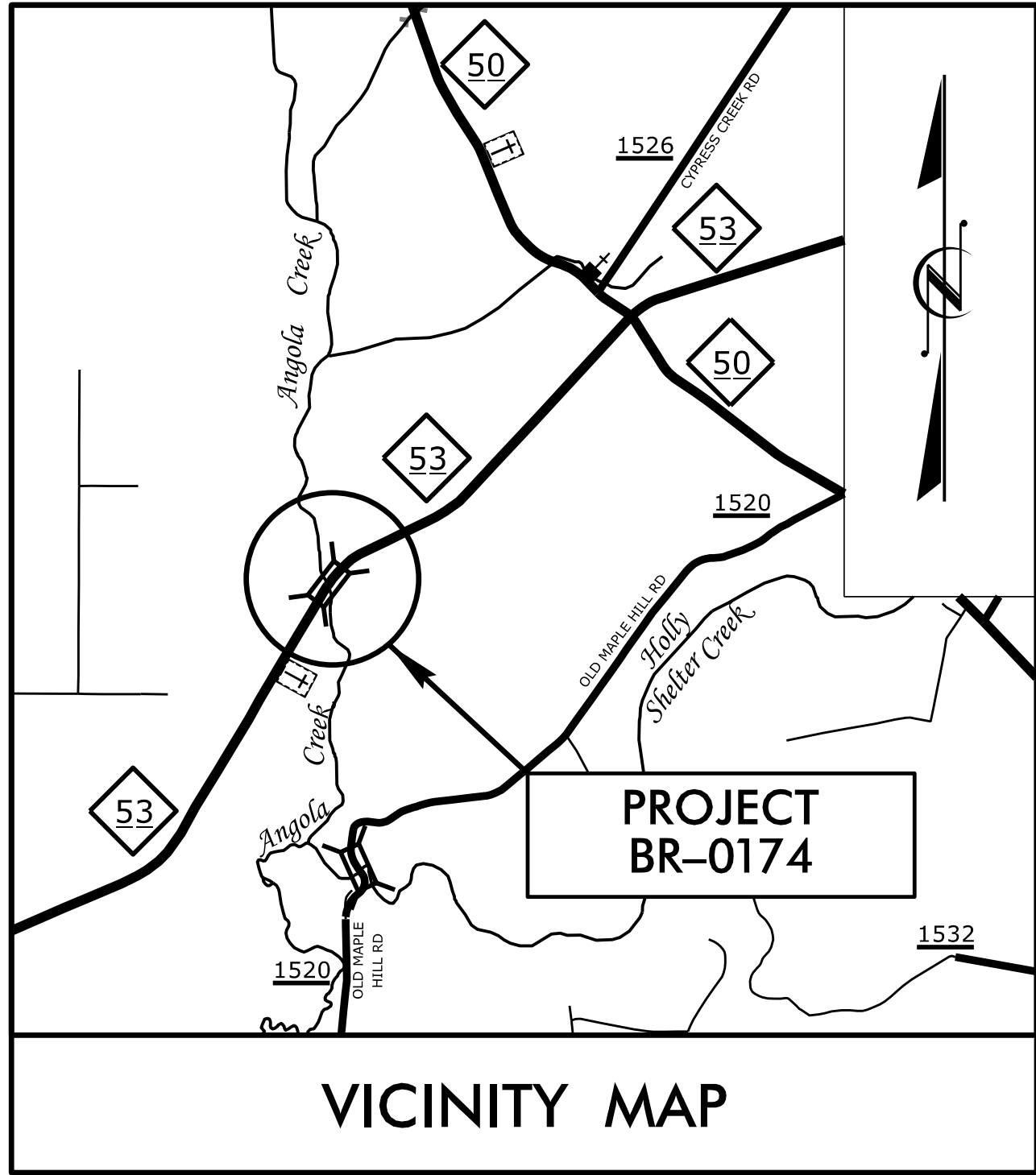


PROJECT: BR-0174

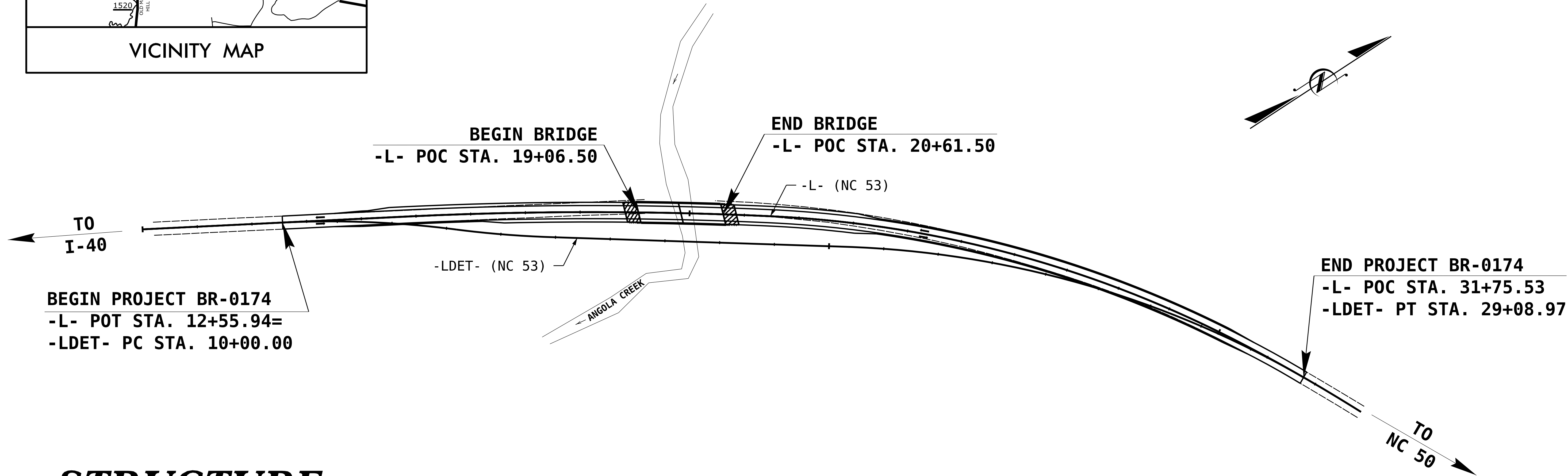
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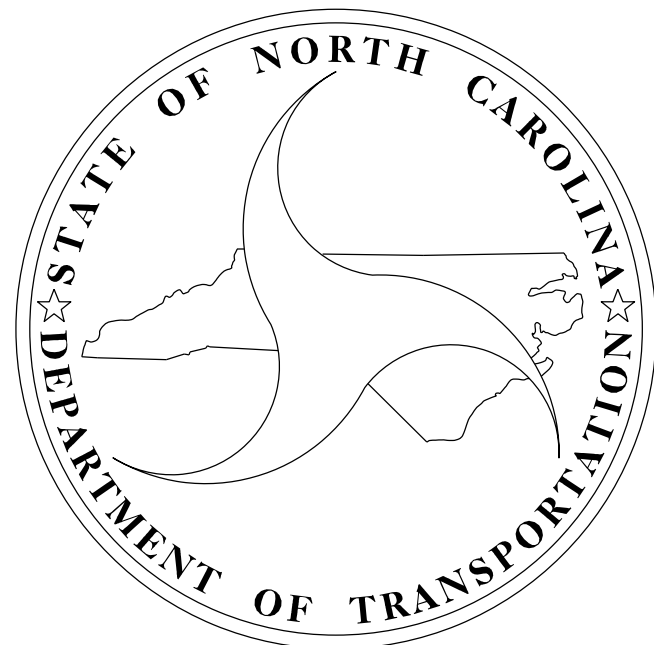
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
PENDER COUNTY

LOCATION: REPLACE BRIDGE 700037 ON NC 53 OVER ANGOLA CREEK
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0174		33
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
67174.1.1	N.A.	P.E.	
67174.2.1	N.A.	UTIL.	
67174.2.2	N.A.	ROW	
52219.3.1	5221901	CONST.	



STRUCTURE



DESIGN DATA
ADT (2025)= 5350
ADT (2045)= 5900
K = N/A
D = N/A
T = 11 % **
V = 60 MPH
** (TTST 6%, DUAL 5%)
FUNC CLASS=MAJOR COLLECTOR
REGIONAL TIER

PROJECT LENGTH
LENGTH ROADWAY PROJECT BR-0174 = 0.335 MILES
LENGTH STRUCTURE PROJECT BR-0174 = 0.029 MILES
TOTAL LENGTH PROJECT BR-0174 = 0.364 MILES

Prepared in the Office of:
CDM Smith
FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2024 STANDARD SPECIFICATIONS

LETTING DATE :
OCTOBER 20, 2026

DAVID KEISER, P.E.
PROJECT ENGINEER

CHRIS CORDELL, P.E.
PROJECT DESIGN ENGINEER

ERIC MURRAY
NCDOT CONTACT

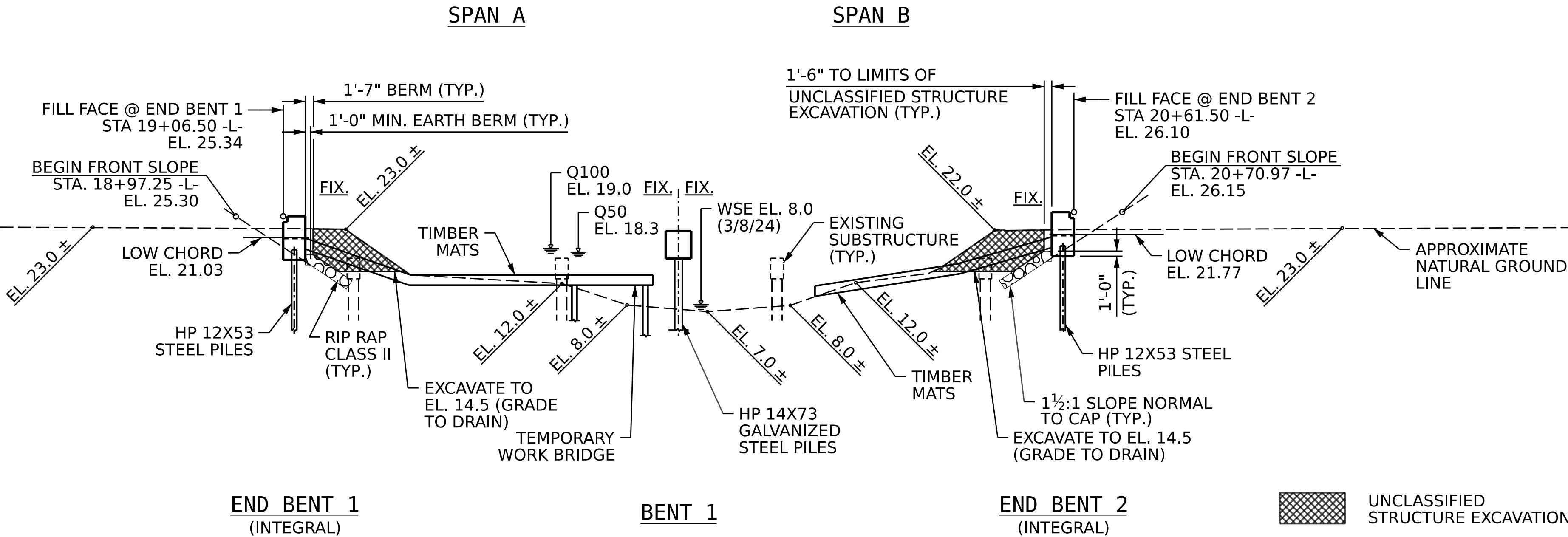
Signed by:
Christopher B. Cordell
7/1/2026

+0.3000% +0.4889%
P.I. STA 14+60.00
EL. = 23.16
VC. = 200'

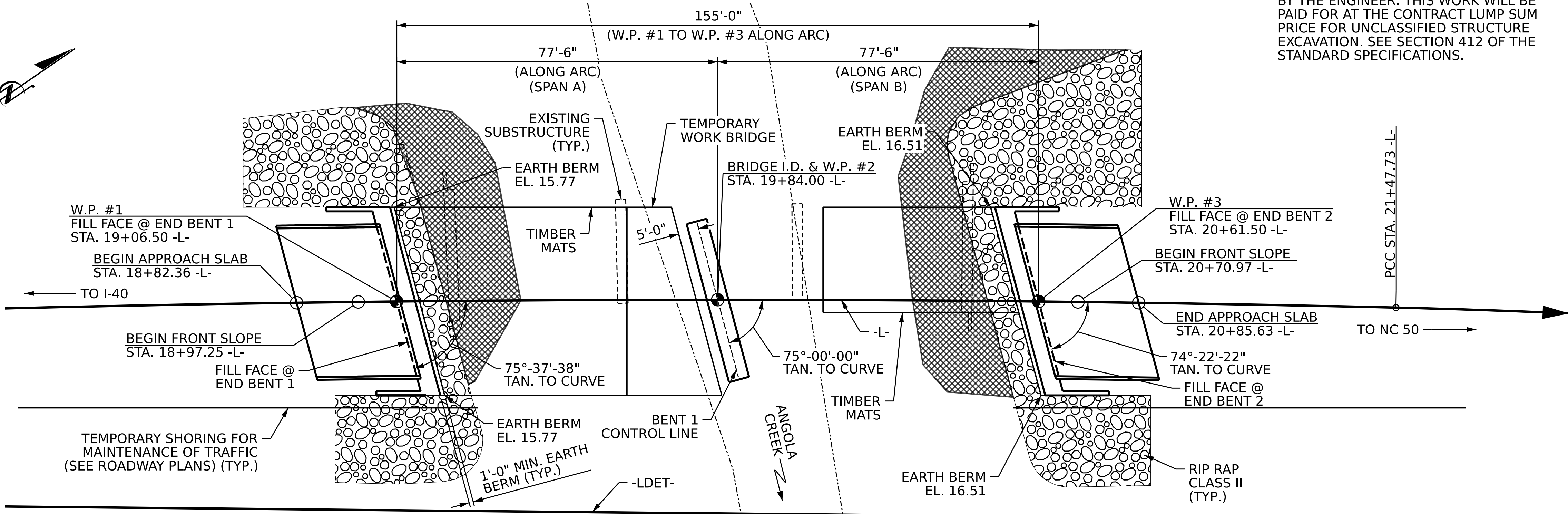
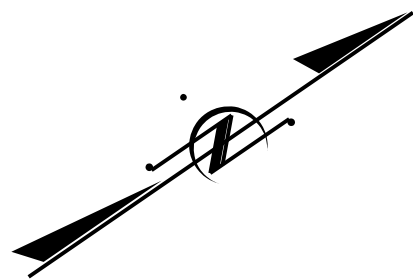
+0.4889% -0.7369%
P.I. STA 22+25.00
EL. = 26.90
VC. = 190'

VERTICAL GRADE DATA -L-

VERTICAL GRADE DATA -L-



I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS



HORIZONTAL CURVE DATA -L-

PI STA 18+12.95
Δ = 5° 25' 21.2" (RT)
D = 0° 48' 33.3"
L = 670.06'
T = 335.28'
R = 7,080'

PROJECT NO. **BR-0174**
PENDER COUNTY
STATION: **19+84.00 -L-**

SHEET 1 OF 5 REPLACES BRIDGE NO. 700037

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER
ANGOLA CREEK ON NC 53
BETWEEN
I-40 AND NC 50

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

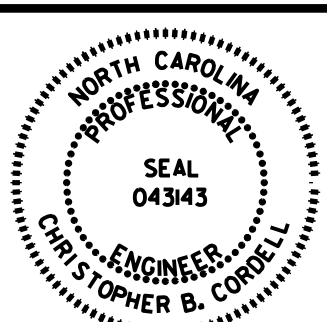
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CDM Smith

CDM SMITH Inc.
4600 Park Road, Suite 240
Charlotte, NC 28209-3730
NC COA No. F-1255

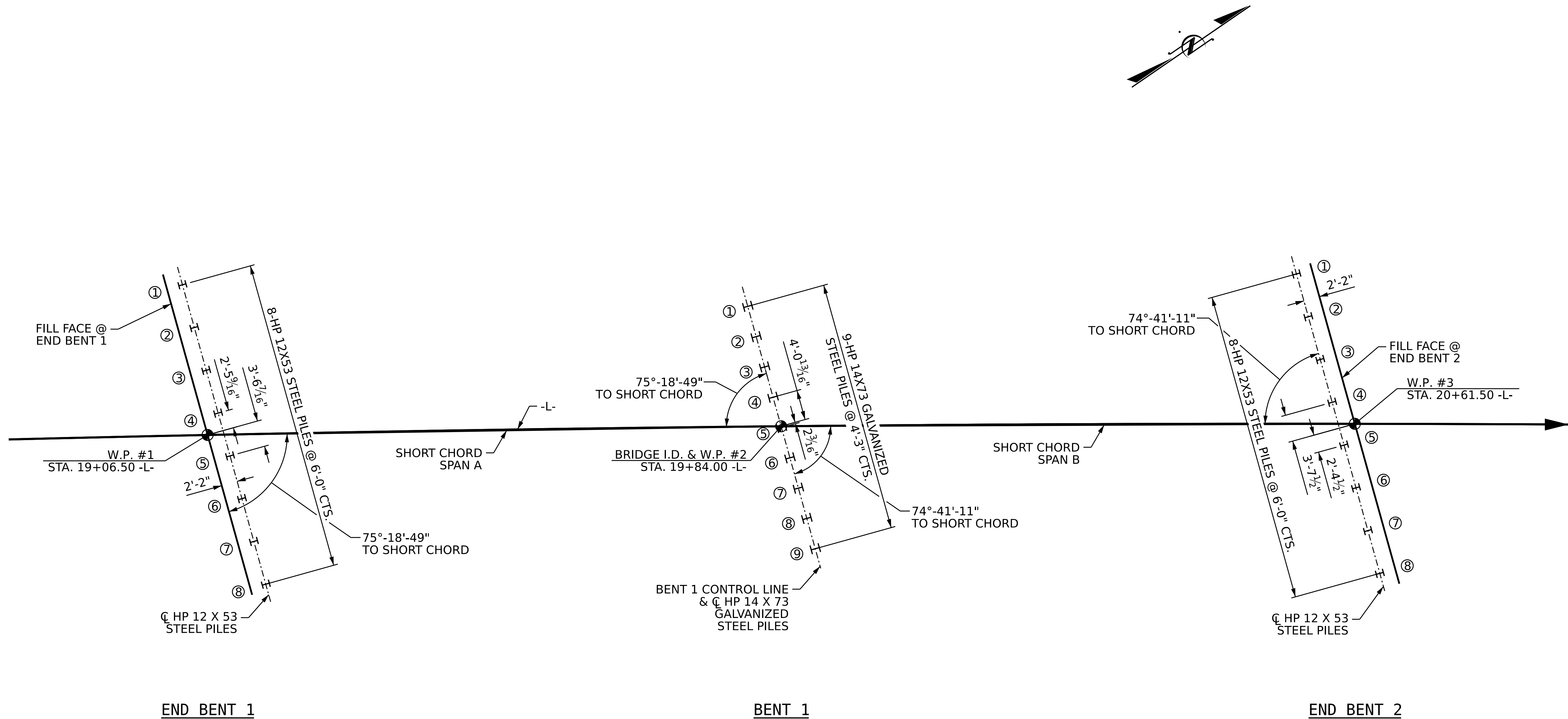
DRAWN BY : JJR DATE : 3/25
CHECKED BY : CBC DATE : 3/25
DESIGN ENGINEER : CBC DATE : 3/25

DWC. No.



Signed by: Christopher B. Cordell
ADAAACBFF2BF485...
7/1/2026

NOTES:
END BENTS AND BENT ARE PARALLEL.
PILES NOT SHOWN IN PLAN VIEW FOR CLARITY.



FOUNDATION LAYOUT PLAN

DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES.
ALL PILES ARE VERTICAL.

NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 31,000 - 60,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT 1, BENT 1, AND END BENT 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.

TEMPORARY STEEL CASING ARE REQUIRED FOR PREDRILLING (AND SPUDDING) AT BENT 1.

PROJECT NO. **BR-0174**

PENDER COUNTY

STATION: **19+84.00 -L-**

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER
ANGOLA CREEK ON NC 53
BETWEEN
I-40 AND NC 50

CDM Smith

CDM SMITH Inc.
4600 Park Road, Suite 240
Charlotte, NC 28209-3730
NC COA No. F-1255

DRAWN BY : JJR DATE : 3/25
CHECKED BY : CBC DATE : 3/25
DESIGN ENGINEER : CBC DATE : 3/25

DWC. No.

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

NORTH CAROLINA
PROFESSIONAL
ENGINEER
SEAL
043143
CHRISTOPHER B. CORDELL

Signed by
Christopher B. Cordell
ADJAC80FF29F485...

7/1/2026

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

SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Number of Piles per Line	Factored Resistance per Pile KIPS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles **			Drilled-In Piles		
						Minimum Pile Tip (Tip No Higher Than) Elevation FT	Required Driving Resistance (RDR)* per pile KIPS	Pile Redrives Quantity EACH	Predrilling Length per Pile LIN FT	Predrilling Elevation (Elevation Not To Predrill Below) FT	Maximum Predrilling Diameter INCHES	Pile Excavation (Bottom of Hole) Elevation FT	Pile Excavation Not In Soil per Pile LIN FT	Pile Excavation In Soil per Pile LIN FT
End Bent No.1	8	200	18.77	40			270	4	13.7	3.10	16			
Bent No.1	9	290	19.02	60	4.70	-12.40	390	4	13.1	-5.70	19			
End Bent No.2	8	200	19.51	40			270	4	13.9	3.60	16			
TOTAL QUANTITY:								12	338.7					

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

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

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile KIPS	Factored Drag Load per Pile KIPS	Factored Dead Load * per Pile KIPS	Dynamic Resistance Factor	Nominal Drag Resistance per Pile KIPS	Nominal Scour Resistance per Pile KIPS
End Bent No.1	200			0.75		
Bent No.1	290			0.75		
End Bent No.2	200			0.75		

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

SUMMARY OF PILE ACCESSORIES

(Blank entries indicate item is not applicable to structure)

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

SUMMARY OF DPT/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Dynamic Pile Testing (DPT)			Pile Order Lengths for Concrete Piles	
End Bent / Bent No (e.g., "Bent 1 - Bent 3")	DPT Test Pile Length FT	DPT Testing Quantity EACH	End Bent / Bent No (e.g., "Bent 1 - Bent 3")	Pile Order Length Basis* EST or DPT
End Bent 1 & End Bent 2	45	1		
Bent 1	65	1		
TOTAL QUANTITY:		2		

* 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:
1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Jinyoung Park, #032171) on 12-12-24.
2. 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.
3. The Engineer may adjust the quantity for DPT Testing and Pipe Pile Plates when necessary.

PROJECT NO. **BR-0174**
PENDER COUNTY
STATION: **19+84.00 -L-**

SHEET 3 OF 5

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SIGNATURES COMPLETED

**CDM
Smith**

CDM SMITH Inc.
4600 Park Road, Suite 240
Charlotte, NC 28209-3730
NC COA No. F-1255

DRAWN BY : JJR
CHECKED BY : CBC
DESIGN ENGINEER : CBC

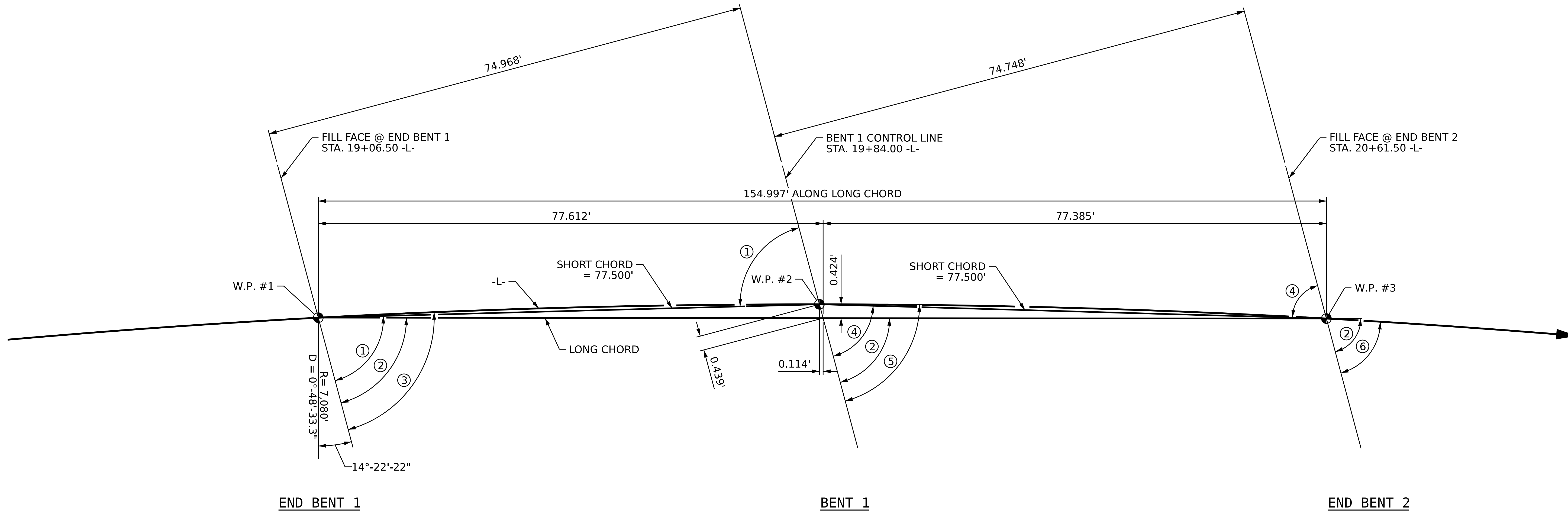
DATE : 3/25
DATE : 3/25
DATE : 3/25

DWC. No.

Seal: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043143
Signature: Christopher B. Cordell
ID: ADIAAC05FF726F485

7/1/2026

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						PILE FOUNDATION TABLES	
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3	
1			3			TOTAL SHEETS	
2			4			33	



LONG CHORD LAYOUT
(END BENTS AND BENT ARE PARALLEL)
VERTICAL SCALE EXAGGERATED FOR CLARITY

ANGLES

- ① 75°-18'-49" TO SHORT CHORD
- ② 75°-00'-00" TO LONG CHORD
- ③ 75°-37'-38" TAN TO CURVE
- ④ 74°-41'-11" TO SHORT CHORD
- ⑤ 75°-00'-00" TAN TO CURVE
- ⑥ 74°-22'-22" TAN TO CURVE

PI STA 18+12.95
Δ = 5° 25' 21.2" (RT)
D = 0° 48' 33.3"
L = 670.06'
T = 335.28'
R = 7,080'

HORIZONTAL CURVE DATA -L-

PROJECT NO. **BR-0174**
PENDER COUNTY
STATION: **19+84.00 -L-**

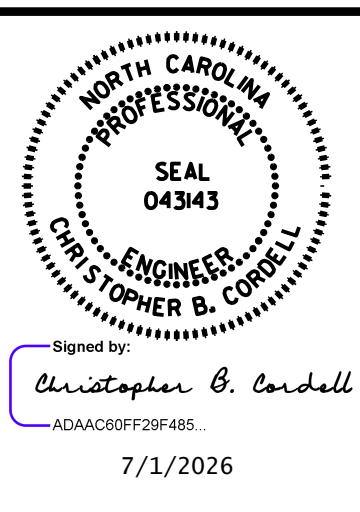
SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER
ANGOLA CREEK ON NC 53
BETWEEN
I-40 AND NC 50

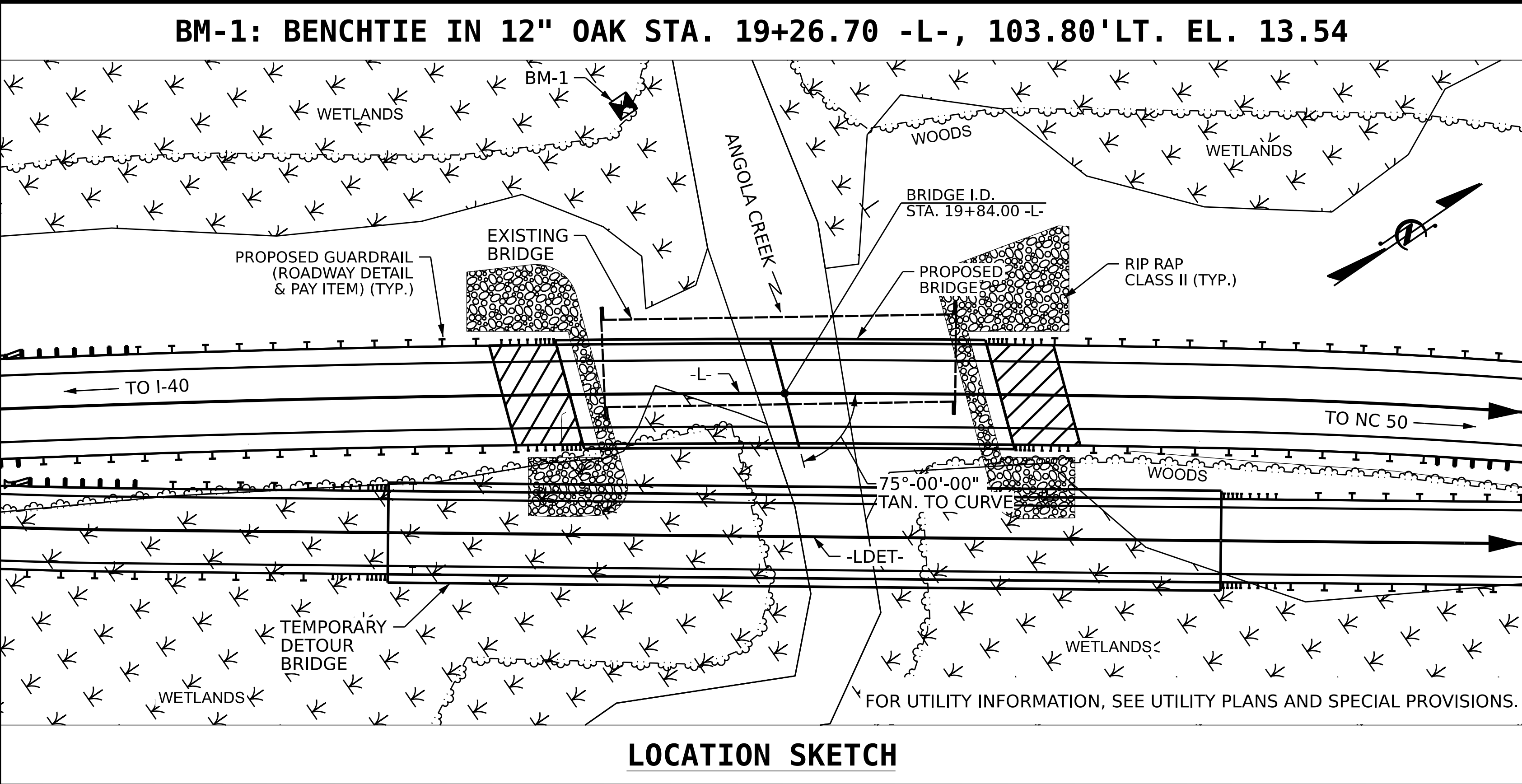
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

CDM Smith		CDM SMITH Inc. 4600 Park Road, Suite 240 Charlotte, NC 28209-3730 NC COA No. F-1255	
DRAWN BY : JJR	DATE : 3/25	DWG. No.	
CHECKED BY : CBC	DATE : 3/25		
DESIGN ENGINEER : CBC	DATE : 3/25		



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

S-4
TOTAL SHEETS 33



LOCATION SKETCH

HYDRAULIC DATA

DESIGN DISCHARGE = 3,300 CFS
FREQUENCY OF DESIGN FLOOD = 50 YRS
DESIGN HIGH WATER ELEVATION = 18.3 FT
DRAINAGE AREA = 39.5 SQ MI
BASE DISCHARGE (Q100) = 4,000 CFS
BASE HIGH WATER ELEVATION = 19.0 FT

OVERTOPPING DATA

OVERTOPPING DISCHARGE = 8,000 CFS
FREQUENCY OF OVERTOPPING FLOOD = 500+ YRS
OVERTOPPING FLOOD ELEVATION = 22.6 FT

WS EL. TAKEN @ RIVER STATION 6742.3

SAMPLE BAR REPLACEMENT

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

NOTE:
SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30" (SAMPLE LENGTH)
PLUS TWO SPLICE LENGTHS AND fy = 60 KSI.

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP ACCESS AT STA. 19+84.00 -L-	REMOVAL OF EXISTING STRUCTURE @ STA. 19+84.00 -L-	ASBESTOS ASSESSMENT	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	FIB 36" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES
	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	EACH
SUPERSTRUCTURE					6,016	6,708		LUMP SUM		10	757.97	
END BENT 1				LUMP SUM			38.1		4,938			8
BENT 1							23.9		3,025			
END BENT 2				LUMP SUM			38.0		4,927			8
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	6,016	6,708	100.0	LUMP SUM	12,890	10	757.97	16

	PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 GALVANIZED STEEL PILES	HP 12 X 53 STEEL PILES		HP 14 X 73 GALVANIZED STEEL PILES		PREDRILLING FOR PILES	PILE REDRIVES	DYNAMIC PILE TESTING	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP STRUCTURE AT STA. 19+84.00 -L-
	EACH	NO.	LIN. FT.	NO.	LIN. FT.	LIN. FT.	EACH	EACH	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE									306.54			LUMP SUM	
END BENT 1		8	320			109.6	4			240	270		
BENT 1	9			9	540	117.9	4	1					
END BENT 2		8	320			111.2	4	1		300	330		
TOTAL	9	16	640	9	540	338.7	12	2	306.54	540	600	LUMP SUM	LUMP SUM

GENERAL NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE SAMPLE BARS SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR THE SAMPLE BARS AND REPLACEMENT REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

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

SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 19+84.00-L-.

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 BASE PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 19+84.00 -L-."

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 CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN, AND AFTERWARDS REMOVE A TEMPORARY STRUCTURE AT STATION 19+84.00 -L- FOR USE DURING THE CONSTRUCTION OF THE PROPOSED STRUCTURE. THE TEMPORARY STRUCTURE MUST BE CONSTRUCTED USING TOP-DOWN METHODS. FOR CONSTRUCTION, MAINTAINANCE AND REMOVAL OF TEMPORARY STRUCTURE, SEE SPECIAL PROVISIONS.

THE BRIDGE RAILS ON THE TEMPORARY STRUCTURE SHALL BE DESIGNED FOR AASHTO LRFD TEST LEVEL 3 (TL-3) CRASH TEST CRITERIA. FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY STRUCTURE, SEE SPECIAL PROVISIONS.

THE EXISTING STRUCTURE CONSISTING OF 3 @ 42'-3" SPANS, 26'-2" CLEAR ROADWAY WIDTH, SUPERSTRUCTURE CONSISTING OF 6.25" REINFORCED CONCRETE DECK ON 6 LINES OF STEEL I-BEAMS, AND SUBSTRUCTURE CONSISTING OF REINFORCED CONCRETE END BENT CAPS SUPPORTED ON STEEL PILES AND REINFORCED CONCRETE PIER CAPS SUPPORTED ON REINFORCED CONCRETE FOOTINGS, AND LOCATED AT 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 TEMPORARY STRUCTURE, A LOAD LIMIT MAYBE 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(S) NO. 1 IS ELEVATION 4.70 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

FOR INTERIOR BENT 1, ONLY PARTIAL GALVANIZING OF THE PILES IS REQUIRED. SEE INTERIOR BENT SHEET FOR REQUIRED GALVANIZED LENGTHS. PAYMENT FOR PARTIALLY GALVANIZED PILES WILL BE MADE UNDER THE CONTRACT UNIT PRICE FOR GALVANIZED STEEL PILES.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

PROJECT NO. **BR-0174**

PENDER COUNTY

STATION: **19+84.00 -L-**

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER
ANGOLA CREEK ON NC 53
BETWEEN
I-40 AND NC 50

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

DOCUMENT NOT CONSIDERED
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SIGNATURES COMPLETED

CDM Smith	CDM SMITH Inc. 4600 Park Road, Suite 240 Charlotte, NC 28209-3730 NC COA No. F-1255
DRAWN BY : JJR CHECKED BY : CBC DESIGN ENGINEER : CBC	DATE : 3/25 DATE : 3/25 DATE : 3/25
DWG. No.	

NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 043143
Christopher B. Cordell
7/1/2026

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γDC	γDW
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

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

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

COMMENTS:

1.

2.

3.

4.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

2 DESIGN LOAD RATING (HS-20)

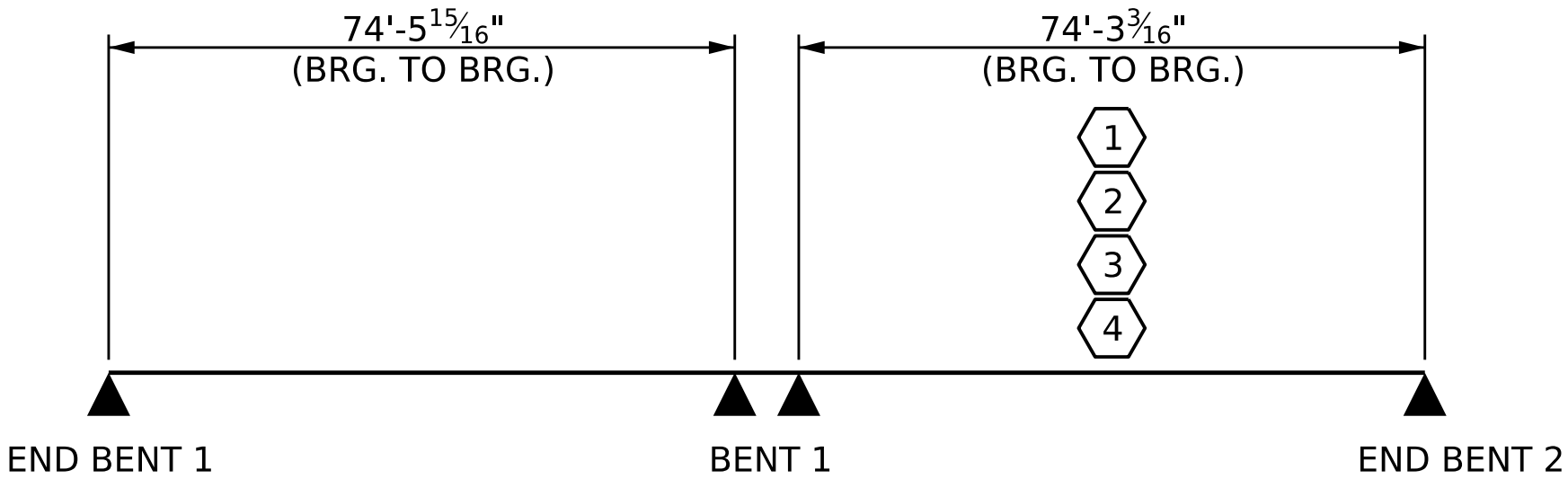
3 LEGAL LOAD RATING **

4 EMERGENCY VEHICLE LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. **BR-0174**

PENDER COUNTY

STATION: **19+84.00 -L-**

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CDM Smith

CDM SMITH Inc.
4600 Park Road, Suite 240
Charlotte, NC 28209-3730
NC COA No. F-1255

DRAWN BY : JJR DATE : 3/25
CHECKED BY : CBC DATE : 3/25
DESIGN ENGINEER : CBC DATE : 3/25

DWG. No.

NORTH CAROLINA PROFESSIONAL SEAL 043143

ENGINEER CHRISTOPHER B. CORDELL

Signed by: Christopher B. Cordell

ADAA0080FP28F485...

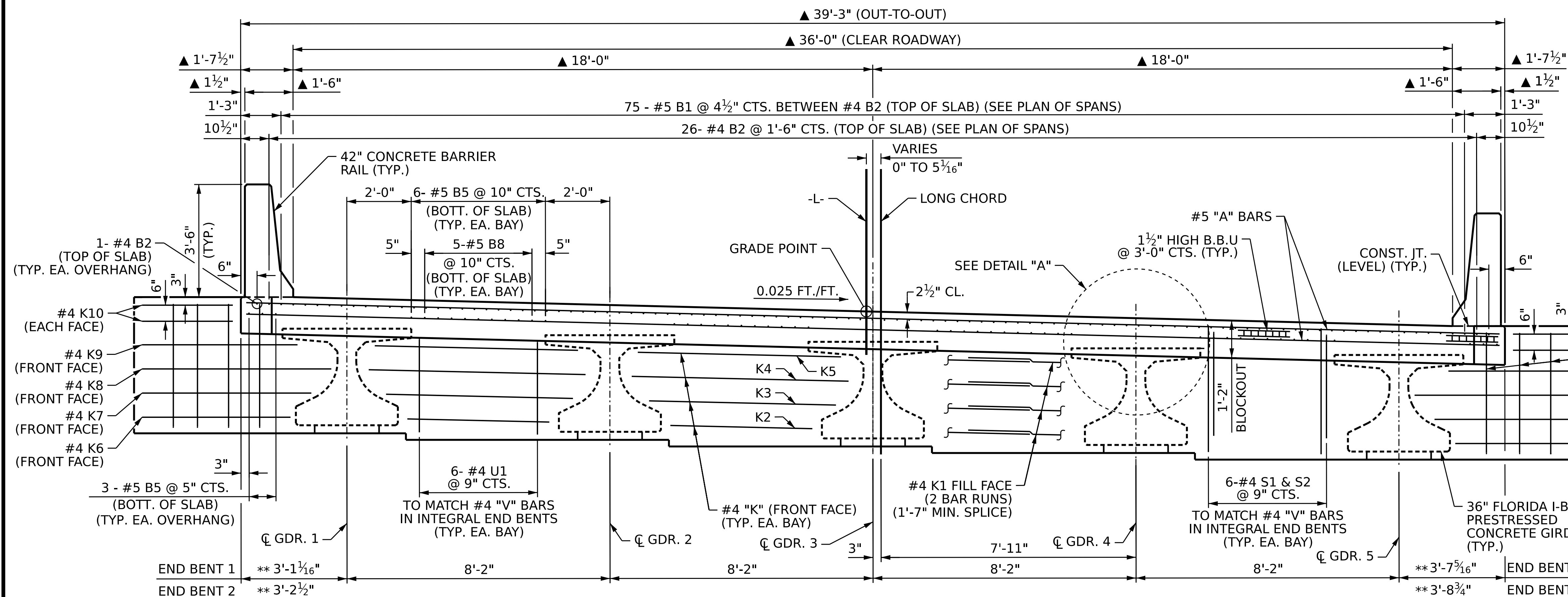
7/1/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

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

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



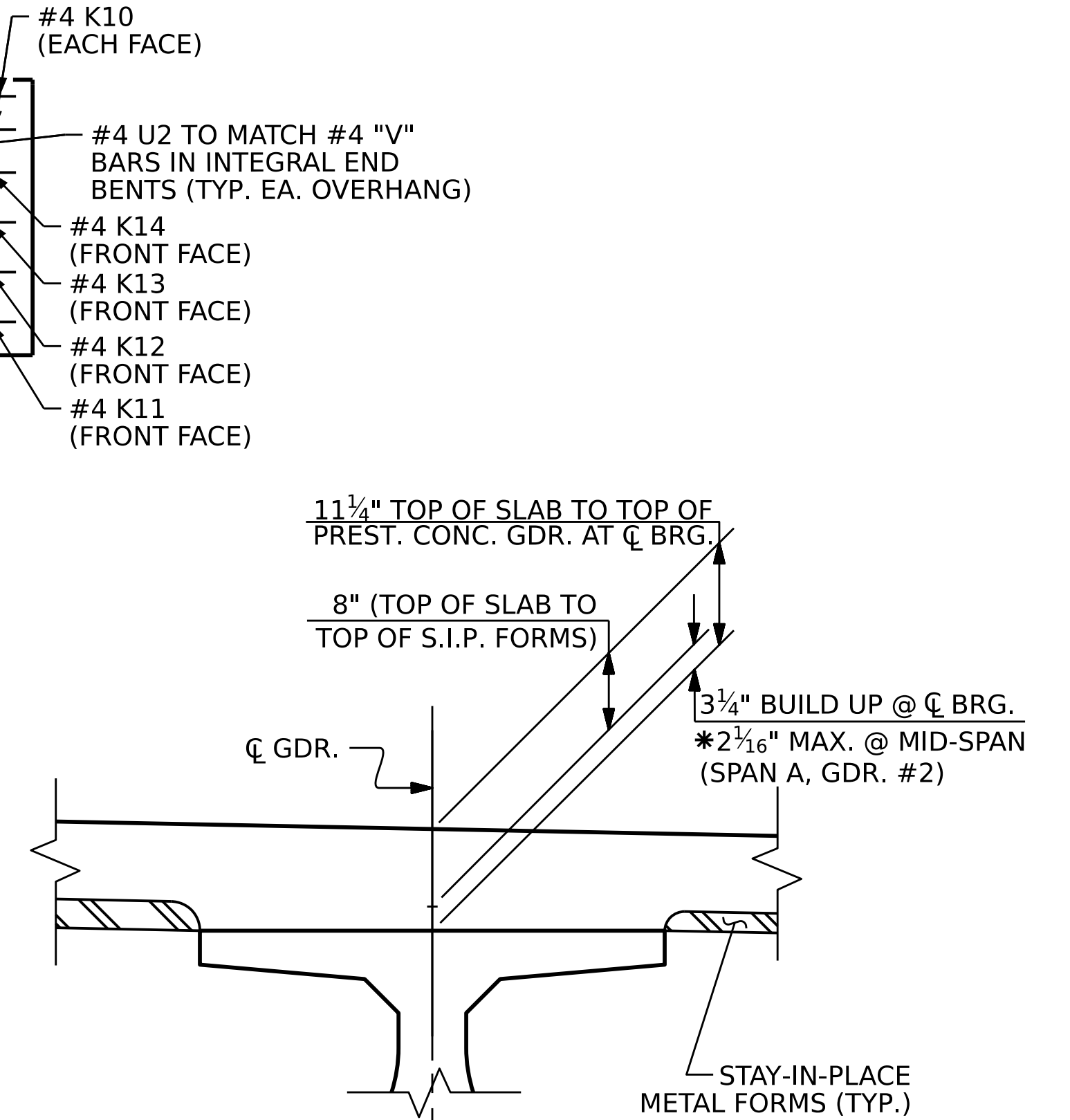
NOTES:

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

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

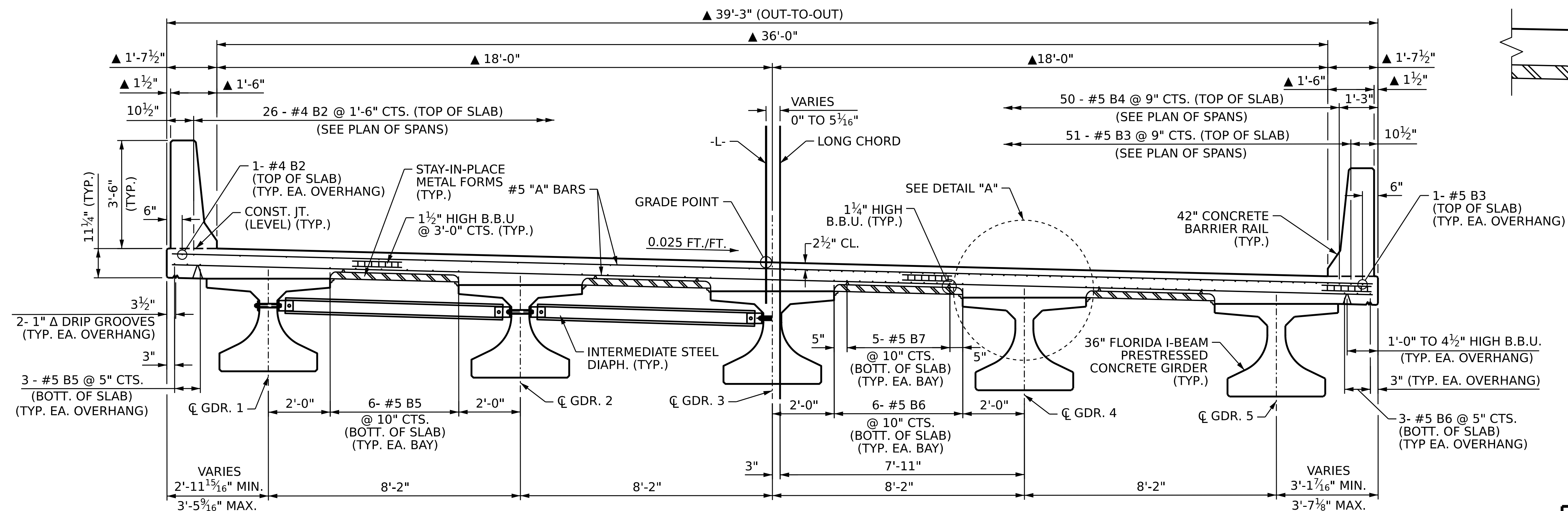
PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.



TYPICAL SECTION

AT INTEGRAL ABUTMENT



TYPICAL HALF SECTION

INTERMEDIATE DIAPHRAGMS

TYPICAL HALF SECTION THRU LINK SLAB

AT BENT

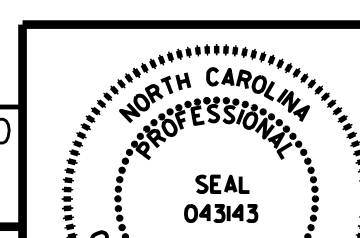
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



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 DESIGN ENGINEER : CBC DATE : 3/25

DWG. No.



Signed by: Christopher B. Cordell
ADAAC60FF29F485...
7/1/2026

PROJECT NO. BR-0174

PENDER COUNTY

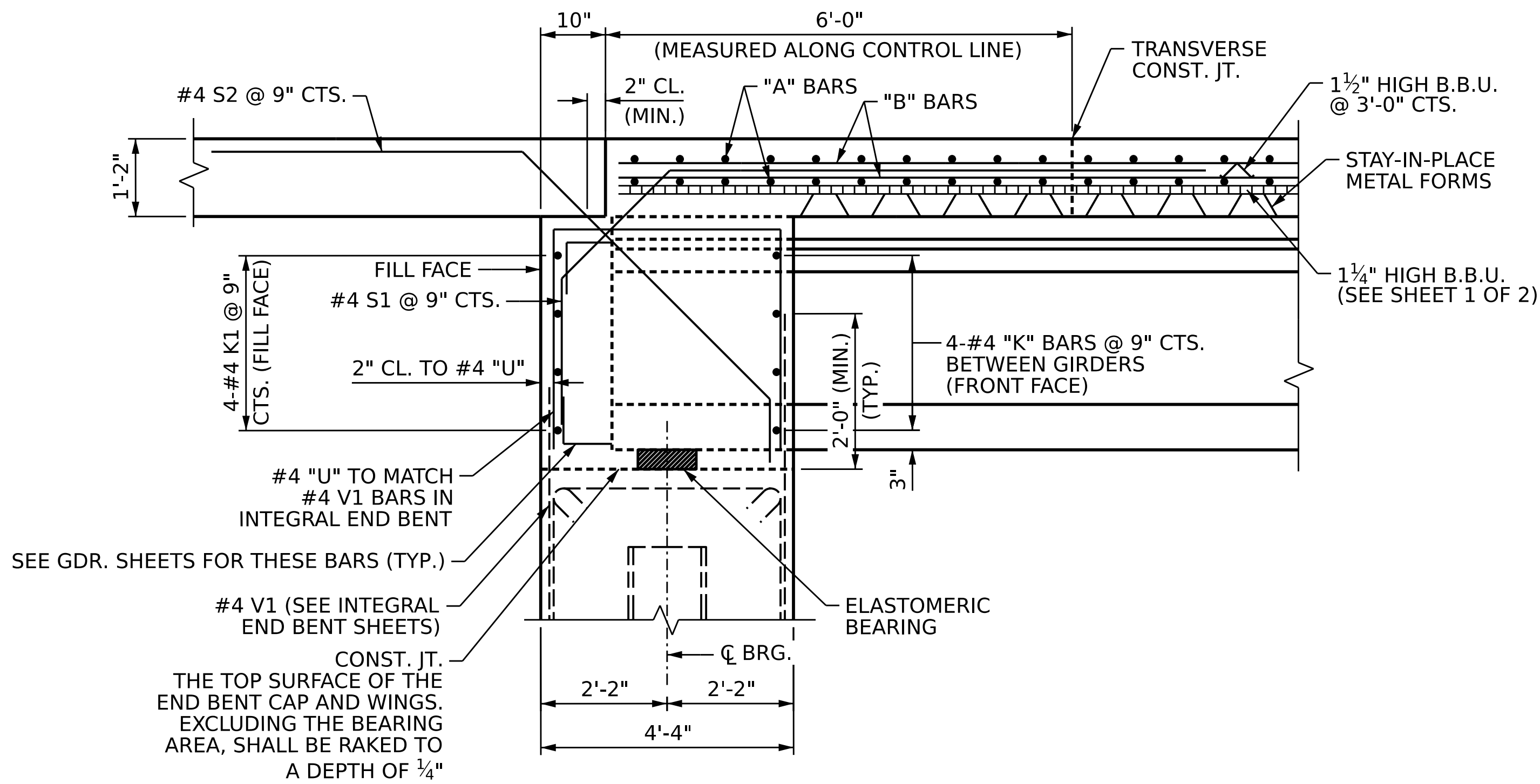
STATION: 19+84.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

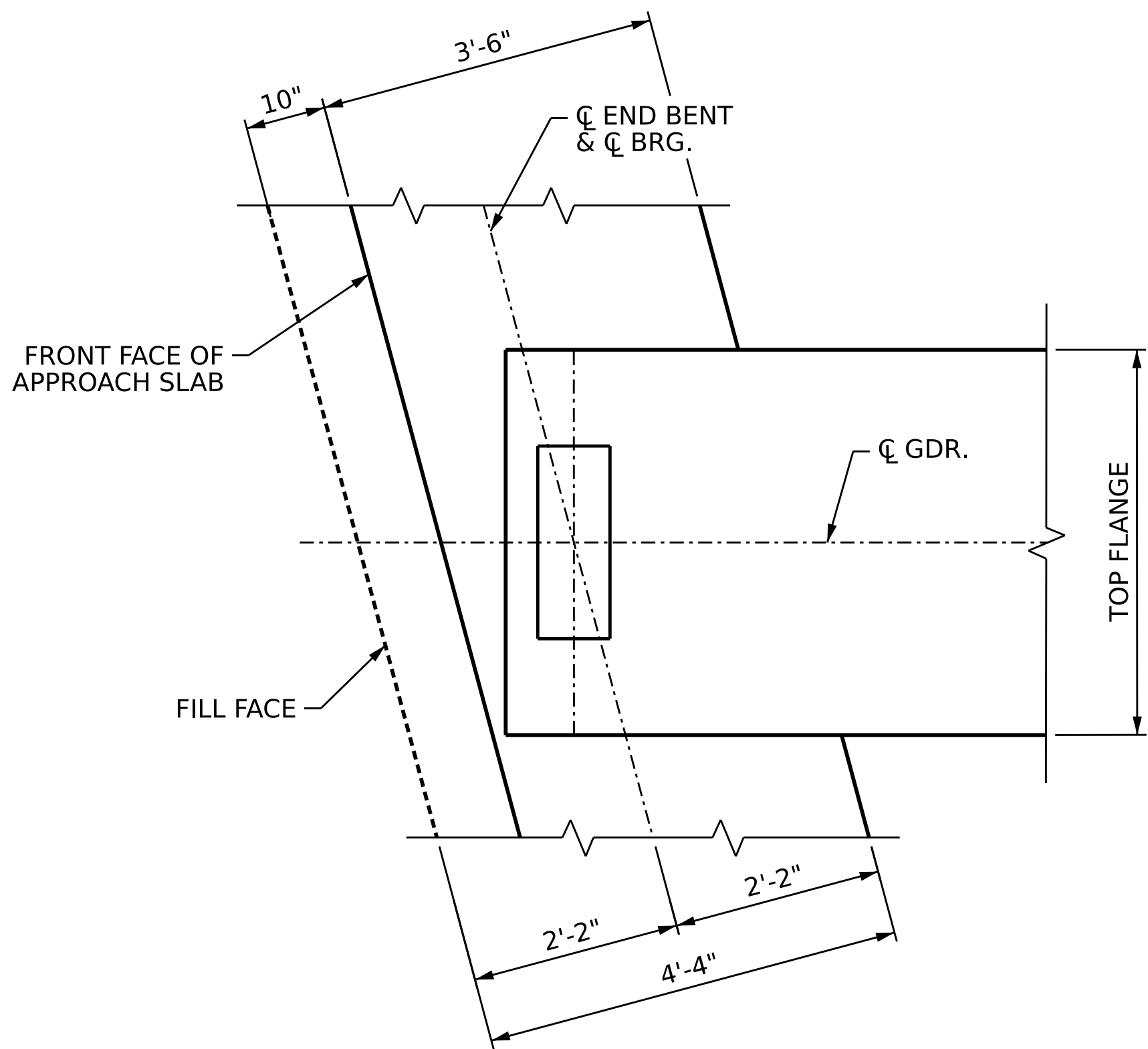
SUPERSTRUCTURE TYPICAL SECTION

REVISIONS						SHEET NO. S-7
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			33



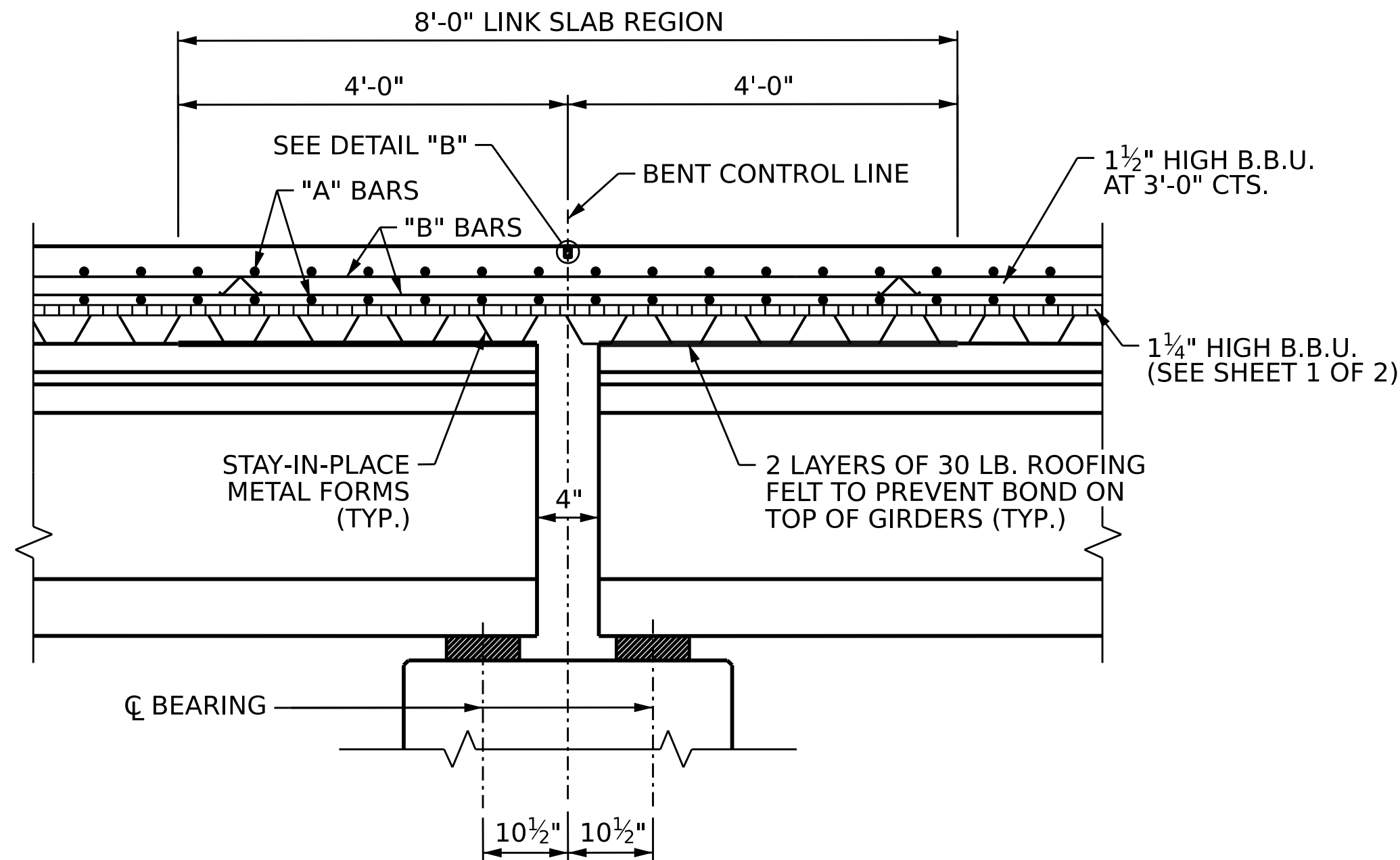
SECTION THRU INTEGRAL END BENT

INTEGRAL END BENT 1 SHOWN
(INTEGRAL END BENT 2 SIMILAR)



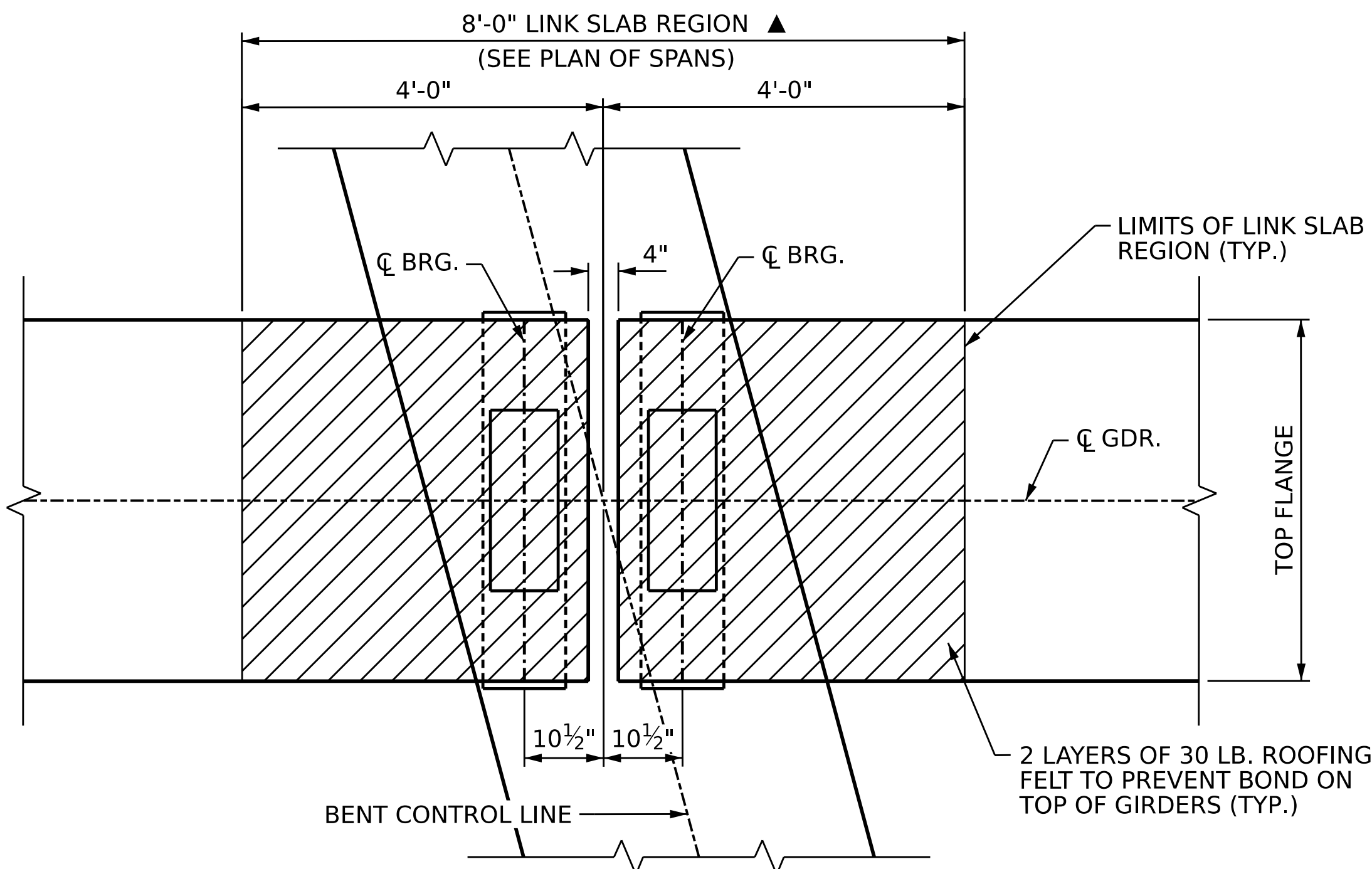
PLAN OF GIRDER AT INTEGRAL END BENT

END BENT 1 SHOWN, END BENT 2
SIMILAR BY ROTATION



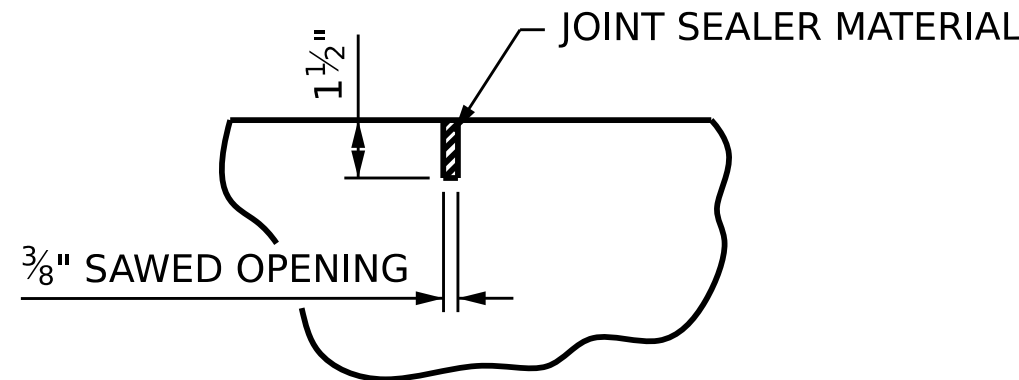
SECTION AT LINK SLAB

MEASURED ALONG GIRDER



PLAN OF GIRDER AT BENT

▲ 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.



DETAIL "B"

A 1 1/2" DEEP, 3/8" WIDE CONTRACTION JOINT AT
BENT CONTROL LINE SHALL BE SAWN WITHIN 24
HOURS OF POURING THE LINK SLAB 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.

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

PROJECT NO. **BR-0174**

PENDER COUNTY

STATION: **19+84.00 -L-**

SHEET 2 OF 2

STATE OF NORTH CAROLINA
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RALEIGH

**SUPERSTRUCTURE
TYPICAL SECTION
DETAILS**

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

S-8

TOTAL

SHEETS

33

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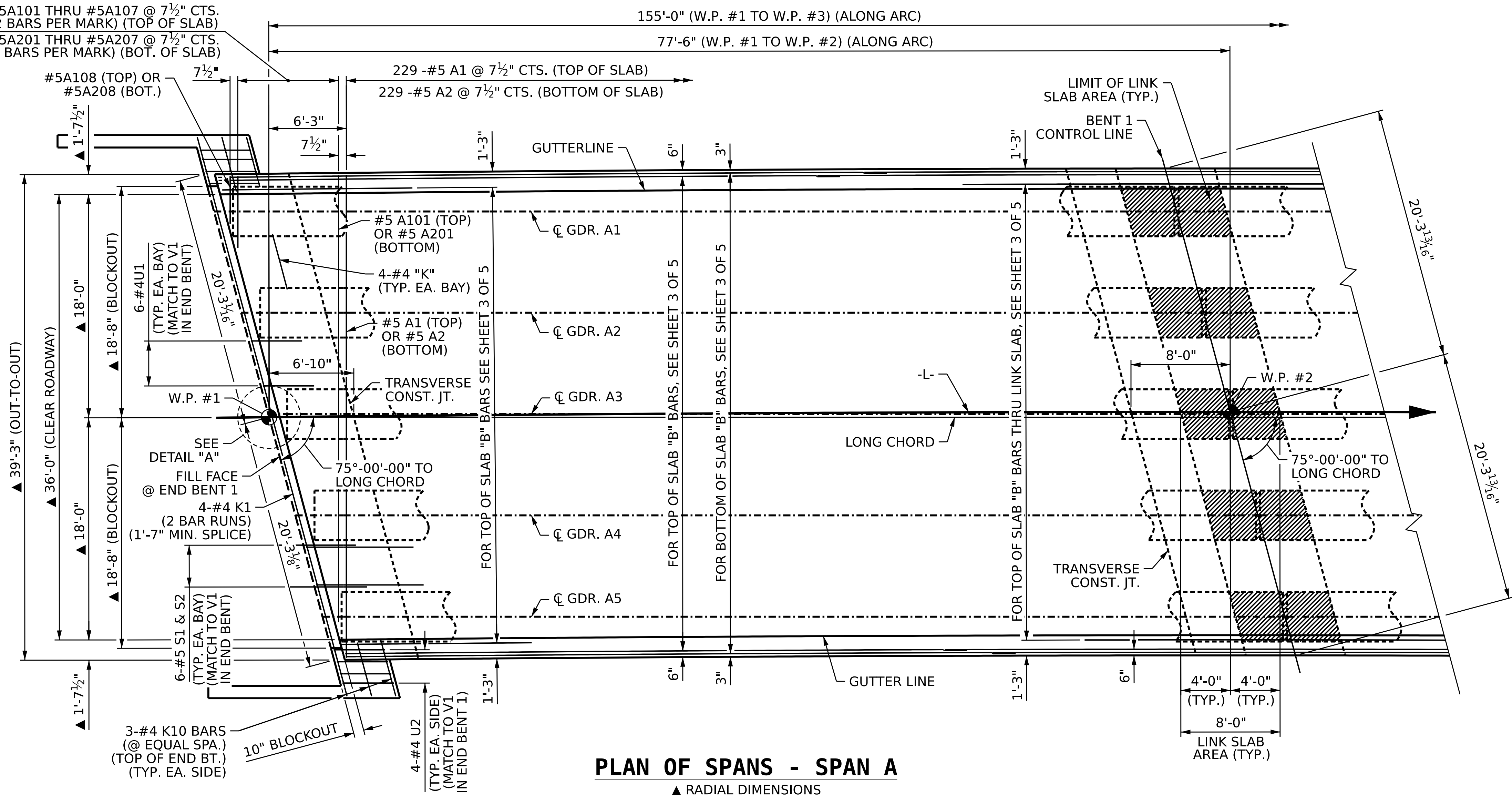
NORTH CAROLINA
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ENGINEER
SEAL
043143
CHRISTOPHER B. CORDELL

Signed by:
Christopher B. Cordell
ADAAC05FF20F485

7/1/2026

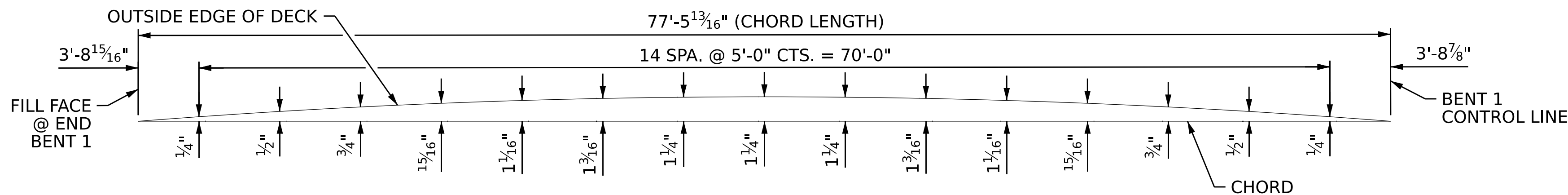
#5A101 THRU #5A107 @ 7½" CTS.
(2 BARS PER MARK) (TOP OF SLAB)
#5A201 THRU #5A207 @ 7½" CTS.
(2 BARS PER MARK) (BOT. OF SLAB)

#5A108 (TOP) OR
#5A208 (BOT.)

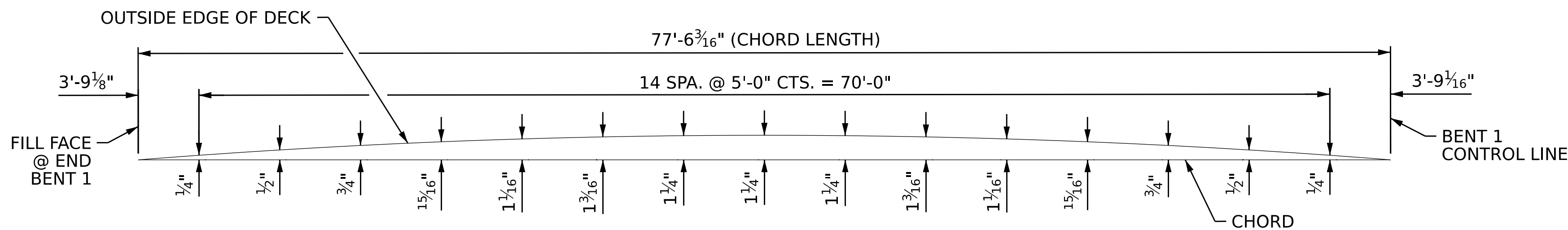


PLAN OF SPANS - SPAN A

▲ RADIAL DIMENSIONS



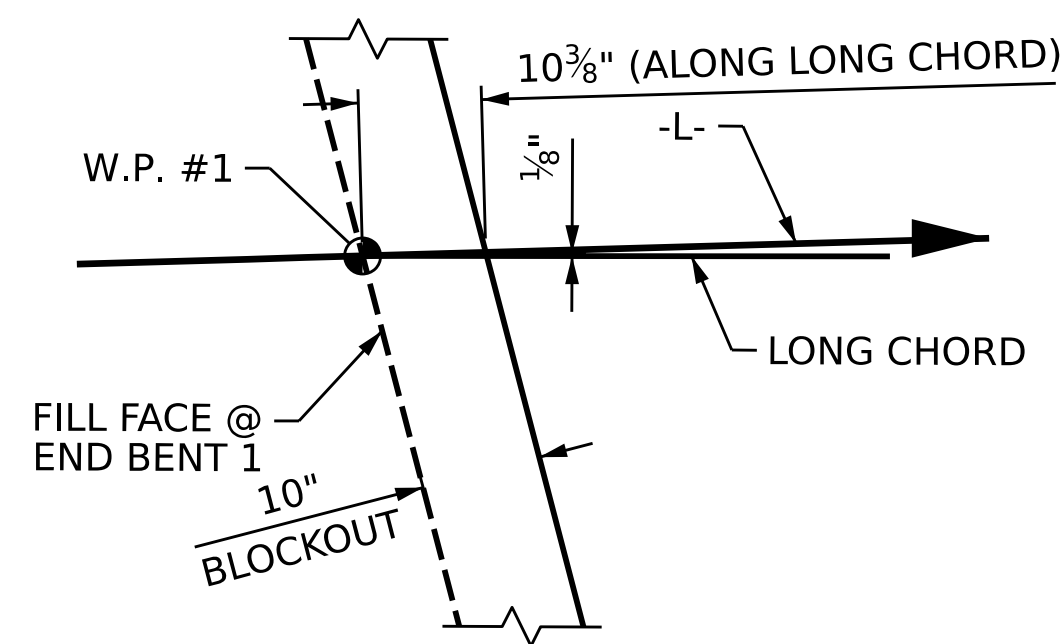
LEFT EDGE



RIGHT EDGE

DECK ARC OFFSET

ALONG SPAN A



DETAIL "A"

NOTES

#5 "A" BARS ARE TO BE PLACED PERPENDICULAR TO AND
ALONG THE LONG CHORD FOR THE FULL LENGTH OF THE
BRIDGE.

PROJECT NO. **BR-0174**

PENDER COUNTY

STATION: **19+84.00 -L-**

SHEET 1 OF 5

STATE OF NORTH CAROLINA
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RALEIGH

SUPERSTRUCTURE PLAN OF SPANS SPAN A

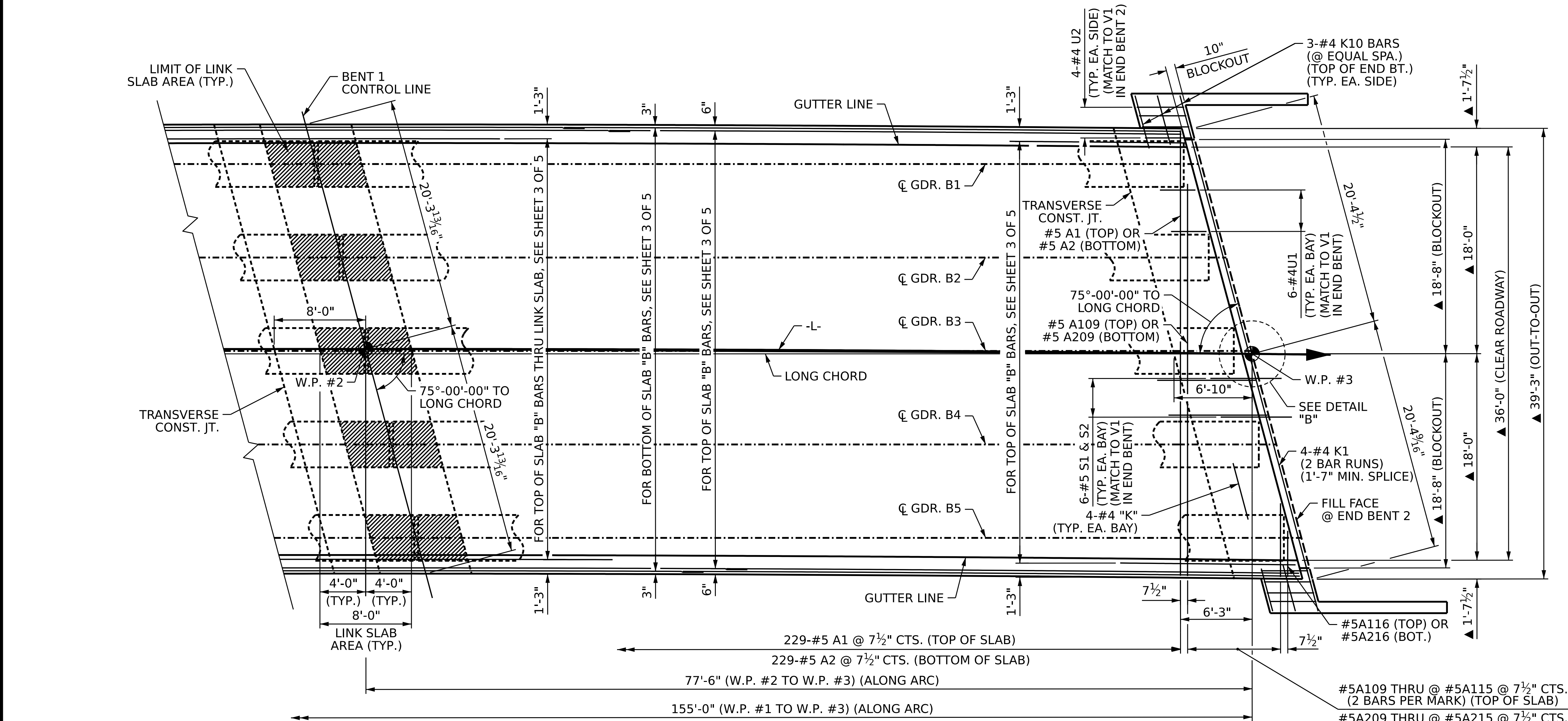
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
CDM Smith			
CDM SMITH Inc. 4600 Park Road, Suite 240 Charlotte, NC 28209-3730 NC COA No. F-1255			
DRAWN BY : JJR	DATE : 3/25	DWG. No.	
CHECKED BY : CBC	DATE : 3/25		
DESIGN ENGINEER : CBC	DATE : 3/25		

NORTH CAROLINA PROFESSIONAL SEAL 043143 ENGINEER CHRISTOPHER B. CORDELL			
Signed by Christopher B. Cordell ADIAAC60FF29F485...			
7/1/2026			

REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	
1			3	5-9
2			4	TOTAL SHEETS 33

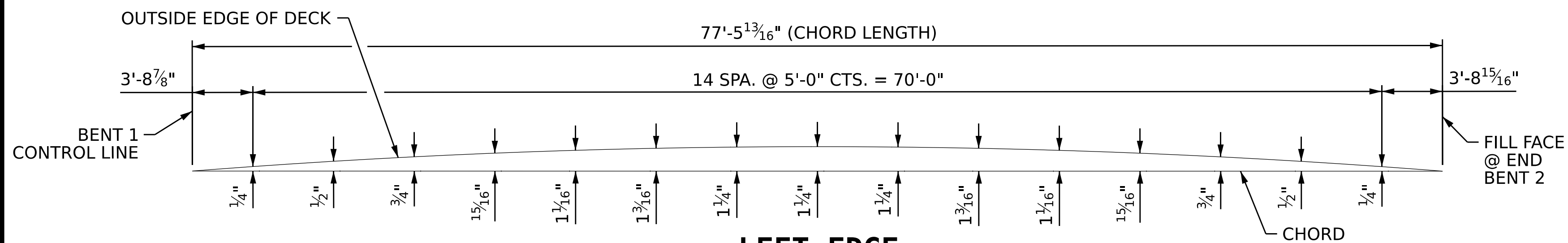
NOTES

#5 "A" BARS ARE TO BE PLACED PERPENDICULAR TO AND ALONG THE LONG CHORD FOR THE FULL LENGTH OF THE BRIDGE.

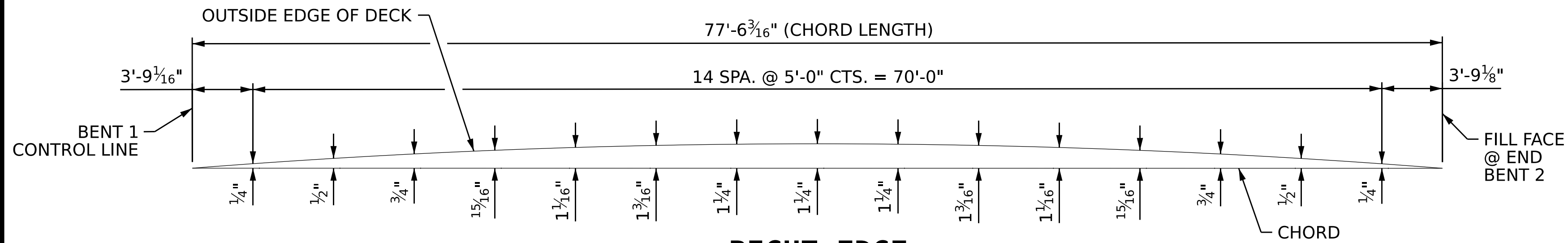


PLAN OF SPAN - SPAN B

▲ RADIAL DIMENSIONS



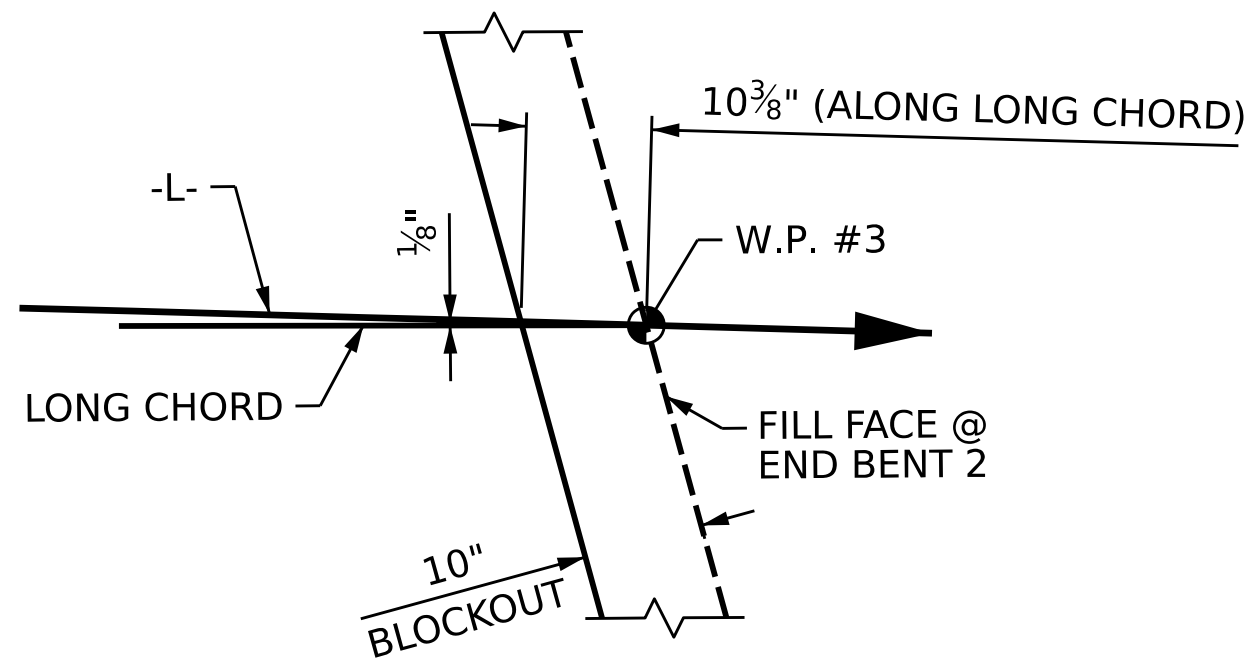
LEFT EDGE



RIGHT EDGE

DECK ARC OFFSET

ALONG SPAN B



DETAIL "B"

PROJECT NO. **BR-0174**

PENDER COUNTY

STATION: **19+84.00 -L-**

SHEET 2 OF 5

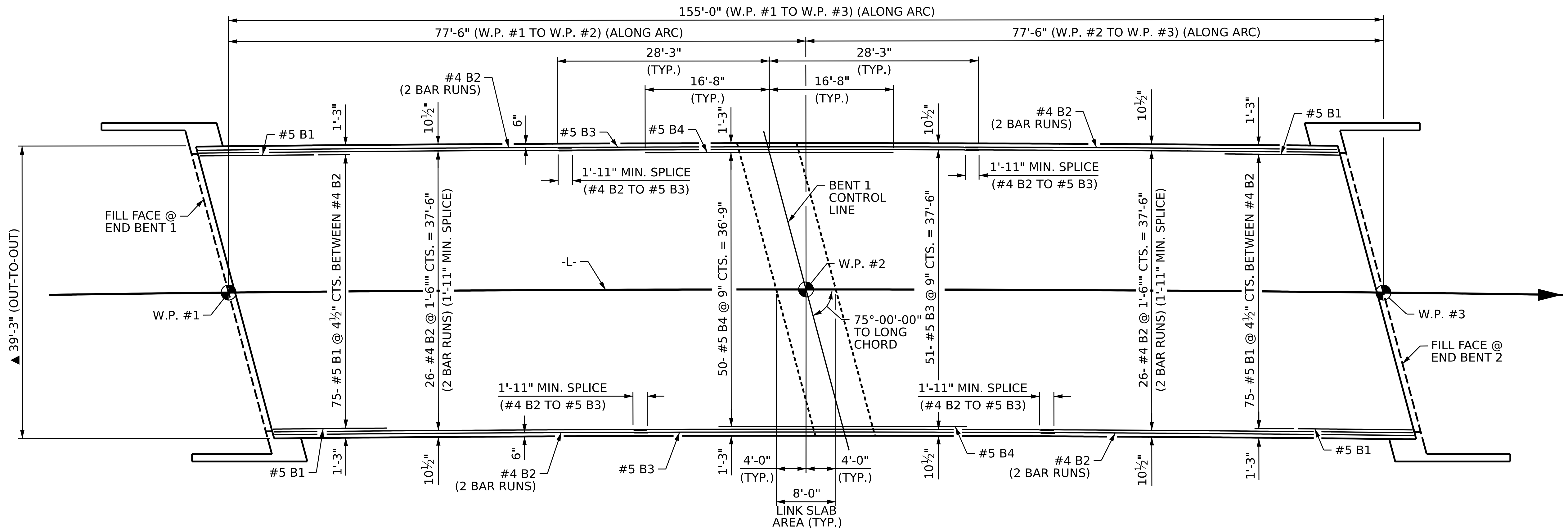
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPANS
SPAN B

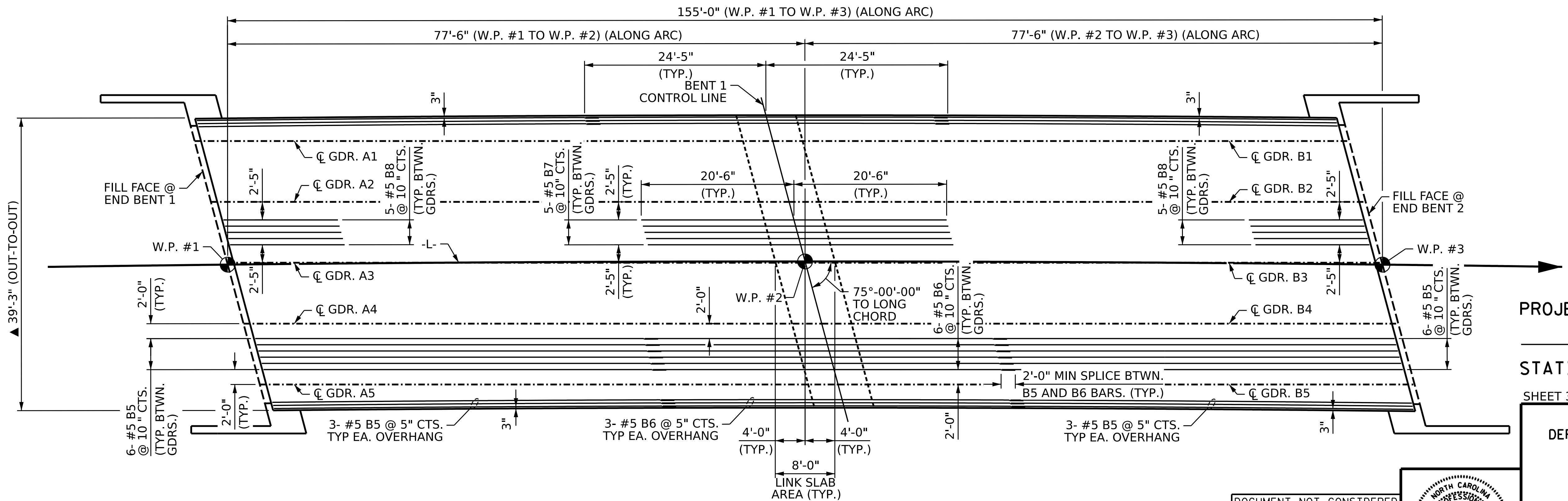
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
CDM Smith		CDM SMITH Inc. 4600 Park Road, Suite 240 Charlotte, NC 28209-3730 NC COA No. F-1255	
DRAWN BY : JJR	DATE : 3/25	DWG. No.	
CHECKED BY : CBC	DATE : 3/25		
DESIGN ENGINEER : CBC	DATE : 3/25		

NORTH CAROLINA PROFESSIONAL ENGINEER CHRISTOPHER B. CORDELL SEAL 043143	Signed by: <i>Christopher B. Cordell</i> ADAAC60FP20F485.	
	7/1/2026	

REVISIONS				SHEET NO. S-10
NO.	BY:	DATE:	NO.	
1			3	TOTAL SHEETS
2			4	33



**TOP OF SLAB
LONGITUDINAL REINFORCEMENT**
▲ RADIAL DIMENSIONS



**BOTTOM OF SLAB
LONGITUDINAL REINFORCEMENT**
▲ RADIAL DIMENSIONS

PROJECT NO. **BR-0174**
PENDER COUNTY
STATION: **19+84.00 -L-**

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUPERSTRUCTURE
PLAN OF SPANS
LONGITUDINAL
REINFORCEMENT LAYOUT**

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SIGNATURES COMPLETED

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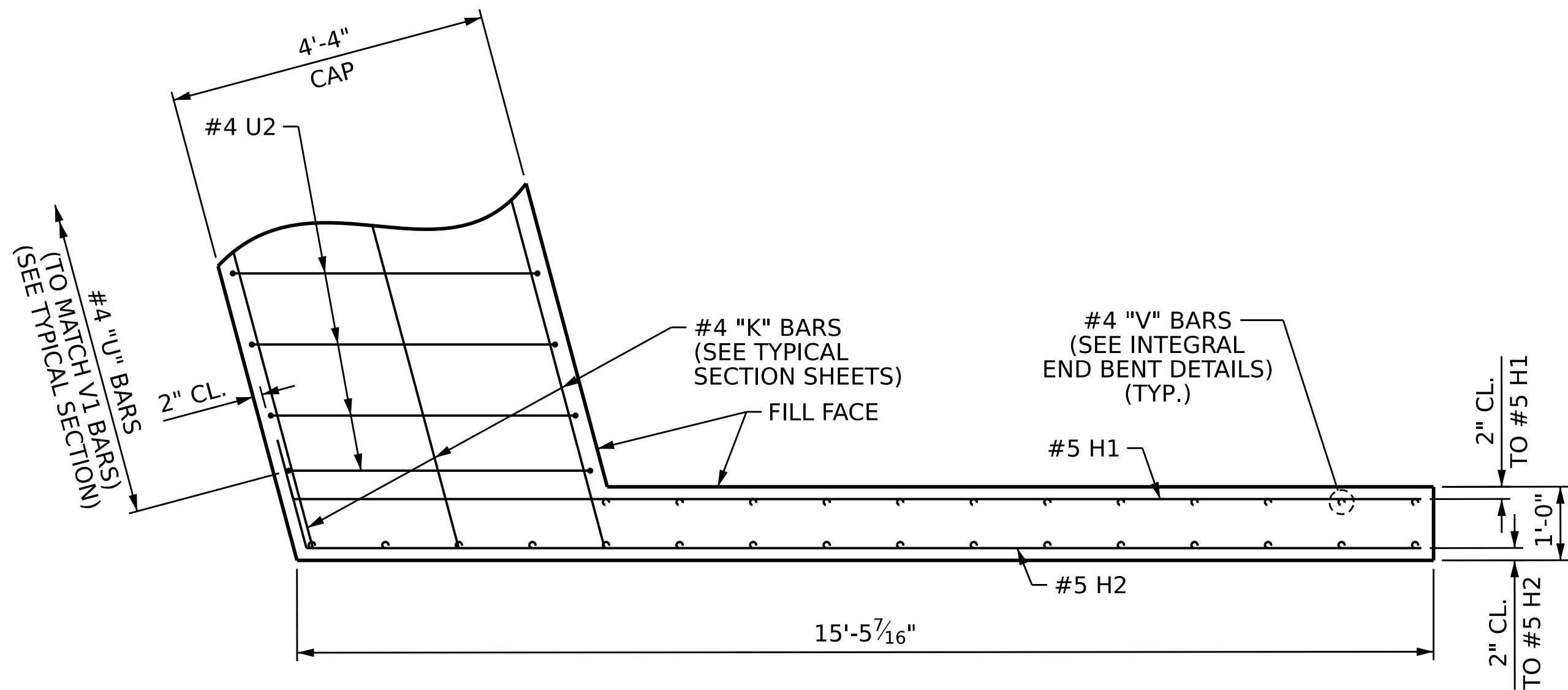
DRAWN BY : JJR DATE : 3/25
CHECKED BY : CBC DATE : 3/25
DESIGN ENGINEER : CBC DATE : 3/25

DWC. No.

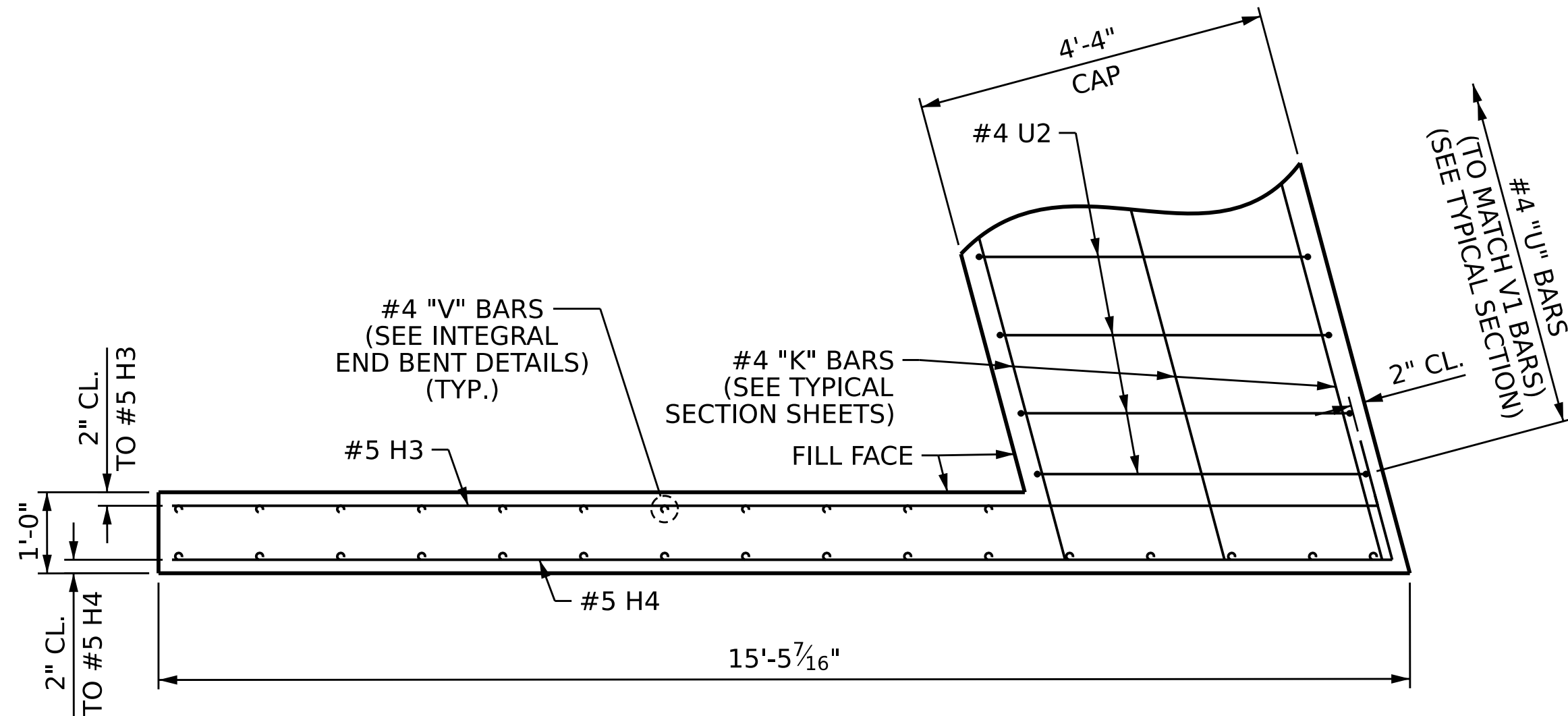
NORTH CAROLINA
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ENGINEER
SEAL
043143
Christopher B. Cordell
7/1/2026

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

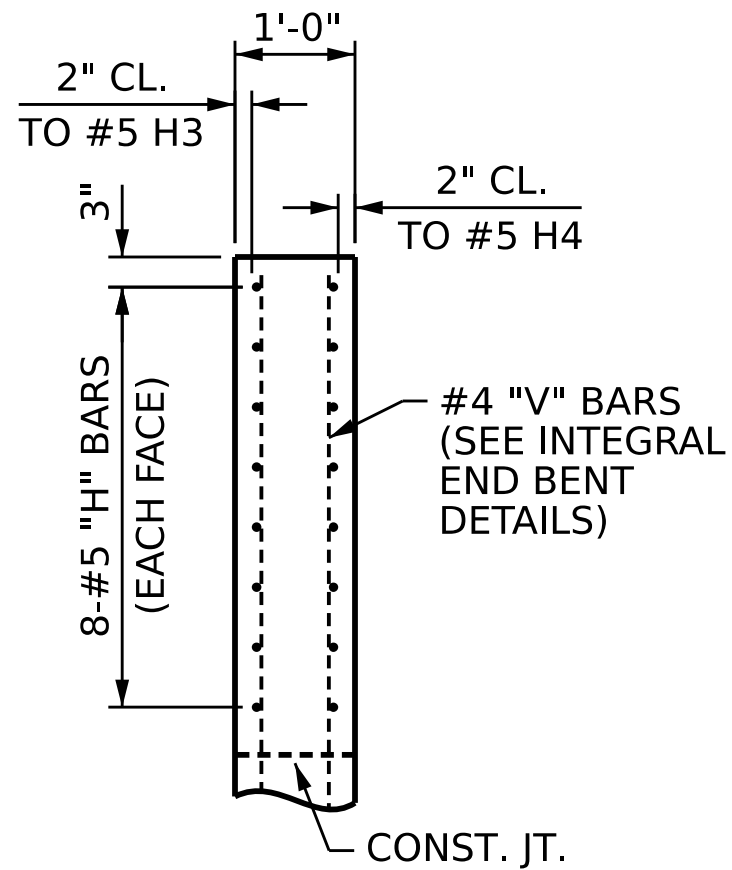
S-11
TOTAL SHEETS
33



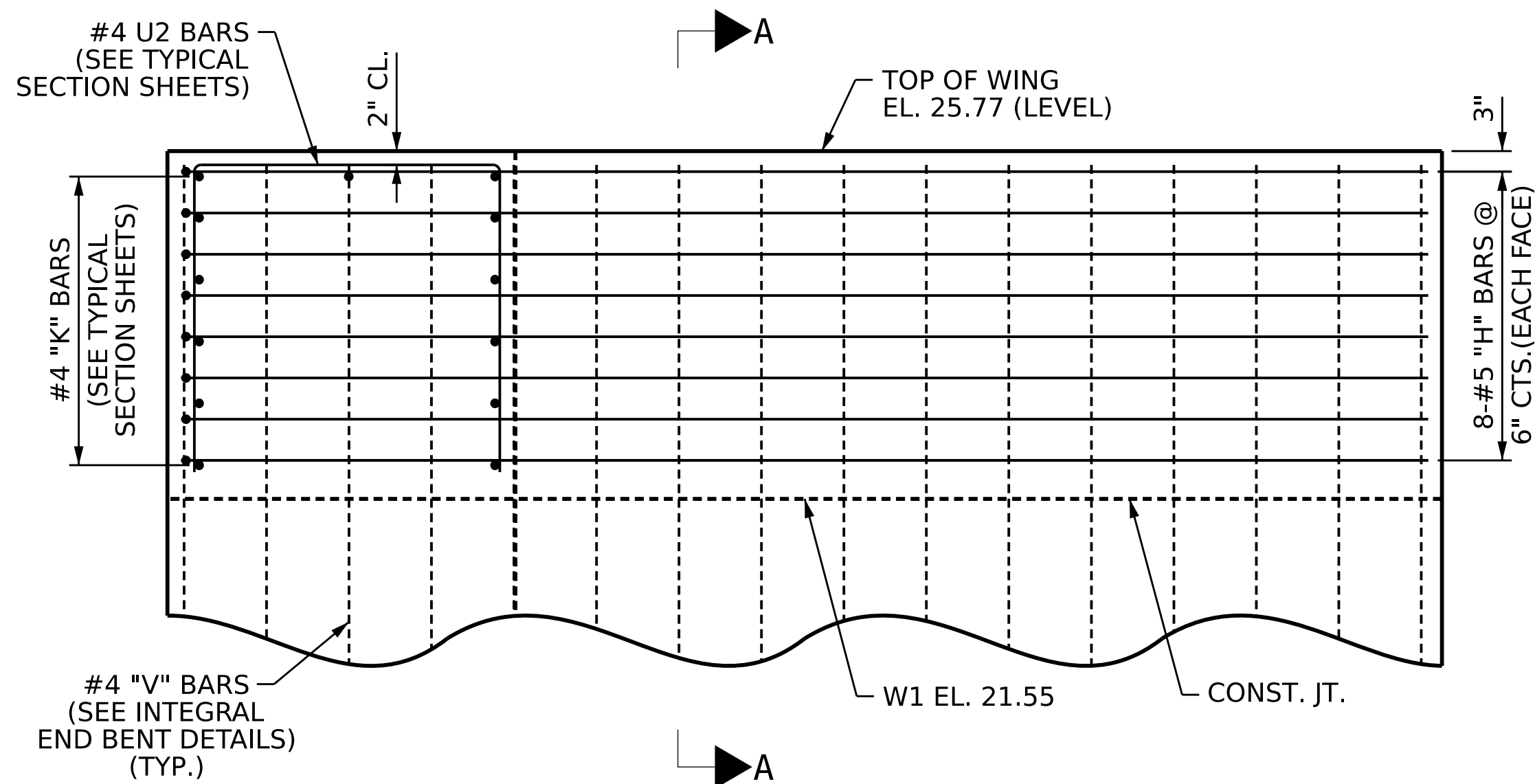
PLAN OF W1



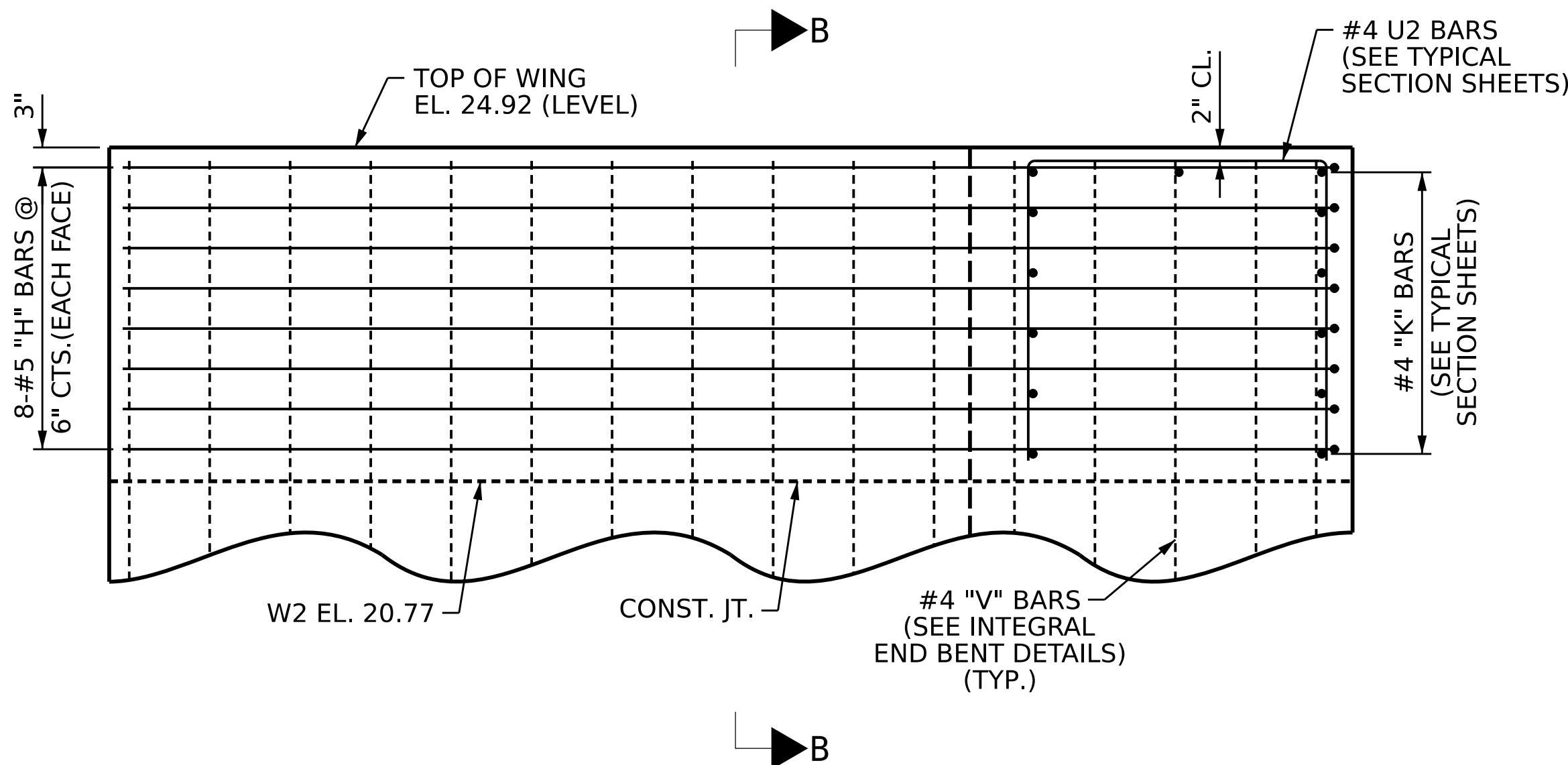
PLAN OF W2



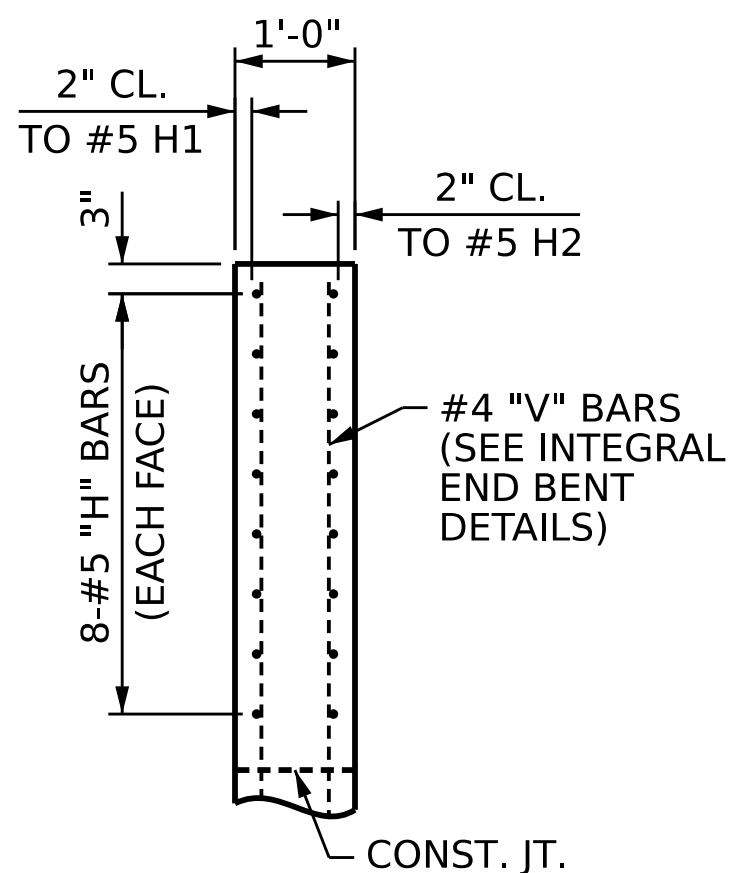
SECTION B-B



ELEVATION OF W1



ELEVATION OF W2



SECTION A-A

UPPER WINGS AT INTEGRAL END BENT 1

FOR LOWER WING REINFORCING STEEL AND DETAILS, SEE "INTEGRAL END BENT 1" SHEETS

PROJECT NO. **BR-0174**
PENDER COUNTY
STATION: **19+84.00 -L-**

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPANS DETAILS AT END BENT 1

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

TOTAL SHEETS: 33

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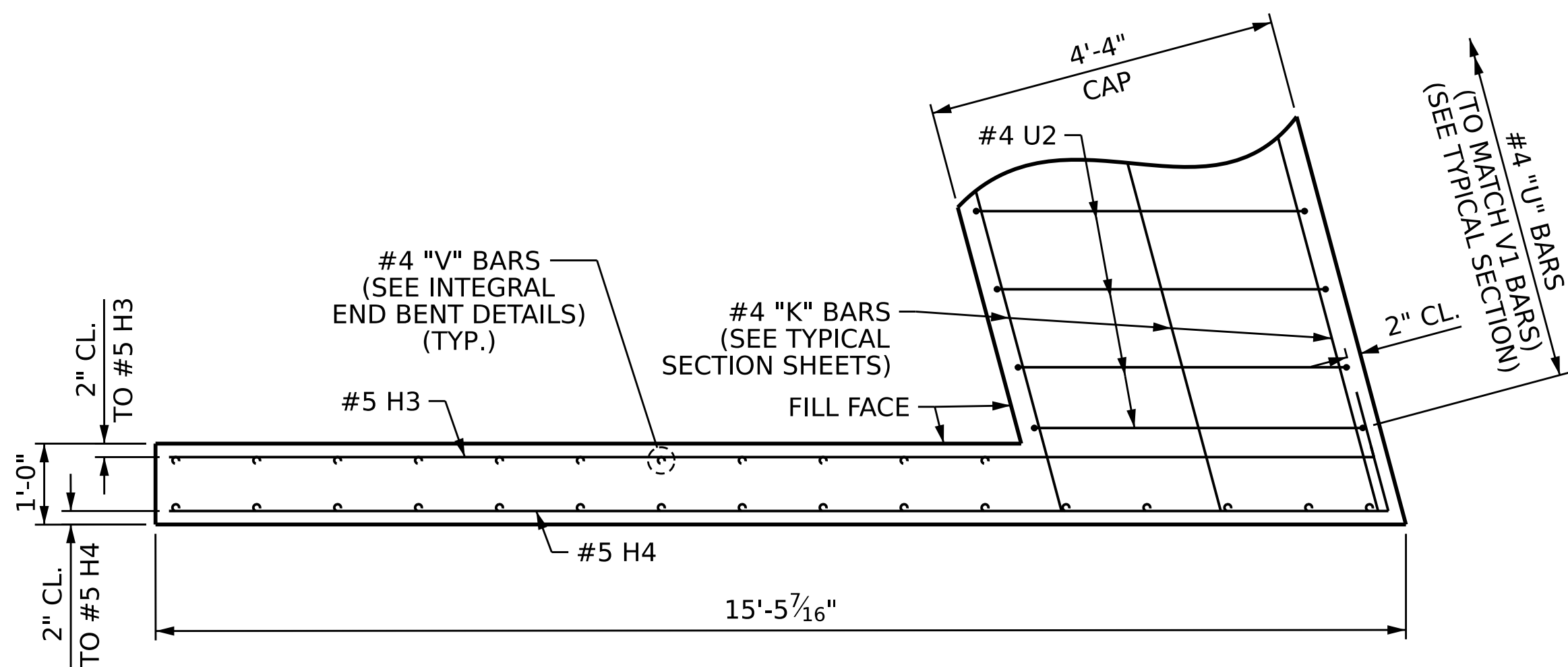
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NC COA No. F-1255

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DESIGN ENGINEER : CBC DATE : 3/25

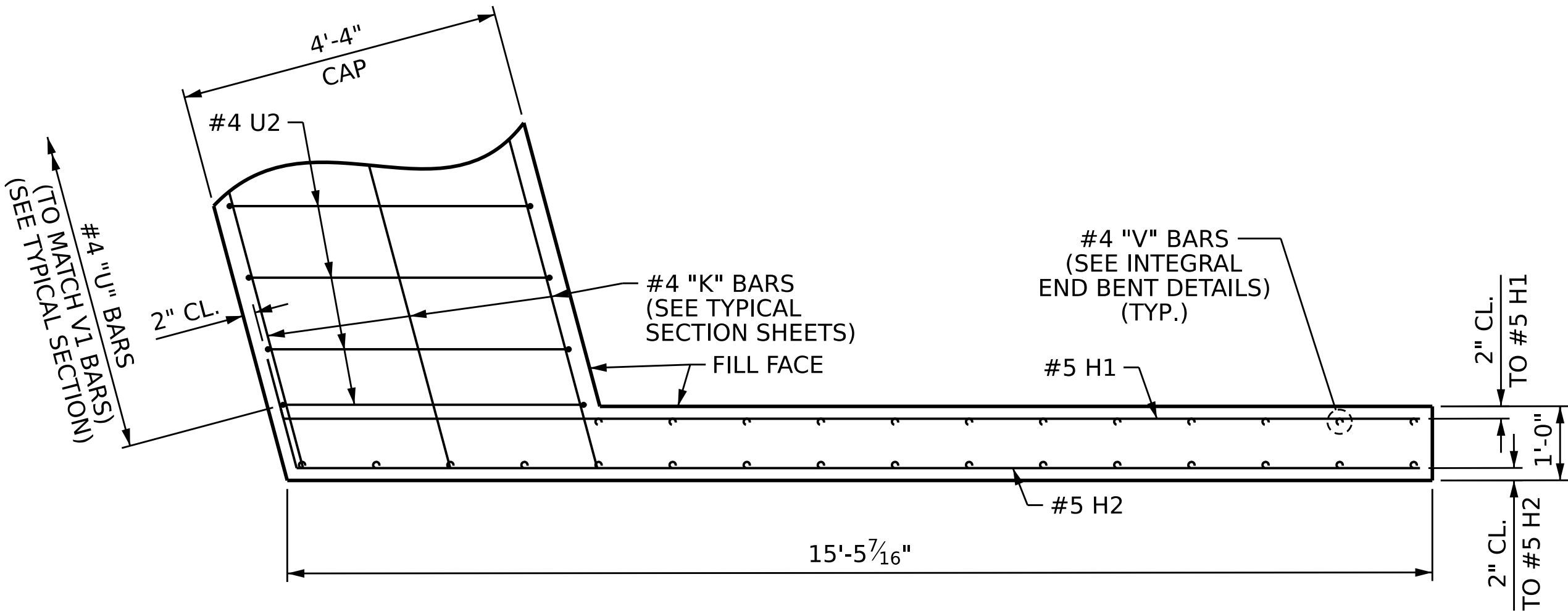
DWC. No.

NORTH CAROLINA
PROFESSIONAL
ENGINEER
SEAL
043143
CHRISTOPHER B. CORDELL

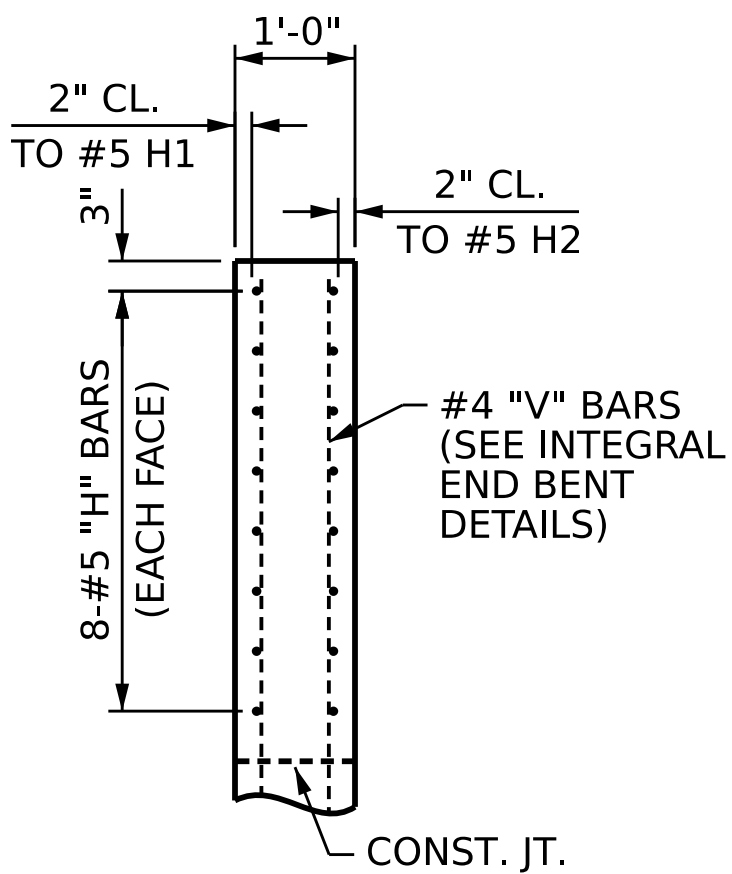
Signed by:
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7/1/2026



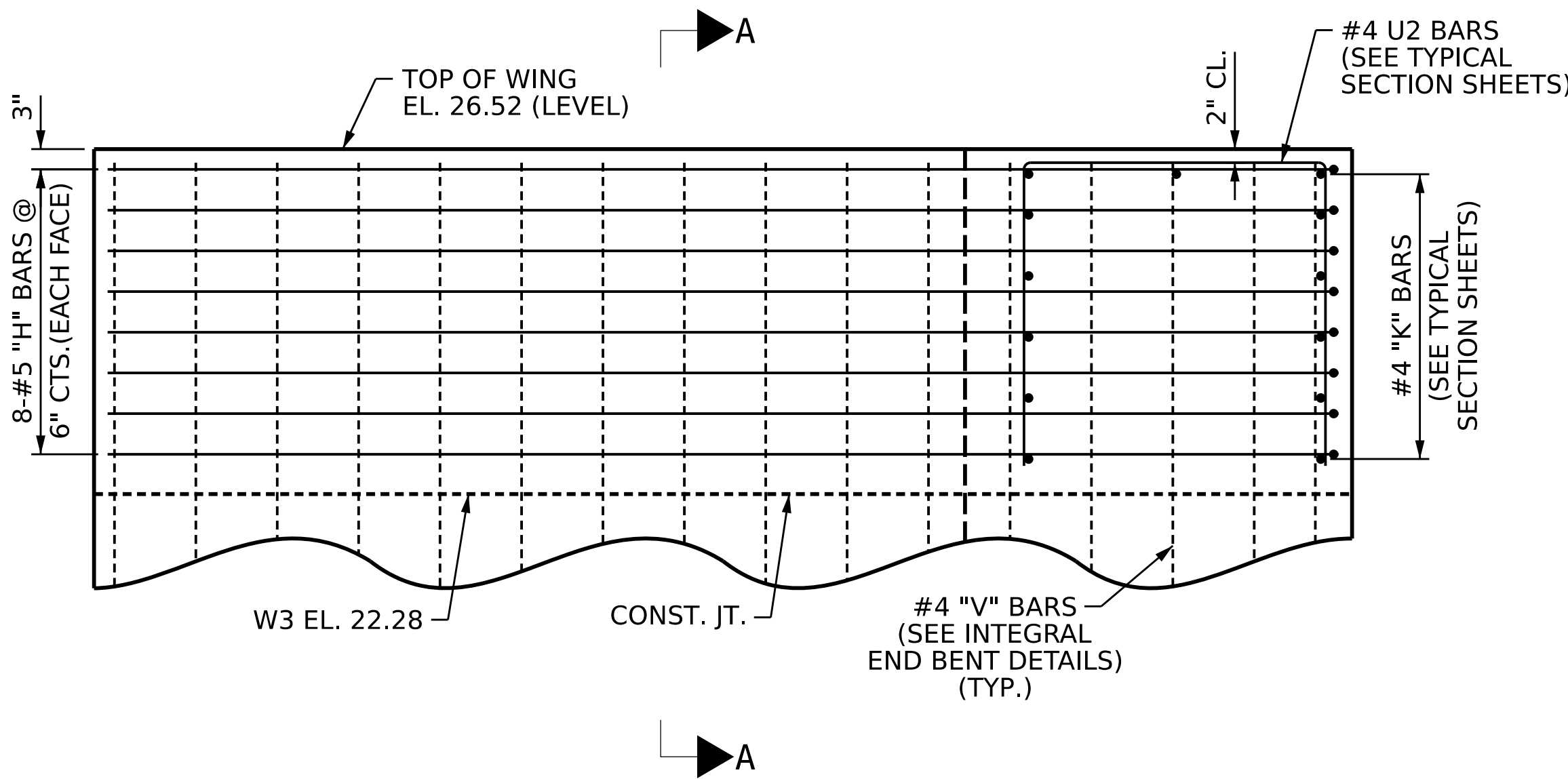
PLAN OF W3



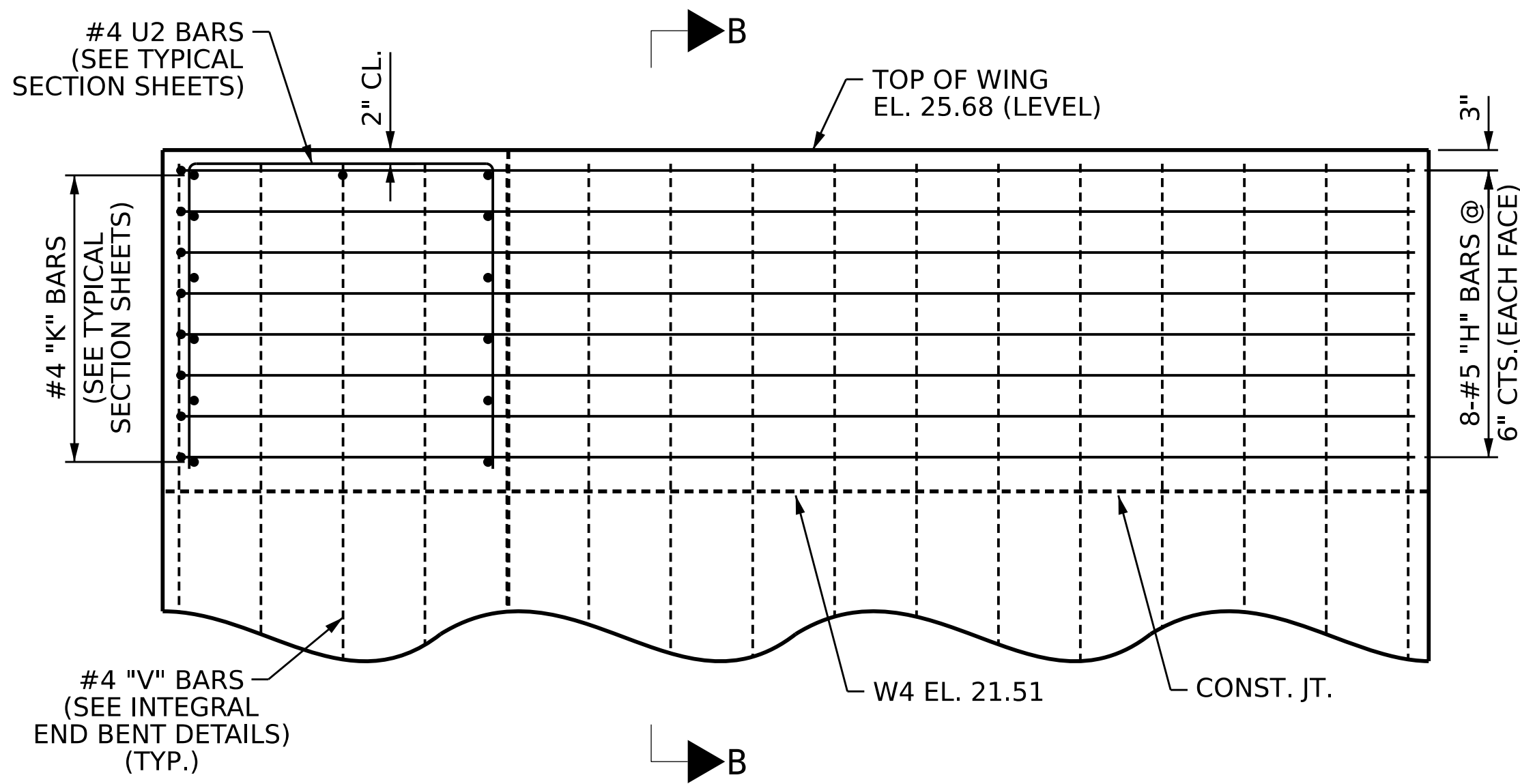
PLAN OF W4



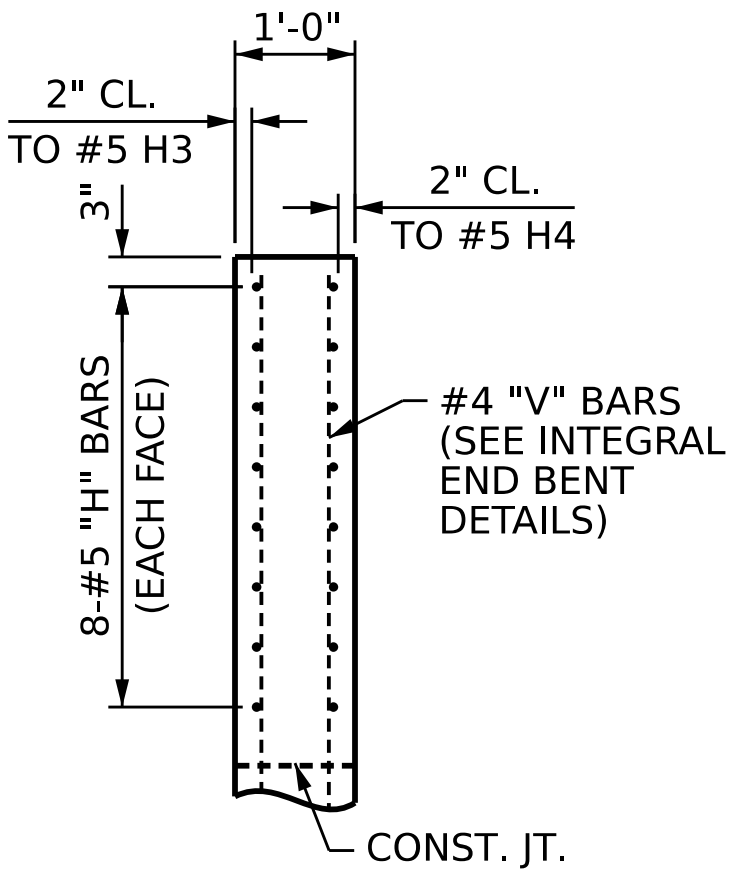
SECTION B-B



ELEVATION OF W3



ELEVATION OF W4



SECTION A-A

UPPER WINGS AT INTEGRAL END BENT 2

FOR LOWER WING REINFORCING STEEL AND DETAILS, SEE "INTEGRAL END BENT 2" SHEETS

PROJECT NO. **BR-0174**
PENDER COUNTY
STATION: **19+84.00 -L-**

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPANS
DETAILS AT
END BENT 2

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

TOTAL SHEETS: 33

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SIGNATURES COMPLETED

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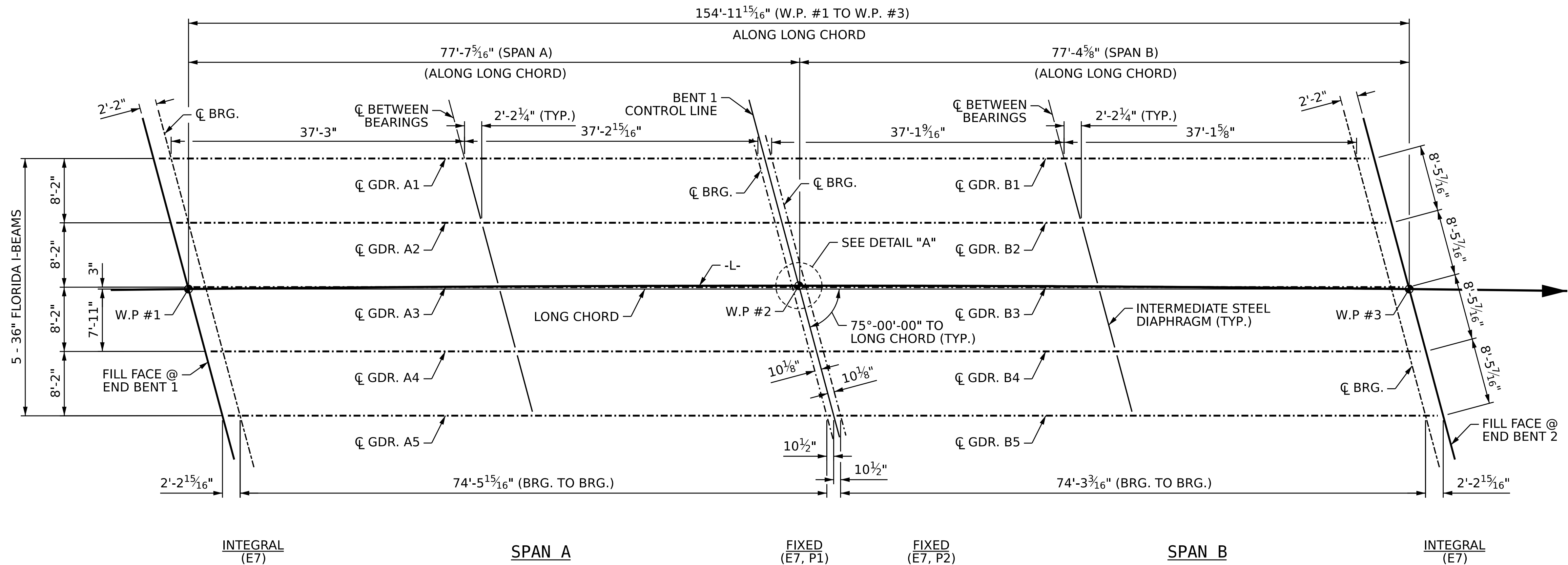
DRAWN BY : JJR DATE : 3/25
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DESIGN ENGINEER : CBC DATE : 3/25

DWC. No.

SEAL
043143
ENGINEER
CHRISTOPHER B. CORDELL

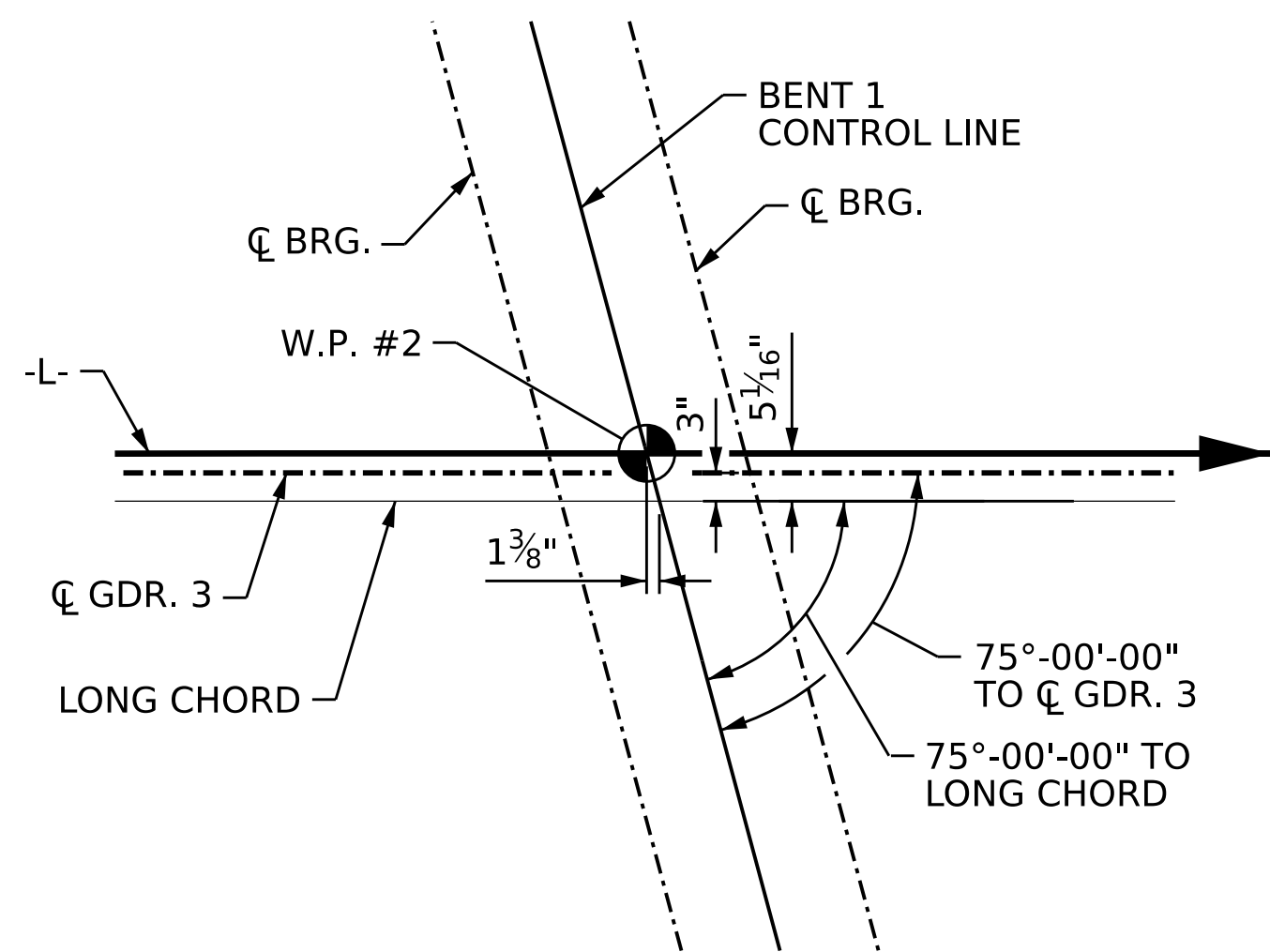
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ADAAC00FF29F485..

7/1/2026



FRAMING PLAN

ALL GIRDERS ARE PARALLEL TO BRIDGE LONG CHORD



DETAIL "A"

PROJECT NO. **BR-0174**

PENDER COUNTY

STATION: **19+84.00 -L-**

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE FRAMING PLAN

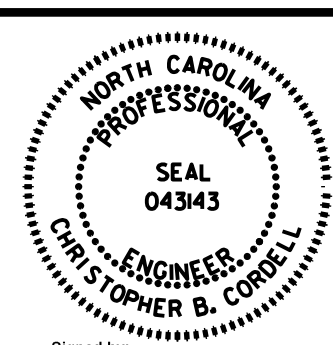
**CDM
Smith**

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DESIGN ENGINEER : CBC DATE : 3/25

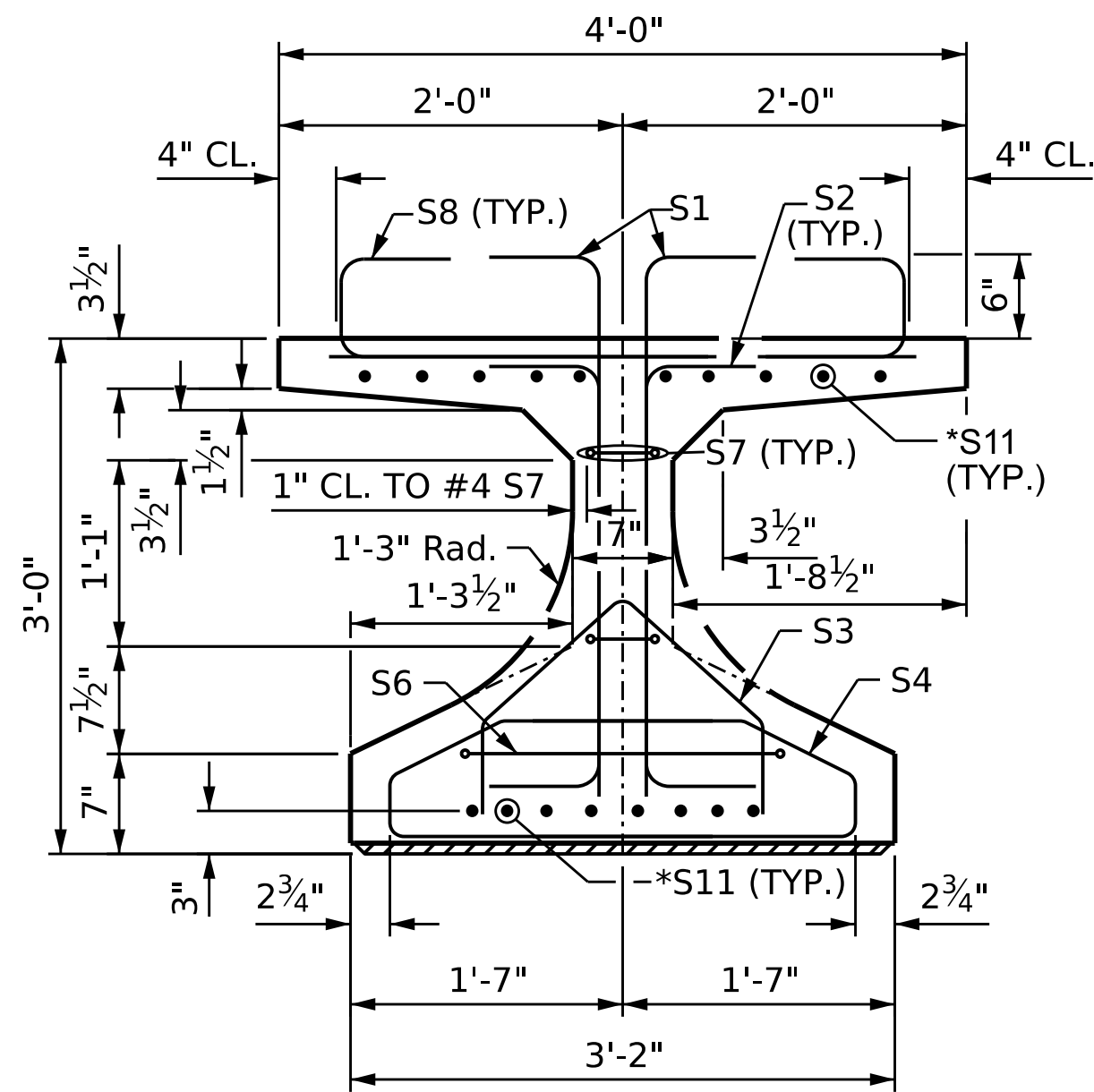
DWC. No.

DOCUMENT NOT CONSIDERED
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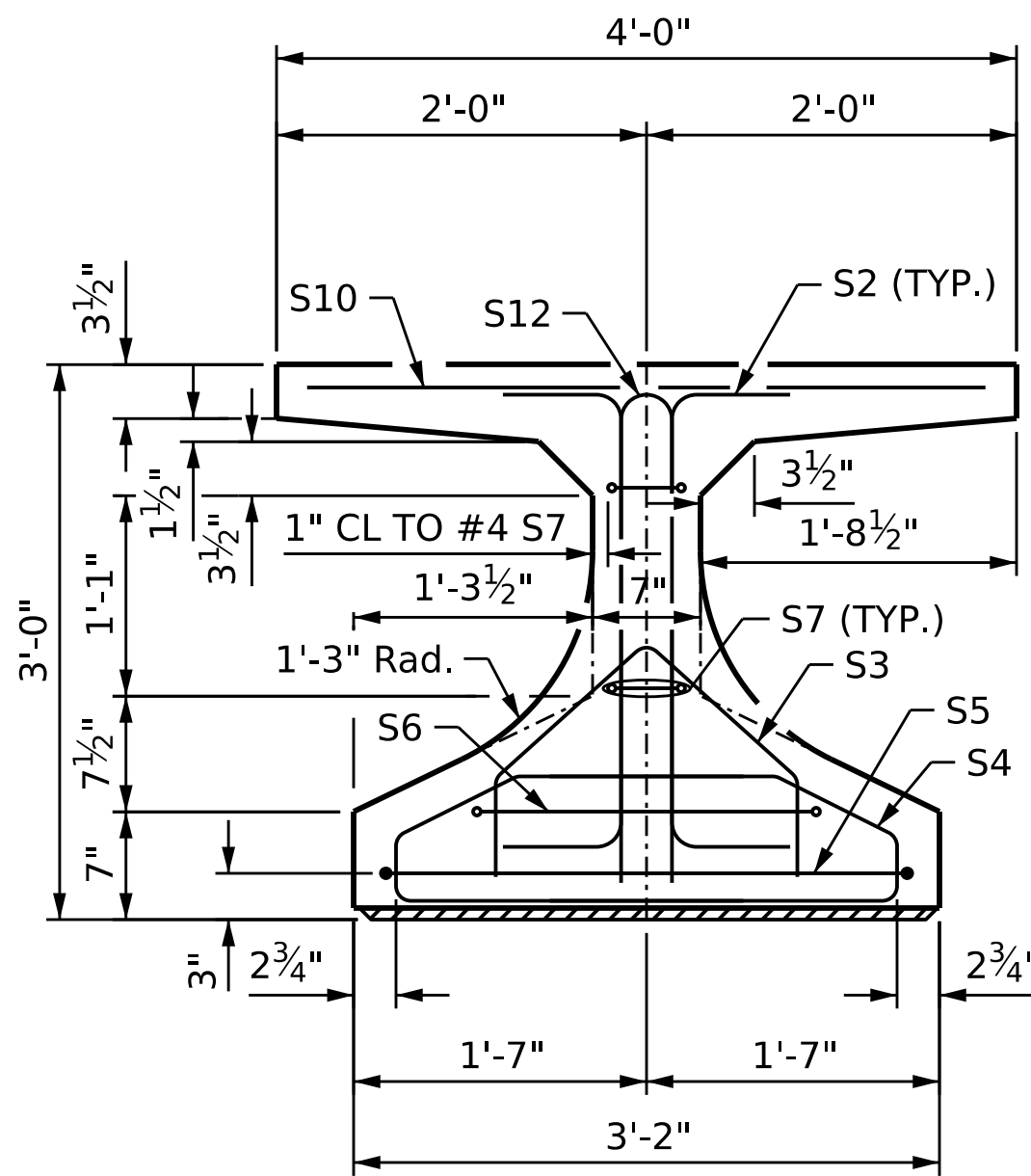
Signed by:
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7/1/2026

REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	
1			3		S-14
2			4		
TOTAL SHEETS					33

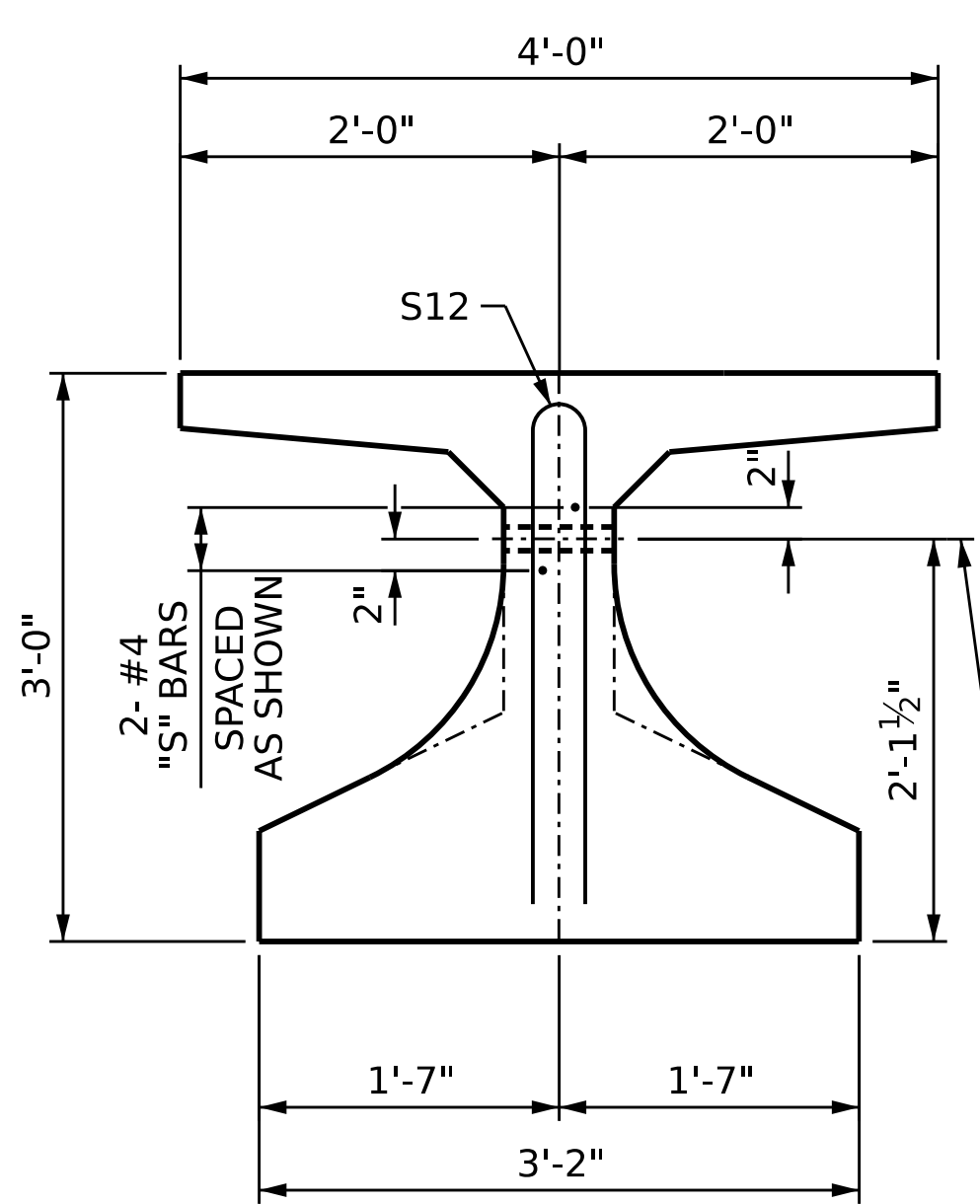


SECTION A-A

* FOR S11 BARS, SEE DETAIL "C" ON SHEET 3 OF 4

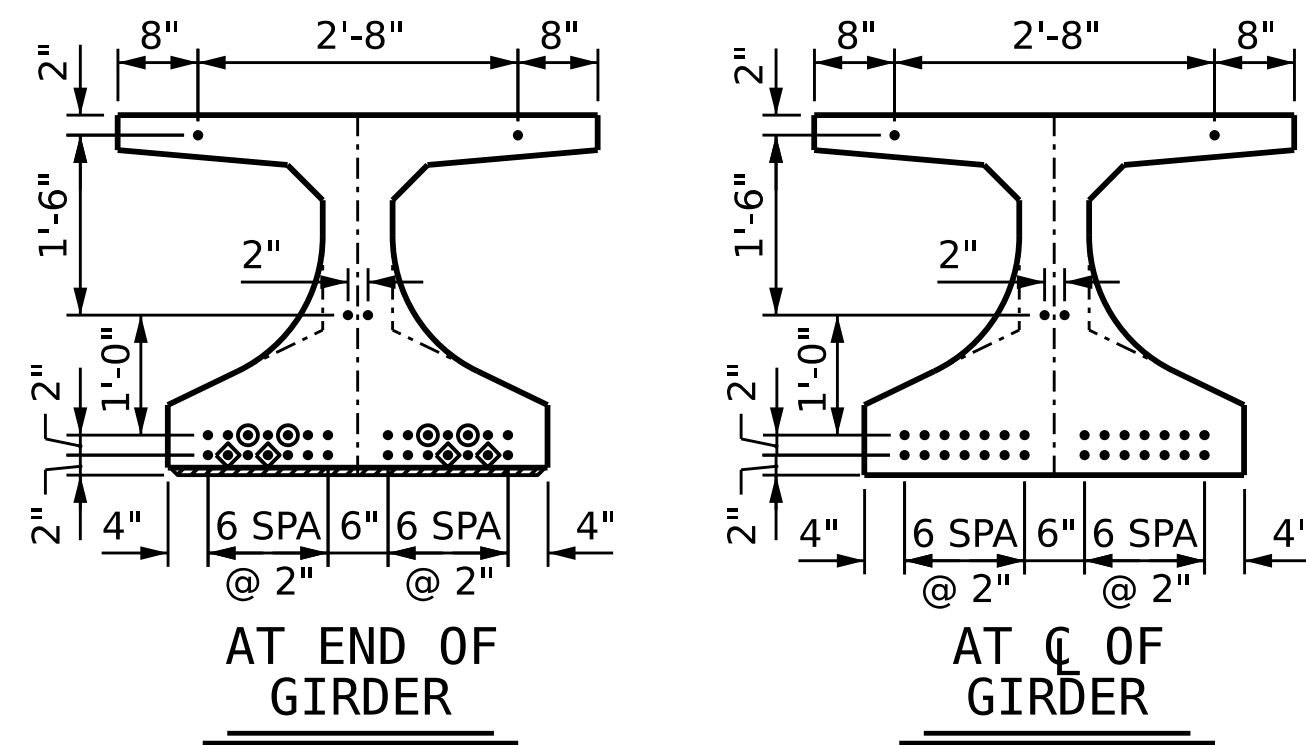


SECTION B-B



SECTION C-C

(S8, S9 AND S10 BARS NOT SHOWN)

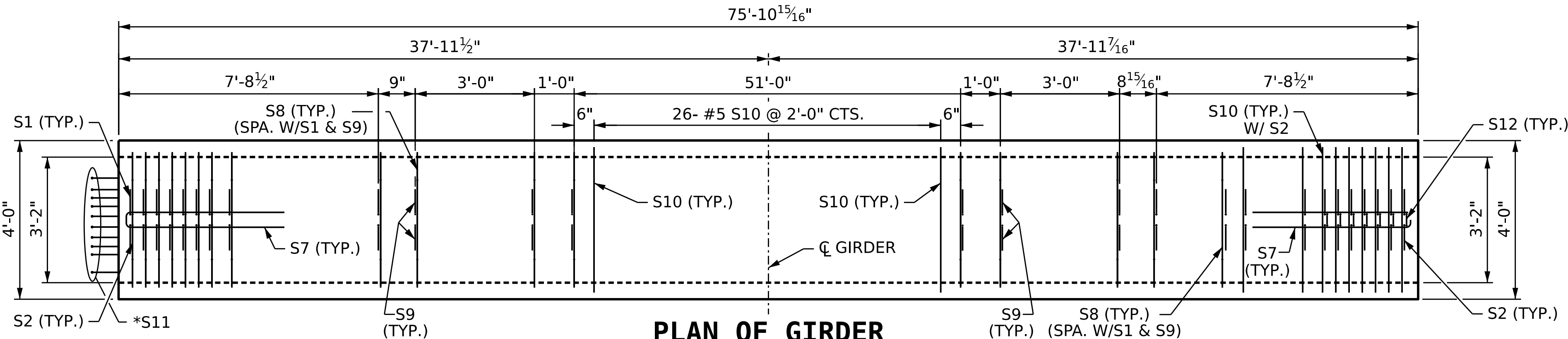


0.6" Ø LOW RELAXATION STRAND LAYOUT

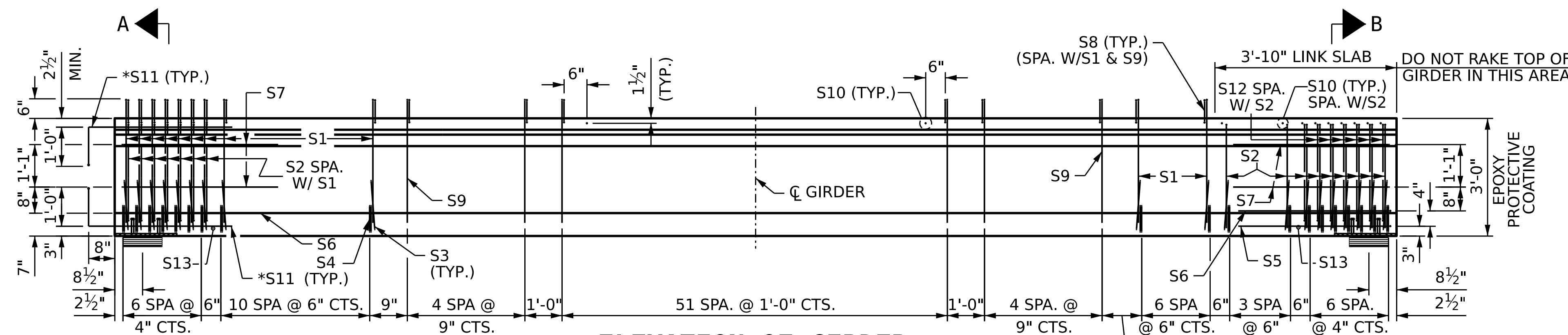
DEBONDING LEGEND

- FULLY BONDED STRANDS
- STRANDS DEBONED FOR 8'-0" FROM END OF GIRDER
- STRANDS DEBONED FOR 12'-0" FROM END OF GIRDER

*SEE NOTE ON SHEET 3 OF 4



PLAN OF GIRDER

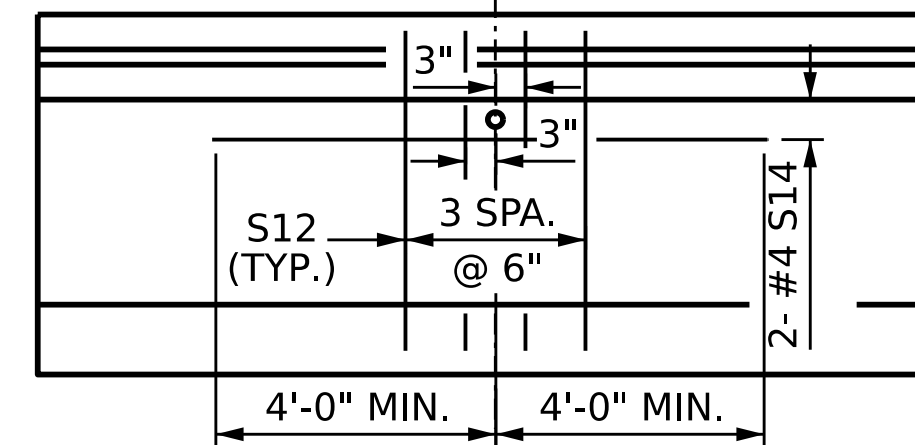


ELEVATION OF GIRDER

AT END BENT 1
INTEGRAL

AT BENT 1
LINK SLAB

1 1/2" Ø FORMED HOLES



PARTIAL ELEVATION

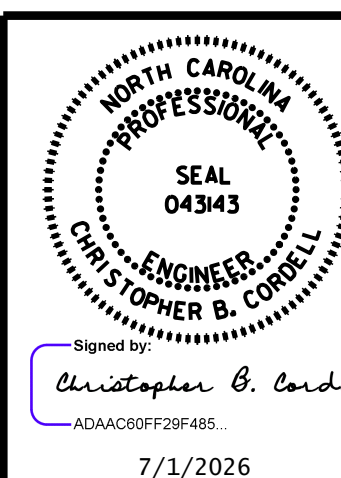
SHOWING INTERMEDIATE STEEL DIAPHRAGM
REINFORCING STEEL FOR GIRDER NOS. 1 THRU 5

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DOCUMENT NOT CONSIDERED
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SIGNATURES COMPLETED

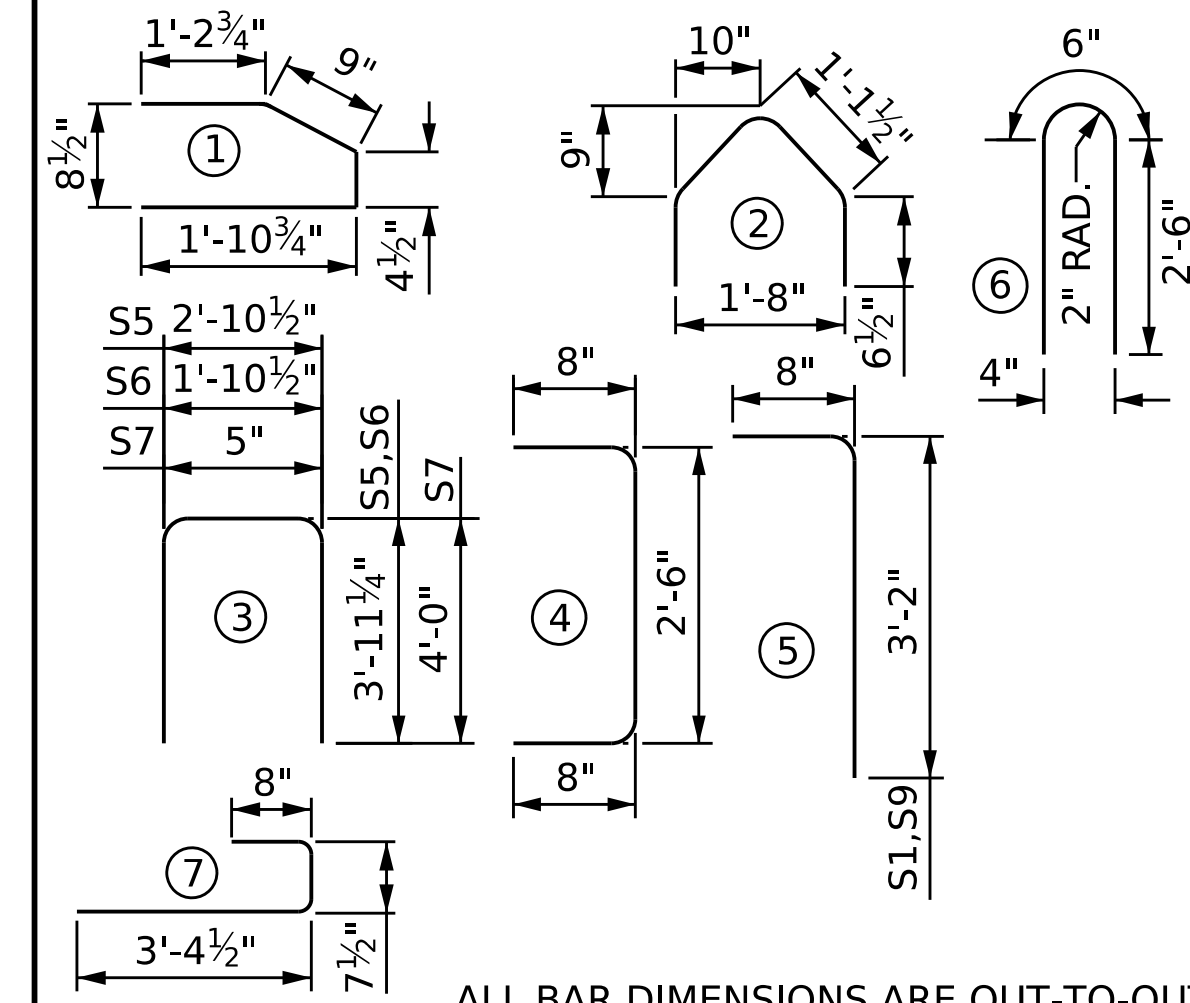
DWG. No.



7/1/2026

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 GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	50	#5	5	3'-10"	200
S2	36	#5	4	3'-10"	144
S3	36	#3	2	3'-4"	45
S4	72	#3	1	4'-3"	115
S5	1	#5	3	10'-9"	11
S6	2	#5	3	9'-9"	20
S7	4	#4	3	8'-5"	22
S8	174	#5	7	4'-8"	847
S9	124	#4	5	3'-10"	318
S10	37	#5	STR	3'-8"	142
* S11	20	#6	STR	4'-8"	140
S12	10	#5	6	5'-6"	57
S13	2	#3	STR	2'-10"	2
S14	2	#4	STR	8'-0"	11
S14	2	#4	STR	8'-0"	11

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	7500 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
EXT. GDR.	2,074	15.8	32
INT. GDR.	2,074	15.8	32
	GIRDERS REQUIRED		
	NUMBER	LENGTH	TOTAL LENGTH
	5	75'-10 ¹⁵ / ₁₆ "	379'-6 ¹¹ / ₁₆ "

PROJECT NO. **BR-0174**

PENDER COUNTY

STATION: **19+84.00 -L-**

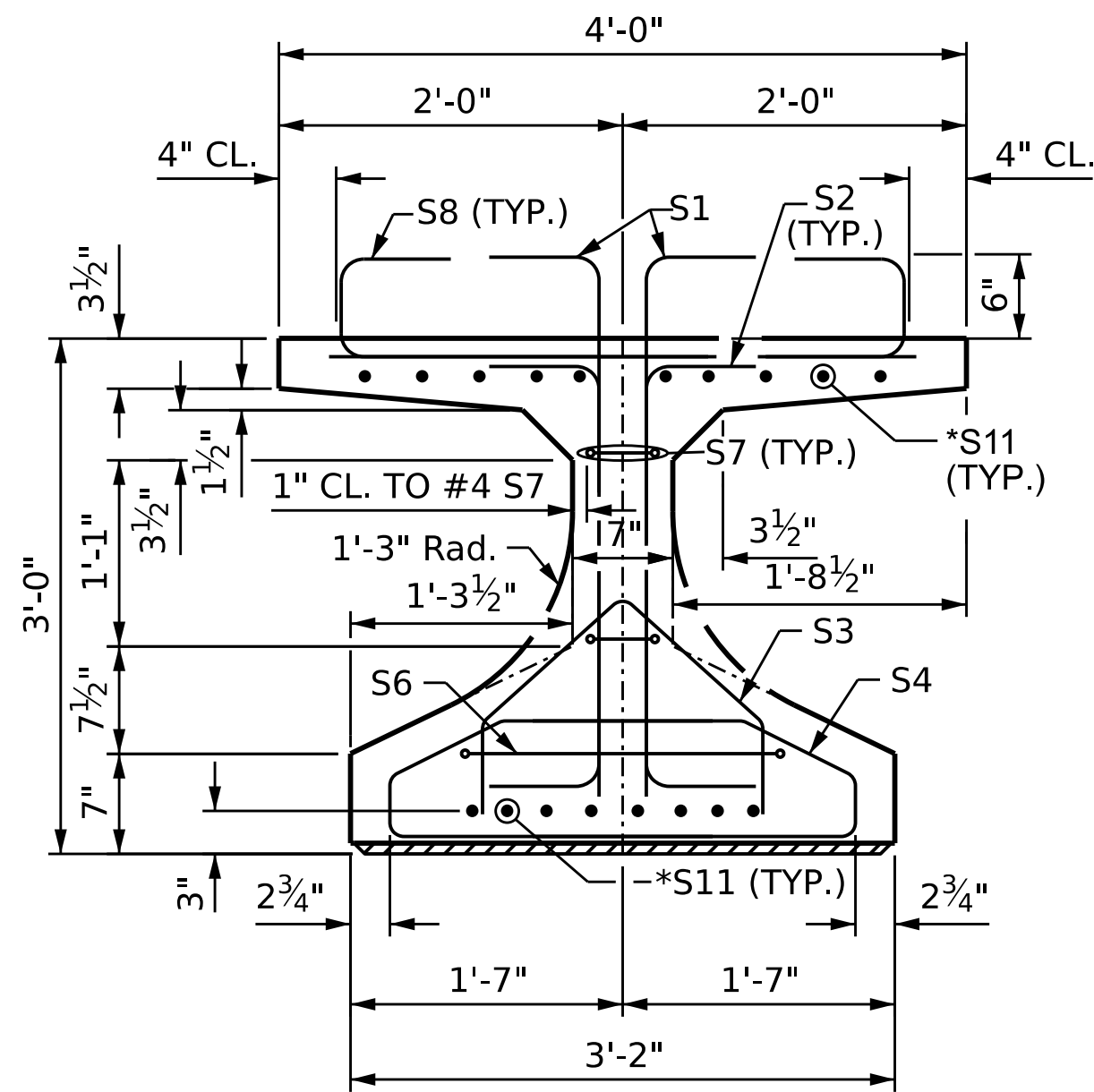
SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

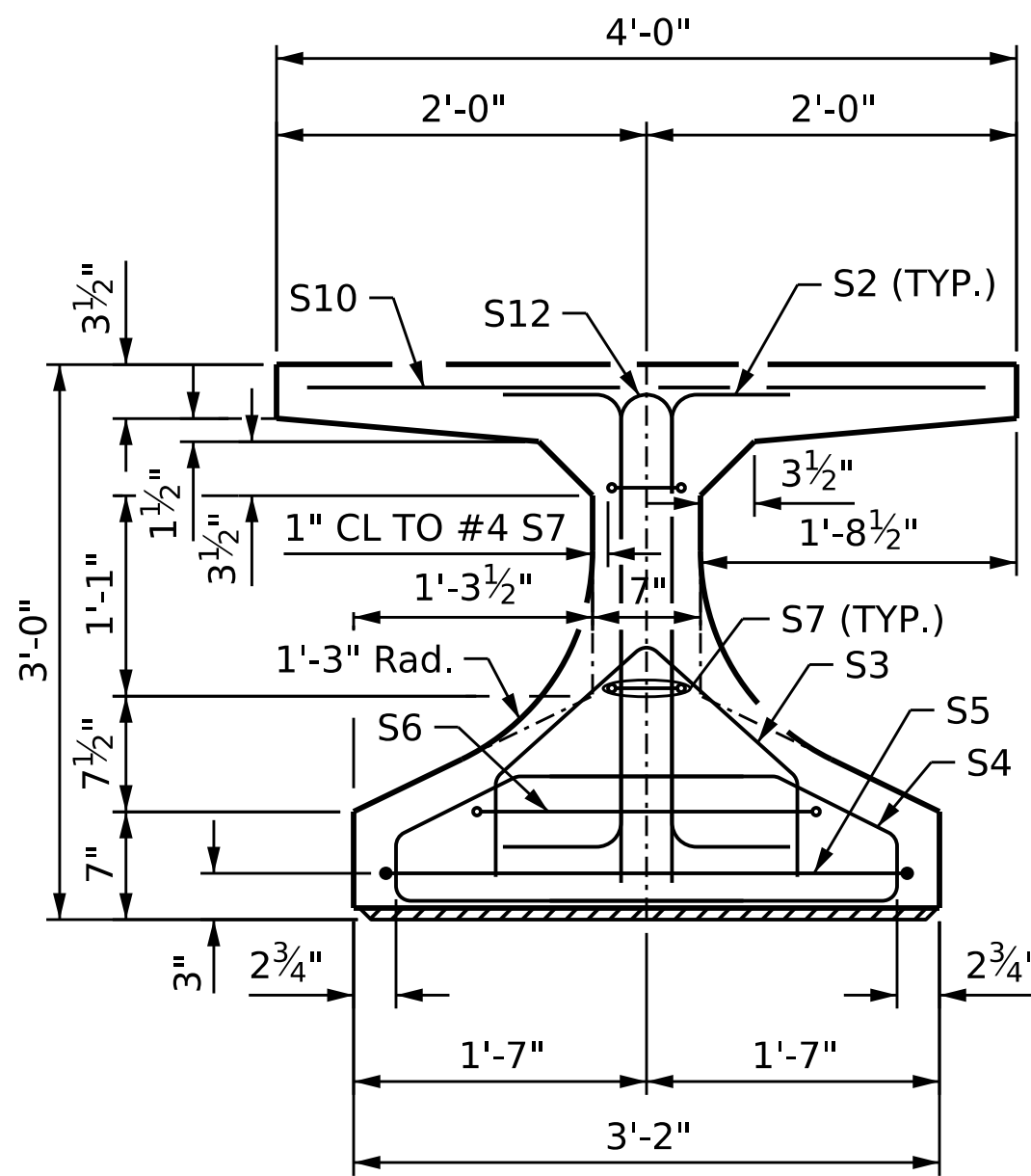
**36" FIB PRESTRESSED
CONCRETE GIRDER
CONTINUOUS FOR
LIVE LOAD (SPAN A)**

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

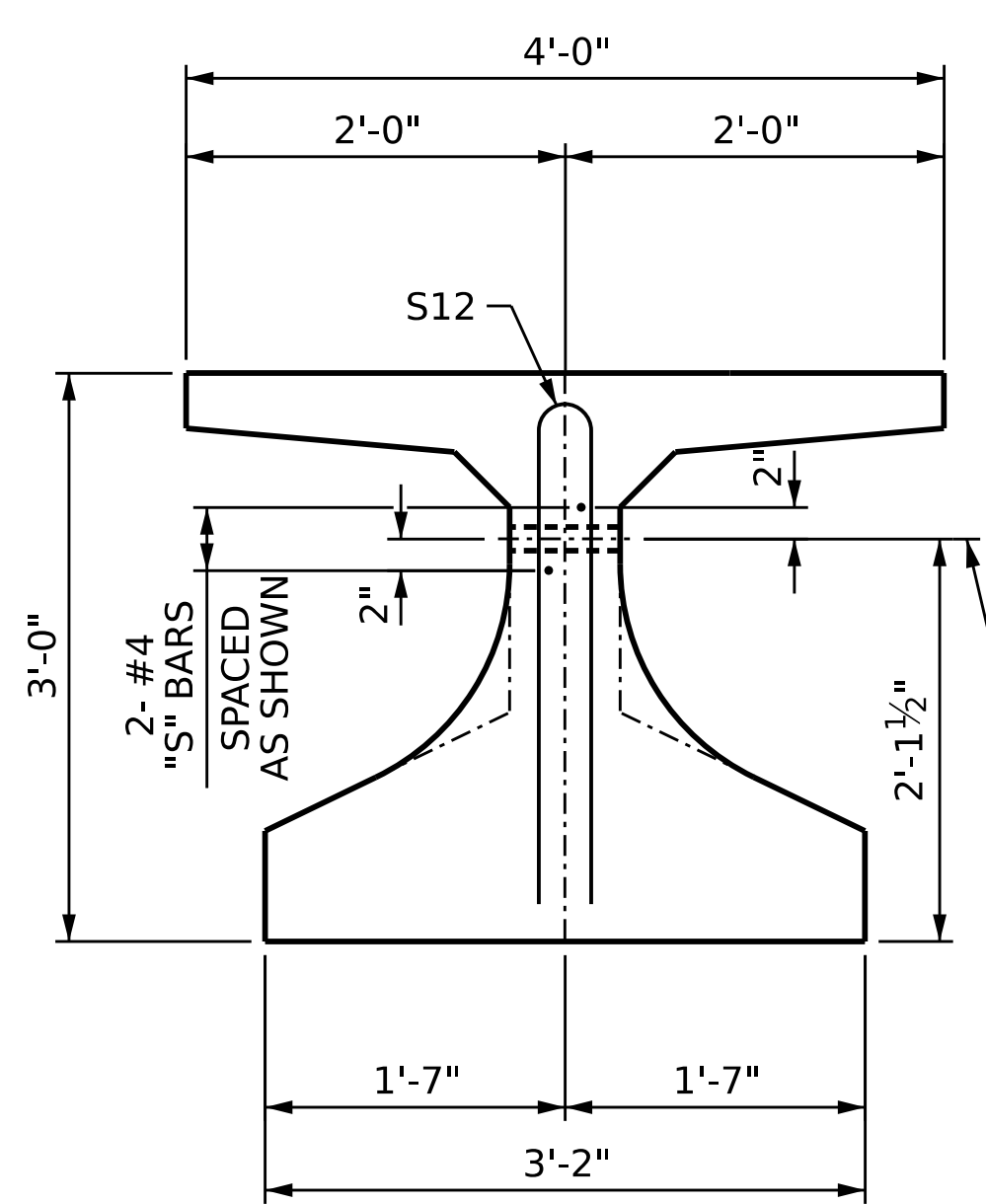


SECTION A-A

* FOR S11 BARS. SEE DETAIL "C" ON SHEET 3 OF 4

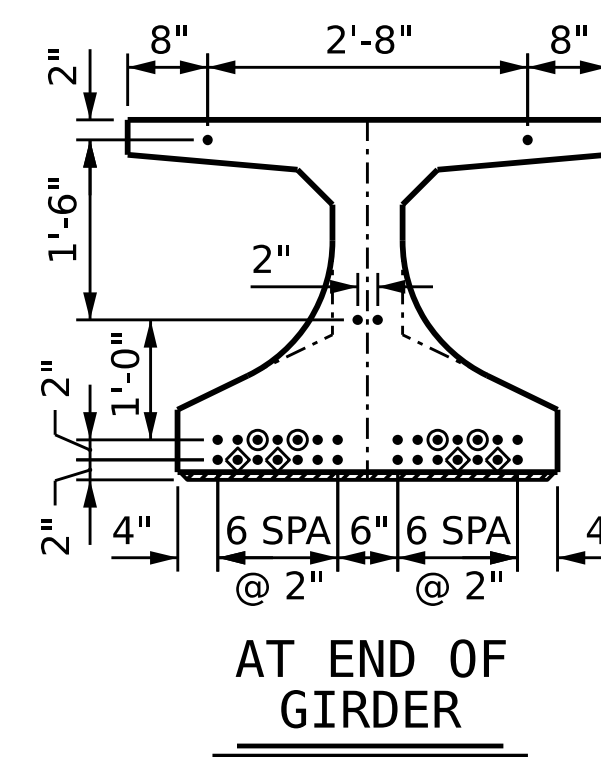


SECTION B-B

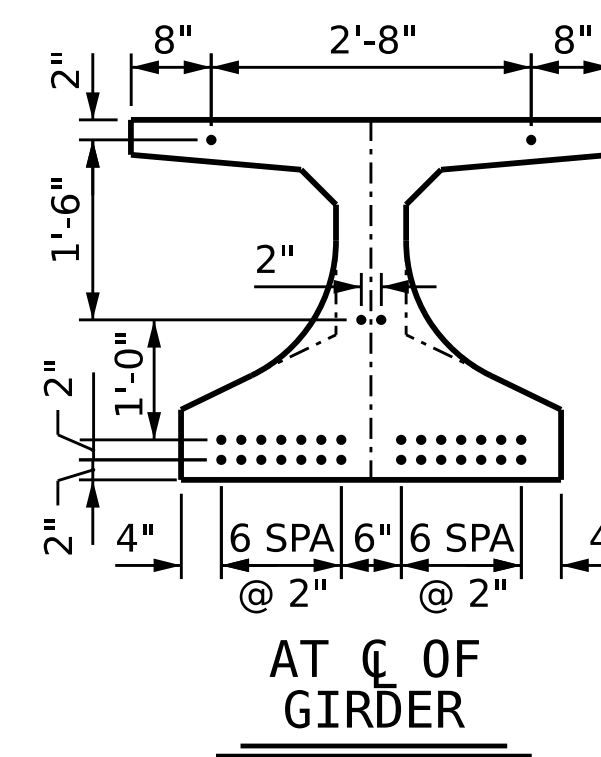


SECTION C-C

(S8, S9 AND S10 BARS NOT SHOWN)



0.6" Ø LOW RELAXATION STRAND LAYOUT



DEBONDING LEGEND

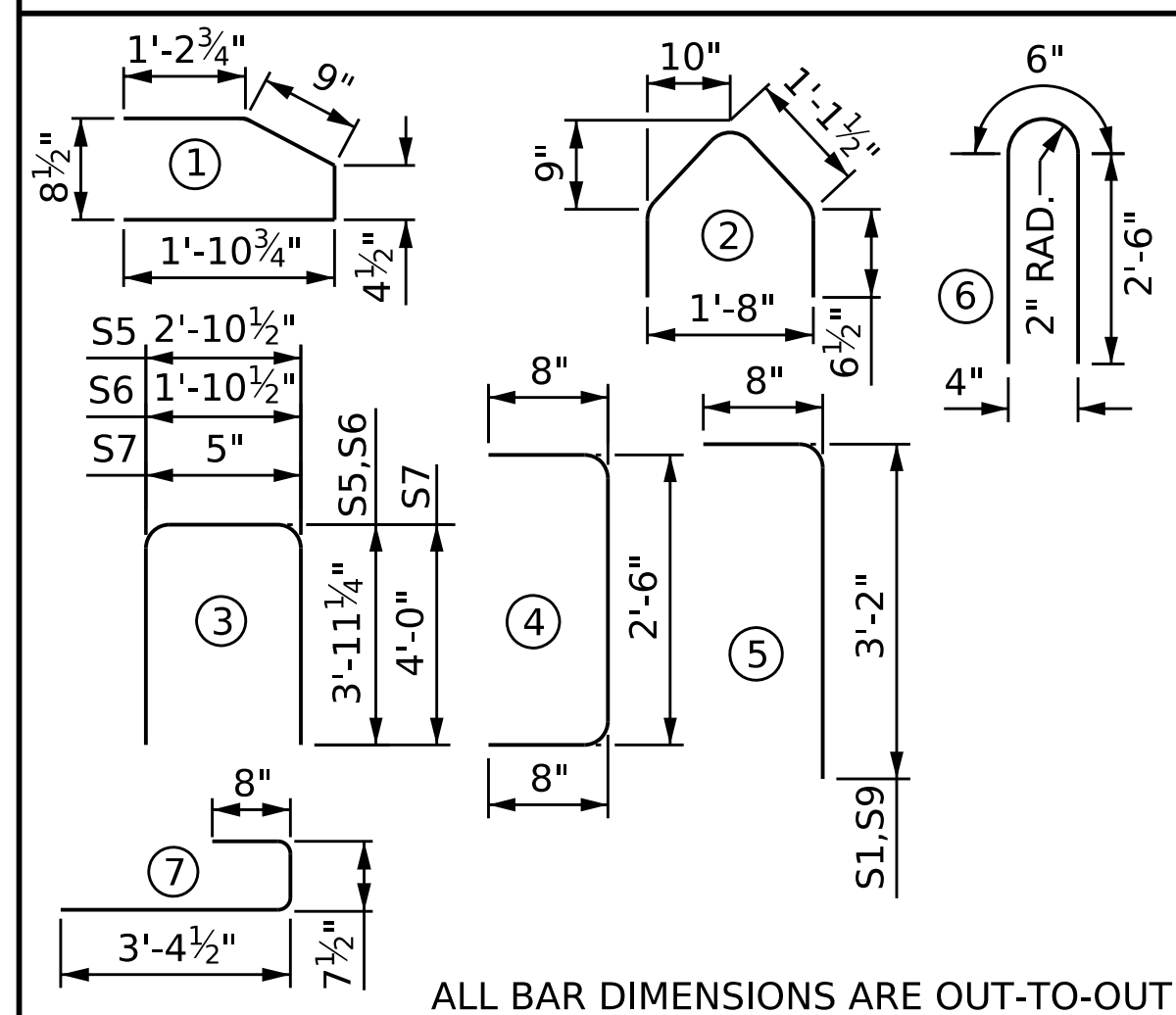
- FULLY BONDED STRANDS
- STRANDS DEBONED FOR 8'-0" FROM END OF GIRDER
- STRANDS DEBONED FOR 12'-0" FROM END OF GIRDER

* SEE NOTE ON SHEET 3 OF 4

EXT. GDR.	S14
INT. GDR.	S14

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 GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	50	#5	5	3'-10"	200
S2	36	#5	4	3'-10"	144
S3	36	#3	2	3'-4"	45
S4	72	#3	1	4'-3"	115
S5	1	#5	3	10'-9"	11
S6	2	#5	3	9'-9"	20
S7	4	#4	3	8'-5"	22
S8	174	#5	7	4'-8"	847
S9	124	#4	5	3'-10"	318
S10	37	#5	STR	3'-8"	142
* S11	20	#6	STR	4'-8"	140
S12	10	#5	6	5'-6"	57
S13	2	#3	STR	2'-10"	2
S14	2	#4	STR	8'-0"	11
S14	2	#4	STR	8'-0"	11

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER

REINFORCING STEEL	7500 PSI CONCRETE	0.6" Ø L.R. STRANDS
LB.	C.Y.	No.
EXT. GDR.	2,074	15.7
INT. GDR.	2,074	15.7
GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
5	75'-8 ³ / ₁₆ "	378'-4 ¹ / ₁₆ "

PROJECT NO. **BR-0174**

PENDER COUNTY

STATION: **19+84.00 -L-**

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

36" FIB PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD (SPAN B)

REVISIONS				SHEET NO.
NO.	BY:	DATE:	DATE:	
1				S-16
2				

CDM Smith
CDM SMITH Inc.
4600 Park Road, Suite 240
Charlotte, NC 28209-3730
NC COA No. F-1255

DRAWN BY : JJR DATE : 3/25
CHECKED BY : CBC DATE : 3/25
DESIGN ENGINEER : CBC DATE : 3/25

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DWG. No.

NORTH CAROLINA PROFESSIONAL SEAL
043143
ENGINEER
CHRISTOPHER B. CORDELL
Signed by: Christopher B. Cordell
ADAAC00F2BF485
7/1/2026

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

SPAN A

0.6" ø LOW RELAXATION	GIRDERS 1 & 5																				
TWENTIETH POINTS	BRG	0.50	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.038	0.076	0.106	0.136	0.156	0.177	0.188	0.200	0.204	0.207	0.204	0.200	0.188	0.177	0.156	0.136	0.106	0.076	0.038	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.015	0.030	0.045	0.060	0.072	0.083	0.091	0.098	0.100	0.103	0.100	0.098	0.091	0.083	0.072	0.060	0.045	0.030	0.015	0
FINAL CAMBER ↑	0	¼"	⅝"	¾"	15⁄16"	1"	1⅛"	1⅜"	1¼"	1¼"	1¼"	1¼"	1¼"	1⅜"	1⅝"	1"	15⁄16"	¾"	⅝"	¼"	0

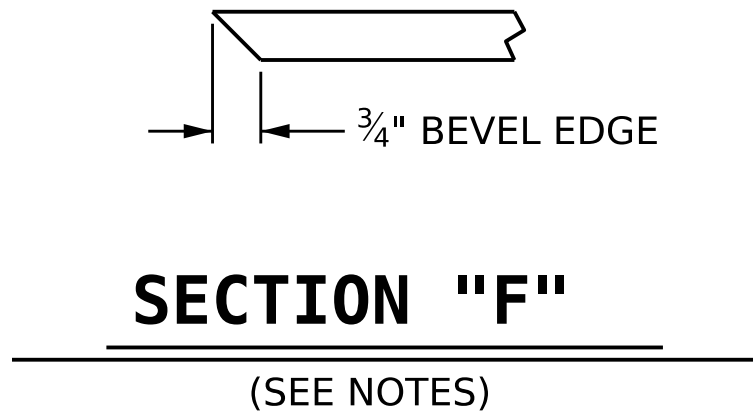
0.6" ø LOW RELAXATION	GIRDERS 2 THRU 4																				
TWENTIETH POINTS	BRG	0.50	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.038	0.076	0.106	0.136	0.156	0.177	0.188	0.200	0.204	0.207	0.204	0.200	0.188	0.177	0.156	0.136	0.106	0.076	0.038	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.016	0.032	0.048	0.063	0.076	0.088	0.096	0.103	0.106	0.109	0.106	0.103	0.096	0.088	0.076	0.063	0.048	0.032	0.016	0
FINAL CAMBER ↑	0	¼"	½"	11⁄16"	7⁄8"	1"	1⅛"	1⅝"	1⅝"	1⅜"	1⅜"	1⅜"	1⅜"	1⅝"	1⅞"	1"	7⁄8"	11⁄16"	½"	¼"	0

SPAN B

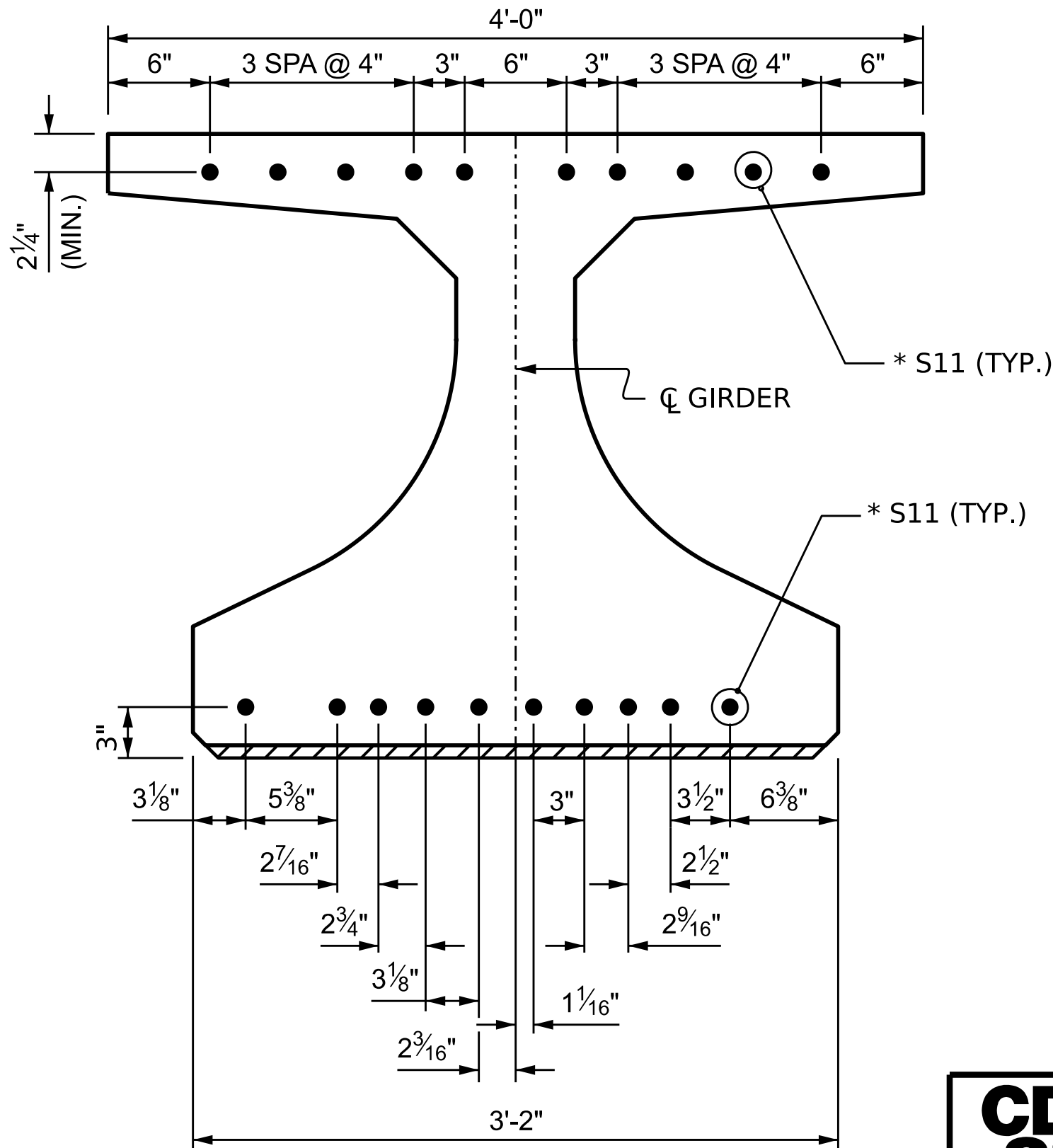
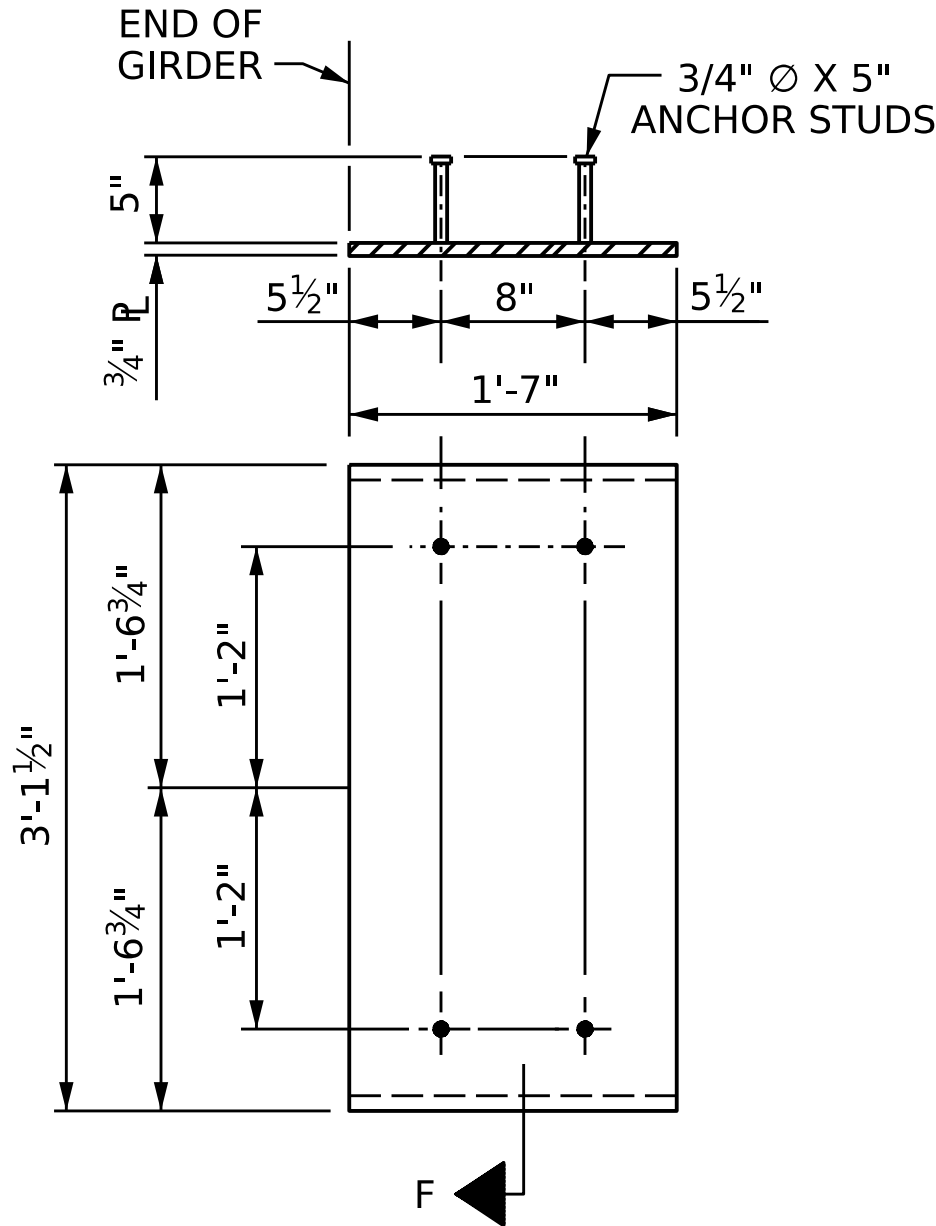
0.6" ø LOW RELAXATION	GIRDERS 1 & 5																				
TWENTIETH POINTS	BRG	0.50	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.038	0.076	0.106	0.136	0.156	0.177	0.188	0.200	0.204	0.207	0.204	0.200	0.188	0.177	0.156	0.136	0.106	0.076	0.038	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.015	0.030	0.045	0.060	0.072	0.084	0.091	0.098	0.101	0.103	0.101	0.098	0.091	0.084	0.072	0.060	0.045	0.030	0.015	0
FINAL CAMBER ↑	0	¼"	⅝"	¾"	15⁄16"	1"	1⅛"	1⅜"	1⅜"	1¼"	1¼"	1¼"	1⅜"	1⅜"	1⅝"	1"	15⁄16"	¾"	⅝"	¼"	0

0.6" ø LOW RELAXATION	GIRDERS 2 THRU 4																				
TWENTIETH POINTS	BRG	0.50	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.038	0.076	0.106	0.136	0.156	0.177	0.188	0.200	0.204	0.207	0.204	0.200	0.188	0.177	0.156	0.136	0.106	0.076	0.038	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.016	0.032	0.047	0.063	0.075	0.087	0.095	0.103	0.105	0.108	0.105	0.103	0.095	0.087	0.075	0.063	0.047	0.032	0.016	0
FINAL CAMBER ↑	0	¼"	⅝"	11⁄16"	7⁄8"	1"	1⅛"	1⅝"	1⅜"	1⅜"	1⅜"	1⅜"	1⅜"	1⅝"	1⅞"	1"	7⁄8"	11⁄16"	⅝"	¼"	0

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



EMBEDDED PLATE "B-1" DETAILS
FOR FLORIDA I BEAM
(2 REQ'D PER GIRDER)



DETAIL "C"
(FLORIDA I BEAM)

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SIGNATURES COMPLETED

CDM Smith

CDM SMITH Inc.
4600 Park Road, Suite 240
Charlotte, NC 28209-3730
NC COA No. F-1255

DRAWN BY : JJR
CHECKED BY : CBC
DESIGN ENGINEER : CBC

DATE : 3/25
DATE : 3/25
DATE : 3/25

DWG. No.

NORTH CAROLINA
PROFESSIONAL
SEAL
043143
ENGINEER
CHRISTOPHER B. CORDELL

Signed by:
Christopher B. Cordell
ADAAC80FF28F485...
7/1/2026

PROJECT NO. **BR-0174**
PENDER COUNTY
STATION: **19+84.00 -L-**
SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
**36" FIB PRESTRESSED
CONCRETE GIRDER
CONTINUOUS FOR
LIVE LOAD DETAILS**

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

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 ANGLE 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 ¼ TURN.

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

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

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

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

FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST ¼" 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.

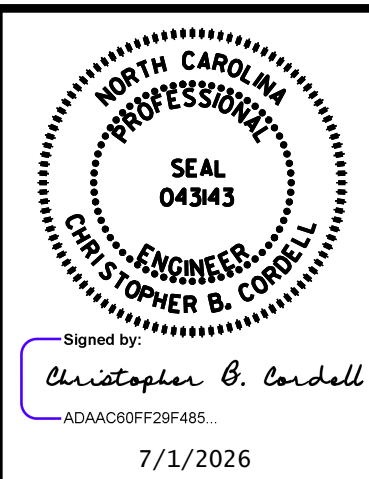
TABLE

GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
36" FIB	MC 6 x 18	10½"	2'-1½"	4"

PROJECT NO. **BR-0174**
PENDER COUNTY
STATION: **19+84.00 -L-**

SHEET 4 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					SHEET NO.	
STANDARD INTERMEDIATE STEEL DIAPHRAGMS FOR 36" FIB					S-18	
REVISIONS					TOTAL SHEETS	
NO.	BY:	DATE:	NO.	BY:	DATE:	33
1			3			
2			4			



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CDM Smith

CDM SMITH Inc.
4600 Park Road, Suite 240
Charlotte, NC 28209-3730
NC COA No. F-1255

DRAWN BY : JJR
CHECKED BY : CBC
DESIGN ENGINEER : CBC

DATE : 3/25
DATE : 3/25
DATE : 3/25

DWC. No.

NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF ½ TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

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

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

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

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

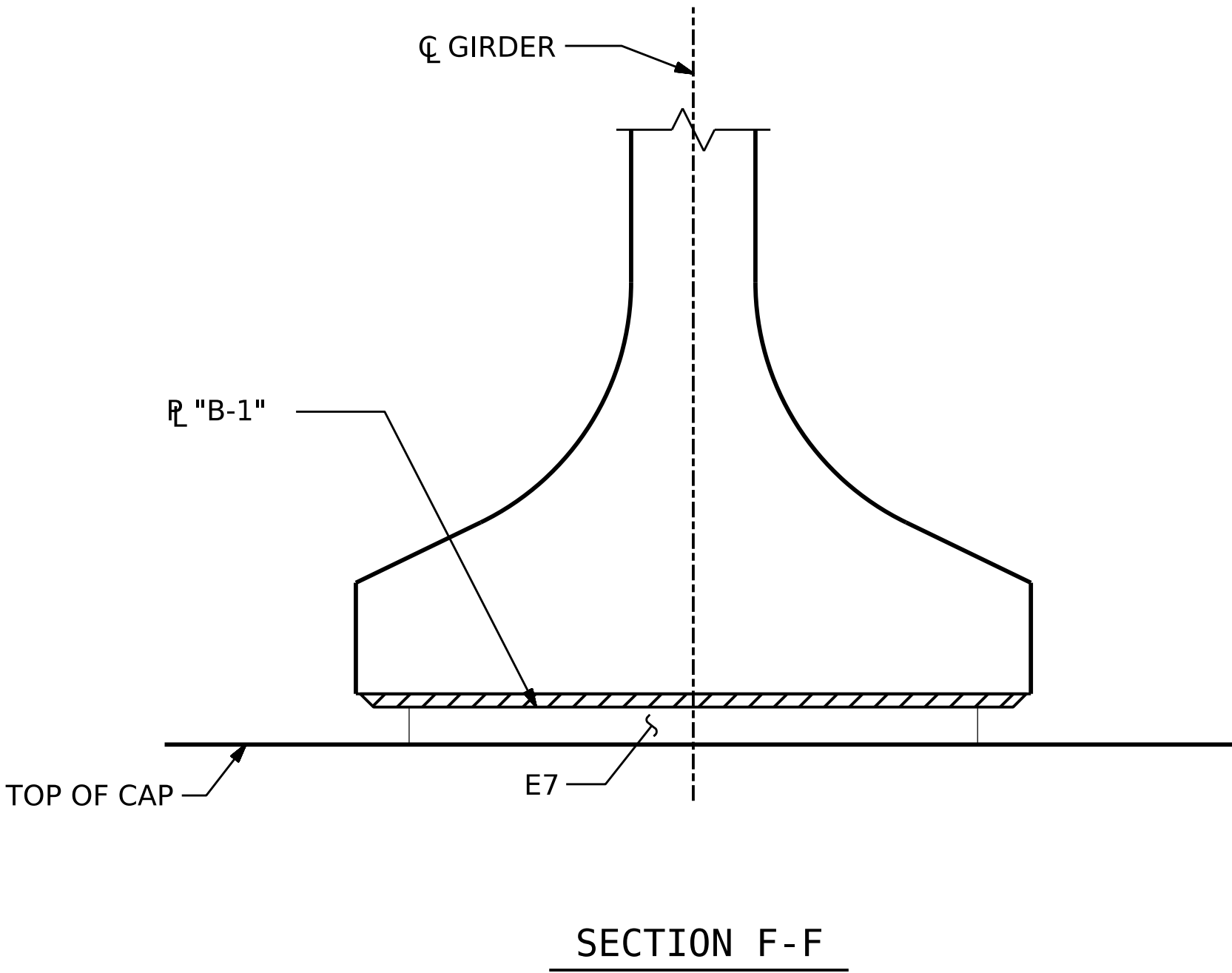
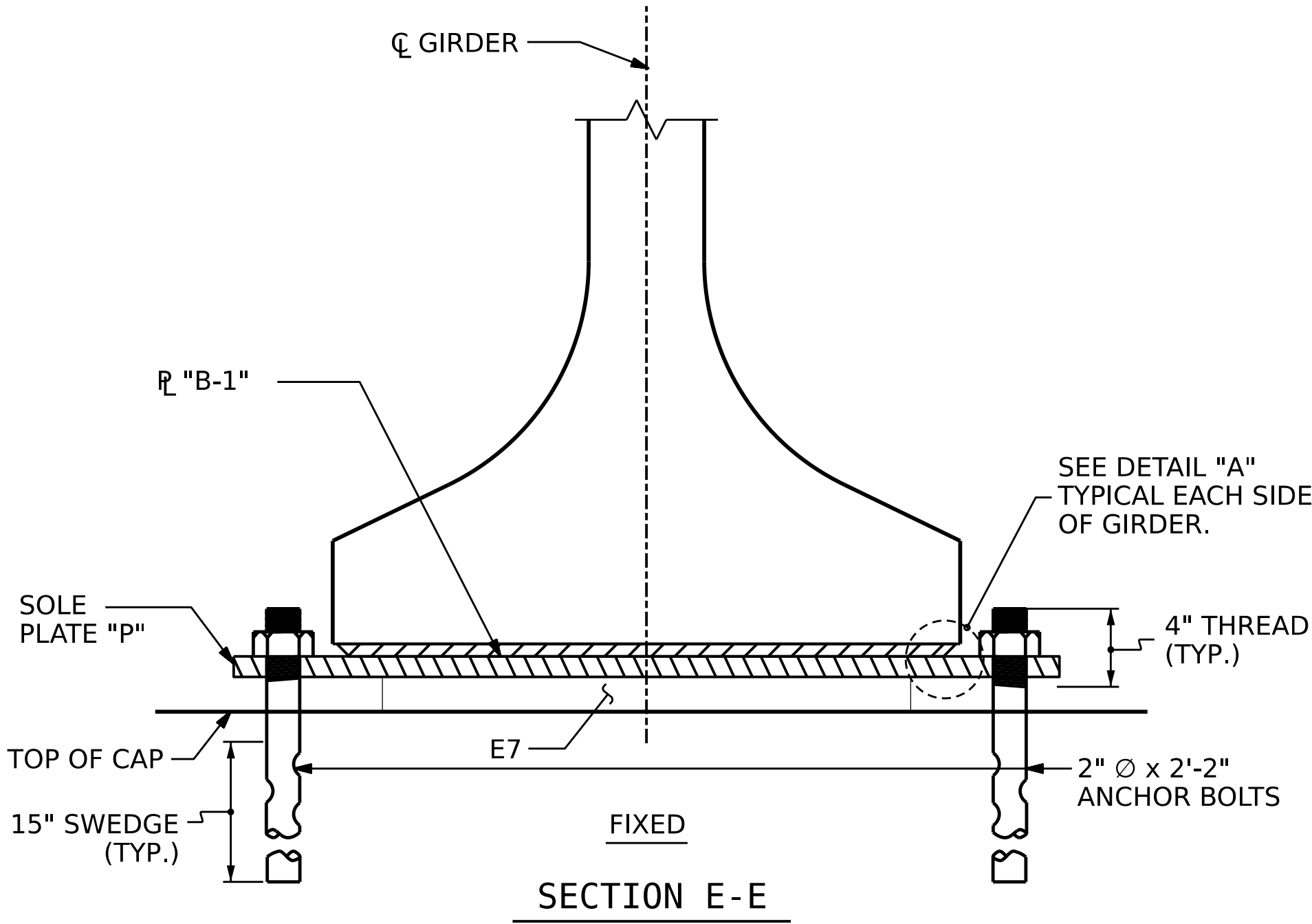
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. NO SHOP DRAWINGS ARE REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

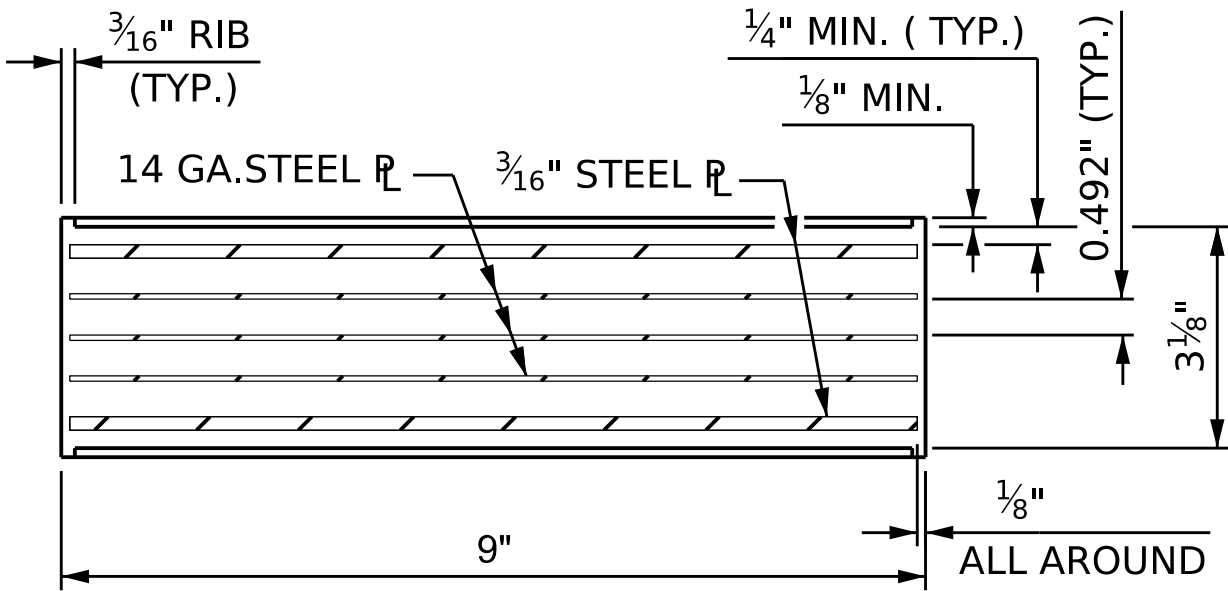
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE STANDARD SPECIFICATIONS.

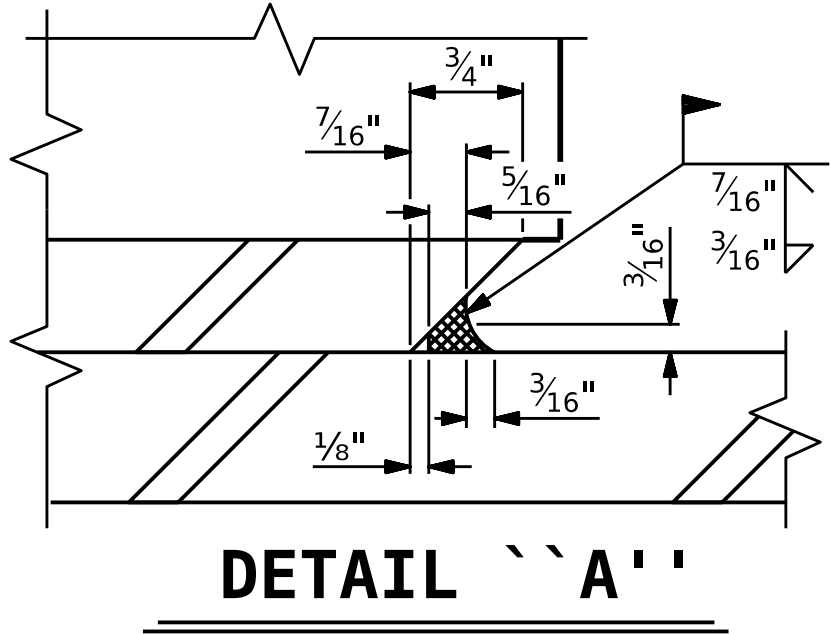
ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



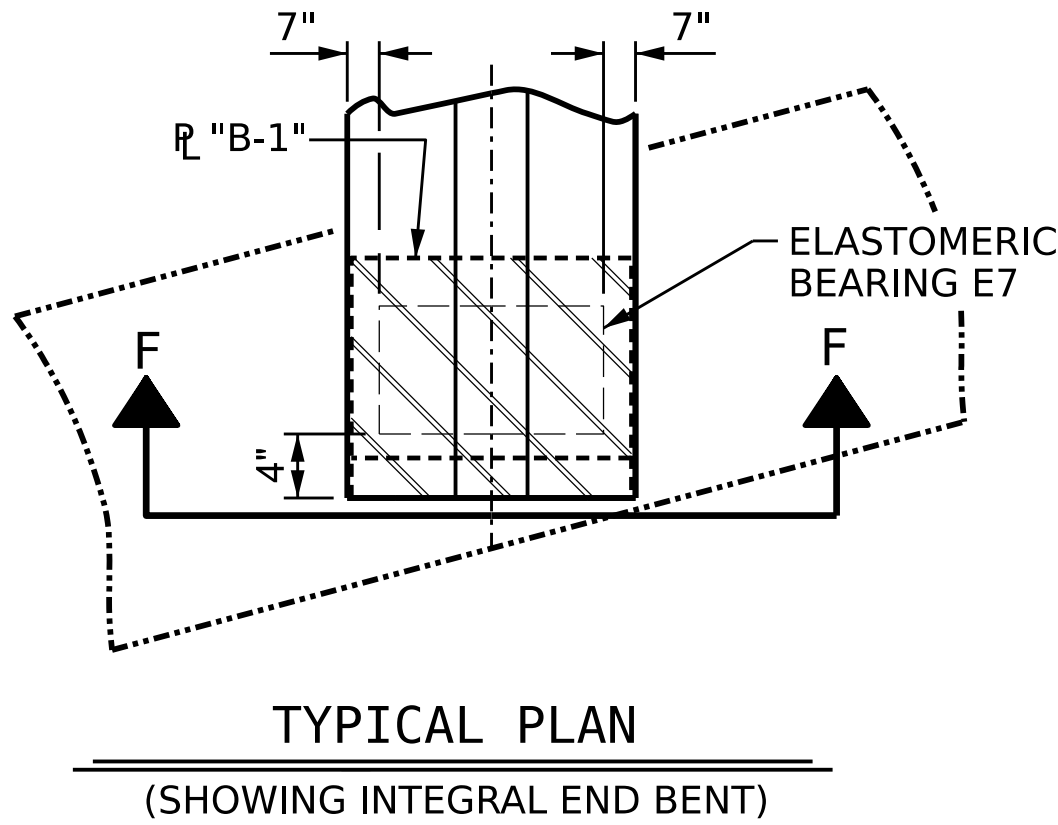
MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE VIII	390 K



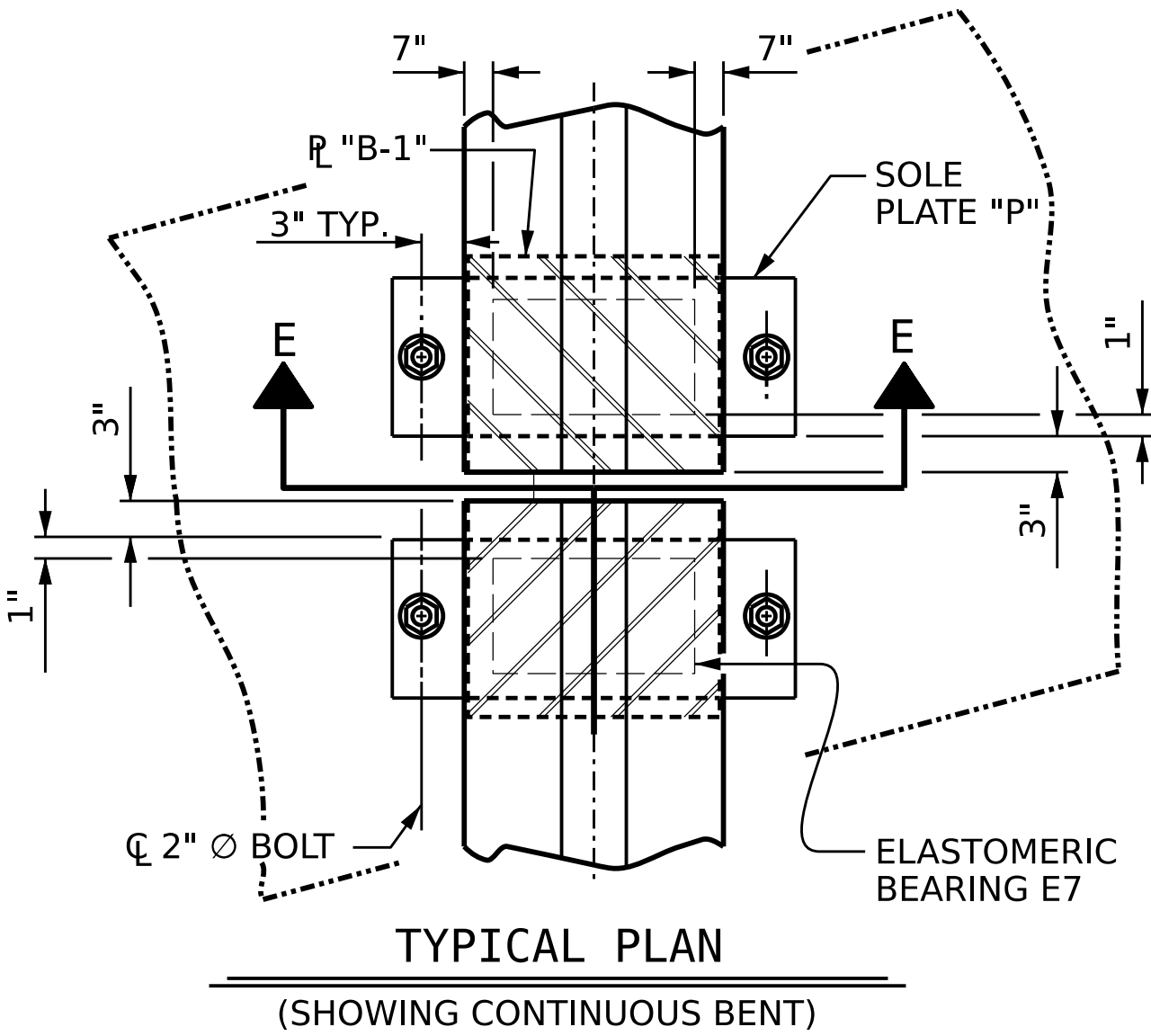
TYPICAL SECTION OF ELASTOMERIC BEARINGS



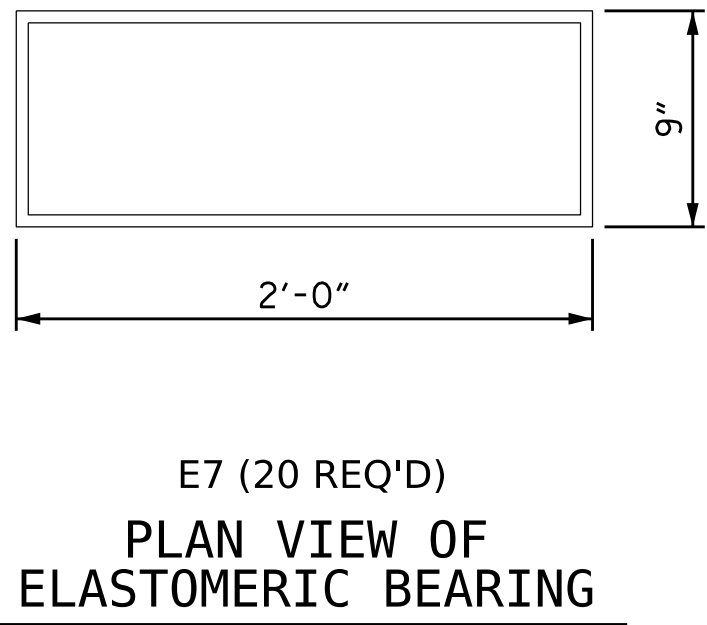
DETAIL 'A'



TYPICAL PLAN
(SHOWING INTEGRAL END BENT)

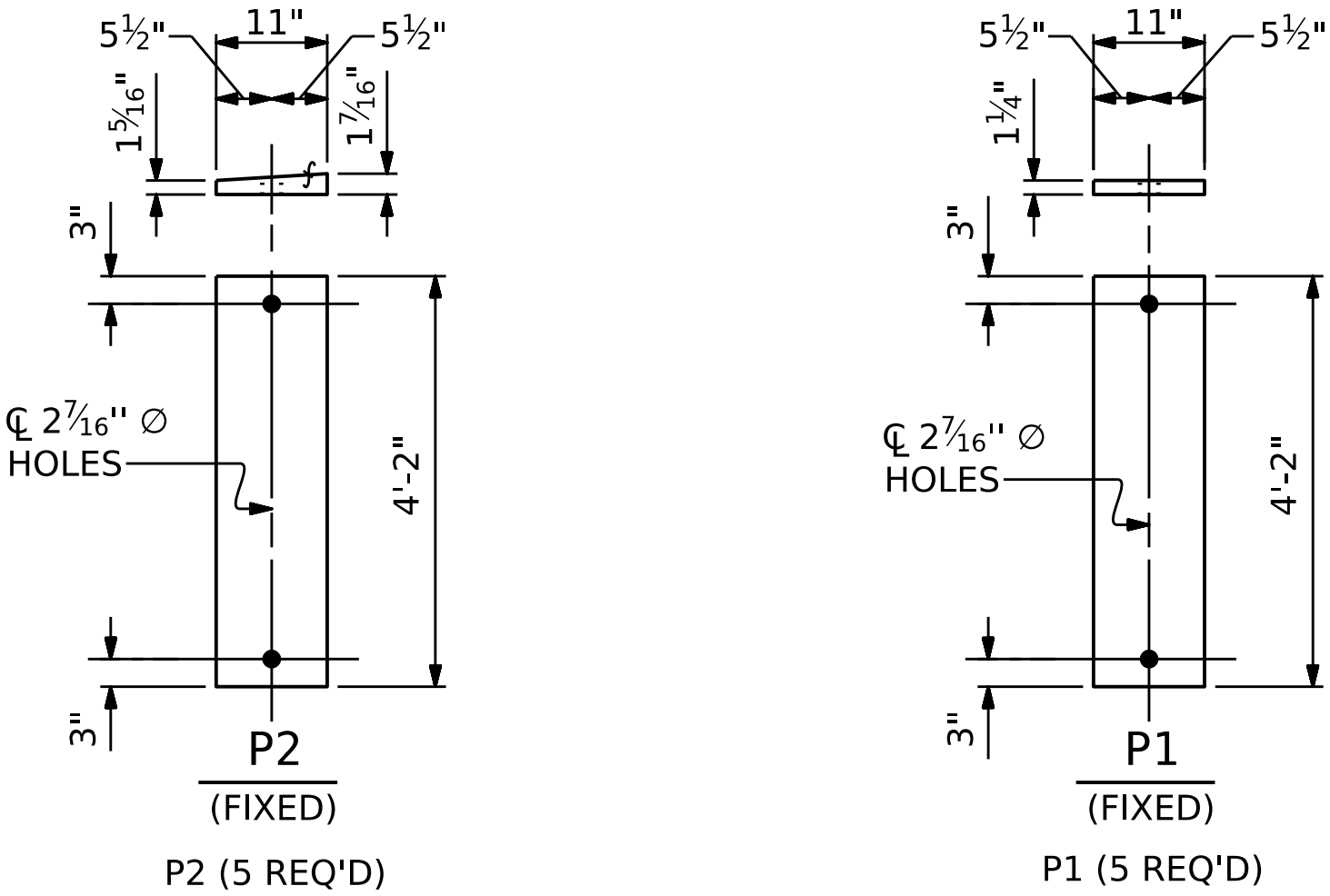


PROJECT NO. **BR-0174**
PENDER COUNTY
STATION: **19+84.00 -L-**

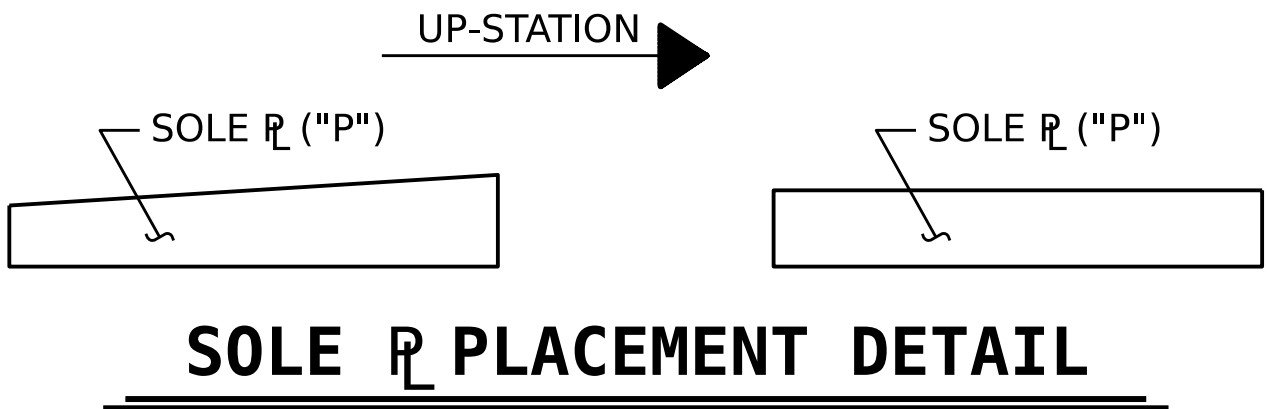


E7 (20 REQ'D)
PLAN VIEW OF
ELASTOMERIC BEARING

TYPE VIII



SOLE PLATE DETAILS ("P")



CDM Smith

CDM SMITH Inc.
4600 Park Road, Suite 240
Charlotte, NC 28209-3730
NC COA No. F-1255

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DRAWN BY : JJR
CHECKED BY : CBC
DESIGN ENGINEER : CBC

DATE : 3/25
DATE : 3/25
DATE : 3/25

DWG. No.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SEAL
043143
ENGINEER
CHRISTOPHER B. CORDELL

Signed by:
Christopher B. Cordell
ADAACR0FF20F485
7/1/2026

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD ELASTOMERIC BEARING DETAILS					
FIB SUPERSTRUCTURE					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					33

THE BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

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

SECTION S-S

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

C 1/2" EXP. JT. MAT'L HELD IN
PLACE WITH GALVANIZED NAILS.
(NOTE: OMIT EXP. JT. MAT'L.
WHEN SLIP FORM IS USED.)

**CDM
Smith**

DRAWN BY : JJR DATE : 3/25
 CHECKED BY : CBC DATE : 3/25
 DESIGN ENGINEER : CBC DATE : 3/25

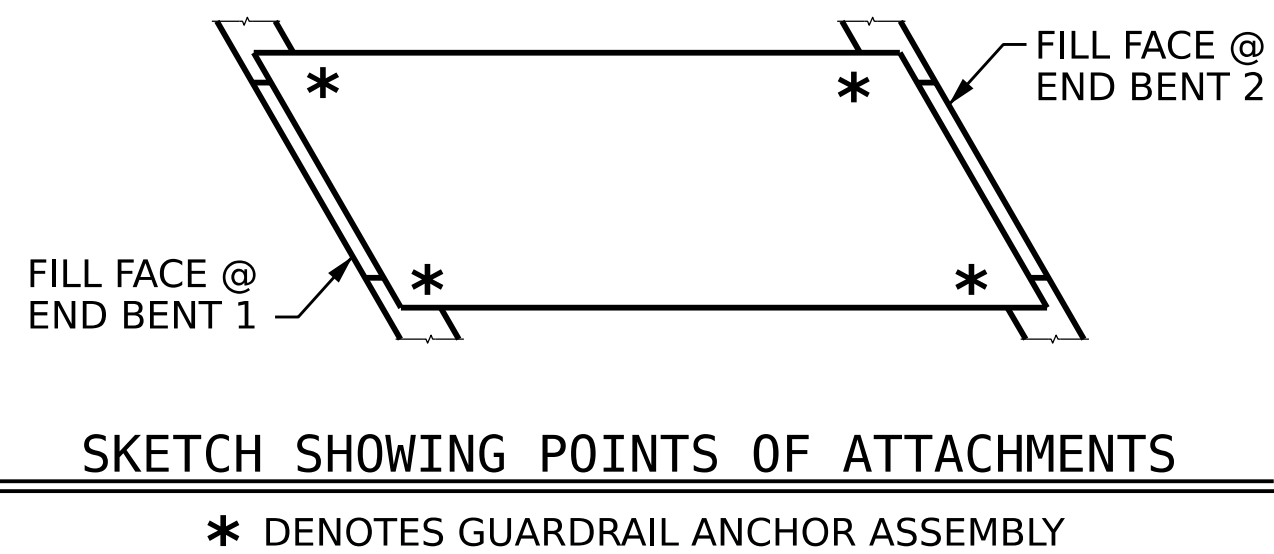
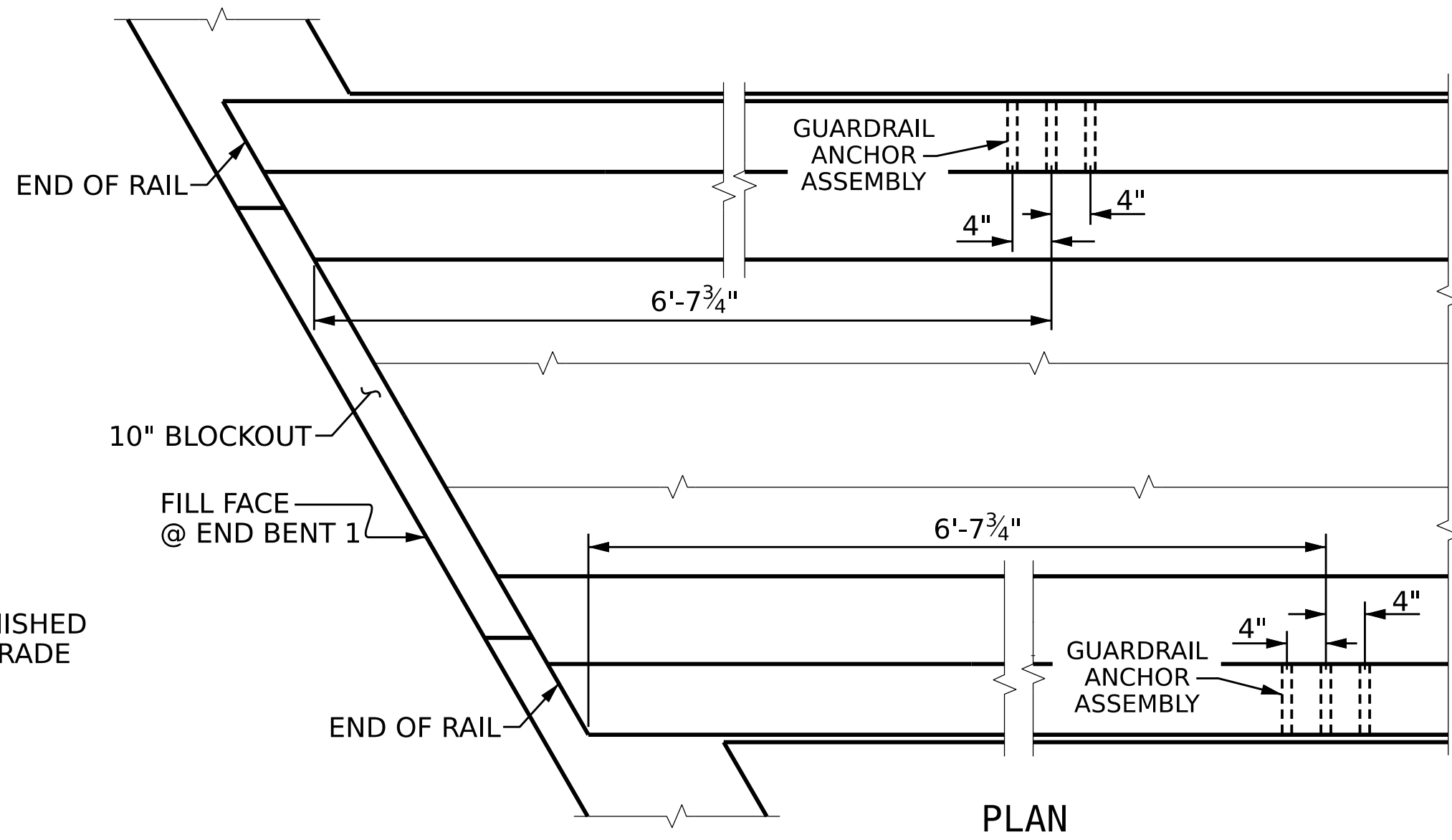
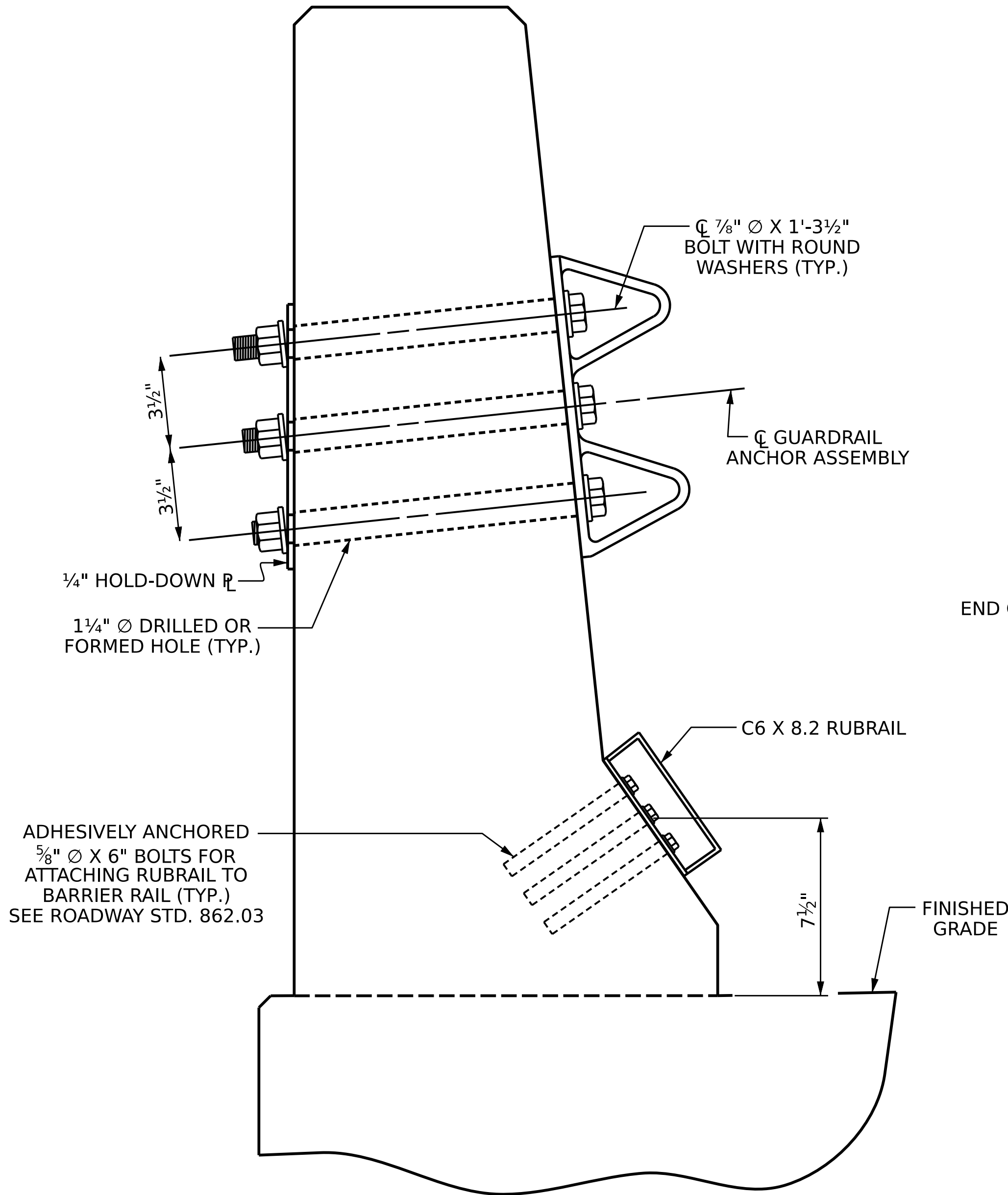
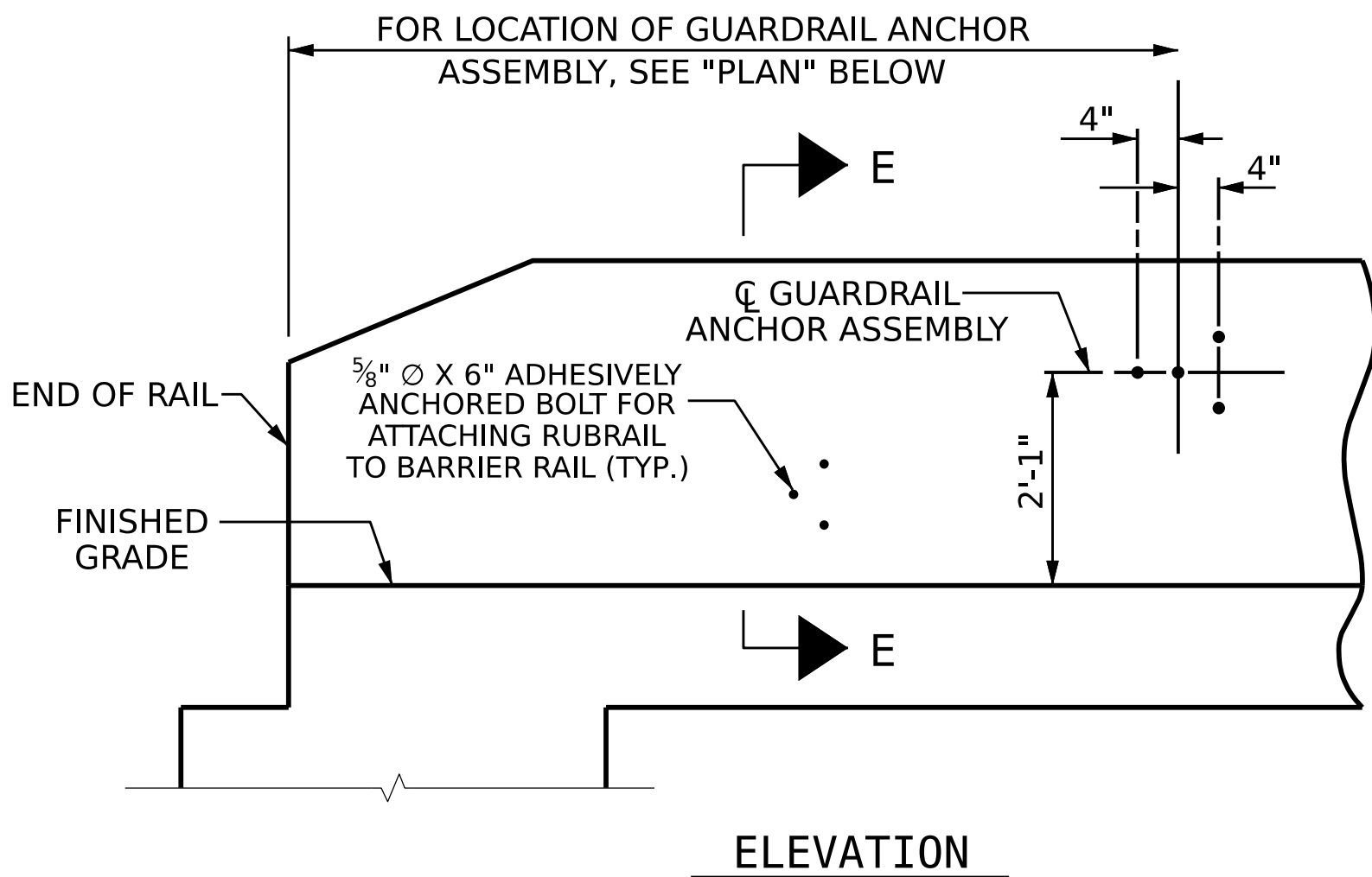
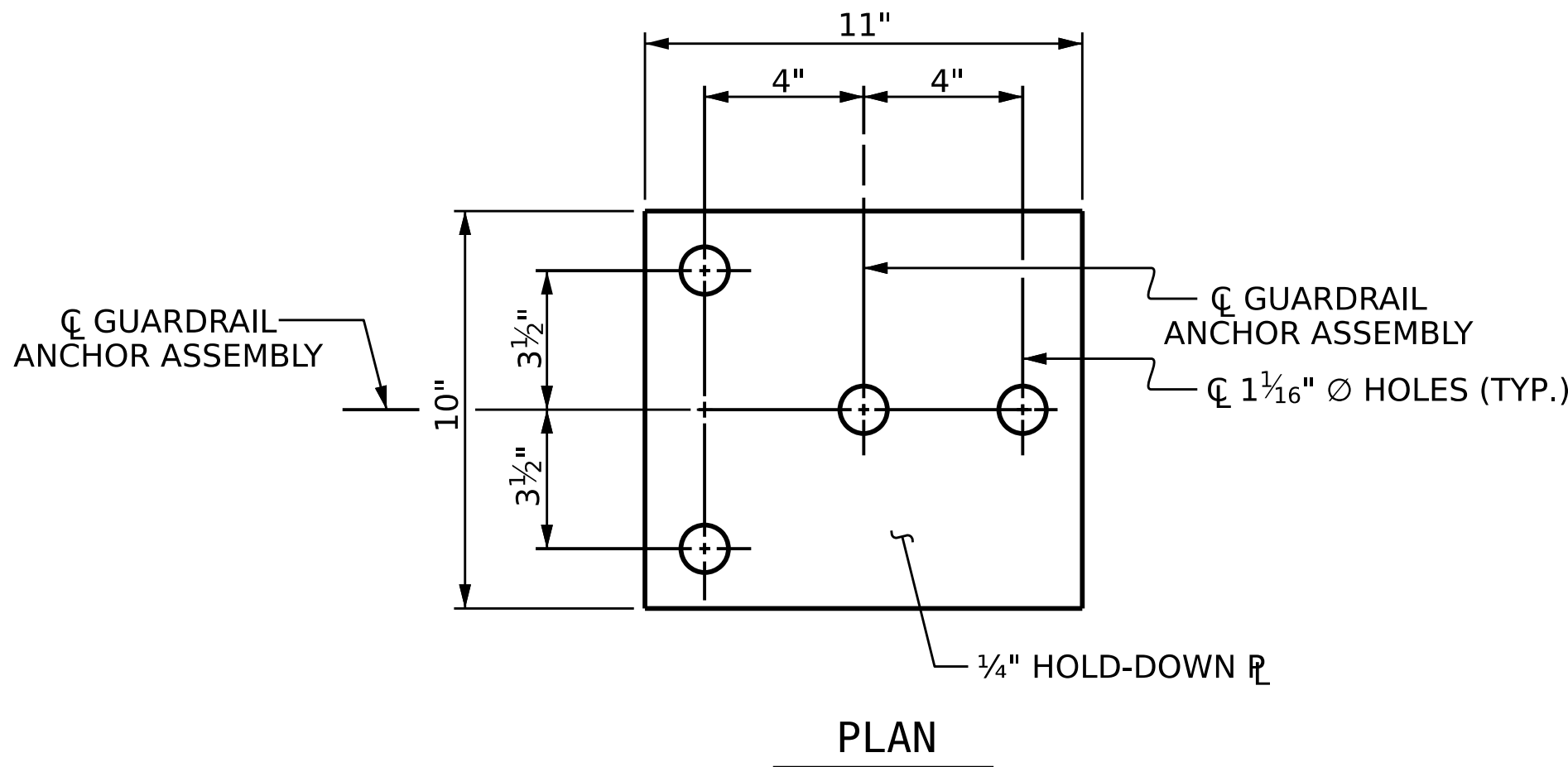
Technical drawing of a mechanical part with the following dimensions:

- Overall width: $1'-0\frac{1}{2}"$
- Top horizontal distance from left face to start of curve: $8\frac{7}{8}"$
- Radius of the top curve: $5\frac{3}{4}"$
- Vertical distance from bottom face to the start of the curve: $11\frac{1}{16}"$
- Vertical distance from the start of the curve to the top of the part: $8"$
- Horizontal distance from the vertical centerline to the start of the curve: $8"$
- Radius of the internal fillet: $2\frac{1}{4}"$ RAD.
- Vertical distance from the bottom face to the top of the part: $1'-8\frac{1}{4}"$
- Feature identifier: 1



REVISIONS						SHEET NO. 5-20
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 33
2			4			

5/5/2025
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RANARDJJ



PROJECT NO. **BR-0174**
PENDER COUNTY
STATION: **19+84.00 -L-**

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD GUARDRAIL ANCHORAGE FOR BARRIER RAIL					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					33

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**NORTH CAROLINA
PROFESSIONAL
ENGINEER**
SEAL
043143
CHRISTOPHER B. CORDELL

Signed by:
Christopher B. Cordell
ADAAC80FP26F485.
7/1/2026

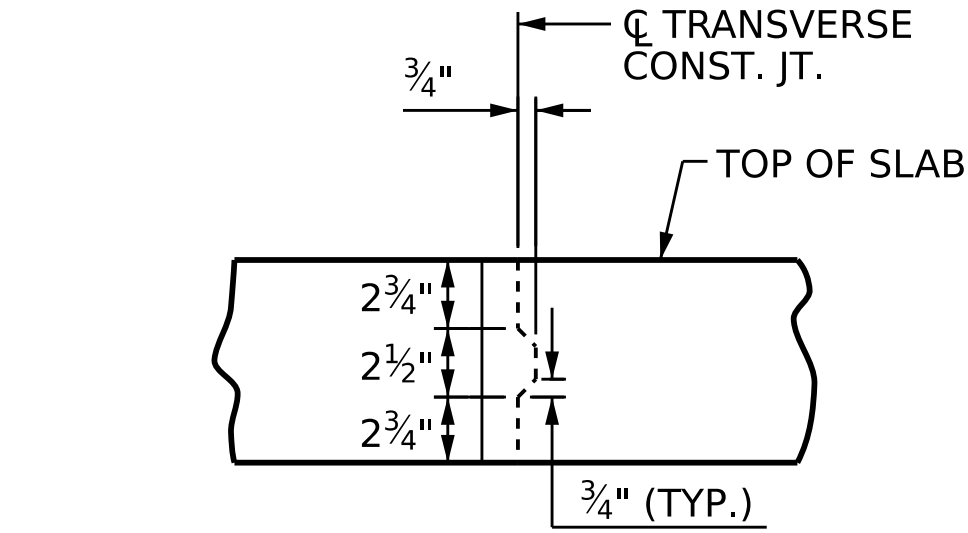
STD. NO. GRA2

BILL OF MATERIAL

SUPERSTRUCTURE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	229	#5	STR	38'-11"	9295	A208	1	#5	STR	3'-9"	4
A2	229	#5	STR	38'-11"	9295	A209	2	#5	STR	34'-3"	71
*A101	2	#5	STR	34'-2"	71	A210	2	#5	STR	29'-7"	62
*A102	2	#5	STR	29'-6"	62	A211	2	#5	STR	24'-11"	52
*A103	2	#5	STR	24'-10"	52	A212	2	#5	STR	20'-3"	42
*A104	2	#5	STR	20'-2"	42	A213	2	#5	STR	15'-7"	33
*A105	2	#5	STR	15'-6"	32	A214	2	#5	STR	11'-0"	23
*A106	2	#5	STR	10'-10"	23	A215	2	#5	STR	6'-4"	13
*A107	2	#5	STR	6'-1"	13	A216	1	#5	STR	4'-0"	4
*A108	1	#5	STR	3'-9"	4						
*A109	2	#5	STR	34'-3"	71	* B1	150	#5	STR	15'-4"	2399
*A110	2	#5	STR	29'-7"	62	* B2	112	#4	STR	26'-0"	1945
*A111	2	#5	STR	24'-11"	52	* B3	53	#5	STR	56'-6"	3123
*A112	2	#5	STR	20'-3"	42	* B4	50	#5	STR	33'-4"	1738
*A113	2	#5	STR	15'-7"	33	B5	60	#5	STR	54'-1"	3385
*A114	2	#5	STR	11'-0"	23	B6	30	#5	STR	48'-10"	1528
*A115	2	#5	STR	6'-4"	13	B7	20	#5	STR	41'-0"	855
*A116	1	#5	STR	4'-0"	4	B8	40	#5	STR	15'-4"	640
A201	2	#5	STR	34'-2"	71						
A202	2	#5	STR	29'-6"	62	H1	16	#5	3	16'-2"	270
A203	2	#5	STR	24'-10"	52	H2	16	#5	3	15'-11"	266
A204	2	#5	STR	20'-2"	42	H3	16	#5	4	15'-8"	261
A205	2	#5	STR	15'-6"	32	H4	16	#5	4	15'-10"	264
A206	2	#5	STR	10'-10"	23						
A207	2	#5	STR	6'-1"	13	K1	16	#4	STR	24'-2"	258

REINFORCING STEEL = 18,274 LBS.
* EPOXY COATED REINFORCING STEEL = 19,820 LBS.



TRANSVERSE CONSTRUCTION JOINT DETAIL

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

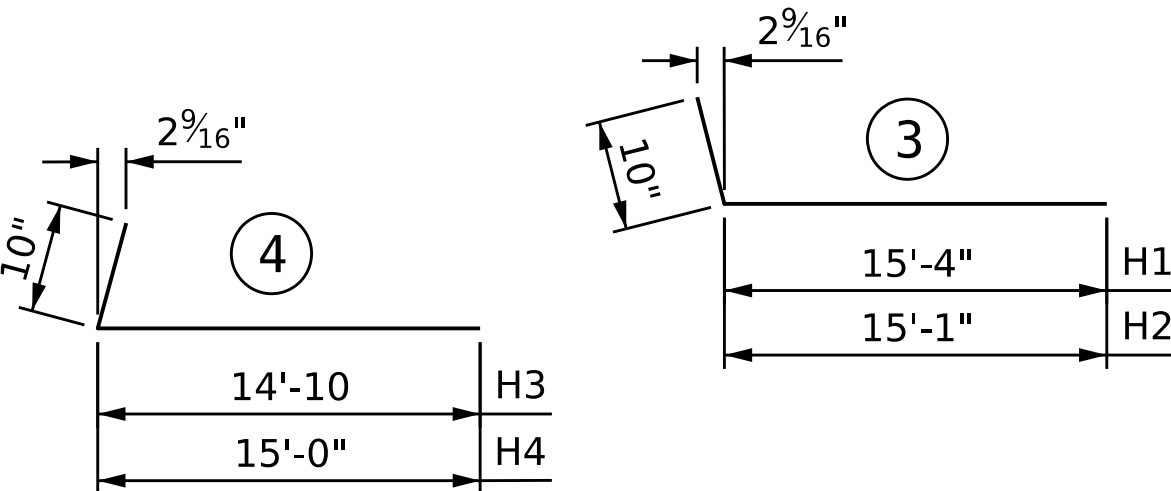
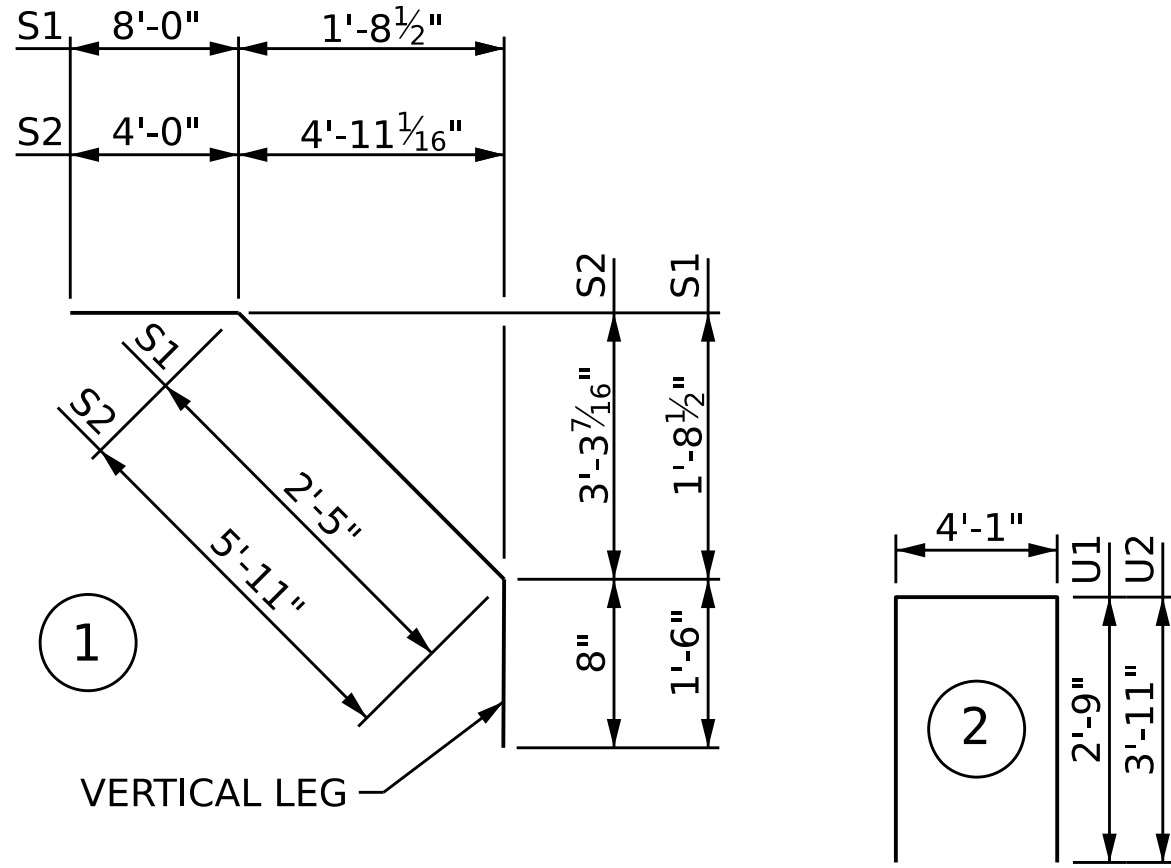
GROOVING BRIDGE FLOORS

APPROACH SLABS	1,650	SQ. FT.
BRIDGE DECK	5,058	SQ. FT.
TOTAL	6,708	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"			

BAR TYPES

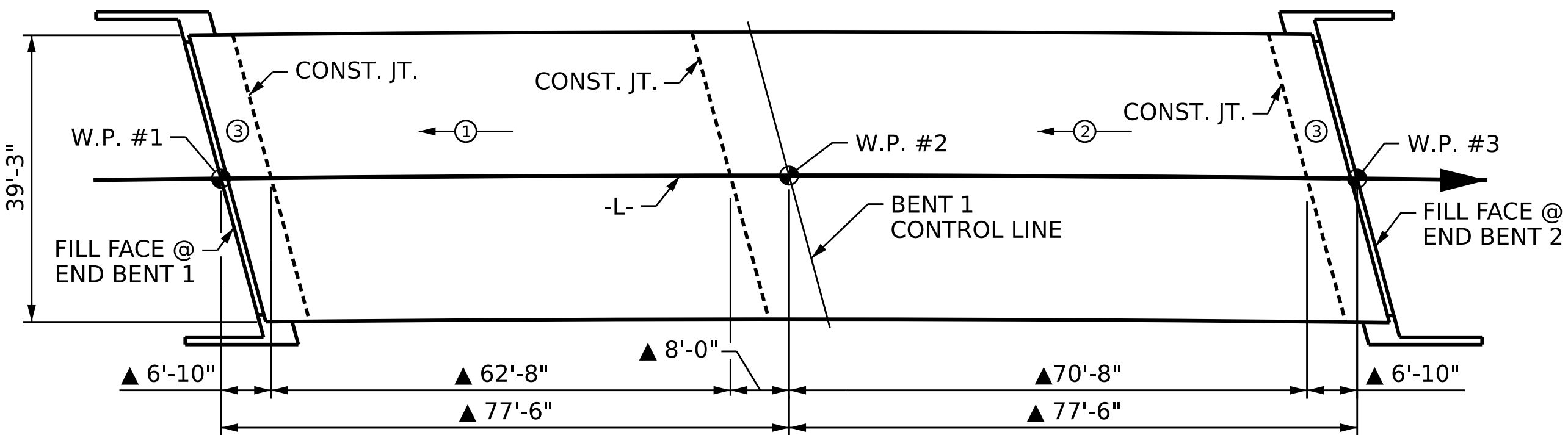


ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL

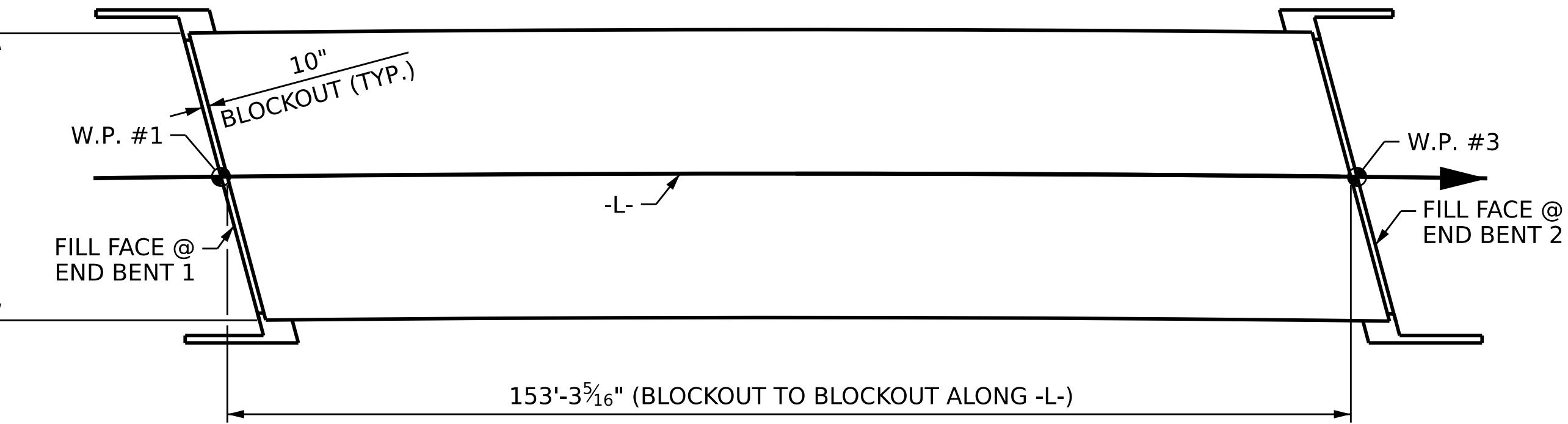
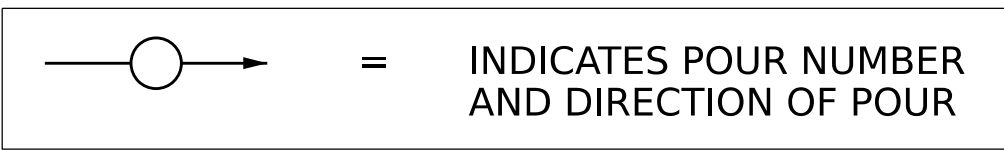
	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU.YDS.)	(LBS.)	(LBS.)
POUR 1	78.2		
POUR 2	98.0		
**POUR 3	68.6		
TOTALS***	244.8	18,274	19,820

** QUANTITY INCLUDES THE UPPER PORTION OF WINGWALLS
*** QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

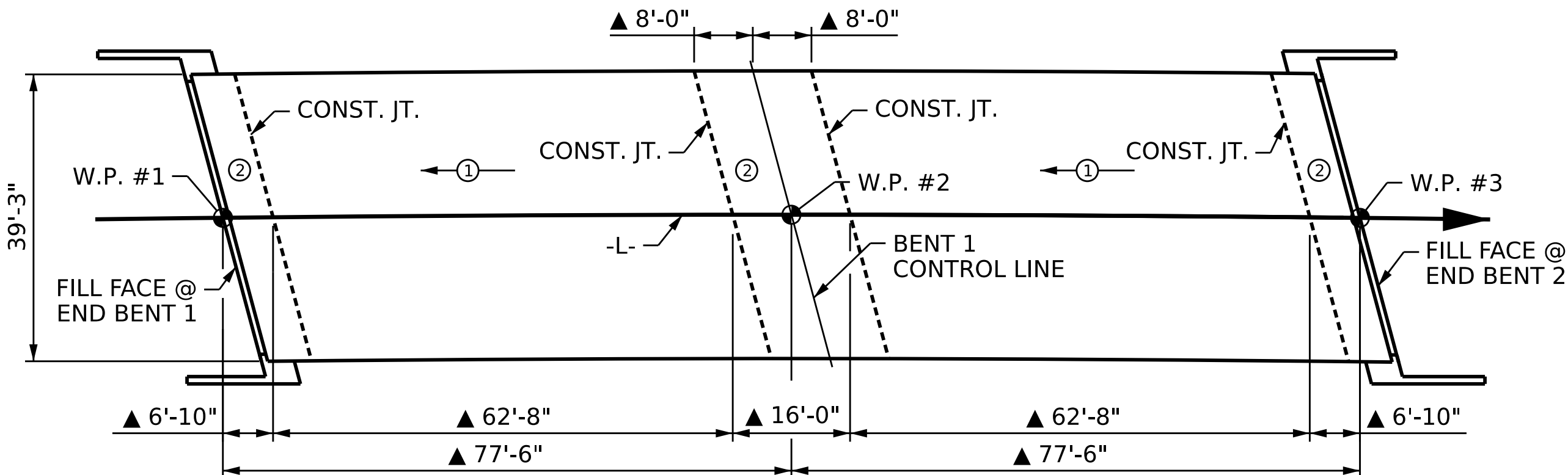


POURING SEQUENCE

POUR ② CAN NOT BE STARTED UNTIL ADJACENT ① POURS REACH A MINIMUM OF 3000 PSI.



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB (SQ. FT. = 6,016)



OPTIONAL POURING SEQUENCE

POUR ② CAN NOT BE STARTED UNTIL ADJACENT ① POURS REACH A MINIMUM OF 3000 PSI.



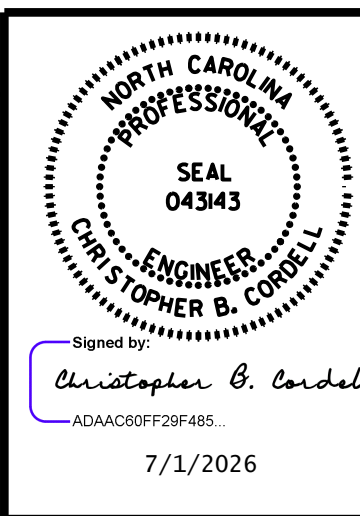
PROJECT NO. **BR-0174**
PENDER COUNTY
STATION: **19+84.00 -L-**

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
SUPERSTRUCTURE
BILL OF MATERIAL

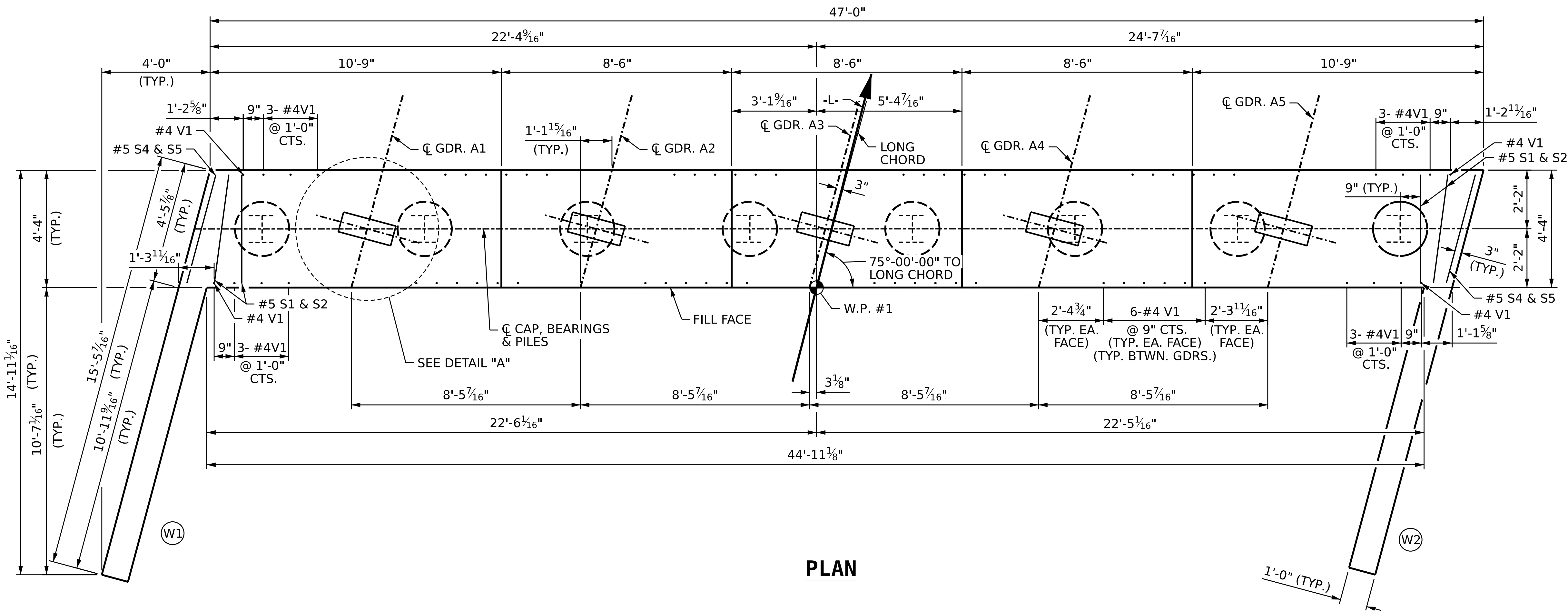
REVISIONS				SHEET NO.
NO.	BY:	DATE:	DATE:	
1				S-22
2				

CDM Smith		CDM SMITH Inc. 4600 Park Road, Suite 240 Charlotte, NC 28209-3730 NC COA No. F-1255	
DRAWN BY :	JJR	DATE :	3/25
CHECKED BY :	CBC	DATE :	3/25
DESIGN ENGINEER :	CBC	DATE :	3/25

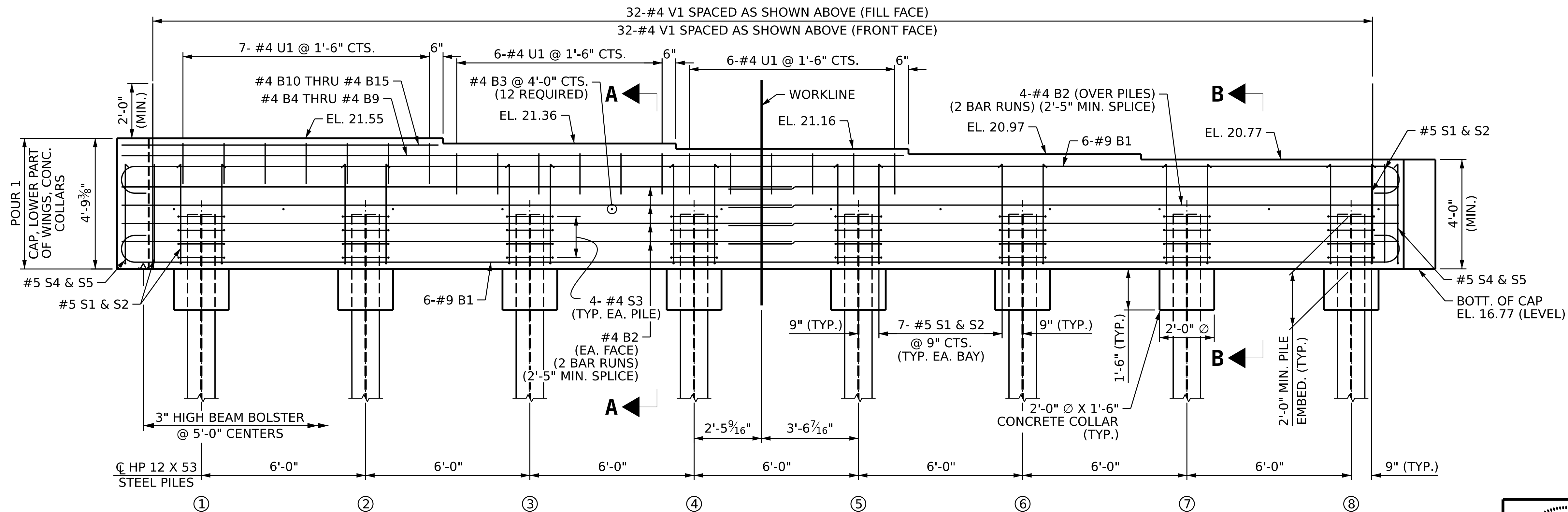


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DWC. No.



PLAN



ELEVATION

(WINGS NOT SHOWN FOR CLARITY)
SEE SHEET 3 OF 3 FOR SECTIONS A-A AND B-B

NOTES

STIRRUPS AND #4 U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

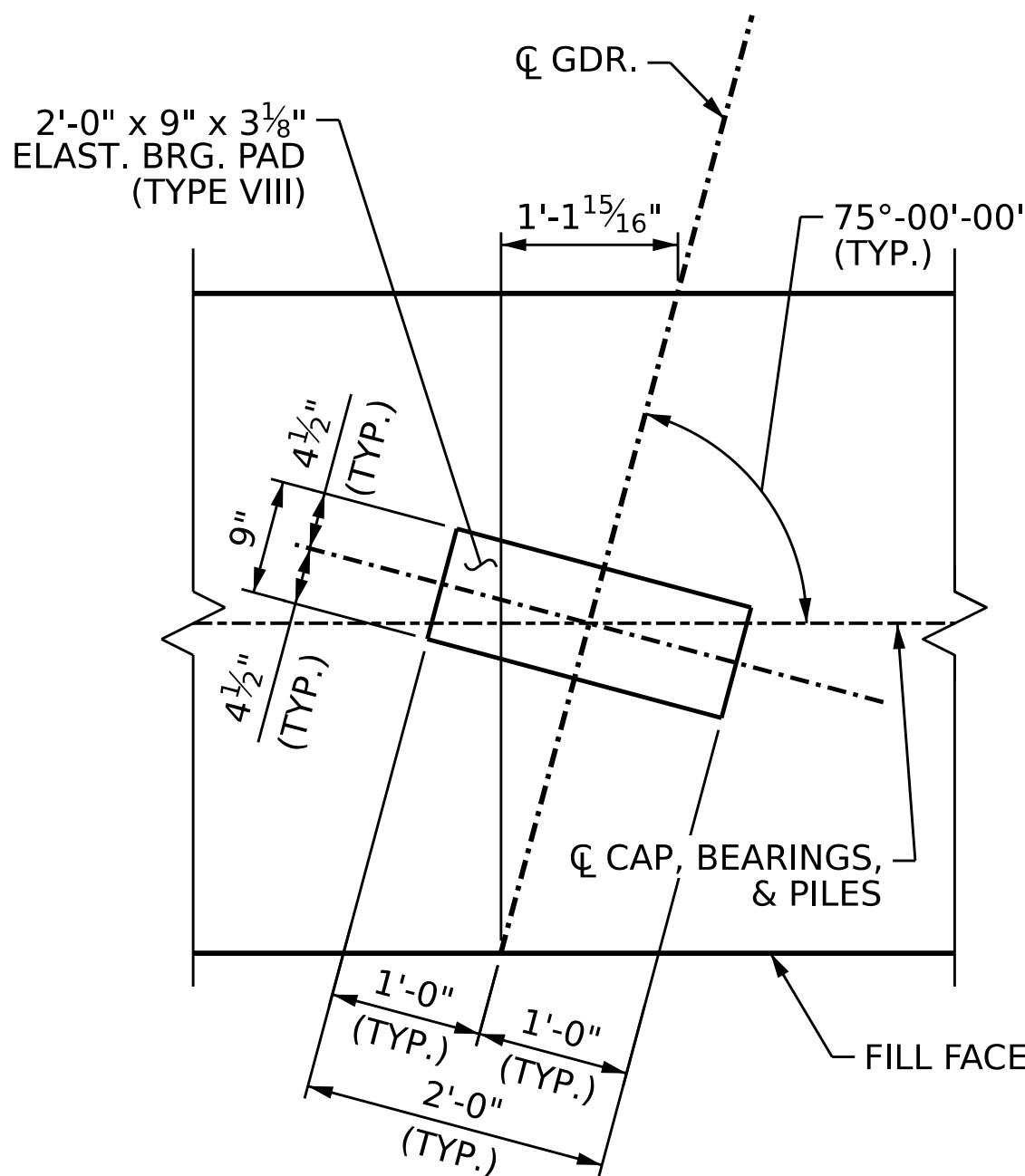
FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

THE TOP SURFACE AREA OF THE END BENT CAP AND WINGS (POUR 1) EXCEPT THE BEARING AREAS SHALL BE RAKED TO A DEPTH OF 1/4".

FOR WING DETAILS, SEE SHEET 2 OF 3.

SPLAY STIRRUPS AT END OF CAP EVENLY AS SHOWN.

THE UPPER PART OF INTEGRAL PORTION AND WINGS SHALL BE POURED WITH THE SUPERSTRUCTURE, SEE SUPERSTRUCTURE PLAN OF SPANS.



DETAIL "A"

(PILES NOT SHOWN FOR CLARITY)
(TYP. EACH GIRDER)

PROJECT NO. **BR-0174**

PENDER COUNTY

STATION: **19+84.00 -L-**

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
INTEGRAL
END BENT 1

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

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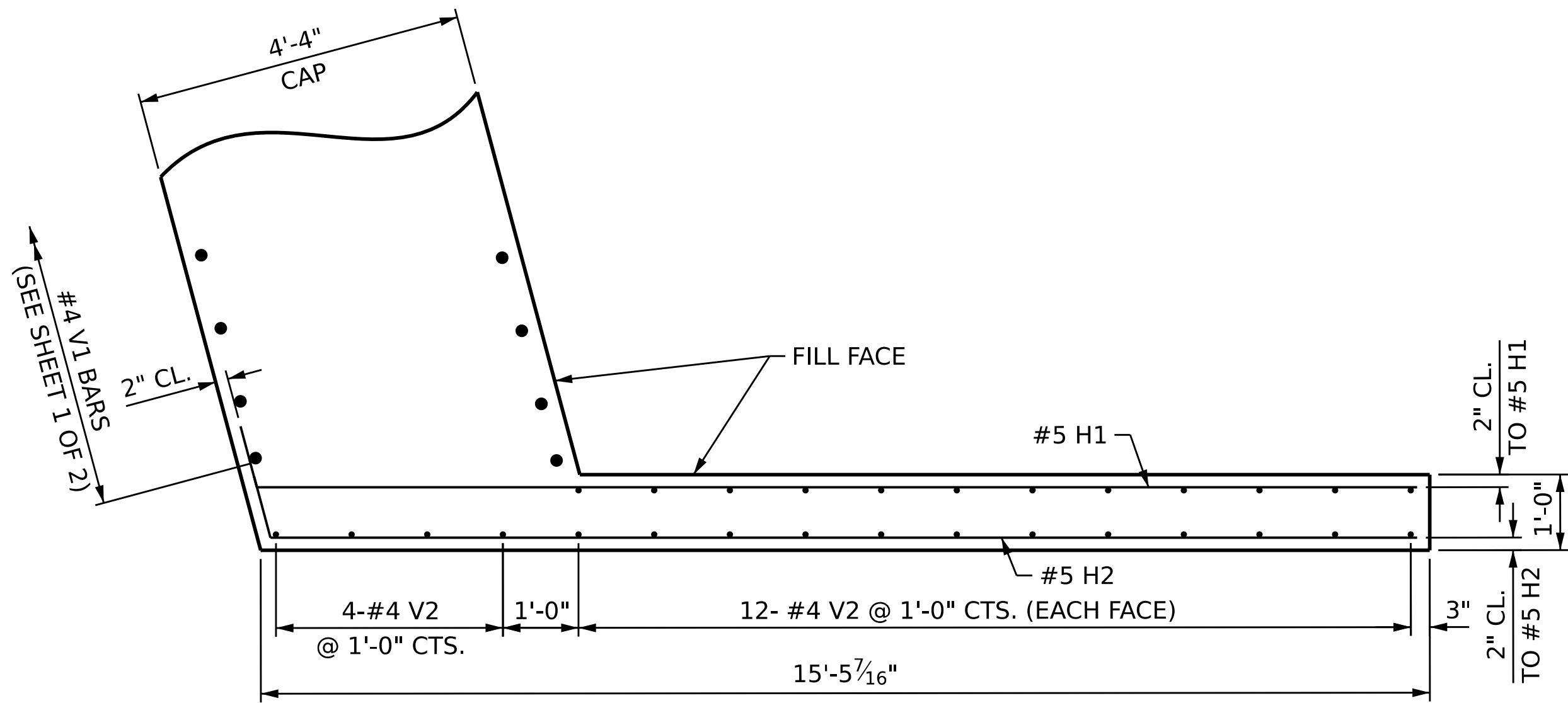
DWC. No.

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CHECKED BY : CBC DATE : 3/25
DESIGN ENGINEER : CBC DATE : 3/25

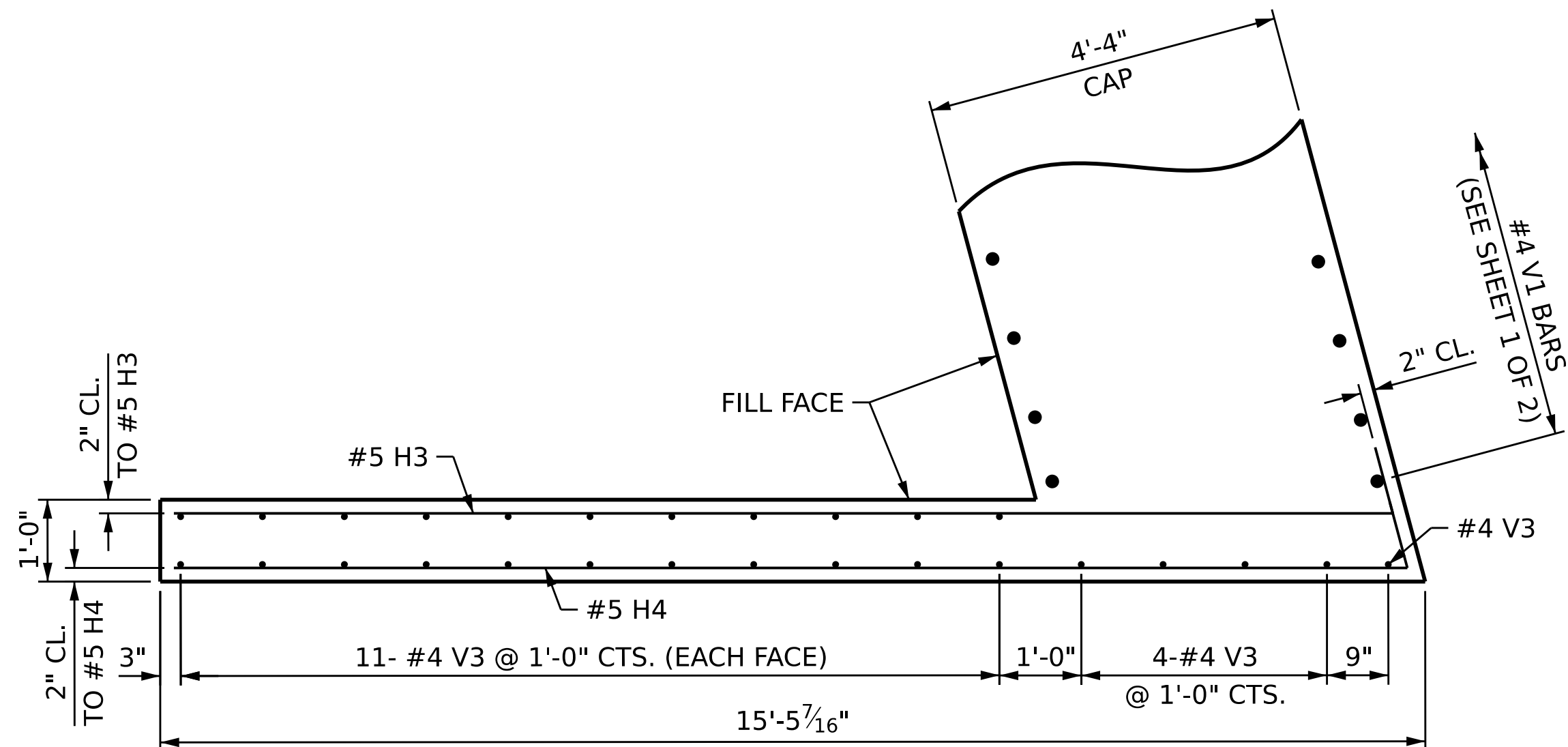
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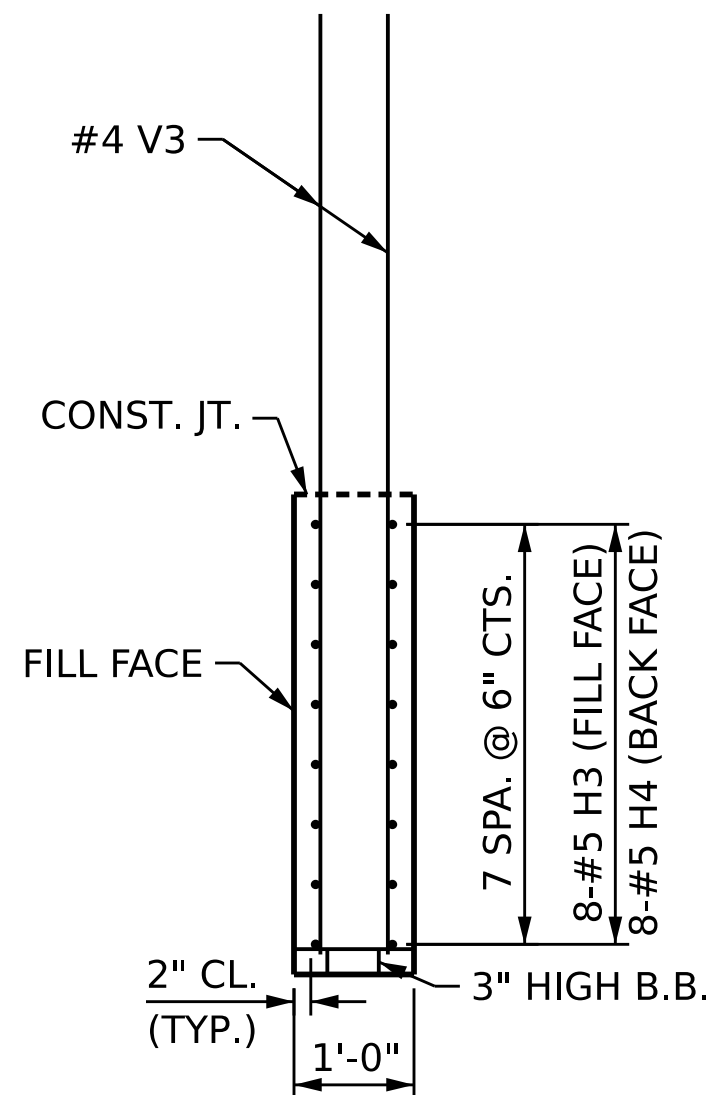
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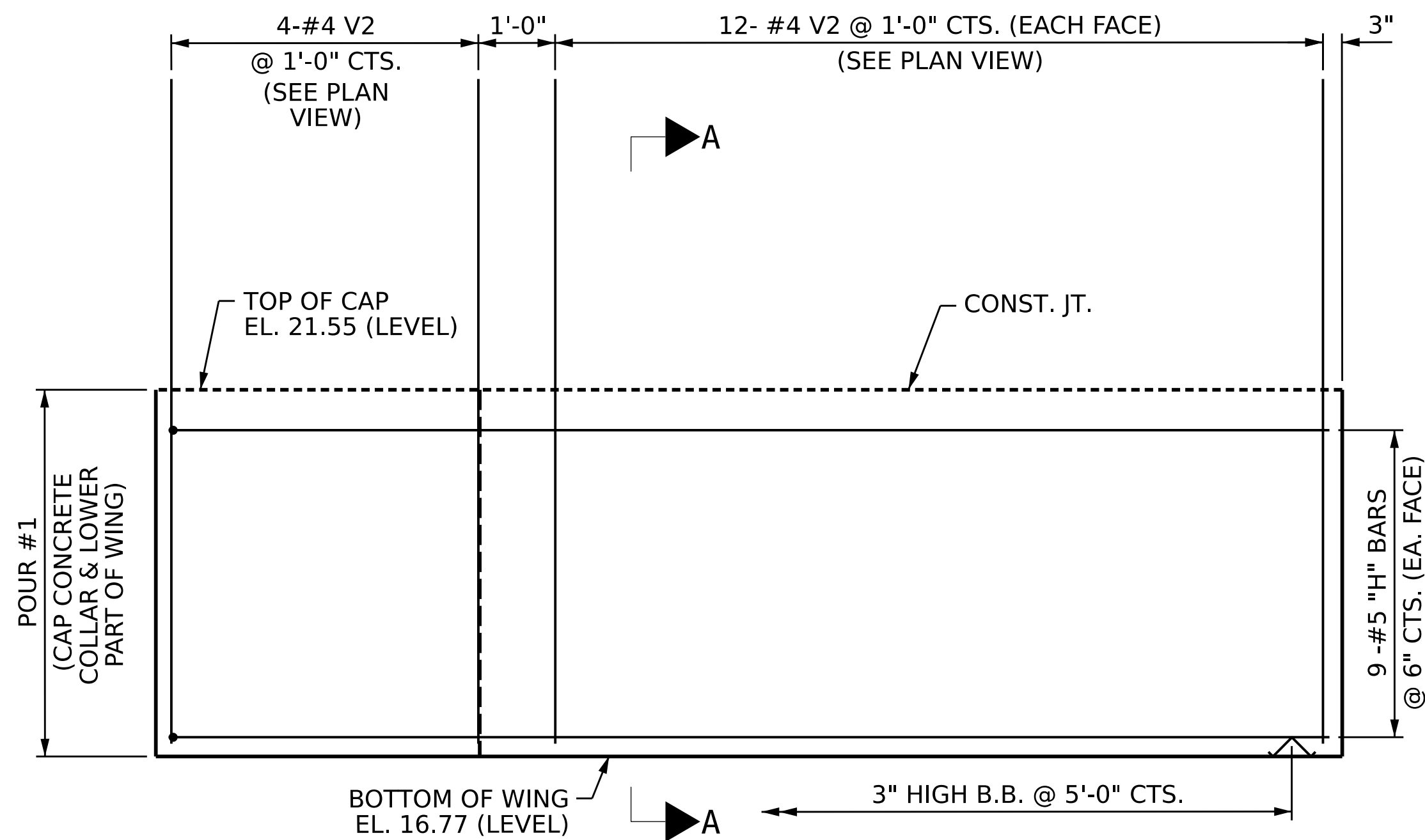
PLAN OF W1



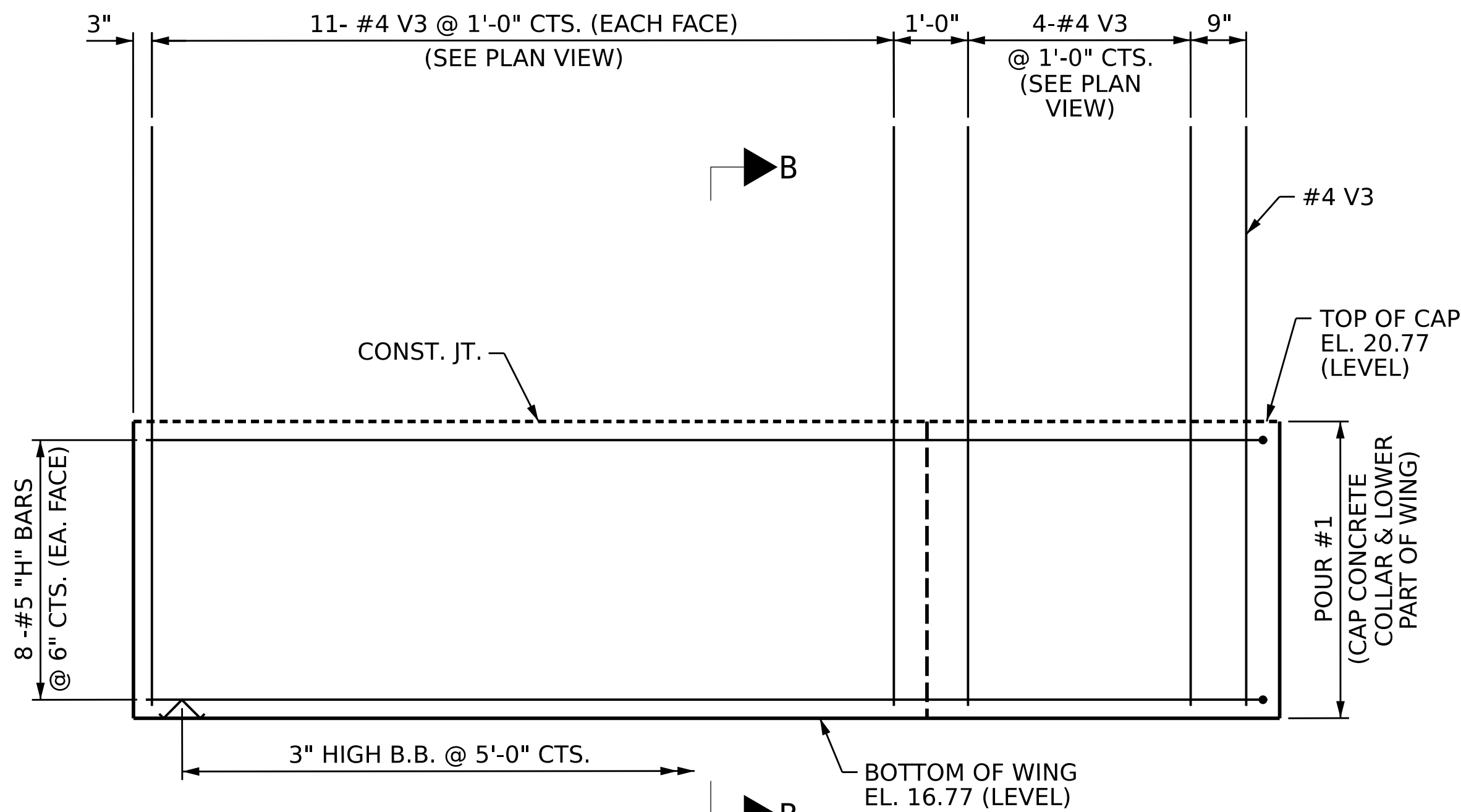
PLAN OF W2



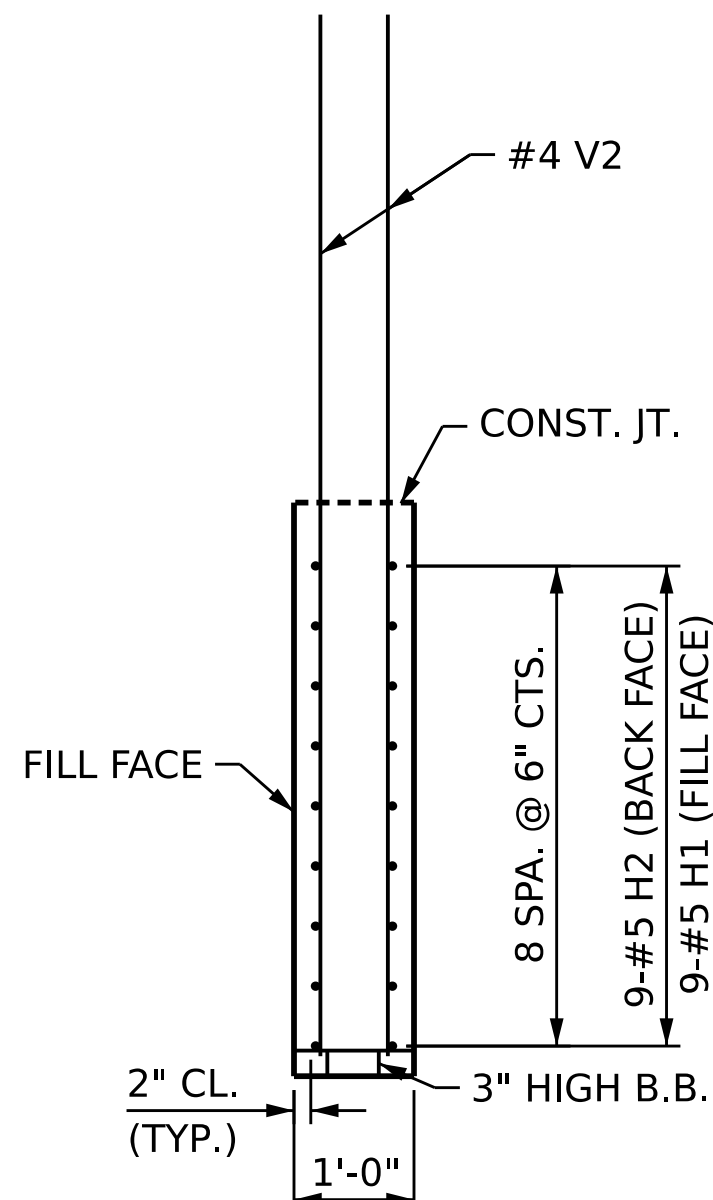
SECTION B-B



ELEVATION OF W1



ELEVATION OF W2



SECTION A-A

PROJECT NO. **BR-0174**
PENDER COUNTY
STATION: **19+84.00 -L-**

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUBSTRUCTURE
INTEGRAL
END BENT 1**

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

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NC COA No. F-1255

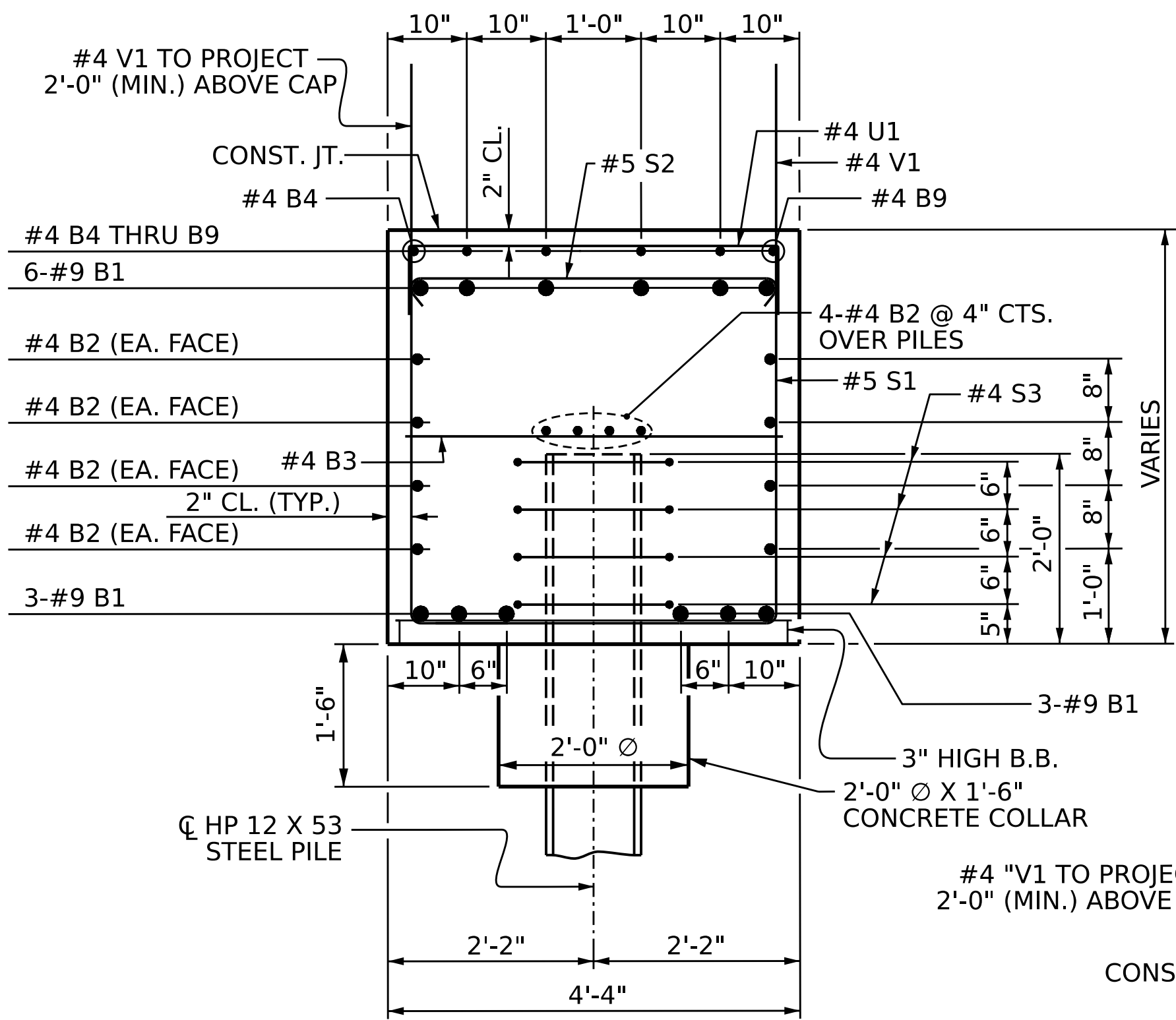
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CHECKED BY : CBC DATE : 3/25
DESIGN ENGINEER : CBC DATE : 3/25

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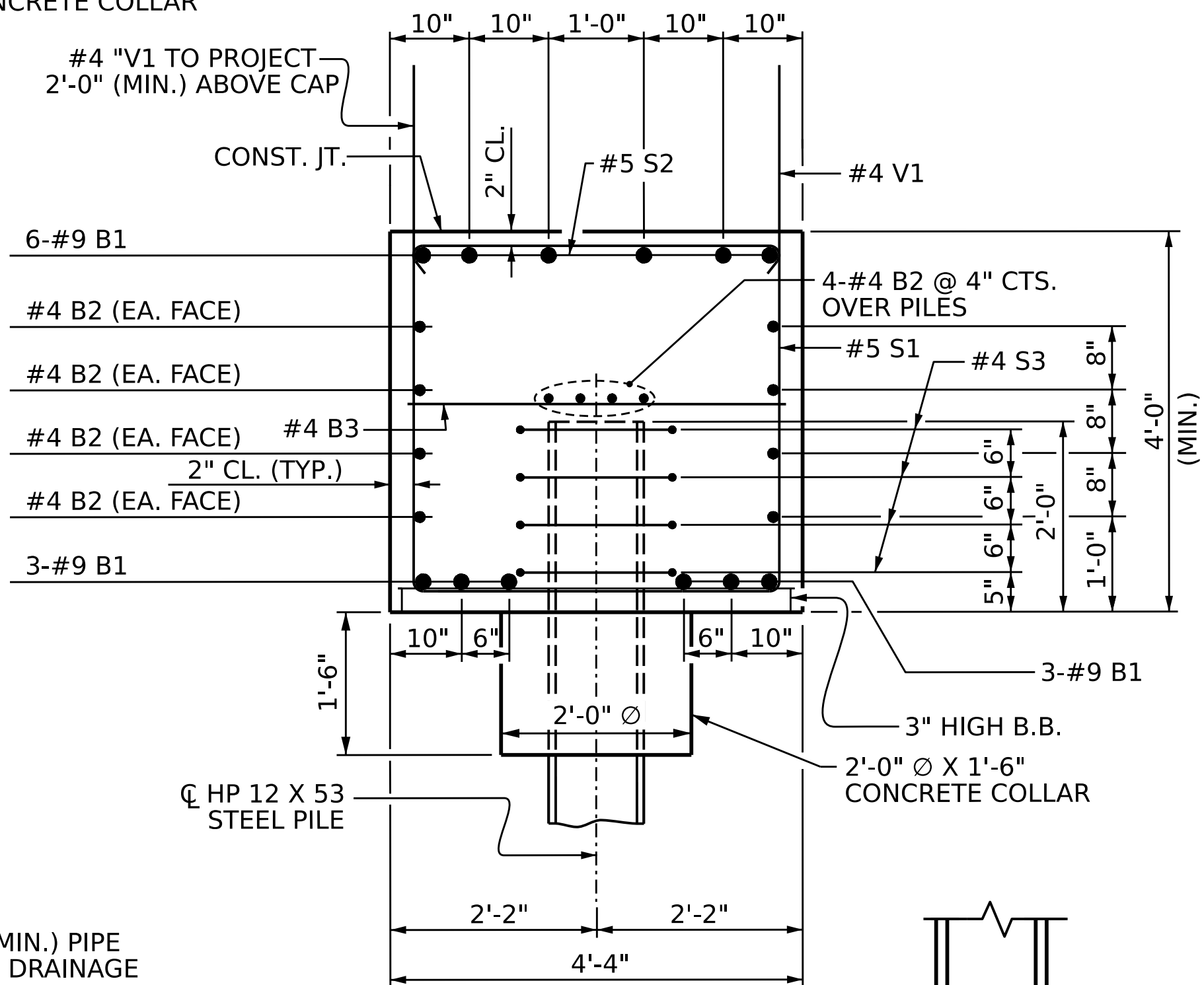
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043143
ENGINEER
CHRISTOPHER B. CORDELL

Signed by:
Christopher B. Cordell
ADAAC00FF20F485...

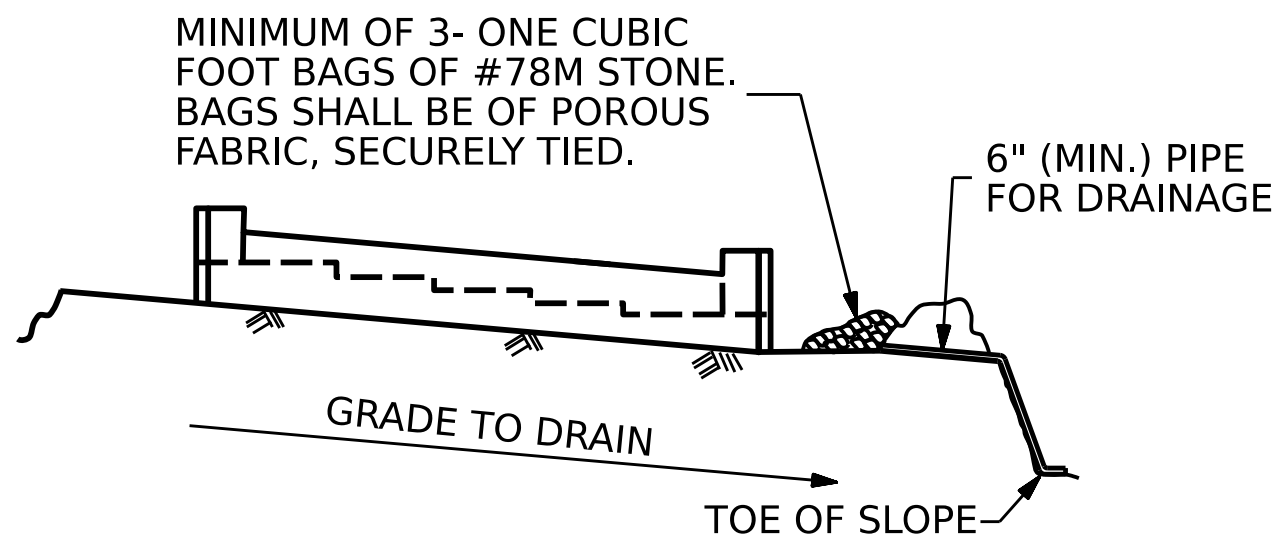
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SECTION A-A



SECTION B-B

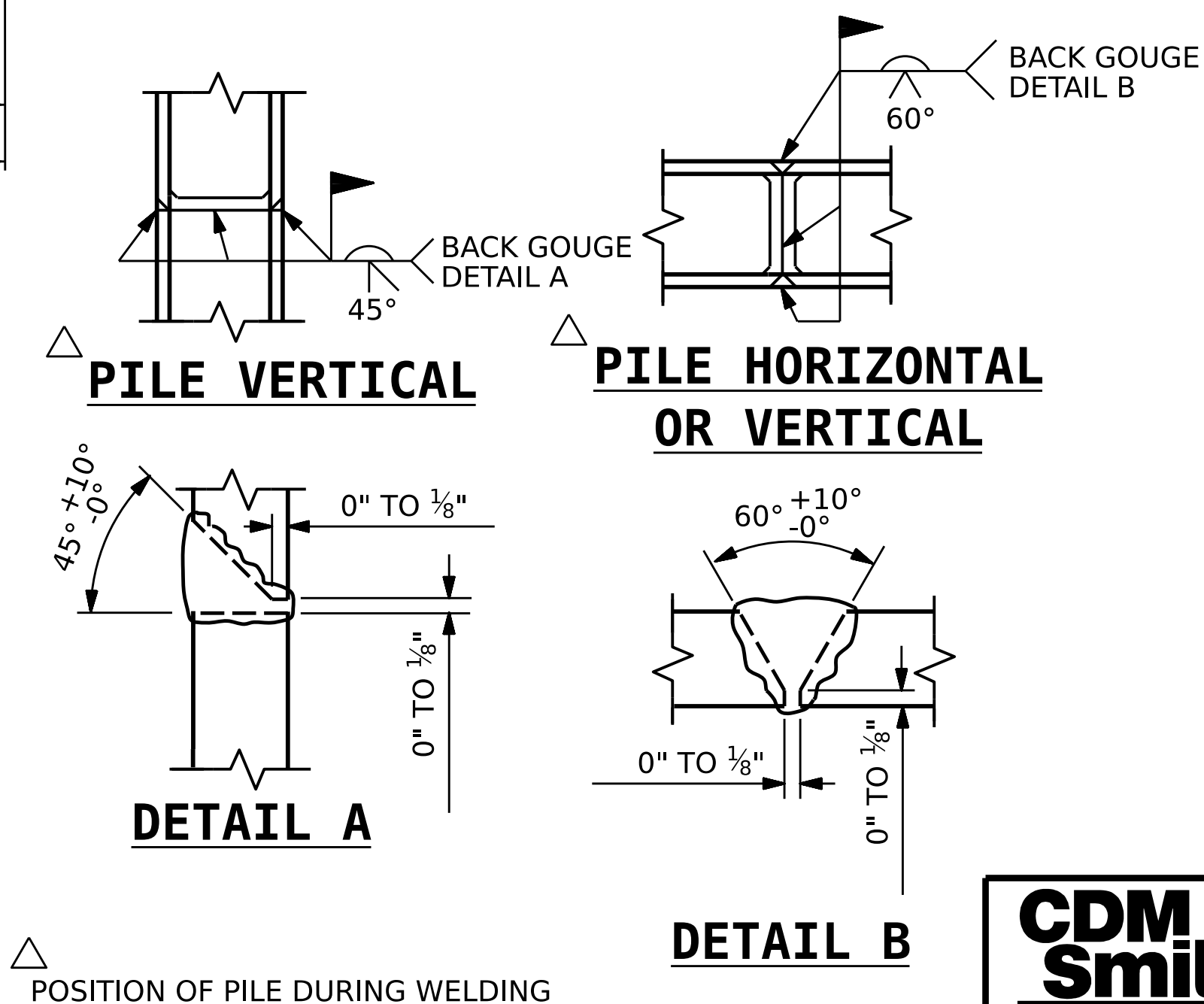


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

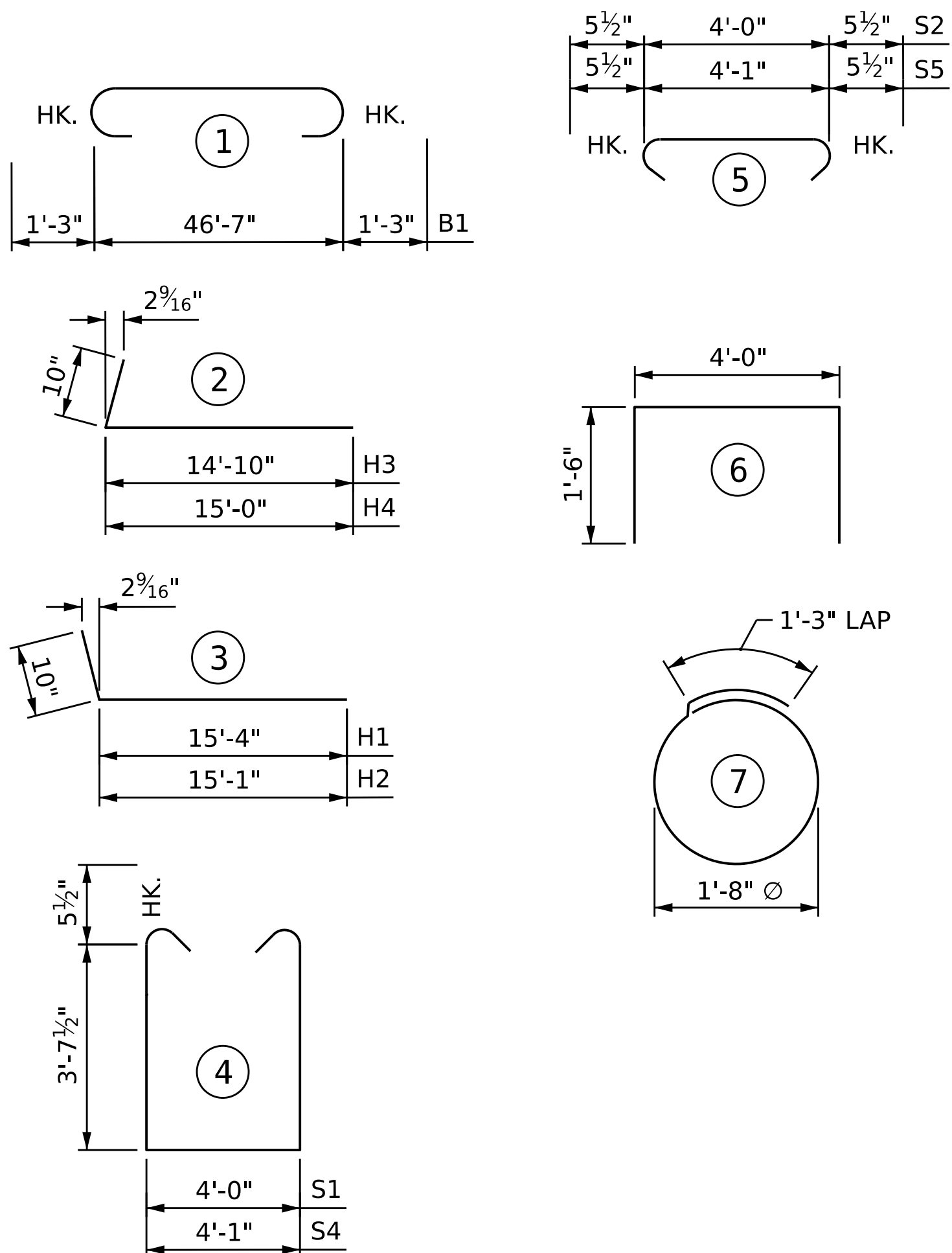
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	#9	1	49'-1"	2003
B2	24	#4	STR	24'-6"	393
B3	12	#4	STR	4'-0"	32
B4	1	#4	STR	28'-6"	19
B5	1	#4	STR	28'-4"	19
B6	1	#4	STR	28'-1"	19
B7	1	#4	STR	27'-10"	19
B8	1	#4	STR	27'-7"	18
B9	1	#4	STR	27'-5"	18
B10	1	#4	STR	11'-6"	8
B11	1	#4	STR	11'-4"	8
B12	1	#4	STR	11'-1"	7
B13	1	#4	STR	10'-10"	7
B14	1	#4	STR	10'-7"	7
B15	1	#4	STR	10'-5"	7
H1	9	#5	3	16'-2"	152
H2	9	#5	3	15'-11"	149
H3	8	#5	2	15'-8"	131
H4	8	#5	2	15'-10"	132
S1	53	#5	4	12'-2"	673
S2	53	#5	5	4'-11"	272
S3	32	#4	7	6'-6"	139
S4	2	#5	4	12'-3"	26
S5	2	#5	5	5'-0"	10
U1	19	#4	6	7'-0"	88
V1	64	#4	STR	6'-7"	281
V2	28	#4	STR	8'-7"	161
V3	27	#4	STR	7'-9"	140

REINFORCING STEEL 4,938 LBS.

CLASS A CONCRETE

POUR #1- CAP, COLLARS & LOWER WINGS 38.1 C.Y.

TOTAL CLASS A CONCRETE 38.1 C.Y.

PROJECT NO. BR-0174

PENDER COUNTY

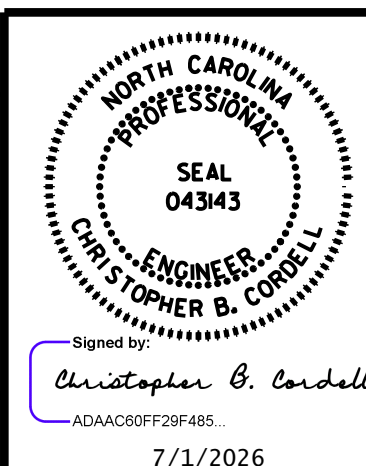
STATION: 19+84.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
INTEGRAL
END BENT 1

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



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DWC. No.

DRAWN BY : JJR DATE : 3/25
CHECKED BY : CBC DATE : 3/25
DESIGN ENGINEER : CBC DATE : 3/25

STIRRUPS IN CAP AND "U" BARS MAY BE SHIFTED AS NECESSARY
TO CLEAR ANCHOR BOLTS.

GALVANIZE THE TOP 33 FEET OF EACH INTERIOR BENT PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

Plan view of bridge deck showing spans A and B, bents, and girders. The diagram includes dimensions for spans (e.g., 39'-6" total, 5'-6", 8'-5", 8'-9"), girder spacings (e.g., 8'-5 7/16", 5'-7 13/16", 2'-9 3/16"), and labels for various components like BENT 1 CONTROL LINE, GDR. B1-B5, GDR. A1-A5, ELASTOMERIC BEARING PAD, and LONG CHORD. It also shows a 75°-00'-00" angle to the long chord and a 3° angle for the bearing pad.

[illegible]

Technical drawing of a bridge bent showing plan and elevation views with dimensions and labels.

Plan View (Top):

- Overall width: 3'-9"
- Overall length: 1'-10 1/2"
- Internal dimensions: 1'-10", 1'-10", 2'-0", 1'-0", 1'-0"
- Typical dimension: 3 5/16" (TYP.)
- Labels: 2'-0" X 9" X 3 3/8" ELAST. BRG. PAD (TYPE VIII), BENT 1 CONTROL LINE, CAP & PILES, CL BRG., CL GDR. A & B, 2" O X 2'-2" ANCHOR BOLTS PROJECTING 8" ABOVE CAP (TYP. SPAN A & B), 2'-0" X 9" X 3 3/8" ELAST. BRG. PAD (TYPE VIII)

Elevation View (Bottom):

- Overall height: 3'-8"
- Overall width: 1'-10"
- Internal dimensions: 1'-10", 2'-0", 1'-0", 1'-0"
- Typical dimension: 3 5/16" (TYP.)
- Labels: 2'-0" X 9" X 3 3/8" ELAST. BRG. PAD (TYPE VIII), BENT 1 CONTROL LINE, CAP & PILES, CL BRG., CL GDR. A & B, 2" O X 2'-2" ANCHOR BOLTS PROJECTING 8" ABOVE CAP (TYP. SPAN A & B), 2'-0" X 9" X 3 3/8" ELAST. BRG. PAD (TYPE VIII)

(TYP. EACH GIRDER)

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

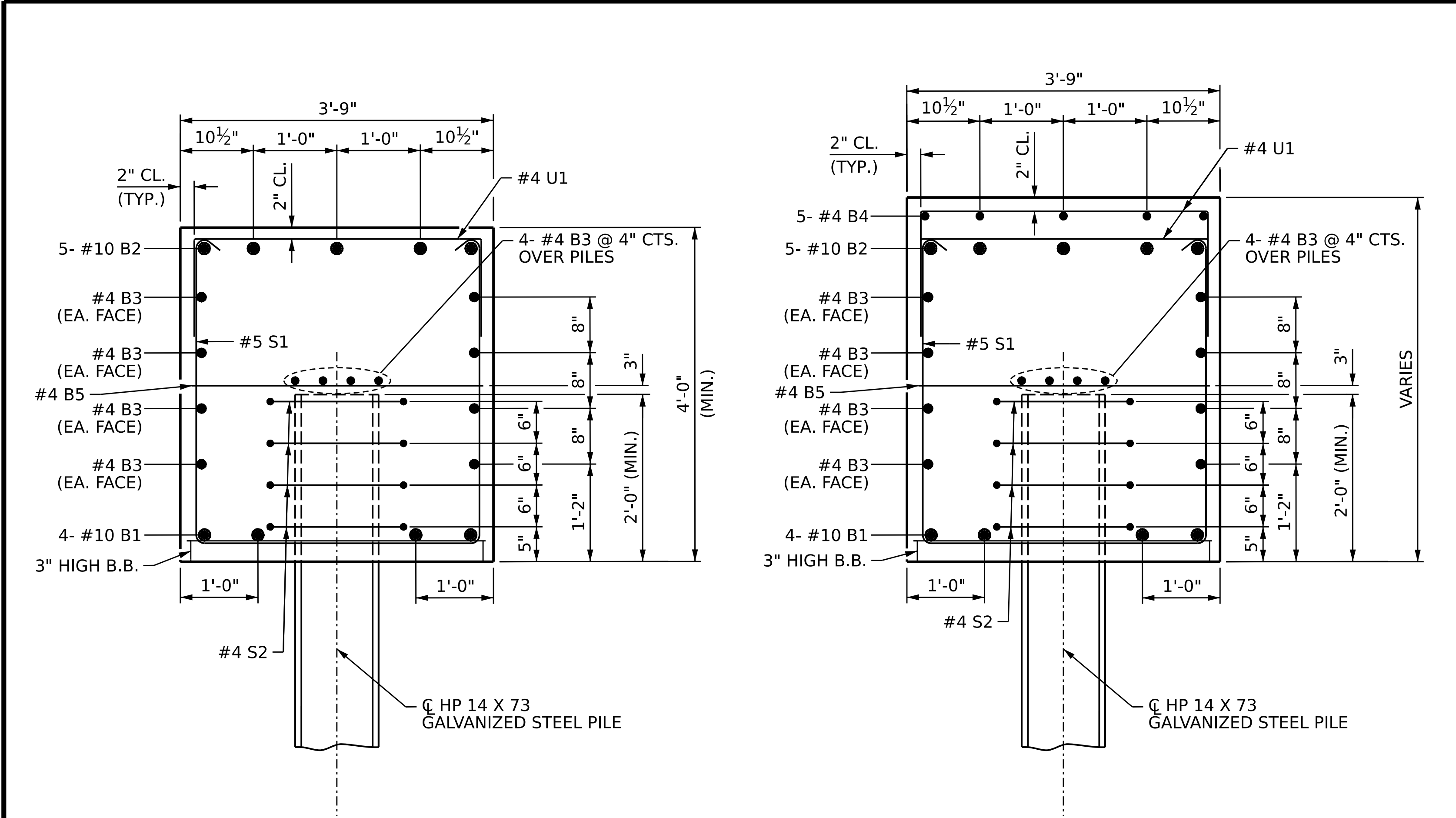
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DWG. No.

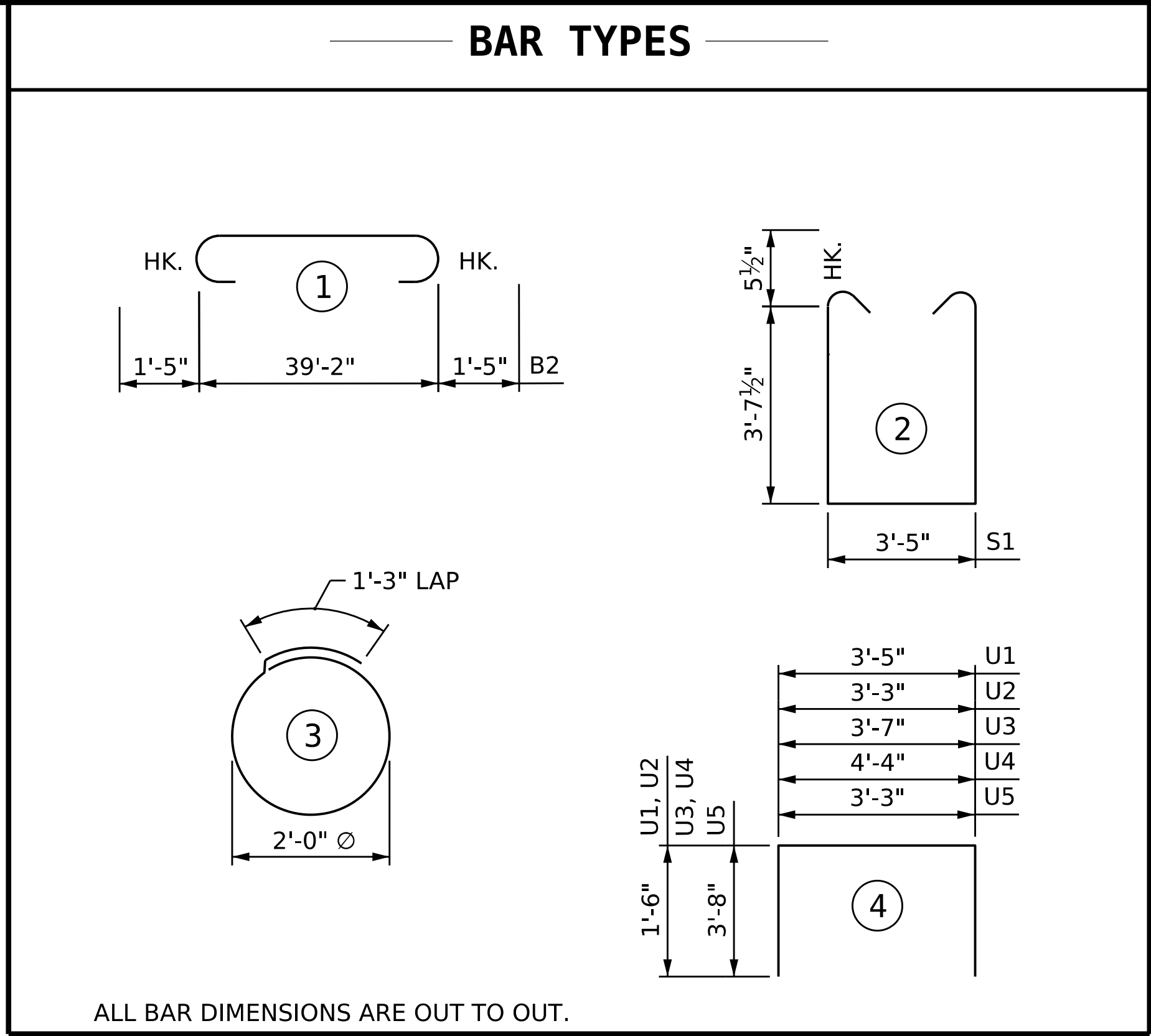
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REVISIONS						SHEET NO. 5-26
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 33
2			4			

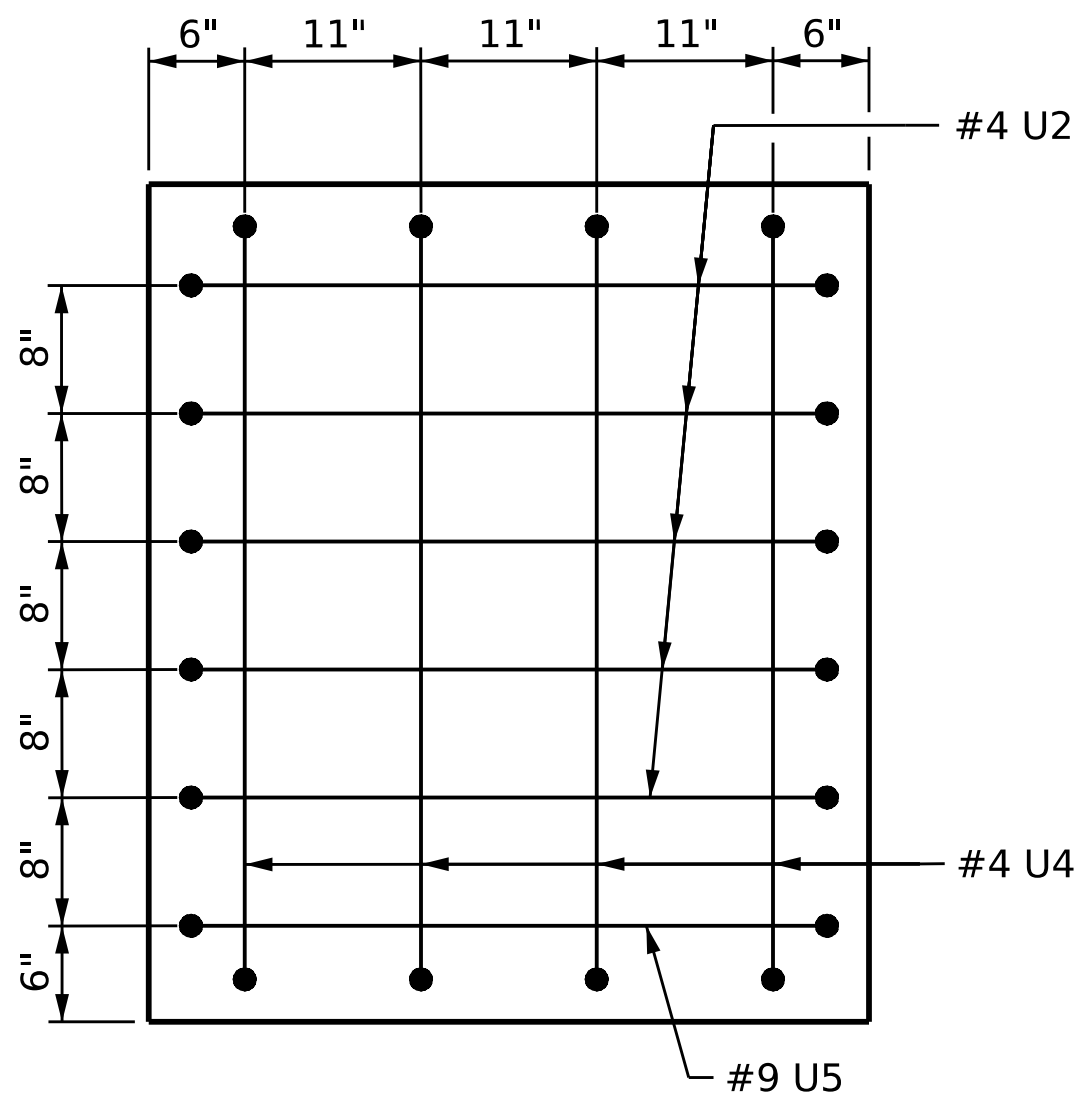
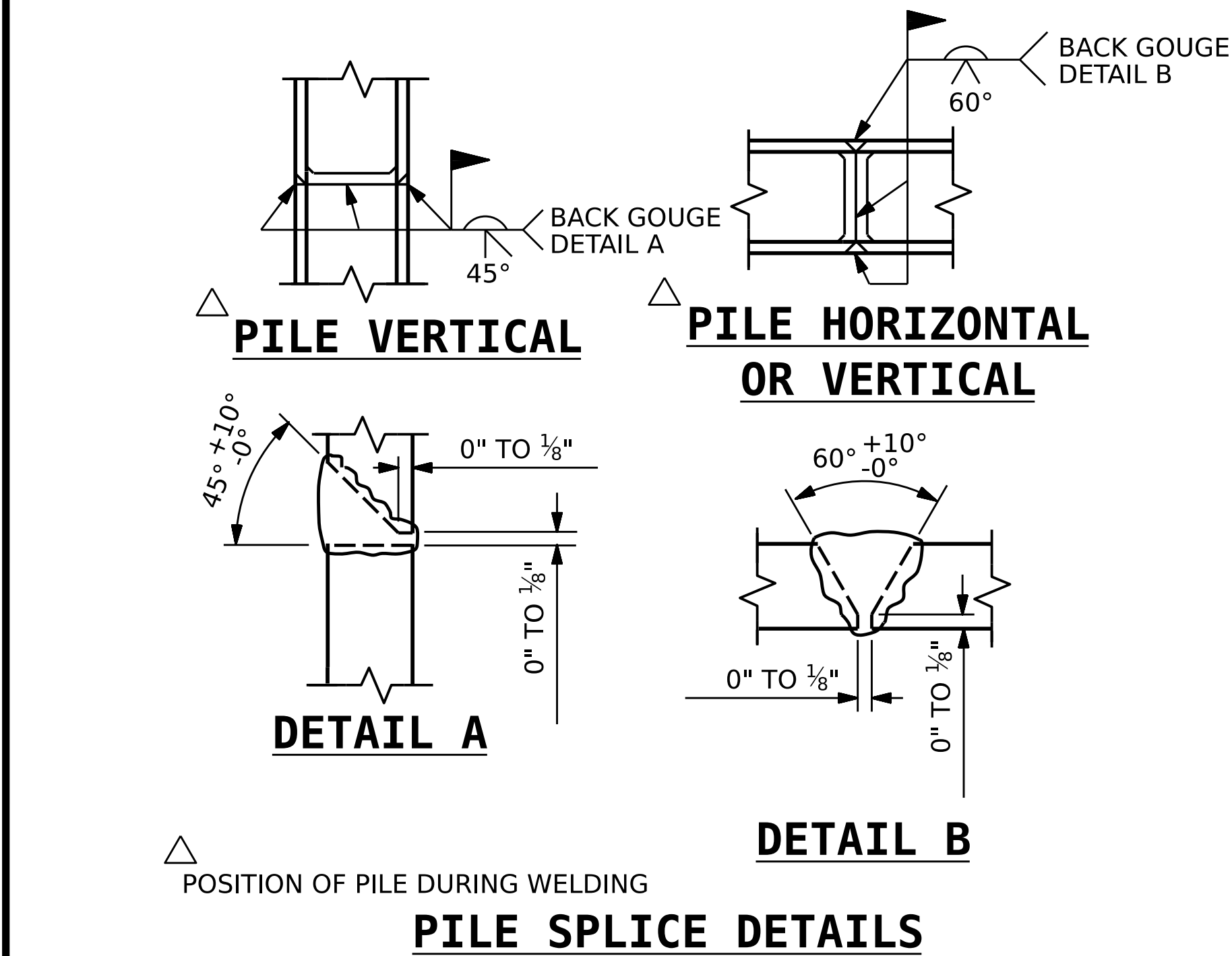


SECTION A-A

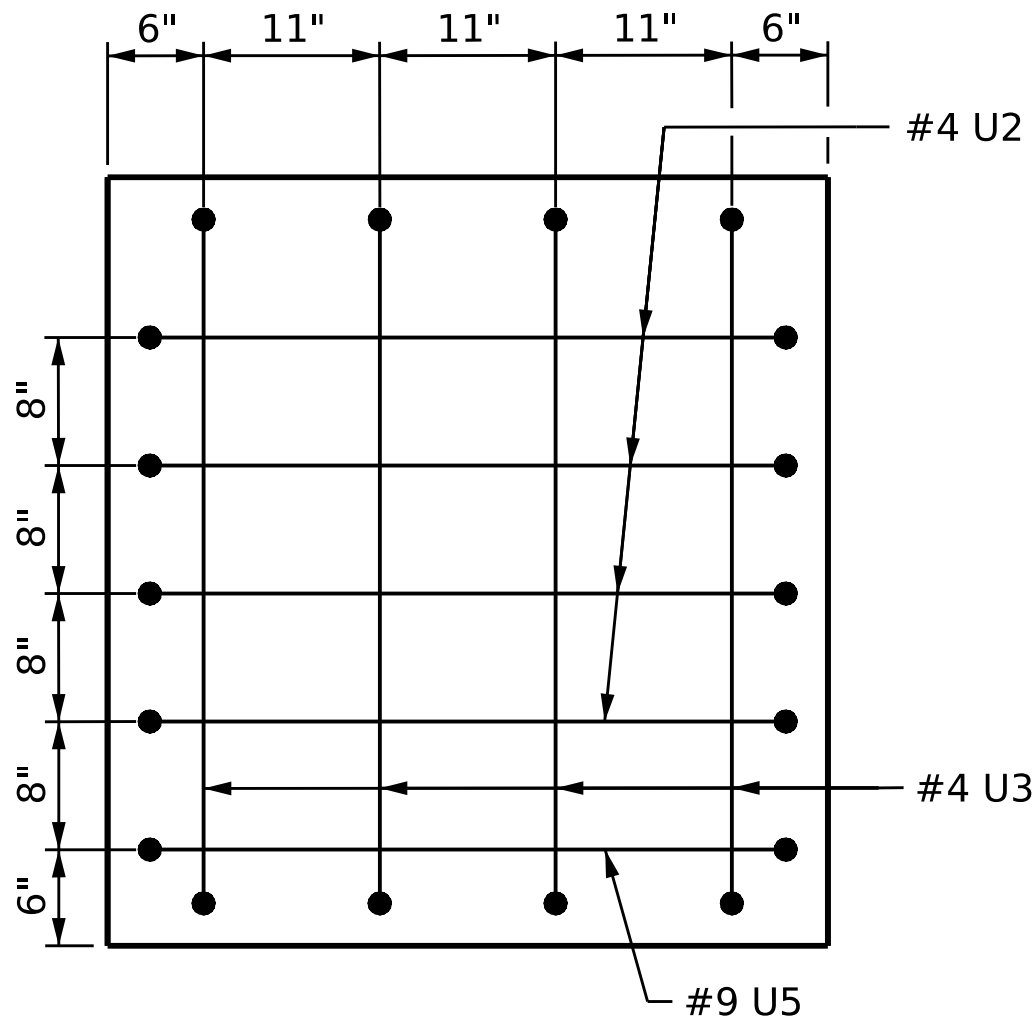
SECTION B-B



BILL OF MATERIAL					
BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	STR	39'-2"	674
B2	5	#10	1	42'-0"	904
B3	12	#4	STR	39'-2"	314
B4	5	#4	STR	22'-0"	73
B5	10	#4	STR	3'-5"	23
B6	5	#4	STR	5'-2"	17
S1	38	#5	2	11'-7"	459
S2	36	#4	3	7'-7"	182
U1	54	#4	4	6'-5"	231
U2	9	#4	4	6'-3"	38
U3	4	#4	4	6'-7"	18
U4	4	#4	4	7'-4"	20
U5	2	#9	4	10'-7"	72
REINFORCING STEEL					3,025 LBS.
TOTAL CLASS A CONCRETE					23.9 C.Y.



VIEW X-X



VIEW Y-Y

PROJECT NO. **BR-0174**
PENDER COUNTY
STATION: **19+84.00 -L-**

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT 1					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					33

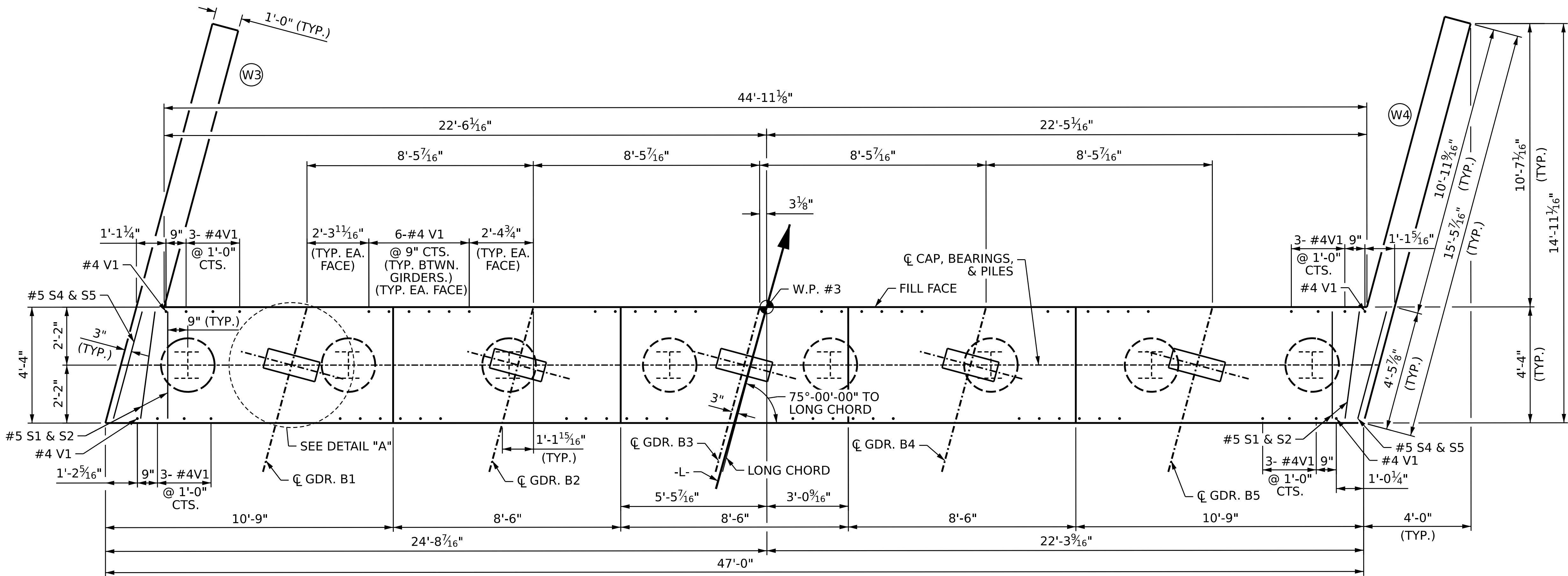
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NC COA No. F-1255

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DESIGN ENGINEER : CBC DATE : 3/25

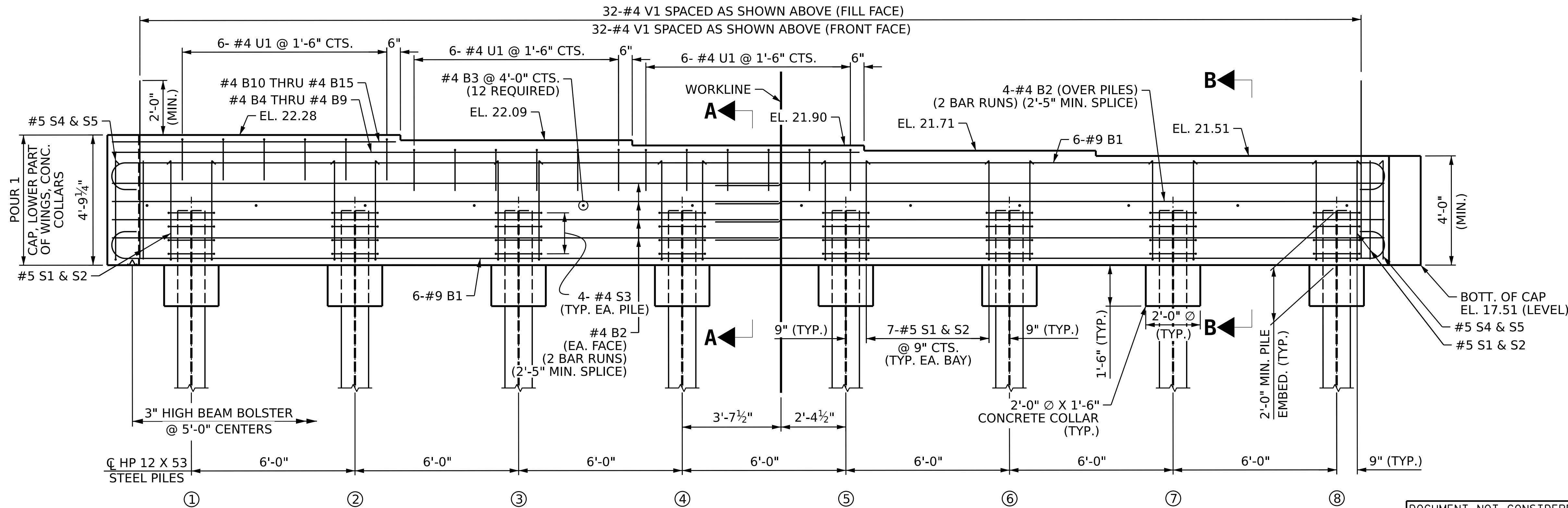
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DWC. No.

NORTH CAROLINA
PROFESSIONAL
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043143
Christopher B. Cordell
7/1/2026



PLAN



ELEVATION

(WINGS NOT SHOWN FOR CLARITY)
SEE SHEET 3 OF 3 FOR SECTIONS A-A AND B-B

NOTES

STIRRUPS AND #4 U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

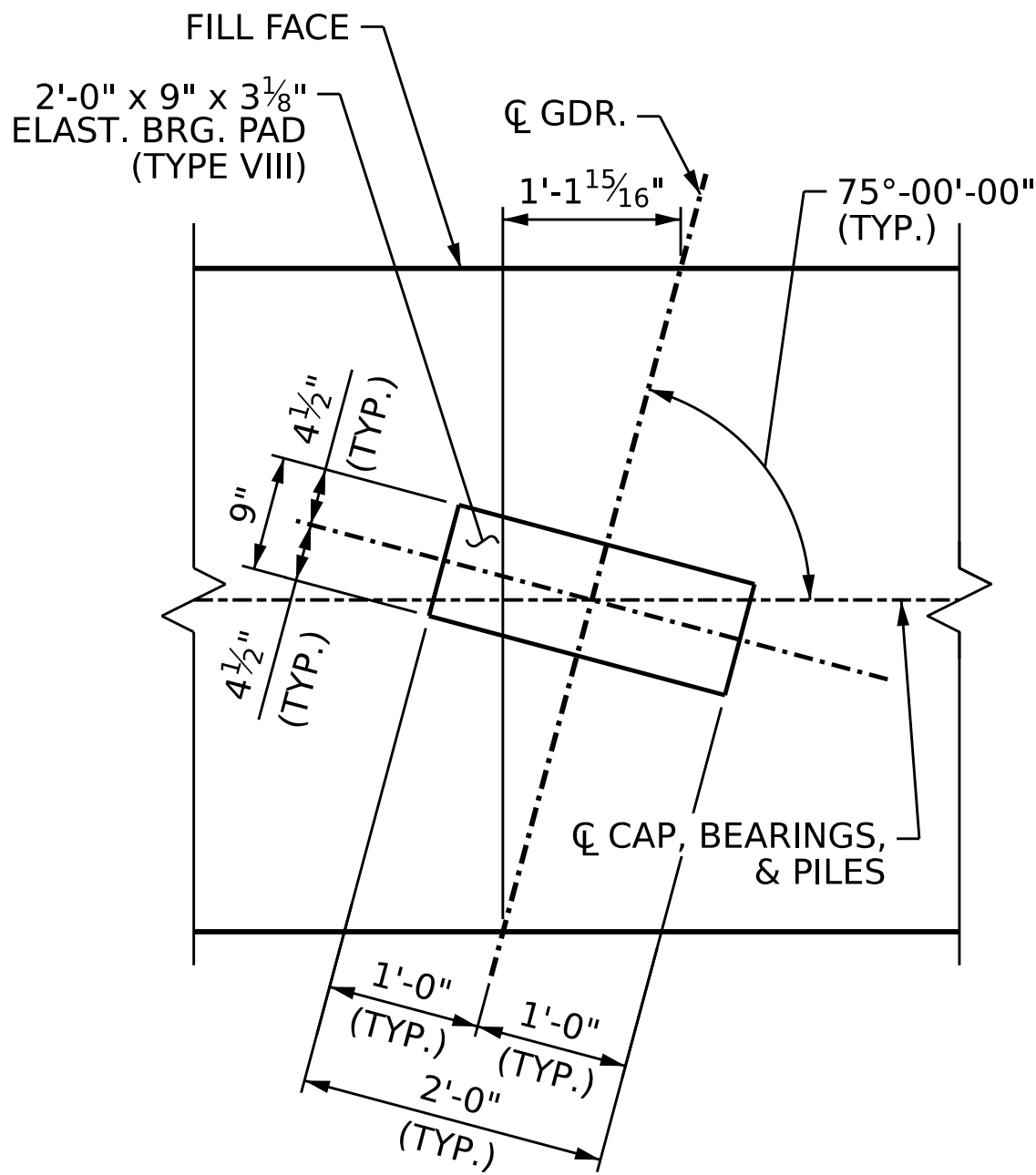
FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

THE TOP SURFACE AREA OF THE END BENT CAP AND WINGS (POUR 1) EXCEPT THE BEARING AREAS SHALL BE RAKED TO A DEPTH OF $\frac{3}{4}$ ".

FOR WING DETAILS, SEE SHEET 2 OF 3.

SPLAY STIRRUPS AT END OF CAP EVENLY AS SHOWN.

THE UPPER PART OF INTEGRAL PORTION AND WINGS SHALL BE POURED WITH THE SUPERSTRUCTURE, SEE SUPERSTRUCTURE PLAN OF SPANS.



DETAIL "A"

PILES NOT SHOWN FOR CLARITY
(TYP. EACH GIRDER)

PROJECT NO. **BR-0174**

PENDER COUNTY

STATION: **19+84.00 -L-**

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUBSTRUCTURE
INTEGRAL
END BENT 2**



Signed by:
Christopher B. Cordell
ADAAC00FF2BF485
7/1/2026

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SIGNATURES COMPLETED

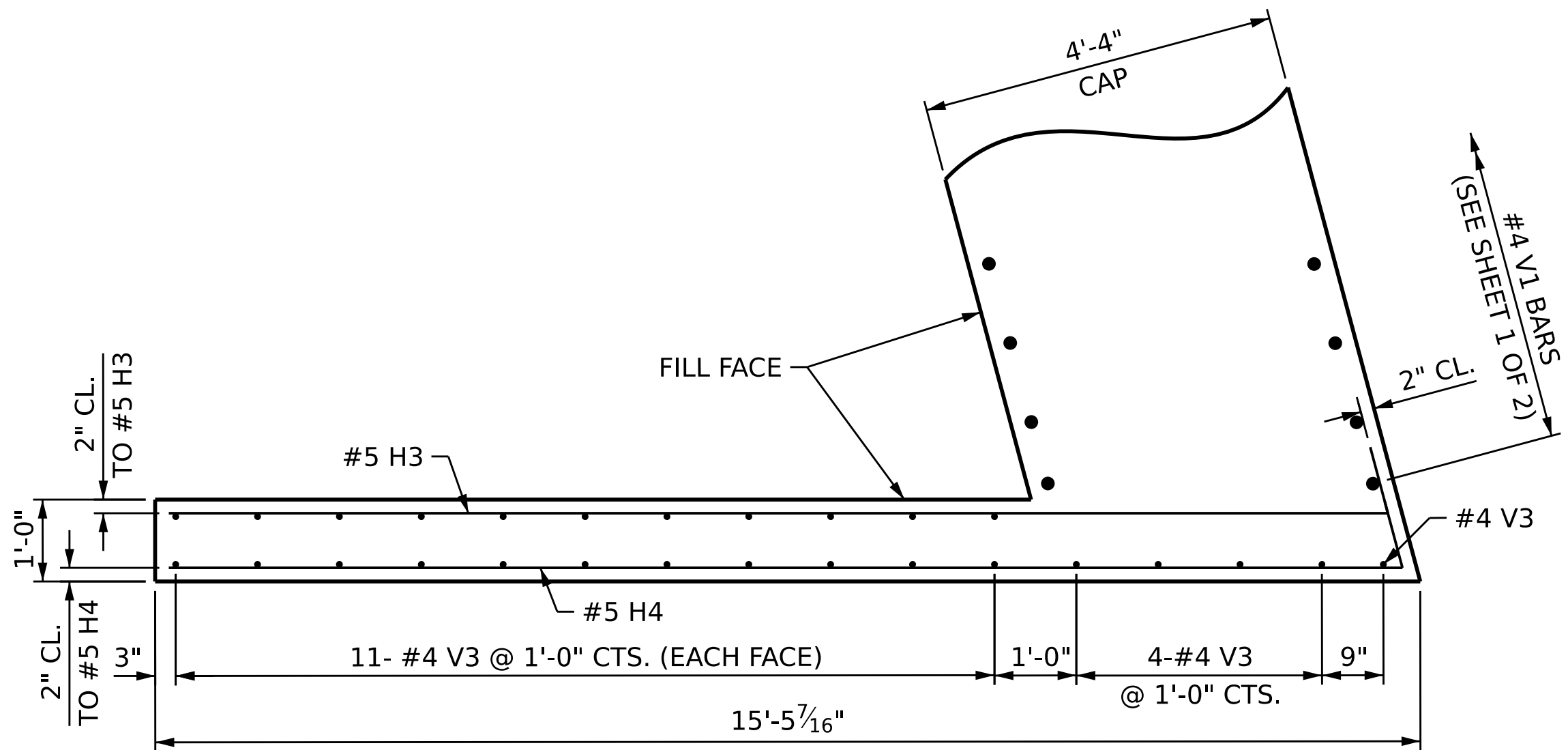
**CDM
Smith**

CDM SMITH Inc.
4600 Park Road, Suite 240
Charlotte, NC 28209-3730
NC COA No. F-1255

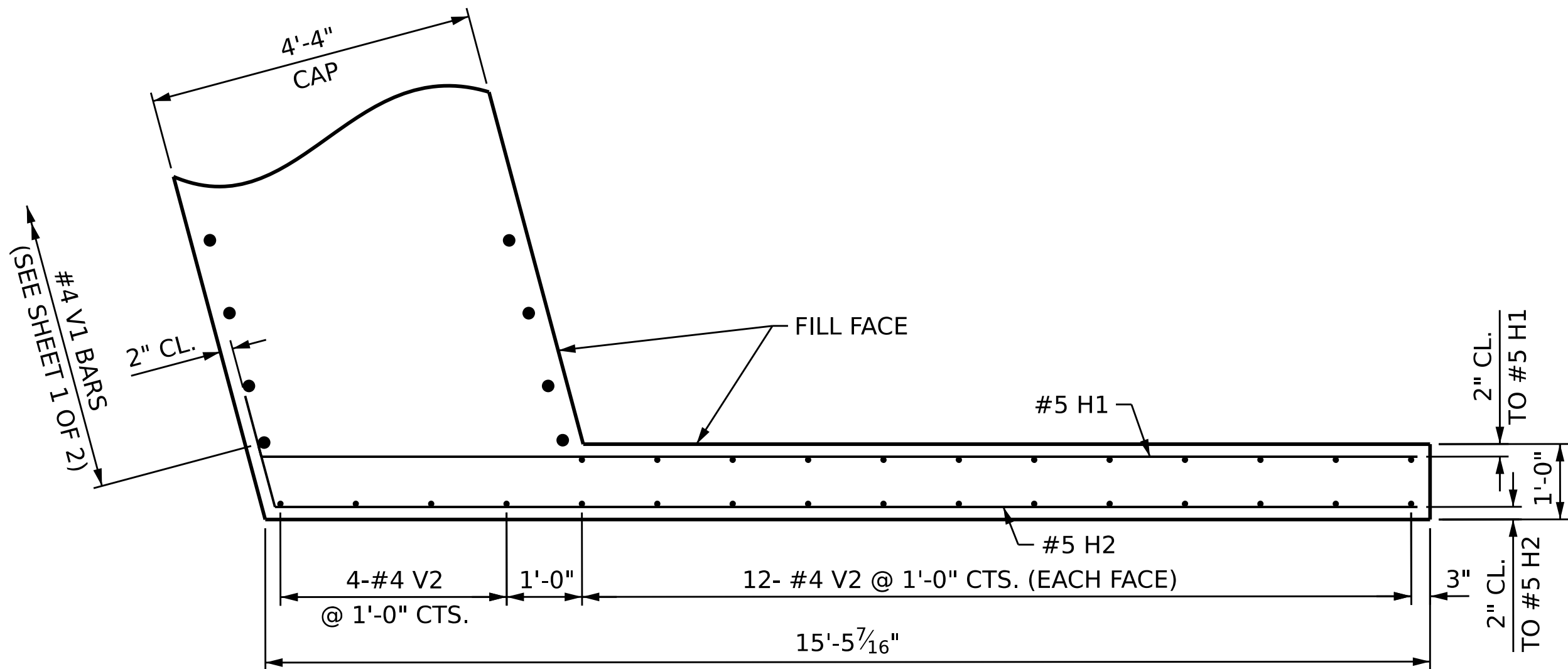
DRAWN BY : JJR DATE : 3/25
CHECKED BY : CBC DATE : 3/25
DESIGN ENGINEER : CBC DATE : 3/25

DWG. No.

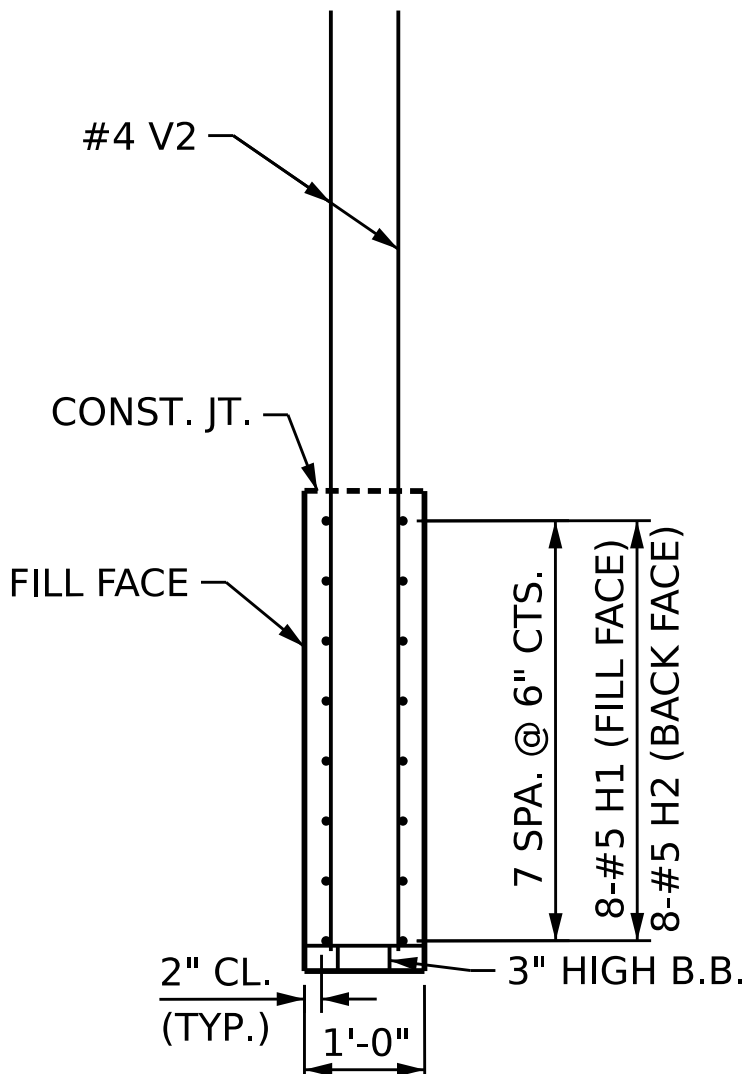
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	
1			3	S-28
2			4	TOTAL SHEETS 33



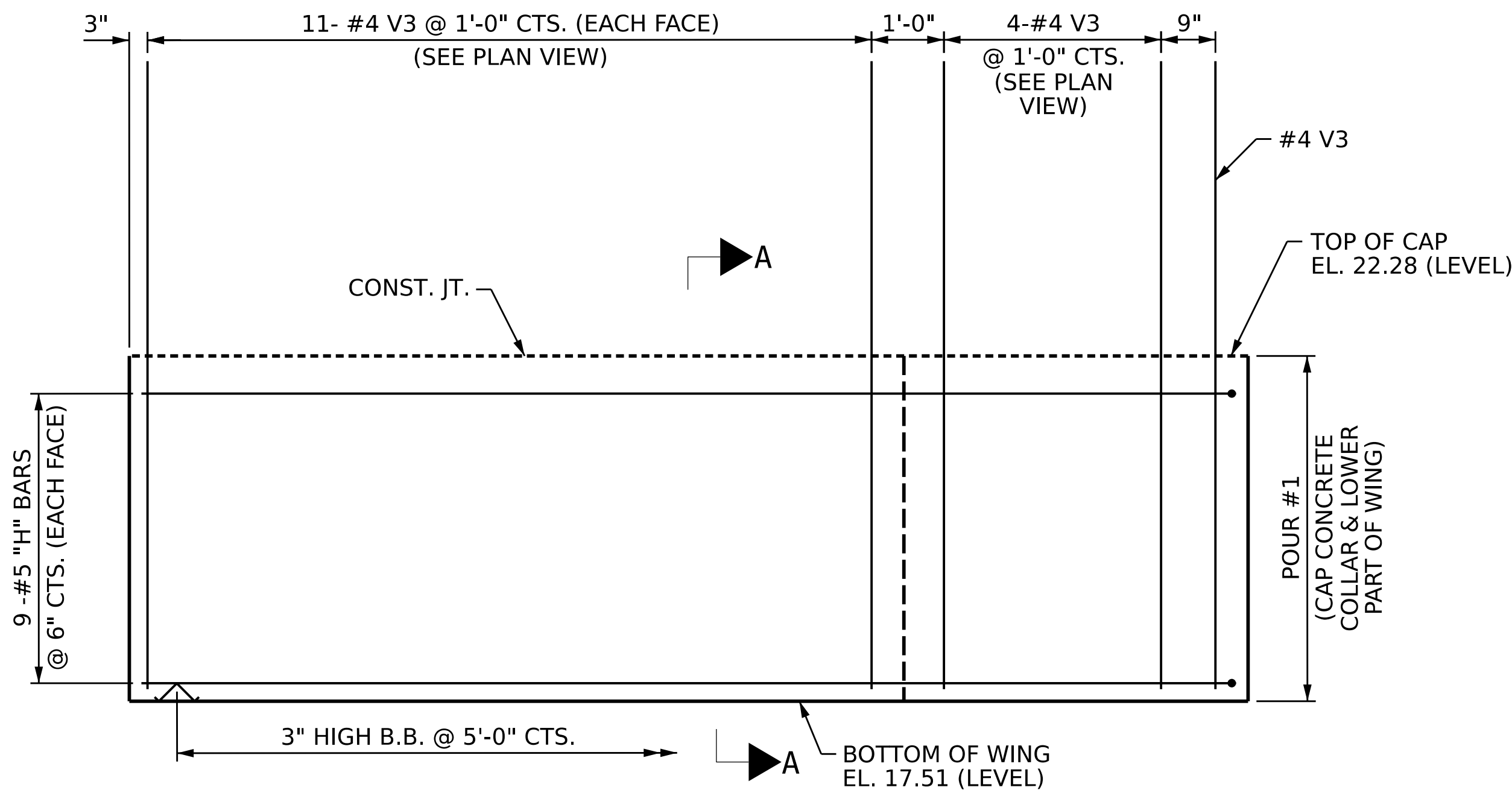
PLAN OF W3



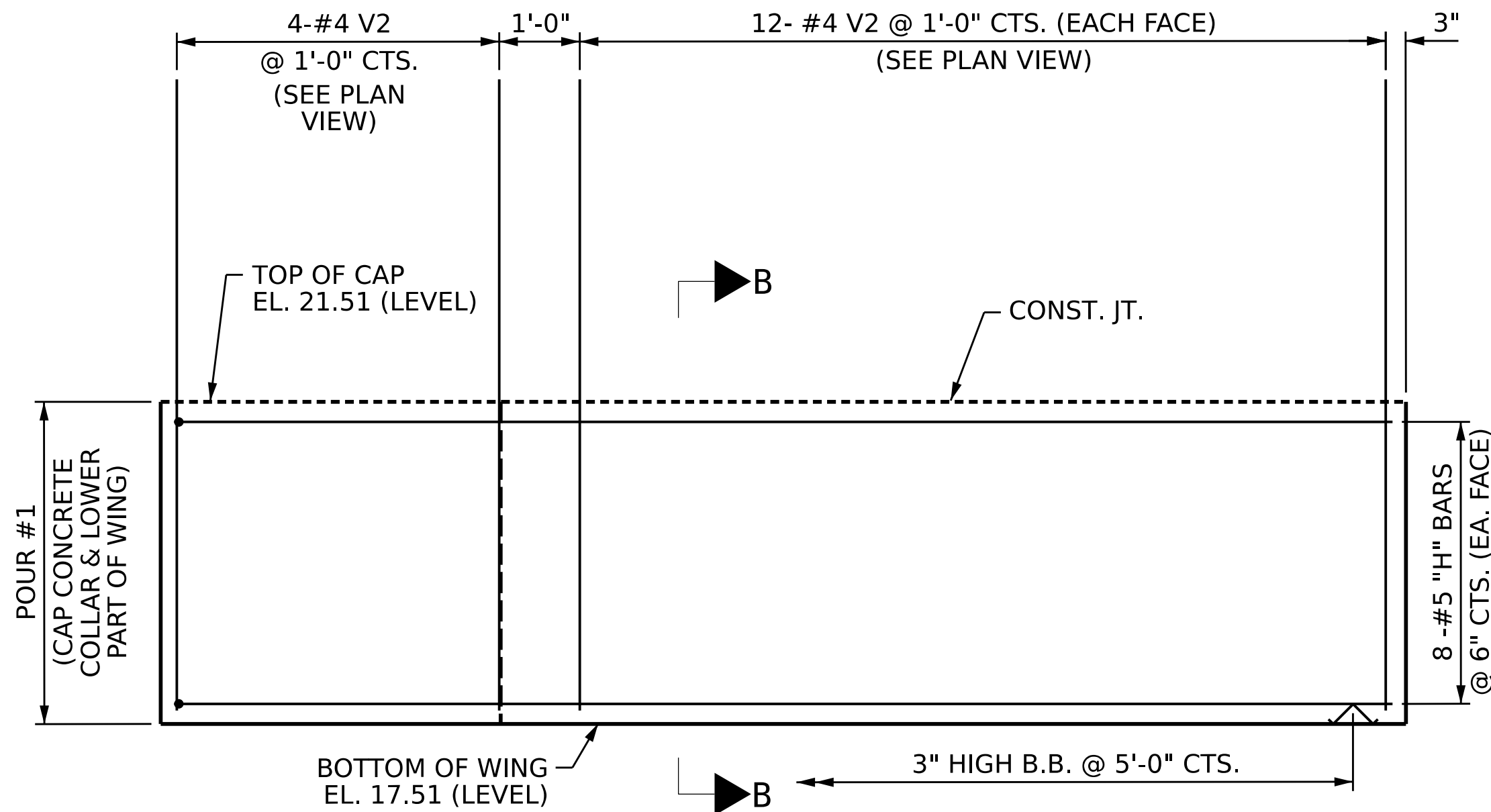
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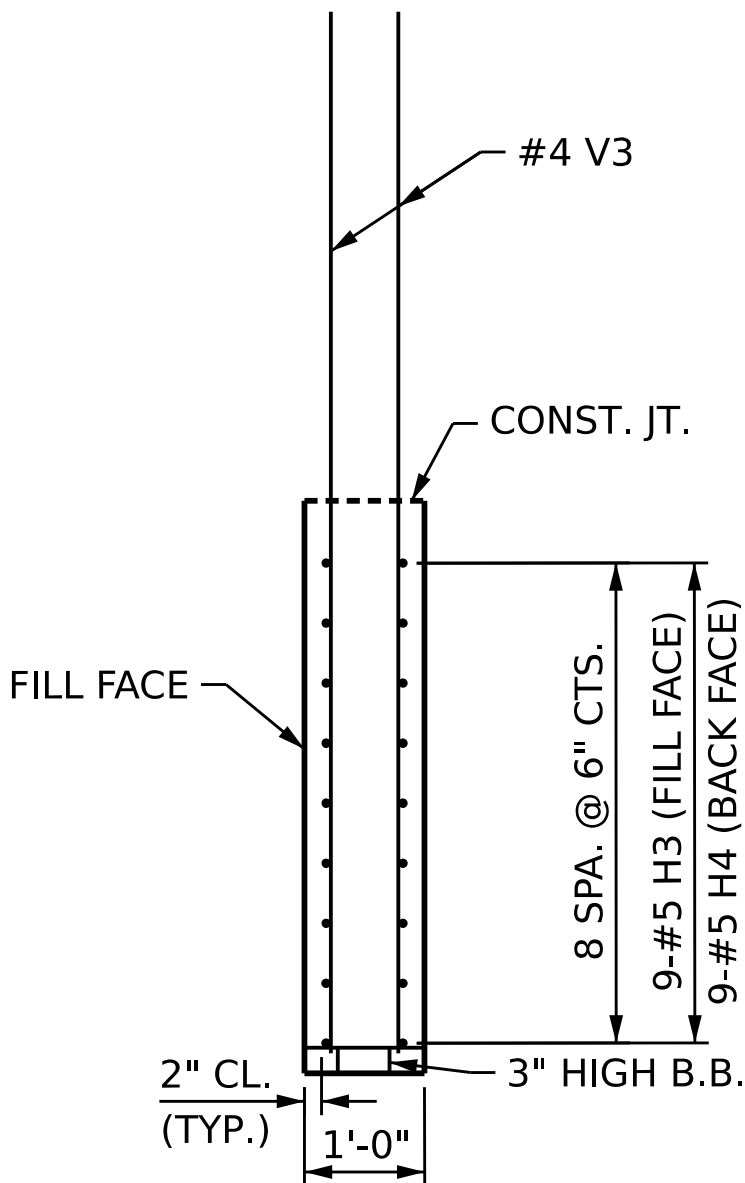
SECTION B-B



ELEVATION OF W3



ELEVATION OF W4



SECTION A-A

PROJECT NO. **BR-0174**
PENDER COUNTY
STATION: **19+84.00 -L-**

SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE INTEGRAL END BENT 2					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					33

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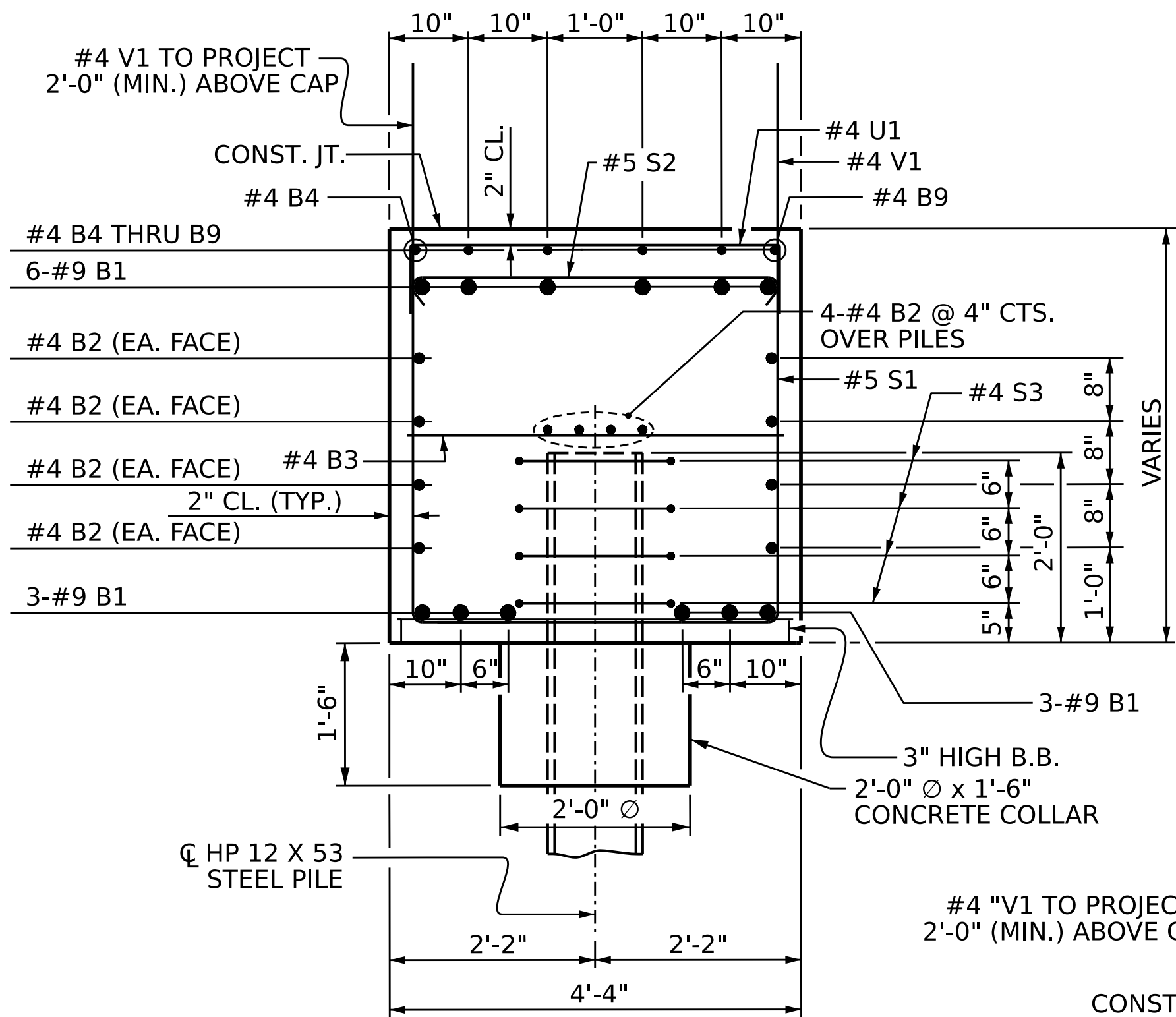
DRAWN BY : JJR
CHECKED BY : CBC
DESIGN ENGINEER : CBC

DATE : 3/25
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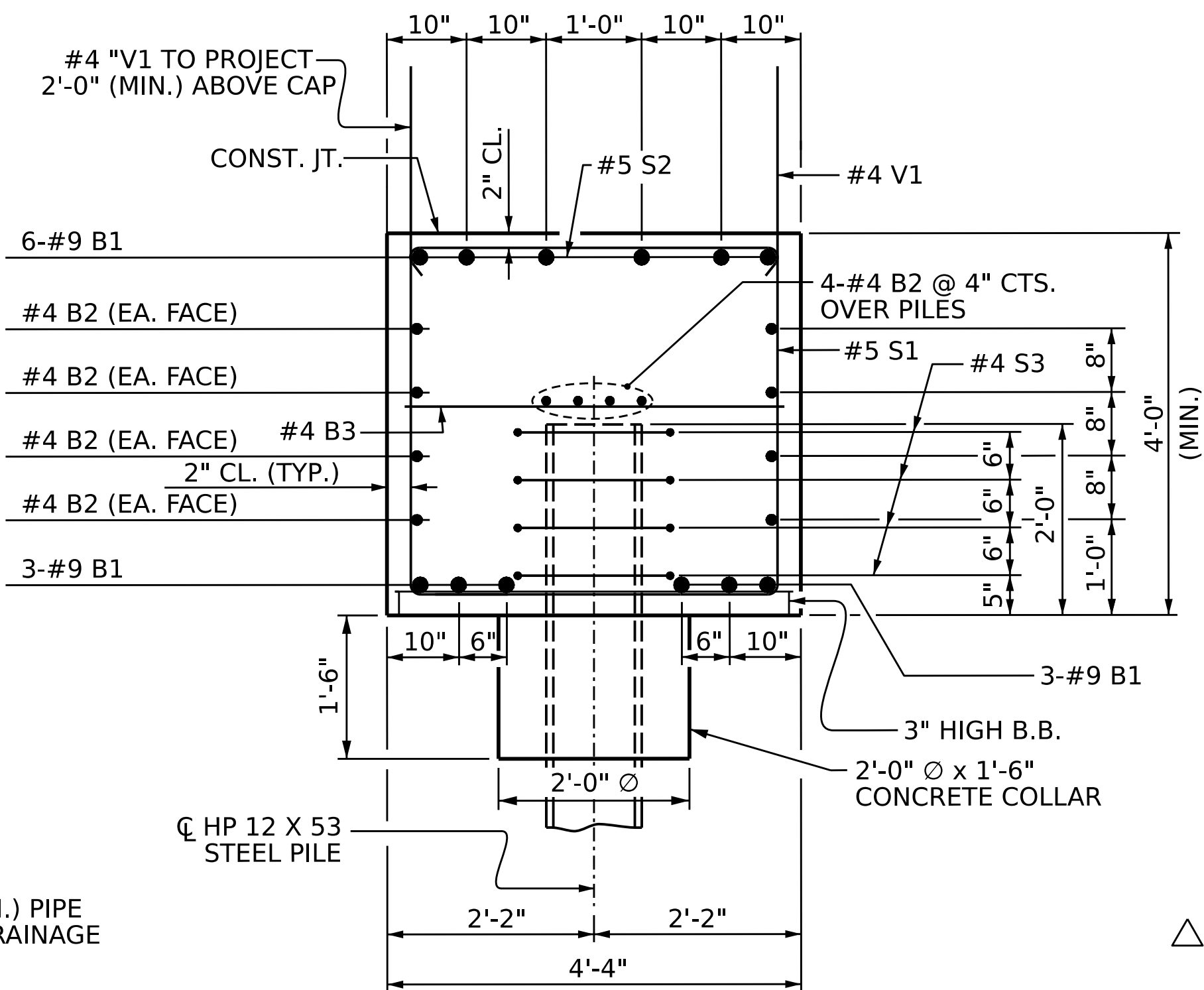
DWC. No.

NORTH CAROLINA
PROFESSIONAL
ENGINEER
043143
CHRISTOPHER B. CORDELL

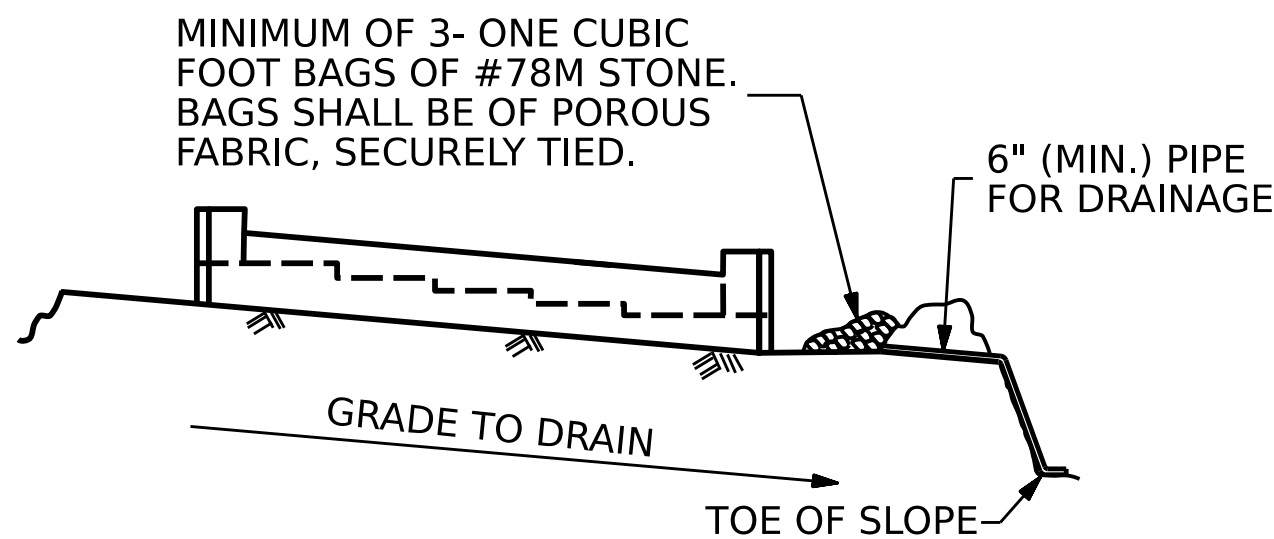
Signed by:
Christopher B. Cordell
ADAAC60FP2P485.
7/1/2026



SECTION A-A



SECTION B-B

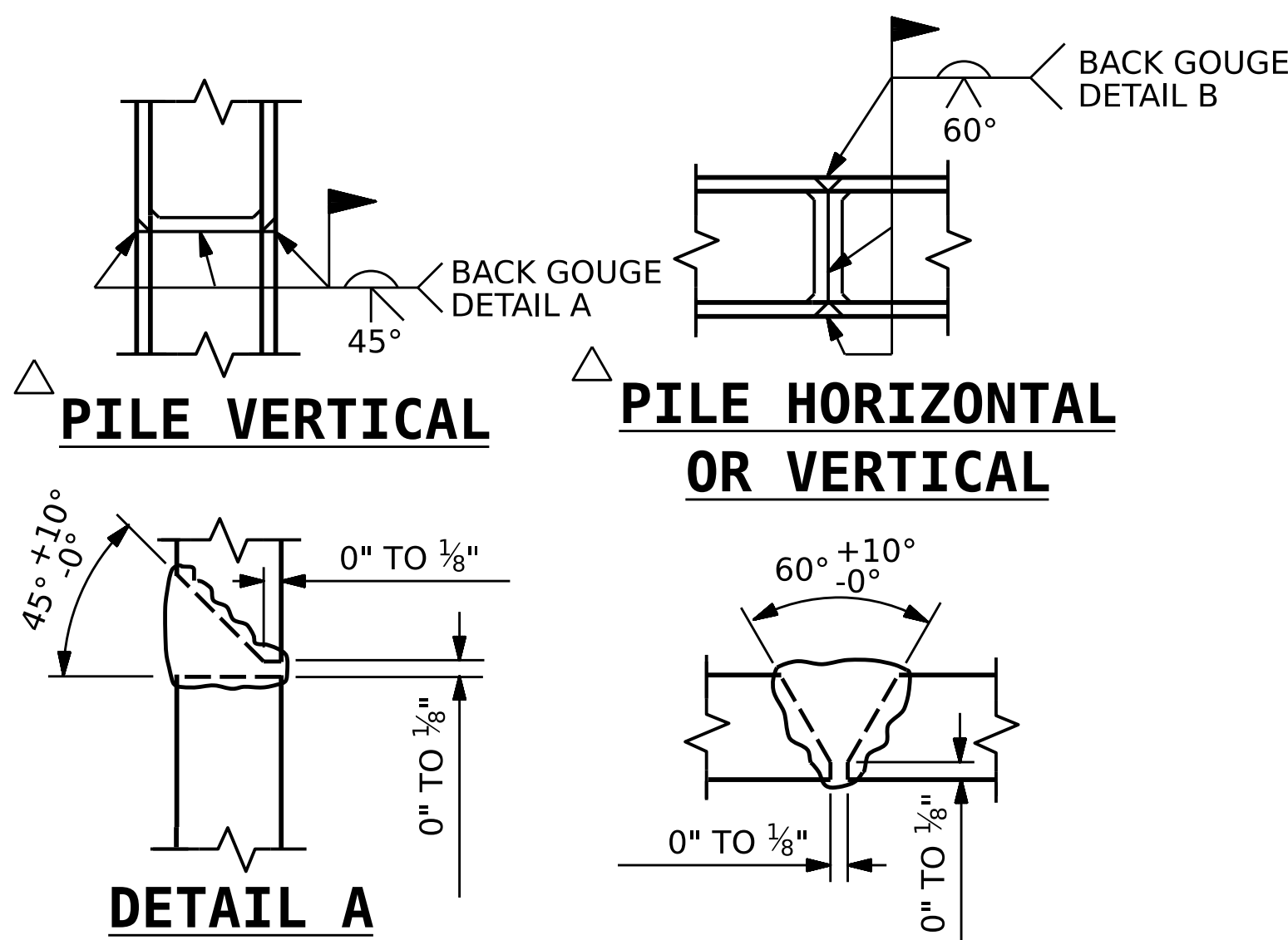
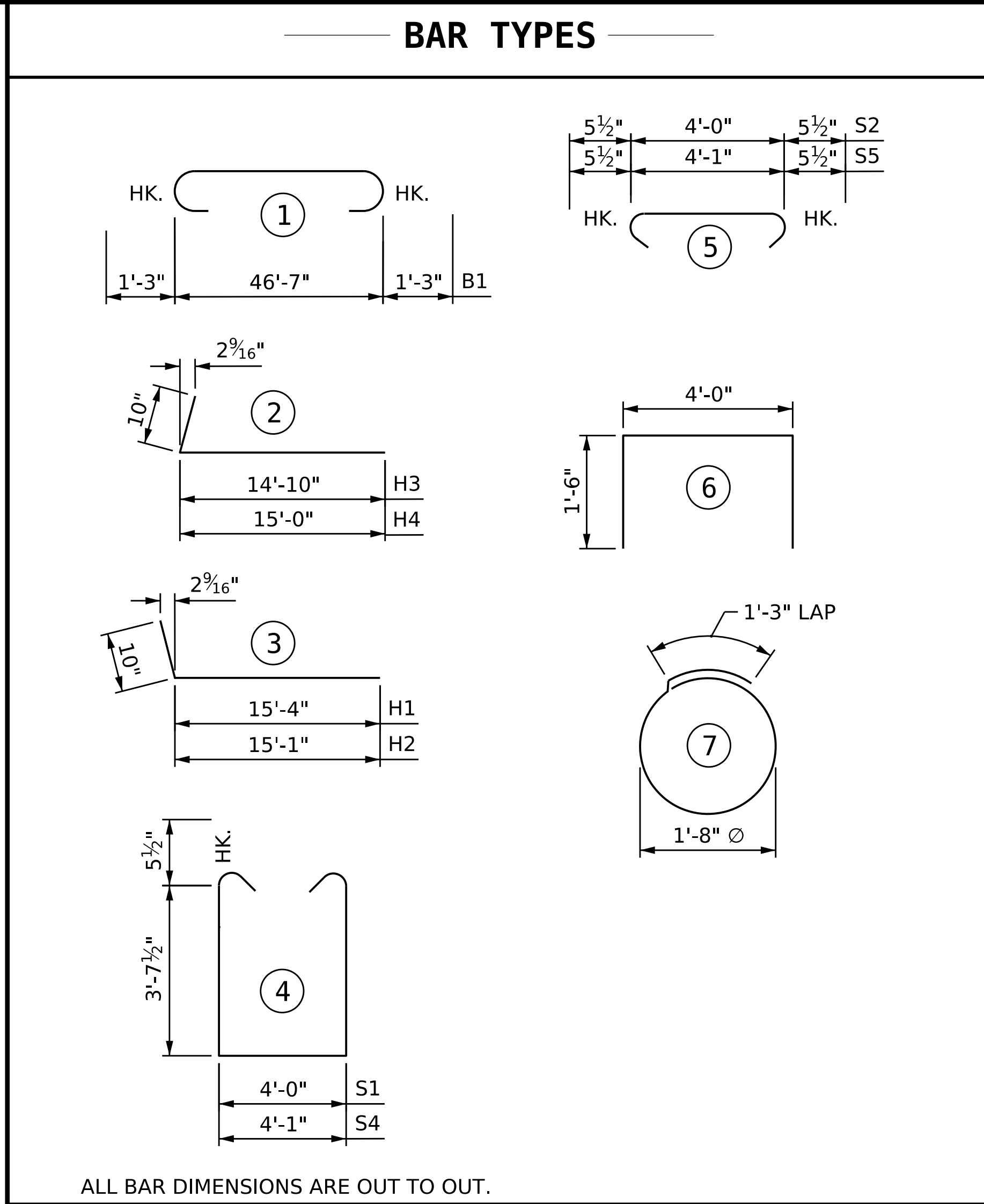


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

TEMPORARY DRAINAGE AT END BENT



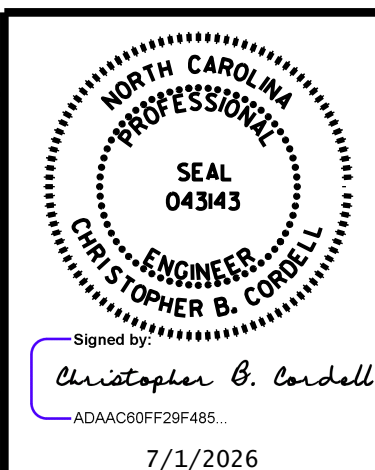
PILE SPlice DETAILS

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NC COA No. F-1255

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DESIGN ENGINEER : CBC DATE : 3/25

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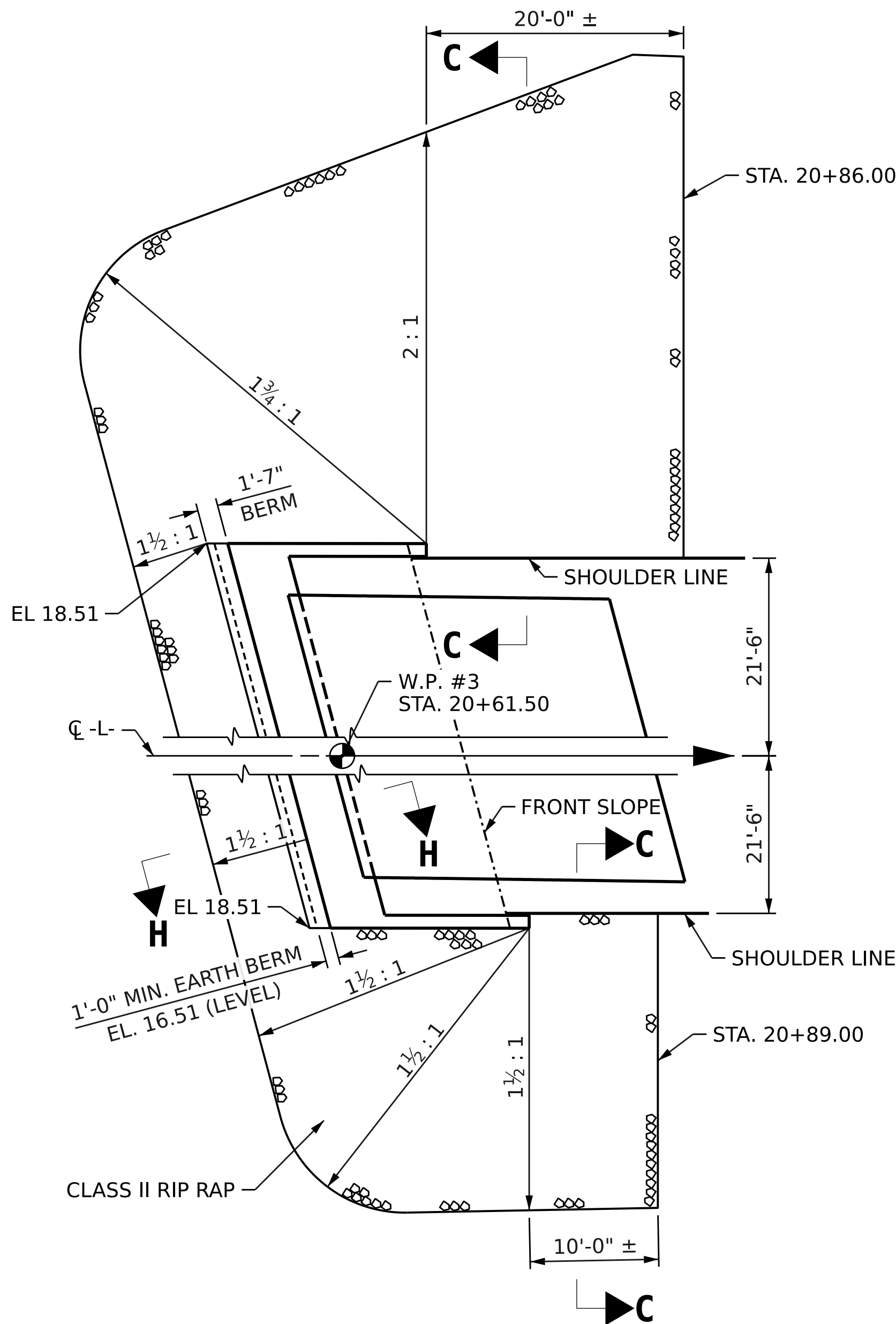
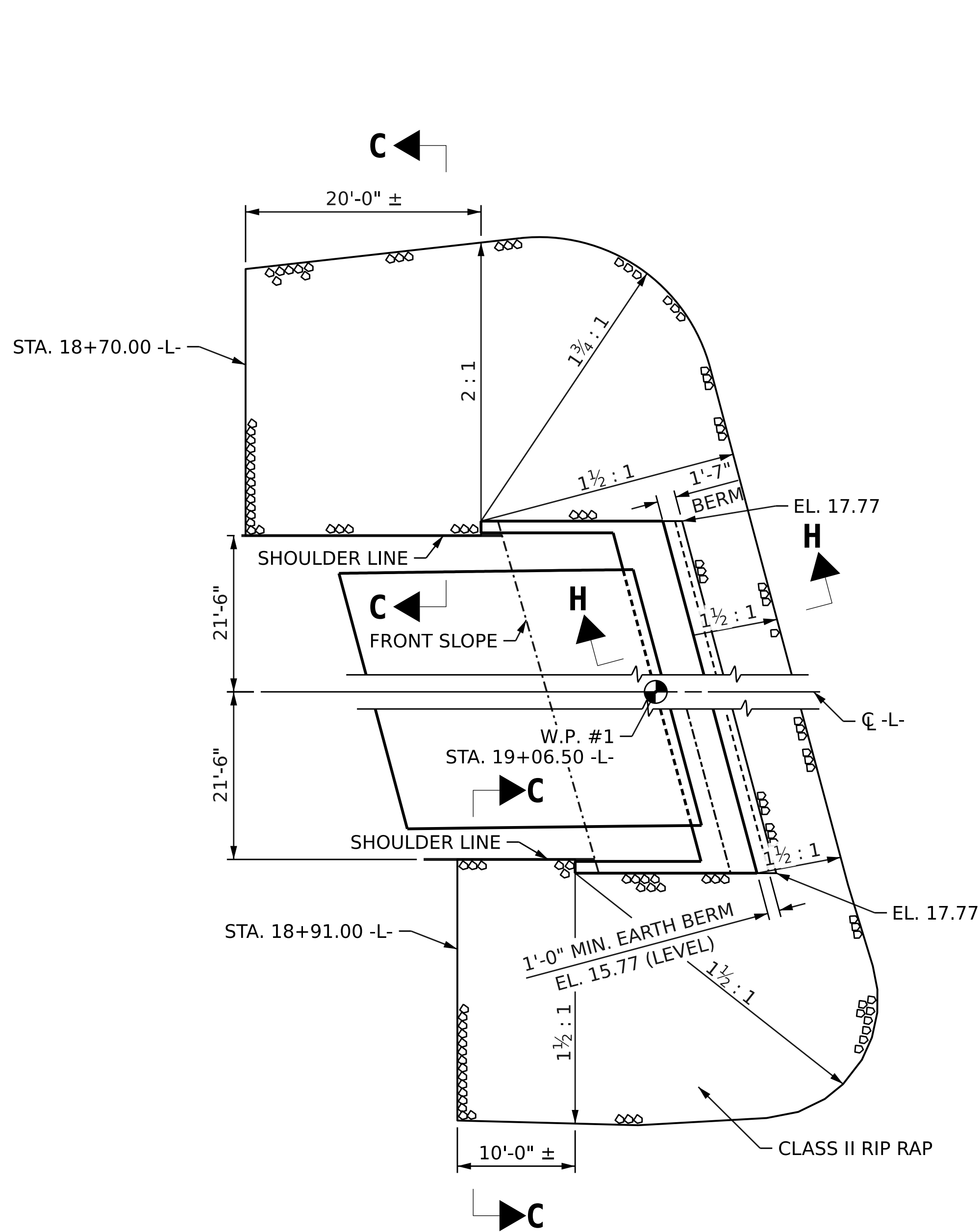


BILL OF MATERIAL					
END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	#9	1	49'-1"	2003
B2	24	#4	STR	24'-6"	393
B3	12	#4	STR	4'-0"	32
B4	1	#4	STR	27'-4"	18
B5	1	#4	STR	27'-2"	18
B6	1	#4	STR	26'-11"	18
B7	1	#4	STR	26'-8"	18
B8	1	#4	STR	26'-5"	18
B9	1	#4	STR	26'-3"	18
B10	1	#4	STR	10'-4"	7
B11	1	#4	STR	10'-2"	7
B12	1	#4	STR	9'-11"	7
B13	1	#4	STR	9'-8"	6
B14	1	#4	STR	9'-5"	6
B15	1	#4	STR	9'-3"	6
H1	8	#5	3	16'-2"	135
H2	8	#5	3	15'-11"	133
H3	9	#5	2	15'-8"	147
H4	9	#5	2	15'-10"	149
S1	53	#5	4	12'-2"	673
S2	53	#5	5	4'-11"	272
S3	32	#4	7	6'-6"	139
S4	2	#5	4	12'-3"	26
S5	2	#5	5	5'-0"	10
U1	18	#4	6	7'-0"	84
V1	64	#4	STR	6'-7"	281
V2	28	#4	STR	7'-10"	147
V3	27	#4	STR	8'-8"	156
REINFORCING STEEL					4,927 LBS.
CLASS A CONCRETE					
POUR #1 - CAP, COLLARS, & LOWER WINGS					38.0 C.Y.
TOTAL CLASS A CONCRETE					38.0 C.Y.

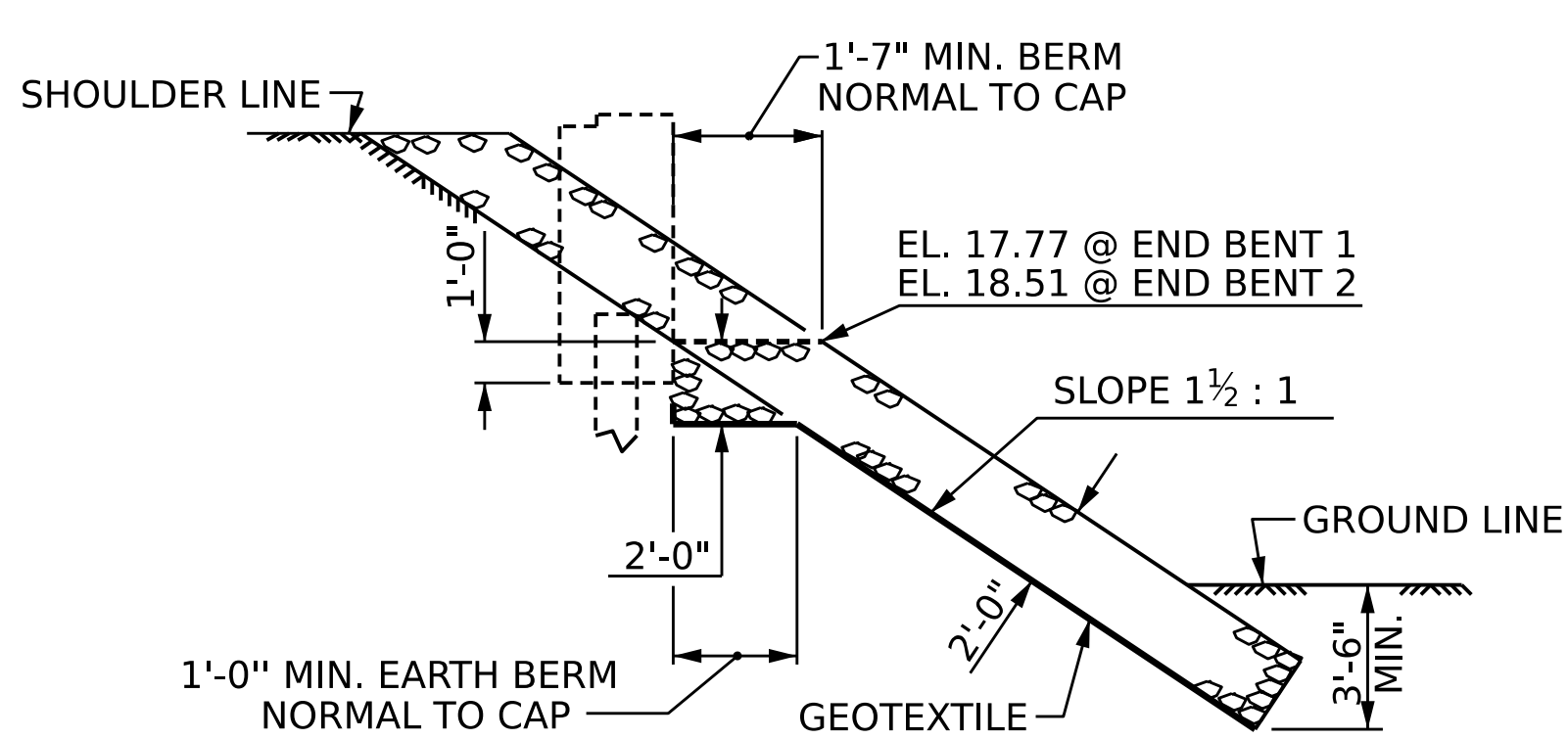
PROJECT NO. **BR-0174**
PENDER COUNTY
STATION: **19+84.00 -L-**

SHEET 3 OF 3

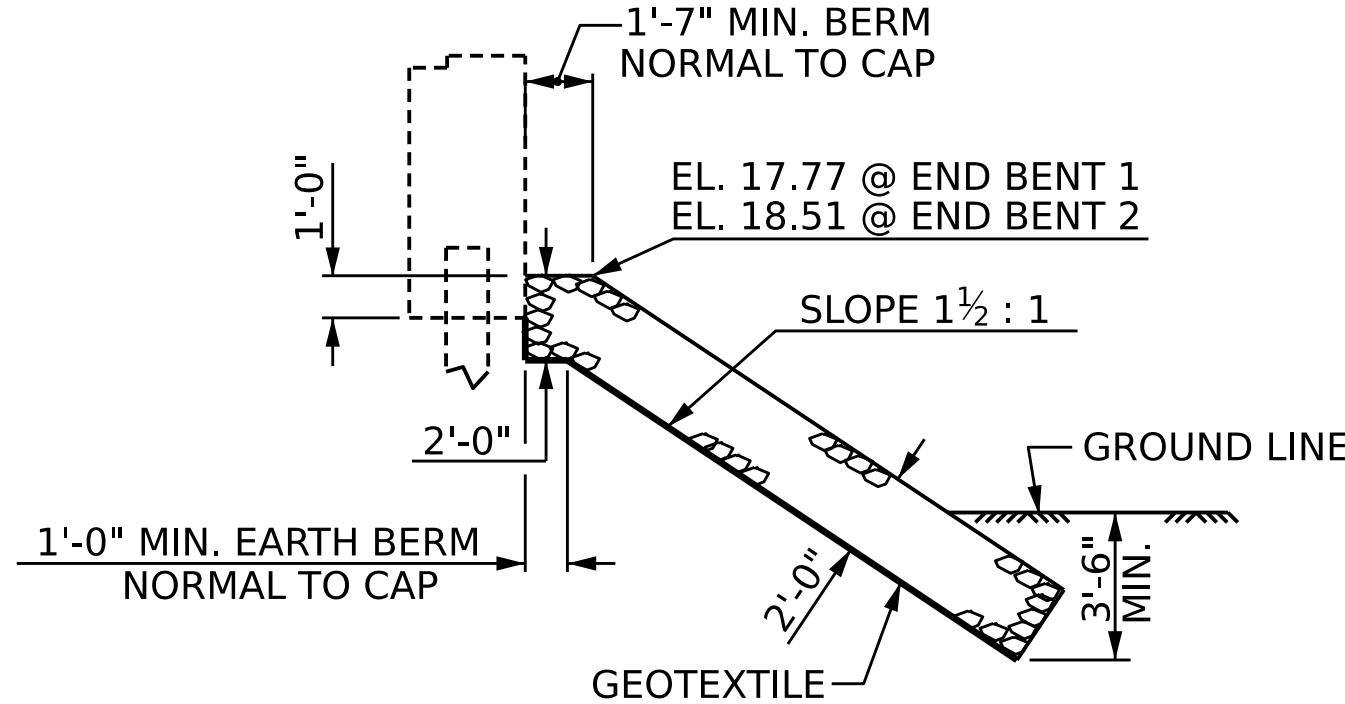
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE INTEGRAL END BENT 2					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					33



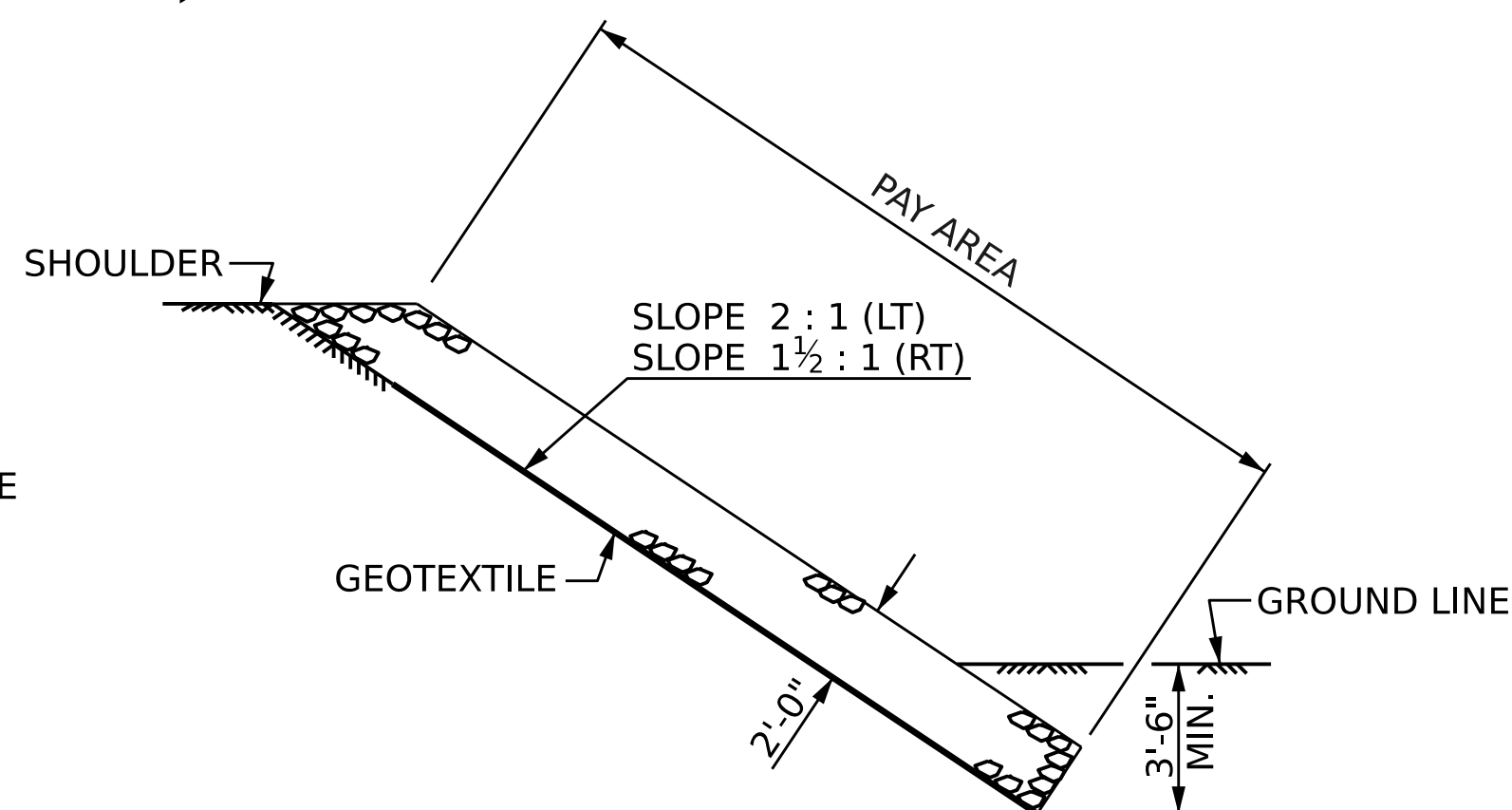
ESTIMATED QUANTITIES		
BRIDGE @ STA. 19+84.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	240	270
END BENT 2	300	330



SECTION H-H



SECTION C-C



SECTION C-C

PROJECT NO. **BR-0174**
PENDER COUNTY
STATION: **19+84.00 -L-**

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

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CDM Smith
CDM SMITH Inc.
4600 Park Road, Suite 240
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NC COA No. F-1255

DRAWN BY : JJR
CHECKED BY : CBC
DESIGN ENGINEER : CBC

DATE : 3/25
DATE : 3/25
DATE : 3/25

DWC. No.

**NORTH CAROLINA
PROFESSIONAL
ENGINEER**
SEAL
043143
CHRISTOPHER B. CORDELL

Signed by:
Christopher B. Cordell
ADAAC00FF2BF485

7/1/2026

REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	
1			3	S-31
2			4	TOTAL SHEETS 33

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.

THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

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

#4 "A" BARS ARE TO BE PLACED ALONG THE APPROACH SLAB SHORT CHORDS.

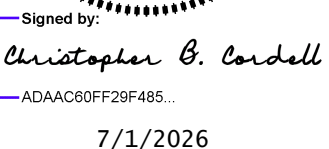
FOR ARC OFFSET DIMENSIONS, SEE SHEET 2 OF 2.



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PROJECT NO. BR-0174

 PENDER COUNTY

STATION: 19+84.00 -L-

SHEET 1 OF 2

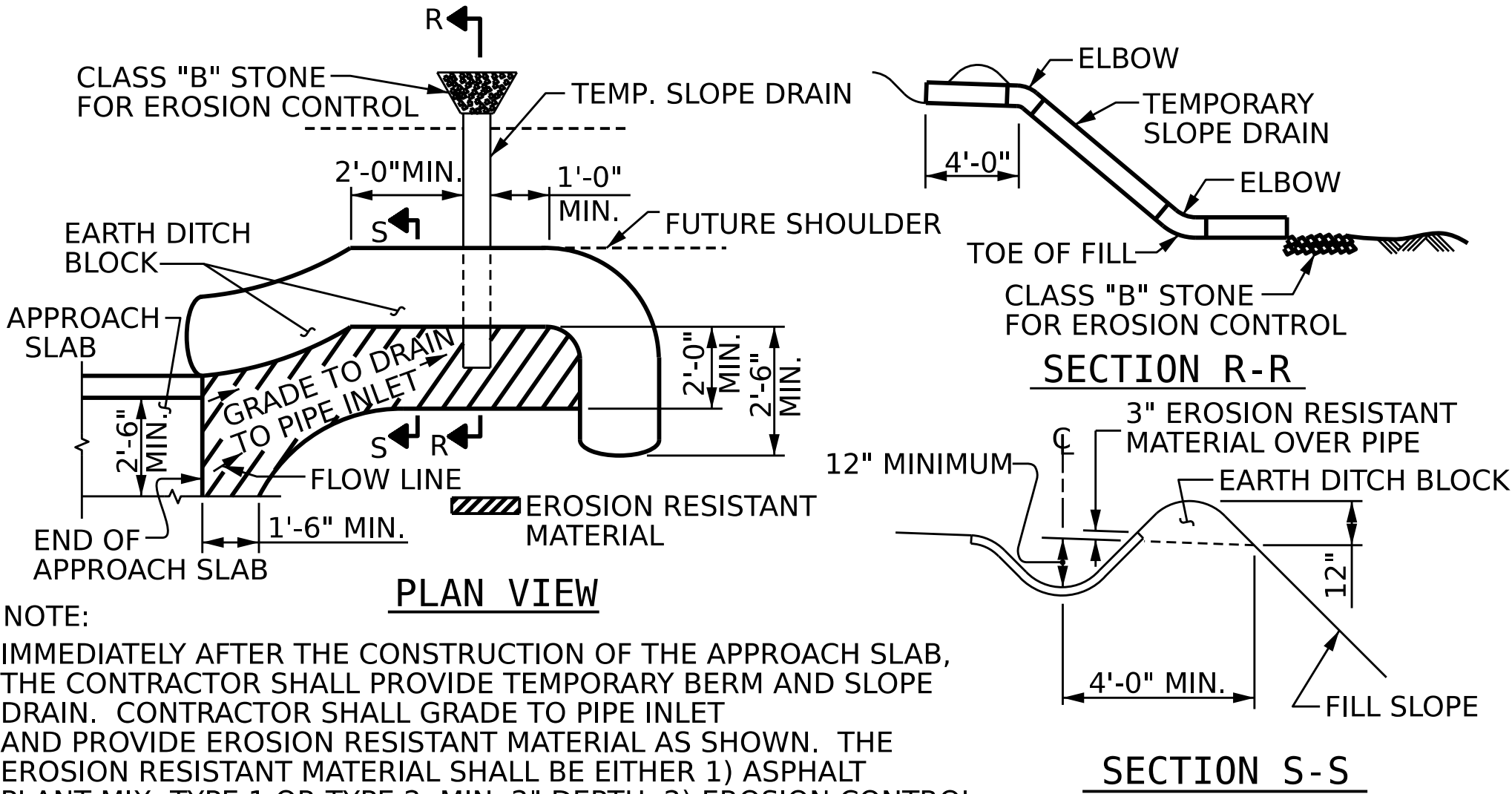
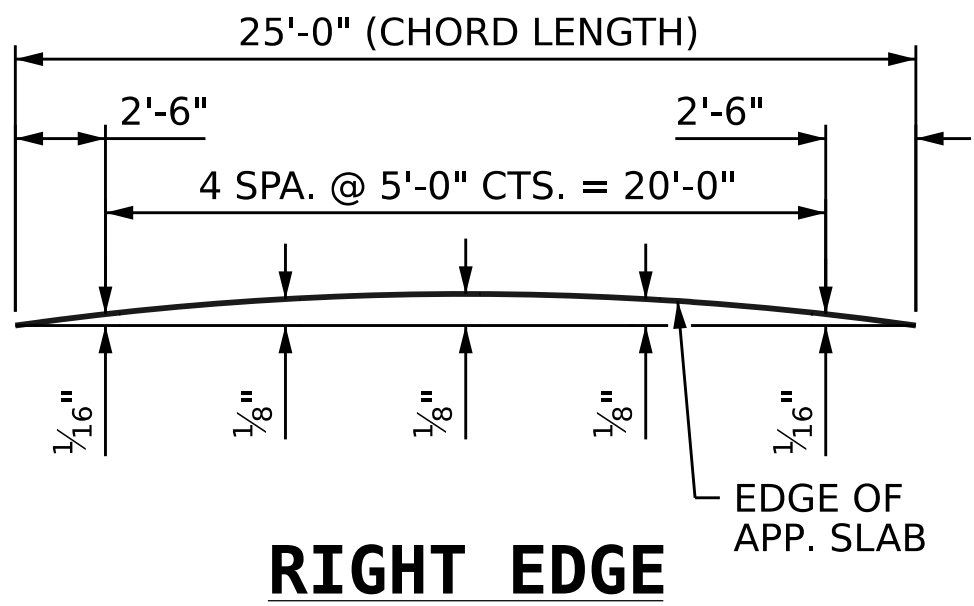
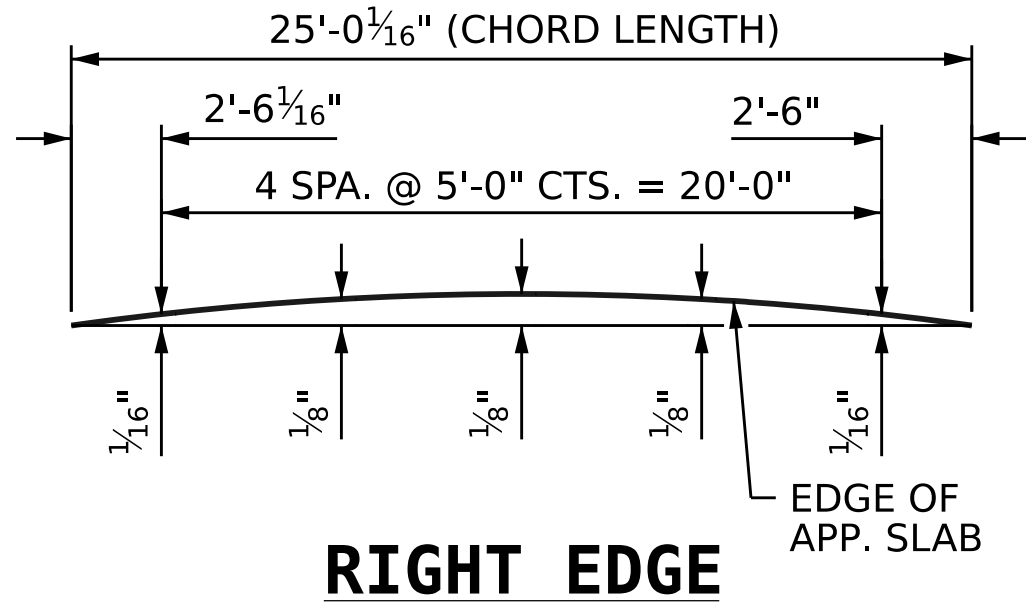
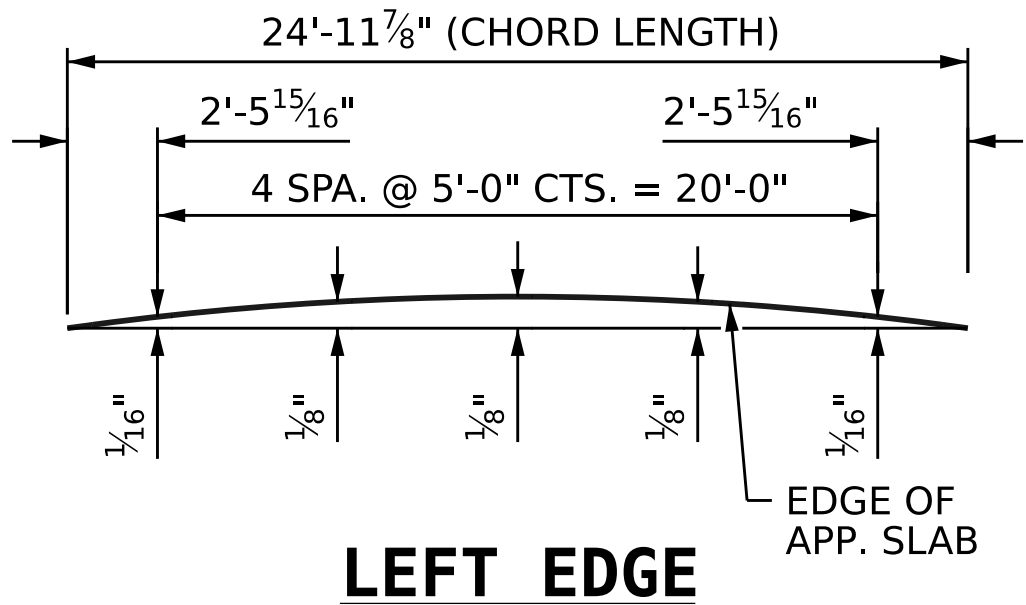
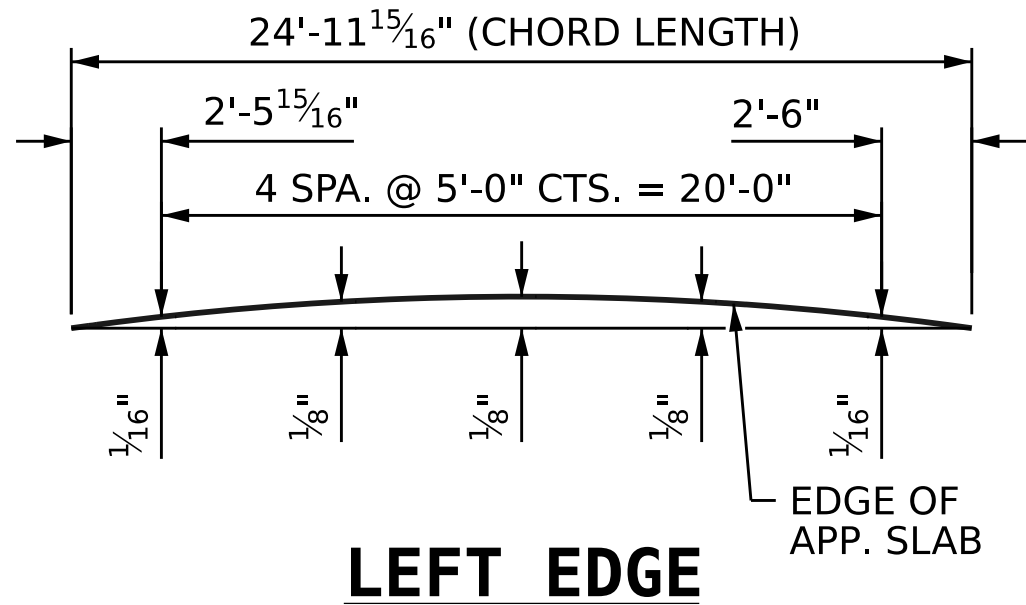
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT WITH FLEXIBLE PAVEMENT

REVISIONS						SHEET NO. S-32
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 33
2			4			

BILL OF MATERIAL											
APPROACH SLAB @ END BENT 1						APPROACH SLAB @ END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	38'-2"	663	*A3	26	#4	STR	38'-5"	667
A2	26	#4	STR	38'-2"	663	A4	26	#4	STR	38'-5"	667
*B1	74	#5	STR	24'-2"	1865	*B1	74	#5	STR	24'-2"	1865
B2	74	#6	STR	24'-8"	2742	B2	74	#6	STR	24'-8"	2742
REINFORCING STEEL					3,405 LBS.	REINFORCING STEEL					3,409 LBS.
* EPOXY COATED REINFORCING STEEL					2,528 LBS.	* EPOXY COATED REINFORCING STEEL					2,532 LBS.
CLASS AA CONCRETE					40.5 C.Y.	CLASS AA CONCRETE					40.5 C. Y.

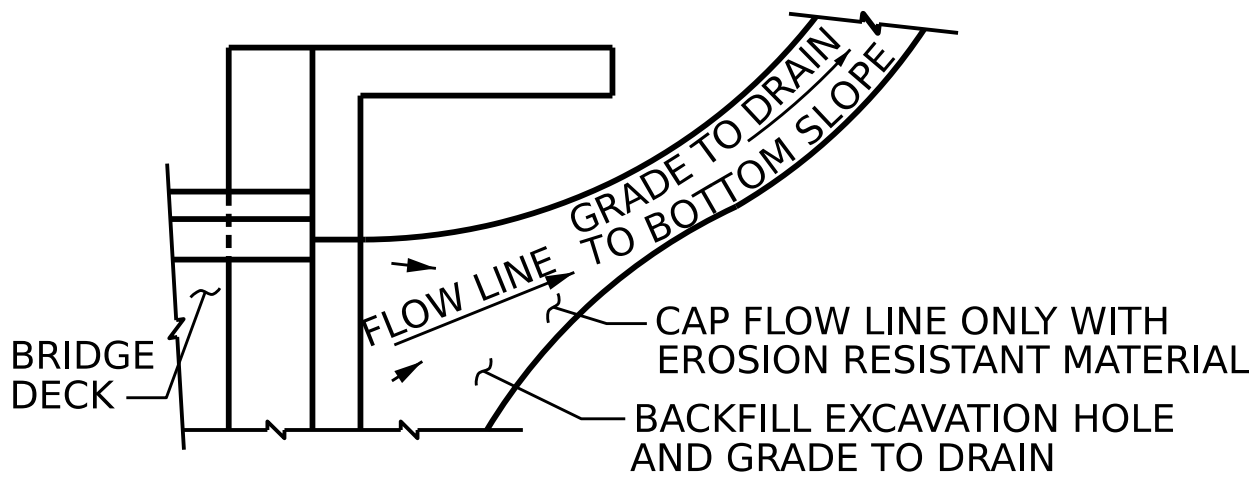
SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"



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

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

PROJECT NO. **BR-0174**

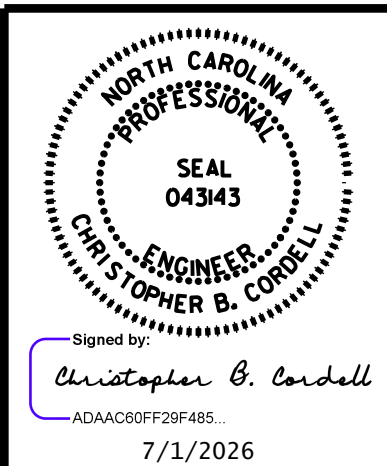
PENDER COUNTY

STATION: **19+84.00 -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:					TOTAL SHEETS	
1			3							S-33	
2			4							33	

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DRAWN BY : JJR	DATE : 3/25	DWG. No.
CHECKED BY : CBC	DATE : 3/25	
DESIGN ENGINEER : CBC	DATE : 3/25	



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 ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" 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 ¼" 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 ⅞" Ø SHEAR STUDS FOR THE ¾" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞" Ø STUDS FOR 4 - ¾" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞" Ø STUDS ALONG THE BEAM AS SHOWN FOR ¾" Ø STUDS BASED ON THE RATIO OF 3 - ⅞"Ø STUDS FOR 4 - ¾" 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 ⅝" 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 ⅛" 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.

Signed by:
Christopher B. Cordell
ADAACB0FF20F485
7/1/2026