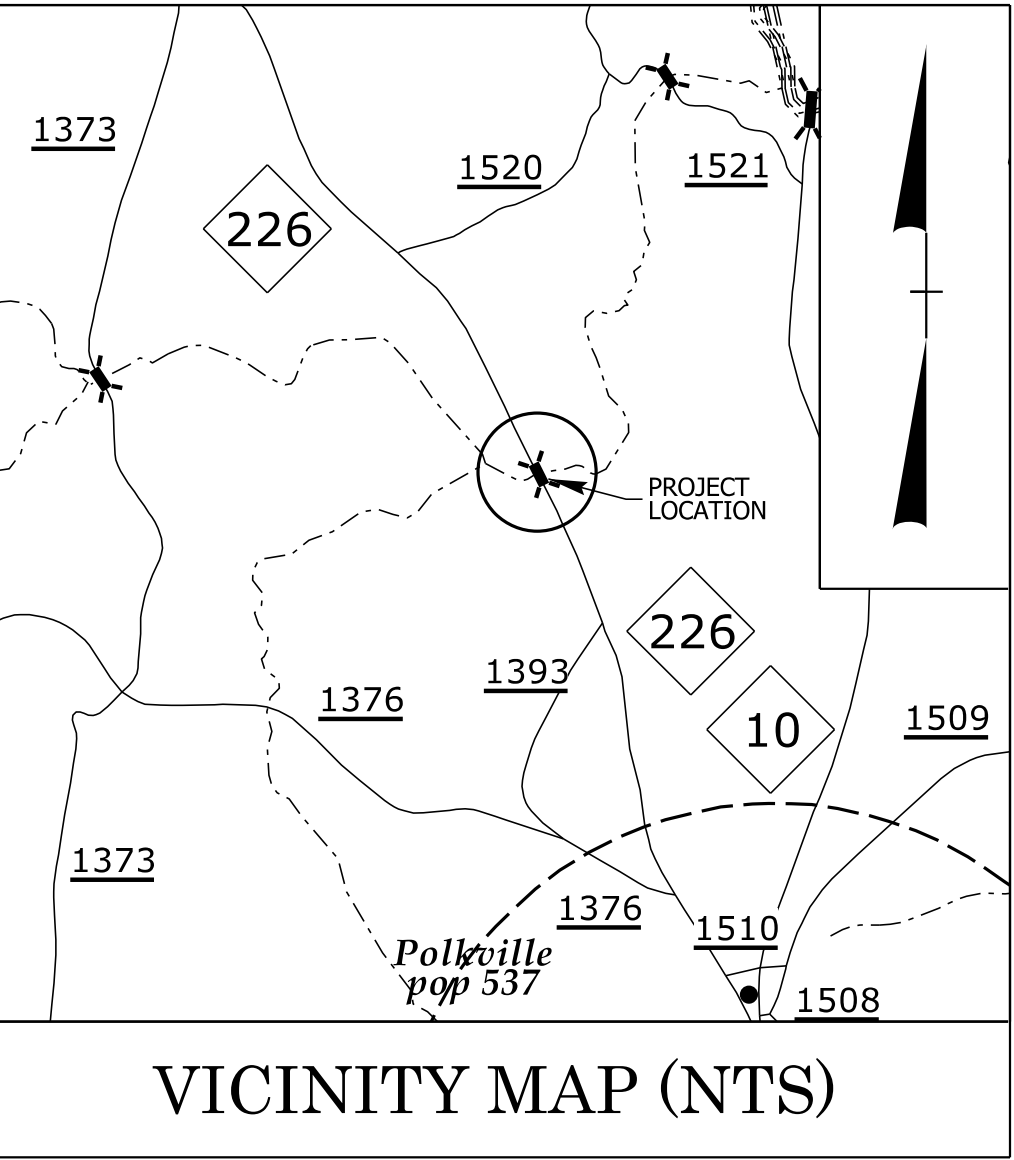


PROJECT: BP12-R002

PROJECT: C205132

CONTRACT: C205132



VICINITY MAP (NTS)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CLEVELAND COUNTY

LOCATION: *BRIDGE NO. 220075 OVER HINTON CREEK
ON NC 226 (POLKVILLE RD.)*

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP12-R002		
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
BP12-R002.1		PE	
BP12-R002.2		UTL & R/W	
BP12-R002.3		CONST	

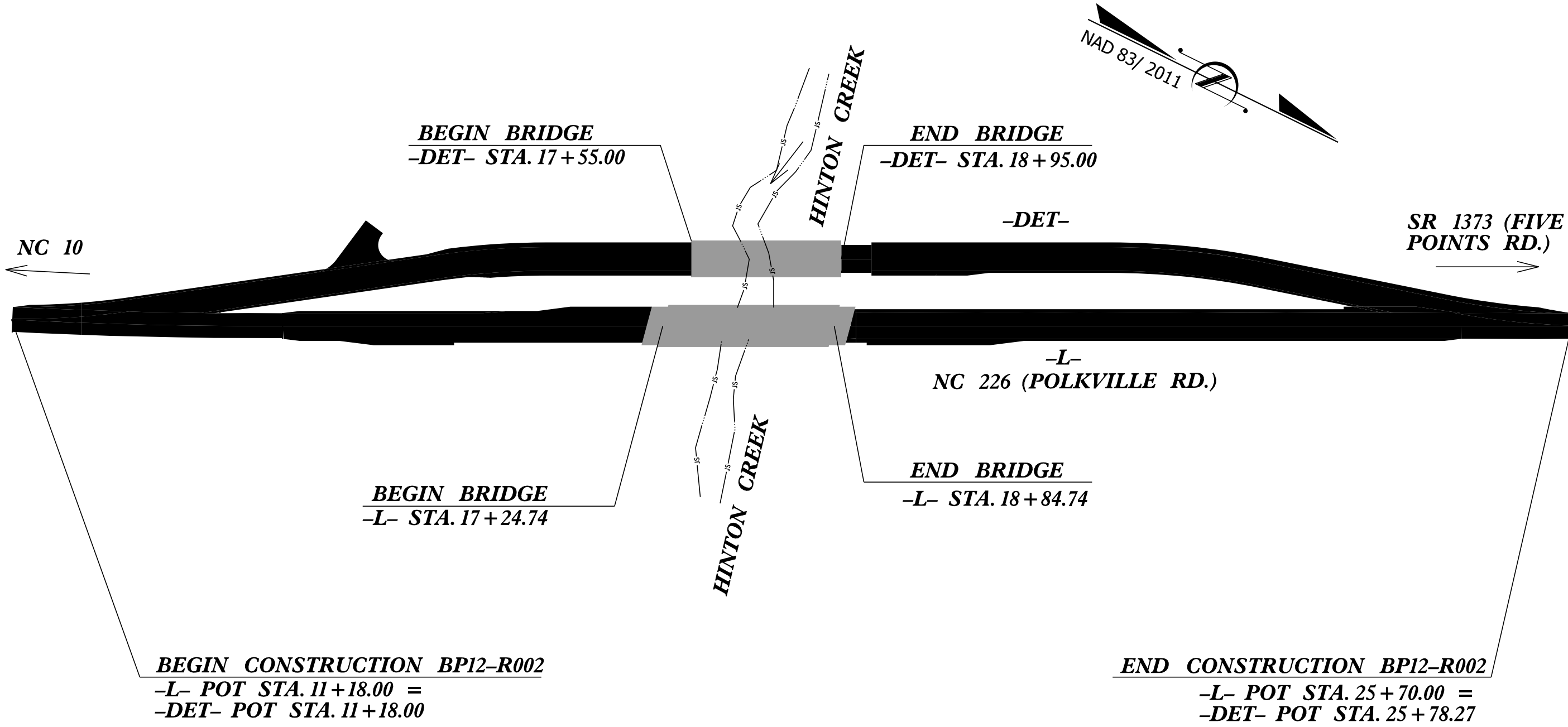
BRIDGE #220075



WE Design your Tomorrow ...

1223 Jones Franklin Road
Raleigh, NC 27606
(919) 851-8077

NCBELS F-0377



STRUCTURE

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

DESIGN DATA

ADT 2025 = 3030
ADT 2045 = 4500

T = 7 % *
V = 60 MPH
* TTST =3.5% DUAL =3.5%
FUNC CLASS =
MAJOR COLLECTOR
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT BP12-R002 = 0.245 MILES
LENGTH STRUCTURE PROJECT BP12-R002 = 0.030 MILES

TOTAL LENGTH PROJECT BP12-R002 = 0.275 MILES

NCDOT CONTACT: JOSHUA WHITE, PE
DIVISION 12 DIVISION BRIDGE MANAGER

Prepared for the Office of:
DIVISION OF HIGHWAYS - DIV. 12
1710 E. Marion St., Shelby NC, 28151

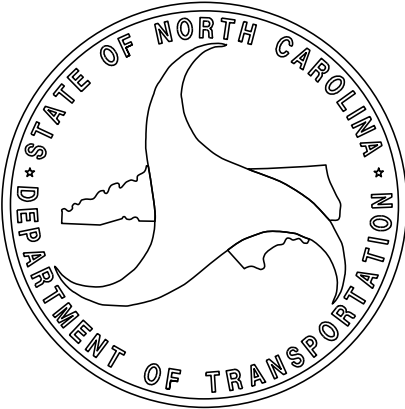
2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

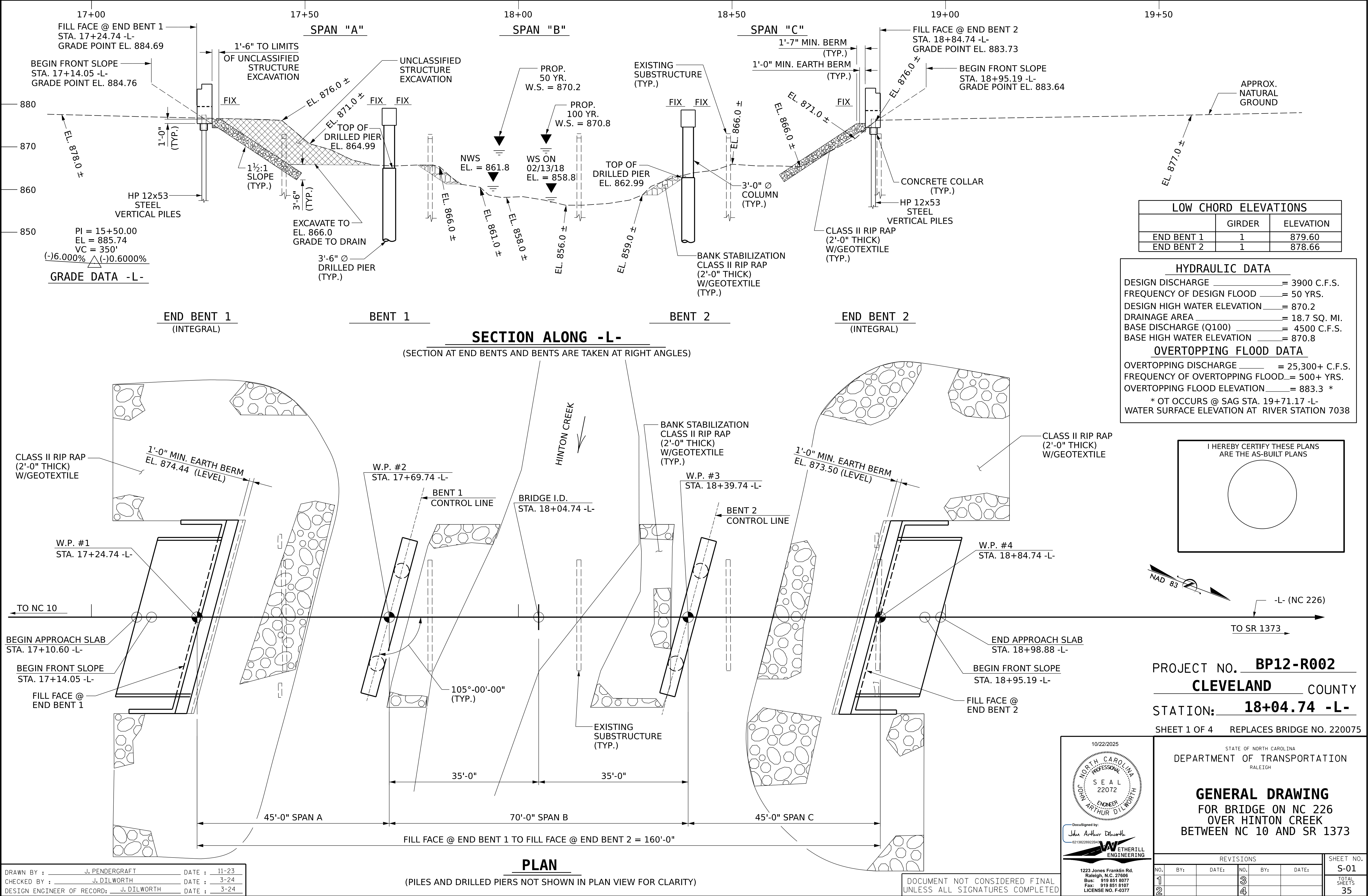
LETTING DATE:
JANUARY 20, 2026

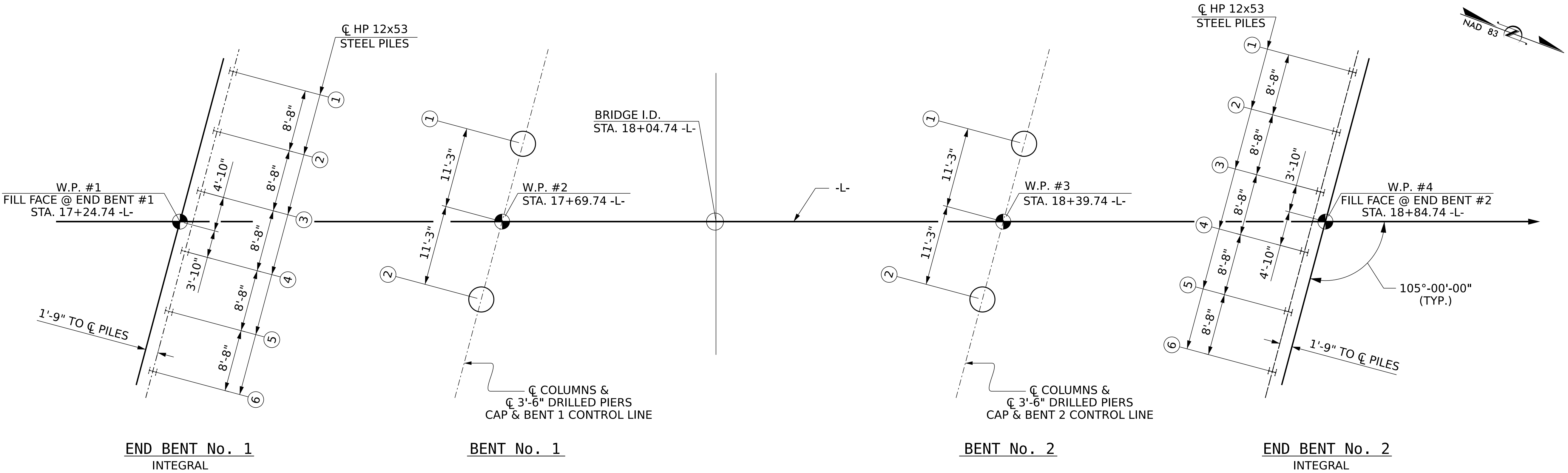
GREG S. PURVIS, PE
PROJECT ENGINEER

JOHN A. DILWORTH, PE
PROJECT DESIGN ENGINEER



P:\2017\1718201-CLEVELAND_75Structures\0BD_DGN\BP_12\002_SD.GD1_220075.dgn
10/21/2025 3:10:20 PM





FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE.

FOUNDATION NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. **BP12-R002**

CLEVELAND COUNTY

STATION: **18+04.74 -L-**

SHEET 2 OF 4

10/22/2025

NORTH CAROLINA

PROFESSIONAL

SEAL

22072

ENGINEER

ARTHUR DILWORTH

DocuSigned by:
John Arthur Dilworth
621382269226436

WETHERILL
ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-4377

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

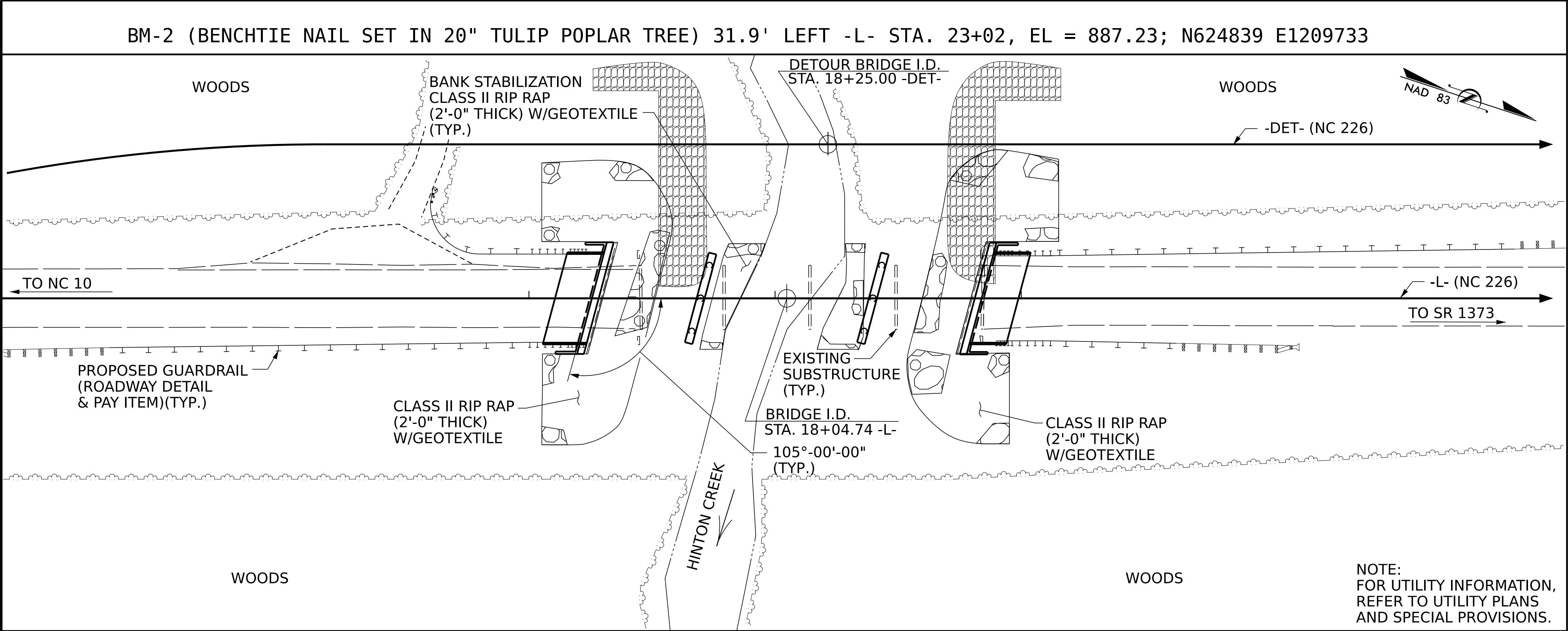
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON NC 226
OVER HINTON CREEK
BETWEEN SR 1393 AND SR 1520

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-02
1			3			TOTAL SHEETS
2			4			35

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



LOCATION SKETCH

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 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.

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

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

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THE EXISTING STRUCTURE CONSISTS OF 4 SPANS @ 35.0' WITH A CLEAR ROADWAY WIDTH OF 26'-0" WITH REINFORCE CONCRETE SLAB ON STEEL I-BEAMS, ON END BENTS AND BENTS OF REINFORCED CONCRETE CAPS ON TIMBER PILES AND LOCATED AT THE 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.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 25 FT LEFT AND 40 FT RIGHT AT END BENT 1. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 18+04.74 -L-"

THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.

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

THE SCOUR CRITICAL ELEVATION FOR BENTS NO. 1 AND 2 ARE ELEVATION 843.9 AND 845.8 RESPECTIVELY. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY STRUCTURE AT STATION 18+25.00 -DET- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE AT STATION 18+04.74 -L-, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL											
	CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE AT STATION 18+04.74 -L-	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	3'-6" Ø DRILLED PIERS IN SOIL	3'-6" Ø DRILLED PIERS NOT IN SOIL	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS
	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM
SUPERSTRUCTURE								6,280	6,145		
END BENT 1										29.1	
BENT 1				47.83	14.00	1				26.4	
BENT 2				32.67	14.00	1				27.2	
END BENT 2										29.1	
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	80.50	28.00	2	LUMP SUM	6,280	6,145	111.8	LUMP SUM

TOTAL BILL OF MATERIAL												
	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	45" PRESTRESSED CONCRETE GIRDER		PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	HP 12x53 STEEL PILES		DYNAMIC PILE TESTING	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS
	LBS.	LBS.	NO.	LIN. FT.	EACH	NO.	LIN. FT.	EACH	LIN. FT.	TONS	SQ. YDS.	LUMP SUM
SUPERSTRUCTURE			12	628.17					316.55			LUMP SUM
END BENT 1	3,712				6	6	195			510	566	
BENT 1	9,152	1,752										
BENT 2	8,532	1,512										
END BENT 2	3,712				6	6	240	1		530	588	
TOTAL	25,108	3,264	12	628.17	12	12	435	1	316.55	1040	1154	LUMP SUM

PROJECT NO. **BP12-R002**

CLEVELAND COUNTY

STATION: **18+04.74 -L-**

SHEET 4 OF 4

DRAWN BY :	J. PENDERGRAFT	DATE :	11-23
CHECKED BY :	J. DILWORTH	DATE :	11-23
DESIGN ENGINEER OF RECORD:	J. DILWORTH	DATE :	11-23

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

10/22/2025

NORTH CAROLINA

PROFESSIONAL

SEAL

22072

ENGINEER

ARTHUR DILWORTH

DocuSigned by:

Jana Arthur Dilworth

02138228522843

ETHERILL

ENGINEERING

1223 Jones Franklin Rd.

Raleigh, N.C. 27606

Bus: 919 851 8077

Fax: 919 851 8107

LICENSE NO. F-0377

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

GENERAL DRAWING

FOR BRIDGE ON NC 226

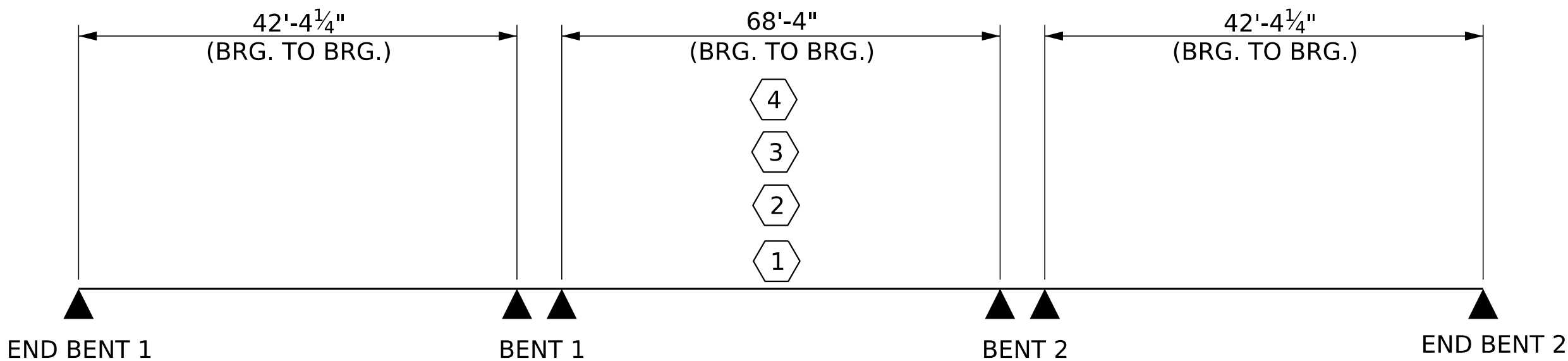
OVER HINTON CREEK

BETWEEN NC 10 AND SR 1373

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-04	
1			3			TOTAL SHEETS	
2			4			35	

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DRAWN BY :	J. PENDERGRAFT	DATE :	2-24
CHECKED BY :	J. DILWORTH	DATE :	3-24
DESIGN ENGINEER OF RECORD:	J. DILWORTH	DATE :	3-24
DRAWN BY :	MAA 1/08	REV. 11/12/08RR	MAA/GM
CHECKED BY :	GM/DI 2/08	REV. 10/1/11	MAA/GM
		REV. 04/23	BNB/AAI



LRFR SUMMARY

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	
							LIVE-LOAD FACTORS (γ LL)	MOMENT			SHEAR				LIVE-LOAD FACTORS (γ LL)	MOMENT								
								DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR		SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)
DESIGN LOAD		HL-93 (INVENTORY)	N/A	Ⓢ1	1.05	--	1.75	0.940	1.270	1	2	21.180	1.060	1.100	1	2	34.820	0.80	0.830	1.05	2	2	34.170	
		HL-93 (OPERATING)	N/A		1.65	--	1.35	0.940	1.650	1	2	21.180	1.070	1.860	2	2	55.070	N/A	--	--	--	--	--	
		HS-20 (INVENTORY)	36.000	Ⓢ2	1.36	48.960	1.75	0.940	1.560	1	2	21.180	1.060	1.570	1	2	34.280	0.80	0.830	1.36	2	2	34.170	
		HS-20 (OPERATING)	36.000		2.02	72.720	1.35	0.940	2.020	1	2	21.180	1.070	2.280	2	2	55.070	N/A	--	--	--	--	--	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		3.04	41.040	1.40	0.940	3.740	1	2	21.180	1.070	5.260	2	2	55.070	0.80	0.830	3.04	2	2	34.170	
		SNGARBS2	20.000		2.28	45.600	1.40	0.940	3.050	1	2	21.180	1.070	3.750	2	2	55.070	0.80	0.830	2.28	2	2	34.170	
		SNAGRIS2	22.000		2.17	47.740	1.40	0.940	2.980	1	2	21.180	1.070	3.480	2	2	55.070	0.80	0.830	2.17	2	2	34.170	
		SNCOTTS3	27.250		1.51	41.148	1.40	0.940	1.870	1	2	21.180	1.070	2.590	2	2	55.070	0.80	0.830	1.51	2	2	34.170	
		SNAGGRS4	34.925		1.27	44.355	1.40	0.940	1.660	1	2	21.180	1.060	2.150	1	2	29.920	0.80	0.830	1.27	2	2	34.170	
		SNS5A	35.550		1.24	44.082	1.40	0.940	1.610	1	2	21.180	1.070	2.210	2	2	55.070	0.80	0.830	1.24	2	2	34.170	
		SNS6A	39.950		1.14	45.543	1.40	0.940	1.530	1	2	21.180	1.070	2.020	2	2	55.070	0.80	0.830	1.14	2	2	34.170	
		SNS7B	42.000		1.09	45.780	1.40	0.940	1.450	1	2	21.180	1.070	2.000	2	2	55.070	0.80	0.830	1.09	2	2	34.170	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.39	45.870	1.40	0.940	1.870	1	2	21.180	1.070	2.410	2	2	55.070	0.80	0.830	1.39	2	2	34.170	
		TNT4A	33.075		1.40	46.305	1.40	0.940	1.890	1	2	21.180	1.070	2.330	2	2	55.070	0.80	0.830	1.40	2	2	34.170	
		TNT6A	41.600		1.15	47.840	1.40	0.940	1.590	1	2	21.180	1.070	2.160	2	2	55.070	0.80	0.830	1.15	2	2	34.170	
		TNT7A	42.000		1.15	48.300	1.40	0.940	1.630	1	2	21.180	1.070	2.070	2	2	55.070	0.80	0.830	1.15	2	2	34.170	
		TNT7B	42.000		1.20	50.400	1.40	0.940	1.690	1	2	21.180	1.070	1.930	2	2	55.070	0.80	0.830	1.20	2	2	34.170	
		TNAGRIT4	43.000		1.14	49.020	1.40	0.940	1.620	1	2	21.180	1.060	1.820	1	2	34.280	0.80	0.830	1.14	2	2	34.170	
		TNAGT5A	45.000		1.07	48.150	1.40	0.940	1.500	1	2	21.180	1.070	1.870	2	2	55.070	0.80	0.830	1.07	2	2	34.170	
		TNAGT5B	45.000	Ⓢ3	1.06	47.700	1.40	0.940	1.460	1	2	21.180	1.060	1.580	1	2	34.280	0.80	0.830	1.06	2	2	34.170	
EMERGENCY VEHICLE (EV)		EV2	28.750		1.61	46.288	1.30	0.940	2.360	1	2	21.180	1.070	2.830	2	2	55.070	0.80	0.830	1.61	2	2	34.170	
		EV3	43.000	Ⓢ4	1.06	45.580	1.30	0.940	1.510	1	2	21.180	1.060	1.610	1	2	29.920	0.80	0.830	1.06	2	2	34.170	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ DC	γ DW
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

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

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

COMMENTS:

-
-
-
-

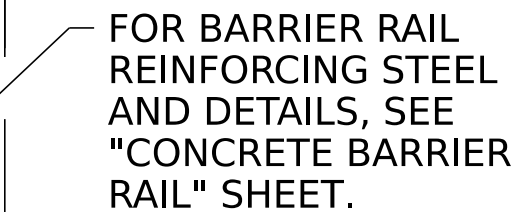
#	CONTROLLING LOAD RATING
Ⓢ1	DESIGN LOAD RATING (HL-93)
Ⓢ2	DESIGN LOAD RATING (HS-20)
Ⓢ3	LEGAL LOAD RATING **
Ⓢ4	EMERGENCY VEHICLE LOAD RATING **
** SEE CHART FOR VEHICLE TYPE	
GIRDER LOCATION	
I - INTERIOR GIRDER EL - EXTERIOR LEFT GIRDER ER - EXTERIOR RIGHT GIRDER	

PROJECT NO. **BP12-R002**
CLEVELAND COUNTY
STATION: **18+04.74 -L-**

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

10/22/2025 STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS (NON-INTERSTATE TRAFFIC) DocuSigned by: John Arthur Dilworth 021382269226143 ETHERILL ENGINEERING 1223 Jones Franklin Rd. Raleigh, N.C. 27606 Bus: 919 851 8077 Fax: 919 851 8107 LICENSE NO. F-0377	REVISIONS						SHEET NO.
	NO.	BY:	DATE:	NO.	BY:	DATE:	S-05
	1			3			TOTAL SHEETS
	2			4			35

STD. NO. LRFR1



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



REVISIONS						SHEET NO. S-06
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			



PROVIDE 1 $\frac{1}{4}$ " 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 $\frac{1}{2}$ " ABOVE THE TOP OF THE REMOVABLE FORM.

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.

CONCRETE 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.

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



* * (MEASURED ALONG THE C GIRDER)



SHEET 2 OF 2



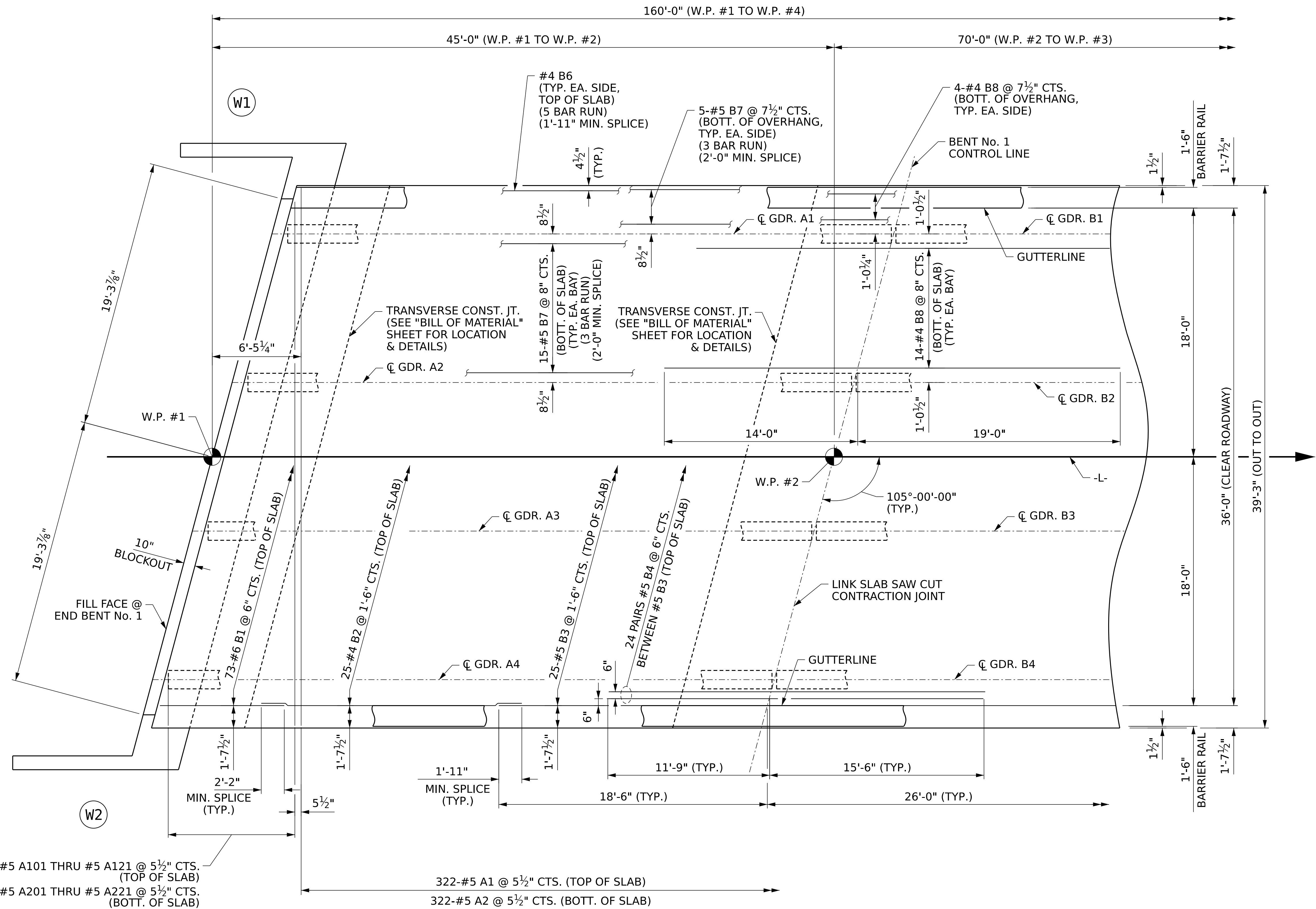
SUPERSTRUCTURE

TYPICAL SECTION

DRAWN BY : D. HODGE DATE : 3/24
 CHECKED BY : J. DILWORTH DATE : 3/24
 DESIGN ENGINEER OF RECORD: J. DILWORTH DATE : 3/24

REVISIONS						SHEET NO. S-07
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



PLAN OF SPAN A

FOR REINFORCING STEEL IN END BENT, SEE "PLAN OF SPAN DETAILS" SHEET.

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

PROJECT NO. **BP12-R002**

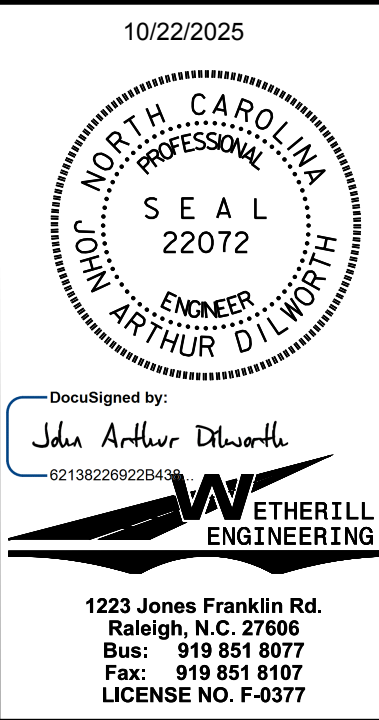
CLEVELAND COUNTY

STATION: **18+04.74 -L-**

SHEET 1 OF 4

DRAWN BY : D. HODGE DATE : 3/24
CHECKED BY : J. DILWORTH DATE : 3/24
DESIGN ENGINEER OF RECORD: J. DILWORTH DATE : 3/24

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

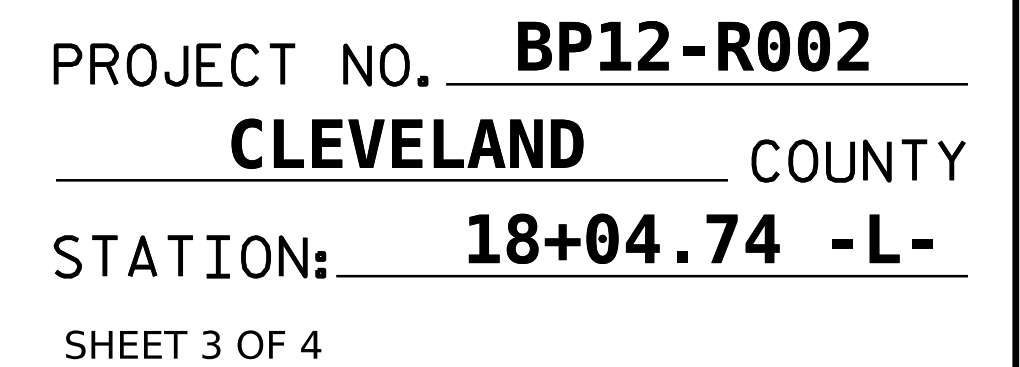


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE PLAN OF SPAN

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-08	
1			3			TOTAL SHEETS	
2			4			35	



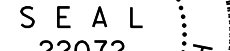


FOR LOCATIONS OF INTERMEDIATE STEEL DIAPHRAGMS, SEE "GIRDER LAYOUT" SHEET.

10/22/2025



DocuSigned by:
John Arthur Dilworth
62138226922843



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

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

SUPERSTRUCTURE

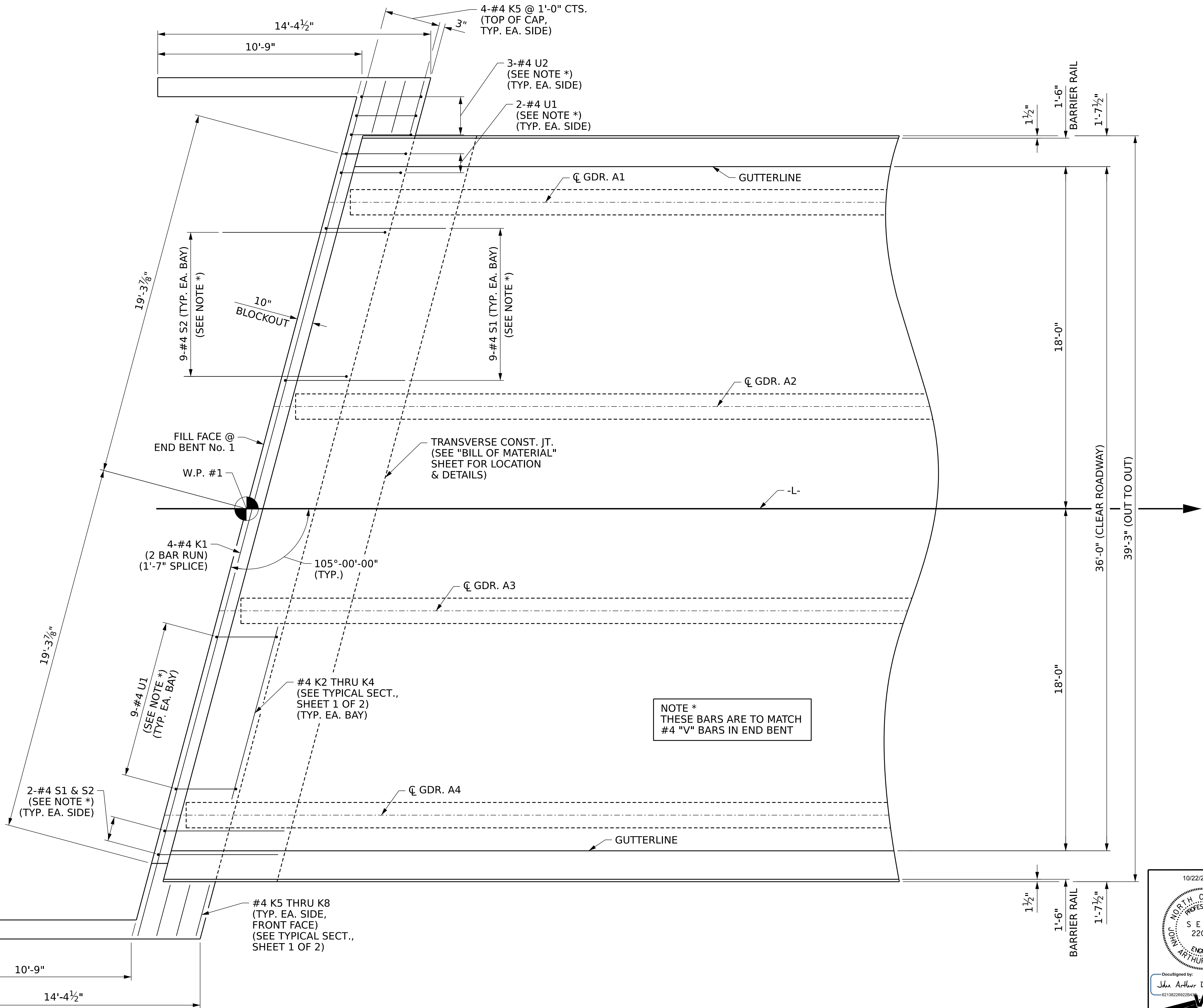
PLAN OF SPAN

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

SHEET NO.
S-10
TOTAL SHEETS
35

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

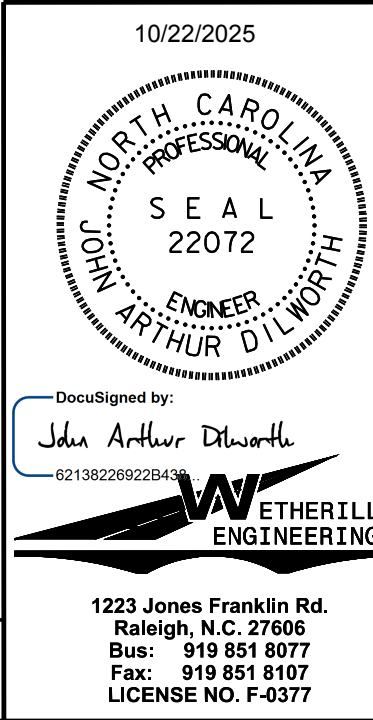
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10/21/2025 3:53:17 PM



PLAN OF INTEGRAL END BENT No. 1

(END BENT No. 2 SIMILAR BY ROTATION.)

PROJECT NO. **BP12-R002**
CLEVELAND COUNTY
STATION: **18+04.74 -L-**
SHEET 4 OF 4



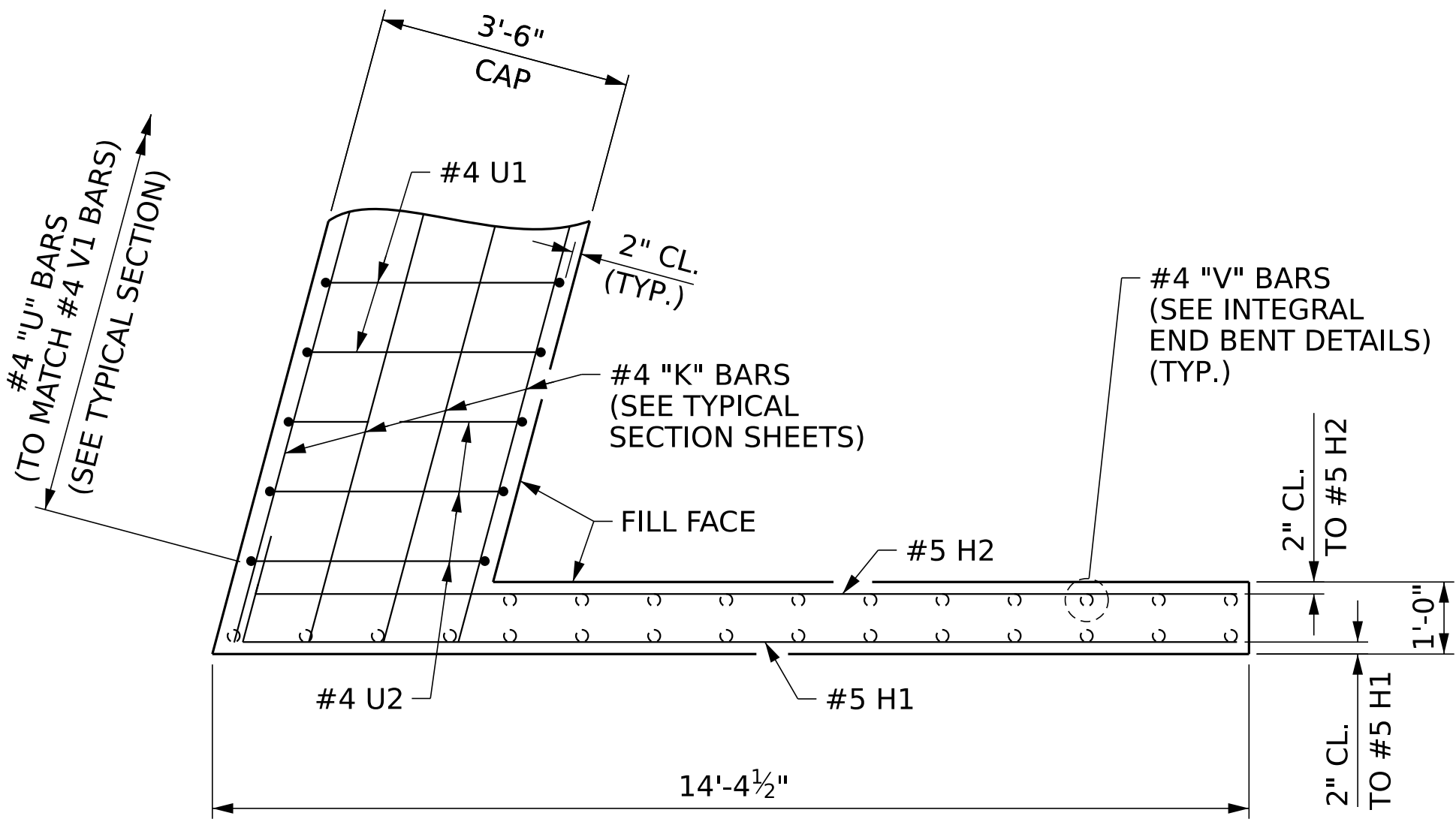
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPAN
DETAILS

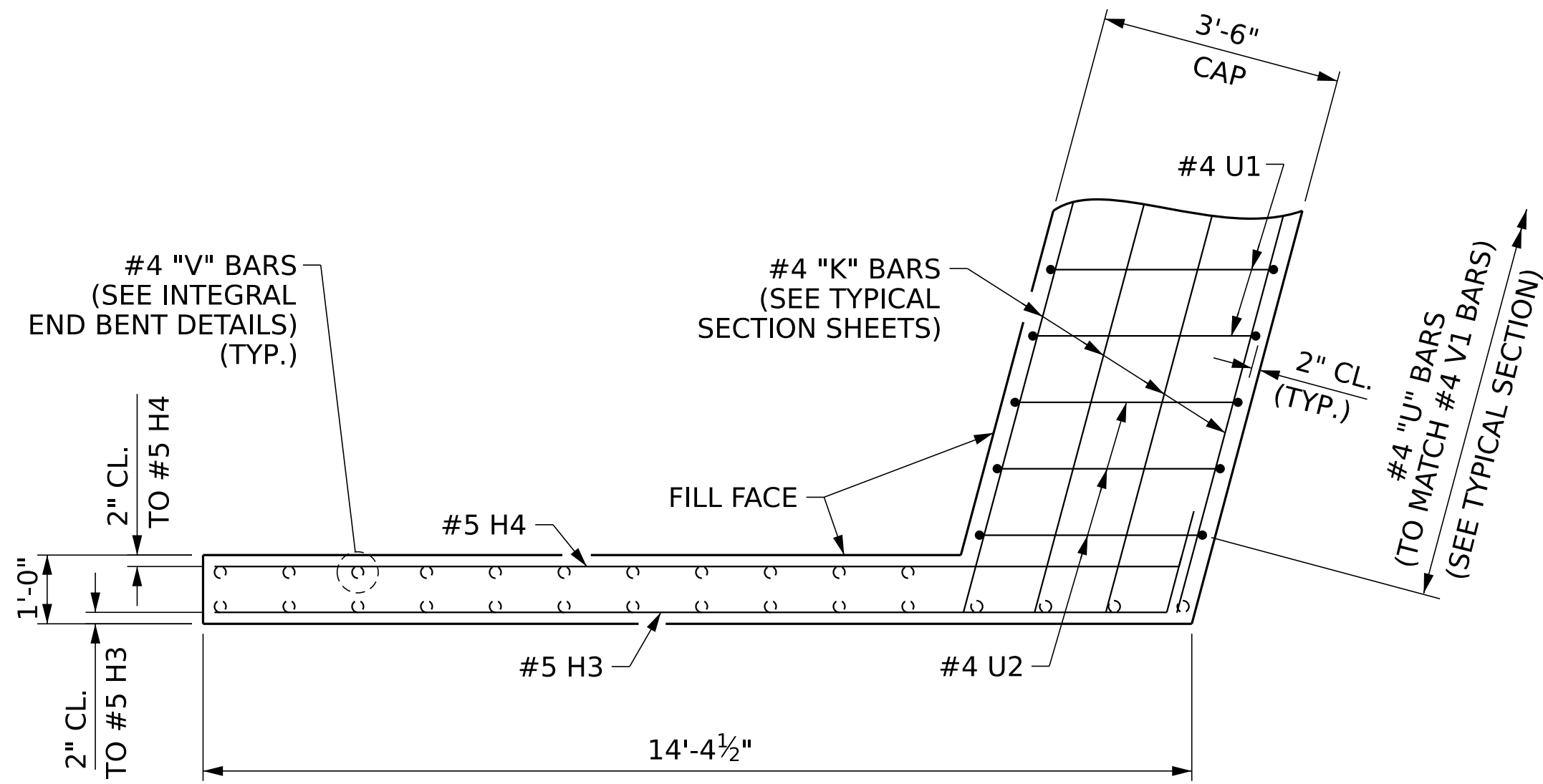
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-11	
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UNLESS ALL SIGNATURES COMPLETED

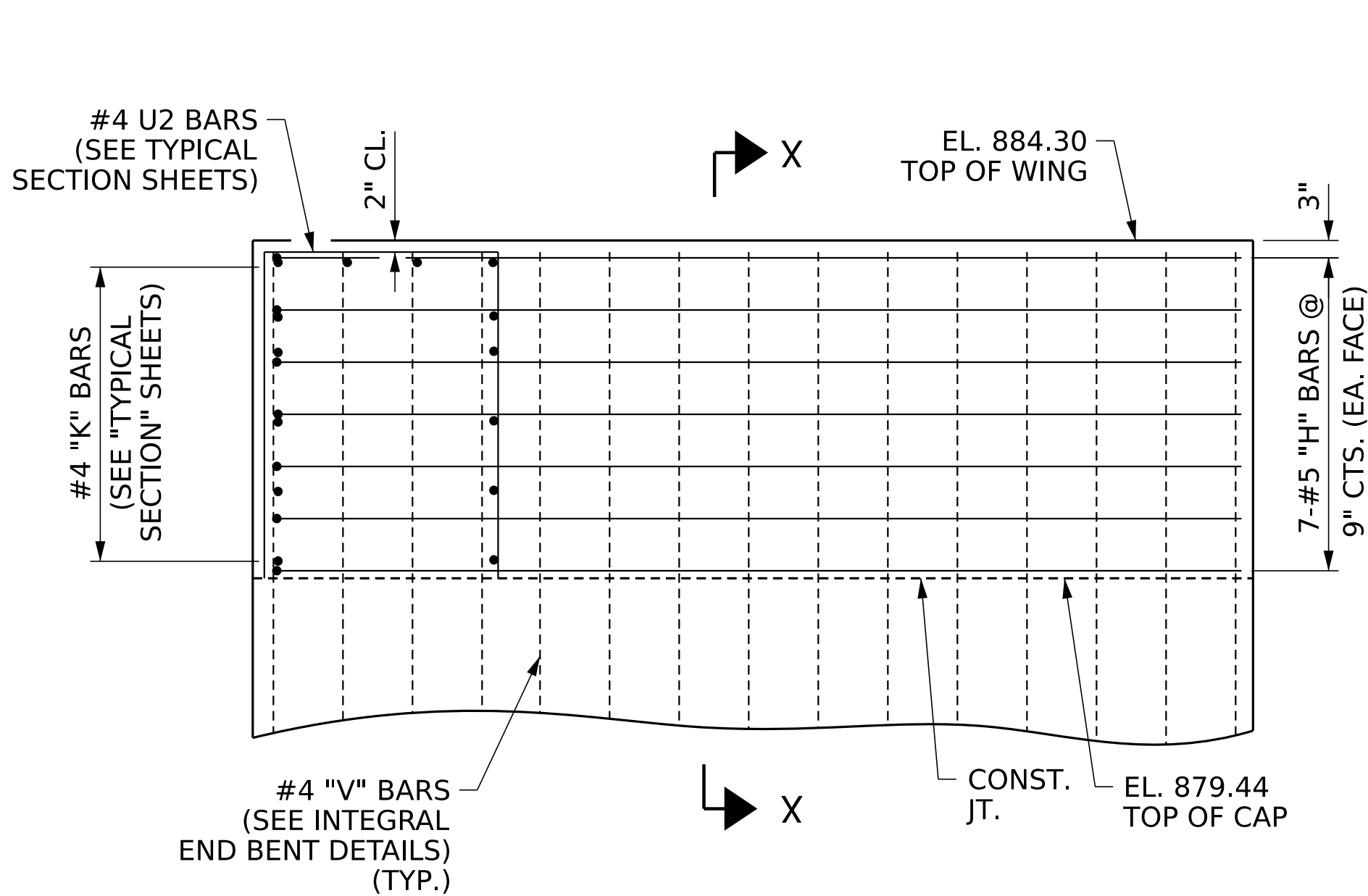
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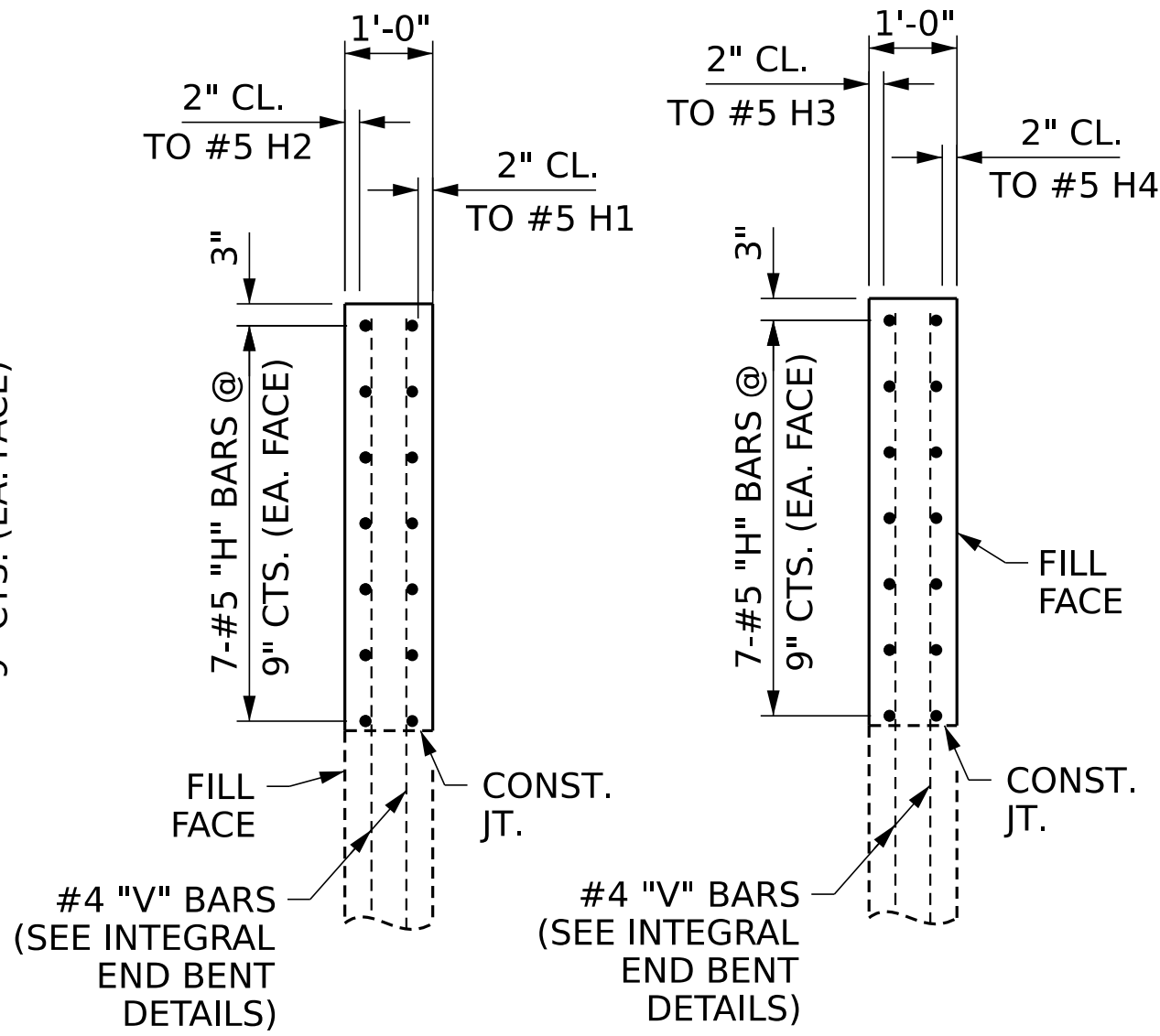
PLAN OF WING - W1



PLAN OF WING - W2

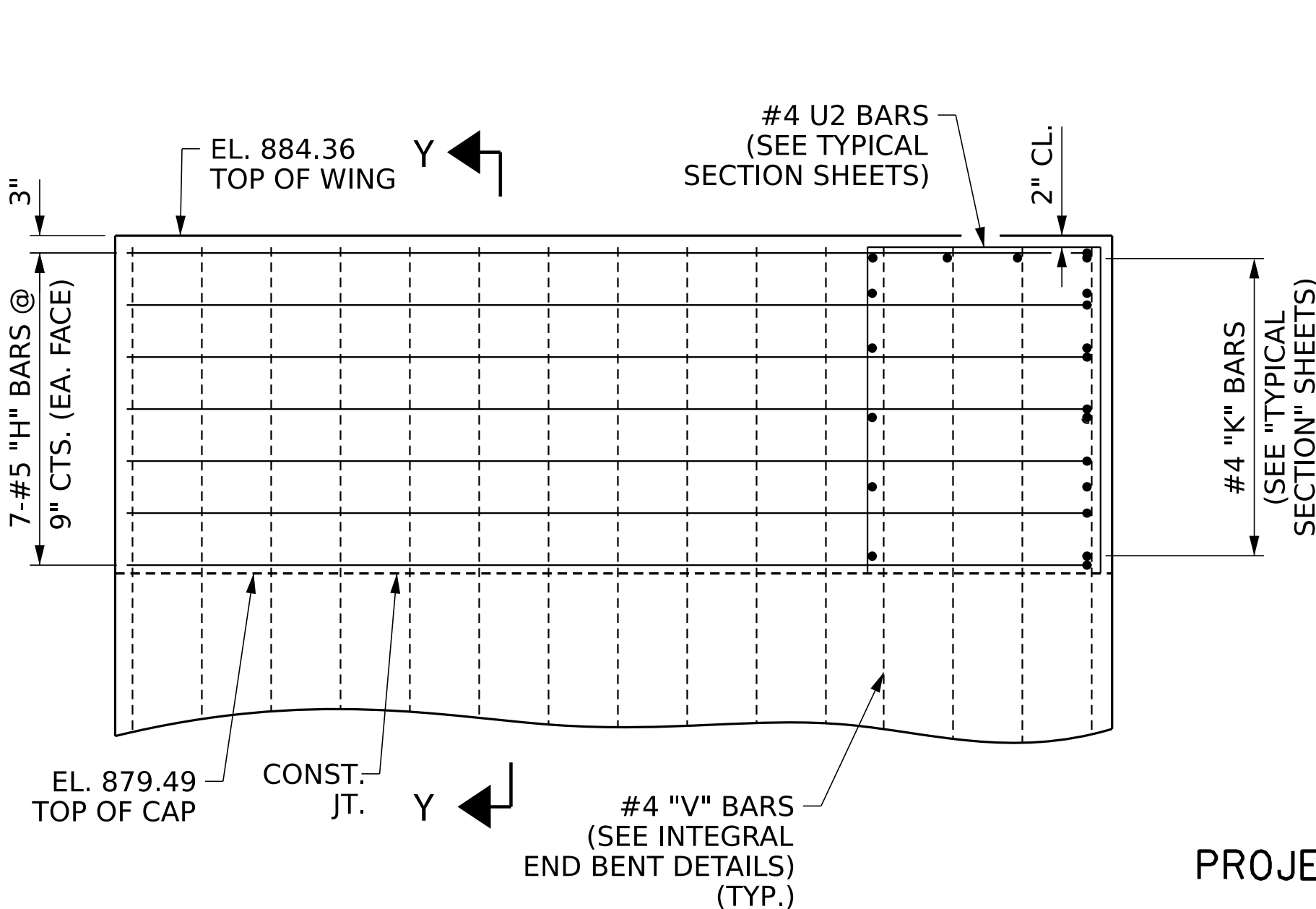


ELEVATION OF WING - W1



SECTION X-X

SECTION Y-Y



ELEVATION OF WING - W2

PROJECT NO. **BP12-R002**

CLEVELAND COUNTY

STATION: **18+04.74 -L-**

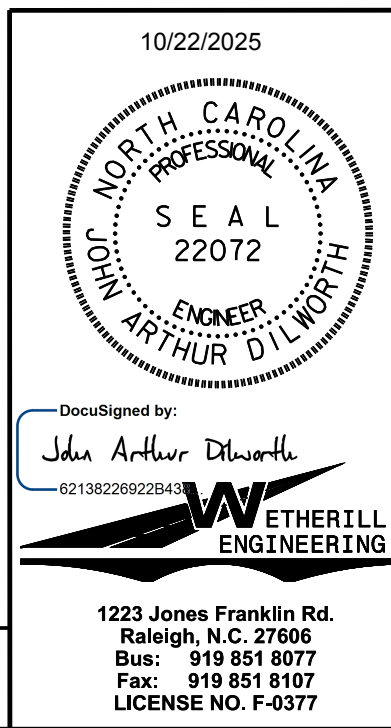
SHEET 1 OF 2

UPPER WINGS AT INTEGRAL END BENT No. 1

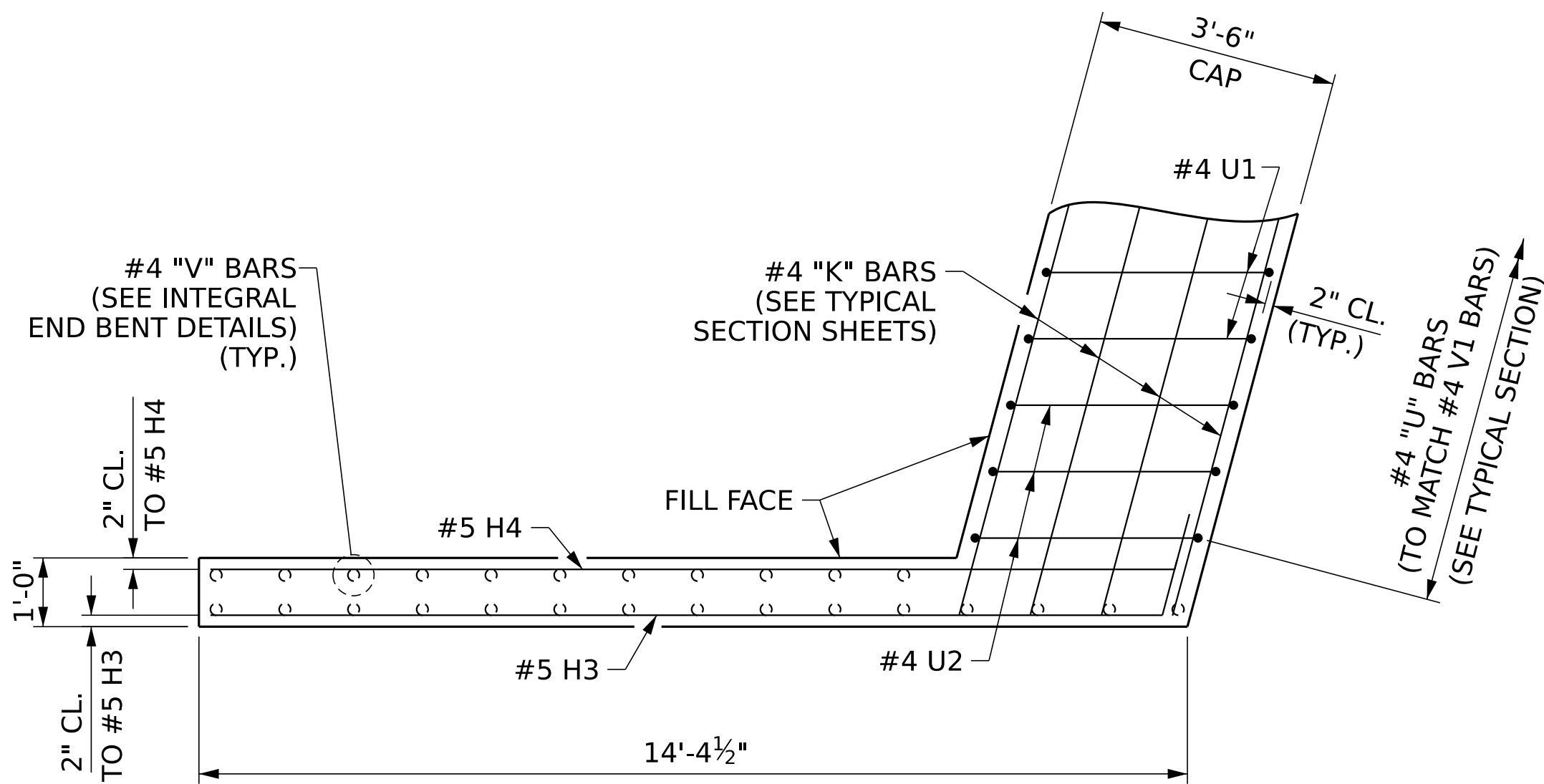
FOR LOWER WING REINFORCING STEEL AND DETAILS, SEE "INTEGRAL END BENT No. 1" SHEETS

DRAWN BY : D. HODGE DATE : 3/24
CHECKED BY : J. DILWORTH DATE : 3/24
DESIGN ENGINEER OF RECORD: J. DILWORTH DATE : 3/24

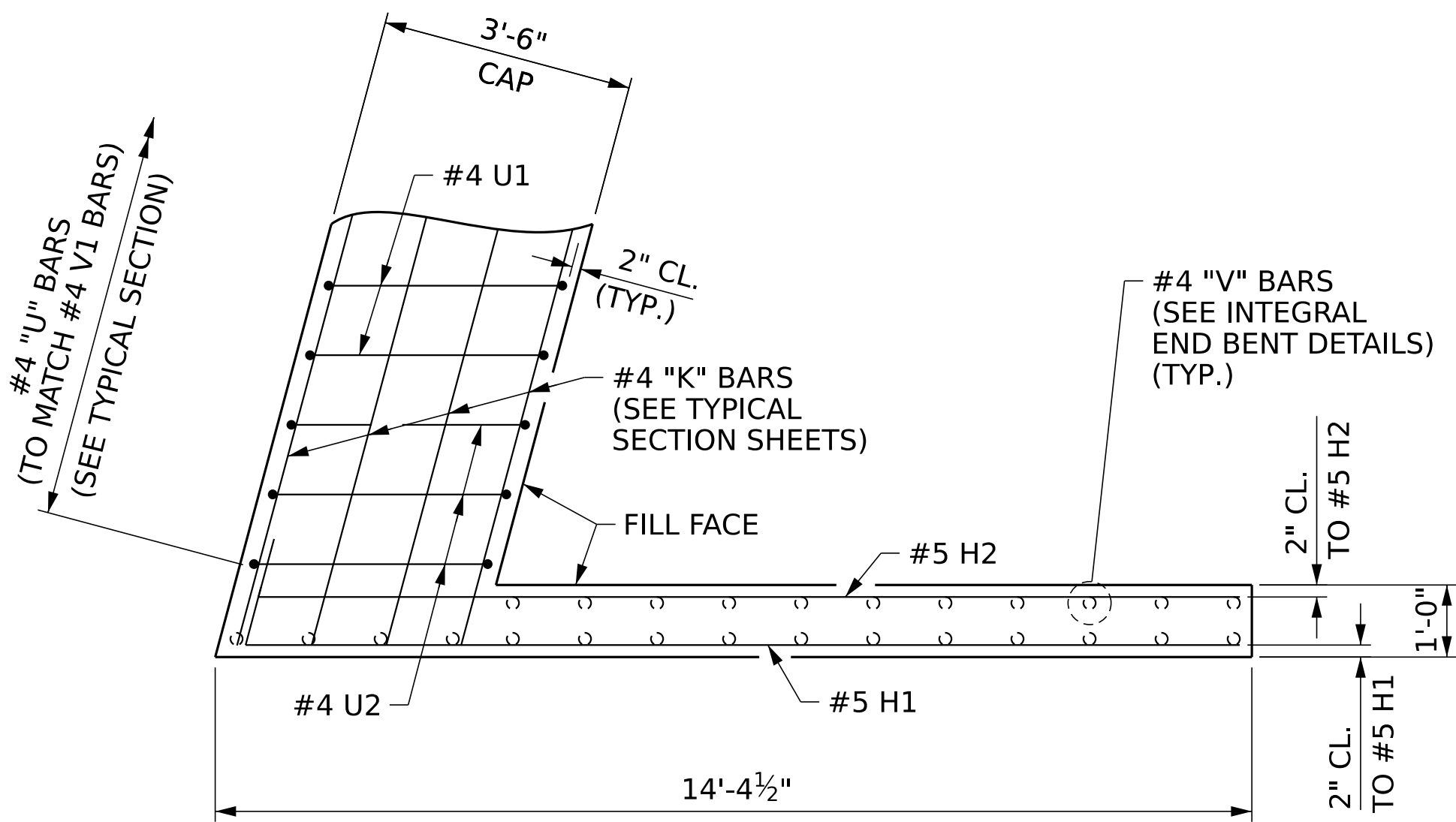
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UNLESS ALL SIGNATURES COMPLETED



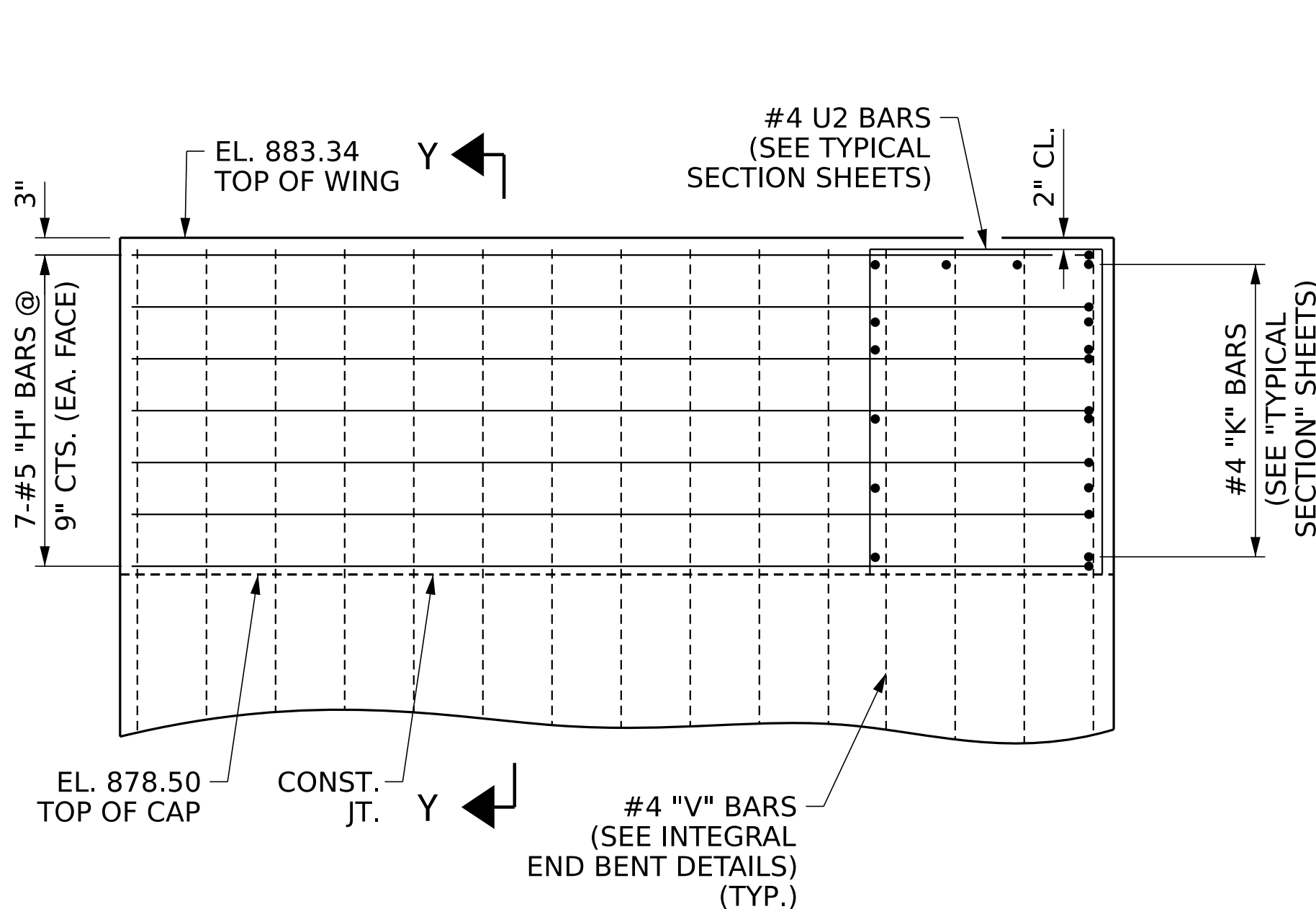
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-12	
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2			4			35	



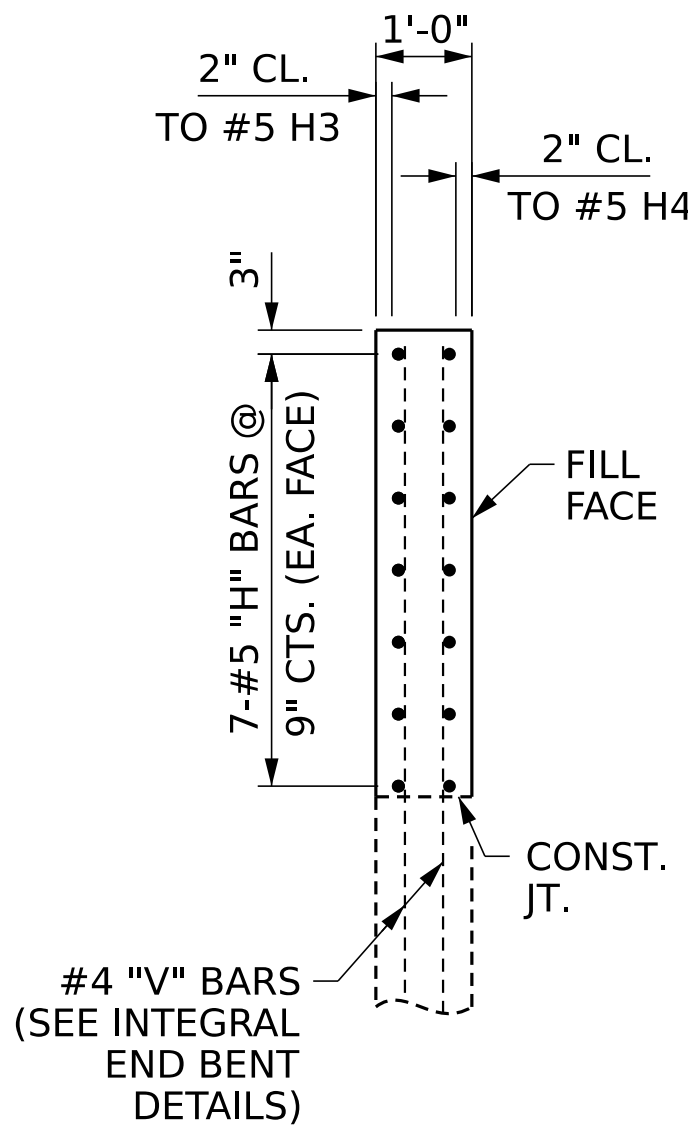
PLAN OF WING - W2



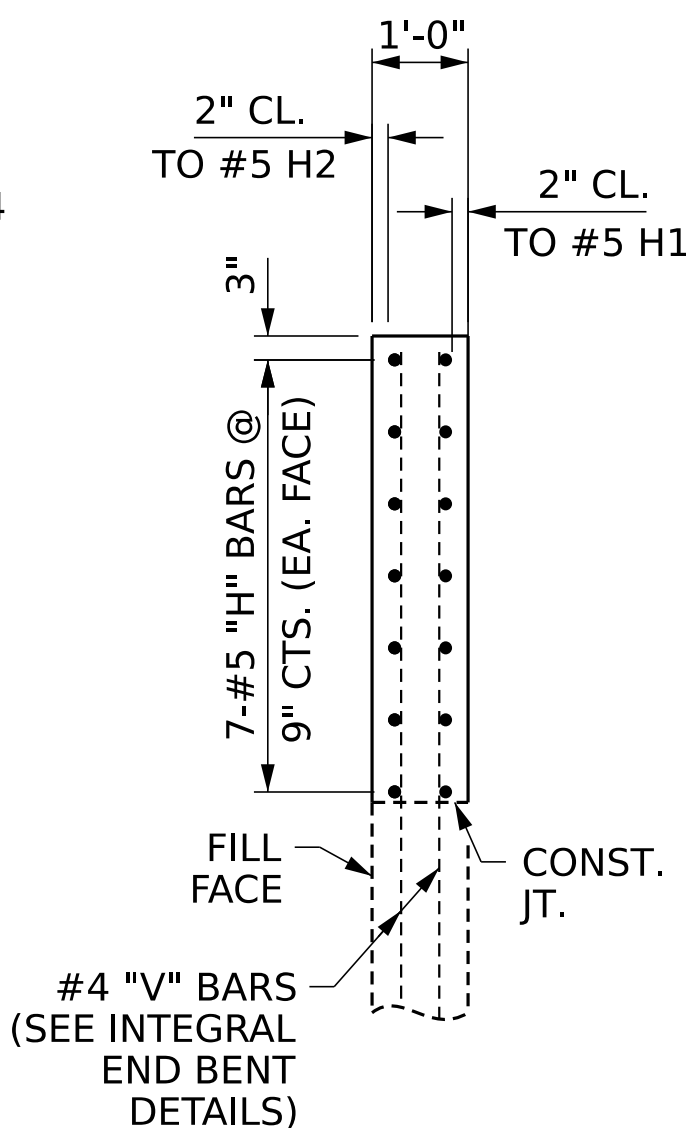
PLAN OF WING - W1



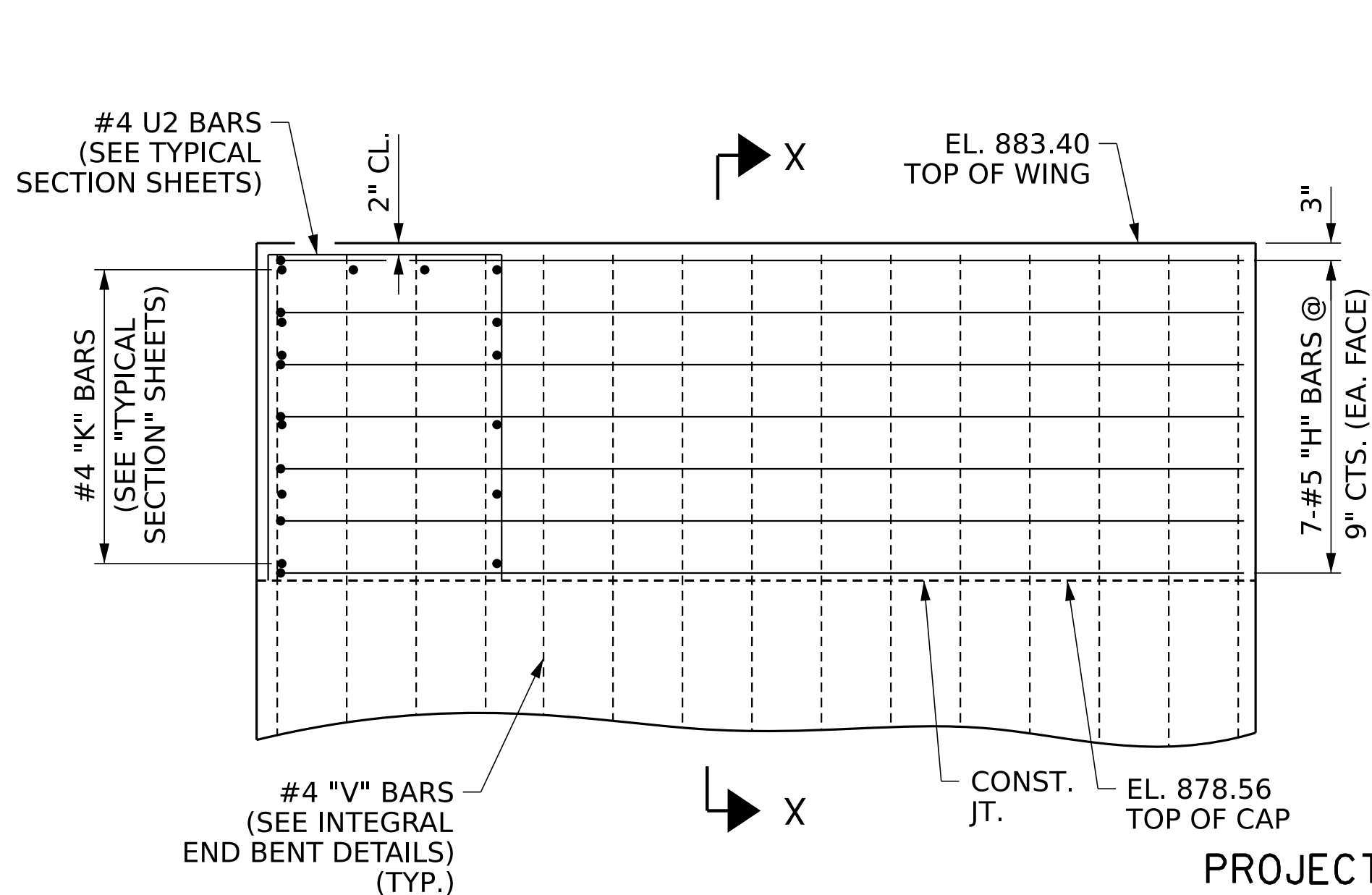
ELEVATION OF WING - W2



SECTION Y-Y



SECTION X-X



ELEVATION OF WING - W1

PROJECT NO. **BP12-R002**

CLEVELAND COUNTY

STATION: **18+04.74 -L-**

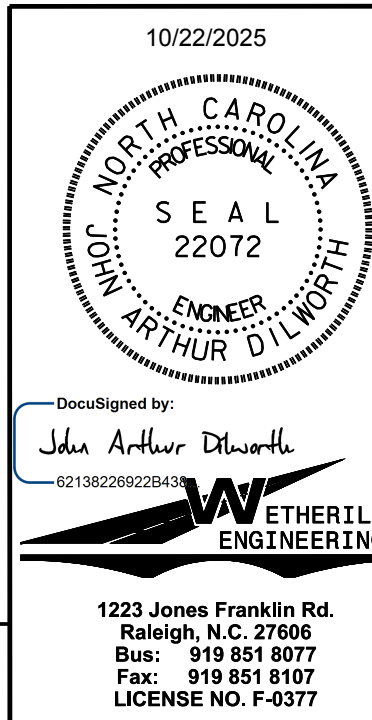
SHEET 2 OF 2

UPPER WINGS AT INTEGRAL END BENT No. 2

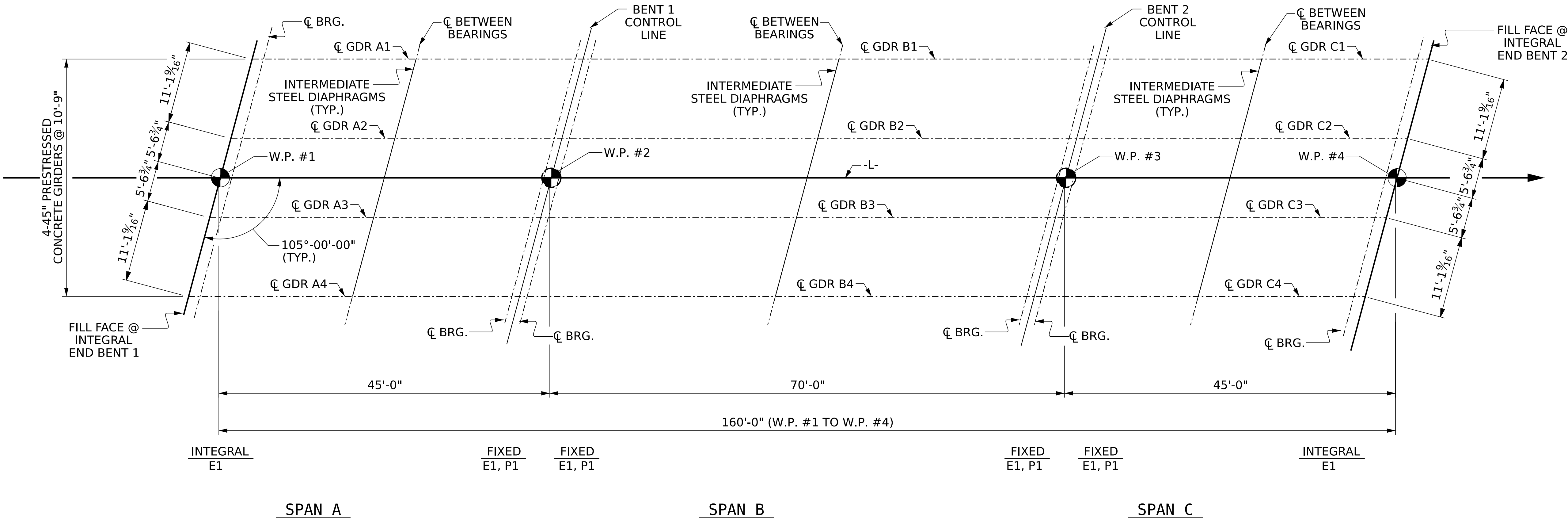
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DRAWN BY : D. HODGE DATE : 3/24
CHECKED BY : J. DILWORTH DATE : 3/24
DESIGN ENGINEER OF RECORD: J. DILWORTH DATE : 3/24

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-13
2			4			
TOTAL SHEETS						35



GIRDER LAYOUT

PROJECT NO. **BP12-R002**
CLEVELAND COUNTY
STATION: **18+04.74 -L-**

DRAWN BY :	J. PENDERGRAFT	DATE :	2-24
CHECKED BY :	J. DILWORTH	DATE :	2-24
DESIGN ENGINEER OF RECORD:	J. DILWORTH	DATE :	2-24

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

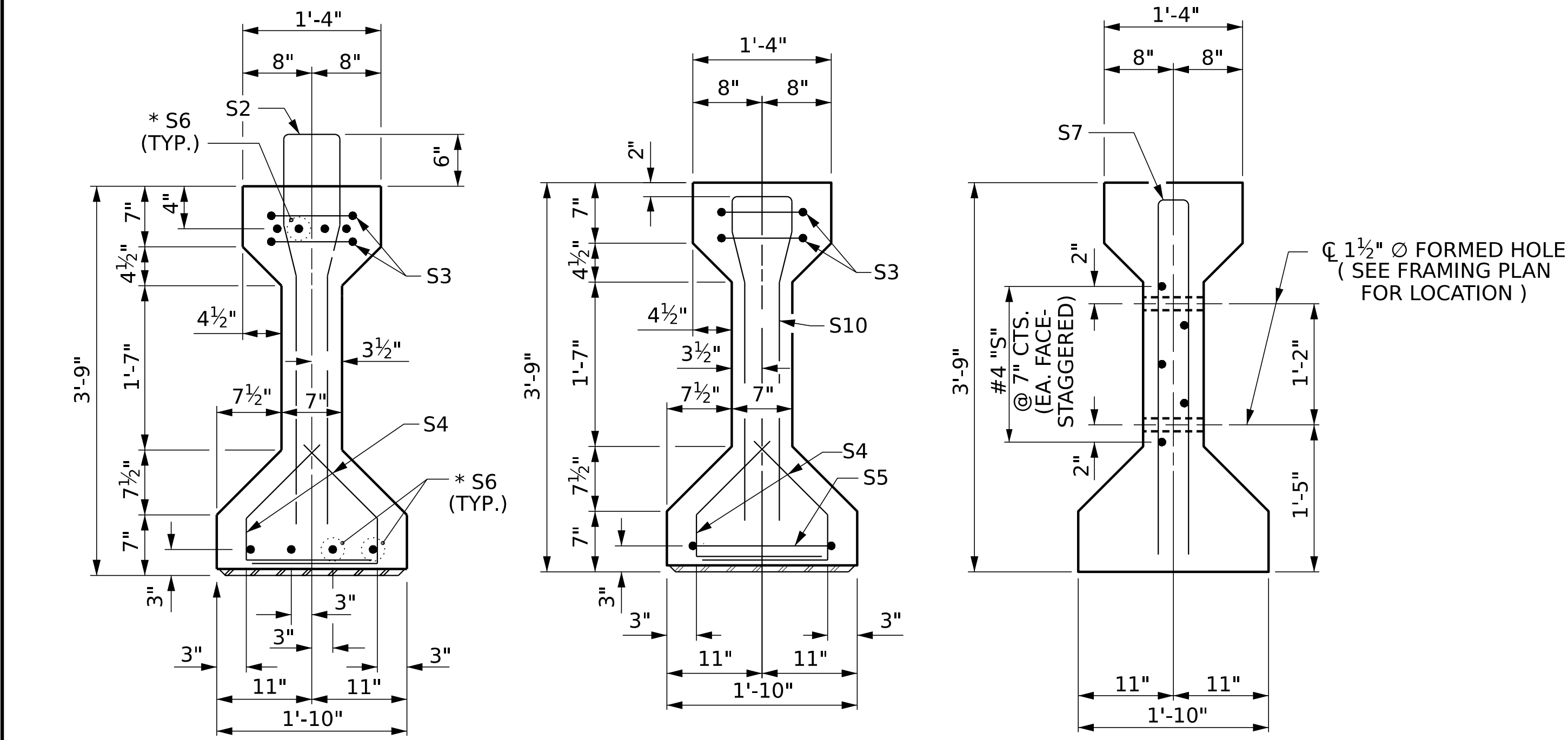
10/22/2025
NORTH CAROLINA
PROFESSIONAL
SEAL
22072
JONATHAN
ARTHUR DILWORTH
ENGINEER

DocuSigned by:
Jonathan Arthur Dilworth
02138226922843
WETHERILL
ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-4377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
**SUPERSTRUCTURE
GIRDER LAYOUT**

REVISIONS						SHEET NO. S-14 TOTAL SHEETS 35
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

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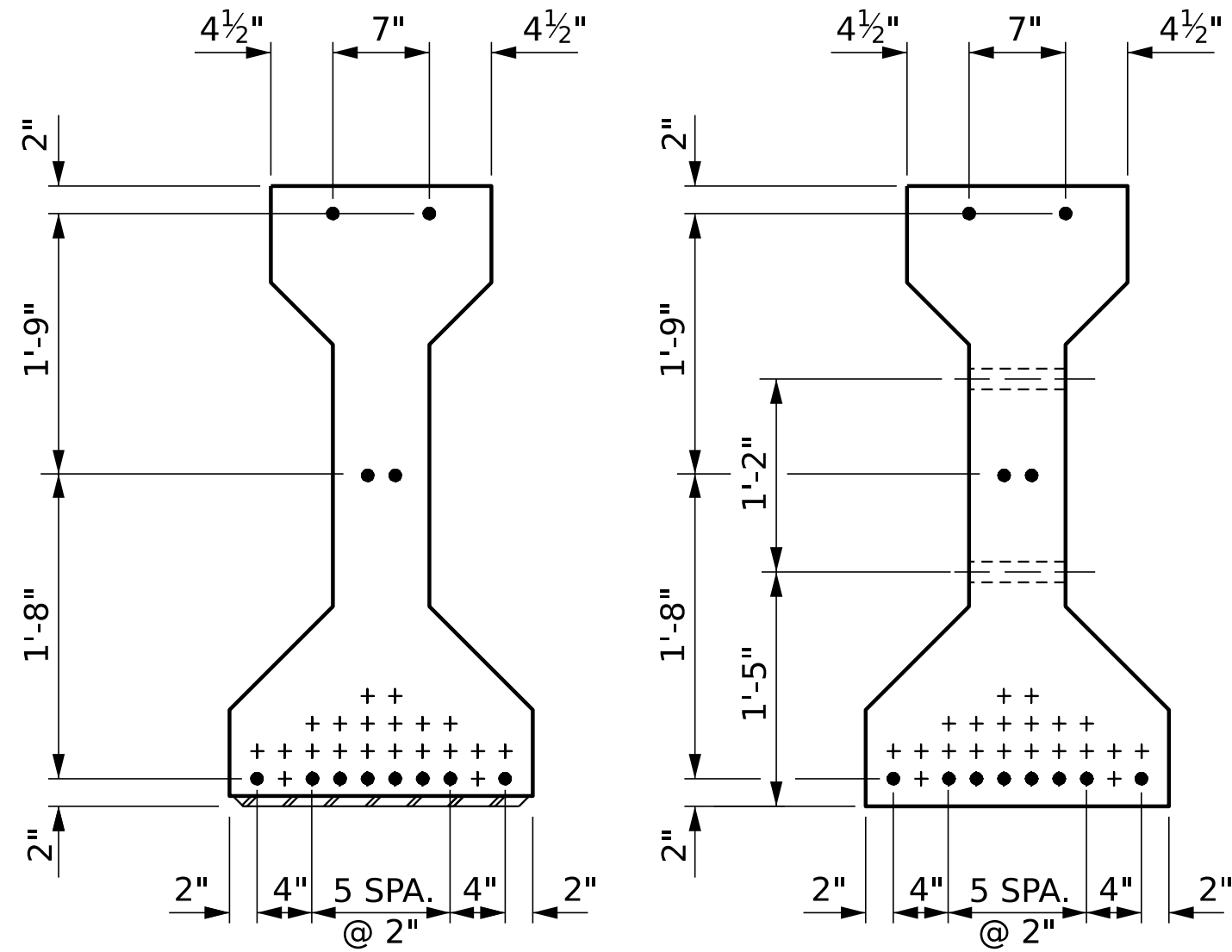


SECTION A-A

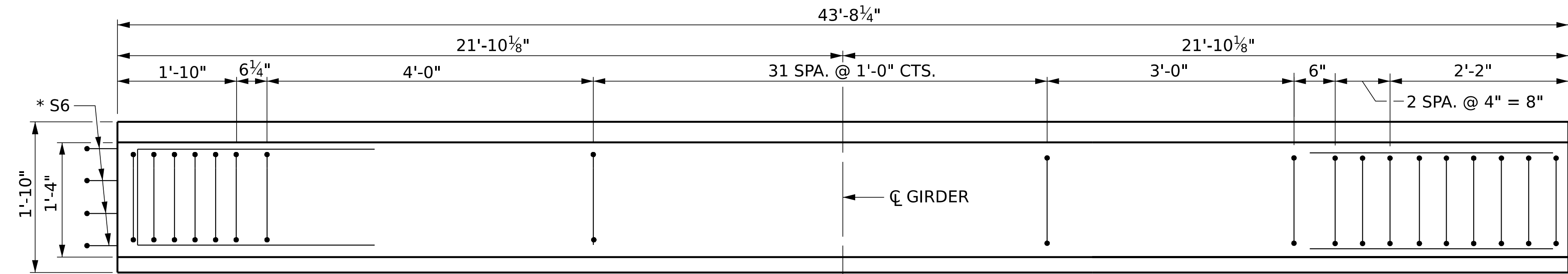
SECTION B-B

SECTION C-C

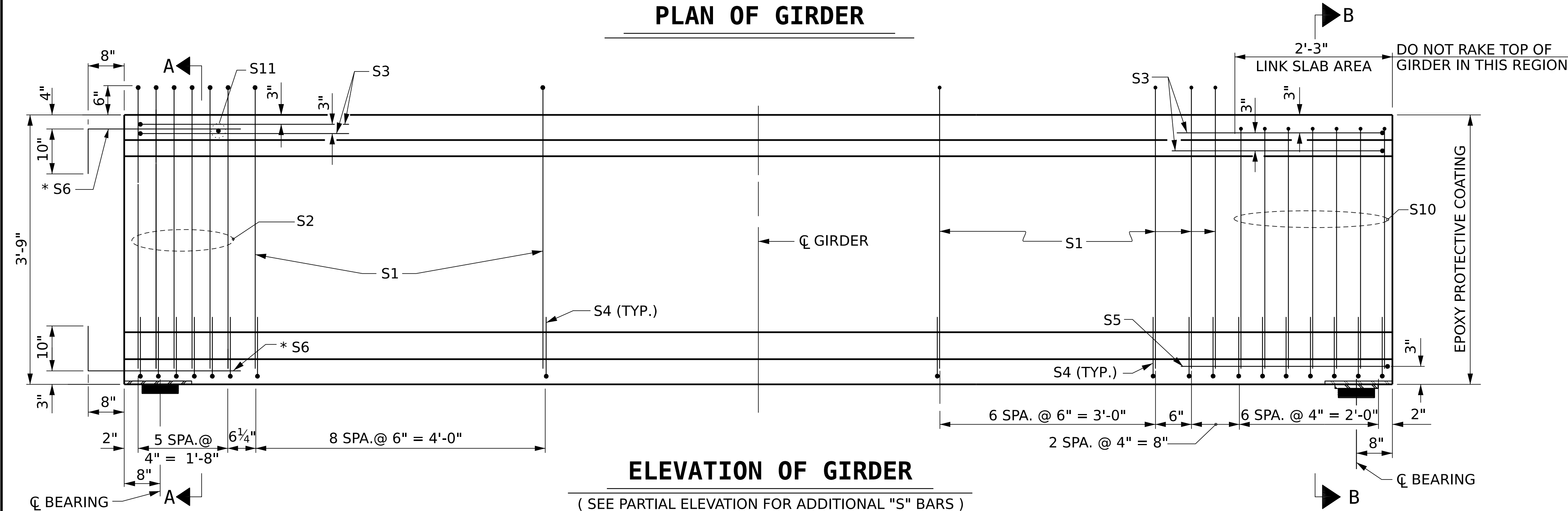
(S1 BARS NOT SHOWN)



0.6" Ø LOW RELAXATION STRAND LAYOUT

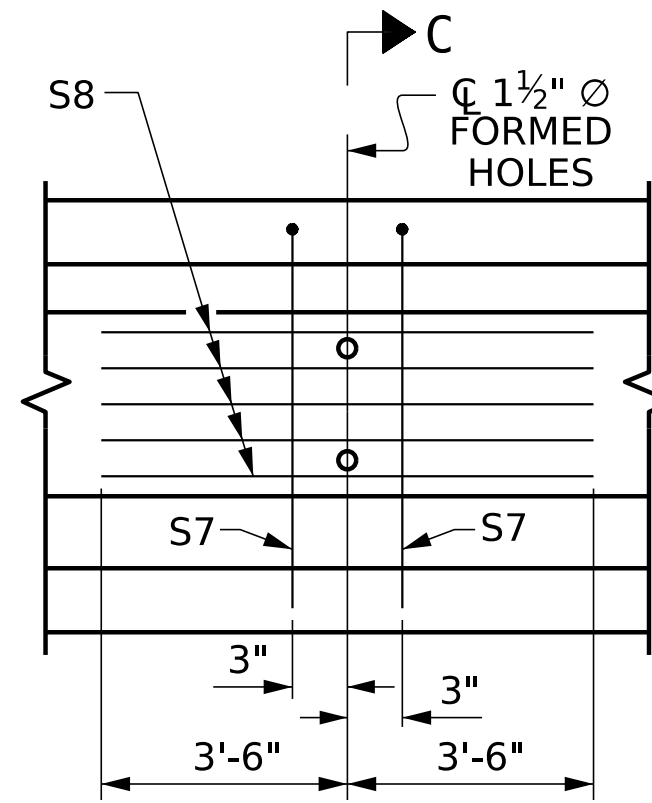


PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR ALL GIRDERS

0.6"Ø L.R. GRADE 270 STRANDS

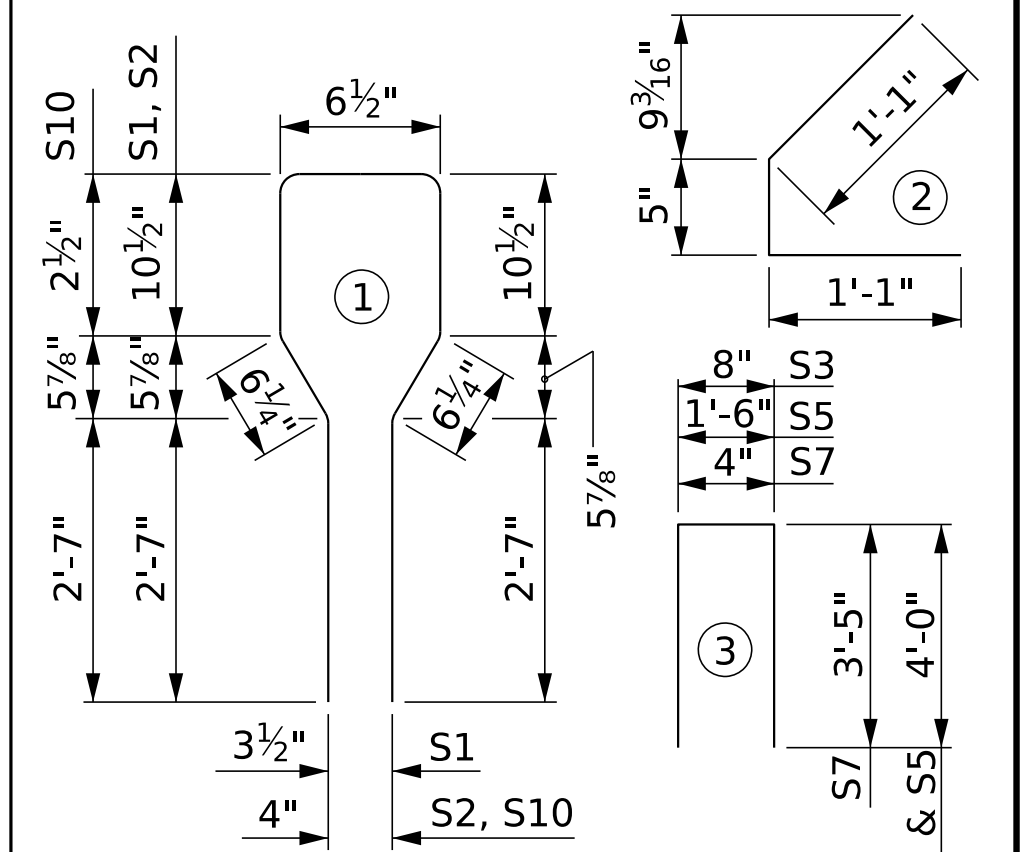
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	48	#4	1	8'-6"	273
S2	6	#6	1	8'-6"	77
S3	4	#4	3	8'-8"	23
S4	62	#4	2	2'-9"	114
S5	1	#4	3	9'-6"	6
* S6	8	#5	STR	3'-8"	31
S7	2	#5	3	7'-2"	15
S8	5	#4	STR	7'-0"	23
S10	7	#6	1	7'-2"	75
S11	1	#3	STR	1'-0"	1

* NOTE: S6 BARS SHALL BE BENT BEFORE
SHIPMENT. HEAT BENDING SHALL
NOT BE ALLOWED.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL LB.	5,000 PSI CONCRETE C.Y.	0.6" Ø L. R. STRANDS No.
SPAN A	638	6.3	12

GIRDERS REQUIRED

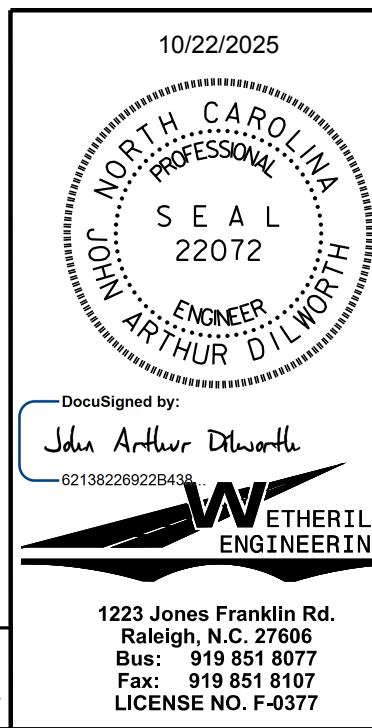
NUMBER	LENGTH	TOTAL LENGTH
4	43'-8 1/4"	174'-9"

PROJECT NO. **BP12-R002**

CLEVELAND COUNTY

STATION: **18+04.74 -L-**

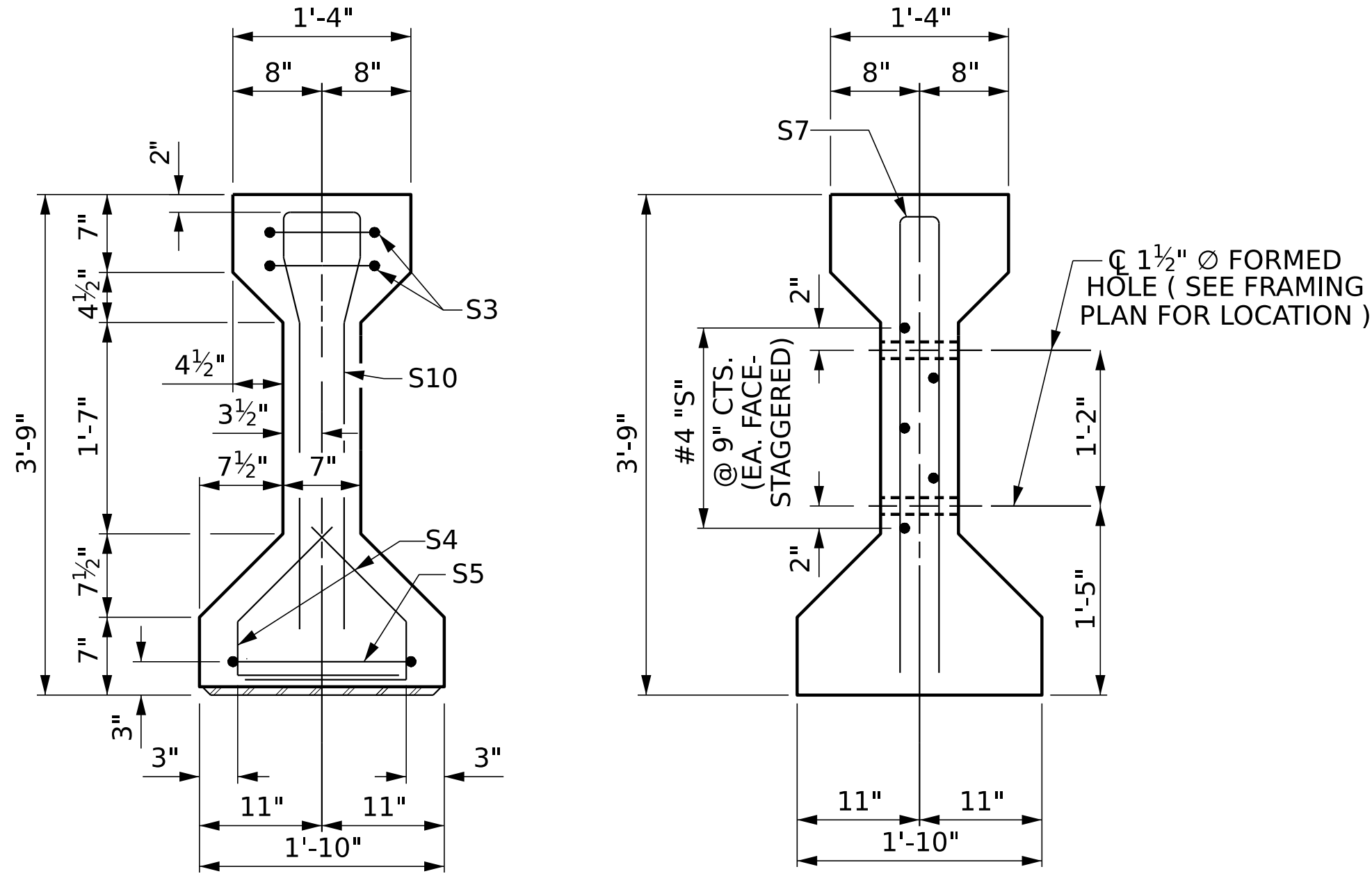
SHEET 1 OF 5



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

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UNLESS ALL SIGNATURES COMPLETED

STD. NO. PCG5 (SHT. 2)



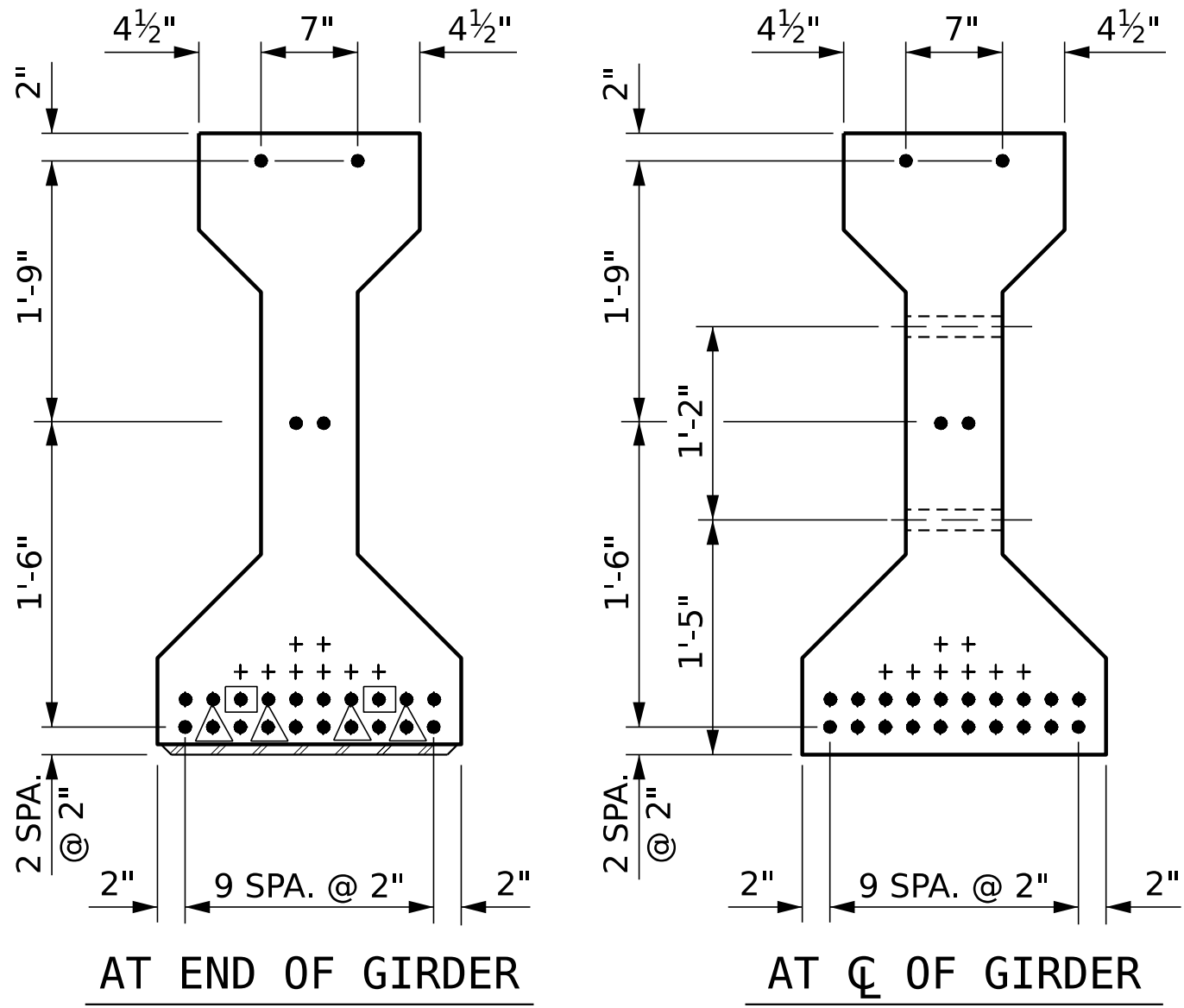
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SECTION C-C

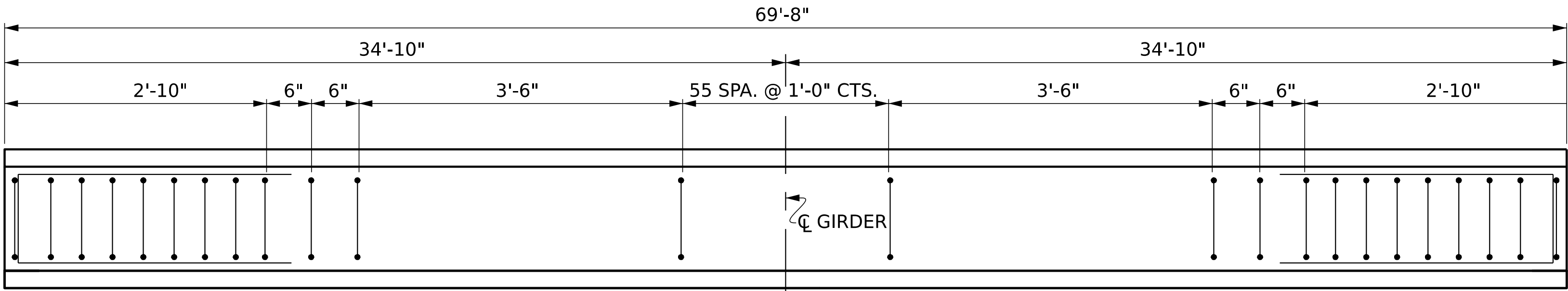
(S1 BARS NOT SHOWN)

DEBONDING LEGEND

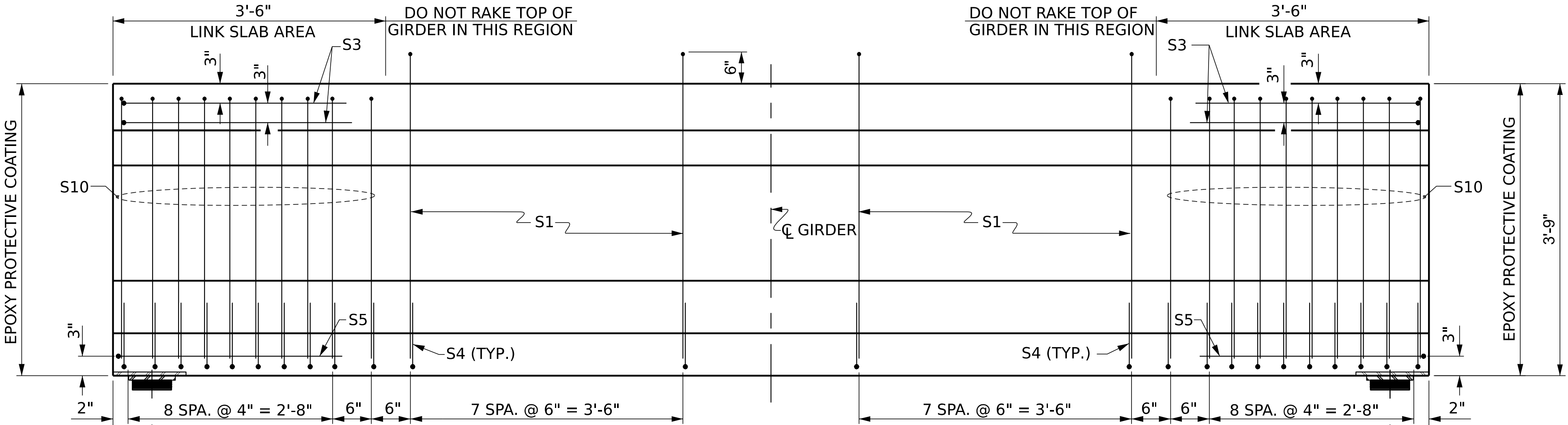
- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER



0.6" Ø LOW RELAXATION STRAND LAYOUT

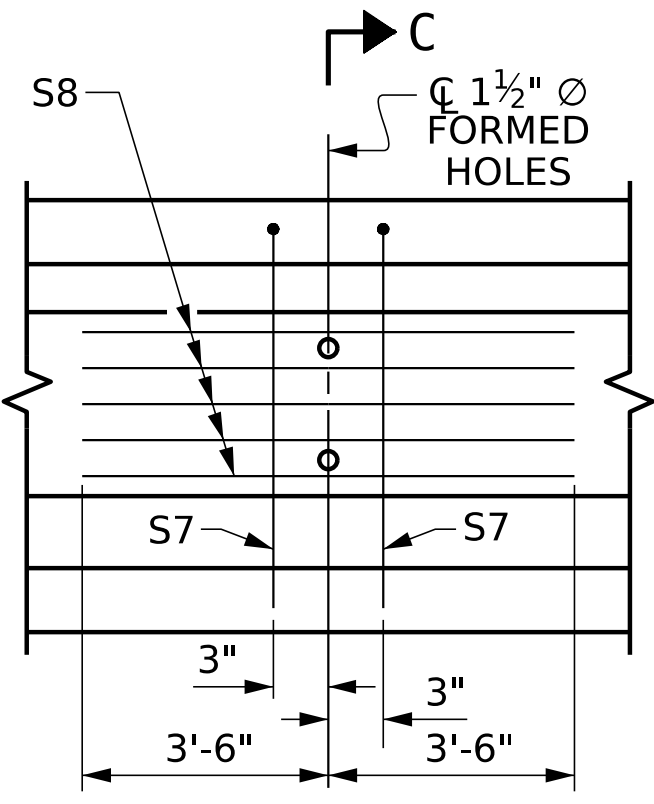


PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION

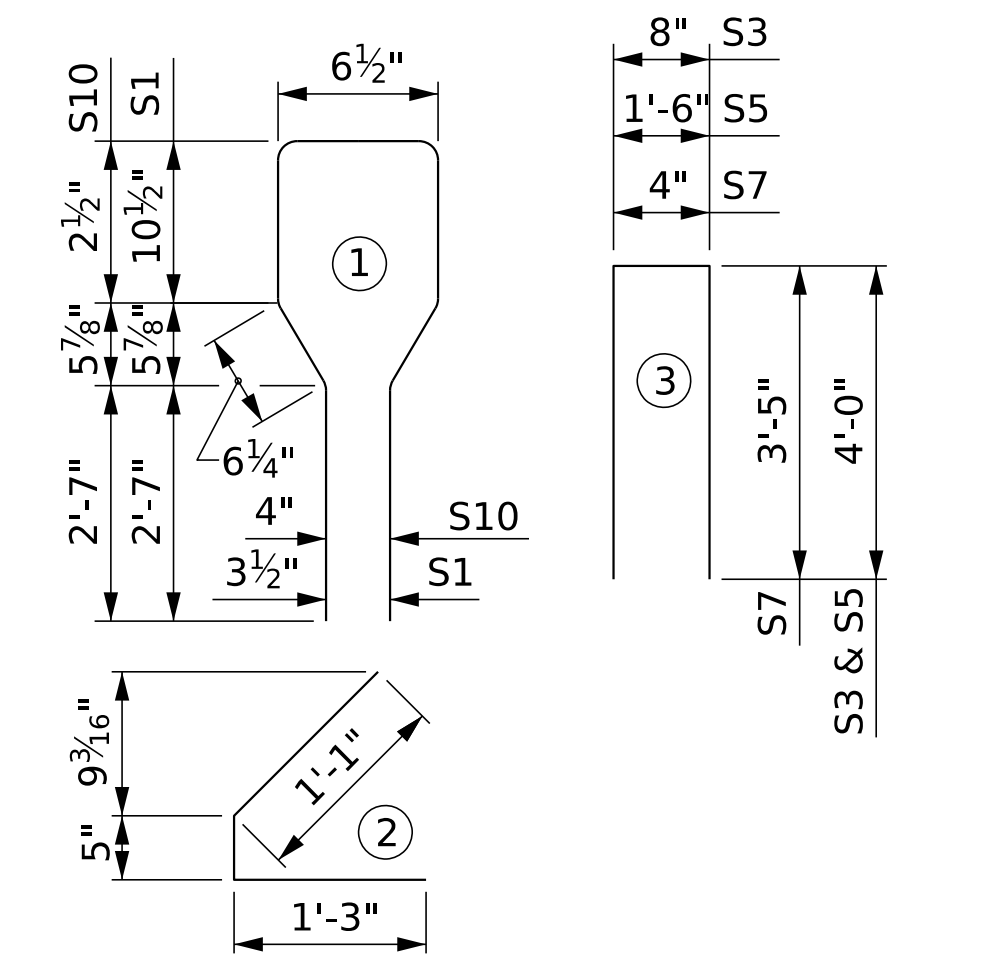
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS

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	70	#4	1	8'-6"	397
S3	4	#4	3	8'-8"	23
S4	72	#4	2	2'-9"	132
S5	2	#4	3	9'-6"	13
S7	2	#5	3	7'-2"	15
S8	5	#4	STR	7'-0"	23
S10	20	#6	1	7'-2"	215

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL LB.	7,000 PSI CONCRETE C.Y.	0.6" Ø L. R. STRANDS No.
	818	10.0	24

GIRDERS REQUIRED

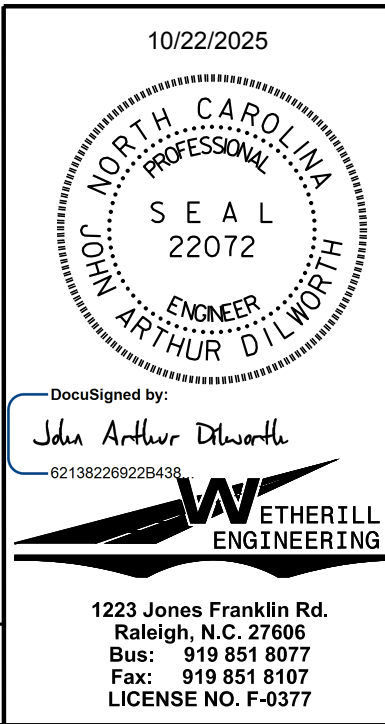
NUMBER	LENGTH	TOTAL LENGTH
4	69'-8"	278'-8"

PROJECT NO. **BP12-R002**

CLEVELAND COUNTY

STATION: **18+04.74 -L-**

SHEET 2 OF 5

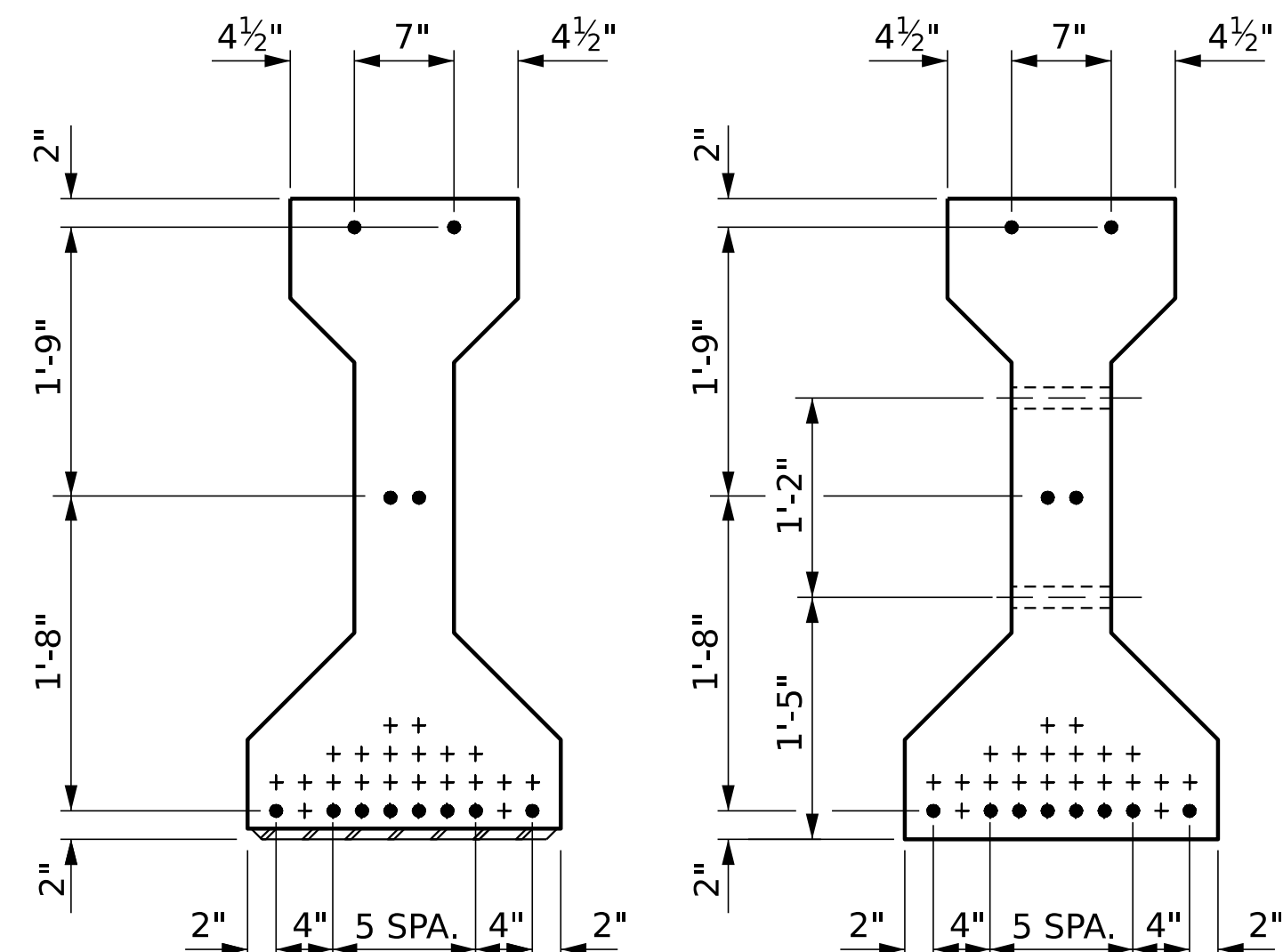
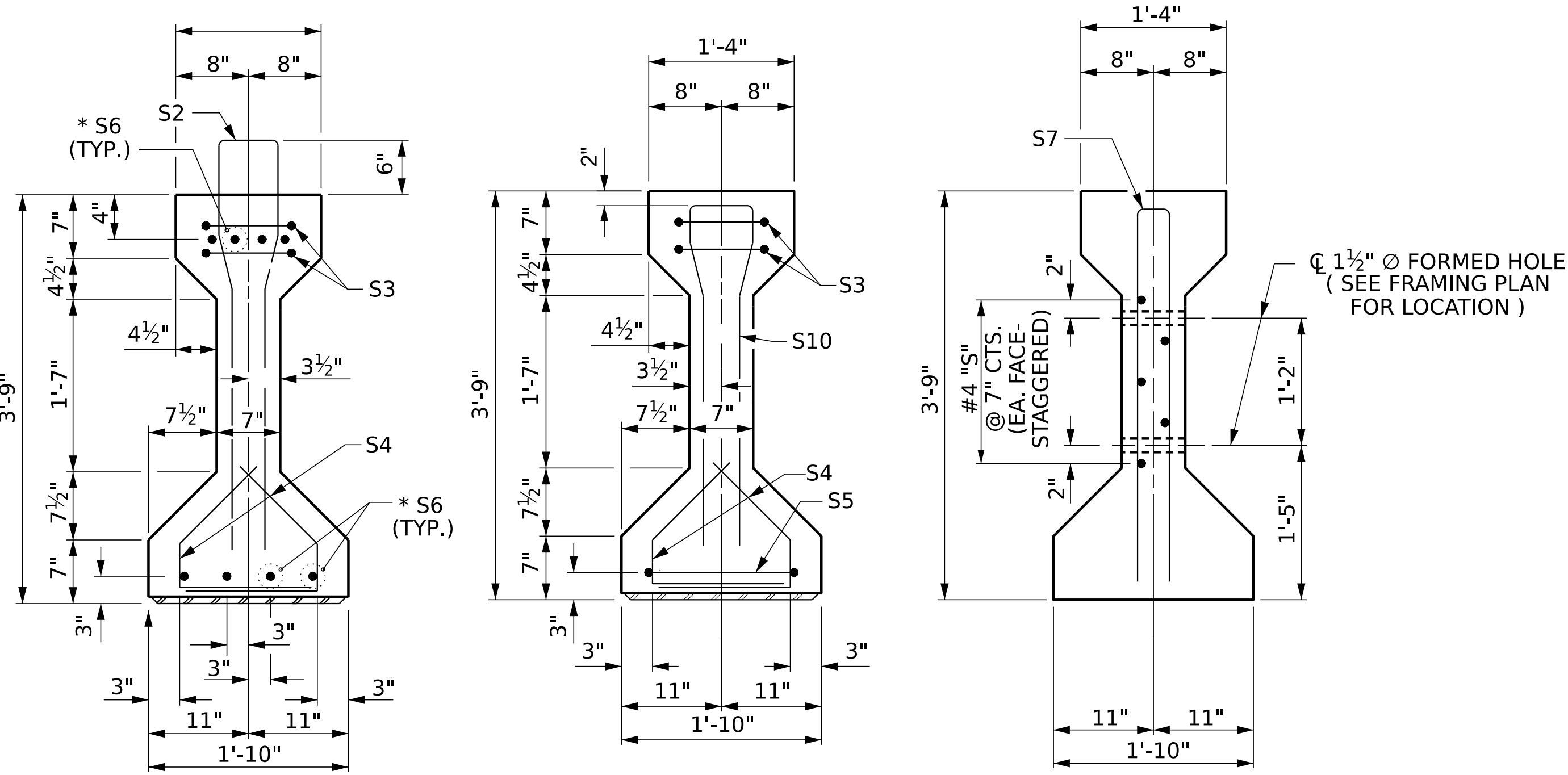


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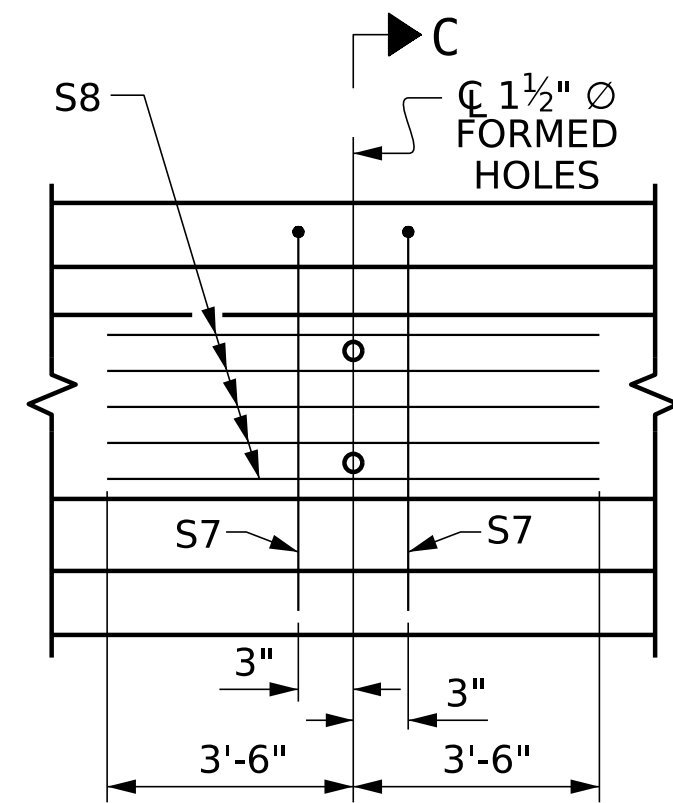
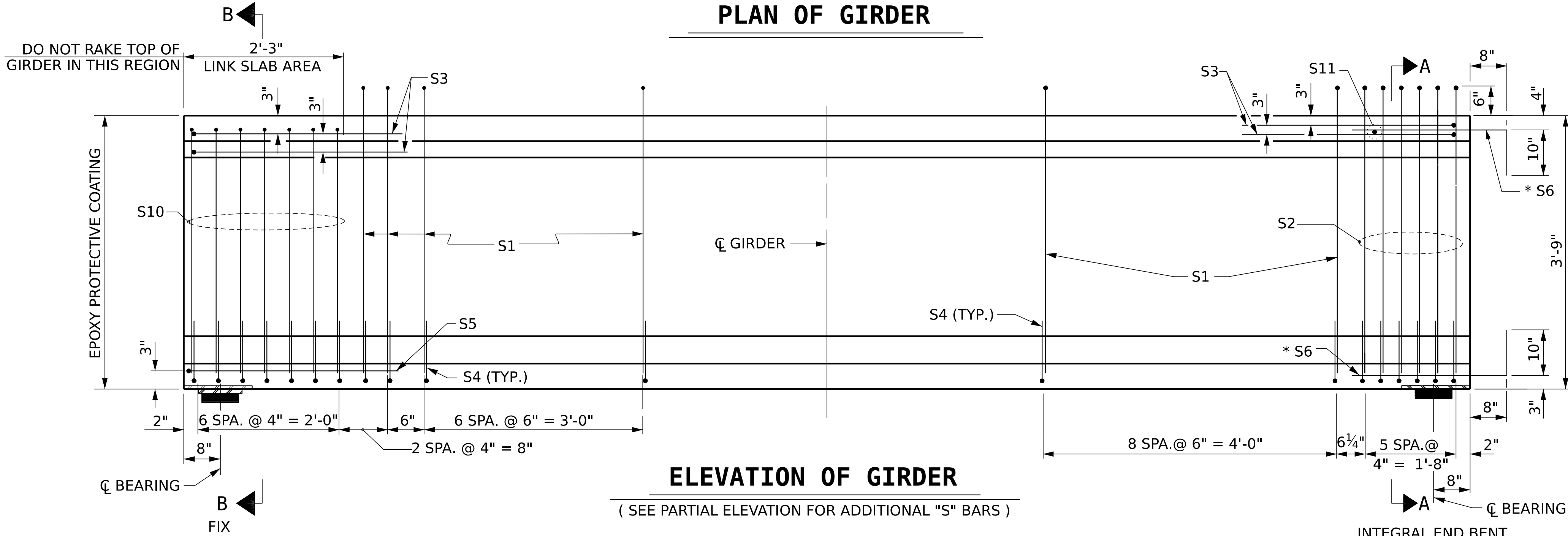
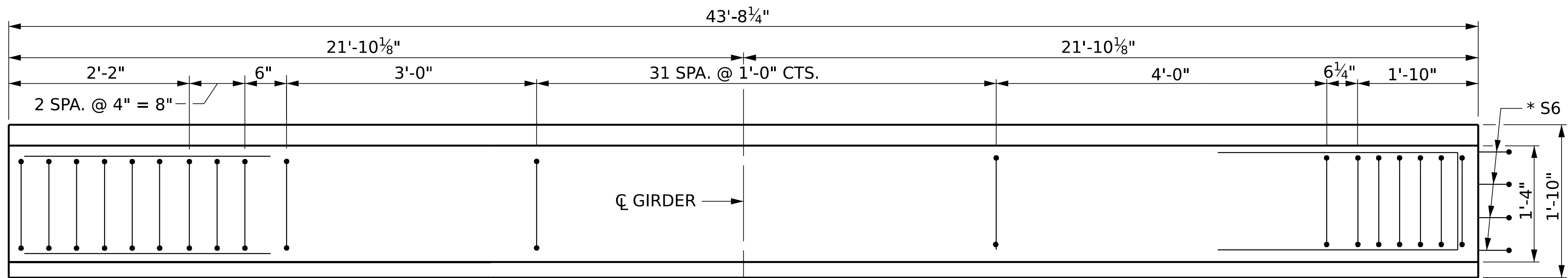
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

STD. NO. PCG5 (SHT. 1)

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0.6" Ø LOW RELAXATION STRAND LAYOUT

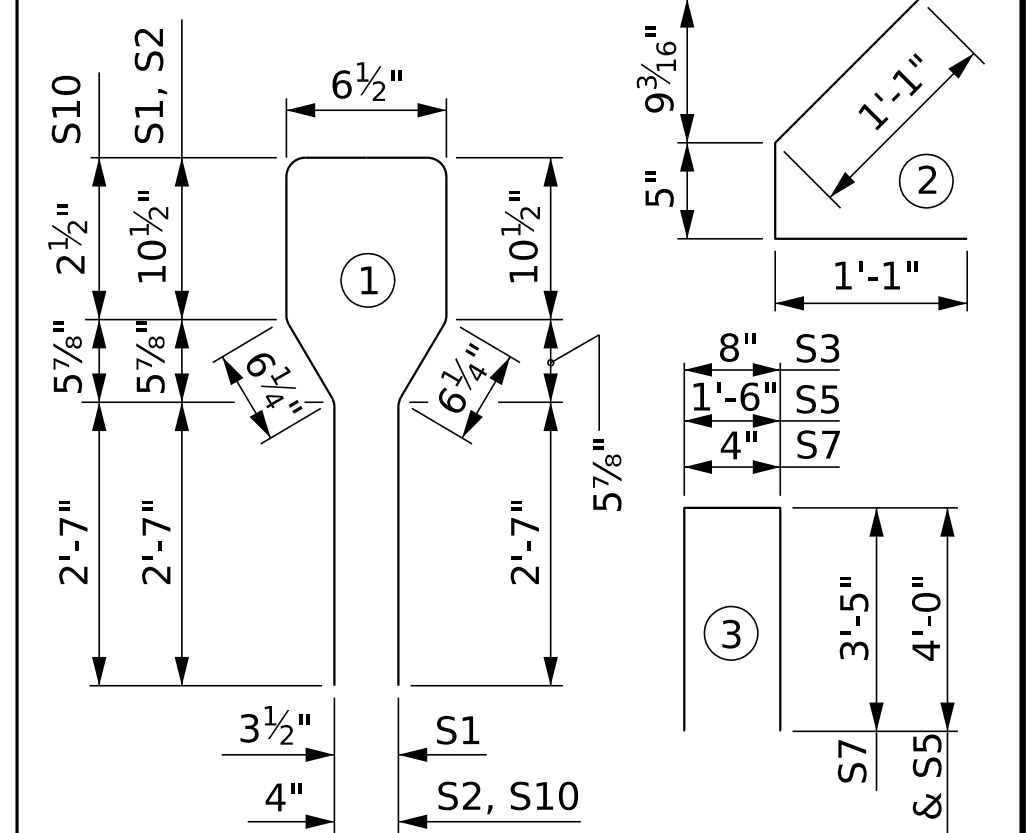


0.6"Ø L.R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	48	#4	1	8'-6"	273
S2	6	#6	1	8'-6"	77
S3	4	#4	3	8'-8"	23
S4	62	#4	2	2'-9"	114
S5	1	#4	3	9'-6"	6
*S6	8	#5	STR	3'-8"	31
S7	2	#5	3	7'-2"	15
S8	5	#4	STR	7'-0"	23
S10	7	#6	1	7'-2"	75
S11	1	#3	STR	1'-0"	1

* NOTE: S6 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	5,000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
SPAN C	638	6.3	12

GIRDERS REQUIRED

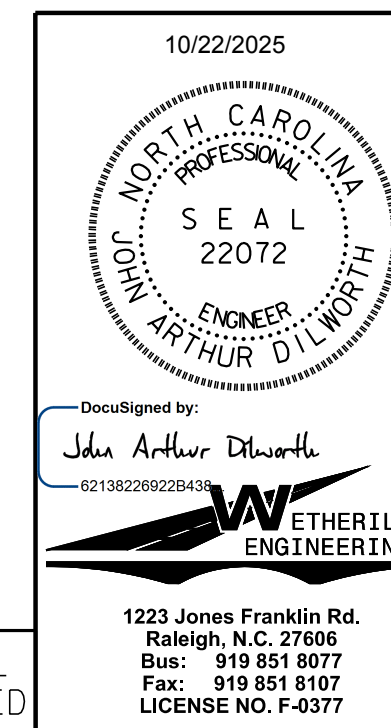
NUMBER	LENGTH	TOTAL LENGTH
4	43'-8 1/4"	174'-9"

PROJECT NO. **BP12-R002**

CLEVELAND COUNTY

STATION: **18+04.74 -L-**

SHEET 3 OF 5



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
**AASHTO TYPE III
PRESTRESSED CONCRETE
GIRDER - LINK SLAB
SPAN C**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-17
2			4			
						TOTAL SHEETS 35

DOCUMENT NOT CONSIDERED FINAL
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1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STD. NO. PCG5 (SHT. 2)

DRAWN BY : J. PENDERGRAFT	DATE : 3-24
CHECKED BY : G. GILLAND/JAD	DATE : 3-24
DESIGN ENGINEER OF RECORD: J. DILWORTH	DATE : 3-24
DRAWN BY : ELR 8/9/1	REV. 1/15 MAA/TMG
CHECKED BY : GRP 8/9/1	REV. 12/17 MAA/THC
	REV. 11/21 BNB/AAI

STRUCTURAL STEEL NOTES

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

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

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

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

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

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

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

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

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

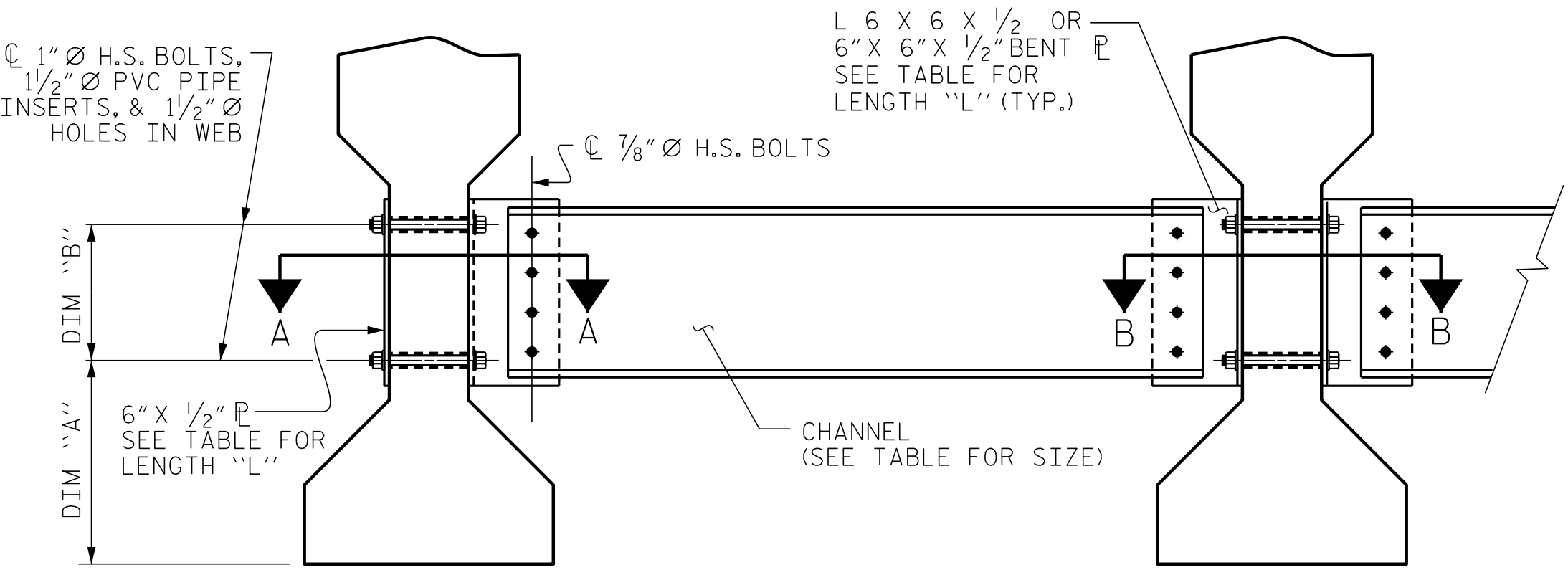
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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

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

TABLE

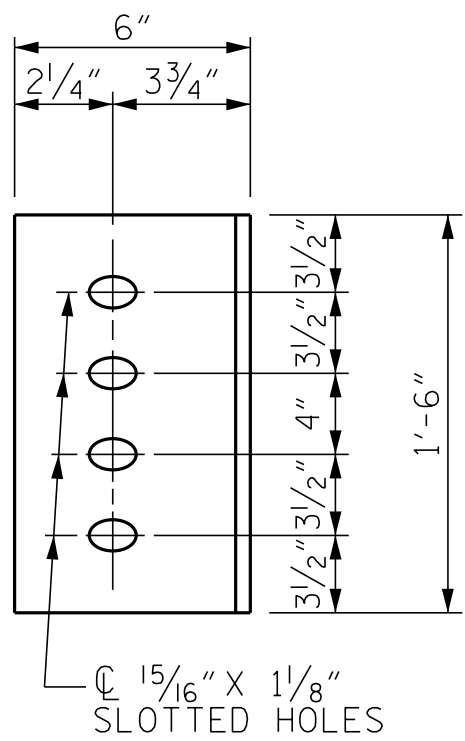
GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
III	MC 18 x 42.7	1'-5"	1'-2"	1'-6"



EXTERIOR GIRDER INTERIOR GIRDER

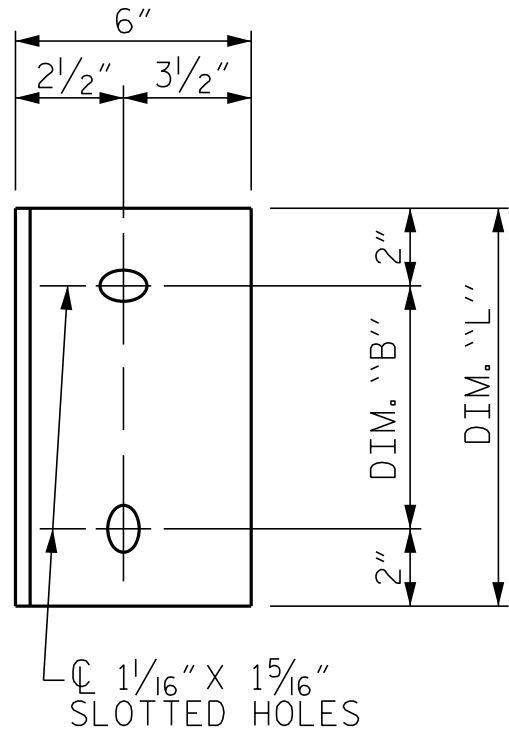
PART SECTION AT INTERMEDIATE DIAPHRAGM

(TYPE III GIRDER SHOWN)



DIAPHRAGM FACE

(TYPE III GDR.)



WEB FACE

CONNECTOR PLATE DETAILS

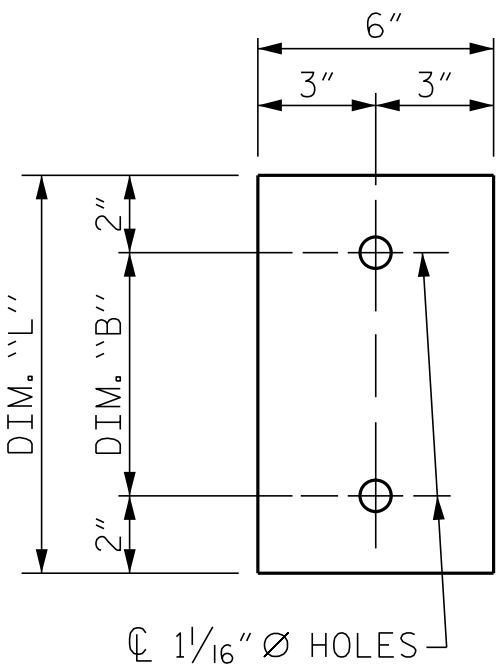
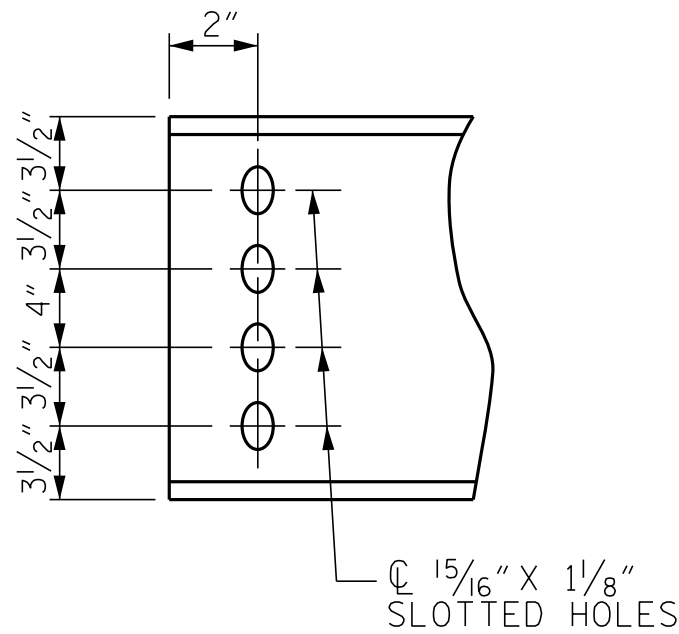
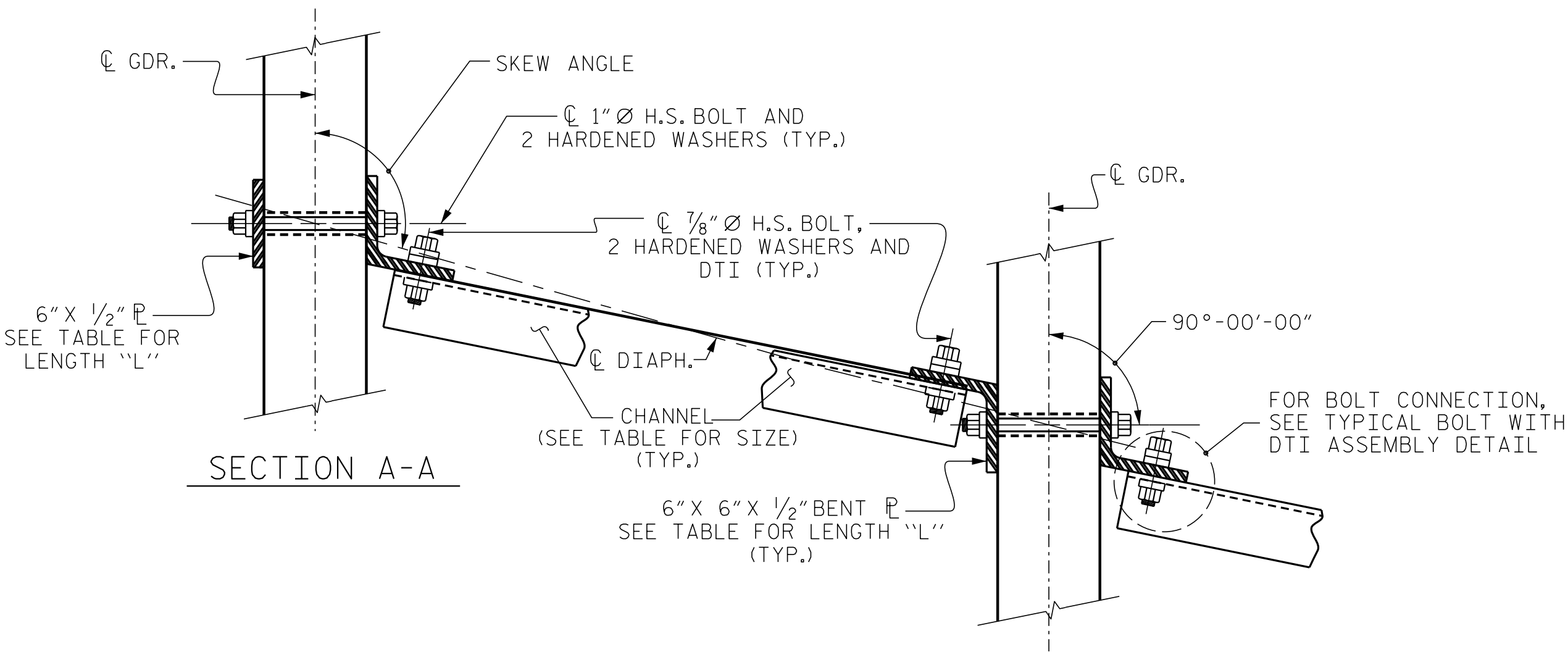


PLATE DETAILS

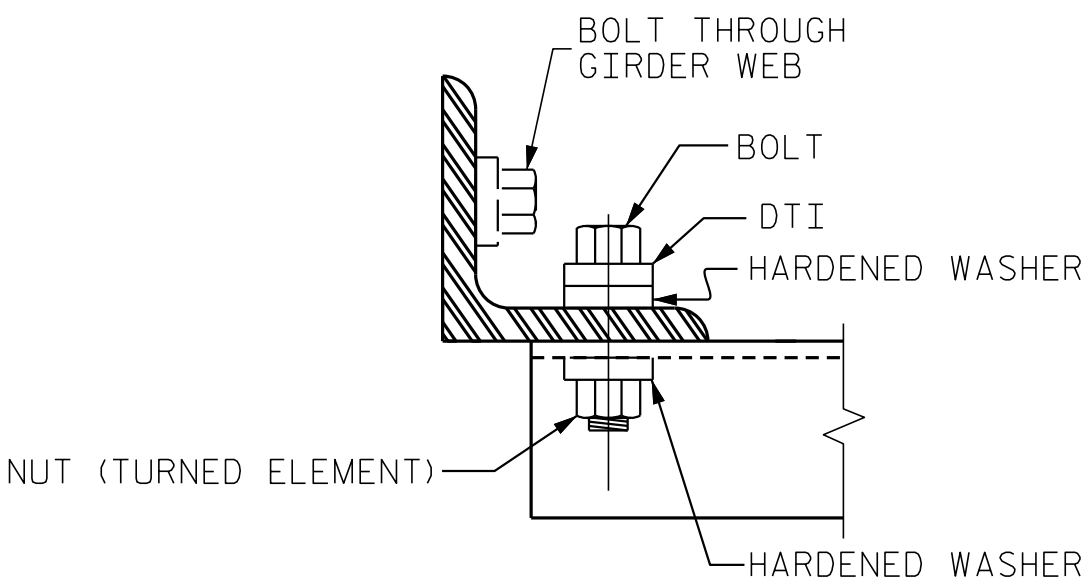


CHANNEL END

(TYPE III GDR.)



CONNECTION DETAILS



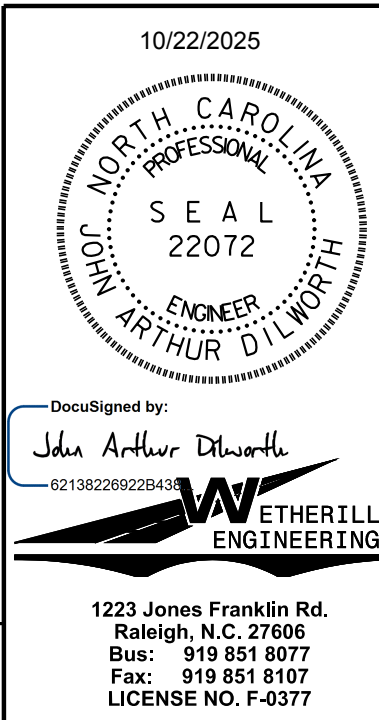
BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. **BP12-R002**

CLEVELAND COUNTY

STATION: **18+04.74 -L-**

SHEET 4 OF 5



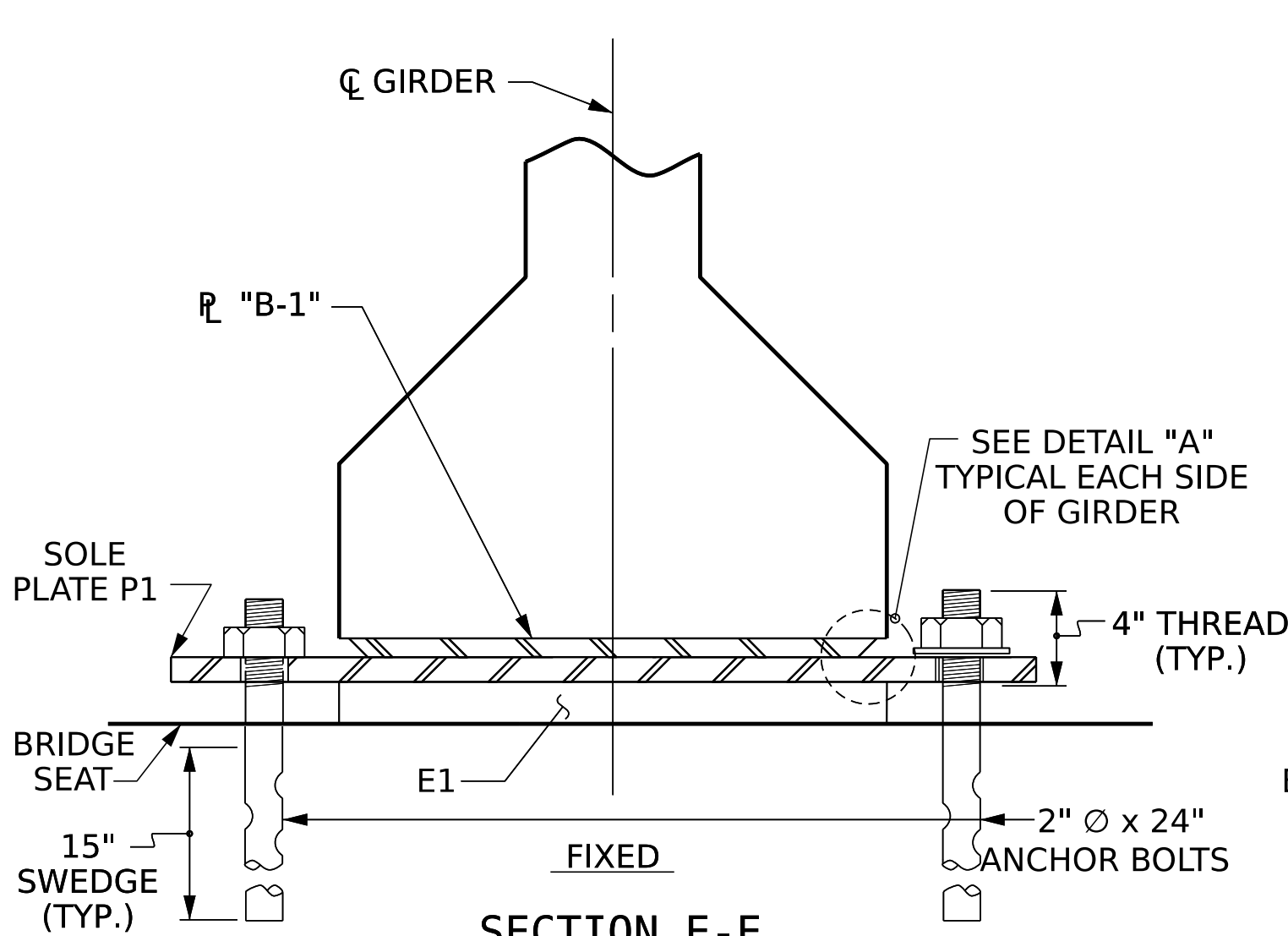
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
INTERMEDIATE
STEEL DIAPHRAGMS
FOR TYPE III
PRESTRESSED CONCRETE
GIRDERS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			35

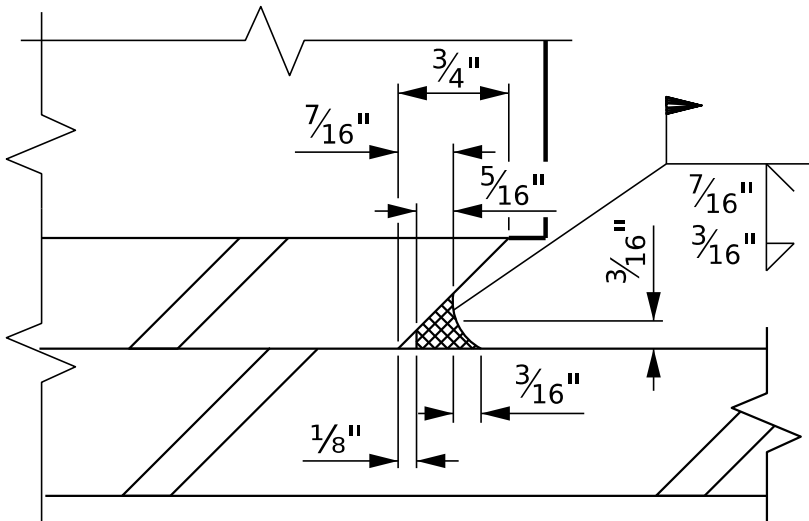
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UNLESS ALL SIGNATURES COMPLETED

STD. NO. PCG10 (SHT 4)

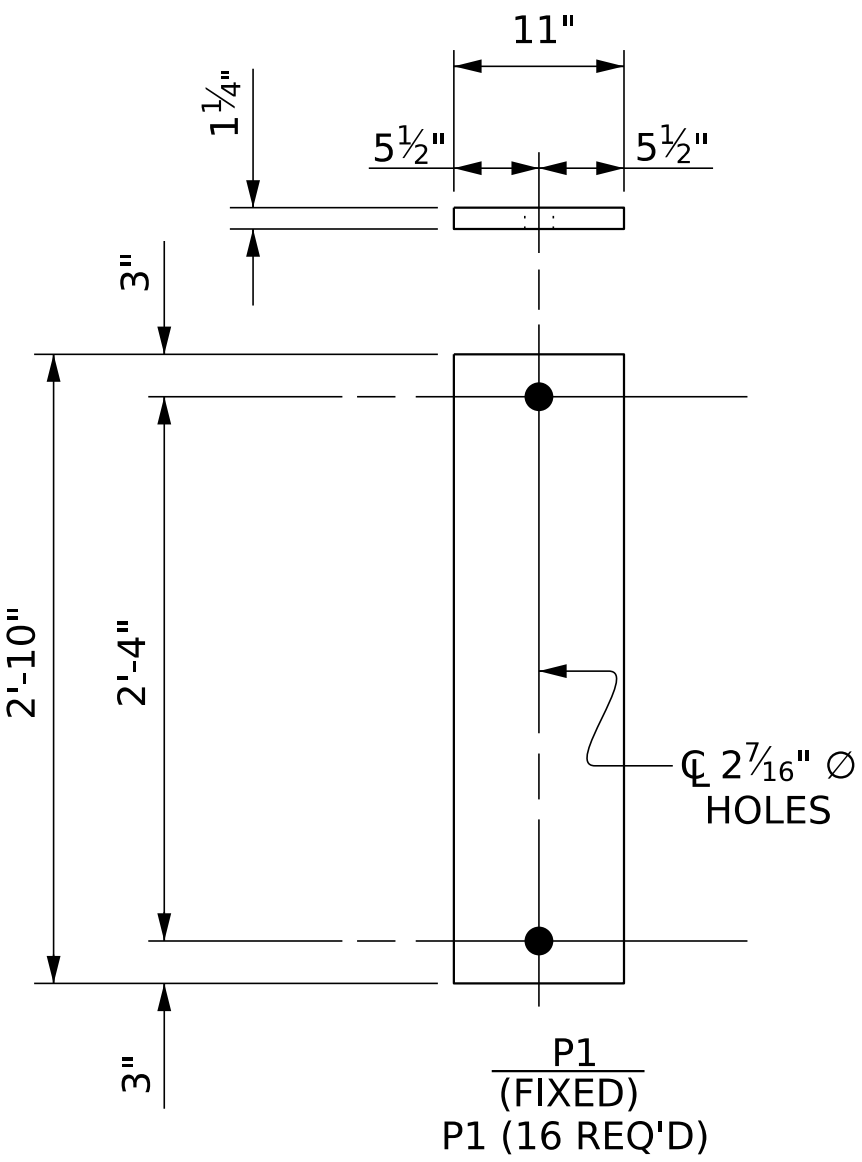
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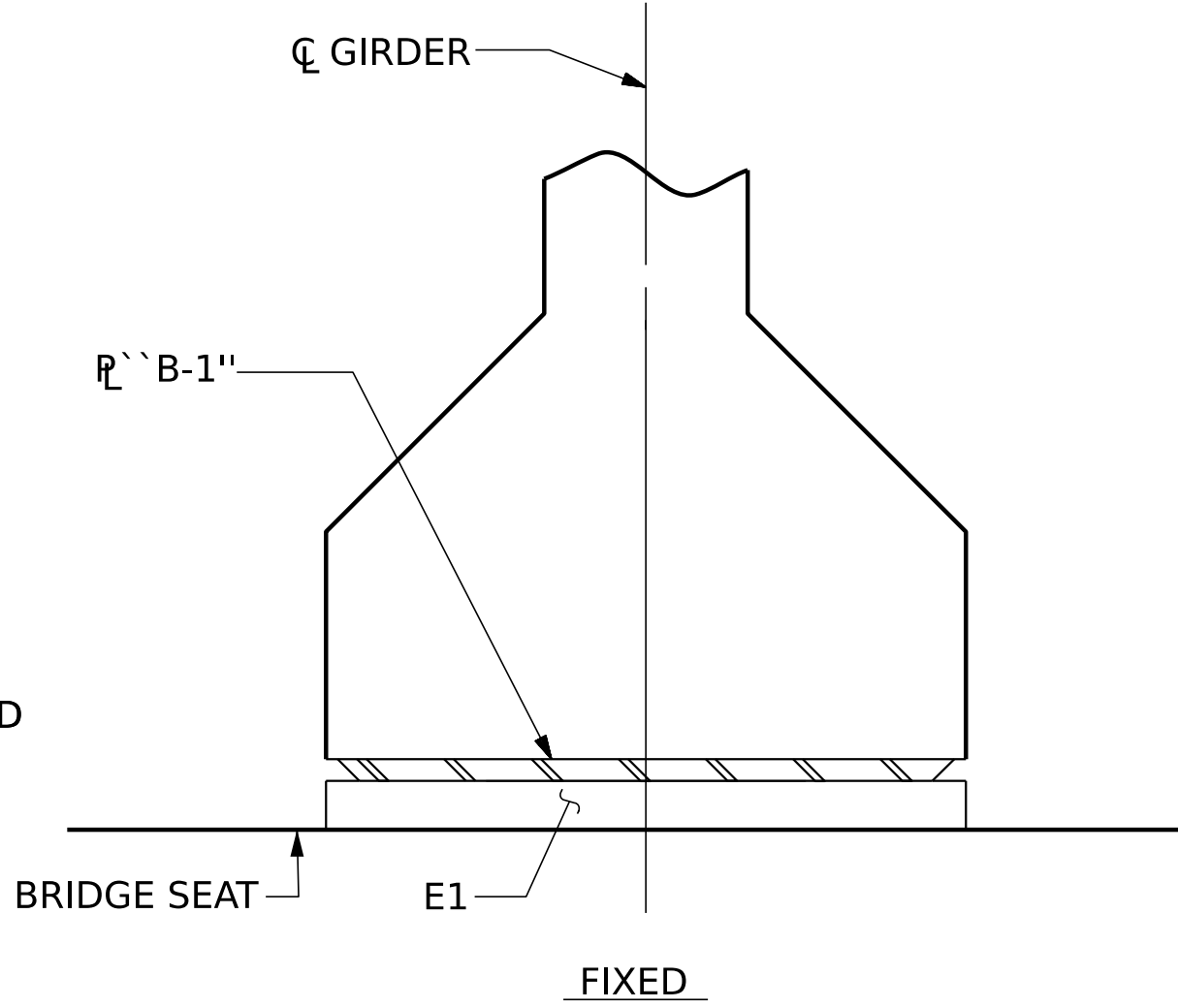
SECTION E-E
(AT CONTINUOUS BENTS)



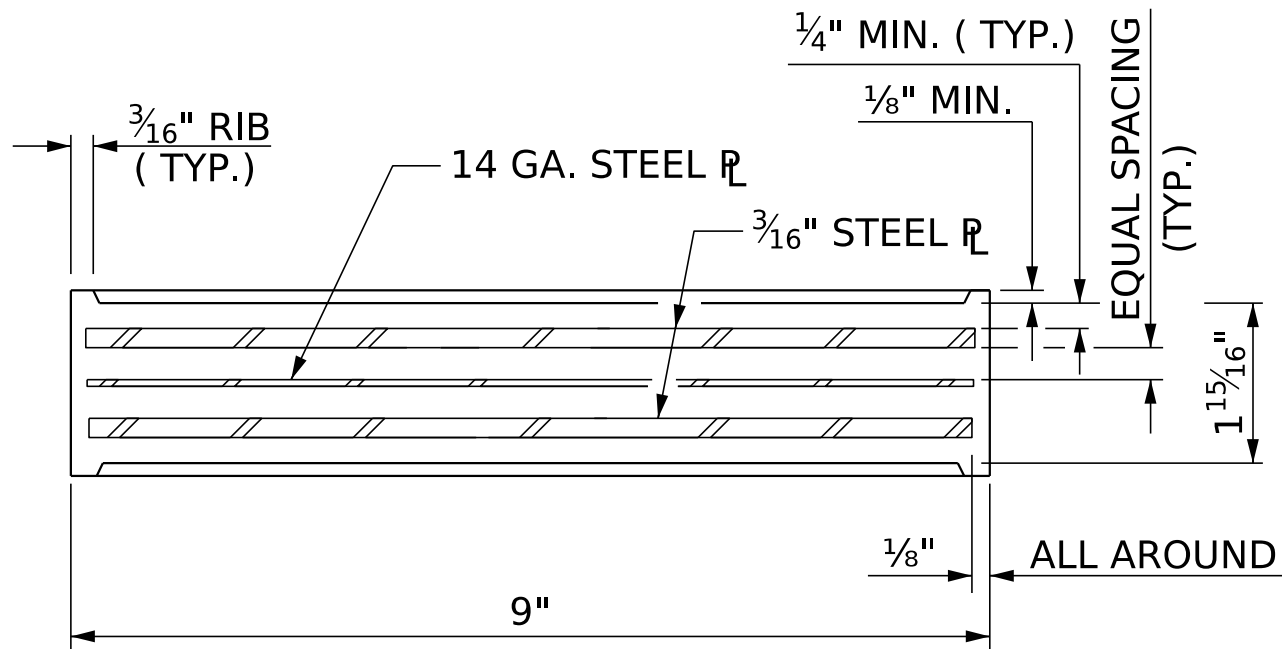
DETAIL "A"



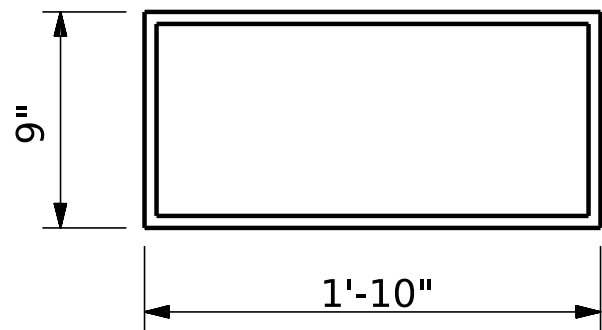
SOLE PLATE DETAILS (P1)



SECTION D-D
(AT INTEGRAL END BENTS)



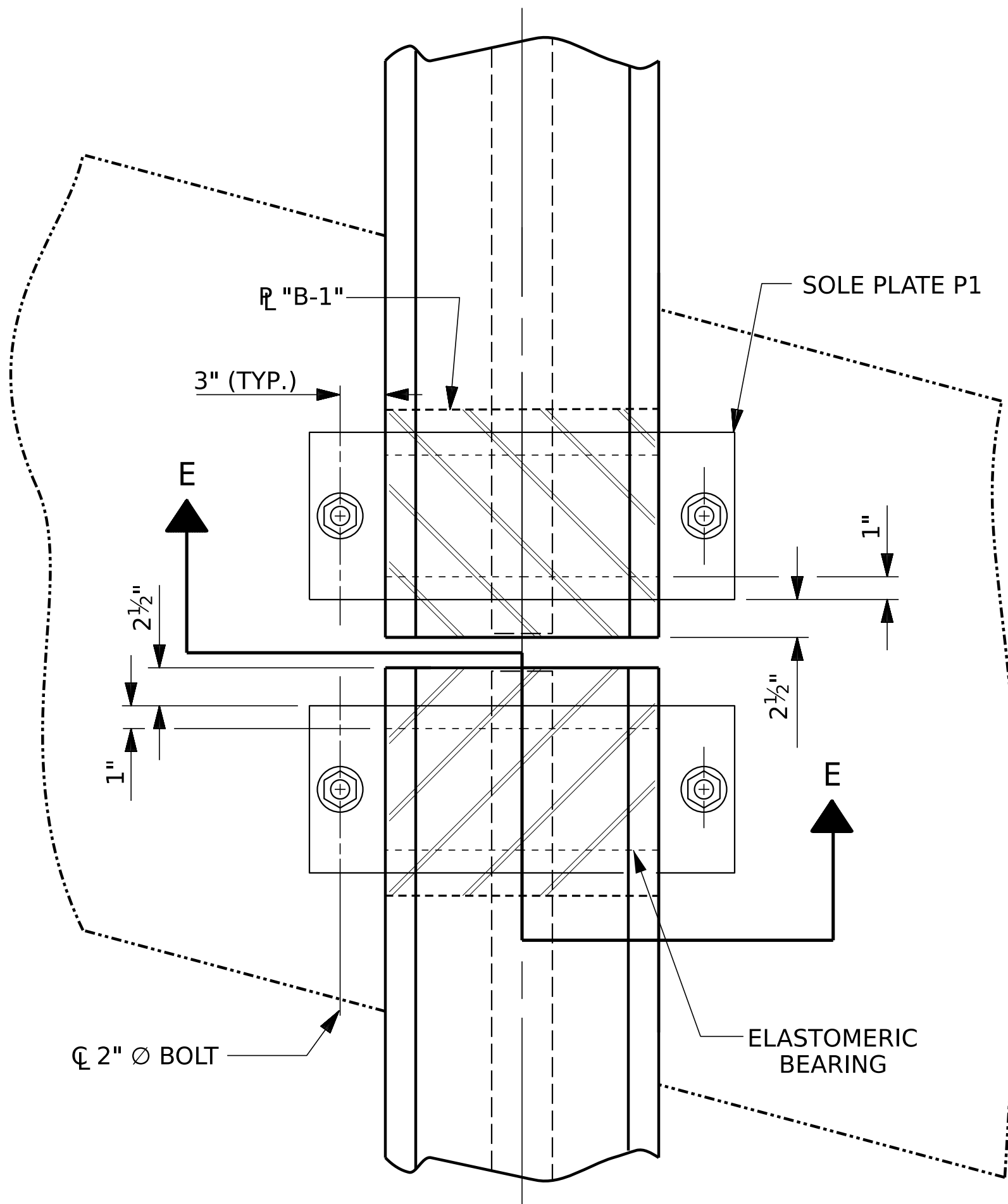
TYPICAL SECTION OF ELASTOMERIC BEARINGS



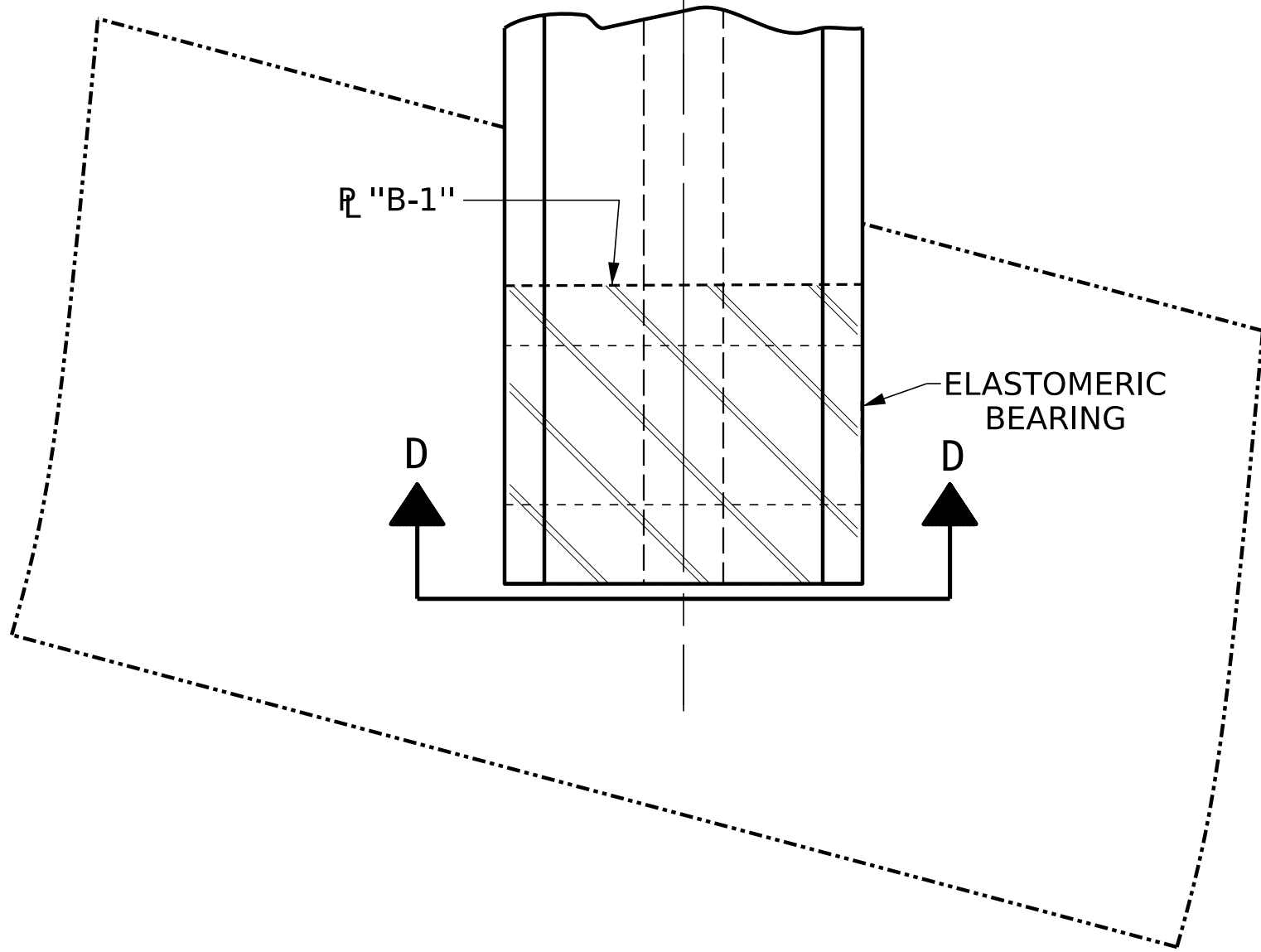
E1 (24 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING

TYPE IV

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE IV	225 K



TYPICAL PLAN
SHOWING CONTINUOUS BENT



TYPICAL PLAN
SHOWING INTEGRAL END BENT

NOTES

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

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

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

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

SOLE PLATE P1, 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.

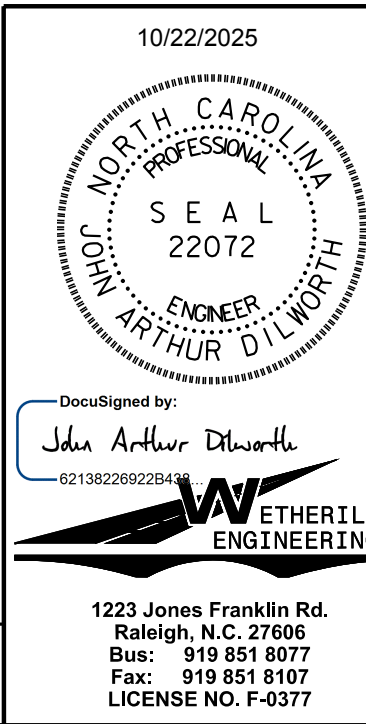
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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.

PROJECT NO. **BP12-R002**
CLEVELAND COUNTY
STATION: **18+04.74 -L-**

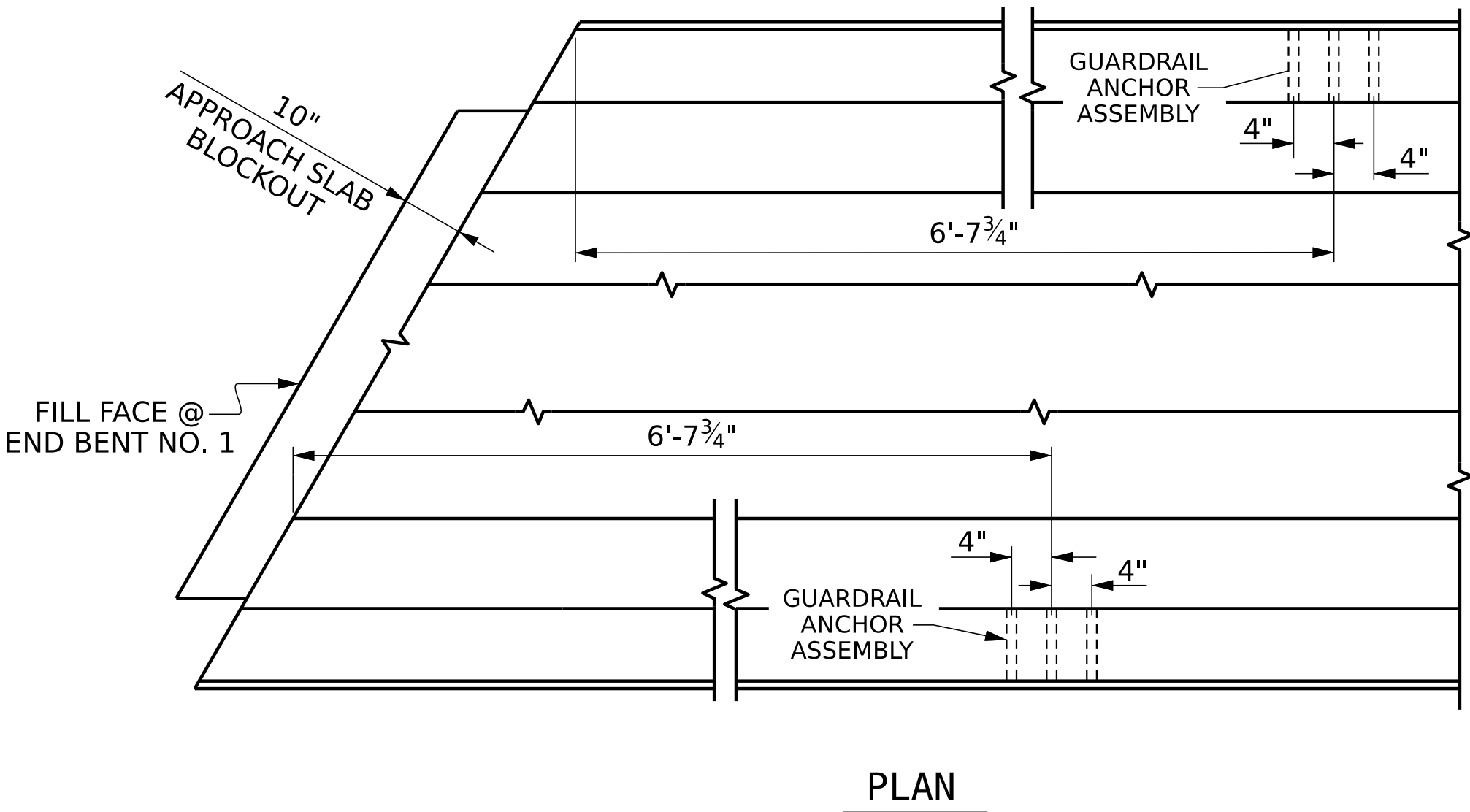
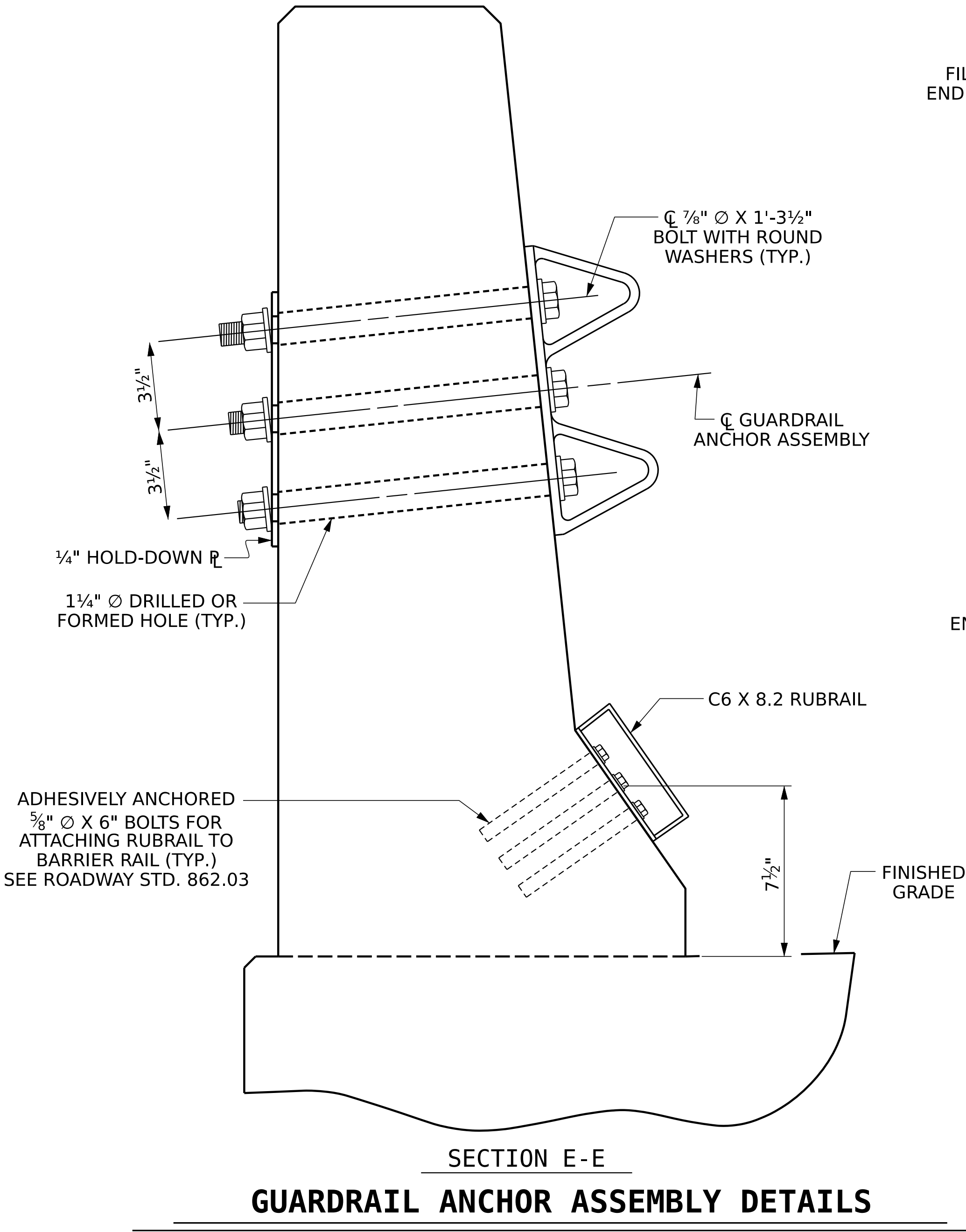
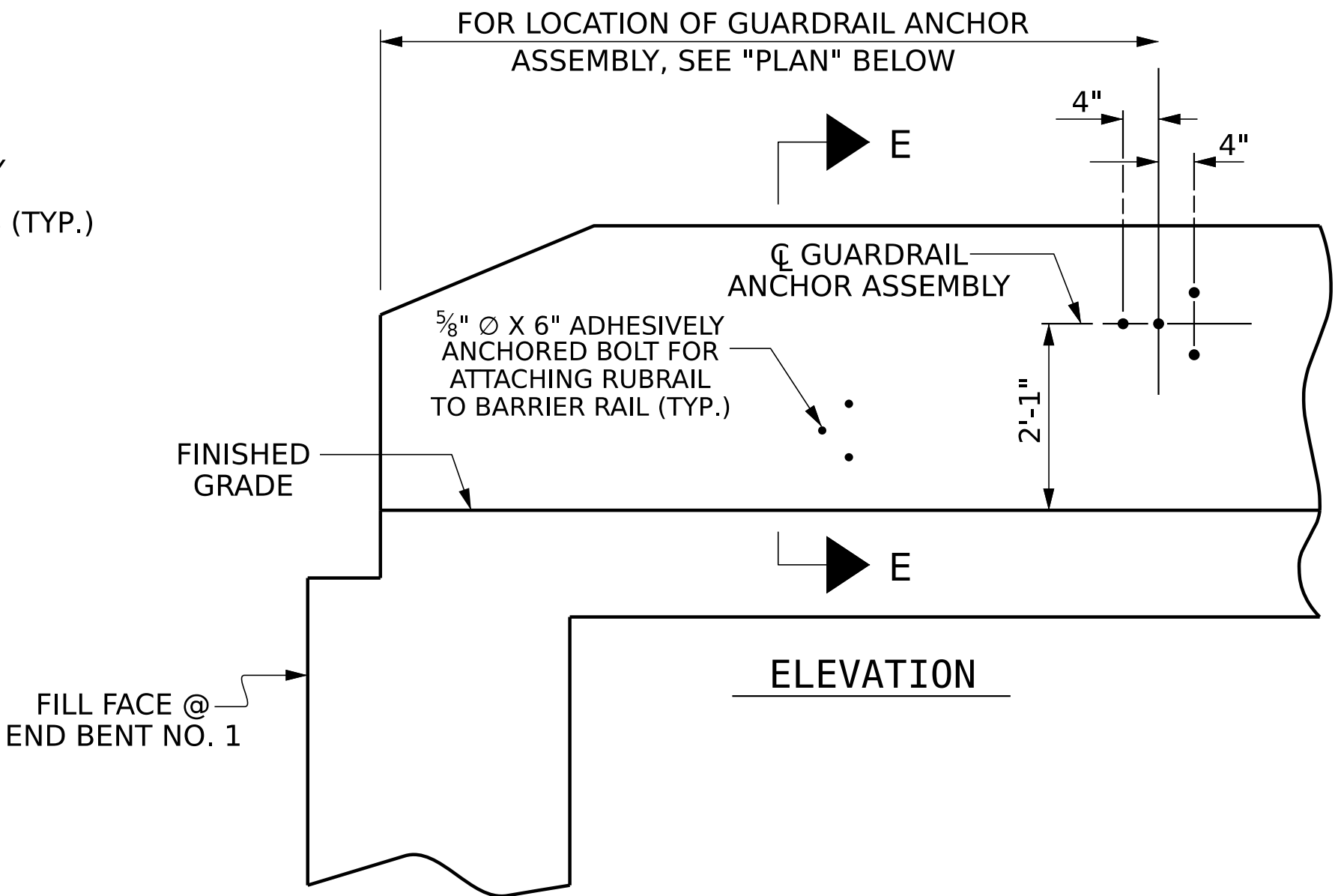
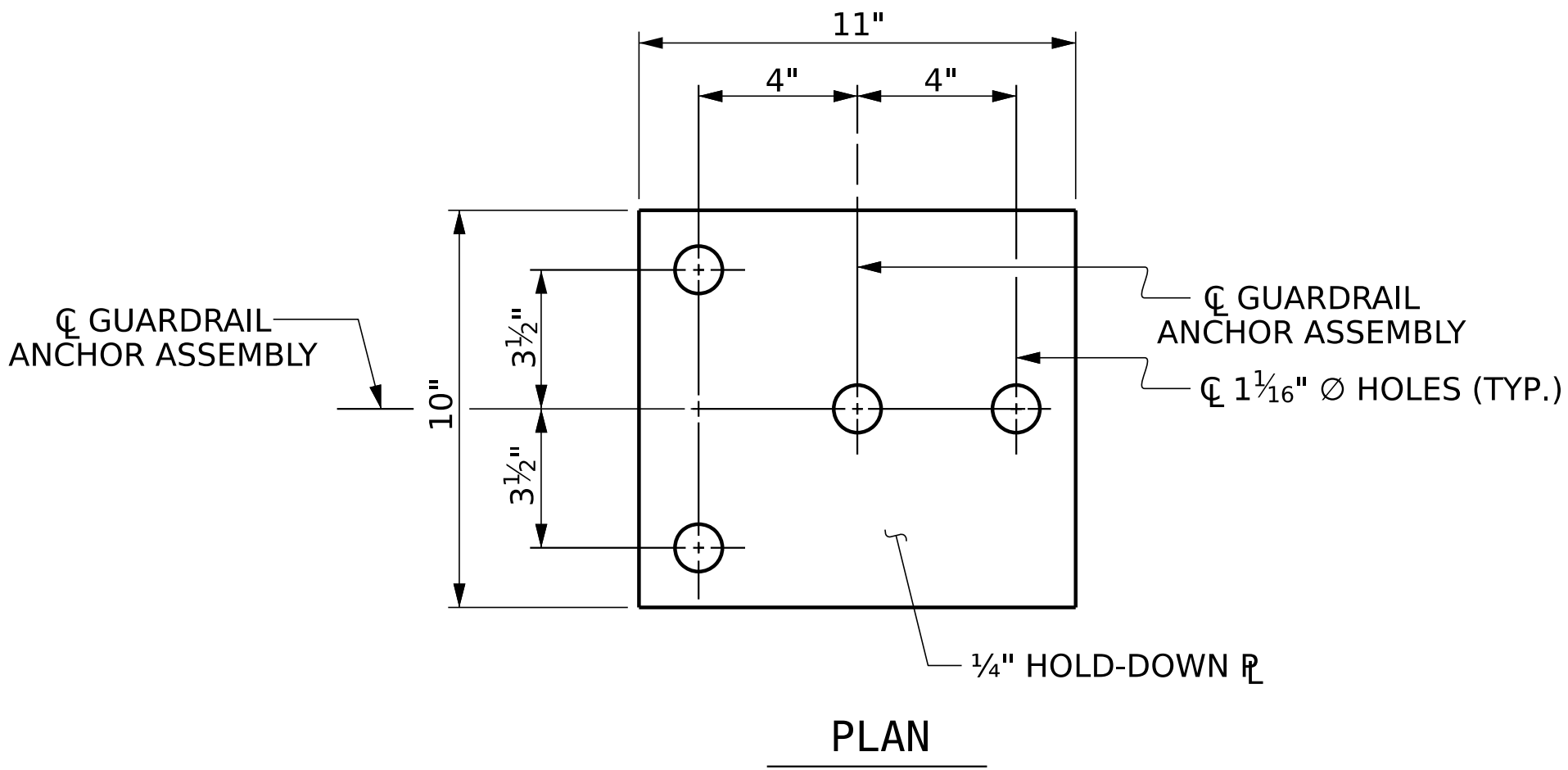


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
**ELASTOMERIC BEARING
DETAILS**
PRESTRESSED CONCRETE GIRDER
SUPERSTRUCTURE

REVISIONS						SHEET NO. S-20
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PA\2017\1718201-CLEVELAND_75Structures\0BD_DGN\BP_12.R002_SD_GR_220075.dgn
10/22/2025 7:45:13 AM



LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR.

NOTES

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

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

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

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

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

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

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

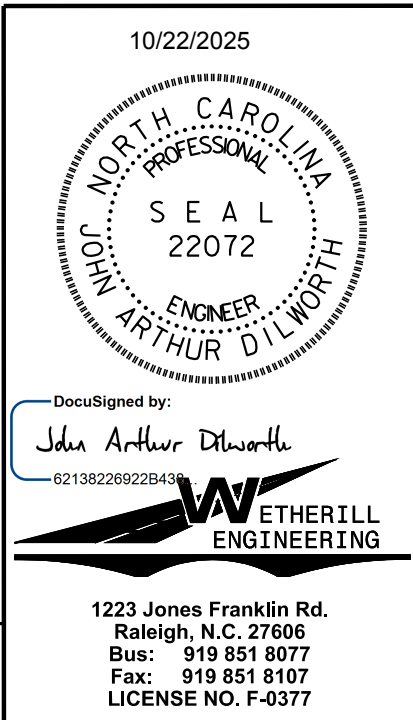
THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 5/8" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.



SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

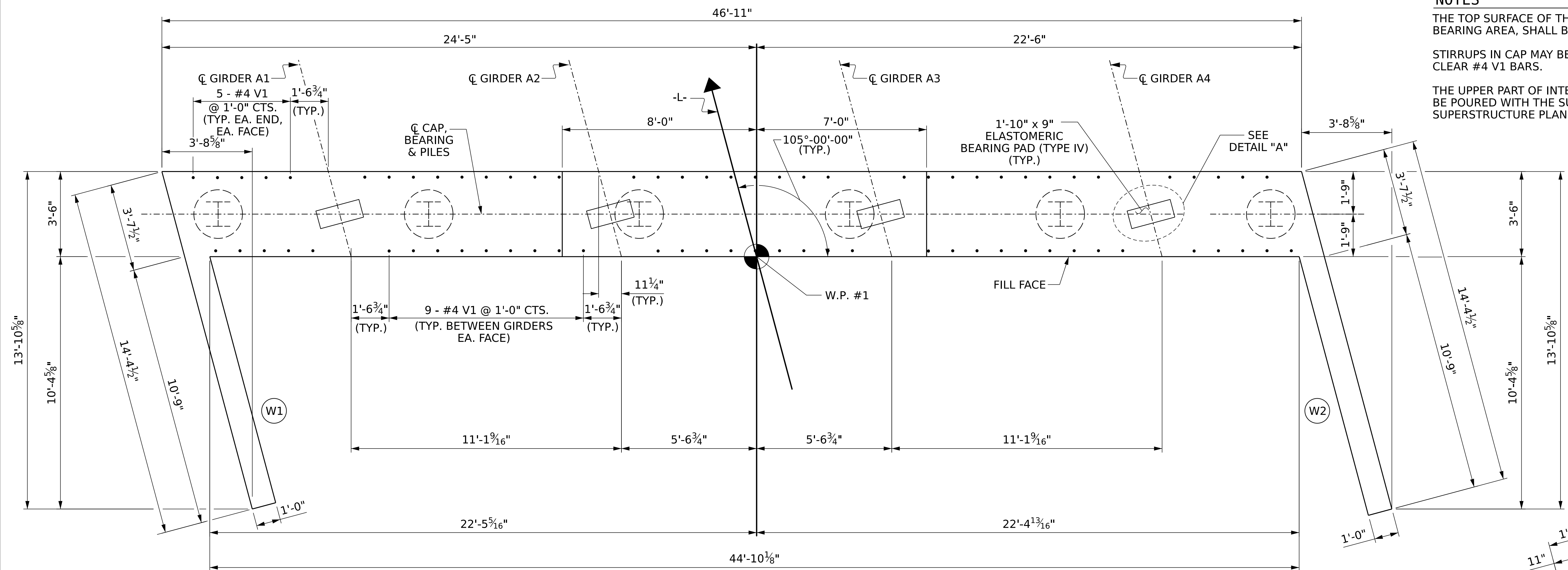
PROJECT NO. **BP12-R002**
CLEVELAND COUNTY
STATION: **18+04.74 -L-**



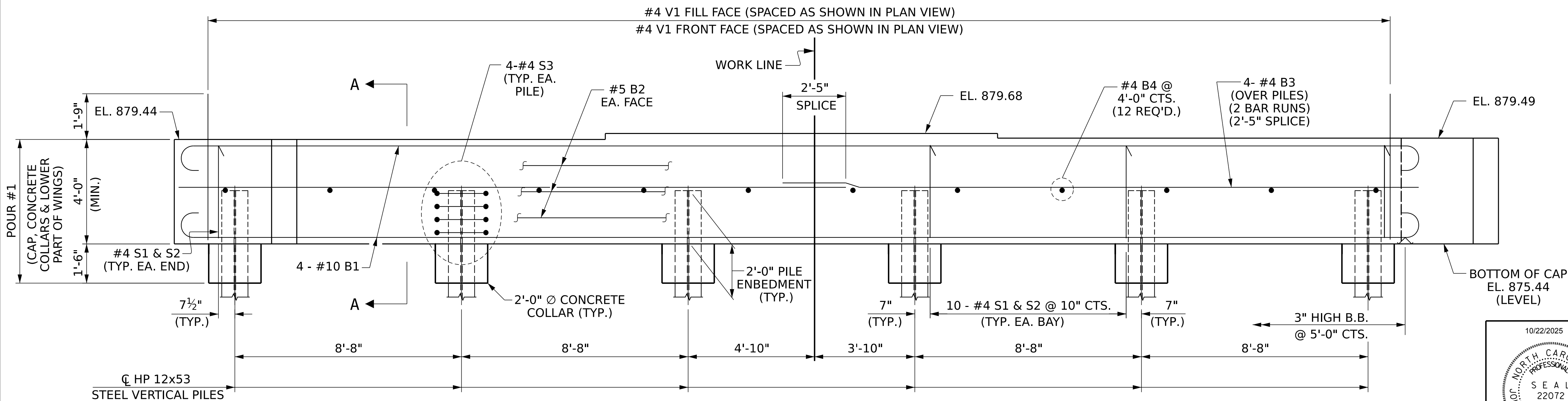
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			35

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

STD. NO. GRA2 (SHT 1b)



PLAN



ELEVATION

FOR SECTION A-A, SEE SHEET 3 OF 3

DRAWN BY : J. PENDERGRAFT DATE : 3-24
CHECKED BY : G. GILLAND/JAD DATE : 3-24
DESIGN ENGINEER OF RECORD: J. DILWORTH DATE : 3-24

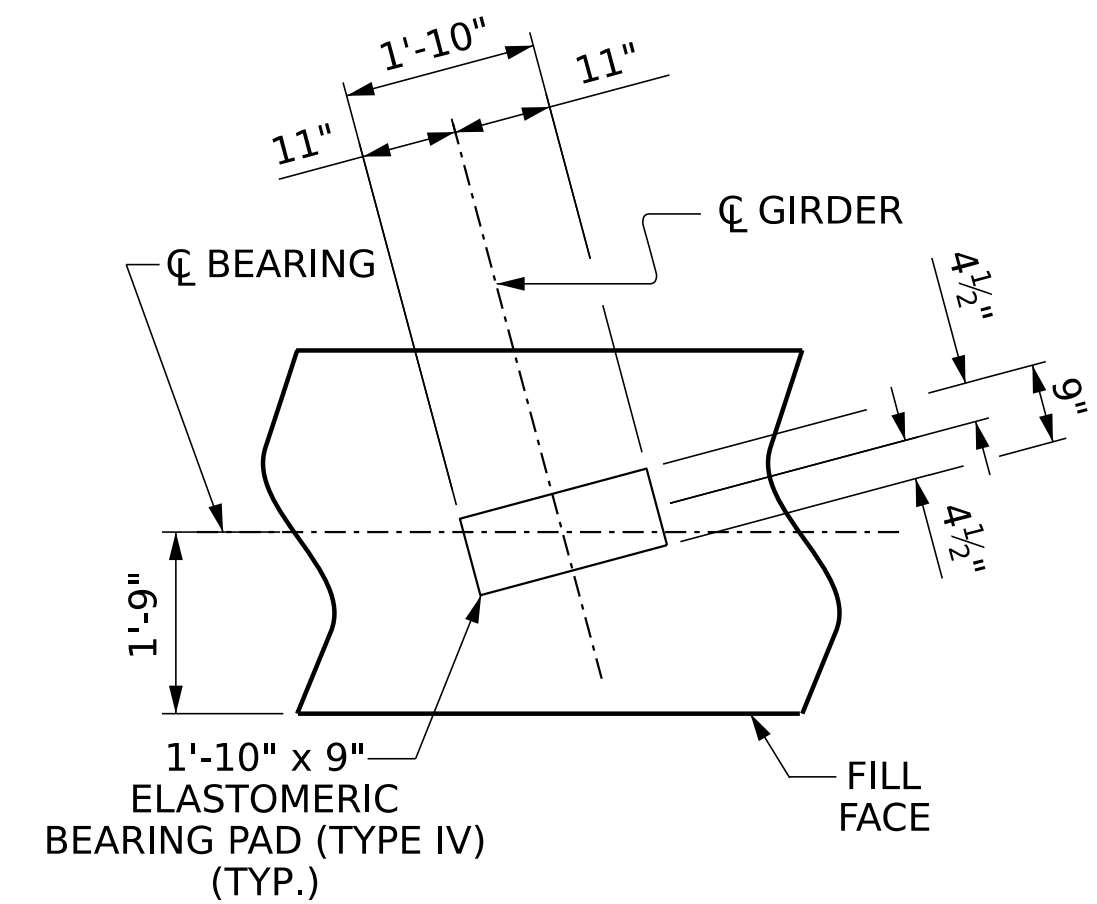
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

NOTES

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

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO
CLEAR #4 V1 BARS.

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



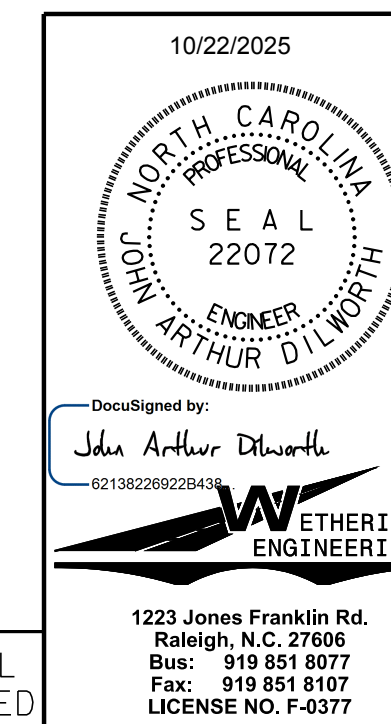
DETAIL A
(TYP. EA. GIRDER)

PROJECT NO. **BP12-R002**

CLEVELAND COUNTY

STATION: 18+04.74 -L-

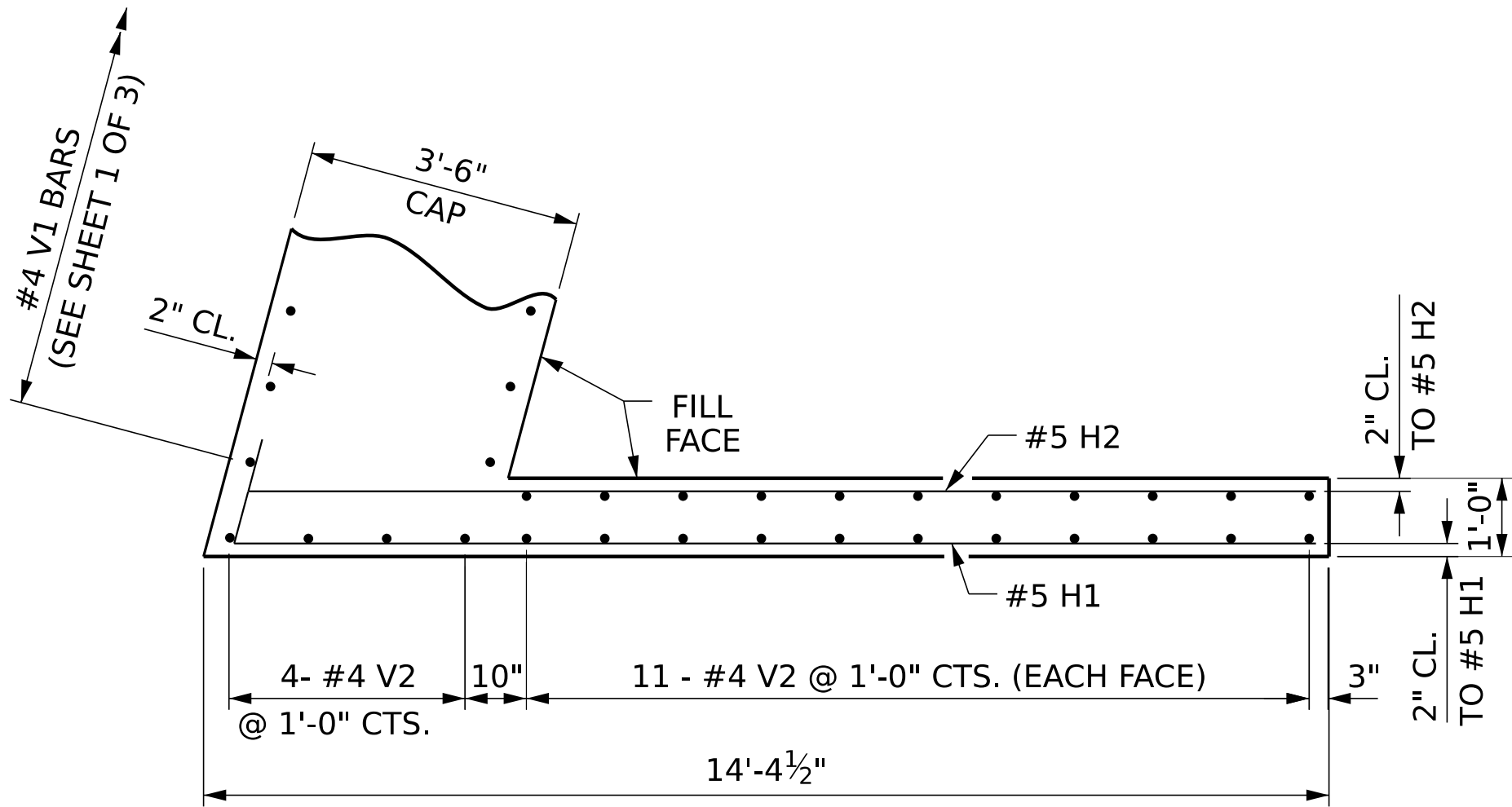
SHEET 1 OF 3



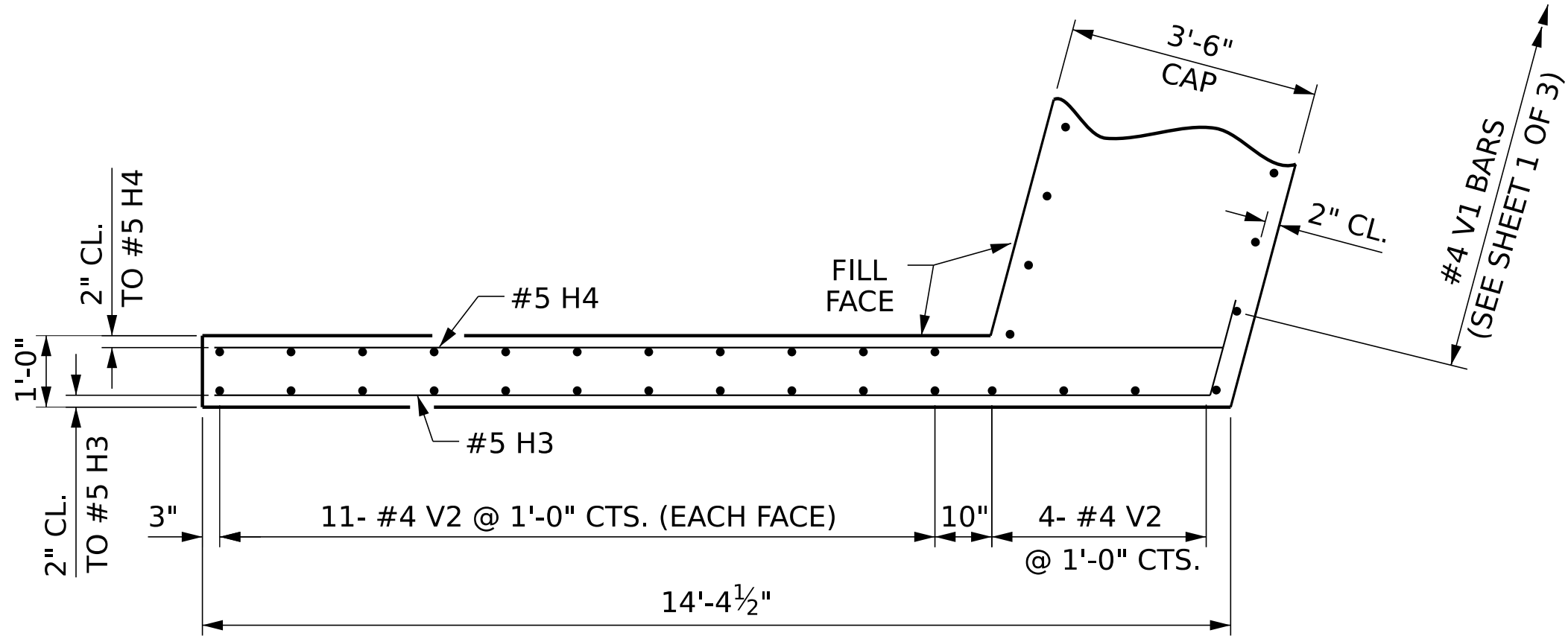
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
INTEGRAL
END BENT No. 1

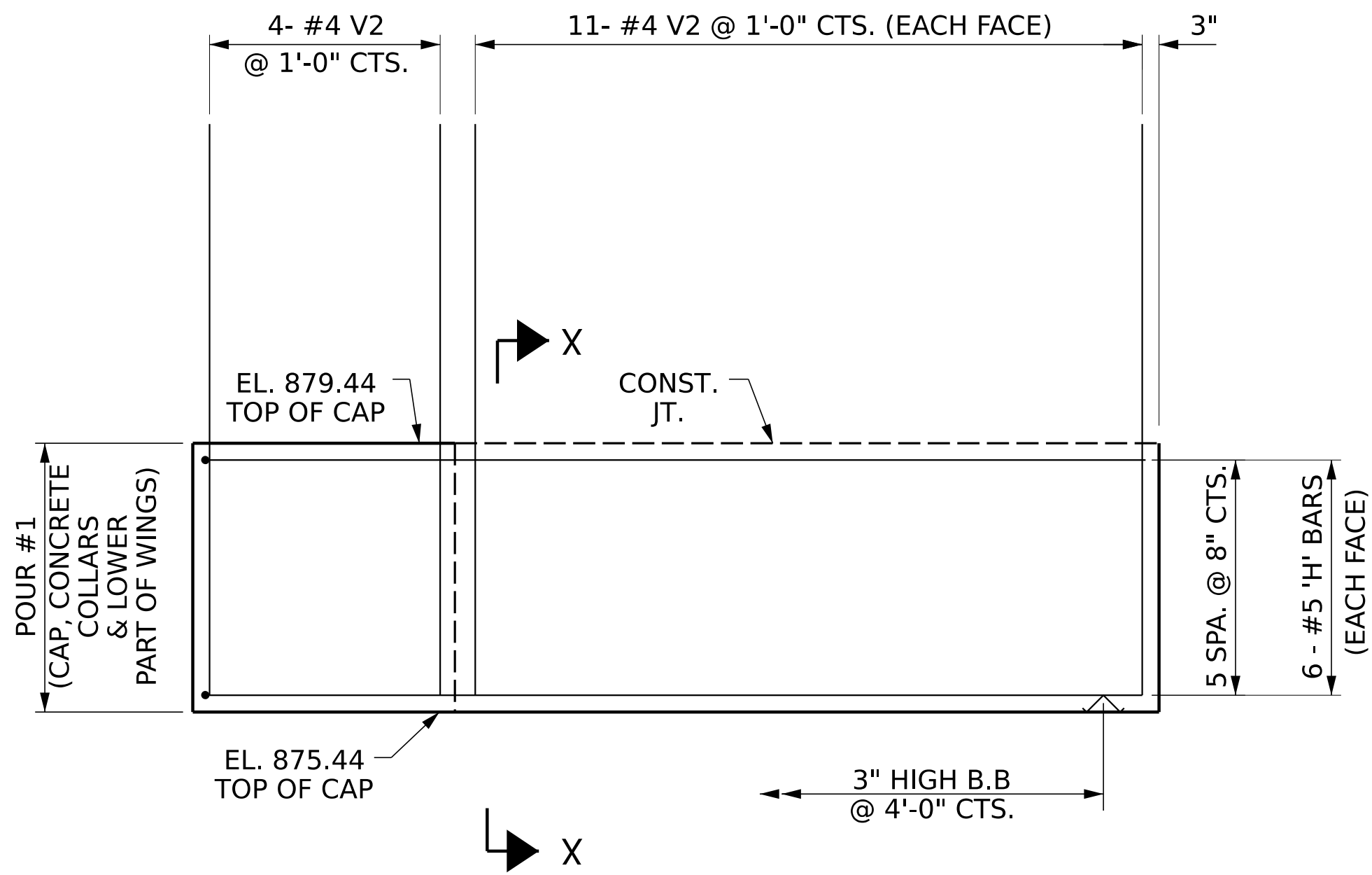
REVISIONS						SHEET NO. S-24
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			



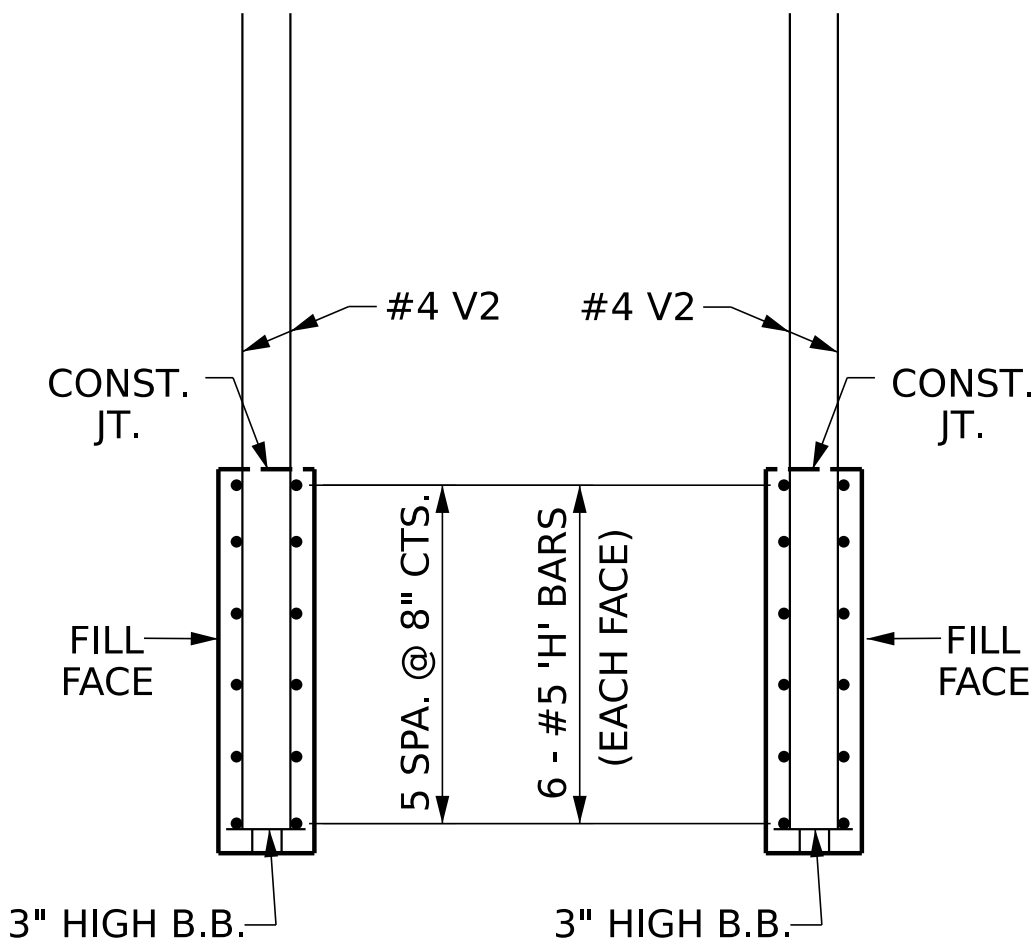
PLAN OF WING - W1



PLAN OF WING - W2

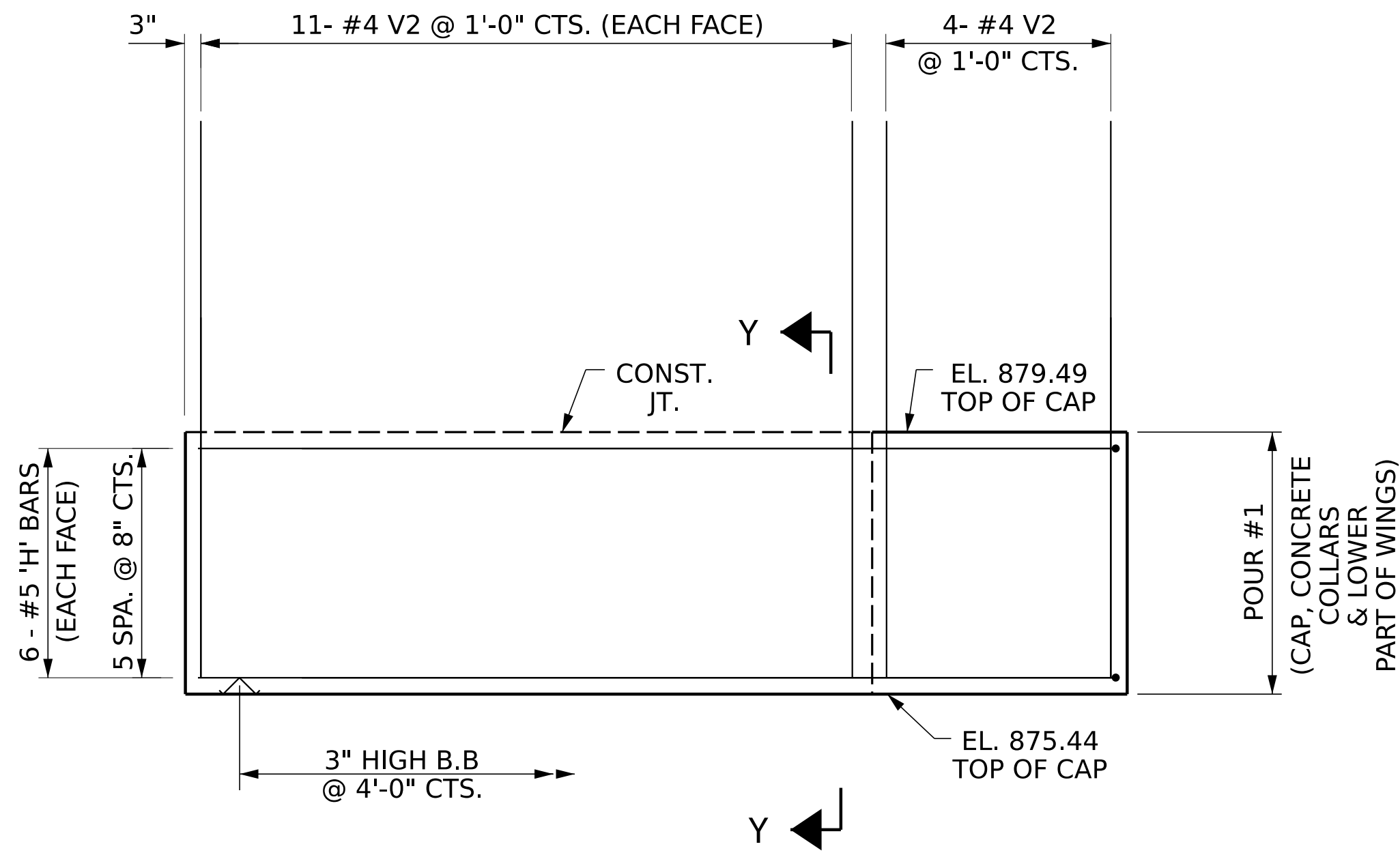


ELEVATION OF WING - W1



SECTION X-X

SECTION Y-Y



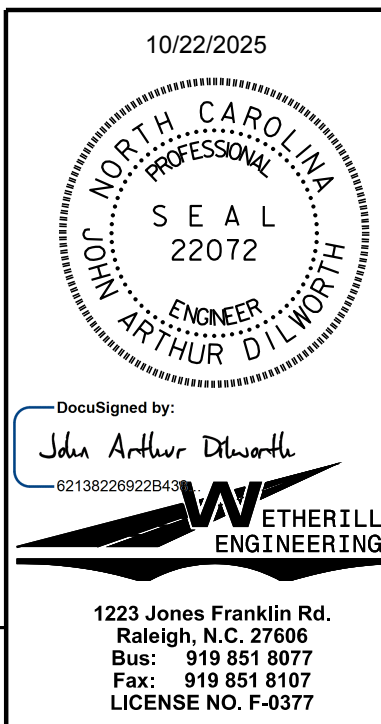
ELEVATION OF WING - W2

PROJECT NO. **BP12-R002**

CLEVELAND COUNTY

STATION: **18+04.74 -L-**

SHEET 2 OF 3



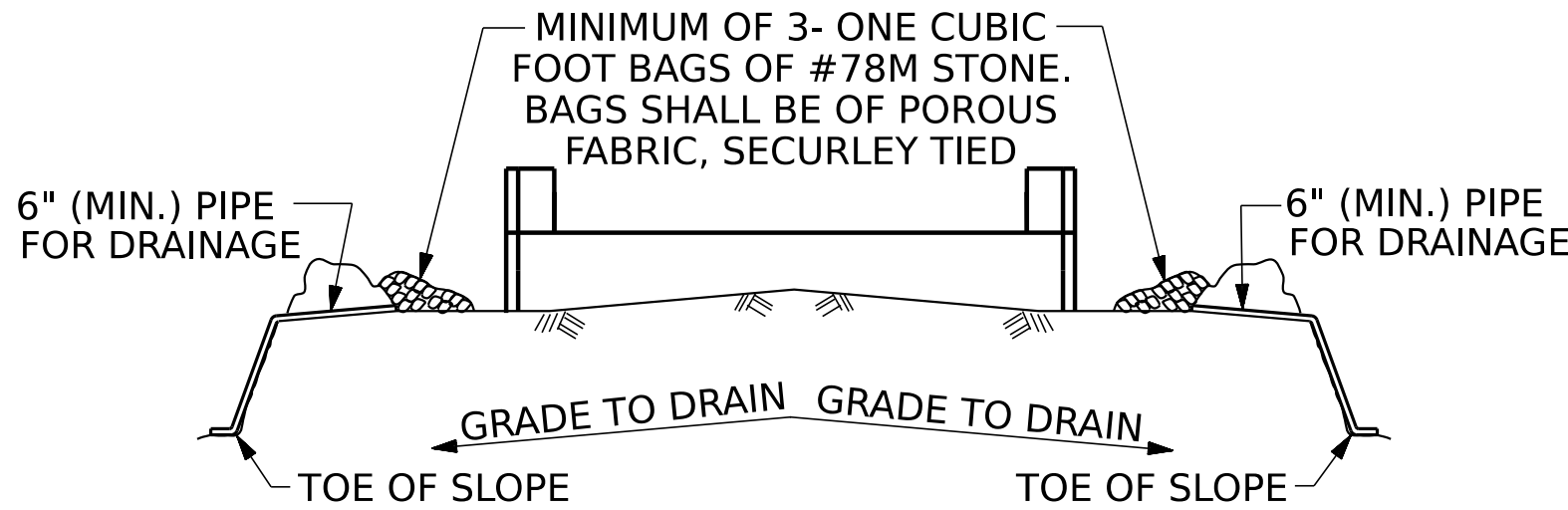
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
**INTEGRAL
END BENT No. 1**

REVISIONS						SHEET NO. S-25
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

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DRAWN BY : J. PENDERGRAFT DATE : 3-24
CHECKED BY : G. GILLAND/JAD DATE : 3-24
DESIGN ENGINEER OF RECORD: J. DILWORTH DATE : 3-24

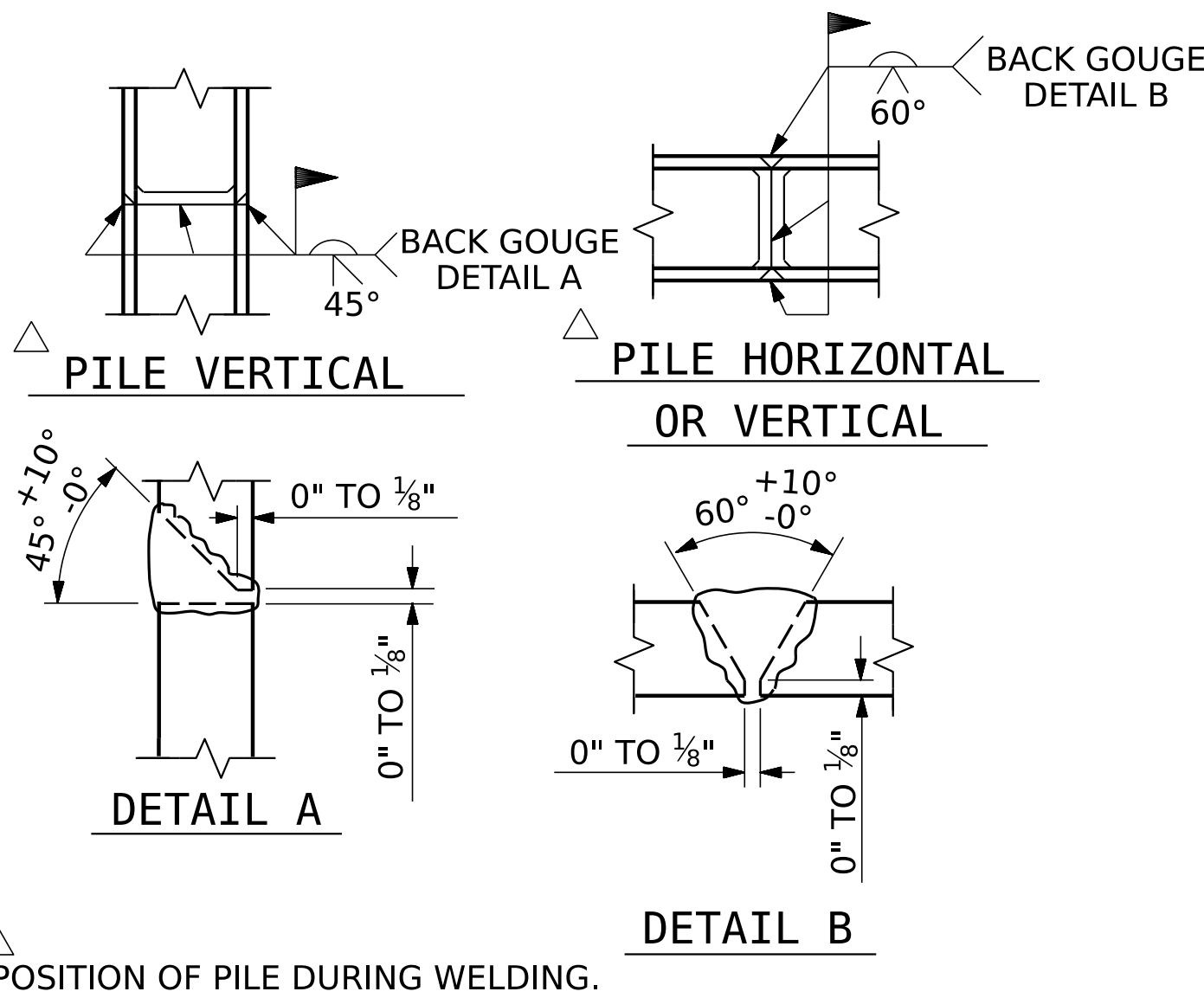


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

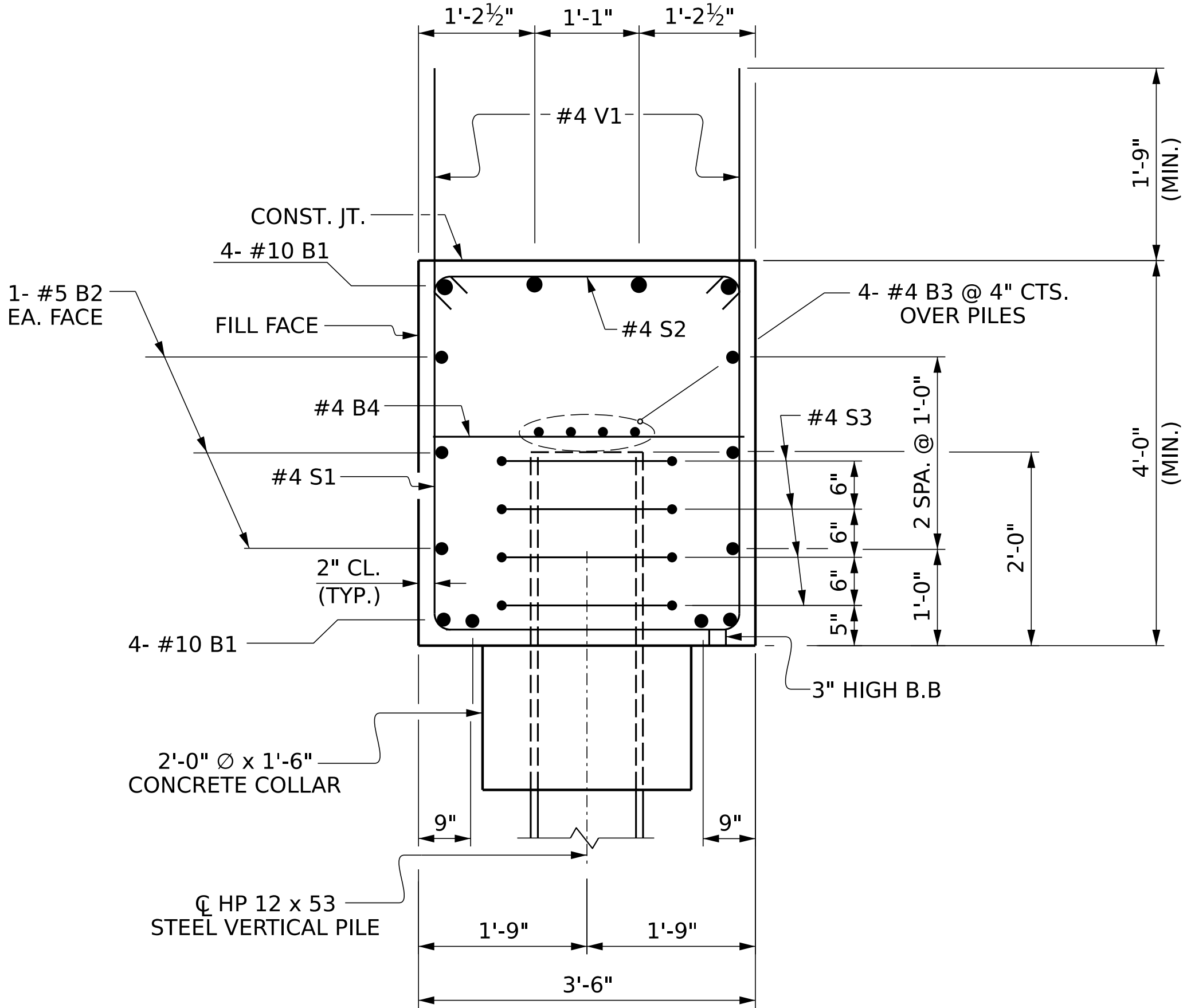
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

BAR TYPES						BILL OF MATERIAL					
						END BENT No. 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT						
B1	8	#10		49'-3"	1,695						
B2	6	#5	STR	46'-7"	292						
B3	8	#4	STR	24'-6"	131						
B4	12	#4	STR	3'-2"	25						
H1	6	#5	2	14'-9"	92						
H2	6	#5	2	14'-7"	91						
H3	6	#5	3	14'-10"	93						
H4	6	#5	3	15'-0"	94						
S1	52	#4	4	11'-2"	388						
S2	52	#4	5	3'-11"	136						
S3	24	#4	6	6'-6"	104						
V1	74	#4	STR	5'-7"	276						
V2	52	#4	STR	8'-6"	295						
						REINFORCING STEEL					
						3,712 LBS.					
						CLASS A CONCRETE BREAKDOWN					
						POUR #1 CAP, CONC. COLLARS & LOWER PART OF WINGS					
						29.1 C.Y.					
						TOTAL CLASS A CONCRETE					
						29.1 C.Y.					



SECTION A-A

DRAWN BY :	J. PENDERGRAFT	DATE :	3-24
CHECKED BY :	G. GILLAND/JAD	DATE :	3-24
DESIGN ENGINEER OF RECORD:	J. DILWORTH	DATE :	3-24

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UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. **BP12-R002**

CLEVELAND COUNTY

STATION: **18+04.74 -L-**

SHEET 3 OF 3

10/22/2025

NORTH CAROLINA

PROFESSIONAL

SEAL

22072

ENGINEER

ARTHUR DILWORTH

DocuSigned by:
John Arthur Dilworth
621382269228436

WETHERILL

ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-4377

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

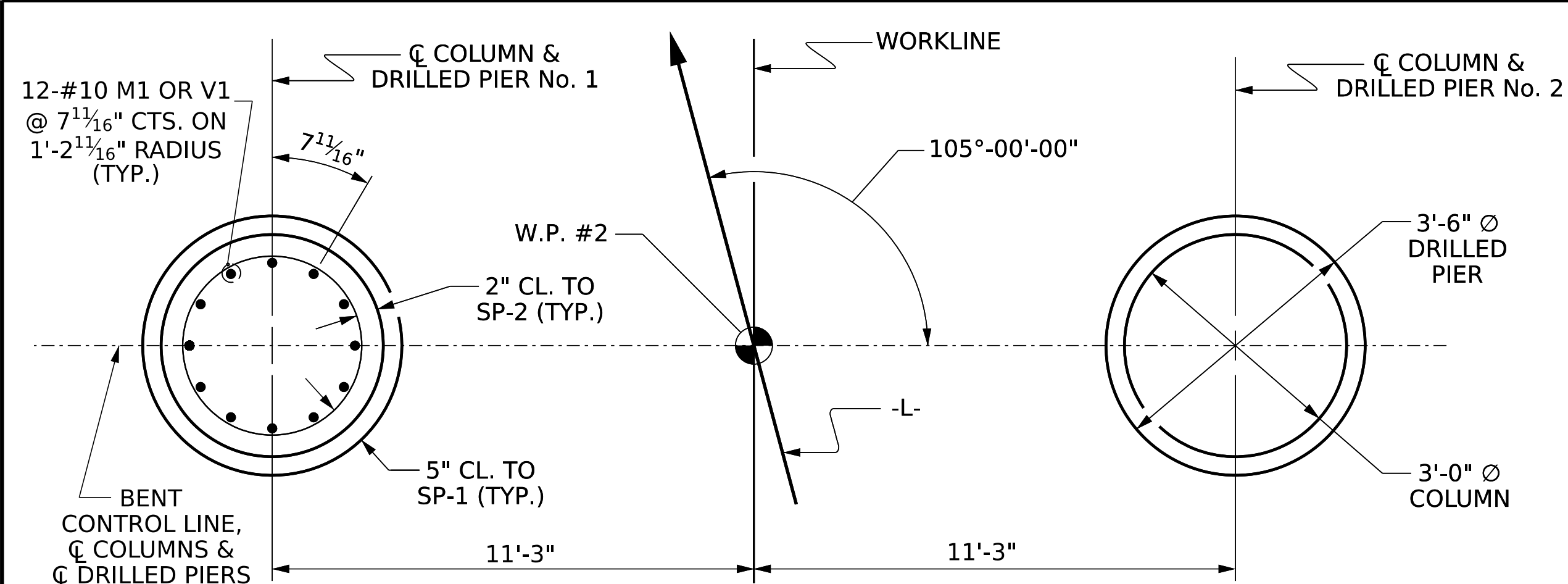
SUBSTRUCTURE

INTEGRAL

END BENT No. 1

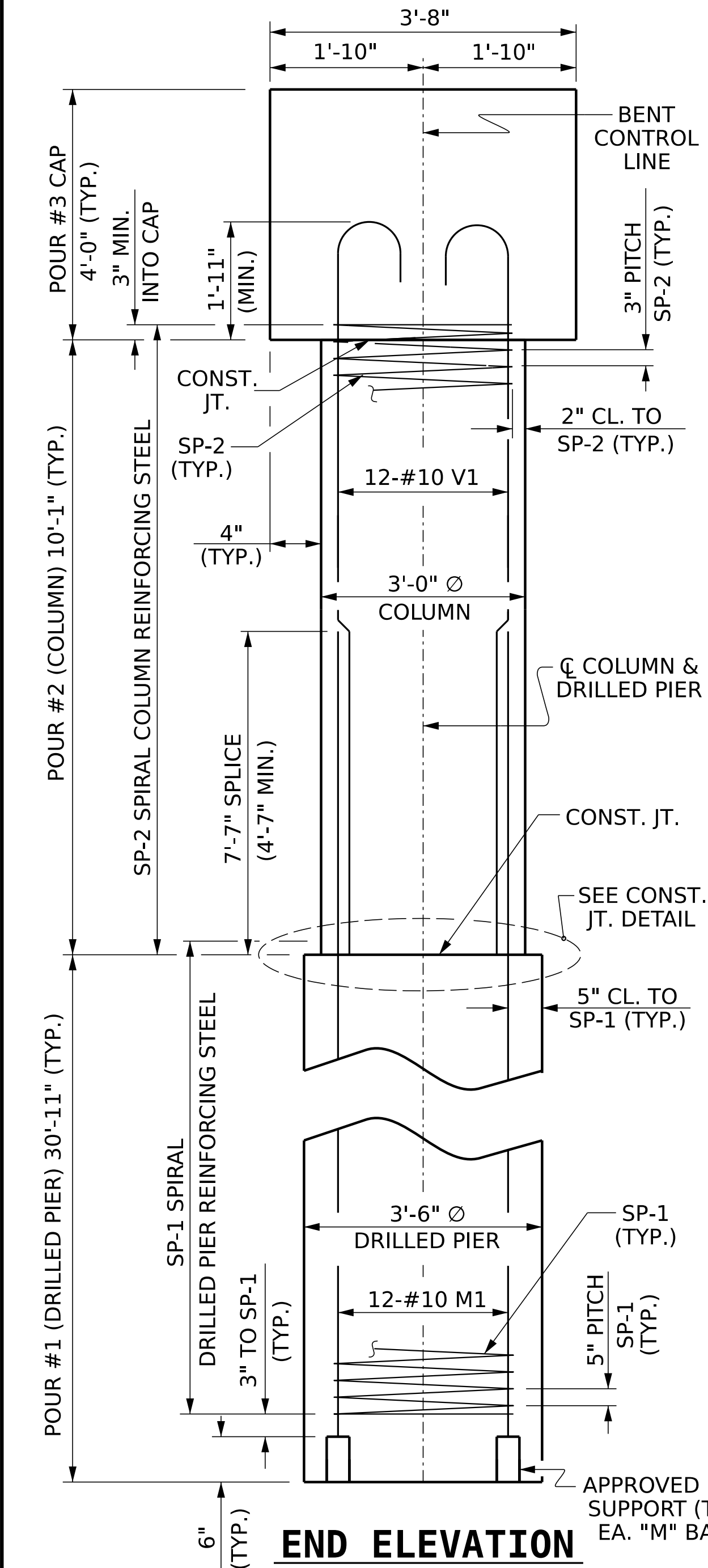
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			35

EL. 834.07
— BOTTOM OF
DRILLED PIER
(TYP.)



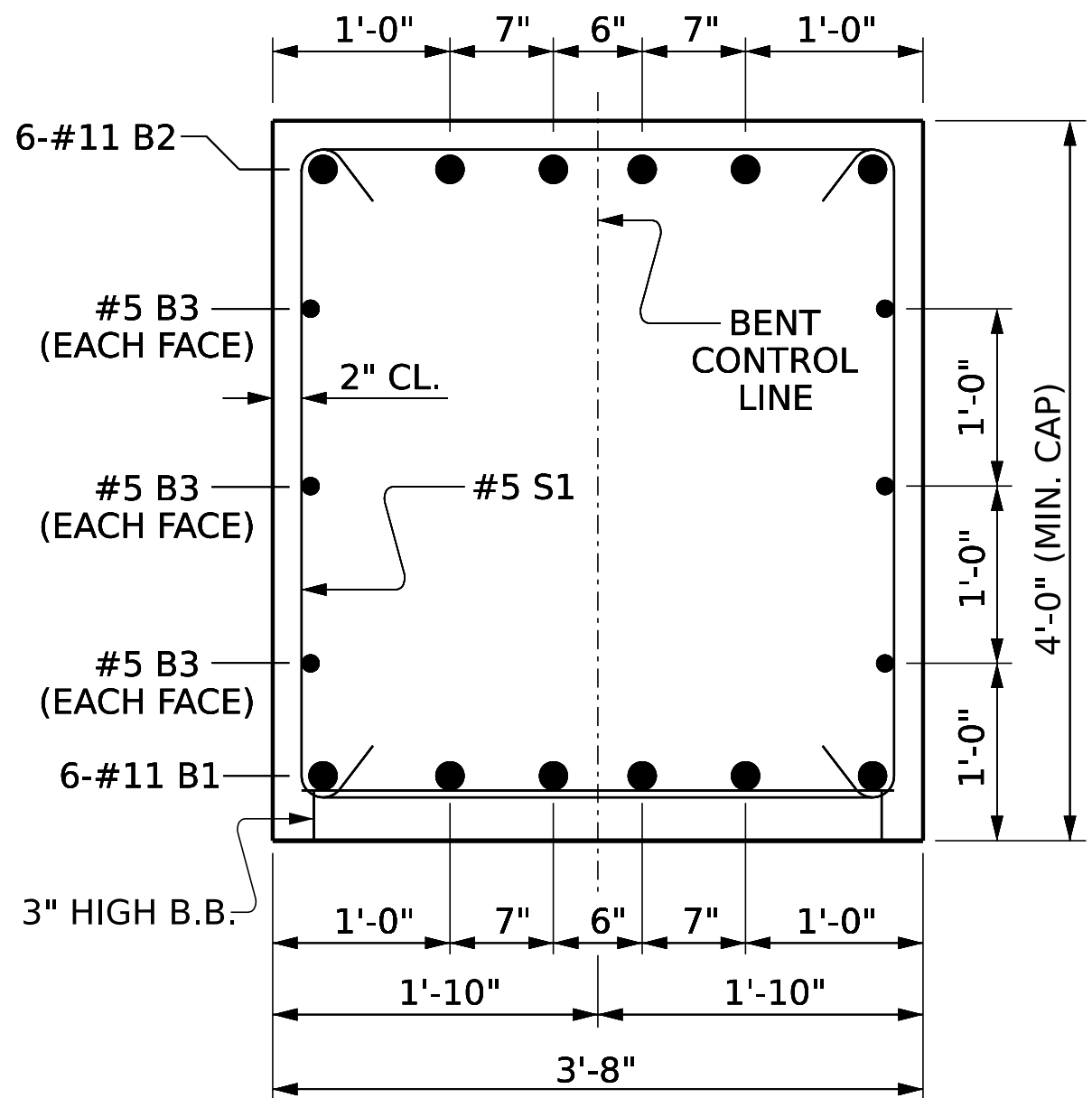
PLAN OF DRILLED PIERS & COLUMNS

(DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER)

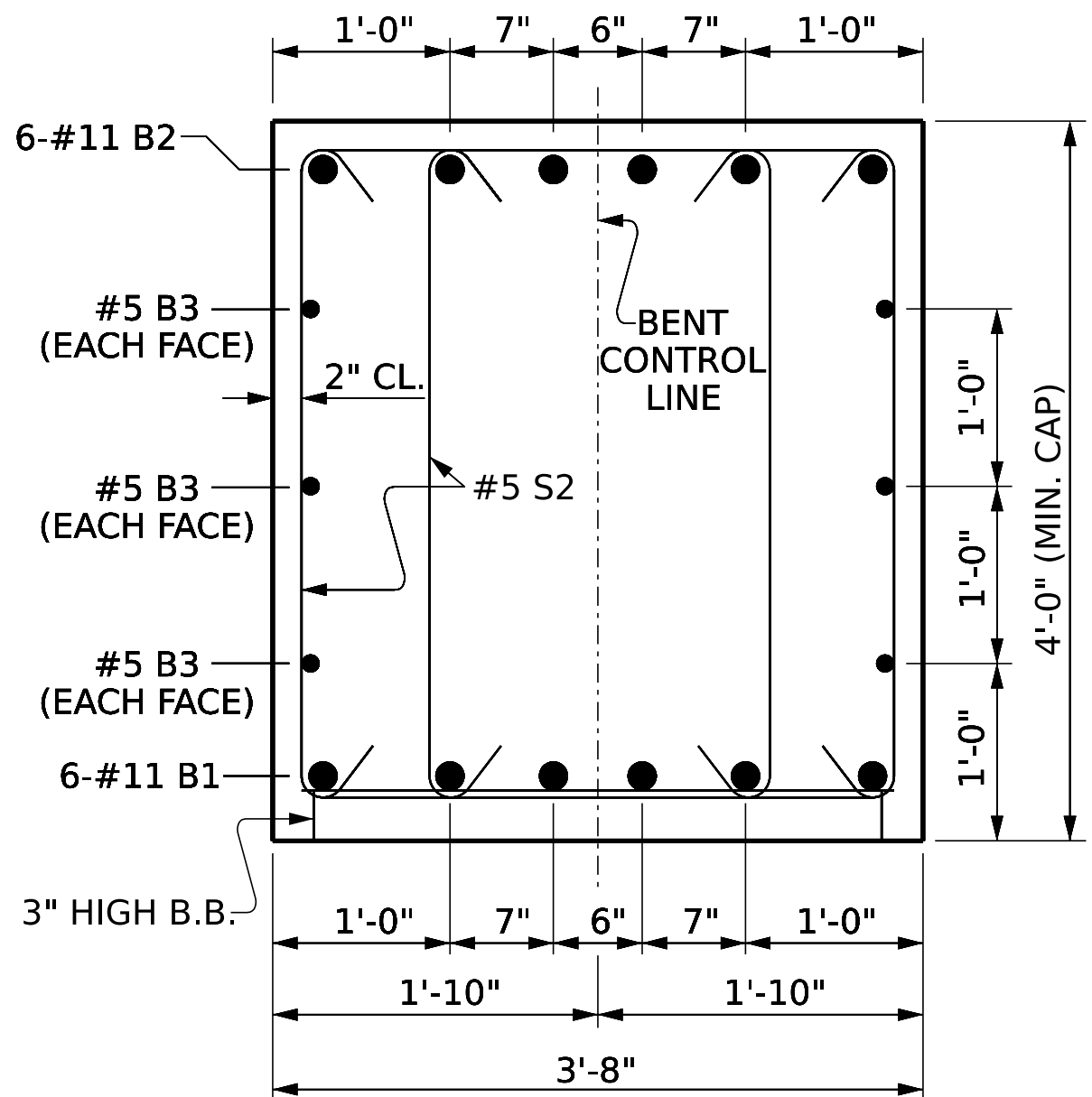


END ELEVATION

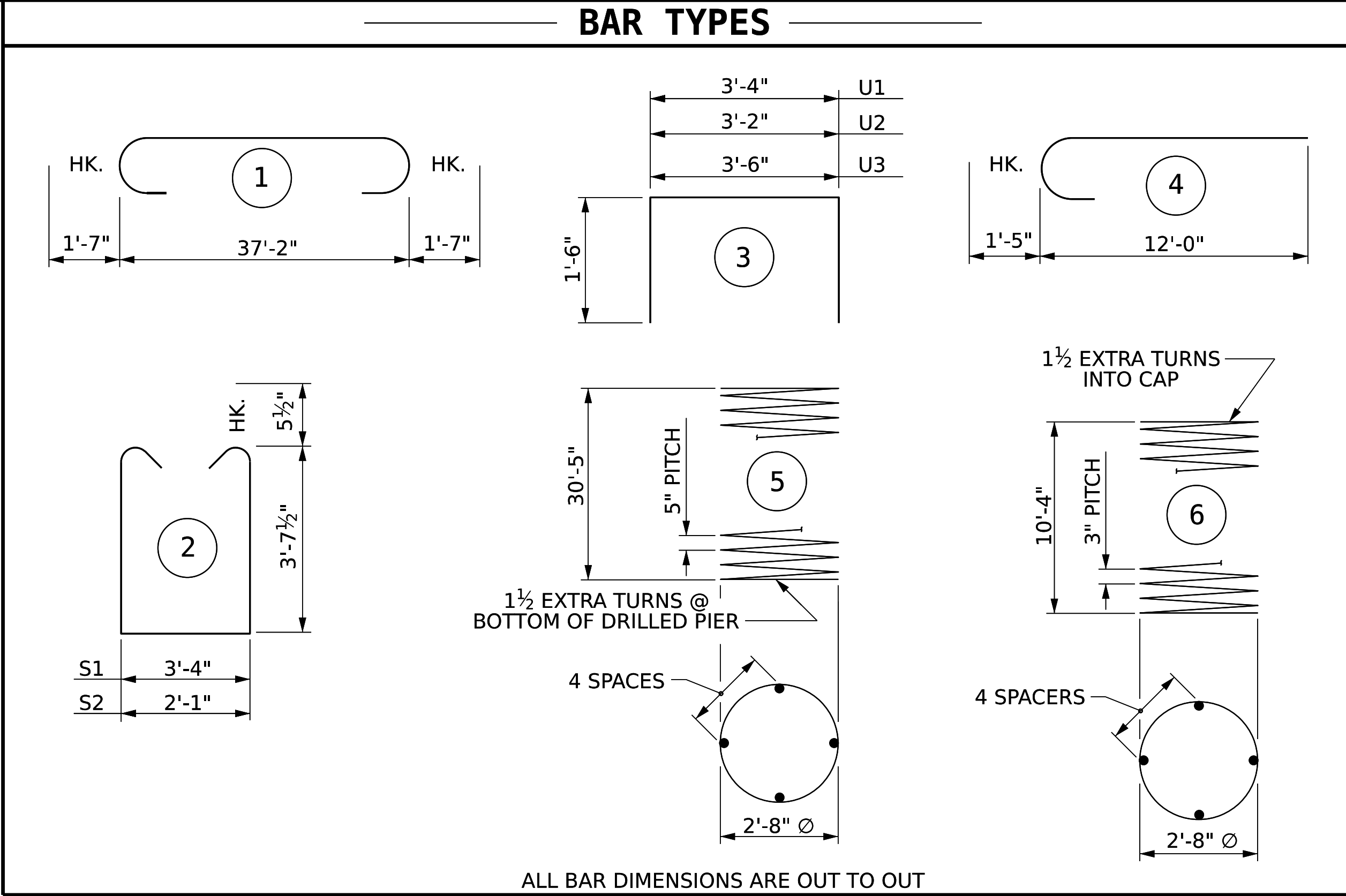
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CHECKED BY :	J. DILWORTH	DATE :	3-24
DESIGN ENGINEER OF RECORD:	J. DILWORTH	DATE :	3-24



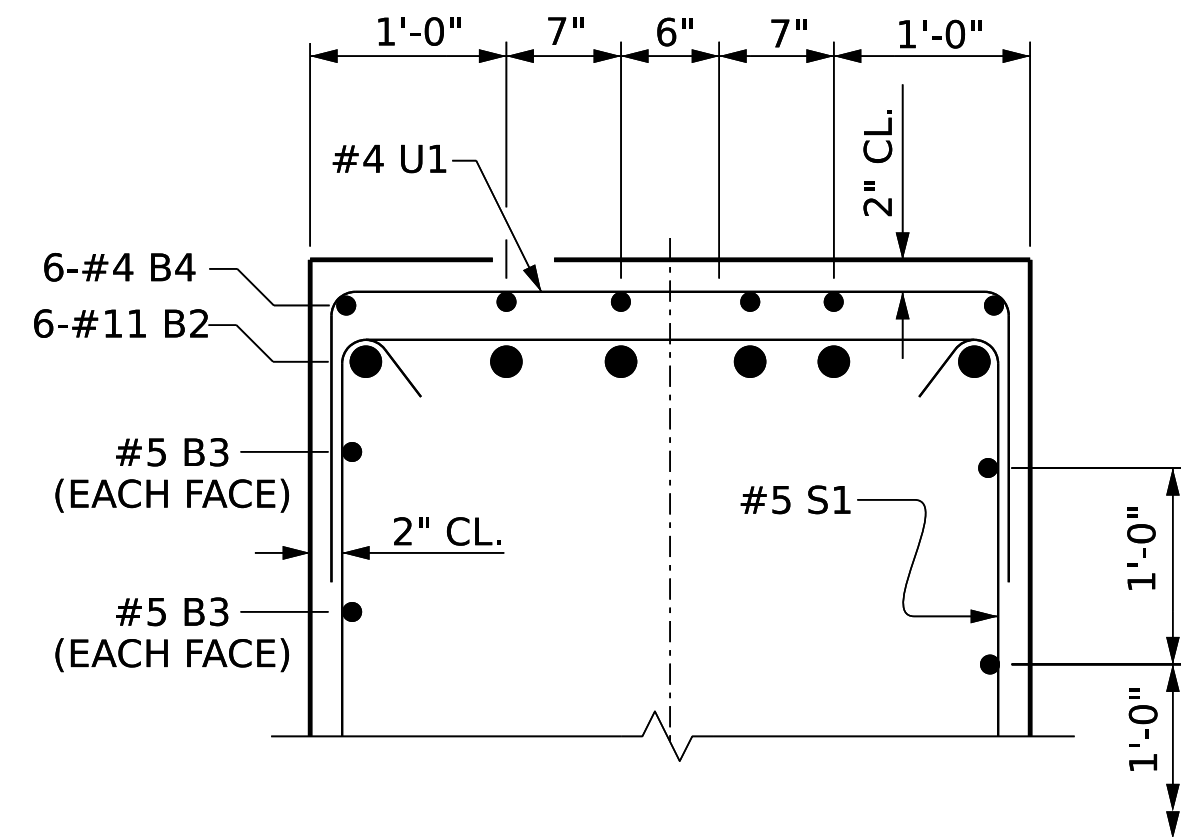
SECTION A-A



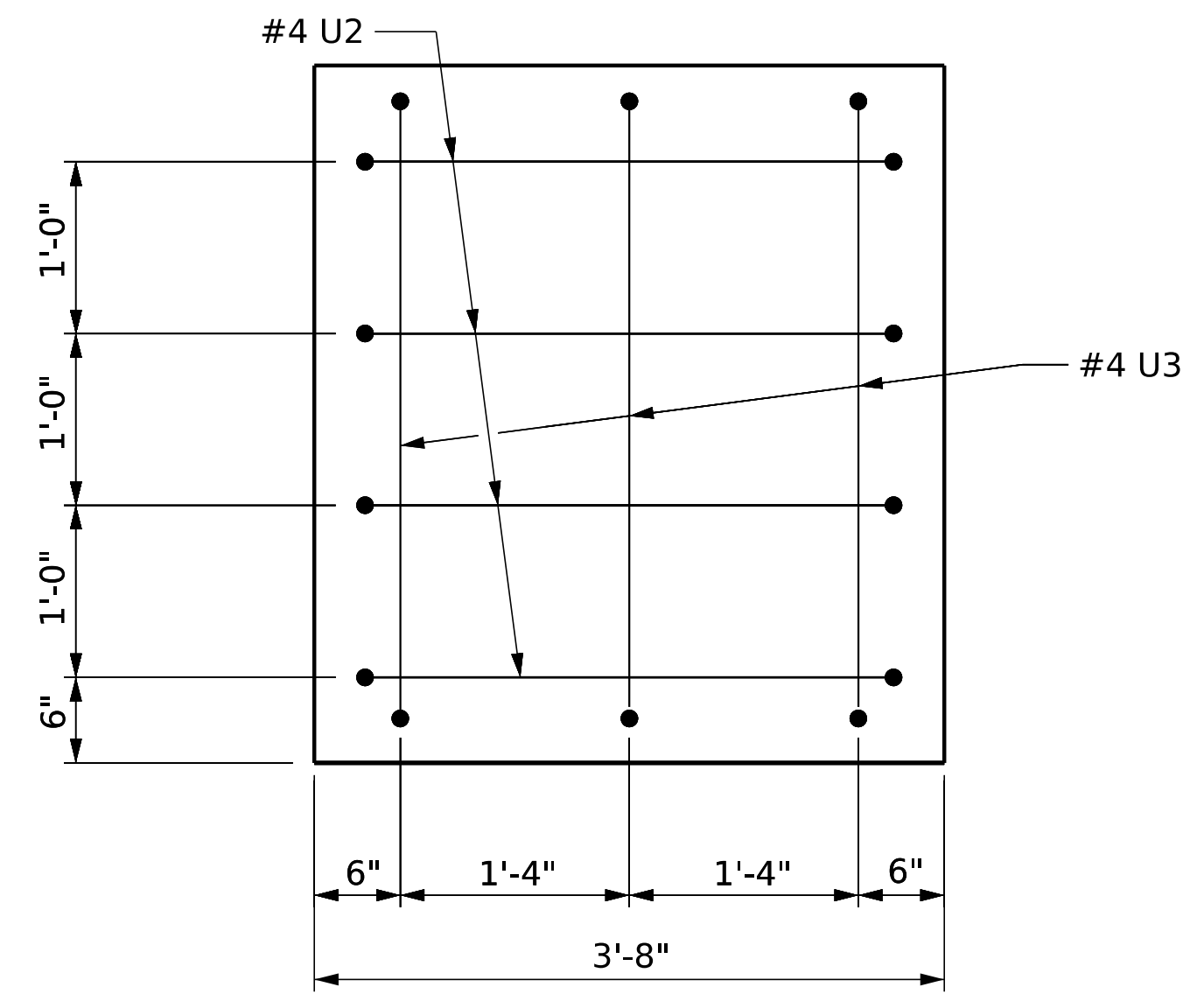
SECTION B-B



ALL BAR DIMENSIONS ARE OUT TO OUT



SECTION C-C



END OF CAP VIEW

(TYPICAL BOTH ENDS)

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

BILL OF MATERIAL

BENT No. 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#11	STR	37'-2"	1185
B2	6	#11	1	40'-4"	1286
B3	6	#5	STR	37'-4"	234
B4	6	#4	STR	15'-2"	61
M1	24	#10	STR	38'-0"	3,924
S1	36	#5	2	11'-6"	432
S2	40	#5	2	10'-3"	428
U1	37	#4	3	6'-4"	157
U2	8	#4	3	6'-2"	33
U3	6	#4	3	6'-6"	26
V1	24	#10	4	13'-5"	1,386

REINFORCING STEEL 9,152 LBS.

SP-1	2	*	5	612'-9"	1,278
SP-2	2	**	6	354'-10"	474

SPIRAL COLUMN REINFORCING STEEL 1,752 LBS.

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

CLASS A CONCRETE BREAKDOWN

POUR #2 (COLUMNS)	5.3 C.Y.
POUR #3 (CAPS)	21.1 C.Y.

TOTAL CLASS A CONCRETE 26.4 C.Y.

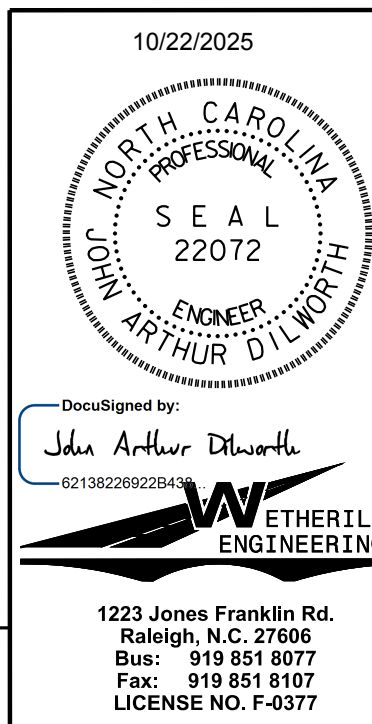
DRILLED PIERS:
DRILLED PIER CONCRETE
POUR #1 (DRILLED PIERS) 22.0 C.Y.

PROJECT NO. **BP12-R002**

CLEVELAND COUNTY

STATION: **18+04.74 -L-**

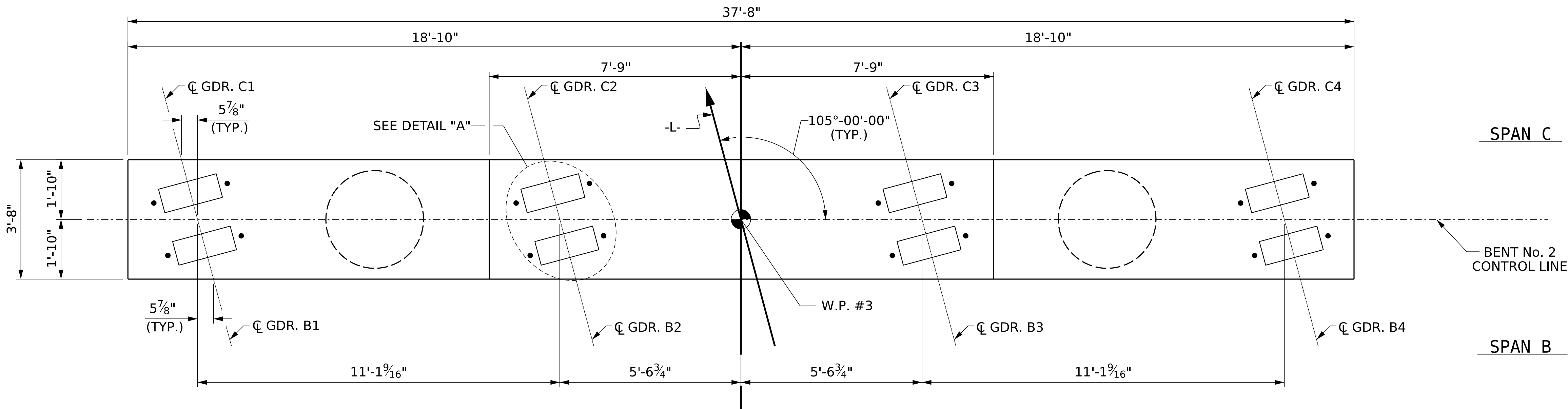
SHEET 2 OF 2



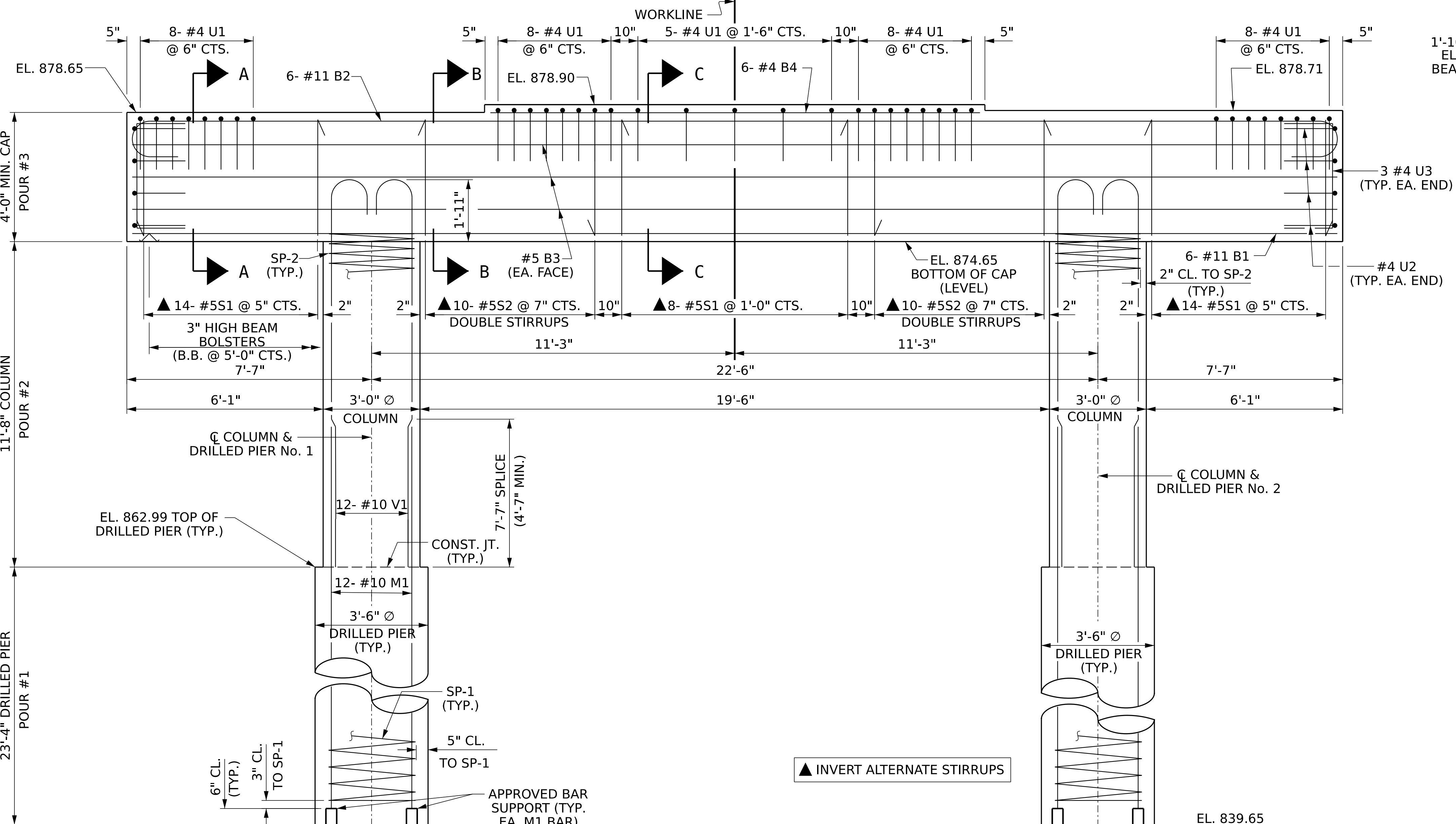
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT No. 1

REVISIONS						SHEET NO. S-28
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			



PLAN



ELEVATION

DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.

NOTES

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

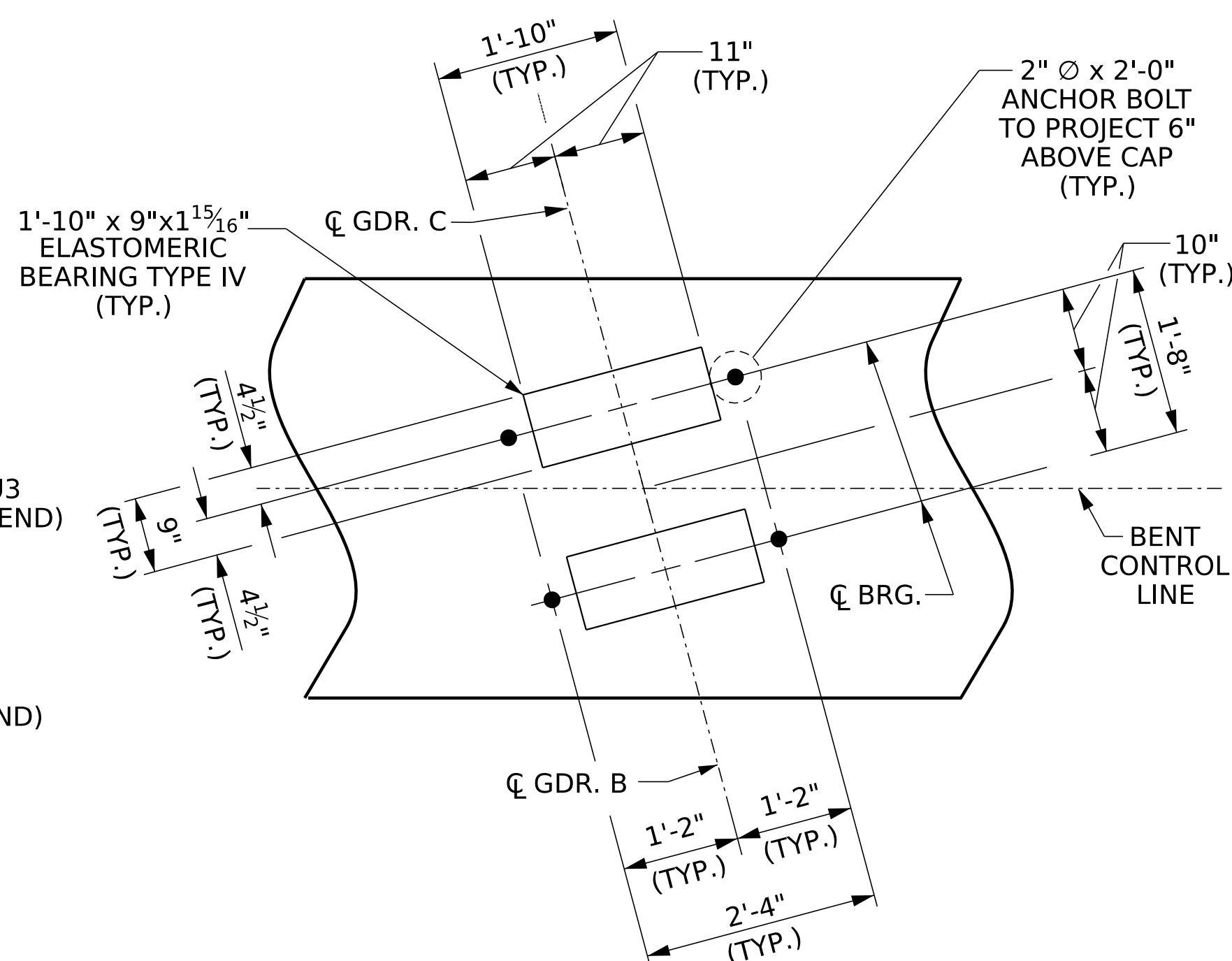
HOOKS ON V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

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

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

SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.

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



DETAIL "A"
(TYP. EA. GIRDER)

PROJECT NO. **BP12-R002**

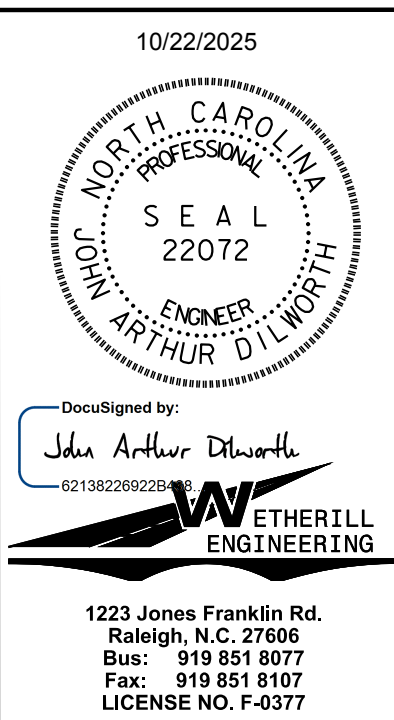
CLEVELAND COUNTY

STATION: **18+04.74 -L-**

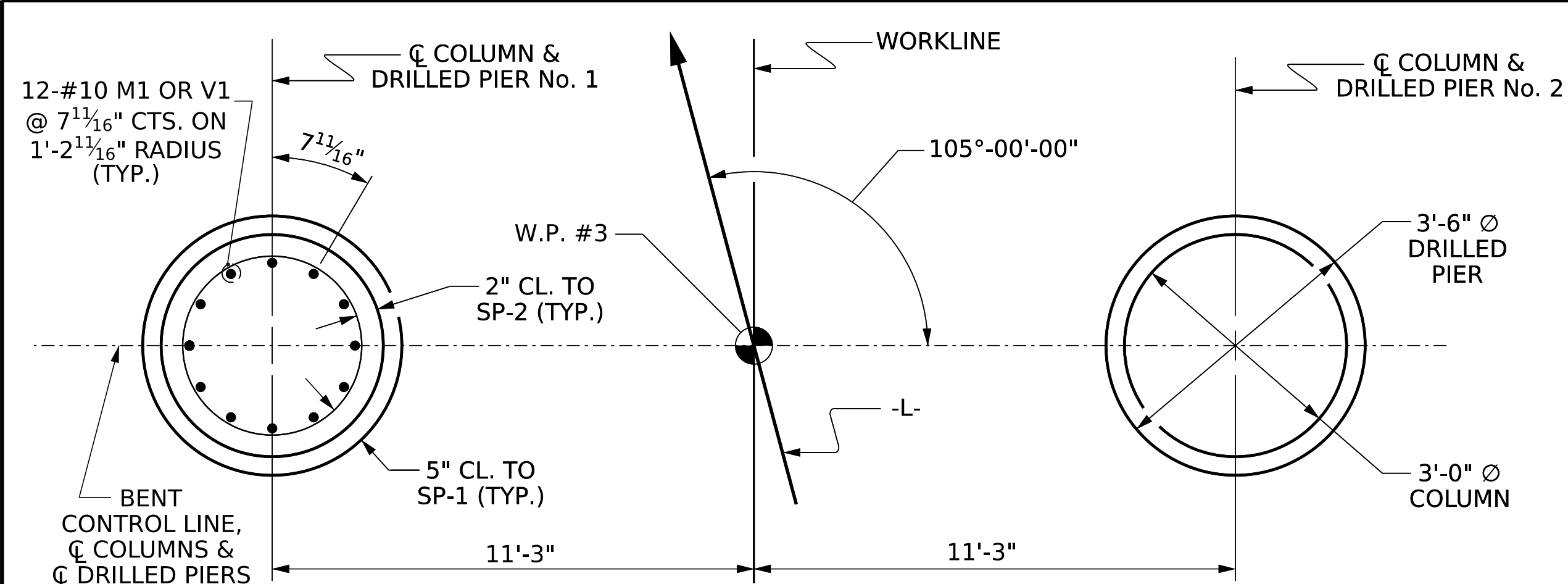
SHEET 1 OF 2

DRAWN BY :	J. PENDERGRAFT	DATE :	3-24
CHECKED BY :	J. DILWORTH	DATE :	3-24
DESIGN ENGINEER OF RECORD:	J. DILWORTH	DATE :	3-24

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

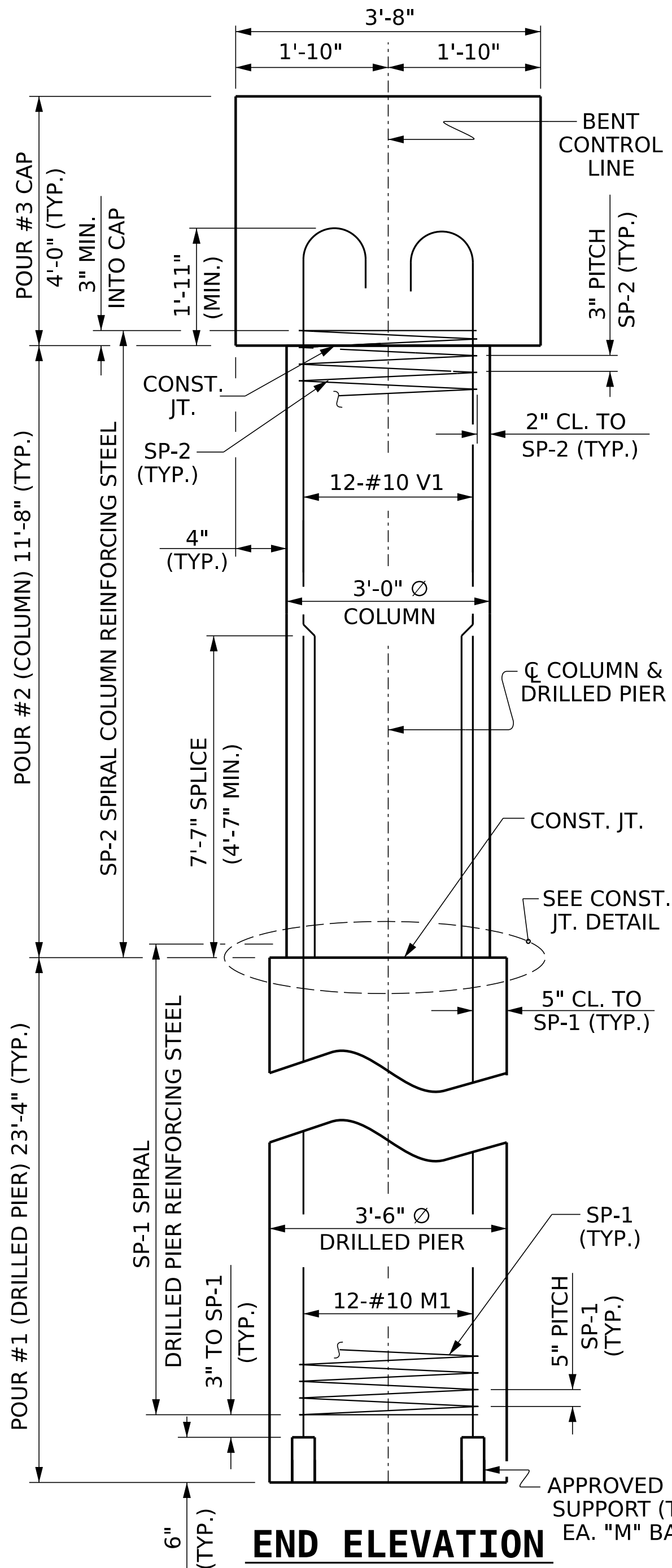


REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29	
1			3			TOTAL SHEETS	
2			4			35	

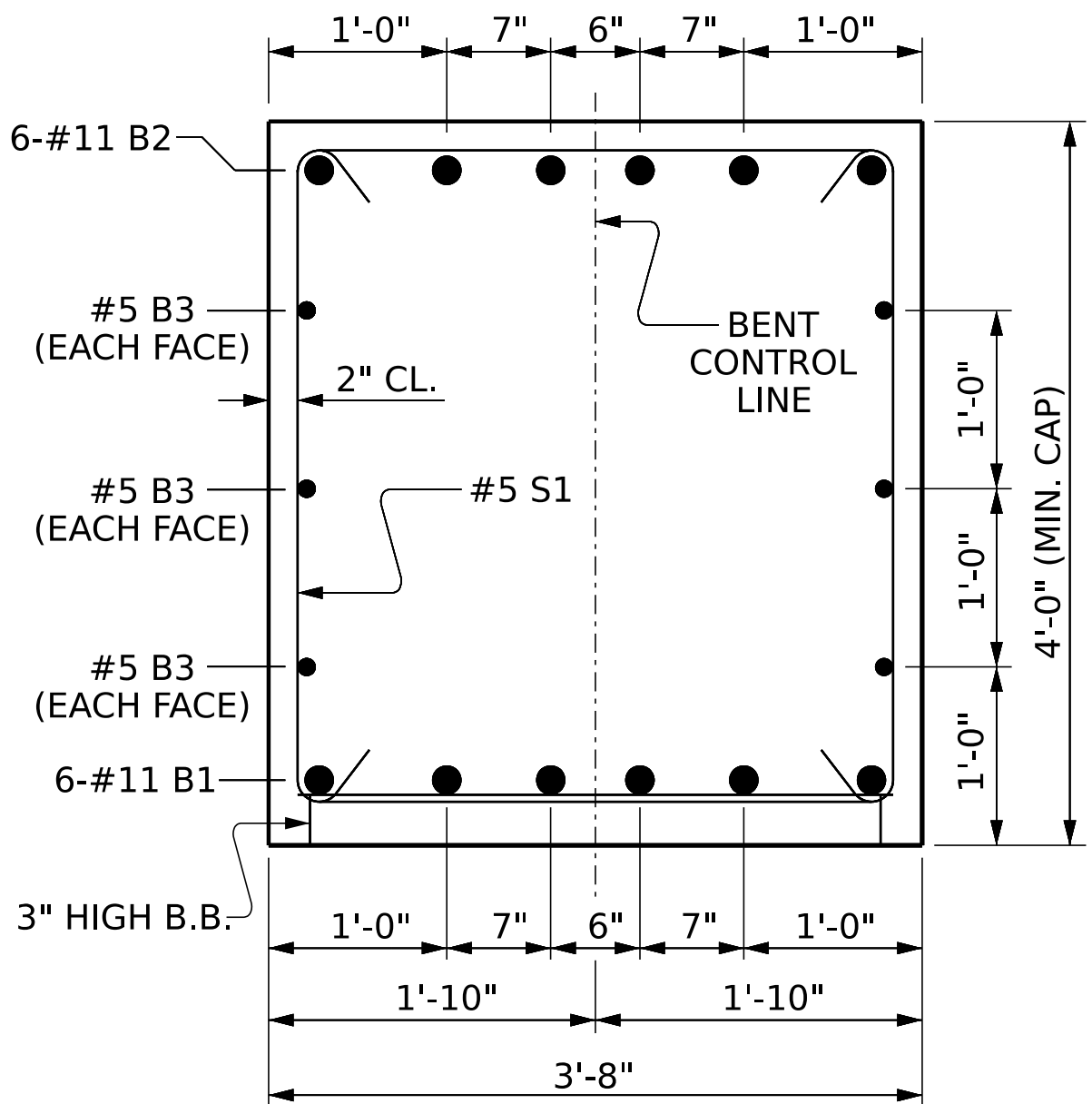


PLAN OF DRILLED PIERS & COLUMNS

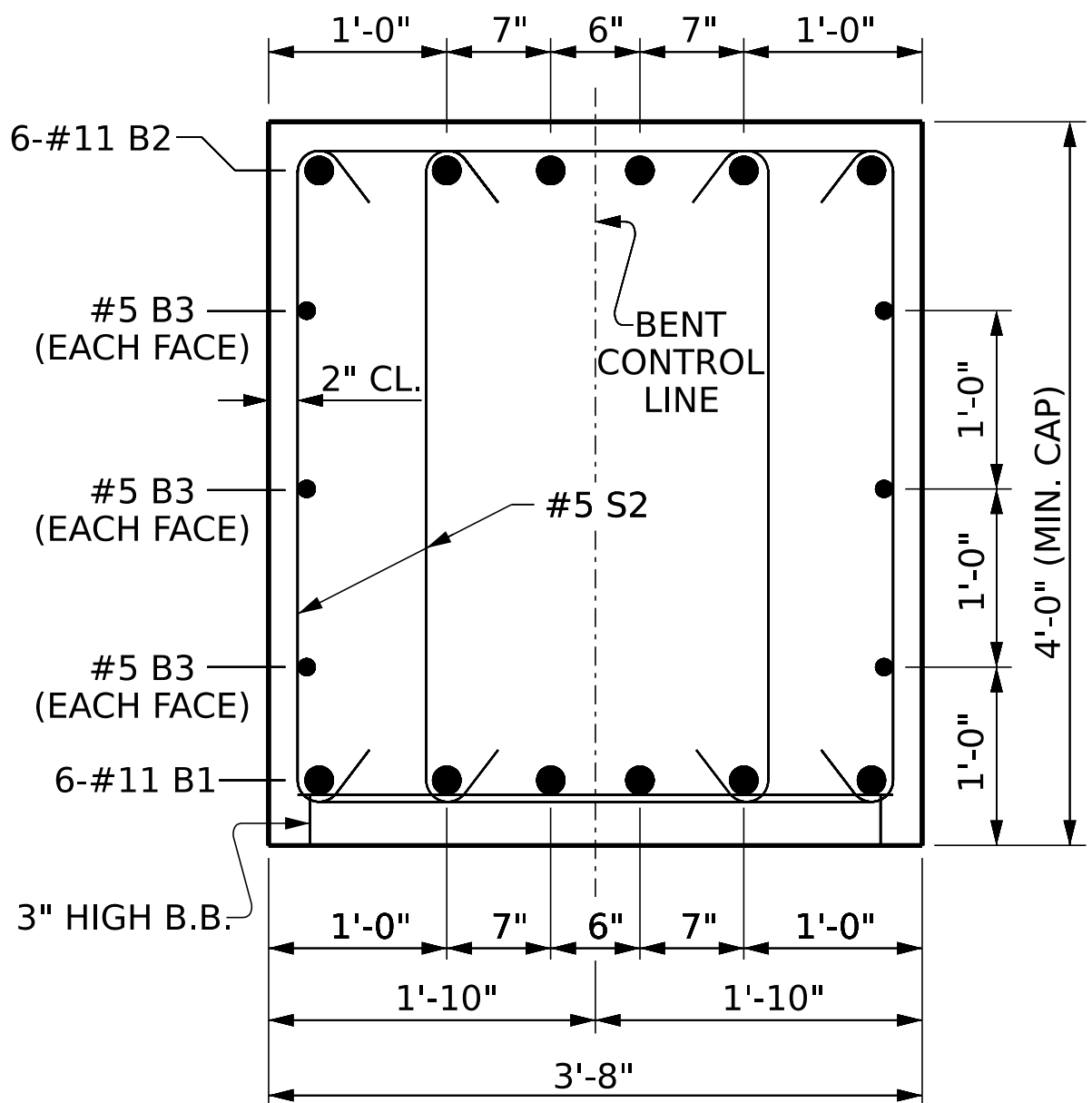
(DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER)



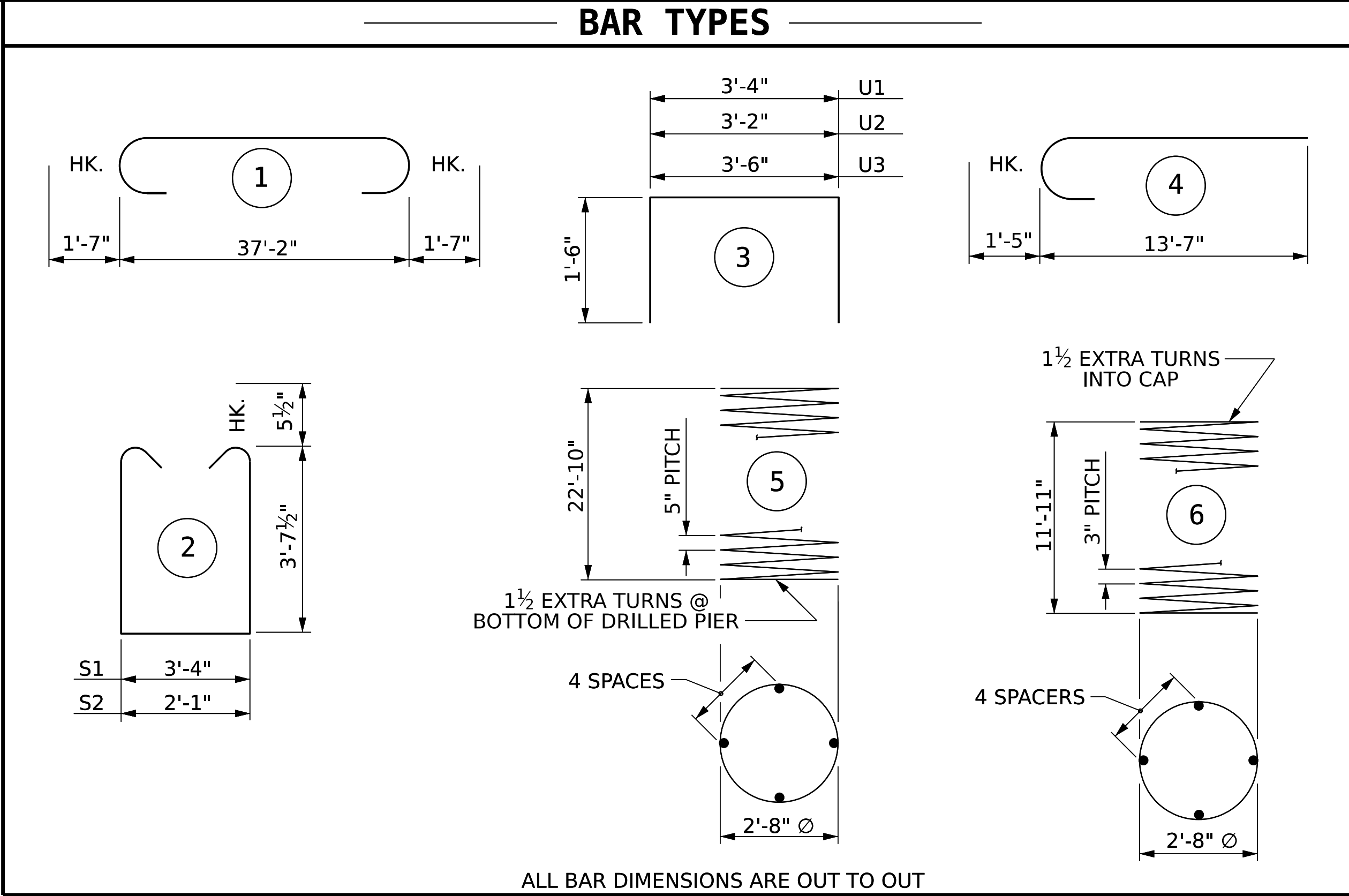
END ELEVATION



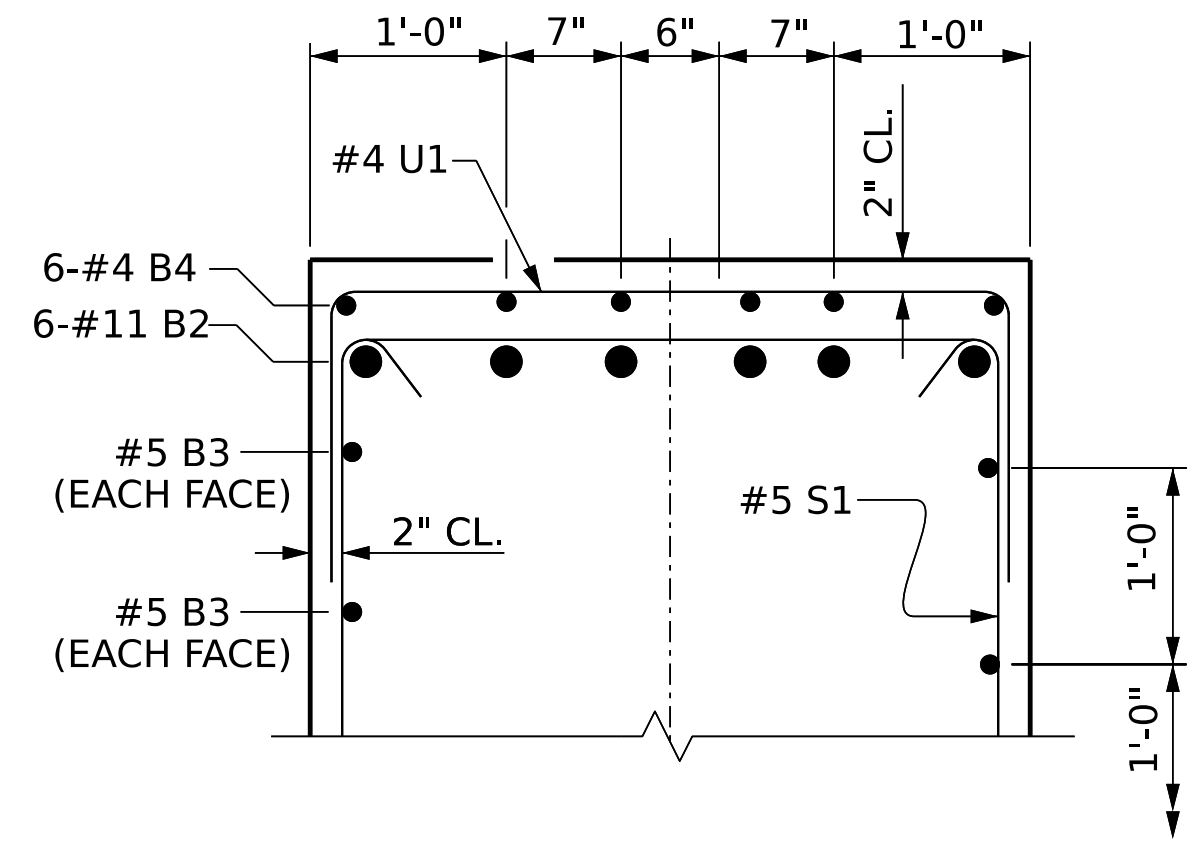
SECTION A-A



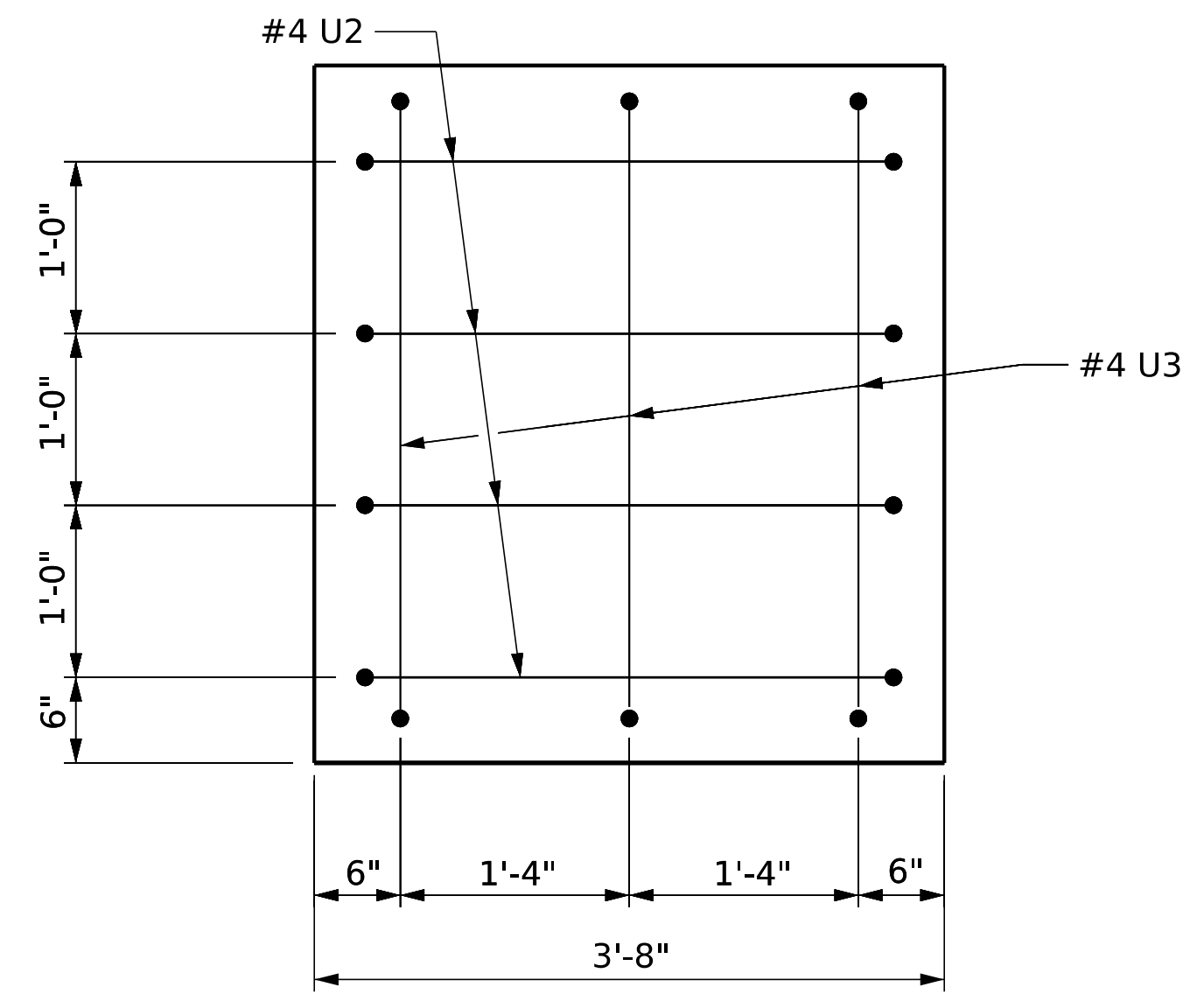
SECTION B-B



ALL BAR DIMENSIONS ARE OUT TO OUT



SECTION C-C



END OF CAP VIEW

(TYPICAL BOTH ENDS)

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

BILL OF MATERIAL

BENT No. 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#11	STR	37'-2"	1185
B2	6	#11	1	40'-4"	1286
B3	6	#5	STR	37'-4"	234
B4	6	#4	STR	15'-2"	61
M1	24	#10	STR	30'-5"	3,141
S1	36	#5	2	11'-6"	432
S2	40	#5	2	10'-3"	428
U1	37	#4	3	6'-4"	157
U2	8	#4	3	6'-2"	33
U3	6	#4	3	6'-6"	26
V1	24	#10	4	15'-0"	1,549

REINFORCING STEEL 8,532 LBS.

SP-1	2	*	5	464'-9"	969
SP-2	2	**	6	406'-5"	543

SPIRAL COLUMN REINFORCING STEEL 1,512 LBS.

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

CLASS A CONCRETE BREAKDOWN

POUR #2 (COLUMNS)	6.1 C.Y.
POUR #3 (CAPS)	21.1 C.Y.

TOTAL CLASS A CONCRETE 27.2 C.Y.

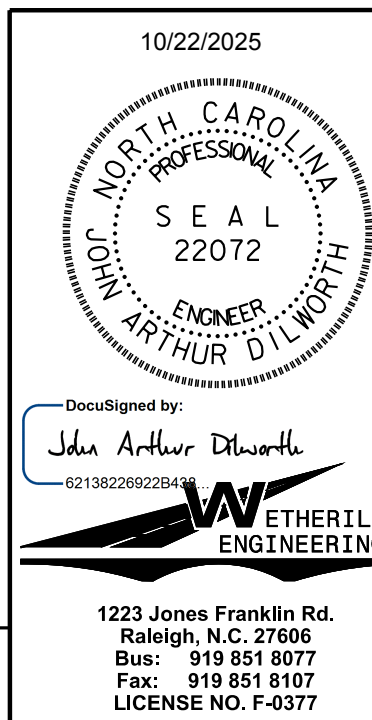
DRILLED PIERS:
DRILLED PIER CONCRETE
POUR #1 (DRILLED PIERS) 16.6 C.Y.

PROJECT NO. **BP12-R002**

CLEVELAND COUNTY

STATION: **18+04.74 -L-**

SHEET 2 OF 2



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT No. 2

REVISIONS

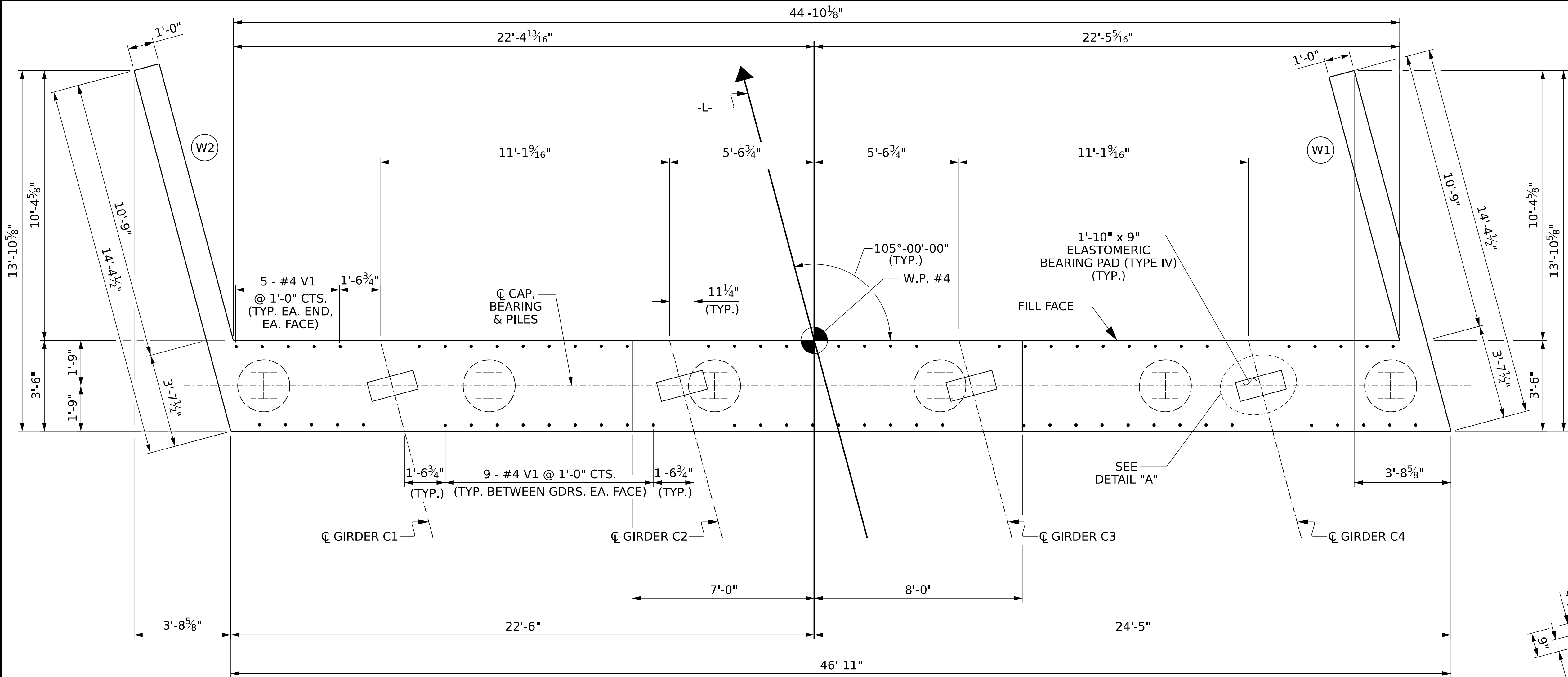
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
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SHEET NO.

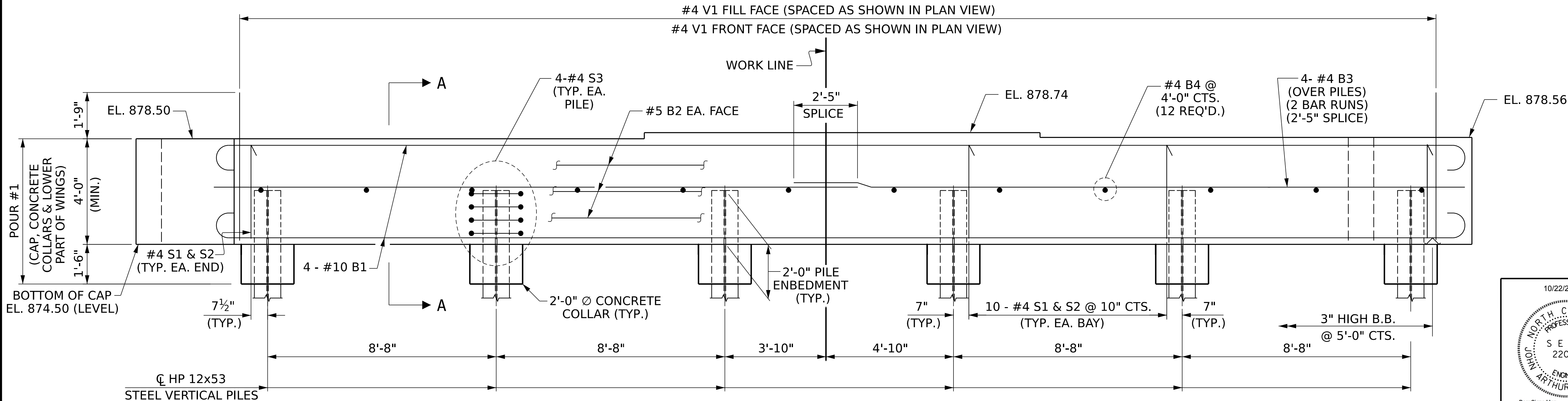
S-30

TOTAL SHEETS

35



PLAN



ELEVATION

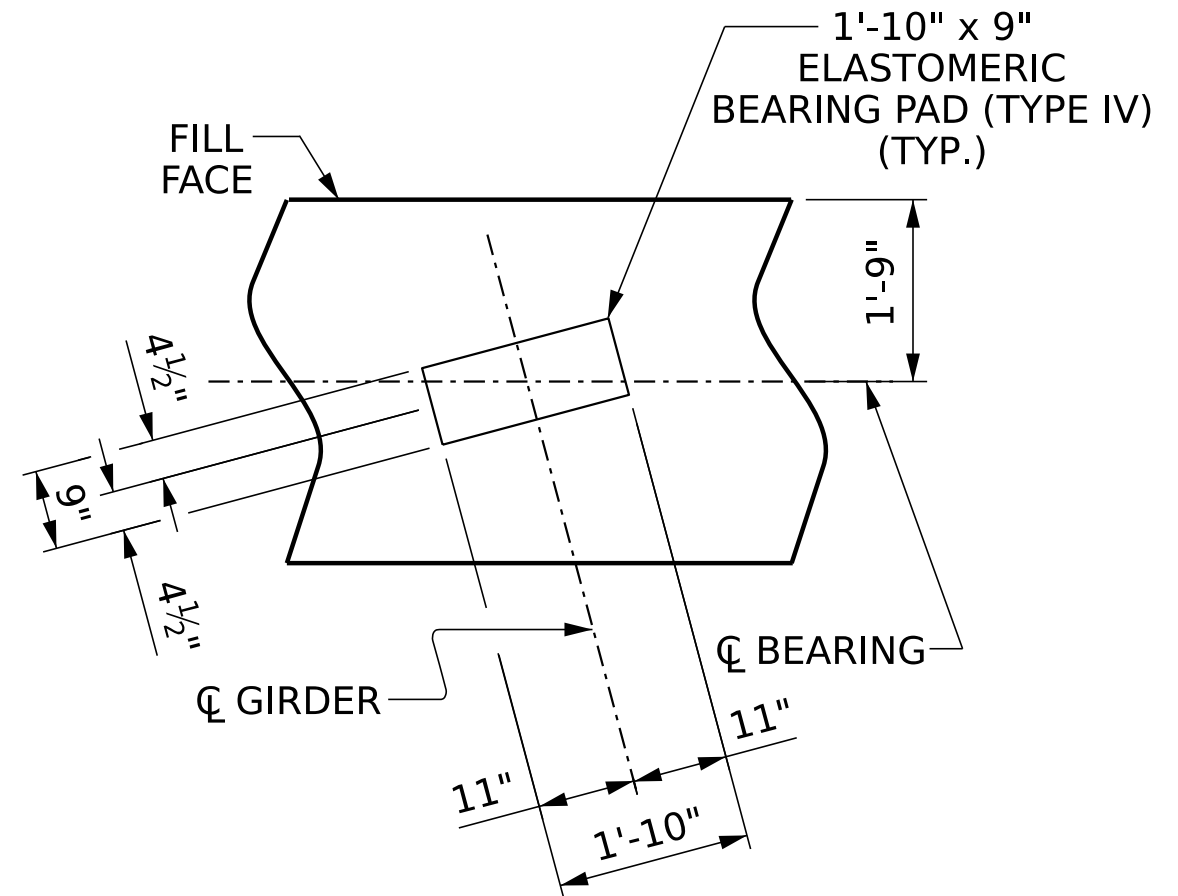
FOR SECTION A-A, SEE SHEET 3 OF 3

NOTES

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

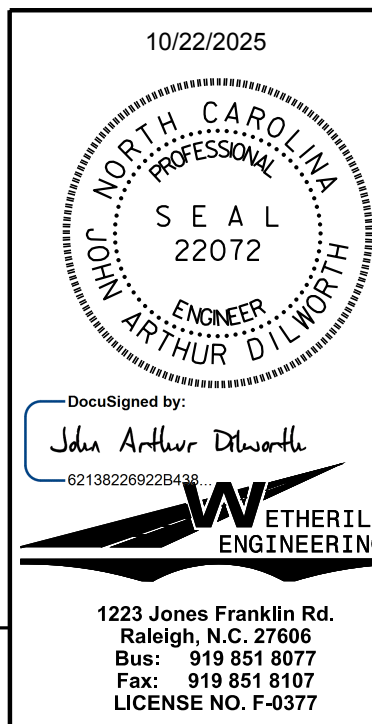
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 V1 BARS.

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



DETAIL A
(TYP. EA. GIRDER)

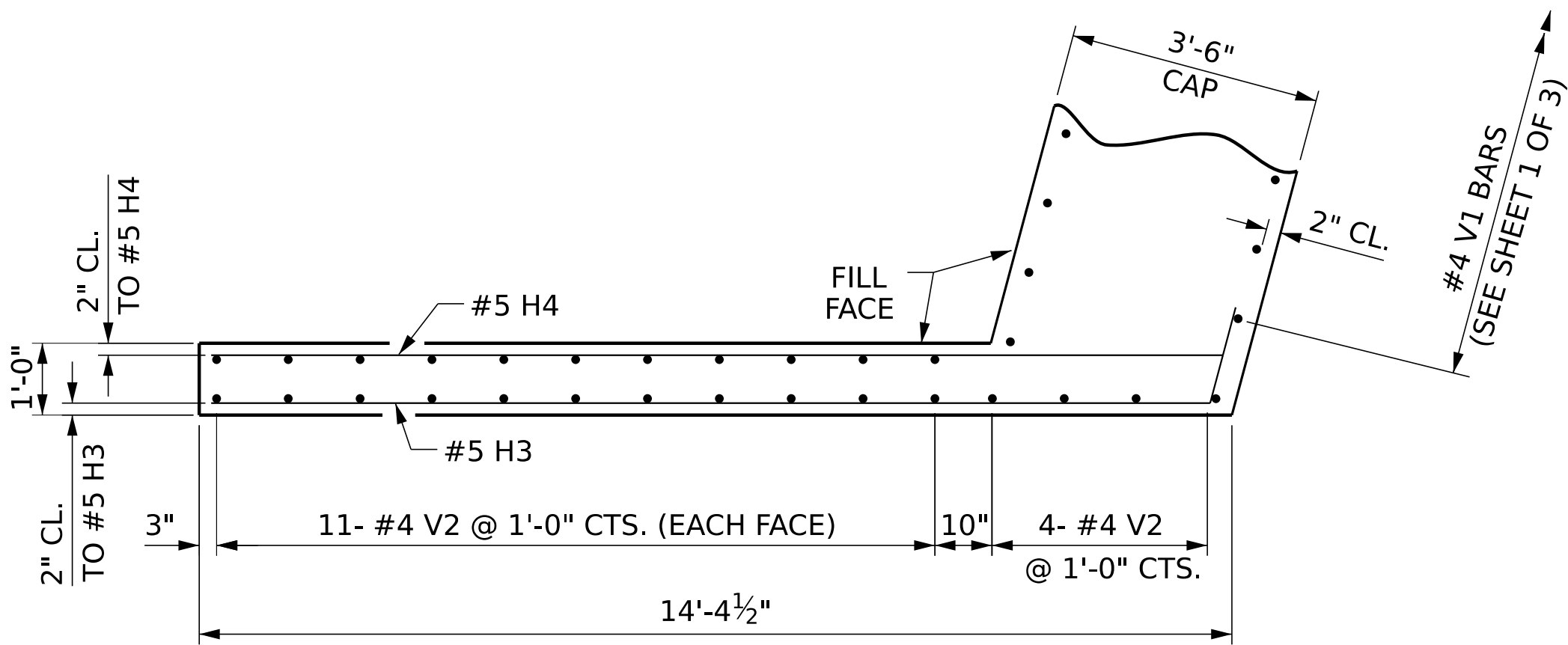
PROJECT NO. **BP12-R002**
CLEVELAND COUNTY
STATION: **18+04.74 -L-**
SHEET 1 OF 3



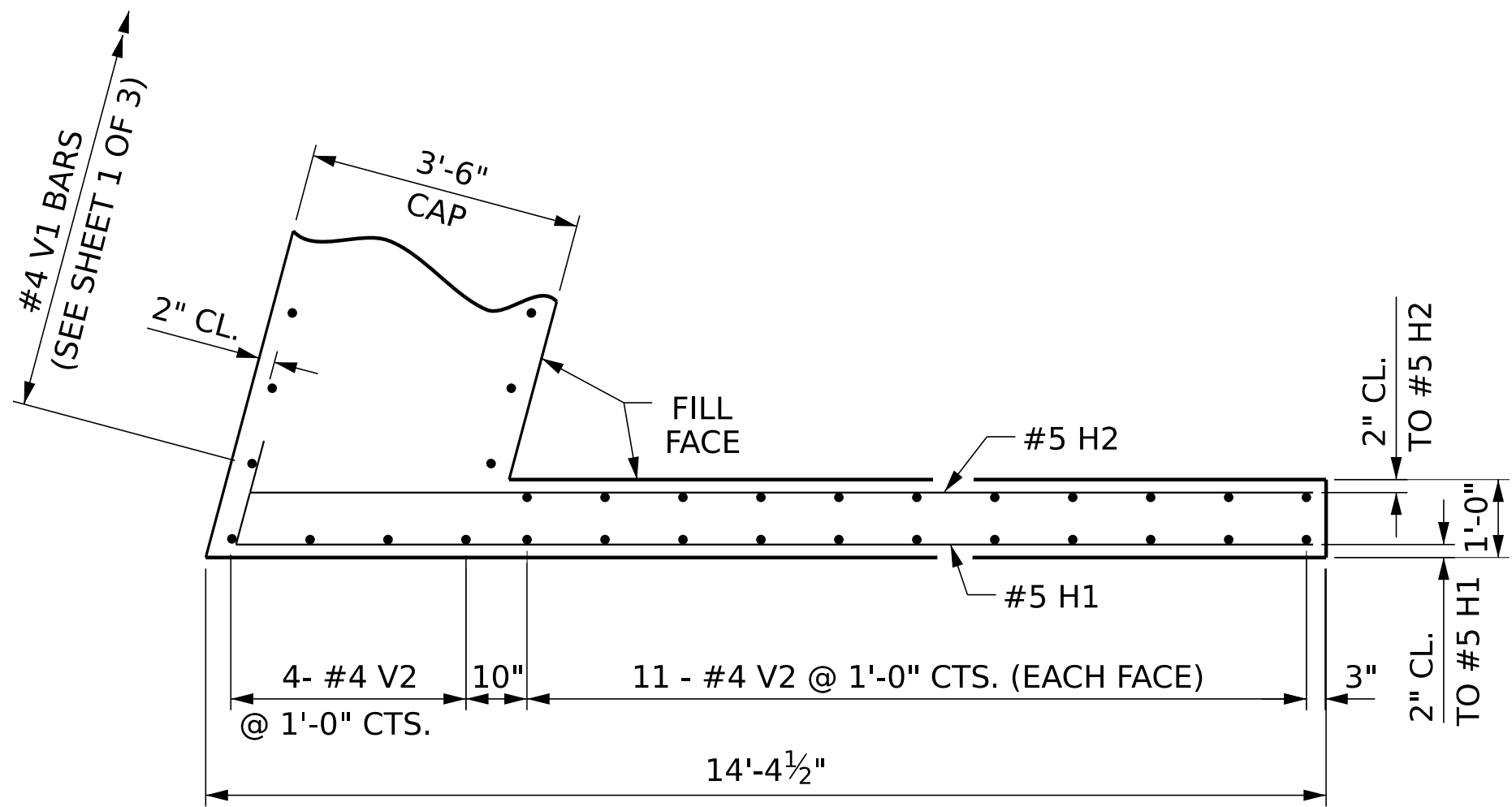
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-31	
1			3			TOTAL SHEETS	
2			4			35	

DRAWN BY :	J. PENDERGRAFT	DATE :	3-24
CHECKED BY :	G. GILLAND/JAD	DATE :	3-24
DESIGN ENGINEER OF RECORD:	J. DILWORTH	DATE :	3-24

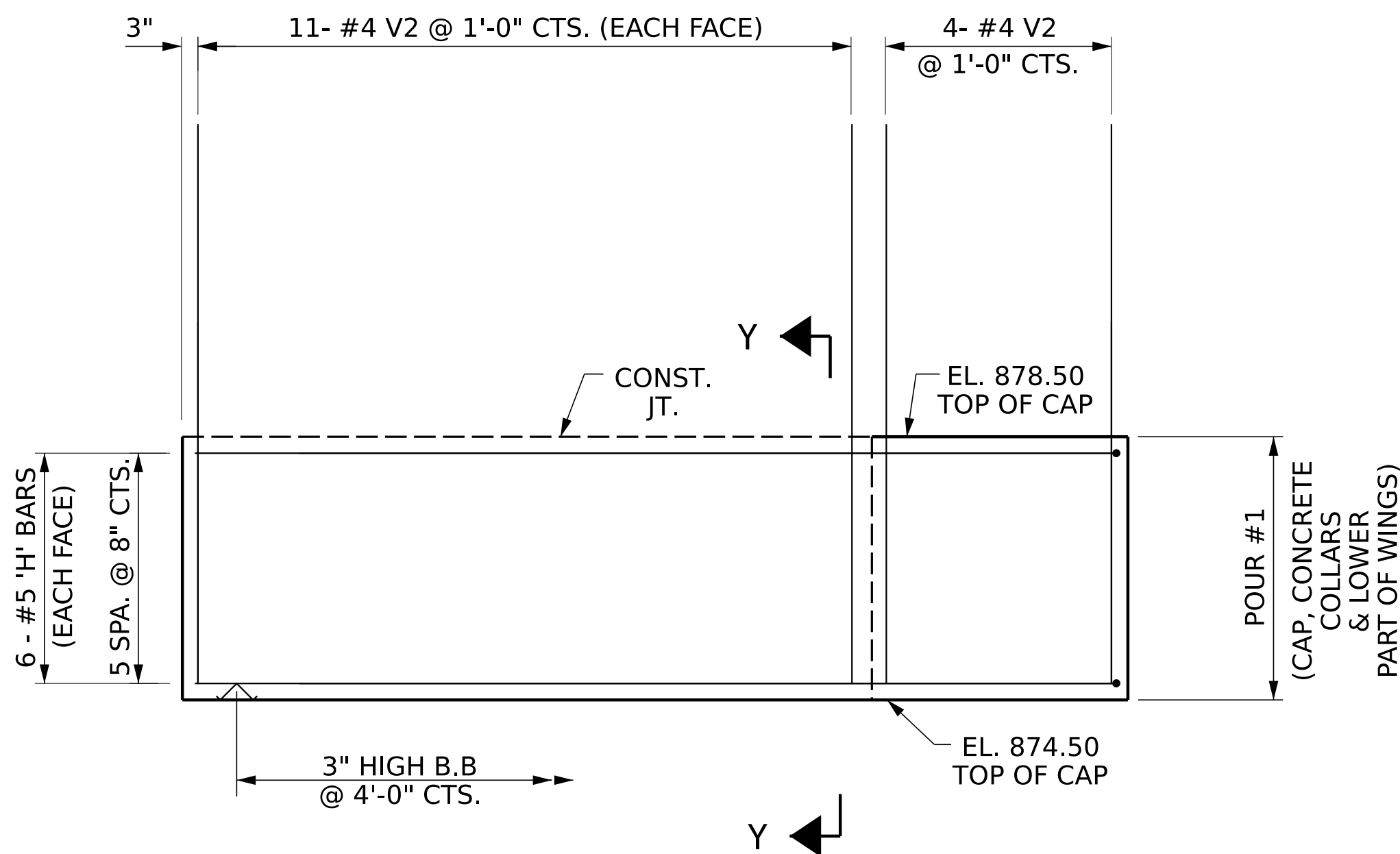
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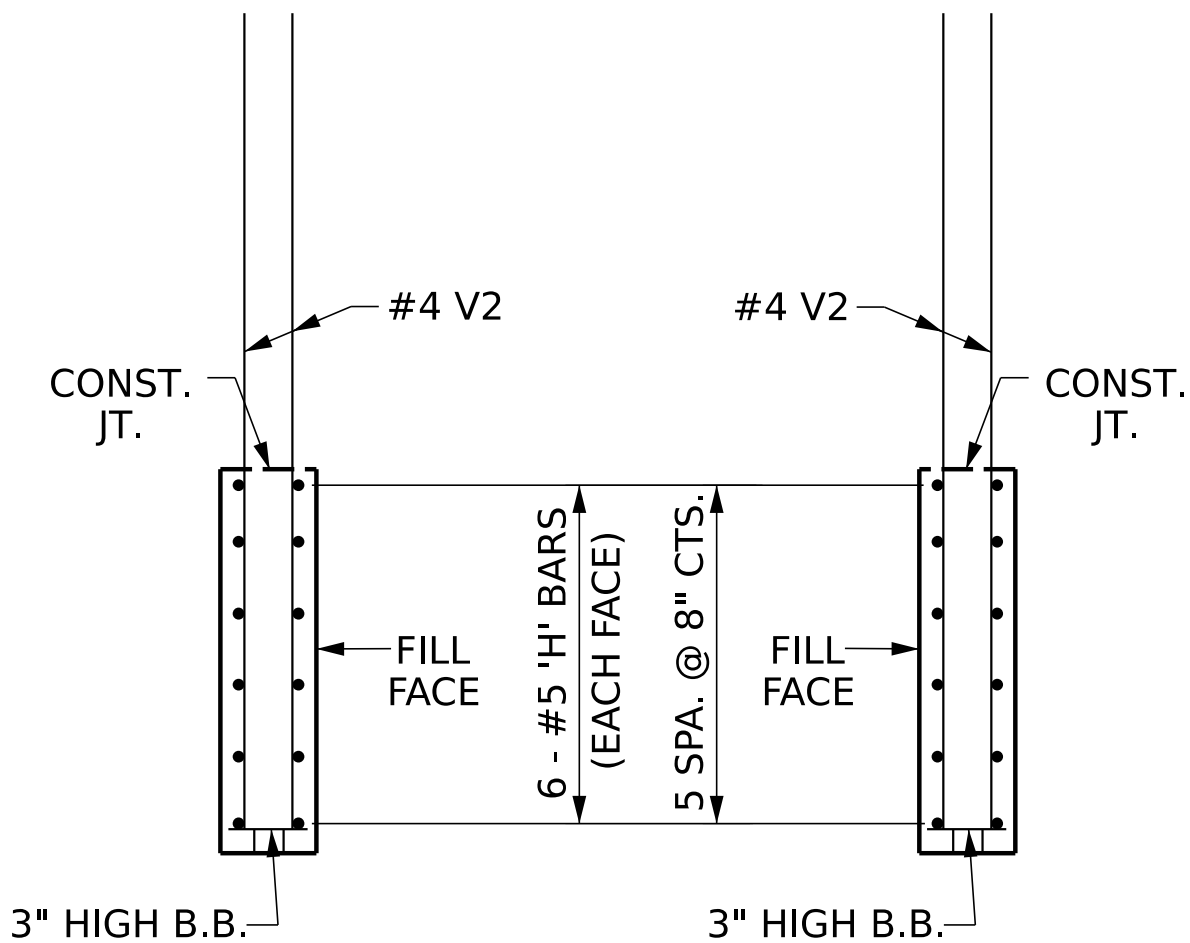
PLAN OF WING - W2



PLAN OF WING - W1

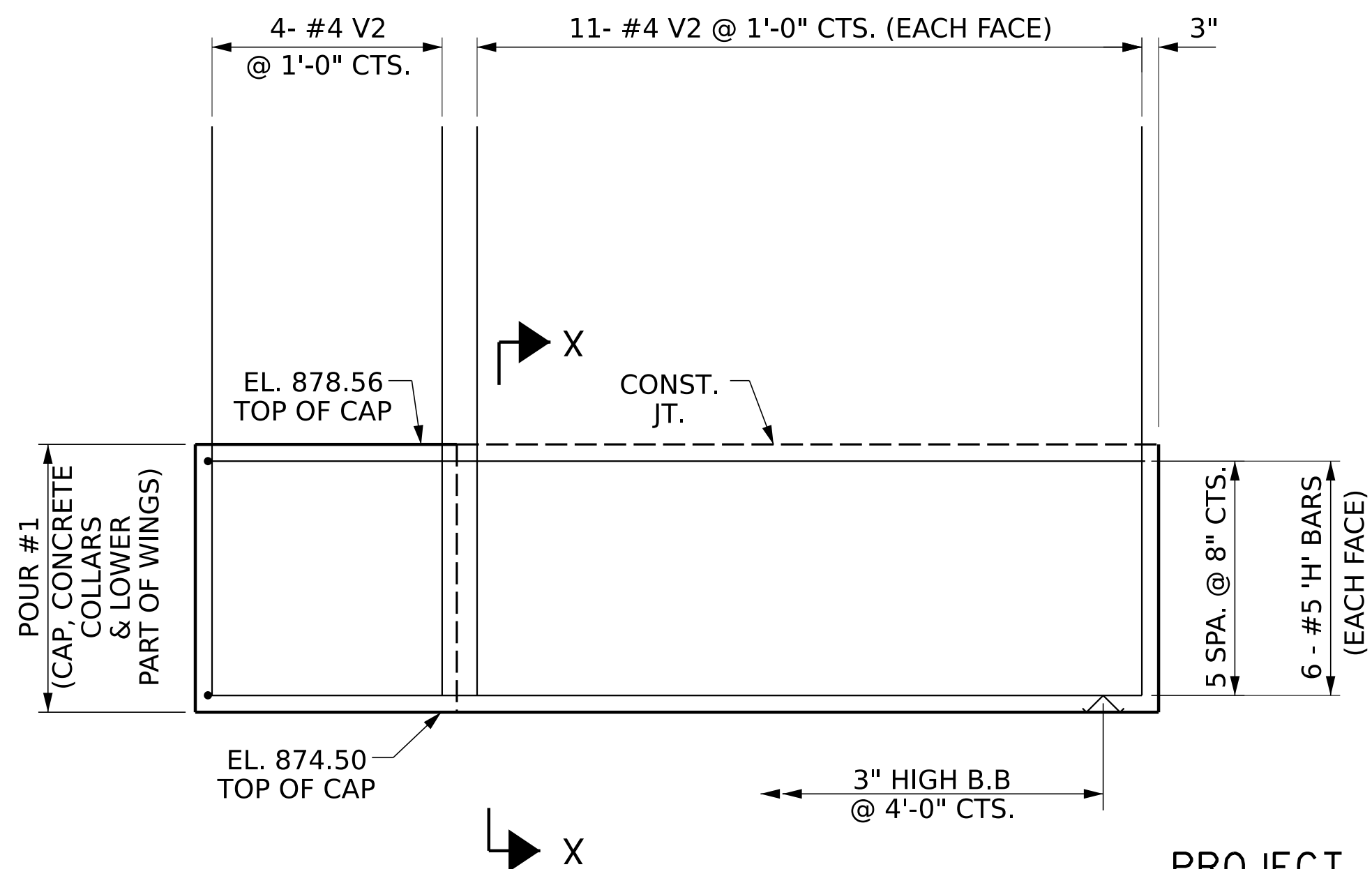


ELEVATION OF WING - W2



SECTION Y-Y

SECTION X-X



ELEVATION OF WING - W1

PROJECT NO. **BP12-R002**

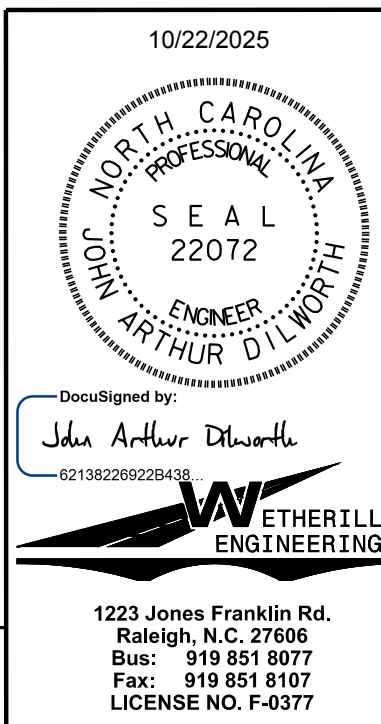
CLEVELAND COUNTY

STATION: **18+04.74 -L-**

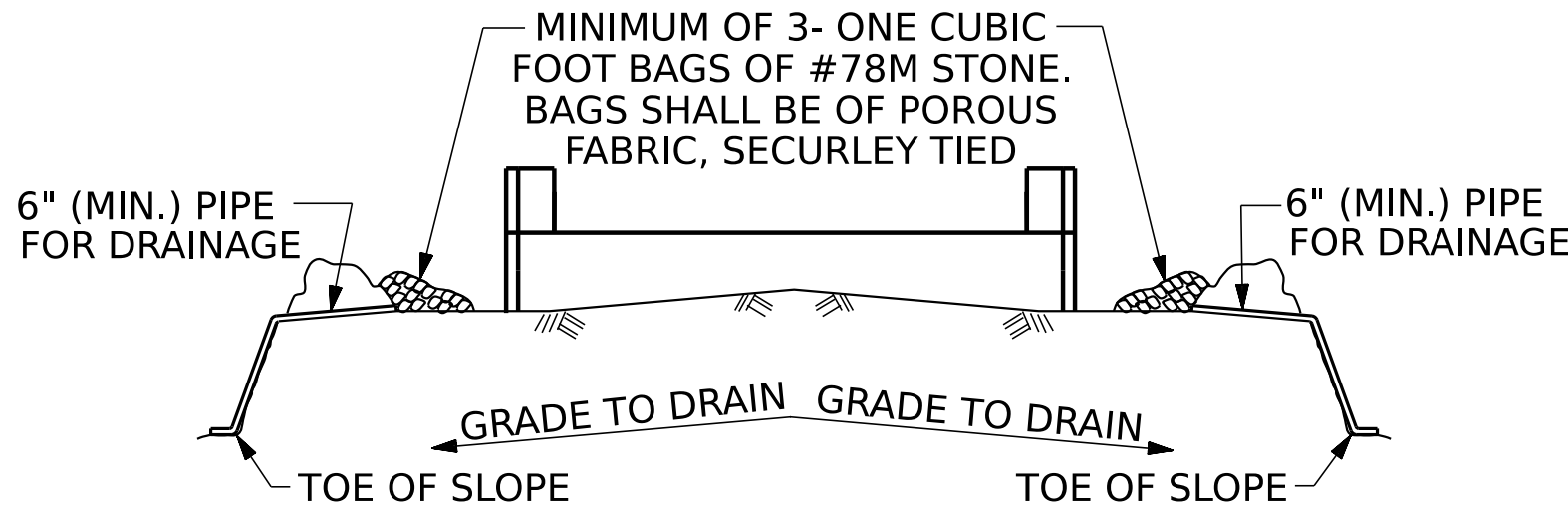
SHEET 2 OF 3

DRAWN BY : J. PENDERGRAFT DATE : 3-24
CHECKED BY : J. DILWORTH DATE : 3-24
DESIGN ENGINEER OF RECORD: J. DILWORTH DATE : 3-24

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2			4			

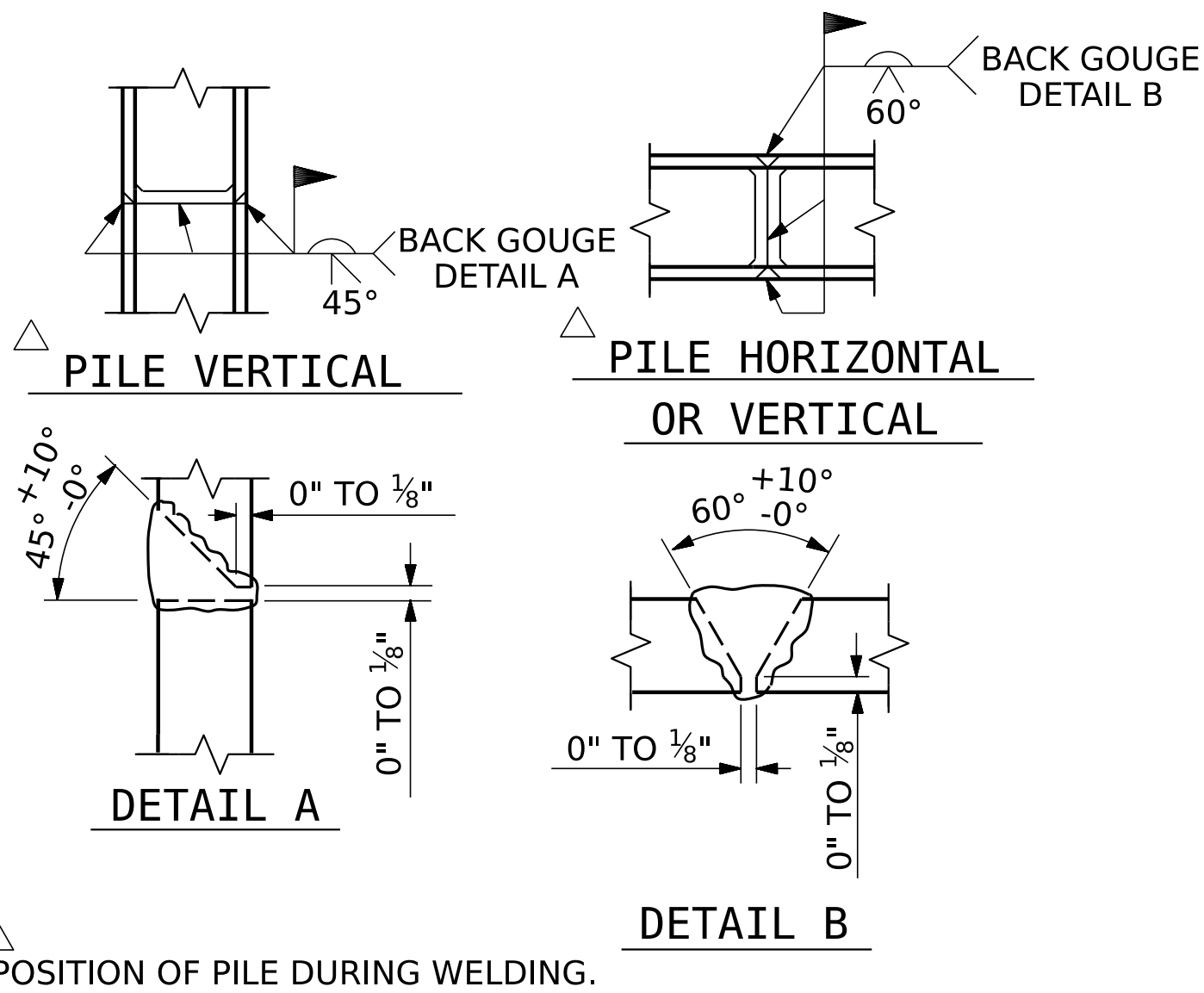


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

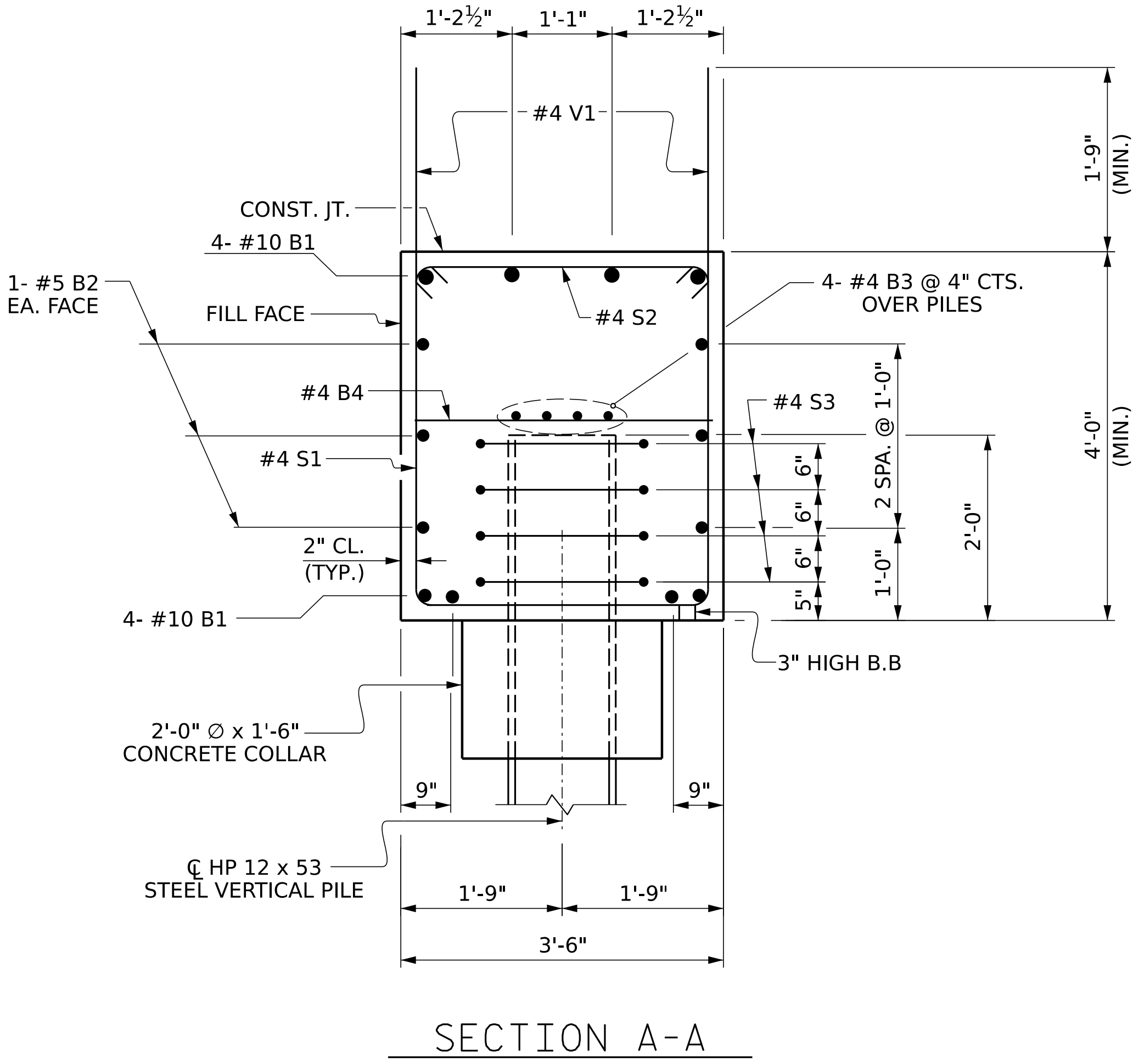
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



PILE SPlice DETAILS

BAR TYPES						BILL OF MATERIAL					
						END BENT No. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT						
B1	8	#10		49'-3"	1,695						
B2	6	#5	STR	46'-7"	292						
B3	8	#4	STR	24'-6"	131						
B4	12	#4	STR	3'-2"	25						
H1	6	#5		14'-9"	92						
H2	6	#5		14'-7"	91						
H3	6	#5		14'-10"	93						
H4	6	#5		15'-0"	94						
S1	52	#4		11'-2"	388						
S2	52	#4		3'-11"	136						
S3	24	#4		6'-6"	104						
V1	74	#4	STR	5'-7"	276						
V2	52	#4	STR	8'-6"	295						
						REINFORCING STEEL					
						3,712 LBS.					
						CLASS A CONCRETE BREAKDOWN					
						POUR #1 CAP, CONC. COLLARS & LOWER PART OF WINGS					
						29.1 C.Y.					
						TOTAL CLASS A CONCRETE					
						29.1 C.Y.					



PROJECT NO. **BP12-R002**
CLEVELAND COUNTY
STATION: **18+04.74 -L-**
SHEET 3 OF 3

10/22/2025

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

SUBSTRUCTURE

INTEGRAL

END BENT No. 2

DocuSigned by:
John Arthur Dilworth
021382299228436

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-4377

ETHERILL

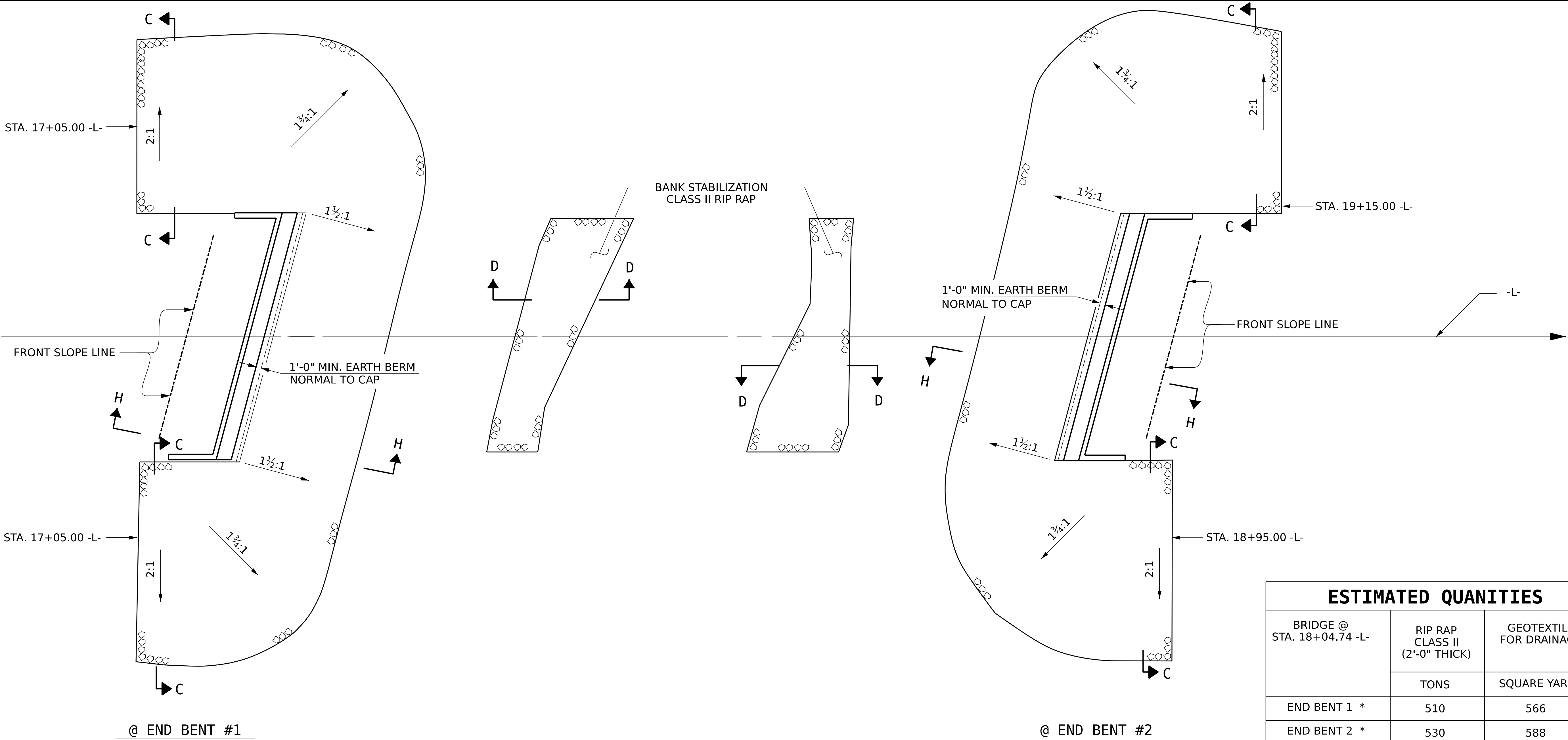
ENGINEERING

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33	
1			3			TOTAL SHEETS	
2			4			35	

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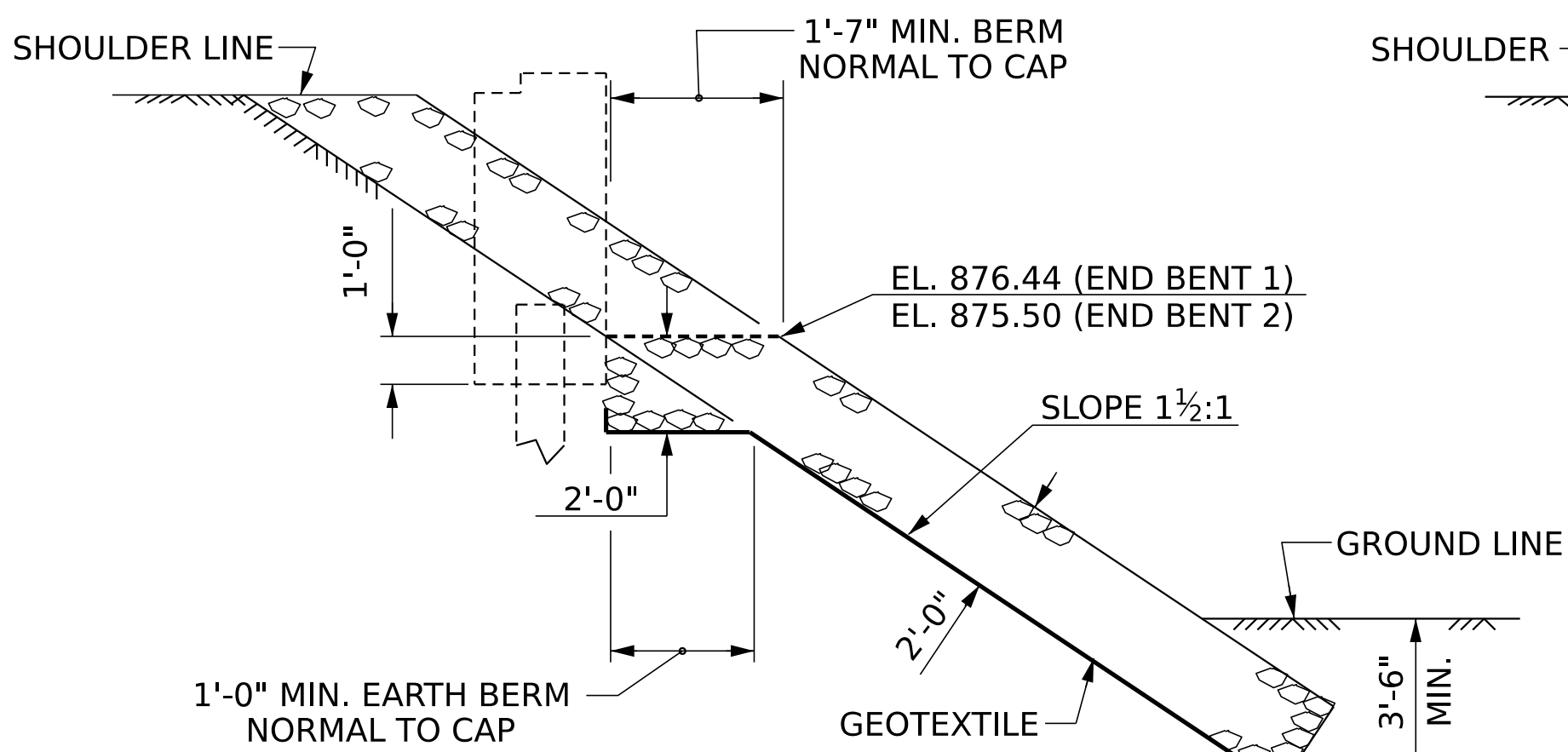
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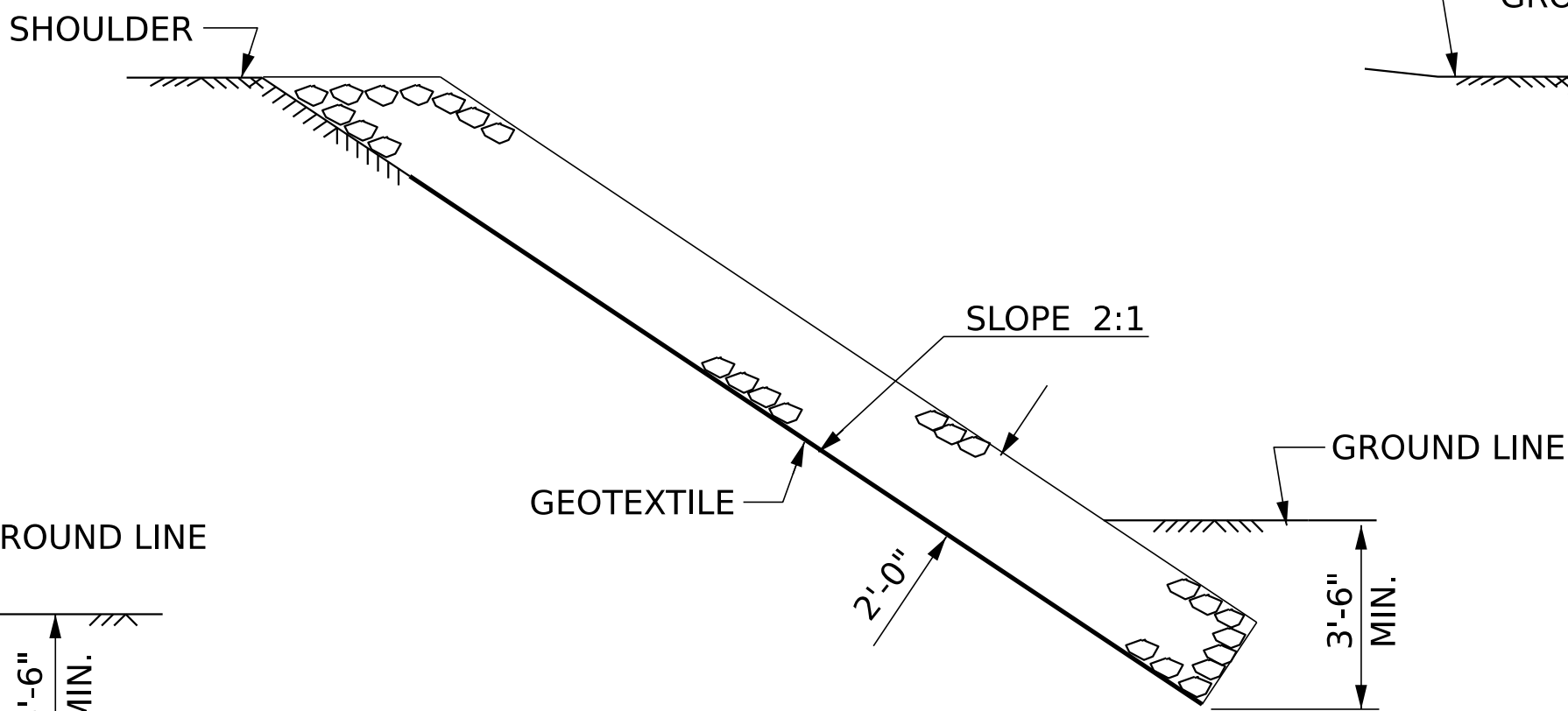
PLAN OF RIP RAP

ESTIMATED QUANTITIES		
BRIDGE @ STA. 18+04.74 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1 *	510	566
END BENT 2 *	530	588

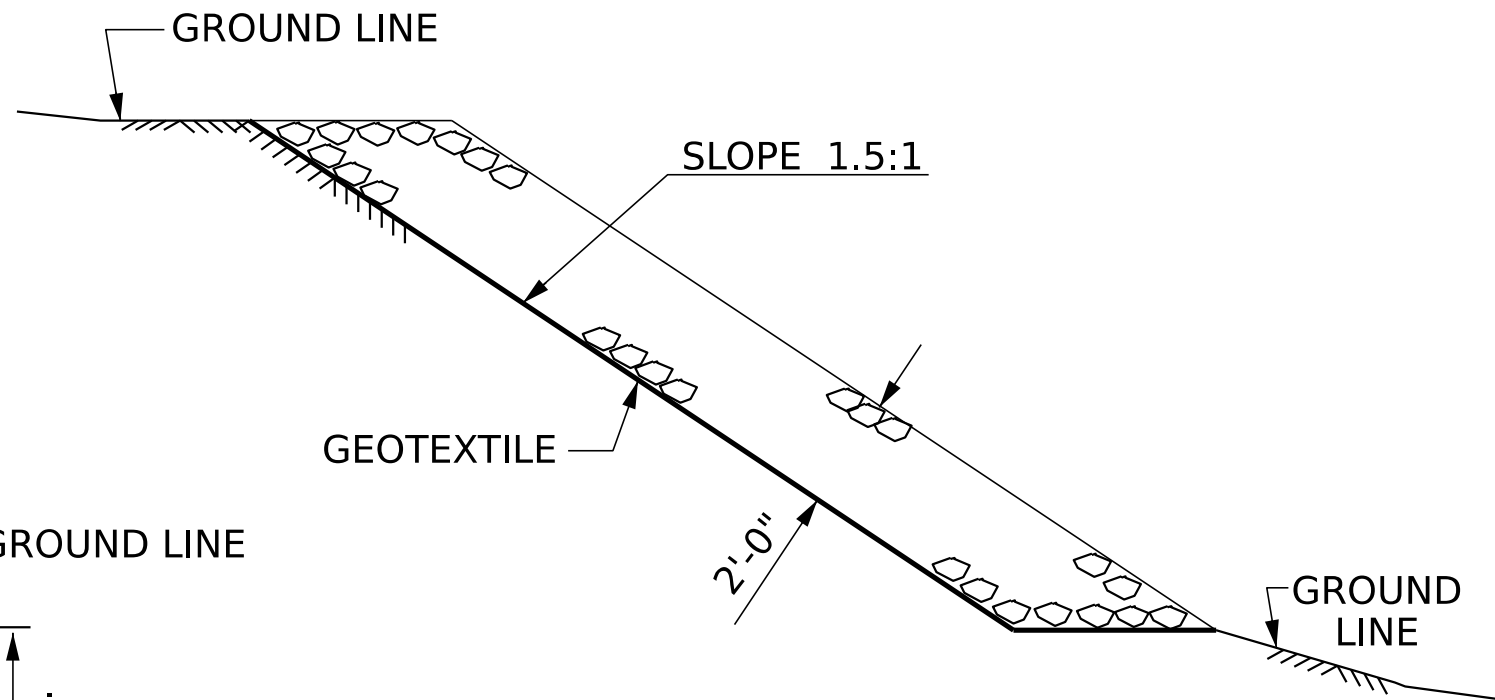
* INCLUDES QUANTITY FOR BANK STABILIZATION



SECTION H-H



SECTION C-C

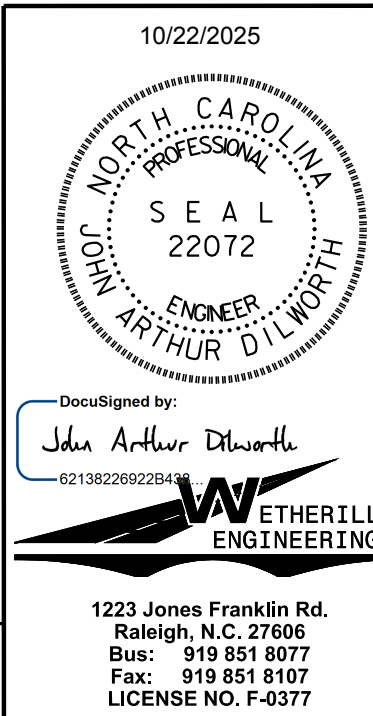


SECTION D-D

PROJECT NO. **BP12-R002**
CLEVELAND COUNTY
STATION: **18+04.74 -L-**

DRAWN BY :	J. PENDERGRAFT	DATE :	2-24
CHECKED BY :	J. DILWORTH	DATE :	2-24
DESIGN ENGINEER OF RECORD:	J. DILWORTH	DATE :	2-24
DRAWN BY :	REK 1/84	REV. 10/11/II	MAA/GM
CHECKED BY :	RDU 1/84	REV. 12/21/II	MAA/GM
		REV. 12/17	MAA/THC

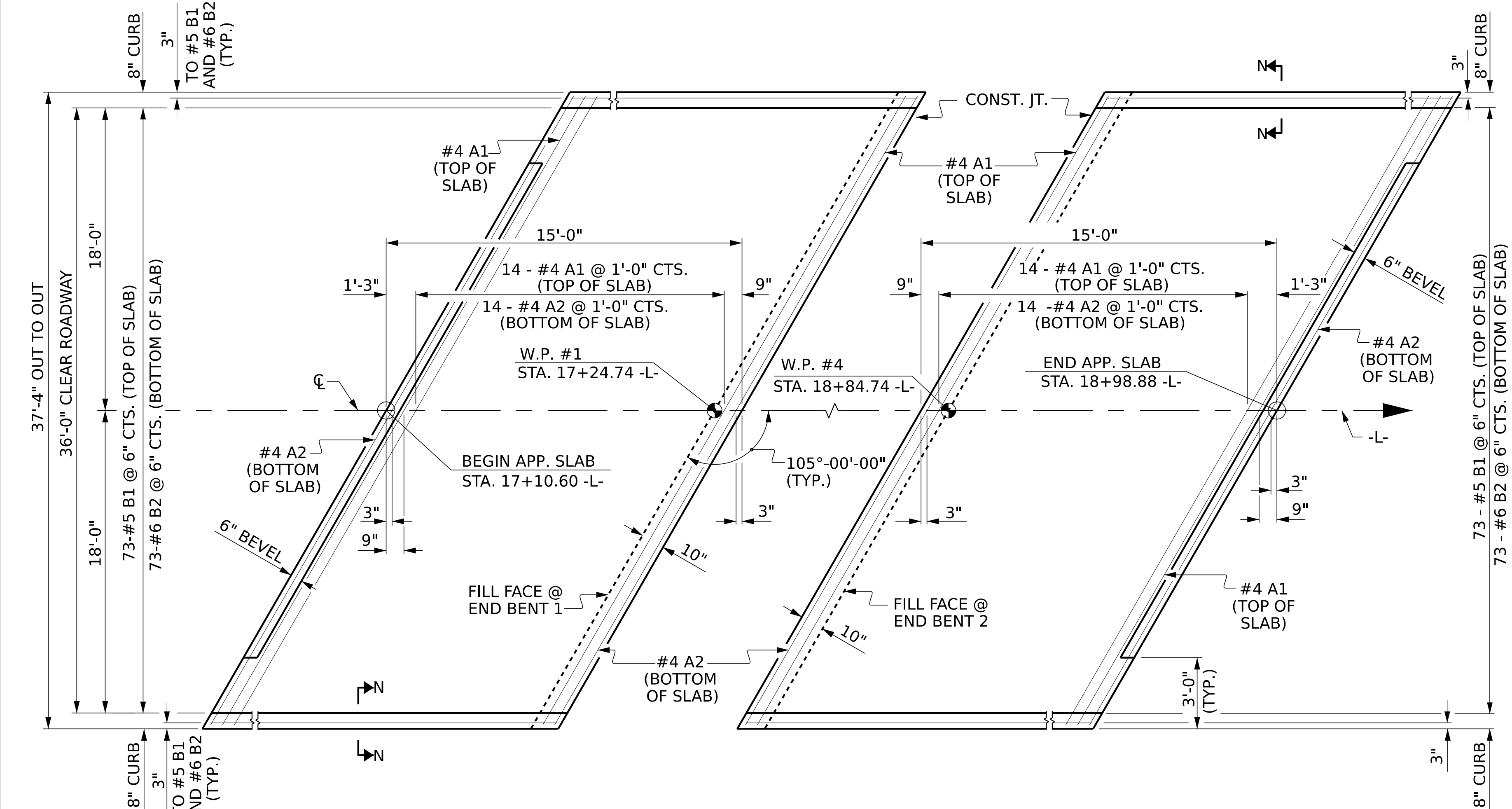
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



REVISIONS						SHEET NO. S-34
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			35

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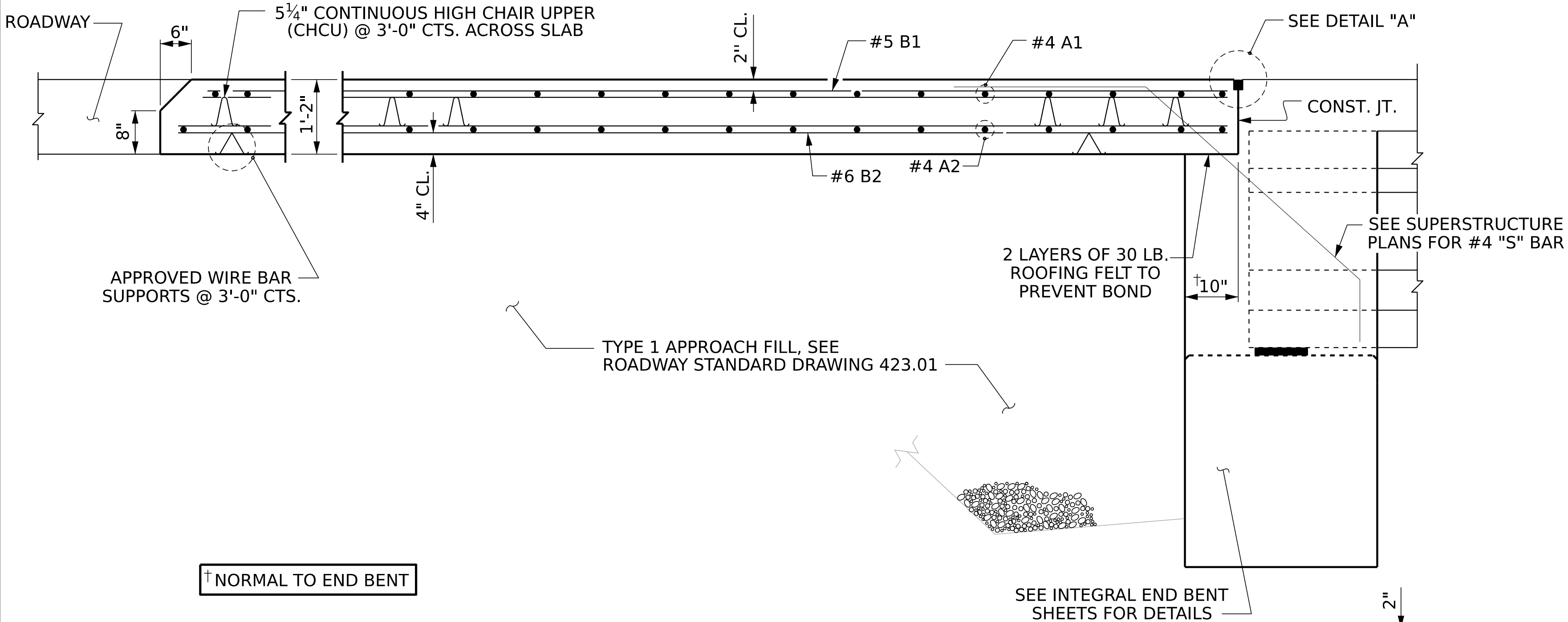
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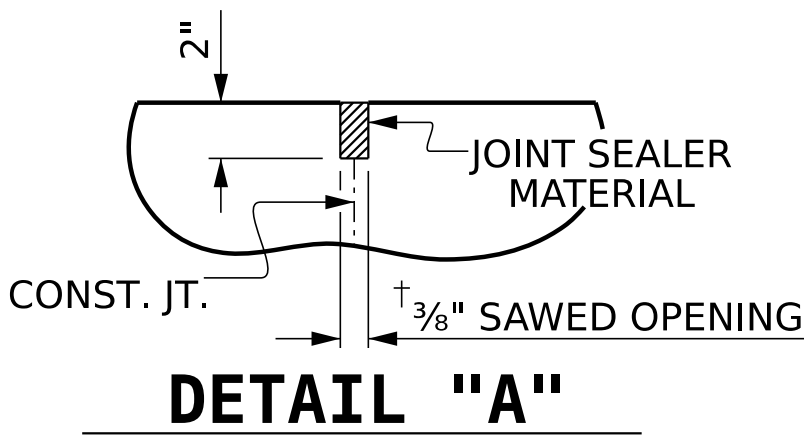
PLAN @ END BENT 1

PLAN @ END BENT 2

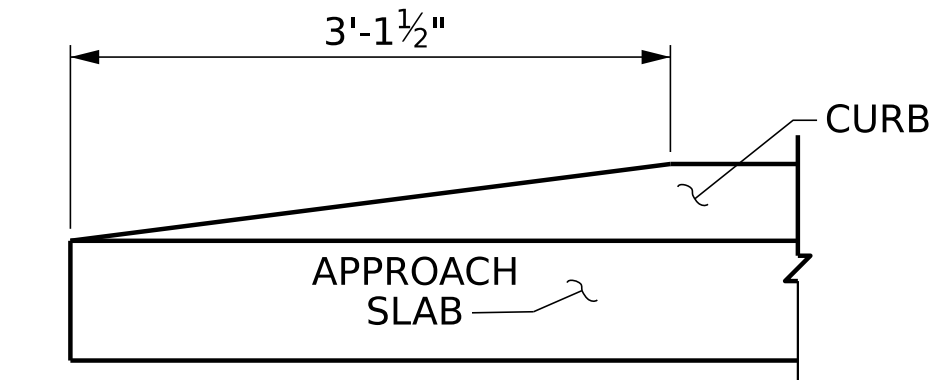
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB



DETAIL "A"



END OF CURB WITHOUT
SHOULDER BERM GUTTER

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

NOTES

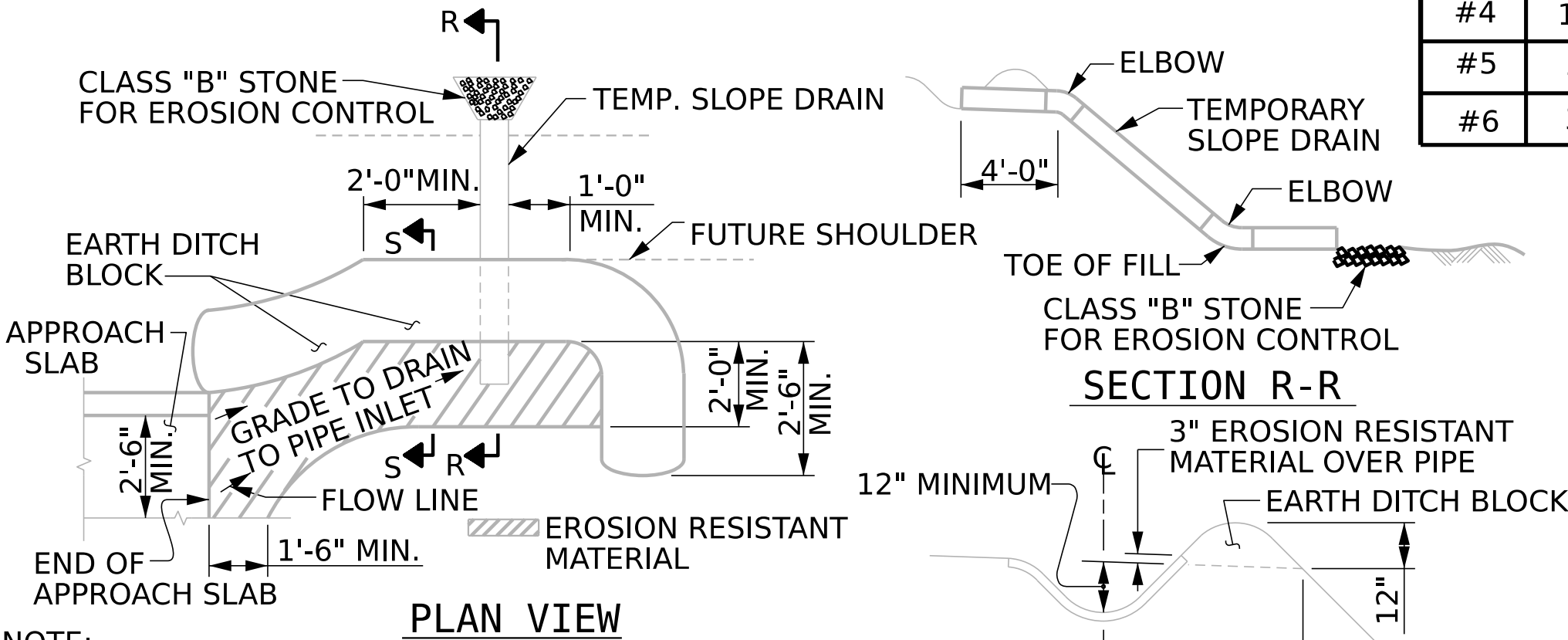
FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.

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.

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".

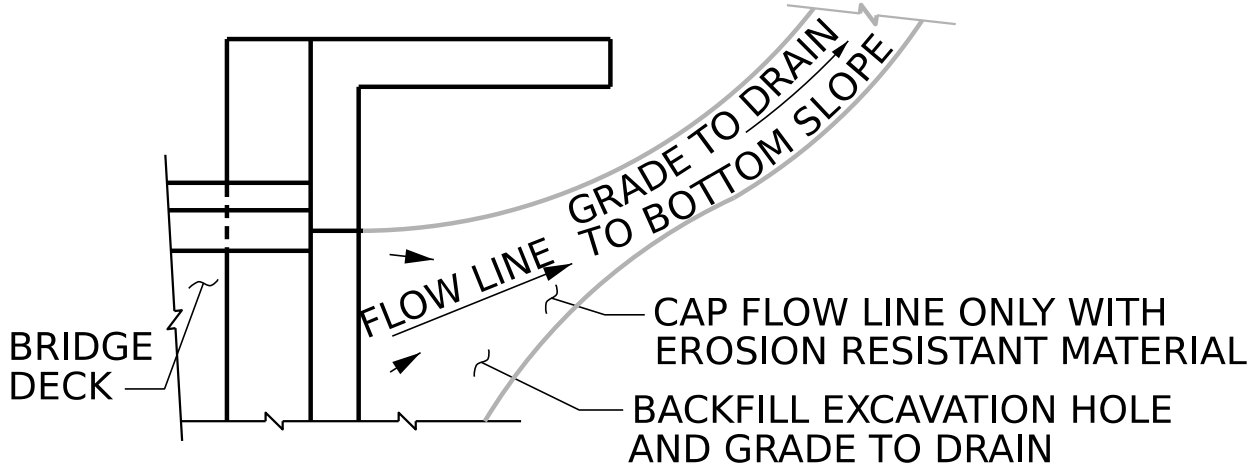


PLAN VIEW

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

BILL OF MATERIAL

FOR ONE APPROACH SLAB
(2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	16	#4	STR	38'-3"	409
A2	16	#4	STR	38'-3"	409
*B1	75	#5	STR	14'-2"	1108
B2	75	#6	STR	14'-7"	1643

REINFORCING STEEL	2052 LBS.
* EPOXY COATED REINFORCING STEEL	1517 LBS.

CLASS AA CONCRETE	24.2 C. Y.
-------------------	------------

SPLICE LENGTHS

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

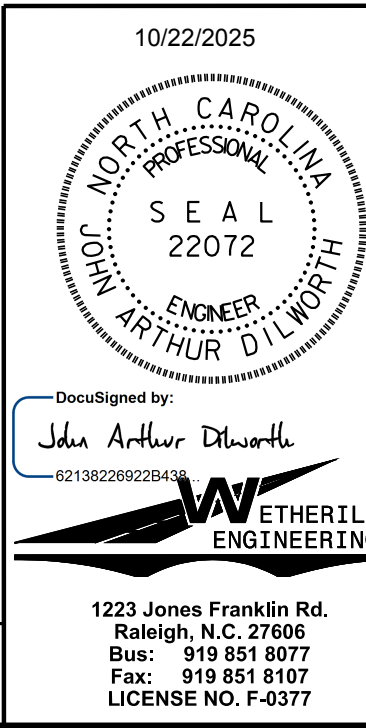
SECTION R-R

SECTION S-S

SECTION N-N

PROJECT NO. **BP12-R002**
CLEVELAND COUNTY
STATION: **18+04.74 -L-**

DRAWN BY : J. PENDERGRAFT	DATE : 2-24
CHECKED BY : J. DILWORTH	DATE : 2-24
DESIGN ENGINEER OF RECORD: J. DILWORTH	DATE : 2-24
DRAWN BY : TLA 10/05	REV. 12/17
CHECKED BY : GM 5/06	REV. 06/19
	REV. 07/23
MAA/THC	BNB/THC
	BNB/SNM



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD					
BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT WITH FLEXIBLE PAVEMENT					
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
				TOTAL SHEETS	
				35	

STD. NO. BAS5 Sht. 01b

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

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

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

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