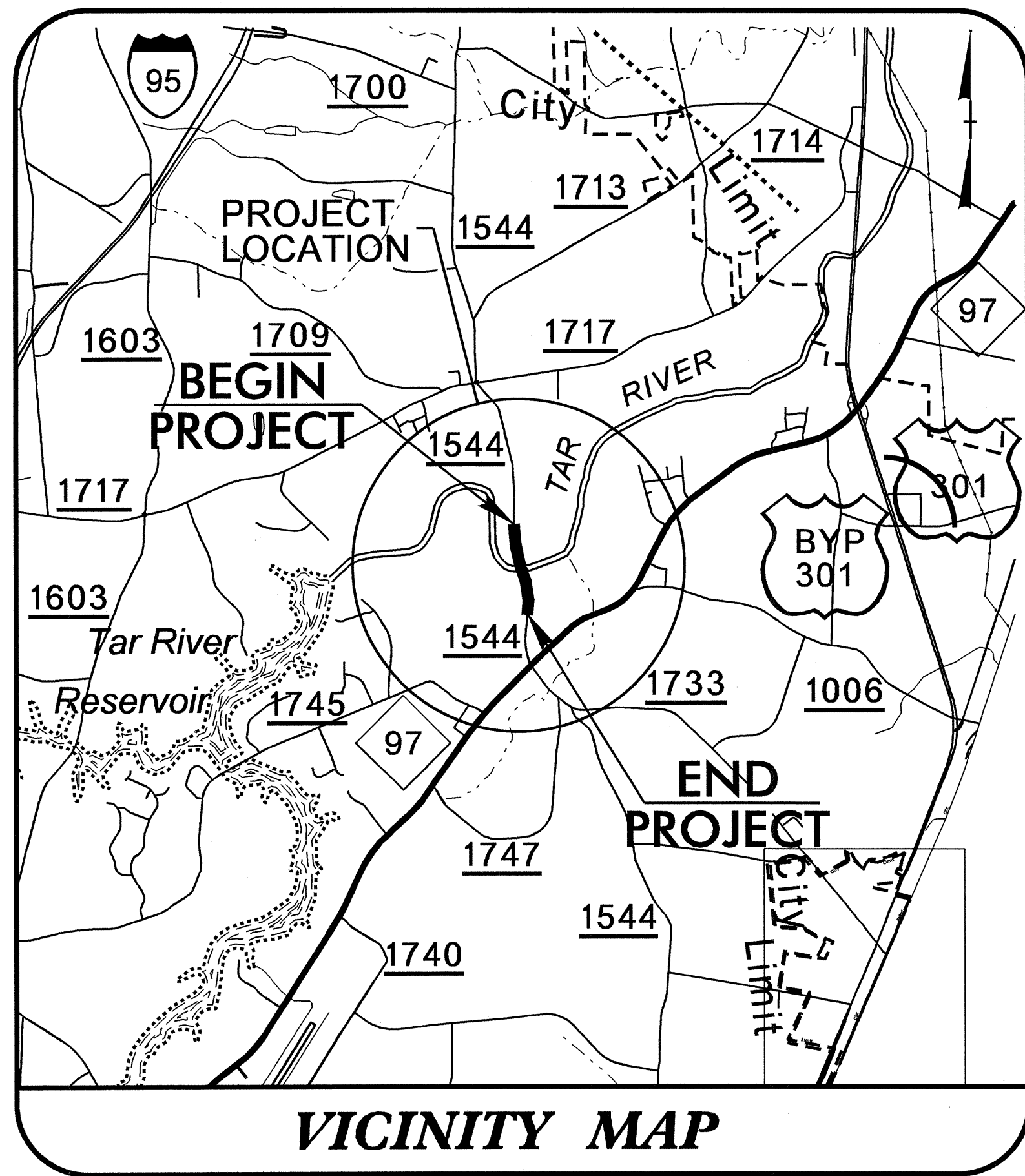


CONTRACT: C202657 TIP PROJECT: B-4211

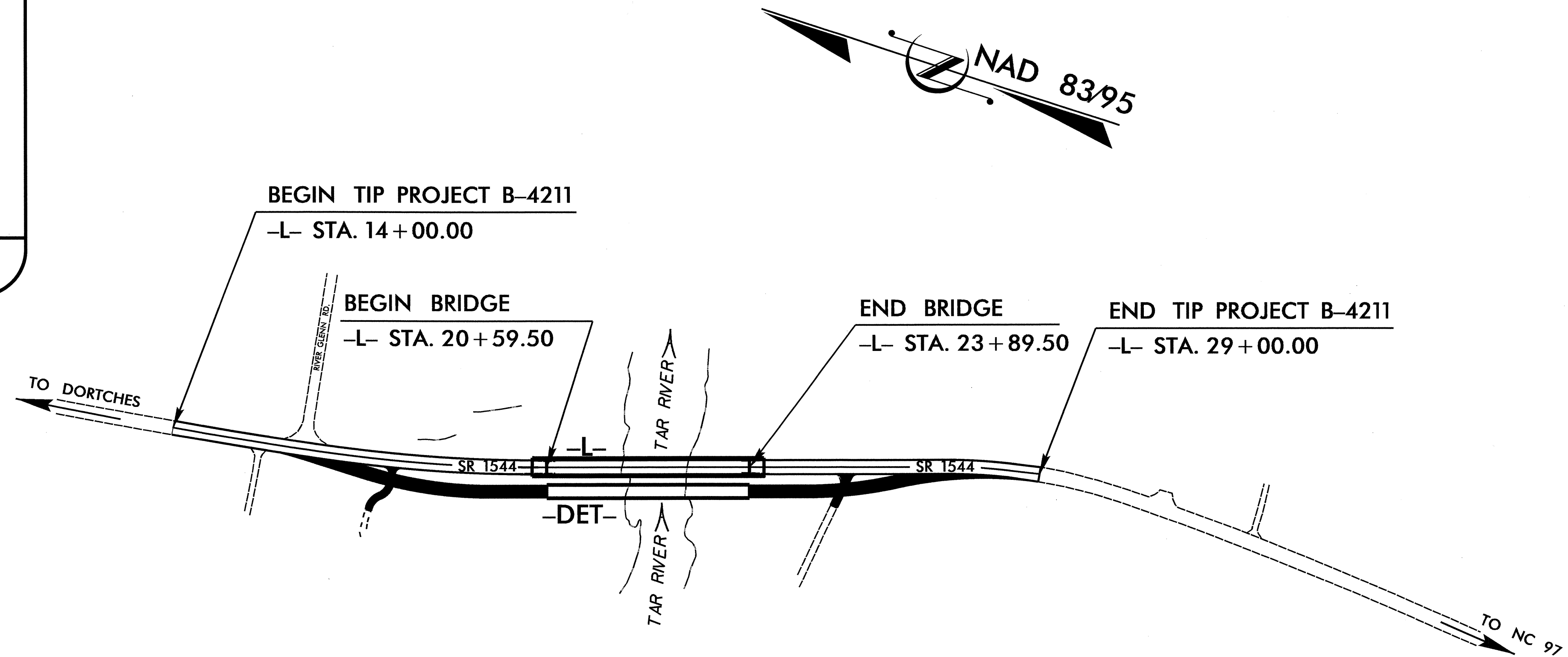
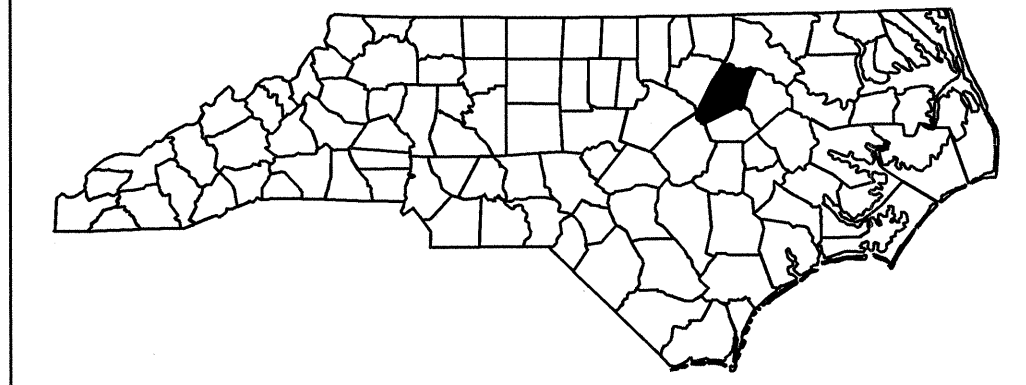


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

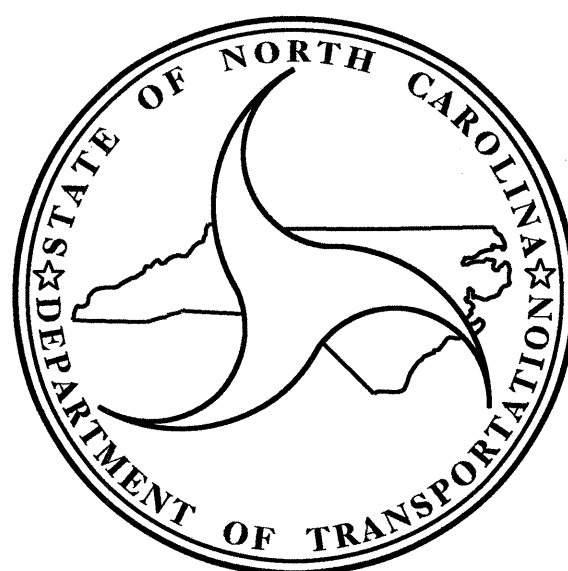
NASH COUNTY

LOCATION : BRIDGE NO. 56 OVER TAR RIVER ON SR 1544
TYPE OF WORK : GRADING, DRAINAGE, PAVING, AND STRUCTURES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4211		
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
33557.1.1	BRZ-1544 (2)	PE	
33557.2.1	BRZ-1544 (2)	R/W & UTIL.	
33557.3.1	BRZ-1544 (2)	CONST.	



STRUCTURE



DESIGN DATA

ADT 2011 =	8,950
ADT 2030 =	15,600
DHV =	14 %
D =	55 %
T =	3 % *
V =	50 MPH
V _{DET} =	45 MPH
* TTST 1 %	DUAL 2 %
FUNC CLASS =	COLLECTOR

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4211 =	0.221 MI.
LENGTH OF STRUCTURE TIP PROJECT B-4211 =	0.063 MI.
TOTAL LENGTH OF TIP PROJECT B-4211 =	0.284 MI.

Prepared In the Office of:
DIVISION OF HIGHWAYS
1000 BIRCH RIDGE DR. RALEIGH, NC 27610

2006 STANDARD SPECIFICATIONS

LETTING DATE:
OCTOBER 18, 2011

N. N. BULLOCK, PE
PROJECT ENGINEER

D. R. CALHOUN, PE
PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

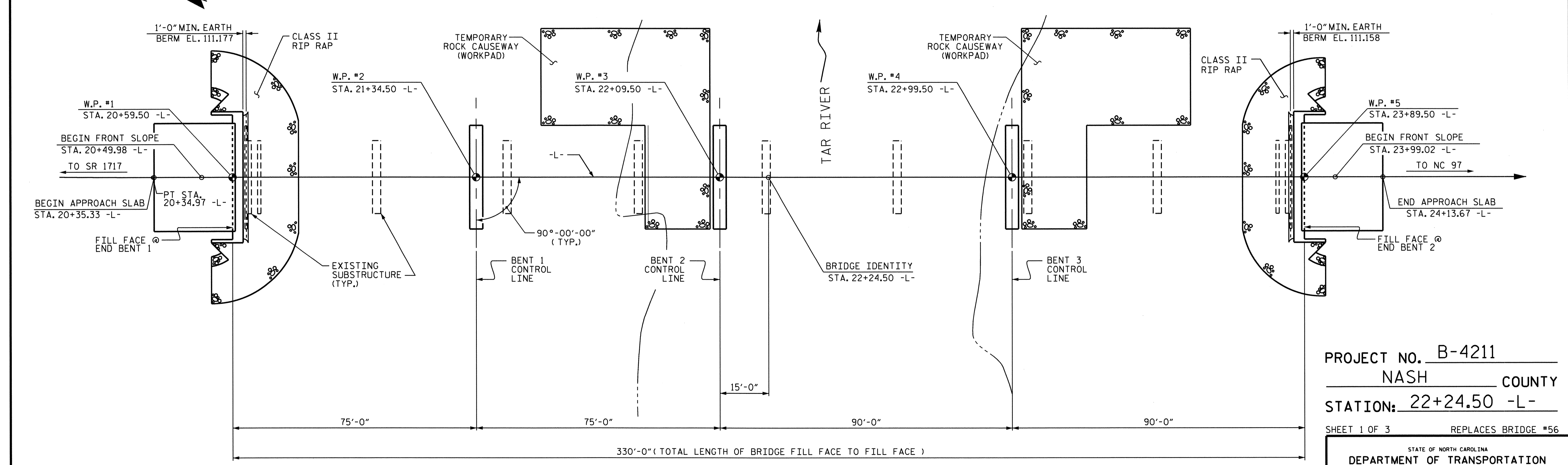
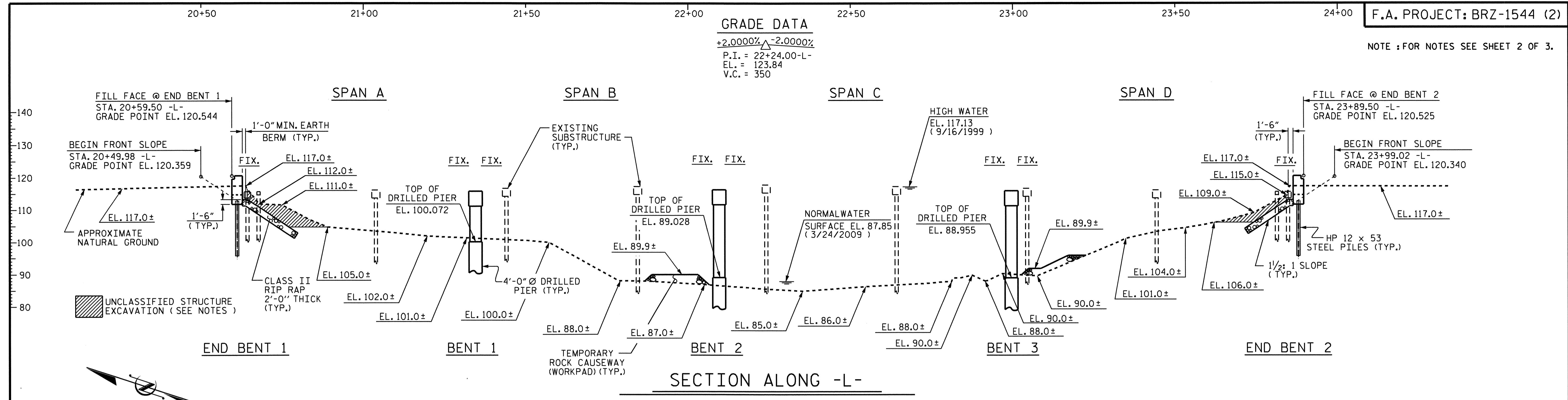
APPROVED
DIVISION ADMINISTRATOR

P.E.

DATE

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NOTE: FOR NOTES SEE SHEET 2 OF 3.



PROJECT NO. B-4211
NASH COUNTY
 STATION: 22+24.50 -L-
 SHEET 1 OF 3 REPLACES BRIDGE #56

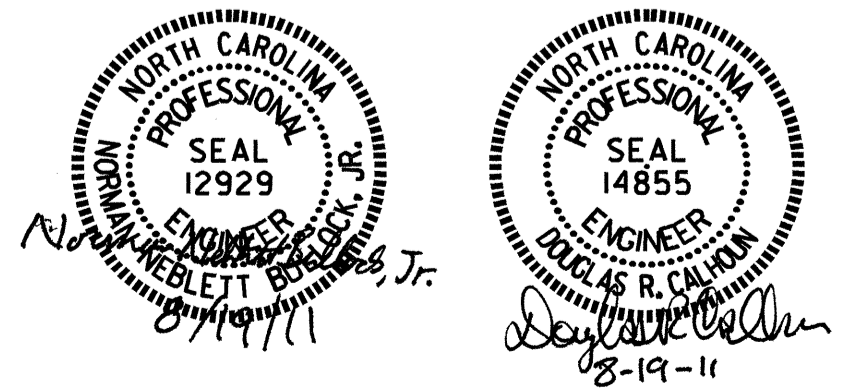
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

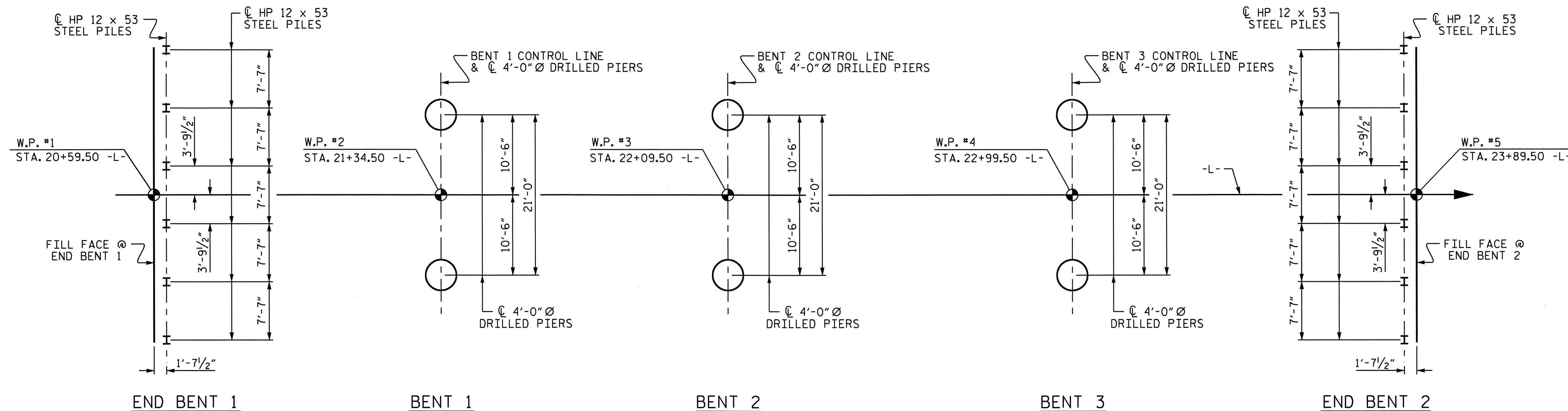
GENERAL DRAWING
 BRIDGE ON SR 1544
 OVER TAR RIVER BETWEEN
 SR 1717 AND NC 97

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			42

DRAWN BY: B.N. GRADY DATE: 6/21/10
 CHECKED BY: J.L. WALTON DATE: 6/29/10

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FOUNDATION LAYOUT

(DIMENSIONS LOCATING DRILLED PIERS AND PILES ARE SHOWN TO CENTERLINE OF DRILLED PIERS AND PILES)

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.
 REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
 THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS AT BENTS 1 & 3 IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT AT THE BENTS IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.
 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 22+24.50 -L-."
 THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY STRUCTURE AT STATION 16+96.66 -DET- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE, SEE SPECIAL PROVISIONS.
 THE BRIDGE RAILS ON THE TEMPORARY STRUCTURE SHALL BE DESIGNED FOR THE AASHTO LRFD TEST LEVEL 3 (TL-3) CRASH TEST CRITERIA. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE, SEE SPECIAL PROVISIONS.
 AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 22+24.50 -L-.
 THE EXISTING STRUCTURE CONSISTING OF 10 (1 @ 3'-8", 1 @ 35'-7", 1 @ 39'-6", 1 @ 39'-10", 4 @ 39'-6", 1 @ 35'-3", AND 1 @ 3'-8") TIMBER FLOOR SPANS ON I-BEAMS WITH A CLEAR ROADWAY WIDTH OF 21'-6" ON TIMBER CAP AND PILE END BENTS, TIMBER CAP AND PILES @ BENTS 1 AND 9, REINFORCED CONCRETE CAP AND TIMBER PILES @ BENTS 2, 7, AND 8, AND REINFORCED CONCRETE POST AND BEAMS @ BENTS 3 THRU 6 AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE DURING CONSTRUCTION OF THE TEMPORARY DETOUR BRIDGE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING CONSTRUCTION OF THE DETOUR BRIDGE.
 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 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.

SEE SHEET 3 OF 3 FOR ADDITIONAL NOTES.

DRAWN BY : B.N. GRADY DATE : 6/21/10
 CHECKED BY : J.L. WALTON DATE : 6/29/10

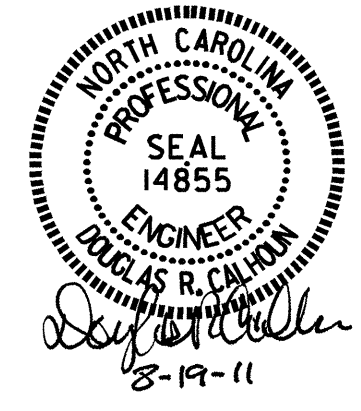
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FOUNDATION NOTES

FOR PILES, SEE SPECIAL PROVISIONS.
 PILES AT END BENT 1 AND END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 120 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 200 TONS PER PILE.
 STEEL H PILE POINTS ARE REQUIRED FOR STEEL H PILES AT END BENT 2. FOR STEEL PILE POINTS, SEE PILES SPECIAL PROVISION.
 FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.
 DRILLED PIERS AT BENT 1, BENT 2, AND BENT 3 ARE DESIGNED FOR A FACTORED RESISTANCE OF 470 TONS, 510 TONS, AND 540 TONS, RESPECTIVELY PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 80 TSF.
 PERMANENT STEEL CASINGS ARE REQUIRED FOR DRILLED PIERS AT BENT 2. DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 84 FT. WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
 INSTALL PERMANENT STEEL CASING AT BENT 2 BY VIBRATING, SCREWING, OR DRIVING PERMANENT CASINGS BEFORE EXCAVATING OR DISTURBING ANY MATERIAL BELOW ELEVATION 85 FT.
 PERMANENT STEEL CASINGS MAY BE REQUIRED FOR DRILLED PIERS AT BENT 3. IF REQUIRED, DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 85 FT. WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT CASINGS.
 INSTALL DRILLED PIERS AT BENT 1 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 74 FT. AND SATISFY THE REQUIRED TIP RESISTANCE.
 INSTALL DRILLED PIERS AT BENT 2 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 76 FT. AND SATISFY THE REQUIRED TIP RESISTANCE.
 INSTALL DRILLED PIERS AT BENT 3 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 76 FT. (LEFT) AND 78 FT. (RIGHT) AND SATISFY THE REQUIRED TIP RESISTANCE.
 THE SCOUR CRITICAL ELEVATION FOR BENT 1, BENT 2, AND BENT 3 ARE ELEVATION 85 FT., 83 FT., AND 83 FT., RESPECTIVELY. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
 DO NOT USE SLURRY CONSTRUCTION FOR DRILLED PIERS AT BENT 1, BENT 2, AND BENT 3.
 SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS.
 CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CSL TESTING, SEE DRILLED PIER SPECIAL PROVISION.

PROJECT NO. B-4211
NASH COUNTY
 STATION: 22+24.50 -L-
 SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 BRIDGE ON SR 1544
 OVER TAR RIVER BETWEEN
 SR 1717 AND NC 97



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2	
1			3			TOTAL SHEETS	
2			4			42	

TOTAL BILL OF MATERIAL												
	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP. STRUCTURE	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP. ACCESS	REMOVAL OF EXISTING STRUCTURE	4'-0" Ø DRILLED PIERS IN SOIL	4'-0" Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIER	SID INSPECTION	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE
	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.
SUPERSTRUCTURE										11413	10812	
END BENT 1									LUMP SUM			17.4
BENT 1				40.0	14.0							30.4
BENT 2				8.0	18.0	10.0						38.6
BENT 3				9.0	17.0	7.9						38.5
END BENT 2									LUMP SUM			17.4
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	57.0	49.0	17.9	1	1	LUMP SUM	11413	10812	142.3

TOTAL BILL OF MATERIAL														
	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	54" PRESTRESSED CONCRETE GIRDERS	HP 12 X 53 STEEL PILES	STEEL PILE POINTS	TWO BAR METAL RAIL	1'-2" x 2'-6" CONCRETE PARAPET	RIP RAP CLASS II (2'-0" THICK)	FILTER FABRIC FOR DRAINAGE	ELASTOMERIC BEARINGS	EVAZOTE JOINT SEALS	INSTALL 6" STEEL NATURAL GAS PIPELINE	
	LUMP SUM	LBS.	LBS.	LIN. FT.	NO.	LIN. FT.	EACH	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM	LUMP SUM
SUPERSTRUCTURE				1302.67				641.67	656.67			LUMP SUM	LUMP SUM	
END BENT 1		3523			6	195				161	179			
BENT 1		9758	1949											
BENT 2		9467	1859											
BENT 3		9516	1846											
END BENT 2		3523			6	60	6			142	157			
TOTAL	LUMP SUM	35787	5654	1302.67	12	255	6	641.67	656.67	303	336	LUMP SUM	LUMP SUM	LUMP SUM

NOTES : CONT'D.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 25 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.

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

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

NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

FOR INSTALLATION OF 6" STEEL NATURAL GAS PIPELINE, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

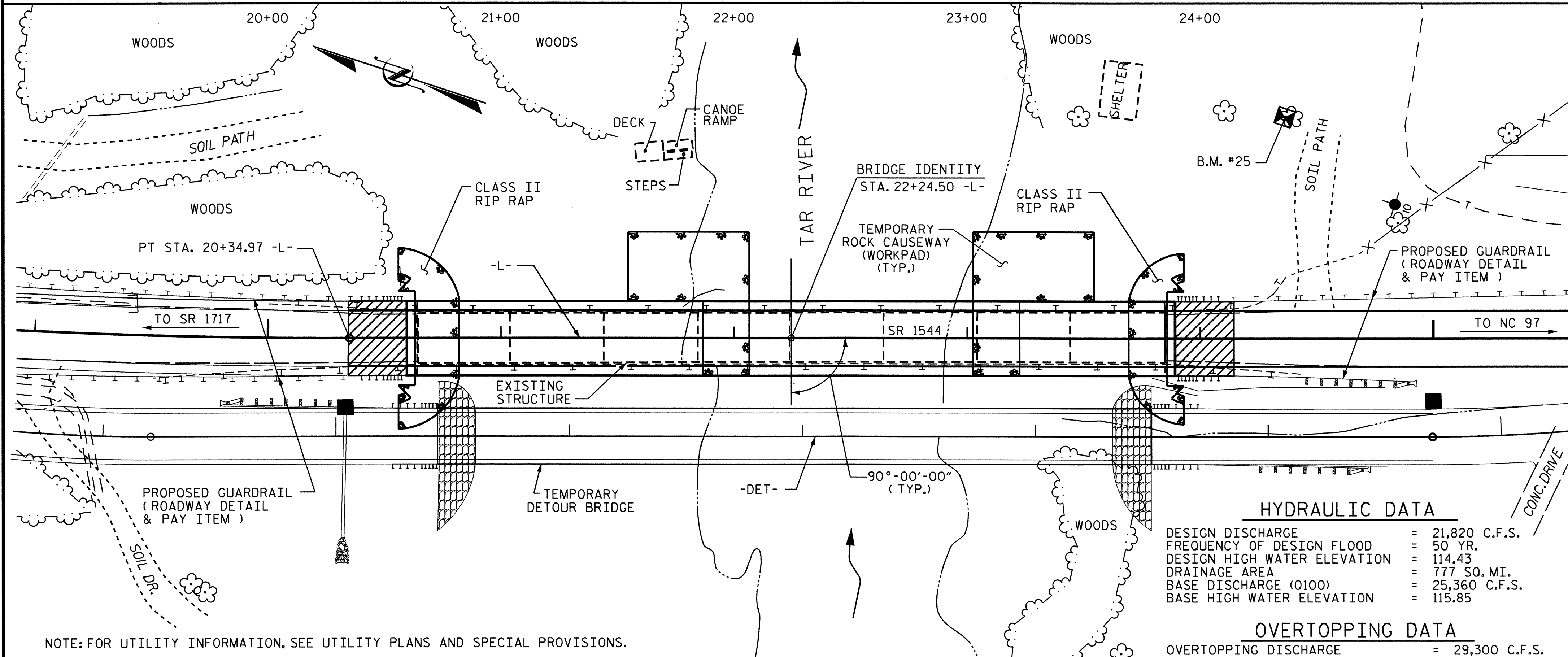
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CURING CONCRETE, SEE SPECIAL PROVISIONS.

FOR FORMS FOR CONCRETE BRIDGE DECKS, SEE SPECIAL PROVISIONS.

FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

B.M. #25 : RAILROAD SPIKE IN BASE OF 24" OAK TREE 95.40' LT. OF STA. 24+36.33 -L- EL. 109.91



HYDRAULIC DATA

DESIGN DISCHARGE = 21,820 C.F.S.
 FREQUENCY OF DESIGN FLOOD = 50 YR.
 DESIGN HIGH WATER ELEVATION = 114.43
 DRAINAGE AREA = 777 SQ. MI.
 BASE DISCHARGE (Q100) = 25,360 C.F.S.
 BASE HIGH WATER ELEVATION = 115.85

OVERTOPPING DATA

OVERTOPPING DISCHARGE = 29,300 C.F.S.
 FREQUENCY OF OVERTOPPING FLOOD = 100+ YR.
 OVERTOPPING FLOOD ELEVATION = 117.52

LOCATION SKETCH

DRAWN BY : B.N. GRADY DATE : 6/21/10
 CHECKED BY : J.L. WALTON DATE : 6/29/10

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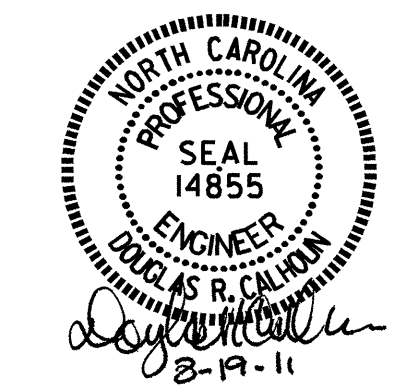
PROJECT NO. B-4211
 NASH COUNTY
 STATION: 22+24.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 BRIDGE ON SR 1544
 OVER TAR RIVER BETWEEN
 SR 1717 AND NC 97

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			42



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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (%LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	LIVE-LOAD FACTORS (%LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.001	--	1.75	0.827	1.35	B	EL	36.375	0.901	1.52	B	I	29.1	0.80	0.901	1.00	B	I	36.375		
	HL-93 (OPERATING)	N/A		1.751	--	1.35	0.827	1.75	B	EL	36.375	0.901	1.97	B	I	29.1	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.31	47.169	1.75	0.827	1.77	B	EL	36.375	0.901	1.79	B	I	29.1	0.80	0.788	1.31	B	I	36.375		
	HS-20 (OPERATING)	36.000		2.293	82.549	1.35	0.827	2.29	B	EL	36.375	0.901	2.32	B	I	29.1	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		2.958	39.929	1.4	0.827	4.99	B	EL	36.375	0.901	4.98	B	I	29.1	0.80	0.788	2.96	B	I	36.375	
		SNGARBS2	20.000		2.204	44.082	1.4	0.827	3.72	B	EL	36.375	0.901	3.65	B	I	29.1	0.80	0.788	2.20	B	I	36.375	
		SNAGRIS2	22.000		2.087	45.92	1.4	0.827	3.52	B	EL	36.375	0.901	3.43	B	I	29.1	0.80	0.788	2.09	B	I	36.375	
		SNCOTTS3	27.250		1.472	40.108	1.4	0.827	2.48	B	EL	36.375	0.901	2.5	B	I	29.1	0.80	0.788	1.47	B	I	36.375	
		SNAGGRS4	34.925		1.23	42.956	1.4	0.827	2.08	B	EL	36.375	0.901	2.15	B	I	29.1	0.80	0.788	1.23	B	I	36.375	
		SNS5A	35.550		1.203	42.759	1.4	0.827	2.03	B	EL	36.375	0.901	2.21	B	I	29.1	0.80	0.788	1.20	B	I	36.375	
		SNS6A	39.950		1.104	44.087	1.4	0.827	1.86	B	EL	36.375	0.901	2.05	B	I	29.1	0.80	0.788	1.10	B	I	36.375	
		SNS7B	42.000		1.051	44.138	1.4	0.827	1.77	B	EL	36.375	0.901	2.06	B	I	29.1	0.80	0.788	1.05	B	I	36.375	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.346	44.408	1.4	0.827	2.27	B	EL	36.375	0.901	2.42	B	I	29.1	0.80	0.788	1.35	B	I	36.375	
		TNT4A	33.075		1.352	44.705	1.4	0.827	2.28	B	EL	36.375	0.901	2.32	B	I	29.1	0.80	0.788	1.35	B	I	36.375	
		TNT6A	41.600		1.105	45.972	1.4	0.827	1.86	B	EL	36.375	0.901	2.28	B	I	29.1	0.80	0.788	1.11	B	I	36.375	
		TNT7A	42.000		1.111	46.646	1.4	0.827	1.87	B	EL	36.375	0.901	2.22	B	I	29.1	0.80	0.788	1.11	B	I	36.375	
		TNT7B	42.000		1.149	48.255	1.4	0.827	1.94	B	EL	36.375	0.901	1.98	B	I	29.1	0.80	0.788	1.15	B	I	36.375	
		TNAGRIT4	43.000		1.093	46.999	1.4	0.827	1.84	B	EL	36.375	0.901	1.9	B	I	29.1	0.80	0.788	1.09	B	I	36.375	
	TNAGT5A	45.000		1.031	46.376	1.4	0.827	1.74	B	EL	36.375	0.901	1.94	B	I	29.1	0.80	0.788	1.03	B	I	36.375		
	TNAGT5B	45.000	③	1.018	45.816	1.4	0.827	1.72	B	EL	36.375	0.901	1.81	B	I	29.1	0.80	0.788	1.02	B	I	36.375		

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

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

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

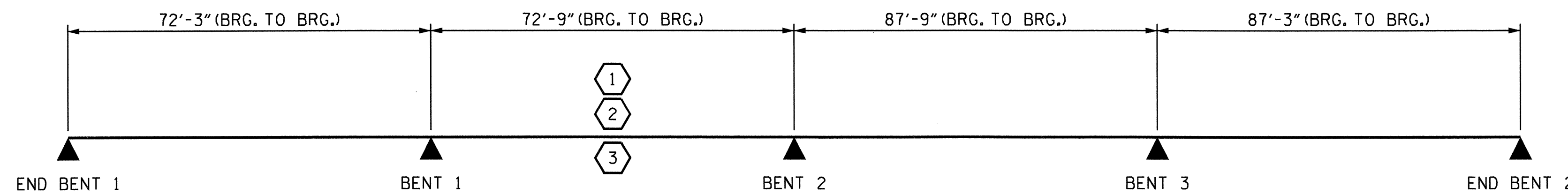
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



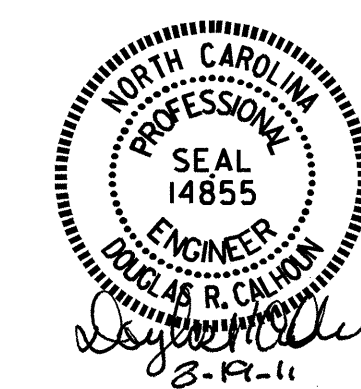
LRFR SUMMARY

PROJECT NO. B-4211
NASH COUNTY
 STATION: 22+24.50 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 LRFR SUMMARY FOR
 PRESTRESSED
 CONCRETE GIRDERS
 (NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO. S-4
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 42
2			4			



ASSEMBLED BY : B.N. GRADY DATE : 5/13/11
 CHECKED BY : W.S. ARAFAT DATE : 5/16/11
 DRAWN BY : MAA 1/08 REV. 11/12/08RR MAA/GM
 CHECKED BY : GM/DI 2/08

NOTES

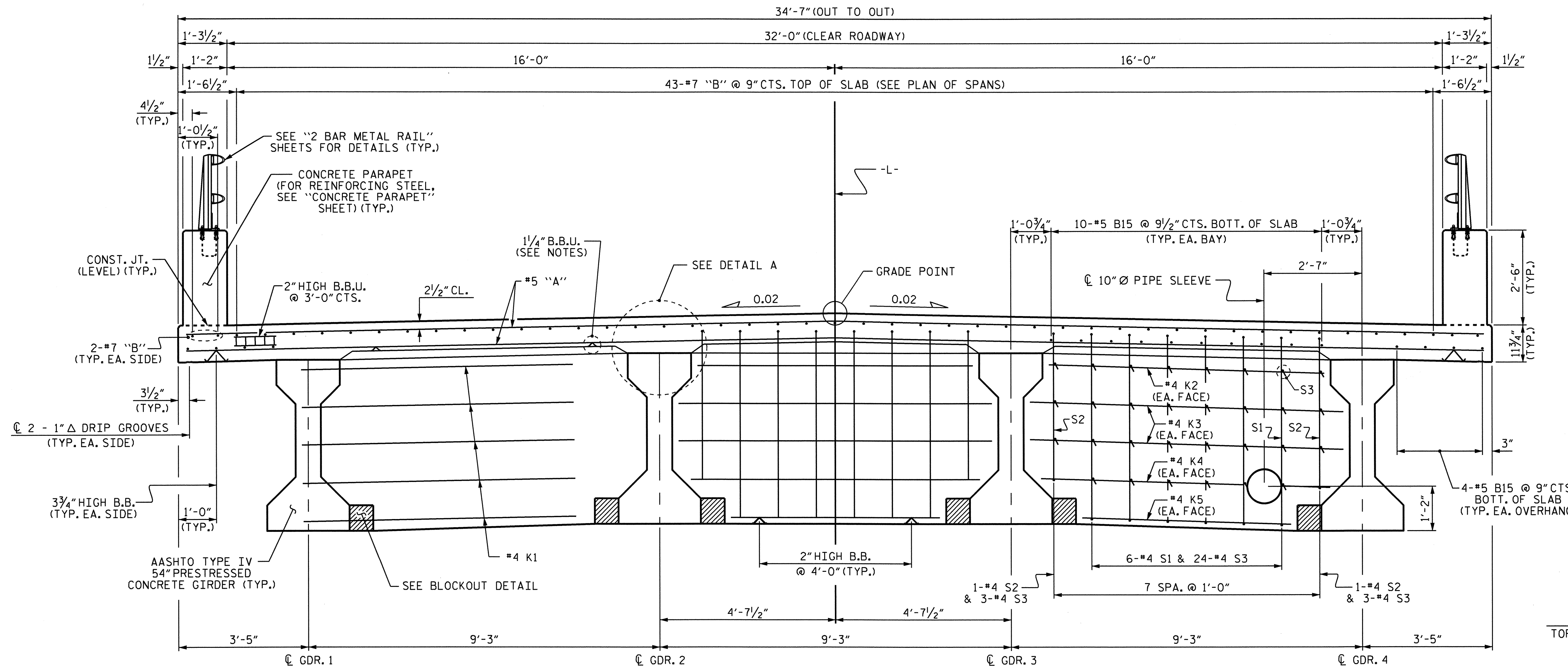
PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF 'A' BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.

LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

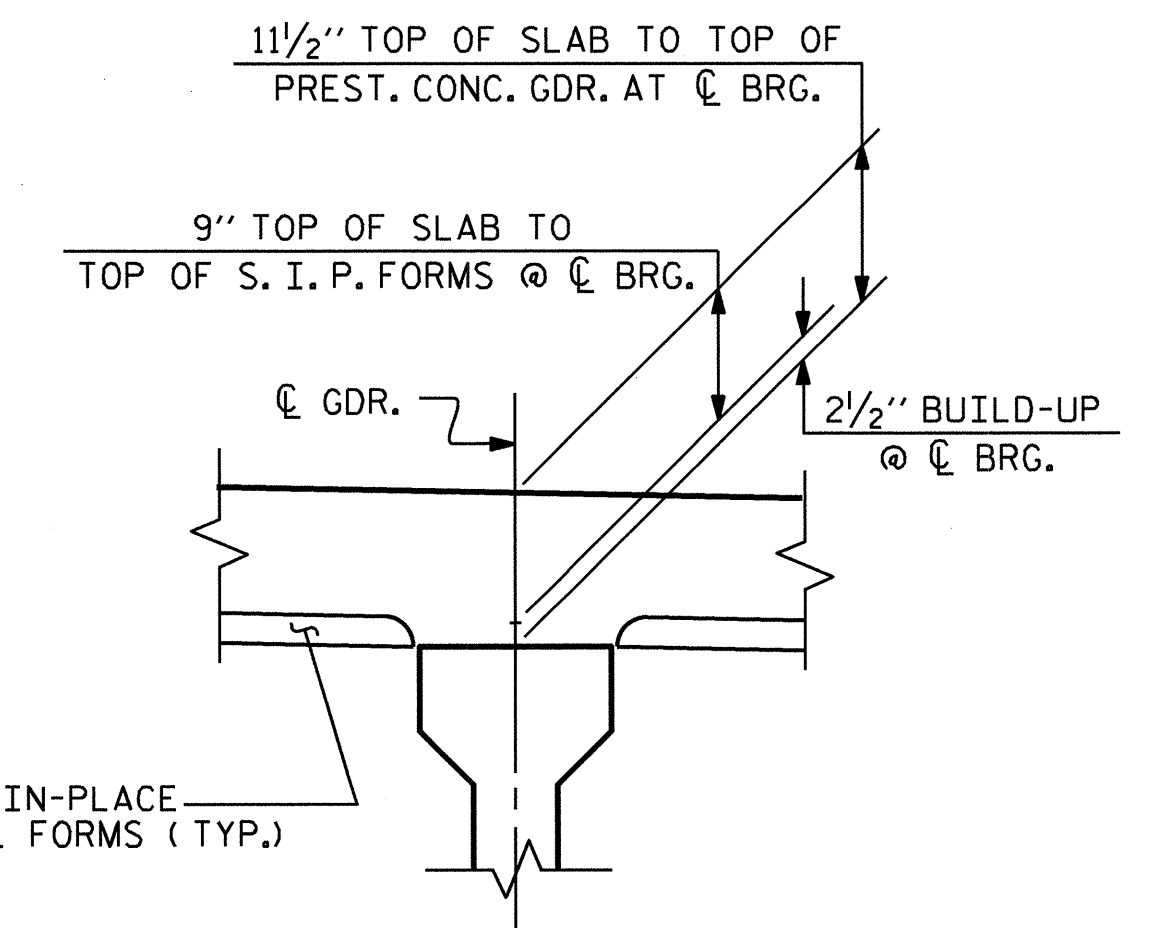
PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

FOR TYPICAL SECTION OF INTERMEDIATE DIAPHRAGMS, SEE "PRESTRESSED CONCRETE GIRDER" SHEET 6 OF 6.

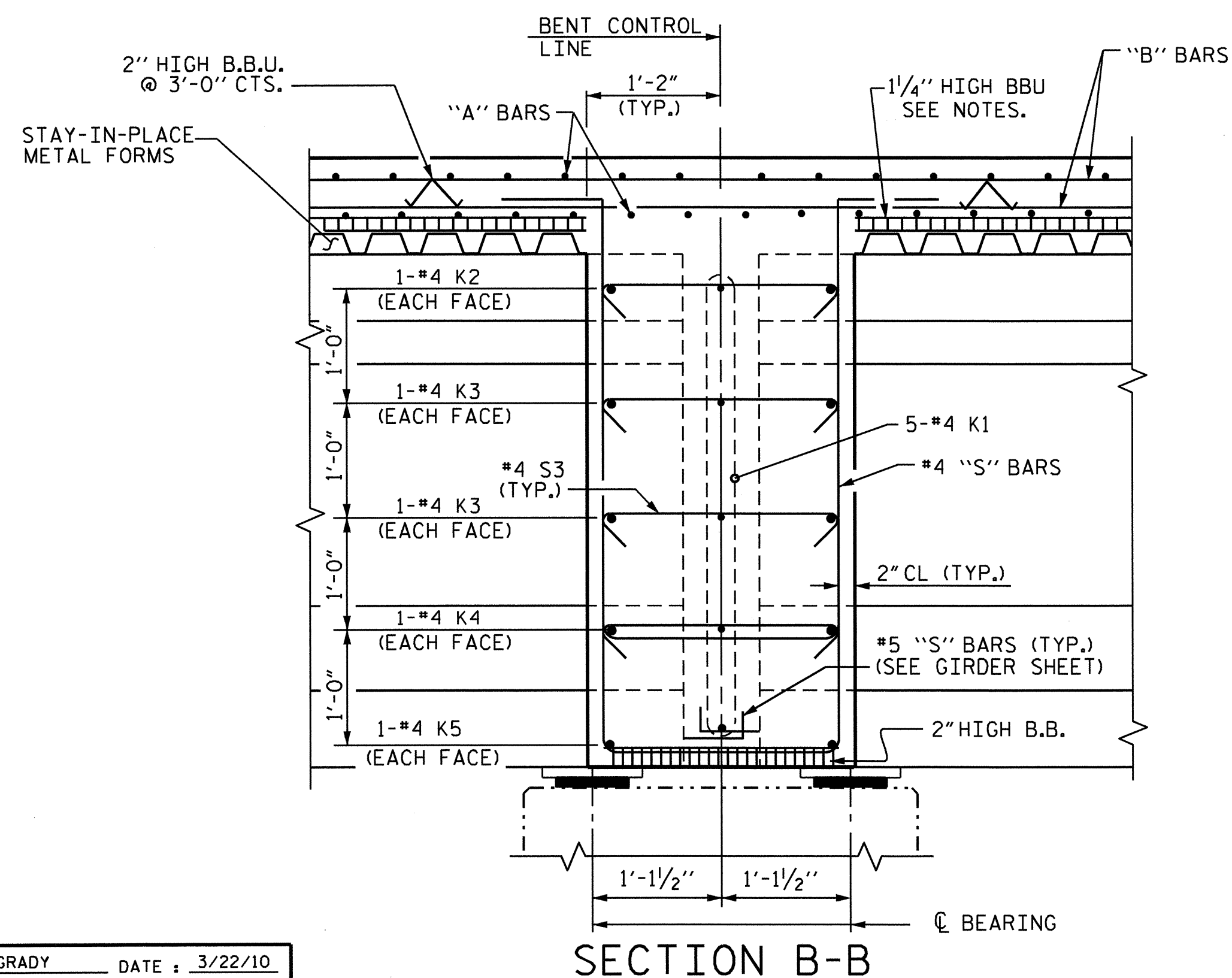
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE UTILITY BLOCKOUTS IN THE BENT DIAPHRAGMS AND INTEGRAL END BENTS. REINFORCING STEEL IN THE BENT DIAPHRAGMS AND INTEGRAL END BENTS MAY BE SHIFTED OR CUT AS NECESSARY TO PROVIDE FOR THE UTILITY BLOCKOUTS. SEE UTILITY SHEETS FOR DETAILS.



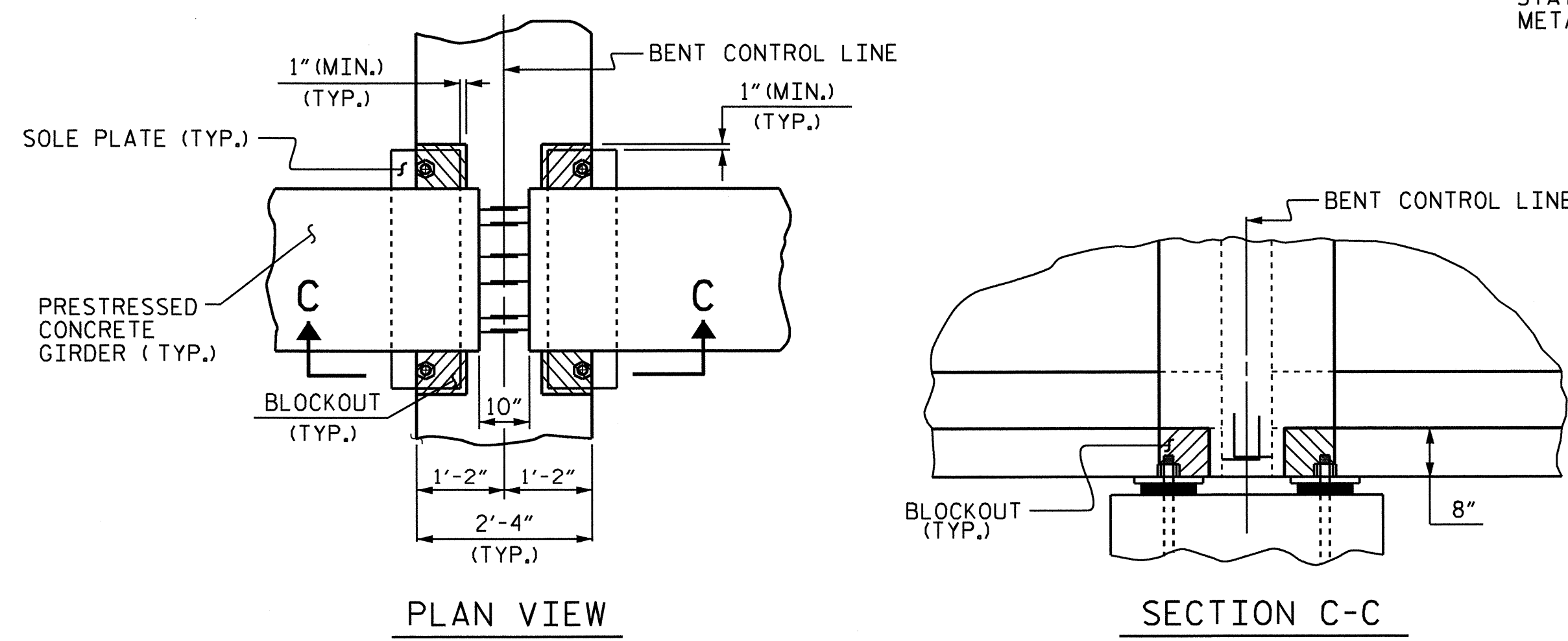
TYPICAL SECTION AT BENT DIAPHRAGM



DETAIL A



SECTION B-B



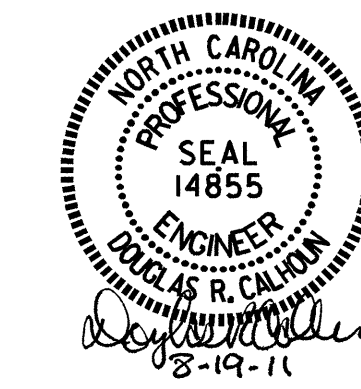
BENT DIAPHRAGM BLOCKOUT DETAIL
(PRESTRESSED GIRDERS WITH CONTINUOUS DECK SLAB)

PROJECT NO. B-4211
NASH COUNTY
 STATION: 22+24.50 -L-

SHEET 1 OF 2

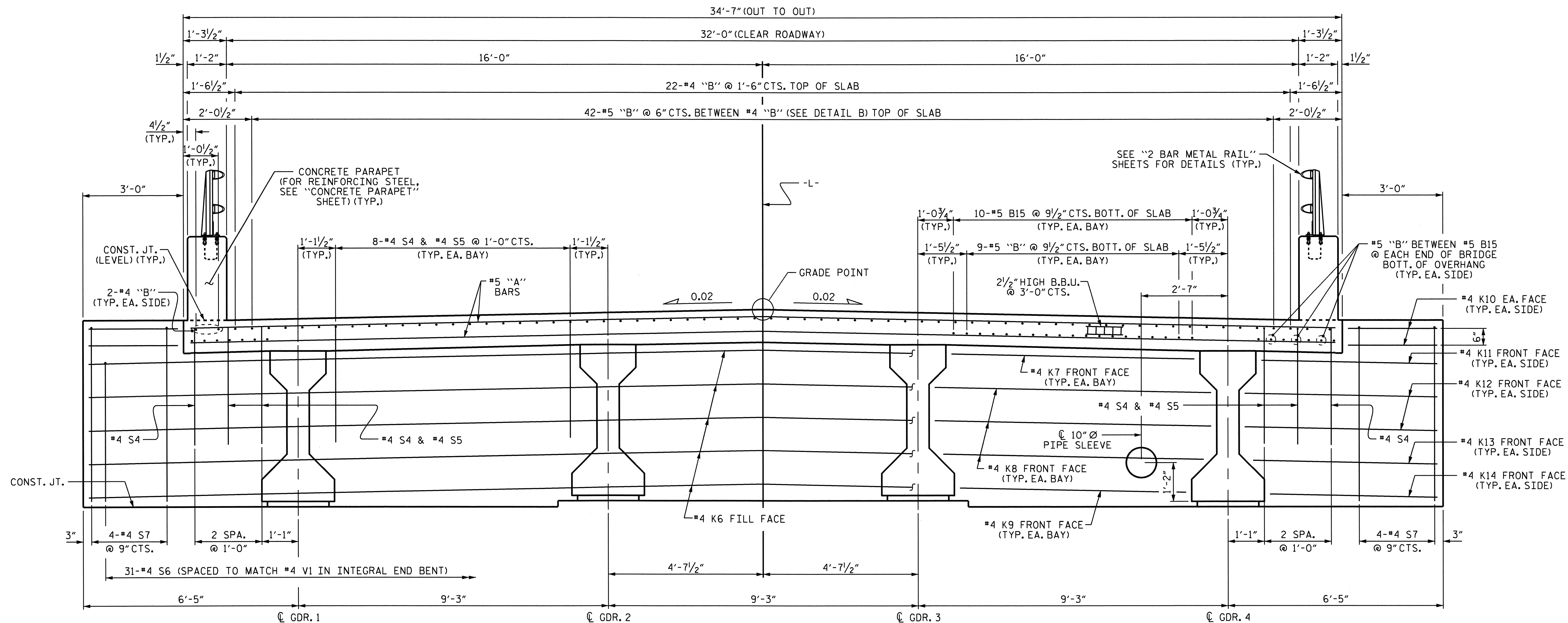
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 TYPICAL SECTION**

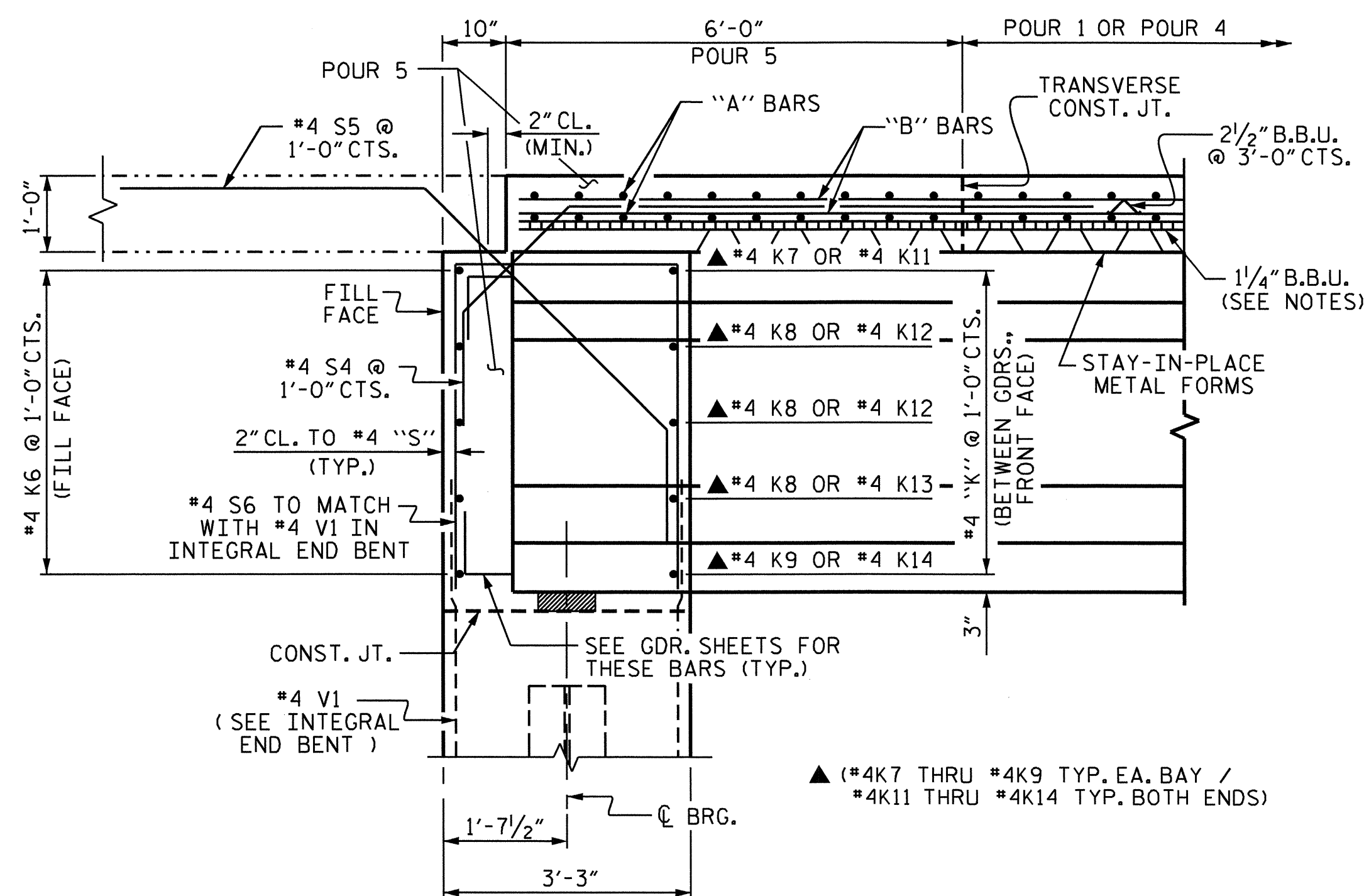


REVISIONS						SHEET NO. S-5
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 42
2			4			

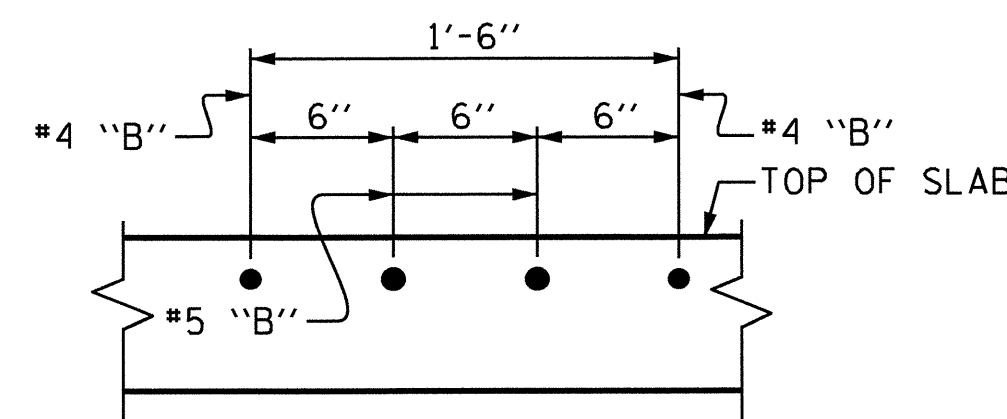
DRAWN BY: B.N. GRADY DATE: 3/22/10
 CHECKED BY: K.P. SEDAI DATE: 5/4/10



TYPICAL SECTION AT INTEGRAL END BENT



SECTION A-A
(AT INTEGRAL END BENT)



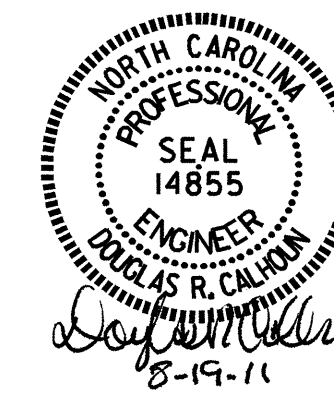
DETAIL B

PROJECT NO. B-4211
NASH COUNTY
 STATION: 22+24.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 TYPICAL SECTION

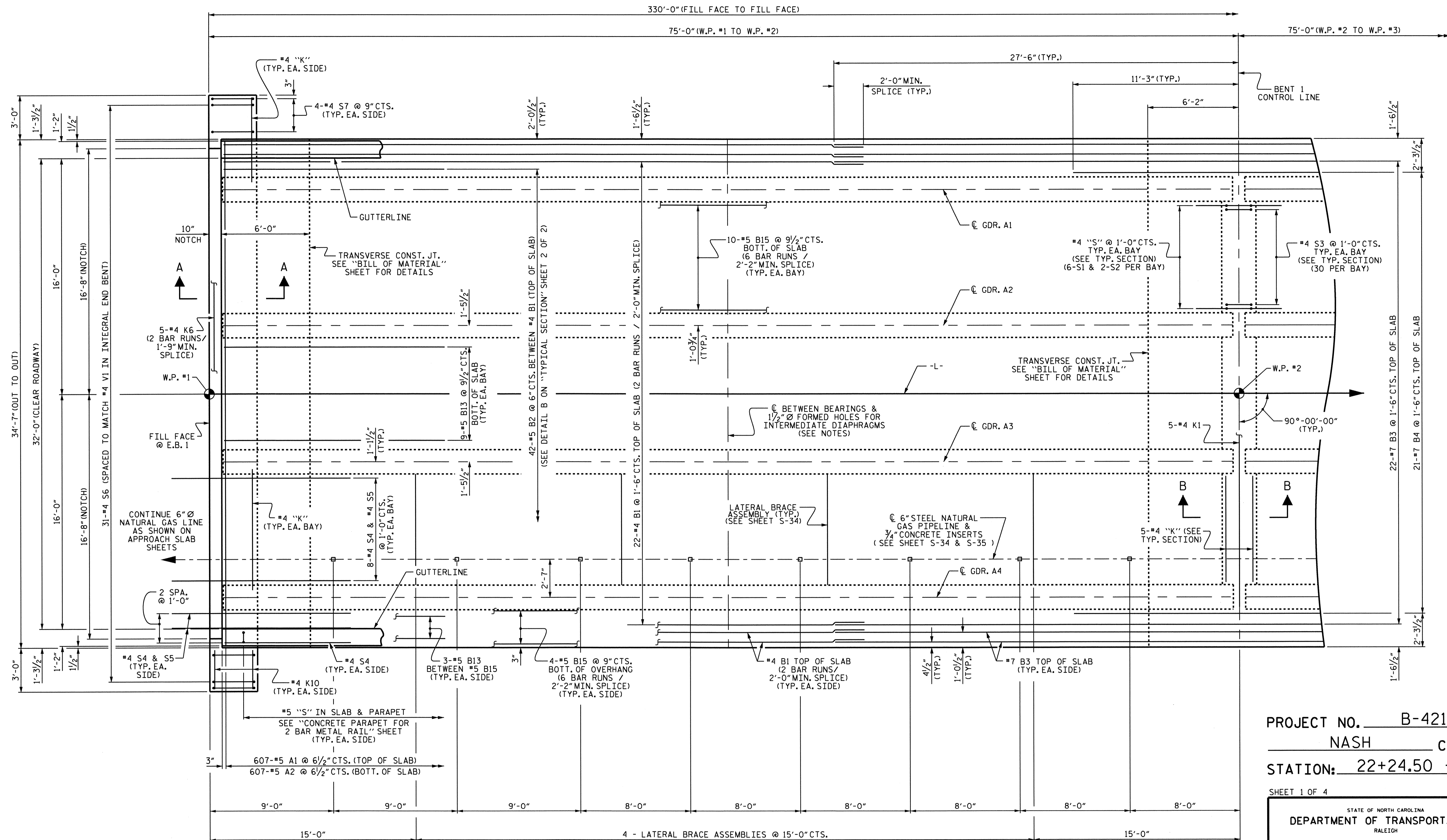


DRAWN BY : B.N. GRADY DATE : 3/22/10
 CHECKED BY : K.P. SEDAI DATE : 5/4/10

19-AUG-2011 09:01
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 bng:grady

REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	42
1			3			
2			4			

SHEET NO.
S-6



PLAN OF SPAN A

FOR SECTION VIEWS, SEE "TYPICAL SECTION" SHEETS.
 FOR DETAILS OF INTERMEDIATE DIAPHRAGMS, SEE "PRESTRESSED CONCRETE GIRDER" SHEET 6 OF 6.
 KEEP CONCRETE INSERTS AT LEAST 18" FROM TRANSVERSE CONSTRUCTION JOINTS.

PROJECT NO. B-4211
NASH COUNTY
 STATION: 22+24.50 -L-

SHEET 1 OF 4
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

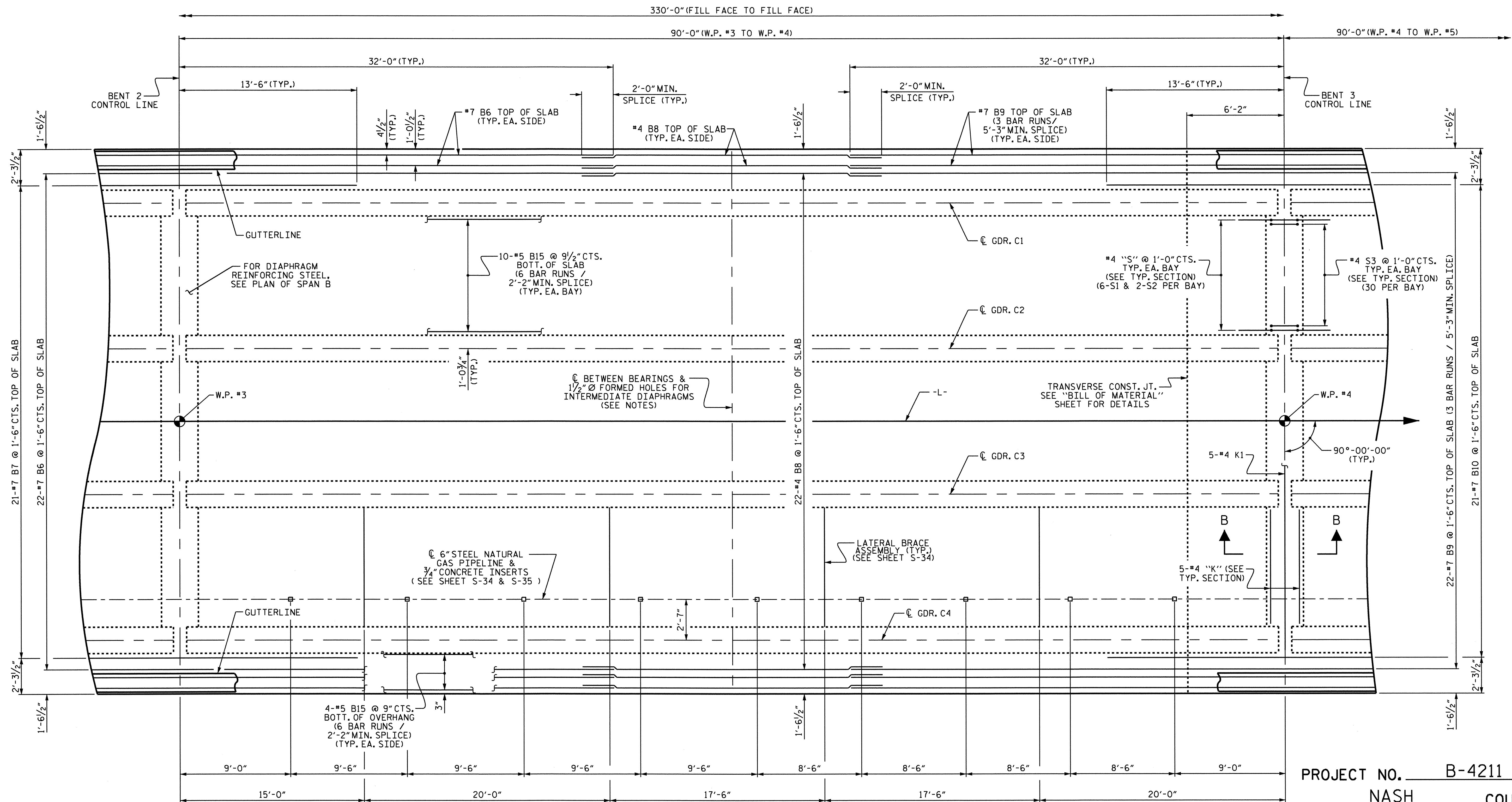
**SUPERSTRUCTURE
 PLAN OF SPAN A**



DRAWN BY: B.N. GRADY DATE: 3/22/10
 CHECKED BY: K.P. SEDA DATE: 5/5/10

19-AUG-2011 09:00
 R:\Structures\Final Plans\B4211.sd.S.dgn
 bngrady

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			42



607-#5 A1 @ 6 1/2" CTS. (TOP OF SLAB)
 607-#5 A2 @ 6 1/2" CTS. (BOTT. OF SLAB)

#5 "S" IN SLAB & PARAPET
 SEE "CONCRETE PARAPET FOR
 2 BAR METAL RAIL" SHEET
 (TYP. EA. SIDE)

PLAN OF SPAN C

FOR SECTION VIEWS, SEE "TYPICAL SECTION" SHEETS.
 FOR DETAILS OF INTERMEDIATE DIAPHRAGMS, SEE "PRESTRESSED
 CONCRETE GIRDER" SHEET 6 OF 6.
 KEEP CONCRETE INSERTS AT LEAST 18" FROM TRANSVERSE
 CONSTRUCTION JOINTS.

PROJECT NO. B-4211
NASH COUNTY
 STATION: 22+24.50 -L-

SHEET 3 OF 4

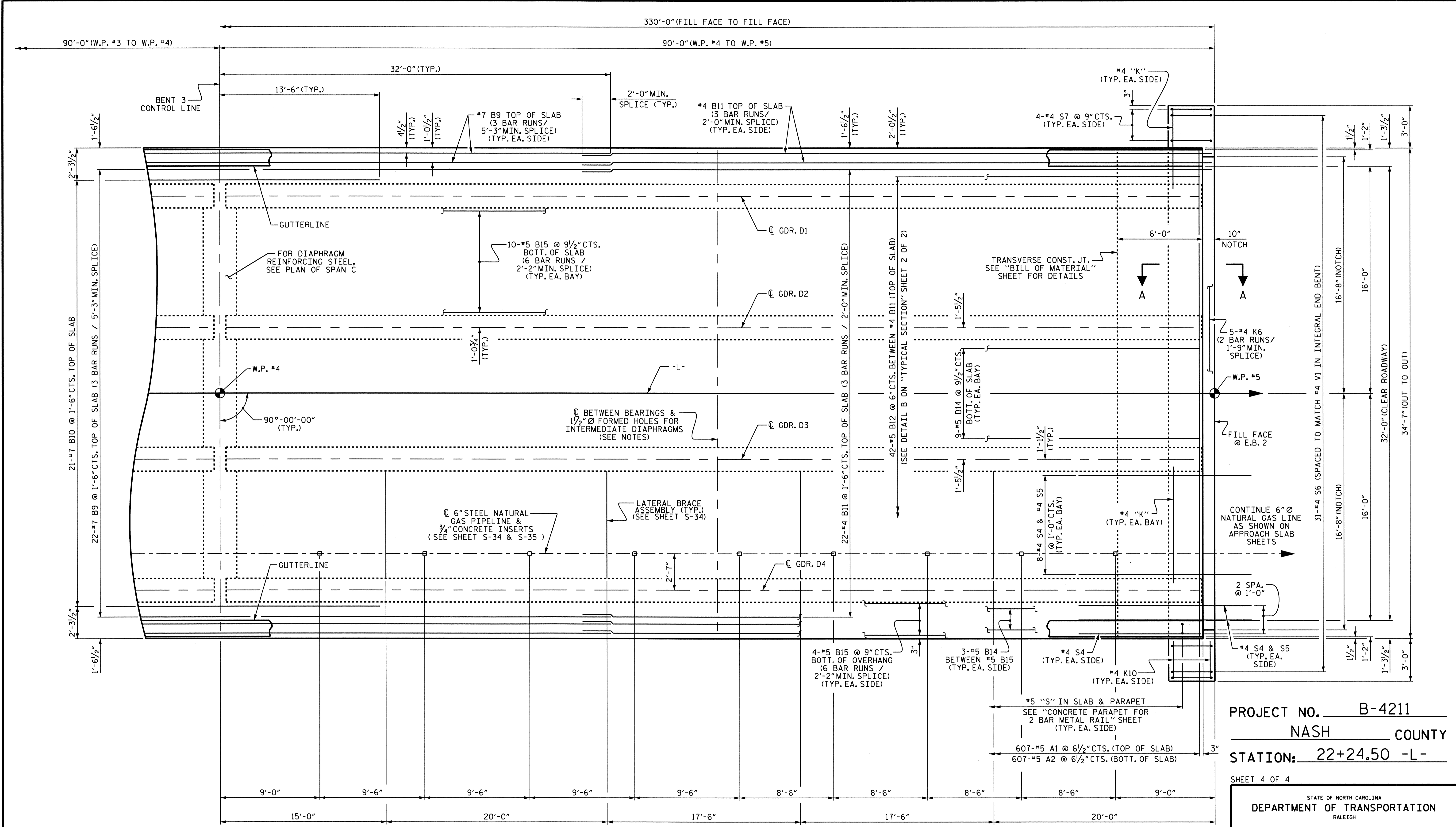
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 PLAN OF SPAN C**

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9	
1			3			TOTAL SHEETS	
2			4			42	

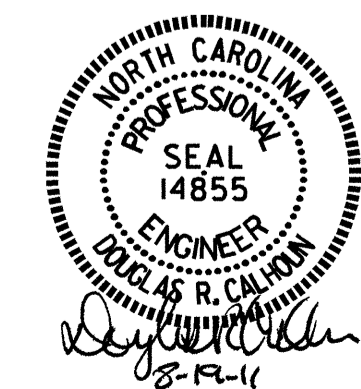


DRAWN BY : B.N. GRADY DATE : 3/22/10
 CHECKED BY : K.P. SEDAI DATE : 5/5/10



PLAN OF SPAN D

FOR SECTION VIEWS, SEE "TYPICAL SECTION" SHEETS.
 FOR DETAILS OF INTERMEDIATE DIAPHRAGMS, SEE "PRESTRESSED CONCRETE GIRDER" SHEET 6 OF 6.
 KEEP CONCRETE INSERTS AT LEAST 18" FROM TRANSVERSE CONSTRUCTION JOINTS.



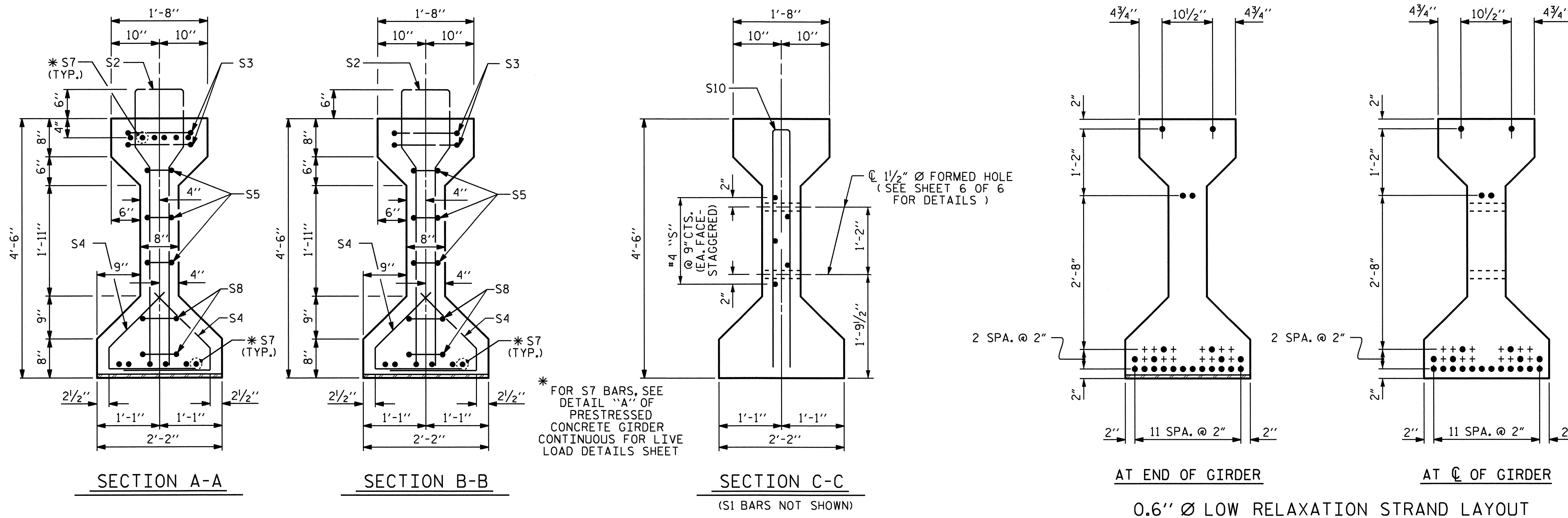
DRAWN BY : B.N. GRADY DATE : 3/22/10
 CHECKED BY : K.P. SEDAII DATE : 5/5/10

19-AUG-2011 09:00
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PROJECT NO. B-4211
NASH COUNTY
 STATION: 22+24.50 -L-

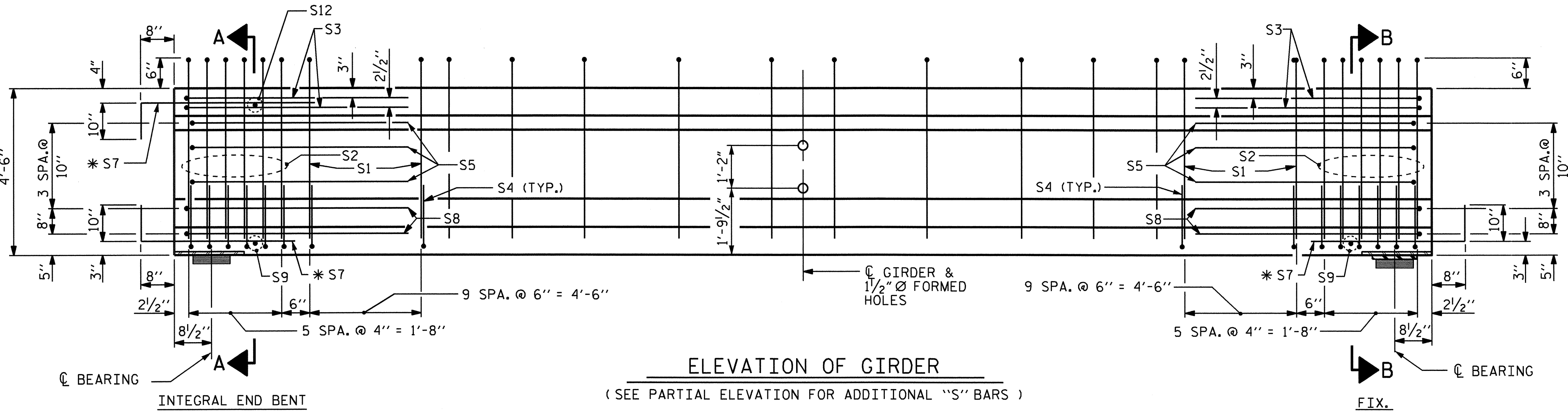
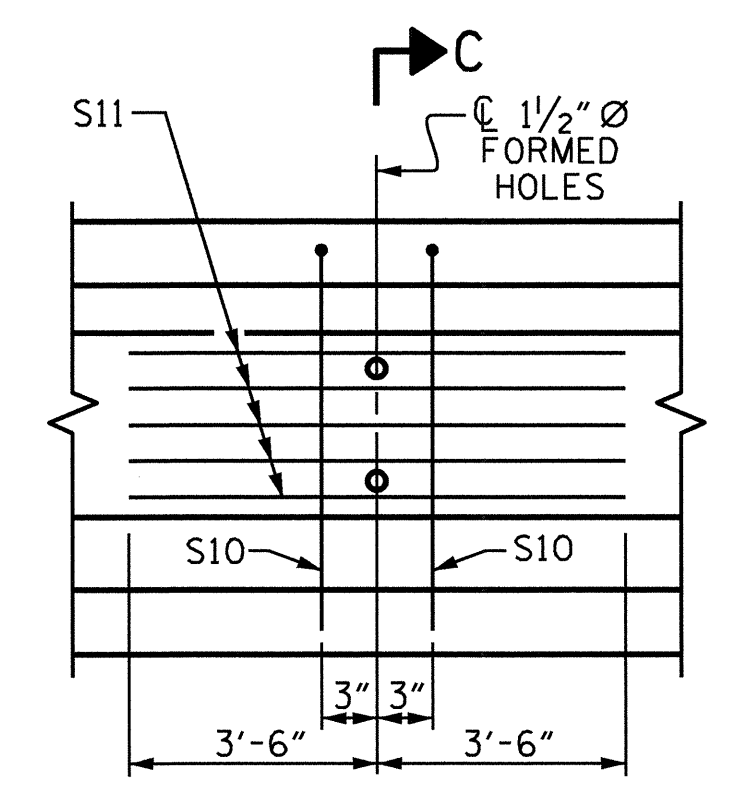
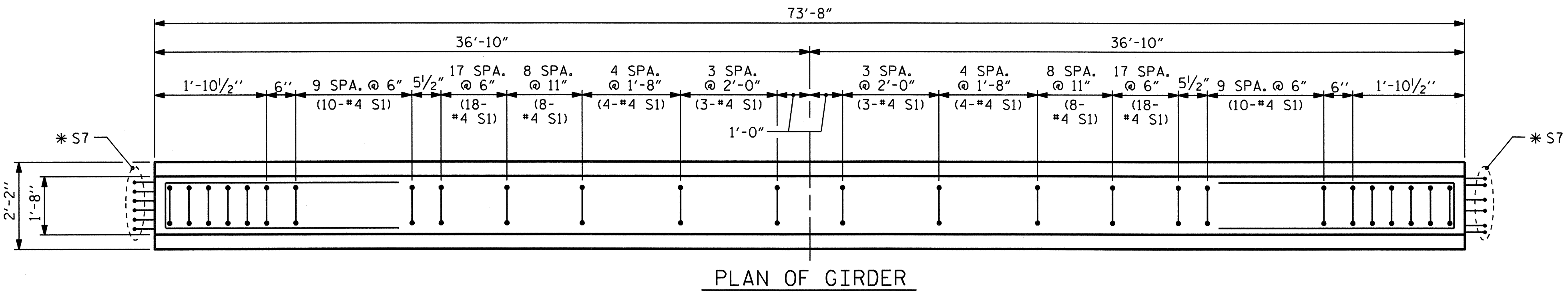
SHEET 4 OF 4

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10	
1			3			TOTAL SHEETS	
2			4			42	



* FOR S7 BARS, SEE
DETAIL "A" OF
PRESTRESSED
CONCRETE GIRDER
CONTINUOUS FOR LIVE
LOAD DETAILS SHEET

1/2" Ø FORMED HOLE
(SEE SHEET 6 OF 6
FOR DETAILS)

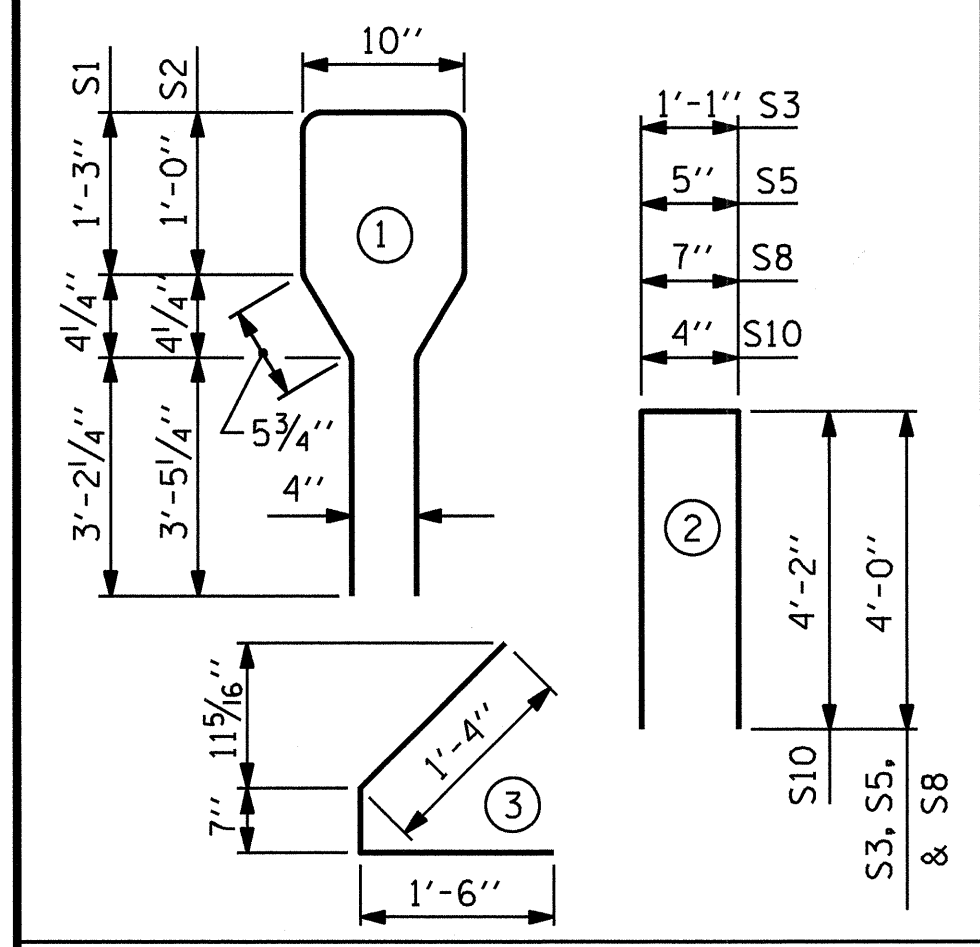


0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	86	#4	1	10'-8"	613
S2	12	#6	1	10'-8"	192
S3	4	#4	2	9'-1"	24
S4	64	#4	3	3'-5"	146
S5	6	#4	2	8'-5"	34
*S7	18	#5	STR	3'-8"	69
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23
S12	1	#3	STR	1'-4"	1

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES
ALL BAR DIMENSIONS ARE OUT-TO-OUT

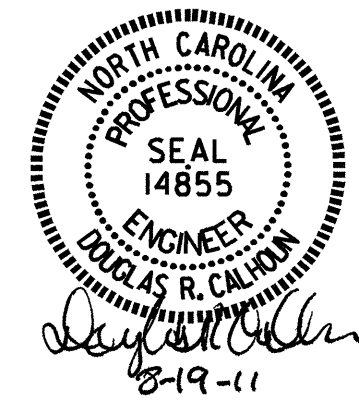


QUANTITIES FOR ONE GIRDER		
REINFORCING STEEL	5000 PSI CONCRETE	0.6" Ø L.R. STRANDS
LB.	C.Y.	No.
1144	14.9	22

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
4	73'-8"	294'-8"

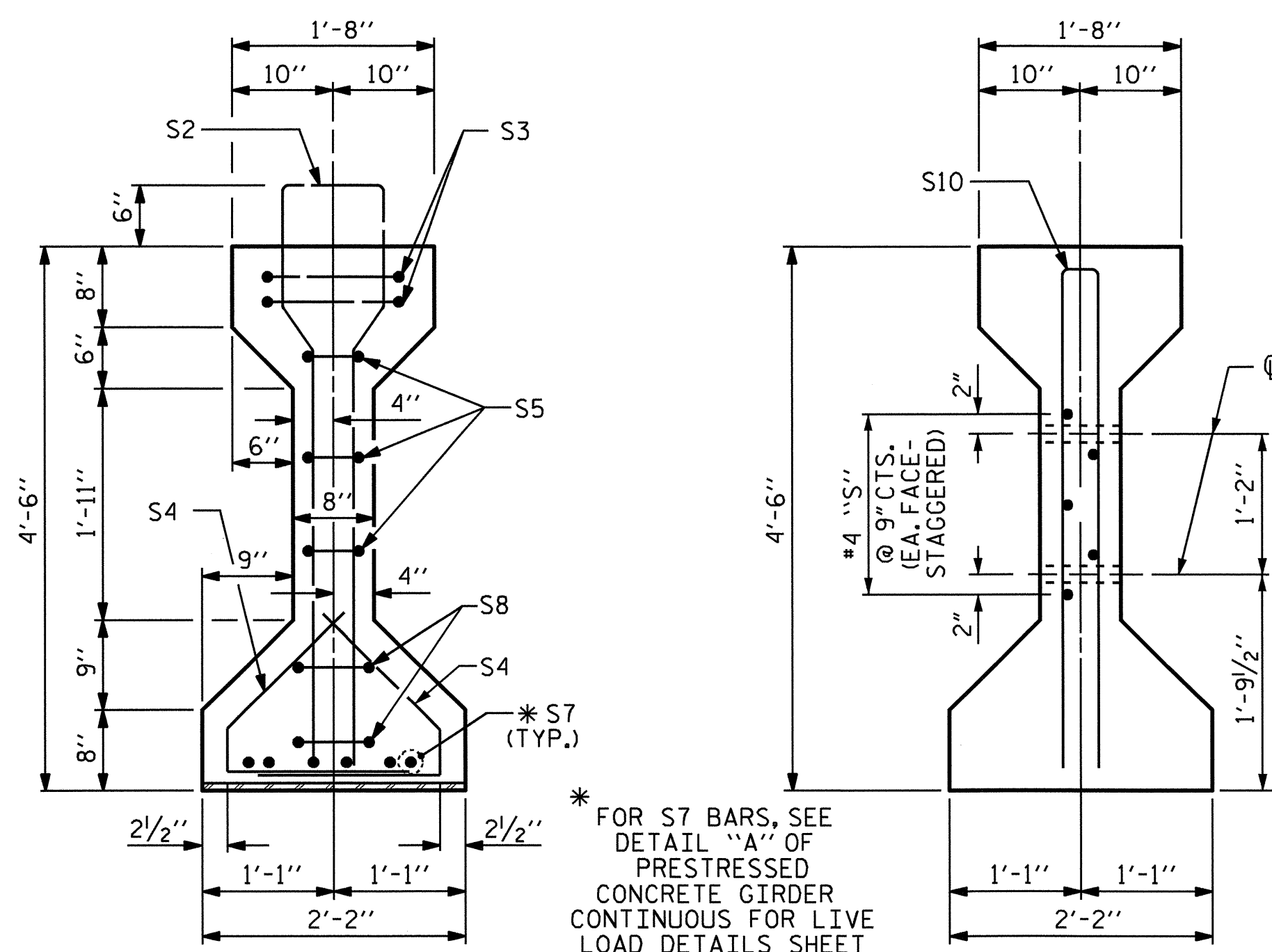
PROJECT NO. B-4211
NASH COUNTY
STATION: 22+24.50 -L-
SHEET 1 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
(SPAN A)



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			42

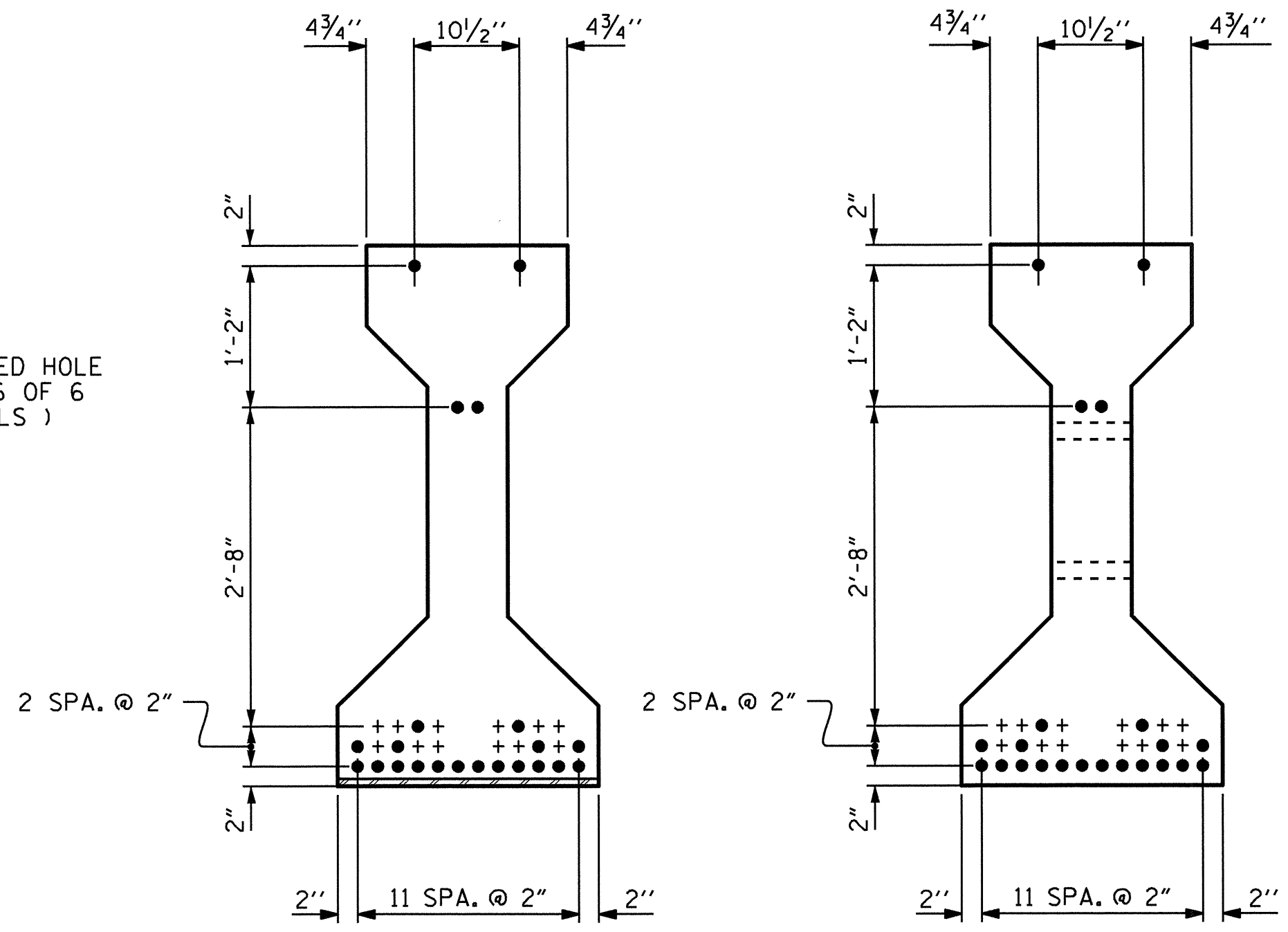
ASSEMBLED BY : B.N. GRADY
CHECKED BY : K.P. SEDA
DATE : 3/22/10
DATE : 5/17/10
DRAWN BY : ELR 8/91
CHECKED BY : GRP 8/91
REV. 7/17/98 RWW/LES
REV. 10/17/00R RWW/LES
REV. 5/1/06R TLA/GM



SECTION B-B

SECTION C-C

(S1 BARS NOT SHOWN)



AT END OF GIRDER

AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

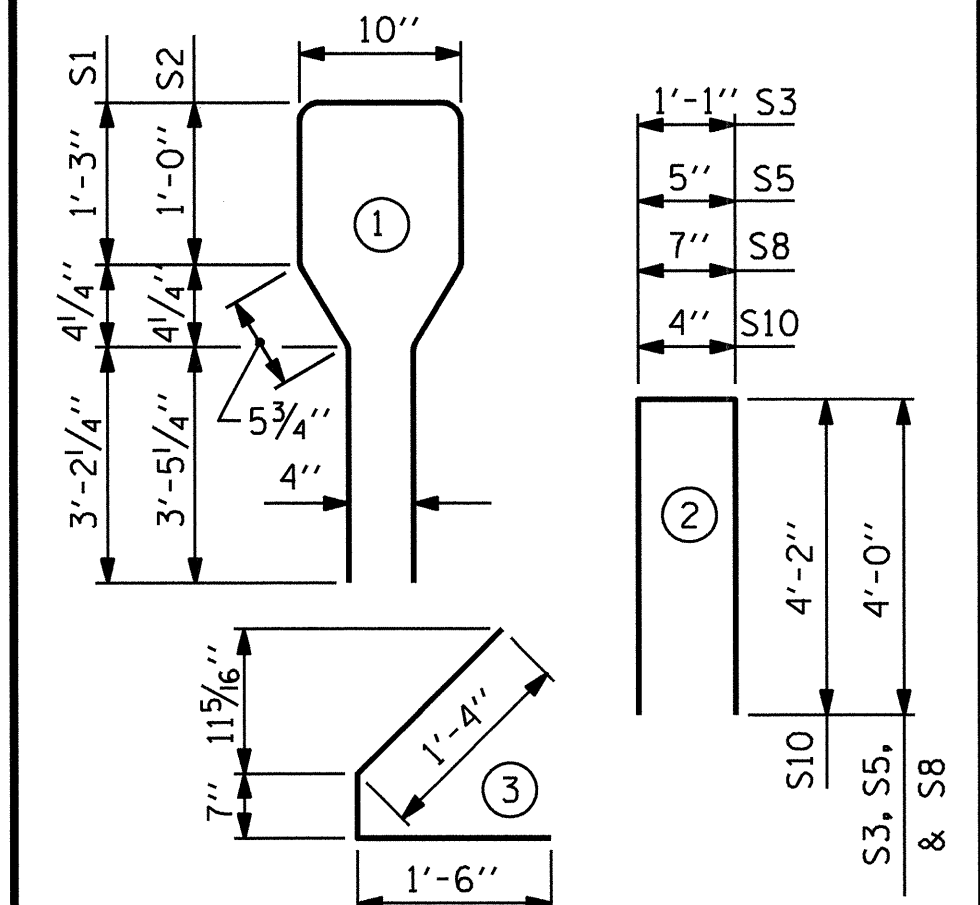
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	82	#4	1	10'-8"	584
S2	12	#6	1	10'-8"	192
S3	4	#4	2	9'-1"	24
S4	76	#4	3	3'-5"	173
S5	6	#4	2	8'-5"	34
* S7	12	#5	STR	3'-8"	46
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT

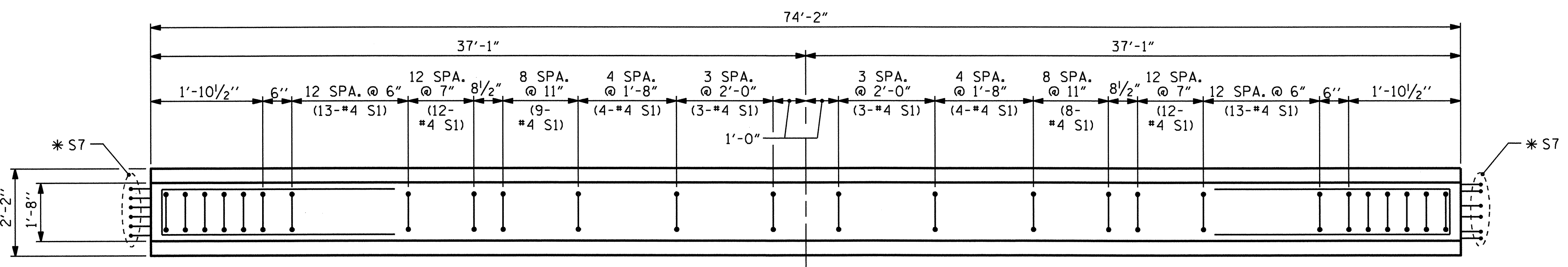


QUANTITIES FOR ONE GIRDER

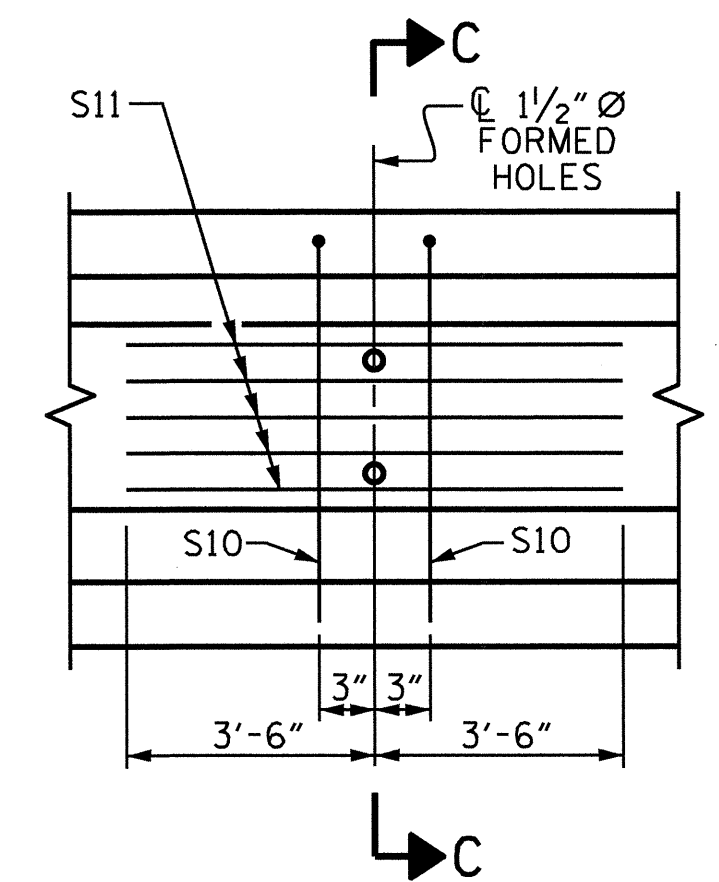
REINFORCING STEEL	5000 PSI CONCRETE	0.6" Ø L.R. STRANDS
LB.	C.Y.	No.
1118	15.1	22

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	74'-2"	296'-8"

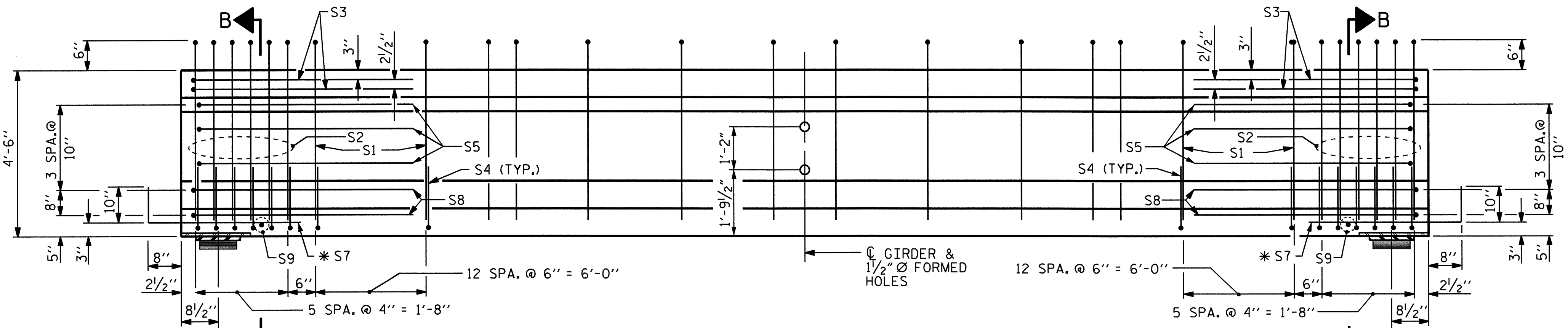


PLAN OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

ASSEMBLED BY : B.N. GRADY	DATE : 3/22/10
CHECKED BY : K.P. SEDA	DATE : 5/17/10
DRAWN BY : ELR 8/91	REV. 7/17/98 RWW/LES
CHECKED BY : GRP 8/91	REV. 10/17/00R RWW/LES
	REV. 5/1/06R TLA/GM

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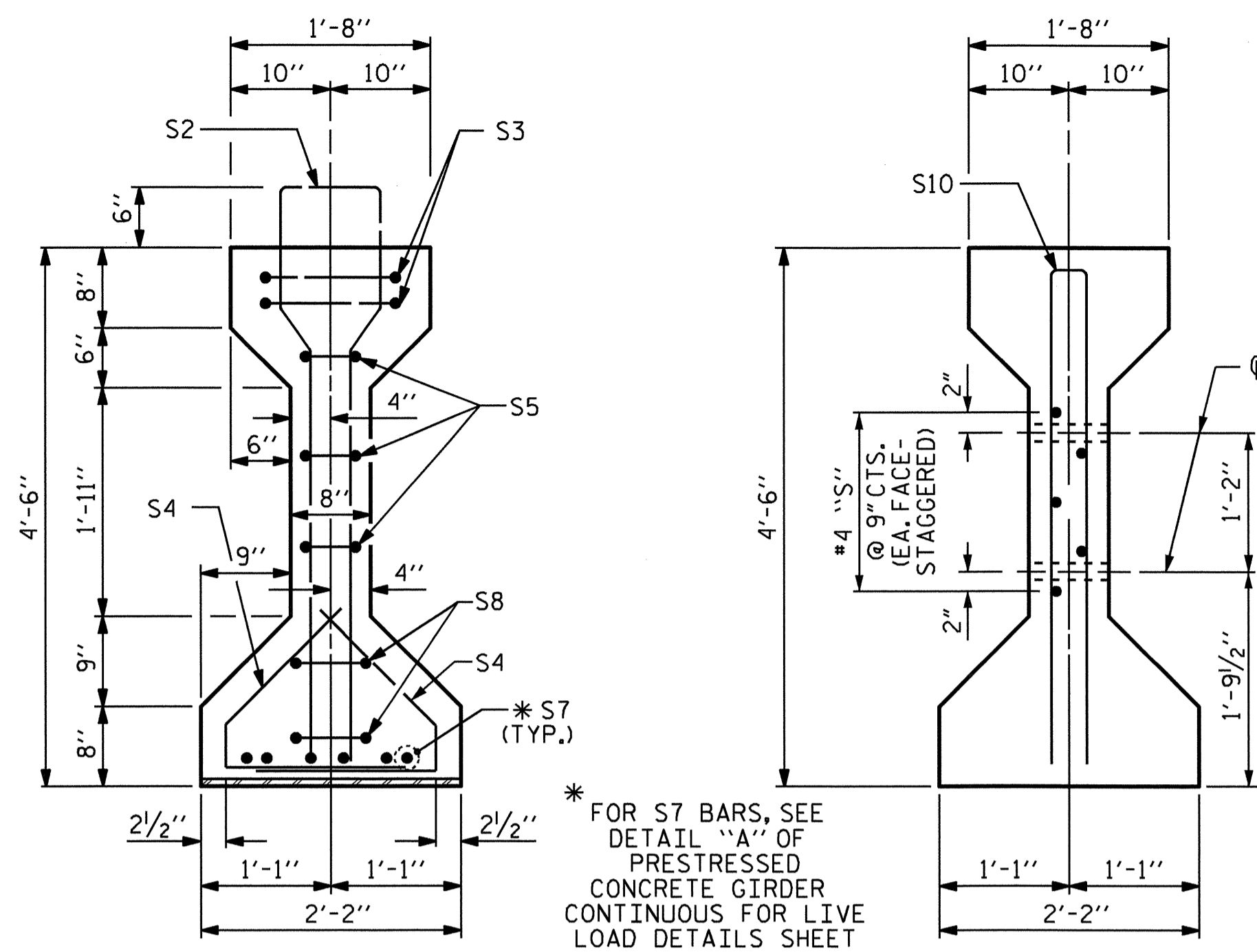


PROJECT NO. B-4211
NASH COUNTY
STATION: 22+24.50 -L-
SHEET 2 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
(SPAN B)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS 42
2			4			

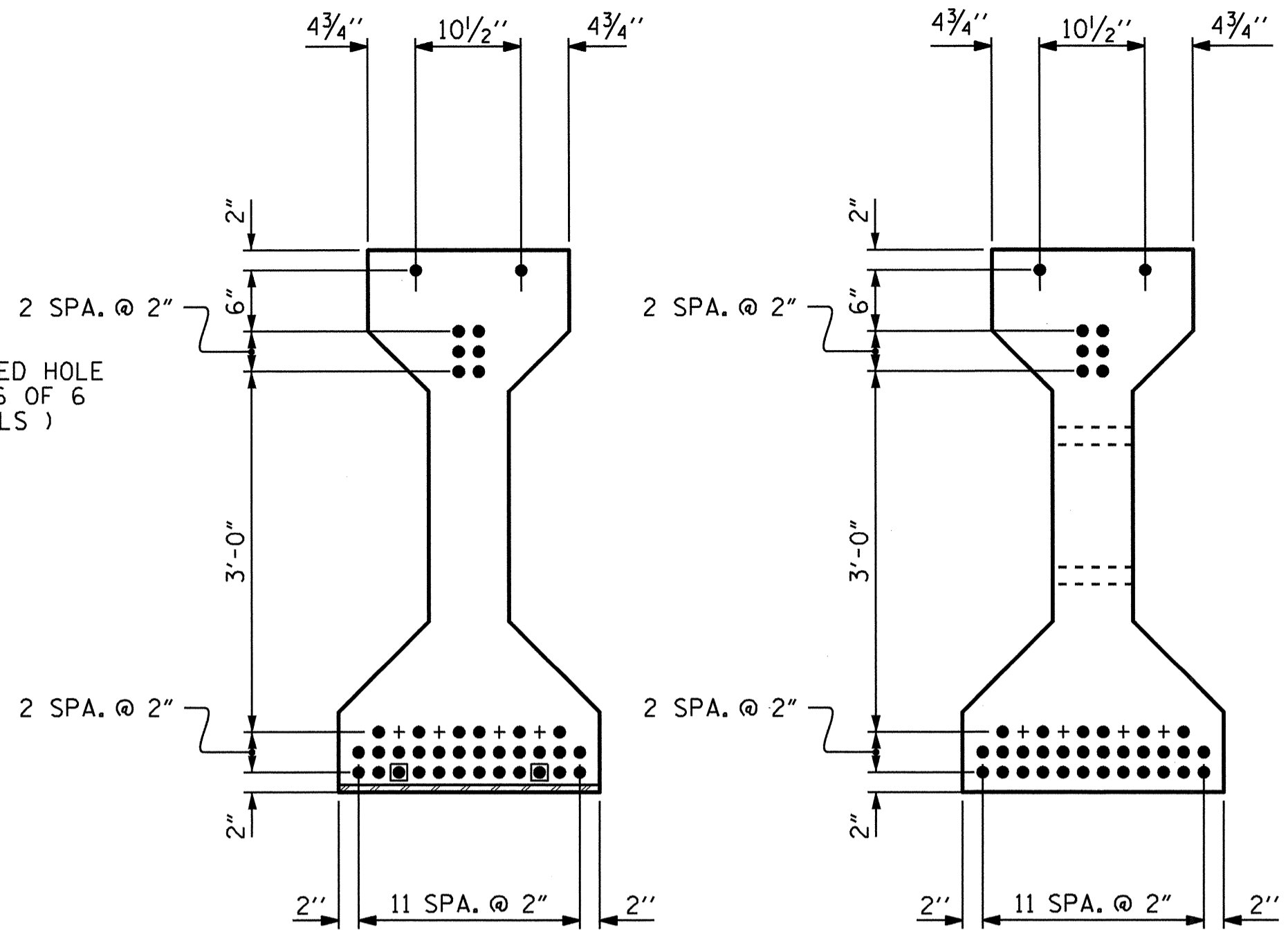
STD. NO. PCG6 (Sht. 1)



SECTION B-B

SECTION C-C

* FOR S7 BARS, SEE DETAIL "A" OF PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS SHEET



AT END OF GIRDER

AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

● STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER

0.6" Ø L. R. GRADE 270 STRANDS

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

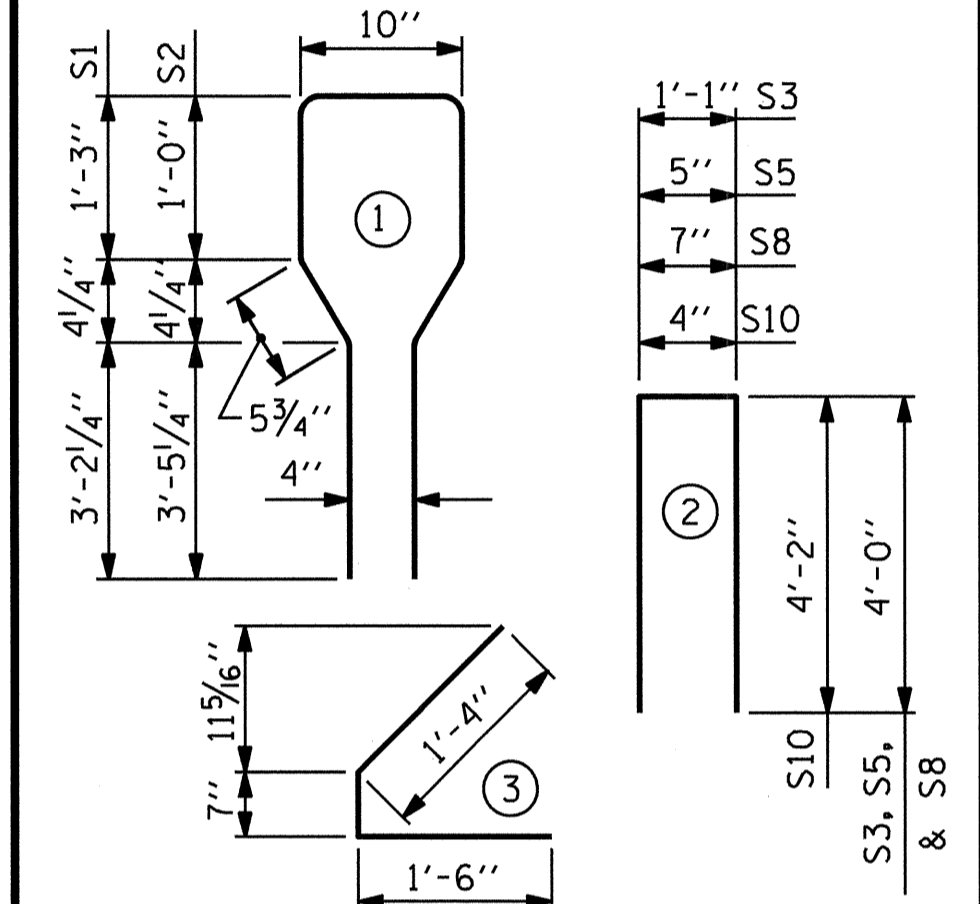
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	132	#4	1	10'-8"	941
S2	12	#6	1	10'-8"	192
S3	4	#4	2	9'-1"	24
S4	72	#4	3	3'-5"	164
S5	6	#4	2	8'-5"	34
* S7	12	#5	STR	3'-8"	46
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT

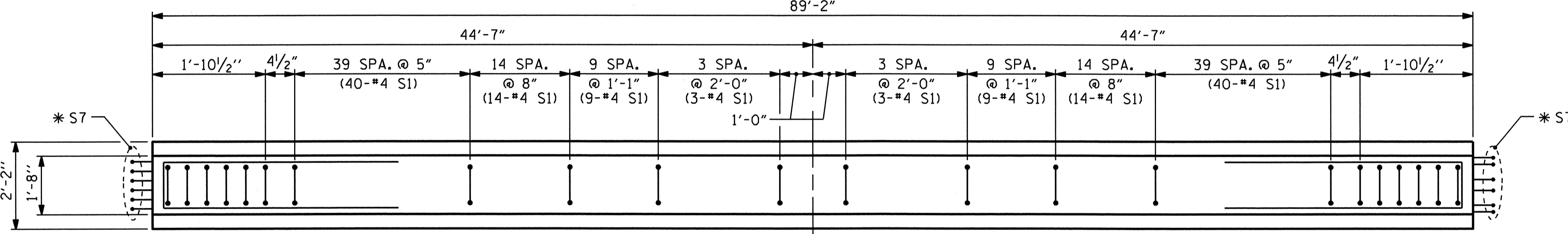


QUANTITIES FOR ONE GIRDER

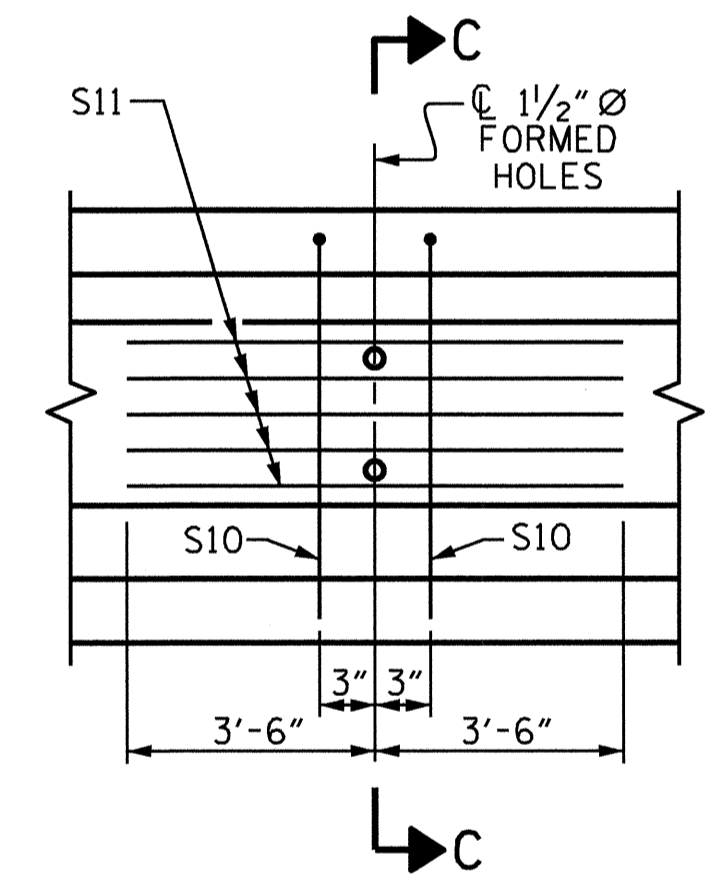
REINFORCING STEEL	8000 PSI CONCRETE	0.6" Ø L.R. STRANDS
LB.	C.Y.	No.
1466	18.1	38

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	89'-2"	356'-8"

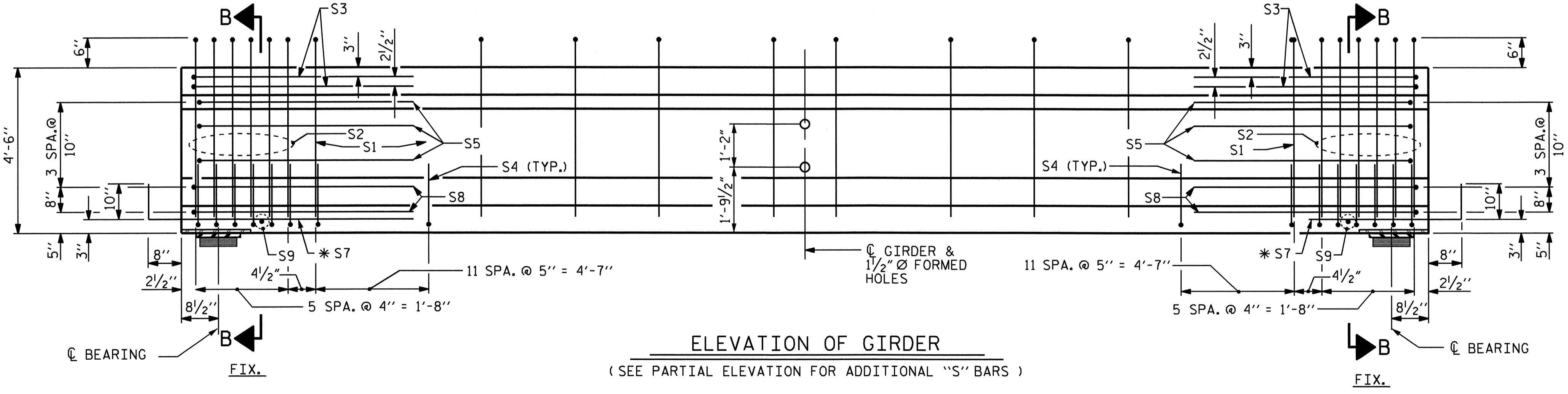


PLAN OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL

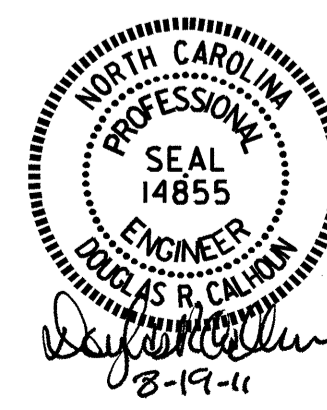


ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

ASSEMBLED BY : B.N. GRADY	DATE : 3/22/10
CHECKED BY : K.P. SEDA	DATE : 5/18/10
DRAWN BY : ELR 8/91	REV. 7/17/98 RWW/LES
CHECKED BY : GRP 8/91	REV. 10/17/00R RWW/LES
	REV. 5/1/06R TLA/GM

19-AUG-2011 08:59 R:\Structures\Final Plans\B4211.sd..G.dgn bngardy

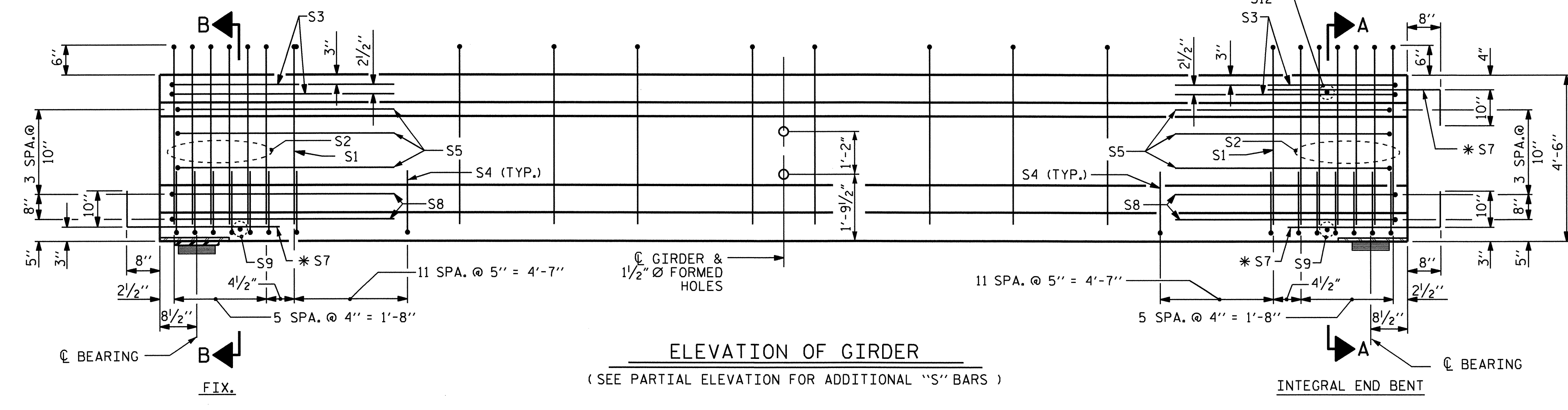
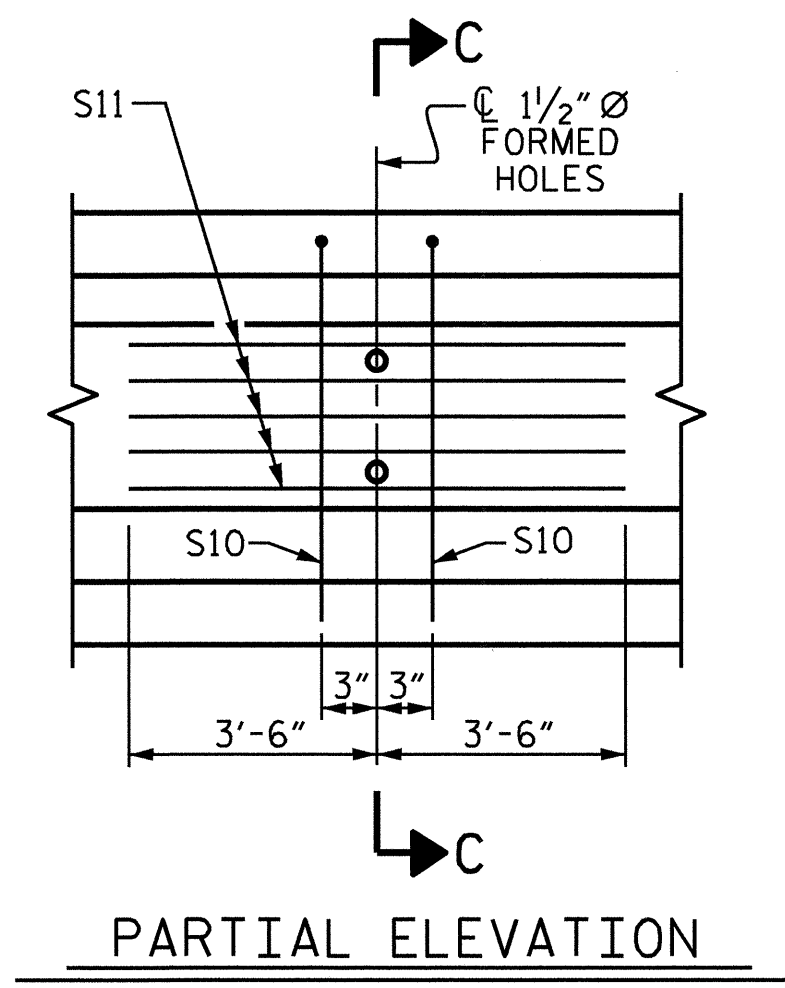
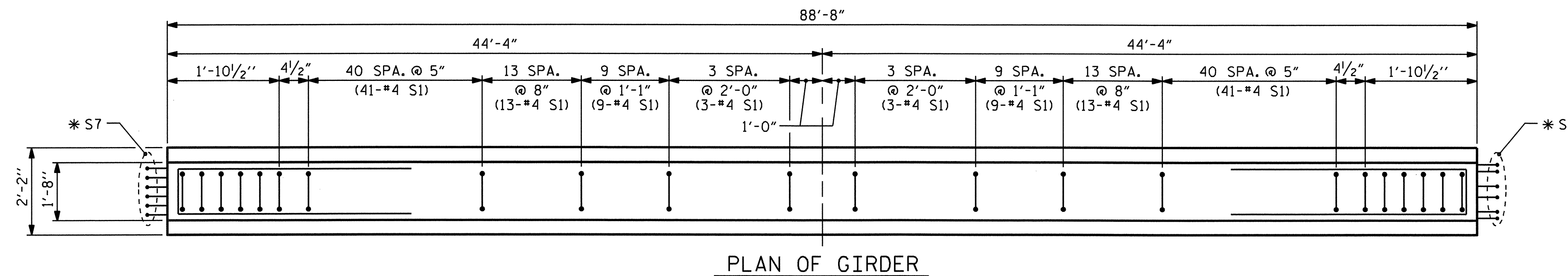
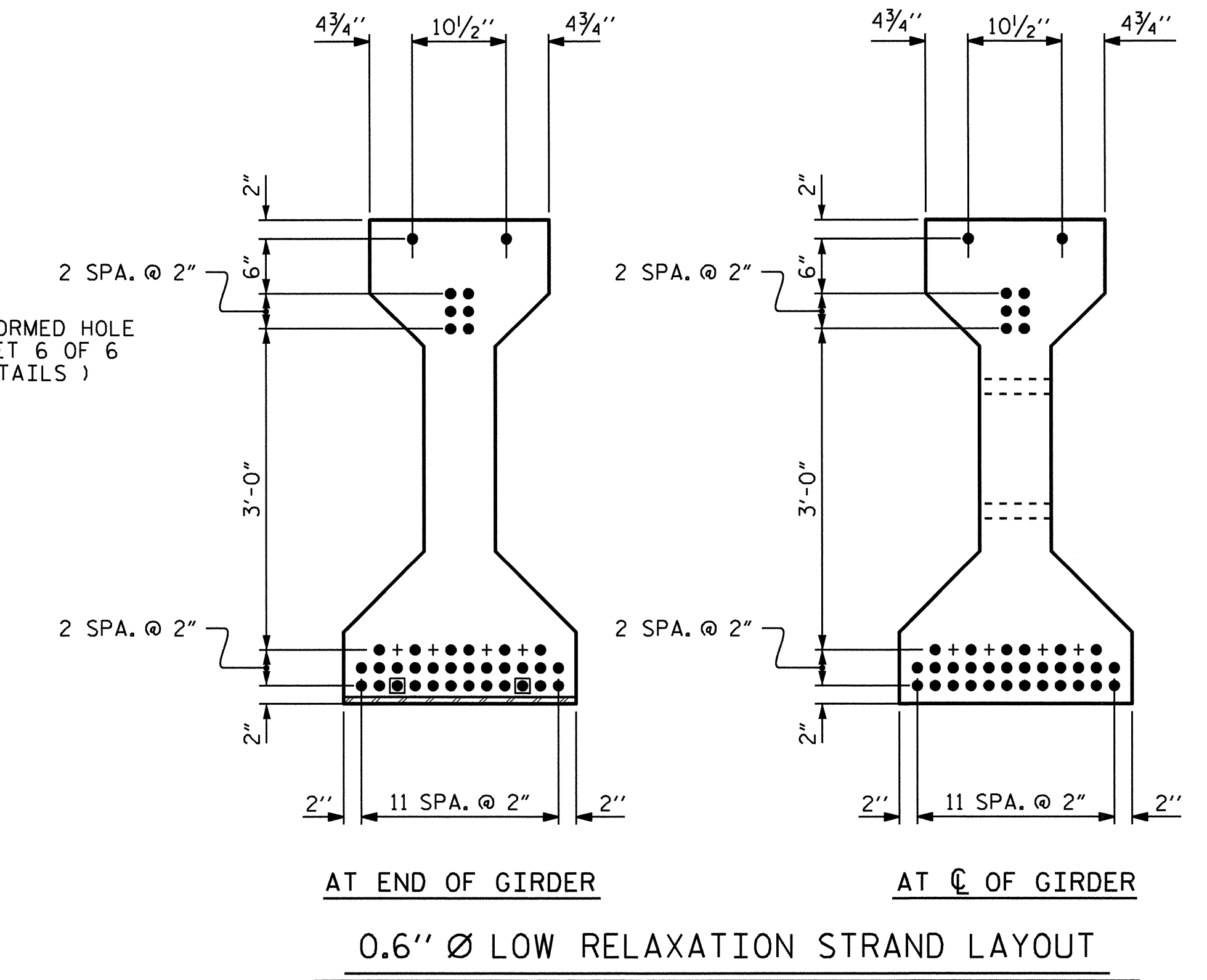
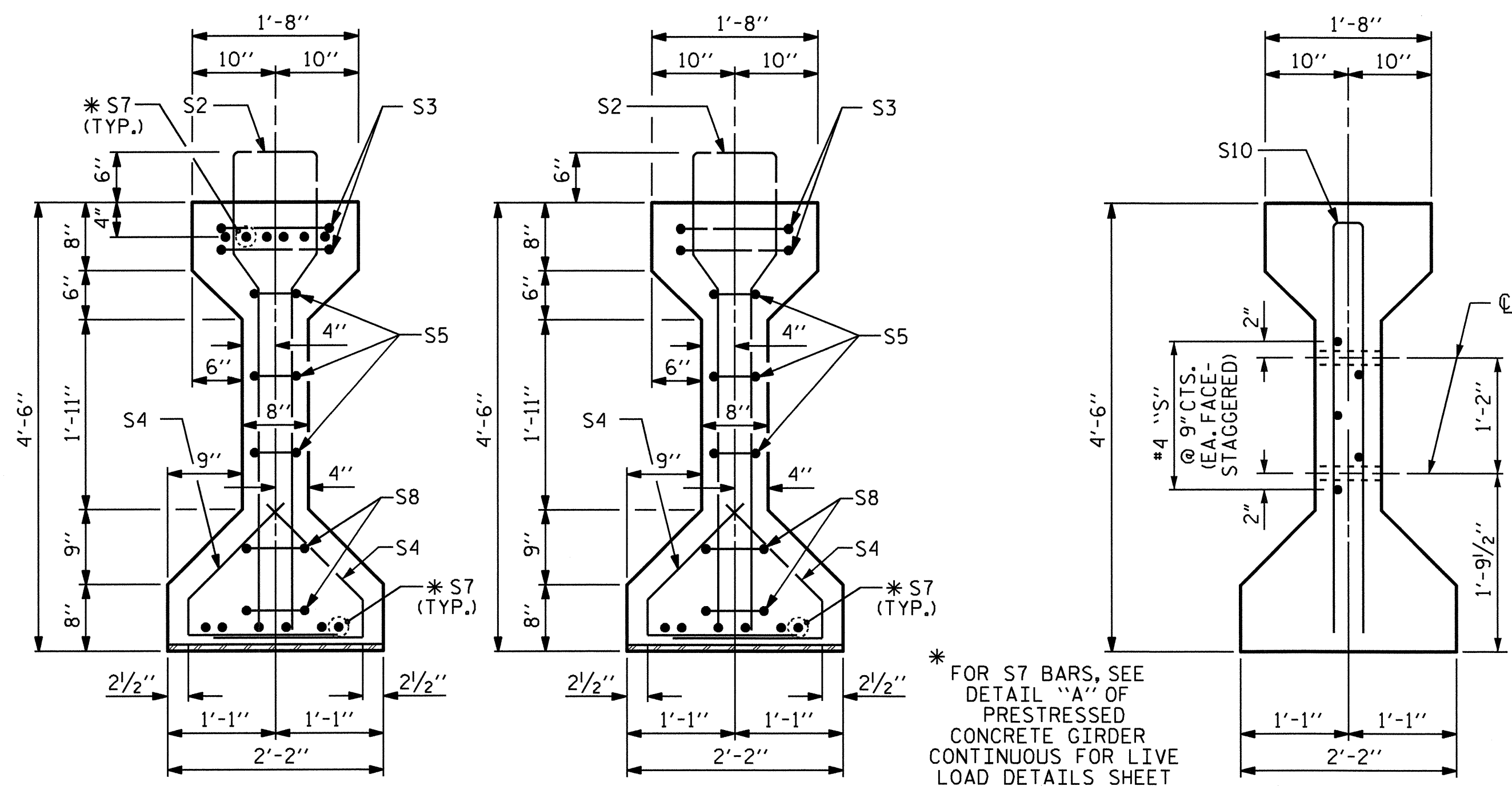


PROJECT NO. B-4211
 NASH COUNTY
 STATION: 22+24.50 -L-
 SHEET 3 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 AASHTO TYPE IV
 PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 (SPAN C)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS 42
2			4			

STD. NO. PCG6 (Sht. 1)

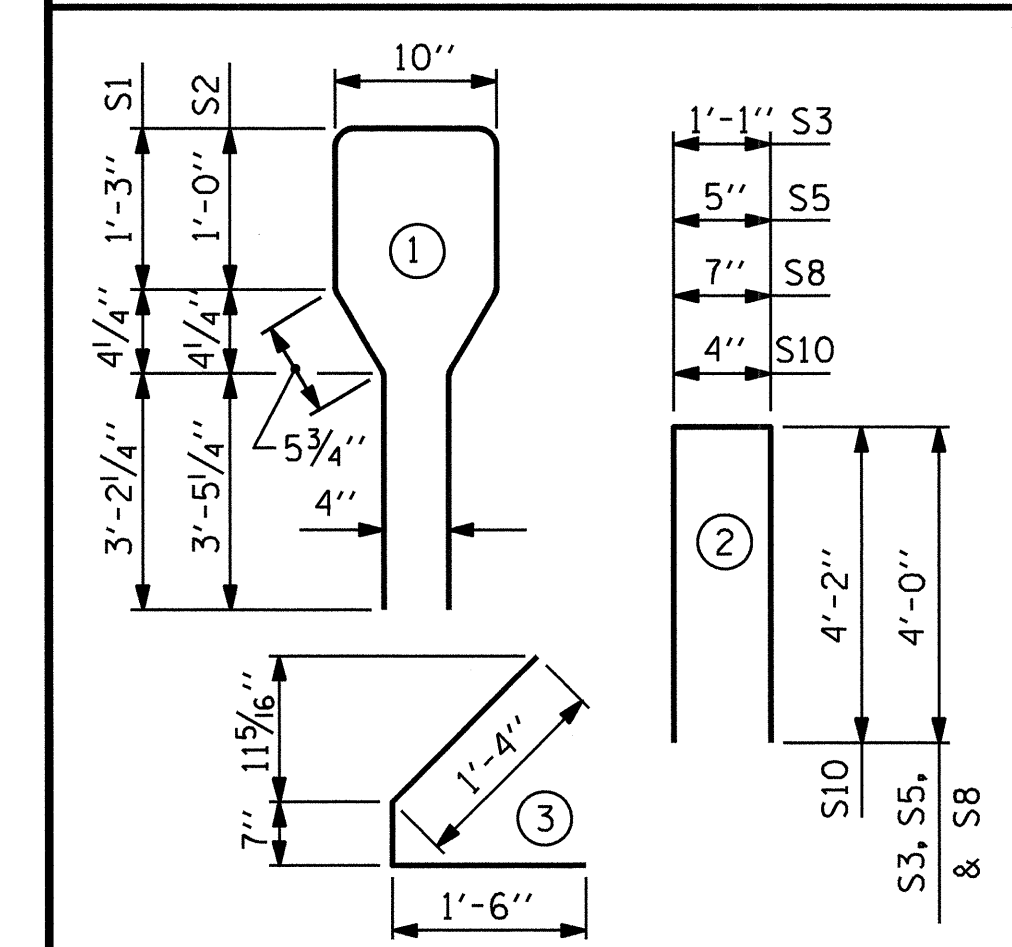


AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	132	#4	1	10'-8"	941
S2	12	#6	1	10'-8"	192
S3	4	#4	2	9'-1"	24
S4	72	#4	3	3'-5"	164
S5	6	#4	2	8'-5"	34
*S7	18	#5	STR	3'-8"	69
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23
S12	1	#3	STR	1'-4"	1

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES
ALL BAR DIMENSIONS ARE OUT-TO-OUT



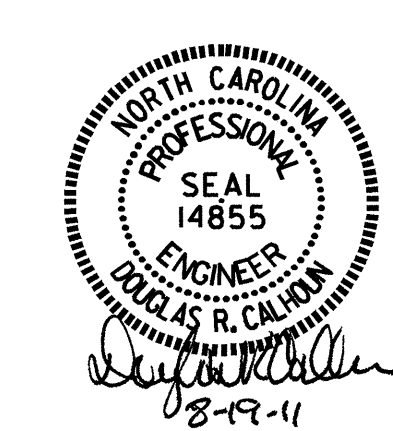
REINFORCING STEEL	8000 PSI CONCRETE	0.6" Ø L.R. STRANDS
LB.	C.Y.	No.
1490	18.0	38

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
4	88'-8"	354'-8"

PROJECT NO. B-4211
NASH COUNTY
STATION: 22+24.50 -L-
SHEET 4 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
(SPAN D)



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS 42
2			4			

ASSEMBLED BY : B.N. GRADY
CHECKED BY : K.P. SEDAI
DATE : 3/22/10
DATE : 5/18/10

DRAWN BY : ELR 8/91
CHECKED BY : GRP 8/91
REV. 7/17/98 RWW/LES
REV. 10/17/00R RWW/LES
REV. 5/1/06R TLA/GM

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 SHALL BE GRADE 60.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. BEVEL EDGES OF PLATE "B-1" TO GIVE CLOSE FIT BUT NOT TIGHT FIT TO STEEL CASTING FORM.

ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

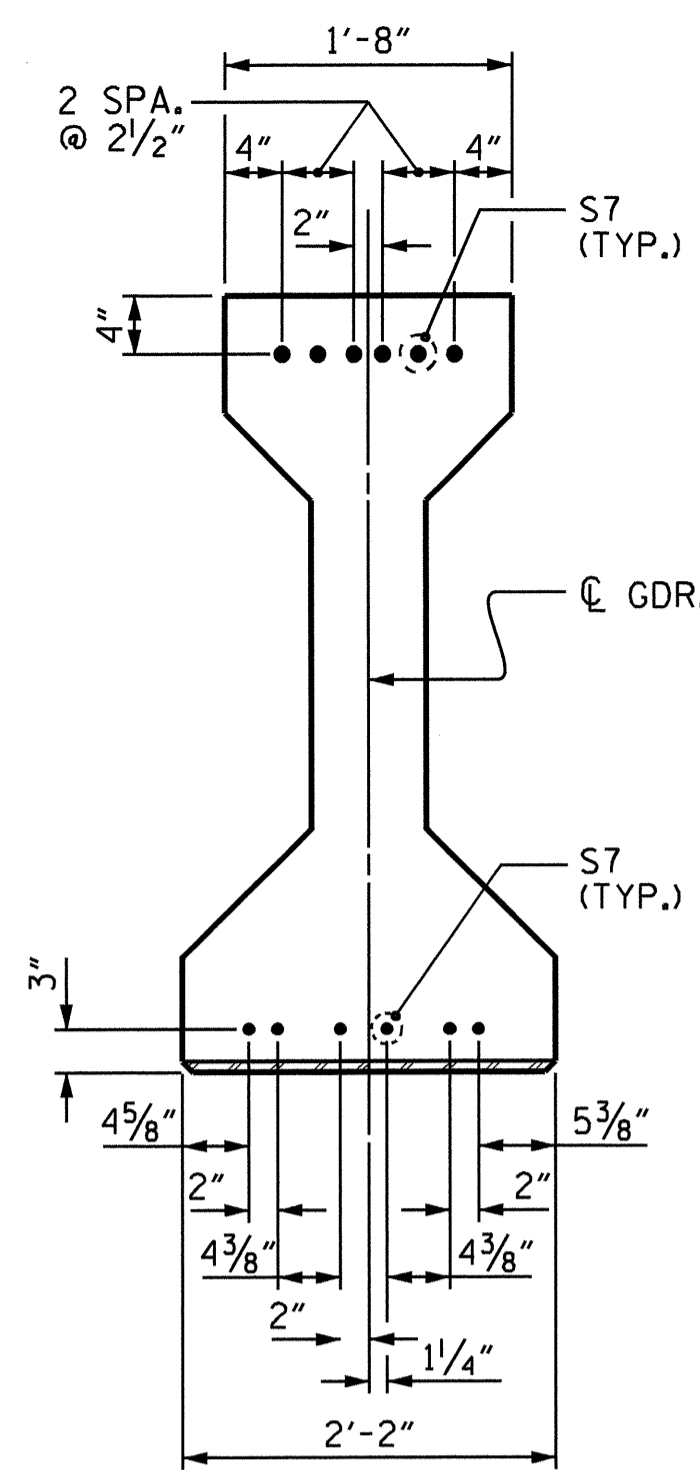
AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI FOR SPANS A & B, AND 6000 PSI FOR SPANS C & D.

DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

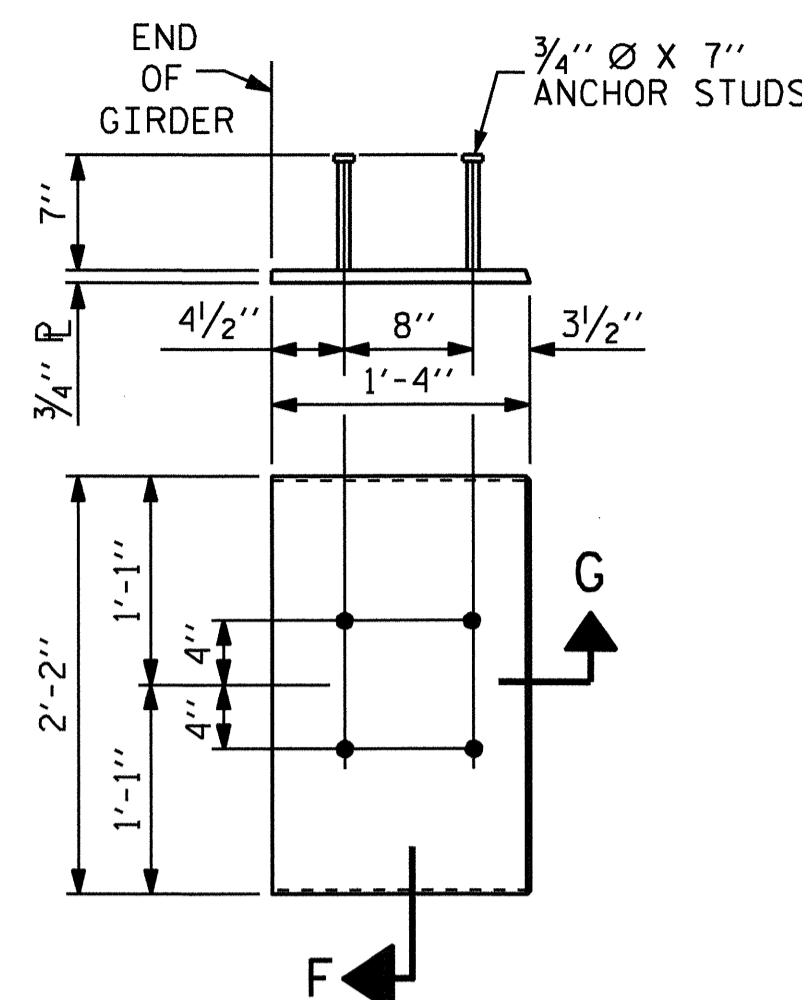
THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.



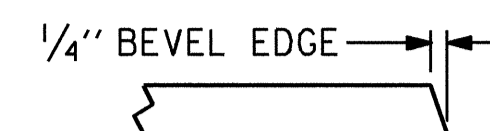
DETAIL "A"

(FOR AASHTO TYPE IV GIRDERS)

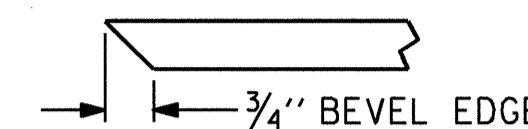


EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDER

(2 REQ'D. PER GIRDER)



SECTION "G"



SECTION "F"

(SEE NOTES)

DEAD LOAD DEFLECTION TABLE FOR SPAN A

0.6" Ø LOW RELAXATION	GIRDERS A1 & A4											GIRDERS A2 & A3											
	TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.038	0.073	0.100	0.117	0.122	0.117	0.100	0.073	0.038	0.000	0.000	0.038	0.073	0.100	0.117	0.122	0.117	0.100	0.073	0.038	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.018	0.035	0.048	0.056	0.058	0.056	0.048	0.035	0.018	0.000	0.000	0.021	0.039	0.054	0.063	0.066	0.063	0.054	0.039	0.021	0.000
FINAL CAMBER	↑	0	1/4"	7/16"	5/8"	3/4"	3/4"	3/4"	5/8"	7/16"	1/4"	0	0	3/16"	3/8"	9/16"	5/8"	11/16"	5/8"	9/16"	3/8"	3/16"	0

DEAD LOAD DEFLECTION TABLE FOR SPAN B

0.6" Ø LOW RELAXATION	GIRDERS B1 & B4											GIRDERS B2 & B3											
	TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.039	0.073	0.100	0.117	0.123	0.117	0.100	0.073	0.039	0.000	0.000	0.039	0.073	0.100	0.117	0.123	0.117	0.100	0.073	0.039	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.019	0.036	0.049	0.057	0.060	0.057	0.049	0.036	0.019	0.000	0.000	0.021	0.040	0.055	0.065	0.068	0.065	0.055	0.040	0.021	0.000
FINAL CAMBER	↑	0	1/4"	7/16"	5/8"	11/16"	3/4"	11/16"	5/8"	7/16"	1/4"	0	0	3/16"	3/8"	9/16"	5/8"	11/16"	5/8"	9/16"	3/8"	3/16"	0

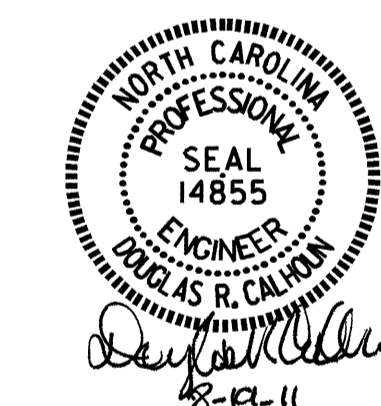
DEAD LOAD DEFLECTION TABLE FOR SPAN C

0.6" Ø LOW RELAXATION	GIRDERS C1 & C4											GIRDERS C2 & C3											
	TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.065	0.123	0.168	0.197	0.207	0.197	0.168	0.123	0.065	0.000	0.000	0.065	0.123	0.168	0.197	0.207	0.197	0.168	0.123	0.065	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.032	0.060	0.083	0.097	0.102	0.097	0.083	0.060	0.032	0.000	0.000	0.036	0.068	0.093	0.109	0.115	0.109	0.093	0.068	0.036	0.000
FINAL CAMBER	↑	0	3/8"	3/4"	1"	1 3/16"	1 1/4"	1 3/16"	1"	3/4"	3/8"	0	0	3/8"	1 1/16"	7/8"	1 1/16"	1 1/8"	1 1/16"	7/8"	1 1/16"	3/8"	0

DEAD LOAD DEFLECTION TABLE FOR SPAN D

0.6" Ø LOW RELAXATION	GIRDERS D1 & D4											GIRDERS D2 & D3											
	TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.065	0.122	0.168	0.196	0.206	0.196	0.168	0.122	0.065	0.000	0.000	0.065	0.122	0.168	0.196	0.206	0.196	0.168	0.122	0.065	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.031	0.059	0.081	0.095	0.099	0.095	0.081	0.059	0.031	0.000	0.000	0.035	0.067	0.091	0.107	0.112	0.107	0.091	0.067	0.035	0.000
FINAL CAMBER	↑	0	3/8"	3/4"	1 1/16"	1 1/4"	1 5/16"	1 1/4"	1 1/16"	3/4"	3/8"	0	0	3/8"	1 1/16"	1 5/16"	1 1/16"	1 1/8"	1 1/16"	1 5/16"	1 1/16"	3/8"	0

* INCLUDES FUTURE WEARING SURFACE
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).



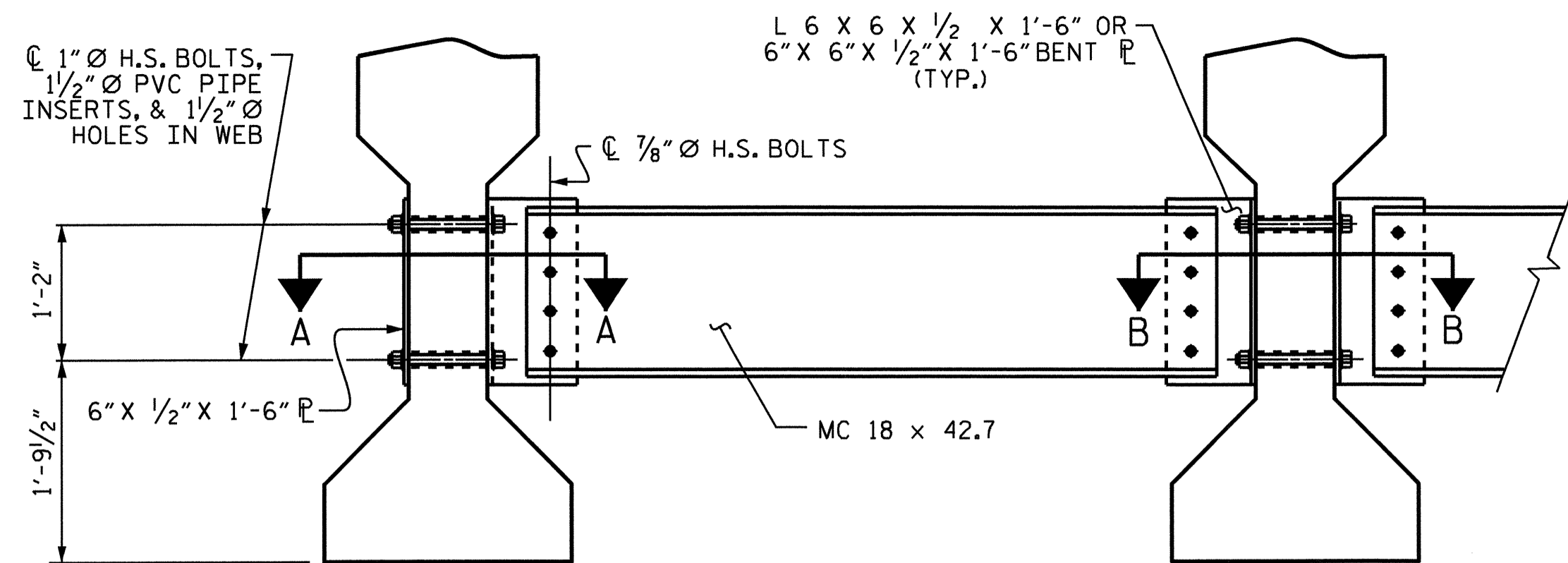
PROJECT NO. B-4211
NASH COUNTY
STATION: 22+24.50 -L-

SHEET 5 OF 6

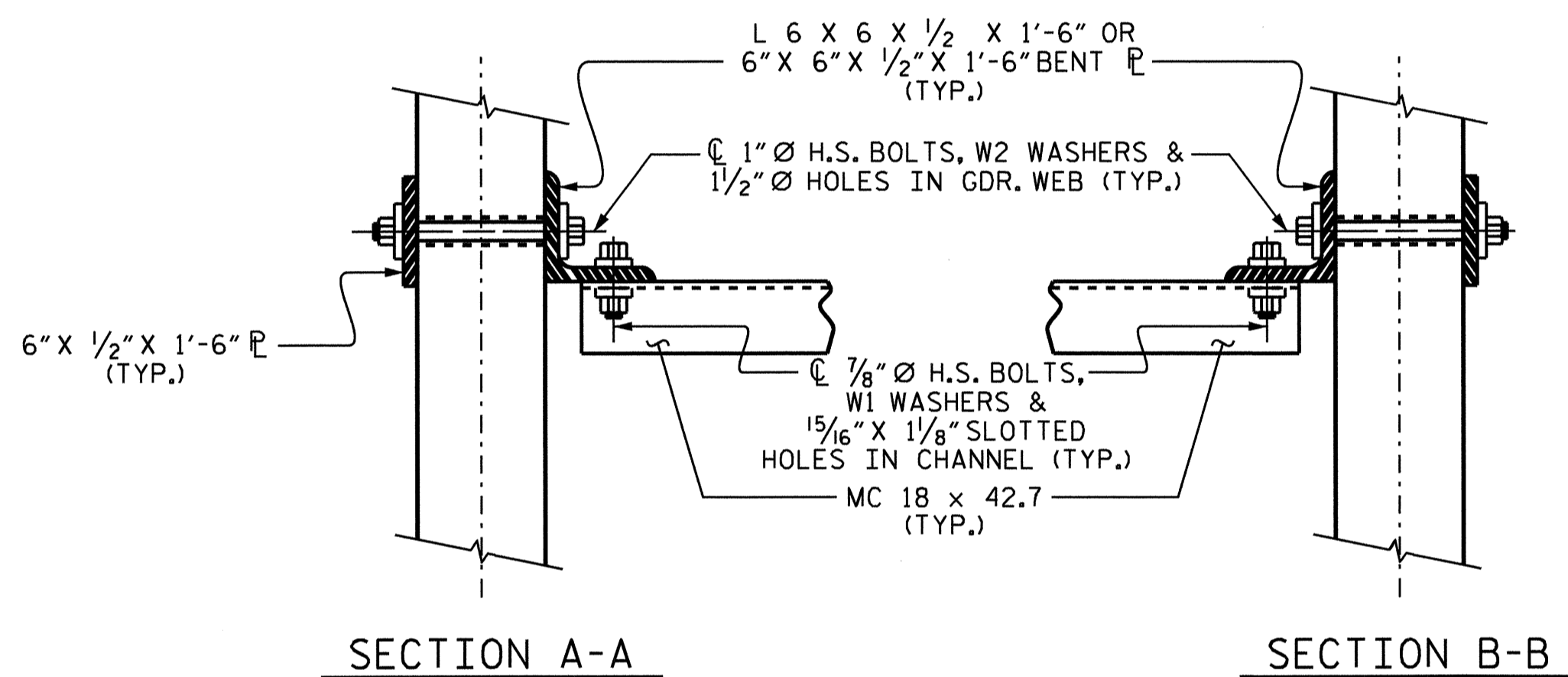
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
DETAILS

ASSEMBLED BY : B.N. GRADY	DATE : 3/22/10
CHECKED BY : K.P. SEDAI	DATE : 5/18/10
DRAWN BY : ELR 11/91	REV. 10/17/00 RWW/LES
CHECKED BY : GRP 11/91	REV. 7/10/01RR LES/RDR
	REV. 5/1/06 TLA/GM

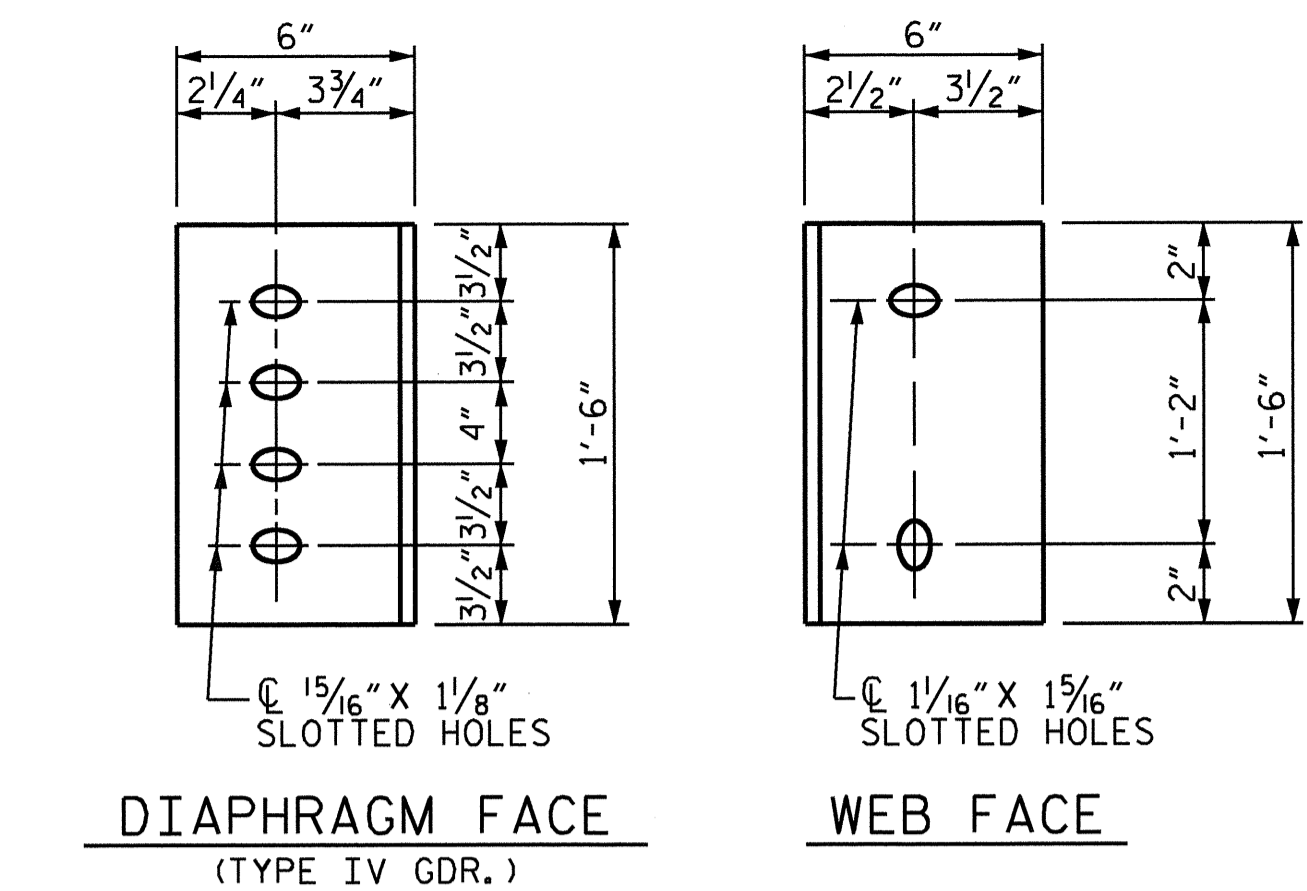
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			42



EXTERIOR GIRDER INTERIOR GIRDER
PART SECTION AT INTERMEDIATE DIAPHRAGM
(TYPE IV GIRDER SHOWN)



SECTION A-A SECTION B-B
CONNECTION DETAILS



DIAPHRAGM FACE WEB FACE
CONNECTOR PLATE DETAILS

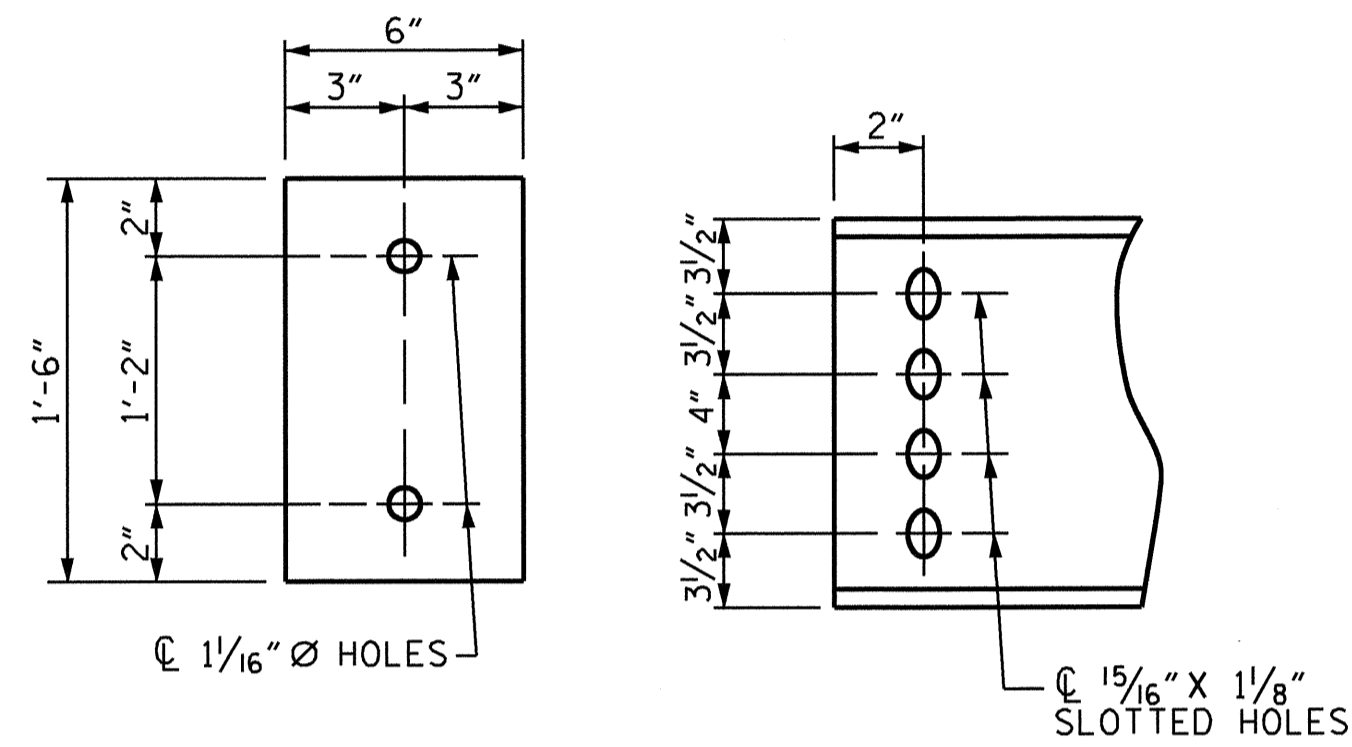
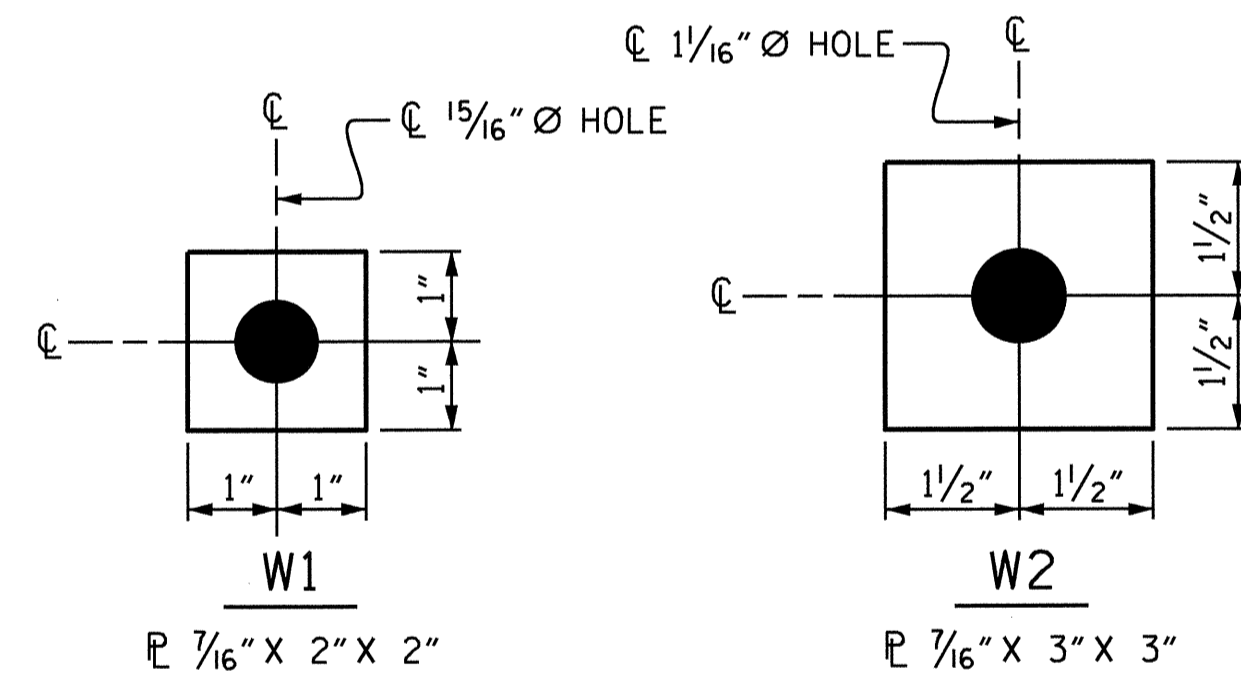


PLATE DETAILS CHANNEL END
(TYPE IV GIRDER)



USE WITH 7/8" dia HVY. HEX NUTS & DIRECT TENSION INDICATOR WASHERS AT DIAPHRAGM CHANNEL TO CONNECTOR PLATE CONNECTIONS
USE WITH 1" dia HVY. HEX NUTS AT CONNECTOR PLATE TO GIRDER CONNECTIONS

WASHER DETAILS

STRUCTURAL STEEL NOTES

ALL INTERMEDIATE DIAPHRAGM STEEL, CONNECTOR PLATES AND PLATE WASHERS SHALL BE AASHTO M270 GRADE 50 OR APPROVED EQUAL.
TENSION ON THE AASHTO M164 BOLTS THROUGH THE CHANNEL MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR DIRECT TENSION INDICATORS, SEE SPECIAL PROVISIONS.
TENSION ON THE AASHTO M164 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL 1/4 TURN.
THE PLATES, BENT PLATES, CHANNELS, ANGLES, AND PLATE WASHERS SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.
FOR METALLIZATION, APPLY AN 8 MIL THICK 99.99 PERCENT ZINC (W-Zn-1) THERMAL SPRAYED COATING WITH A 0.5 MIL THICK SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE THERMAL SPRAYED COATINGS SPECIAL PROVISIONS AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

GALVANIZE THE HIGH STRENGTH BOLTS, NUTS, WASHERS AND DIRECT TENSION INDICATORS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR HIGH STRENGTH BOLTS, SEE SPECIAL PROVISIONS.

USE A MINIMUM 7/16" THICK PLATE WASHER WITH STANDARD HOLES UNDER EACH BOLT HEAD AND NUT. THE PLATE WASHERS SHALL HAVE SUFFICIENT SIZE TO COVER THE HOLES AFTER INSTALLATION. HARDENED WASHERS AND DIRECT TENSION INDICATORS ARE TO BE USED IN CONJUNCTION WITH THE PLATE WASHERS IN THE CHANNEL MEMBER CONNECTION.

FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

INTERMEDIATE DIAPHRAGM ASSEMBLY SHALL COMPLY WITH SECTION 1072 OF THE STANDARD SPECIFICATIONS.

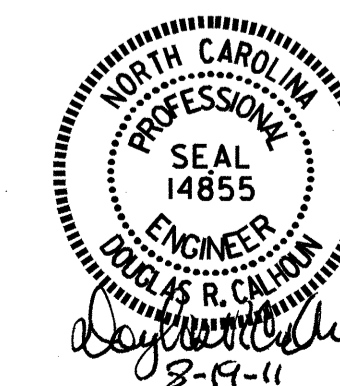
CONTRACTOR SHALL SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

IN THE EXTERIOR BAYS, TEMPORARY STRUTS SHALL BE PLACED BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED. ALL AASHTO M164 H.S. BOLTS SHALL BE FULLY TIGHTENED AFTER THE STRUTS HAVE BEEN REMOVED.

THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.

PROJECT NO. B-4211
NASH COUNTY
STATION: 22+24.50 -L-

SHEET 6 OF 6



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-16					TOTAL SHEETS 42

ASSEMBLED BY : B.N. GRADY	DATE : 3/22/10
CHECKED BY : K.P. SEDAI	DATE : 5/18/10
DRAWN BY : TLA 6/05	ADDED 10/21/05
CHECKED BY : VC 6/05	REV. 5/1/06RR KMM/GM

NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

STEEL SOLE PLATES, ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

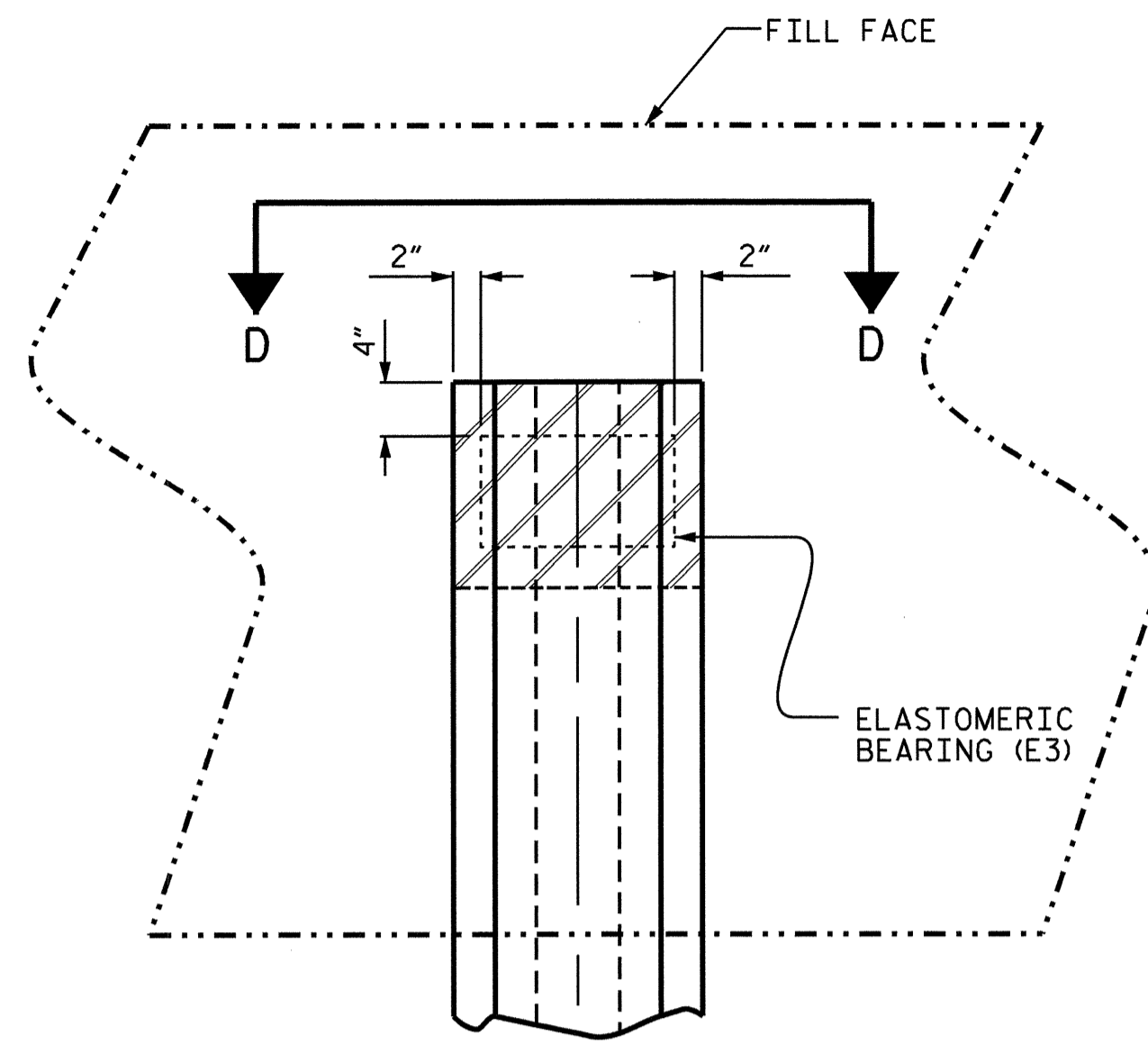
PRIOR TO WELDING, GRIND THE GALVANIZED SURFACE OF THE PORTION OF THE EMBEDDED PLATE AND SOLE PLATE THAT ARE TO BE WELDED. AFTER WELDING, DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

WHEN WELDING THE SOLE PLATE TO THE EMBEDDED PLATE IN THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

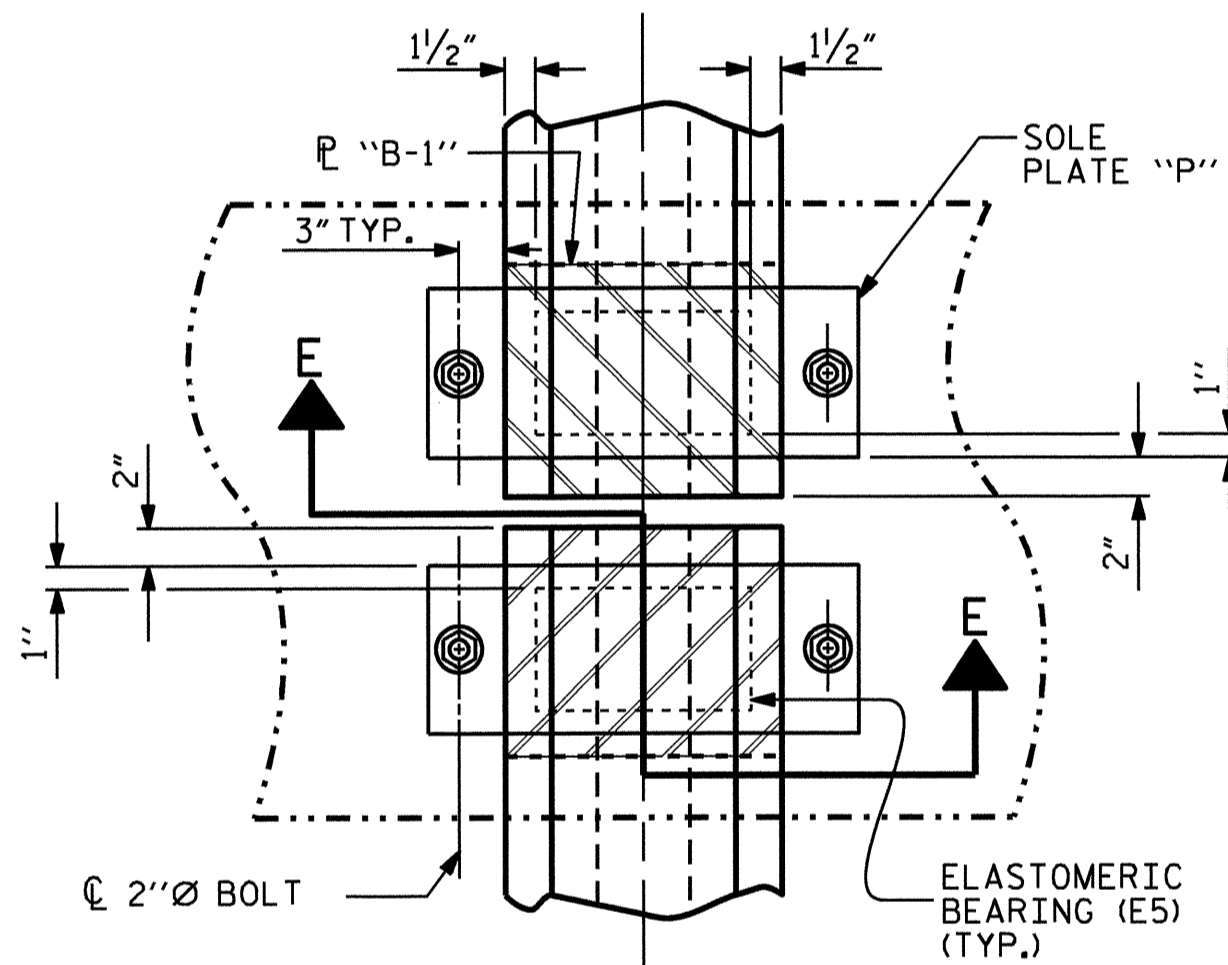
SOLE PLATE "P", BOLTS, NUTS, AND WASHERS SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

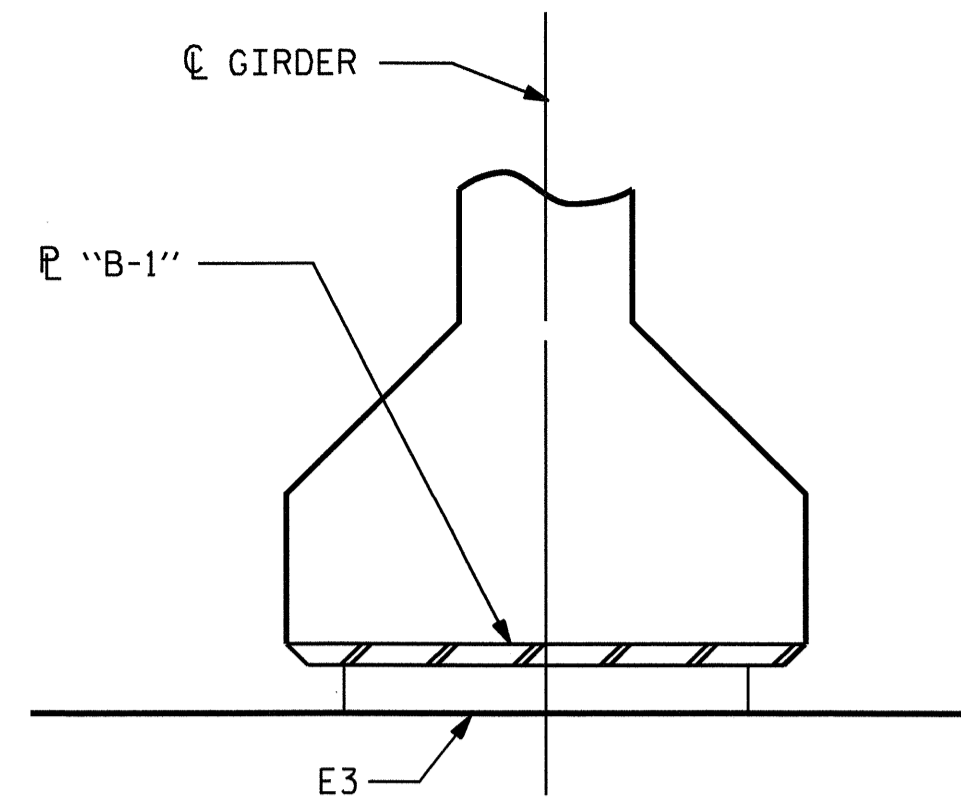
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.



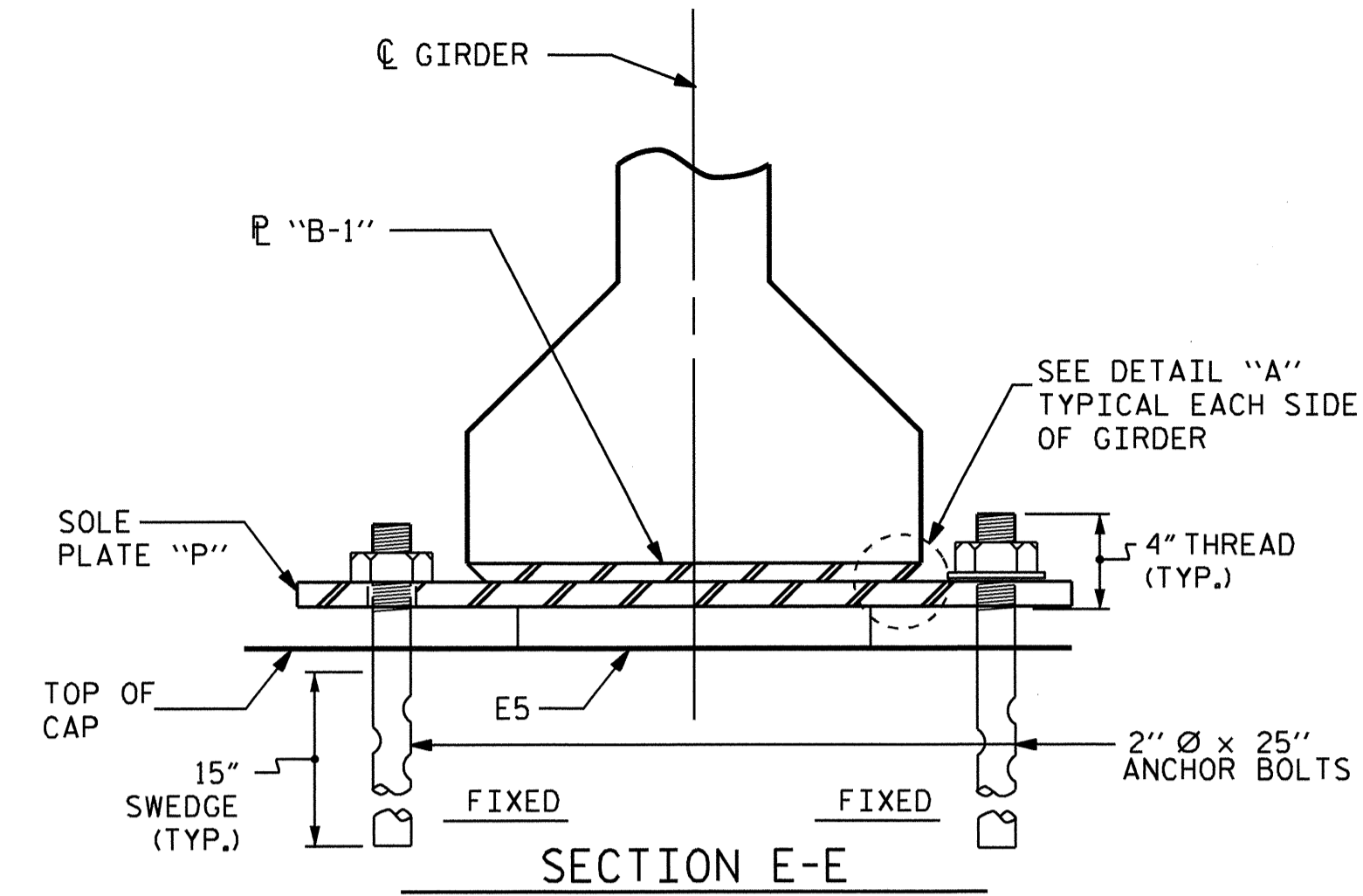
PLAN VIEW @ INTEGRAL END BENTS



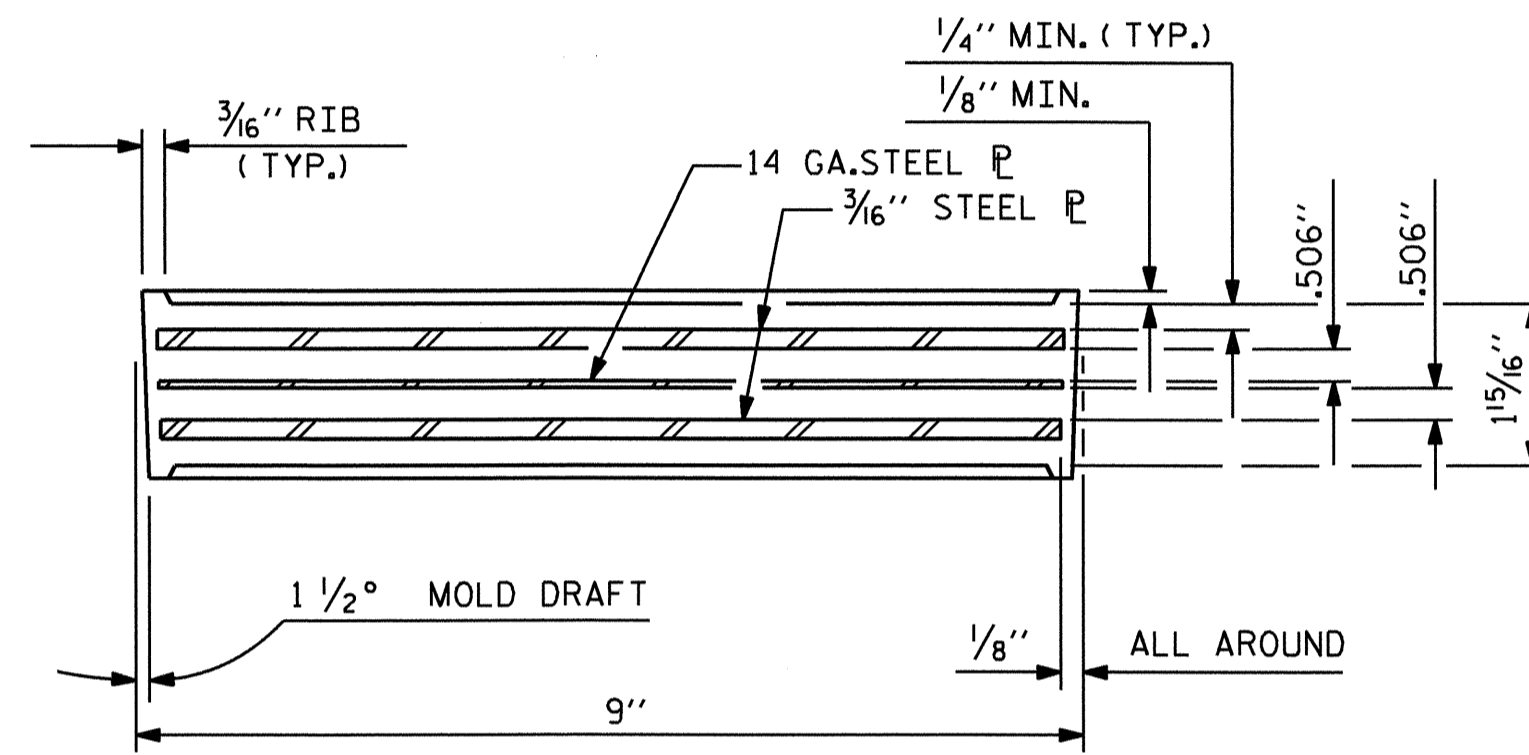
PLAN VIEW @ BENT
SHOWING CONTINUOUS BENT



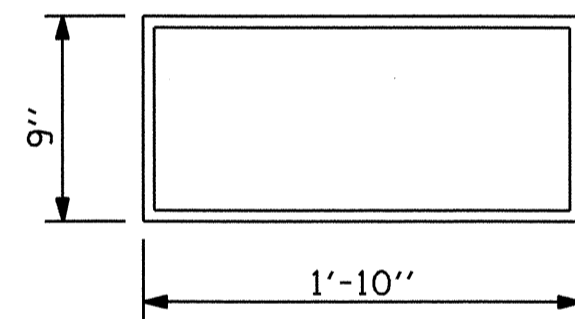
SECTION D-D



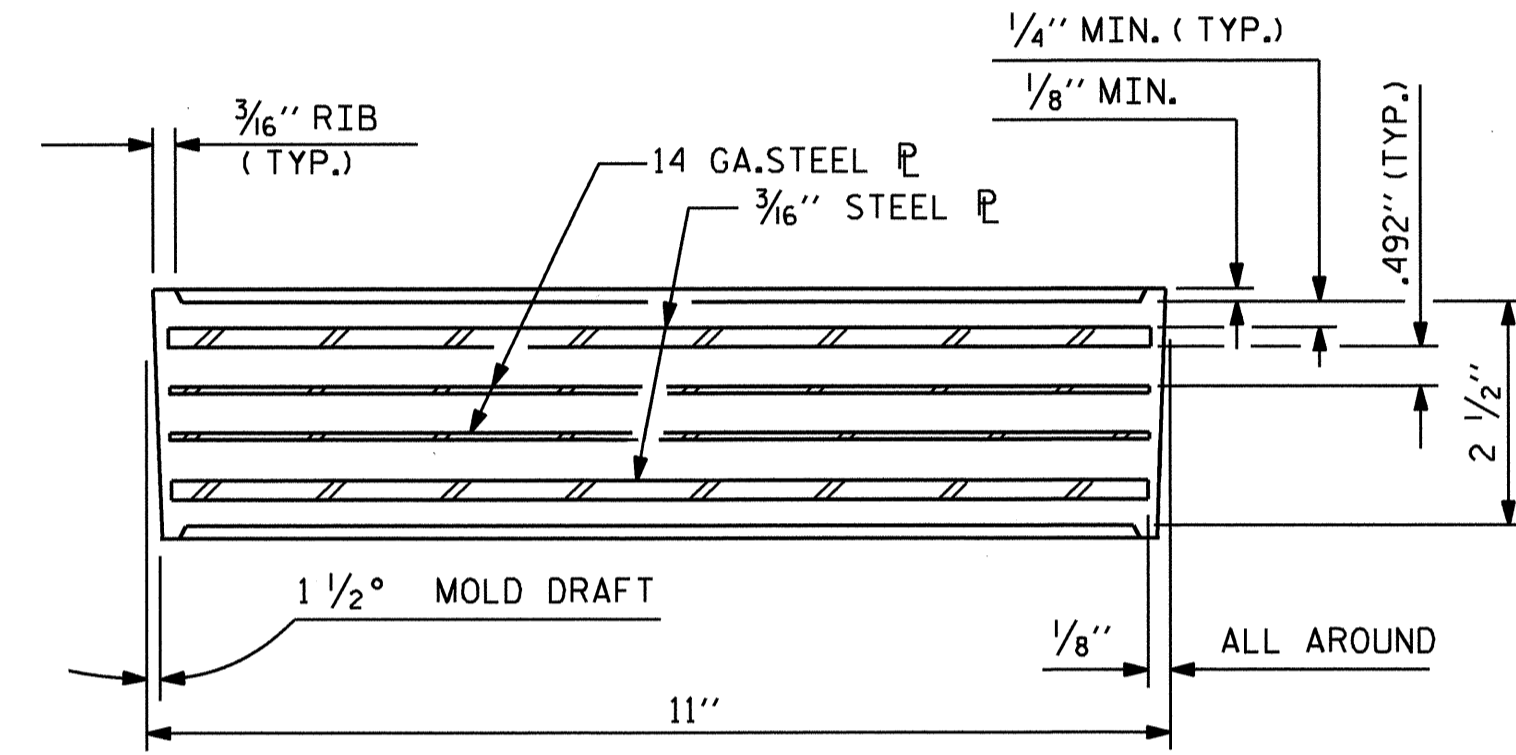
SECTION E-E



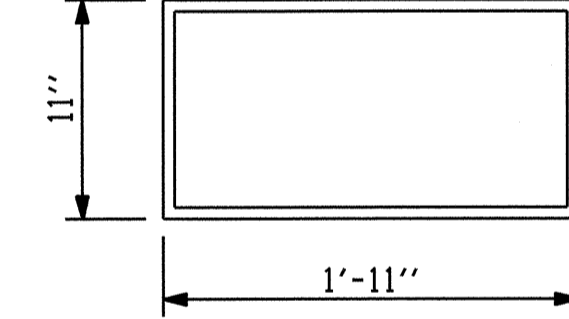
TYPICAL SECTION OF ELASTOMERIC BEARINGS



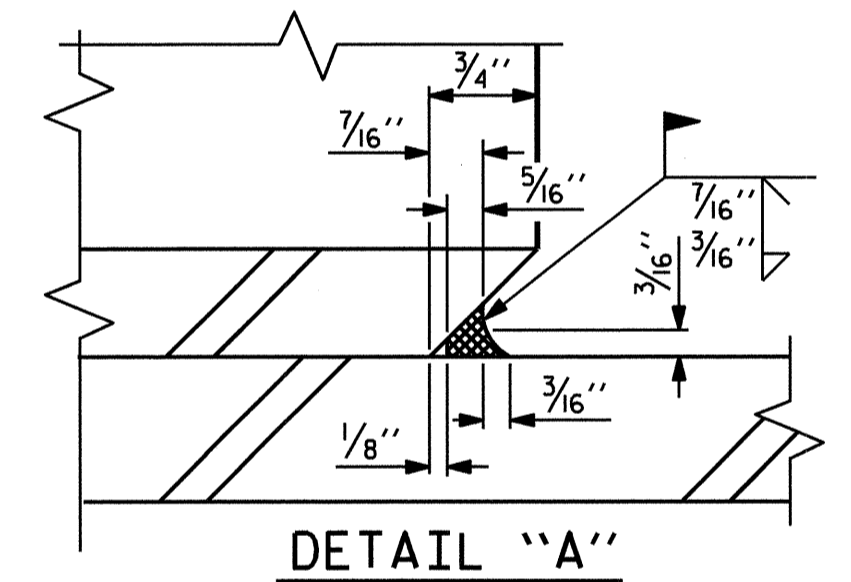
E3 (8 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE IV
(50 DUROMETER HARDNESS)



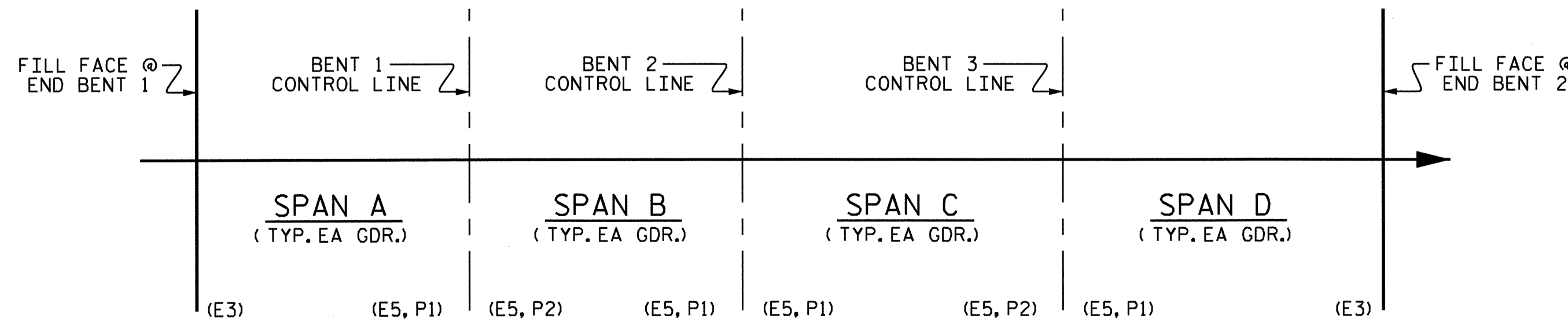
TYPICAL SECTION OF ELASTOMERIC BEARINGS



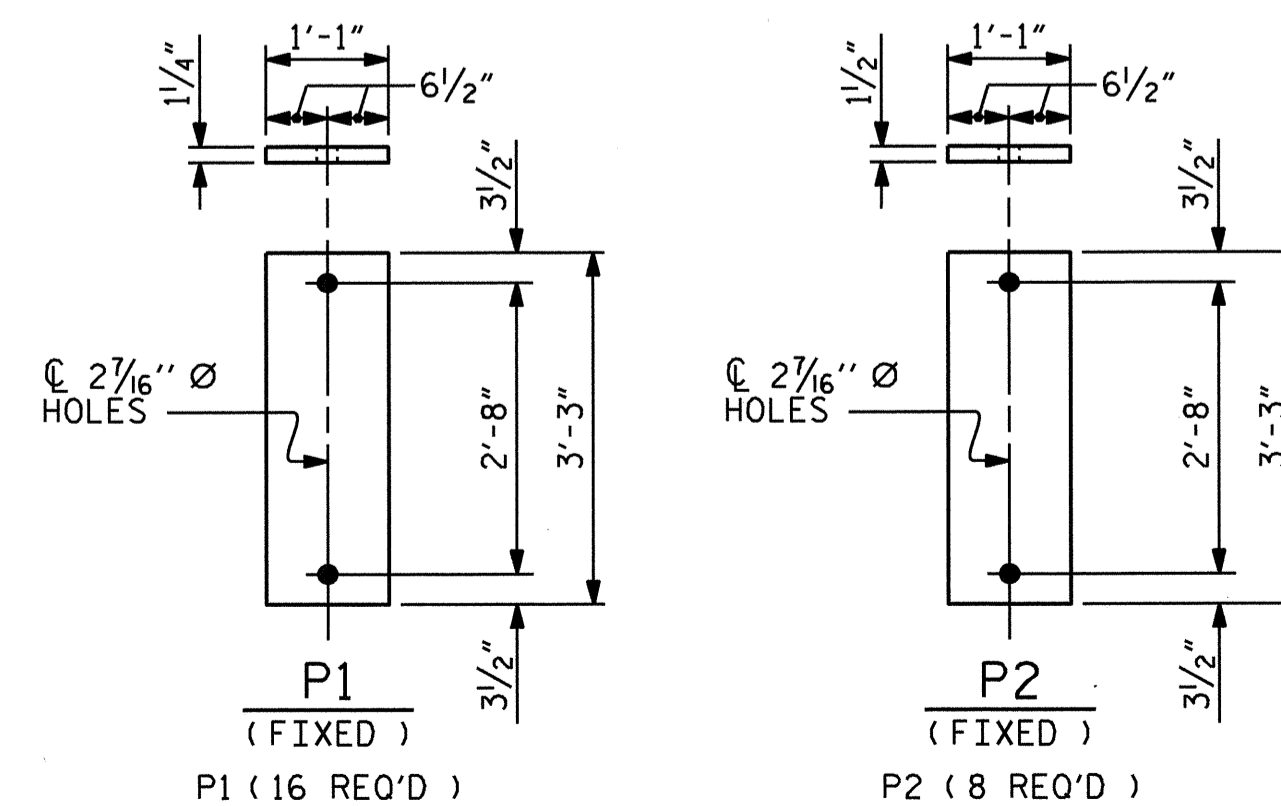
E5 (24 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE VI
(50 DUROMETER HARDNESS)



DETAIL "A"



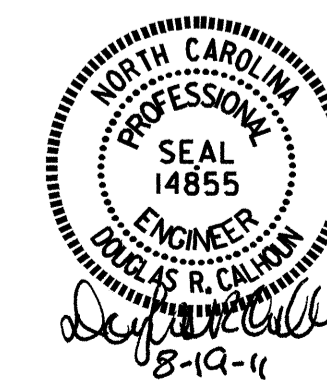
SOLE P & BEARING PAD
PLACEMENT DETAIL



SOLE PLATE DETAILS ("P")

- LOAD RATINGS -	
	MAX.D.L.+L.L.
TYPE IV	137 K
TYPE VI	211 K

ASSEMBLED BY : B.N. GRADY	DATE : 3/22/10
CHECKED BY : K.P. SEDA	DATE : 5/18/10
DRAWN BY : WJH 8/89	REV. 10/17/00 RWW/LES
CHECKED BY : CRK 8/89	REV. 7/10/01 RWW/LES
	REV. 5/1/06 TLA/GM

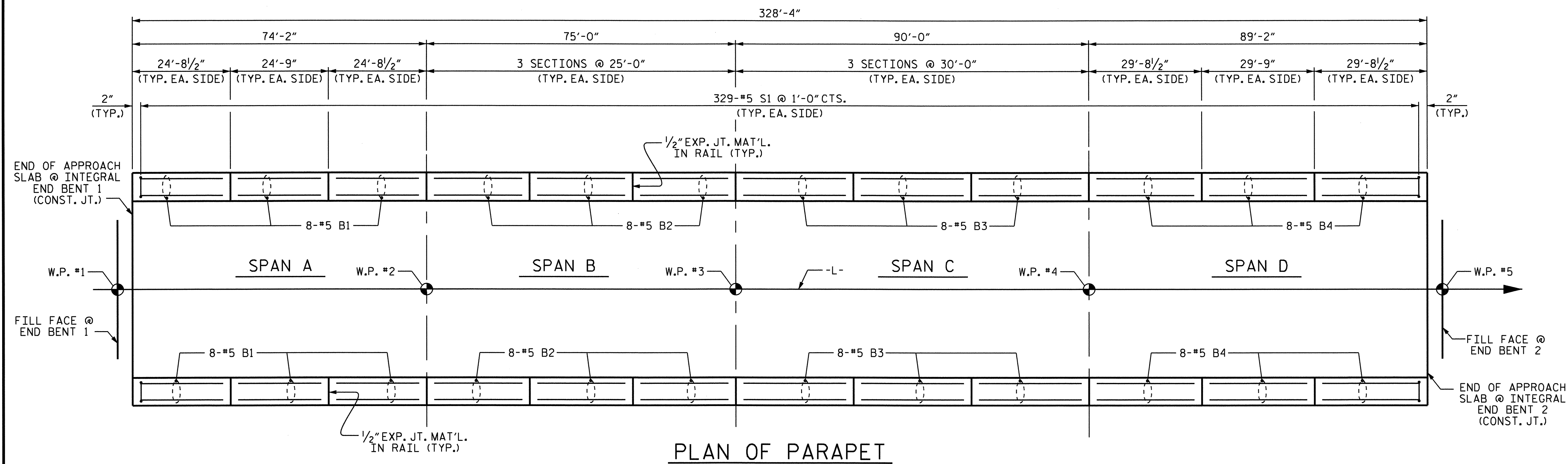


PROJECT NO. B-4211
NASH COUNTY
 STATION: 22+24.50 -L-

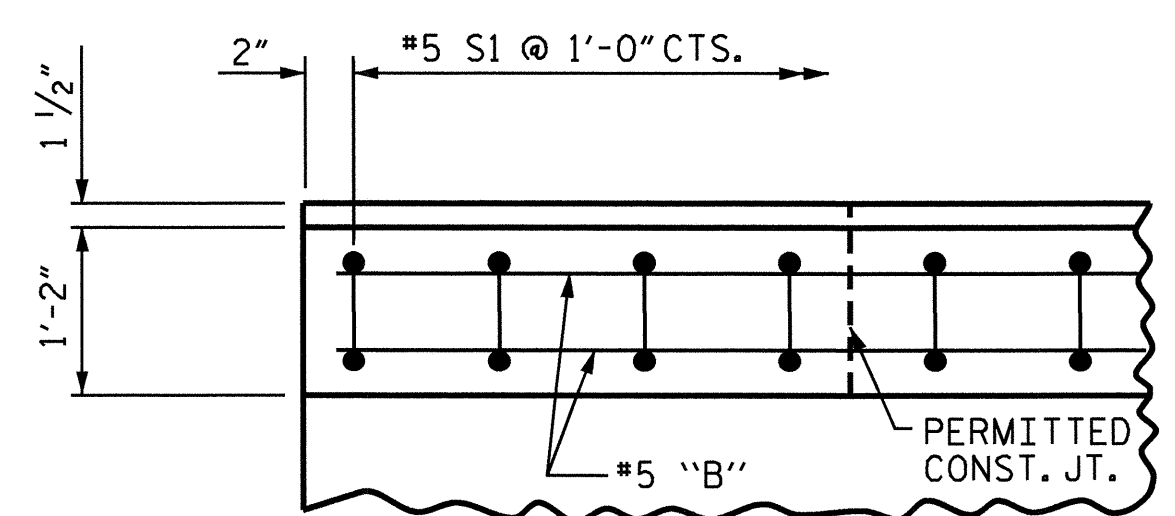
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
**ELASTOMERIC BEARING
 DETAILS**
 PRESTRESSED CONCRETE GIRDER
 SUPERSTRUCTURE

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

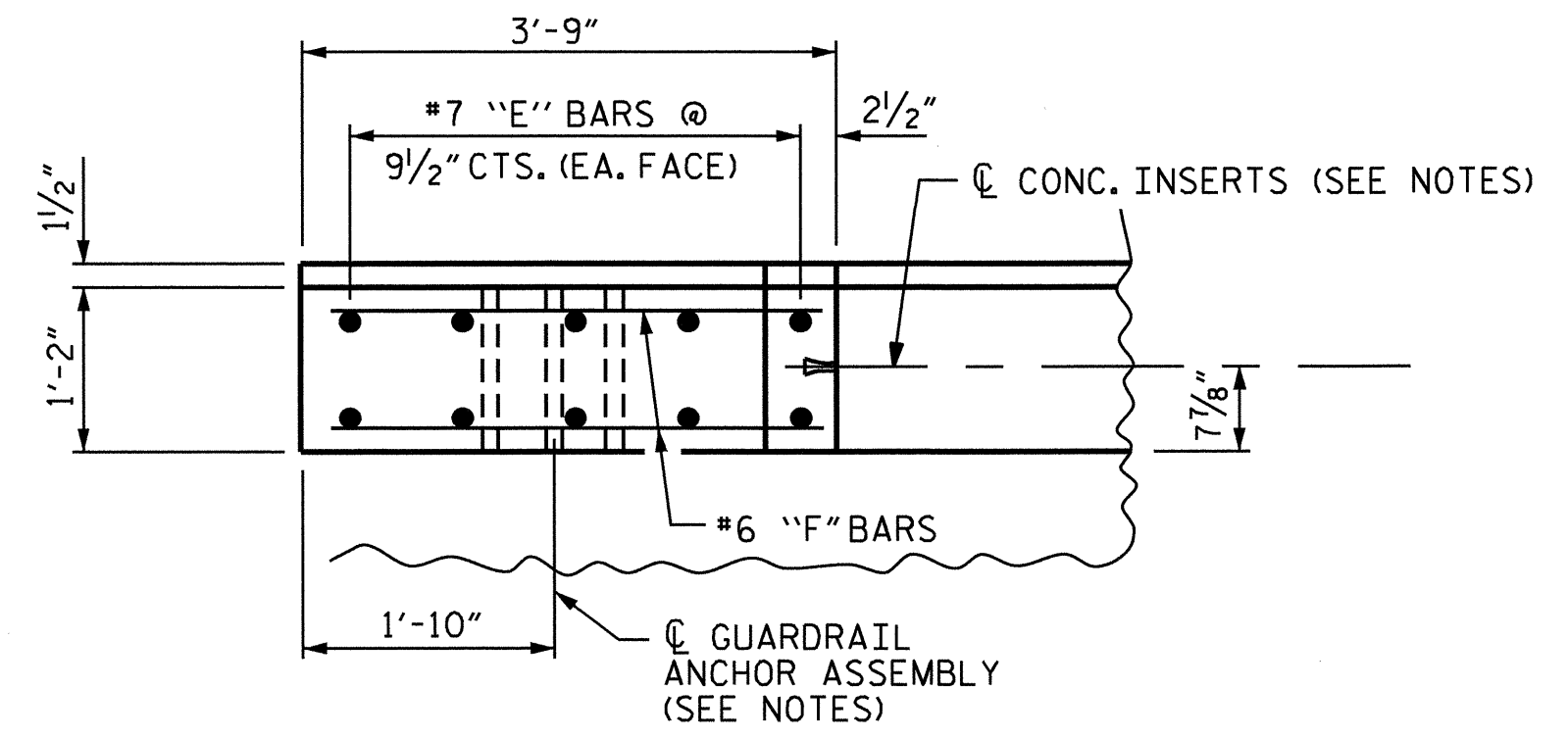
TOTAL SHEETS: 42



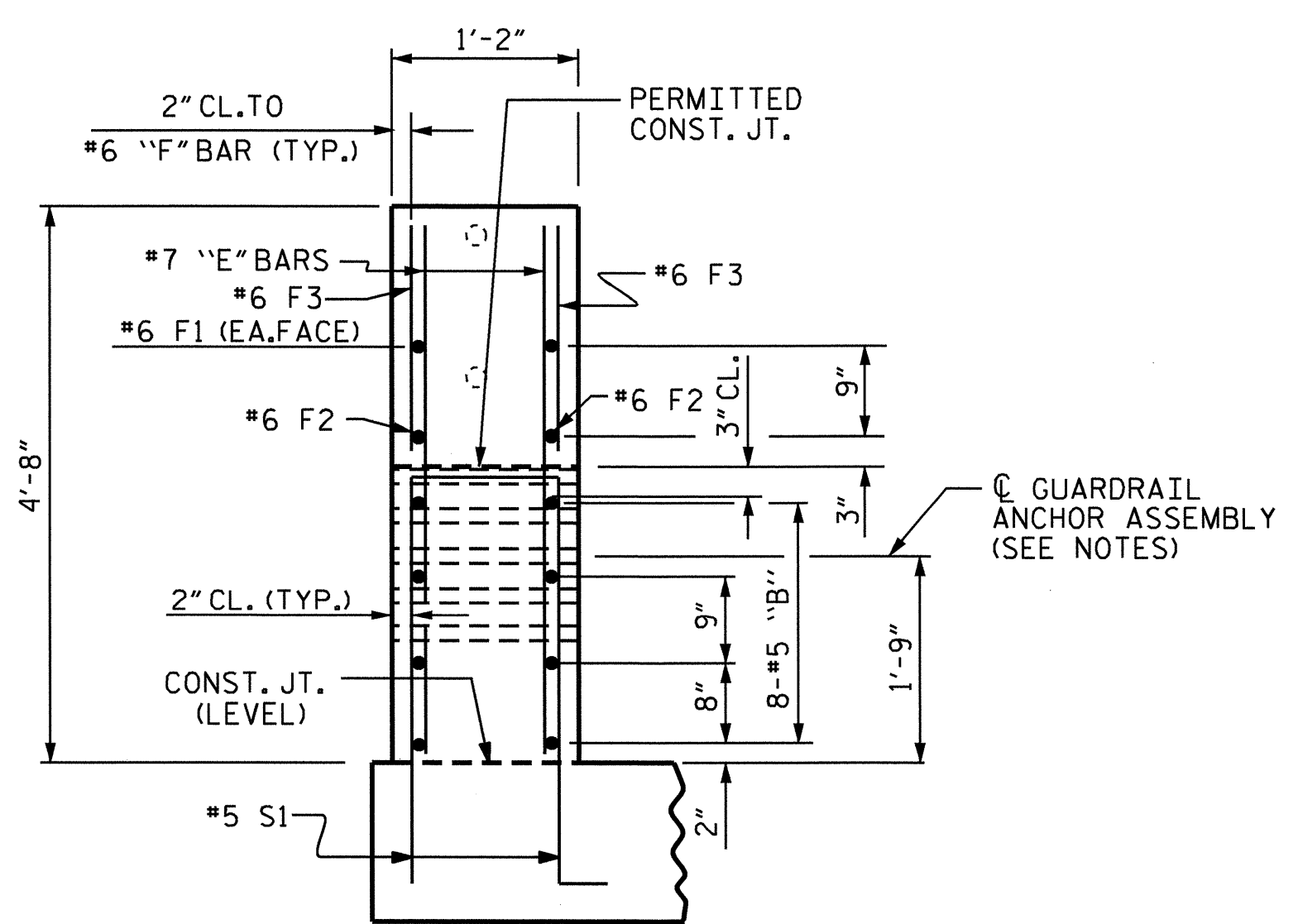
PLAN OF PARAPET



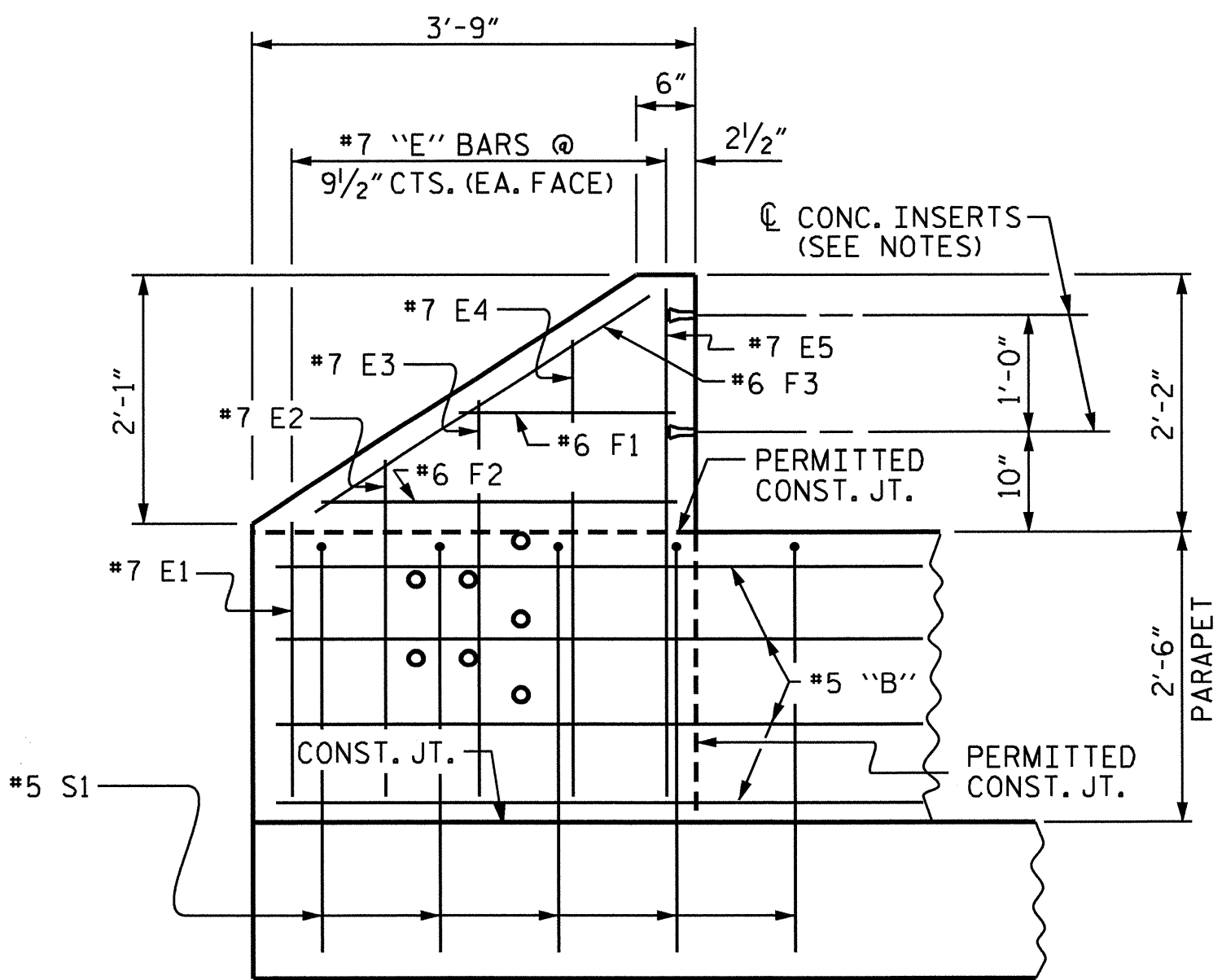
PLAN OF PARAPET



PLAN OF END POST



END VIEW

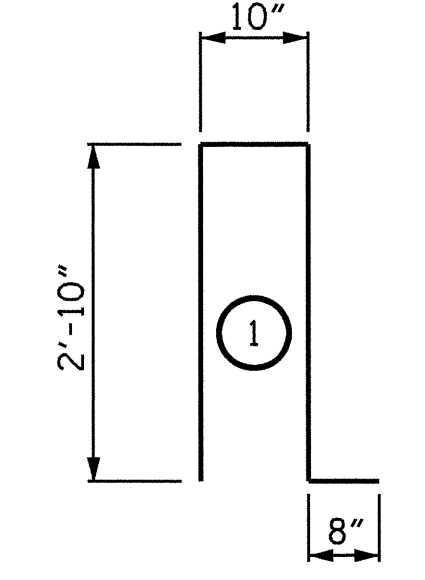


ELEVATION

PARAPET AND END POST FOR TWO BAR RAIL

BILL OF MATERIAL FOR PARAPET AND FOUR END POSTS					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	48	#5	STR	24'-4"	1218
* B2	48	#5	STR	24'-7"	1231
* B3	48	#5	STR	29'-7"	1481
* B4	48	#5	STR	29'-4"	1469
* E1	8	#7	STR	2'-6"	41
* E2	8	#7	STR	3'-0"	49
* E3	8	#7	STR	3'-6"	57
* E4	8	#7	STR	4'-0"	65
* E5	8	#7	STR	4'-4"	71
* F1	8	#6	STR	1'-9"	21
* F2	8	#6	STR	3'-0"	36
* F3	8	#6	STR	3'-4"	40
* S1	658	#5	1	7'-2"	4918
* EPOXY COATED REINFORCING STEEL 10697 LBS.					
CLASS AA CONCRETE					71.8 CU. YDS.
CONCRETE PARAPET					656.67 LIN. FT.

BAR TYPE



ALL DIMENSIONS ARE OUT TO OUT

NOTES:

- THE PARAPET IN A CONTINUOUS SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.
- ALL REINFORCING STEEL IN THE PARAPET SHALL BE EPOXY COATED.
- THE #5 S1 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN THE PARAPET.
- FOR DETAILS OF CONCRETE INSERT AND GUARDRAIL ANCHOR ASSEMBLY, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET 4 OF 5 AND "GUARDRAIL ANCHORAGE DETAILS" SHEET 5 OF 5.

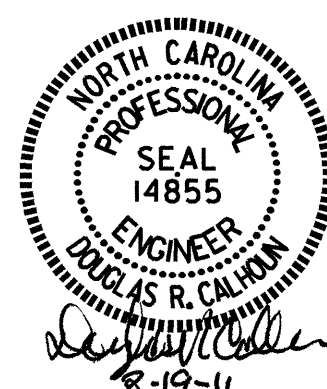
PROJECT NO. B-4211
NASH COUNTY
 STATION: 22+24.50 -L-
 SHEET 1 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 CONCRETE PARAPET
 FOR
 2 BAR METAL RAIL

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

TOTAL SHEETS: 42



DRAWN BY: B.N. GRADY DATE: 3/22/10
 CHECKED BY: K.P. SEDA DATE: 5/19/10

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NOTES

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

ALUMINUM RAILS

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

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

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

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

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

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

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

GENERAL NOTES

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

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

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

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

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

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

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

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

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

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

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

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT A SPACING OF 8 FT. TO 10 FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

PAY LENGTH = 641.67 LIN. FT.

PROJECT NO. B-4211
NASH COUNTY
 STATION: 22+24.50 -L-

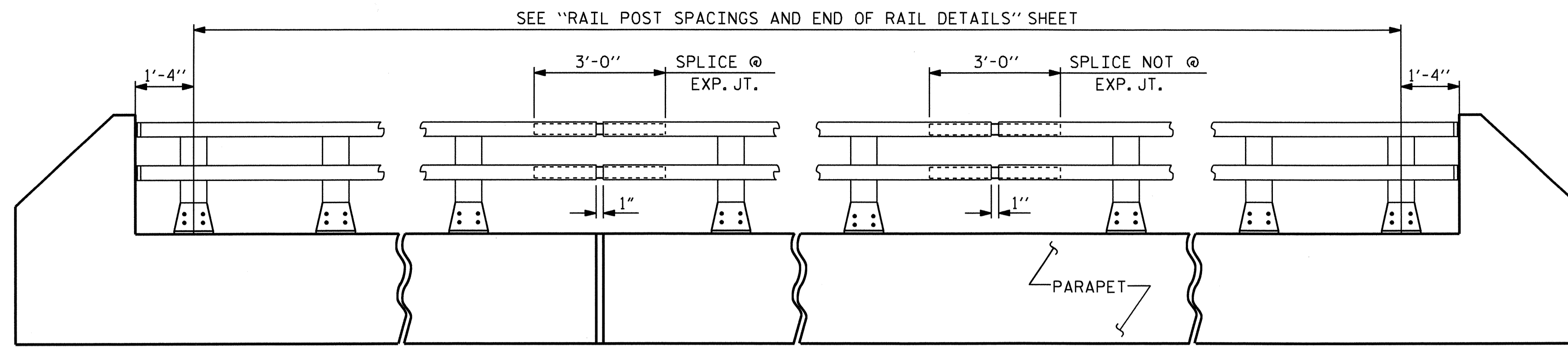
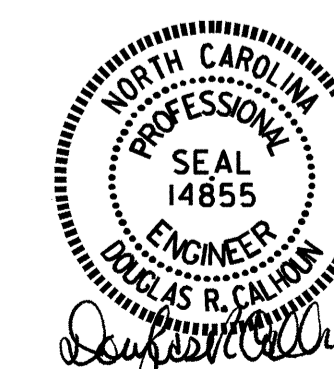
SHEET 2 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD

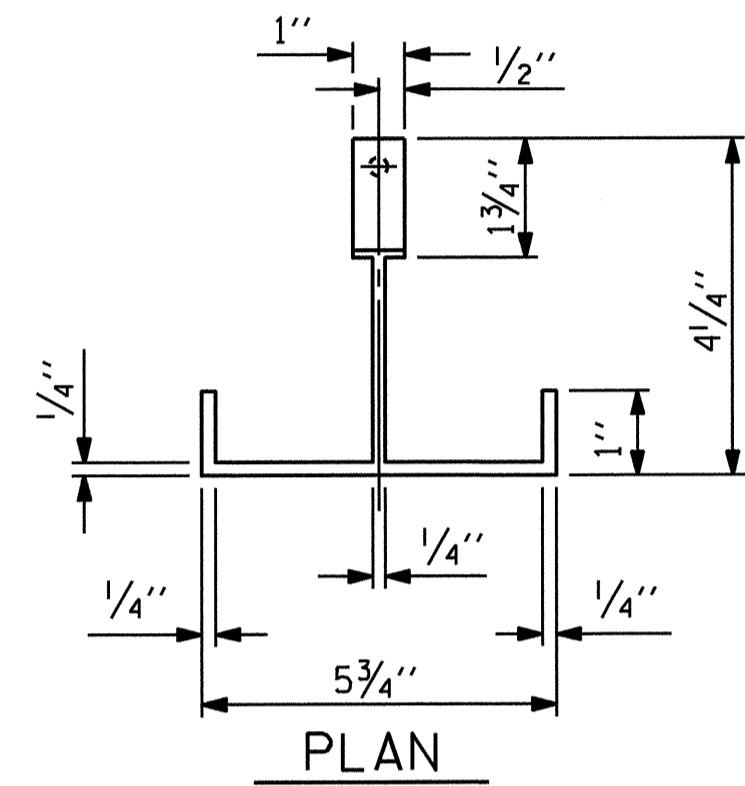
2 BAR METAL RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			42

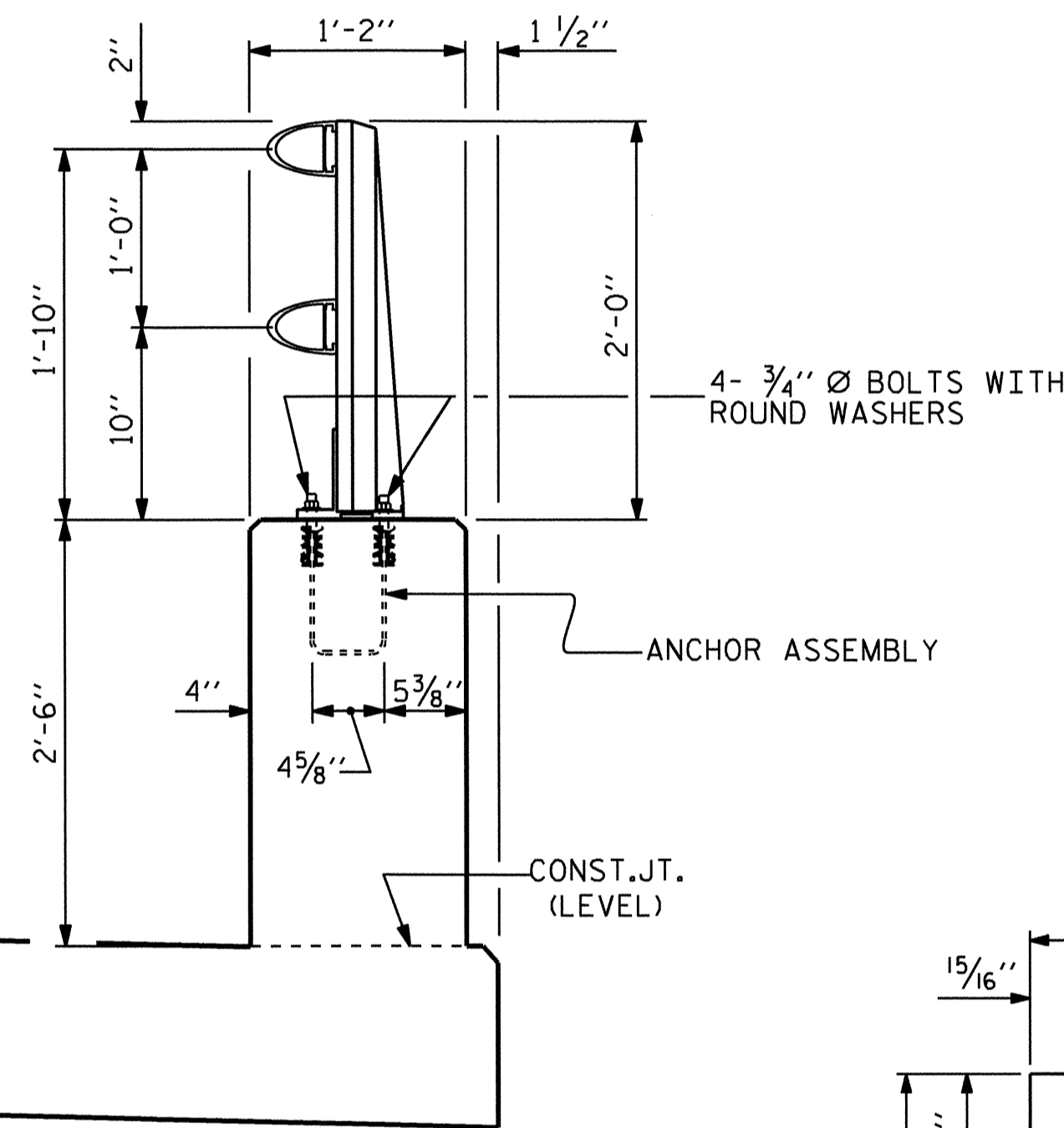


ELEVATION

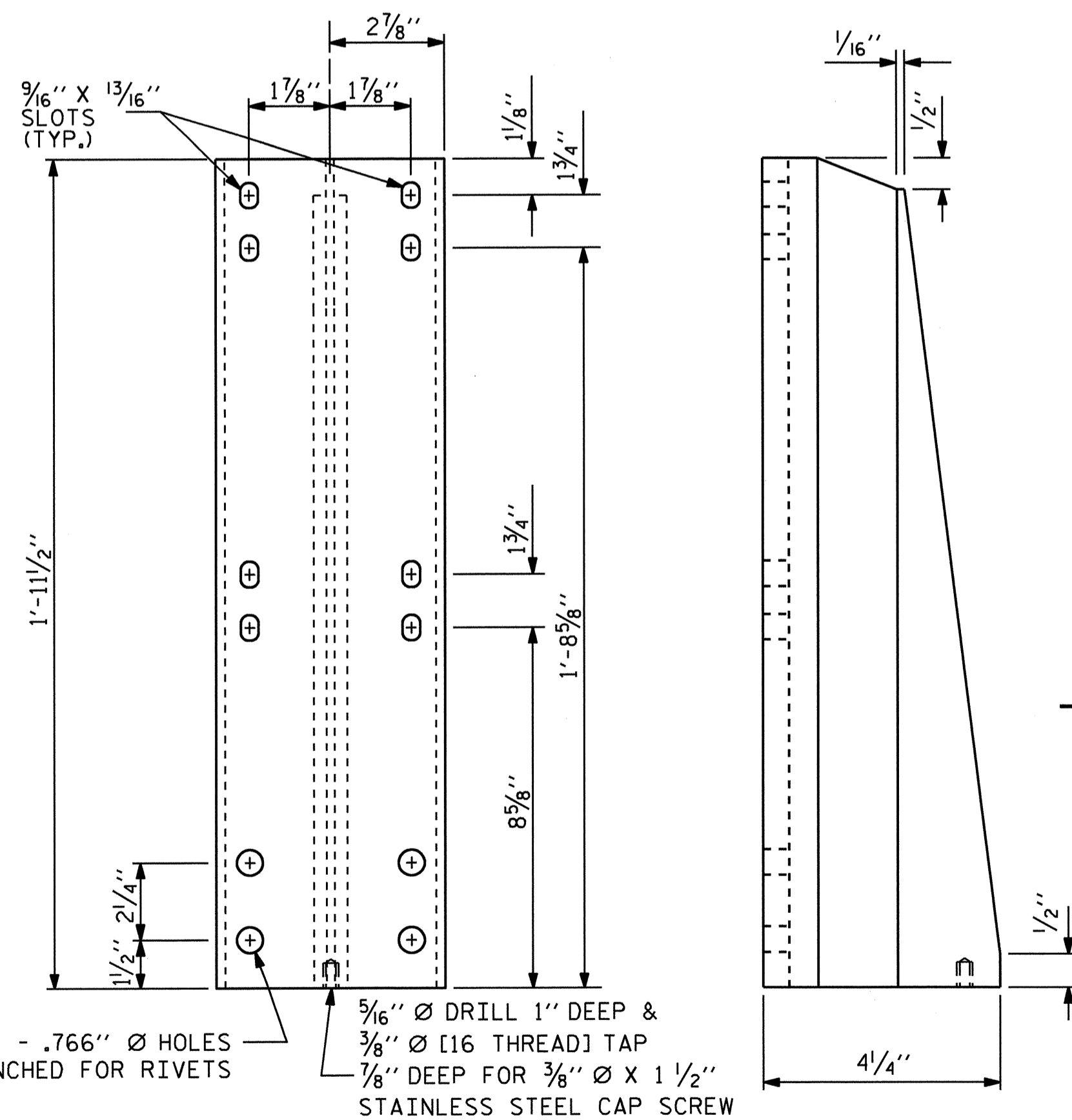
NOTE: FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2.



PLAN



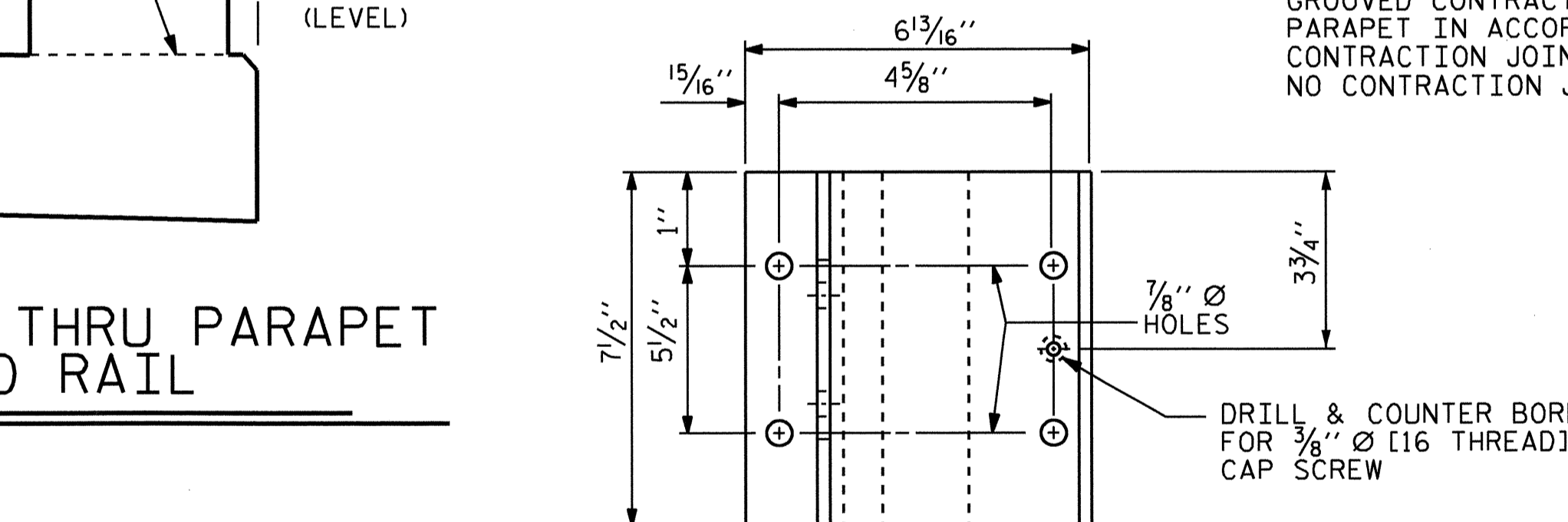
SECTION THRU PARAPET AND RAIL



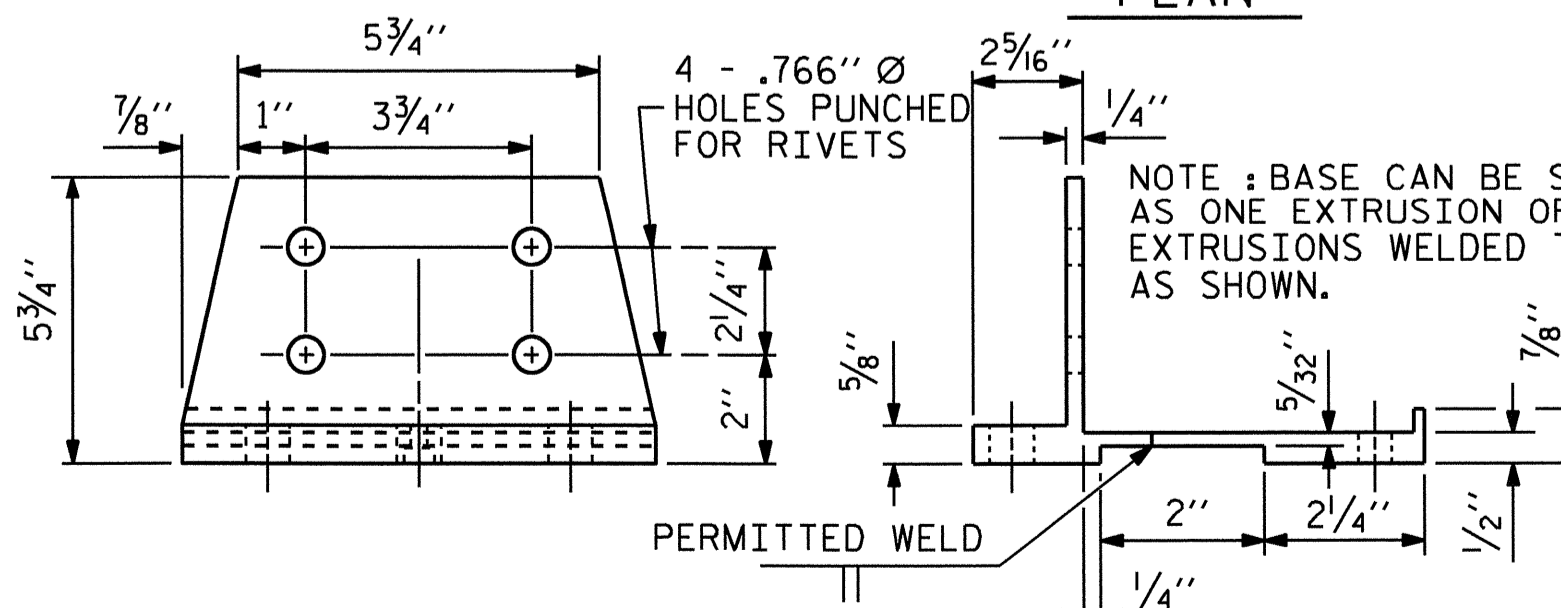
FRONT ELEVATION

SIDE ELEVATION

DETAILS OF POST



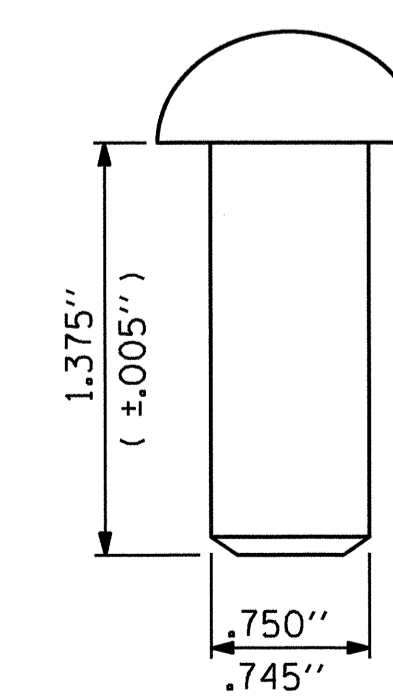
PLAN



FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS



RIVET DETAIL

ASSEMBLED BY : B.N. GRADY	DATE : 3/22/10
CHECKED BY : K.P. SEDAI	DATE : 5/19/10
DRAWN BY : EEM 6/94	REV. 10/17/00 LES/RDR
CHECKED BY : RGW 6/94	REV. 5/17/03R RWW/JTE
	REV. 5/1/06 TLA/GM

NOTES

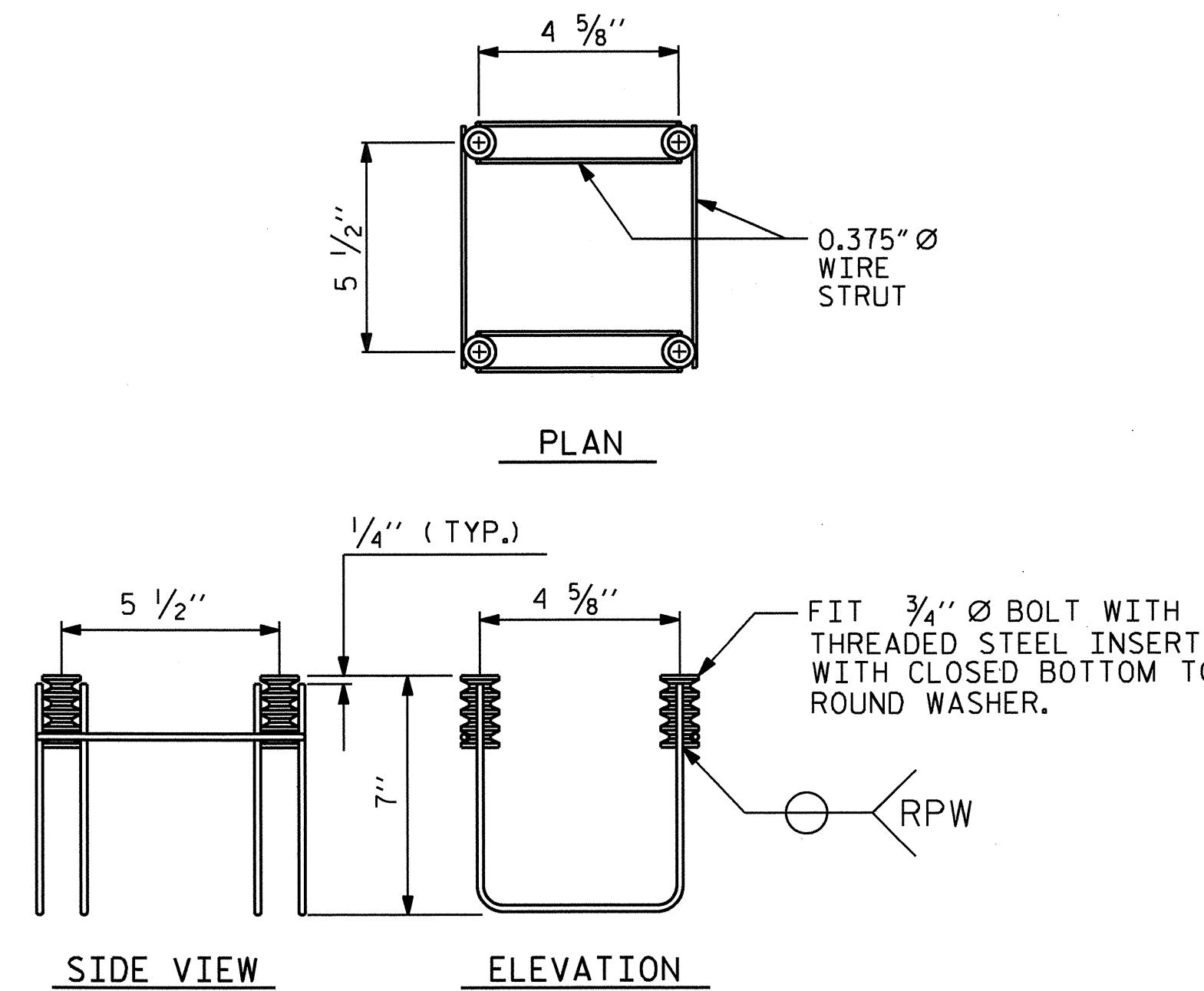
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 2 1/2" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/6" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
- E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
- F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

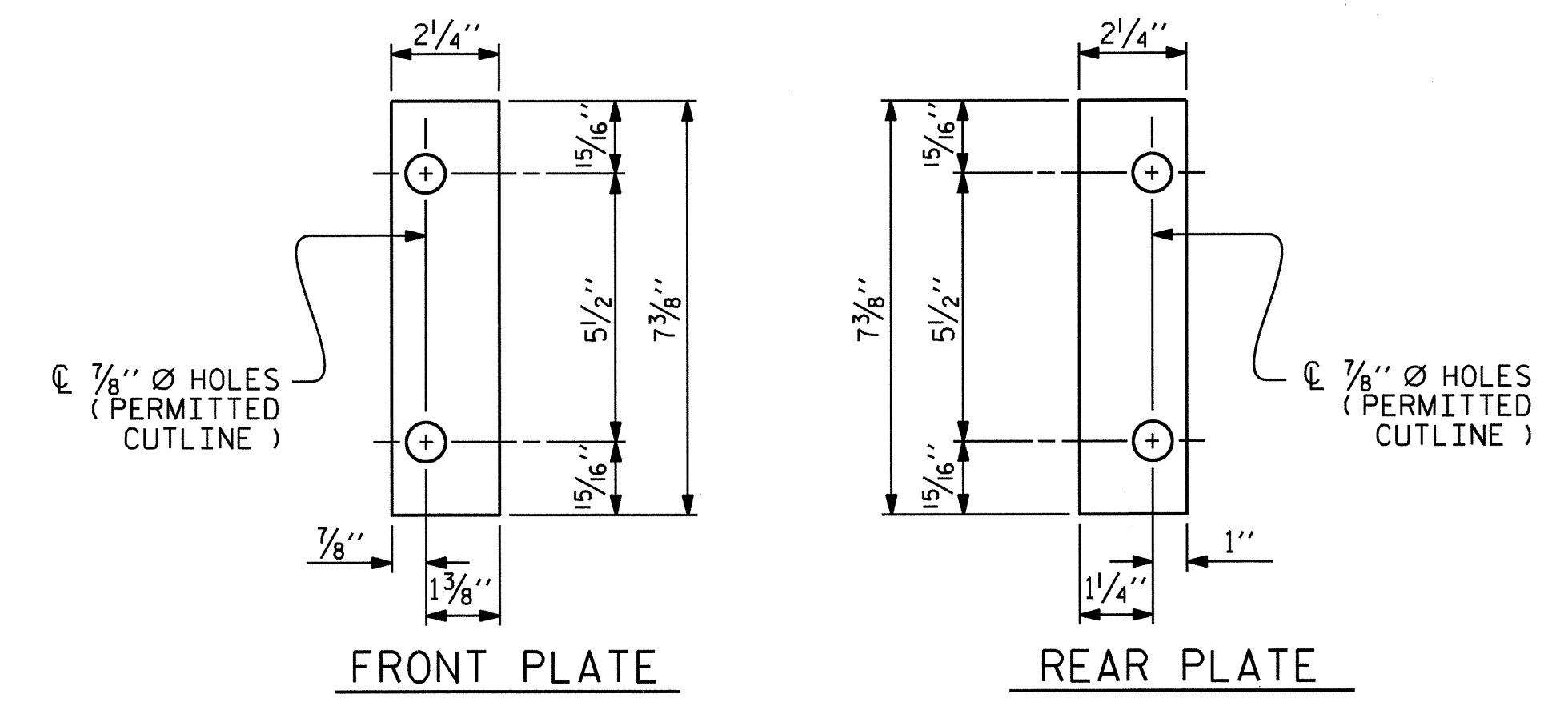
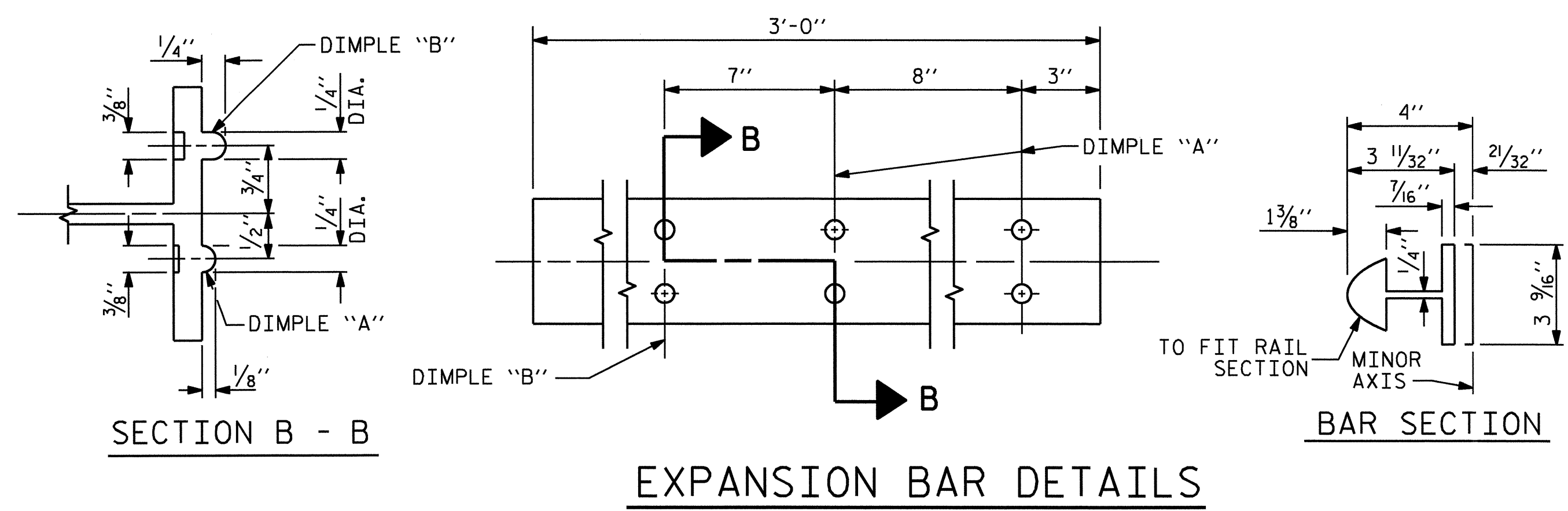
THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

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



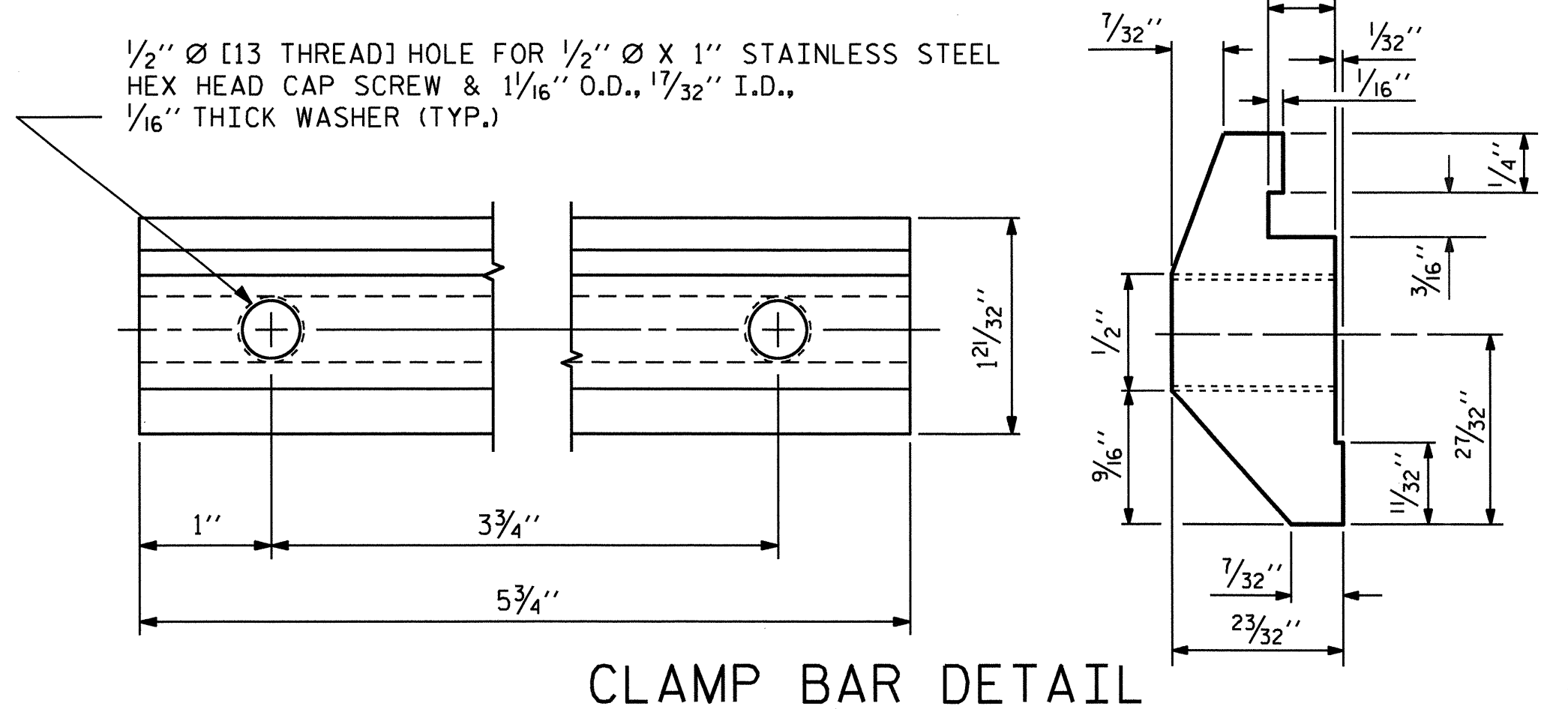
4-BOLT METAL RAIL ANCHOR ASSEMBLY

(104 ASSEMBLIES REQUIRED)



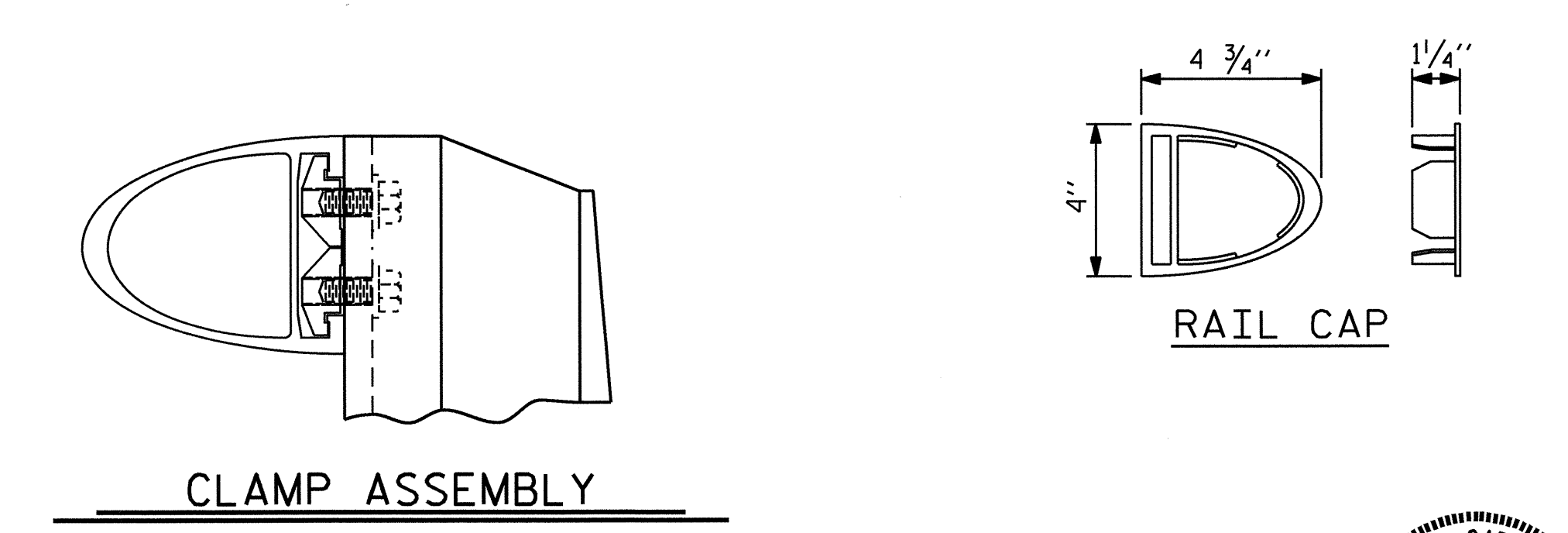
SHIM DETAILS

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



CLAMP BAR DETAIL

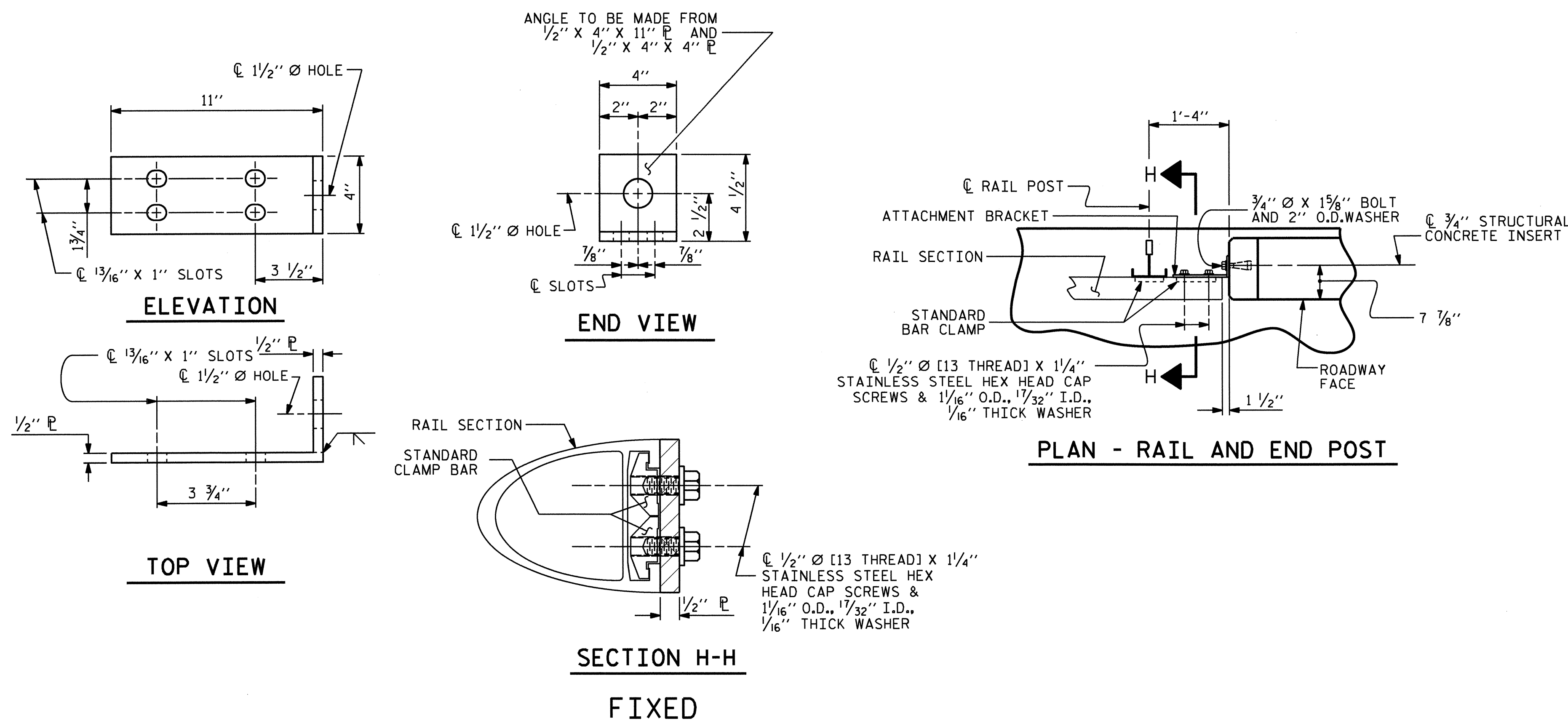
(4 REQUIRED PER POST)



PROJECT NO. B-4211
 NASH COUNTY
 STATION: 22+24.50 -L-
 SHEET 3 OF 5

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD					
2 BAR METAL RAIL					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					42

ASSEMBLED BY : B.N. GRADY	DATE : 3/22/10
CHECKED BY : K.P. SEDAI	DATE : 5/19/10
DRAWN BY : EEM 6/94	REV. 2/6/97 EEM/RGW
CHECKED BY : RGW 6/94	REV. 8/16/99 MAB/LES
	REV. 5/1/06R KMM/GM



DETAILS FOR ATTACHING METAL RAIL TO END POST

NOTES
STRUCTURAL CONCRETE INSERT

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

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

NOTES
METAL RAIL TO END POST CONNECTION

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

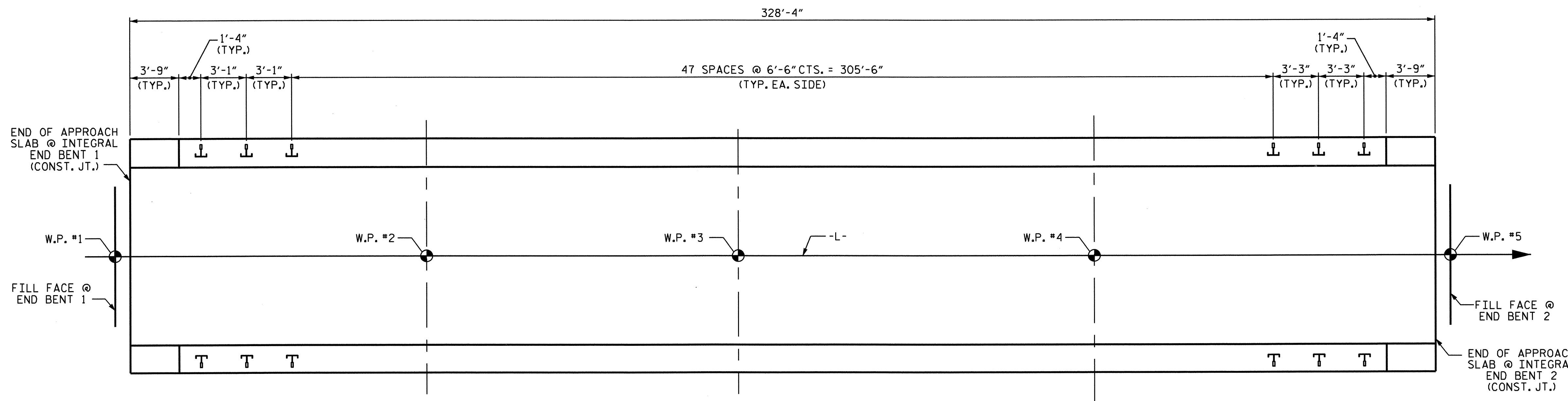
- 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 5/8" BOLT SHALL HAVE N.C. THREADS.
- CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.
- STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
- 1/2" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

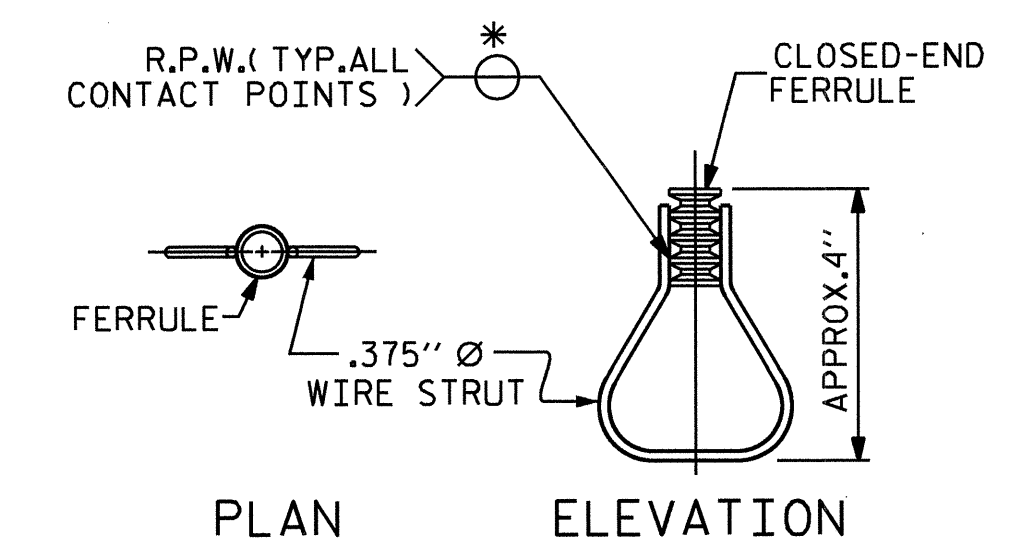
THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 5/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



PLAN OF RAIL POST SPACINGS



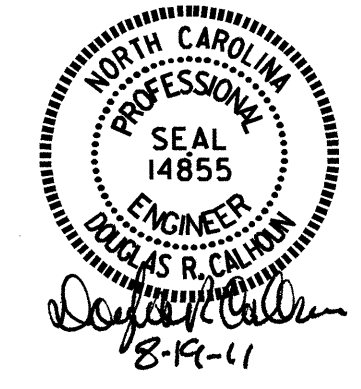
STRUCTURAL CONCRETE INSERT

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

PROJECT NO. B-4211
NASH COUNTY
 STATION: 22+24.50 -L-

SHEET 4 OF 5

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



ASSEMBLED BY : B.N. GRADY	DATE : 3/22/10
CHECKED BY : K.P. SEDAI	DATE : 5/19/10
DRAWN BY : FCJ 1/88	REV. 10/17/00 LES/RDR
CHECKED BY : CRK 3/89	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS 42
2			4			

NOTES

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

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

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

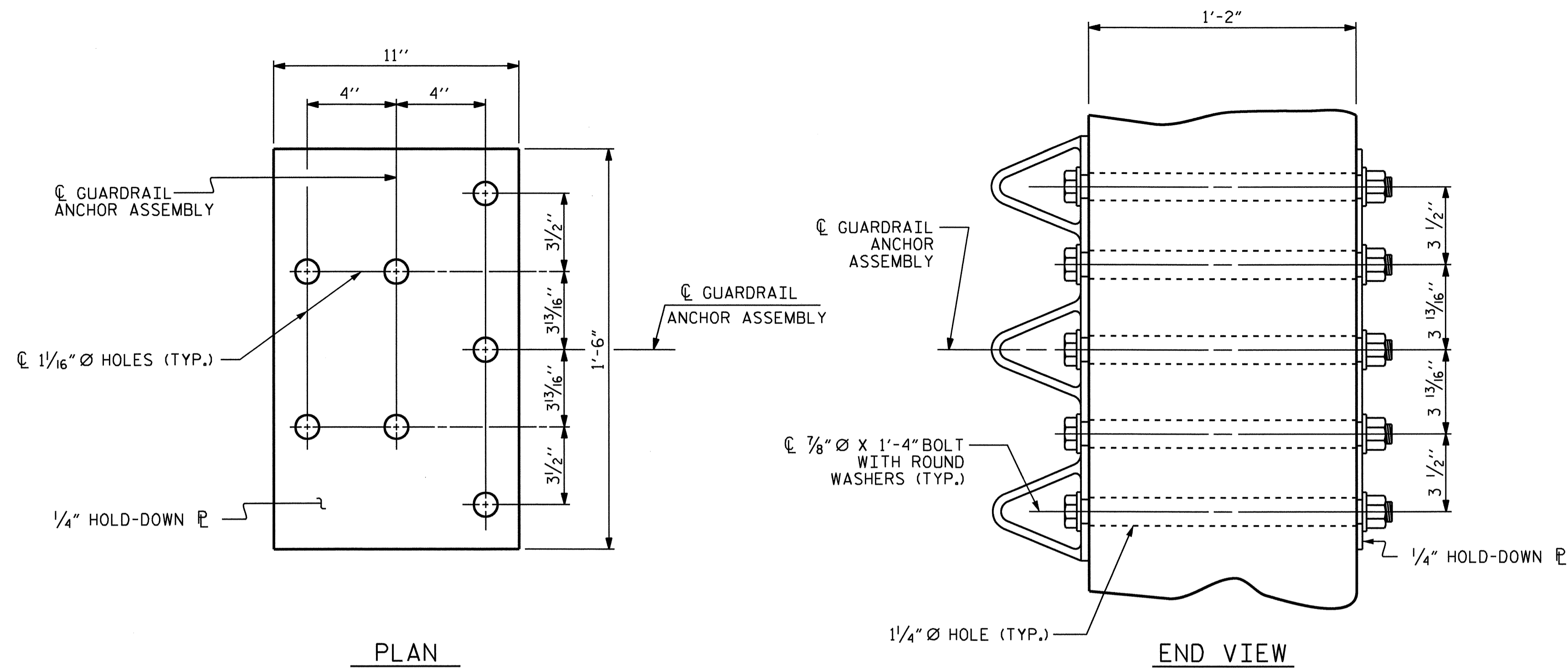
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

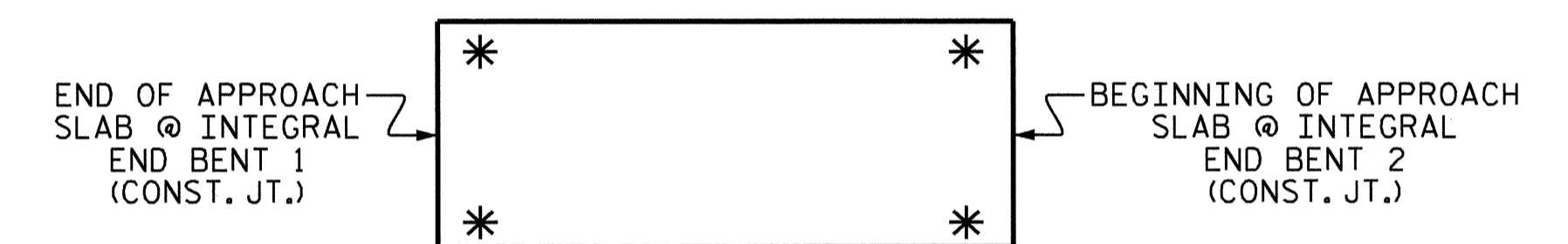
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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

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

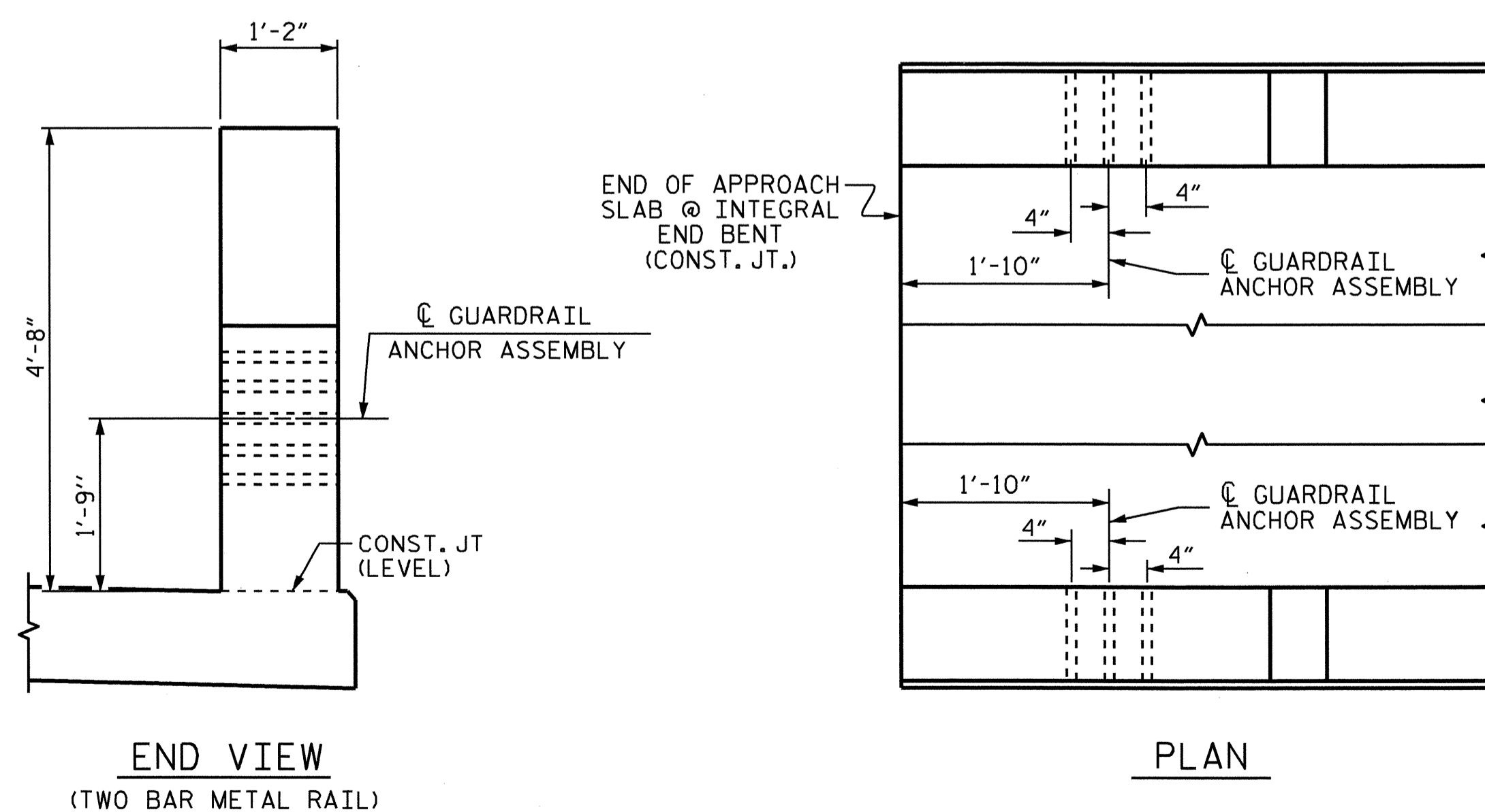


GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END POST

ASSEMBLED BY : B.N. GRADY	DATE : 3/22/10
CHECKED BY : K.P. SEDAI	DATE : 5/19/10
DRAWN BY : MAA 5/10	ADDED 5/6/10
CHECKED BY : GM 5/10	

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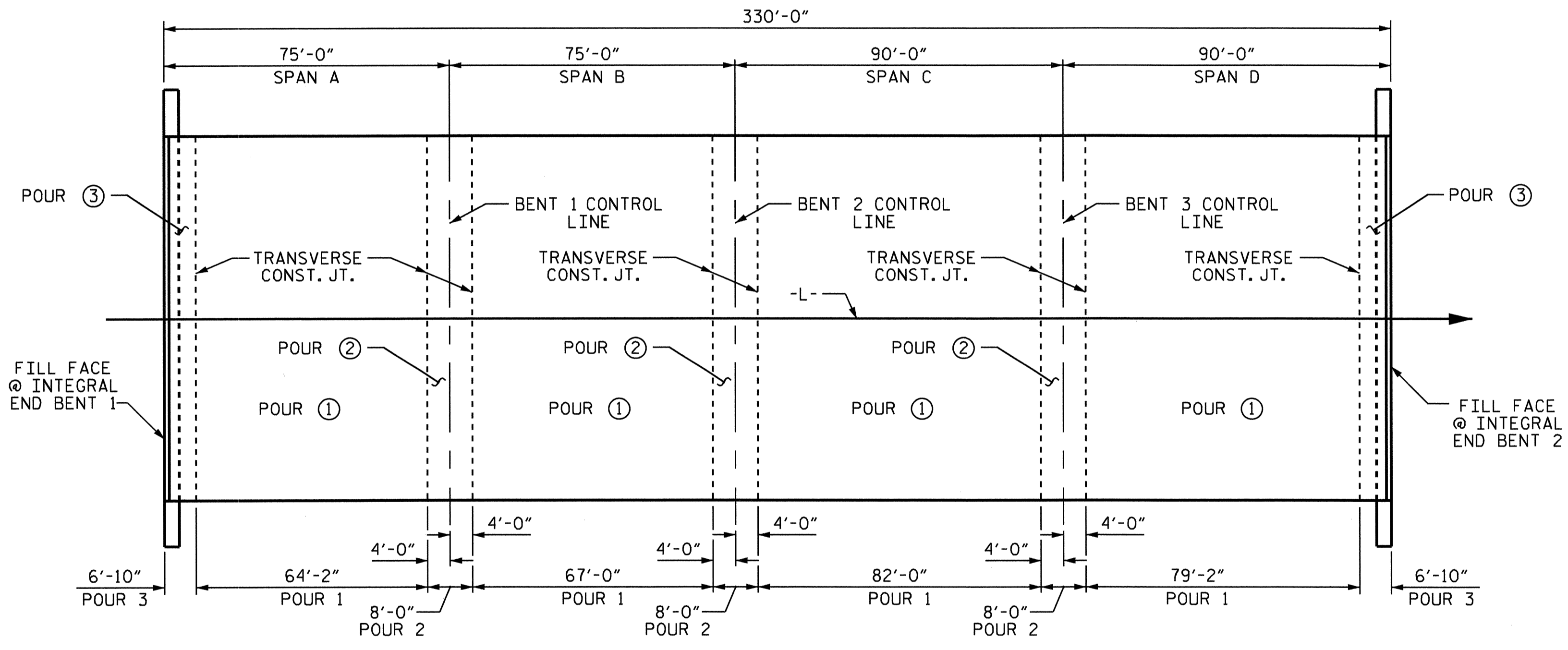
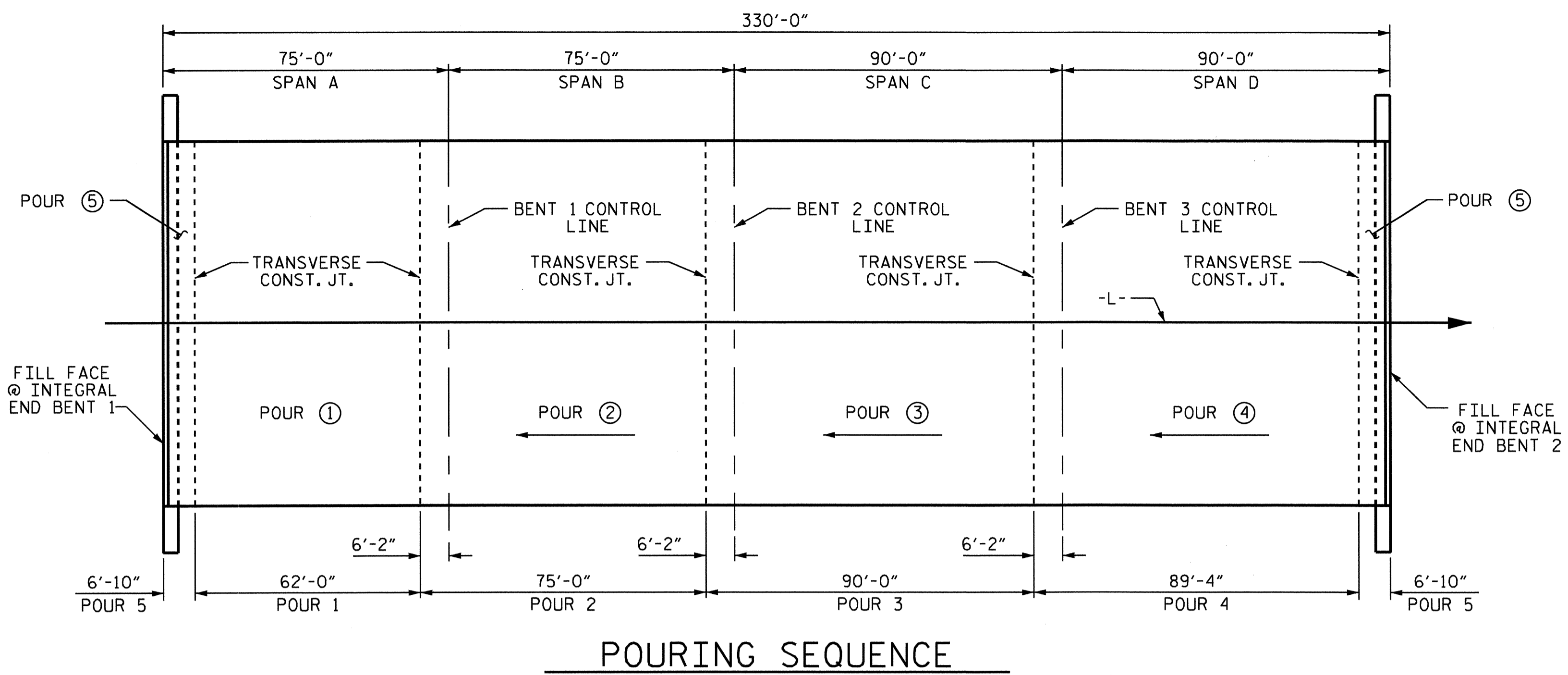


PROJECT NO. B-4211
NASH COUNTY
 STATION: 22+24.50 -L-
 SHEET 5 OF 5

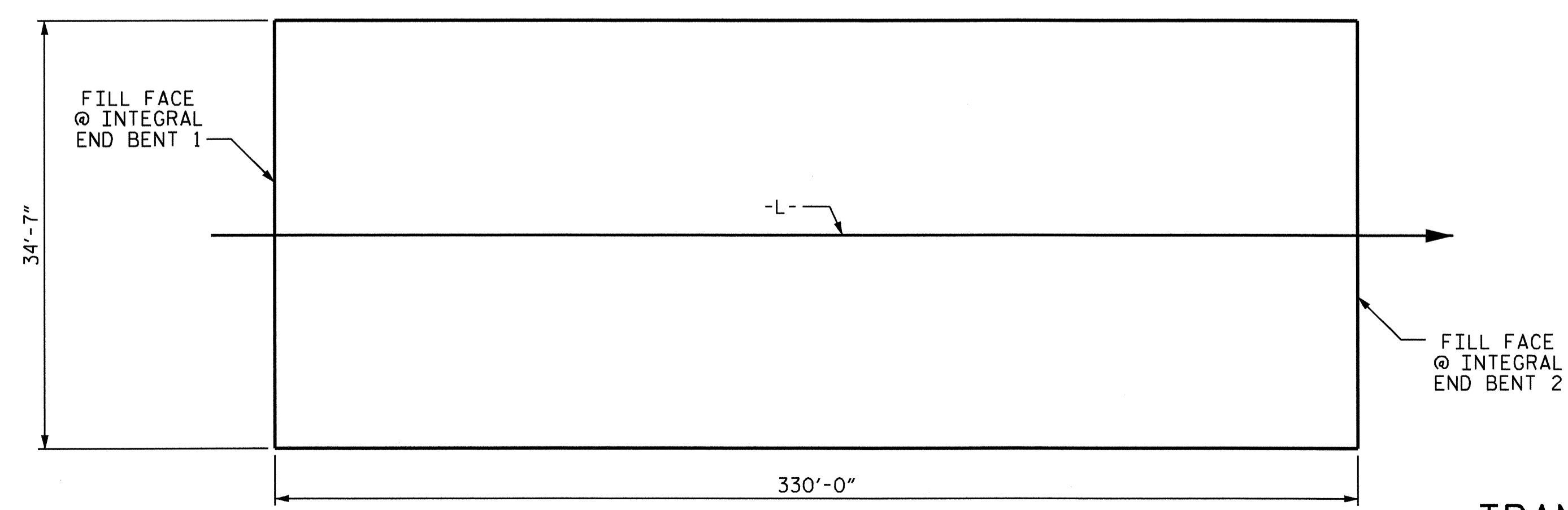
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 DETAILS
 FOR METAL RAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			42

(SHT 4) STD. NO. GRA3

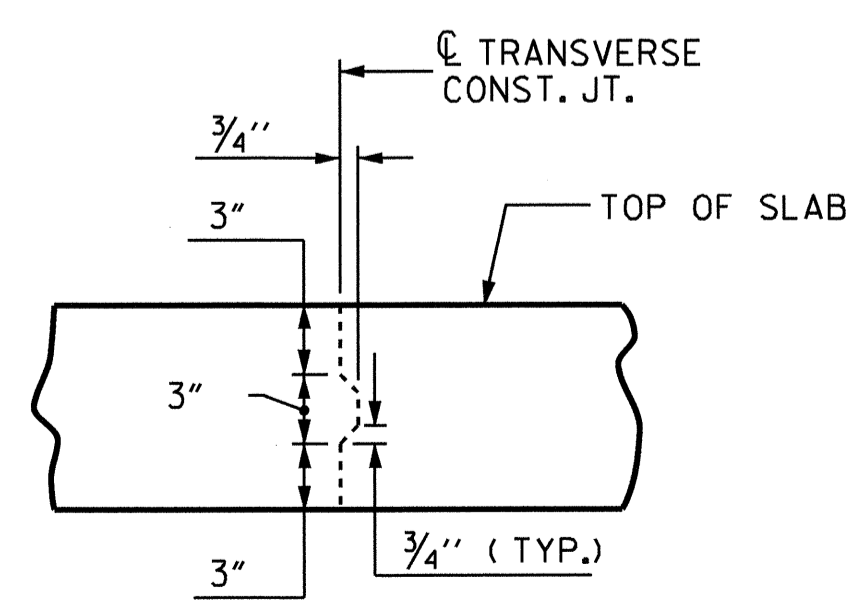


POUR 2 CANNOT BE STARTED UNTIL BOTH ADJACENT POUR 1'S REACH A MINIMUM OF 3000 PSI.



SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"	—	—	—
#8	6'-10"	4'-7"	—	—	—



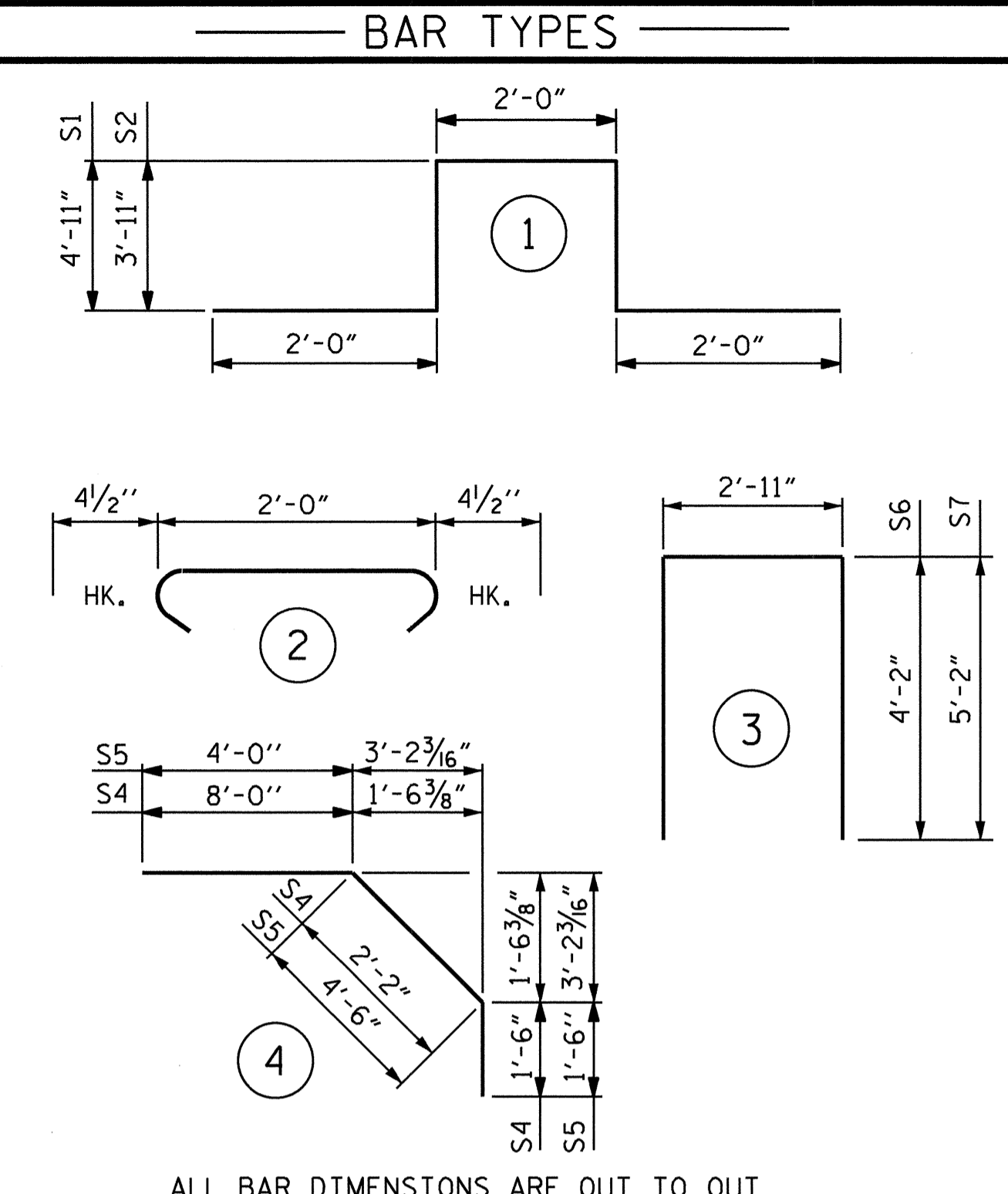
TRANSVERSE CONSTRUCTION JOINT DETAIL

NOTE: REINFORCING STEEL IN SLAB NOT SHOWN. LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT.

REINFORCING BAR SCHEDULE

SPANS A, B, C, & D

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	607	#5	STR	34'-3"	21684
A2	607	#5	STR	34'-3"	21684
*B1	52	#4	STR	25'-3"	877
*B2	42	#5	STR	15'-0"	657
*B3	26	#7	STR	55'-0"	2923
*B4	21	#7	STR	22'-6"	966
*B5	26	#4	STR	24'-0"	417
*B6	26	#7	STR	59'-6"	3162
*B7	21	#7	STR	24'-9"	1062
*B8	26	#4	STR	30'-0"	521
*B9	78	#7	STR	24'-10"	3959
*B10	21	#7	STR	27'-0"	1159
*B11	78	#4	STR	21'-0"	1094
*B12	42	#5	STR	18'-0"	789
B13	33	#5	STR	15'-0"	516
B14	33	#5	STR	18'-0"	620
B15	228	#5	STR	56'-6"	13436
K1	15	#4	STR	28'-1"	281
K2	18	#4	STR	7'-3"	87
K3	36	#4	STR	8'-3"	198
K4	18	#4	STR	7'-7"	91
K5	18	#4	STR	5'-6"	66
K6	20	#4	STR	21'-0"	281
K7	6	#4	STR	7'-3"	29
K8	18	#4	STR	7'-9"	93
K9	6	#4	STR	6'-9"	27
K10	16	#4	STR	2'-8"	29
K11	4	#4	STR	5'-3"	14
K12	8	#4	STR	5'-9"	31
K13	4	#4	STR	5'-6"	15
K14	4	#4	STR	5'-0"	13
S1	54	#4	1	15'-10"	571
S2	18	#4	1	13'-10"	166
S3	270	#4	2	2'-9"	496
*S4	60	#4	4	11'-8"	468
*S5	56	#4	4	10'-0"	374
S6	62	#4	3	11'-3"	466
S7	16	#4	3	13'-3"	142
REINFORCING STEEL =					39352 LBS
*EPOXY COATED REIN. STEEL =					40112 LBS



SUPERSTRUCTURE BILL OF MATERIAL

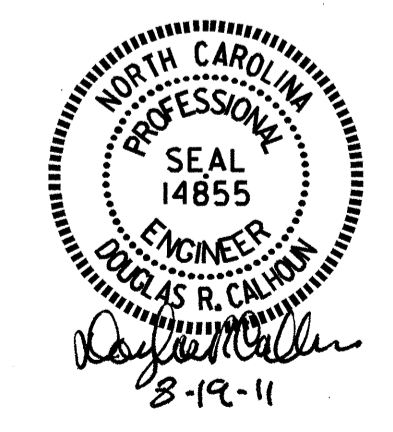
	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
POUR 1	70.5		
POUR 2	95.7		
POUR 3	112.7		
POUR 4	112.0		
POUR 5	▲ 63.9		
TOTALS**	454.8	39352	40112

** QUANTITIES FOR PARAPET AND END POSTS ARE NOT INCLUDED
▲ CONCRETE IN THE UPPER WINGS OF END BENTS IS INCLUDED IN POUR 5.

GROOVING BRIDGE FLOORS

BRIDGE DECK	9512 SQ.FT.
APPROACH SLABS	1300 SQ.FT.
TOTAL	10812 SQ.FT.

PROJECT NO. B-4211
NASH COUNTY
STATION: 22+24.50 -L-



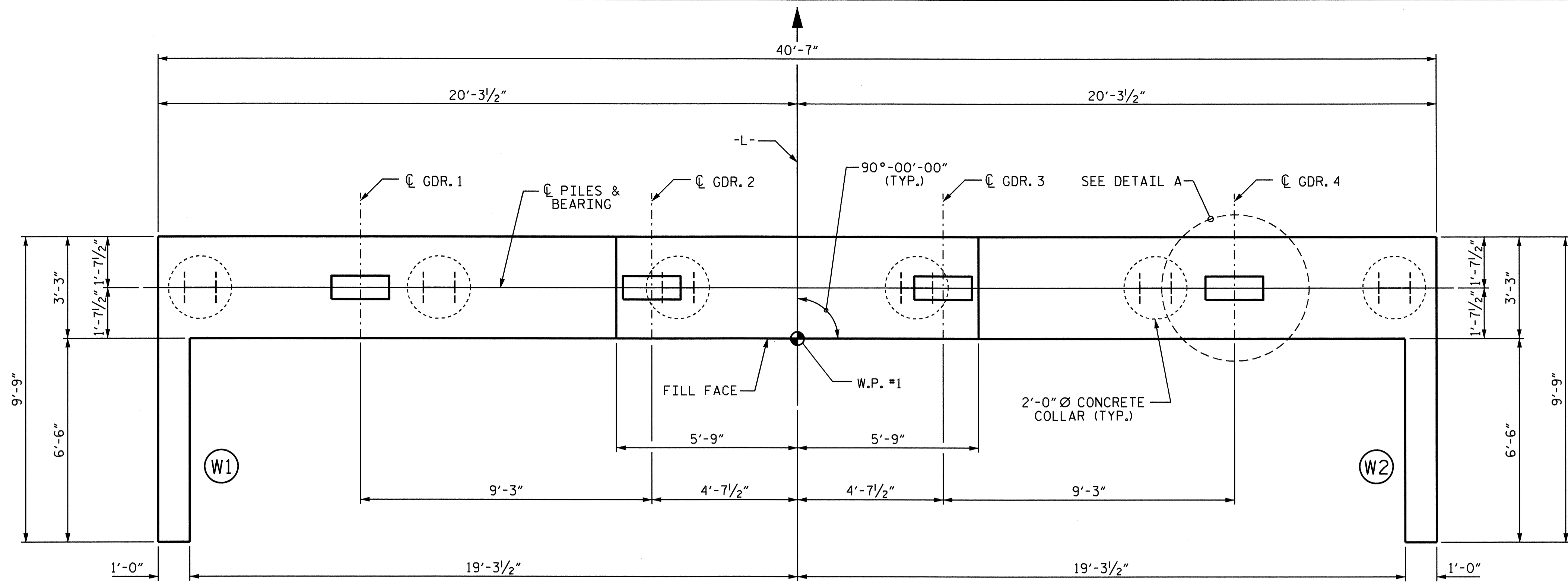
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE BILL OF MATERIAL

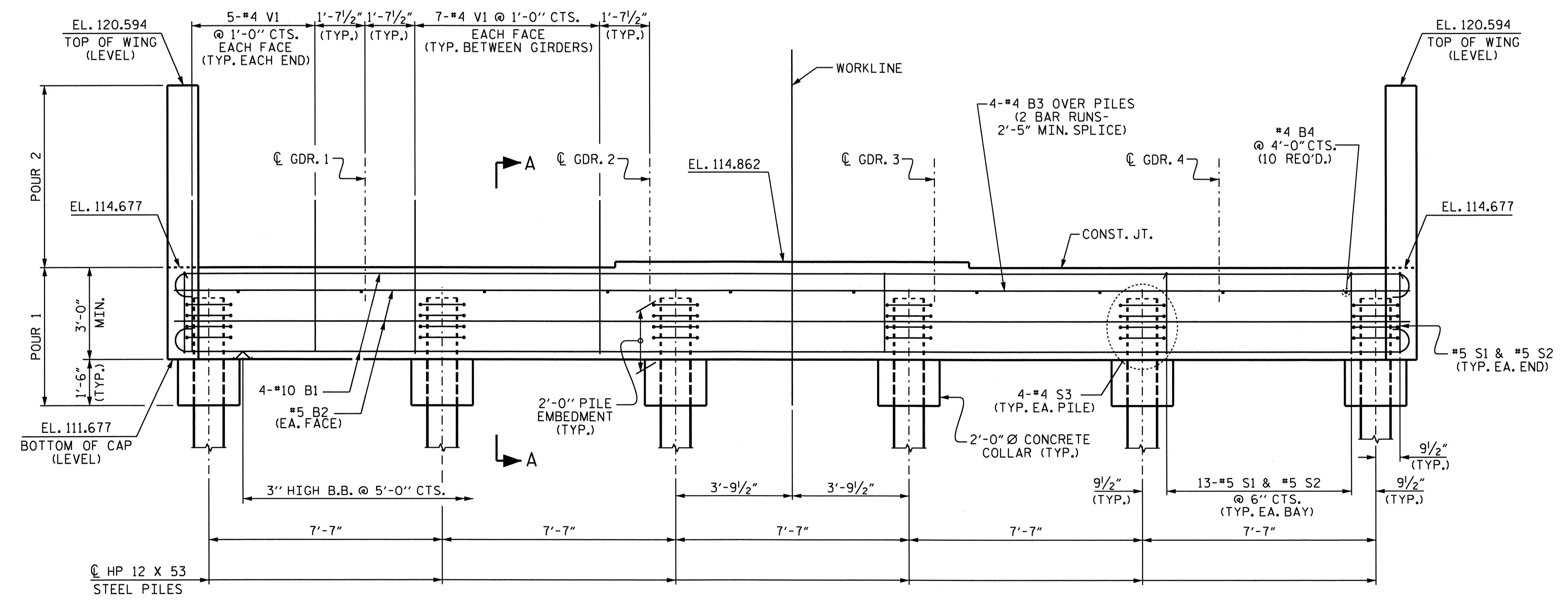
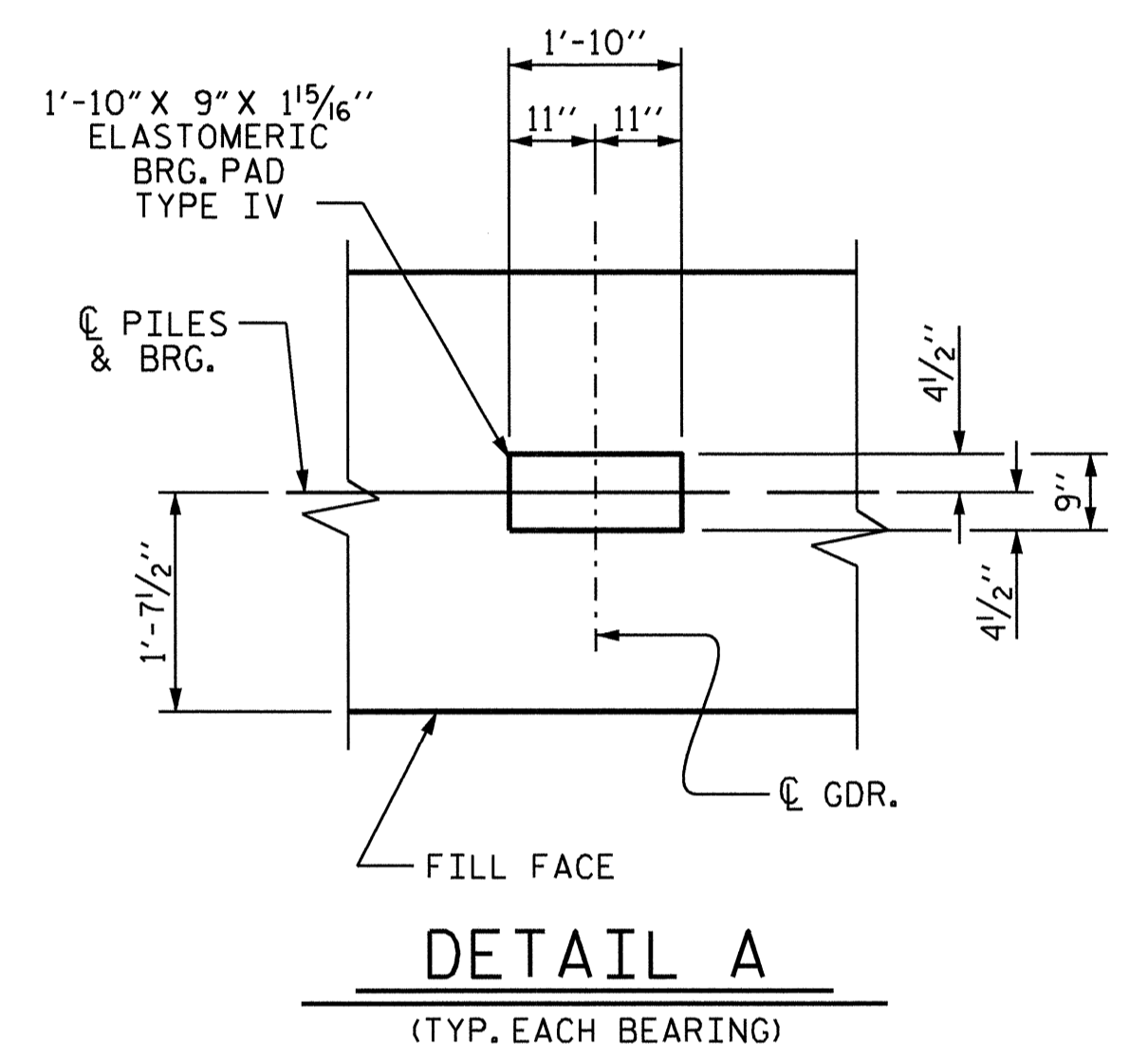
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

TOTAL SHEETS: 42

ASSEMBLED BY: B.N. GRADY DATE: 3/22/10
CHECKED BY: K.P. SEDAI DATE: 5/24/10
DRAWN BY: JMB 5/87 REV. 6/1/94 EEM/GRP
CHECKED BY: SJD 9/87 REV. 8/16/99 RWW/LES
REV. 5/1/06 TLA/GM

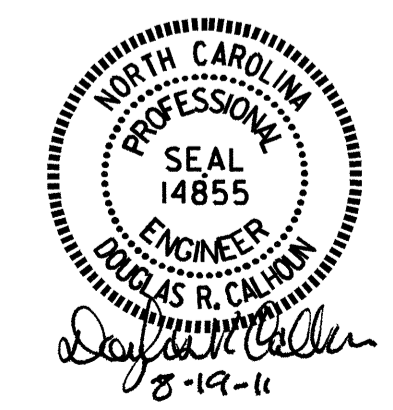


NOTES
 THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.
 THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE UPPER PART OF WING IS TO BE POURED WITH SUPERSTRUCTURE.

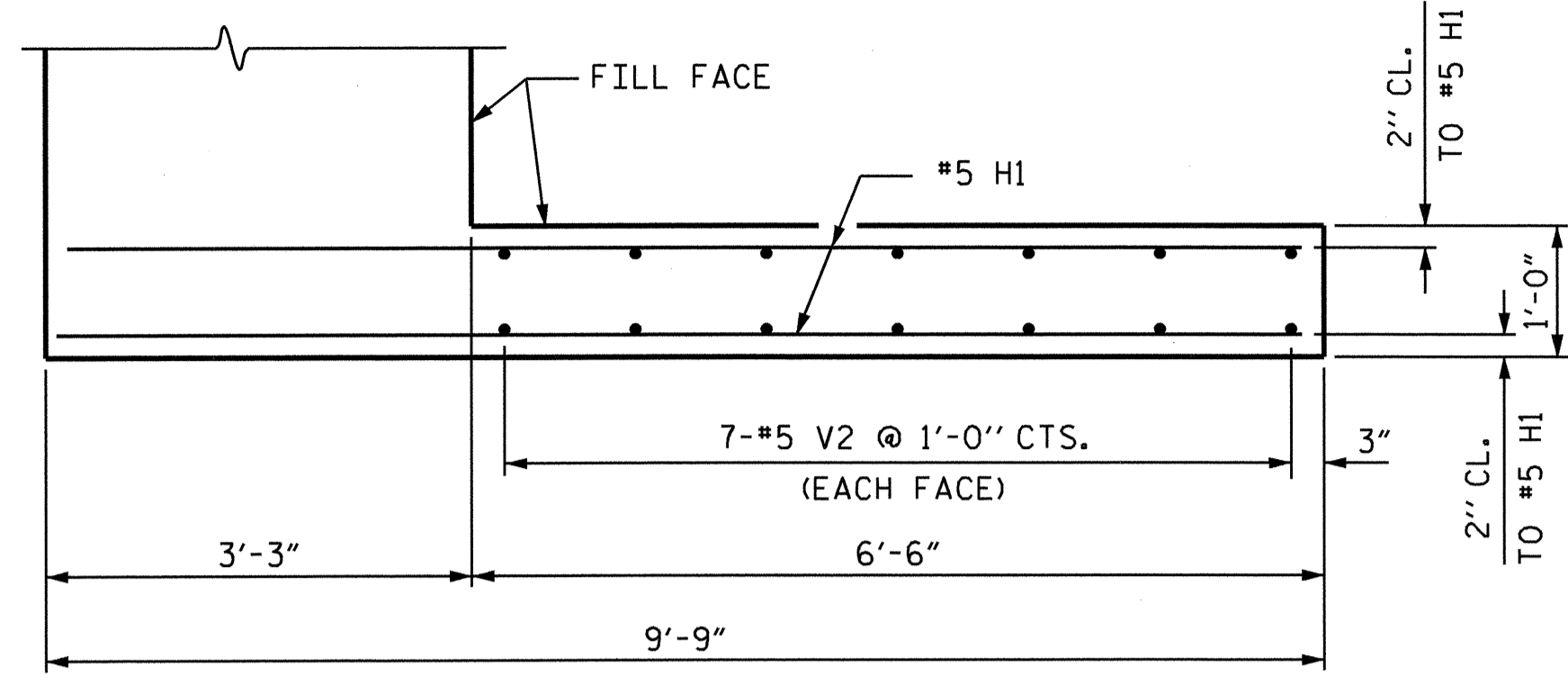


PROJECT NO. B-4211
NASH COUNTY
 STATION: 22+24.50 -L-
 SHEET 1 OF 2

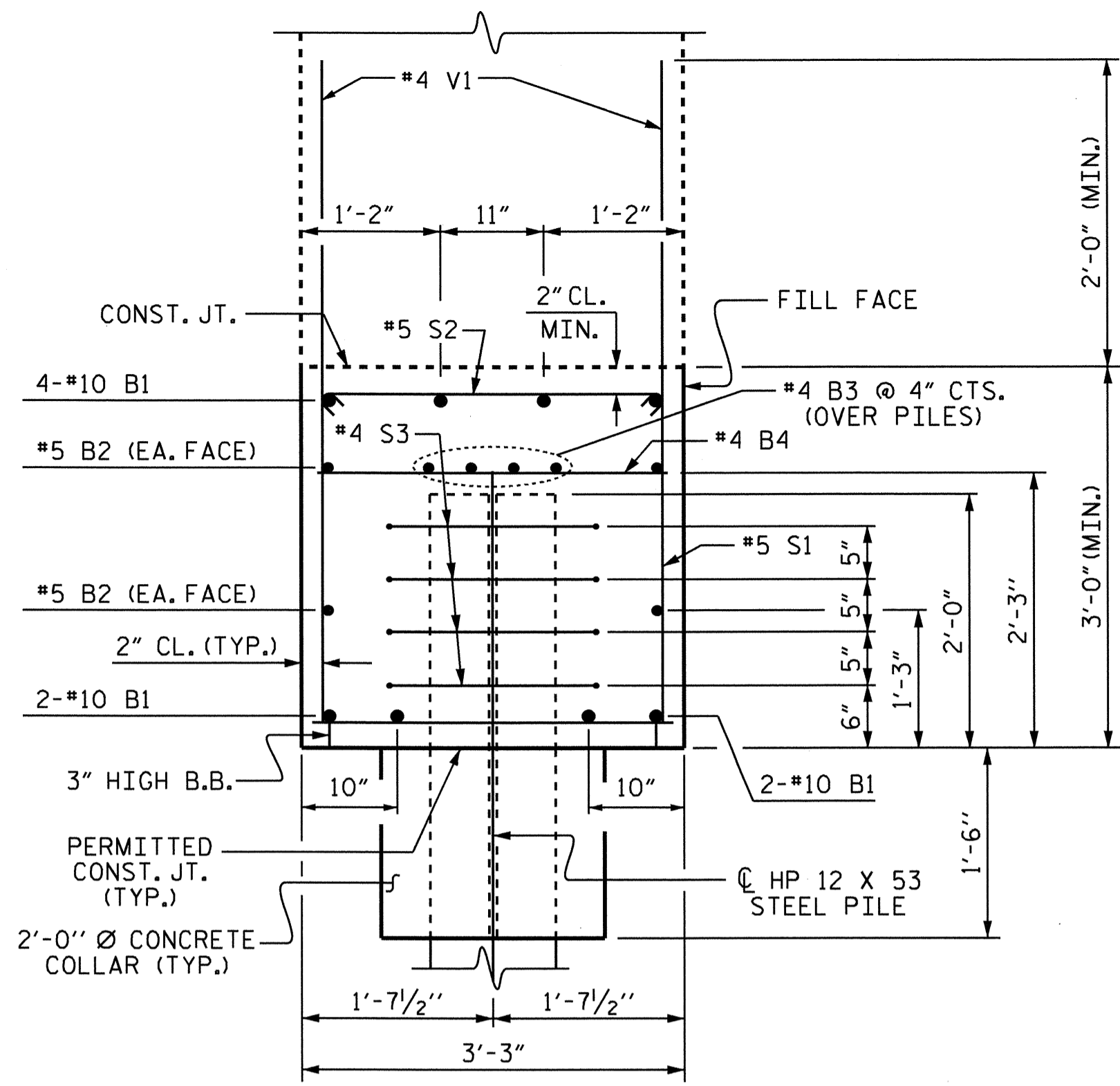
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE INTEGRAL END BENT 1					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 42



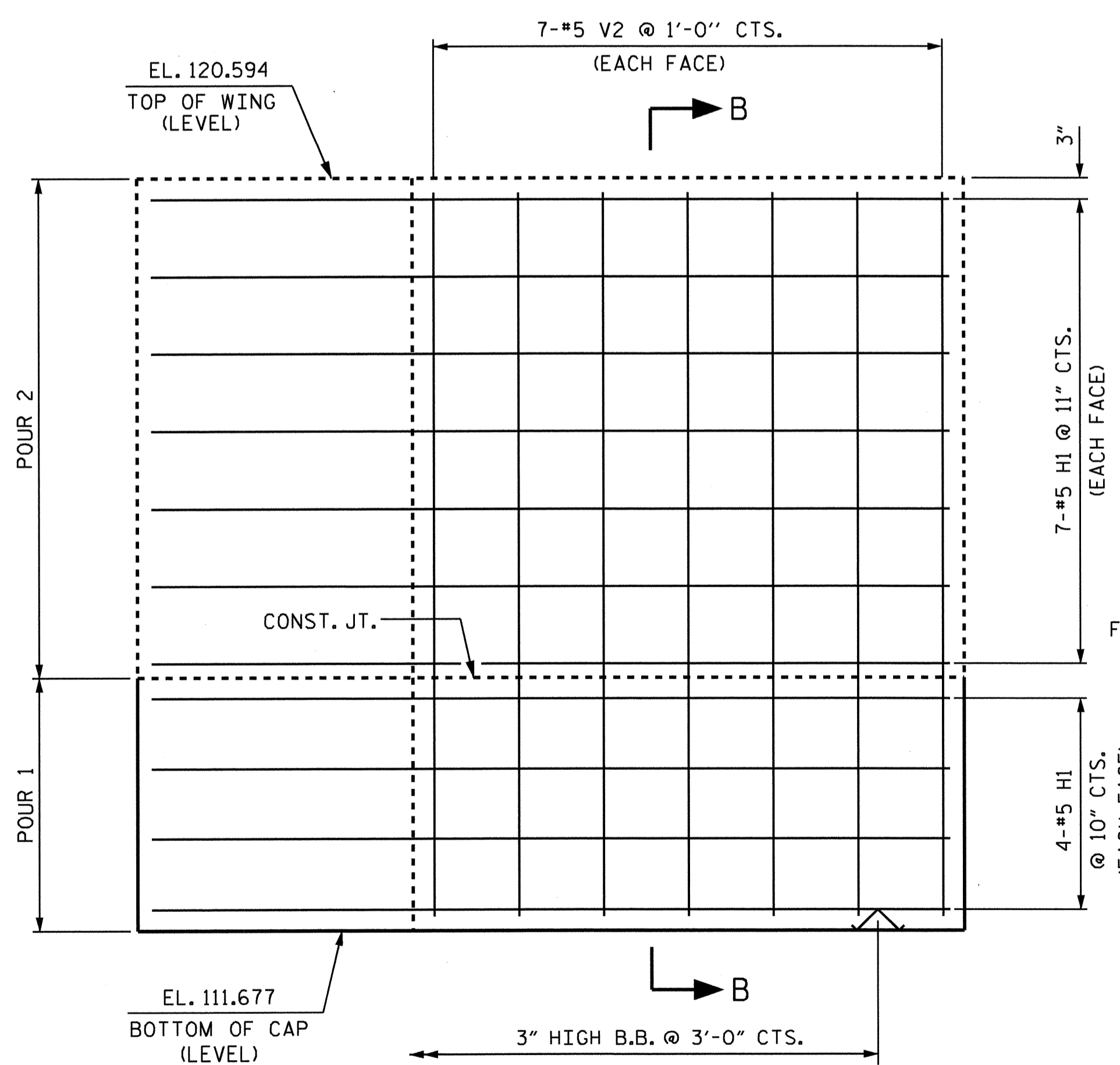
DRAWN BY: J. MYA DATE: 5-12-10
 CHECKED BY: J. L. WALTON DATE: 6-16-10



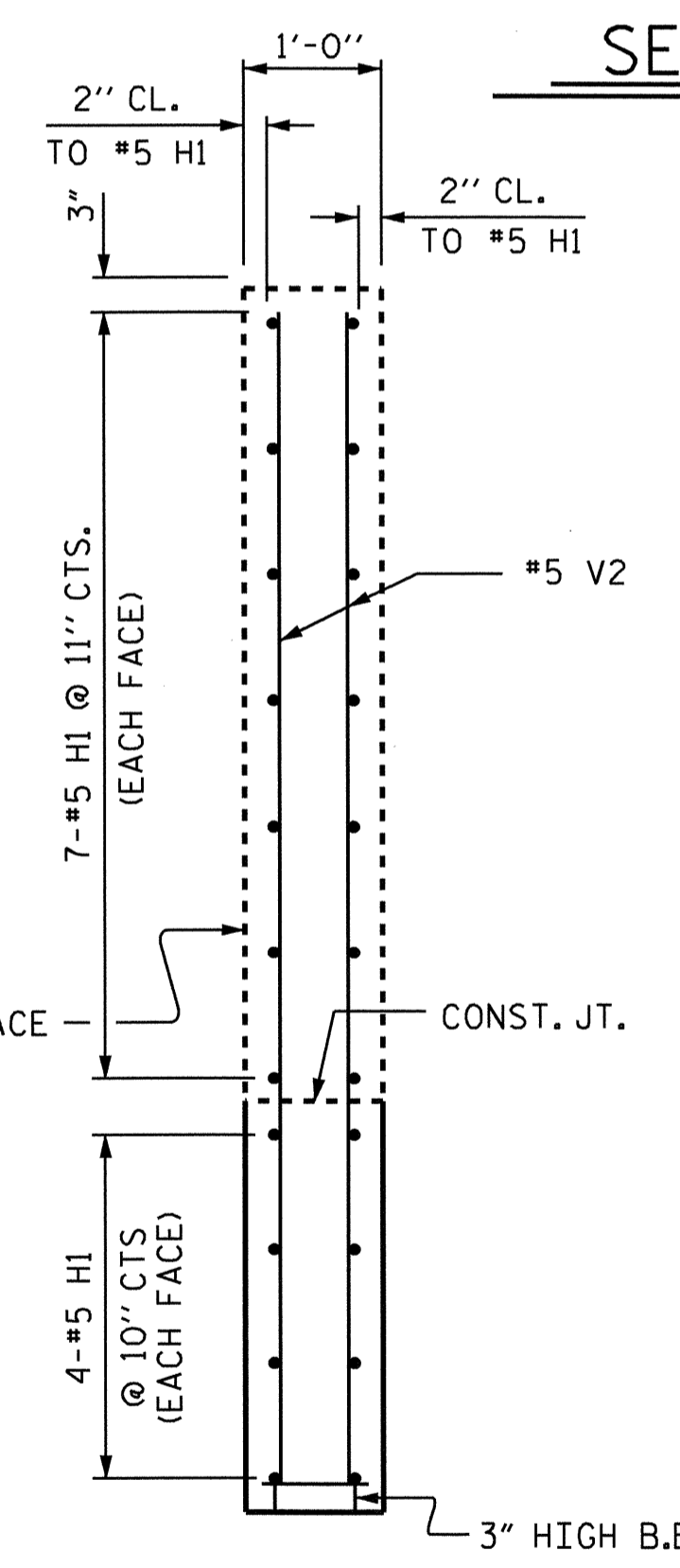
PLAN (W1)
(WING 2 SIMILAR)



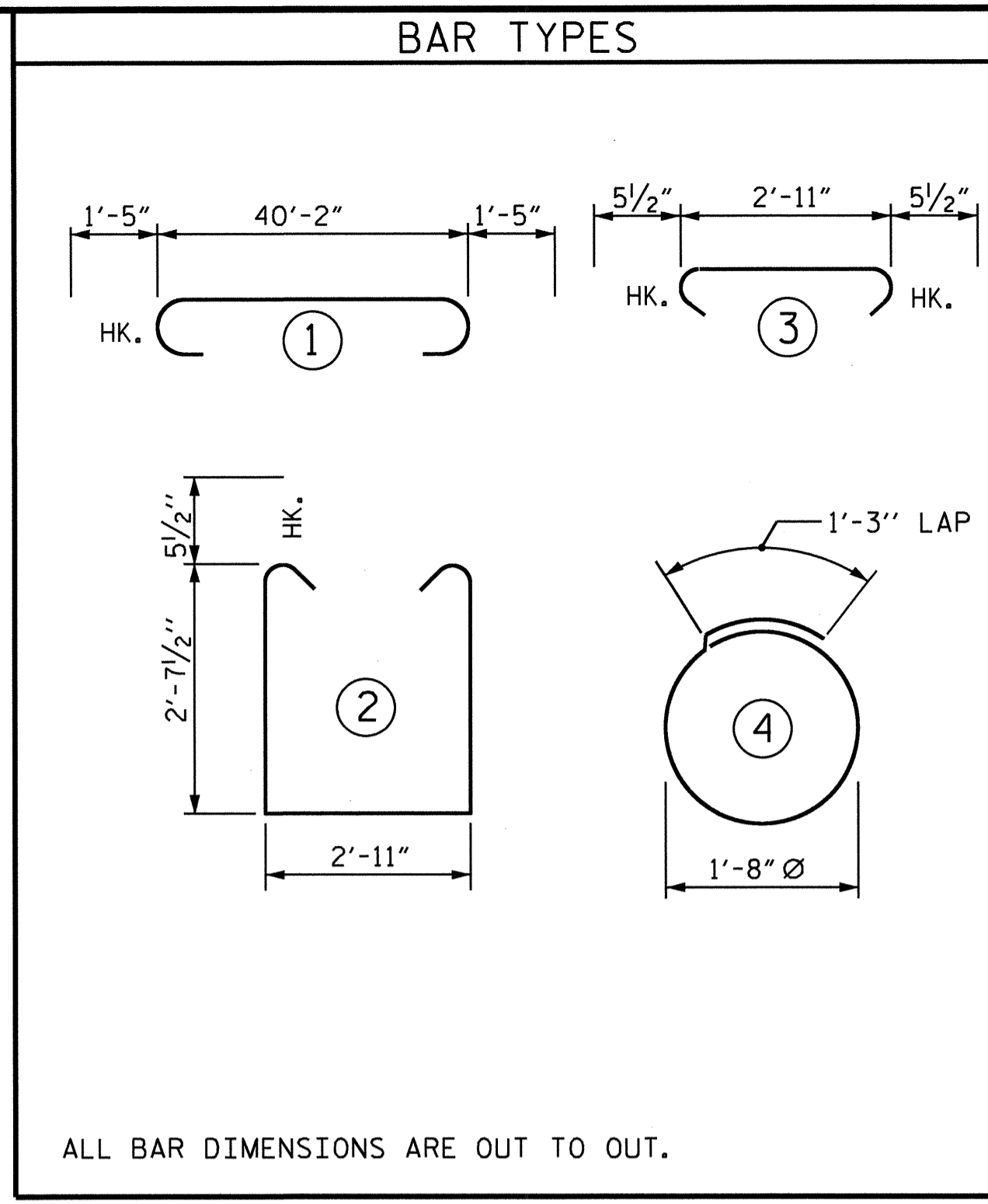
SECTION A-A



ELEVATION (W1)
(WING 2 SIMILAR)



SECTION B-B



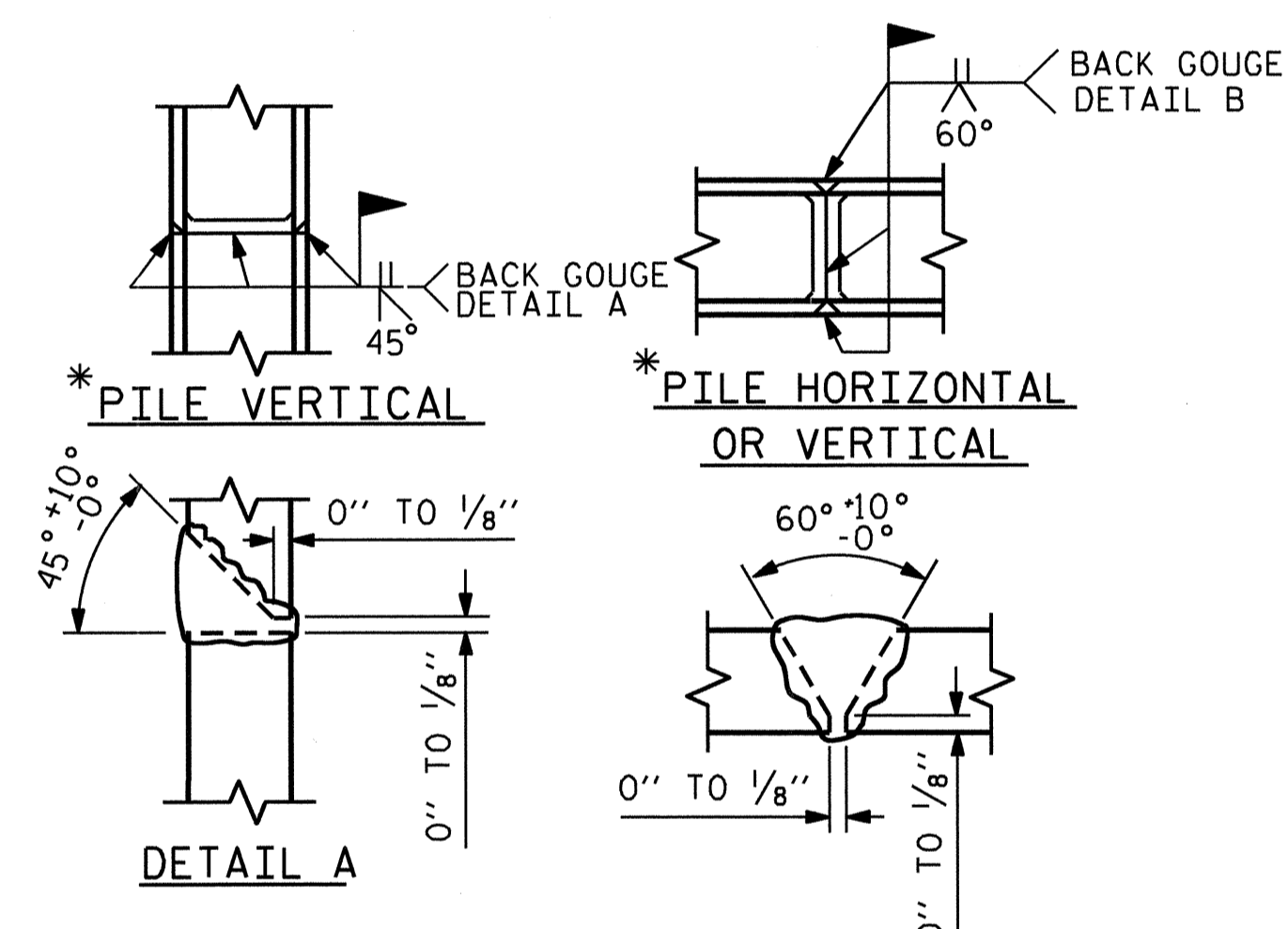
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10	1	43'-0"	1480
B2	4	#5	STR	40'-3"	168
B3	8	#4	STR	21'-4"	114
B4	10	#4	STR	2'-11"	19
H1	44	#4	STR	9'-5"	277
S1	67	#5	2	9'-1"	635
S2	67	#5	3	3'-10"	268
S3	24	#4	4	6'-6"	104
V1	62	#4	STR	5'-0"	207
V2	28	#5	STR	8'-7"	251
REINFORCING STEEL					LBS. 3523

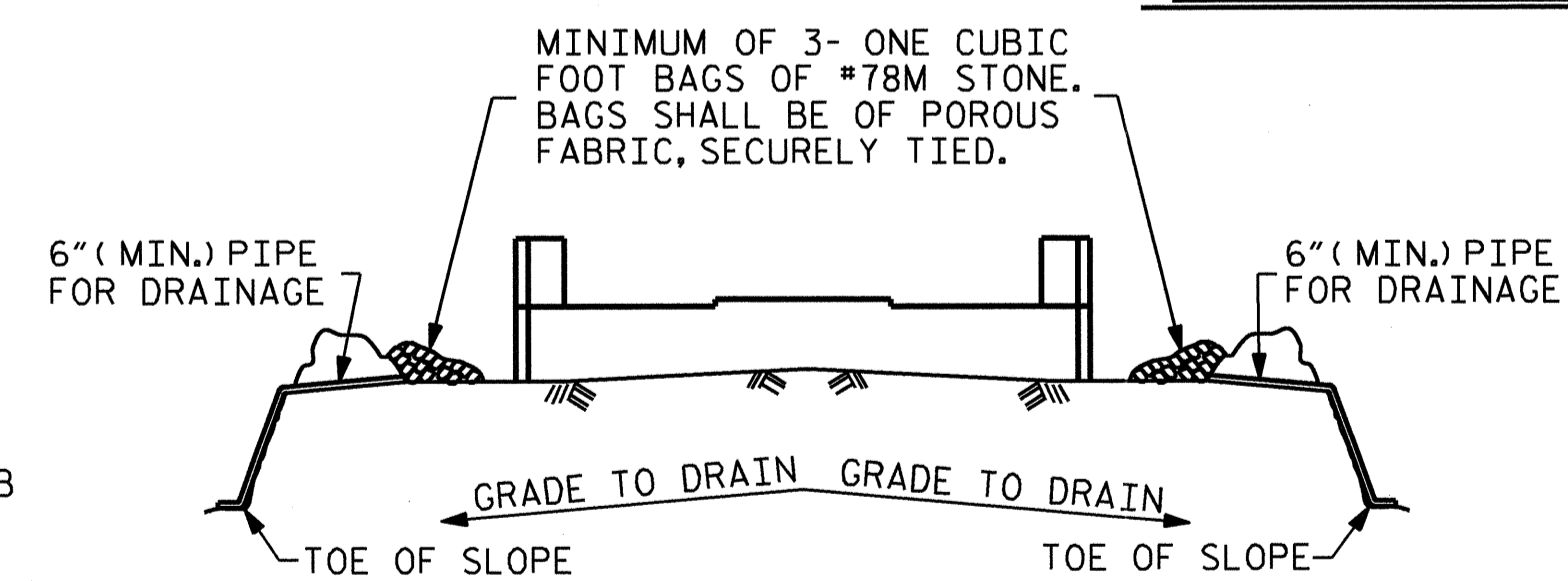
CLASS A CONCRETE BREAKDOWN	
▲ POUR 1 (CAP, CONCRETE COLLARS & LOWER PART OF WINGS)	C.Y. 17.4
TOTAL	C.Y. 17.4

HP 12 X 53 STEEL PILES :	
NUMBER = 6	195 FT.

UPPER WINGS (POUR 2) TO BE POURED WITH SUPERSTRUCTURE	
-------------------------------------------------------	--



PILE SPLICE DETAILS



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

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

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

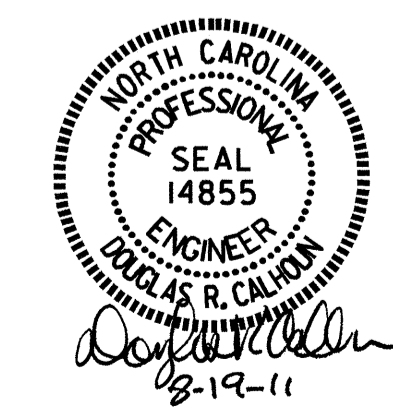
TEMPORARY DRAINAGE AT END BENT

PROJECT NO. B-4211
NASH COUNTY
STATION: 22+24.50 -L-

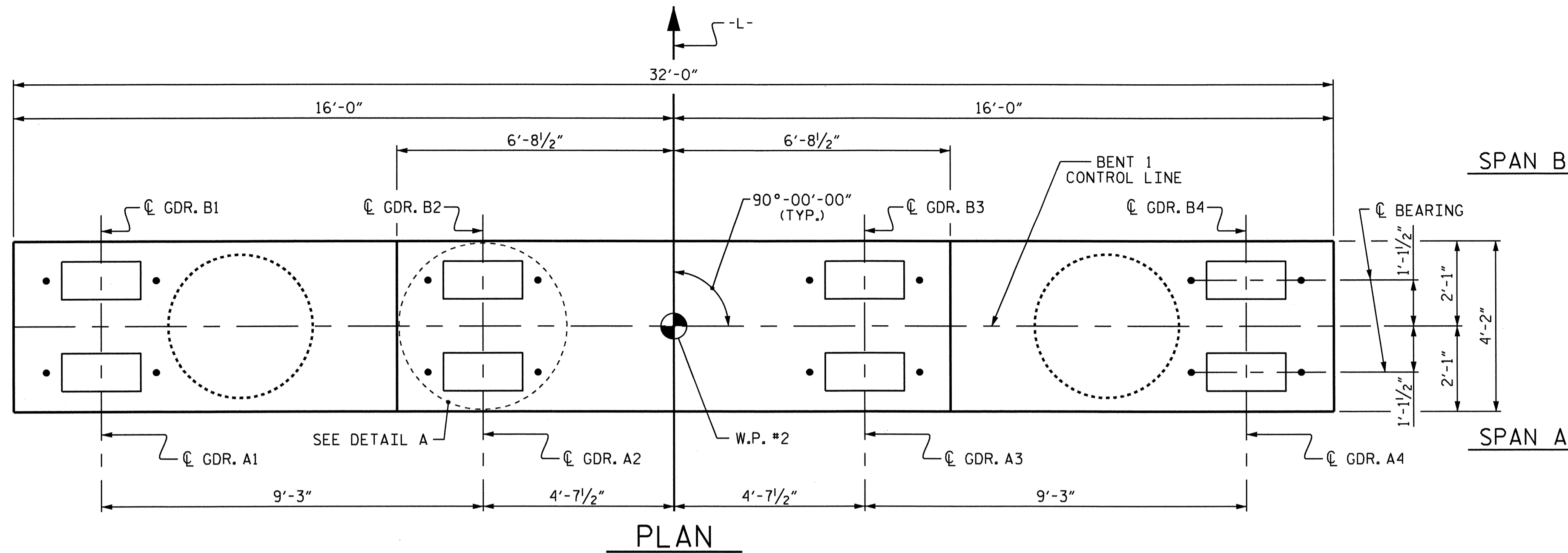
SHEET 2 OF 2

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

TOTAL SHEETS 42



DRAWN BY: J. MYA DATE: 5-12-10
CHECKED BY: J. L. WALTON DATE: 6-16-10

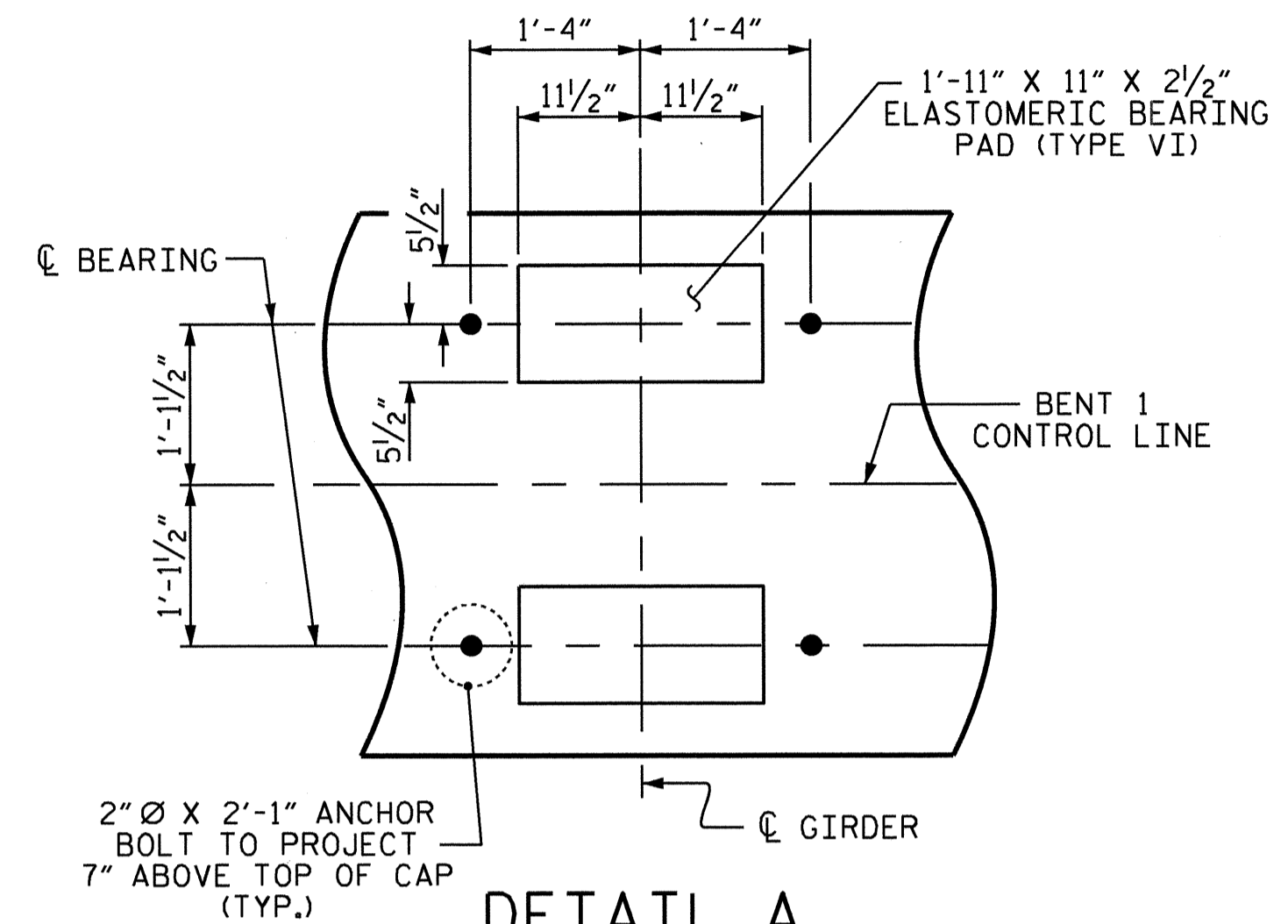


SPAN B

SPAN A

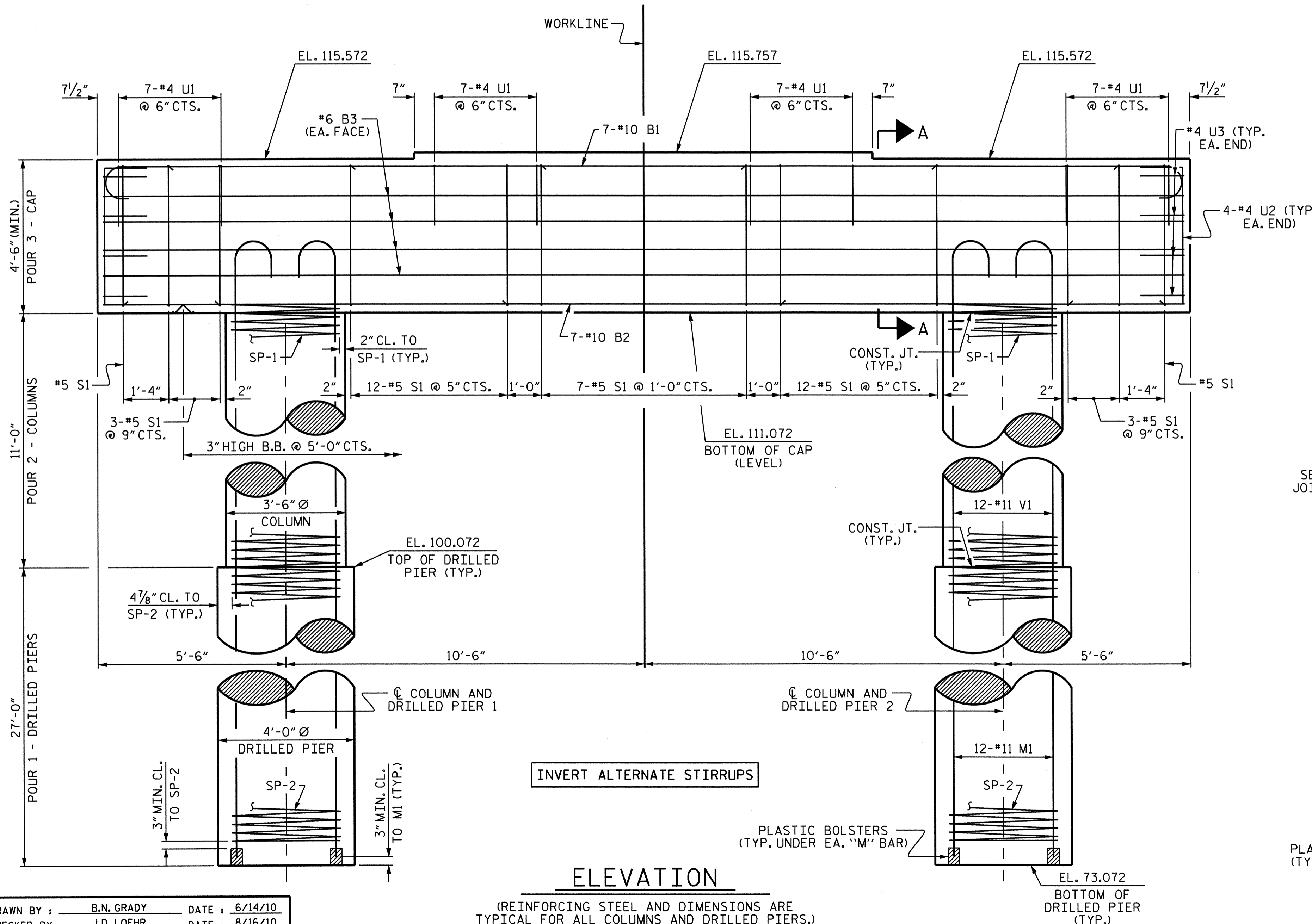
PLAN

NOTES
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
 ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".
 THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.
 NO SEPARATE PAYMENT WILL BE MADE FOR CSL TUBES. CSL TUBES WILL BE INCLUDED IN THE UNIT BID PRICE FOR DRILLED PIERS.



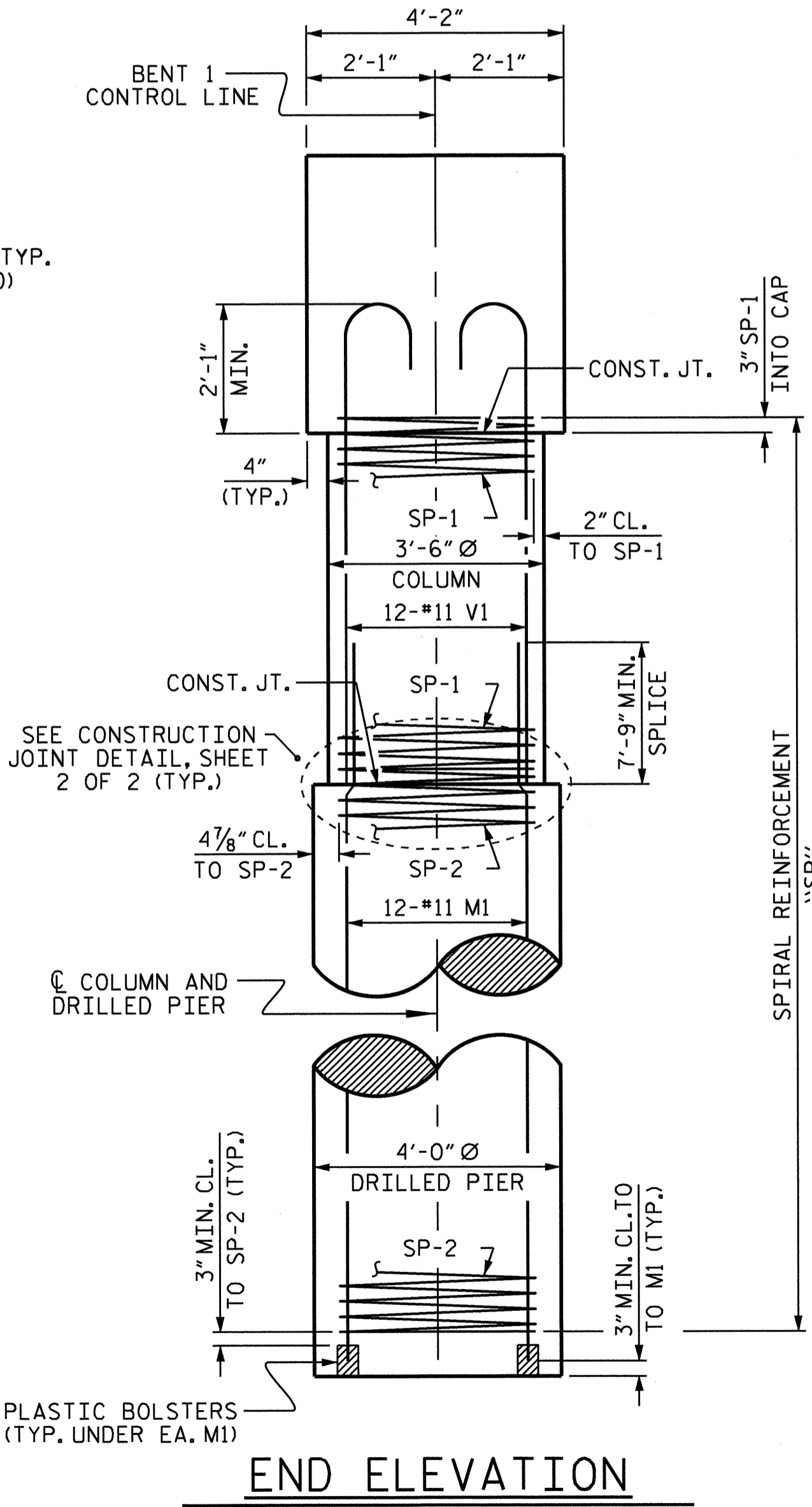
DETAIL A

(DETAILS AND DIMENSIONS ARE TYPICAL FOR EACH BEARING)

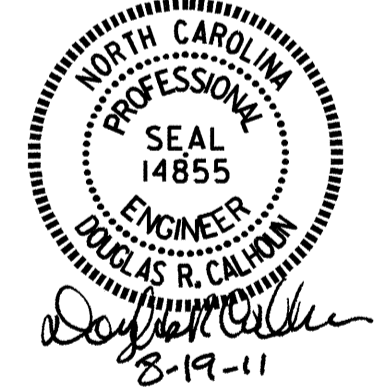


ELEVATION

(REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR ALL COLUMNS AND DRILLED PIERS.)



END ELEVATION



PROJECT NO. B-4211
NASH COUNTY
 STATION: 22+24.50 -L-
 SHEET 1 OF 2

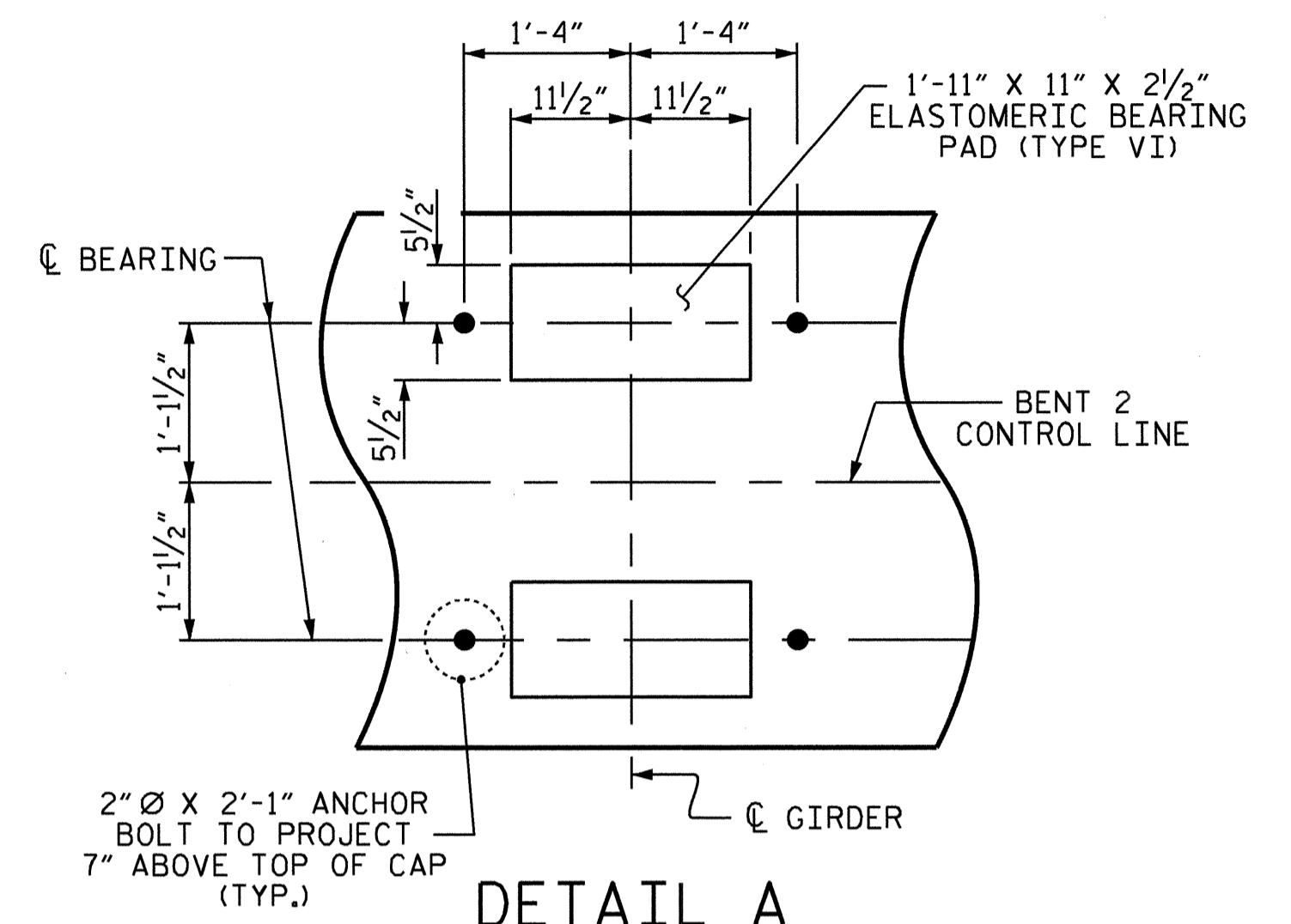
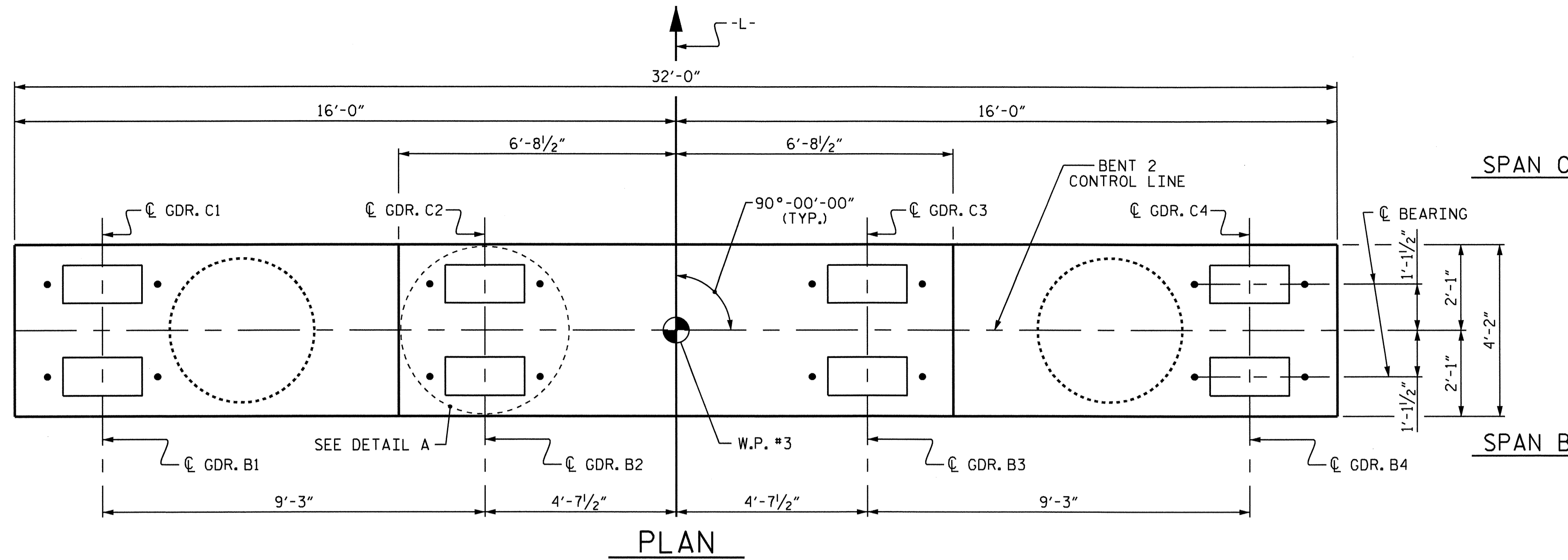
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
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					TOTAL SHEETS 42

DRAWN BY: B.N. GRADY DATE: 6/14/10
 CHECKED BY: J.D. LOEHR DATE: 8/16/10

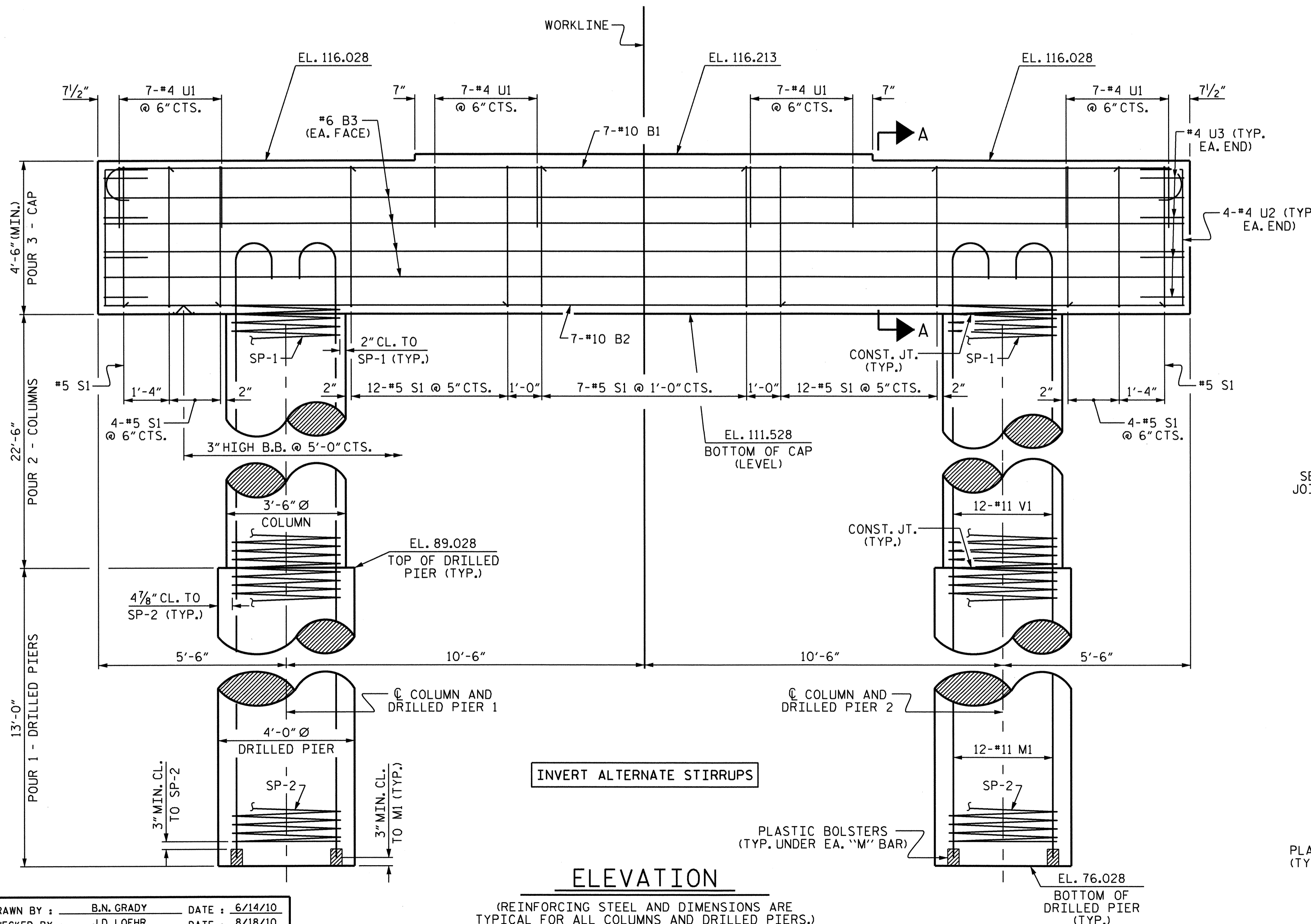
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 bngrady

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
 ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".
 THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.
 NO SEPARATE PAYMENT WILL BE MADE FOR CSL TUBES. CSL TUBES WILL BE INCLUDED IN THE UNIT BID PRICE FOR DRILLED PIERS.

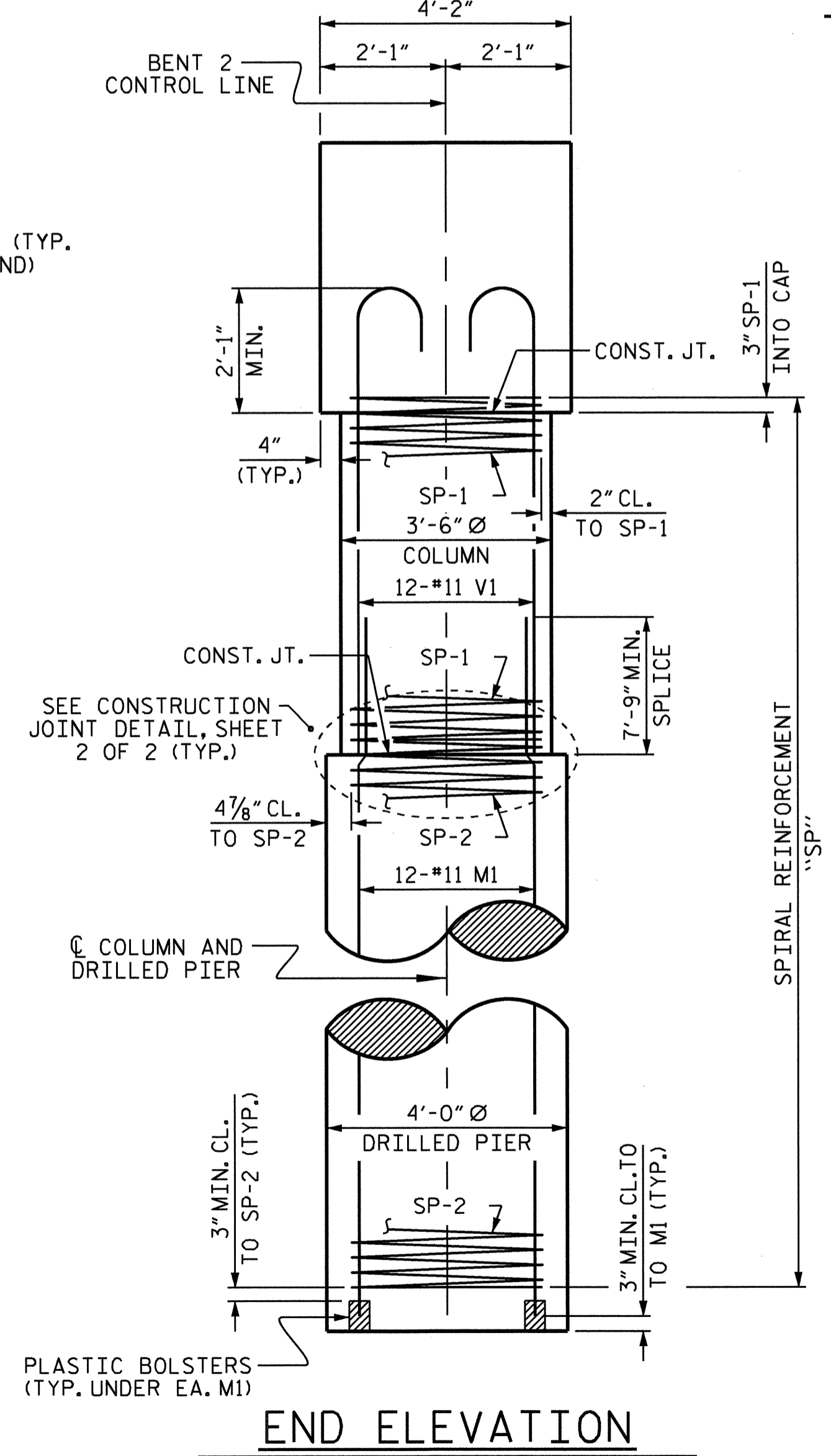


DETAIL A
 (DETAILS AND DIMENSIONS ARE TYPICAL FOR EACH BEARING)

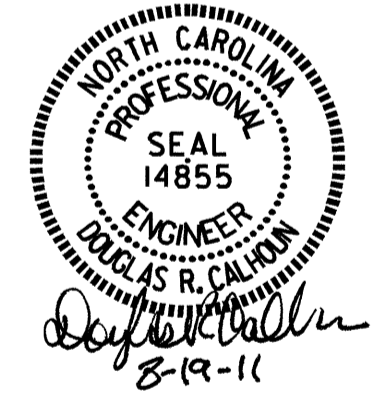


ELEVATION

(REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR ALL COLUMNS AND DRILLED PIERS.)



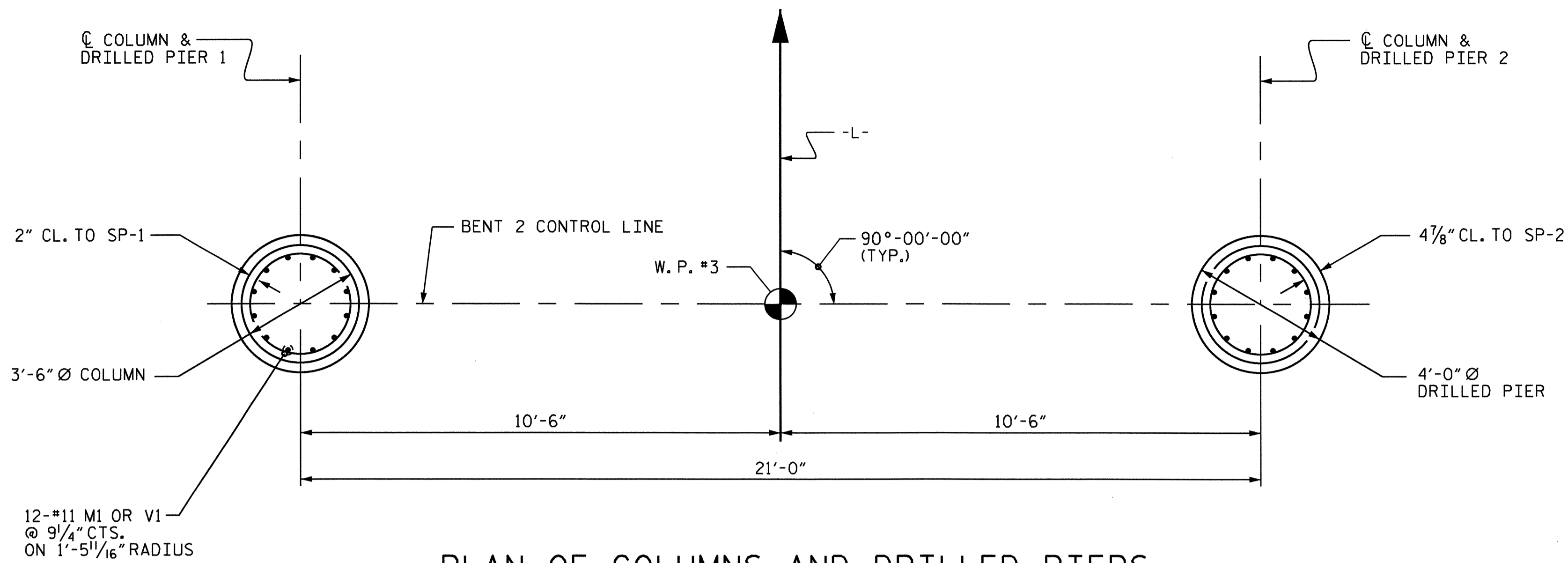
END ELEVATION



PROJECT NO. B-4211
NASH COUNTY
 STATION: 22+24.50 -L-
 SHEET 1 OF 2

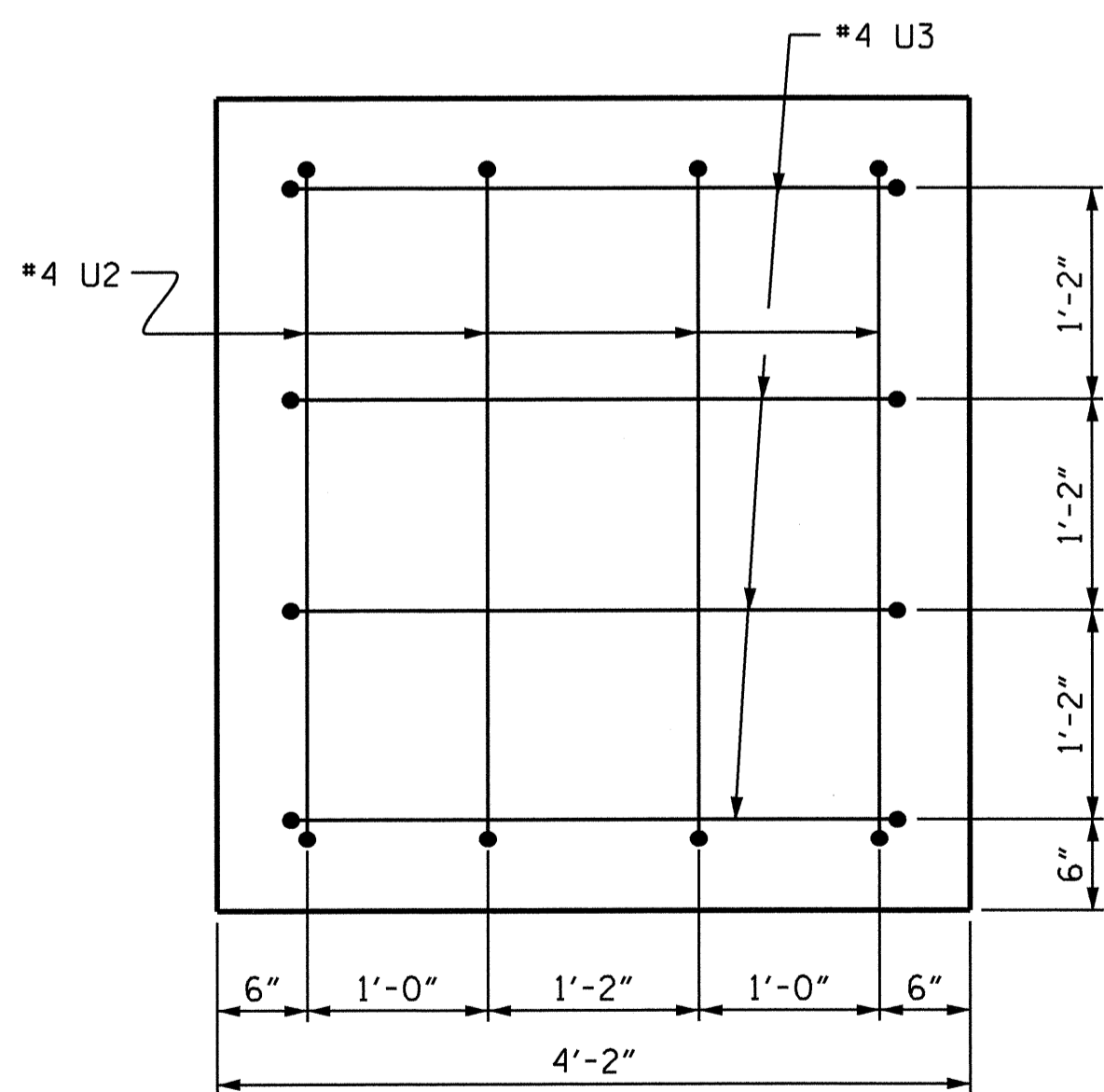
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
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					TOTAL SHEETS 42

DRAWN BY: B.N. GRADY DATE: 6/14/10
 CHECKED BY: J.D. LOEHR DATE: 8/18/10



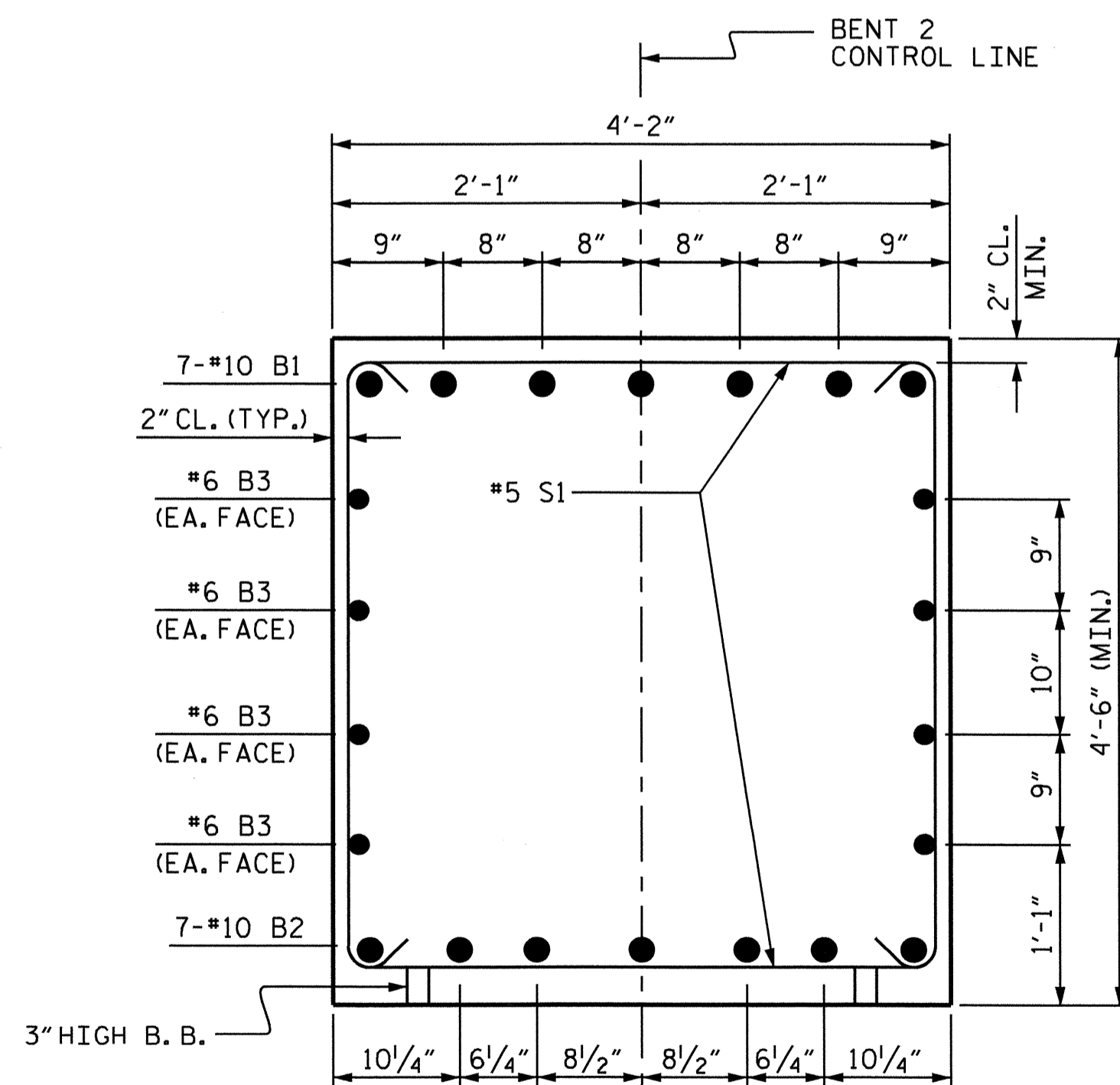
PLAN OF COLUMNS AND DRILLED PIERS

(REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR ALL COLUMNS AND DRILLED PIERS.)

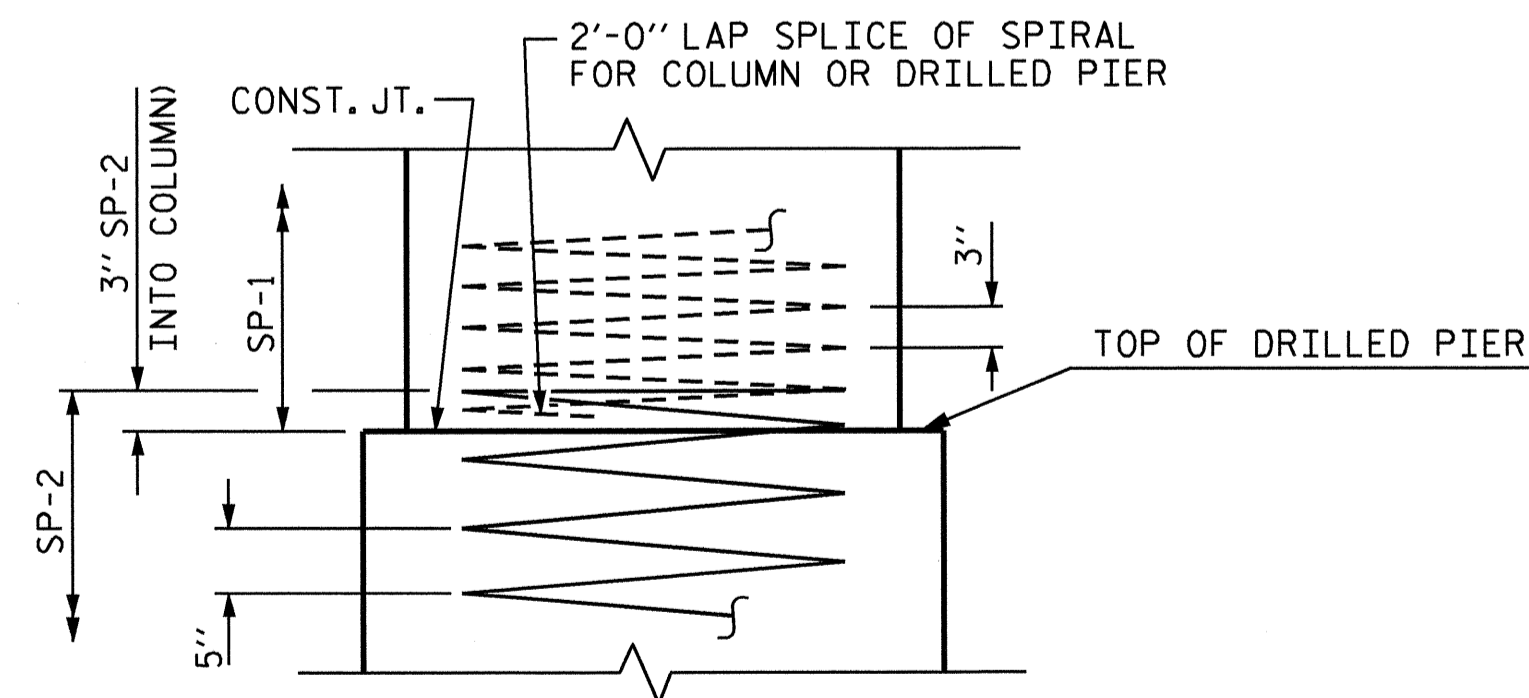


END VIEW

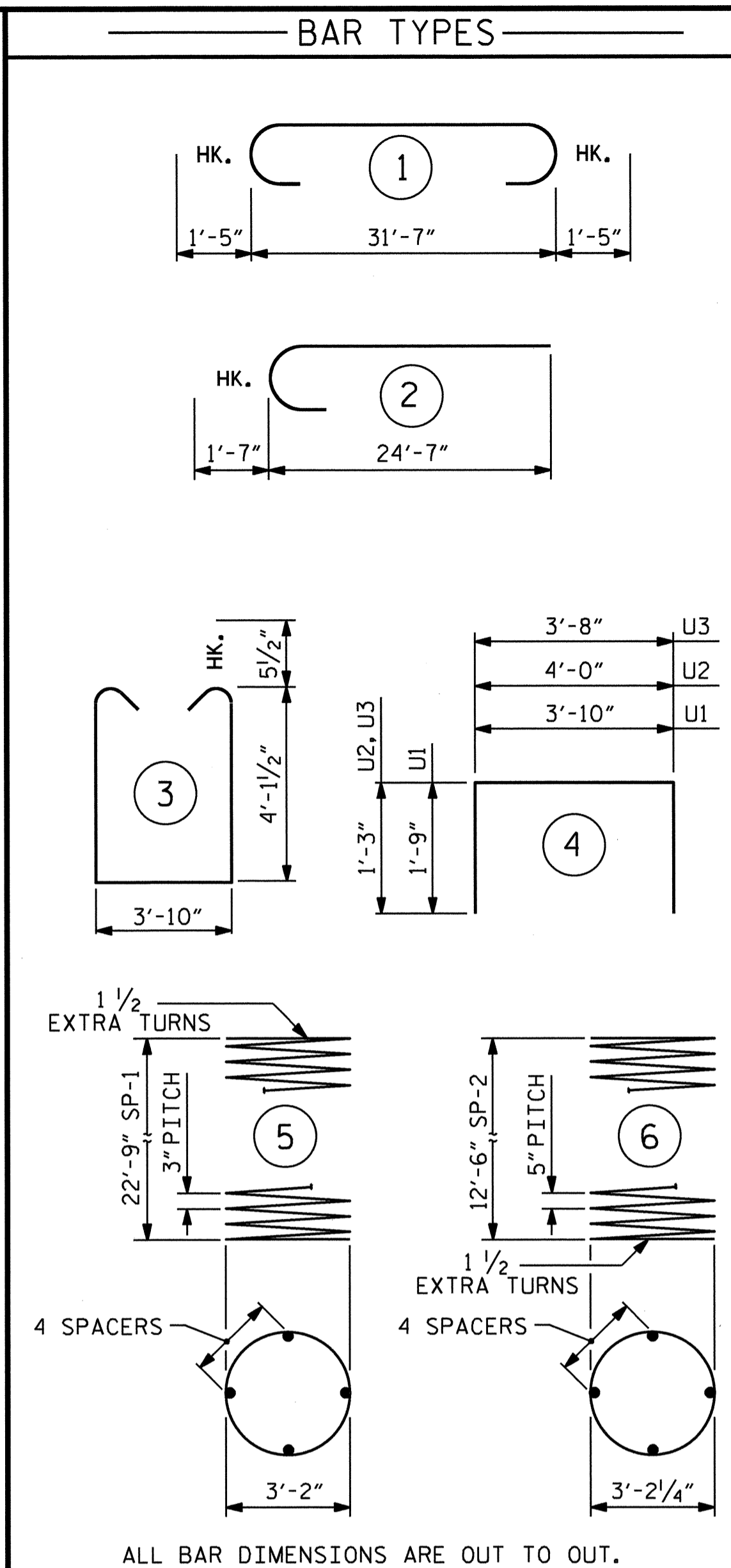
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SECTION A-A



CONSTRUCTION JOINT DETAIL

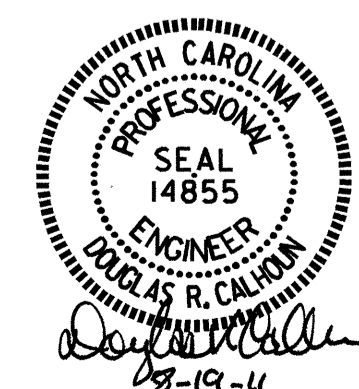


*** THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.
** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.
▲ SEE NOTES

BILL OF MATERIAL						
BENT 2						
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		
B1	7	#10	1	34'-5"	1037	
B2	7	#10	STR	31'-8"	954	
B3	8	#6	STR	31'-8"	381	
M1	24	#11	STR	23'-6"	2997	
S1	41	#5	3	13'-0"	556	
U1	28	#4	4	7'-4"	137	
U2	8	#4	4	6'-6"	35	
U3	8	#4	4	6'-2"	33	
V1	24	#11	2	26'-2"	3337	
REINFORCING STEEL					9467 LBS.	
SP-1	2	***	5	906'-11"	1212	
SP-2	2	**	6	310'-1"	647	
SPIRAL COLUMN REINFORCING STEEL					1859 LBS.	
CLASS A CONCRETE BREAKDOWN						
POUR 2 (COLUMNS)				16.0	CU.YDS.	
POUR 3 (CAP)				22.6	CU.YDS.	
TOTAL CLASS A CONCRETE				38.6	CU.YDS.	
4'-0" Ø DRILLED PIERS						
DRILLED PIER CONCRETE POUR 1 (DRILLED PIERS)					12.1	CU.YDS.
4'-0" Ø DRILLED PIERS IN SOIL :						
					8.00	LIN. FT.
4'-0" Ø DRILLED PIERS NOT IN SOIL :						
					18.00	LIN. FT.
PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIER :					10.0	LIN. FT.
CSL TUBES ▲					124	LIN. FT.

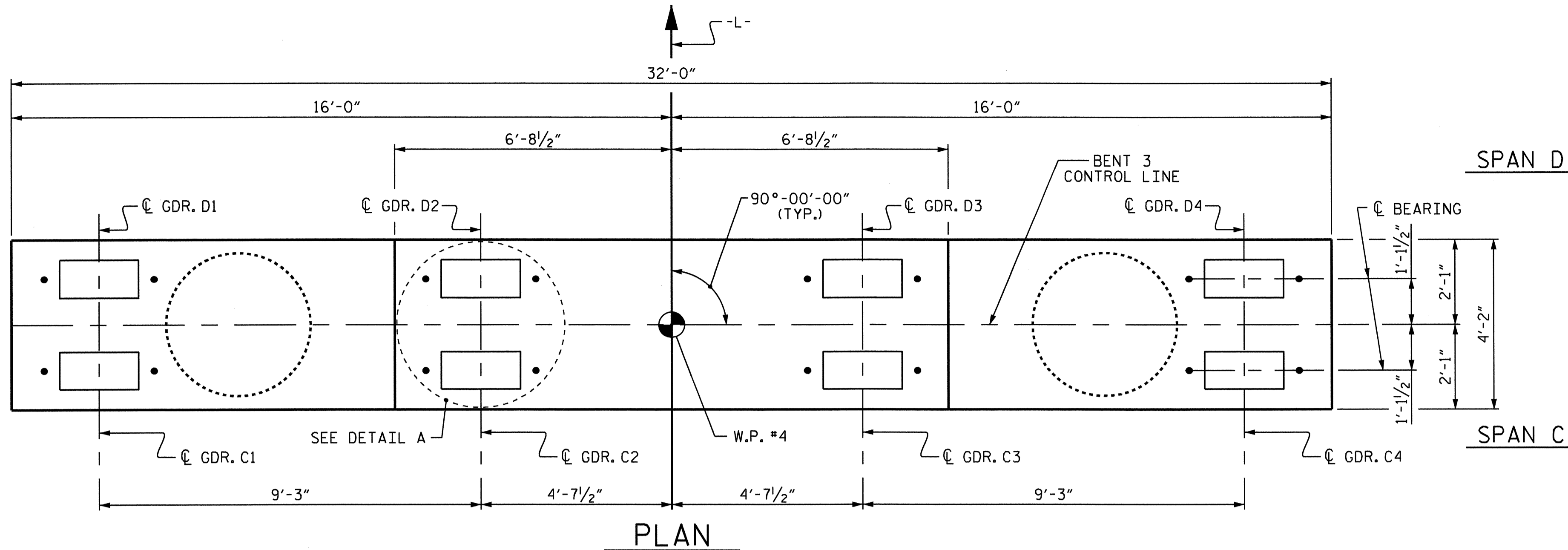
PROJECT NO. B-4211
NASH COUNTY
STATION: 22+24.50 -L-
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENT 2

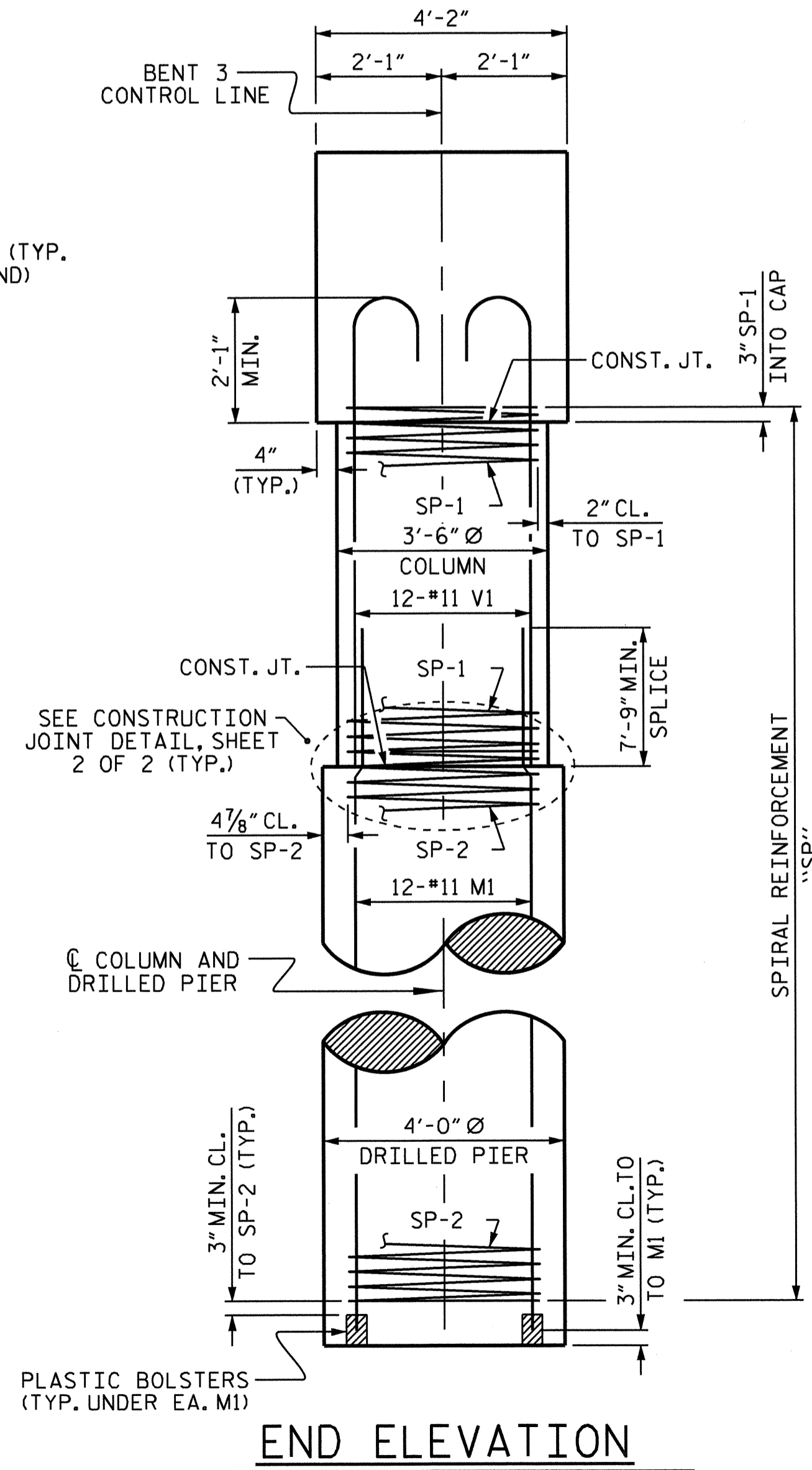
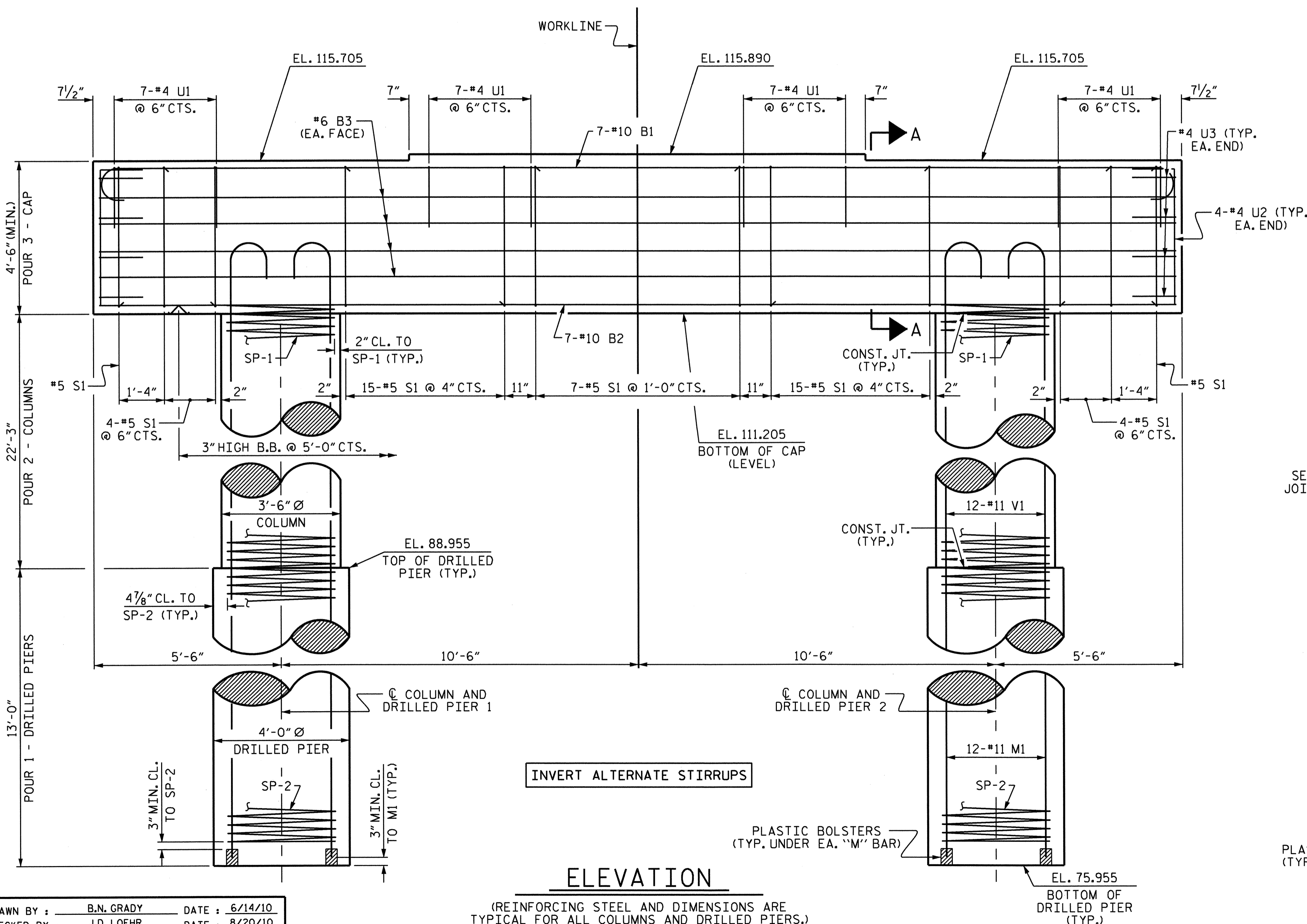
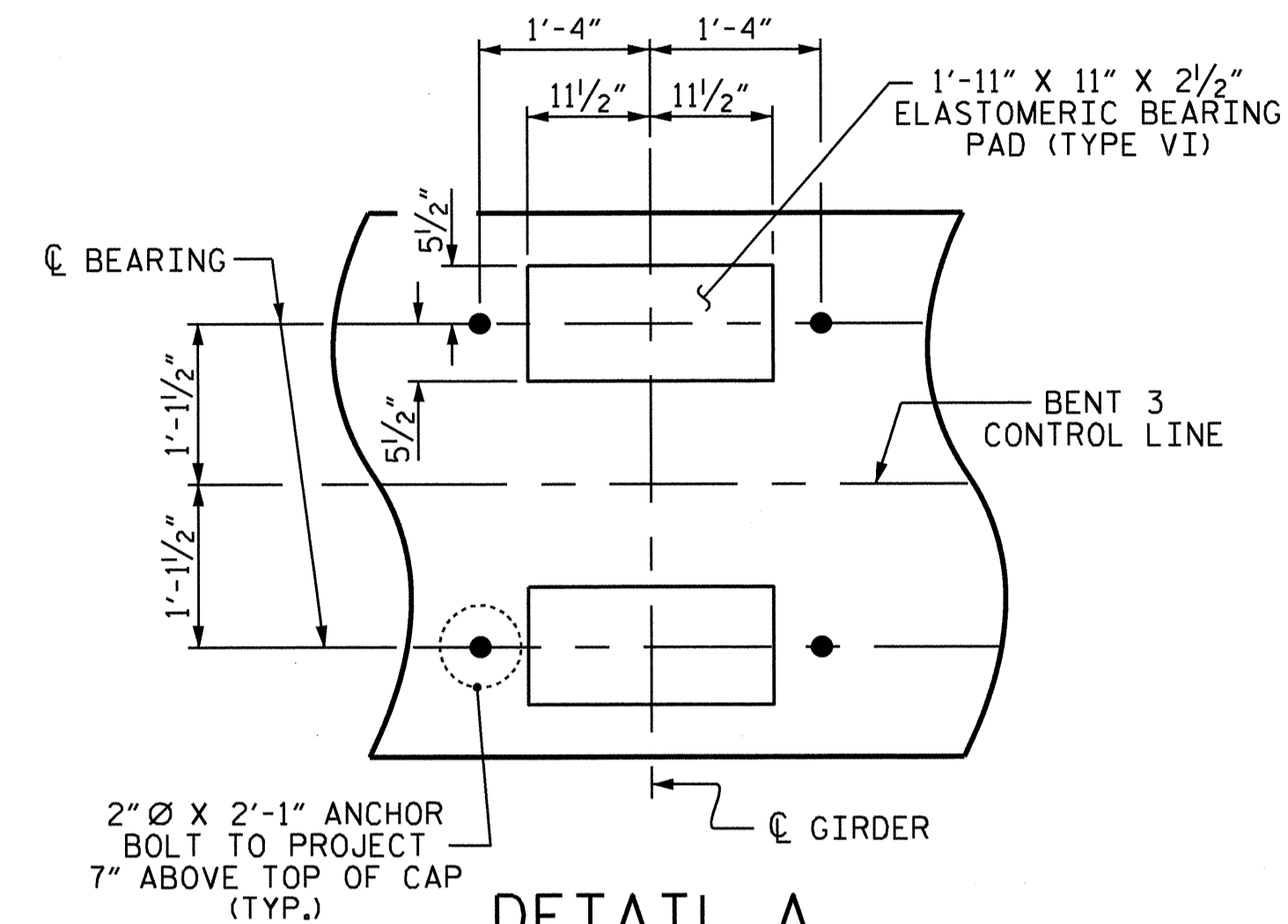


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			42

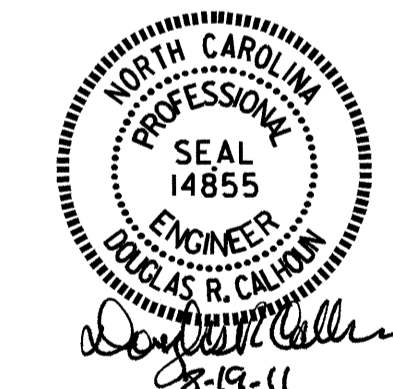
DRAWN BY : B.N. GRADY DATE : 6/14/10
CHECKED BY : J.D. LOEHR DATE : 8/19/10



NOTES
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
 ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".
 THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.
 NO SEPARATE PAYMENT WILL BE MADE FOR CSL TUBES. CSL TUBES WILL BE INCLUDED IN THE UNIT BID PRICE FOR DRILLED PIERS.



DETAIL A
 (DETAILS AND DIMENSIONS ARE TYPICAL FOR EACH BEARING)



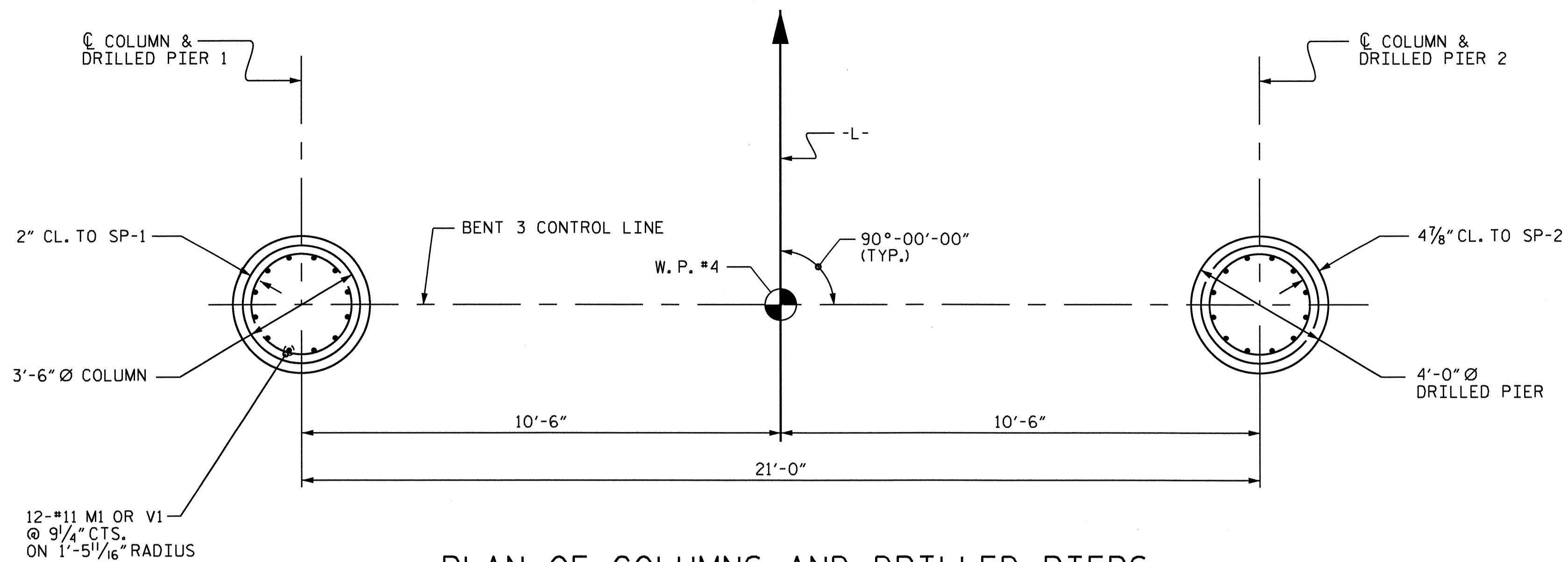
PROJECT NO. B-4211
NASH COUNTY
 STATION: 22+24.50 -L-
 SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT 3					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
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					TOTAL SHEETS 42

DRAWN BY: B.N. GRADY DATE: 6/14/10
 CHECKED BY: J.D. LOEHR DATE: 8/20/10

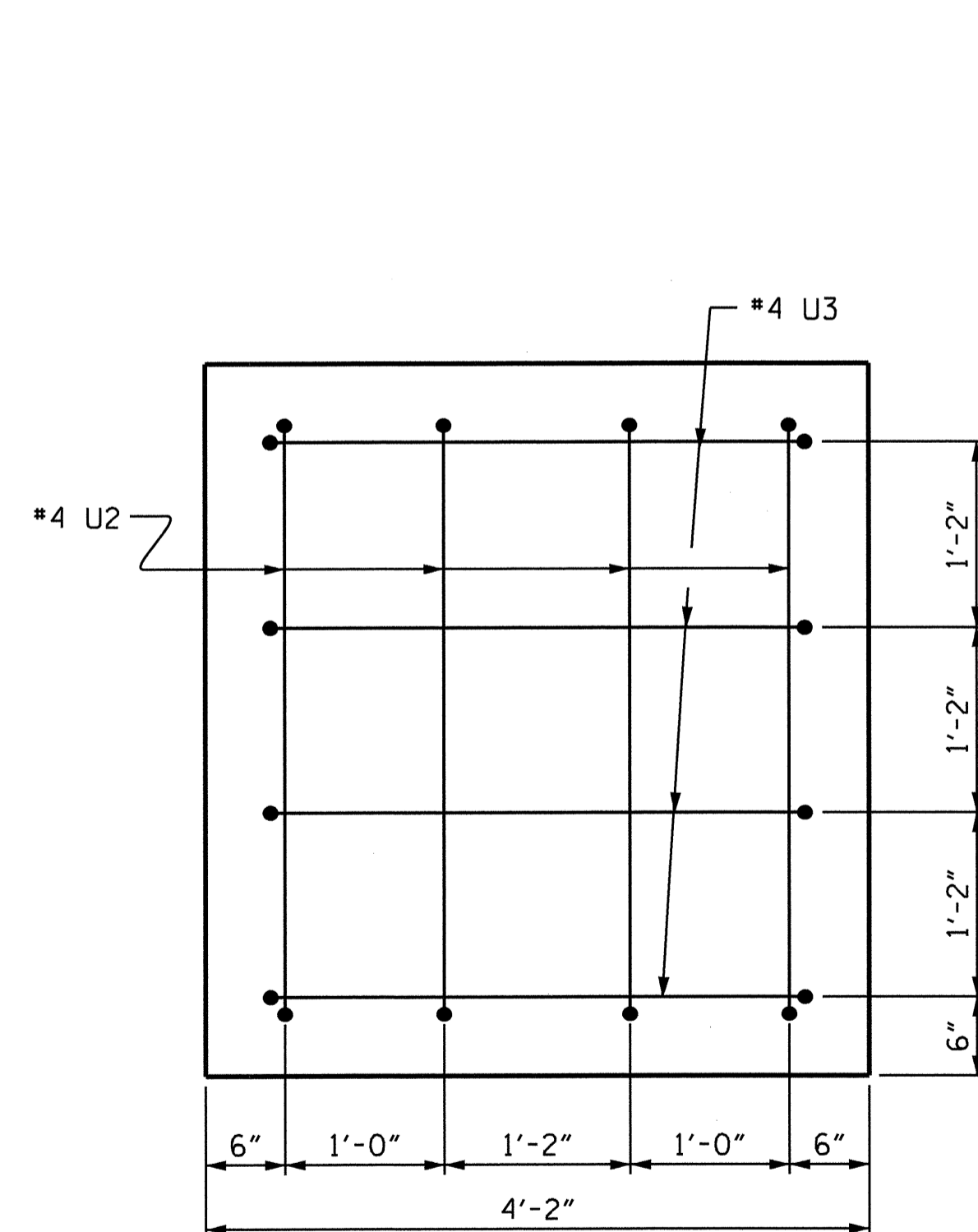
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 bngrady

(REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR ALL COLUMNS AND DRILLED PIERS.)



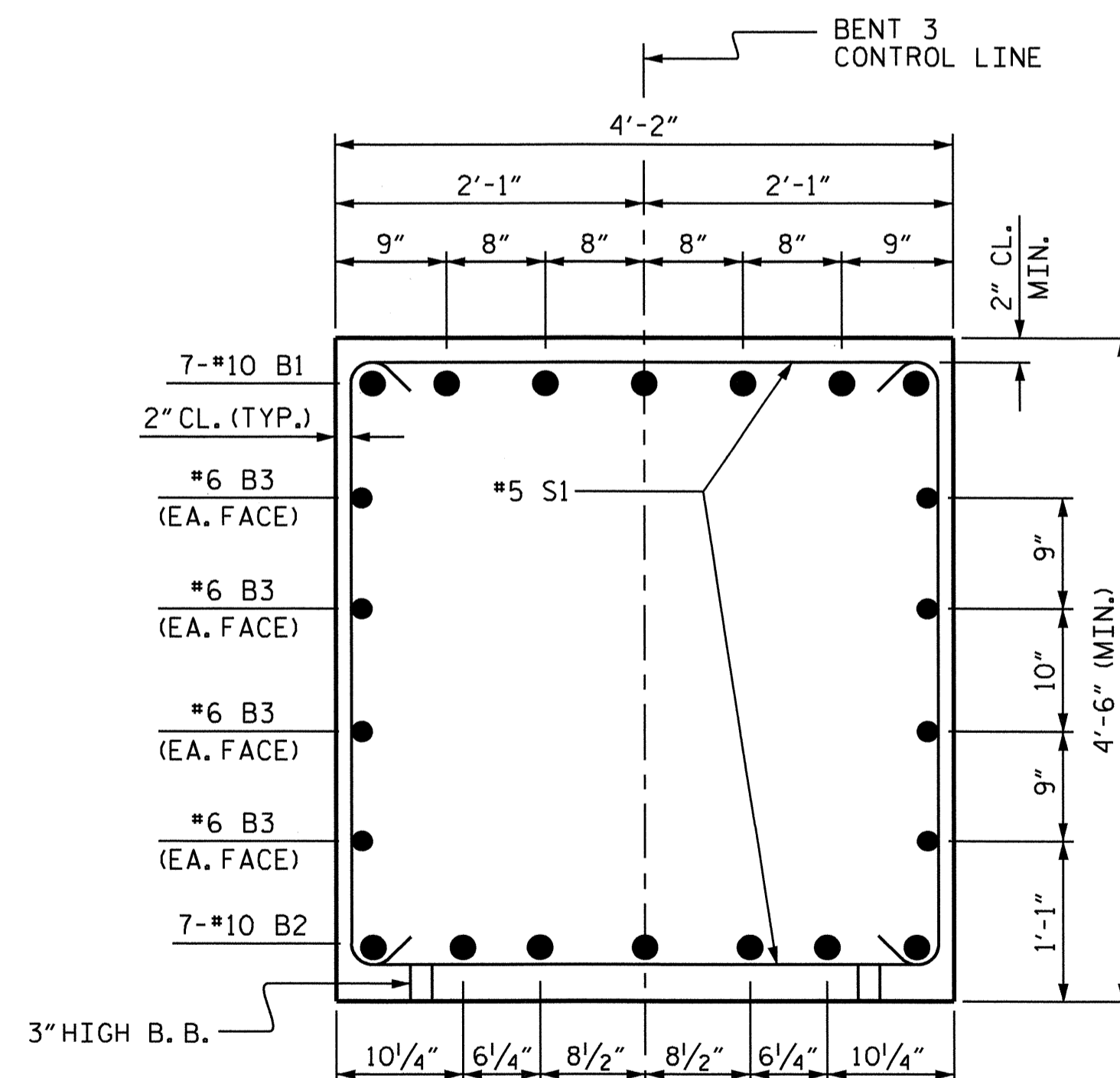
PLAN OF COLUMNS AND DRILLED PIERS

(REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR ALL COLUMNS AND DRILLED PIERS.)

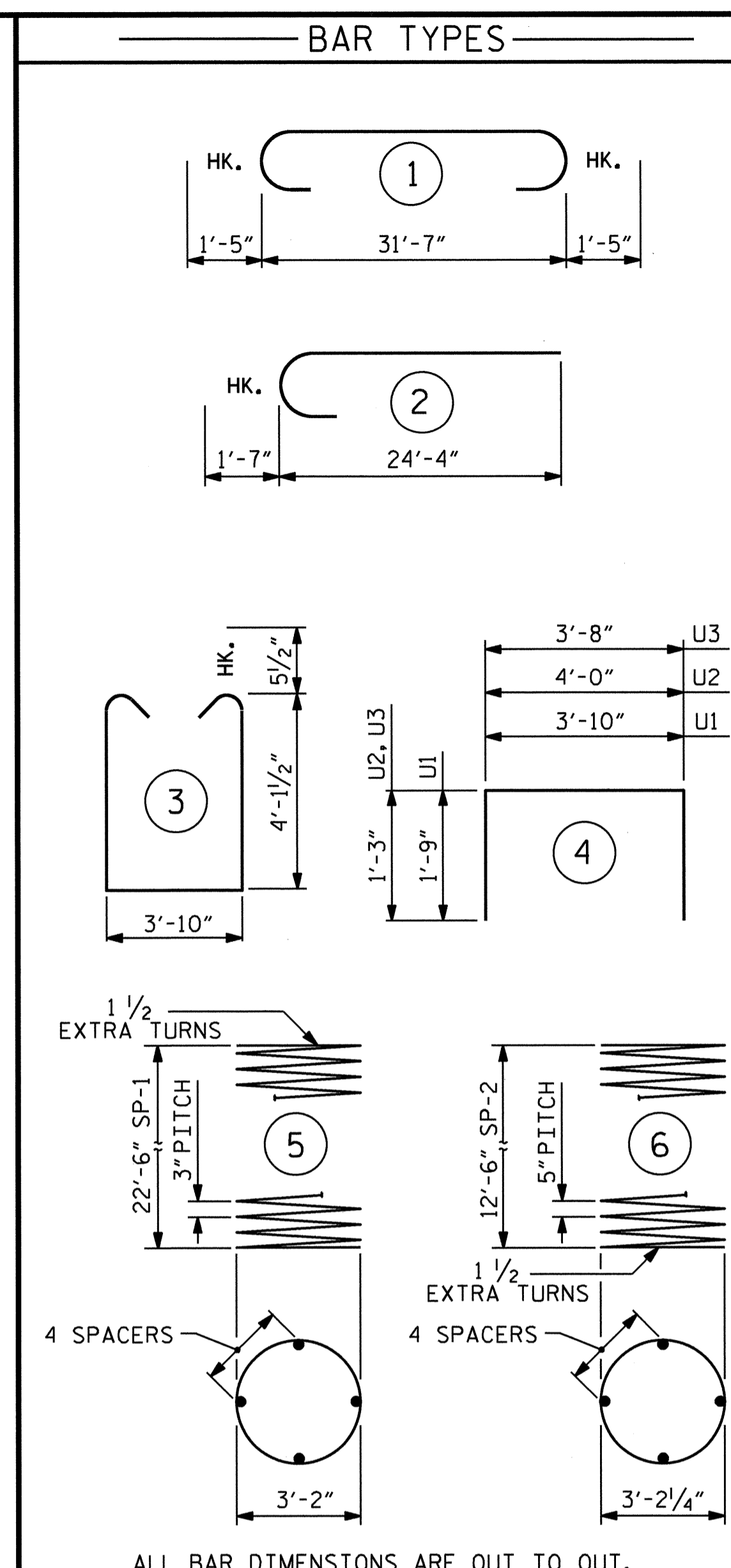


END VIEW

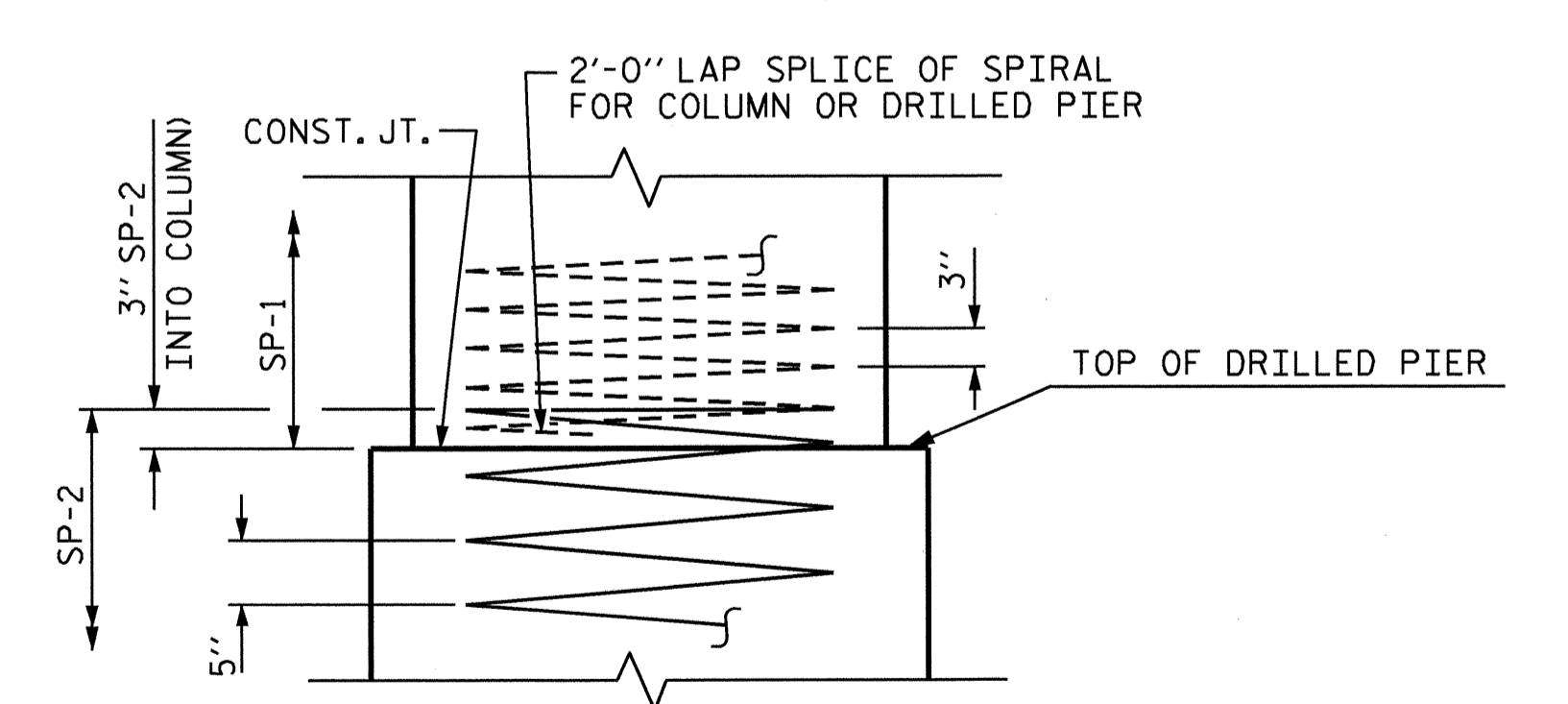
(TYP. EA. END)



SECTION A-A



ALL BAR DIMENSIONS ARE OUT TO OUT.
 *** THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.
 ** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.
 ▲ SEE NOTES



CONSTRUCTION JOINT DETAIL

BILL OF MATERIAL

BENT 3

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	#10	1	34'-5"	1037
B2	7	#10	STR	31'-8"	954
B3	8	#6	STR	31'-8"	381
M1	24	#11	STR	23'-6"	2997
S1	47	#5	3	13'-0"	637
U1	28	#4	4	7'-4"	137
U2	8	#4	4	6'-6"	35
U3	8	#4	4	6'-2"	33
V1	24	#11	2	25'-11"	3305

REINFORCING STEEL 9516 LBS.

SP	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-1	2	***	5	897'-2"	1199
SP-2	2	**	6	310'-1"	647

SPIRAL COLUMN REINFORCING STEEL 1846 LBS.

CLASS A CONCRETE BREAKDOWN

POUR	DESCRIPTION	VOLUME
POUR 2	(COLUMNS)	15.9 CU.YDS.
POUR 3	(CAP)	22.6 CU.YDS.
TOTAL	CLASS A CONCRETE	38.5 CU.YDS.

4'-0" Ø DRILLED PIERS

DRILLED PIER CONCRETE
POUR 1 (DRILLED PIERS) 12.1 CU.YDS.

4'-0" Ø DRILLED PIERS IN SOIL : 9.00 LIN. FT.
 4'-0" Ø DRILLED PIERS NOT IN SOIL : 17.00 LIN. FT.

PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIER : 7.9 LIN. FT.

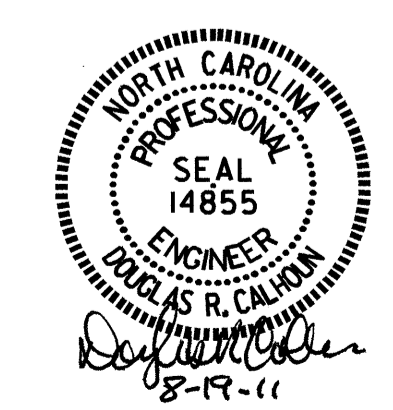
CSL TUBES ▲ 124 LIN. FT.

PROJECT NO. B-4211
NASH COUNTY
 STATION: 22+24.50 -L-

SHEET 2 OF 2

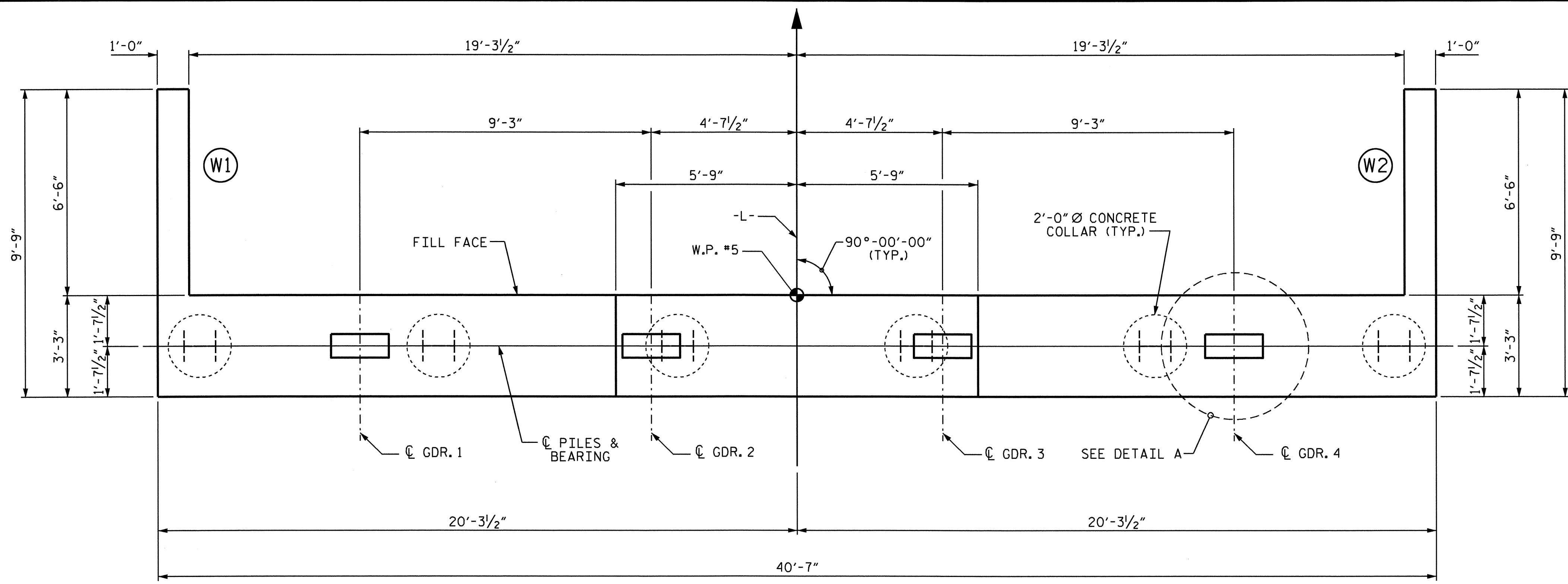
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE BENT 3



REVISIONS						SHEET NO. S-31
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 42
2			4			

DRAWN BY : B.N. GRADY DATE : 6/14/10
 CHECKED BY : J.D. LOEHR DATE : 8/21/10

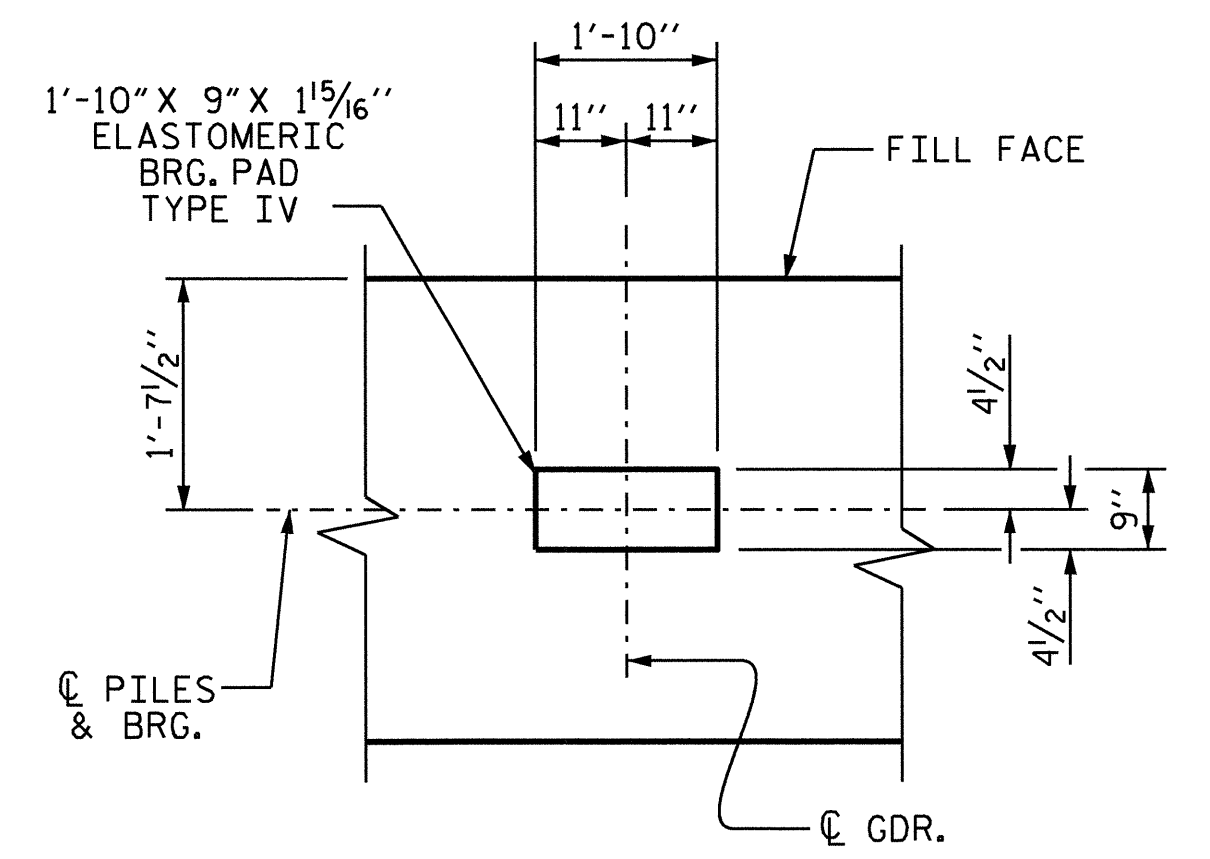


PLAN

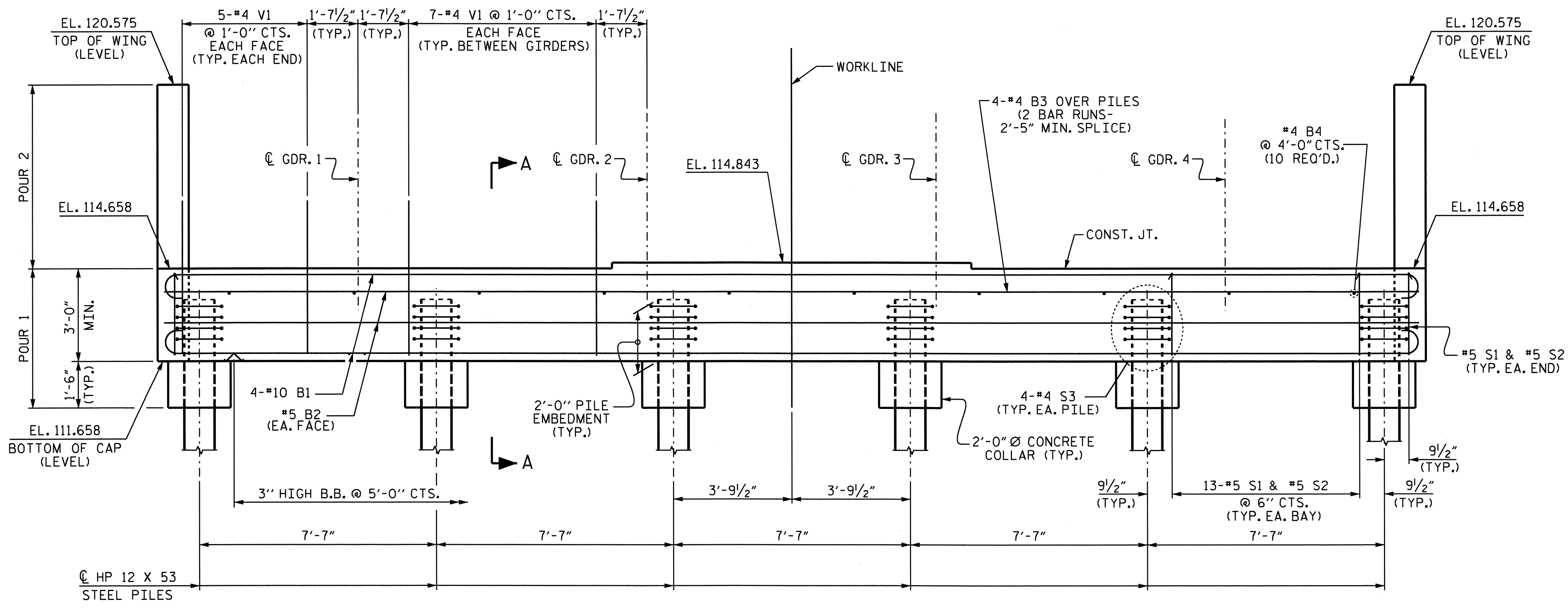
NOTES

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

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE UPPER PART OF WING IS TO BE POURED WITH SUPERSTRUCTURE.

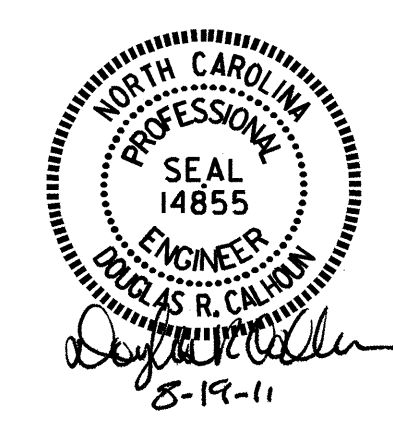


DETAIL A
(TYP. EACH BEARING)



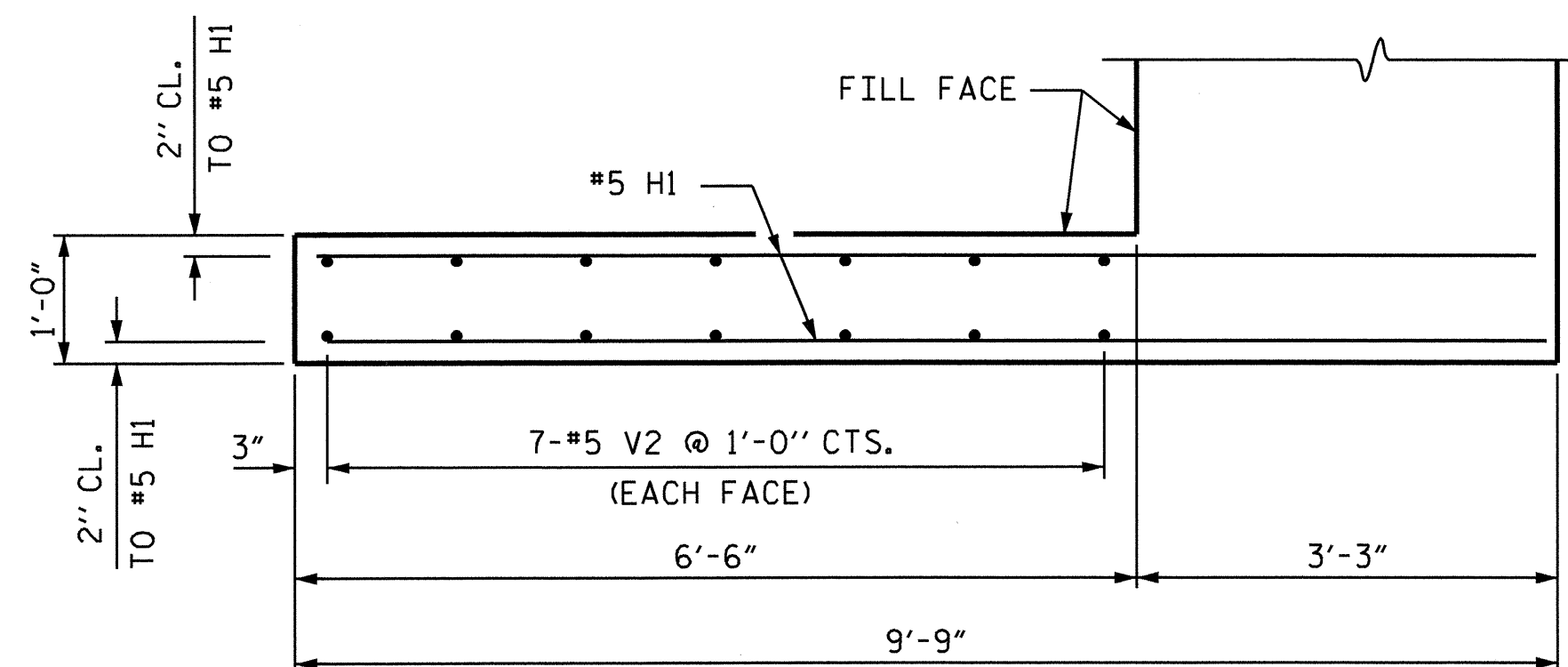
ELEVATION

PROJECT NO. B-4211
 NASH COUNTY
 STATION: 22+24.50 -L-
 SHEET 1 OF 2

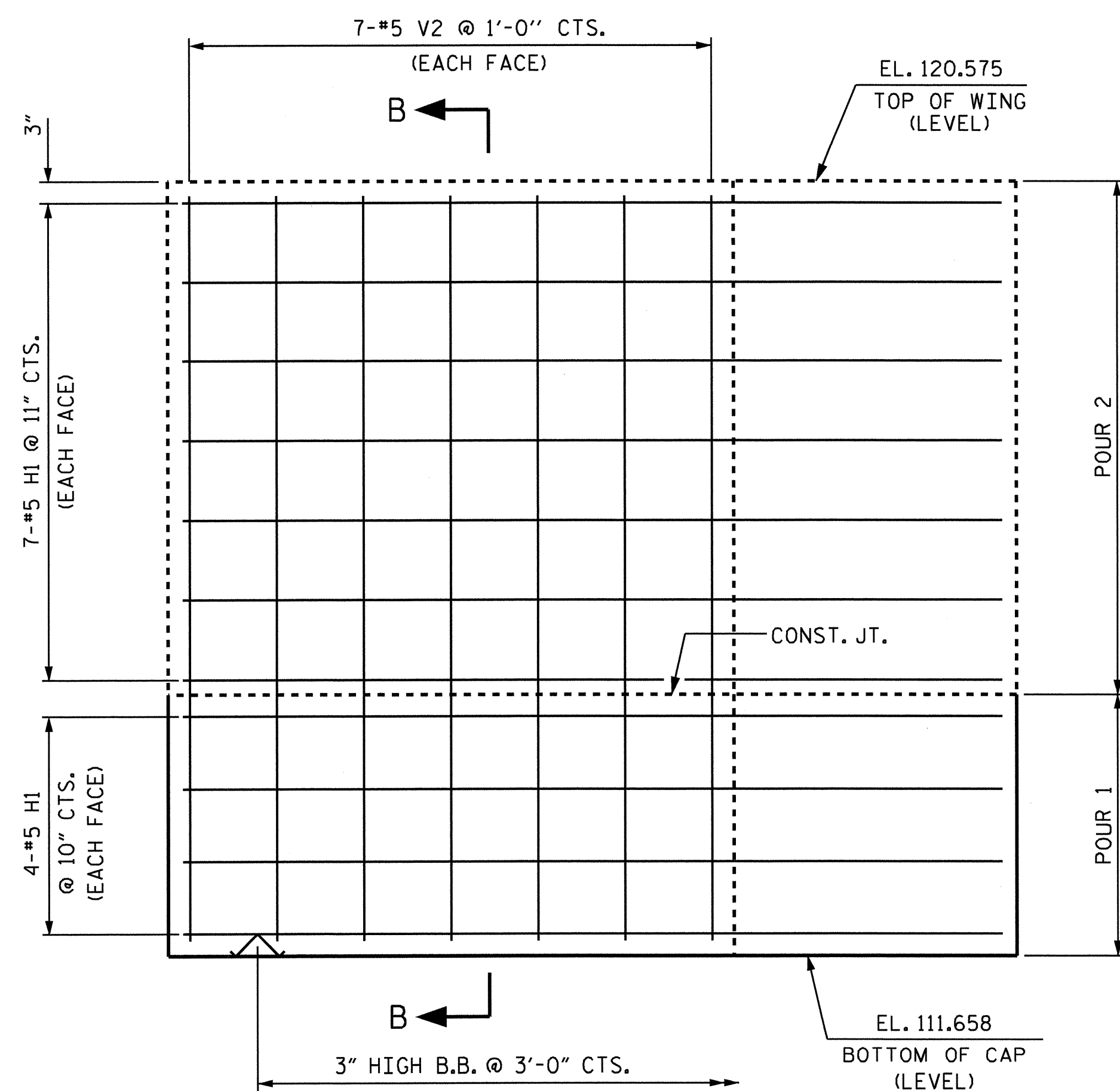


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE INTEGRAL END BENT 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-32 TOTAL SHEETS 42

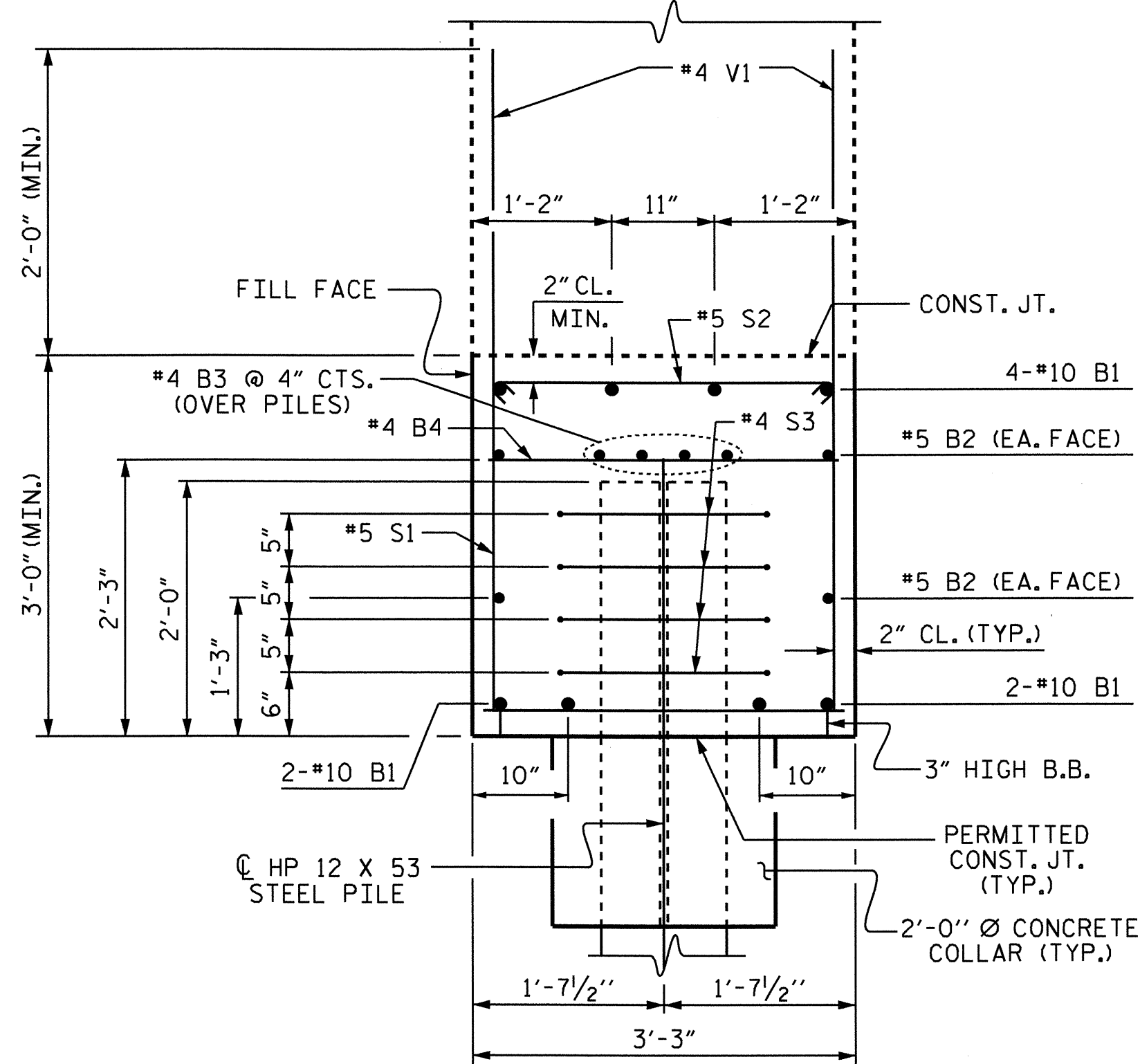
DRAWN BY: J. MYA DATE: 5-12-10
 CHECKED BY: J. L. WALTON DATE: 6-16-10



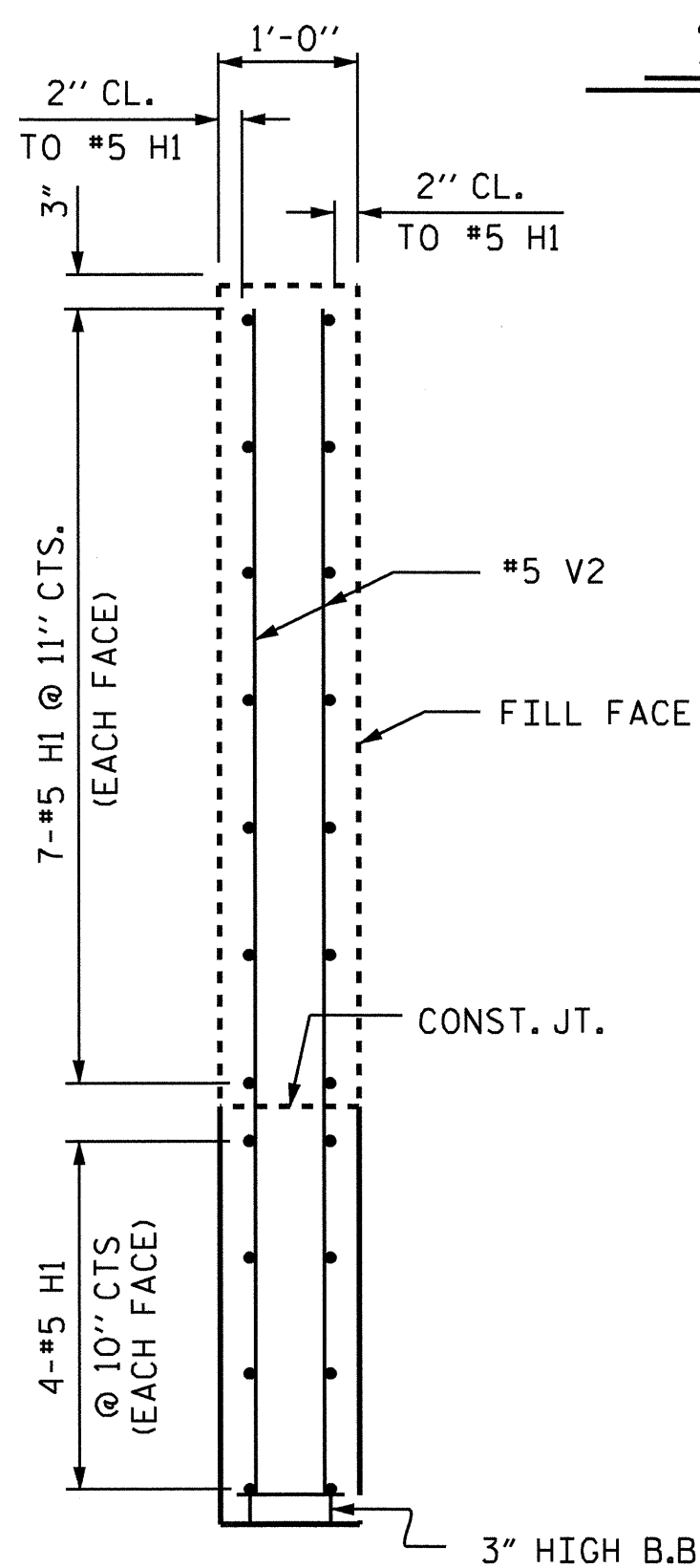
PLAN W1
(WING 2 SIMILAR)



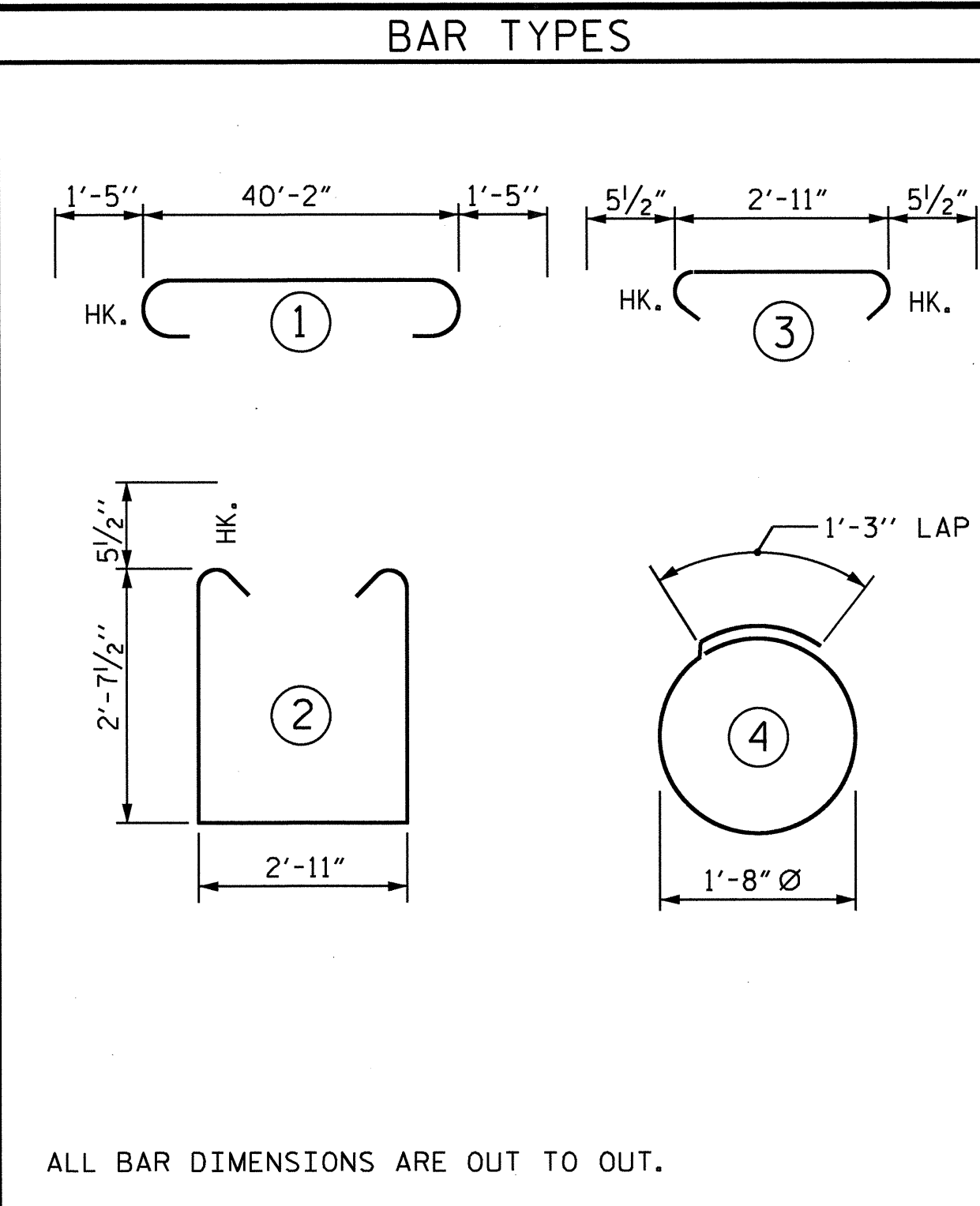
ELEVATION W1
(WING 2 SIMILAR)



SECTION A-A



SECTION B-B



ALL BAR DIMENSIONS ARE OUT TO OUT.

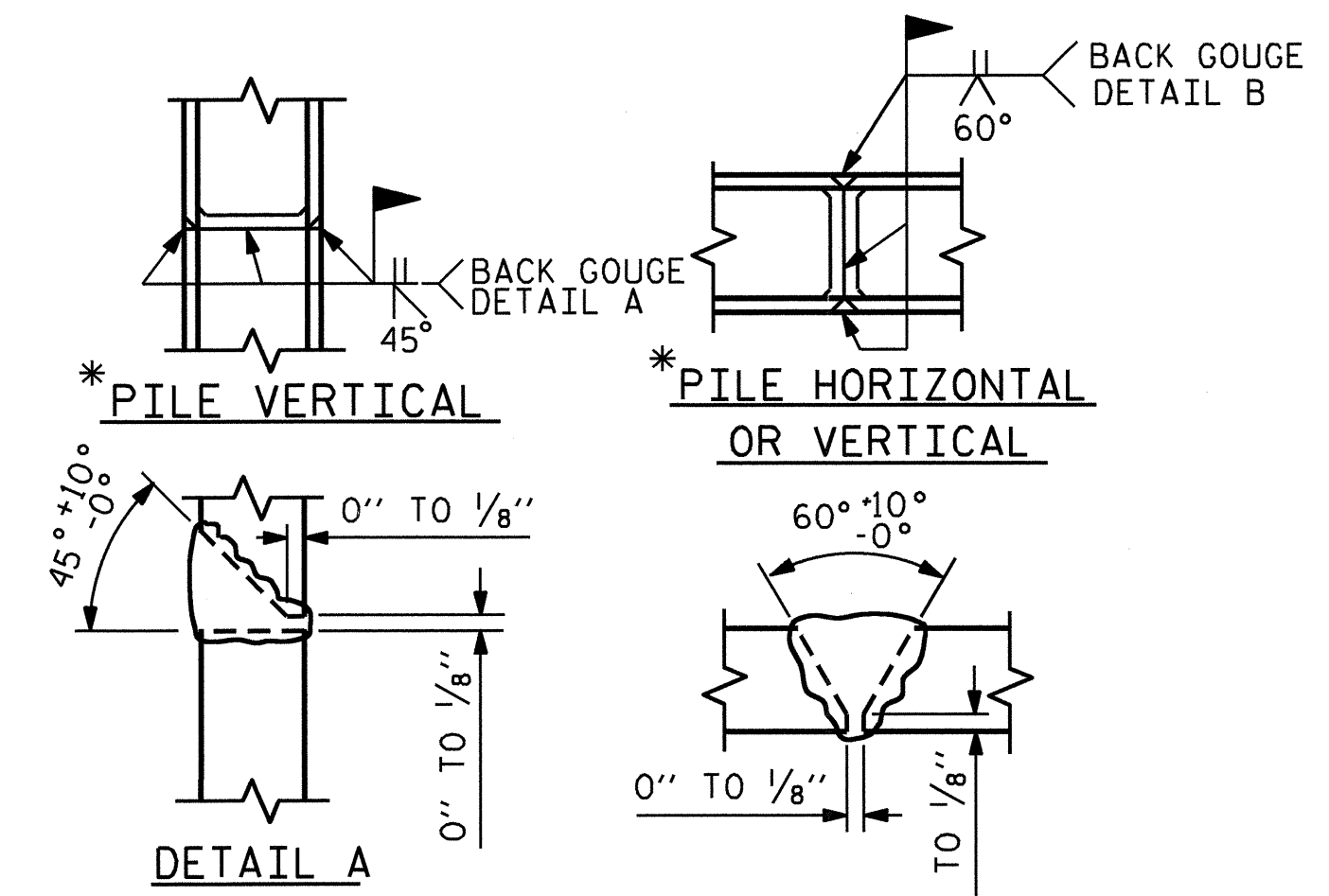
BILL OF MATERIAL					
END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10	1	43'-0"	1480
B2	4	#5	STR	40'-3"	168
B3	8	#4	STR	21'-4"	114
B4	10	#4	STR	2'-11"	19
H1	44	#4	STR	9'-5"	277
S1	67	#5	2	9'-1"	635
S2	67	#5	3	3'-10"	268
S3	24	#4	4	6'-6"	104
V1	62	#4	STR	5'-0"	207
V2	28	#5	STR	8'-7"	251
REINFORCING STEEL				LBS.	3523

CLASS A CONCRETE BREAKDOWN		
▲ POUR 1 (CAP, CONCRETE COLLARS & LOWER PART OF WINGS)	C.Y.	17.4
TOTAL	C.Y.	17.4

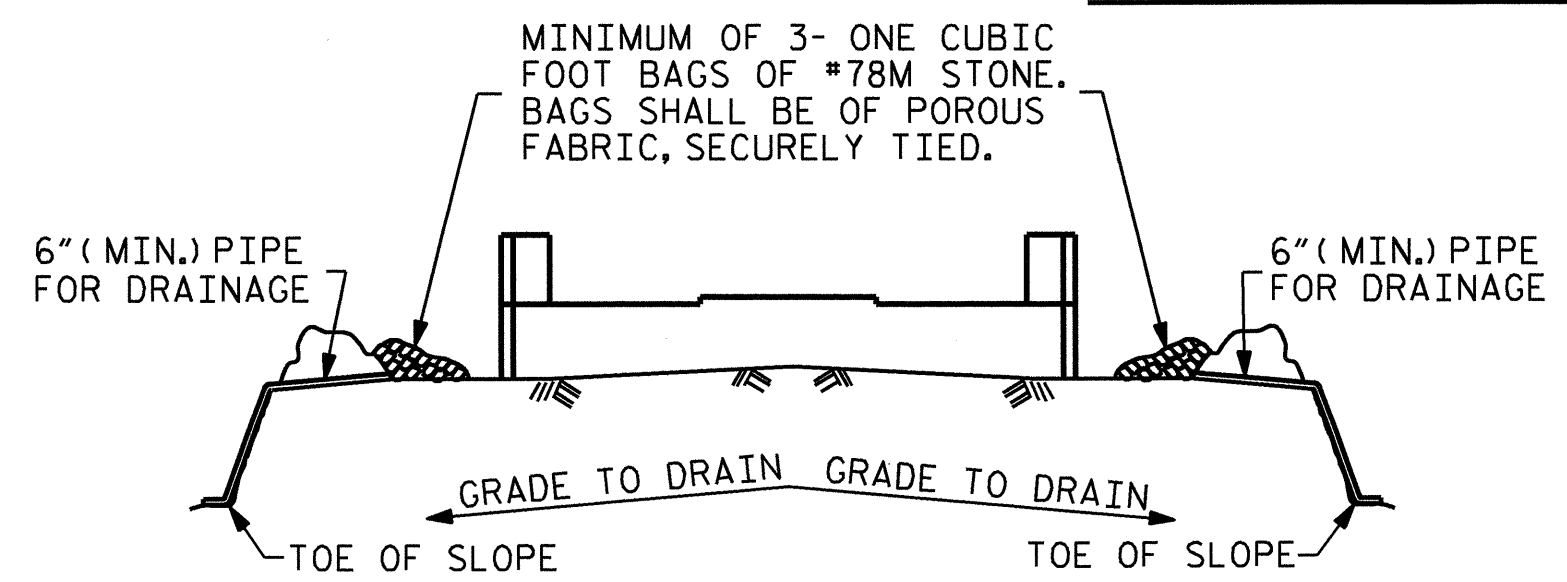
HP 12 X 53 STEEL PILES :	
NUMBER = 6	60 FT.

STEEL PILE POINTS	
EACH: 6	

▲ UPPER WINGS (POUR 2) TO BE POURED WITH SUPERSTRUCTURE



PILE SPLICE DETAILS



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

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

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

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

TEMPORARY DRAINAGE AT END BENT

PROJECT NO. B-4211
 NASH COUNTY
 STATION: 22+24.50 -L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 INTEGRAL END BENT 2

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

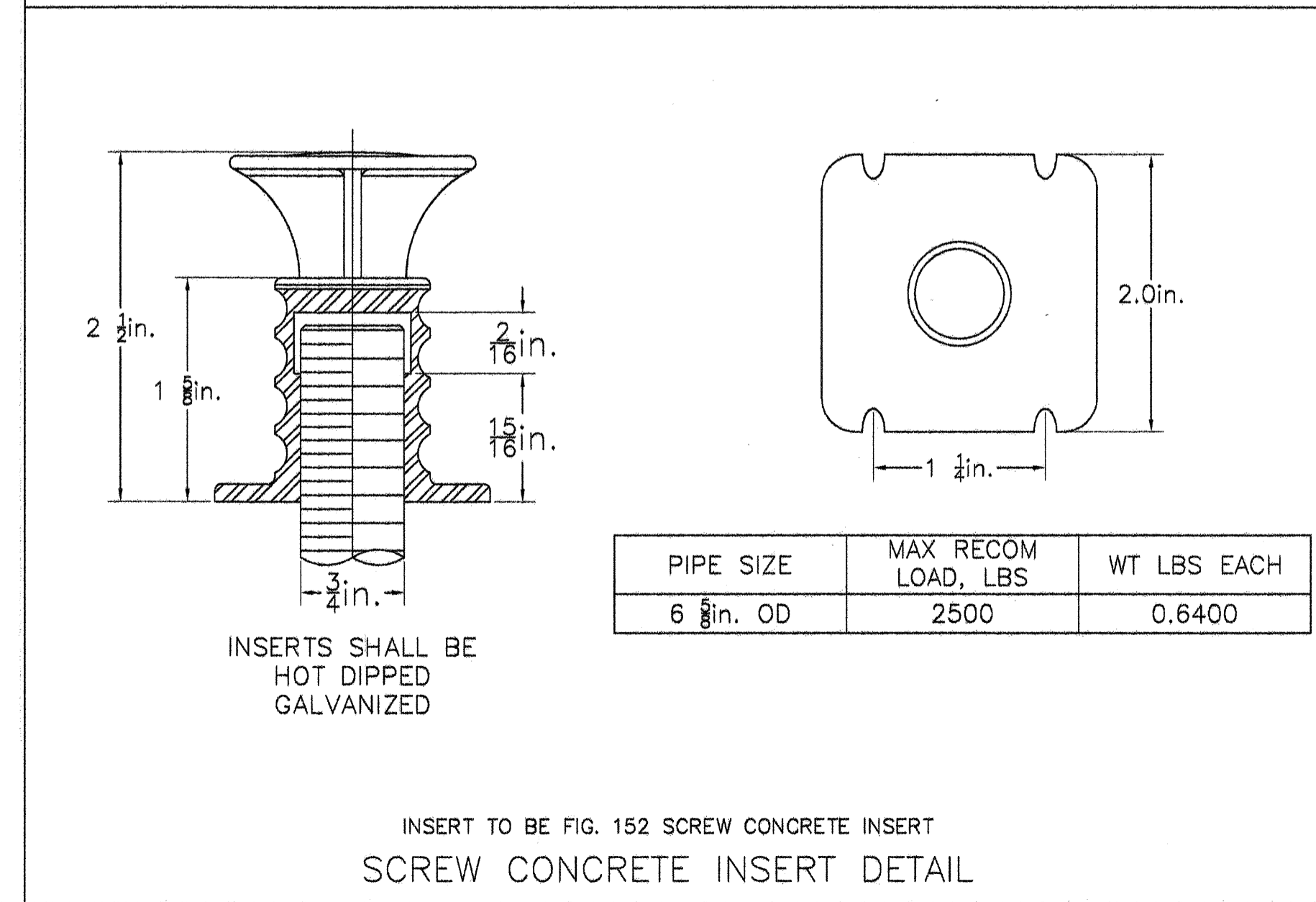
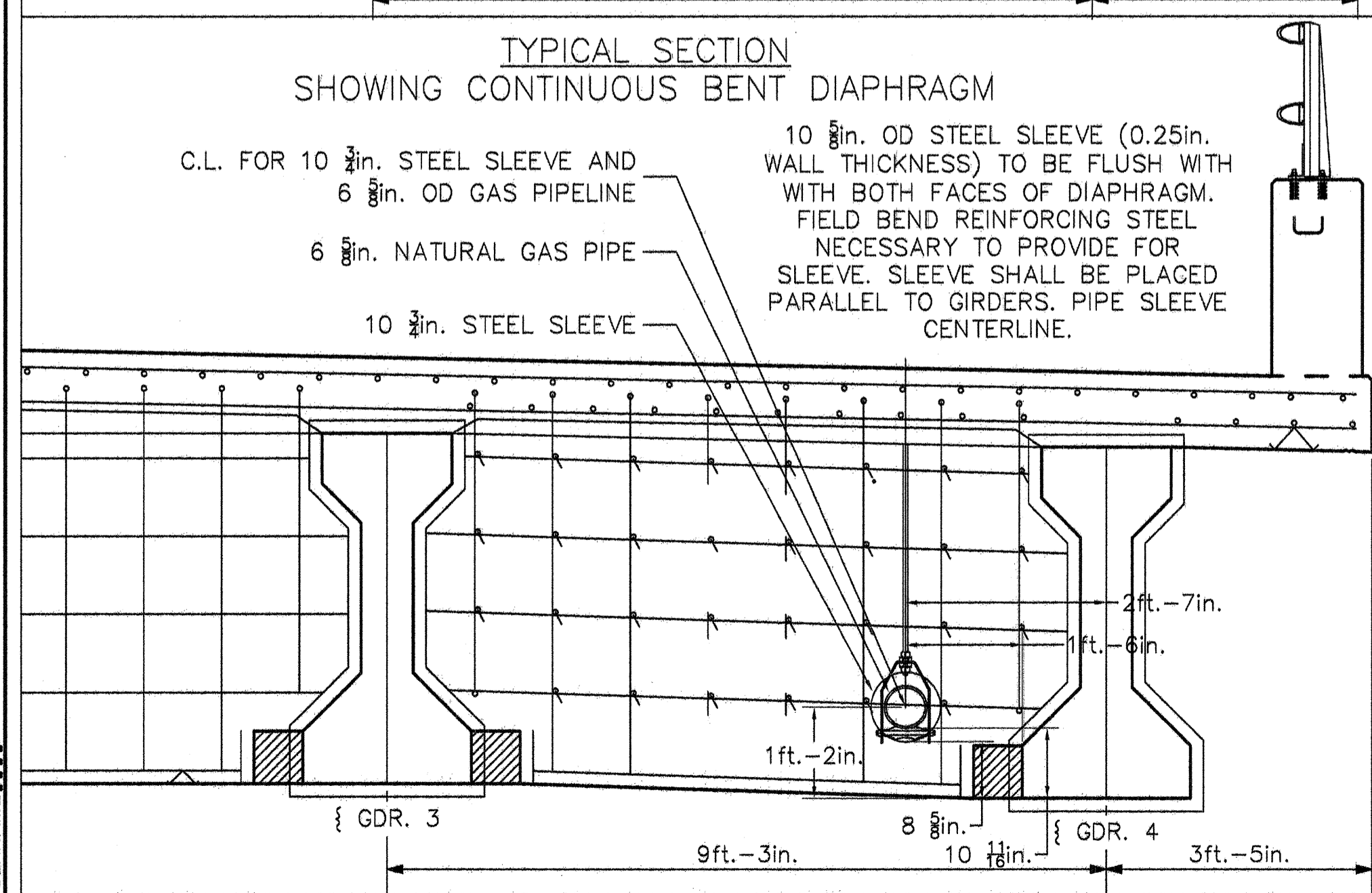
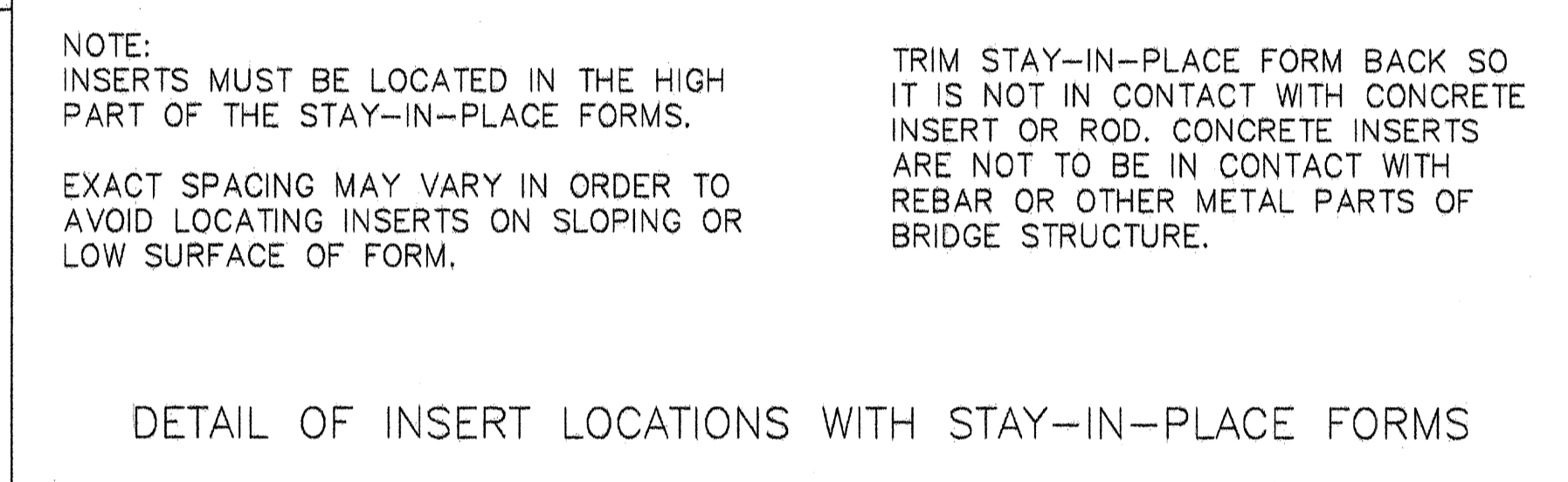
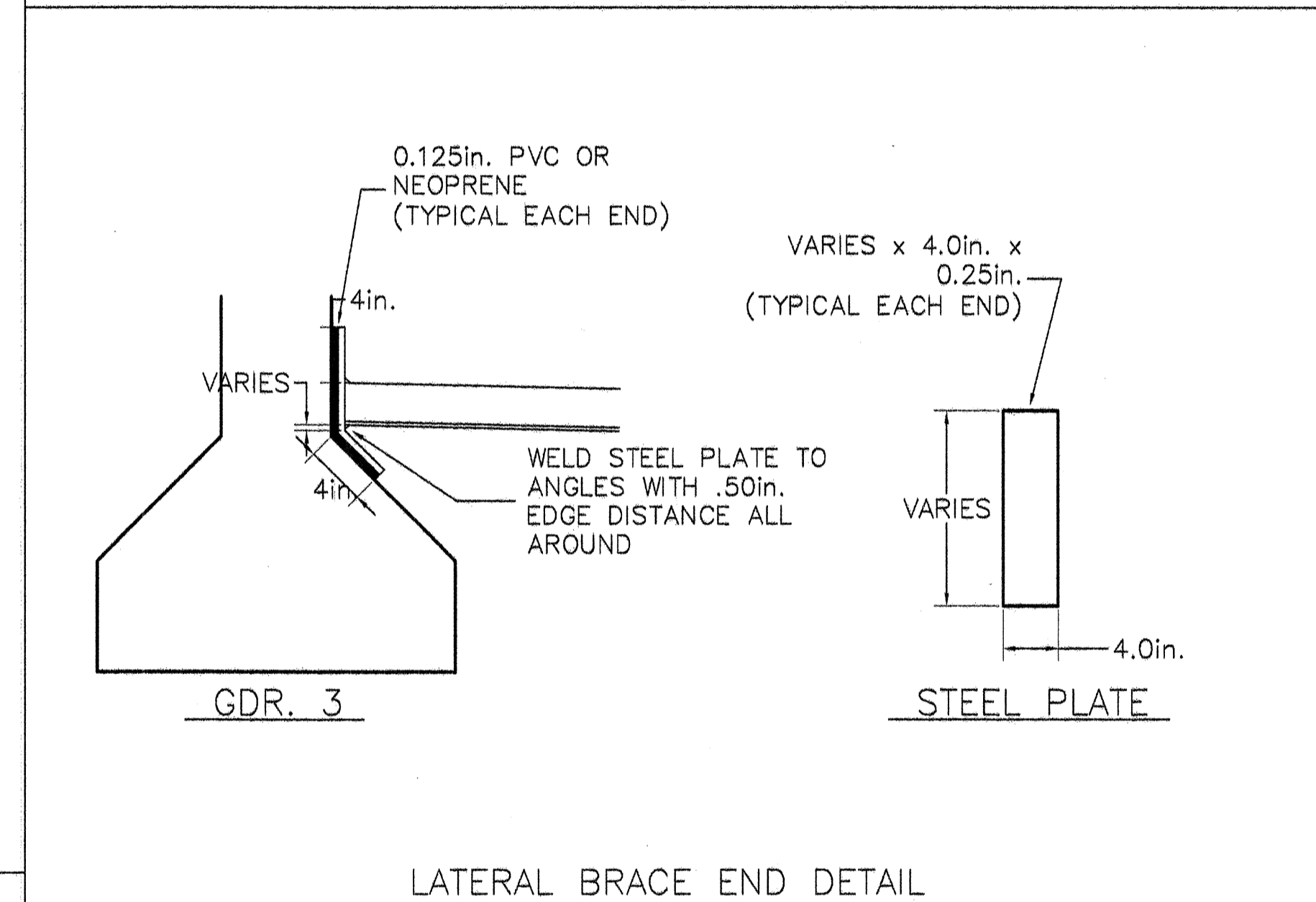
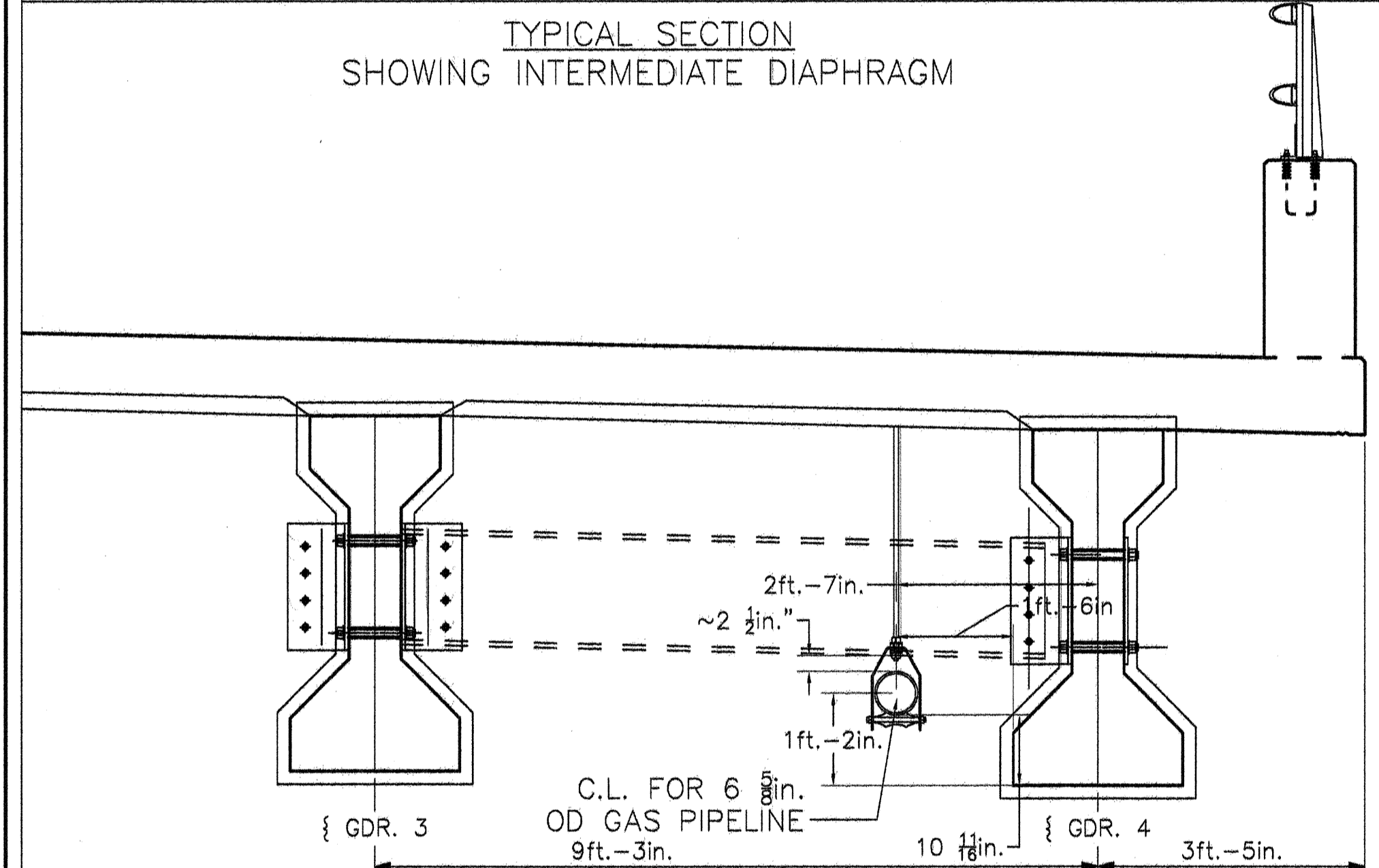
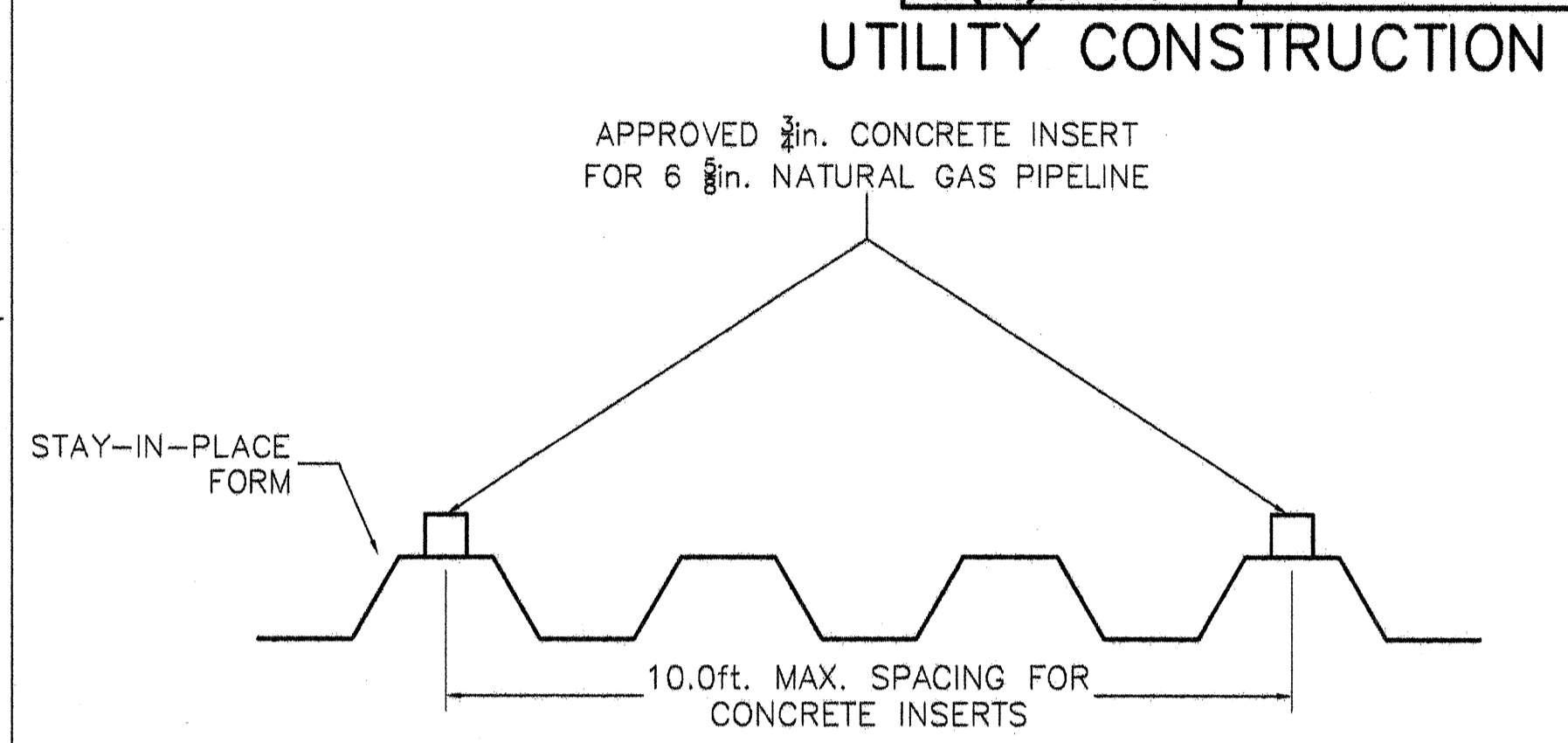
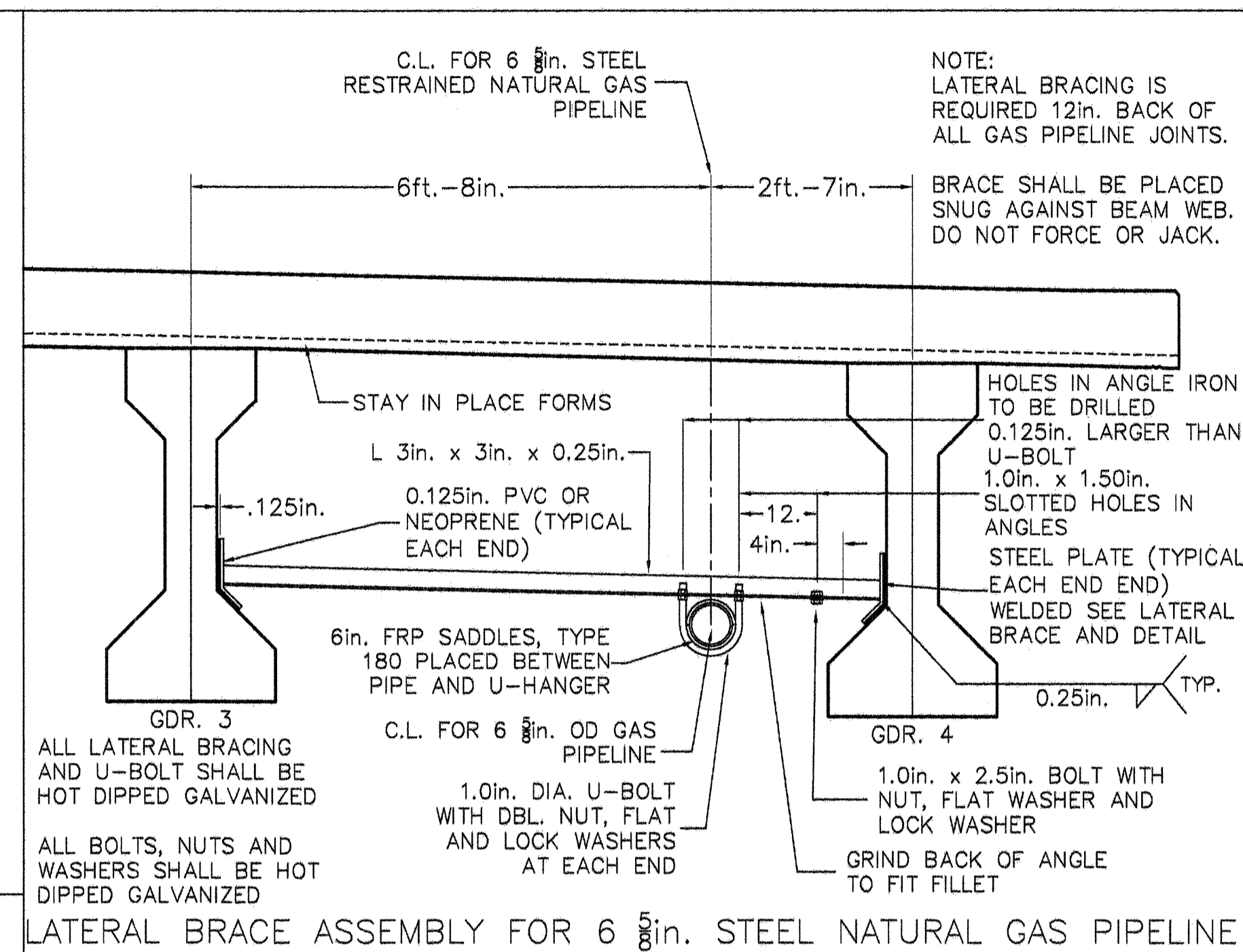
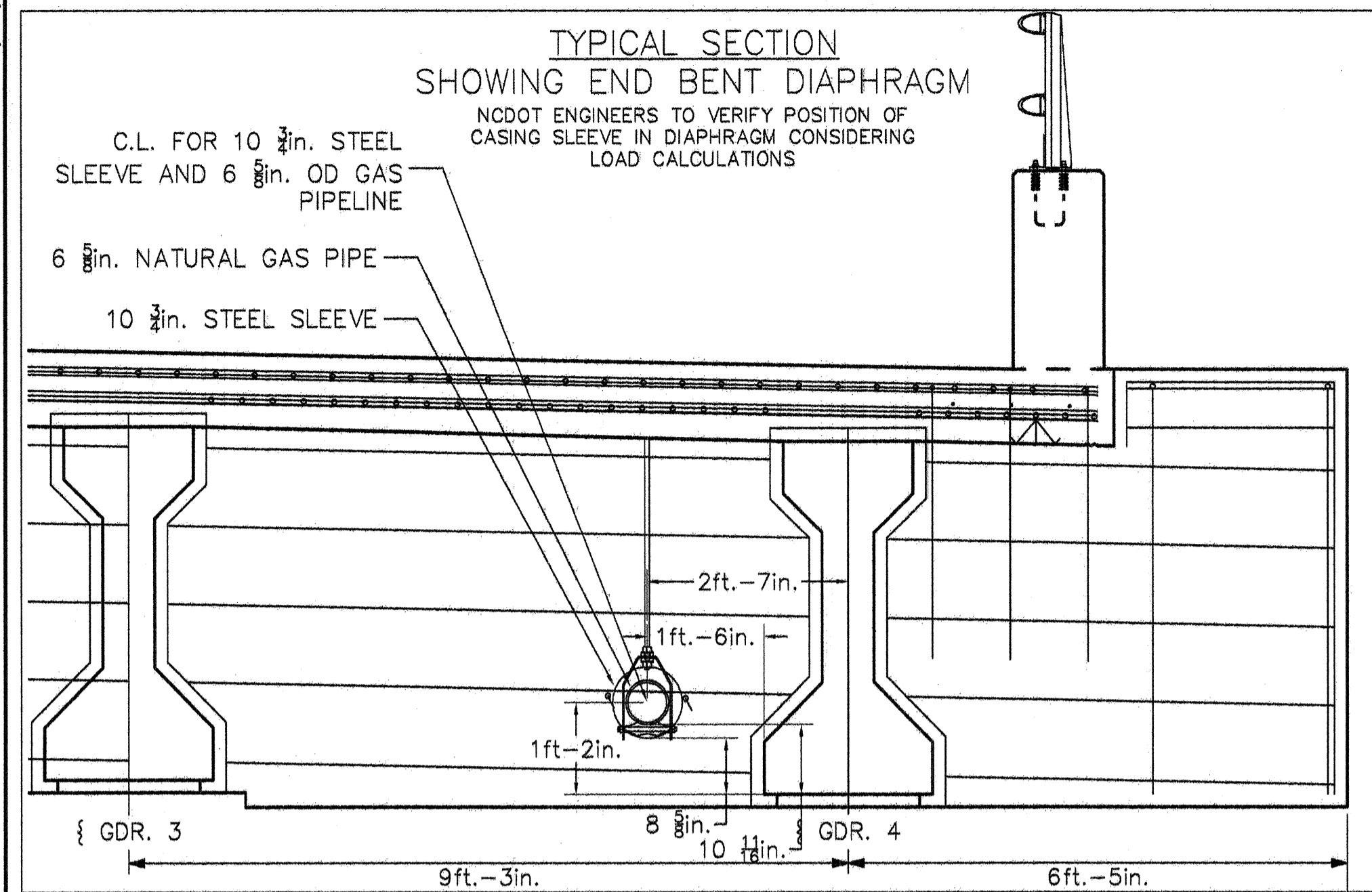
SHEET NO. S-33
 TOTAL SHEETS 42

DRAWN BY: J. MYA DATE: 5-12-10
 CHECKED BY: J. L. WALTON DATE: 6-16-10



5/14/98

PROJECT REFERENCE NO. B-4211	SHEET NO.
DESIGNED BY: ESH	
DRAWN BY: TPC	
CHECKED BY: ESH	
APPROVED BY: ESH	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 250-4128 FAX: (919) 250-4119	
UTILITY CONSTRUCTION PLANS ONLY	



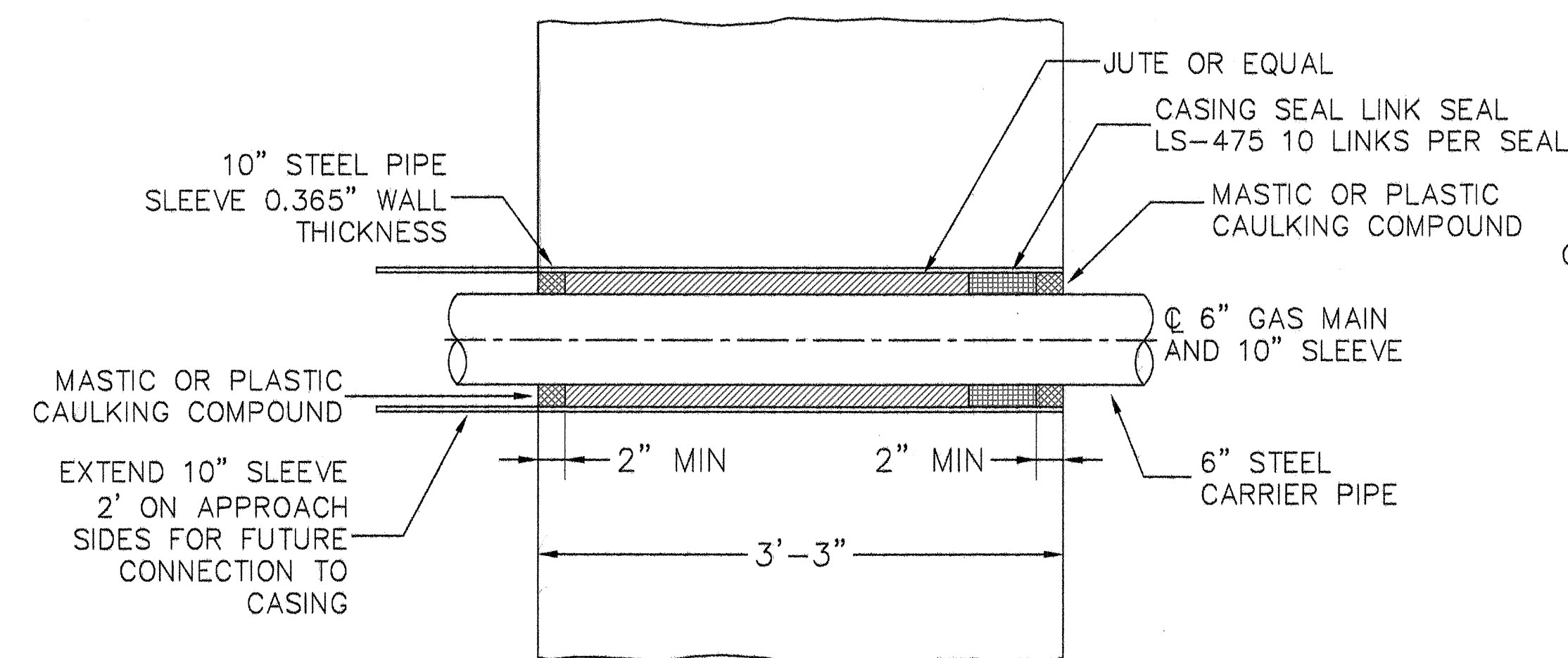
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-4211	
DESIGNED BY: ESH	
DRAWN BY: TPC	
CHECKED BY: ESH	
APPROVED BY: ESH	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919)250-4128 FAX: (919)250-4119	
UTILITY CONSTRUCTION PLANS ONLY	

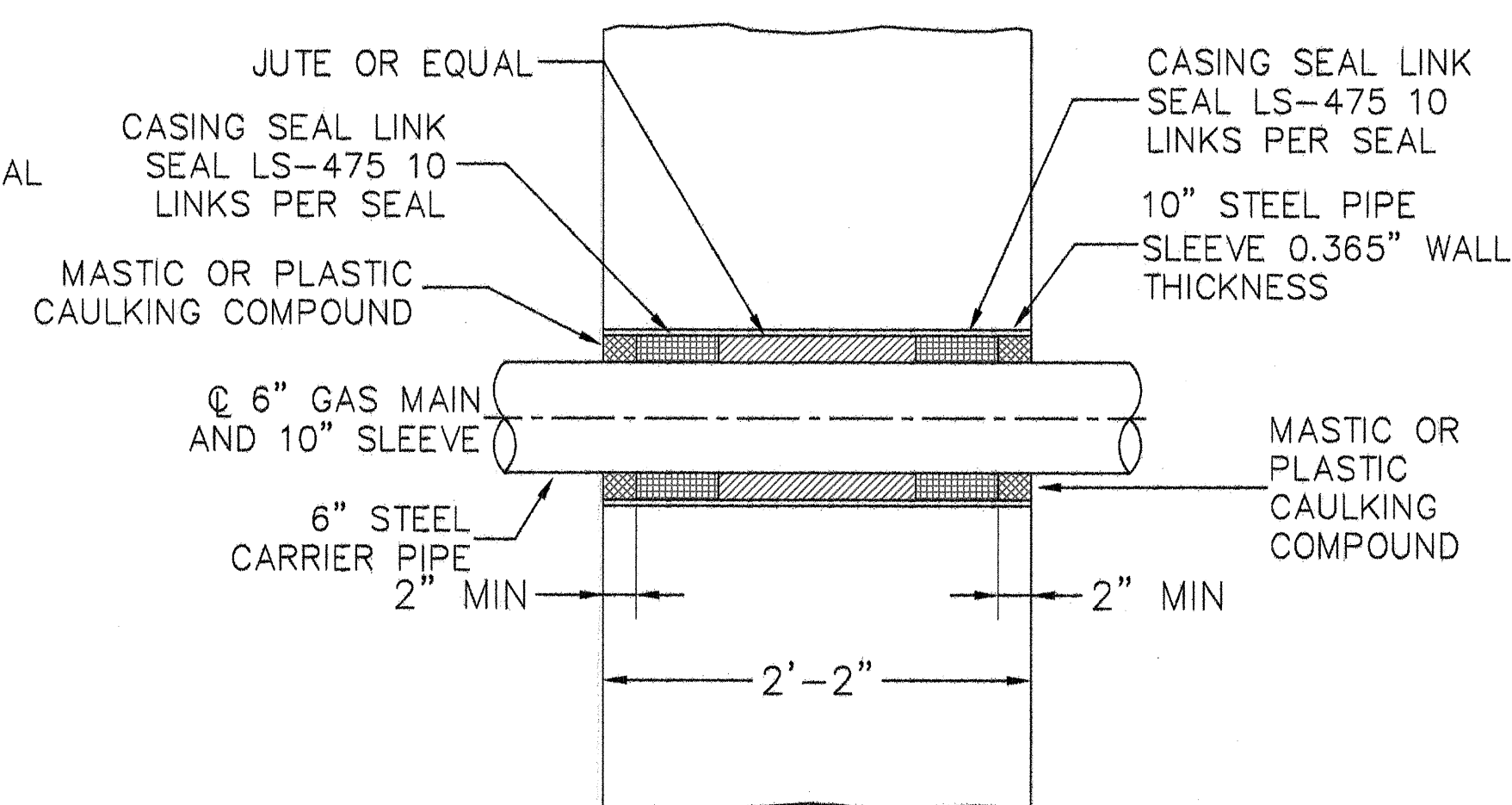
UTILITY CONSTRUCTION

NOTE:

A LINK SEAL IS TO BE PLACED AT EACH SIDE OF THE INTERMEDIATE END BENT DIAPHRAGMS. THE LINK SEAL SHALL BE TIGHTENED BY BOLTS TO FURNISH STRAY CURRENT PROTECTION FOR THE BRIDGE AND TO WATERPROOF THE OPENING BETWEEN THE END AND THE MAIN. THE SEAL IS TO BE PLACED SO AS TO PROVIDE A 2" MINIMUM RECESS AT THE FILL FACE OF THE ENDWALL. ANNULAR SPACE BETWEEN THE SEAL AND THE OPPOSITE FACE OF THE ENDWALL IS TO BE FILLED WITH JUTE OR A SIMILAR MATERIAL UP TO WITHIN 2" OF THE FACE OF THE ENDWALL THE 2" RECESSES ARE TO BE FILLED WITH A MASTIC OR PLASTIC CAULKING COMPOUND TO CONFORM IN COLOR WITH THAT OF THE EXISTING CONCRETE AND FINISHED SMOOTH AND FLUSH.



SECTION THROUGH END BENTS

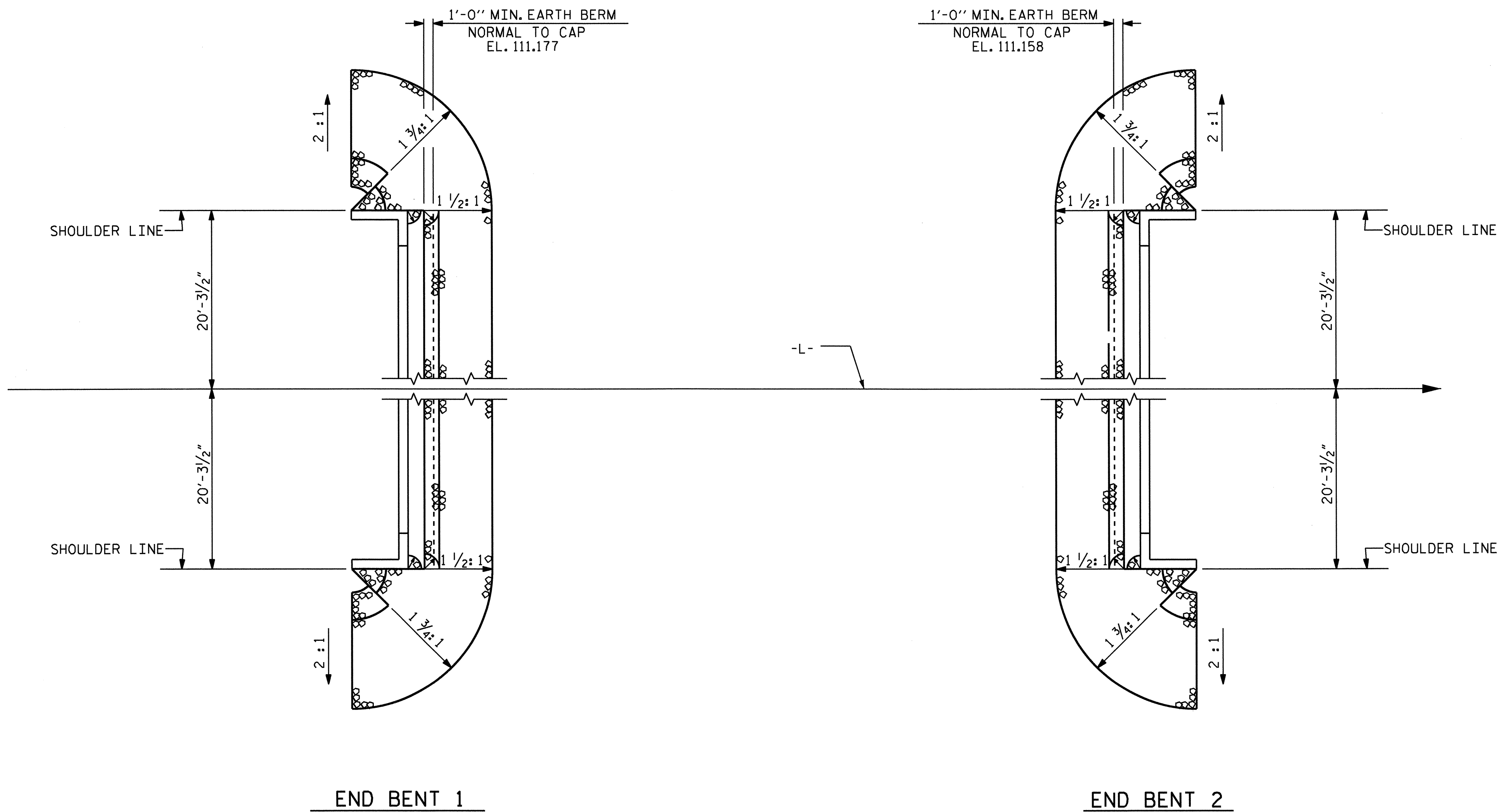


SECTION AT INTERMEDIATE BENT DIAPHRAGMS

No.	Quantity	Units	Item
Materials installed by pipeline subcontractor			
1	330	Feet	6 5/8" O.D Steel pipe, API X-42, ERW, .280 wt, bare
2	90	Feet	6 5/8" O.D Coated Steel pipe, API X-42, ERW, .280 wt, 18-20 mils FBE coating
3	46	Feet	10 3/4" O. D Steel pipe, ASTM A53, Grade B, ERW, .365 wt, bare (Casing)
4	34	Each	Vertical Hanger Assembly - Includes 3/4" steel rod (galvanized), Grinnell hanger Fig 181 with nuts/insulating materials, 6" FRP roll on Shield type 240
5	18	Each	Lateral Brace Assembly - Includes angle braces, U bolt, nuts, and 2- 6" FRP shields type 180
6	10	Each	Link Seals LS 475 C10, 10 links per application
7	5	Each	Jute and mastic or plastic caulking as needed (per diaphragm)
8	8	Each	Casing insulators T.D. Williamson polyethylene M-2 Plastic Thinsulators
9	2	Each	6" LRW 90 Ells, Standard Weight
10	2	Each	6" End Caps
11	1	Each	Tapecoat 20 Hot applied tape wrap as needed
12	1	Each	Primer and Paint as needed
13			
14			Materials installed by bridge fabrication subcontractor
A	15	Feet	10 3/4" O. D Steel pipe, ASTM A53, ERW, .365 wt, bare (Diaphragm Sleeves)
B	34	Each	3/4" Screw Concrete Inserts Grinnell Fig. 152

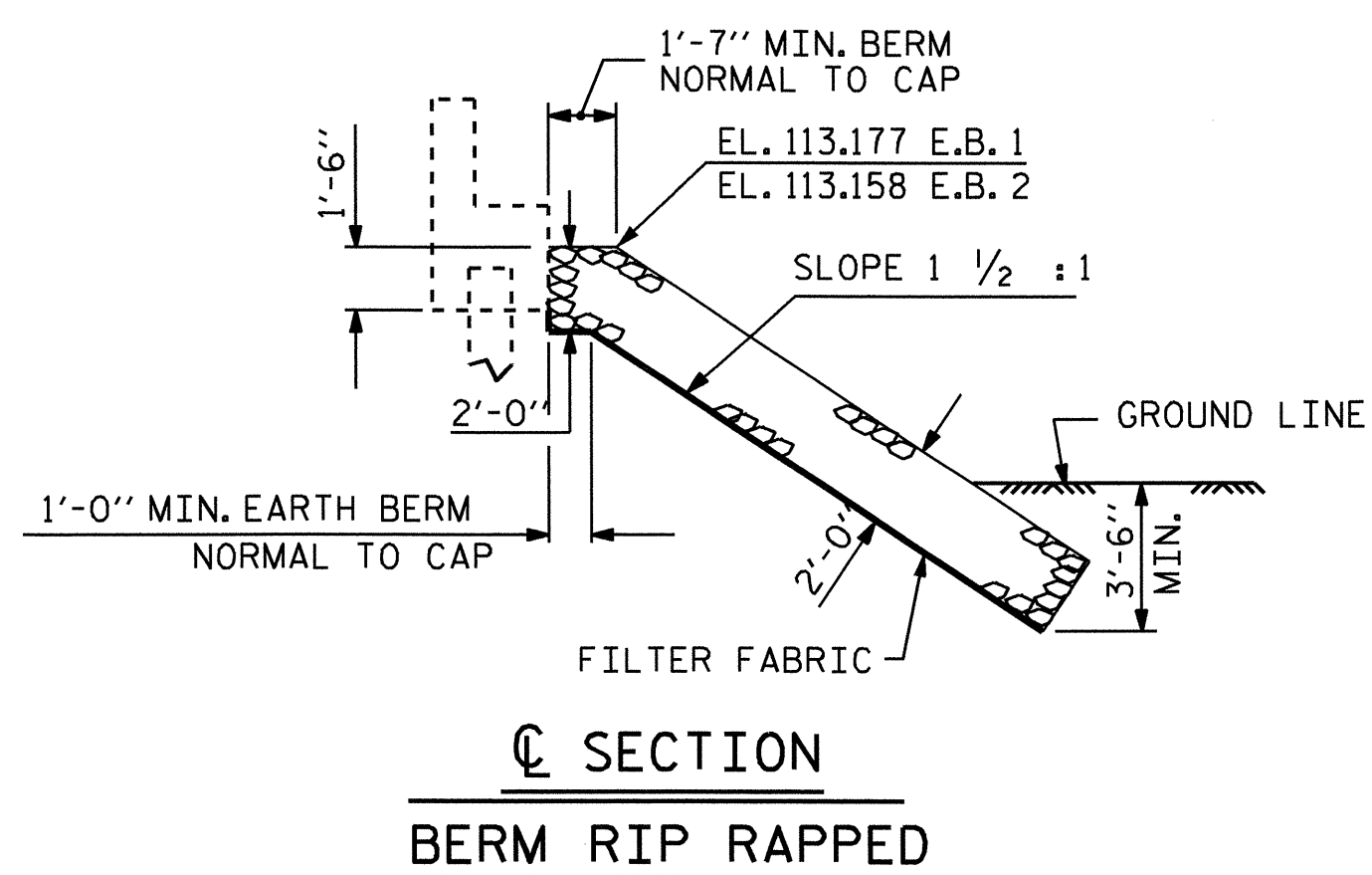
BILL OF MATERIALS

SHEET NO.
5-35
TOTAL SHEETS
42

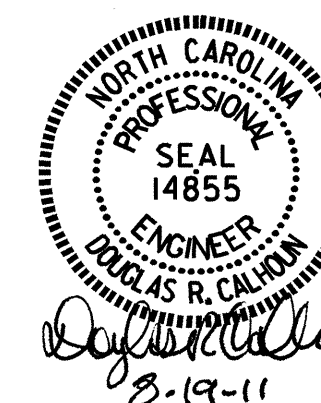


PLAN

ESTIMATED QUANTITIES		
BRIDGE @ STA. 22+24.50 -L-	RIP RAP CLASS II	FILTER FABRIC FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	161	179
END BENT 2	142	157



PROJECT NO. B-4211
NASH COUNTY
 STATION: 22+24.50 -L-

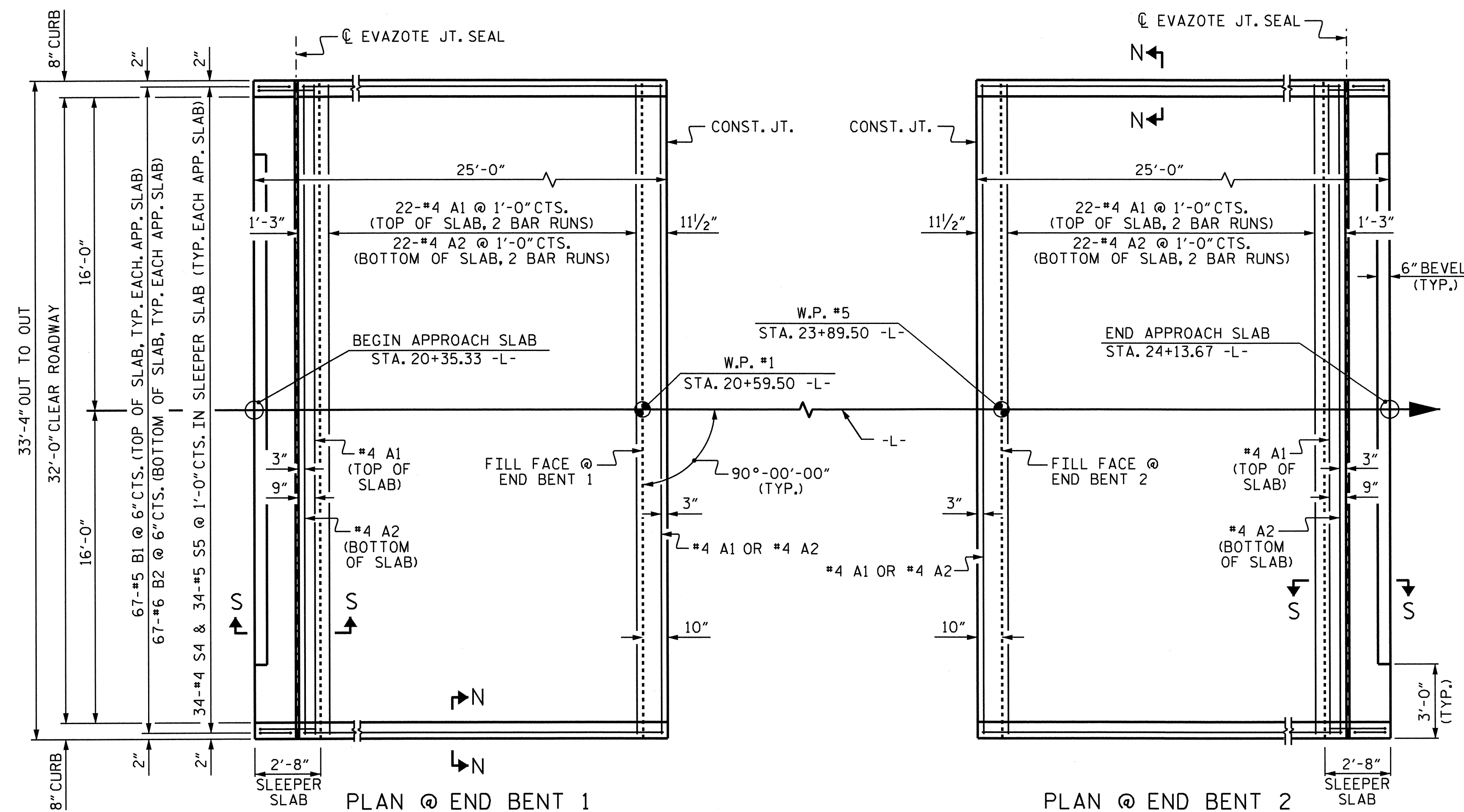


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD = RIP RAP DETAILS =					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 42
					S-37

ASSEMBLED BY : J. L. WALTON	DATE : 3-11-10
CHECKED BY : W.S. ARAFAT	DATE : 5-12-10
DRAWN BY : FCJ 2/88	REV. 8/16/99 RWW/LES
CHECKED BY : ARB 8/88	REV. 10/17/00 RWW/LES
	REV. 5/1/06 TLA/GM

08-JUN-2011 09:29
 R:\Structures\Final Plans\B-4211.SD.RR.1.dgn
 bngrady

SKEW 90° STD. NO. RR2



NOTES

APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

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

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

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

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

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

THE VERTICAL JOINT ON THE RIGHT AND LEFT SIDE OF THE APPROACH SLAB AT THE ENDS OF THE EVAZOTE JOINT SHALL BE FILLED WITH SILICONE OR OTHER APPROVED MATERIAL IN ORDER TO PREVENT BACKFILL FROM ENTERING THE JOINT OPENING.

THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE SL LOW MODULUS SILICONE SEALANT.

FOR EVAZOTE JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE EVAZOTE JOINT SEAL SHALL BE 3/16".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL

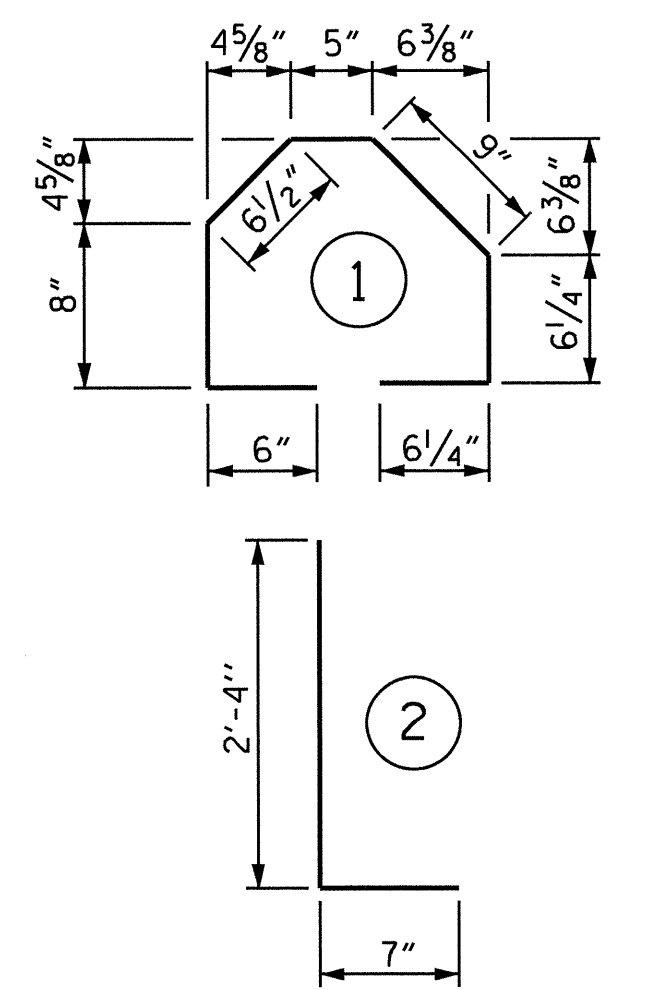
FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	62	#4	STR	17'-6"	725
A2	48	#4	STR	17'-5"	558
* B1	67	#5	STR	22'-5"	1566
B2	67	#6	STR	22'-10"	2298
* S4	34	#4	1	3'-11"	89
S5	34	#5	2	2'-11"	103

REINFORCING STEEL	LBS.	2959
* EPOXY COATED REINFORCING STEEL	LBS.	2380

CLASS AA CONCRETE		
POUR #1 - SLAB & CURB	C. Y.	28.9
POUR #2 - SLEEPER SLAB	C. Y.	3.4
TOTAL	C. Y.	32.3

BAR TYPES



SPLICE BAR LENGTH

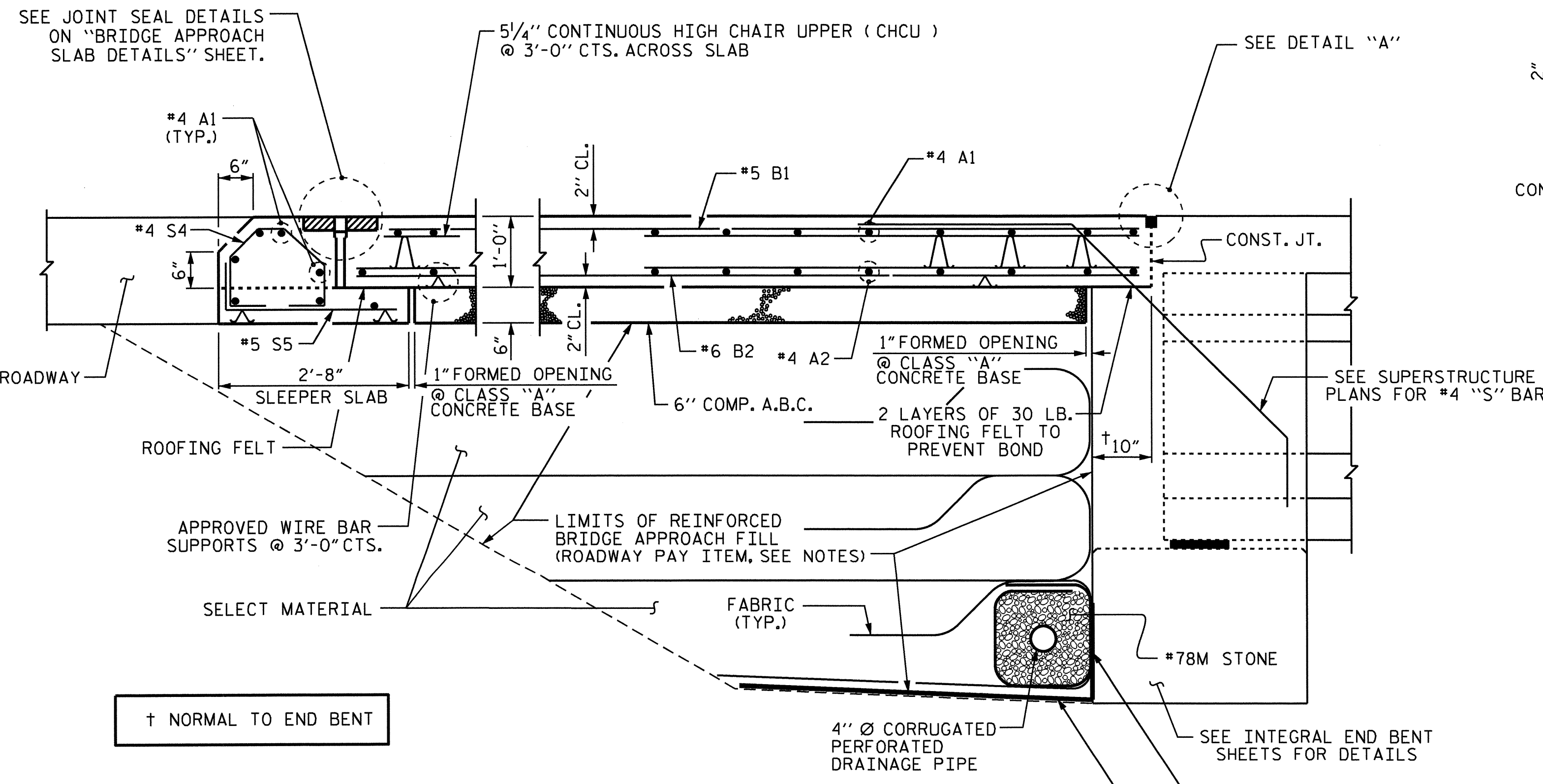
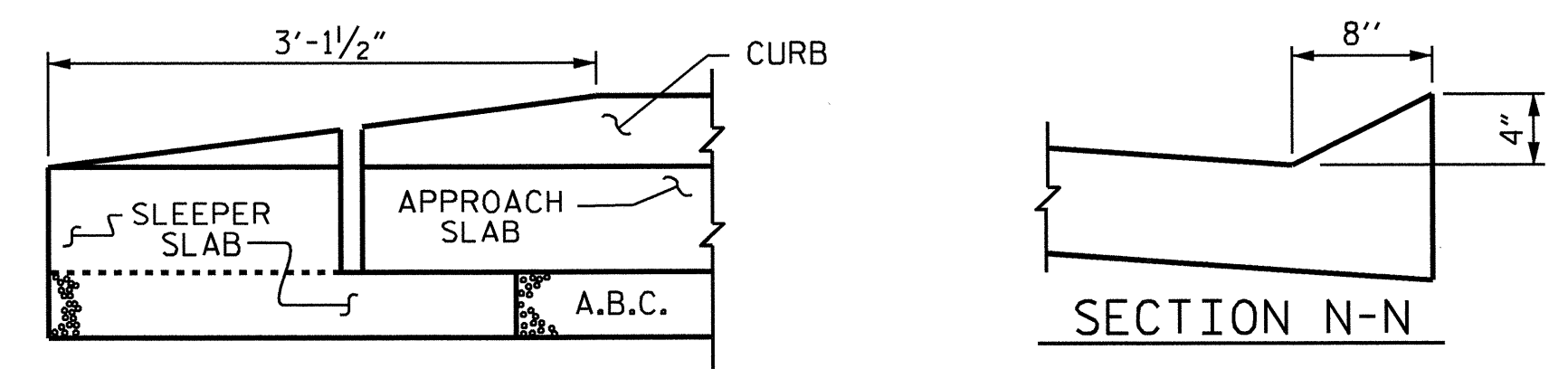
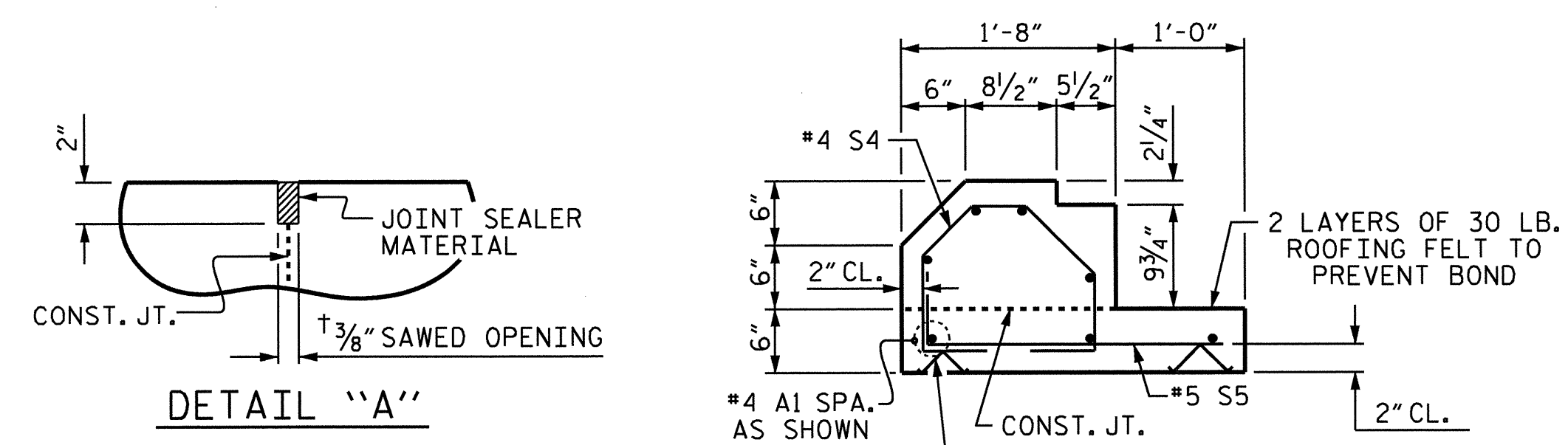
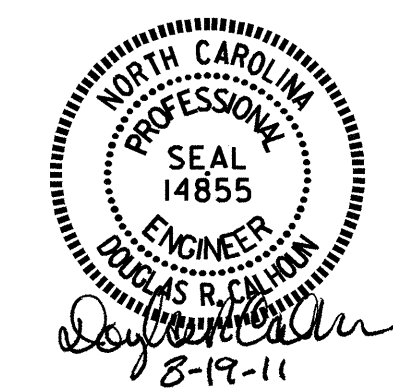
BARS	SPLICE LENGTH
#4 A1	2'-0"
#4 A2	1'-9"

PROJECT NO. B-4211
 NASH COUNTY
 STATION: 22+24.50 -L-

SHEET 1 OF 2

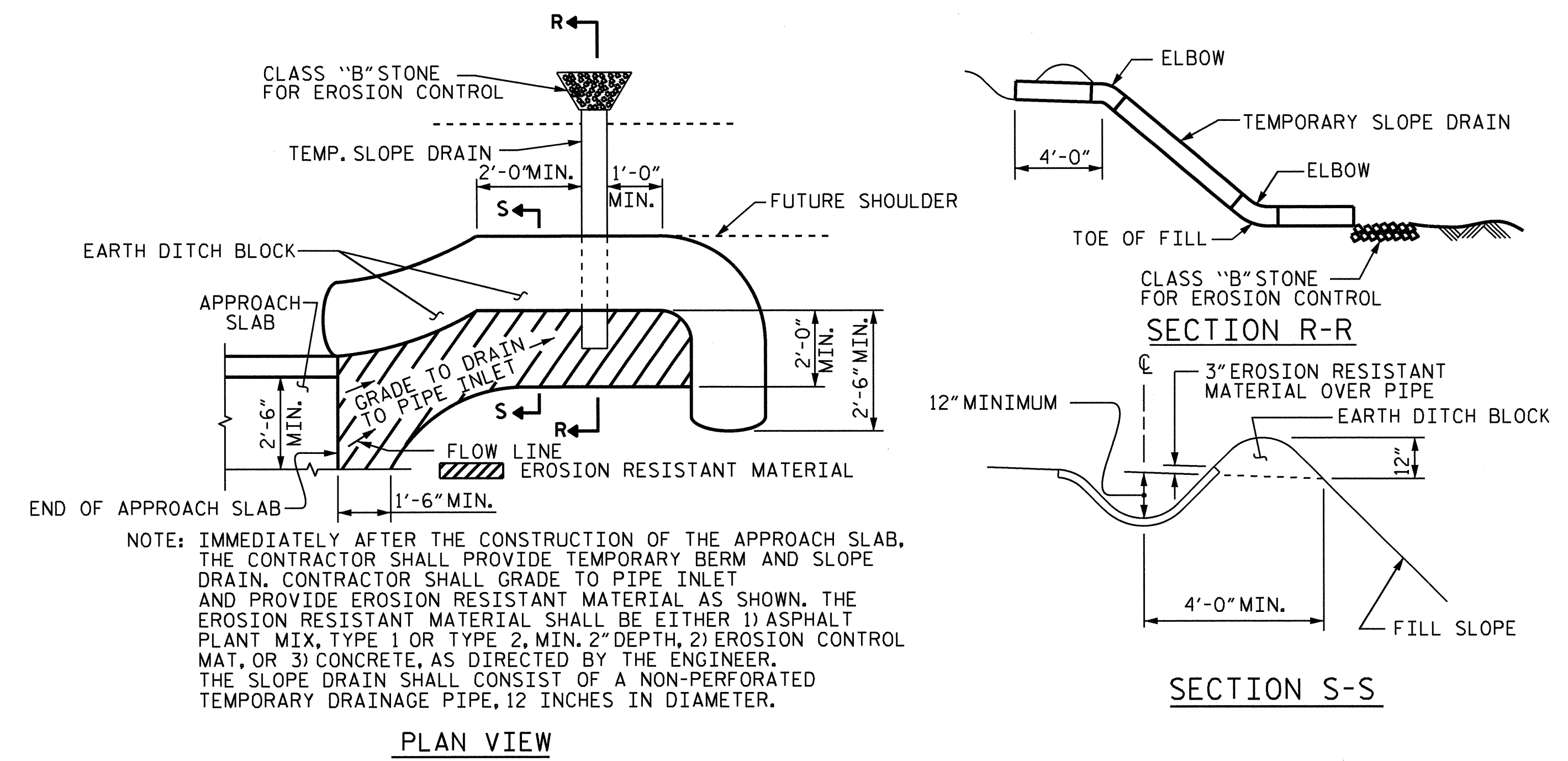
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR INTEGRAL ABUTMENT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-38
1			3			TOTAL SHEETS 42
2			4			



ASSEMBLED BY : J. L. WALTON DATE : 3/9/10
 CHECKED BY : B.N. GRADY DATE : 5/11/10
 DRAWN BY : TLA 10/05
 CHECKED BY : GM 5/06

SECTION THRU SLAB

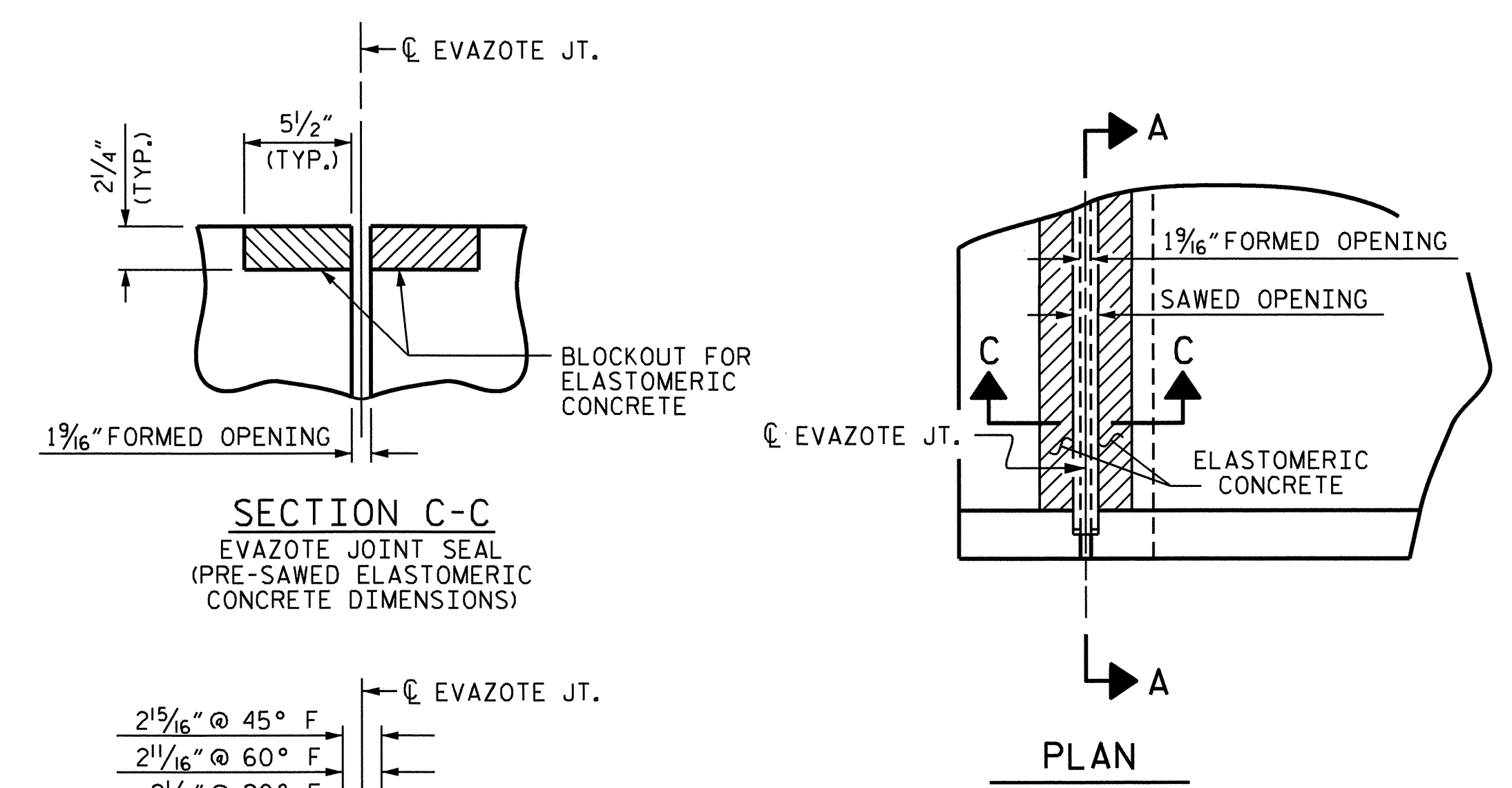


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW

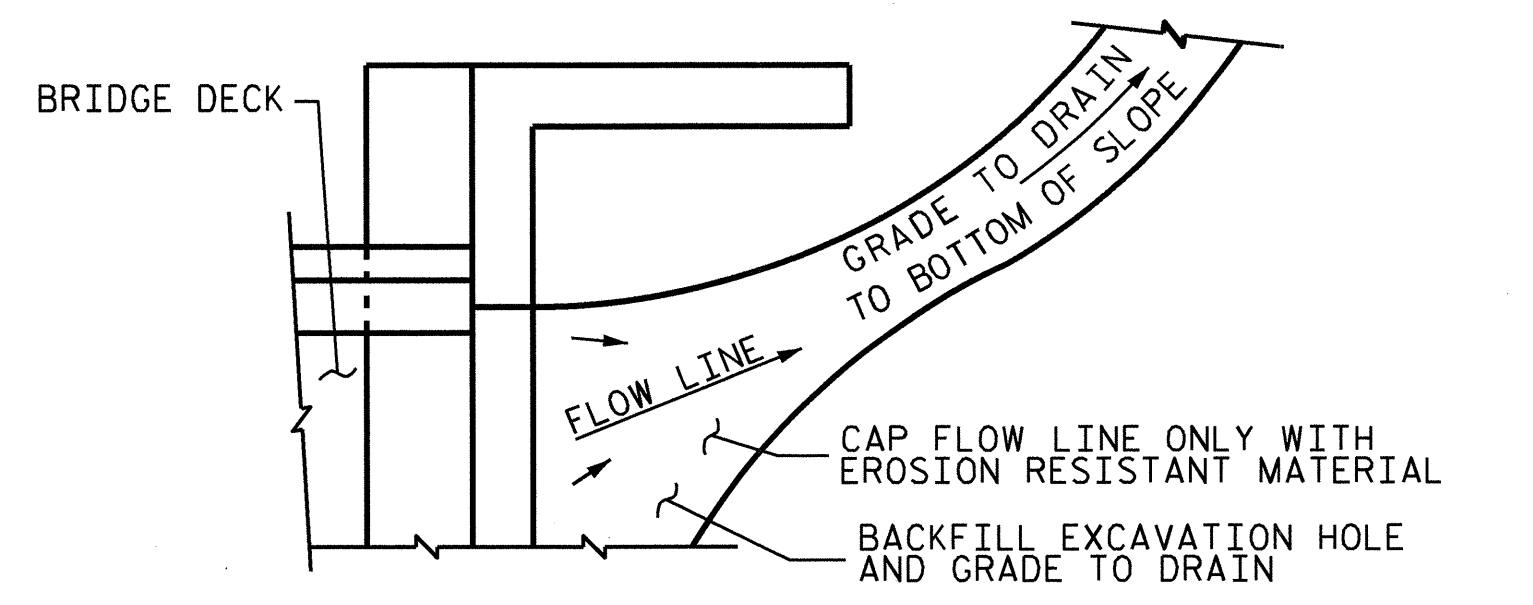
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



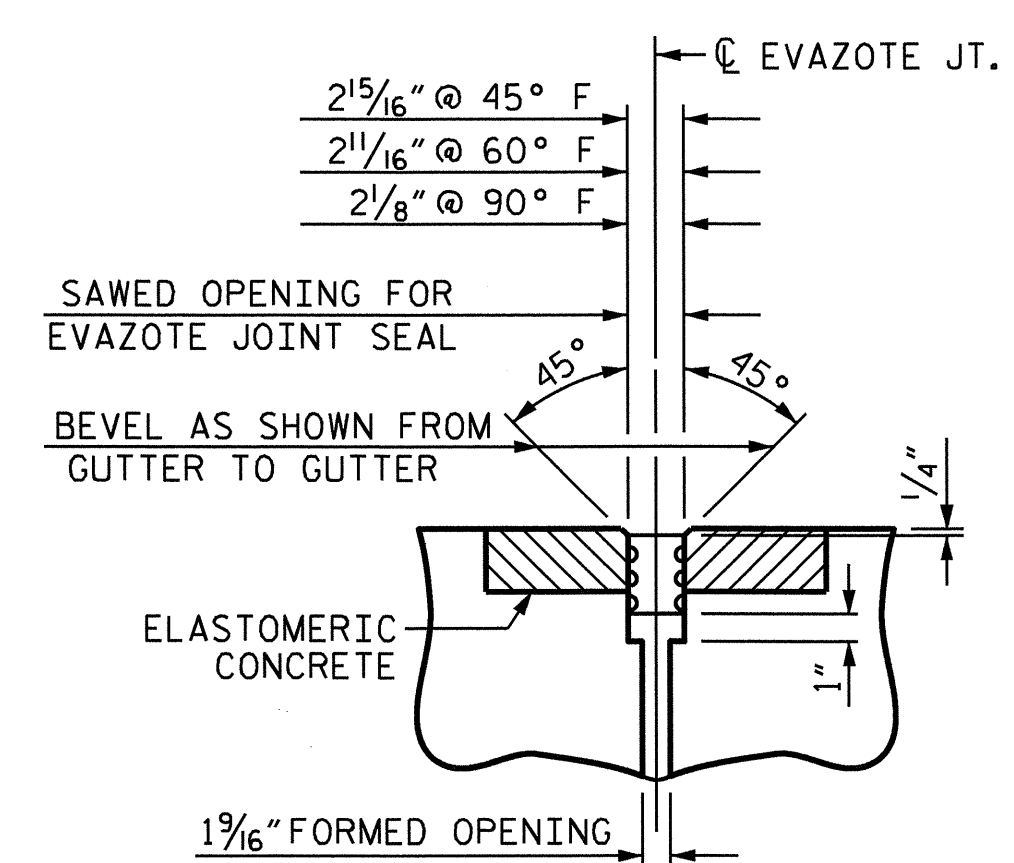
SECTION C-C
EVAZOTE JOINT SEAL
(PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS)

PLAN

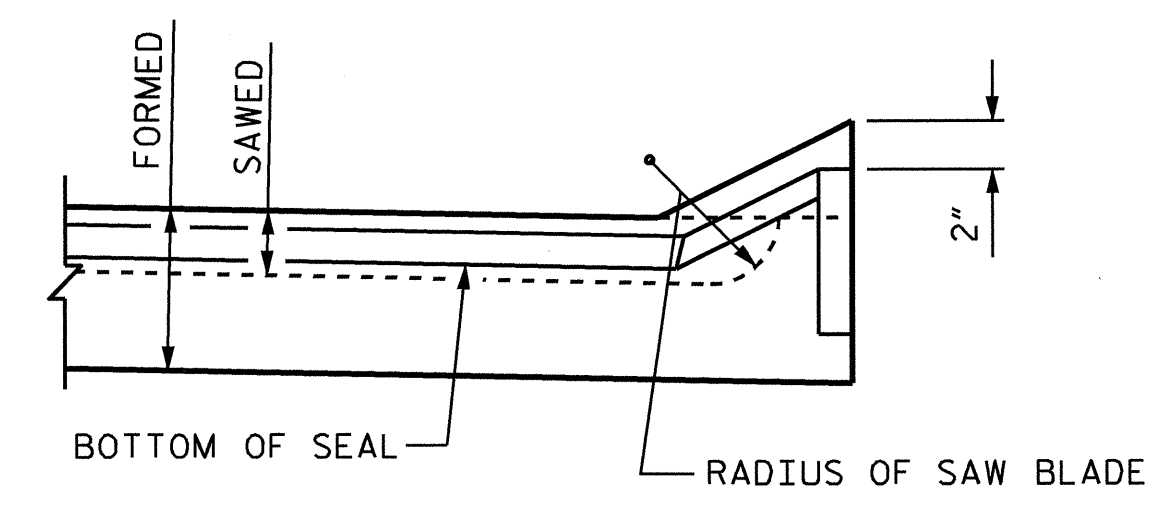


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL



SECTION C-C
EVAZOTE JOINT SEAL



SECTION A-A

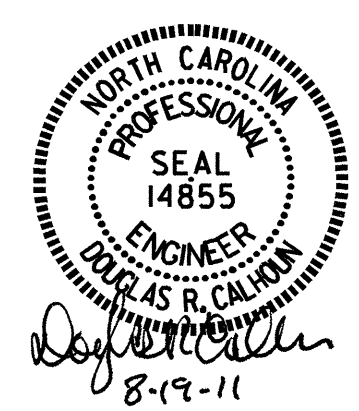
ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	5.5
2	5.5
TOTAL	11.0

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

PROJECT NO. B-4211
NASH COUNTY
 STATION: 22+24.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH
 SLAB DETAILS



REVISIONS						SHEET NO. S-39
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 42
2			4			

ASSEMBLED BY : J.L. WALTON	DATE : 3/10/10
CHECKED BY : B.N. GRADY	DATE : 5/11/10
DRAWN BY : FCJ 11/88	REV. 10/17/00 RWW/LJS
CHECKED BY : ARB 11/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06RR MAA/KMM

OVERHANG BRACKET CALCULATION INSTRUCTIONS

AASHTO SHAPES - TYPES III, IV, V, AND VI

- RECORD KNOWN INFORMATION ON "BRIDGE OVERHANG BRACKET SUMMARY" ON SHEET 2
- CALCULATE THE MAXIMUM SCREED LOAD PER BRACKET (SLPB) WITH AN ESTIMATED R = 1.5. $SLPB = R \times W$. ROUND VALUE UP TO NEAREST SLPB VALUE INDICATED ON APPROPRIATE TABLE 1-1, 1-2, 1-3, OR 1-4.
- WITH THE ESTIMATED SLPB, OVERHANG SLAB THICKNESS, "K" VALUE, AND 45° HANGER SAFE WORKING LOAD (SWL), ENTER THE APPROPRIATE TABLE 1-1, 1-2, 1-3, OR 1-4 (BASED ON OVERHANG DIMENSION) AND DETERMINE THE BRACKET SPACING, S.
- CALCULATE S/D1 AND S/D2, ROUNDING UP TO NEAREST VALUE IN TABLE 2. ENTER TABLE 2 AND DETERMINE R VALUE.
- CALCULATE REVISED SLPB. ROUND VALUE UP TO NEAREST SLPB VALUE INDICATED ON APPROPRIATE TABLE 1-1, 1-2, 1-3, OR 1-4.
- WITH THE REVISED SLPB, OVERHANG SLAB THICKNESS, "K" VALUE AND 45° HANGER SAFE WORKING LOAD (SWL), ENTER THE APPROPRIATE TABLE 1-1, 1-2, 1-3 OR 1-4 (BASED ON OVERHANG DIMENSION) AND DETERMINE REVISED BRACKET SPACING, S.
- CONTINUE ITERATIONS OF STEPS 4-6 UNTIL THE REVISED BRACKET SPACING, S, IS THE SAME AS THE PREVIOUS S VALUE.
- CHECK LUMBER JOIST SPACING: WITH BRACKET SPACING VALUE, S, ROUND THIS VALUE UP TO THE NEAREST VALUE OF ALLOWABLE SPAN LENGTH OF JOIST OF TABLE 3. USING THIS VALUE, ALONG WITH THE AVERAGE OVERHANG SLAB THICKNESS AND THE LUMBER JOIST SIZE, DETERMINE JOIST SPACING FROM TABLE 3. IF NECESSARY, ADJUST LUMBER JOIST SIZE AND/OR JOIST SPACING TO MEET ALLOWABLE SPAN LENGTH OF JOIST.
- CONVERSELY, IF THE DESIRED JOIST SPACING IS KNOWN, USE THIS ALONG WITH THE AVERAGE OVERHANG SLAB THICKNESS AND THE LUMBER JOIST SIZE TO DETERMINE IF ALLOWABLE SPAN LENGTH OF JOIST IS GREATER THAN THE BRACKET SPACING, S. IF NECESSARY, ADJUST LUMBER JOIST SIZE TO MEET REQUIREMENTS OF ALLOWABLE SPAN LENGTH OF JOIST AND JOIST SPACING.
- RECORD REMAINING INFORMATION ON "BRIDGE OVERHANG BRACKET SUMMARY" FORM.
- SUBMIT FORM AND CALCULATIONS FOR REVIEW AND APPROVAL.

TABLE 1-1 (FOR USE ON UP TO 2'-0" OVERHANG (L) & 54" HORIZONTAL LEG LENGTH OF THE OVERHANG BRACKET)

AVG. SLAB THICKNESS (in)	BRACKET DIMENSION (in)	SCREED LOAD PER BRACKET									45° HANGER SWL (lbs)
		2500 lbs.	2250 lbs.	2000 lbs.	1750 lbs.	1500 lbs.	1250 lbs.	1000 lbs.	750 lbs.	0 lbs.	
		BRACKET SPACING									
10	30	3'-6"	4'-0"	4'-5"	2'-1"	2'-7"	3'-2"	3'-8"	4'-2"	5'-9"	4000
	40	3'-6"	4'-0"	4'-5"	2'-1"	2'-7"	3'-2"	3'-8"	4'-2"	5'-9"	4000
	50	3'-6"	4'-0"	4'-5"	2'-1"	2'-7"	3'-2"	3'-8"	4'-2"	5'-9"	4000
12	30	3'-2"	3'-7"	4'-1"	2'-4"	2'-10"	3'-4"	3'-9"	5'-2"	4000	
	40	3'-2"	3'-7"	4'-1"	2'-4"	2'-10"	3'-4"	3'-9"	5'-2"	4000	
	50	3'-2"	3'-7"	4'-1"	2'-4"	2'-10"	3'-4"	3'-9"	5'-2"	4000	
14	30	2'-10"	3'-4"	3'-9"	2'-2"	2'-7"	3'-0"	3'-5"	4'-9"	4000	
	40	2'-10"	3'-4"	3'-9"	2'-2"	2'-7"	3'-0"	3'-5"	4'-9"	4000	
	50	2'-10"	3'-4"	3'-9"	2'-2"	2'-7"	3'-0"	3'-5"	4'-9"	4000	
16	30	2'-8"	3'-0"	3'-5"	2'-0"	2'-4"	2'-9"	3'-2"	4'-4"	4000	
	40	2'-8"	3'-0"	3'-5"	2'-0"	2'-4"	2'-9"	3'-2"	4'-4"	4000	
	50	2'-8"	3'-0"	3'-5"	2'-0"	2'-4"	2'-9"	3'-2"	4'-4"	4000	

TABLE 1-2 (FOR USE ON OVER 2'-0" TO 2'-6" OVERHANG (L) & 54" HORIZONTAL LEG LENGTH OF THE OVERHANG BRACKET)

AVG. SLAB THICKNESS (in)	BRACKET DIMENSION (in)	SCREED LOAD PER BRACKET									45° HANGER SWL (lbs)
		2500 lbs.	2250 lbs.	2000 lbs.	1750 lbs.	1500 lbs.	1250 lbs.	1000 lbs.	750 lbs.	0 lbs.	
		BRACKET SPACING									
10	30	3'-1"	3'-6"	4'-0"	2'-4"	2'-9"	3'-3"	3'-8"	5'-1"	4000	
	40	3'-1"	3'-6"	4'-0"	2'-4"	2'-9"	3'-3"	3'-8"	5'-1"	4000	
	50	3'-1"	3'-6"	4'-0"	2'-4"	2'-9"	3'-3"	3'-8"	5'-1"	4000	
12	30	2'-9"	3'-2"	3'-7"	2'-1"	2'-6"	2'-11"	3'-4"	4'-6"	4000	
	40	2'-9"	3'-2"	3'-7"	2'-1"	2'-6"	2'-11"	3'-4"	4'-6"	4000	
	50	2'-9"	3'-2"	3'-7"	2'-1"	2'-6"	2'-11"	3'-4"	4'-6"	4000	
14	30	2'-6"	2'-10"	3'-3"	2'-3"	2'-7"	3'-0"	4'-1"	4000		
	40	2'-6"	2'-10"	3'-3"	2'-3"	2'-7"	3'-0"	4'-1"	4000		
	50	2'-6"	2'-10"	3'-3"	2'-3"	2'-7"	3'-0"	4'-1"	4000		
16	30	2'-3"	2'-7"	2'-11"	2'-1"	2'-5"	2'-9"	3'-9"	4000		
	40	2'-3"	2'-7"	2'-11"	2'-1"	2'-5"	2'-9"	3'-9"	4000		
	50	2'-3"	2'-7"	2'-11"	2'-1"	2'-5"	2'-9"	3'-9"	4000		

TABLE 1-3 (FOR USE ON OVER 2'-6" TO 3'-0" OVERHANG (L) & 54" HORIZONTAL LEG LENGTH OF THE OVERHANG BRACKET)

AVG. SLAB THICKNESS (in)	BRACKET DIMENSION (in)	SCREED LOAD PER BRACKET									45° HANGER SWL (lbs)
		2500 lbs.	2250 lbs.	2000 lbs.	1750 lbs.	1500 lbs.	1250 lbs.	1000 lbs.	750 lbs.	0 lbs.	
		BRACKET SPACING									
10	30					2'-1"	2'-6"	2'-11"	3'-4"	4'-6"	4000
	40					2'-1"	2'-6"	2'-11"	3'-4"	4'-6"	4000
	50	2'-9"	3'-2"	3'-7"	4'-0"	2'-1"	2'-6"	2'-11"	3'-4"	4'-6"	4000
12	30							2'-2"	2'-7"	2'-11"	4'-0"
	40	2'-5"	2'-10"	3'-2"	3'-6"	3'-11"	4'-3"	4'-8"	5'-0"	6'-1"	6000
	50	2'-5"	2'-10"	3'-2"	3'-6"	3'-11"	4'-3"	4'-8"	5'-0"	6'-1"	6000
14	30				3'-2"	3'-6"	3'-10"	4'-2"	2'-8"	3'-8"	4000
	40	2'-2"	2'-6"	2'-10"	3'-2"	3'-6"	3'-10"	4'-2"	2'-8"	3'-8"	4000
	50	2'-2"	2'-6"	2'-10"	3'-2"	3'-6"	3'-10"	4'-2"	2'-8"	3'-8"	4000
16	30					2'-11"	3'-2"	3'-6"	3'-10"	4'-1"	5'-0"
	40	2'-0"	2'-4"	2'-7"	2'-11"	3'-2"	3'-6"	3'-10"	2'-1"	2'-5"	3'-4"
	50	2'-0"	2'-4"	2'-7"	2'-11"	3'-2"	3'-6"	3'-10"	2'-1"	2'-5"	3'-4"

TABLE 1-4 (FOR USE ON OVER 3'-0" TO 3'-6" OVERHANG (L) & 54" HORIZONTAL LEG LENGTH OF THE OVERHANG BRACKET)

AVG. SLAB THICKNESS (in)	BRACKET DIMENSION (in)	SCREED LOAD PER BRACKET									45° HANGER SWL (lbs)
		2500 lbs.	2250 lbs.	2000 lbs.	1750 lbs.	1500 lbs.	1250 lbs.	1000 lbs.	750 lbs.	0 lbs.	
		BRACKET SPACING									
10	30					2'-3"	2'-11"	3'-7"	4'-3"	5'-9"	4000
	40					2'-3"	2'-11"	3'-7"	4'-3"	5'-9"	4000
	50	2'-4"	2'-8"	3'-0"	3'-4"	3'-8"	4'-1"	4'-5"	4'-9"	5'-9"	4000
12	30						2'-2"	2'-6"	3'-5"	4000	
	40					2'-1"	2'-8"	3'-4"	3'-11"	5'-2"	6000
	50	2'-1"	2'-4"	2'-8"	3'-0"	3'-4"	3'-8"	4'-1"	4'-5"	4'-9"	5'-9"
14	30						2'-0"	2'-6"	3'-1"	3'-8"	4'-8"
	40					2'-0"	2'-6"	3'-1"	3'-8"	4'-8"	4000
	50		2'-2"	2'-5"	2'-8"	3'-0"	3'-3"	3'-6"	3'-10"	4'-8"	6000
16	30						2'-4"	2'-10"	2'-0"	2'-9"	4000
	40						2'-4"	2'-10"	2'-0"	2'-9"	4000
	50						2'-4"	2'-10"	2'-0"	2'-9"	4000

DEFINITIONS

- SLPB = SCREED LOAD PER BRACKET (R x W)
- R = SCREED LOAD FACTOR, OBTAINED FROM TABLE 2
- W = WHEEL LOAD
- S = BRACKET SPACING
- T = AVERAGE SLAB THICKNESS
- SWL = SAFE WORKING LOAD
- K = DIMENSION DEFINED ON "BRIDGE OVERHANG BRACKET SUMMARY" ON SHEET 2
- L = OVERHANG MEASURED FROM EDGE OF TOP FLANGE TO EDGE OF SUPERSTRUCTURE

PROJECT NO. B-4211

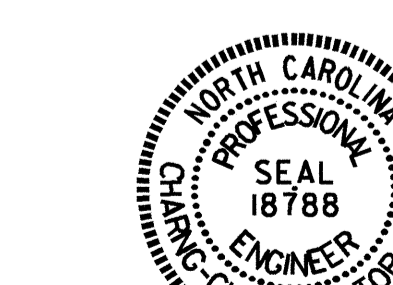
NASH COUNTY

STATION: 22+24.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD OVERHANG FALSEWORK
AASHTO TYPES
III, IV, V, AND VI



Chang-Chuan Victor Chao
5-26-2011

REVISIONS						SHEET NO. 5-40
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 42
2			4			

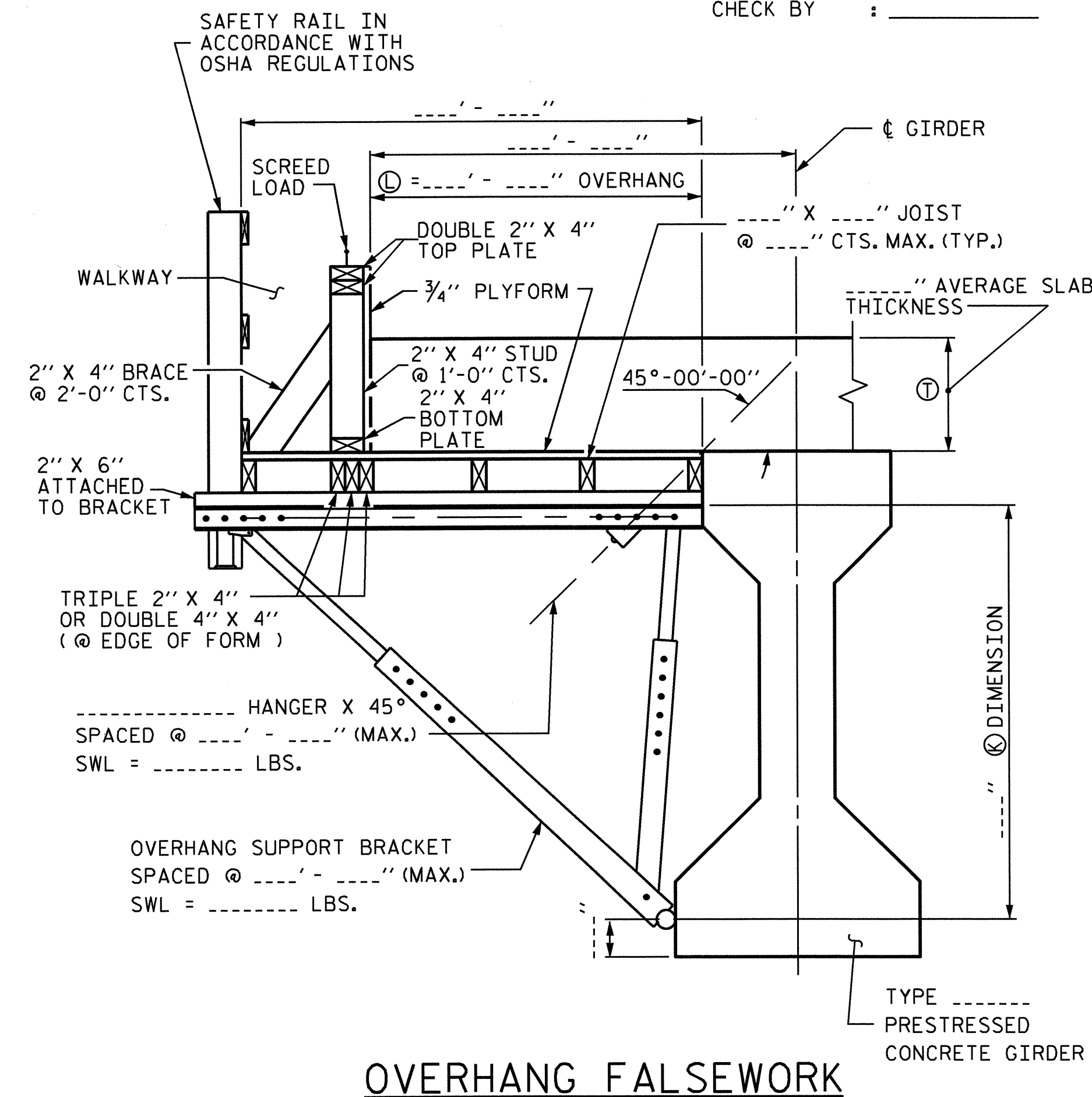
ASSEMBLED BY:	DATE:
CHECKED BY:	DATE:
DRAWN BY: R. WRIGHT 06/04	REV.
CHECKED BY: C. V. CHAO 06/04	

BRIDGE OVERHANG BRACKET SUMMARY

TOTAL SCREED WEIGHT = _____ LBS.
 NUMBER OF SCREED WHEELS = _____
 SCREED WHEEL LOAD (W) = _____ LBS.
 SCREED LOAD PER BRACKET = _____ LBS.

PROJECT No. : _____
 COUNTY : _____
 STATION : _____
 DESCRIPTION : _____

DATE : _____
 DESIGN BY : _____
 CHECK BY : _____



OVERHANG FALSEWORK

NOTES

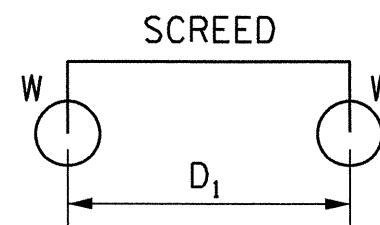
DESIGN INCLUDES CONSTRUCTION LIVE LOAD 20 PSF ON THE AREA SUPPORTED AND 75 PLF AT THE OUTSIDE DECK OF OVERHANGS.

REQUIRED MINIMUM DIAGONAL LEG CAPACITY: 3600 LB WORKING LOAD

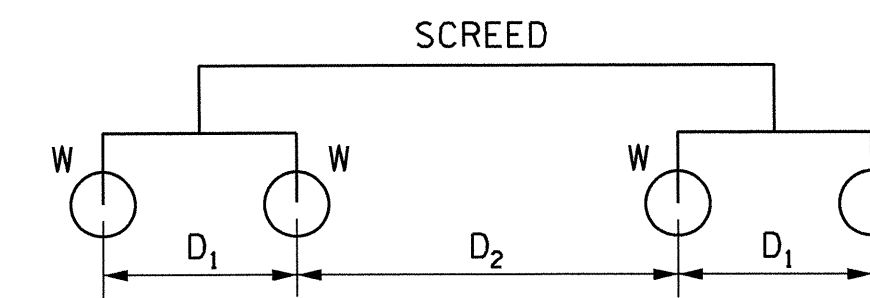
THE CONTRACTOR HAS THE OPTION OF SUBMITTING HIS OWN DESIGN FOR OVERHANG FALSEWORK IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

SUBMITTALS UTILIZING THE INSTRUCTIONS AND PROCEDURES DESCRIBED ON SHEET 1 OF 3 SHALL BE IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE SPECIFICATIONS AND SPECIAL PROVISIONS, EXCEPT THAT CALCULATIONS FOR OVERHANG FALSEWORK NEED NOT BE SEALED BY A REGISTERED ENGINEER.

FOR OVERHANG FALSEWORK BRACING DESIGN, SEE SHEET 3 OF 3.



4-WHEEL MACHINE



8-WHEEL MACHINE

TABLE 2: SCREED LOAD FACTOR "R"

4 WHEEL MACHINE	
S/D1	R
<= 1.0	1.00
1.1	1.09
1.2	1.17
1.3	1.23
1.4	1.29
1.5	1.33
1.6	1.38
1.7	1.41
1.8	1.44
1.9	1.47
2.0	1.50
2.2	1.55
2.4	1.58
2.6	1.62
2.8	1.64
3.0	1.67
3.5	1.71
4.0	1.75

		THE SCREED LOAD FACTOR R (FOR 8 WHEEL MACHINE)																	
		S/D2																	
S/D1		<= 1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.2	2.4	2.6	2.8	3.0	3.5	4.0
		<= 1.0		1.00	1.09	1.17	1.23	1.29	1.33	1.38	1.41	1.44	1.47	1.50	1.55	1.58	1.62	1.64	1.67
1.1		1.09	1.18	1.26	1.32	1.38	1.42	1.47	1.50	1.54	1.56	1.59	1.64	1.67	1.71	1.73	1.76	1.81	1.84
1.2		1.17	1.26	1.33	1.40	1.45	1.50	1.54	1.58	1.61	1.64	1.67	1.71	1.75	1.78	1.81	1.83	1.88	1.92
1.3		1.23	1.32	1.40	1.46	1.52	1.56	1.61	1.64	1.68	1.70	1.73	1.78	1.81	1.85	1.87	1.90	1.95	1.98
1.4		1.29	1.38	1.45	1.52	1.57	1.62	1.66	1.70	1.73	1.76	1.79	1.83	1.87	1.90	1.93	1.95	2.00	2.07
1.5		1.33	1.42	1.50	1.56	1.62	1.67	1.71	1.75	1.78	1.81	1.83	1.88	1.92	1.95	1.98	2.00	2.10	2.17
1.6		1.38	1.47	1.54	1.61	1.66	1.71	1.75	1.79	1.82	1.85	1.88	1.92	1.96	1.99	2.04	2.08	2.18	2.25
1.7		1.41	1.50	1.58	1.64	1.70	1.75	1.79	1.82	1.86	1.89	1.91	1.96	2.00	2.05	2.11	2.16	2.25	2.32
1.8		1.44	1.54	1.61	1.68	1.73	1.78	1.82	1.86	1.89	1.92	1.94	1.99	2.06	2.12	2.17	2.22	2.32	2.39
1.9		1.47	1.56	1.64	1.70	1.76	1.81	1.85	1.89	1.92	1.95	1.97	2.04	2.11	2.18	2.23	2.28	2.38	2.45
2.0		1.50	1.59	1.67	1.73	1.79	1.83	1.88	1.91	1.94	1.97	2.00	2.09	2.17	2.23	2.29	2.33	2.43	2.50
2.2		1.55	1.64	1.71	1.78	1.83	1.88	1.92	1.96	1.99	2.04	2.09	2.18	2.26	2.32	2.38	2.42	2.52	2.59
2.4		1.58	1.67	1.75	1.81	1.87	1.92	1.96	2.00	2.06	2.11	2.17	2.26	2.33	2.40	2.45	2.50	2.60	2.67
2.6		1.62	1.71	1.78	1.85	1.90	1.95	1.99	2.05	2.12	2.18	2.23	2.32	2.40	2.46	2.52	2.56	2.66	2.73
2.8		1.64	1.73	1.81	1.87	1.93	1.98	2.04	2.11	2.17	2.23	2.29	2.38	2.45	2.52	2.57	2.62	2.71	2.79
3.0		1.67	1.76	1.83	1.90	1.95	2.00	2.08	2.16	2.22	2.28	2.33	2.42	2.50	2.56	2.62	2.67	2.76	2.83
3.5		1.71	1.81	1.88	1.95	2.00	2.10	2.18	2.25	2.32	2.38	2.43	2.52	2.60	2.66	2.71	2.76	2.86	2.93
4.0		1.75	1.84	1.92	1.98	2.07	2.17	2.25	2.32	2.39	2.45	2.50	2.59	2.67	2.73	2.79	2.83	2.93	3.00

TABLE 3: ALLOWABLE SPAN LENGTH OF JOISTS AND JOIST SPACINGS

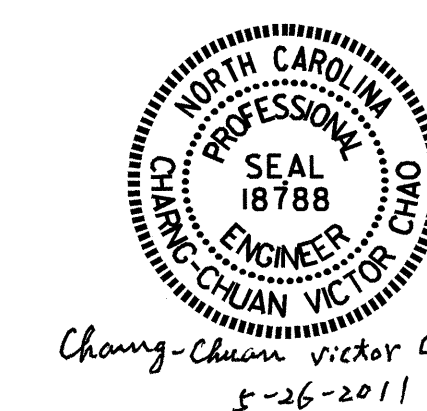
AVG. SLAB THICKNESS (IN)	LUMBER JOIST SIZE (IN X IN)	JOIST SPACINGS			
		15 IN	12 IN	10 IN	8 IN
10	2 X 4	---	4' - 6"	4' - 9"	5' - 0"
	4 X 4	5' - 9"	6' - 3"	6' - 6"	6' - 7"
12	2 X 4	---	4' - 3"	4' - 9"	5' - 0"
	4 X 4	5' - 3"	6' - 0"	6' - 3"	6' - 5"
14	2 X 4	---	4' - 0"	4' - 6"	5' - 0"
	4 X 4	---	5' - 6"	6' - 0"	6' - 4"
16	2 X 4	---	4' - 0"	4' - 3"	4' - 9"
	4 X 4	---	5' - 3"	5' - 9"	6' - 3"

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NASH COUNTY
 STATION: 22+24.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

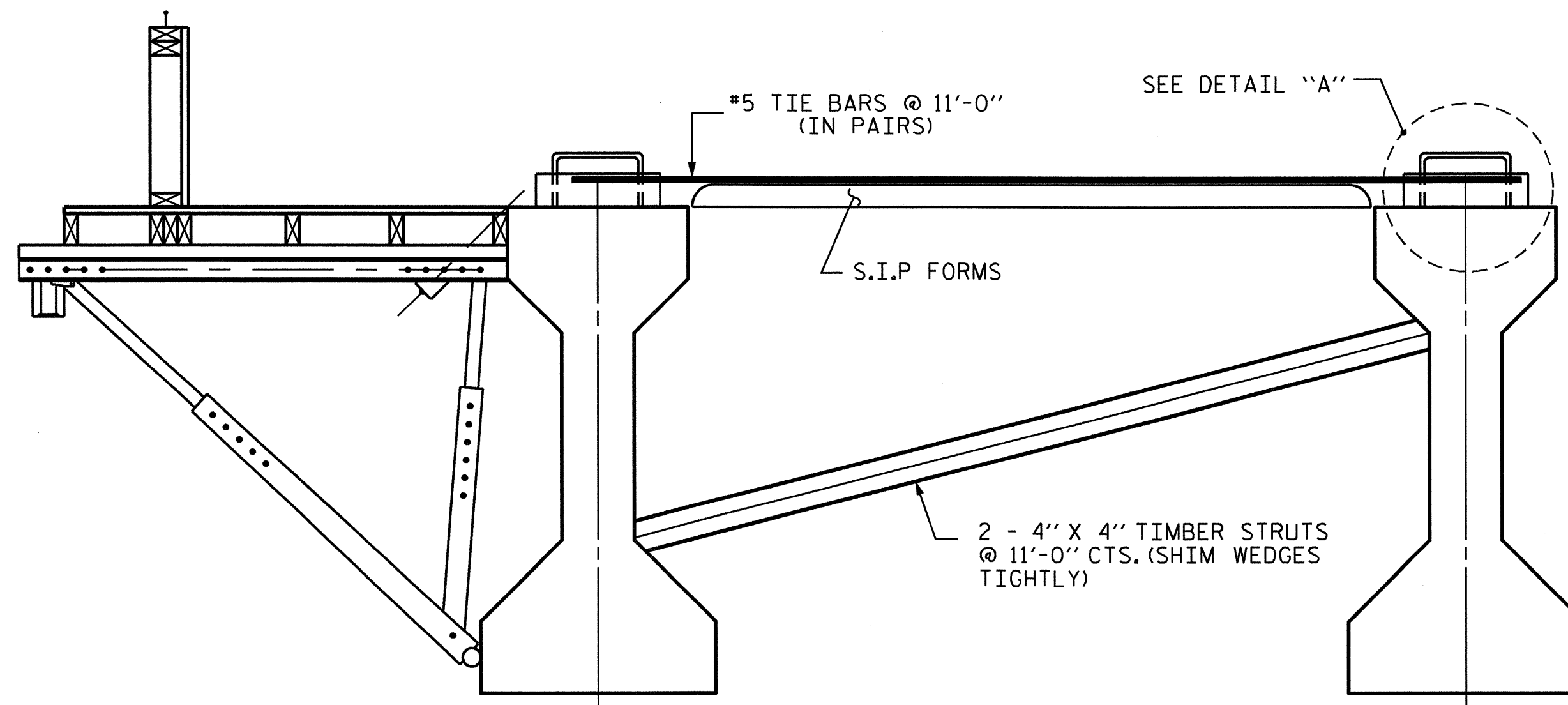
STANDARD OVERHANG FALSEWORK
 AASHTO TYPES III, IV, V, AND VI



Chang-Chuan Victor Chao
 5-26-2011

ASSEMBLED BY:	DATE:
CHECKED BY:	DATE:
DRAWN BY: R. WRIGHT 06/04	REV.
CHECKED BY: C. V. CHAO 06/04	

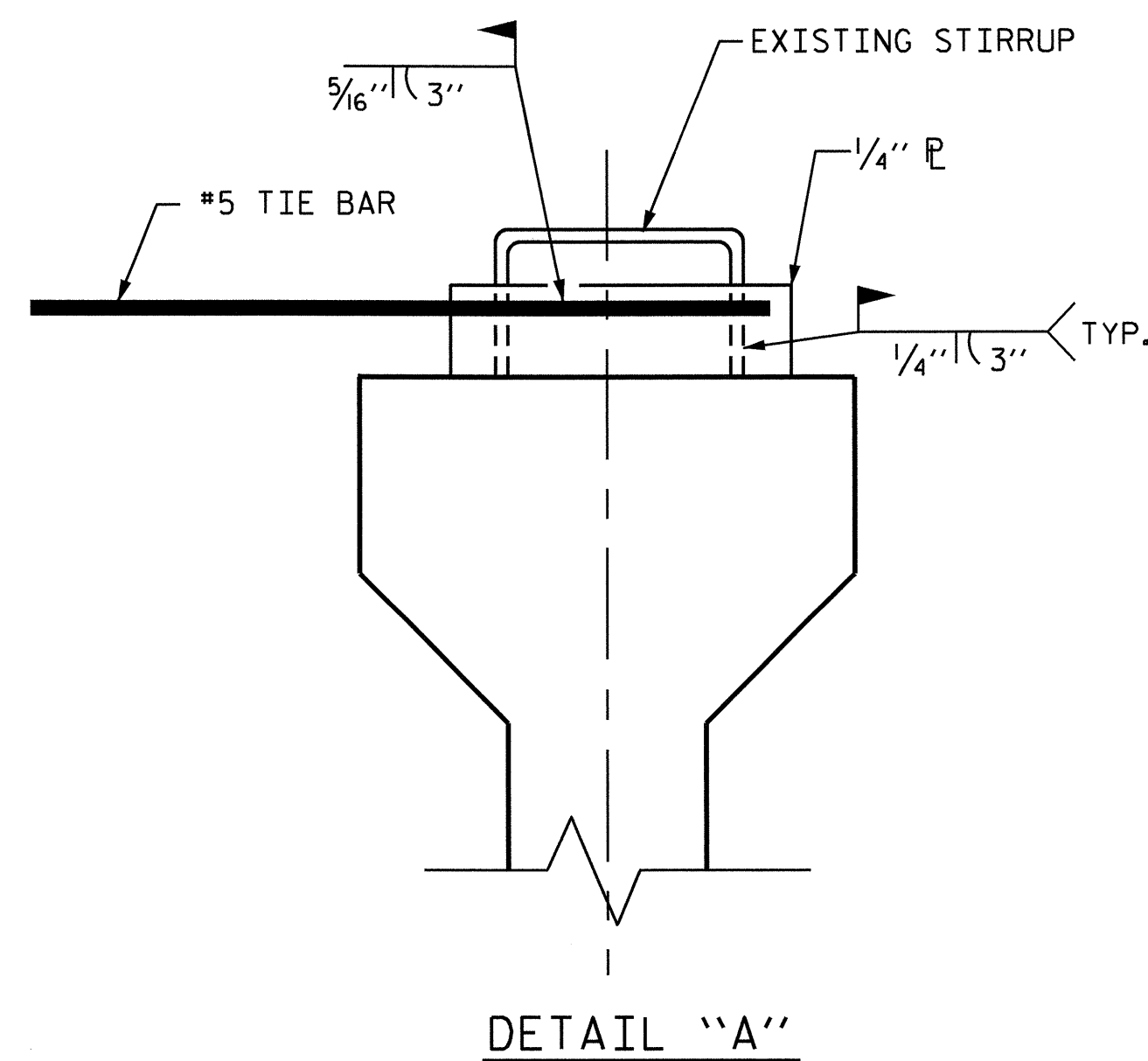
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-41
1			3			TOTAL SHEETS 42
2			4			



EXTERIOR GIRDER

INTERIOR GIRDER

DETAIL OF REQUIRED OVERHANG FALSEWORK BRACING SYSTEM



NOTES:

EACH #5 TIE BAR SHALL BE WELDED TO ONE STIRRUP LOOP AS SHOWN IN DETAIL "A". #5 TIE BARS SHALL BE WELDED TO TWO ADJACENT STIRRUPS OF THE EXTERIOR GIRDER AND THE ADJACENT INTERIOR GIRDER BETWEEN PERMANENT DIAPHRAGMS. WELD STEEL PLATES IN BETWEEN THE TIE BARS AND THE STIRRUP LOOP. WELDING TWO TIE BARS TO THE SAME STIRRUP LOOP SHALL NOT BE PERMITTED.

MAXIMUM SPACING BETWEEN THE BRACING (TIE BARS-TIMBER STRUT) IS 11'-0" CTS. #5 TIE BARS SHALL BE LOCATED OVER A TIMBER STRUT.

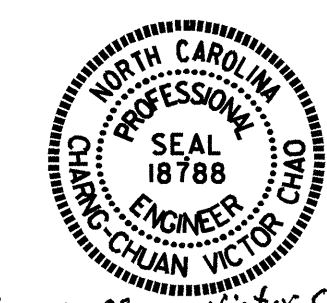
INSTALL TIE BARS AND TIMBER STRUTS PRIOR TO PLACEMENT OF CONCRETE OR SCREED WEIGHT ONTO THE OVERHANG FALSEWORK.

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SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD OVERHANG FALSEWORK
 AASHTO TYPES
 III, IV, V, AND VI



Cheng-Chuen Victor Chao
 5-26-2011

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-42
1			3			TOTAL SHEETS
2			4			42

DRAWN BY: R. WRIGHT 06/04 DATE : _____
 CHECKED BY: C. V. CHAO 06/04 DATE : _____

