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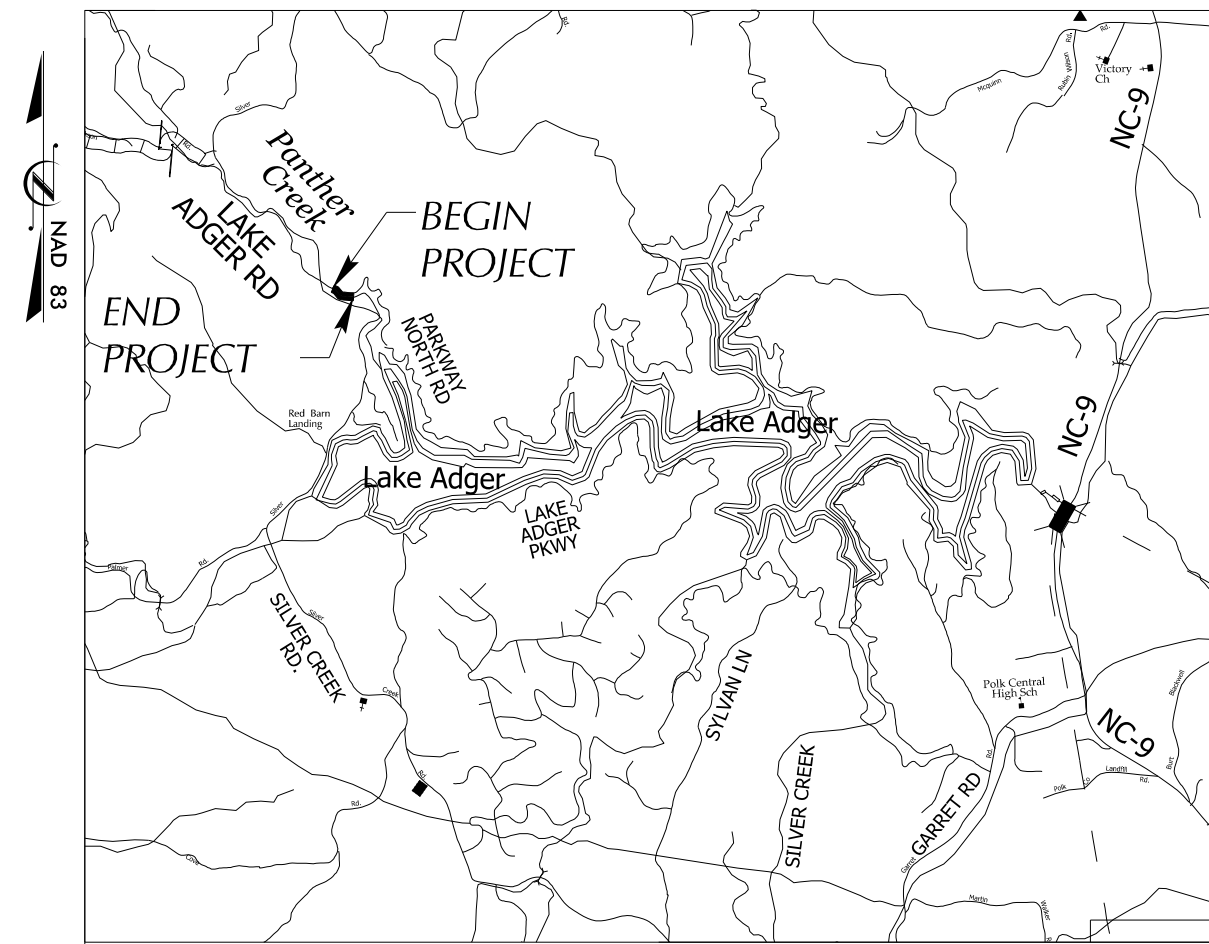
See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Plan Sheet Symbols

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

POLK COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP14.R006	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BP14.R006.1		P.E.	
BP14.R006.2		ROW	
BP14.R006.3		CONST.	

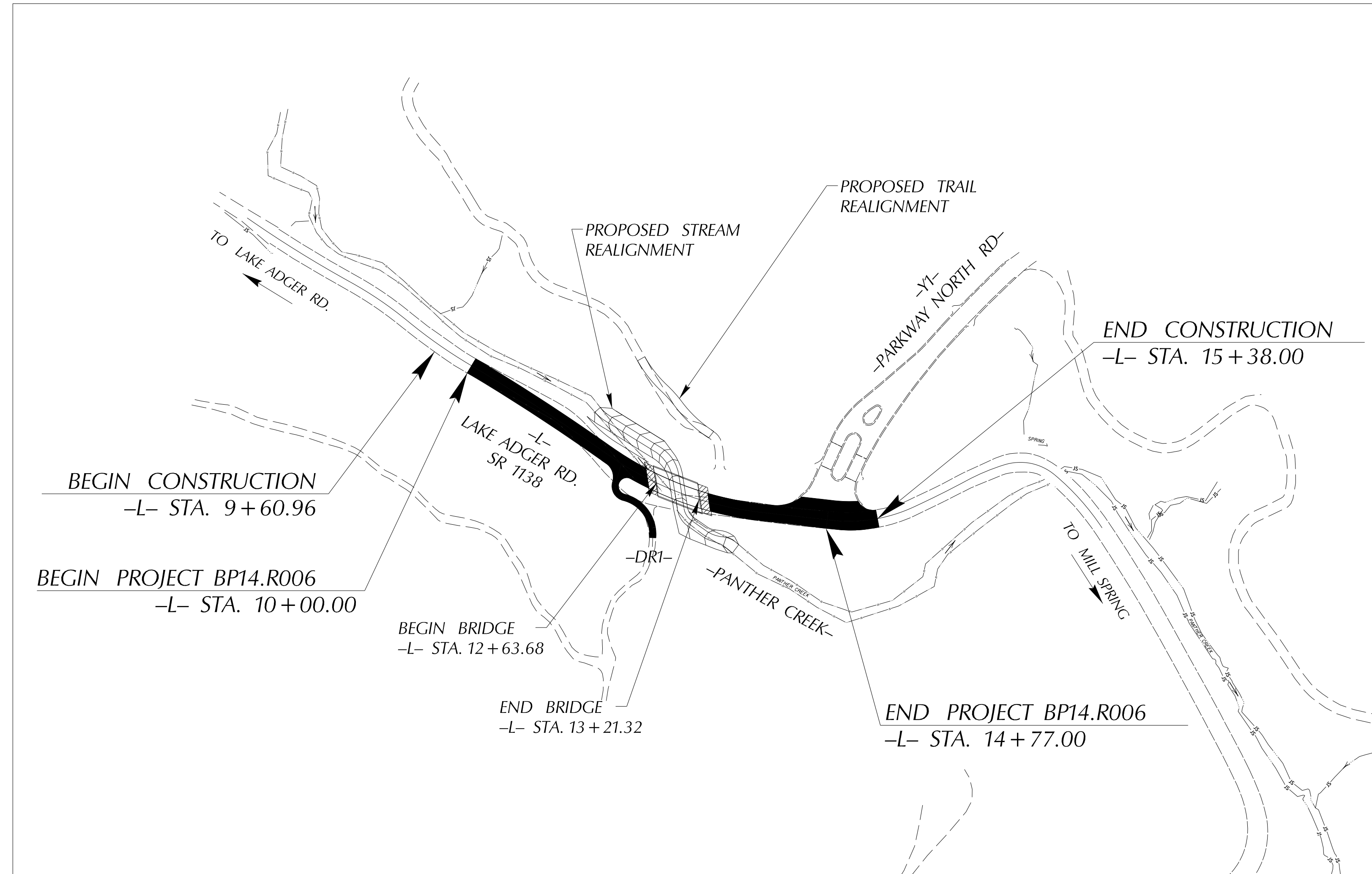
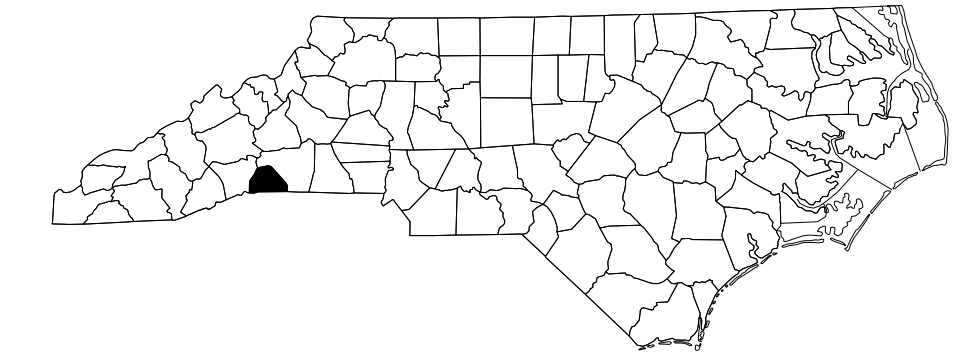
BP14.R006



VICINITY MAP

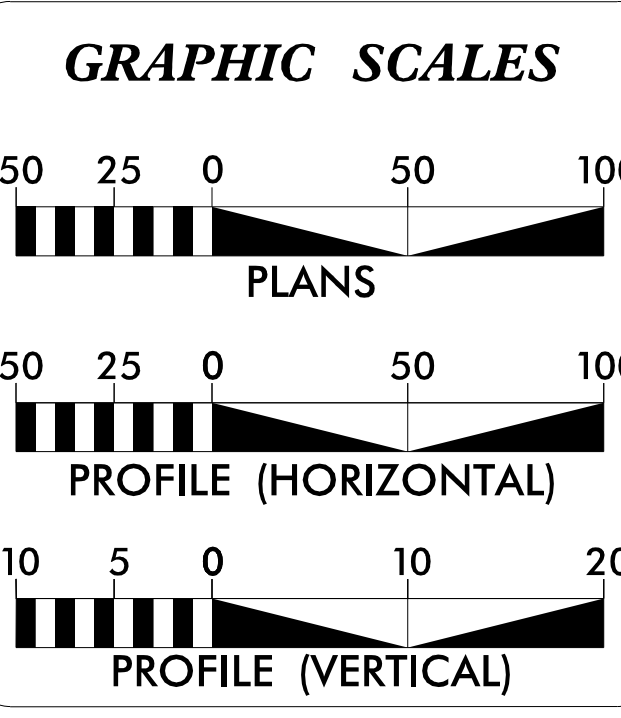
LOCATION: REPLACE POLK BRIDGE 740143 ON SR 1138 OVER PANTHER CREEK

TYPE OF WORK: GRADING, DRAINAGE, PAVING, RETAINING WALL, AND STRUCTURE



STRUCTURES

DOCUMENT NOT CONSIDERED FINAL
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DESIGN DATA

ADT 2025 =	N/A
ADT 2045 =	< 400
K =	12 %
D =	55 %
T =	13 % *
V =	20 MPH
* TTST =	1% DUAL 12%
FUNC CLASS =	LOCAL
	SUB-REGIONAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT BP14.R006	0.080 Miles
LENGTH STRUCTURE TIP PROJECT BP14.R006	0.010 Miles
TOTAL LENGTH TIP PROJECT BP14.R006	0.090 Miles

Prepared in the Office of:

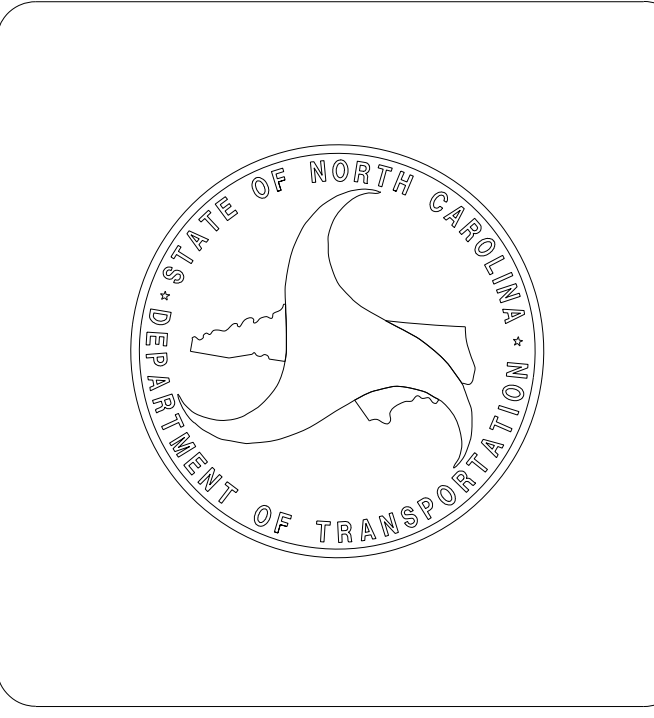
NIV5
NIV5 ENGINEERS & CONSULTANTS, INC.
3300 REGENCY PARKWAY, SUITE 100
CARY, NC 27518
P: 919.851.1912 www.NIV5.com
NC License # F-3333

FOR THE NORTH CAROLINA DEPT. OF TRANSPORTATION
2024 STANDARD SPECIFICATIONS

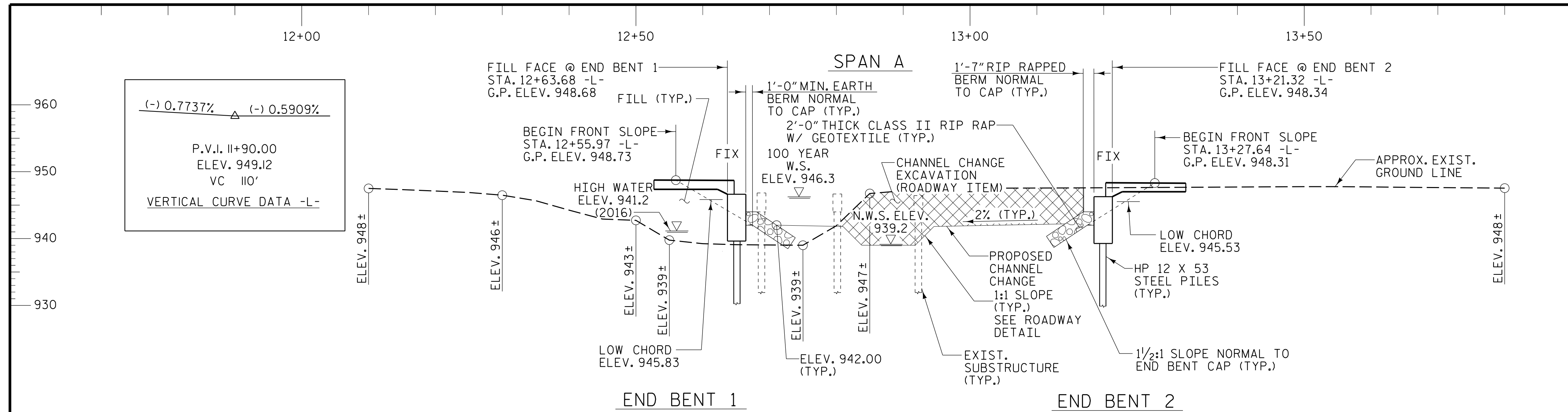
RIGHT OF WAY DATE: ROBERT C. LARSON, P.E.
PROJECT ENGINEER
OCTOBER 19, 2023

LETTING DATE: JACOB M. DAVIS, P.E.
PROJECT DESIGN ENGINEER
DECEMBER 09, 2025

NC DOT CONTACT: ANDREW BUCHANAN
DIVISION 14 PROJECT MANAGER

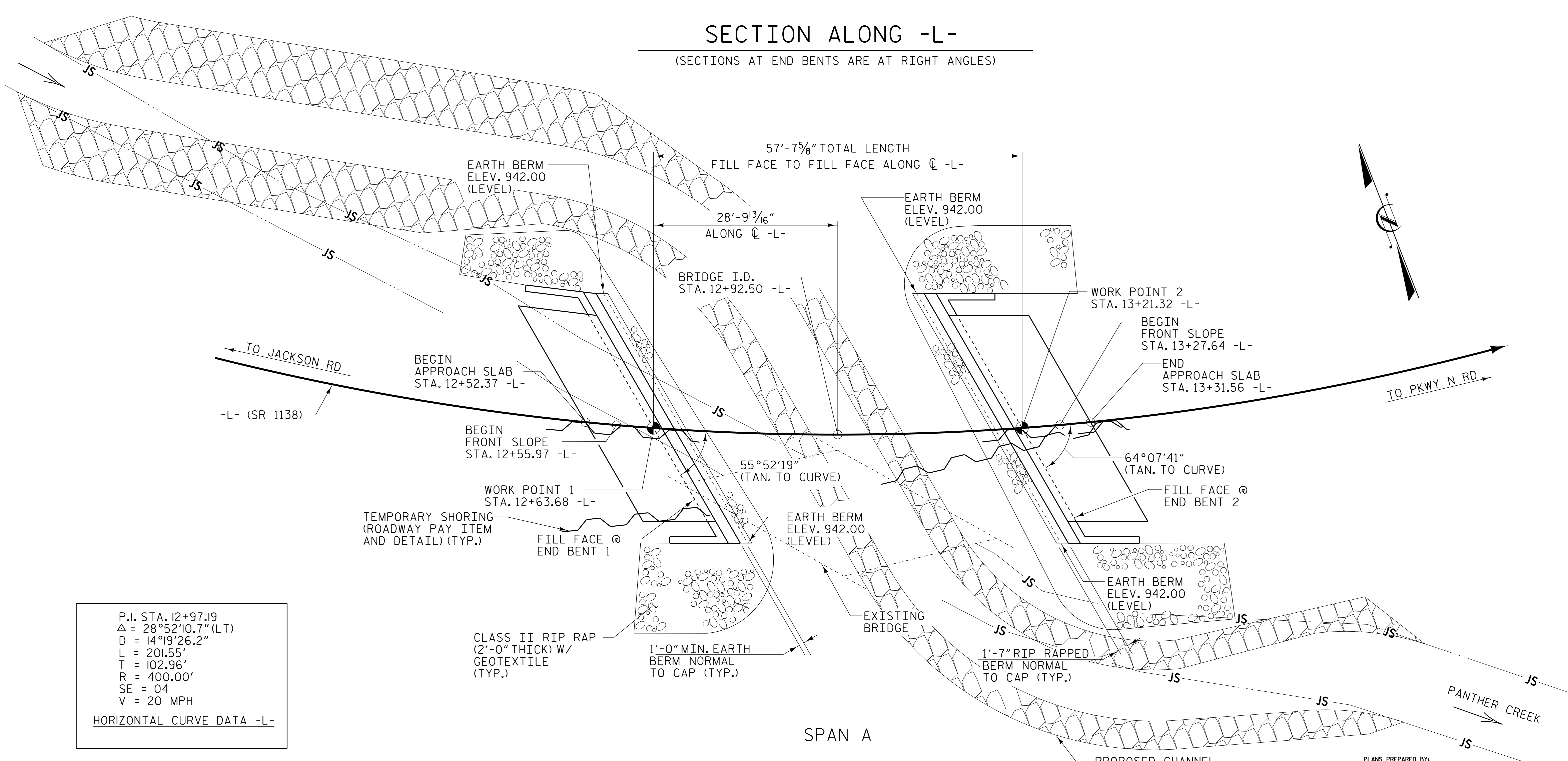


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11:40 AM
CONTRACT: DN00586



SECTION ALONG -L-

(SECTIONS AT END BENTS ARE AT RIGHT ANGLES)



PLAN

(NOTE: PILES NOT SHOWN FOR CLARITY)

OVERTOPPING FLOOD DATA:

OVERTOPPING DISCHARGE -	2165 CFS
FREQUENCY OF OVERTOPPING FLOOD -	>500 YEAR
OVERTOPPING FLOOD ELEVATION -	948.5
(OVERTOPPING @ STA. 13+30 -L-)	

PROJECT NO. BP14.R006
POLK COUNTY
 STATION: 12+92.50 -L-

SHEET 1 OF 5 REPLACES BRIDGE NO. 740143

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON -L- (SR 1138)
 OVER PANTHER CREEK
 BETWEEN JACKSON RD
 AND PKWY N RD

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

PLANS PREPARED BY:

N|V|5

NV5 ENGINEERS & CONSULTANTS, INC.
 3300 REGENCY PARKWAY, SUITE 100
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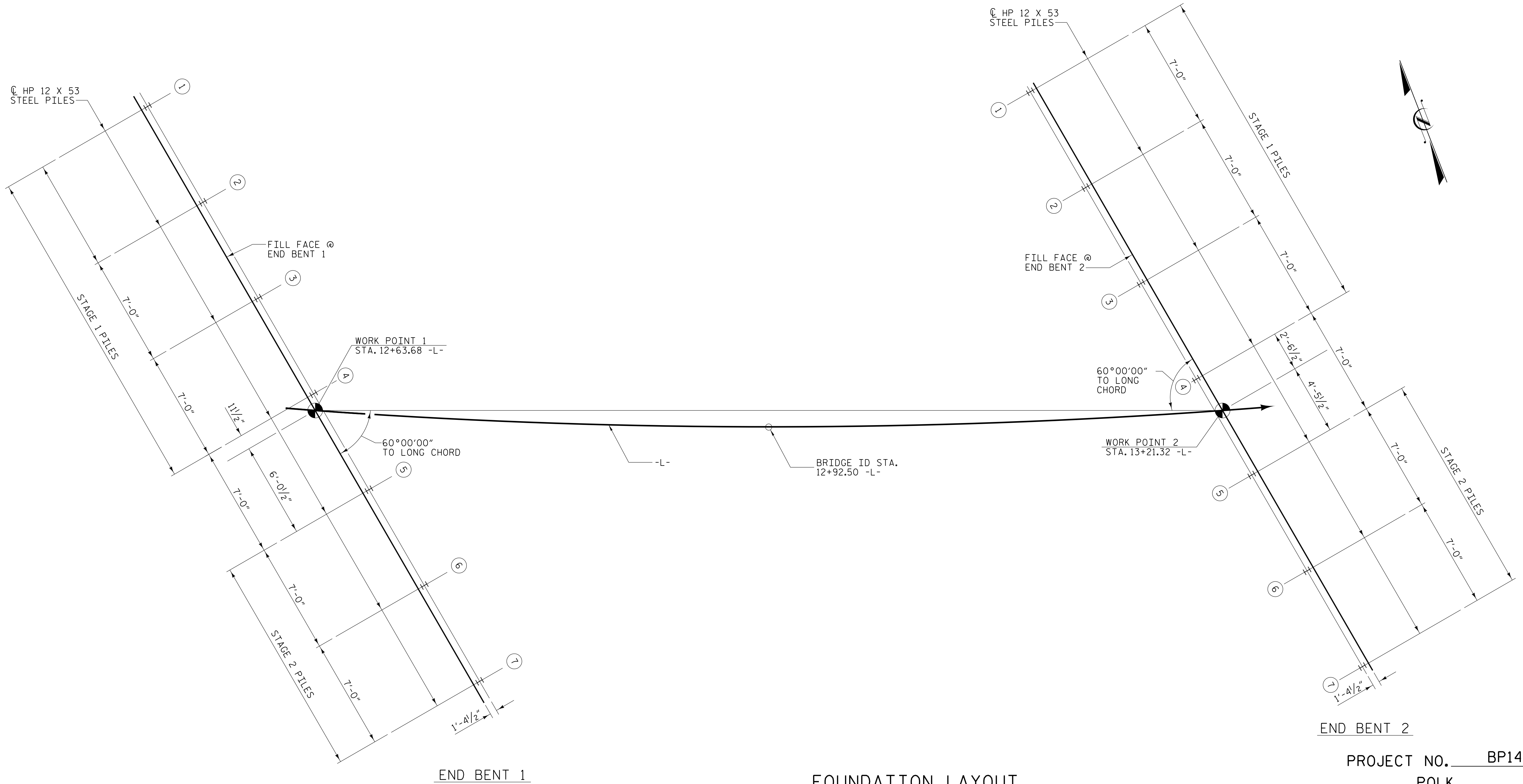
Signed By:
Jacob Davis
 10/16/2025 17:24

PROFESSIONAL ENGINEER
 SEAL 058455
 JACOB M. DAVIS

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DRAWN BY : J. M. DAVIS DATE : 4/23
 CHECKED BY : R. C. LARSON DATE : 4/23
 DESIGN ENGINEER OF RECORD: R. C. LARSON DATE : 3/24

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FOUNDATION LAYOUT

PROJECT NO. BP14.R006
POLK COUNTY
 STATION: 12+92.50 -L-

SHEET 2 OF 5

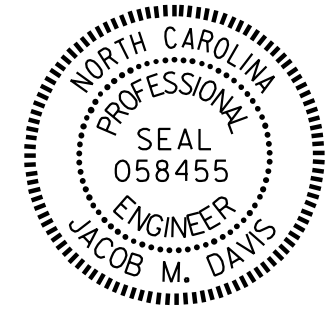
NOTES

- ALL PILES ARE HP 12 X 53.
- DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE AT THE BOTTOM OF THE CAP.
- FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- BEFORE FILLING HOLES FOR PILE EXCAVATION AT END BENT 1, DRIVE PILES TO THE REQUIRED DRIVING RESISTANCE IF THE BOTTOM OF THE HOLE CANNOT BE OBSERVED.
- FILL HOLES FOR PILE EXCAVATION AT END BENT 1 WITH CONCRETE OR GROUT.

PLANS PREPARED BY:

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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

FOR BRIDGE ON -L- (SR 1138)
 OVER PANTHER CREEK
 BETWEEN JACKSON RD
 AND PKWY N RD

DRAWN BY :	J. M. DAVIS	DATE :	6/23
CHECKED BY :	R. C. LARSON	DATE :	6/23
DESIGN ENGINEER OF RECORD:	R. C. LARSON	DATE :	6/23

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

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SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Resistance per Pile TONS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles*			Drilled-In Piles		
					Min Pile Tip (Tip No Higher Than) Elev FT	Required Driving Resistance (RDR)** per Pile TONS	Total Pile Redrives Quantity EACH	Predrilling Length per Pile Lin FT	Predrilling Elevation (Elev Not To Predrill Below) FT	Maximum Predrilling Dia INCHES	Pile Excavation (Bottom of Hole) Elev FT	Pile Exc Not In Soil per Pile Lin FT	Pile Exc In Soil per Pile Lin FT
End Bent 1, Piles 1-3	80	940.86	15			135				930.0	3.0	6.0	
End Bent 1, Piles 4-7	80	942.21	20			135				926.1	3.0	12.0	
End Bent 2, Piles 1-3	80	940.48	20		924.9	135							
End Bent 2, Piles 4-7	80	941.97	20		924.9	135							

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

** RDR = $\frac{\text{Factored Resistance} + \text{Factored Downdrag Load} + \text{Factored Dead Load}}{\text{Dynamic Resistance Factor}} + \text{Nominal Downdrag Resistance} + \frac{\text{Nominal Scour Resistance}}{\text{Scour Resistance Factor}}$

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile TONS	Factored Downdrag Load per Pile TONS	Factored Dead Load* per Pile TONS	Dynamic Resistance Factor	Nominal Downdrag Resistance per Pile TONS	Nominal Scour Resistance per Pile TONS	Scour Resistance Factor (Default = 1.00)
End Bent 1, Piles 1-7	80			0.60			1.00
End Bent 2, Piles 1-7	80			0.60			1.00

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

SUMMARY OF PDA/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Pile Driving Analyzer (PDA)				Pile Order Lengths	
End Bent/ Bent No	PDA Testing Required? YES or MAYBE	PDA Test Pile Length FT	Total PDA Testing Quantity EACH	End Bent/ Bent No(s)	Pile Order Length Basis* EST or PDA
End Bent 2	Maybe	20	1		

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

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 Required? YES or MAYBE	Steel Pile Points			Steel Pile Tips Required? YES
		Pipe Pile Cutting Shoes Required? YES	Pipe Pile Conical Points Required? YES	H-Pile Points Required? YES	
End Bent 2, Piles 1-7				Yes	
TOTAL QTY:				7	


PROJECT NO. BP14.R006

Polk COUNTY

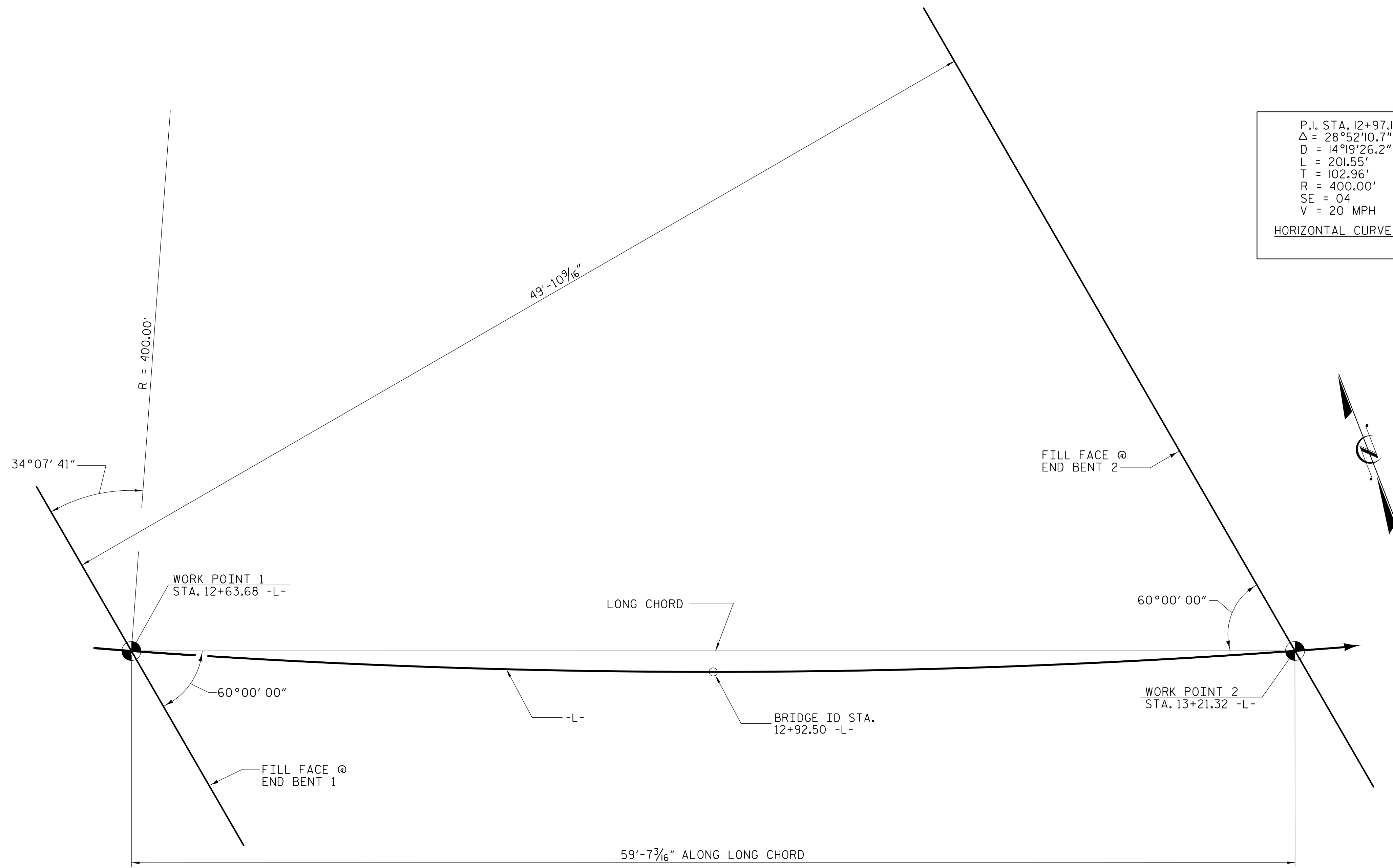
STATION: 12+92.50 -L-

NOTES:

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Thomas J. Daily, PE and 045672) on 06-23-2023.
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 will determine the need for PDA Testing and Pipe Pile Plates when PDAs or plates may be required.

	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH	
	PILE FOUNDATION TABLES	
SIGNATURE _____	DATE _____	
REVISIONS		
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	NO. <u>3</u> <u>4</u>	BY: _____ DATE: _____

P.I. STA. 12+97.19
 $\Delta = 28^\circ 52' 10.7''$ (LT)
 $D = 14^\circ 19' 26.2''$
 $L = 201.55'$
 $T = 102.96'$
 $R = 400.00'$
 $SE = 04$
 $V = 20$ MPH
 HORIZONTAL CURVE DATA -L-



LONG CHORD LAYOUT
 END BENTS ARE PARALLEL

PROJECT NO. BP14.R006
POLK COUNTY
 STATION: 12+92.50 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON -L- (SR 1138)
 OVER PANTHER CREEK
 BETWEEN JACKSON RD
 AND PKWY N RD

PLANS PREPARED BY:
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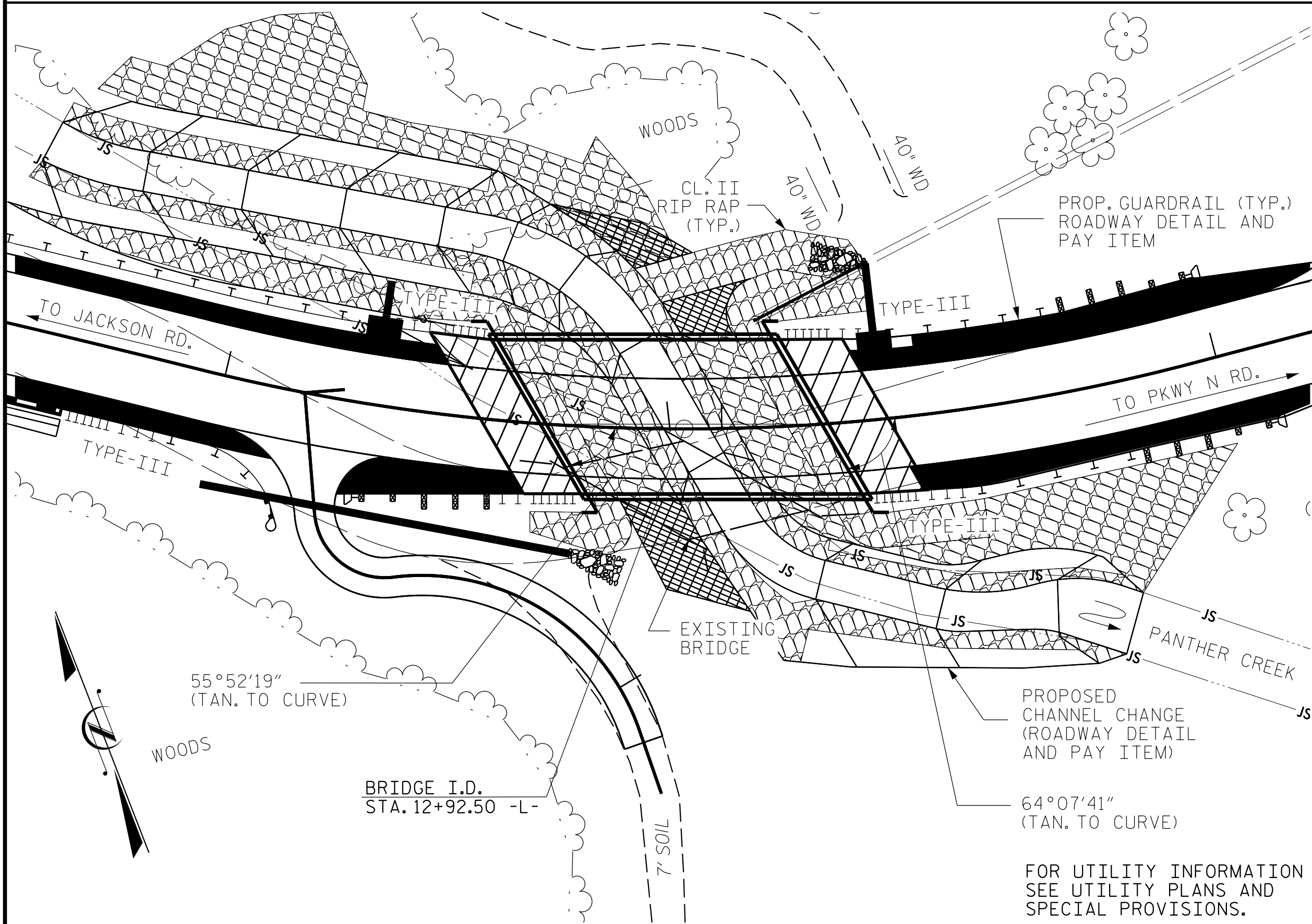
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DRAWN BY : J. M. DAVIS DATE : 7/24
 CHECKED BY : R. C. LARSON DATE : 7/24
 DESIGN ENGINEER OF RECORD: R. C. LARSON DATE : 7/24

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

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BM #2: RR SPIKE IN BASE 10" OAK; 63.6' RT STA. 12+75 -L-; ELEV. 953.88 NAVD 88



LOCATION SKETCH

NOTES

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENT 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.
- 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 12+92.50 -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 EXISTING STRUCTURE CONSISTING OF ONE SPAN @ 25'-7"; 19'-4" CLEAR ROADWAY WIDTH AND TIMBER FLOOR ON STEEL BEAMS AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, THE LOAD LIMIT MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
- THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
- REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18- EVALUATING SCOUR AT BRIDGES."
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.
- FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.
- FOR CORED SLAB AND BOX BEAM POST TENSIONING, SEE SPECIAL PROVISIONS.

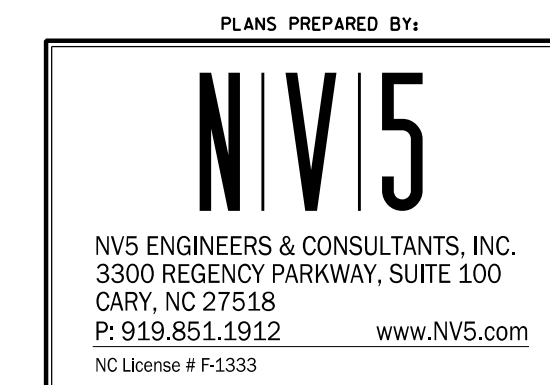
TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE @ STATION 12+92.50 -L-	ASBESTOS ASSESSMENT	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	CONCRETE WEARING SURFACE	CLASS A CONCRETE	BRIDGE APPROACH SLABS @ STATION 12+92.50 -L-	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES	STEEL PILE POINTS	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS			
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	EACH	NO.	LIN. FT.	EA.	LIN. FT.	TONS	SO. YDS.	LUMP SUM	NO.	LIN. FT.	
SUPERSTRUCTURE					1695		LUMP SUM					110.29				LUMP SUM	11	605.00	
END BENT 1			66.0	21.0		35.8		3744	7	7	125		118	131					
END BENT 2						35.6		3611	7	7	140	7	140	156					
TOTAL	LUMP SUM	LUMP SUM	66.0	21.0	1695	71.4	LUMP SUM	7355	14	14	265	7	110.29	258	287	LUMP SUM	11	605.00	

PROJECT NO. BP14.R006
POLK COUNTY
 STATION: 12+92.50 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON
 SR1138 (LAKE ADGER ROAD)
 OVER PANTHER CREEK BETWEEN
 JACKSON RD AND PKWY N RD



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DRAWN BY : J. M. DAVIS DATE : 4/23
 CHECKED BY : R. C. LARSON DATE : 4/23
 DESIGN ENGINEER OF RECORD: R. C. LARSON DATE : 3/24

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

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

LOAD TYPE	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γ LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD	HL-93 (INVENTORY)	N/A	1	1.16	-	1.75	0.249	1.36	55'	EL	26.923	0.659	1.21	55'	EL	10.769	0.80	0.249	1.16	55'	EL	26.923		
	HL-93 (OPERATING)	N/A		1.56	-	1.35	0.249	1.76	55'	EL	26.923	0.659	1.56	55'	EL	10.769	N/A	-	-	-	-	-		
	HS-20 (INVENTORY)	36.000	2	1.42	51.265	1.75	0.249	1.70	55'	EL	26.923	0.659	1.42	55'	EL	10.769	0.80	0.249	1.46	55'	EL	26.923		
	HS-20 (OPERATING)	36.000		1.85	66.455	1.35	0.249	2.20	55'	EL	26.923	0.659	1.85	55'	EL	10.769	N/A	-	-	-	-	-		
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		3.06	41.264	1.4	0.249	4.46	55'	EL	26.923	0.659	3.96	55'	EL	10.769	0.80	0.249	3.06	55'	EL	26.923	
		SNGARBS2	20.000		2.37	47.473	1.4	0.249	3.46	55'	EL	26.923	0.659	2.90	55'	EL	10.769	0.80	0.249	2.37	55'	EL	26.923	
		SNAGRIS2	22.000		2.29	50.392	1.4	0.249	3.34	55'	EL	26.923	0.659	2.72	55'	EL	10.769	0.80	0.249	2.29	55'	EL	26.923	
		SNCOTTS3	27.250		1.52	41.521	1.4	0.249	2.22	55'	EL	26.923	0.659	1.98	55'	EL	10.769	0.80	0.249	1.52	55'	EL	26.923	
		SNAGGRS4	34.925		1.31	45.740	1.4	0.249	1.91	55'	EL	26.923	0.659	1.71	55'	EL	10.769	0.80	0.249	1.31	55'	EL	26.923	
		SNS5A	35.550		1.28	45.439	1.4	0.249	1.86	55'	EL	26.923	0.659	1.76	55'	EL	10.769	0.80	0.249	1.28	55'	EL	26.923	
		SNS6A	39.950		1.19	47.481	1.4	0.249	1.73	55'	EL	26.923	0.659	1.63	55'	EL	10.769	0.80	0.249	1.19	55'	EL	26.923	
	SNS7B	42.000		1.13	47.562	1.4	0.249	1.65	55'	EL	26.923	0.659	1.64	55'	EL	10.769	0.80	0.249	1.13	55'	EL	26.923		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.45	47.984	1.4	0.249	2.12	55'	EL	26.923	0.659	1.92	55'	EL	10.769	0.80	0.249	1.45	55'	EL	26.923	
		TNT4A	33.075		1.46	48.451	1.4	0.249	2.14	55'	EL	26.923	0.659	1.85	55'	EL	10.769	0.80	0.249	1.46	55'	EL	26.923	
		TNT6A	41.600		1.21	50.478	1.4	0.249	1.77	55'	EL	26.923	0.659	1.81	55'	EL	10.769	0.80	0.249	1.21	55'	EL	26.923	
		TNT7A	42.000		1.23	51.576	1.4	0.249	1.79	55'	EL	26.923	0.659	1.67	55'	EL	10.769	0.80	0.249	1.23	55'	EL	26.923	
		TNT7B	42.000		1.28	53.827	1.4	0.249	1.87	55'	EL	26.923	0.659	1.58	55'	EL	10.769	0.80	0.249	1.28	55'	EL	26.923	
		TNAGRIT4	43.000		1.21	52.158	1.4	0.249	1.77	55'	EL	26.923	0.659	1.52	55'	EL	10.769	0.80	0.249	1.21	55'	EL	26.923	
TNAGT5A		45.000		1.14	51.134	1.4	0.249	1.66	55'	EL	26.923	0.659	1.55	55'	EL	10.769	0.80	0.249	1.14	55'	EL	26.923		
TNAGT5B	45.000	3	1.12	50.224	1.4	0.249	1.63	55'	EL	26.923	0.659	1.44	55'	EL	10.769	0.80	0.249	1.12	55'	EL	26.923			
EMERGENCY VEHICLE (EV)	EV2	28.750		1.64	47.205	1.3	0.249	2.62	55'	EL	29.620	0.659	1.64	55'	EL	5.420	0.80	0.249	1.78	55'	EL	26.923		
	EV3	43.000	4	1.11	47.752	1.3	0.249	1.70	55'	EL	26.920	0.659	1.11	55'	EL	5.420	0.80	0.249	1.16	55'	EL	26.923		

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

- 1.
- 2.
- 3.
- 4.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

2 DESIGN LOAD RATING (HS-20)

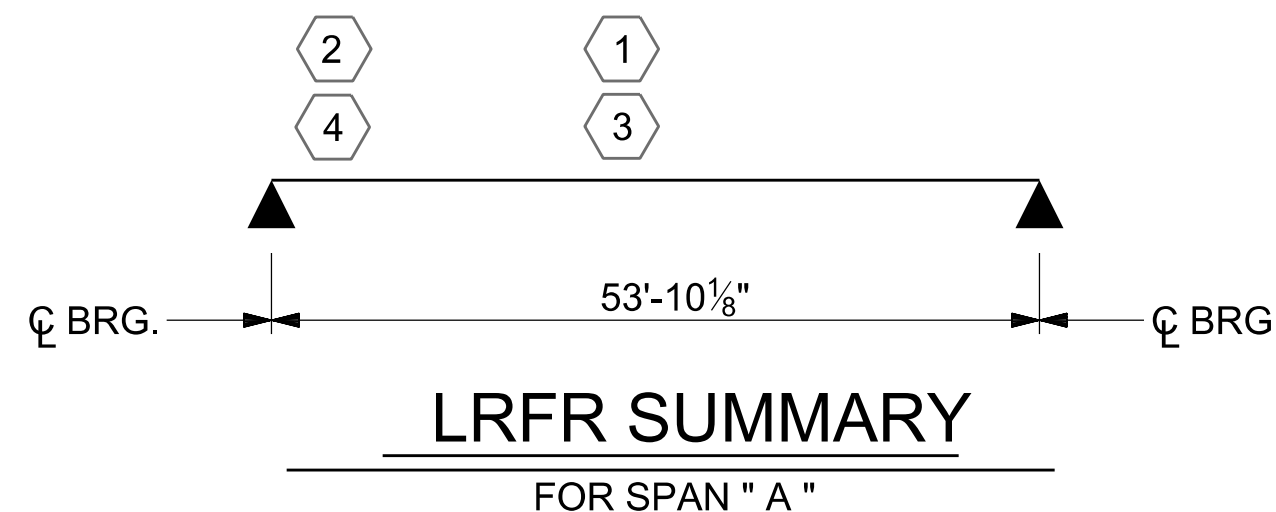
3 LEGAL LOAD RATING **

4 EMERGENCY VEHICLE LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



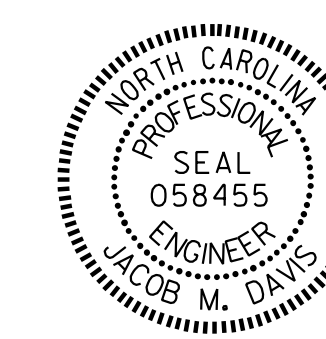
PROJECT NO. BP14.R006
POLK COUNTY
STATION: 12+92.50 -L-

DESIGN ENGINEER OF RECORD: R. C. LARSON	DATE: 6/23
ASSEMBLED BY: J. M. DAVIS	DATE: 5/23
CHECKED BY: R. C. LARSON	DATE: 5/23
DRAWN BY: MAA 1/08	REV. 11/12/08RR MAA/GM
CHECKED BY: GM/DI 2/08	REV. 10/1/18 MAA/GM
	REV. 04/23 BNB/AM

PLANS PREPARED BY:

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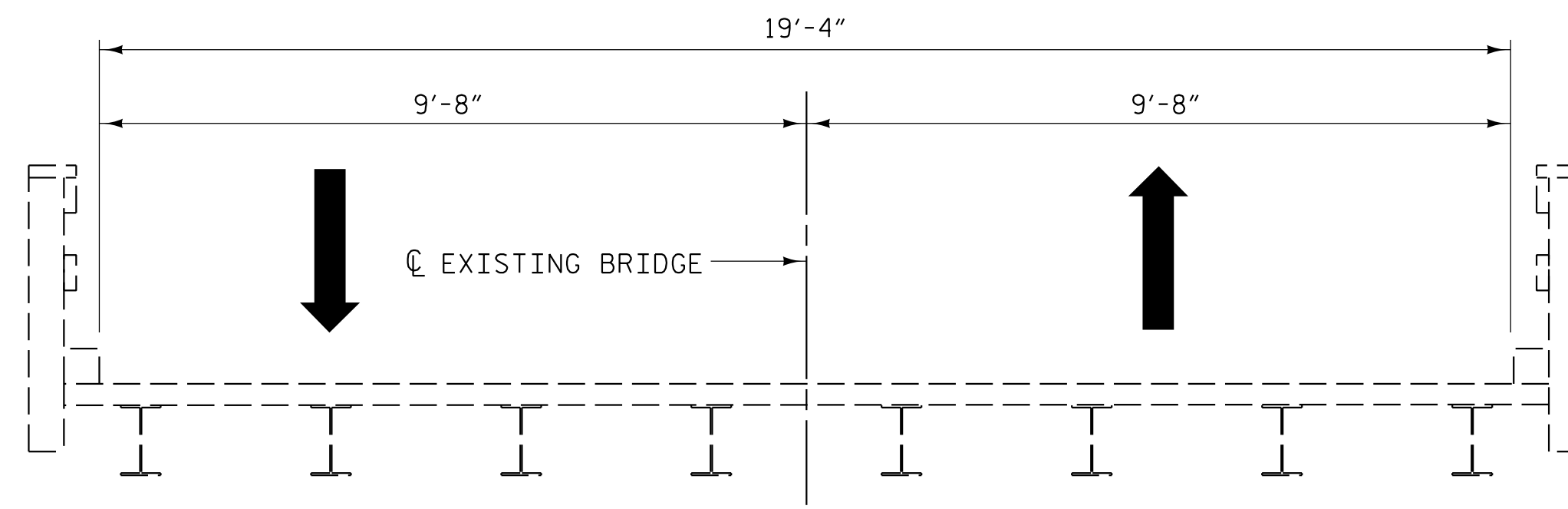
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

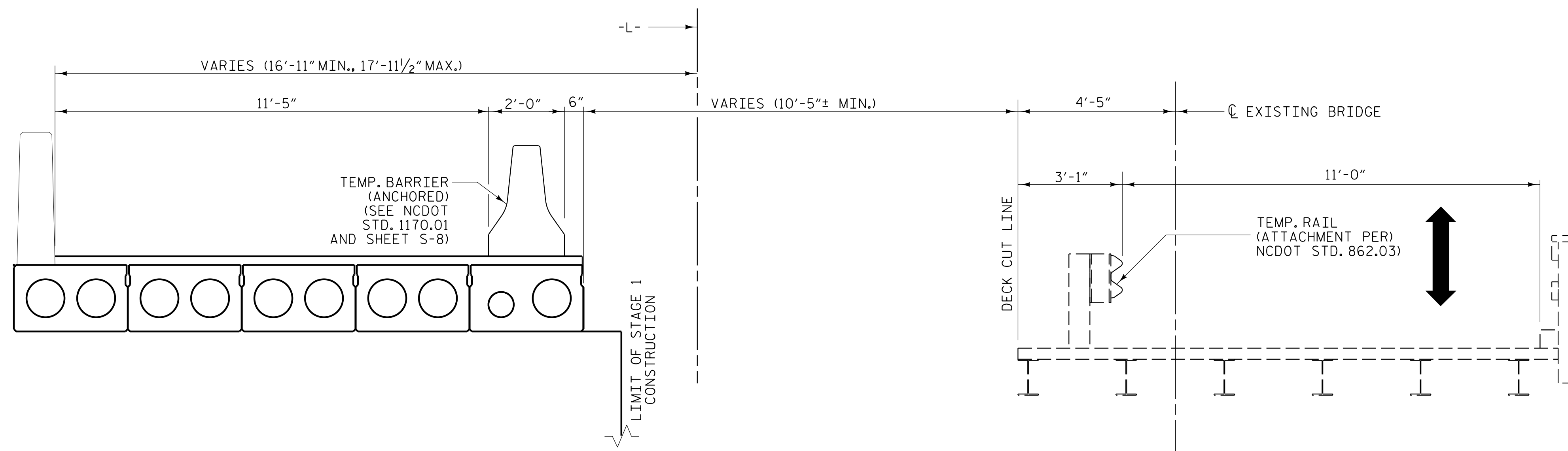
LRFR SUMMARY FOR
55' CORED SLAB UNIT
60° SKEW & 120° SKEW
(NON-INTERSTATE TRAFFIC)

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

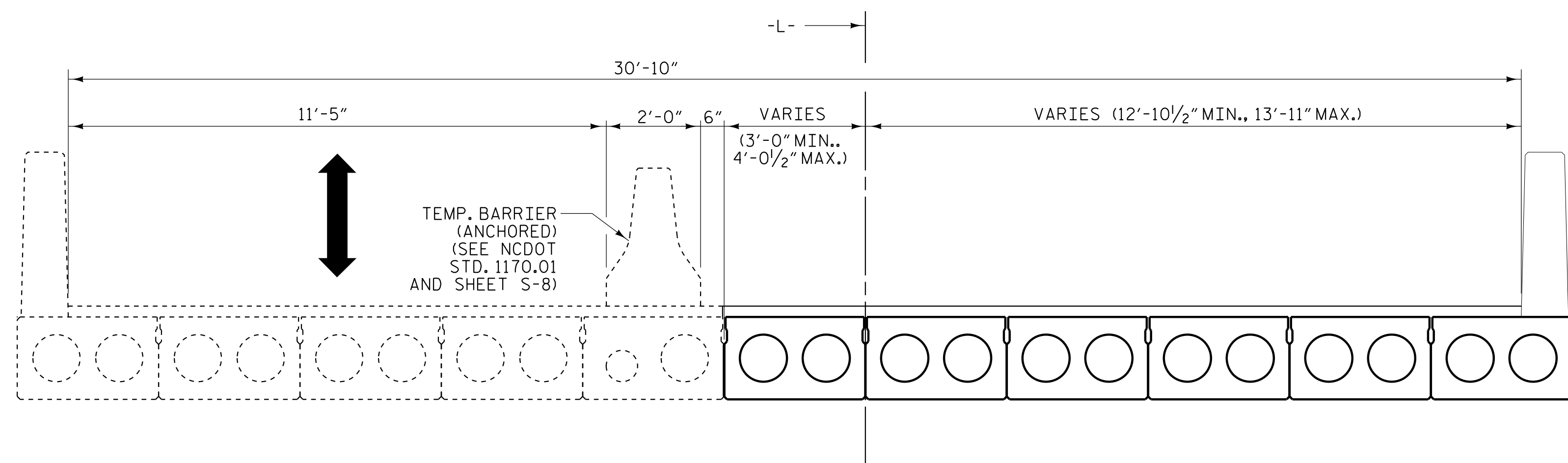
TOTAL SHEETS: 20



EXISTING BRIDGE



STAGE 1 CONSTRUCTION



STAGE 2 CONSTRUCTION

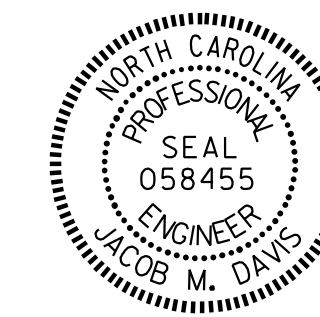
PROJECT NO. BP14.R006
POLK COUNTY
 STATION: 12+92.50 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
CONSTRUCTION SEQUENCE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-7
					TOTAL SHEETS 20

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10/9/2025 10:23:26 AM R:\Structures\Final Drawings\401.005.BP14.R006.SMU.PC01.007.dgn

DRAWN BY: J. M. DAVIS DATE: 4/23
 CHECKED BY: R. C. LARSON DATE: 4/23
 DESIGN ENGINEER OF RECORD: R. C. LARSON DATE: 4/23

NOTES

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

- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 3/4".
- B. 1/4" Ø BOLT WITH WASHER, BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED, AT THE CONTRACTORS OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 1/4" Ø GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATIVE SHALL BE APPROVED BY THE ENGINEER, BOLT LENGTH TO BE DETERMINED BY THE CONTRACTOR CONSIDERING VARIABLE THICKNESS OF WEARING SURFACE.

C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI.

D. STRUCTURAL CONCRETE INSERT ASSEMBLIES SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

THE COST OF THE STRUCTURAL CONCRETE INSERT ASSEMBLY, COMPLETE IN PLACE, SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS.

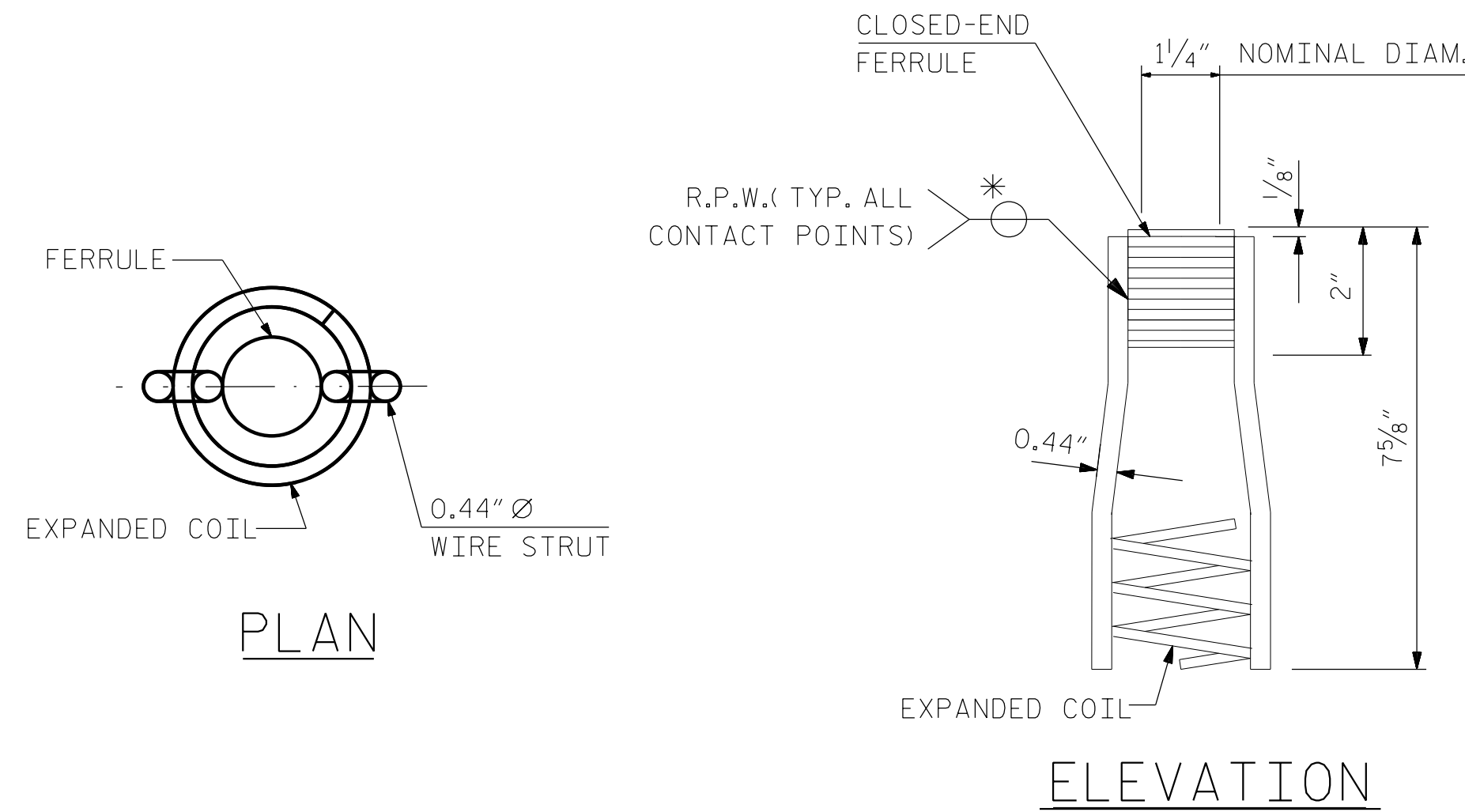
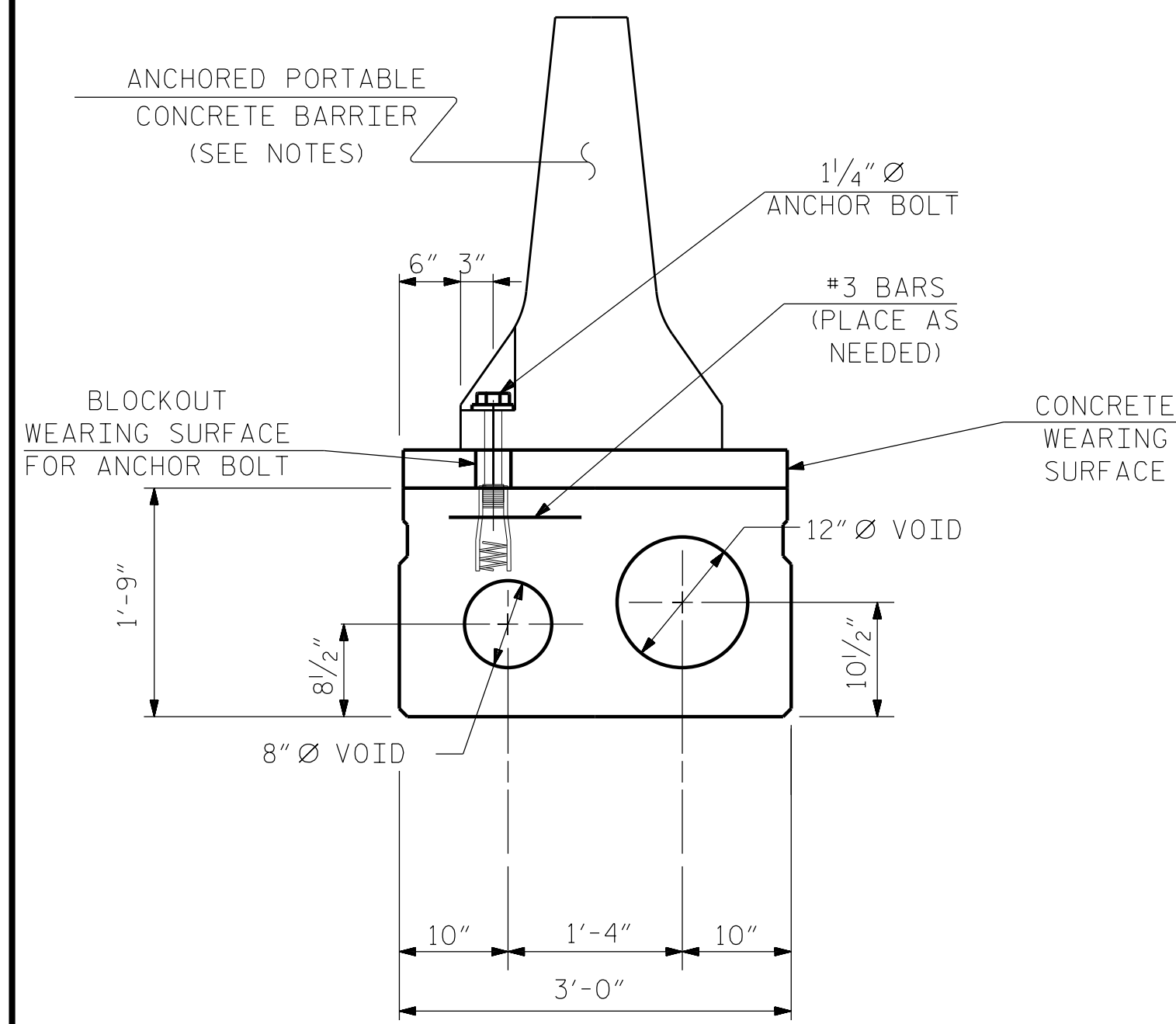
TO FACILITATE PLACEMENT OF THE STRUCTURAL CONCRETE INSERT ASSEMBLIES, #3 BARS MAY BE TIED TO THE ON #4 B7 BARS IN THE CORED SLAB UNITS. THE COST OF THE #3 BARS SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS.

STIRRUPS IN THE CORED SLAB UNITS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR STRUCTURAL CONCRETE INSERT ASSEMBLIES.

FERRULES TO BE PLUGGED DURING CASTING OF THE CORED SLAB UNITS AS RECOMMENDED BY THE MANUFACTURER. PROVIDE BLOCKOUT IN WEARING SURFACE AT EACH INSERT LOCATION.

ANCHORED PORTABLE CONCRETE BARRIERS SHALL BE AS SPECIFIED IN ROADWAY STANDARD DRAWING NO. 1170.01. SEE TRAFFIC CONTROL PLANS.

AFTER REMOVAL OF ANCHORED PORTABLE CONCRETE BARRIER, THE STRUCTURAL CONCRETE INSERTS AND BLOCKOUTS IN WEARING SURFACE SHALL BE FILLED WITH GROUT.

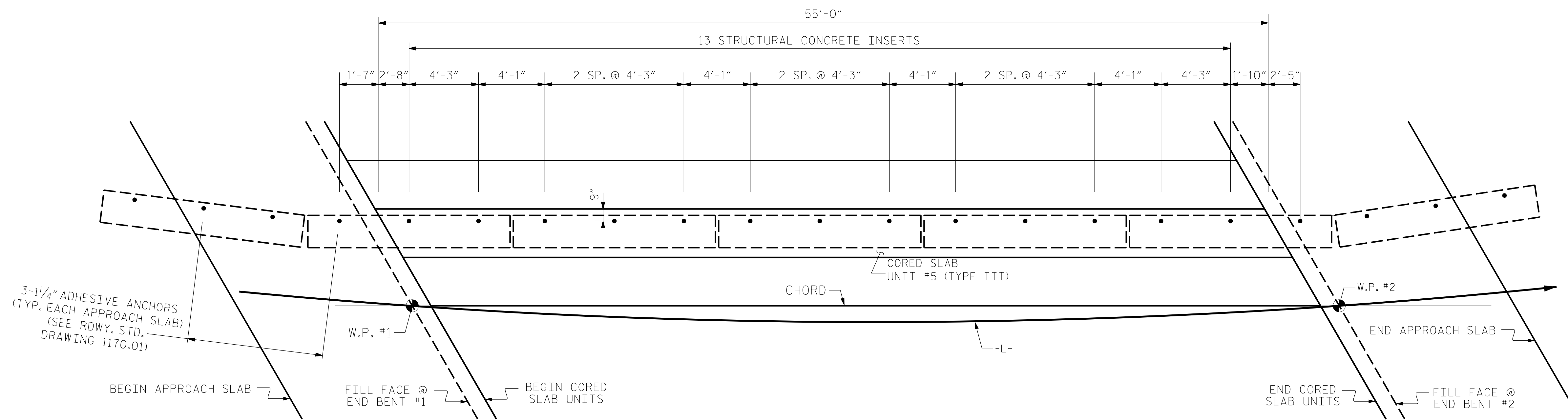


STRUCTURAL CONCRETE INSERT

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

CONCRETE INSERT LOCATION

(FOR 21" CORED SLAB, TYPE III UNIT)



CONCRETE INSERT SPACING

PROJECT NO. BP14.R006
 POLK COUNTY
 STATION: 12+92.50 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

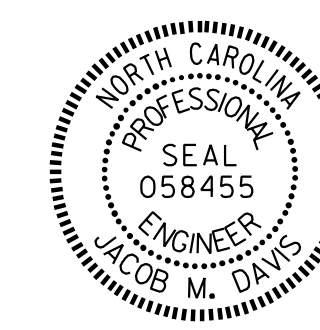
ANCHORED PORTABLE
 CONCRETE BARRIER
 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			20

PLANS PREPARED BY:

N|V|5

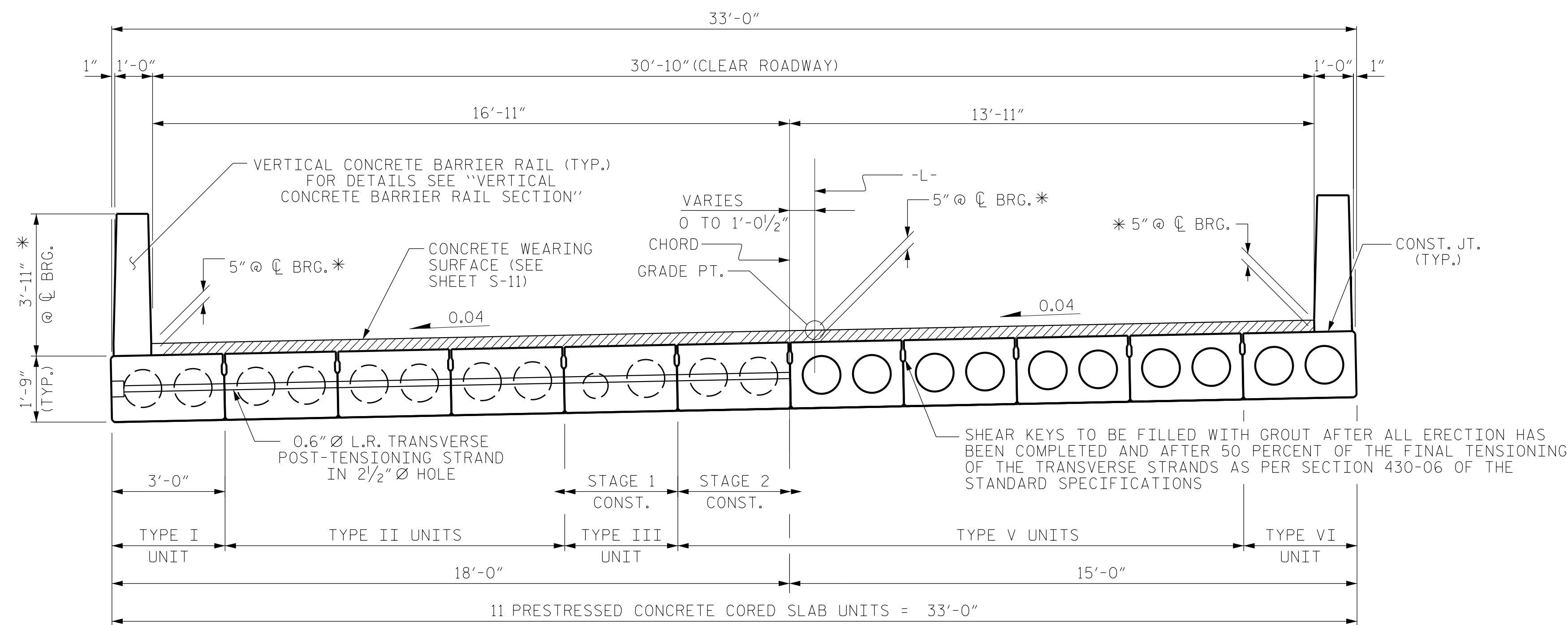
NV5 ENGINEERS & CONSULTANTS, INC.
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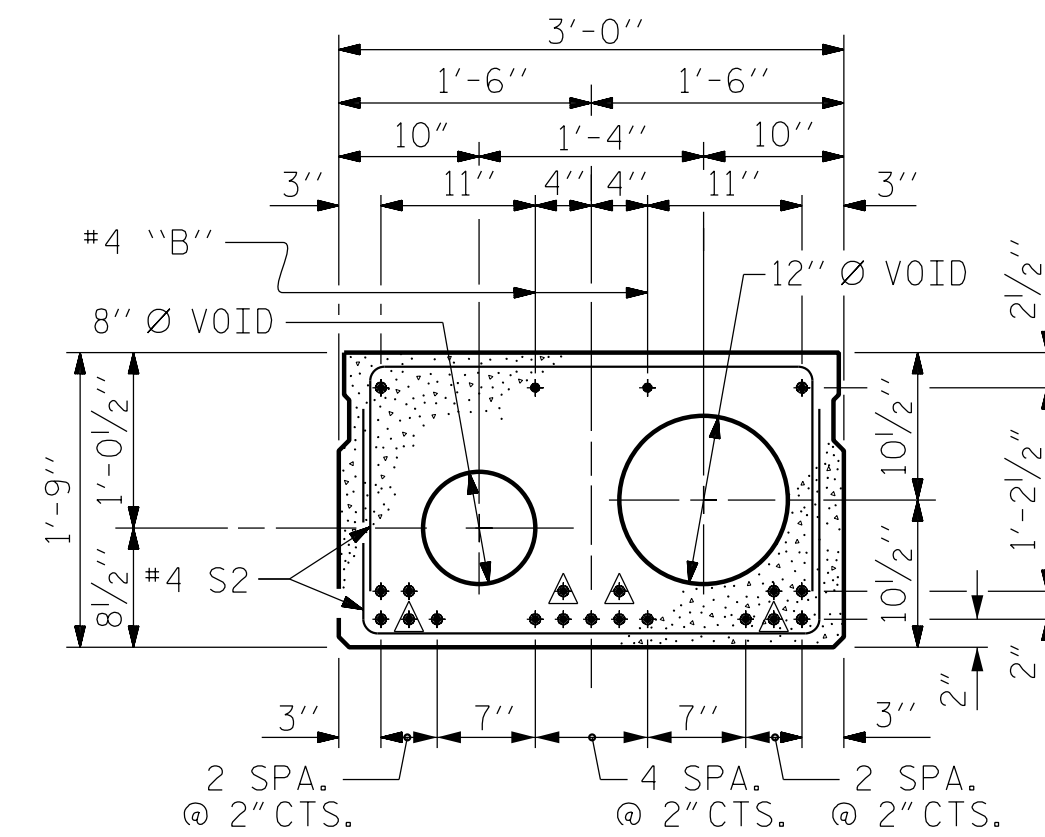
DRAWN BY: J. M. DAVIS DATE: 7/23
 CHECKED BY: R. C. LARSON DATE: 7/23
 DESIGN ENGINEER OF RECORD: R. C. LARSON DATE: 7/23

\$\$\$USERNAME\$\$\$
 \$\$\$DATE\$\$\$
 \$\$\$TIME\$\$\$
 \$\$\$STRUCTURES\Final Drawings\401.07_BP14.R006_SMU_PC02.008.dgn

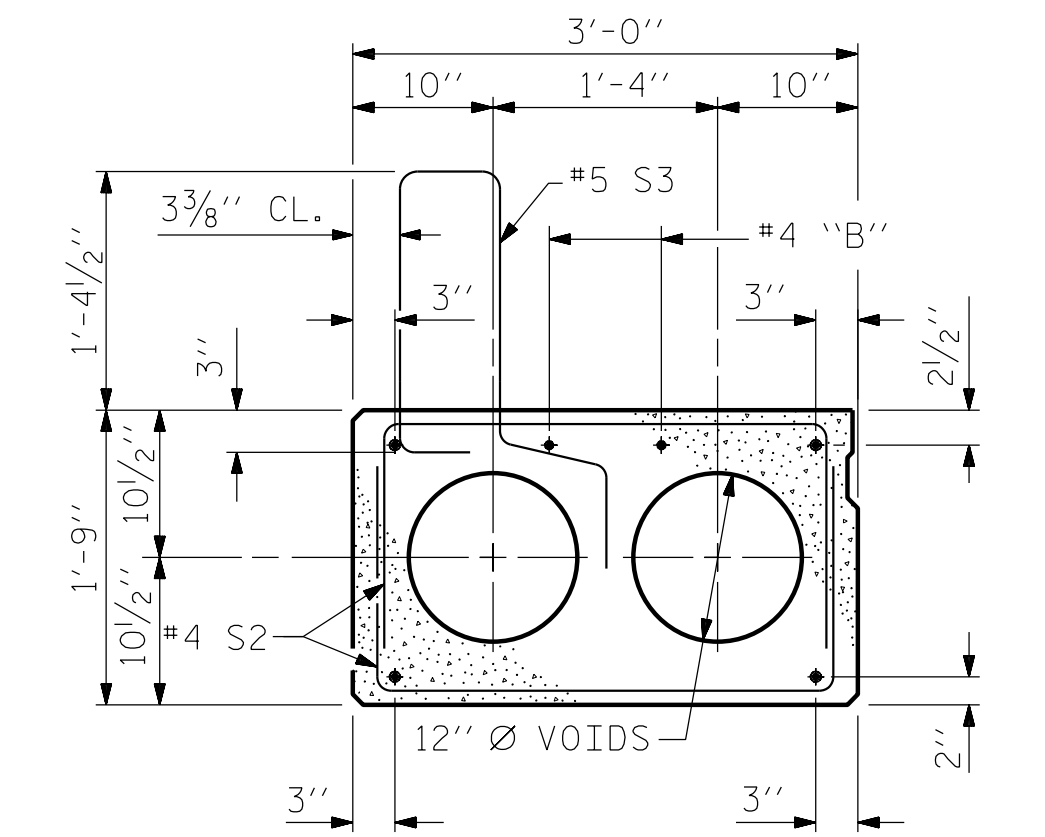


TYPICAL SECTION

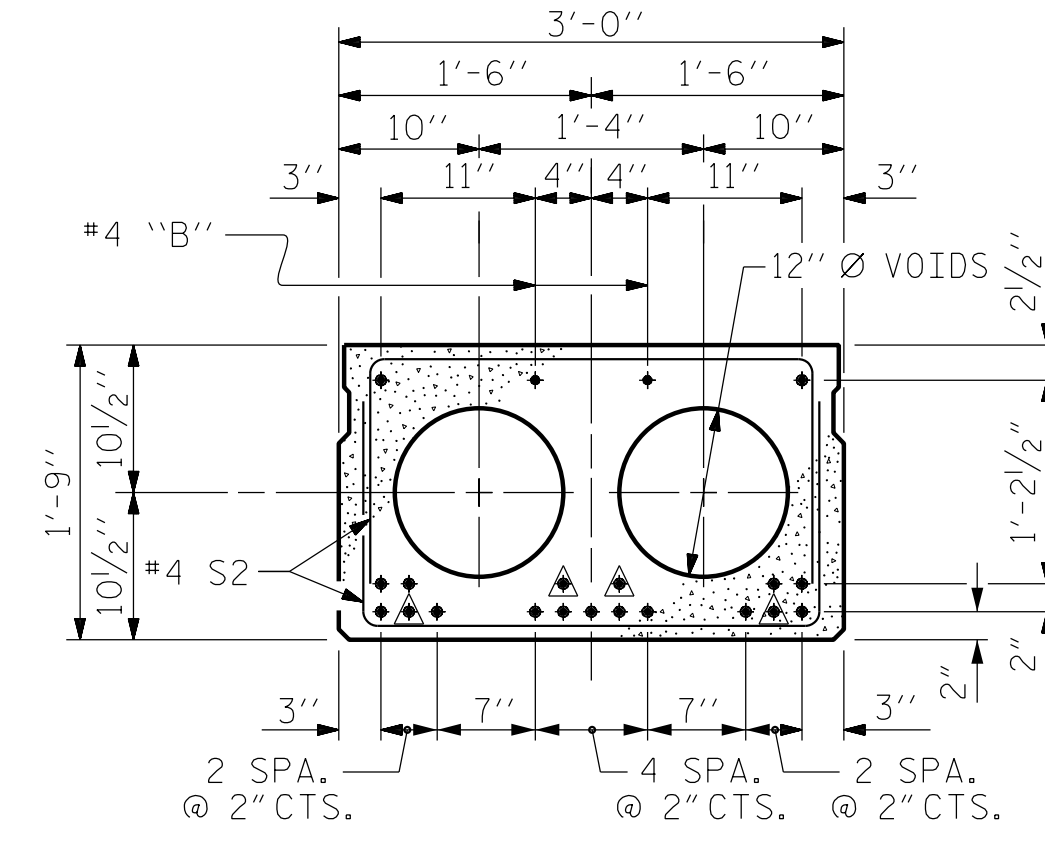
* - THE MAXIMUM BARRIER RAIL HEIGHT AND WEARING SURFACE THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND WEARING SURFACE THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND WEARING SURFACE THICKNESS SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



INTERIOR SLAB SECTION (50' & 55' UNIT) (TYPE III)
(19 STRANDS REQUIRED)



EXTERIOR SLAB SECTION (TYPE I & VI)
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION - TYPE II & V)

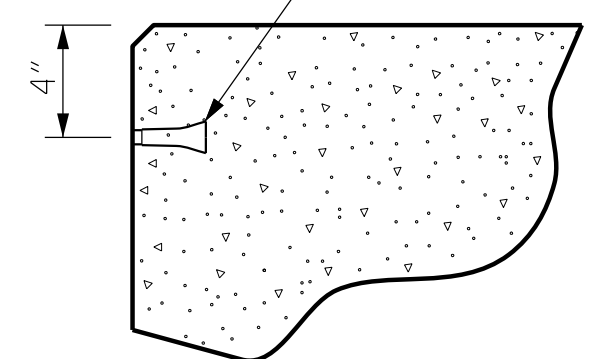


INTERIOR SLAB SECTION (50' & 55' UNIT) (TYPE II & V)
(19 STRANDS REQUIRED)

⚠ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

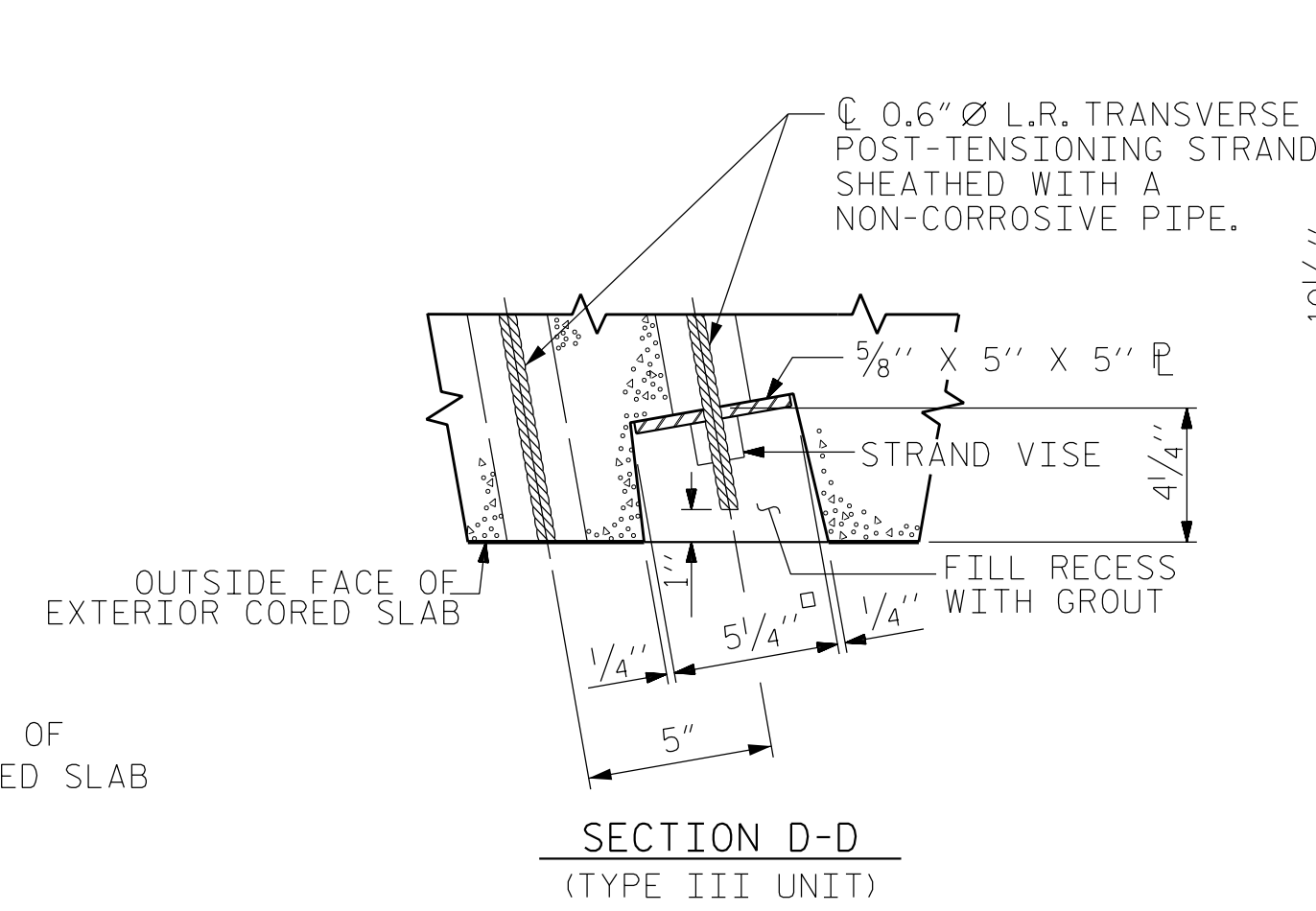
DEBONDING LEGEND

PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8" SIZE TO BE DETERMINED BY CONTRACTOR.

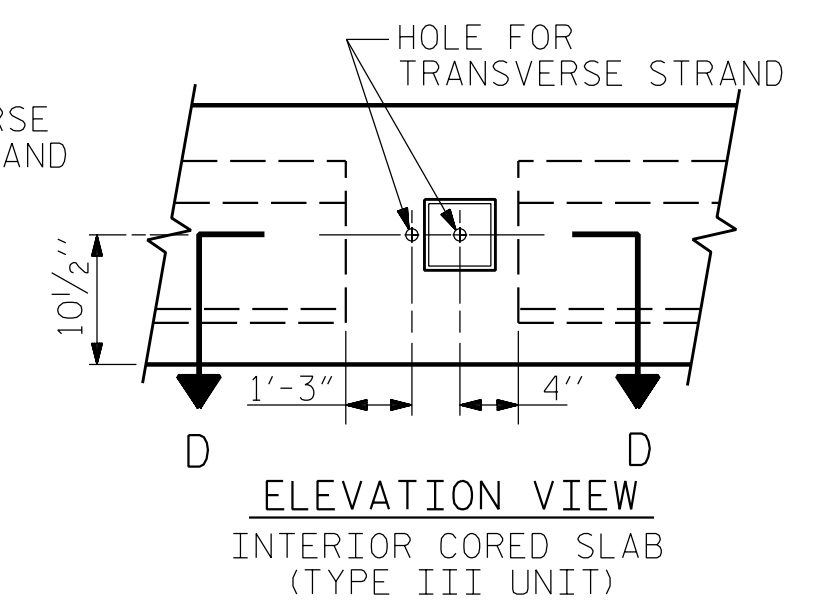


THREADED INSERT DETAIL

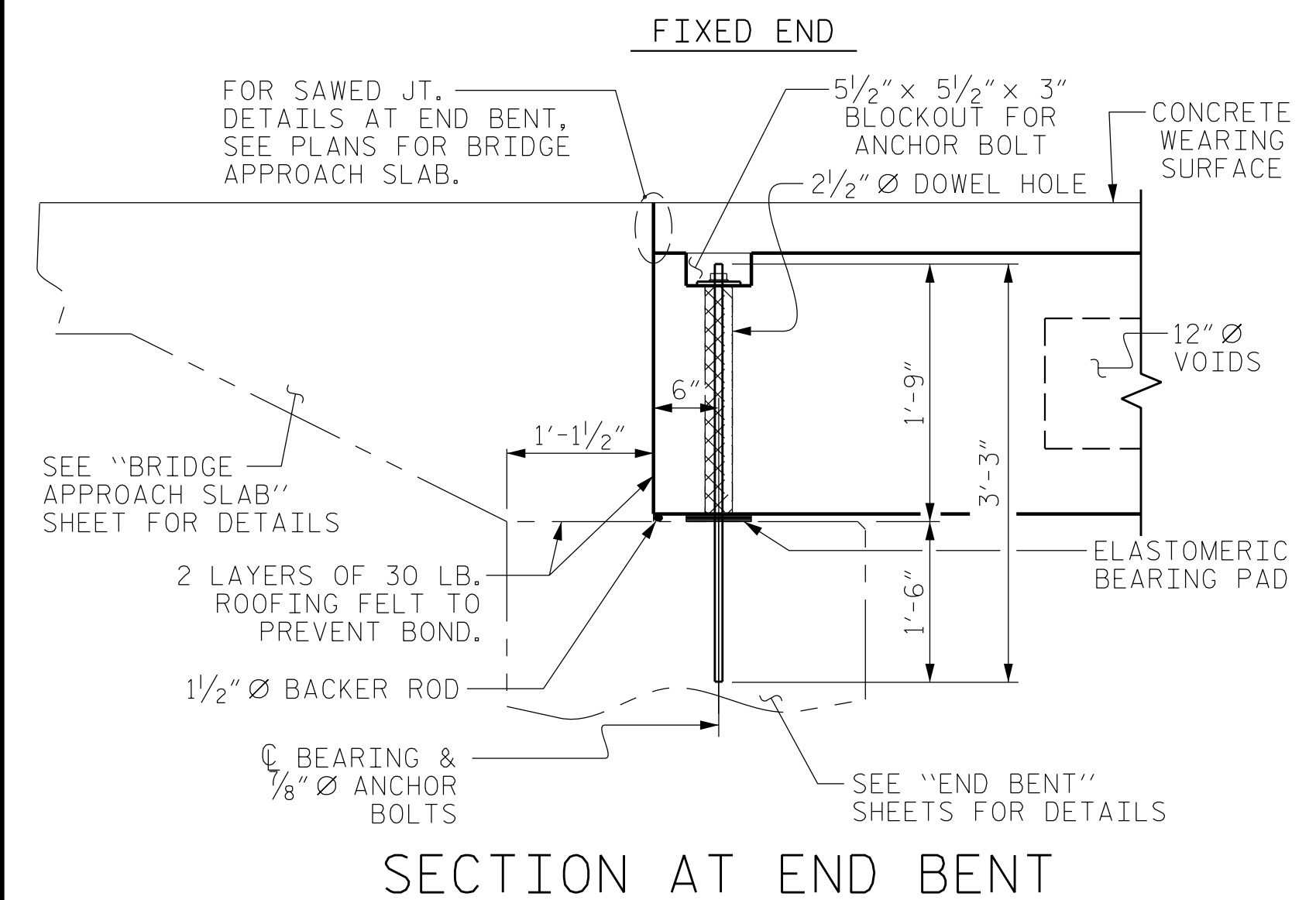
0.6" Ø LOW RELAXATION STRAND LAYOUT



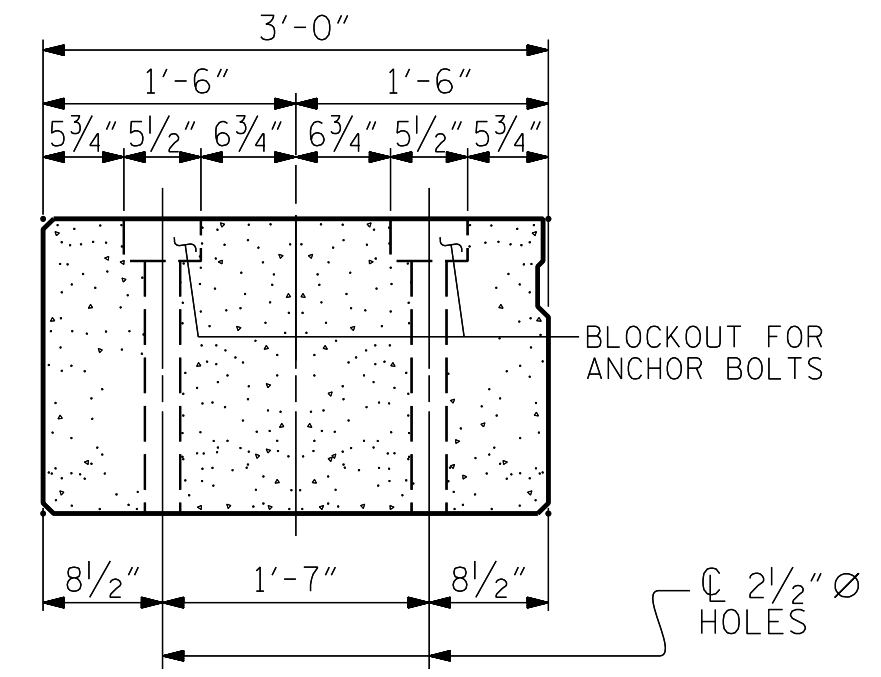
SECTION D-D (TYPE III UNIT)



ELEVATION VIEW INTERIOR CORED SLAB (TYPE III UNIT)



SECTION AT END BENT

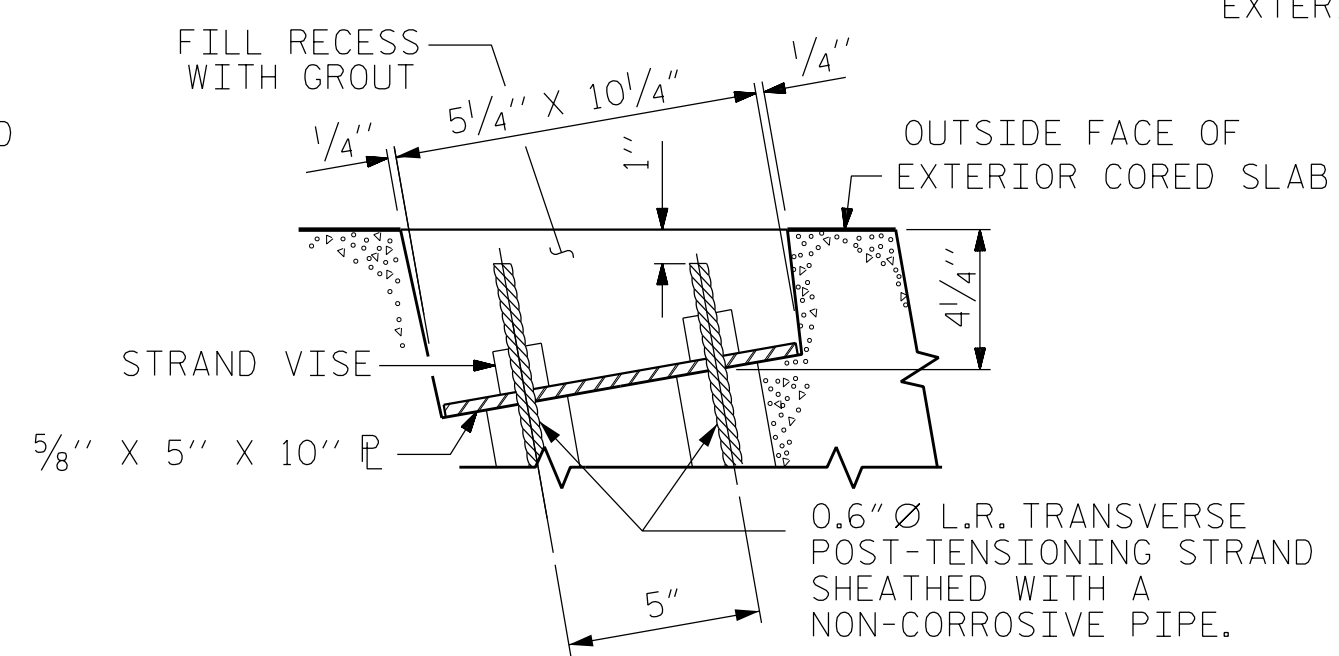


END ELEVATION

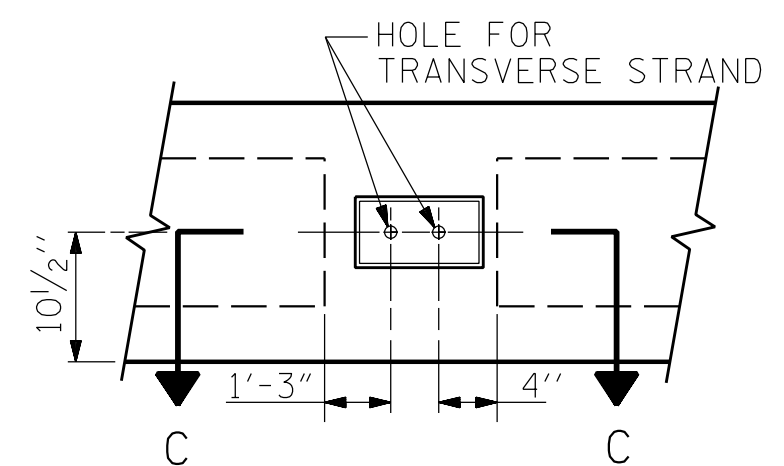
SHOWING LOCATION OF BLOCKOUT FOR ANCHOR BOLTS AND DOWEL HOLES.

SHEAR KEY DETAIL

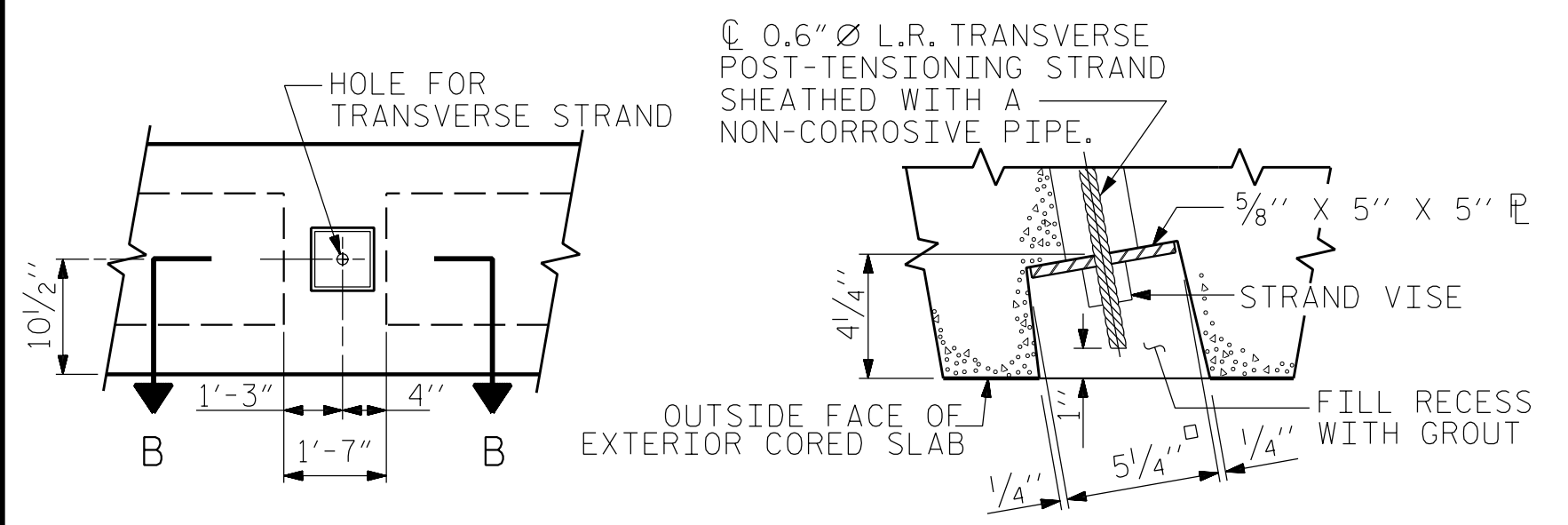
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



SECTION C-C (TYPE I UNIT)



ELEVATION VIEW LEFT EXTERIOR CORED SLAB (TYPE I UNIT)



SECTION B-B (TYPE VI UNIT)

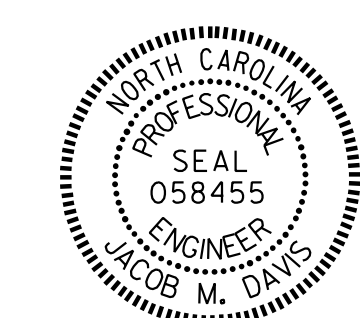
ELEVATION VIEW RIGHT EXTERIOR CORED SLAB (TYPE VI UNIT)

GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS

DESIGN ENGINEER OF RECORD: R. C. LARSON	DATE: 6/23
ASSEMBLED BY: R. C. LARSON	DATE: 10/22
CHECKED BY: J. M. DAVIS	DATE: 5/23
DRAWN BY: DGE 5/09	
CHECKED BY: BCH 6/09	

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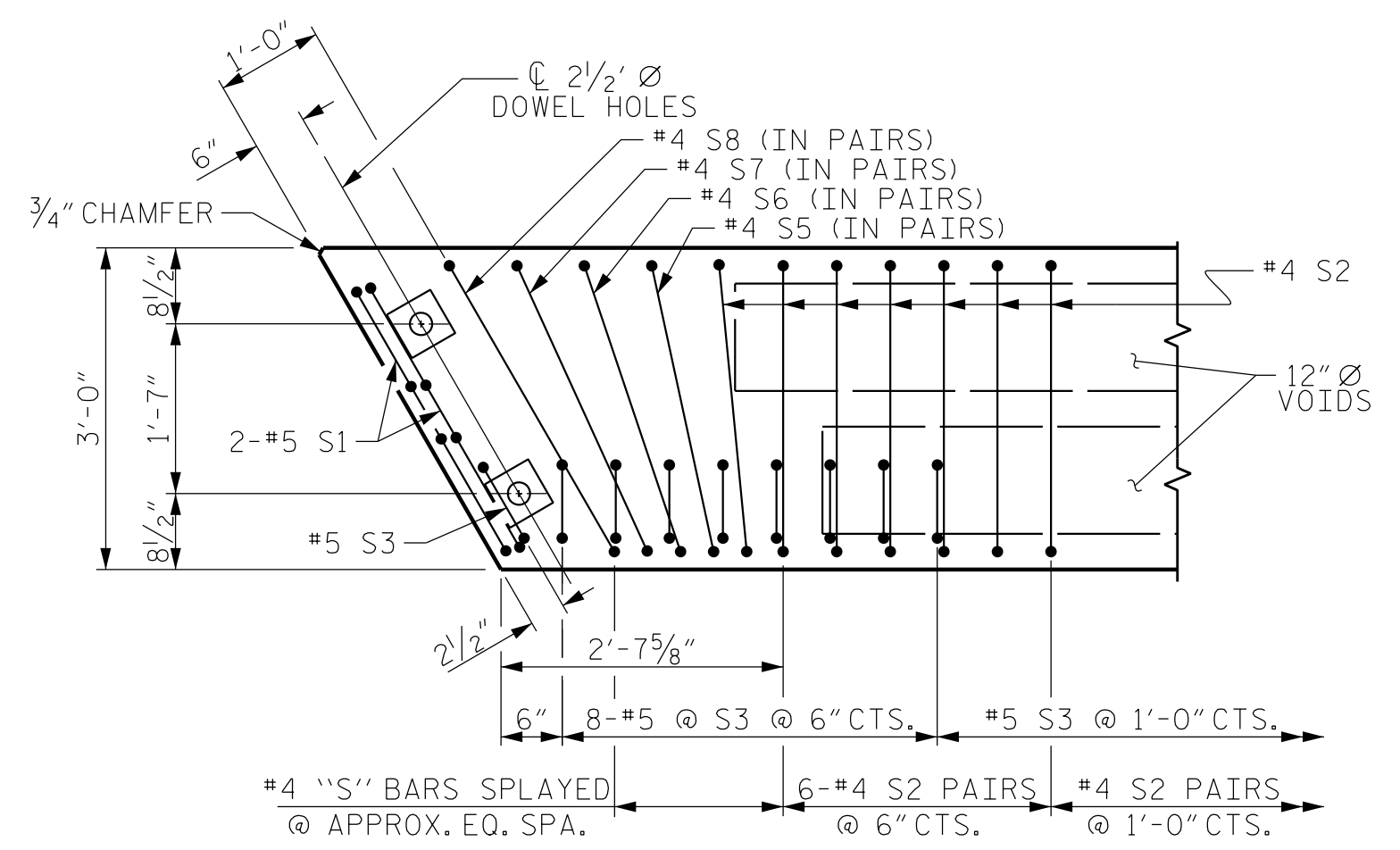
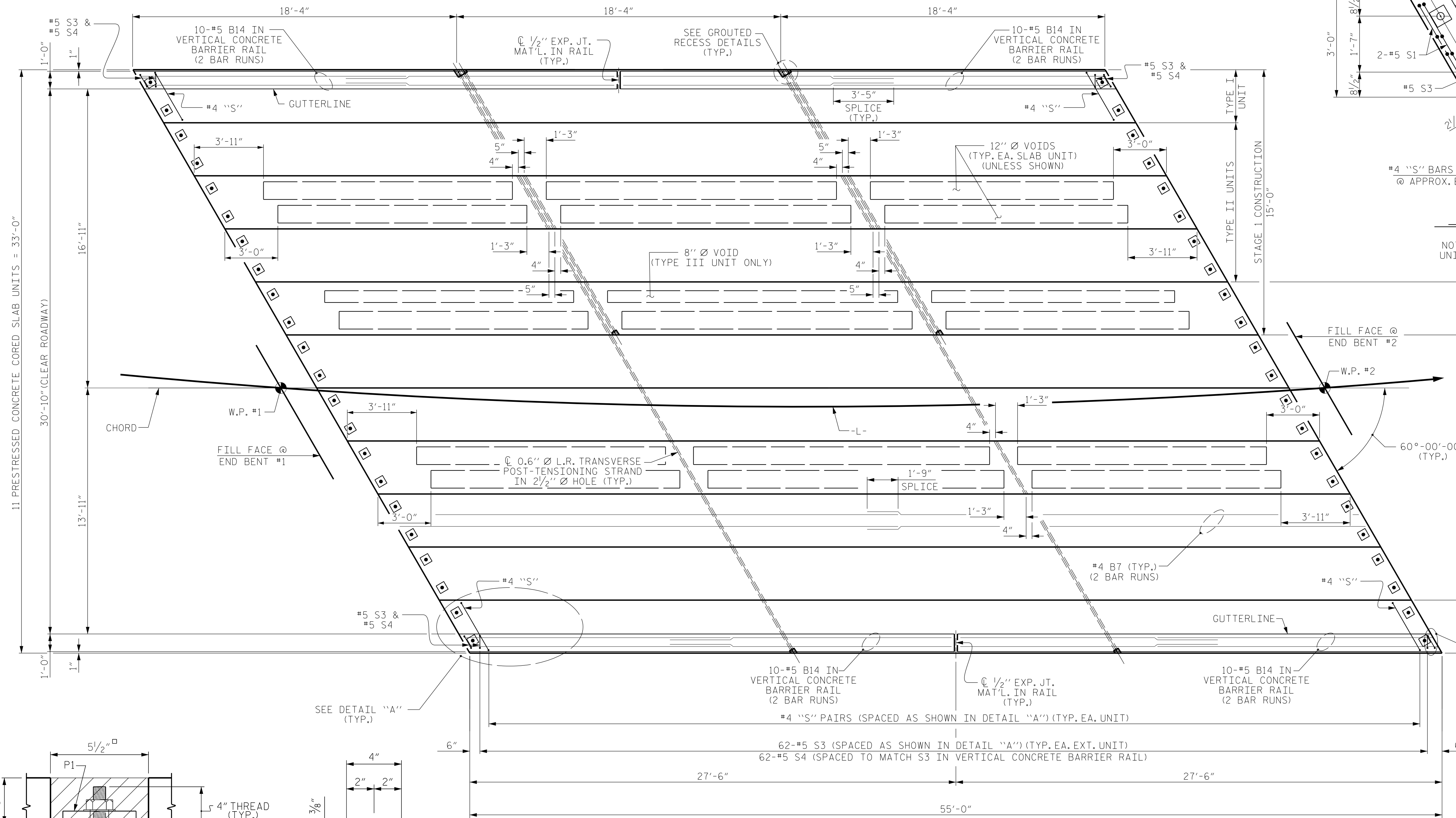


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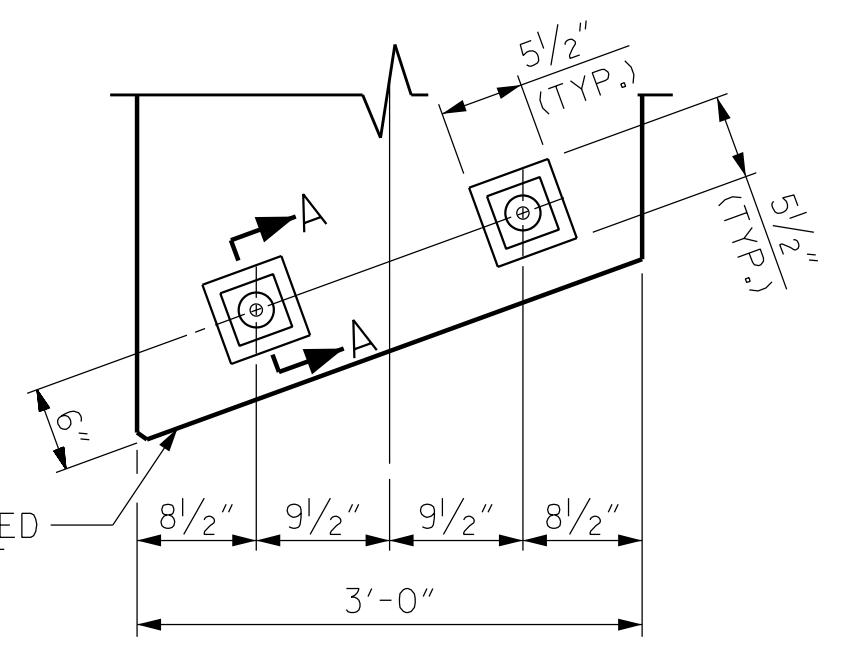
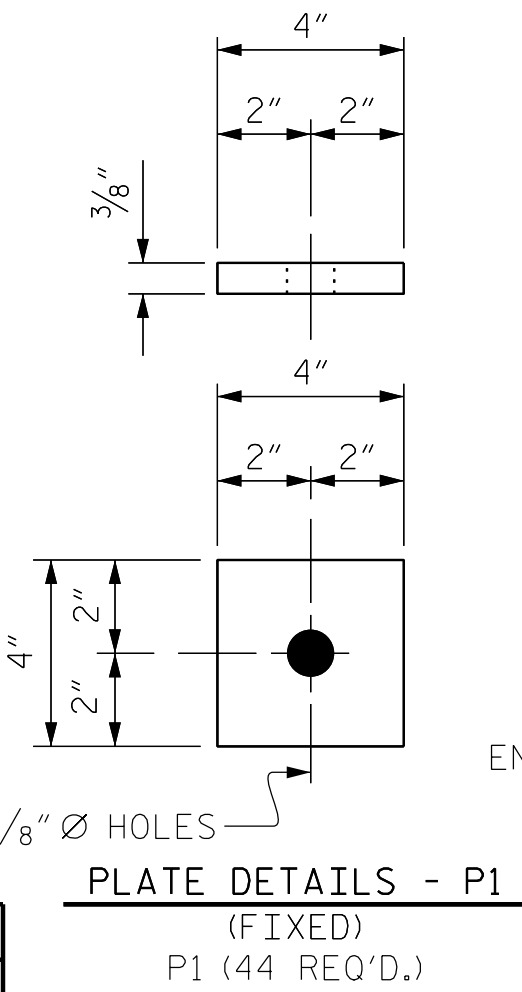
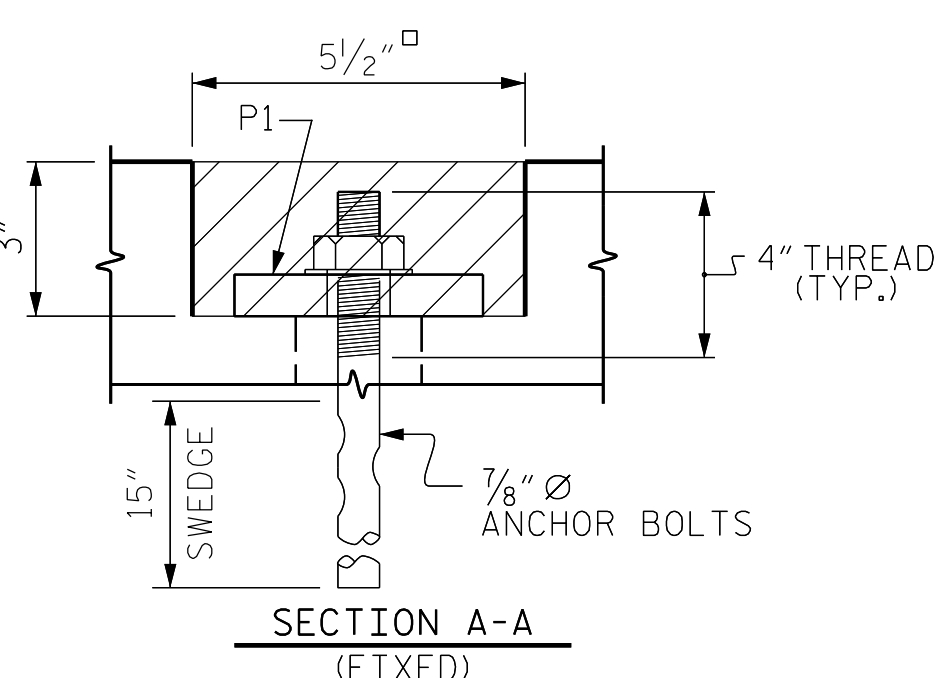
PROJECT NO. BP14.R006
POLK COUNTY
STATION: 12+92.50

SHEET 1 OF 4

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			20



DETAIL "A"
 (SIMILAR EACH END OF UNIT)
 NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.



BLOCKOUT DETAIL FOR ANCHOR BOLTS
 (TYPICAL EACH END)

PLAN OF UNIT

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PROJECT NO. BP14.R006
POLK COUNTY
 STATION: 12+92.50 -L-

SHEET 2 OF 4

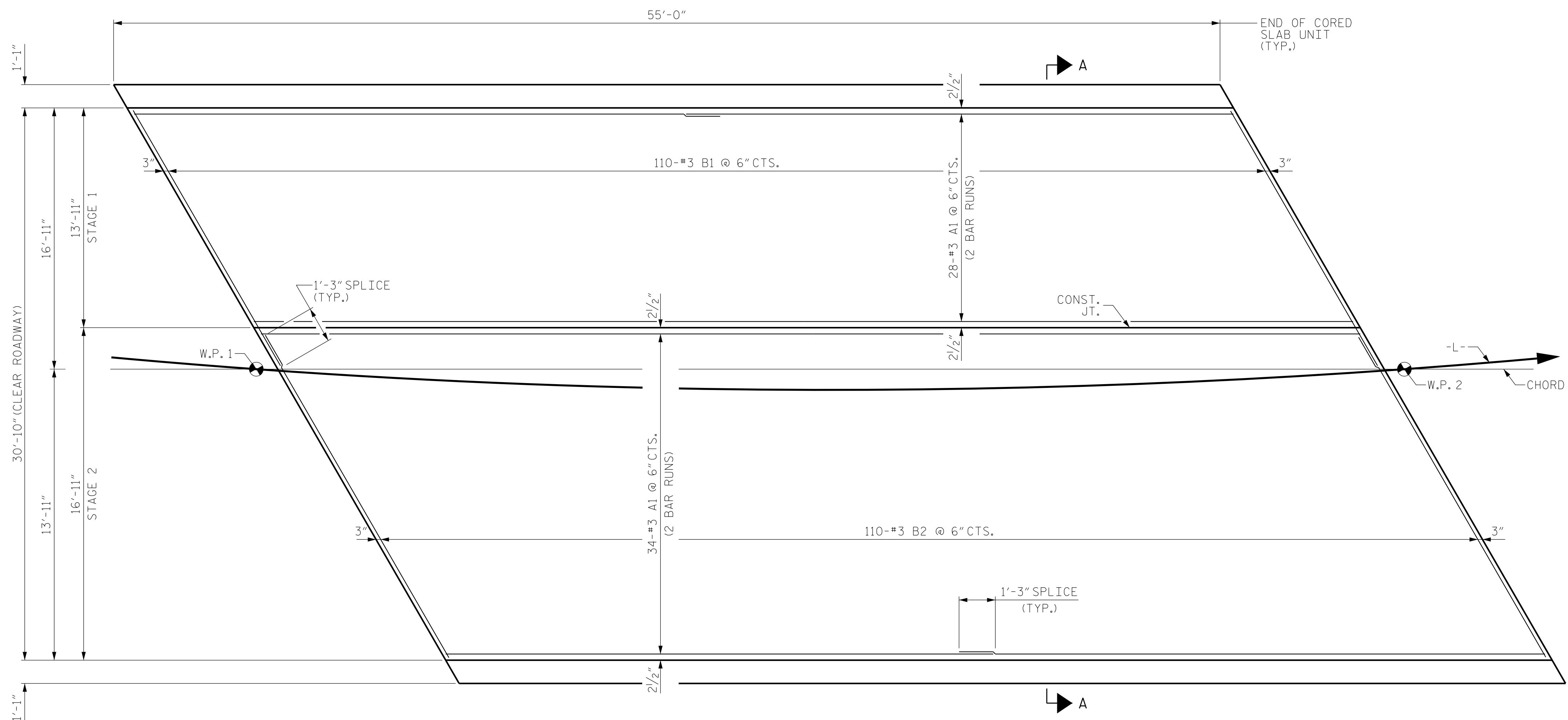
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF 55' UNIT
 30'-10" CLEAR ROADWAY
 60° SKEW

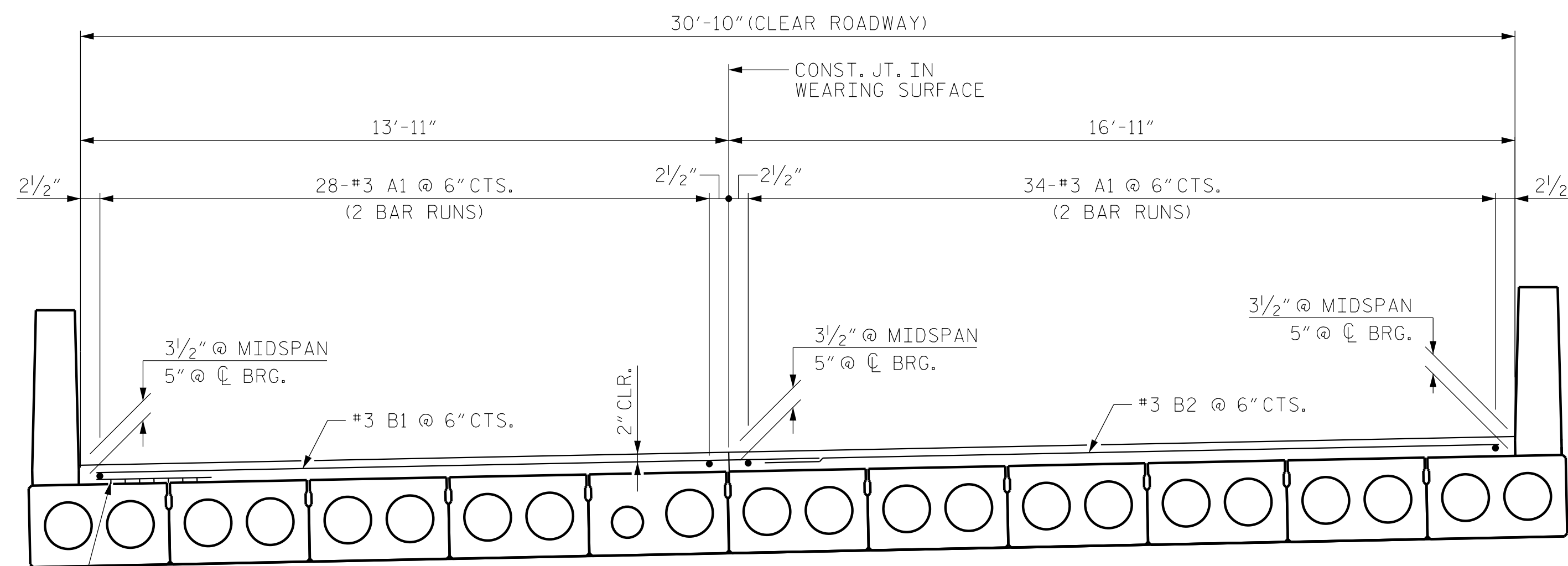
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			20

DESIGN ENGINEER OF RECORD: R. C. LARSON	DATE: 6/23
ASSEMBLED BY: J. M. DAVIS	DATE: 11/22
CHECKED BY: R. C. LARSON	DATE: 5/23
DRAWN BY: DGE 3/09	REV. 12/5/11 MAA/AAC
CHECKED BY: BCH 3/09	REV. 8/14 MAA/TMG

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PLAN OF CONCRETE WEARING SURFACE



SECTION A-A

1/2" HIGH BEAM BOLSTER @ MIDSPAN @ 2'-0" MAX CTS.
2" HIGH BEAM BOLSTER @ CLR BRG. @ 2'-0" MAX CTS.

BILL OF MATERIAL					
STAGE 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	56	#3	STR	28'-0"	590
B1	110	#3	STR	17'-3"	713
TOTAL STAGE 1					LBS. 1303
STAGE 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	68	#3	STR	28'-0"	716
B2	110	#3	STR	19'-3"	796
TOTAL STAGE 2					LBS. 1512
CLASS AA CONCRETE					
STAGE 1				10.0	C.Y.
STAGE 2				12.2	C.Y.
TOTAL				22.2	C.Y.
CONCRETE WEARING SURFACE					
STAGE 1				765	S.F.
STAGE 2				930	S.F.
TOTAL				1695	S.F.

PROJECT NO. BP14.R006
POLK COUNTY
STATION: 12+92.50

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 55' UNIT
CONCRETE
WEARING SURFACE
60° SKEW



DESIGN ENGINEER OF RECORD: R. C. LARSON DATE: 8/24
ASSEMBLED BY: J. M. DAVIS DATE: 8/24
CHECKED BY: R. C. LARSON DATE: 8/24

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			20

NOTES

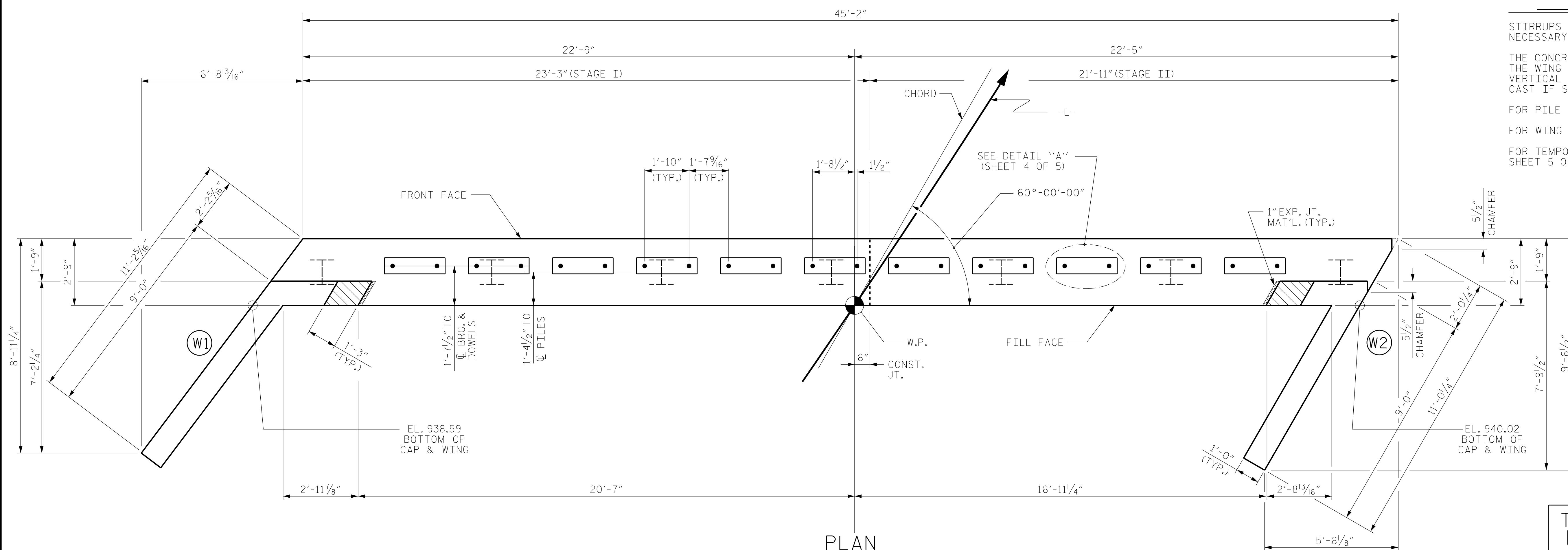
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 5 OF 5.

FOR WING DETAILS, SEE SHEET 3 OF 5.

FOR TEMPORARY DRAINAGE AT END BENT, SEE SHEET 5 OF 5.



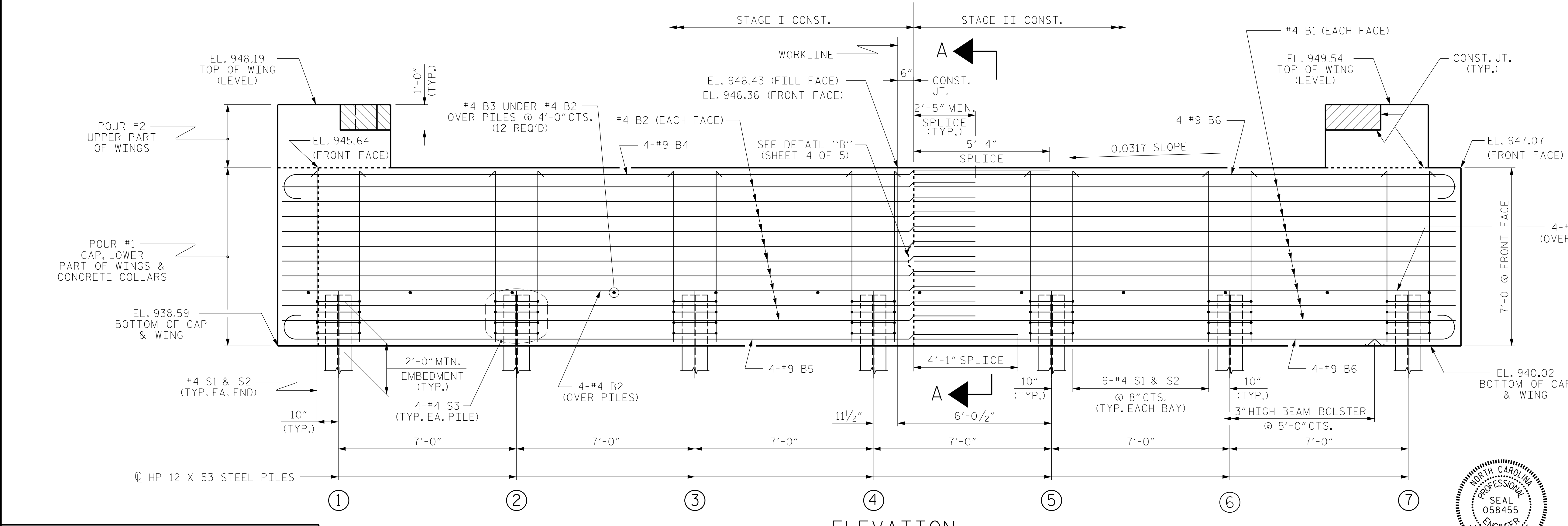
PLANS PREPARED BY:

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 CARY, NC 27518
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TOP OF PILE ELEVATIONS

①	940.68
②	940.90
③	941.13
④	941.35
⑤	941.57
⑥	941.79
⑦	942.01



PROJECT NO. BP14.R006
POLK COUNTY
 STATION: 12+92.50 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS 20
2			4			

DESIGN ENGINEER OF RECORD: R. C. LARSON	DATE: 6/23
ASSEMBLED BY: J. M. DAVIS	DATE: 5/23
CHECKED BY: R. C. LARSON	DATE: 5/23
DRAWN BY: WJH 12/11	REV. 4/15 MAA/TMG
CHECKED BY: AAC 12/11	

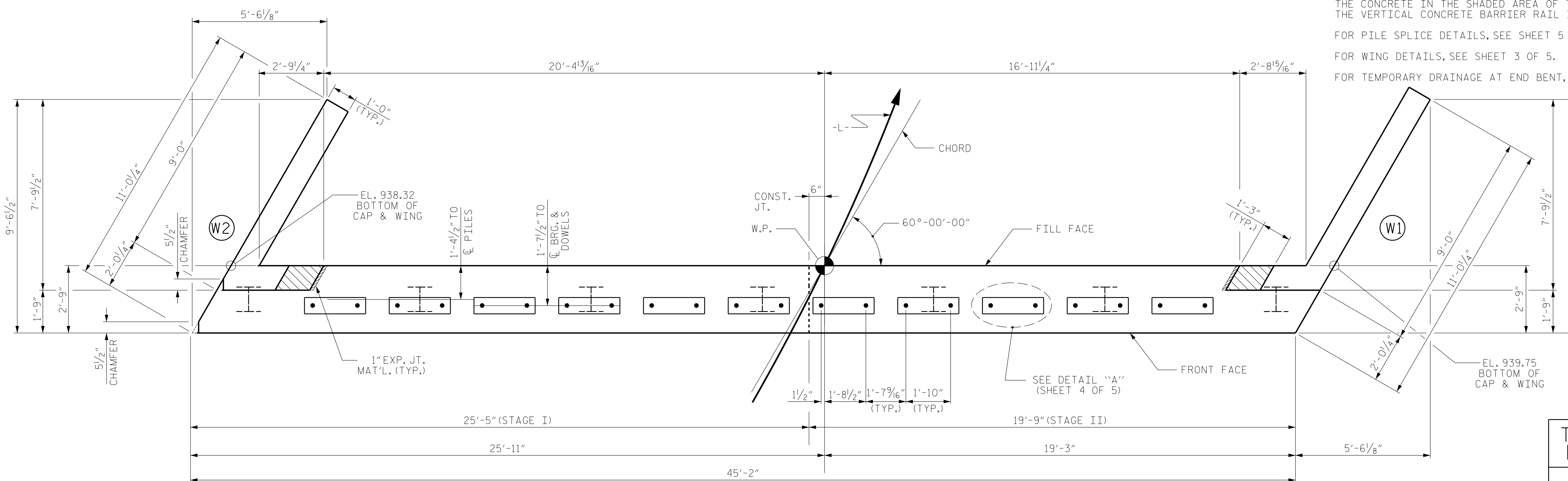
WINGS NOT SHOWN FOR CLARITY.
 FOR SECTION A-A, SEE SHEET 4 OF 5.
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 5.

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NOTES

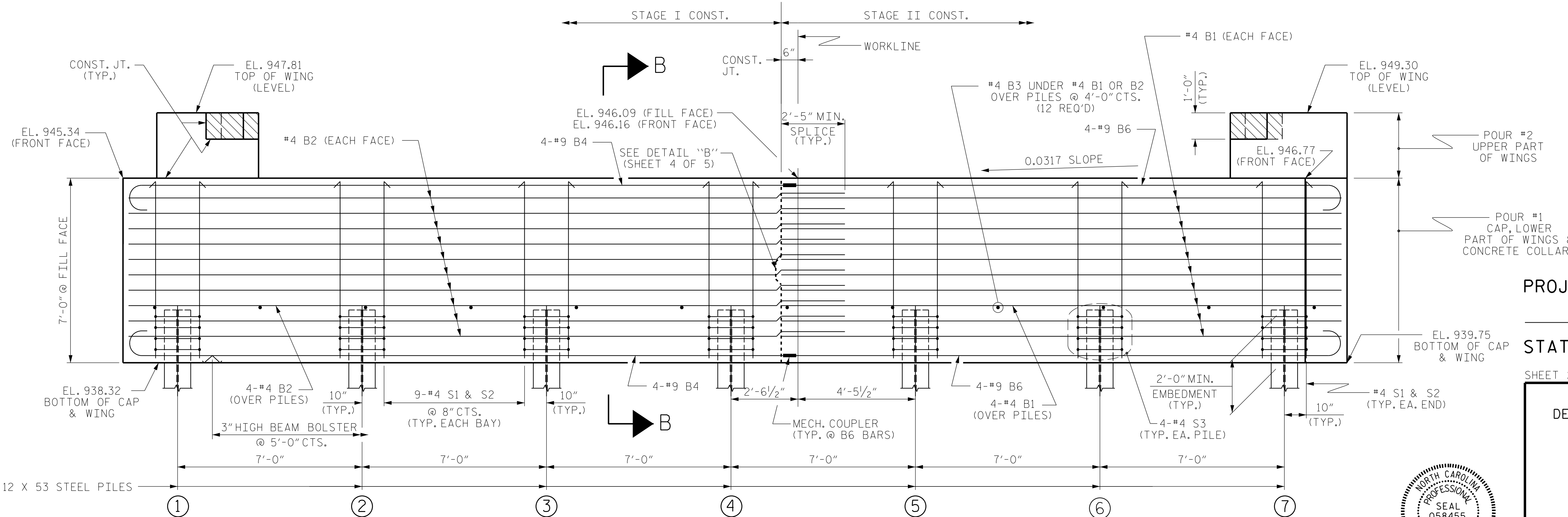
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
 THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
 FOR PILE SPLICE DETAILS, SEE SHEET 5 OF 5.
 FOR WING DETAILS, SEE SHEET 3 OF 5.
 FOR TEMPORARY DRAINAGE AT END BENT, SEE SHEET 5 OF 5.



PLAN

TOP OF PILE ELEVATIONS

①	940.36
②	940.59
③	940.81
④	941.03
⑤	941.25
⑥	941.47
⑦	941.69



ELEVATION

PLANS PREPARED BY:
NIV5
 NV5 ENGINEERS & CONSULTANTS, INC.
 3300 REGENCY PARKWAY, SUITE 100
 CARY, NC 27518
 P: 919.851.1912 www.NV5.com
 NC License # F-1333

PROJECT NO. BP14.R006
 POLK COUNTY
 STATION: 12+92.50 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 2

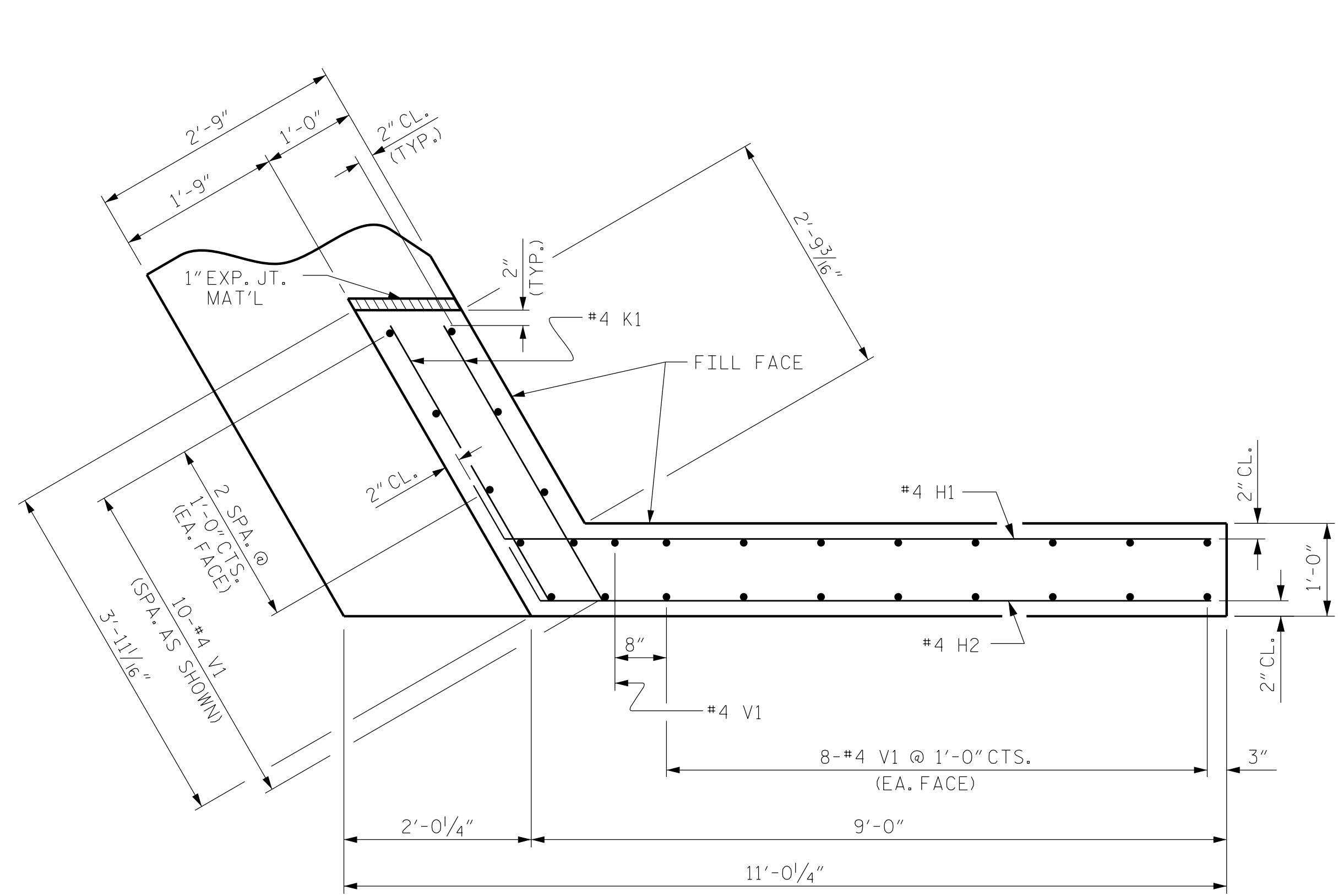


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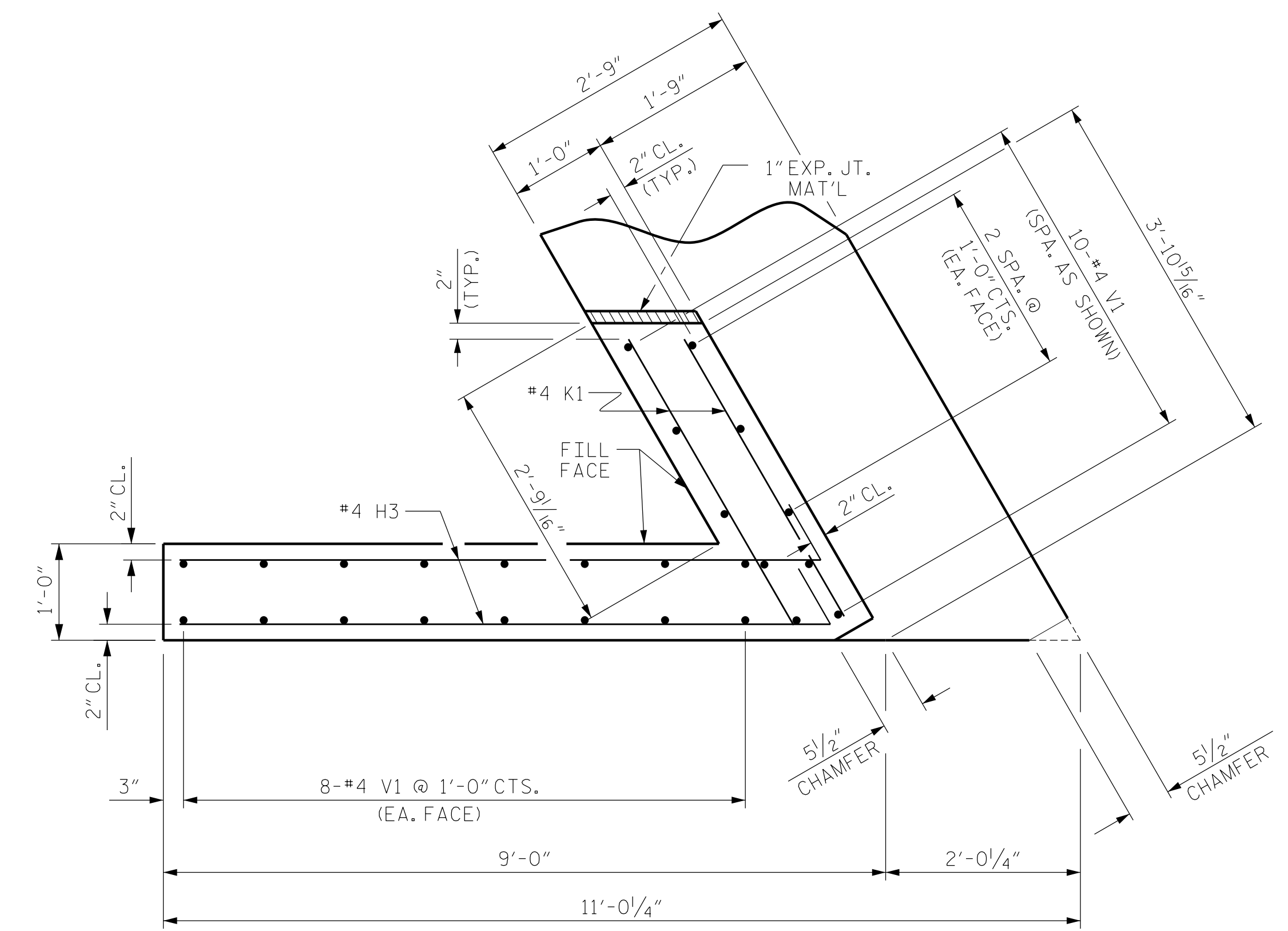
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS 20
2			4			

DESIGN ENGINEER OF RECORD: R. C. LARSON	DATE: 6/23
ASSEMBLED BY: J. M. DAVIS	DATE: 5/23
CHECKED BY: R. C. LARSON	DATE: 5/23
DRAWN BY: WJH 12/11	REV. 4/15
CHECKED BY: AAC 12/11	MAA/TMG

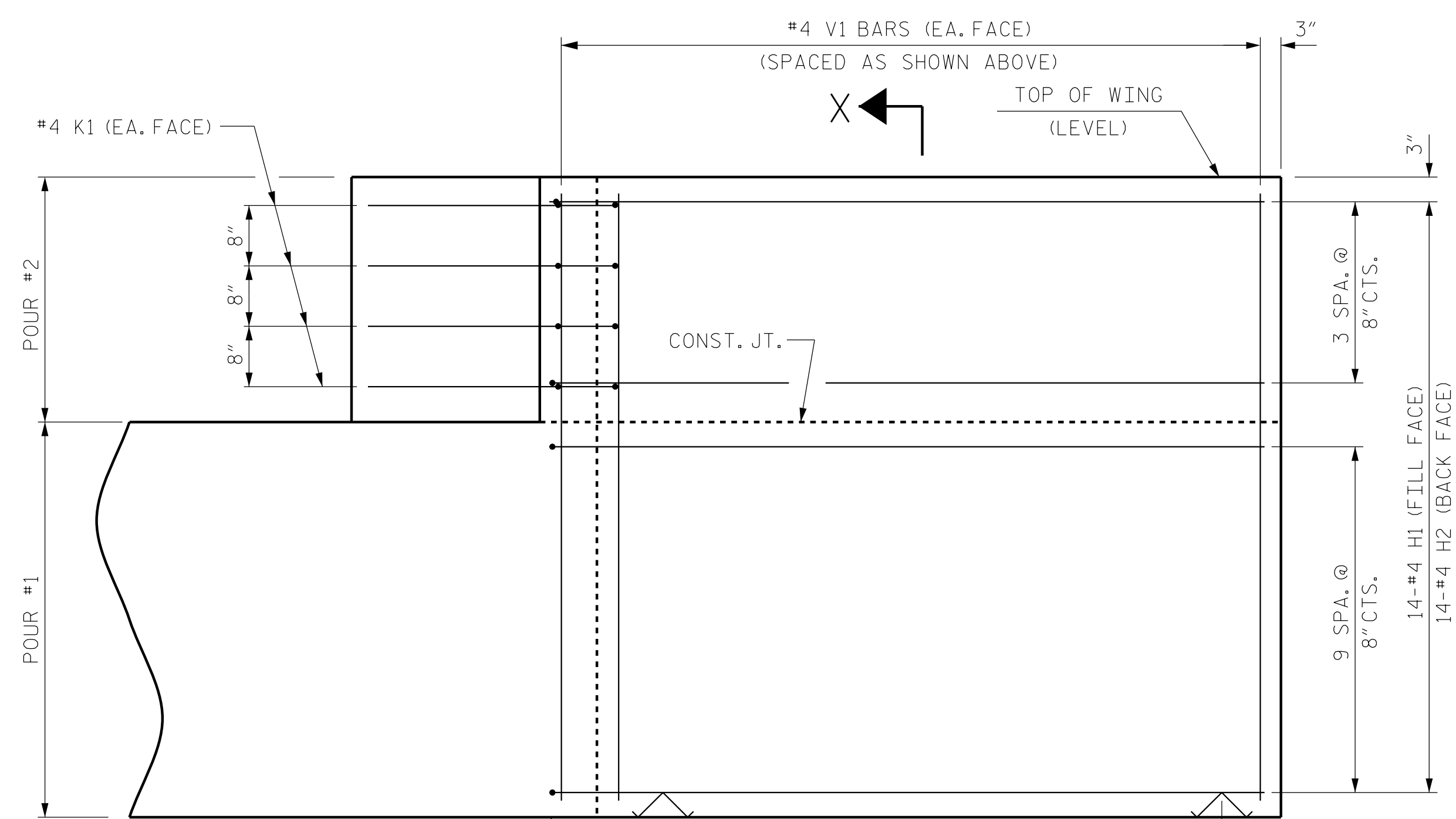
WINGS NOT SHOWN FOR CLARITY.
 FOR SECTION B-B, SEE SHEET 5 OF 5.
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 5.



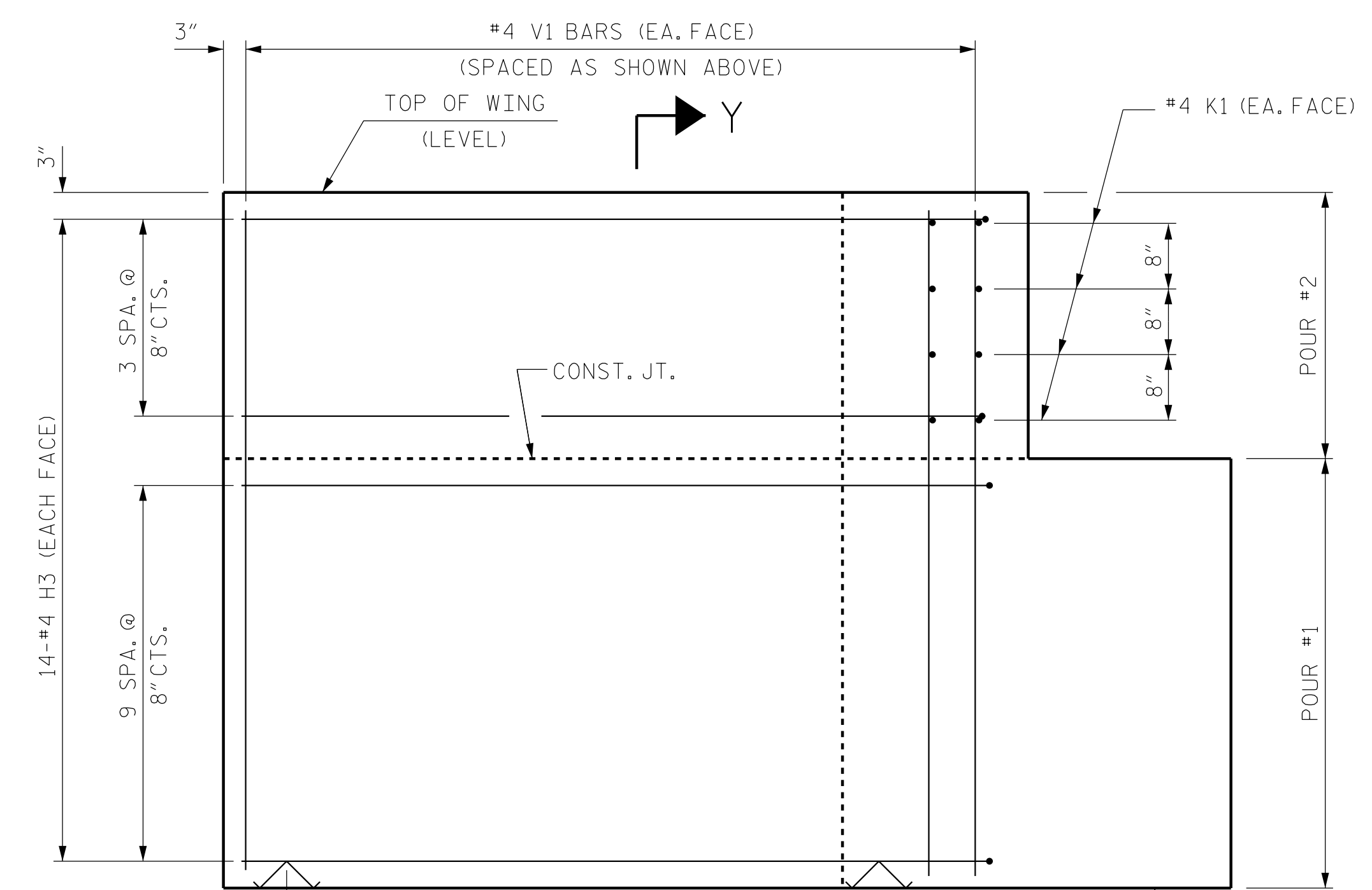
PLAN OF WING (W1)



PLAN OF WING (W2)



ELEVATION OF WING (W1)

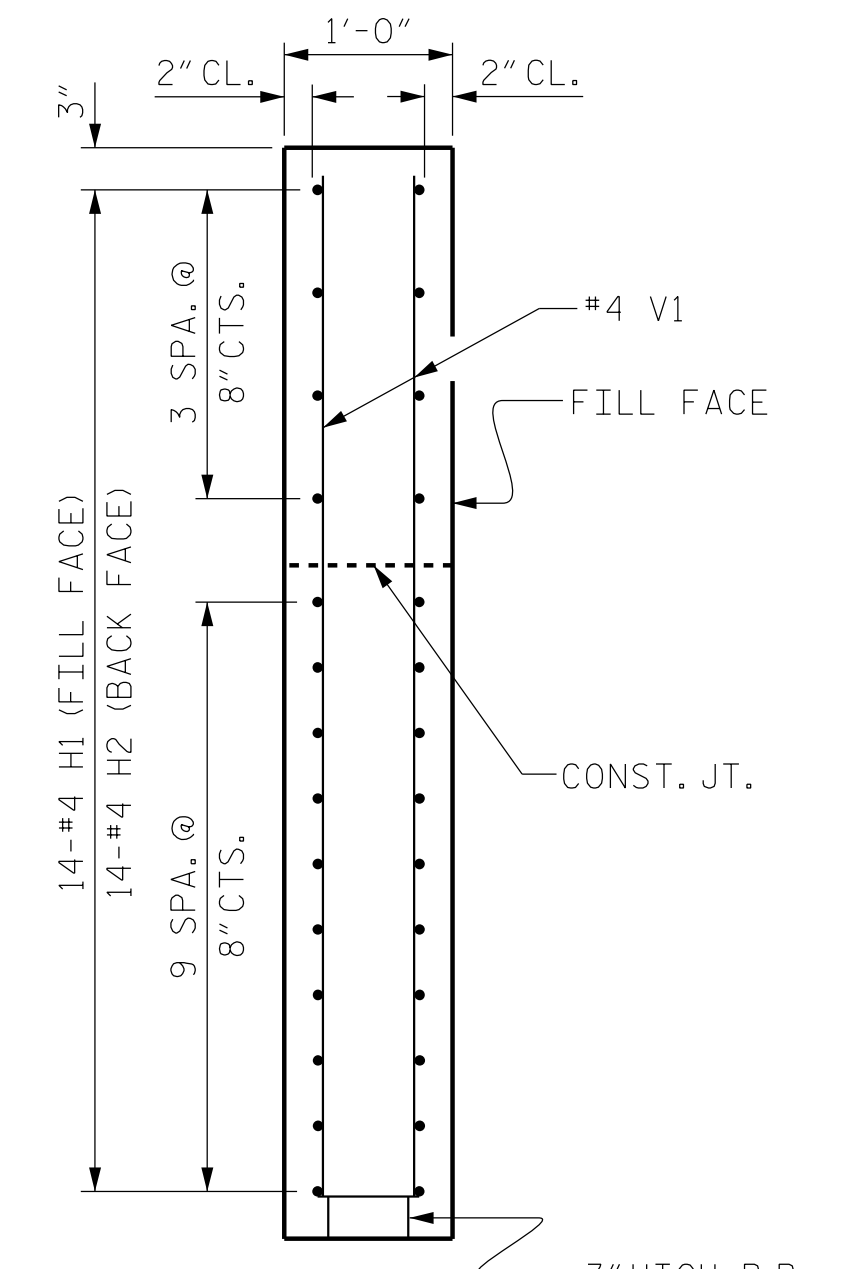


ELEVATION OF WING (W2)

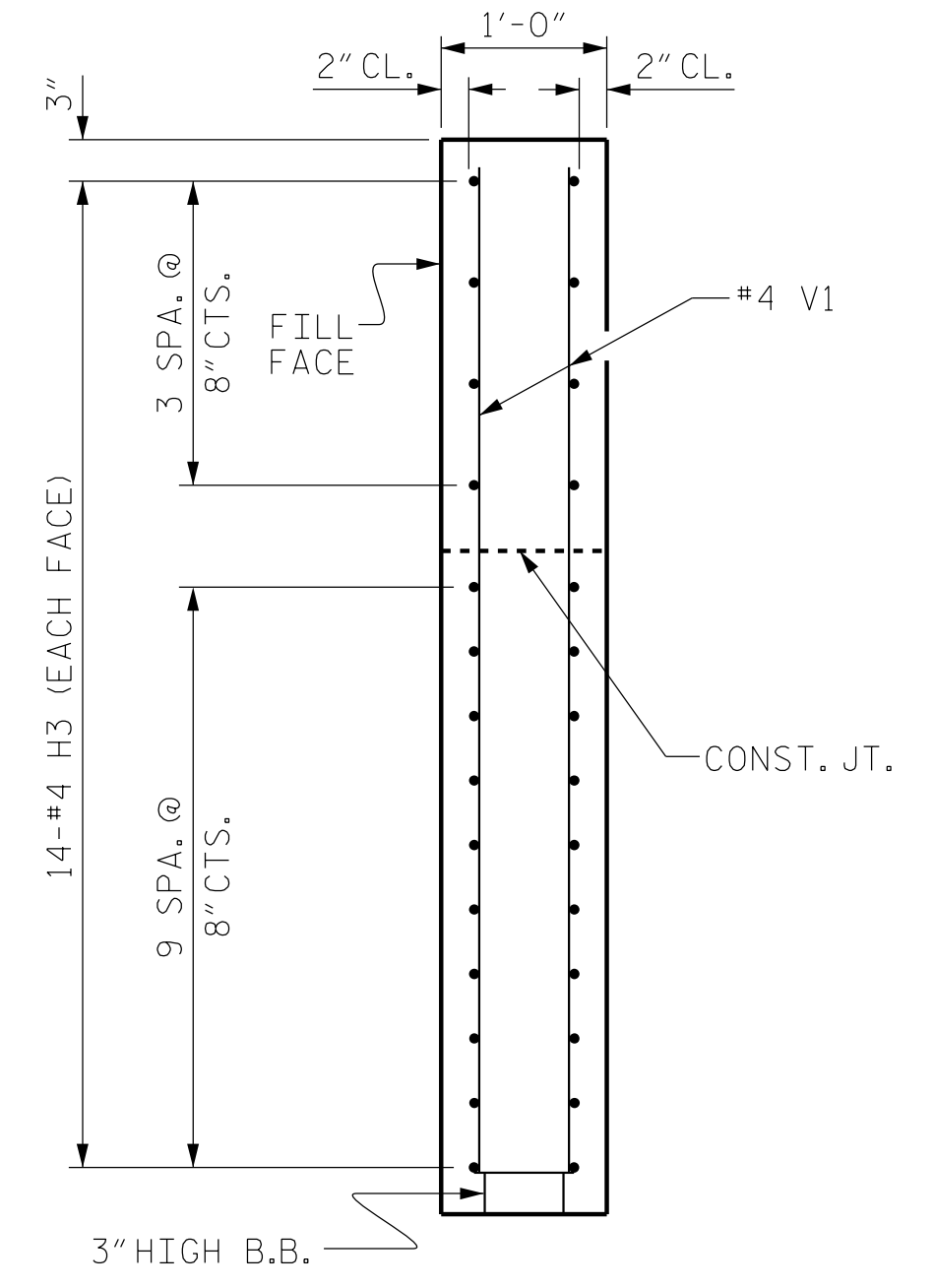
PLANS PREPARED BY:

NV5 ENGINEERS & CONSULTANTS, INC.
 3300 REGENCY PARKWAY, SUITE 100
 CARY, NC 27518
 P: 919.851.1912 www.NV5.com
 NC License # F1333

WING DETAILS



SECTION X-X



SECTION Y-Y

PROJECT NO. BP14.R006
POLK COUNTY
 STATION: 12+92.50 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

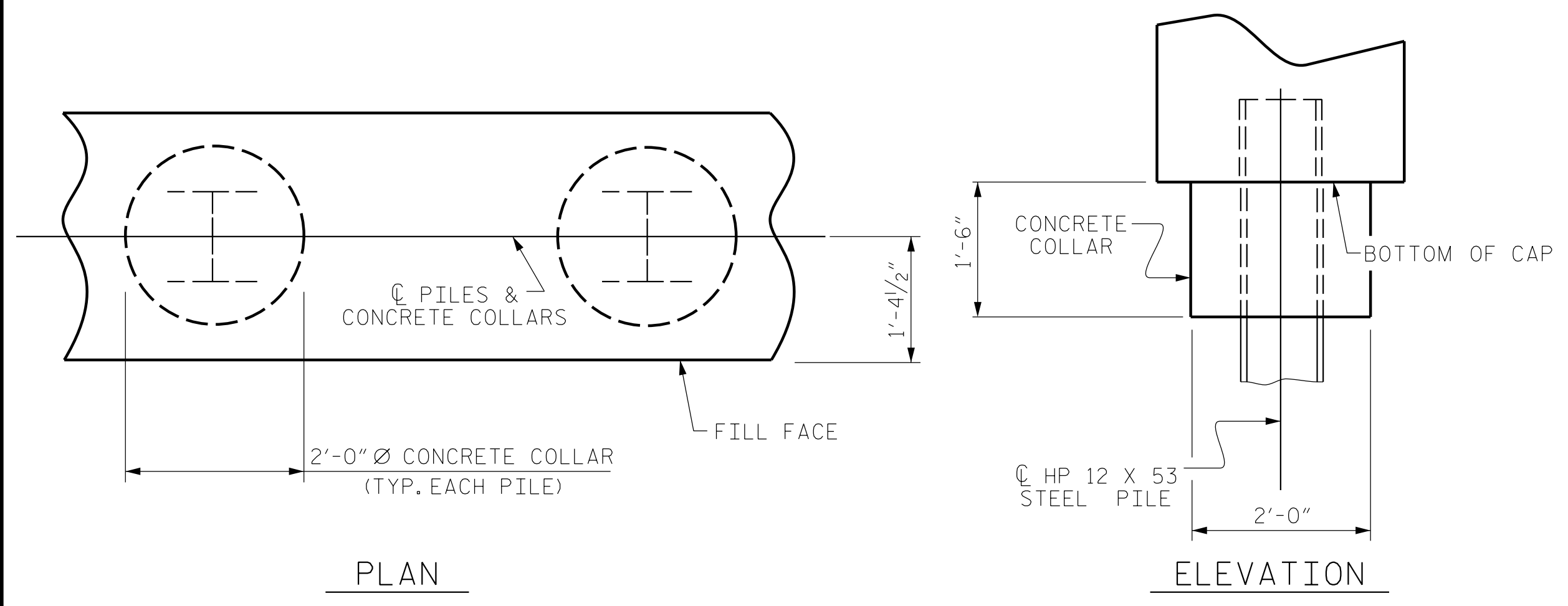
SUBSTRUCTURE
 END BENT
 WING DETAILS



DESIGN ENGINEER OF RECORD: R. C. LARSON	DATE: 6/23
ASSEMBLED BY: J. M. DAVIS	DATE: 5/23
CHECKED BY: R. C. LARSON	DATE: 5/23
DRAWN BY: WJH 12/11	REV. 4/15
CHECKED BY: AAC 12/11	MAA/TMG

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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16	
1			3			TOTAL SHEETS	
2			4			20	

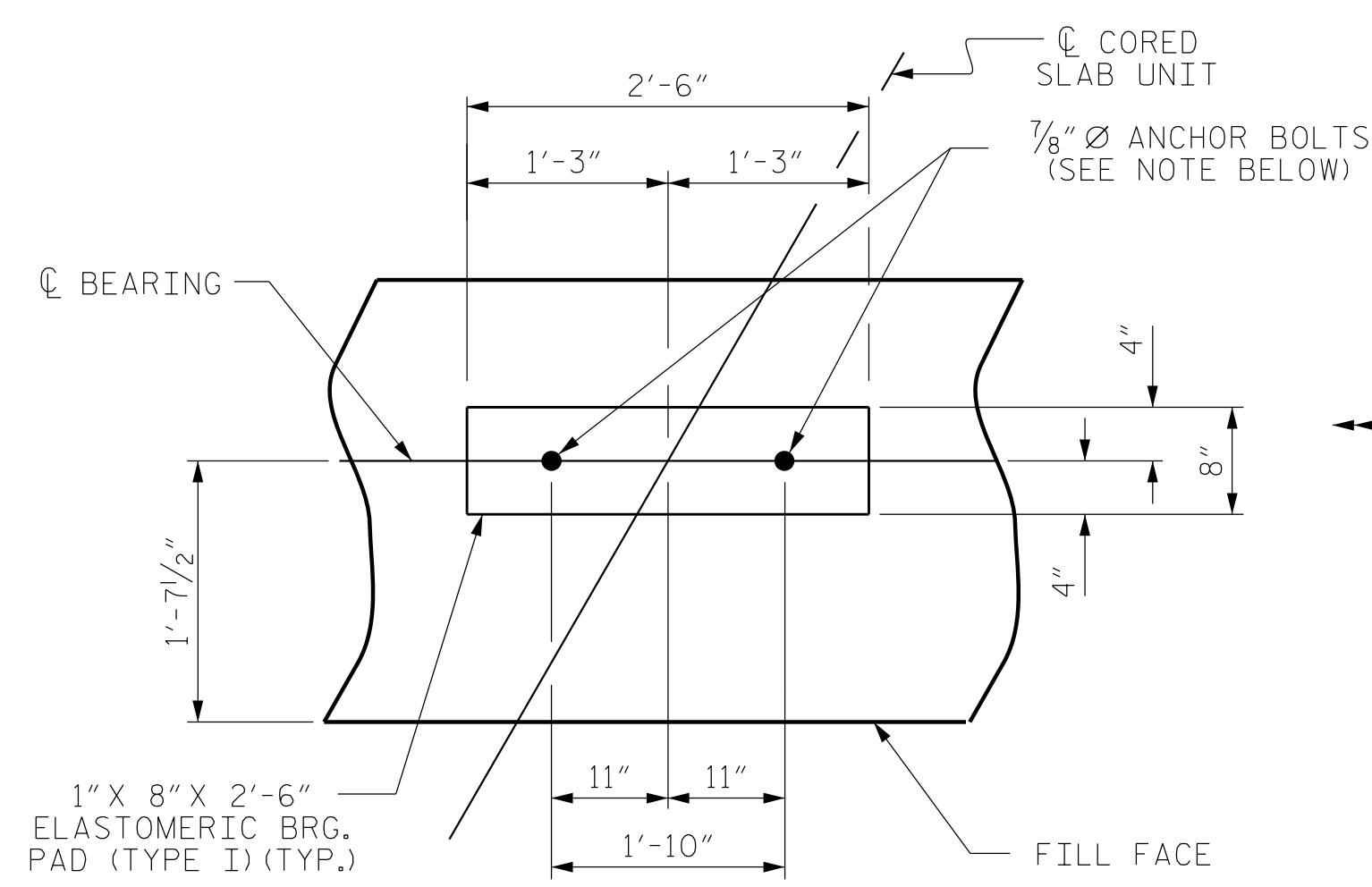


PLAN

ELEVATION

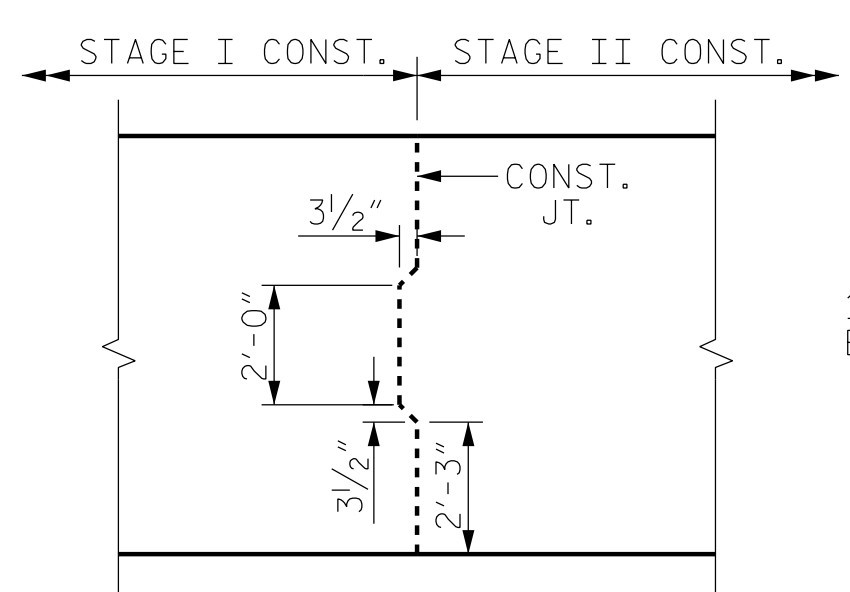
CORROSION PROTECTION FOR STEEL PILES DETAIL

(END BENT No.1 SHOWN, END BENT No.2 SIMILAR BY ROTATION)

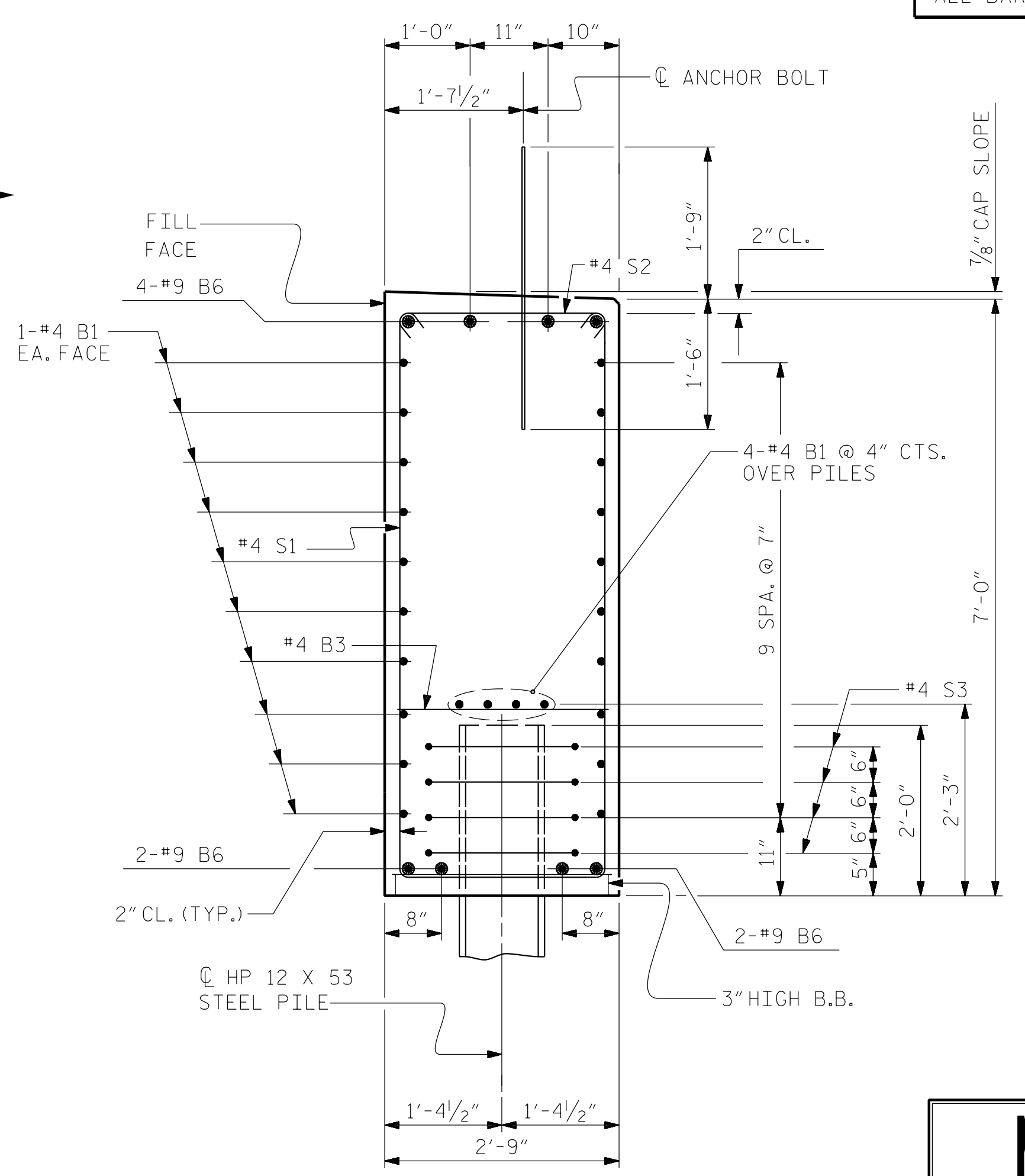


DETAIL "A"

(END BENT No.1 SHOWN, END BENT No.2 SIMILAR BY ROTATION)

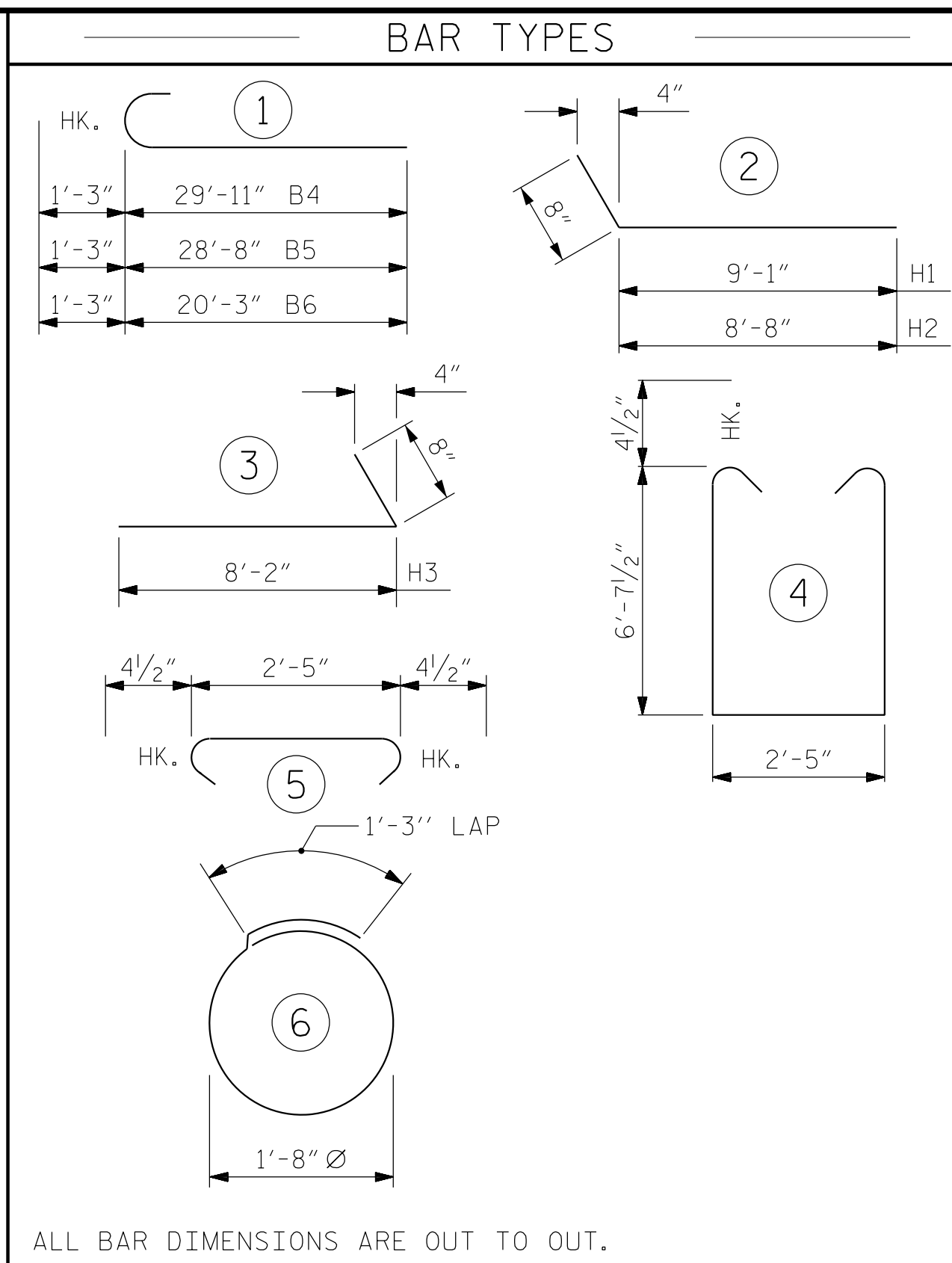


DETAIL "B"



SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT No. 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	24	#4	STR	20'-3"	325
B2	24	#4	STR	27'-0"	433
B3	12	#4	STR	2'-5"	19
B4	4	#9	1	31'-2"	424
B5	4	#9	1	29'-11"	407
B6	8	#9	1	21'-6"	585
H1	14	#4	2	9'-9"	91
H2	14	#4	2	9'-4"	87
H3	28	#4	3	8'-10"	165
K1	16	#4	STR	3'-3"	35
S1	56	#4	4	16'-5"	614
S2	56	#4	5	3'-2"	118
S3	28	#4	6	6'-6"	122
V1	53	#4	STR	9'-0"	319

REINFORCING STEEL 3744 LBS.

CLASS A CONCRETE BREAKDOWN	
POUR #1: CAP, LOWER PART OF WINGS & COLLARS	33.6 C.Y.
POUR #2: UPPER PART OF WINGS	2.2 C.Y.
TOTAL CLASS A CONCRETE	35.8 C.Y.

HP 12 X 53 STEEL PILES NO: 7 LIN. FT. = 125

PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 7

PILE EXCAVATION IN SOIL 66.0 LIN. FT.

PILE EXCAVATION NOT IN SOIL 21.0 LIN. FT.

PROJECT NO. BP14.R006
POLK COUNTY
 STATION: 12+92.50 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

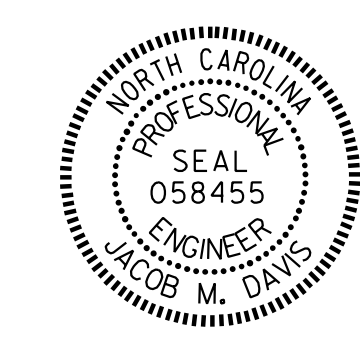
SUBSTRUCTURE
 END BENT No. 1
 DETAILS

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17	
1			3			TOTAL SHEETS 20	
2			4				

PLANS PREPARED BY:

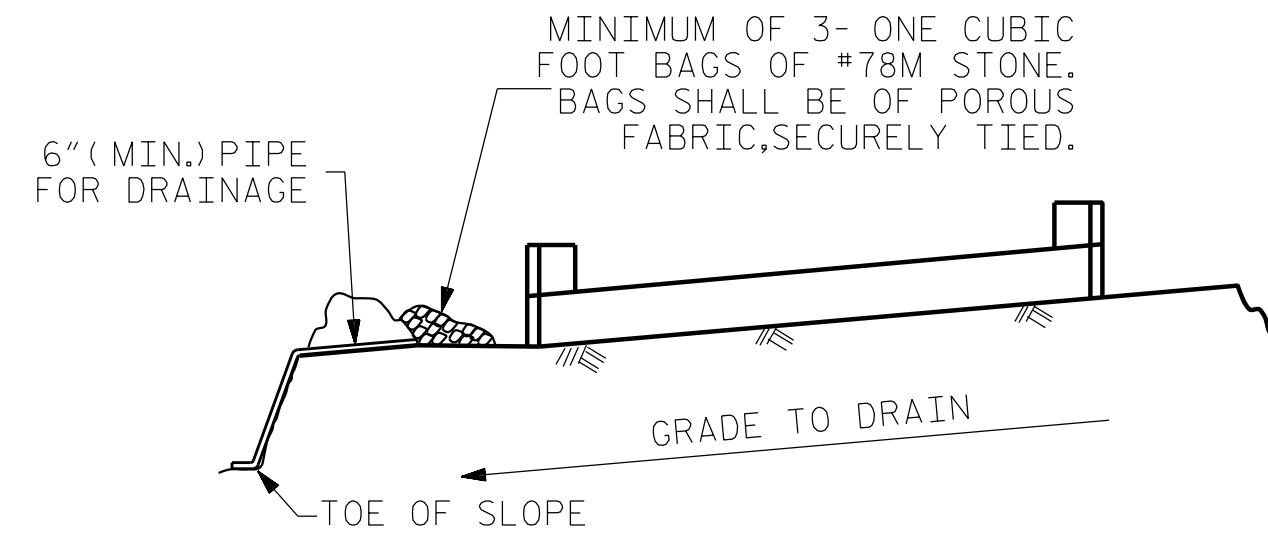
NV5

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 3300 REGENCY PARKWAY, SUITE 100
 CARY, NC 27518
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 NC License # F-1333



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY : J. M. DAVIS	DATE : 6/23
CHECKED BY : R. C. LARSON	DATE : 6/23
DRAWN BY : WJH 12/11	REV. 4/17
CHECKED BY : AAC 12/11	MAA/THC
DESIGN ENGINEER OF RECORD: R. C. LARSON DATE : 6/23	

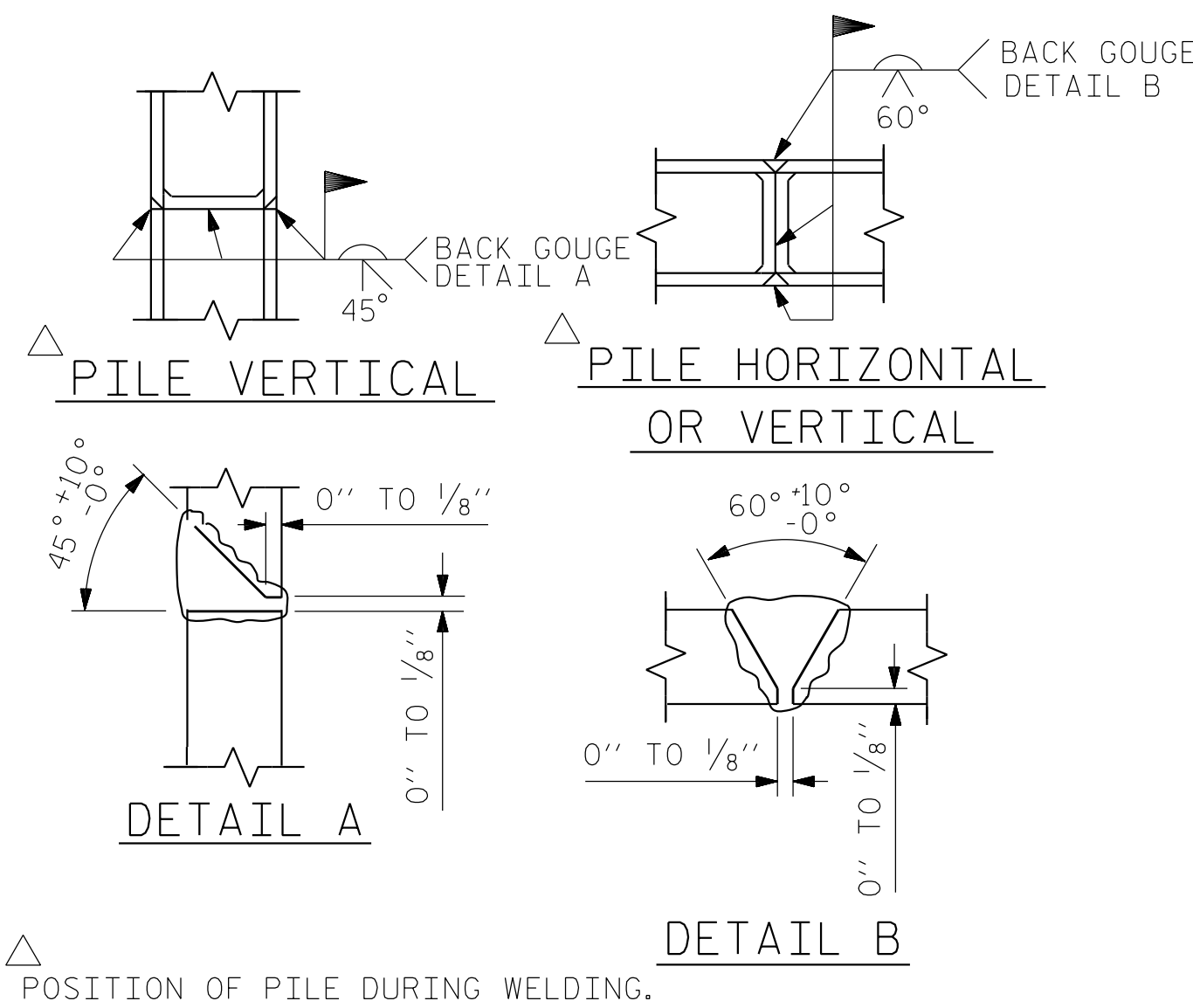


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

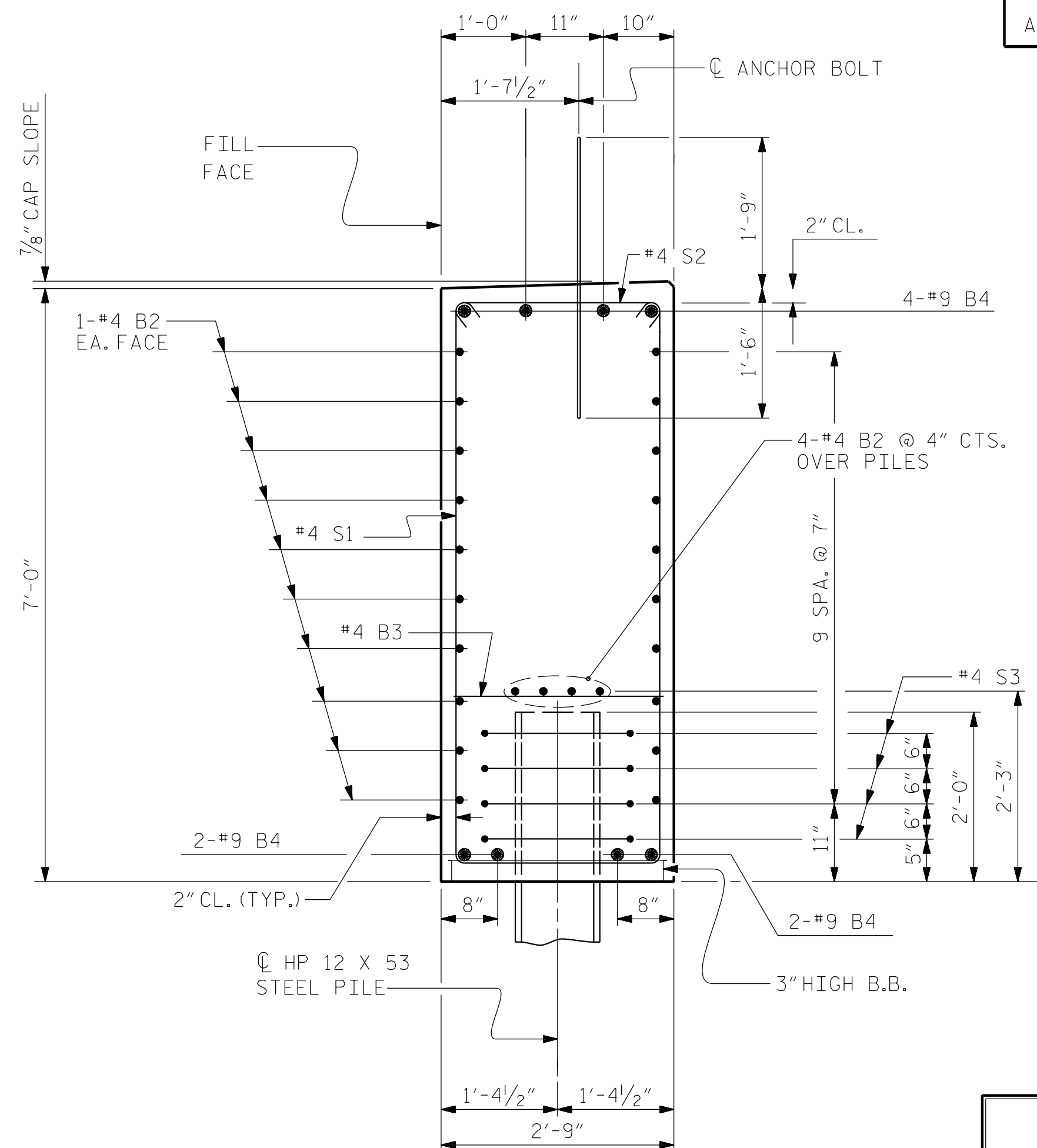
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

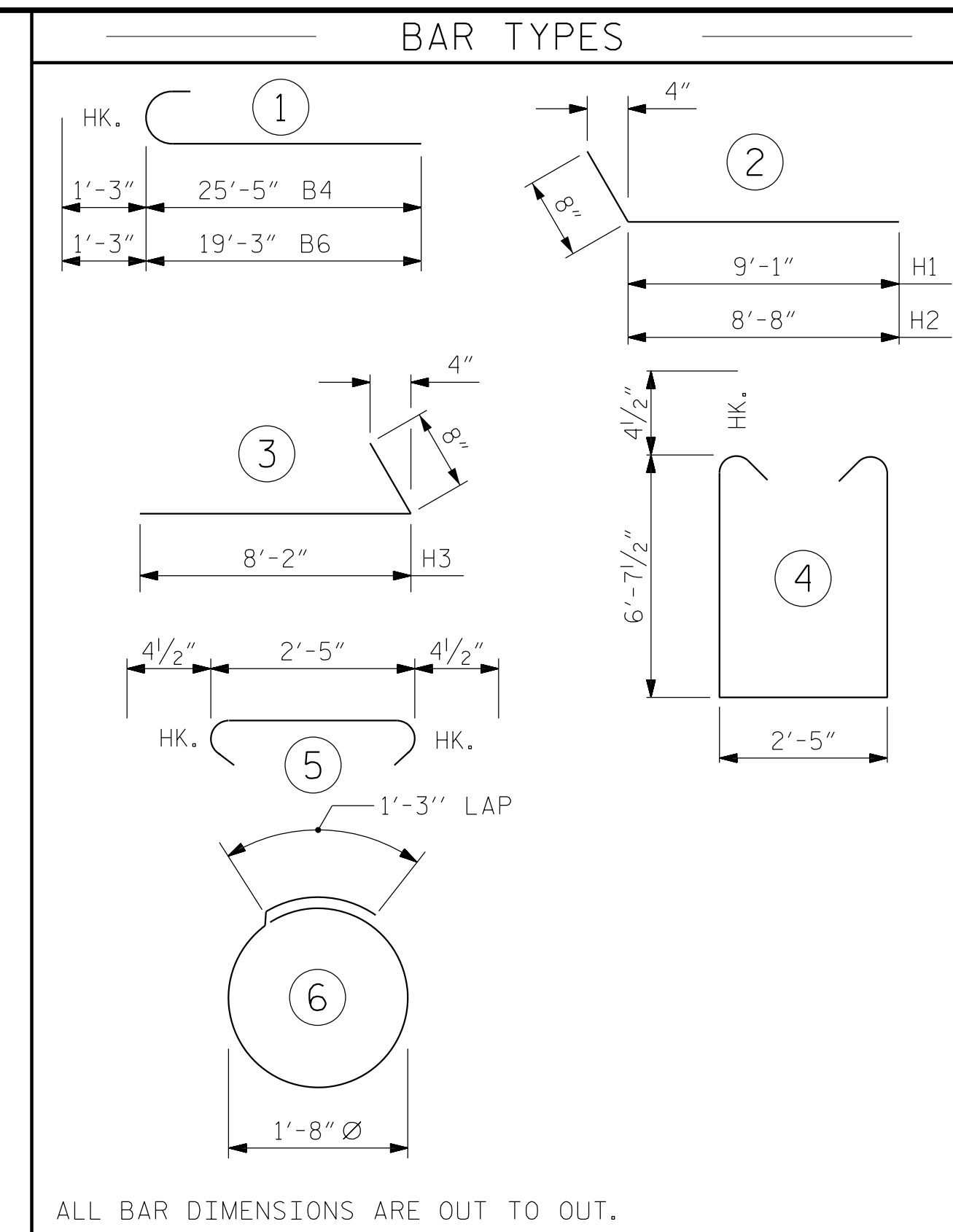


PILE SPLICE DETAILS



SECTION B-B

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL						
END BENT No. 2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	24	#4	STR	19'-6"	313	
B2	24	#4	STR	27'-9"	445	
B3	12	#4	STR	2'-5"	19	
B4	8	#9	1	26'-8"	725	
B6	8	#9	1	20'-6"	558	
H1	14	#4	2	9'-9"	91	
H2	14	#4	2	9'-4"	87	
H3	28	#4	3	8'-10"	165	
K1	16	#4	STR	3'-3"	35	
S1	56	#4	4	16'-5"	614	
S2	56	#4	5	3'-2"	118	
S3	28	#4	6	6'-6"	122	
V1	53	#4	STR	9'-0"	319	
REINFORCING STEEL					3611 LBS.	
CLASS A CONCRETE BREAKDOWN						
POUR #1: CAP, LOWER PART OF WINGS & COLLARS					33.4 C.Y.	
POUR #2: UPPER PART OF WINGS					2.2 C.Y.	
TOTAL CLASS A CONCRETE					35.6 C.Y.	
HP 12 X 53 STEEL PILES					NO: 7	LIN. FT. = 140
STEEL PILE POINTS					NO: 7	

PROJECT NO. BP14.R006
 POLK COUNTY
 STATION: 12+92.50 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 2
 DETAILS

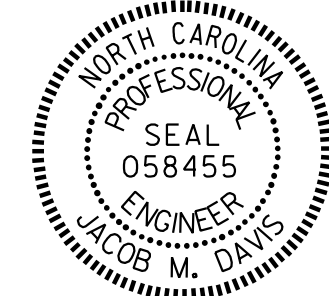
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS 20
2			4			

ASSEMBLED BY : J. M. DAVIS	DATE : 6/23
CHECKED BY : R. C. LARSON	DATE : 6/23
DRAWN BY : WJH 12/11	REV. 4/17
CHECKED BY : AAC 12/11	MAA/THC
DESIGN ENGINEER OF RECORD: R. C. LARSON DATE : 6/23	

PLANS PREPARED BY:

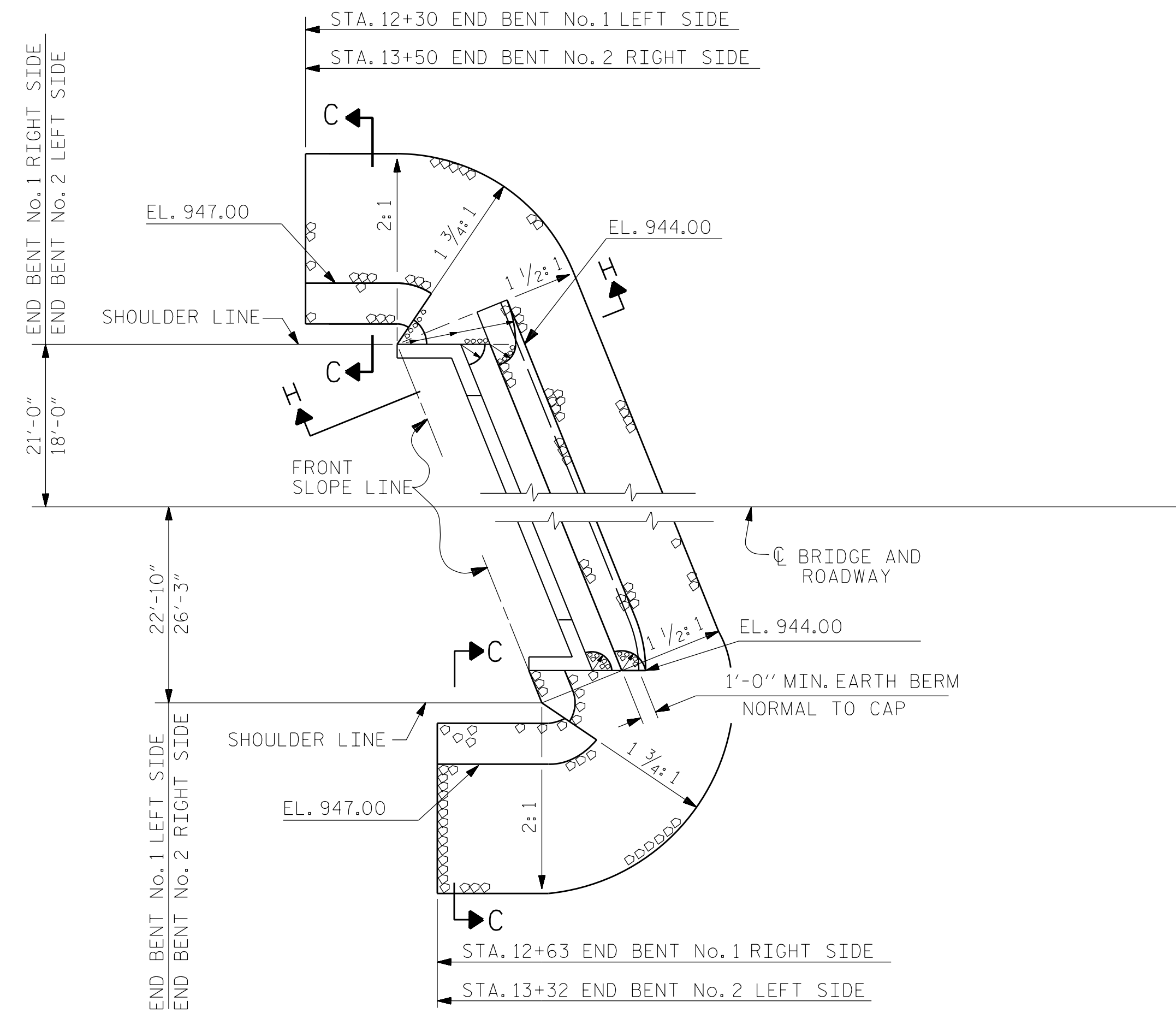
NV5

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 3300 REGENCY PARKWAY, SUITE 100
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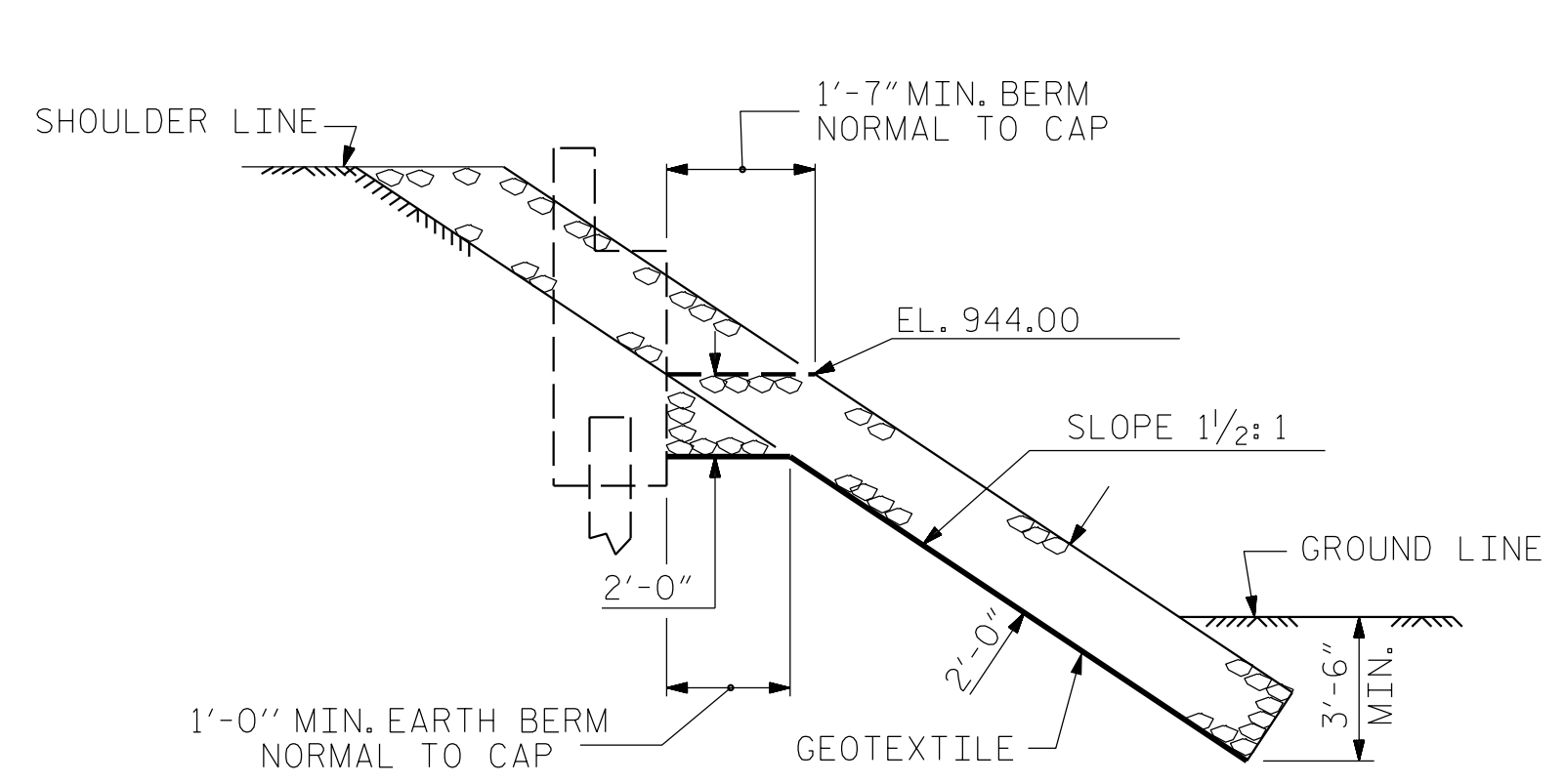
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NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

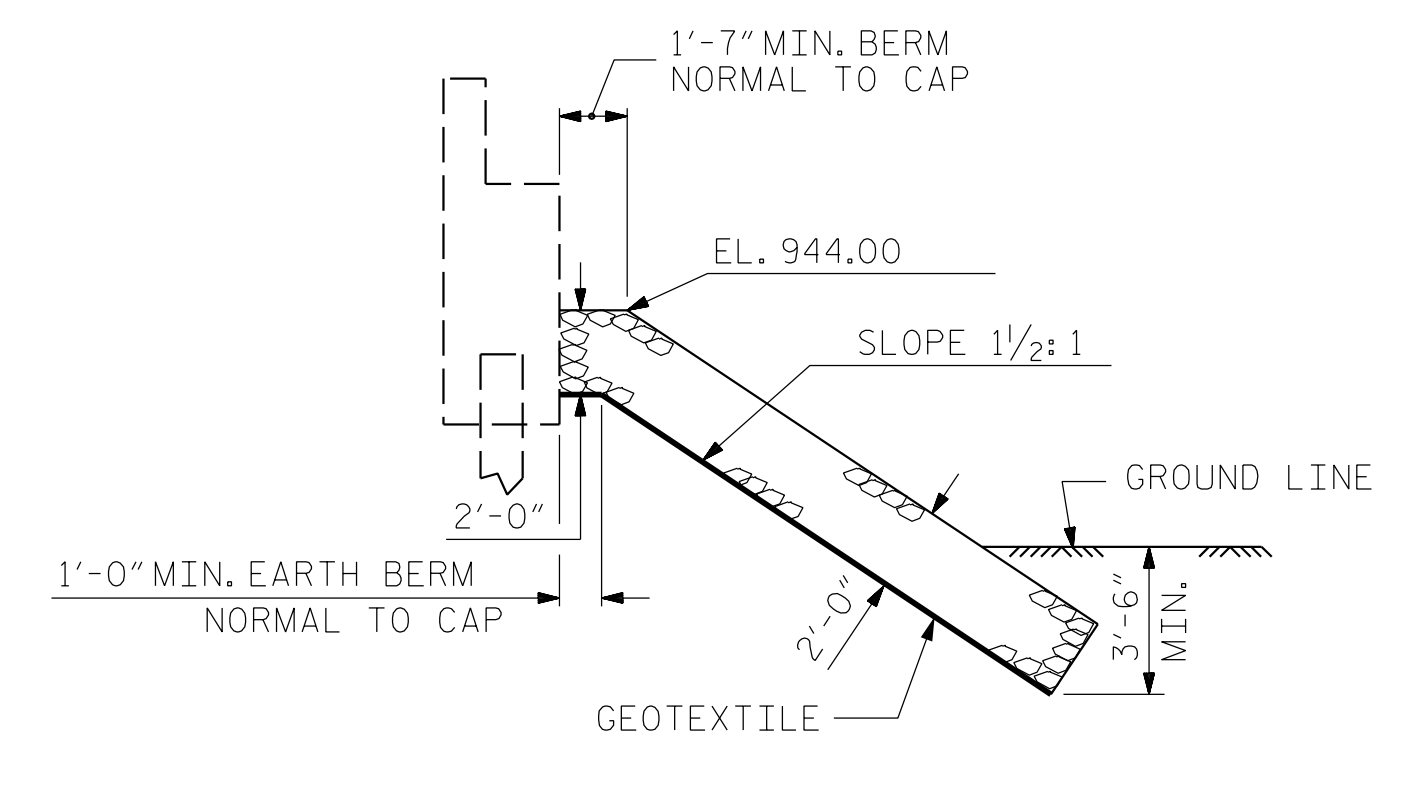


SHOULDER RIP RAP IS HIGHER THAN BERM RIP RAP

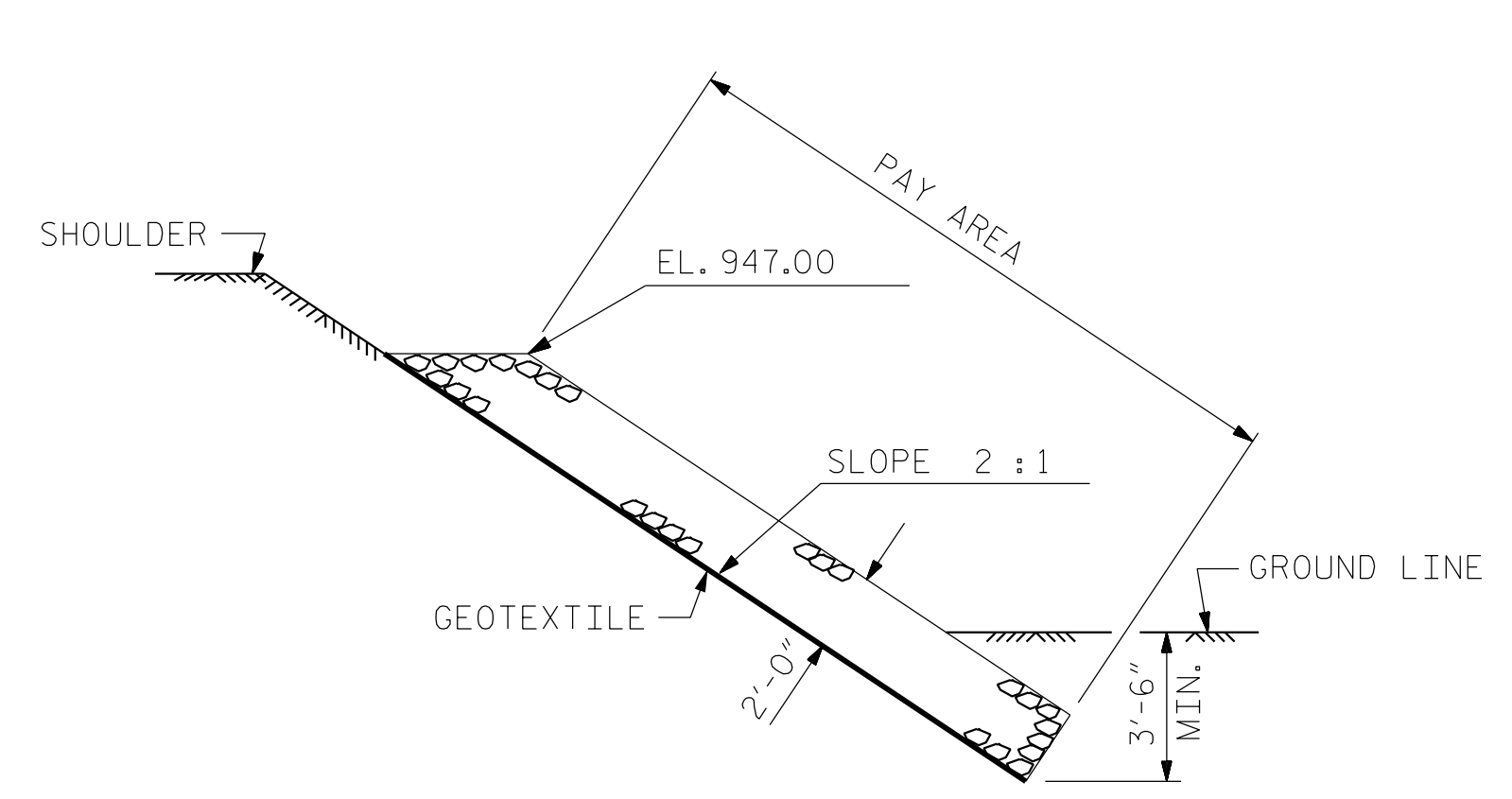
ESTIMATED QUANTITIES		
BRIDGE @ STA. 12+92.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	118	131
END BENT 2	140	156



SECTION H-H



SECTION C-C
BERM RIP RAPPED



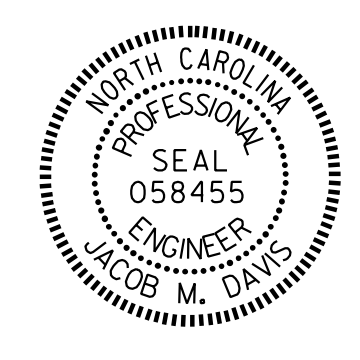
SECTION C-C

PROJECT NO. BP14.R006
POLK COUNTY
STATION: 12+92.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
RIP RAP DETAILS

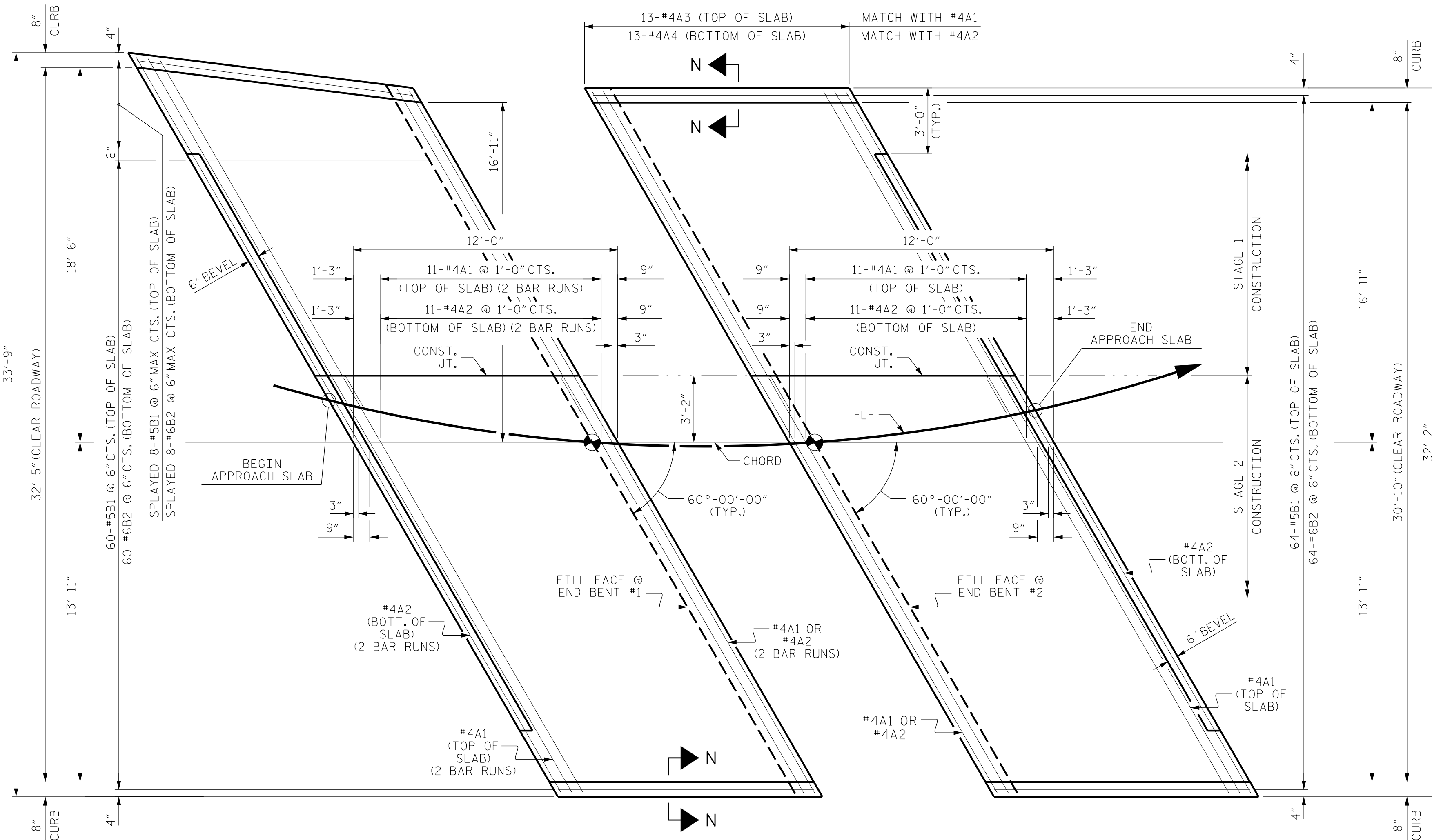
DESIGN ENGINEER OF RECORD: R. C. LARSON	DATE: 6/23
ASSEMBLED BY: J. M. DAVIS	DATE: 5/23
CHECKED BY: R. C. LARSON	DATE: 5/23
DRAWN BY: REK 1/84	REV. 10/1/11 MAA/GM
CHECKED BY: RDU 1/84	REV. 12/21/11 MAA/GM
	REV. 12/17 MAA/THC

PLANS PREPARED BY:
N|V|5
NV5 ENGINEERS & CONSULTANTS, INC.
3300 REGENCY PARKWAY, SUITE 100
CARY, NC 27518
P: 919.851.1912 www.NV5.com
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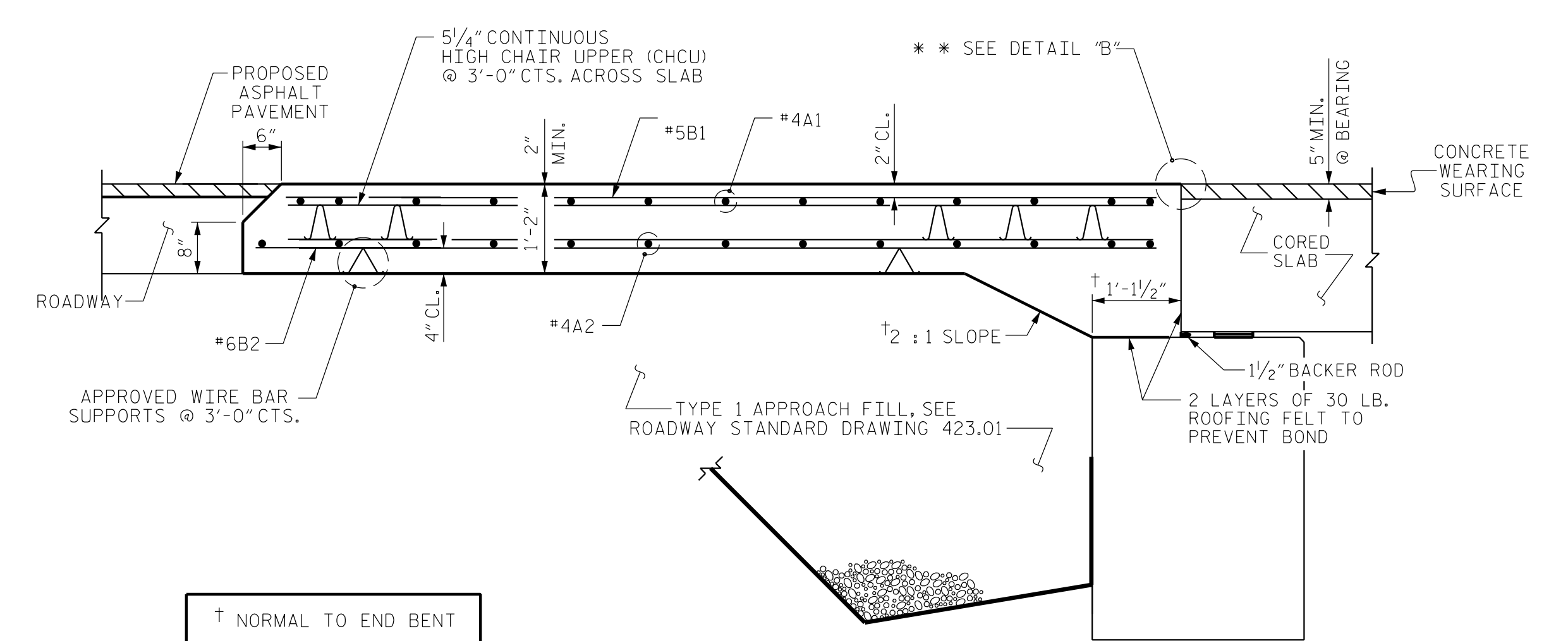


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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			20

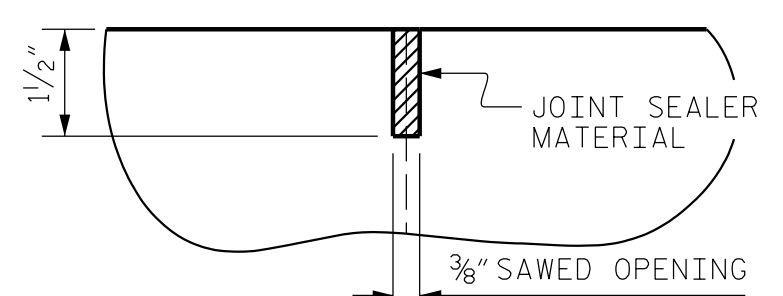


PLAN @ END BENT #1 PLAN @ END BENT #2
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

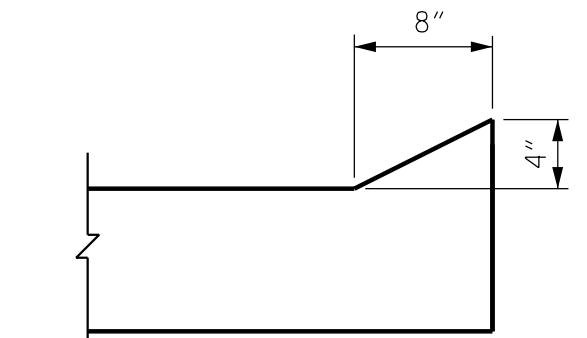


SECTION THRU SLAB

** A 1 1/2" DEEP, 3/8" WIDE CONTRACTION JOINT SHALL BE SAWS BETWEEN APPROACH SLAB AND WEARING SURFACE WITHIN 24 HOURS OF POURING THE APPROACH SLAB. 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.



DETAIL "B"



CURB DETAILS

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

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.

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

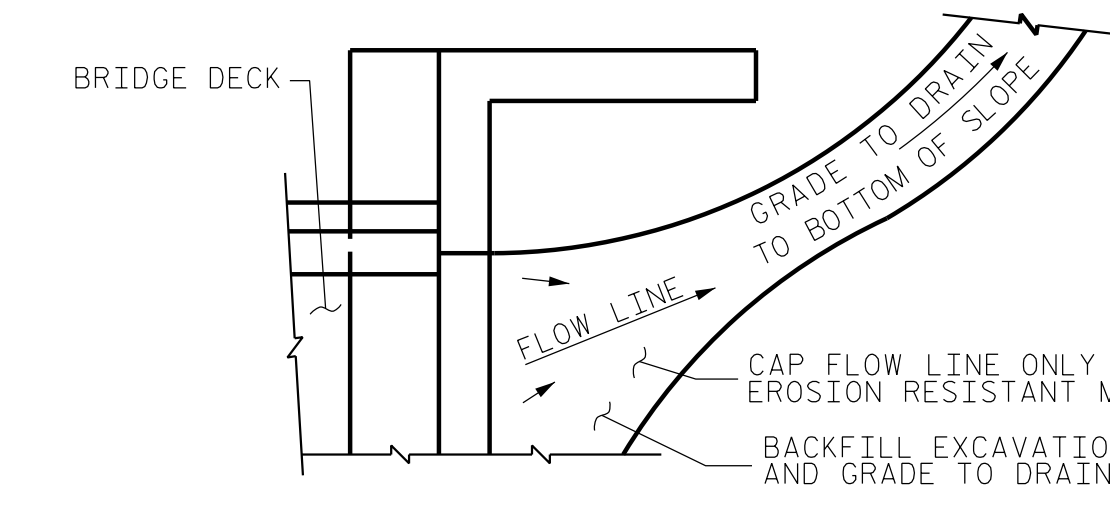
SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

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

FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

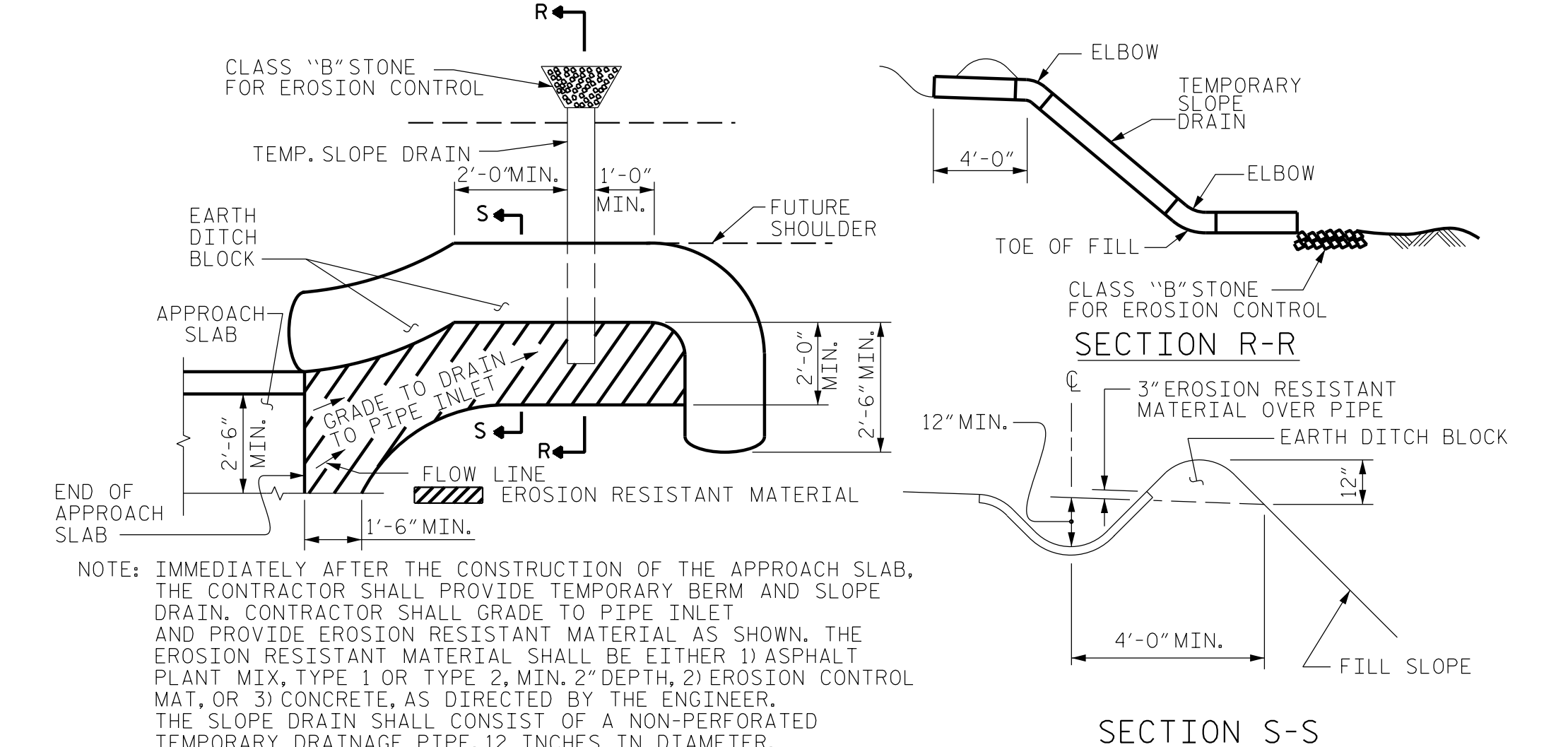
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED, SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT 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



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.

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

BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	20'-2"	350
A2	26	#4	STR	20'-2"	350
*B1	68	#5	STR	11'-1"	786
B2	68	#6	STR	11'-7"	1183
REINFORCING STEEL				LBS.	1533
* EPOXY COATED REINFORCING STEEL				LBS.	1136
CLASS AA CONCRETE				C. Y.	19.0
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	13	#4	STR	20'-2"	175
A2	13	#4	STR	20'-2"	175
*A3	13	#4	STR	18'-6"	161
A4	13	#4	STR	18'-2"	158
*B1	64	#5	STR	11'-1"	740
B2	64	#6	STR	11'-7"	1113
REINFORCING STEEL				LBS.	1446
* EPOXY COATED REINFORCING STEEL				LBS.	1076
CLASS AA CONCRETE				C. Y.	18.6

DESIGN ENGINEER OF RECORD: R. C. LARSON	DATE: 6/23
ASSEMBLED BY: J. M. DAVIS	DATE: 4/23
CHECKED BY: R. C. LARSON	DATE: 4/23
DRAWN BY: SHS/MAA 5-09	REV. 12-17
CHECKED BY: BCH 5-09	REV. 08-19
	MAA/THC
	BNB/THC



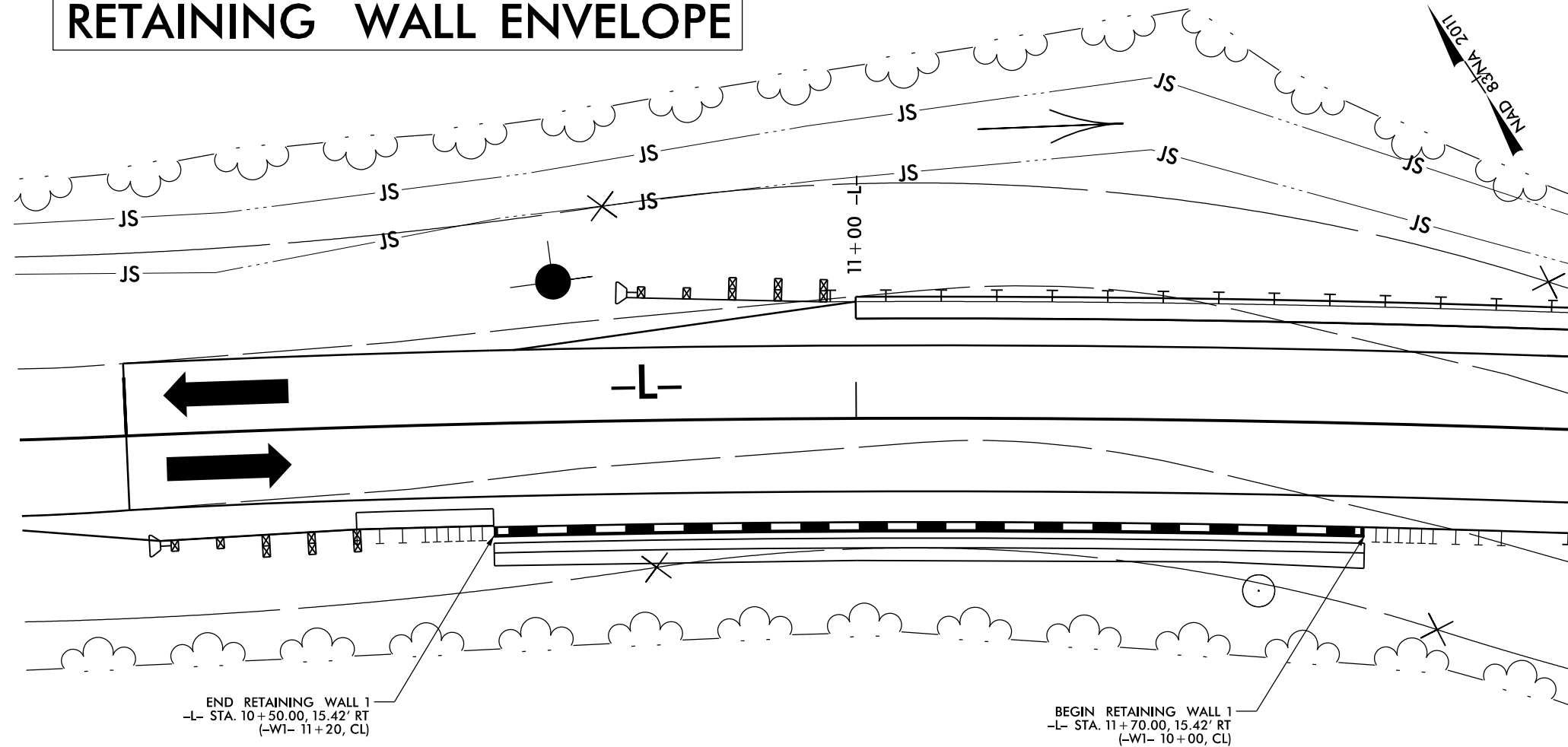
PROJECT NO. BP14.R006
POLK COUNTY
STATION: 12+92.50 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER) 60° SKEW					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.	S-20
TOTAL SHEETS	20

5/28/23

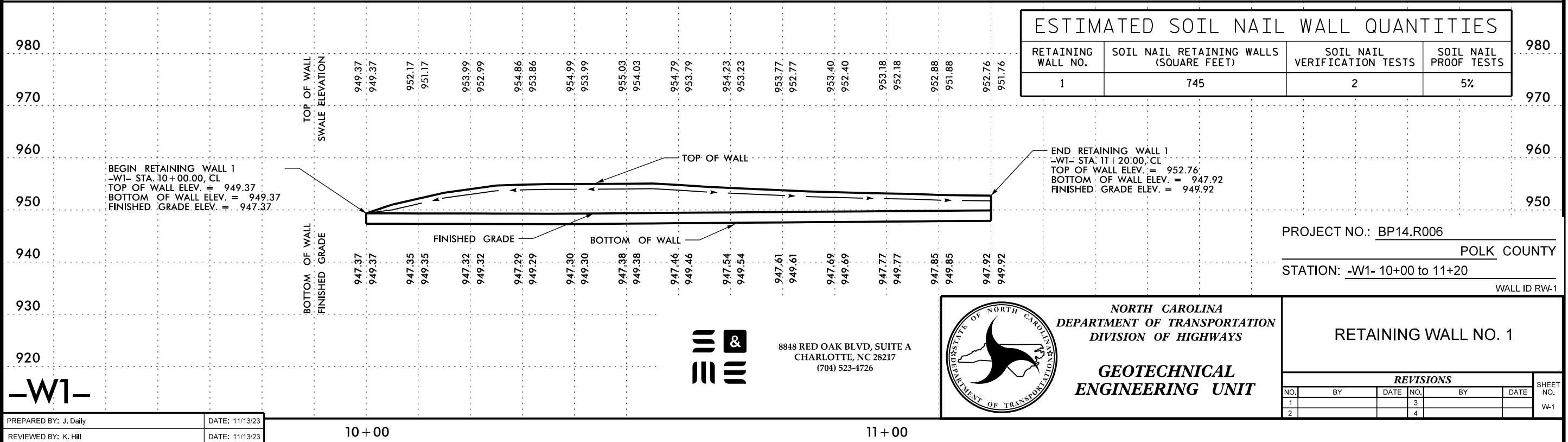
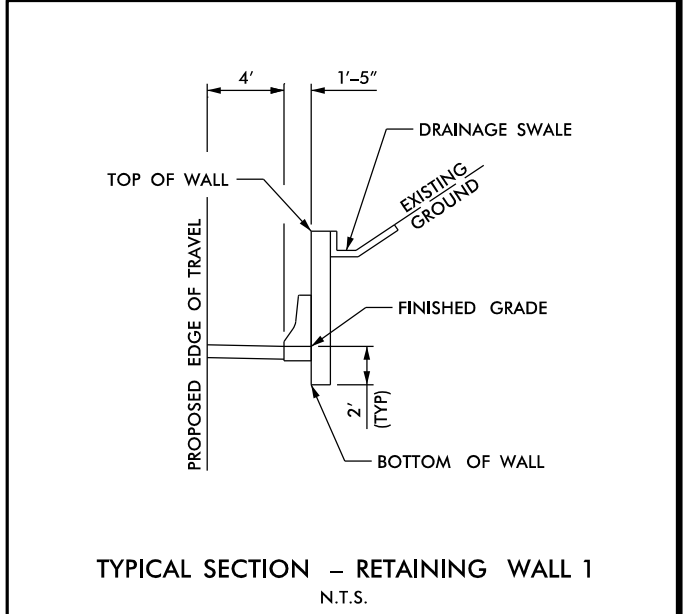
RETAINING WALL ENVELOPE



END RETAINING WALL 1
-L- STA. 10+50.00, 15.42' RT
(-W1- 11+20, CL)

BEGIN RETAINING WALL 1
-L- STA. 11+70.00, 15.42' RT
(-W1- 10+00, CL)

GEOTECHNICAL ENGINEER
 ENGINEER
 10/13/2025
 DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED



PROJECT NO.: BP14.R006
 POLK COUNTY
 STATION: -W1- 10+00 to 11+20
 WALL ID RW-1

NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GEOTECHNICAL
 ENGINEERING UNIT

RETAINING WALL NO. 1

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

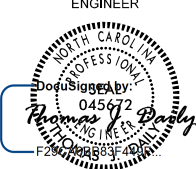
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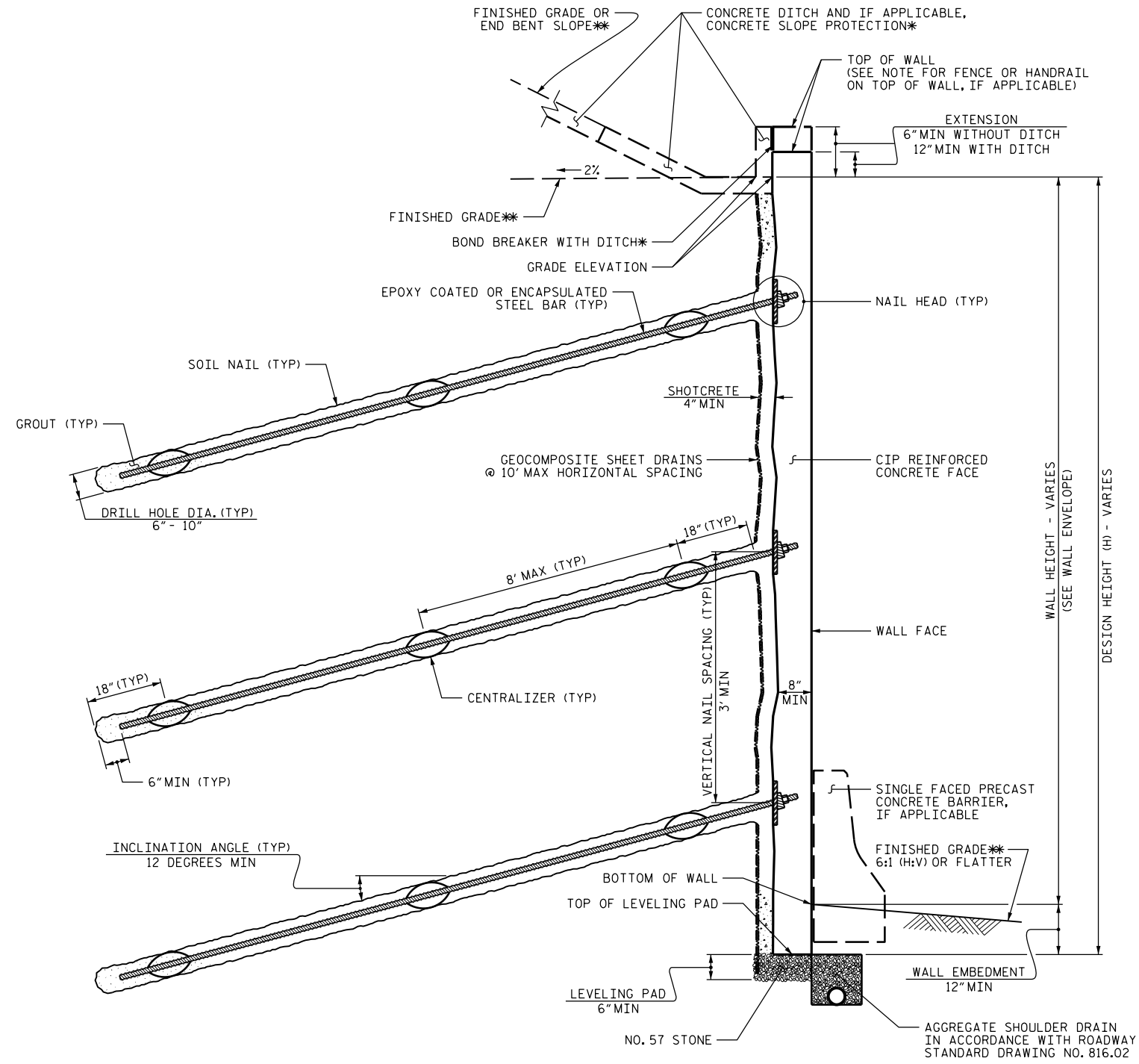
PREPARED BY: J. Daily
 DATE: 11/13/23
 REVIEWED BY: K. Hill
 DATE: 11/13/23

10 + 00

11 + 00

\$\$\$SYTIME\$\$\$\$\$

GEOTECHNICAL ENGINEER  10/13/2025 SIGNATURE DATE	ENGINEER SIGNATURE DATE
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



NOTES:

FOR SOIL NAIL RETAINING WALLS, SEE SOIL NAIL RETAINING WALLS PROVISION.

FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

FOR SINGLE FACED PRECAST CONCRETE BARRIER, SEE ROADWAY PLANS AND SECTION 857 OF THE STANDARD SPECIFICATIONS.

A SHOTCRETE FINISH IS REQUIRED FOR THE CIP REINFORCED CONCRETE FACE FOR RETAINING WALL NO.1. SEE SECTION 825 OF THE STANDARD SPECIFICATIONS.

BEFORE BEGINNING SOIL NAIL WALL DESIGN FOR RETAINING WALL NO.1, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.


DESIGN RETAINING WALL NO.1 FOR THE FOLLOWING:
 1) DESIGN HEIGHT (H) = WALL HEIGHT + WALL EMBEDMENT
 2) DESIGN LIFE = 100 YEARS
 3) IN-SITU ASSUMED MATERIAL PARAMETERS ABOVE ELEVATION 946.0 FT:
 UNIT WEIGHT, $\gamma = 115$ PCF
 FRICTION ANGLE, $\phi = 28$ DEGREES
 COHESION, $c = 0$ PSF
 4) IN-SITU ASSUMED MATERIAL PARAMETERS BELOW ELEVATION 946.0 FT:
 UNIT WEIGHT, $\gamma = 140$ PCF
 FRICTION ANGLE, $\phi = 45$ DEGREES
 COHESION, $c = 0$ PSF

SOIL NAIL WALL - TYPICAL SECTION

*SEE CONCRETE DITCH BEHIND WALL DETAILS.
 *SEE PLANS FOR FINISHED GRADE OR END BENT SLOPE DETAILS.

PROJECT NO.: BP14.R006
 POLK COUNTY
 STATION: -W1- 10+00 TO 11+20
 WALL ID RW- 1

PREPARED BY: J. Daily	DATE: 11/13/23
REVIEWED BY: K. Hill	DATE: 11/13/23


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NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS

**GEOTECHNICAL
 ENGINEERING UNIT**

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