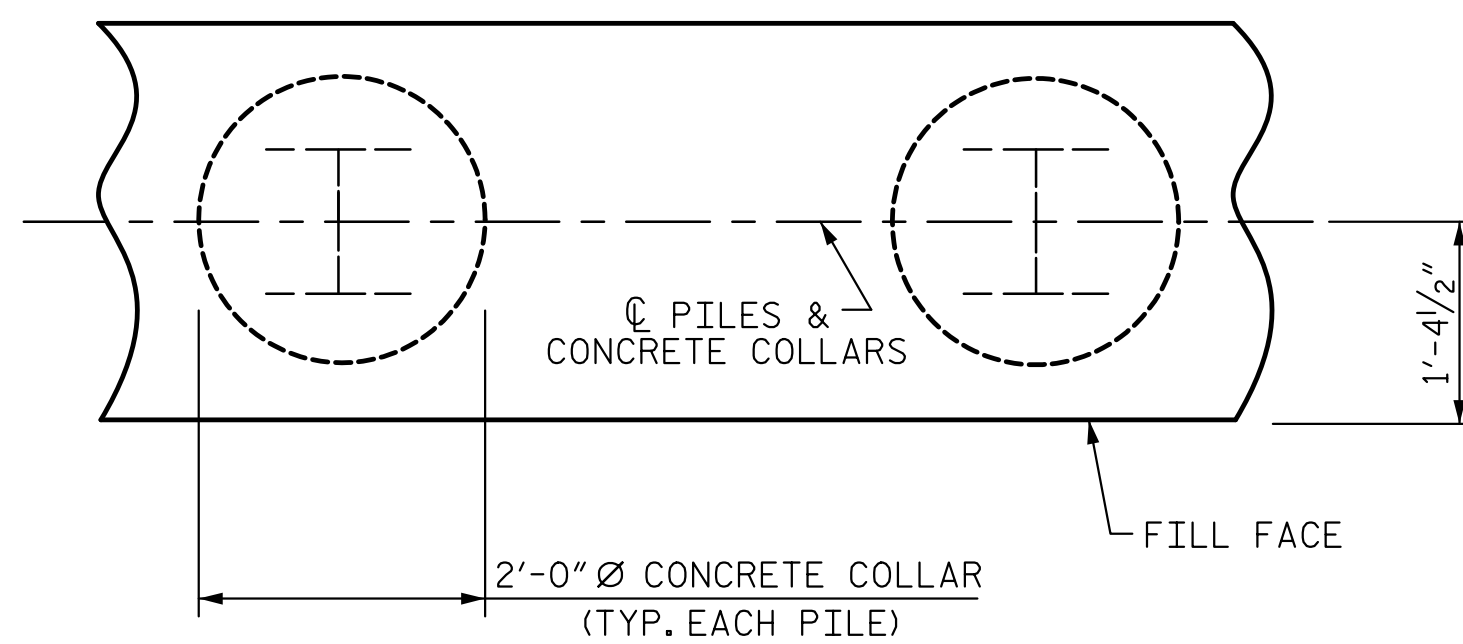
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



DETAIL "A"

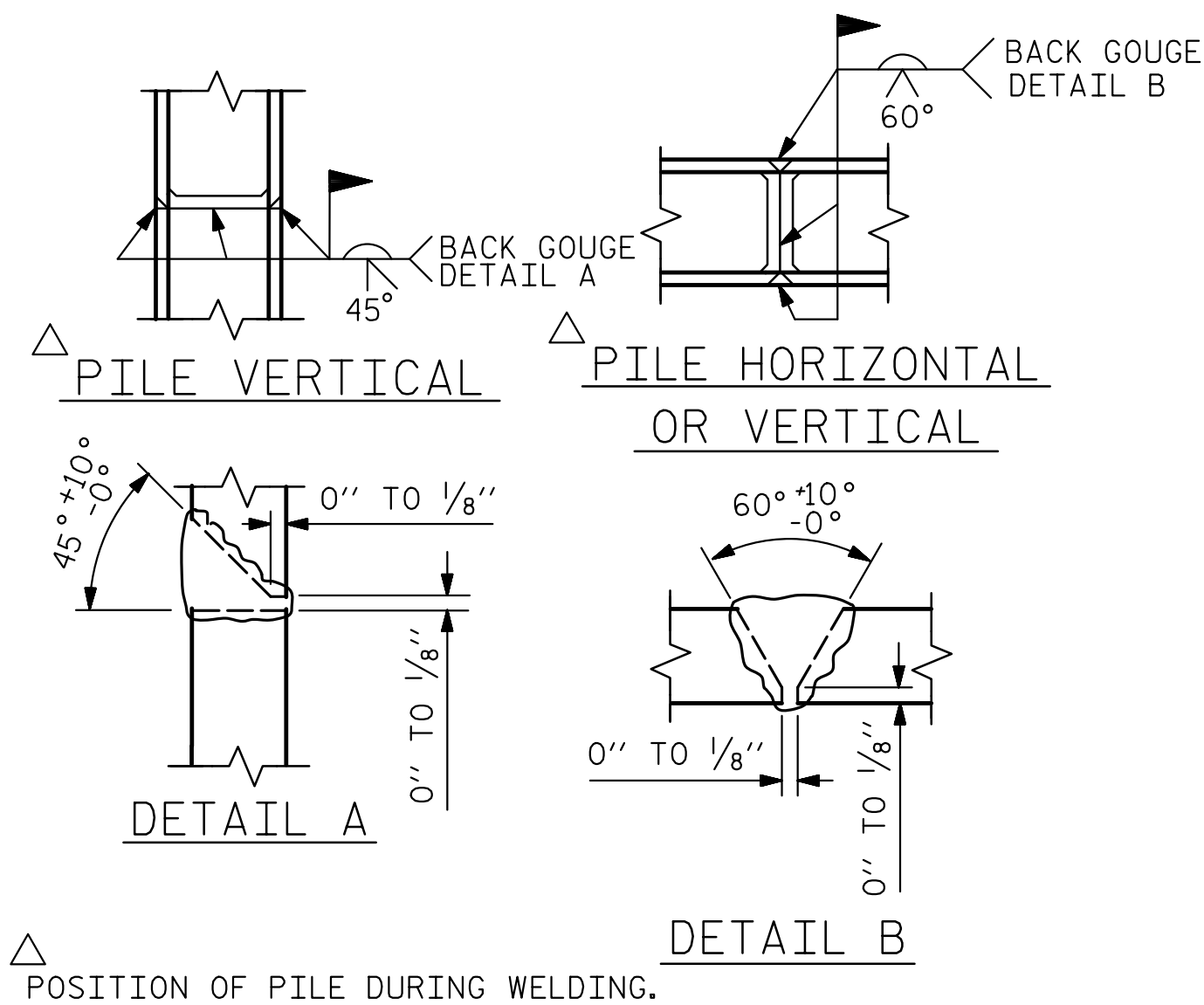
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



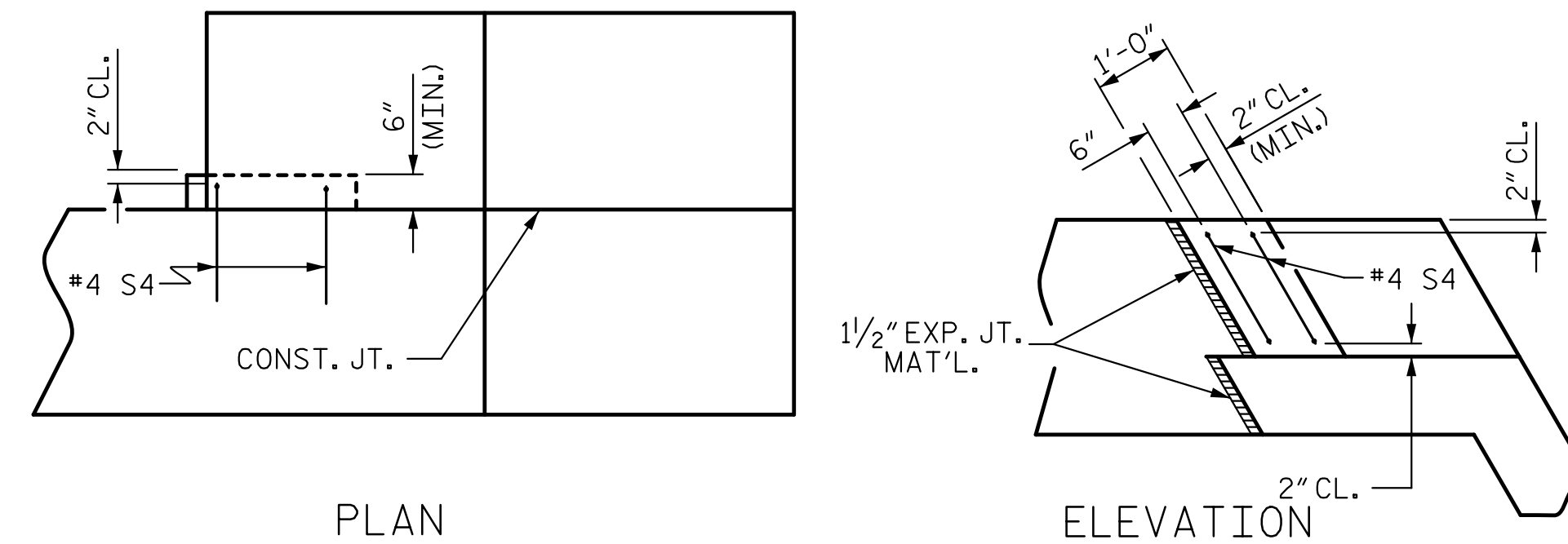
PLAN

CORROSION PROTECTION FOR STEEL PILES DETAIL

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

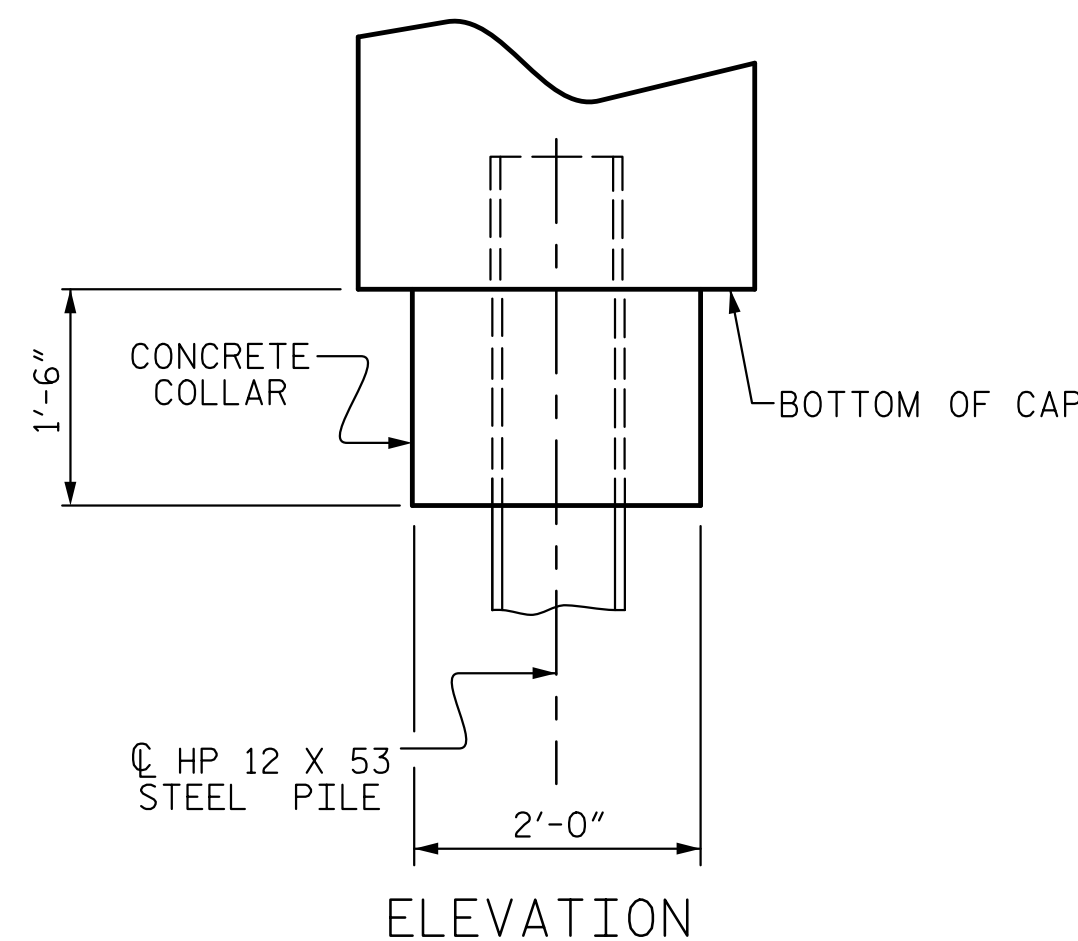


PILE SPLICE DETAILS

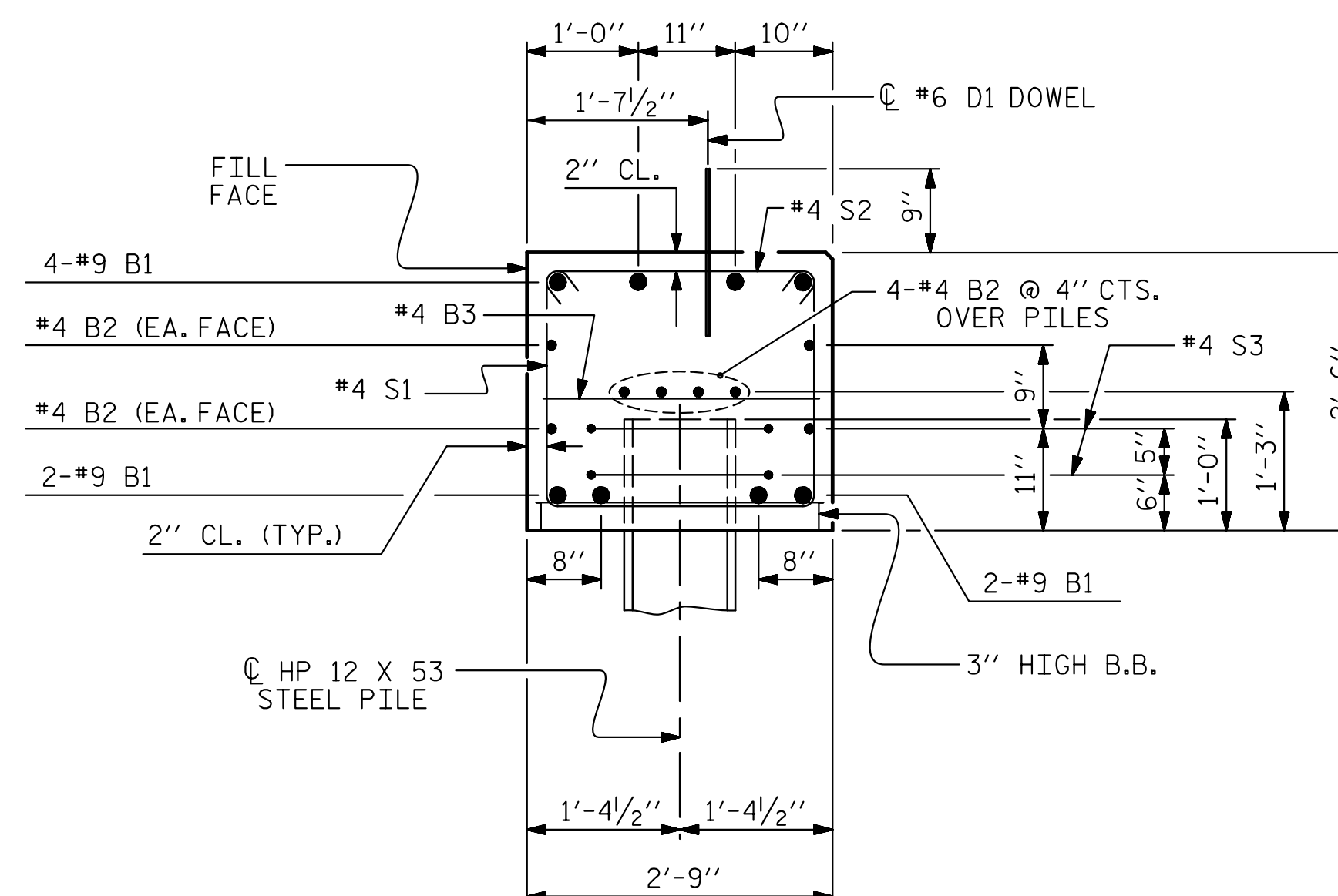


LATERAL GUIDE DETAILS

(END BENT No. 1, RIGHT LATERAL GUIDE SHOWN, LEFT END SIMILAR)
(END BENT No. 2 SIMILAR BY ROTATION)

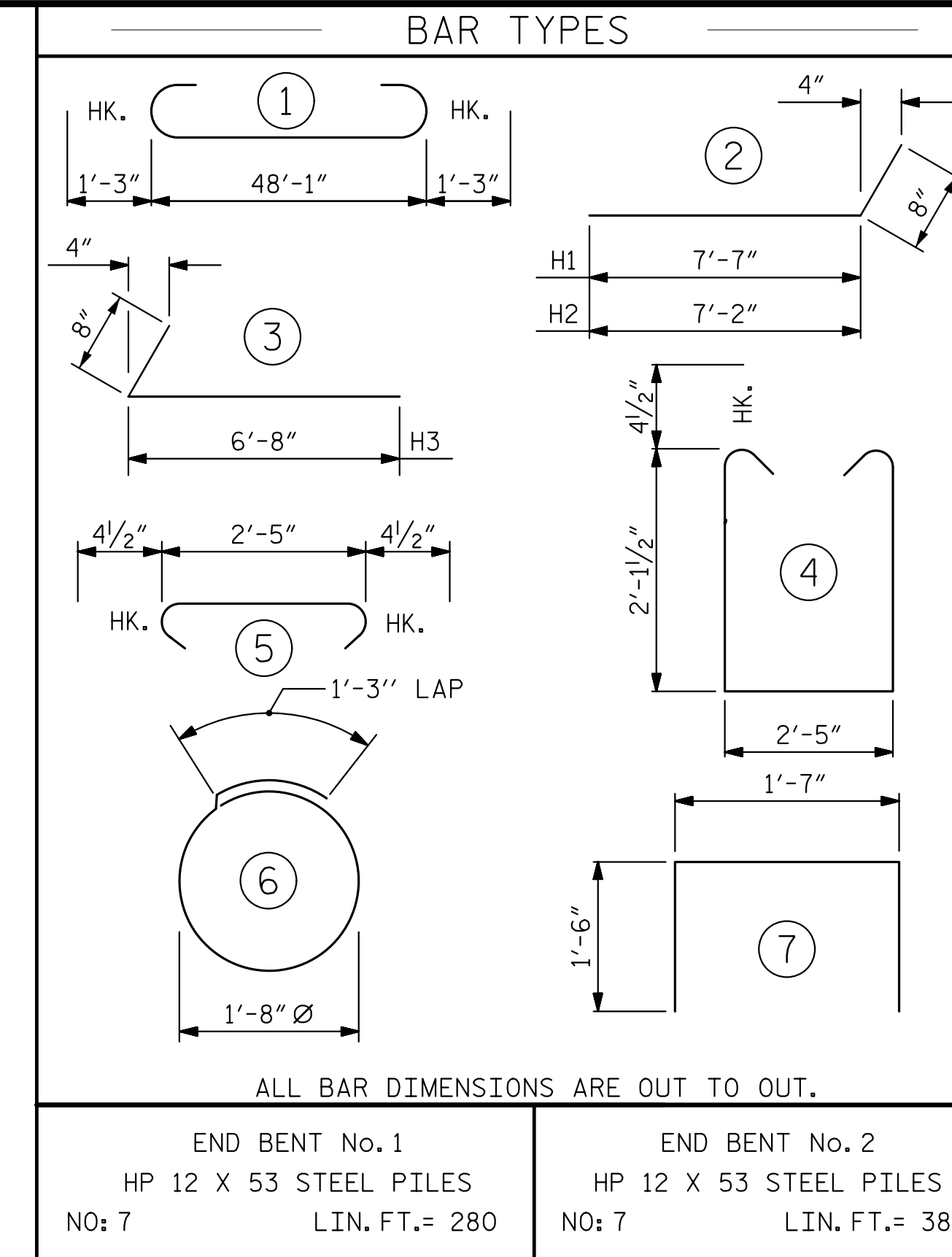


ELEVATION



SECTION A-A

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



END BENT No. 1 HP 12 X 53 STEEL PILES NO: 7 LIN. FT. = 280	END BENT No. 2 HP 12 X 53 STEEL PILES NO: 7 LIN. FT. = 385
---	---

BILL OF MATERIAL FOR ONE END BENT

BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	50'-7"	1376
B2	16	#4	STR	25'-4"	271
B3	12	#4	STR	2'-5"	19
D1	24	#6	STR	1'-6"	54
H1	6	#4	2	8'-3"	33
H2	6	#4	2	7'-10"	31
H3	12	#4	3	7'-4"	59
K1	12	#4	STR	3'-3"	26
S1	62	#4	4	7'-5"	307
S2	62	#4	5	3'-2"	131
S3	14	#4	6	6'-6"	61
S4	4	#4	7	4'-7"	12
V1	47	#4	STR	4'-8"	147

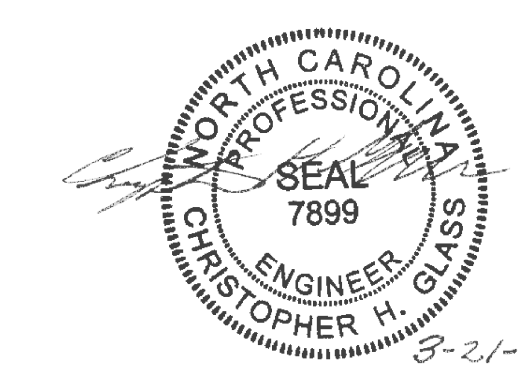
REINFORCING STEEL (FOR ONE END BENT) 2527 LBS.

CLASS A CONCRETE BREAKDOWN (END BENT 1)		
POUR #1	CAP, LOWER PART OF WINGS & COLLARS	15.0 C.Y.
POUR #2	UPPER PART OF WINGS	1.9 C.Y.
POUR #3	LATERAL GUIDES	0.1 C.Y.
TOTAL CLASS A CONCRETE		17.0 C.Y.

CLASS A CONCRETE BREAKDOWN (END BENT 2)		
POUR #1	CAP, LOWER PART OF WINGS & COLLARS	15.0 C.Y.
POUR #2	UPPER PART OF WINGS	2.1 C.Y.
POUR #3	LATERAL GUIDES	0.1 C.Y.
TOTAL CLASS A CONCRETE		17.2 C.Y.

PROJECT NO. 17BP.4.R.7
HALIFAX COUNTY
STATION: 12+84.80 -L-

SHEET 4 OF 4
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT No. 1 & 2
DETAILS



ASSEMBLED BY : JBS/KE	DATE : 10/13
CHECKED BY : CG	DATE : 10/13
DRAWN BY : DGE 12/09	
CHECKED BY : MKT 01/10	

*****SYTIME*****
*****SDGN*****
*****USERNAME*****

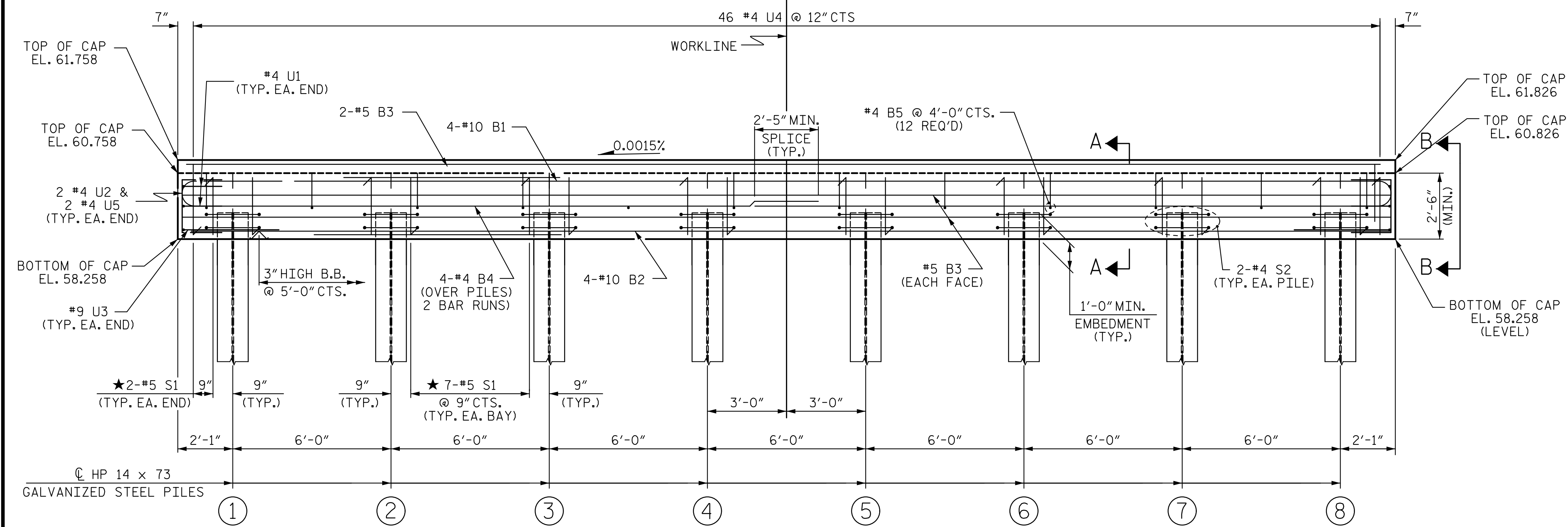
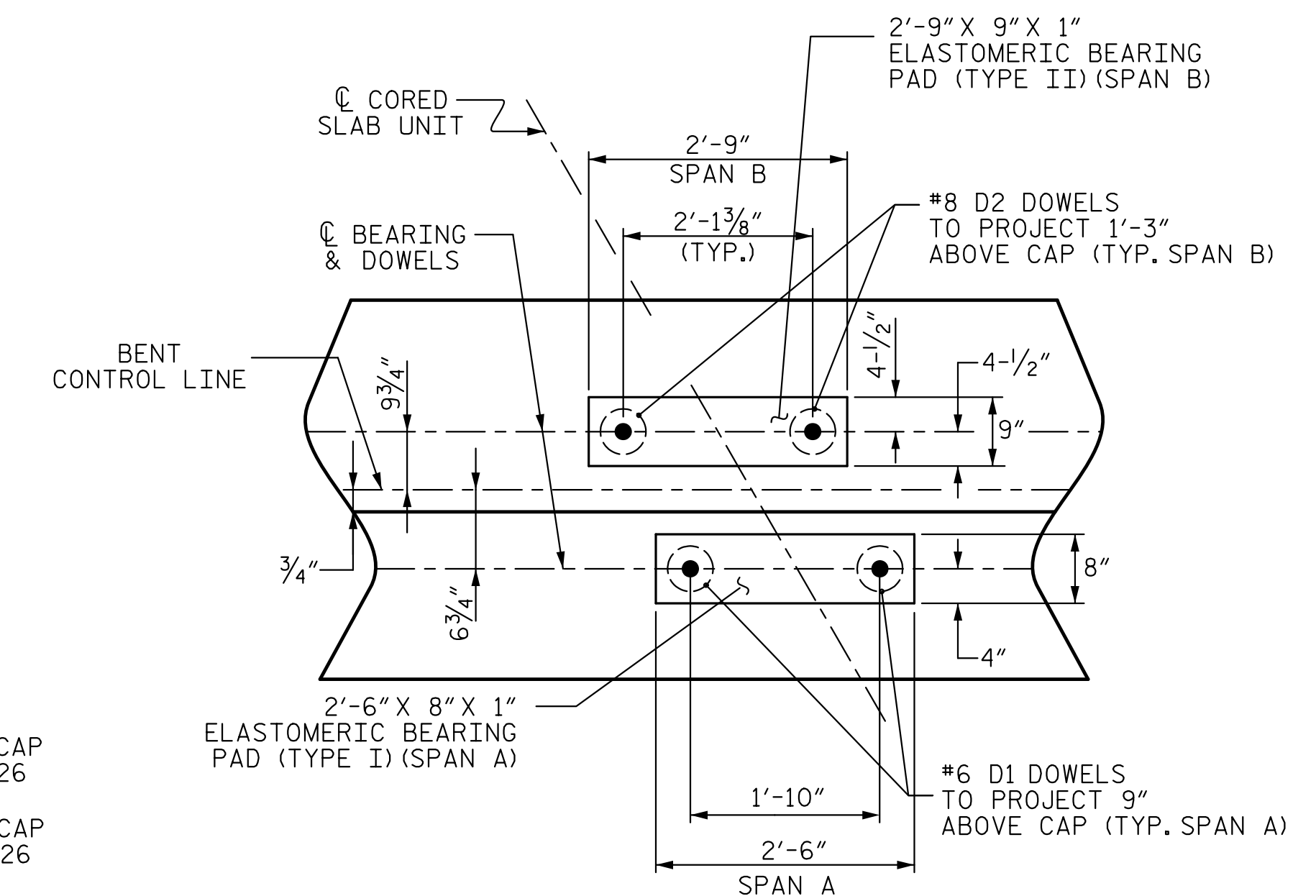
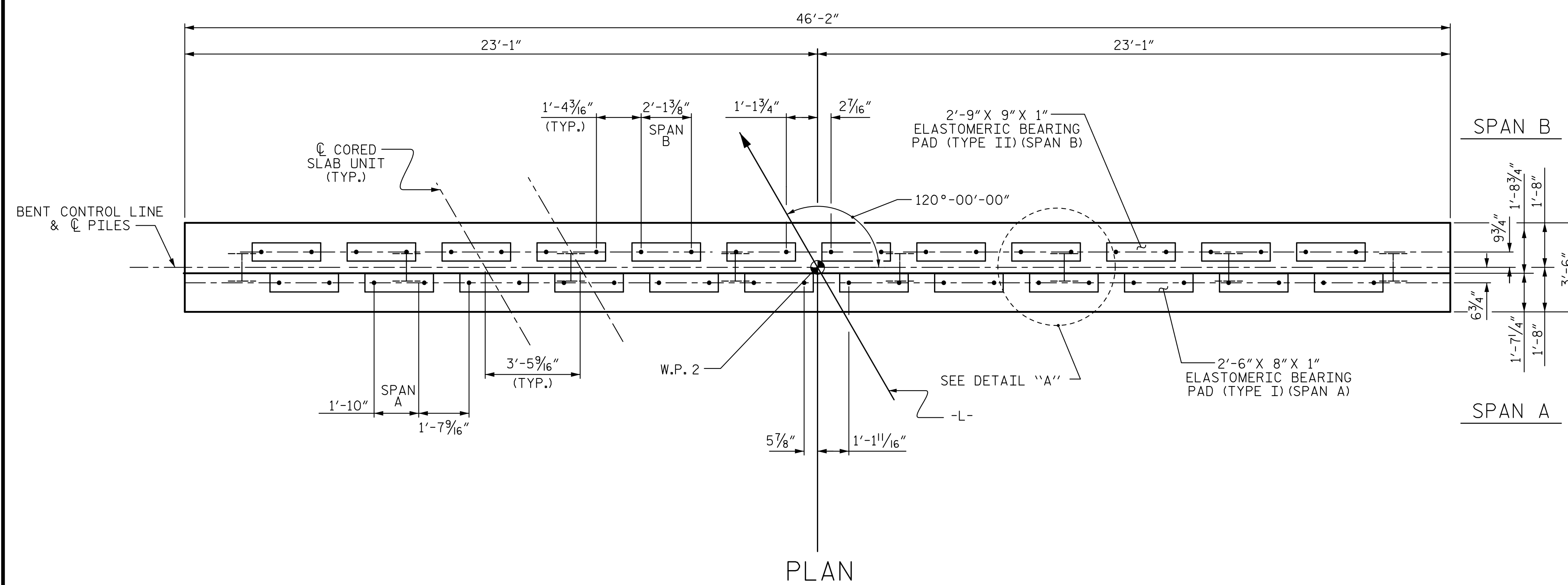
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			33
2			4			33

NOTES

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

★ INVERT ALTERNATE STIRRUPS.

GALVANIZE THE FULL LENGTH OF EACH INTERIOR BENT PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



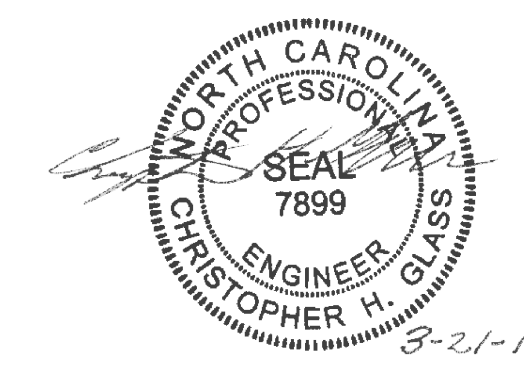
PROJECT NO. 17BP.4.R.7
 HALIFAX COUNTY
 STATION: 12+84.80 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

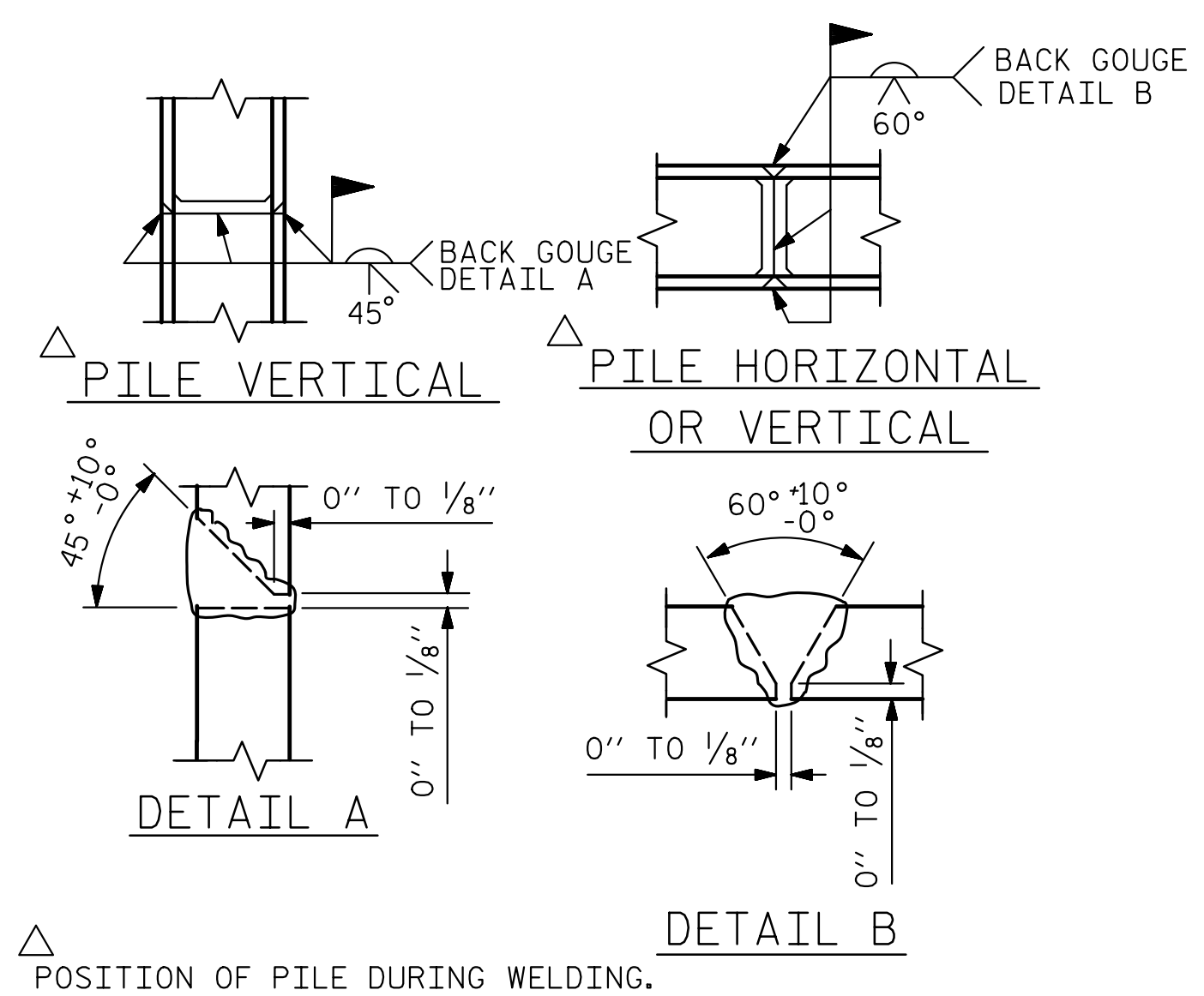
SUBSTRUCTURE
 BENT No. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			33

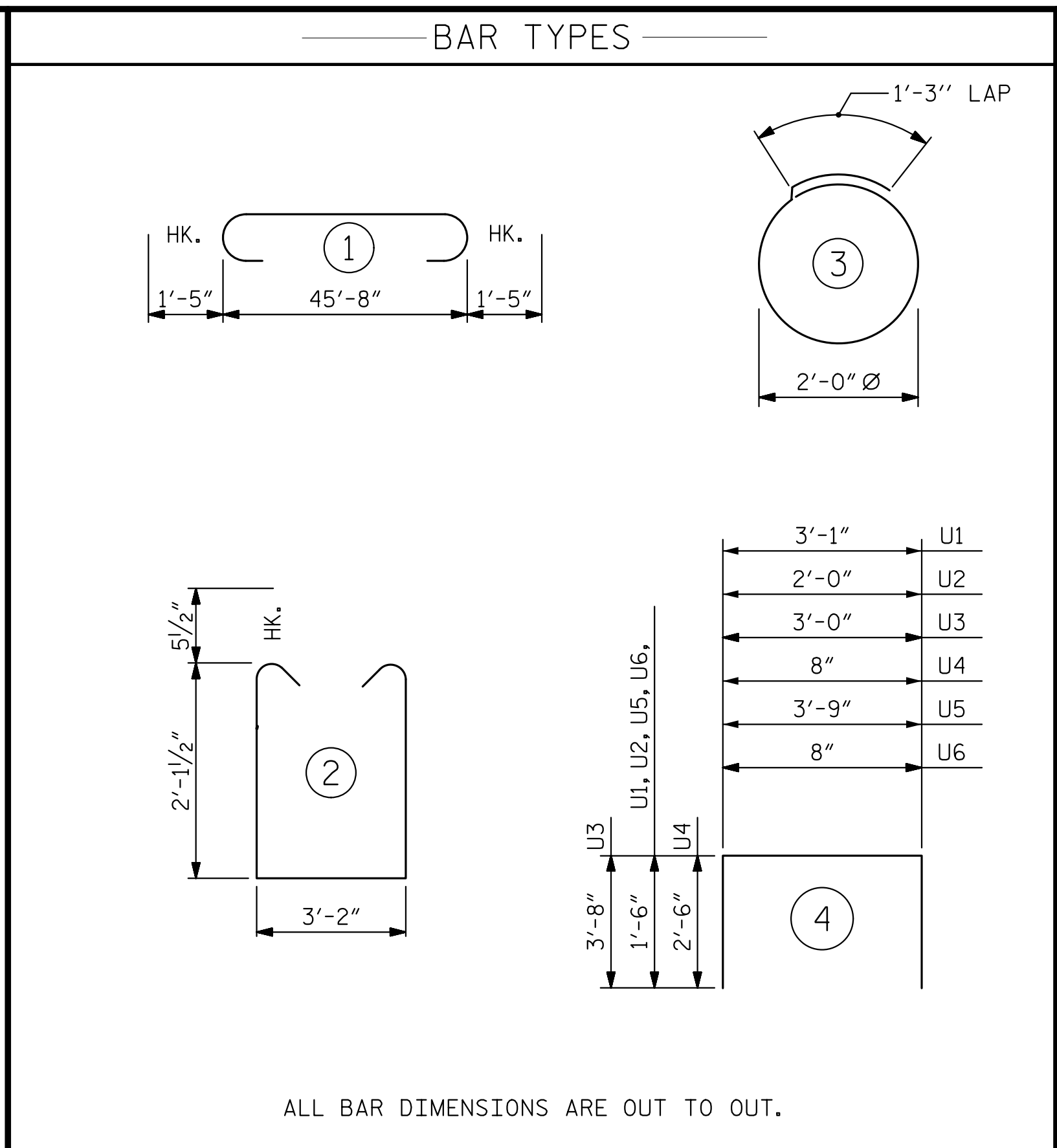


ASSEMBLED BY : JBS DATE : 1/14
 CHECKED BY : C.GLASS DATE : 1/14
 DRAWN BY : DGE 05/10
 CHECKED BY : MKT 05/10

*****SYTIME*****
 *****SDGN*****
 *****USERNAME*****

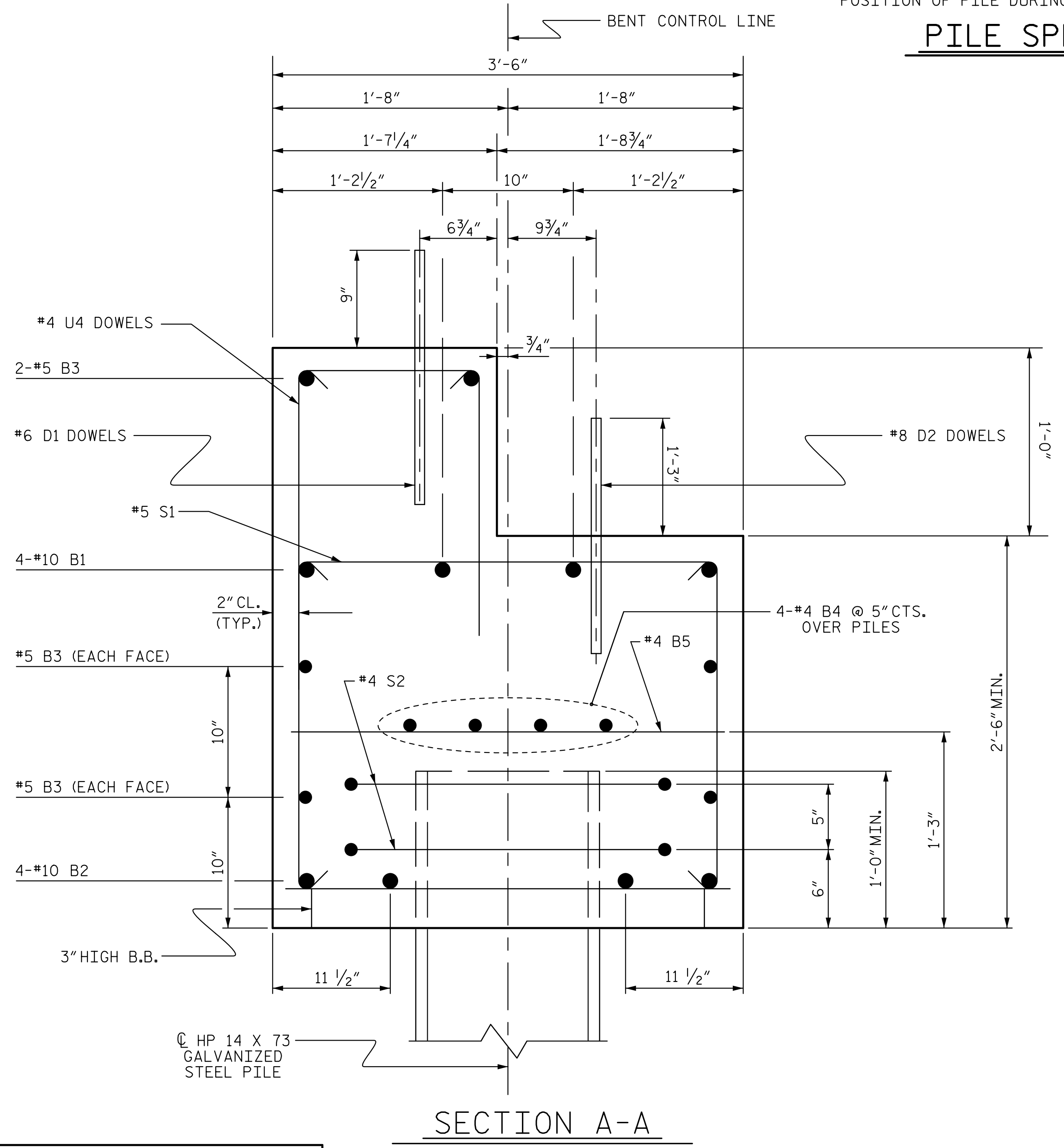


PILE SPLICE DETAILS

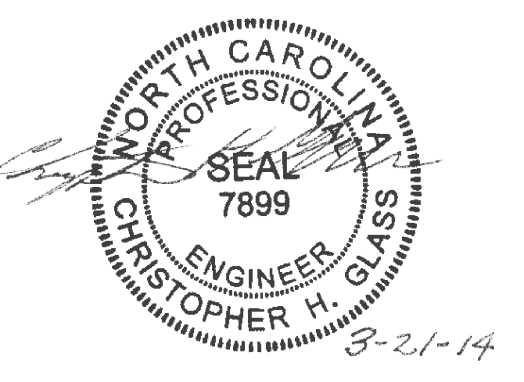
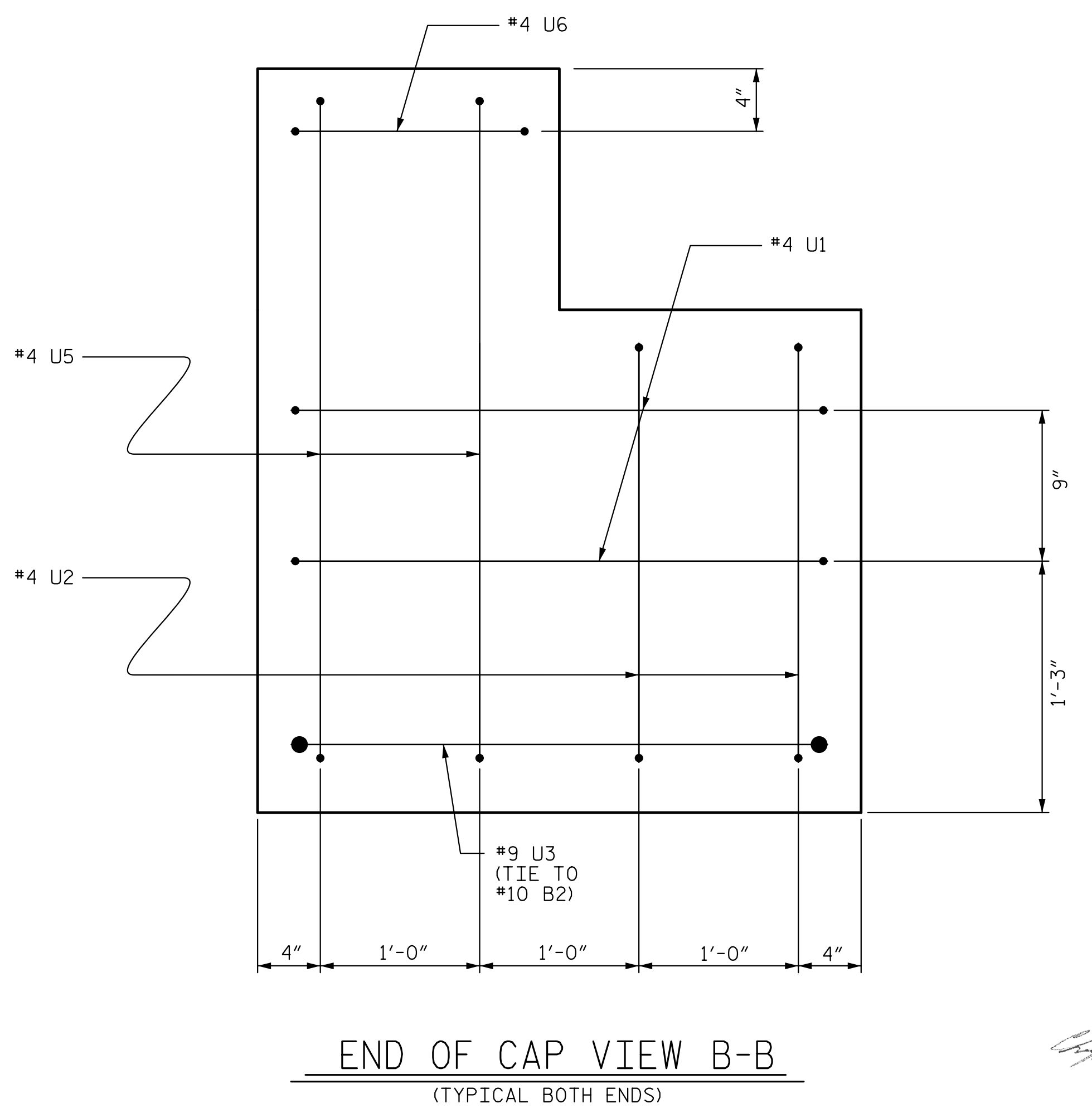


BILL OF MATERIAL FOR BENT No. 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	48'-5"	835
B2	4	#10	STR	45'-10"	789
B3	6	#5	STR	45'-10"	287
B4	8	#4	STR	24'-2"	129
B5	14	#4	STR	2'-11"	27
B6	2	#4	STR	3'-4"	4
D1	24	#6	STR	1'-6"	54
D2	24	#8	STR	2'-3"	144
S1	53	#5	2	8'-4"	461
S2	16	#4	3	7'-7"	81
U1	4	#4	4	6'-1"	16
U2	4	#4	4	5'-0"	13
U3	2	#9	4	10'-4"	70
U4	46	#4	4	5'-8"	174
U5	4	#4	4	6'-0"	16
U6	2	#4	4	3'-8"	5
REINFORCING STEEL					3105 LBS
CLASS A CONCRETE BREAKDOWN					
TOTAL CLASS A CONCRETE					17.9 C.Y.
HP 14 X 73 GALVANIZED STEEL PILES					
No. 8					LIN. FT. 520



SECTION A-A



PROJECT NO. 17BP.4.R.7
 HALIFAX COUNTY
 STATION: 12+84.80 -L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT No. 1

DRAWN BY: JBS DATE: 1/14
 CHECKED BY: C. GLASS DATE: 1/14
 DRAWN BY: DGE 05/10
 CHECKED BY: MKT 05/10

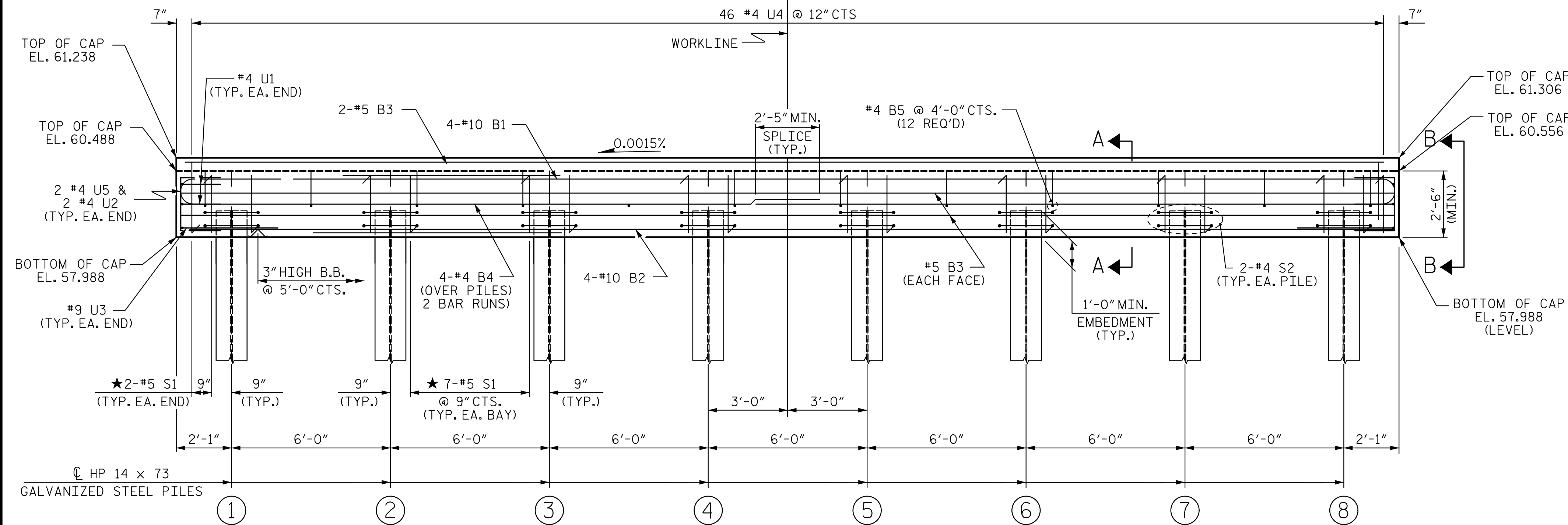
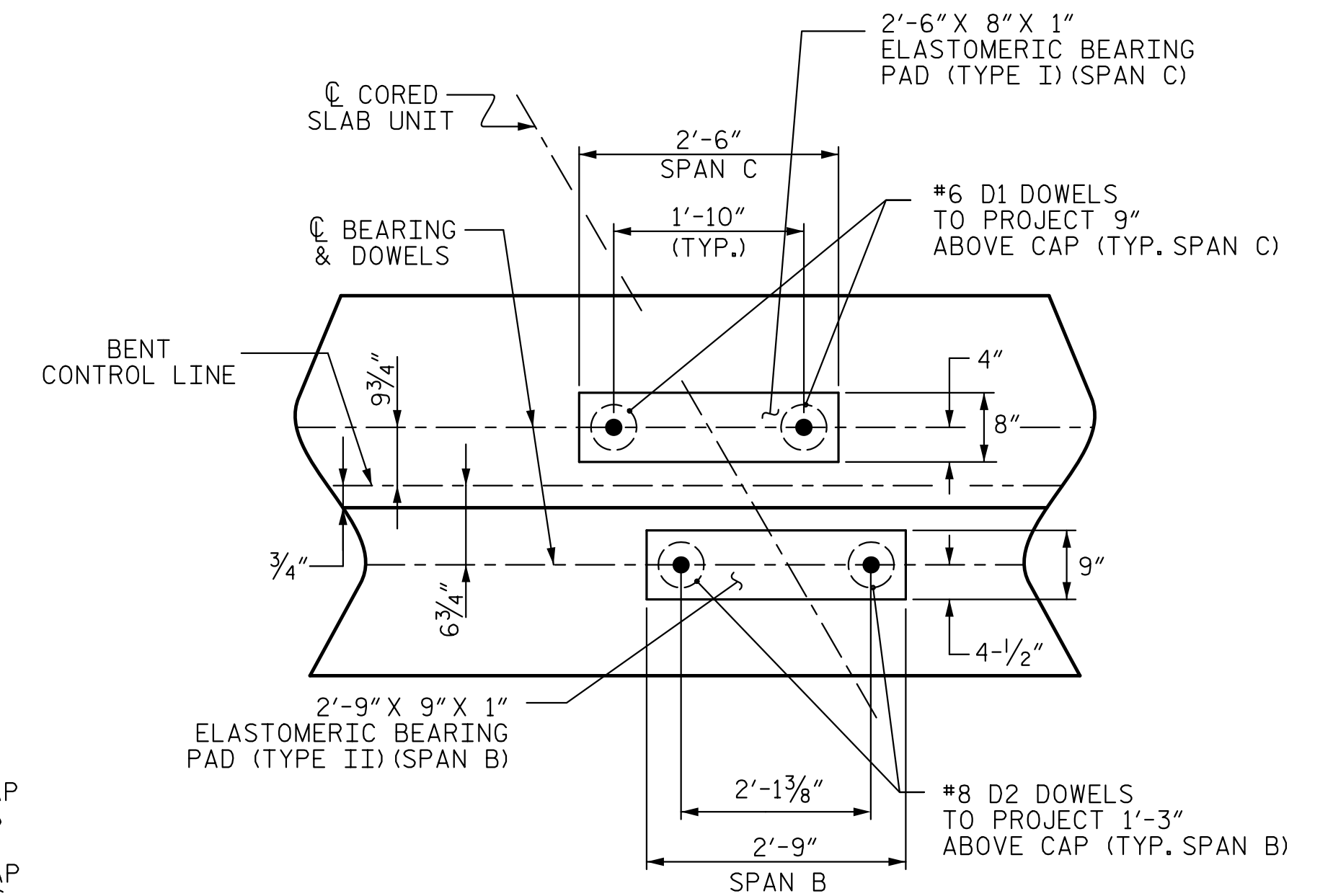
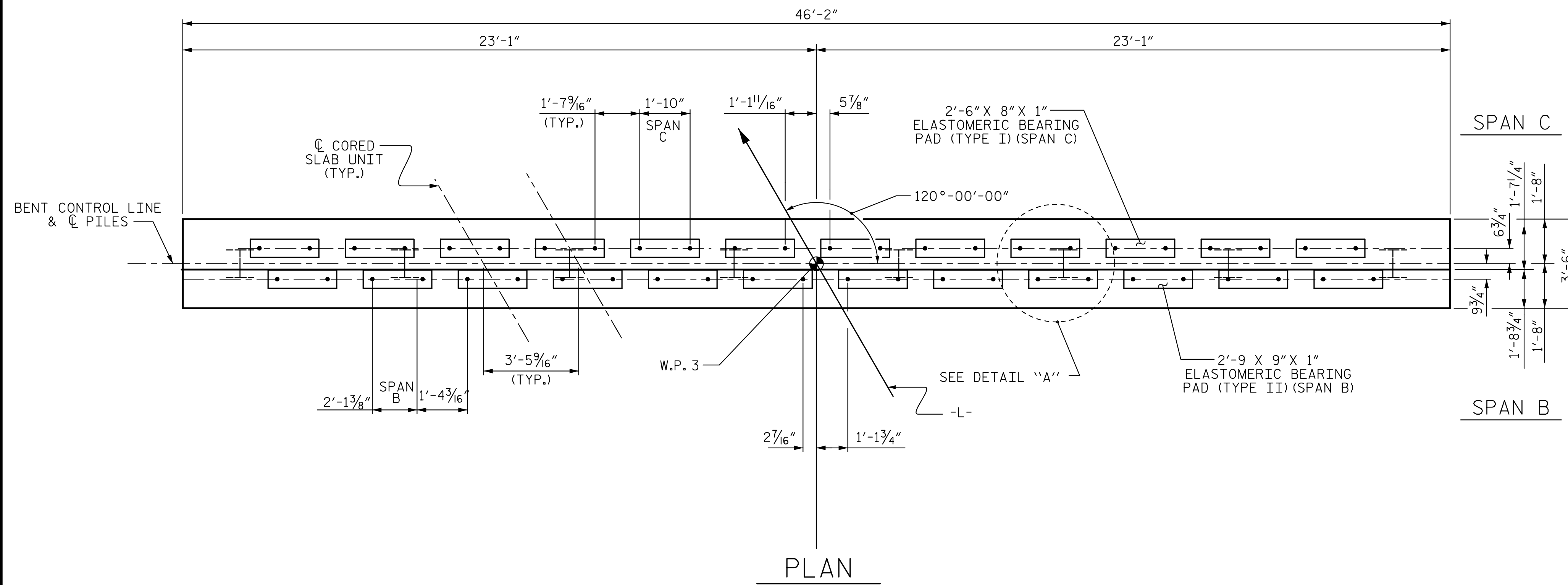
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			33

NOTES

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

★ INVERT ALTERNATE STIRRUPS.

GALVANIZE THE FULL LENGTH OF EACH INTERIOR BENT PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



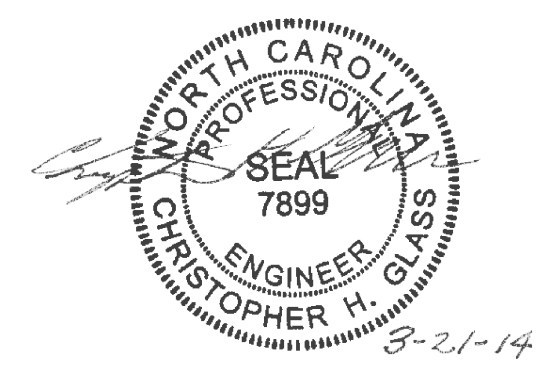
PROJECT NO. 17BP.4.R.7
 HALIFAX COUNTY
 STATION: 12+84.80 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 2

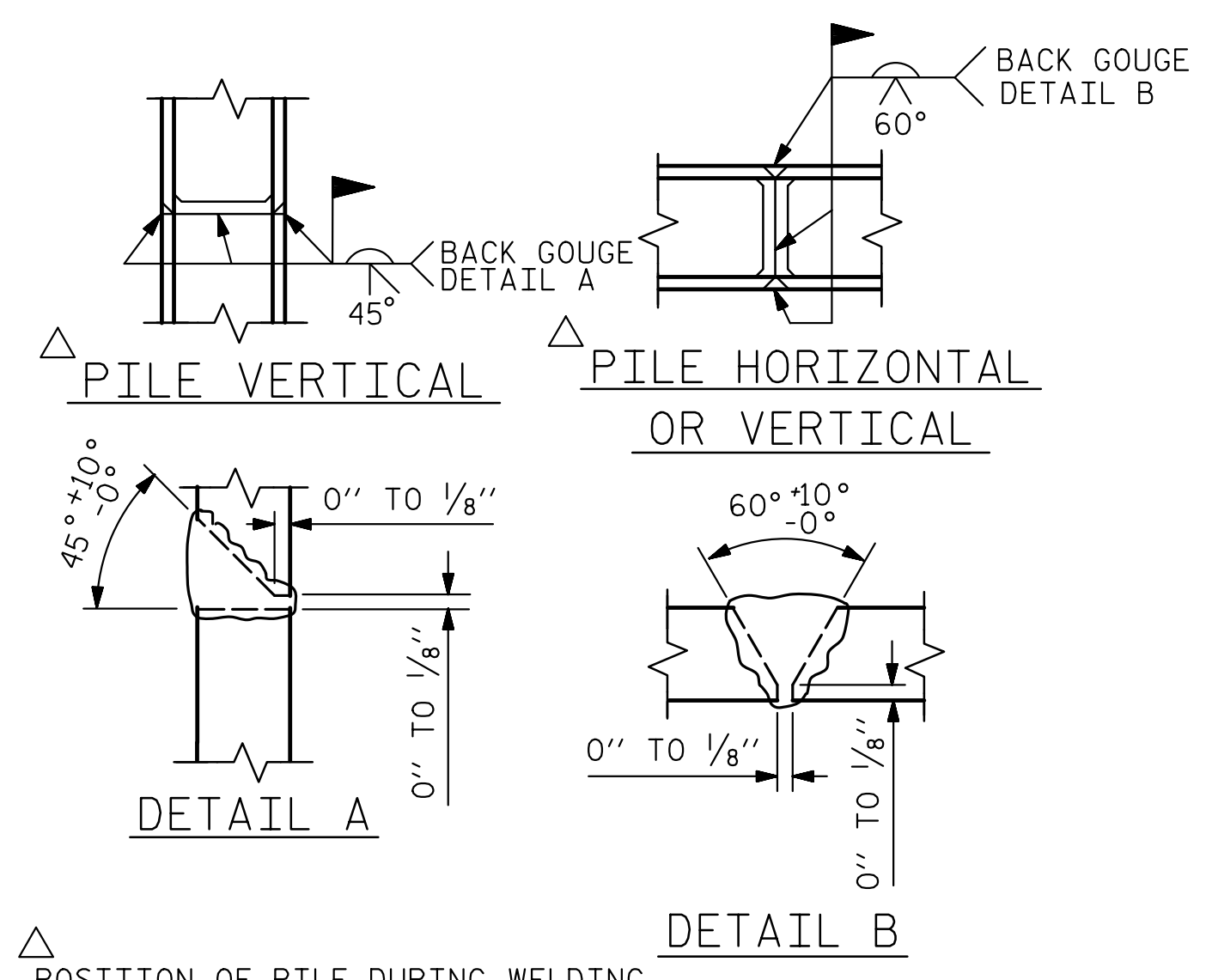
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30	
1			3			TOTAL SHEETS	
2			4			33	



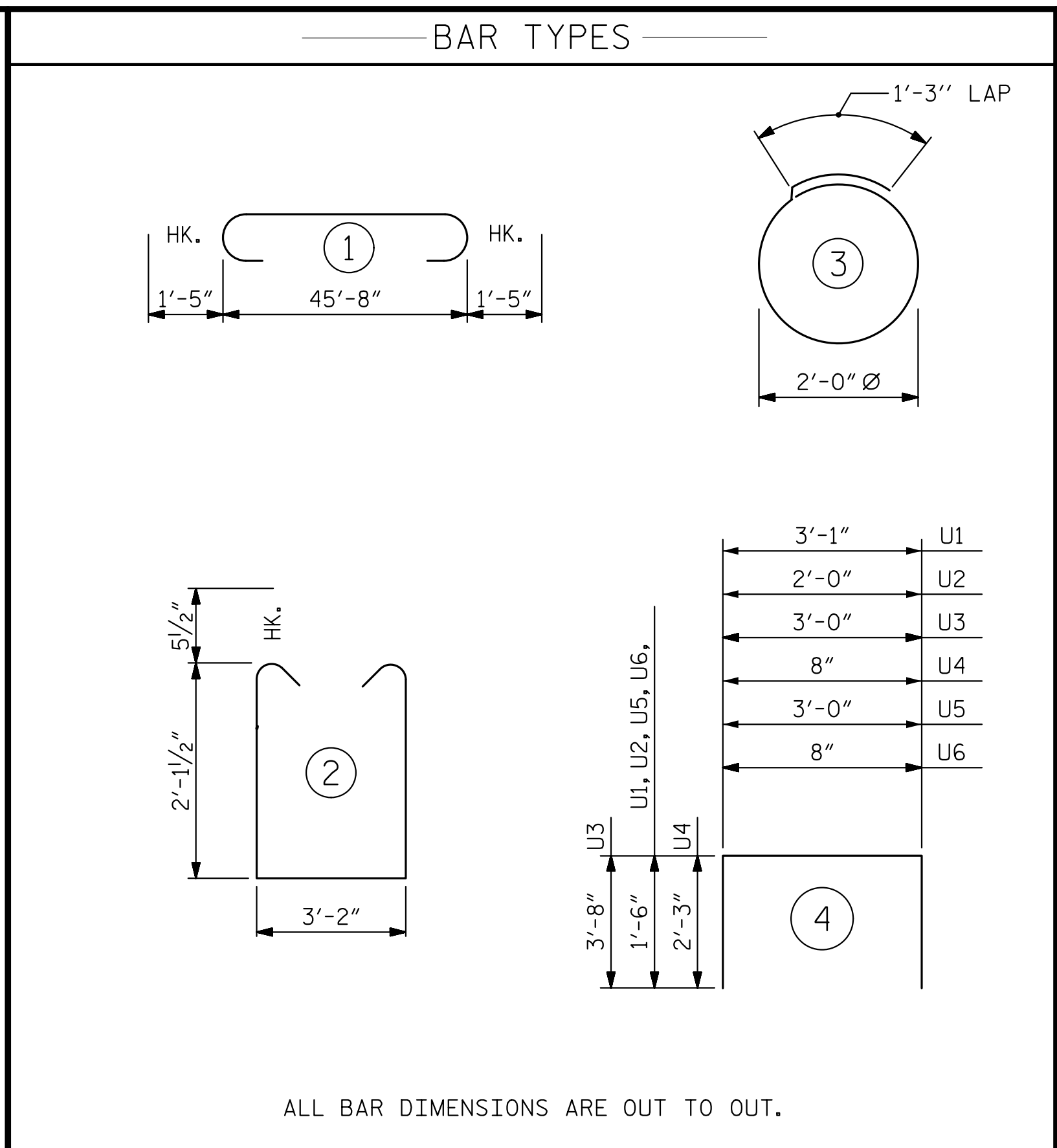
ASSEMBLED BY : JBS DATE : 1/14
 CHECKED BY : C.GLASS DATE : 1/14
 DRAWN BY : DGE 05/10
 CHECKED BY : MKT 05/10

*****SYTIME*****
 *****SDGN*****
 *****USERNAME*****

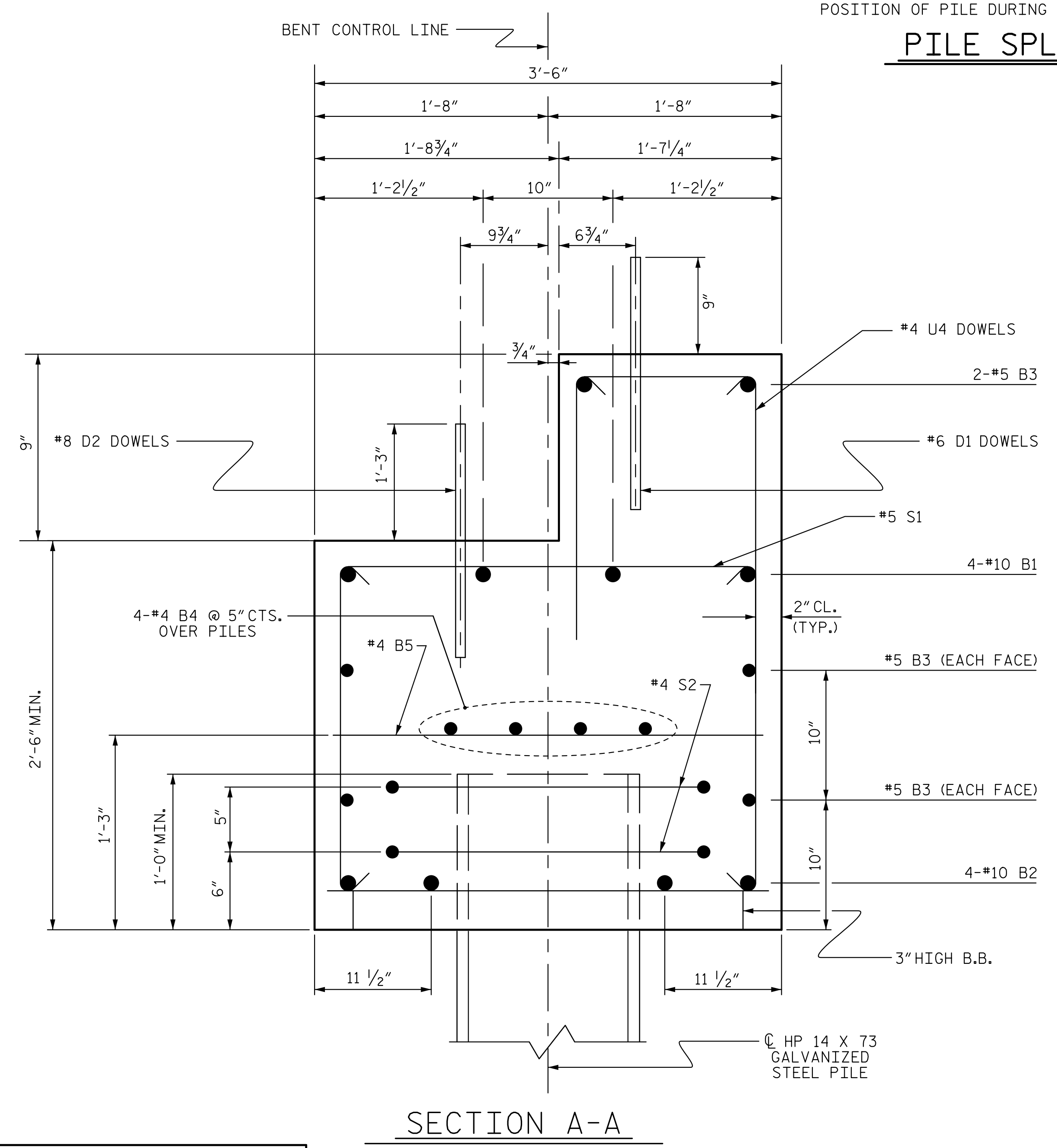
STD. NO. 14" HP_BT_36_120S_<60'



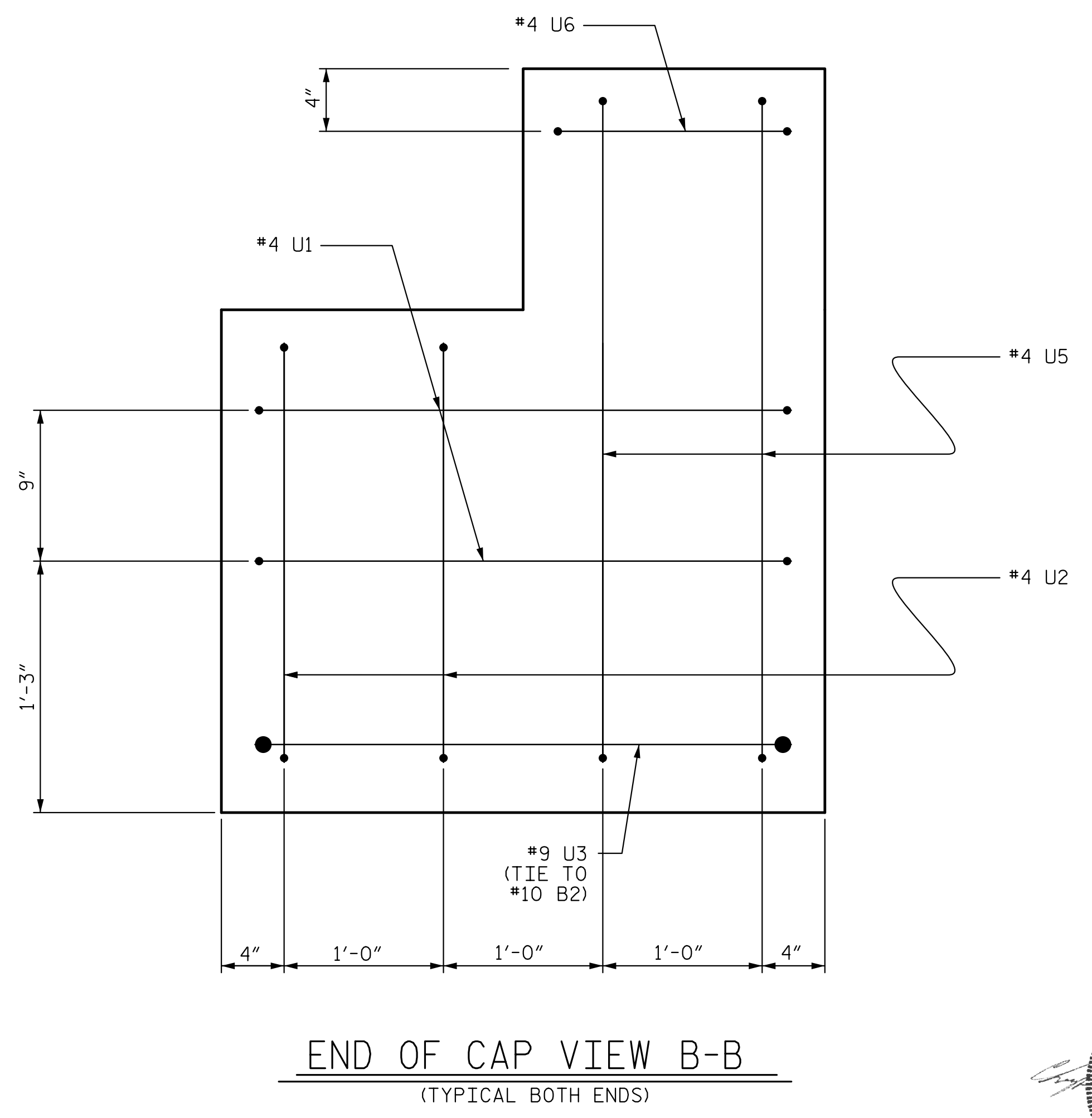
PILE SPLICE DETAILS



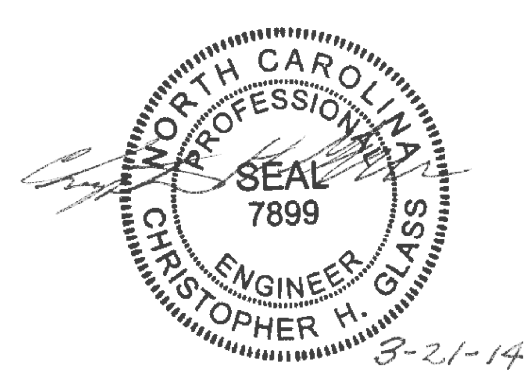
BILL OF MATERIAL					
FOR BENT No. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	48'-5"	835
B2	4	#10	STR	45'-10"	789
B3	6	#5	STR	45'-10"	287
B4	8	#4	STR	24'-2"	129
B5	14	#4	STR	2'-11"	27
B6	2	#4	STR	3'-4"	4
D1	24	#6	STR	1'-6"	54
D2	24	#8	STR	2'-3"	144
S1	53	#5	2	8'-4"	461
S2	16	#4	3	7'-7"	81
U1	4	#4	4	6'-1"	16
U2	4	#4	4	5'-0"	13
U3	2	#9	4	10'-4"	70
U4	46	#4	4	5'-2"	159
U5	4	#4	4	6'-0"	16
U6	2	#4	4	3'-8"	5
REINFORCING STEEL				3090 LBS	
CLASS A CONCRETE BREAKDOWN					
TOTAL CLASS A CONCRETE				17.2 C.Y.	
HP 14 X 73 GALVANIZED STEEL PILES					
No. 8				LIN. FT. 520	



SECTION A-A



END OF CAP VIEW B-B
(TYPICAL BOTH ENDS)



PROJECT NO. 17BP.4.R.7
 HALIFAX COUNTY
 STATION: 12+84.80 -L-
 SHEET 2 OF 2

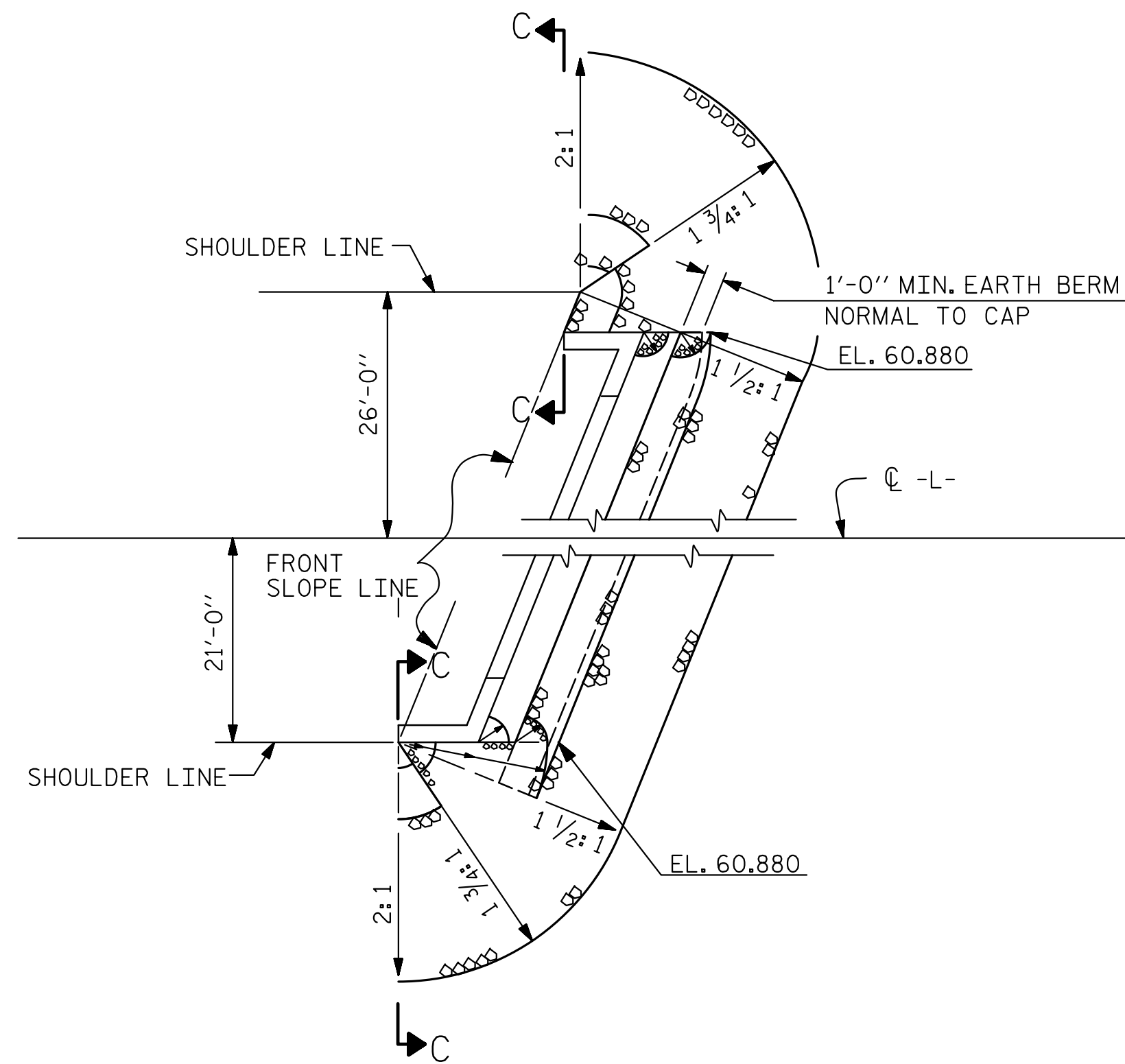
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT No. 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.	S-31
TOTAL SHEETS	33

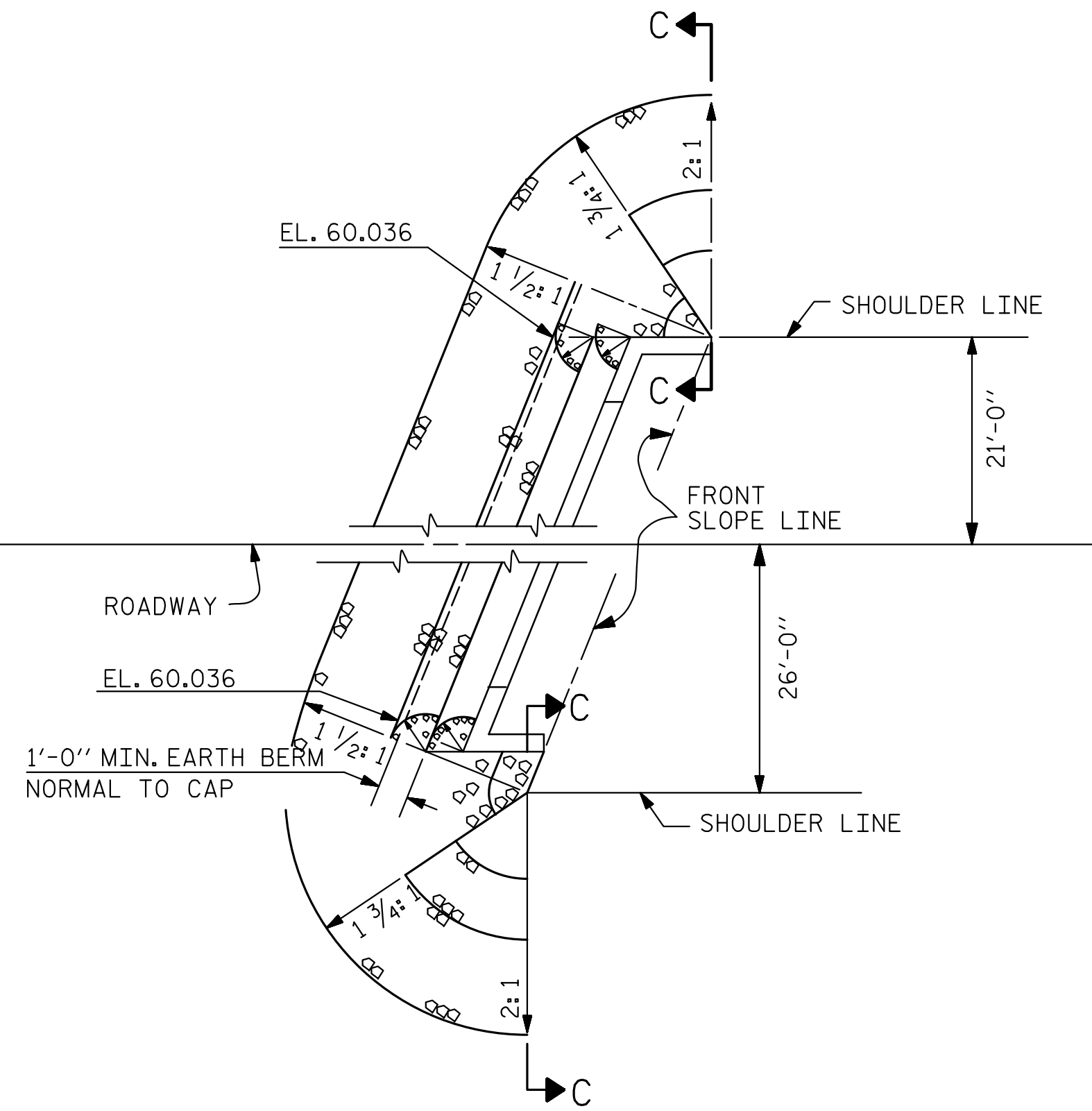
DRAWN BY: JBS DATE: 1/14
 CHECKED BY: C. GLASS DATE: 1/14
 DRAWN BY: DGE 05/10
 CHECKED BY: MKT 05/10

*****SYTIME*****
 *****SDGN*****
 *****USERNAME*****

NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

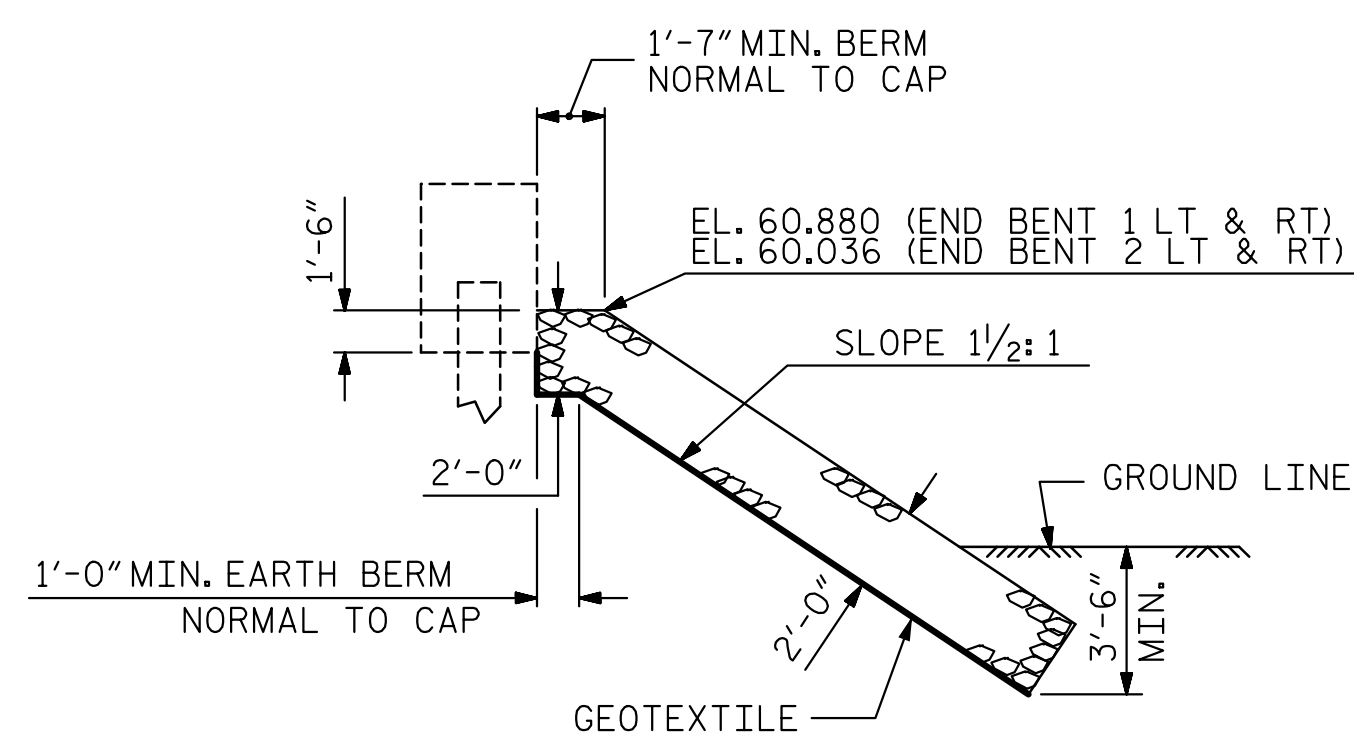


END BENT 1

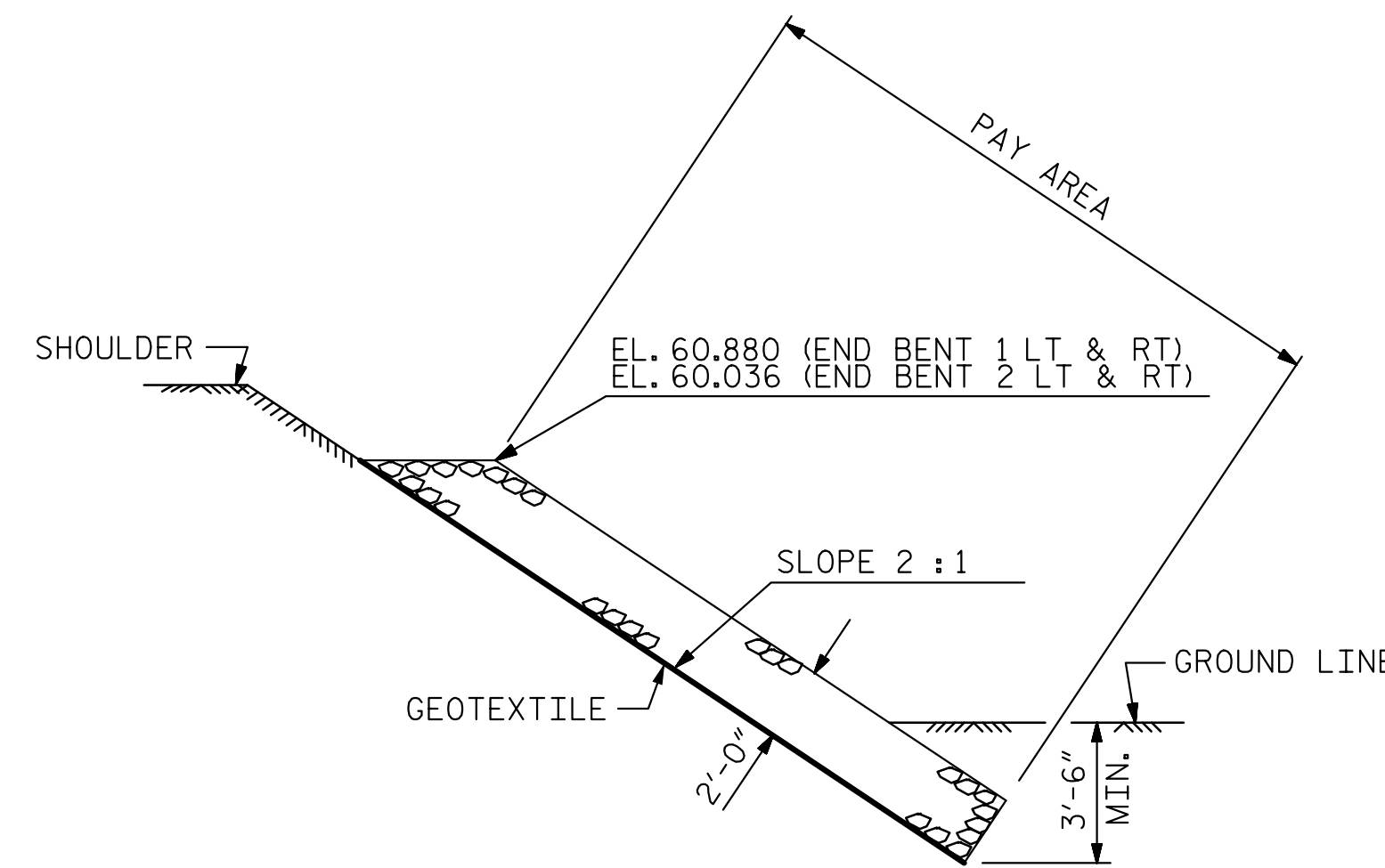


END BENT 2

ESTIMATED QUANTITIES		
BRIDGE @ STA. 12+84.80 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	317	352
END BENT 2	261	290



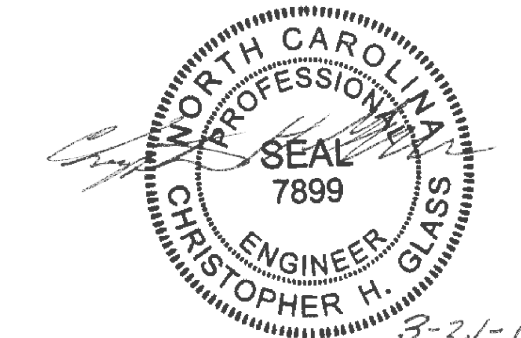
SECTION
BERM RIP RAPPED



SECTION C-C

PROJECT NO. 17BP.4.R.7
HALIFAX COUNTY
STATION: 12+84.80 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
RIP RAP DETAILS

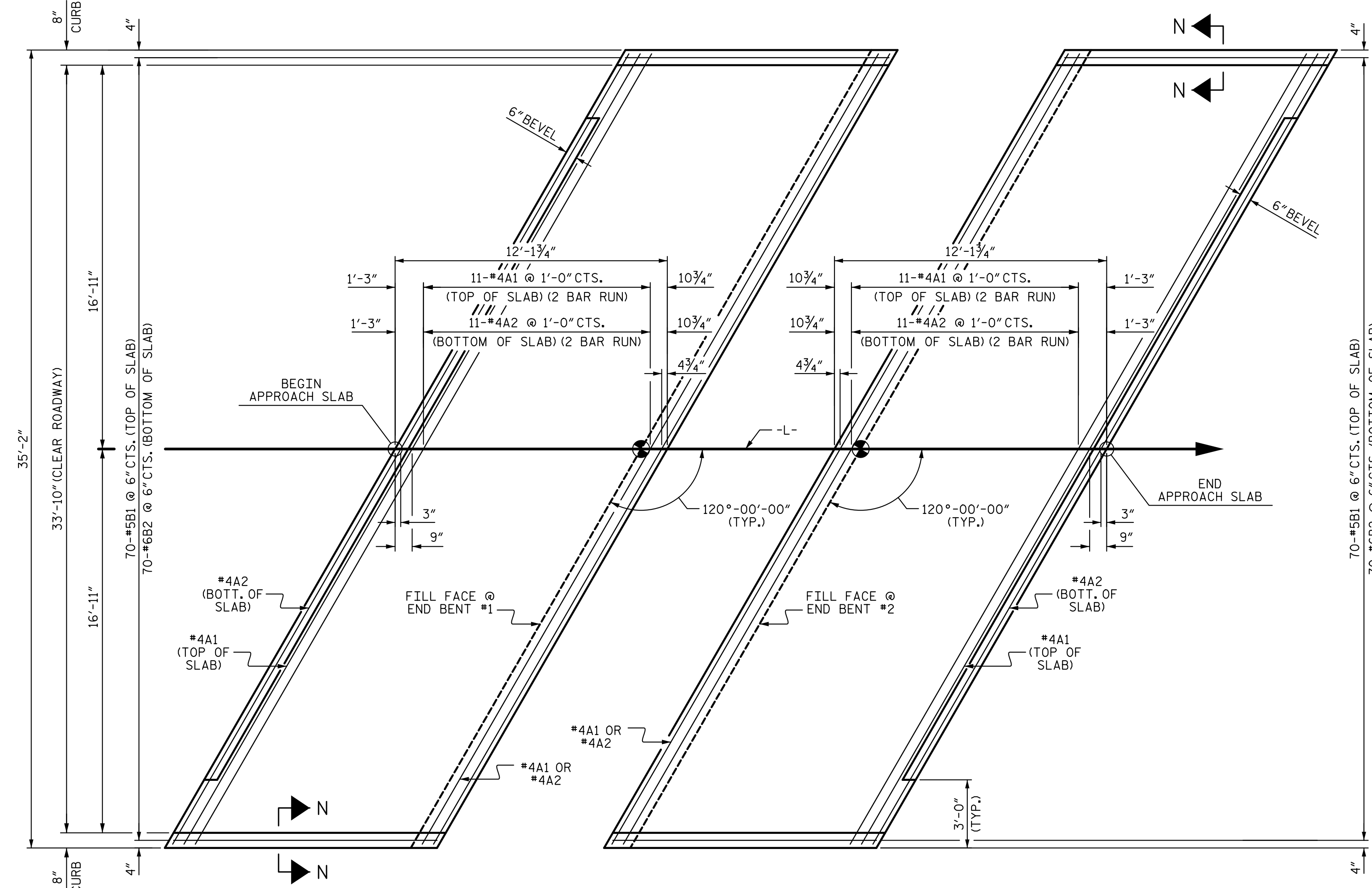


ASSEMBLED BY : JBS	DATE : 01/14
CHECKED BY : C. GLASS	DATE : 01/14
DRAWN BY : REK 1/84	REV. 5/1/06R TLA/GM
CHECKED BY : RDU 1/84	REV. 10/1/11 MAA/GM
	REV. 12/21/11 MAA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			32
2			4			32

*****SYTIME*****
*****DCN*****
*****USERNAME*****

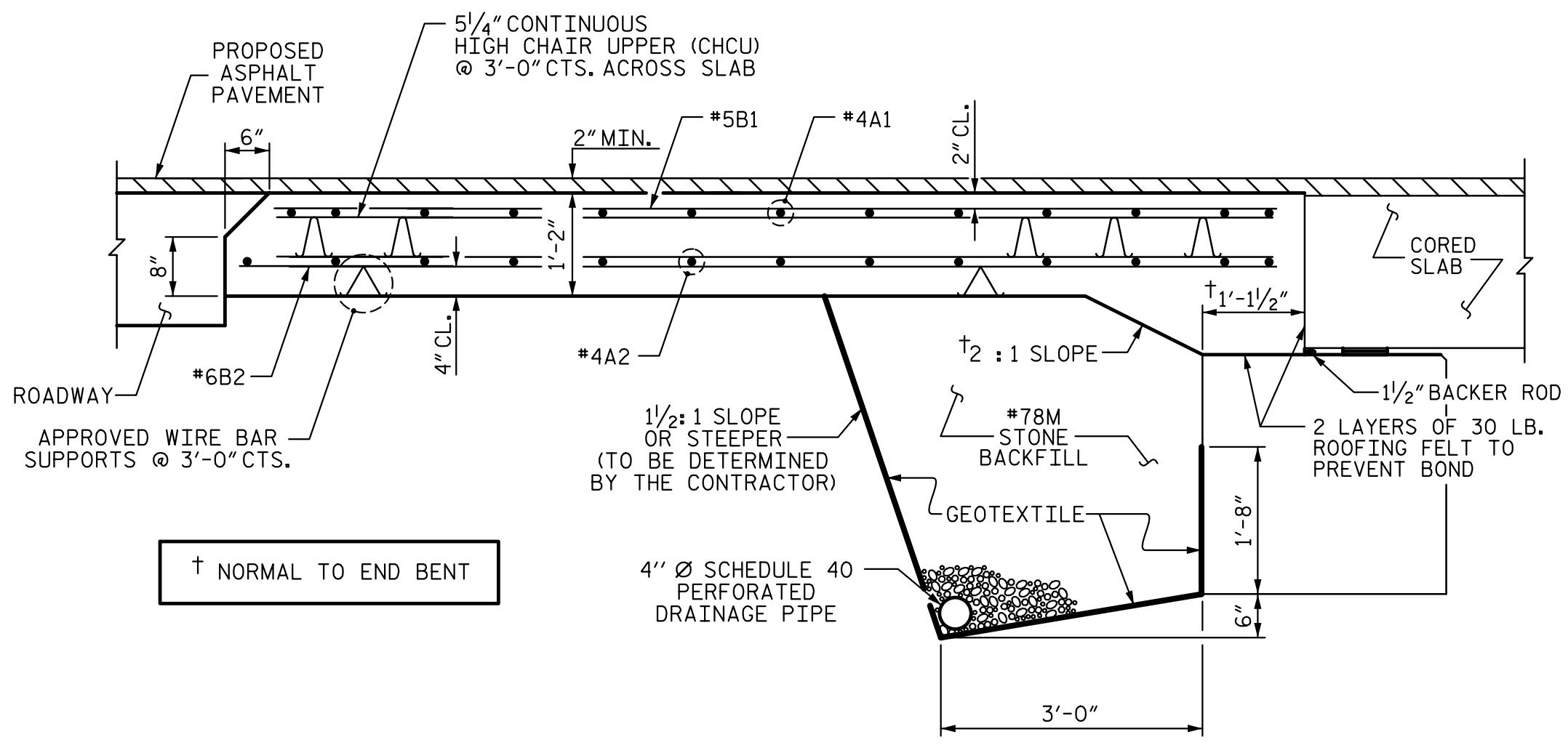
STD. NO. RR1 120° SKEW



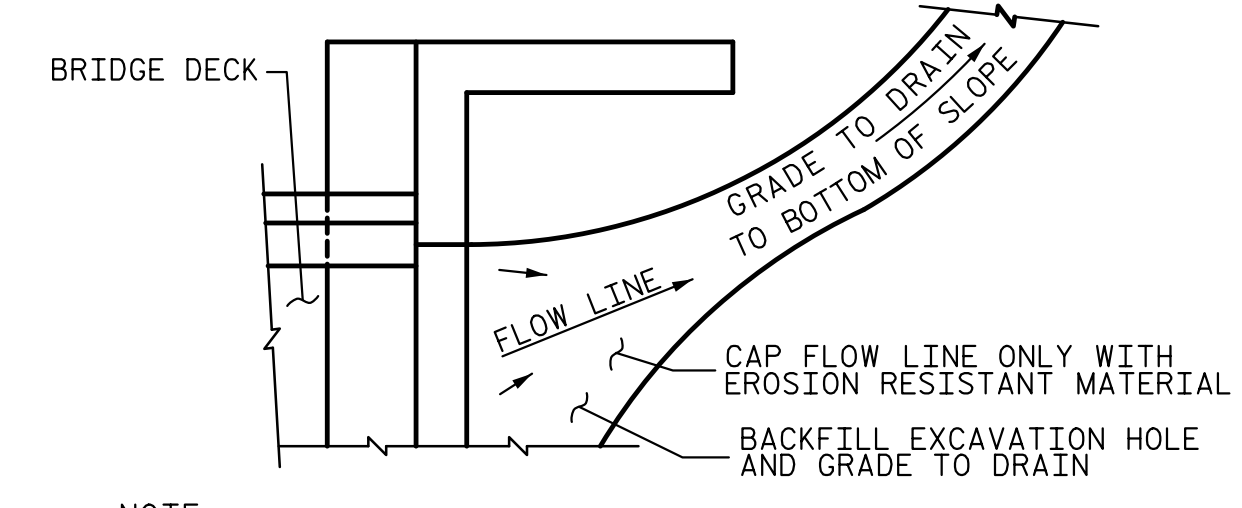
PLAN @ END BENT #1 PLAN @ END BENT #2
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

NOTES

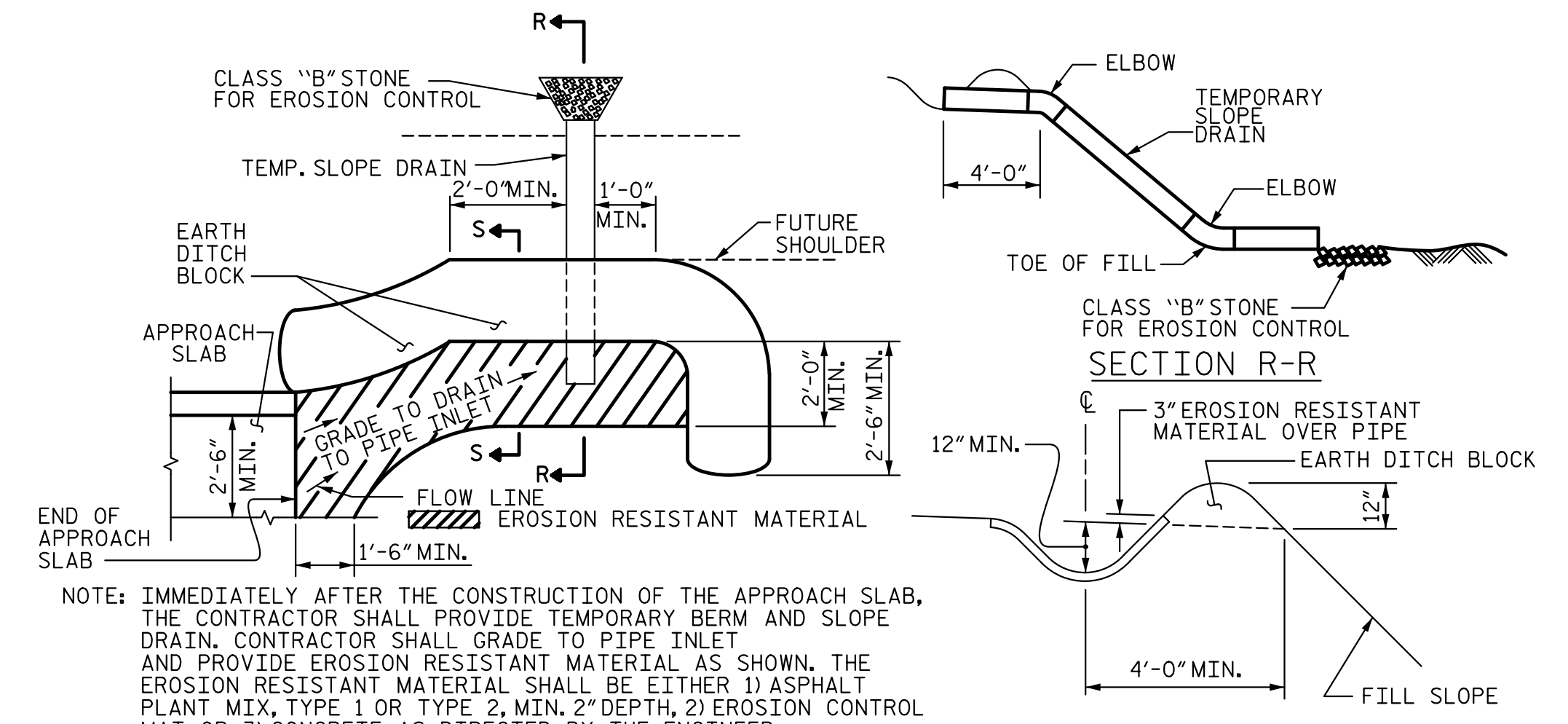
FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.
 GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.
 #78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 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.



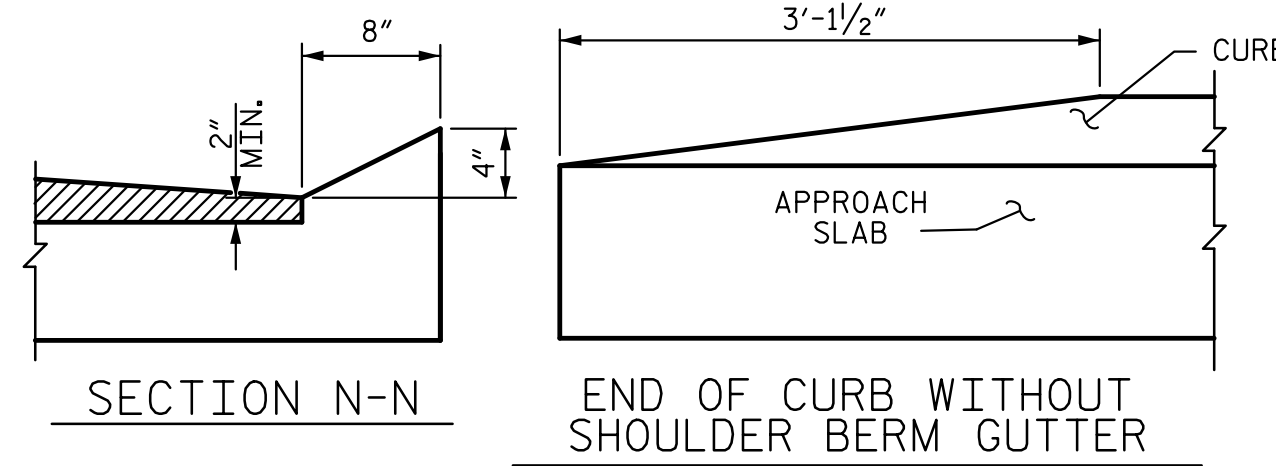
SECTION THRU SLAB



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

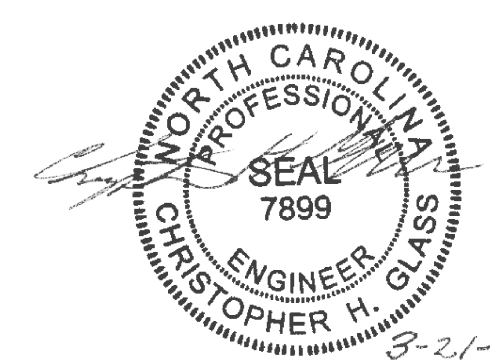


TEMPORARY BERM AND SLOPE DRAIN DETAILS
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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 #1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	26	#4	STR	21'-2"	368	
A2	26	#4	STR	21'-0"	365	
*B1	70	#5	STR	11'-1"	809	
B2	70	#6	STR	11'-7"	1218	
REINFORCING STEEL					LBS.	1583
*EPOXY COATED REINFORCING STEEL					LBS.	1177
CLASS AA CONCRETE					C. Y.	20.6
APPROACH SLAB AT EB #2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	26	#4	STR	21'-2"	368	
A2	26	#4	STR	21'-0"	365	
*B1	70	#5	STR	11'-1"	809	
B2	70	#6	STR	11'-7"	1218	
REINFORCING STEEL					LBS.	1583
*EPOXY COATED REINFORCING STEEL					LBS.	1177
CLASS AA CONCRETE					C. Y.	20.6

ASSEMBLED BY : JBS DATE : 01/14
 CHECKED BY : C.GLASS DATE : 01/14
 DRAWN BY : SHS/MAA 5-09 REV. 12-11 MAA/AAC
 CHECKED BY : BCH 5-09

PROJECT NO. 17BP.4.R.7
 HALIFAX COUNTY
 STATION: 12+84.80 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER) 120° SKEW					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-33
					TOTAL SHEETS 33

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.4.R.07	EC-1	3
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.4.R.07	N/A	BRIDGE REPLACEMENT	

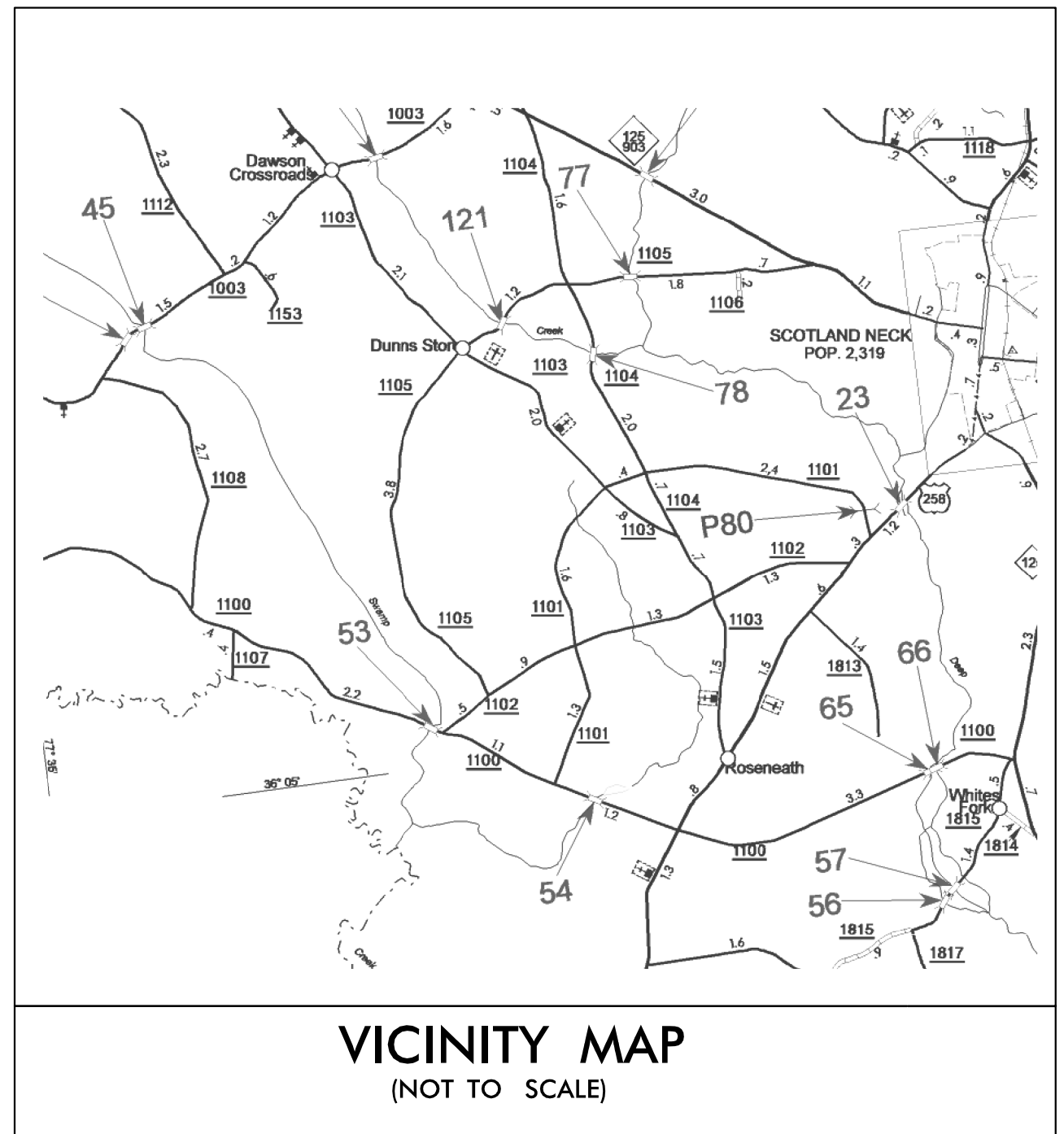
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HALIFAX COUNTY

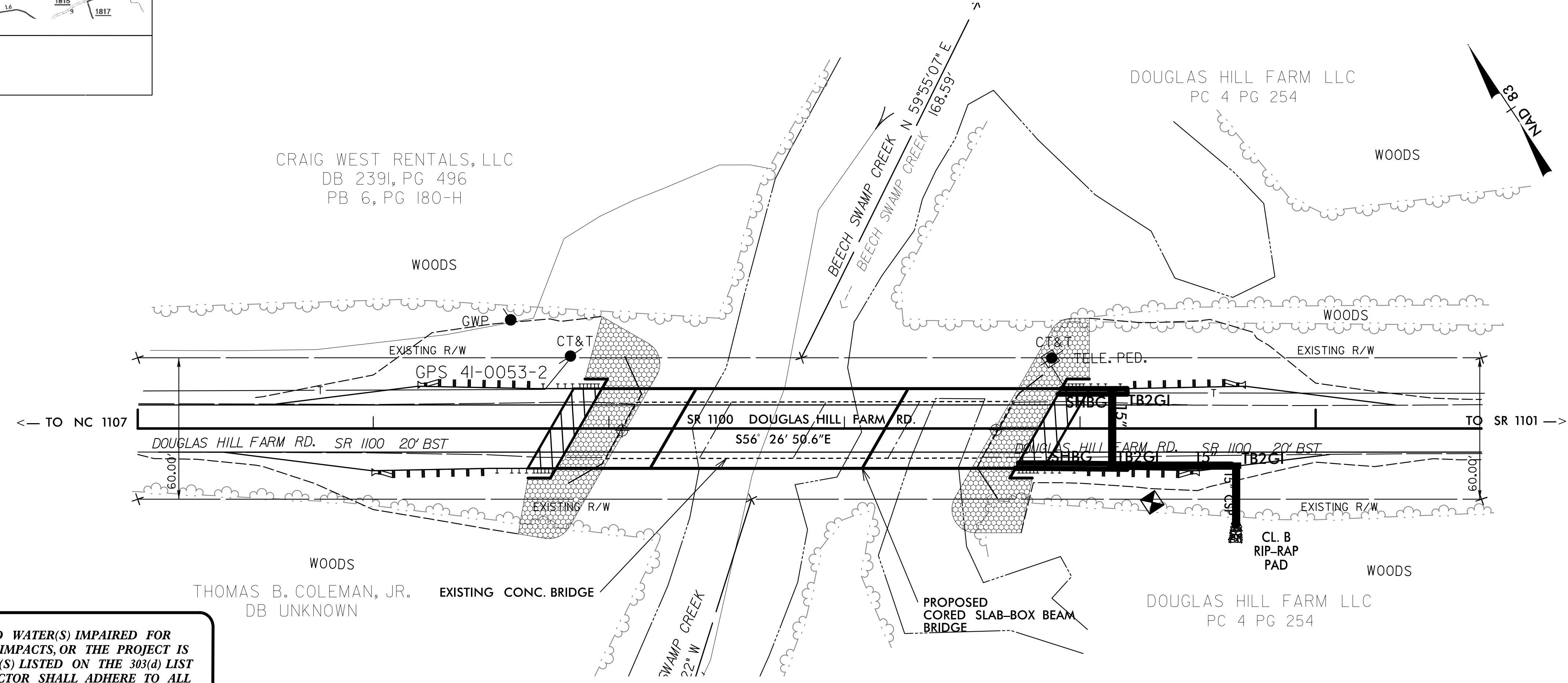
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

HALIFAX #0053

PROJECT NO: 17BP.4.R.07



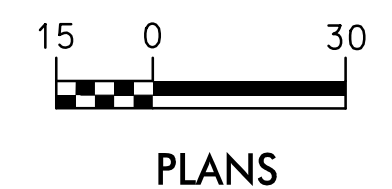
VICINITY MAP
(NOT TO SCALE)



ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT
Refer To E. C. Special Provisions for Special Considerations.

THIS PROJECT CONTAINS 303(d) IMPAIRED WATER(S) IMPAIRED FOR TURBIDITY FROM STORMWATER-RELATED IMPACTS, OR THE PROJECT IS WITHIN ONE MILE AND DRAINS TO WATER(S) LISTED ON THE 303(d) LIST FOR TURBIDITY IMPAIRMENT. THE CONTRACTOR SHALL ADHERE TO ALL CONDITIONS AND REGULATIONS REQUIRED FOR IMPACTS TO THESE WATERS.

GRAPHIC SCALE



EXISTING STRUCTURE: (4) SPANS 1@40'-3"; 2@40'; 1@40'-3"
STEEL PLANK DECK WITH ASPHALT COURSE ON I-BEAMS ON TIMBER-BEAM CAPS AND TIMBERSTEEL PILES

PROPOSED STRUCTURE: (3) SPANS 1@40': 24" CORED SLAB; 1@90': 33" BOX BEAM AND 1@65': 21" CORED SLAB ON REINFORCED CONCRETE 2'-6" END BENTS AND STEEL H-PILES

ROADSIDE ENVIRONMENTAL UNIT
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

2012 STANDARD SPECIFICATIONS

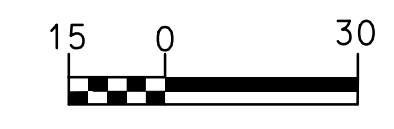
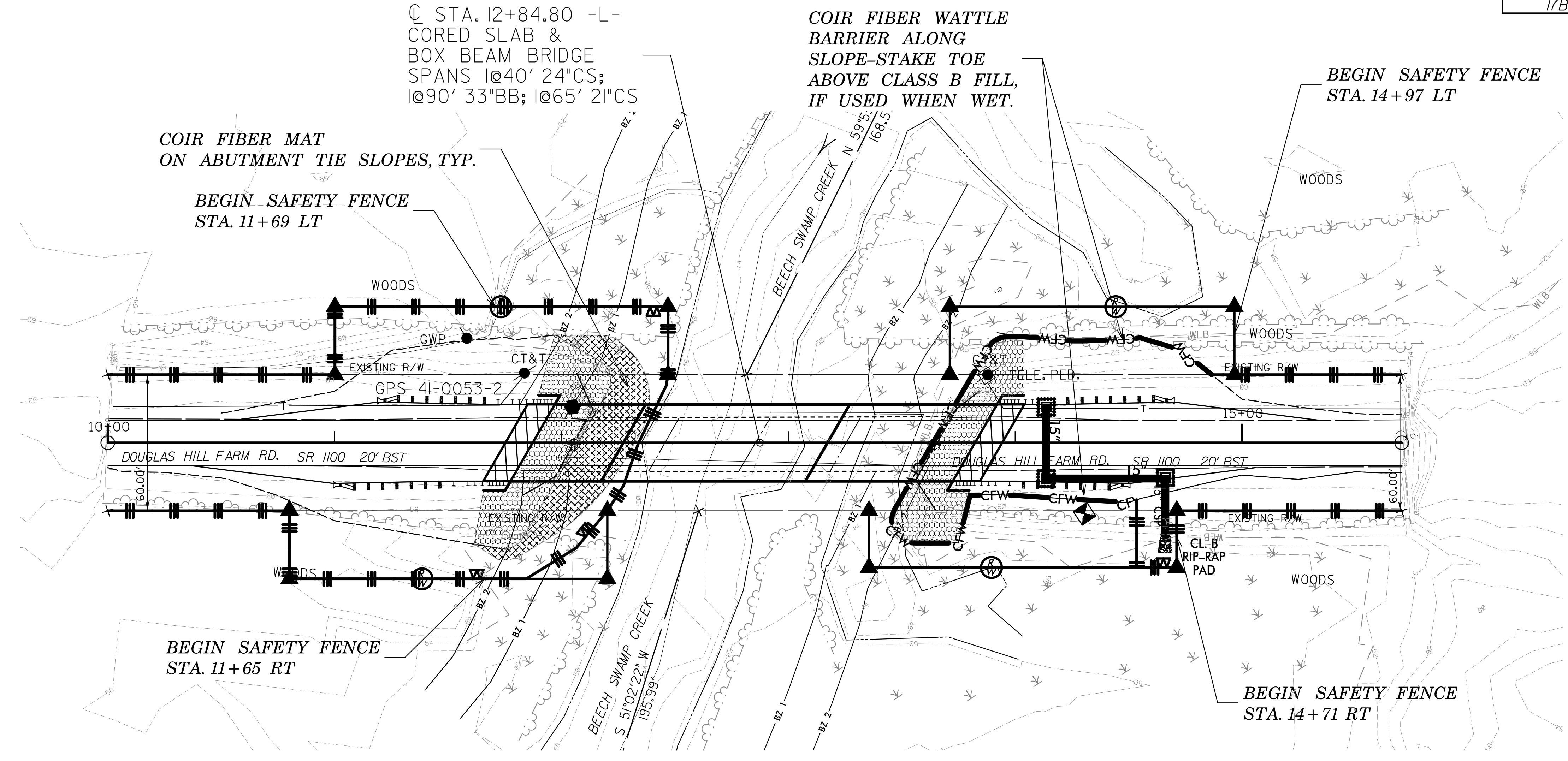
J. BRANCH SMITH
LEVEL III NAME

3355
LEVEL III CERTIFICATION NO.

Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2012 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01 Railroad Erosion Control Detail	1632.01 Rock Inlet Sediment Trap Type A
1605.01 Temporary Silt Fence	1632.02 Rock Inlet Sediment Trap Type B
1606.01 Special Sediment Control Fence	1632.03 Rock Inlet Sediment Trap Type C
1607.01 Gravel Construction Entrance	1633.01 Temporary Rock Silt Check Type A
1622.01 Temporary Berms and Slope Drains	1633.02 Temporary Rock Silt Check Type B
1630.01 Riser Basin	1634.01 Temporary Rock Sediment Dam Type A
1630.02 Silt Basin Type B	1634.02 Temporary Rock Sediment Dam Type B
1630.03 Temporary Silt Ditch	1635.01 Rock Pipe Inlet Sediment Trap Type A
1630.04 Stilling Basin	1635.02 Rock Pipe Inlet Sediment Trap Type B
1630.05 Temporary Diversion	1640.01 Coir Fiber Baffle
1630.06 Special Stilling Basin	1645.01 Temporary Stream Crossing
1631.01 Matting Installation	



ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT
 Refer To E. C. Special Provisions for Special Considerations.

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY.

THIS PROJECT CONTAINS 303(d) IMPAIRED WATER(S) IMPAIRED FOR TURBIDITY FROM STORMWATER-RELATED IMPACTS, OR THE PROJECT IS WITHIN ONE MILE AND DRAINS TO WATER(S) LISTED ON THE 303(d) LIST FOR TURBIDITY IMPAIRMENT. THE CONTRACTOR SHALL ADHERE TO ALL CONDITIONS AND REGULATIONS REQUIRED FOR IMPACTS TO THESE WATERS.

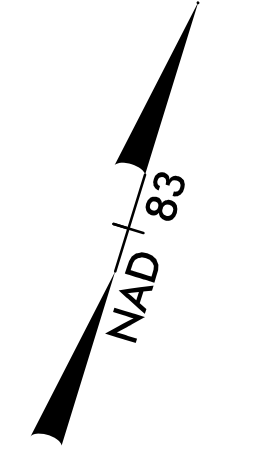
EROSION CONTROL MEASURES

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1606.01	Rock Inlet Sediment Trap Type C	
	Coir Fiber Wattle Barrier	

SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

GENERAL EROSION CONTROL NOTES:
 INSTALL EROSION & SEDIMENT CONTROL MEASURES ACCORDING TO PLANS, CONTRACT, AND SPECIAL PROVISIONS.
 TEMPORARY SILT FENCE SHALL BE INSTALLED TO ROW OR AS SHOWN. SILT FENCE OUTLETS MUST BE PLACED IN ORDER FOR SEDIMENT TO DISCHARGE JUST INSIDE ROW AND NOT OUTSIDE ROW.
 COIR FIBER WATTLE BARRIERS SHALL BE USED AS SHOWN FOR TOE PROTECTION.
 ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.
 ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.
 SEED ALL DISTURBED AREAS ACCORDING TO THE SITE STABILIZATION TIMEFRAMES.
 INSTALLATION SCHEDULE:
 INSTALL EROSION & SEDIMENT CONTROL DEVICES PRIOR TO DEMOLITION OF EXISTING STRUCTURE.
 ESTABLISH RIP-RAP SLOPE PROTECTION FOR ABUTMENTS AND FOR FILL SLOPES STEEPER THAN 2:1. USE COIR FIBER MAT FOR SLOPE PROTECTION IN AREAS OF ABUTMENT EXCAVATIONS.
 ESTABLISH PERMANENT VEGETATION AND REFORESTATION.
 REMOVE ALL EROSION/SEDIMENT CONTROL DEVICES AFTER PERMANENT VEGETATIVE COVER HAS BEEN ESTABLISHED ON DISTURBED AREAS.



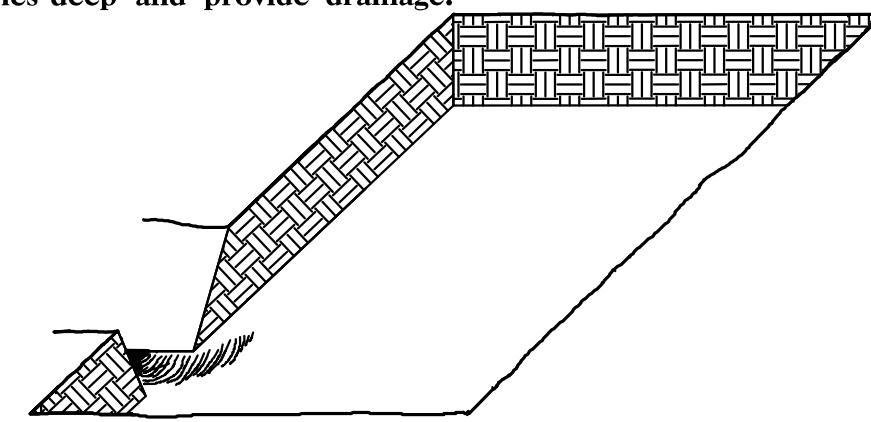
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.4.R.07	RF-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

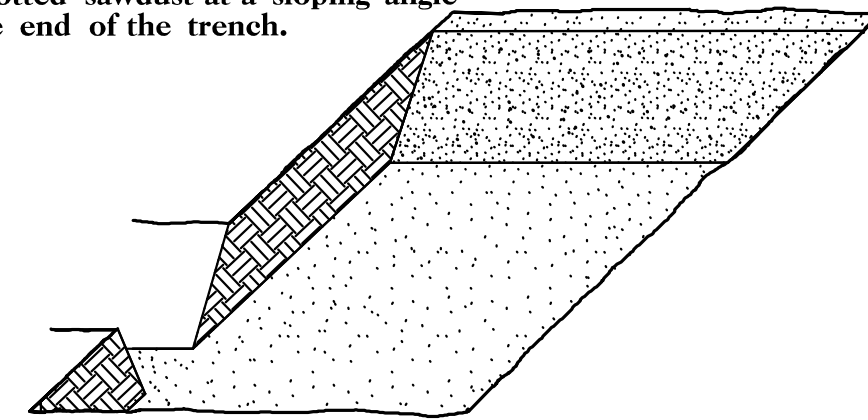
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

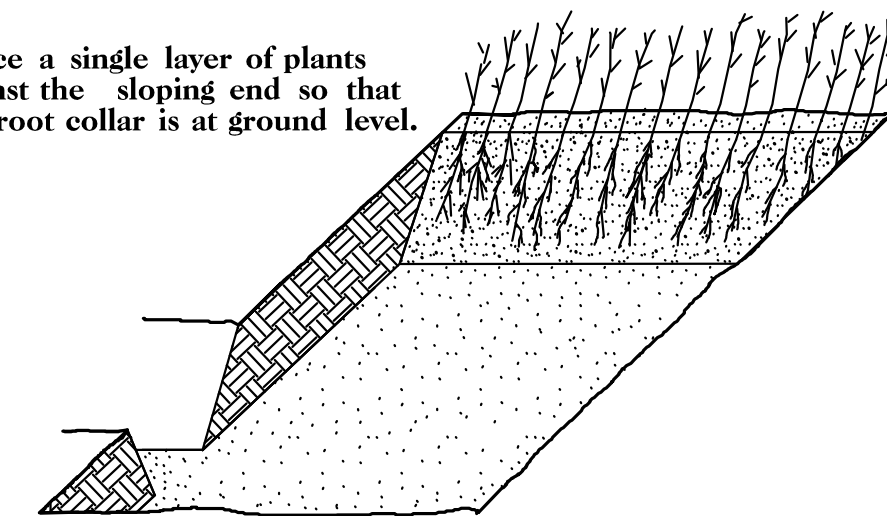
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



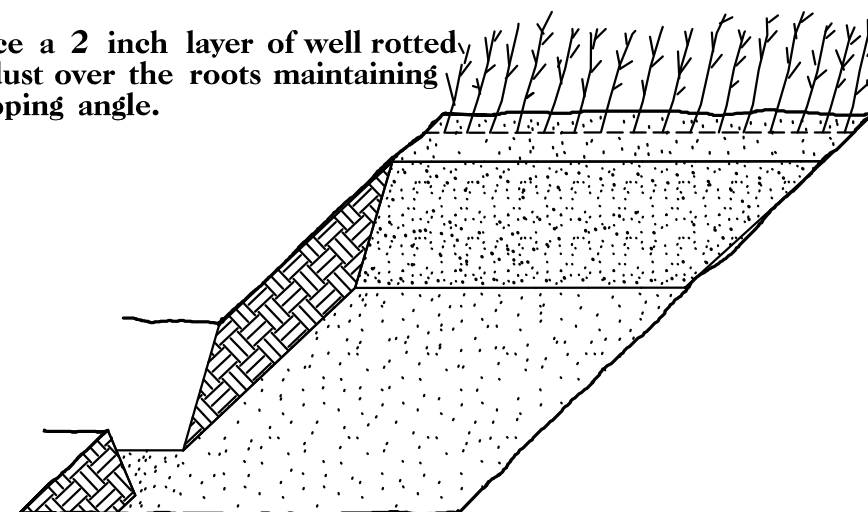
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

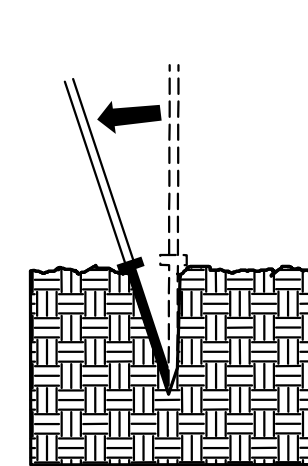


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

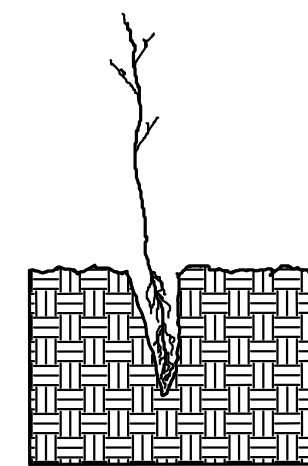


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

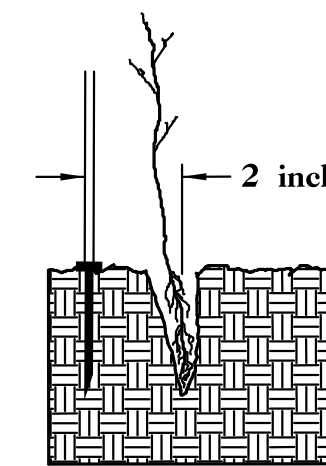
DIBBLE PLANTING METHOD USING THE KBC PLANTING BAR



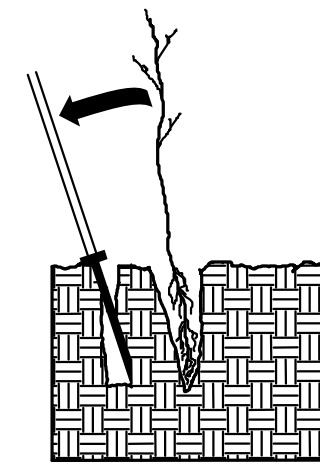
1. Insert planting bar as shown and pull handle toward planter.



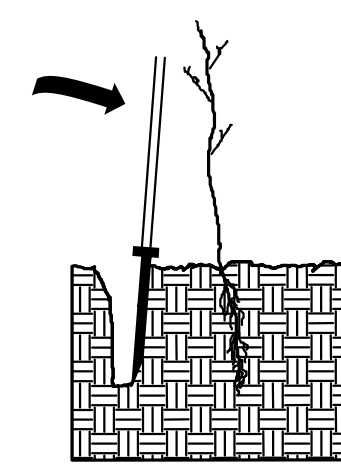
2. Remove planting bar and place seedling at correct depth.



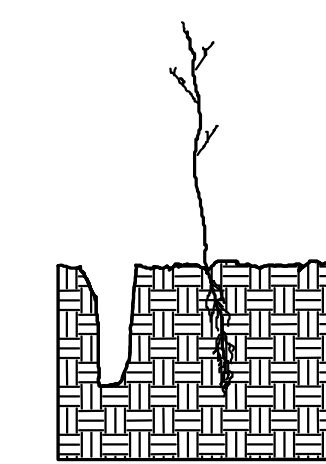
3. Insert planting bar 2 inches toward planter from seedling.



4. Pull handle of bar toward planter, firming soil at bottom.



5. Push handle forward firming soil at top.



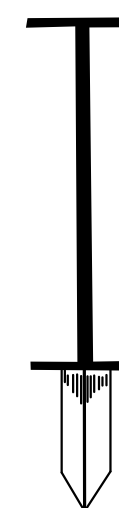
6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.



KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.



ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

REFORESTATION

- TREE REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

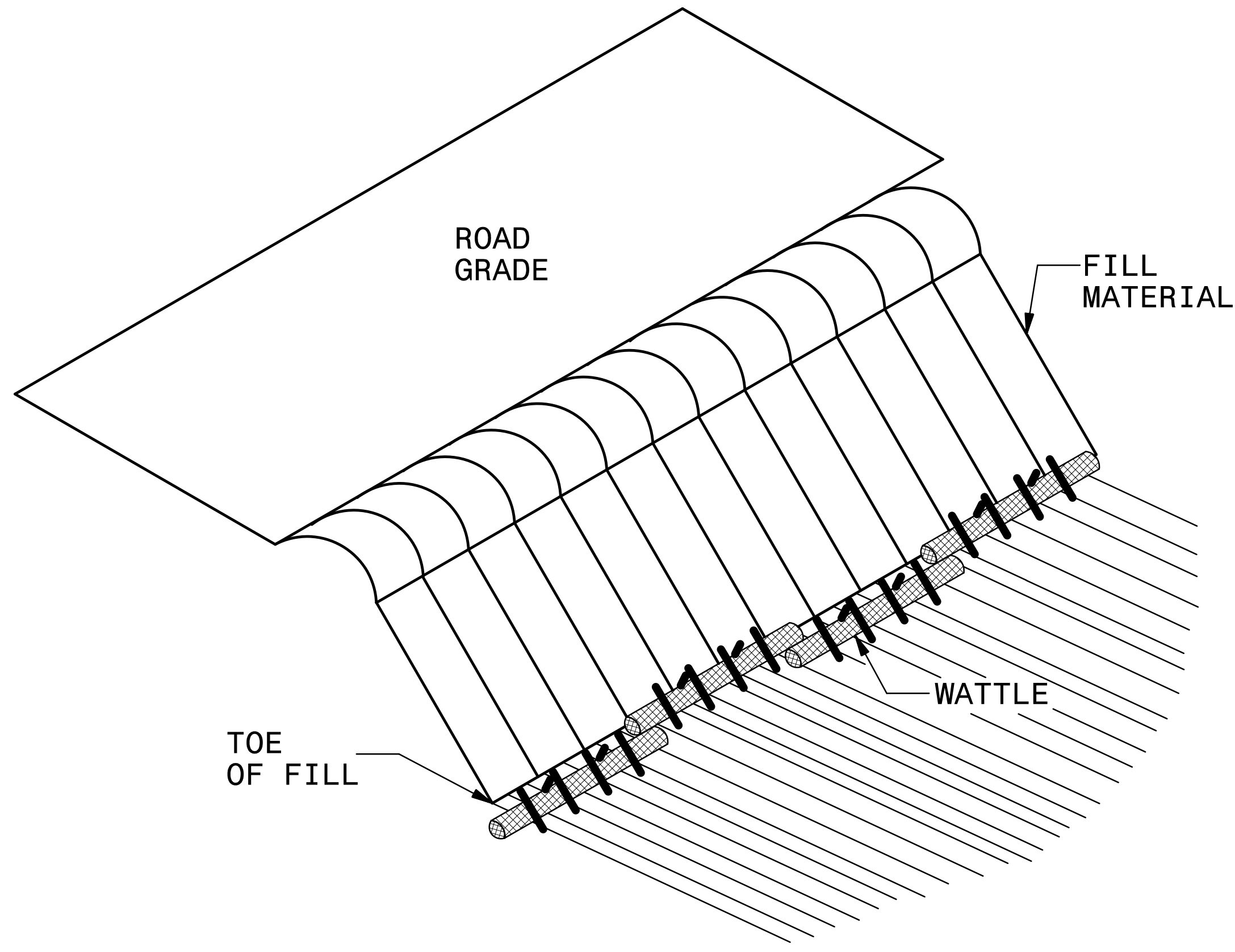
25%	LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in - 18 in BR
25%	PLATANUS OCCIDENTALIS	SYCAMORE	12 in - 18 in BR
25%	FRAXINUS PENNSYLVANICA	GREEN ASH	12 in - 18 in BR
25%	BETULA NIGRA	RIVER BIRCH	12 in - 18 in BR

REFORESTATION DETAIL SHEET

N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

PROJECT REFERENCE NO. 17BP.4.R.07	SHEET NO. EC-4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

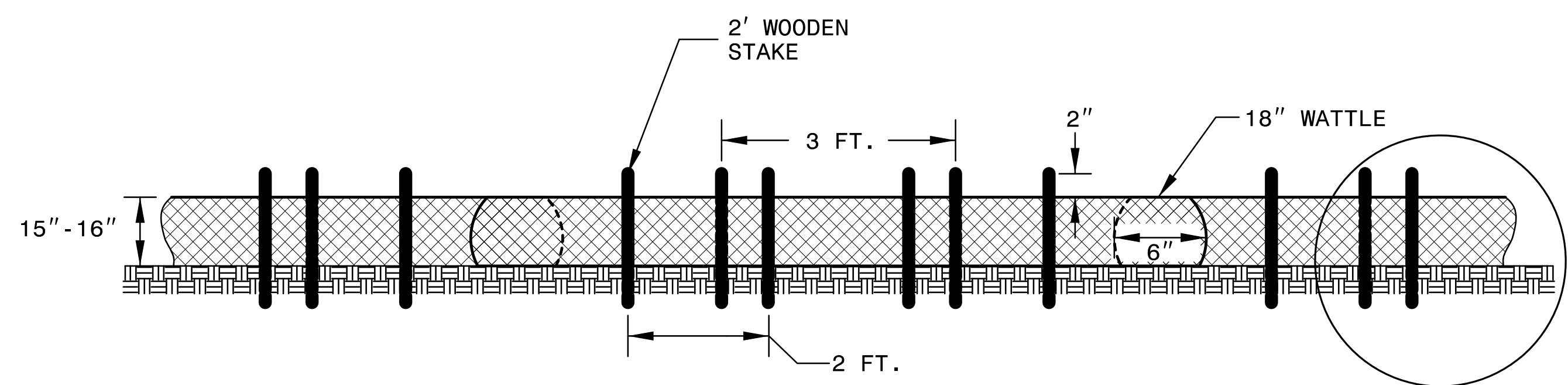
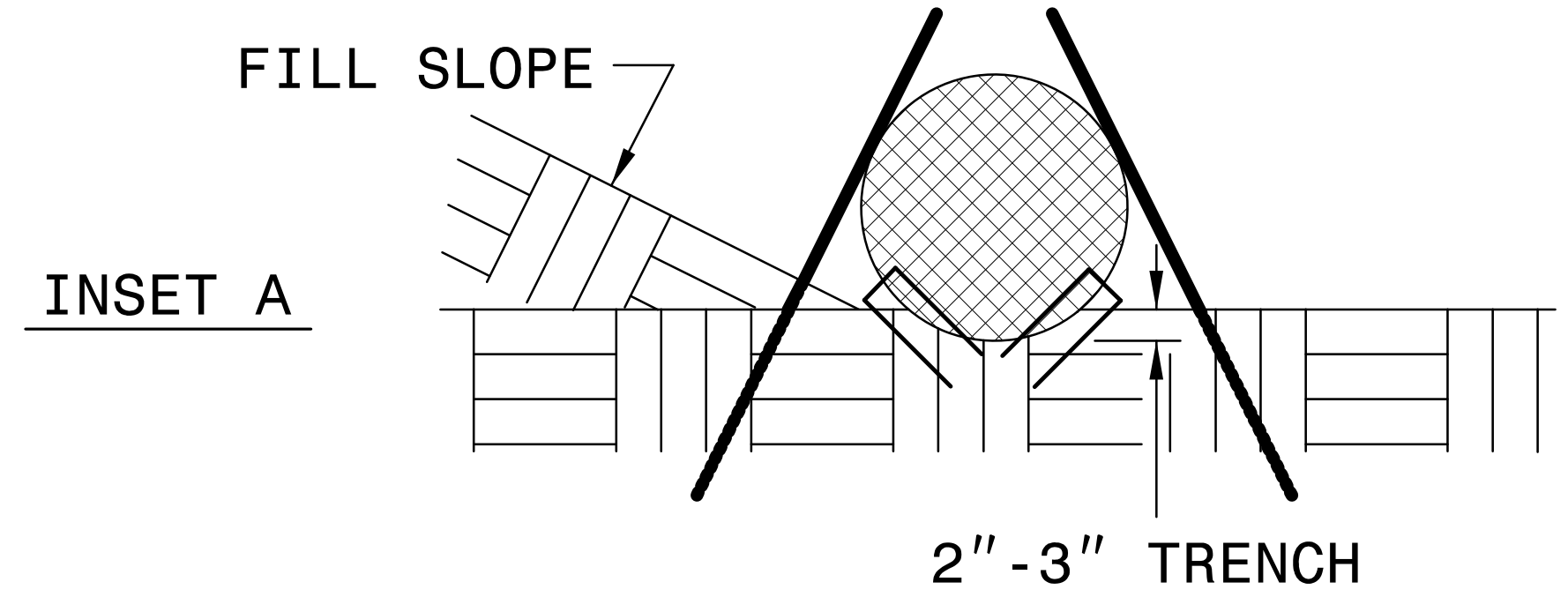
COIR FIBER WATTLE BARRIER DETAIL



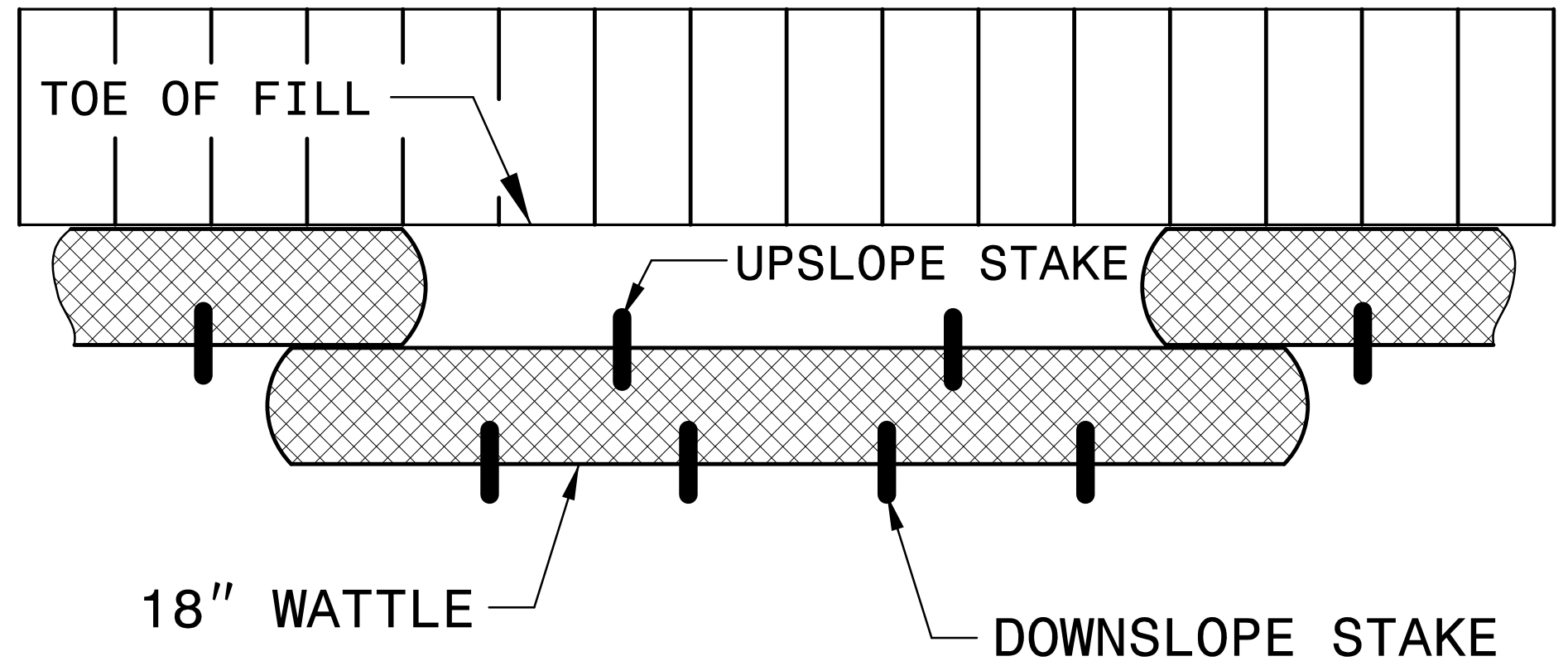
ISOMETRIC VIEW

NOTES:

- USE MINIMUM 18 IN. NOMINAL DIAMETER COIR FIBER (COCONUT) WATTLE AND LENGTH OF 10 FT.
- EXCAVATE A 2 TO 3 INCH TRENCH FOR WATTLE TO BE PLACED.
- DO NOT PLACE WATTLES ON TOE OF SLOPE.
- USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.
- INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.
- PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.
- INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.
- FOR BREAKS ALONG LARGE SLOPES, USE MAXIMUM SPACING OF 20 FT.



FRONT VIEW



TOP VIEW