

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROBESON COUNTY

LOCATION: BRIDGE NO. 770125 OVER LUMBER RIVER ON NC 41/72

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

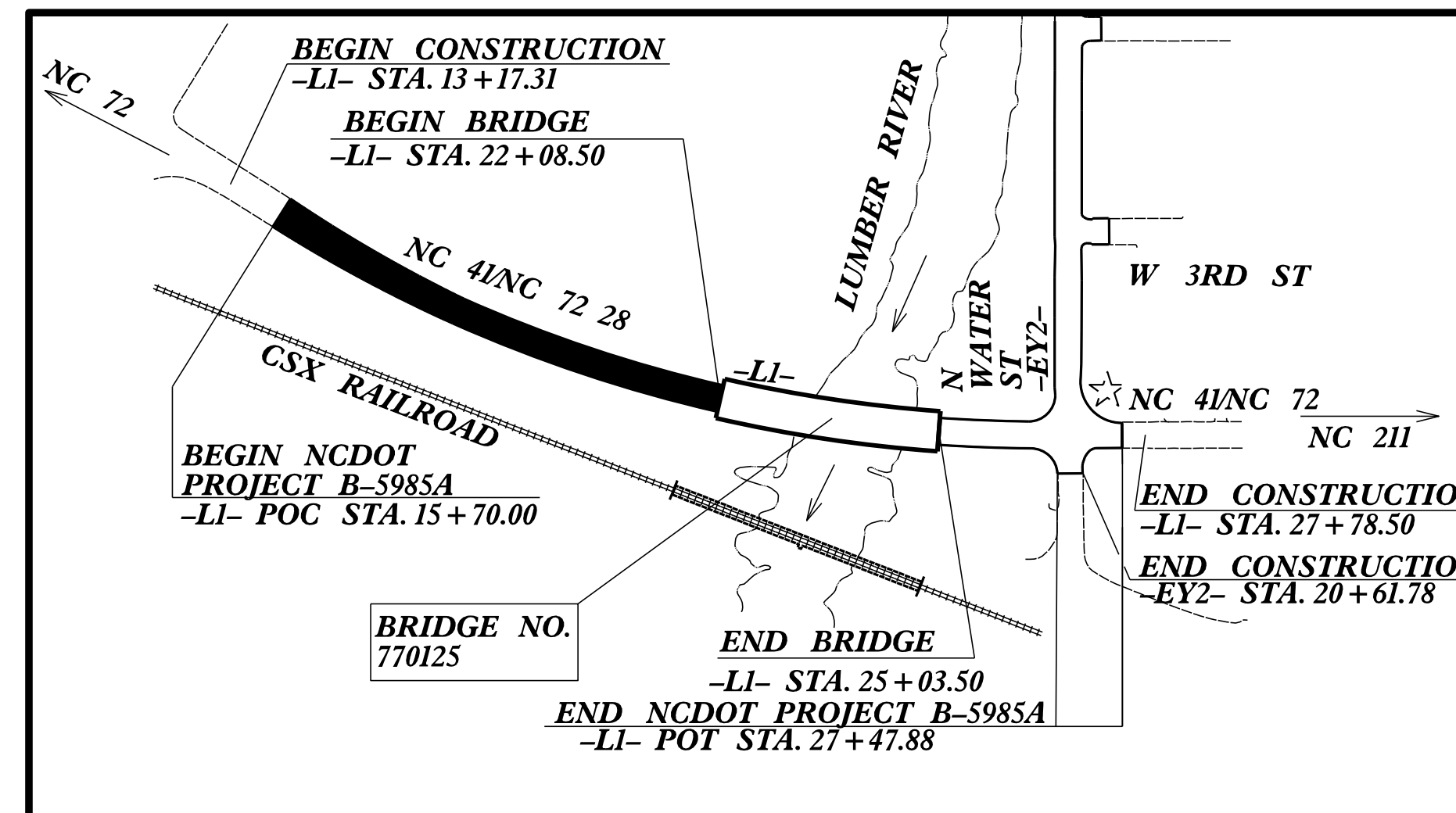
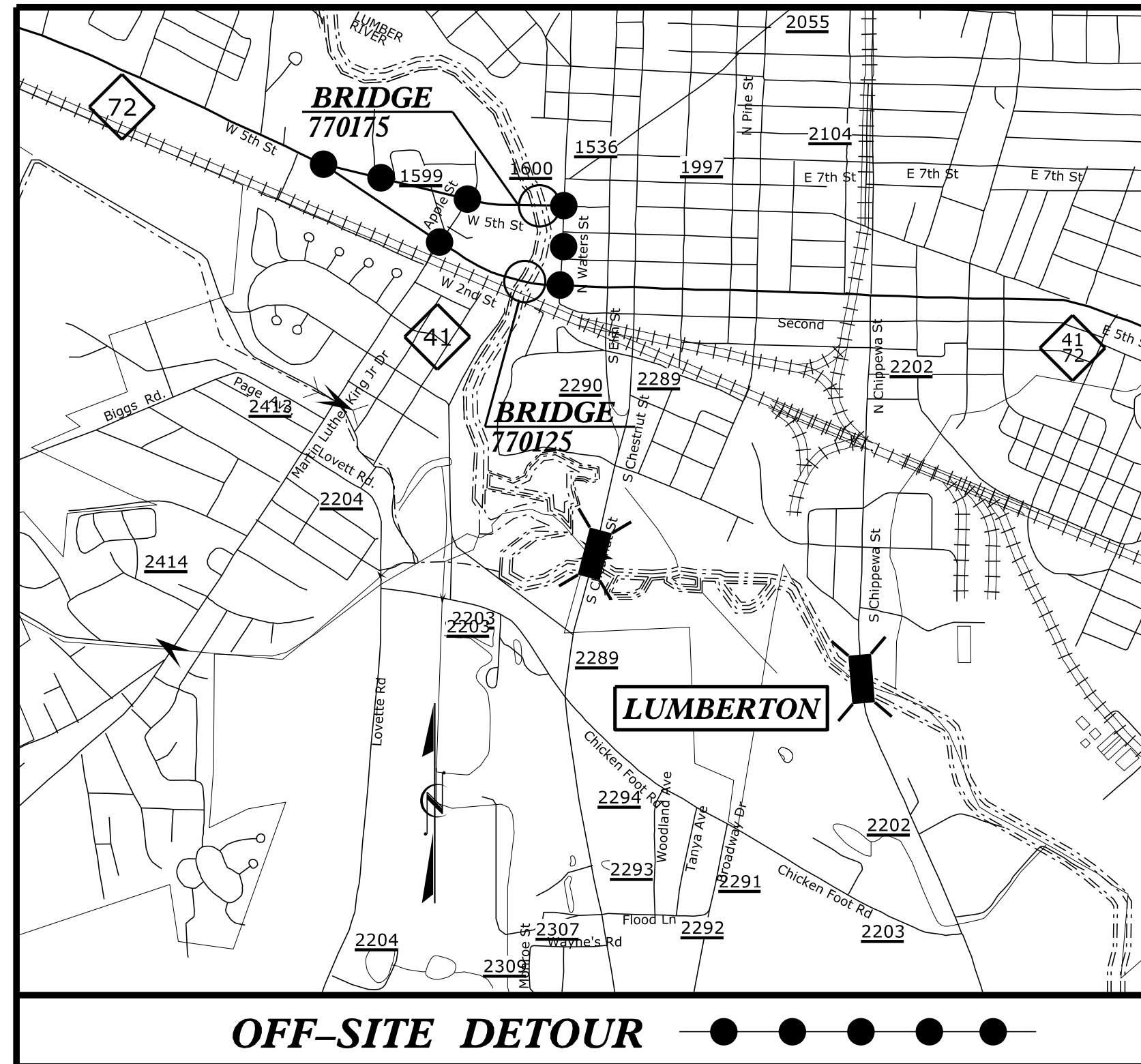
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5985A		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
47749.1.2	4774901	PE	
47749.2.1	0041115	ROW	
47749.2.2	0041115	UTILITY	
47749.3.2	4774901	CONST.	

WETHERILL ENGINEERING
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 #770125

STRUCTURE PLANS



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PROJECT: B-5985A

CONTRACT: C204764

DESIGN DATA

BRIDGE # 770125
ADT 2022 = 15,200
ADT 2042 = 17,000
K = 9 %
D = 55 %
T = 6 % *
V = 40 MPH
* (TTST = 2% +
DUAL = 4%)
FUNC CLASS =
PRINCIPAL ARTERIAL
REGIONAL TIER

PROJECT LENGTH

BRIDGE # 770125
LENGTH ROADWAY PROJECT B-5985A = 0.175 MILES
LENGTH STRUCTURE PROJECT B-5985A = 0.056 MILES
TOTAL LENGTH PROJECT B-5985A = 0.231 MILES

NCDOT CONTACT: DAVID STUTTS, PE
PROJECT ENGINEER - PEP/PROGRAM MGT.

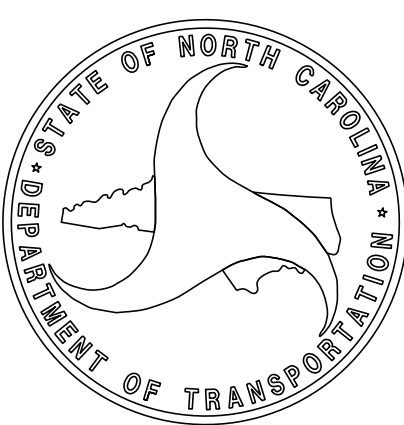
Prepared for:
DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DRIVE RALEIGH NC, 27610

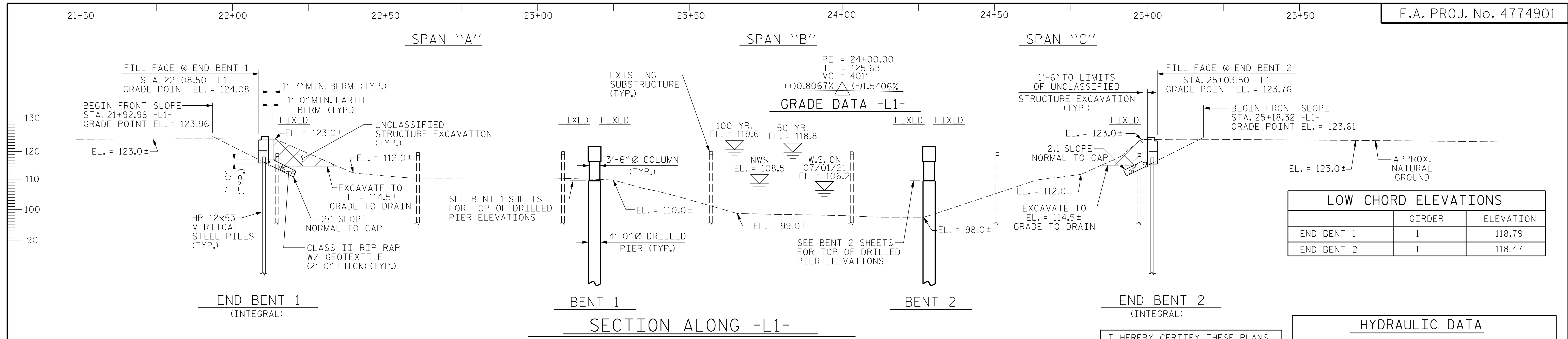
2018 STANDARD SPECIFICATIONS
RIGHT OF WAY DATE:
JANUARY 27, 2022

LETTING DATE:
JULY 18, 2023

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

JOHN A DILWORTH, PE
PROJECT DESIGN ENGINEER

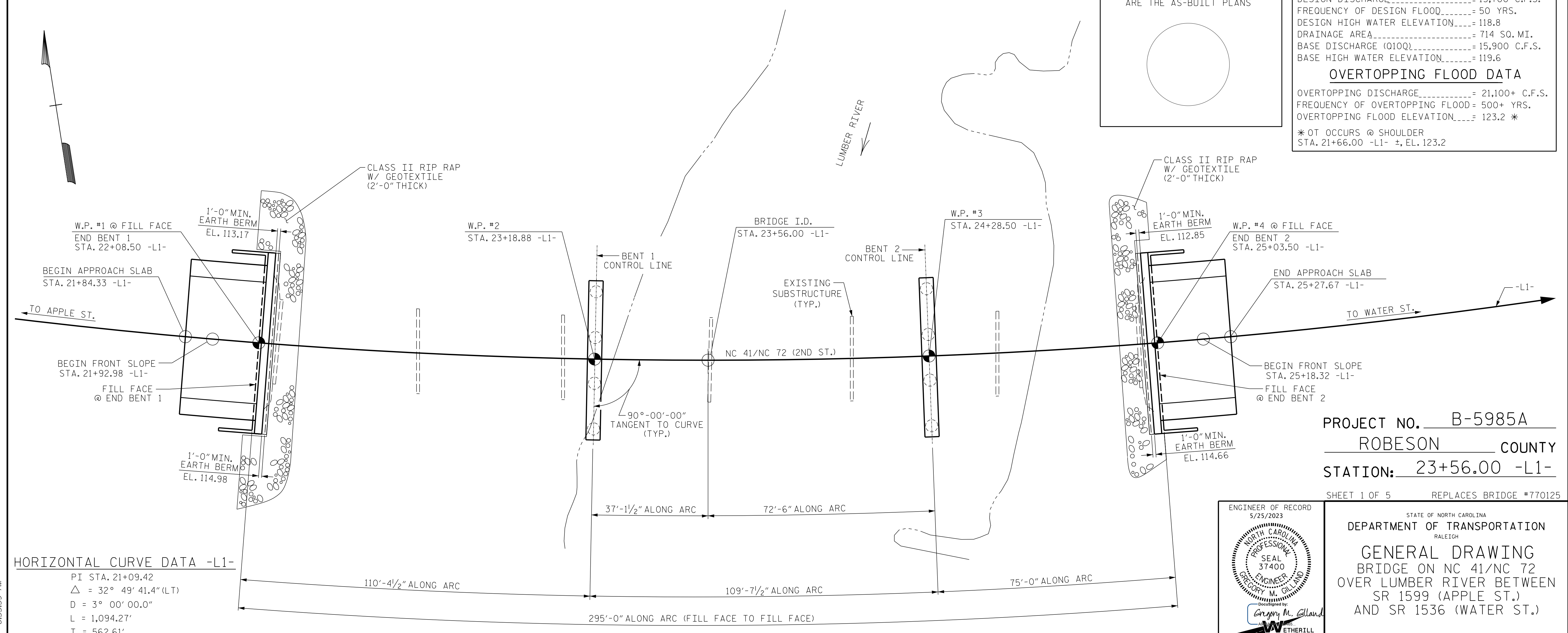




LOW CHORD ELEVATIONS		
	GIRDER	ELEVATION
END BENT 1	1	118.79
END BENT 2	1	118.47

HYDRAULIC DATA	
DESIGN DISCHARGE	= 13,700 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 50 YRS.
DESIGN HIGH WATER ELEVATION	= 118.8
DRAINAGE AREA	= 714 SQ. MI.
BASE DISCHARGE (Q10Q)	= 15,900 C.F.S.
BASE HIGH WATER ELEVATION	= 119.6
OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE	= 21,100+ C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	= 500+ YRS.
OVERTOPPING FLOOD ELEVATION	= 123.2 *
* OT OCCURS @ SHOULDER STA. 21+66.00 -L1- ±, EL. 123.2	

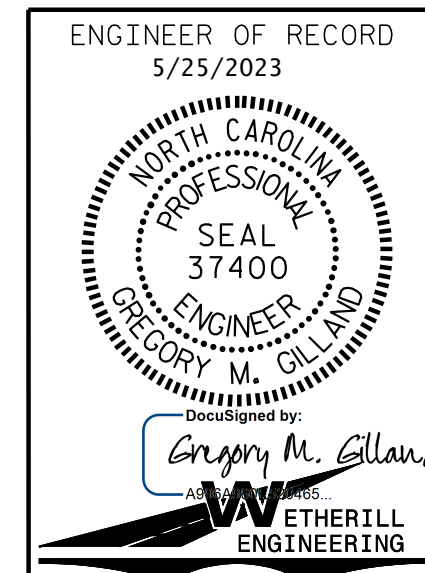
I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS



HORIZONTAL CURVE DATA -L1-

PI STA.	21+09.42
Δ	= 32° 49' 41.4" (LT)
D	= 3° 00' 00.0"
L	= 1,094.27'
T	= 562.61'
R	= 1,909.86'

PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 1 OF 5 REPLACES BRIDGE #770125



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE ON NC 41/NC 72
 OVER LUMBER RIVER BETWEEN
 SR 1599 (APPLE ST.)
 AND SR 1536 (WATER ST.)

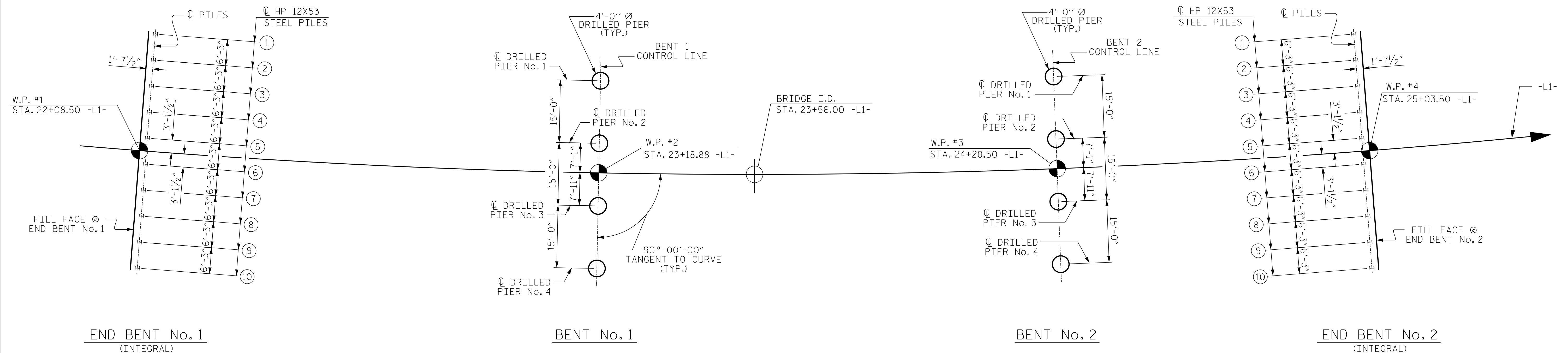
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-01
1			3			TOTAL SHEETS
2			4			49

DRAWN BY: J. PENDERGRAFT DATE: 5-22
 CHECKED BY: D. HODGE DATE: 6-22

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
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FOUNDATION LAYOUT

FOUNDATION NOTES:

- FOR PILES, SEE PILES PROVISION AND SECTION 450 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 83.5 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 83.5 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.
- REFER TO PILE AND DRILLED PIER FOUNDATION TABLES (SHEET 3 OF 5).

PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 2 OF 5

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DRAWN BY : J. PENDERGRAFT DATE : 6-22
 CHECKED BY : G. GILLAND DATE : 6-22

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ENGINEER OF RECORD
 2/6/2023

 Gregory M. Gilland
 WETHERILL ENGINEERING
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 Bus: 919 851 8077
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 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 BRIDGE ON NC 41/NC 72
 OVER LUMBER RIVER BETWEEN
 SR 1599 (APPLE ST.)
 AND SR 1536 (WATER ST.)

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

SHEET NO.
 S-02
 TOTAL SHEETS
 49

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'")	FACTORED RESISTANCE PER PILE (TONS)	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		
					MIN. PILE TIP (TIP NO HIGHER THAN) ELEV. (FT)	REQUIRED DRIVING RESISTANCE (RDR)** PER PILE (TONS)	TOTAL PILE REDRIVES QUANTITY (EACH)	PREDRILLING LENGTH PER PILE (LIN FT)	PREDRILLING ELEVATION (ELEV NOT TO PREDRILL BELOW) (FT)	MAXIMUM PREDRILLING DIA (INCHES)	PILE EXCAVATION (BOTTOM OF HOLE) ELEV (FT)	PILE EXC NOT IN SOIL PER PILE (LIN FT)	PILE EXC IN SOIL PER PILE (LIN FT)
END BENT 1, PILES (1-10)	120		90			200	10						
END BENT 2, PILES (1-10)	96	SEE SUBSTRUCTURE PLANS	65			160							

* 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.

**RDR = $\frac{\text{FACTORED RESISTANCE} + \text{FACTORED DOWNDRAG LOAD} + \text{FACTORED DEAD LOAD}}{\text{DYNAMIC RESISTANCE FACTOR}}$ + $\frac{\text{NOMINAL DOWNDRAG RESISTANCE} + \text{NOMINAL SCOUR RESISTANCE}}{\text{SCOUR RESISTANCE FACTOR}}$

SUMMARY OF PDA/PILE ORDER LENGTHS (BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)					
PILE DRIVING ANALYZER (PDA)			PILE ORDER LENGTHS		
END BENT/ BENT No.	PDA TESTING REQUIRED? (YES OR MAYBE)	PDA TEST PILE LENGTH (FT)	TOTAL PDA TESTING QUANTITY (EACH)	END BENT/ BENT No. (s)	PILE ORDER LENGTH BASIS* (EST OR PDA)
END BENT 1, PILES (1-10)	MAYBE	95	1		
END BENT 2, PILES (1-10)	MAYBE	70			

* EST = PILE ORDER LENGTHS FROM ESTIMATED PILE LENGTHS; PDA = PILE ORDER LENGTHS BASED ON PDA TESTING. FOR GROUPS OF END BENTS/BENTS WITH PILE ORDER LENGTHS BASED ON PDA TESTING, THE FIRST END BENT/BENT No. LISTED FOR EACH GROUP IS THE REPRESENTATIVE END BENT/BENT WITH THE PDA.

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 (TONS)	FACTORED DOWNDRAG LOAD PER PILE (TONS)	FACTORED DEAD LOAD* PER PILE (TONS)	DYNAMIC RESISTANCE FACTOR	NOMINAL DOWNDRAG RESISTANCE PER PILE (TONS)	NOMINAL SCOUR RESISTANCE PER PILE (TONS)	SCOUR RESISTANCE FACTOR (DEFAULT = 1.00)
END BENT 1, PILES (1-10)	120			0.60			1.00
END BENT 2, PILES (1-10)	96			0.60			1.00

* FACTORED DEAD LOAD IS FACTORED WEIGHT OF PILE ABOVE GROUND LINE.

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'")	FACTORED RESISTANCE PER PIER (TONS)	MIN. PIER TIP (TIP NO HIGHER THAN) ELEV. (FT)	REQUIRED TIP RESISTANCE PER PIER (TSF)	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 OR MAYBE	PERMANENT STEEL CASING TIP ELEVATION (ELEV NOT TO EXTEND CASING BELOW) (FT)	PERMANENT STEEL CASING LENGTH* PER PIER (LIN FT)
BENT 1, PIERS (1-4)	520	14.0	5	80		95,583			YES	79.0	30.0
BENT 2, PIERS (1-4)	520	19.0	5	80		90,583			YES	79.0	30.0

* PERMANENT STEEL CASING LENGTH EQUALS THE DIFFERENCE BETWEEN THE GROUND LINE OF TOP OF DRILLED PIER ELEVATION, WHICHEVER IS HIGHER, AND THE PERMANENT CASING TIP ELEVATION.

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) REQUIRED? YES OR MAYBE	CROSSHOLE SONIC LOGGING (CSL) REQUIRED?*	TOTAL CSL TUBE LENGTH (FOR ALL TUBES) PER PIER (LIN FT)	SHAFT INSPECTION DEVICE (SID) REQUIRED? YES OR MAYBE	PILE INTEGRITY TEST (PIT) REQUIRED? MAYBE
BENT 1, PIERS (1-4)	MAYBE	MAYBE	386	MAYBE	
BENT 2, PIERS (1-4)	MAYBE	MAYBE	366	MAYBE	
TOTAL QTY:	2	2	3,008	2	

* CSL TUBES ARE REQUIRED IF CSL TESTING IS OR MAY BE REQUIRED. THE NUMBER OF CSL TUBES PER DRILLED PIER IS EQUAL TO ONE TUBE PER FOOT OF DESIGN PIER DIAMETER WITH AT LEAST 4 TUBES PER PIER. THE LENGTH OF EACH CSL TUBE IS EQUAL TO THE DRILLED PIER LENGTH PLUS 1.5 FT.

NOTES:

THE PILE AND DRILLED PIER FOUNDATION TABLES ARE BASED ON THE BRIDGE SUBSTRUCTURE DESIGN AND FOUNDATION RECOMMENDATIONS SEALED BY A NORTH CAROLINA PROFESSIONAL ENGINEER (YINHUI LUI, PE #034020) ON 03/25/22.

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 WILL DETERMINE THE NEED FOR PDA TESTING, SPT'S, CSL TESTING AND SID INSPECTIONS WHEN THESE ITEMS MAY BE REQUIRED.

PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-

SHEET 3 OF 5

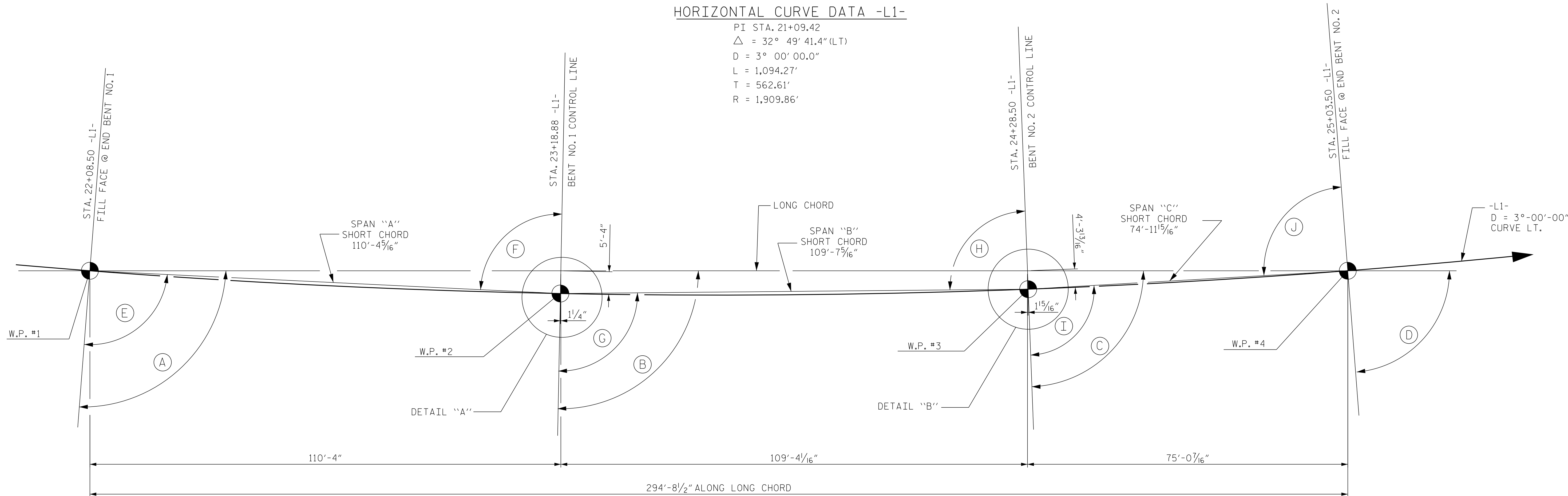
	ENGINEER OF RECORD 2/6/2023		STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH GENERAL DRAWING PILE AND DRILLED PIER FOUNDATION TABLES		SHEET NO. S-03
	1223 Jones Franklin Rd. Raleigh, N.C. 27606 Bus: 919 851 8077 Fax: 919 851 8107 LICENSE NO. F-0377		REVISIONS		TOTAL SHEETS 49
NO. 1 BY: G. GILLAND DATE: 5-22-22	NO. 2 BY: G. GILLAND DATE: 6-22-22	NO. 3 BY: G. GILLAND DATE: 6-22-22	NO. 4 BY: G. GILLAND DATE: 6-22-22		

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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HORIZONTAL CURVE DATA -L1-

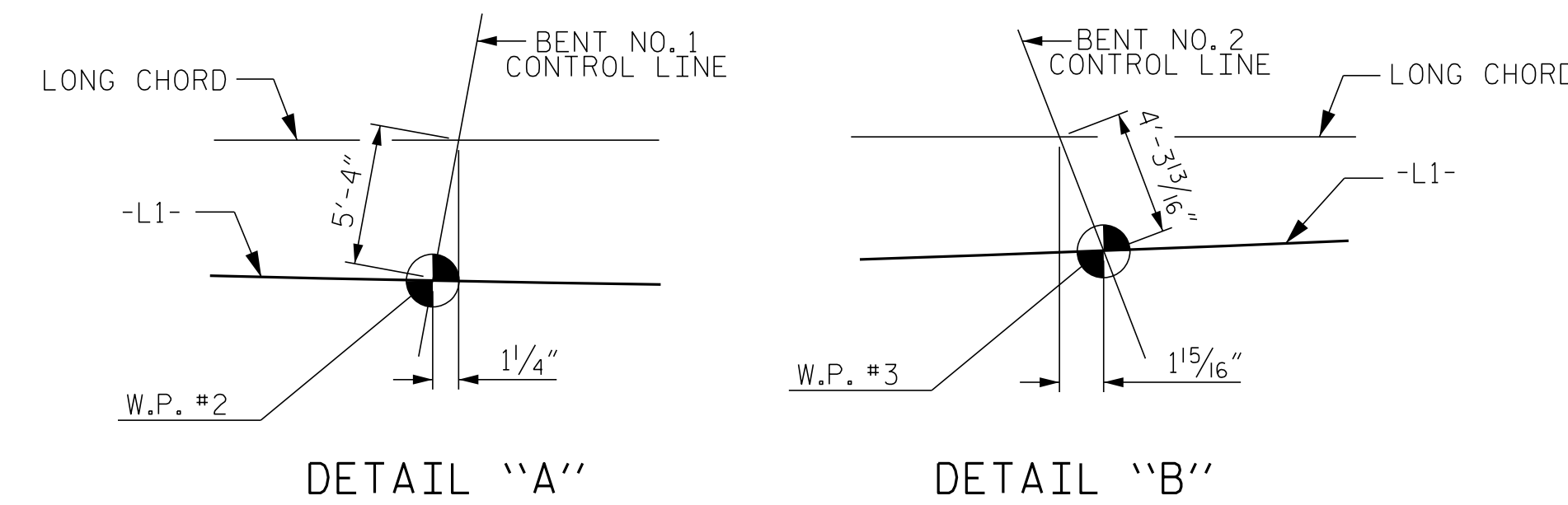
PI STA. 21+09.42
 $\Delta = 32^\circ 49' 41.4''$ (LT)
 D = $3^\circ 00' 00.0''$
 L = 1,094.27'
 T = 562.61'
 R = 1,909.86'



ANGLES			
LONG CHORD		SHORT CHORD	
A	$94^\circ-25'-30''$	E	$91^\circ-39'-20''$
B	$91^\circ-06'-49''$	F	$88^\circ-20'-40''$
C	$87^\circ-49'-30''$	G	$91^\circ-38'-40''$
D	$85^\circ-34'-30''$	H	$88^\circ-21'-20''$
		I	$91^\circ-07'-30''$
		J	$88^\circ-52'-30''$

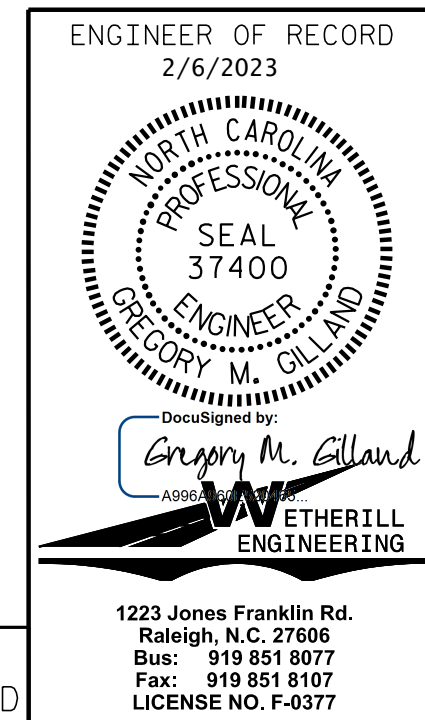
LONG CHORD LAYOUT

ALL BENTS AND END BENTS ARE RADIAL TO -L1-



PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-

SHEET 4 OF 5



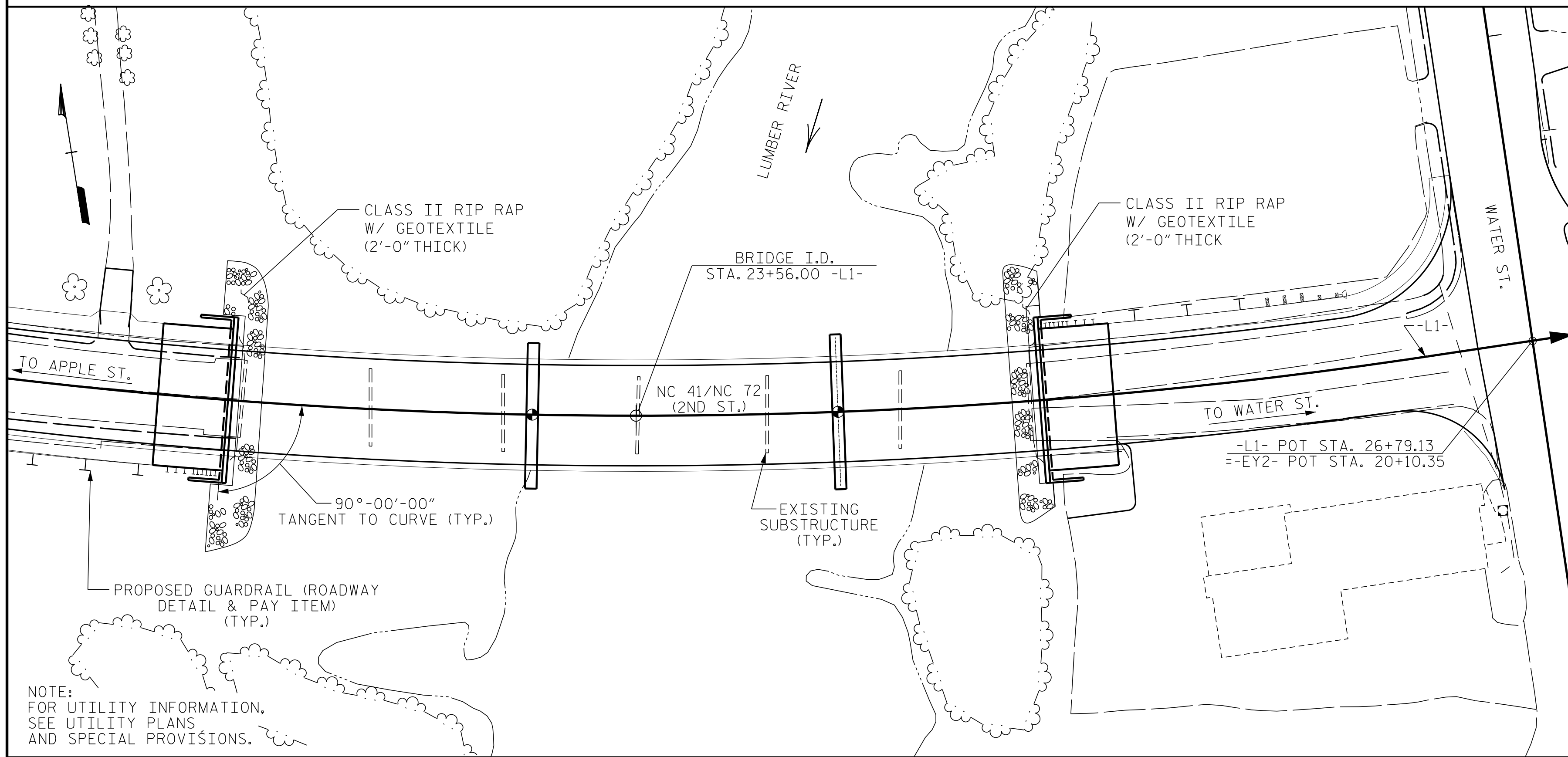
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-04
1			3			TOTAL SHEETS
2			4			49

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 1/13/2022 8:57:05 AM

DRAWN BY: J. PENDERGRAFT DATE: 8-21
 CHECKED BY: J. DILWORTH DATE: 10-21

BM-2 (RR SPIKE IN BASE OF 10" PEAR) 35.43' LT OF -L1- STA 21+49.34 EL. 124.25; N 316000 E 1996394



LOCATION SKETCH

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE & REMOVAL OF TEMP. ACCESS	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	4'-0" Ø DRILLED PIERS	PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIER	PDA TESTING	SID INSPECTIONS	SPT TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS
	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	EACH	EACH	EACH	EACH	LUMP SUM	SQ. FT.	SQ. FT.
SUPERSTRUCTURE											15,733	12,653
END BENT 1												
BENT 1				382.33	120							
BENT 2				362.33	120							
END BENT 2												
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	744.66	240	1	2	2	2	LUMP SUM	15,733	12,653

TOTAL BILL OF MATERIAL

	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	45" PRESTRESSED FLORIDA I-BEAM	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES	PILE REDRIVES	CLASSIC CONCRETE BRIDGE RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	ELECTRICAL CONDUIT SYSTEM
	CU. YDS.	LUMP SUM	LBS.	LBS.	No.	LIN. FT.	EA.	EA.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE					18	1,755.19			586.67				
END BENT 1	52.0		7,824				10	10	900	131	146		
BENT 1	48.5		31,573	10,310									
BENT 2	48.2		30,308	9,778									
END BENT 2	52.0		7,824				10	10	650	115	128		
TOTAL	200.7	LUMP SUM	77,529	20,088	18	1,755.19	20	20	1,550	10	586.67	246	274

NOTES:

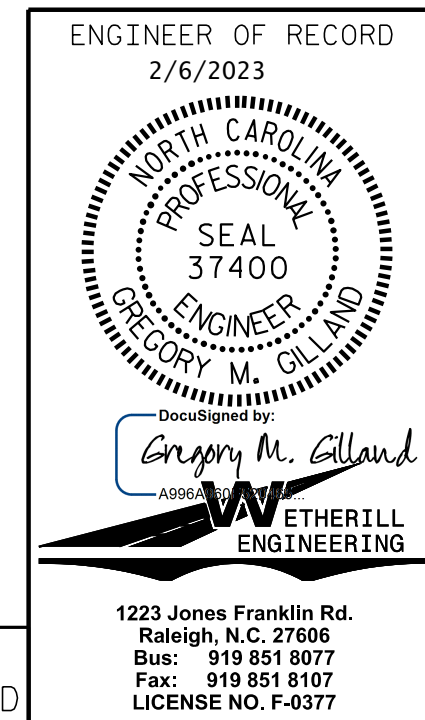
ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
 THIS BRIDGE IS LOCATED IN SEISMIC ZONE 2.
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
 FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
 FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
 FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
 FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
 FOR SECURING VESSELS, SEE SPECIAL PROVISIONS.
 FOR ELECTRICAL CONDUIT SYSTEM, SEE SPECIAL PROVISIONS.
 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.
 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 EXISTING 6 SPAN STRUCTURE CONSISTS OF 6 SPANS @ 47.5' WITH REINFORCED CONCRETE DECK ON REINFORCED CONCRETE DECK GIRDERS AND A CLEAR ROADWAY WIDTH OF 28' ON A SUBSTRUCTURE CONSISTING OF REINFORCED CONCRETE CAPS ON PPC PILES. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. 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.
 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 23+56.00 -L1-, 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/DOWNSTREAM/LEFT/RIGHT CHANNEL FOR PUBLIC NAVIGATION SAFETY.
 THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."
 FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
 FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

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 SPLICE LENGTHS AND $f_y = 60 \text{ksi}$.

PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 5 OF 5



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE ON NC 41/NC 72
 OVER LUMBER RIVER BETWEEN
 SR 1599 (APPLE ST.)
 AND SR 1536 (WATER ST.)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-05
1			3			TOTAL SHEETS
2			4			49

DRAWN BY: J. PERDERGRAFT DATE: 5-22
 CHECKED BY: G. GILLAND DATE: 6-22

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 1/130/2022 8:57:45 AM

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE						SERVICE III LIMIT STATE						COMMENT NUMBER						
						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)							
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.10	--	1.75	0.760	1.390	A & B	6	54.620	0.760	1.120	A & B	6	98.880	0.80	0.760	1.100	A & B	6	54.620	1	
	HL-93 (OPERATING)	N/A		1.49	--	1.35	0.760	1.800	A & B	6	54.620	0.760	1.490	A & B	6	98.880	N/A	--	--	--	--	--	1	
	HS-20 (INVENTORY)	36.000	②	1.57	56.520	1.75	0.760	1.980	A & B	6	54.620	0.760	1.580	A & B	6	98.880	0.80	0.760	1.570	A & B	6	54.620	1	
	HS-20 (OPERATING)	36.000		2.09	75.240	1.35	0.760	2.560	A & B	6	54.620	0.760	2.090	A & B	6	98.880	N/A	--	--	--	--	--	1	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.77	50.895	1.40	0.760	5.930	A & B	6	54.620	0.760	5.220	A & B	6	98.880	0.80	0.760	3.770	A & B	6	54.620	1
		SNGARBS2	20.000		2.71	54.200	1.40	0.760	4.260	A & B	6	54.620	0.760	3.600	A & B	6	98.880	0.80	0.760	2.710	A & B	6	54.620	1
		SNAGRIS2	22.000		2.53	55.660	1.40	0.760	3.970	A & B	6	54.620	0.760	3.300	A & B	6	98.880	0.80	0.760	2.530	A & B	6	54.620	1
		SNCOTTS3	27.250		1.87	50.958	1.40	0.760	2.950	A & B	6	54.620	0.760	2.520	A & B	6	98.880	0.80	0.760	1.870	A & B	6	54.620	1
		SNAGGRS4	34.925		1.53	53.435	1.40	0.760	2.400	A & B	6	54.620	0.760	2.020	A & B	6	98.880	0.80	0.760	1.530	A & B	6	54.620	1
		SNS5A	35.550		1.50	53.325	1.40	0.760	2.350	A & B	6	54.620	0.760	2.020	A & B	6	98.880	0.80	0.760	1.500	A & B	6	54.620	1
		SNS6A	39.950		1.36	54.332	1.40	0.760	2.130	A & B	6	54.620	0.760	1.810	A & B	6	98.880	0.80	0.760	1.360	A & B	6	54.620	1
		SNS7B	42.000		1.29	54.180	1.40	0.760	2.030	A & B	6	54.620	0.760	1.760	A & B	6	98.880	0.80	0.760	1.290	A & B	6	54.620	1
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.65	54.450	1.40	0.760	2.600	A & B	6	54.620	0.760	2.200	A & B	6	98.880	0.80	0.760	1.650	A & B	6	54.620	1
		TNT4A	33.075		1.65	54.574	1.40	0.760	2.600	A & B	6	54.620	0.760	2.160	A & B	6	98.880	0.80	0.760	1.650	A & B	6	54.620	1
		TNT6A	41.600		1.34	55.744	1.40	0.760	2.100	A & B	6	54.620	0.760	1.840	A & B	6	98.880	0.80	0.760	1.340	A & B	6	54.620	1
		TNT7A	42.000		1.34	56.280	1.40	0.760	2.100	A & B	6	54.620	0.760	1.810	A & B	6	98.880	0.80	0.760	1.340	A & B	6	54.620	1
		TNT7B	42.000		1.37	57.540	1.40	0.760	2.150	A & B	6	54.620	0.760	1.730	A & B	6	98.880	0.80	0.760	1.370	A & B	6	54.620	1
		TNAGRIT4	43.000		1.31	56.330	1.40	0.760	2.060	A & B	6	54.620	0.760	1.670	A & B	6	98.880	0.80	0.760	1.310	A & B	6	54.620	1
TNAGT5A	45.000		1.24	55.800	1.40	0.760	1.950	A & B	6	54.620	0.760	1.630	A & B	6	98.880	0.80	0.760	1.240	A & B	6	54.620	1		
TNAGT5B	45.000		③	1.23	55.350	1.40	0.760	1.940	A & B	6	54.620	0.760	1.590	A & B	6	98.880	0.80	0.760	1.230	A & B	6	54.620	1	

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:

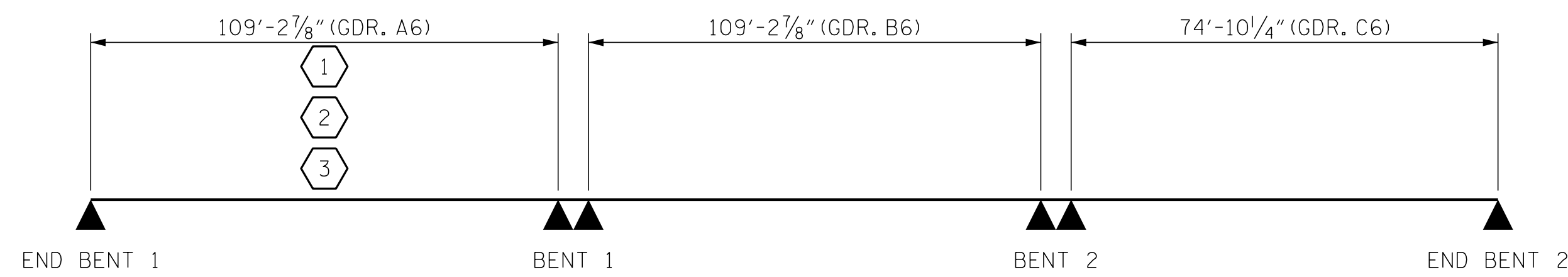
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

COMMENTS:

1. SPAN A & B SAME.
- 2.
- 3.
- 4.

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



LRFR SUMMARY

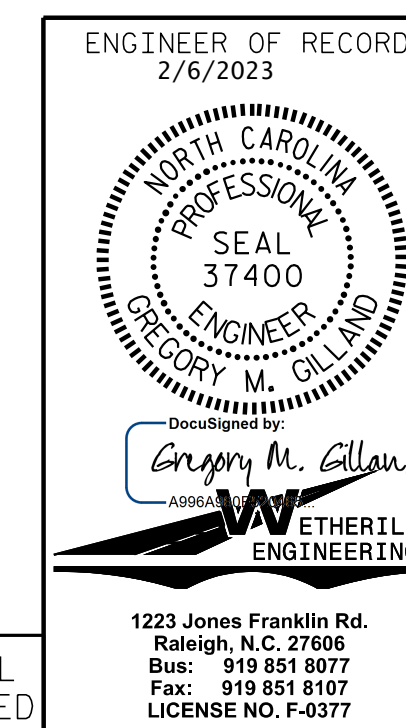
(GIRDER LENGTHS VARY. CONTROLLING GIRDER BEARING TO BEARING LENGTH SHOWN)

PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-

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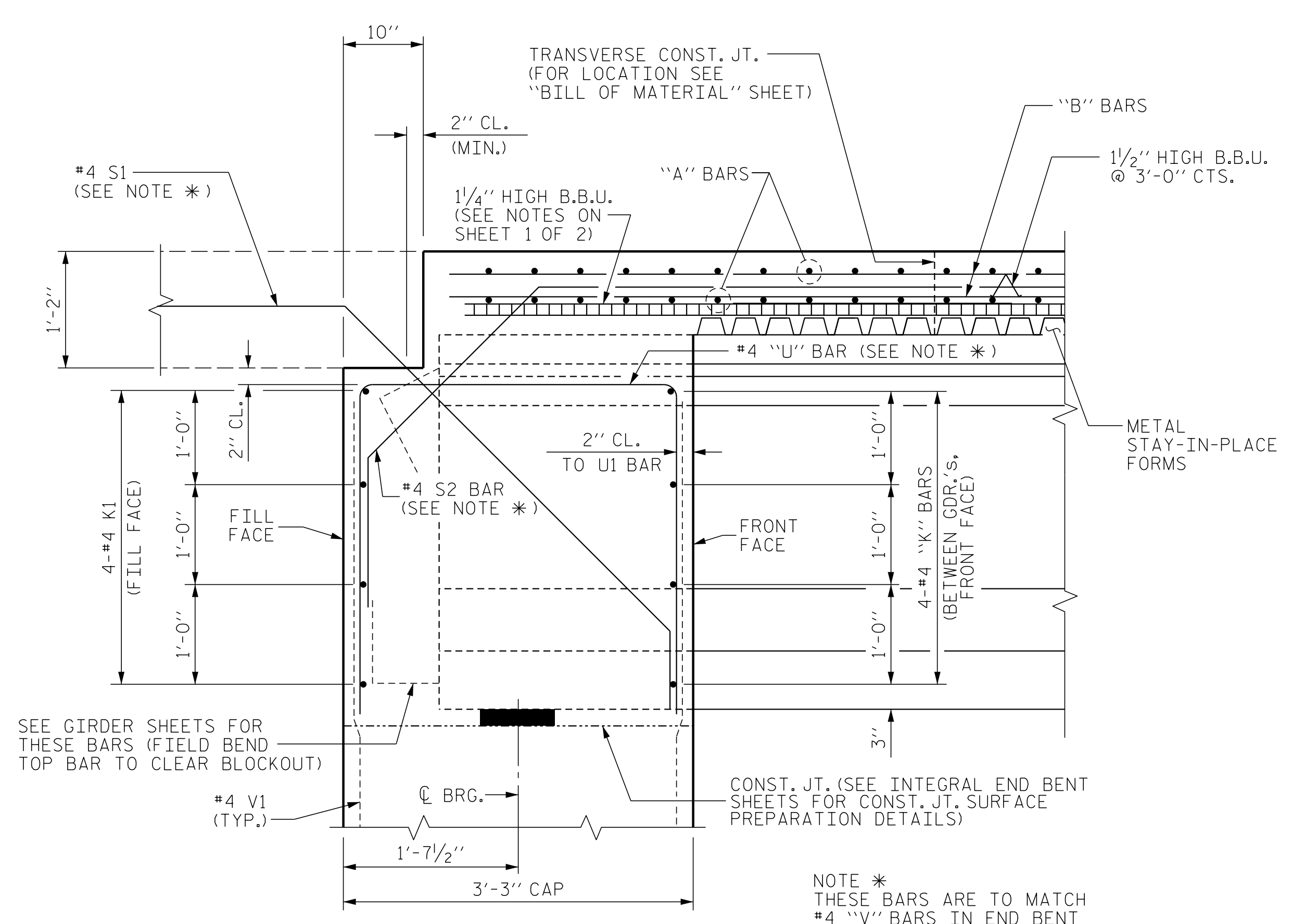
ASSEMBLED BY : J. PENDERGRAFT	DATE : 7-22
CHECKED BY : G. GILLAND	DATE : 7-22
DRAWN BY : MAA 1/08	REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

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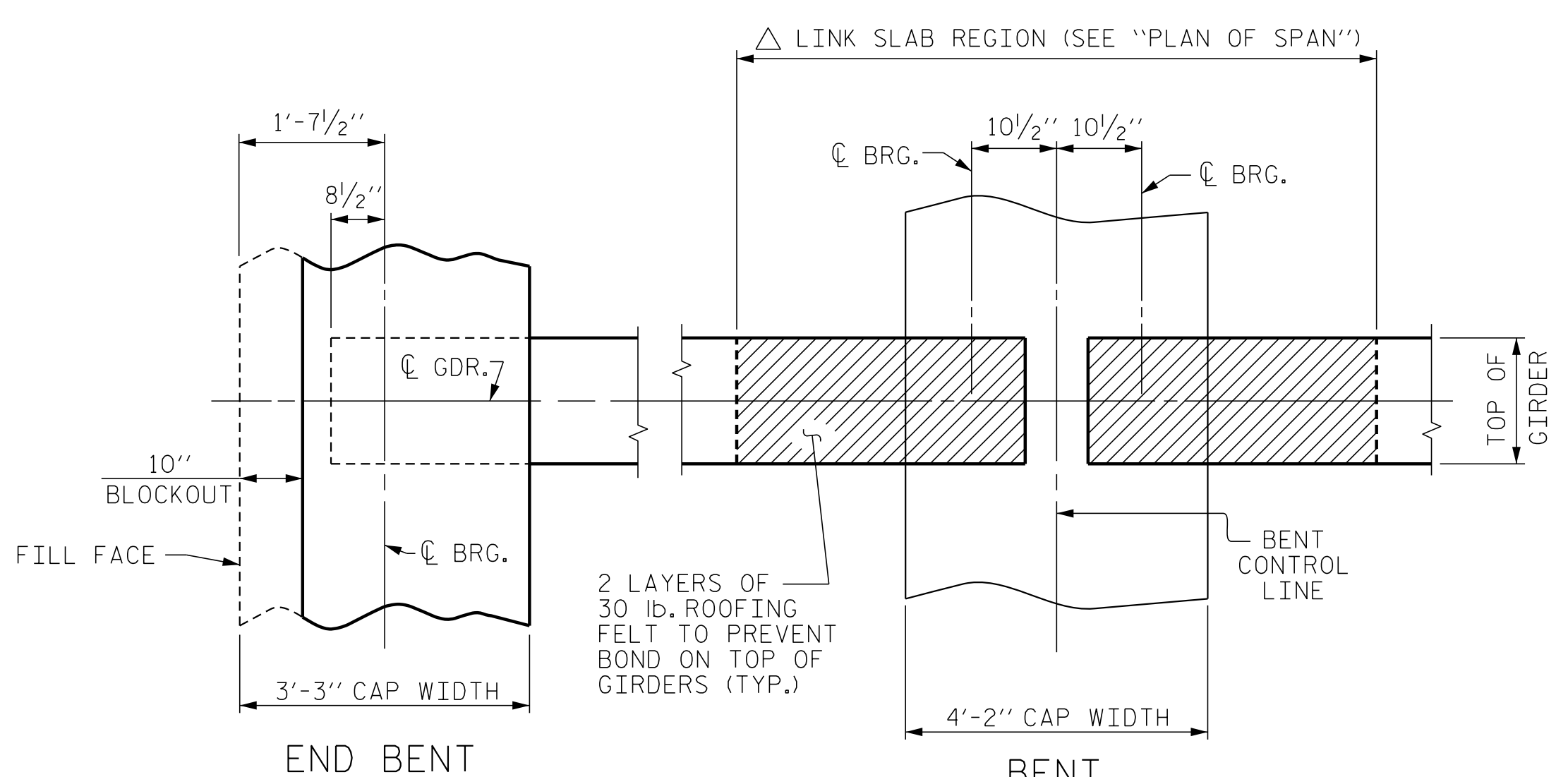


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS (NON-INTERSTATE TRAFFIC)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-06
					TOTAL SHEETS 49

STD. NO. LRFR1

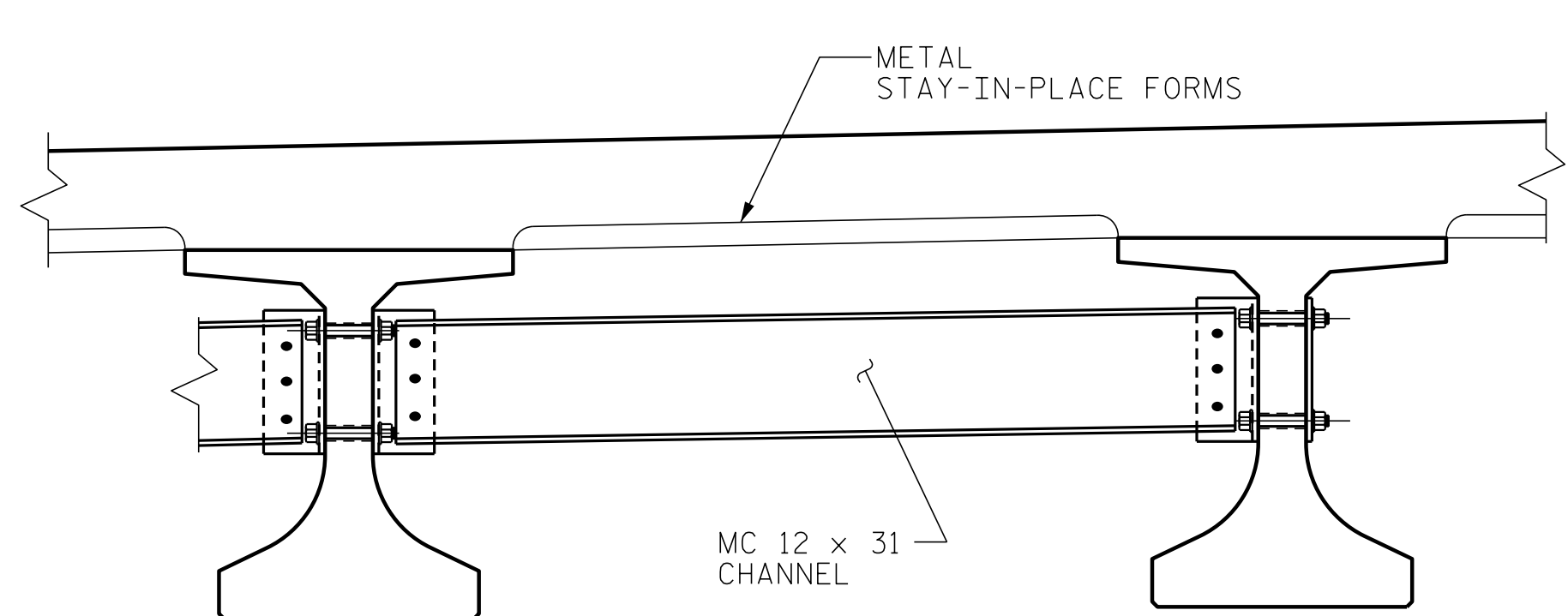


SECTION THRU INTEGRAL END BENT
(SHOWN PERPENDICULAR TO FILL FACE)



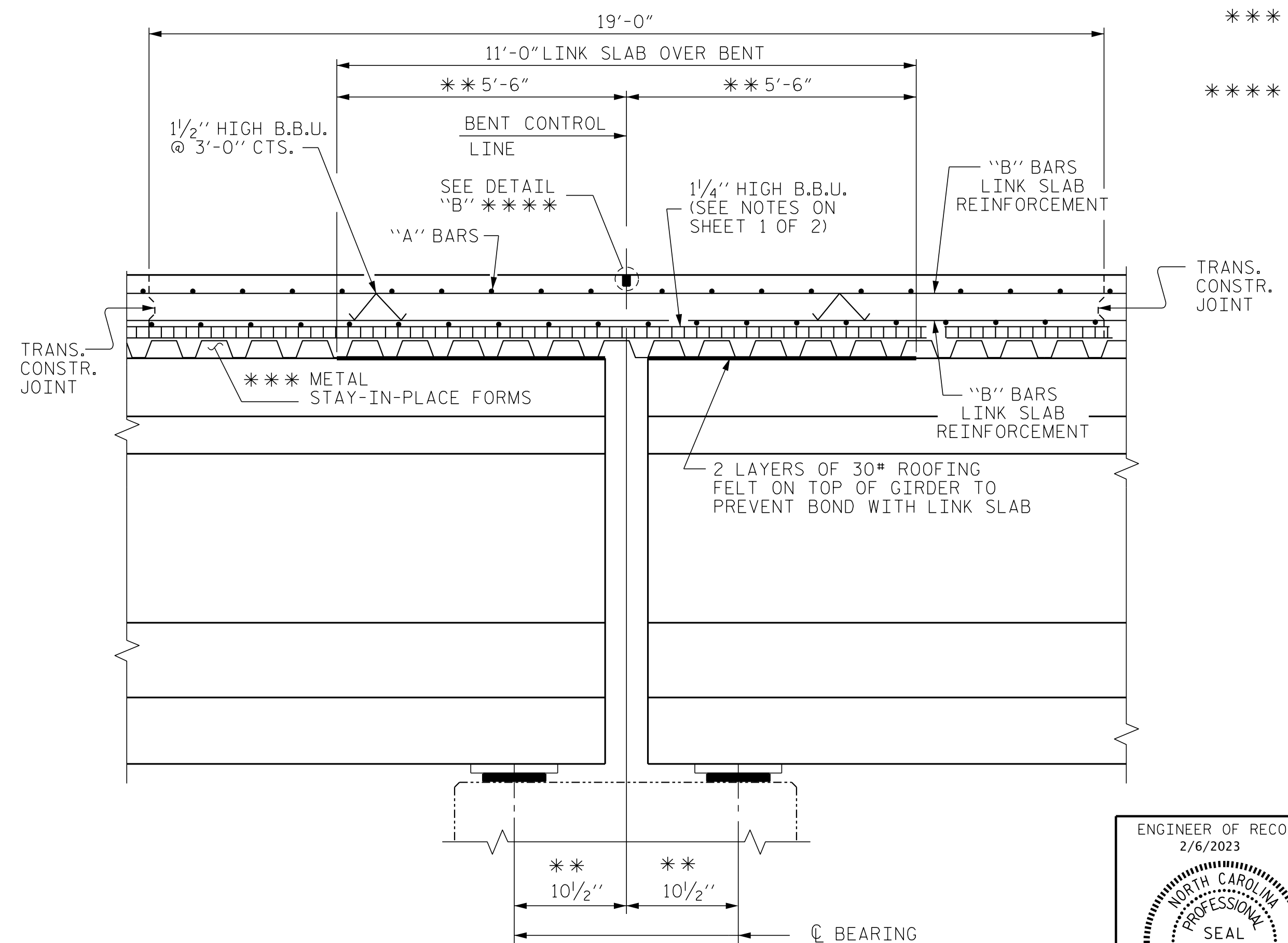
PLAN

△ 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.



TYPICAL INTERMEDIATE DIAPHRAGM

SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 45" FLORIDA I-BEAM" SHEET FOR DETAILS

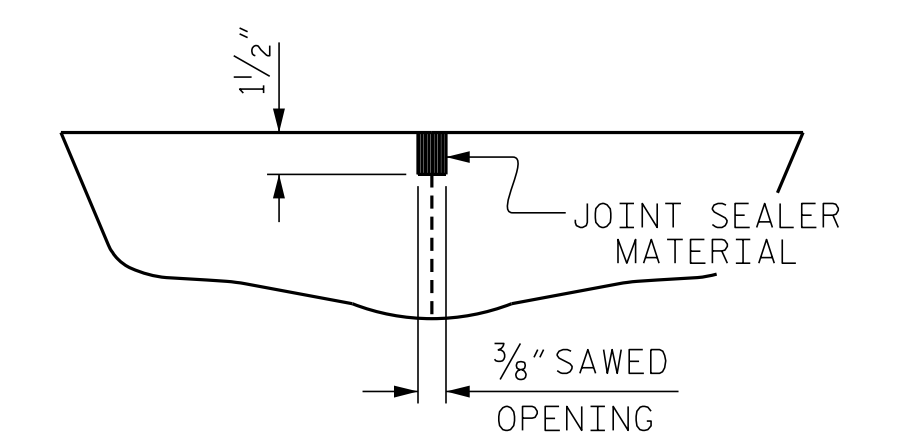


SECTION THRU LINK SLAB @ BENTS

(SHOWN PERPENDICULAR TO BENT CONTROL LINE)

** DIMENSION IS MEASURED ALONG THE CL GIRDER

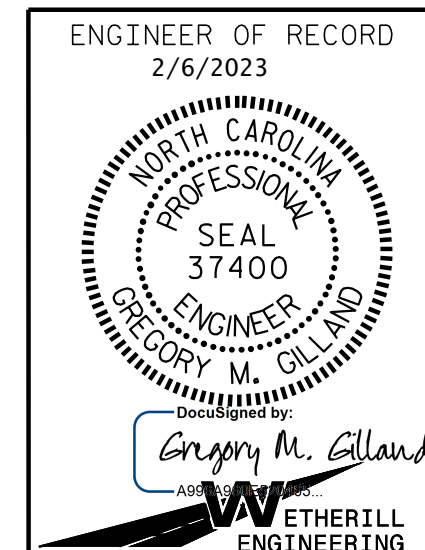
*** METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO THE GIRDER FLANGES IN THE REGION OF THE LINK SLAB.
 *** A 1/2" DEEP, 3/8" WIDE CONTRACTION JOINT AT BENT CONTROL LINE SHALL BE SAWN WITHIN 24 HOURS OF POURING THE DECK. THE JOINT SHALL BE FILLED WITH JOINT SEALER MATERIAL. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATION.



DETAIL "B"

PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-

SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-08
1			3			TOTAL SHEETS
2			4			49

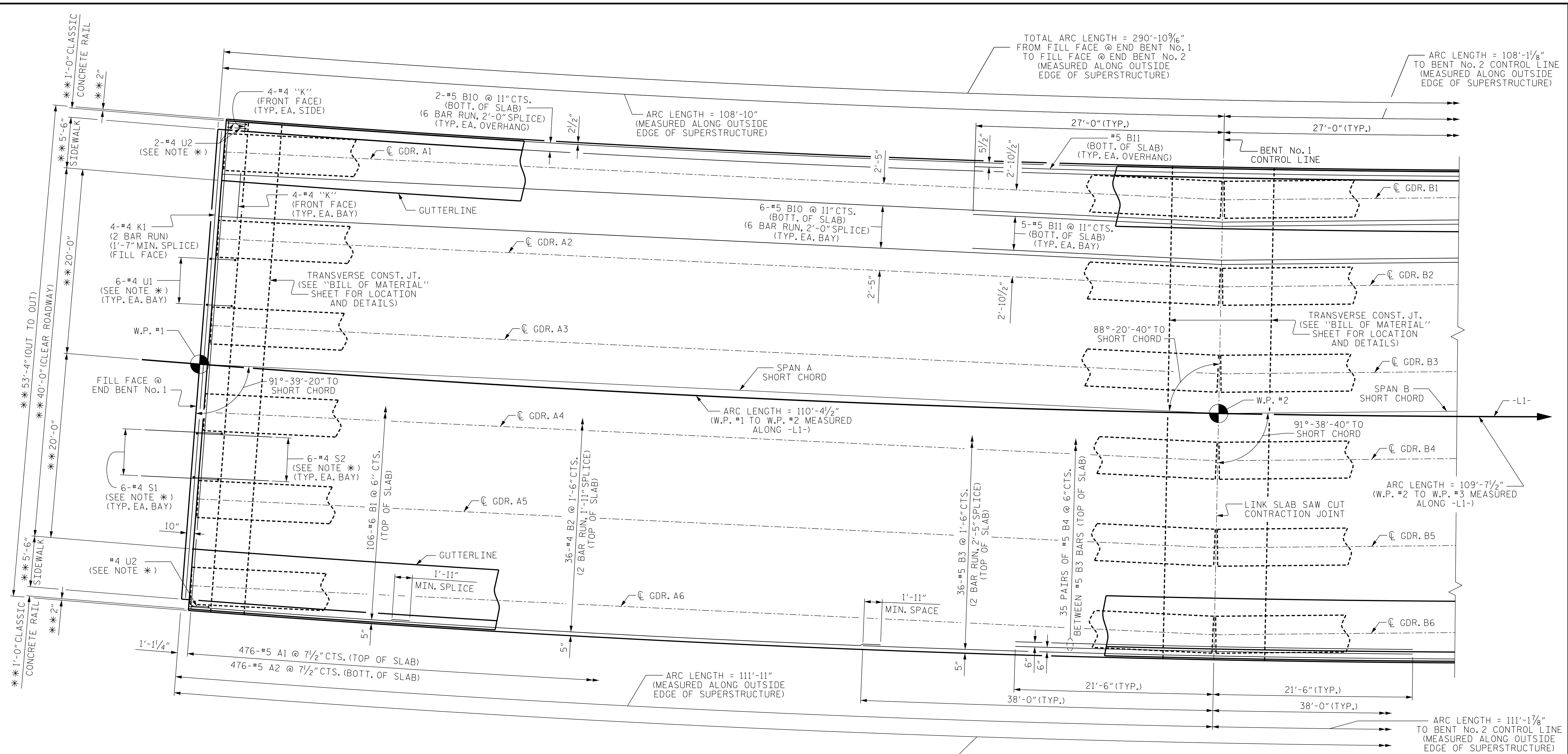
DRAWN BY: D. HODGE DATE: 1/22
 CHECKED BY: G. GILLAND DATE: 2/22

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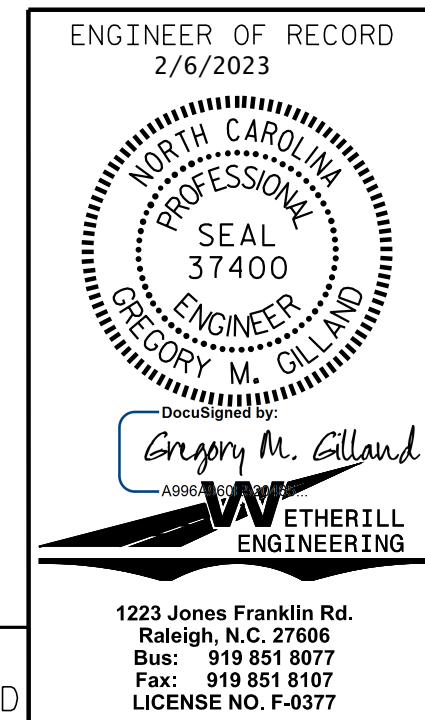
PLAN OF SPAN "A"

- * THESE BARS ARE TO MATCH SPACING OF THE #4 "V" BARS IN END BENT
- ** DENOTES RADIAL DIMENSIONS
- #5 "A" BARS ARE TO BE PLACED RADIALLY ALONG RIGHT OUTSIDE EDGE OF SUPERSTRUCTURE.
- FOR LOCATIONS OF INTERMEDIATE STEEL DIAPHRAGMS, SEE "GIRDER LAYOUT" SHEET.

PROJECT NO. B-5985A
 ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 1 OF 3

DRAWN BY: D. HODGE DATE: 1/22
 CHECKED BY: G. GILLAND DATE: 2/22

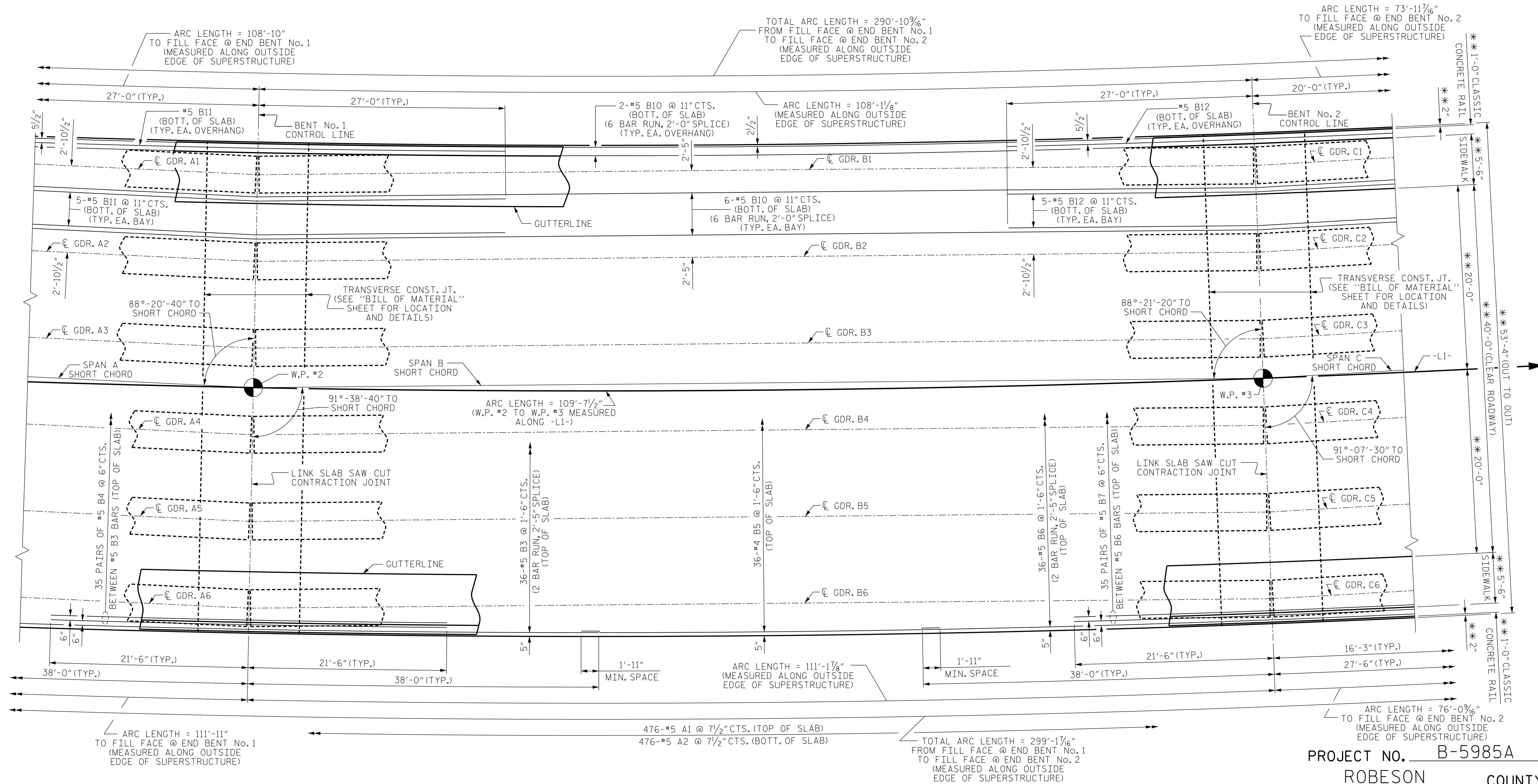
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPAN A					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-09
TOTAL SHEETS					49

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PLAN OF SPAN "B"

** DENOTES RADIAL DIMENSIONS

#5 "A" BARS ARE TO BE PLACED RADIALLY ALONG RIGHT OUTSIDE EDGE OF SUPERSTRUCTURE.

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

PROJECT NO. B-5985A

ROBESON COUNTY

STATION: 23+56.00 -L1-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPAN B

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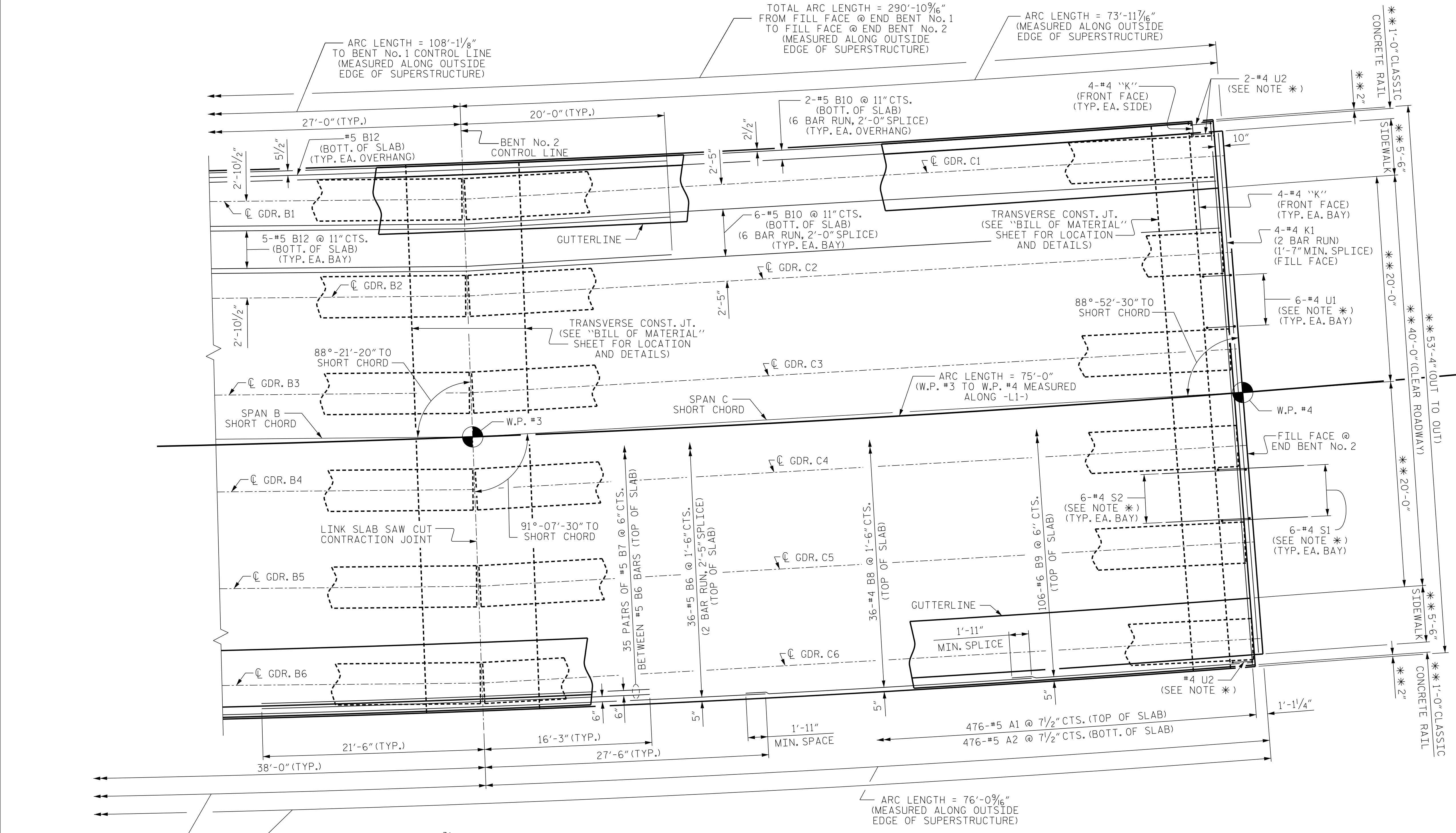
ENGINEER OF RECORD
2/6/2023

Gregory M. Gilland
 WETHERILL ENGINEERING

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 Raleigh, N.C. 27606
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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10	
1			3			TOTAL SHEETS	
2			4			49	

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ARC LENGTH = 111'-1⁷/₈" TO BENT No. 1 CONTROL LINE (MEASURED ALONG OUTSIDE EDGE OF SUPERSTRUCTURE)

TOTAL ARC LENGTH = 299'-1¹/₁₆" FROM FILL FACE @ END BENT No. 1 TO FILL FACE @ END BENT No. 2 (MEASURED ALONG OUTSIDE EDGE OF SUPERSTRUCTURE)

PLAN OF SPAN "C"

- * THESE BARS ARE TO MATCH SPACING OF THE #4 "V" BARS IN END BENT
- ** DENOTES RADIAL DIMENSIONS
- #5 "A" BARS ARE TO BE PLACED RADIALLY ALONG RIGHT OUTSIDE EDGE OF SUPERSTRUCTURE.
- FOR LOCATIONS OF INTERMEDIATE STEEL DIAPHRAGMS, SEE "GIRDER LAYOUT" SHEET.

PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 3 OF 3

DRAWN BY: D. HODGE DATE: 1/22
 CHECKED BY: G. GILLAND DATE: 2/22

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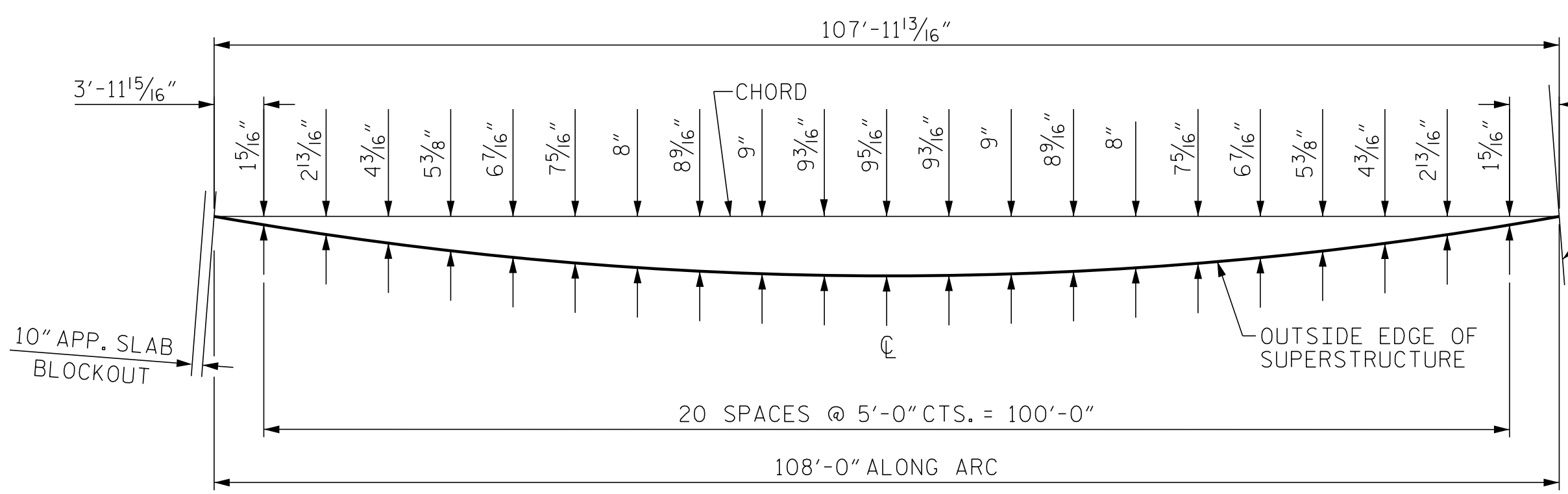
ENGINEER OF RECORD
 2/6/2023

Gregory M. Gilland
 WETHERILL ENGINEERING

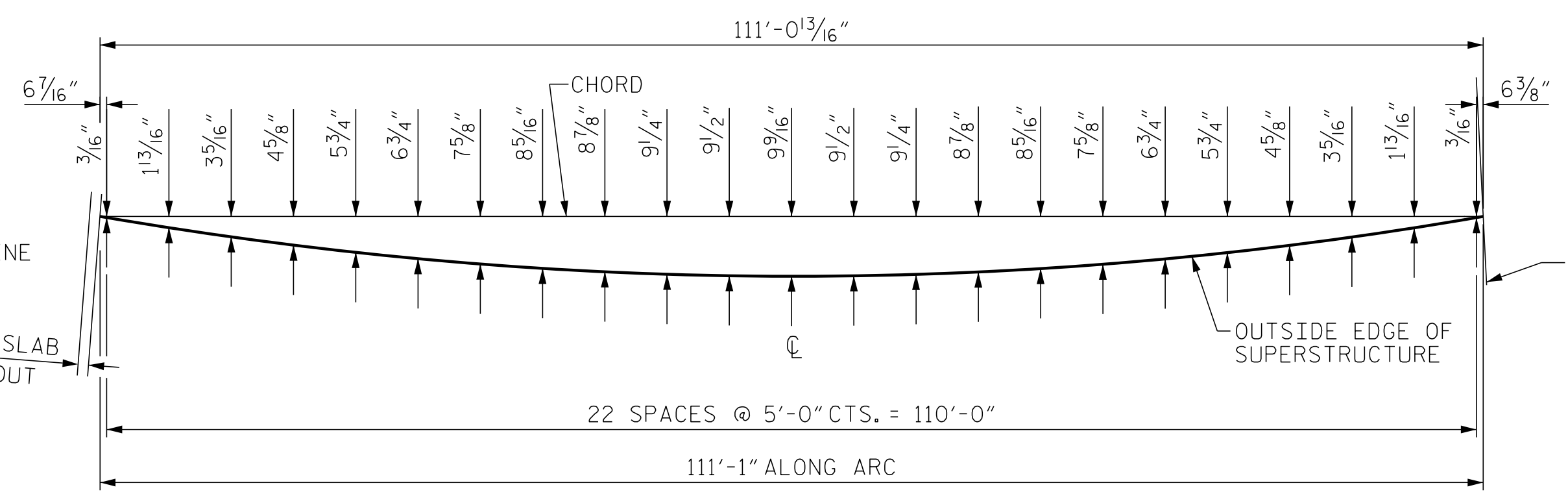
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 LICENSE NO. F-0377

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPAN C					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-11
					TOTAL SHEETS 49

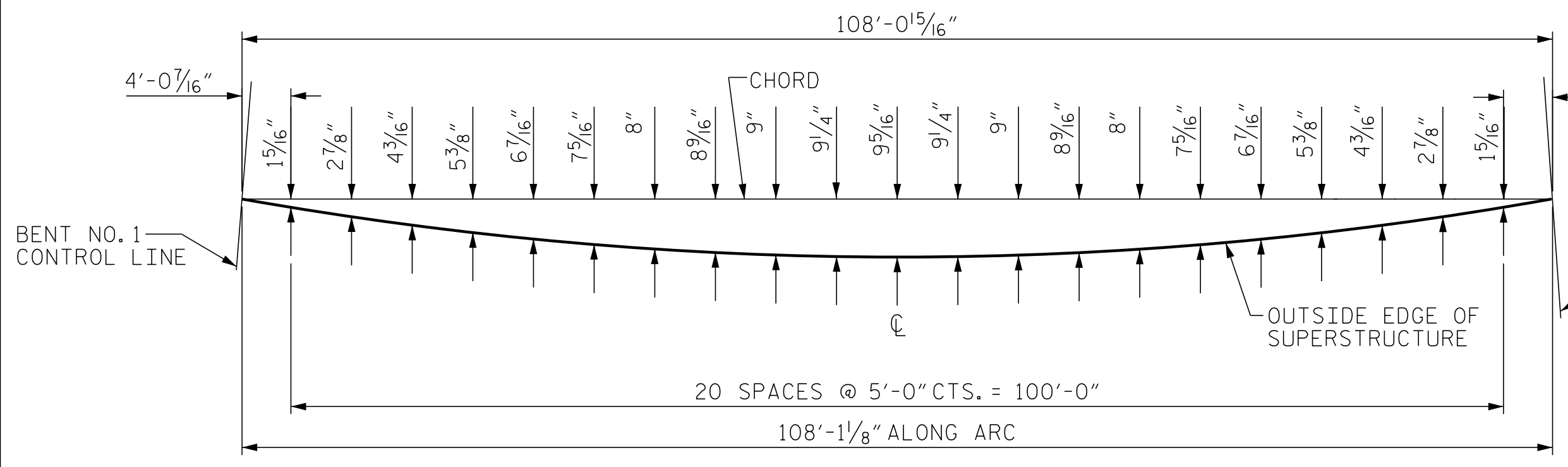
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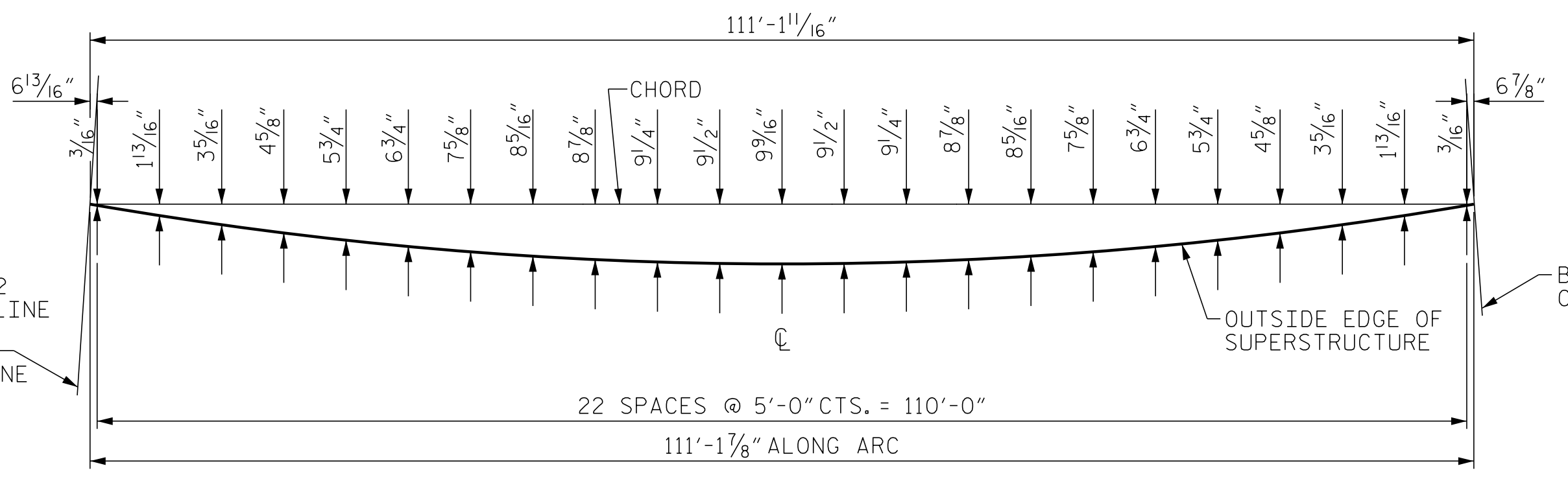
LEFT SIDE SPAN "A"



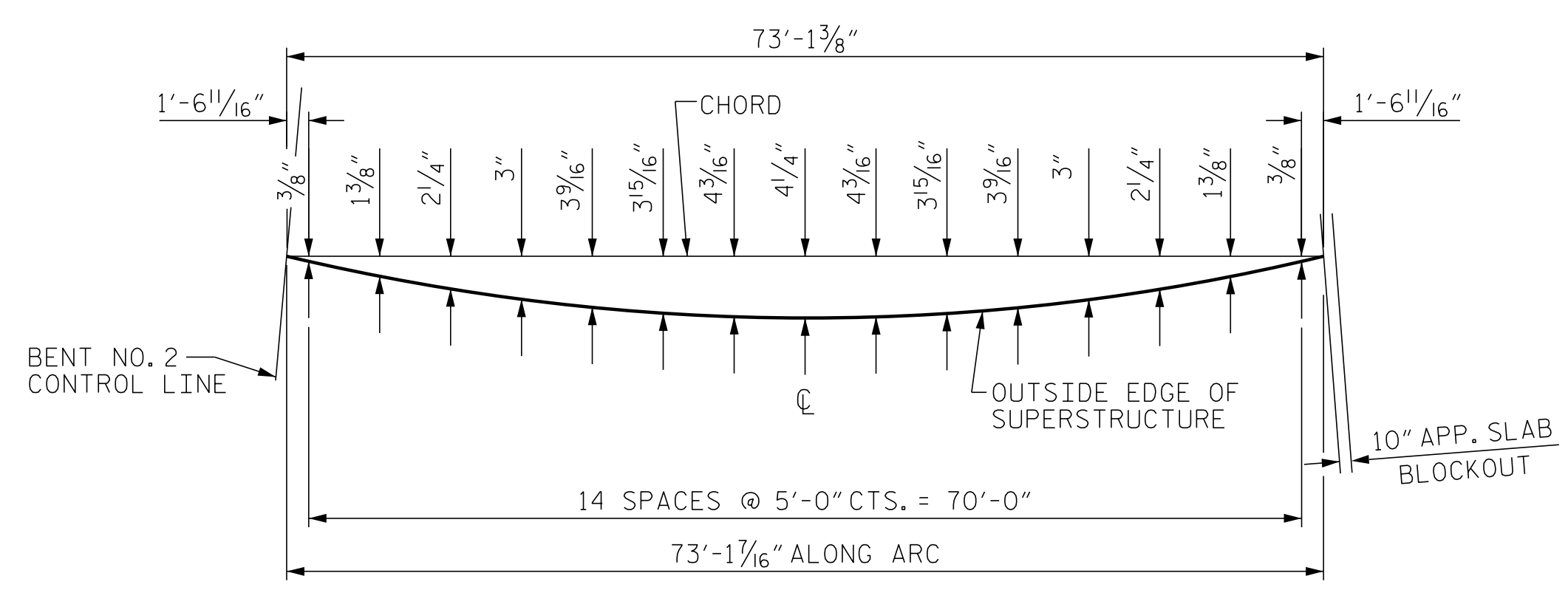
RIGHT SIDE SPAN "A"



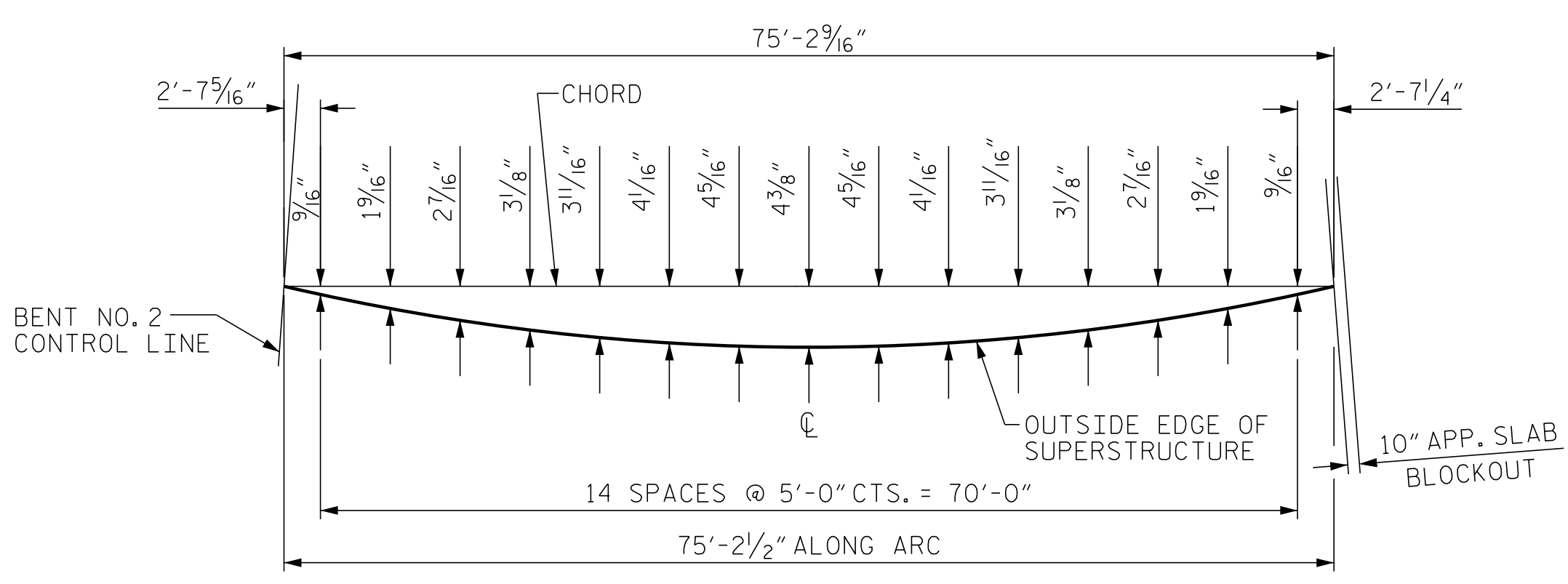
LEFT SIDE SPAN "B"



RIGHT SIDE SPAN "B"

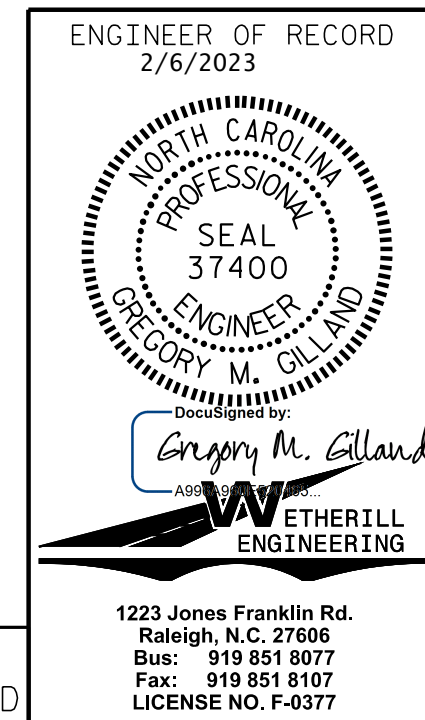


LEFT SIDE SPAN "C"



RIGHT SIDE SPAN "C"

PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUPERSTRUCTURE
ARC OFFSETS**

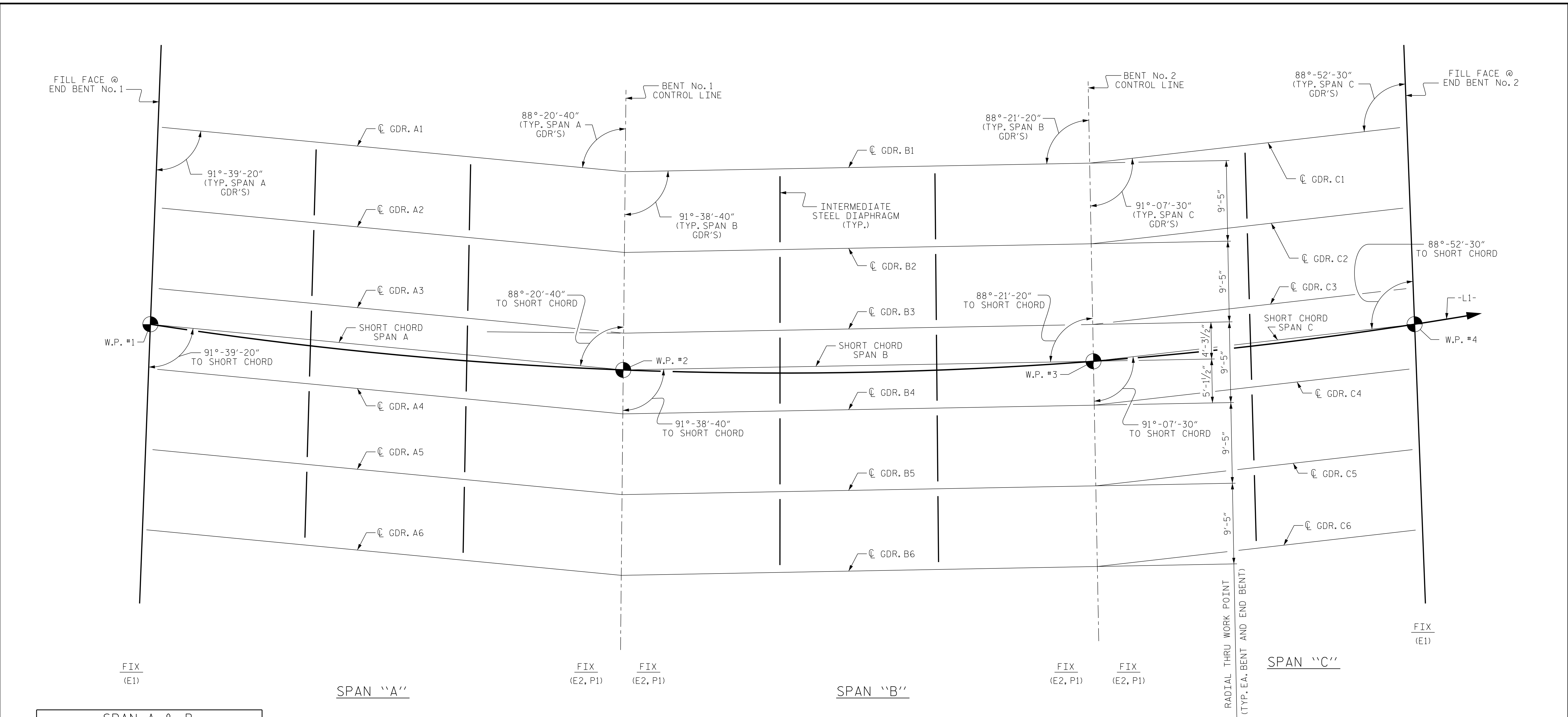
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NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

S-12
TOTAL SHEETS
49

DRAWN BY: J. PENDERGRAFT DATE: 10-21
 CHECKED BY: J. DILWORTH DATE: 12-21

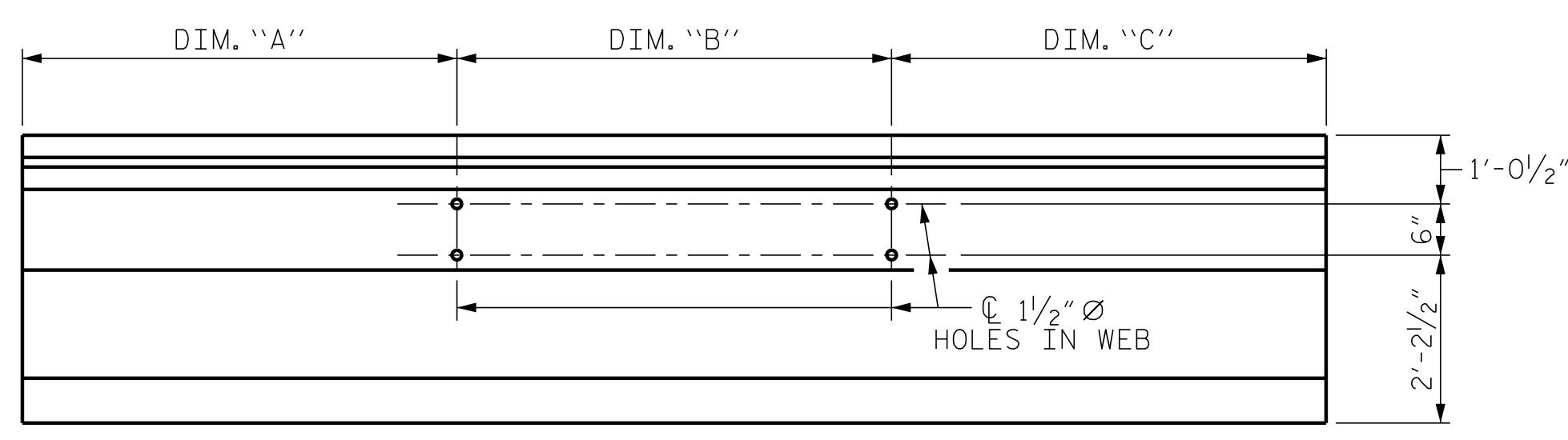
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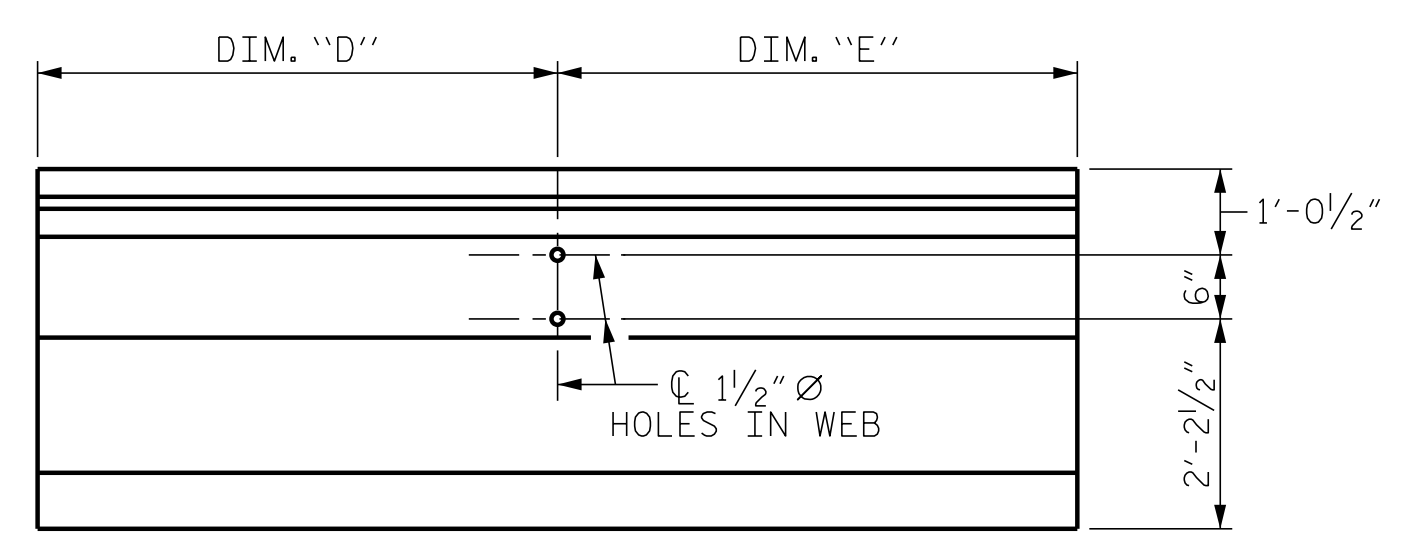
SPAN A & B			
GDR. No.	DIM. "A"	DIM. "B"	DIM. "C"
A1 & B1	36'-2 1/2"	35'-6 1/4"	36'-2 1/2"
A2 & B2	36'-4 3/4"	35'-8 3/8"	36'-4 3/4"
A3 & B3	36'-7"	35'-10 3/8"	36'-7"
A4 & B4	36'-9"	36'-0 7/8"	36'-9"
A5 & B5	36'-11 1/4"	36'-2 7/8"	36'-11 1/4"
A6 & B6	37'-1 1/2"	36'-4 7/8"	37'-1 1/2"

SPAN C		
GDR. No.	DIM. "D"	DIM. "E"
C1	36'-6"	36'-6"
C2	36'-8 1/4"	36'-8 1/4"
C3	36'-10 1/2"	36'-10 1/2"
C4	37'-0 11/16"	37'-0 11/16"
C5	37'-2 15/16"	37'-2 15/16"
C6	37'-5 1/8"	37'-5 1/8"



ELEVATION OF SPAN A & SPAN B GIRDERS

SHOWING LOCATION OF 1 1/2" Ø HOLES



ELEVATION OF SPAN C GIRDERS

SHOWING LOCATION OF 1 1/2" Ø HOLES

DRAWN BY: D. HODGE DATE: 1/22
 CHECKED BY: J. DILWORTH DATE: 2/22

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ENGINEER OF RECORD
 2/6/2023

 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

PROJECT NO. B-5985A
 ROBESON COUNTY
 STATION: 23+56.00 -L1-

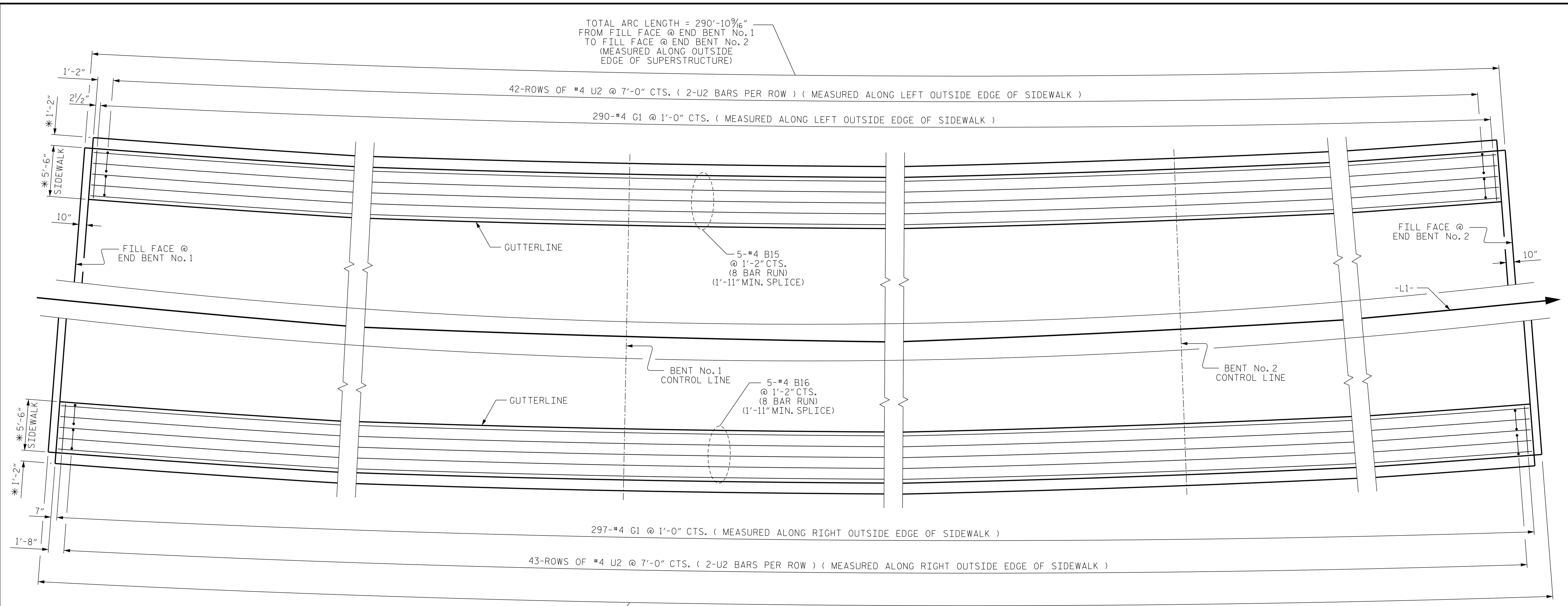
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 GIRDER LAYOUT

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

SHEET NO. S-13
 TOTAL SHEETS 49

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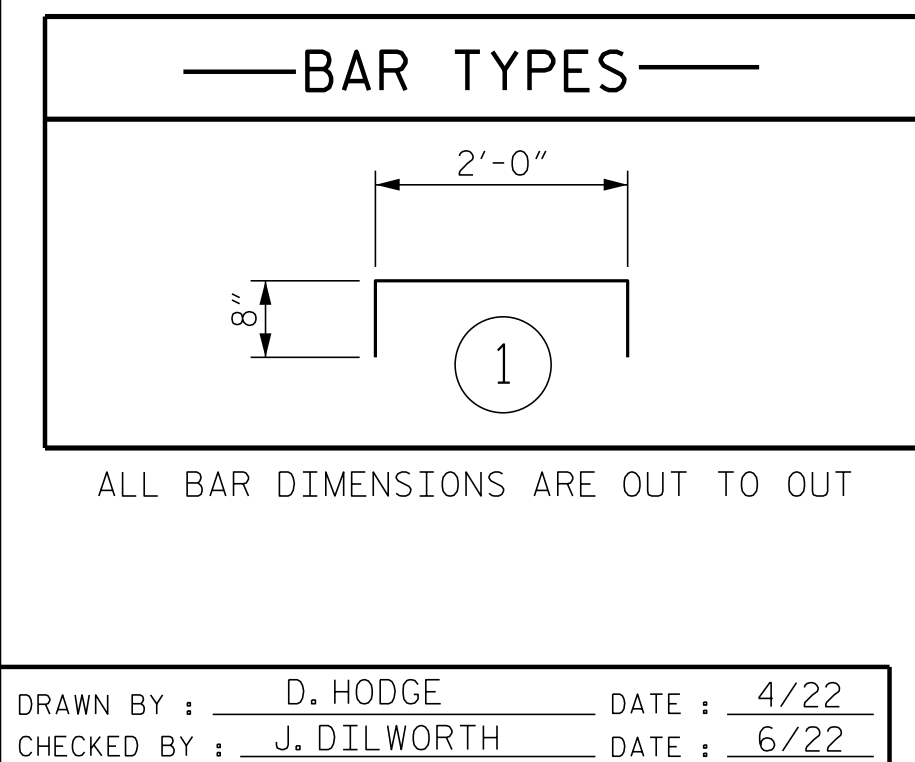
* RADIAL DIMENSIONS

TOTAL ARC LENGTH = 299'-17/16"
 FROM FILL FACE @ END BENT No. 1
 TO FILL FACE @ END BENT No. 2
 (MEASURED ALONG OUTSIDE
 EDGE OF SUPERSTRUCTURE)

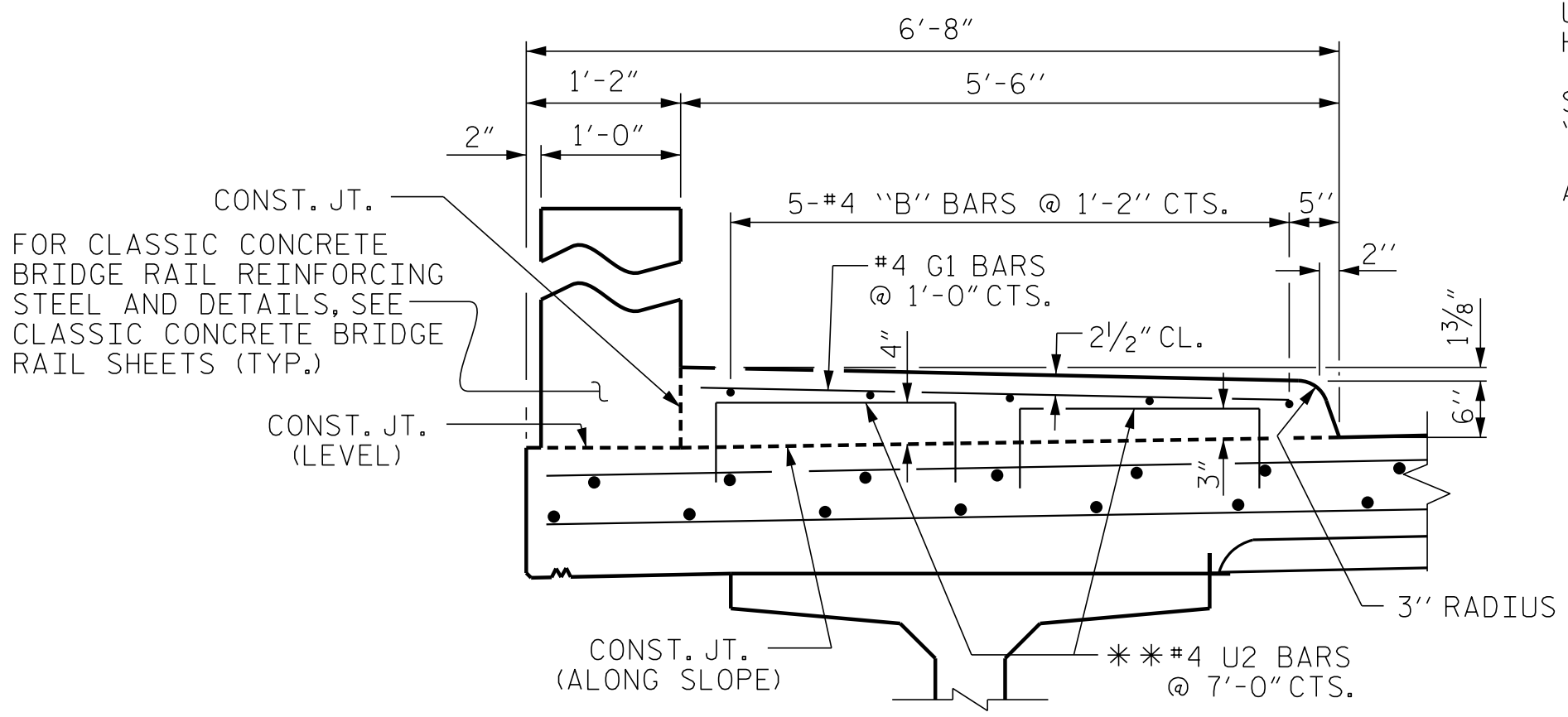
PLAN
 FOR SIDEWALK ON APPROACH SLABS, SEE
 BRIDGE APPROACH SLAB DETAILS SHEET.

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 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.

PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-



BILL OF MATERIAL FOR SIDEWALK					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B15	40	#4	STR	37'-11"	1,013
* B16	40	#4	STR	38'-10"	1,038
* G1	587	#4	STR	5'-0"	1,961
* U2	170	#4	1	3'-4"	379
* EPOXY COATED REINFORCING STEEL					4,391 LBS.
CLASS "AA" CONCRETE					65.5 C.Y.



SECTION THRU SIDEWALK
 ** #4 U2 BARS MAY BE PUSHED INTO GREEN CONCRETE
 AFTER SPAN HAS BEEN SCREEDDED OFF.

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 UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD
 2/6/2023

Gregory M. Gilland
 WETHERILL ENGINEERING

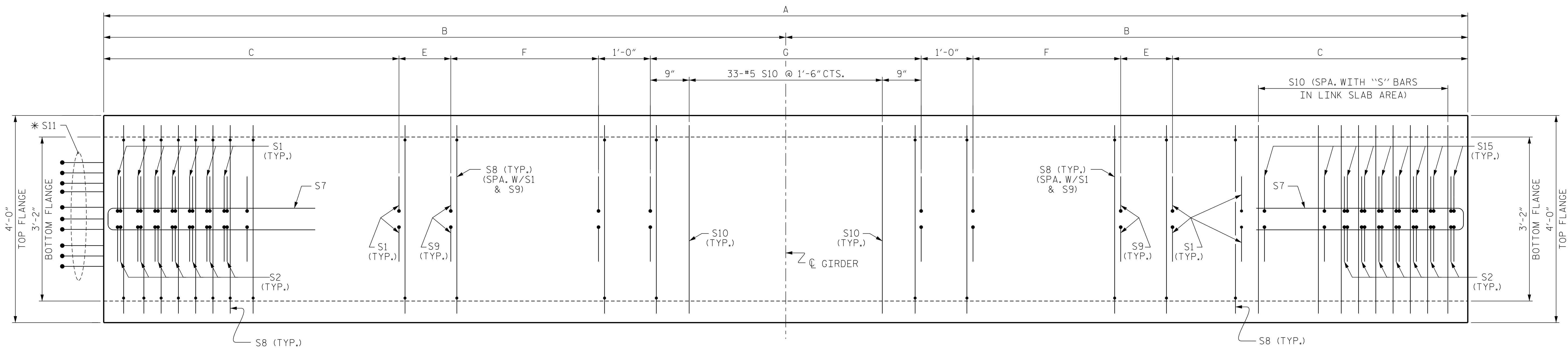
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 RALEIGH

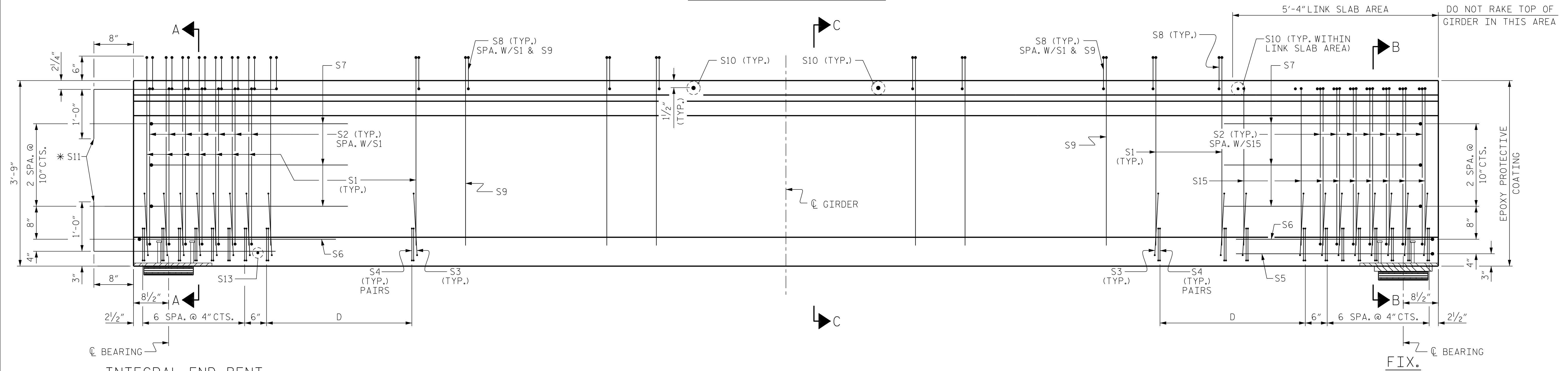
SUPERSTRUCTURE
 SIDEWALK DETAIL

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

SHEET NO. S-14
 TOTAL SHEETS 49



PLAN OF GIRDER



ELEVATION OF GIRDER

(FOR QUANTITIES, SECTIONS AND STRAND LAYOUT, SEE SHEET 4 OF 5)

GIRDER TABLE - SPAN A							
GIRDER	A	B	C	D	E	F	G
A1	107'-11 1/4"	53'-11 5/8"	13'-8 1/2"	22 SPA. @ 6"	6 7/8"	14 SPA. @ 1'-0"	33 SPA. @ 1'-6"
A2	108'-5 7/8"	54'-2 5/8"	13'-8 1/2"	22 SPA. @ 6"	9 1/16"	14 SPA. @ 1'-0"	33 SPA. @ 1'-6"
A3	109'-0 3/8"	54'-6 3/8"	14'-2 1/2"	23 SPA. @ 6"	6 1/16"	14 SPA. @ 1'-0"	33 SPA. @ 1'-6"
A4	109'-6 7/8"	54'-9 7/16"	14'-2 1/2"	23 SPA. @ 6"	9 5/16"	14 SPA. @ 1'-0"	33 SPA. @ 1'-6"
A5	110'-1 3/8"	55'-0 11/16"	14'-8 1/2"	24 SPA. @ 6"	7 3/16"	14 SPA. @ 1'-0"	33 SPA. @ 1'-6"
A6	110'-7 7/8"	55'-3 5/16"	14'-8 1/2"	24 SPA. @ 6"	10 1/16"	14 SPA. @ 1'-0"	33 SPA. @ 1'-6"
TOTAL LENGTH	655'-9 9/8"						

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

PROJECT NO. B-5985A
 ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 1 OF 5

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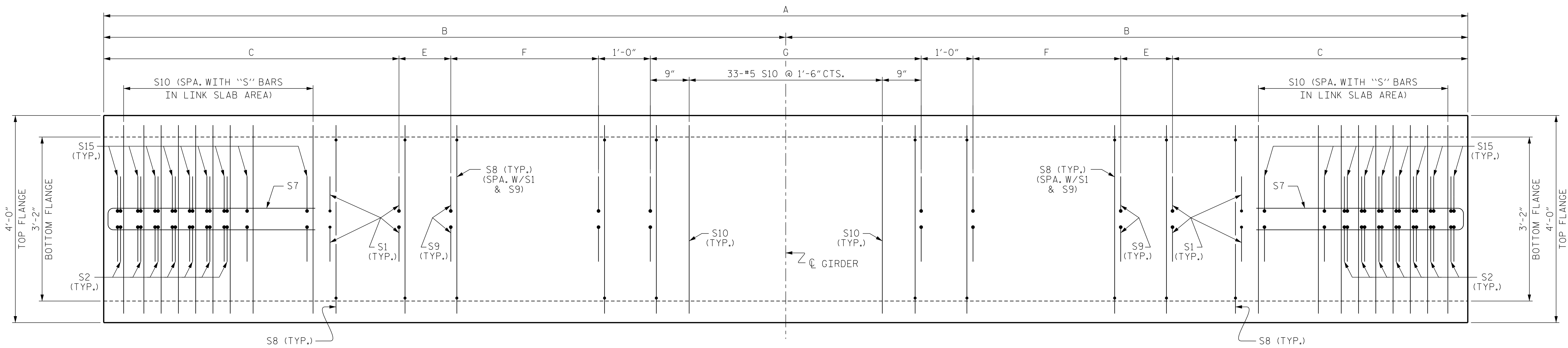
ENGINEER OF RECORD
 2/6/2023

 Gregory M. Gilliland
 WETHERILL ENGINEERING
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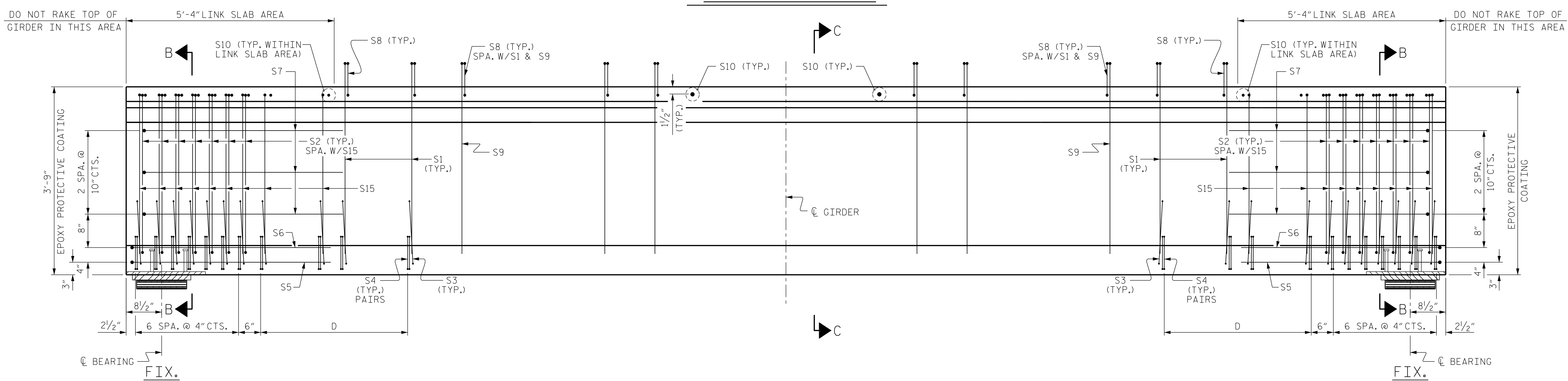
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 45" FIB PRESTRESSED
 CONCRETE GIRDER
 LINK SLAB
 SPAN A

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

SHEET NO. S-15
 TOTAL SHEETS 49



PLAN OF GIRDER

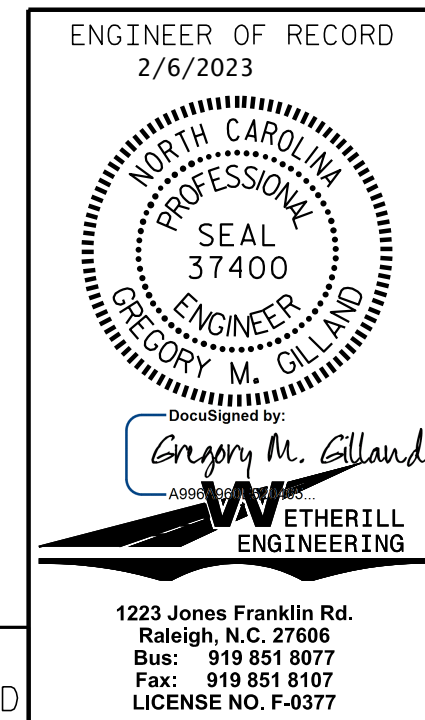


ELEVATION OF GIRDER

(FOR QUANTITIES, SECTIONS AND STRAND LAYOUT, SEE SHEET 4 OF 5)

GIRDER TABLE - SPAN B							
GIRDER	A	B	C	D	E	F	G
B1	107'-11 1/4"	53'-11 5/8"	13'-8 1/2"	22 SPA. @ 6" 6/8"	14 SPA. @ 1'-0"	33 SPA. @ 1'-6"	
B2	108'-5 7/8"	54'-2 5/8"	13'-8 1/2"	22 SPA. @ 6" 9/16"	14 SPA. @ 1'-0"	33 SPA. @ 1'-6"	
B3	109'-0 3/8"	54'-6 3/8"	14'-2 1/2"	23 SPA. @ 6" 6 1/16"	14 SPA. @ 1'-0"	33 SPA. @ 1'-6"	
B4	109'-6 7/8"	54'-9 7/16"	14'-2 1/2"	23 SPA. @ 6" 9 5/16"	14 SPA. @ 1'-0"	33 SPA. @ 1'-6"	
B5	110'-1 3/8"	55'-0 11/16"	14'-8 1/2"	24 SPA. @ 6" 7 3/16"	14 SPA. @ 1'-0"	33 SPA. @ 1'-6"	
B6	110'-7 7/8"	55'-3 5/16"	14'-8 1/2"	24 SPA. @ 6" 10 1/16"	14 SPA. @ 1'-0"	33 SPA. @ 1'-6"	
TOTAL LENGTH	655'-9 5/8"						

PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 2 OF 5



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**45" FIB PRESTRESSED
 CONCRETE GIRDER
 LINK SLAB
 SPAN B**

REVISIONS					
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2			4		

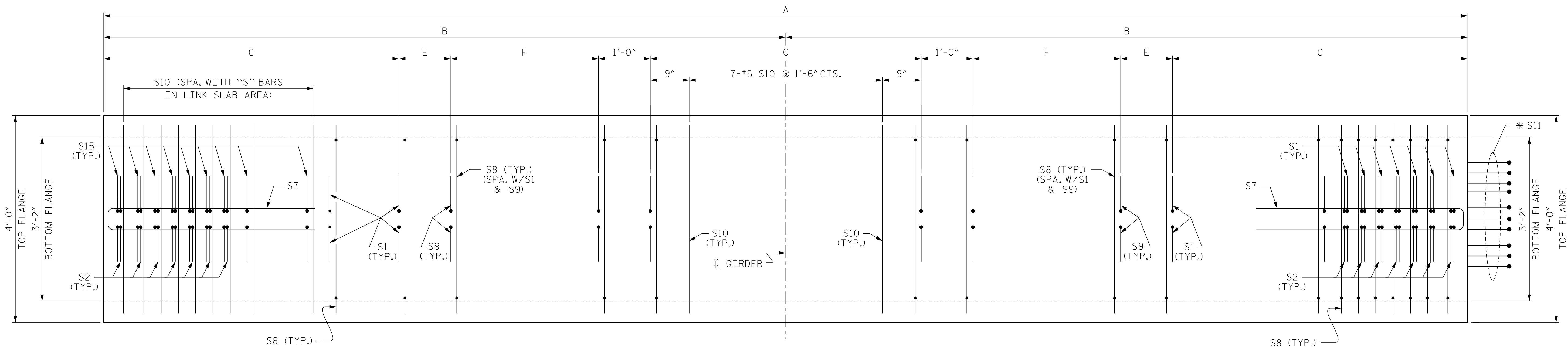
SHEET NO. S-16
 TOTAL SHEETS 49

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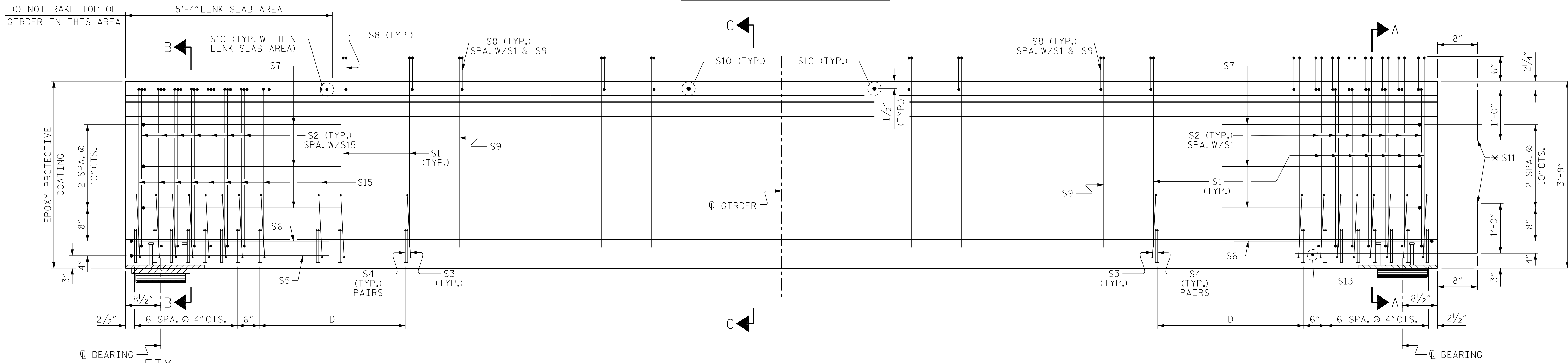
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PLAN OF GIRDER



ELEVATION OF GIRDER

(FOR QUANTITIES, SECTIONS AND STRAND LAYOUT, SEE SHEET 4 OF 5)

INTEGRAL END BENT

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

PROJECT NO. B-5985A
 ROBESON COUNTY
 STATION: 23+56.00 -L1-

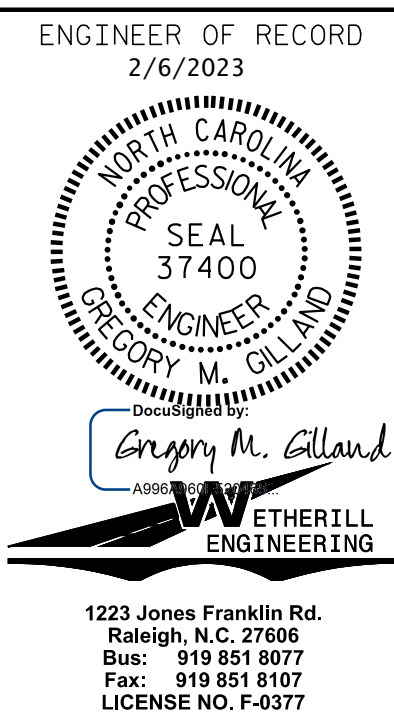
SHEET 3 OF 5

GIRDER TABLE - SPAN C						
GIRDER	A	B	C	D	E	F
C1	73'-0"	36'-6"	6'-8 1/2"	8 SPA. @ 6"	6 1/2"	23 SPA. @ 1'-0"
C2	73'-4 1/2"	36'-8 1/4"	6'-8 1/2"	8 SPA. @ 6"	8 3/4"	23 SPA. @ 1'-0"
C3	73'-9"	36'-10 1/2"	6'-8 1/2"	8 SPA. @ 6"	11"	23 SPA. @ 1'-0"
C4	74'-1 3/8"	37'-0 1/16"	7'-2 1/2"	9 SPA. @ 6"	7 3/16"	23 SPA. @ 1'-0"
C5	74'-5 1/8"	37'-2 15/16"	7'-2 1/2"	9 SPA. @ 6"	9 7/16"	23 SPA. @ 1'-0"
C6	74'-10 1/4"	37'-5 1/8"	7'-2 1/2"	9 SPA. @ 6"	11 5/8"	23 SPA. @ 1'-0"
TOTAL LENGTH	443'-7"					

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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

45" FIB PRESTRESSED
 CONCRETE GIRDER
 LINK SLAB
 SPAN C

REVISIONS					
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SHEET NO. S-17
 TOTAL SHEETS 49

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DEBONDING LEGEND

- FULLY BONDED STRANDS
- ◻ STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER
- ▲ STRANDS DEBONDED FOR 20'-0" FROM END OF GIRDER

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	
GDR. A1 & A2	S1	#5	5	4'-7"	449
GDR. A3 & A4	S1	#5	5	4'-7"	468
GDR. A5 & A6	S1	#5	5	4'-7"	488
	S2	#5	4	4'-3"	124
GDR. A1 & A2	S3	#3	2	3'-4"	75
GDR. A3 & A4	S3	#3	2	3'-4"	78
GDR. A5 & A6	S3	#3	2	3'-4"	80
GDR. A1 & A2	S4	#3	1	4'-3"	192
GDR. A3 & A4	S4	#3	1	4'-3"	198
GDR. A5 & A6	S4	#3	1	4'-3"	205
	S5	#5	3	10'-9"	11
	S6	#5	3	9'-9"	20
	S7	#4	3	8'-5"	34
GDR. A1 & A2	S8	#5	7	4'-8"	1,081
GDR. A3 & A4	S8	#5	7	4'-8"	1,100
GDR. A5 & A6	S8	#5	7	4'-8"	1,119
	S9	#4	5	4'-7"	392
	S10	#5	STR	3'-8"	176
	*S11	#5	STR	4'-8"	97
	S12	#5	6	7'-0"	58
	S13	#3	STR	2'-10"	1
	S14	#4	STR	8'-0"	53
	S15	#5	5	3'-11"	106

0.6" Ø L. R. GRADE 270 STRANDS - SPAN B

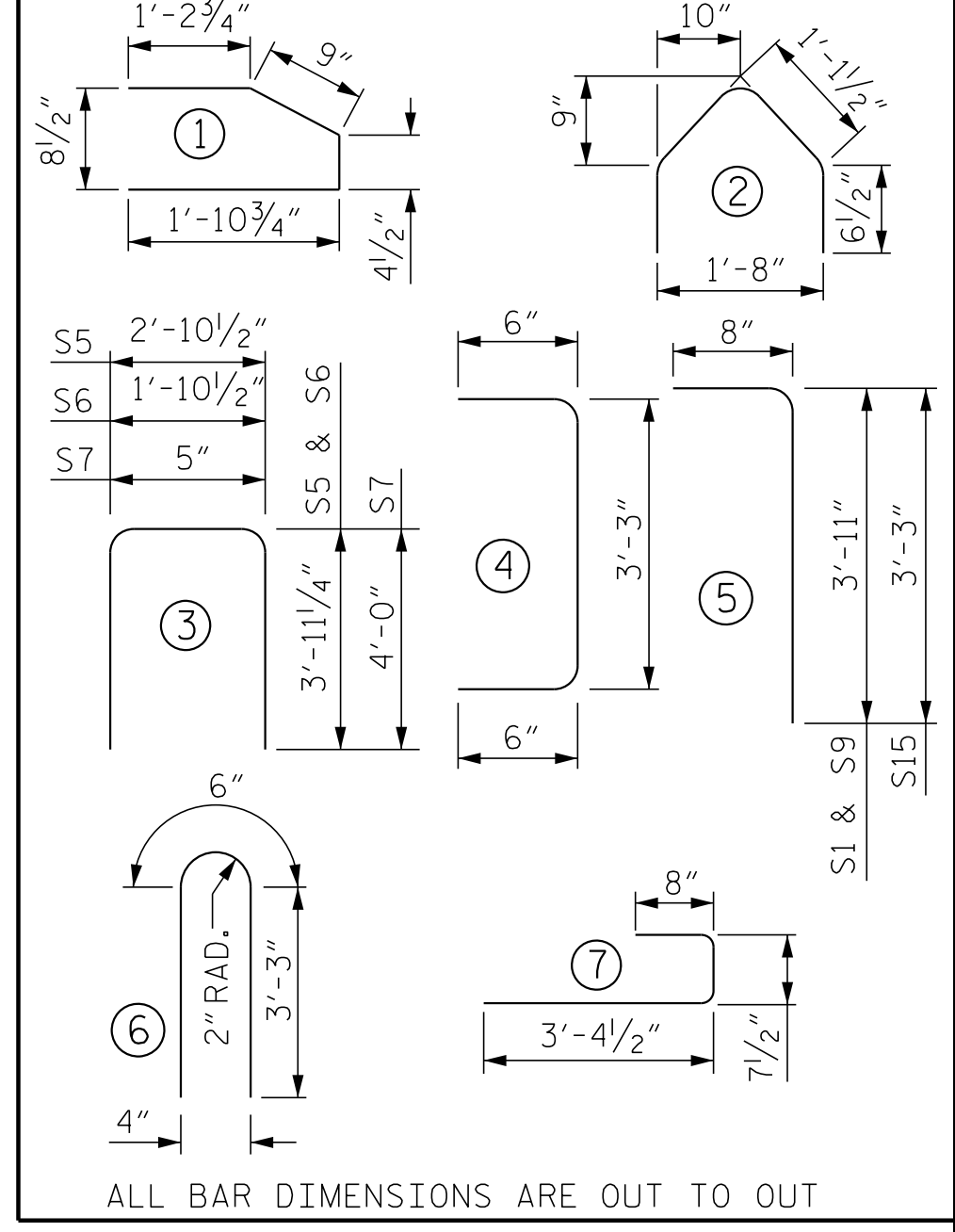
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)			
0.217	58,600	43,950			
REINFORCING STEEL FOR ONE GDR					
BAR NUMBER	SIZE	TYPE	LENGTH	WEIGHT	
GDR. B1 & B2	S1	#5	5	4'-7"	325
GDR. B3 & B4	S1	#5	5	4'-7"	344
GDR. B5 & B6	S1	#5	5	4'-7"	363
	S2	#5	4	4'-3"	124
GDR. B1 & B2	S3	#3	2	3'-4"	75
GDR. B3 & B4	S3	#3	2	3'-4"	78
GDR. B5 & B6	S3	#3	2	3'-4"	80
GDR. B1 & B2	S4	#3	1	4'-3"	192
GDR. B3 & B4	S4	#3	1	4'-3"	198
GDR. B5 & B6	S4	#3	1	4'-3"	205
	S5	#5	3	10'-9"	22
	S6	#5	3	9'-9"	20
	S7	#4	3	8'-5"	34
GDR. B1 & B2	S8	#5	7	4'-8"	954
GDR. B3 & B4	S8	#5	7	4'-8"	973
GDR. B5 & B6	S8	#5	7	4'-8"	993
	S9	#4	5	4'-7"	392
	S10	#5	STR	3'-8"	226
	S12	#5	6	7'-0"	58
	S14	#4	STR	8'-0"	53
	S15	#5	5	3'-11"	212

0.6" Ø L. R. GRADE 270 STRANDS - SPAN C

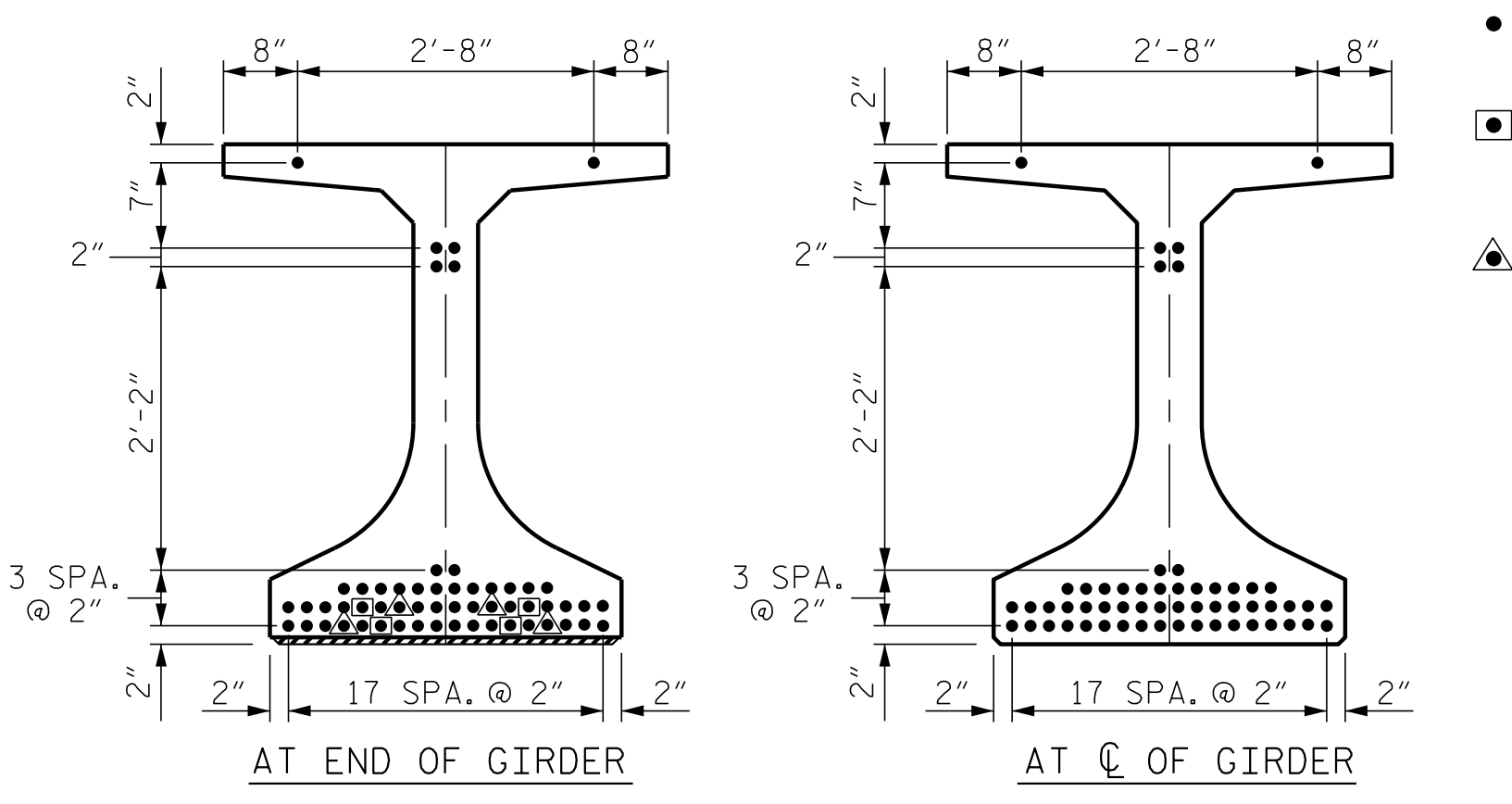
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)			
0.217	58,600	43,950			
REINFORCING STEEL FOR ONE GDR					
BAR NUMBER	SIZE	TYPE	LENGTH	WEIGHT	
GDR. C1 - C3	S1	#5	5	4'-7"	182
GDR. C4 - C6	S1	#5	5	4'-7"	191
	S2	#5	4	4'-3"	124
GDR. C1 - C3	S3	#3	2	3'-4"	40
GDR. C4 - C6	S3	#3	2	3'-4"	43
GDR. C1 - C3	S4	#3	1	4'-3"	102
GDR. C4 - C6	S4	#3	1	4'-3"	109
	S5	#5	3	10'-9"	11
	S6	#5	3	9'-9"	20
	S7	#4	3	8'-5"	34
GDR. C1 - C3	S8	#5	7	4'-8"	730
GDR. C4 - C6	S8	#5	7	4'-8"	750
	S9	#4	5	4'-7"	343
	S10	#5	STR	3'-8"	76
	*S11	#5	STR	4'-8"	97
	S12	#5	6	7'-0"	29
	S13	#3	STR	2'-10"	1
	S14	#4	STR	8'-0"	27
	S15	#5	5	3'-11"	106

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

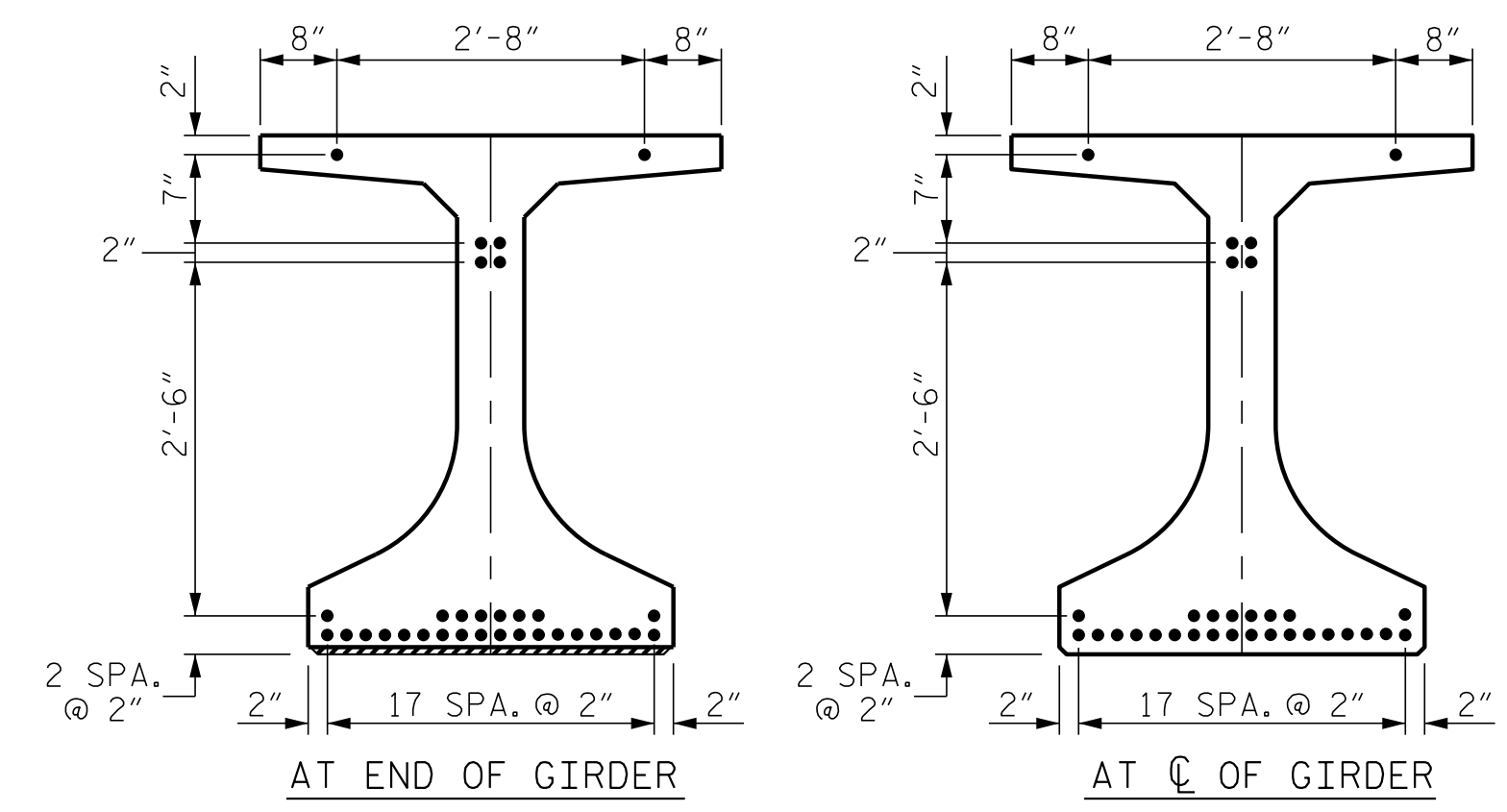
BAR TYPES



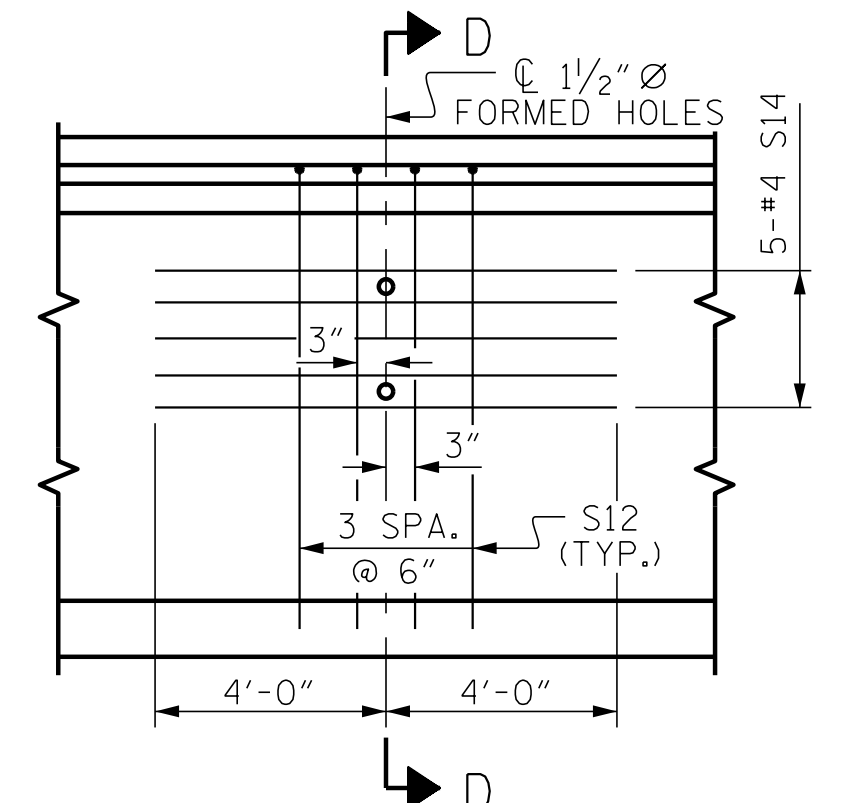
ALL BAR DIMENSIONS ARE OUT TO OUT



0.6" Ø LOW RELAXATION STRAND LAYOUT - SPANS A & B



0.6" Ø LOW RELAXATION STRAND LAYOUT - SPAN C



PARTIAL ELEVATION
SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL

QUANTITIES FOR SPAN A GIRDERS

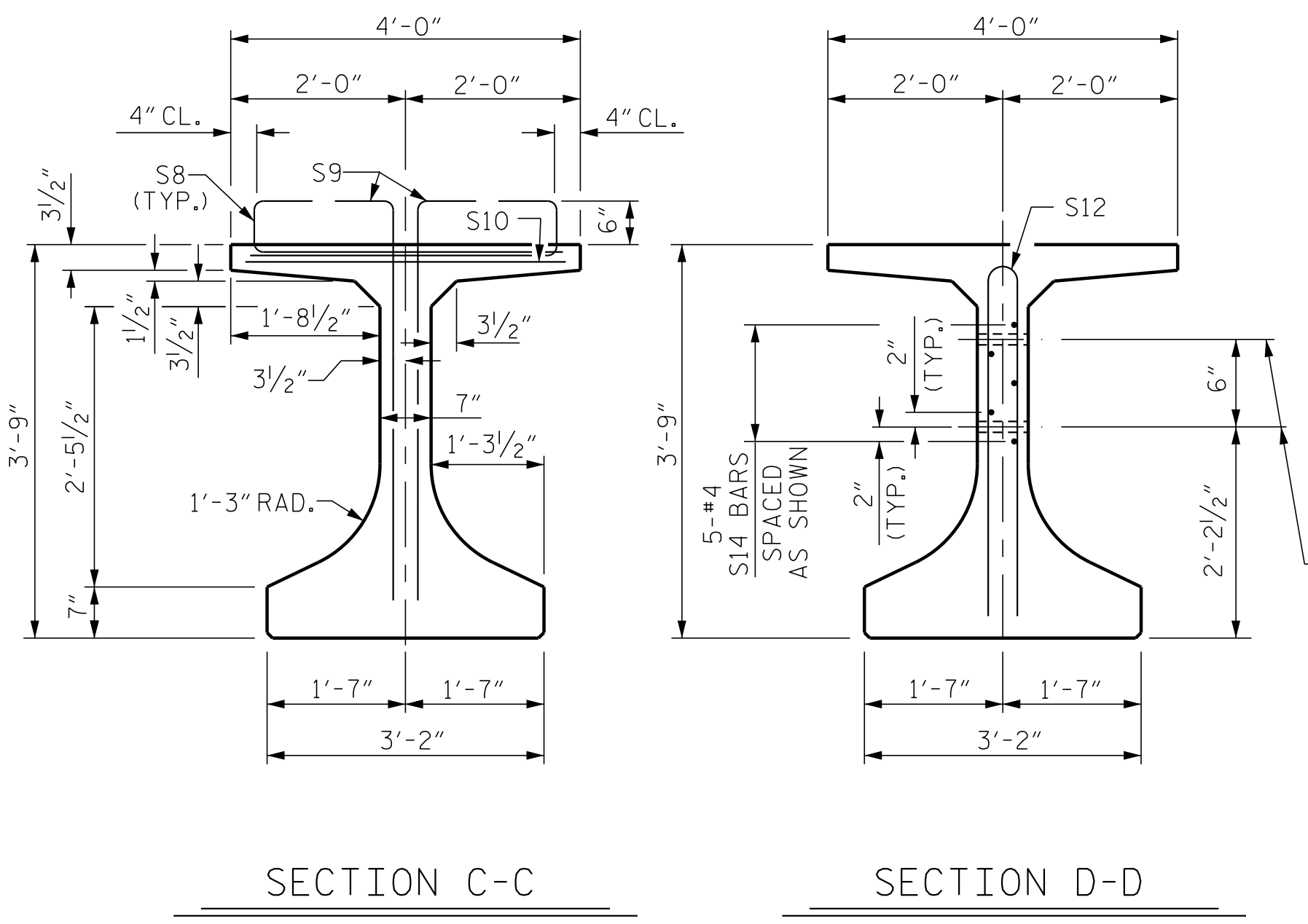
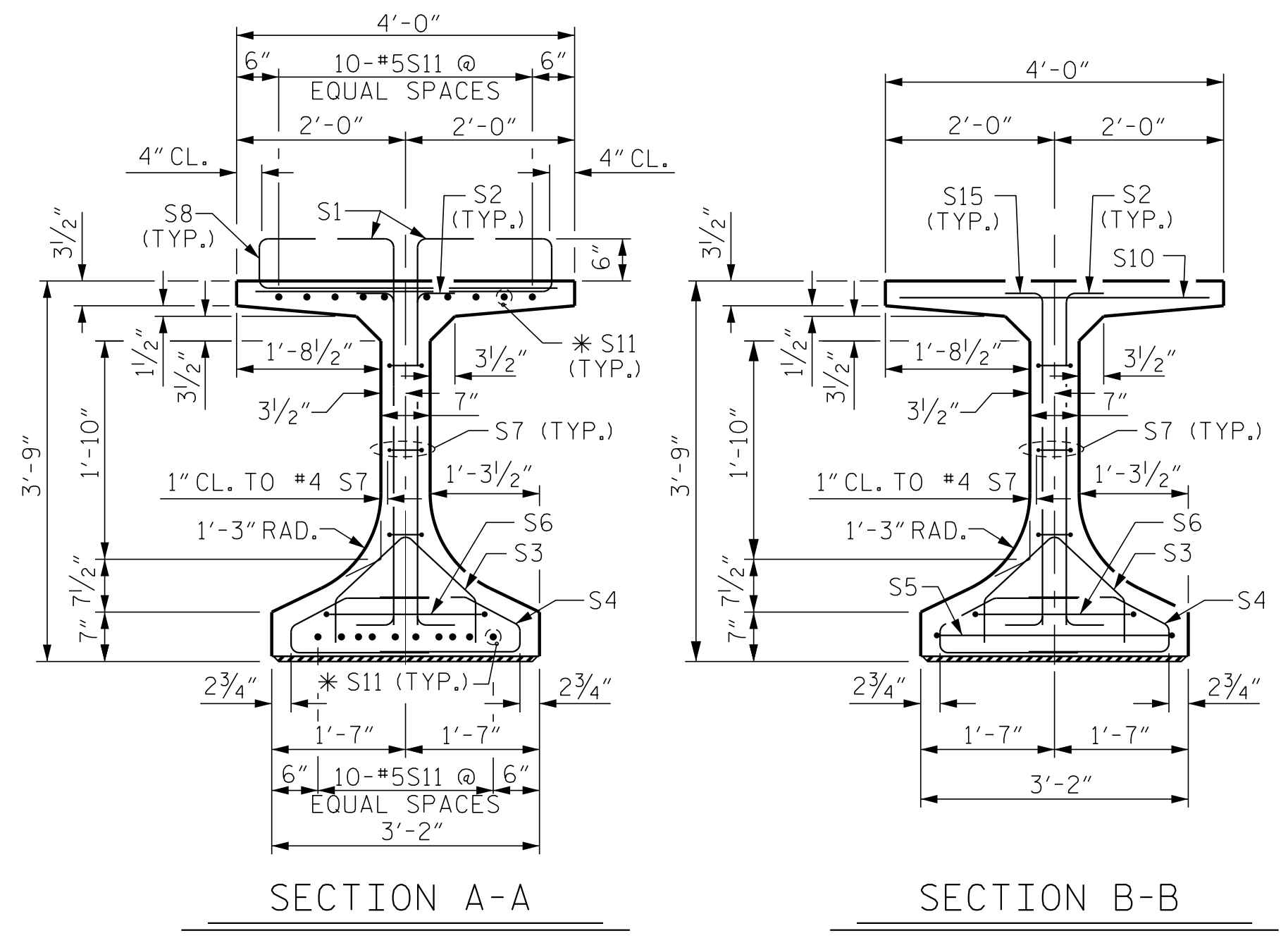
GIRDER	REINFORCING STEEL LB.	10,000 PSI CONCRETE C.Y.	0.6" Ø L.R. STRANDS No.
A1	2,869	24.1	56
A2	2,869	24.3	56
A3	2,916	24.4	56
A4	2,916	24.5	56
A5	2,964	24.6	56
A6	2,964	24.7	56

QUANTITIES FOR SPAN B GIRDERS

GIRDER	REINFORCING STEEL LB.	10,000 PSI CONCRETE C.Y.	0.6" Ø L.R. STRANDS No.
B1	2,687	24.1	56
B2	2,687	24.3	56
B3	2,734	24.4	56
B4	2,734	24.5	56
B5	2,782	24.6	56
B6	2,782	24.7	56

QUANTITIES FOR SPAN C GIRDERS

GIRDER	REINFORCING STEEL LB.	6,500 PSI CONCRETE C.Y.	0.6" Ø L.R. STRANDS No.
C1	1,922	16.3	32
C2	1,922	16.4	32
C3	1,922	16.5	32
C4	1,961	16.6	32
C5	1,961	16.7	32
C6	1,961	16.7	32



1/2" Ø FORMED HOLE. (SEE FRAMING PLAN FOR LOCATION)

(S8, S9 AND S10 BARS NOT SHOWN)

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 CHECKED BY: G. GILLAND DATE: 5/22

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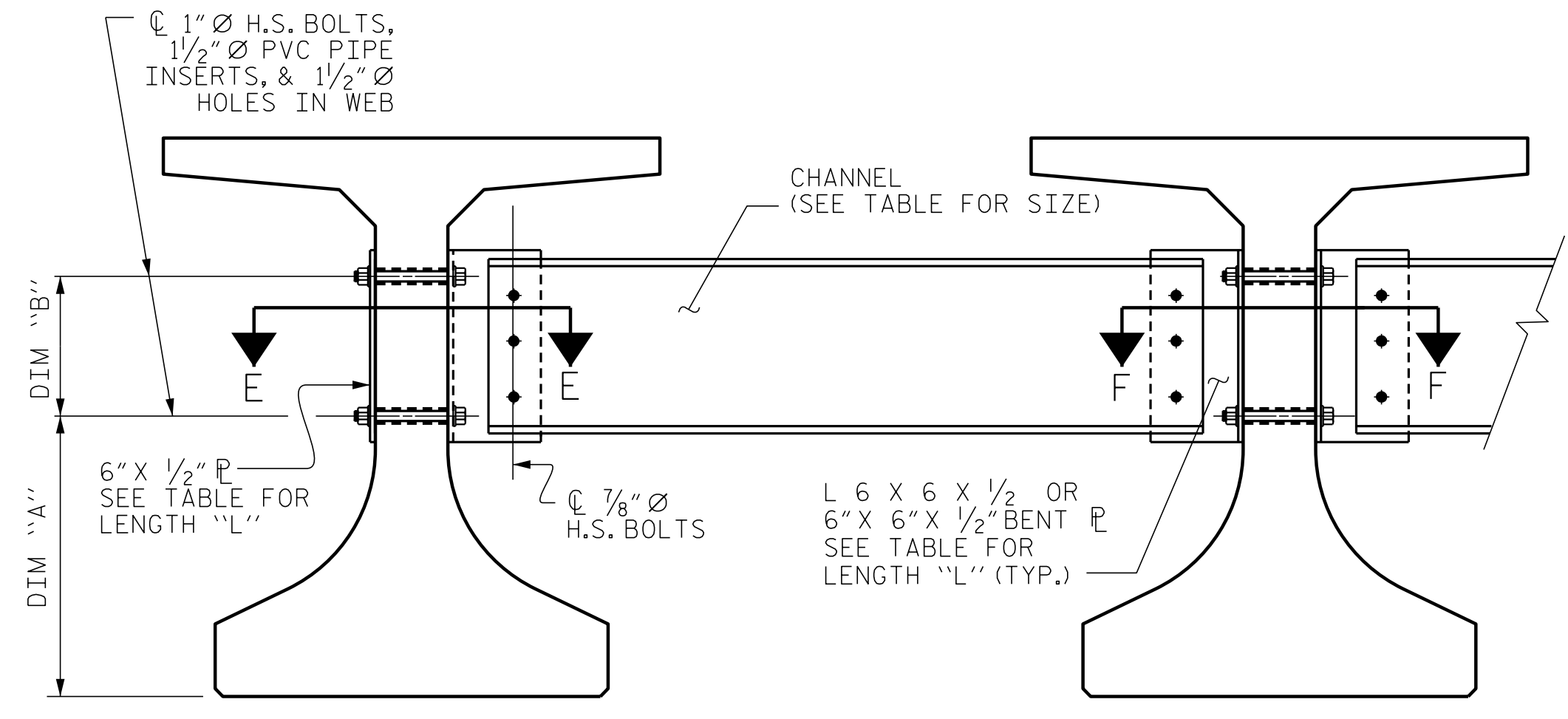
ENGINEER OF RECORD
 2/6/2023

 Gregory M. Gilland
 WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
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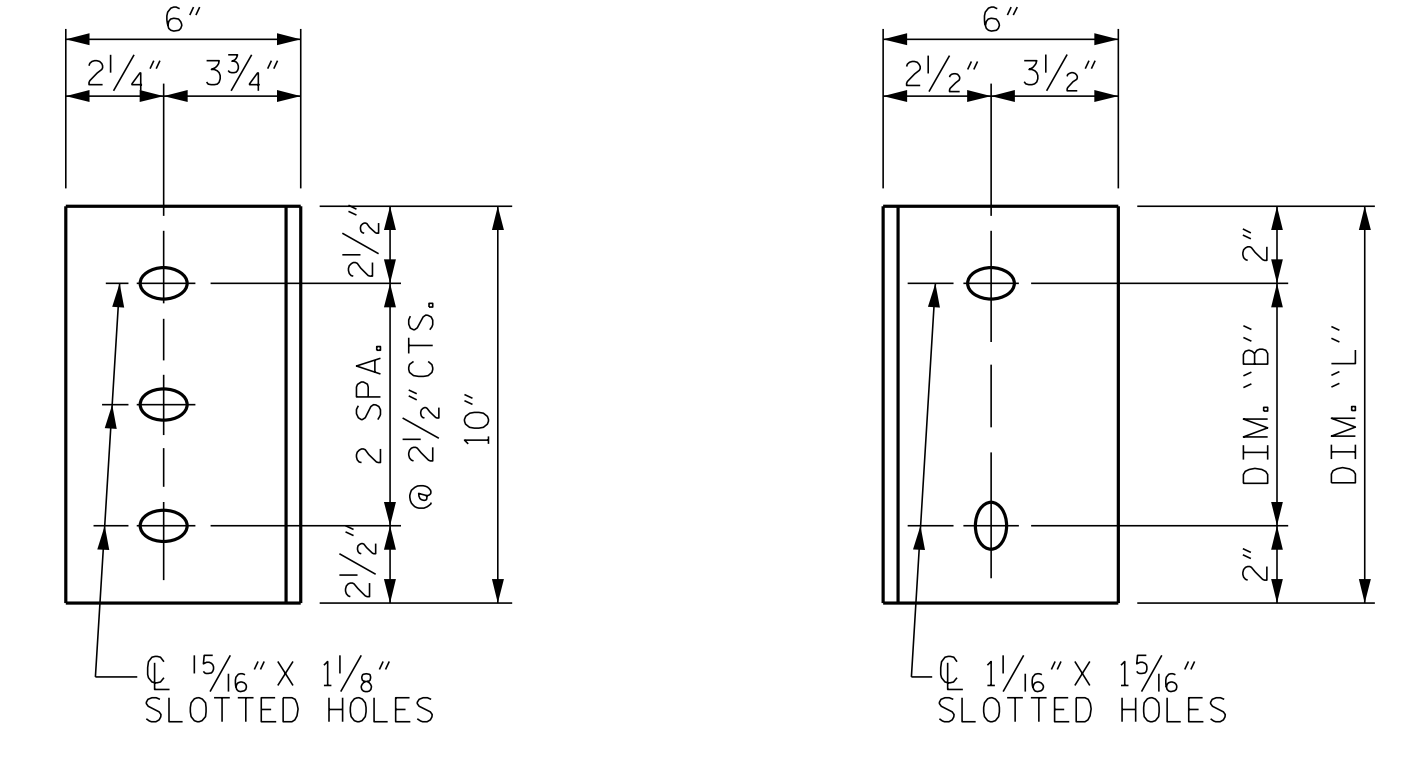
PROJECT NO. B-5985A
 ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 4 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
45" FIB PRESTRESSED CONCRETE GIRDER

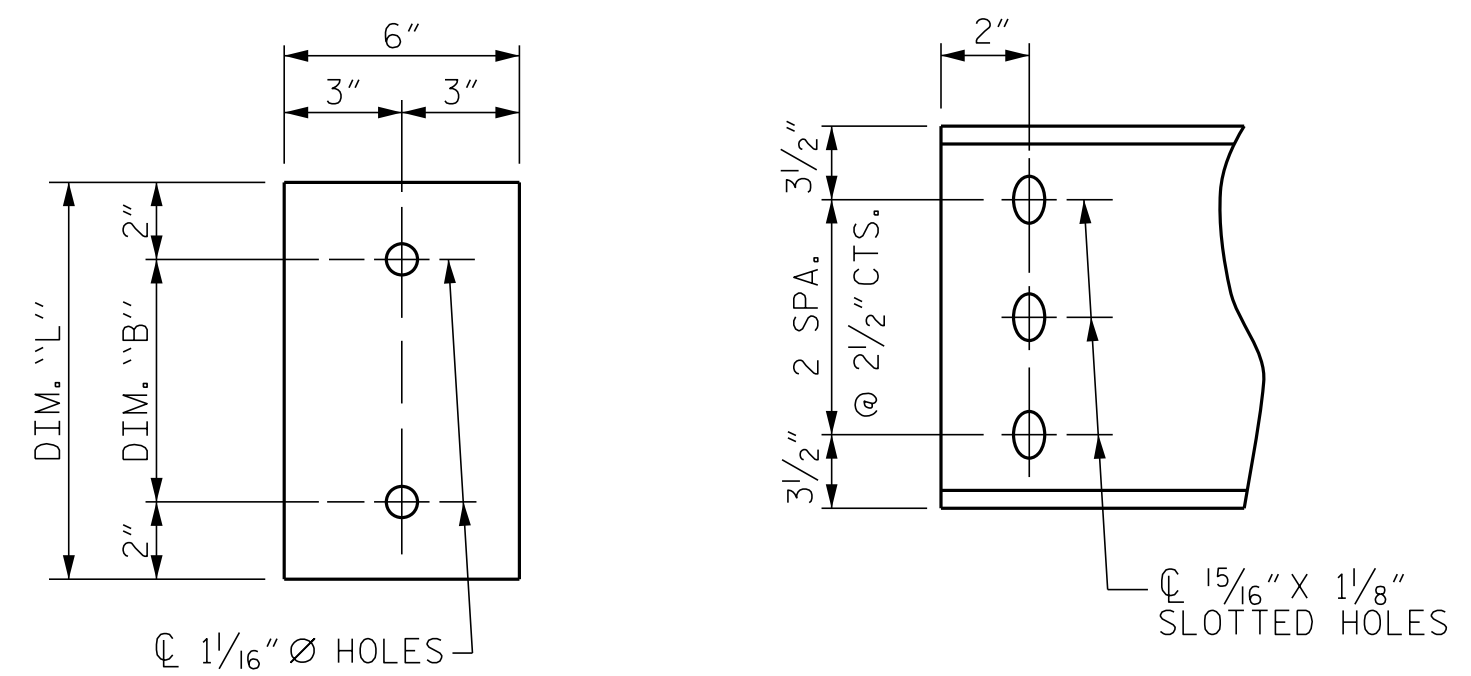
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2			4			



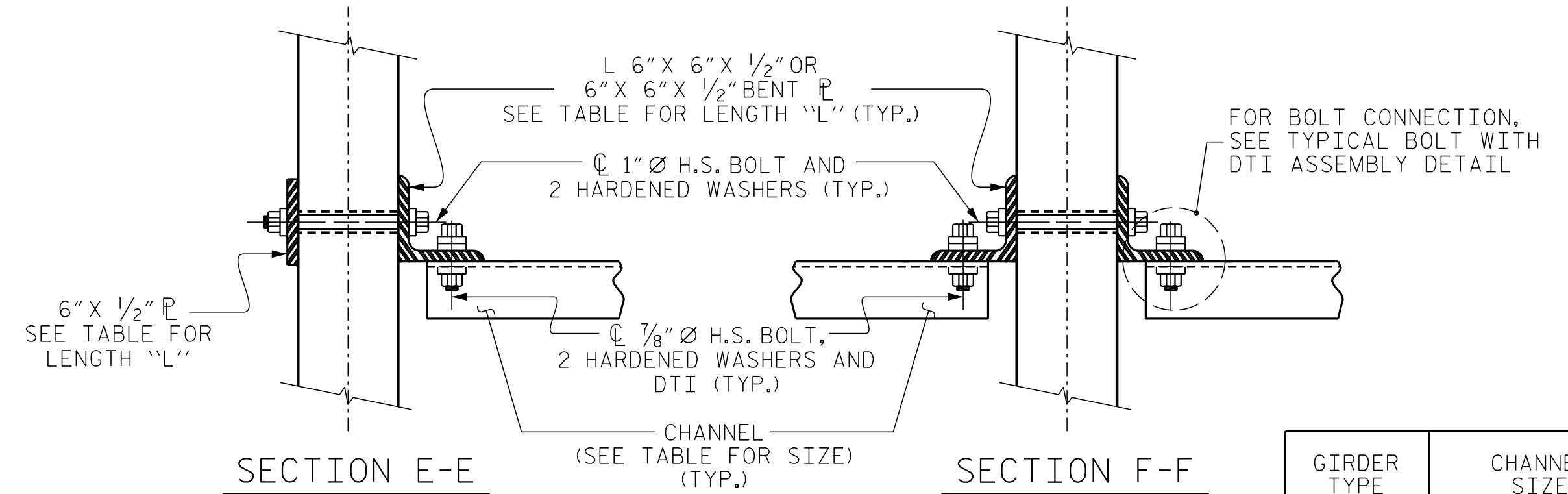
EXTERIOR GIRDER INTERIOR GIRDER
PART SECTION AT INTERMEDIATE DIAPHRAGM



DIAPHRAGM FACE WEB FACE
CONNECTOR PLATE DETAILS



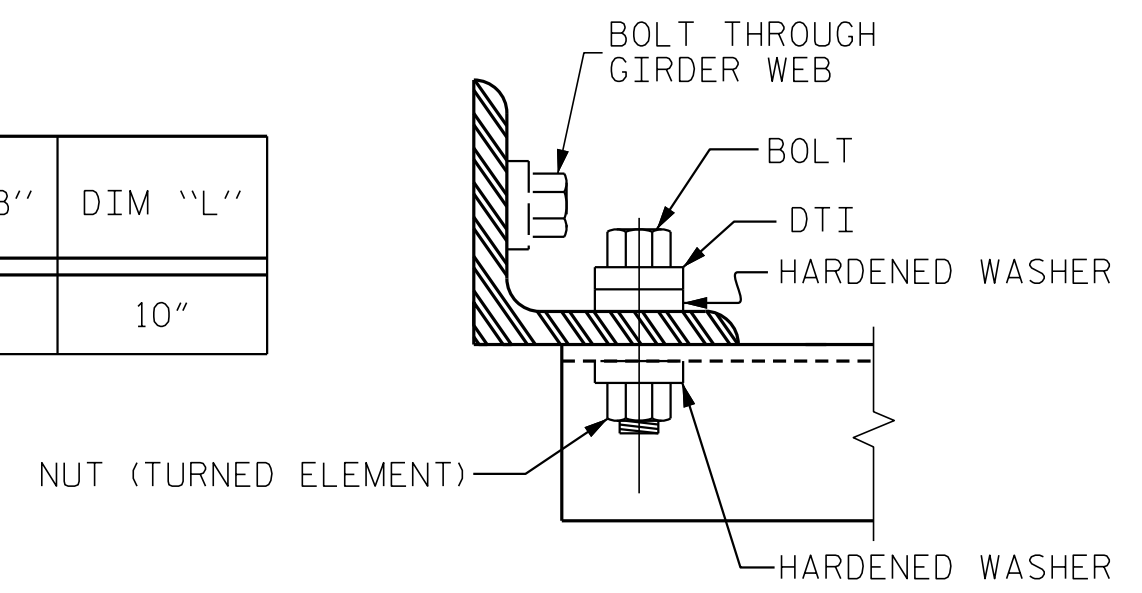
CHANNEL END PLATE DETAILS



SECTION E-E SECTION F-F
CONNECTION DETAILS

TABLE

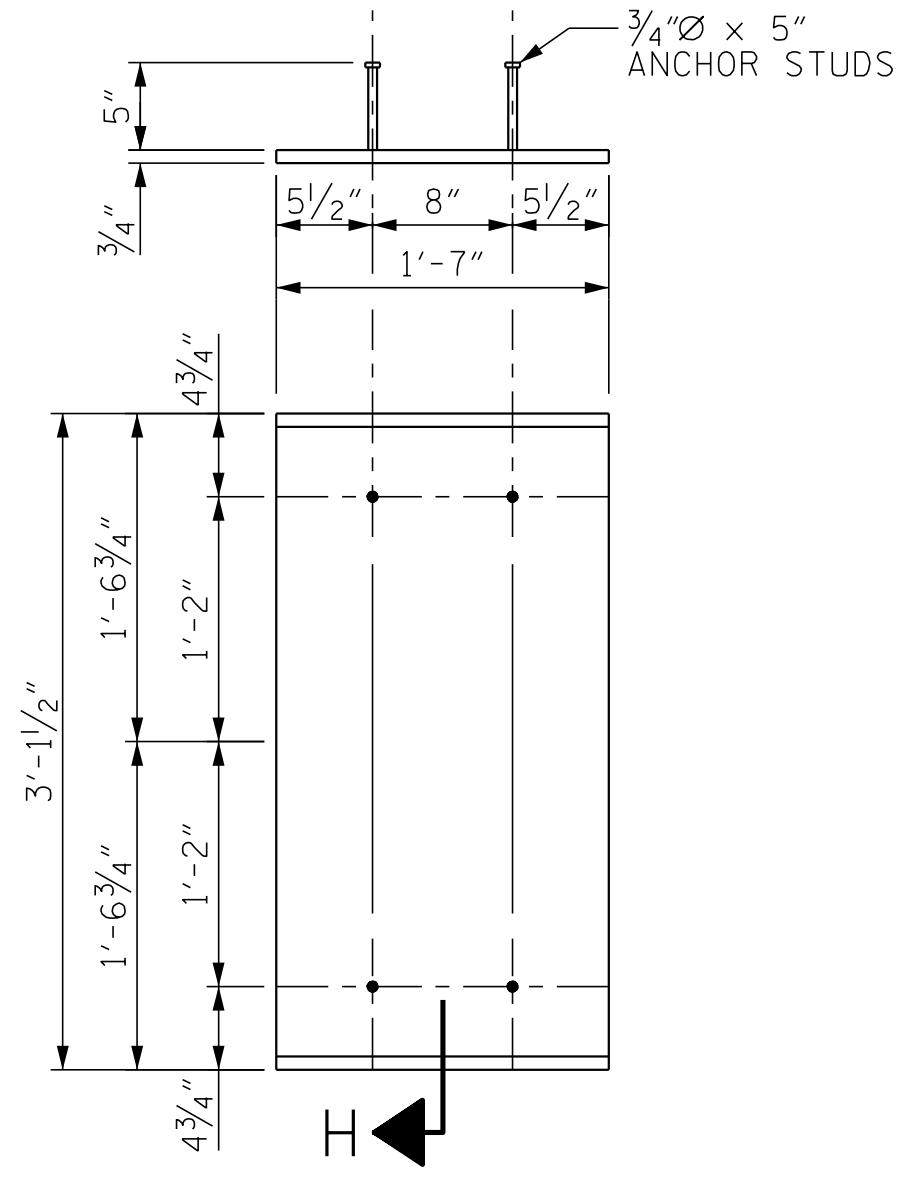
GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
45" FIB	MC 12 x 31	2'-2 1/2"	6"	10"



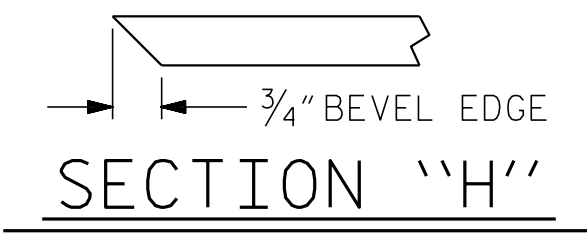
BOLT WITH DTI ASSEMBLY DETAIL

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 DETAILS



SECTION "H"

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

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 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.

PROJECT NO. B-5985A
ROBESON COUNTY
STATION: 23+56.00 -L1-
SHEET 5 OF 5

ENGINEER OF RECORD
2/6/2023
NORTH CAROLINA PROFESSIONAL SEAL 37400
GREGORY M. GILLAND
Decommissioned by
Gregory M. Gilland
ETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
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LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
INTERMEDIATE STEEL DIAPHRAGMS & GIRDER DETAILS FOR 45" FIB
REVISIONS
NO. BY: DATE: NO. BY: DATE:
1 3
2 4
SHEET NO. S-19
TOTAL SHEETS 49

DRAWN BY: D. HODGE DATE: 1/22
CHECKED BY: G. GILLAND DATE: 5/22

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DEAD LOAD DEFLECTION TABLE FOR GIRDERS

Table with 4 rows and 30 columns. Rows include: 0.6" Ø LOW RELAXATION, SPANS "A & B", GIRDER 1, FORTIETH POINTS, CAMBER (GIRDER ALONE IN PLACE), * DEFLECTION DUE TO SUPERIMPOSED D.L., FINAL CAMBER.

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

Table with 4 rows and 30 columns. Rows include: 0.6" Ø LOW RELAXATION, SPANS "A & B", GIRDERS 2 THRU 5, FORTIETH POINTS, CAMBER (GIRDER ALONE IN PLACE), * DEFLECTION DUE TO SUPERIMPOSED D.L., FINAL CAMBER.

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

Table with 4 rows and 30 columns. Rows include: 0.6" Ø LOW RELAXATION, SPANS "A & B", GIRDER 6, FORTIETH POINTS, CAMBER (GIRDER ALONE IN PLACE), * DEFLECTION DUE TO SUPERIMPOSED D.L., FINAL CAMBER.

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

Table with 4 rows and 20 columns. Rows include: 0.6" Ø LOW RELAXATION, SPAN "C", GIRDER 1, TWENTIETH POINTS, CAMBER (GIRDER ALONE IN PLACE), * DEFLECTION DUE TO SUPERIMPOSED D.L., FINAL CAMBER.

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

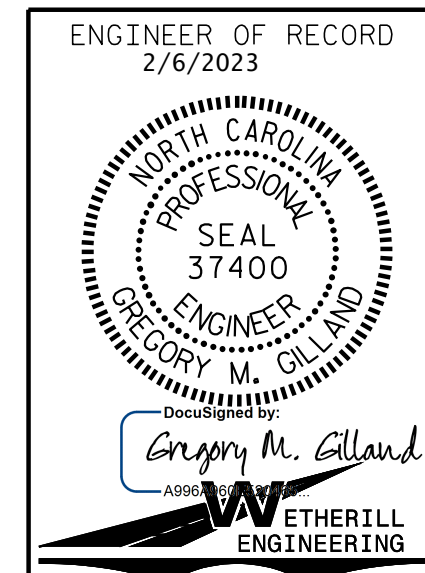
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DEAD LOAD DEFLECTION TABLE FOR GIRDERS

Table with 4 rows and 20 columns. Rows include: 0.6" Ø LOW RELAXATION, SPAN "C", GIRDER 6, TWENTIETH POINTS, CAMBER (GIRDER ALONE IN PLACE), * DEFLECTION DUE TO SUPERIMPOSED D.L., FINAL CAMBER.

* 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-5985A
ROBESON COUNTY
STATION: 23+56.00 -L1-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE DEAD LOAD DEFLECTIONS

Table with 4 columns: NO., BY, DATE, REVISIONS. Includes revision 1 and 2.

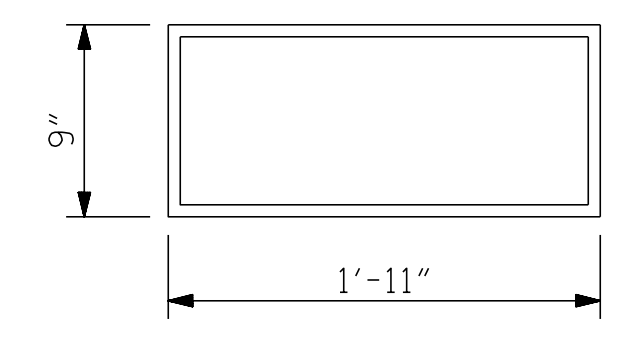
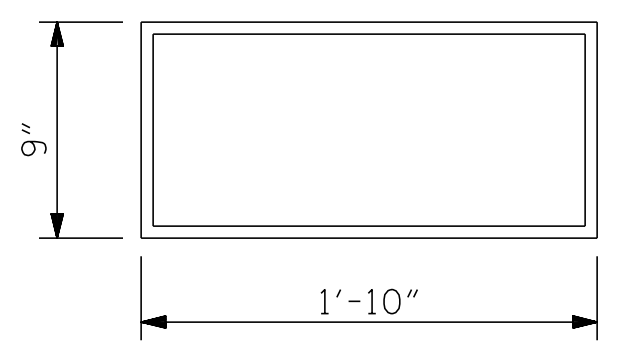
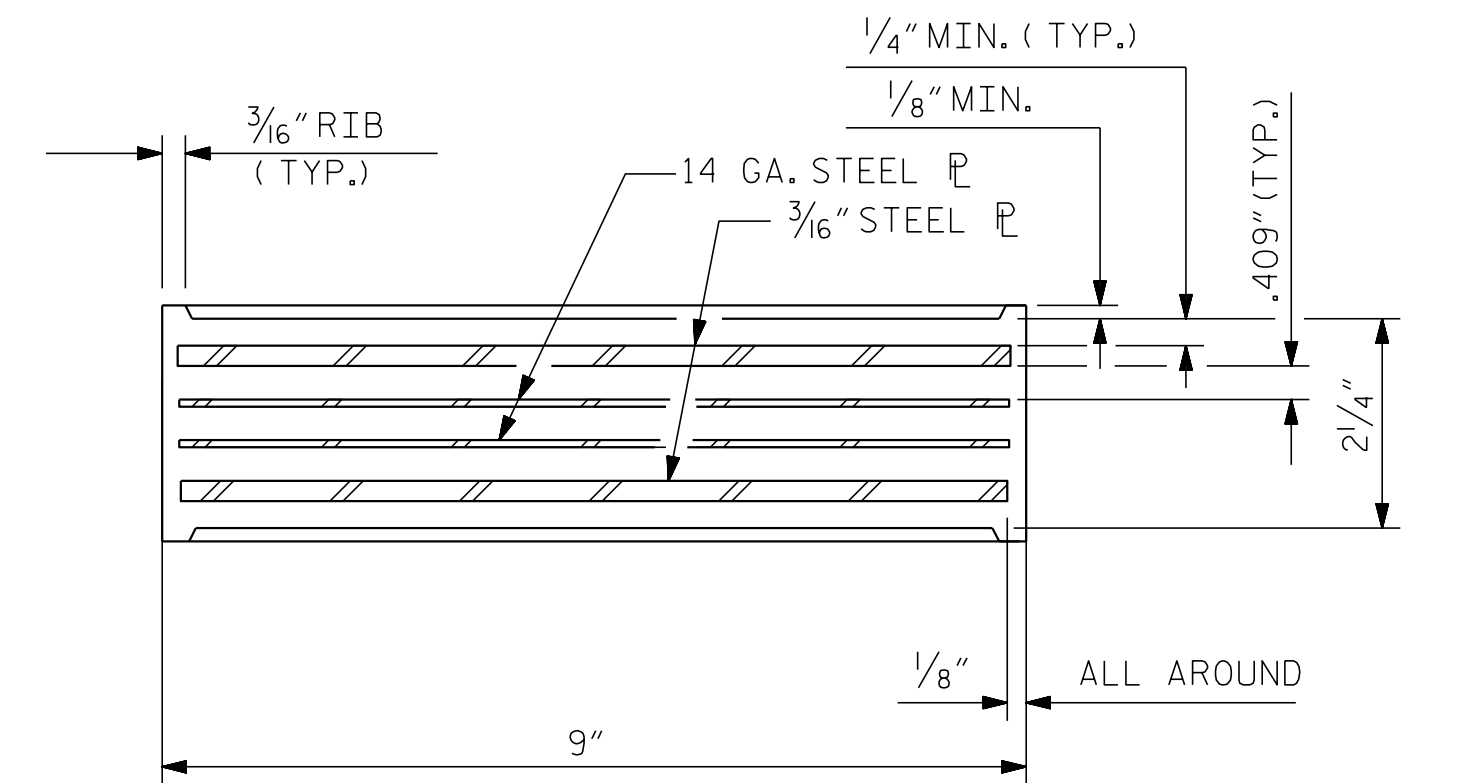
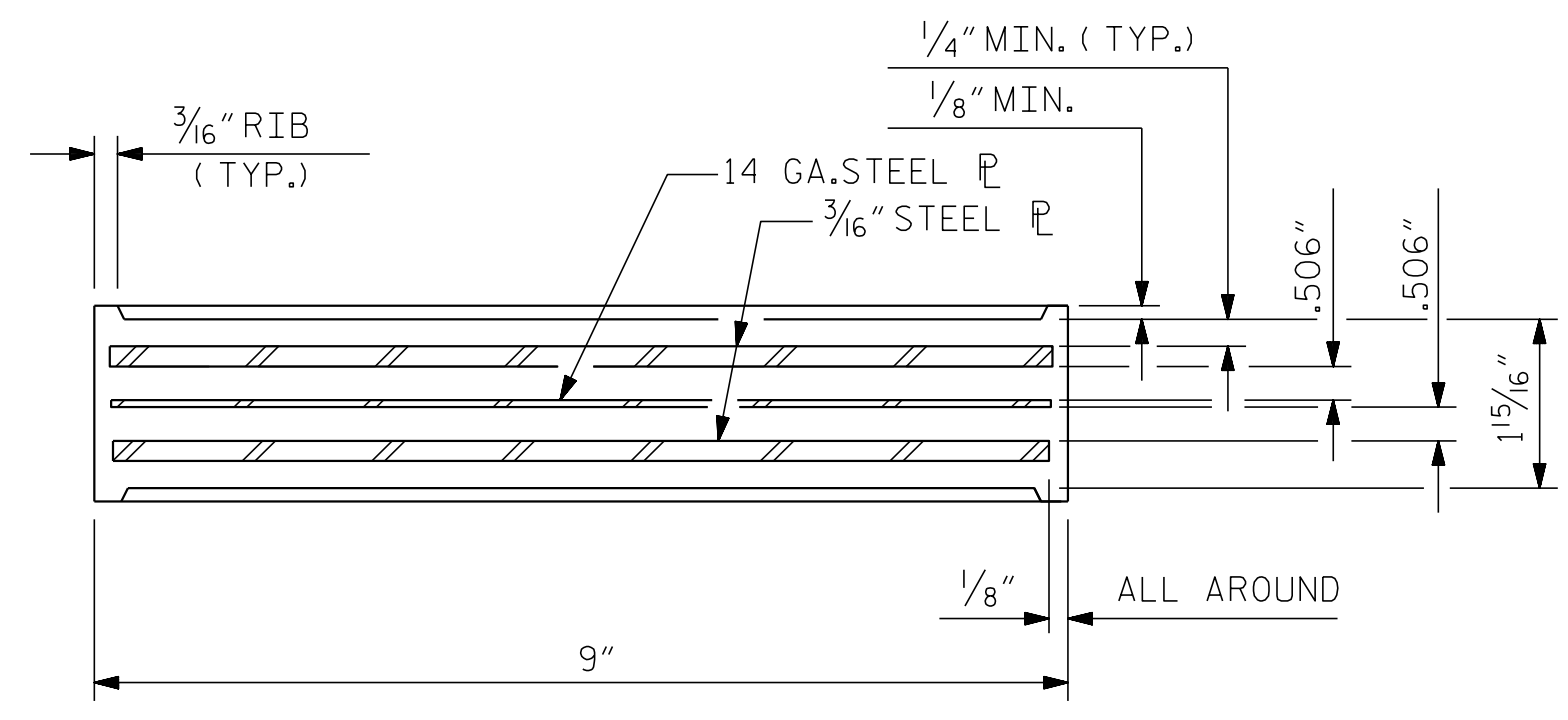
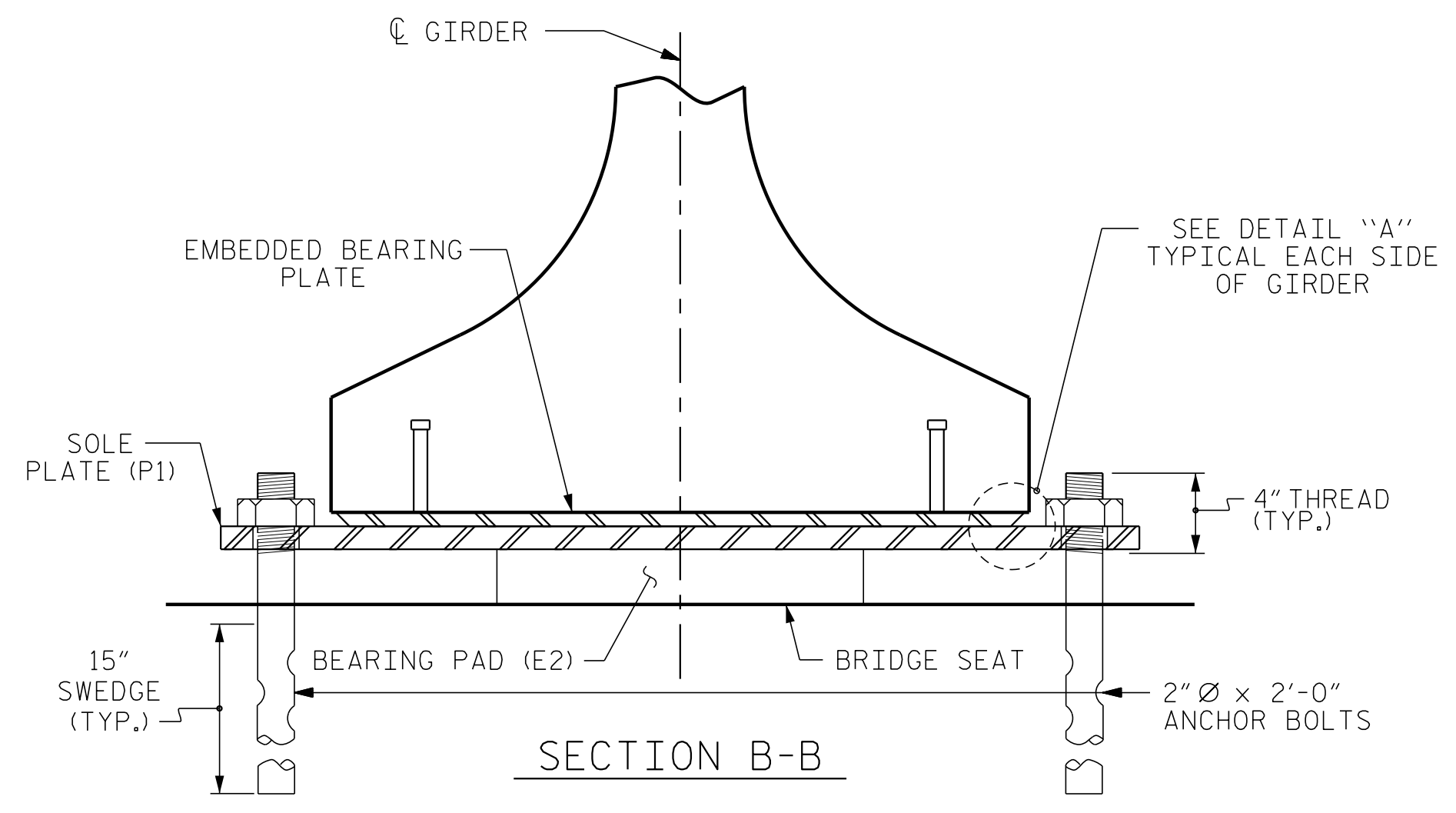
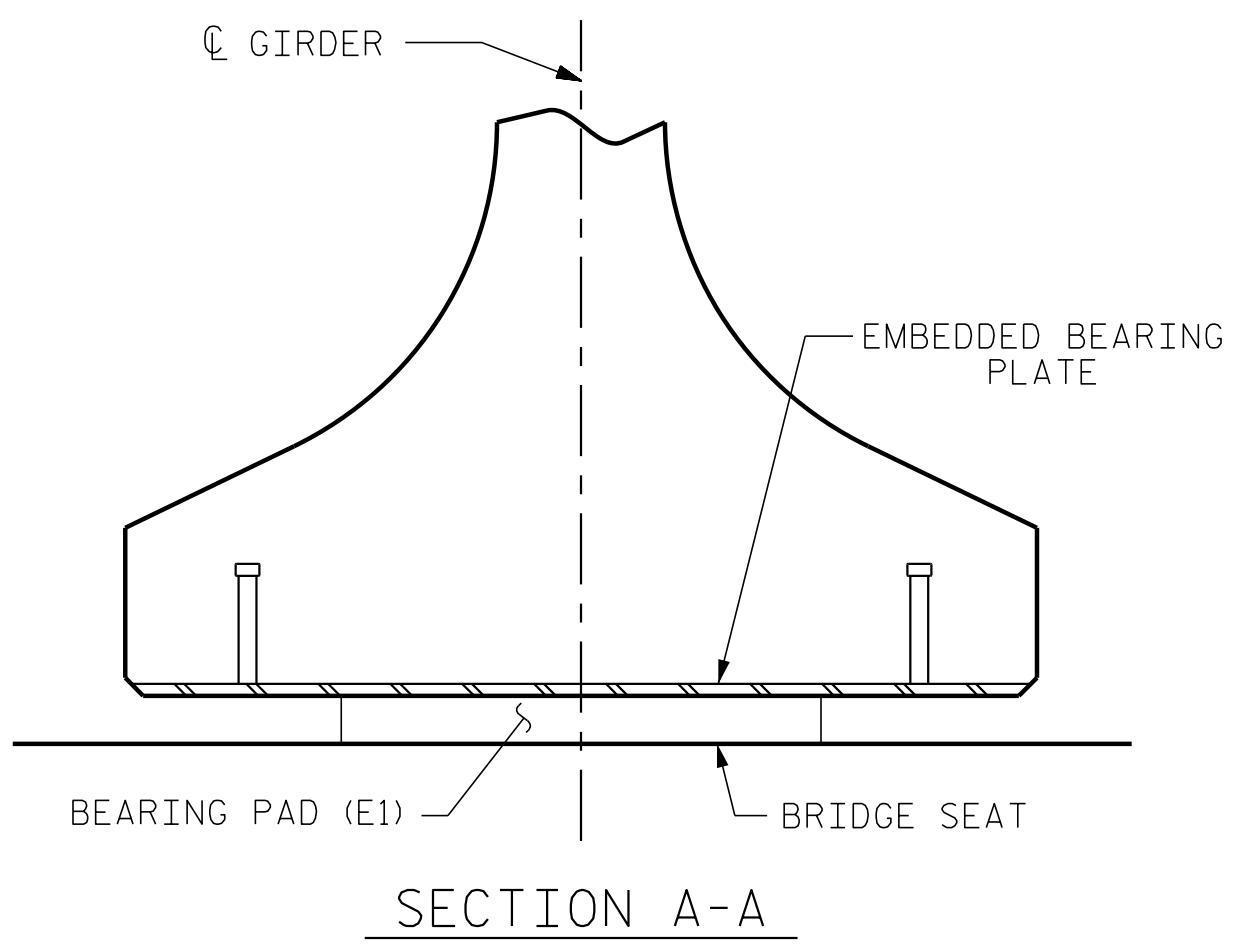
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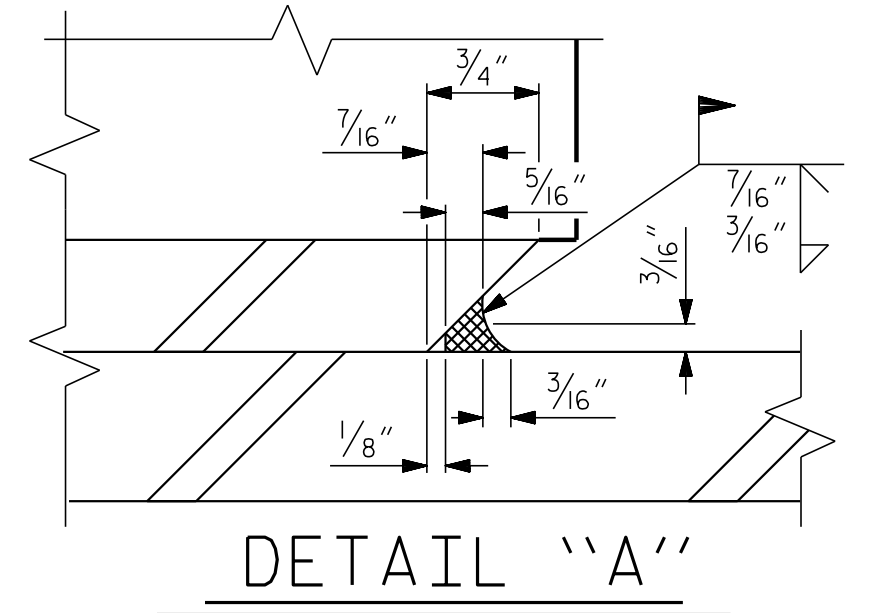
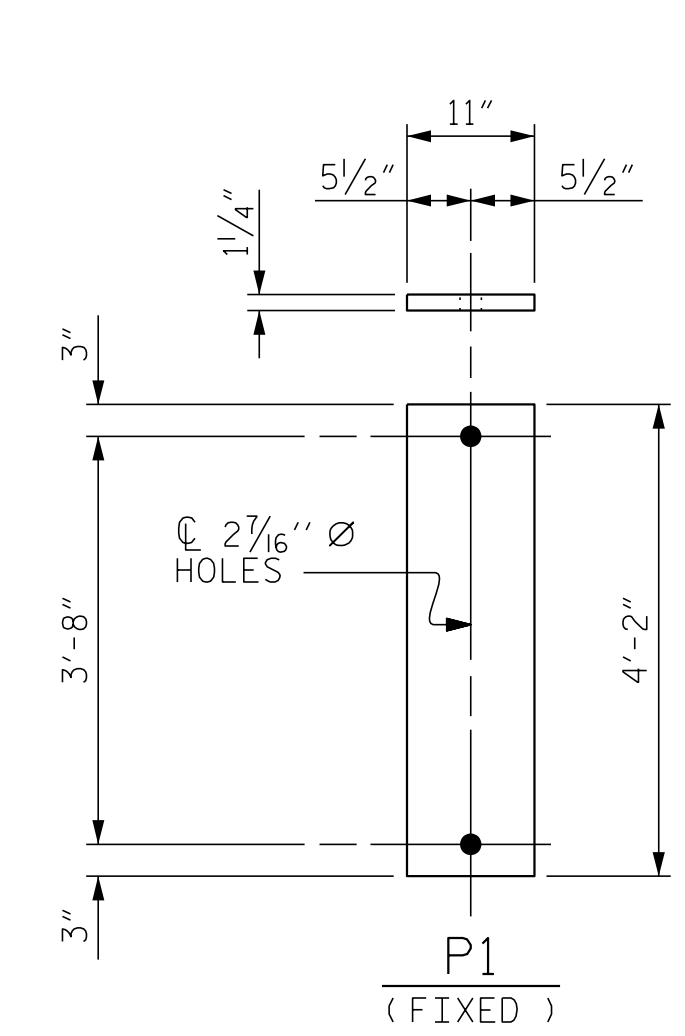
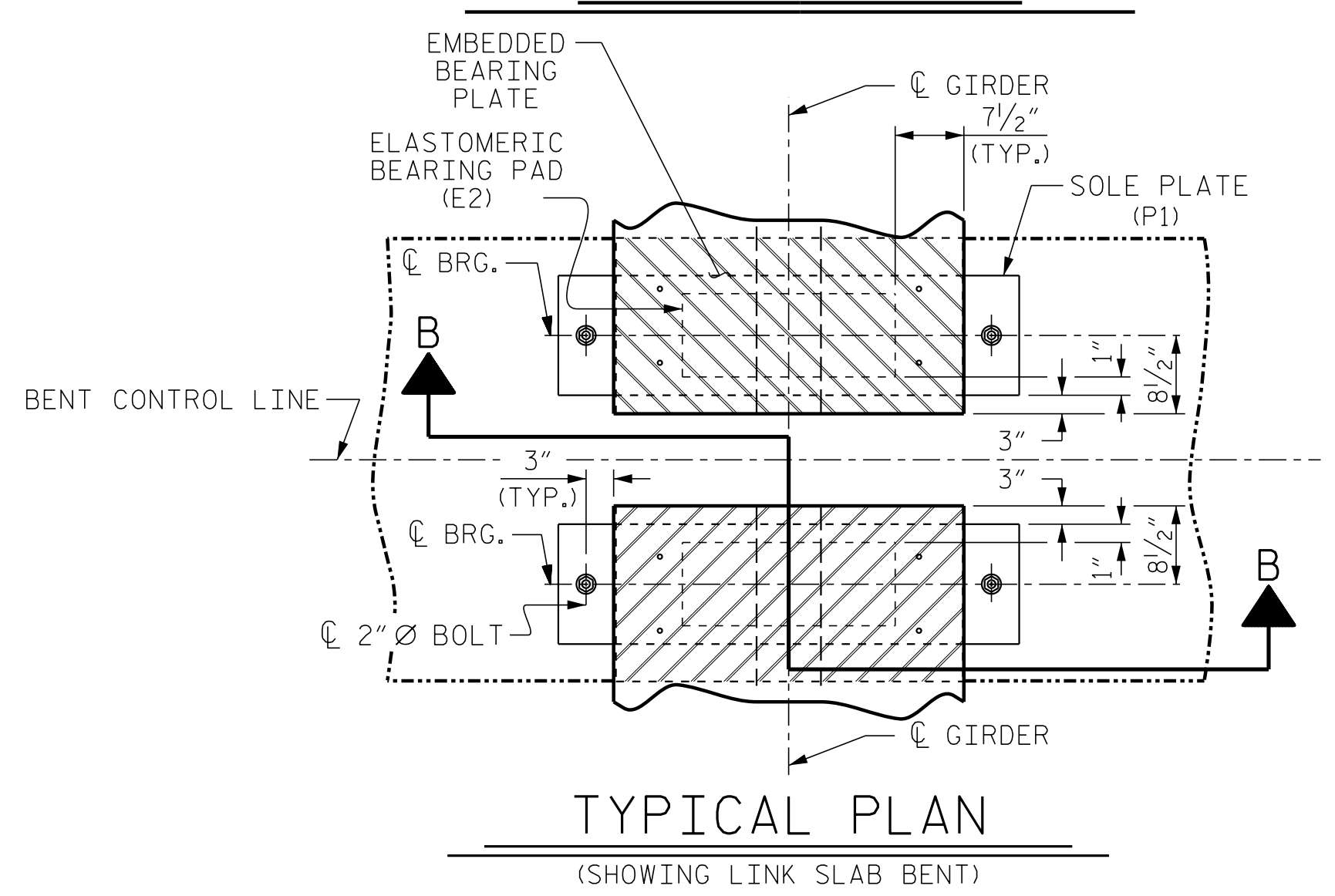
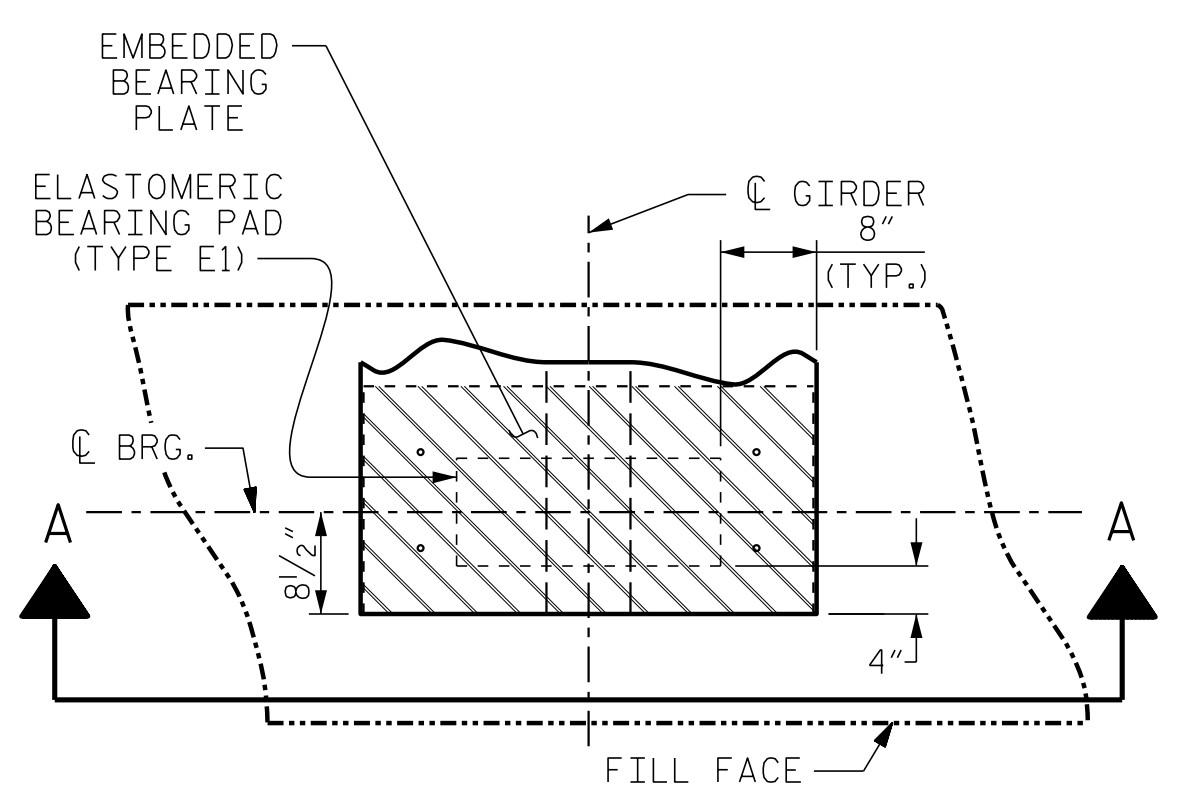
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SHEET NO. S-20 TOTAL SHEETS 49



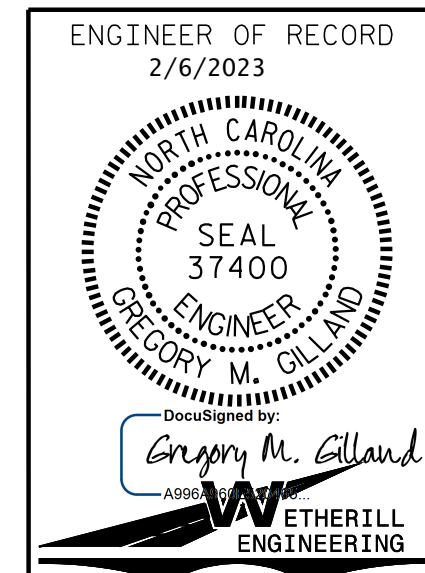
E1 (12 REQ'D)

E2 (24 REQ'D)



MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE IV	225 k
TYPE V	365 k

PROJECT NO. B-5985A
ROBESON COUNTY
STATION: 23+56.00 -L1-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
BEARING PADS
AND SOLE PLATES
PRESTRESSED FLORIDA-I BEAM

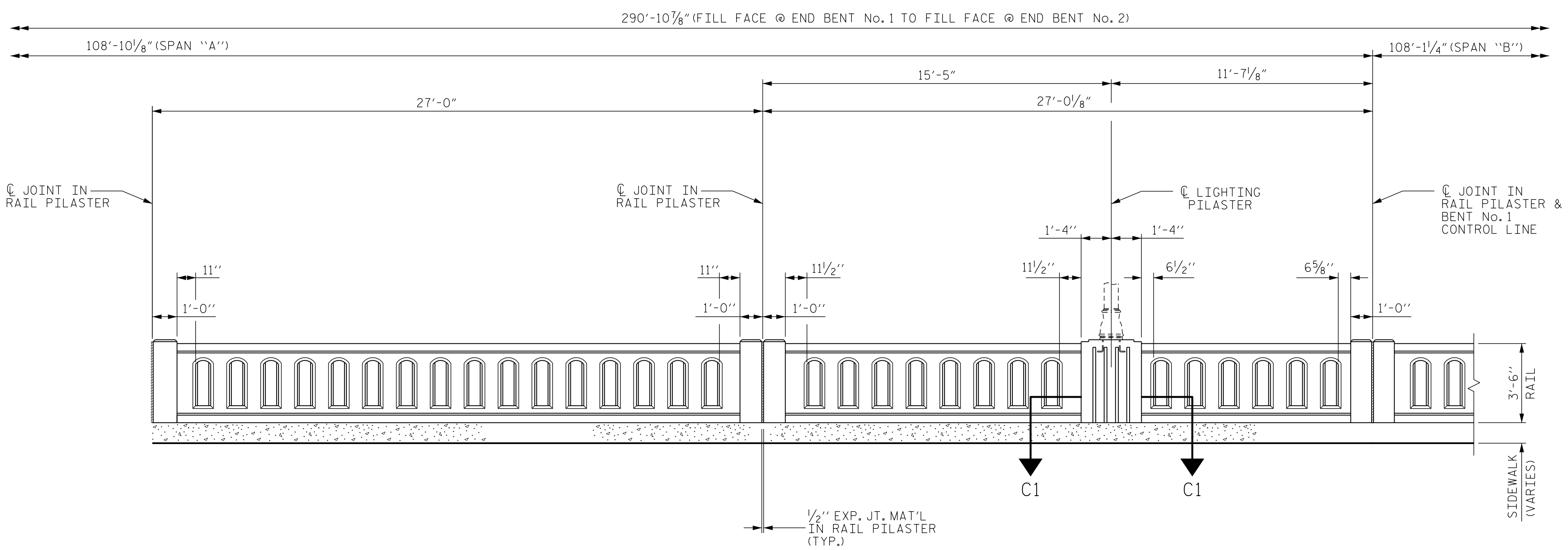
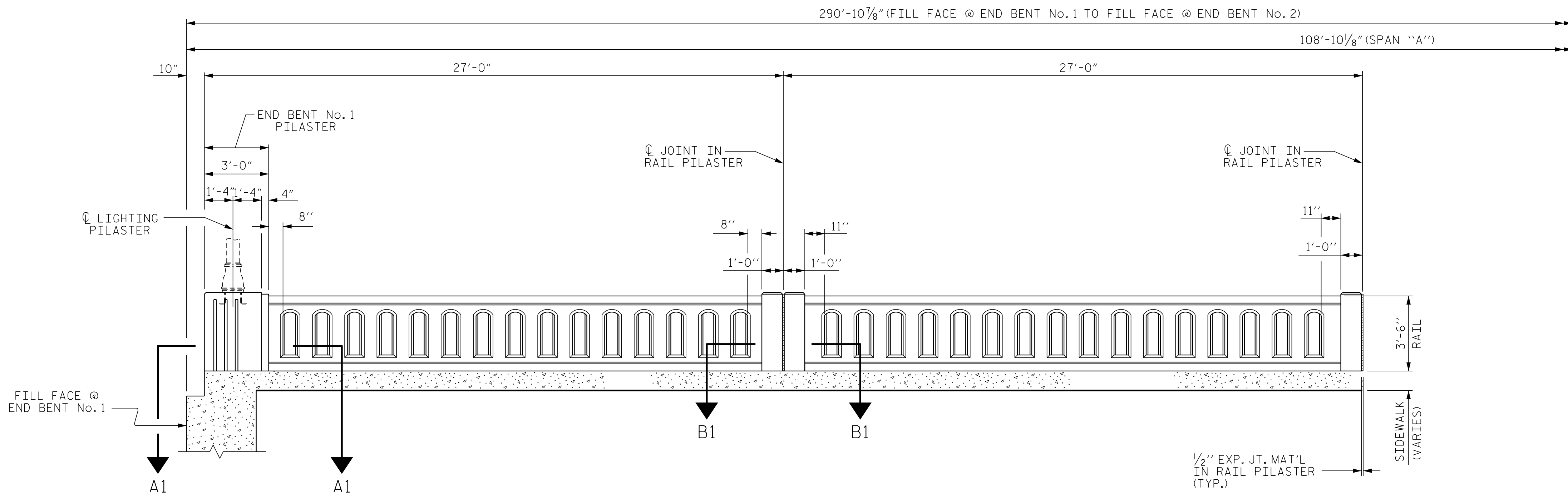
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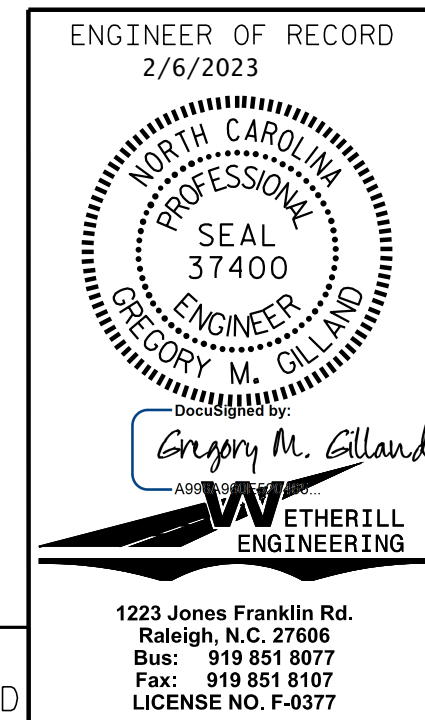
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ROADWAY ELEVATION OF LEFT RAIL - SPAN "A"

(ALL DIMENSIONS ARE MEASURED ALONG OUTSIDE FACE OF RAIL)

PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 1 OF 12



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 CLASSIC CONCRETE
 BRIDGE RAIL WITH
 SIDEWALK

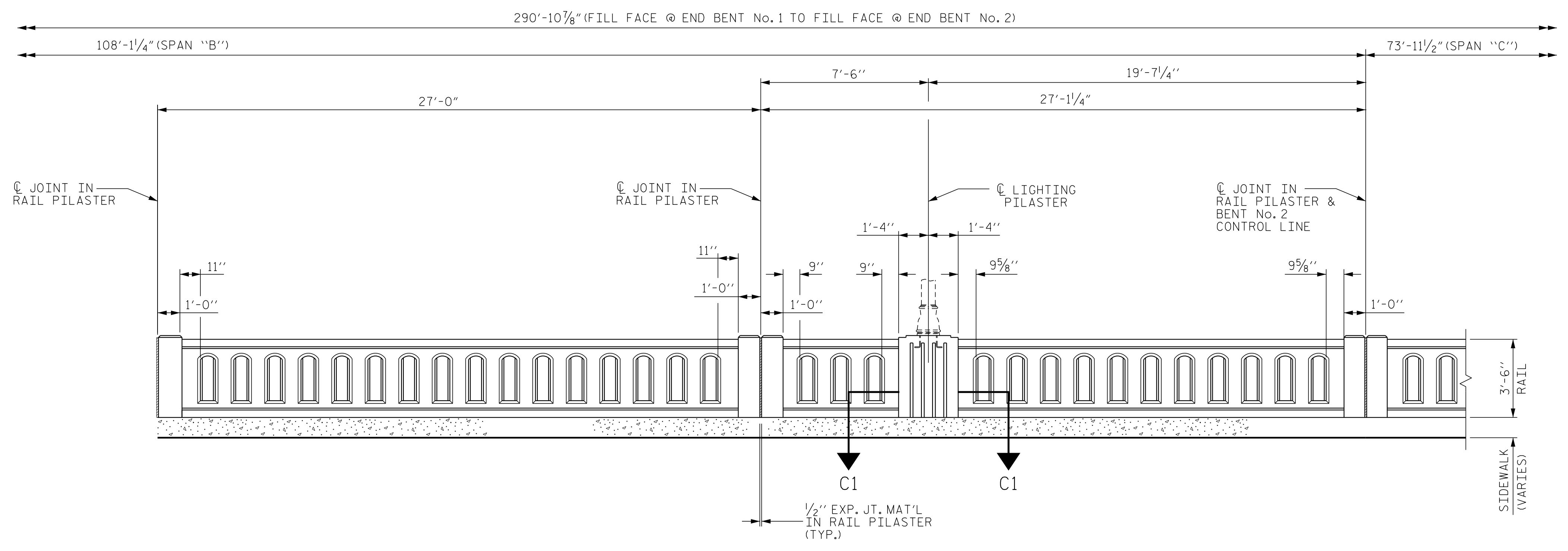
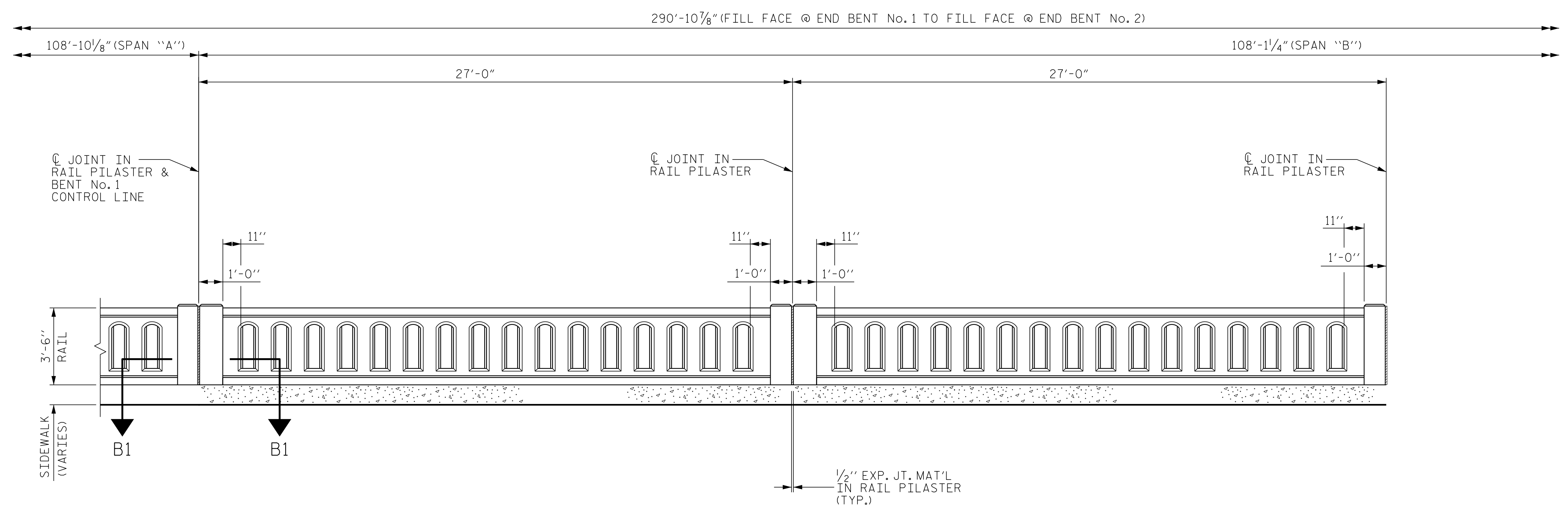
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 CHECKED BY : G. GILLAND DATE : 5/22

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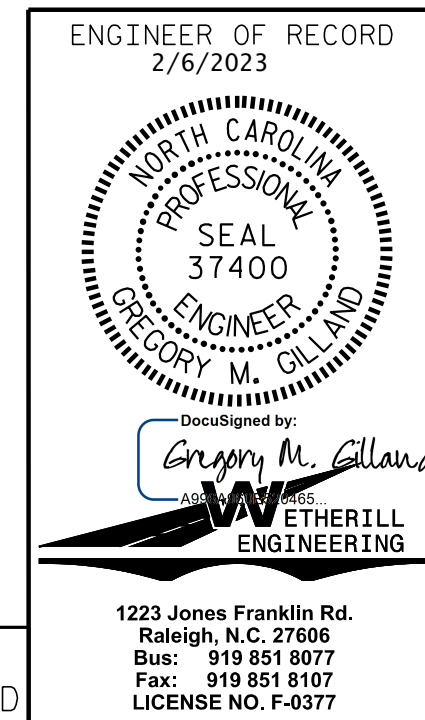
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ROADWAY ELEVATION OF LEFT RAIL - SPAN "B"

(ALL DIMENSIONS ARE MEASURED ALONG OUTSIDE FACE OF RAIL)

PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 2 OF 12



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 CLASSIC CONCRETE
 BRIDGE RAIL WITH
 SIDEWALK

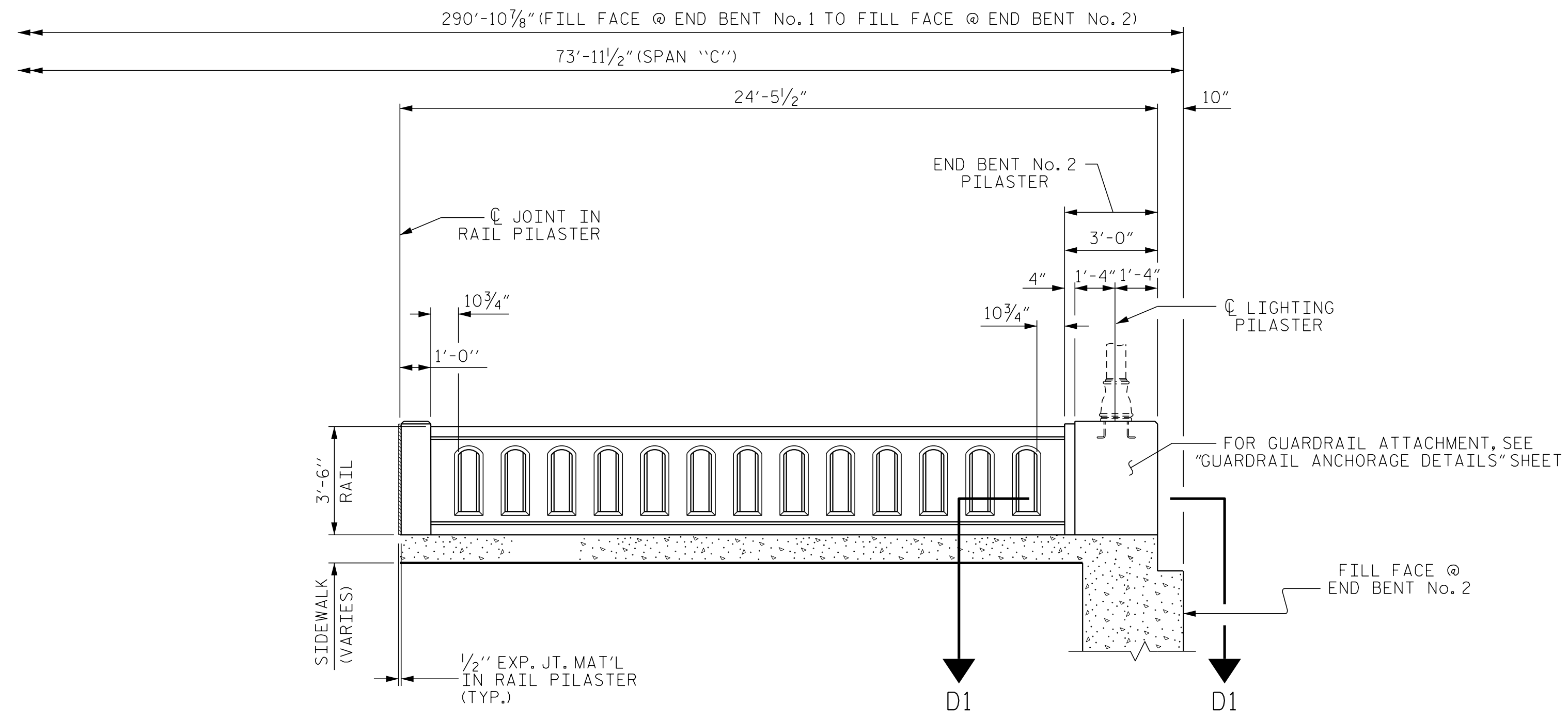
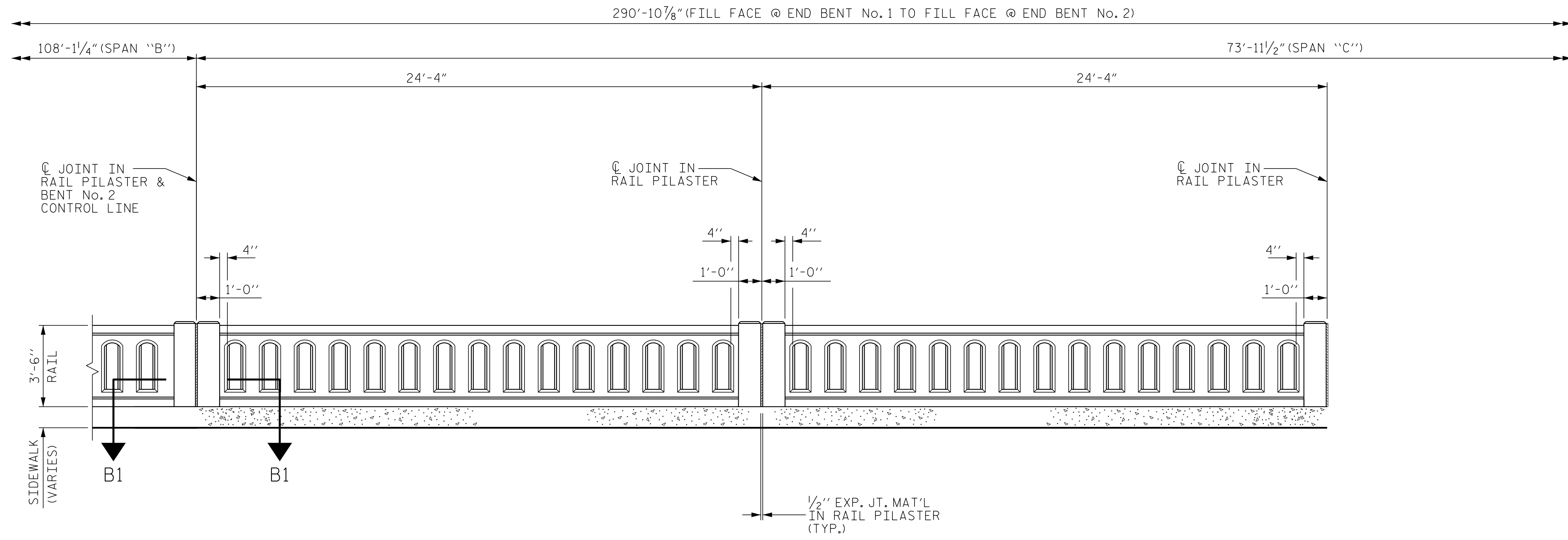
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TOTAL SHEETS: 49

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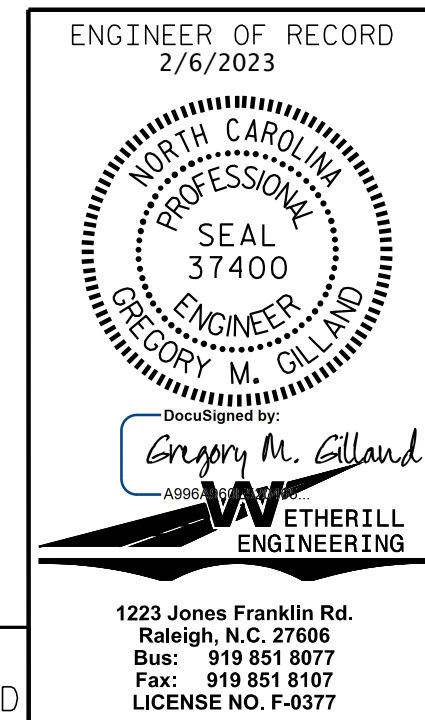
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ROADWAY ELEVATION OF LEFT RAIL - SPAN "C"

(ALL DIMENSIONS ARE MEASURED ALONG OUTSIDE FACE OF RAIL)

PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 3 OF 12

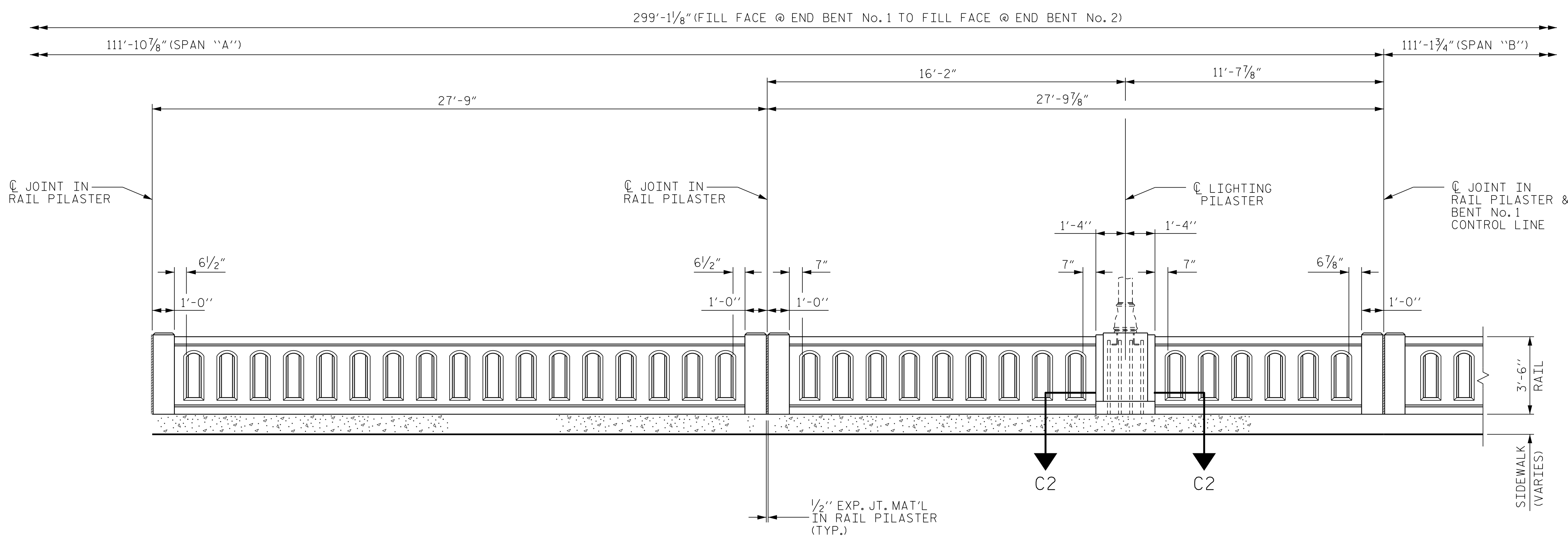
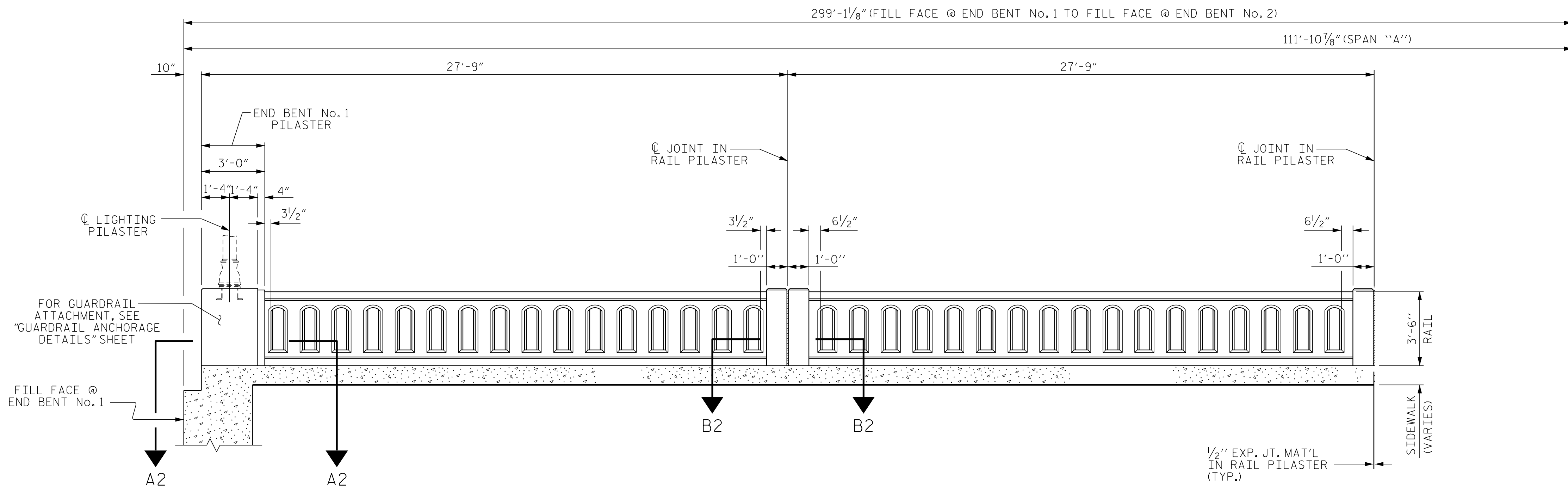


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE					
CLASSIC CONCRETE BRIDGE RAIL WITH SIDEWALK					
REVISIONS					
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SHEET NO.					S-24
TOTAL SHEETS					49

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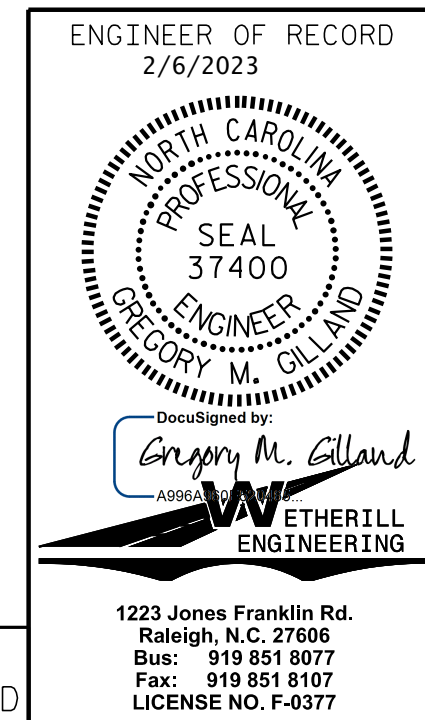
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ROADWAY ELEVATION OF RIGHT RAIL - SPAN "A"
(ALL DIMENSIONS ARE MEASURED ALONG OUTSIDE FACE OF RAIL)

PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 4 OF 12



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
**CLASSIC CONCRETE
 BRIDGE RAIL WITH
 SIDEWALK**

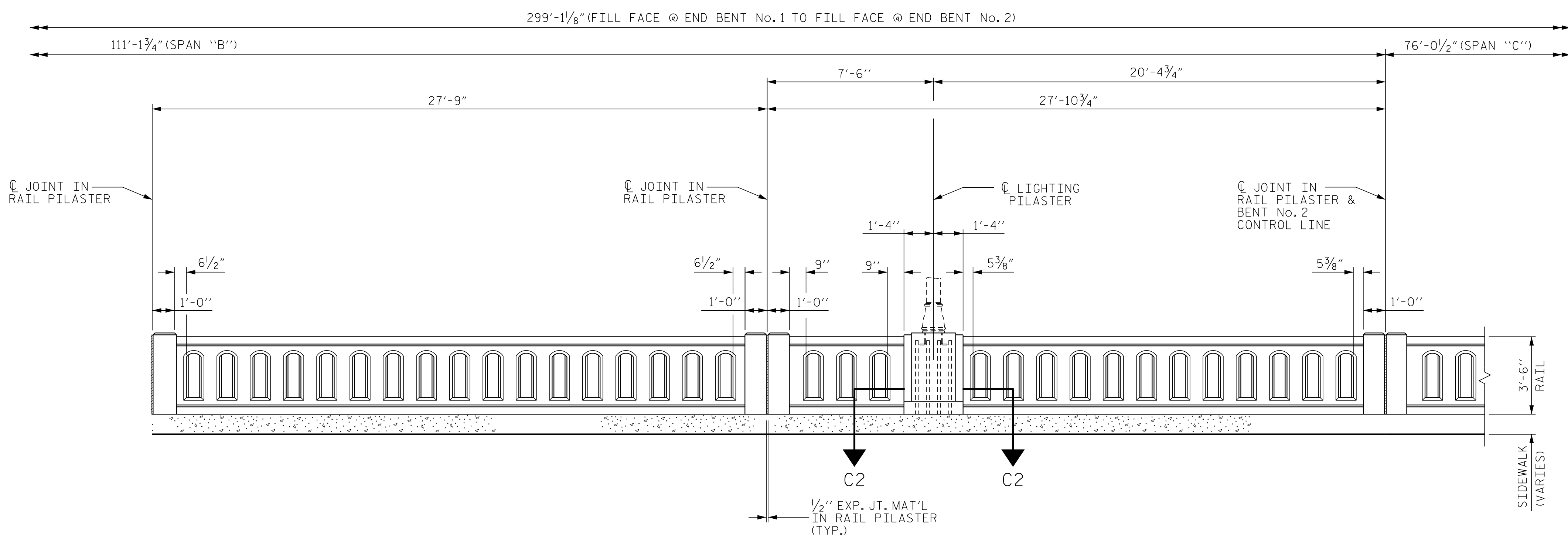
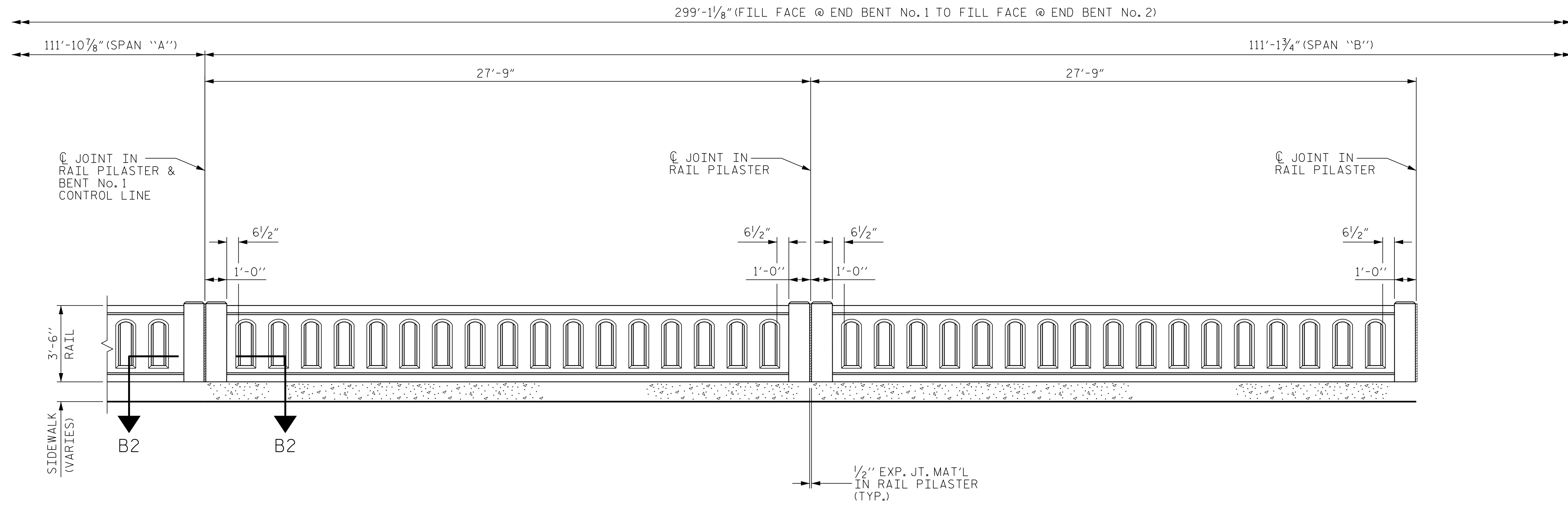
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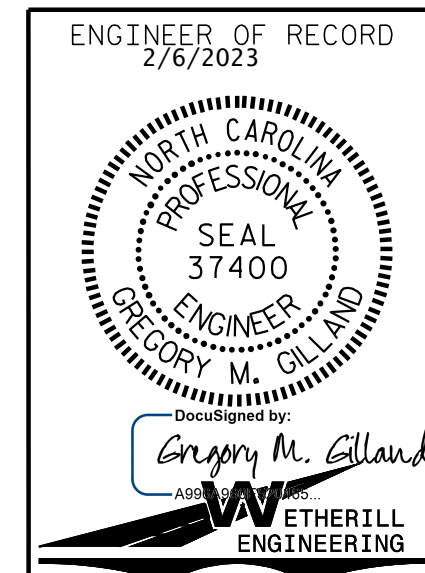
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ROADWAY ELEVATION OF RIGHT RAIL - SPAN "B"
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PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 5 OF 12



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 CLASSIC CONCRETE
 BRIDGE RAIL WITH
 SIDEWALK

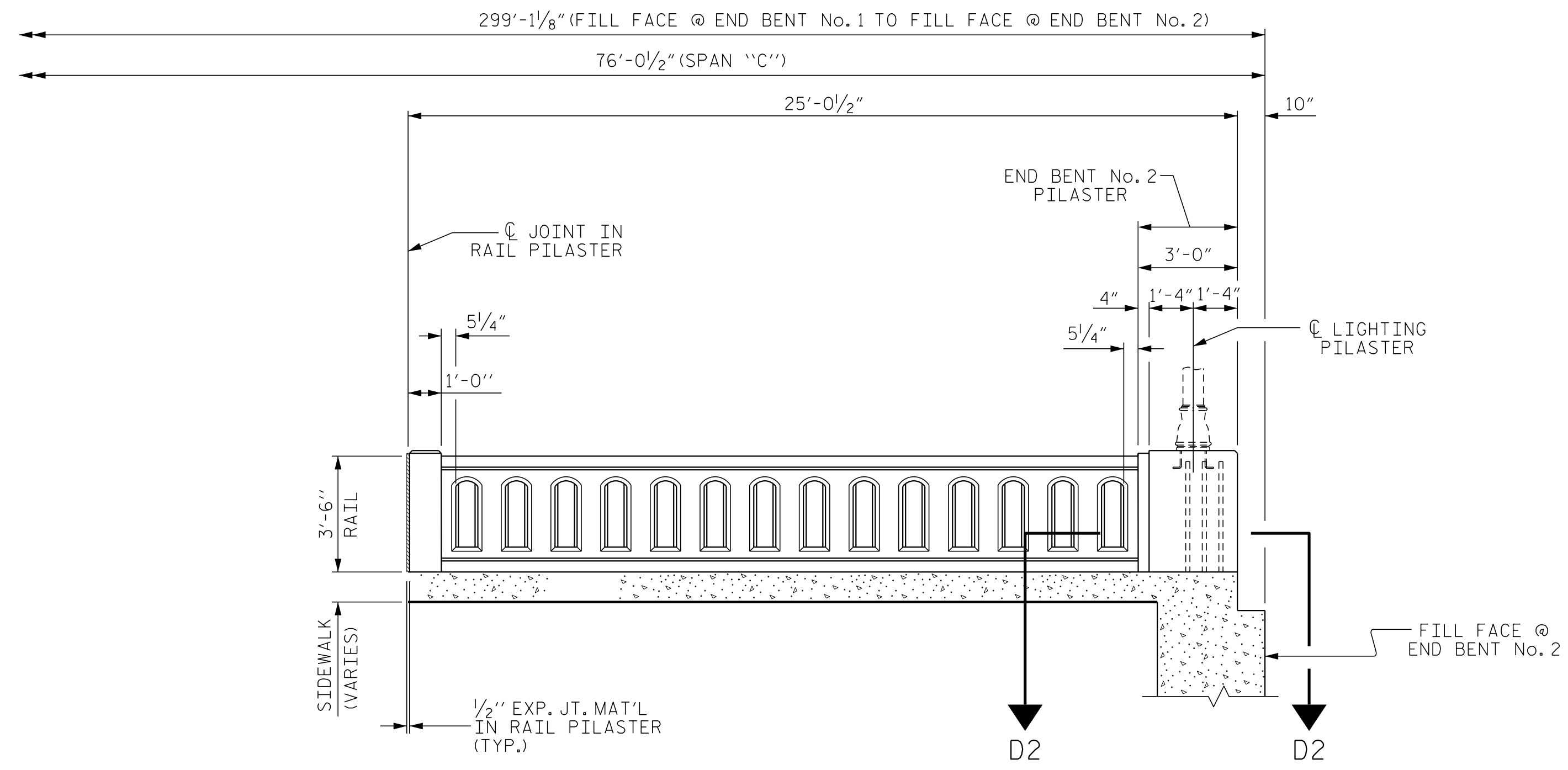
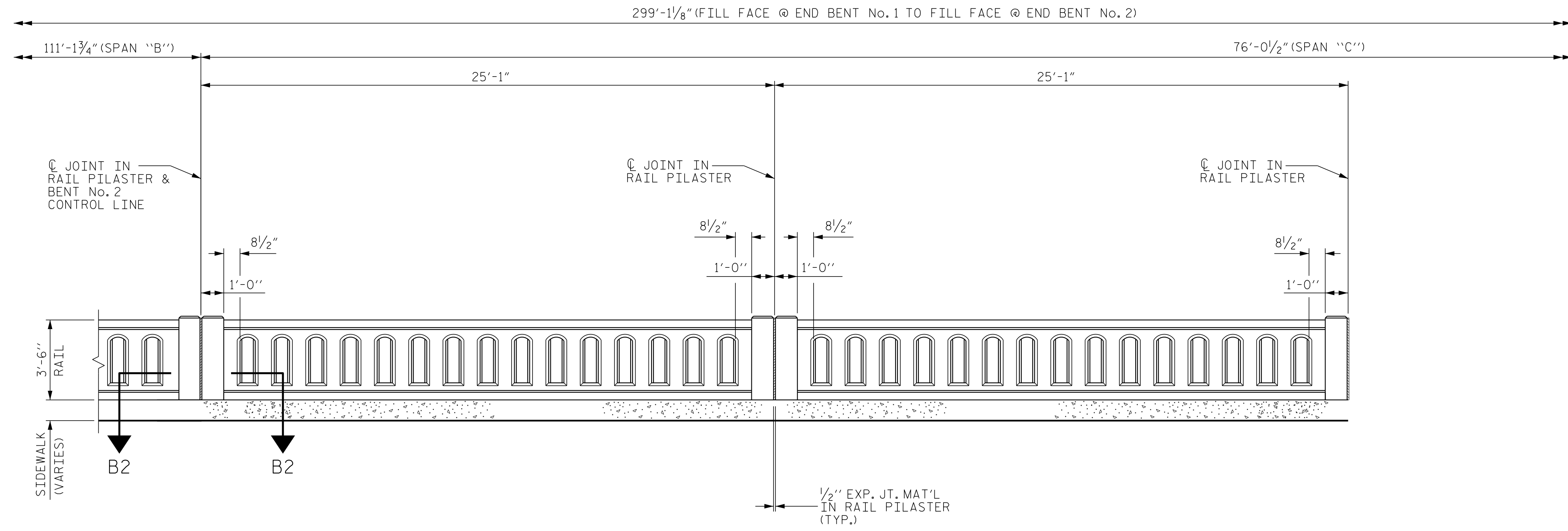
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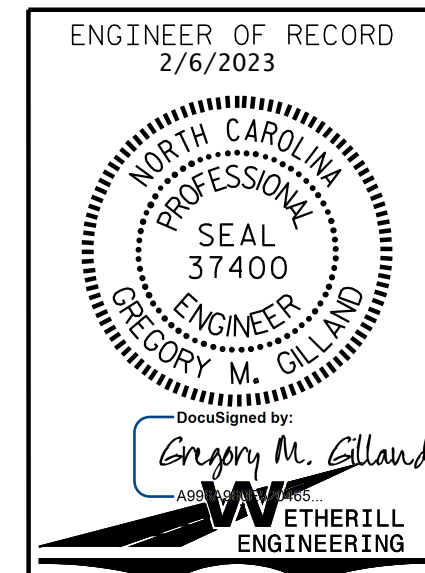
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 CHECKED BY: G. GILLAND DATE: 5/22



ROADWAY ELEVATION OF RIGHT RAIL - SPAN "C"

(ALL DIMENSIONS ARE MEASURED ALONG OUTSIDE FACE OF RAIL)

PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 6 OF 12



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 CLASSIC CONCRETE
 BRIDGE RAIL WITH
 SIDEWALK

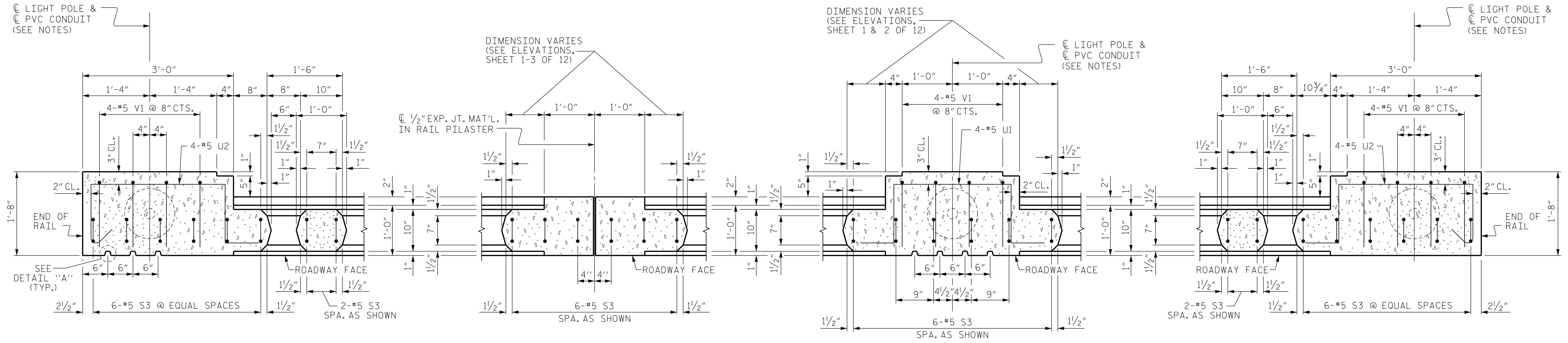
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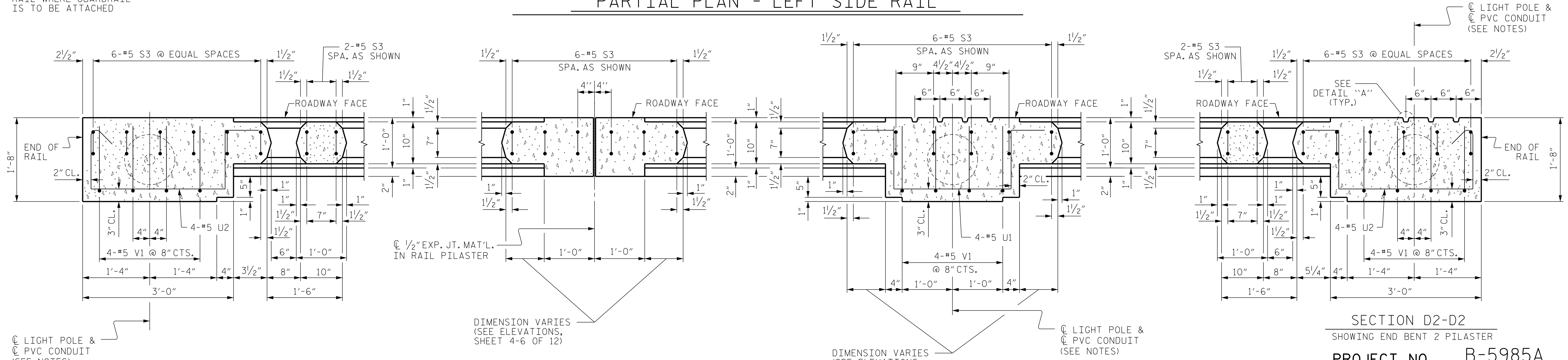
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 CHECKED BY: G. GILLAND DATE: 5/22



SECTION A1-A1 SHOWING END BENT 1 PILASTER
 SECTION B1-B1 SHOWING RAIL PILASTER
 SECTION C1-C1 SHOWING LIGHTING PILASTER
 SECTION D1-D1 SHOWING END BENT 2 PILASTER

NOTE:
 OMIT FLUTES AT END OF RAIL WHERE GUARDRAIL IS TO BE ATTACHED

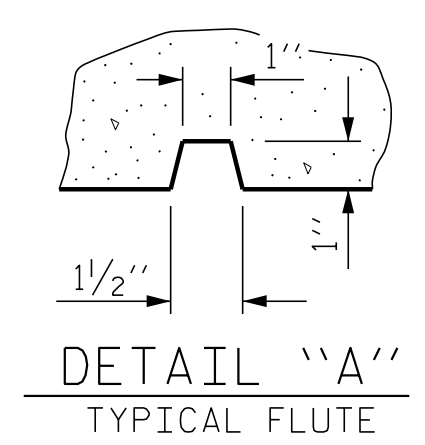
PARTIAL PLAN - LEFT SIDE RAIL



SECTION A2-A2 SHOWING END BENT 1 PILASTER
 SECTION B2-B2 SHOWING RAIL PILASTER
 SECTION C2-C2 SHOWING LIGHTING PILASTER
 SECTION D2-D2 SHOWING END BENT 2 PILASTER

PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 7 OF 12

NOTES:
 FOR CONDUIT DETAILS, SEE "ELECTRICAL CONDUIT SYSTEM" PLAN SHEET.
 ANCHOR BOLTS FOR LIGHT POLES ARE REQUIRED IN LIGHTING PILASTER. COORDINATE WITH CITY OF LUMBERTON TO INSTALL ANCHOR BOLTS ACCORDING TO POLE MANUFACTURER SPECIFICATIONS.



DRAWN BY: D. HODGE DATE: 4/22
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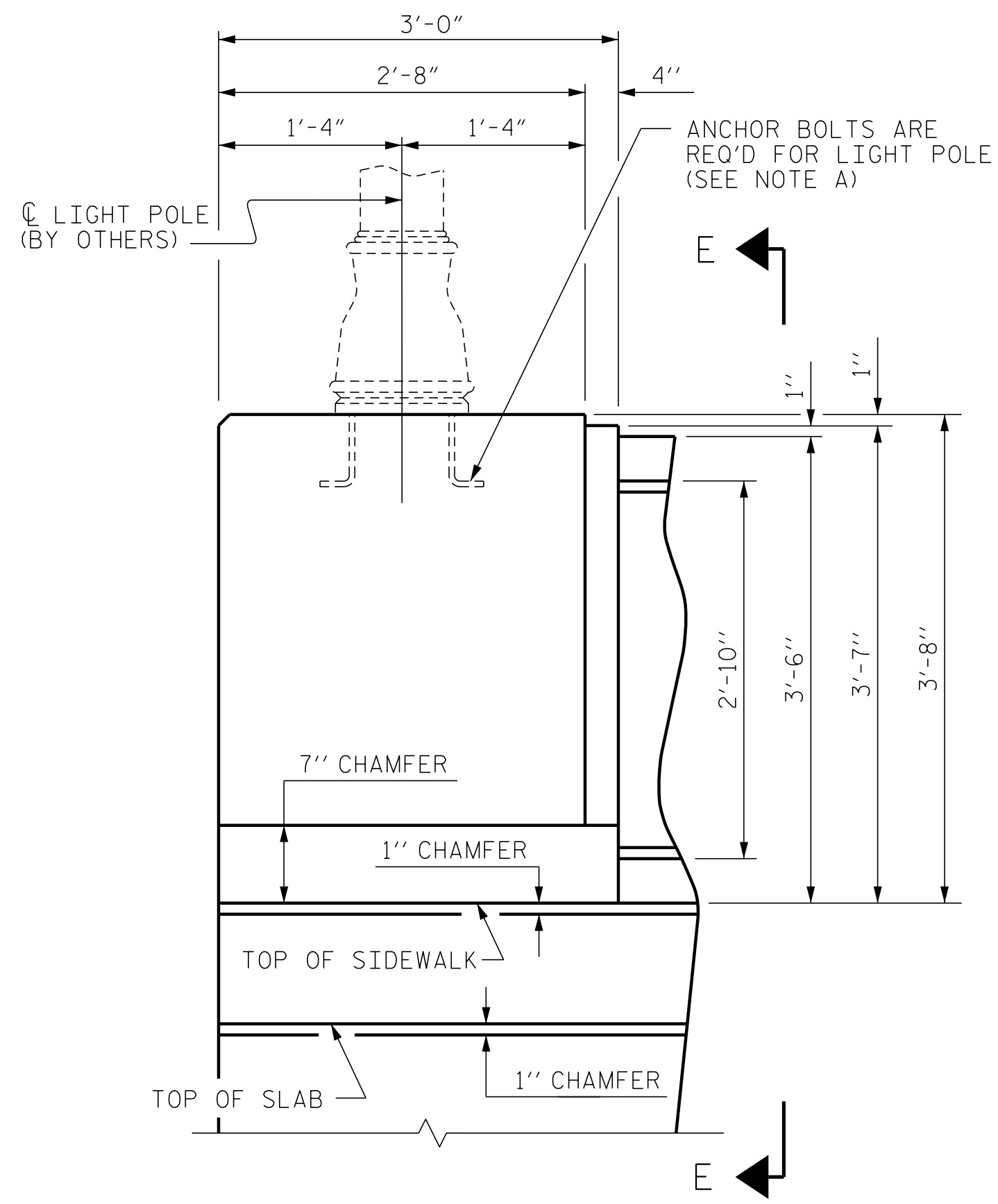
 Described by:

 GREGORY M. GILLAND
 ETHERILL ENGINEERING
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 Raleigh, N.C. 27606
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 Fax: 919 851 8107
 LICENSE NO. F-0377

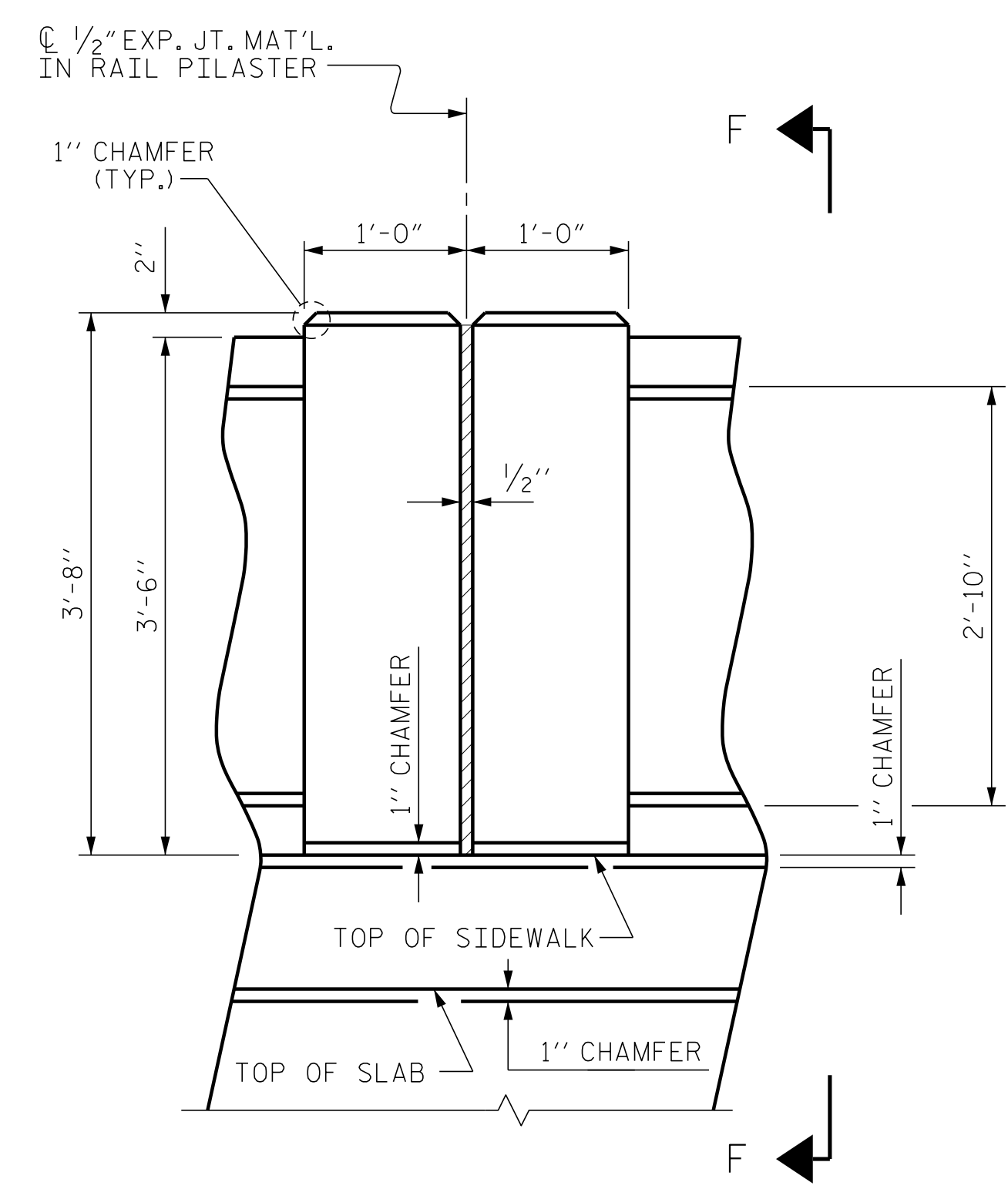
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE					
CLASSIC CONCRETE BRIDGE RAIL WITH SIDEWALK					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-28
TOTAL SHEETS					49

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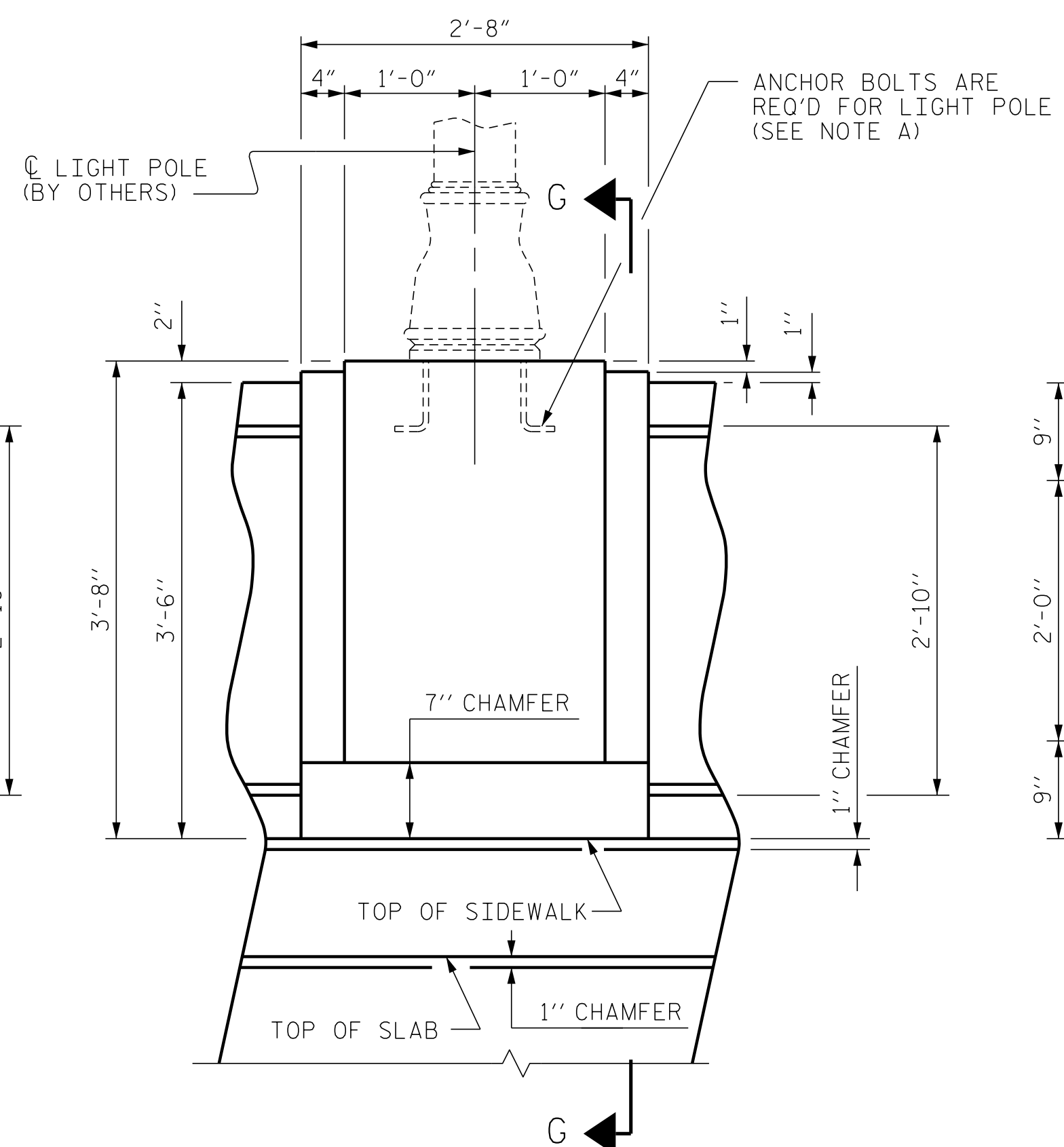
NOTE A:
 COORDINATE WITH CITY OF LUMBERTON FOR
 INSTALLATION OF ANCHOR BOLTS. ANCHOR BOLT
 SIZE & LOCATION ARE TO BE AS SPECIFIED BY
 LIGHT POLE MANUFACTURER.



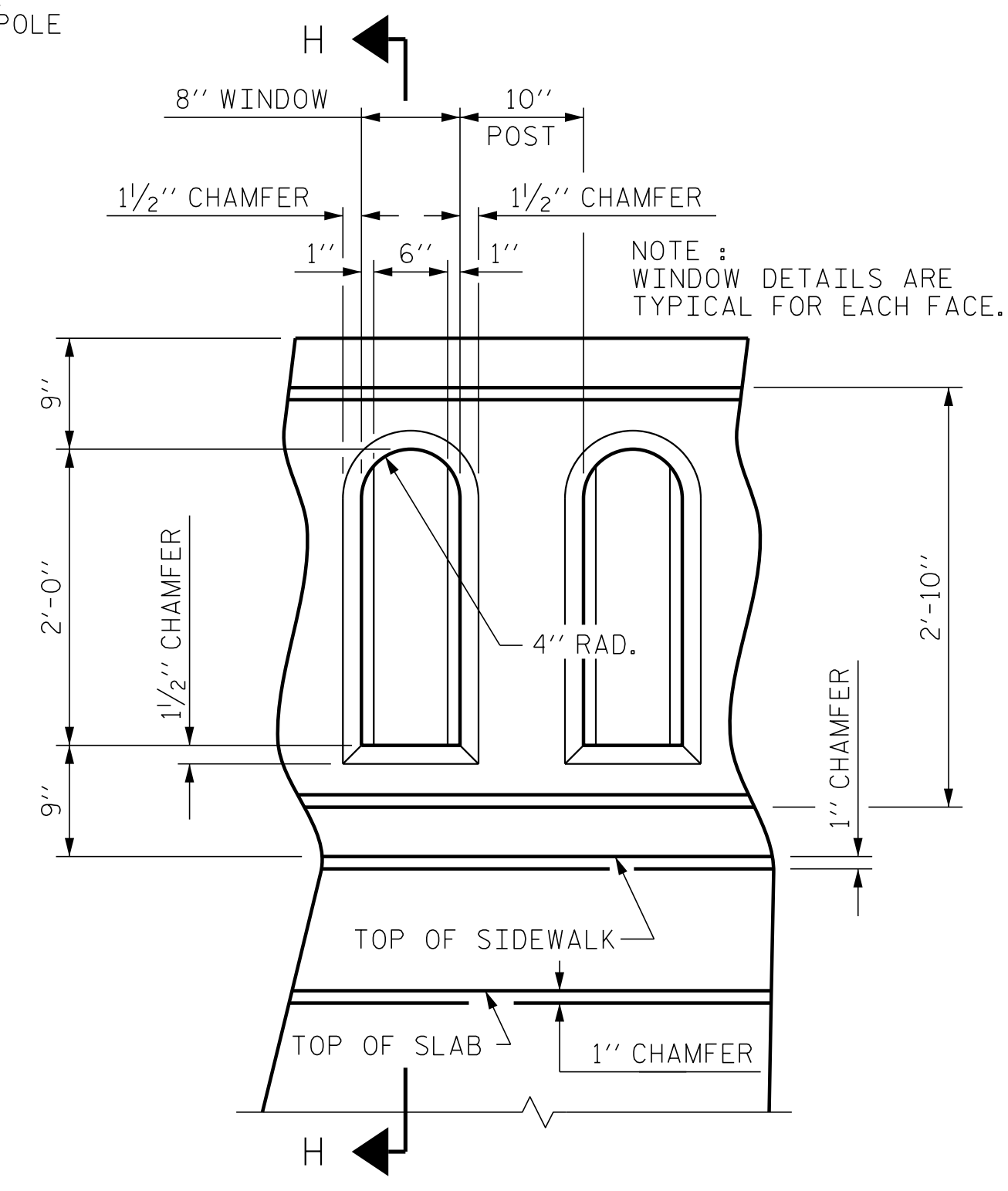
END BENT PILASTER



RAIL PILASTER



LIGHTING PILASTER



WINDOW DETAIL
 WINDOW DETAILS ARE TYPICAL FOR EACH FACE.

EXTERIOR ELEVATIONS

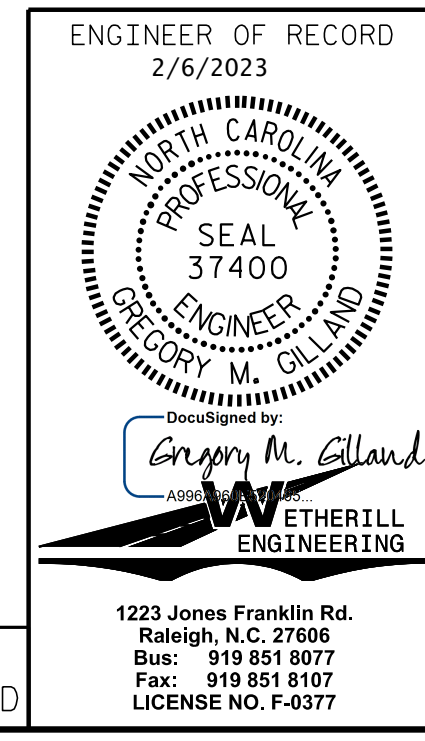
NOTE: FOR SECTIONS, SEE SHEET 9 OF 12

PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 8 OF 12

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DRAWN BY: D. HODGE DATE: 4/22
 CHECKED BY: G. GILLAND DATE: 5/22

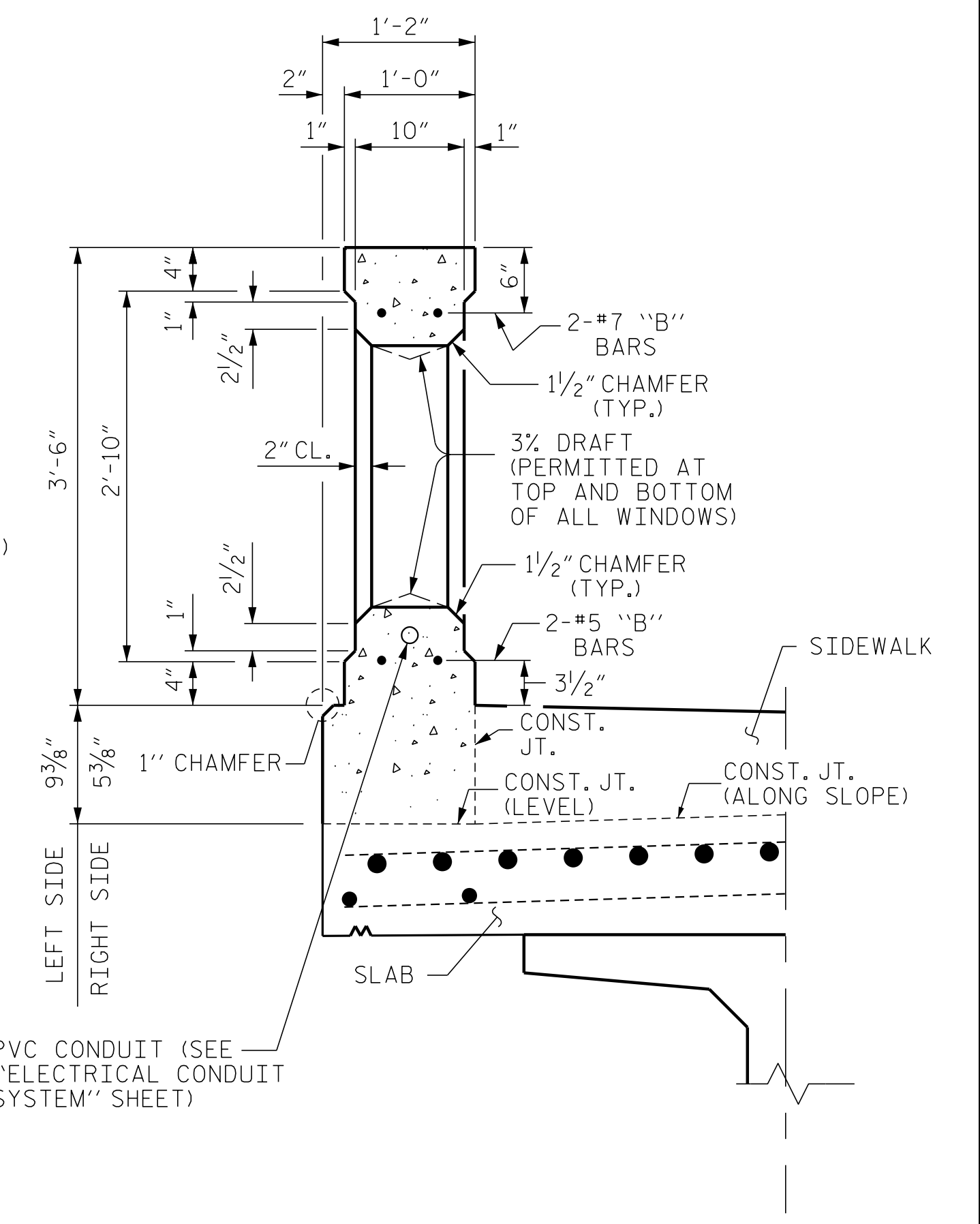
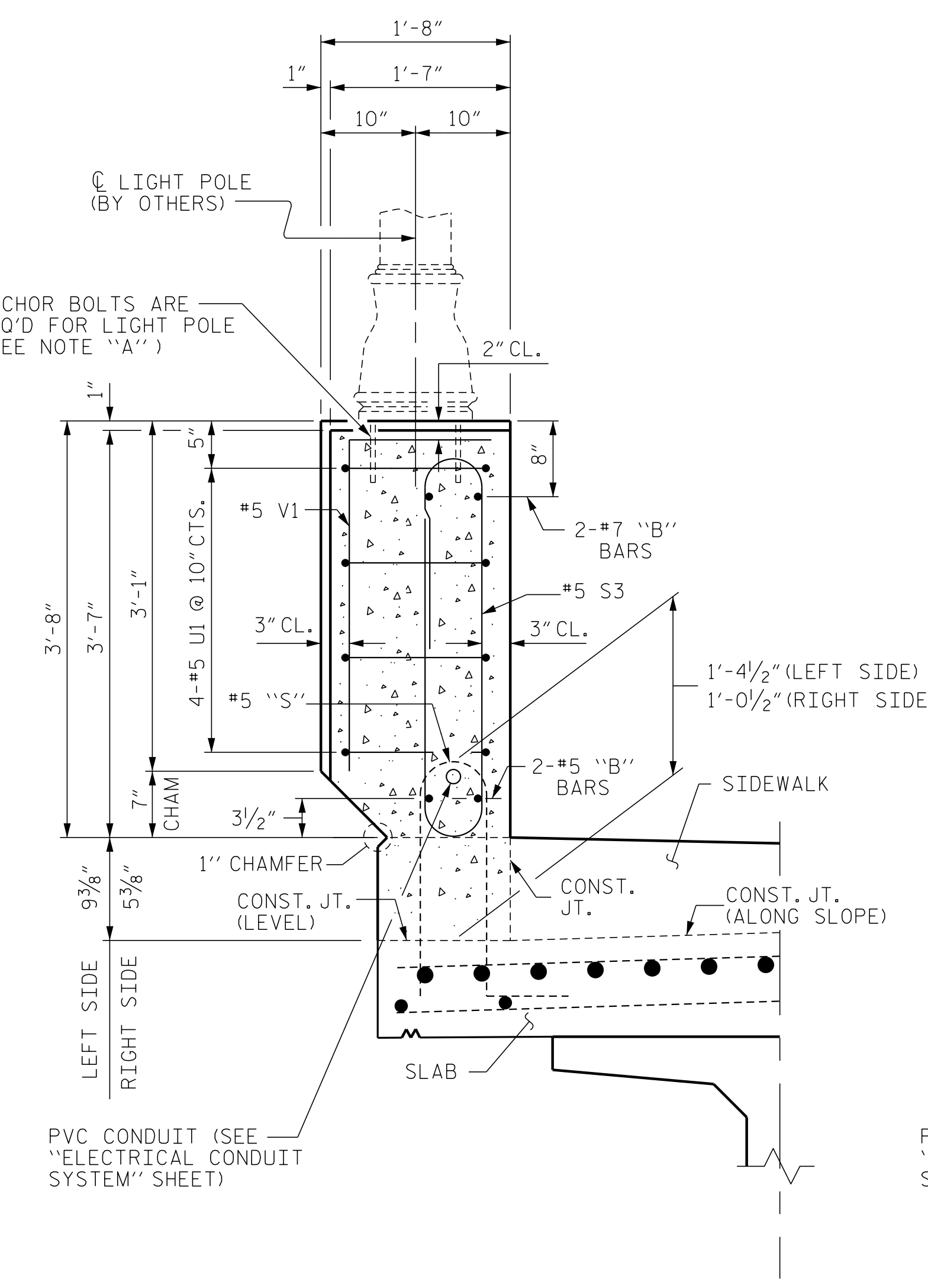
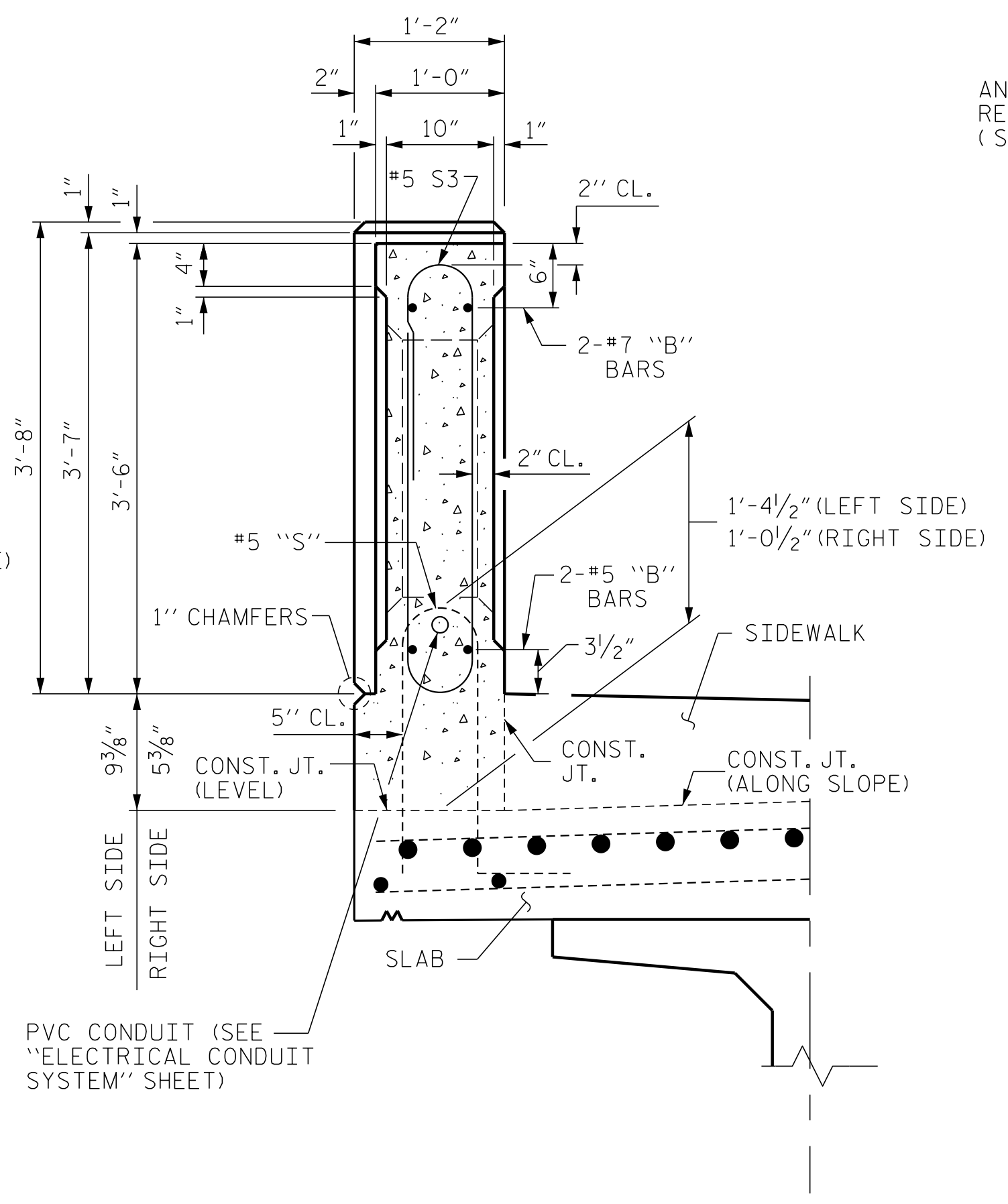
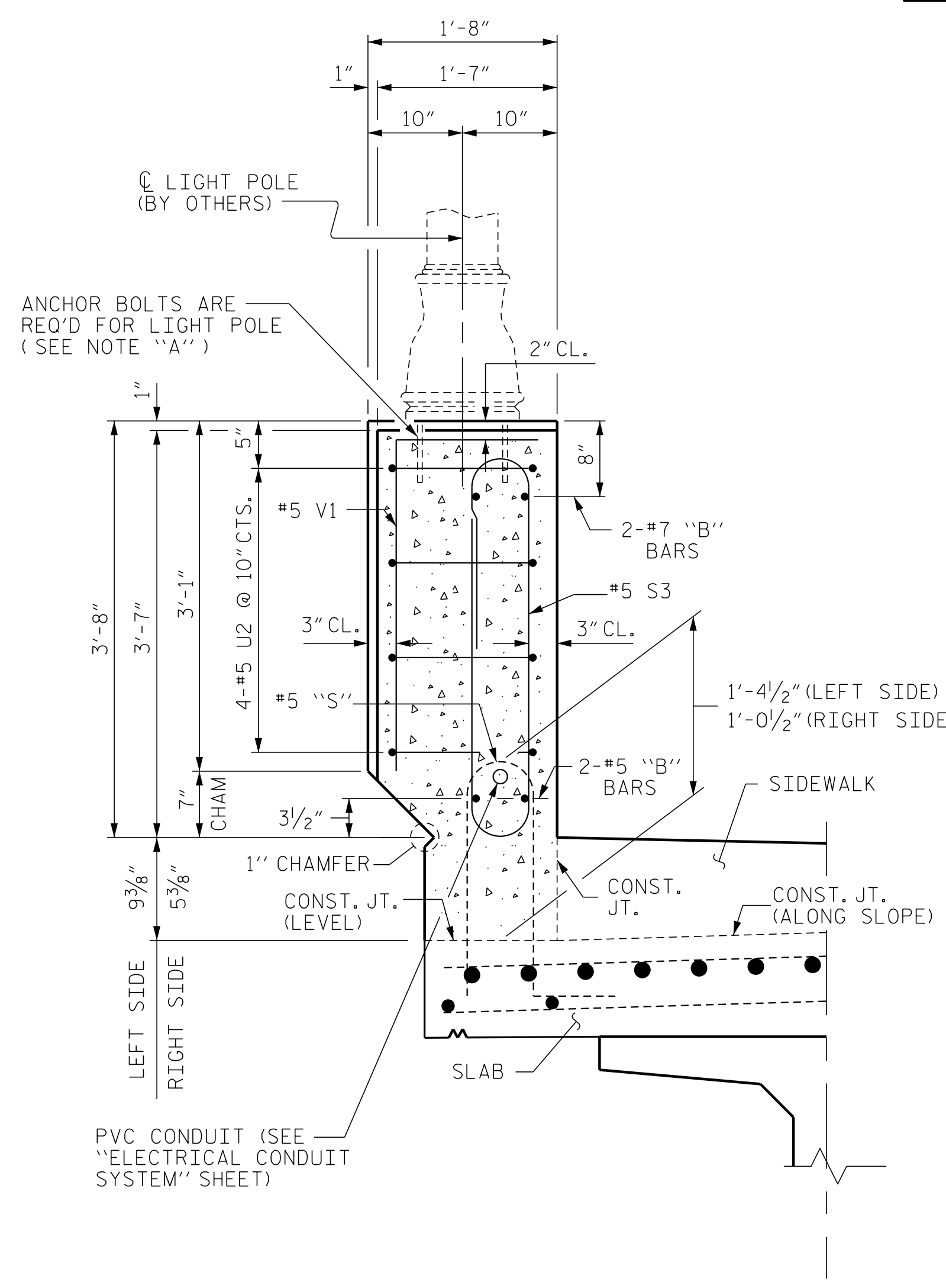
DOCUMENT NOT CONSIDERED FINAL
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 CLASSIC CONCRETE
 BRIDGE RAIL WITH
 SIDEWALK

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			49

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.



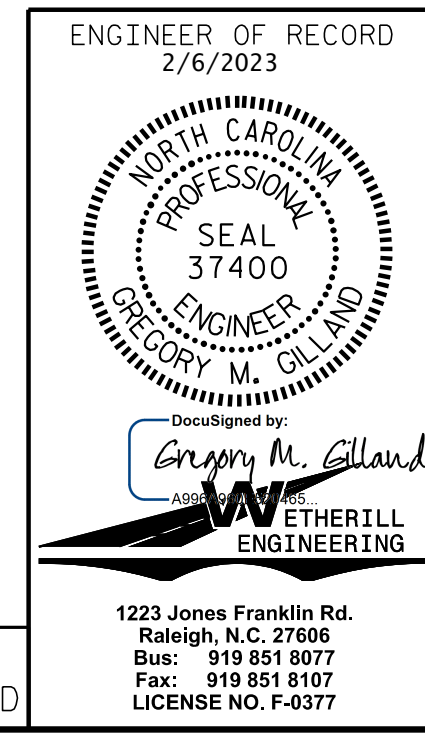
SECTIONS THRU RAIL
 (FOR LOCATION OF SECTIONS, SEE SHEET 8 OF 12)

PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 9 OF 12

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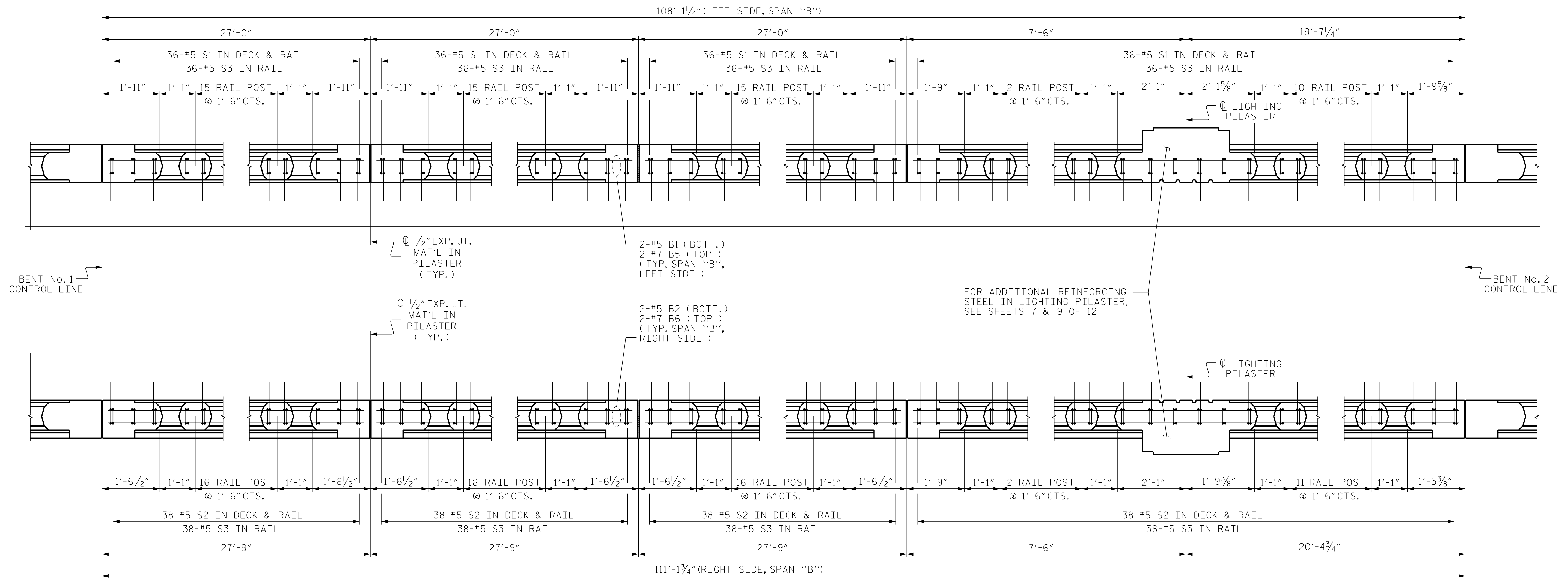
DRAWN BY: D. HODGE DATE: 4/22
 CHECKED BY: G. GILLAND DATE: 5/22

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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE CLASSIC CONCRETE BRIDGE RAIL WITH SIDEWALK					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-30
TOTAL SHEETS					49

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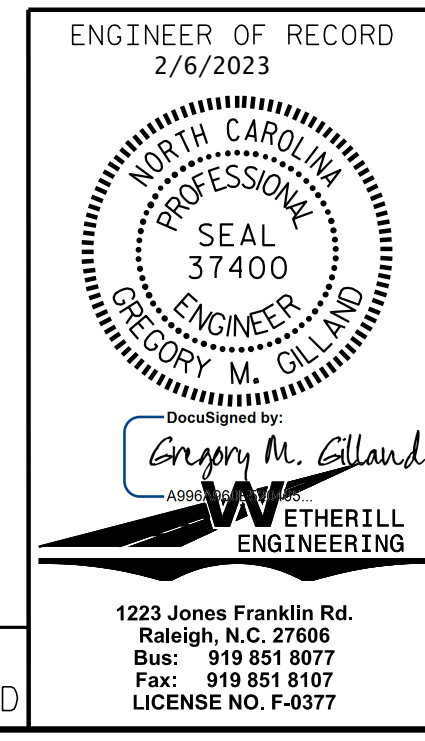
PLAN OF SPAN "B"

(FOR EXACT PLACEMENT OF S1 OR S2 BARS IN DECK & RAIL, SEE SHEET 7 OF 12)

PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 11 OF 12

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

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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE

**CLASSIC CONCRETE
 BRIDGE RAIL WITH
 SIDEWALK**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			49

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

— BILL OF MATERIAL —

FOR CLASSIC CONCRETE BRIDGE RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	16	#5	STR	26'-7"	444
*B2	16	#5	STR	27'-4"	456
*B3	6	#5	STR	23'-11"	150
*B4	6	#5	STR	24'-8"	154
*B5	16	#7	STR	26'-7"	869
*B6	16	#7	STR	27'-4"	894
*B7	6	#7	STR	23'-11"	293
*B8	6	#7	STR	24'-8"	303
*S1	390	#5	1	4'-8"	1,898
*S2	408	#5	1	4'-0"	1,702
*S3	798	#5	2	8'-4"	6,936
*U1	16	#5	3	6'-0"	100
*U2	16	#5	4	6'-2"	103
*V1	32	#5	5	4'-1"	136

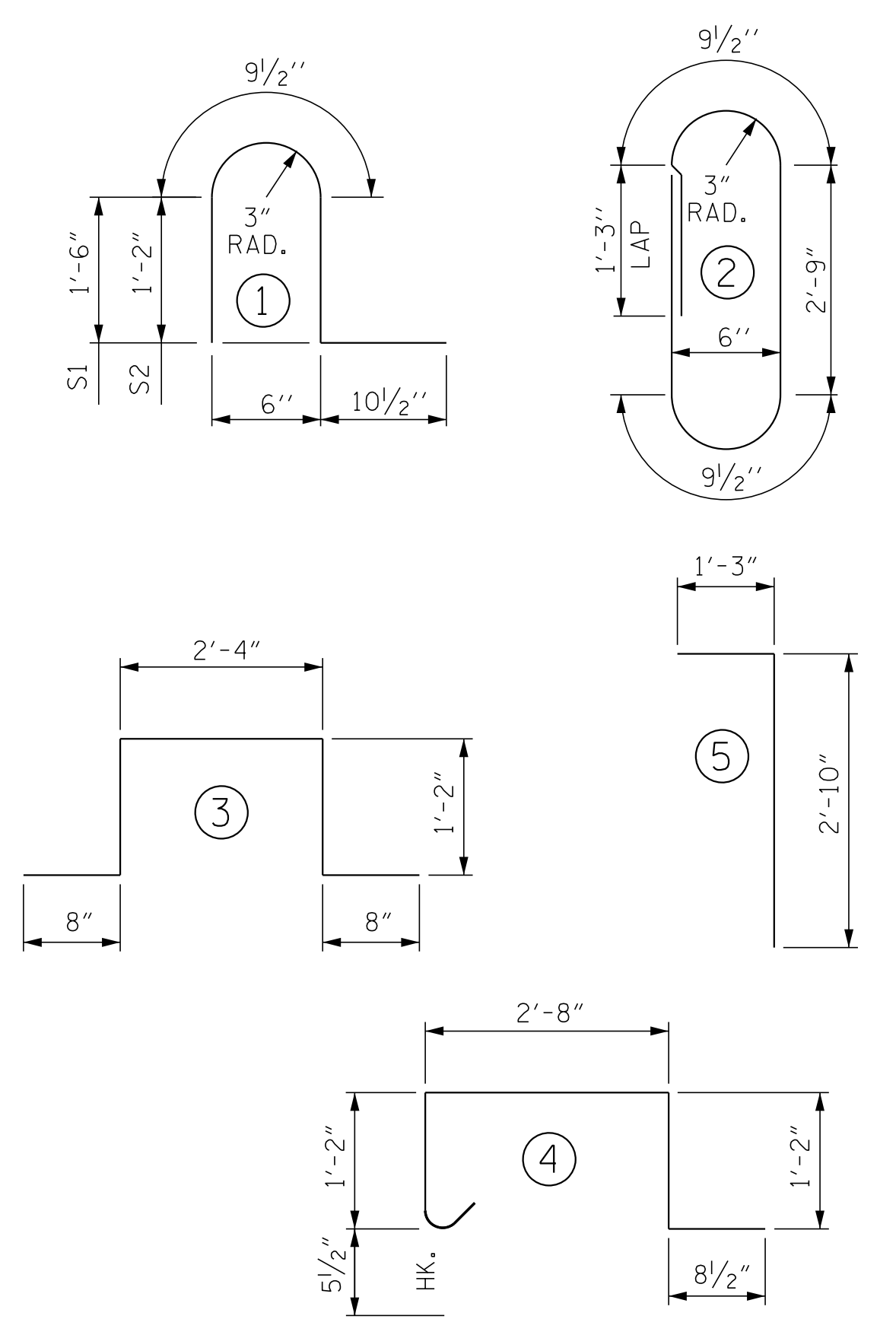
*EPOXY COATED REINFORCING STEEL
14,438 LBS.

CLASS AA CONCRETE
71.7 CU. YDS.

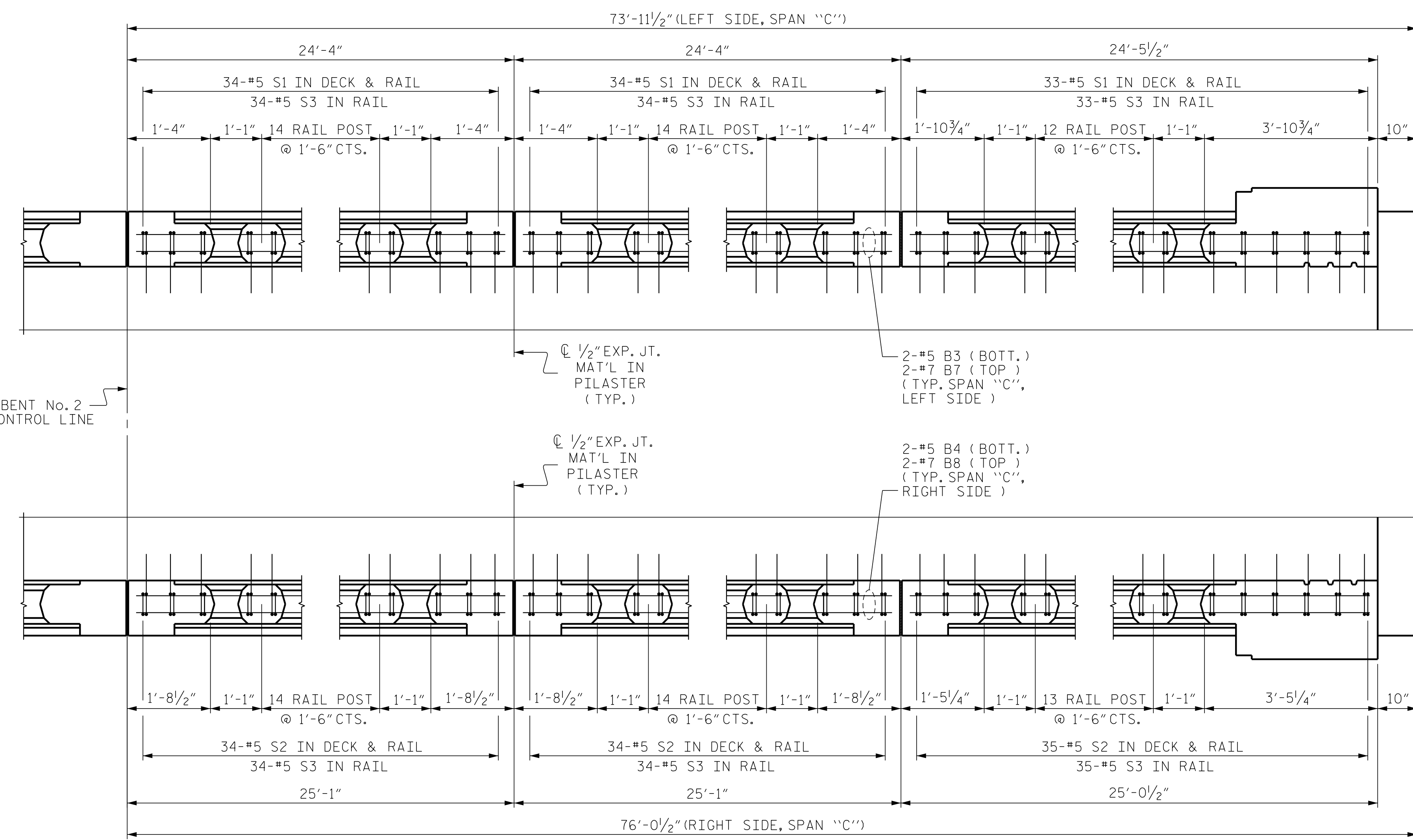
CLASSIC CONCRETE BRIDGE RAIL
586.67 LIN. FT.

* THESE BARS ARE EPOXY COATED

— BAR TYPES —



ALL BAR DIMENSIONS ARE OUT TO OUT



PLAN OF SPAN "C"

(FOR EXACT PLACEMENT OF S1 OR S2 BARS IN DECK & RAIL, SEE SHEET 7 OF 12)

NOTES:

FOR EACH STAGE, 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.

ALL REINFORCING STEEL IN THE CLASSIC CONCRETE BRIDGE RAIL SHALL BE EPOXY COATED.

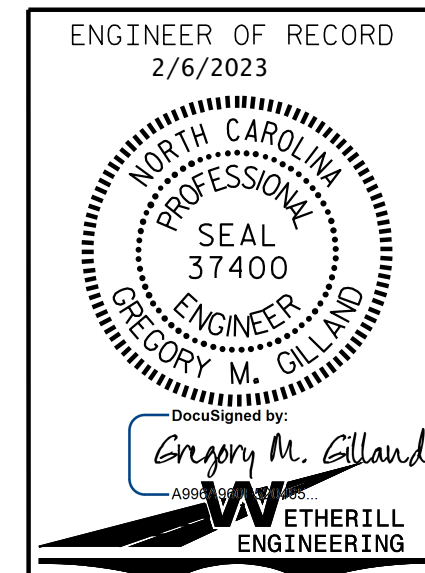
SIDEWALK QUANTITIES ARE SHOWN ON THE "SIDEWALK DETAIL" SHEET.

PROJECT NO. B-5985A

ROBESON COUNTY

STATION: 23+56.00 -L1-

SHEET 12 OF 12



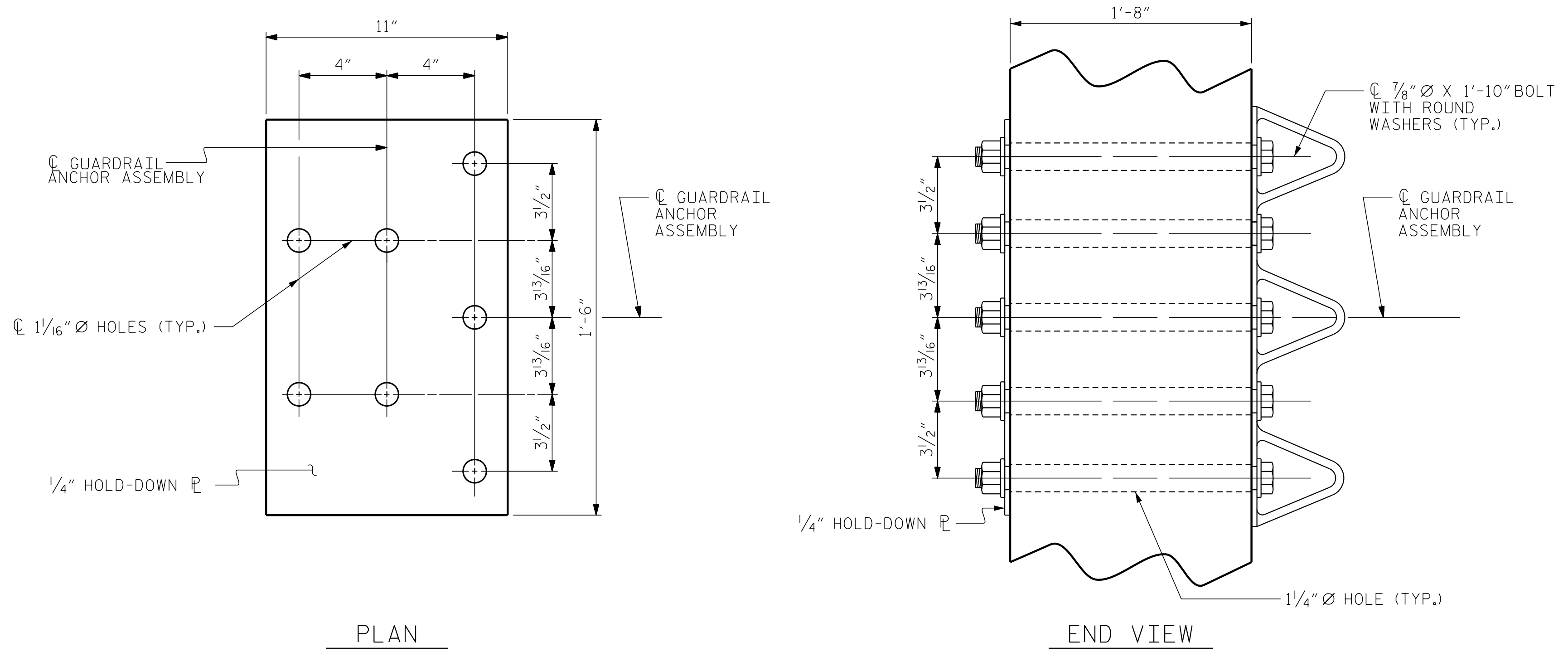
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
CLASSIC CONCRETE
BRIDGE RAIL WITH
SIDEWALK

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33
1			3			TOTAL SHEETS
2			4			49

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CHECKED BY: G. GILLAND DATE: 5/22

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PLAN
END VIEW
GUARDRAIL ANCHOR ASSEMBLY DETAILS

NOTES

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

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

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

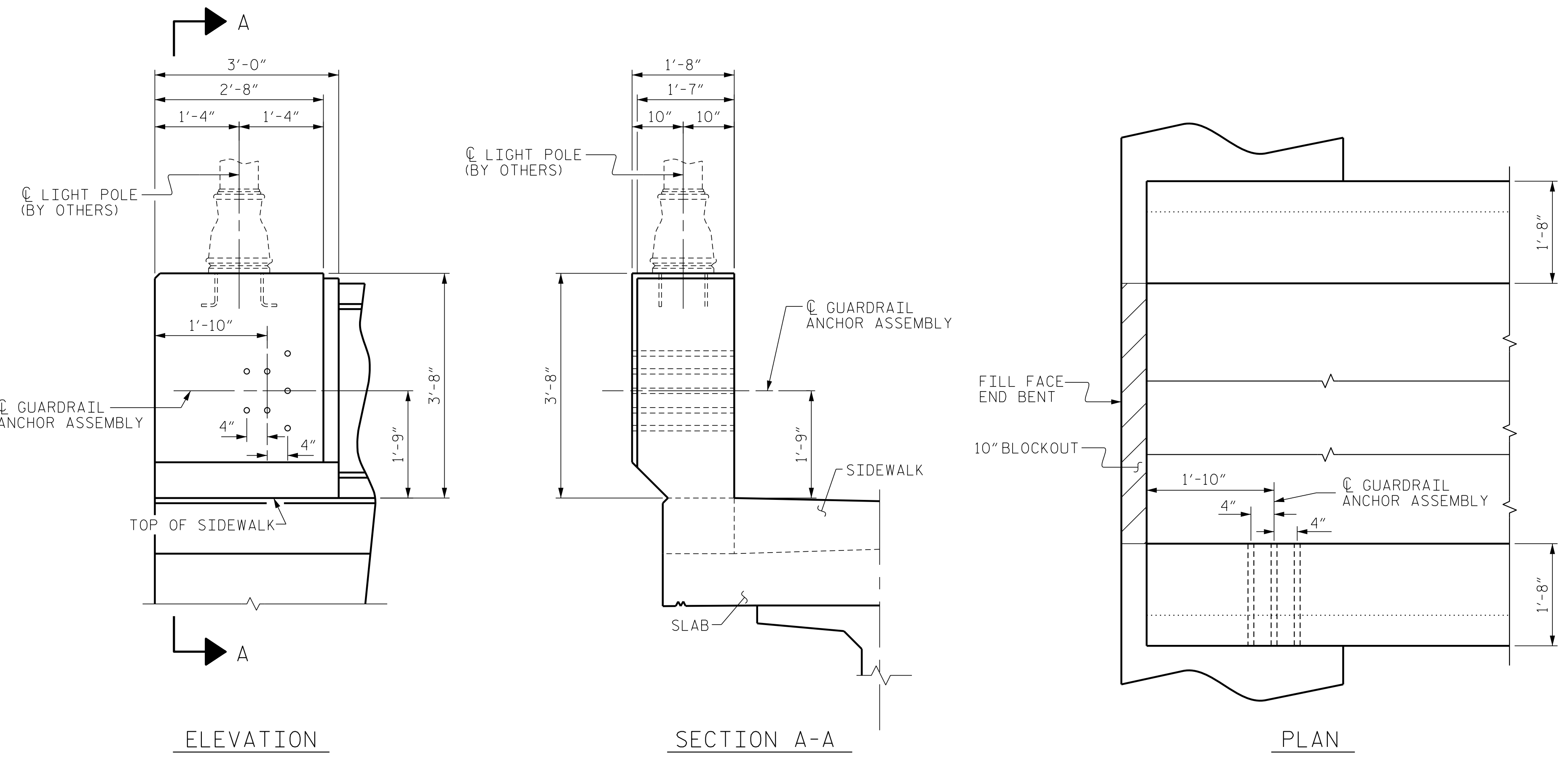
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF CLASSIC CONCRETE BRIDGE RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

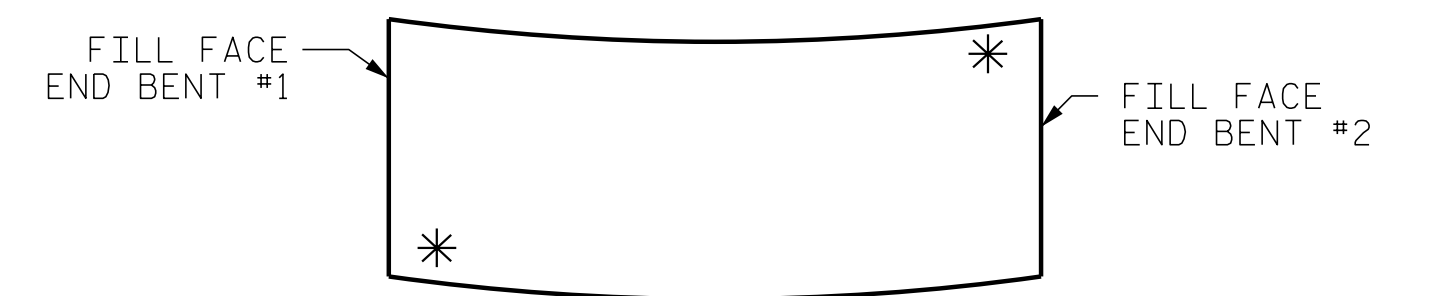
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CLASSIC CONCRETE BRIDGE RAIL.

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

THE 1/4" 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.



ELEVATION
SECTION A-A
PLAN
LOCATION OF ANCHORS FOR GUARDRAIL
END BENT #1 SHOWN, END BENT #2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENT
* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-5985A
ROBESON COUNTY
STATION: 23+56.00 -L1-

ENGINEER OF RECORD
2/6/2023

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

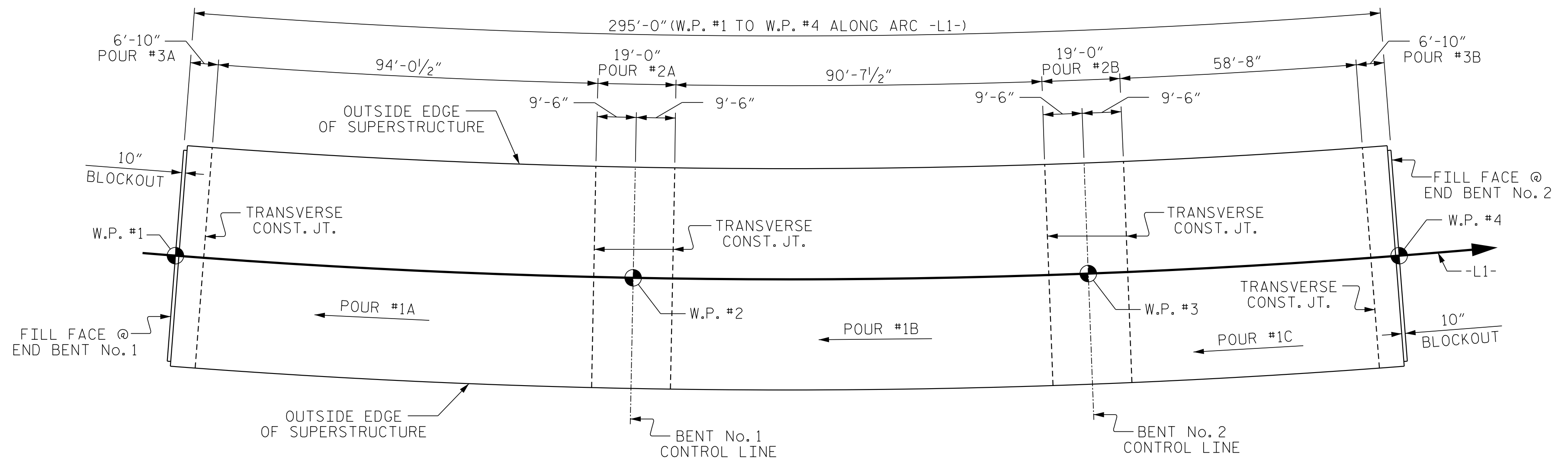
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
GUARDRAIL ANCHORAGE DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-34
					TOTAL SHEETS 49

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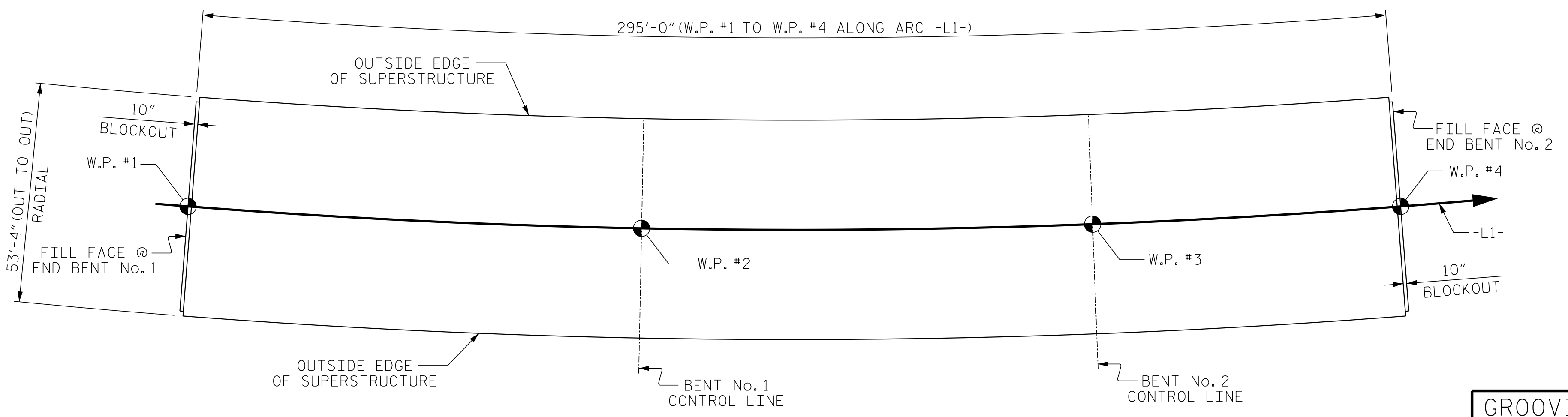
DRAWN BY: G. GILLAND DATE: 6-22
CHECKED BY: J. DILWORTH DATE: 6-22

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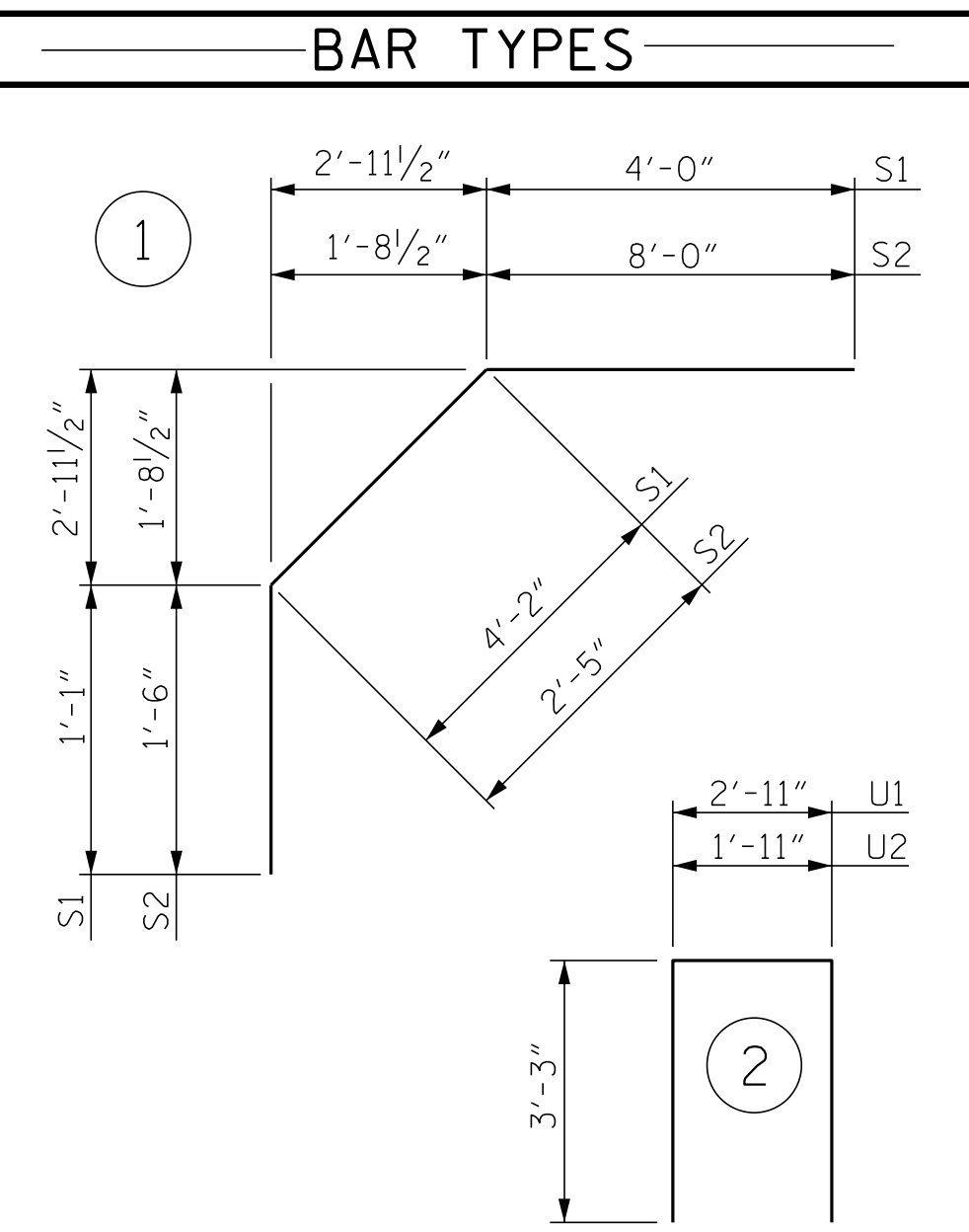
POURING SEQUENCE

POURS #2 & #3 CAN NOT BE STARTED UNTIL BOTH ADJACENT #1 POURS REACH A MINIMUM OF 3000 PSI.
 ALL DIMENSIONS ARE MEASURED ALONG THE ARC OF -L1-



LAYOUT FOR COMPUTING AREA
 REINFORCED CONCRETE DECK SLAB
 (SQ. FT. = 15,733)

GROOVING BRIDGE FLOORS	
APPROACH SLABS	1,800 SQ.FT.
BRIDGE DECK	10,853 SQ.FT.
TOTAL	12,653 SQ.FT.



ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	* EPOXY COATED REINFORCING STEEL (LBS.)
POUR #1	401.1		
POUR #2	62.6		
POUR #3	62.6		
TOTALS**	526.3	40,975	47,626

**QUANTITIES FOR CLASSIC CONCRETE RAILS AND SIDEWALKS ARE NOT INCLUDED

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	476	#5	STR	53'-0"	26,313
A2	476	#5	STR	53'-0"	26,313
*B1	106	#6	STR	22'-0"	3,503
*B2	72	#4	STR	28'-4"	1,363
*B3	72	#5	STR	39'-3"	2,948
*B4	70	#5	STR	43'-0"	3,139
*B5	36	#4	STR	39'-0"	938
*B6	72	#5	STR	34'-0"	2,553
*B7	70	#5	STR	37'-9"	2,756
*B8	36	#4	STR	36'-5"	876
*B9	106	#6	STR	15'-0"	2,388
B10	204	#5	STR	51'-3"	10,905
B11	27	#5	STR	54'-0"	1,521
B12	27	#5	STR	47'-0"	1,324
K1	16	#4	STR	26'-2"	280
K2	10	#4	STR	5'-11"	40
K3	10	#4	STR	7'-7"	51
K4	20	#4	STR	8'-2"	109
K5	4	#4	STR	2'-9"	7
K6	2	#4	STR	1'-7"	2
K7	2	#4	STR	2'-5"	3
K8	4	#4	STR	2'-1"	6
K9	2	#4	STR	9"	1
K10	2	#4	STR	1'-11"	2

	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	* EPOXY COATED REINFORCING STEEL (LBS.)	
*S1	60	#4	1 9'-3"	371
*S2	60	#4	1 11'-11"	478
U1	60	#4	2 9'-5"	377
U2	6	#4	2 8'-5"	34
			REINFORCING STEEL	LBS. 40,975
			* EPOXY COATED REINFORCING STEEL	LBS. 47,626

* THESE BARS ARE EPOXY COATED.

CONCRETE BREAKDOWN

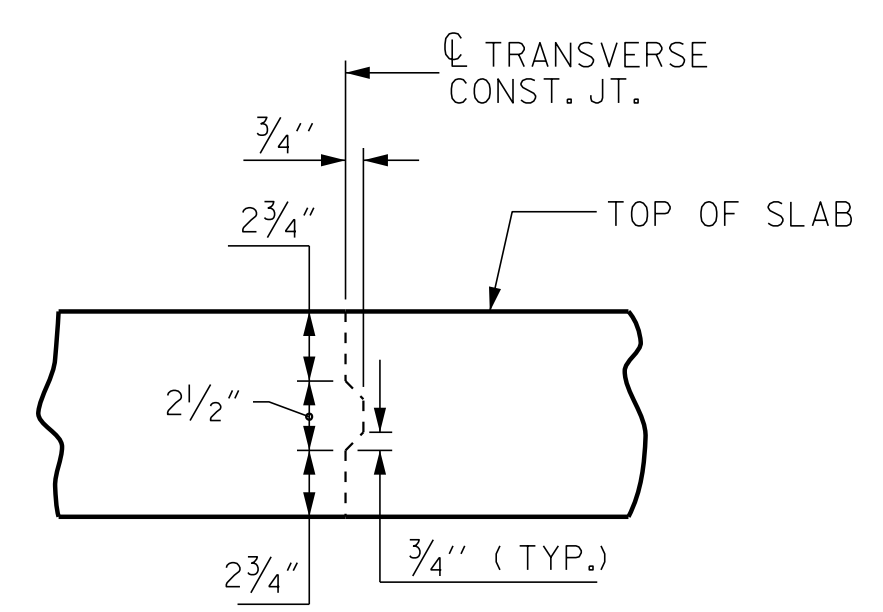
	CLASS AA CONCRETE (CU. YDS.)
POUR #1A	155.0
POUR #1B	149.4
POUR #1C	96.7
POUR #2A	31.3
POUR #2B	31.3
POUR #3A	31.3
POUR #3B	31.3
TOTALS ***	526.3

*** QUANTITIES FOR CLASSIC CONCRETE RAILS AND SIDEWALKS ARE NOT INCLUDED

PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-

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

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	1'-11"	1'-7"	1'-11"	1'-7"	2'-6"
#5	2'-5"	2'-0"	2'-5"	2'-0"	3'-1"
#6	2'-10"	2'-5"	3'-7"	2'-5"	3'-8"
#7	4'-2"	2'-9"			
#8	4'-9"	3'-2"			



TRANSVERSE CONSTRUCTION JOINT DETAIL

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

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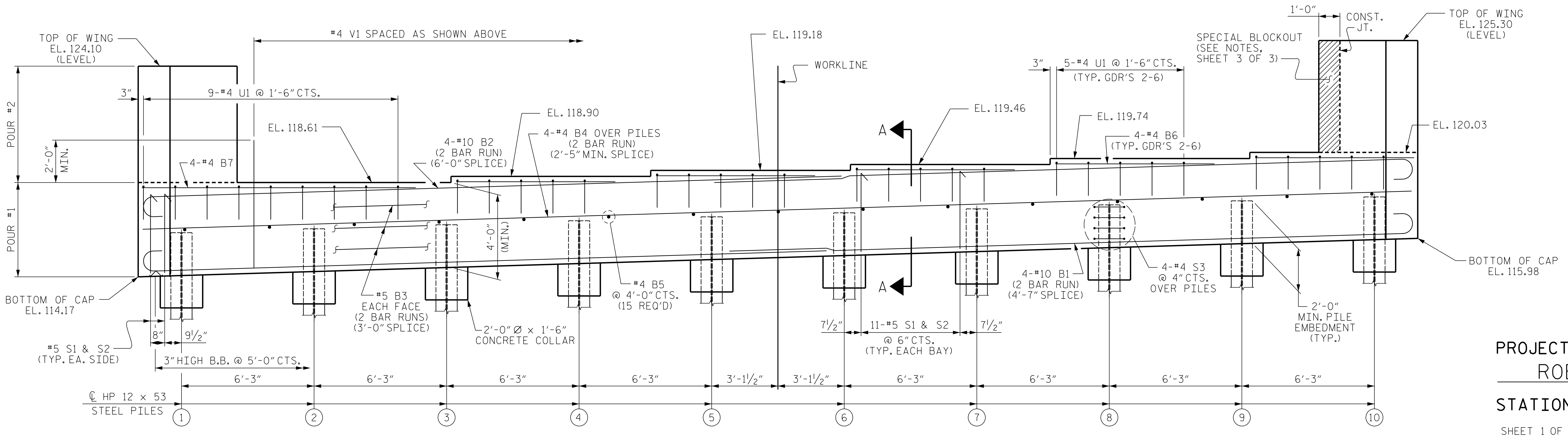
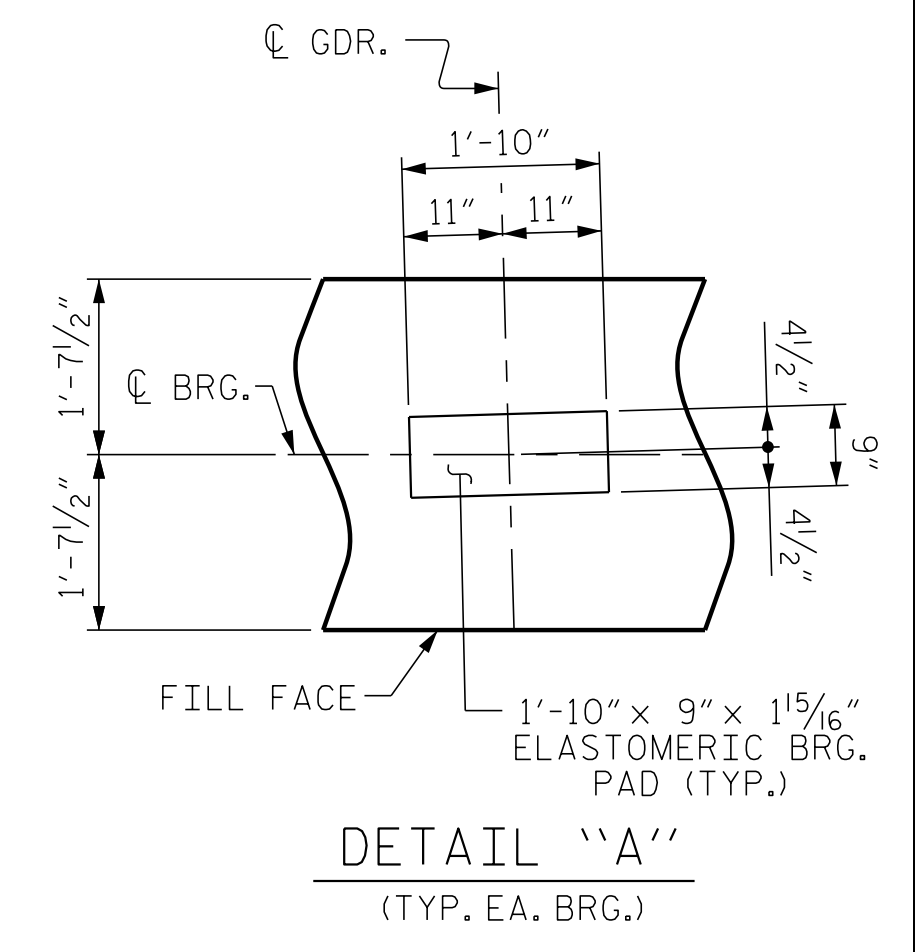
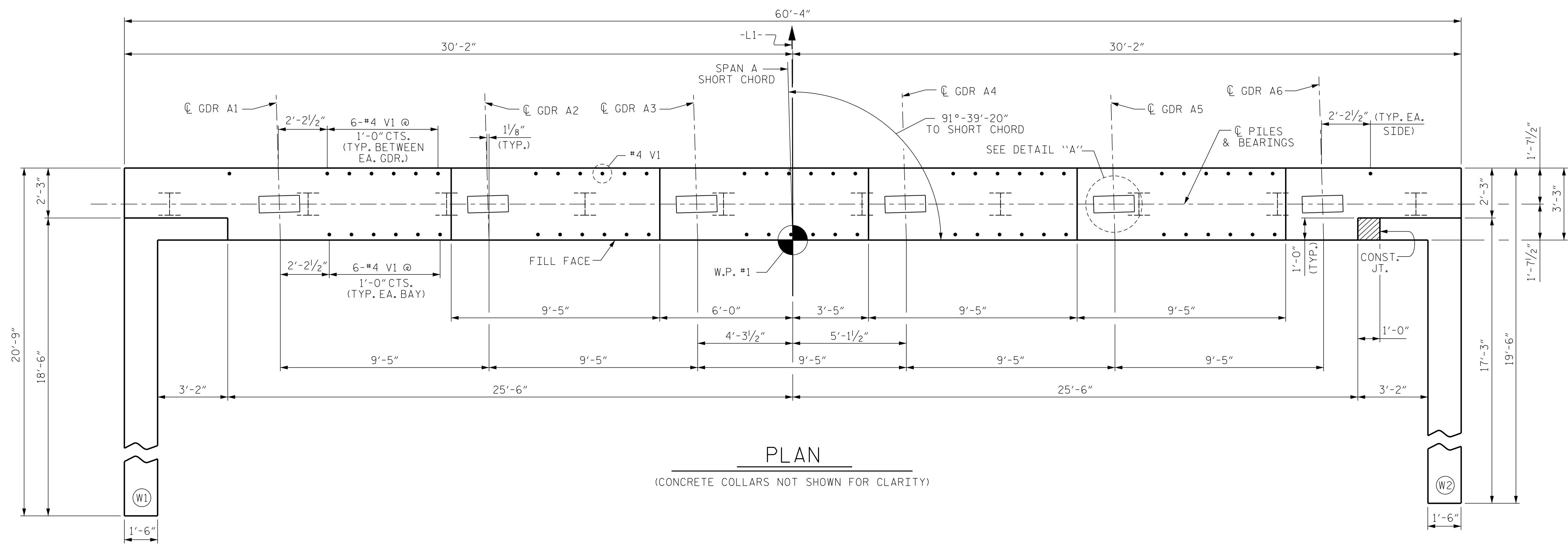
ENGINEER OF RECORD
 2/6/2023

 Gregory M. Gilliland
 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

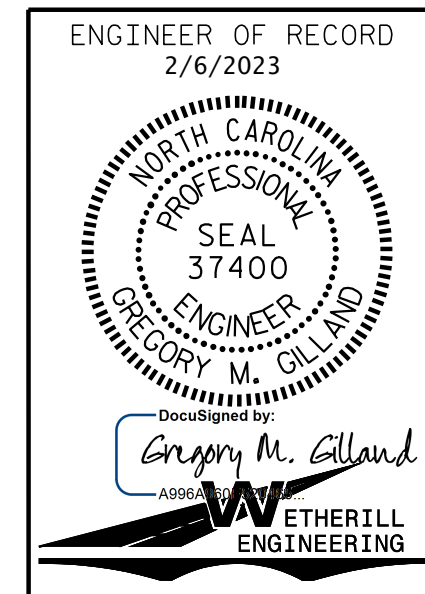
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			49

DRAWN BY: D. HODGE DATE: 1/22
 CHECKED BY: G. GILLAND DATE: 2/22



TOP OF PILE ELEVATIONS	
①	116.25
②	116.44
③	116.62
④	116.81
⑤	117.00
⑥	117.19
⑦	117.37
⑧	117.56
⑨	117.75
⑩	117.94

PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 1 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT No. 1**

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

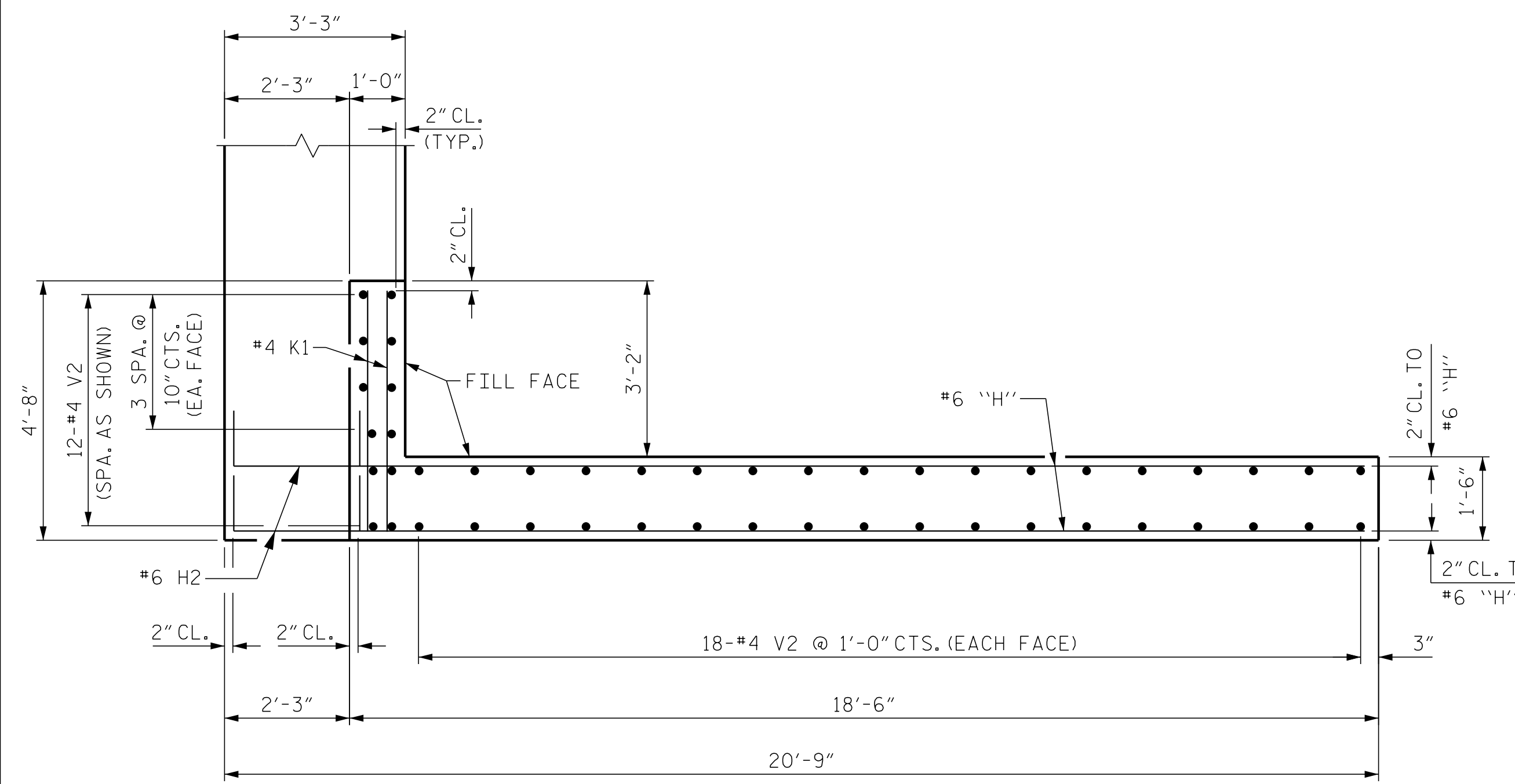
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DRAWN BY: J. PENDERGRAFT/DAH DATE: 4-22
 CHECKED BY: G. GILLAND DATE: 6-22

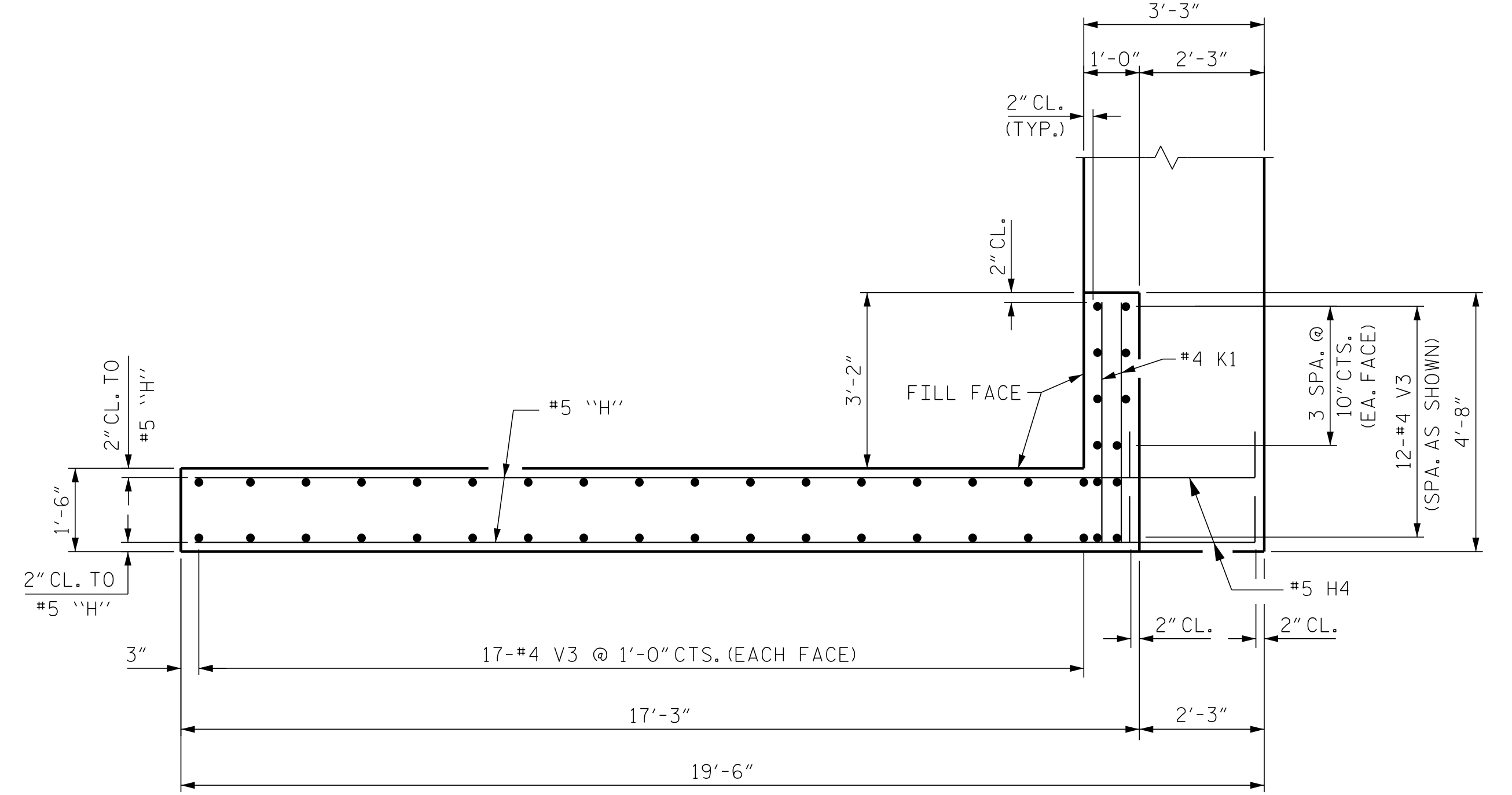
DOCUMENT NOT CONSIDERED FINAL
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 Bus: 919 851 8077
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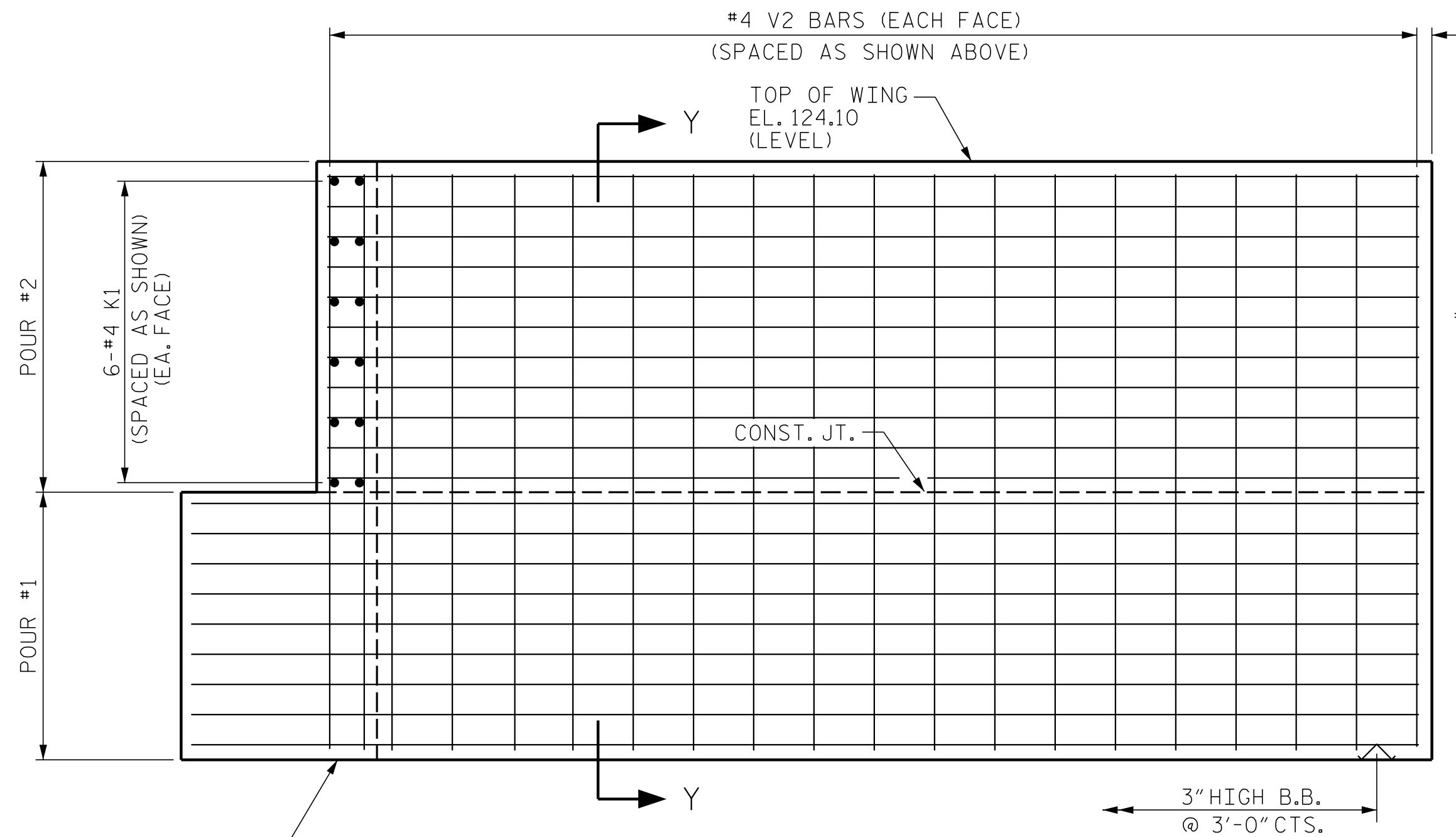
SHEET NO.
S-36
 TOTAL SHEETS
49



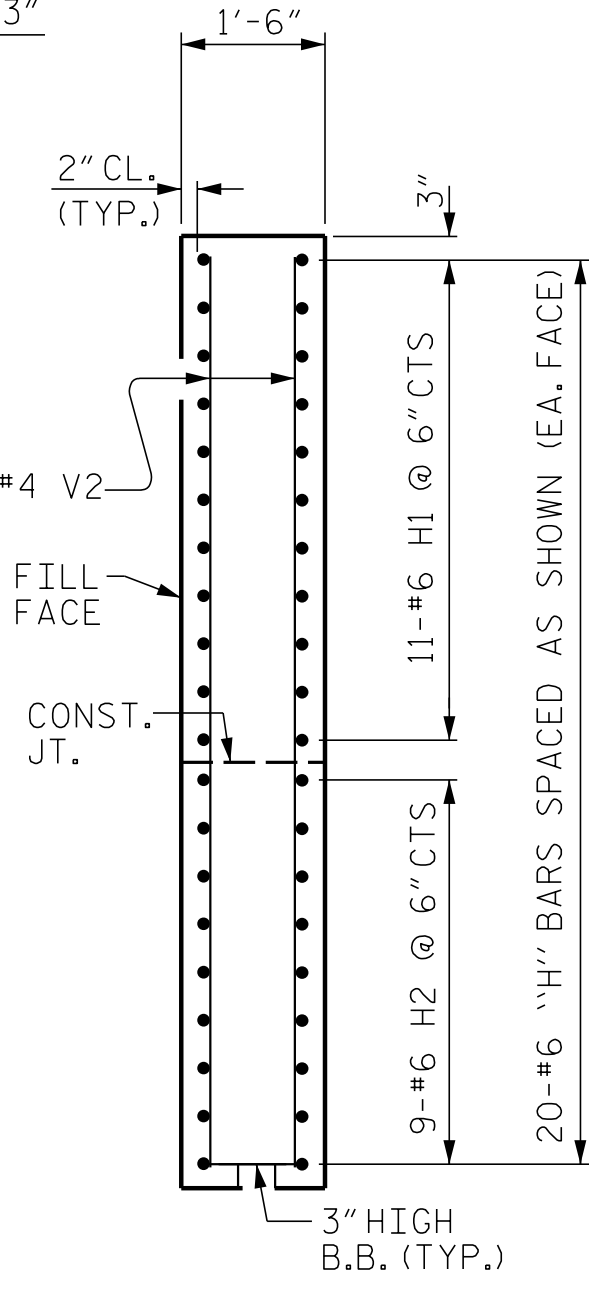
PLAN OF WING (W1)



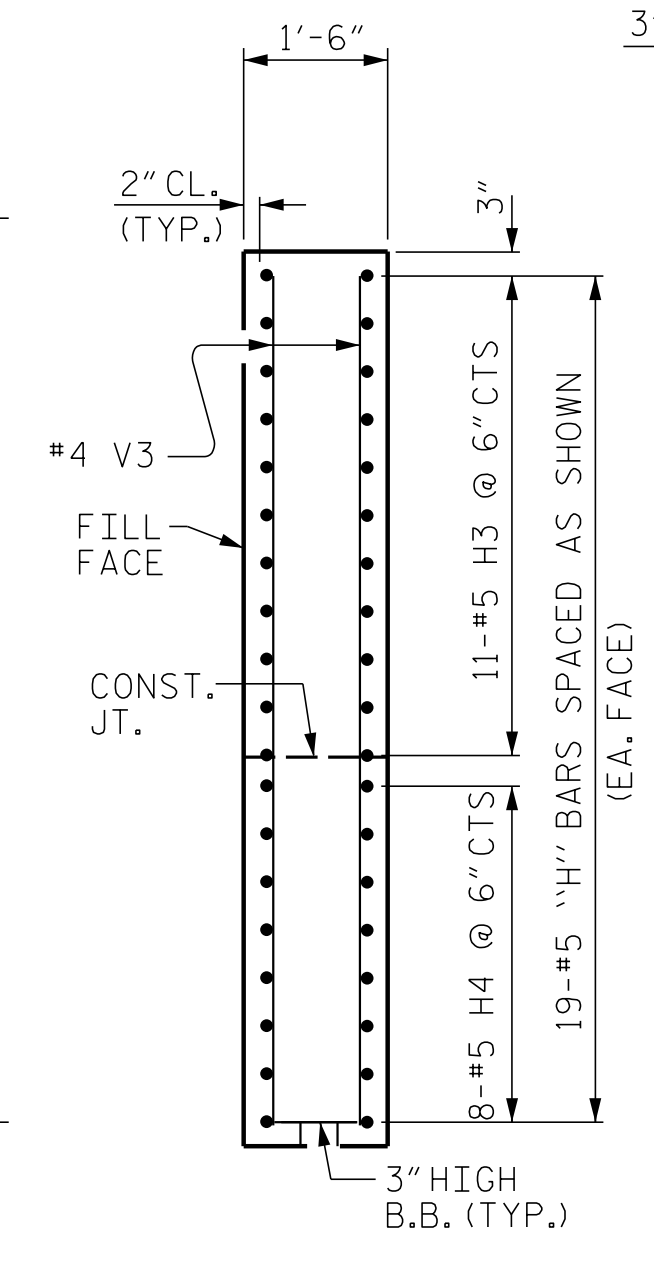
PLAN OF WING (W2)



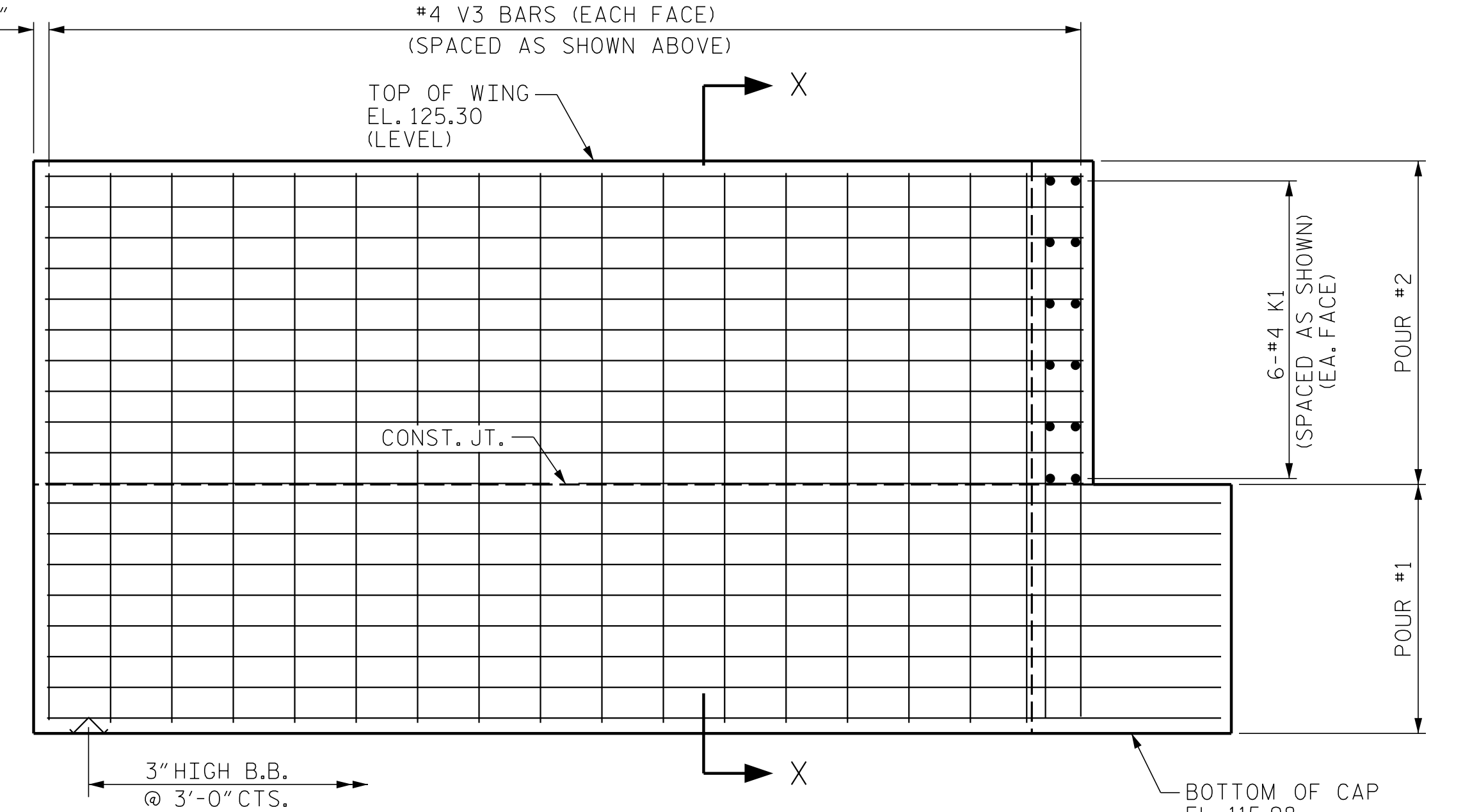
ELEVATION OF WING (W1)



SECTION Y-Y

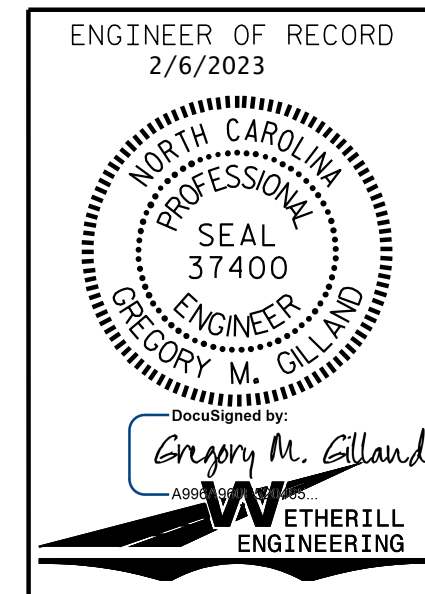


SECTION X-X



ELEVATION OF WING (W2)

PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 2 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1

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

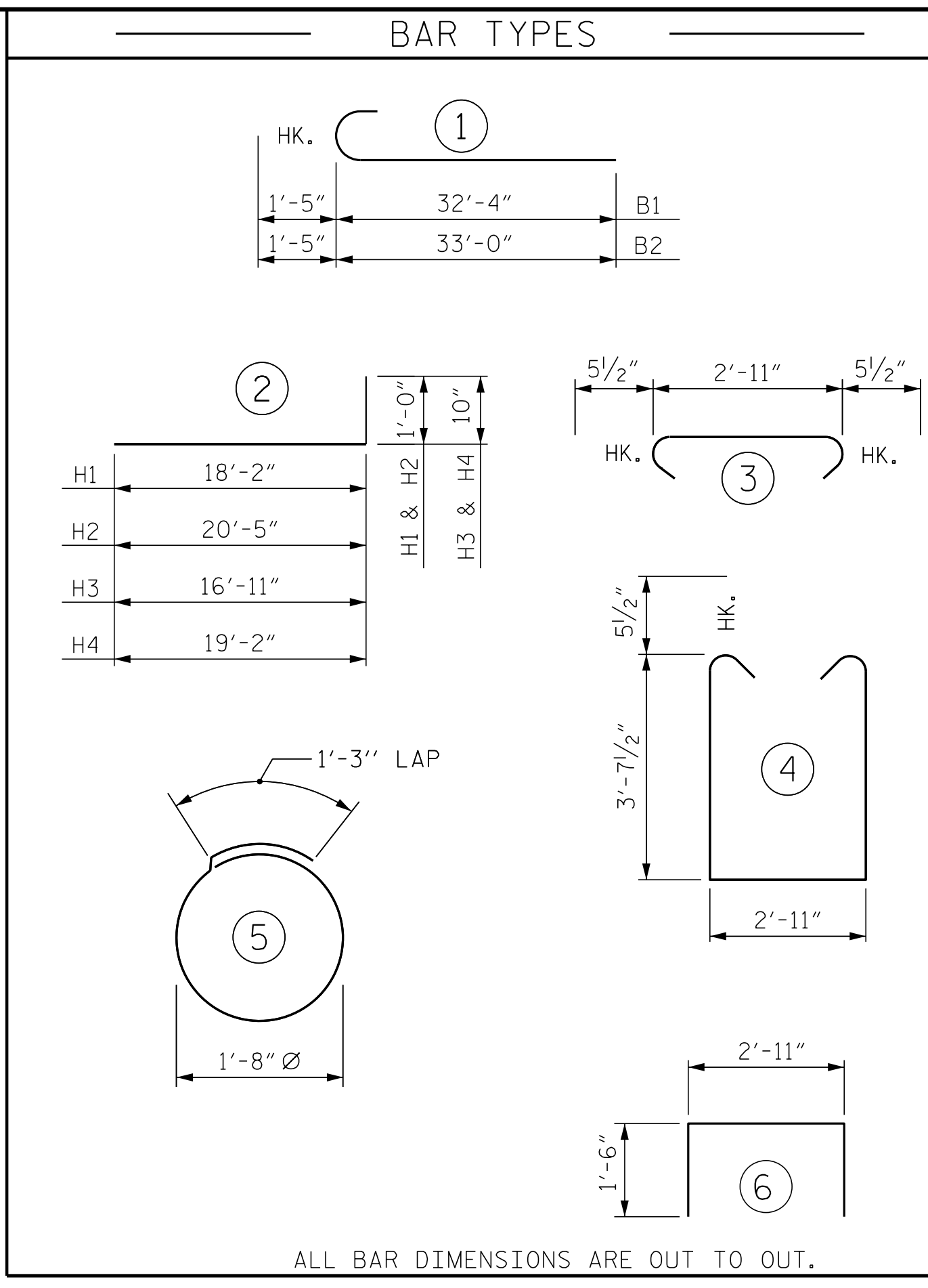
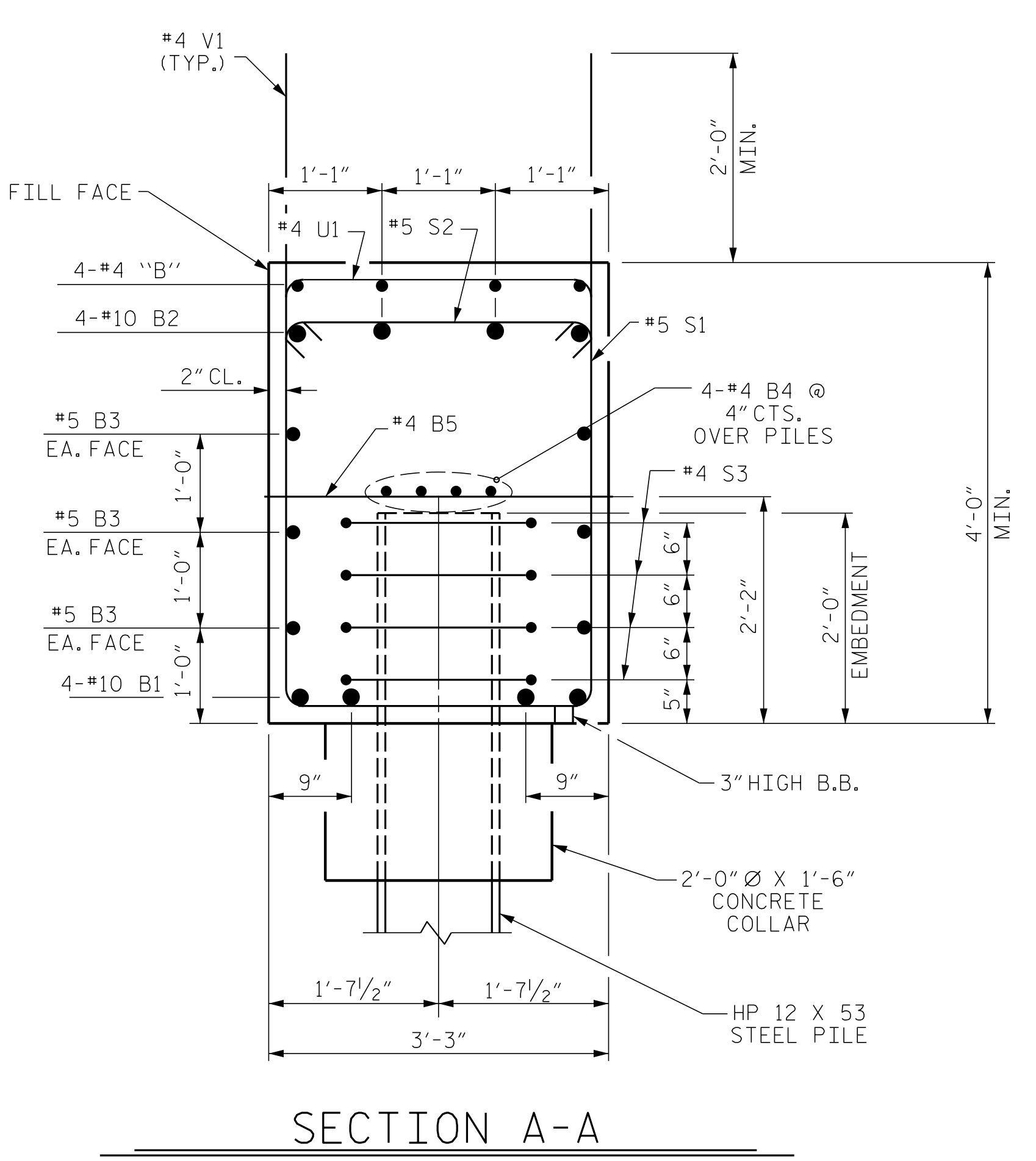
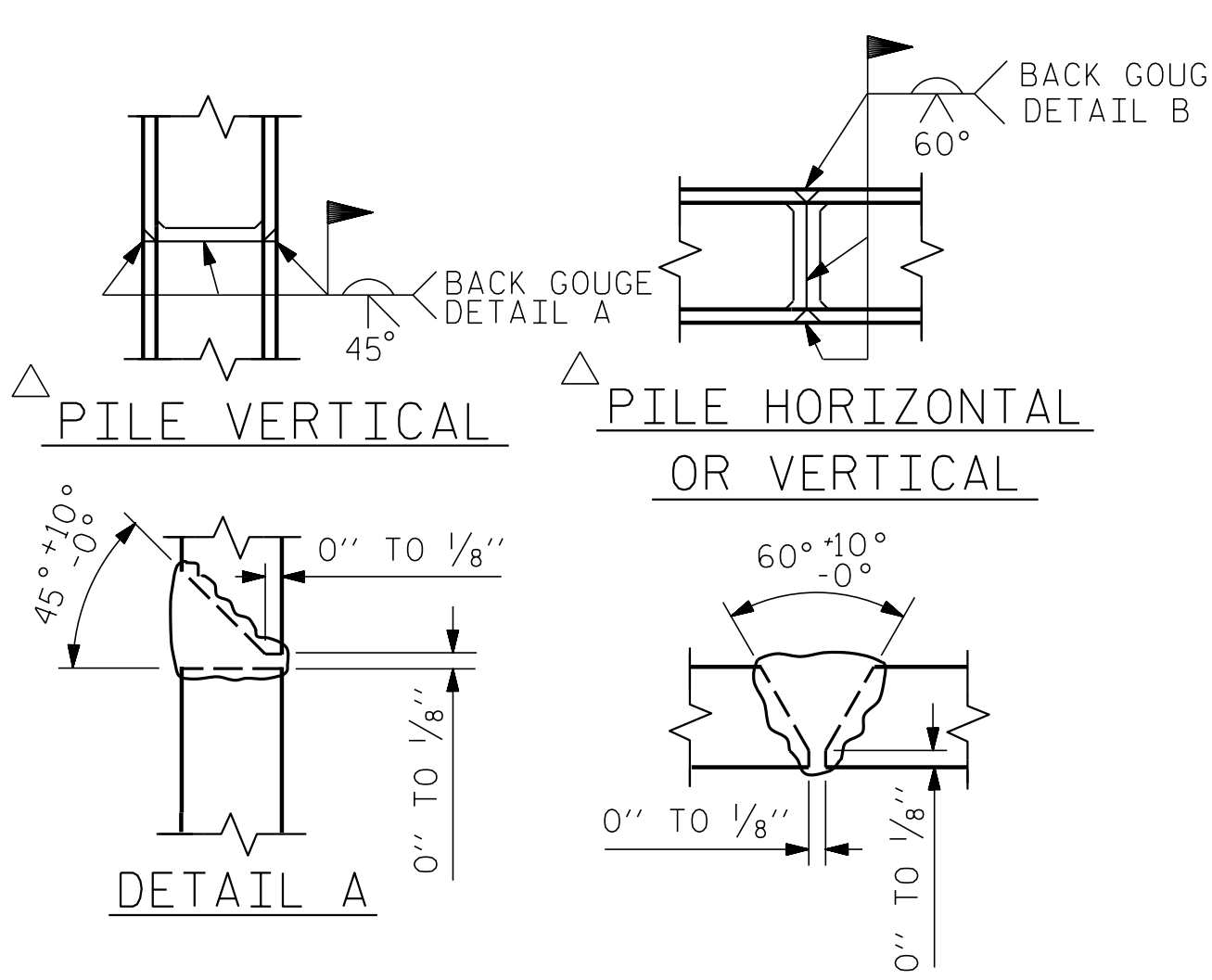
SHEET NO. S-37
 TOTAL SHEETS 49

DRAWN BY: J. PENDERGRAFT/DAH DATE: 4-22
 CHECKED BY: G. GILLAND DATE: 6-22

DOCUMENT NOT CONSIDERED FINAL
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1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
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 Fax: 919 851 8107
 LICENSE NO. F-0377

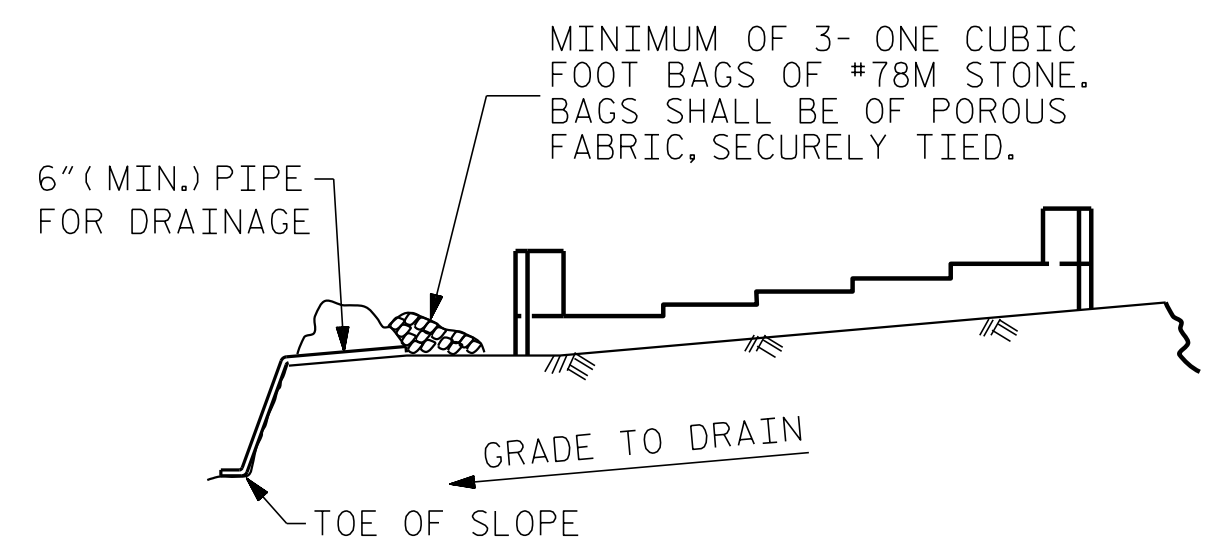
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BILL OF MATERIAL

END BENT No. 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10	1	33'-9"	1,162
B2	8	#10	1	34'-5"	1,185
B3	12	#5	STR	31'-6"	394
B4	8	#4	STR	31'-3"	167
B5	15	#4	STR	2'-11"	29
B6	20	#4	STR	7'-6"	100
B7	4	#4	STR	12'-11"	35
H1	22	#6	2	19'-2"	633
H2	18	#6	2	21'-5"	579
H3	22	#5	2	17'-9"	407
H4	16	#5	2	20'-0"	334
K1	24	#4	STR	4'-4"	69
S1	103	#5	4	11'-1"	1,191
S2	103	#5	3	3'-10"	412
S3	40	#4	5	6'-6"	174
U1	34	#4	6	5'-11"	134
V1	62	#4	STR	5'-9"	238
V2	48	#4	STR	9'-7"	307
V3	46	#4	STR	8'-11"	274
REINFORCING STEEL					7,824 LBS.
CLASS A CONCRETE BREAKDOWN					
POUR #1	CAP, CONC. COLLARS & LOWER PART OF WINGS				40.0 C.Y.
POUR #2	UPPER PART OF WINGS				12.0 C.Y.
TOTAL CLASS A CONCRETE					52.0 C.Y.



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

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

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

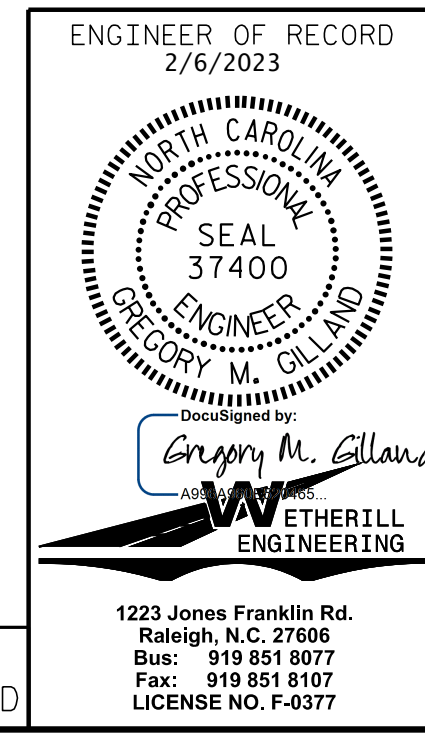
TEMPORARY DRAINAGE AT END BENT

NOTES

THE BLOCKOUT (SHADED AREA) OF THE WING IS DUE TO INTERFERENCE BETWEEN GIRDER A6 TOP & BOTTOM FLANGE AND WING. THE CONCRETE IN THE BLOCKOUT OF THE WING SHALL BE POURED AFTER THE GIRDERS ARE PLACED AND DURING POUR 3A OF THE SUPERSTRUCTURE.

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-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 3 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

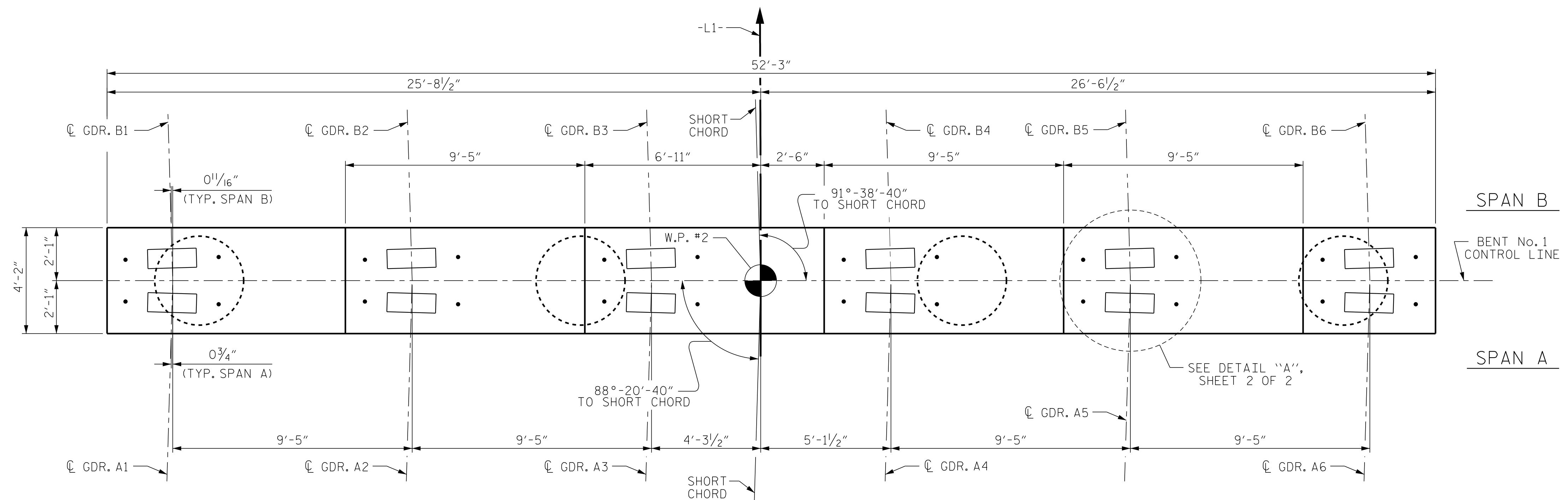
**SUBSTRUCTURE
END BENT No. 1**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-38
1			3			TOTAL SHEETS
2			4			49

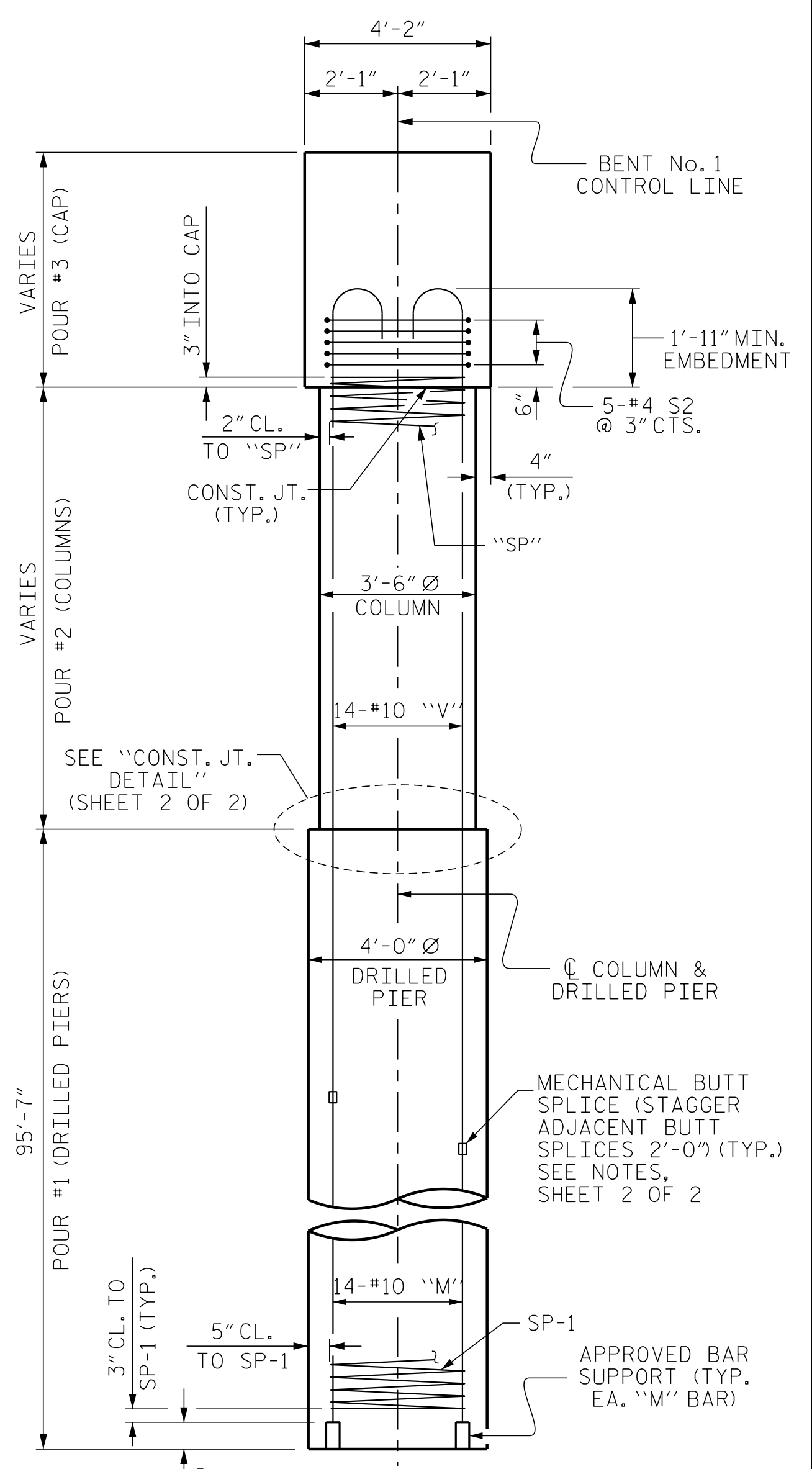
DRAWN BY : J. PENDERGRAFT/DAH DATE : 4-22
 CHECKED BY : G. GILLAND DATE : 6-22

DOCUMENT NOT CONSIDERED FINAL
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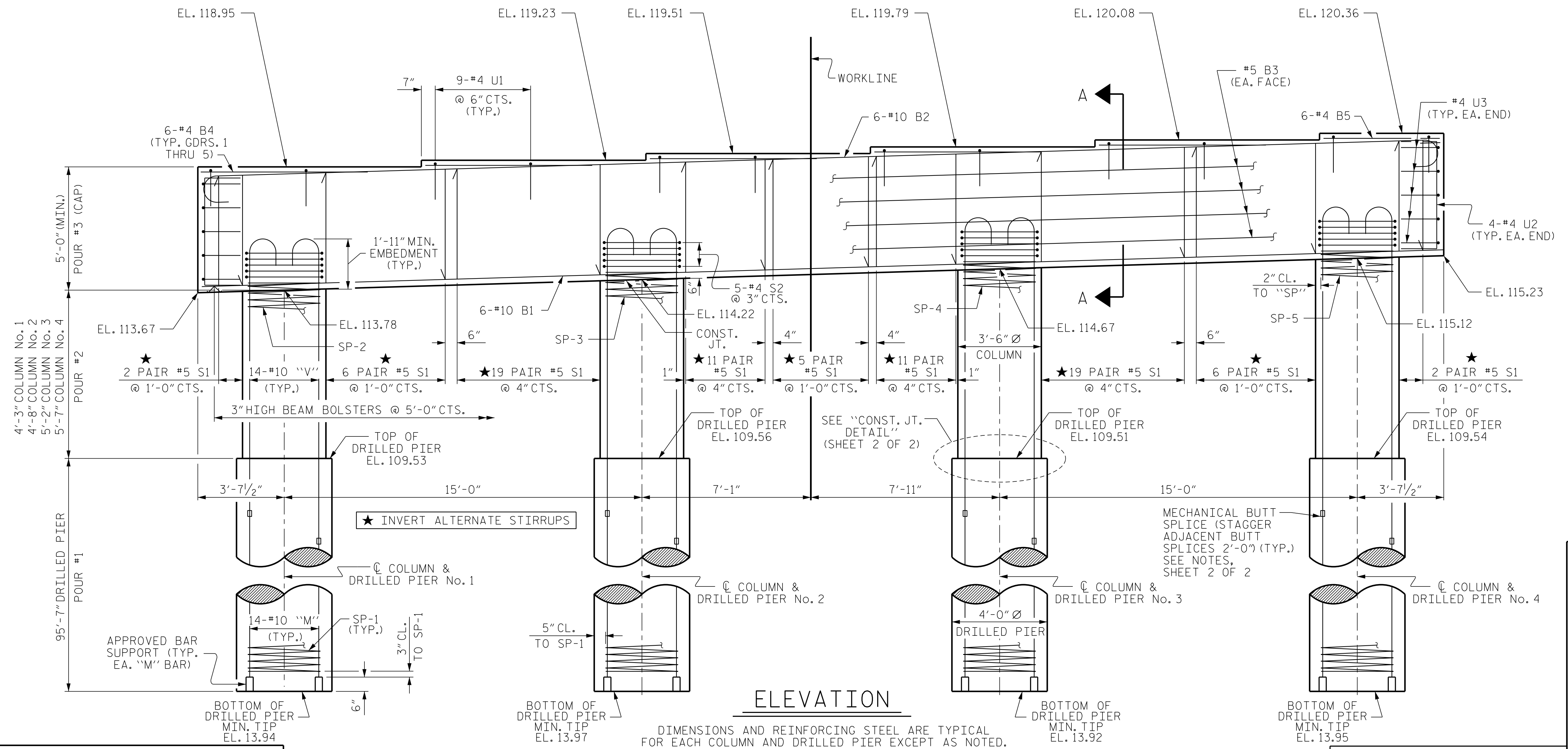
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PLAN



END ELEVATION



ELEVATION

DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER EXCEPT AS NOTED. FOR PLACEMENT OF "M" AND "V" BARS, SEE SHEET 2 OF 2.

PROJECT NO. B-5985A
ROBESON COUNTY
STATION: 23+56.00 -L1-
SHEET 1 OF 2

ENGINEER OF RECORD
2/6/2023

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

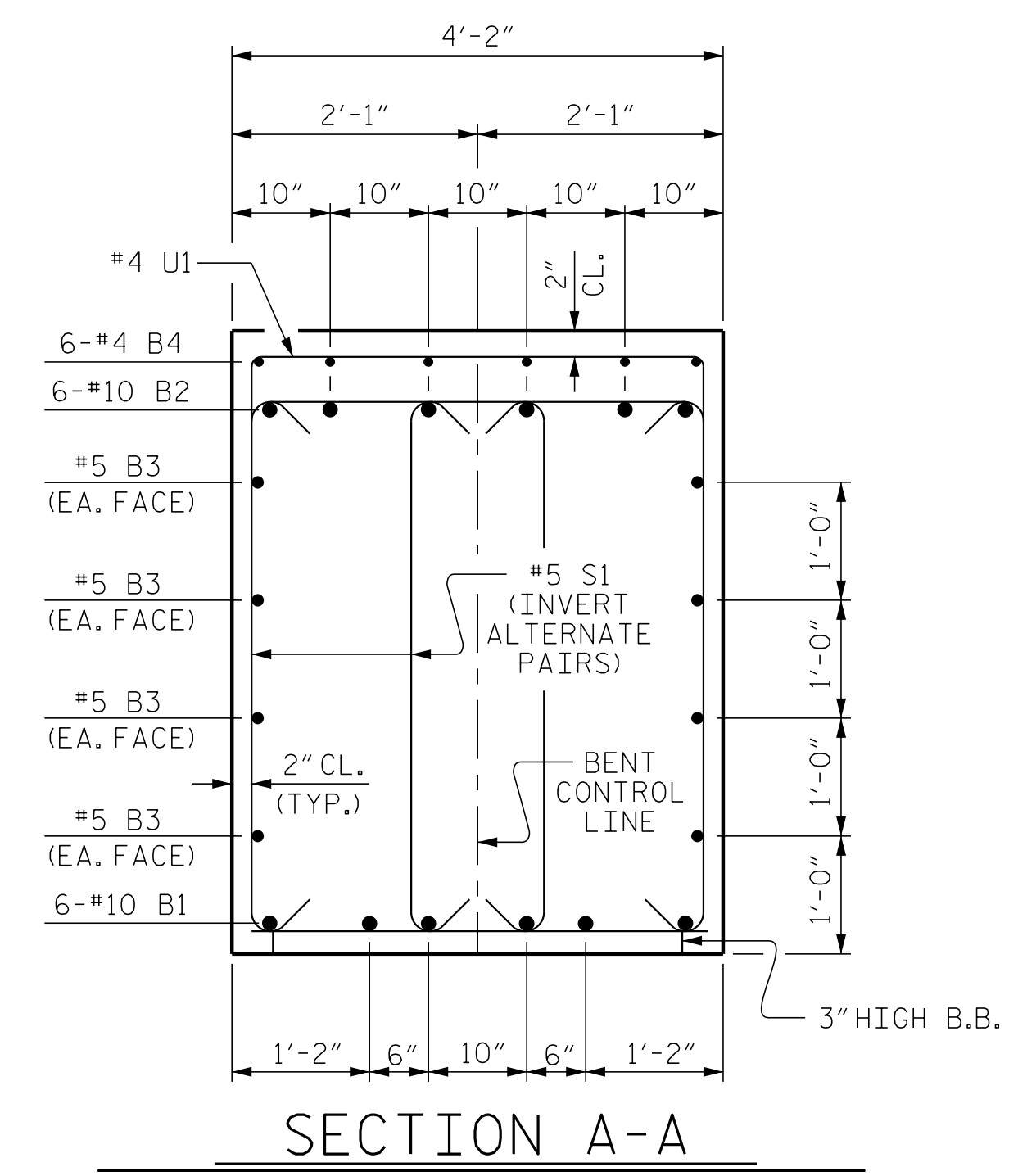
SHEET NO. S-39				
TOTAL SHEETS 49				

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

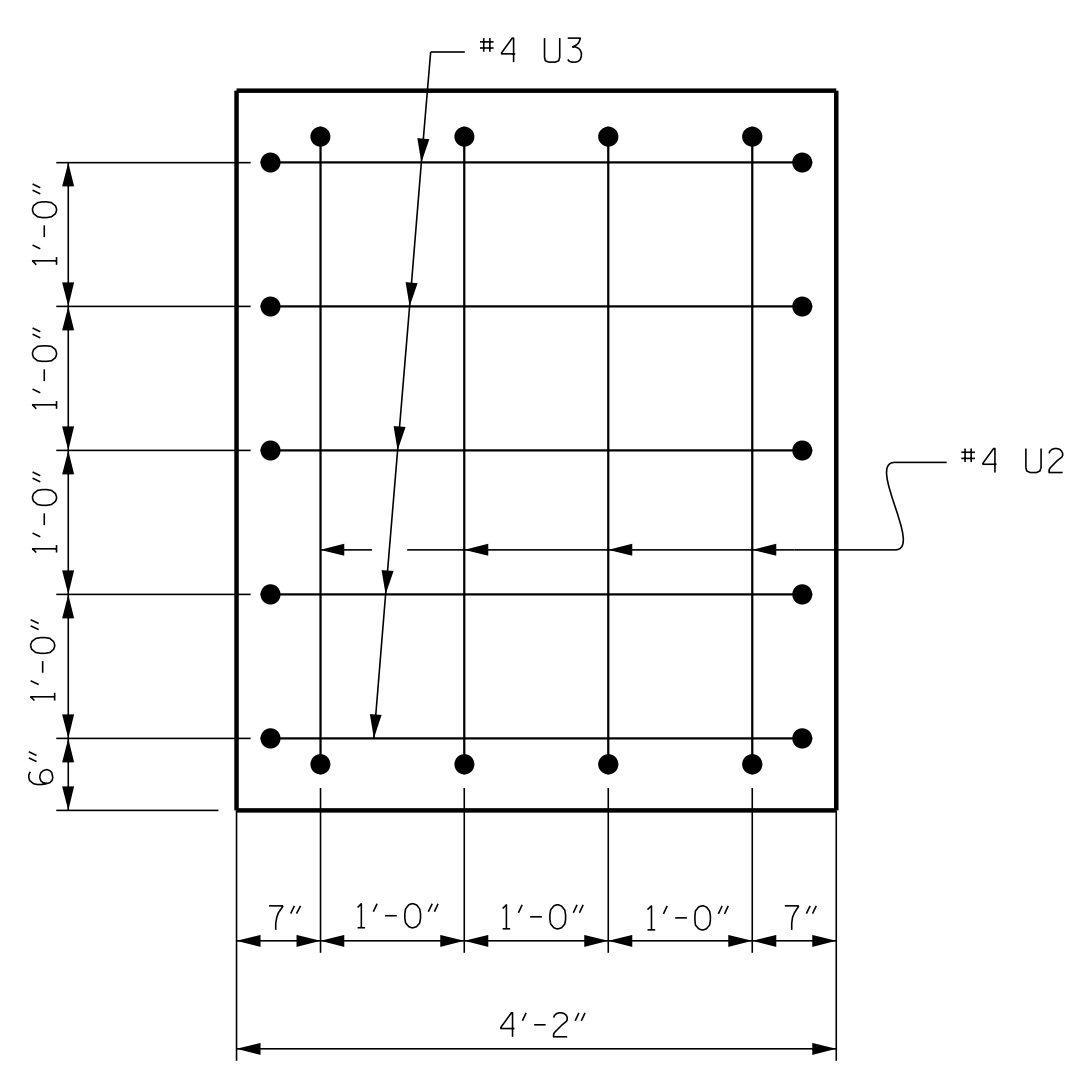
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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SECTION A-A



END OF CAP VIEW
(TYP. EA. END)

NOTES:

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

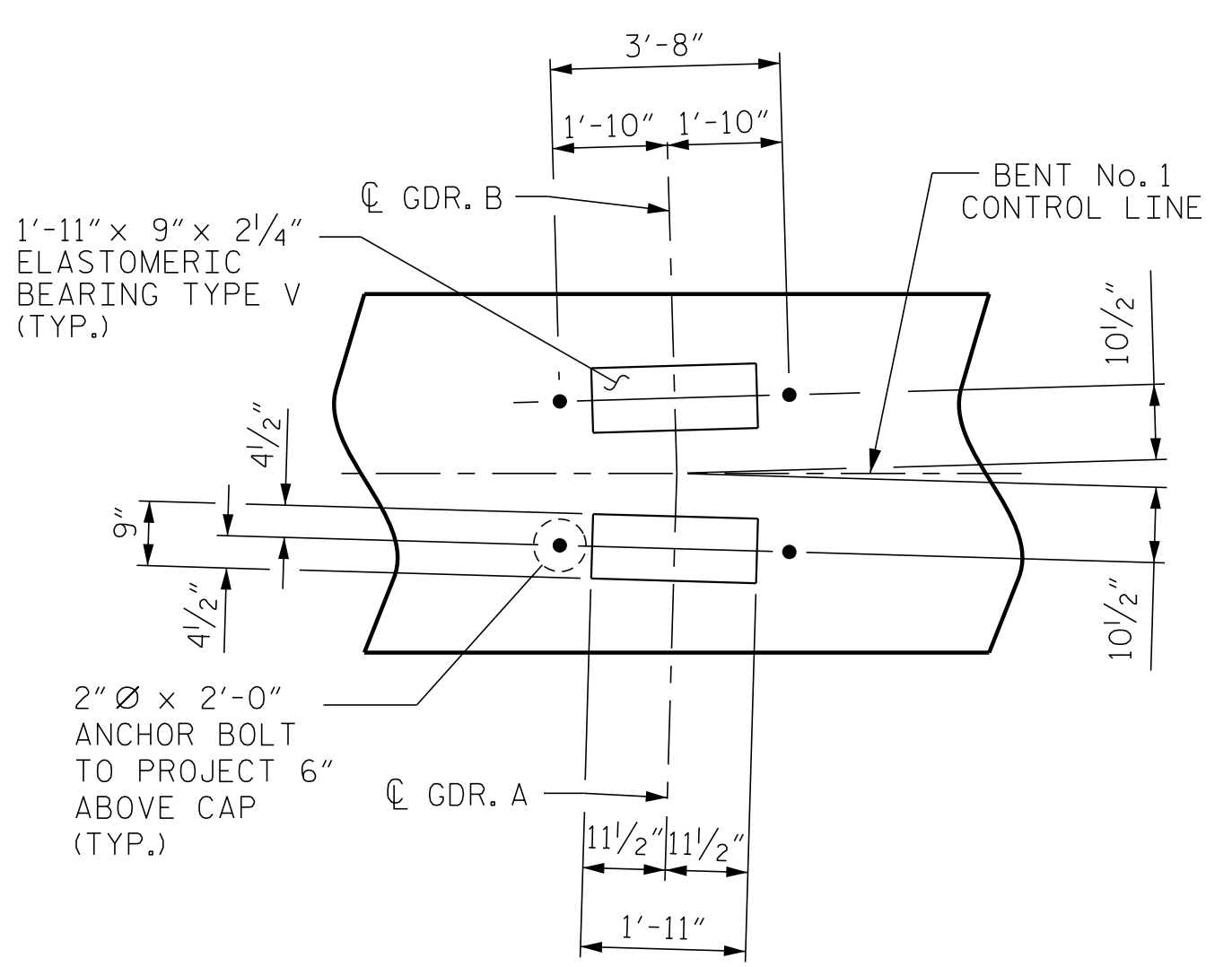
HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

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

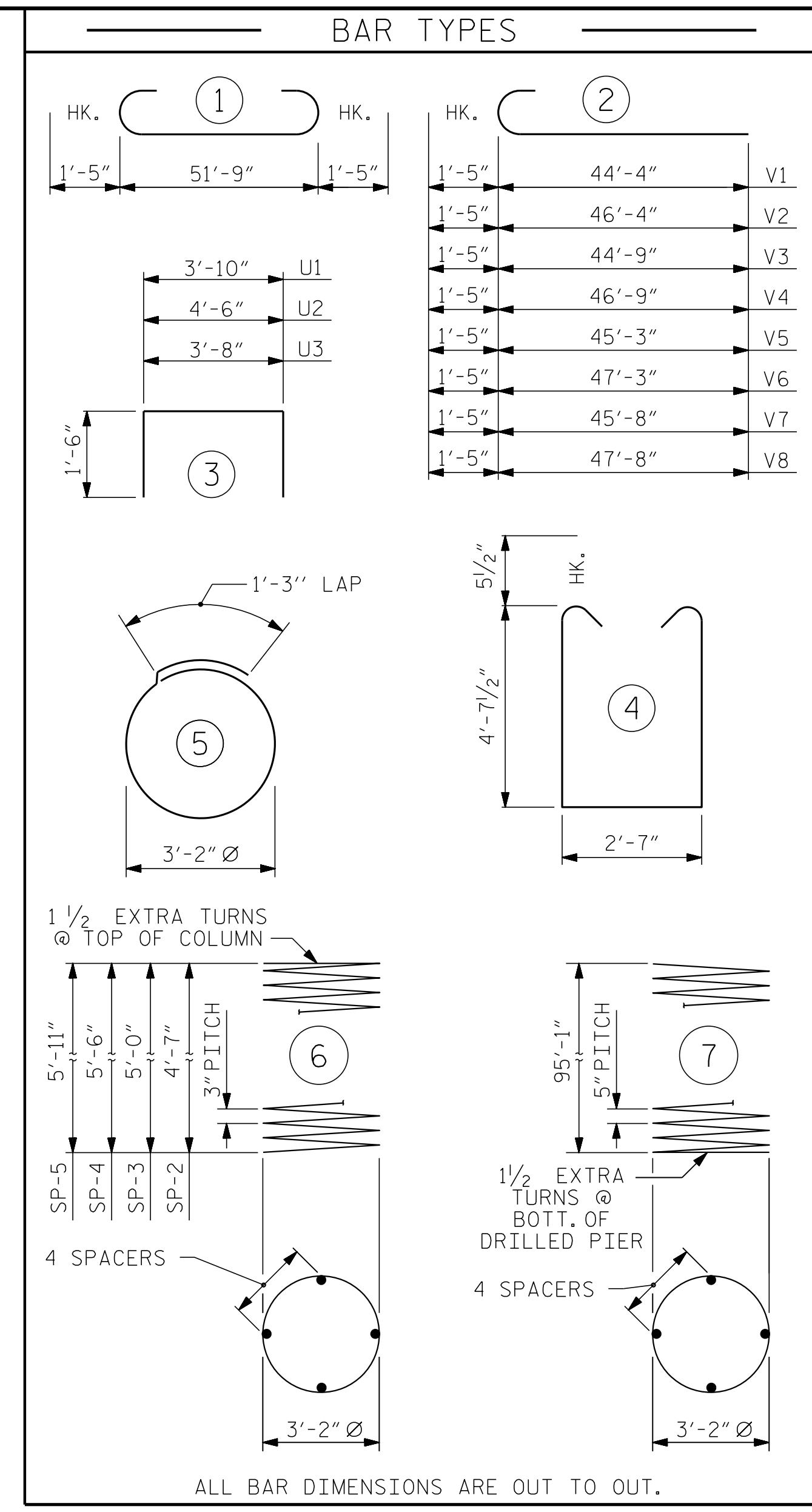
DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.

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)

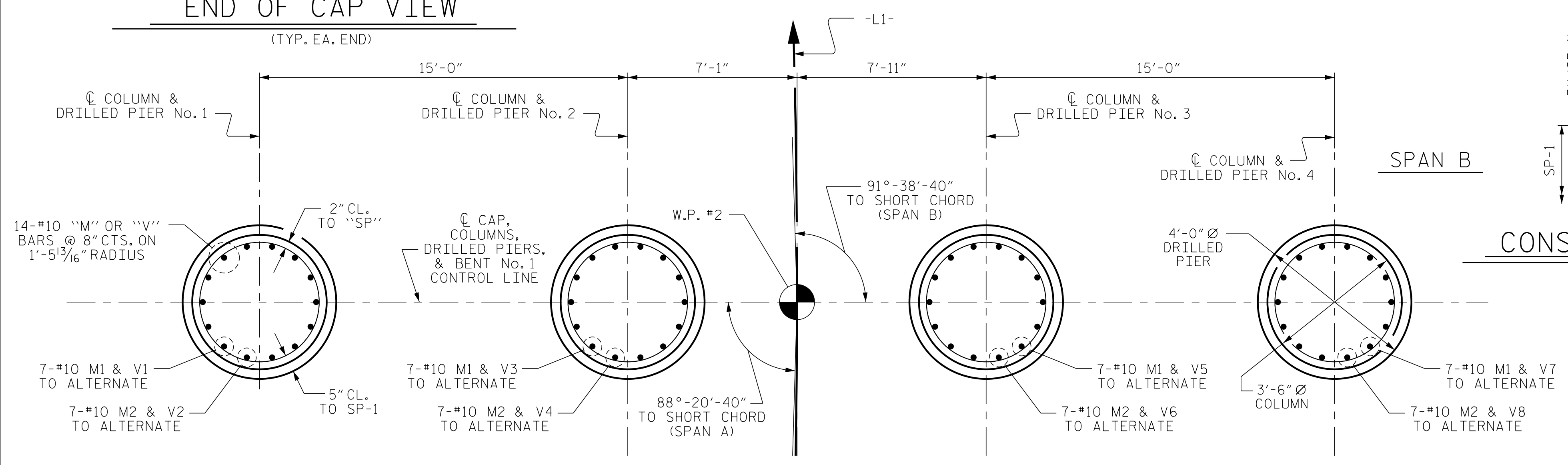


** THE "SP" SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

BILL OF MATERIAL					
BENT No. 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	STR	51'-11"	1,340
B2	6	#10	1	54'-7"	1,409
B3	8	#5	STR	51'-11"	433
B4	30	#4	STR	4'-8"	94
B5	6	#4	STR	4'-10"	19
M1	28	#10	STR	60'-0"	7,229
M2	28	#10	STR	58'-0"	6,988
S1	162	#5	4	12'-9"	2,154
S2	20	#4	5	11'-3"	150
U1	54	#4	3	6'-10"	246
U2	8	#4	3	7'-6"	40
U3	10	#4	3	6'-8"	45
V1	7	#10	2	45'-9"	1,378
V2	7	#10	2	47'-9"	1,438
V3	7	#10	2	46'-2"	1,391
V4	7	#10	2	48'-2"	1,451
V5	7	#10	2	46'-8"	1,406
V6	7	#10	2	48'-8"	1,466
V7	7	#10	2	47'-1"	1,418
V8	7	#10	2	49'-1"	1,478
REINFORCING STEEL					31,573 LBS.
SP-1	4	**	7	2,250'-2"	9,388
SP-2	1	**	6	195'-10"	204
SP-3	1	**	6	210'-6"	220
SP-4	1	**	6	230'-1"	240
SP-5	1	**	6	247'-2"	258
SPIRAL COLUMN REINFORCING STEEL					10,310 LBS.

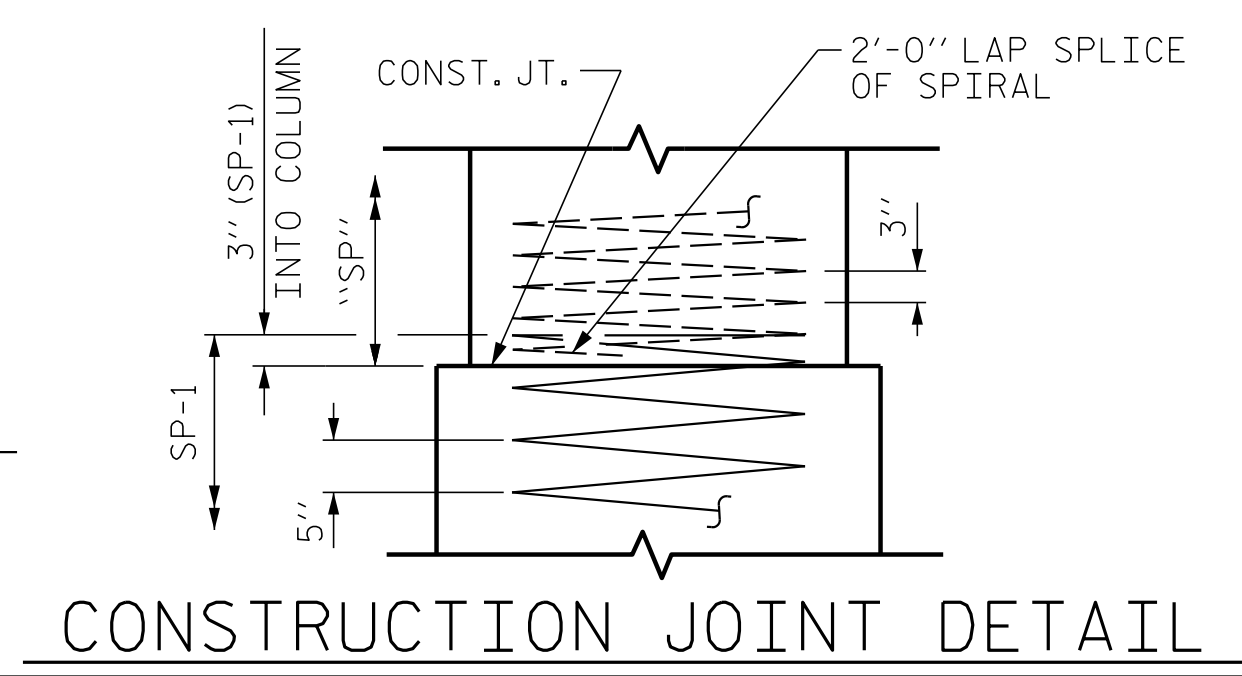
CLASS A CONCRETE BREAKDOWN		
POUR #2 COLUMNS		7.0 C.Y.
POUR #3 CAP		41.5 C.Y.
TOTAL CLASS A CONCRETE		48.5 C.Y.

DRILLED PIERS:	
DRILLED PIER CONCRETE	
POUR #1 (DRILLED PIERS)	177.9 C.Y.



PLAN OF DRILLED PIERS AND COLUMNS

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



CONSTRUCTION JOINT DETAIL

PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 2 OF 2

ENGINEER OF RECORD
 2/6/2023

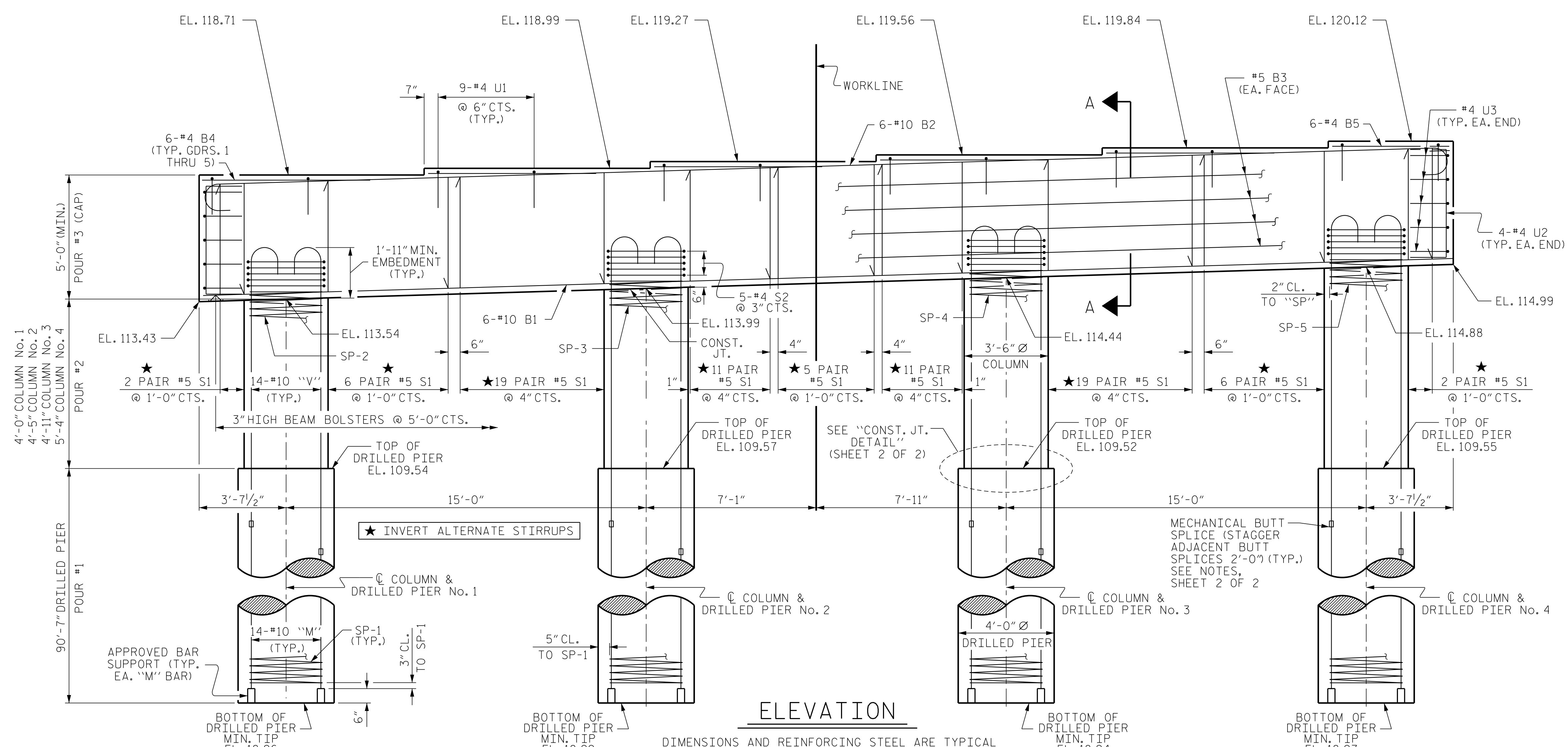
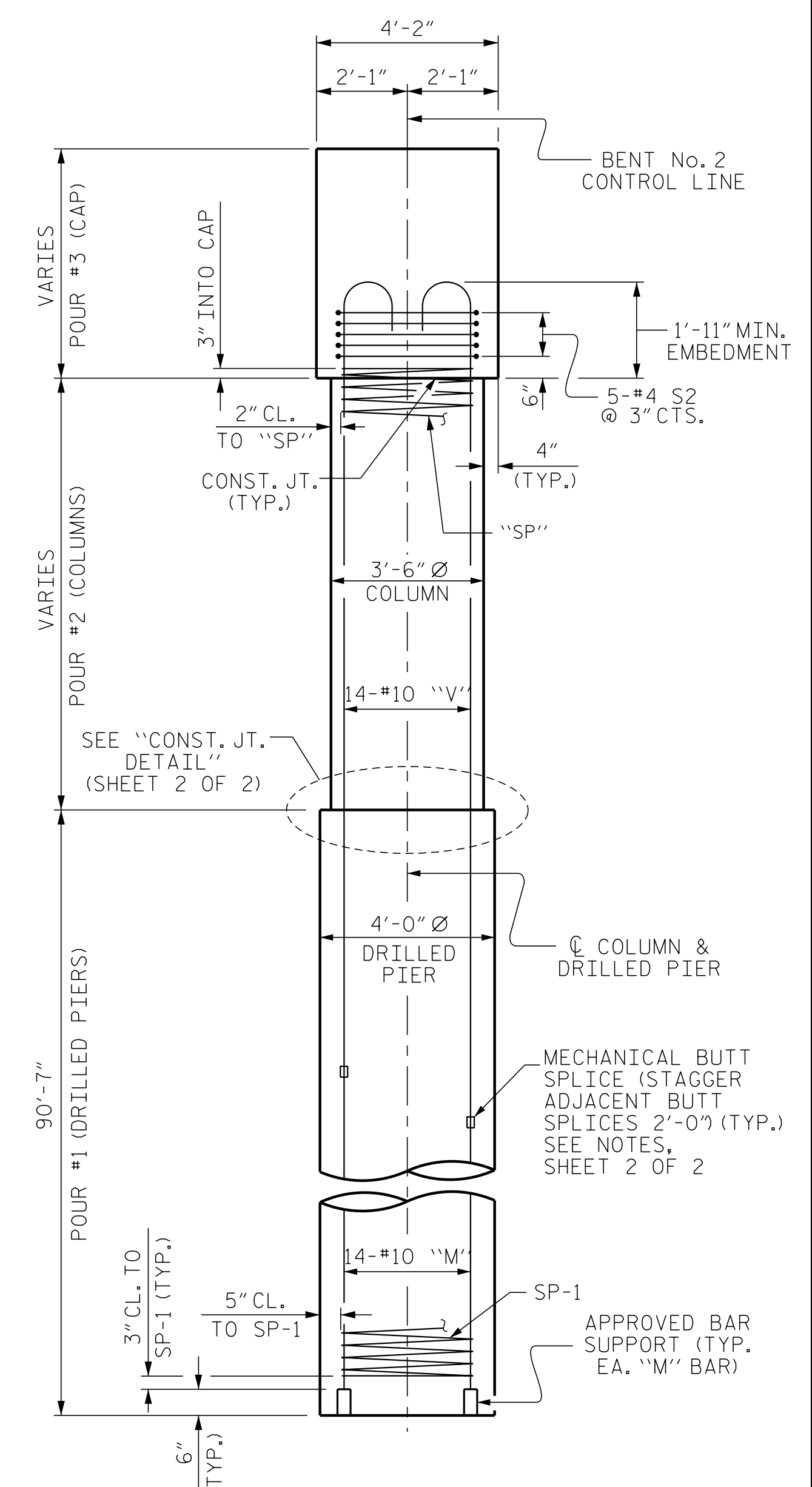
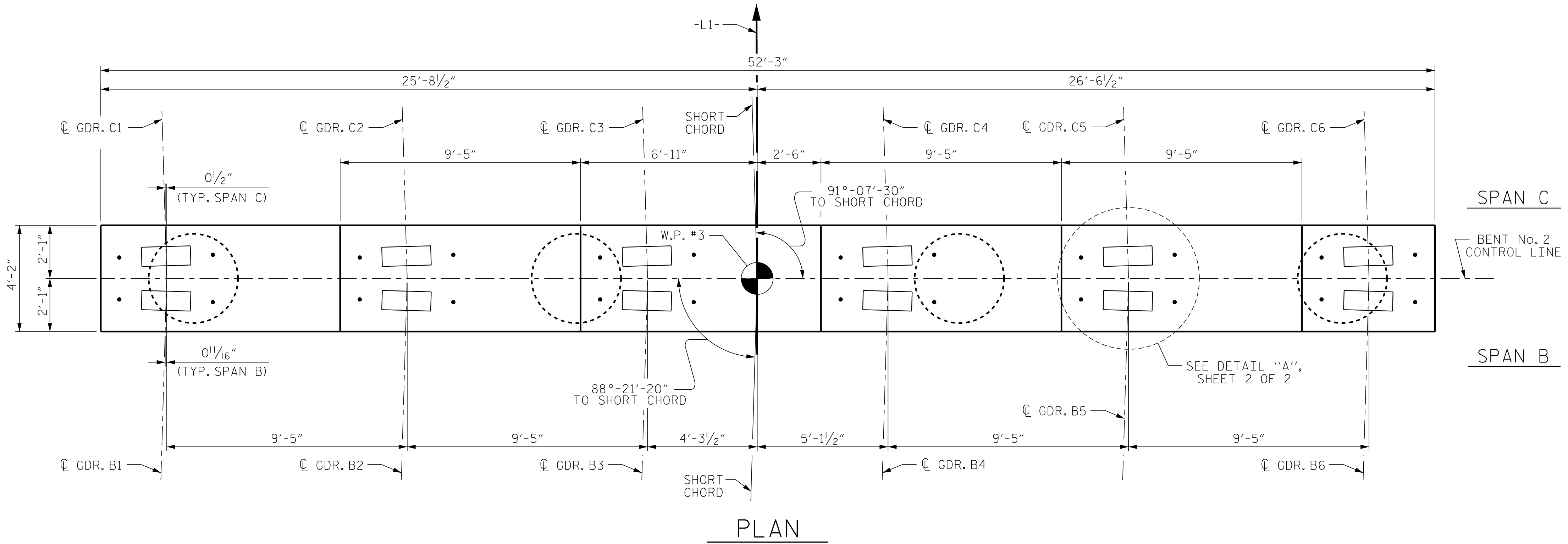
 Gregory M. Gilland
 WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

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

SHEET NO.	
S-40	TOTAL SHEETS 49

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

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DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER EXCEPT AS NOTED. FOR PLACEMENT OF "M" AND "V" BARS, SEE SHEET 2 OF 2.

PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 1 OF 2

ENGINEER OF RECORD
 2/6/2023

 Gregory M. Gilland
 WETHERILL 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					
SUBSTRUCTURE BENT No. 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

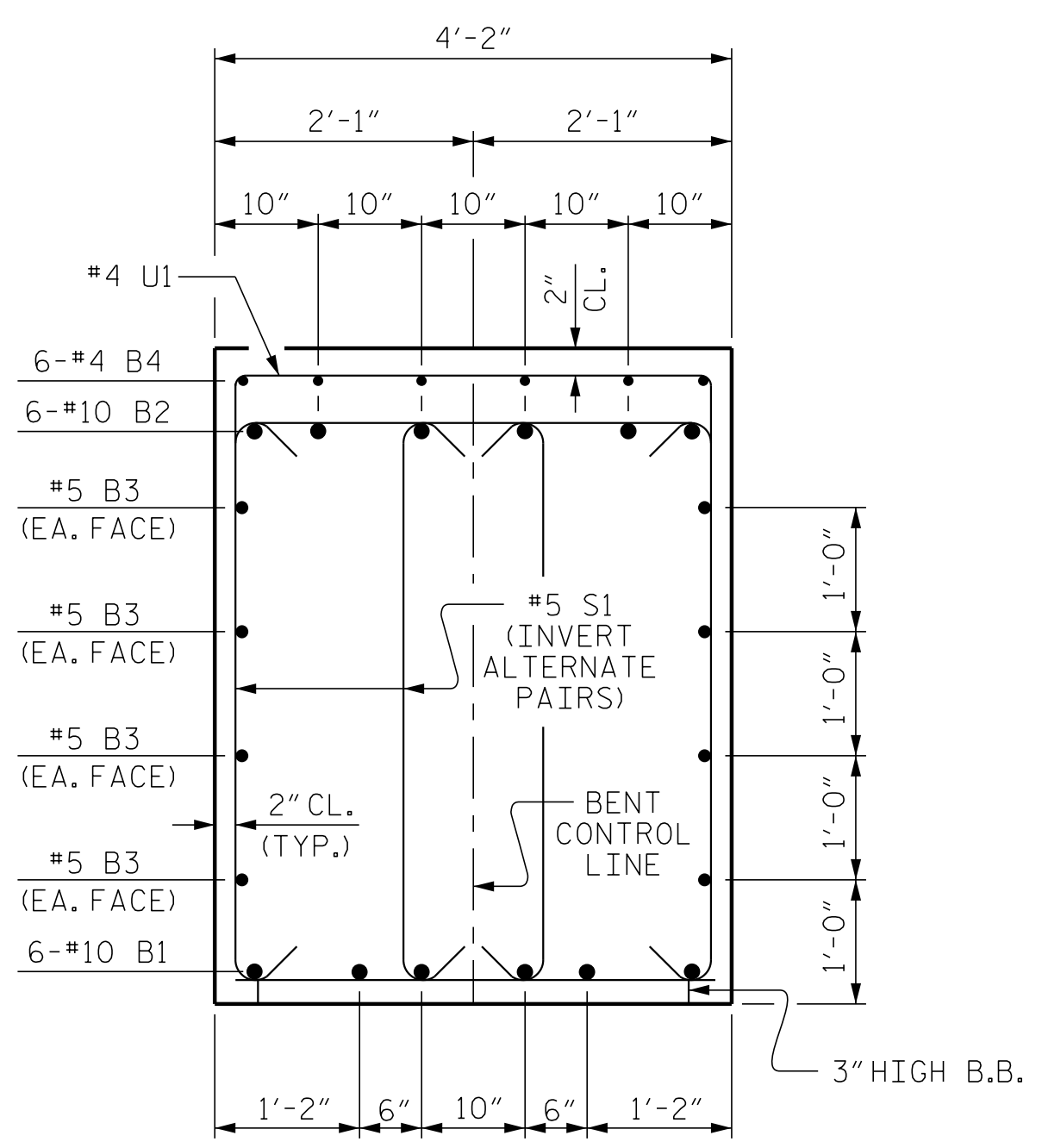
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TOTAL SHEETS 49			

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

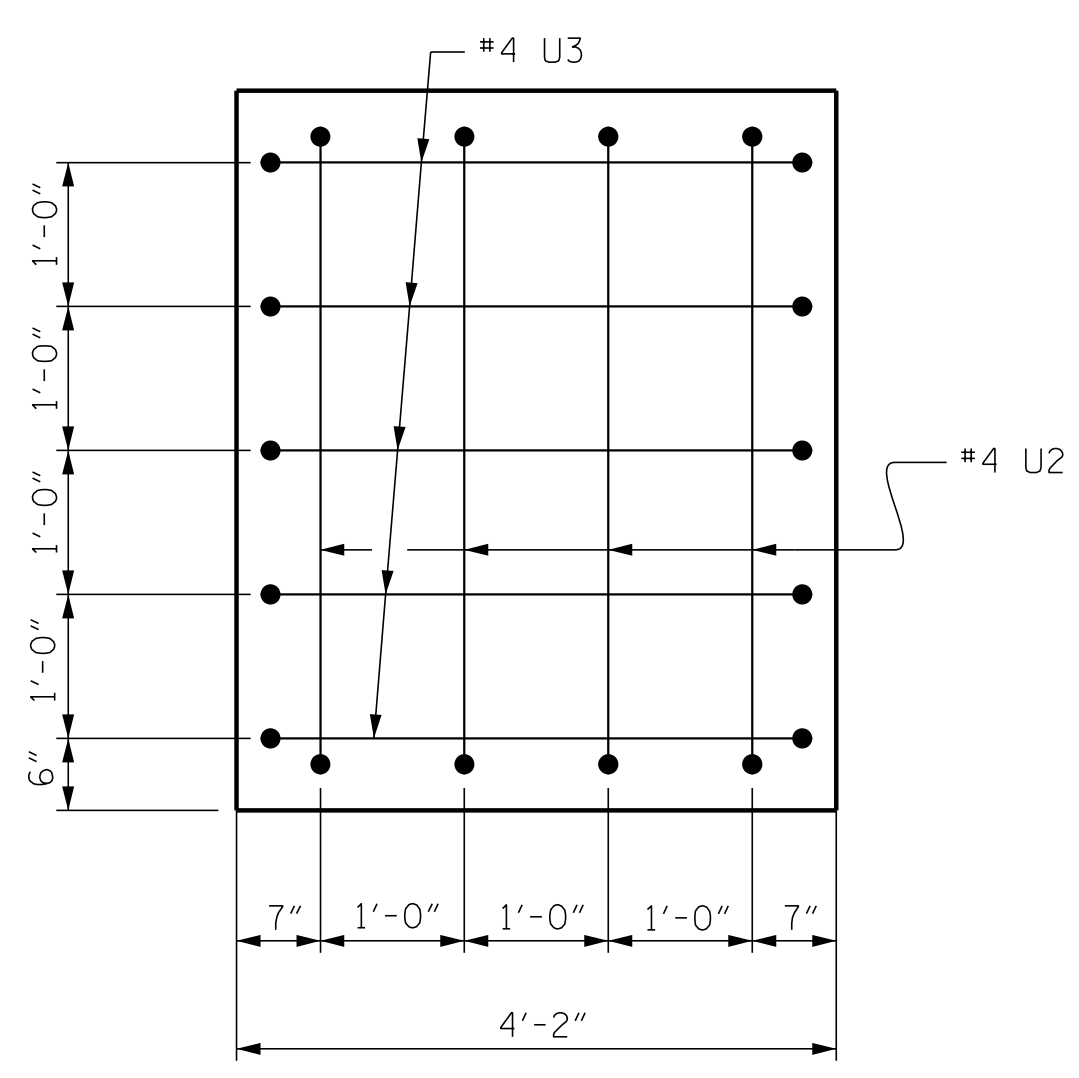
DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

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 11/30/2022 11:06:28 AM



SECTION A-A



END OF CAP VIEW
(TYP. EA. END)

NOTES:

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

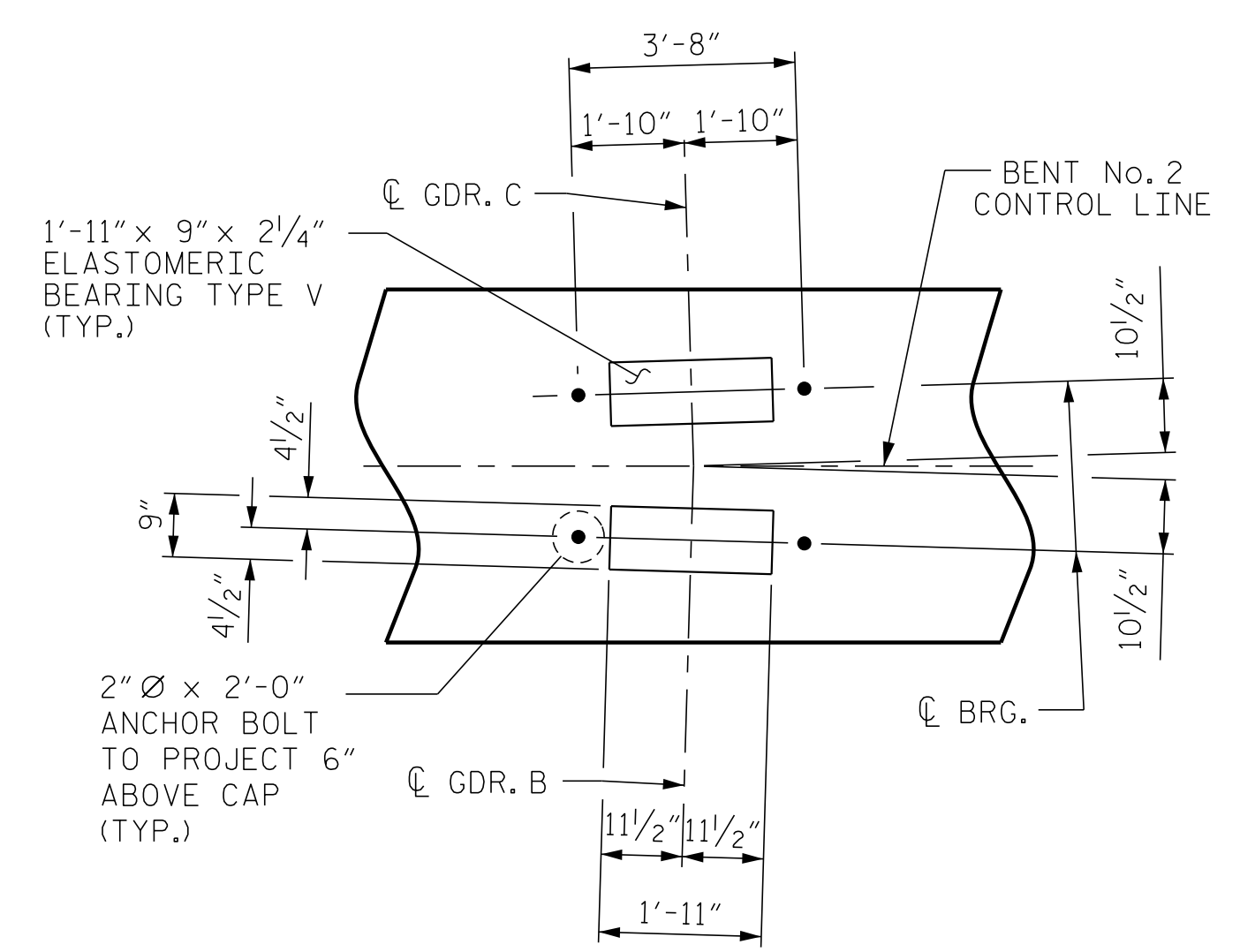
HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

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

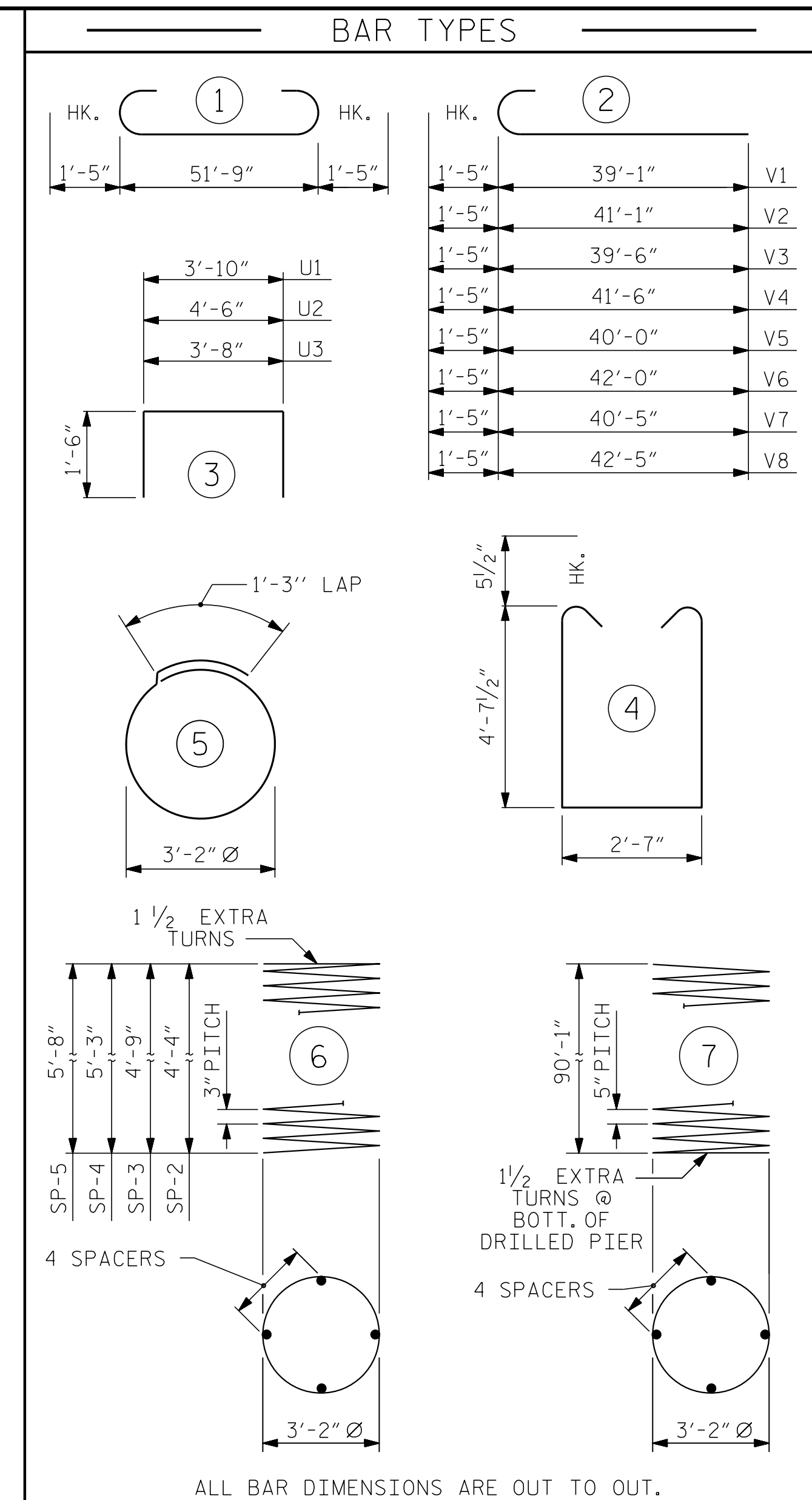
DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.

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)



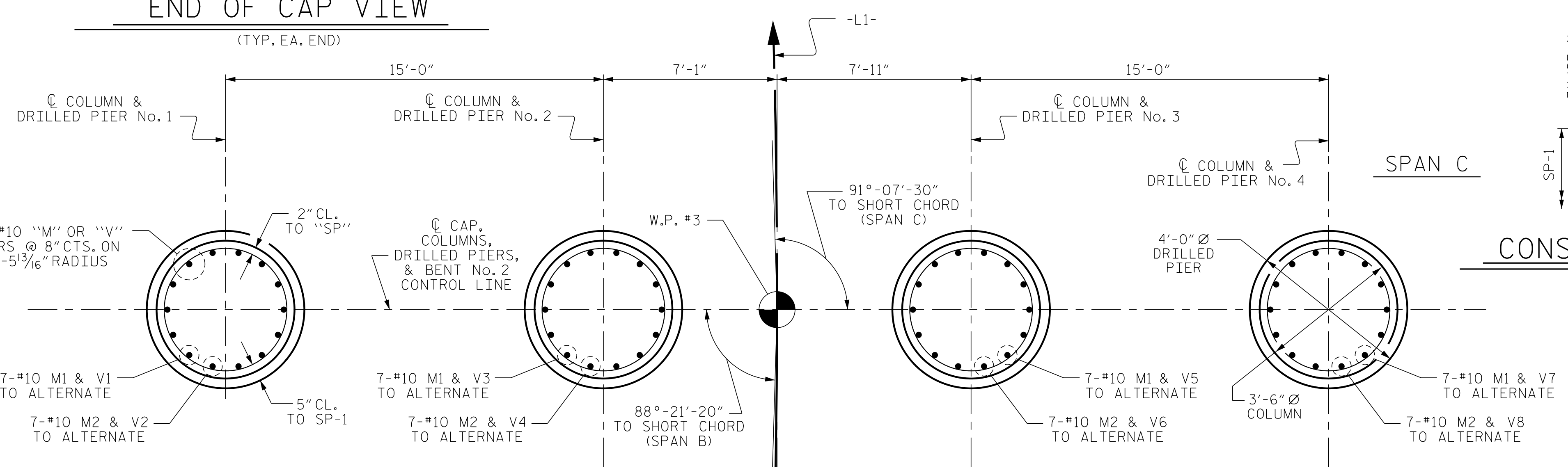
** THE "SP" SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

BILL OF MATERIAL					
BENT No. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	STR	51'-11"	1,340
B2	6	#10	1	54'-7"	1,409
B3	8	#5	STR	51'-11"	433
B4	30	#4	STR	4'-8"	94
B5	6	#4	STR	4'-10"	19
M1	28	#10	STR	60'-0"	7,229
M2	28	#10	STR	58'-0"	6,988
S1	162	#5	4	12'-9"	2,154
S2	20	#4	5	11'-3"	150
U1	54	#4	3	6'-10"	246
U2	8	#4	3	7'-6"	40
U3	10	#4	3	6'-8"	45
V1	7	#10	2	40'-6"	1,220
V2	7	#10	2	42'-6"	1,280
V3	7	#10	2	40'-11"	1,232
V4	7	#10	2	42'-11"	1,293
V5	7	#10	2	41'-5"	1,248
V6	7	#10	2	43'-5"	1,308
V7	7	#10	2	41'-10"	1,260
V8	7	#10	2	43'-10"	1,320
REINFORCING STEEL					30,308 LBS.
SP-1	4	**	7	2,132'-7"	8,897
SP-2	1	**	6	186'-0"	194
SP-3	1	**	6	200'-8"	209
SP-4	1	**	6	220'-3"	230
SP-5	1	**	6	237'-5"	248
SPIRAL COLUMN REINFORCING STEEL					9,778 LBS.

REINFORCING STEEL			30,308 LBS.		
SP-1	4	**	7	2,132'-7"	8,897
SP-2	1	**	6	186'-0"	194
SP-3	1	**	6	200'-8"	209
SP-4	1	**	6	220'-3"	230
SP-5	1	**	6	237'-5"	248

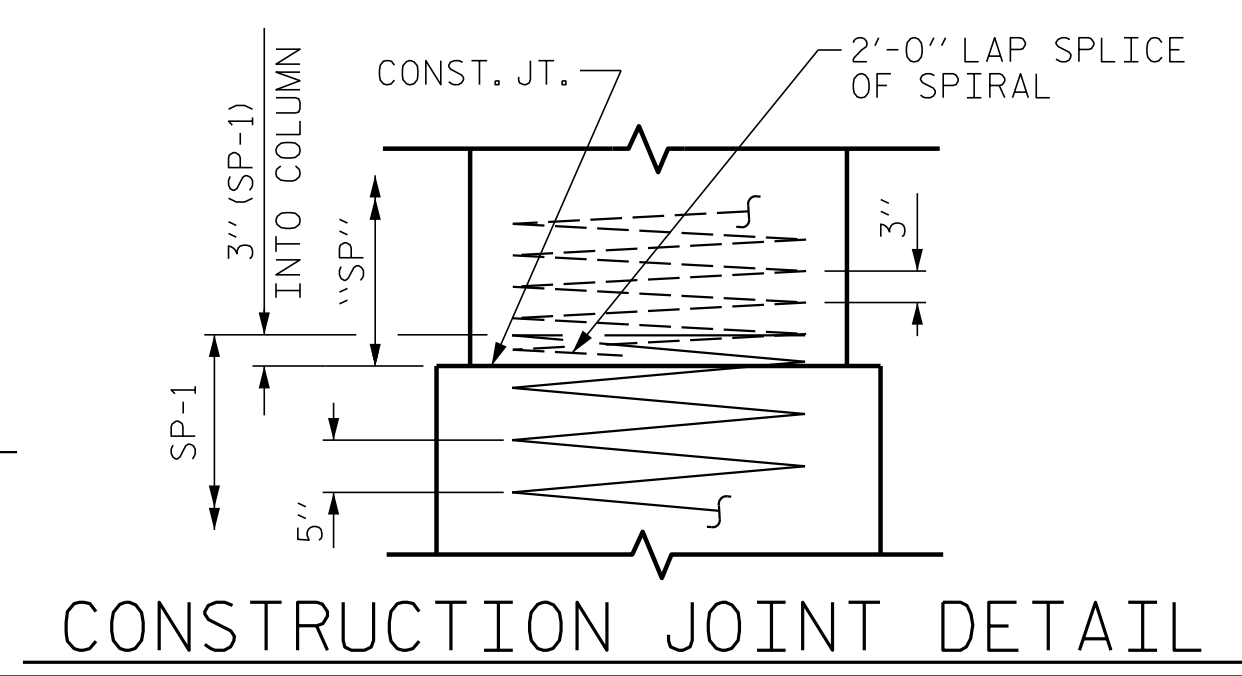
SPIRAL COLUMN REINFORCING STEEL			9,778 LBS.		
CLASS A CONCRETE BREAKDOWN					
POUR #2 COLUMNS					6.7 C.Y.
POUR #3 CAP					41.5 C.Y.
TOTAL CLASS A CONCRETE					48.2 C.Y.

DRILLED PIERS:		
DRILLED PIER CONCRETE		
POUR #1 (DRILLED PIERS)		168.6 C.Y.



PLAN OF DRILLED PIERS AND COLUMNS

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



CONSTRUCTION JOINT DETAIL

PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 2 OF 2

ENGINEER OF RECORD
 2/6/2023

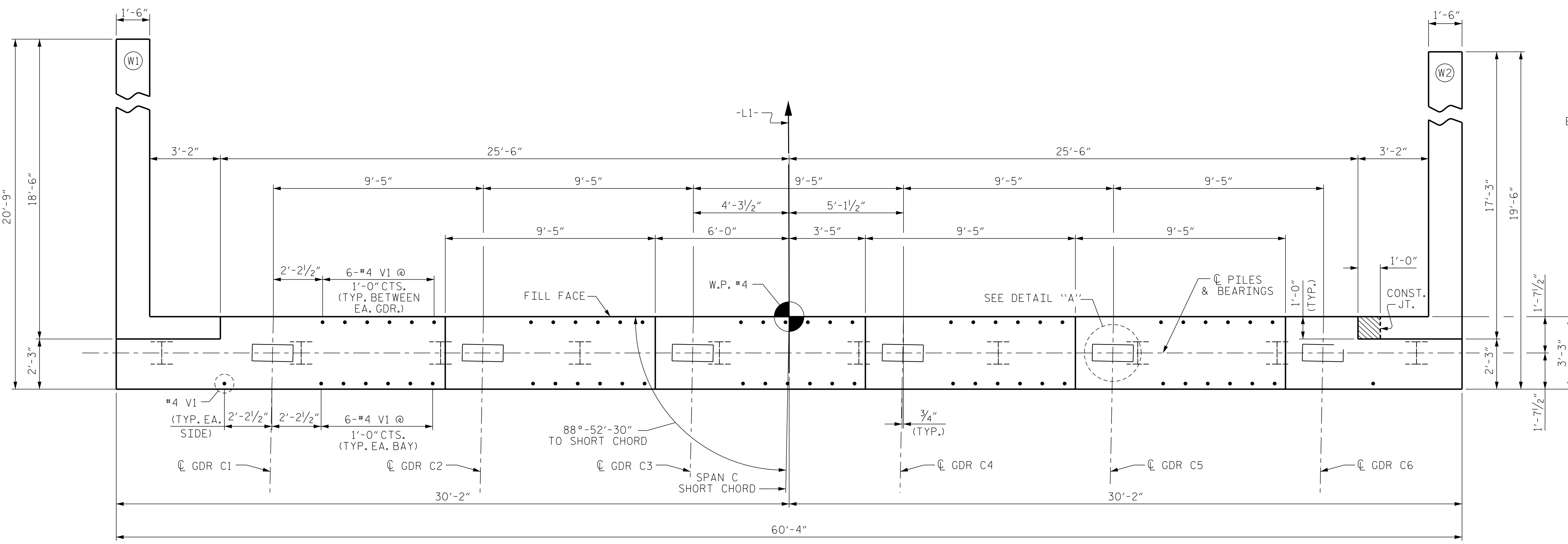
 Gregory M. Gilland
 WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

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

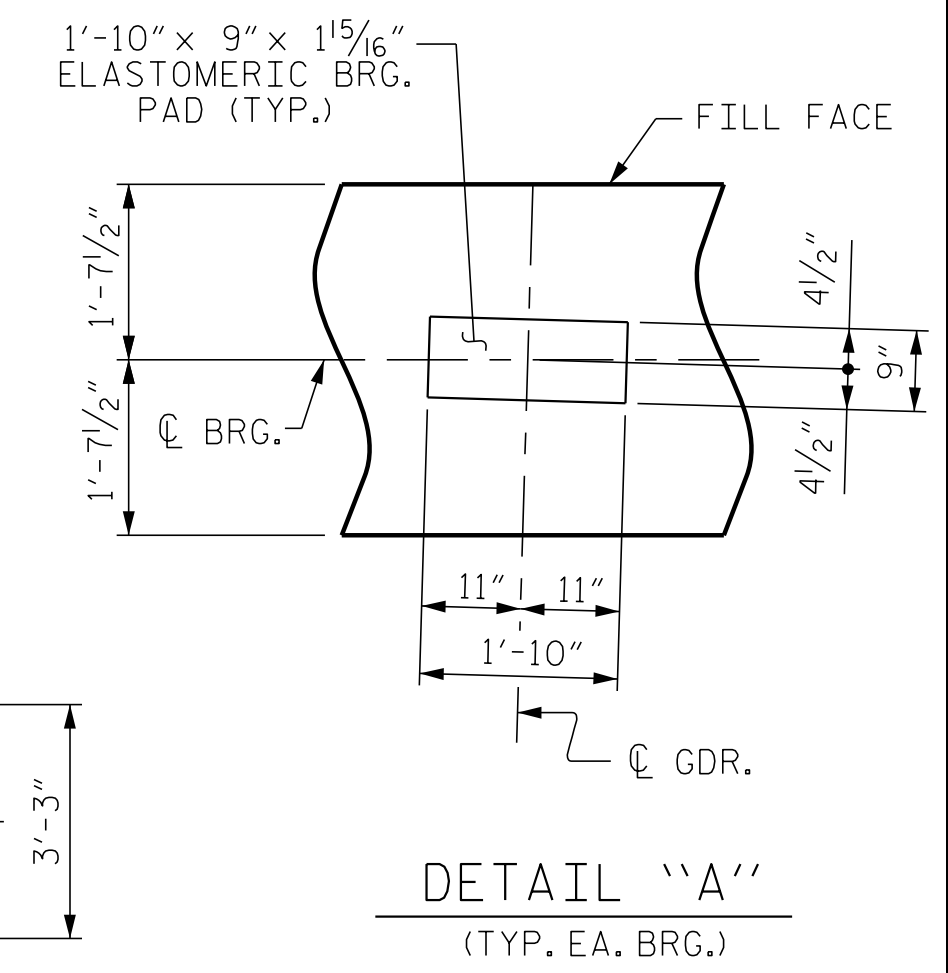
SHEET NO.	
S-42	TOTAL SHEETS 49

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

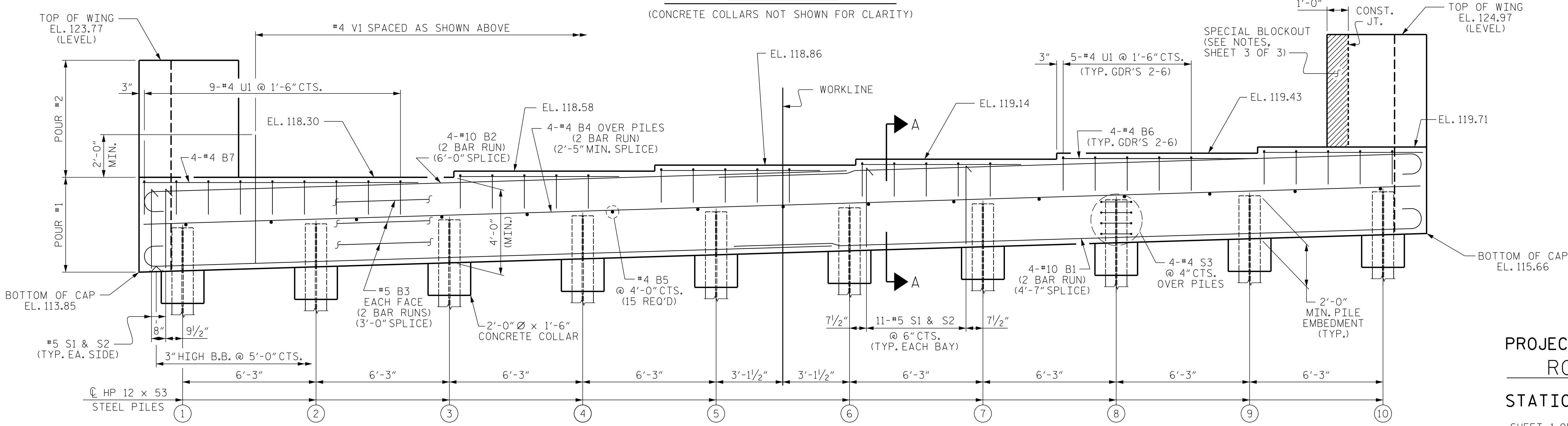
DRAWN BY: D. HODGE DATE: 5/22
 CHECKED BY: G. GILLAND DATE: 6/22



PLAN



DETAIL "A"
(TYP. EA. BRG.)



ELEVATION

FOR SECTION A-A, SEE SHEET 3 OF 3.

TOP OF PILE ELEVATIONS	
①	115.93
②	116.12
③	116.30
④	116.49
⑤	116.68
⑥	116.87
⑦	117.05
⑧	117.24
⑨	117.43
⑩	117.62

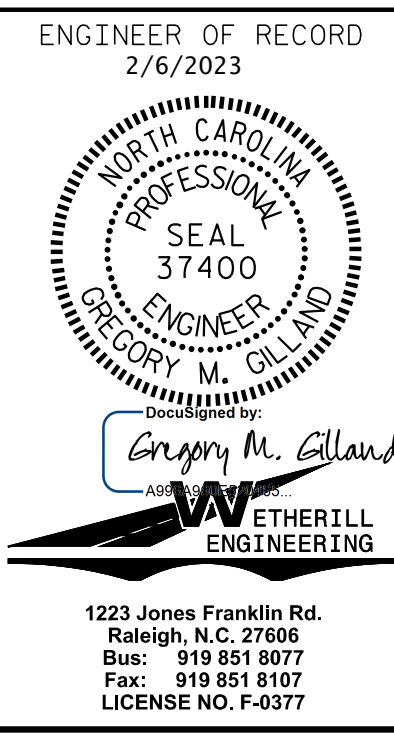
PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-

SHEET 1 OF 3

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DRAWN BY: J. PENDERGRAFT/DAH DATE: 4-22
 CHECKED BY: G. GILLAND DATE: 6-22

DOCUMENT NOT CONSIDERED FINAL
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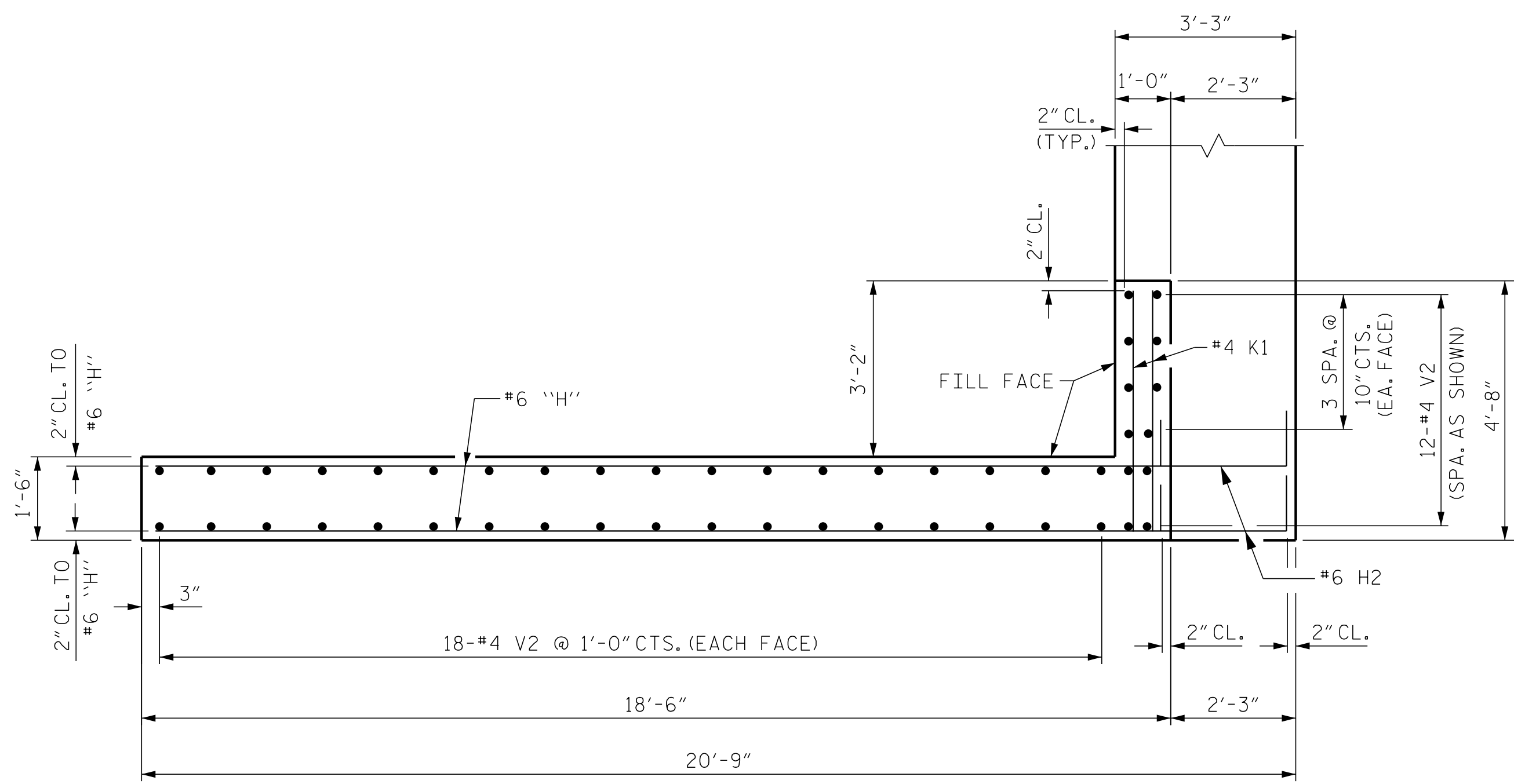


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

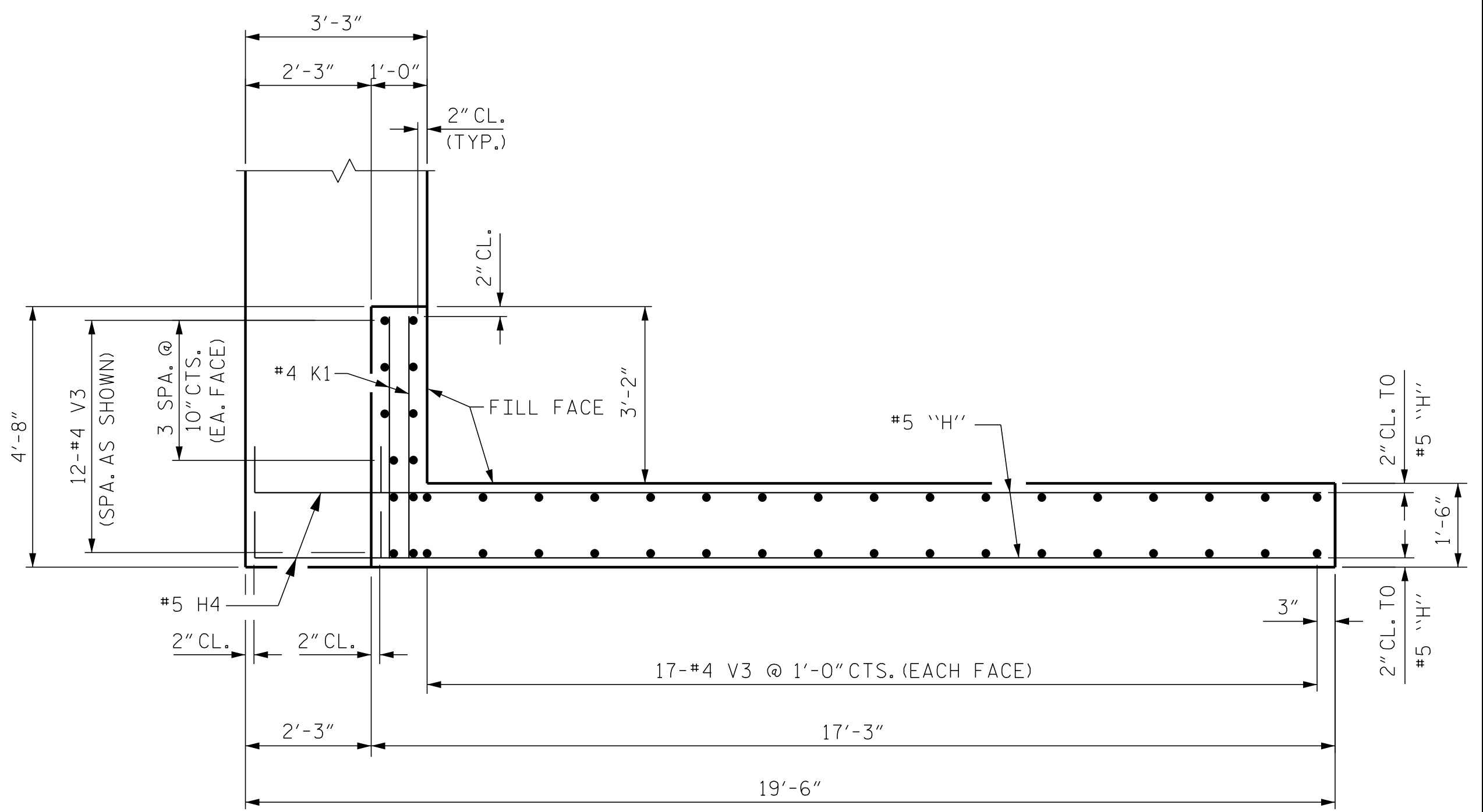
SUBSTRUCTURE
 END BENT No. 2

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

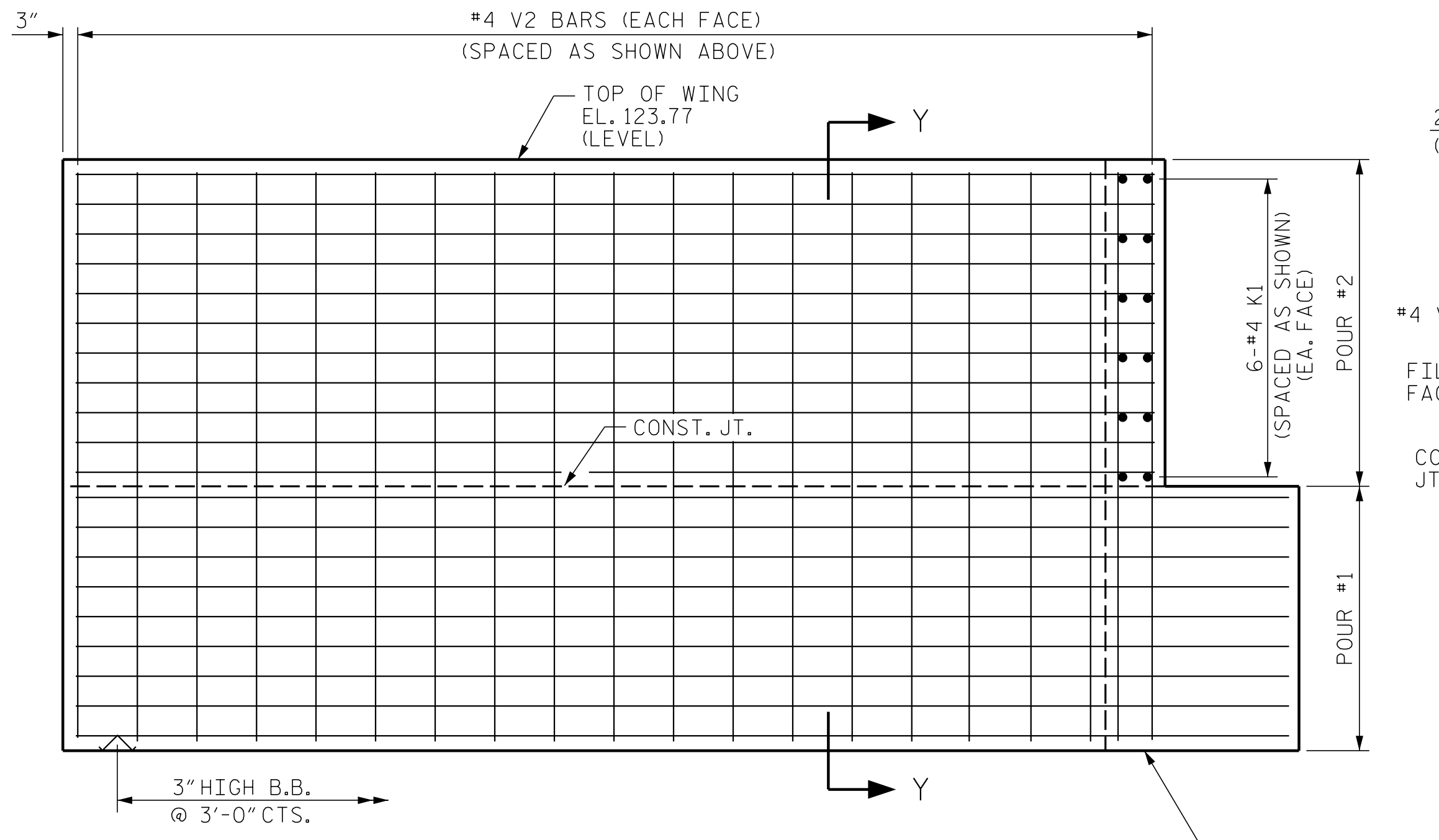
SHEET NO. S-43
 TOTAL SHEETS 49



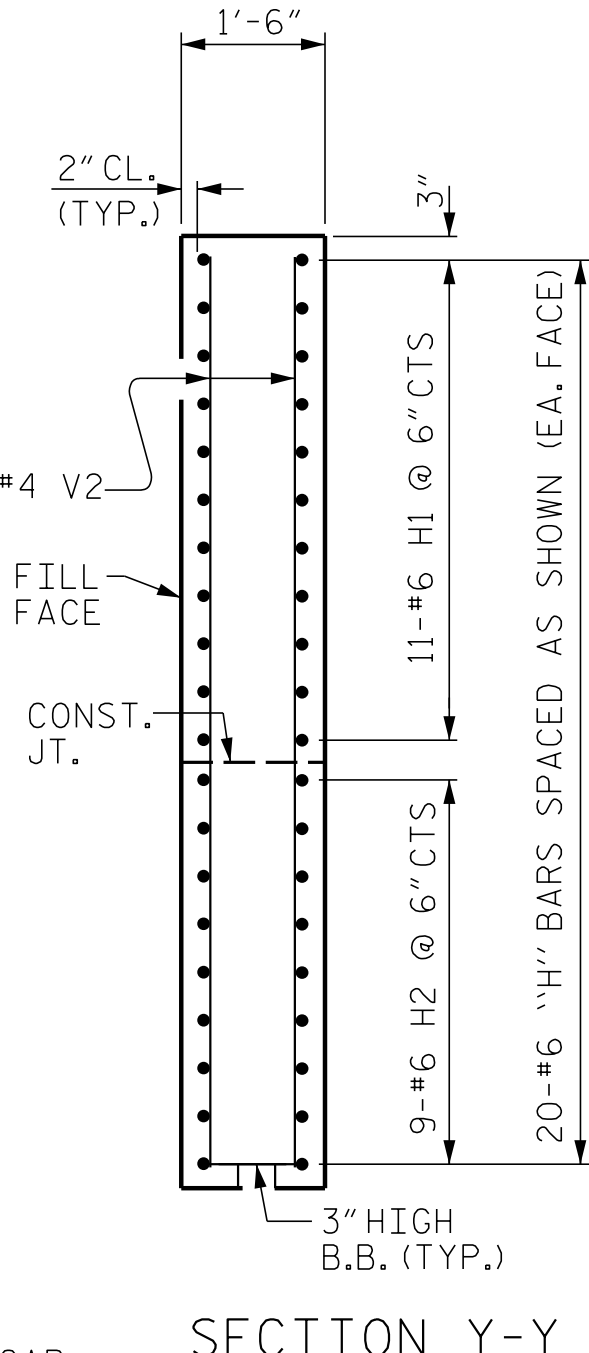
PLAN OF WING (W1)



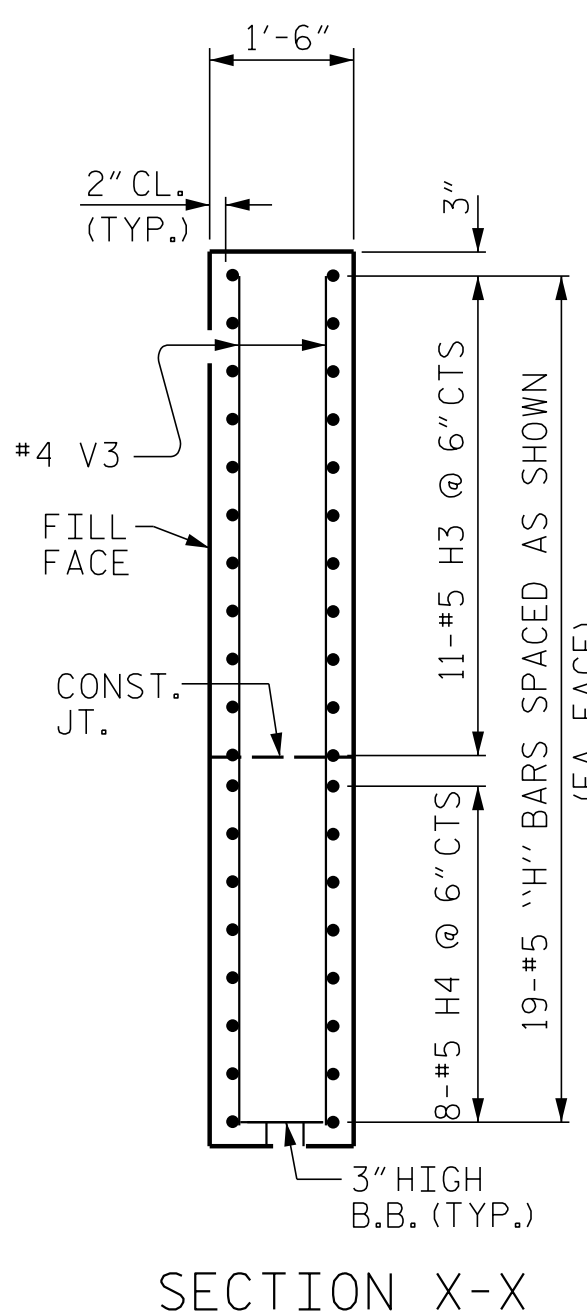
PLAN OF WING (W2)



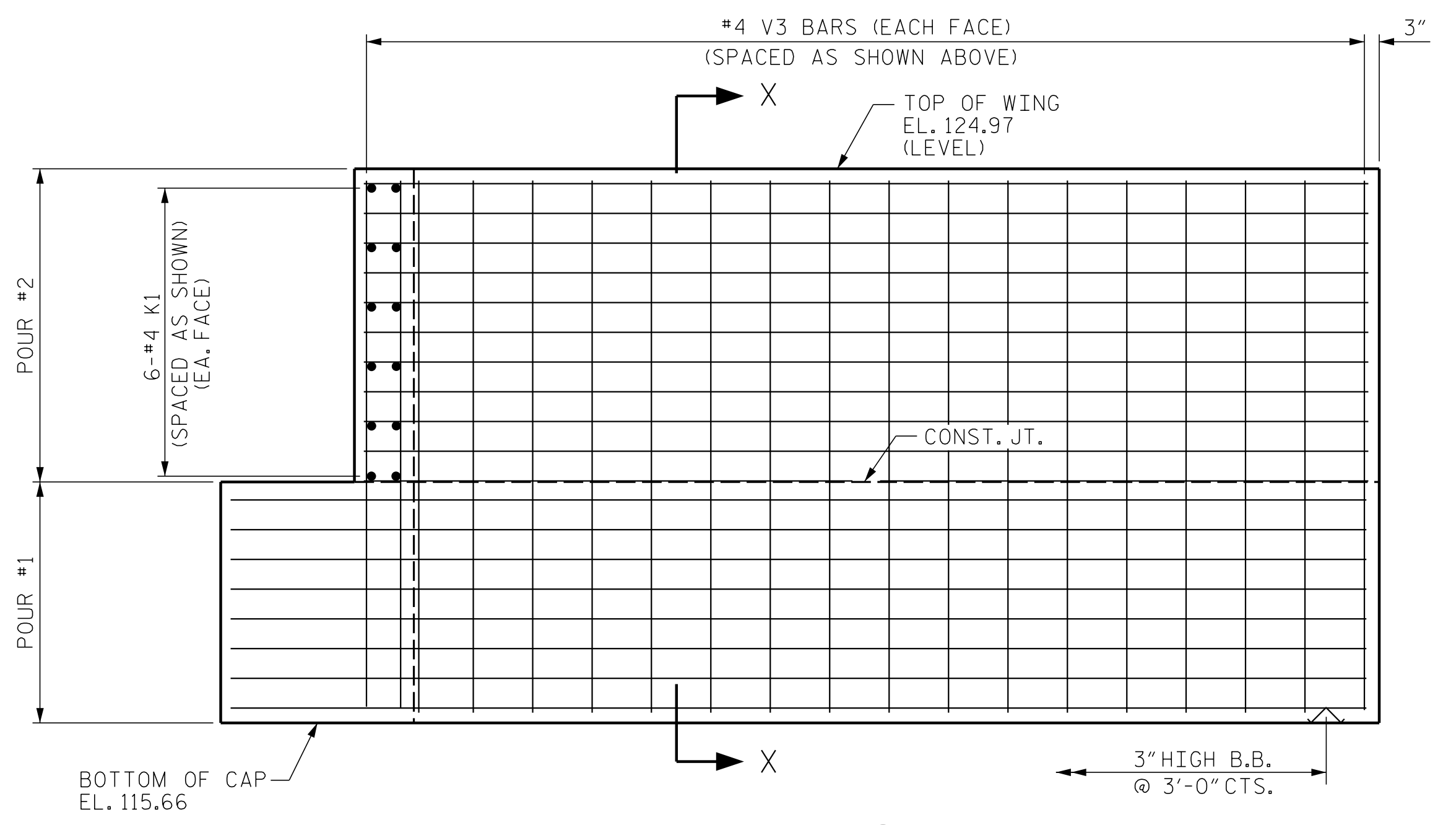
ELEVATION OF WING (W1)



SECTION Y-Y

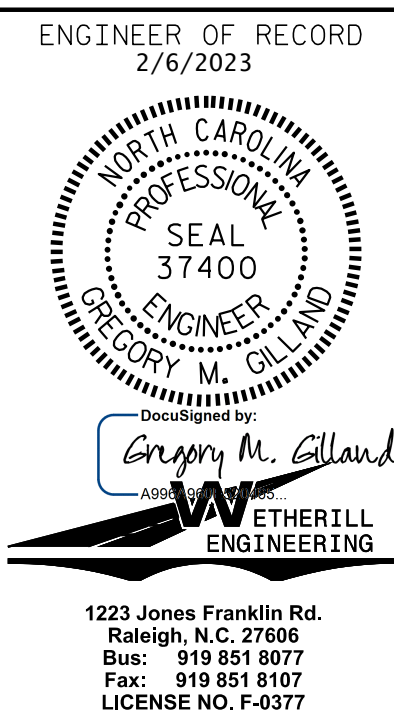


SECTION X-X



ELEVATION OF WING (W2)

PROJECT NO. B-5985A
 ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 2 OF 3



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT No. 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-44					TOTAL SHEETS 49

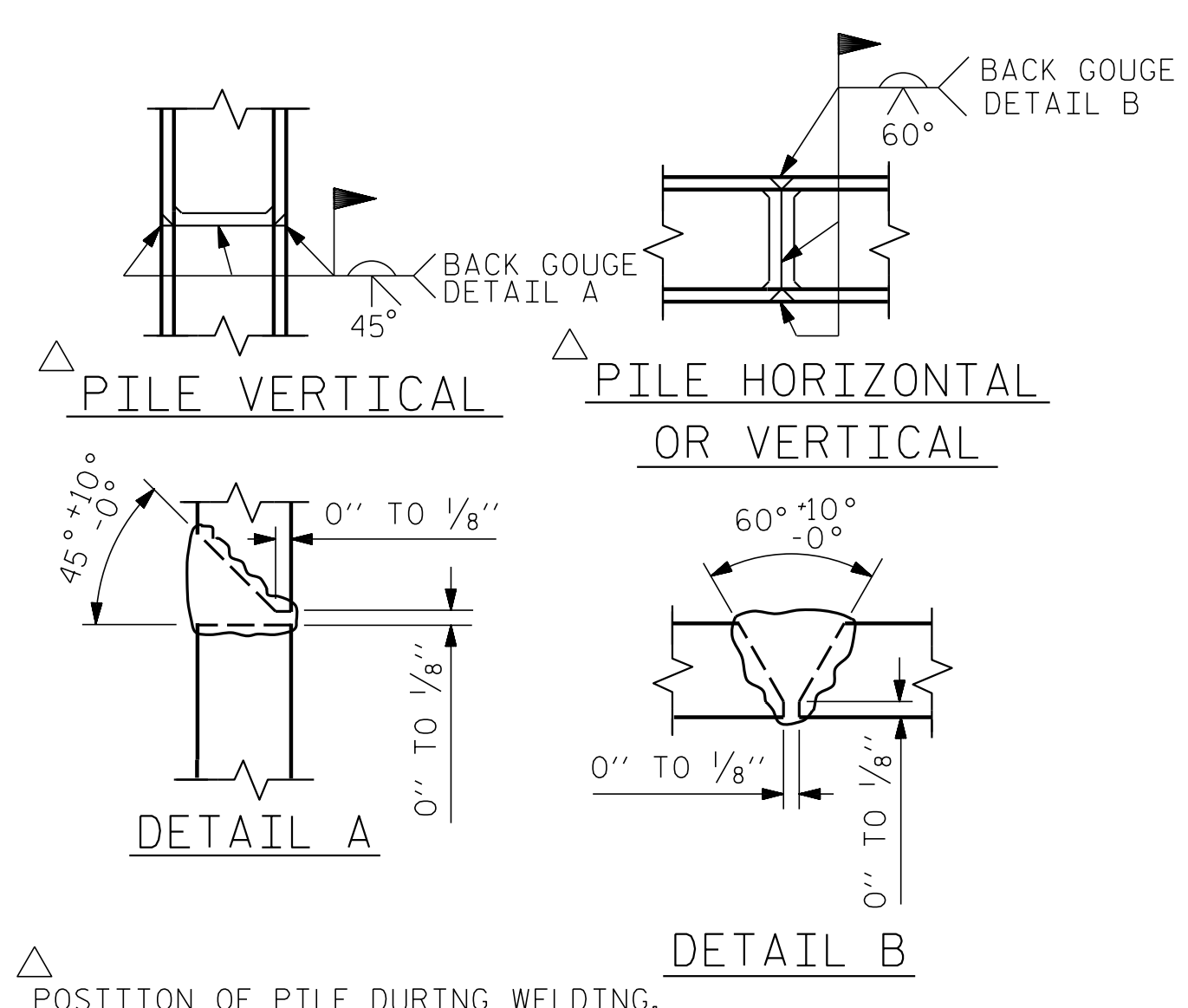
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DRAWN BY: J. PENDERGRAFT/DAH DATE: 4-22
 CHECKED BY: G. GILLAND DATE: 6-22

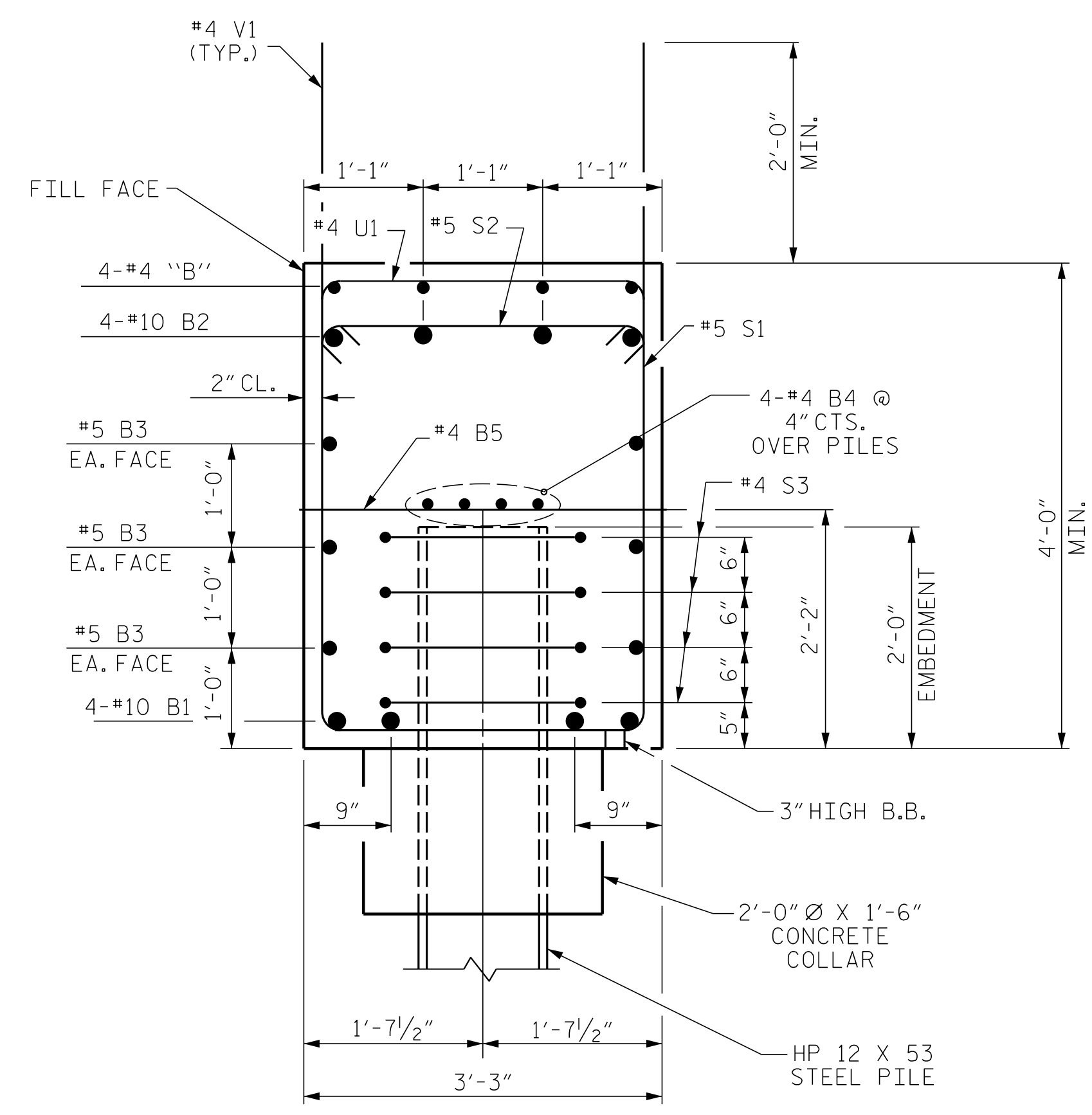
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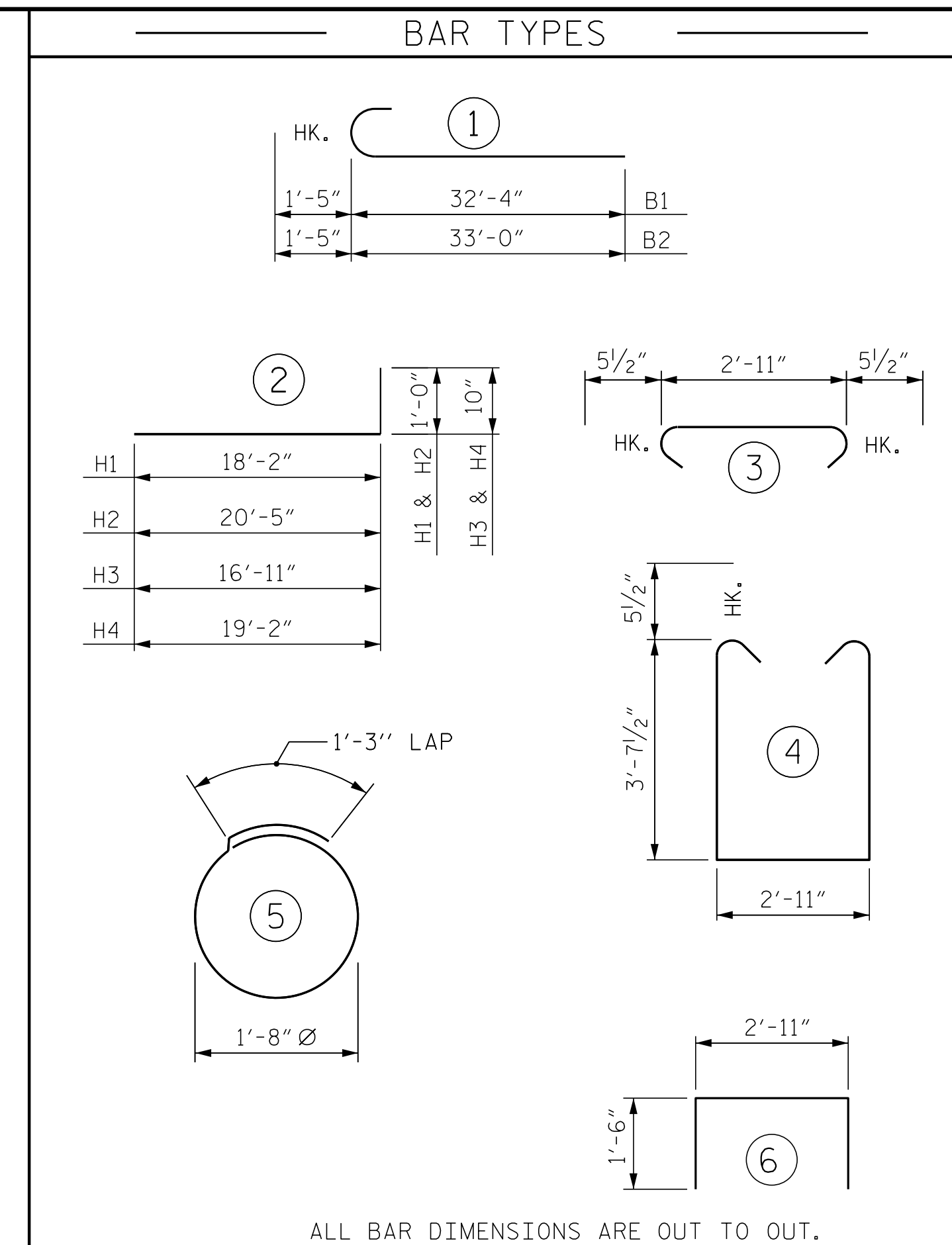
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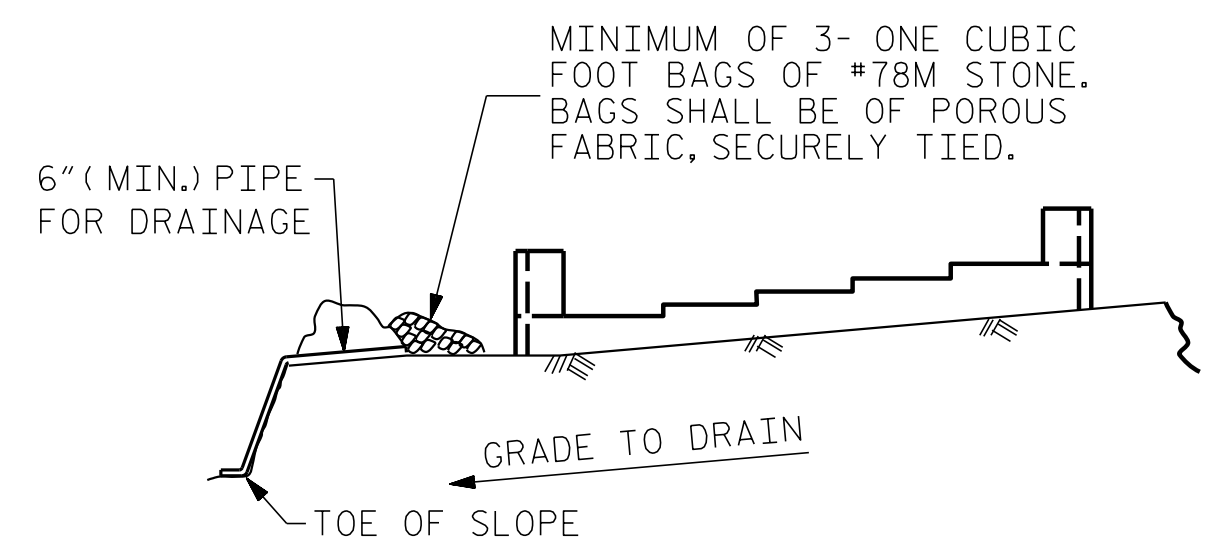
PILE SPLICE DETAILS



SECTION A-A



BILL OF MATERIAL					
END BENT No. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10	1	33'-9"	1,162
B2	8	#10	1	34'-5"	1,185
B3	12	#5	STR	31'-6"	394
B4	8	#4	STR	31'-3"	167
B5	15	#4	STR	2'-11"	29
B6	20	#4	STR	7'-6"	100
B7	4	#4	STR	12'-11"	35
H1	22	#6	2	19'-2"	633
H2	18	#6	2	21'-5"	579
H3	22	#5	2	17'-9"	407
H4	16	#5	2	20'-0"	334
K1	24	#4	STR	4'-4"	69
S1	103	#5	4	11'-1"	1,191
S2	103	#5	3	3'-10"	412
S3	40	#4	5	6'-6"	174
U1	34	#4	6	5'-11"	134
V1	62	#4	STR	5'-9"	238
V2	48	#4	STR	9'-7"	307
V3	46	#4	STR	8'-11"	274
REINFORCING STEEL					7,824 LBS.
CLASS A CONCRETE BREAKDOWN					
POUR #1 CAP, CONC. COLLARS & LOWER PART OF WINGS					40.0 C.Y.
POUR #2 UPPER PART OF WINGS					12.0 C.Y.
TOTAL CLASS A CONCRETE					52.0 C.Y.



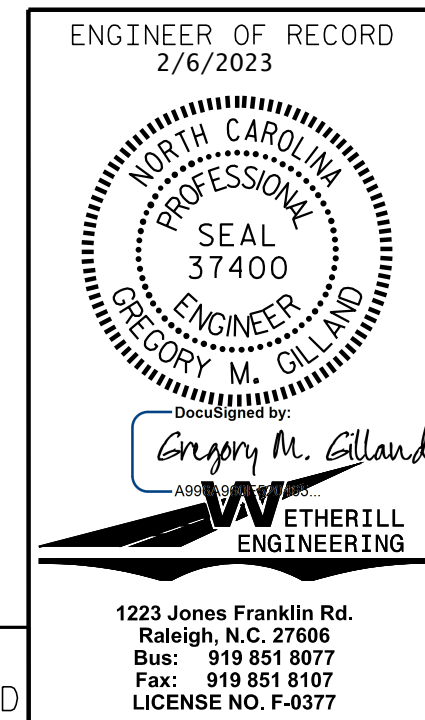
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.
 BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.
 NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

NOTES

THE BLOCKOUT (SHADED AREA) OF THE WING IS DUE TO INTERFERENCE BETWEEN GIRDER C6 TOP & BOTTOM FLANGE AND WING. THE CONCRETE IN THE BLOCKOUT OF THE WING SHALL BE POURED AFTER THE GIRDERS ARE PLACED AND DURING POUR 3B OF THE SUPERSTRUCTURE.
 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-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 3 OF 3

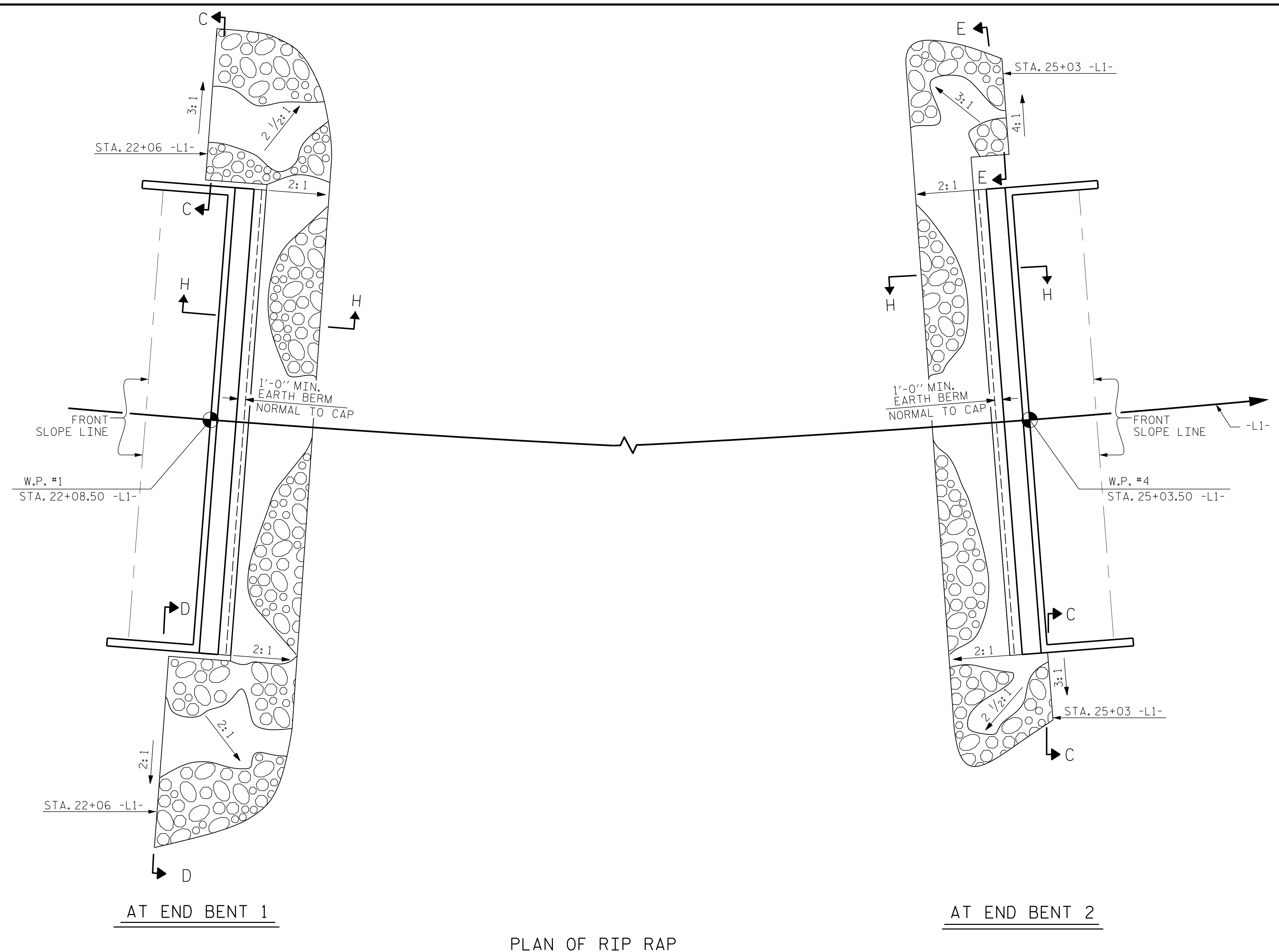


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT No. 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
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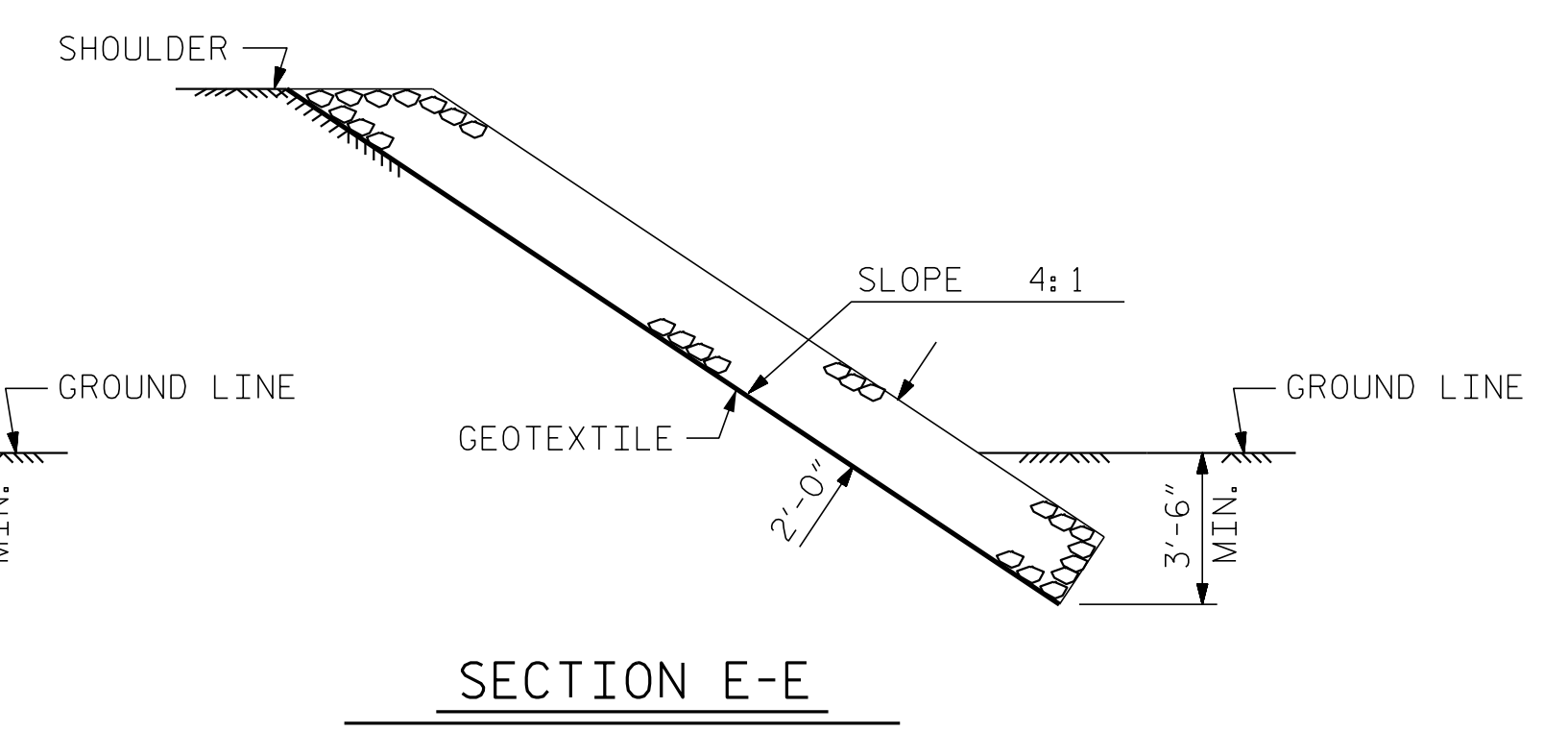
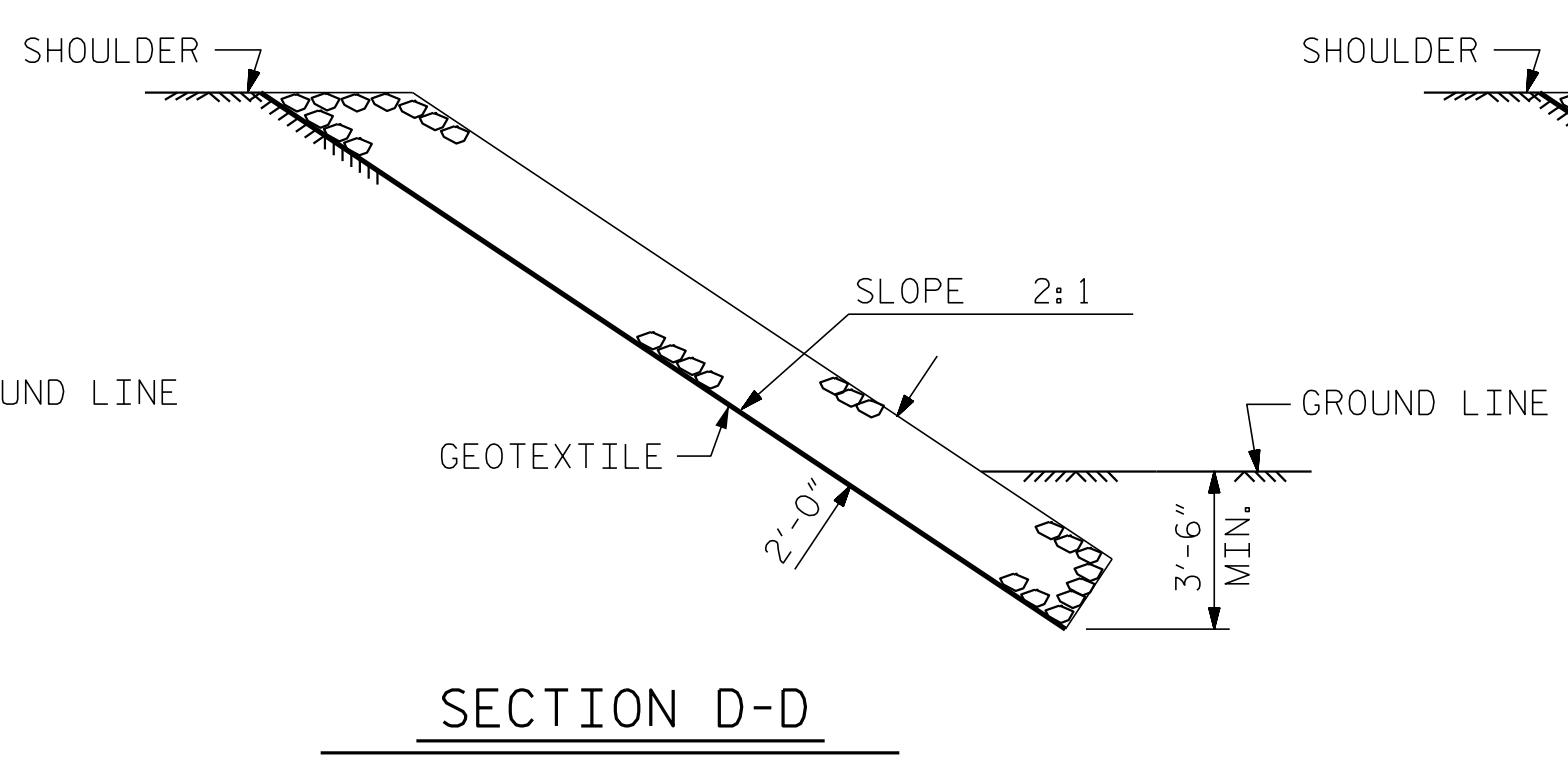
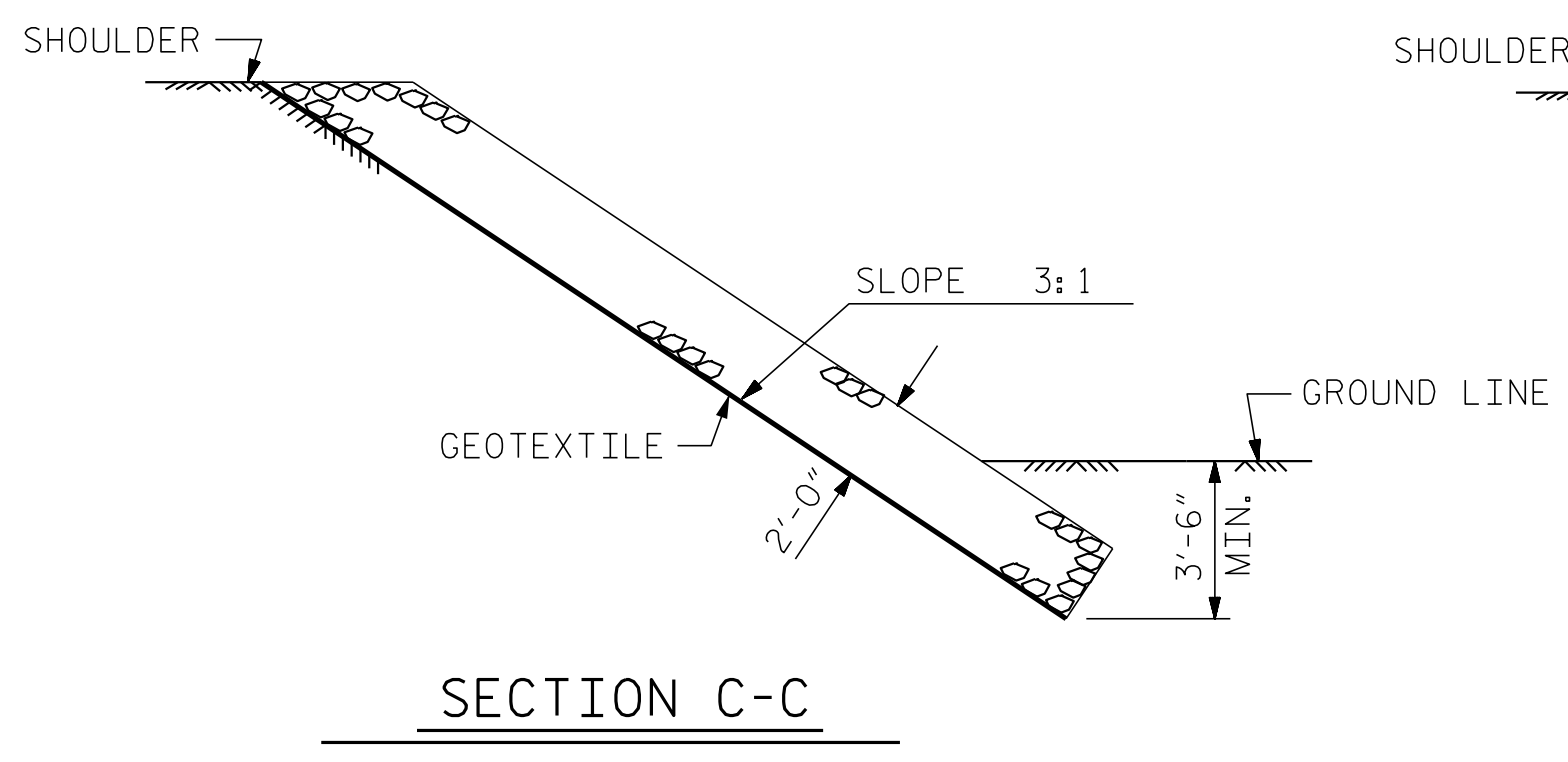
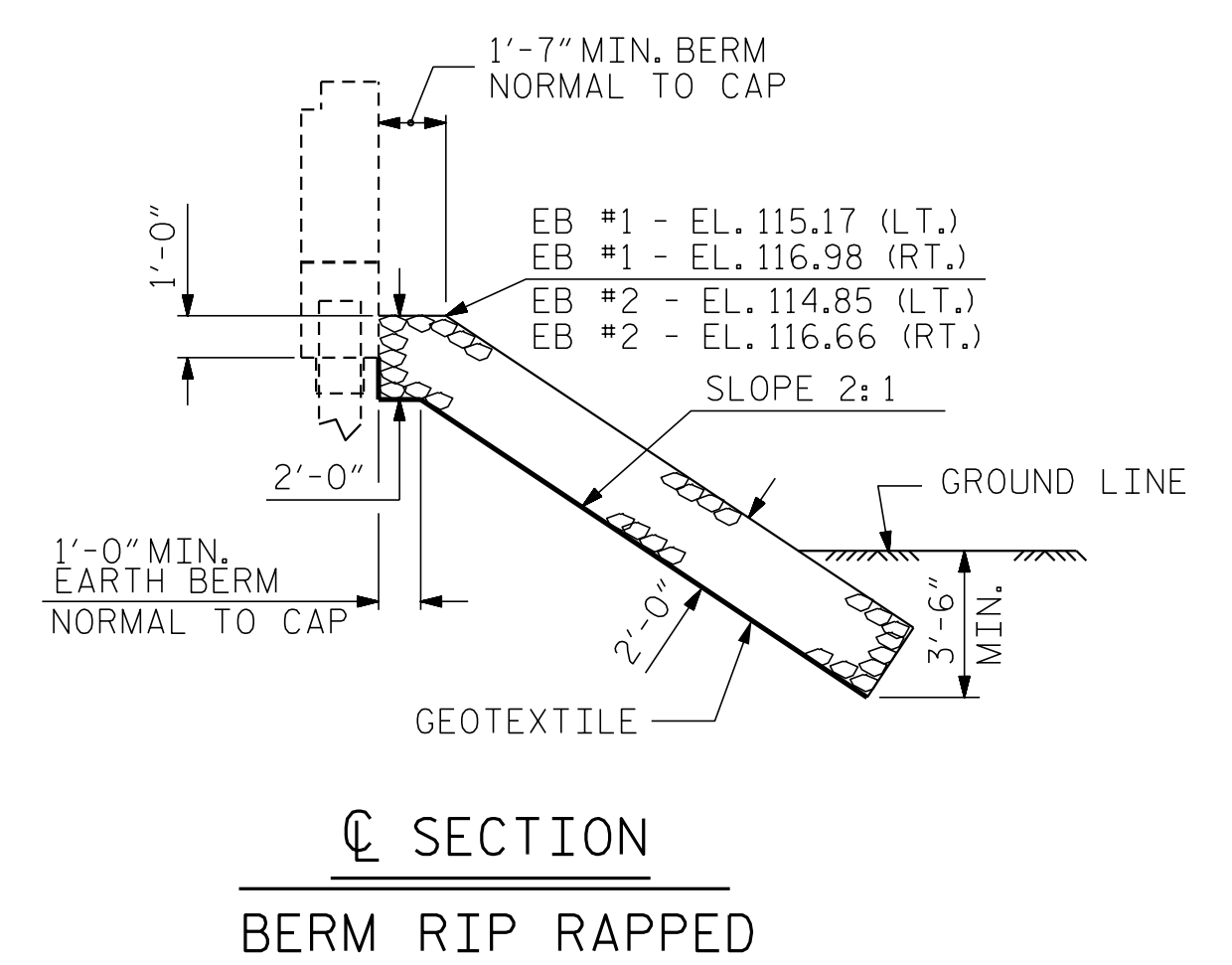
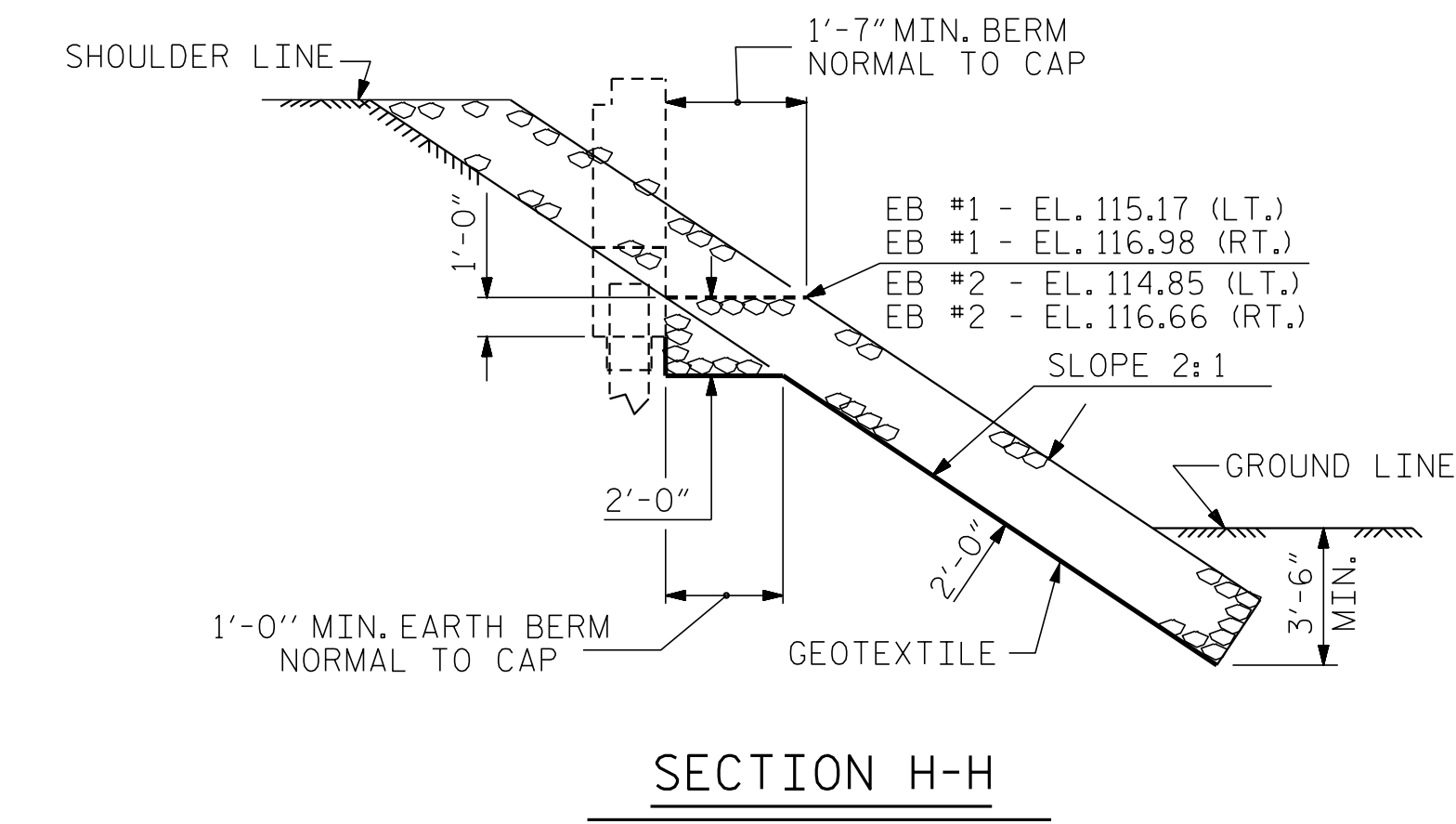
SHEET NO. S-45
TOTAL SHEETS 49

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 CHECKED BY : G. GILLAND DATE : 6-22

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ESTIMATED QUANTITIES		
BRIDGE @ STA. 23+56.00 -L1-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	131	146
END BENT 2	115	128



PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-

ENGINEER OF RECORD
 2/6/2023

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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

RIP RAP DETAILS

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

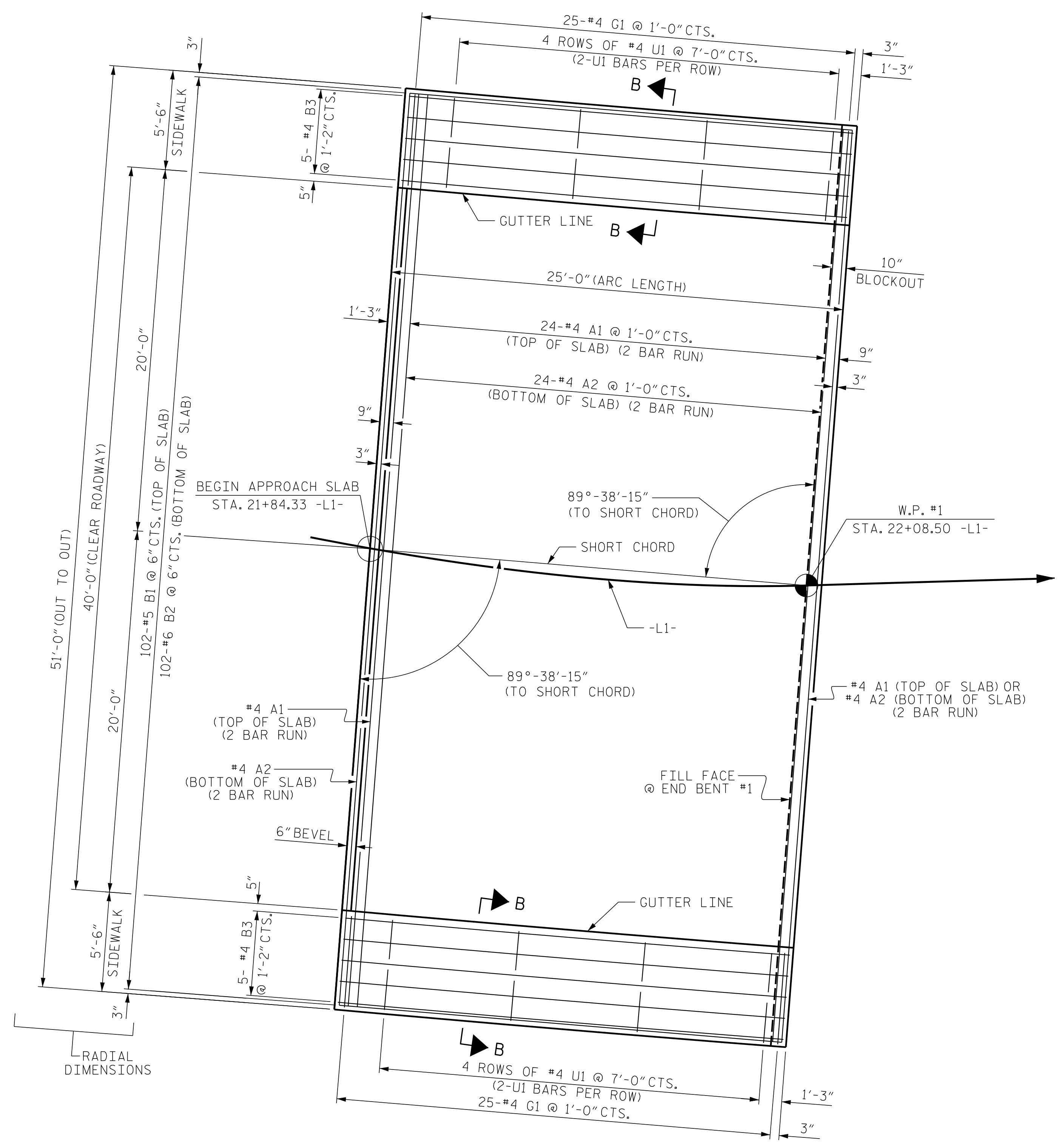
SHEET NO. S-46
 TOTAL SHEETS 49

DRAWN BY: J. PENDERGRAFT DATE: 5-22
 CHECKED BY: G. GILLAND DATE: 7-22

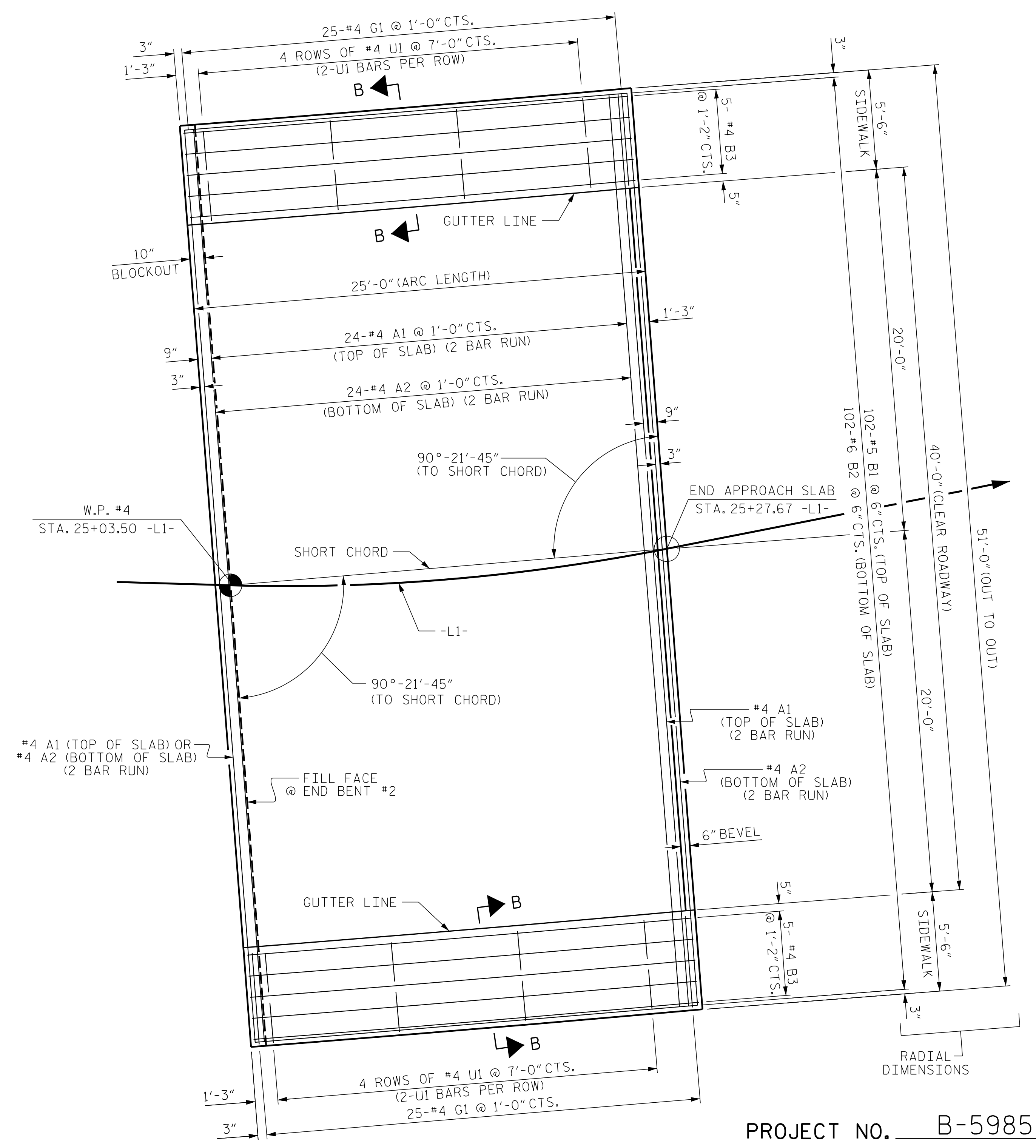
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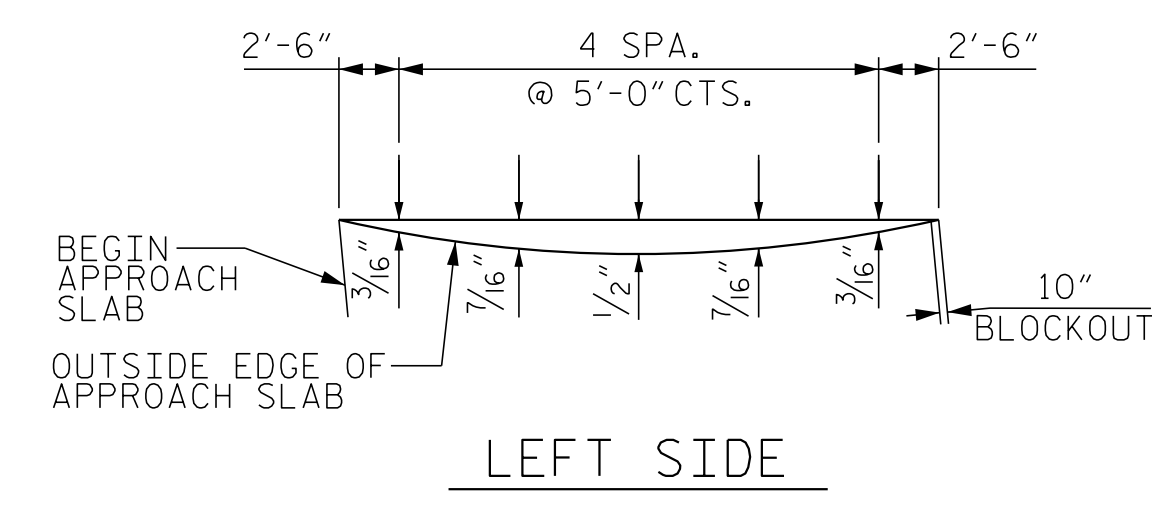
@ END BENT 1



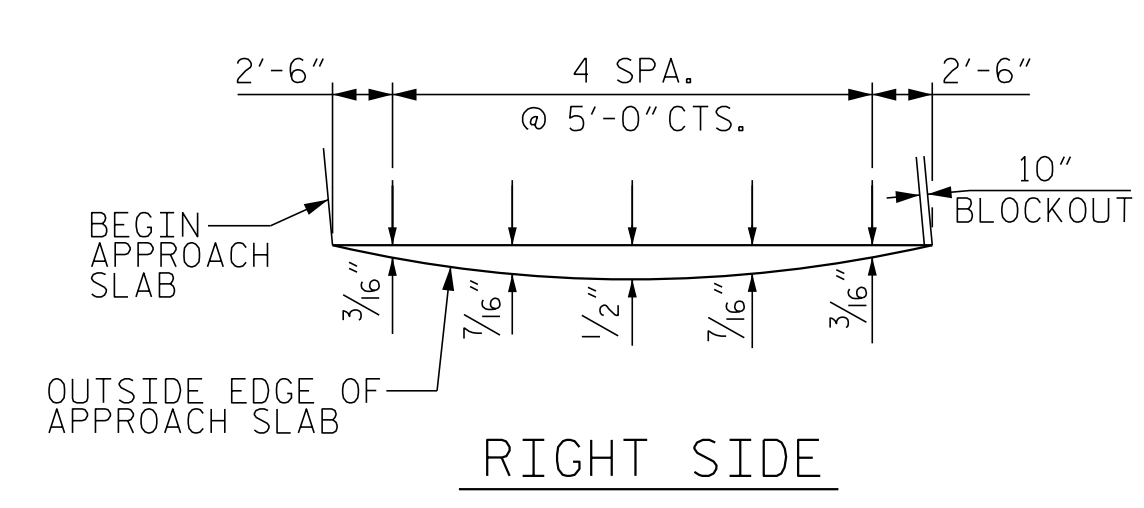
@ END BENT 2

PLAN OF APPROACH SLABS

PROJECT NO. B-5985A
ROBESON COUNTY
STATION: 23+56.00 -L1-
SHEET 1 OF 3



LEFT SIDE



RIGHT SIDE

ARC OFFSETS

(END BENT 1 SHOWN, END BENT 2 SIMILAR)

DRAWN BY: J. PENDERGRAFT DATE: 10-21
CHECKED BY: G. GILLAND DATE: 6-22

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ENGINEER OF RECORD
2/6/2023

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH
SLAB AND ARC OFFSETS

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

SHEET NO. S-47
TOTAL SHEETS 49

NOTES

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

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, AND SELECT MATERIAL, SEE ROADWAY PLANS.

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

SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 6" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

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

THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWS 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.

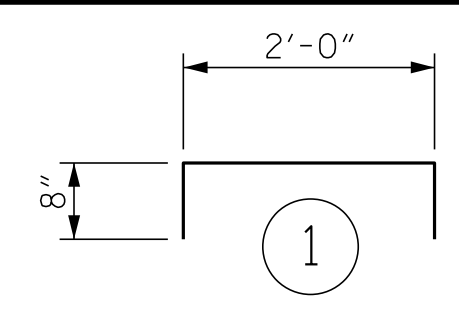
AT THE CONTRACTORS OPTION, "TYPE A - ALTERNATE APPROACH FILL" IN LIEU OF "TYPE I - STANDARD APPROACH FILL" MAY BE CONSTRUCTED AT NO ADDITIONAL COST TO THE DEPARTMENT. SEE SHEET 3 OF 3 FOR DETAILS AND NOTES.

BILL OF MATERIAL FOR SIDEWALK (4 REQUIRED)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B3	5	#4	STR	24'-8"	82
* G1	25	#4	STR	5'-0"	84
* U1	8	#4	1	3'-4"	18
* EPOXY COATED REINFORCING STEEL				184 LBS.	
CLASS AA CONCRETE				2.8 C.Y.	

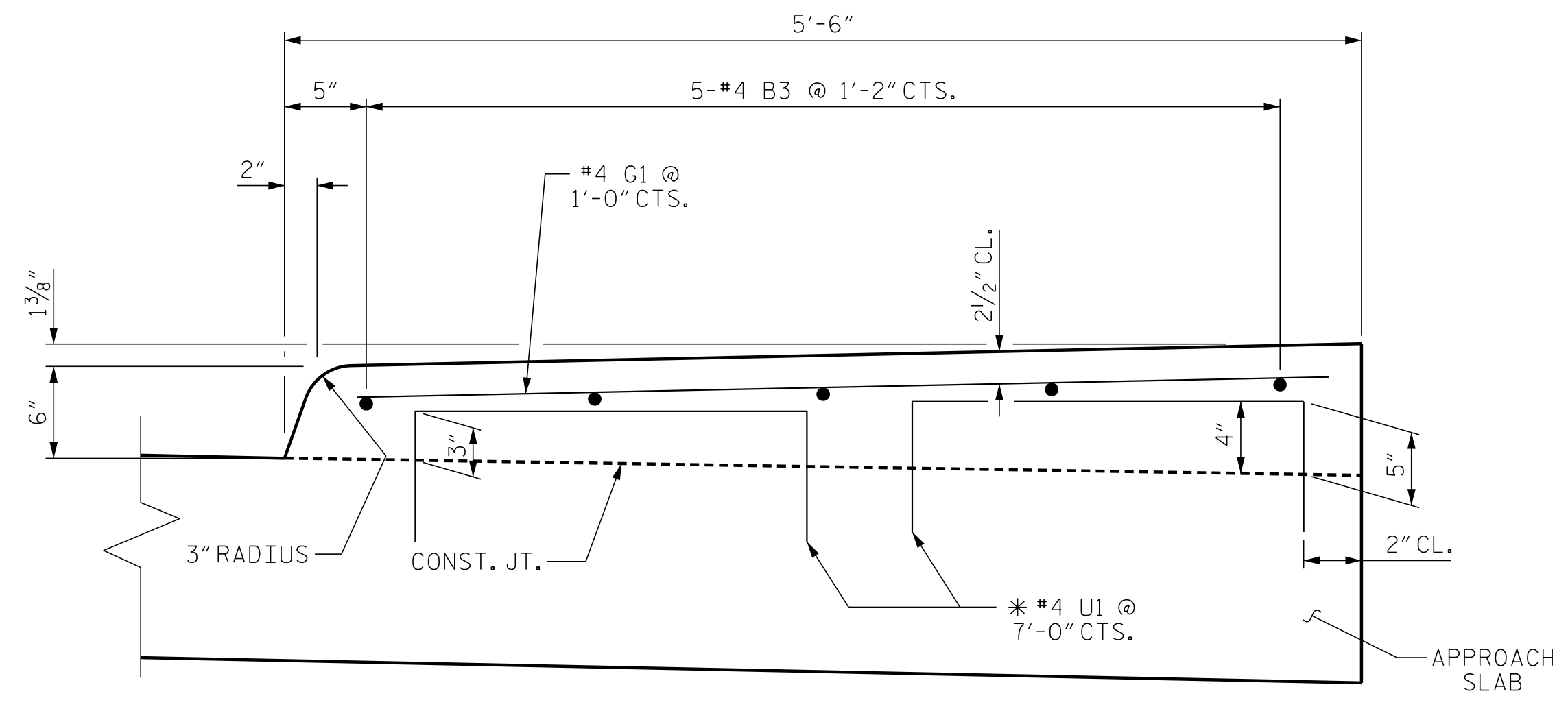
BILL OF MATERIAL FOR ONE APPROACH SLAB (2 REQ'D)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	52	#4	STR	26'-4"	915
A2	52	#4	STR	26'-3"	912
* B1	102	#5	STR	24'-2"	2,571
B2	102	#6	STR	24'-8"	3,779
REINFORCING STEEL				LBS.	4,691
* EPOXY COATED REINFORCING STEEL				LBS.	3,486
CLASS AA CONCRETE				54.9 C.Y.	

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

BAR TYPES



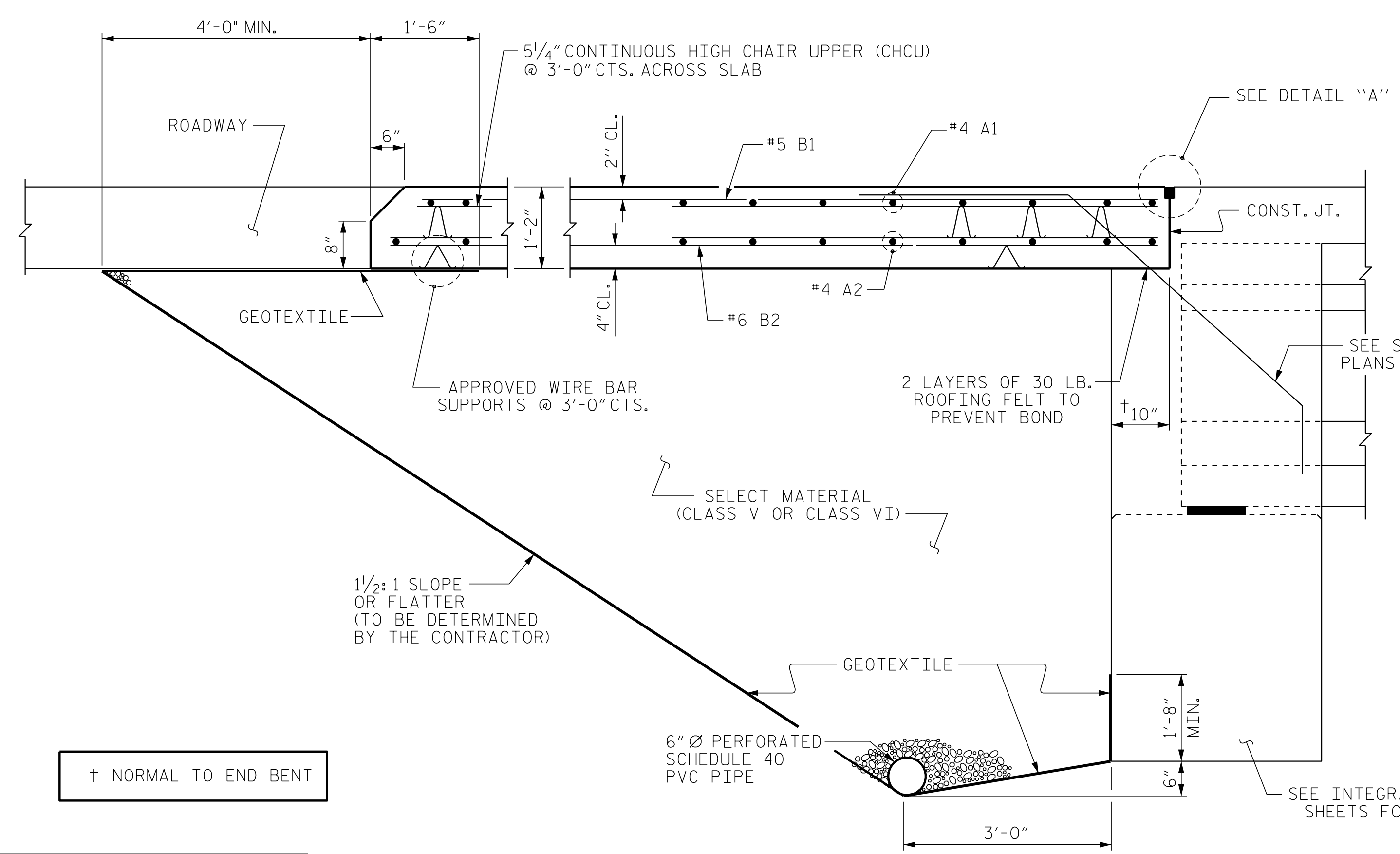
ALL BAR DIMENSIONS ARE OUT TO OUT



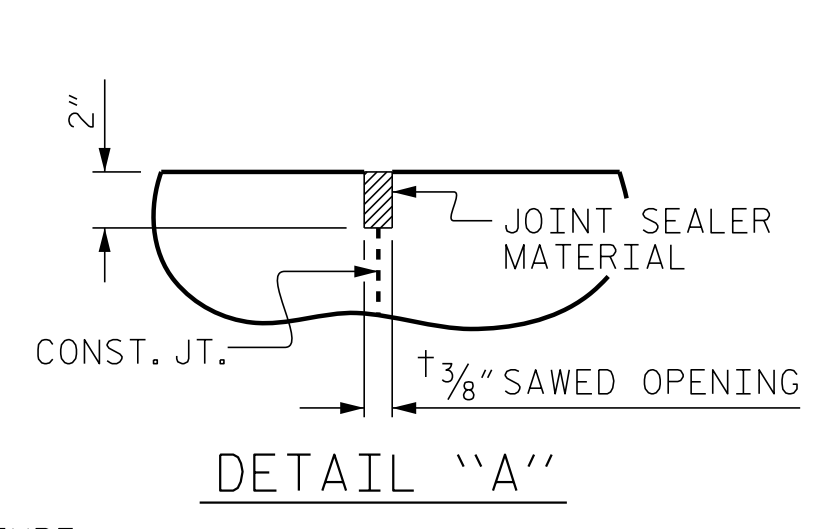
SECTION B-B

SECTION THRU SIDEWALK

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



SECTION THRU SLAB (TYPE I - STANDARD APPROACH FILL)



DETAIL "A"

PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 2 OF 3

ENGINEER OF RECORD
 2/6/2023

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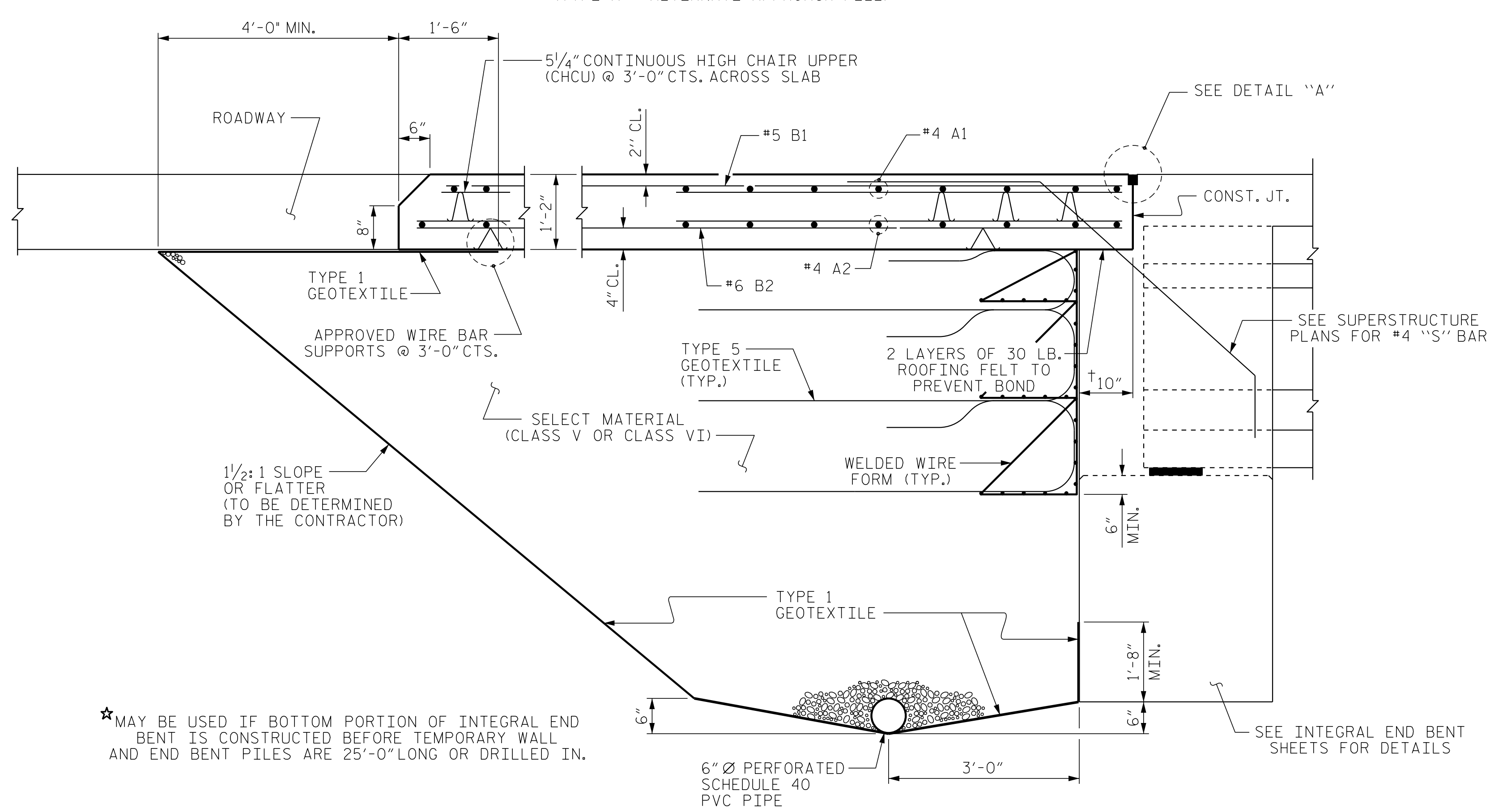
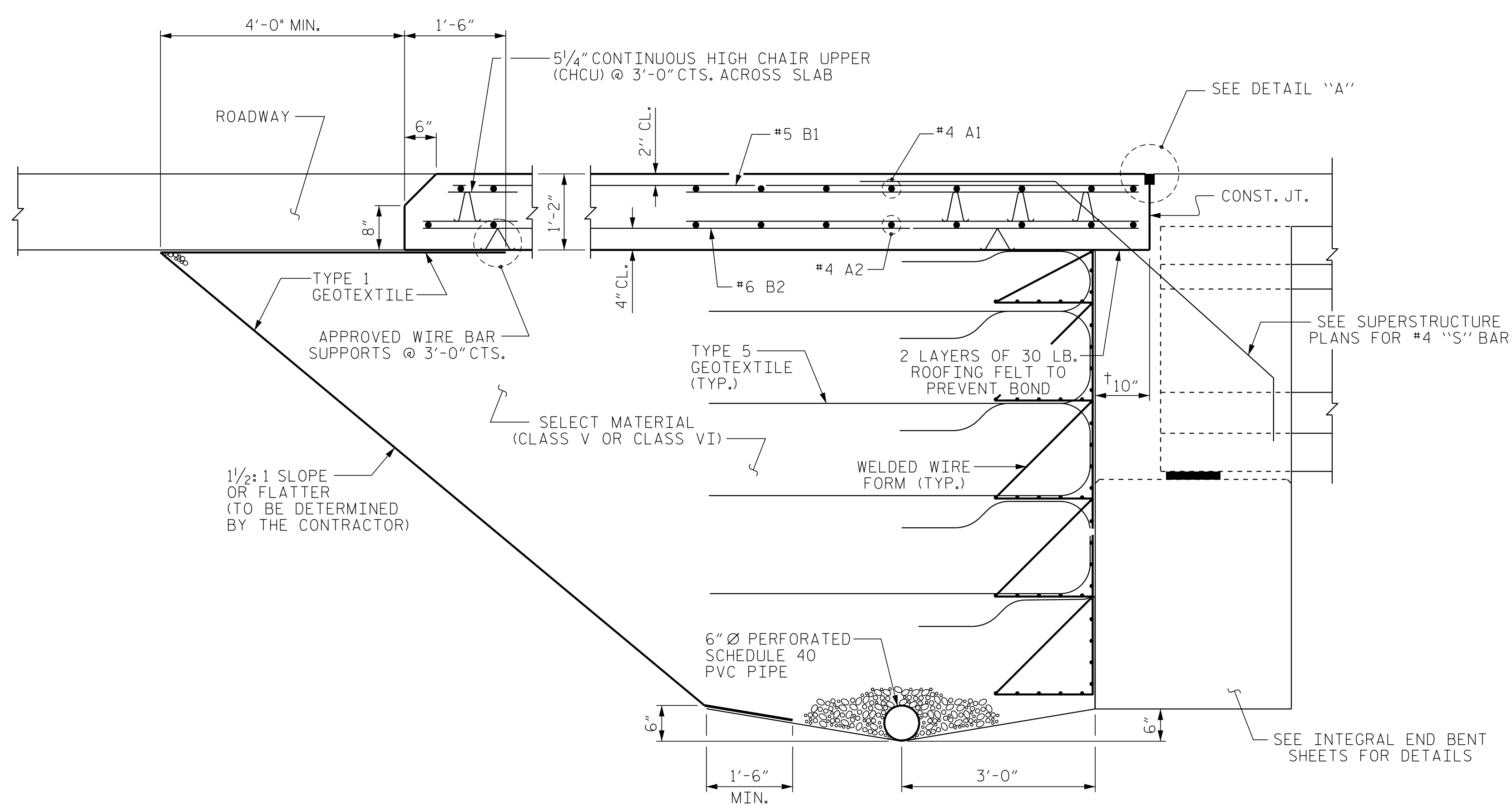
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR INTEGRAL ABUTMENT
 WITH FLEXIBLE PAVEMENT

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			49

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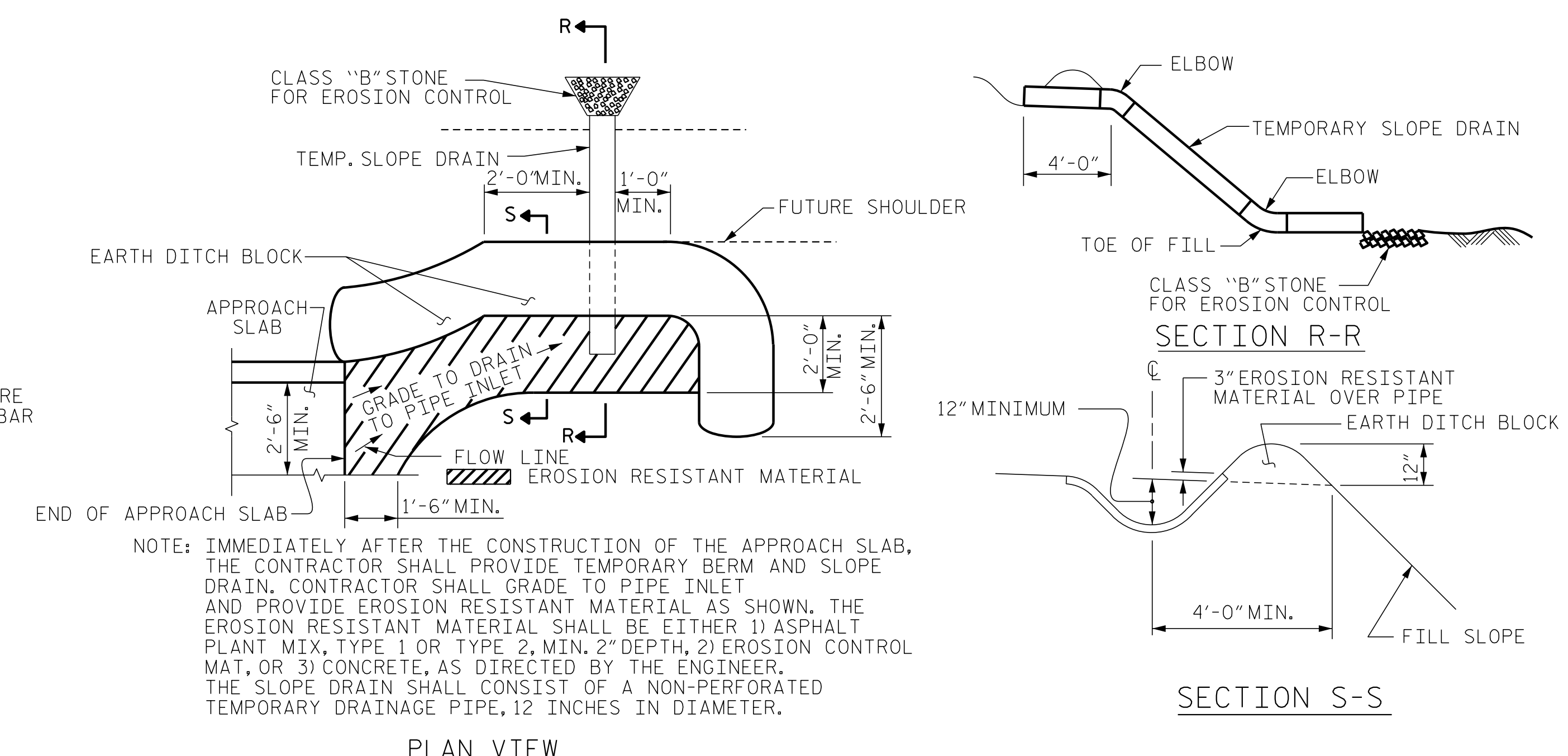
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ASSEMBLED BY : J. PENDERGRAFT	DATE : 6-22
CHECKED BY : G. GILLAND	DATE : 6-22
DRAWN BY : TLA 10/05	REV. 6/13 MAA/GM
CHECKED BY : GM 5/06	REV. 12/17 MAA/THC
	REV. 06/19 BNB/THC

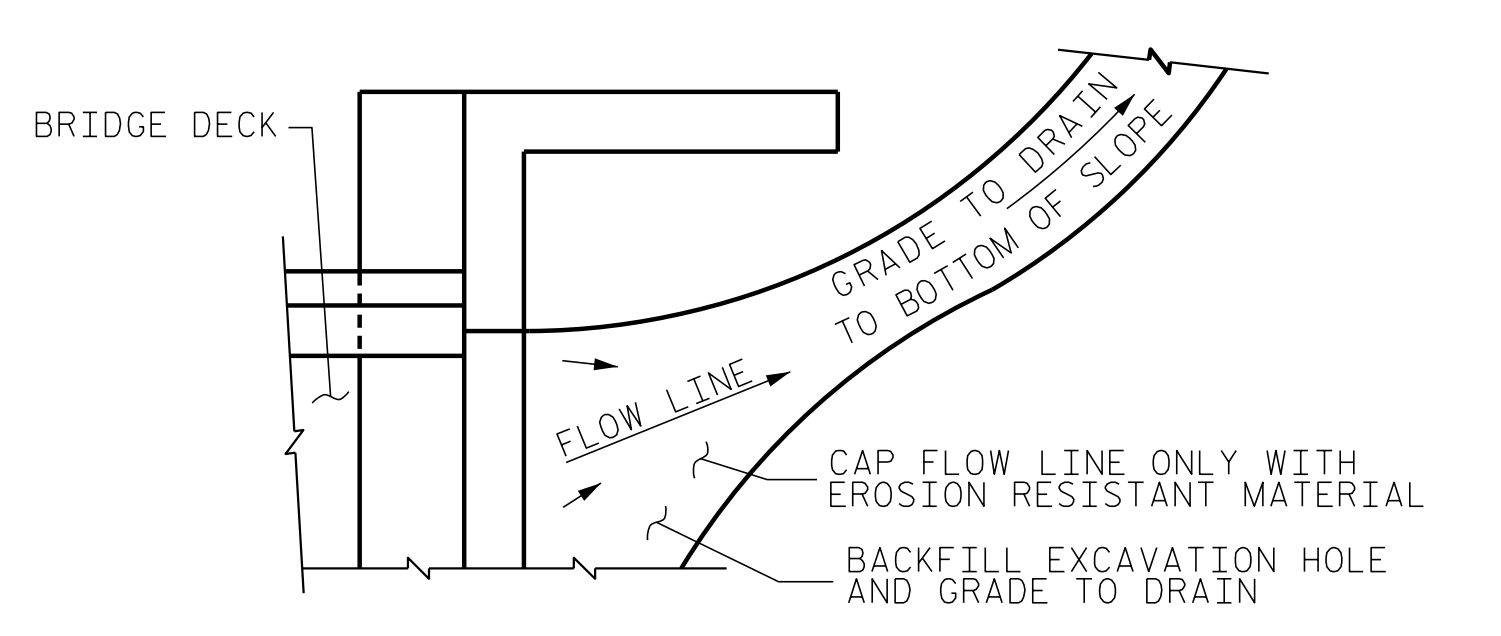


ASSEMBLED BY : J. PENDERGRAFT	DATE : 6-22
CHECKED BY : G. GILLAND	DATE : 6-22
DRAWN BY : TLA 10/05	REV. 12/21/11 MAA/GM
CHECKED BY : GM 5/06	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

SECTION THRU SLAB
(TYPE A - ALTERNATE APPROACH FILL)



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



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

NOTES

- APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
- FOR TEMPORARY GEOTEXTILE WALL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, WELDED WIRE FORM, AND SELECT MATERIAL, SEE ROADWAY PLANS.
- GEOTEXTILE (TYPE 1 OR TYPE 5) SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.
- SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.
- SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.
- FOR THE 6" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.
- AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.
- THE 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.

PROJECT NO. B-5985A
ROBESON COUNTY
 STATION: 23+56.00 -L1-
 SHEET 3 OF 3

ENGINEER OF RECORD
2/6/2023

Gregory M. Gilland
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD BRIDGE APPROACH SLAB DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
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SHEET NO. S-49					TOTAL SHEETS 49

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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.
	--	27,000 LBS. PER SQ. IN.
	--	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 2018 "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 $\frac{3}{4}$ " WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO $1\frac{1}{2}$ " RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A $\frac{1}{4}$ " 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 $\frac{1}{4}$ " 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 $\frac{7}{8}$ " \emptyset SHEAR STUDS FOR THE $\frac{3}{4}$ " \emptyset STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - $\frac{7}{8}$ " \emptyset STUDS FOR 4 - $\frac{3}{4}$ " \emptyset STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF $\frac{7}{8}$ " \emptyset STUDS ALONG THE BEAM AS SHOWN FOR $\frac{3}{4}$ " \emptyset STUDS BASED ON THE RATIO OF 3 - $\frac{7}{8}$ " \emptyset STUDS FOR 4 - $\frac{3}{4}$ " \emptyset 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 $\frac{3}{16}$ " 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 $\frac{1}{16}$ " 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. FINS 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.

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