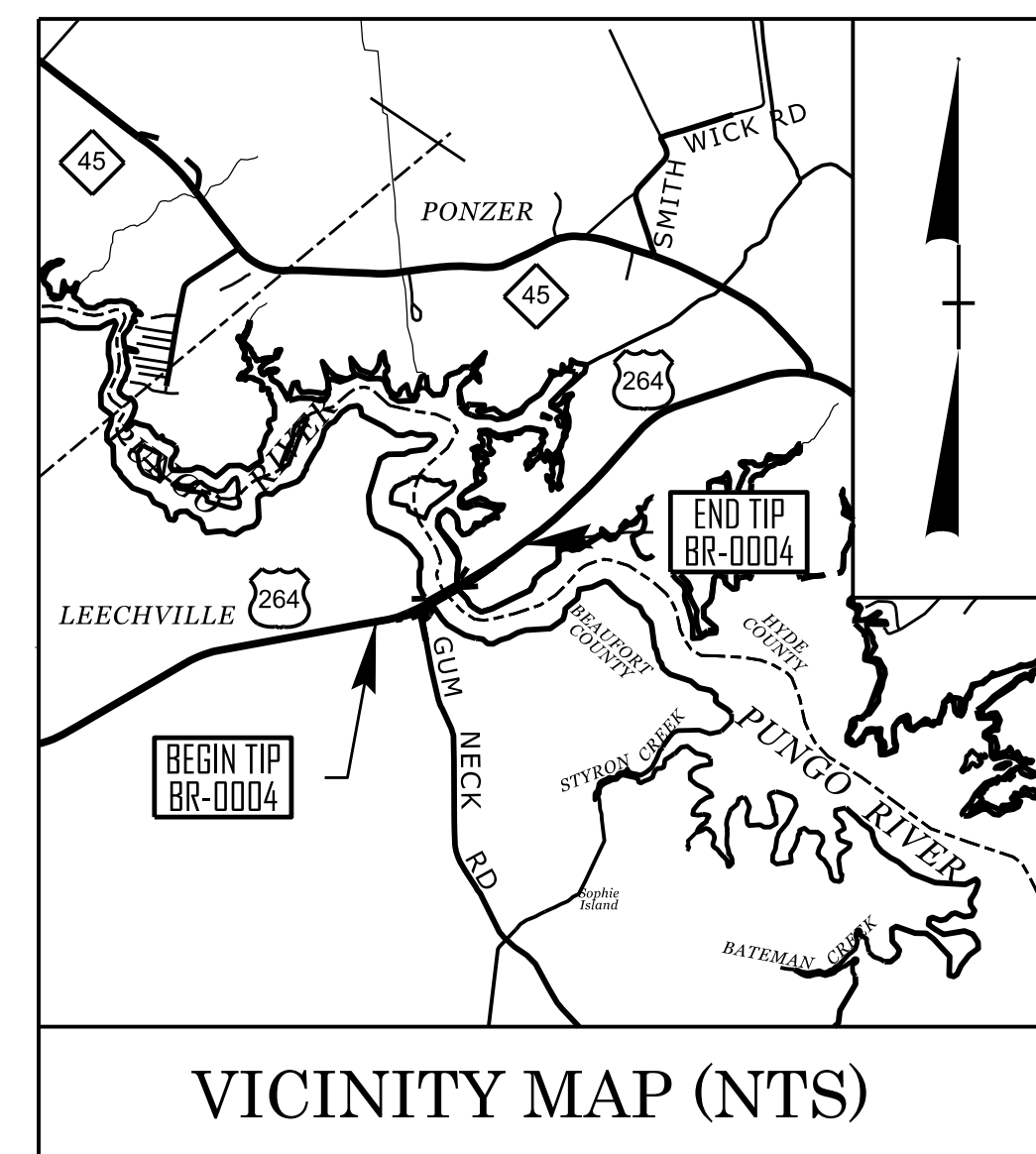


TIP PROJECT: BR-0004

CONTRACT: C205106



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

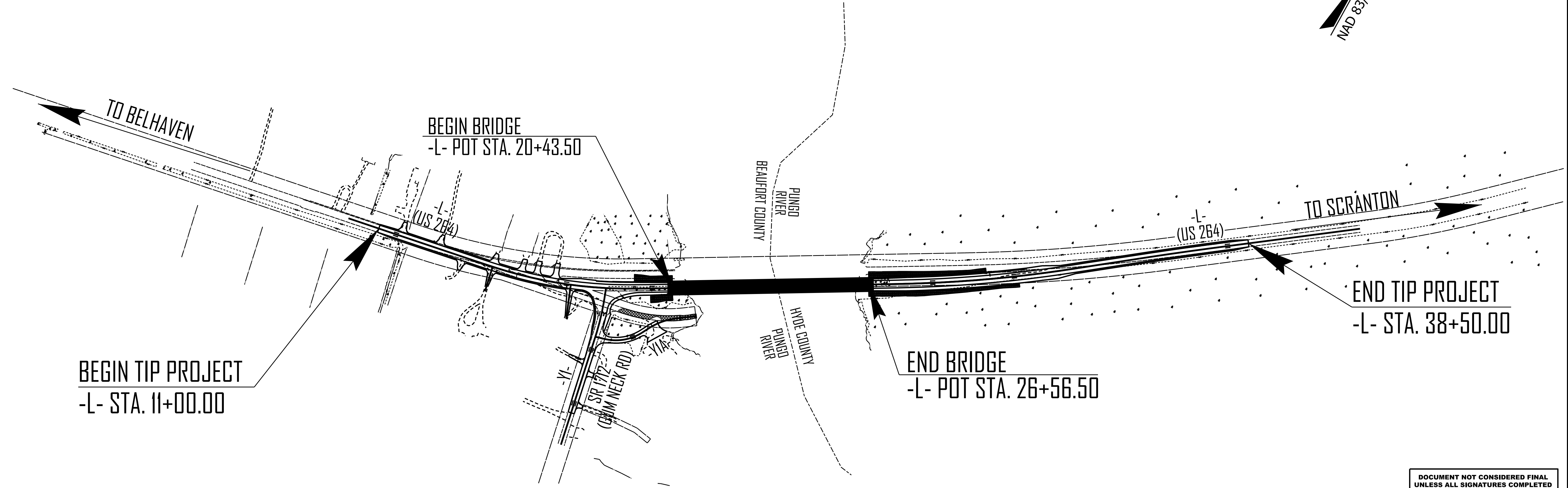
BEAUFORT & HYDE COUNTY

LOCATION: *BRIDGE NO. 060066 ON US. 264 OVER PUNGO RIVER*

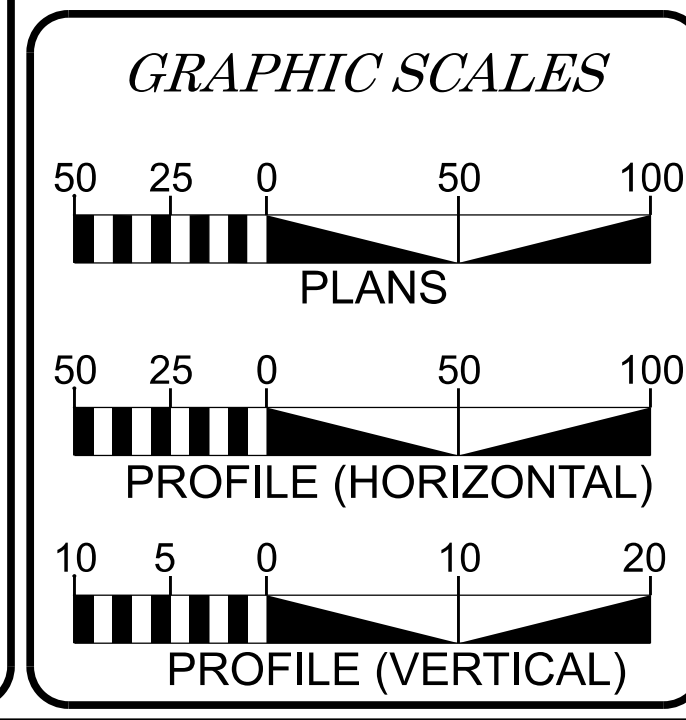
STRUCTURE PLANS

TYPE OF WORK: *GRADING, PAVING, DRAINAGE, AND STRUCTURES*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0004		
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
67004.1.1	N/A	P.E.	
67004.2.1	N/A	ROW	
67004.2.2	N/A	UTIL.	
67004.3.1	N/A	CONST.	



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2025 =	2,763
ADT 2045 =	3,800
K =	9 %
D =	55 %
T =	17 % *
V =	60 MPH
(* TTST 3% + DUAL 14%)	
FUNC CLASS = RURAL ARTERIAL	
REGIONAL TIER	

PROJECT LENGTH

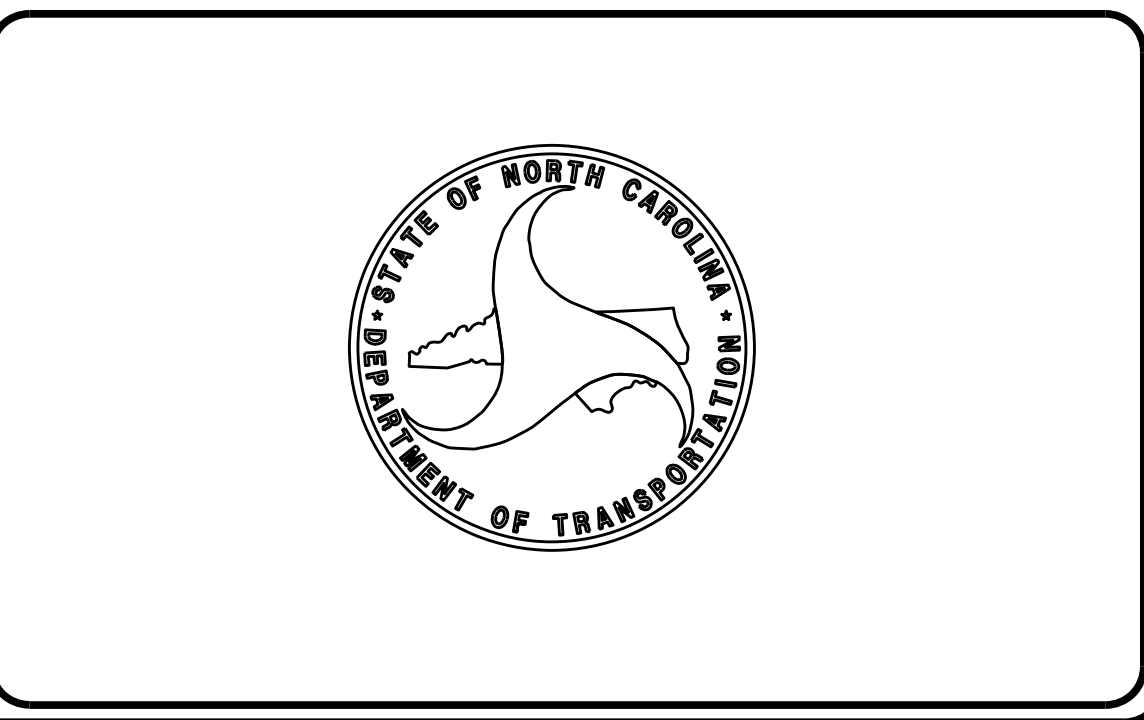
LENGTH ROADWAY TIP PROJECT BR-0004 =	0.405 MILES
LENGTH STRUCTURE TIP PROJECT BR-0004 =	0.116 MILES
TOTAL LENGTH TIP PROJECT BR-0004 =	0.521 MILES

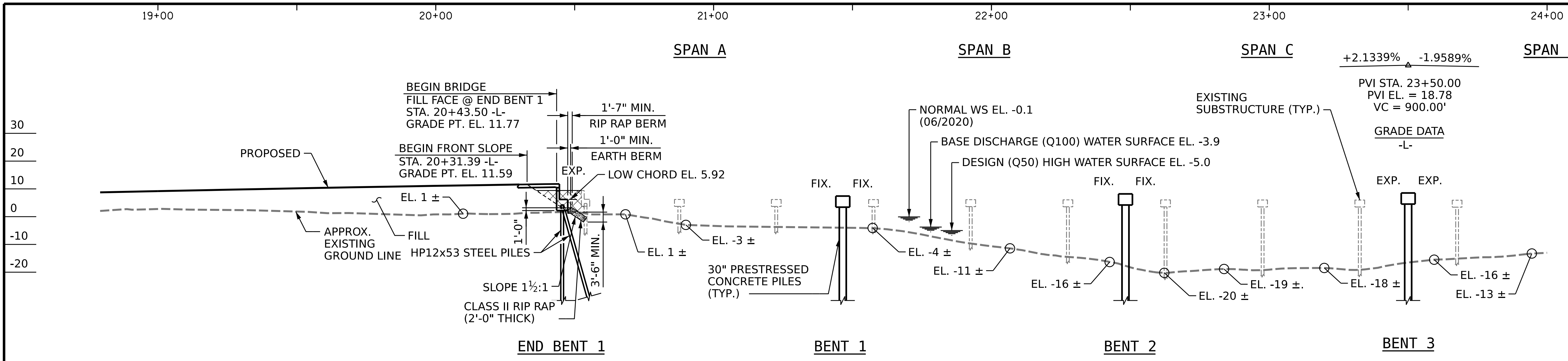
NCDOT CONTACT: CATHERINE A. HOSSACK-MEYER, PE
PROJECT MANAGER

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

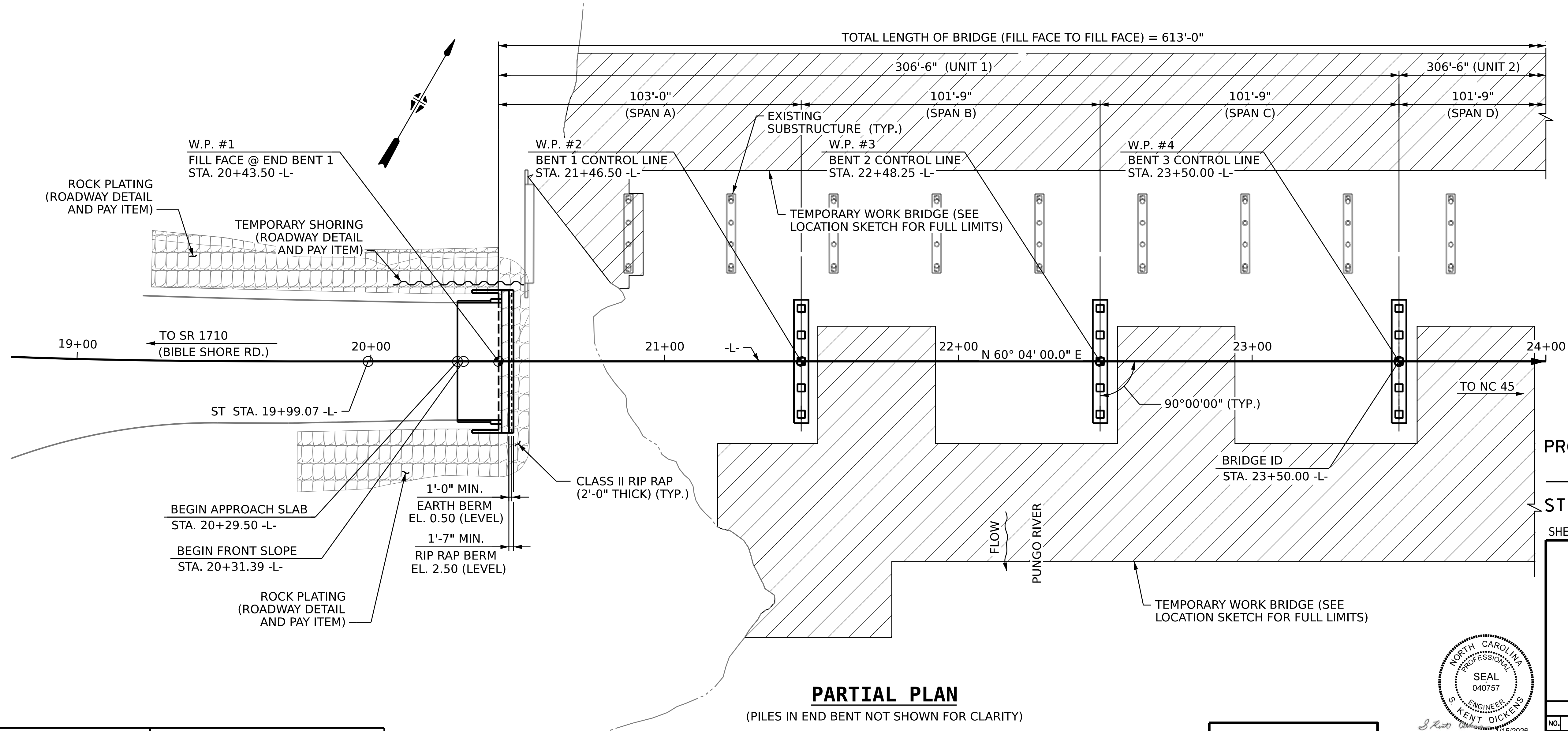
2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: DECEMBER 19, 2024	DOMENICA A. COLETTI, PE <small>PROJECT ENGINEER</small>
LETTING DATE: MAY 19, 2026	S. KENT DICKENS, PE <small>PROJECT DESIGN ENGINEER</small>





PARTIAL SECTION ALONG -L-
 (SECTIONS AT END BENT AND BENTS TAKEN AT RIGHT ANGLES TO END BENT AND BENTS)
 UNCLASSIFIED STRUCTURE EXCAVATION



PARTIAL PLAN
 (PILES IN END BENT NOT SHOWN FOR CLARITY)

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. **BR-0004**
BEAUFORT COUNTY
 STATION: **23+50.00 -L-**
 SHEET 1 OF 8 REPLACES BRIDGE NO. 060066

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON US 264 (-L-) OVER
 PUNGO RIVER BETWEEN
 SR 1710 (BIBLE SHORE RD.) AND
 NC 45

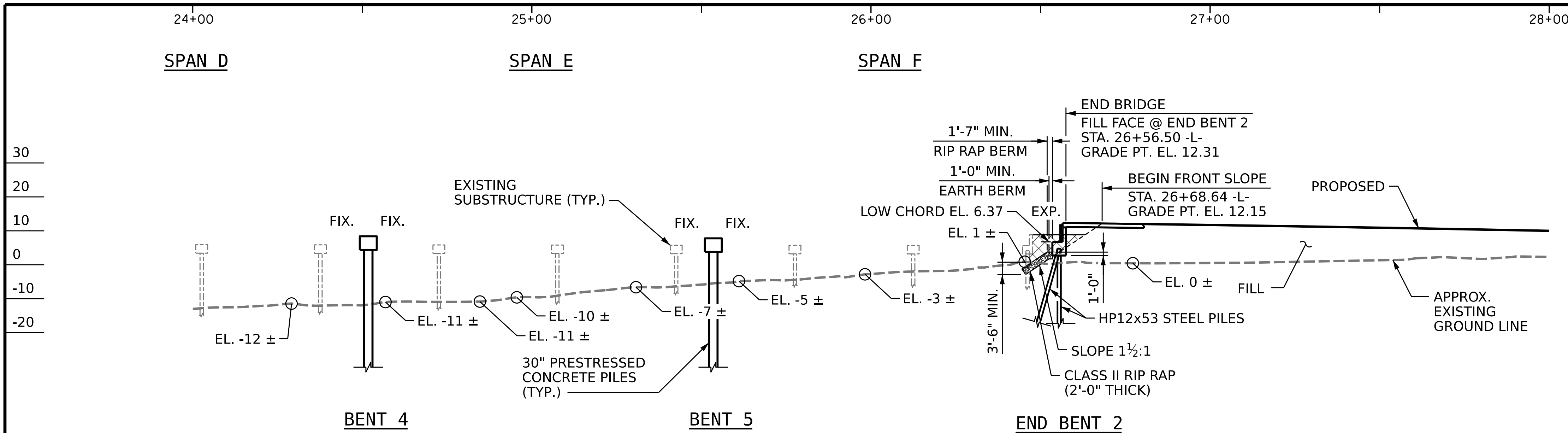


DES BY: <u>K. DICKENS</u>	DATE: <u>04/24</u>	DWG BY: <u>D. CARTER</u>	DATE: <u>04/24</u>
DES CHK: <u>D. COLETTI</u>	DATE: <u>04/24</u>	CHK BY: <u>K. DICKENS</u>	DATE: <u>12/24</u>

HR HDR Engineering, Inc. of the Carolinas
 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
 N.C.B.E.L.S. License Number: F-0116

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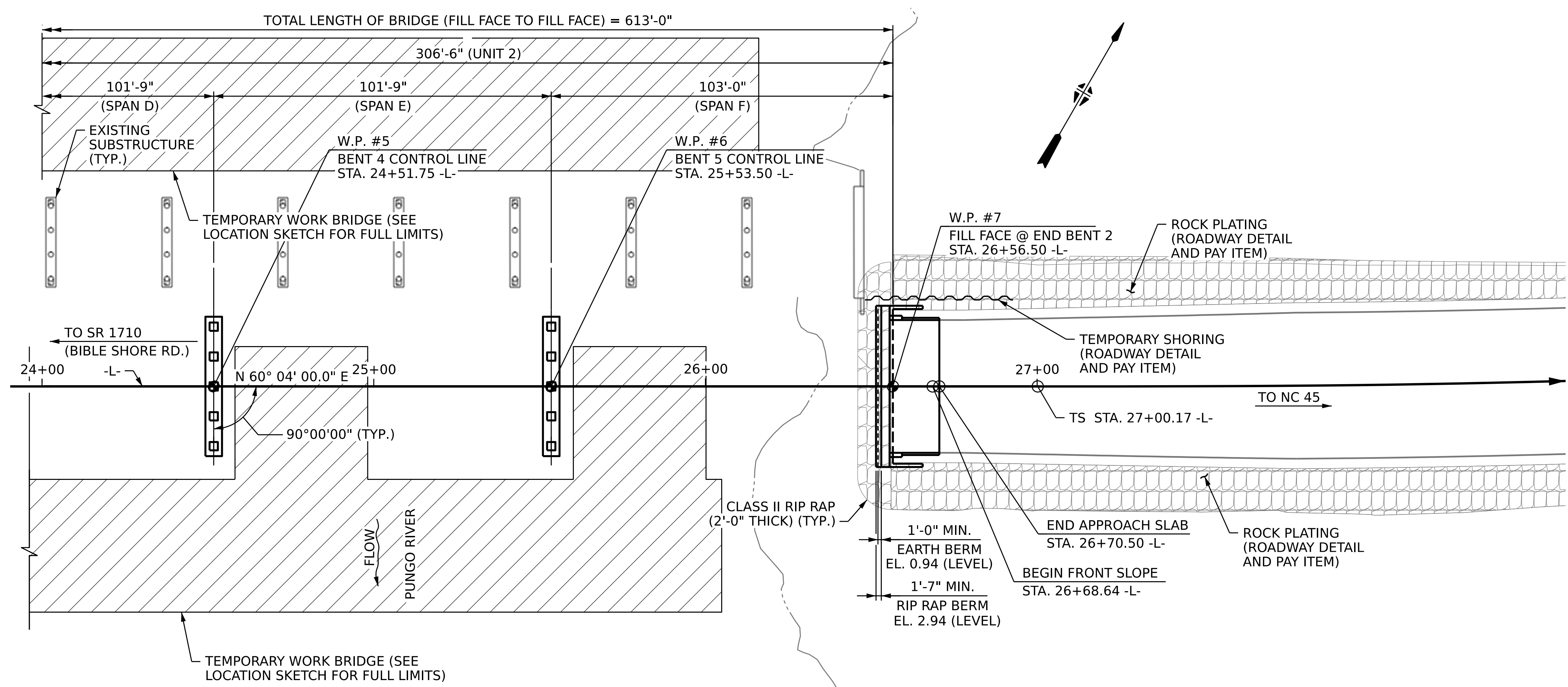
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-01
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	44



PARTIAL SECTION ALONG -L-

(SECTIONS AT END BENT AND BENTS TAKEN AT RIGHT ANGLES TO END BENT AND BENTS)

UNCLASSIFIED STRUCTURE EXCAVATION



PARTIAL PLAN

(PILES IN END BENT NOT SHOWN FOR CLARITY)

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. **BR-0004**
BEAUFORT COUNTY
 STATION: **23+50.00 -L-**
 SHEET 2 OF 8 REPLACES BRIDGE NO. 060066

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON US-264 (-L-) OVER
 PUNGO RIVER BETWEEN
 SR 1710 (BIBLE SHORE RD.) AND
 NC 45

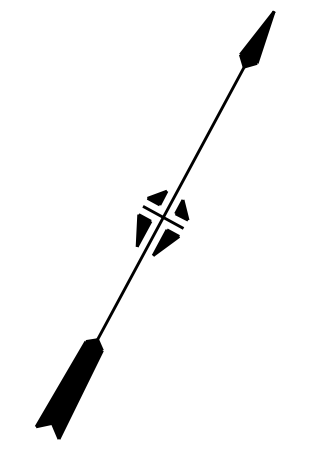
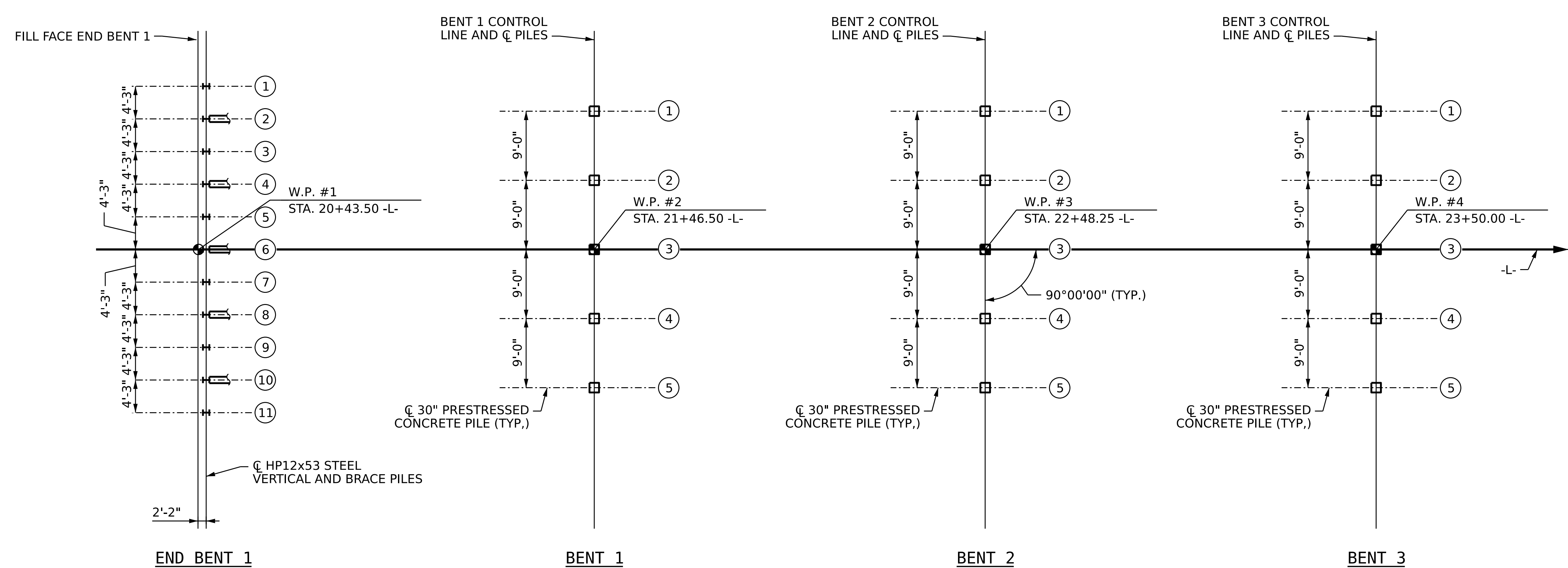


DES BY: K. DICKENS DATE: 04/24 DWG BY: D. CARTER DATE: 04/24
 DES CHK: D. COLETTI DATE: 04/24 CHK BY: K. DICKENS DATE: 12/24

HDR HDR Engineering, Inc. of the Carolinas
 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
 N.C.B.E.L.S. License Number: F-0116

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 UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-02
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	44



FOUNDATION LAYOUT

NOTES

FOR PILES, SEE SECTION 450 OF THE NCDOT STANDARD SPECIFICATIONS.

SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS FOR THE SETTLEMENT GAUGES REQUIRED AT END BENT NO. 2.

OBSERVE A 2 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FT OF FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT NO.2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 186,000 TO 213,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT NO. 1 TO 5. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 27,000 TO 56,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO. 1 AND 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

- #### LEGEND
- HP12x53 VERTICAL STEEL PILES
 - HP12x53 BATTERED STEEL PILES (BATTERED AT 3H:12V AT END BENTS)
 - 30" SQUARE PRESTRESSED CONCRETE VERTICAL PILES
 - # PILE NUMBER

PROJECT NO. **BR-0004**
BEAUFORT COUNTY
 STATION: **23+50.00 -L-**
 SHEET 3 OF 8



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING FOUNDATION LAYOUT

DES BY: F. CORDOVA	DATE: 12/24	DWG BY: B. PETERSON	DATE: 12/24
DES CHK: K. DICKENS	DATE: 12/24	CHK BY: K. DICKENS	DATE: 12/24

HDR HDR Engineering, Inc. of the Carolinas
 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
 N.C.B.E.L.S. License Number: F-0116

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-03
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	44

SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Number of Piles per Line	Factored Resistance per Pile KIPS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles **			Drilled-In Piles		
						Minimum Pile Tip (Tip No Higher Than) Elevation FT	Required Driving Resistance (RDR)* per pile KIPS	Pile Redrives Quantity EACH	Predrilling Length per Pile LIN FT	Predrilling Elevation (Elevation Not To Pre-drill Below) FT	Maximum Predrilling Diameter INCHES	Pile Excavation (Bottom of Hole) Elevation FT	Pile Excavation Not In Soil per Pile LIN FT	Pile Excavation In Soil per Pile LIN FT
End Bent 1, Piles 1-11	11	185	3.50	100			250	6						
Bent 1, Piles 1-5	5	630	5.00	105	-26.00	-95.00	940	3						
Bent 2, Piles 1-5	5	630	5.80	105	-37.00	-95.00	955	3						
Bent 3, Piles 1-5	5	630	6.13	105	-37.00	-95.00	955	3						
Bent 4, Piles 1-5	5	630	5.98	100	-37.00	-90.00	955	3						
Bent 5, Piles 1-5	5	630	5.36	100	-27.50	-90.00	940	3						
End Bent 2, Piles 1-11	11	185	3.94	95			250	6						
TOTAL QUANTITY:								27						

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

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

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile KIPS	Factored Drag Load per Pile KIPS	Factored Dead Load * per Pile KIPS	Dynamic Resistance Factor	Nominal Drag Resistance per Pile KIPS	Nominal Scour Resistance per Pile KIPS
End Bent 1, Piles 1-11	185			0.75		
Bent 1, Piles 1-5	630		33	0.75		56
Bent 2, Piles 1-5	630		46	0.75		53
Bent 3, Piles 1-5	630		46	0.75		53
Bent 4, Piles 1-5	630		46	0.75		53
Bent 5, Piles 1-5	630		33	0.75		56
End Bent 2, Piles 1-11	185			0.75		

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

SUMMARY OF DPT/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Dynamic Pile Testing (DPT)		
End Bent / Bent No (e.g., "Bent 1 - Bent 3")	DPT Test Pile Length FT	DPT Testing Quantity EACH
End Bent 1	105	1
Bent 1 & Bent 5	105	1
Bent 2 to Bent 4	105	1
End Bent 2	100	1
TOTAL QUANTITY:		4

Pile Order Lengths for Concrete Piles	
End Bent / Bent No (e.g., "Bent 1 - Bent 3")	Pile Order Length Basis* EST or DPT
End Bent 1	DPT
Bent 1 & Bent 5	DPT
Bent 2 - Bent 4	DPT
End Bent 2	DPT

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

NOTES:

- The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Saket Kabra, #053059) on 01-10-2025.
- Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
- The Engineer may adjust the quantity for DPT Testing when necessary.

PROJECT NO. **BR-0004**

BEAUFORT COUNTY

STATION: **23+50.00 -L-**

SHEET 5 OF 8

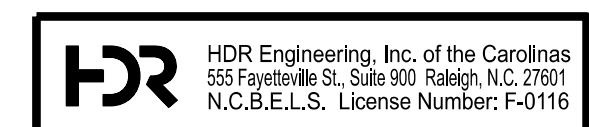
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
PILE FOUNDATION TABLES

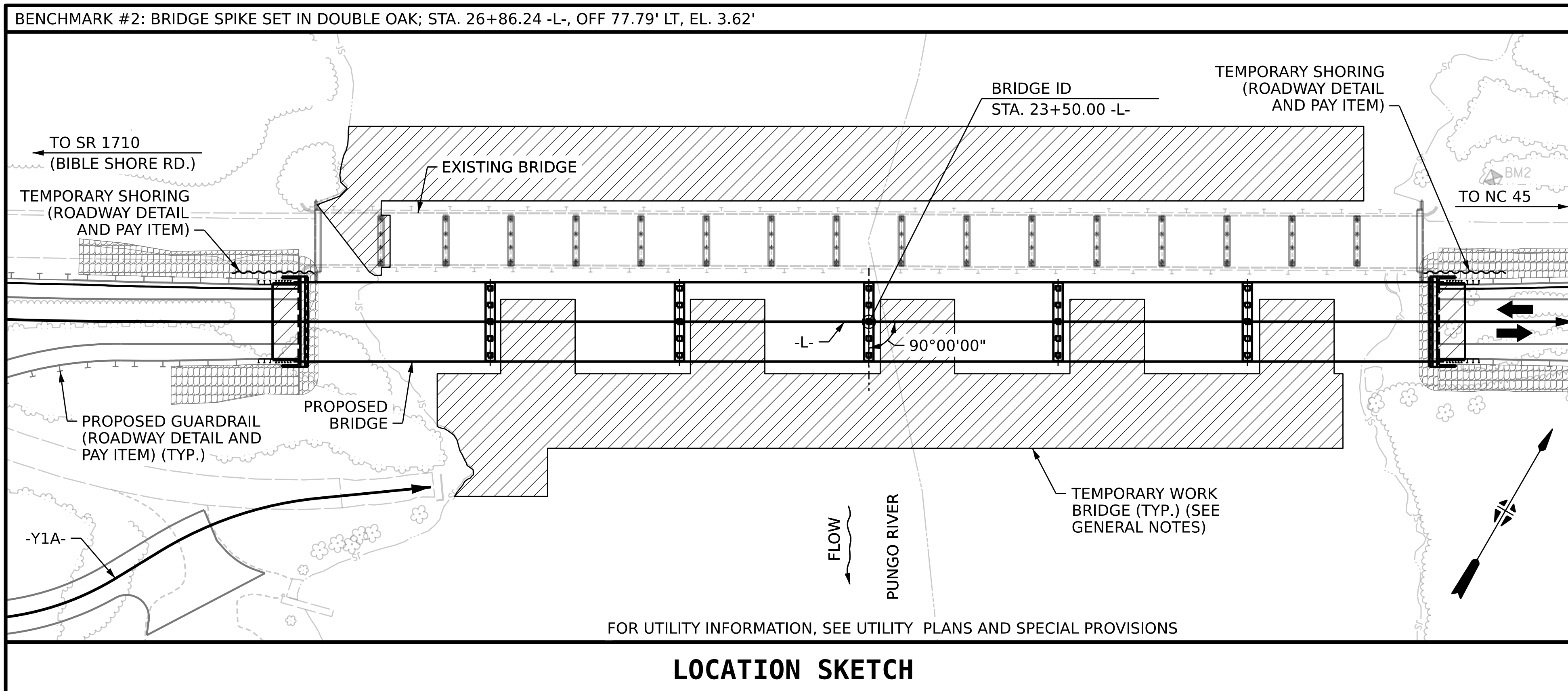
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-05
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	44



DES BY: <u>S. KABRA</u> DATE: <u>11/24</u>	DWG BY: <u>B. PETERSON</u> DATE: <u>12/24</u>
DES CHK: <u>B. KEANEY</u> DATE: <u>11/24</u>	CHK BY: <u>K. DICKENS</u> DATE: <u>12/24</u>



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



HYDRAULIC DATA

DESIGN DISCHARGE = 7,535 CFS
 FREQUENCY OF DESIGN FLOOD = 50 YR
 DESIGN HIGH WATER ELEVATION = -5.0
 DRAINAGE AREA = 145 SQ MI
 BASE DISCHARGE (Q100) = 8,979 CFS
 BASE HIGH WATER ELEVATION = -3.9

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 35,000 CFS
 FREQUENCY OF OVERTOPPING FLOOD ... = 500+ YR
 OVERTOPPING FLOOD ELEVATION = 5.2*

* OVERTOPPING LOCATION -L- STA. 31+74±
 AT ROADWAY SAG RIGHT SHOULDER.

WS EL. TAKEN @ RIVER STATION 64148

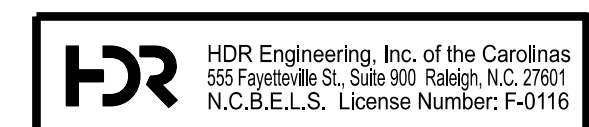
PROJECT NO. **BR-0004**
BEAUFORT COUNTY
 STATION: **23+50.00 -L-**
 SHEET 6 OF 8

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**GENERAL DRAWING
 LOCATION SKETCH**



DES BY: <u>K. DICKENS</u>	DATE : <u>04/24</u>	DWG BY: <u>D. CARTER</u>	DATE : <u>04/24</u>
DES CHK: <u>D. COLETTI</u>	DATE : <u>04/24</u>	CHK BY: <u>K. DICKENS</u>	DATE : <u>12/24</u>



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 UNLESS ALL SIGNATURES COMPLETED

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

TOTAL SHEETS	44
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TOTAL BILL OF MATERIAL											
	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP ACCESS AT STATION 23+50.00 -L-	REMOVAL OF EXISTING STRUCTURE AT STATION 23+50.00 -L-	ASBESTOS ASSESMENT	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION 23+50.00 -L-	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS AA CONCRETE (BRIDGE)	BRIDGE APPROACH SLABS, STATION 23+50.00 -L-	EPOXY COATED REINFORCING STEEL (BRIDGE)	54" PRESTRESSED CONCRETE GIRDERS	
	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.
SUPERSTRUCTURE					25,992	23,612		LUMP SUM		30	3042.5
END BENT No. 1							46.3		6,507		
BENT No. 1							41.3		4,991		
BENT No. 2							41.3		4,991		
BENT No. 3							41.3		4,991		
BENT No. 4							41.3		4,991		
BENT No. 5							41.3		4,991		
END BENT No. 2							46.9		6,657		
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	25,992	23,612	299.7	LUMP SUM	38,119	30	3042.5

	PILE DRIVING EQUIPMENT SETUP FOR 30" PRESTRESSED CONCRETE PILES	PILE DRIVING EQUIPMENT SETUP FOR HP12x53 STEEL PILES	30" PRESTRESSED CONCRETE PILES		HP 12 X 53 STEEL PILES		PILE REDRIVES	DYNAMIC PILE TESTING (DPT)	TWO BAR METAL RAIL	1'-2" X 2'-6" CONCRETE PARAPET	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	STRIP SEAL EXPANSION JOINTS
	EA.	EA.	NO.	LIN. FT.	NO.	LIN. FT.	EA.	EA.	LIN. FT.	LIN. FT.	TONS	SQ. YD.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE									1205.7	1220.7			LUMP SUM	LUMP SUM
END BENT No. 1		11			11	1105	6				90	100		
BENT No. 1	5		5	525			3							
BENT No. 2	5		5	525			3							
BENT No. 3	5		5	525			3							
BENT No. 4	5		5	500			3							
BENT No. 5	5		5	500			3							
END BENT No. 2		11			11	1050	6				70	80		
TOTAL	25	22	25	2575	22	2155	27	4	1205.7	1220.7	160	180	LUMP SUM	LUMP SUM

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

THIS STRUCTURE CONTAINS THE NECESSARY CORROSION PROTECTION REQUIRED FOR A CORROSIVE SITE.

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR SECURING OF VESSELS, SEE SPECIAL PROVISIONS.

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

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 23+50.00 -L-".

ALL METALIZED SURFACES SHALL RECEIVE A SEAL COATING AS SPECIFIED IN THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

CLASS AA CONCRETE SHALL BE USED IN ALL CAST-IN-PLACE BENT CAPS AND PILE CAPS, AND SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR. FOR CALCIUM NITRITE CORROSION INHIBITOR, SEE STANDARD SPECIFICATIONS.

ALL BAR SUPPORTS USED IN THE PARAPET, DECK, BENT CAPS, PILE CAPS, AND ALL INCIDENTAL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED IN THE VICINITY OF THE TEMPORARY SHORING ADJACENT TO THE EXISTING STRUCTURE AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE CONCRETE IN THE BENT CAPS AND PILES OF BENT NOS. 1 THRU 5 SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB OF CEMENT. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.

STEEL SHEET PILING REQUIRED FOR SHORING SHALL BE HOT ROLLED.

TEMPORARY SHORING WILL BE REQUIRED IN THE AREAS INDICATED IN THE PLAN VIEW.

FOR TEMPORARY SHORING, SEE SPECIAL PROVISIONS.

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

THE EXISTING STRUCTURE CONSISTING OF (17) 35'-0" STEEL ROLLED BEAM SPANS, 28'-0" CLEAR ROADWAY WIDTH AND CONCRETE SLAB ON C.I.P. CONCRETE BENT CAPS SUPPORTED BY 18" PRESTRESSED CONCRETE PILES AND LOCATED APPROXIMATELY 8 FT UPSTREAM FROM PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND 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.

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

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 IS ELEVATION -26.00, FOR BENT NOS. 2 THRU 4 IS ELEVATION -37.00 AND FOR BENT NO. 5 IS ELEVATION -27.50. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR ASBESTOS ASSESMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS AT STA. 23+50.00 -L-, SEE SPECIAL PROVISIONS.

PROJECT NO. **BR-0004**
BEAUFORT COUNTY
 STATION: **23+50.00 -L-**
 SHEET 7 OF 8

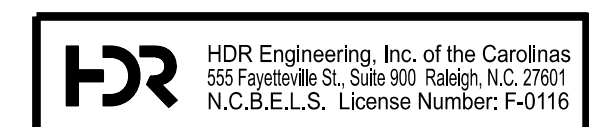


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**GENERAL DRAWING
 GENERAL NOTES**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-07
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	44

DES BY: K. DICKENS DATE : 04/24 DWG BY: D. CARTER DATE : 04/24
 DES CHK: D. COLETTI DATE : 04/24 CHK BY: K. DICKENS DATE : 12/24



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 UNLESS ALL SIGNATURES COMPLETED

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.

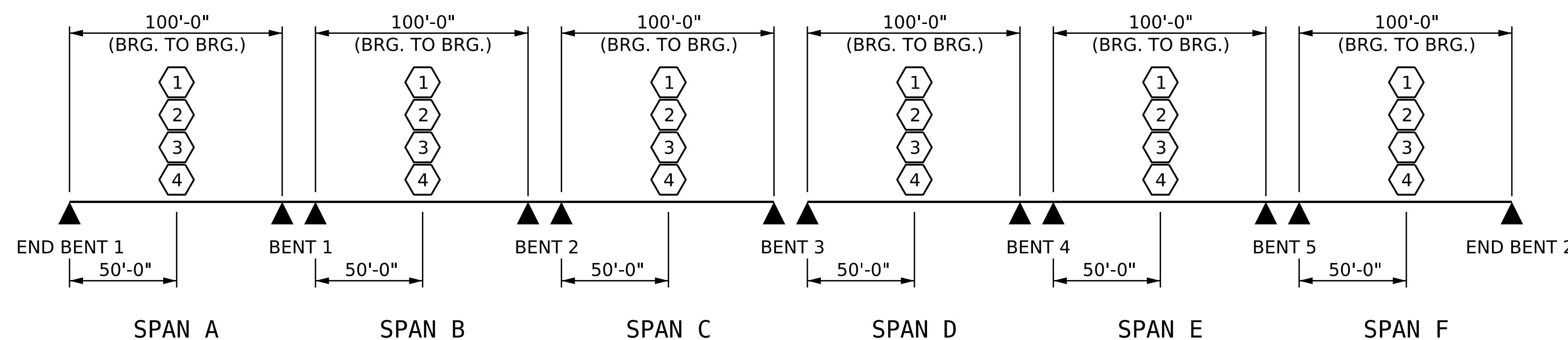
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE SHALL BE 0 PSI TENSION IN THE PRECOMPRESSED TENSILE ZONE.

DISTANCE FROM LEFT END OF SPAN IS MEASURED FROM CENTERLINE OF BEARING.

RATING FACTORS ARE THE SAME FOR ALL SPANS.

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

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																							
LOAD TYPE	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER	
						MOMENT					SHEAR					MOMENT							
						LIVE-LOAD FACTORS (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)
DESIGN LOAD	HL-93 (INVENTORY)	N/A	①	1.09	--	1.75	0.80	1.86	A	E	50.00	0.90	1.40	A	I	9.43	0.80	0.80	1.09	A	E	50.00	
	HL-93 (OPERATING)	N/A		1.84	--	1.35	0.80	2.41	A	E	50.00	0.90	1.84	A	I	90.57	N/A	--	--	--	--	--	
	HS-20 (INVENTORY)	36.000	②	1.52	54.72	1.75	0.80	2.60	A	E	50.00	0.90	1.89	A	I	19.57	0.80	0.80	1.52	A	E	50.00	
	HS-20 (OPERATING)	36.000		2.50	90.00	1.35	0.80	3.36	A	E	50.00	0.90	2.50	A	I	90.57	N/A	--	--	--	--	--	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		3.62	48.87	1.40	0.80	7.70	A	E	50.00	0.90	6.11	A	I	9.43	0.80	0.80	3.62	A	E	50.00
		SNGARBS2	20.000		2.62	52.40	1.40	0.80	5.57	A	E	50.00	0.90	4.24	A	I	9.43	0.80	0.80	2.62	A	E	50.00
		SNAGRIS2	22.000		2.45	53.90	1.40	0.80	5.21	A	E	50.00	0.90	3.90	A	I	9.43	0.80	0.80	2.45	A	E	50.00
		SNCOTTS3	27.250		1.80	49.05	1.40	0.80	3.83	A	E	50.00	0.90	2.97	A	I	19.57	0.80	0.80	1.80	A	E	50.00
		SNAGGRS4	34.925		1.47	51.34	1.40	0.80	3.14	A	E	50.00	0.90	2.40	A	I	19.57	0.80	0.80	1.47	A	E	50.00
		SNS5A	35.550		1.44	51.19	1.40	0.80	3.07	A	E	50.00	0.90	2.42	A	I	9.43	0.80	0.80	1.44	A	E	50.00
		SNS6A	39.950		1.31	52.33	1.40	0.80	2.79	A	E	50.00	0.90	2.18	A	I	19.57	0.80	0.80	1.31	A	E	50.00
		SNS7B	42.000		1.25	52.50	1.40	0.80	2.66	A	E	50.00	0.90	2.11	A	I	9.43	0.80	0.80	1.25	A	E	50.00
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.60	52.80	1.40	0.80	3.40	A	E	50.00	0.90	2.63	A	I	9.43	0.80	0.80	1.60	A	E	50.00
		TNT4A	33.075		1.60	52.92	1.40	0.80	3.40	A	E	50.00	0.90	2.58	A	I	9.43	0.80	0.80	1.60	A	E	50.00
		TNT6A	41.600		1.30	54.08	1.40	0.80	2.76	A	E	50.00	0.90	2.22	A	I	9.43	0.80	0.80	1.30	A	E	50.00
		TNT7A	42.000		1.30	54.60	1.40	0.80	2.76	A	E	50.00	0.90	2.18	A	I	9.43	0.80	0.80	1.30	A	E	50.00
		TNT7B	42.000		1.33	55.86	1.40	0.80	2.82	A	E	50.00	0.90	2.08	A	I	19.57	0.80	0.80	1.33	A	E	50.00
		TNAGRIT4	43.000		1.27	54.61	1.40	0.80	2.71	A	E	50.00	0.90	2.01	A	I	19.57	0.80	0.80	1.27	A	E	50.00
		TNAGT5A	45.000		1.21	54.45	1.40	0.80	2.57	A	E	50.00	0.90	1.97	A	I	9.43	0.80	0.80	1.21	A	E	50.00
		TNAGT5B	45.000	③	1.20	54.00	1.40	0.80	2.54	A	E	50.00	0.90	1.90	A	I	19.57	0.80	0.80	1.20	A	E	50.00
EMERGENCY VEHICLE (EV)	EV2	28.750		1.84	52.90	1.30	0.80	4.22	A	E	50.00	0.90	3.17	A	I	9.43	0.80	0.80	1.84	A	E	50.00	
	EV3	43.000	④	1.21	52.03	1.30	0.80	2.78	A	E	50.00	0.90	2.07	A	I	19.57	0.80	0.80	1.21	A	E	50.00	



LRFR SUMMARY

PROJECT NO. **BR-0004**
BEAUFORT COUNTY
 STATION: **23+50.00 -L-**

SHEET 8 OF 8

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**GENERAL DRAWING
 LRFR SUMMARY
 CONCRETE GIRDERS**
 (NON-INTERSTATE TRAFFIC)

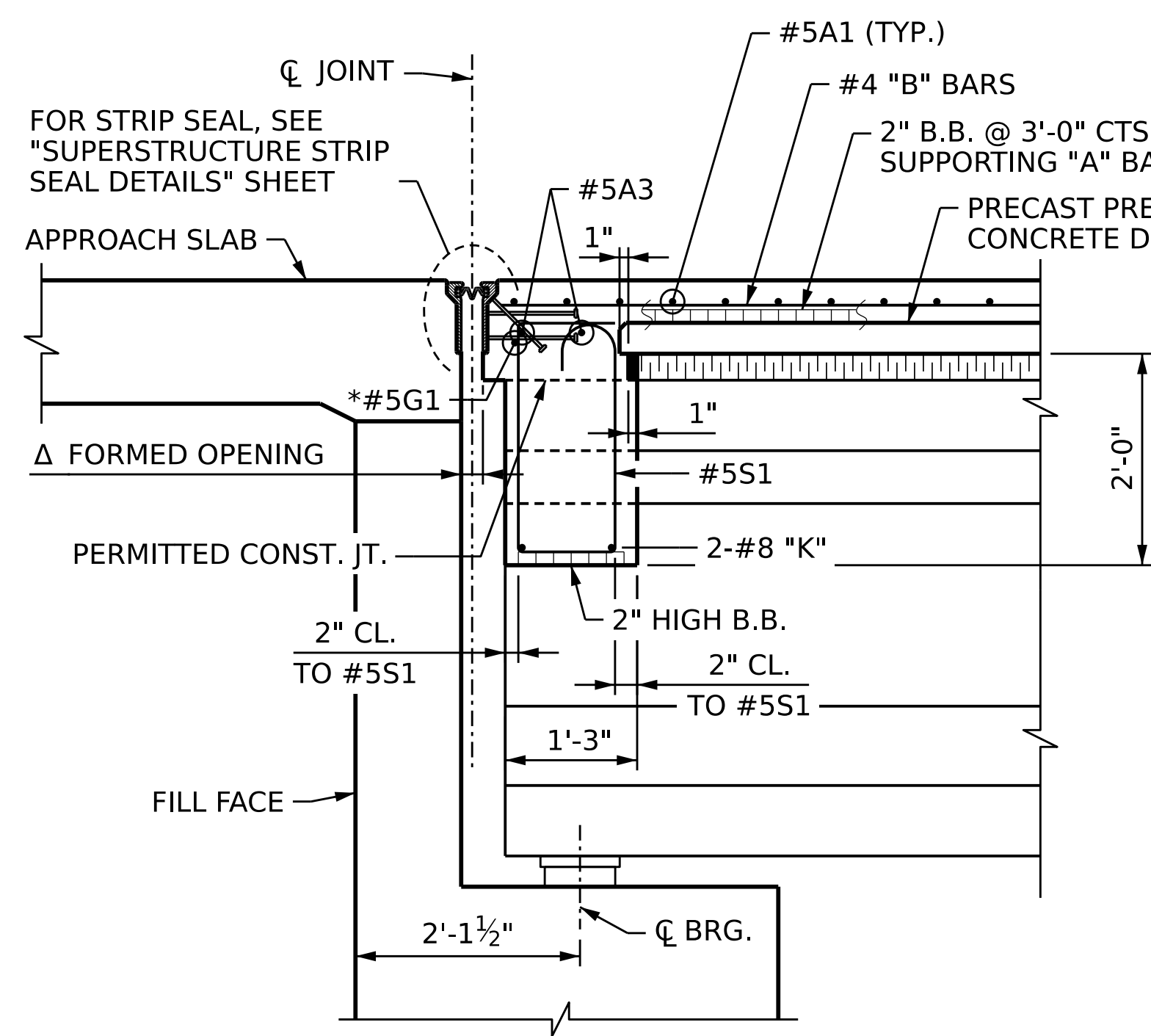
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2	--	--	4	--	--	44



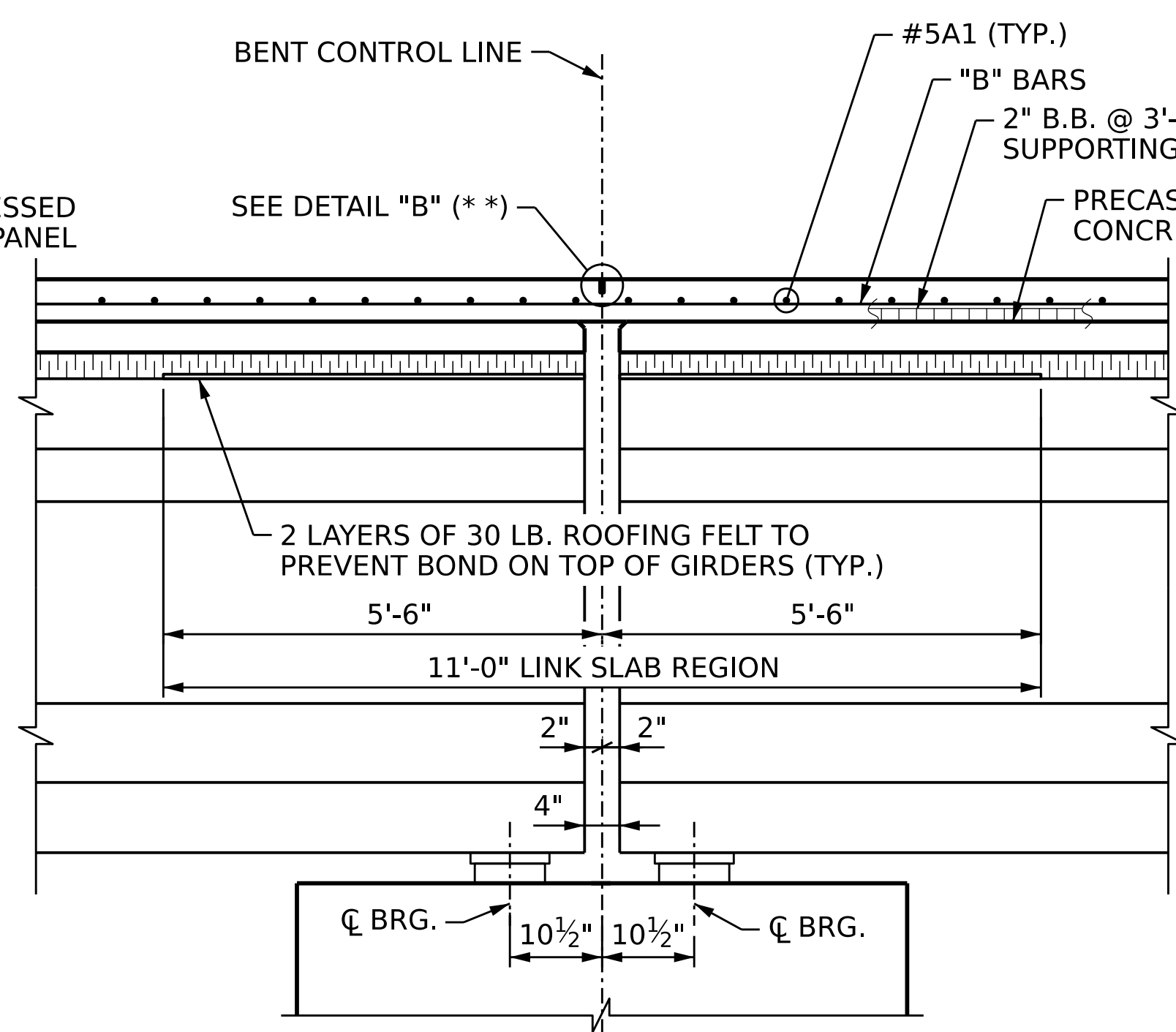
DES BY: F. CORDOVA DATE: 12/24
 DES CHK: R. JONES DATE: 12/24
 DWG BY: B. PETERSON DATE: 12/24
 CHK BY: R. JONES DATE: 12/24



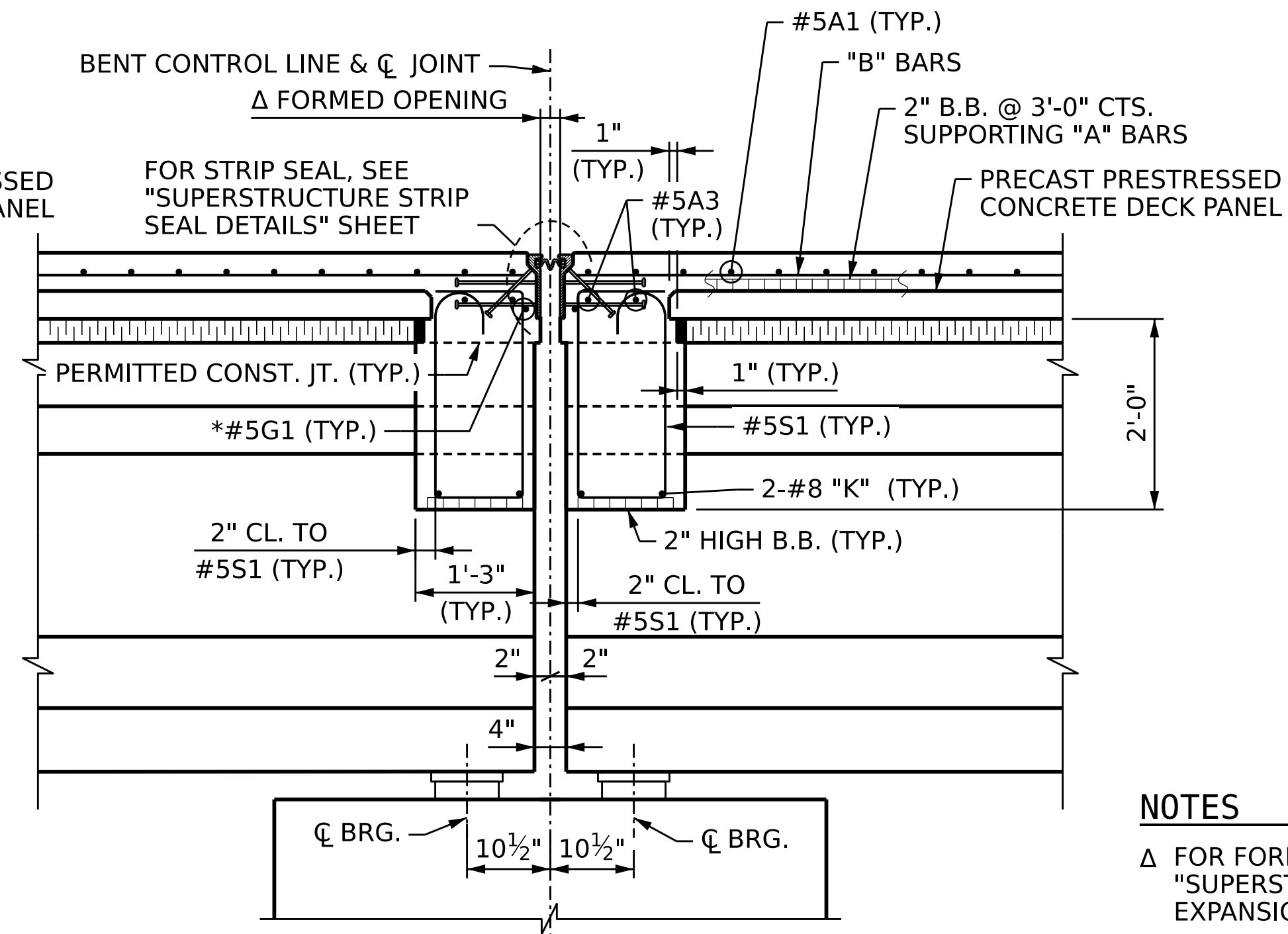
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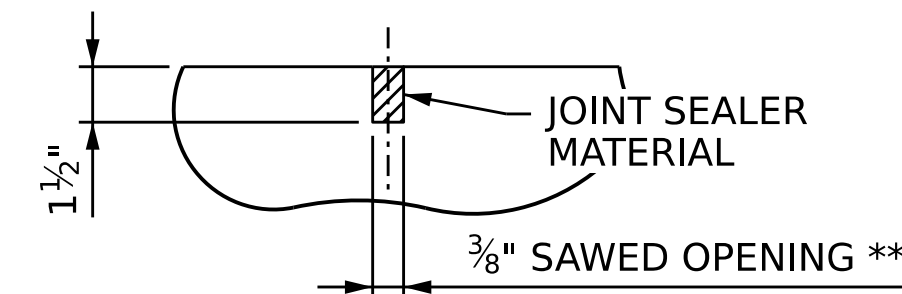
SECTION A-A
SECTION AT END BENT DIAPHRAGM



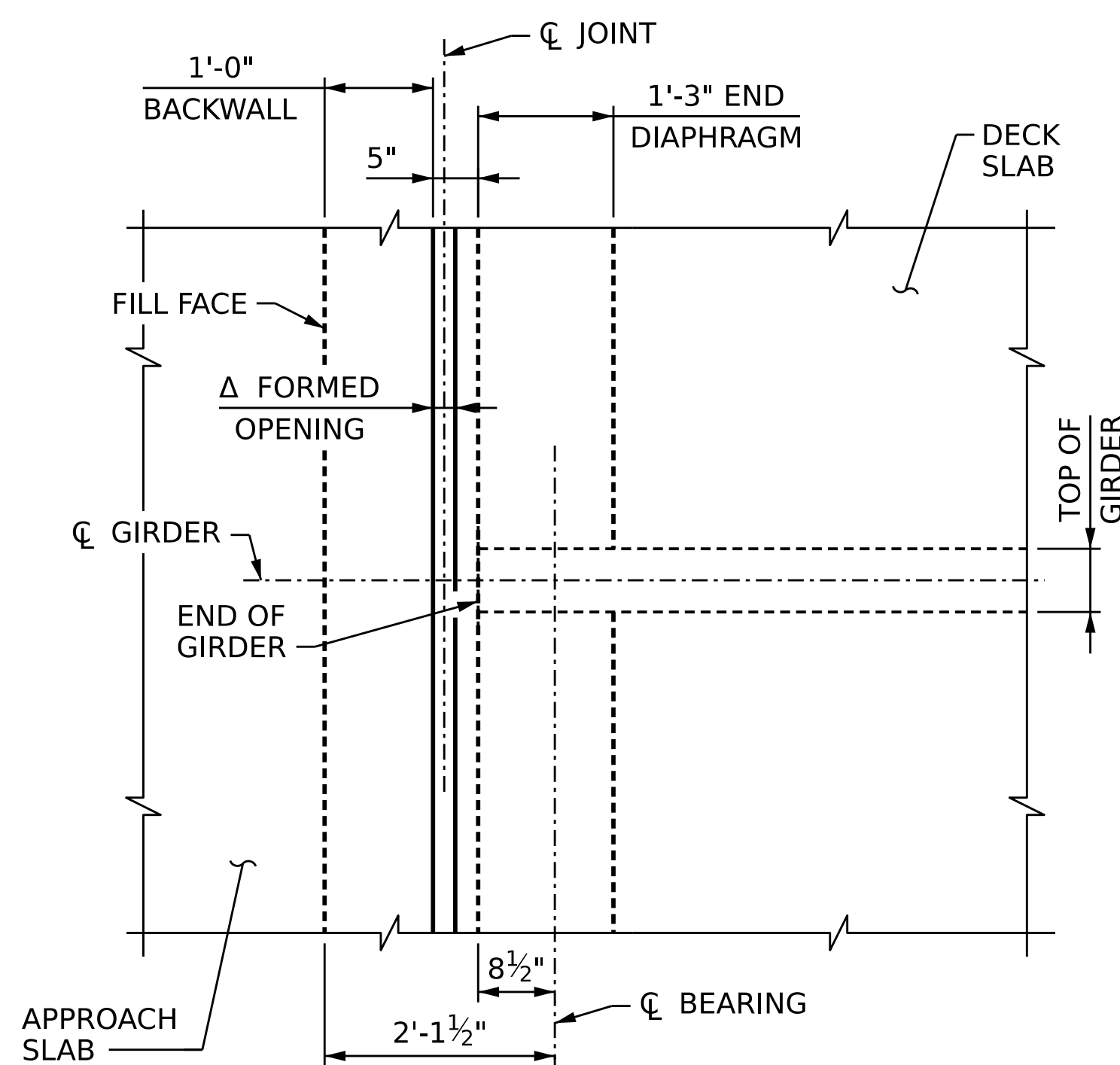
SECTION B-B
SECTION AT LINK SLAB



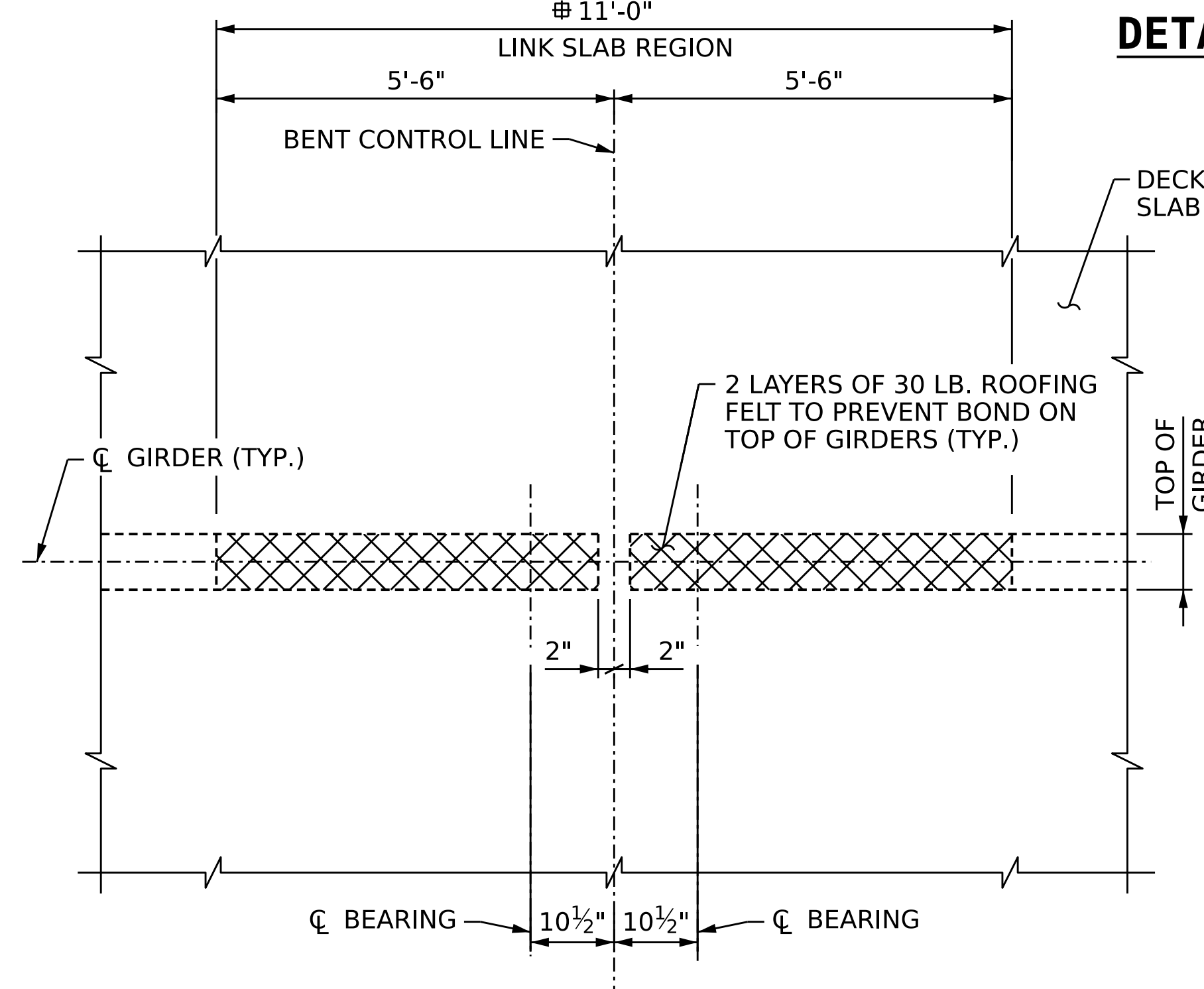
SECTION C-C
SECTION AT BENT 3



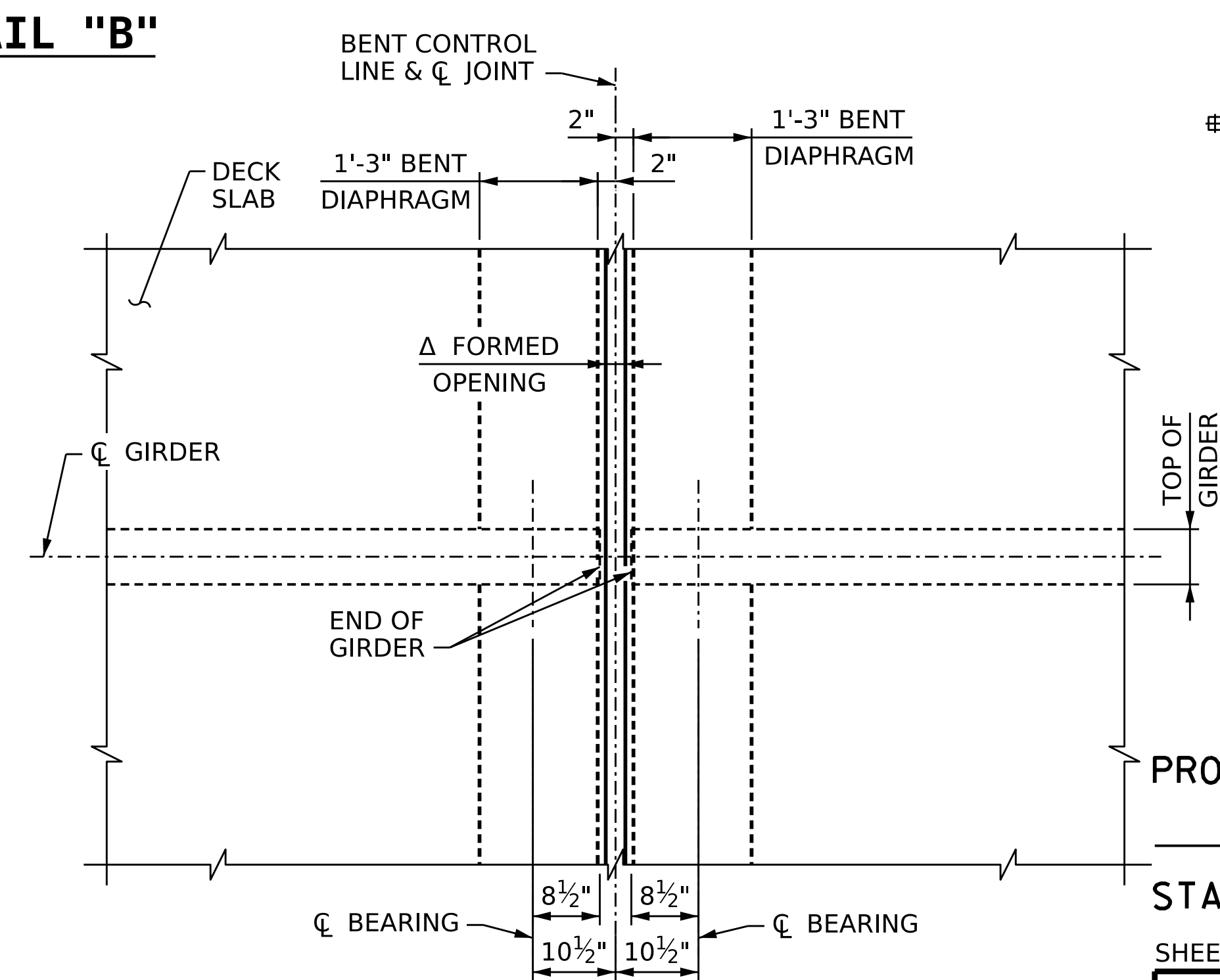
DETAIL "B"



PLAN OF GIRDER AT END BENT
(END BENT 1 SHOWN, END BENT 2 OPP. HAND)



PLAN OF GIRDER AT FIXED BENT
(SHOWING LINK SLAB)



PLAN OF GIRDER AT EXPANSION BENT
(BENT 3)

NOTES

Δ FOR FORMED OPENING DIMENSIONS, SEE "SUPERSTRUCTURE STRIP SEAL EXPANSION JOINT DETAILS" SHEET.

* #5G1 BAR MAY BE SHIFTED SLIGHTLY TO CLEAR OTHER REINFORCING STEEL.

** A 1 1/2" DEEP CONTRACTION JOINT AT BENT CONTROL LINE, SHALL BE SAWED 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 SPECIFICATIONS.

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

PROJECT NO. **BR-0004**

BEAUFORT COUNTY

STATION: **23+50.00 -L-**

SHEET 2 OF 2

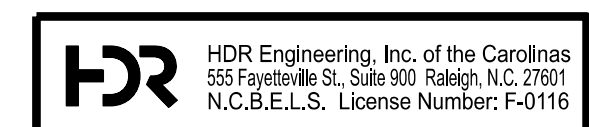
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUPERSTRUCTURE
TYPICAL SECTION DETAILS**

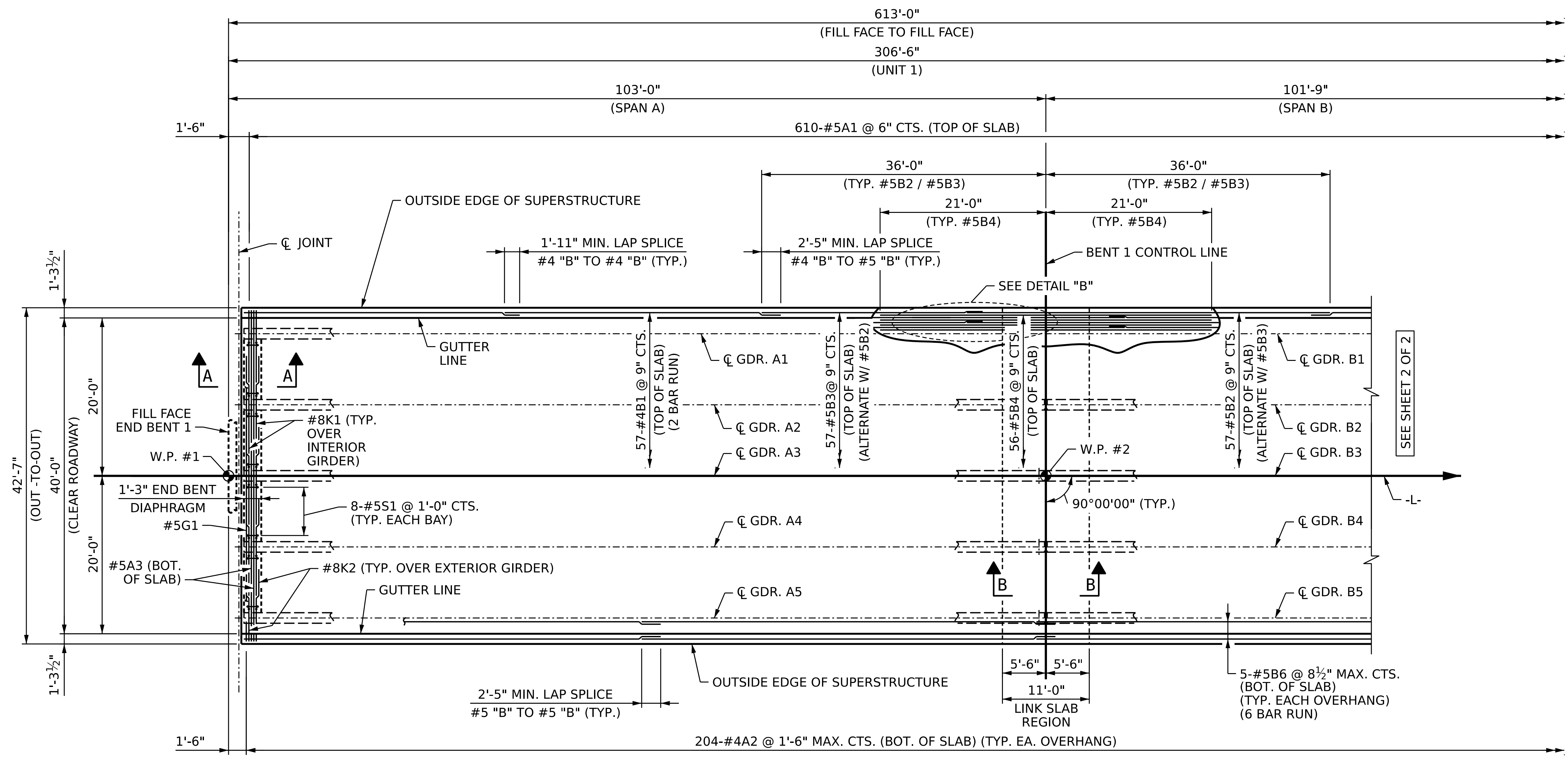


3/5/2026
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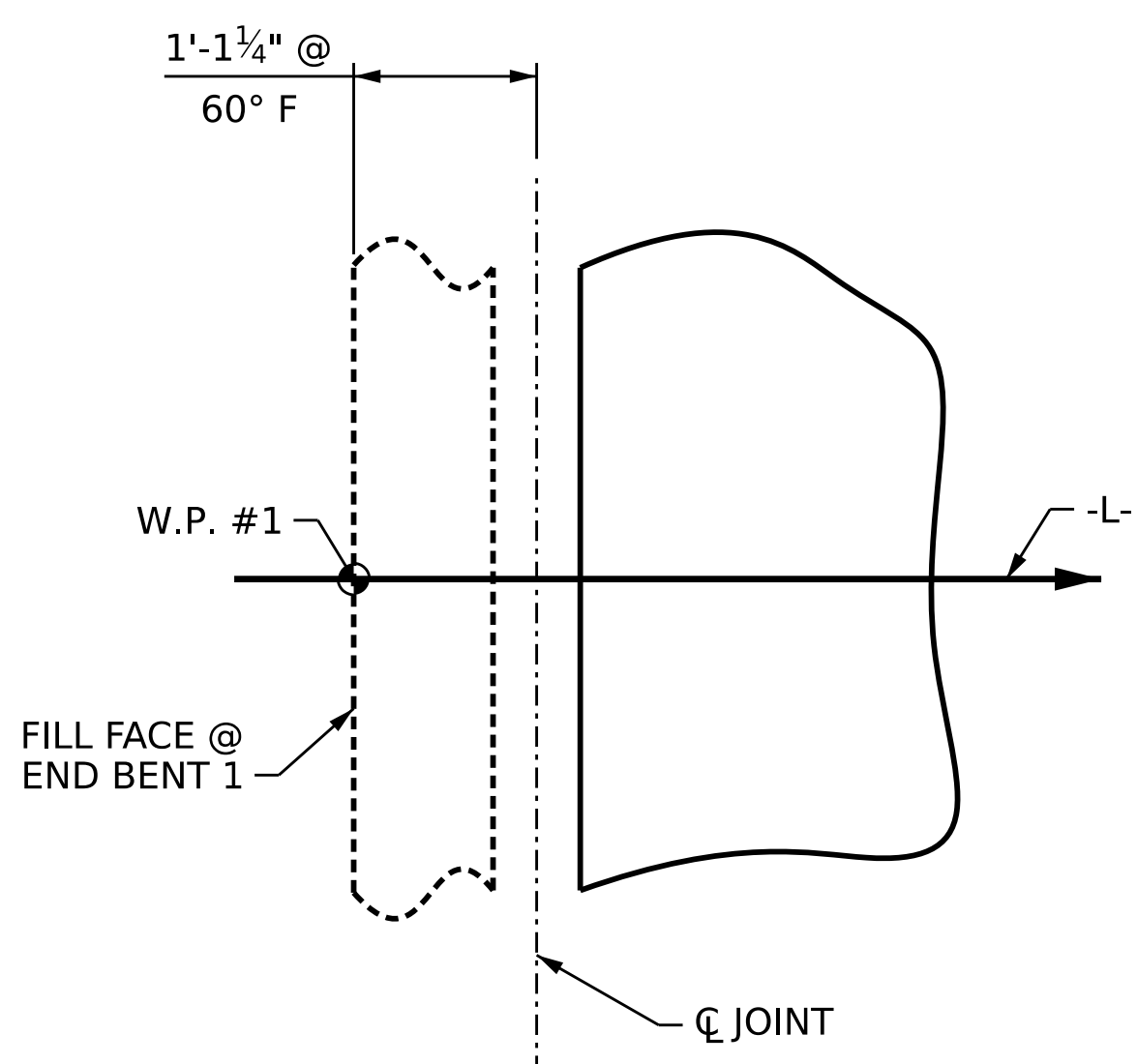
DES BY: <u>A. RURKA</u>	DATE: <u>07/24</u>	DWG BY: <u>B. PETERSON</u>	DATE: <u>06/24</u>
DES CHK: <u>K. DICKENS</u>	DATE: <u>07/24</u>	CHK BY: <u>K. DICKENS</u>	DATE: <u>07/24</u>



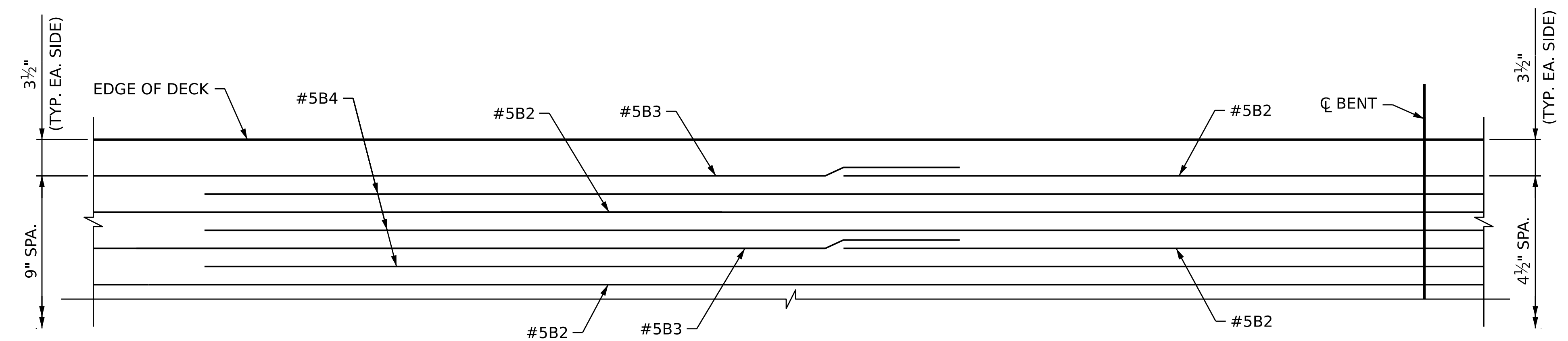
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NO.	BY:	DATE:	NO.	BY:	DATE:	
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PARTIAL PLAN



DETAIL "A"



DETAIL "B"
(TYPICAL ALL SPANS)

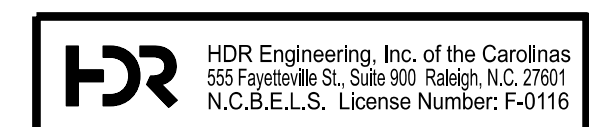
NOTES

FOR SECTIONS A-A AND B-B, SEE SHEET "SUPERSTRUCTURE TYPICAL SECTION DETAILS" SHEET.

FOR CONCRETE PARAPET DIMENSIONS, JOINT SPACING AND REINFORCEMENT, SEE "SUPERSTRUCTURE CONCRETE PARAPET" SHEET.

FOR POUR SEQUENCE DIAGRAM AND TRANSVERSE CONSTRUCTION JOINT LOCATIONS AND DETAIL, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.

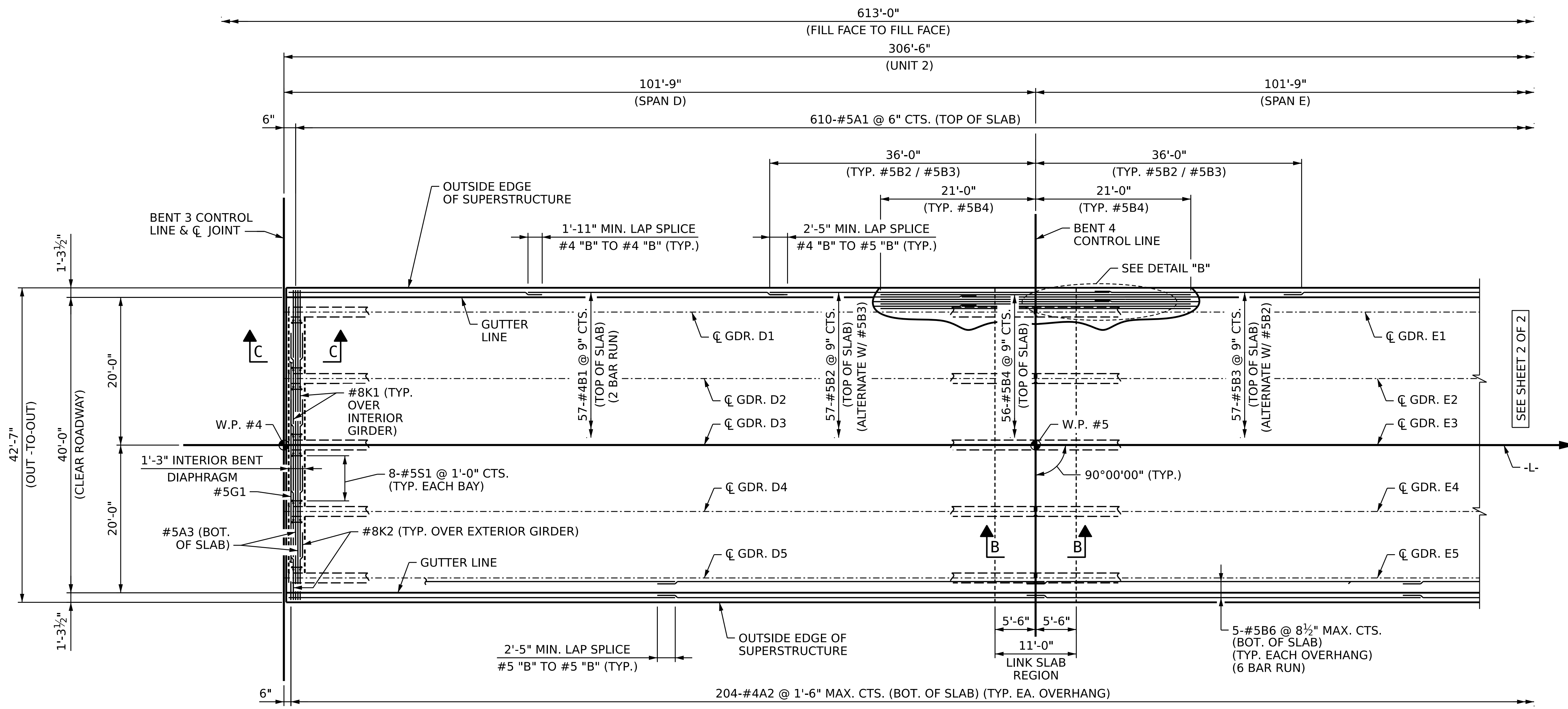
DES BY: A. RURKA	DATE: 07/24	DWG BY: B. PETERSON	DATE: 06/24
DES CHK: K. DICKENS	DATE: 07/24	CHK BY: K. DICKENS	DATE: 07/24



PROJECT NO. **BR-0004**
BEAUFORT COUNTY
 STATION: **23+50.00 -L-**
 SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPANS (UNIT 1)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1	--	--	3	--	--
2	--	--	4	--	--
					SHEET NO. S-11
					TOTAL SHEETS 44

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UNLESS ALL SIGNATURES COMPLETED



PARTIAL PLAN

NOTES

- FOR SECTIONS C-C AND B-B, SEE "SUPERSTRUCTURE TYPICAL SECTION DETAILS" SHEET.
- FOR CONCRETE PARAPET DIMENSIONS, JOINT SPACING AND REINFORCEMENT, SEE "SUPERSTRUCTURE CONCRETE PARAPET" SHEET.
- FOR POUR SEQUENCE DIAGRAM AND TRANSVERSE CONSTRUCTION JOINT LOCATIONS AND DETAIL, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.
- FOR DETAIL "B", SEE SHEET "SUPERSTRUCTURE PLAN OF SPANS (UNIT 1)" SHEET 1 OF 2.

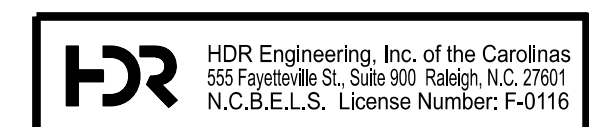
PROJECT NO. **BR-0004**
BEAUFORT COUNTY
 STATION: **23+50.00 -L-**
 SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 PLAN OF SPANS
 (UNIT 2)**

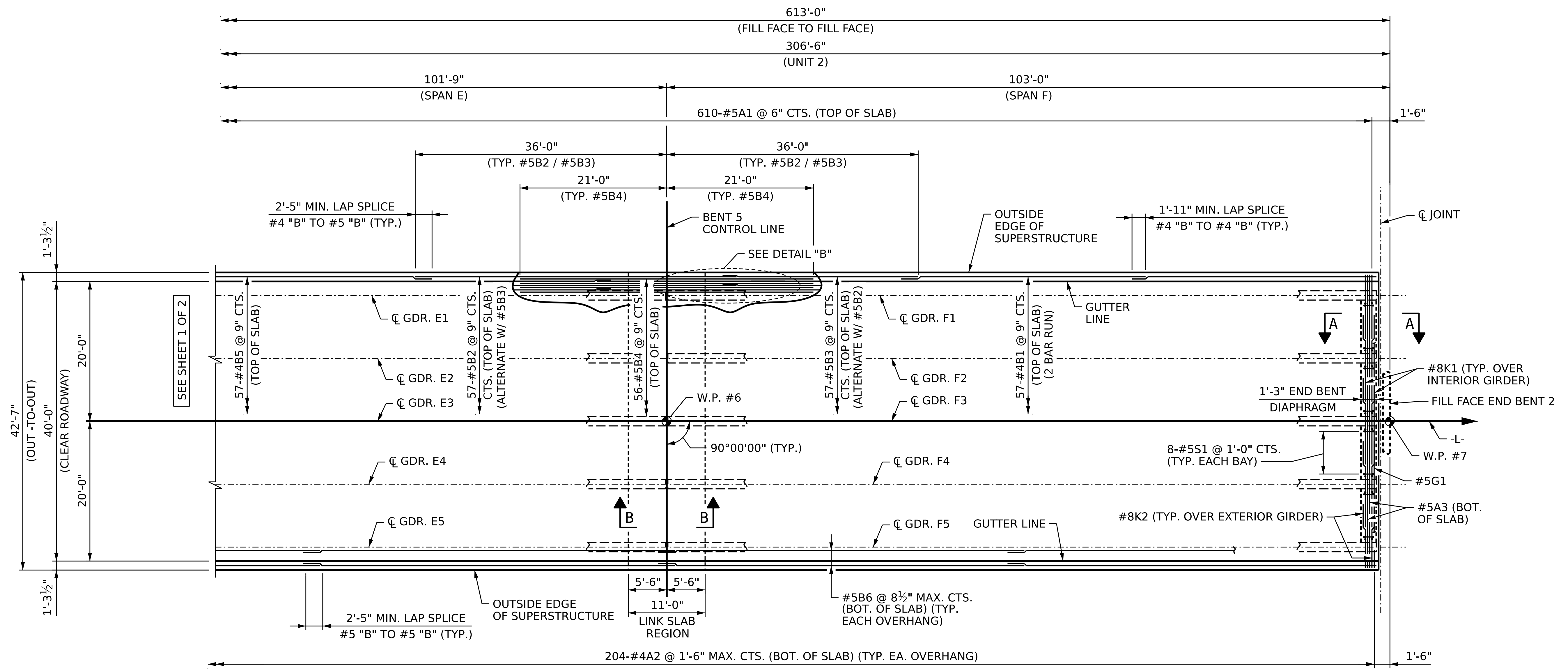


DES BY: <u>A. RURKA</u>	DATE: <u>07/24</u>	DWG BY: <u>B. PETERSON</u>	DATE: <u>06/24</u>
DES CHK: <u>K. DICKENS</u>	DATE: <u>07/24</u>	CHK BY: <u>K. DICKENS</u>	DATE: <u>11/24</u>

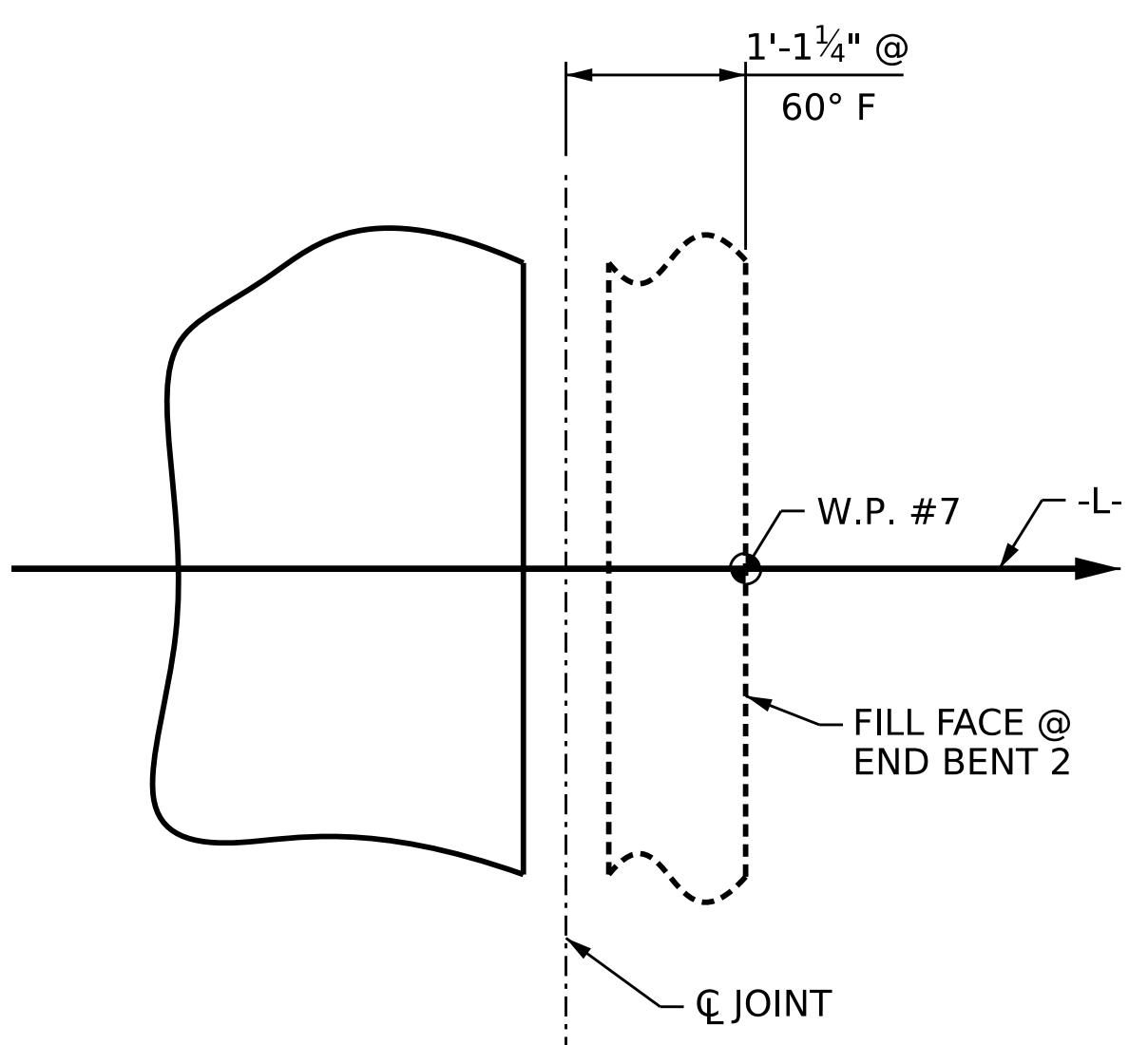


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2	--	--	4	--	--	44



PARTIAL PLAN



DETAIL "C"

NOTES

- FOR SECTIONS B-B AND A-A, SEE "SUPERSTRUCTURE TYPICAL SECTION DETAILS" SHEET.
- FOR CONCRETE PARAPET DIMENSIONS, JOINT SPACING AND REINFORCEMENT, SEE "SUPERSTRUCTURE CONCRETE PARAPET" SHEET.
- FOR POUR SEQUENCE DIAGRAM AND TRANSVERSE CONSTRUCTION JOINT LOCATIONS AND DETAIL, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.
- FOR DETAIL "B", SEE SHEET "SUPERSTRUCTURE PLAN OF SPANS (UNIT 1)" SHEET 1 OF 2.

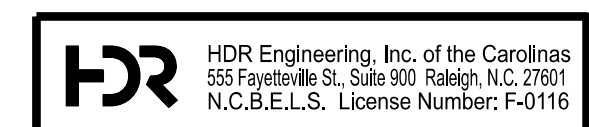
PROJECT NO. **BR-0004**
BEAUFORT COUNTY
 STATION: **23+50.00 -L-**
 SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 PLAN OF SPANS
 (UNIT 2)**



DES BY: <u>A. RURKA</u>	DATE: <u>07/24</u>	DWG BY: <u>B. PETERSON</u>	DATE: <u>06/24</u>
DES CHK: <u>K. DICKENS</u>	DATE: <u>07/24</u>	CHK BY: <u>K. DICKENS</u>	DATE: <u>11/24</u>



1/15/2026
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
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DECK PANEL SUPPORTS

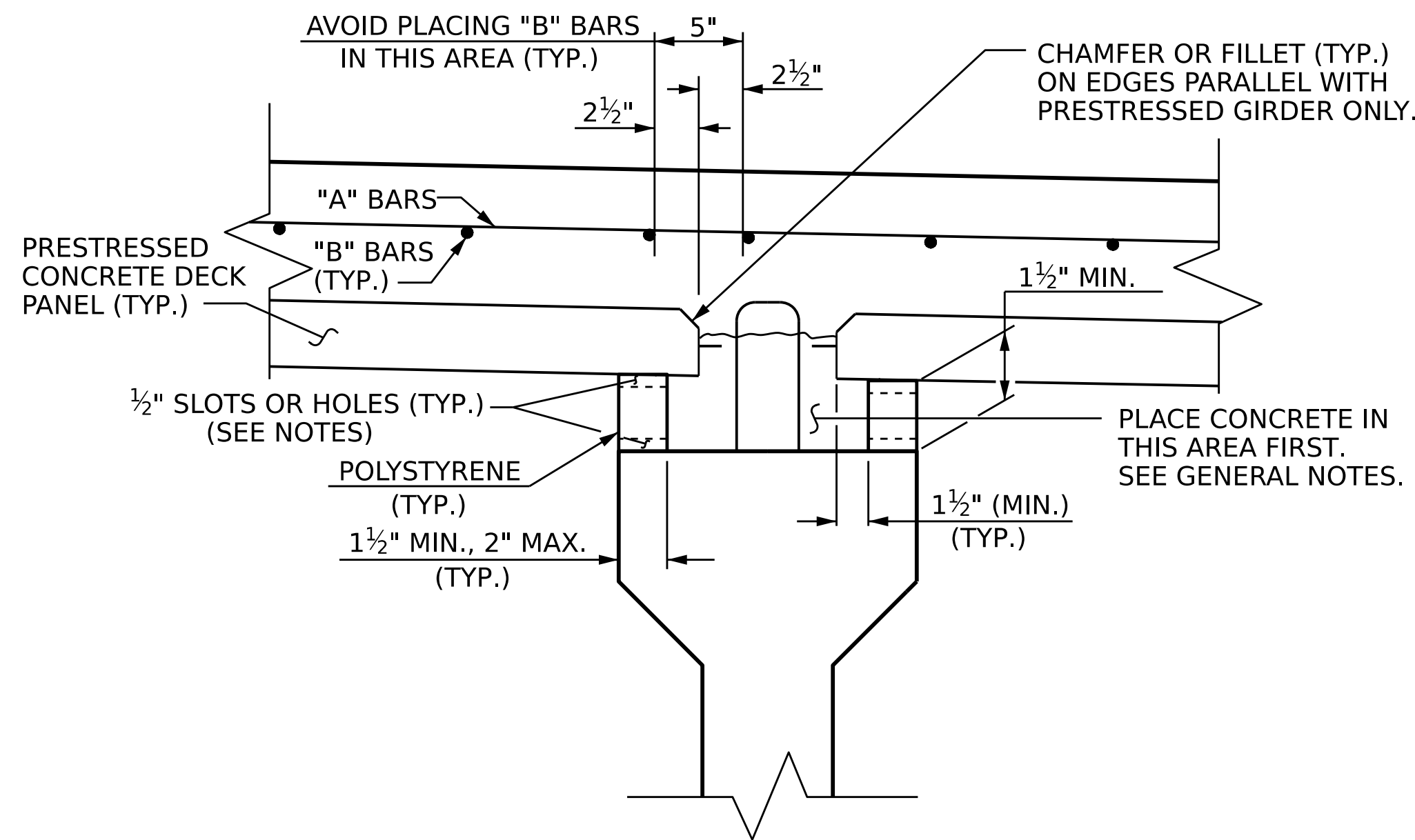
THE CONTRACTOR SHALL PROVIDE THE DECK PANEL SUPPORT SYSTEM SHOWN OR HE MAY SUBMIT A DECK PANEL SUPPORT SYSTEM OF HIS OWN DESIGN TO THE ENGINEER FOR APPROVAL.

POLYSTYRENE SUPPORT SYSTEM

1. ALL POLYSTYRENE SHALL BE DOW STYROFOAM 60 HIGH-LOAD, UC INDUSTRIES FOAMULAR 600 OR APPROVED EQUAL.
2. THE POLYSTYRENE SUPPORT SYSTEM SHALL CONSIST OF ONE LAYER WITH A MINIMUM WIDTH OF 1½" AND A MAXIMUM WIDTH OF 2". THE POLYSTYRENE SHALL HAVE ½" x ½" WIDE SLOTS OR ½" DIAMETER HOLES AT 4'-0" CENTERS STAGGERED ALONG THE TOP AND BOTTOM.
3. THE POLYSTYRENE MAY BE CUT AND PLACED ON EDGE AS NECESSARY TO MATCH THE REQUIRED BUILDUP PROFILE ALONG THE GIRDER.
4. ADHESIVE, AS APPROVED BY THE ENGINEER, SHALL BE APPLIED TO THE TOP OF THE GIRDER IN A CONTINUOUS BEAD AND IN SUFFICIENT AMOUNT TO PREVENT THE POLYSTYRENE FROM BLOWING OUT AND TO PREVENT GAPS FROM FORMING BETWEEN THE POLYSTYRENE AND THE GIRDER. PRIOR TO PLACEMENT OF THE DECK PANELS, THE ADHESIVE SHALL ALSO BE APPLIED TO THE TOP OF THE POLYSTYRENE.
5. CONCRETE-FILLED BUCKETS, STACKS OF DECK PANELS, BUNDLED REINFORCING BARS OR OTHER HEAVY CONCENTRATED LOADS WILL NOT BE PERMITTED ON THE DECK PANEL ONCE THE PANEL HAS BEEN PLACED ON THE POLYSTYRENE SUPPORT SYSTEM.

GENERAL NOTES

1. THE DESIGN COMPRESSIVE STRENGTH (f'c) FOR THE CONCRETE IN PRESTRESSED PANELS SHALL BE 5000 PSI MINIMUM AT 28 DAYS. COMPRESSIVE STRENGTH OF CONCRETE AT TIME OF RELEASE OF STRANDS SHALL BE 4000 PSI MINIMUM.
2. THE PRECAST PRESTRESSED PANEL SHALL HAVE A THICKNESS OF 3½" WITH THE PRESTRESSED STRANDS LOCATED AT HALF THE DEPTH OF THE PANEL.
3. FOR SKEWED SPANS, TRAPEZOIDAL CLOSURE PANELS SHALL HAVE A MINIMUM WIDTH OF 2 FEET ON THE SHORT SIDE.
4. ALL PRESTRESSING STRANDS SHALL EXTEND 2" BEYOND THE PANEL EDGES.
5. SHEAR REINFORCING OF 0.60 SQ. INCHES OF REINFORCING STEEL PER 10 SQ. FEET OF PANEL SURFACE SHALL BE PROVIDED IN THE PANEL TO ENSURE COMPOSITE ACTION BETWEEN PANEL AND THE CAST-IN-PLACE CONCRETE. SHEAR REINFORCEMENT SHALL BE MADE OF WELDED WIRE HAVING A MINIMUM YIELD STRENGTH OF 60 KSI.
6. SHEAR REINFORCEMENT AND LIFTING DEVICES SHALL BE CONSTRUCTED AND PLACED SO AS TO AVOID ANY INTERFERENCE WITH REINFORCING STEEL IN THE CAST-IN-PLACE DECK SLAB AND TO ALLOW FOR PROPER CONCRETE CONSOLIDATION IN THE DECK PANEL.
7. SHIFT LONGITUDINAL "B" BARS AS NECESSARY TO OBTAIN A MINIMUM CLEAR DISTANCE OF 2½" TO THE RIGHT OR LEFT OF THE EDGE OF THE DECK PANEL. IF, IN SHIFTING TO OBTAIN THIS CLEARANCE, THE "B" BAR INTERFERES WITH THE STIRRUP IN THE TOP OF THE GIRDER THE "B" BAR MAY BE ELIMINATED.
8. WHEN CASTING THE DECK, PLACE CONCRETE FIRST OVER THE GIRDERS IN CONTINUOUS STRIPS A MINIMUM OF THREE PANEL LENGTHS AHEAD OF THE REST OF THE CONCRETE. CAREFULLY VIBRATE THE CONCRETE OVER THE GIRDERS SO THAT CONCRETE COMPLETELY FILLS THE AREA UNDER THE DECK PANEL OVERHANGS. THEN PLACE AND VIBRATE THE REMAINING DECK CONCRETE.
9. PRECAST PANELS SHALL BE DESIGNED FOR AN ALLOWABLE TENSILE STRESS OF 0 PSI IN THE PRECOMPRESSED TENSILE ZONE UNDER ALL LOADING CONDITIONS.
10. PRESTRESSED CONCRETE PRECAST DECK PANELS SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR. SEE STANDARD SPECIFICATIONS FOR CALCIUM NITRITE CORROSION INHIBITOR.

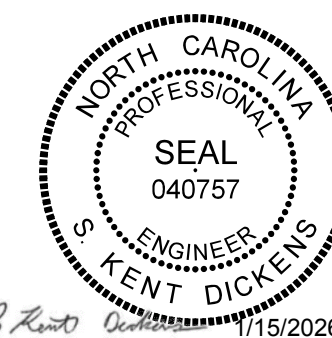


POLYSTYRENE SUPPORT

PROJECT NO. **BR-0004**
BEAUFORT COUNTY
 STATION: **23+50.00 -L-**

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE PRECAST PRESTRESSED CONCRETE DECK PANELS



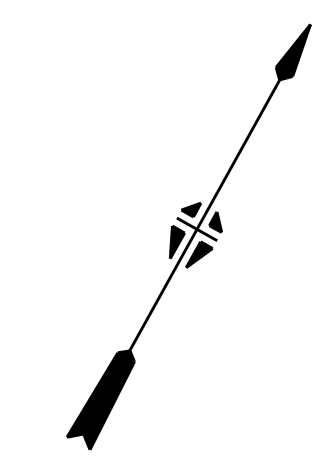
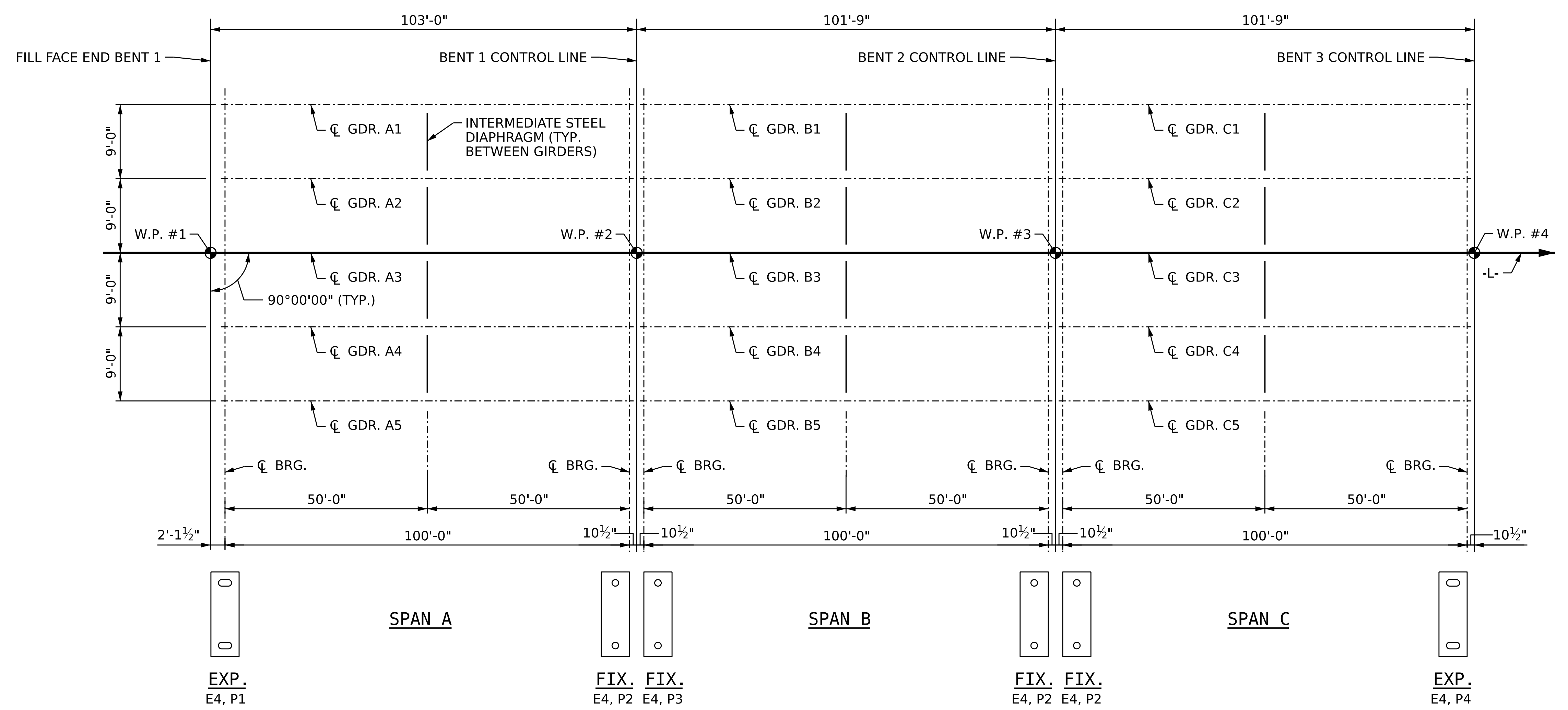
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NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
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DES BY: <u>J. PATT</u>	DATE: <u>11/24</u>	DWG BY: <u>B. PETERSON</u>	DATE: <u>07/24</u>
DES CHK: <u>K. DICKENS</u>	DATE: <u>11/24</u>	CHK BY: <u>K. DICKENS</u>	DATE: <u>12/24</u>



DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

NOTES
 FOR ELASTOMERIC BEARING AND SOLE PLATE DETAILS, SEE "SUPERSTRUCTURE ELASTOMERIC BEARING DETAILS" SHEET.
 FOR DIAPHRAGM DETAILS, SEE "SUPERSTRUCTURE INTERMEDIATE STEEL DIAPHRAGMS DETAILS" SHEET.



FRAMING PLAN
(UNIT 1)

PROJECT NO. **BR-0004**
BEAUFORT COUNTY
 STATION: **23+50.00 -L-**
 SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 FRAMING PLAN
 (UNIT 1)**



DES BY: F. CORDOVA	DATE: 07/24	DWG BY: B. PETERSON	DATE: 06/24
DES CHK: K. DICKENS	DATE: 11/24	CHK BY: K. DICKENS	DATE: 11/24

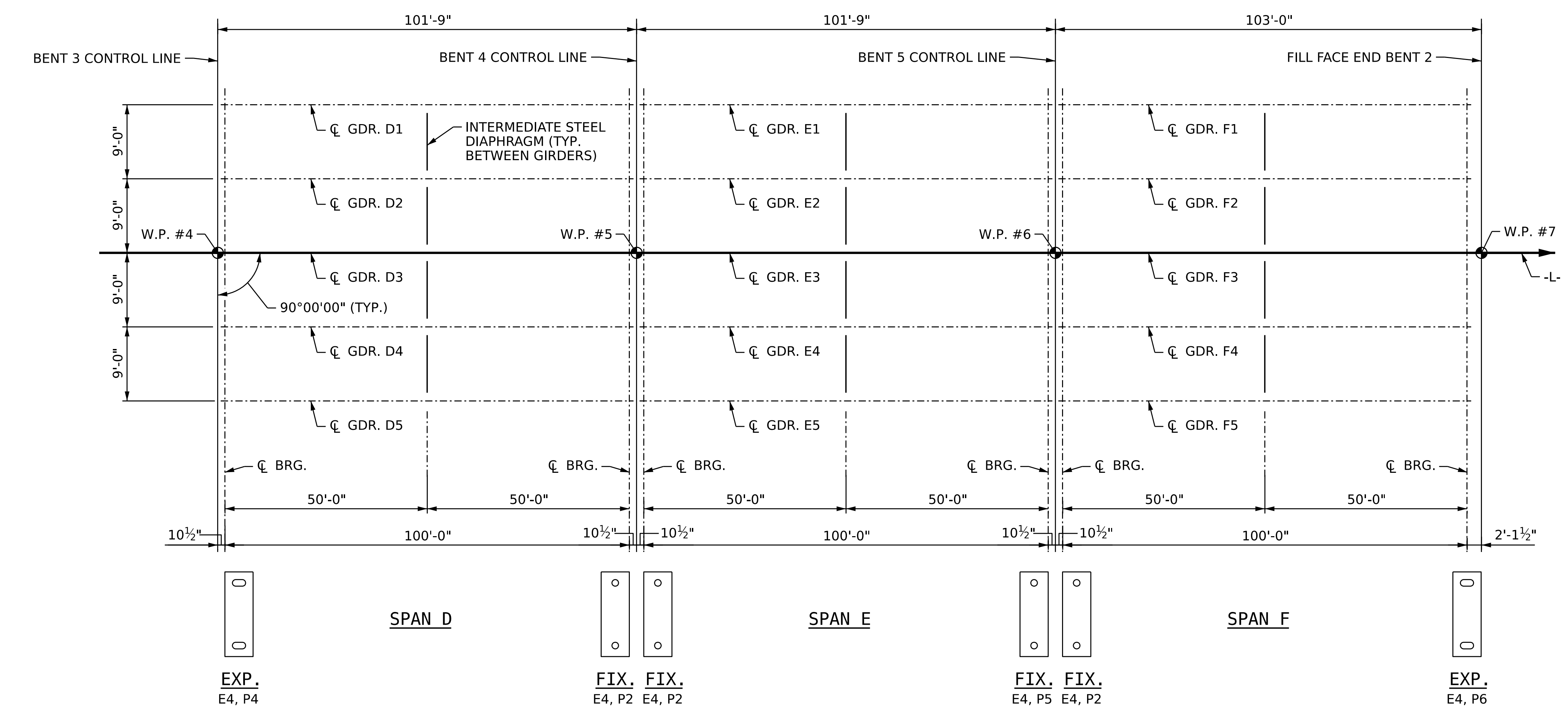


DOCUMENT NOT CONSIDERED FINAL
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REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1	--	--	3	--	--
2	--	--	4	--	--

TOTAL SHEETS	44
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NOTES
SEE SHEET 1 OF 2 FOR NOTES.



FRAMING PLAN
(UNIT 2)

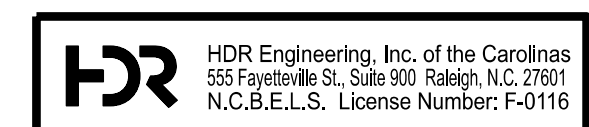
PROJECT NO. **BR-0004**
BEAUFORT COUNTY
STATION: **23+50.00 -L-**
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUPERSTRUCTURE
FRAMING PLAN
(UNIT 2)**

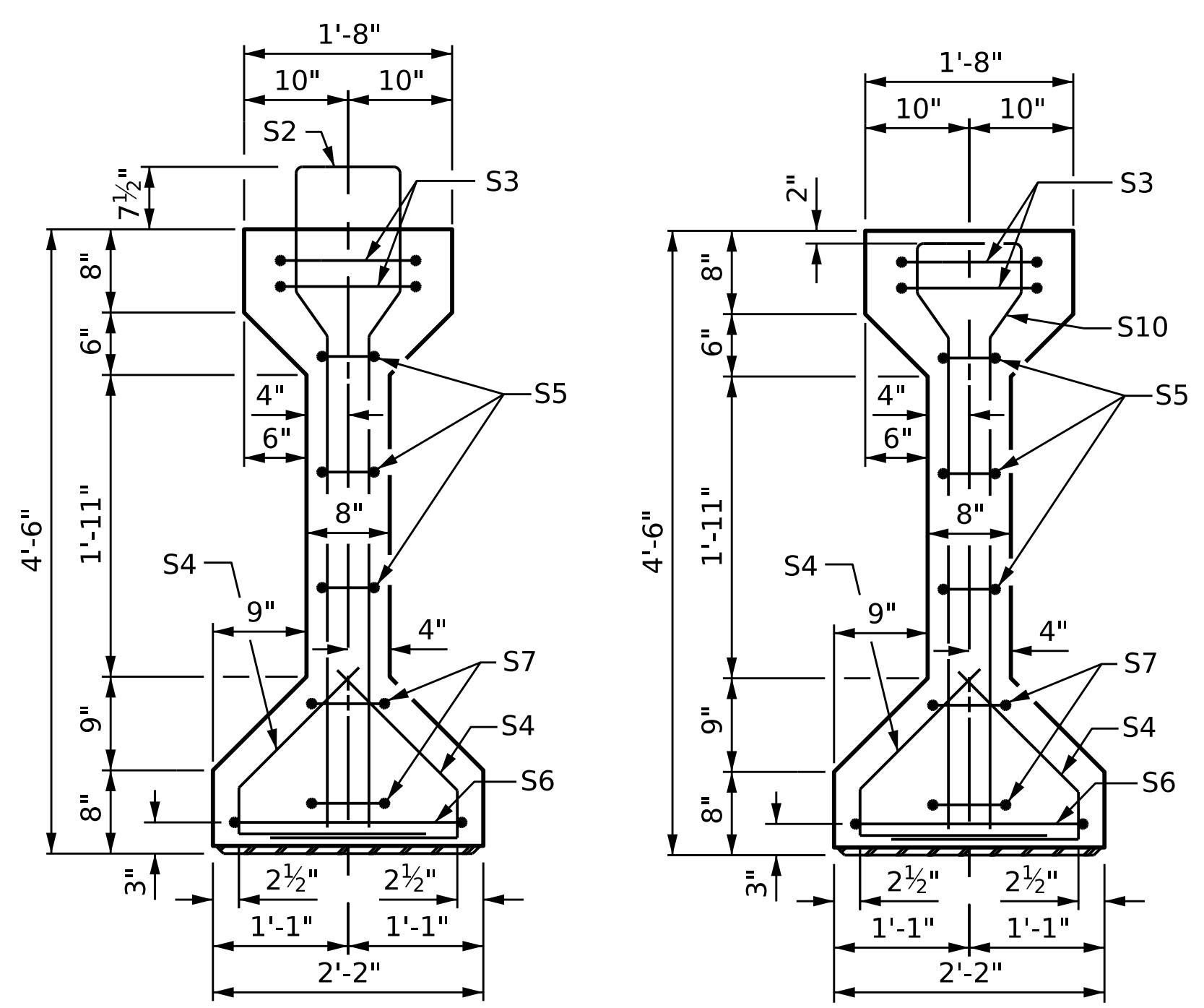


DES BY: F. CORDOVA	DATE: 07/24	DWG BY: B. PETERSON	DATE: 06/24
DES CHK: K. DICKENS	DATE: 11/24	CHK BY: K. DICKENS	DATE: 11/24



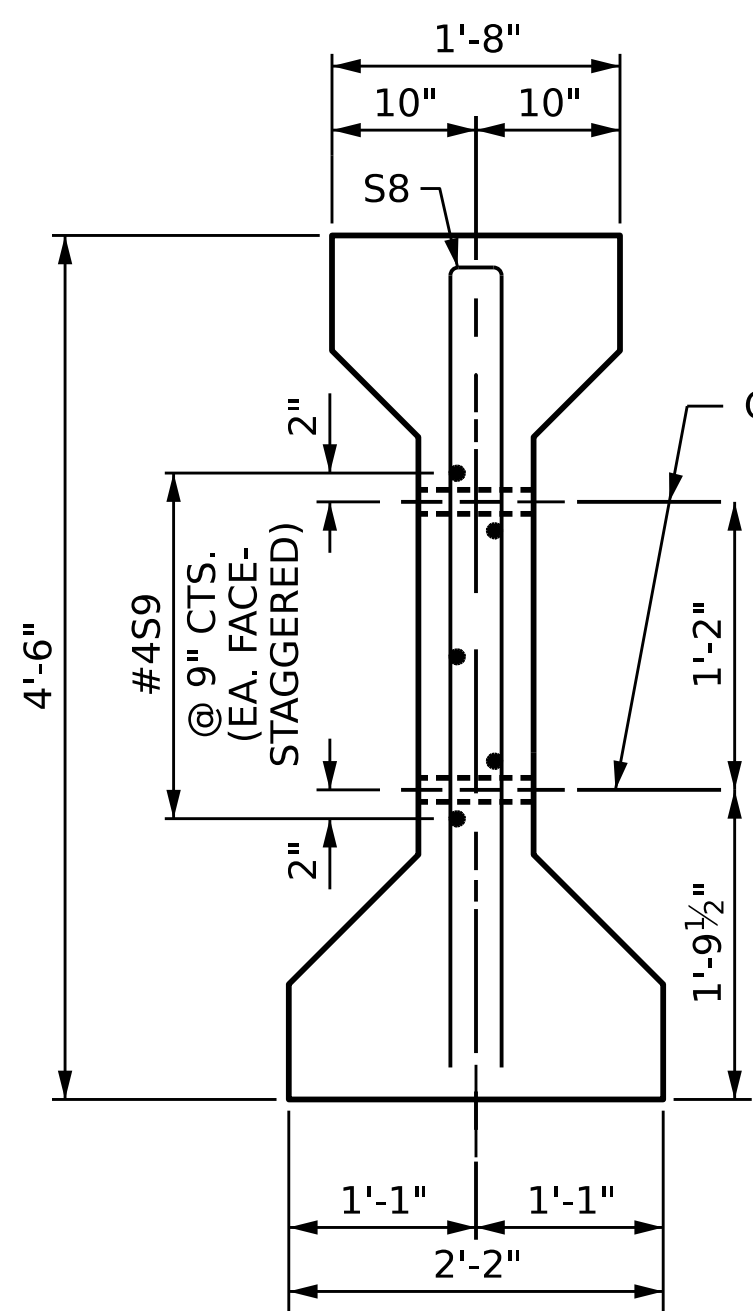
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	44



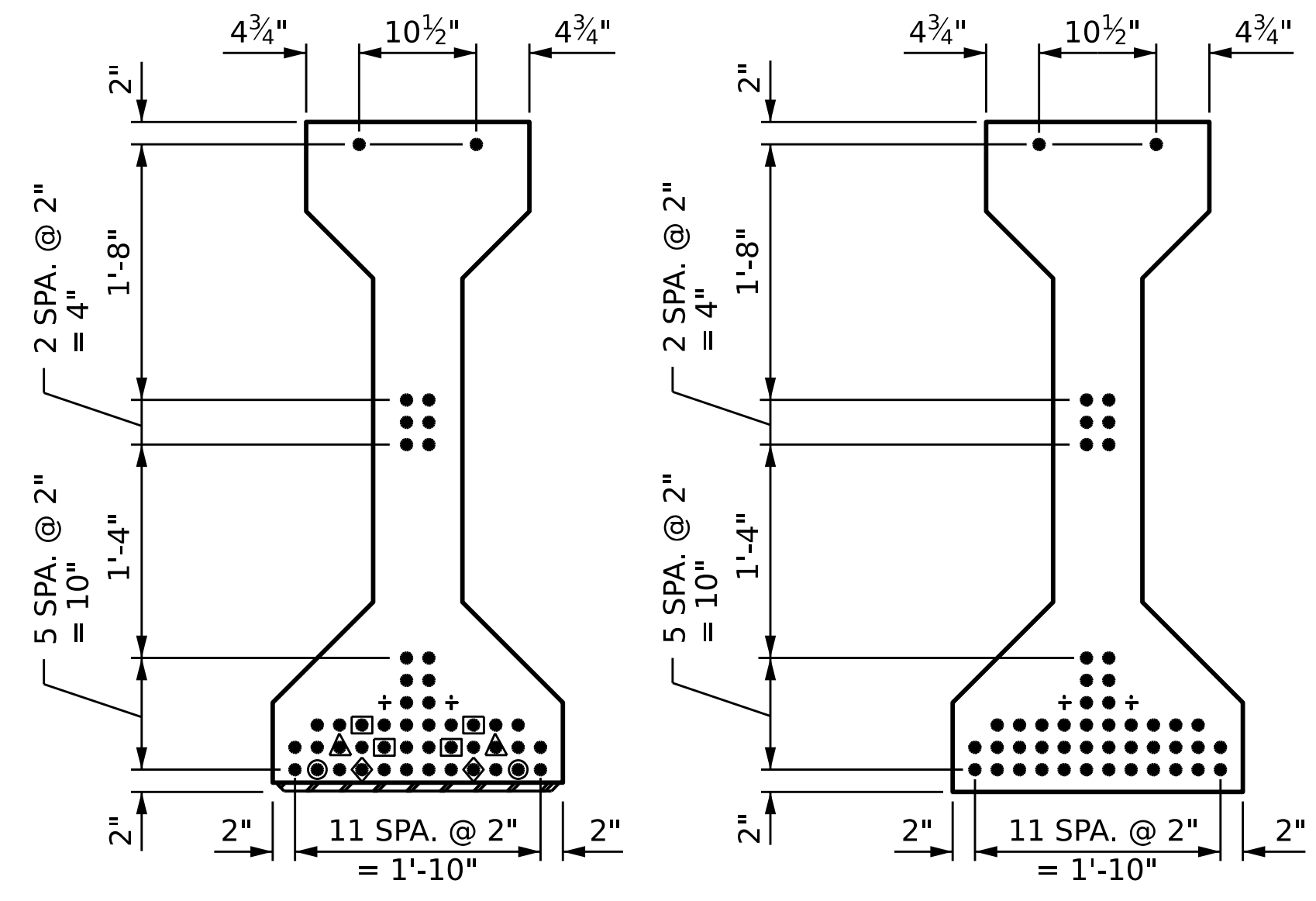
SECTION A-A

SECTION B-B

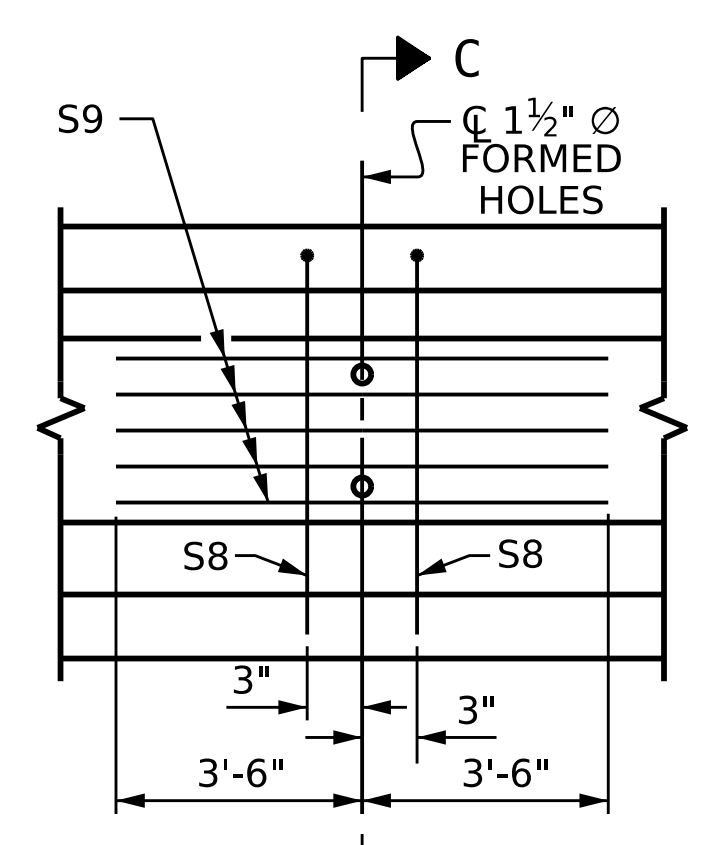


SECTION C-C
(S1 BARS NOT SHOWN)

- DEBONDING LEGEND**
- FULLY BONDED STRANDS
 - ◻ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
 - △ STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER
 - ⊙ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER
 - ◇ STRANDS DEBONDED FOR 20'-0" FROM END OF GIRDER



0.6" Ø LOW RELAXATION STRAND LAYOUT

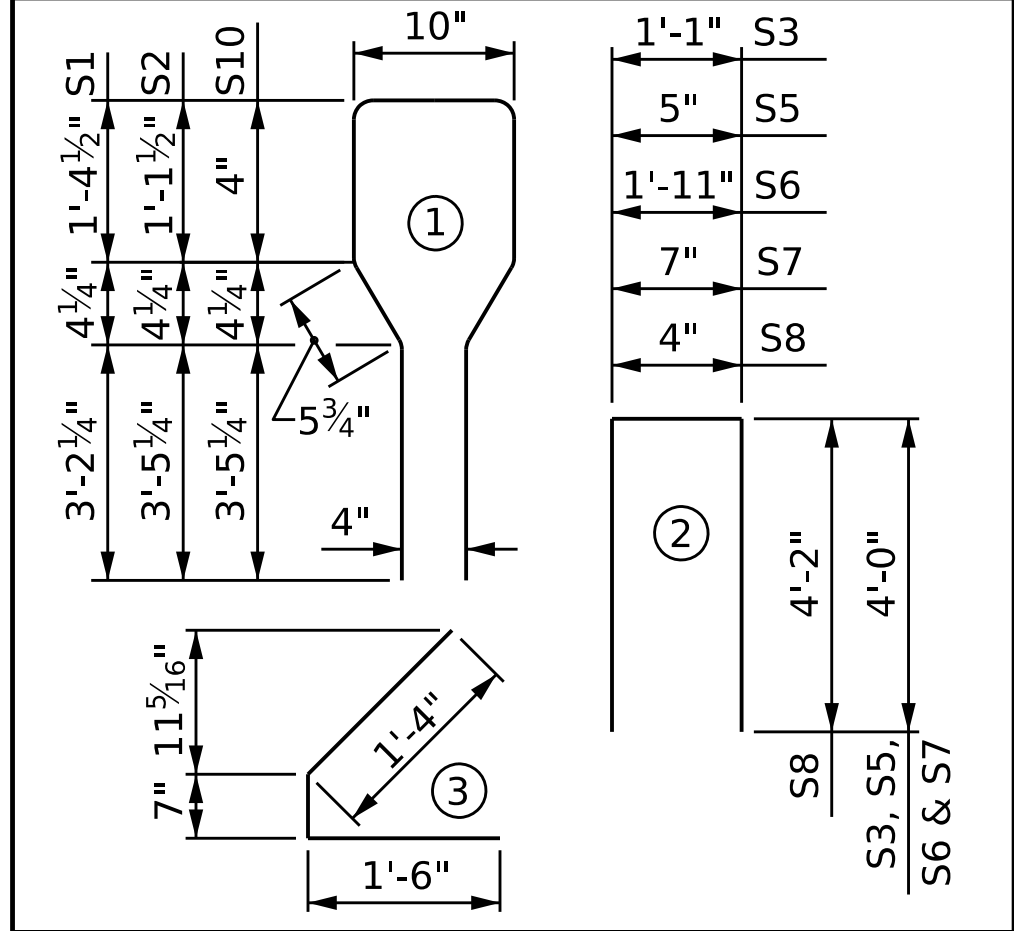


PARTIAL ELEVATION
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDER

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

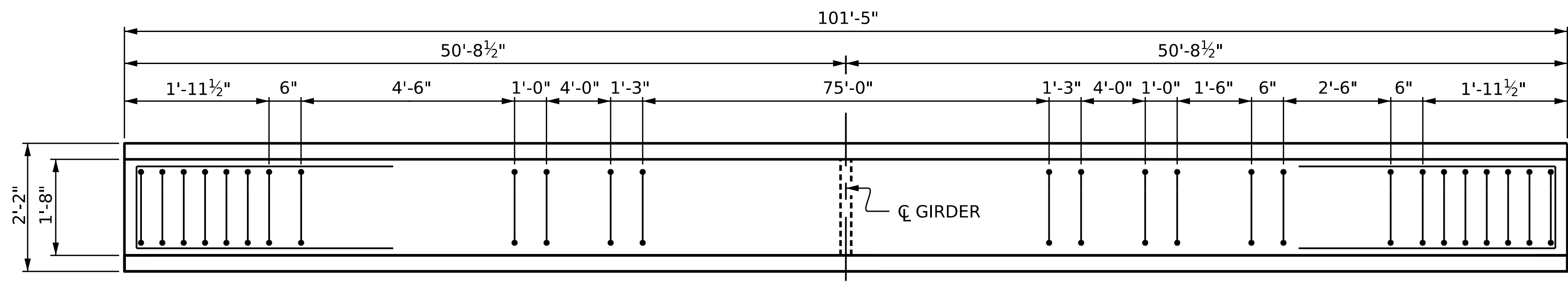
REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	75	#6	1	10'-11"	547
S2	7	#6	1	10'-11"	115
S3	4	#4	2	9'-1"	25
S4	68	#4	3	3'-5"	156
S5	6	#4	2	8'-5"	34
S6	2	#4	2	9'-11"	14
S7	4	#4	2	8'-7"	23
S8	2	#5	2	8'-8"	19
S9	5	#4	STR	7'-0"	24
S10	13	#6	1	9'-4"	183

BAR TYPES
ALL BAR DIMENSIONS ARE OUT-TO-OUT

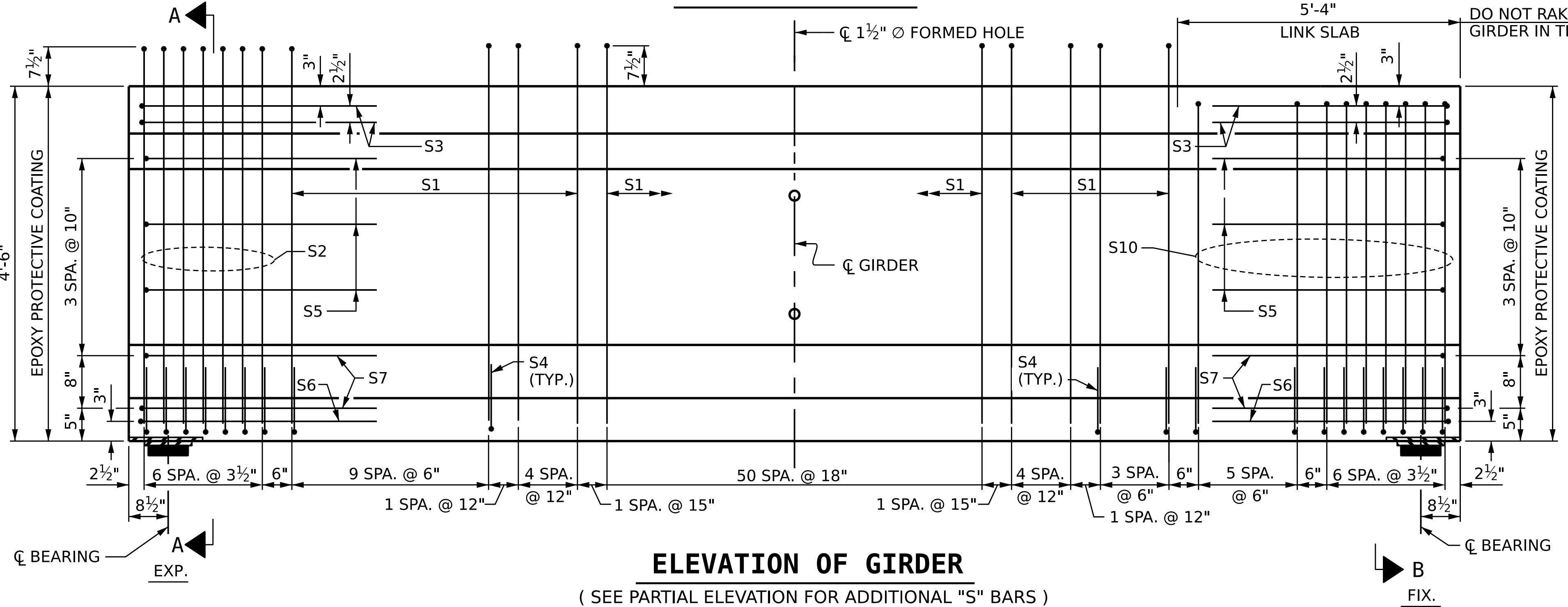


QUANTITIES FOR ONE GIRDER		
REINFORCING STEEL	8,000 PSI CONCRETE	0.6" Ø L. R. STRANDS
LB.	C.Y.	No.
1140	20.6	48

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
20	101'-5"	2028'-4"

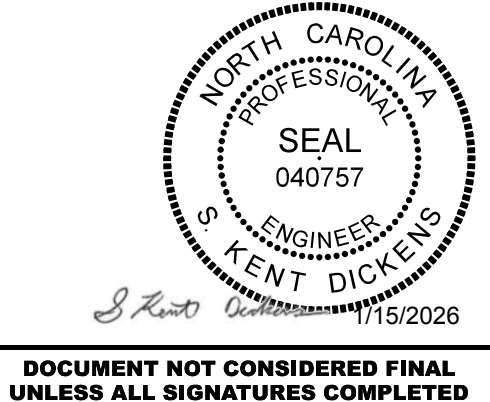
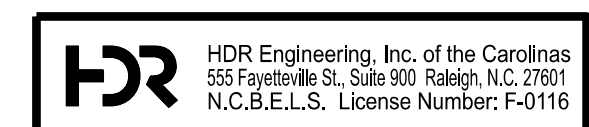


PLAN OF GIRDER



ELEVATION OF GIRDER
(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

DES BY: F. CORDOVA	DATE: 12/24	DWG BY: B. PETERSON	DATE: 12/24
DES CHK: K. DICKENS	DATE: 12/24	CHK BY: R. JONES	DATE: 12/24



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**AASHTO TYPE IV
PRESTRESSED CONCRETE
GIRDER - LINK SLAB
SPANS A, C, D, F**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-18
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	44

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
ALL GIRDERS																					
FORTIETH POINTS	0.000	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200	0.225	0.250	0.275	0.300	0.325	0.350	0.375	0.400	0.425	0.450	0.475	
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.023	0.046	0.068	0.090	0.111	0.132	0.152	0.169	0.188	0.204	0.219	0.233	0.245	0.256	0.265	0.273	0.279	0.283	0.286	
DEFLECTION DUE TO SUPERIMPOSED D.L. * ↓	0.000	0.014	0.028	0.042	0.055	0.068	0.081	0.093	0.104	0.115	0.126	0.135	0.143	0.151	0.157	0.163	0.168	0.171	0.174	0.176	
FINAL CAMBER ↑	0"	1/8"	3/16"	5/16"	7/16"	1/2"	5/8"	11/16"	13/16"	7/8"	15/16"	1"	1 1/16"	1 1/8"	1 3/16"	1 1/4"	1 1/4"	1 5/16"	1 5/16"	1 5/16"	
ALL GIRDERS																					
FORTIETH POINTS	0.500	0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750	0.775	0.800	0.825	0.850	0.875	0.900	0.925	0.950	0.975	1.000
CAMBER (GIRDER ALONE IN PLACE) ↑	0.287	0.286	0.283	0.278	0.273	0.265	0.256	0.245	0.233	0.219	0.204	0.188	0.170	0.152	0.132	0.111	0.090	0.068	0.046	0.023	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L. * ↓	0.176	0.176	0.174	0.171	0.168	0.163	0.157	0.151	0.143	0.135	0.126	0.115	0.105	0.093	0.081	0.068	0.055	0.042	0.028	0.014	0.000
FINAL CAMBER ↑	1 5/16"	1 5/16"	1 5/16"	1 5/16"	1 1/4"	1 3/4"	1 3/16"	1 1/8"	1 1/16"	1"	1 5/16"	7/8"	1 3/16"	1 1/16"	5/8"	1/2"	7/16"	5/16"	3/16"	1/8"	0"

↑ = UPWARD CAMBER

↓ = DOWNWARD DEFLECTION

* INCLUDES FUTURE WEARING SURFACE IN SUPERIMPOSED DEAD LOAD.

ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER" WHICH IS SHOWN IN INCHES (FRACTION FORM).

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 BOTH SIDES AND BOTTOM OF END 2 FEET OF GIRDER AND END OF GIRDER SURFACES INDICATED IN ELEVATION VIEW ON SHEETS 1 OF 4 AND 2 OF 4.

EMBEDDED PLATE "B-1" 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.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

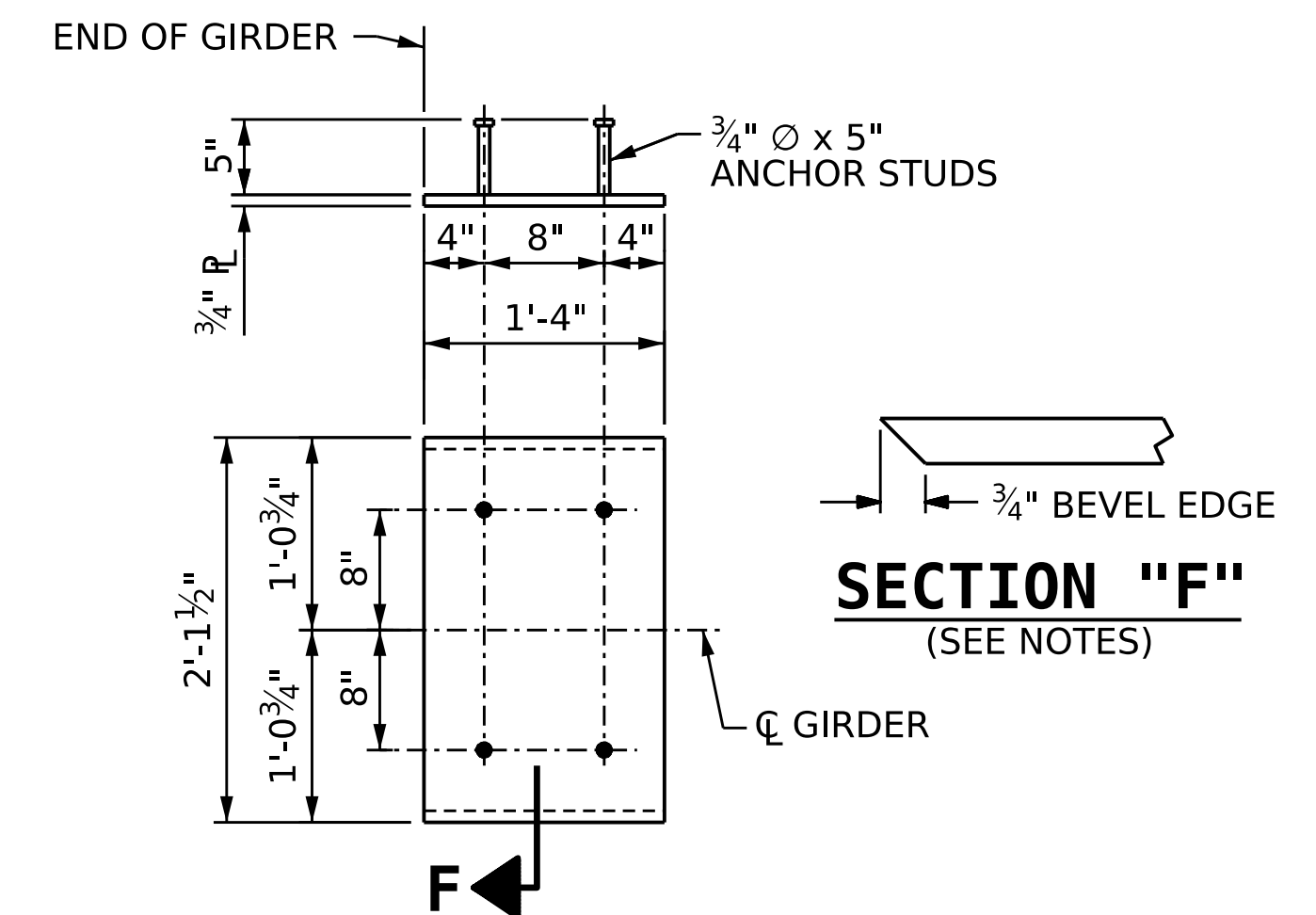
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6,400 PSI.

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 THE LINK SLAB AREA, SHALL BE RAKED TO A DEPTH OF 1/4".

PRESTRESSED CONCRETE GIRDERS ARE DESIGNED FOR 0 PSI TENSION IN THE PRECOMPRESSED TENSILE ZONE UNDER ALL LOADING CONDITIONS.

PRESTRESSED CONCRETE GIRDERS SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR. SEE STANDARD SPECIFICATIONS FOR CALCIUM NITRITE CORROSION INHIBITOR.



EMBEDDED PLATE "B-1" DETAILS

TWO EMBEDDED PLATES "B-1" ARE REQUIRED FOR EACH GIRDER.

PROJECT NO. **BR-0004**
BEAUFORT COUNTY
 STATION: **23+50.00 -L-**

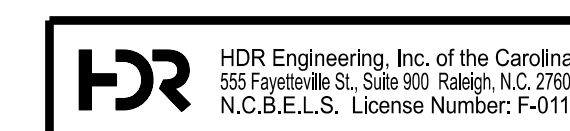
SHEET 3 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**SUPERSTRUCTURE
 PRESTRESSED CONCRETE
 GIRDER FOR LINK SLAB
 DETAILS**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-20
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	44

DES BY: <u>F. CORDOVA</u>	DATE: <u>12/24</u>	DWG BY: <u>B. PETERSON</u>	DATE: <u>12/24</u>
DES CHK: <u>K. DICKENS</u>	DATE: <u>12/24</u>	CHK BY: <u>R. JONES</u>	DATE: <u>12/24</u>



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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 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.

METALLIZE 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.

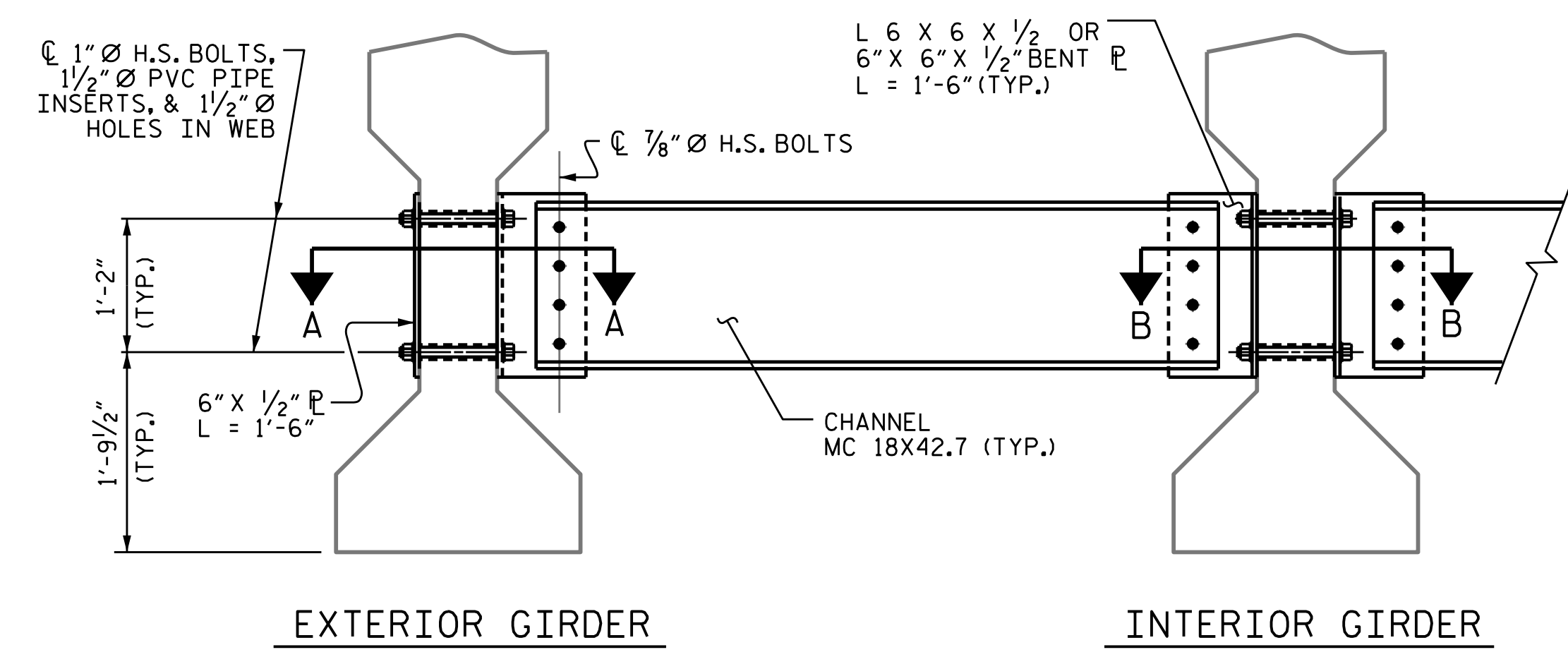
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

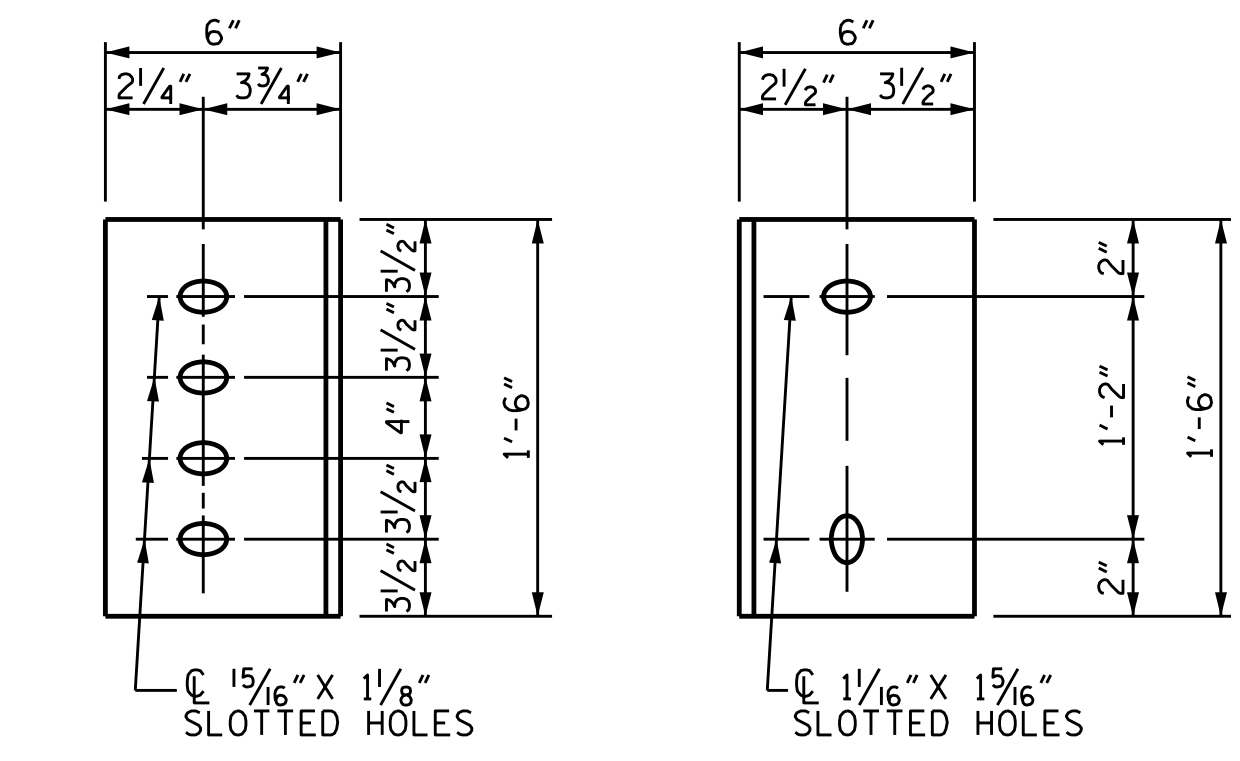
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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.

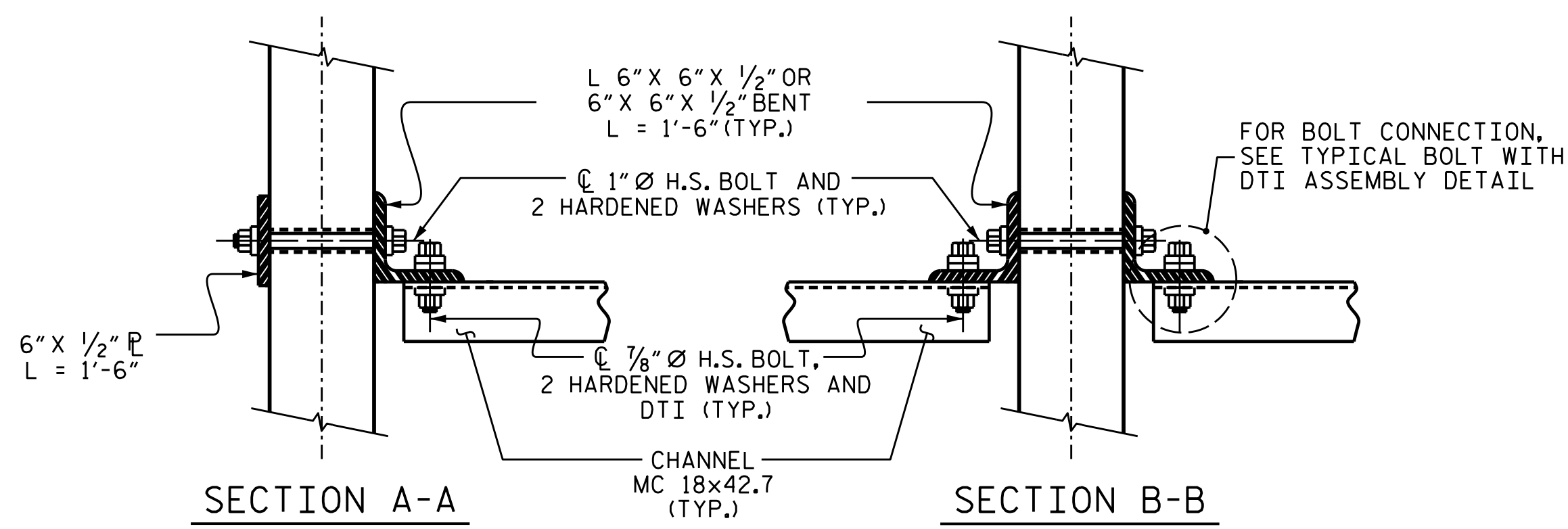
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.



PART SECTION AT INTERMEDIATE DIAPHRAGM



CONNECTOR PLATE DETAILS



CONNECTION DETAILS

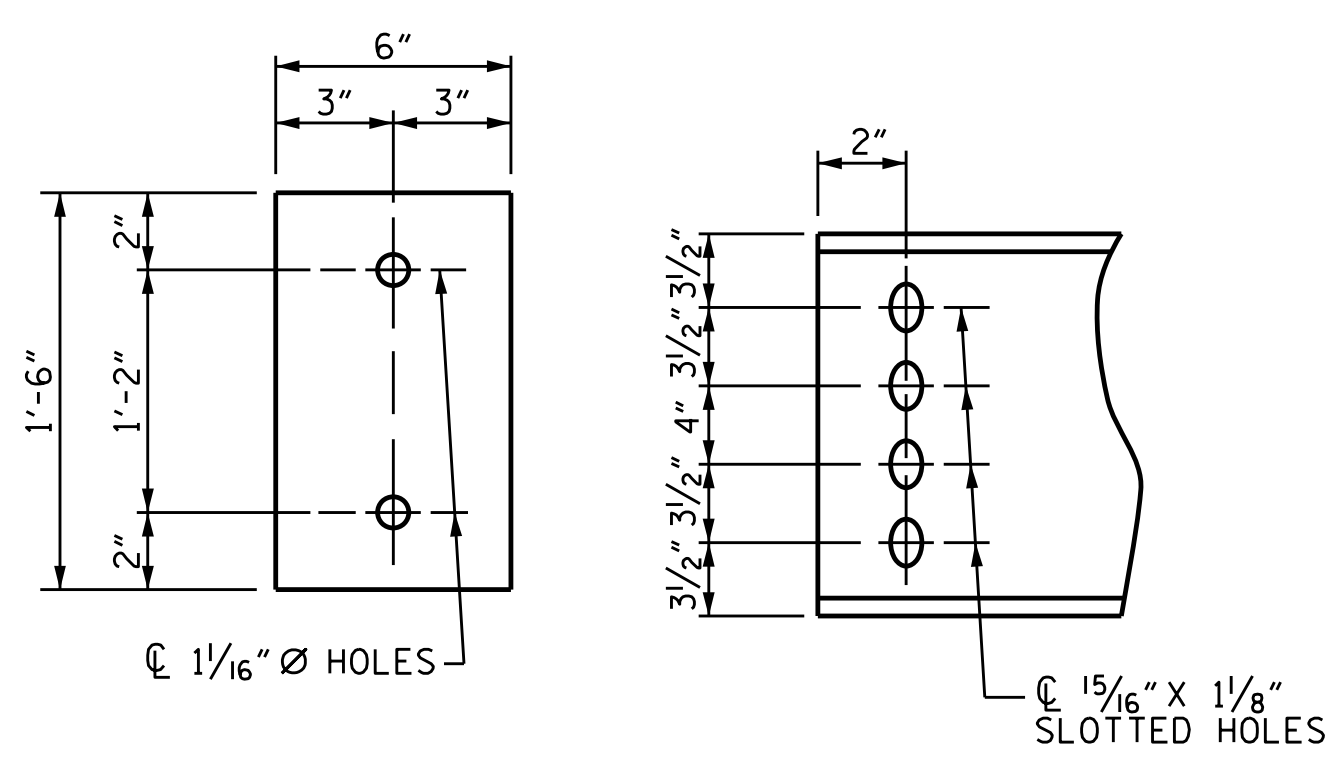
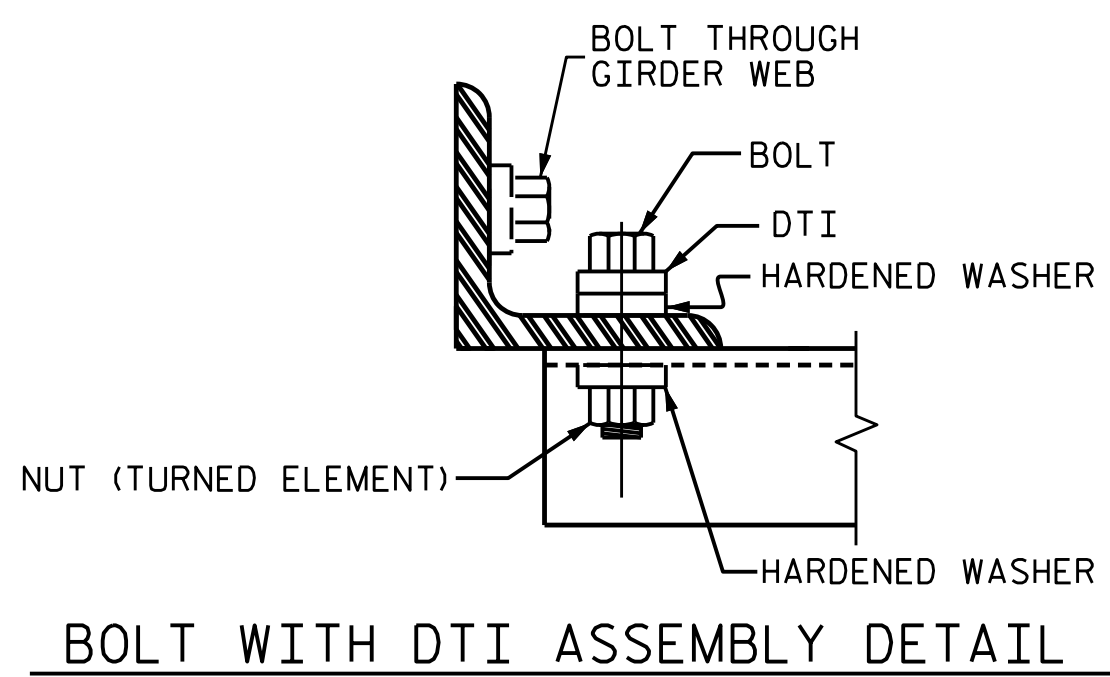


PLATE DETAILS CHANNEL END



BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. **BR-0004**
BEAUFORT COUNTY
 STATION: **23+50.00 -L-**
 SHEET 4 OF 4

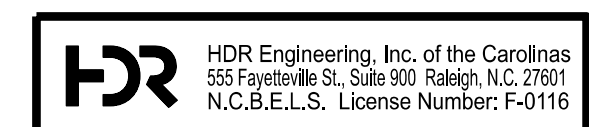
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 INTERMEDIATE STEEL
 DIAPHRAGM DETAILS**



REVISIONS						SHEET NO. S-21
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	44

DES BY: F. CORDOVA	DATE: 12/24	DWG BY: B. PETERSON	DATE: 06/24
DES CHK: J. PATT	DATE: 12/24	CHK BY: J. PATT	DATE: 12/24



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NOTES

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

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

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

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

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

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

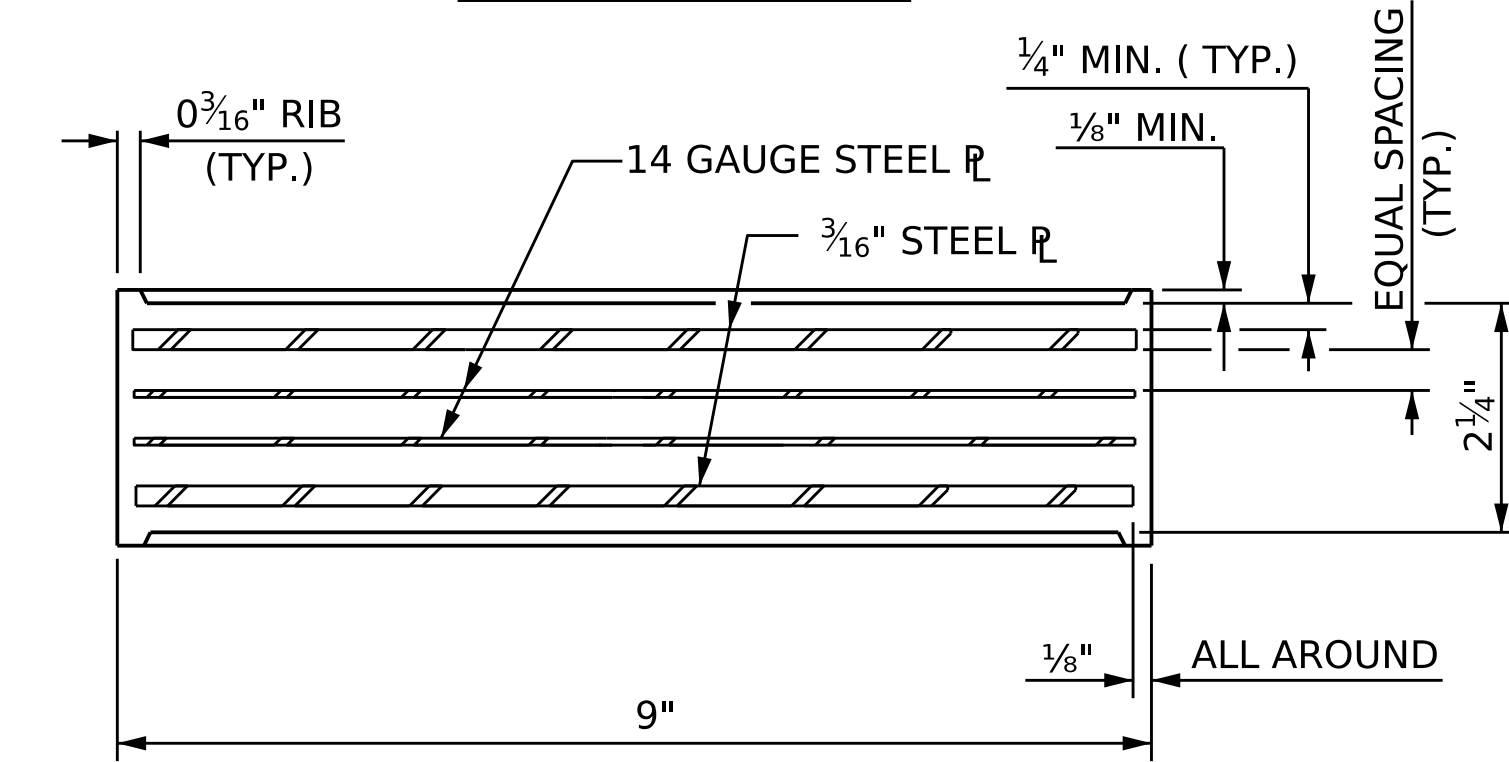
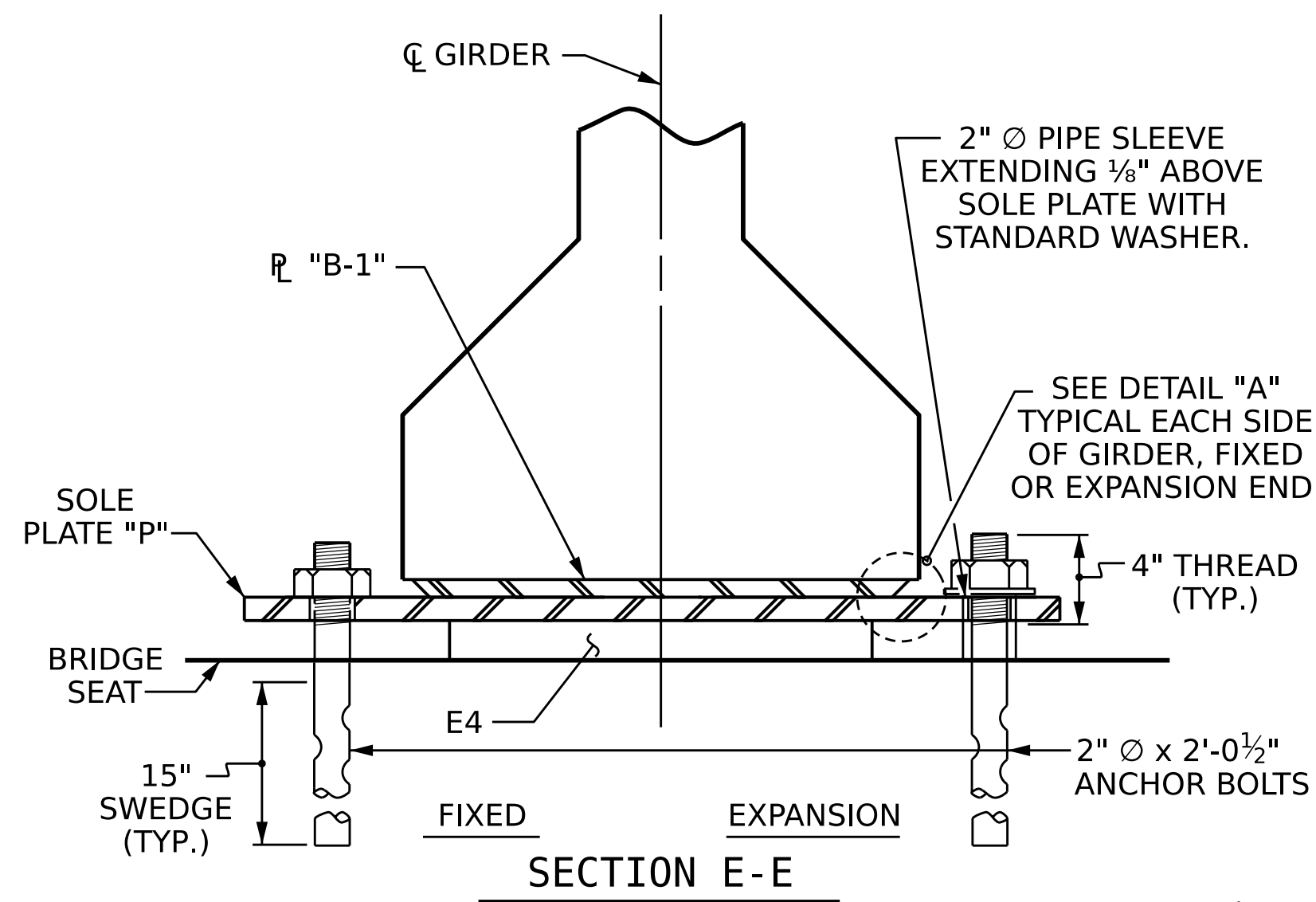
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

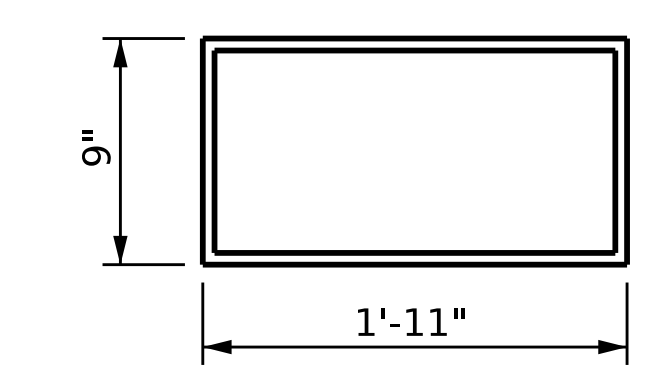
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE STANDARD SPECIFICATIONS.

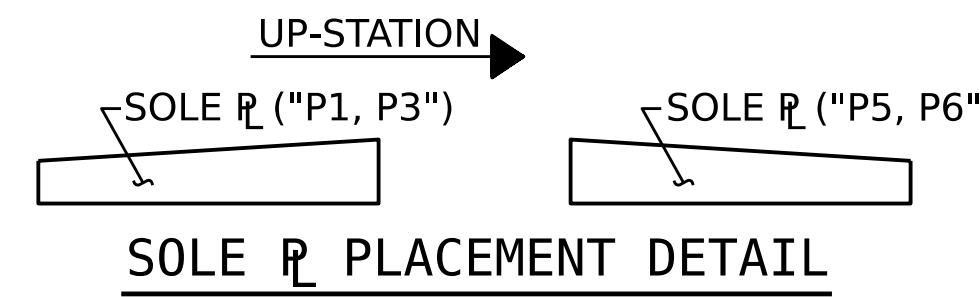
ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



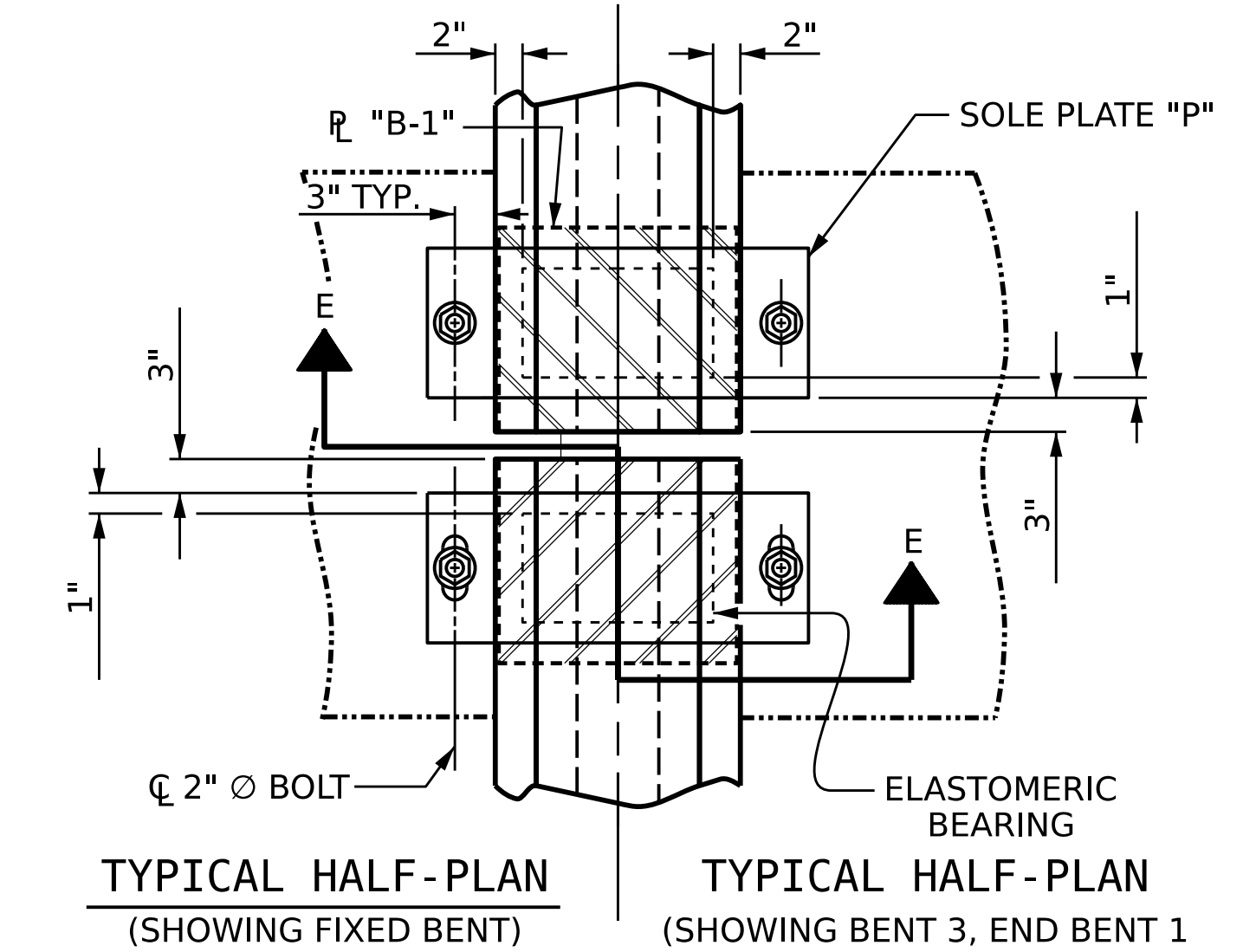
TYPICAL SECTION OF ELASTOMERIC BEARINGS



E4 (60 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE V

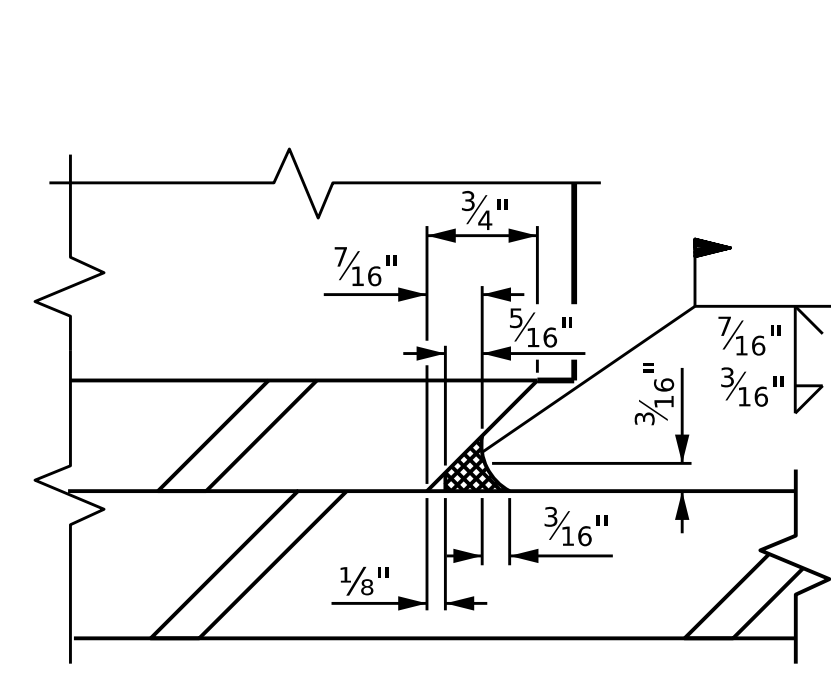


SOLE PLATE PLACEMENT DETAIL

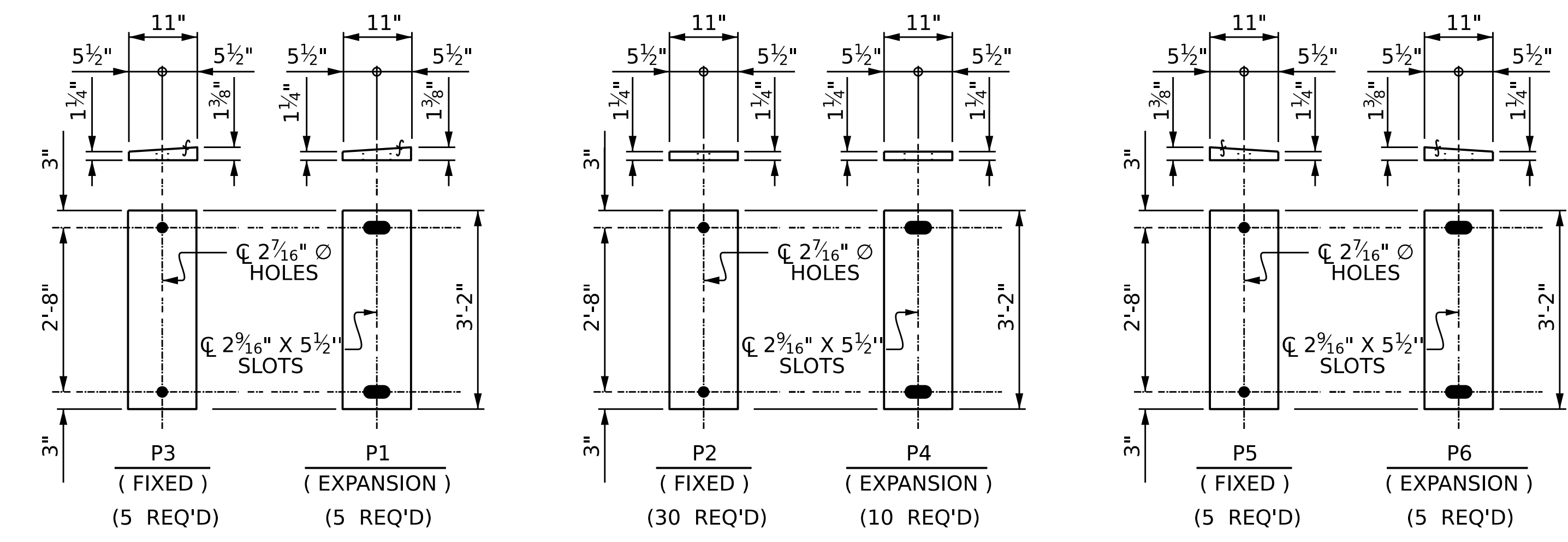


MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	TYPE V
	365 k

PROJECT NO. **BR-0004**
BEAUFORT COUNTY
STATION: **23+50.00 -L-**



DETAIL "A"



SOLE PLATE DETAILS ("P")



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUPERSTRUCTURE
ELASTOMERIC BEARING
DETAILS**

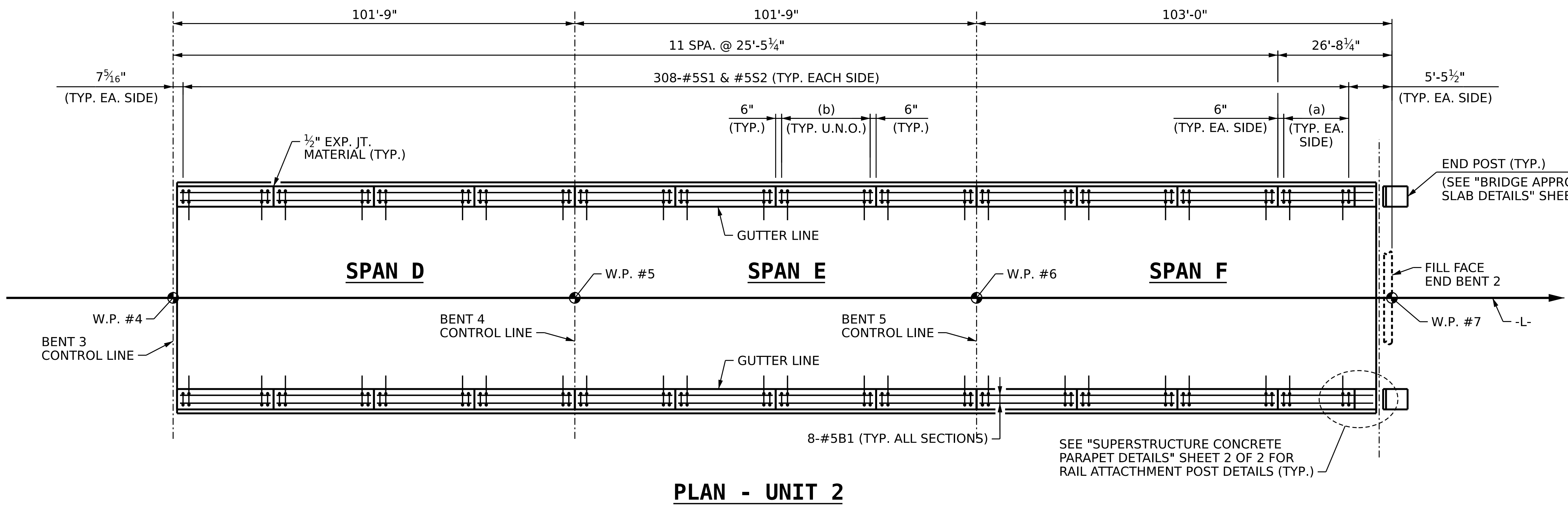
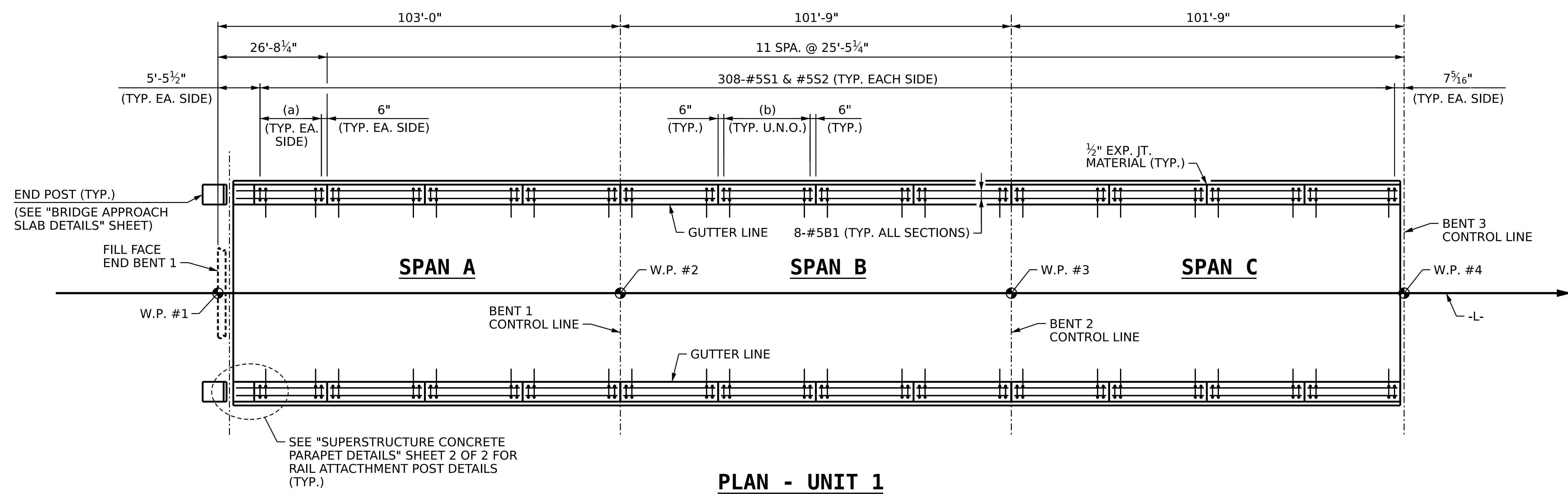
REVISIONS						SHEET NO. 5-22
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	TOTAL SHEETS 44
2	--	--	4	--	--	

DES BY: F. CORDOVA	DATE: 07/24	DWG BY: B. PETERSON	DATE: 06/24
DES CHK: K. DICKENS	DATE: 12/24	CHK BY: K. DICKENS	DATE: 12/24

HR HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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NOTES
 SEE "SUPERSTRUCTURE CONCRETE PARAPET DETAILS" SHEET 2 OF 2 FOR QUANTITIES AND DETAILS.
 (a) 22-#5S1 & #5S2 @ 1'-0" MAX. CTS.
 (b) 26-#5S1 & #5S2 @ 1'-0" MAX. CTS.



PROJECT NO. **BR-0004**
BEAUFORT COUNTY
 STATION: **23+50.00 -L-**
 SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 CONCRETE PARAPET
 DETAILS**

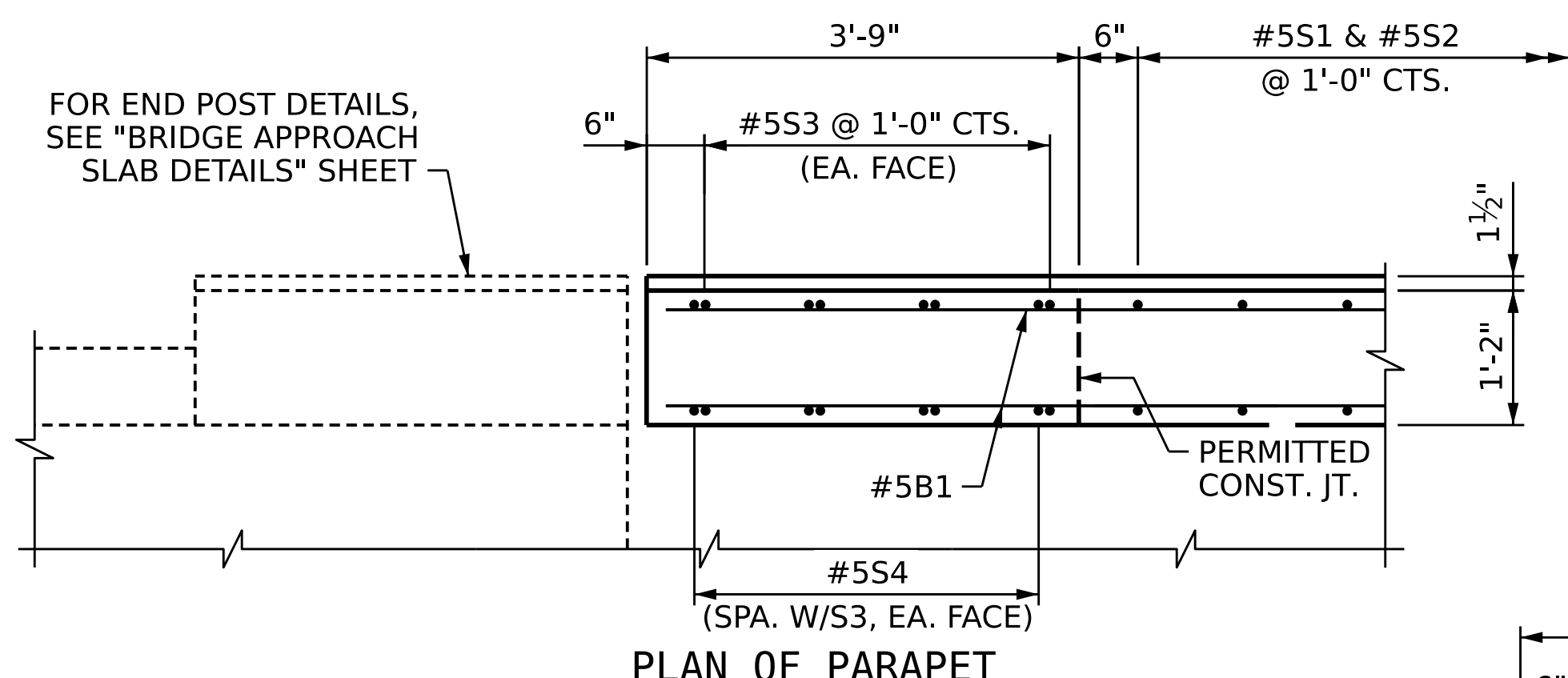


DES BY: J. PATT DATE: 12/24
 DES CHK: R. JONES DATE: 12/24
 DWG BY: B. PETERSON DATE: 12/24
 CHK BY: R. JONES DATE: 12/24

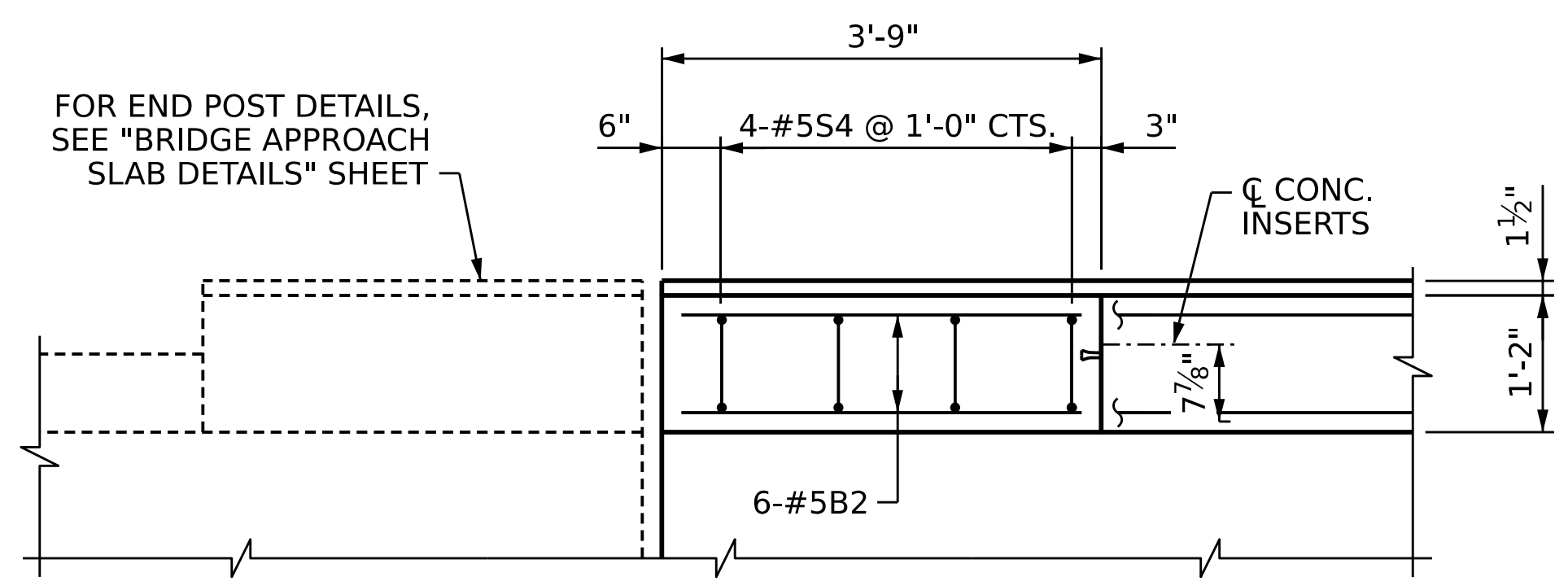
HDR HDR Engineering, Inc. of the Carolinas
 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
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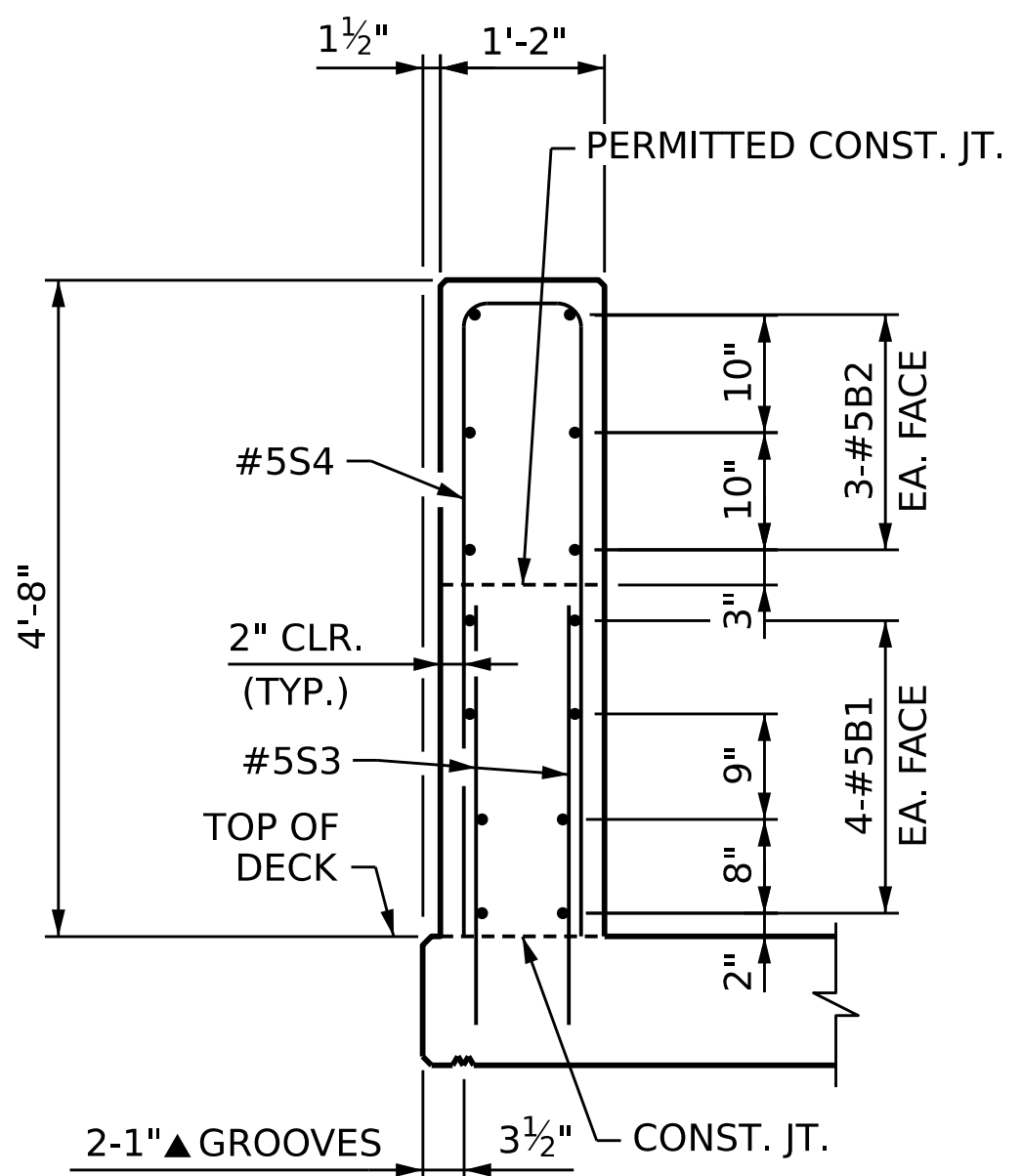
REVISIONS						SHEET NO. S-23
NO.	BY:	DATE:	NO.	BY:	DATE:	
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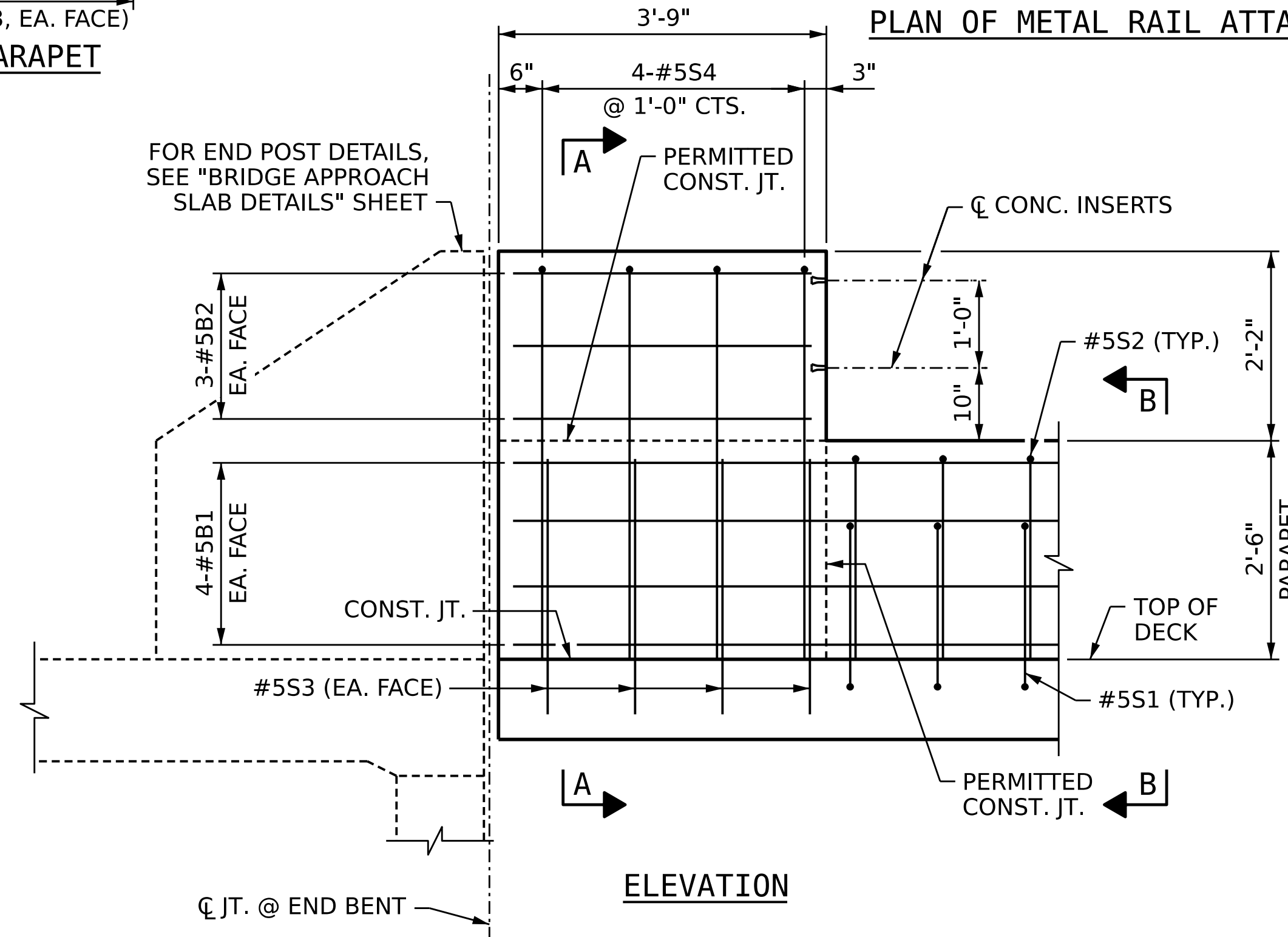
PLAN OF PARAPET



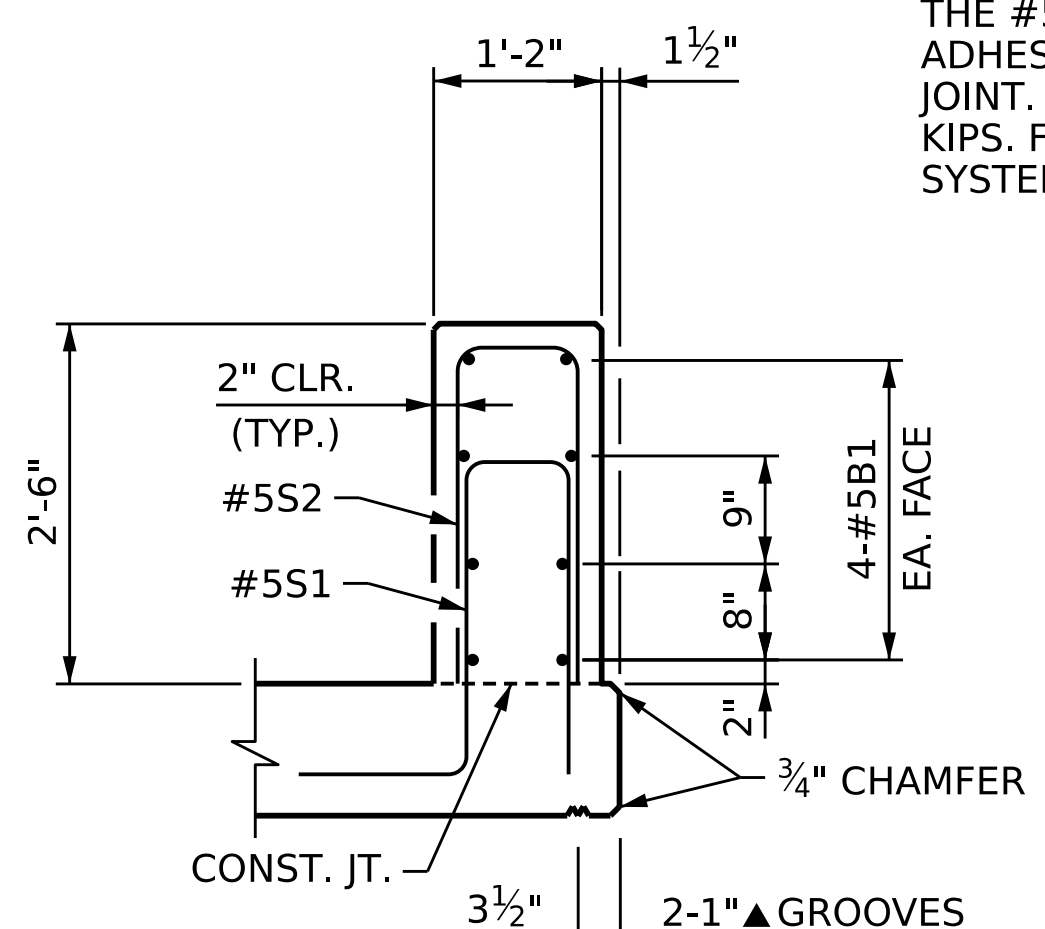
PLAN OF METAL RAIL ATTACHMENT POST



SECTION A-A



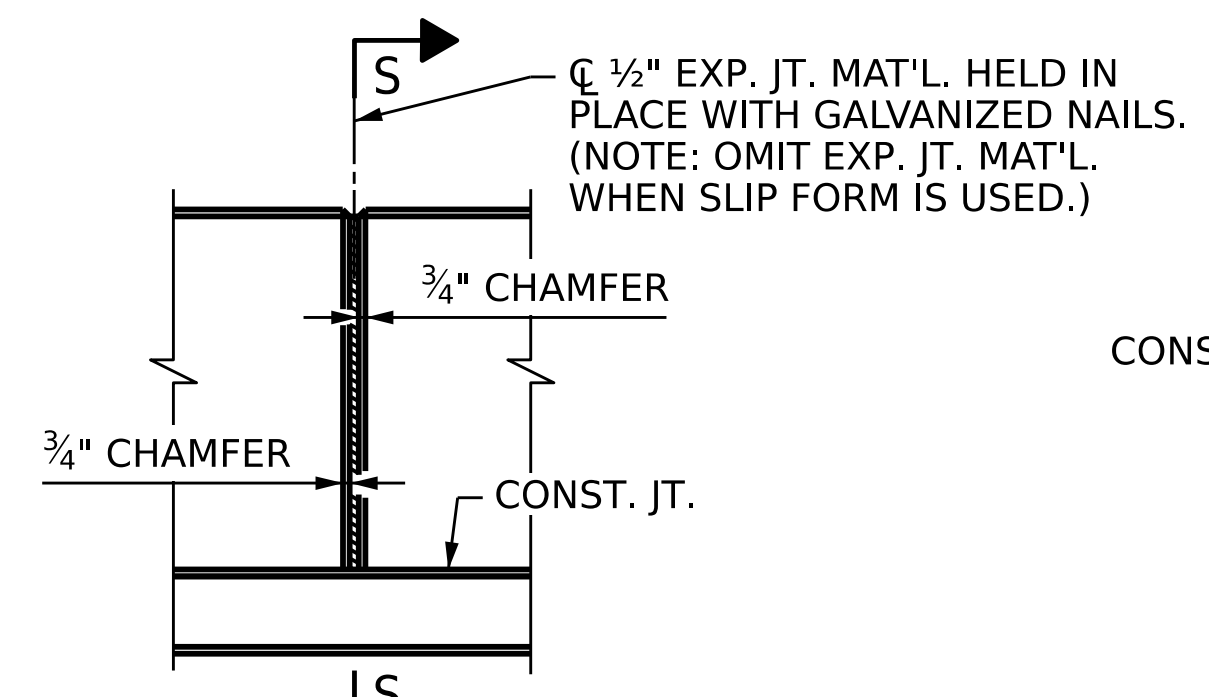
ELEVATION



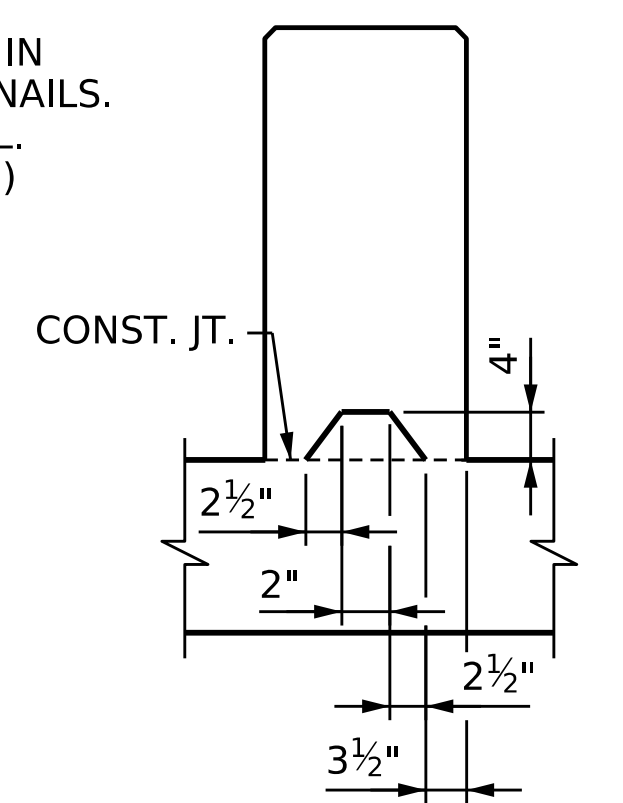
SECTION B-B

PARAPET AND METAL RAIL ATTACHMENT POST FOR TWO BAR METAL RAIL

(LEFT PARAPET AT END BENT 1 SHOWN, OTHERS SIMILAR)



ELEVATION AT EXPANSION JOINTS
PARAPET RAIL DETAILS



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

NOTES

CONCRETE PARAPET 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.

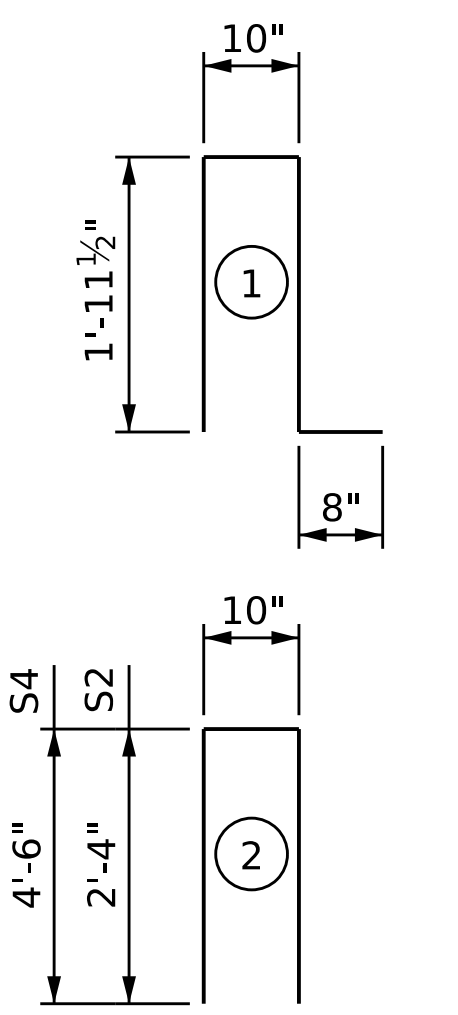
ALL REINFORCING STEEL IN CONCRETE PARAPETS AND RAIL ATTACHMENT POSTS SHALL BE EPOXY COATED.

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

GROOVED CONTRACTION JOINTS IN THE CONCRETE PARAPET SHALL BE LOCATED SUCH THAT RAIL POST BASES ARE NOT LOCATED ON GROOVED CONTRACTION JOINTS. PROVIDE 2" MINIMUM BETWEEN ANY GROOVED CONTRACTION JOINT AND THE EDGE OF ANY RAIL POST BASE.

THE #5 S3 BARS SHALL BE INSTALLED, USING AN ADHESIVE ANCHORING SYSTEM, AFTER SAWING THE JOINT. THE YIELD LOAD FOR THE #5 S3 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BAR	QTY	SIZE	TYPE	LENGTH	WEIGHT
* B1	384	#5	STR	24'-11"	9980
* B2	24	#5	STR	3'-5"	86
* S1	1232	#5	1	5'-5"	6961
* S2	1232	#5	2	5'-6"	7068
* S3	32	#5	STR	3'-0"	101
* S4	16	#5	2	9'-10"	165

* EPOXY COATED REINFORCING STEEL	LBS.	24361
CLASS AA CONCRETE	CU.YDS.	133.3
1'-2" x 2'-6" CONCRETE PARAPET	LIN. FT.	1220.7

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**SUPERSTRUCTURE
 CONCRETE PARAPET
 DETAILS**



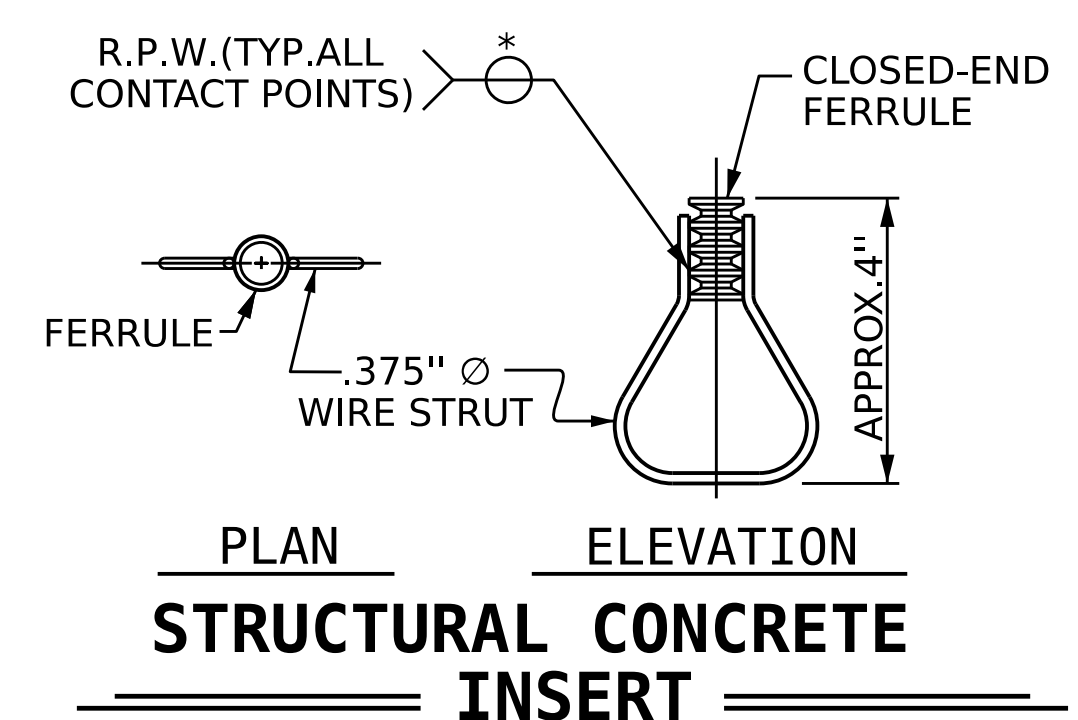
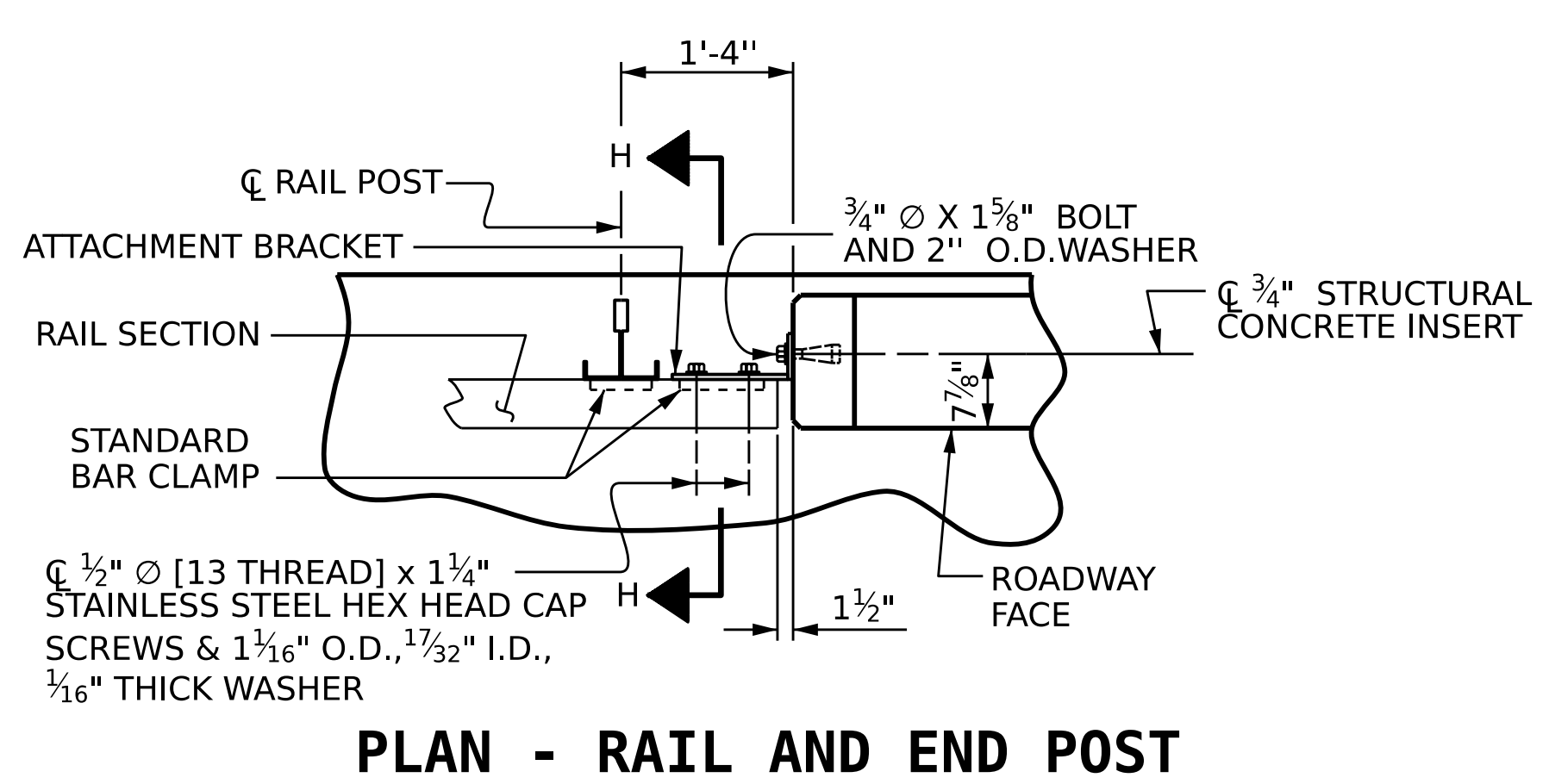
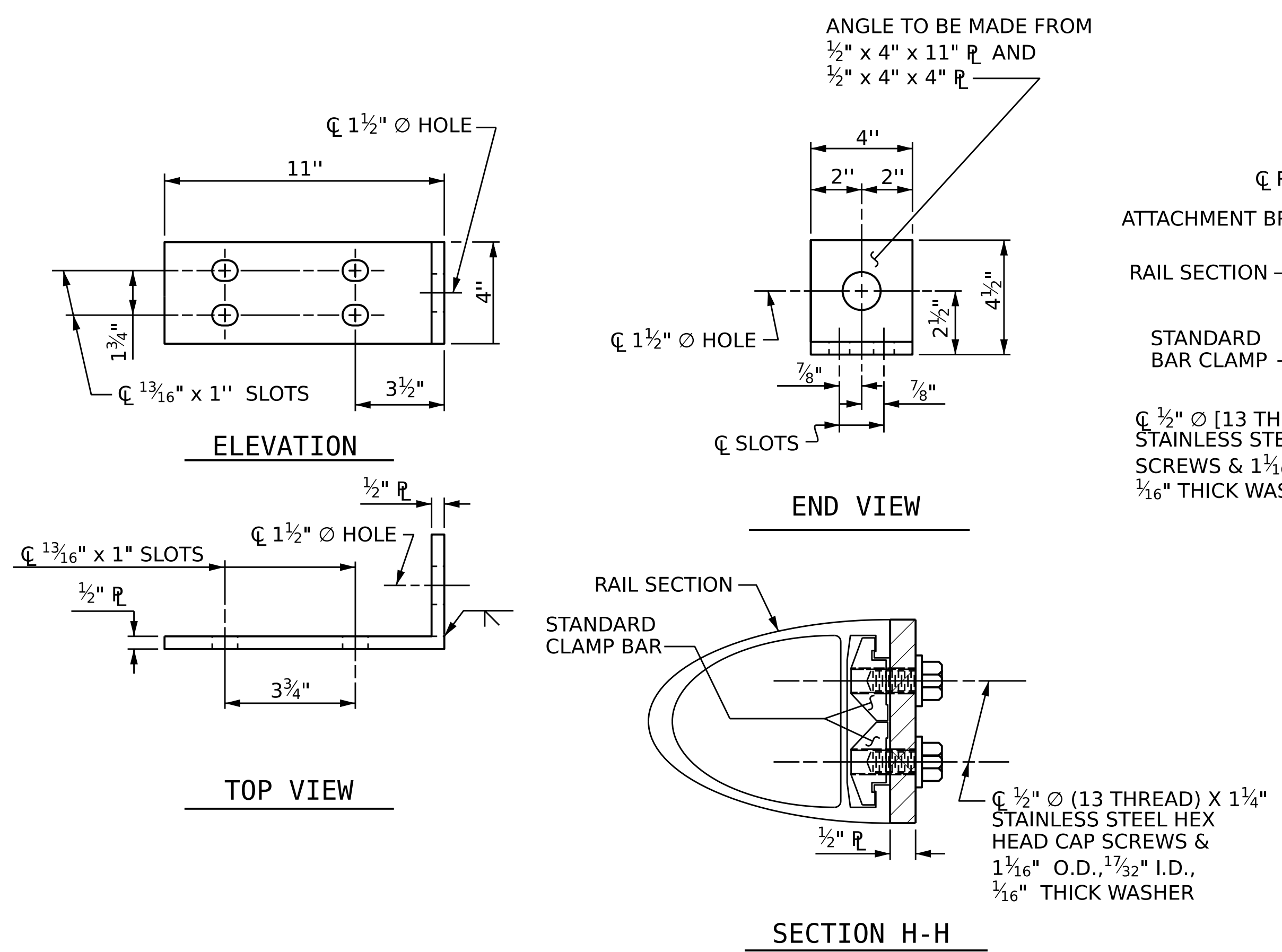
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DES BY: J. PATT DATE: 12/24
 DES CHK: R. JONES DATE: 12/24
 DWG BY: B. PETERSON DATE: 12/24
 CHK BY: R. JONES DATE: 12/24

HDR HDR Engineering, Inc. of the Carolinas
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 N.C.B.E.L.S. License Number: F-0116

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SEE SHEET 2 OF 4 FOR RAIL POST SPACING



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

NOTES

STRUCTURAL CONCRETE INSERT

- THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".
 - B. 1 - 3/4" ϕ x 1 5/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" ϕ x 1 5/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
 - C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" ϕ WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

- THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- A. 1/2" PLATES SHALL CONFORM TO ASTM A36 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
 - B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" ϕ x 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" ϕ x 1 5/8" BOLT SHALL HAVE N. C. THREADS.
 - C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.
 - D. STANDARD CLAMP BARS (SEE SHEET 4 OF 4).
 - E. 1/2" ϕ PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.
- THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.
- THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.
- THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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

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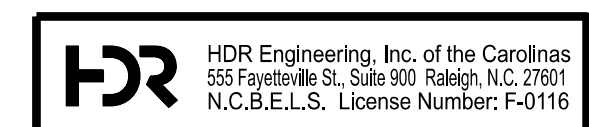
**SUPERSTRUCTURE
 2 BAR METAL RAIL
 END OF RAIL DETAILS**



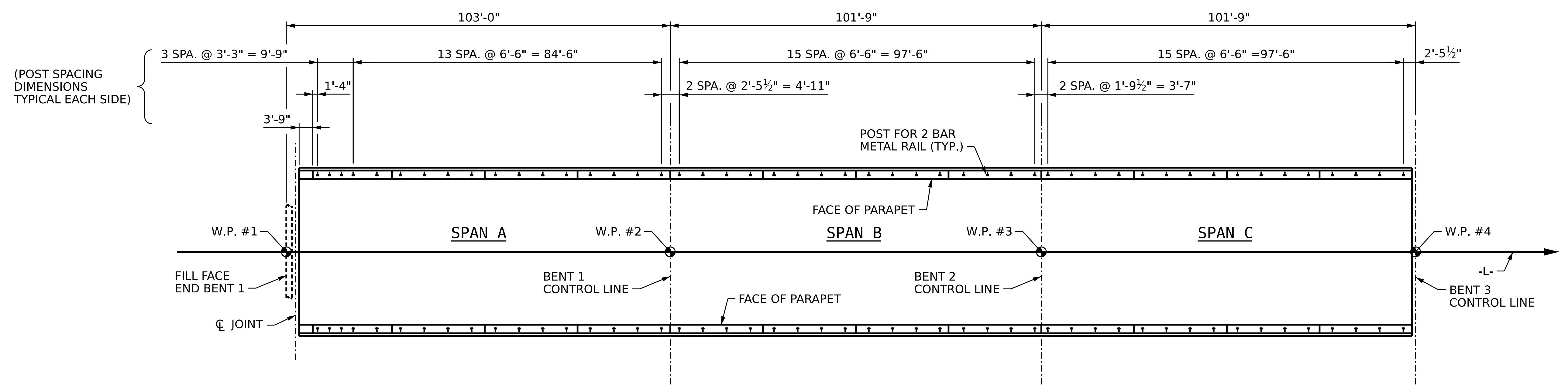
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DES CHK: R. JONES	DATE: 12/24	CHK BY: R. JONES	DATE: 12/24

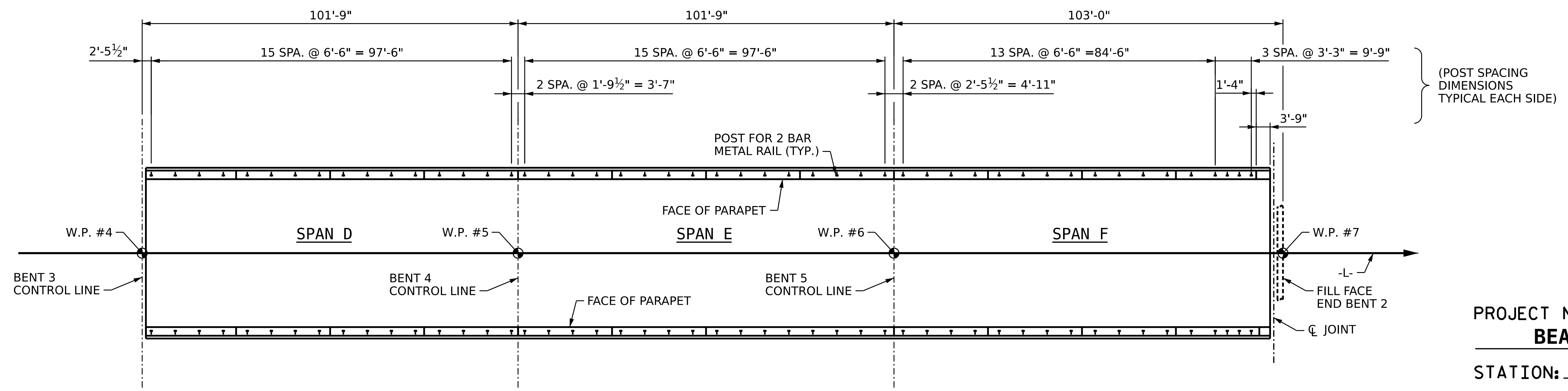
DETAILS FOR ATTACHING METAL RAIL TO END POST



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PLAN OF RAIL POST SPACING - UNIT 1



PLAN OF RAIL POST SPACING - UNIT 2

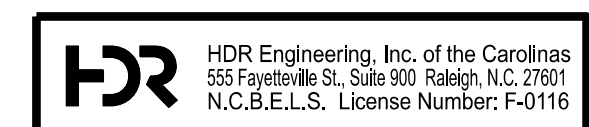
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**SUPERSTRUCTURE
 2 BAR METAL RAIL
 RAIL POST SPACINGS**



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NOTES

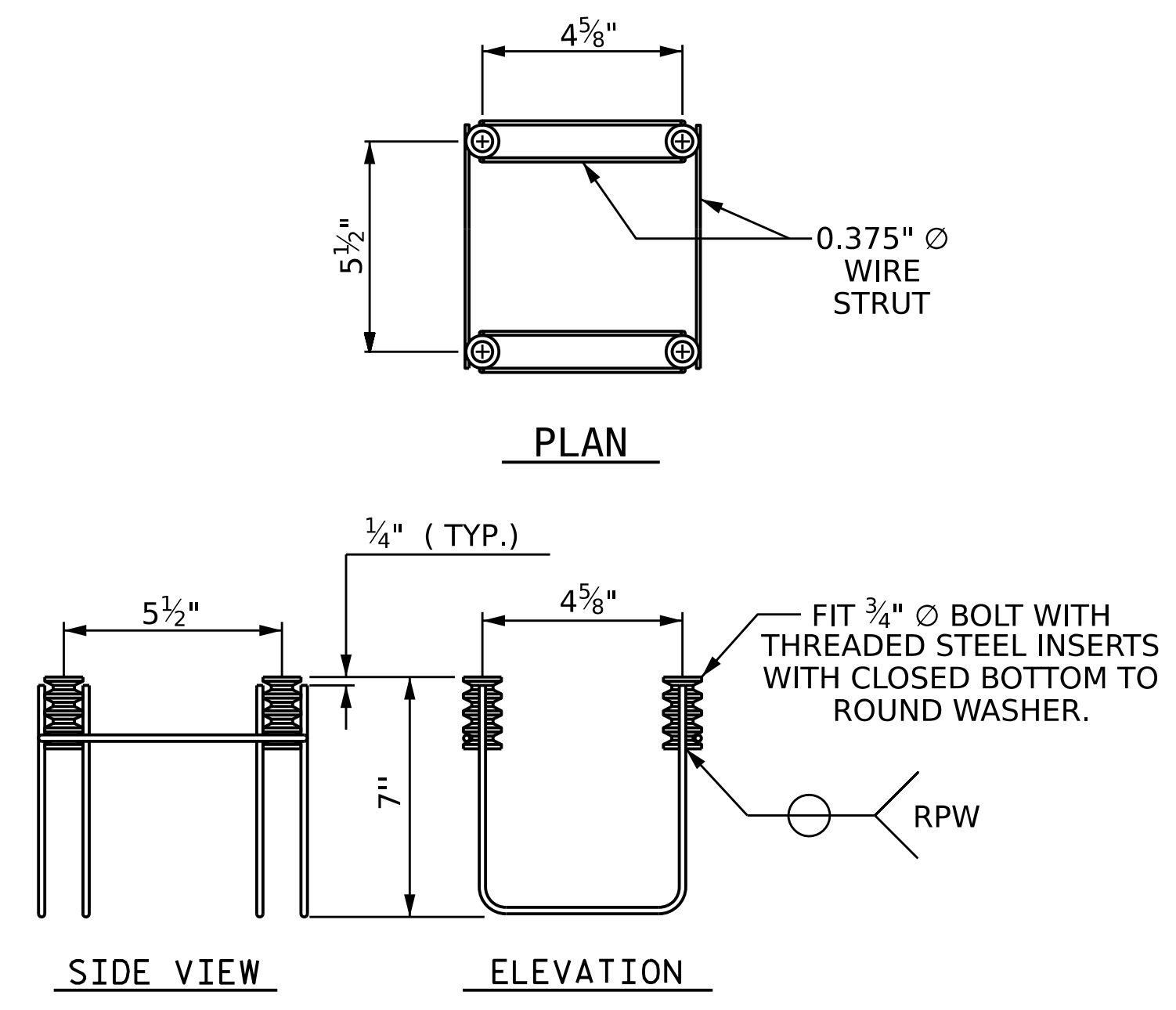
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

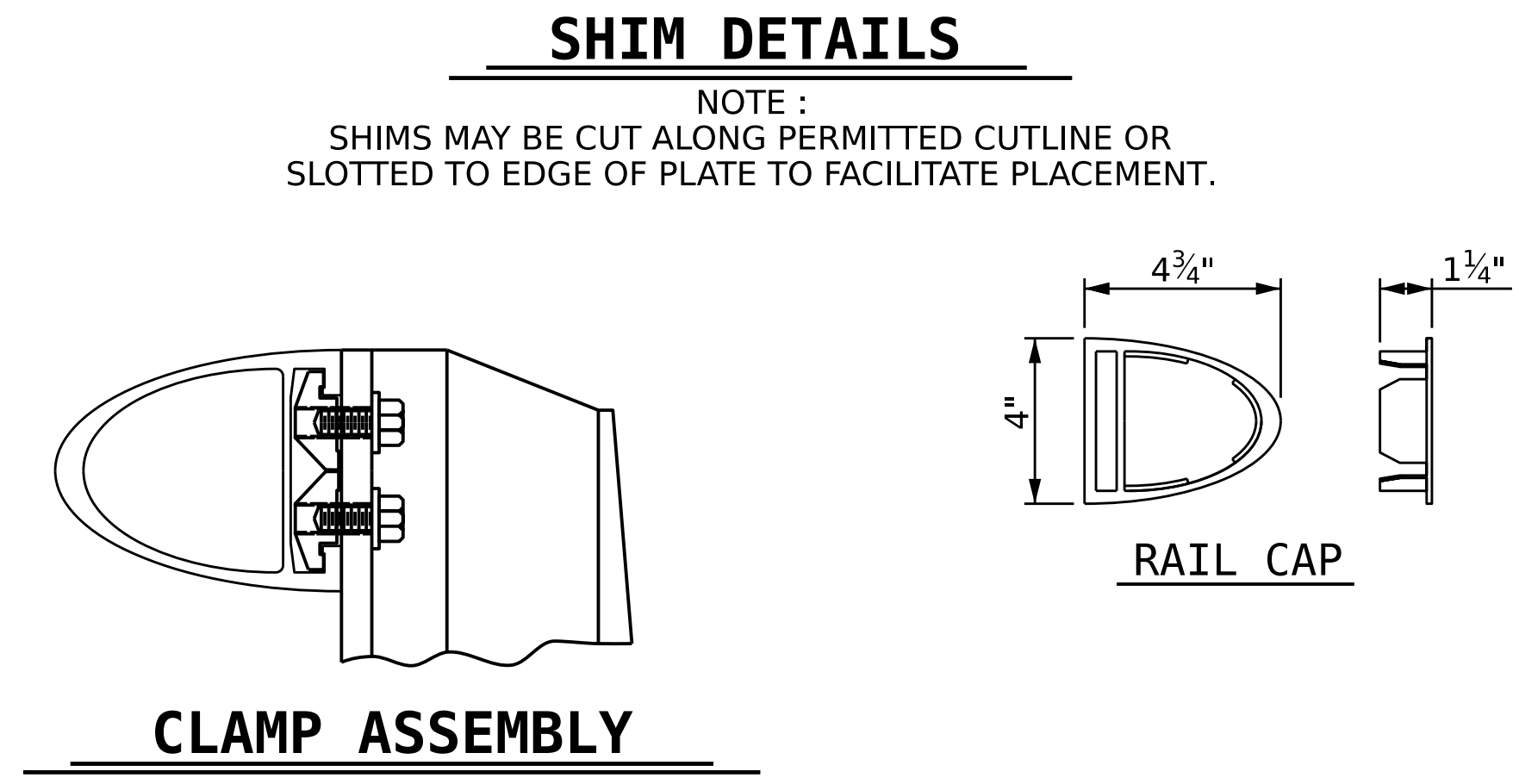
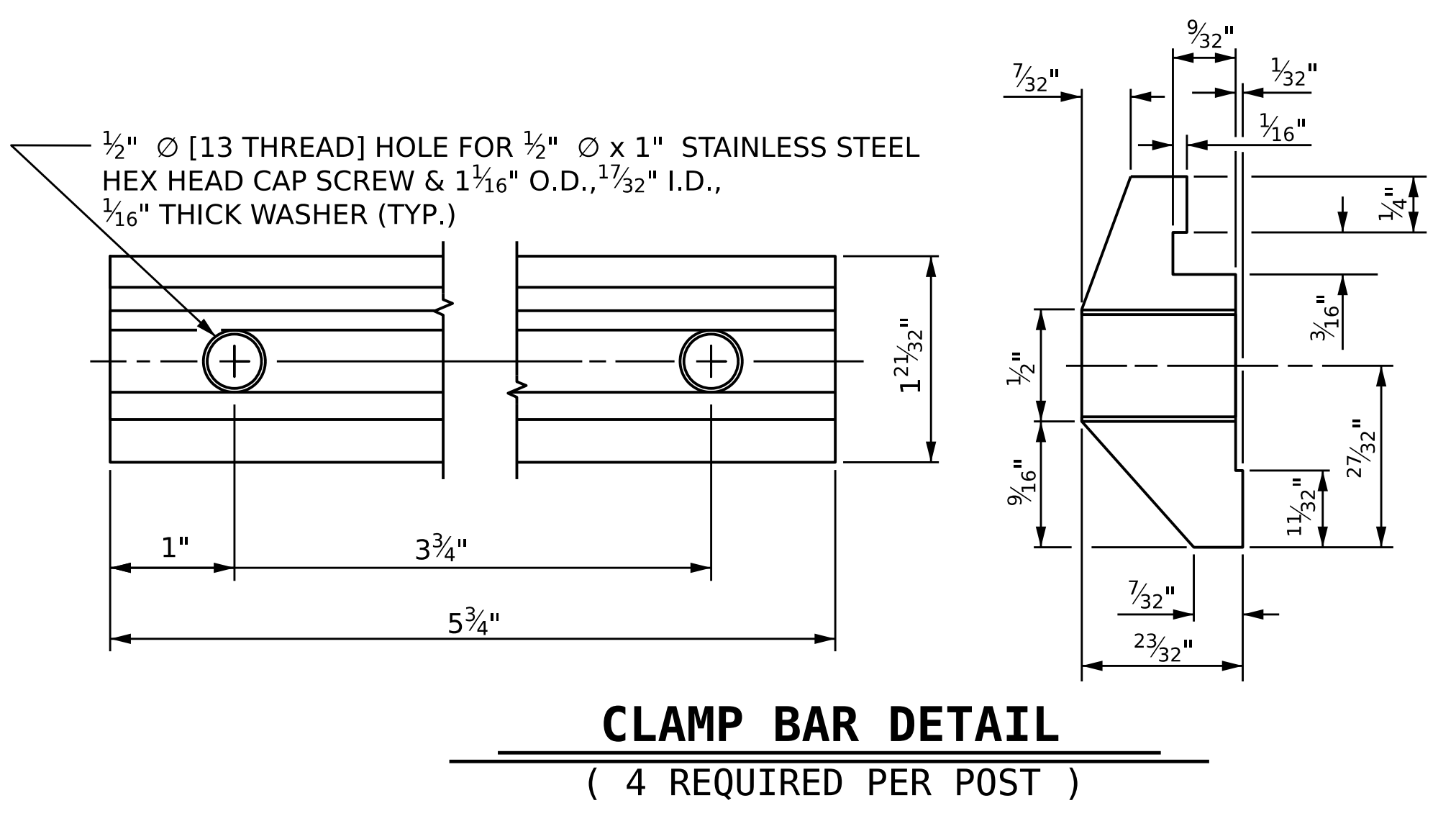
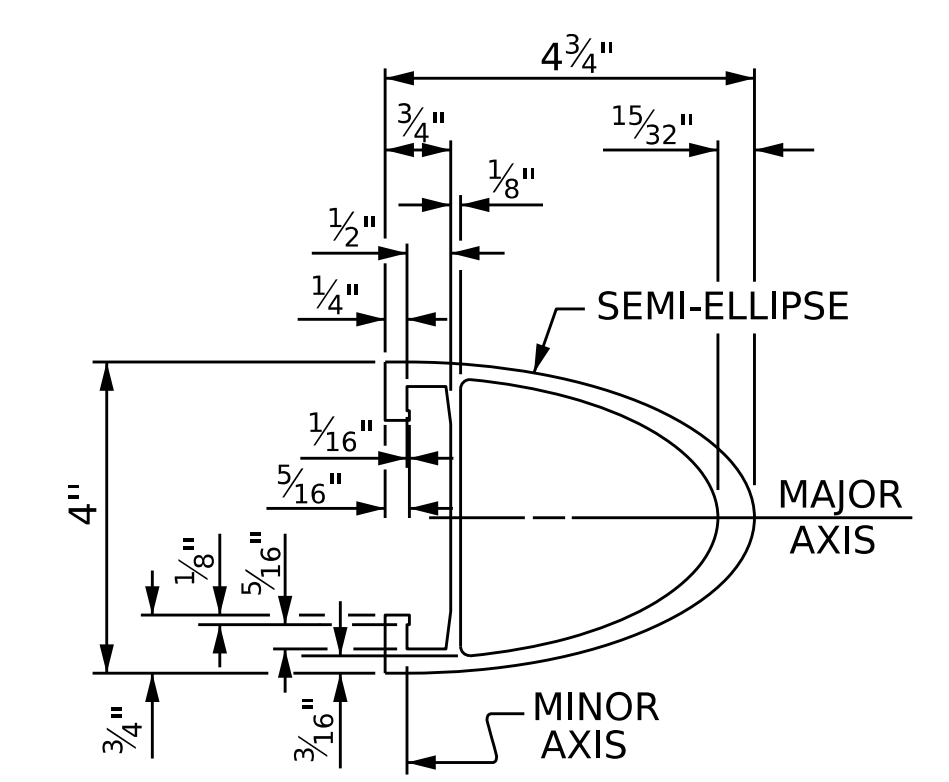
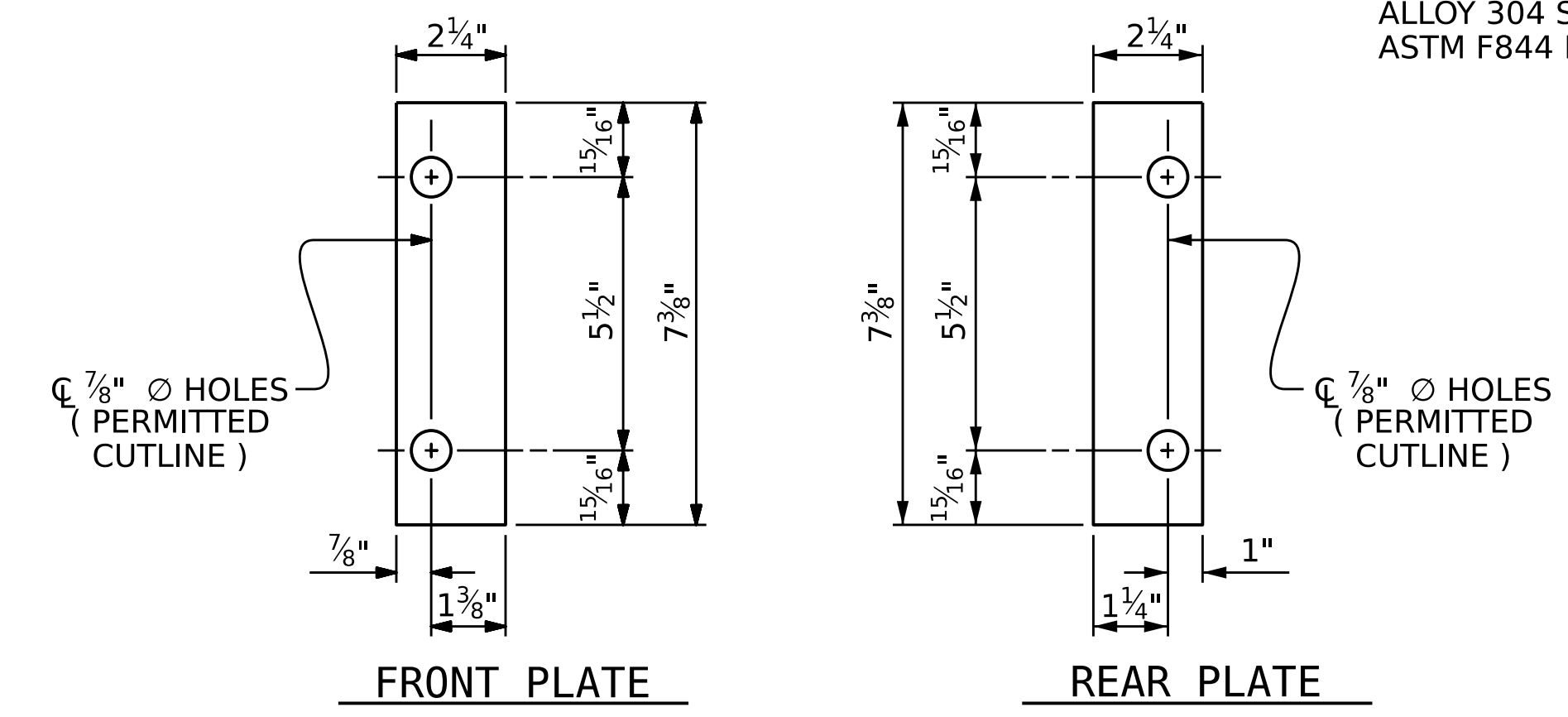
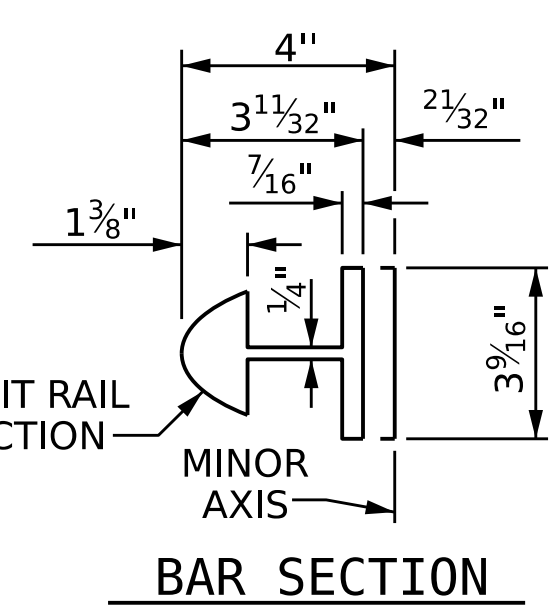
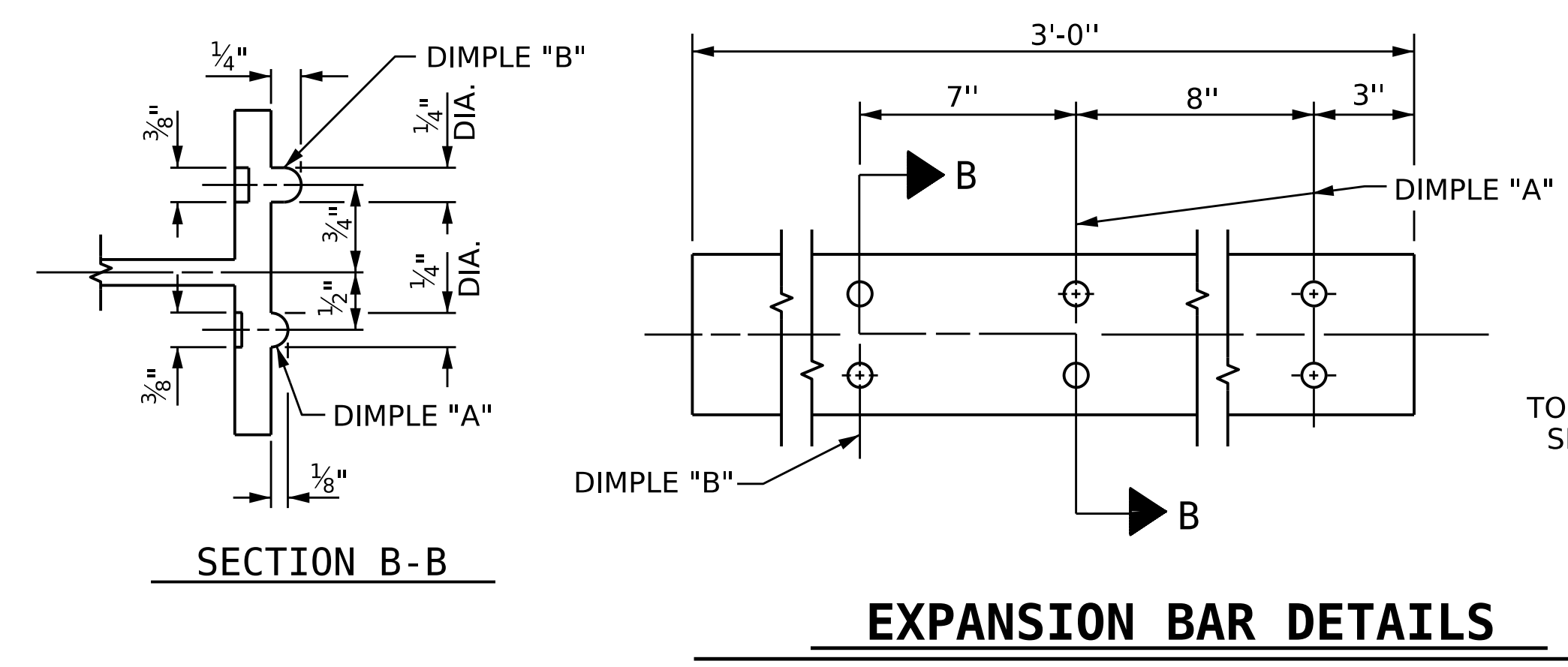
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø x 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø x 2 1/2" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF ASTM A123.
- E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
- F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

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

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

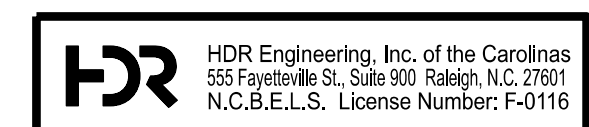
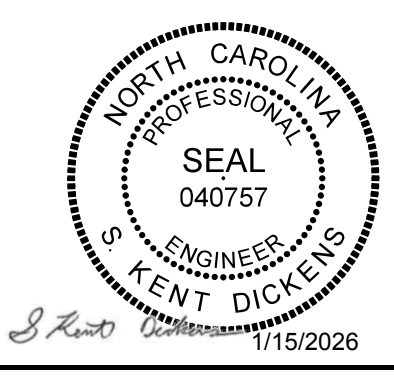


4-BOLT METAL RAIL ANCHOR ASSEMBLY
(196 ASSEMBLIES REQUIRED)



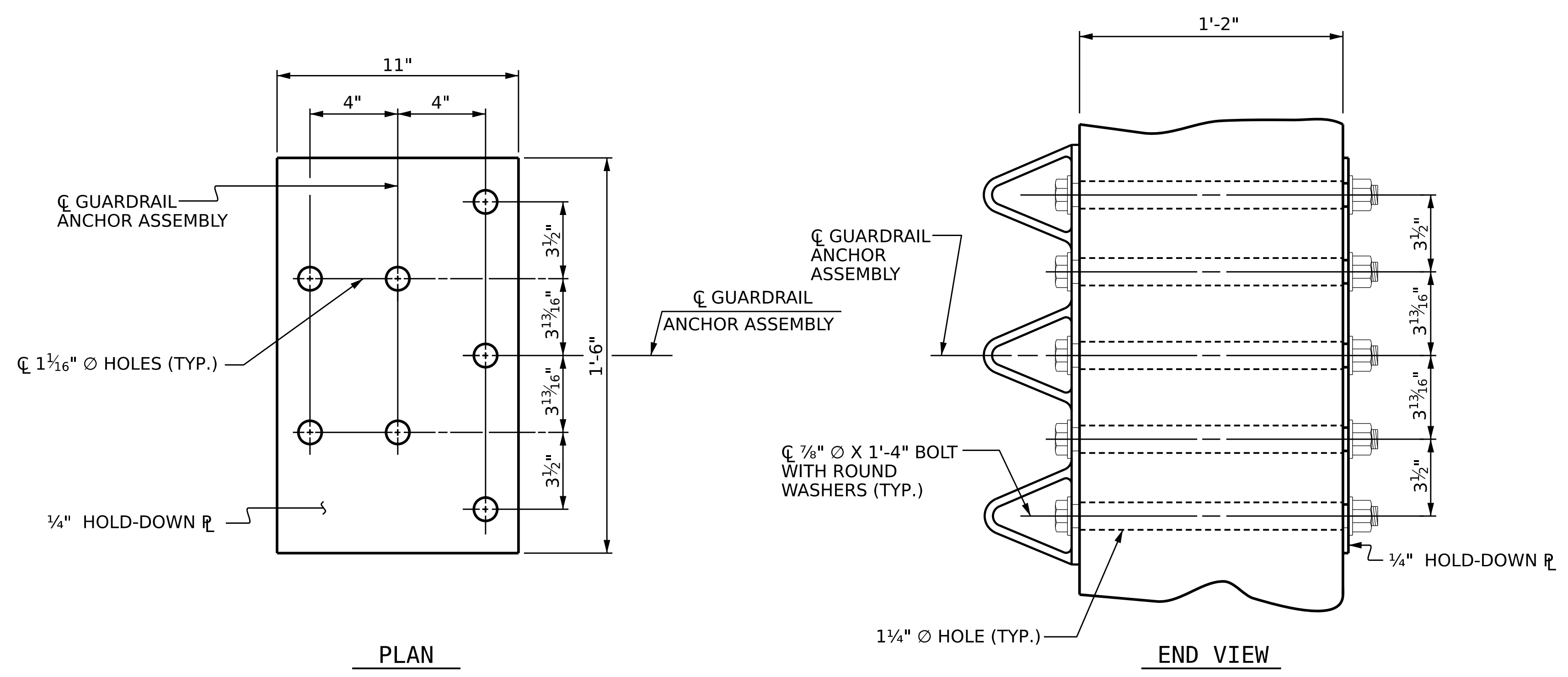
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE 2 BAR METAL RAIL					
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GUARDRAIL ANCHOR ASSEMBLY DETAILS

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 3/8" 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 3/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

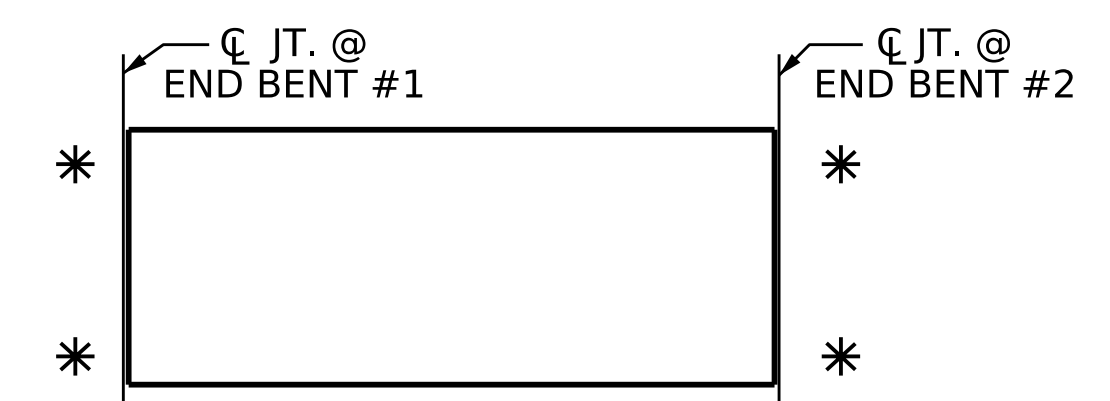
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

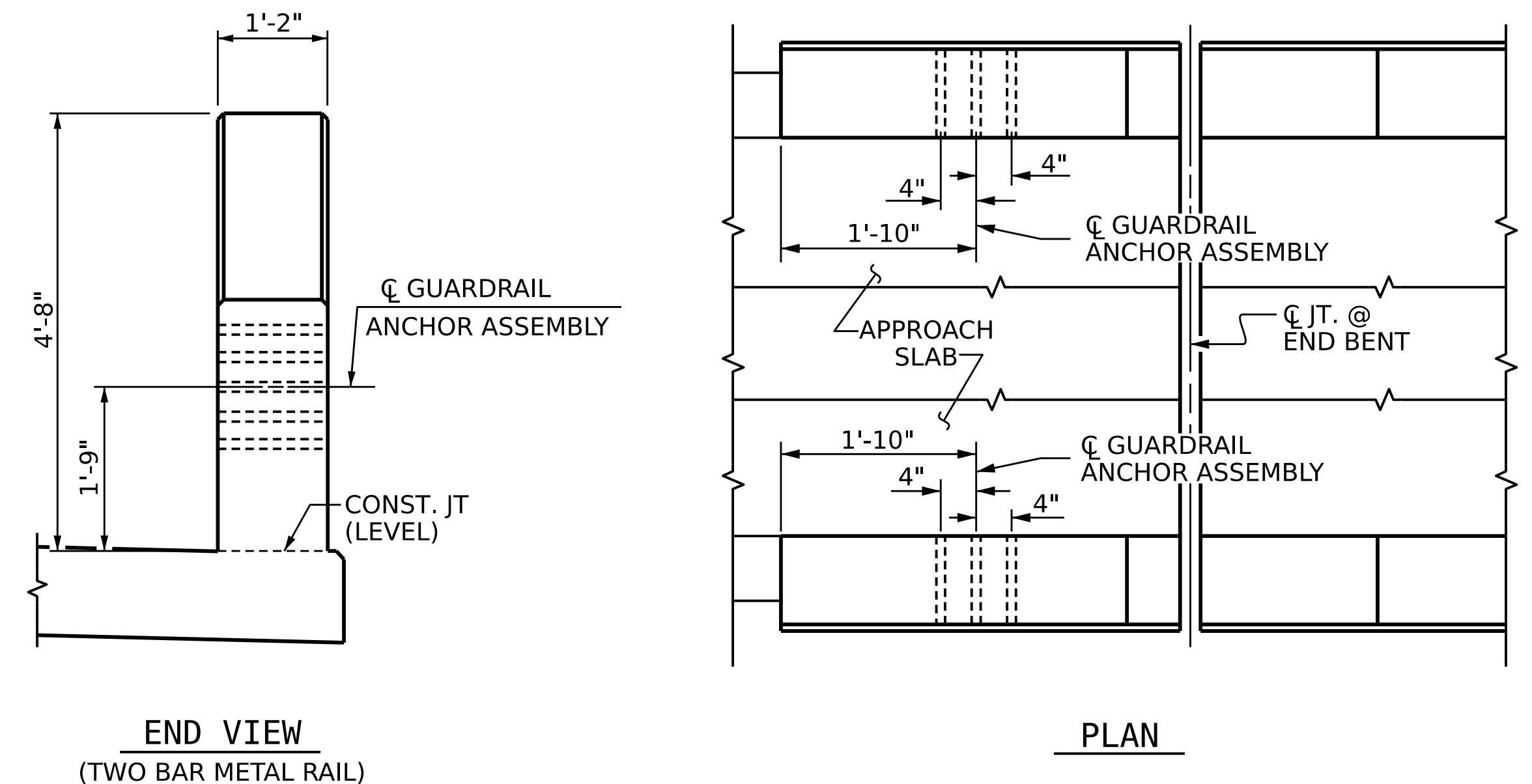
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

THE 1 1/2" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END POST

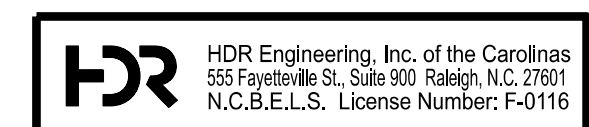
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**SUPERSTRUCTURE
 GUARDRAIL ANCHORAGE
 FOR METAL RAILS**

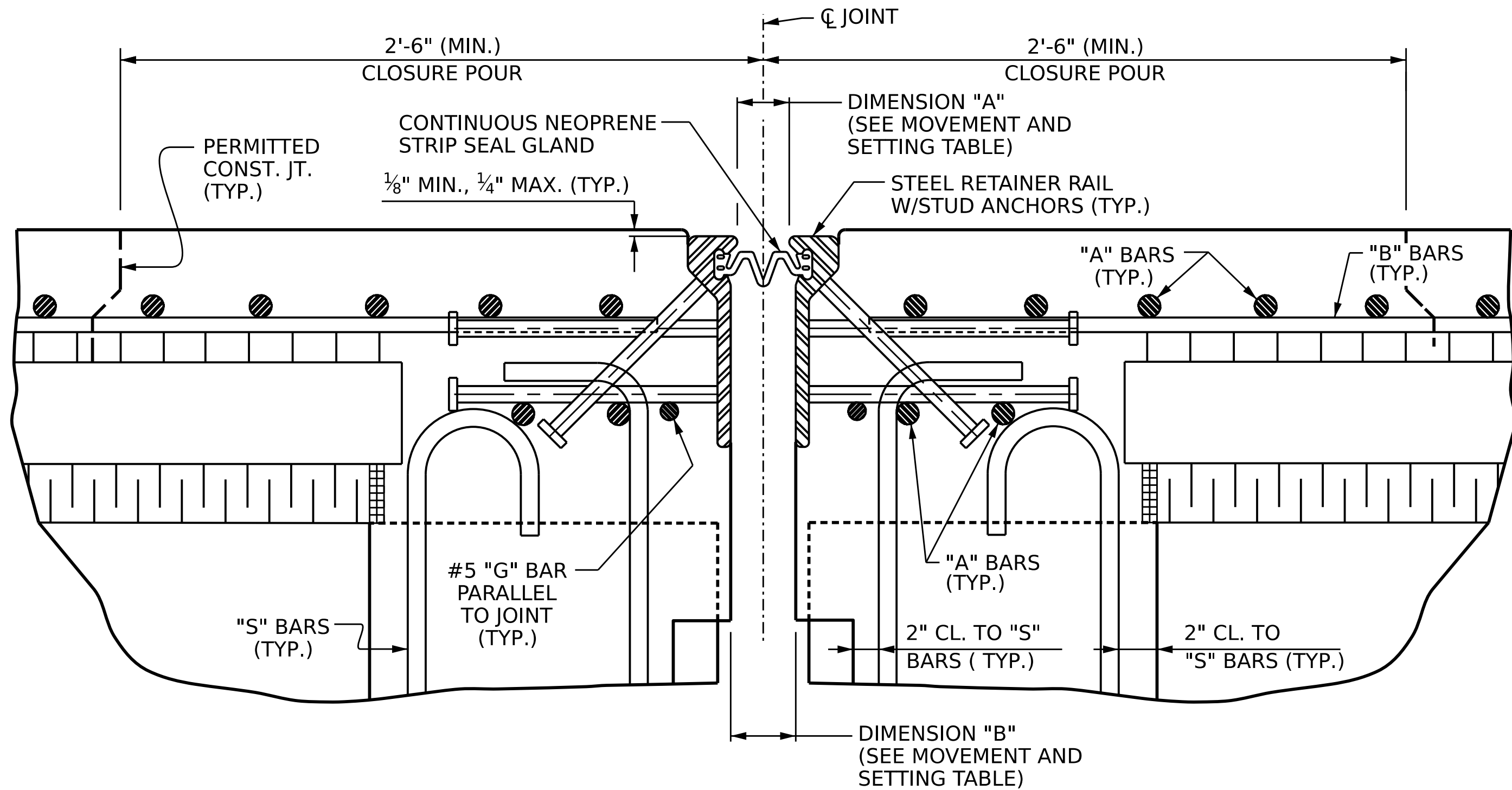


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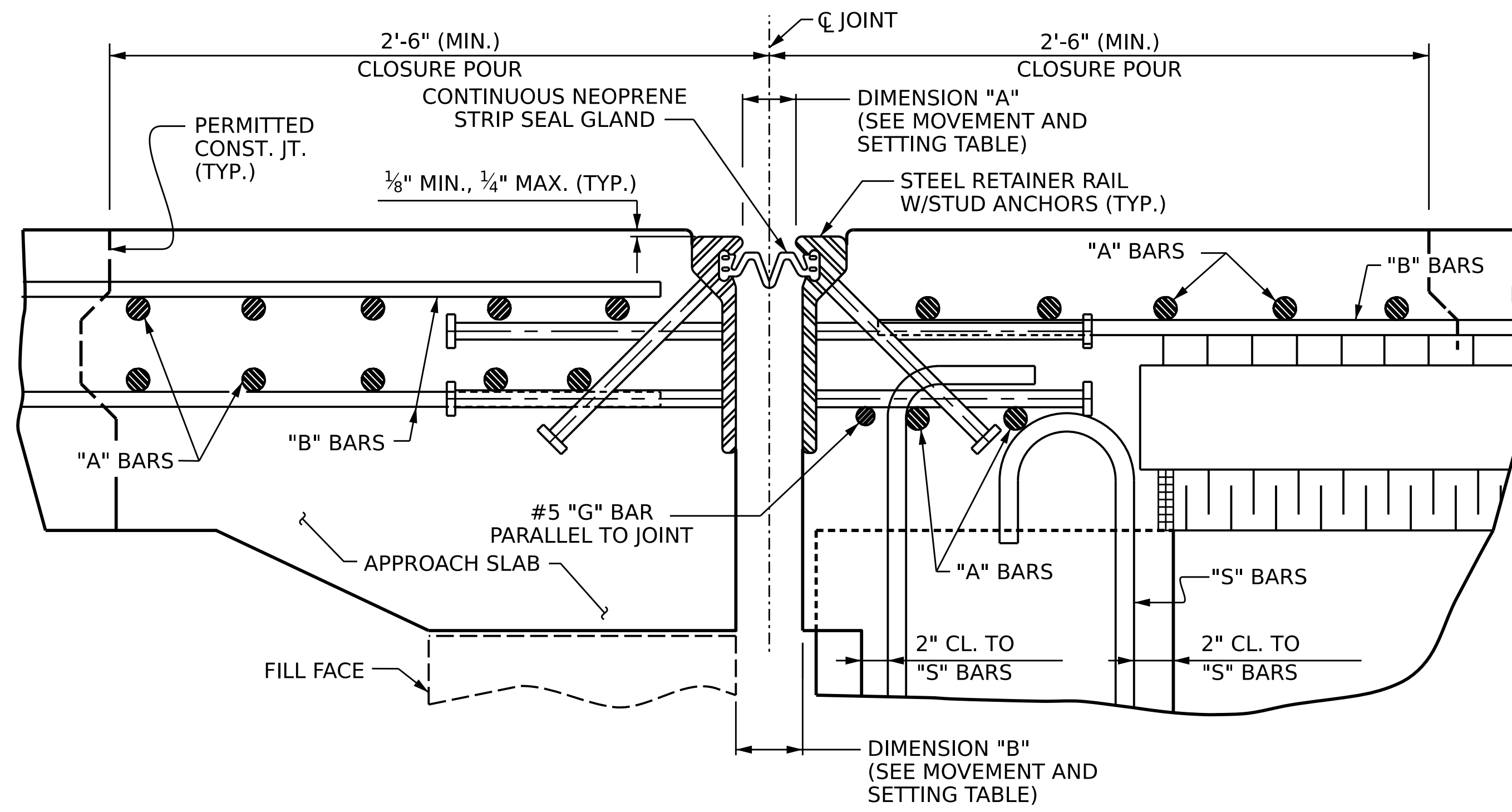
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STRIP SEAL EXPANSION JOINT DETAILS

SECTION NORMAL TO JOINT -- PRESTRESSED GIRDER SUPERSTRUCTURE (SECTION AT BENT 3)



STRIP SEAL EXPANSION JOINT DETAILS

SECTION NORMAL TO JOINT -- PRESTRESSED GIRDER SUPERSTRUCTURE (SECTION AT END BENT)

MOVEMENT AND SETTING AT JOINT

LOCATION	SKEW ANGLE	TOTAL MOVEMENT (ALONG CL RDWY)	DIMENSION "A"				DIMENSION "B"			
			PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F		
END BENT 1	90°0'0"	1 5/16"	2 3/16"	2"	1 11/16"	2 11/16"	2 1/2"	2 3/16"		
BENT 3	90°0'0"	1 7/8"	2 3/16"	2"	1 3/16"	2 13/16"	2 1/2"	1 33/16"		
END BENT 2	90°0'0"	1 5/16"	2 3/16"	2"	1 11/16"	2 11/16"	2 1/2"	2 3/16"		

JOINT INSTALLATION PROCEDURE:

1. INSTALL THE STRIP SEAL EXPANSION JOINT AS RECOMMENDED BY THE MANUFACTURER.
2. A MANUFACTURER'S REPRESENTATIVE SHALL BE PRESENT DURING INSTALLATION OF THE JOINT.
3. PLACE STEEL RETAINER RAILS IN JOINT OPENING. PROPERLY ALIGN THE RAILS BOTH HORIZONTALLY AND VERTICALLY. DO NOT WELD SUPPORT SYSTEM TO THE METALLIZED SURFACES OF THE STEEL RETAINER RAILS.
4. CONFLICTING REINFORCING STEEL MAY BE SHIFTED SLIGHTLY WHEN NECESSARY.
5. DECK SLAB CONCRETE PLACEMENT OPERATIONS SHALL COMMENCE PER THE POURING SEQUENCE AFTER FINAL JOINT ALIGNMENT IS SET.
6. PROTECT THE STEEL RETAINER RAILS FROM BEING FOULED BY CONCRETE SPILLOVER DURING THE DECK POUR.
7. LOOSEN THE STEEL RETAINER RAIL SUPPORT SYSTEM TO ALLOW MOVEMENT WHILE CONCRETE CURES.
8. RE-LEVEL AND RE-ALIGN STEEL RETAINER RAIL AS REQUIRED ON OPPOSITE SIDE OF JOINT.
9. PLACE APPROACH/DECK SLAB CONCRETE.
10. ONCE THE CONCRETE HAS HARDENED SUFFICIENTLY ON BOTH SIDES OF JOINT, STEEL RETAINER RAILS SHALL BE CLEANED THOROUGHLY AND SEAL CHANNELS SHALL BE INSPECTED TO ASCERTAIN THE ABSENCE OF CONCRETE AND DEBRIS.
11. COAT THE STRIP SEAL LUGS WITH LUBRICANT-ADHESIVE AND INSTALL THE NEOPRENE STRIP SEAL GLAND AS RECOMMENDED BY THE STRIP SEAL EXPANSION JOINT MANUFACTURER.

GENERAL NOTES

FOR STRIP SEAL EXPANSION JOINTS, SEE SPECIAL PROVISIONS.

STEEL RETAINER RAILS AND COVER PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 OR GRADE 50 STEEL. ALL STUD ANCHORS SHALL CONFORM TO AASHTO M169, GRADES 1010 THRU 1020 OR APPROVED EQUAL. ALL CONCRETE INSERTS SHALL BE CLOSED END AND SHALL CONFORM TO AASHTO M169, GRADE 12L14. TENSILE CAPACITY SHALL BE 3000 LBS. MIN.

ONLY STEEL RETAINER RAILS OF ONE-PIECE CONSTRUCTION ARE PERMITTED. STEEL RETAINER RAILS CONSISTING OF TWO OR MORE COMPONENTS WELDED TOGETHER TO OBTAIN THEIR FINAL CROSS-SECTIONAL SHAPE ARE NOT PERMITTED.

STUD ANCHORS SHALL BE SHOP WELDED AND SHALL BE ELECTRIC ARC END WELDED WITH COMPLETE FUSION.

SURFACES COMING IN CONTACT WITH STRIP SEAL GLAND SHALL BE GROUND SMOOTH PRIOR TO METALLIZING.

UPON COMPLETION OF SHOP FABRICATION, THE STEEL RETAINER RAILS SHALL BE METALLIZED AS SHOWN IN THE "METALLIZING DETAIL". SEE SPECIAL PROVISIONS FOR THERMAL SPRAYED COATINGS (METALLIZATION).

INSTALLED STEEL RETAINER RAILS SHALL FOLLOW THE ROADWAY SLOPE.

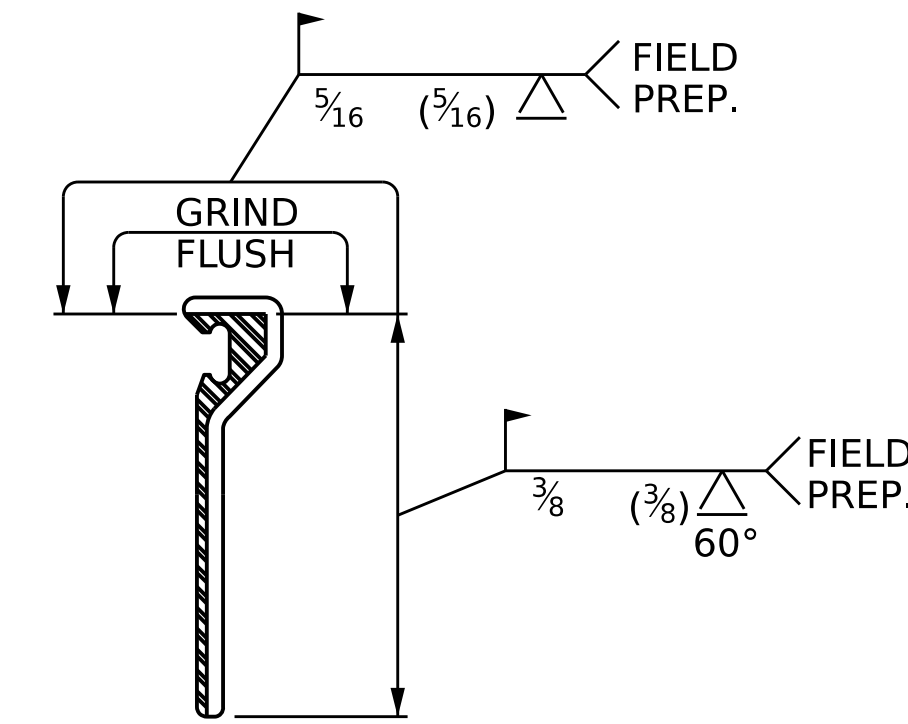
FIELD SPLICES OF THE RETAINER RAILS SHALL BE KEPT TO A MINIMUM. CONTRACTOR SHALL FURNISH DETAILED PLANS SHOWING PROPOSED SPlice LOCATIONS FOR APPROVAL. FINISHED WELDS SHALL BE REPAIRED IN ACCORDANCE WITH THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).

NEOPRENE STRIP SEAL GLAND SHALL BE CONTINUOUS THROUGHOUT THE JOINT AND SHALL BE COMPATIBLE WITH THE STEEL RETAINER RAILS. FIELD SPLICING THE GLAND IS NOT PERMITTED.

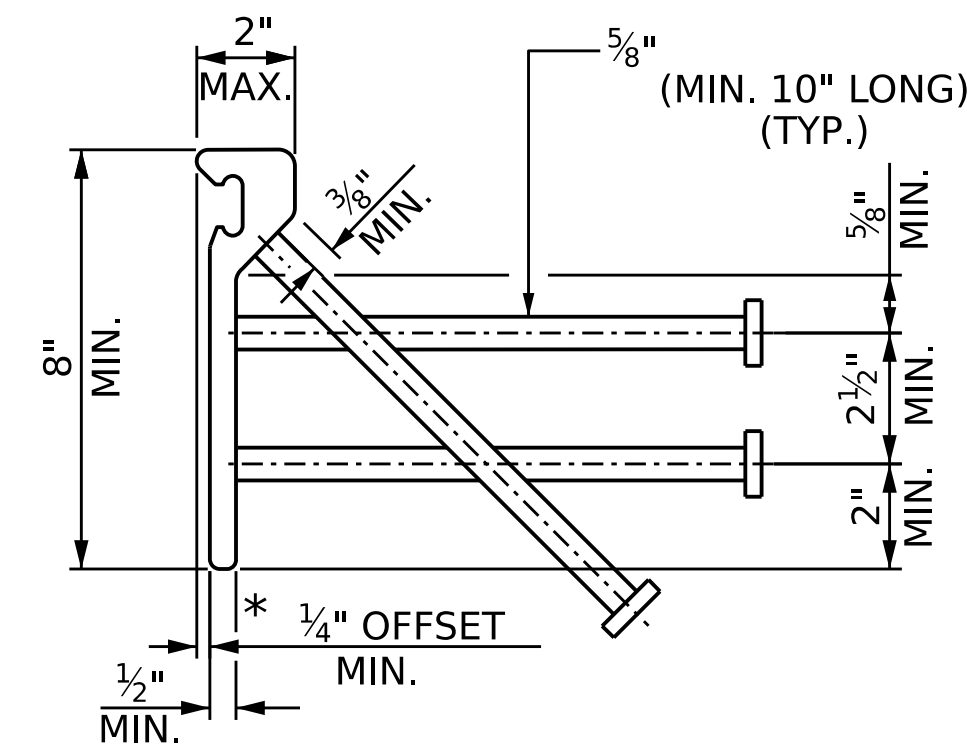
NO ALTERNATE JOINT DETAILS SHALL BE PERMITTED IN LIEU OF THOSE SHOWN ON THESE PLANS.

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

BOLTS IN PLACE OF CONCRETE INSERTS FOR COVER PLATES. THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

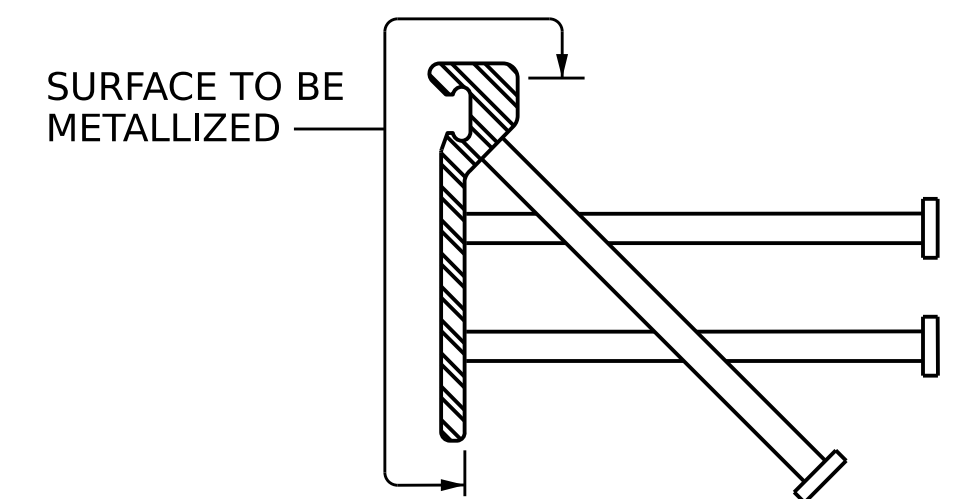


STEEL RETAINER RAIL (FIELD SPLICE DETAIL)



TYPICAL SECTION STEEL RETAINER RAIL

* DIMENSION "B" BASED ON STEEL RETAINER RAIL TOP OFFSET TO FACE OF RAIL OF 1/4" IF ACTUAL OFFSET IS GREATER ADJUST DIMENSION "B" AS REQUIRED.



METALLIZING DETAIL

PROJECT NO. **BR-0004**
BEAUFORT COUNTY
 STATION: **23+50.00 -L-**
 SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE STRIP SEAL EXPANSION JOINT DETAILS

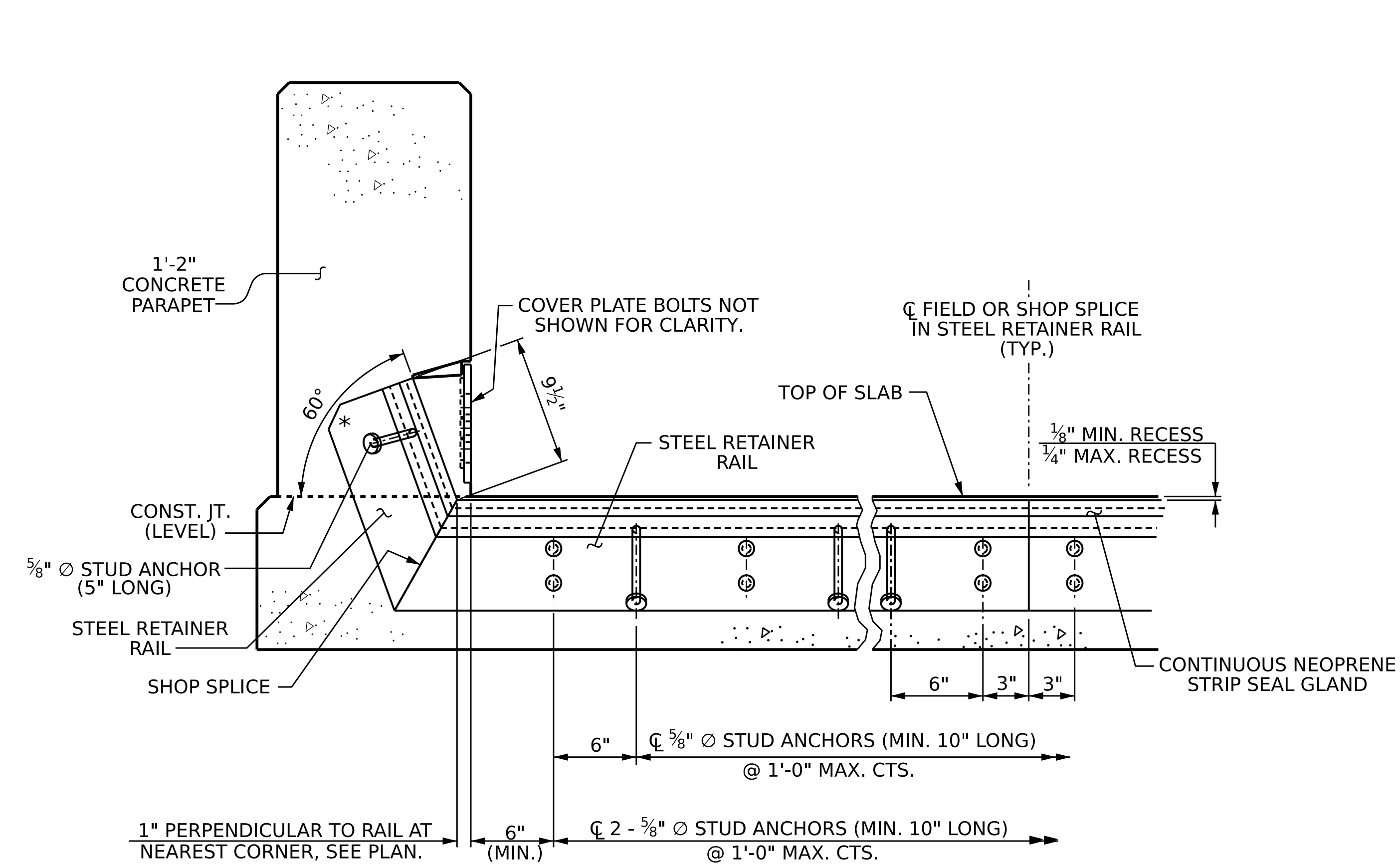
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	44

DES BY: J. PATT DATE: 12/24
 DES CHK: R. JONES DATE: 12/24
 DWG BY: B. PETERSON DATE: 12/24
 CHK BY: R. JONES DATE: 12/24

HDR HDR Engineering, Inc. of the Carolinas
 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
 N.C.B.E.L.S. License Number: F-0116

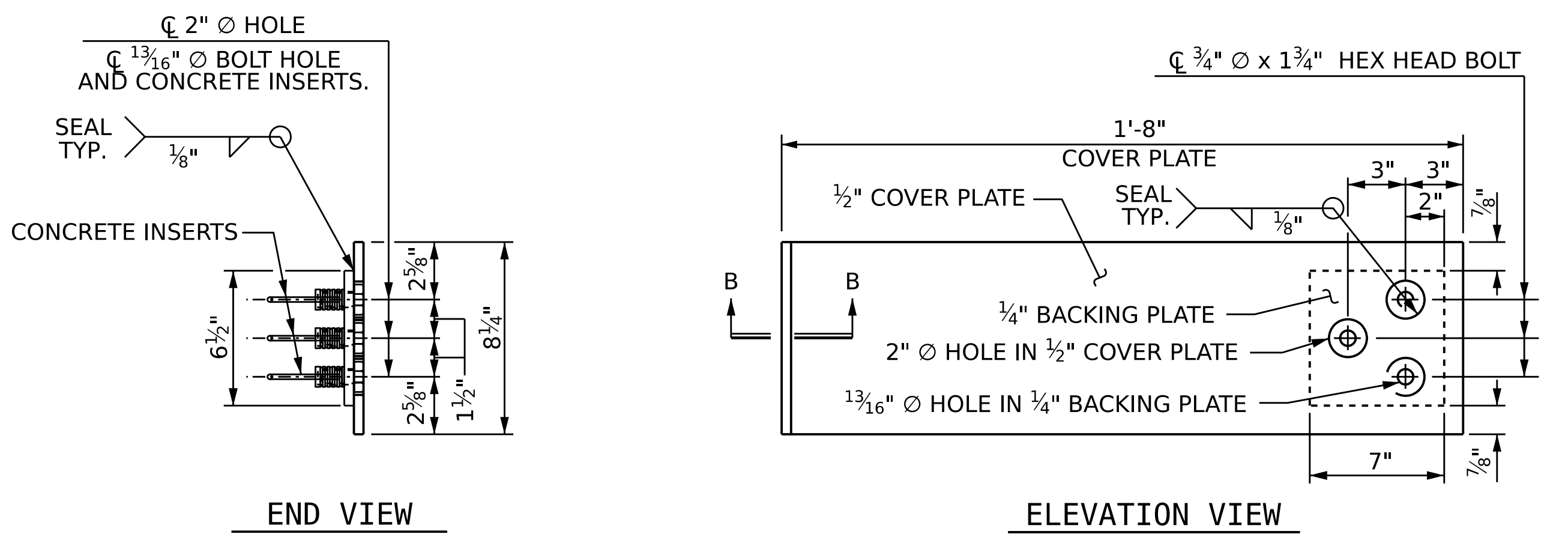
3/5/2026
 DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED



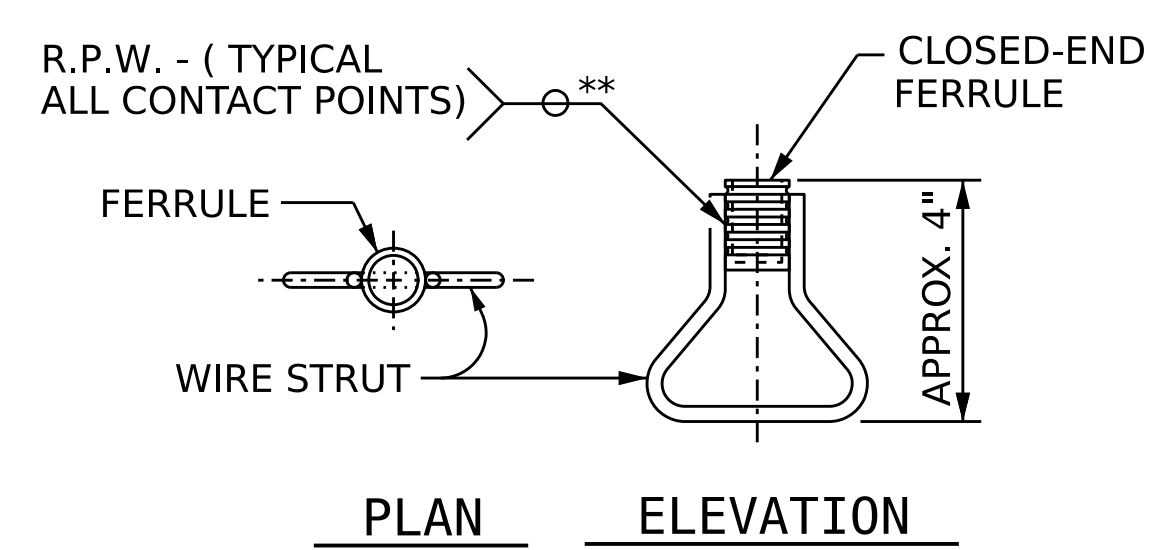


SECTION THRU RAIL NORMAL TO JOINT

* STEEL RETAINER PLATE SHALL BE CLIPPED TO PROVIDE A MINIMUM OF 2" CLEARANCE WITH THE BACK EDGE OF THE PARAPET.

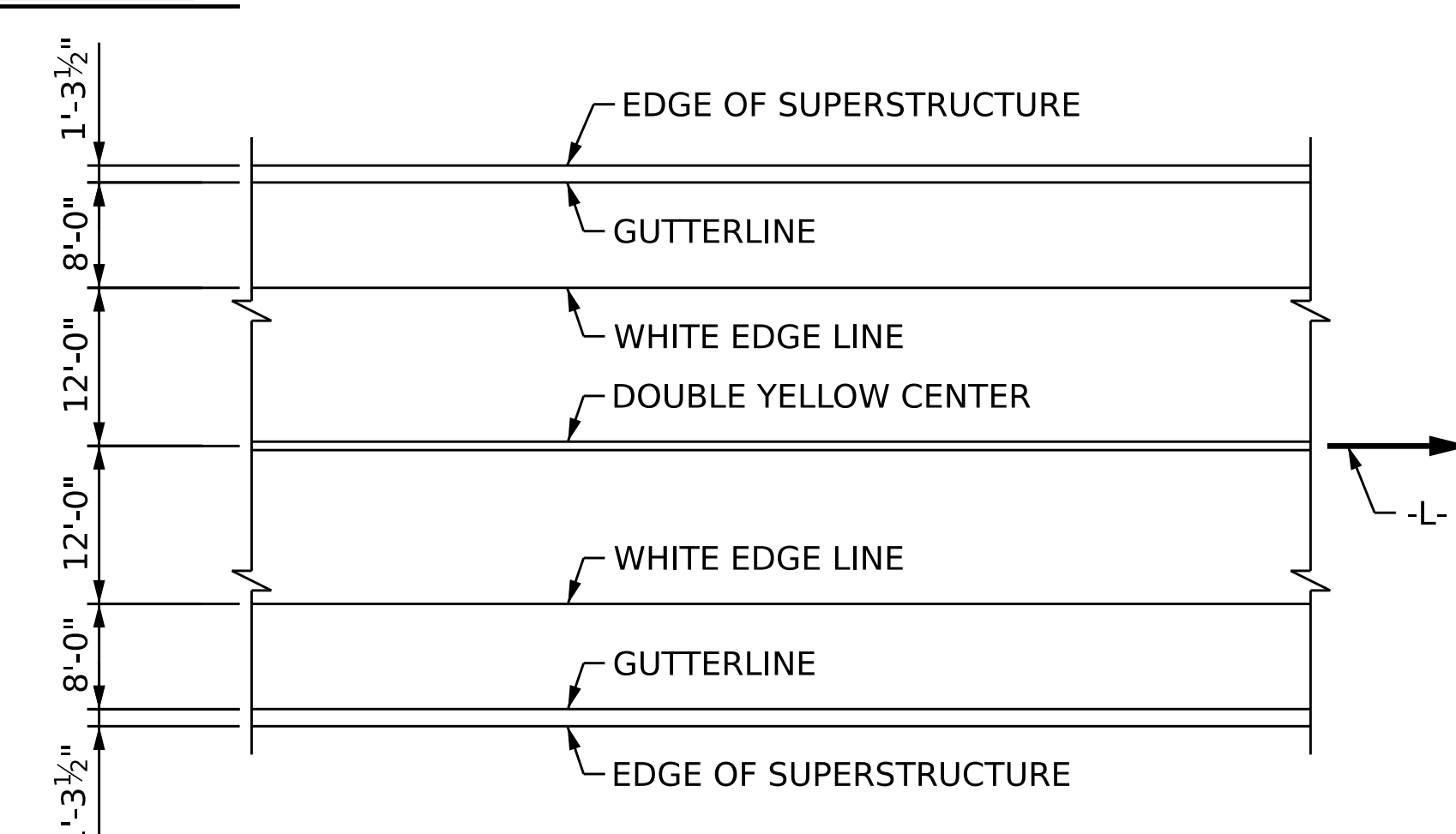


COVER PLATE DETAILS

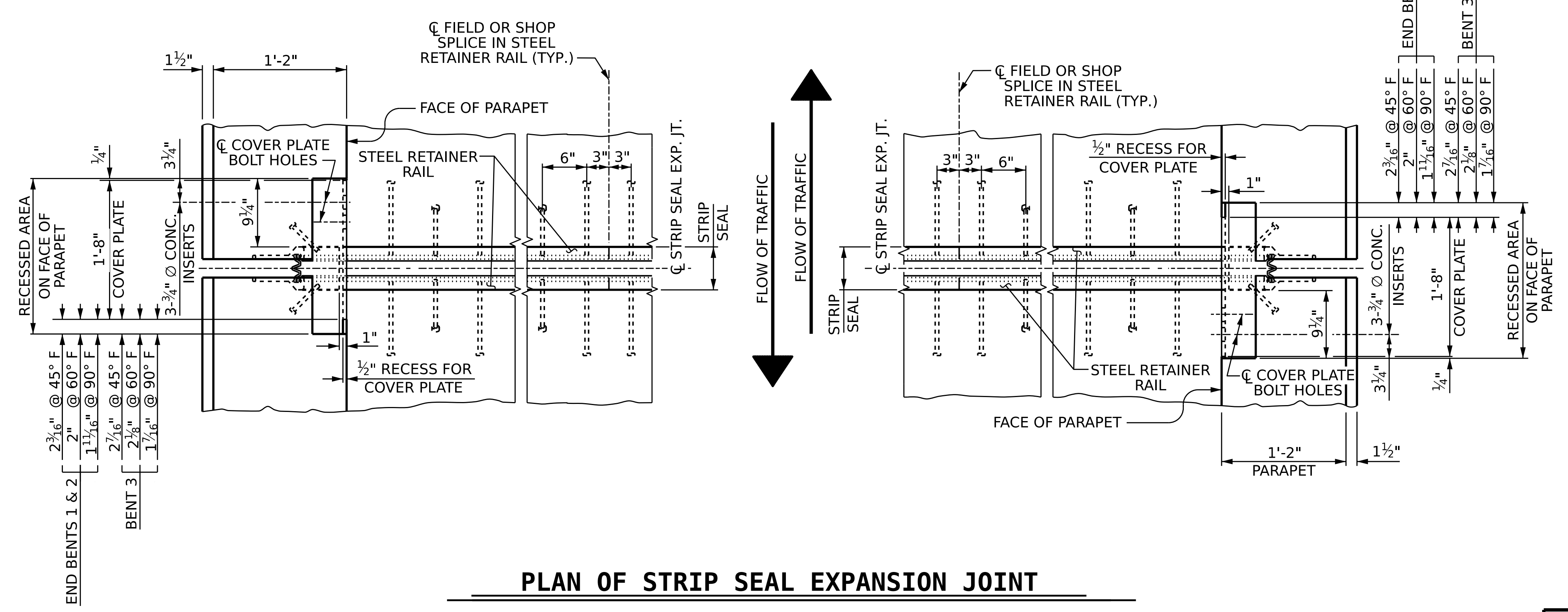


CONCRETE INSERT

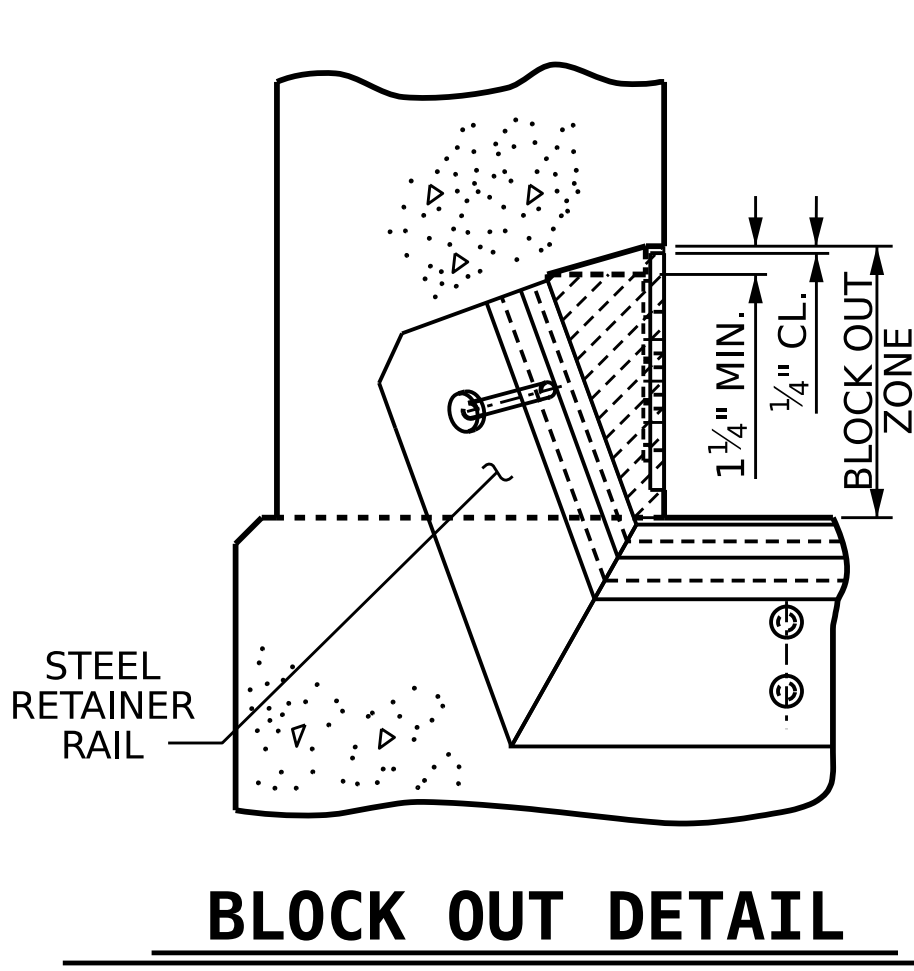
** EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.



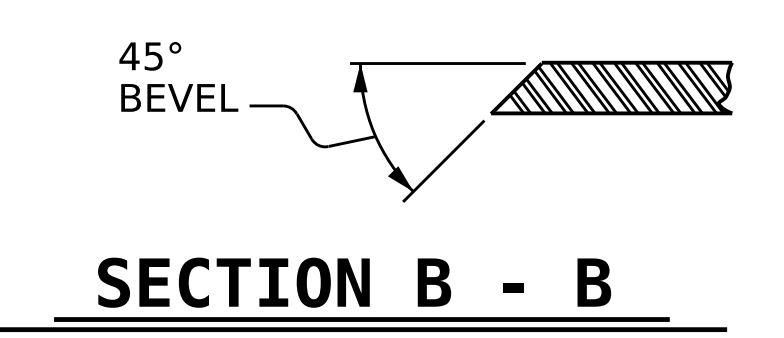
PAVEMENT MARKING ALIGNMENT



PLAN OF STRIP SEAL EXPANSION JOINT



BLOCK OUT DETAIL



SECTION B - B

PROJECT NO. **BR-0004**
BEAUFORT COUNTY
 STATION: **23+50.00 -L-**
 SHEET 2 OF 2

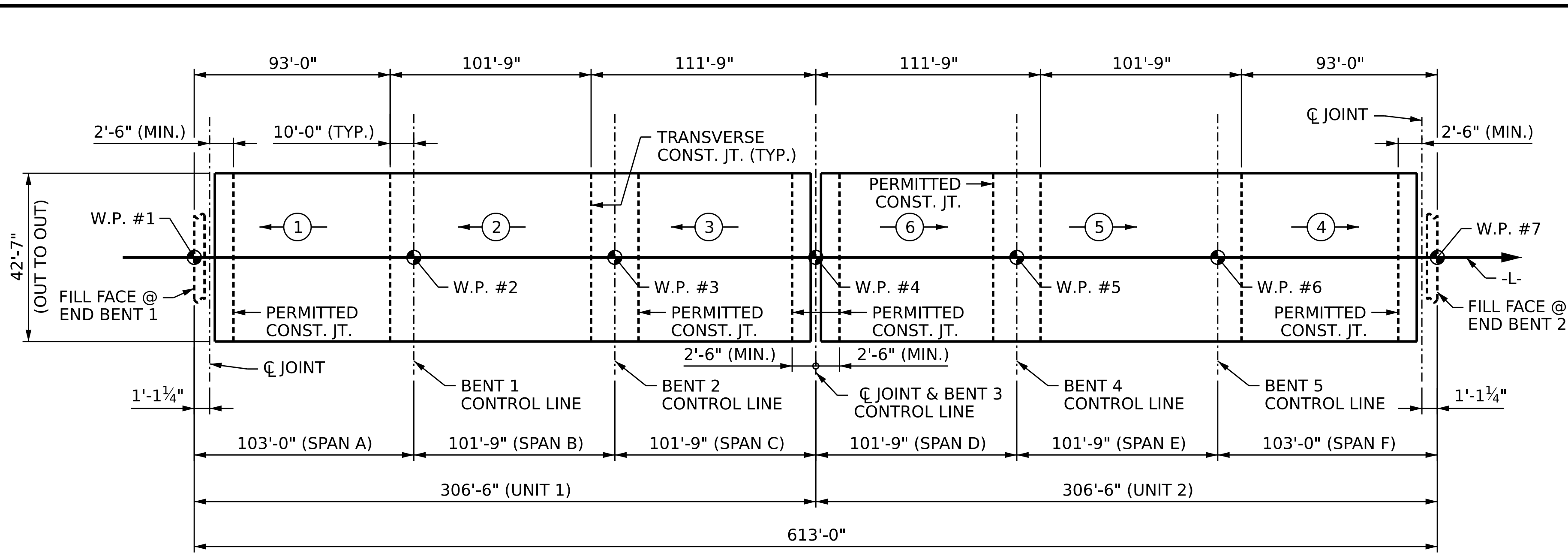
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE STRIP SEAL EXPANSION JOINT DETAILS FOR CONCRETE PARAPET					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1	--	--	3	--	--
2	--	--	4	--	--
					SHEET NO. S-31
					TOTAL SHEETS 44

DES BY: J. PAIT DATE: 12/24
 DES CHK: R. JONES DATE: 12/24
 DWG BY: B. PETERSON DATE: 12/24
 CHK BY: R. JONES DATE: 12/24

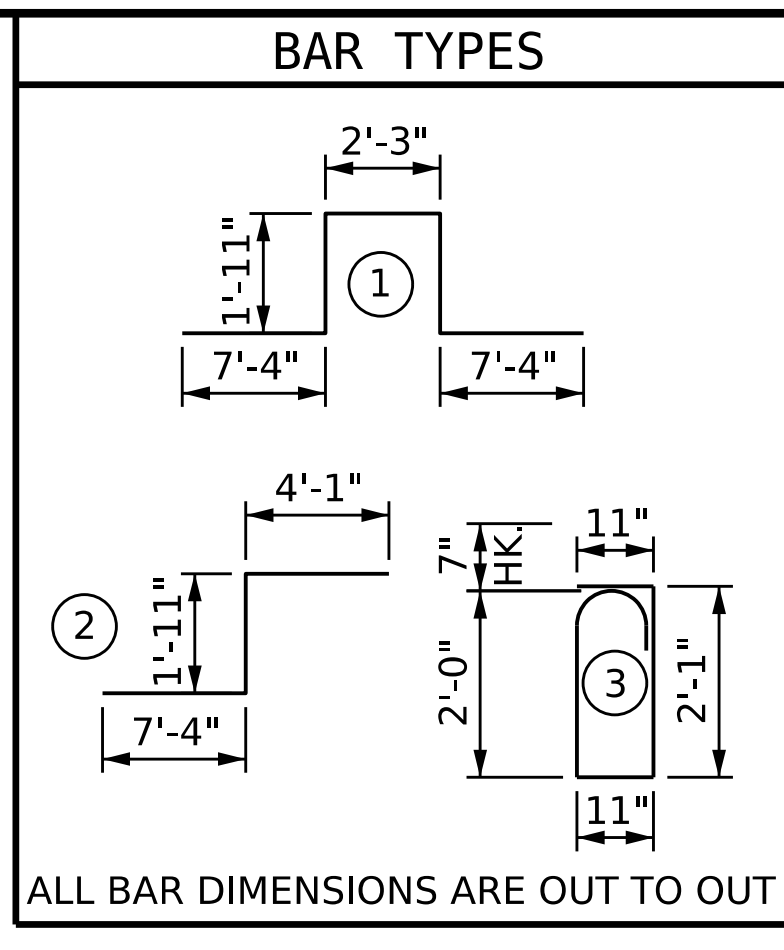
HR HDR Engineering, Inc. of the Carolinas
 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
 N.C.B.E.L.S. License Number: F-0116

NORTH CAROLINA
 PROFESSIONAL
 SEAL
 040757
 ENGINEER
 KENT DICKENS
 1/15/2026

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⊙ = INDICATES POUR NUMBER AND DIRECTION OF POUR
CONCRETE POURING SEQUENCE AND LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE SLAB
 (REINFORCED CONCRETE DECK SLAB AREA = 25,992 SQ. FT.)

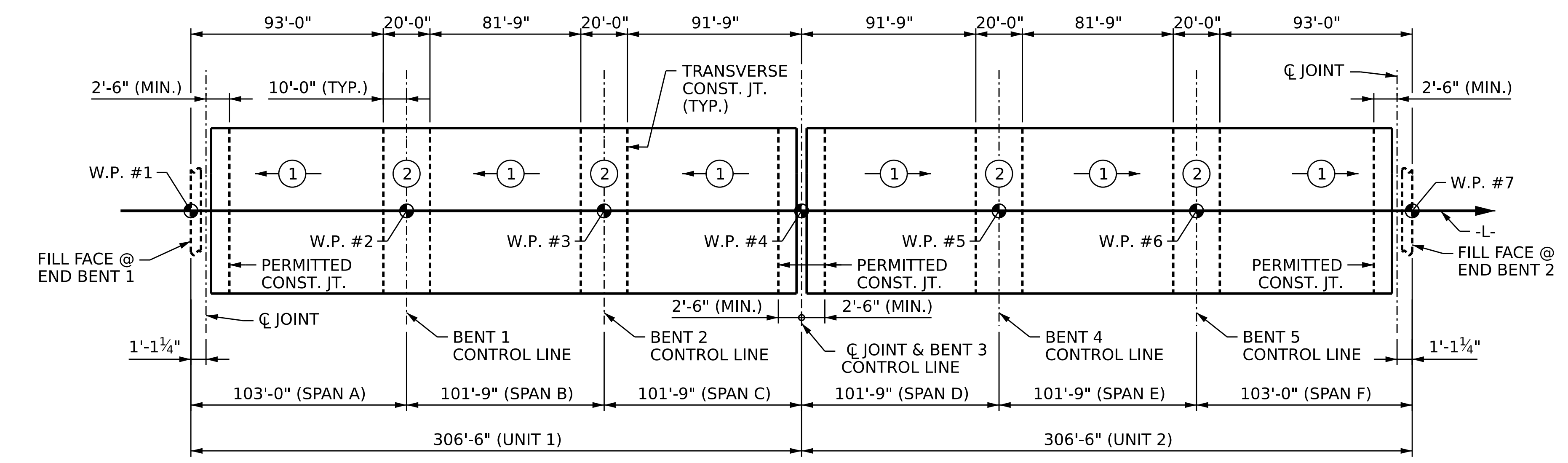


BILL OF MATERIAL UNIT 1						BILL OF MATERIAL UNIT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	610	#5	STR.	42'-3"	26881	*A1	610	#5	STR.	42'-3"	26881
*A2	408	#4	STR.	2'-11"	795	*A2	408	#4	STR.	2'-11"	795
*A3	4	#5	STR.	42'-3"	176	*A3	4	#5	STR.	42'-3"	176
*B1	228	#4	STR.	35'-0"	5331	*B1	228	#4	STR.	35'-0"	5331
*B2	114	#5	STR.	60'-0"	7134	*B2	114	#5	STR.	60'-0"	7134
*B3	114	#5	STR.	14'-5"	1714	*B3	114	#5	STR.	14'-5"	1714
*B4	112	#5	STR.	42'-0"	4906	*B4	112	#5	STR.	42'-0"	4906
*B5	57	#4	STR.	34'-9"	1323	*B5	57	#4	STR.	34'-9"	1323
*B6	60	#5	STR.	53'-0"	3317	*B6	60	#5	STR.	53'-0"	3317
*G1	2	#5	STR.	42'-3"	88	*G1	2	#5	STR.	42'-3"	88
*K1	12	#8	1	20'-9"	665	*K1	12	#8	1	20'-9"	665
*K2	8	#8	2	13'-4"	285	*K2	8	#8	2	13'-4"	285
*S1	64	#5	3	6'-6"	434	*S1	64	#5	3	6'-6"	434
EPOXY COATED *REINFORCING STEEL (#) 53,049 LBS.						EPOXY COATED *REINFORCING STEEL (#) 53,049 LBS.					
CLASS AA CONCRETE						CLASS AA CONCRETE					
POUR #1				86.9	CY	POUR #4				86.9	CY
POUR #2				92.8	CY	POUR #5				92.8	CY
POUR #3				105.0	CY	POUR #6				105.0	CY
TOTAL (#)				284.8	CY	TOTAL (#)				284.8	CY

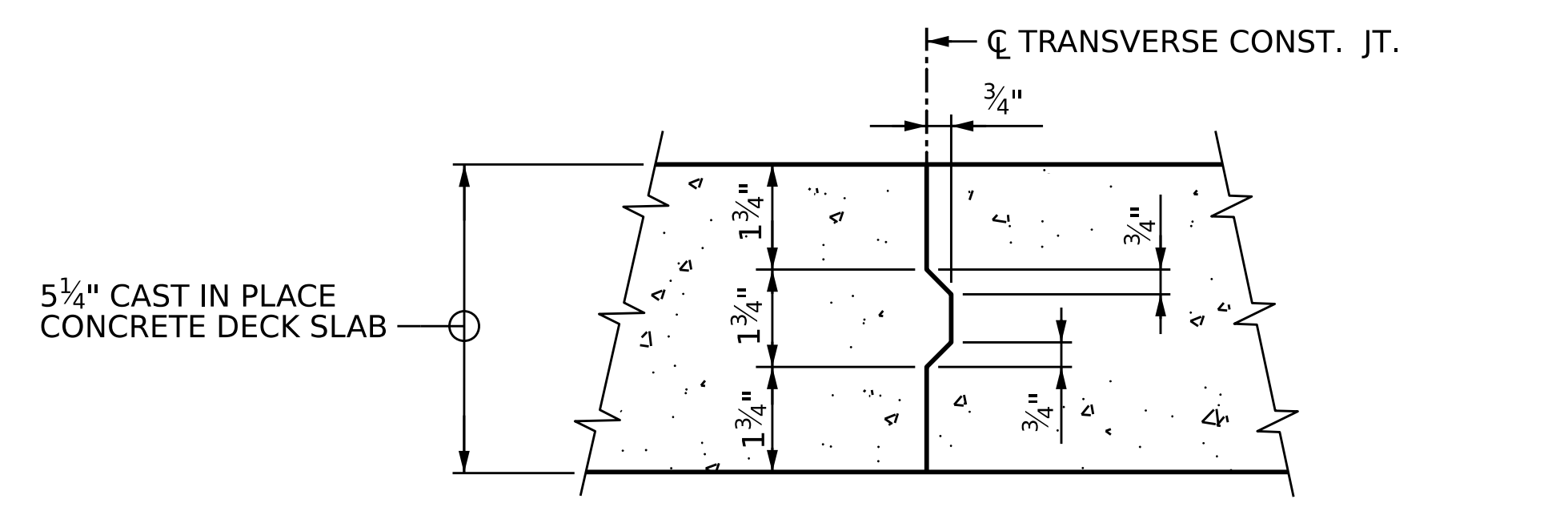
* DENOTES EPOXY COATED REINFORCING STEEL
 # QUANTITIES FOR BARRIER RAIL NOT INCLUDED

GROOVING BRIDGE FLOORS		
BRIDGE DECK UNIT 1	11,269	SQ.FT.
BRIDGE DECK UNIT 2	11,269	SQ.FT.
APPROACH SLABS	1,074	SQ.FT.
TOTAL	23,612	SQ.FT.

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"			

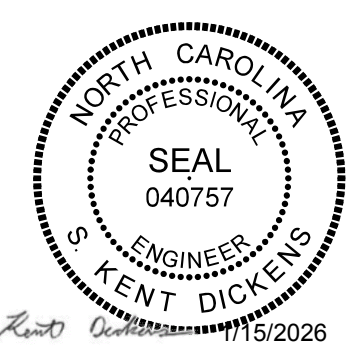


OPTIONAL POUR SEQUENCE
 POUR ② OF THE OPTIONAL POUR SEQUENCE MAY NOT BE STARTED UNTIL BOTH ADJACENT ① POURS HAVE REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.



TRANSVERSE CONSTRUCTION JOINT
 (REINFORCING STEEL IN SLAB NOT SHOWN)
 (LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THROUGH JOINT)

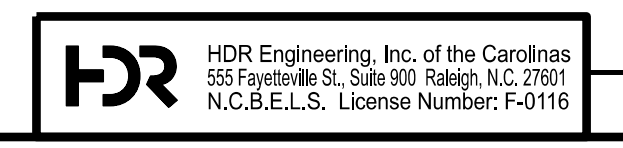
PROJECT NO. **BR-0004**
BEAUFORT COUNTY
 STATION: **23+50.00 -L-**



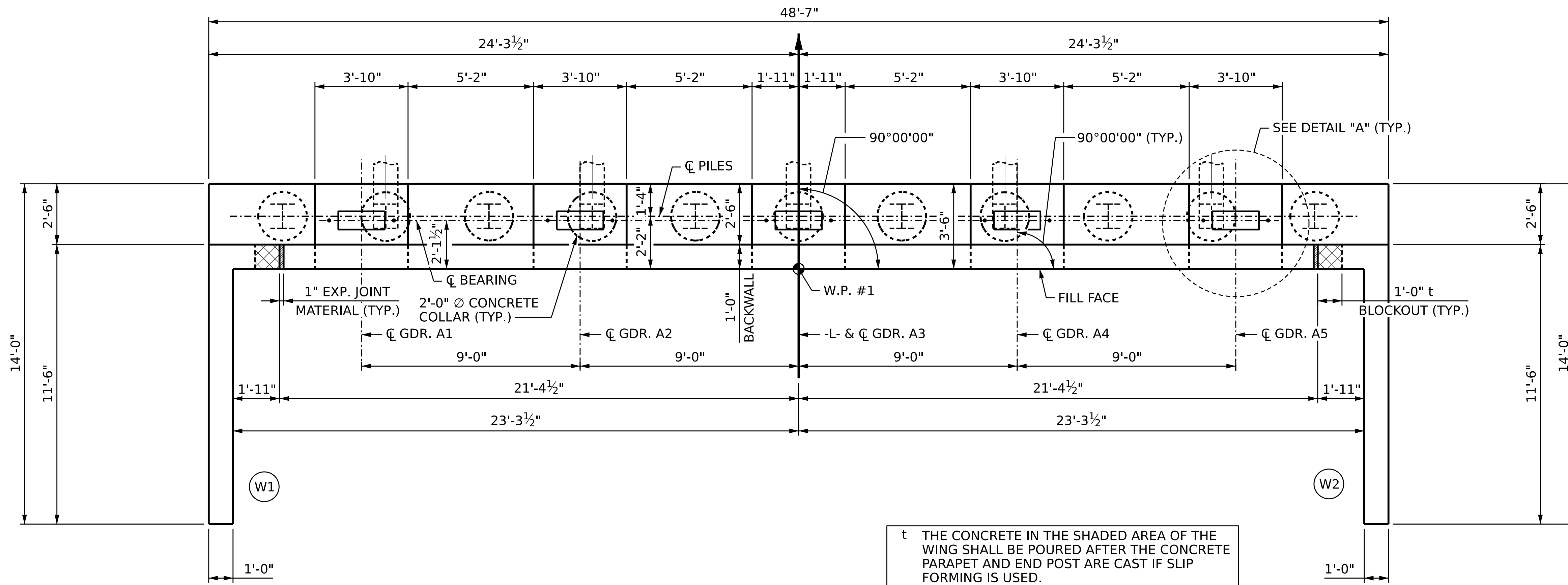
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE BILL OF MATERIAL					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1	--	--	3	--	--
2	--	--	4	--	--

SHEET NO. 5-32				
TOTAL SHEETS 44				

DES BY: <u>A. RURKA</u>	DATE: <u>07/24</u>	DWG BY: <u>B. PETERSON</u>	DATE: <u>06/24</u>
DES CHK: <u>K. DICKENS</u>	DATE: <u>08/24</u>	CHK BY: <u>G. MYERS</u>	DATE: <u>12/24</u>



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



t THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE CONCRETE PARAPET AND END POST ARE CAST IF SLIP FORMING IS USED.

PLAN

NOTES:

THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

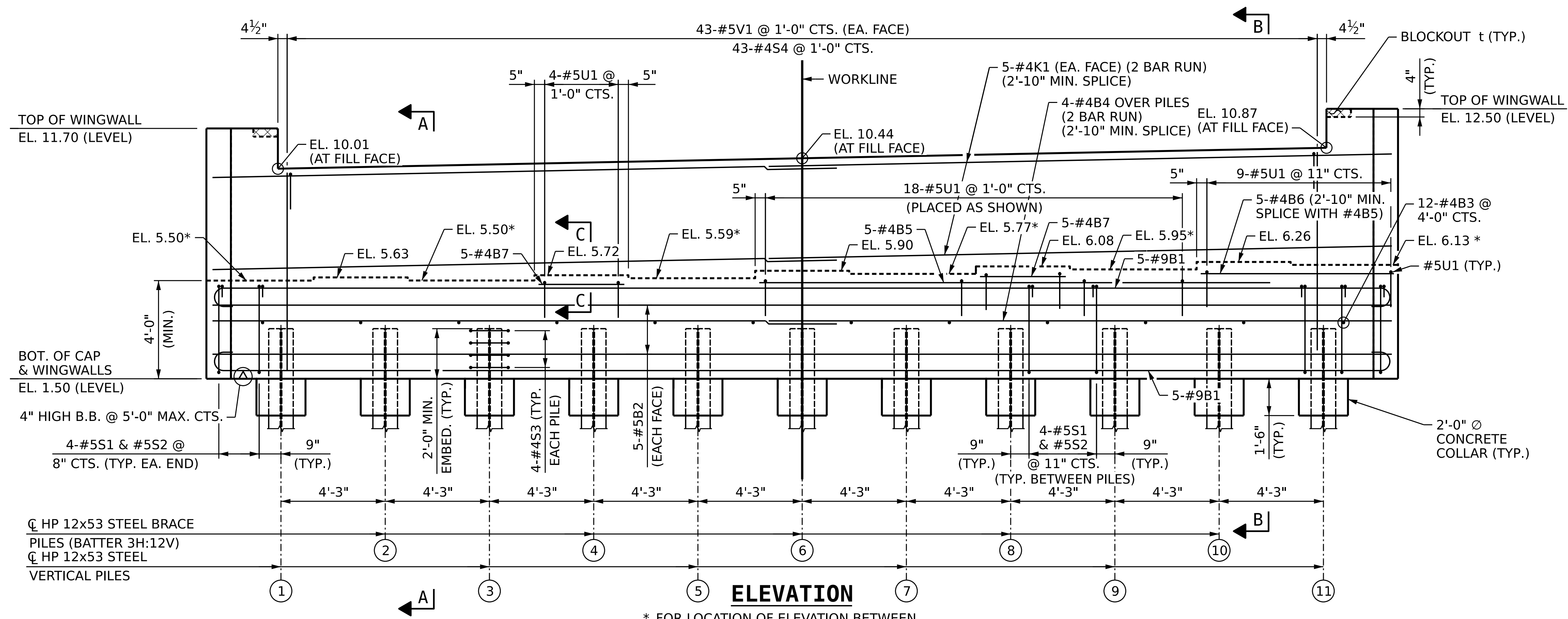
THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

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

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

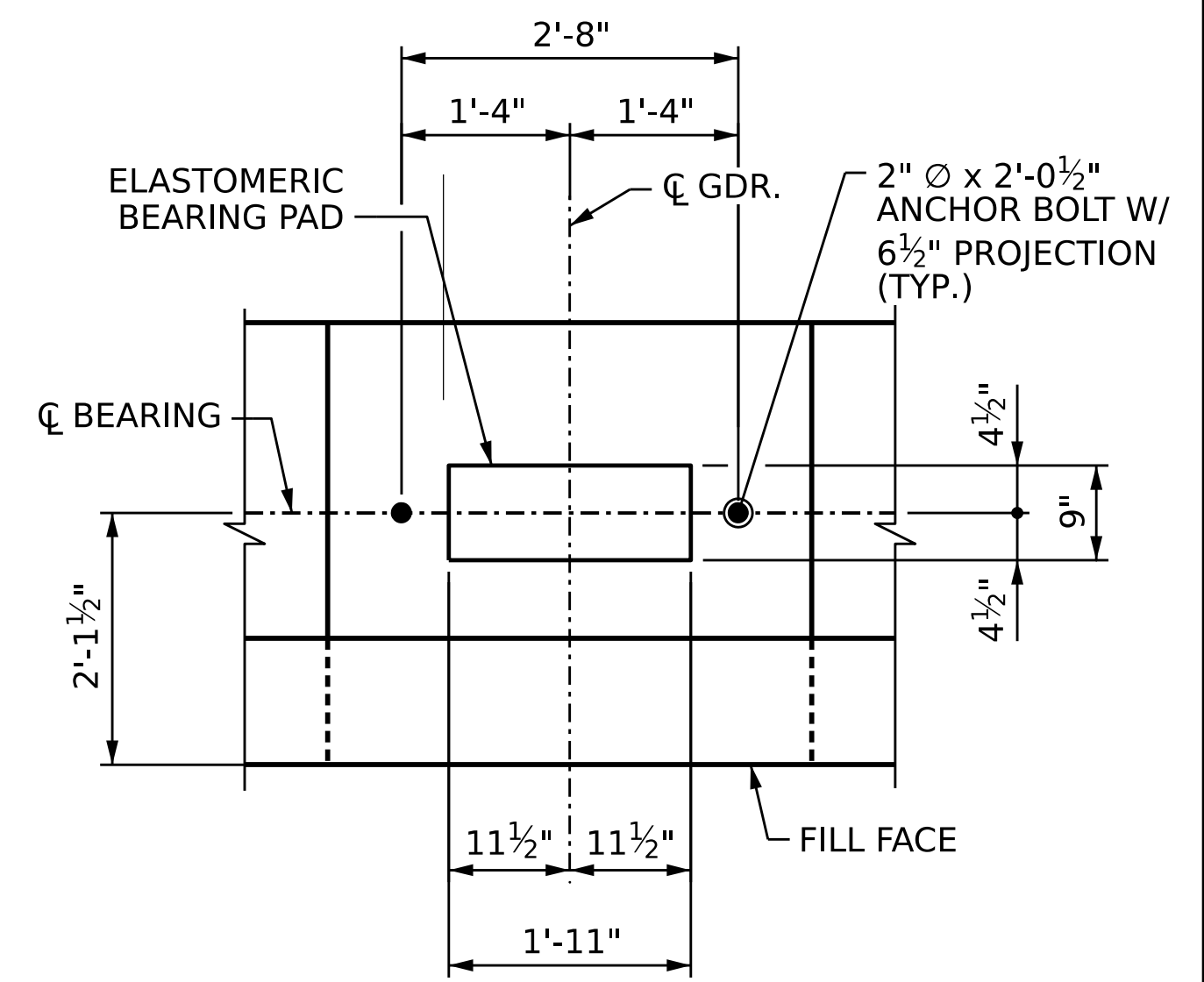
FOR SECTION A-A, B-B AND C-C, SEE "SUBSTRUCTURE END BENT 1 SECTION AND DETAILS" SHEET 3 OF 3.

FOR PILE SPLICE DETAILS AND TEMPORARY DRAINAGE AT END BENT DETAIL, SEE "SUBSTRUCTURE END BENT 1 SECTION AND DETAILS" SHEET 3 OF 3.



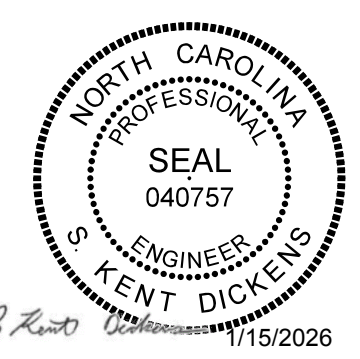
ELEVATION

* FOR LOCATION OF ELEVATION BETWEEN BRIDGE SEATS, SEE "SUBSTRUCTURE END BENT 1 SECTION AND DETAILS" SHEET 3 OF 3.



DETAIL "A"

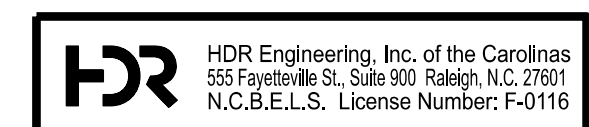
PROJECT NO. **BR-0004**
BEAUFORT COUNTY
 STATION: **23+50.00 -L-**
 SHEET 1 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

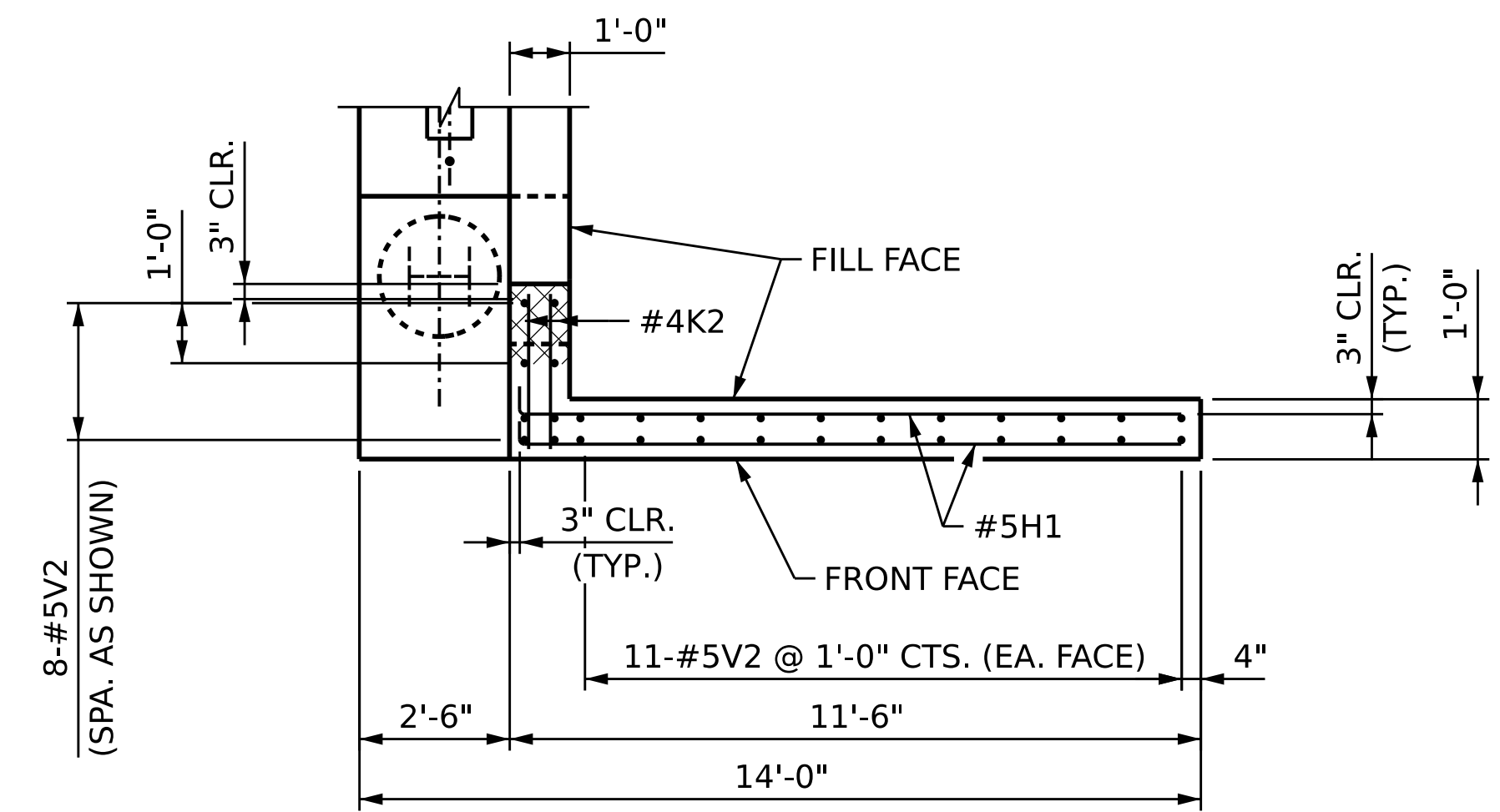
**SUBSTRUCTURE
 END BENT 1
 PLAN AND ELEVATION**

DES BY: F. CORDOVA	DATE: 08/24	DWG BY: B. PETERSON	DATE: 06/24
DES CHK: G. MYERS	DATE: 11/24	CHK BY: G. MYERS	DATE: 12/24

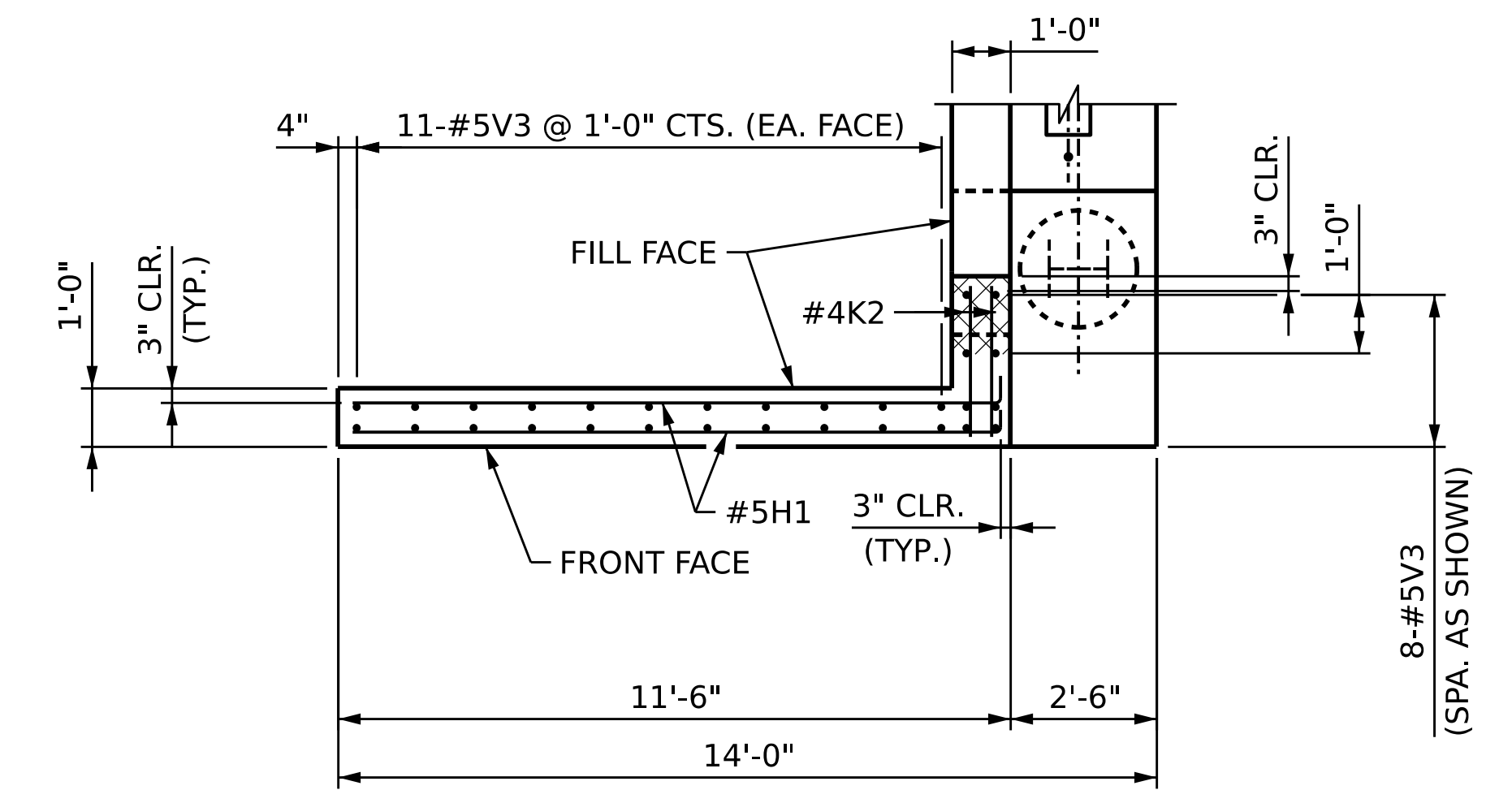


REVISIONS						SHEET NO. 5-33
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	TOTAL SHEETS 44
2	--	--	4	--	--	

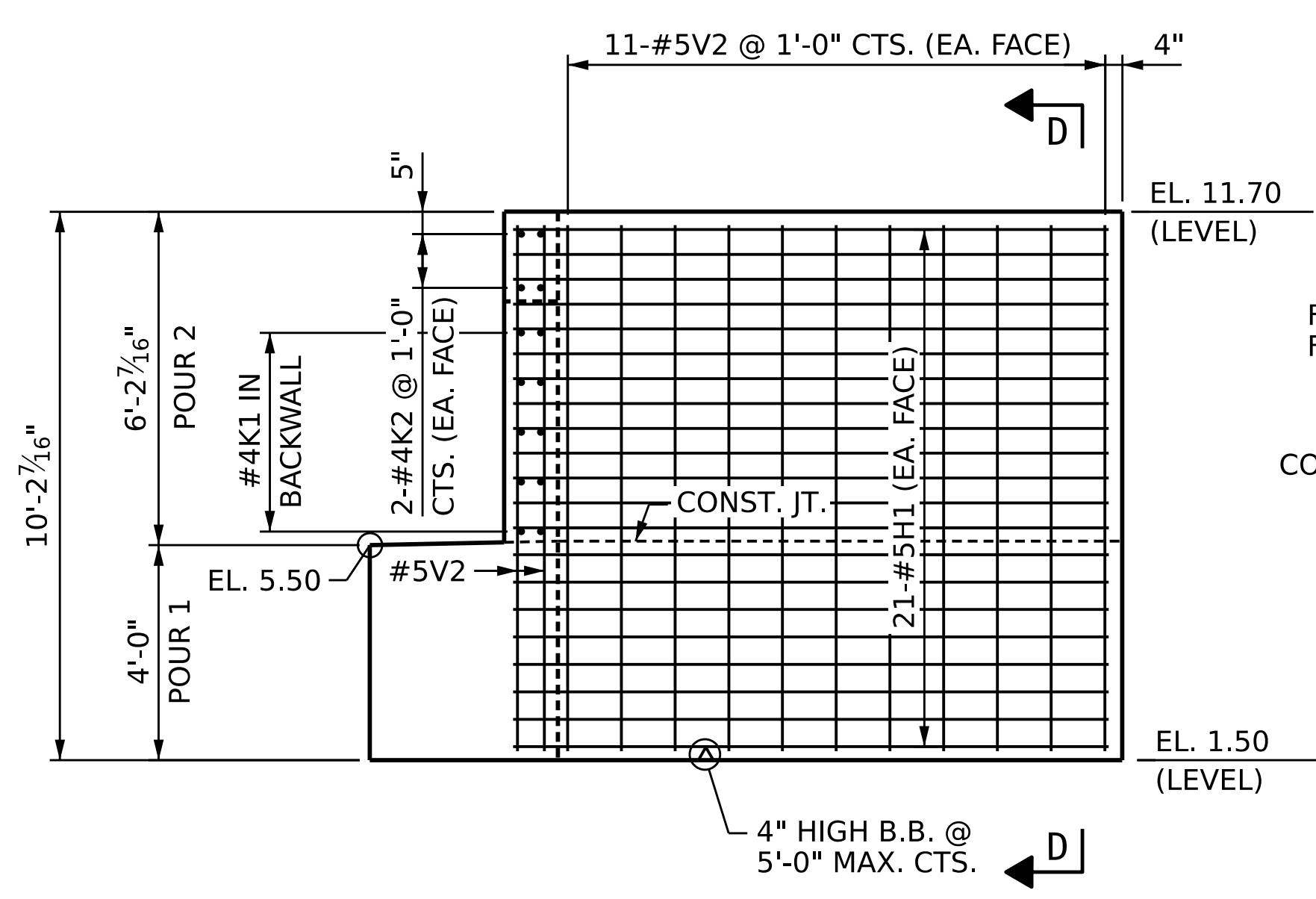
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



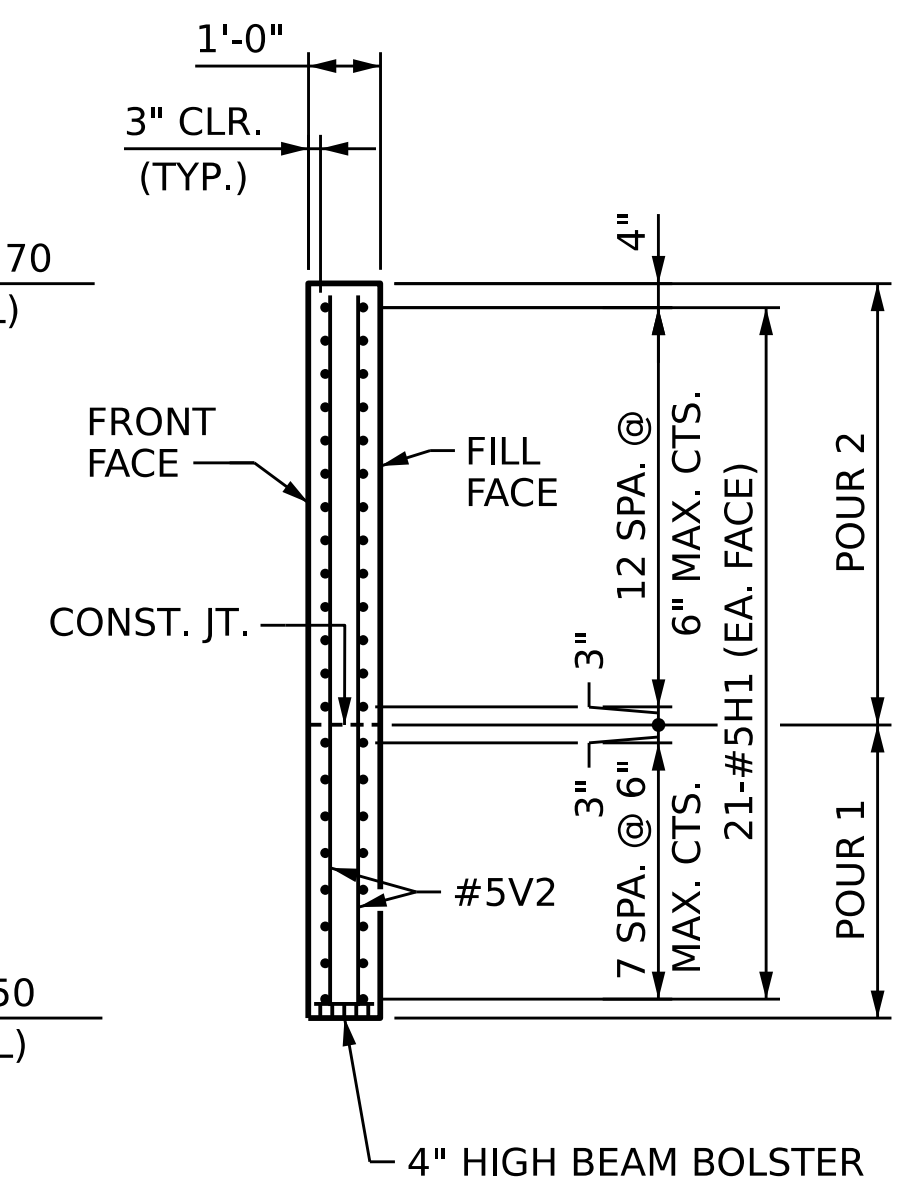
PLAN - WINGWALL "W1"



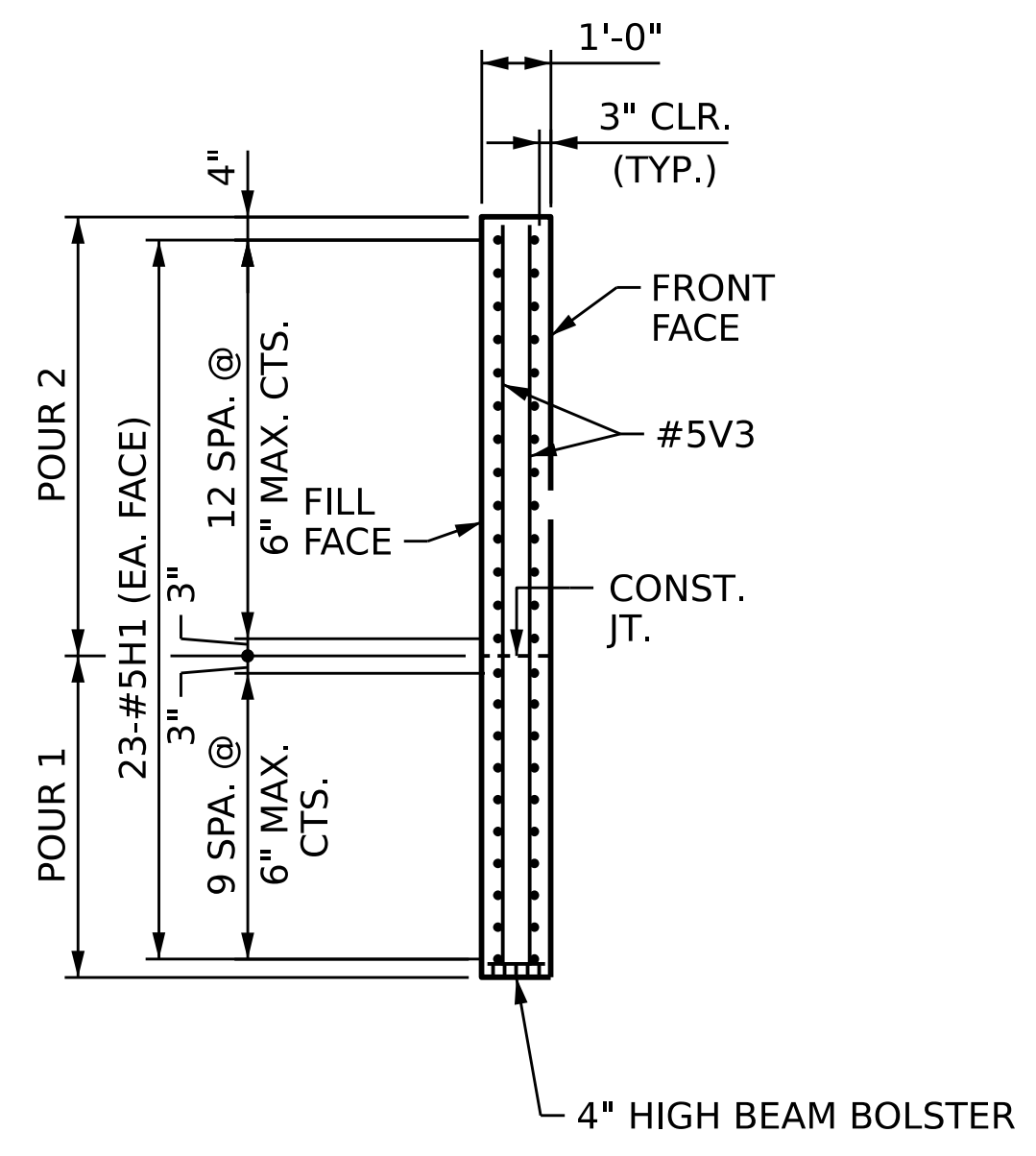
PLAN - WINGWALL "W2"



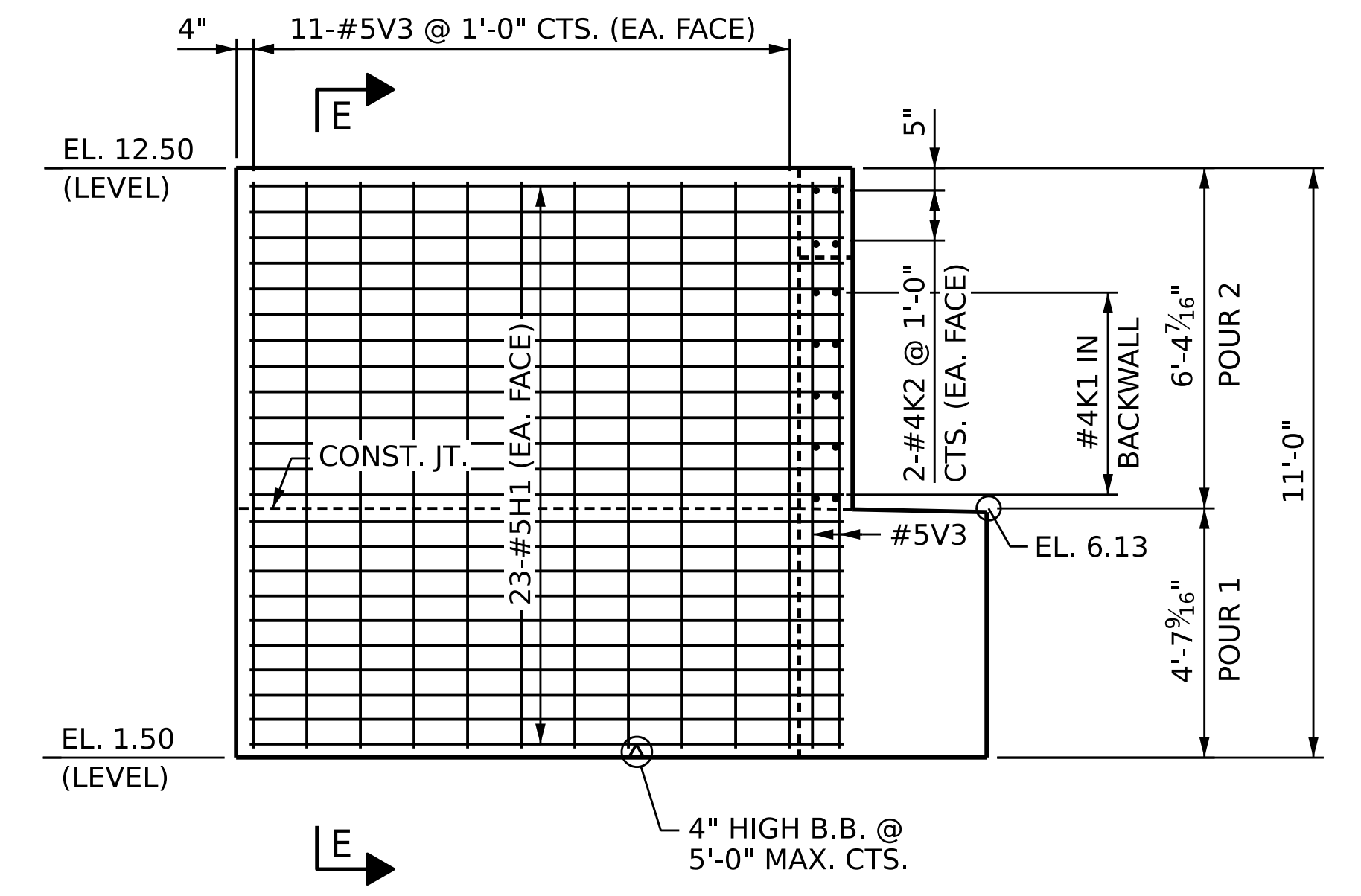
ELEVATION - WINGWALL "W1"



SECTION D-D

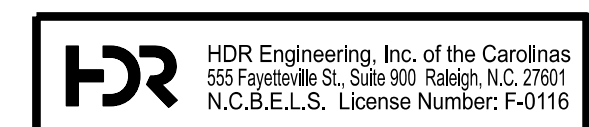


SECTION E-E



ELEVATION - WINGWALL "W2"

DES BY: F. CORDOVA	DATE: 08/24	DWG BY: B. PETERSON	DATE: 06/24
DES CHK: G. MYERS	DATE: 11/24	CHK BY: G. MYERS	DATE: 12/24

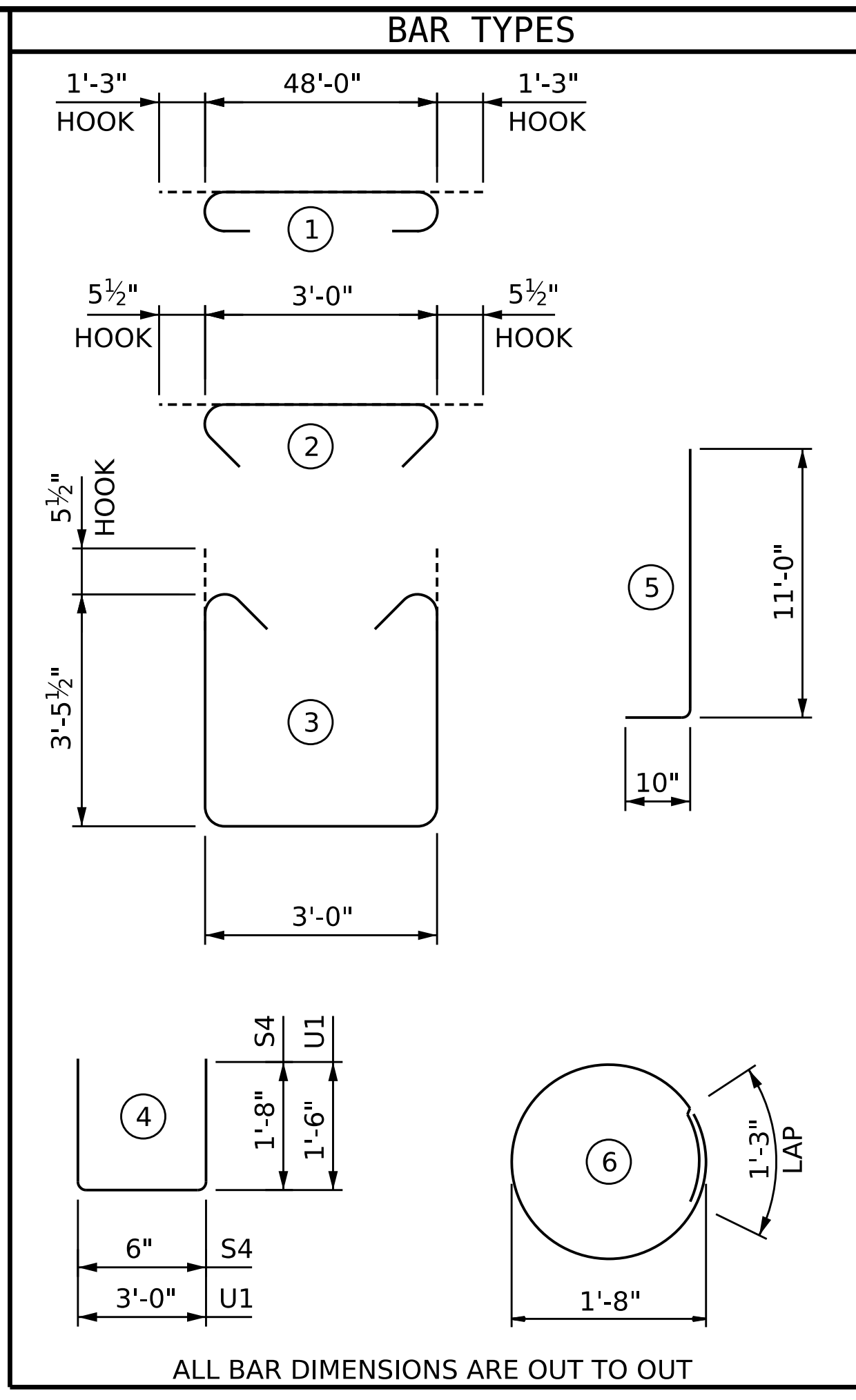
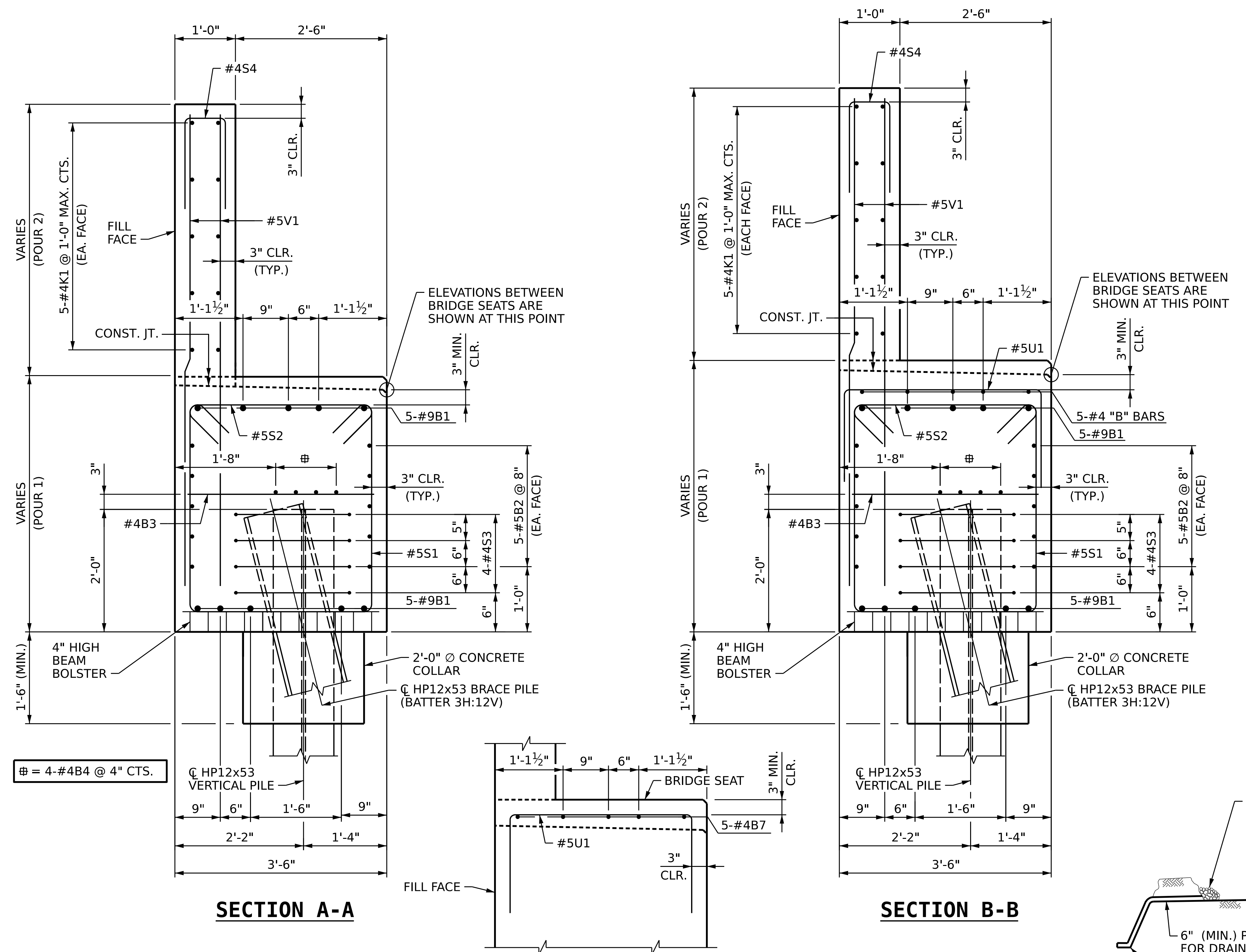


DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



PROJECT NO. **BR-0004**
BEAUFORT COUNTY
 STATION: **23+50.00 -L-**
 SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 1 WINGWALLS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1	--	--	3	--	--
2	--	--	4	--	--
					SHEET NO. S-34
					TOTAL SHEETS 44



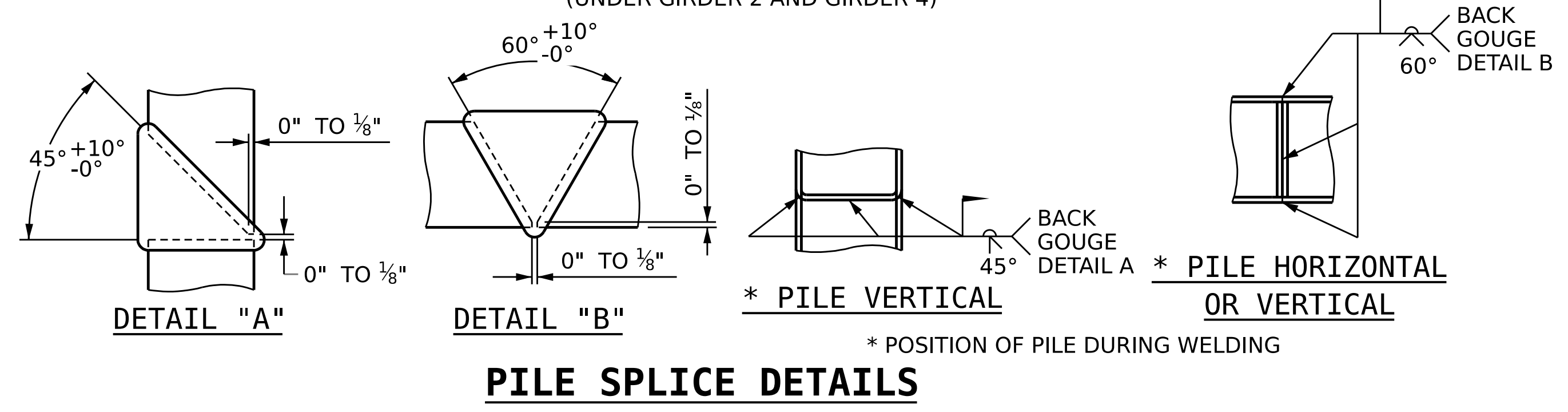
BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	10	# 9		50'-6"	1717
*B2	10	# 5	STR	48'-0"	501
*B3	12	# 4	STR	3'-0"	24
*B4	8	# 4	STR	25'-7"	137
*B5	5	# 4	STR	20'-11"	70
*B6	5	# 4	STR	7'-8"	26
*B7	10	# 4	STR	3'-4"	22
*H1	88	# 5		11'-10"	1086
*K1	20	# 4	STR	25'-7"	342
*K2	8	# 4	STR	2'-5"	13
*S1	48	# 5		10'-10"	542
*S2	48	# 5		3'-11"	196
*S3	44	# 4		6'-6"	191
*S4	43	# 4		3'-10"	110
*U1	31	# 5		6'-0"	194
*V1	86	# 5	STR	7'-11"	710
*V2	30	# 5	STR	9'-7"	300
*V3	30	# 5	STR	10'-5"	326
* EPOXY COATED REINFORCING STEEL				6,507	LBS
CLASS "AA" CONCRETE					
POUR #1: COLLAR, CAP, LOWER PART OF WINGS				32.2	LBS
POUR #2: BACKWALL & UPPER PART OF WINGS				14.1	LBS
TOTAL CONCRETE				46.3	CU. YDS.

= 4-#4B4 @ 4" CTS.

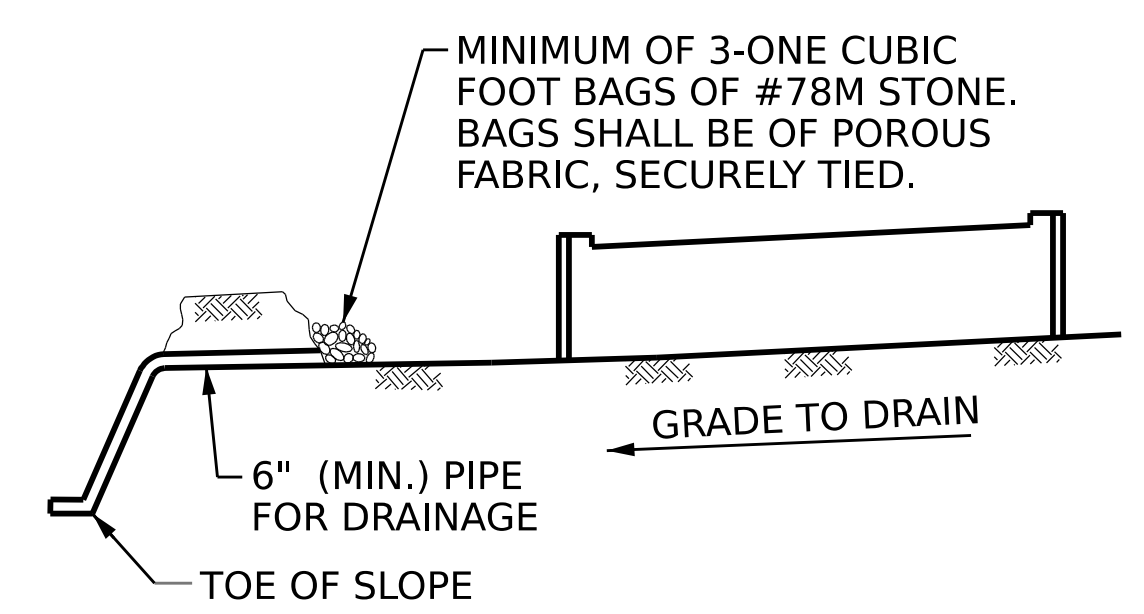
SECTION A-A

SECTION B-B

SECTION C-C
(UNDER GIRDER 2 AND GIRDER 4)



PILE SPLICE DETAILS



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

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

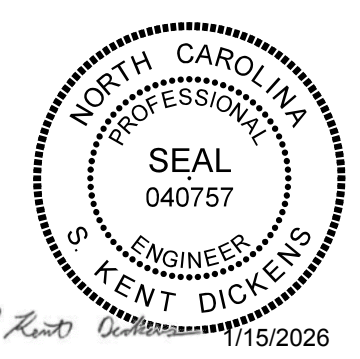
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

PROJECT NO. **BR-0004**
BEAUFORT COUNTY
 STATION: **23+50.00 -L-**
 SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 1
 SECTION AND DETAILS**



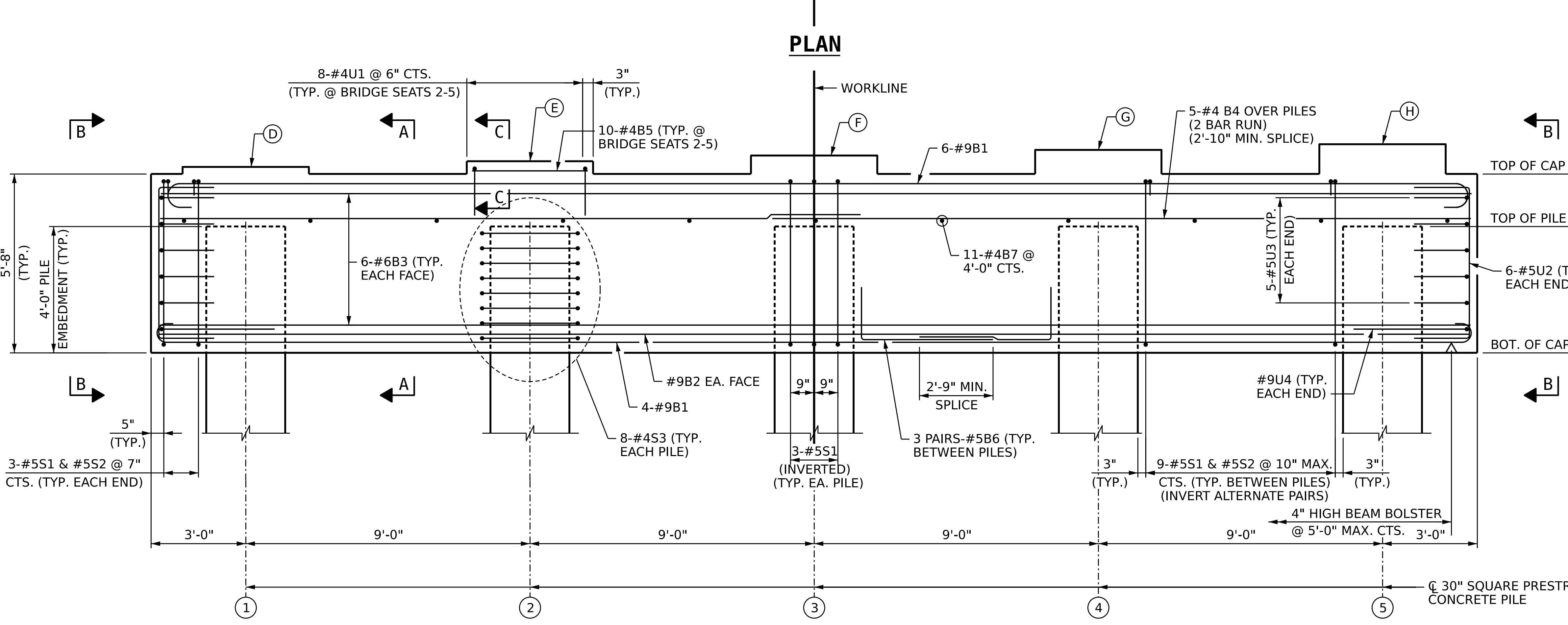
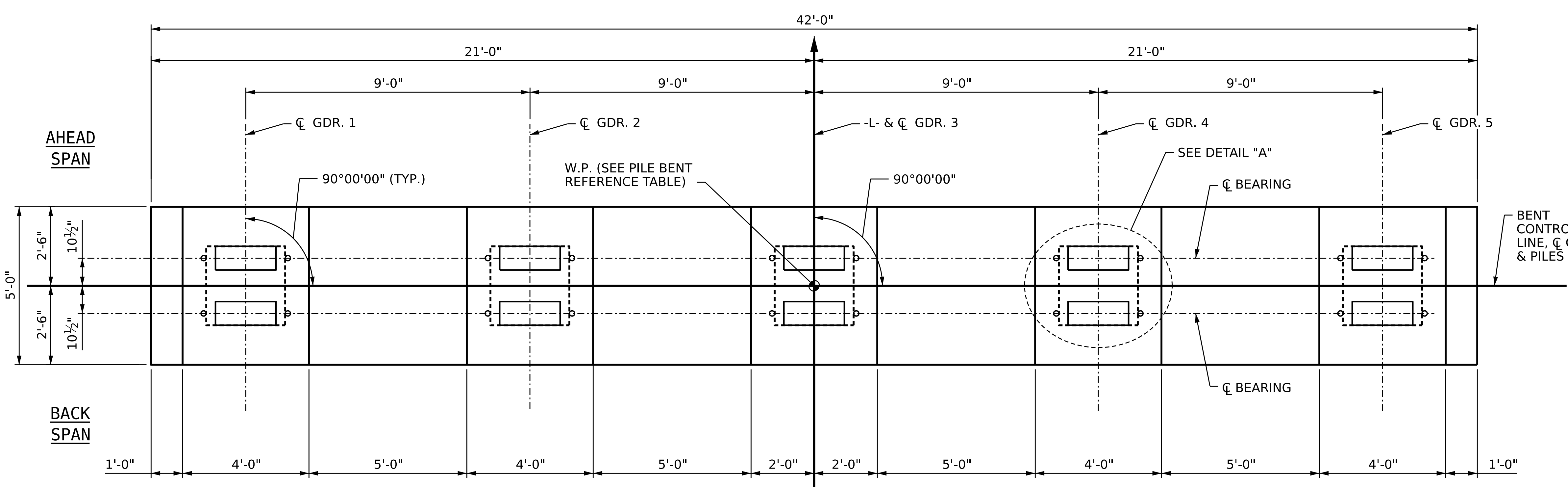
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1	--	--	3	--	--
2	--	--	4	--	--

DES BY: F. CORDOVA	DATE: 08/24	DWG BY: B. PETERSON	DATE: 06/24
DES CHK: G. MYERS	DATE: 11/24	CHK BY: G. MYERS	DATE: 12/24

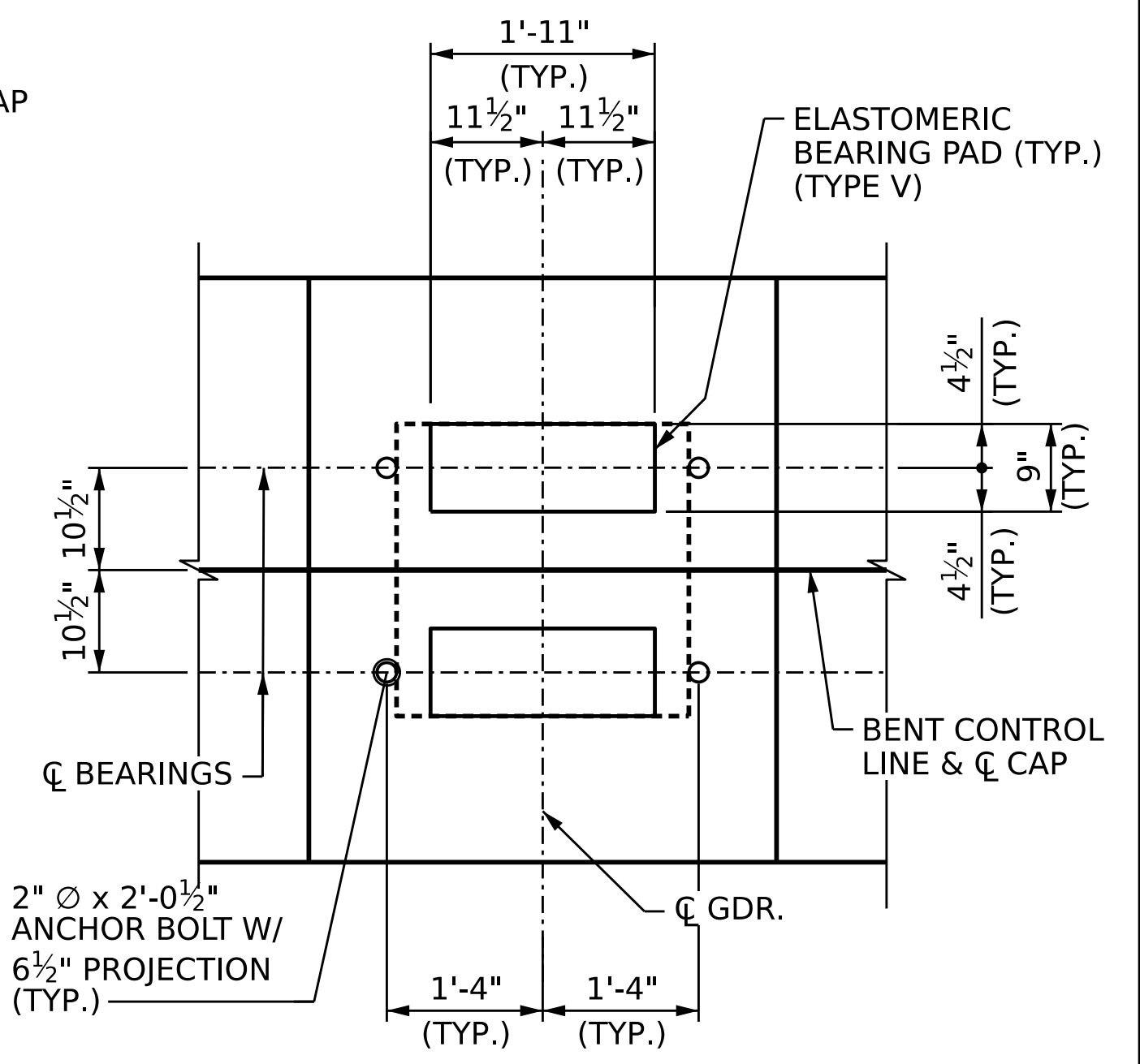


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 UNLESS ALL SIGNATURES COMPLETED

SHEET NO.	S-35
TOTAL SHEETS	44



NOTES
FOR SECTIONS A-A, B-B AND C-C, SEE SHEET 2 OF 2.

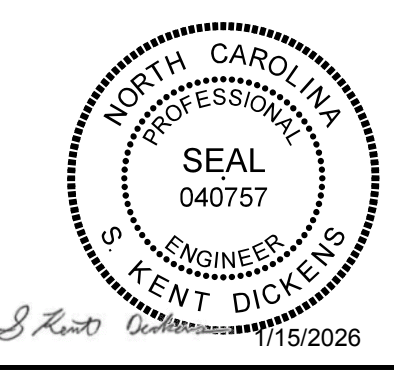


PILE BENT REFERENCE TABLE											
BENT NO.	W.P. NO.	BACK SPAN	AHEAD SPAN	ELEVATIONS							
				A	B	C	D	E	F	G	H
1	2	SPAN A	SPAN B	1.00	5.00	6.67	6.79	6.97	7.15	7.33	7.51
2	3	SPAN B	SPAN C	1.80	5.80	7.47	7.59	7.77	7.95	8.13	8.31
3	4	SPAN C	SPAN D	2.13	6.13	7.80	7.92	8.10	8.28	8.46	8.64
4	5	SPAN D	SPAN E	1.98	5.98	7.65	7.77	7.95	8.13	8.31	8.49
5	6	SPAN E	SPAN F	1.36	5.36	7.03	7.15	7.33	7.51	7.69	7.87

PROJECT NO. **BR-0004**
BEAUFORT COUNTY
STATION: **23+50.00 -L-**
SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUBSTRUCTURE
BENTS 1 THRU 5
PLAN AND ELEVATION**

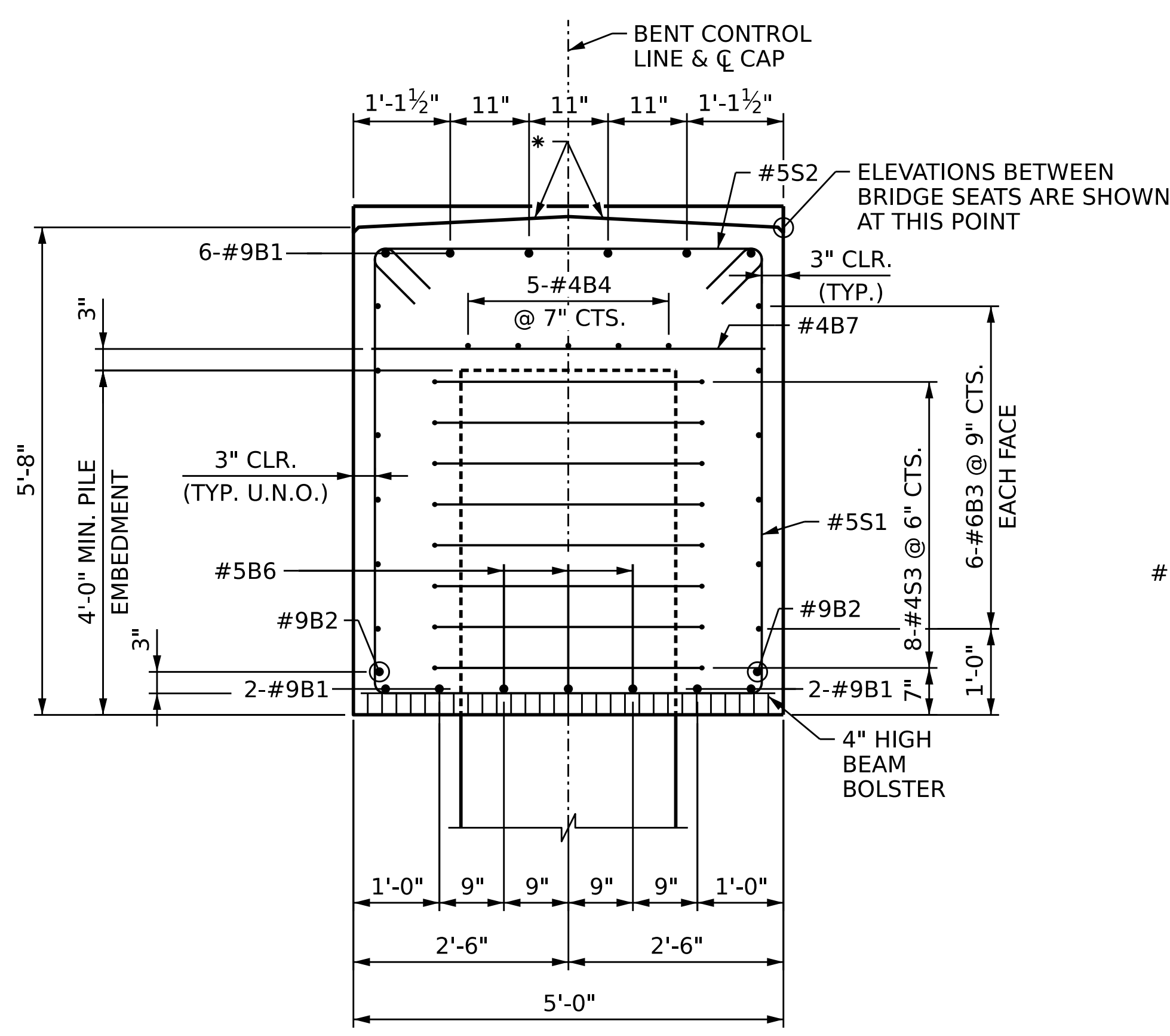


DES BY: J. PATT DATE: 12/24
DES CHK: K. DICKENS DATE: 12/24
DWG BY: B. PETERSON DATE: 11/24
CHK BY: R. JONES DATE: 12/24

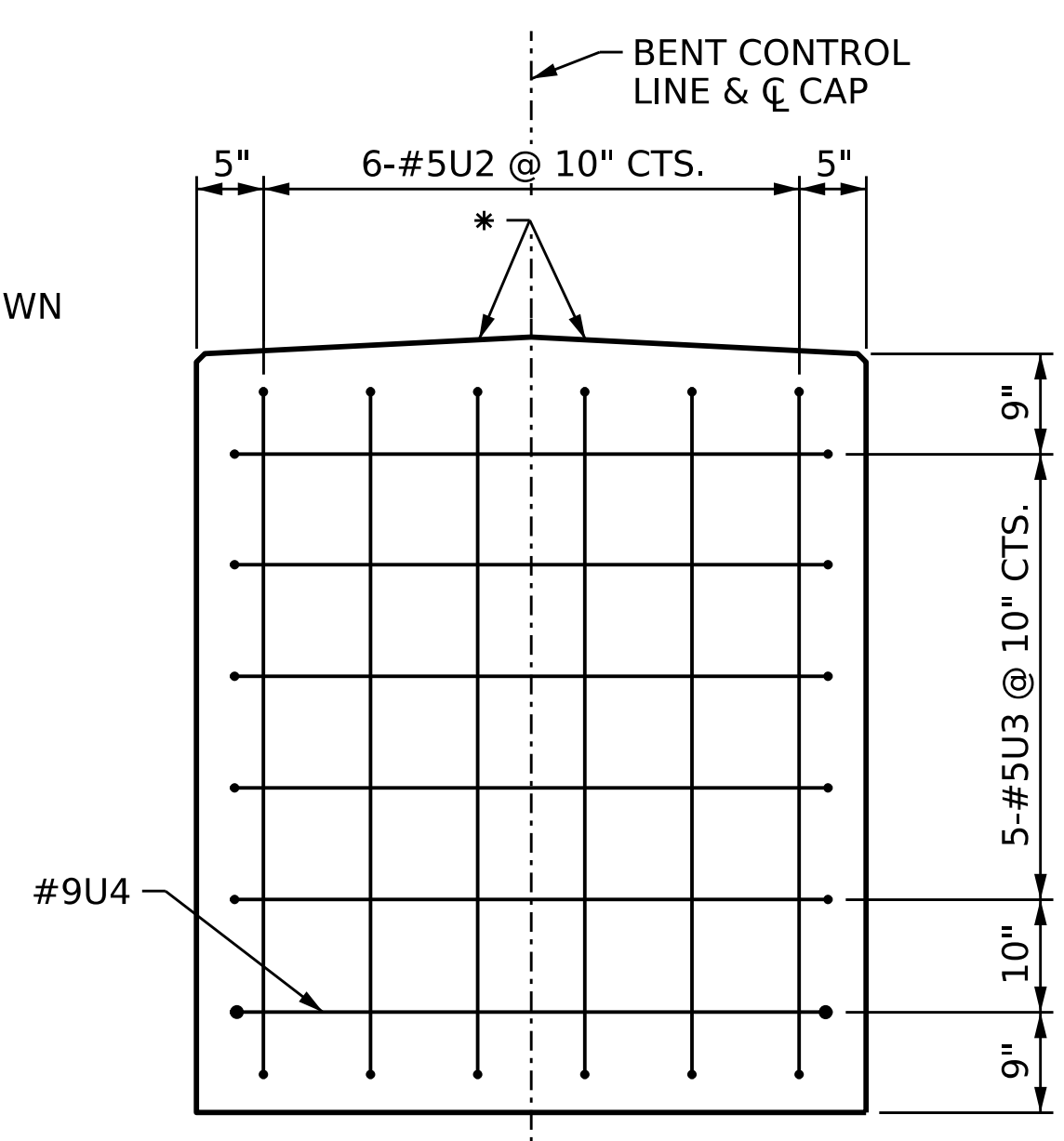
HR HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

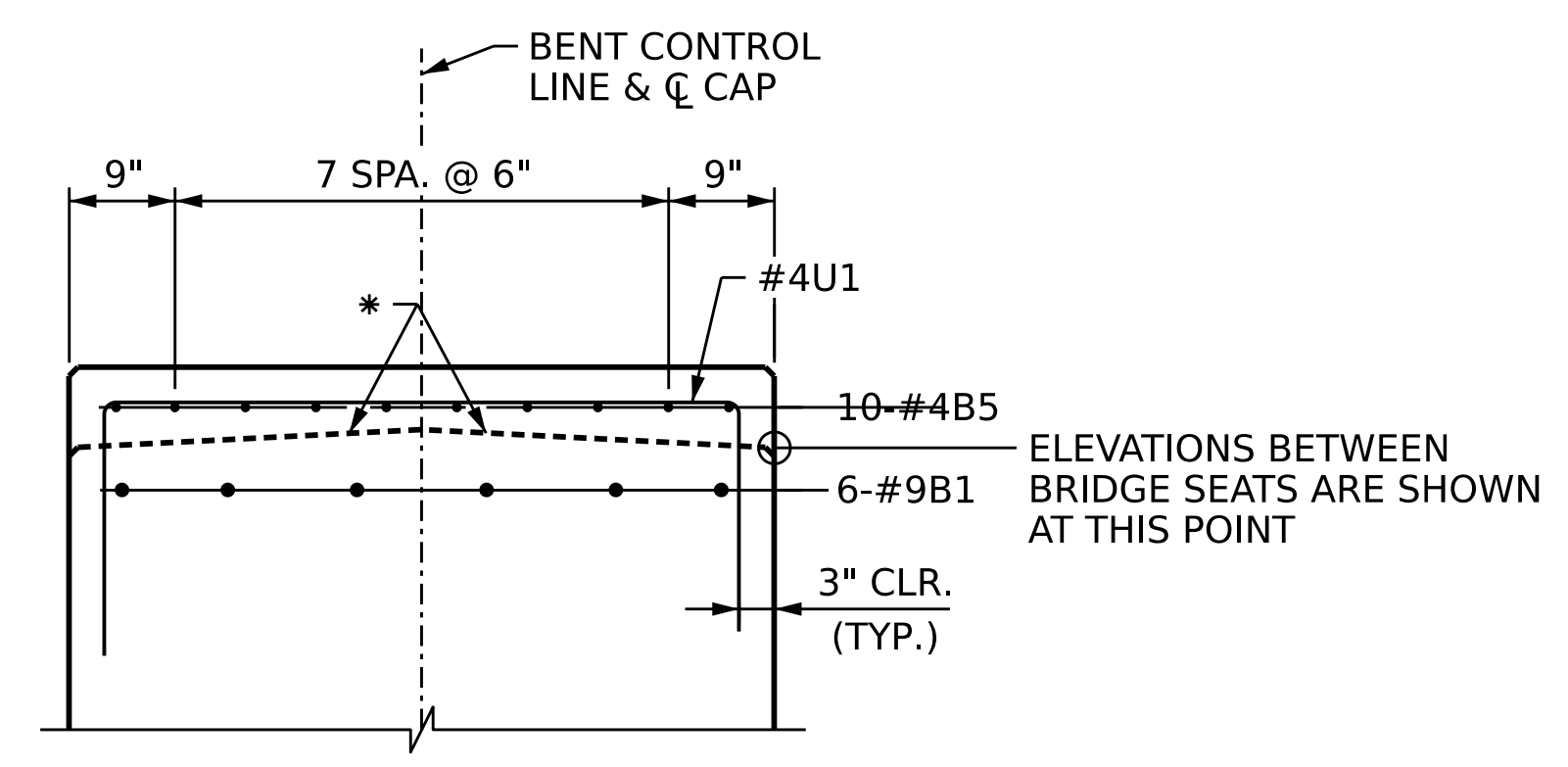
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NO.	BY:	DATE:	NO.	BY:	DATE:	5-36
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	44



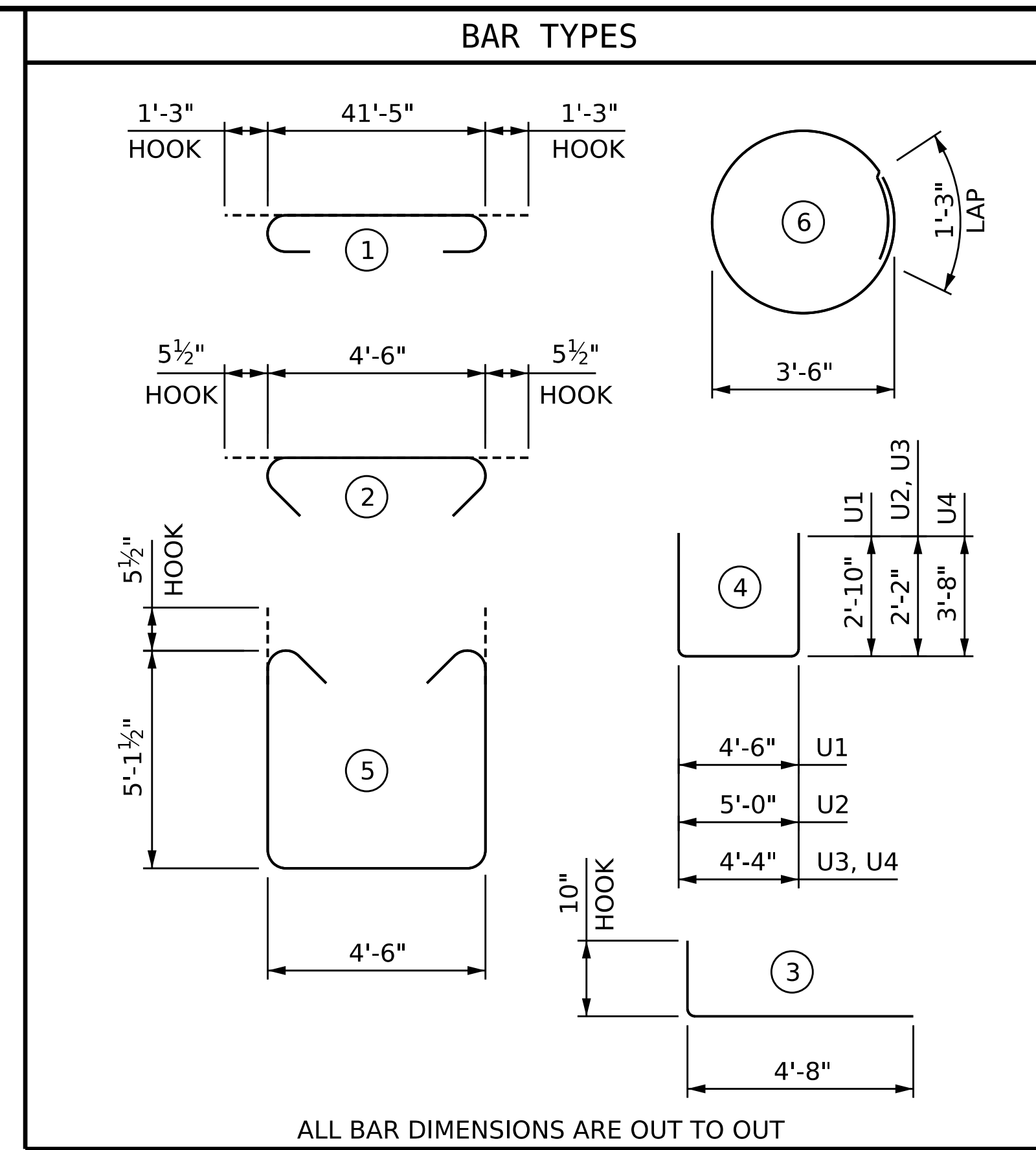
SECTION A-A



SECTION B-B
(TYP. EA. END)



SECTION C-C
(TYP. EA. BRIDGE SEAT)



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL					
FOR ONE BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	10	# 9	1	43'-11"	1494
*B2	2	# 9	STR	41'-5"	282
*B3	12	# 6	STR	41'-5"	747
*B4	10	# 4	STR	22'-2"	149
*B5	40	# 5	STR	3'-5"	143
*B6	24	# 5	3	5'-6"	138
*B7	11	# 4	STR	4'-6"	34
*S1	57	# 5	5	15'-8"	932
*S2	42	# 5	2	5'-5"	238
*S3	40	# 4	6	12'-3"	328
*U1	32	# 4	4	10'-2"	218
*U2	12	# 5	4	9'-4"	117
*U3	10	# 5	4	8'-8"	91
*U4	2	# 9	4	11'-8"	80
*EPOXY COATED REINFORCING STEEL					LBS.: 4991
CLASS AA CONCRETE					CU. YDS.: 41.3

NOTES

- STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- FOR 30" PRESTRESSED CONCRETE PILE DETAILS, SEE "SUBSTRUCTURE 30" PRESTRESSED CONCRETE PILE" SHEET.
- THE TOP SURFACE AREAS OF THE BENT CAP FOR BENT 3 SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
- * THE TOP SURFACE OF THE BENT CAPS EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE C CAP TO THE BACK & AHEAD FACES AT A RATE OF 2%.

PROJECT NO. **BR-0004**
BEAUFORT COUNTY
 STATION: **23+50.00 -L-**
 SHEET 2 OF 2

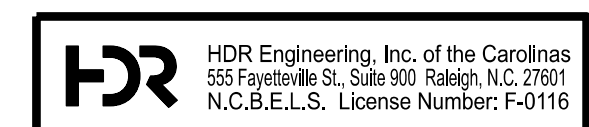
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 BENTS 1 THRU 5
 SECTIONS AND DETAILS**

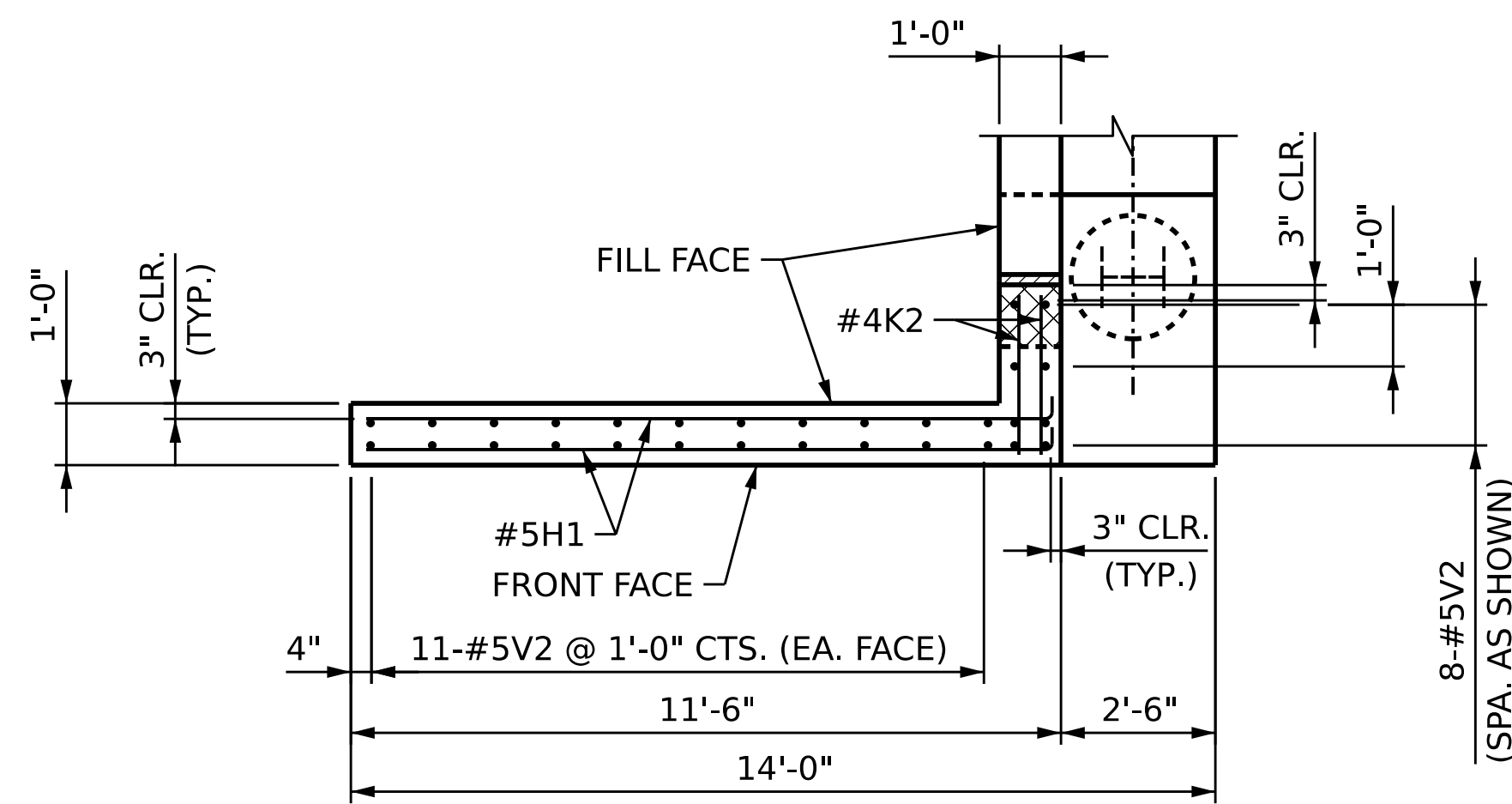


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-37
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	44

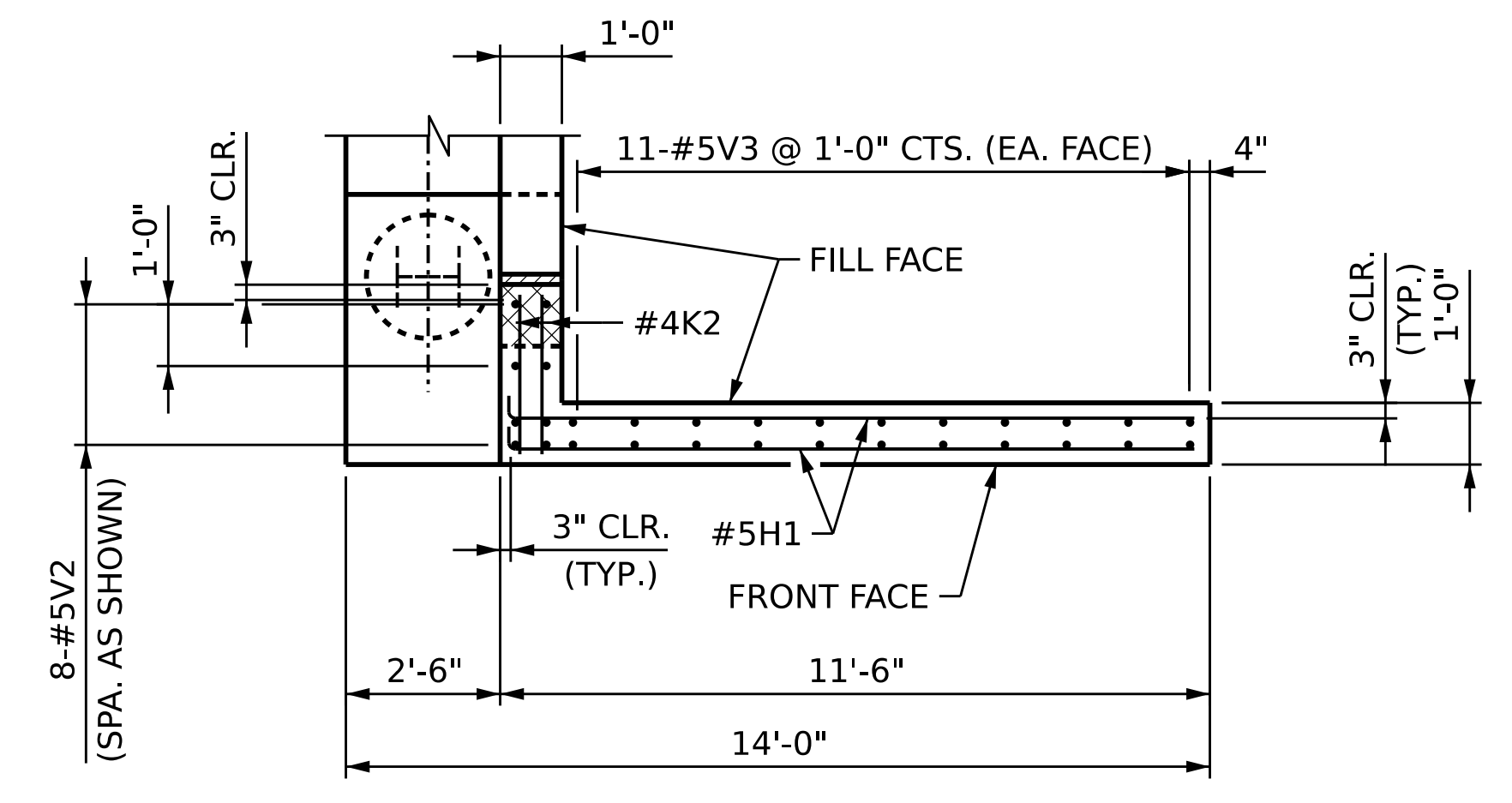
DES BY: J. PATT	DATE: 12/24	DWG BY: B. PETERSON	DATE: 11/24
DES CHK: K. DICKENS	DATE: 12/24	CHK BY: R. JONES	DATE: 12/24



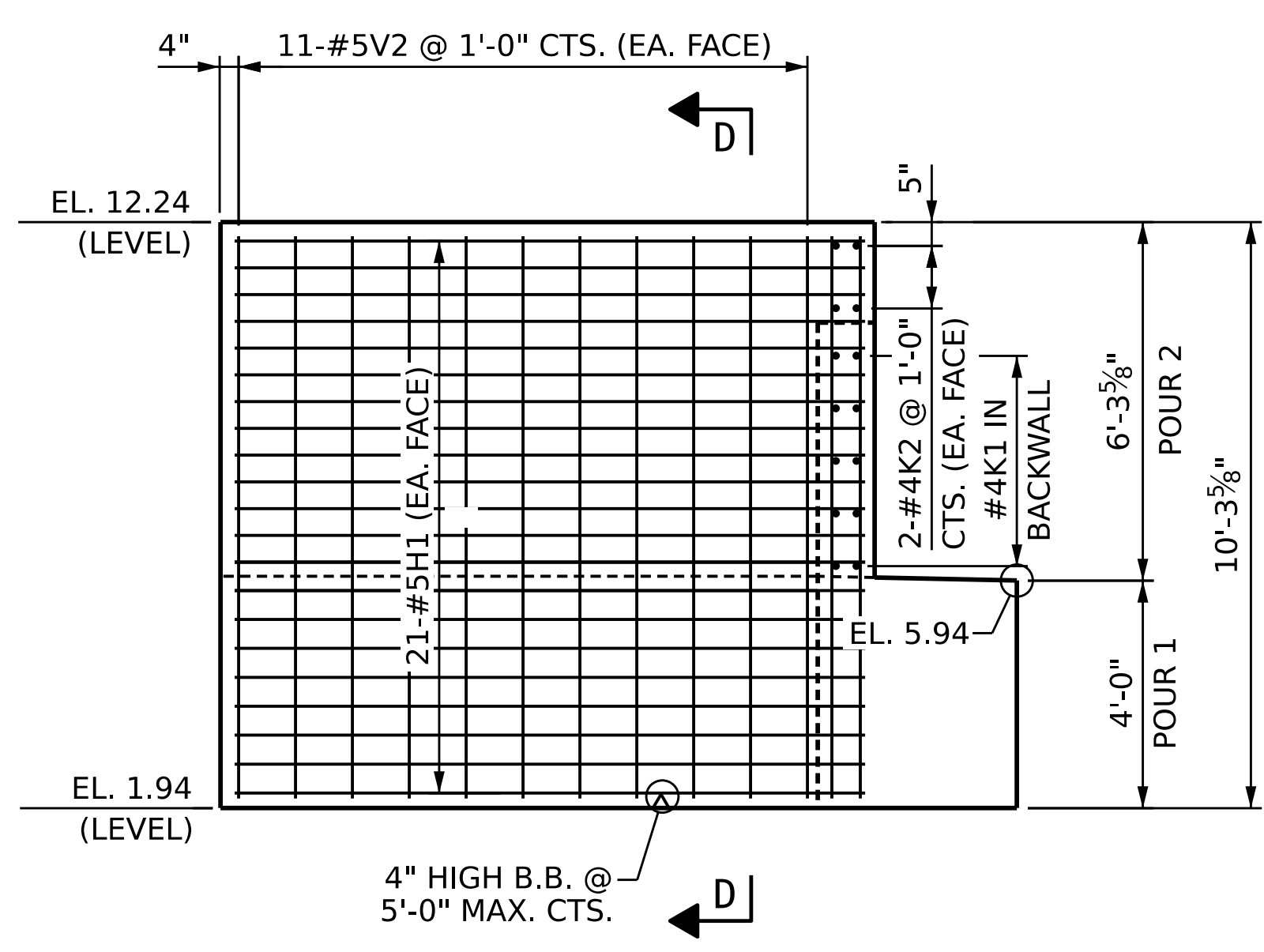
DOCUMENT NOT CONSIDERED FINAL
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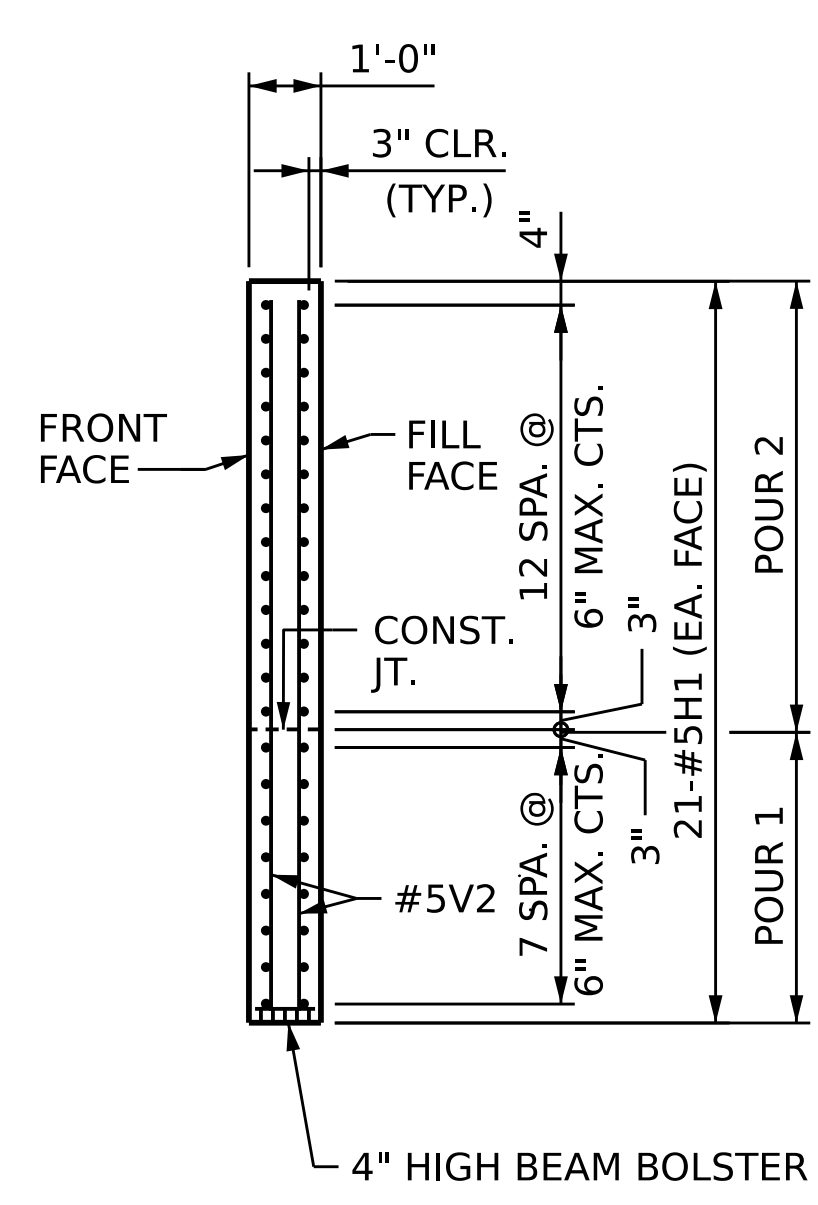
PLAN - WINGWALL "W3"



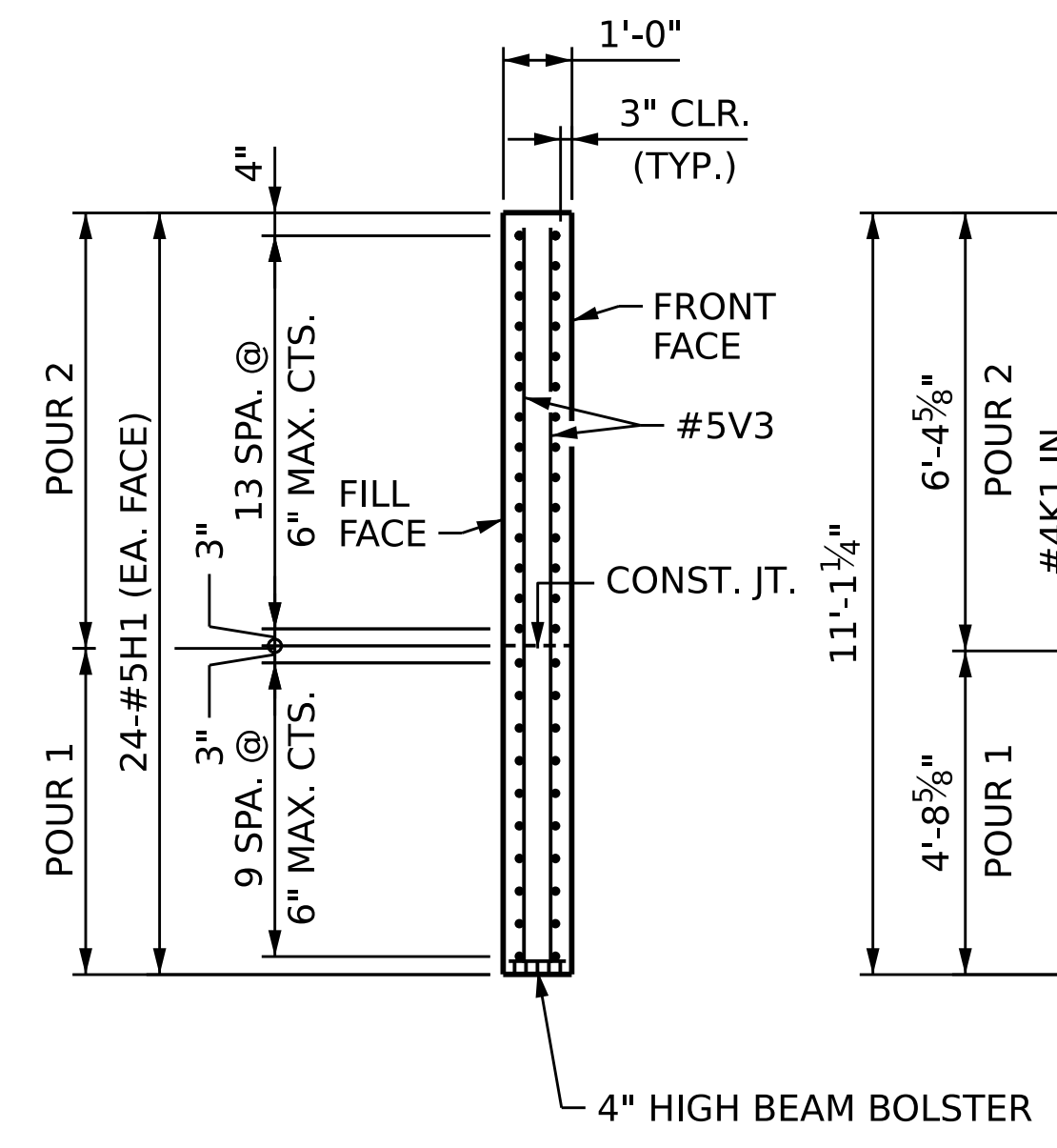
PLAN - WINGWALL "W4"



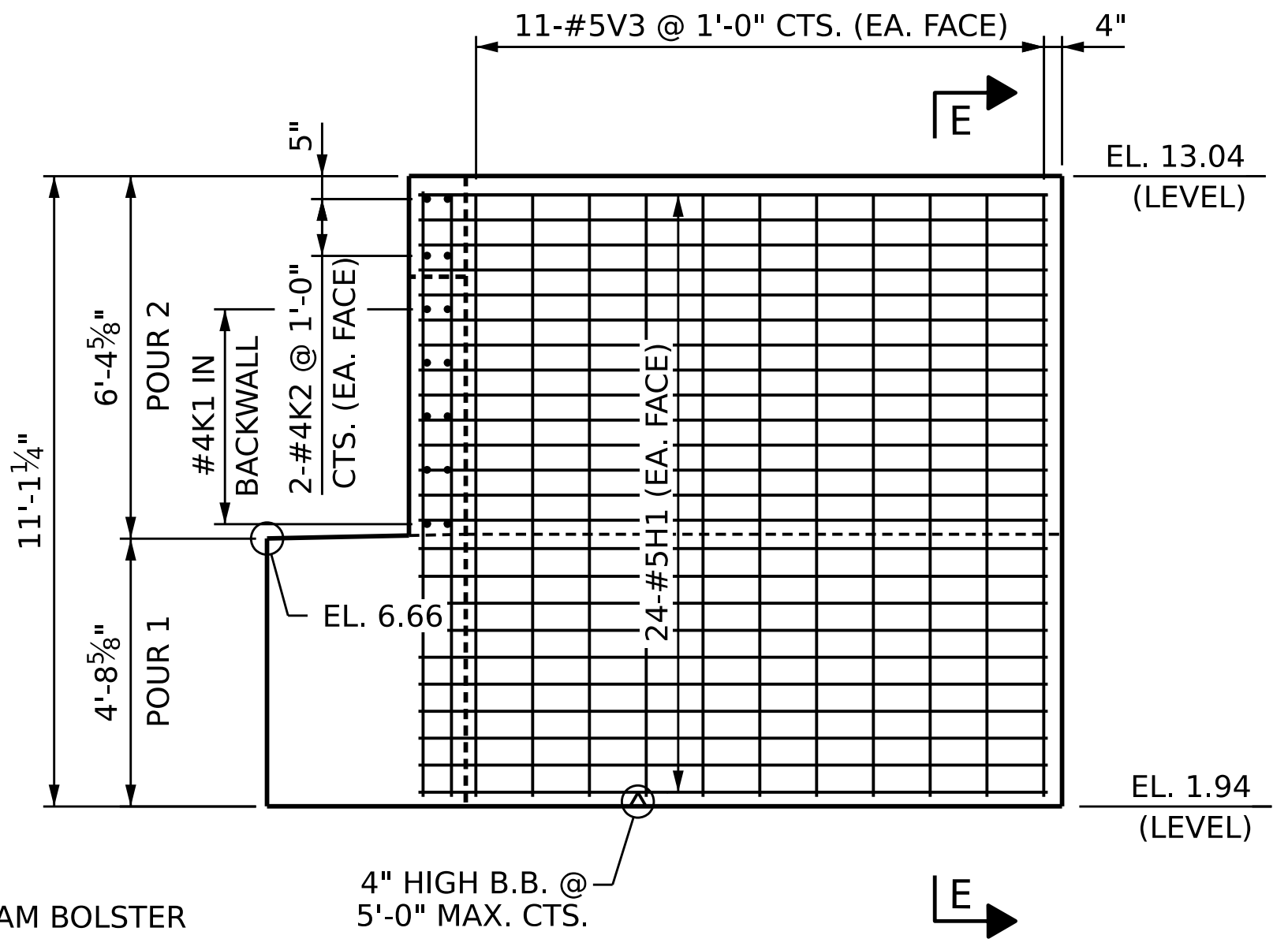
ELEVATION - WINGWALL "W3"



SECTION D-D

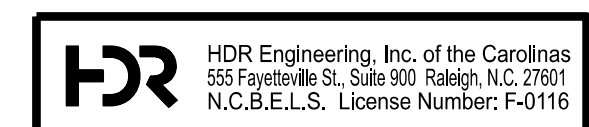


SECTION E-E



ELEVATION - WINGWALL "W4"

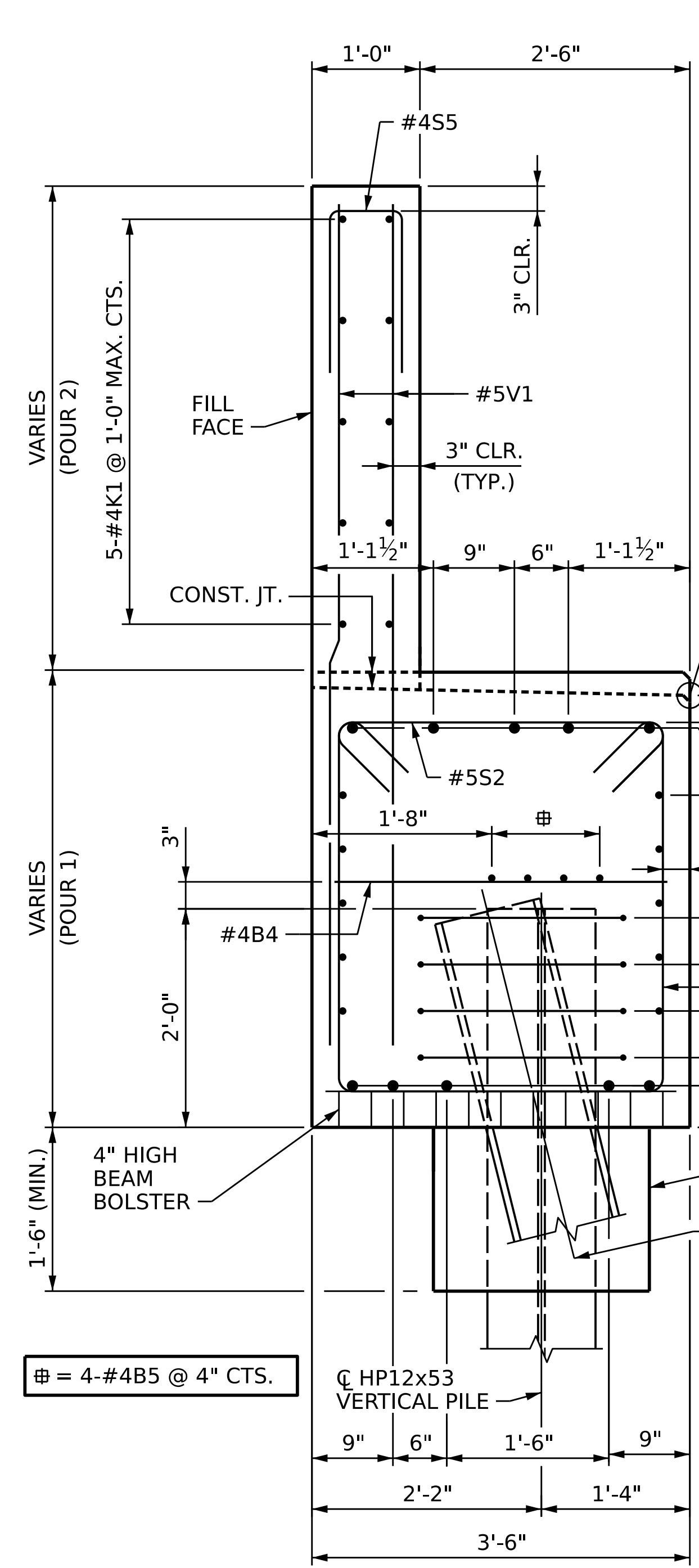
DES BY: F. CORDOVA	DATE: 08/24	DWG BY: B. PETERSON	DATE: 06/24
DES CHK: G. MYERS	DATE: 11/24	CHK BY: G. MYERS	DATE: 12/24



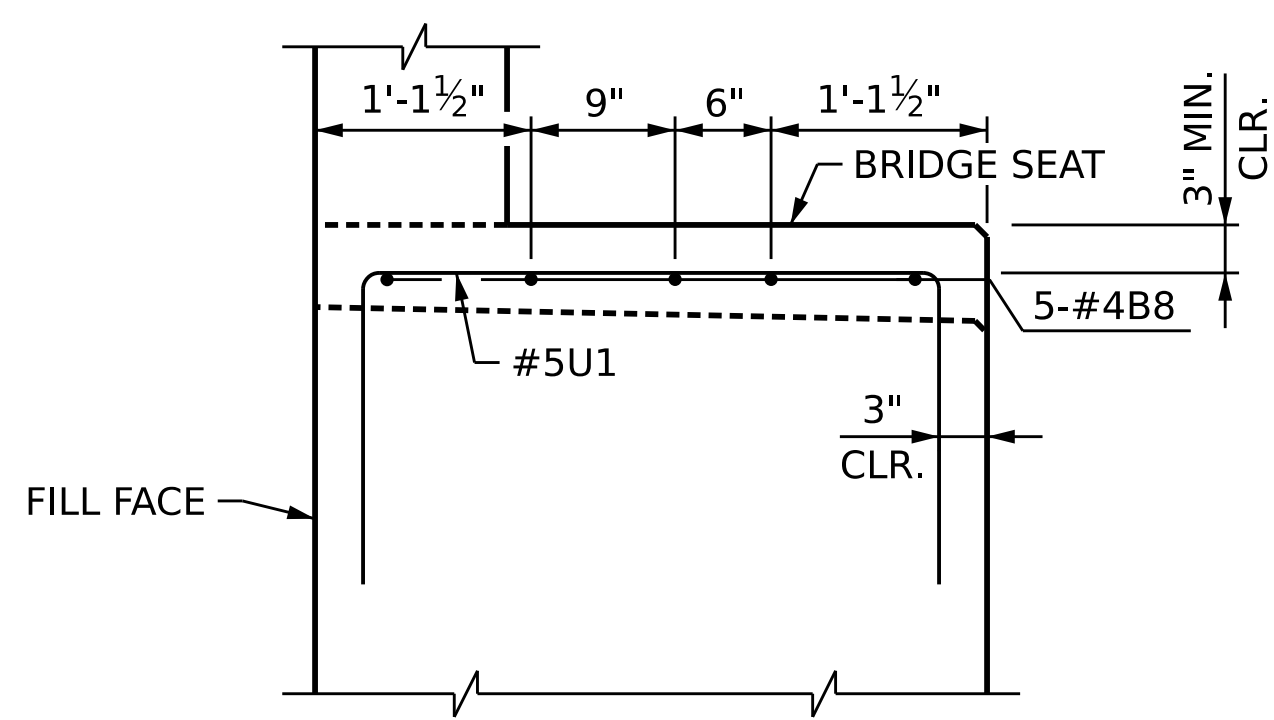
PROJECT NO. **BR-0004**
BEAUFORT COUNTY
 STATION: **23+50.00 -L-**
 SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 2 WINGWALLS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1	--	--	3	--	--
2	--	--	4	--	--
					SHEET NO. S-39
					TOTAL SHEETS 44

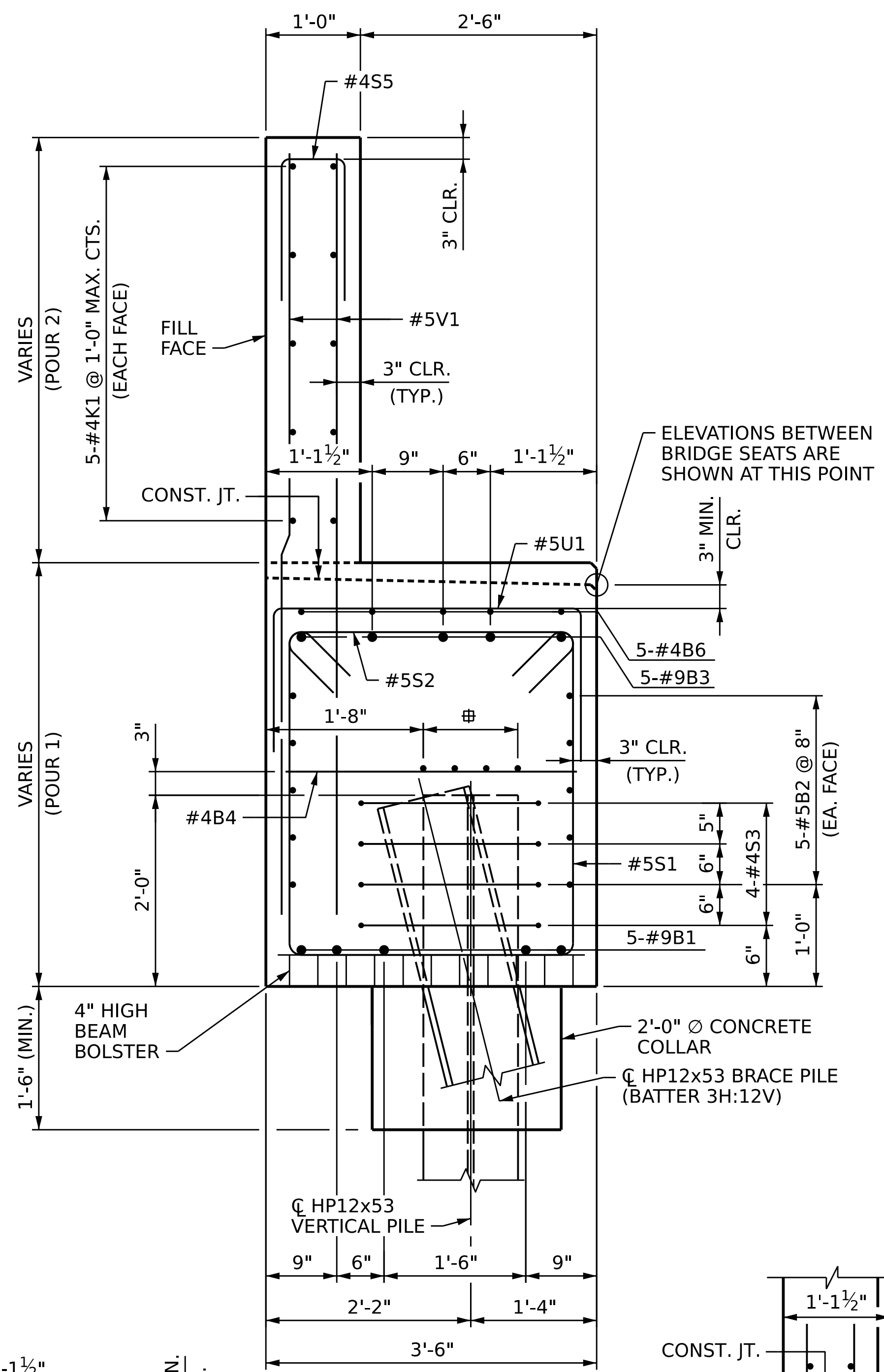
DOCUMENT NOT CONSIDERED FINAL
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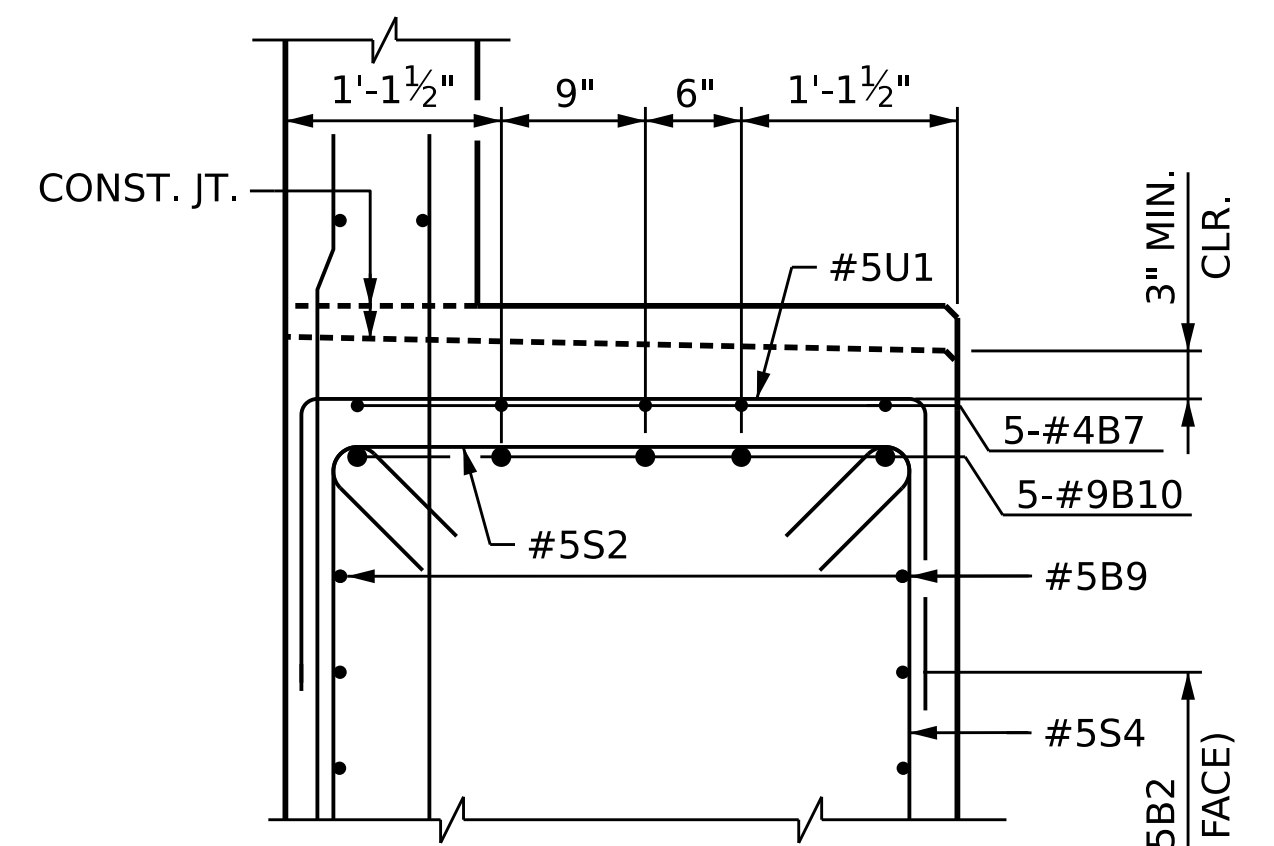
SECTION A-A



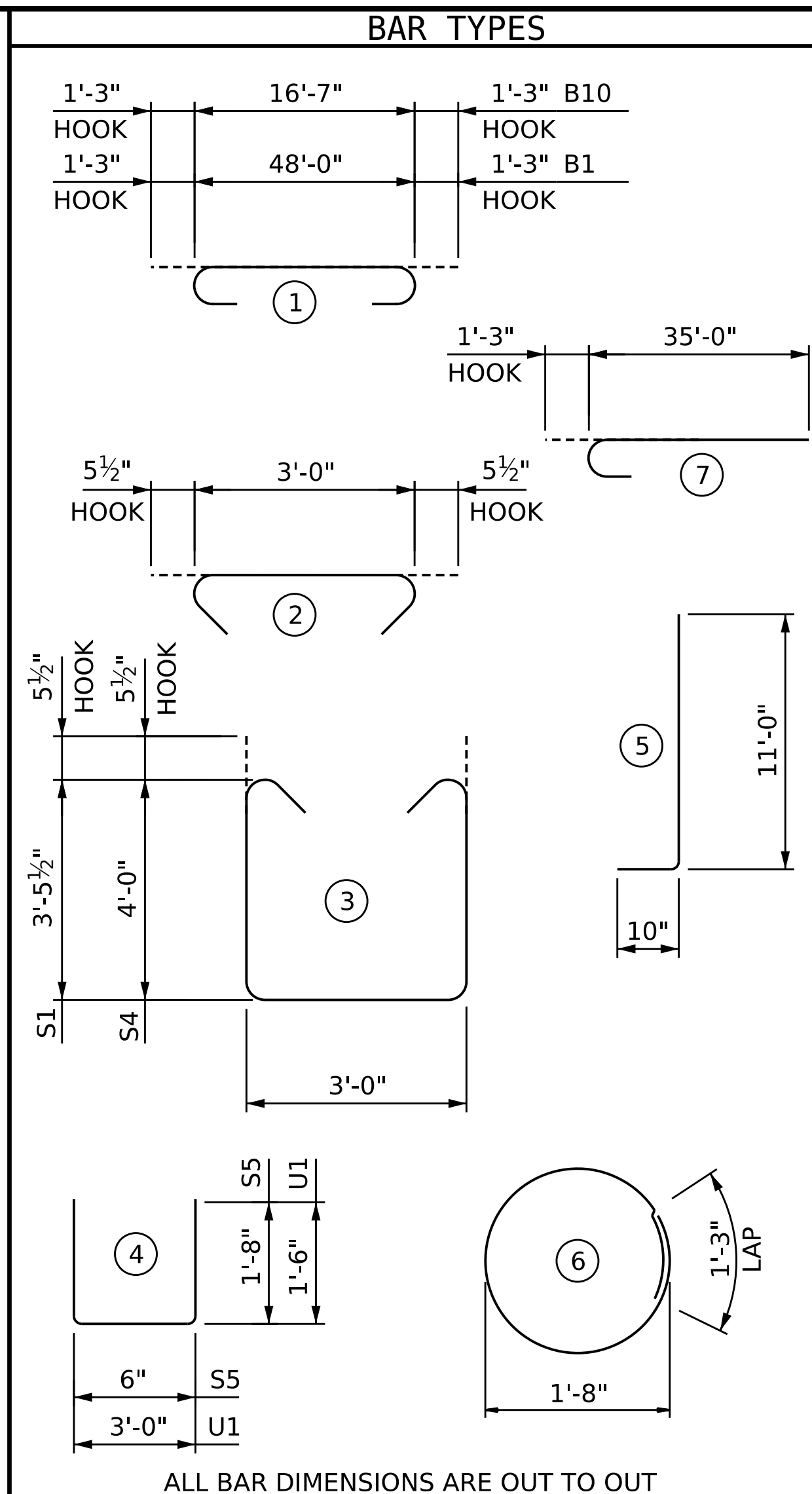
SECTION C-C



SECTION B-B



SECTION D-D

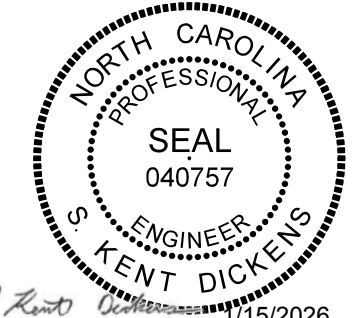


BAR TYPES

BILL OF MATERIAL					
END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	5	# 9	1	50'-6"	859
*B2	10	# 5	STR	48'-0"	501
*B3	5	# 9	7	36'-3"	616
*B4	12	# 4	STR	3'-0"	24
*B5	8	# 4	STR	25'-7"	137
*B6	5	# 4	STR	20'-10"	70
*B7	5	# 4	STR	7'-8"	26
*B8	5	# 4	STR	3'-4"	11
*B9	2	# 5	STR	16'-9"	35
*B10	5	# 9	1	19'-1"	324
*H1	90	# 5	5	11'-10"	1111
*K1	20	# 4	STR	25'-7"	342
*K2	8	# 4	STR	2'-5"	13
*S1	31	# 5	3	10'-10"	350
*S2	48	# 5	2	3'-11"	196
*S3	44	# 4	6	6'-6"	191
*S4	17	# 5	3	11'-11"	211
*S5	43	# 4	4	3'-10"	110
*U1	29	# 5	4	6'-0"	181
*V1	86	# 5	STR	8'-0"	718
*V2	30	# 5	STR	9'-8"	302
*V3	30	# 5	STR	10'-6"	329
* EPOXY COATED REINFORCING STEEL				6,657	LBS
CLASS "AA" CONCRETE					
POUR #1: COLLAR, CAP, LOWER PART OF WINGS				32.6	LBS
POUR #2: BACKWALL & UPPER PART OF WINGS				14.3	LBS
TOTAL CONCRETE				46.9	CU. YDS.

DES BY: F. CORDOVA DATE: 08/24
 DES CHK: G. MYERS DATE: 11/24
 DWG BY: B. PETERSON DATE: 06/24
 CHK BY: G. MYERS DATE: 12/24

HDR HDR Engineering, Inc. of the Carolinas
 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
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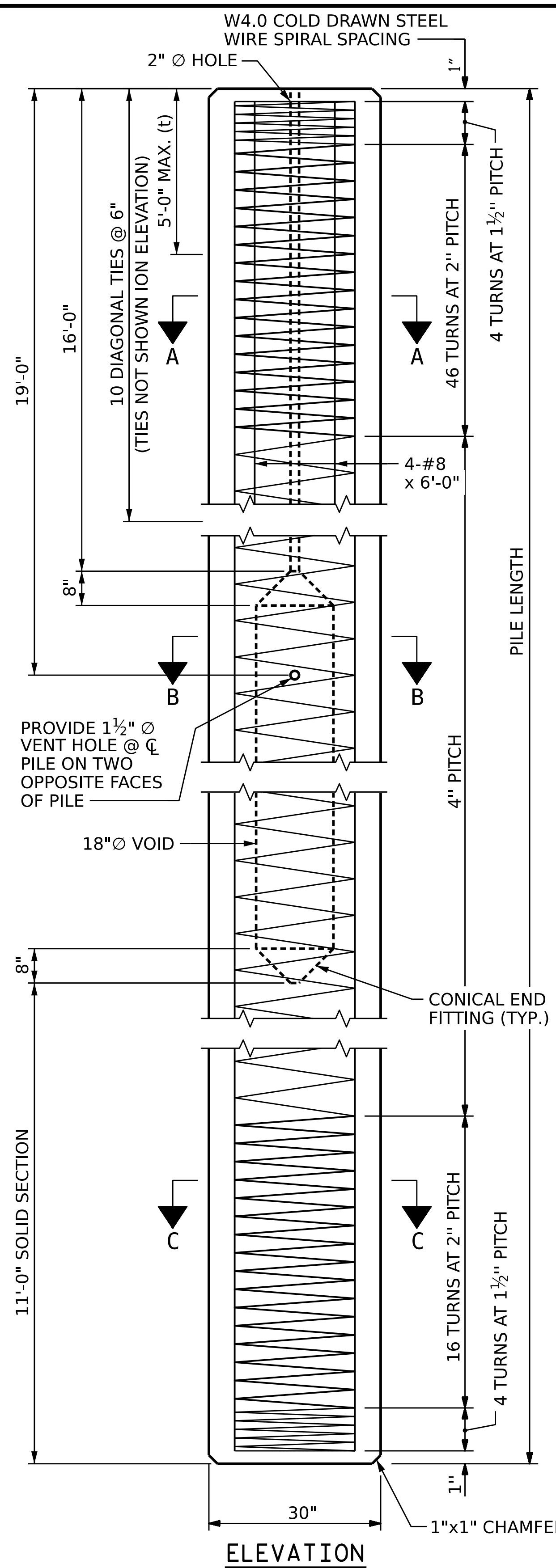


DOCUMENT NOT CONSIDERED FINAL
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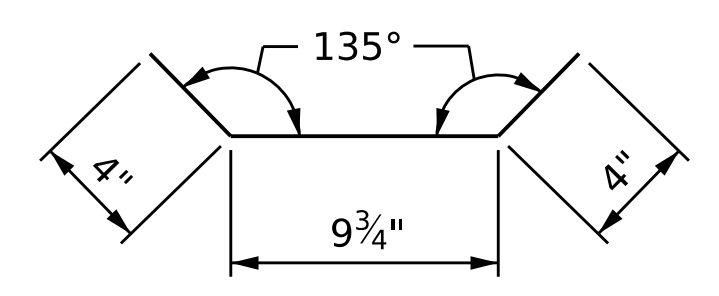
PROJECT NO. **BR-0004**
BEAUFORT COUNTY
 STATION: **23+50.00 -L-**
 SHEET 3 OF 3

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

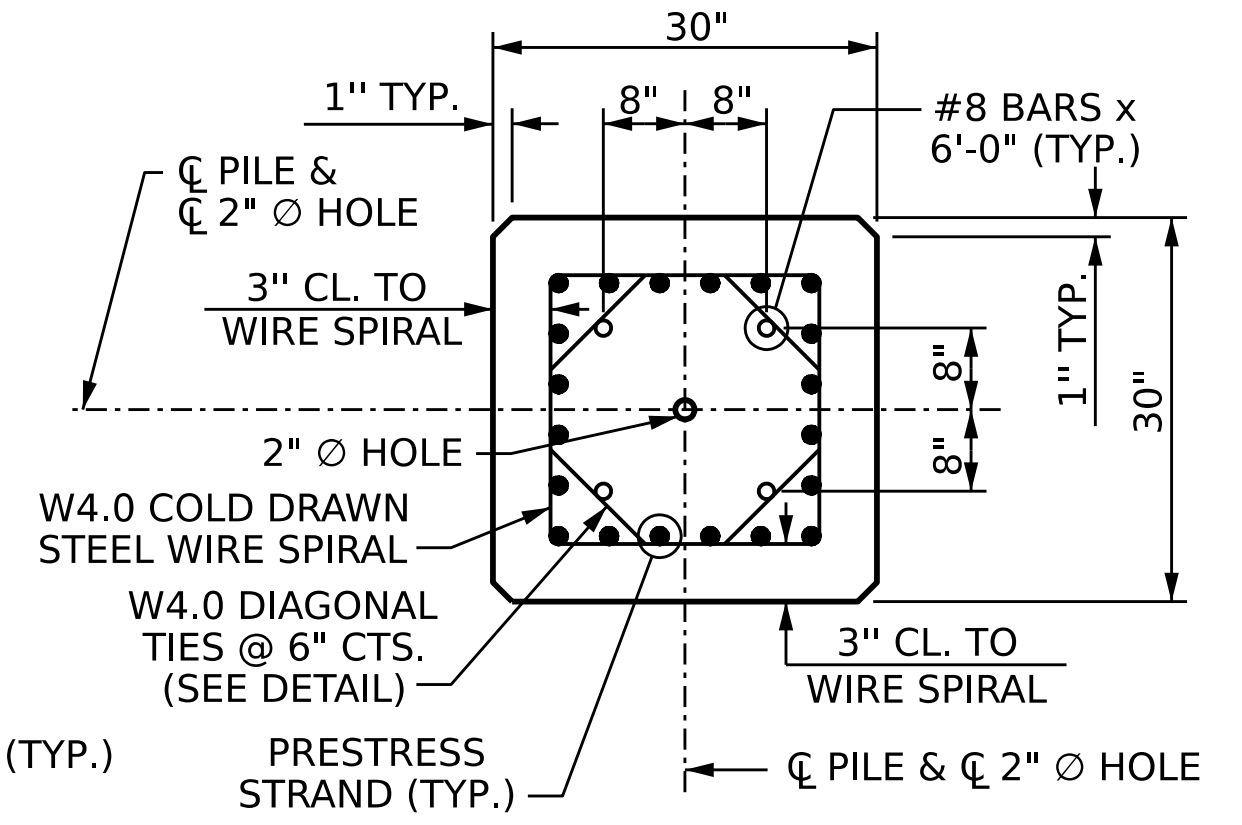
SHEET NO. S-40	TOTAL SHEETS 44
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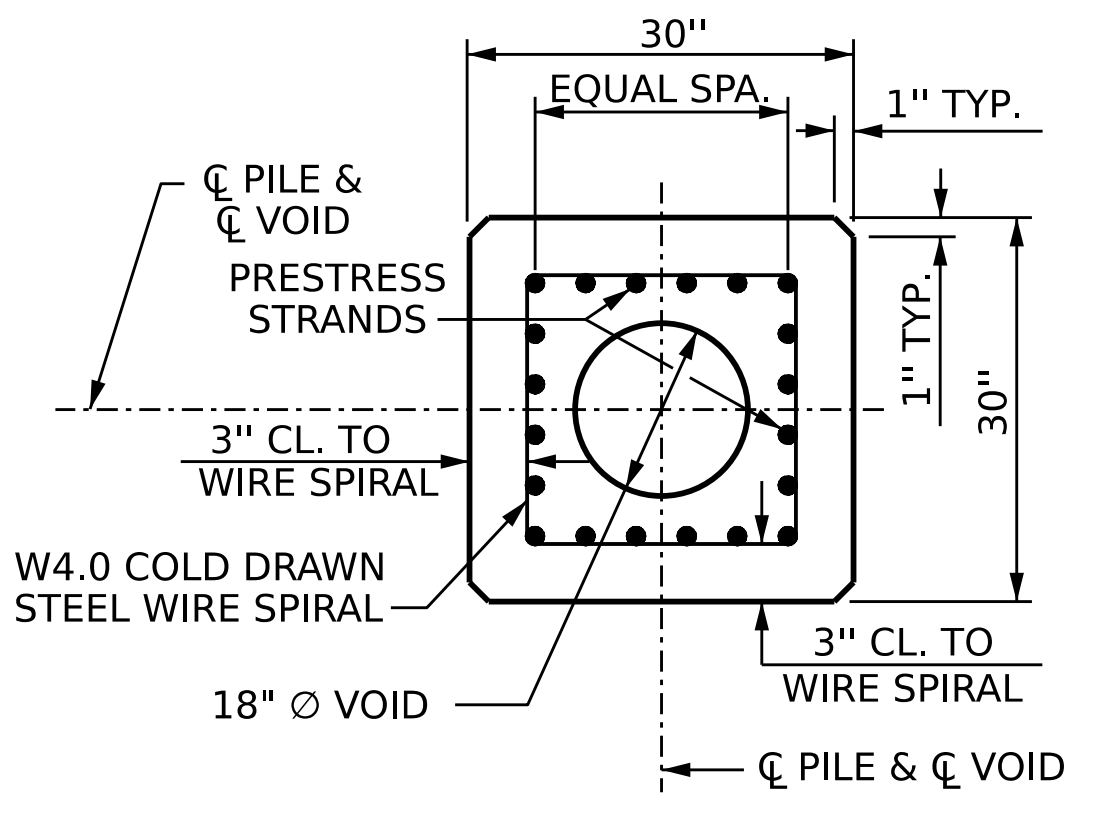
(t) 5'-0" MAX. FIELD CUT-OFF LENGTH PERMITTED



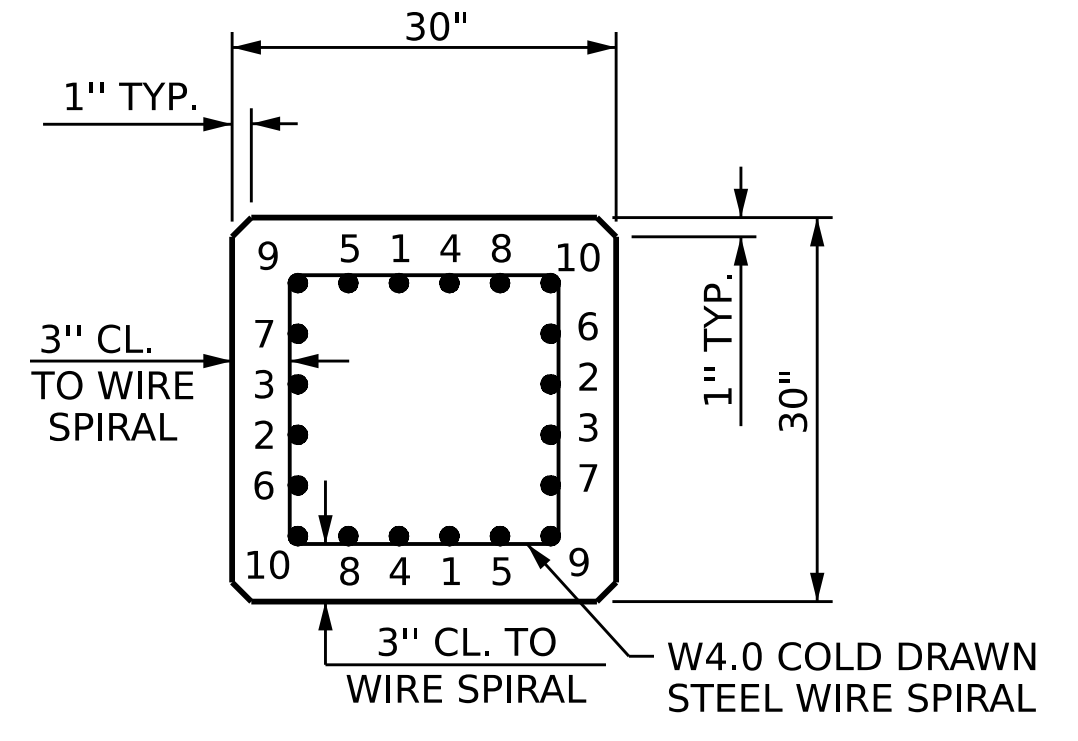
W 4.0 DIAGONAL TIE DETAIL



SECTION A-A

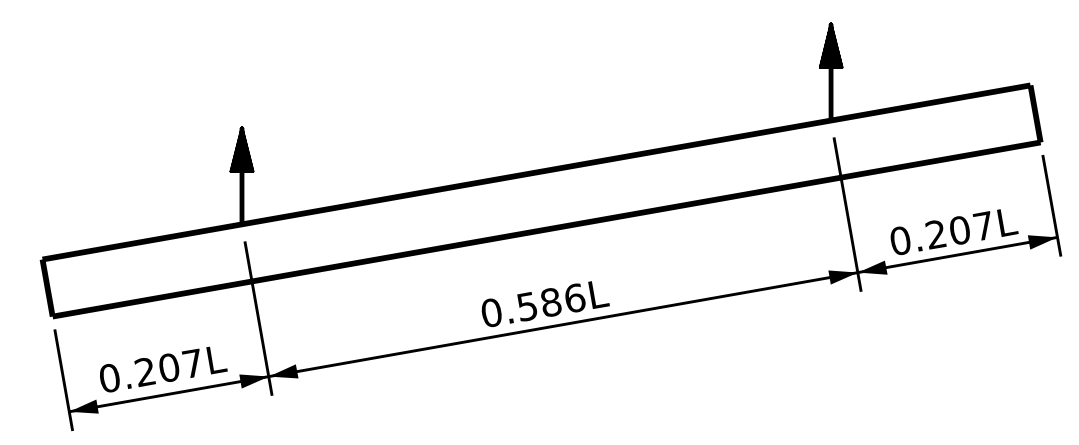


SECTION B-B



SECTION C-C
SHOWING TYPICAL PATTERN FOR BURNING STRANDS

0.6" Ø GRADE 270 L.R. PRESTRESS STRANDS



TWO POINT PICK-UP
PICK-UP POINTS

LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	TWO POINT PICK-UP	
			0.207L	0.586L
100'-0"	18.31	37.07	20'-8"	58'-8"
105'-0"	19.13	38.75	21'-9"	61'-6"

NOTES

PRESTRESSED CONCRETE STRENGTH : $f_c = 6,000$ PSI

STRAND DATA:

SIZE	GRADE	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
0.6"	270 L.R.	0.217	58,600# PER STRAND	41,000# PER STRAND

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS CONFORMING TO AASHTO M203. STRAND SAMPLING REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

TRANSFER THE LOAD FROM THE ANCHORAGES TO THE PILE AFTER THE CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI.

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN OPPOSITE PAIRS AS INDICATED IN THE TYPICAL PATTERN SHOWN. FOR ANY NUMBER OF STRANDS, BURN IN OPPOSITE PAIRS AND SYMMETRICALLY ABOUT BOTH THE VERTICAL AND HORIZONTAL AXES. STRANDS 1-1 SHALL BE BURNED BEFORE 2-2, ETC. NOT MORE THAN 4 STRANDS, SAY 3-3 AND 4-4, MAY BE BURNED AT ANY ONE SECTION BEFORE THESE SAME PAIRS OF STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS ARE TO BE INDICATED WITH A 2" WIDE BLACK MARK.

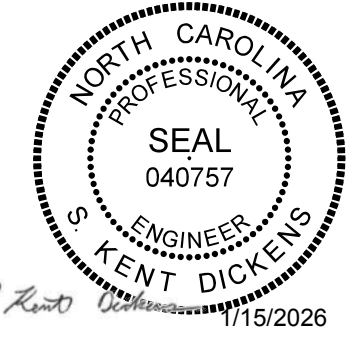
DRIVE PILES USING A METHOD APPROVED BY THE ENGINEER, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

THE WATER/CEMENT RATIO FOR CONCRETE PILES SHALL NOT EXCEED 0.40.

PRESTRESSED CONCRETE PILES SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR. SEE STANDARD SPECIFICATIONS FOR CALCIUM NITRITE CORROSION INHIBITOR.

THE CONCRETE IN THE PILES OF ALL BENTS SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB OF CEMENT. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.

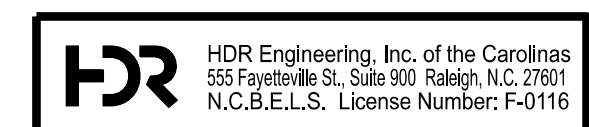
PROJECT NO. **BR-0004**
BEAUFORT COUNTY
 STATION: **23+50.00 -L-**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

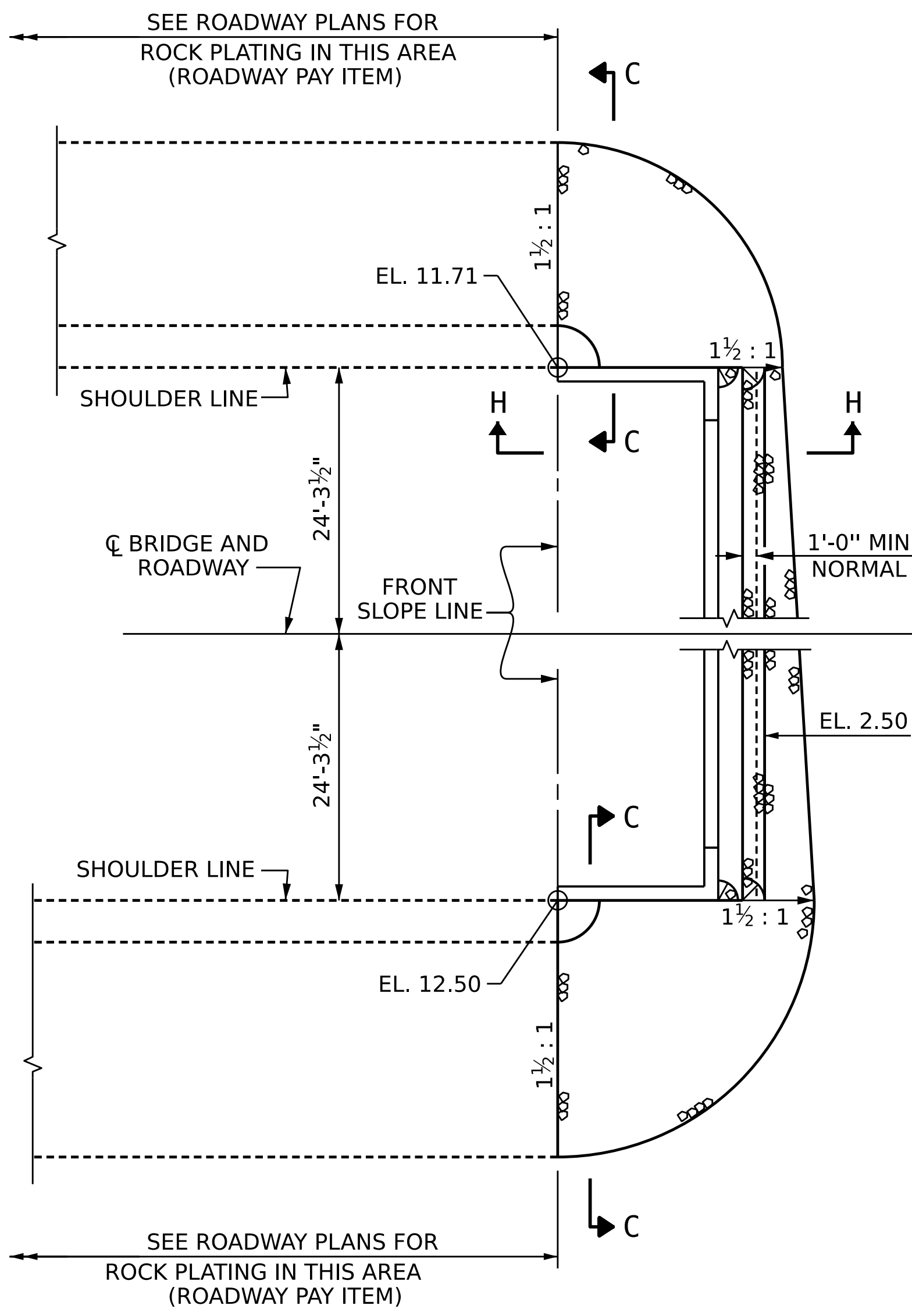
**SUBSTRUCTURE
 30" PRESTRESSED
 CONCRETE PILES**

DES BY: K. DICKENS	DATE: 12/24	DWG BY: B. PETERSON	DATE: 06/24
DES CHK: F. CORDOVA	DATE: 12/24	CHK BY: F. CORDOVA	DATE: 12/24

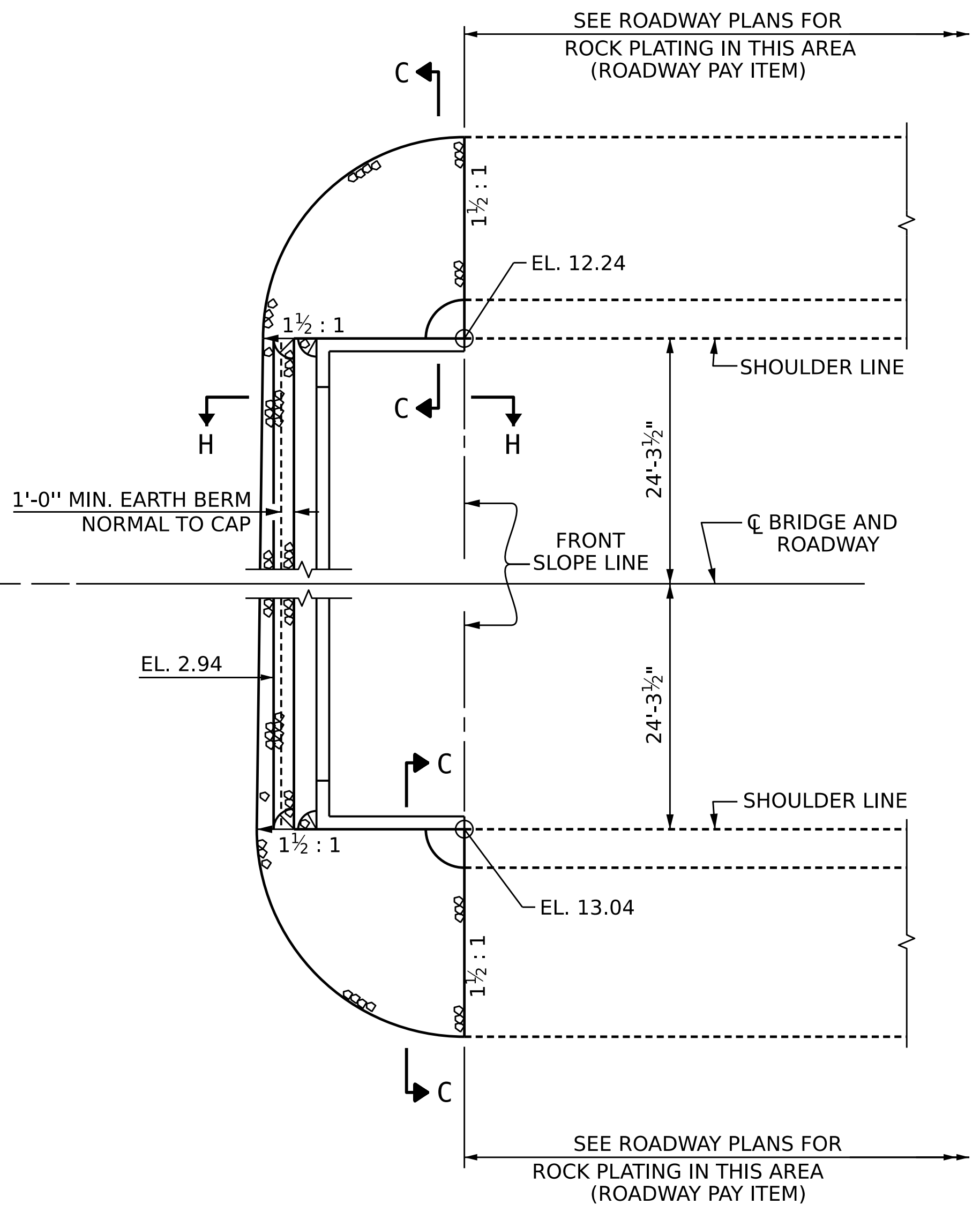


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REVISIONS						SHEET NO. 5-41
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	44



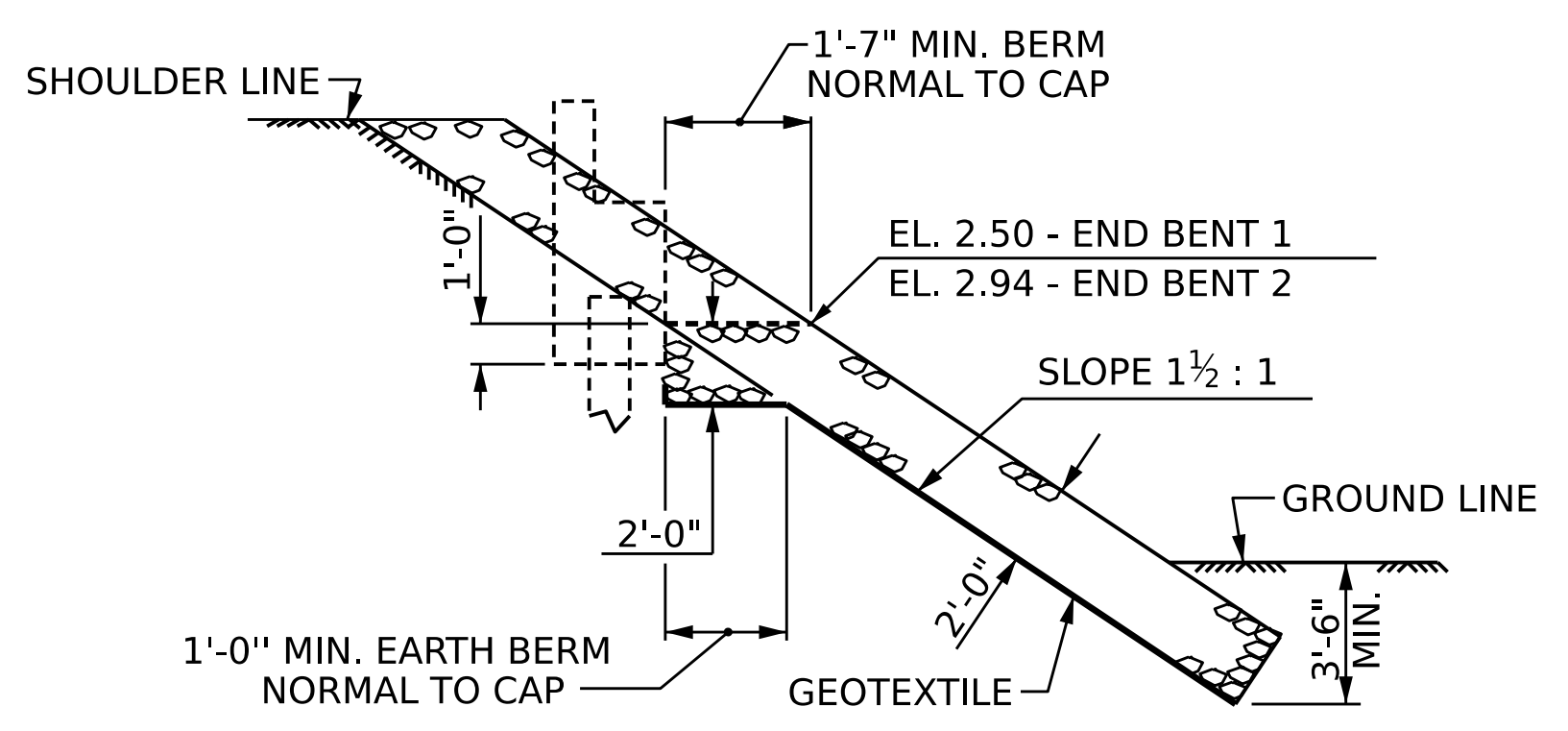
RIP RAP AT END BENT 1



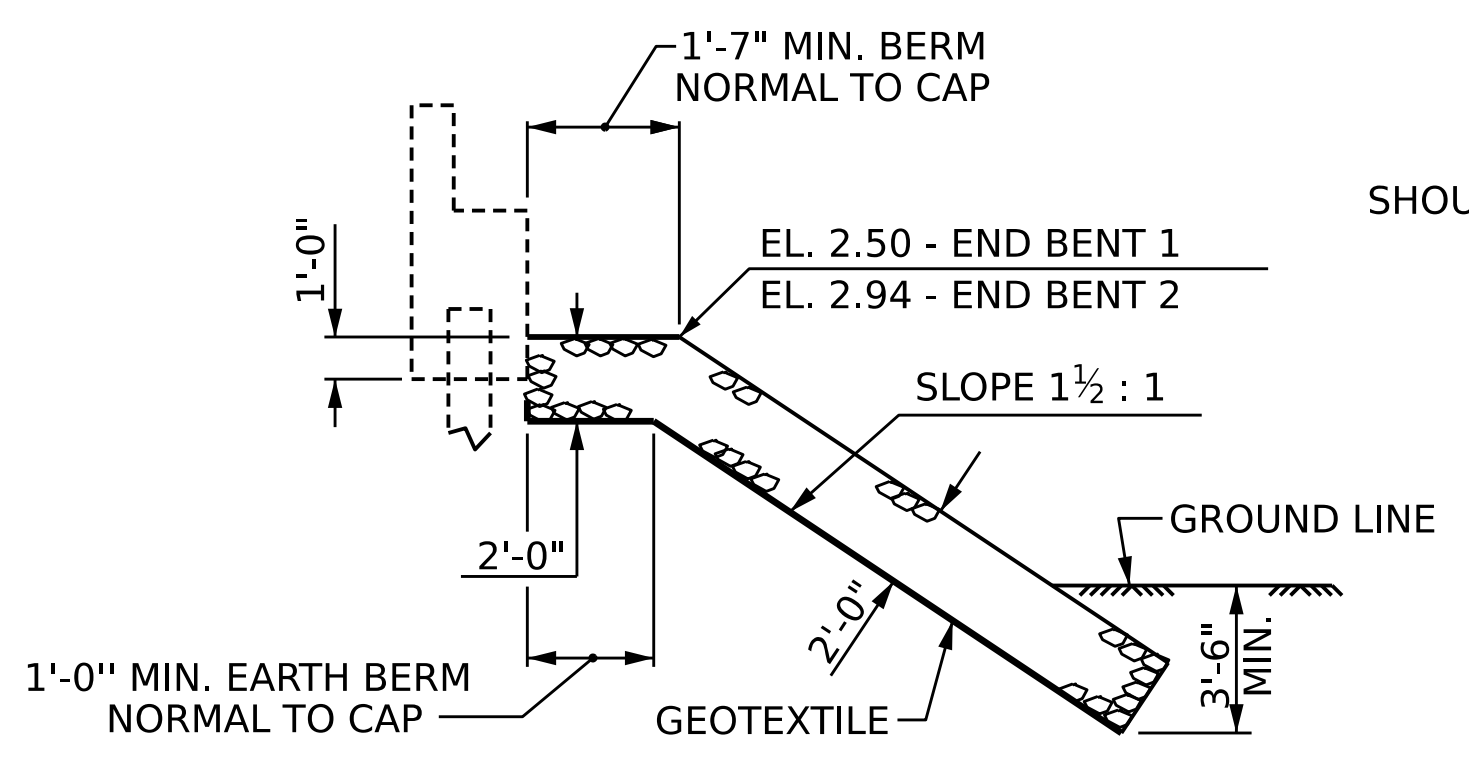
RIP RAP AT END BENT 2

ESTIMATED QUANTITIES		
BRIDGE @ STA. 23+50.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	90	100
END BENT 2	70	80

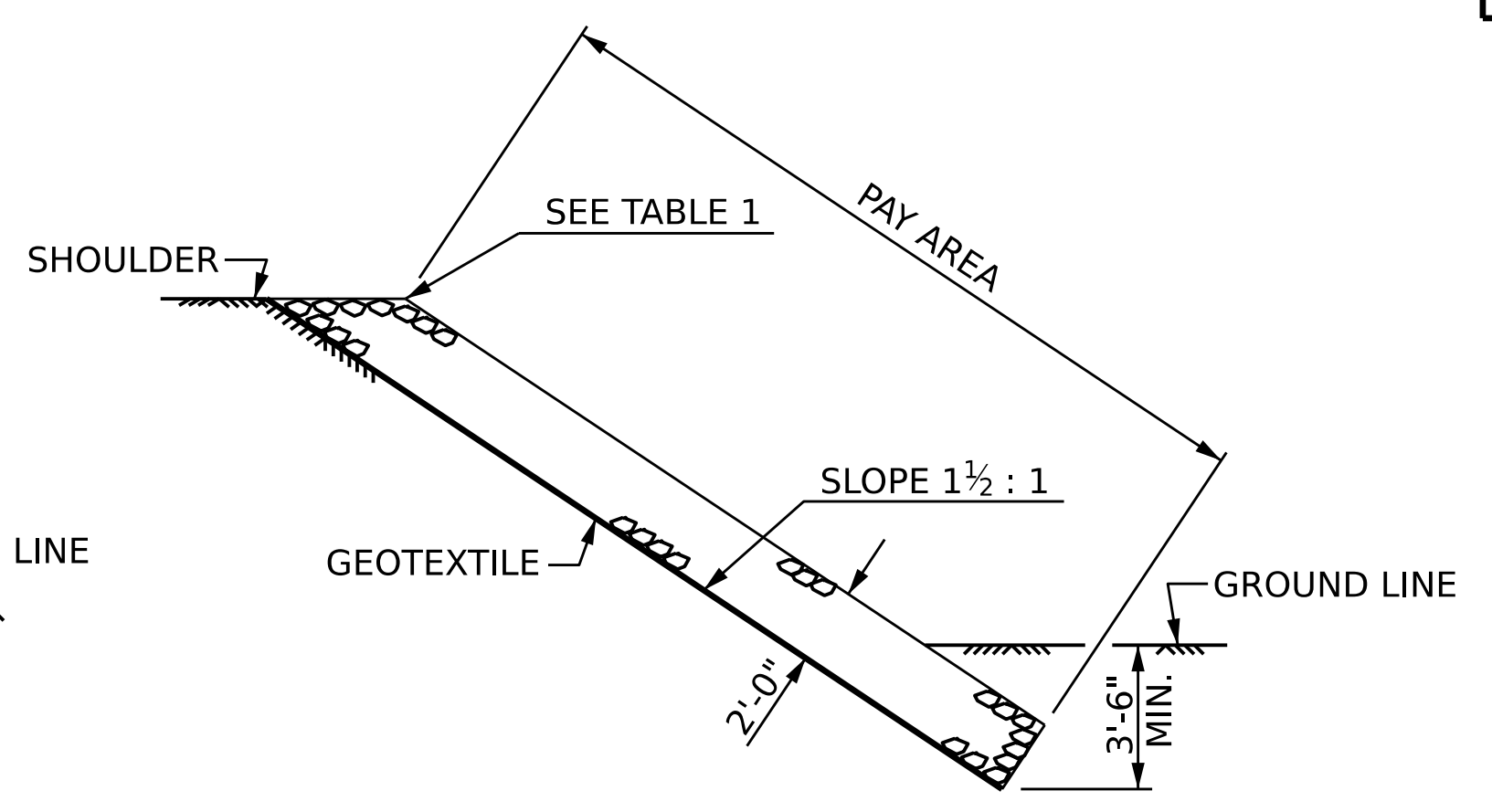
TABLE 1		
LOCATION	ELEVATION	
END BENT 1	LEFT	11.71
	RIGHT	12.50
END BENT 2	LEFT	12.24
	RIGHT	13.04



SECTION H-H



SECTION C-C
BERM RIP RAPPED



SECTION C-C

PROJECT NO. **BR-0004**
BEAUFORT COUNTY
 STATION: **23+50.00 -L-**

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

RIP RAP DETAILS

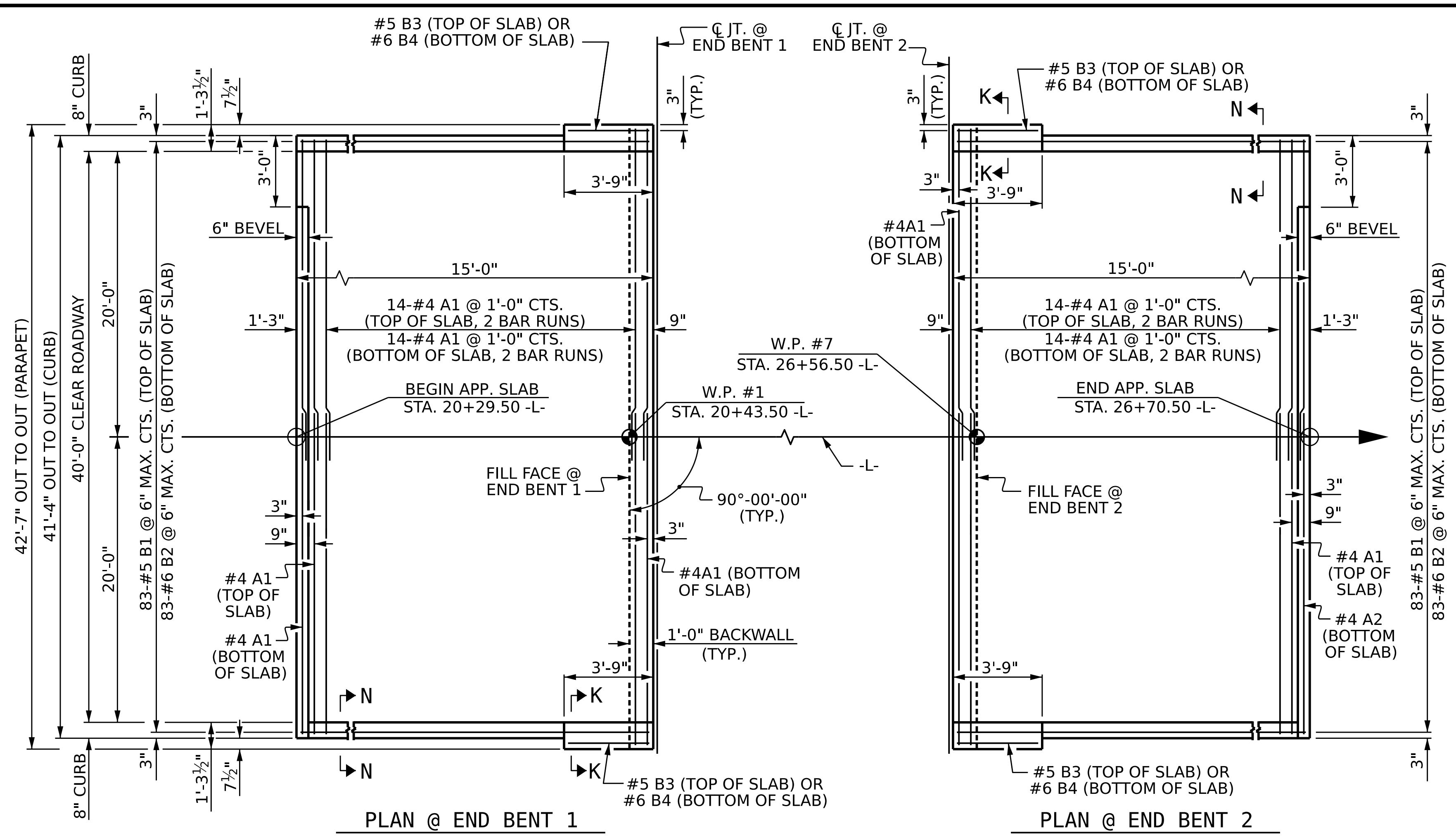


DES BY: J. PATT DATE: 12/24
 DES CHK: R. JONES DATE: 12/24
 DWG BY: B. PETERSON DATE: 12/24
 CHK BY: R. JONES DATE: 12/24

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REVISIONS						SHEET NO. 5-42
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	TOTAL SHEETS 44
2	--	--	4	--	--	



NOTES

FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.

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

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

FOR STRIP SEAL EXPANSION JOINTS, SEE "SUPERSTRUCTURE STRIP SEAL EXPANSION JOINT DETAILS" SHEETS.

BILL OF MATERIAL

APPROACH SLAB AT EB 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	62	#4	STR	22'-1"	915
* B1	83	#5	STR	14'-2"	1226
* B2	83	#6	STR	14'-8"	1828
* B3	2	#5	STR	3'-4"	7
* B4	2	#6	STR	3'-4"	10

* EPOXY COATED REINFORCING STEEL ** LBS. 3986

CLASS AA CONCRETE ** C. Y. 27.1

APPROACH SLAB AT EB 2

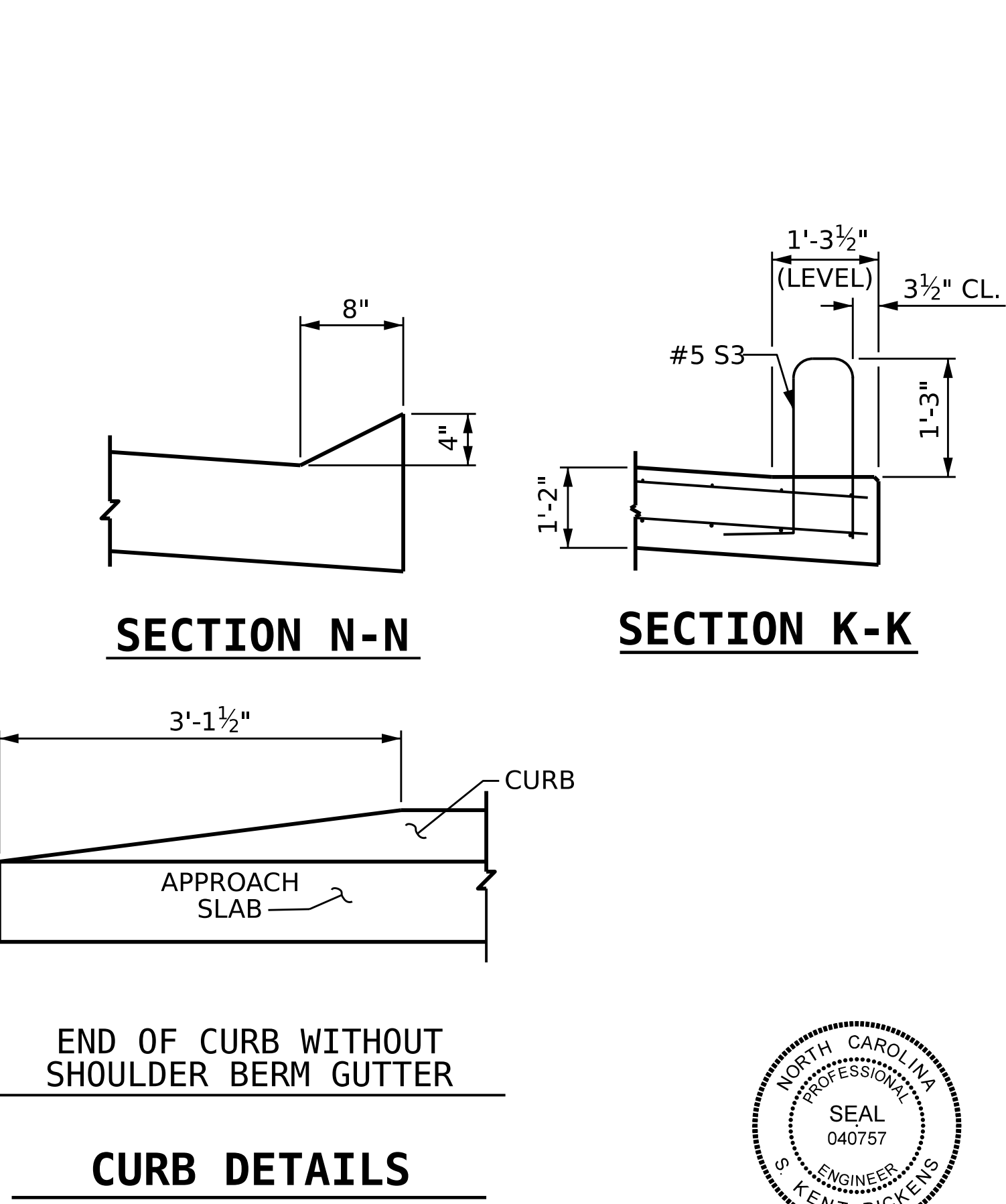
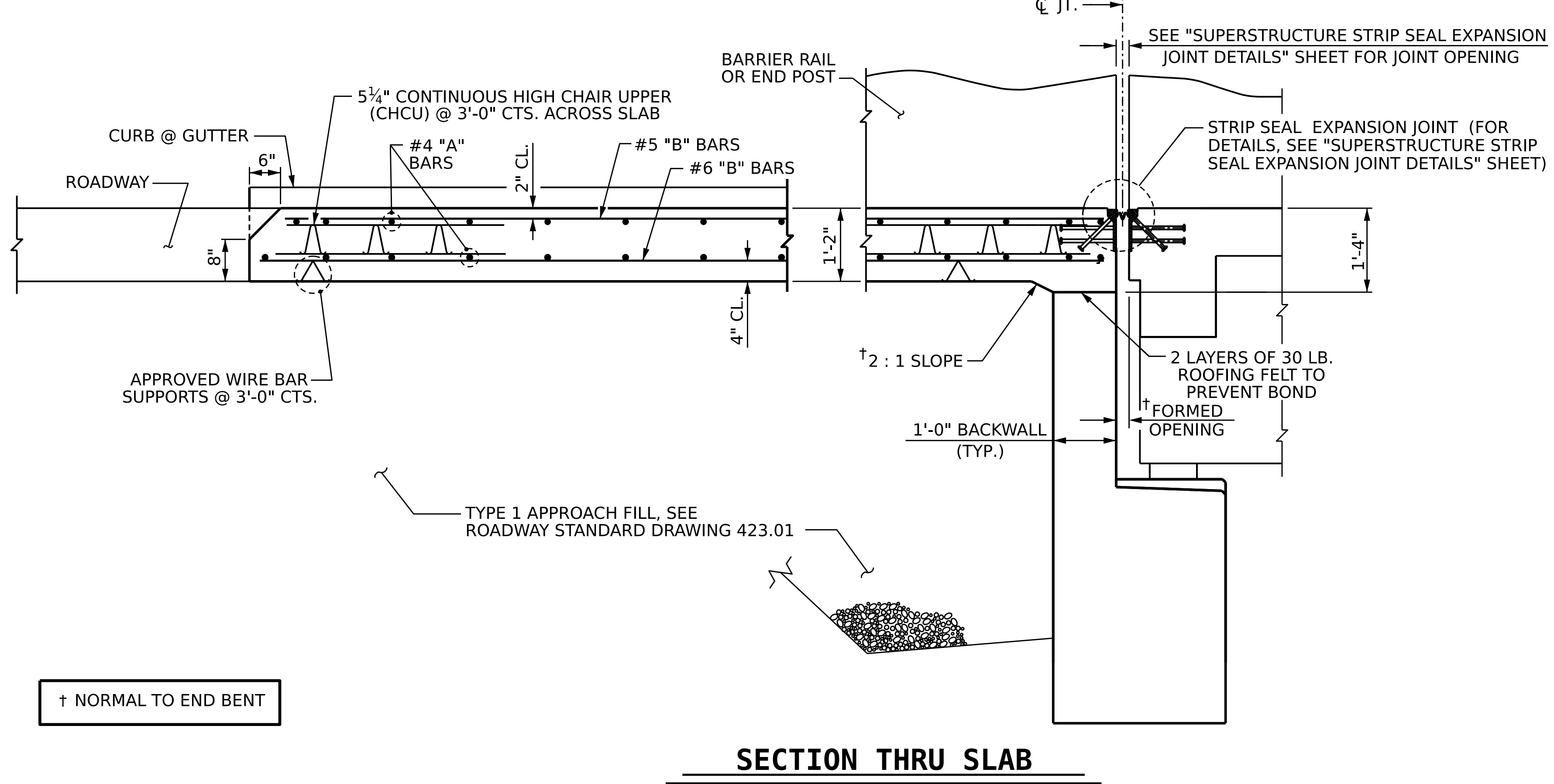
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	62	#4	STR	22'-1"	915
* B1	83	#5	STR	14'-2"	1226
* B2	83	#6	STR	14'-8"	1828
* B3	2	#5	STR	3'-4"	7
* B4	2	#6	STR	3'-4"	10

* EPOXY COATED REINFORCING STEEL ** LBS. 3986

CLASS AA CONCRETE ** C. Y. 27.1

SPLICE LENGTHS

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



PROJECT NO. **BR-0004**

BEAUFORT COUNTY

STATION: **23+50.00 -L-**

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB

REVISIONS

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

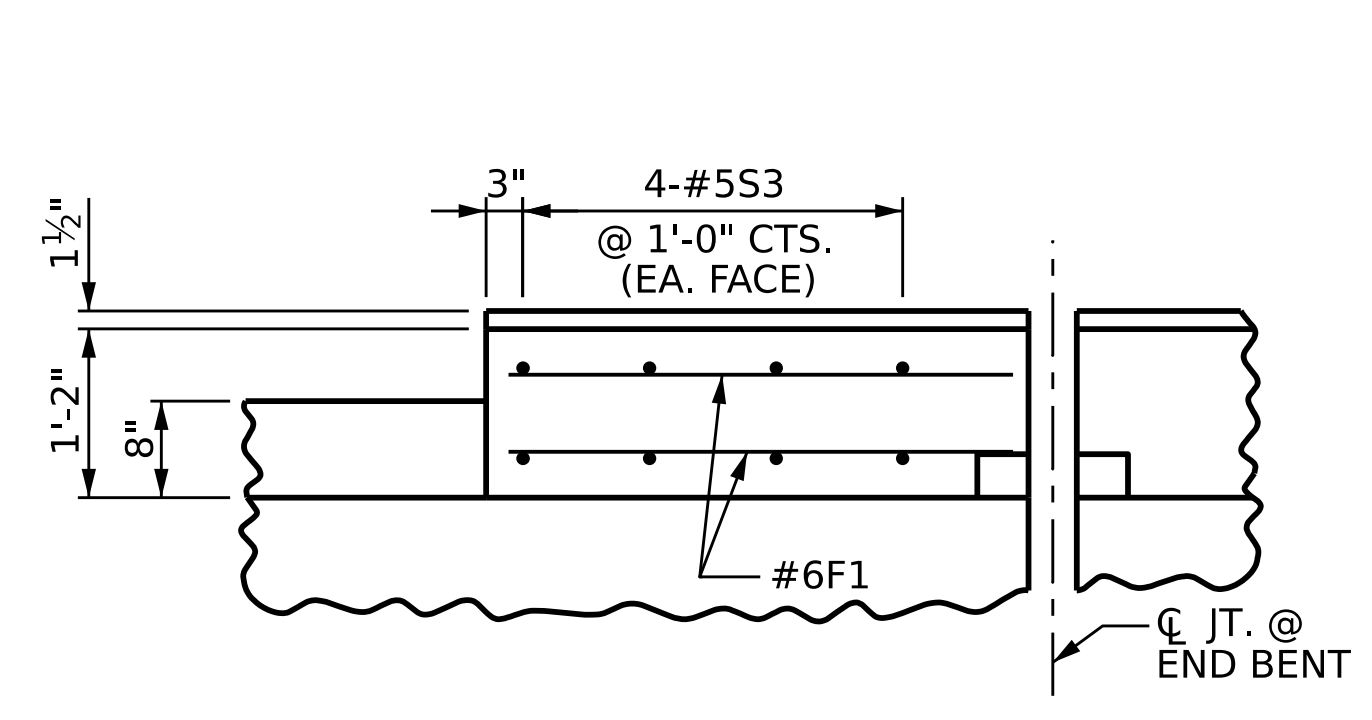
SHEET NO. S-43
TOTAL SHEETS 44

DES BY: A. RURKA DATE: 07/24 DWG BY: B. PETERSON DATE: 06/24
DES CHK: K. DICKENS DATE: 07/24 CHK BY: R. JONES DATE: 12/24

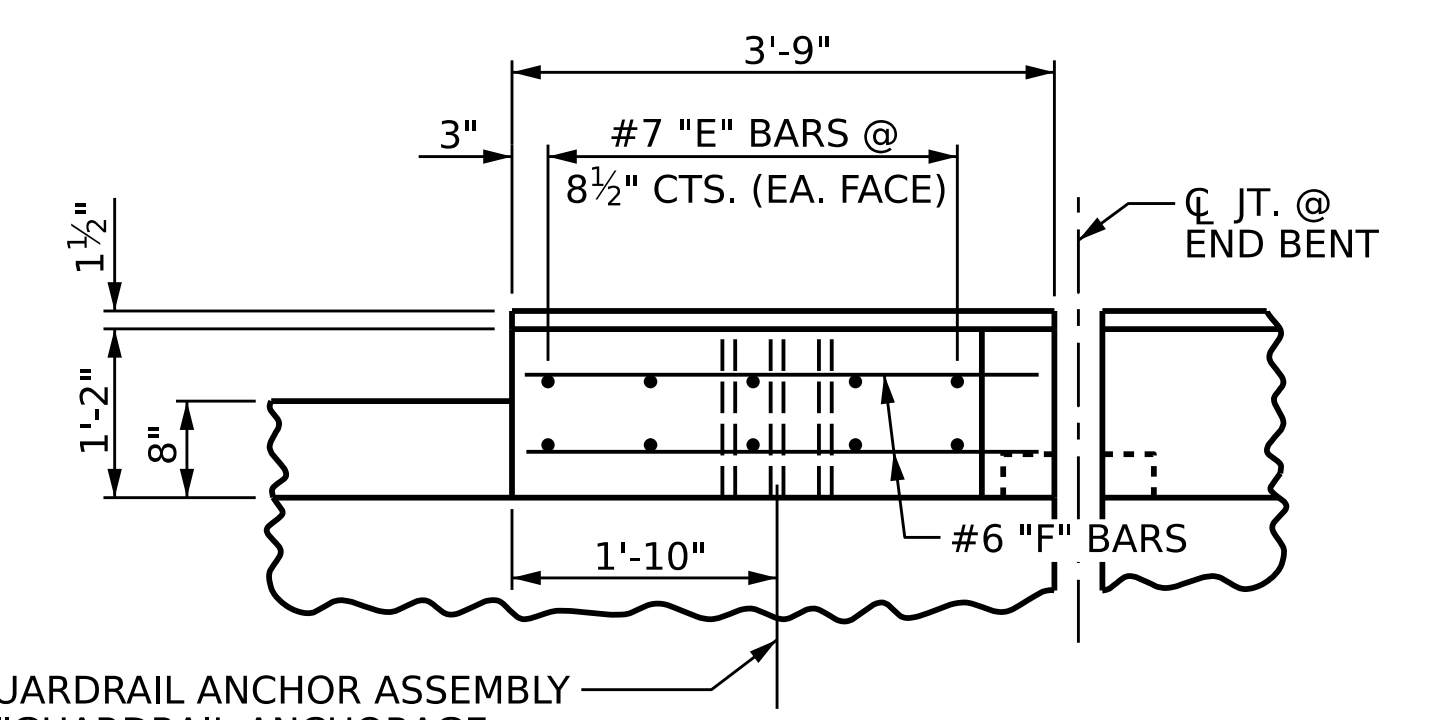
HR HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116



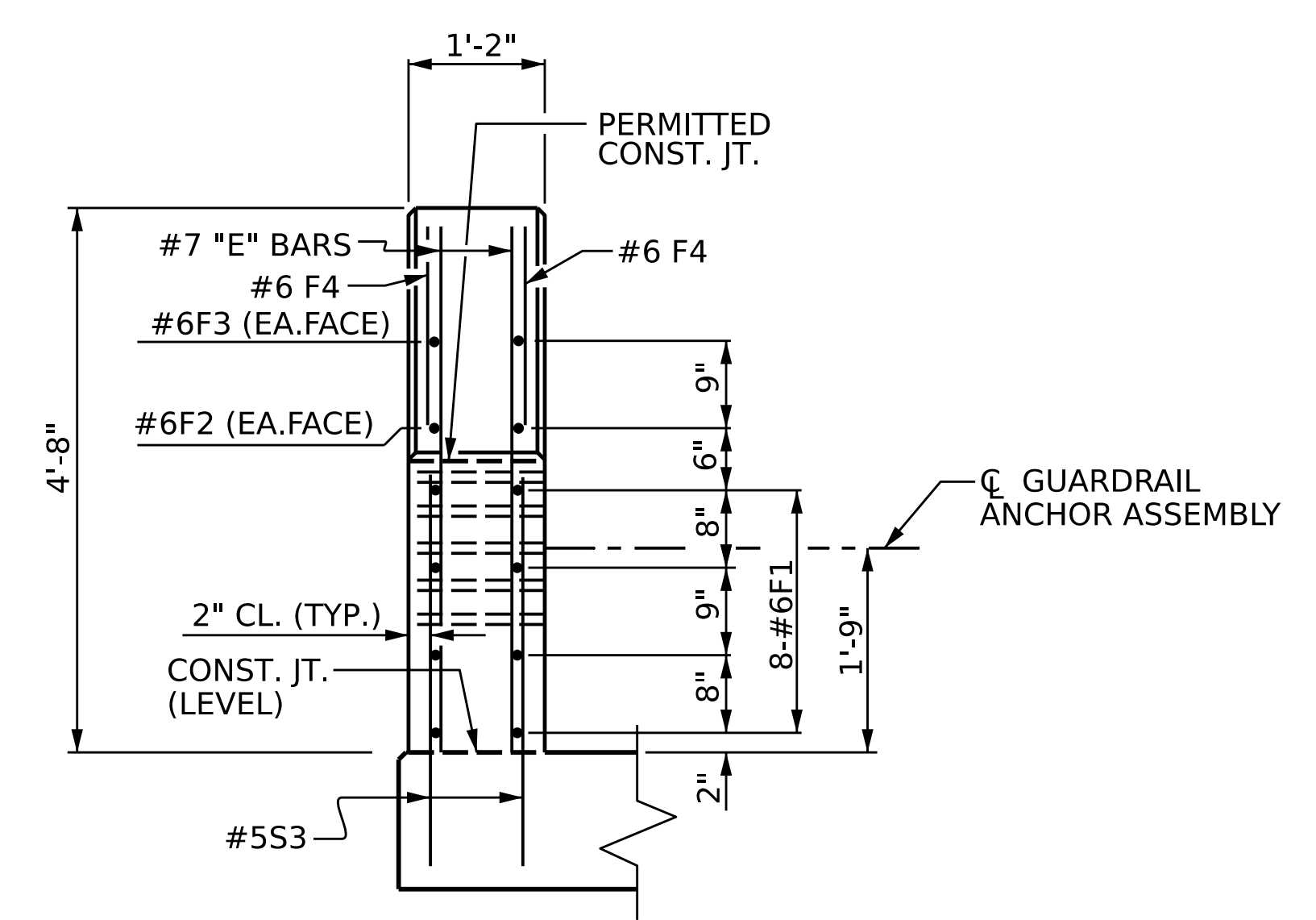
3/5/2026
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



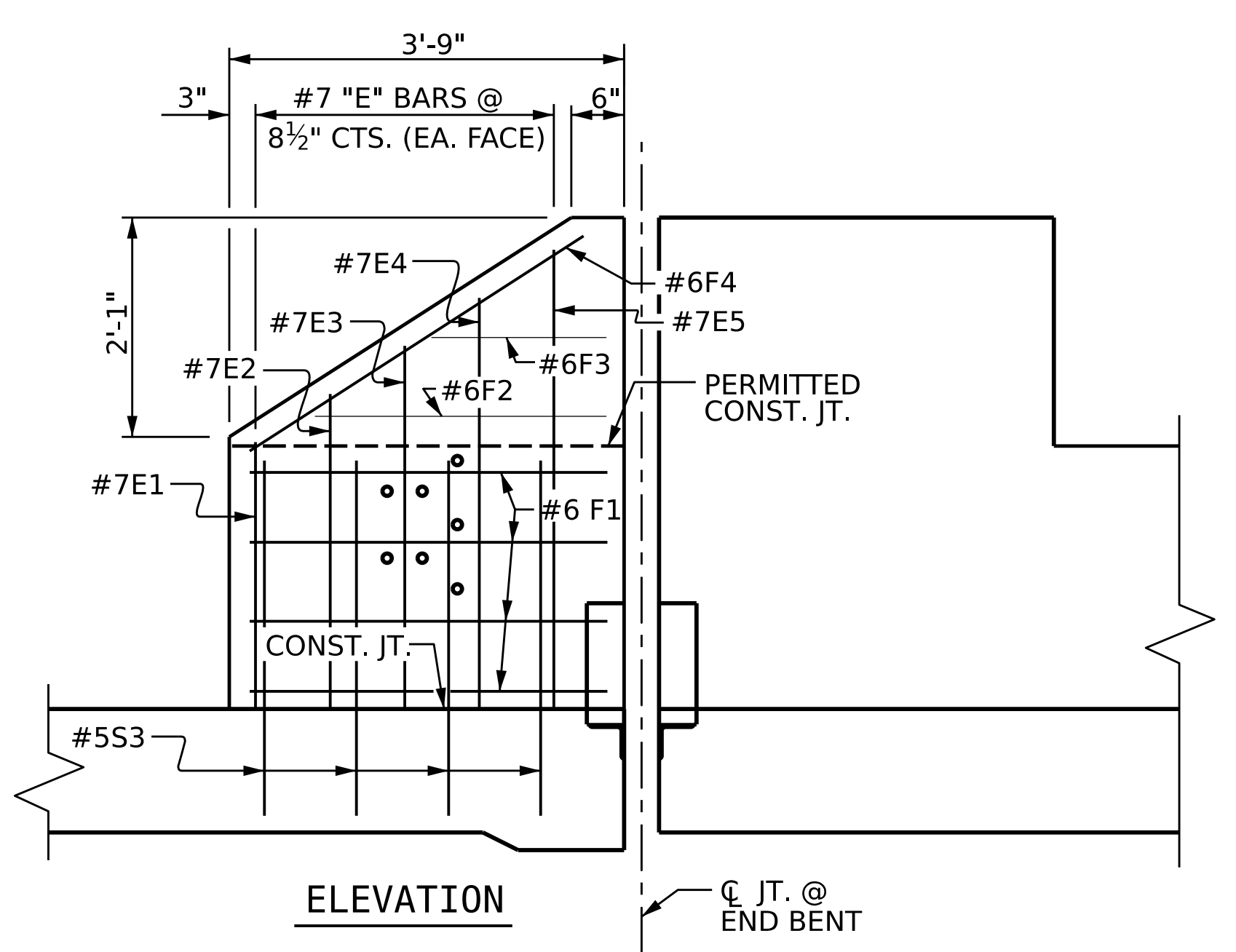
PLAN OF PARAPET



PLAN OF END POST

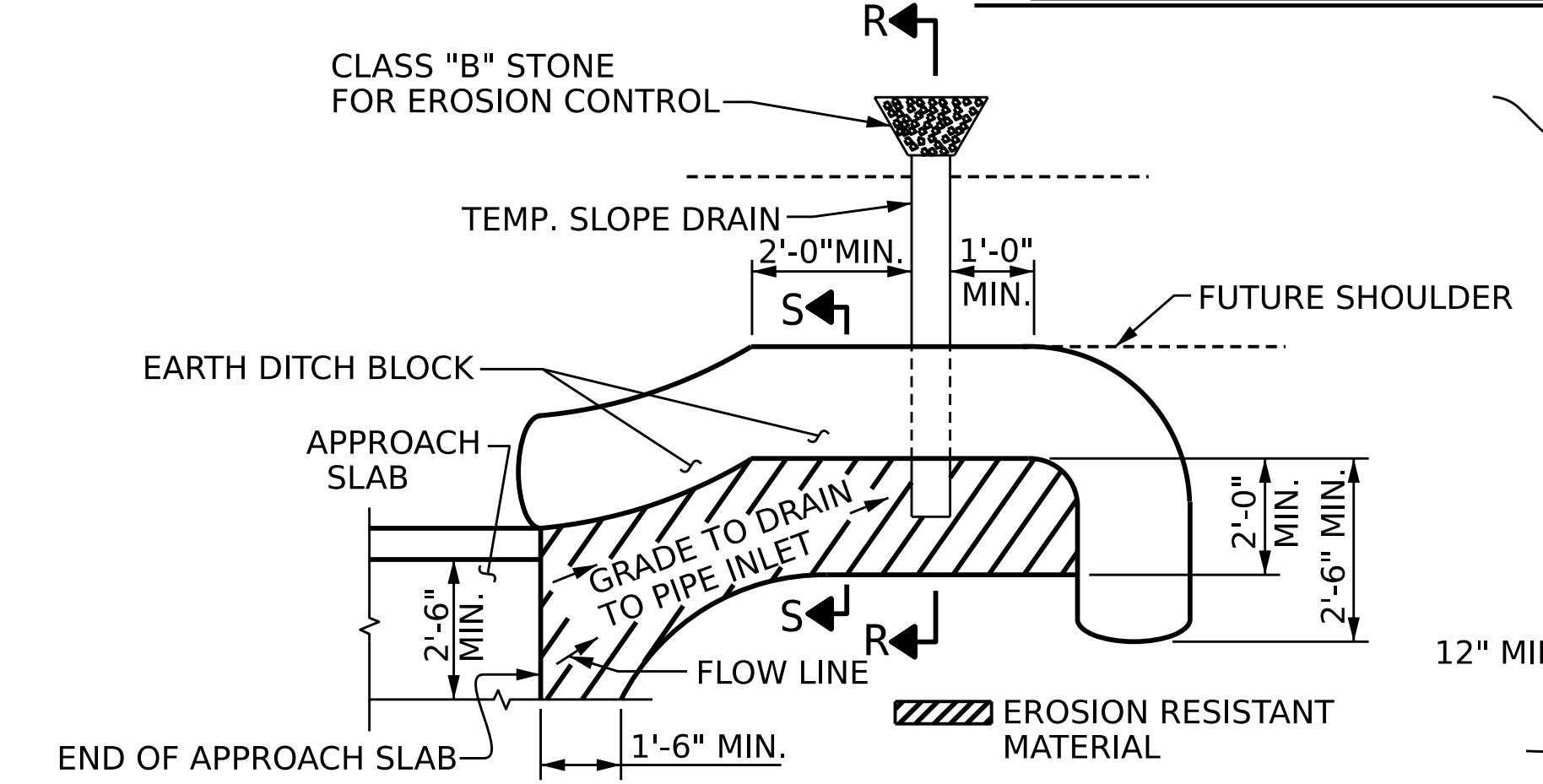


END VIEW

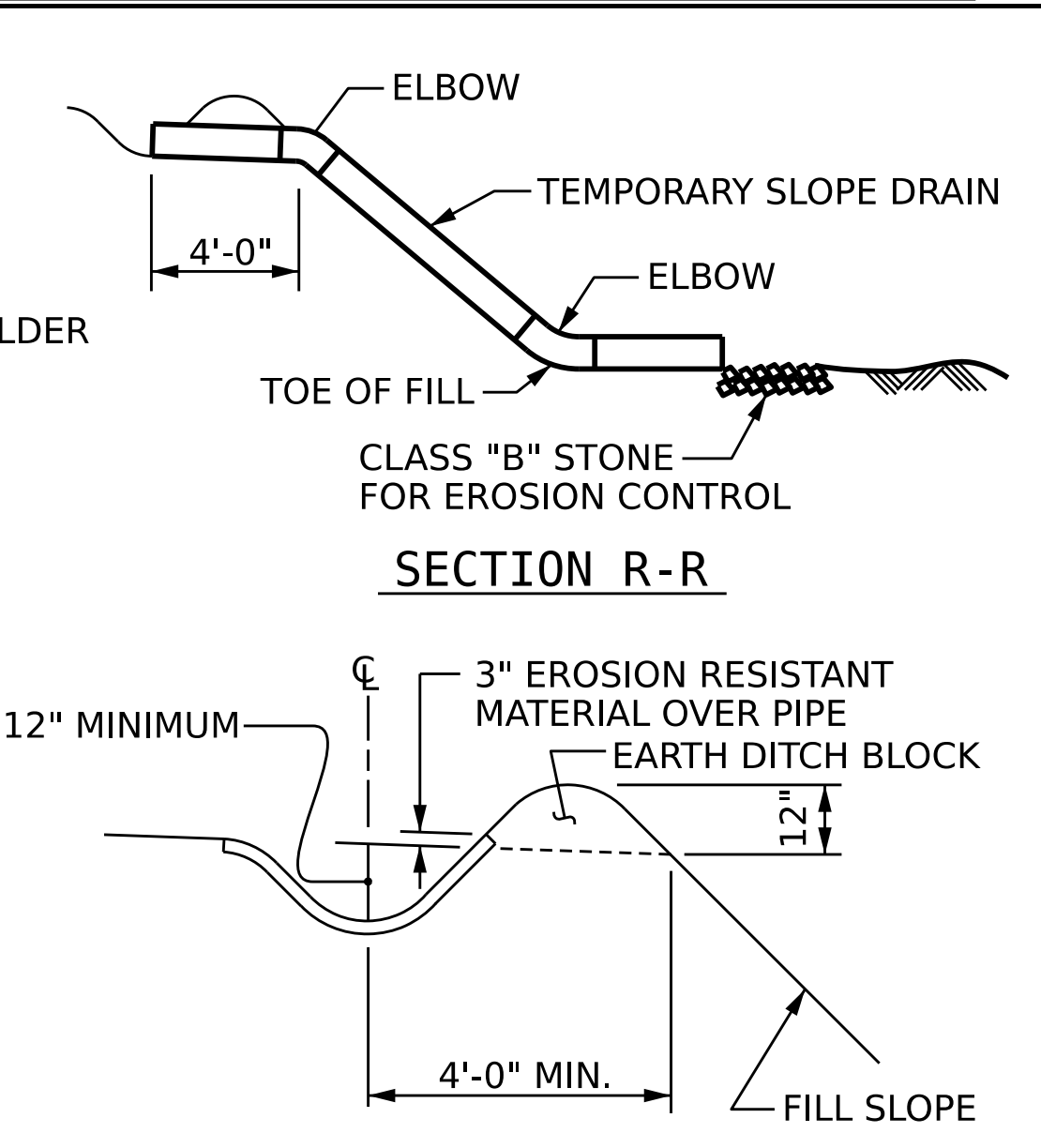


ELEVATION

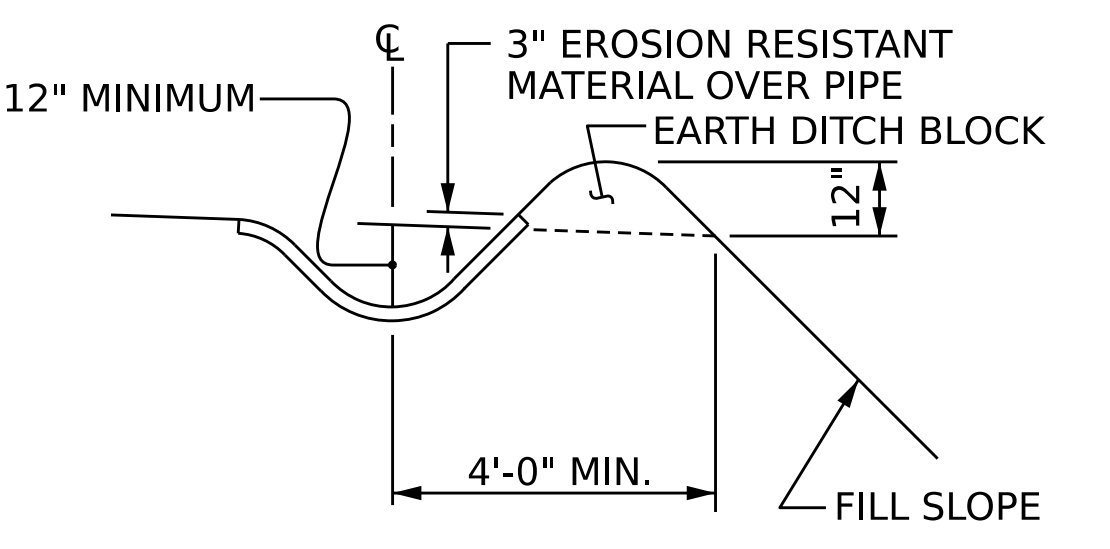
PARAPET AND END POST FOR TWO BAR RAIL



PLAN VIEW



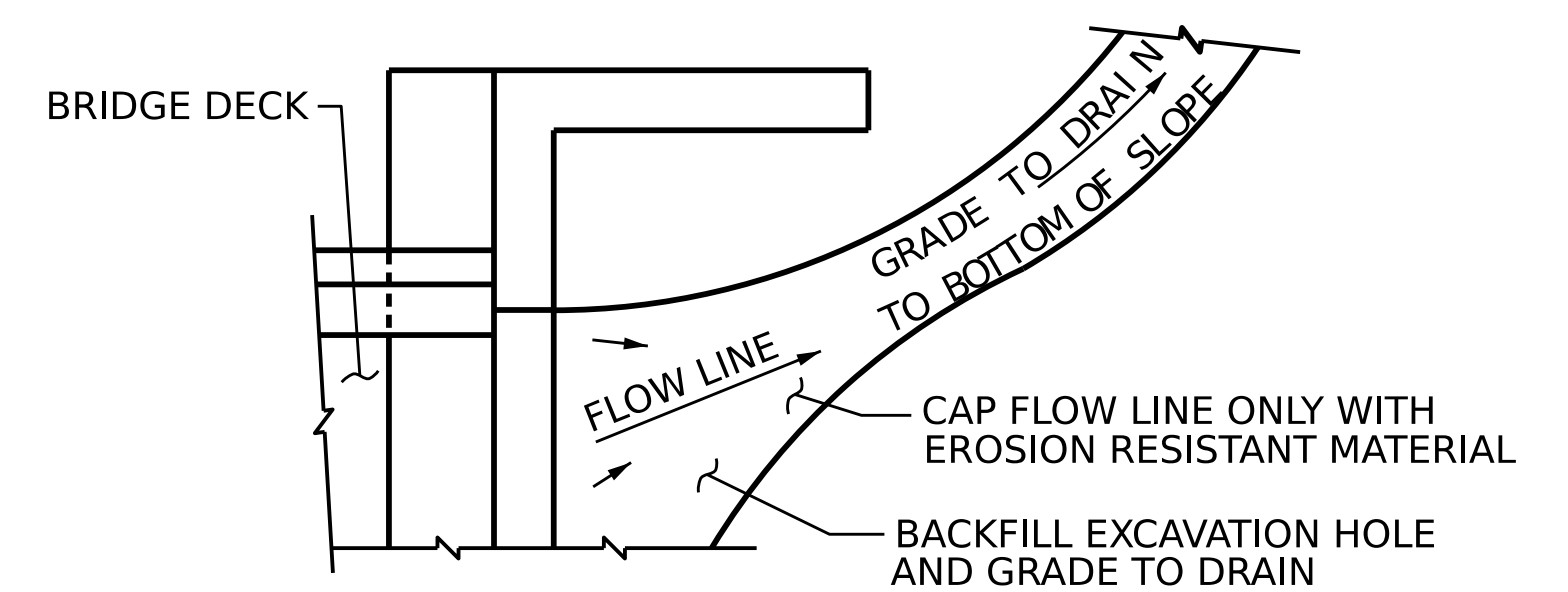
SECTION R-R



SECTION S-S

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.

TEMPORARY DRAINAGE DETAIL

NOTES

THE COST OF THE END POST ON THE APPROACH SLAB SHALL BE INCLUDED IN THE LINEAR FOOT CONTRACT PRICE BID FOR "1'-2" X 2'-6" CONCRETE PARAPET".

THE END POST ON EACH APPROACH SLAB SHALL NOT BE CAST UNTIL ALL APPROACH SLAB CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

THE #5 S3 BARS SHALL BE INSTALLED, USING AN ADHESIVE ANCHORING SYSTEM, AFTER SAWING THE JOINT. THE YIELD LOAD FOR THE #5 S3 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

BILL OF MATERIAL FOR 4 END POSTS

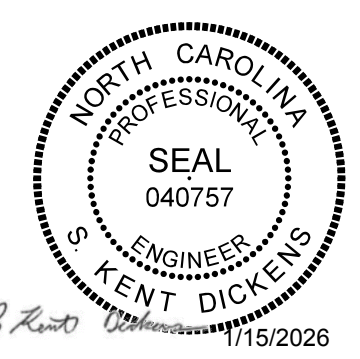
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* E1	8	#7	STR	2'-6"	41
* E2	8	#7	STR	3'-0"	50
* E3	8	#7	STR	3'-6"	58
* E4	8	#7	STR	4'-0"	66
* E5	8	#7	STR	4'-4"	71
* F1	32	#6	STR	3'-5"	165
* F2	8	#6	STR	2'-11"	36
* F3	8	#6	STR	1'-9"	22
* F4	8	#6	STR	3'-9"	46
* S3	32	#5	STR	3'-0"	101

* EPOXY COATED REINFORCING STEEL	LBS.	656
CLASS AA CONCRETE	CU.YDS.	4.1
TOTAL LIN. FT. OF CONCRETE PARAPET		15.0

PROJECT NO. **BR-0004**
BEAUFORT COUNTY
 STATION: **23+50.00 -L-**
 SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE APPROACH SLAB DETAILS



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

DES BY: J. PATT	DATE: 12/24	DWG BY: B. PETERSON	DATE: 12/24
DES CHK: R. JONES	DATE: 12/24	CHK BY: R. JONES	DATE: 12/24



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

PROJECT NO. BR-0004
BEAUFORT COUNTY
 STATION: 23+50.00 -L-

STATE OF NORTH CAROLINA					
DEPARTMENT OF TRANSPORTATION					
RALEIGH					
STANDARD NOTES					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1	--	--	3	--	--
2	--	--	4	--	--
					TOTAL SHEETS

DES BY: <u>F. CORDOVA</u>	DATE: <u>12/24</u>	DWG BY: <u>B. PETERSON</u>	DATE: <u>06/24</u>
DES CHK: <u>K. DICKENS</u>	DATE: <u>12/24</u>	CHK BY: <u>K. DICKENS</u>	DATE: <u>12/24</u>



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