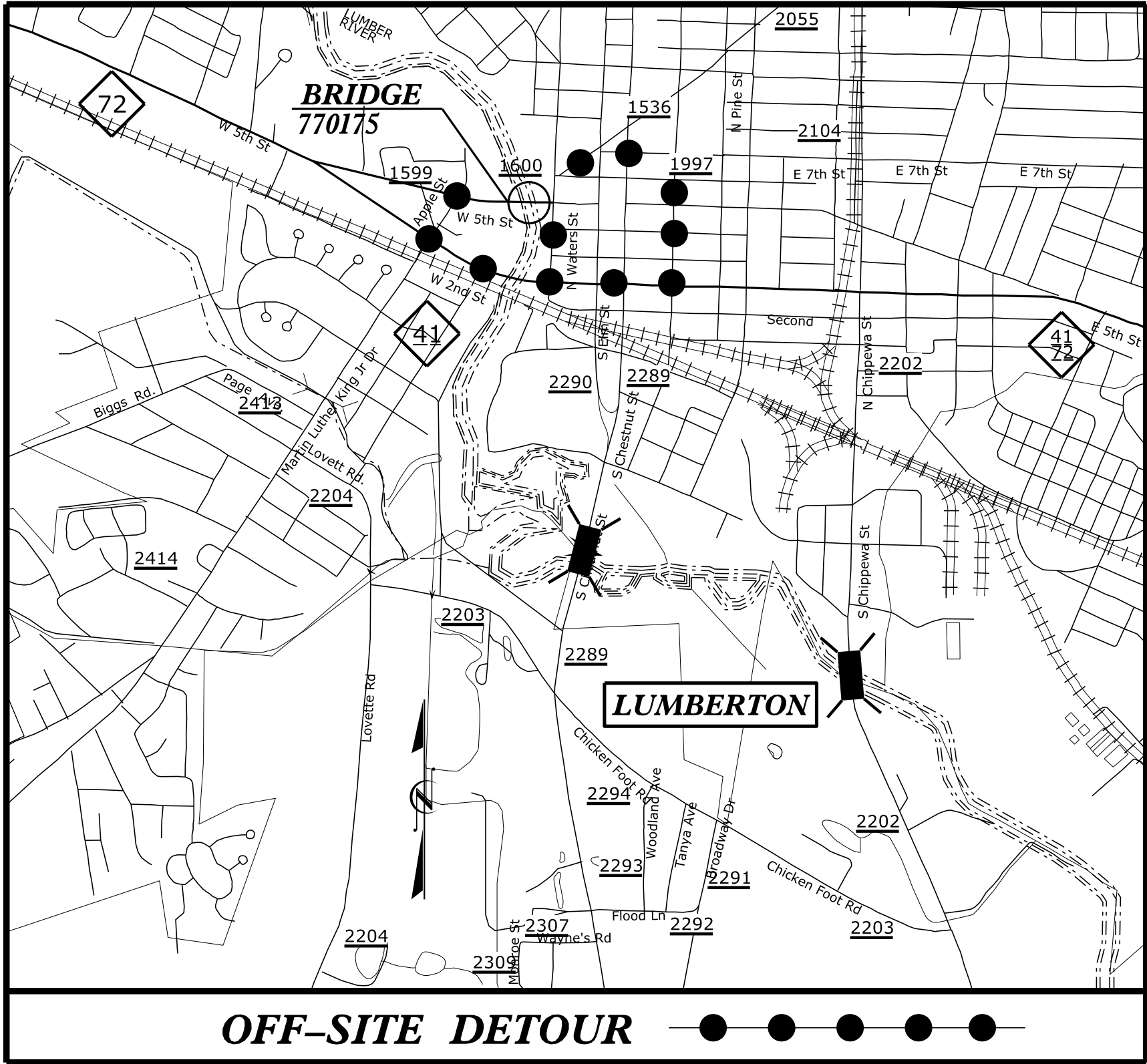


PROJECT: B-5985B

CONTRACT: C205069



OFF-SITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROBESON COUNTY

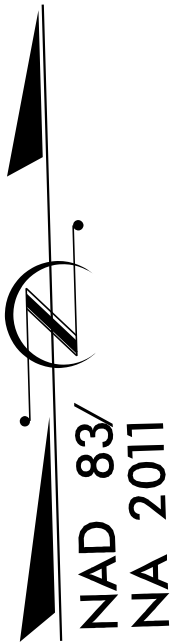
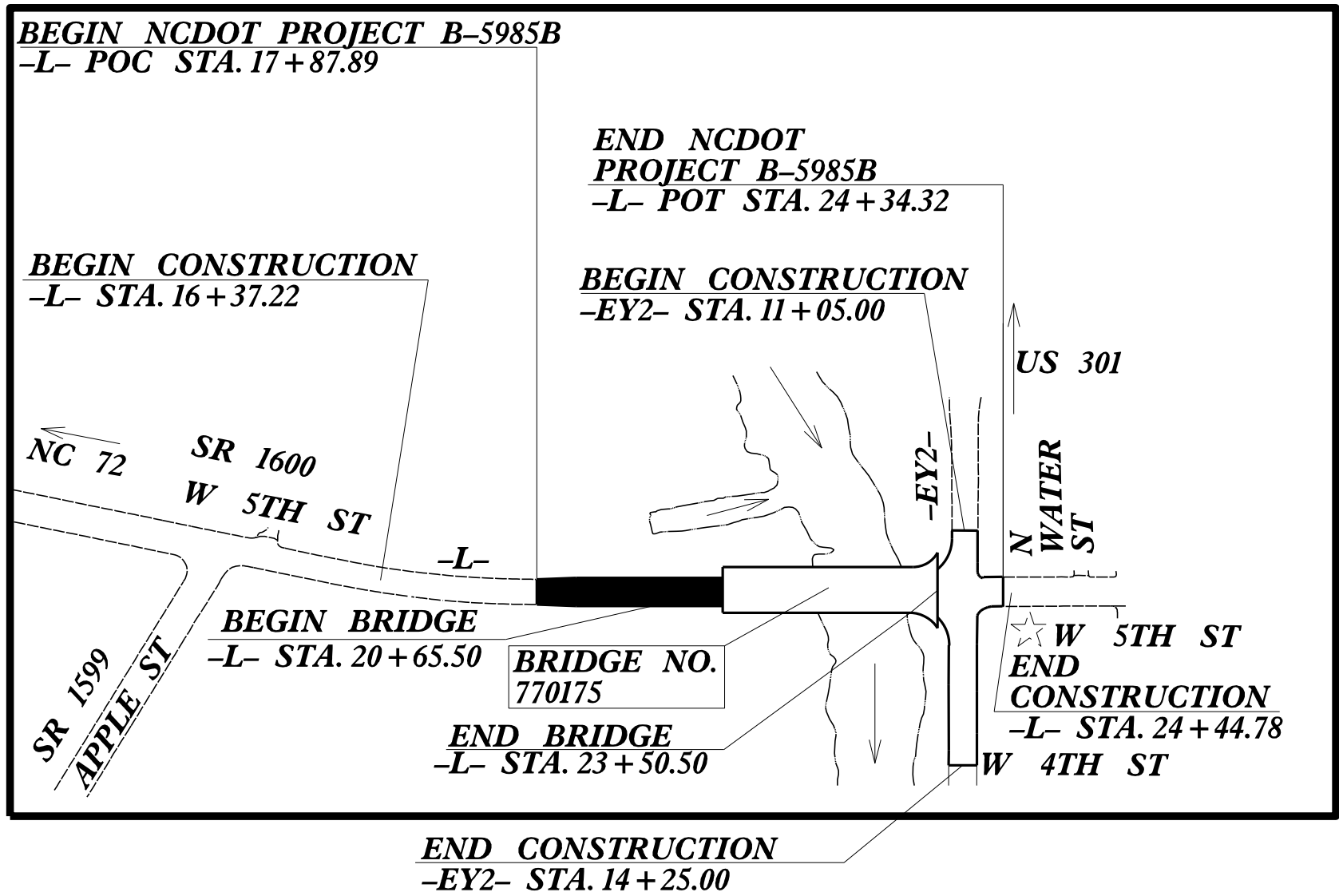
LOCATION: BRIDGE NO. 770175 OVER LUMBER RIVER ON SR 1600

TYPE OF WORK: GRADING, DRAINAGE, SIGNALS, PAVING & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5985B		
STATE PROJ.NO.	F.A.PROJ.NO.	DESCRIPTION	
47749.1.3	4774902	PE	
47749.2.5		ROW	
47749.2.6		UTILITY	
47749.3.3	4774902	CONST.	
		1223 Jones Franklin Rd. Raleigh, N.C. 27606 License No. F-0377 Bus: 919 851 8077 Fax: 919 851 8107	
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION			

BRIDGE # 770175

STRUCTURE PLANS



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

DESIGN DATA

BRIDGE # 770175
ADT 2025 = 11,100
ADT 2042 = 14,800
K = 11 %
D = 55 %
T = 3 % *
V = 40 MPH

* (TTST =1% +
DUAL =2%)
FUNC CLASS =
MAJOR COLLECTOR
SUB-REGIONAL TIER

PROJECT LENGTH

BRIDGE # 770175
LENGTH ROADWAY PROJECT B-5985B = 0.068 MILES
LENGTH STRUCTURE PROJECT B-5985B =0.054 MILES
TOTAL LENGTH PROJECT B-5985B = 0.122 MILES
NCDOT CONTACT: DAVID STUTTS, PE
PROJECT ENGINEER - PEEPROGRAM MGT.

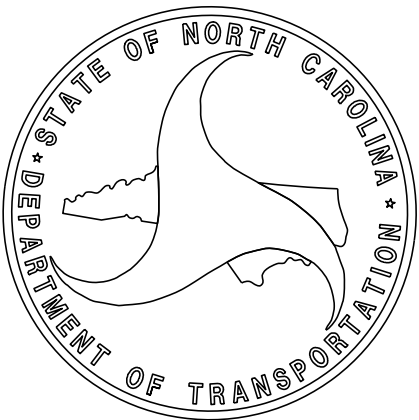
Prepared for:
DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DRIVE RALEIGH NC, 27610

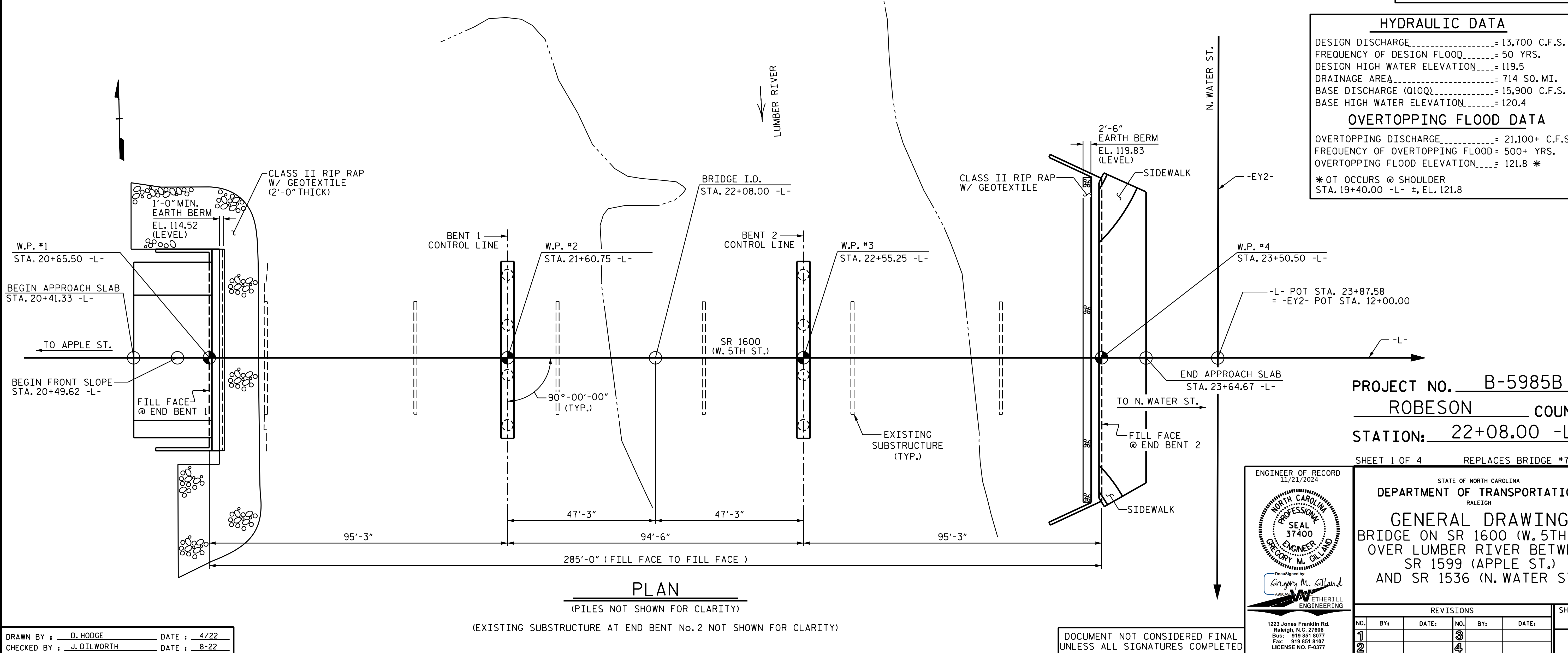
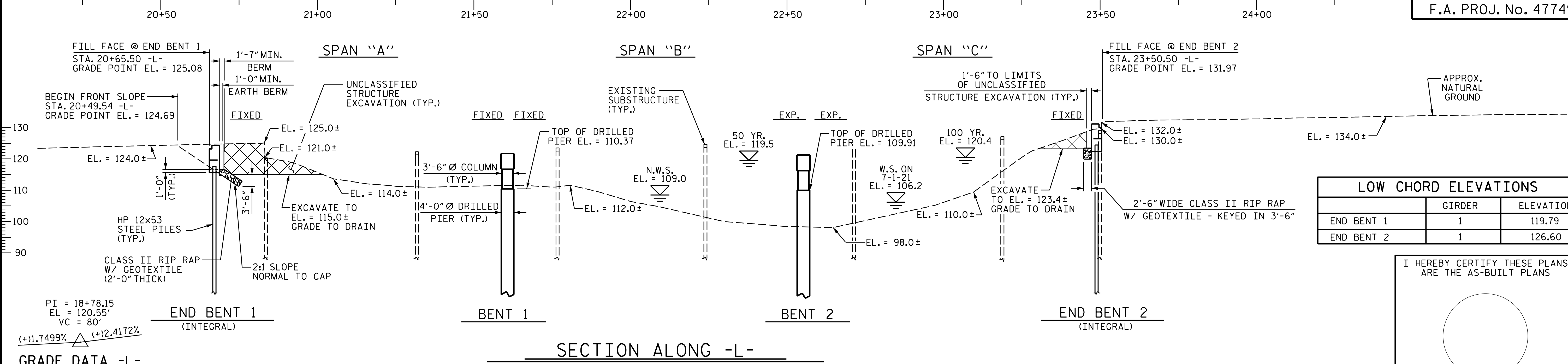
2024 STANDARD SPECIFICATIONS
RIGHT OF WAY DATE:
JANUARY 27, 2022

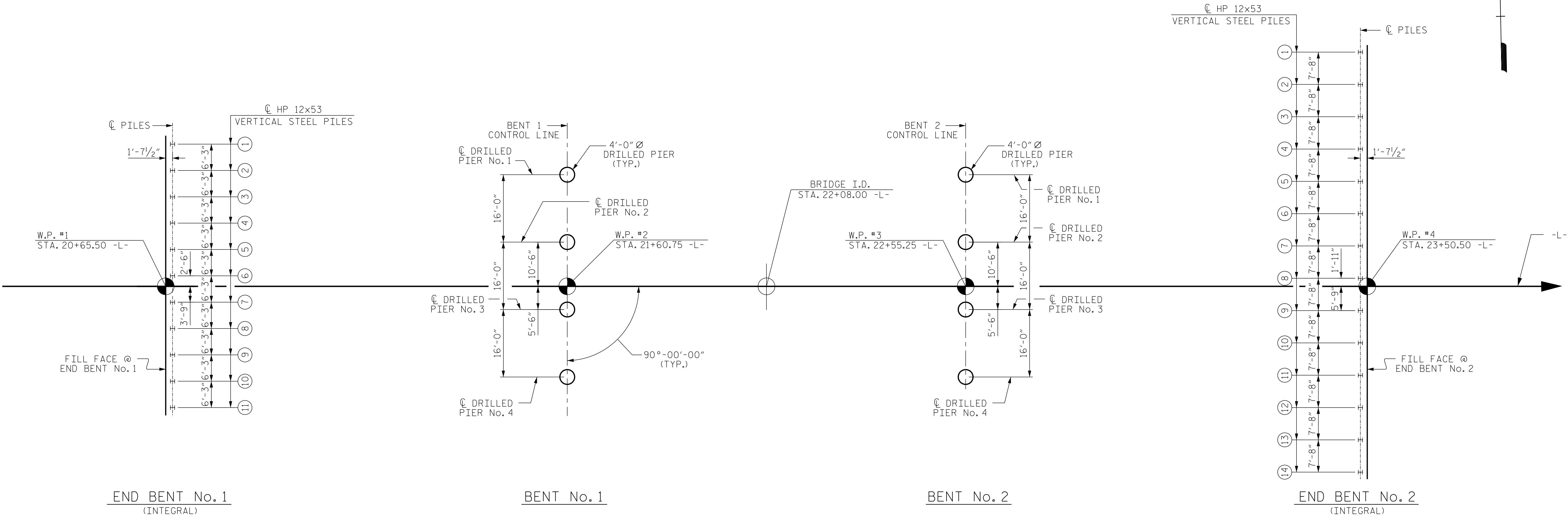
LETTING DATE:
NOVEMBER 18, 2025

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

JOHN A DILWORTH, PE
PROJECT DESIGN ENGINEER







FOUNDATION LAYOUT

FOUNDATION NOTES:

FOR PILES, SEE PILES PROVISION AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 40 TO 70 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO.1 AND END BENT NO.2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

INSTALL PERMANENT STEEL CASINGS AT BENT NO.1 BY VIBRATING, SCREWING OR DRIVING PERMANENT CASINGS BEFORE EXCAVATING OR DISTURBING ANY MATERIAL BELOW ELEVATION 97 FT.

DO NOT DEWATER DRILLED PIER EXCAVATIONS AT BENT NO.1. CLEAN THE BOTTOM OF EXCAVATIONS WITH A SUBMERSIBLE PUMP OR AN AIRLIFT. WET PLACEMENT OF CONCRETE IS REQUIRED.

SLURRY CONSTRUCTION IS REQUIRED FOR DRILLED PIERS AT BENT NO.1.

INSTALL PERMANENT STEEL CASINGS AT BENT NO.2 BY VIBRATING, SCREWING OR DRIVING PERMANENT CASINGS BEFORE EXCAVATING OR DISTURBING ANY MATERIAL BELOW ELEVATION 83 FT.

DO NOT DEWATER DRILLED PIER EXCAVATIONS AT BENT NO.2. CLEAN THE BOTTOM OF EXCAVATIONS WITH A SUBMERSIBLE PUMP OR AN AIRLIFT. WET PLACEMENT OF CONCRETE IS REQUIRED.

SLURRY CONSTRUCTION IS REQUIRED FOR DRILLED PIERS AT BENT NO.2.

REMOVE ALL DEBRIS AND REMNANTS OF PREVIOUS STRUCTURES.

UPON REMOVAL OF EXISTING END BENT 2 CAP, THE EXACT LOCATIONS OF THE EXISTING PILES SHALL BE SURVEYED AND VERIFIED BY THE ENGINEER TO ENSURE THERE IS NO CONFLICTS WITH THE LOCATIONS OF THE PROPOSED PILES. REMOVE THE SUBSTRUCTURE AS NECESSARY TO AVOID INTERFERENCE WITH CONSTRUCTION OF THE PROPOSED STRUCTURE.

REFER TO PILE AND DRILLED PIER FOUNDATION TABLES (SHEET 3 OF 4).

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 2 OF 4

DRAWN BY : J. PENDERCRAFT DATE : 8-22
CHECKED BY : J. DILWORTH DATE : 8-22

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD
1/31/2025

NORTH CAROLINA

PROFESSIONAL

SEAL

37400

REGISTERED ENGINEER

REGENCY M. GILLAND

DocuSigned by



Gregory M. Gilland

WETHERILL

ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE ON SR 1600 (W. 5TH ST.)
OVER LUMBER RIVER BETWEEN
SR 1599 (APPLE ST.)
AND SR 1536 (N. WATER ST.)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-02 TOTAL SHEETS 64
2			4			

P:\2018\18156.01_B-5985_RobesonStructures\Str-2 (770175)NDGN\402_001_B-5985-SITE_2_770175_SKU_GD.dgn 1/31/2025 9:20:10 AM

SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Number of Piles per Line	Factored Resistance per Pile KIPS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles **			Drilled-In Piles		
						Minimum Pile Tip (Tip No Higher Than) Elevation FT	Required Driving Resistance (RDR)* per pile KIPS	Pile Redrives Quantity EACH	Predrilling Length per Pile LIN FT	Predrilling Elevation (Elevation Not To Predrill Below) FT	Maximum Predrilling Diameter INCHES	Pile Excavation (Bottom of Hole) Elevation FT	Pile Excavation Not In Soil per Pile LIN FT	Pile Excavation In Soil per Pile LIN FT
End Bent 1, Piles 1-11	11	230	118.00	70			310	6						
End Bent 2, Piles 1-14	14	200	124.00	65			270	7						
TOTAL QUANTITY:								13						

* $RDR = \frac{Factored\ Resistance + Factored\ Drag\ Load + Factored\ Dead\ Load}{Dynamic\ Resistance\ Factor} + Nominal\ Drag\ Load\ Resistance + Nominal\ Resistance\ from\ Scourable\ Material$

** Predrilling for Piles is required for end bents/bents with a predrilling length and at the Contractor's option for end bents/bents with predrilling information but no predrilling length.

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile KIPS	Factored Drag Load per Pile KIPS	Factored Dead Load * per Pile KIPS	Dynamic Resistance Factor	Nominal Drag Resistance per Pile KIPS	Nominal Scour Resistance per Pile KIPS
End Bent 1, Piles 1-11	228			0.75		1
End Bent 2, Piles 1-14	192			0.75		1

* Factored Dead Load is factored weight of pile above the ground line.

SUMMARY OF PILE ACCESSORIES

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Pipe Pile Plates EACH	Steel Pile Points		
		Pipe Pile Cutting Shoes EACH	Pipe Pile Conical Points EACH	H-Pile Points EACH
End Bent 1, Piles 1-11				
End Bent 2, Piles 1-14				
TOTAL QUANTITY:				

SUMMARY OF DPT/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Dynamic Pile Testing (DPT)		
End Bent / Bent No (e.g., "Bent 1 - Bent 3")	DPT Test Pile Length FT	DPT Testing Quantity EACH
End Bent 1	75	1
End Bent 2	70	1
TOTAL QUANTITY:		2

Pile Order Lengths for Concrete Piles	
End Bent / Bent No (e.g., "Bent 1 - Bent 3")	Pile Order Length Basis* EST or DPT

* EST = Pile order lengths from estimated pile lengths; DPT = Pile order lengths based on Dynamic Pile Testing. For groups of end bents/bents with pile order lengths based on DPT testing, the first end bent/bent no. listed for each group is the representative end bent/bent with the DPT.

SUMMARY OF DRILLED PIER INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3")	Number of Piers per Line	Factored Resistance per Pier KIPS	Required Drilled Pier Tip Elevation FT	Required Tip Resistance per Pier KSF	Scour Critical Elevation FT	Minimum Drilled Pier Penetration Into Rock per Pier LIN FT	Drilled Pier Length* per Pier LIN FT	Drilled Pier Length Not In Soil* per Pier LIN FT	Drilled Pier Length In Soil* per Pier LIN FT	Permanent Steel Casing Required? YES	Permanent Steel Casing Tip Elevation (Elevation Not To Extend Casing Below) FT	Permanent Steel Casing Length** per Pier LIN FT
Bent 1, Piers 1-4	4	1020	-4.00	20	94.00		114.5			Yes	92.00	18
Bent 2, Piers 1-4	4	1020	-4.00	10	80.00		114			Yes	78.00	32
TOTAL QUANTITY:							914.0					200

* Drilled Pier Length, Drilled Pier Length Not in Soil and Drilled Pier Length in Soil represent estimated drilled pier quantities and are measured and paid for as either "48" Dia. Drilled Piers" or "48" Dia. Drilled Piers Not in Soil" and "48" Dia. Drilled Piers in Soil" in accordance with Article 411-7 of the NCDOT Standard Specifications. For bents with a not in soil pay item, drilled piers through air or water will be paid at the contract unit price for "48" Dia. Drilled Piers in Soil."

** Permanent Steel Casing Length equals the difference between the ground line or top of drilled pier elevation, whichever is higher, and the permanent casing tip elevation and is measured and paid for as "Permanent Steel Casing for 48" Dia. Drilled Pier" in accordance with Article 411-7 of the NCDOT Standard Specifications.

SUMMARY OF DRILLED PIER TESTING

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3")	Standard Penetration Test (SPT) EACH	Crosshole Sonic Logging (CSL) EACH	Thermal Integrity Profiler (TIP) EACH	Shaft Inspection Device (SID) EACH	Pile Integrity Test (PIT) EACH
Bent 1, Piers 1-4	1	1		1	
Bent 2, Piers 1-4	1	1		1	
TOTAL QUANTITY:	2	2		2	

NOTES:

- The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Yinhui Liu, #034020) on 01-30-2025.
- Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
- The Engineer may adjust the quantity for DPT Testing, Pipe Pile Plates, Permanent Steel Casing, SPTs, TIPs, CSL Testing, SID Inspections and PITs when necessary.

PROJECT NO. B-5985B

ROBESON COUNTY

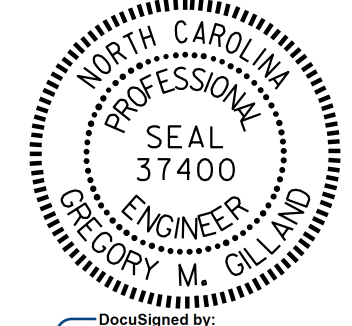
STATION: 22+08.00 -L-

SHEET 3 OF 4

DRAWN BY : J. PENDERGRAFT DATE : 8-22
CHECKED BY : J. DILWORTH DATE : 8-22

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD
1/31/2025



Designed by:

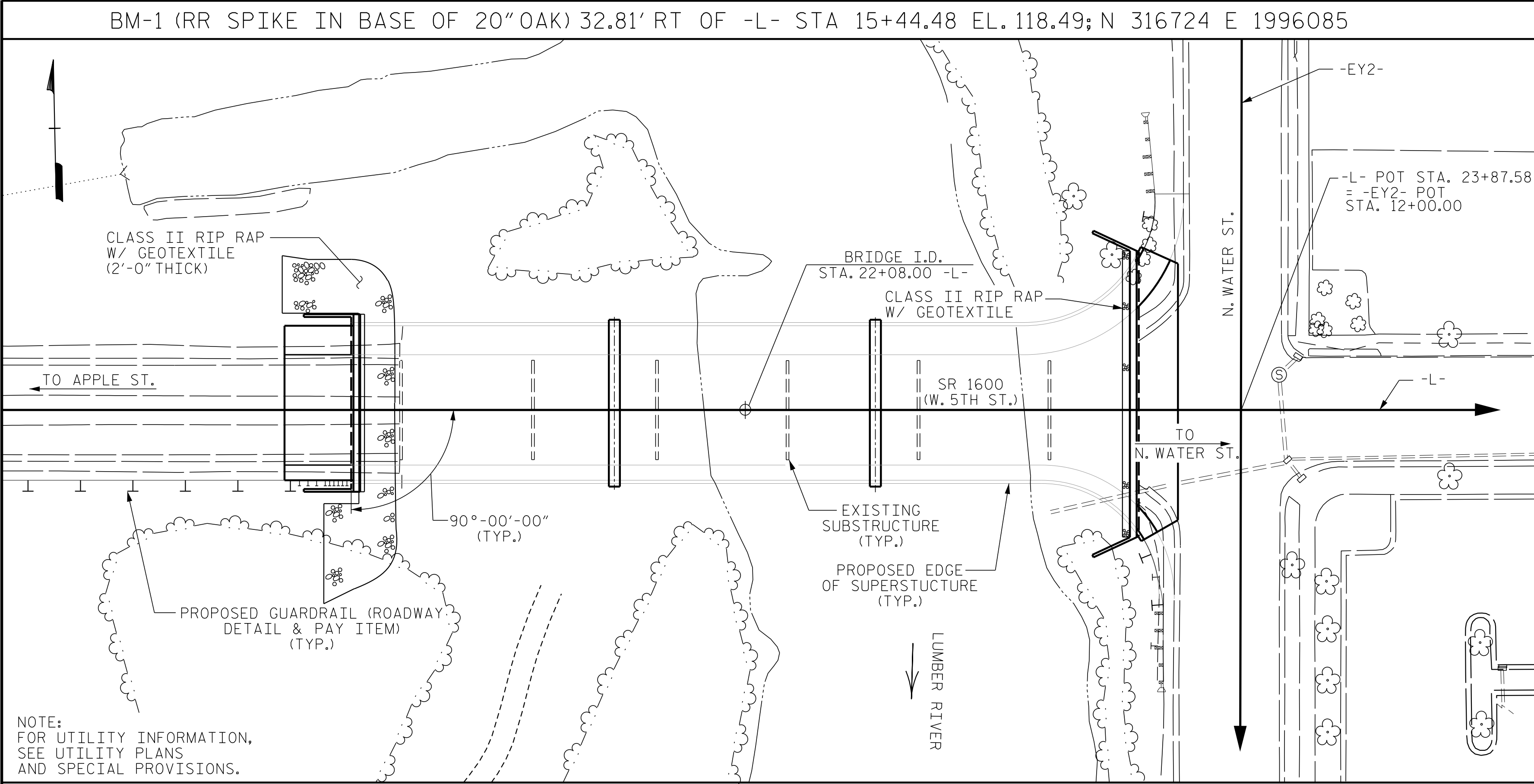
Gregory M. Gilland
ABR
WETHERILL
ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
PILE AND
DRILLED PIER
FOUNDATION
TABLES

REVISIONS						SHEET NO. S-03
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 64
2			4			



LOCATION SKETCH

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 2.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR SECURING OF VESSELS, SEE SPECIAL PROVISIONS.

FOR ELECTRICAL CONDUIT SYSTEM AND ELECTRICAL CONDUIT FOR SIGNALS, SEE ELECTRICAL CONDUIT PLANS.

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 SAMPLE BARS SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR THE SAMPLE BARS AND REPLACEMENT REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

THE EXISTING 6 SPAN STRUCTURE CONSISTS OF 1 @ 47.25', 3 @ 47.5', 1 @ 47.75', AND 1 @ 30.25' WITH REINFORCED CONCRETE DECK ON I-BEAMS AND A CLEAR ROADWAY WIDTH OF 36.08' ON A SUBSTRUCTURE CONSISTING OF REINFORCED CONCRETE CAPS ON PPC PILES SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMITS. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, THE LOAD LIMIT MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S2-01 SHALL BE EXCAVATED FOR A DISTANCE OF 45 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.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS AT STATION 22+08.00 -L-, SEE SPECIAL PROVISIONS.

TEMPORARY WORK BRIDGE SHALL BE CONSTRUCTED SUCH THAT THE LOW CHORD IS HIGHER OR AT THE SAME ELEVATION AS THE EXISTING STRUCTURE.

AT NO TIME IS THE TEMPORARY ACCESS PERMITTED TO OBSTRUCT MORE THAN 50% OF THE STREAM FLOW.

TEMPORARY WORK BRIDGE SHALL BE ILLUMINATED AT NIGHT WITH BLINKING YELLOW LIGHTS AS WELL AS REFLECTIVE SIGNAGE POSTED ON THE UPSTREAM/DOWNSTREA/LEFT/RIGHT CHANNEL FOR PUBLIC NAVAGATION SAFETY.

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

FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

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 STA. 22+08.00-L-".

SAMPLE BAR REPLACEMENT

SIZE	LENGTH
#3	6'-2"
#4	7'-4"
#5	8'-6"
#6	9'-8"
#7	10'-10"
#8	12'-0"
#9	13'-2"
#10	14'-6"
#11	15'-10"

NOTE:
SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30"(SAMPLE LENGTH) PLUS TWO SPICE LENGTHS AND $f_y = 60\text{ksi}$.

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTANCE & REMOVAL OF TEMP. ACCESS	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	4'-0" Ø DRILLED PIERS	PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIER	SID INSPECTIONS	SPT TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS
	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	EACH	EACH	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM
SUPERSTRUCTURE	LUMP SUM	LUMP SUM	LUMP SUM						LUMP SUM	17,131	12,895		LUMP SUM
END BENT 1												55.2	
BENT 1				458.00	72	1	1	1				55.4	
BENT 2				456.00	128	1	1	1				59.3	
END BENT 2												60.0	
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	914.00	200	2	2	2	LUMP SUM	17,131	12,895	229.9	LUMP SUM

TOTAL BILL OF MATERIAL

TOTAL BILL OF MATERIAL																	
	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	FIB 45" PRESTRESSED CONCRETE GIRDERS		APPROX. 15,800LBS. STRUCTURAL STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES		PILE REDRIVES	DYNAMIC PILE TESTING	CLASSIC CONCRETE BRIDGE RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	FOAM JOINT SEALS	ELECTRICAL CONDUIT SYSTEM	ELECTRICAL CONDUIT FOR SIGNALS
	LBS.	LBS.	No.	LIN.FT.	LUMP SUM	EA.	NO.	LIN.FT.	EA.	EACH	LIN.FT.	TON	SQ. YDS.	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM
SUPERSTRUCTURE			24	2,260.00	LUMP SUM						591.01			LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM
END BENT 1	8,380					11	11	770	6	1		314	349				
BENT 1	37,479	12,370															
BENT 2	38,021	12,768															
END BENT 2	10,080					14	14	910	7	1		46	105				
TOTAL	93,960	25,138	24	2,260.00	LUMP SUM	25	25	1,680	13	2	591.01	360	454	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM

DRAWN BY : J. PENDERGRAFT DATE : 8-22
CHECKED BY : JAD / GMG DATE : 8-22

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 4 OF 4

ENGINEER OF RECORD



1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE ON SR 1600 (W. 5TH ST.)
OVER LUMBER RIVER BETWEEN
SR 1599 (APPLE ST.)
AND SR 1536 (N. WATER ST.)

REVISIONS

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

SHEET NO.

S-04

TOTAL SHEETS
64

LOAD FACTORS:

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

NOTES:

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

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

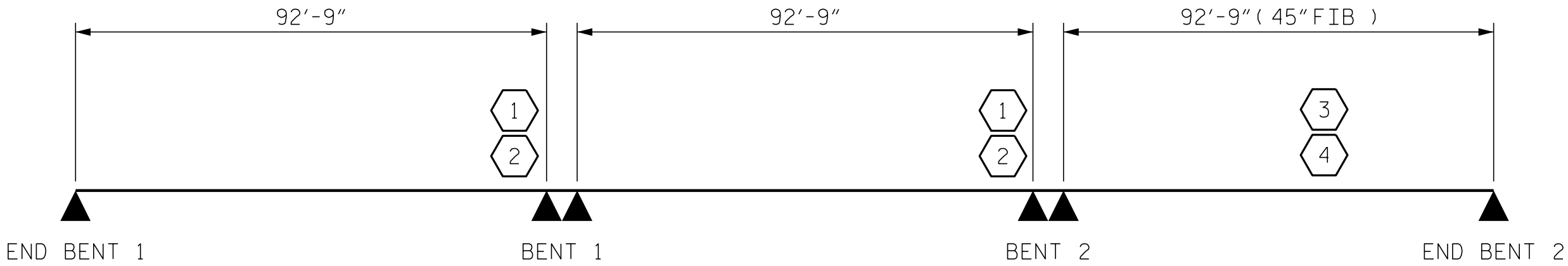
COMMENTS:

1.
2.
3.
4.

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

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

LRFR SUMMARY
(45"FLORIDA I-BEAM CONTROLS RATING; W36x135 RATING EXCEEDS PRESTRESSED GIRDER)
(CONTROLLING GIRDER BEARING TO BEARING LENGTH SHOWN)



LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																										
LOAD TYPE		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING ⬡	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER			
							LIVE-LOAD FACTORS (γ _{LL})	MOMENT					SHEAR					LIVE-LOAD FACTORS (γ _{LL})	MOMENT							
								DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)		
DESIGN LOAD		HL-93 (INVENTORY)	N/A	⬡1	1.06	--	1.75	0.764	1.41	A&B	EL	46.38	0.764	1.06	A&B	EL	84.04	0.80	0.764	1.10	C	EL	55.79			
		HL-93 (OPERATING)	N/A		1.40	--	1.35	0.764	1.83	A&B	EL	46.38	0.764	1.40	A&B	EL	84.04	N/A	--	--	--	--	--			
		HS-20 (INVENTORY)	36.000	⬡2	1.43	51.480	1.75	0.764	1.94	A&B	EL	46.38	0.764	1.43	A&B	EL	84.04	0.80	0.764	1.50	C	EL	55.79			
		HS-20 (OPERATING)	36.000		1.88	67.680	1.35	0.764	2.51	A&B	EL	46.38	0.764	1.88	A&B	EL	84.04	N/A	--	--	--	--	--			
LEGAL LOAD		SINGLE VEHICLE (SV)		SNSH	13.500		3.55	47.925	1.40	0.764	5.70	A&B	EL	46.38	0.777	4.58	C	I	84.04	0.80	0.764	3.55	C	EL	55.79	
				SNGARBS2	20.000		2.55	51.000	1.40	0.764	4.15	A&B	EL	46.38	0.777	3.19	C	I	84.04	0.80	0.764	2.55	C	EL	55.79	
				SNAGRIS2	22.000		2.38	52.360	1.40	0.764	3.89	A&B	EL	46.38	0.777	2.93	C	I	84.04	0.80	0.764	2.38	C	EL	55.79	
				SNCOTTS3	27.250		1.78	48.505	1.40	0.764	2.83	A&B	EL	46.38	0.777	2.23	C	I	84.04	0.80	0.764	1.78	C	EL	55.79	
				SNAGGRS4	34.925		1.45	50.641	1.40	0.764	2.33	A&B	EL	46.38	0.777	1.81	C	I	84.04	0.80	0.764	1.45	C	EL	55.79	
				SNS5A	35.550		1.43	50.837	1.40	0.764	2.28	A&B	EL	46.38	0.777	1.82	C	I	84.04	0.80	0.764	1.43	C	EL	55.79	
				SNS6A	39.950		1.30	51.935	1.40	0.764	2.08	A&B	EL	46.38	0.777	1.64	C	I	84.04	0.80	0.764	1.30	C	EL	55.79	
				SNS7B	42.000		1.24	52.080	1.40	0.764	1.98	A&B	EL	46.38	0.777	1.59	C	I	84.04	0.80	0.764	1.24	C	EL	55.79	
		TRUCK TRACTOR SEMI-TRAILER (TTST)		TNAGRIT3	33.000		1.60	52.800	1.40	0.764	2.53	A&B	EL	46.38	0.777	1.98	C	I	84.04	0.80	0.764	1.60	C	EL	55.79	
				TNT4A	33.075		1.57	51.928	1.40	0.764	2.54	A&B	EL	46.38	0.777	1.94	C	I	84.04	0.80	0.764	1.57	C	EL	55.79	
				TNT6A	41.600		1.29	53.664	1.40	0.764	2.06	A&B	EL	46.38	0.777	1.68	C	I	84.04	0.80	0.764	1.29	C	EL	55.79	
				TNT7A	42.000		1.28	53.760	1.40	0.764	2.06	A&B	EL	46.38	0.777	1.65	C	I	84.04	0.80	0.764	1.28	C	EL	55.79	
				TNT7B	42.000		1.29	54.180	1.40	0.764	2.11	A&B	EL	46.38	0.777	1.56	C	I	84.04	0.80	0.764	1.29	C	EL	55.79	
				TNAGRIT4	43.000		1.25	53.750	1.40	0.764	2.02	A&B	EL	46.38	0.764	1.51	A&B	EL	84.04	0.80	0.764	1.25	C	EL	55.79	
TNAGT5A	45.000				1.20	54.000	1.40	0.764	1.92	A&B	EL	46.38	0.764	1.49	A&B	EL	84.04	0.80	0.764	1.20	C	EL	55.79			
TNAGT5B	45.000			⬡3	1.18	53.100	1.40	0.764	1.90	A&B	EL	46.38	0.764	1.44	A&B	EL	8.71	0.80	0.764	1.18	C	EL	55.79			
EMERGENCY VEHICLE (EV)		EV2	28.750		1.79	51.460	1.30	0.764	3.15	A&B	EL	46.38	0.764	2.38	A&B	EL	8.71	0.80	0.764	1.79	C	EL	55.79			
		EV3	43.000	⬡4	1.20	51.600	1.30	0.764	2.07	A&B	EL	46.38	0.764	1.56	A&B	EL	8.71	0.80	0.764	1.20	C	EL	55.79			

ASSEMBLED BY: T. DIFFEE/DAH	DATE: 8-22
CHECKED BY: G. GILLAND	DATE: 9-22
DRAWN BY: MAA 1/08	REV. 11/12/08RR
CHECKED BY: GM/DI 2/08	REV. 10/1/11
	REV. 04/23
	MAA/GM
	MAA/GM
	BNB/AAI

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ENGINEER OF RECORD
8/20/2024

Designed by:

Reviewed by:

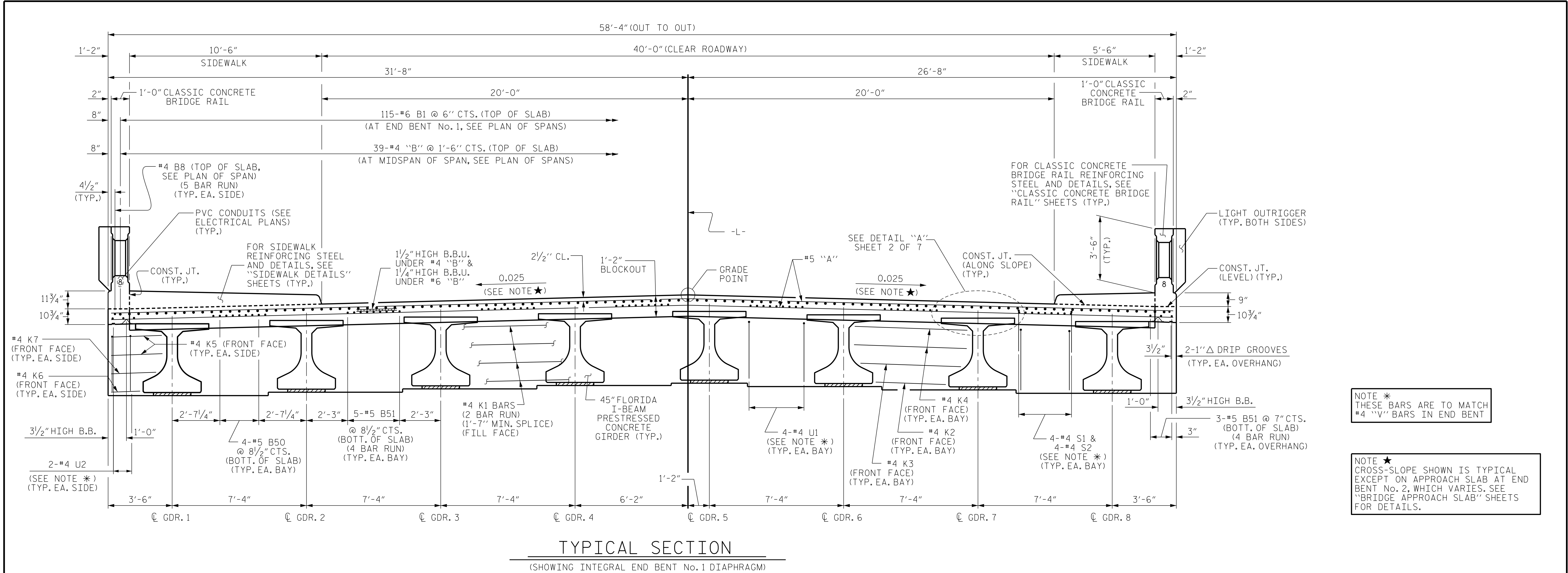
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
LRFR SUMMARY FOR
PRESTRESSED
CONCRETE GIRDERS
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO. S-05
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 64
2			4			

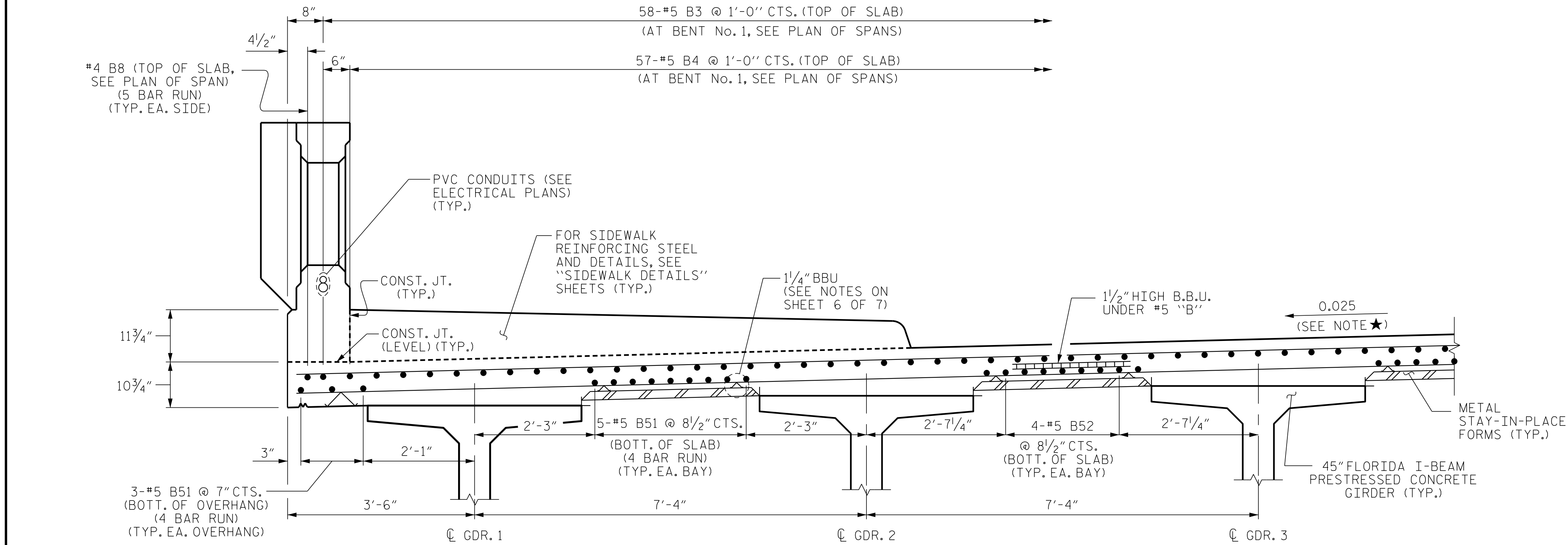
STD. NO. LRFR1

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4/26/2024 7:10:37 AM



NOTE *
THESE BARS ARE TO MATCH
#4 "V" BARS IN END BENT

NOTE ★
CROSS-SLOPE SHOWN IS TYPICAL
EXCEPT ON APPROACH SLAB AT END
BENT No. 2, WHICH VARIES. SEE
"BRIDGE APPROACH SLAB" SHEETS
FOR DETAILS.



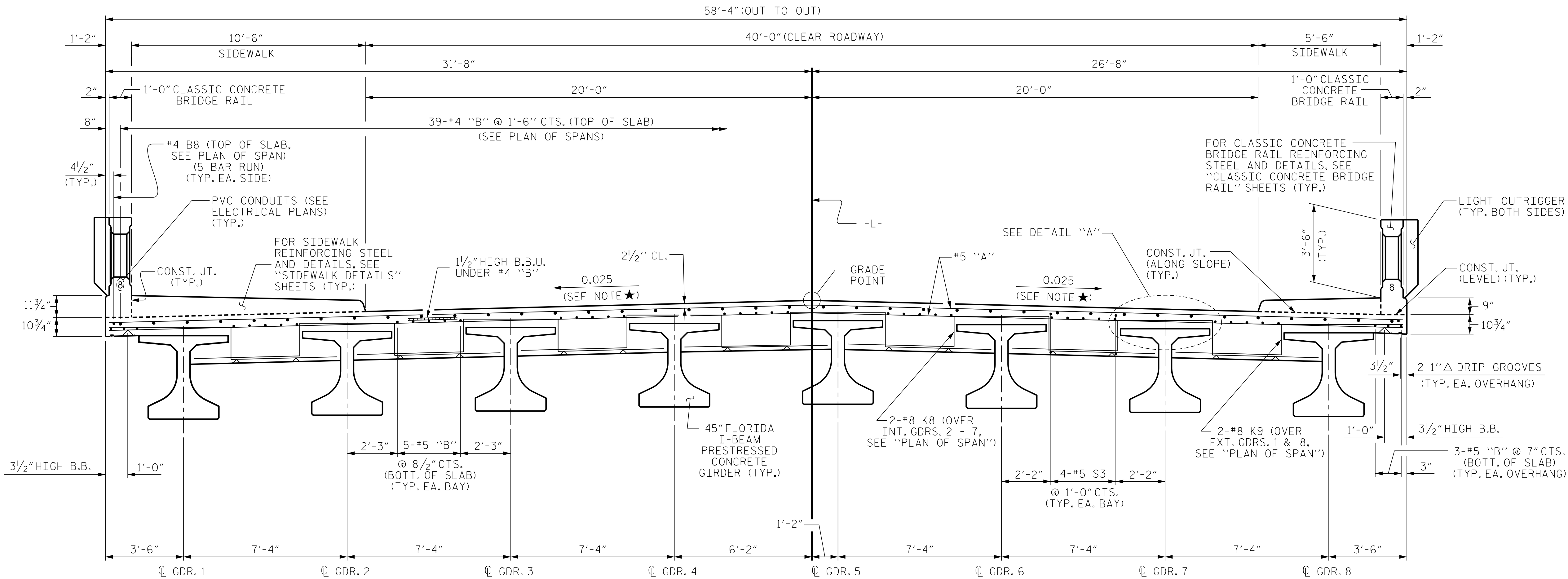
DRAWN BY: D. HODGE DATE: 2/22
CHECKED BY: G. GILLAND DATE: 7/22

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UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-
SHEET 1 OF 7

ENGINEER OF RECORD 8/20/2024 Designed by: 1223 Jones Franklin Rd. Raleigh, N.C. 27606 Bus: 919 851 8077 Fax: 919 851 8107 LICENSE NO. F-0377		STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE TYPICAL SECTION		REVISIONS		SHEET NO. S-06	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
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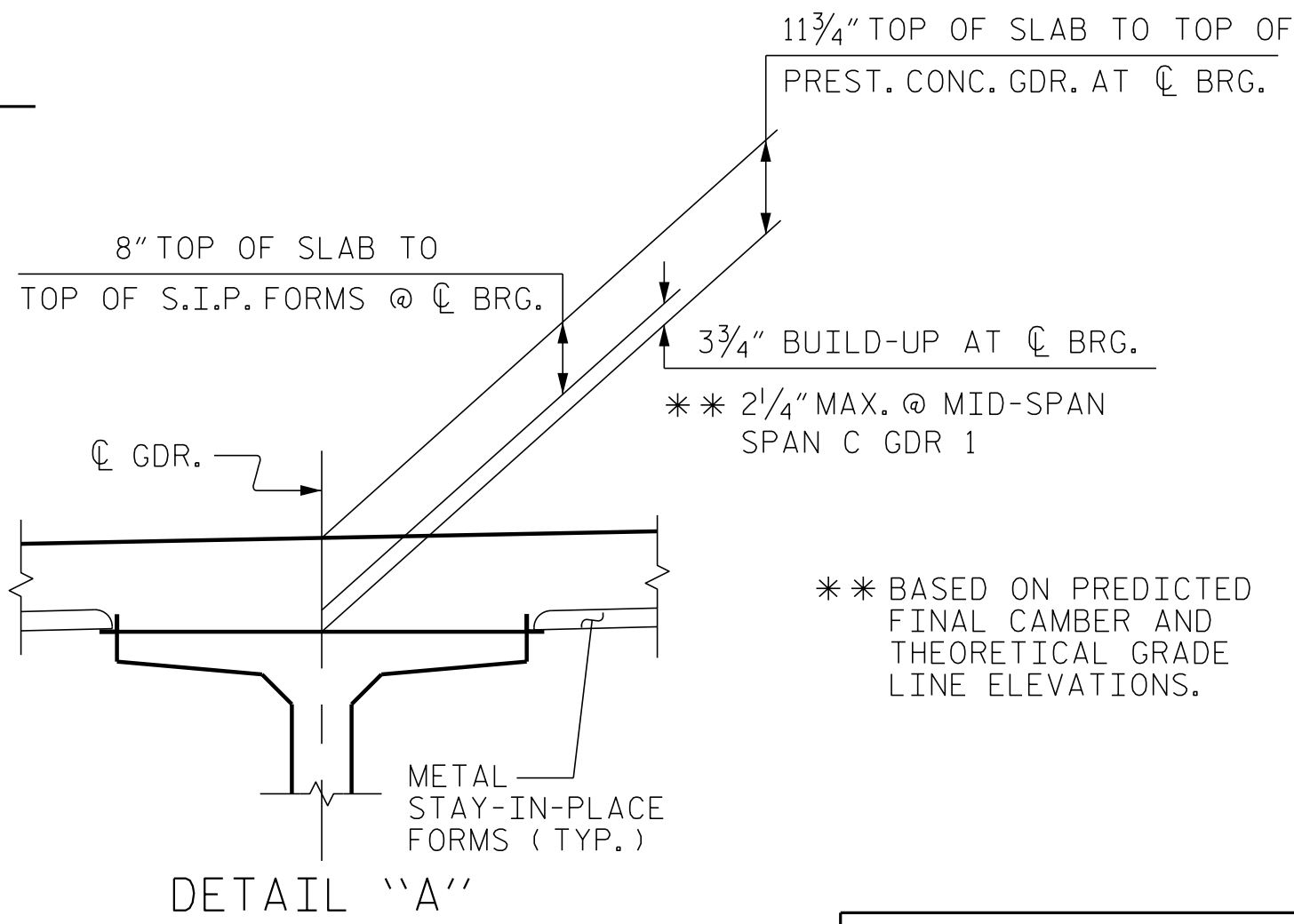
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NOTE ★
CROSS-SLOPE SHOWN IS TYPICAL
EXCEPT ON APPROACH SLAB AT END
BENT No. 2, WHICH VARIES. SEE
"BRIDGE APPROACH SLAB" SHEETS
FOR DETAILS.

TYPICAL SECTION

(AT BENT No. 2)



11 3/4" TOP OF SLAB TO TOP OF
PREST. CONC. GDR. AT C. BRG.

3 3/4" BUILD-UP AT C. BRG.

** 2 1/4" MAX. @ MID-SPAN
SPAN C GDR 1

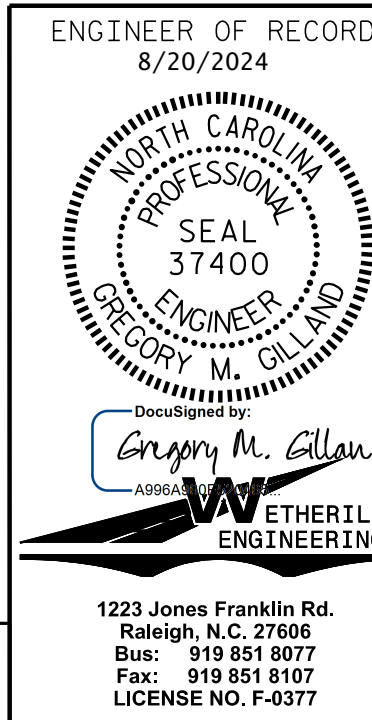
** BASED ON PREDICTED
FINAL CAMBER AND
THEORETICAL GRADE
LINE ELEVATIONS.

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 2 OF 7



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

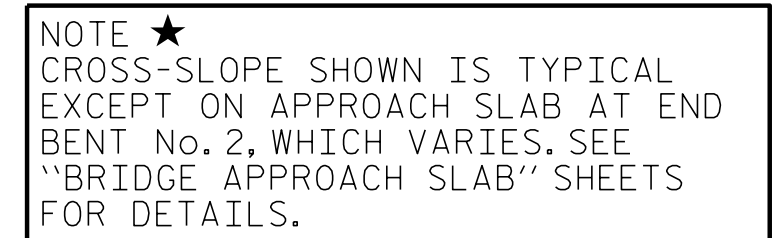
SUPERSTRUCTURE
TYPICAL SECTION

REVISIONS

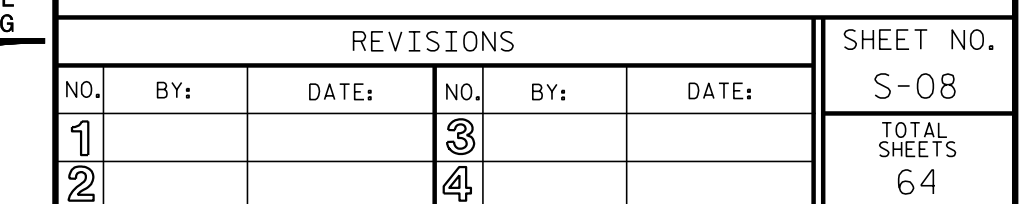
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-07
2			4			TOTAL SHEETS 64

DRAWN BY : D. HODGE DATE : 2/22
CHECKED BY : G. GILLAND DATE : 7/22

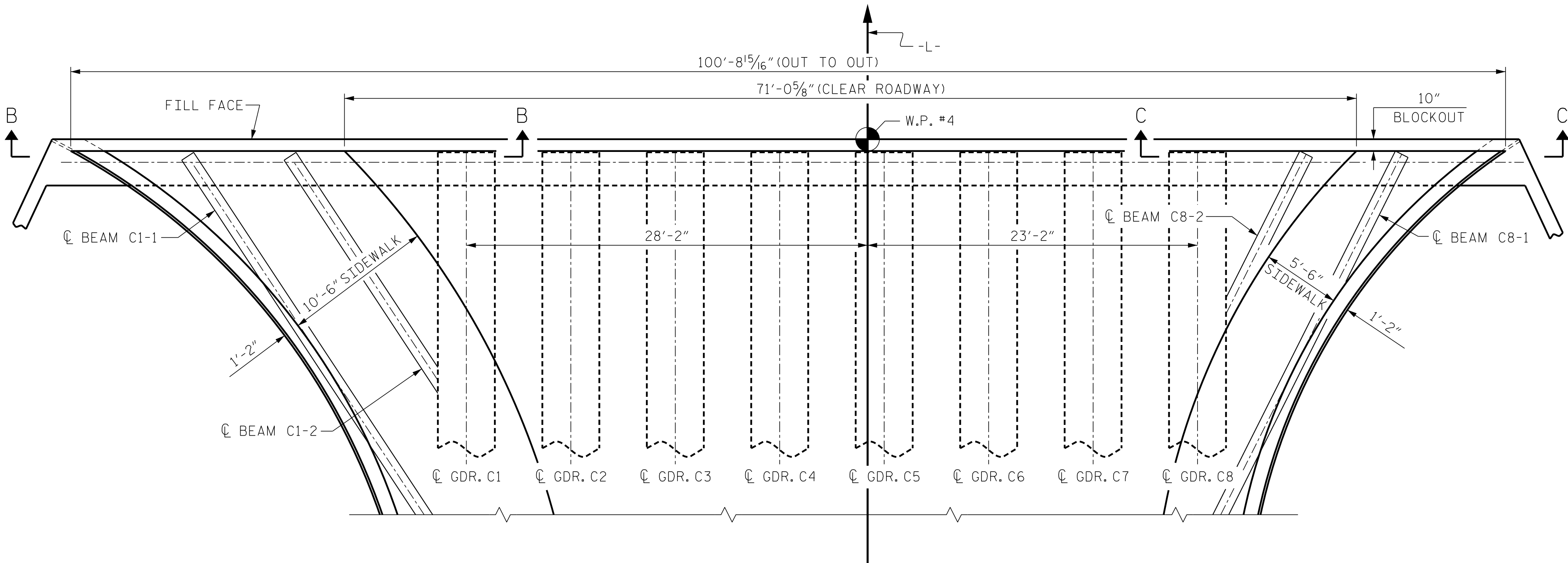
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SHEET 3 OF 7



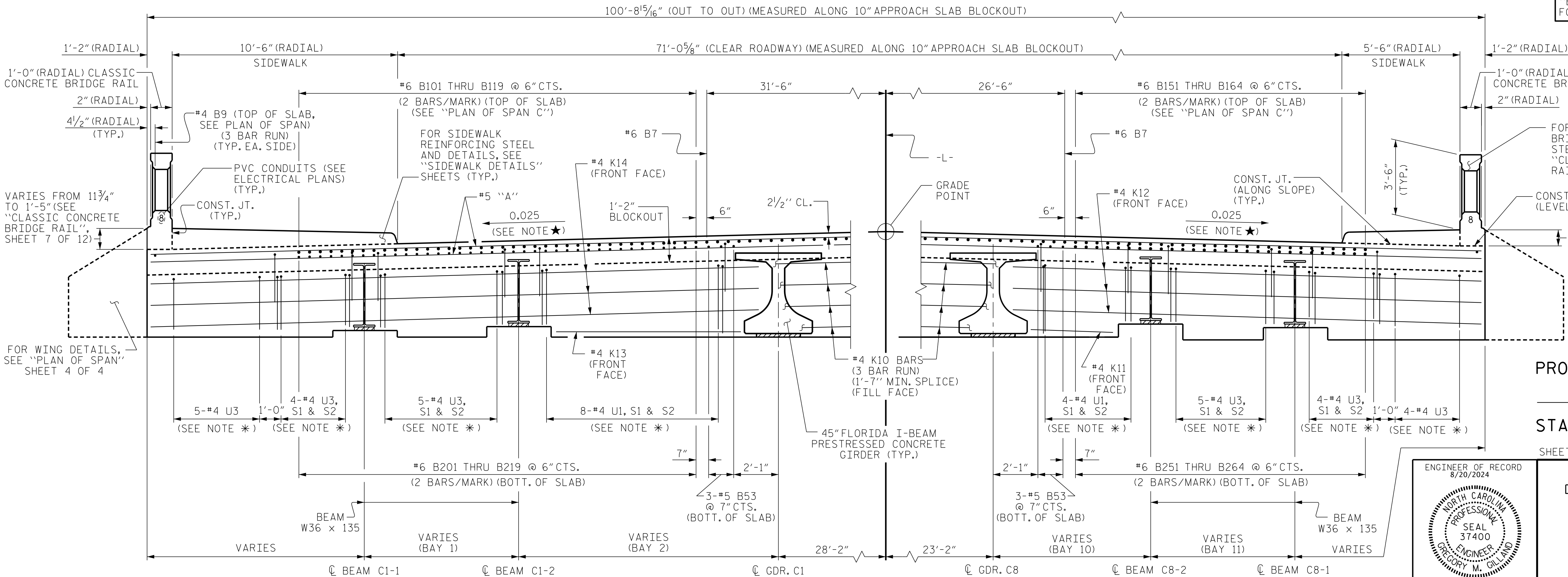
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PLAN OF END BENT No. 2

NOTE *
THESE BARS ARE TO MATCH
#4 "V" BARS IN END BENT

NOTE ★
CROSS-SLOPE SHOWN IS TYPICAL
EXCEPT ON APPROACH SLAB AT END
BENT No. 2, WHICH VARIES. SEE
"BRIDGE APPROACH SLAB" SHEETS
FOR DETAILS.



SECTION B-B

(SHOWING LEFT SIDE W36 X 135 PORTION OF
INTEGRAL END BENT No. 2 DIAPHRAGM)

SECTION C-C

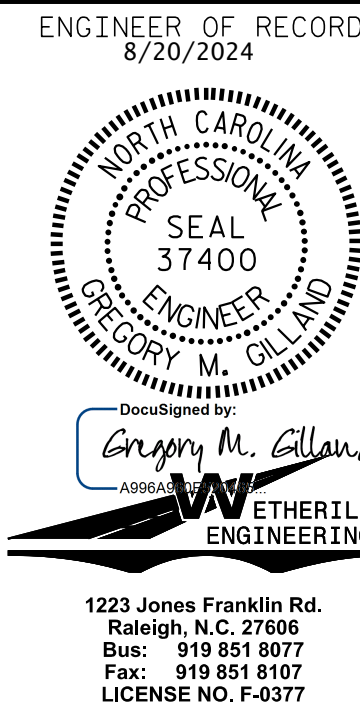
(SHOWING RIGHT SIDE W36 X 135 PORTION OF
INTEGRAL END BENT No. 2 DIAPHRAGM)

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 4 OF 7



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

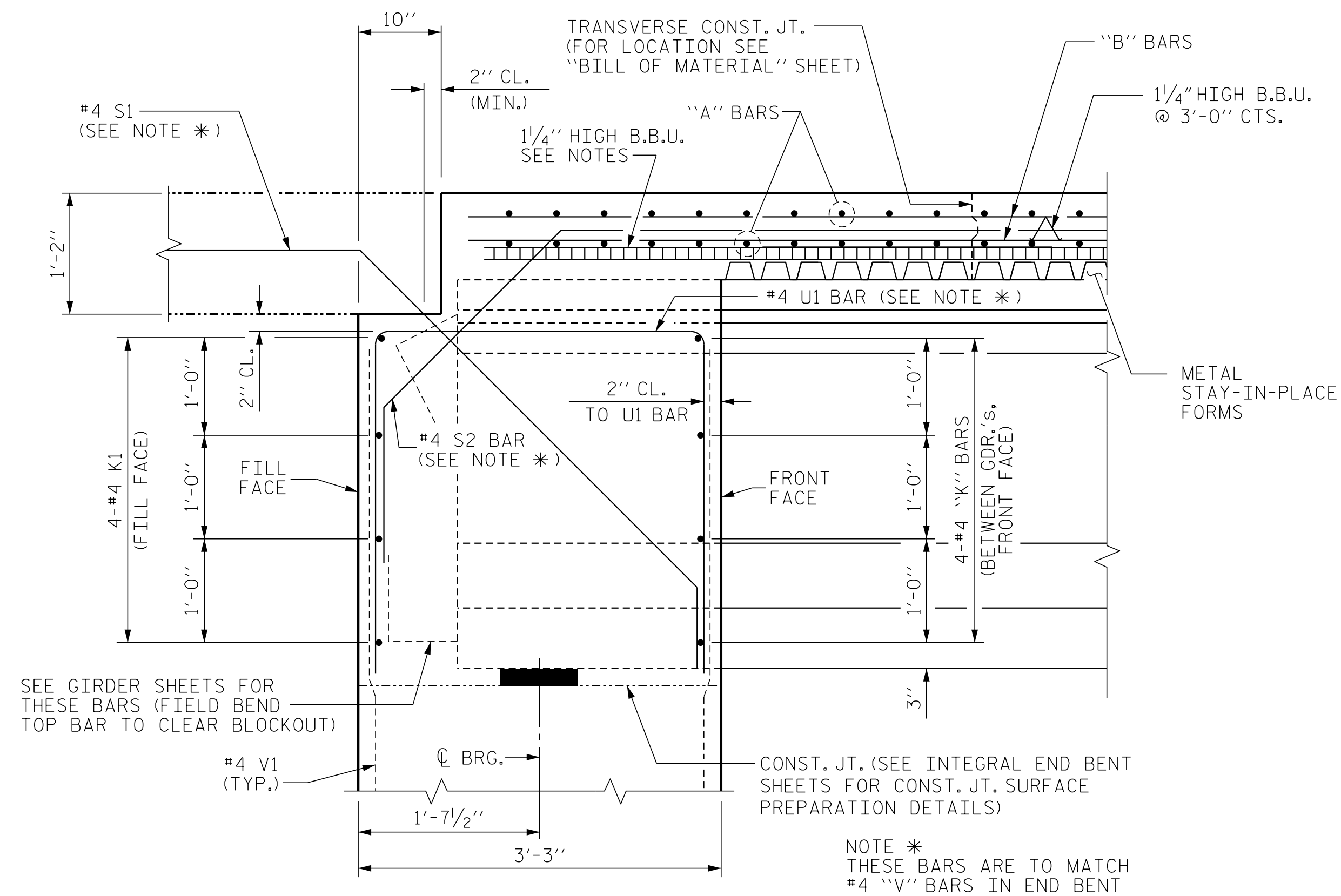
SUPERSTRUCTURE
TYPICAL SECTION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-09
2			4			

DRAWN BY : D. HODGE DATE : 2/22
CHECKED BY : G. GILLAND DATE : 7/22

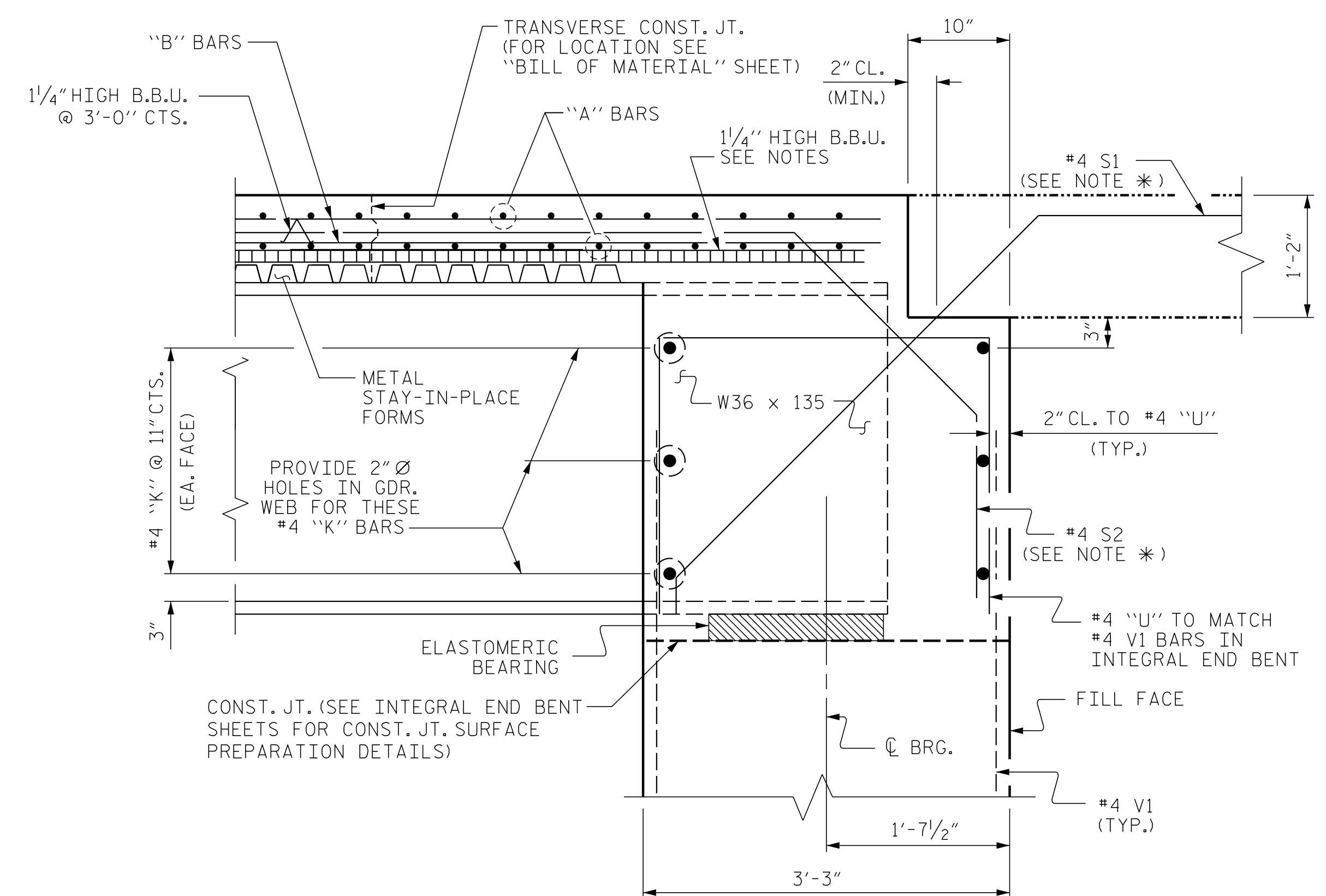
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UNLESS ALL SIGNATURES COMPLETED

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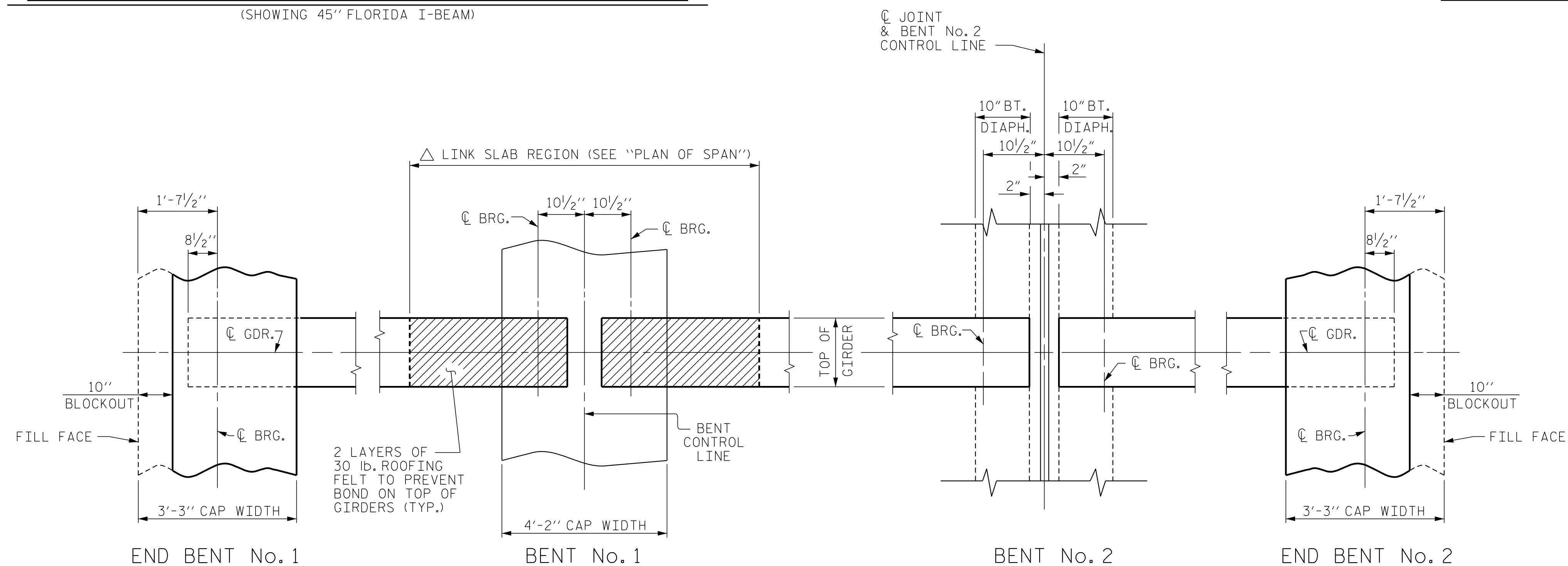
SECTION THRU INTEGRAL END BENT

(SHOWING 45" FLORIDA I-BEAM)



SECTION THRU INTEGRAL END BENT No. 2

(PERPENDICULAR TO FILL FACE)



PLAN

△ THE TOP OF THE GIRDER IN THE REGION OF THE LINK SLAB SHALL BE SMOOTH (NOT RAKED) AND FREE OF STIRRUPS, DECK FORMWORK ATTACHMENTS AND OVERHANG FALSEWORK/FORMWORK ATTACHMENTS.

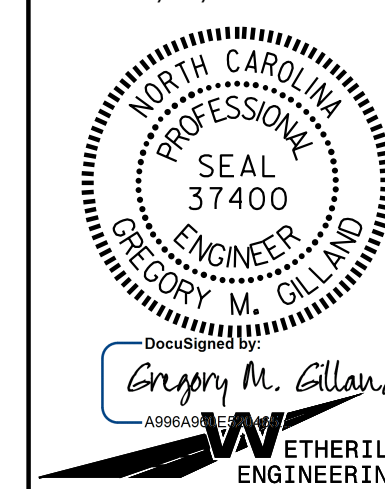
DRAWN BY : D. HODGE DATE : 1/22
CHECKED BY : G. GILLAND DATE : 7/22

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PROJECT NO. B-5985B
ROBESON COUNTY
 STATION: 22+08.00 -L-

SHEET 5 OF 7

ENGINEER OF RECORD
8/20/2024

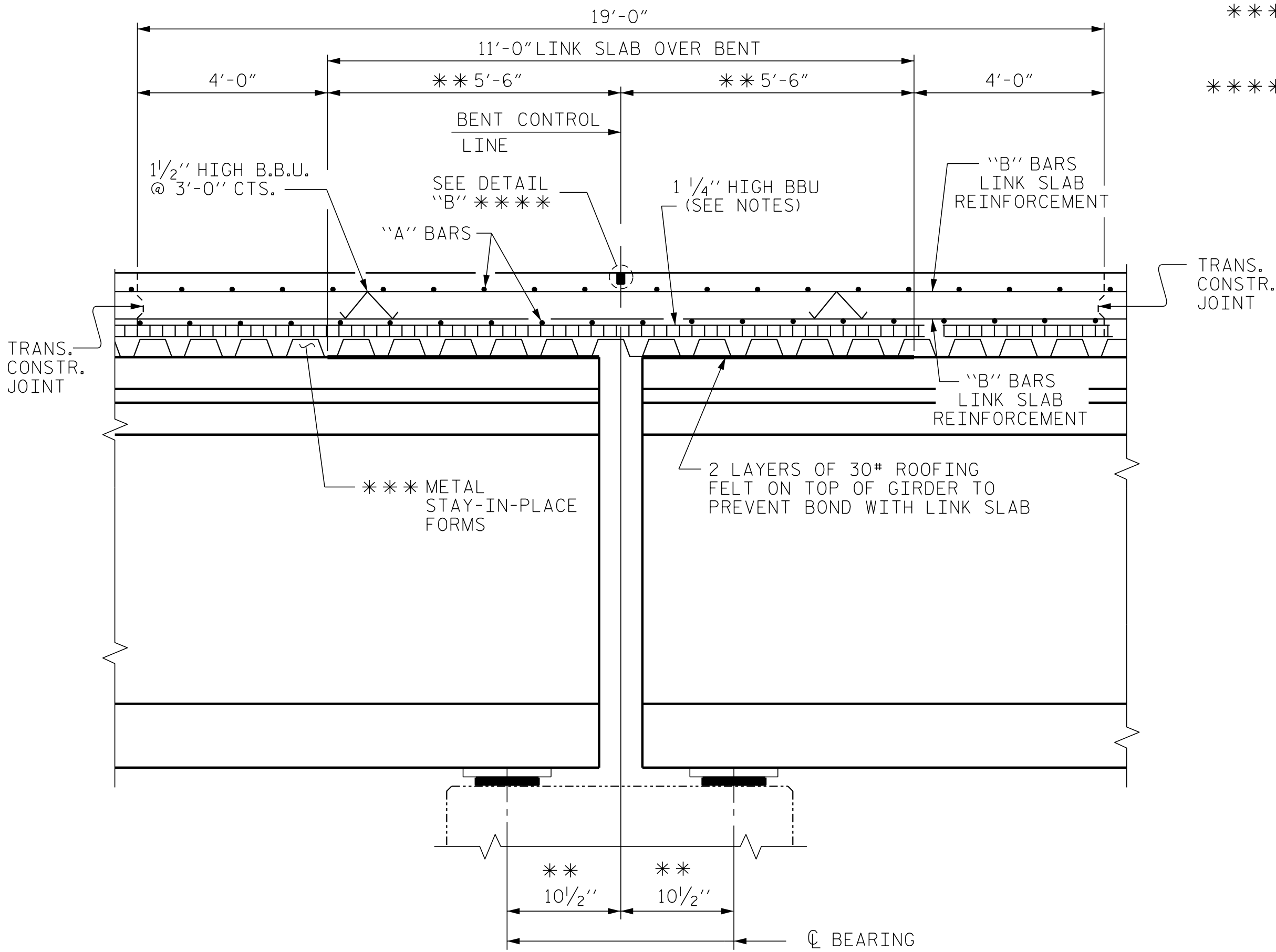


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTION

REVISIONS						SHEET NO. S-10
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 64
2			4			

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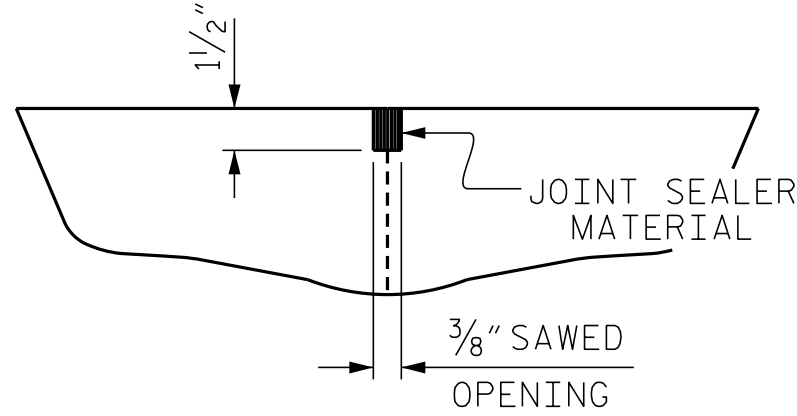
SECTION THRU LINK SLAB @ BENT No. 1

(SHOWN PERPENDICULAR TO BENT CONTROL LINE)

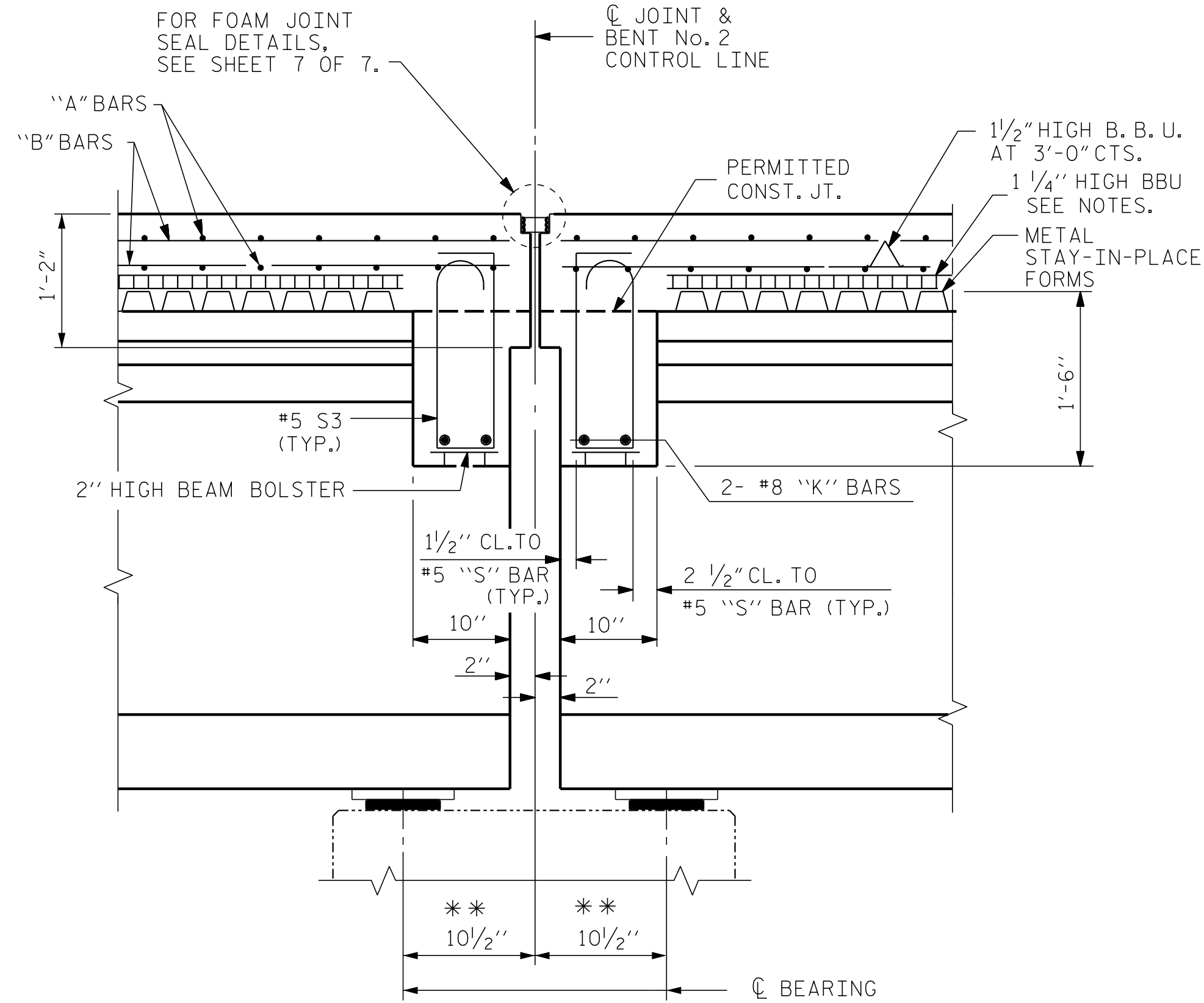
** DIMENSION IS MEASURED ALONG THE $\varnothing$ GIRDER

*** METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO THE GIRDER FLANGES IN THE REGION OF THE LINK SLAB.

**** A 1 1/2" DEEP, 3/8" WIDE CONTRACTION JOINT AT BENT CONTROL LINE SHALL BE SAWN WITHIN 24 HOURS OF POURING THE DECK. THE JOINT SHALL BE FILLED WITH JOINT SEALER MATERIAL. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATION.



DETAIL "B"



SECTION THRU BENT No. 2

(SHOWN PERPENDICULAR TO BENT CONTROL LINE)

** DIMENSION IS MEASURED ALONG THE $\varnothing$ GIRDER

NOTES

PROVIDE 1 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.

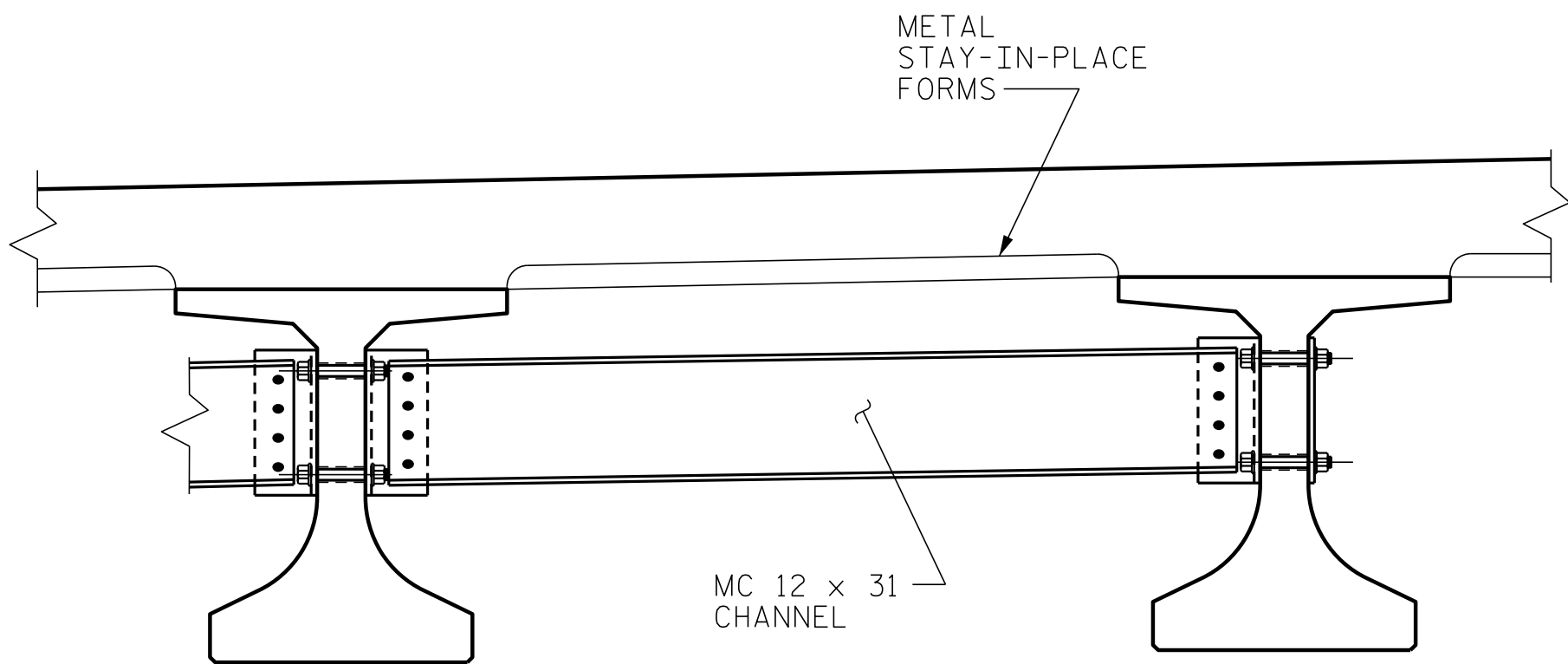
PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

CLASSIC CONCRETE BRIDGE RAIL IN A CONTINUOUS UNIT 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.

DURING THE JOINT INSTALLATION PROCEDURE, THE JOINT AND SURROUNDING AREA SHALL BE KEPT CLEAN AND FREE OF DEBRIS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 3 1/2" AT BENT No. 2.

FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.



TYPICAL INTERMEDIATE DIAPHRAGM

SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 45" F.I.B." SHEET FOR DETAILS

DRAWN BY : D. HODGE DATE : 1/22
CHECKED BY : G. GILLAND DATE : 7/22

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PROJECT NO. B-5985B

ROBESON COUNTY

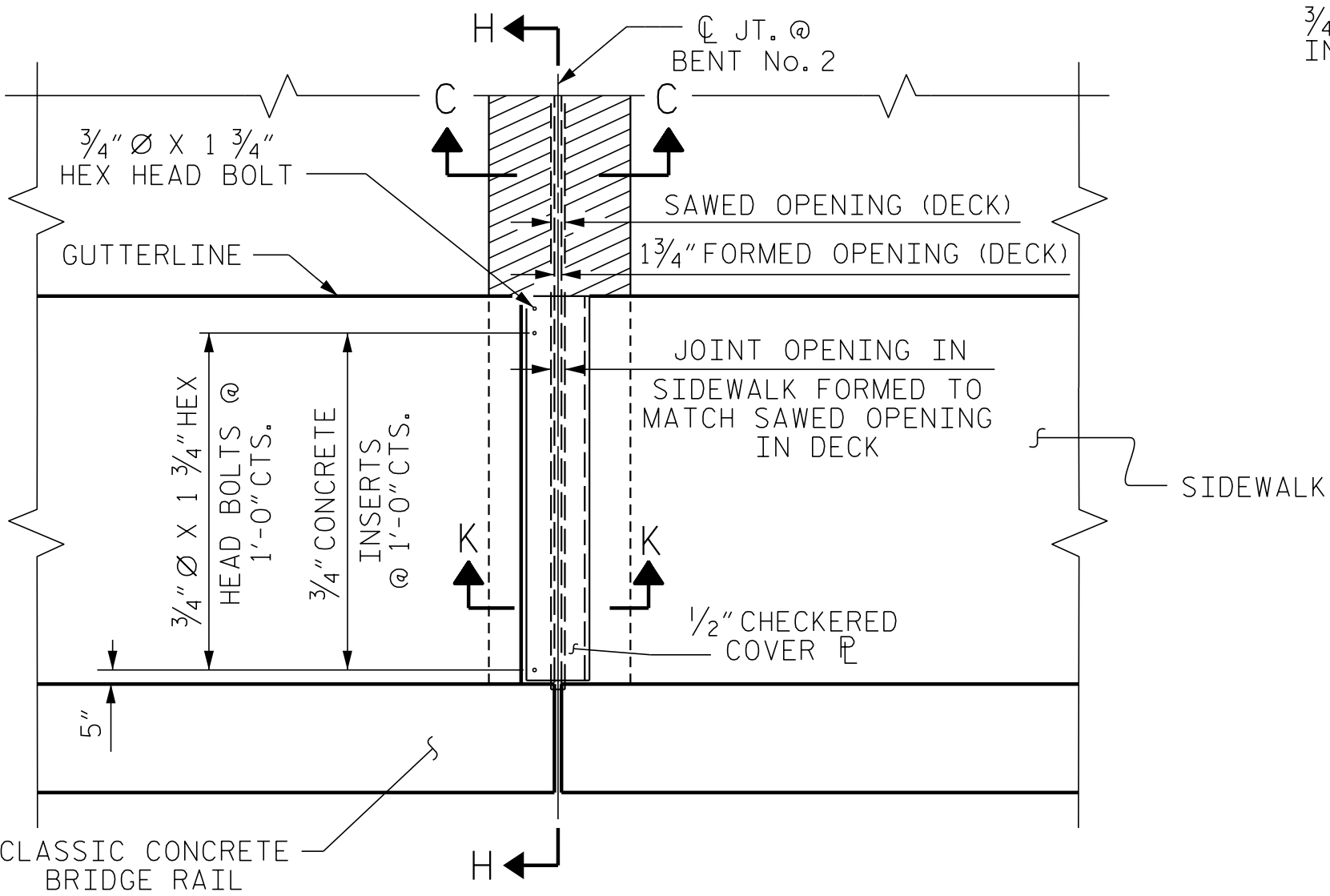
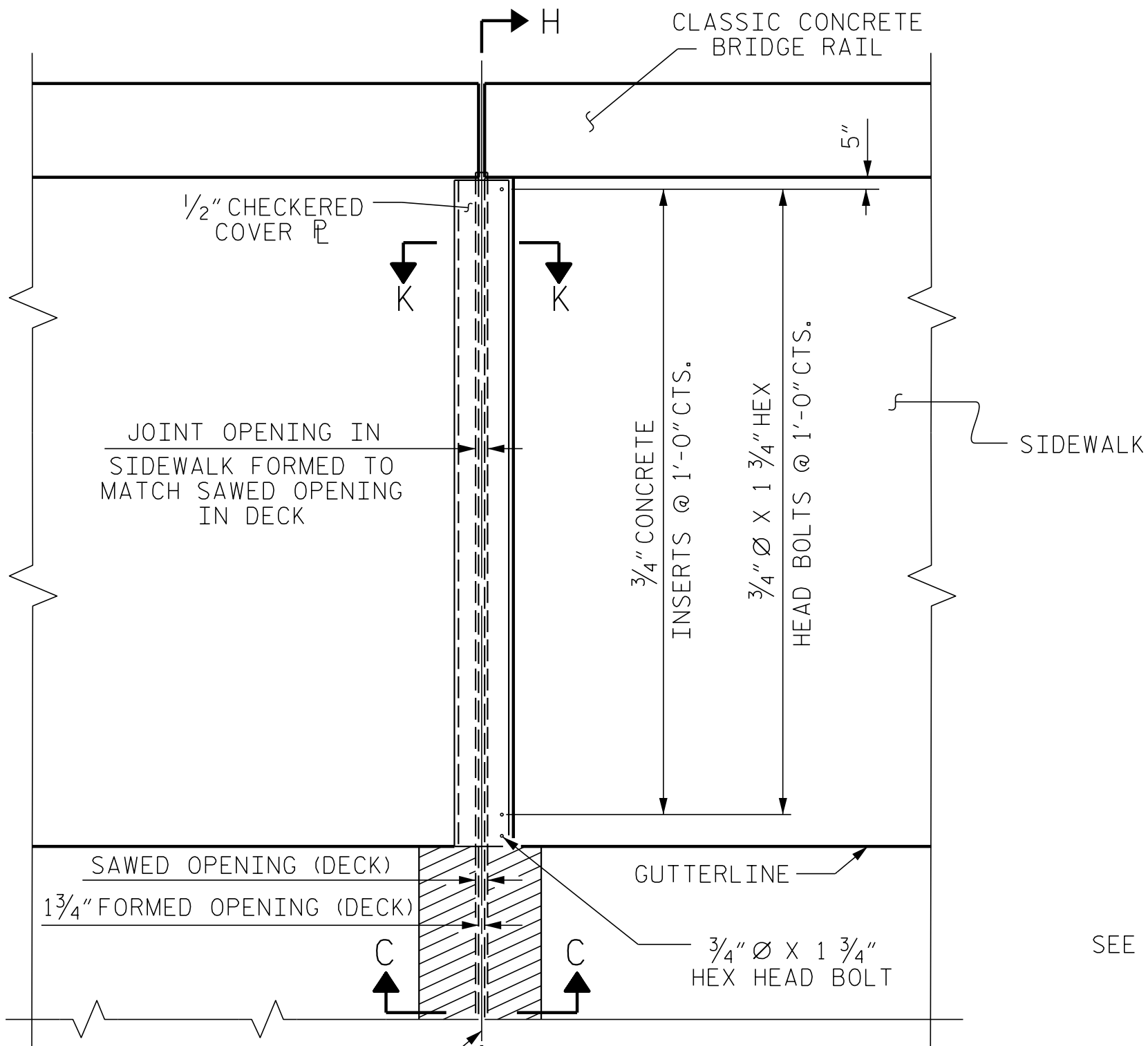
STATION: 22+08.00 -L-

SHEET 6 OF 7

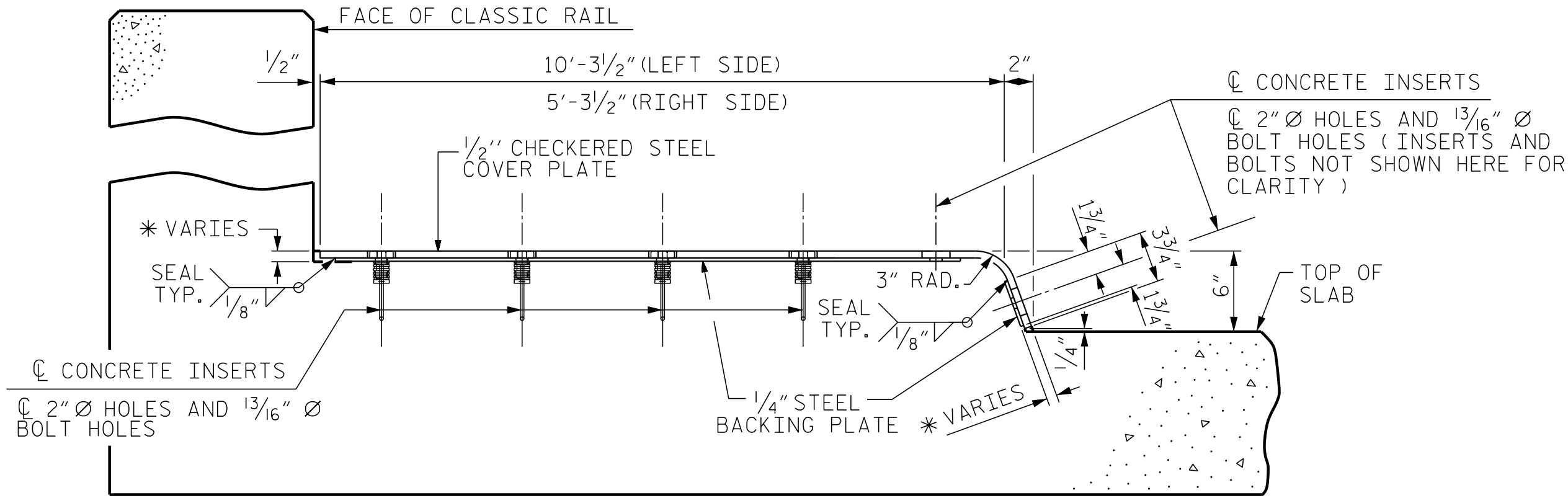
ENGINEER OF RECORD 8/20/2024		STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH			
		SUPERSTRUCTURE TYPICAL SECTION			
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-11			TOTAL SHEETS 64		

1223 Jones Franklin Rd.
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LICENSE NO. F-0377

PA:2018\18156.01 B-5985 RobesonStructures\Str-2 (770175)NDGN\402_001_B-5985-SITE 2 770175_SKU_T\Stdgn 4/26/2024 7:46:10 AM

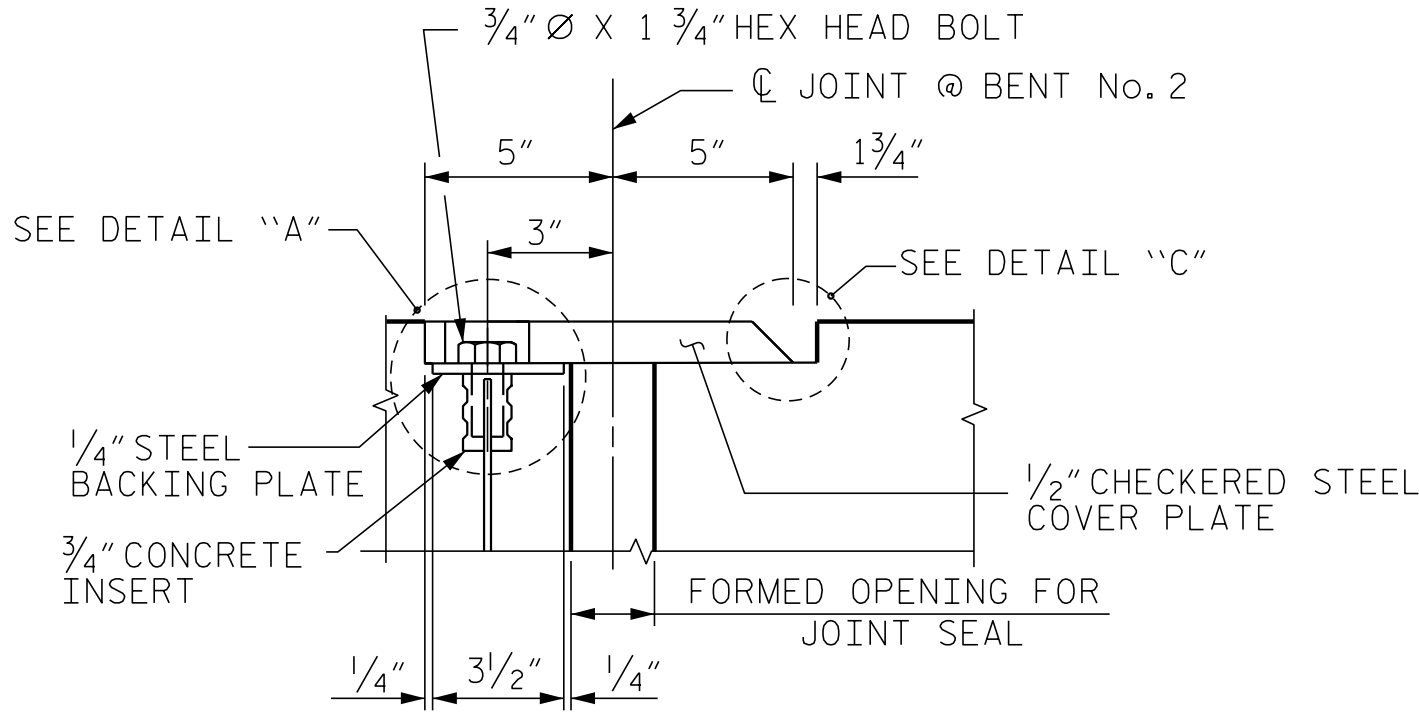


PLAN VIEW OF FOAM
JOINT SEAL @ BENT No. 2



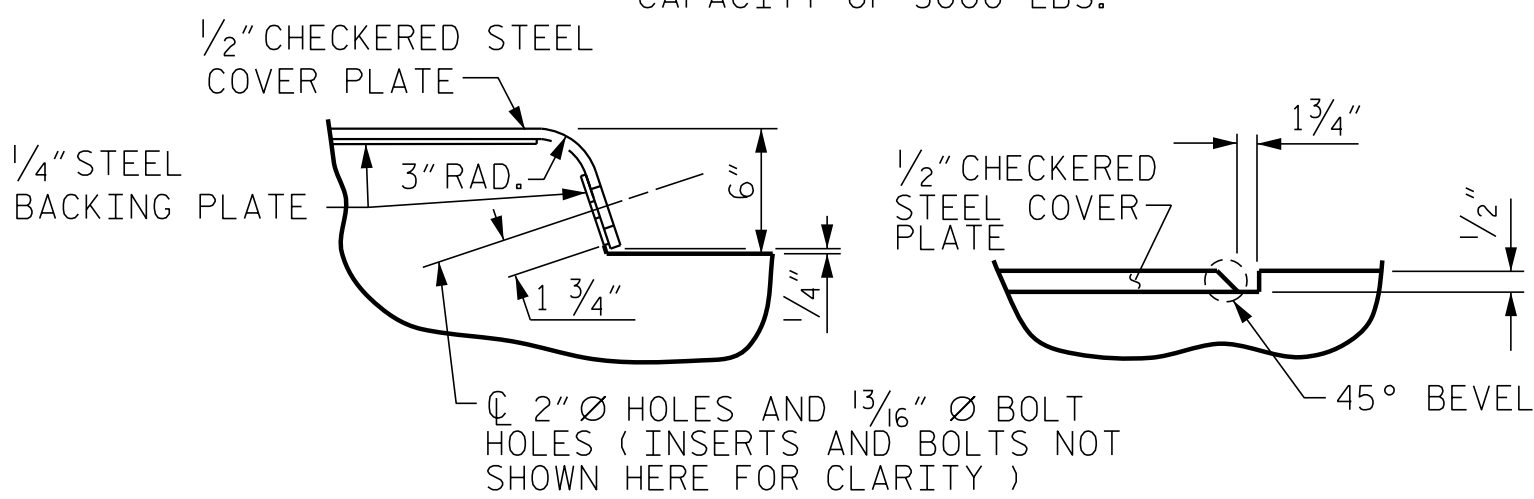
END VIEW

* CONCRETE RECESS DIMENSIONS:
1 3/16" FOR THE SIDE OF THE JOINT HAVING THE 1/2" COVER PLATE WITH A 1/4" BACKING PLATE.
3/16" FOR THE SIDE OF THE JOINT HAVING ONLY THE 1/2" COVER PLATE.



SECTION K-K

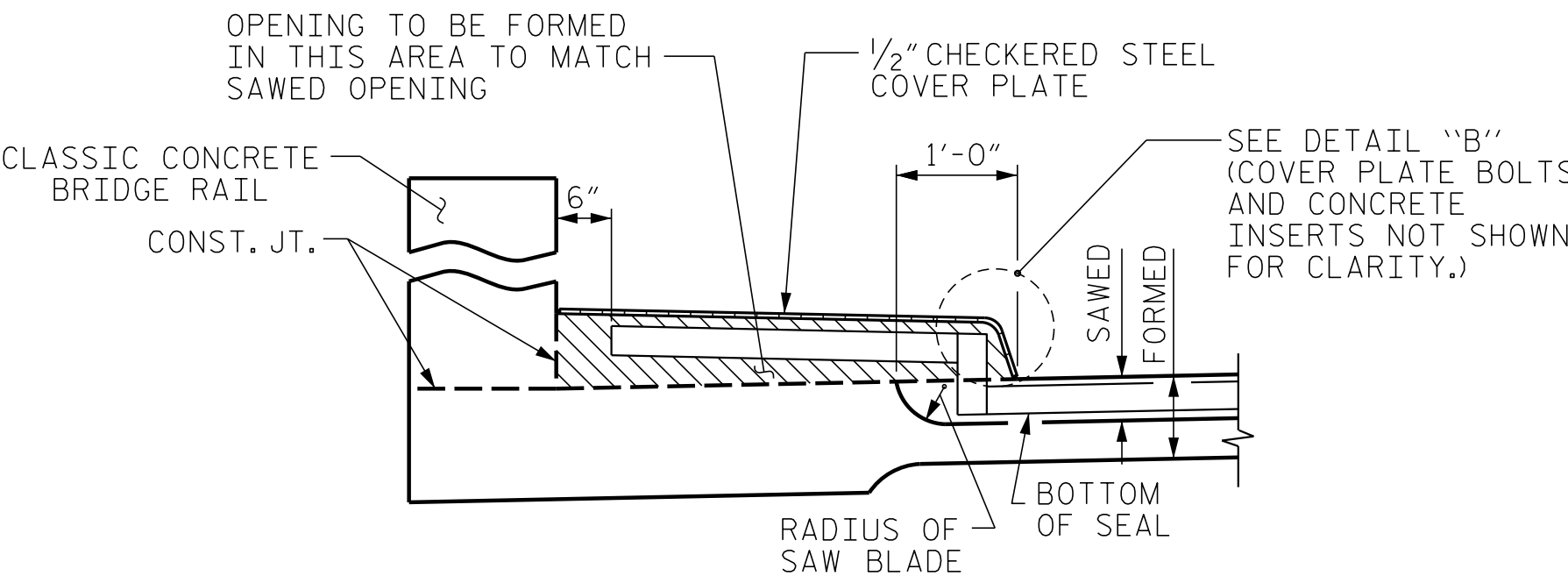
THE 3/4" CONCRETE INSERTS SHALL BE CLOSED-END FERRULES WITH LOOPED WIRE STRUTS ATTACHED TO THEM. THE INSERTS SHALL CONFORM TO AASHTO M169, GRADE 12L14 AND SHALL HAVE A TENSILE WORKING LOAD CAPACITY OF 3000 LBS.



DETAIL "B"

DETAIL "C"

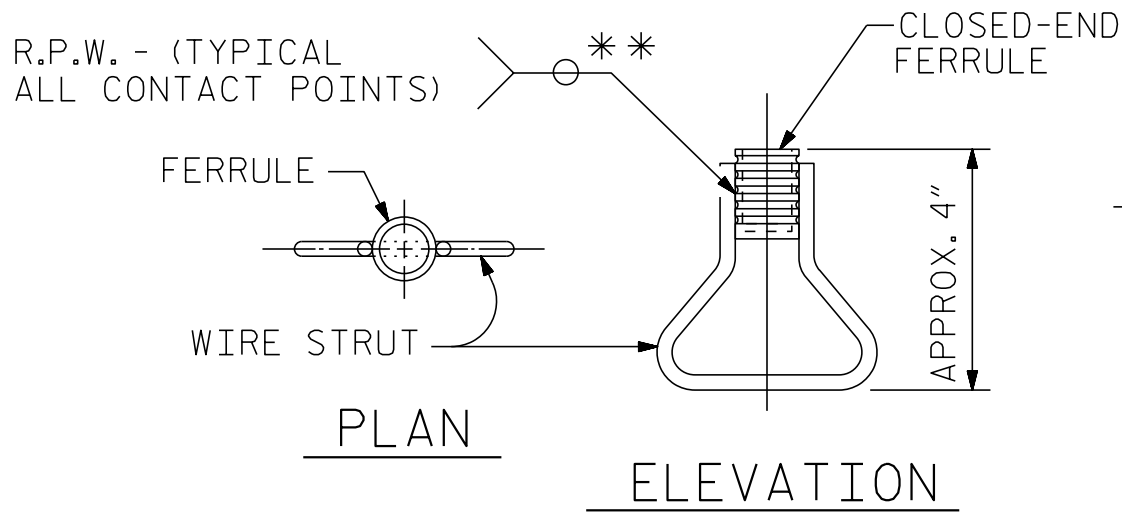
JOINT SEAL DETAILS @ BENT No. 2



SECTION H-H

ELASTOMERIC CONCRETE	
BENT NO.	ELASTOMERIC CONCRETE *** (CU. FT.)
2	6.9
TOTAL	6.9

*** BASED ON THE MINIMUM BLOCKOUT SHOWN.



CONCRETE INSERT

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

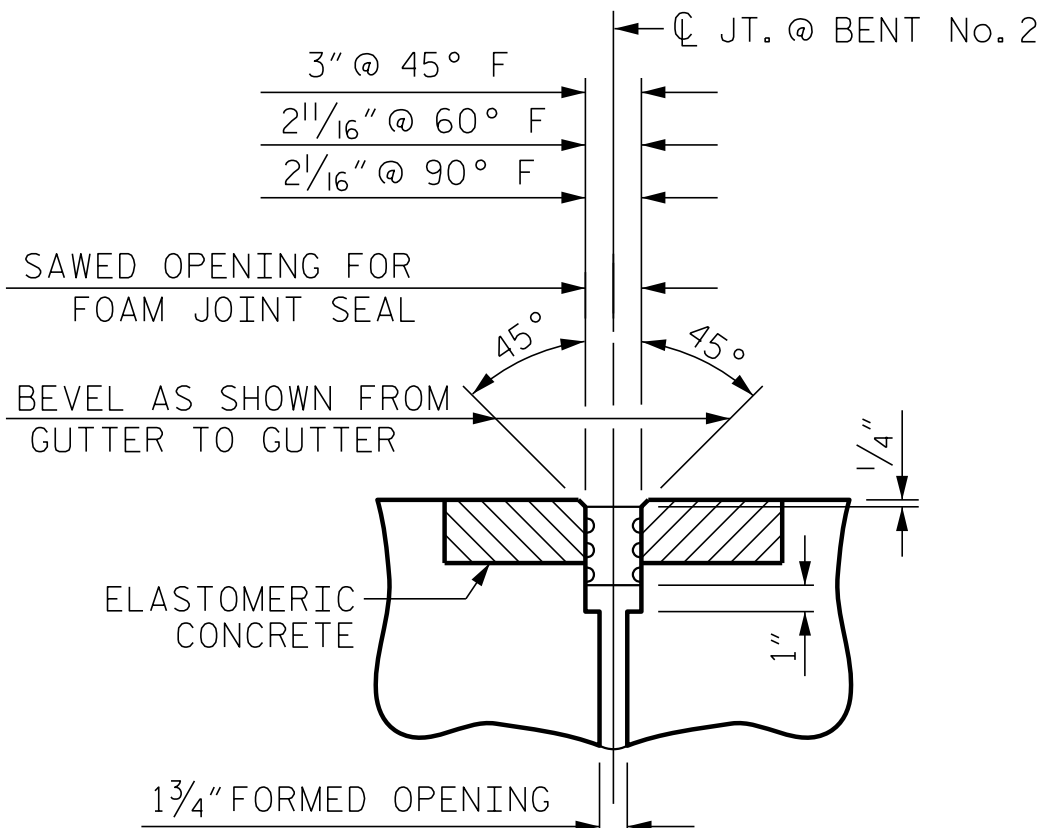
NOTES

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

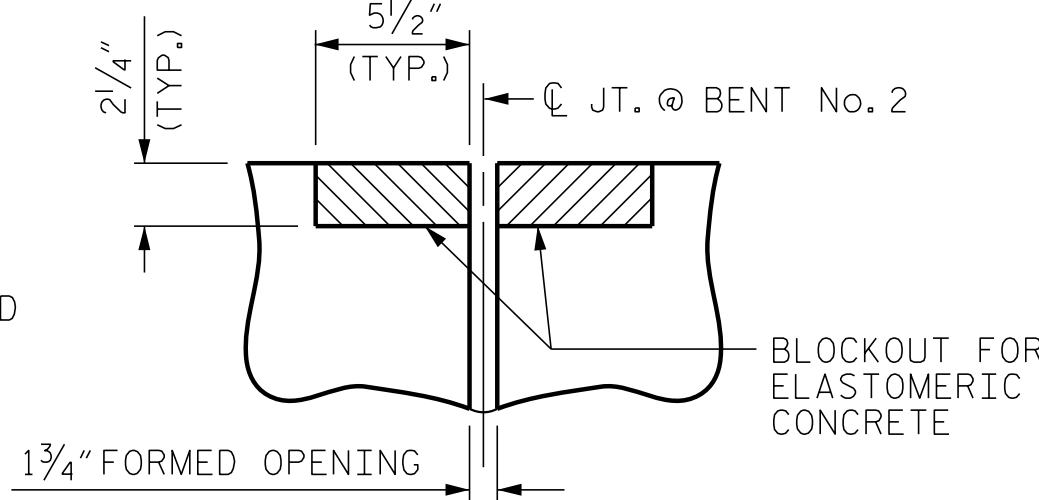
THE 3/4" DIAMETER HEX HEAD BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL.

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

THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE SIDEWALK.



SECTION C-C
FOAM JOINT SEAL
(EXPANSION)



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

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 7 OF 7

DRAWN BY: D. HODGE DATE: 3/22
CHECKED BY: G. GILLAND DATE: 7/22

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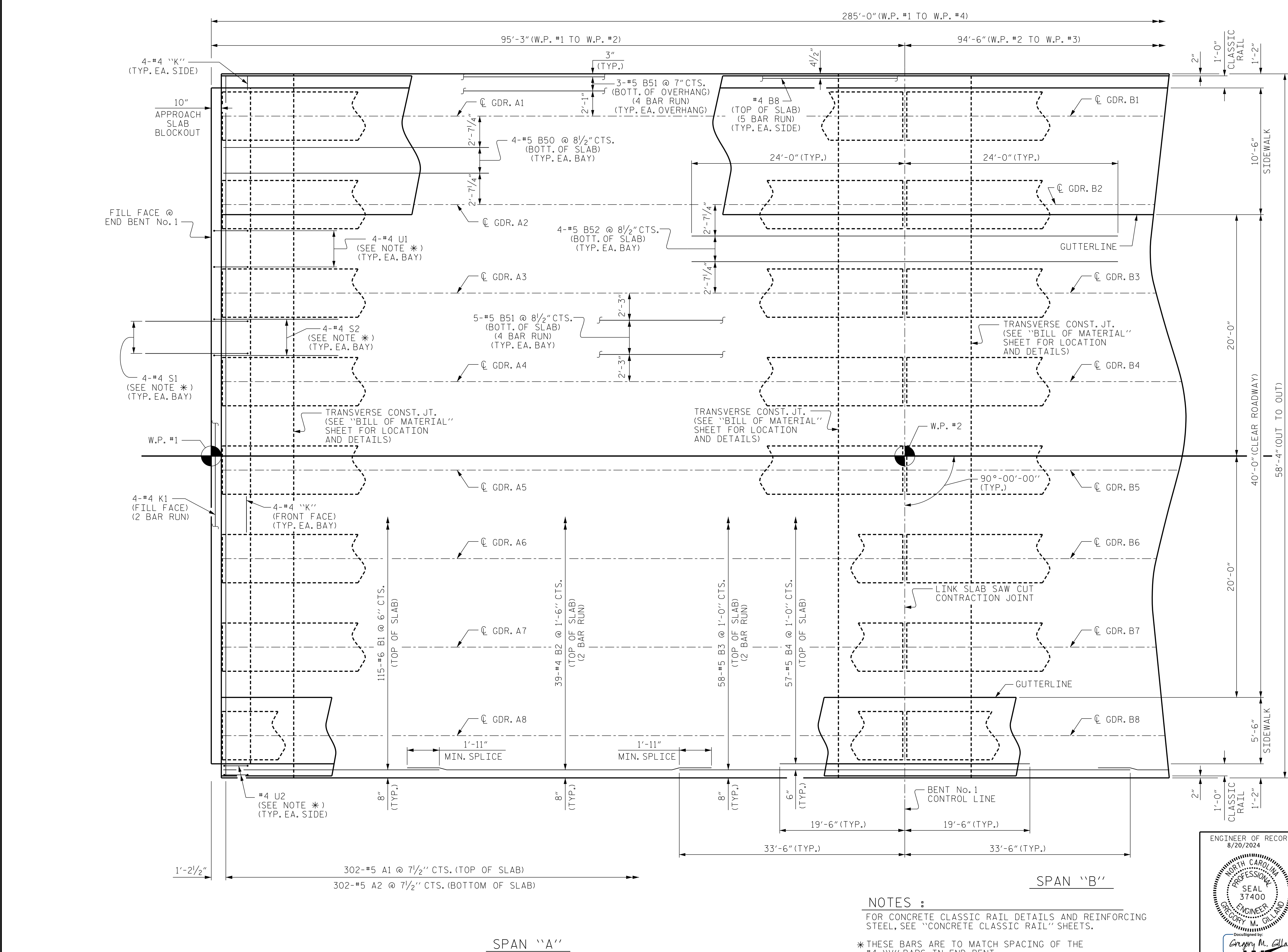
ENGINEER OF RECORD
8/20/2024

Gregory M. Gilland
ASPECT ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTION

REVISIONS						SHEET NO. S-12
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 64
2			4			

PA:2018\18156.01 B-5985 RobesonStructures\Str-2 (770175)NODM402_001.B-5985-SITE 2 770175_SKU_PS.dgn 4/26/2024 7:47:29 AM



DRAWN BY : D. HODGE DATE : 2/22
CHECKED BY : G. GILLAND DATE : 7/22

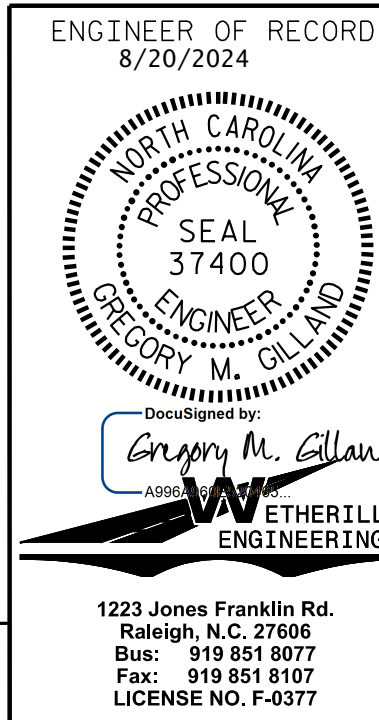
PLAN OF SPAN "A"

NOTES :
FOR CONCRETE CLASSIC RAIL DETAILS AND REINFORCING STEEL, SEE "CONCRETE CLASSIC RAIL" SHEETS.
* THESE BARS ARE TO MATCH SPACING OF THE #4 "V" BARS IN END BENT.
FOR LOCATIONS OF INTERMEDIATE STEEL DIAPHRAGMS, SEE "GIRDER LAYOUT" SHEET.

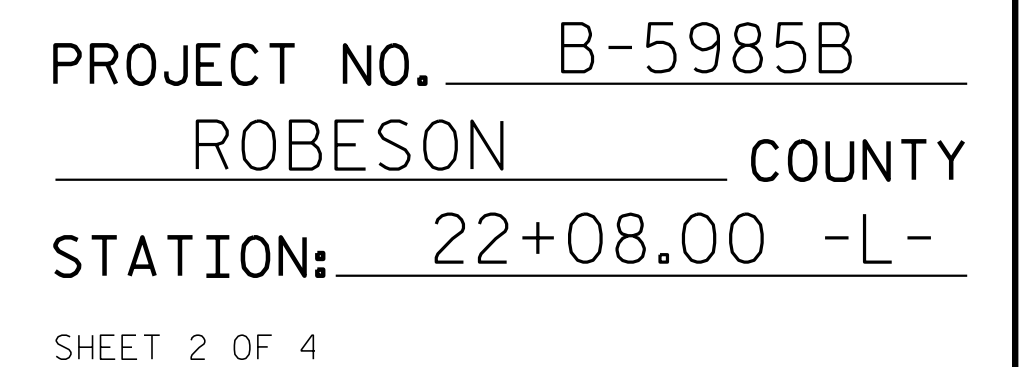
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PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 1 OF 4



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-13 TOTAL SHEETS 64
2			4			

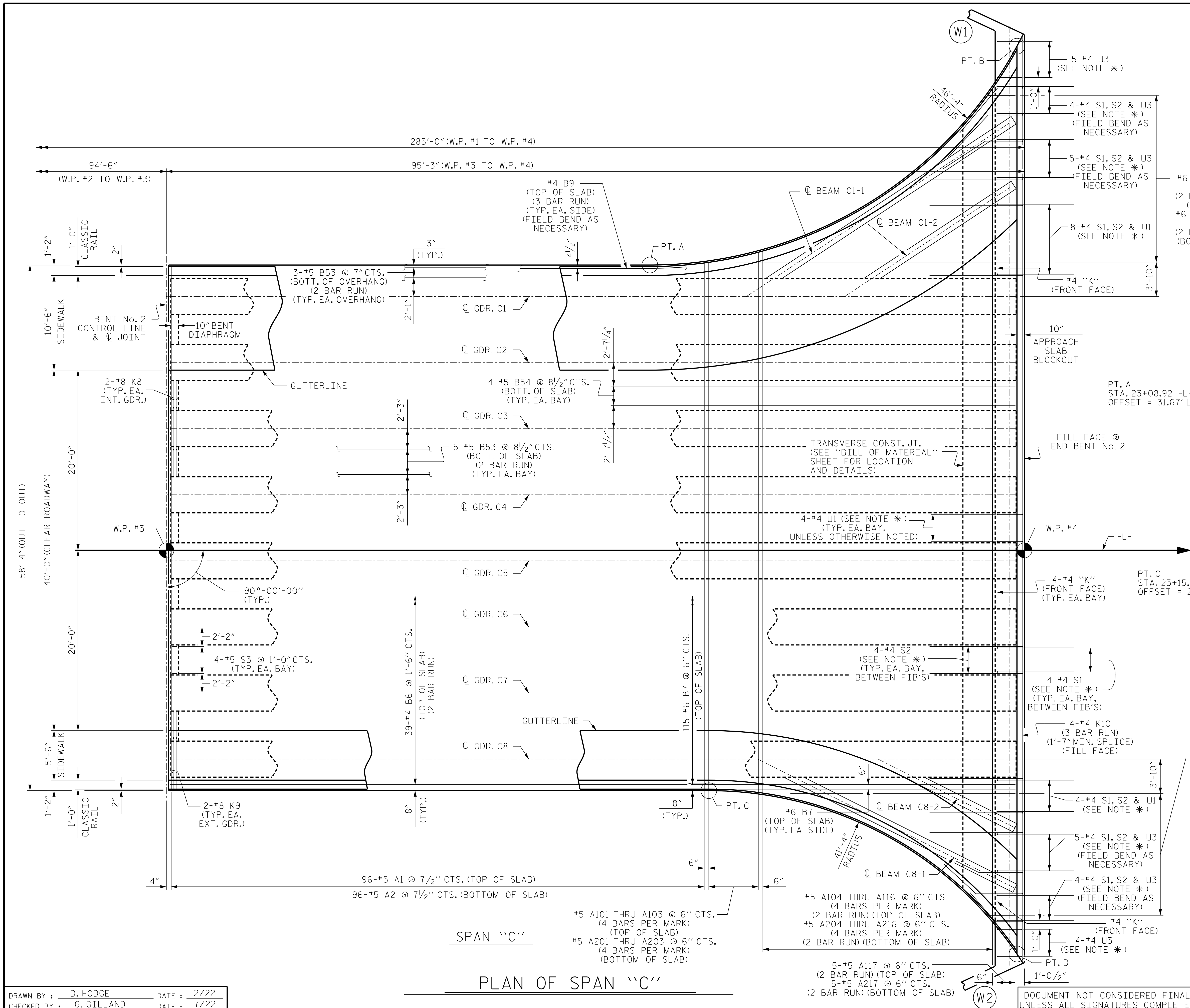


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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPANS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14 TOTAL SHEETS 64
1			3			
2			4			



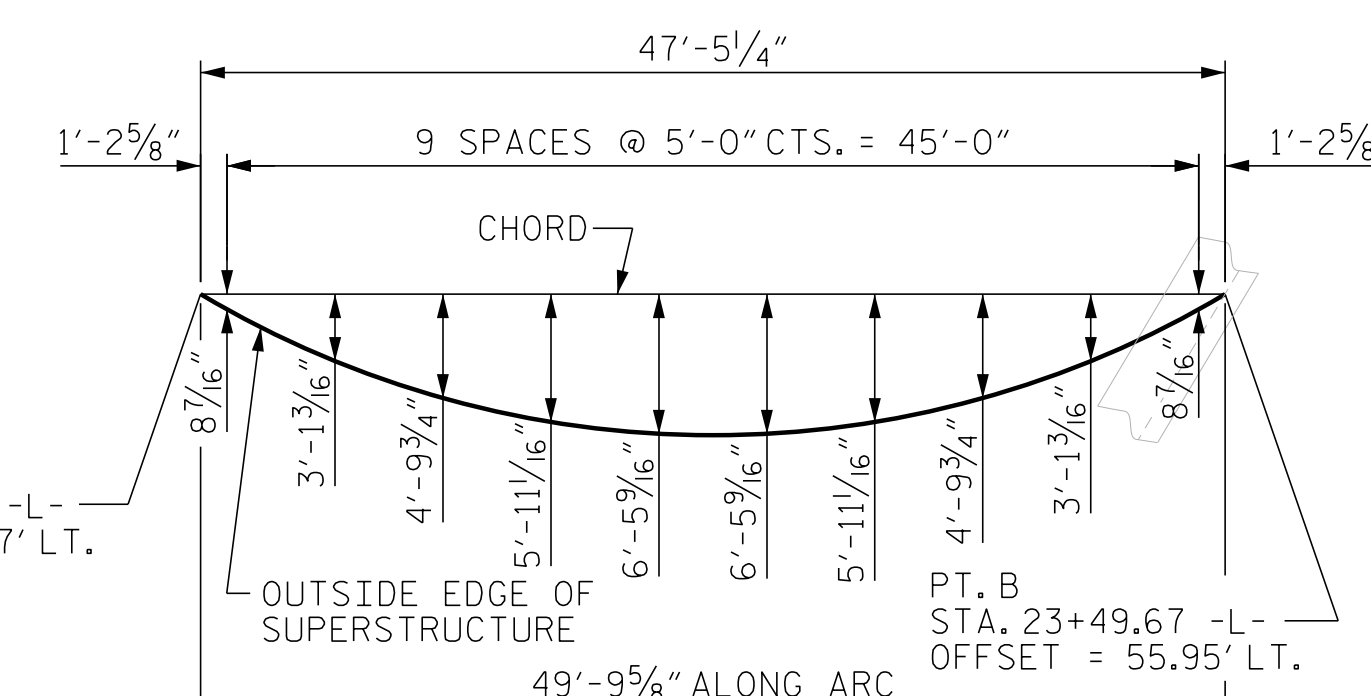
NOTES :

FOR CLASSIC CONCRETE BRIDGE RAIL DETAILS AND
REINFORCING STEEL, SEE "CLASSIC CONCRETE BRIDGE
RAIL" SHEETS.

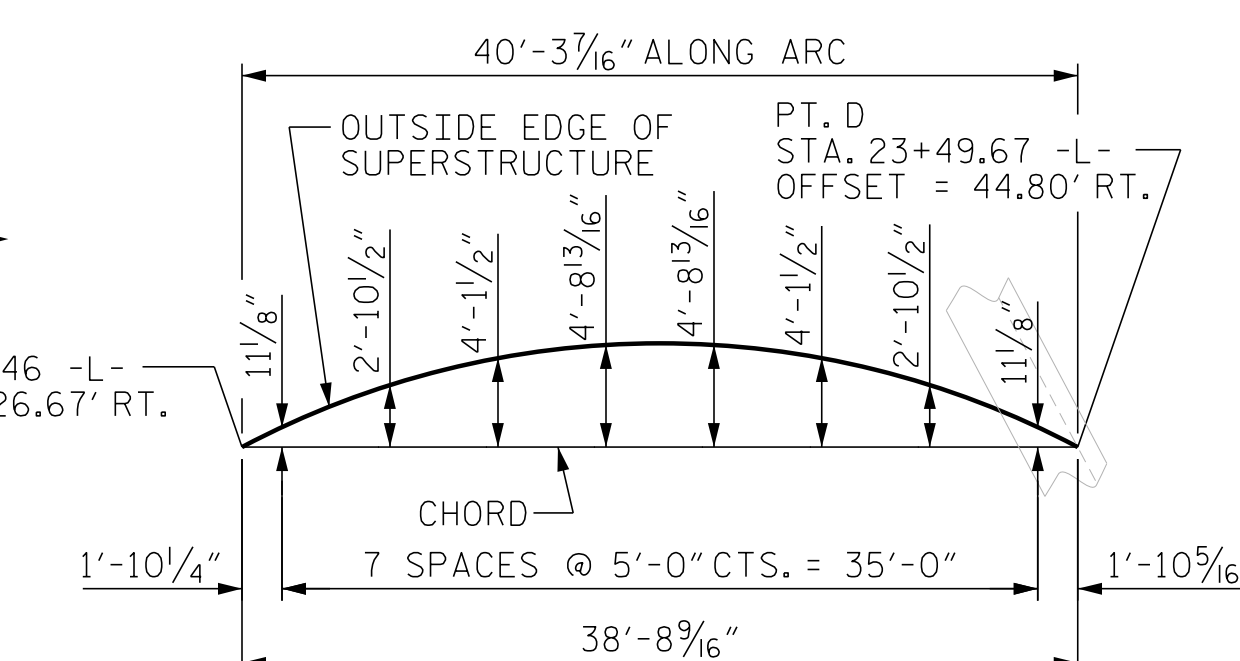
* THESE BARS ARE TO MATCH SPACING OF THE
#4 "V" BARS IN END BENT.

FOR LOCATIONS OF INTERMEDIATE STEEL DIAPHRAGMS,
SEE "GIRDER LAYOUT" SHEET.

— #6 B101 THRU B119
@ 6" CTS.
(2 BARS PER MARK)
(TOP OF SLAB)
#6 B201 THRU B219
@ 6" CTS.
(2 BARS PER MARK)
(BOTTOM OF SLAB)



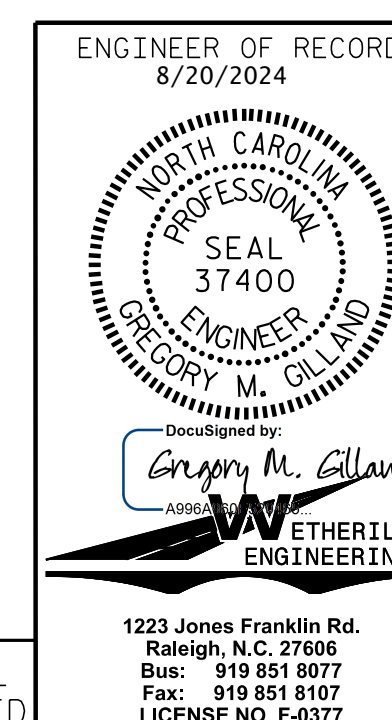
ARC OFFSETS - LEFT SIDE



ARC OFFSETS - RIGHT SIDE

#6 B151 THRU B164
@ 6" CTS.
(2 BARS PER MARK)
(TOP OF SLAB)
#6 B251 THRU B264
@ 6" CTS.
(2 BARS PER MARK)
(BOTT OF SLAB)

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-
SHEET 3 OF 4

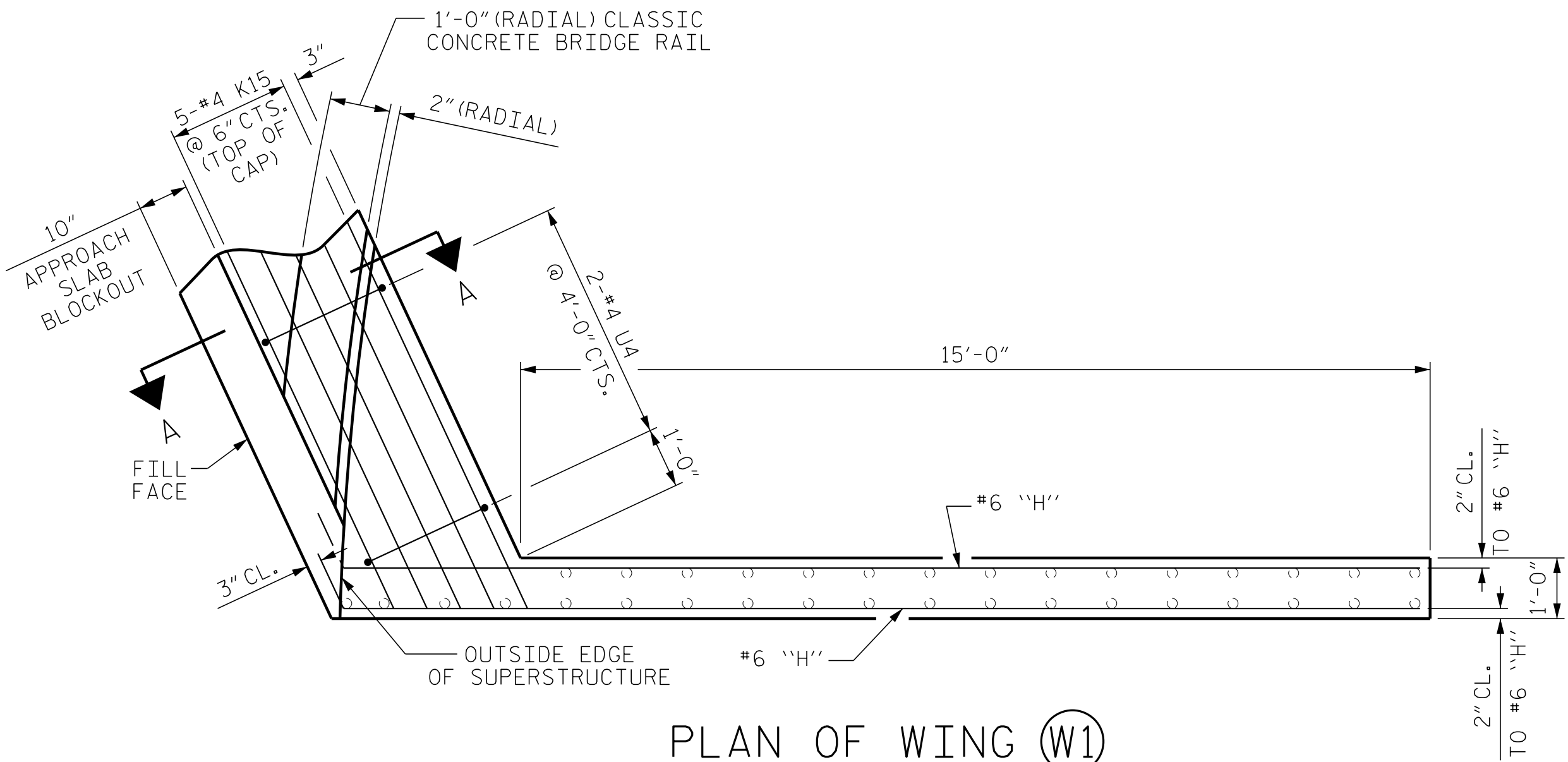


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

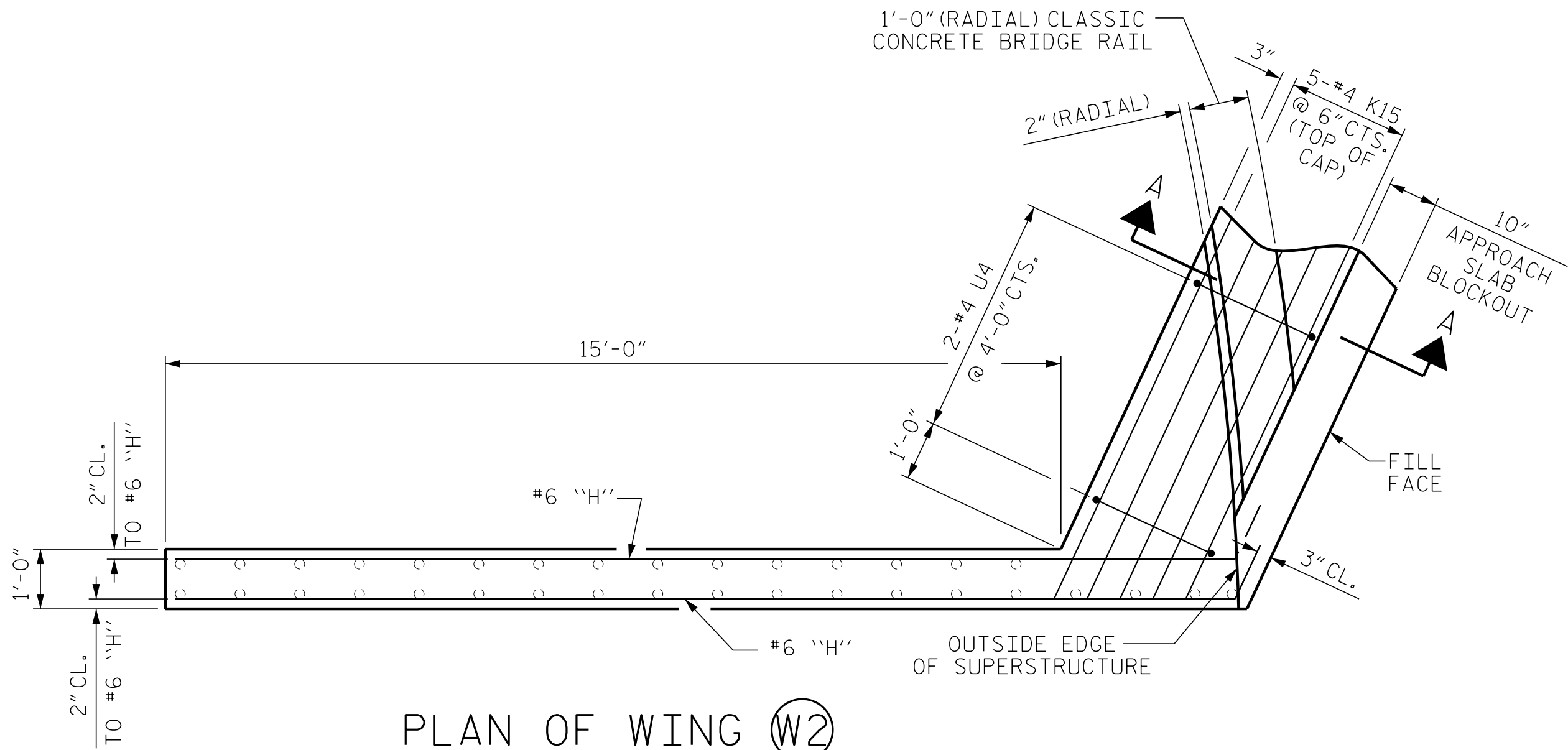
SUPERSTRUCTURE
PLAN OF SPANS

REVISONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			64

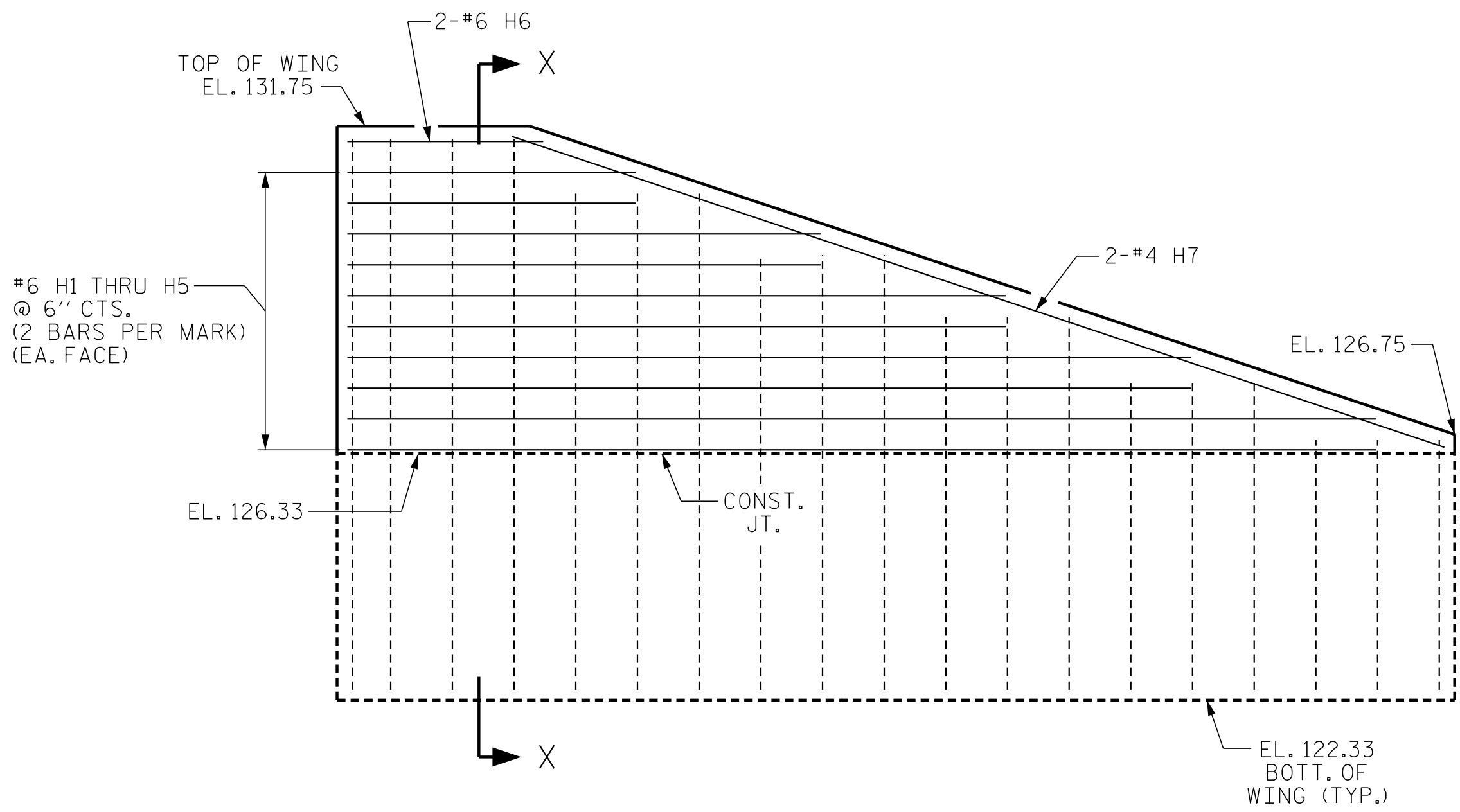
DOCUMENT NOT CONSIDERED FINAL
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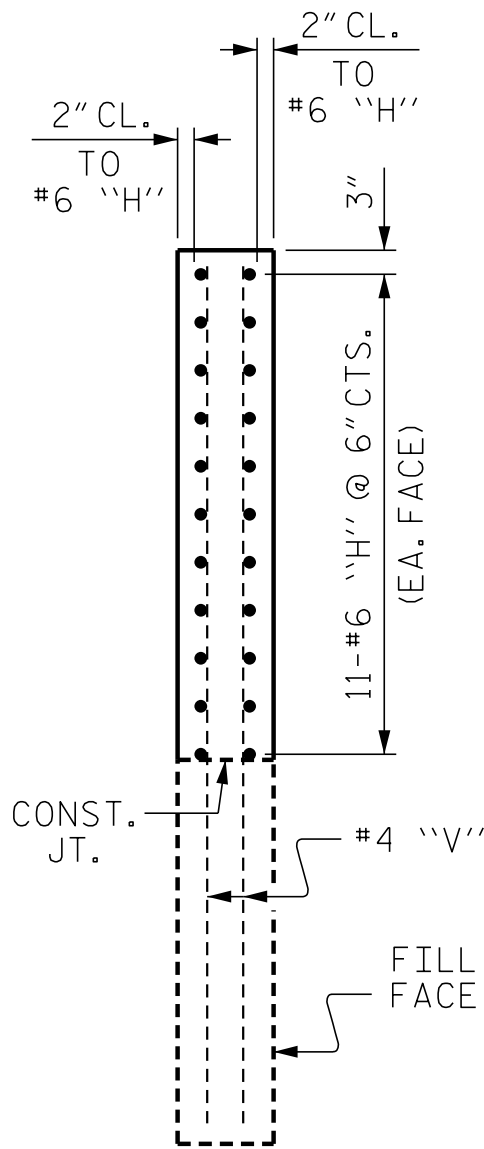
PLAN OF WING (W1)



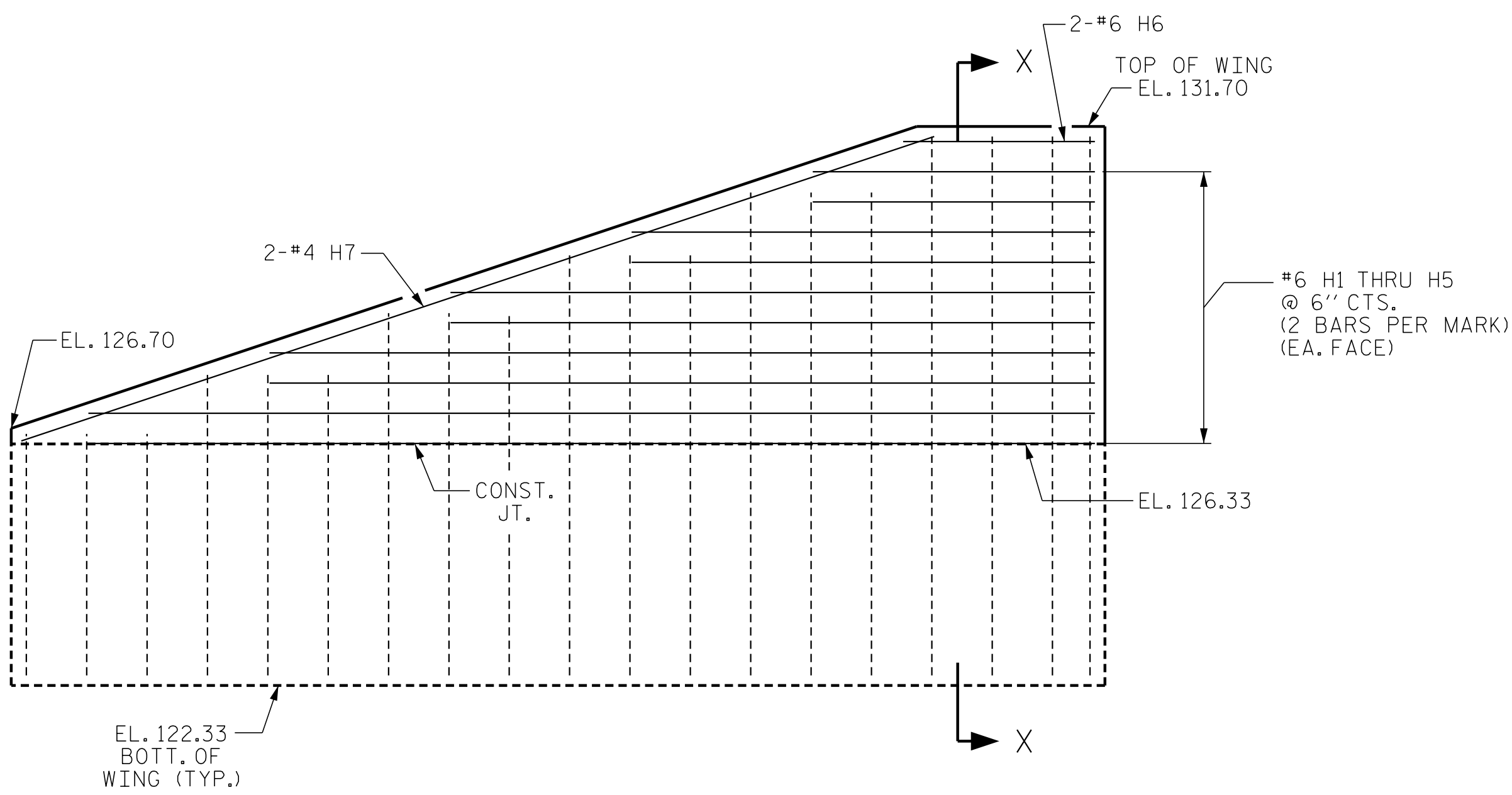
PLAN OF WING (W2)



ELEVATION OF WING (W1)

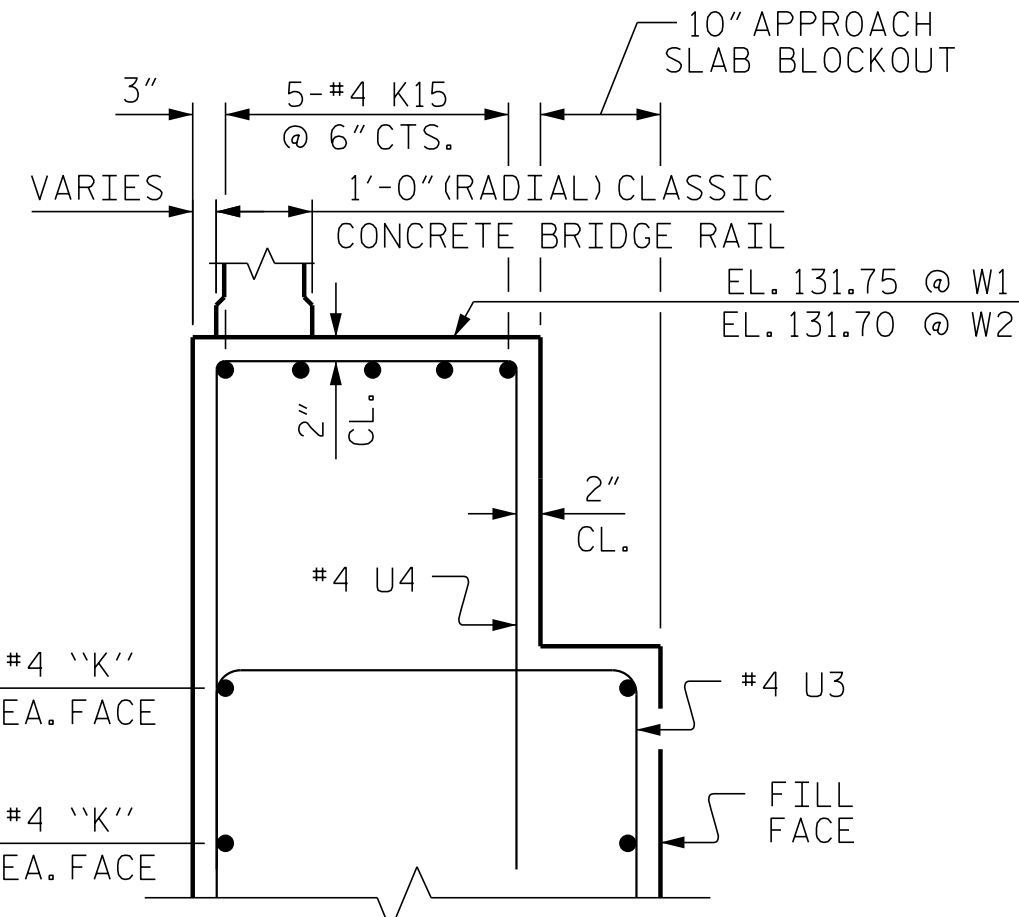


SECTION X-X



ELEVATION OF WING (W2)

UPPER WINGS AT INTEGRAL END BENT No. 2

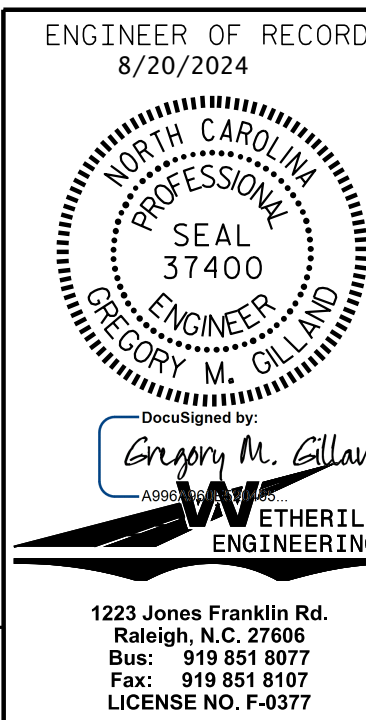


SECTION A-A

NOTE: THE LOWER PORTION OF THE WINGS SHALL BE POURED WITH END BENT No. 2 SUBSTRUCTURE. FOR DETAILS AND REINFORCING STEEL, SEE END BENT No. 2 DETAILS.

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STATION: 22+08.00 -L-

SHEET 4 OF 4



STATE OF NORTH CAROLINA
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SUPERSTRUCTURE
PLAN OF SPANS
END BENT No. 2
WING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-16
2			4			
TOTAL SHEETS						64

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DRAWN BY : D. HODGE DATE : 2/22
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ENGINEER OF RECORD
8/20/2024

NORTH CAROLINA
PROFESSIONAL
SEAL
37400
REGISTERED ENGINEER
GREGORY M. GILLAND

DocuSigned by
Gregory M. Gilland
ETHERILL
ENGINEERING

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Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

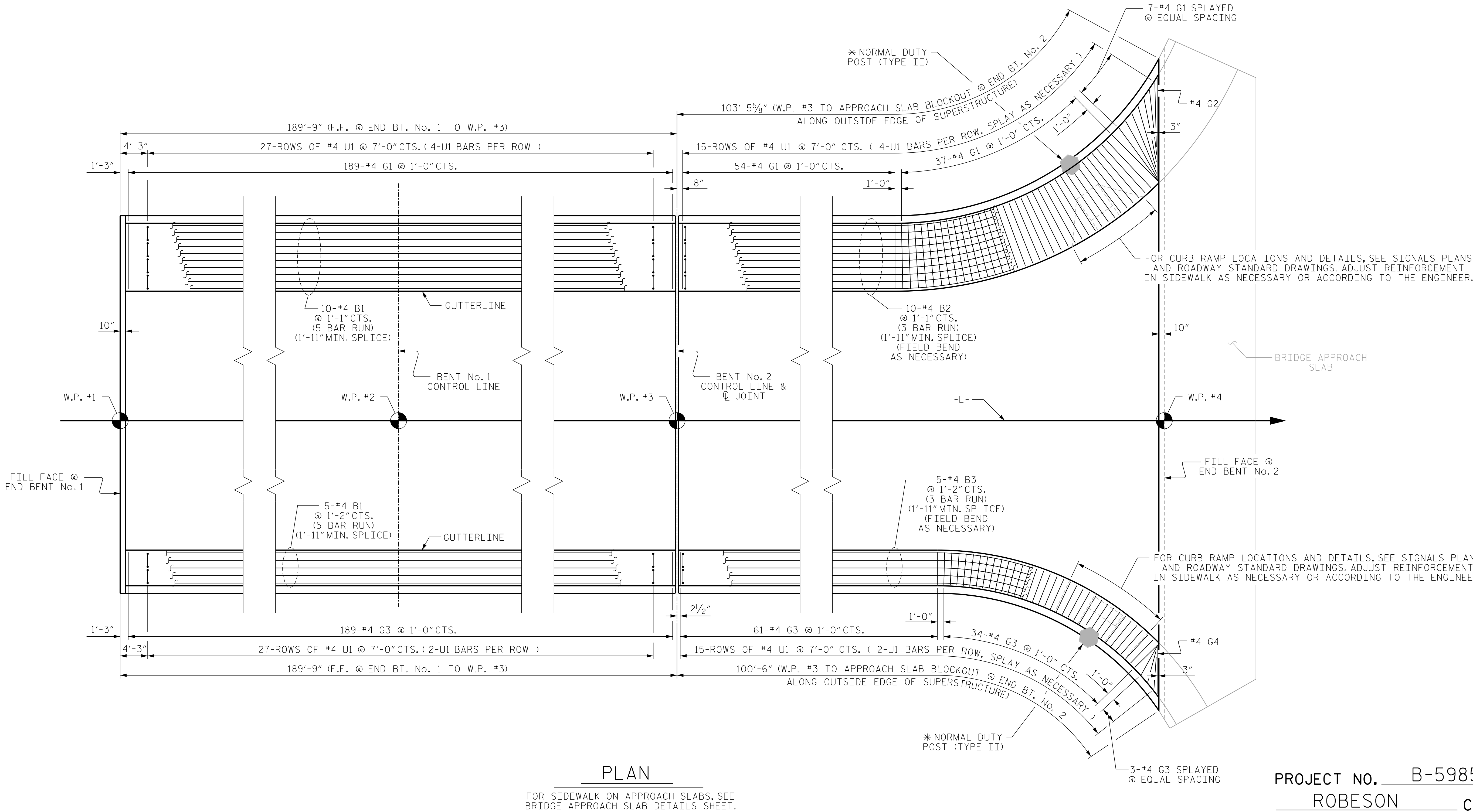
SUPERSTRUCTURE
GIRDER LAYOUT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			64

The diagram illustrates the girder layout for a bridge structure, divided into three spans: SPAN A, SPAN B, and SPAN C. The layout includes various girders (A1-A8, B1-B8, C1-C8), steel diaphragms, and bents (W.P. #1, #2, #3, #4). Dimensions are provided for span lengths, girder spacings, and specific structural details. Key features include intermediate steel diaphragms, steel diaphragms, and bents with control lines. The layout is oriented horizontally, with the bridge axis running from left to right. The girders are labeled with their respective spans and bays. The diagram also shows the location of the fill face at the end bents and the fixed and expansion supports.

GIRDER LAYOUT

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-



PLAN

FOR SIDEWALK ON APPROACH SLABS, SEE
BRIDGE APPROACH SLAB DETAILS SHEET.

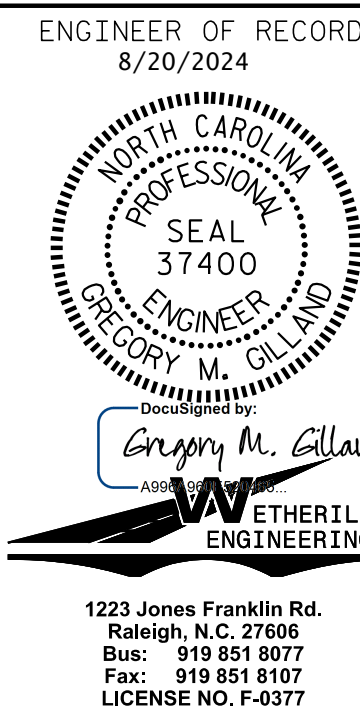
* SEE "CLASSIC CONCRETE BRIDGE RAIL" SHEETS FOR
NORMAL DUTY POST (TYPE II) LOCATION. FOR INSTALLATION
REQUIREMENTS, SEE SIGNALS PLANS AND ROADWAY STANDARD DRAWINGS.

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 1 OF 2

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
SIDEWALK DETAIL

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-18
2			4			TOTAL SHEETS 64

NOTES:

FOR CLASSIC CONCRETE BRIDGE RAIL REINFORCING STEEL AND DETAILS, SEE "CLASSIC CONCRETE BRIDGE RAIL" SHEETS.

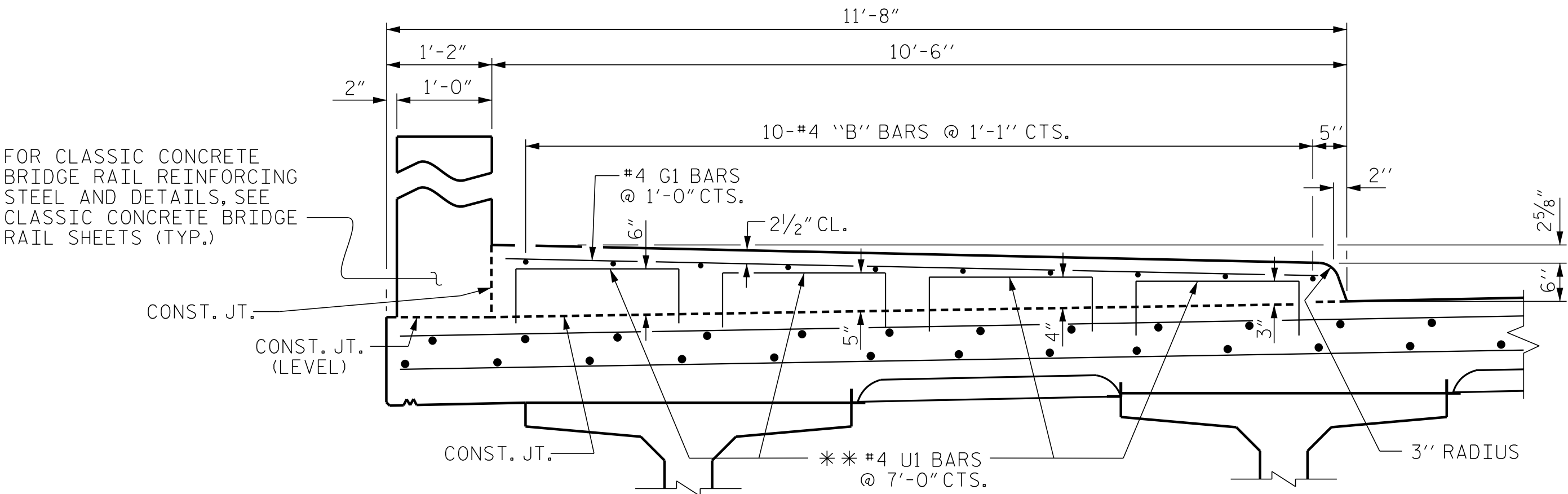
GROOVED CONTRACTION JOINTS 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE SIDEWALK IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED ABOVE BENT No. 1 CONTROL LINE AND AT A SPACING OF 8 FEET TO 10 FEET.

THE SIDEWALK IN A CONTINUOUS UNIT 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.

SIDEWALK ON THE BRIDGE IS PAID FOR AS PART OF THE "REINFORCED CONCRETE DECK SLAB" PAY ITEM.

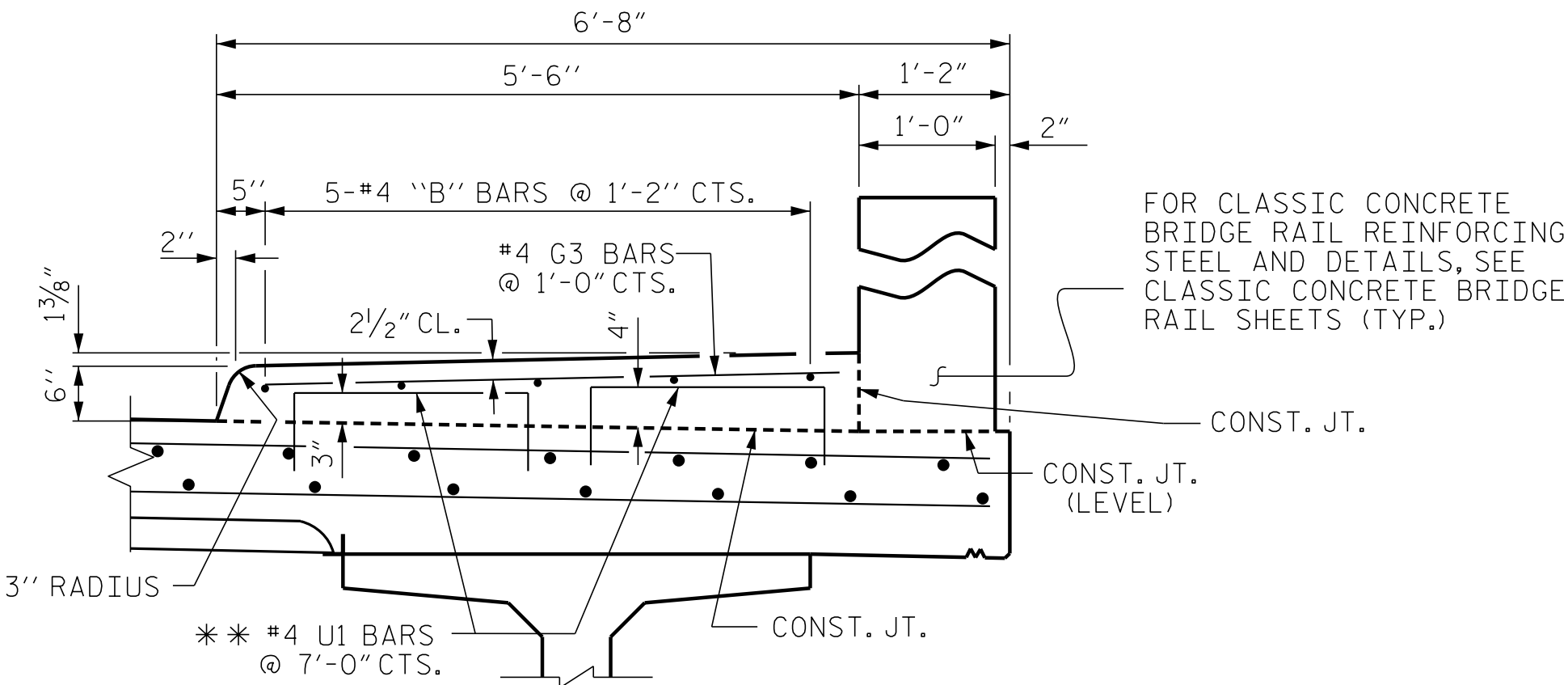
ALL STEEL IN THE SIDEWALK SHALL BE EPOXY COATED.

FOR SIDEWALK COVER PLATES, SEE "TYPICAL SECTION", SHEET 7 OF 7.



SECTION THRU SIDEWALK (LEFT SIDE)

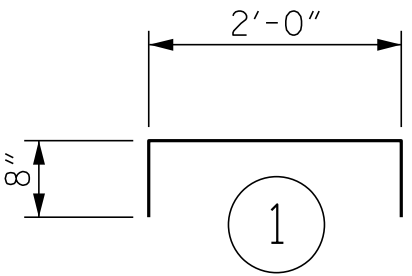
** #4 U1 BARS MAY BE PUSHED INTO GREEN CONCRETE AFTER SPAN HAS BEEN SCREEDED OFF.



SECTION THRU SIDEWALK (RIGHT SIDE)

** #4 U1 BARS MAY BE PUSHED INTO GREEN CONCRETE AFTER SPAN HAS BEEN SCREEDED OFF.

—BAR TYPES—



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL
FOR SIDEWALK

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	75	#4	STR	39'-4"	1,971
* B2	30	#4	STR	35'-3"	706
* B3	15	#4	STR	34'-5"	345
* G1	287	#4	STR	10'-0"	1,917
* G2	1	#4	STR	15'-11"	11
* G3	287	#4	STR	5'-0"	959
* G4	1	#4	STR	7'-7"	5
* U1	252	#4	1	3'-4"	561

* EPOXY COATED
REINFORCING STEEL 6,475 LBS.

CLASS "AA" CONCRETE 118.9 C.Y.

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 2 OF 2

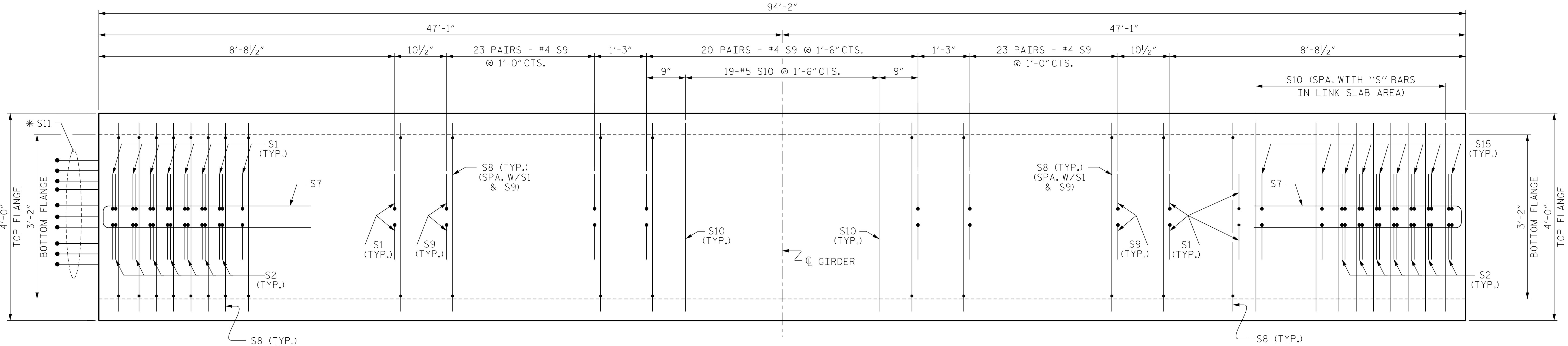
ENGINEER OF RECORD 8/20/2024 Gregory M. Gilland ASPECT ENGINEERING 1223 Jones Franklin Rd. Raleigh, N.C. 27606 Bus: 919 851 8077 Fax: 919 851 8107 LICENSE NO. F-0377		STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE SIDEWALK DETAIL		REVISIONS NO. BY: DATE: NO. BY: DATE: 1 3 2 4		SHEET NO. S-19 TOTAL SHEETS 64
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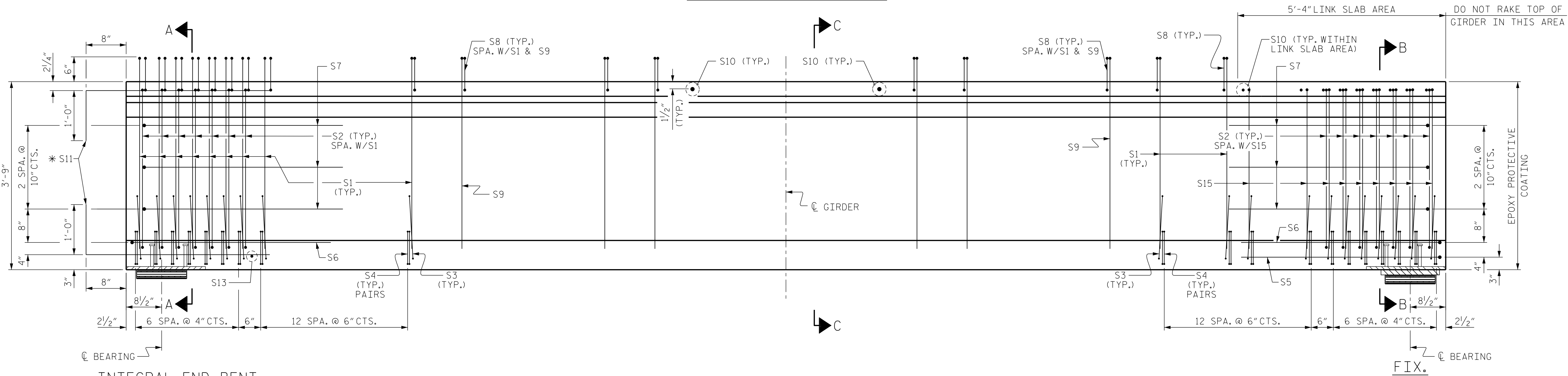
DRAWN BY : D. HODGE DATE : 4/22
CHECKED BY : G. GILLAND DATE : 8/22

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PLAN OF GIRDER



ELEVATION OF GIRDER

(FOR QUANTITIES, WEB HOLES, SECTIONS AND STRAND LAYOUT, SEE SHEETS 5 & 6 OF 7)

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 1 OF 7

DRAWN BY : D. HODGE DATE : 4/22
CHECKED BY : J. DILWORTH DATE : 8/22

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REGISTERED ENGINEER
GREGORY M. GILLAND

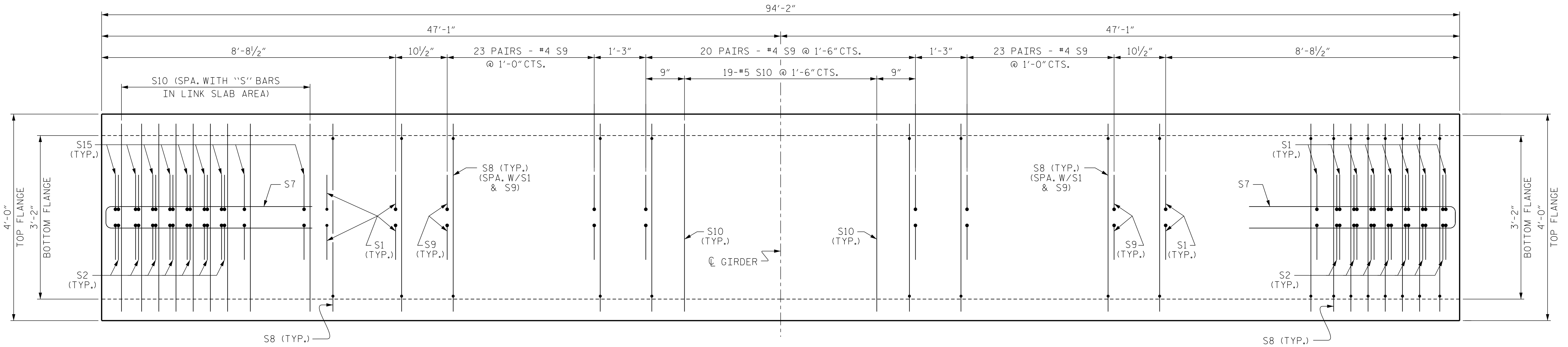
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

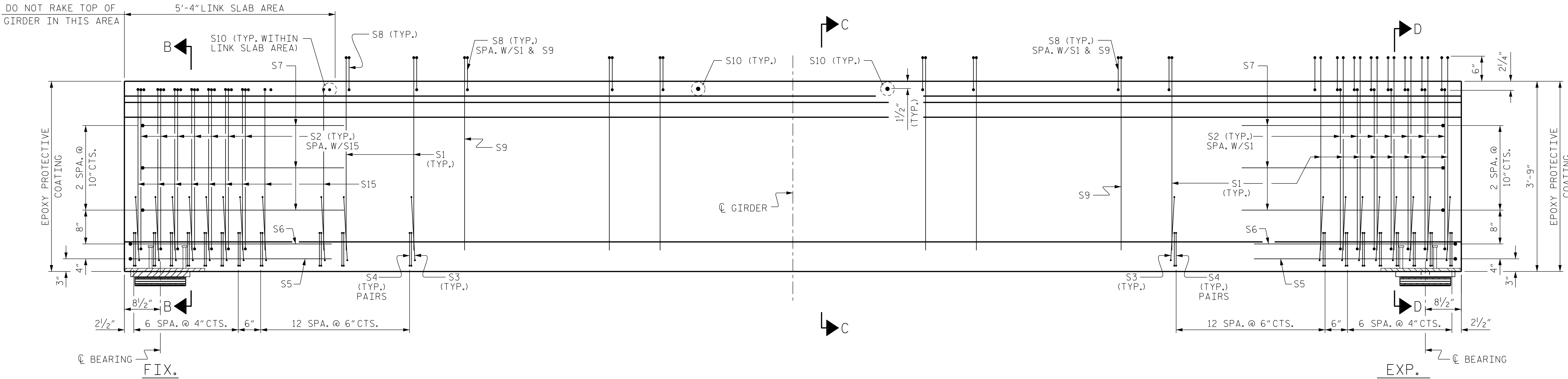
45" FIB PRESTRESSED
CONCRETE GIRDER
LINK SLAB
SPAN A

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

SHEET NO.
S-20
TOTAL SHEETS
64



PLAN OF GIRDER



ELEVATION OF GIRDER

(FOR QUANTITIES, WEB HOLES, SECTIONS AND STRAND LAYOUT, SEE SHEETS 5 & 6 OF 7)

PROJECT NO. B-5985B

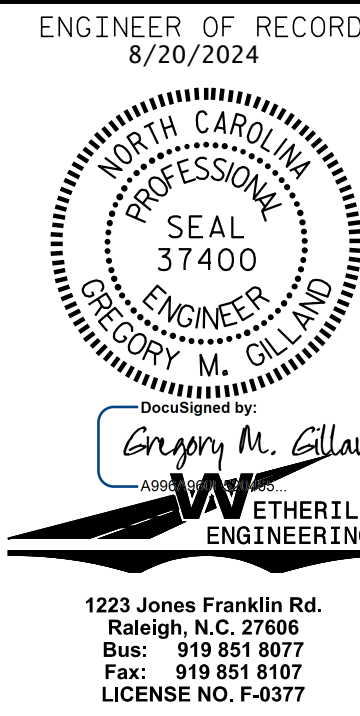
ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 2 OF 7

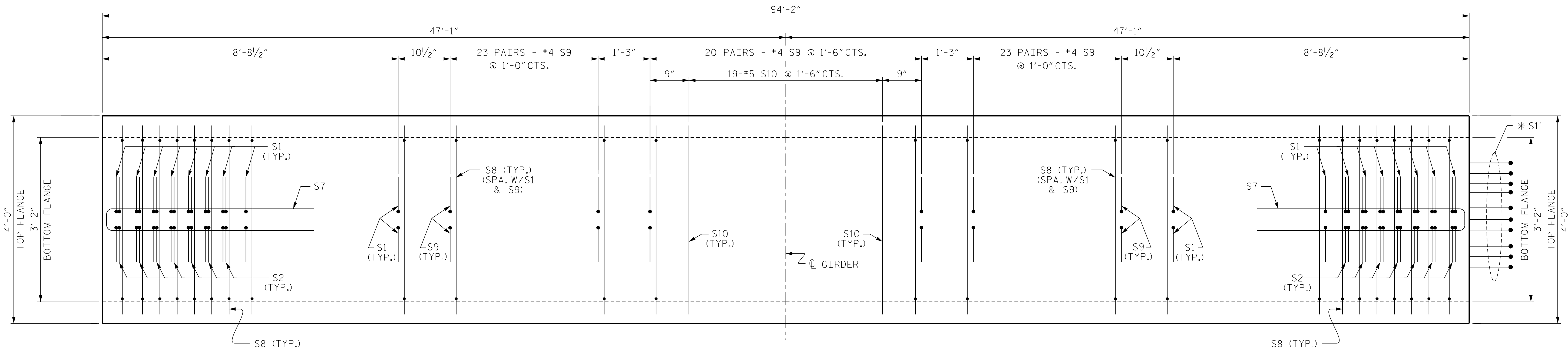
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CHECKED BY : J. DILWORTH DATE : 8/22

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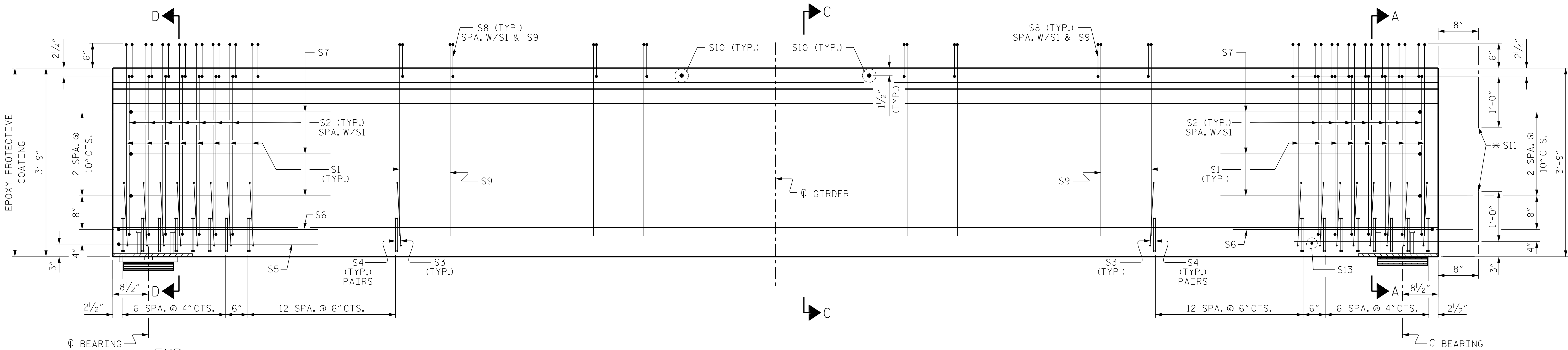


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-21
2			4			
TOTAL SHEETS						64

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PLAN OF GIRDER



ELEVATION OF GIRDER

(FOR QUANTITIES, WEB HOLES, SECTIONS AND STRAND LAYOUT, SEE SHEETS 5 & 6 OF 7)

INTEGRAL END BENT

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 3 OF 7

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DESIGNED BY
Gregory M. Gilland
AND
ETHERILL
ENGINEERING

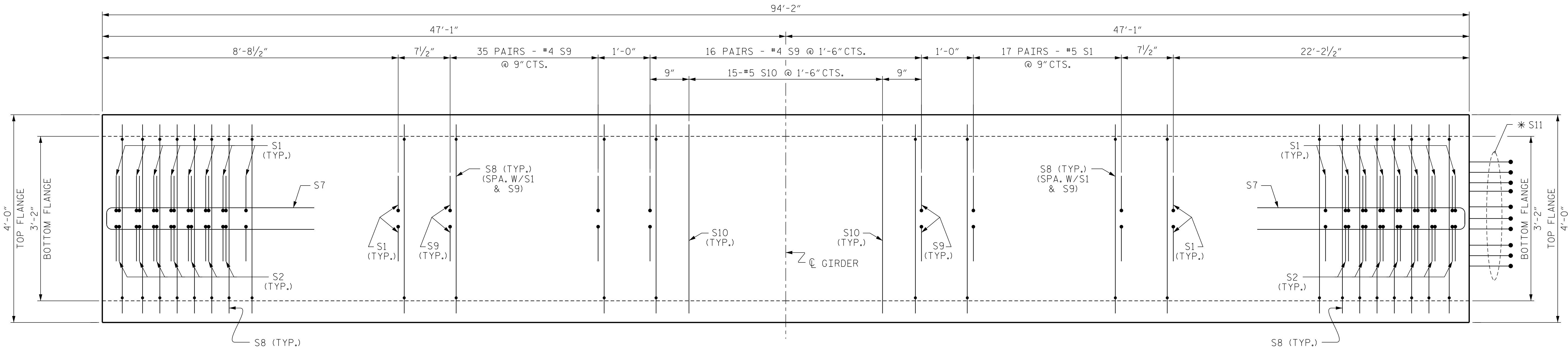
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DEPARTMENT OF TRANSPORTATION
RALEIGH

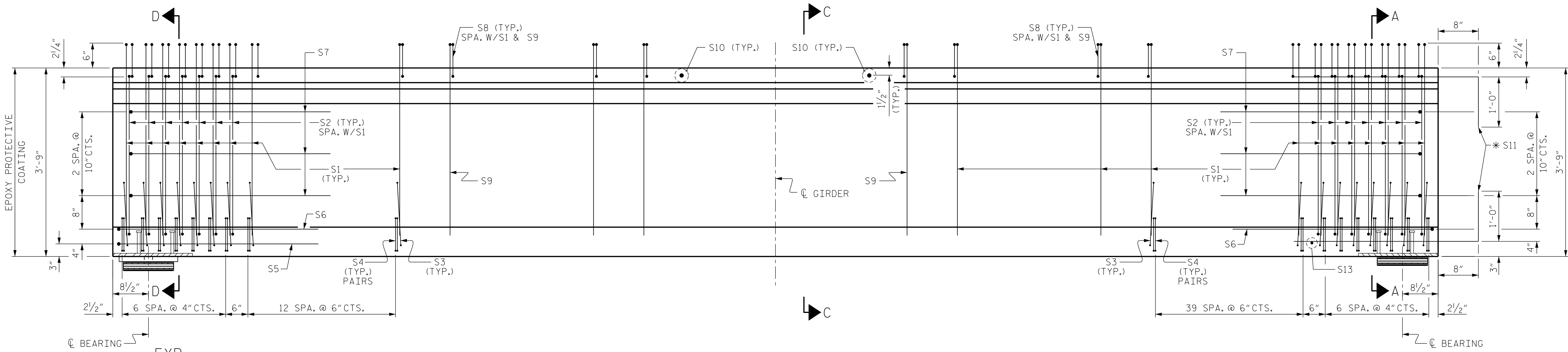
45" FIB PRESTRESSED
CONCRETE GIRDER
SPAN C
INTERIOR GDRS. C2-C7

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

SHEET NO.
S-22
TOTAL
SHEETS
64



PLAN OF GIRDER



ELEVATION OF GIRDER

(FOR QUANTITIES, WEB HOLES, SECTIONS AND STRAND LAYOUT, SEE SHEETS 5 & 6 OF 7)

INTEGRAL END BENT

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 4 OF 7

DRAWN BY : D. HODGE DATE : 8/22
CHECKED BY : J. DILWORTH DATE : 8/22

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8/20/2024

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SEAL
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DESIGNED BY
GREGORY M. GILLAND

DocuSign
GREGORY M. GILLAND
ETHERILL
ENGINEERING

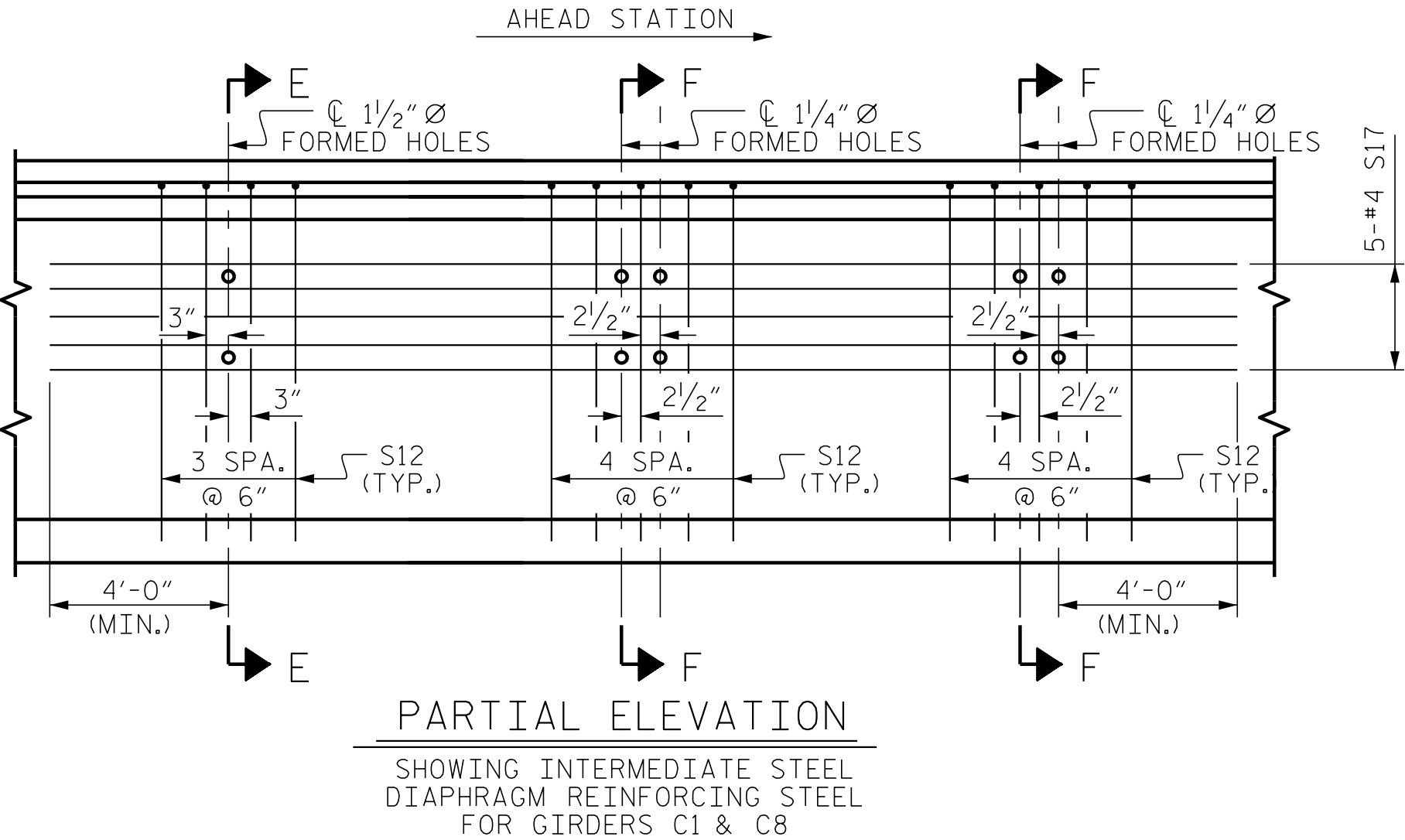
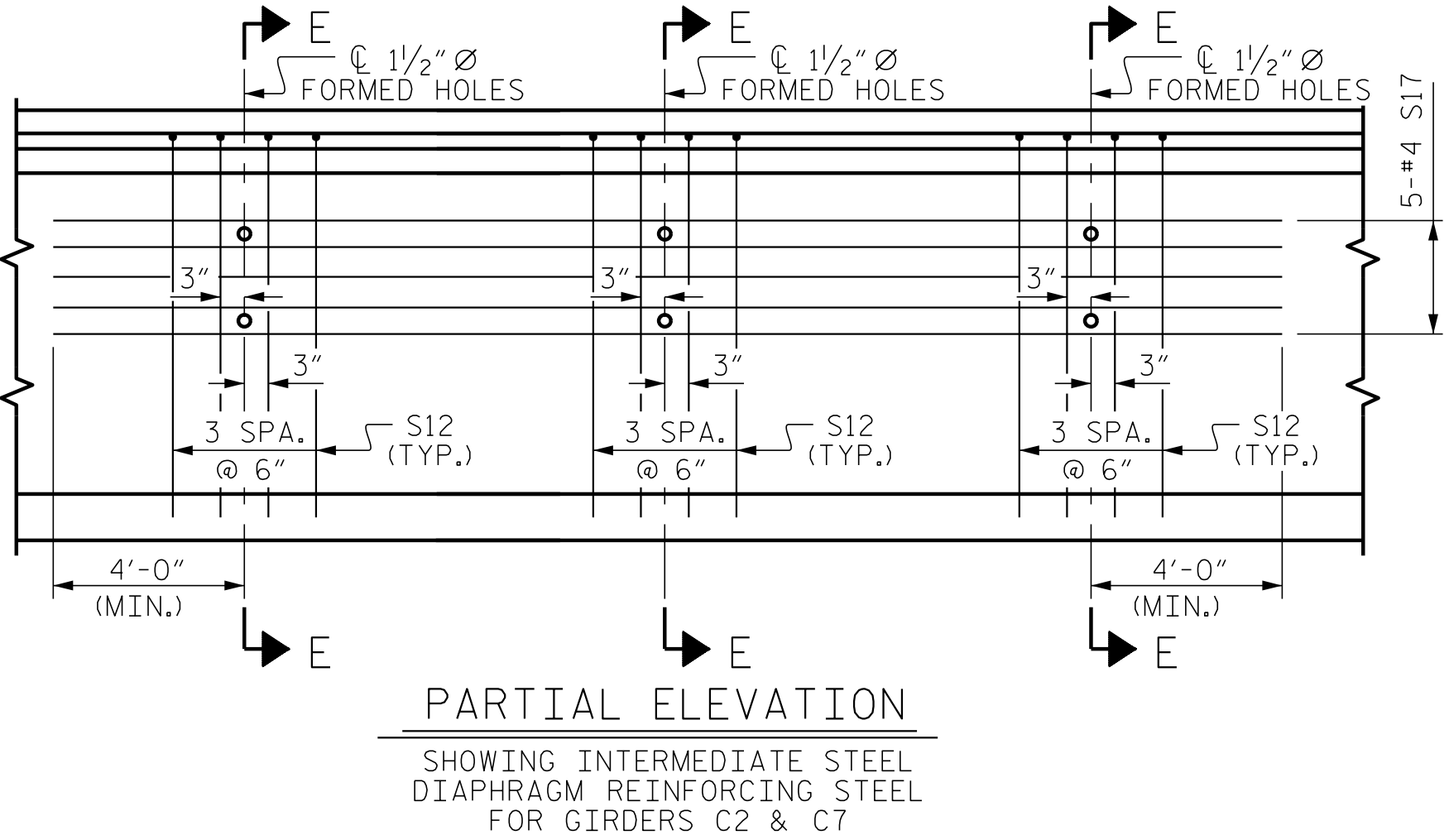
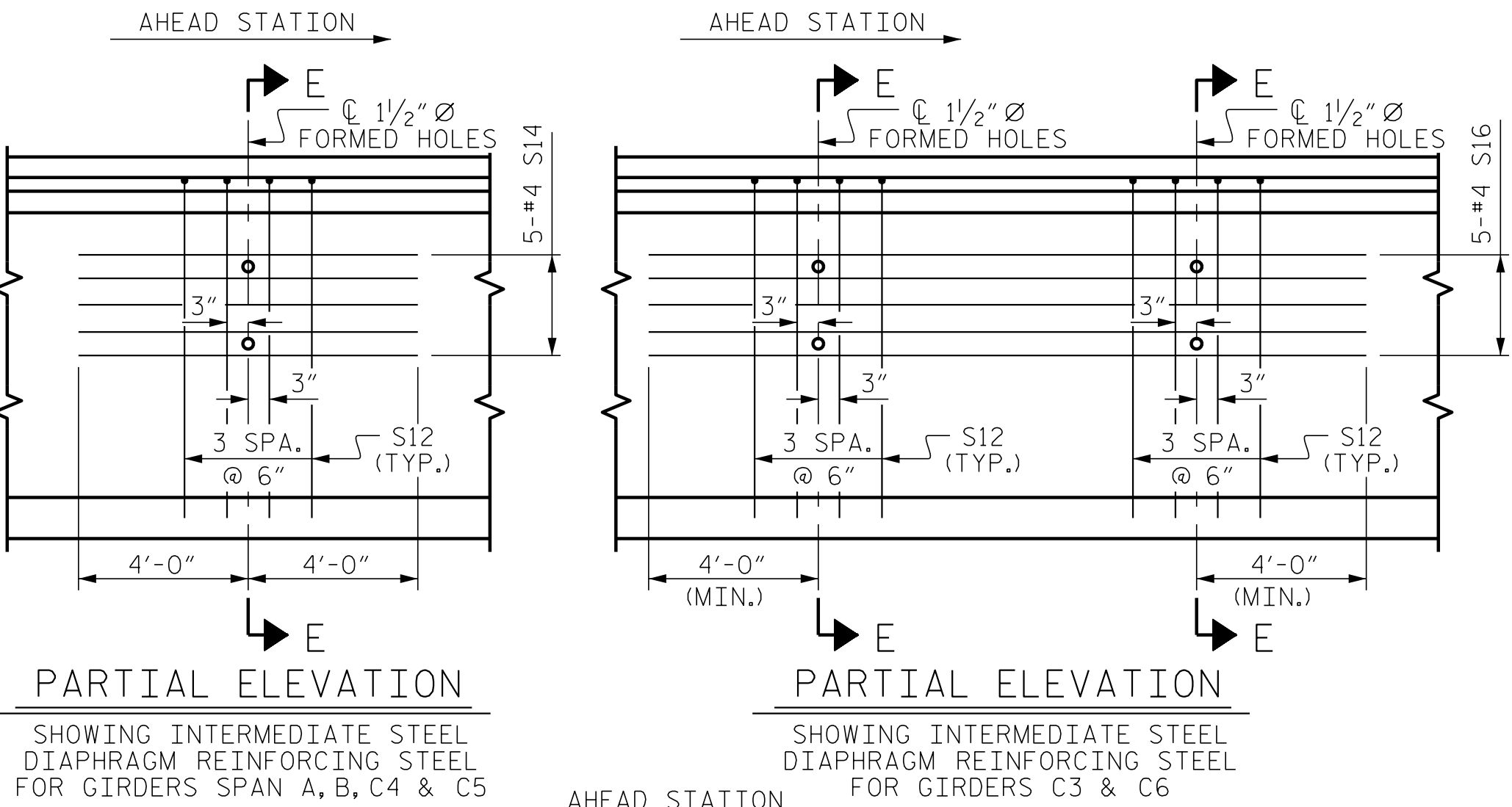
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Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

45" FIB PRESTRESSED
CONCRETE GIRDER
SPAN C
EXTERIOR GDRS. C1 & C8

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

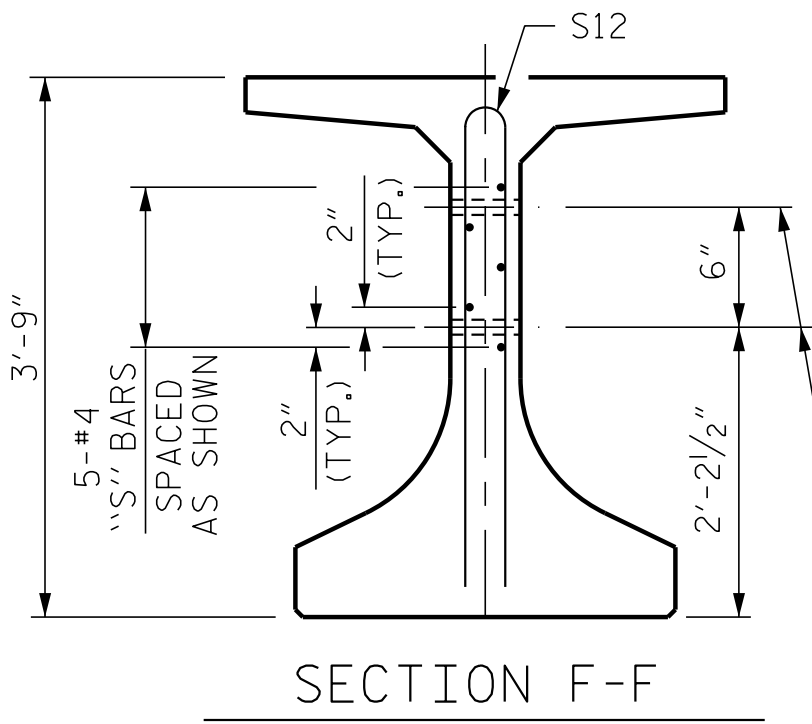
SHEET NO.
S-23
TOTAL
SHEETS
64



QUANTITIES FOR GIRDERS				
	REINFORCING STEEL	7,500 PSI CONCRETE	10,000 PSI CONCRETE	0.6" Ø L.R. STRANDS
SPAN	LB.	C.Y.	C.Y.	No.
A	2,141	21.1		42
B	2,054	21.1		42
C1 & C8	3,171		21.1	64
C2 & C7	2,403	21.1		42
C3 & C6	2,328	21.1		42
C4 & C5	2,237	21.1		42

DRAWN BY : D. HODGE DATE : 3/22
CHECKED BY : J. DILWORTH DATE : 8/22

0.6" Ø L. R. GRADE 270 STRANDS - SPAN A					
AREA (SQUARE INCHES)		ULTIMATE STRENGTH (LBS. PER STRAND)		APPLIED PRESTRESS (LBS. PER STRAND)	
0.217		58,600		43,950	
REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	54	#5	5	4'-7"	258
S2	28	#5	4	4'-3"	124
S3	40	#3	2	3'-4"	50
S4	80	#3	1	4'-3"	128
S5	1	#5	3	10'-9"	11
S6	2	#5	3	9'-9"	20
S7	6	#4	3	8'-5"	34
S8	150	#5	7	4'-8"	730
S9	132	#4	5	4'-7"	404
S10	32	#5	STR	3'-8"	122
*S11	20	#5	STR	4'-8"	97
S12	4	#5	6	7'-0"	29
S13	1	#3	STR	2'-10"	1
S14	5	#4	STR	8'-0"	27
S15	26	#5	5	3'-11"	106
0.6" Ø L. R. GRADE 270 STRANDS SPAN C GDRS. C1 & C8					
AREA (SQUARE INCHES)		ULTIMATE STRENGTH (LBS. PER STRAND)		APPLIED PRESTRESS (LBS. PER STRAND)	
0.217		58,600		43,950	
REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	168	#5	5	4'-7"	803
S2	28	#5	4	4'-3"	124
S3	67	#3	2	3'-4"	84
S4	134	#3	1	4'-3"	214
S5	1	#5	3	10'-9"	11
S6	2	#5	3	9'-9"	20
S7	6	#4	3	8'-5"	34
S8	242	#5	7	4'-8"	1,178
S9	102	#4	5	4'-7"	312
S10	15	#5	STR	3'-8"	57
*S11	20	#5	STR	4'-8"	97
S12	14	#5	6	7'-0"	102
S13	1	#3	STR	2'-10"	1
S17	5	#4	STR	40'-0"	134
0.6" Ø L. R. GRADE 270 STRANDS SPAN C GDRS. C2 & C7					
AREA (SQUARE INCHES)		ULTIMATE STRENGTH (LBS. PER STRAND)		APPLIED PRESTRESS (LBS. PER STRAND)	
0.217		58,600		43,950	
REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	80	#5	5	4'-7"	382
S2	28	#5	4	4'-3"	124
S3	40	#3	2	3'-4"	50
S4	80	#3	1	4'-3"	128
S5	1	#5	3	10'-9"	11
S6	2	#5	3	9'-9"	20
S7	6	#4	3	8'-5"	34
S8	176	#5	7	4'-8"	857
S9	132	#4	5	4'-7"	404
S10	19	#5	STR	3'-8"	73
*S11	20	#5	STR	4'-8"	97
S12	12	#5	6	7'-0"	88
S13	1	#3	STR	2'-10"	1
S17	5	#4	STR	40'-0"	134



1/4" DIAMETER HOLES SHALL BE FORMED WITH 1/4" Ø SCH. 80 STEEL PIPE. PIPE SHALL BE HOT DIPPED GALVANIZED PER ASTM A123. PIPE SHALL MEET THE REQUIREMENTS OF ASTM F1083 WITH A MINIMUM YIELD STRENGTH OF 30 KSI. SEE SHEET 6 OF 7 FOR LOCATION.

0.6" Ø L. R. GRADE 270 STRANDS - SPAN B					
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)		APPLIED PRESTRESS (LBS. PER STRAND)		
0.217	58,600		43,950		
REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	54	#5	5	4'-7"	258
S2	28	#5	4	4'-3"	124
S3	40	#3	2	3'-4"	50
S4	80	#3	1	4'-3"	128
S5	2	#5	3	10'-9"	22
S6	2	#5	3	9'-9"	20
S7	6	#4	3	8'-5"	34
S8	150	#5	7	4'-8"	730
S9	132	#4	5	4'-7"	404
S10	32	#5	STR	3'-8"	122
S12	4	#5	6	7'-0"	29
S14	5	#4	STR	8'-0"	27
S15	26	#5	5	3'-11"	106

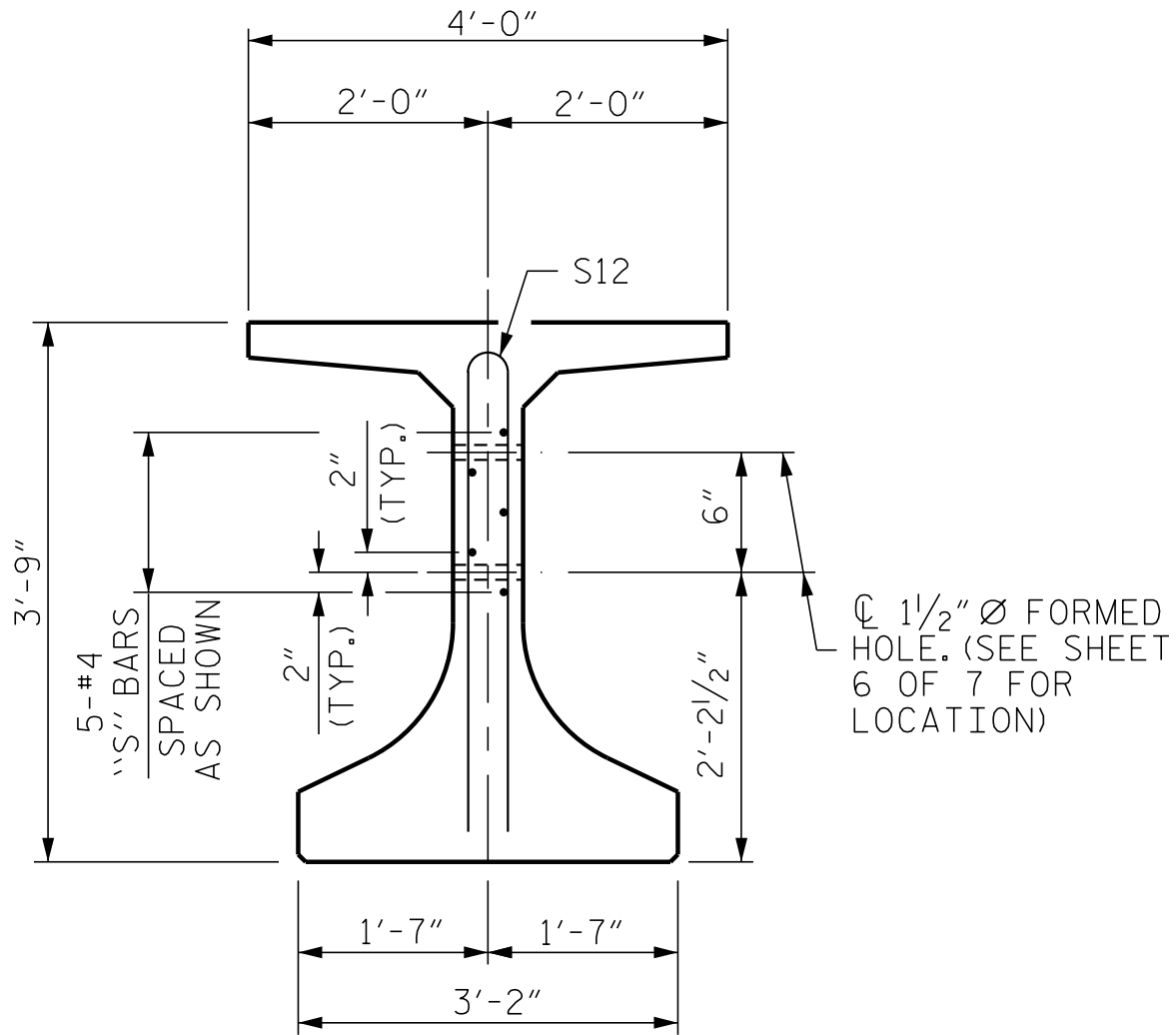
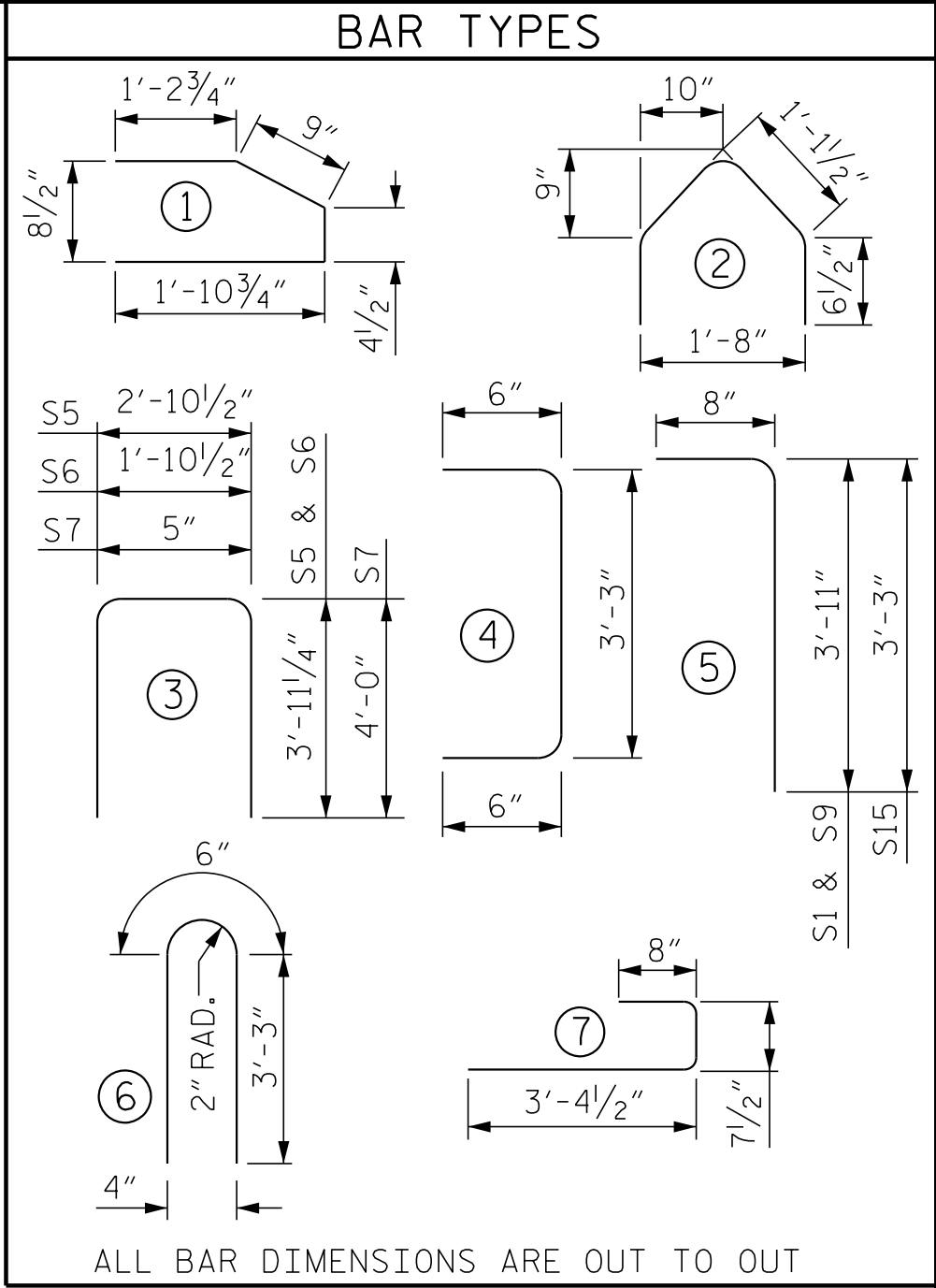
0.6" Ø L. R. GRADE 270 STRANDS SPAN C GDRS. C3 & C6					
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)		APPLIED PRESTRESS (LBS. PER STRAND)		
0.217	58,600		43,950		
REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	80	#5	5	4'-7"	382
S2	28	#5	4	4'-3"	124
S3	40	#3	2	3'-4"	50
S4	80	#3	1	4'-3"	128
S5	1	#5	3	10'-9"	11
S6	2	#5	3	9'-9"	20
S7	6	#4	3	8'-5"	34
S8	176	#5	7	4'-8"	857
S9	132	#4	5	4'-7"	404
S10	19	#5	STR	3'-8"	73
*S11	20	#5	STR	4'-8"	97
S12	8	#5	6	7'-0"	58
S13	1	#3	STR	2'-10"	1
S16	5	#4	STR	26'-8"	89

0.6" Ø L. R. GRADE 270 STRANDS SPAN C GDRS. C4 & C5					
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)		APPLIED PRESTRESS (LBS. PER STRAND)		
0.217	58,600		43,950		
REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	80	#5	5	4'-7"	382
S2	28	#5	4	4'-3"	124
S3	40	#3	2	3'-4"	50
S4	80	#3	1	4'-3"	128
S5	1	#5	3	10'-9"	11
S6	2	#5	3	9'-9"	20
S7	6	#4	3	8'-5"	34
S8	176	#5	7	4'-8"	857
S9	132	#4	5	4'-7"	404
S10	19	#5	STR	3'-8"	73
*S11	20	#5	STR	4'-8"	97
S12	4	#5	6	7'-0"	29
S13	1	#3	STR	2'-10"	1
S14	5	#4	STR	8'-0"	27

* NOTE: S11 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

GIRDERS REQUIRED			
SPAN	NUMBER	LENGTH	TOTAL
A	8	94'-2"	753.33'
B	8	94'-2"	753.33'
C	8	94'-2"	753.33'
TOTAL	24		2,260'

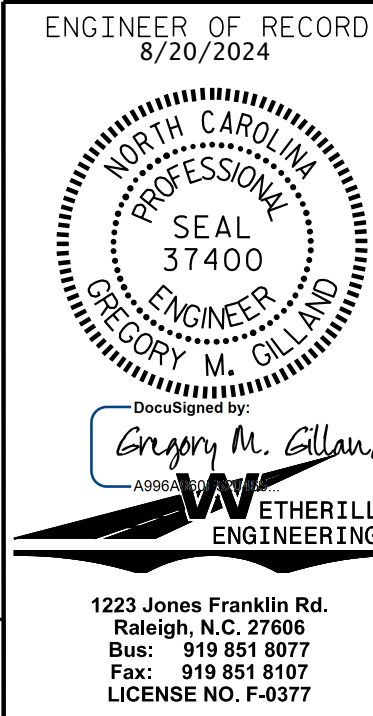
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SECTION E-E

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 5 OF 7



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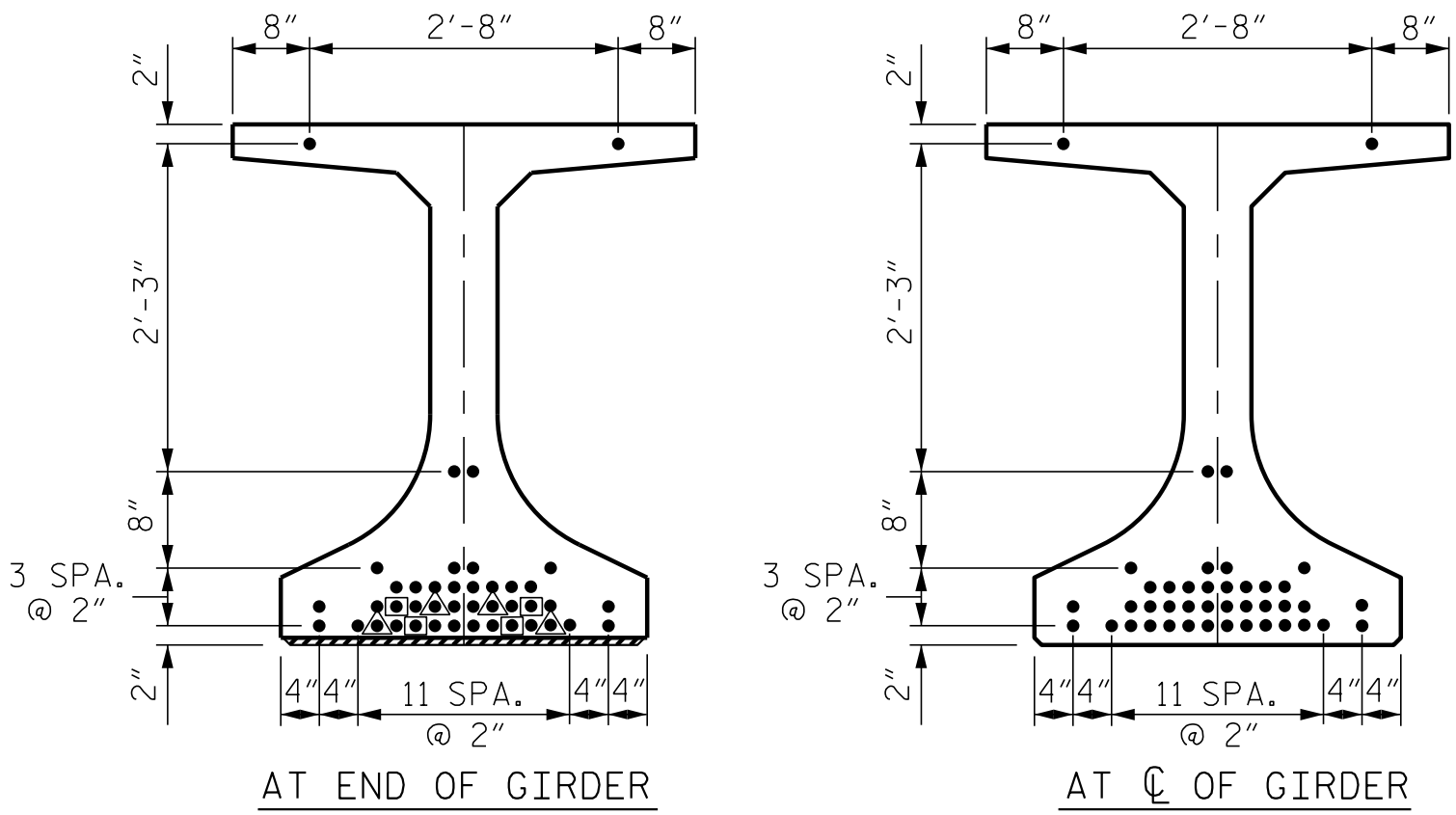
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

45" FIB PRESTRESSED
CONCRETE GIRDER

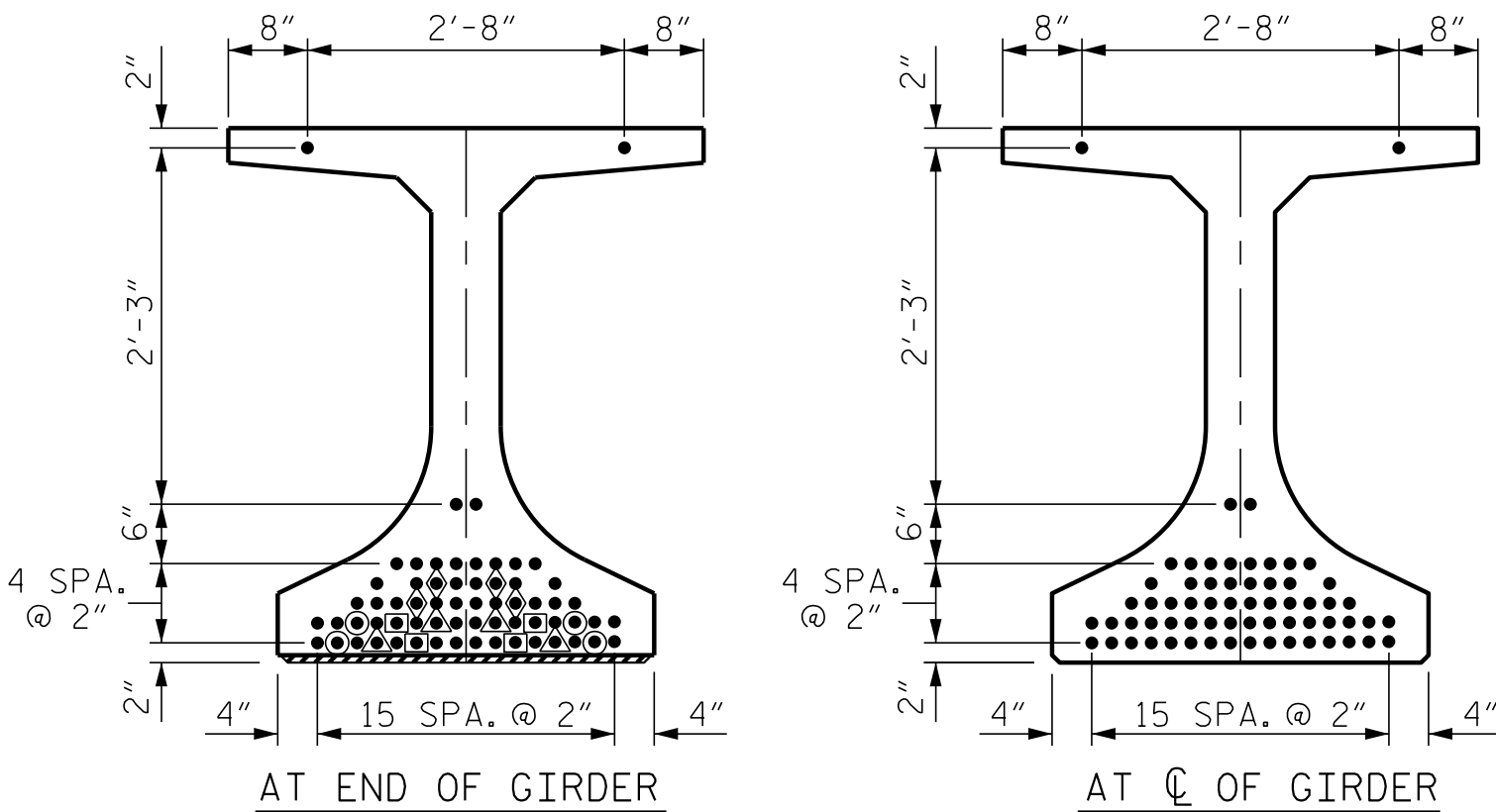
REVISIONS						SHEET NO. S-24
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 64
2			4			

DEBONDING LEGEND

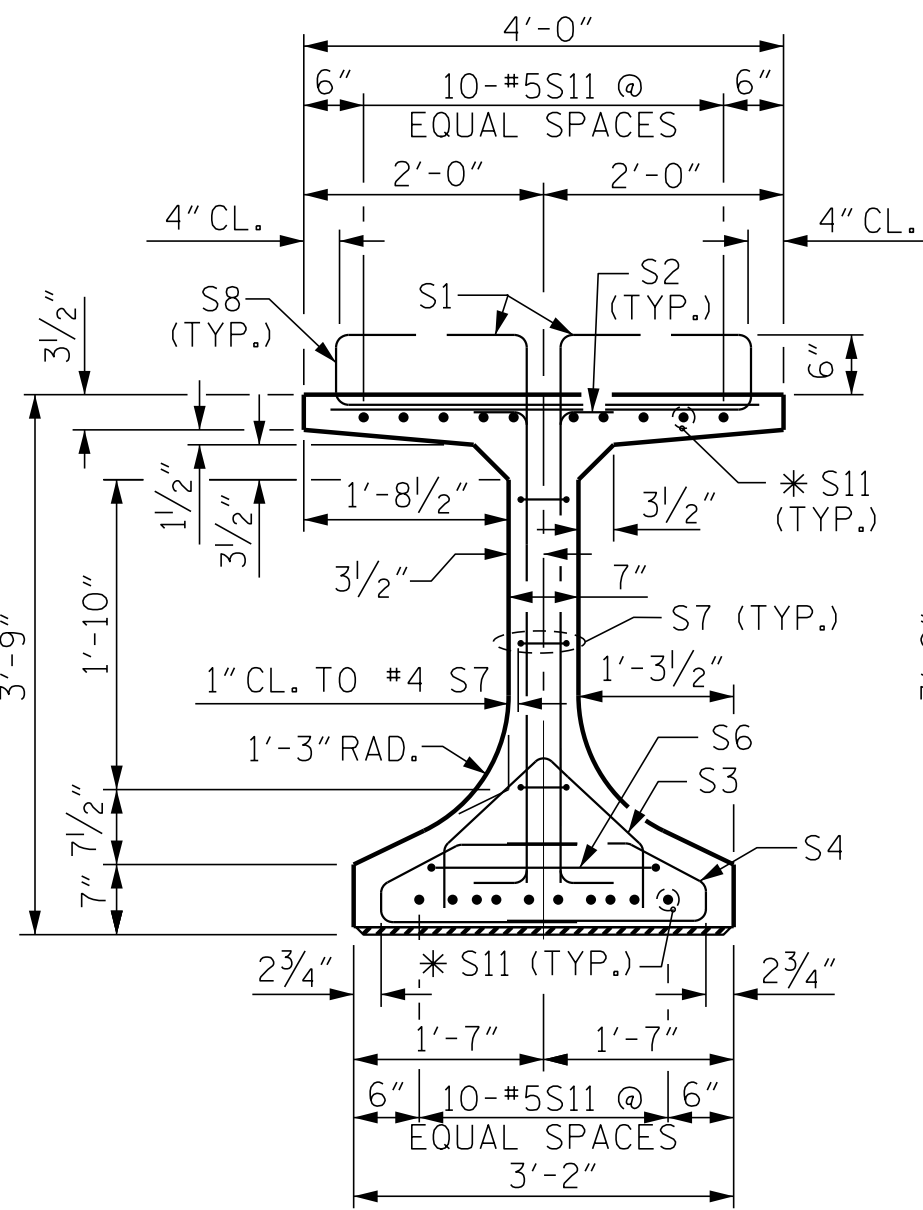
- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 5'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 15'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 20'-0" FROM END OF GIRDER



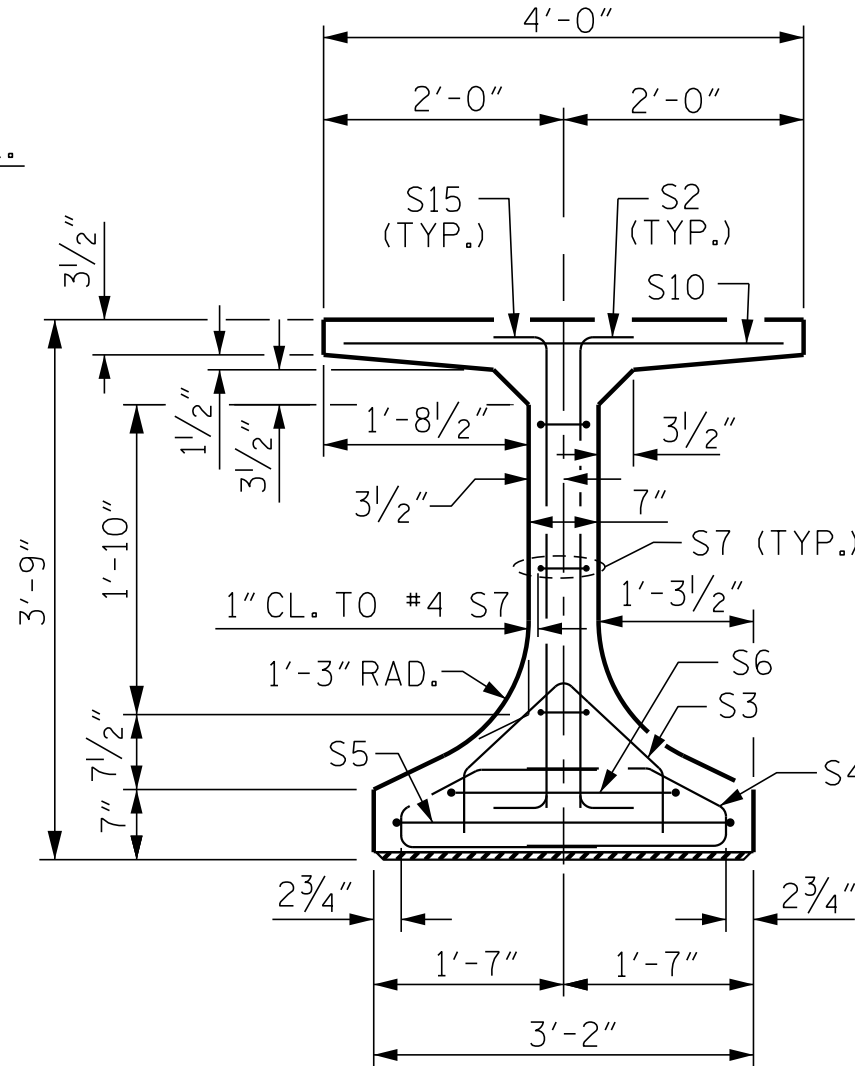
0.6" Ø LOW RELAXATION STRAND LAYOUT - SPANS A, B & C INT.



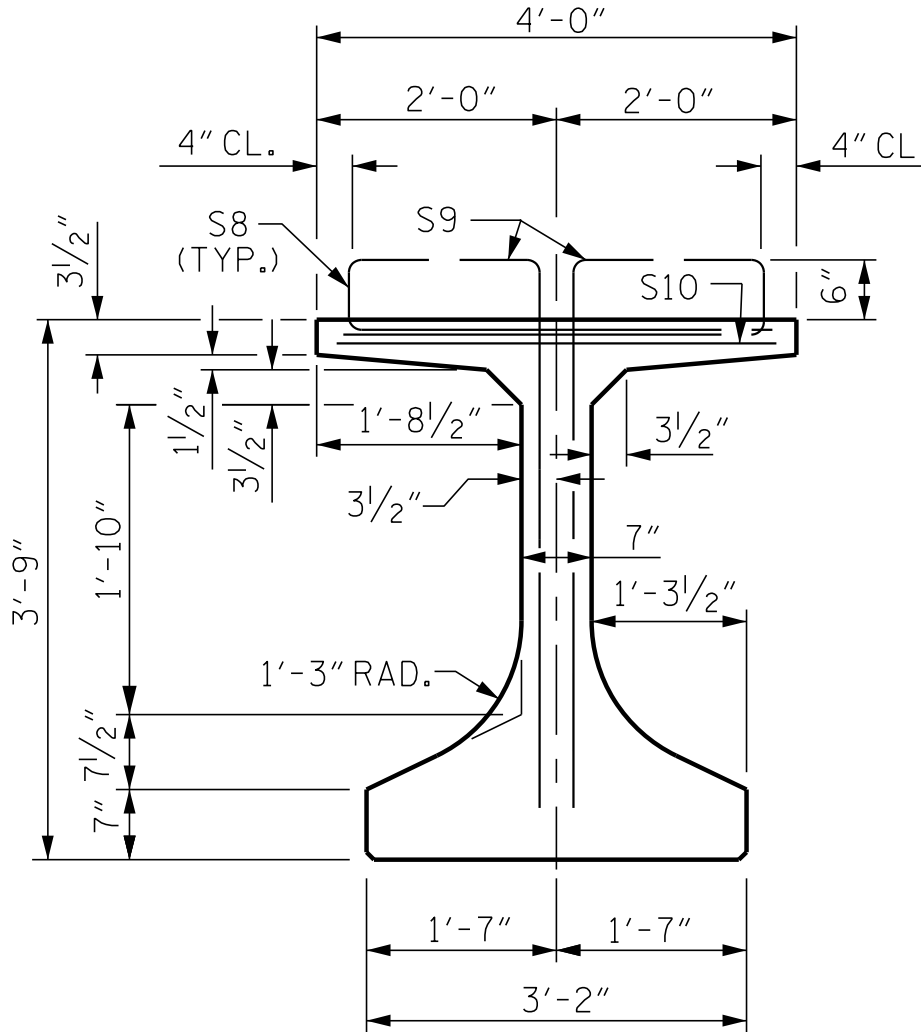
0.6" Ø LOW RELAXATION STRAND LAYOUT - SPAN C EXT.



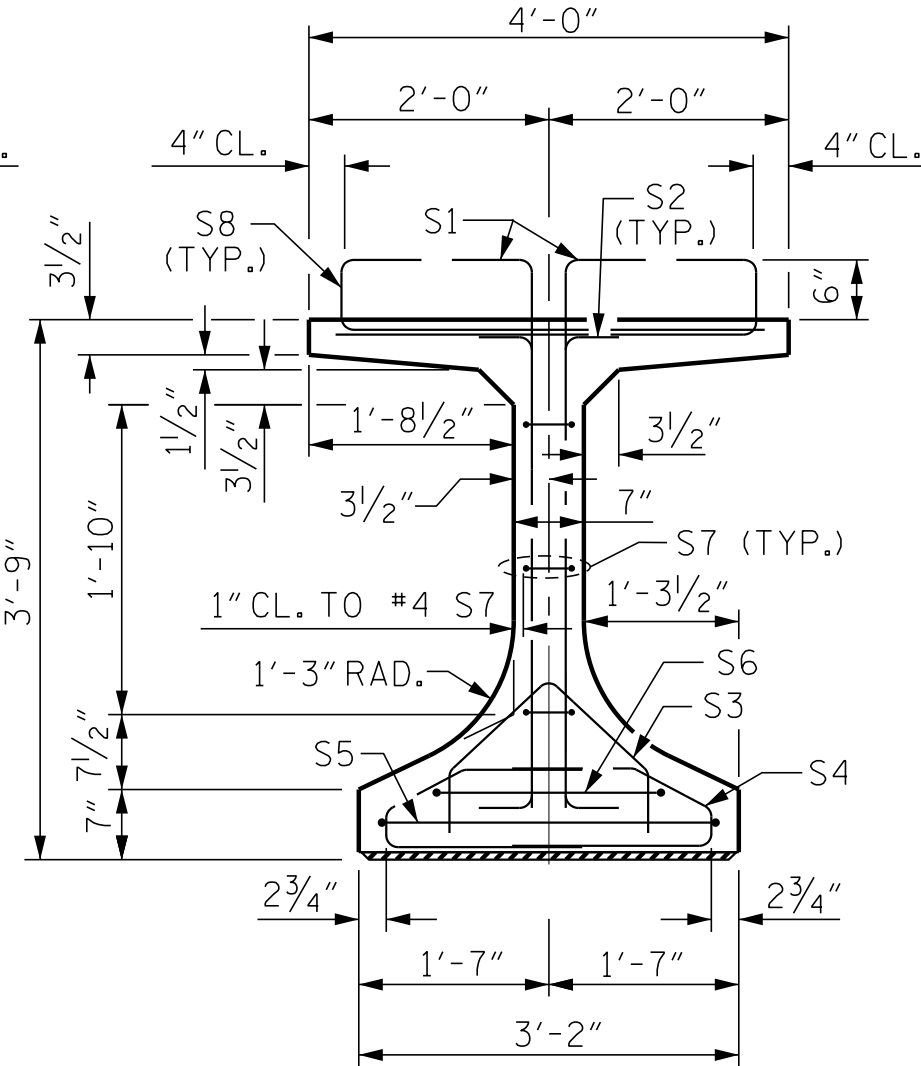
SECTION A-A



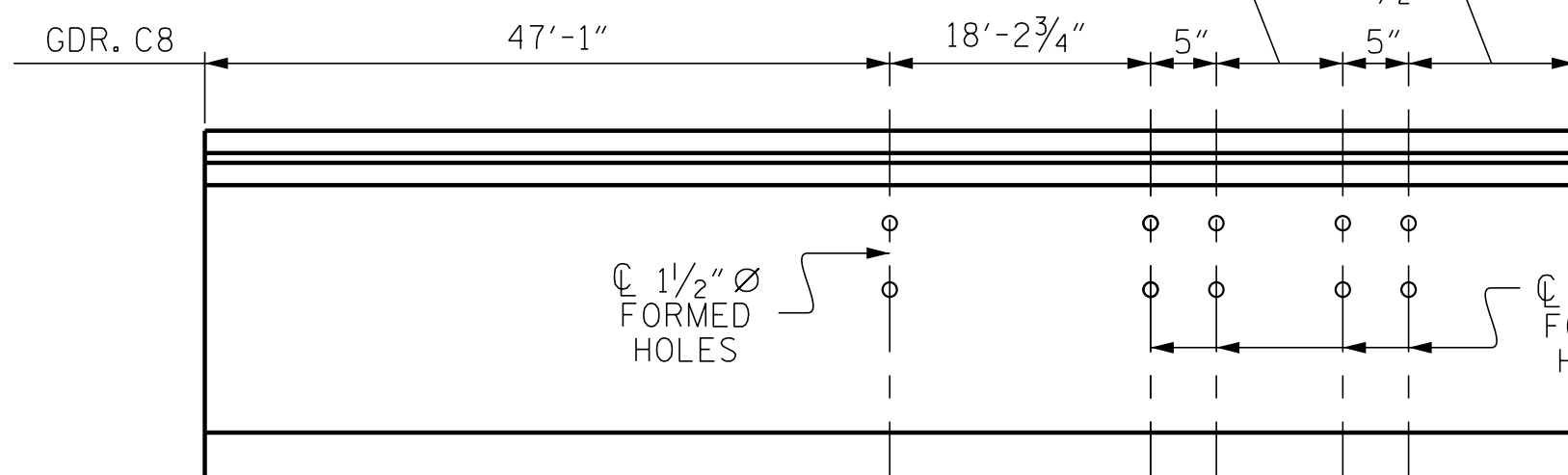
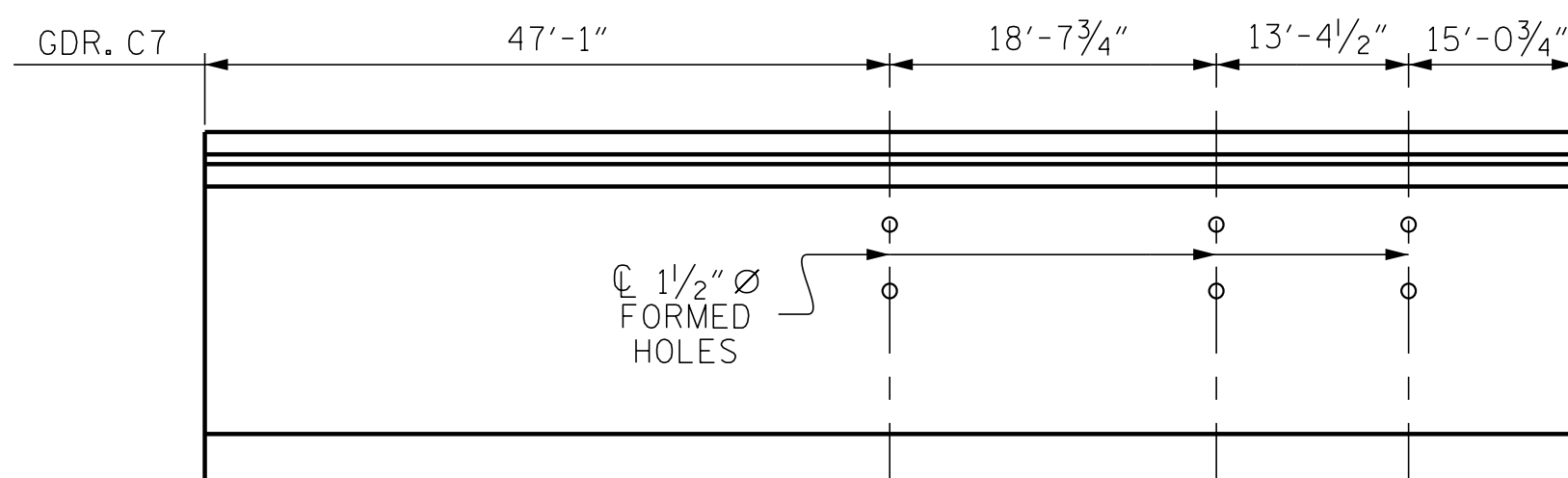
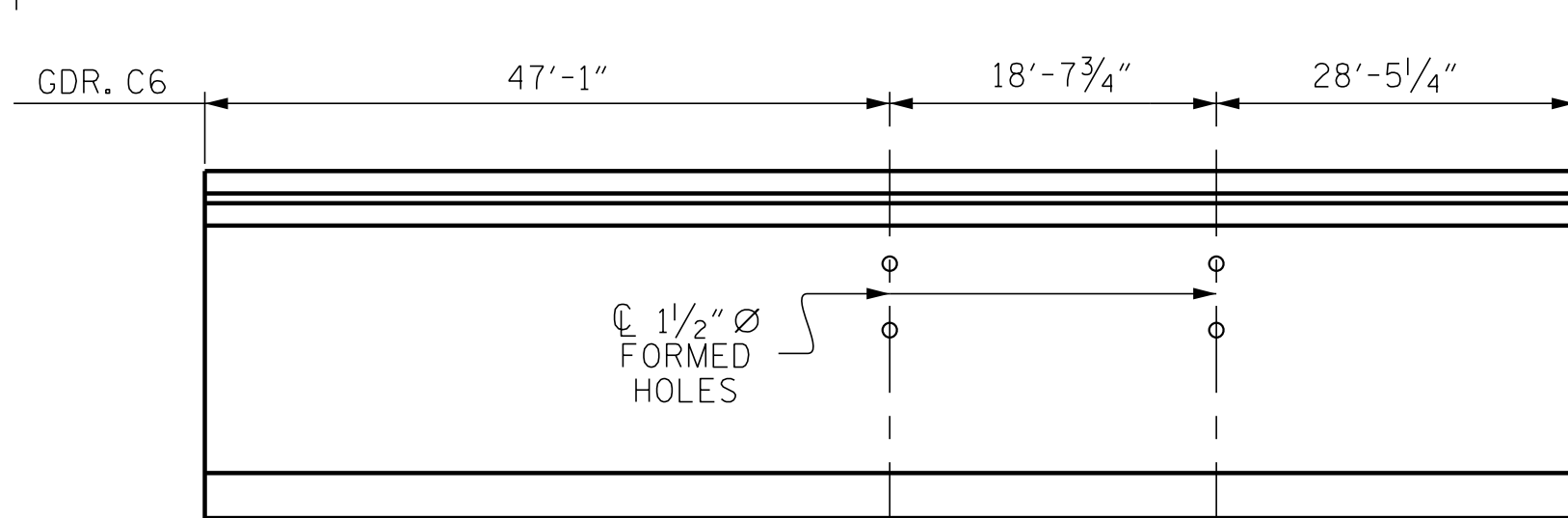
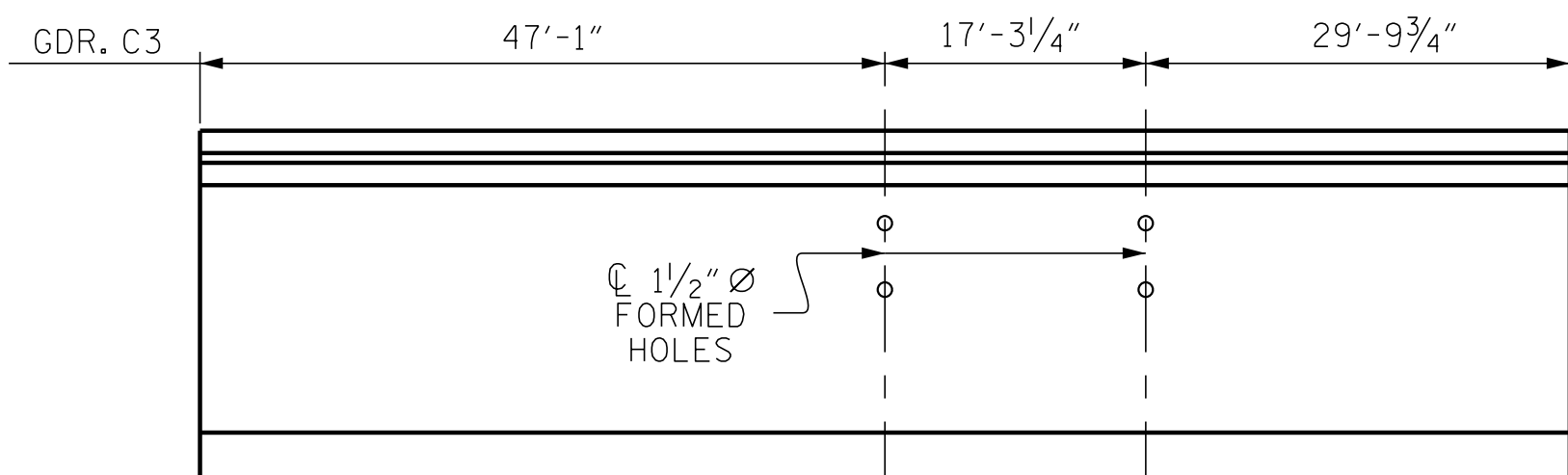
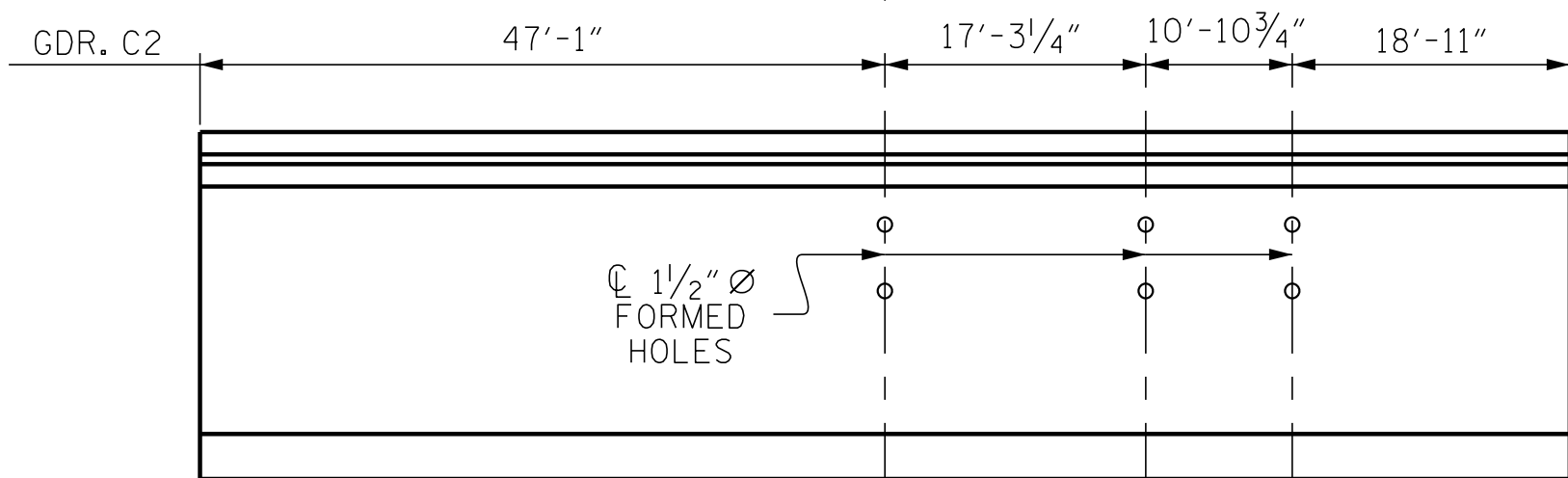
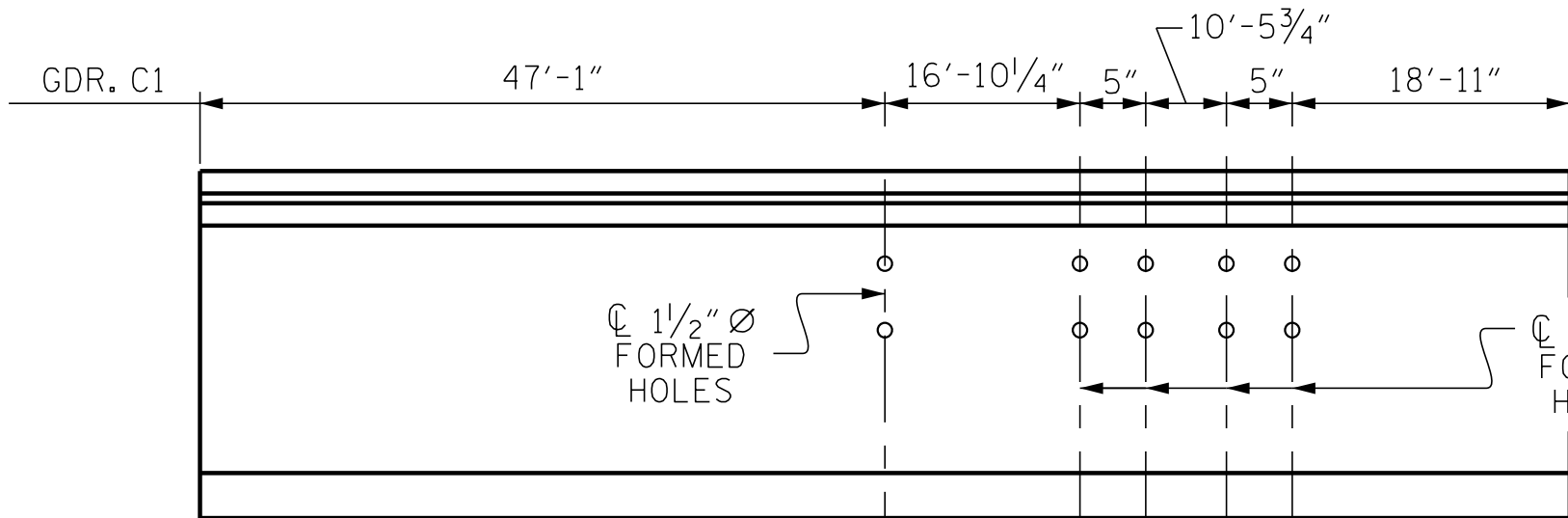
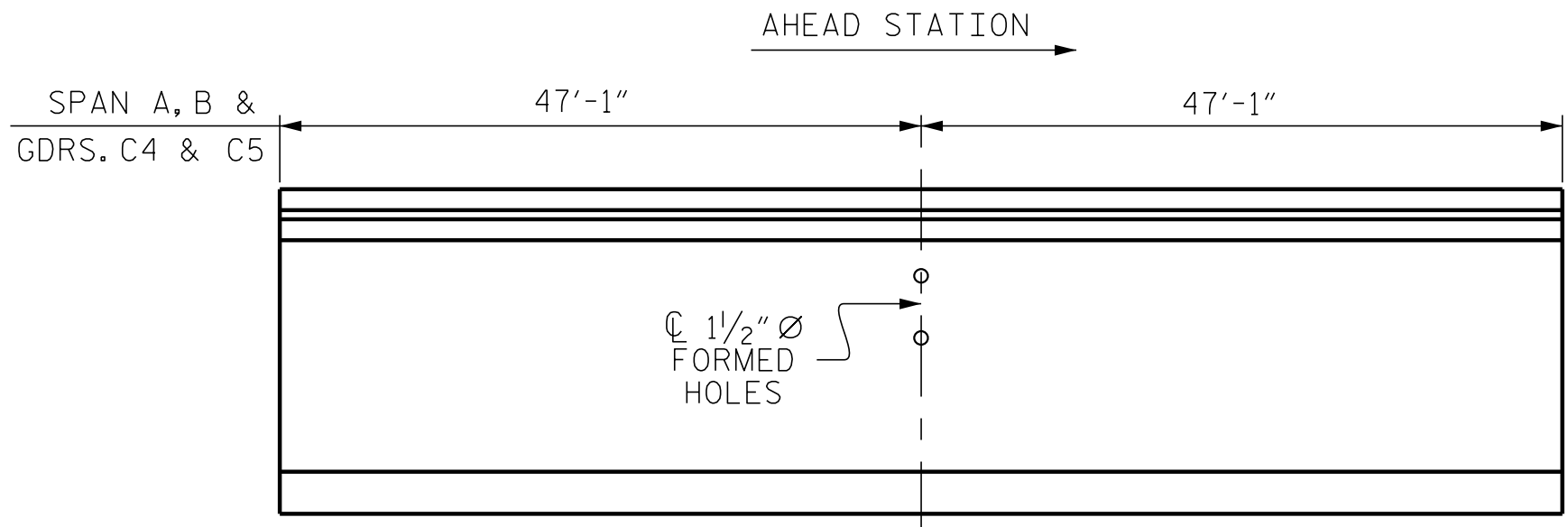
SECTION B-B



SECTION C-C



SECTION D-D

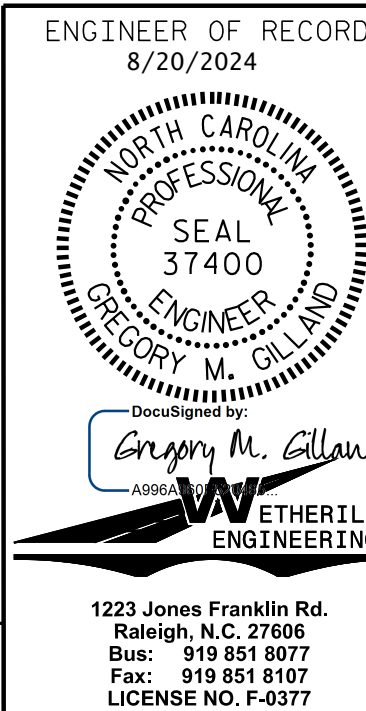


LOCATION OF BOLT HOLES IN GIRDERS

SHEAR STIRRUPS MAY BE SHIFTED SLIGHTLY TO AVOID BOLT HOLES IN GIRDER

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 6 OF 7



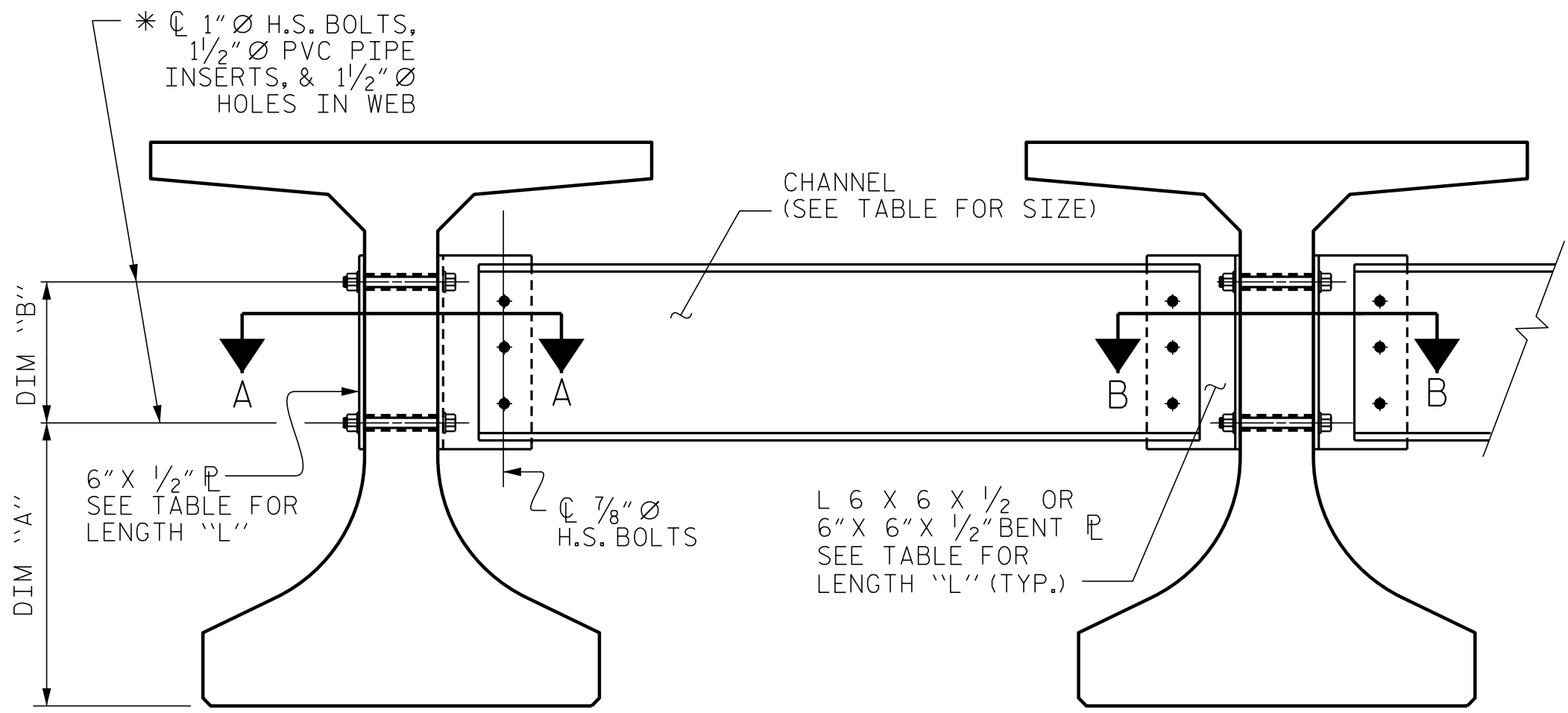
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-25
2			4			

DRAWN BY: D. HODGE DATE: 3/22
CHECKED BY: J. DILWORTH DATE: 8/22

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PA:2018\18156.01 B-5985 RobesonStructuresStr-2 (770175)NDGN402_001.B-5985-SITE 2 770175_SKU_PCC.dgn 4/26/2024 7:55:52 AM

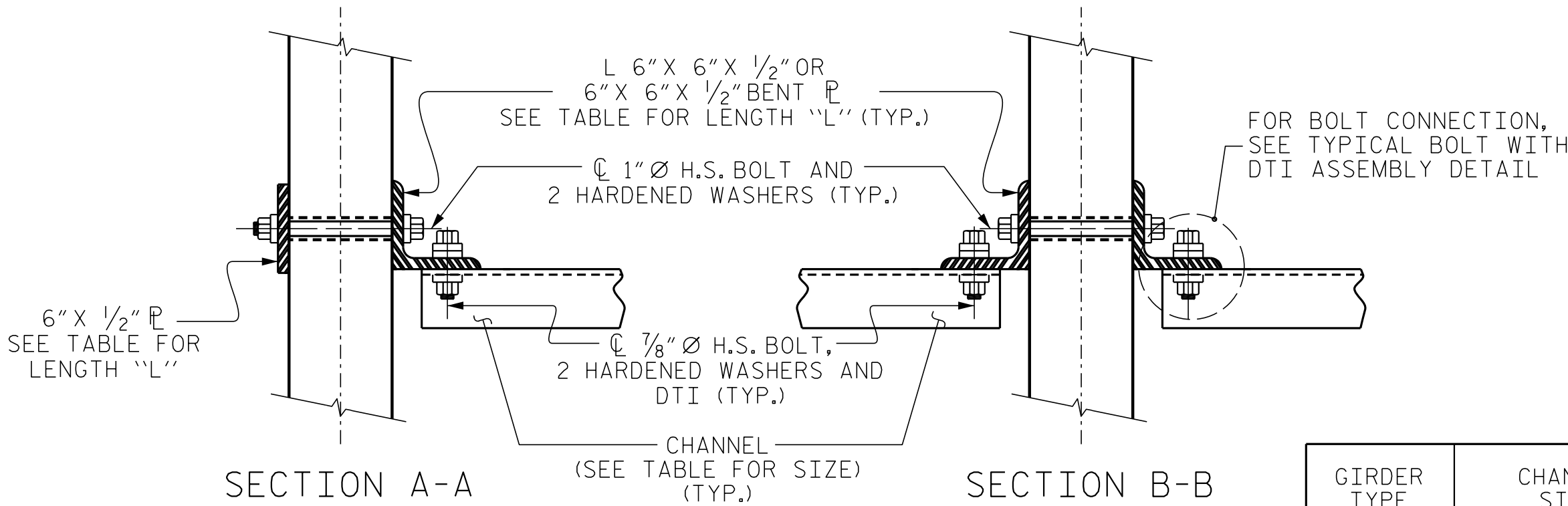


EXTERIOR GIRDER

INTERIOR GIRDER

PART SECTION AT INTERMEDIATE DIAPHRAGM

* $\frac{1}{4}$ " $\varnothing$ HOLES REQUIRED IN GIRDERS C1 AND C8 FOR W36X135 CONNECTIONS, SEE SUPERSTRUCTURE STRUCTURAL STEEL, SHEET 2 OF 2 FOR DETAILS.



CONNECTION DETAILS

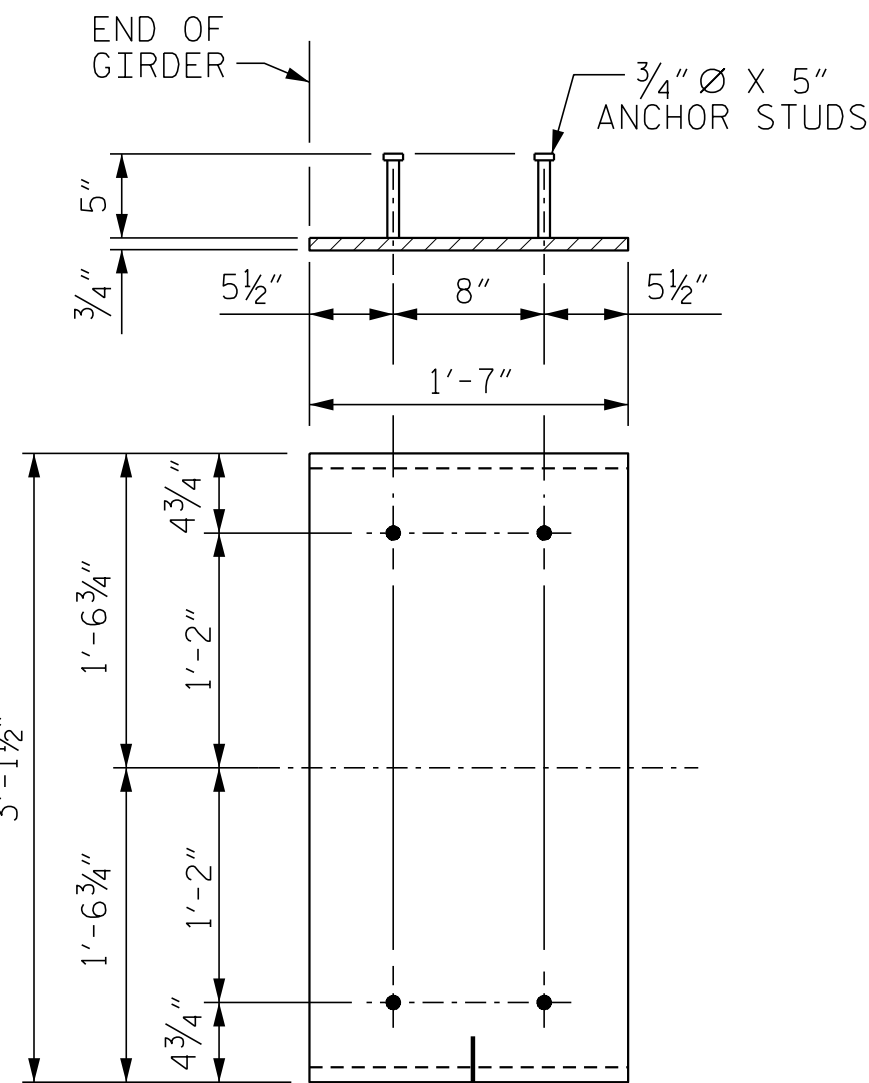
EMBEDDED PLATE NOTES

EMBEDDED PLATE SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

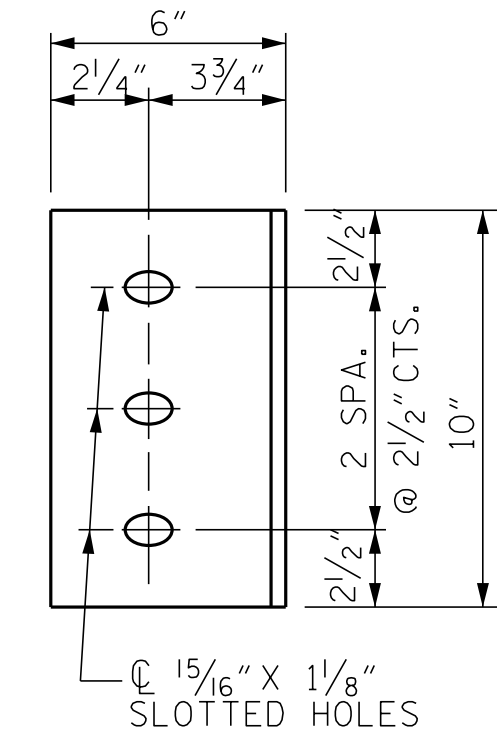
ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

ALL SURFACES OF EMBEDDED BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

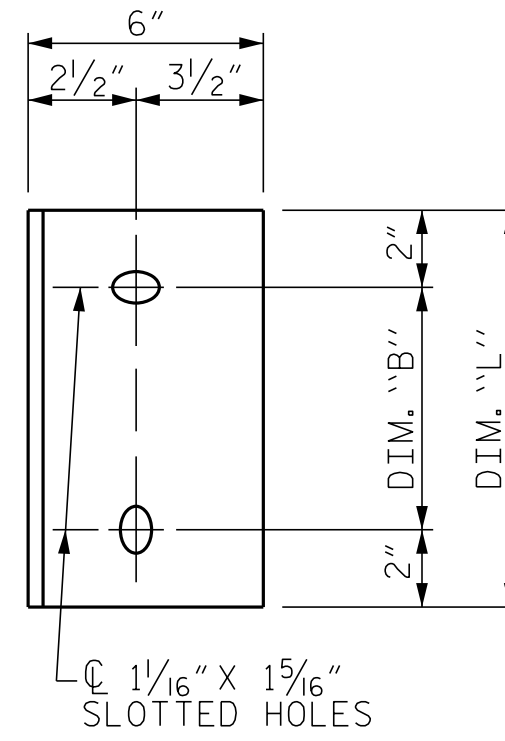
ALL BEARING PLATES SHALL BE AASHTO M270 GRADE 36 OR 50.



EMBEDDED BEARING PLATE PLAN



DIAPHRAGM FACE



WEB FACE

CONNECTOR PLATE DETAILS

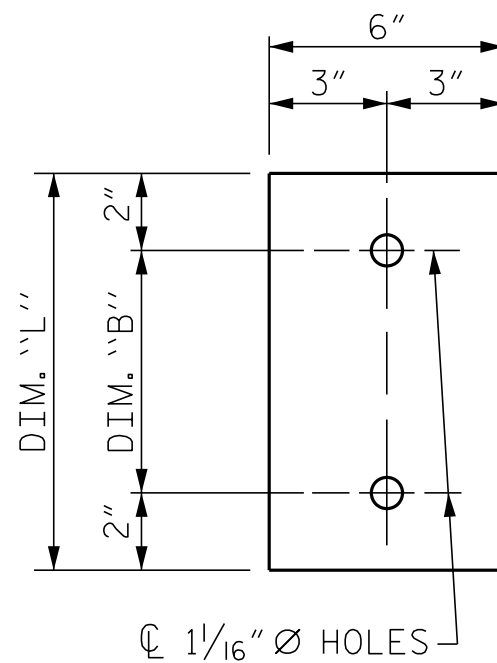
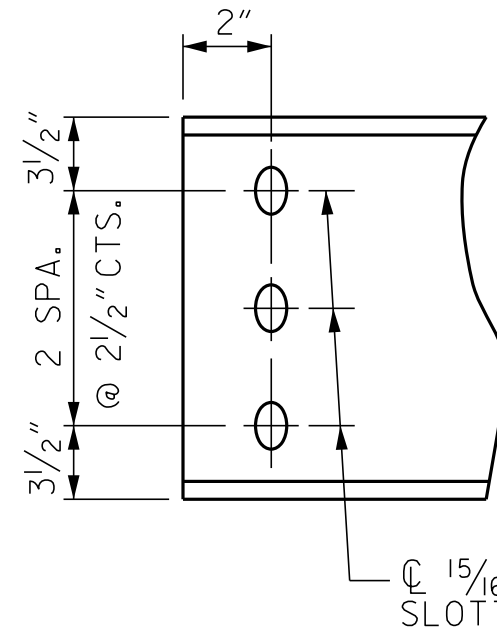
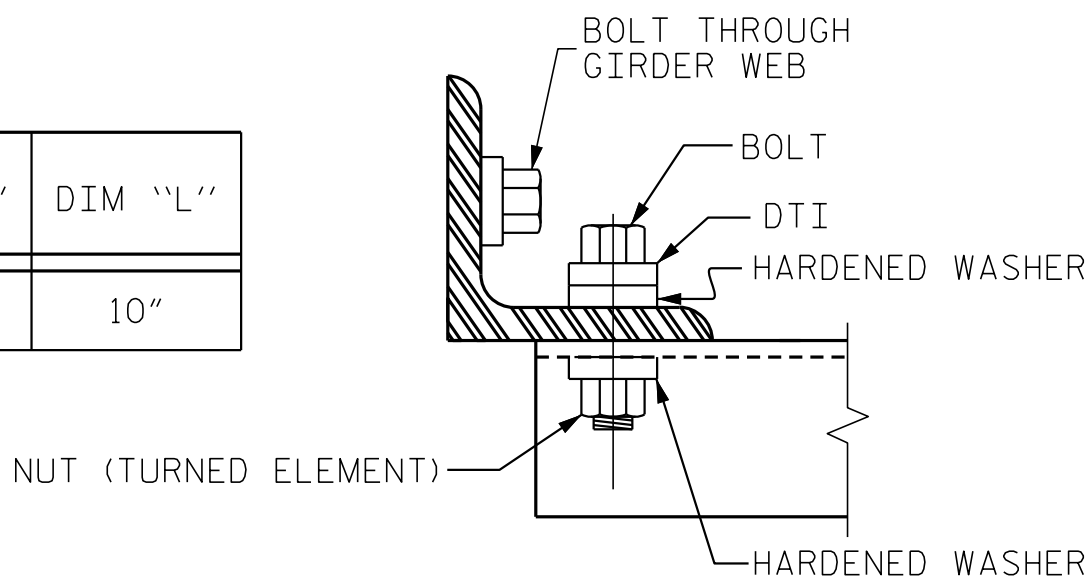


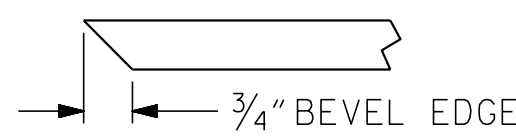
PLATE DETAILS



CHANNEL END



BOLT WITH DTI ASSEMBLY DETAIL



SECTION "F"

STRUCTURAL STEEL NOTES

ALL INTERMEDIATE DIAPHRAGM STEEL AND CONNECTOR PLATES SHALL BE AASHTO M270 GRADE 50 OR APPROVED EQUAL.

TENSION ON THE ASTM A325 BOLTS THROUGH THE CHANNEL MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

TENSION ON THE ASTM A449 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL $\frac{1}{4}$ TURN.

THE PLATES, BENT PLATES, CHANNELS, AND ANGLES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

FOR METALLIZATION, APPLY A THERMAL SPRAYED COATING WITH A SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE DEPARTMENTS THERMAL SPRAYED COATINGS (METALLIZATION) PROGRAM, THERMAL SPRAYED COATINGS SPECIAL PROVISION AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

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

USE AN ASTM F436 HARDENED WASHER WITH STANDARD AND SLOTTED HOLES UNDER EACH BOLT HEAD AND NUT.

FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST $\frac{1}{4}$ " PROJECTION BEYOND THE NUT.

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

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, PLACE TEMPORARY STRUTS BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED.

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

GIRDER 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.

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES INDICATED IN ELEVATION VIEW.

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 5,000 PSI FOR SPANS A & B AND 5,000 PSI FOR SPAN C INTERIOR GIRDERS AND 8,000 PSI FOR SPAN C EXTERIOR GIRDERS.

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" AND WITHIN THE REGION OF THE LINK SLAB, SHALL BE RAKED TO A DEPTH OF $\frac{1}{4}$ ".

THE TOP OF GIRDER IN THE REGION OF THE LINK SLAB SHALL BE SMOOTH (NOT RAKED) AND FREE OF STIRRUPS/STUDS, ANCHOR STUDS, DECK FORMWORK ATTACHMENTS AND OVERHANG FALSEWORK/FORMWORK ATTACHMENTS.

AT FABRICATOR'S OPTION, GIRDERS FOR SPAN A & B, AND INTERIOR GIRDERS OF SPAN C MAY BE CAST IN BED WITH EXTERIOR GIRDERS OF SPAN C. ADDITIONAL STRANDS ONLY IN EXTERIOR GIRDERS OF SPAN C SHALL BE FULL LENGTH DEBONDED IN OTHER GIRDERS AT NO ADDITIONAL COST, SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

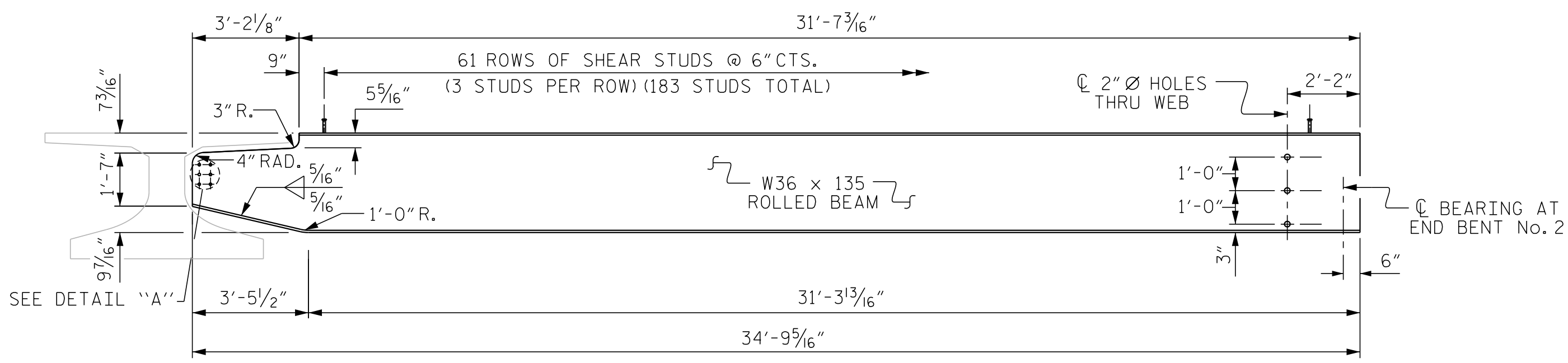
SHEET 7 OF 7

DRAWN BY : D. HODGE DATE : 4/22
CHECKED BY : J. DILWORTH DATE : 8/22

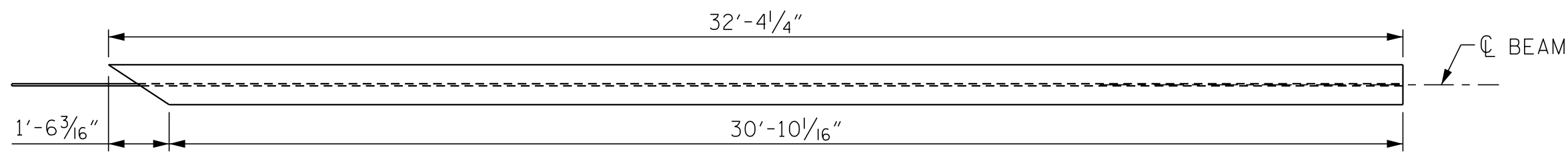
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ENGINEER OF RECORD 8/20/2024 DESIGNED BY: ETHERILL ENGINEERING 1223 Jones Franklin Rd. Raleigh, N.C. 27606 Bus: 919 851 8077 Fax: 919 851 8107 LICENSE NO. F-0377		STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH INTERMEDIATE STEEL DIAPHRAGMS FOR 45" FIB & GIRDER DETAILS		REVISIONS NO. BY: DATE: NO. BY: DATE: 1 3 2 4		SHEET NO. S-26 TOTAL SHEETS 64
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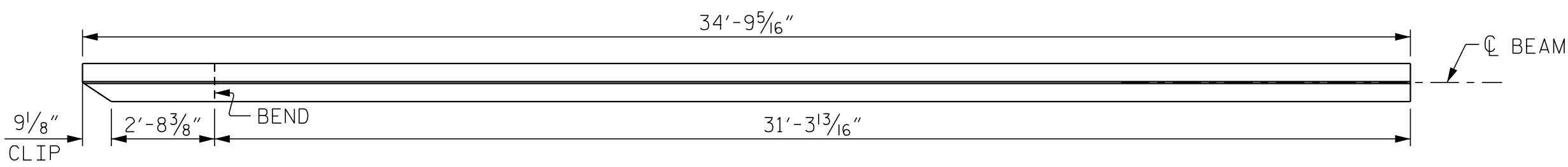
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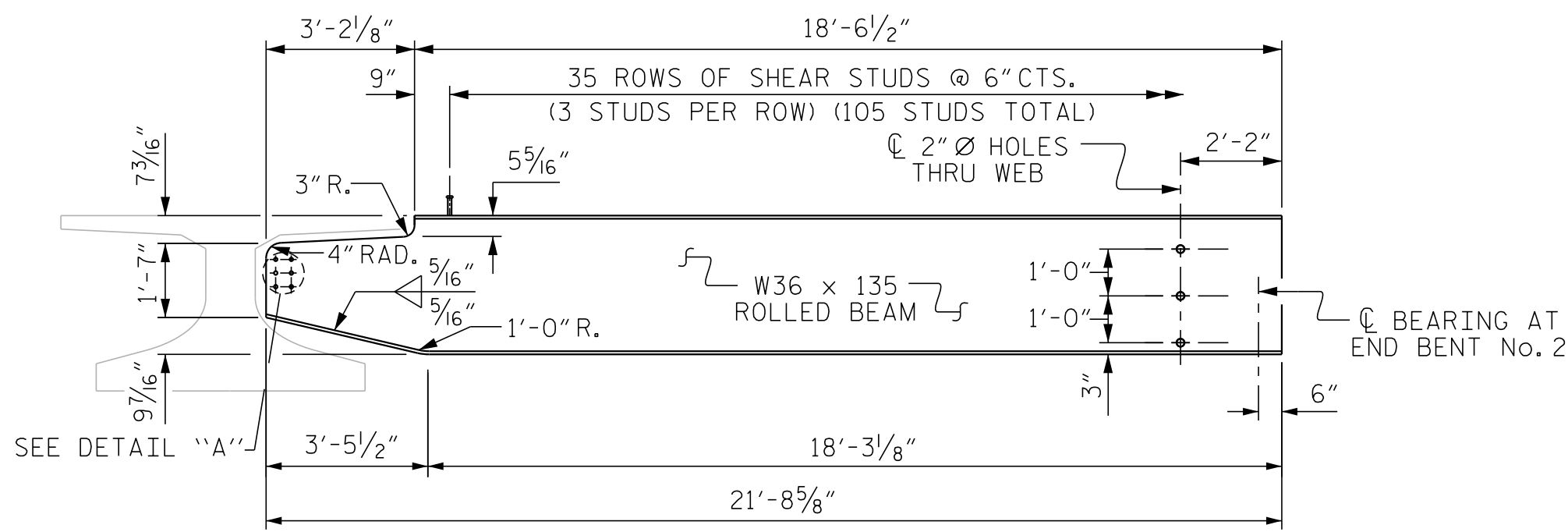
BEAM ELEVATION (C1-1)
(DIMENSIONS ARE ALONG $\varnothing$ BEAM AND DO NOT ACCOUNT FOR EXTRA FLANGE LENGTH DUE TO ANGLE CUT AT BOLTED END OF BEAM)



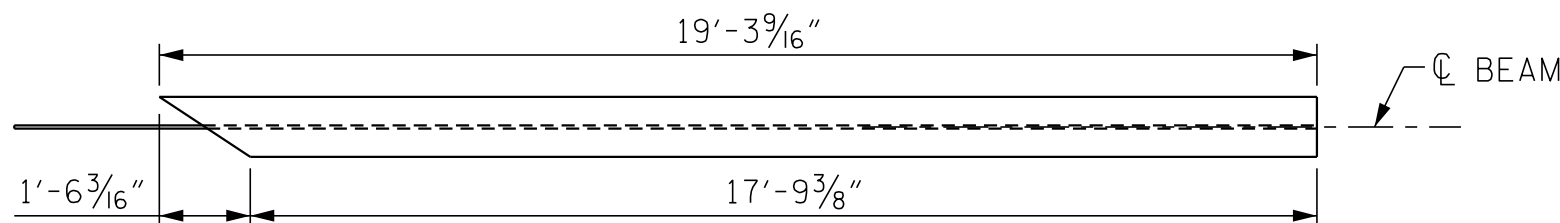
TOP FLANGE DETAIL (C1-1)



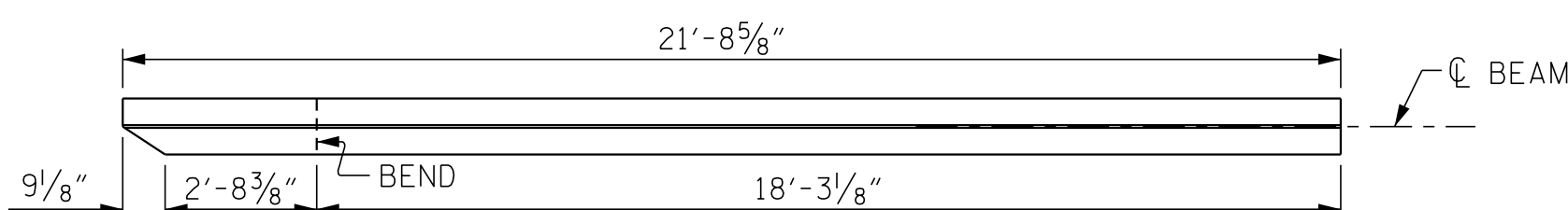
BOTTOM FLANGE DETAIL (C1-1)



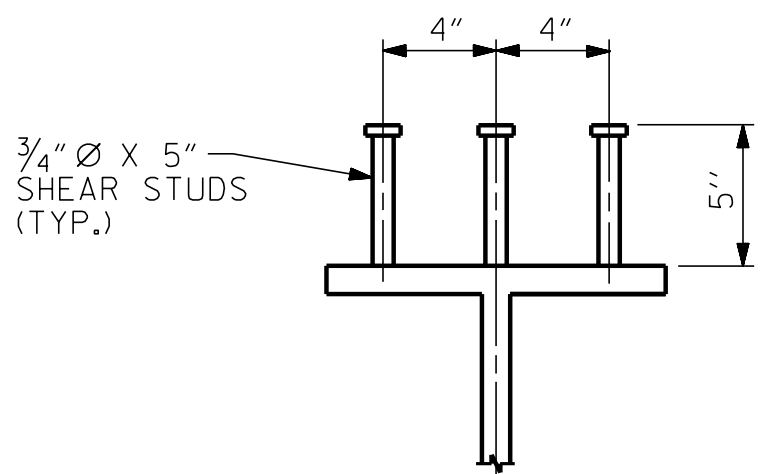
BEAM ELEVATION (C1-2)
(DIMENSIONS ARE ALONG $\varnothing$ BEAM AND DO NOT ACCOUNT FOR EXTRA FLANGE LENGTH DUE TO ANGLE CUT AT BOLTED END OF BEAM)



TOP FLANGE DETAIL (C1-2)

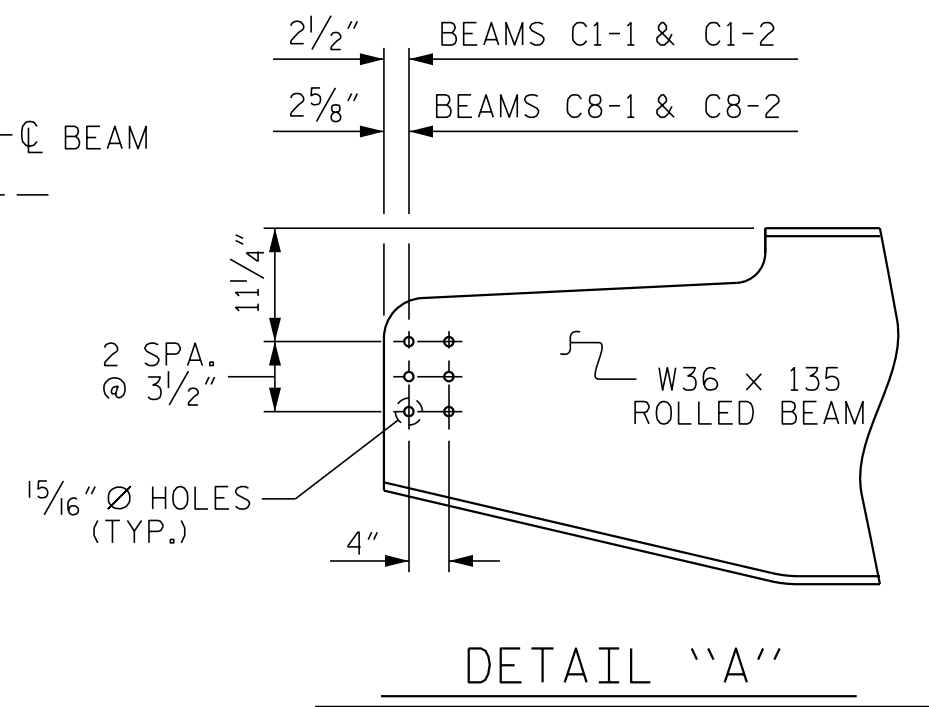


BOTTOM FLANGE DETAIL (C1-2)



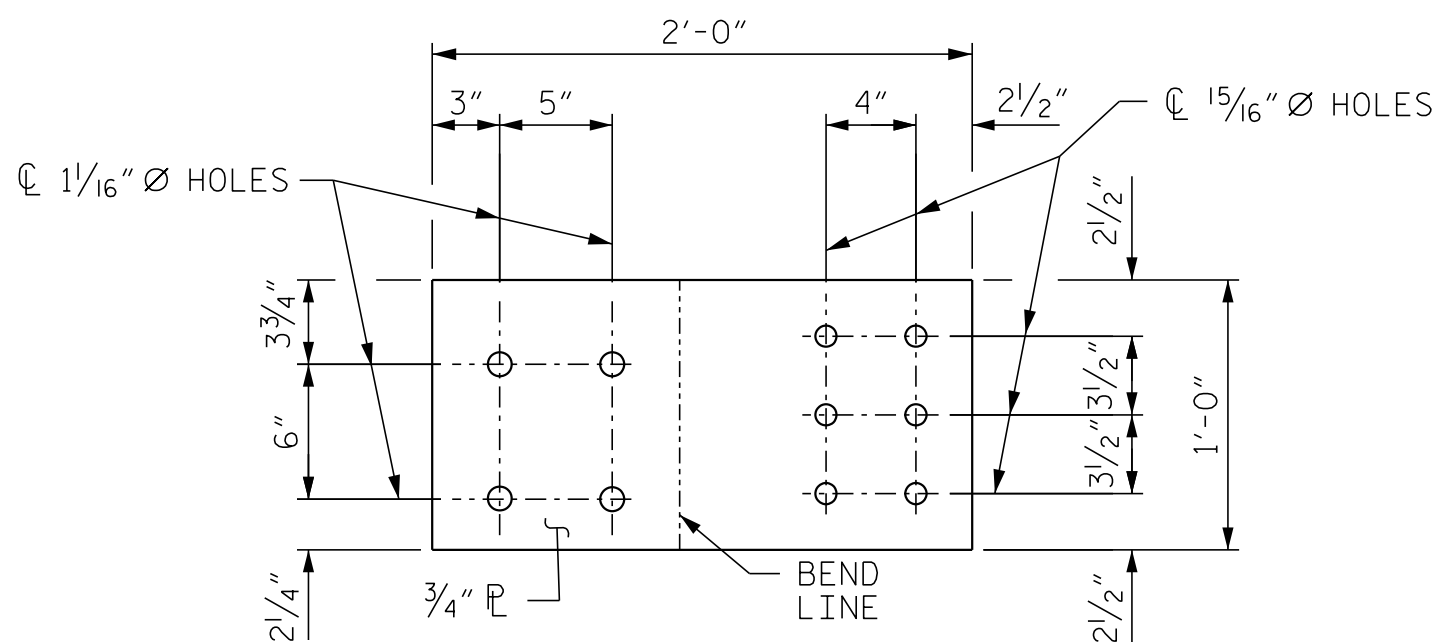
SHEAR STUD DETAILS

DRAWN BY : D. HODGE DATE : 8/22
CHECKED BY : J. DILWORTH DATE : 8/22

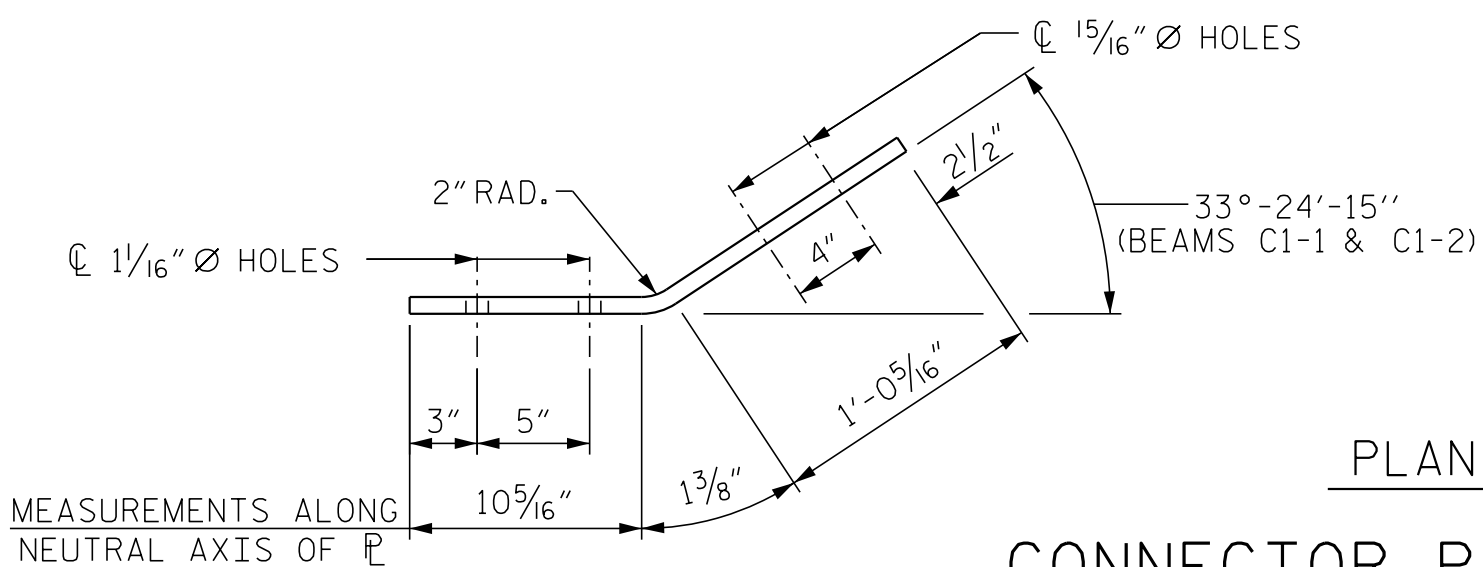


DETAIL "A"

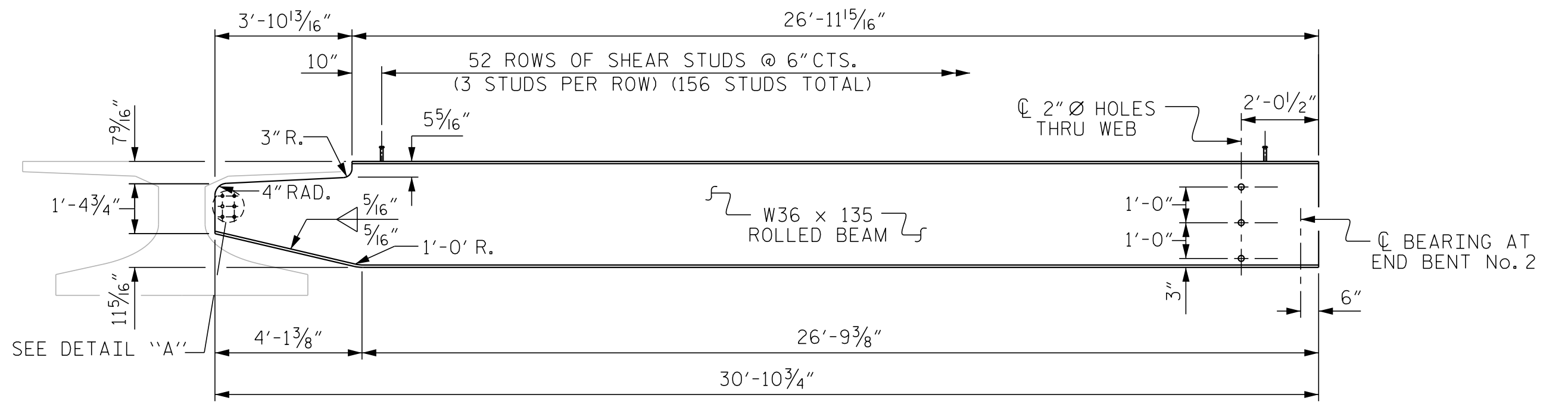
BEAM No.	TOTAL DL DEFLECTIONS AT MID-SPAN
C1-1	3/16"
C1-2	< 1/16"
C8-1	3/16"
C8-2	< 1/16"



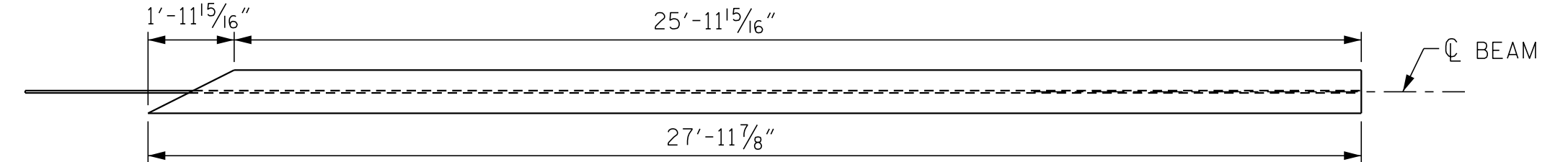
ELEVATION VIEW



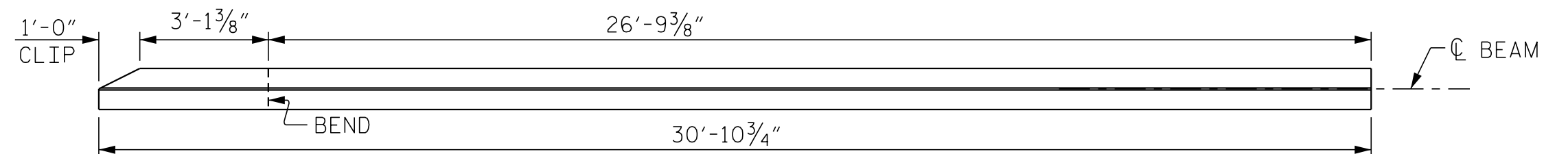
CONNECTOR PLATE DETAILS



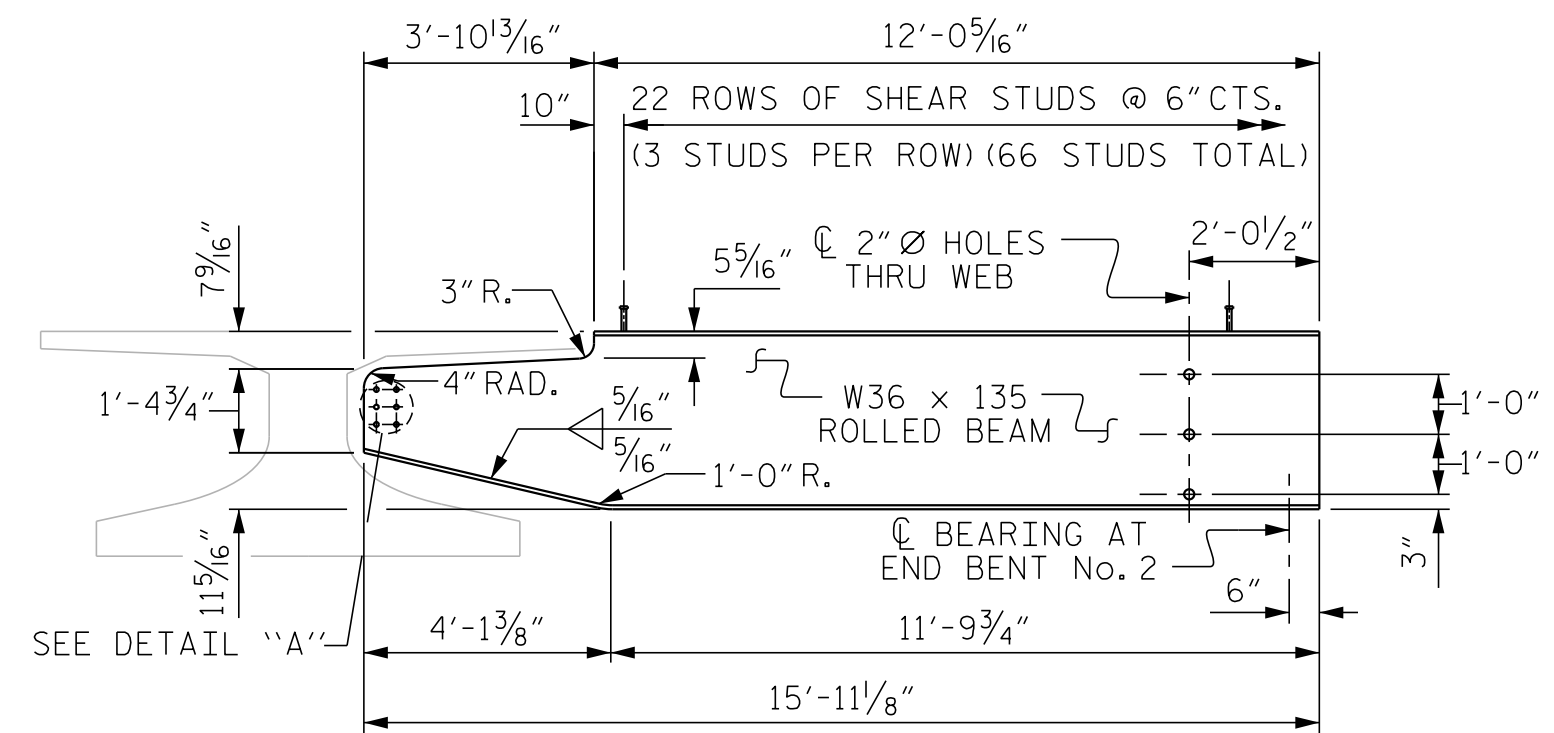
BEAM ELEVATION (C8-1)
(DIMENSIONS ARE ALONG $\varnothing$ BEAM AND DO NOT ACCOUNT FOR EXTRA FLANGE LENGTH DUE TO ANGLE CUT AT BOLTED END OF BEAM)



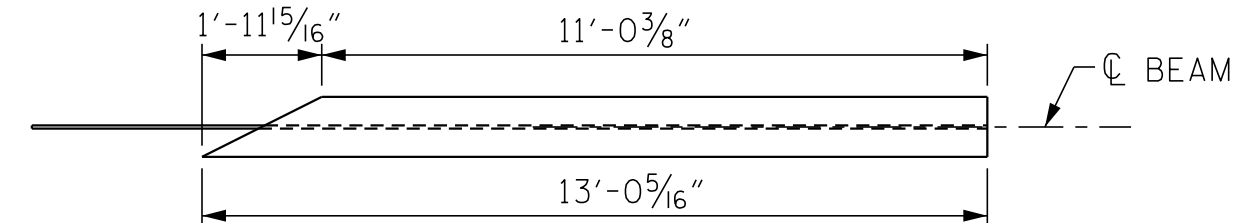
TOP FLANGE DETAIL (C8-1)



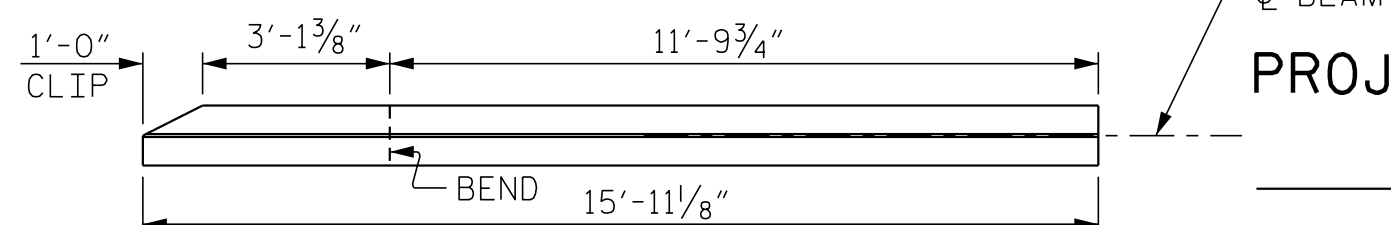
BOTTOM FLANGE DETAIL (C8-1)



BEAM ELEVATION (C8-2)
(DIMENSIONS ARE ALONG $\varnothing$ BEAM AND DO NOT ACCOUNT FOR EXTRA FLANGE LENGTH DUE TO ANGLE CUT AT BOLTED END OF BEAM)



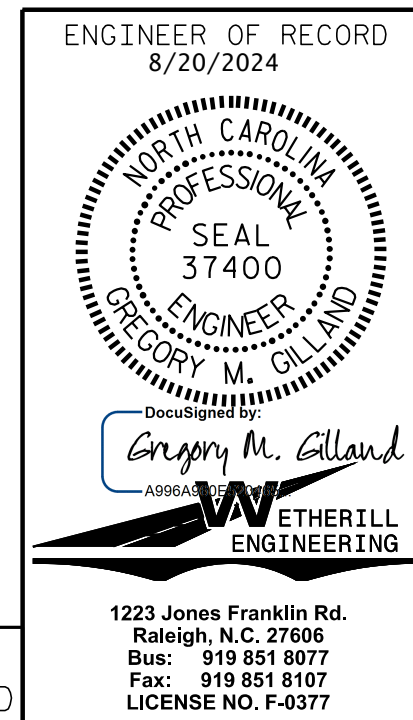
TOP FLANGE DETAIL (C8-2)



BOTTOM FLANGE DETAIL (C8-2)

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

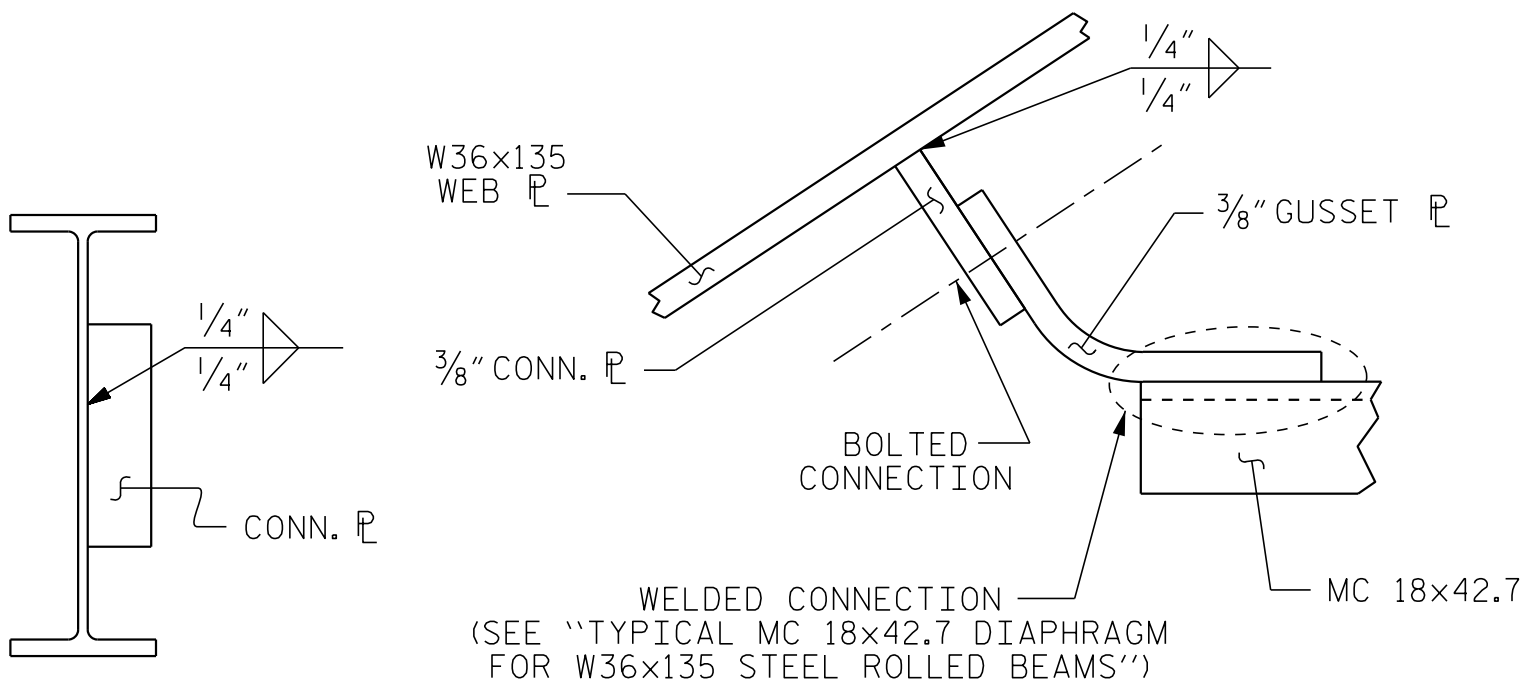
SHEET 1 OF 2



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

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DETAIL "B"

1/4" DIAMETER HOLES SHALL BE FORMED WITH 1/4" Ø SCH. 80 STEEL PIPE. PIPE SHALL BE HOT DIPPED GALVANIZED PER ASTM A123. PIPE SHALL MEET THE REQUIREMENTS OF ASTM F1083 WITH A MINIMUM YIELD STRENGTH OF 30 KSI.

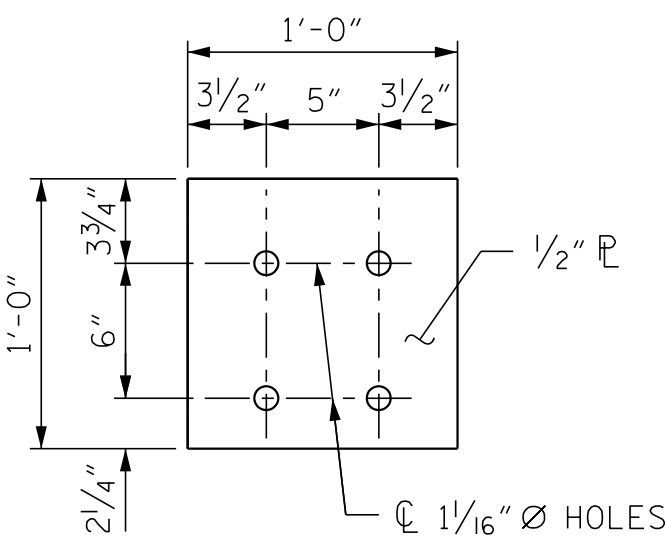
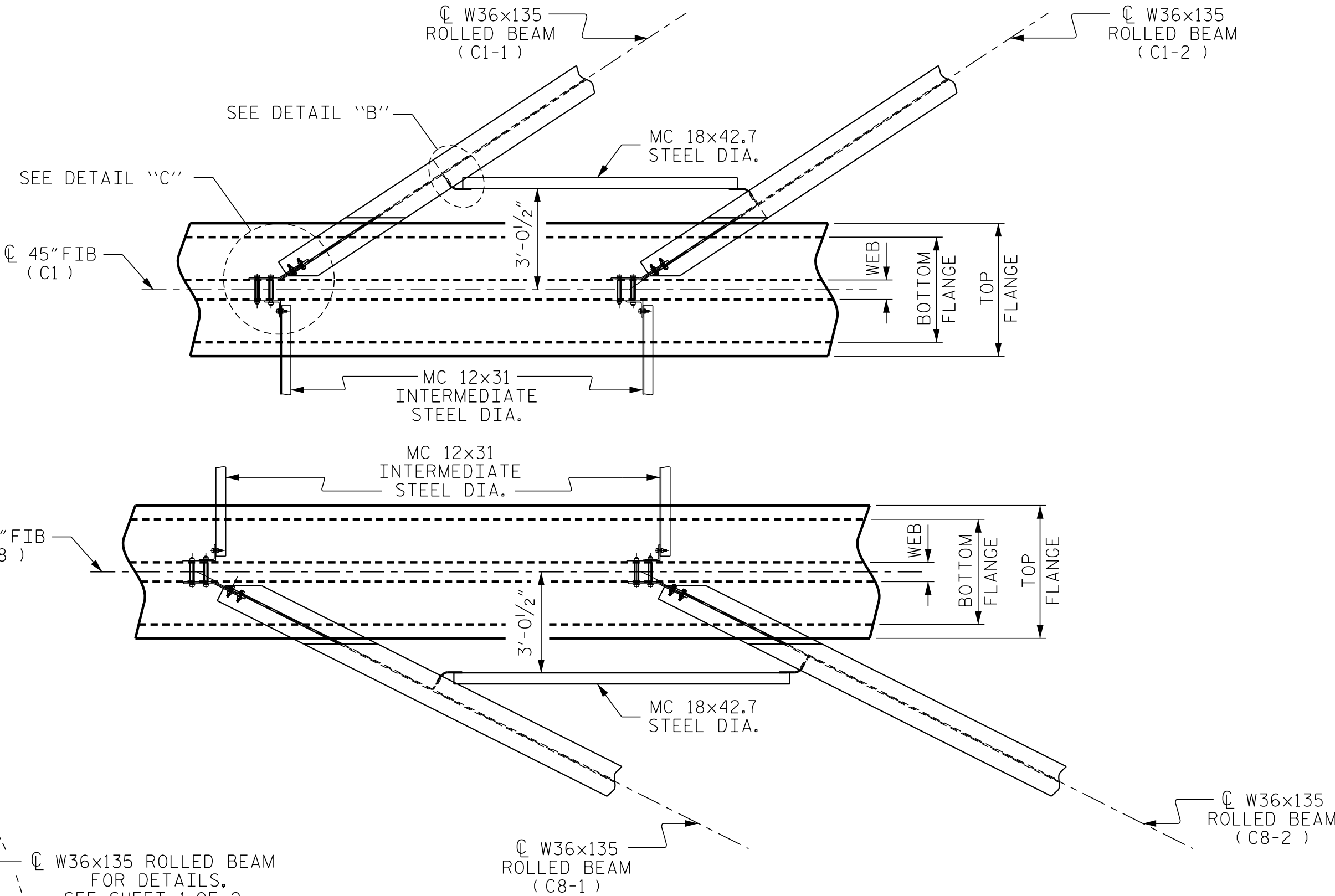
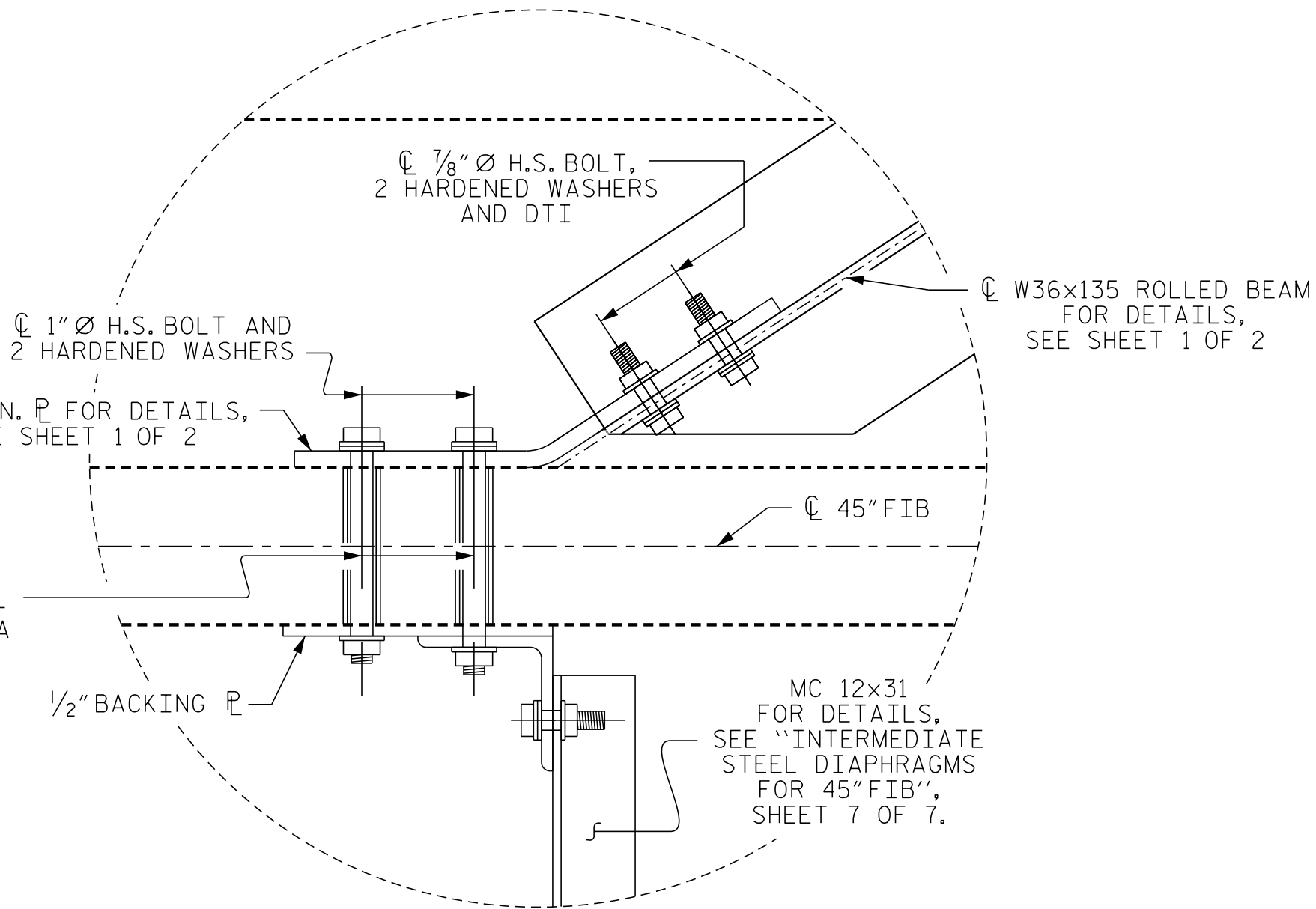


PLATE DETAIL

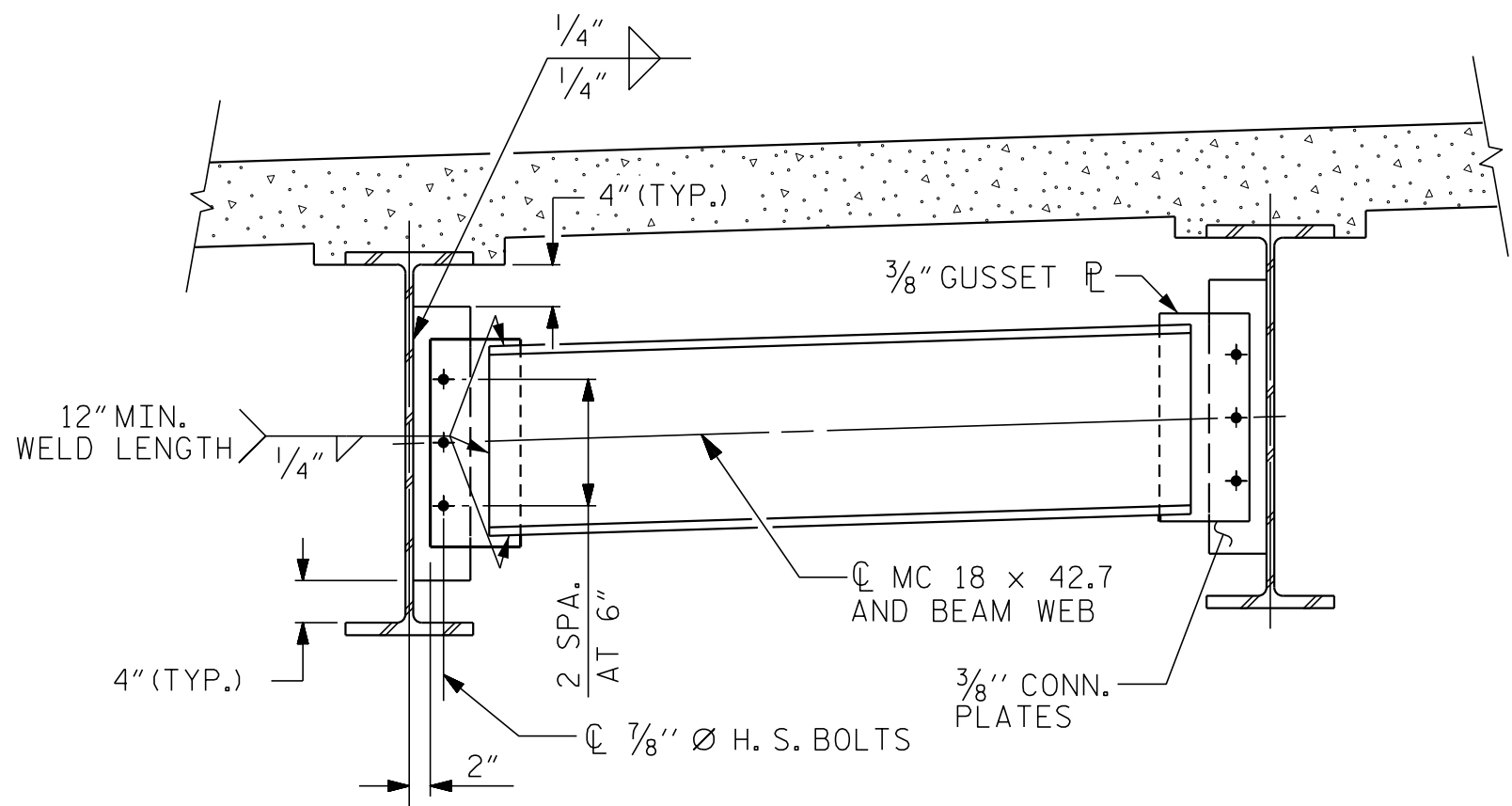
BACKING PLATE DETAIL



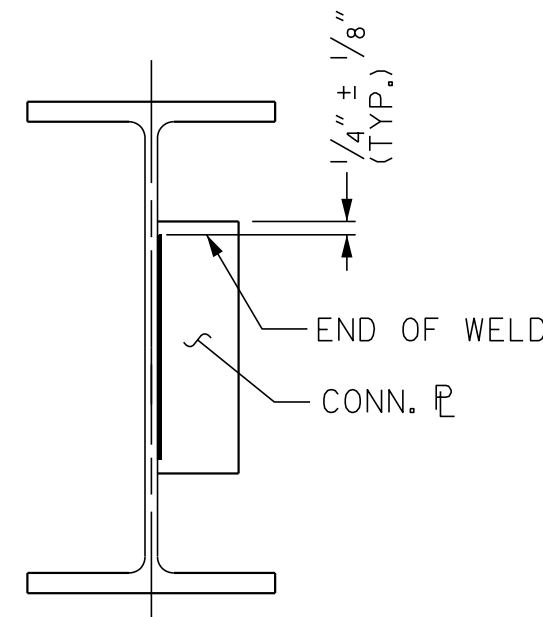
PARTIAL FRAMING PLAN



DETAIL "C"



TYPICAL MC 18x42.7 DIAPHRAGM FOR W36x135 STEEL ROLLED BEAMS



ROLLED BEAM

TYPICAL CONNECTOR PLATE CONNECTION

WELD TERMINATION DETAIL

STRUCTURAL STEEL NOTES

ALL CONNECTOR PLATES SHALL BE AASHTO M270 GRADE 50 OR APPROVED EQUAL.

ALL STEEL BEAMS AND STEEL DIAPHRAGM FOR STEEL BEAMS SHALL BE AASHTO GRADE 50W OR APPROVED EQUAL.

TENSION ON THE ASTM A325 BOLTS THROUGH THE STEEL BEAMS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-8 OR THE STANDARD SPECIFICATIONS.

TENSION ON THE ASTM A449 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL 1/4 TURN.

THE PLATES AND BENT PLATES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

FOR METALLIZATION, APPLY A THERMAL SPRAYED COATING WITH A SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE DEPARTMENTS THERMAL SPRAYED COATINGS (METALLIZATION) PROGRAM, THERMAL SPRAYED COATINGS SPECIAL PROVISION AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

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

USE AN ASTM F436 HARDENED WASHER WITH STANDARD AND SLOTTED HOLES UNDER EACH BOLT HEAD AND NUT.

FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON 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.

SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE STRUCTURAL STEEL FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

IN THE EXTERIOR BAYS, PLACE TEMPORARY STRUTS BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED.

CONNECTION BOLTS BETWEEN WEB OF STEEL BEAMS AND CONNECTOR PLATE, AND CONNECTOR PLATE AND DIAPHRAGM FOR STEEL BEAMS SHALL BE INSTALLED FINGER TIGHT. ONCE DECK POUR #1 IS COMPLETE AND PRIOR TO POUR #2, BACK 1/8" DIAMETER NUTS OFF ONE AT A TIME. APPLY SEVERAL DROPS OF LOCTITE 263, OR APPROVED EQUAL, TO BOLT THREADS AT THE NUT ENGAGEMENT AREA. RESNUG NUT FINGER TIGHT, REPEAT ON ALL BOLTS AT CONNECTION. ONCE ALL BOLTS HAVE THREAD LOCKING COMPOUND APPLIED, FULLY TIGHTEN BOLTS AS REQUIRED BY THE STANDARD SPECIFICATIONS. REPEAT FOR CONNECTION AT ADJACENT BEAM AND THEN MC 18x42.7 STEEL DIAPHRAGM.

CONTRACTOR SHALL PROVIDE TEMPORARY BRACING FOR STEEL BEAMS TO BRACE AGAINST TORSION. BRACING SHALL BE INSTALLED PRIOR TO DECK POUR #2 AND SHALL REMAIN IN PLACE FOR 3 DAYS AFTER DECK POUR #3 IS COMPLETED.

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.

ALL FIELD CONNECTIONS TO BE 7/8" DIA. HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED.

A CHARPY V-NOTCH TEST IS REQUIRED ON ALL BEAM SECTIONS AND CONNECTOR PLATES AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH ARTICLE 1072-7 OF THE STANDARD SPECIFICATIONS.

NO SHOP CAMBER REQUIRED, TURN NATURAL MILL CAMBER UP.

FABRICATORS SHALL DETAIL DIAPHRAGM MEMBERS AND CONNECTIONS FOR FULL DEAD LOAD FIT UP. GIRDERS SHALL BE PLUMB AFTER THE FULL AMOUNT OF DEAD LOAD IS APPLIED.

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 2 OF 2

ENGINEER OF RECORD 8/20/2024 NORTH CAROLINA PROFESSIONAL SEAL 37400 DESIGNED BY: Gregory M. Gilling APPROVED BY: W. E. HERRILL 1223 Jones Franklin Rd. Raleigh, N.C. 27606 Bus: 919 851 8077 Fax: 919 851 8107 LICENSE NO. F-0377		STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE STRUCTURAL STEEL		REVISIONS <table><tr><th>NO.</th><th>BY:</th><th>DATE:</th><th>NO.</th><th>BY:</th><th>DATE:</th></tr><tr><td>1</td><td></td><td></td><td>3</td><td></td><td></td></tr><tr><td>2</td><td></td><td></td><td>4</td><td></td><td></td></tr></table>		NO.	BY:	DATE:	NO.	BY:	DATE:	1			3			2			4			SHEET NO. S-28 TOTAL SHEETS 64
NO.	BY:	DATE:	NO.	BY:	DATE:																			
1			3																					
2			4																					

DRAWN BY: D. HODGE DATE: 8/22
CHECKED BY: J. DILWORTH DATE: 8/22

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
0.6"Ø LOW RELAXATION	SPANS ``A'' & ``B''																				
	GIRDERS 1 & 2																				
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.056	0.104	0.147	0.183	0.214	0.238	0.256	0.269	0.276	0.279	0.276	0.269	0.256	0.238	0.214	0.183	0.147	0.104	0.056	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.022	0.045	0.068	0.089	0.107	0.123	0.136	0.145	0.151	0.152	0.151	0.145	0.136	0.123	0.107	0.089	0.068	0.045	0.022	0
FINAL CAMBER ↑	0"	3⁄8"	11⁄16"	15⁄16"	1½"	1¼"	13⁄8"	17⁄16"	1½"	1½"	1½"	1½"	1½"	17⁄16"	13⁄8"	1¼"	1½"	15⁄16"	11⁄16"	3⁄8"	0"

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
0.6"Ø LOW RELAXATION	SPANS ``A'' & ``B''																				
	GIRDERS 3, 7 & 8																				
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.056	0.104	0.147	0.183	0.214	0.238	0.256	0.269	0.276	0.279	0.276	0.269	0.256	0.238	0.214	0.183	0.147	0.104	0.056	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.019	0.039	0.058	0.076	0.092	0.106	0.116	0.124	0.129	0.131	0.129	0.124	0.116	0.106	0.092	0.076	0.058	0.039	0.019	0
FINAL CAMBER ↑	0"	7⁄16"	13⁄16"	1½"	15⁄16"	17⁄16"	19⁄16"	111⁄16"	13⁄4"	13⁄4"	13⁄4"	13⁄4"	13⁄4"	111⁄16"	19⁄16"	17⁄16"	15⁄16"	1½"	13⁄16"	7⁄16"	0"

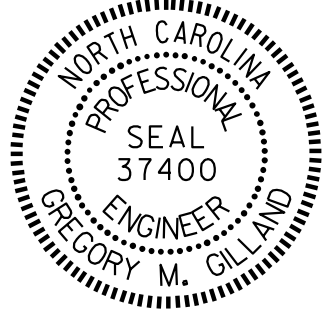
DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
0.6"Ø LOW RELAXATION	SPANS ``A'' & ``B''																				
	GIRDERS 4, 5 & 6																				
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.056	0.104	0.147	0.183	0.214	0.238	0.256	0.269	0.276	0.279	0.276	0.269	0.256	0.238	0.214	0.183	0.147	0.104	0.056	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.017	0.034	0.051	0.066	0.080	0.092	0.101	0.108	0.112	0.114	0.112	0.108	0.101	0.092	0.080	0.066	0.051	0.034	0.017	0
FINAL CAMBER ↑	0"	7⁄16"	13⁄16"	1½"	13⁄8"	15⁄8"	13⁄4"	17⁄8"	15⁄16"	2"	2"	2"	15⁄16"	17⁄8"	13⁄4"	15⁄8"	13⁄8"	1½"	13⁄16"	7⁄16"	0"

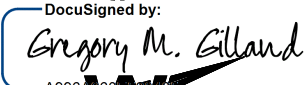
* INCLUDES FUTURE WEARING SURFACE
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT ``FINAL CAMBER'', WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 1 OF 2

ENGINEER OF RECORD
8/20/2024



DocuSigned by:

GREGORY M. GILLAND

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Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
DEAD LOAD
DEFLECTIONS
SPANS ``A'' & ``B''

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS 64
2			4			

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DRAWN BY : J. PENDERGRAFT DATE : 8/22
CHECKED BY : D. HODGE DATE : 8/22

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DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
0.6"Ø LOW RELAXATION	SPAN ``C``																				
	GIRDER 1																				
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.083	0.158	0.225	0.283	0.332	0.371	0.402	0.423	0.436	0.440	0.436	0.423	0.402	0.371	0.332	0.283	0.225	0.158	0.083	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.042	0.086	0.130	0.172	0.209	0.242	0.270	0.292	0.307	0.315	0.315	0.308	0.293	0.270	0.238	0.198	0.152	0.101	0.049	0
FINAL CAMBER ↑	0"	1/2"	7/8"	1 1/8"	1 5/16"	1 1/2"	1 9/16"	1 9/16"	1 9/16"	1 9/16"	1 1/2"	1 7/16"	1 3/8"	1 5/16"	1 1/4"	1 1/8"	1"	7/8"	1 1/16"	3/8"	0"

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
0.6"Ø LOW RELAXATION	SPAN ``C``																				
	GIRDER 8																				
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.083	0.158	0.225	0.283	0.332	0.371	0.402	0.423	0.436	0.44	0.436	0.423	0.402	0.371	0.332	0.283	0.225	0.158	0.083	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.035	0.072	0.109	0.144	0.175	0.203	0.226	0.244	0.257	0.264	0.264	0.258	0.245	0.226	0.200	0.167	0.128	0.086	0.042	0
FINAL CAMBER ↑	0"	9/16"	1 1/16"	1 3/8"	1 11/16"	1 7/8"	2"	2 1/8"	2 1/8"	2 1/8"	2 1/8"	2 1/16"	2"	1 7/8"	1 3/4"	1 9/16"	1 3/8"	1 3/16"	7/8"	1/2"	0"

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
0.6"Ø LOW RELAXATION	SPAN ``C``																				
	GIRDER 2																				
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.056	0.104	0.147	0.183	0.214	0.238	0.256	0.269	0.276	0.279	0.276	0.269	0.256	0.238	0.214	0.183	0.147	0.104	0.056	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.020	0.042	0.063	0.083	0.100	0.115	0.126	0.135	0.141	0.142	0.140	0.135	0.126	0.115	0.100	0.083	0.063	0.042	0.020	0
FINAL CAMBER ↑	0"	7/16"	3/4"	1"	1 3/16"	1 3/8"	1 1/2"	1 9/16"	1 5/8"	1 5/8"	1 5/8"	1 5/8"	1 5/8"	1 9/16"	1 1/2"	1 3/8"	1 3/16"	1"	3/4"	7/16"	0"

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
0.6"Ø LOW RELAXATION	SPAN ``C``																				
	GIRDERS 3 & 7																				
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.056	0.104	0.147	0.183	0.214	0.238	0.256	0.269	0.276	0.279	0.276	0.269	0.256	0.238	0.214	0.183	0.147	0.104	0.056	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.019	0.039	0.058	0.077	0.093	0.106	0.117	0.125	0.130	0.131	0.130	0.125	0.116	0.105	0.092	0.076	0.058	0.039	0.019	0
FINAL CAMBER ↑	0"	7/16"	1 3/16"	1 1/16"	1 1/4"	1 7/16"	1 9/16"	1 11/16"	1 3/4"	1 3/4"	1 3/4"	1 3/4"	1 3/4"	1 11/16"	1 9/16"	1 7/16"	1 5/16"	1 1/16"	1 3/16"	7/16"	0"

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
0.6"Ø LOW RELAXATION	SPAN ``C``																				
	GIRDERS 4 & 5																				
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.056	0.104	0.147	0.183	0.214	0.238	0.256	0.269	0.276	0.279	0.276	0.269	0.256	0.238	0.214	0.183	0.147	0.104	0.056	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.016	0.034	0.051	0.067	0.081	0.093	0.102	0.109	0.113	0.115	0.114	0.109	0.102	0.093	0.081	0.067	0.051	0.034	0.017	0
FINAL CAMBER ↑	0"	1/2"	7/8"	1 1/8"	1 3/8"	1 9/16"	1 3/4"	1 7/8"	1 5/16"	1 5/16"	2"	1 5/16"	1 5/16"	1 7/8"	1 3/4"	1 9/16"	1 3/8"	1 1/8"	7/8"	7/16"	0"

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
0.6"Ø LOW RELAXATION	SPAN ``C``																				
	GIRDER 6																				
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.056	0.104	0.147	0.183	0.214	0.238	0.256	0.269	0.276	0.279	0.276	0.269	0.256	0.238	0.214	0.183	0.147	0.104	0.056	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.018	0.037	0.056	0.073	0.088	0.101	0.111	0.119	0.123	0.125	0.123	0.119	0.111	0.100	0.088	0.072	0.055	0.037	0.018	0
FINAL CAMBER ↑	0"	7/16"	1 3/16"	1 1/8"	1 5/16"	1 1/2"	1 5/8"	1 3/4"	1 13/16"	1 13/16"	1 7/8"	1 13/16"	1 13/16"	1 3/4"	1 5/8"	1 1/2"	1 5/16"	1 1/8"	1 3/16"	7/16"	0"

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

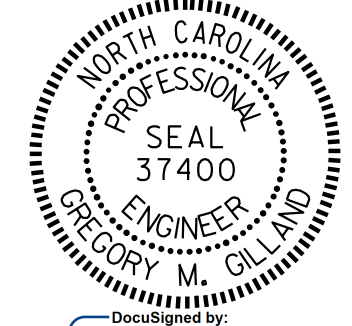
PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 2 OF 2

ENGINEER OF RECORD
8/20/2024



Designed by:
Gregory M. Gilland
AND
W. ETHERILL
ENGINEERING

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

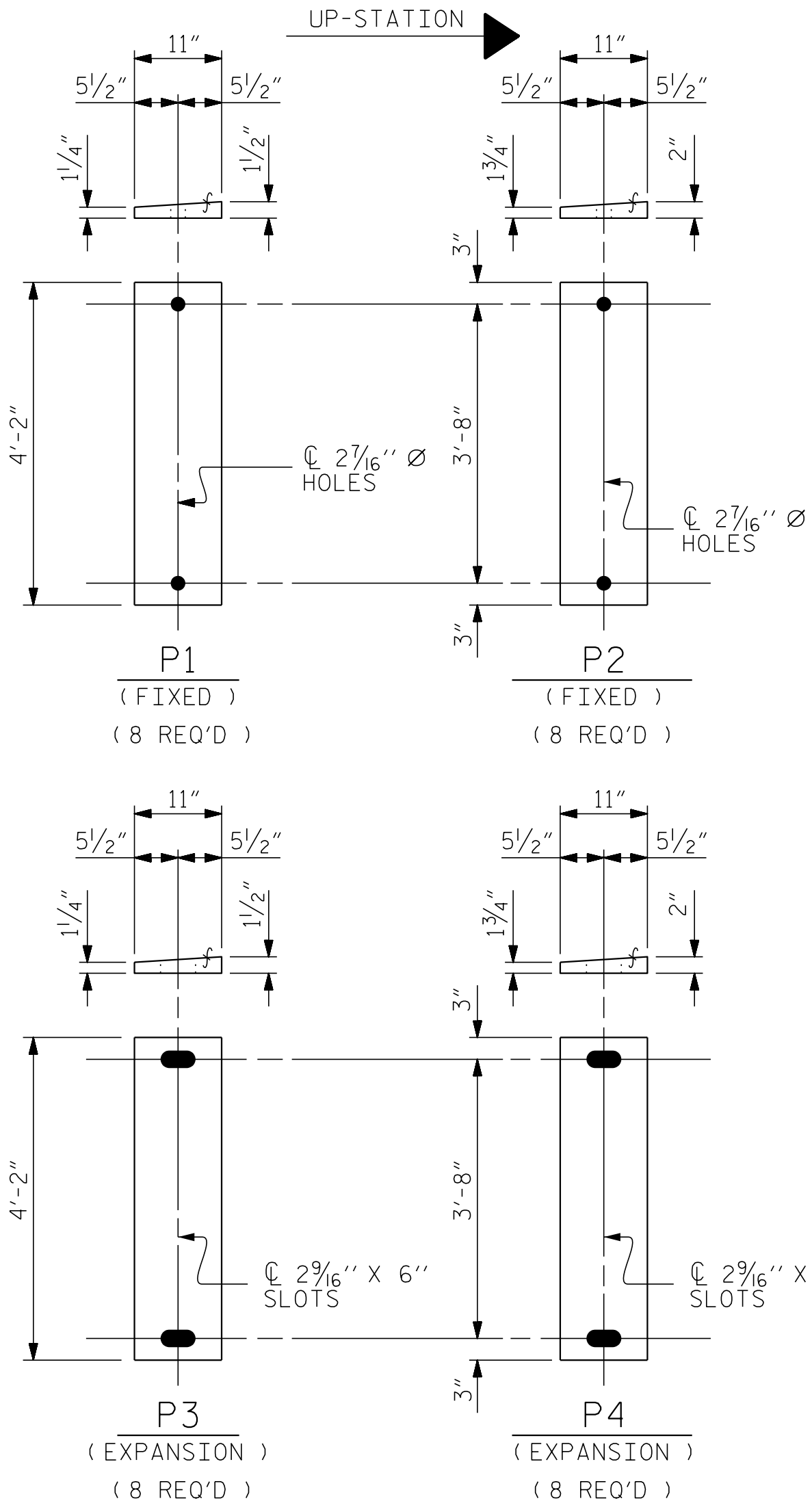
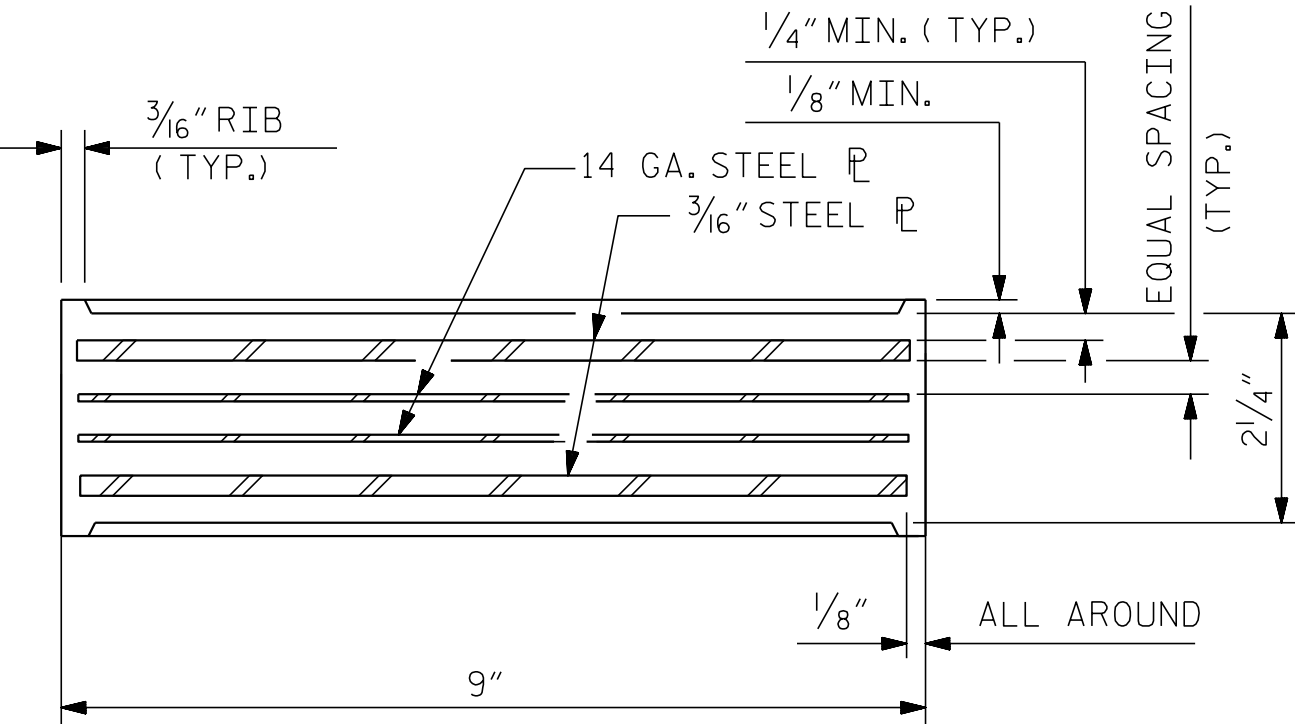
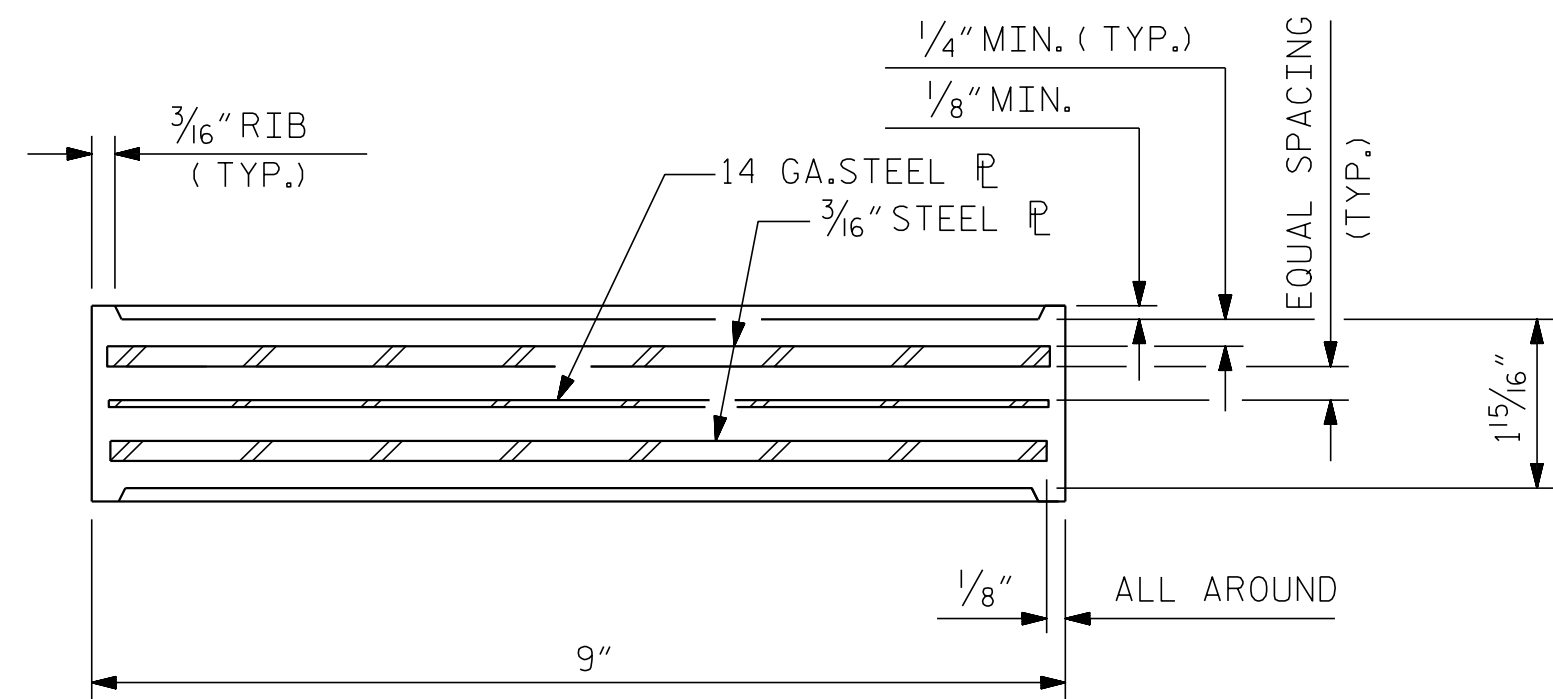
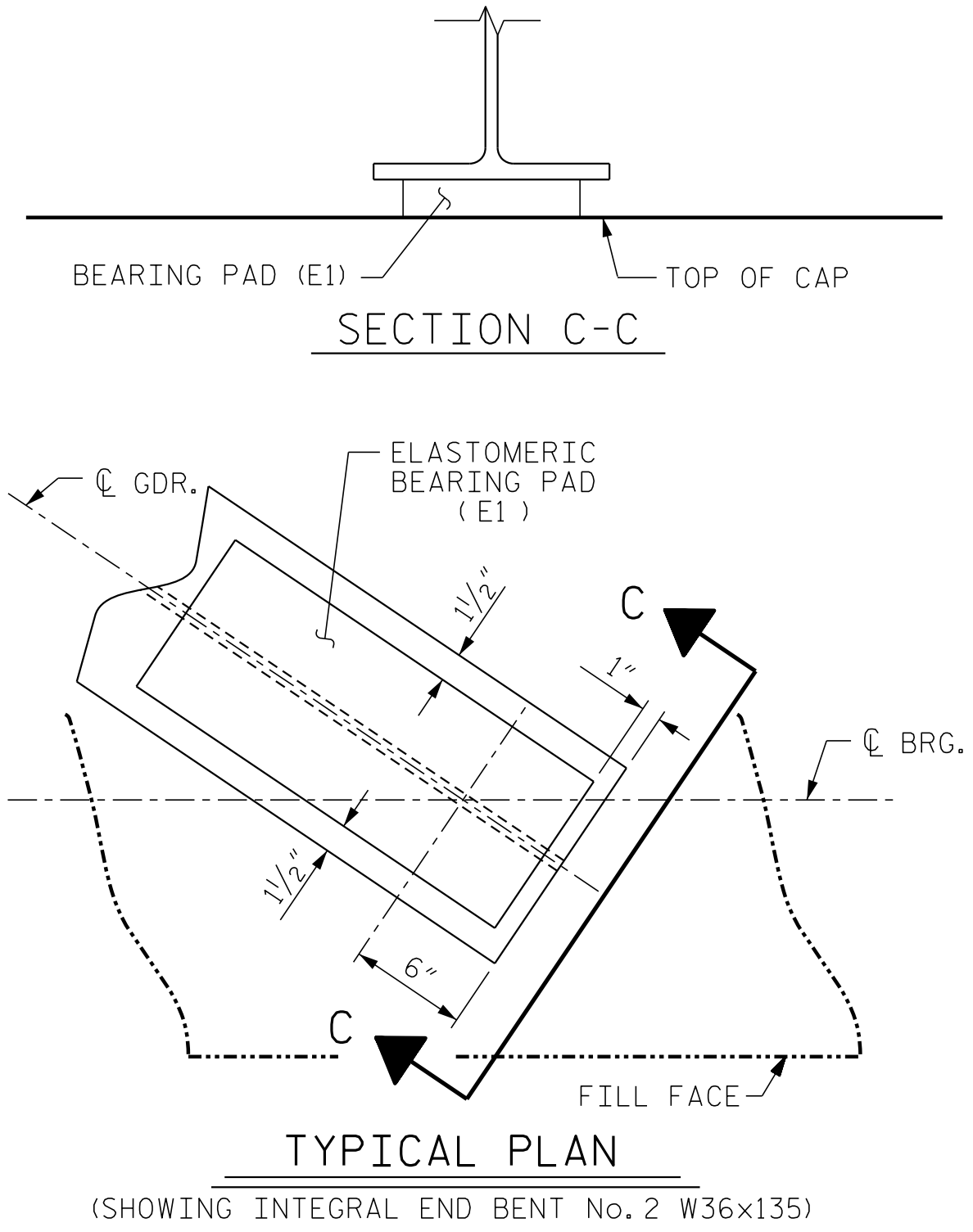
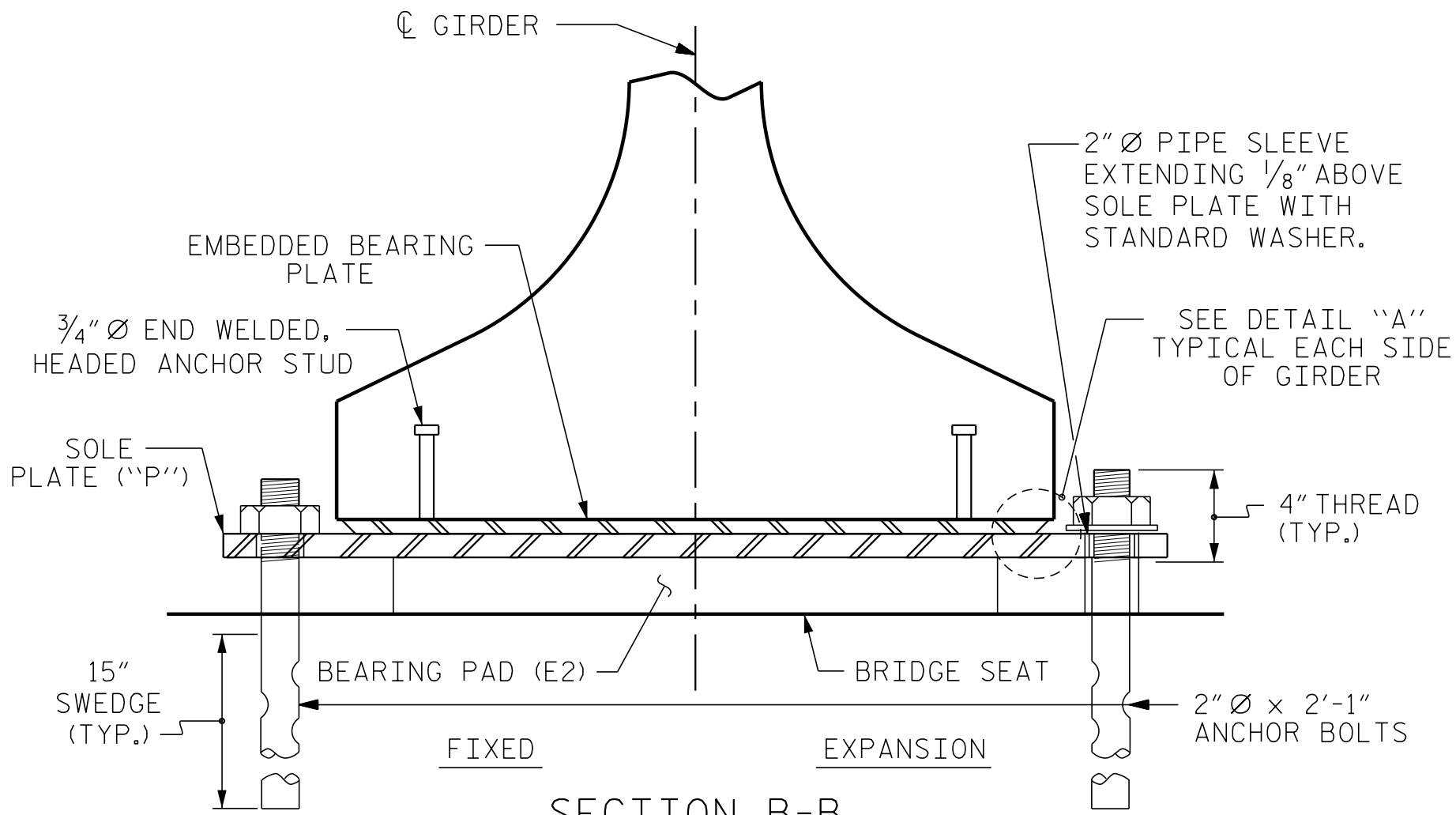
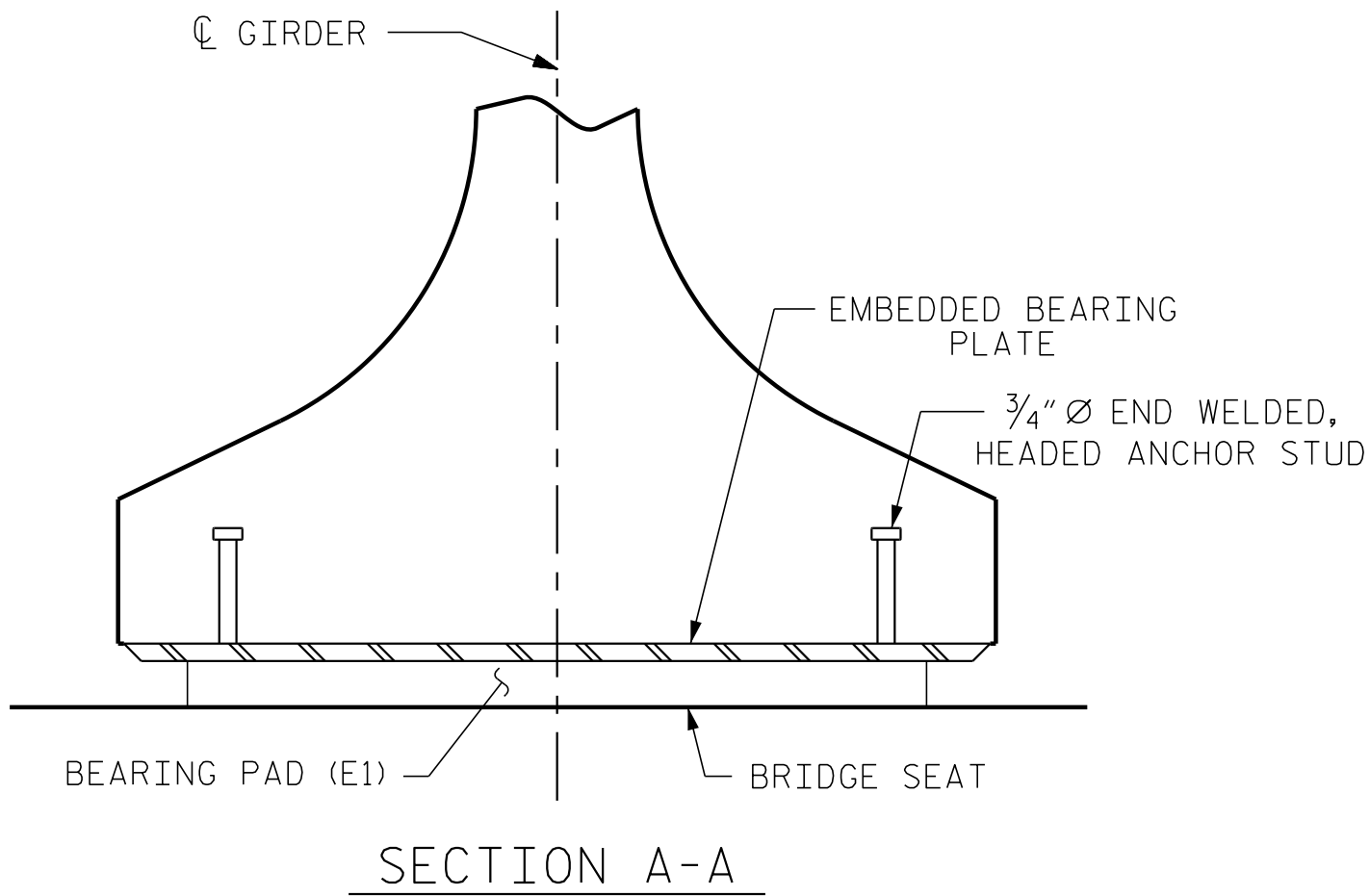
SUPERSTRUCTURE
DEAD LOAD
DEFLECTIONS
SPAN ``C``

REVISIONS						SHEET NO. S-30
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 64
2			4			

DRAWN BY : J. PENDERGRAFT DATE : 8/22
CHECKED BY : D. HODGE DATE : 8/22

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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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 BURR WITH A SHARP POINTED TOOL.

THE 2"Ø PIPE SLEEVE SHALL BE CUT FROM SCHEDULE 40 PVC PLASTIC PIPE. THE PVC PLASTIC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D1785.

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, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

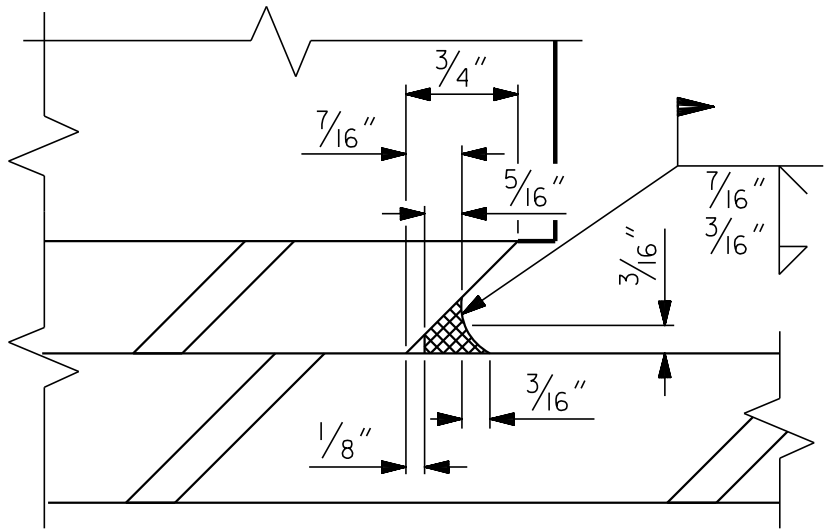
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. NO SHOP DRAWINGS ARE REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE STANDARD SPECIFICATIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



DETAIL "A"

MAXIMUM ALLOWABLE SERVICE LOADS

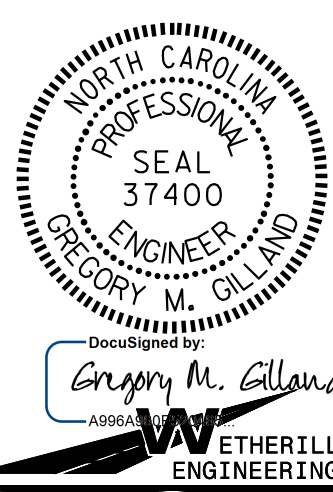
D.L.+L.L. (NO IMPACT)

TYPE IV 225 k

TYPE V 365 k

PROJECT NO. B-5985B
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STATION: 22+08.00 -L-

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

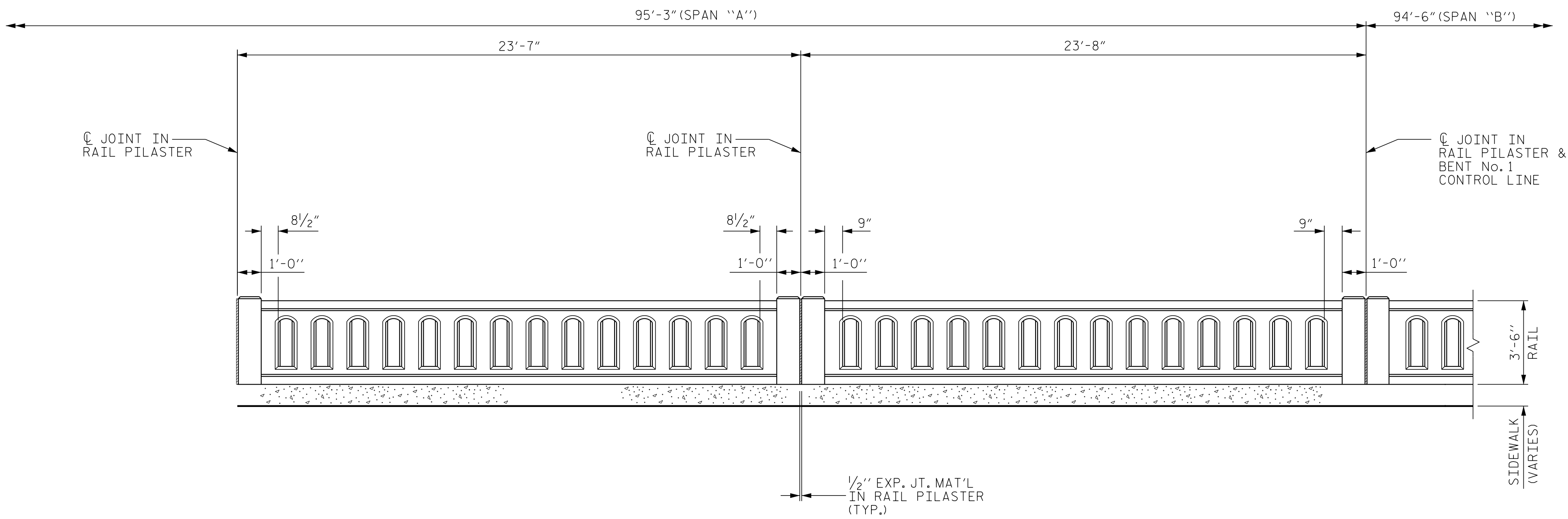
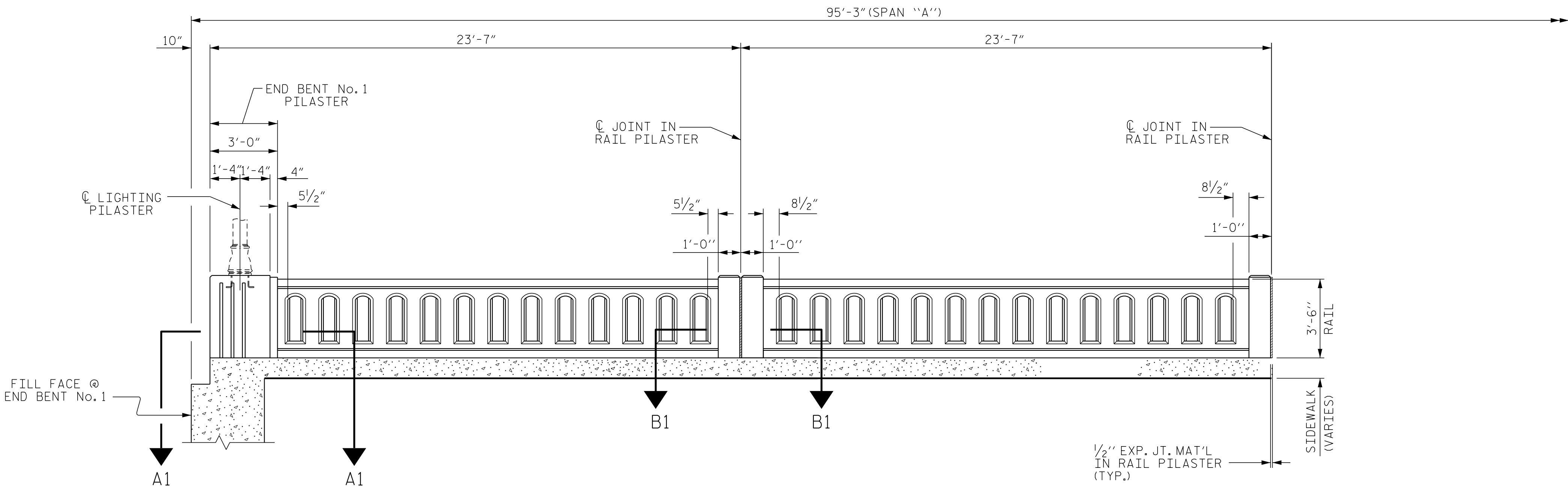
SUPERSTRUCTURE
BEARING PADS
AND SOLE PLATES
PRESTRESSED FLORIDA-I BEAM
AND W36 x 135

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
				S-31	
				TOTAL SHEETS 64	

DRAWN BY: D. HODGE DATE: 8/22
CHECKED BY: J. DILWORTH DATE: 8/22

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ROADWAY ELEVATION OF RAIL - SPAN "A"

(LEFT SIDE RAIL SHOWN, RIGHT SIDE RAIL SIMILAR)

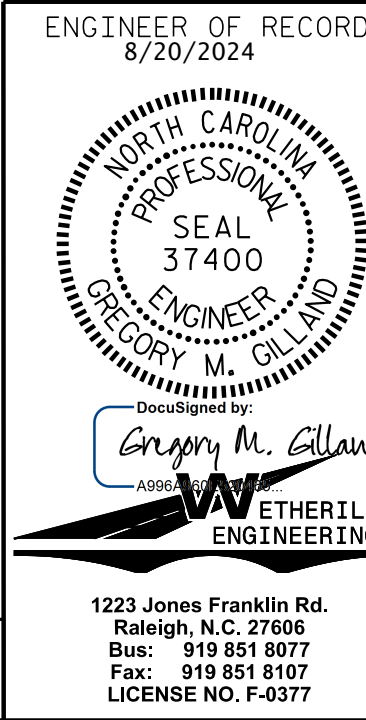
(FOR SECTIONS, SEE SHEET 5 OF 12)

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 1 OF 12

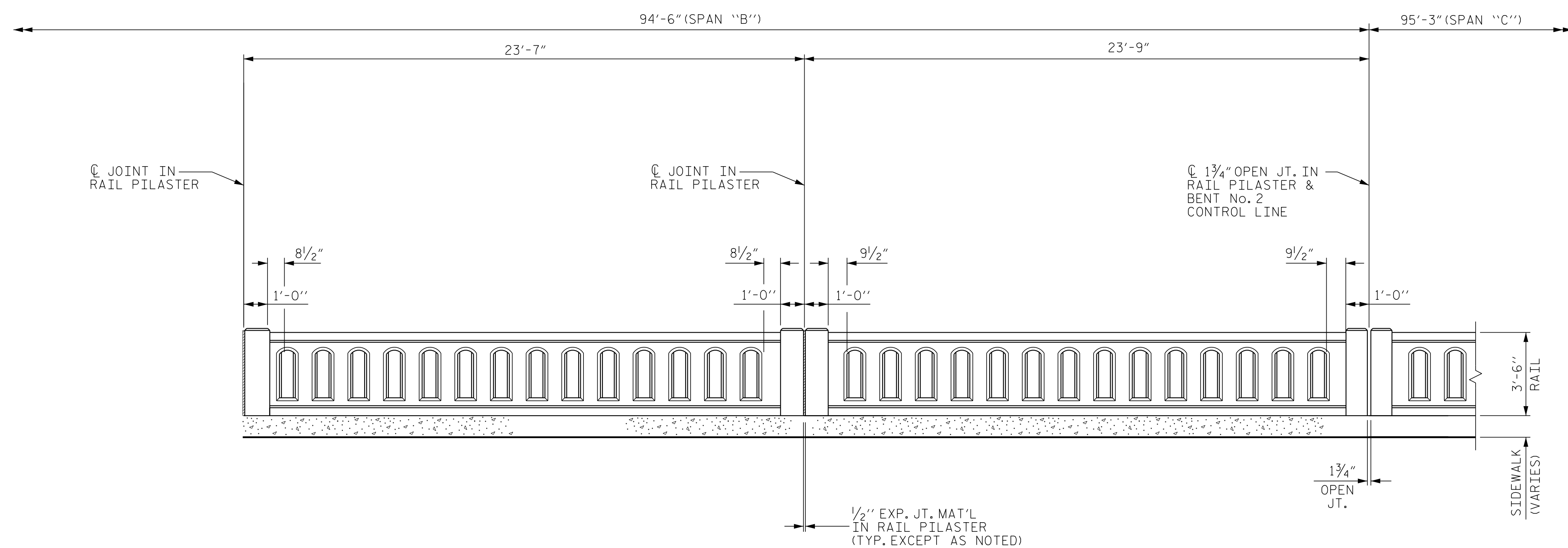


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
CLASSIC CONCRETE
BRIDGE RAIL
ELEVATION - PLAN A

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-32
2			4			TOTAL SHEETS 64

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(LEFT SIDE RAIL SHOWN, RIGHT SIDE RAIL SIMILAR)

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CHECKED BY : G. GILLAND DATE : 8/22

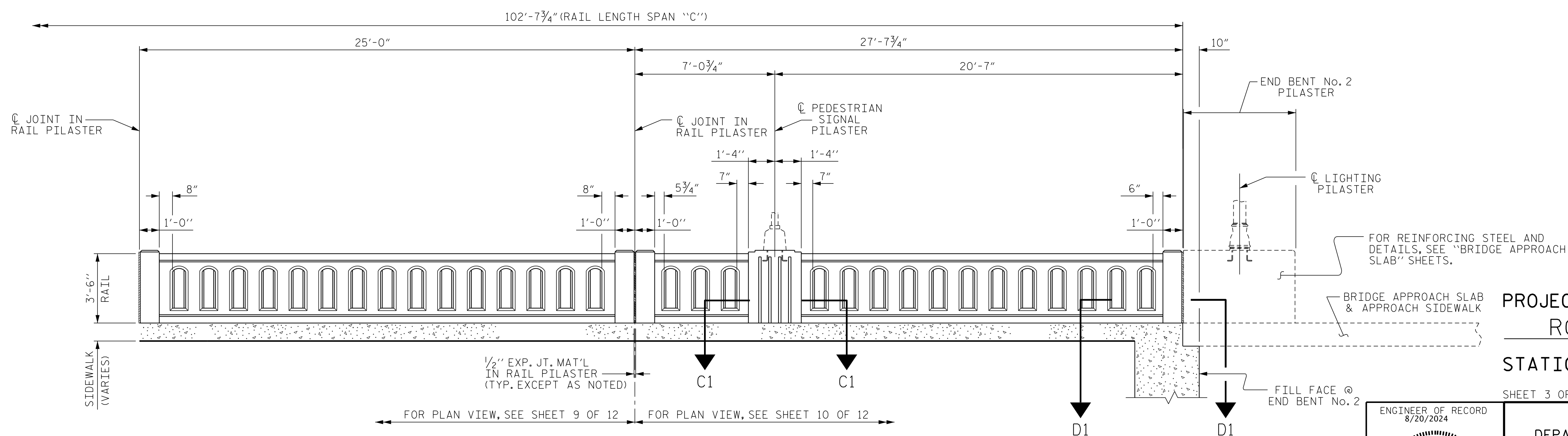
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SHEET 2 OF 12



SUPERSTRUCTURE
CLASSIC CONCRETE
BRIDGE RAIL
ELEVATION - PLAN B

6	REVISIONS						SHEET NO.
	NO.	BY:	DATE:	NO.	BY:	DATE:	S-33
	1			3			TOTAL SHEETS
	2			4			64



(LEFT SIDE RAIL)

(ALL DIMENSIONS ARE MEASURED
ALONG INSIDE FACE OF RAIL)

(FOR SECTIONS, SEE SHEET 5 OF 12)

SHEET 3 OF 12

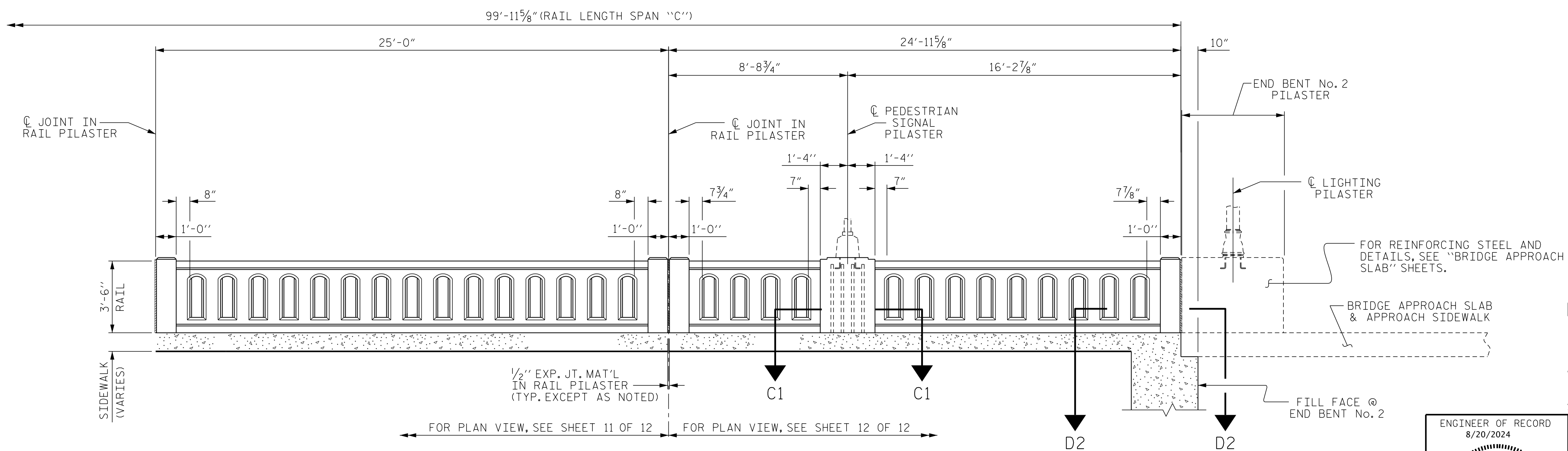


SUPERSTRUCTURE
CLASSIC CONCRETE
BRIDGE RAIL
ELEVATION - PLAN C (LEFT

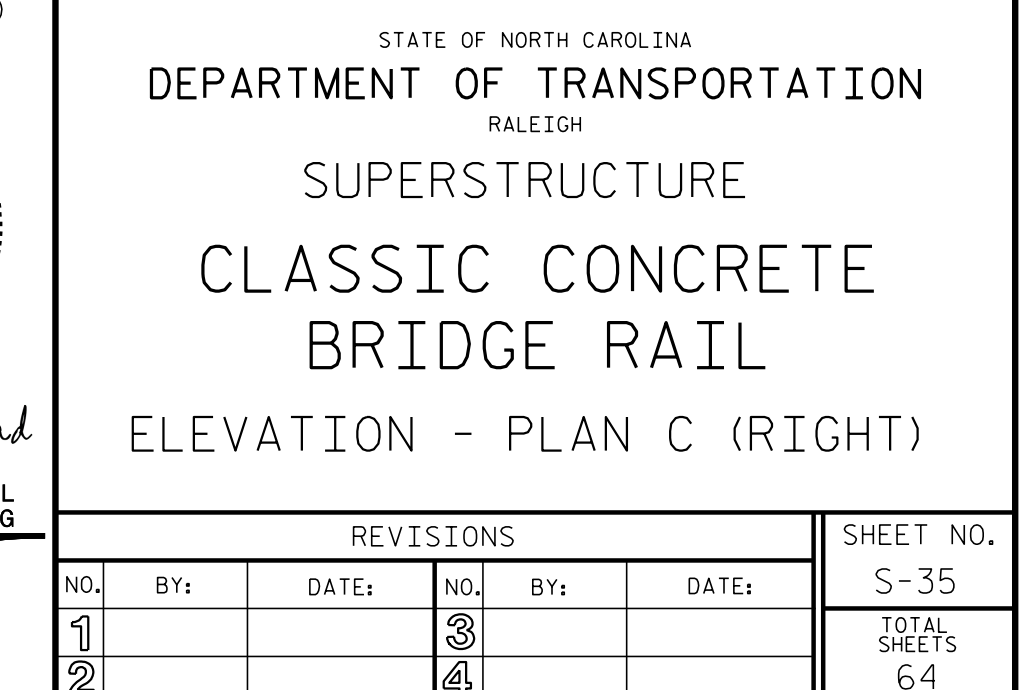
6	REVISIONS						SHEET NO.
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	2			4			64

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SHEET 4 OF 12



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Technical drawing of a bridge deck cross-section. The drawing shows a rectangular deck with a width of 1'-8" and a height of 1'-0". The deck is reinforced with 2-#5 S3 bars at the top and 4-#5 U2 bars at the bottom. The reinforcement is spaced at 8" center-to-center (CTS). The deck is supported by a 4'-0" wide pier. The pier is reinforced with 4-#5 V1 bars at the top and 4-#5 U2 bars at the bottom. The pier is spaced at 8" CTS. The deck is shown with a 2" clearance from the end of the rail. The drawing includes various dimensions and labels for reinforcement bars and spacing.

Dimensions and labels:

- Overall width: 1'-8"
- Overall height: 1'-0"
- Reinforcement: 2-#5 S3 (top), 4-#5 U2 (bottom)
- Spacing: 8" CTS
- Labels: END OF RAIL, 2" CL., ROADWAY FACE, 2-#5 S3 SPA. AS SHOWN

Q LIGHT POLE &
Q PVC CONDUIT
(SEE NOTES)



Q 1/2" EXP. JT. MAT'L
IN RAIL PILASTER




 ④ LIGHT/PEDESTRIAN
 SIGNAL POLE &
 ④ PVC CONDUIT
 (SEE NOTES)

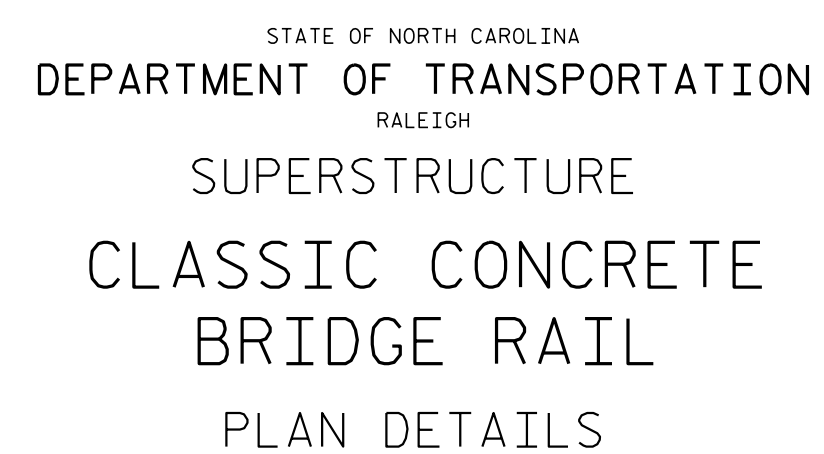


L C 1/2" EXP.
 JT. MAT'L.
 IN RAIL
 PILASTER

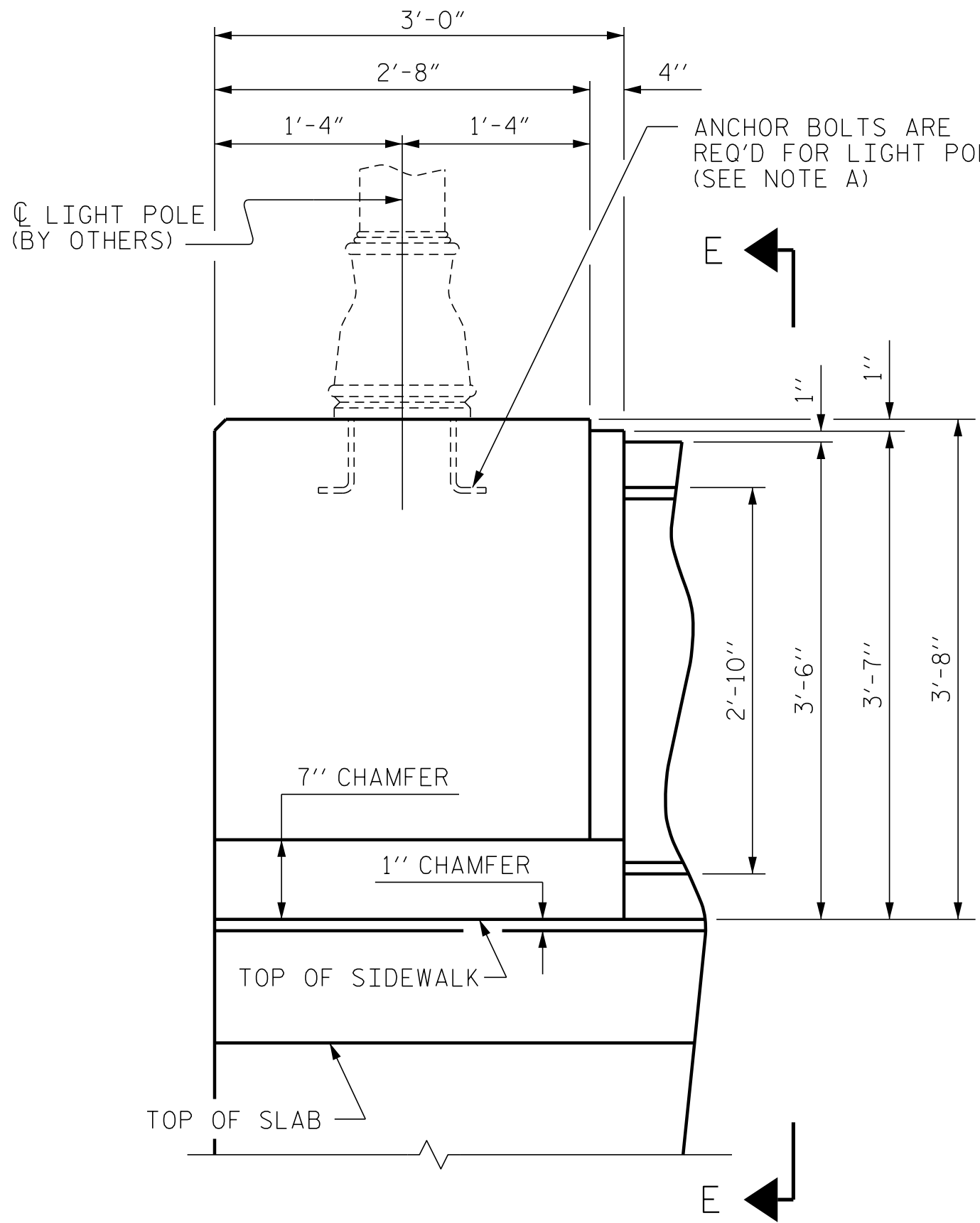
SHEET 5 OF 12

ANCHOR BOLTS FOR PEDESTRIAN SIGNAL POLE ARE
REQUIRED IN PEDESTRIAN SIGNAL POLE PILASTER,
SEE ROADWAY STD. NO. 1743.01

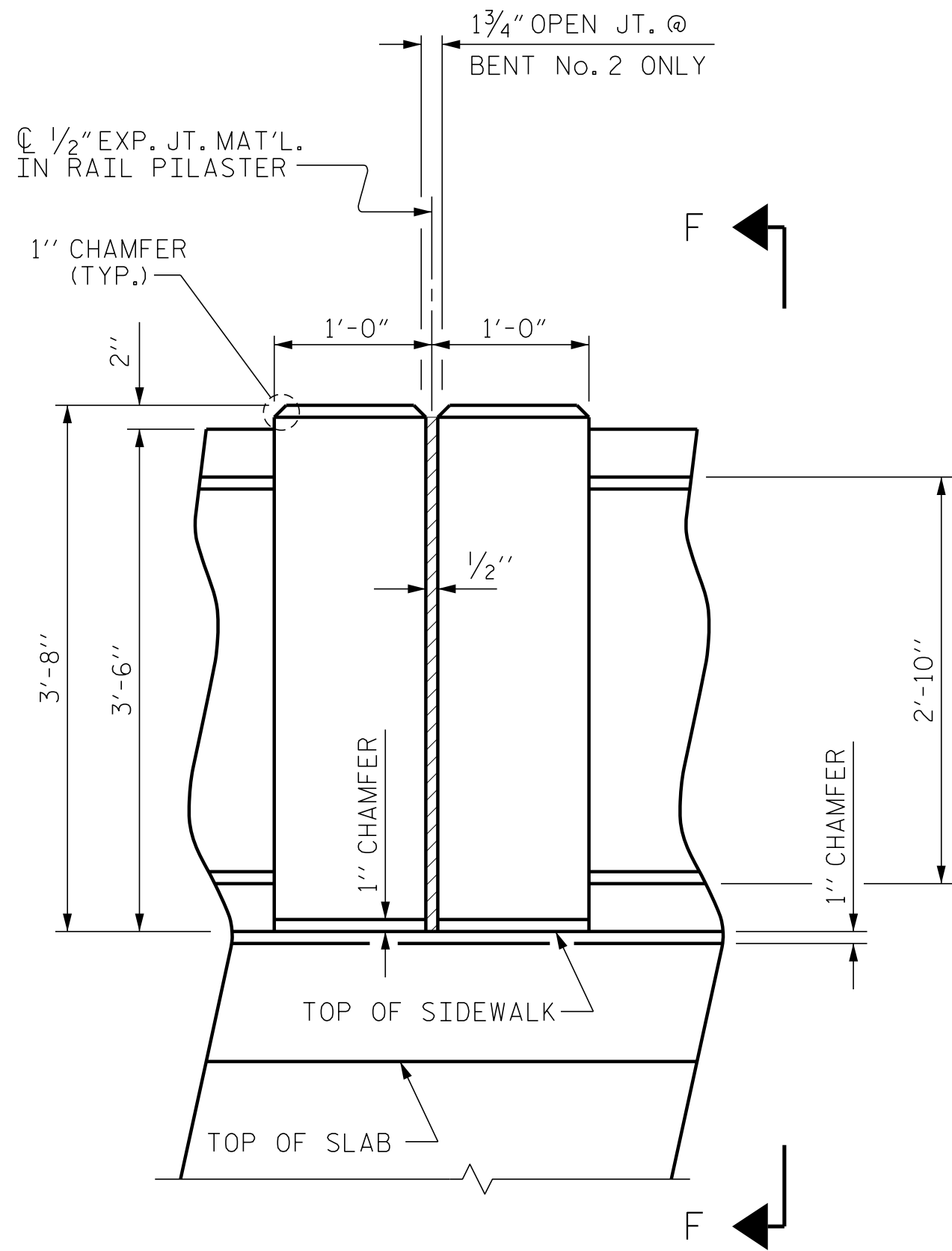
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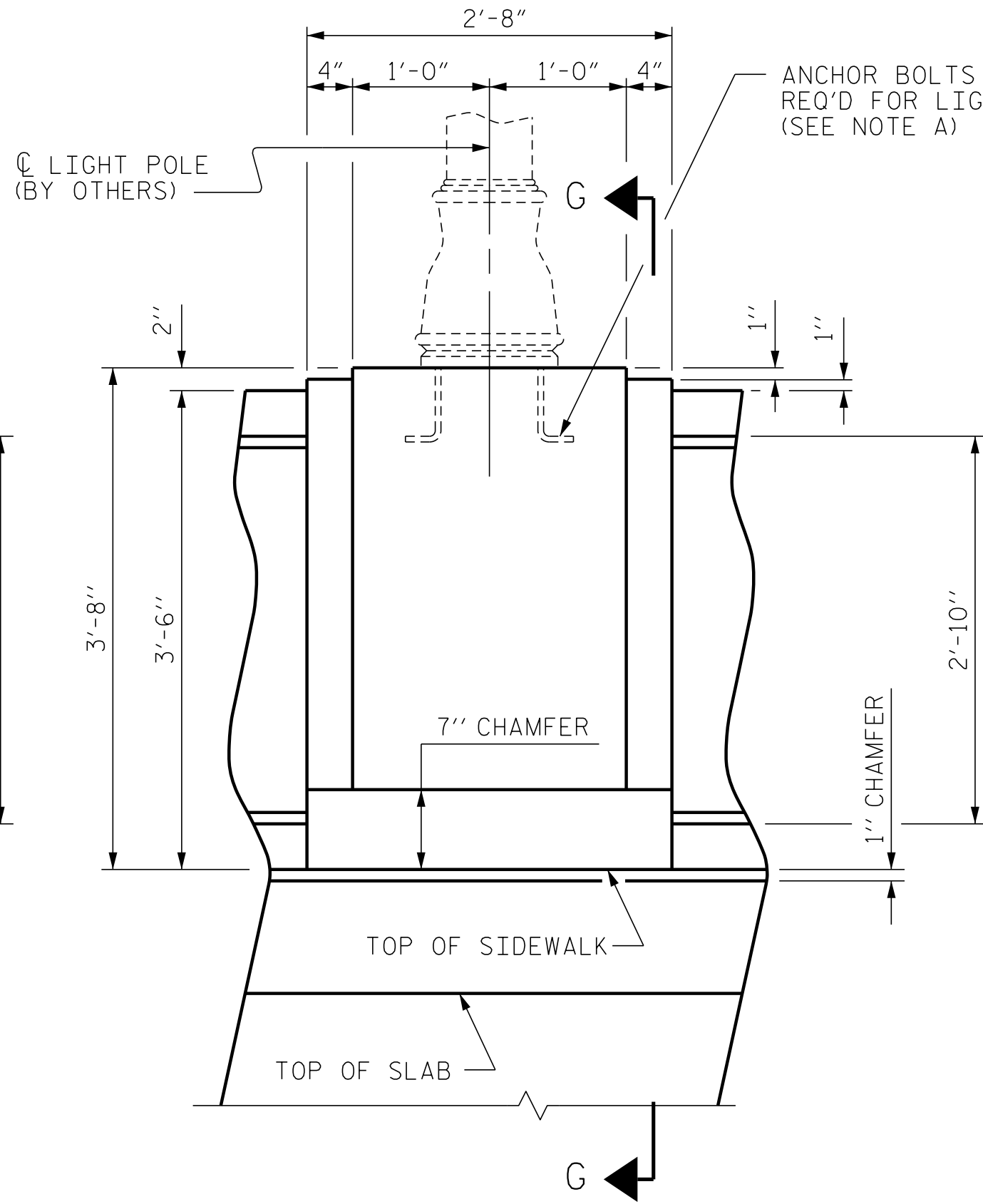
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 64
2			4			



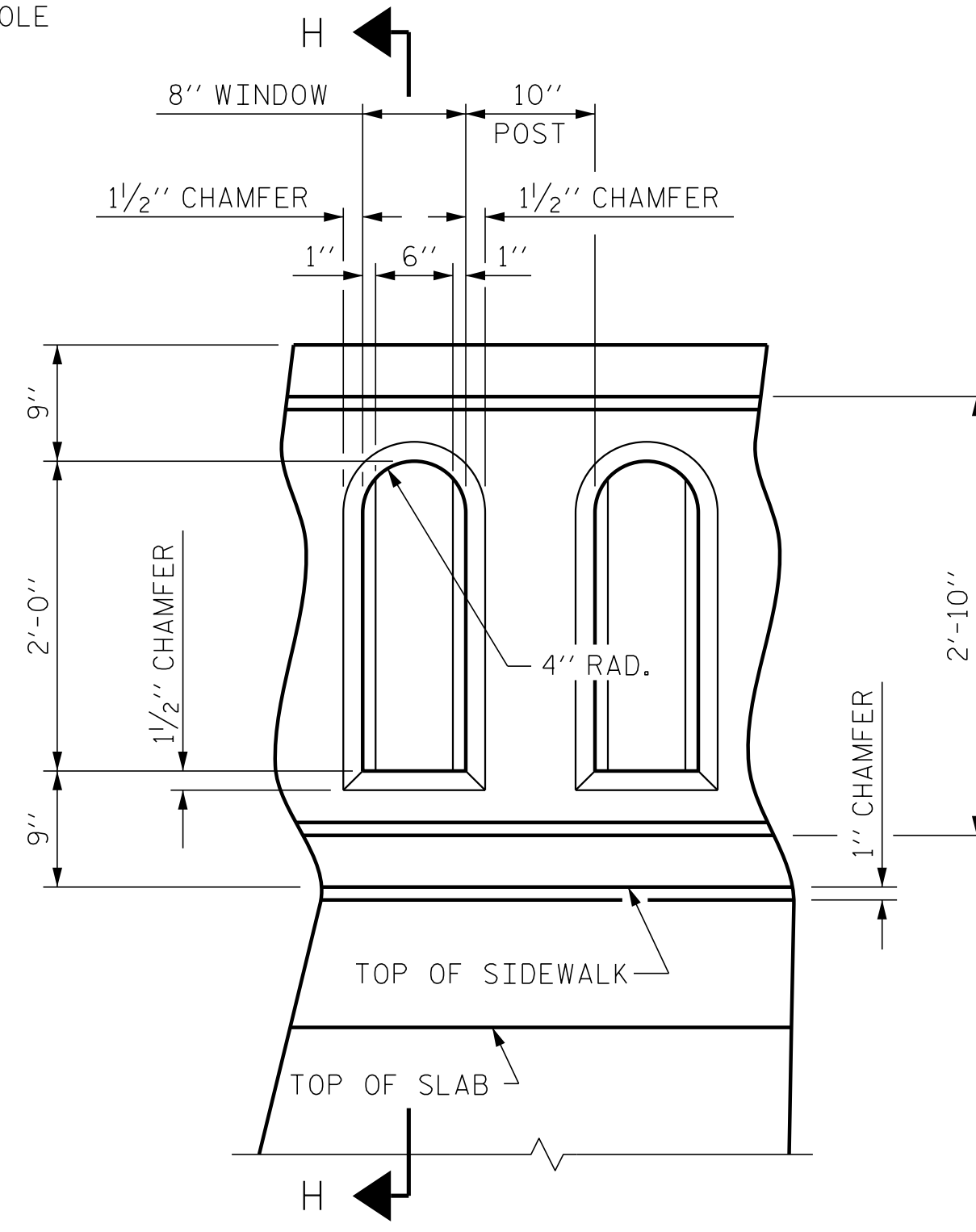
END BENT No.1 PILASTER



RAIL PILASTER

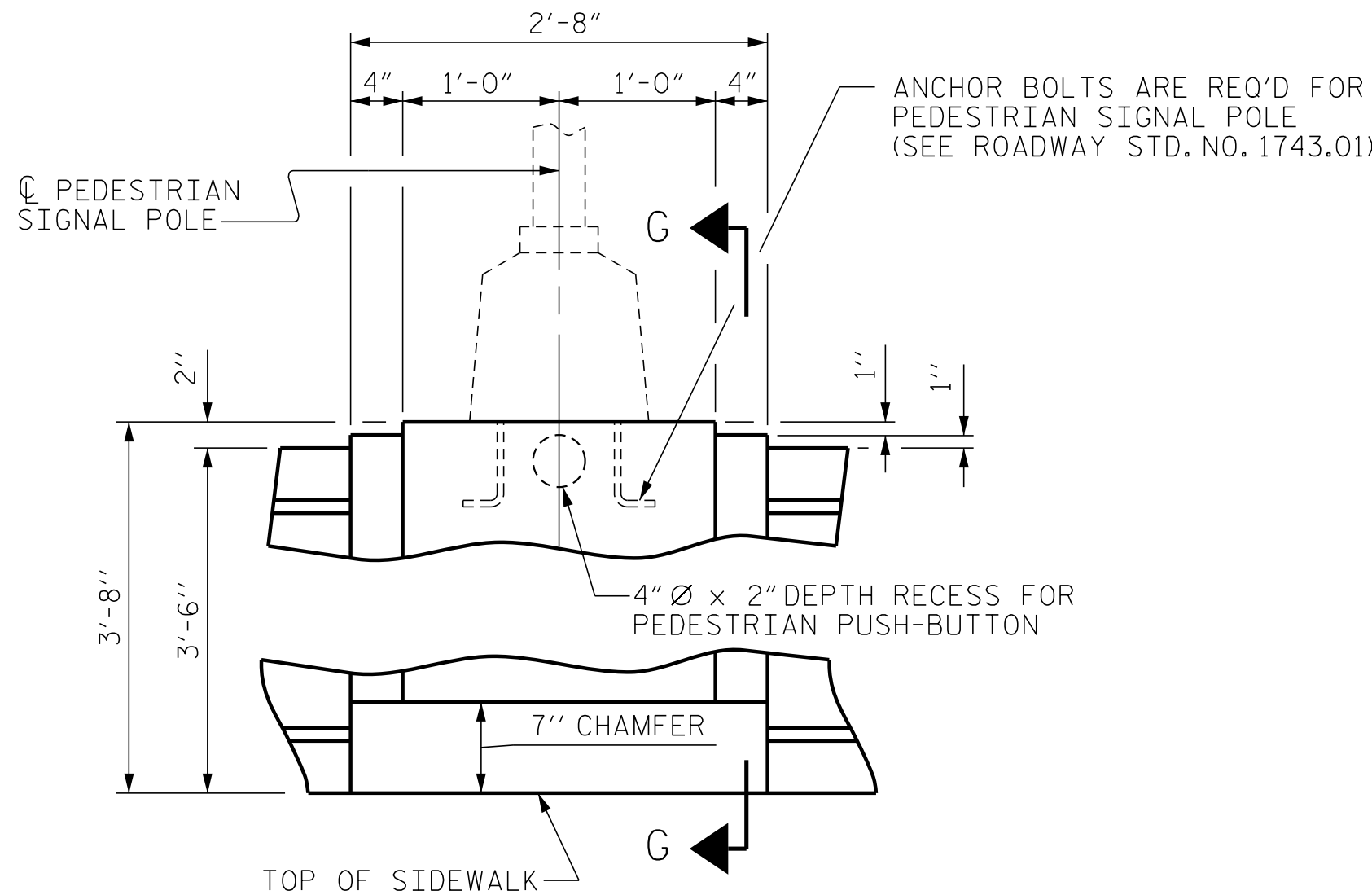


LIGHTING PILASTER



WINDOW DETAIL

WINDOW DETAILS ARE SHOWN ALONG THE INSIDE FACE OF RAIL



PEDESTRIAN SIGNAL POLE PILASTER

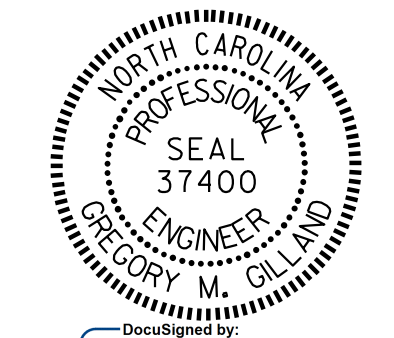
EXTERIOR ELEVATIONS

NOTE: FOR SECTIONS, SEE SHEET 7 OF 12

NOTE A:
COORDINATE WITH CITY OF LUMBERTON FOR INSTALLATION OF ANCHOR BOLTS. ANCHOR BOLT SIZE & LOCATION ARE TO BE AS SPECIFIED BY LIGHT POLE MANUFACTURER.

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

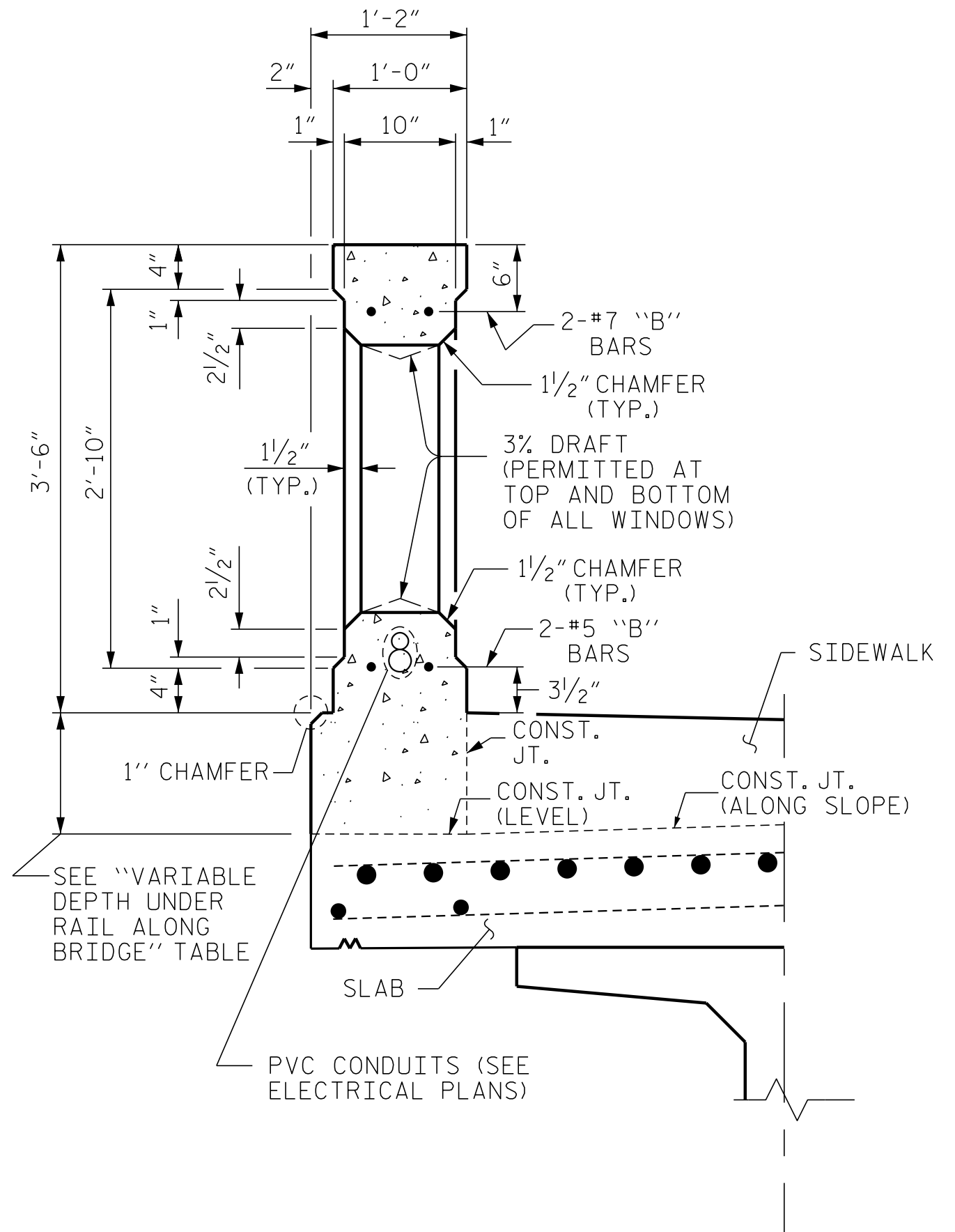
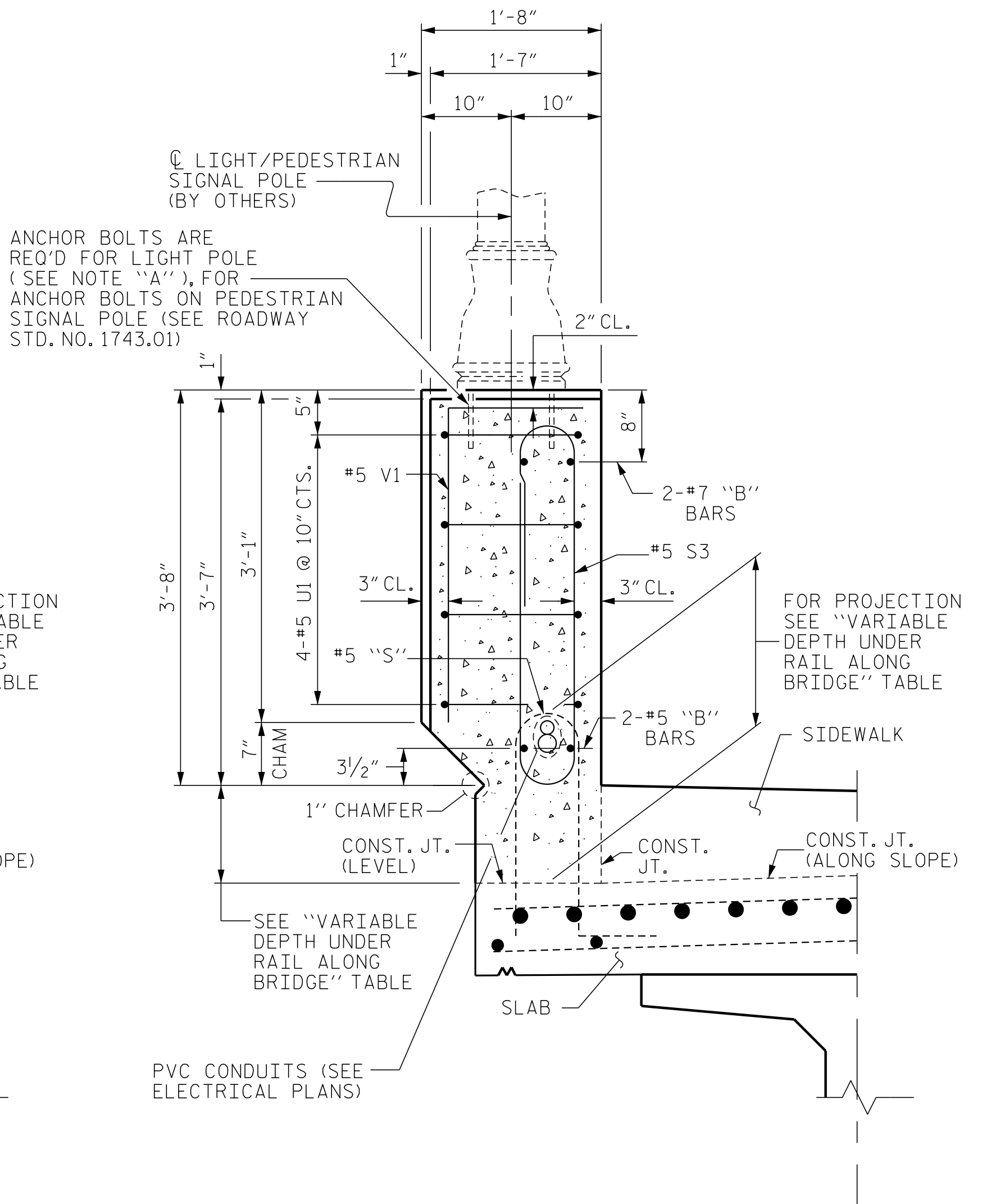
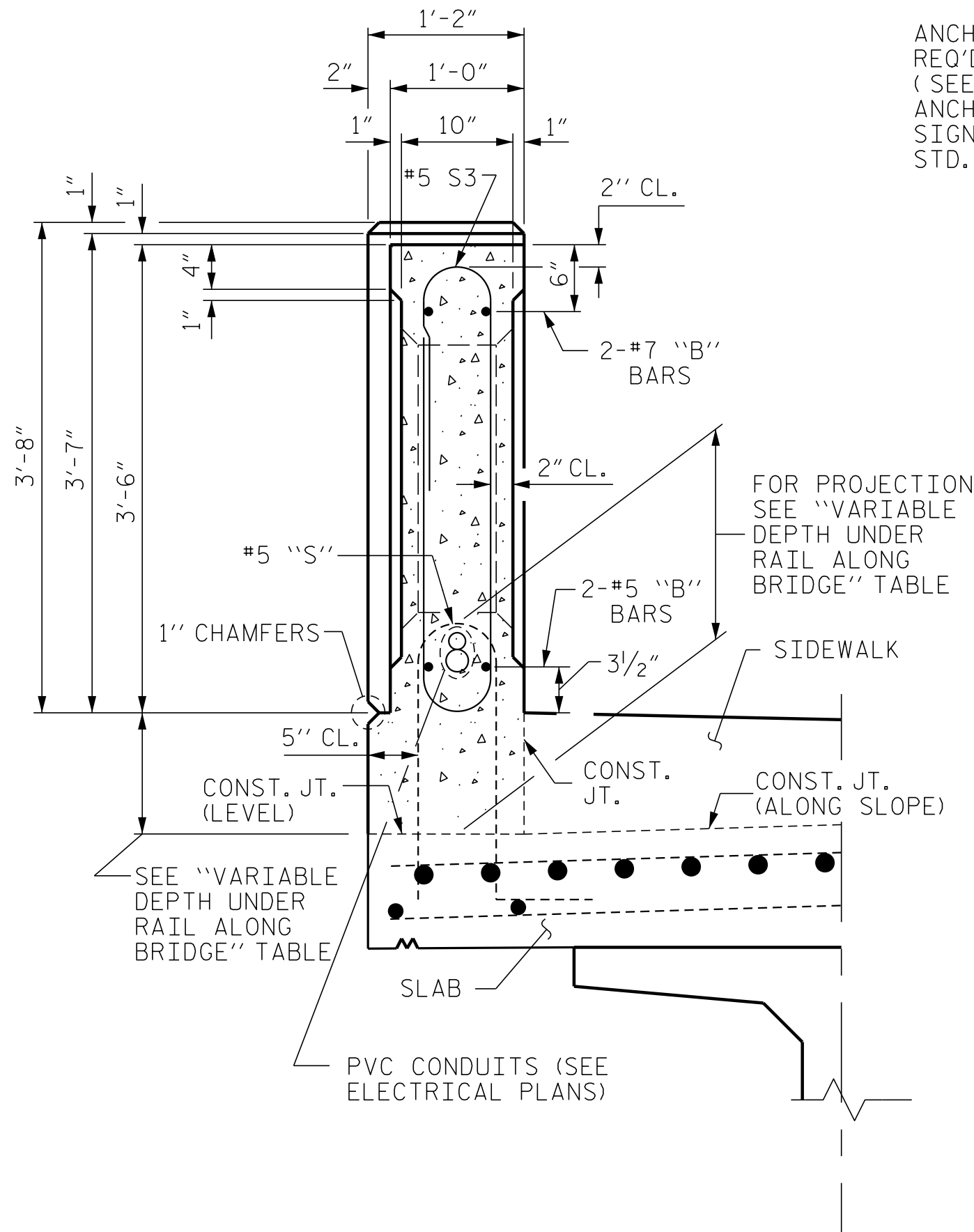
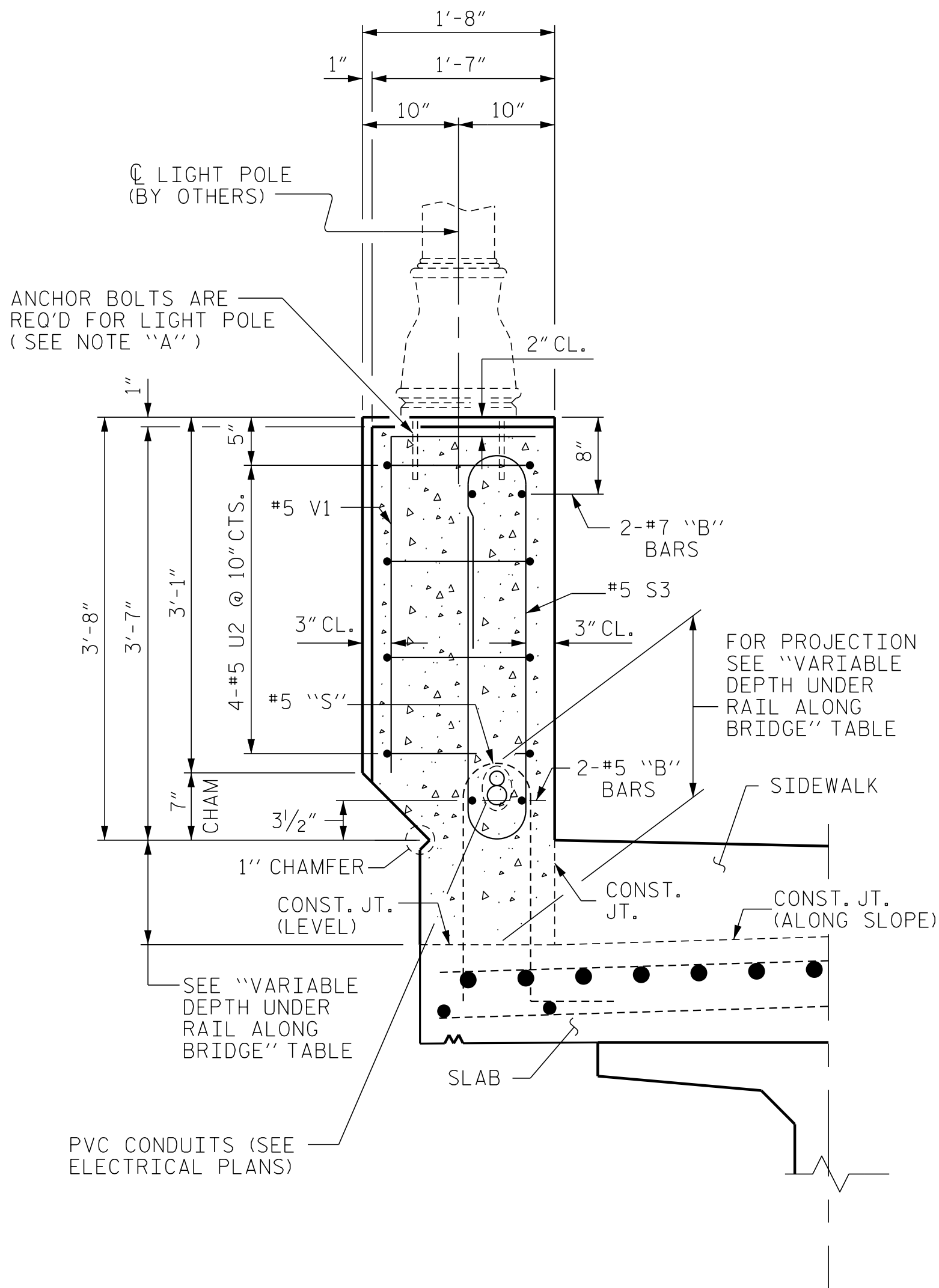
SHEET 6 OF 12

ENGINEER OF RECORD 12/19/2024  Gregory M. Gilland WETHERILL ENGINEERING		STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE CLASSIC CONCRETE BRIDGE RAIL ELEVATION DETAILS				
REVISIONS				SHEET NO.		
NO.	BY:	DATE:	NO.	BY:	DATE:	S-37
1			3			TOTAL SHEETS
2			4			64

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NOTE A:
COORDINATE WITH CITY OF LUMBERTON FOR
INSTALLATION OF ANCHOR BOLTS. ANCHOR BOLT
SIZE & LOCATION ARE TO BE AS SPECIFIED BY
LIGHT POLE MANUFACTURER.



SECTIONS THRU RAIL

(FOR LOCATION OF SECTIONS, SEE SHEET 6 OF 12)

VARIABLE DEPTH UNDER RAIL ALONG BRIDGE							
	REGION BEFORE RAIL CURVATURE				REGION AFTER RAIL CURVATURE		
	STATION RANGES	DEPTH	PROJECTION		STATION RANGES	VARIABLE DEPTH	PROJECTION
LEFT RAIL	STA. 20+66.33 -L- TO STA. 23+08.92 -L-	11 3/4"	1'-6 3/4"		STA. 23+08.92 -L- TO STA. 23+49.67 -L-	VARIES FROM 11 3/4" MIN. TO 1'-5" MAX.	2'-1"
RIGHT RAIL	STA. 20+66.33 -L- TO STA. 23+15.46 -L-	9"	1'-6"		STA. 23+15.46 -L- TO STA. 23+49.67 -L-	VARIES FROM 9" MIN. TO 10" MAX.	1'-6"

NOTE: THESE STATIONS CORRESPOND TO POINTS A, B, C, AND D AS SHOWN ON "PLAN OF SPANS", SHEET 3 OF 4.

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CHECKED BY : G. GILLAND DATE : 8/22

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PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 7 OF 12

ENGINEER OF RECORD
8/20/2024

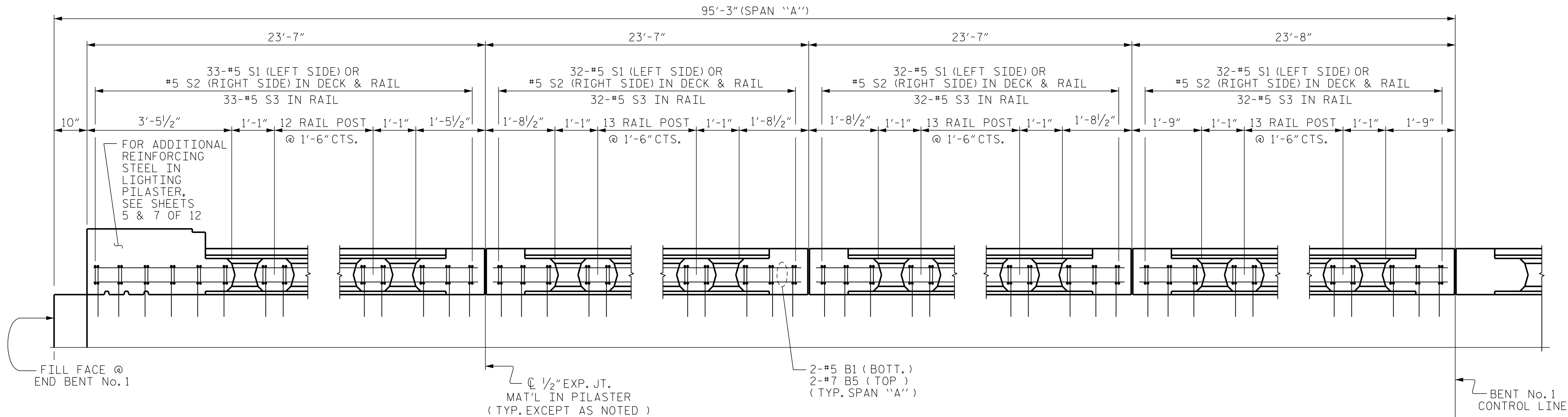
NORTH CAROLINA
PROFESSIONAL
SEAL
37400
C. M. GILLAND
REGISTERED PROFESSIONAL ENGINEER

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LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
CLASSIC CONCRETE
BRIDGE RAIL
SECTION DETAILS

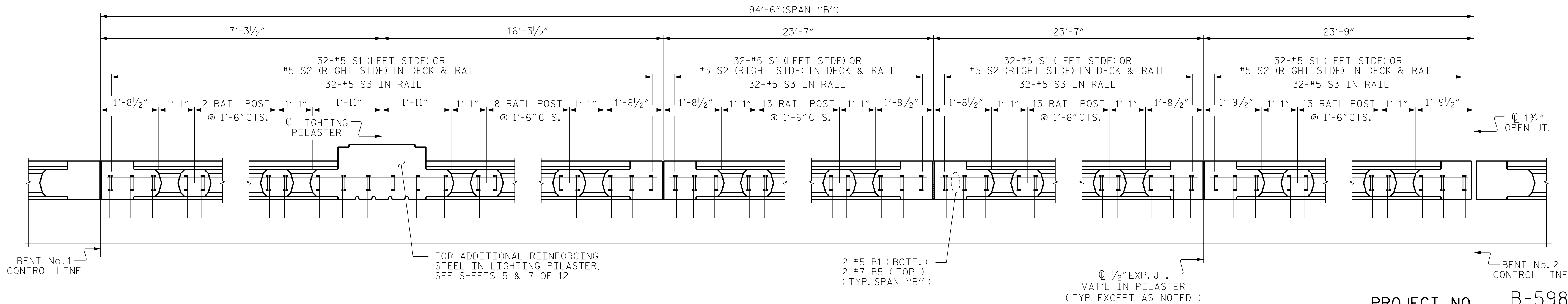
REVISIONS						SHEET NO. S-38
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			64



PLAN OF SPAN ``A``

(FOR EXACT PLACEMENT OF S1 OR S2 BARS IN DECK & RAIL, SEE SHEET 5 OF 12)

(LEFT SIDE SHOWN, RIGHT SIDE SIMILAR EXCEPT AS NOTED)



PLAN OF SPAN ``B``

(FOR EXACT PLACEMENT OF S1 OR S2 BARS IN DECK & RAIL, SEE SHEET 5 OF 12)

(LEFT SIDE SHOWN, RIGHT SIDE SIMILAR EXCEPT AS NOTED)

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 8 OF 12

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8/20/2024

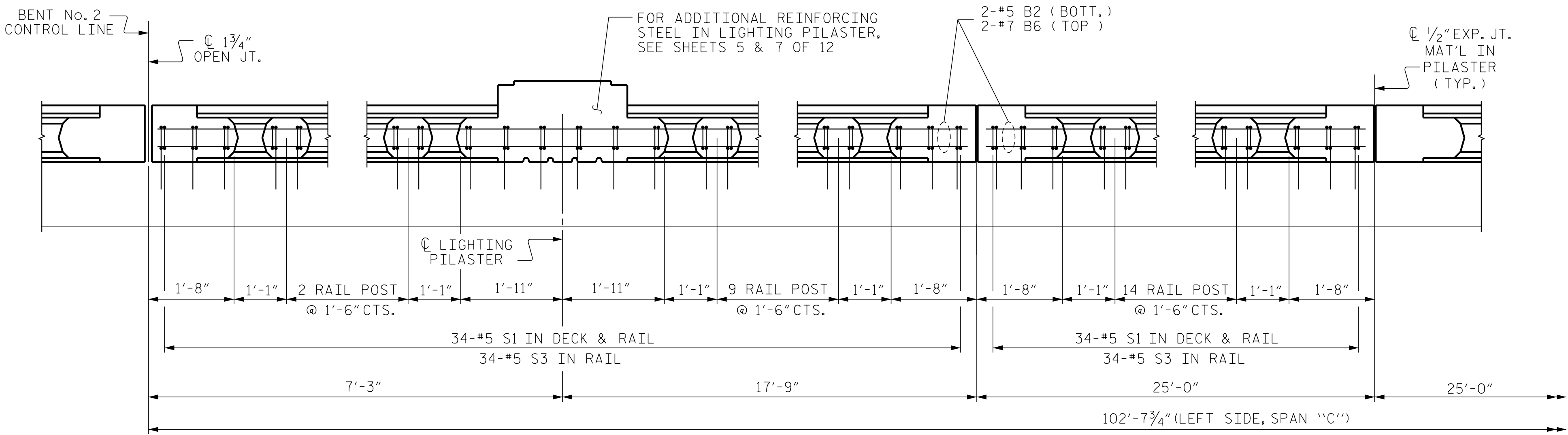
NORTH CAROLINA
PROFESSIONAL
SEAL
37400
ENGINEER
GREGORY M. GILLAND

Designed by:
Gregory M. Gilland
ARCHITECT
WETHERILL
ENGINEERING

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DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
CLASSIC CONCRETE
BRIDGE RAIL
PLAN DETAILS - PLAN A & B

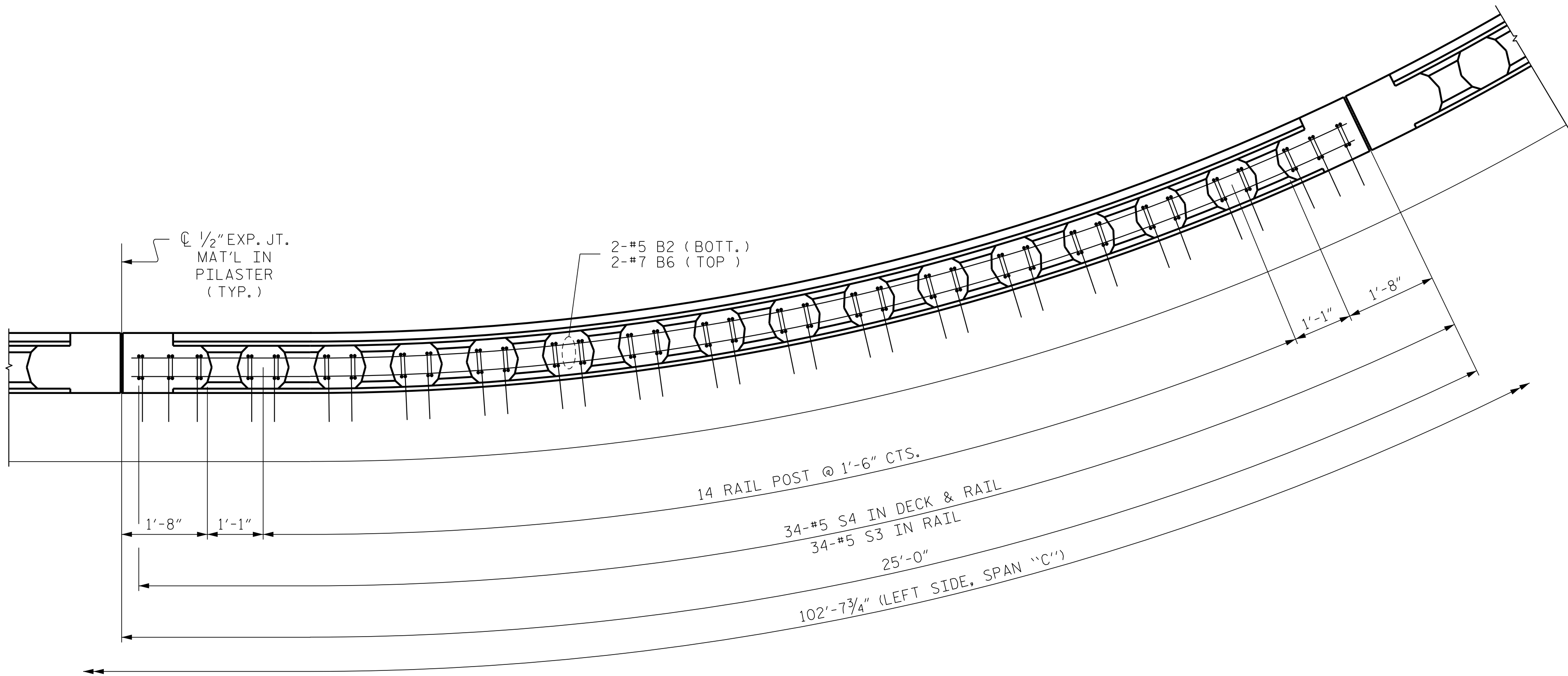
REVISIONS					SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-39
1			3			TOTAL SHEETS
2			4			64



PARTIAL PLAN OF SPAN "C"

(FOR EXACT PLACEMENT OF S1 BARS IN DECK & RAIL, SEE SHEET 5 OF 12)

(LEFT SIDE SHOWN)



PARTIAL PLAN OF SPAN "C"

(FOR EXACT PLACEMENT OF S1, S4, OR BARS IN DECK & RAIL, SEE SHEET 5 OF 12)

(LEFT SIDE SHOWN)

(ALL DIMENSIONS ARE MEASURED ALONG INSIDE FACE OF RAIL)

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 9 OF 12

ENGINEER OF RECORD
8/20/2024



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Gregory M. Gilland
ASST. V.P. ETHERILL ENGINEERING

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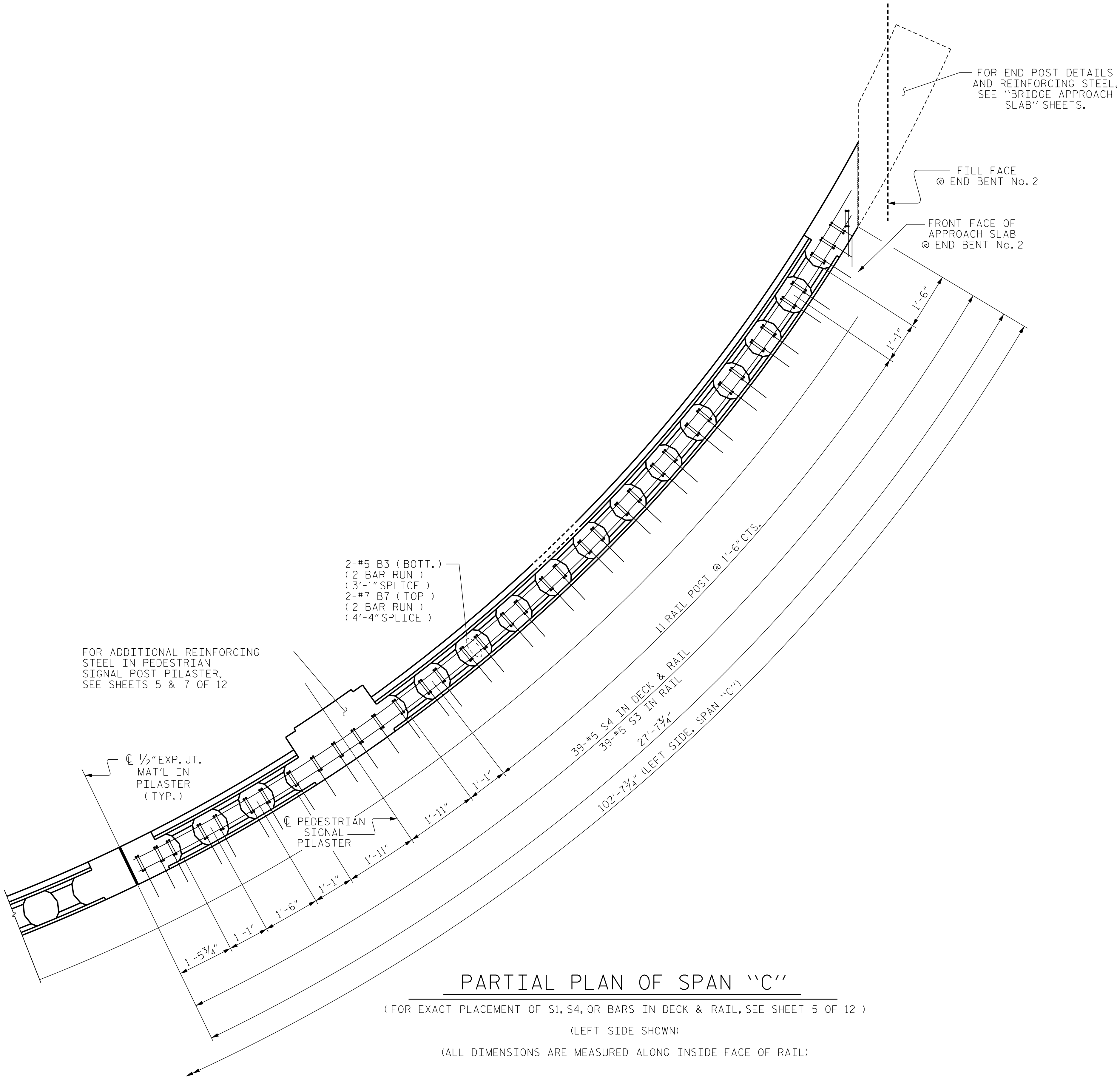
SUPERSTRUCTURE
CLASSIC CONCRETE
BRIDGE RAIL
PLAN DETAILS - PARTIAL PLAN C
(LEFT)

REVISIONS					SHEET NO. S-40
NO.	BY:	DATE:	NO.	BY:	
1			3		TOTAL SHEETS
2			4		64

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SHEET 10 OF 12

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8/20/2024

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37400
ENGINEER
GREGORY M. GILLAND

Designed by:
Gregory M. Gilland

Approved:
WETHERILL
ENGINEERING

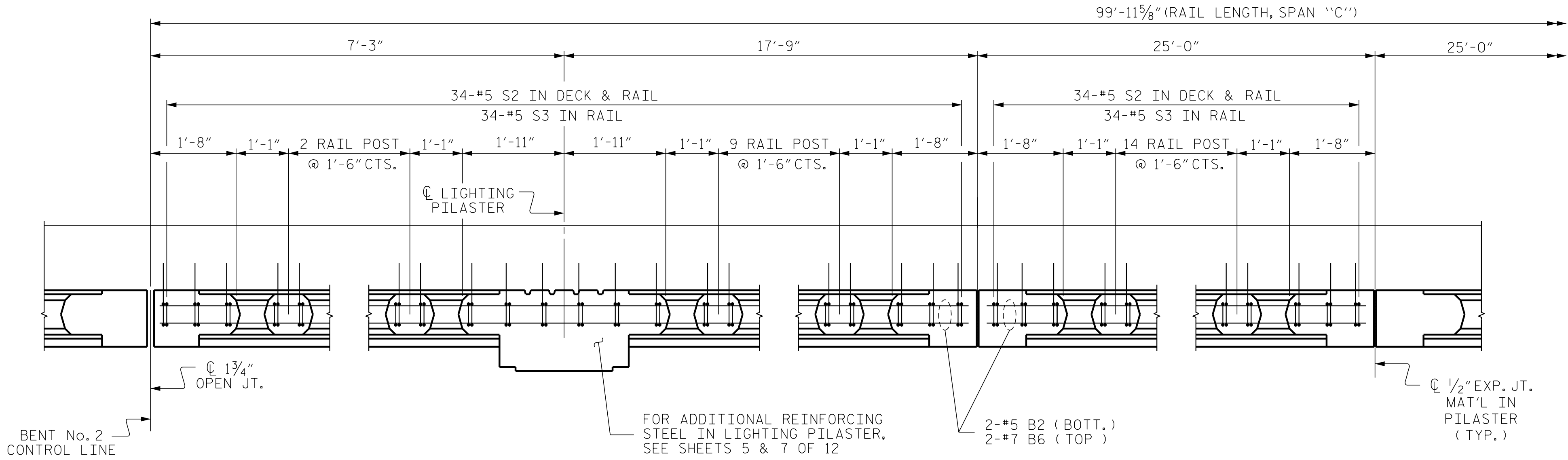
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DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
CLASSIC CONCRETE
BRIDGE RAIL
PLAN DETAILS - PARTIAL PLAN C
(LEFT)

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

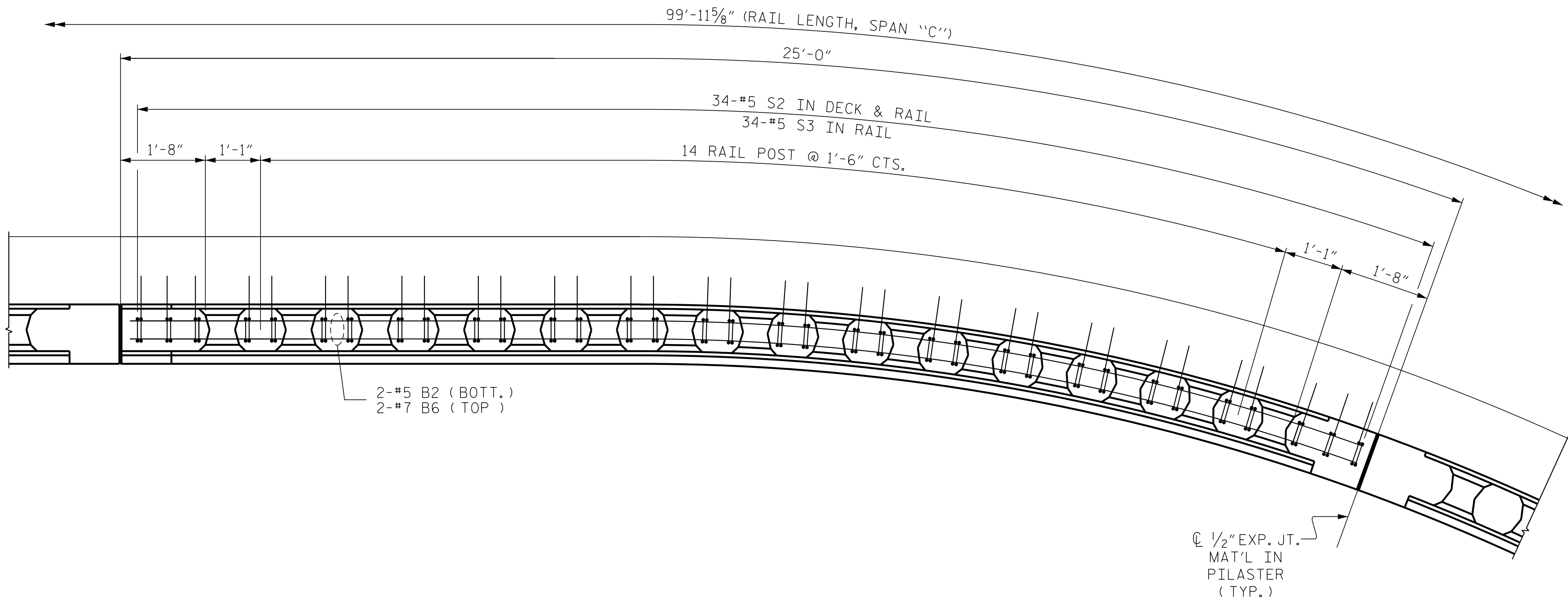
SHEET NO. S-41
TOTAL SHEETS 64



PARTIAL PLAN OF SPAN ``C``

(FOR EXACT PLACEMENT OF S2 BARS IN DECK & RAIL, SEE SHEET 5 OF 12)

(RIGHT SIDE SHOWN)



PARTIAL PLAN OF SPAN ``C``

(FOR EXACT PLACEMENT OF S2 BARS IN DECK & RAIL, SEE SHEET 5 OF 12)

(RIGHT SIDE SHOWN)

(ALL DIMENSIONS ARE MEASURED ALONG INSIDE FACE OF RAIL)

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 11 OF 12

ENGINEER OF RECORD
8/20/2024



Designd by:
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WETHERILL
ENGINEERING

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Fax: 919 851 8107
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
CLASSIC CONCRETE
BRIDGE RAIL
PLAN DETAILS - PARTIAL PLAN C
(RIGHT)

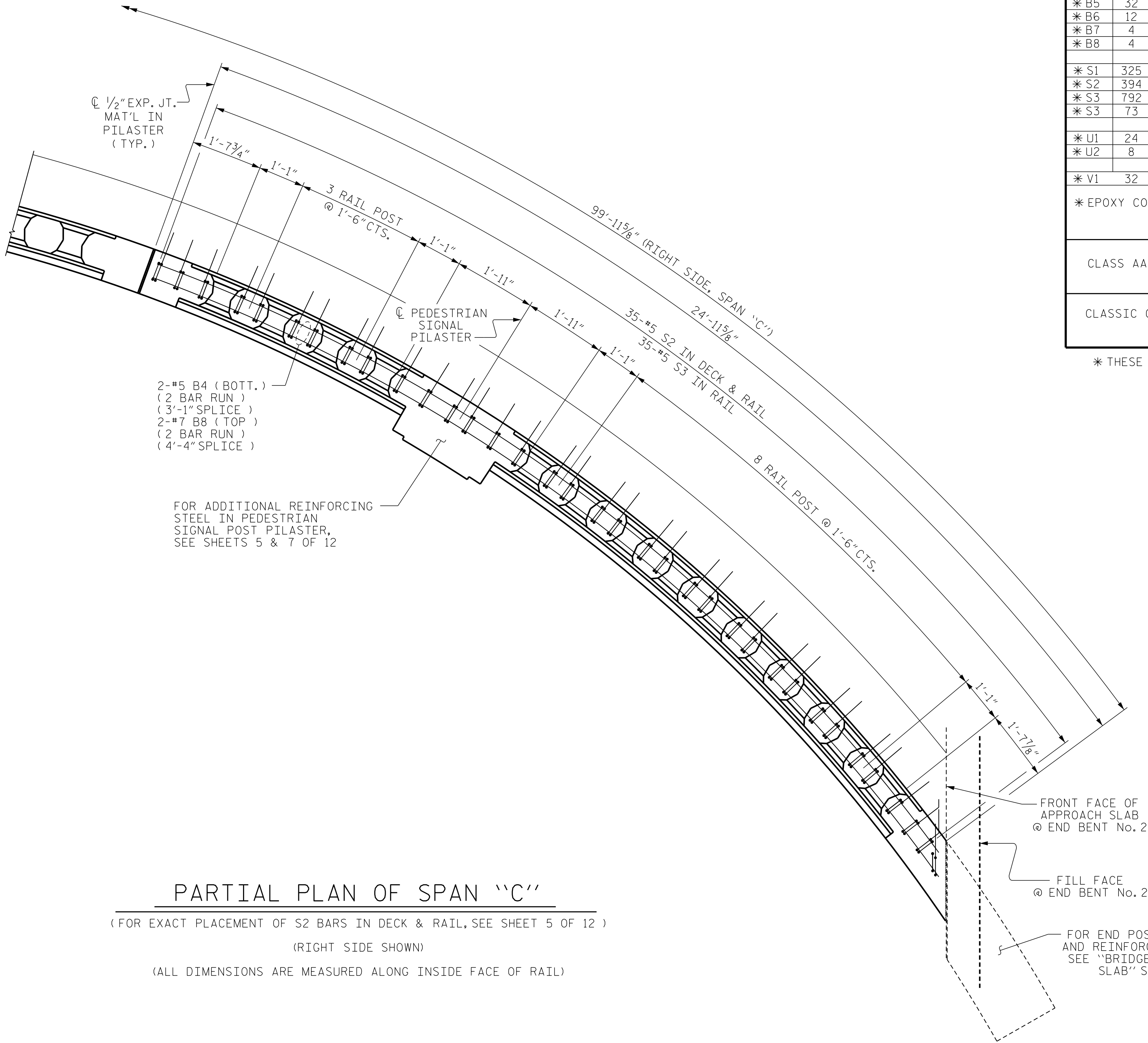
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NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
				S-42	TOTAL SHEETS 64

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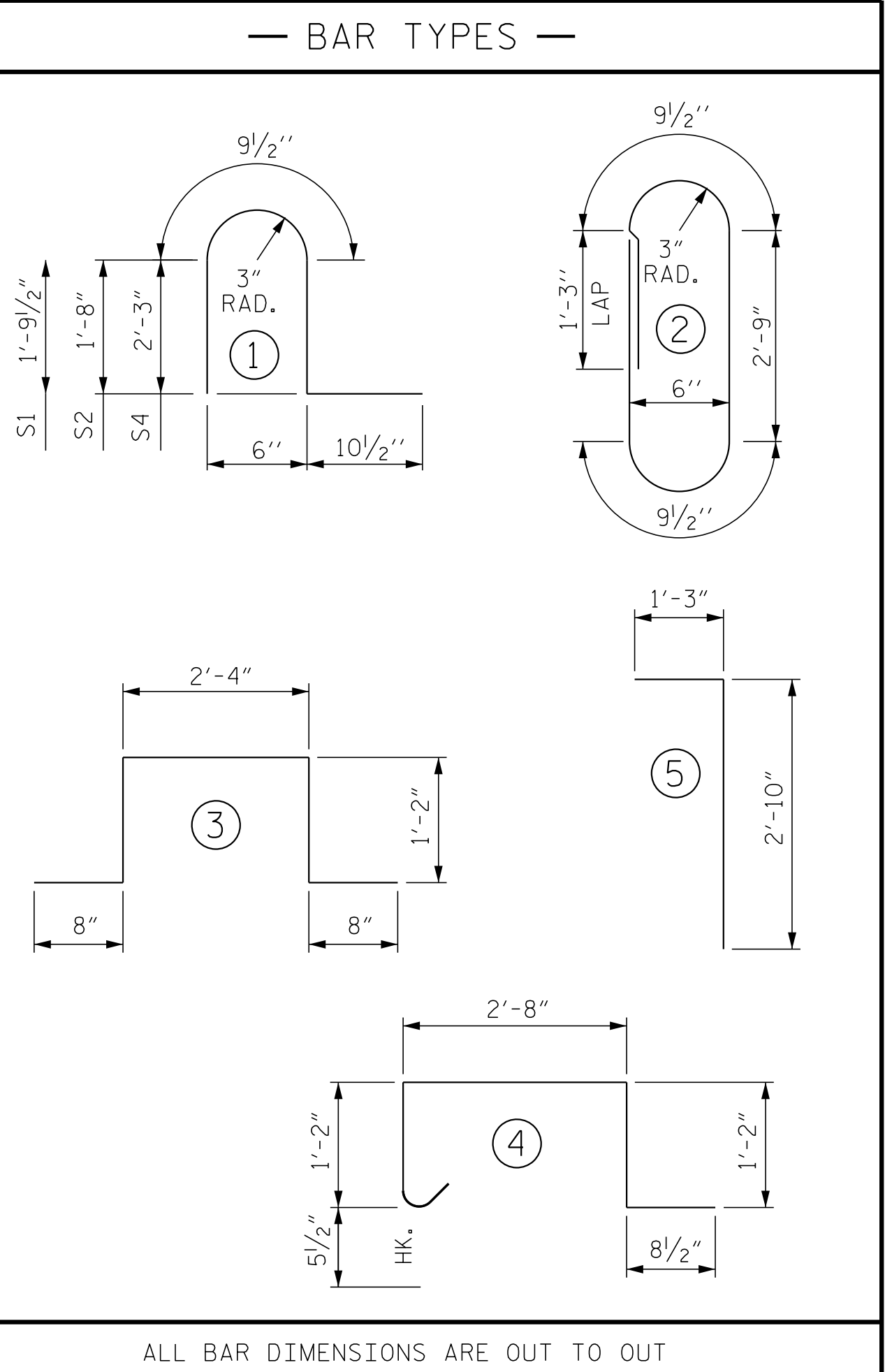
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PARTIAL PLAN OF SPAN "C"
(FOR EXACT PLACEMENT OF S2 BARS IN DECK & RAIL, SEE SHEET 5 OF 12)
(RIGHT SIDE SHOWN)
(ALL DIMENSIONS ARE MEASURED ALONG INSIDE FACE OF RAIL)

BILL OF MATERIAL					
FOR CLASSIC CONCRETE BRIDGE RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	32	#5	STR	23'-2"	773
*B2	12	#5	STR	24'-7"	308
*B3	4	#5	STR	15'-6"	65
*B4	4	#5	STR	14'-1"	59
*B5	32	#7	STR	23'-2"	1,515
*B6	12	#7	STR	24'-7"	603
*B7	4	#7	STR	16'-1"	131
*B8	4	#7	STR	14'-8"	120
*S1	325	#5	1	5'-3"	1,780
*S2	394	#5	1	5'-0"	2,255
*S3	792	#5	2	8'-4"	6,884
*S3	73	#5	2	6'-2"	470
*U1	24	#5	3	6'-0"	150
*U2	8	#5	4	6'-2"	51
*V1	32	#5	5	4'-1"	136
*EPOXY COATED REINFORCING STEEL				15,100 LBS.	
CLASS AA CONCRETE				76.5 CU. YDS.	
CLASSIC CONCRETE BRIDGE RAIL				580.45 LIN. FT.	
* THESE BARS ARE EPOXY COATED					



NOTES:
FOR EACH STAGE, CLASSIC CONCRETE BRIDGDE RAIL IN A CONTINUOUS UNIT 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 CLASSIC CONCRETE BRIDGE RAIL SHALL BE EPOXY COATED.
SIDEWALK QUANTITIES ARE SHOWN ON THE "SIDEWALK DETAIL" SHEET.

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-
SHEET 12 OF 12

ENGINEER OF RECORD
8/20/2024

NORTH CAROLINA PROFESSIONAL SEAL 37400
ENGINEER
GREGORY M. GILLAND

Disciplined By:
Gregory M. Gilland
ADVERSELY AFFECTED
WETHERILL ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

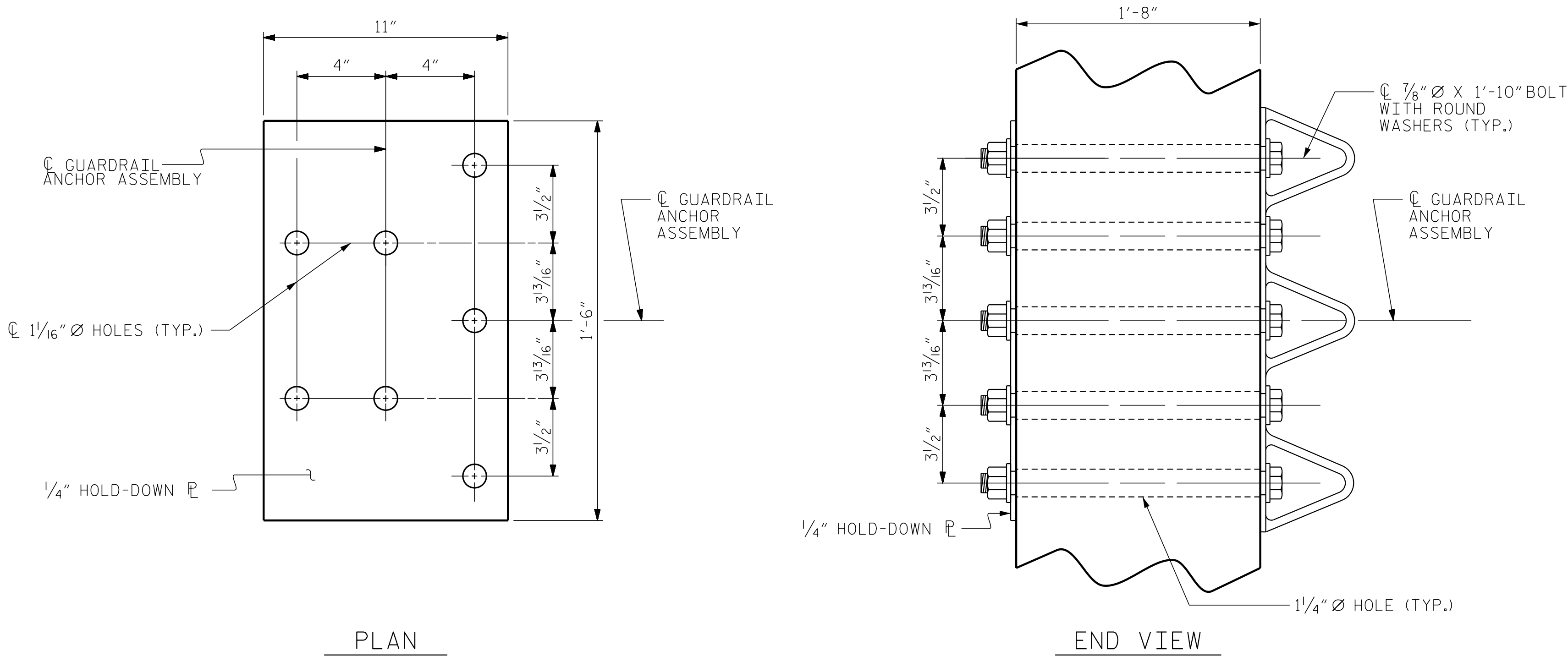
SUPERSTRUCTURE
CLASSIC CONCRETE
BRIDGE RAIL
PLAN DETAILS - PARTIAL PLAN C (RIGHT)

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

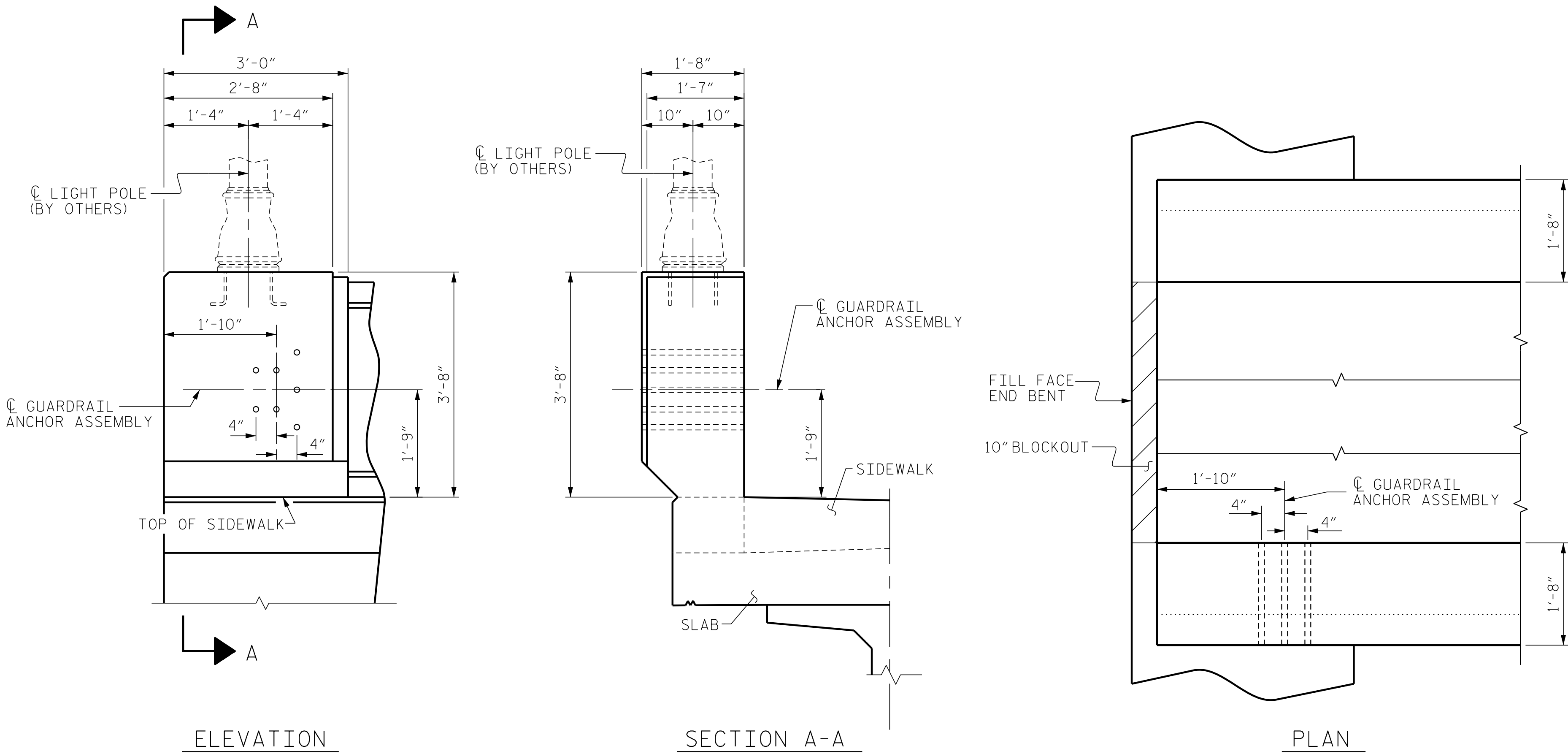
TOTAL SHEETS 64

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GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SHOWN ON THE APPROACH SLAB.

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.)

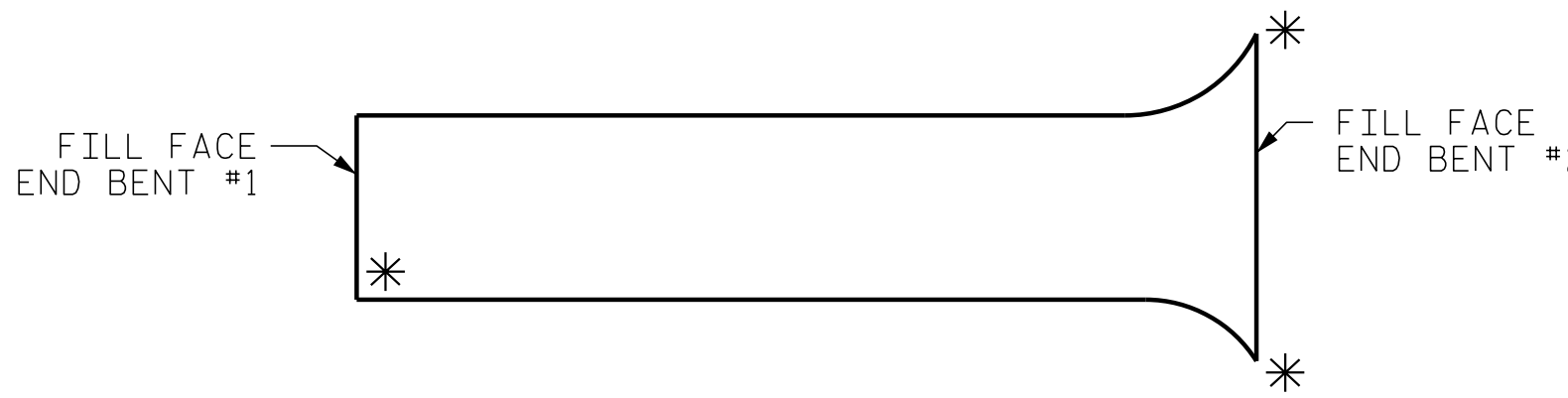
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF CLASSIC CONCRETE BRIDGE RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

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



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

DRAWN BY : G. GILLAND DATE : 8-22
CHECKED BY : J. DILWORTH DATE : 8-22

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ENGINEER OF RECORD
8/20/2024

NORTH CAROLINA
PROFESSIONAL
SEAL
37400
CIVIL ENGINEER
GREGORY M. GILLAND

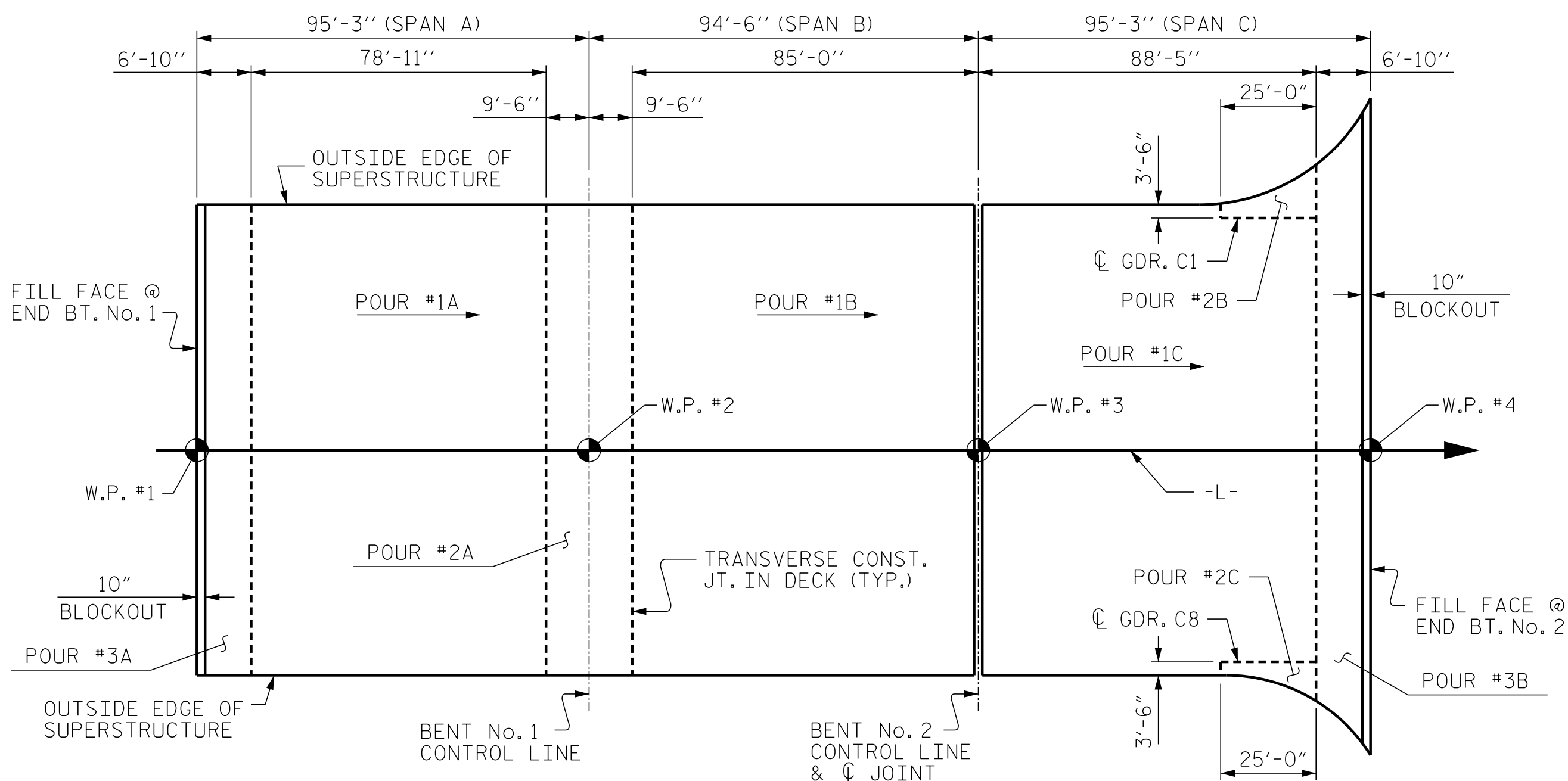
Designed by:
Gregory M. Gilland
AND
WETHERILL ENGINEERING

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Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

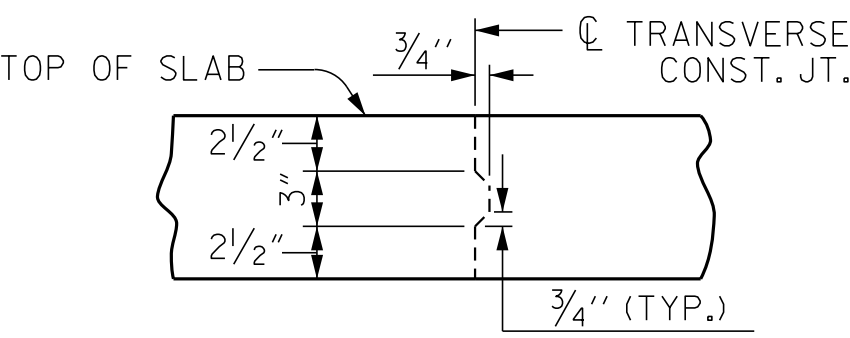
GUARDRAIL ANCHORAGE DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-44
1			3			TOTAL SHEETS
2			4			64

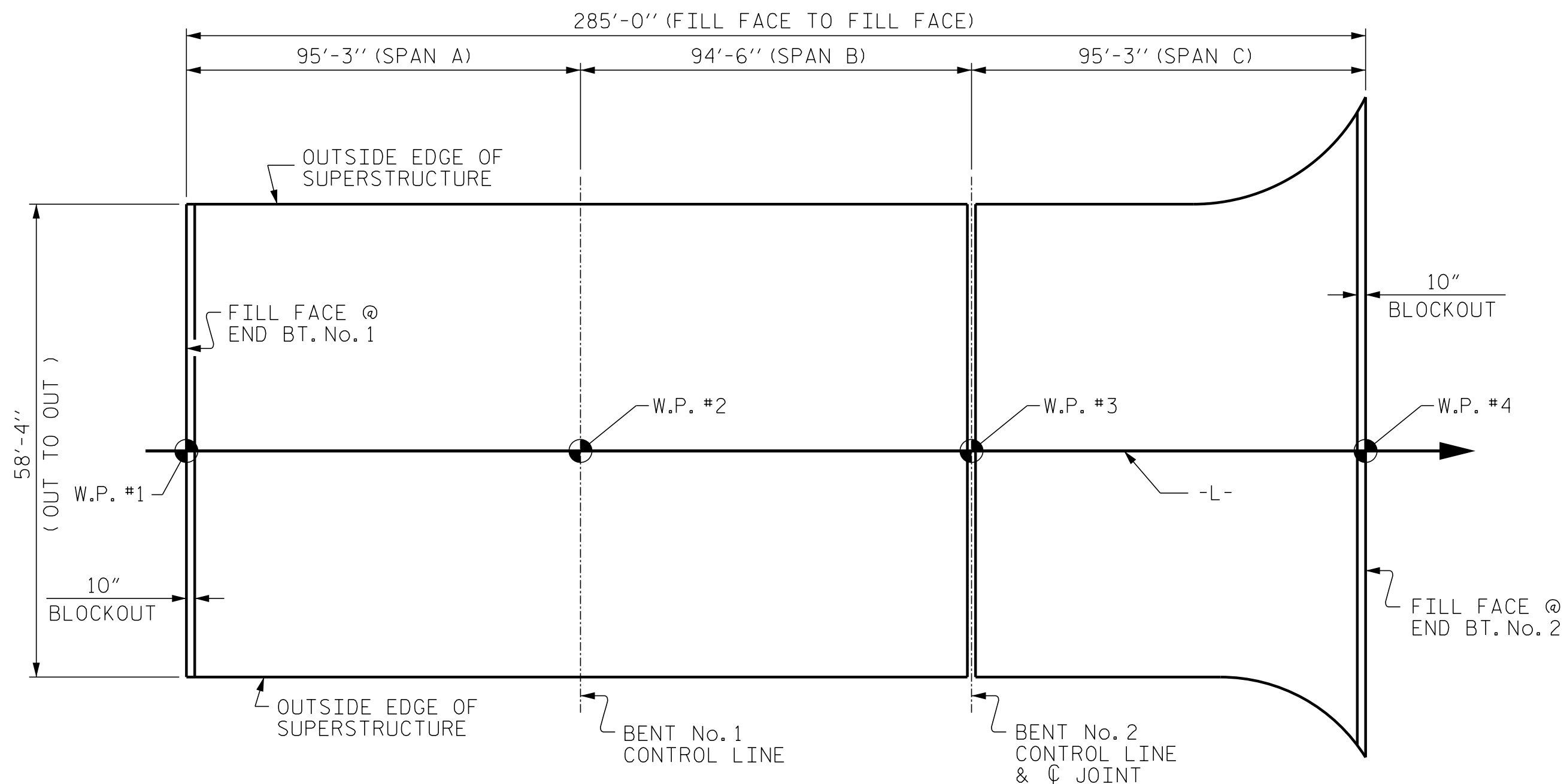


CONCRETE DECK POUR DETAIL
BLOCKOUT FOR ELASTOMERIC CONCRETE AT BENT No. 2 NOT SHOWN FOR CLARITY.

NOTE :
POUR #3B INCLUDES UPPER
PART AND WINGS OF INTEGRAL
END BENT No. 2.



TRANSVERSE CONST. JOINT DETAIL
NOTE: SLAB REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT



LAYOUT FOR COMPUTING AREA
REINFORCED CONCRETE DECK SLAB
(SQ. FT. = 17,131)

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 2 OF 2

ENGINEER OF RECORD
8/20/2024

NORTH CAROLINA
PROFESSIONAL
SEAL
37400

REGISTERED ENGINEER
GREGORY M. GILLAND

Described by:
Gregory M. Gilland

APPRAISED BY
WETHERILL
ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
BILL OF MATERIAL

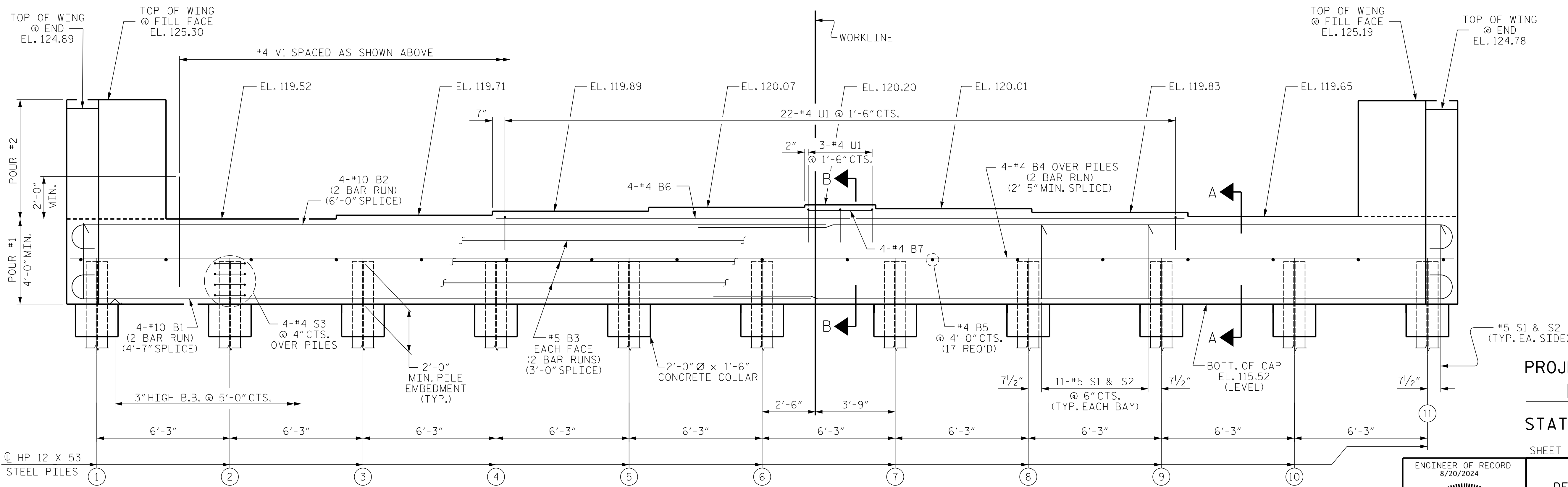
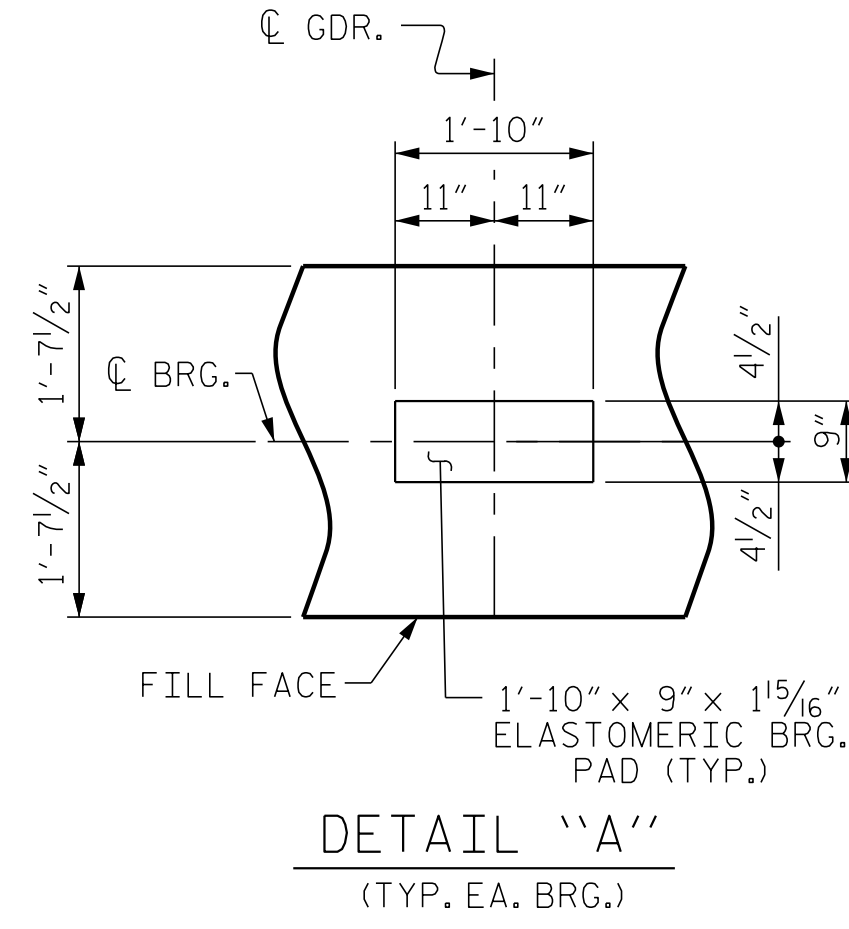
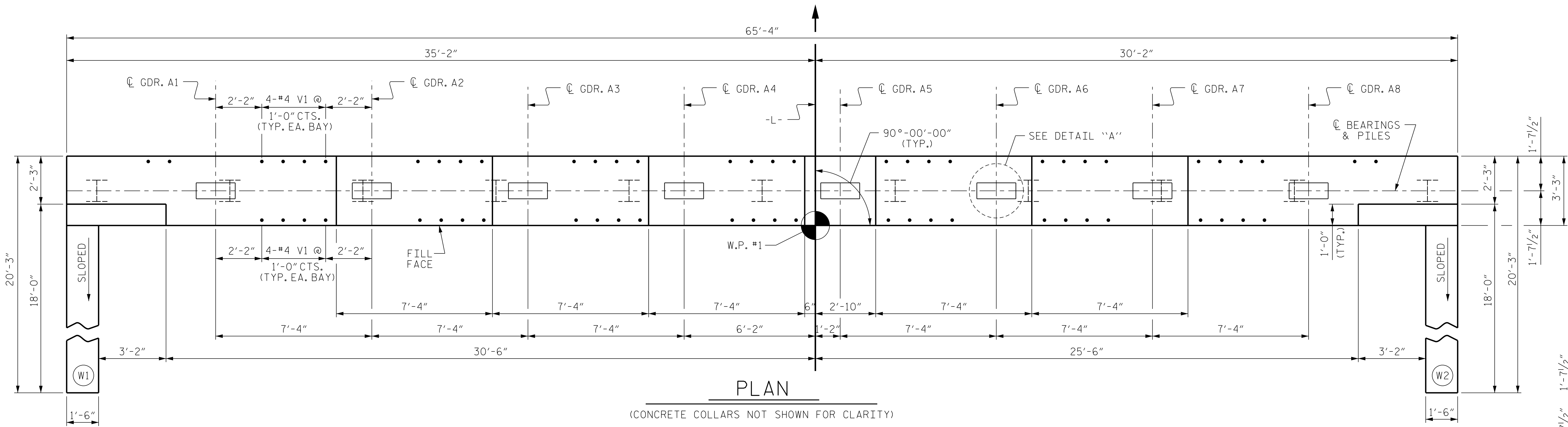
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SHEET NO.
S-46
TOTAL SHEETS
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DRAWN BY : D. HODGE DATE : 3/22
CHECKED BY : G. GILLAND DATE : 7/22

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PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-
SHEET 1 OF 3

ELEVATION
FOR SECTION A-A & SECTION B-B, SEE SHEET 3 OF 3.

DRAWN BY: D. HODGE DATE: 6/22
CHECKED BY: G. GILLAND DATE: 7/22

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ENGINEER OF RECORD
8/20/2024

NORTH CAROLINA
PROFESSIONAL
SEAL
37400
REGISTERED ENGINEER
GREGORY M. GILLAND

Designed by:
Gregory M. Gilland
ETHERILL
ENGINEERING

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 1

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

SHEET NO.
S-47
TOTAL SHEETS
64

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SHEET 2 OF 3



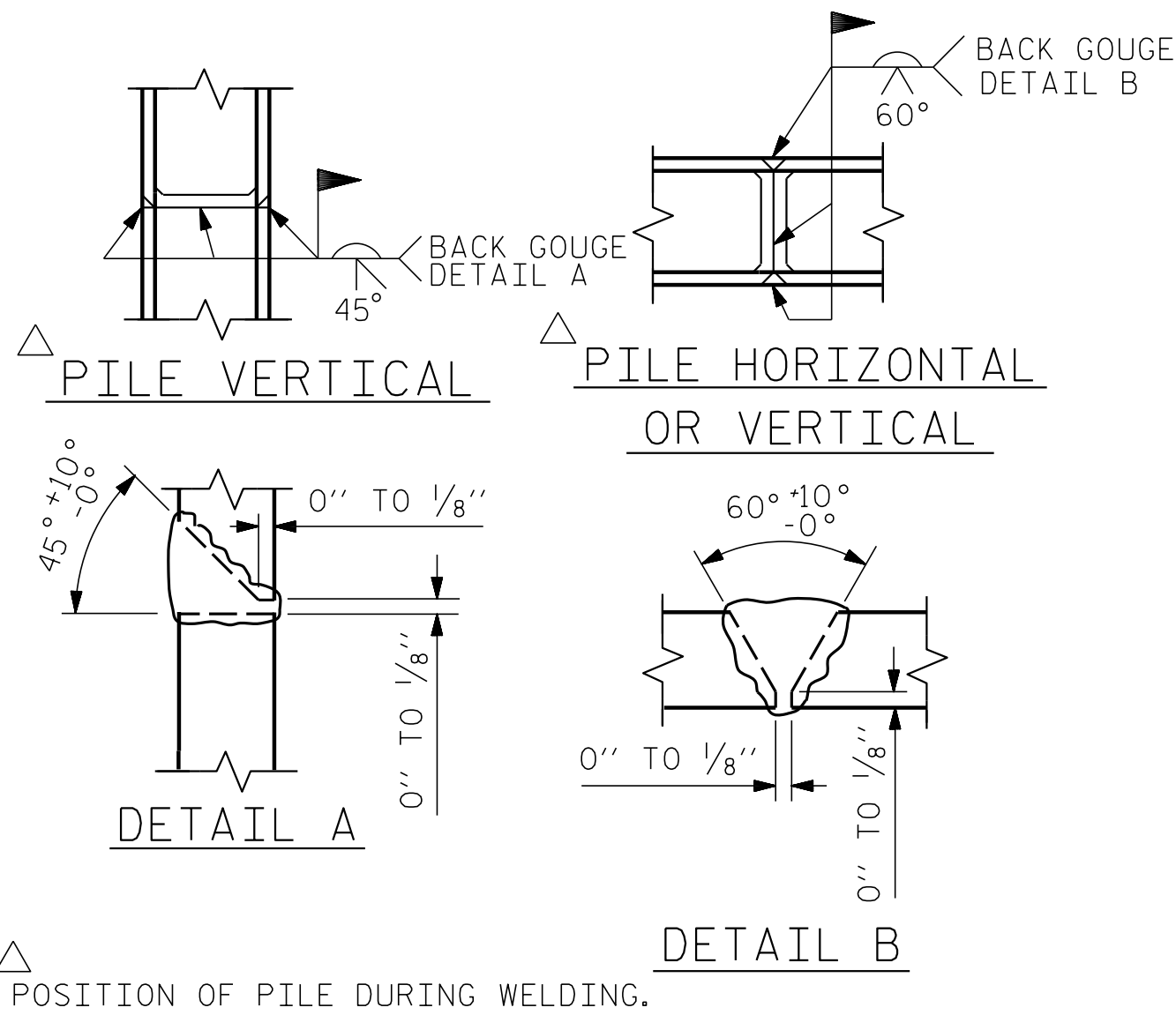
SUBSTRUCTURE
END BENT No. 1

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NO.	BY:	DATE:	NO.	BY:	DATE:	S-48 TOTAL SHEETS 64
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2			4			

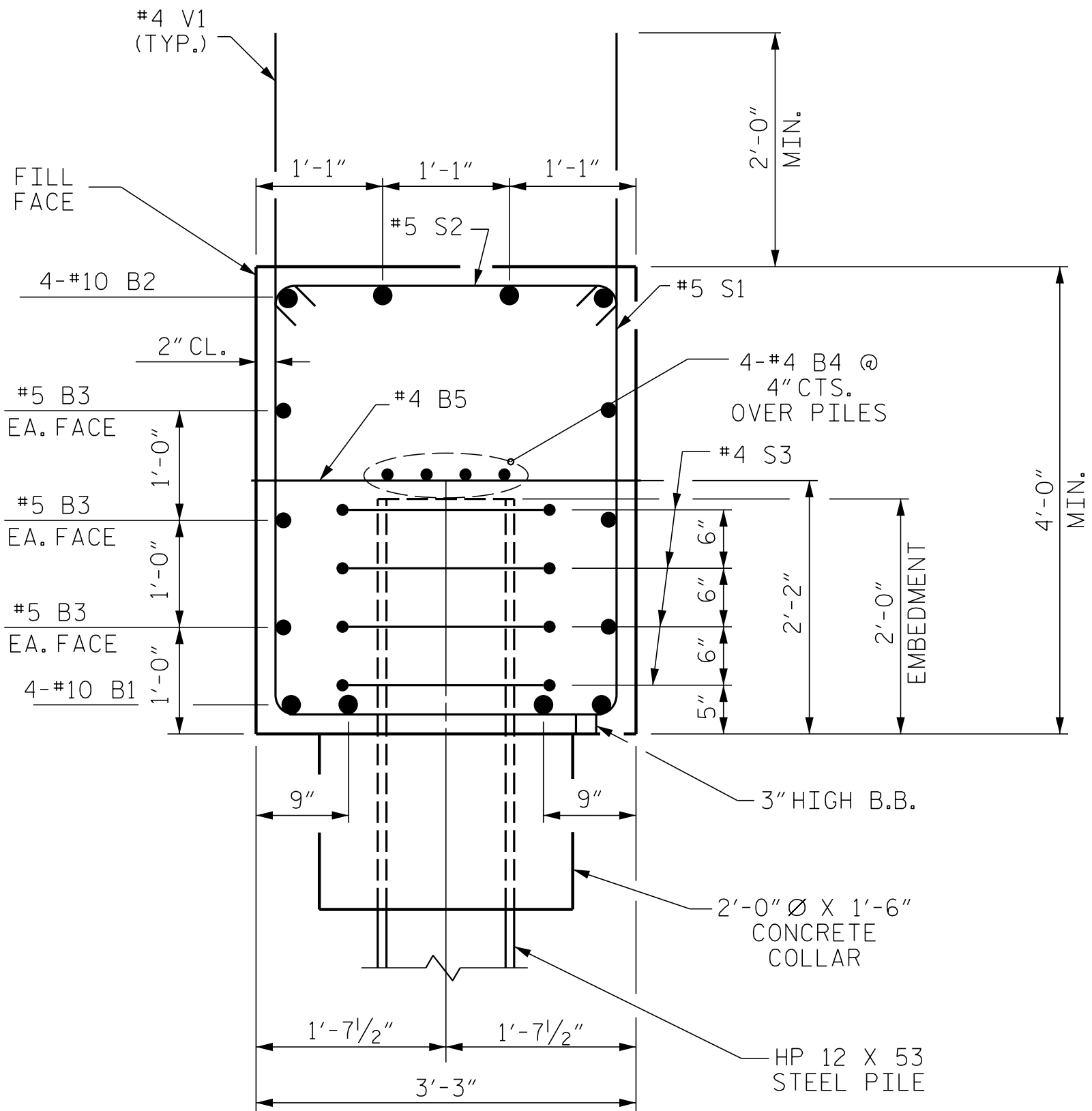
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CHECKED BY : G. GILLAND DATE : 7/22

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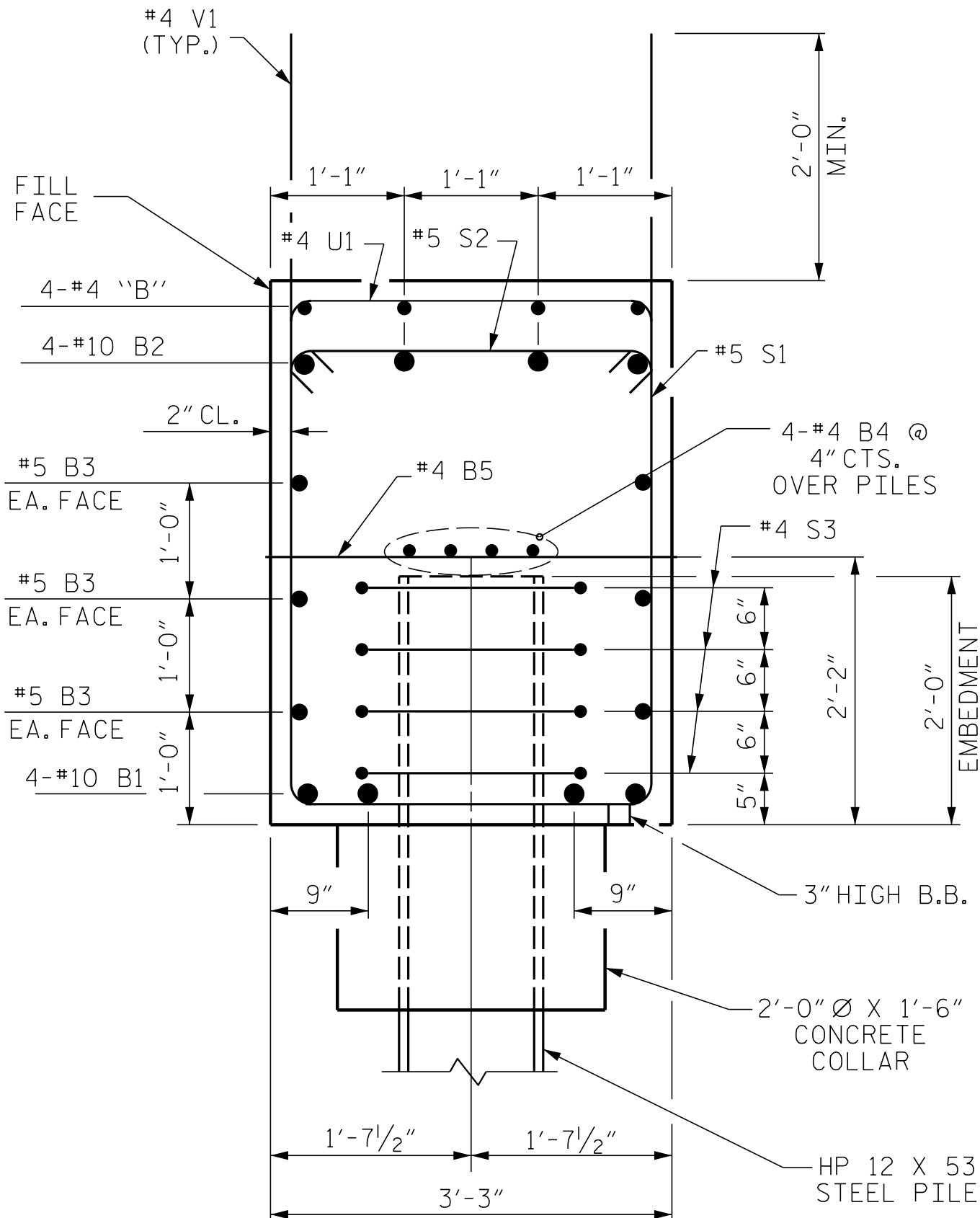
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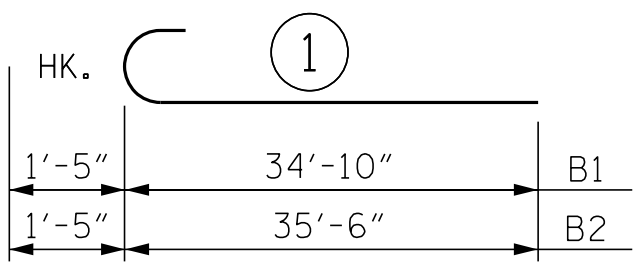
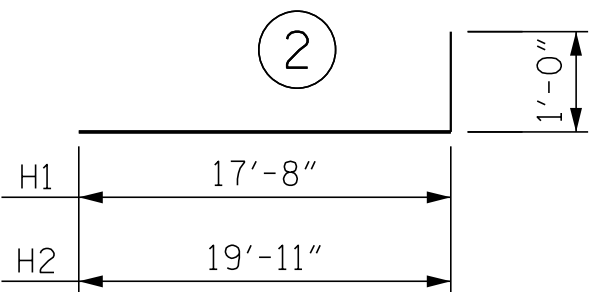
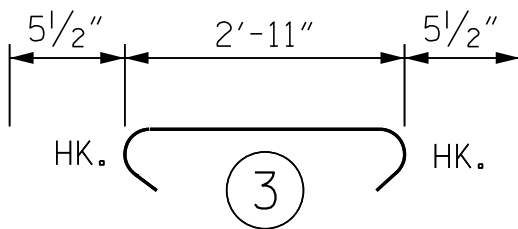
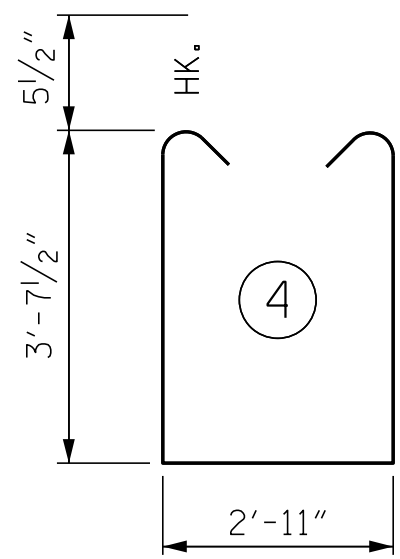
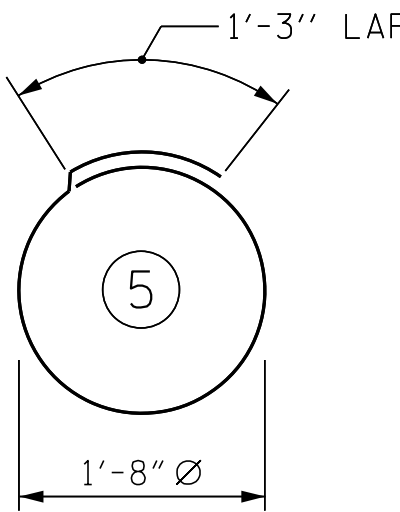
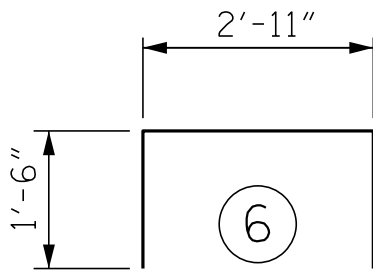
PILE SPLICE DETAILS

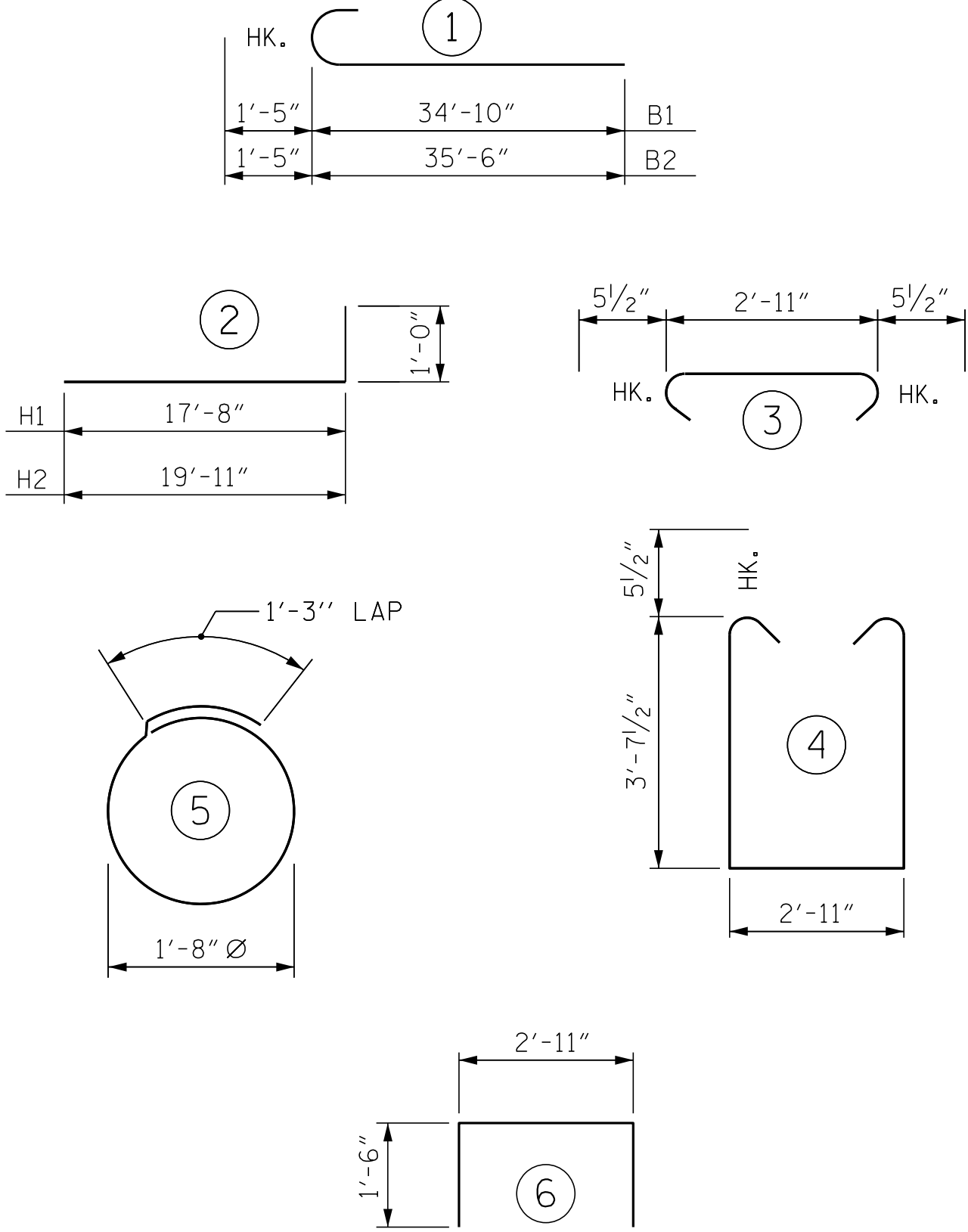


SECTION A-A



SECTION B-B

BAR TYPES		BILL OF MATERIAL						
		END BENT No. 1						
		BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
		B1	8	#10	1	36'-3"	1,248	
		B2	8	#10	1	36'-11"	1,271	
		B3	12	#5	STR	34'-0"	426	
		B4	8	#4	STR	33'-9"	180	
		B5	17	#4	STR	2'-11"	33	
		B6	4	#4	STR	32'-4"	86	
		B7	4	#4	STR	3'-0"	8	
		H1	44	#6	2	18'-8"	1,234	
		H2	32	#6	2	20'-11"	1,005	
		K1	24	#4	STR	4'-4"	69	
		S1	112	#5	4	11'-1"	1,295	
		S2	112	#5	3	3'-10"	448	
		S3	44	#4	5	6'-6"	191	
		U1	25	#4	6	5'-11"	99	
		V1	60	#4	STR	5'-10"	234	
		V2	12	#4	STR	9'-4"	75	
		V3	16	#4	STR	9'-1"	97	
		V4	18	#4	STR	8'-11"	107	
		V5	12	#4	STR	9'-2"	73	
		V6	18	#4	STR	8'-9"	105	
		V7	16	#4	STR	9'-0"	96	
		REINFORCING STEEL					8,380 LBS.	
		CLASS A CONCRETE BREAKDOWN						
		POUR #1	CAP, CONC. COLLARS & LOWER PART OF WINGS					43.2 C.Y.
		POUR #2	UPPER PART OF WINGS					12.0 C.Y.
		TOTAL CLASS A CONCRETE					55.2 C.Y.	
								
ALL BAR DIMENSIONS ARE OUT TO OUT.								



ALL BAR DIMENSIONS ARE OUT TO OUT.

NOTES

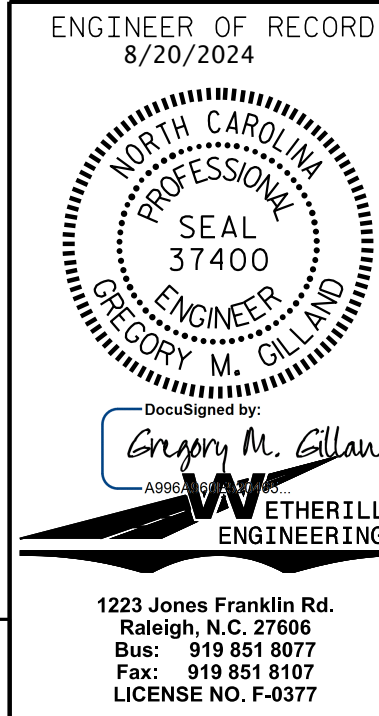
THE TOP SURFACE OF THE END BENT CAP WITHIN THE LIMITS OF THE INTEGRAL ABUTMENT, EXCEPT THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 1

REVISIONS

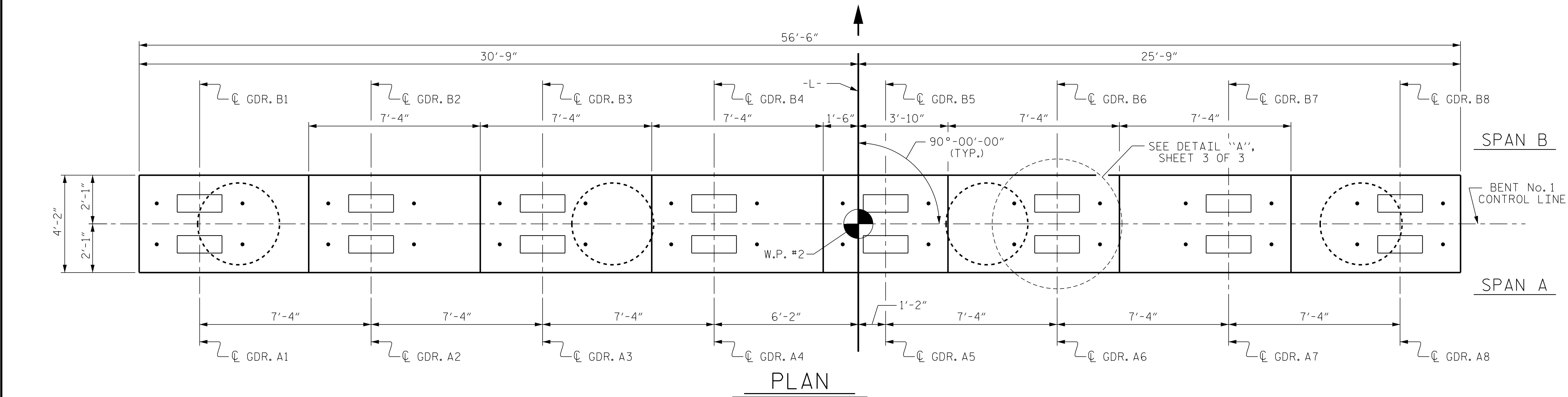
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1			3			S-49
2			4			TOTAL SHEETS 64

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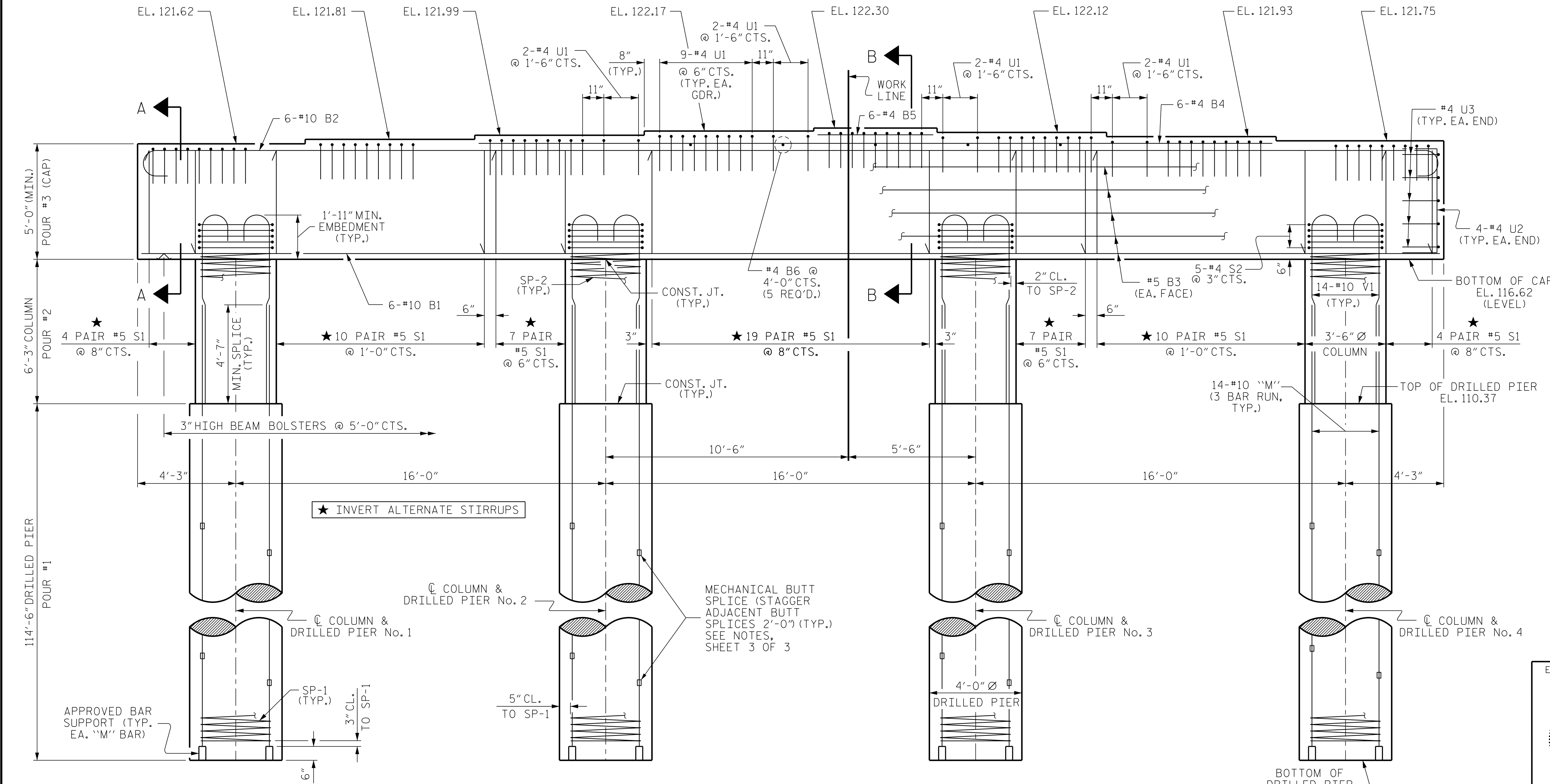
DRAWN BY : D. HODGE DATE : 6/22

CHECKED BY : G. GILLAND DATE : 7/22

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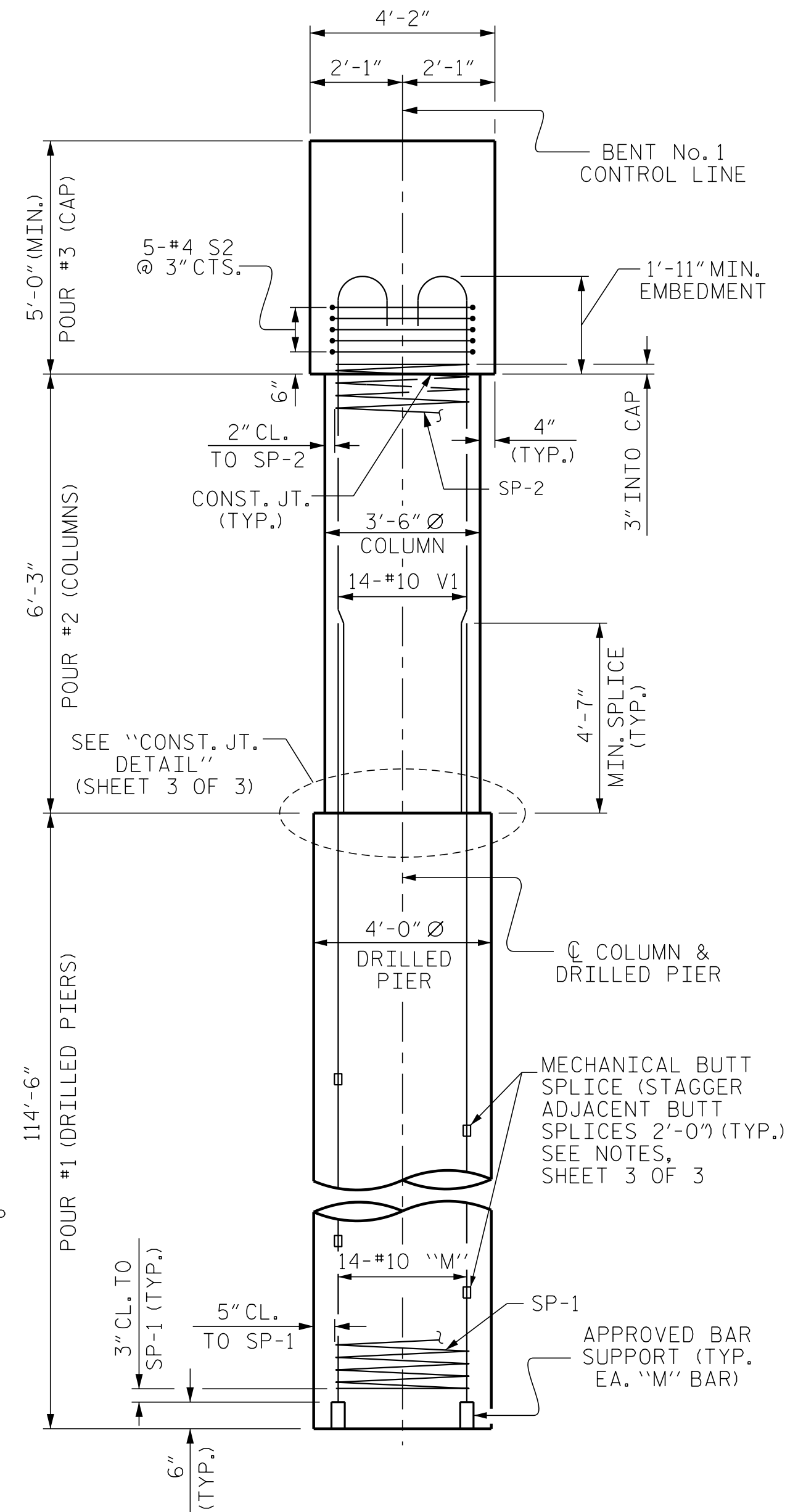


PLAN



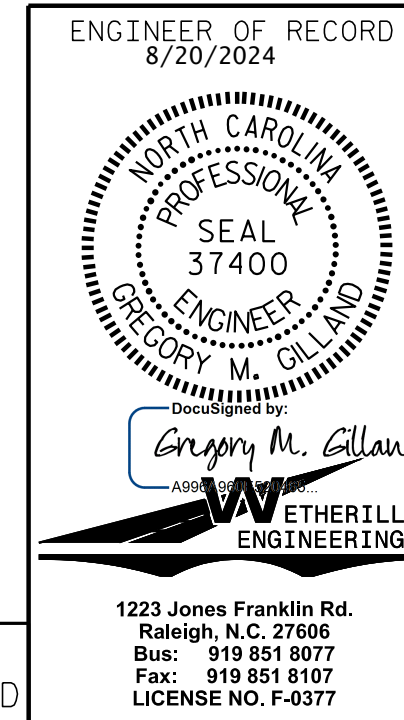
ELEVATION

DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER.
FOR PLACEMENT OF "M" AND V1 BARS, SEE SHEET 2 OF 3.



END ELEVATION

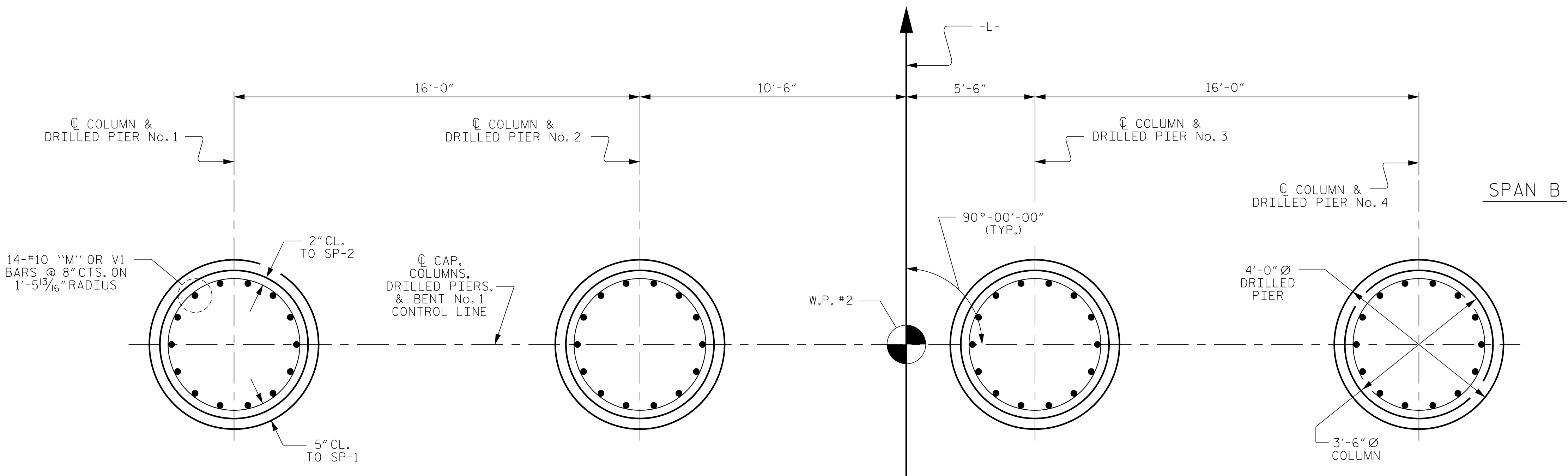
PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-
SHEET 1 OF 3



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-50
2			4			
TOTAL SHEETS						64

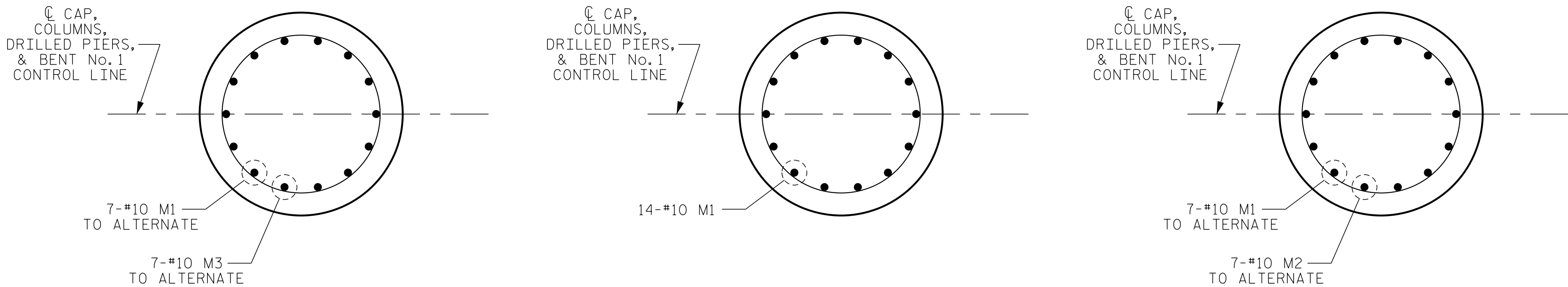
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PLAN OF DRILLED PIERS AND COLUMNS

REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR DRILLED PIERS AND COLUMNS EXCEPT AS NOTED.



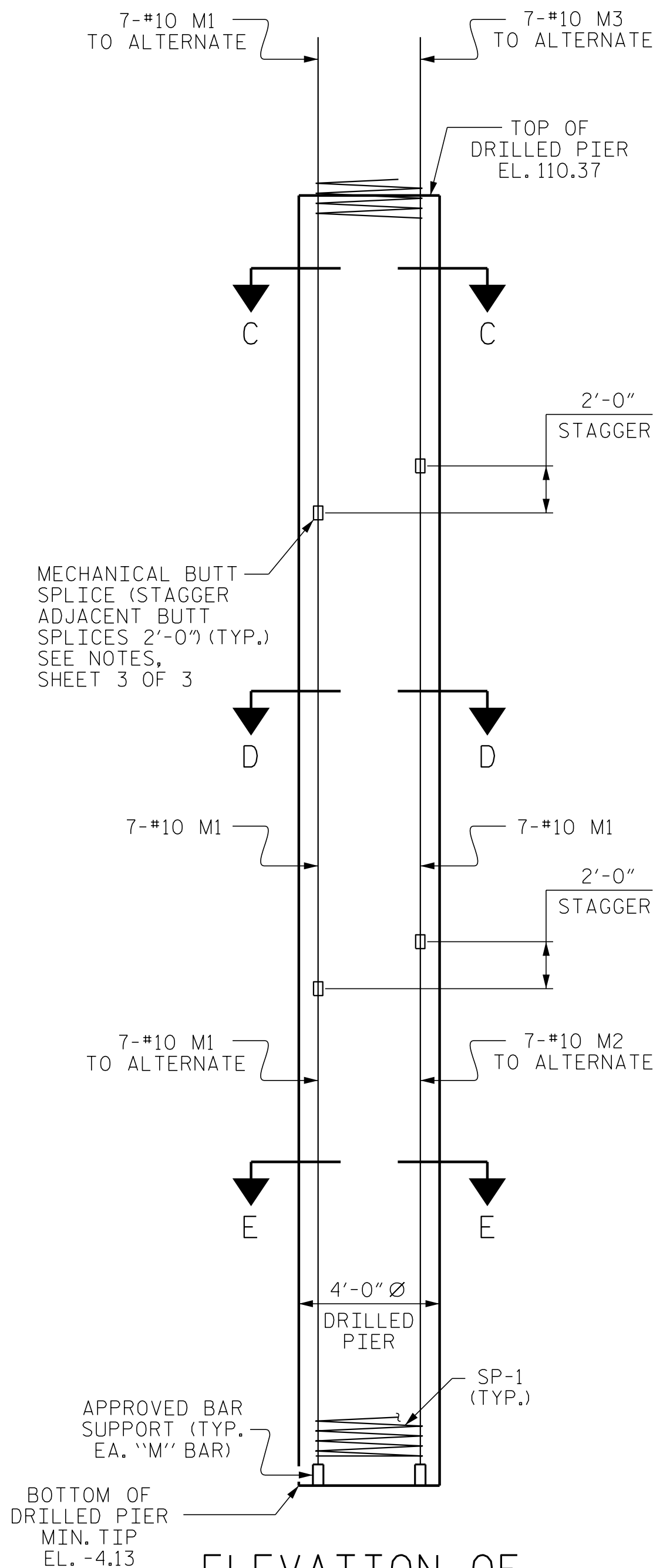
SECTION C-C

SECTION D-D

SECTION E-E

PLAN OF DRILLED PIERS

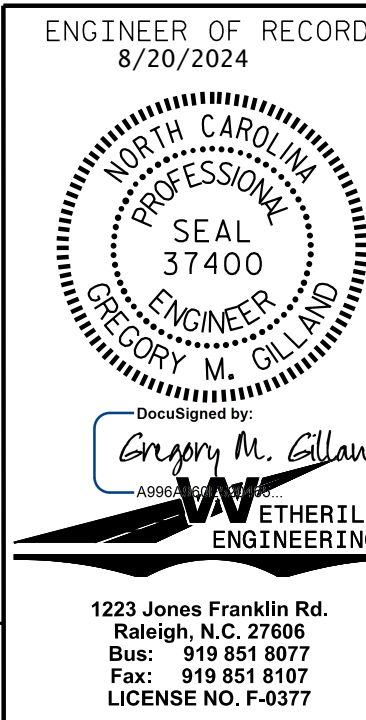
REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR DRILLED PIERS.



ELEVATION OF DRILLED PIER

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 2 OF 3



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

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-51
2			4			TOTAL SHEETS 64

DRAWN BY : D. HODGE DATE : 6/22
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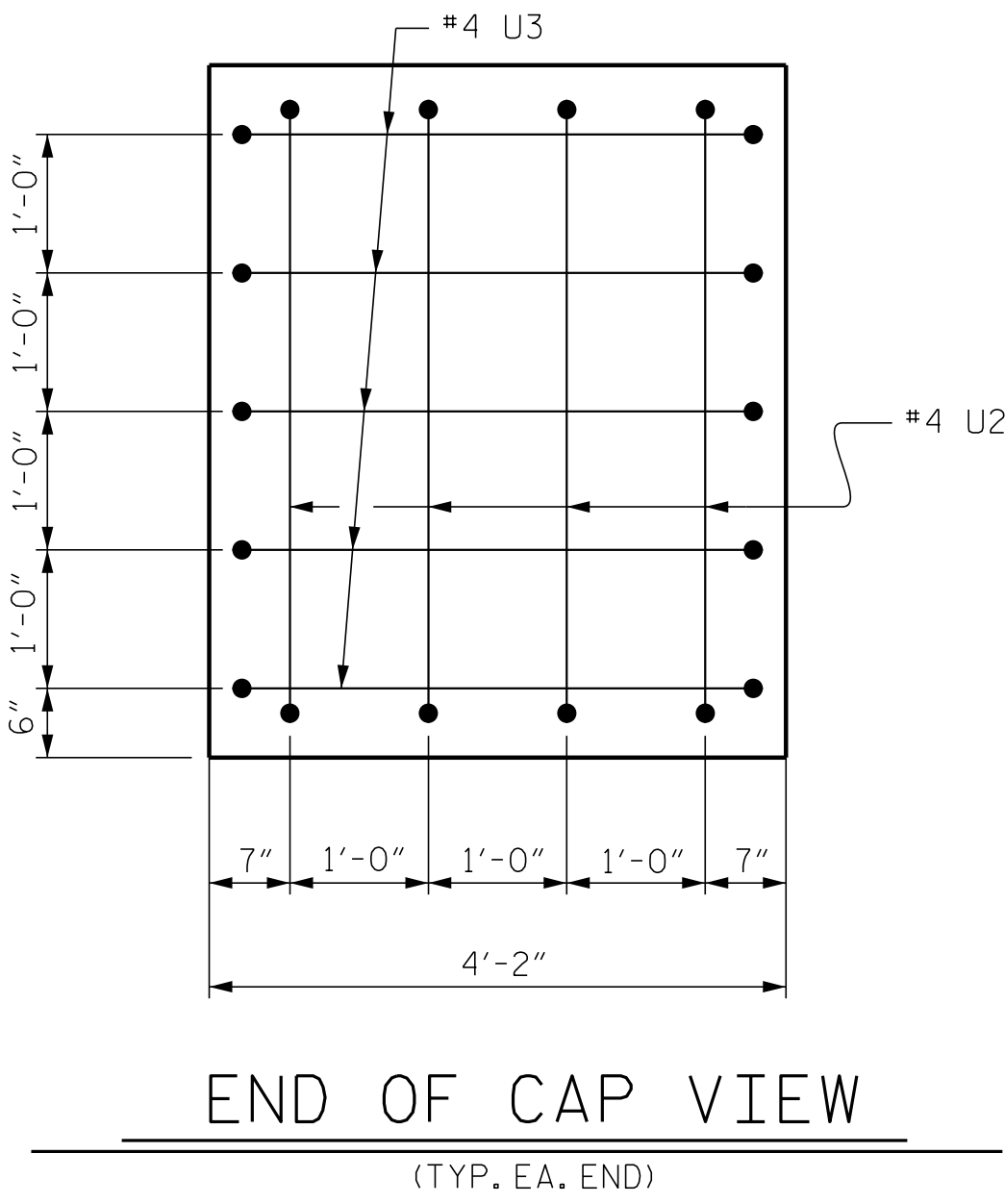
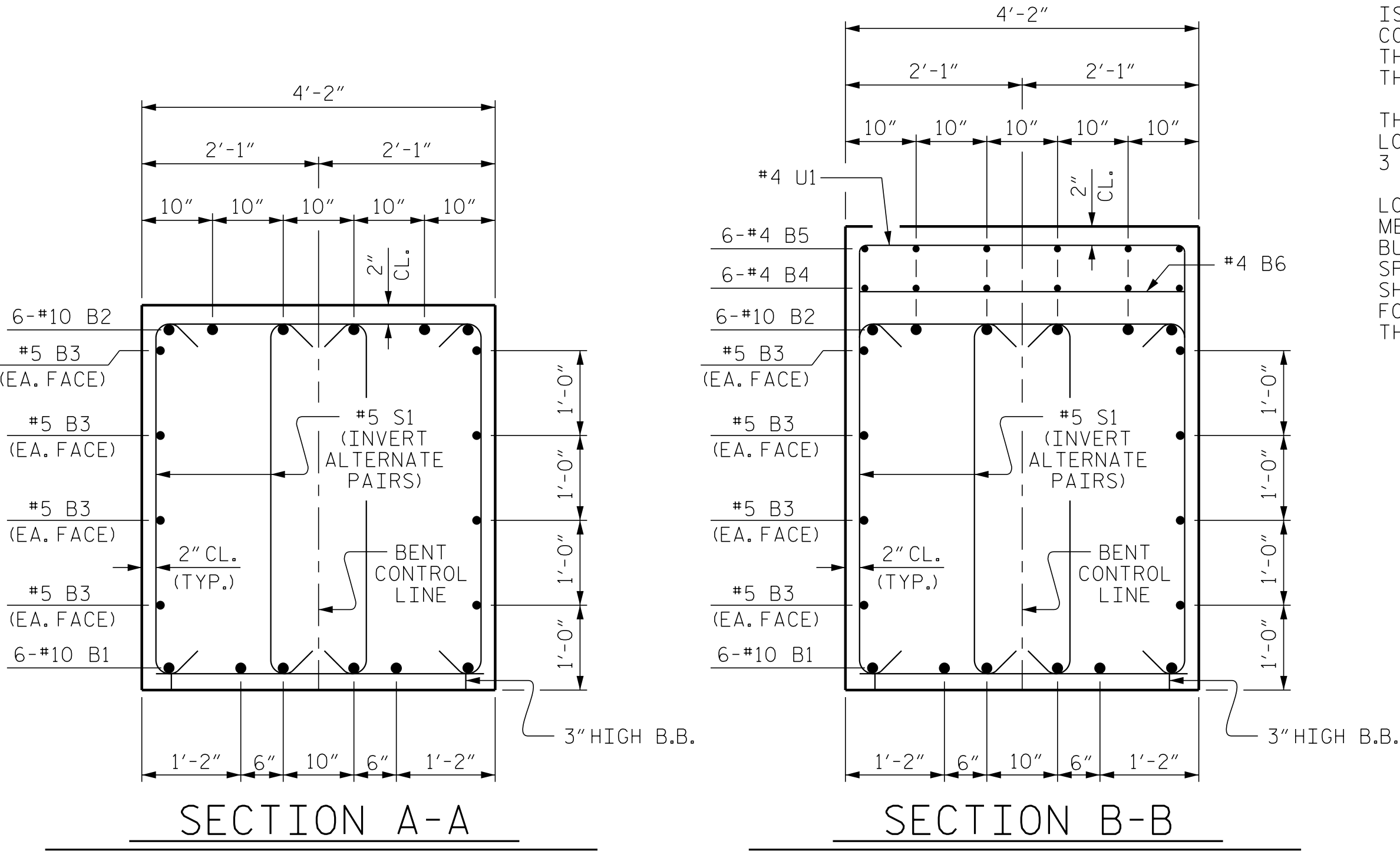
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DRAWN BY : D. HODGE DATE : 5/22
CHECKED BY : G. GILLAND DATE : 5/22



NOTES:

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

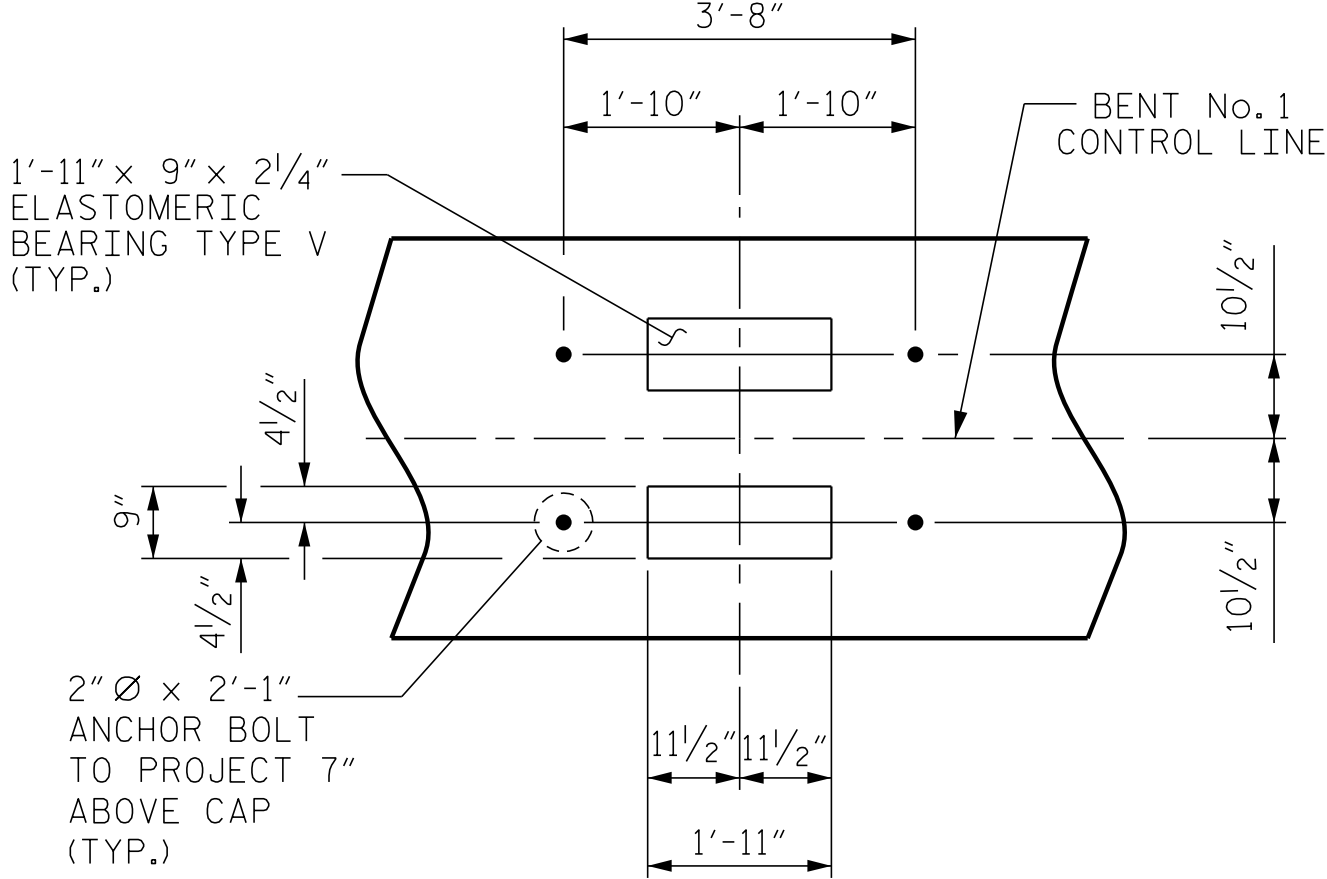
HOOKS ON V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

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

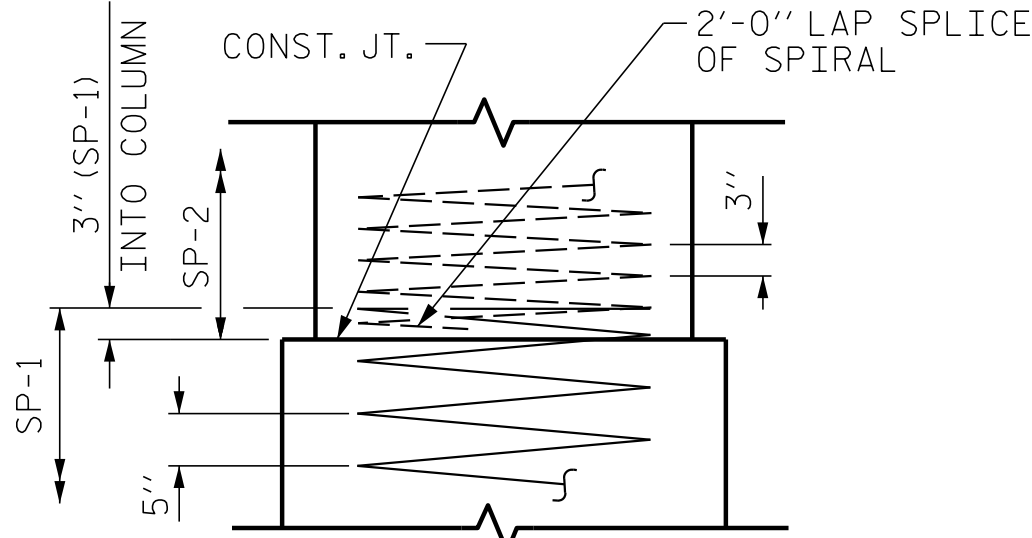
THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

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

LONGITUDINAL COLUMN REINFORCING STEEL SHALL BE SPLICED USING MECHANICAL BUTT SPLICES, NO LAP SPLICES ALLOWED. MECHANICAL BUTT SPLICES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND SUBMITTED FOR APPROVAL. ADJACENT SPLICES SHALL BE STAGGERED AT 2'-0". NO EXTRA PAYMENT WILL BE MADE FOR USING MECHANICAL BUTT SPLICES OR MODIFYING BAR LENGTHS. THE COST WILL BE INCIDENTAL TO REINFORCING STEEL.

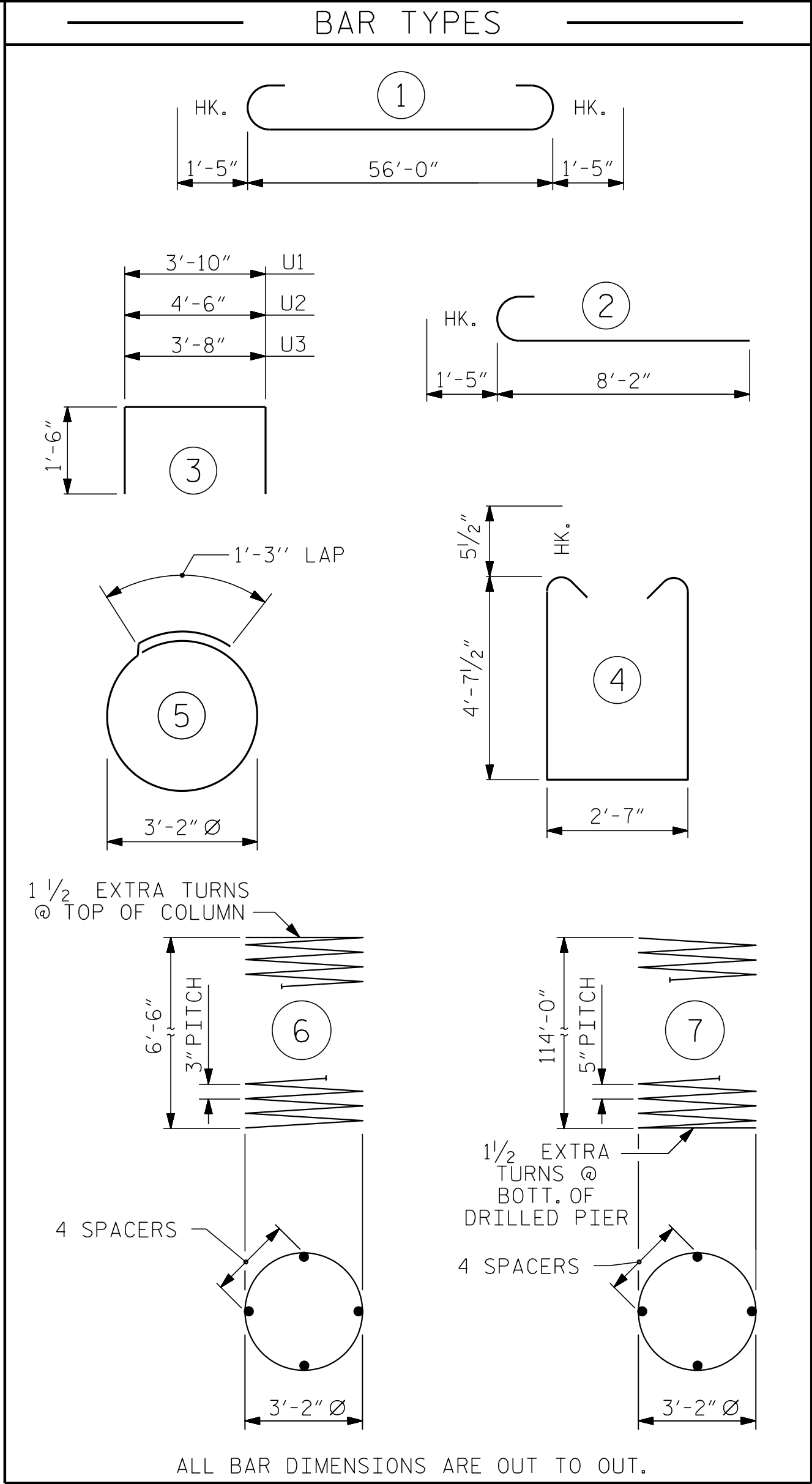


DETAIL "A"
(TYP. EACH GIRDER)



CONSTRUCTION JOINT DETAIL

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

BILL OF MATERIAL

BENT No. 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	STR	56'-2"	1,450
B2	6	#10	1	58'-10"	1,519
B3	8	#5	STR	56'-2"	469
B4	6	#4	STR	34'-4"	138
B5	6	#4	STR	5'-0"	20
B6	5	#4	STR	3'-10"	13

M1	112	#10	STR	40'-7"	19,559
M2	28	#10	STR	42'-7"	5,131
M3	28	#10	STR	38'-7"	4,649

S1	122	#5	4	12'-9"	1,622
S2	20	#4	5	11'-3"	150

U1	80	#4	3	6'-10"	365
U2	8	#4	3	7'-6"	40
U3	10	#4	3	6'-8"	45

V1	56	#10	2	9'-7"	2,309
----	----	-----	---	-------	-------

REINFORCING STEEL 37,479 LBS.

SP-1	4	**	7	2,695'-9"	11,247
SP-2	4	**	6	269'-3"	1,123

SPIRAL COLUMN REINFORCING STEEL 12,370 LBS.

CLASS A CONCRETE BREAKDOWN				
POUR #2	COLUMNS			8.9 C.Y.
POUR #3	CAP			46.5 C.Y.
TOTAL CLASS A CONCRETE				55.4 C.Y.

DRILLED PIERS:

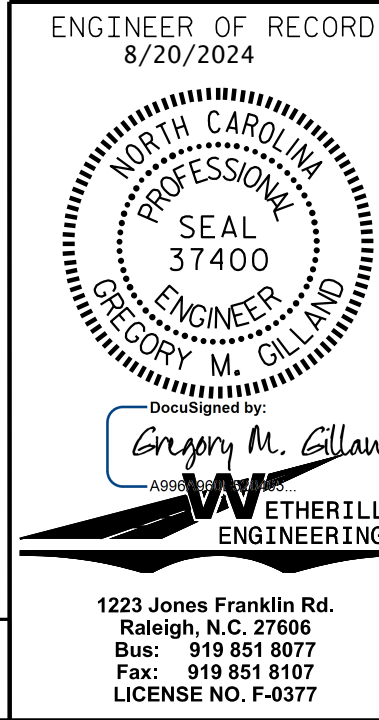
DRILLED PIER CONCRETE				
POUR #1 (DRILLED PIERS)				213.2 C.Y.

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

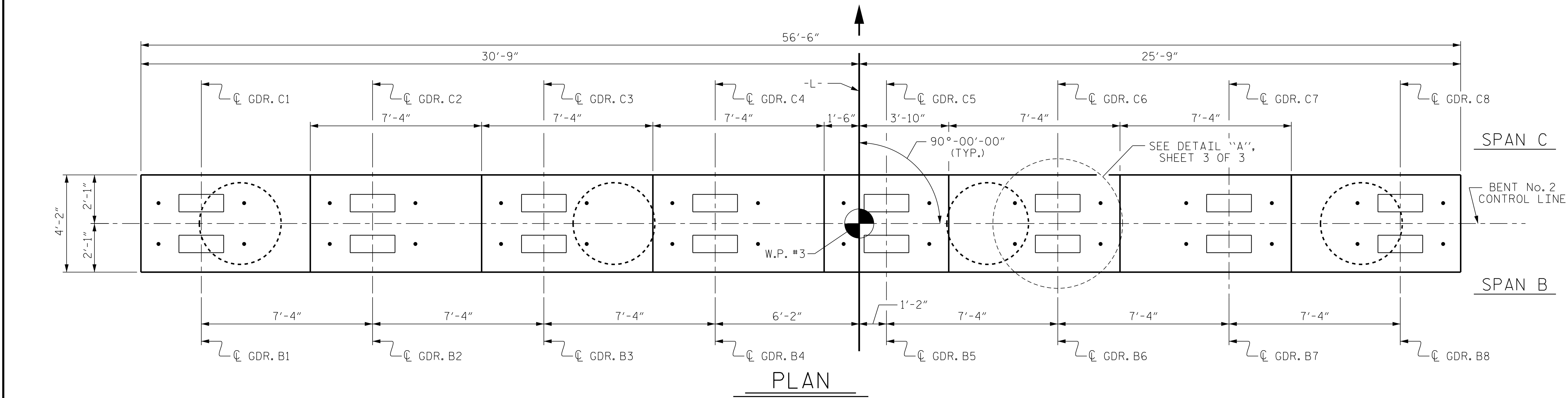
SUBSTRUCTURE

BENT No. 1

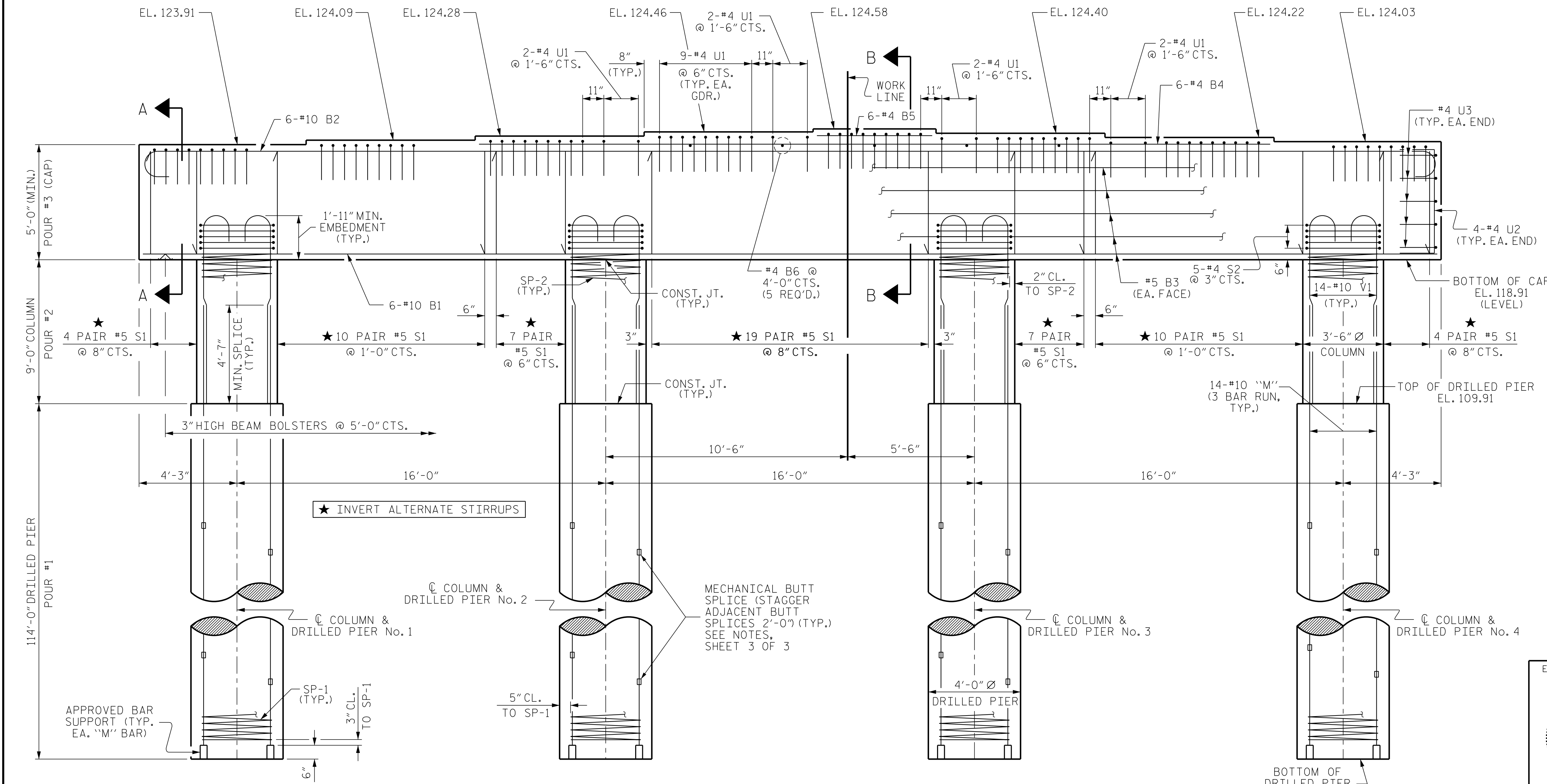
REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-52
2			4			TOTAL SHEETS 64

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4/26/2024 9:26:43 AM

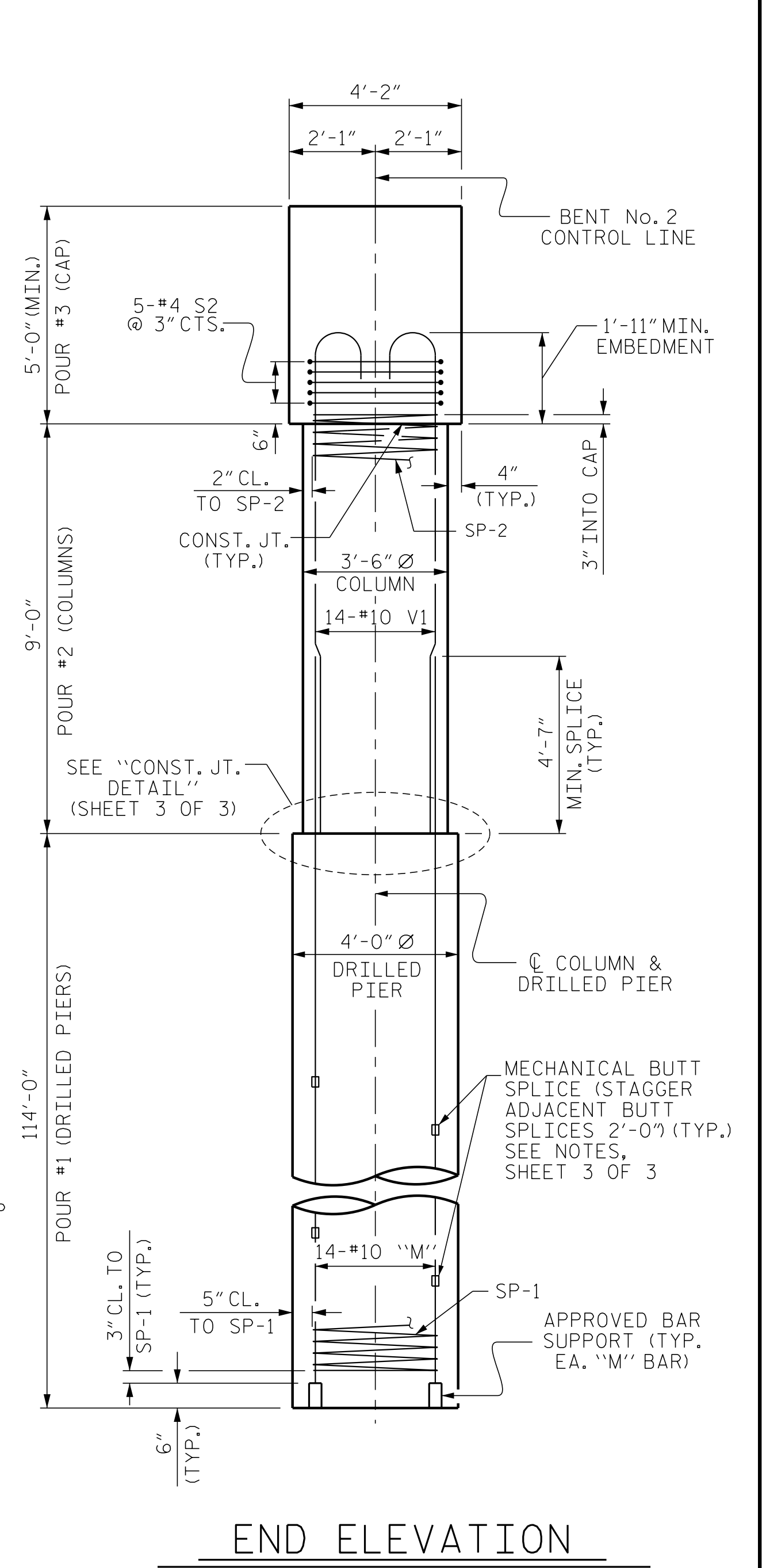


PLAN



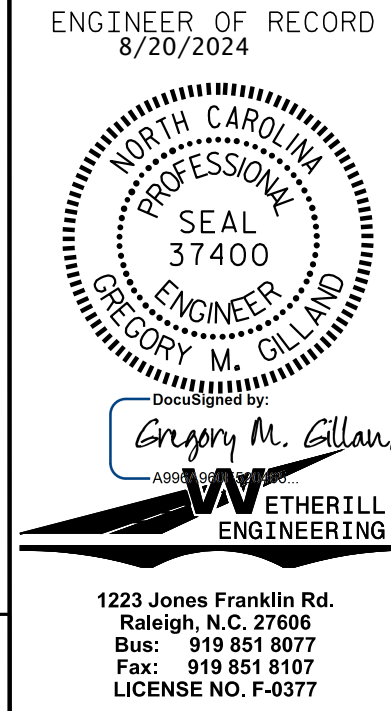
ELEVATION

DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER.
FOR PLACEMENT OF "M" AND V1 BARS, SEE SHEET 2 OF 3.



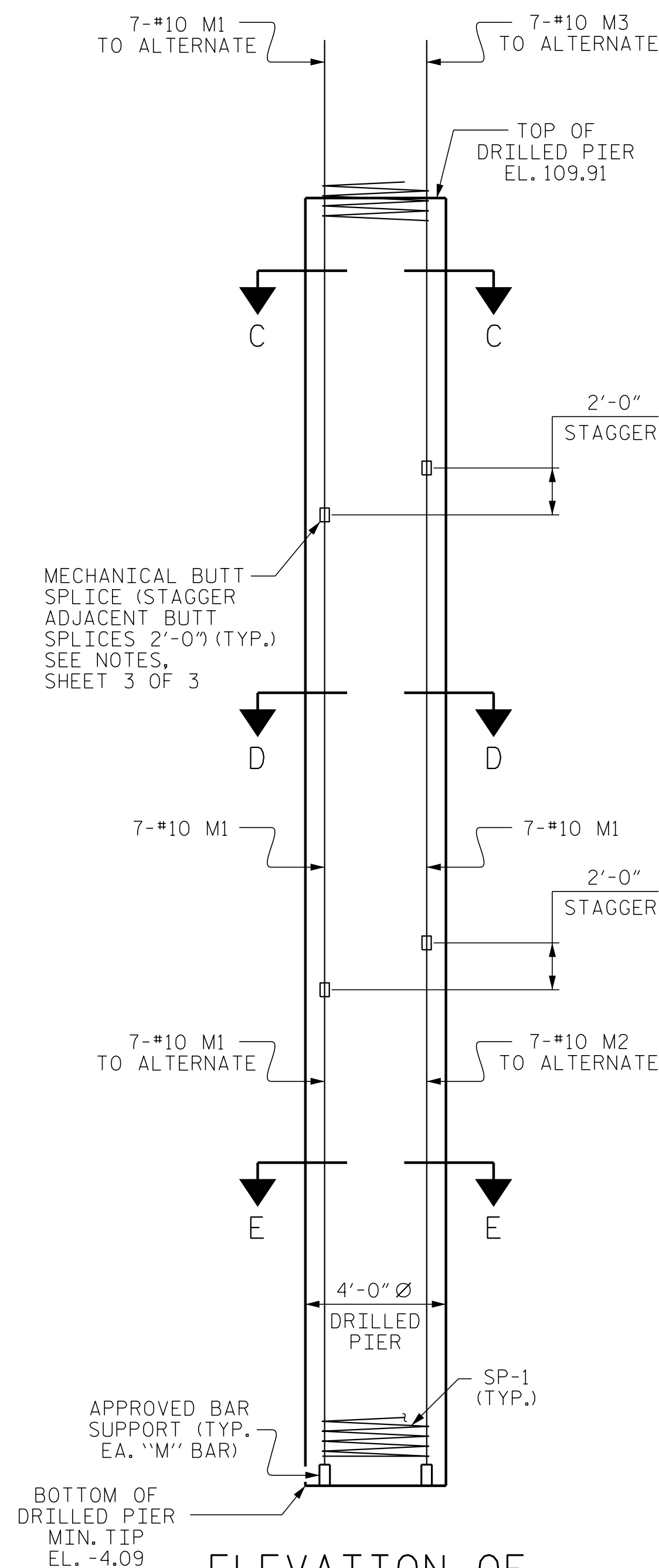
END ELEVATION

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-
SHEET 1 OF 3



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-53
2			4			
TOTAL SHEETS						64

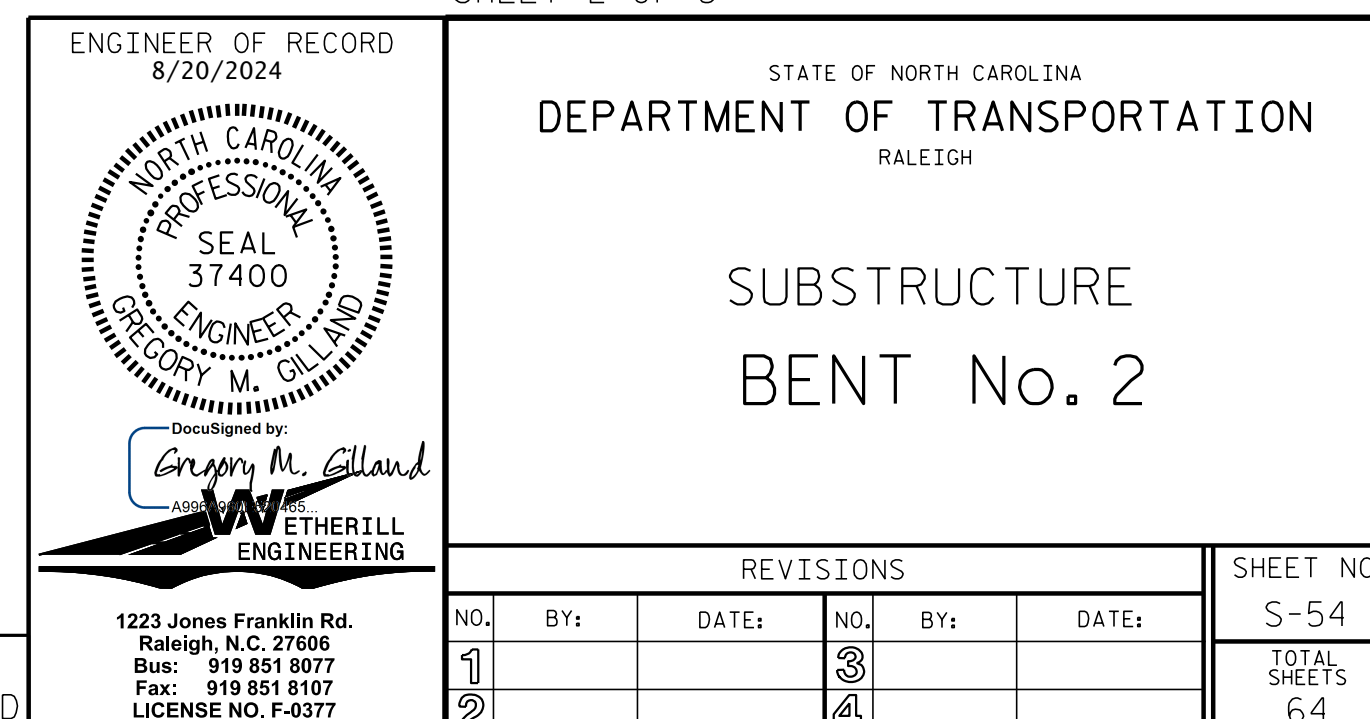
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



SPAN E

ELEVATION OF
DRILLED PIER

SHEET 2 OF 3



SECTION E-E

REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR DRILLED PIERS.

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PA:2018\18156.01 B-5985 RobesonStructures\Str-2 (770175)NDGN\402_001_B-5985-SITE 2 770175_SKU_BT.dgn
4/26/2024 9:44:38 AM

NOTES:

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

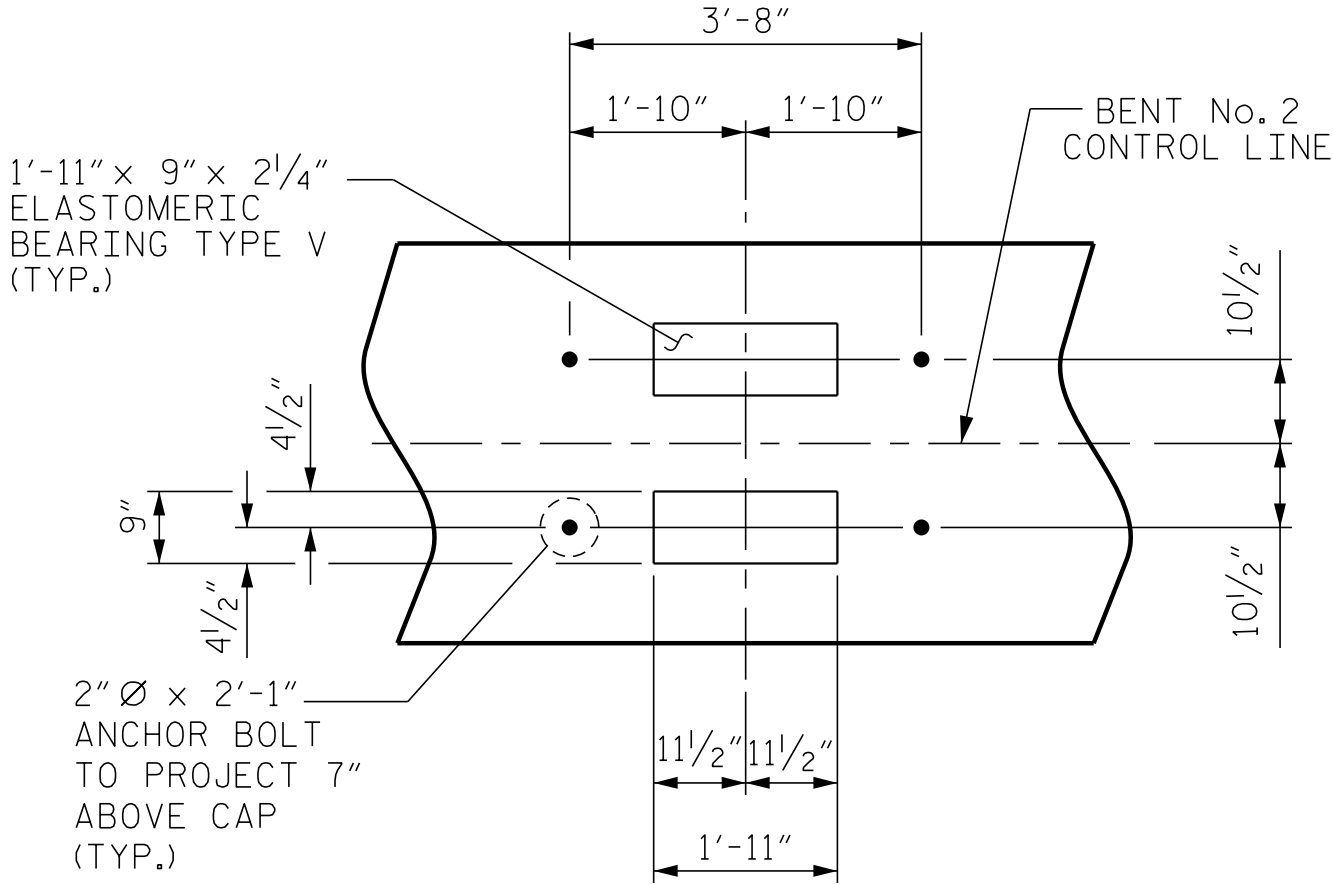
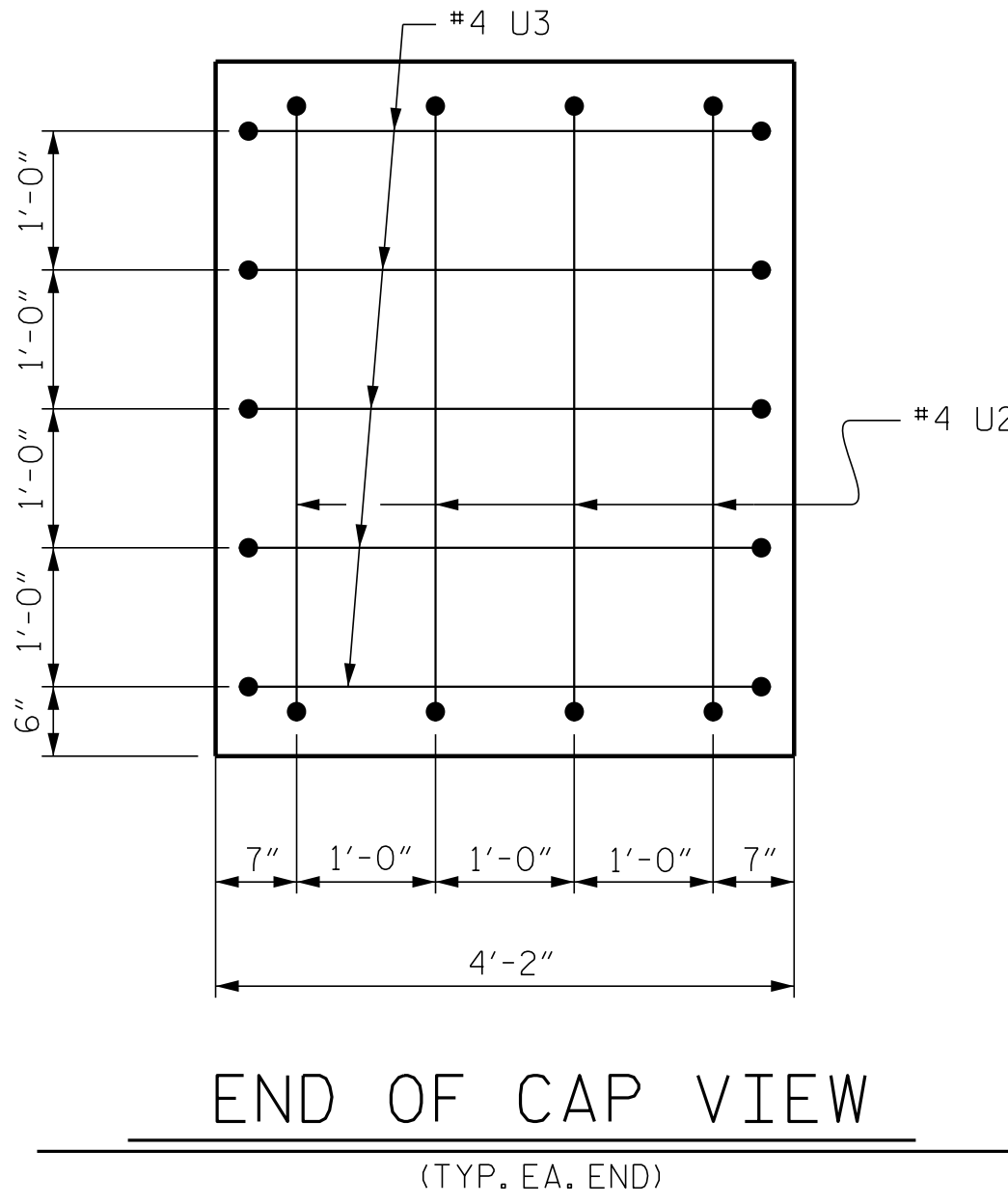
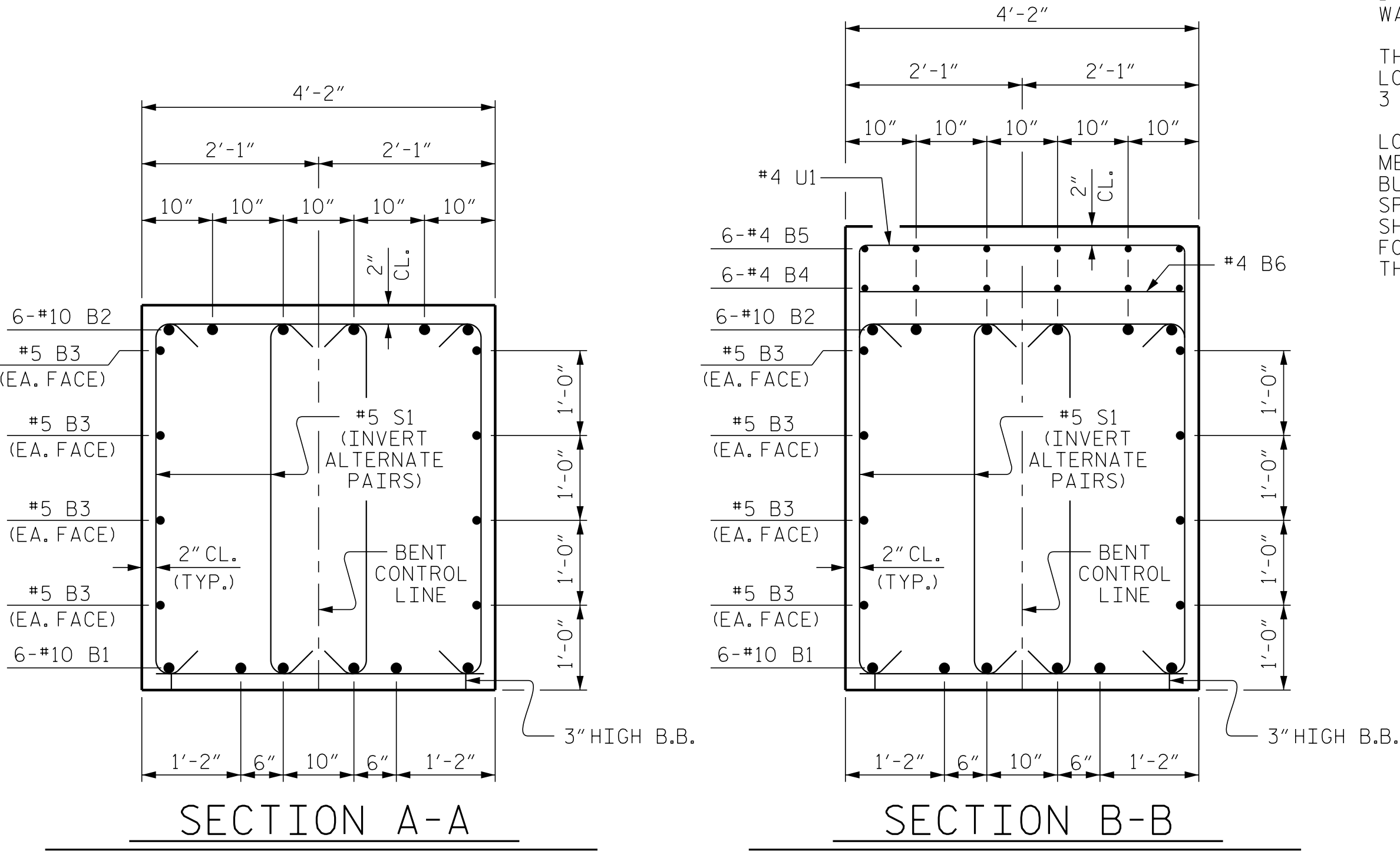
HOOKS ON V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

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

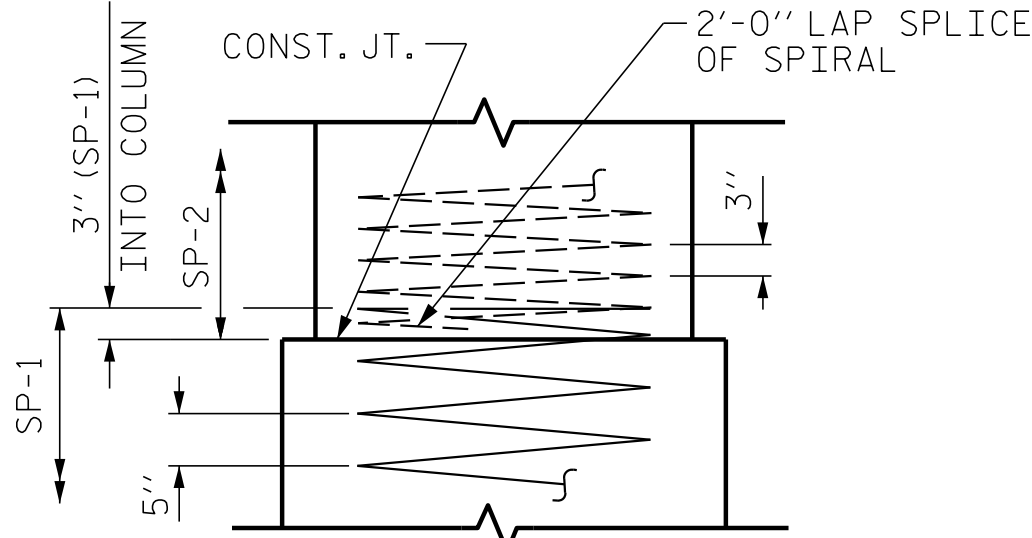
DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.

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

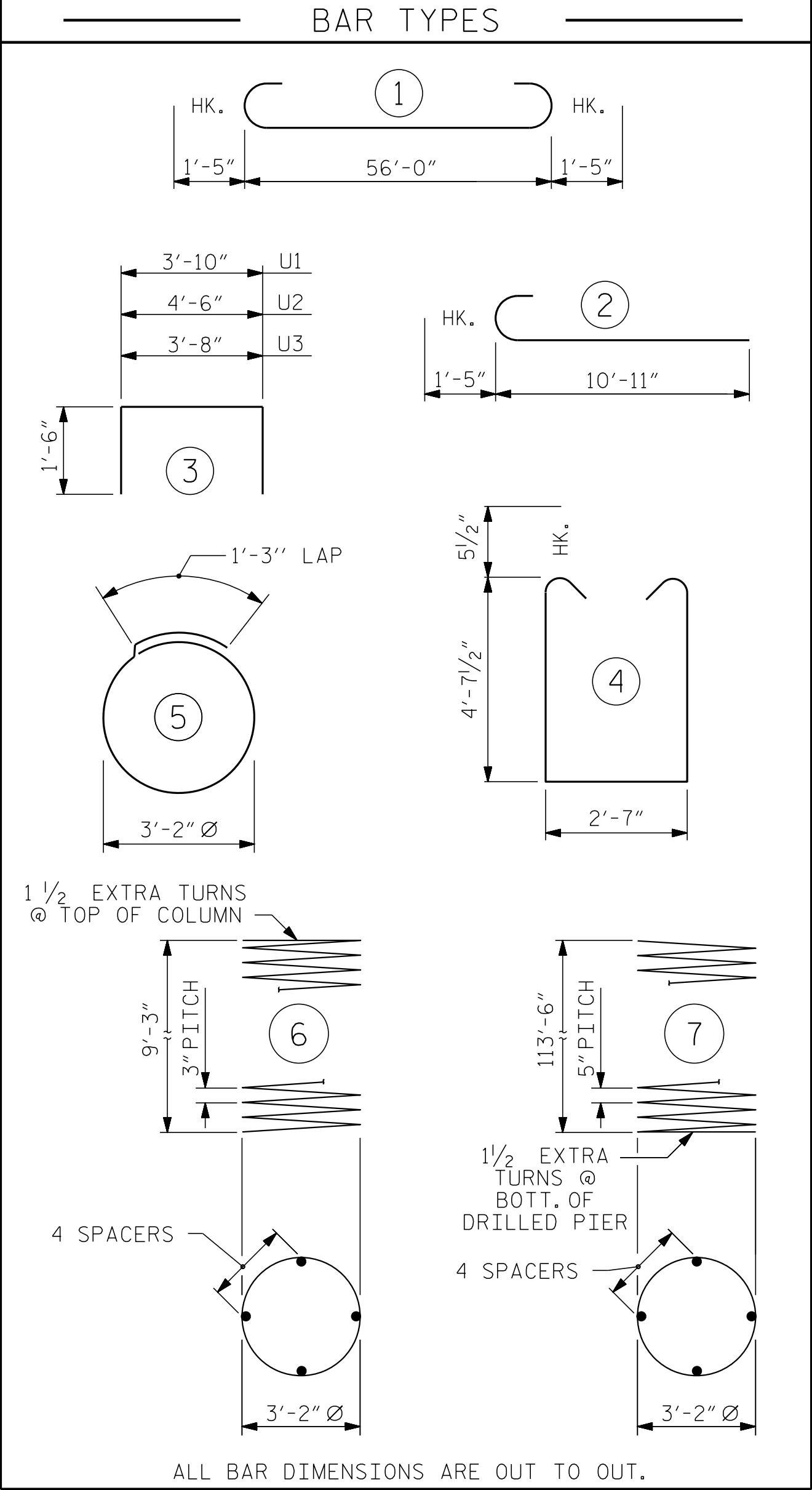
LONGITUDINAL COLUMN REINFORCING STEEL SHALL BE SPLICED USING MECHANICAL BUTT SPLICES. NO LAP SPLICES ALLOWED. MECHANICAL BUTT SPLICES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND SUBMITTED FOR APPROVAL. ADJACENT SPLICES SHALL BE STAGGERED AT 2'-0". NO EXTRA PAYMENT WILL BE MADE FOR USING MECHANICAL BUTT SPLICES OR MODIFYING BAR LENGTHS. THE COST WILL BE INCIDENTAL TO REINFORCING STEEL.



DETAIL "A"
(TYP. EACH GIRDER)



CONSTRUCTION JOINT DETAIL



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

BILL OF MATERIAL

BENT No. 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	STR	56'-2"	1,450
B2	6	#10	1	58'-10"	1,519
B3	8	#5	STR	56'-2"	469
B4	6	#4	STR	34'-4"	138
B5	6	#4	STR	5'-0"	20
B6	5	#4	STR	3'-10"	13

M1	112	#10	STR	40'-5"	19,478
M2	28	#10	STR	42'-5"	5,111
M3	28	#10	STR	38'-5"	4,629

S1	122	#5	4	12'-9"	1,622
S2	20	#4	5	11'-3"	150

U1	80	#4	3	6'-10"	365
U2	8	#4	3	7'-6"	40
U3	10	#4	3	6'-8"	45

V1	56	#10	2	12'-4"	2,972
----	----	-----	---	--------	-------

REINFORCING STEEL 38,021 LBS.

SP-1	4	**	7	2,683'-6"	11,196
SP-2	4	**	6	376'-11"	1,572

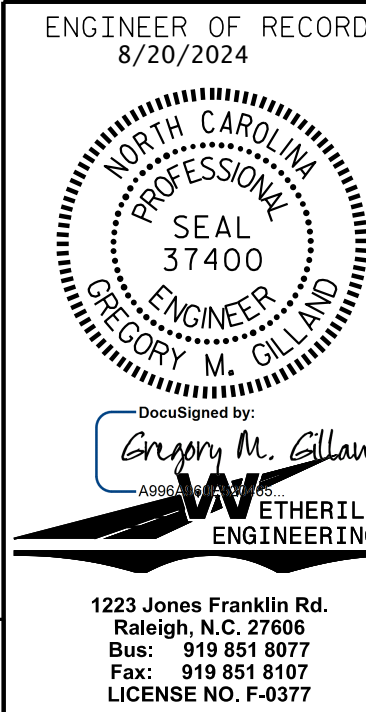
SPIRAL COLUMN REINFORCING STEEL 12,768 LBS.

CLASS A CONCRETE BREAKDOWN				
POUR #2	COLUMNS			12.8 C.Y.
POUR #3	CAP			46.5 C.Y.
TOTAL CLASS A CONCRETE				59.3 C.Y.

DRILLED PIERS:				
DRILLED PIER CONCRETE				
POUR #1 (DRILLED PIERS)				212.2 C.Y.

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 3 OF 3



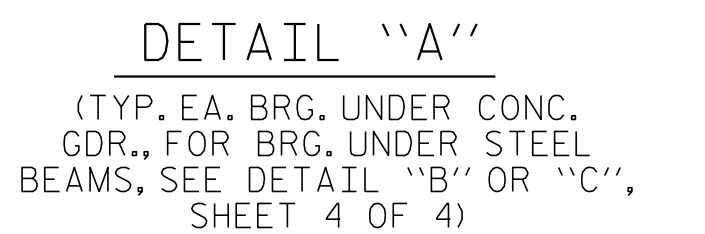
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 2

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-55
2			4			TOTAL SHEETS 64

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UNLESS ALL SIGNATURES COMPLETED



ENGINEER OF RECORD
8/20/2024



Designed by:
Gregory M. Gilland
ASME
ETHERILL ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

SUBSTRUCTURE
END BENT No. 2

REVISIONS			
NO.	BY:	DATE:	
1			
2			

NO.	BY:	DATE:
3		
4		

SHEET NO.
S-56
TOTAL SHEETS 64

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ENGINEER OF RECORD
8/20/2024



Decommissioned by

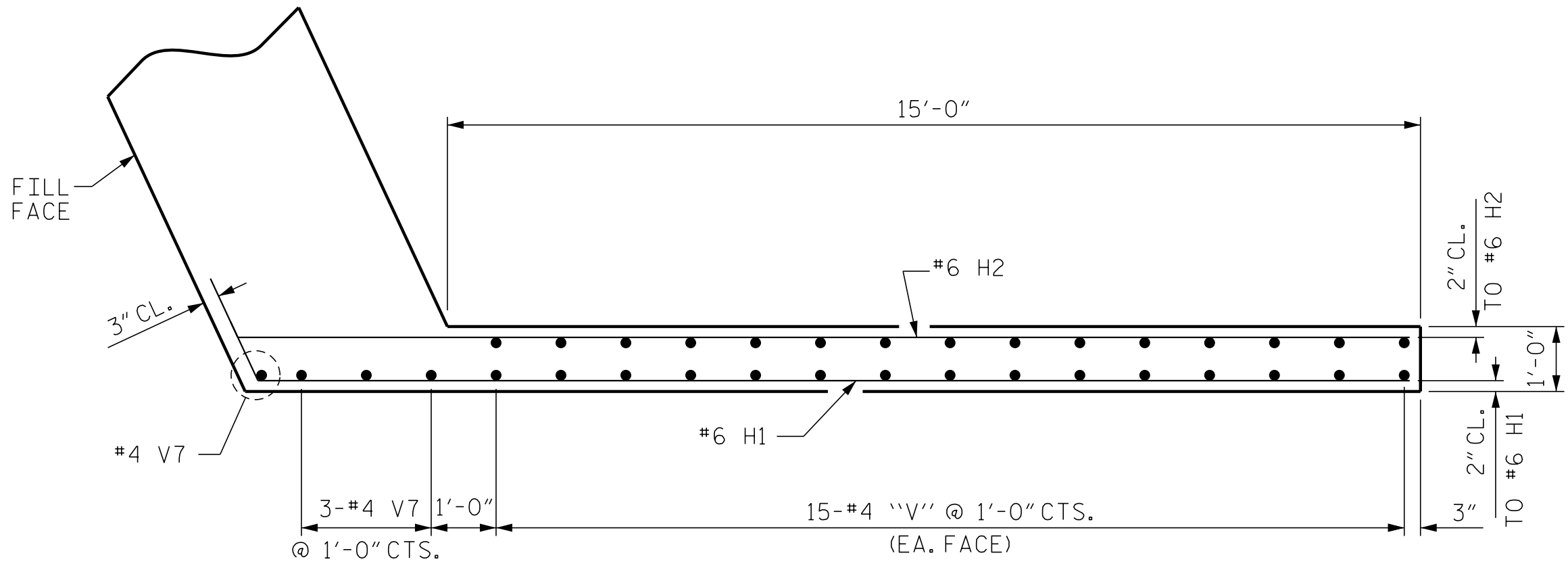
AGGREGATE


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Raleigh, N.C. 27606
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Fax: 919 851 8107
LICENSE NO. F-0377

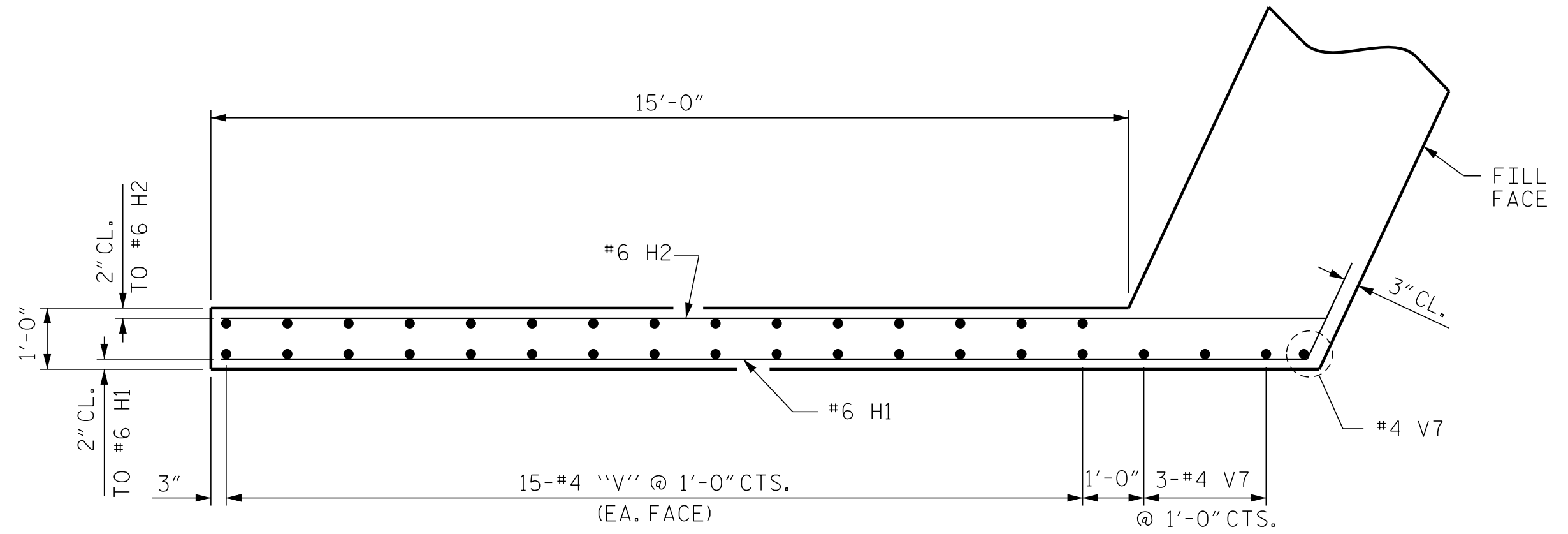
SUBSTRUCTURE
END BENT No. 2

REVISIONS						SHEET NO. S-57
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

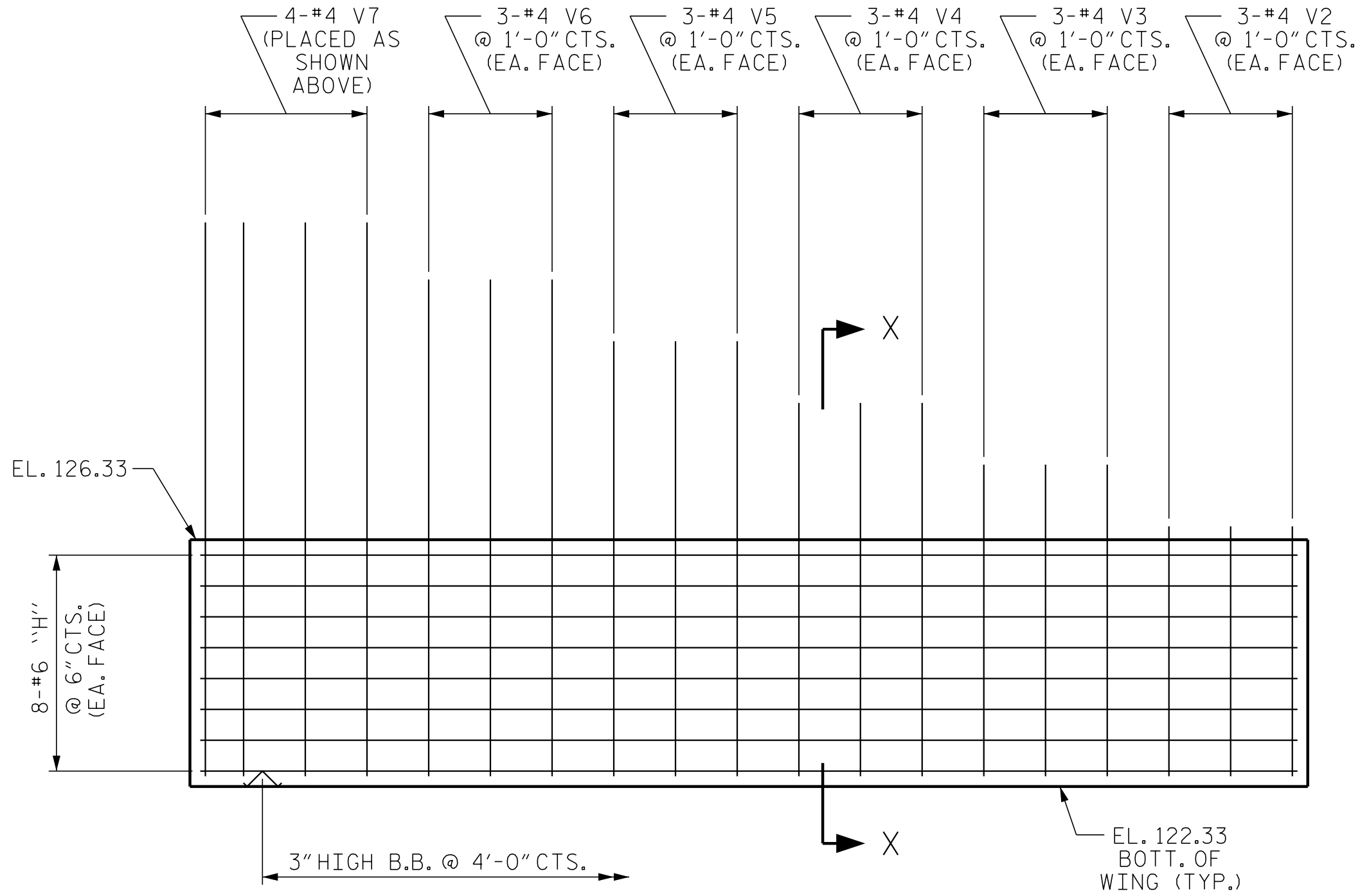
DOCUMENT NOT CONSIDERED FINAL
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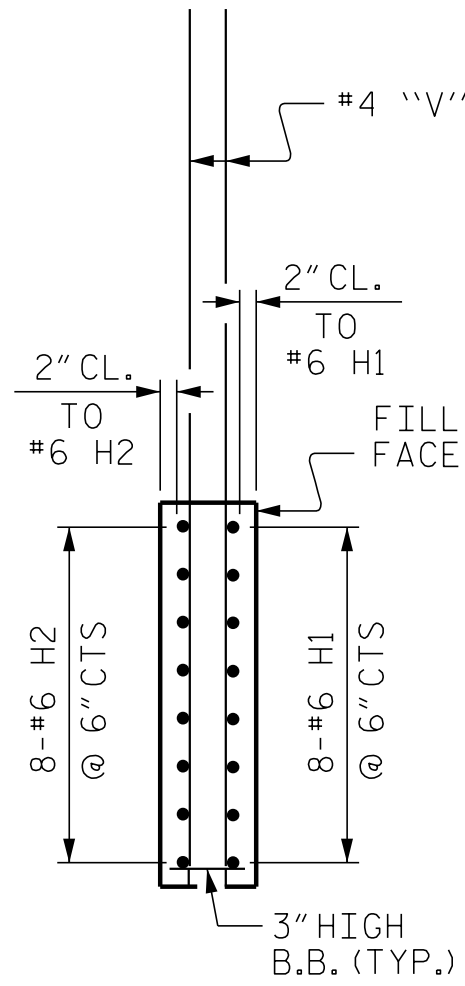
PLAN OF WING (W1)



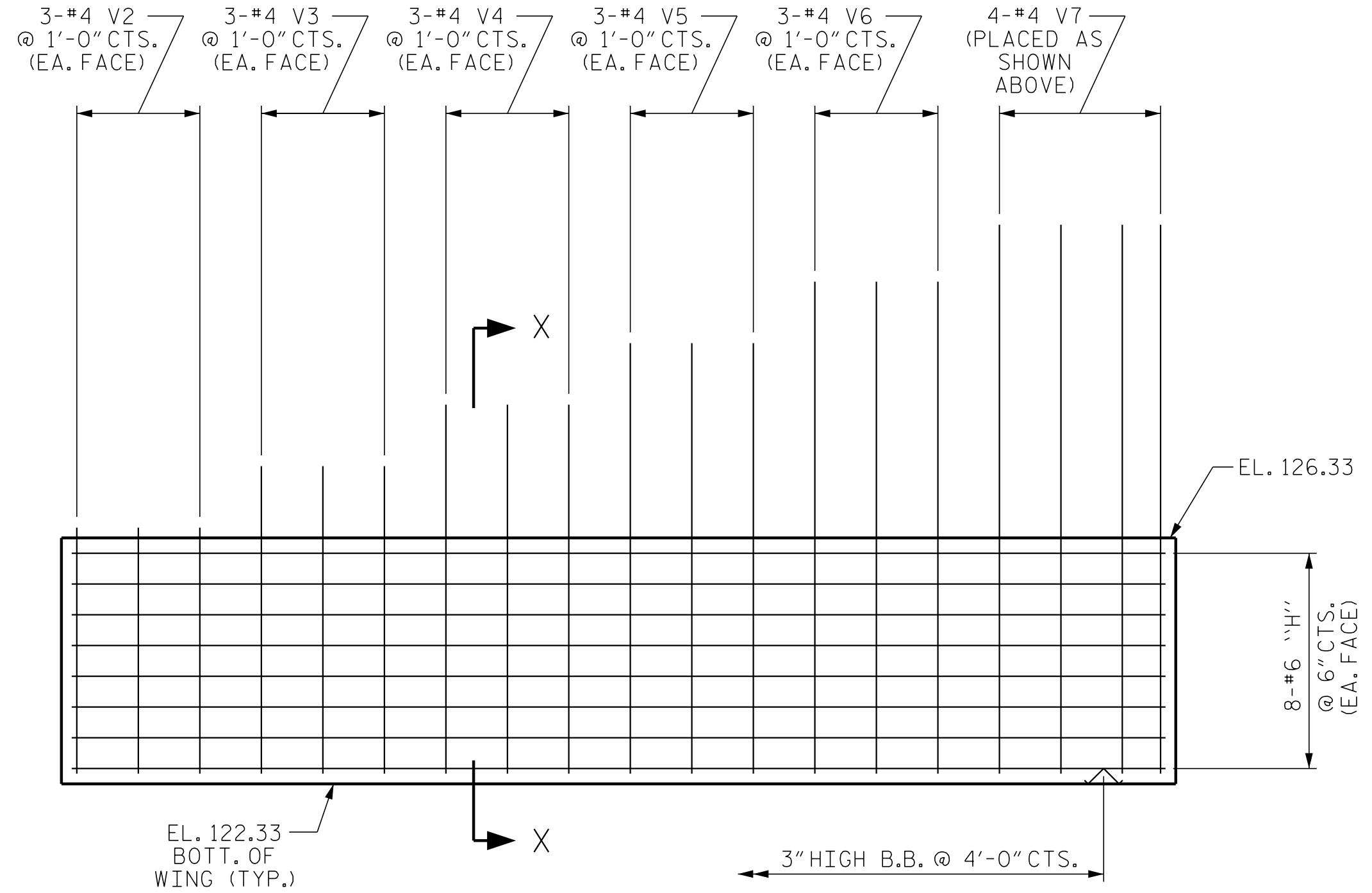
PLAN OF WING (W2)



ELEVATION OF WING (W1)



SECTION X-X



ELEVATION OF WING (W2)

NOTE: THE UPPER PORTION OF THE WINGS SHALL BE POURED WITH SPAN C OF THE SUPERSTRUCTURE. FOR DETAILS AND REINFORCING STEEL, SEE "PLAN OF SPAN C" SUPERSTRUCTURE DETAILS, SHEET 4 OF 4.

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 3 OF 4

DRAWN BY : D. HODGE DATE : 7/22
CHECKED BY : G. GILLAND DATE : 8/22

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ENGINEER OF RECORD
8/20/2024

DocuSigned by:

GREGORY M. GILLAND
ETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

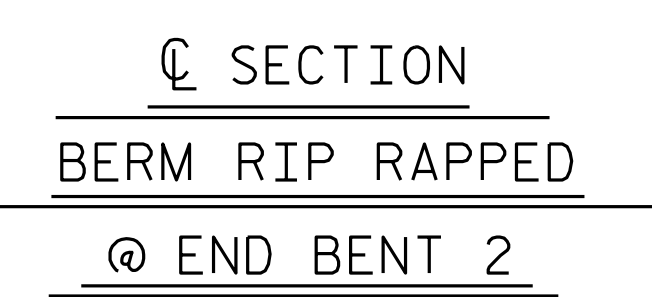
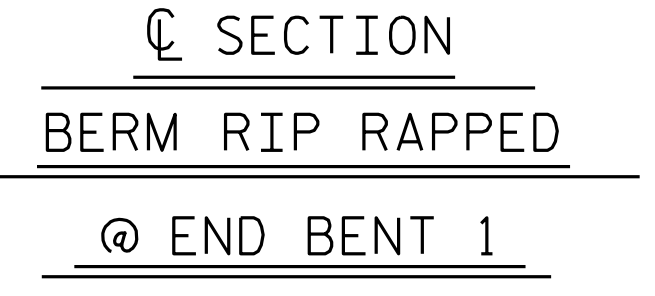
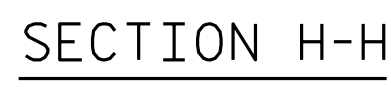
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			64

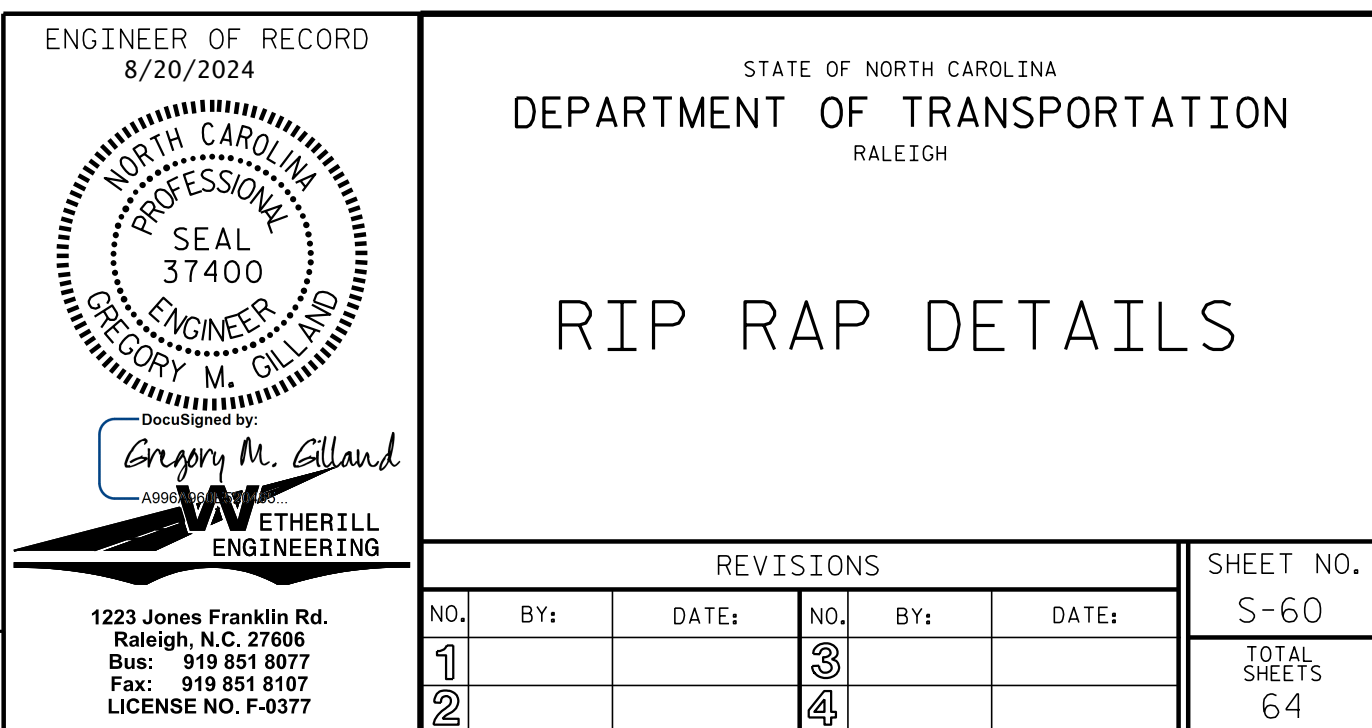


PLAN OF RIP RAP AND GRADING

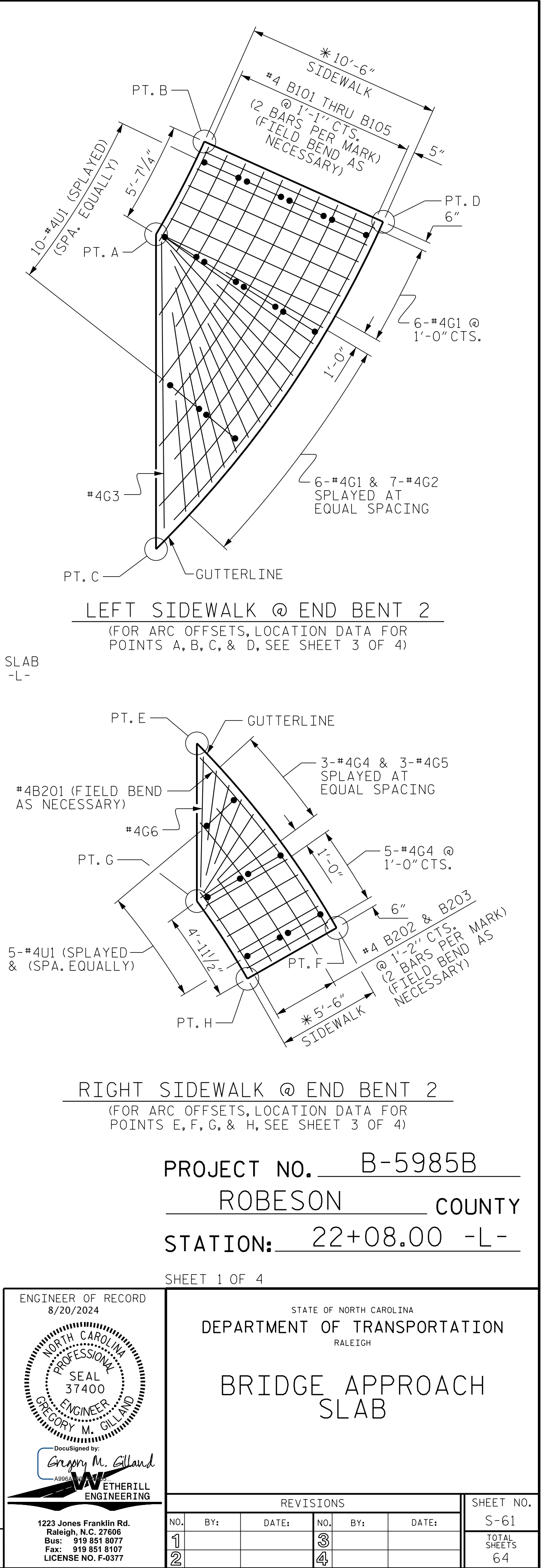
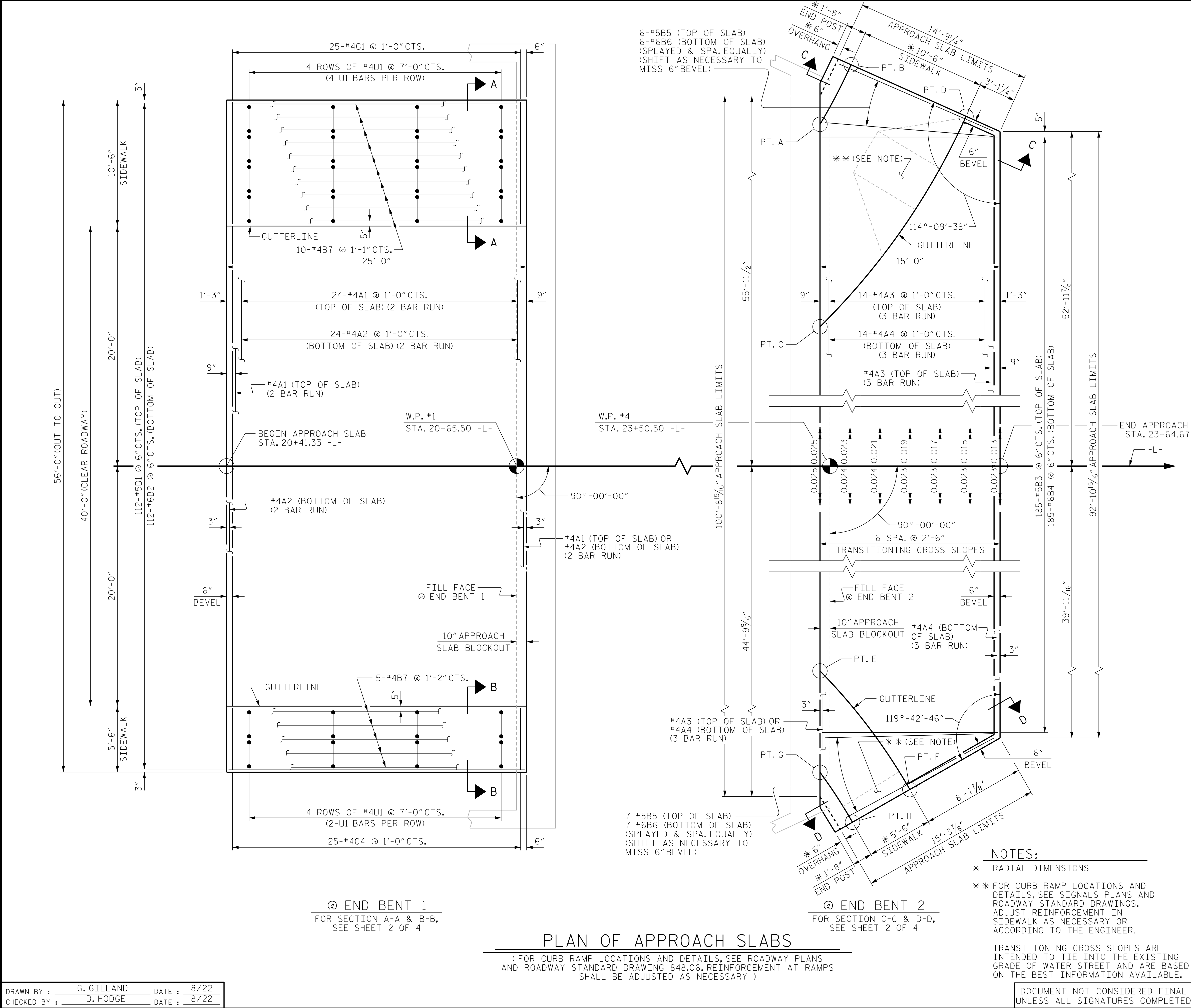


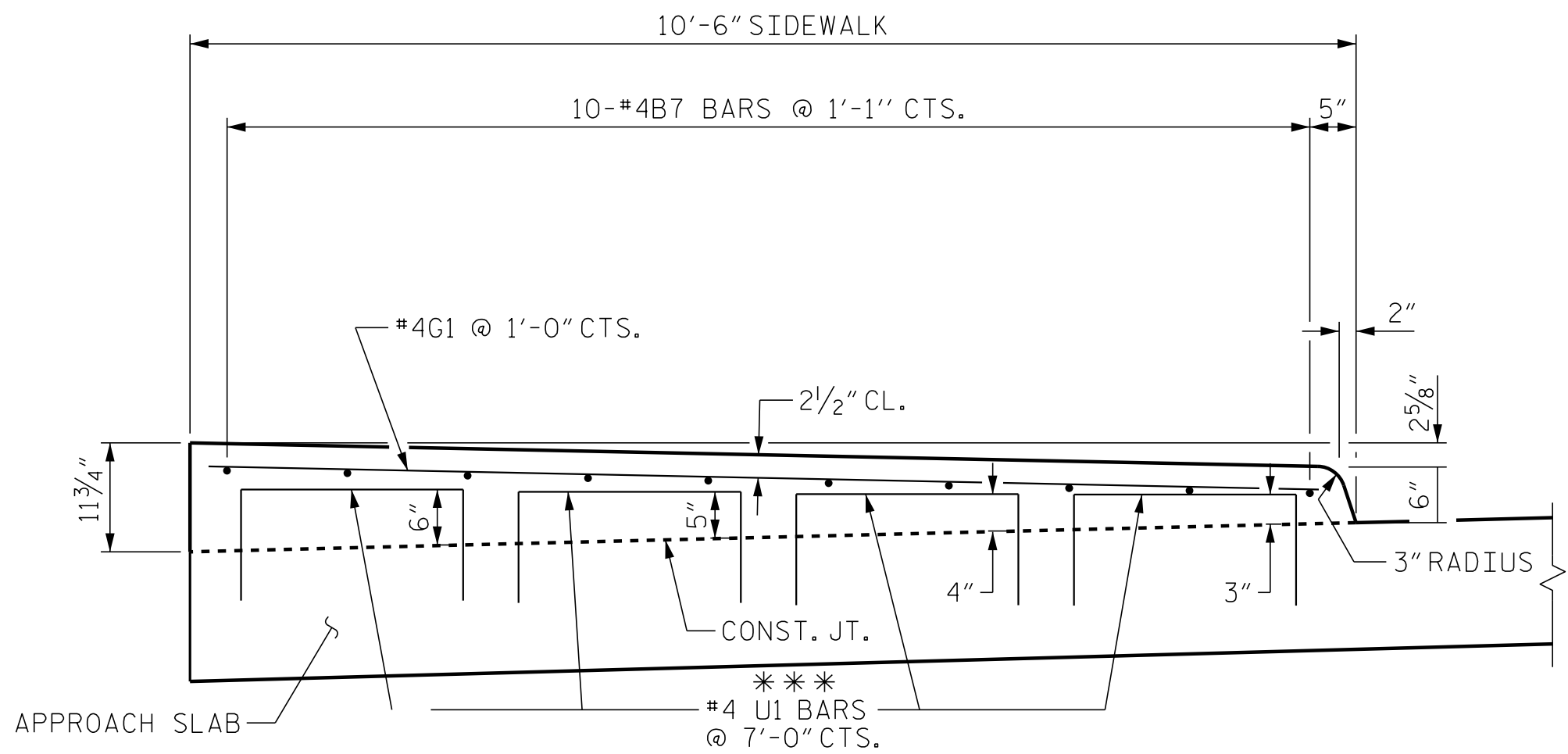
PROJECT NO. B-5985B
ROBESON COUNTY
 STATION: 22+08.00 -L-

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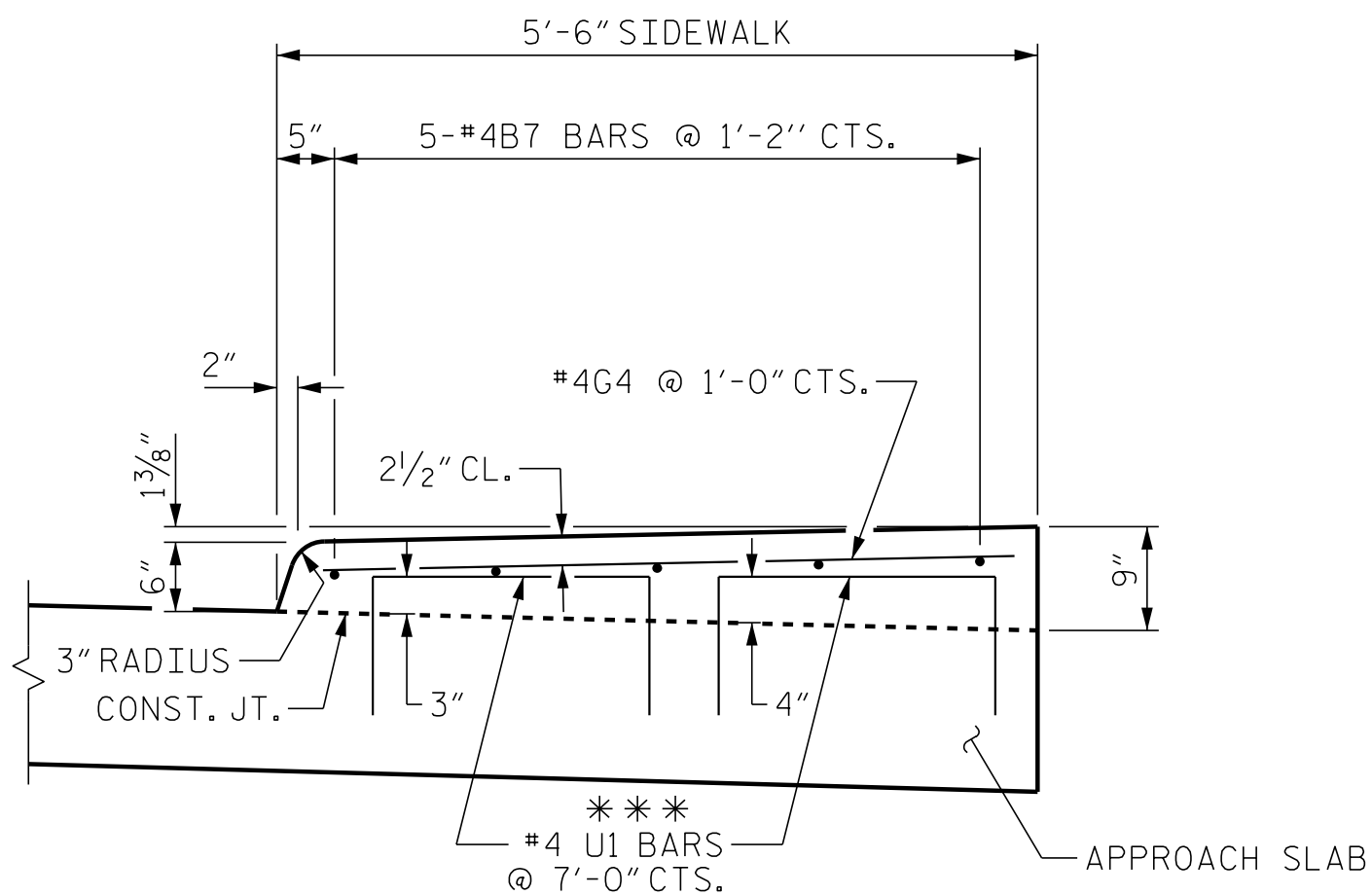


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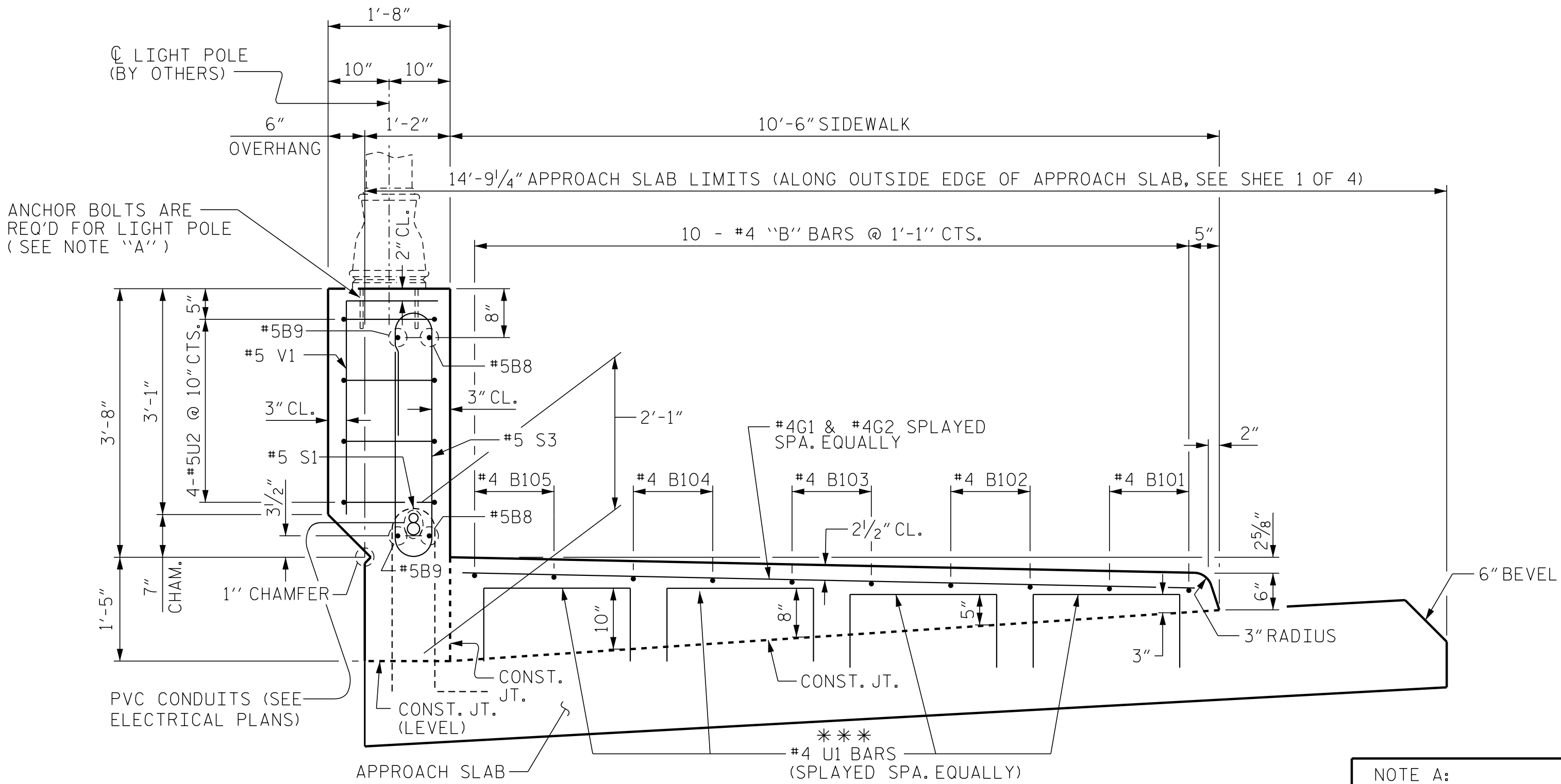




SECTION A-A



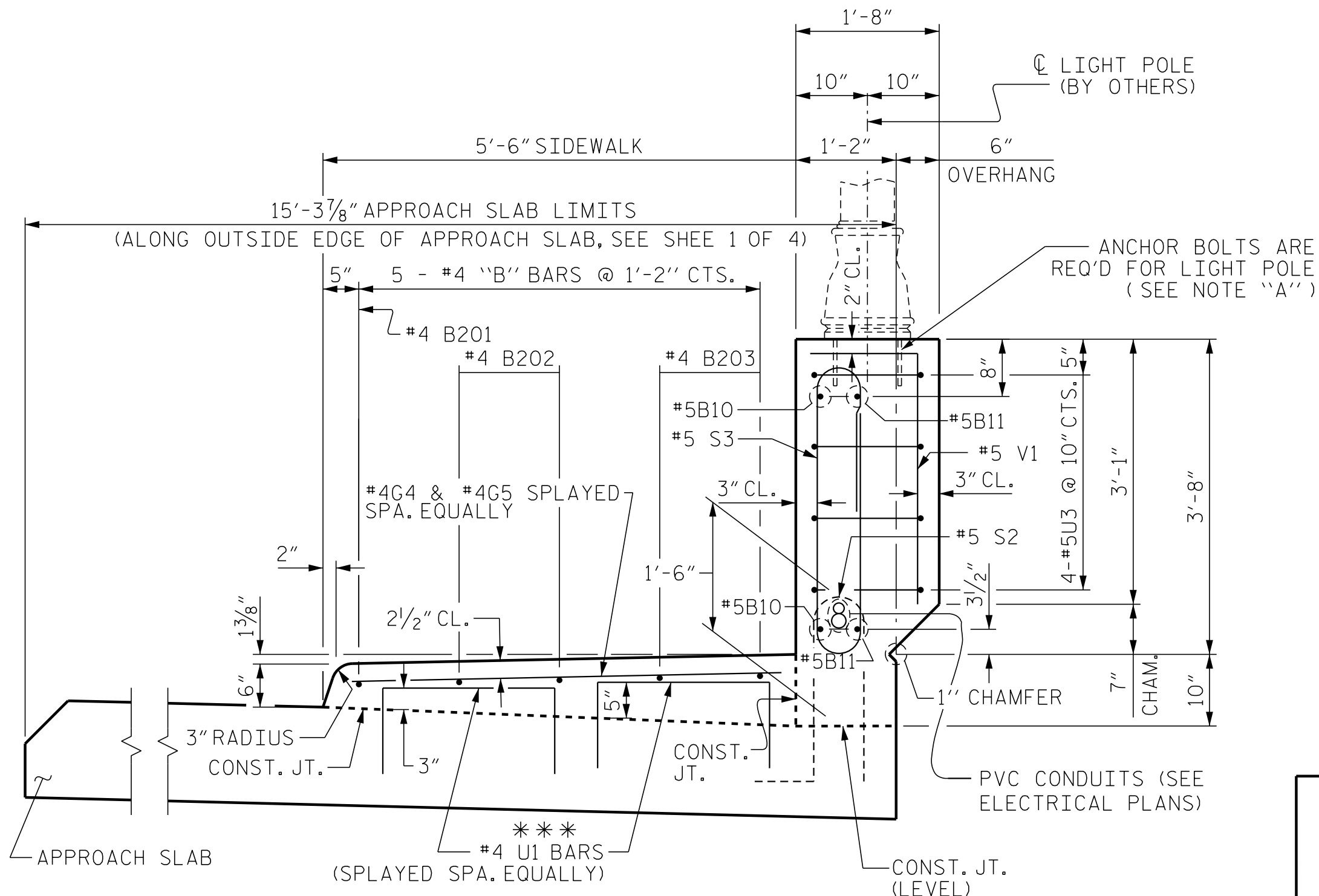
SECTION B-B



SECTION C-C

NOTE A:
COORDINATE WITH CITY OF LUMBERTON FOR
INSTALLATION OF ANCHOR BOLTS. ANCHOR BOLT
SIZE & LOCATION ARE TO BE AS SPECIFIED BY
LIGHT POLE MANUFACTURER.

*** #4U1 BARS MAY BE PUSHED INTO GREEN
CONCRETE AFTER SPAN HAS BEEN SCREEDED OFF.



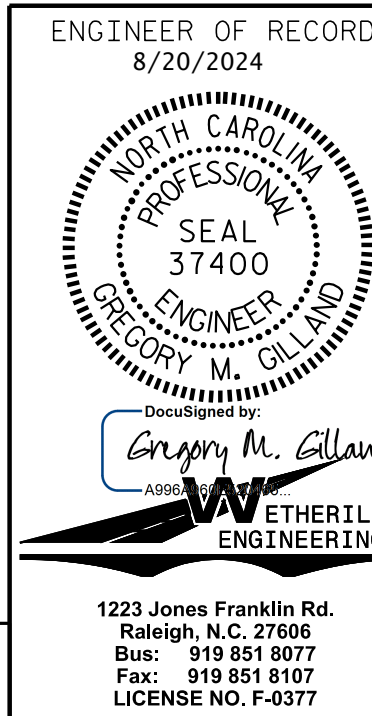
SECTION D-D

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 2 OF 4



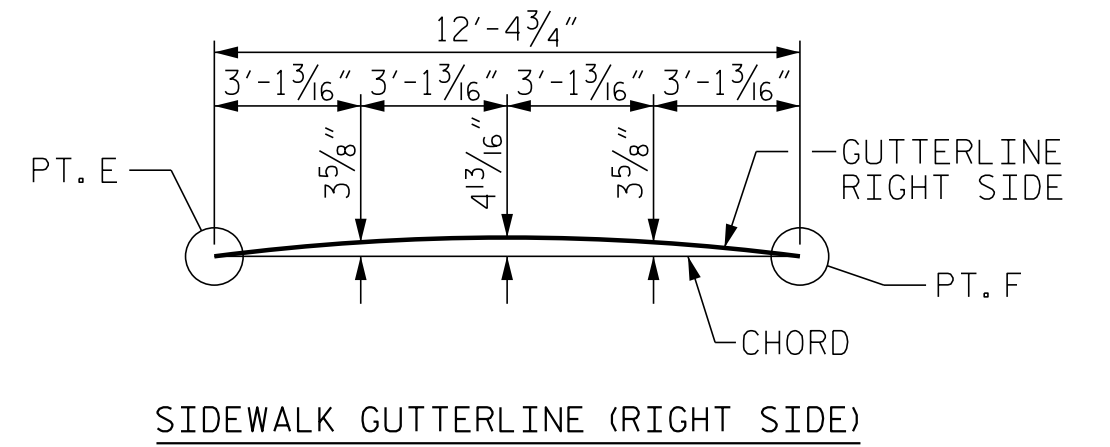
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH
SLAB
SIDEWALK & END
POST DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-62 TOTAL SHEETS 64
2			4			

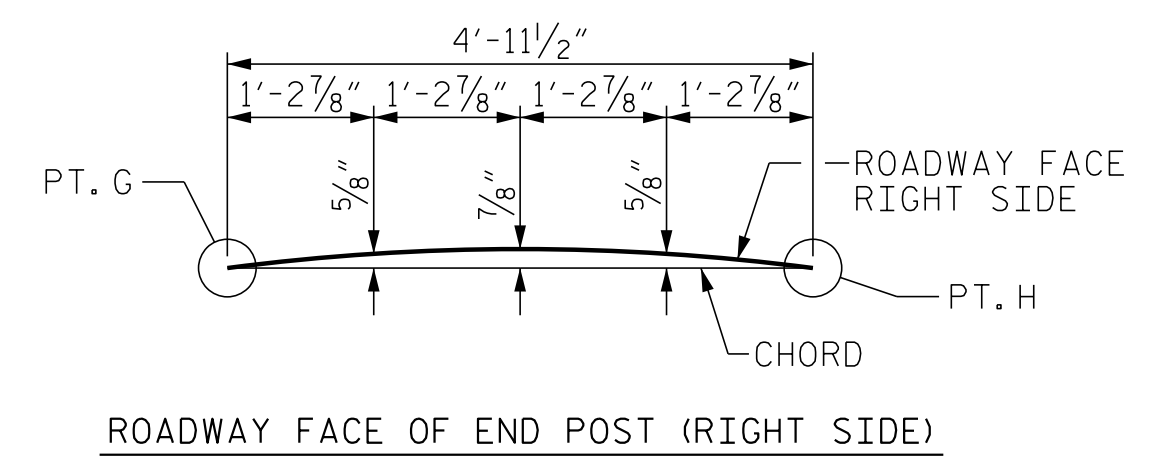
DRAWN BY : G. GILLAND DATE : 8/22
CHECKED BY : D. HODGE DATE : 8/22

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SEE SHEET 1 OF 4 FOR POINTS C, D, E & F

POINT	STATION	OFFSET
A	23+49.67 -L-	53.59' LT.
B	23+52.26 -L-	58.56' LT.
C	23+49.67 -L-	36.73' LT.
D	23+61.84 -L-	54.26' LT.
E	23+49.67 -L-	34.32' RT.
F	23+57.15 -L-	44.21' RT.
G	23+49.67 -L-	42.78' RT.
H	23+52.37 -L-	46.93' RT.



SEE SHEET 1 OF 4 FOR POINTS A, B, G & H



ANCHOR BOLTS FOR LIGHT POLES ARE REQUIRED IN LIGHTING PILASTER.COORDINATE WITH CITY OF LUMBERTON TO INSTALL ANCHOR BOLTS ACCORDING TO POLE MANUFACTURER SPECIFICATIONS.

PROJECT NO. B-5985B
ROBESON COUNTY
 STATION: 22+08.00 -L-

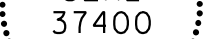
SHEET 3 OF 4

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ENGINEER OF RECORD
8/20/2014



DocuSigned by:
Gregory M. Gilland
A9060



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LICENSE NO. F-0377

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

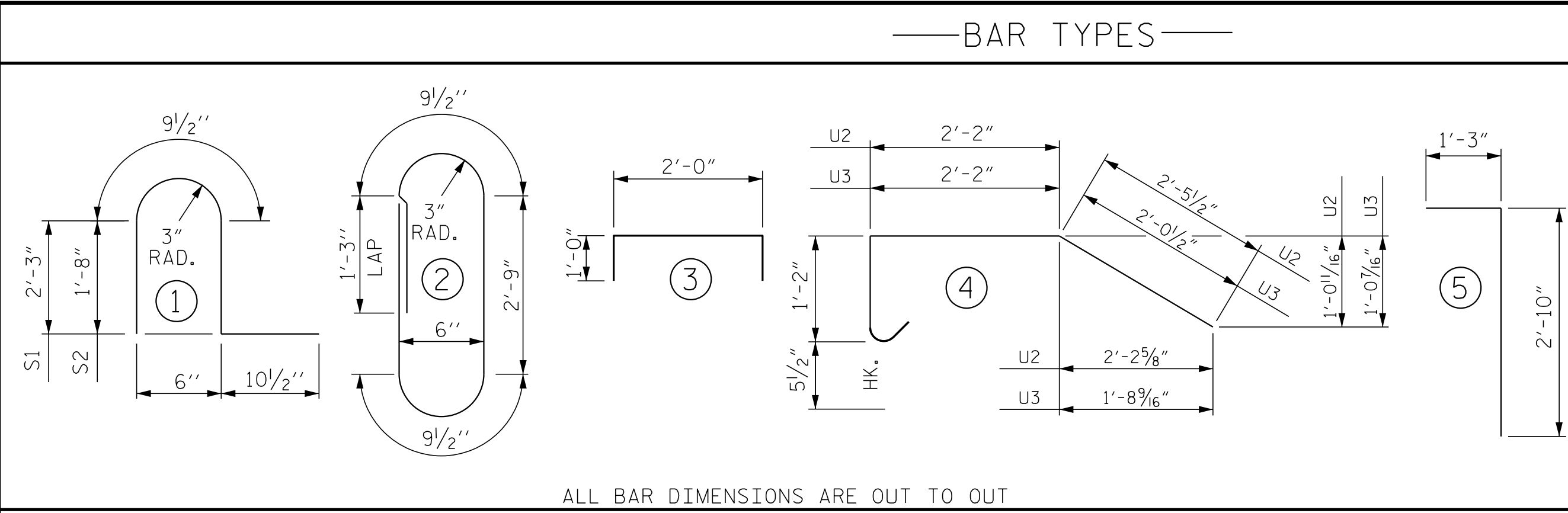
BRIDGE APPROACH
SLAB

END POST DETAILS &
ARC OFFSETS

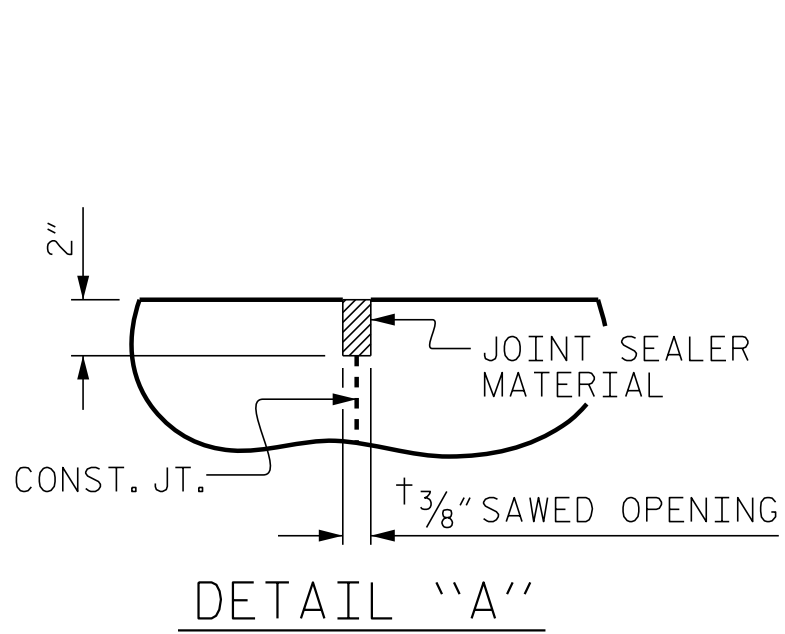
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-63 TOTAL SHEETS 64
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2			4			

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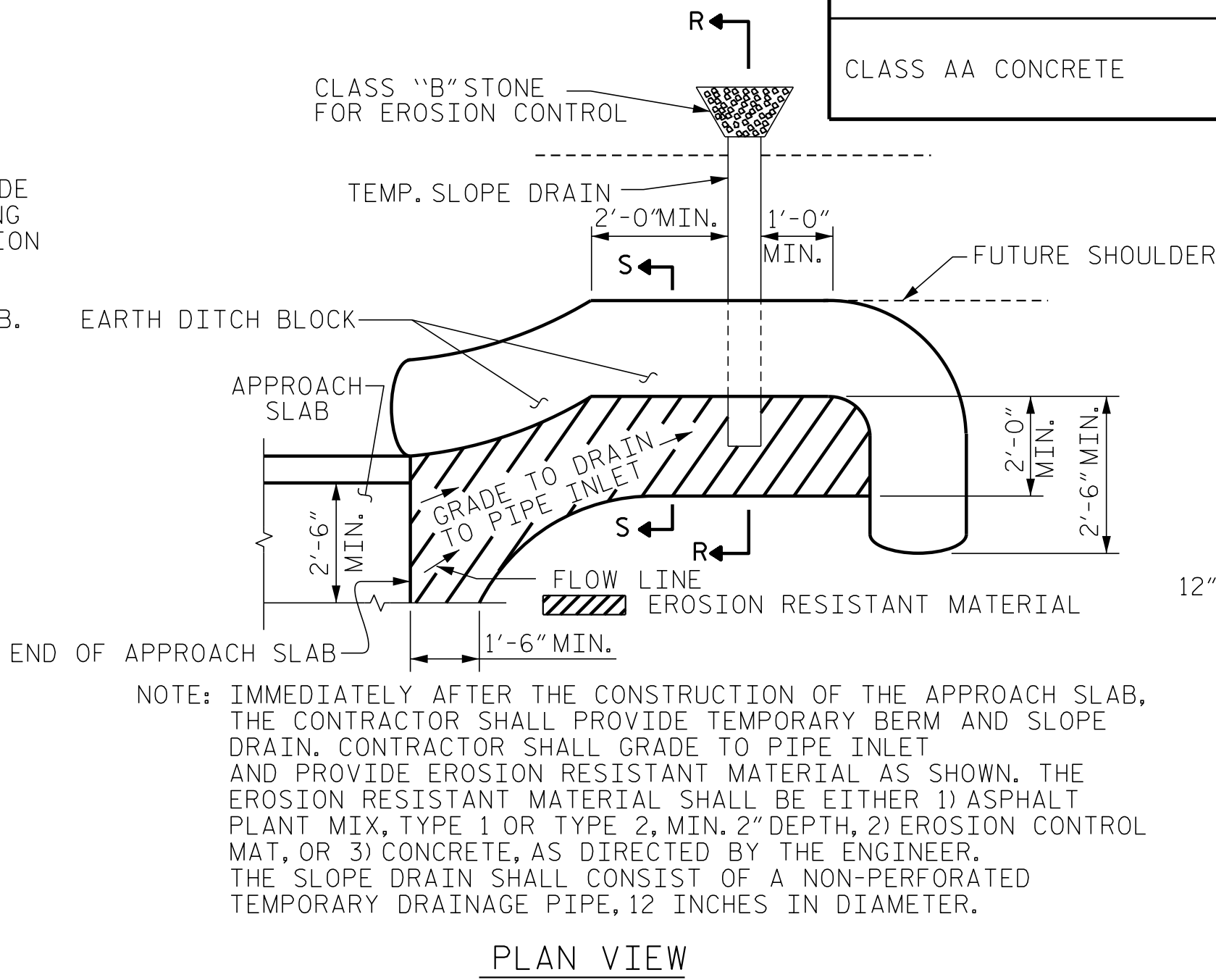
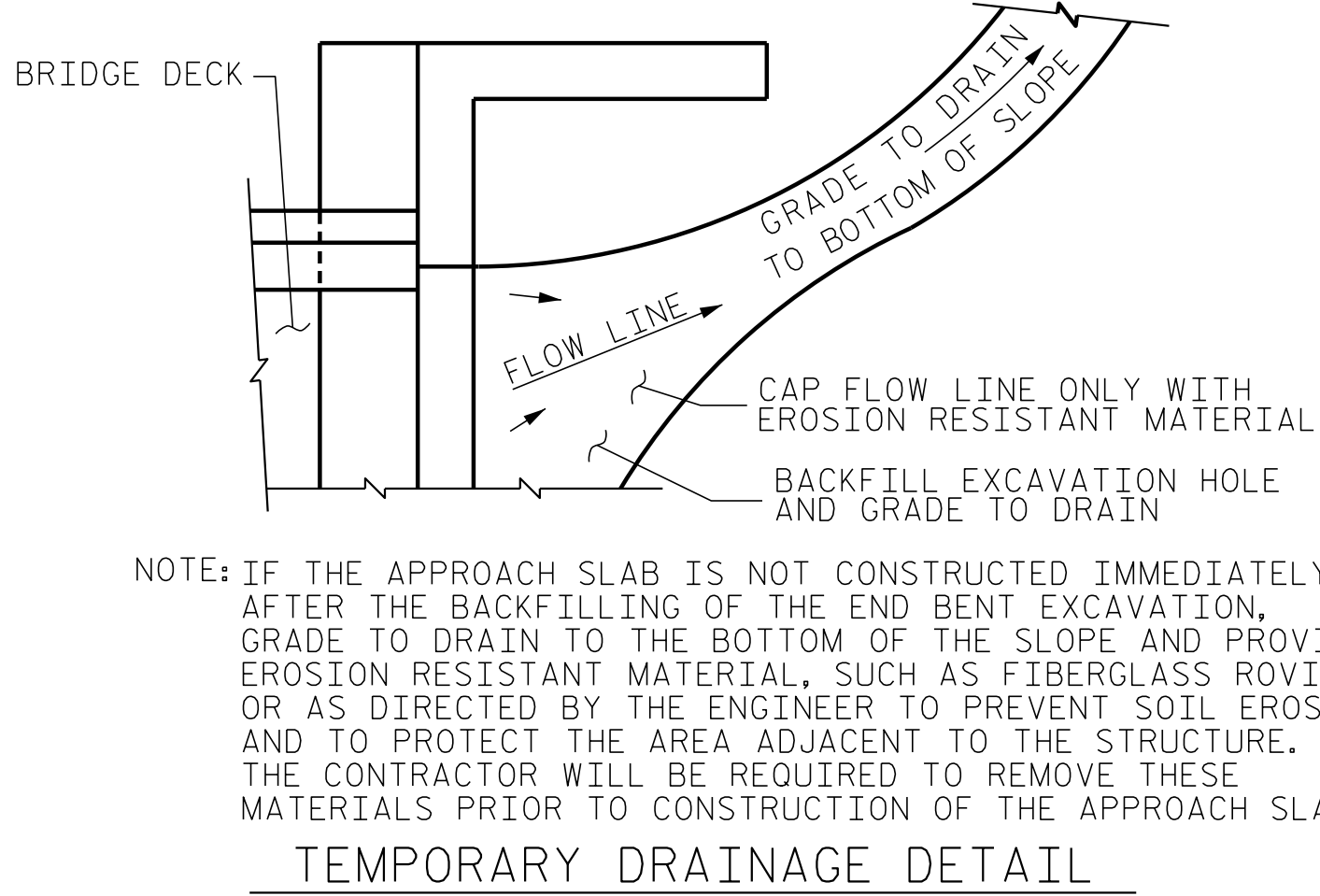
PA-2018\18156.01 B-5985 RobesonStructuresStr-2 (770175)NDGN402-001 B-5985-SITE 2 770175_SKU_AS.dgn 4/26/2024 9:56:01 AM



BILL OF MATERIAL															
FOR APPROACH SLAB @ END BENT 1						FOR APPROACH SLAB @ END BENT 2						FOR (4) SIDEWALKS			
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE
* A1	52	#4	STR	28'-10"	1,002	* A3	48	#4	STR	36'-8"	1,176	* B7	15	#4	STR
A2	52	#4	STR	28'-8"	996	A4	48	#4	STR	36'-5"	1,168				
* B1	112	#5	STR	24'-2"	2,823	* B3	185	#5	STR	14'-2"	2,734	* B101	2	#4	STR
B2	112	#6	STR	24'-8"	4,150	B4	185	#6	STR	14'-8"	4,075	* B102	2	#4	STR
						* B5	13	#5	STR	14'-0"	190	* B103	2	#4	STR
						B6	13	#6	STR	14'-0"	273	* B104	2	#4	STR
REINFORCING STEEL LBS. 5,146						REINFORCING STEEL LBS. 5,516						* B105	2	#4	STR
* EPOXY COATED REINFORCING STEEL LBS. 3,825						* EPOXY COATED REINFORCING STEEL LBS. 4,100						* B201	1	#4	STR
CLASS AA CONCRETE 60.3 C. Y.						CLASS AA CONCRETE 64.4 C. Y.						* B202	2	#4	STR
												* B203	2	#4	STR
												* G1	37	#4	STR
												* G2	7	#4	STR
												* G3	1	#4	STR
												* G4	33	#4	STR
												* G5	3	#4	STR
												* G6	1	#4	STR
												* U1	39	#4	3
												* EPOXY COATED REINFORCING STEEL LBS. 304			
												CLASS AA CONCRETE 2.4 C. Y.			
												CLASSIC CONCRETE BRIDGE RAIL 10.56 LIN. FT.			
												CLASS AA CONCRETE 16.6 C. Y.			



SPlice LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"



TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 4 OF 4

ASSEMBLED BY : G. GILLAND	DATE : 4/24
CHECKED BY : D. HODGE	DATE : 4/24
DRAWN BY : TLA 10/05	REV. 12/17 MAA/THC
CHECKED BY : GM 5/06	REV. 06/19 BNB/THC
	REV. 07/23 BNB/SNM

SECTION THRU SLAB



NOTES

FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.

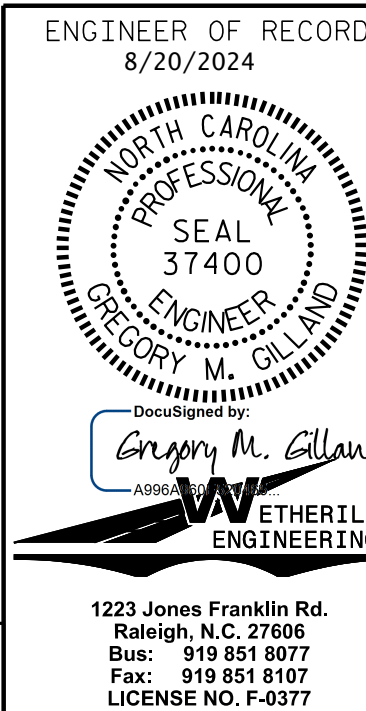
APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AT END BENT 1 AND SHALL BE PAVED. SEE ROADWAY PLANS.

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 SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

AT THE CONTRACTORS OPTION, "TYPE 1A - ALTERNATE APPROACH FILL" (ROADWAY STD. 423.02) MAY BE CONSTRUCTED AT NO ADDITIONAL COST TO THE DEPARTMENT IN LIEU OF "TYPE 1 - APPROACH FILL".

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-64
2			4			

STD. NO. BAS5

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2024 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N.C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 3/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16" INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

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