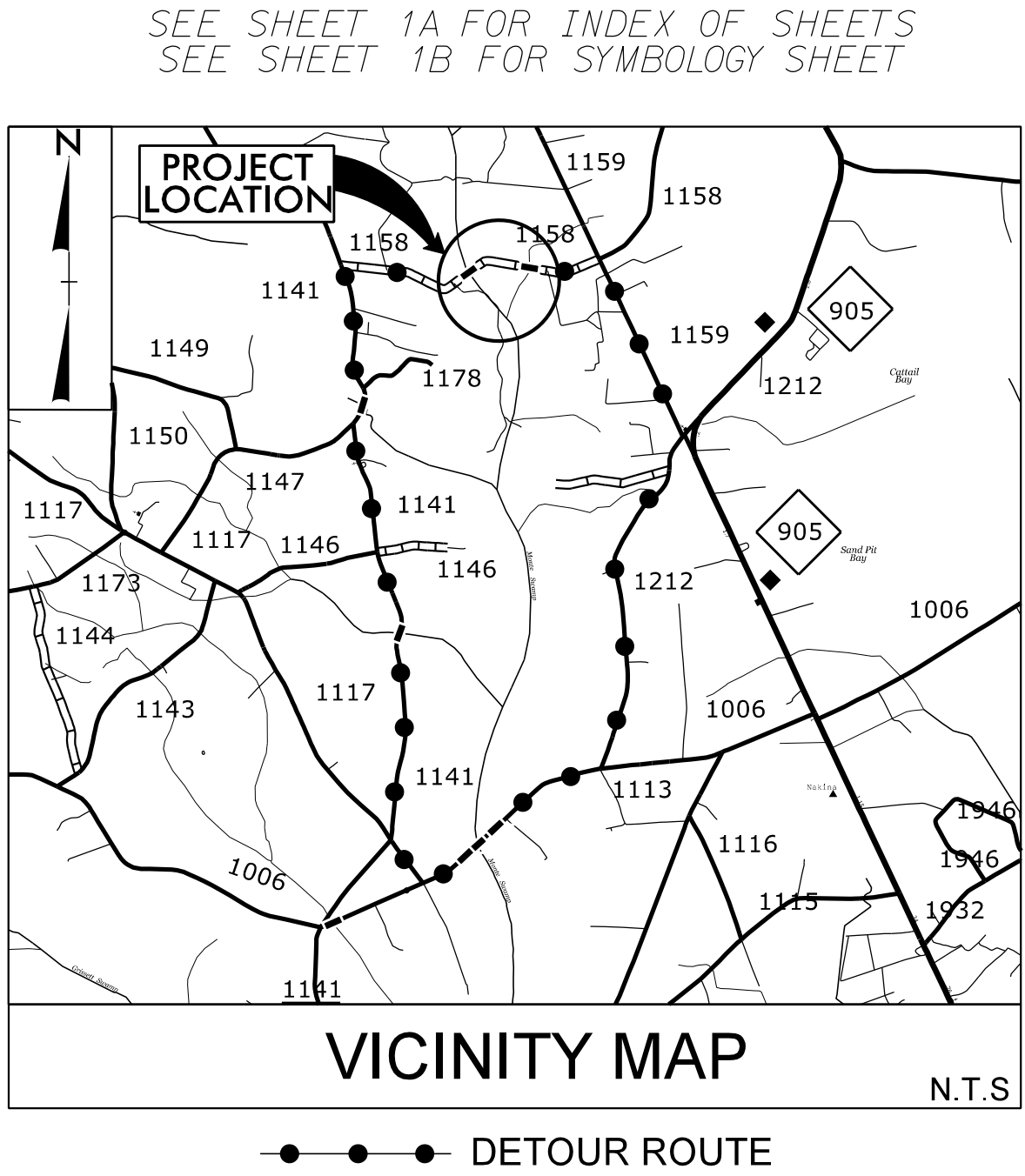


TIP PROJECT: BP6-R013

CONTRACT: DF00539



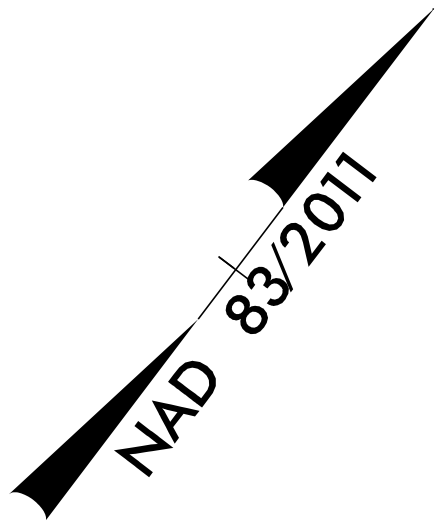
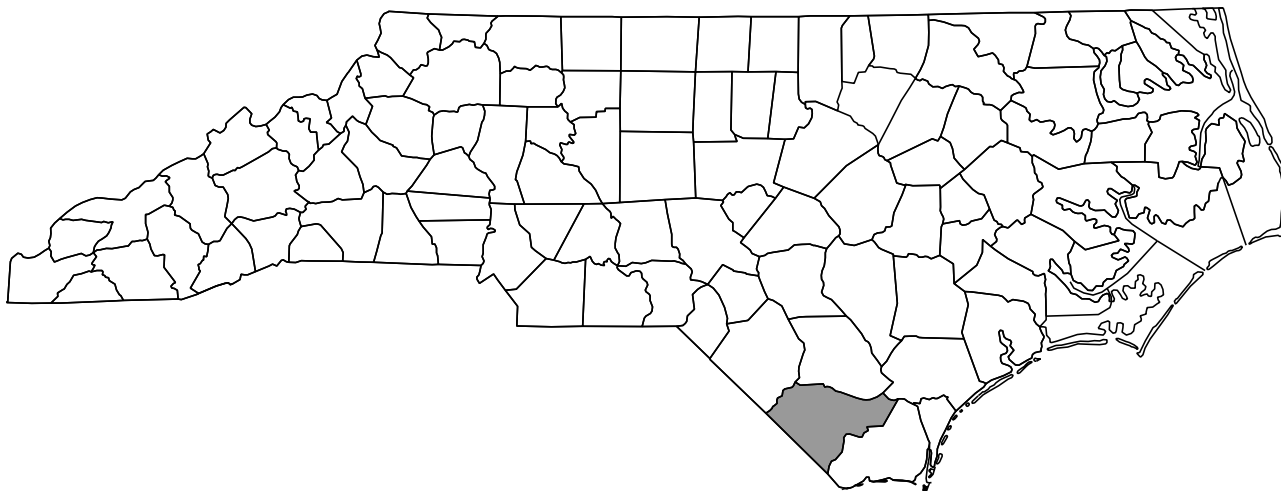
FINAL PLAN SUBMITTAL

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

COLUMBUS COUNTY

LOCATION: REPLACE BRIDGES NO. 324 AND NO. 325 ON
SR 1158 (CHAIR FACTORY RD) OVER BEAVER DAM SWAMP
AND MONIE SWAMP

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



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP6-R013	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BP6.R013.1		PE	
BP6.R013.2		RW/UTIL	
BP6.R013.3		CONSTRUCTION	

END TIP PROJECT BP6-R013
-L- STA. 31+00.00

BEGIN TIP PROJECT BP6-R013
-L- STA. 17+50.00

BEGIN BRIDGE
-L- STA. 20+47.38

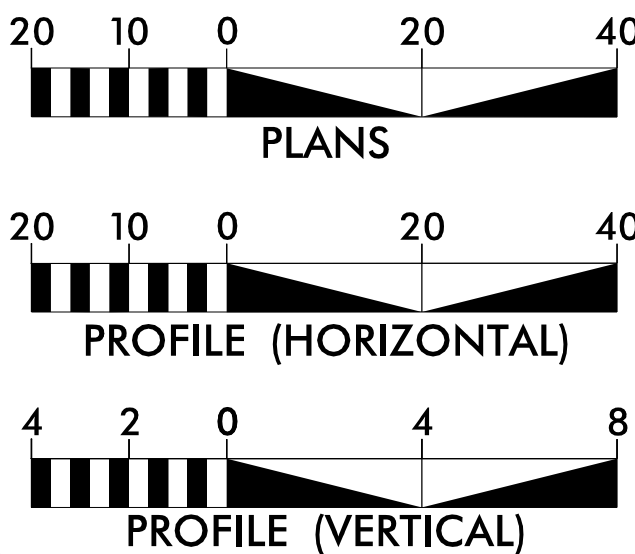
END BRIDGE
-L- STA. 21+04.63

BEGIN BRIDGE
-L- STA. 27+30.81

END BRIDGE
-L- STA. 28+28.19

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2025 = 190
ADT 2045 = 280
K = 10 %
D = 60 %
T = 6 % *
V = 50 MPH
* TTST=3% DUAL=3%
FUNC CLASS =
RURAL LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT BP6-R013 = 0.227 MILES
LENGTH OF STRUCTURES PROJECT BP6-R013 = 0.029 MILES
TOTAL LENGTH OF PROJECT BP6-R013 = 0.256 MILES

PREPARED IN THE OFFICE OF:



WSP USA
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 919.836.4040
FAX: 919.836.4099
LICENSE NO. F-0165

FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 21, 2023

LETTING DATE:
OCTOBER 21, 2026

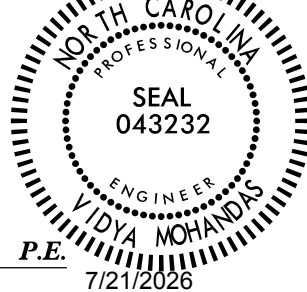
NCDOT CONTACT:

RONYELL THIGPEN, PE
PROJECT ENGINEER

ERIC MISAK
PROJECT DESIGN ENGINEER

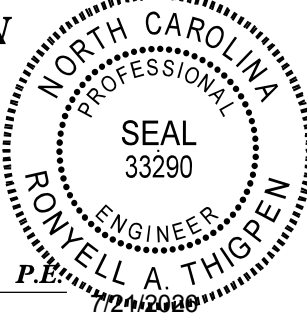
ADAM BRITT
DIVISION 6 BRIDGE PROGRAM MANAGER

HYDRAULICS ENGINEER

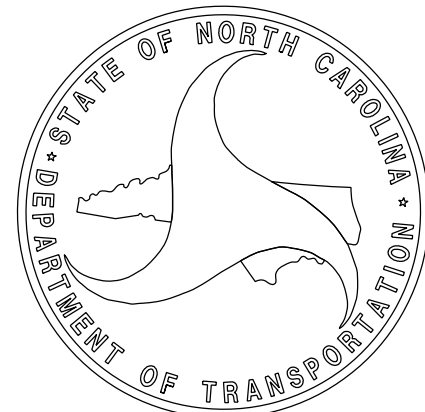


DocuSigned by:
Vidya Mohandas
SIGNATURE:

ROADWAY DESIGN
ENGINEER



DocuSigned by:
Ronyell A. Thigpen
SIGNATURE:



8/17/99

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1 THRU 2A-2	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1 THRU 2C-3	SPECIAL DETAILS
3B-1	ROADWAY SUMMARIES
3D-1	DRAINAGE SUMMARIES
3P-1	PARCEL INDEX SHEET
4 THRU 6	PLAN AND PROFILE SHEET
RW01 THRU RW06	SURVEY CONTROL, EXISTING CENTERLINES, RIGHT OF WAY, EASEMENT AND PROPERTY TIES
TMP-01 THRU TMP-04	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-01 THRU EC-09	EROSION CONTROL PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-9	CROSS-SECTIONS
S1-1 THRU S1-15	STRUCTURE PLANS BRIDGE #324
SN	STANDARD NOTES BRIDGE #324
S2-1 THRU S2-20	STRUCTURE PLANS BRIDGE #325
SN	STANDARD NOTES BRIDGE #325

GENERAL NOTES:

2024 SPECIFICATIONS

EFFECTIVE: 01-16-2024
REVISED:

GRADE LINE:

GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01

SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

GUARDRAIL:

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

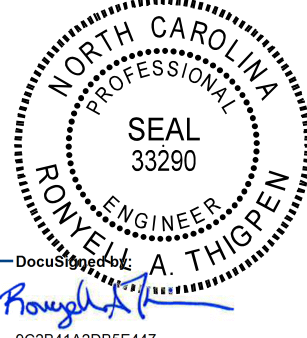
RIGHT-OF-WAY MARKERS:

ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.

PROJECT REFERENCE NO.
BP6-R013

SHEET NO.
1A

ROADWAY DESIGN
ENGINEER
2/13/2026



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:


WSP USA
434 EYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
FAX: 1.919.836.4099
LICENSE NO. F-0165

EFF. 01-16-2024
REV.

2024 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Contracts Standards and Development Unit – N. C. Department of Transportation – Raleigh, N. C., Dated January 16, 2024 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2	– EARTHWORK
200.02	Method of Clearing – Method II
225.02	Guide for Grading Subgrade – Secondary and Local
225.04	Method of Obtaining Superelevation – Two Lane Pavement
275.01	Rock Plating
DIVISION 3	– PIPE CULVERTS
300.01	Method of Pipe Installation (Use Details in Lieu of Standards for Sheets 1 and 2 of 2)
DIVISION 4	– MAJOR STRUCTURES
423.01	Bridge Approach Fills – Type 1 Approach Fill for Bridge Abutment
DIVISION 5	– SUBGRADE, BASES AND SHOULDERS
560.01	Method of Shoulder Construction – High Side of Superelevated Curve – Method I
DIVISION 8	– INCIDENTALS
840.00	Concrete Base Pad for Drainage Structures
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet – for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement (Use Details in Lieu of Standards for Sheets 4, 6, 12, and 14 of 15)
862.02	Guardrail Installation
862.03	Structure Anchor Units (Use Detail in Lieu of Standard for Sheet 8 of 9)
876.02	Guide for Rip Rap at Pipe Outlets

Note: Not to Scale

BOUNDARIES AND PROPERTY:

State Line	
County Line	
Township Line	
City Line	
Reservation Line	
Property Line	
Existing Iron Pin (EIP)	
Computed Property Corner	
Existing Concrete Monument (ECM)	
Parcel / Sequence Number	
Existing Fence Line	
Proposed Woven Wire Fence	
Proposed Chain Link Fence	
Proposed Barbed Wire Fence	
Existing Wetland Boundary	
Proposed Wetland Boundary	
Existing Endangered Animal Boundary	
Existing Endangered Plant Boundary	
Existing Historic Property Boundary	
Known Contamination Area: Soil	
Potential Contamination Area: Soil	
Known Contamination Area: Water	
Potential Contamination Area: Water	
Contaminated Site: Known or Potential	

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	
Sign	
Well	
Small Mine	
Foundation	
Area Outline	
Cemetery	
Building	
School	
Church	
Dam	

HYDROLOGY:

Stream or Body of Water	
Hydro, Pool or Reservoir	
Jurisdictional Stream	
Buffer Zone 1	
Buffer Zone 2	
Flow Arrow	
Disappearing Stream	
Spring	
Wetland	
Proposed Lateral, Tail, Head Ditch	
False Sump	

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

RAILROADS:

Standard Gauge	
RR Signal Milepost	
Switch	
RR Abandoned	
RR Dismantled	

RIGHT OF WAY & PROJECT CONTROL:

Primary Horiz Control Point	
Primary Horiz and Vert Control Point	
Secondary Horiz and Vert Control Point	
Vertical Benchmark	
Existing Right of Way Monument	
Proposed Right of Way Monument (Rebar and Cap)	
Proposed Right of Way Monument (Concrete)	
Existing Permanent Easement Monument	
Proposed Permanent Easement Monument (Rebar and Cap)	
Existing C/A Monument	
Proposed C/A Monument (Rebar and Cap)	
Proposed C/A Monument (Concrete)	
Existing Right of Way Line	
Proposed Right of Way Line	
Existing Control of Access Line	
Proposed Control of Access Line	
Proposed ROW and CA Line	
Existing Easement Line	
Proposed Temporary Construction Easement	
Proposed Temporary Drainage Easement	
Proposed Permanent Drainage Easement	
Proposed Permanent Drainage/Utility Easement	
Proposed Permanent Utility Easement	
Proposed Temporary Utility Easement	
Proposed Aerial Utility Easement	

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	
Existing Curb	
Proposed Slope Stakes Cut	
Proposed Slope Stakes Fill	
Proposed Curb Ramp	
Existing Metal Guardrail	
Proposed Guardrail	
Existing Cable Guiderail	
Proposed Cable Guiderail	
Equality Symbol	
Pavement Removal	
VEGETATION:	
Single Tree	
Single Shrub	
Hedge	

Woods Line	
Orchard	
Vineyard	

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	
Bridge Wing Wall, Head Wall and End Wall	
MINOR:	
Head and End Wall	
Pipe Culvert	
Footbridge	
Drainage Box: Catch Basin, DI or JB	
Paved Ditch Gutter	
Storm Sewer Manhole	
Storm Sewer	

UTILITIES:

** SUE - Subsurface Utility Engineering
LOS - Level of Service - A,B,C or D (Accuracy)*

POWER:	
Existing Power Pole	
Proposed Power Pole	
Existing Joint Use Pole	
Proposed Joint Use Pole	
Power Manhole	
Power Line Tower	
Power Transformer	
U/G Power Cable Hand Hole	
H-Frame Pole	
U/G Power Line Test Hole (SUE - LOS A)*	
U/G Power Line (SUE - LOS B)*	
U/G Power Line (SUE - LOS C)*	
U/G Power Line (SUE - LOS D)*	

TELEPHONE:

Existing Telephone Pole	
Proposed Telephone Pole	
Telephone Manhole	
Telephone Pedestal	
Telephone Cell Tower	
U/G Telephone Cable Hand Hole	
U/G Telephone Test Hole (SUE - LOS A)*	
U/G Telephone Cable (SUE - LOS B)*	
U/G Telephone Cable (SUE - LOS C)*	
U/G Telephone Cable (SUE - LOS D)*	
U/G Telephone Conduit (SUE - LOS B)*	
U/G Telephone Conduit (SUE - LOS C)*	
U/G Telephone Conduit (SUE - LOS D)*	
U/G Fiber Optics Cable (SUE - LOS B)*	
U/G Fiber Optics Cable (SUE - LOS C)*	
U/G Fiber Optics Cable (SUE - LOS D)*	

WATER:

Water Manhole	
Water Meter	
Water Valve	
Water Hydrant	
U/G Water Line Test Hole (SUE - LOS A)*	
U/G Water Line (SUE - LOS B)*	
U/G Water Line (SUE - LOS C)*	
U/G Water Line (SUE - LOS D)*	
Above Ground Water Line	

TV:

TV Pedestal	
TV Tower	
U/G TV Cable Hand Hole	
U/G TV Test Hole (SUE - LOS A)*	
U/G TV Cable (SUE - LOS B)*	
U/G TV Cable (SUE - LOS C)*	
U/G TV Cable (SUE - LOS D)*	
U/G Fiber Optic Cable (SUE - LOS B)*	
U/G Fiber Optic Cable (SUE - LOS C)*	
U/G Fiber Optic Cable (SUE - LOS D)*	

GAS:

Gas Valve	
Gas Meter	
U/G Gas Line Test Hole (SUE - LOS A)*	
U/G Gas Line (SUE - LOS B)*	
U/G Gas Line (SUE - LOS C)*	
U/G Gas Line (SUE - LOS D)*	
Above Ground Gas Line	

SANITARY SEWER:

Sanitary Sewer Manhole	
Sanitary Sewer Cleanout	
U/G Sanitary Sewer Line	
Above Ground Sanitary Sewer	
SS Force Main Line Test Hole (SUE - LOS A)*	
SS Force Main Line (SUE - LOS B)*	
SS Force Main Line (SUE - LOS C)*	
SS Force Main Line (SUE - LOS D)*	

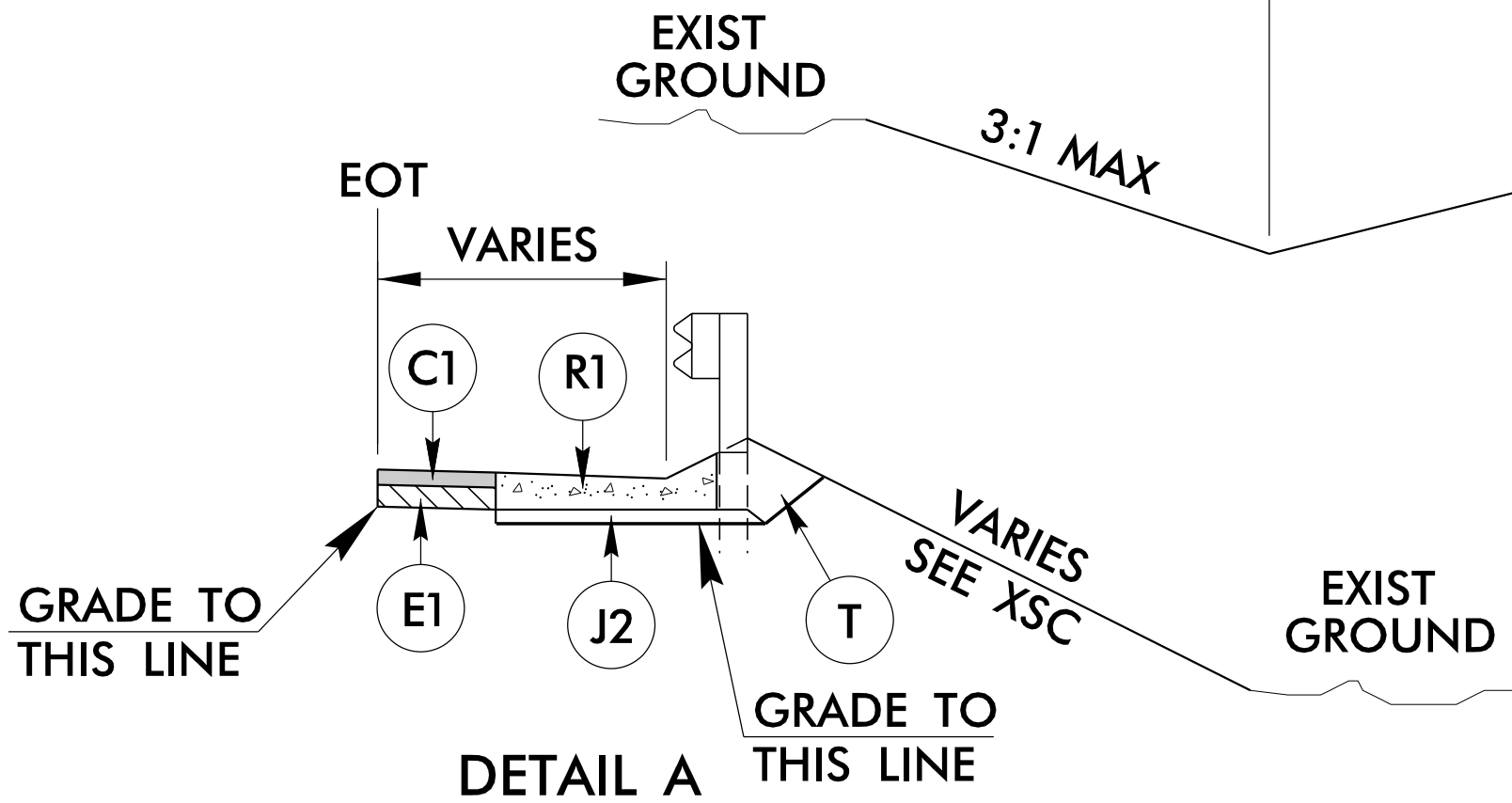
MISCELLANEOUS:

Utility Pole	
Utility Pole with Base	
Utility Located Object	
Utility Traffic Signal Box	
Utility Unknown U/G Line (SUE - LOS B)*	
U/G Tank; Water, Gas, Oil	
Underground Storage Tank, Approx. Loc.	
A/G Tank; Water, Gas, Oil	
Geoenvironmental Boring	
Abandoned According to Utility Records	
End of Information	

6/2/99

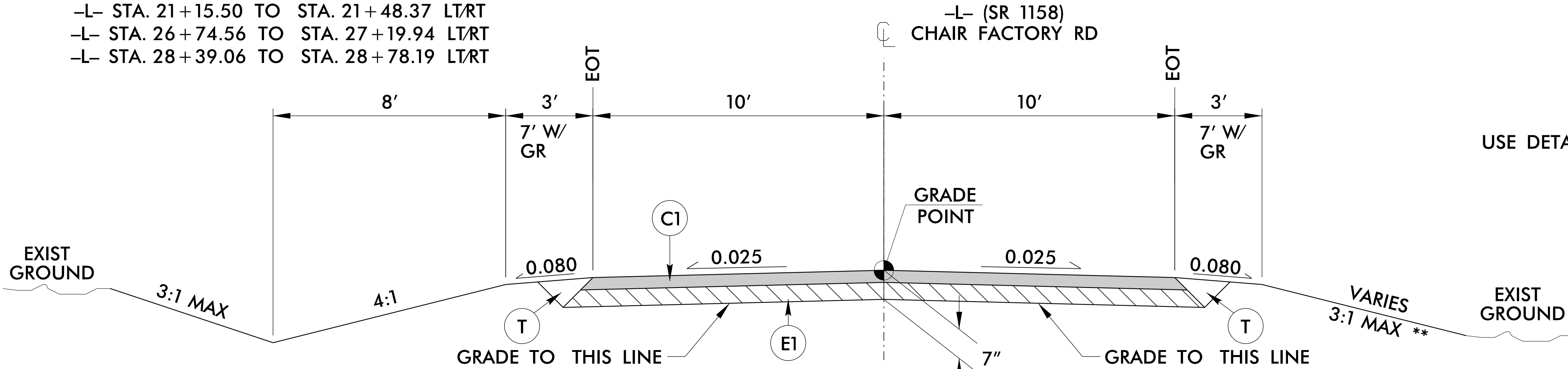
FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
J1	8" AGGREGATE BASE COURSE
J2	6" AGGREGATE BASE COURSE
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



USE DETAIL A IN CONJUNCTION WITH TYPICAL SECTION NO. 2

- L- STA. 20+03.63 TO STA. 20+36.50 LT/RT
- L- STA. 21+15.50 TO STA. 21+48.37 LT/RT
- L- STA. 26+74.56 TO STA. 27+19.94 LT/RT
- L- STA. 28+39.06 TO STA. 28+78.19 LT/RT



TYPICAL SECTION NO. 2

- L- STA. 19+02.29 TO STA. 20+47.38 (BEGIN BRIDGE)
- L- STA. 21+04.63 (END BRIDGE) TO STA. 22+49.71
- L- STA. 25+73.23 TO STA. 27+30.81 (BEGIN BRIDGE)
- L- STA. 28+28.19 (END BRIDGE) TO STA. 29+79.52
- L- STA. 22+49.71 TO STA. 25+73.23

** USE 2:1 SLOPES WITH ROCK PLATING (STD. DRAWING 275.01) IN THE FOLLOWING LOCATIONS

- L- STA. 19+80.00 TO STA. 20+36.50 LT/RT
- L- STA. 21+15.50 TO STA. 21+75.00 LT/RT
- L- STA. 26+60.00 TO STA. 27+19.94 LT
- L- STA. 28+39.06 TO STA. 28+95.00 LT

PROJECT REFERENCE NO.
BP6-R013

SHEET NO.
2A-1

ROADWAY DESIGN
ENGINEER
2/13/2008
NORTH CAROLINA
PROFESSIONAL
SEAL
33290
BOYETTE A. THIGPEN

PAVEMENT DESIGN
ENGINEER
2/13/2008
NORTH CAROLINA
PROFESSIONAL
SEAL
038176
SHUAI ZHANG

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

WSP

WSP USA
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 919.836.4040
FAX: 919.836.4099
LICENSE NO. F-0165

USE DETAIL A IN CONJUNCTION WITH TYPICAL SECTION NO. 2

- L- STA. 19+53.63 TO 20+47.38 (RT)
- L- STA. 19+53.63 TO 20+47.38 (LT)
- L- STA. 21+04.63 TO 21+98.38 (RT)
- L- STA. 21+04.63 TO 21+98.38 (LT)
- L- STA. 26+24.56 TO 27+30.81 (RT)
- L- STA. 26+24.56 TO 27+30.81 (LT)
- L- STA. 28+28.19 TO 29+28.19 (RT)
- L- STA. 28+28.19 TO 29+28.19 (LT)

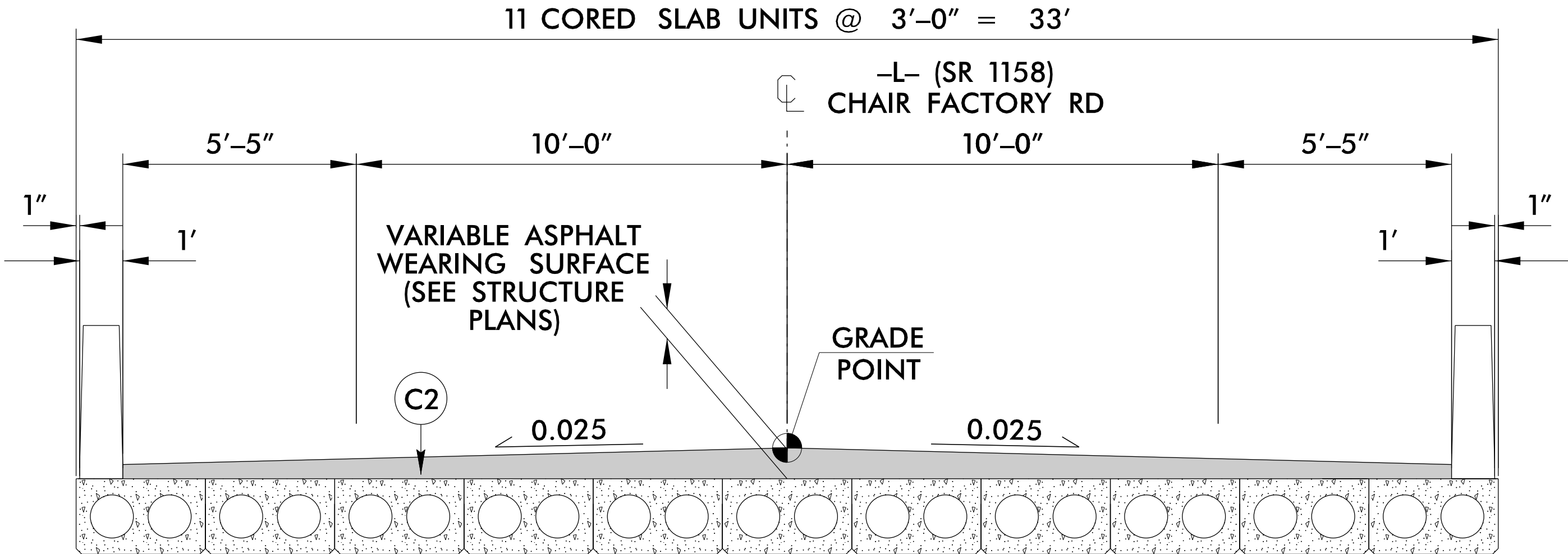
**NOTE: USE 1.5:1 MAX IN AREAS OF ROCK EMBANKMENT & ROCK PLATING

1/23/15 PM
BP6R013.dgn
2/13/2008

6/2/99

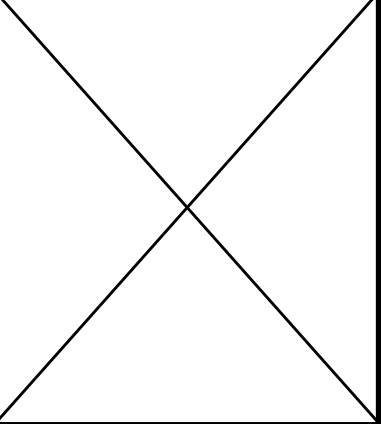
FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
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J1	8" AGGREGATE BASE COURSE
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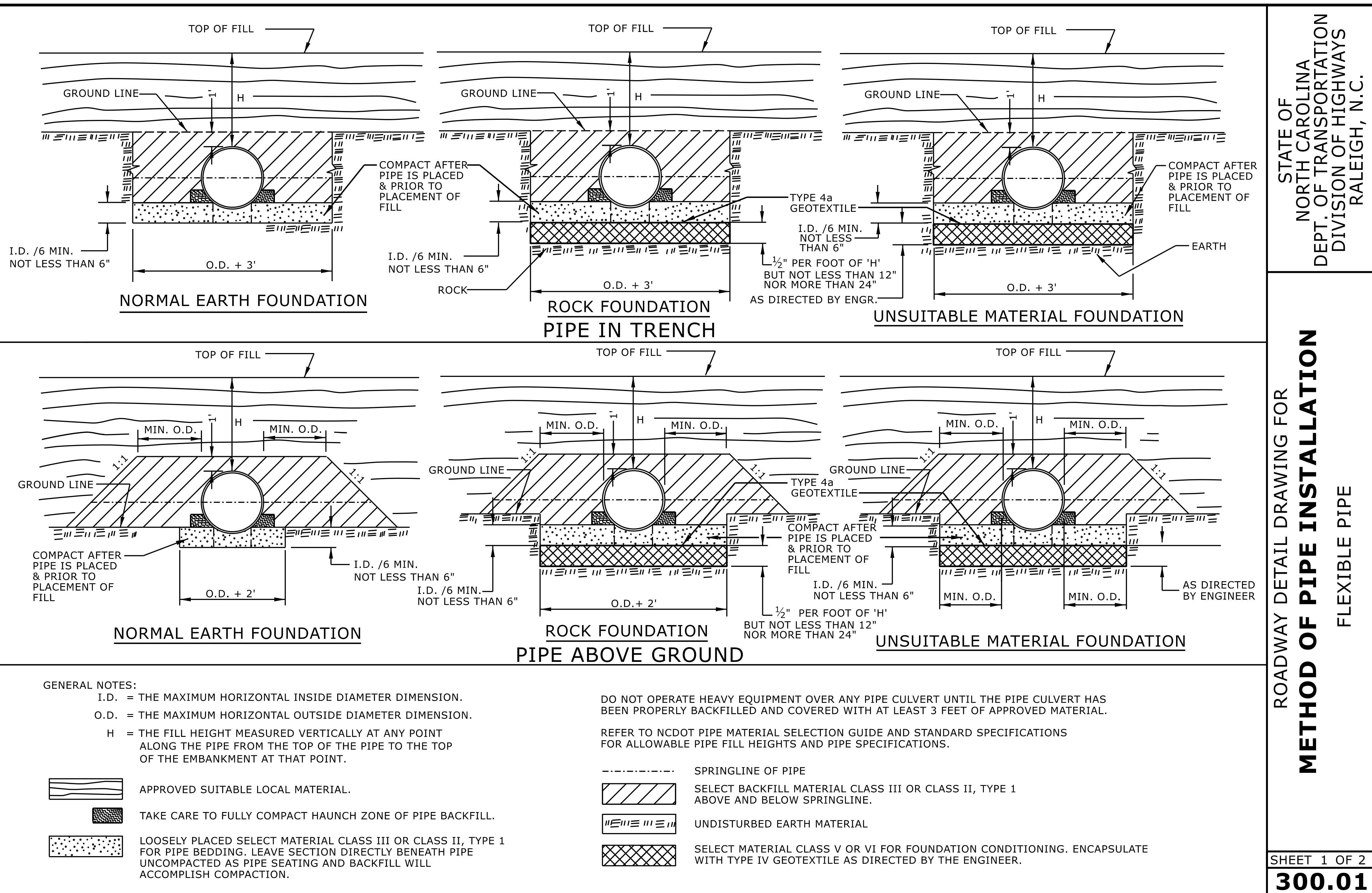
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



BRIDGE TYPICAL SECTION NO. 1

-L- STA. 20+47.38 (BEGIN BRIDGE) TO STA. 21+04.63 (END BRIDGE)
-L- STA. 27+30.81 (BEGIN BRIDGE) TO STA. 28+28.19 (END BRIDGE)

PROJECT REFERENCE NO.		SHEET NO.	
BP6-R013		2A-2	
ROADWAY DESIGN ENGINEER 2/13/2026 			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
		WSP USA 434 LAVETTEVILLE STREET SUITE 1500 RALEIGH, NC 27601 TEL: 1.919.836.4040 FAX: 1.919.836.4099 LICENSE NO. F-0165	



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

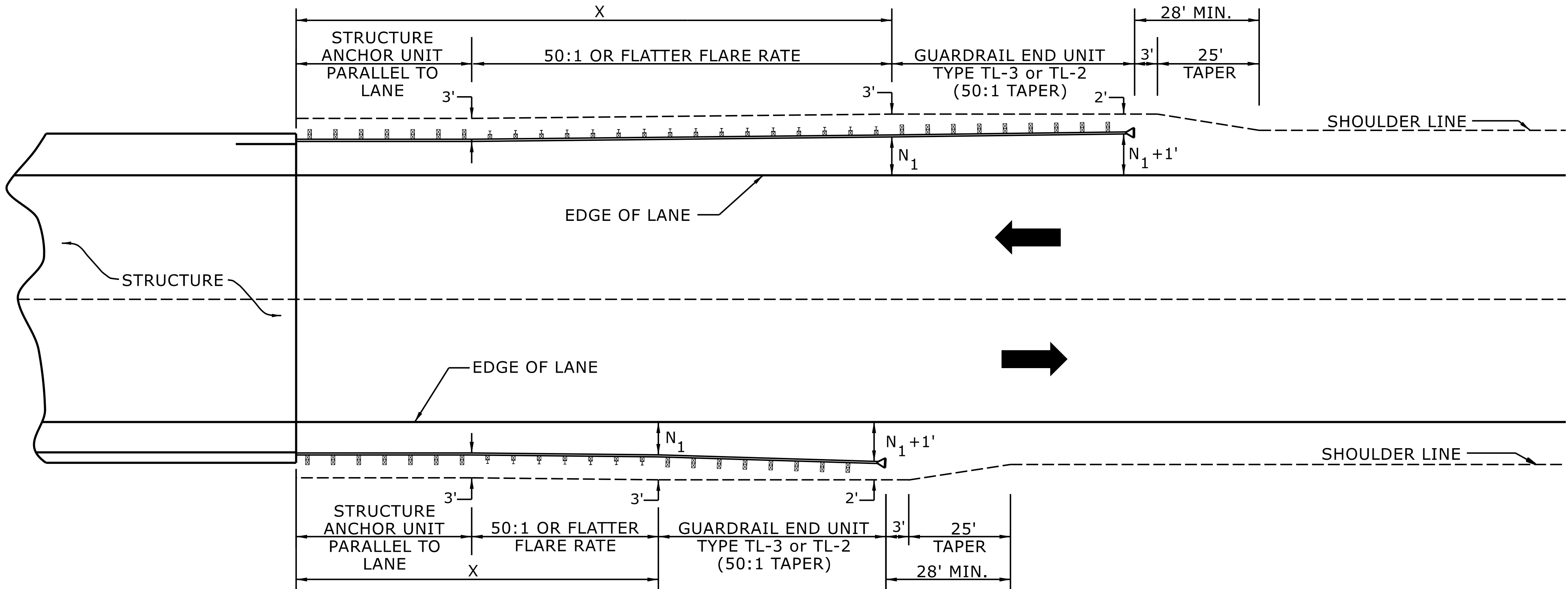
**CONTRACTS STANDARDS
AND DEVELOPMENT UNIT**
919-707-6950 FAX 919-250-4

Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

PROJECT REFERENCE NO.	SHEET NO.
BPR-R013	2C-2



USE FLARE RATE AS THE CONTROL IF THE "N₁" DISTANCE IS NOT OBTAINED.
("N₁" IS BASED ON SHOULDER WIDTHS IN THE ROADWAY DESIGN MANUAL)

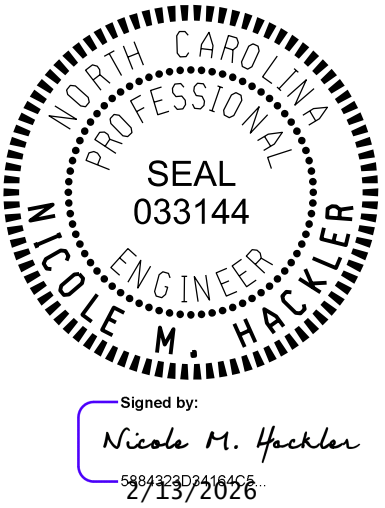
SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

FOR POSTED SPEEDS ≥ 45MPH USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45MPH USE GREU TYPE TL-2

GUARDRAIL LENGTH OF NEED (X) IS CALCULATED BASED ON THE AASHTO ROADSIDE DESIGN GUIDE.

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT



LENGTHS AND OFFSETS FOR PROPOSED GUARDRAIL AT TWO LANE - TWO WAY LOCATIONS

SHEET 4 OF 15
862D01

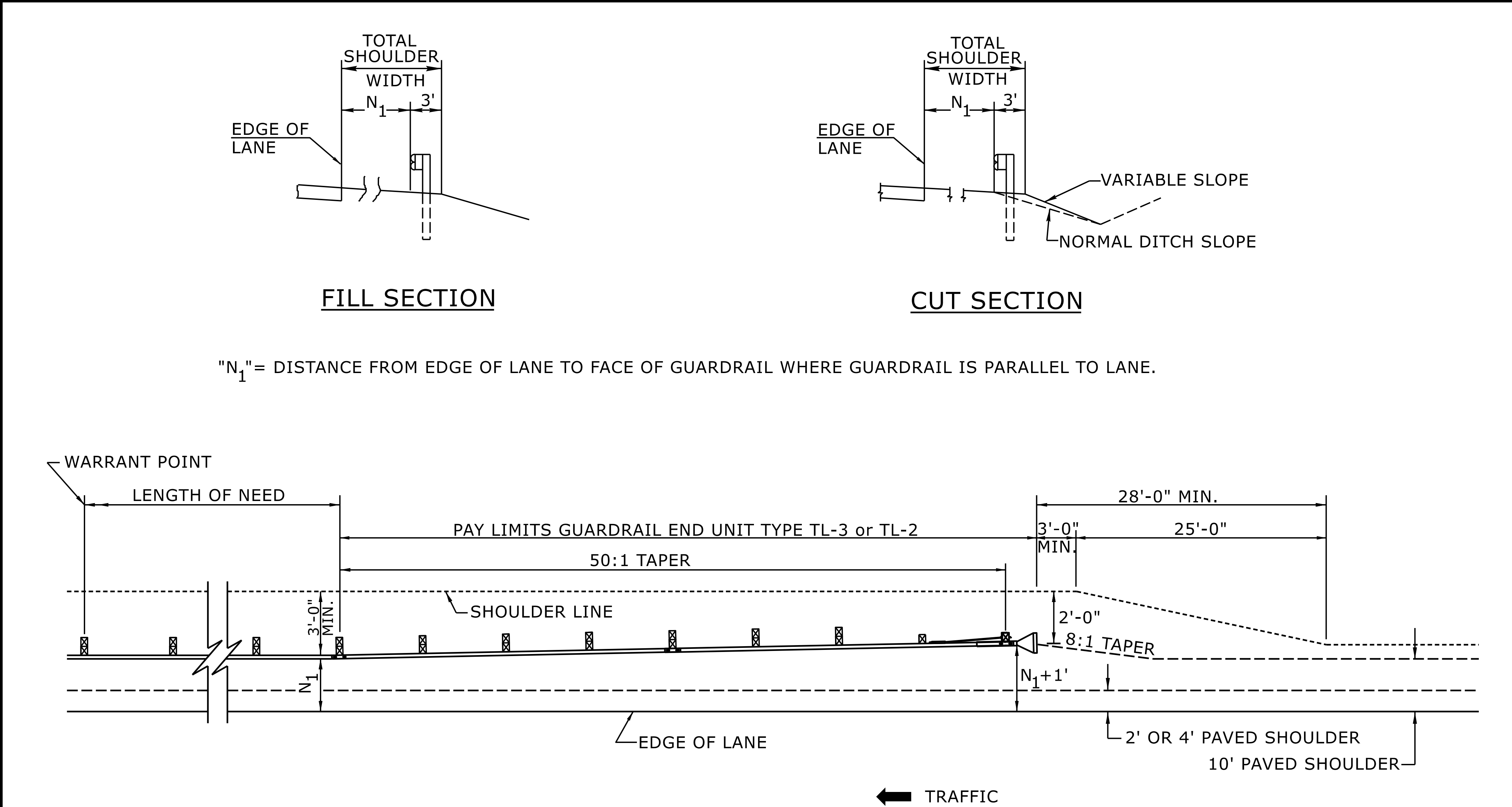
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

**CONTRACTS STANDARDS
AND DEVELOPMENT UNIT**
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

PROJECT REFERENCE NO.	SHEET NO.
BPR-R013	2C-3



" N_1 "= DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.

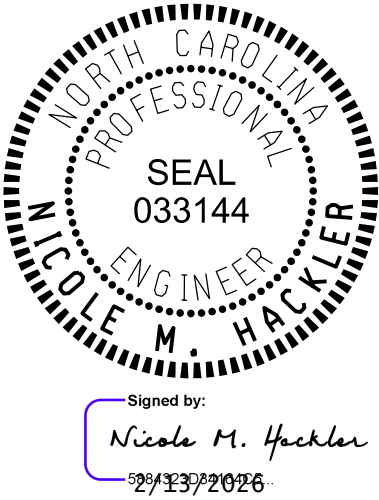
FOR POSTED SPEEDS $\geq$ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 6 OF 15
862D01



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

**CONTRACTS STANDARDS
AND DEVELOPMENT UNIT**
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: DATE:

12/06/07

COMPUTED BY: AC	DATE: 01-15-2026
CHECKED BY: EM	DATE: 01-15-2026

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
BP6.R013	3B-1

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	EMBANK. + %	BORROW	WASTE
-L- 17 + 50.00	-L- 20 + 47.38 (BRIDGE)	80	375	295	
-L- 21 + 04.63 (BRIDGE)	-L- 27 + 30.81 (BRIDGE)	199	503	304	
-L- 28 + 28.19 (BRIDGE)	-L- 31 + 00.00	209	238	29	
SUBTOTALS:		488	1,116	628	
PROJECT TOTALS:					
WASTE IN LIEU OF BORROW					
LOSS DUE TO CLEARING & GRUBBING		-230		230	
5% TO REPLACE BORROW				42	
GRAND TOTALS:		258	1,116	900	
SAY:		300		900	

CONTINGENCY: EST. UNDERCUT EXCAVATION = 450 CY
EST. SHALLOW UNDERCUT = 100 SY
EST. SELECT GRANULAR MATERIAL = 400 SY
EST. GEOTEXTILE FOR SOIL STABILIZATION = 400 SY

Earthwork quantities are calculated by the Roadway Designer
These earthwork quantities are based in part on subsurface data
provided by the Geotechnical Engineering Unit.

Note: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Fine Grading,
and Clearing and Grubbing will be paid for at the contract lump sum price for "Grading."

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH
-L- RT	20 + 03.63	20 + 36.50	32.87
-L- LT	20 + 03.63	20 + 36.50	32.87
-L- RT	21 + 15.50	21 + 48.37	32.87
-L- LT	21 + 15.50	21 + 48.37	32.87
-L- RT	26 + 74.56	27 + 19.94	45.38
-L- LT	26 + 74.56	27 + 19.94	45.38
-L- RT	28 + 39.06	28 + 78.19	39.13
-L- LT	28 + 39.06	28 + 78.19	39.13
		TOTAL:	300.50
		SAY:	310

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TL-2
NG = NON-GATING IMPACT ATTENUATOR TL-2

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS												IMPACT ATTENUATOR TL-2			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	TYPE III	GREU TL-3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		</

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2/15/2026

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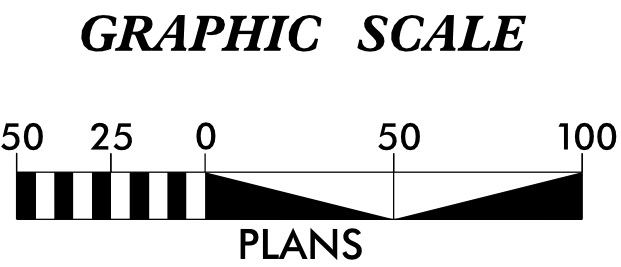
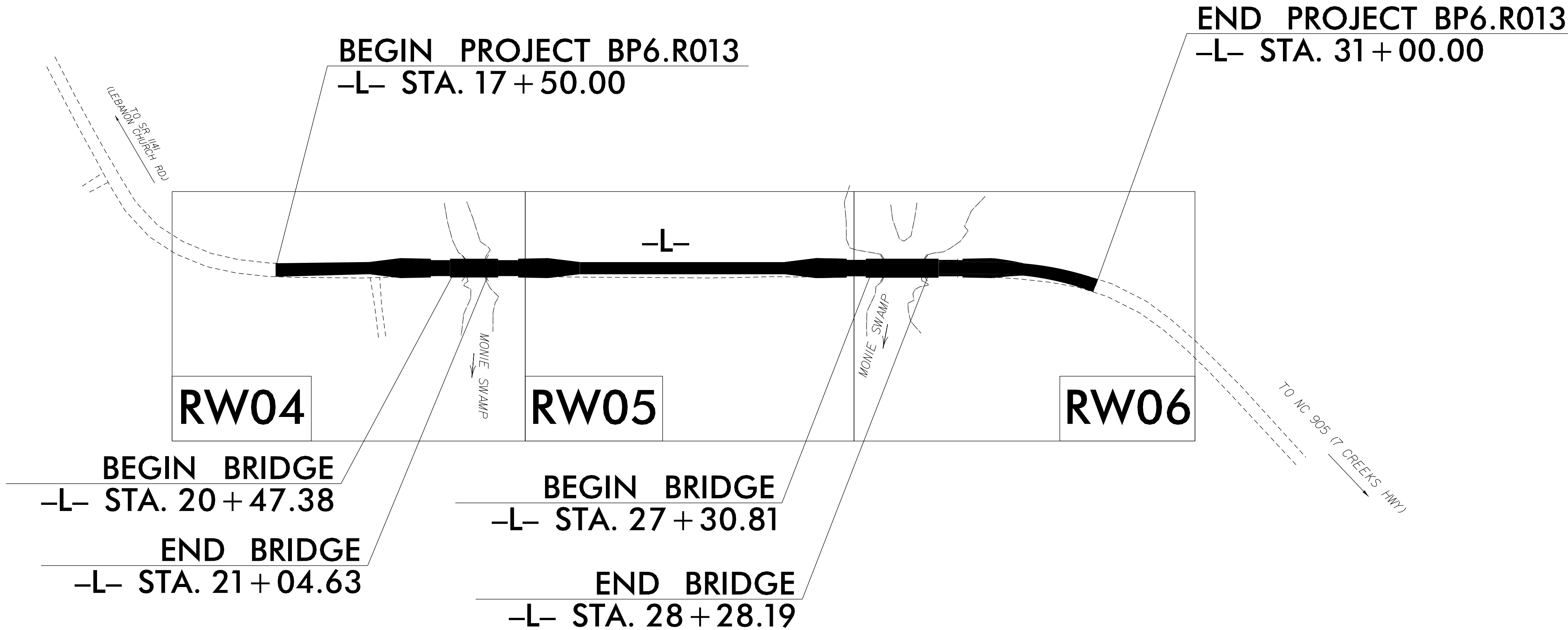
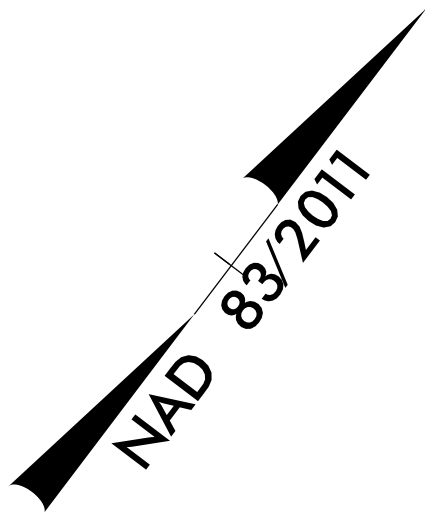
TIP PROJECT: BP6.R013

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP6.R013	RW01	9

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SURVEY CONTROL, EXISTING CENTERLINES,
RIGHT OF WAY, EASEMENTS AND PROPERTY TIES

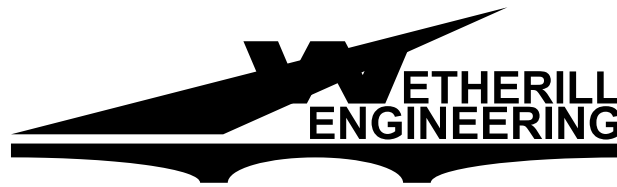
COLUMBUS



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY OTHERS FOR MONUMENT "GPS-102" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 153,641.094 (ft) EASTING: 2,088,435.934 (ft) ELEVATION: 47.401 (ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.0000517628 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS-102" TO -L- STATION 10+00 IS N 59-56'28.7" W 312.73 (ft) ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAD 88

Prepared in the Office of:



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

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - SURVEYING - CONSTRUCTION OBSERVATION

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
09/21/2023

LETTING DATE:
08/04/2027

PROFESSIONAL LAND
SURVEYOR

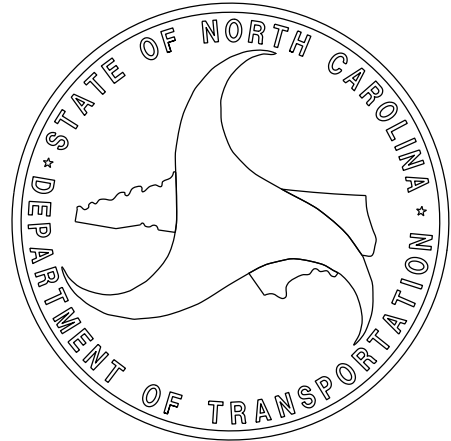


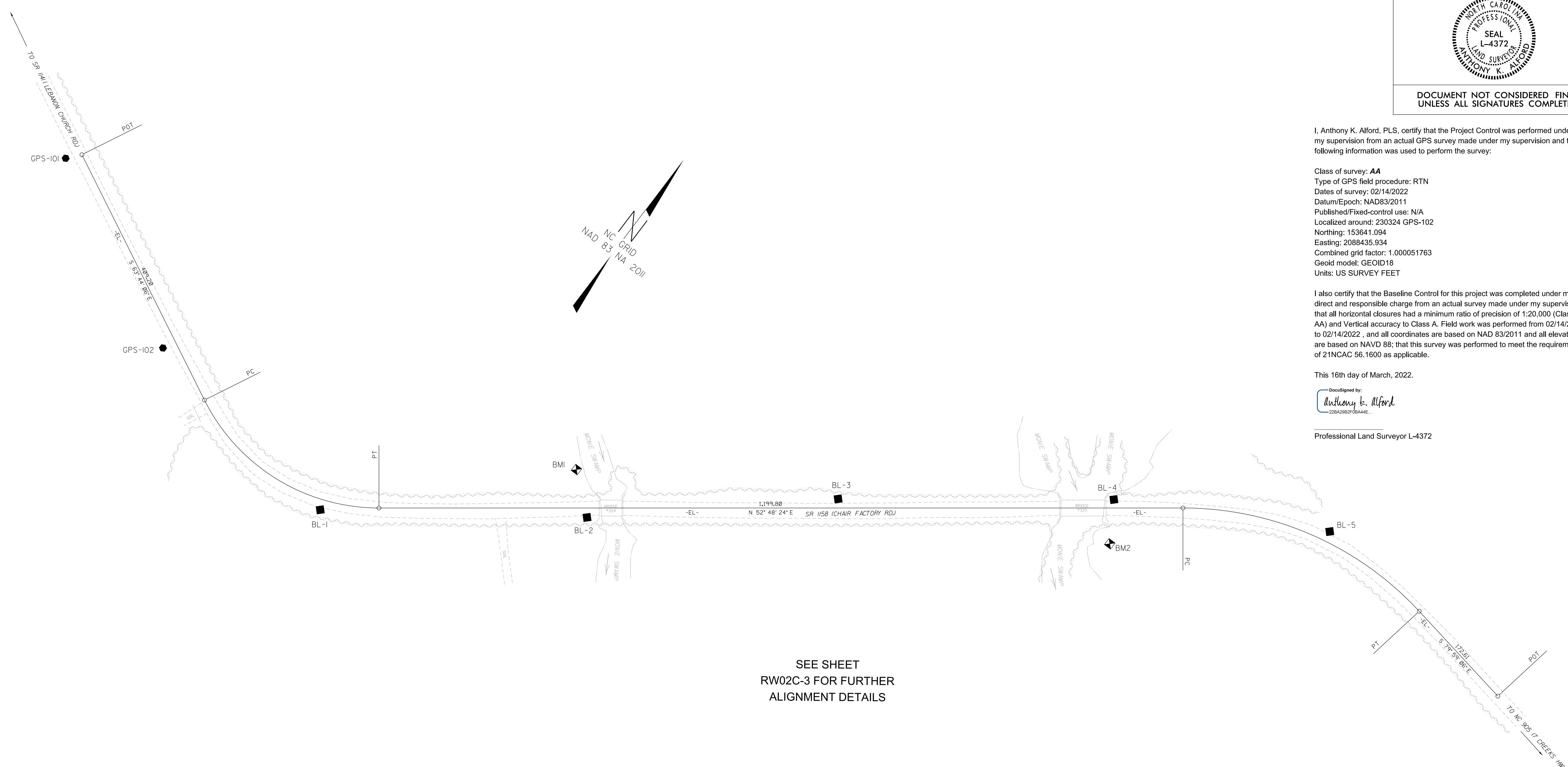
DocuSigned by:
Anthony K. Alford
ccsf7999a839408

9/23/2025

SIGNATURE:

Date:





SEE SHEET
RW02C-3 FOR FURTHER
ALIGNMENT DETAILS

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

PROJECT REFERENCE NO.	SHEET NO.
BP6.R013 & BP6.R014	RW02C-1
Location and Surveys	
	
1223 Jones Franklin Rd. Raleigh, N.C. 27606 License No. F-0377 Bus: 919 851 8077 Fax: 919 851 8107	
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN CIVIL/SITE DESIGN - SURVEYING - CONSTRUCTION OBSERVATION	
PROJECT SURVEYOR 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, Anthony K. Alford, PLS, certify that the Project Control was performed under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: **AA**
Type of GPS field procedure: RTN
Dates of survey: 02/14/2022
Datum/Epoch: NAD83/2011
Published/Fixed-control use: N/A
Localized around: 230324 GPS-102
Northing: 153641.094
Easting: 2088435.934
Combined grid factor: 1.000051763
Geoid model: GEOID18
Units: US SURVEY FEET

I also certify that the Baseline Control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed from 02/14/2022 to 02/14/2022 , and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 83; that this survey was performed to meet the requirements of 21NAC 56.1600 as applicable.

This 16th day of March, 2022.

DocuSigned by:
Anthony E. Alford
228A2982F0BA44E...

Professional Land Surveyor L-4372

REVISIONS

22-MAR-2022 1513
P:\2021\10000\Location and Surveys\Div 6 Bridges Feb2022 22115.30\80-Drawings\FOR REVIEW\Revised\230324_230325_1s-rw02c-2_220322.dgn
more AT RAL-WS094

SURVEY CONTROL SHEET
W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

BL	POINT	DESC.	NORTH	EAST	ELEVATION
101		GPS-101	153778.7974	2088149.1763	48.73
102		GPS-102	153641.0935	2088435.9340	47.40
1		BL-1	153590.6480	2088768.7970	45.09
2		BL-2	153822.2390	2089092.8160	46.90
3		BL-3	154070.7330	2089374.6520	45.93
4		BL-4	154318.7700	2089703.0210	47.30
5		BL-5	154475.4870	2089988.4820	45.15

BM1 ELEVATION = 43.34
N 153870 E 2089037
BENCHTIE NAIL SET IN 18" OAK

BM2 ELEVATION = 43.89
N 154263 E 2089738
BENCHTIE NAIL SET IN 16" CYPRESS

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

PROJECT REFERENCE NO.
BP6.R013 & BP6.R014

SHEET NO.
RW02C-2

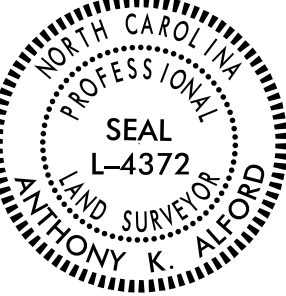
Location and Surveys



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Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - SURVEYING - CONSTRUCTION OBSERVATION

PROJECT SURVEYOR



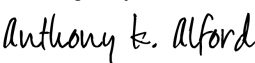
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

I, Anthony K. Alford, PLS, certify that the Project Control was performed under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: **AA**
Type of GPS field procedure: RTN
Dates of survey: 02/14/2022
Datum/Epoch: NAD83/2011
Published/Fixed-control use: N/A
Localized around: 230324 GPS-102
Northing: 153641.094
Easting: 2088435.934
Combined grid factor: 1.000051763
Geoid model: GEOID18
Units: US SURVEY FEET

I also certify that the Baseline Control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed from 02/14/2022 to 02/14/2022 , and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 16th day of March, 2022.

DocuSigned by:

229A0982703A4E

Professional Land Surveyor L-4372

6/2/2025

22-MAR-2022 15:14
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more AT RAL-WS094

REVISIONS

SURVEY CONTROL SHEET
W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.
BP6.R013 & BP6.R014

SHEET NO.
RW02C-3

Location and Surveys



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Raleigh, N.C. 27606
License No. F-0377
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Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - SURVEYING - CONSTRUCTION OBSERVATION

PROJECT SURVEYOR



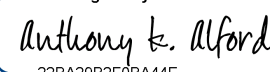
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

I, Anthony K. Alford, PLS, certify that the Project Control was performed under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

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Type of GPS field procedure: RTN
Dates of survey: 02/14/2022
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Northing: 153641.094
Easting: 2088435.934
Combined grid factor: 1.000051763
Geoid model: GEOID18
Units: US SURVEY FEET

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This 16th day of March, 2022.

DocuSigned by:

230324230325-3044E...

Professional Land Surveyor L-4372

EL (BASED ON PROJECT 6C.024024)									
POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	153797.737	2088165.262							
LINE			S 63°44'06.0" E	409.20					
PC	153616.656	2088532.215							
CURVE			N 84°32'09.0" E	306.19	63°27'30.0"(LT)	19°40'54.6"	322.42	180.00	291.11
PT	153645.813	2088837.016							
LINE			N 52°48'24.0" E	1199.80					
PC	154371.100	2089792.776							
CURVE			N 76°24'39.0" E	384.86	47°12'30.0"(RT)	11°55'20.0"	395.97	210.00	480.58
PT	154461.527	2090166.866							
LINE			S 79°59'06.0" E	172.61					
POT	154431.509	2090336.845							

- NOTES:
1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

6/2/99

REVISIONS

22-SEP-2025 14:48
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PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO.
BP6.R013

SHEET NO.
RW02D-1

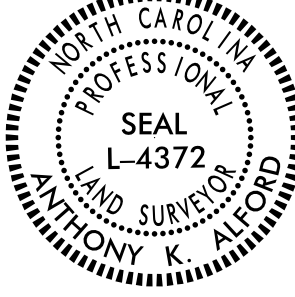
Location and Surveys



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Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - SURVEYING - CONSTRUCTION OBSERVATION

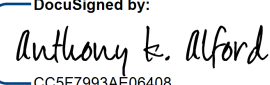
PROJECT SURVEYOR



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

I, Anthony K. Alford, PLS, certify that the data compiled came from available surveys/mapping performed by others and provided to me by NCDOT and do not certify to the accuracy or quality of the individual data sources.

This 22nd day of September, 2025.

DocuSigned by:

CC8F7993AE06408...

Anthony K. Alford
Professional Land Surveyor L-4372

L			
TYPE	STATION	NORTH	EAST
POT	10+00.00	153797.7366	2088165.2617
PC	14+09.20	153616.6560	2088532.2147
PT	17+31.62	153645.8127	2088837.0155
PC	29+31.42	154371.0997	2089792.7764
PT	33+27.39	154461.5266	2090166.8658
POT	35+00.00	154431.5088	2090336.8453

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

6/2/99

REVISIONS

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more AT WET-BN2\DX3

RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO.
BP6.R013

SHEET NO.
RW03E-1

Location and Surveys



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Raleigh, N.C. 27606
License No. F-03777
Bus: 919 851 8077
Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - SURVEYING - CONSTRUCTION OBSERVATION

PROJECT SURVEYOR



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

I, Anthony K. Alford, PLS, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from 09/18/2025 to 09/18/2025, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 22nd day of September, 2025.

DocuSigned by:

CC5F7893AE06408...
Anthony K. Alford
Professional Land Surveyor L-4372

ROW MARKER IRON PIN AND CAP-L

NOT SET-FELL IN 8" OAK TREE

60D NAIL SET IN LARGE ROOT

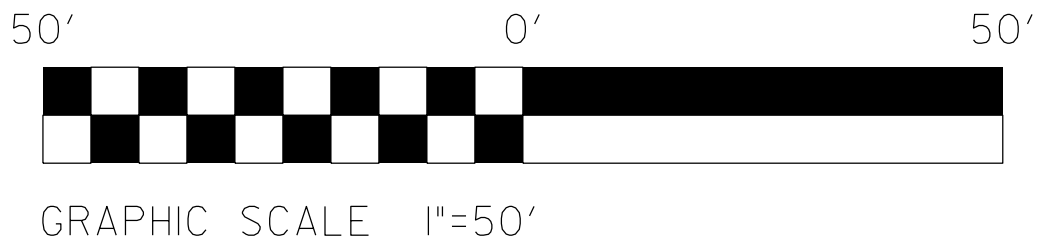
ALIGN	STATION	OFFSET	NORTH	EAST
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L	19+00.00	30.00	153723.7010	2088989.2816
L	19+00.00	-30.00	153771.4970	2088953.0112
L	19+00.00	-40.00	153779.4630	2088946.9661
L	22+50.00	40.00	153927.3123	2089274.1367
L	22+50.00	30.00	153935.2783	2089268.0916
L	22+50.00	-40.00	153991.0403	2089225.7762
L	22+50.00	-30.00	153983.0743	2089231.8212
L	25+70.00	40.00	154120.7544	2089529.0487
L	25+70.00	30.00	154128.7204	2089523.0037
L	25+70.00	-40.00	154184.4824	2089480.6882
L	25+70.00	-30.00	154176.5164	2089486.7333
L	29+31.42	40.00	154339.2356	2089816.9567
L	29+31.42	-40.00	154402.9637	2089768.5961
L	29+80.00	-40.00	154432.6033	2089812.0503
L	29+80.00	-30.00	154424.0679	2089817.2606
L	29+80.00	30.00	154372.8558	2089848.5227
L	29+80.00	40.00	154364.3204	2089853.7330

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED 09/18/2025 TO 09/18/2025 .

REVISIONS

REVISIONS



-L- CURVE DATA
PI Sta 15+89.20
Δ = 63° 27' 30.0" (LT)
D = 19° 40' 54.6"
L = 322.42'
T = 180.00'
R = 291.11'
e = EXIST
RO = N/A

WALTER H. POWELL SR.
FAMILY FARMS LLC
DB 819 PG 325

SOUTHERN DIVERSIFIED LLC
DB 1138 PG 422

WALTER H. POWELL SR.
FAMILY FARMS LLC
DB 819 PG 325

SOUTHERN DIVERSIFIED LLC
DB 1138 PG 422

PROJECT REFERENCE NO.		SHEET NO.	
BP6.R013		RW04	
Location and Surveys			
		1223 Jones Franklin Rd. Raleigh, N.C. 27606 License No. F-0377 Bus: 919 851 8077 Fax: 919 851 8107	
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN CIVIL/SITE DESIGN - SURVEYING - CONSTRUCTION OBSERVATION			
PROJECT SURVEYOR			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

I, Anthony K. Alford, PLS, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from 09/18/2025 to 09/18/2025, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 23rd day of September, 2025.

DocuSigned by:

Anthony K. Alford
Professional Land Surveyor L-4372

MATCHLINE RW05
-L- STA. 21+60.00

NOTES:

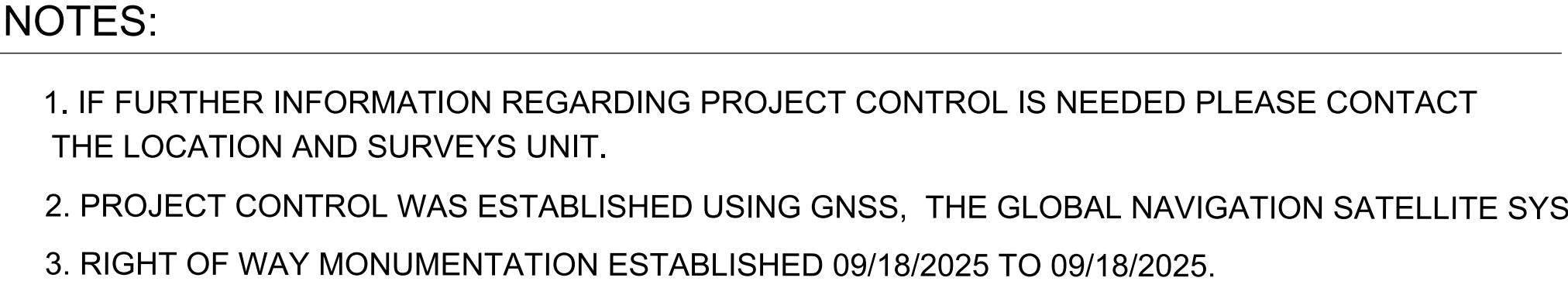
1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED 09/18/2025 TO 09/18/2025.

, Anthony K. Alford, P.L.S., certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and personal supervision; that all surveying from an actual survey made under my supervision; that all horizontal measurements were taken by electronic means; that all vertical measurements were taken by leveling methods; that all closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from 09/18/2025 to 09/18/2025, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 23rd day of September, 2025.

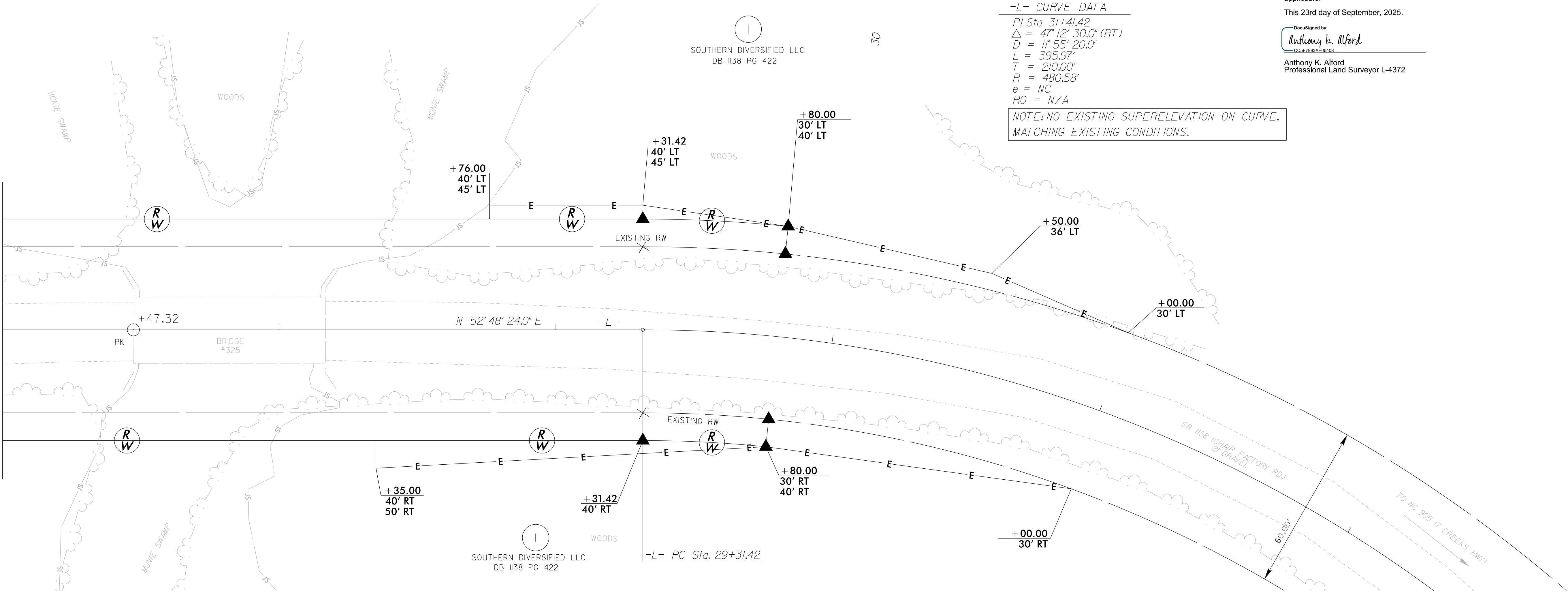
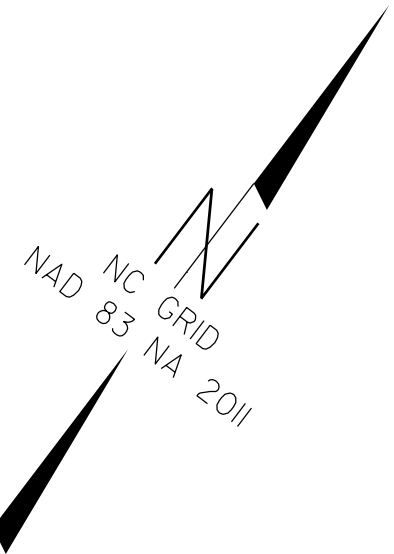
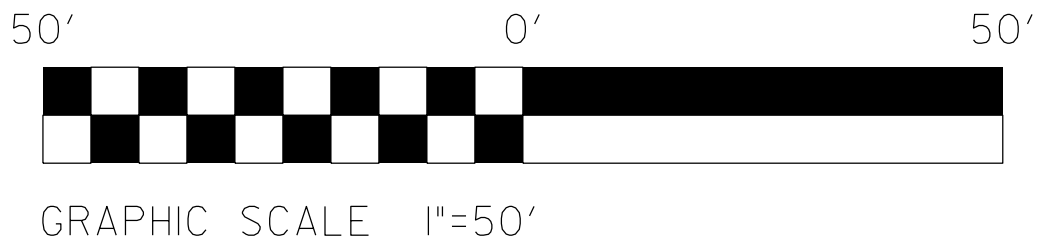
Designed by:
Anthony K. Alford

Professional Land Surveyor L-4372



REVISIONS

MATCHLINE RW05
-L- STA. 27 + 00.00



-L- CURVE DATA

PI Sta. 31+41.42
 $\Delta = 47^\circ 12' 30.0''$ (RT)
 $D = 11^\circ 55' 20.0''$
 $L = 395.97'$
 $T = 210.00'$
 $R = 480.58'$
 $e = NC$
 $RO = N/A$

NOTE: NO EXISTING SUPERELEVATION ON CURVE.
MATCHING EXISTING CONDITIONS.

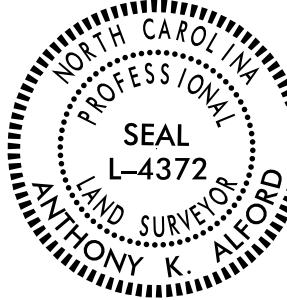
I, Anthony K. Alford, PLS, certify that the right of way and permanent easement monummentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from 09/18/2025 to 09/18/2025, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 23rd day of September, 2025.

DocuSigned by:
Anthony K. Alford
CC5E7993AE06408

Anthony K. Alford
Professional Land Surveyor L-4372

PROJECT SURVEYOR



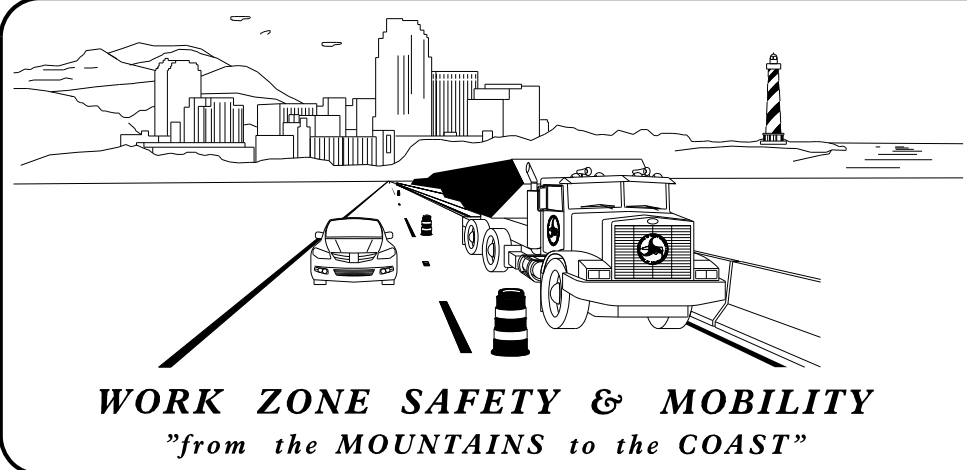
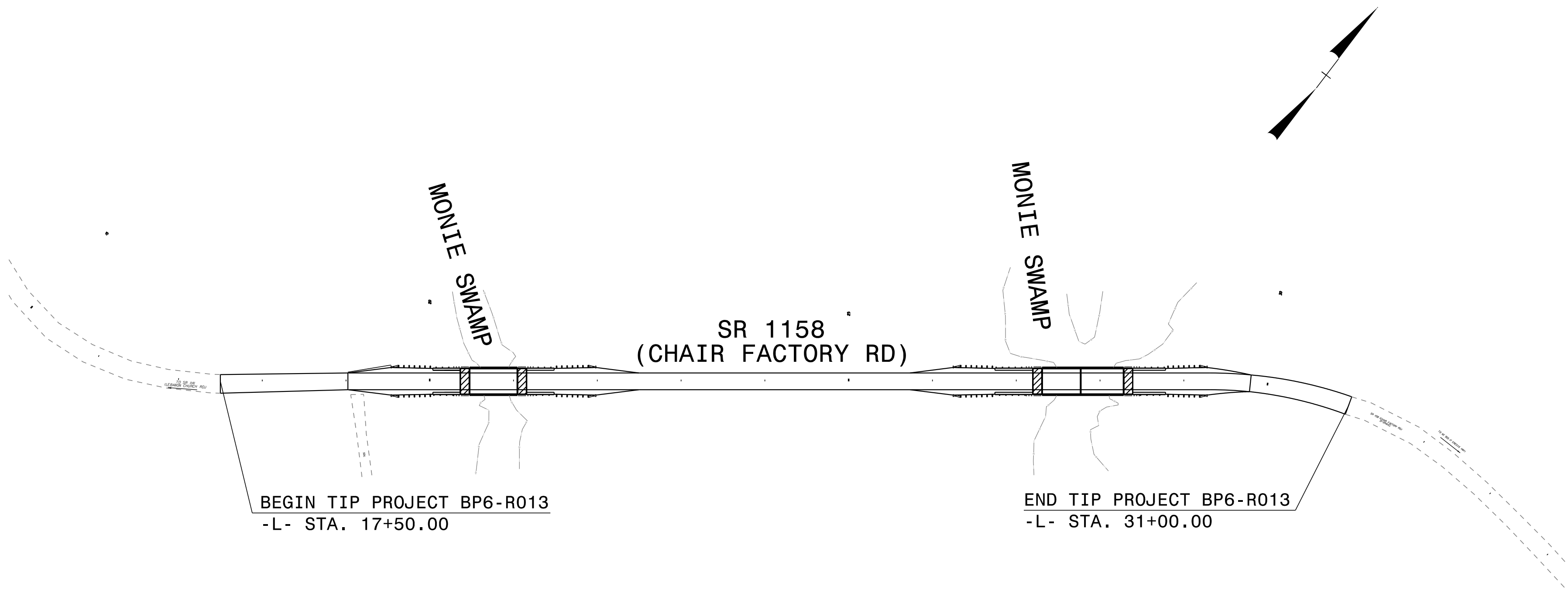
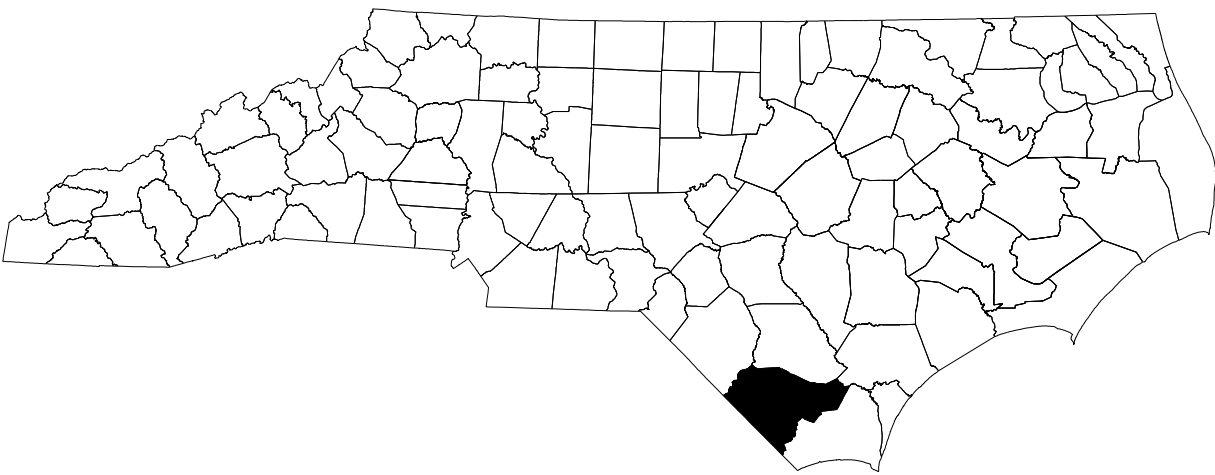
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED 09/18/2025 TO 09/18/2025.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN
COLUMBUS COUNTY



PLANS PREPARED BY:

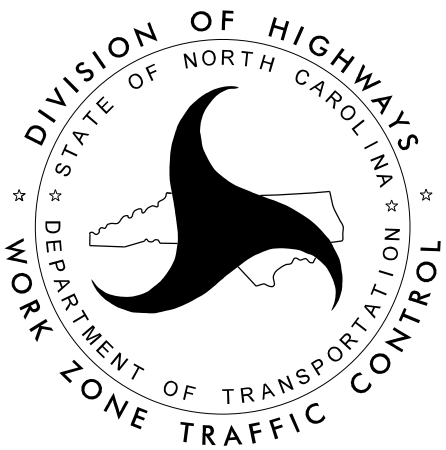
RONYELL THIGPEN, PE

ERIC MISAK

NCDOT CONTACTS:

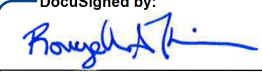
KARMEN E. MILLER PE
PROJECT ENGINEER

ALLA LYUDMIRSKAYA
PROJECT DESIGN ENGINEER



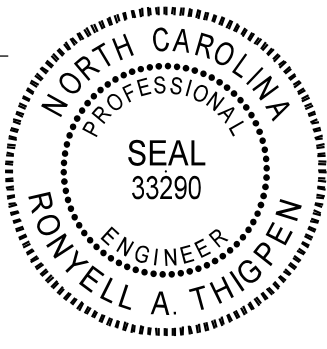
WSP USA
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 919.836.4040
FAX: 919.836.4099
LICENSE NO. F-0165

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

APPROVED: 

DATE: 2/13/2026

SEAL



ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2024 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.06	WARNING SIGNS FOR BLASTING ZONES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1165.01	TRUCK MOUNTED ATTENUATOR
1170.01	PORTABLE CONCRETE BARRIER
1180.01	SKINNY - DRUMS
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.03	PAVEMENT MARKINGS - EXITS AND ENTRANCE RAMPS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.06	PAVEMENT MARKINGS - LANE DROPS
1205.07	PAVEMENT MARKINGS - PEDESTRIAN CROSSWALKS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1205.10	PAVEMENT MARKINGS - SCHOOL AREAS
1205.11	PAVEMENT MARKINGS - RAILROAD CROSSINGS
1205.12	PAVEMENT MARKINGS - BRIDGES
1205.13	PAVEMENT MARKINGS - LANE REDUCTIONS
1205.14	PAVEMENT MARKINGS - ROUNDABOUTS
1205.15	PAVEMENT MARKINGS - SUPERSTREETS
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - (PERMANENT AND TEMPORARY)
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- TEMP. SHORING (LOCATION PURPOSES ONLY)

WORK AREA

REMOVAL

SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY
- PORTABLE

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM SKINNY DRUM TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

- CRYSTAL/CRYSTAL
- CRYSTAL/RED
- YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

APPROVED:

DATE: 2/13/2026

SEAL

WSP USA
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
FAX: 1.919.836.4099
LICENSE NO. F-0165

TRANSPORTATION
MANAGEMENT PLAN
ROADWAY STANDARD
DRAWINGS & LEGEND

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

DocuSigned by:  APPROVED: _____ RC2841A2DB5E447 DATE: <u>2/13/2026</u> SEAL 	 WSP USA 434 FAYETTEVILLE STREET SUITE 1500 RALEIGH, NC 27601 TEL: 1.919.836.4040 FAX: 1.919.836.4099 LICENSE NO. F-0165	TRANSPORTATION MANAGEMENT PLAN SIGN DESIGN
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

PROJ. REFERENCE NO.	SHEET NO.
BP6-R013	TMP-03

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

LANE AND SHOULDER CLOSURE REQUIREMENTS

- A) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.
- B) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.
- C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
- WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
- D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.
- E) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.
- F) CONTRACTOR SHALL PROVIDE ACCESS TO ALL RESIDENCES AT ALL TIMES. COORDINATE WITH PROPERTY OWNERS DURING CONSTRUCTION ACTIVITIES IMPACTING DRIVEWAYS.

PAVEMENT EDGE DROP OFF REQUIREMENTS

- G) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:
- BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.
- BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.
- BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.
- H) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 500 FT IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

- I) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

- J) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

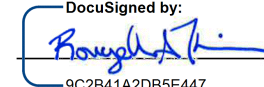
- J) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.
- PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.
- K) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

PAVEMENT MARKINGS AND MARKERS

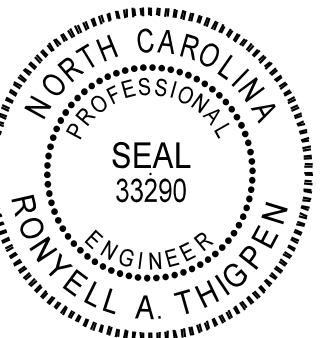
- L) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:
- ROAD NAMEMARKINGMARKER
ALL ROADSPAINTNONE
- M) PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.
- N) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- O) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

PHASING NOTES

- STEP 1: INSTALL WORK ZONE ADVANCE WARNING SIGNS ON ALL ROADS ACCORDING TO ROADWAY STANDARD DRAWING NO. 1101.01 WHERE WORK WILL BE OCCURRING NO MORE THAN THREE DAYS PRIOR TO BEGINNING CONSTRUCTION.
- STEP 2: USING ROADWAY STANDARD DRAWING NO. 1101.03, SHEET 1 OF 9, AND SHEET TMP-04, INSTALL ROAD CLOSURE AND DETOUR SIGNS FOR CHAIR FACTORY RD. COVER SIGNS UNTIL DETOUR IS READY FOR CONSTRUCTION.
- STEP 3: WHEN DETOUR IS READY UNCOVER SIGNS AND CLOSE CHAIR FACTORY RD. CONSTRUCT STRUCTURE AND ROADWAY IMPROVEMENTS ALONG CHAIR FACTORY RD.
- STEP 4: REMOVE ROAD CLOSURE DEVICES AND SIGNS ONCE CONSTRUCTION IS COMPLETE. OPEN CHAIR FACTORY RD. TO TRAFFIC.

APPROVED: 
DATE: 2/13/2026

SEAL

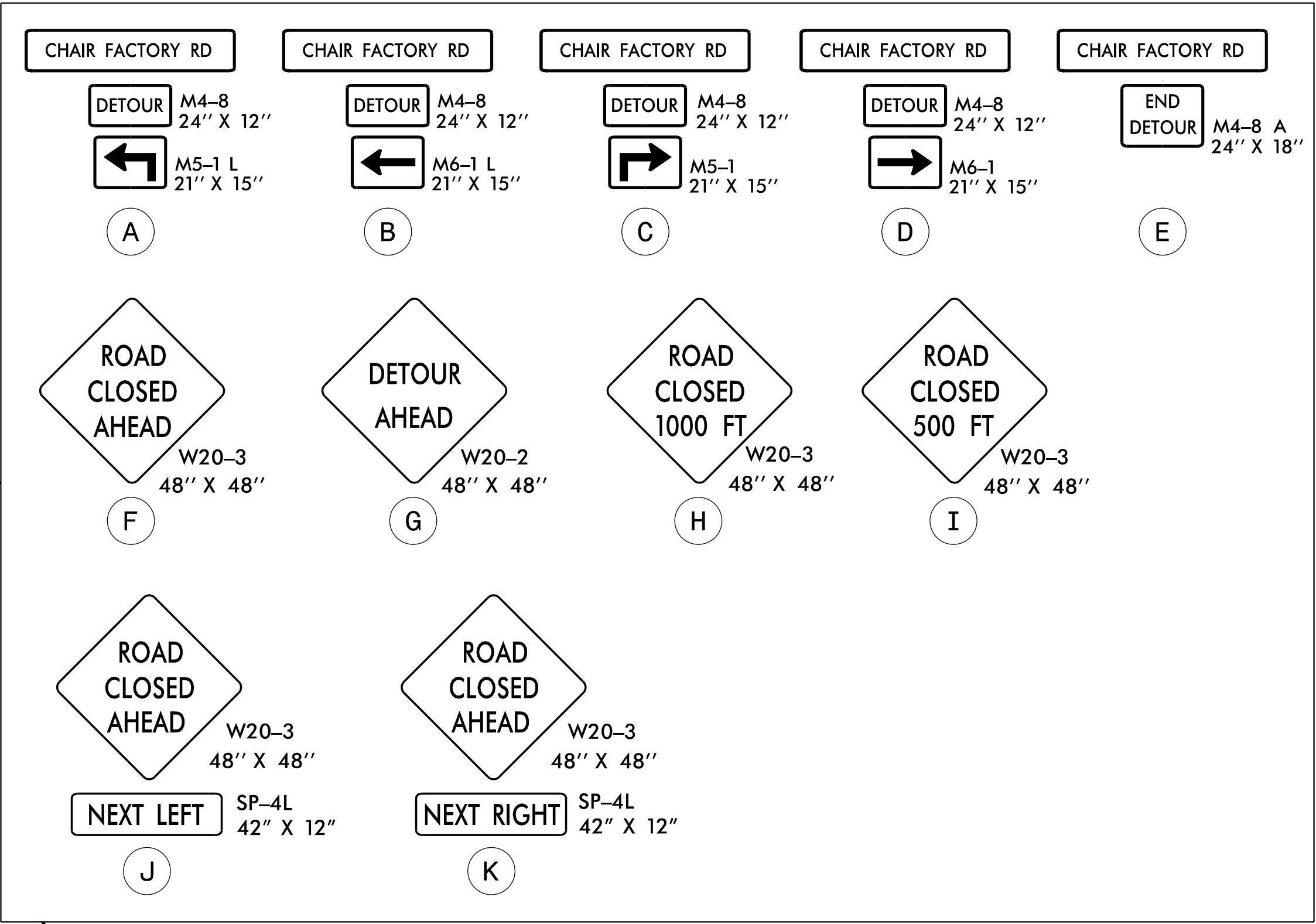
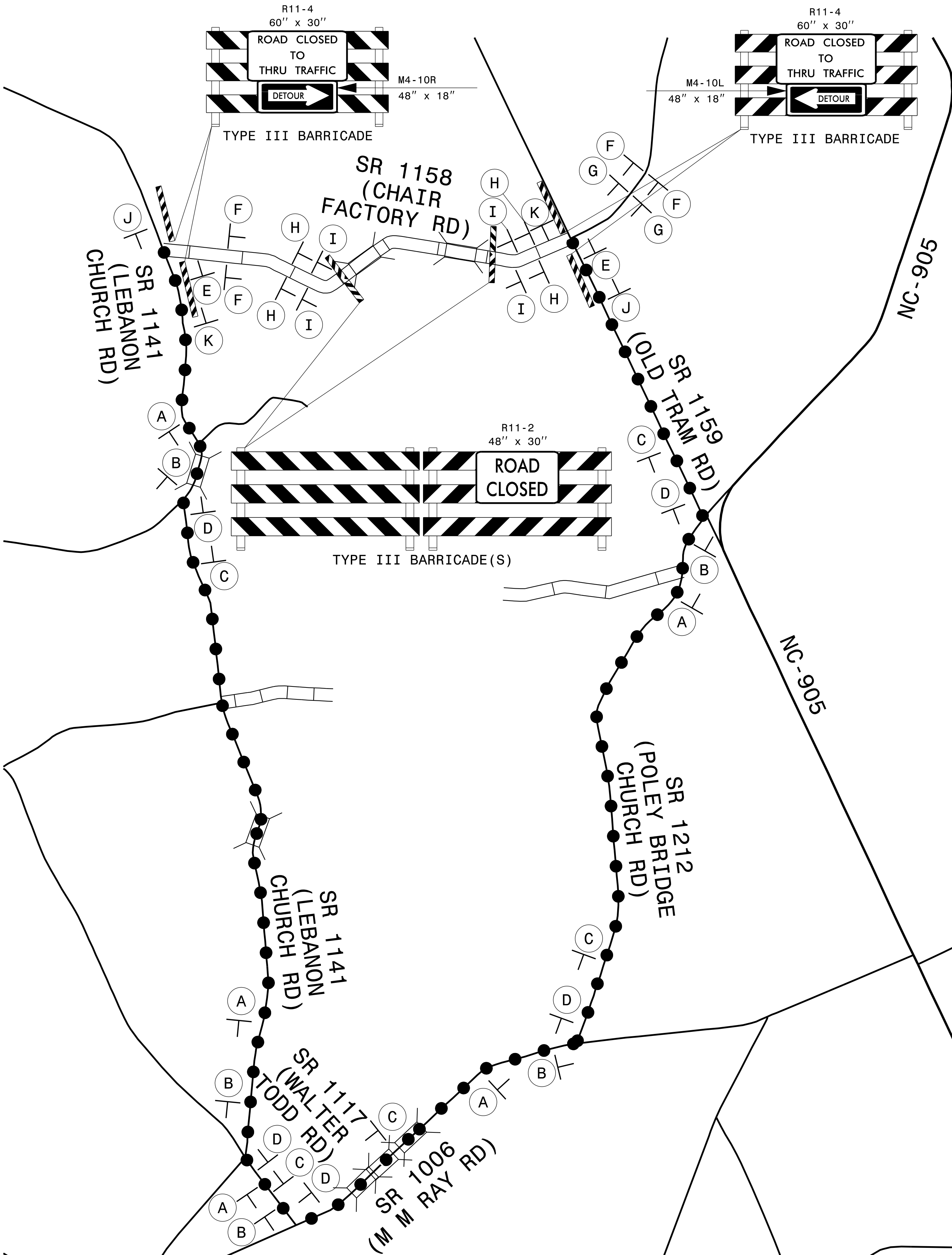


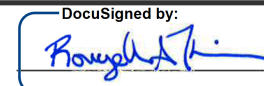


WSP USA
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
FAX: 1.919.836.4099
LICENSE NO. F-0165

TRANSPORTATION
MANAGEMENT PLAN
GENERAL NOTES AND
WRITTEN PHASING

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



APPROVED: 
DATE: 2/13/2026
SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
POWELL A. THIGPEN
SEAL 33290
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

wsp
WSP USA
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
FAX: 1.919.836.4099
LICENSE NO. F-0165

TRANSPORTATION
MANAGEMENT PLAN
OFFSITE DETOUR
ROUTE SIGNING

2/16/2026 2:18:54 PM
BP6-R013.tsh.dgn

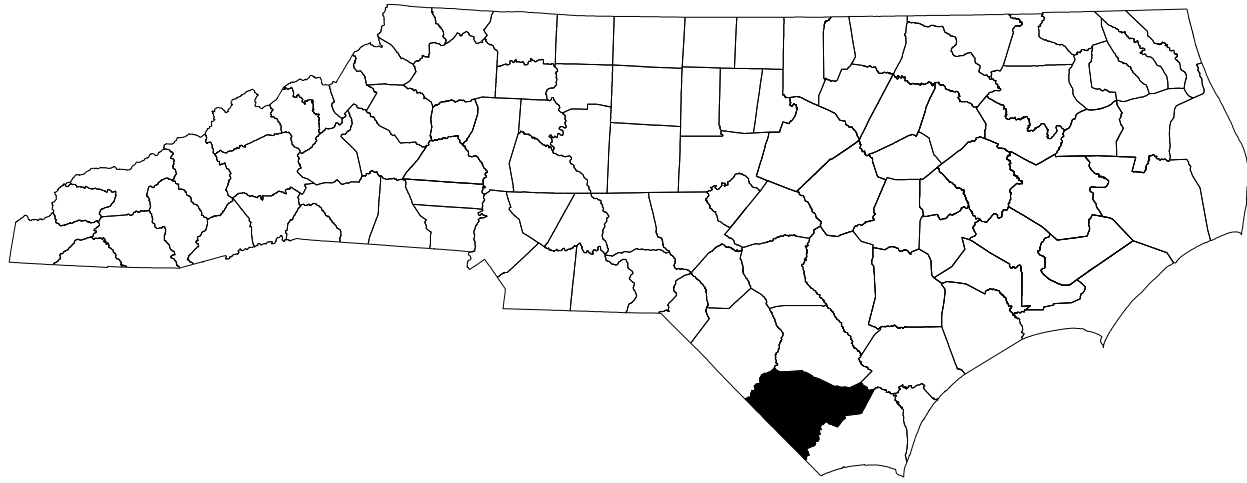
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T.I.P.: BP6-R013

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
COLUMBUS COUNTY

LOCATION: REPLACE BRIDGES No. 324 AND No. 325 ON
SR 1158 (CHAIR FACTORY RD) OVER BEAVER DAM SWAMP
AND MONIE SWAMP



INDEX

SHEET NO.	DESCRIPTION
PMP-1	TITLE SHEET, INDEX, GENERAL NOTES & ROADWAY STANDARD DRAWINGS
PMP-2	PAVEMENT MARKING PLAN SHEET

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" -
N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2024 ARE
APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF
THESE PLANS:

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

GENERAL NOTES

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF
THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN,
OR DIRECTED BY THE ENGINEER.

A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE
AS FOLLOWS:

ROAD NAME	MARKING	MARKER
SR 1158 (CHAIR FACTORY RD) BRIDGE	THERMOPLASTIC	NONE
	THERMOPLASTIC	NONE

B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.

D) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY
THE ENGINEER.

E) STOP BAR LOCATION AT NON-SIGNALIZED INTERSECTIONS MAY BE ADJUSTED AS
DIRECTED BY THE ENGINEER.



WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
NC LIC. NO. F-0165

PLAN PREPARED BY:

ERIC W BOWMAN, PE SR. TRANSPORTATION DESIGNER
SAYMA AFREEN TRANSPORATION DESIGNER

TIP NO.	SHEET NO.
BP6-R013	PMP - 1
APPROVED: Signed by: Eric W Bowman DADA2D3CB0248F...	
DATE: 2/16/2026	
SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043754 ERIC W. BOWMAN	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

TIP NO.
BP6-R013

SHEET NO.
PMP -2

Signed by:
Eric W Bowman

APPROVED:

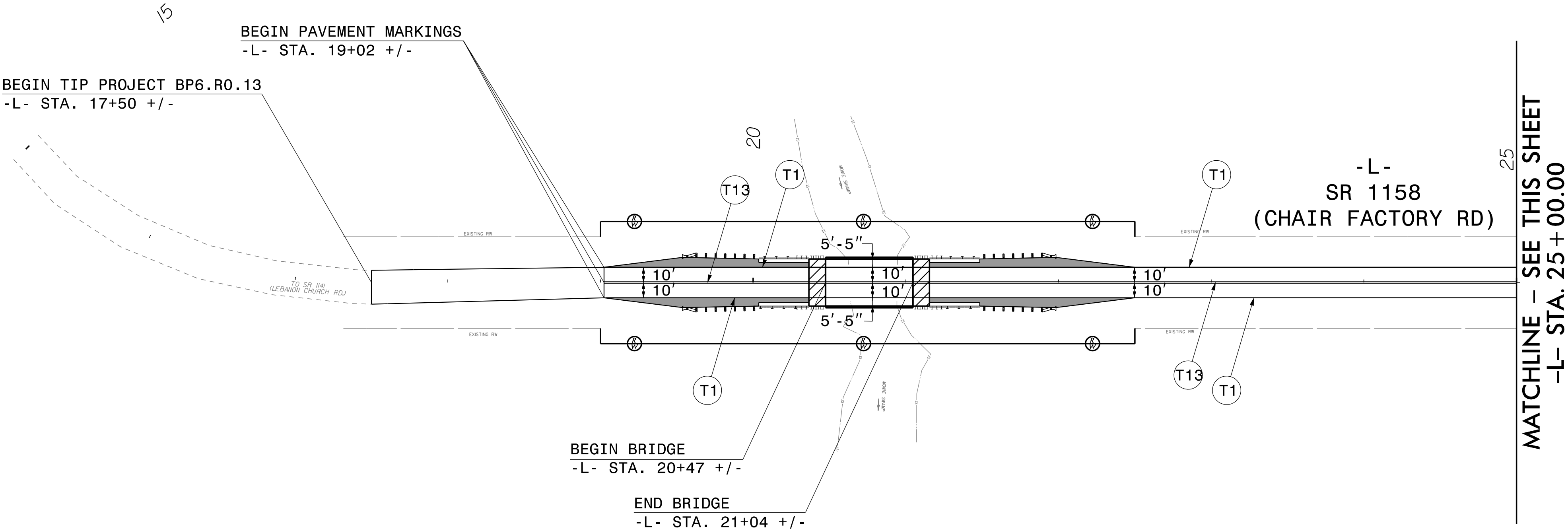
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DATE: 2/16/2026

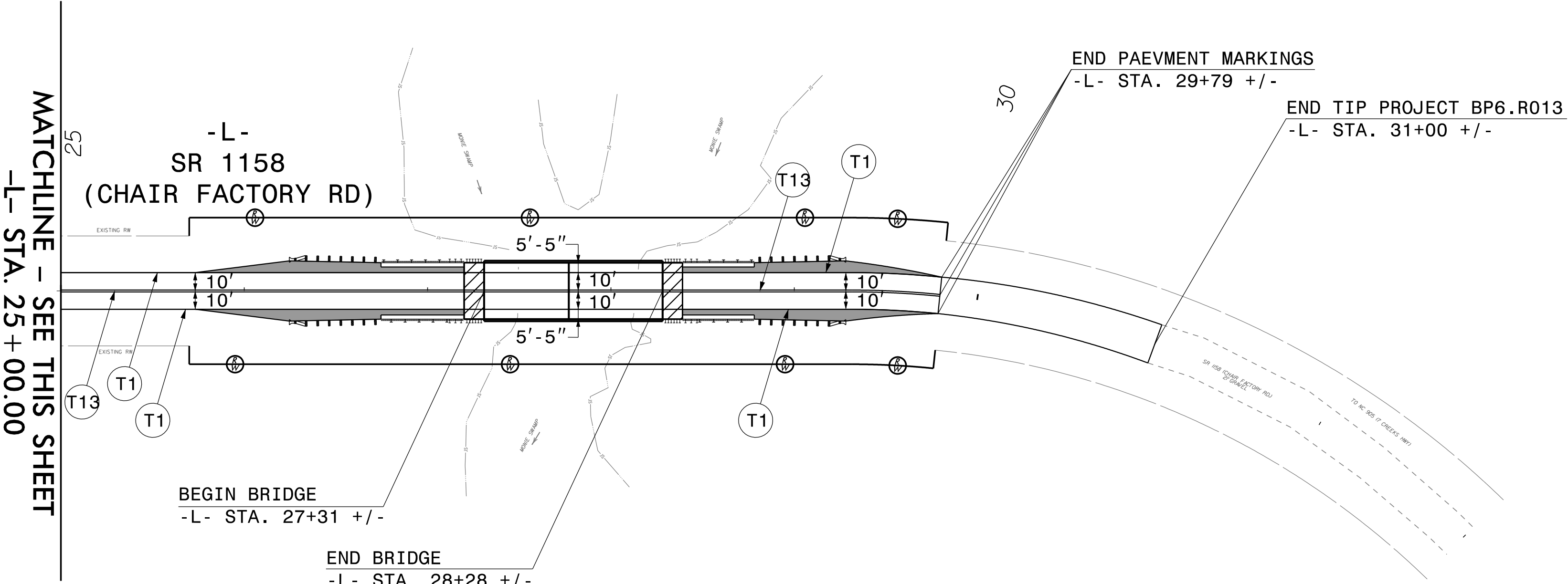
SEAL

NORTH CAROLINA
PROFESSIONAL
SEAL
043754
ENGINEER
ERIC W. BOWMAN

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



T.I.P. BP6-R013	
PAVEMENT MARKING SCHEDULE	
SYMBOL	DESCRIPTION
THERMOPLASTIC (4", 90 MIL)	
T1	WHITE EDGELINE
T13	YELLOW DOUBLE CENTER

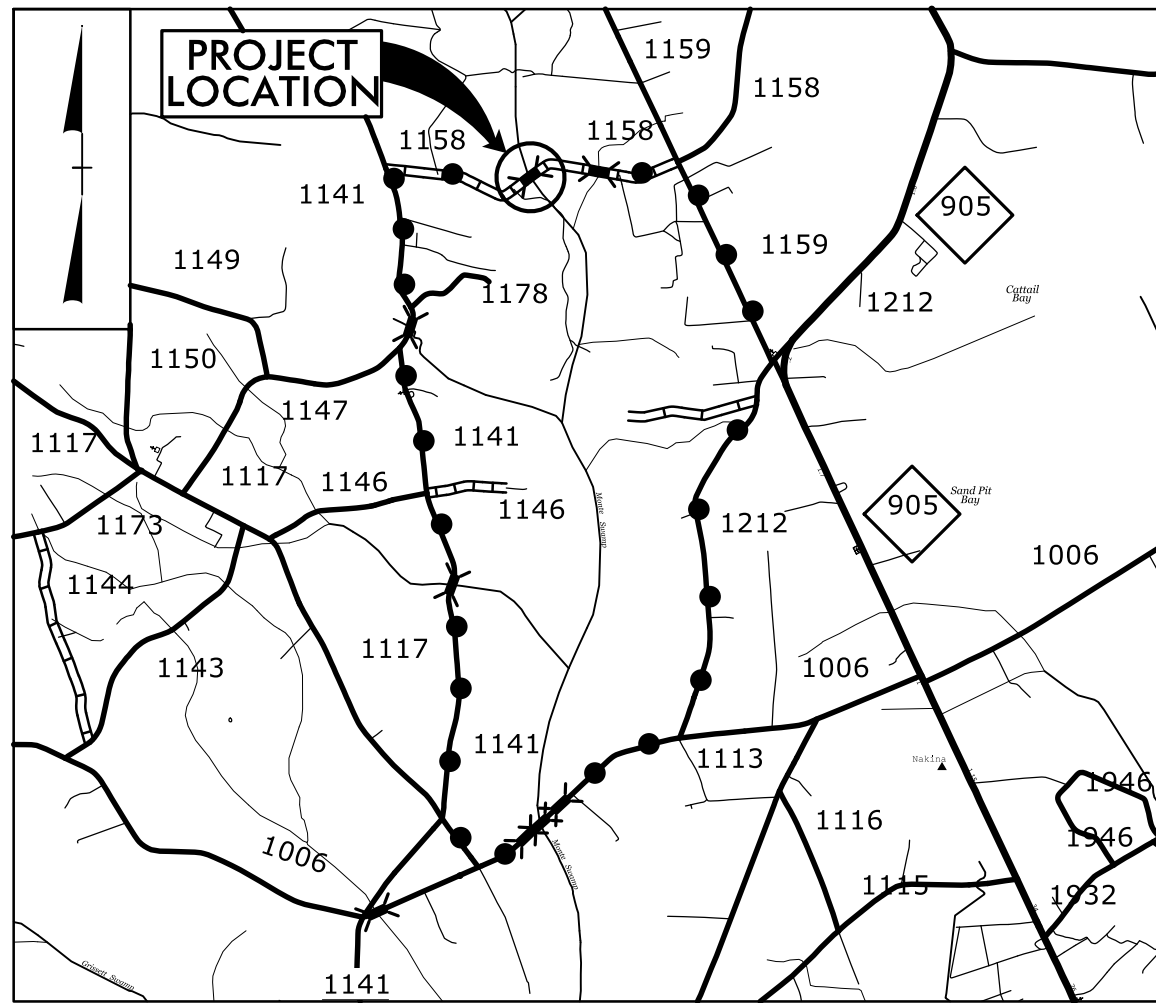


PAVEMENT MARKING PLAN SHEET

9:33:17 AM
BP6.R013_pmp_psh.dgn
2/16/2026

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP6.R013	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BP6.R013.1	N/A	PE	

TIP PROJECT: BP6.R013

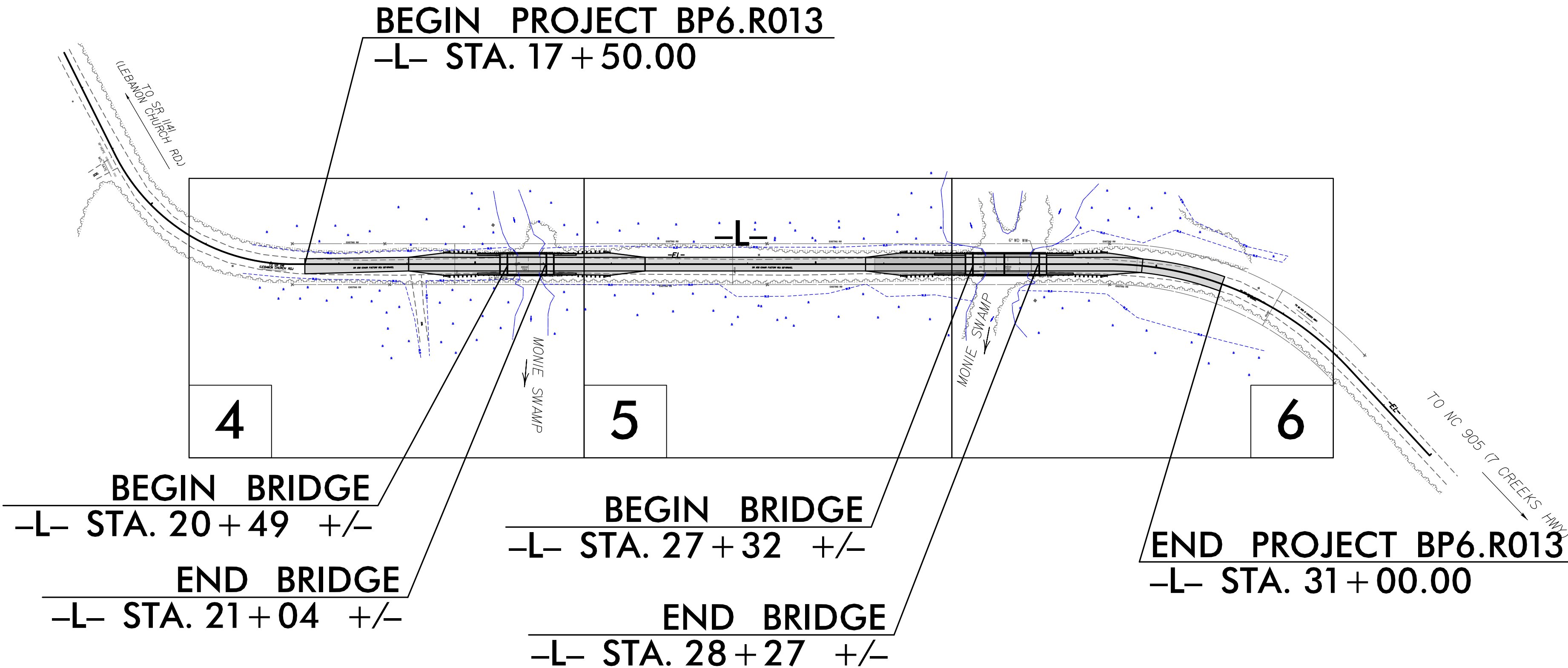
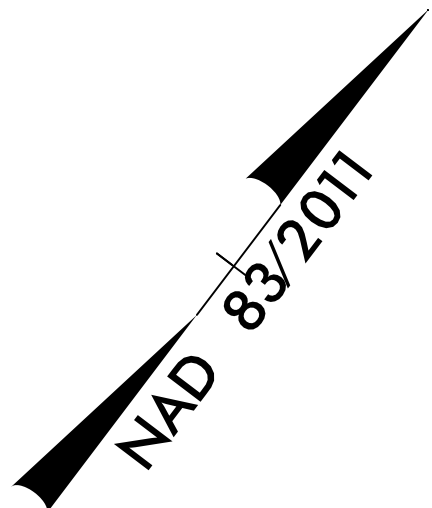


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL
COLUMBUS COUNTY

LOCATION: REPLACE BRIDGES NO. 324 AND NO. 325 ON SR 1158 (CHAIR FACTORY RD) OVER BEAVER DAM SWAMP AND MONIE SWAMP

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

● — ● DETOUR ROUTE



THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

GRAPHIC SCALE



THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE APPLICABLE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.

wsp

Prepared In the Office of:
WSP USA
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601

Designed by:

Victoria Fyfe
NAME

4319
LEVEL III CERTIFICATION NO.

Roadway Standard Drawings

The "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2024 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

DIVISION OF HIGHWAYS

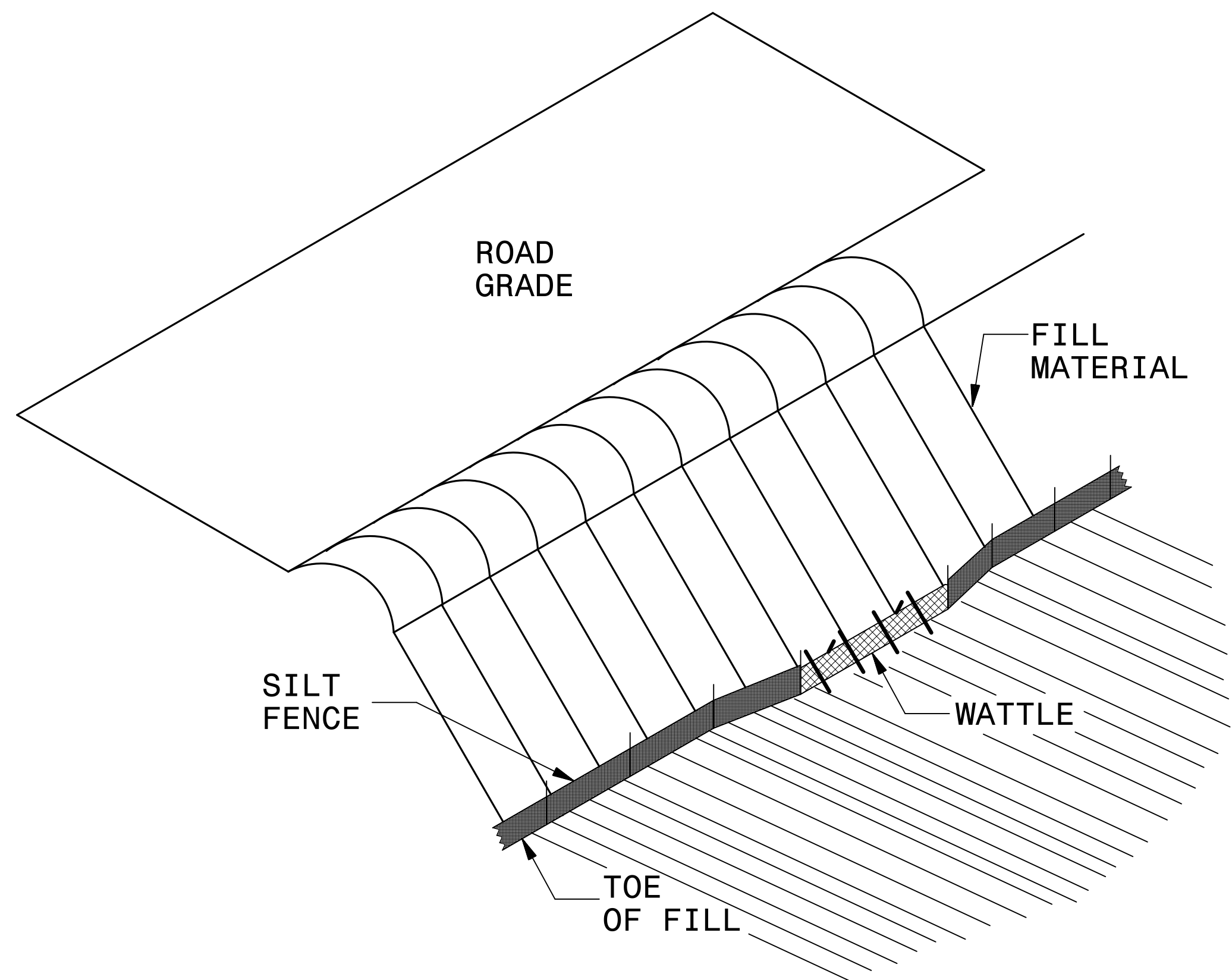
PROJECT REFERENCE NO.		SHEET NO.	
BP6.R013		EC-02	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1630.03	Temporary Silt Ditch	
1630.04	Stilling Basin	
1630.05	Temporary Diversion	
1630.06	Special Stilling Basin	
1630.07	Skimmer Basin	
1630.08	Tiered Skimmer Basin	
1630.09	Earthen Dam with Skimmer	
	Infiltration Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	
1632.02	Type B	
1632.03	Type C	

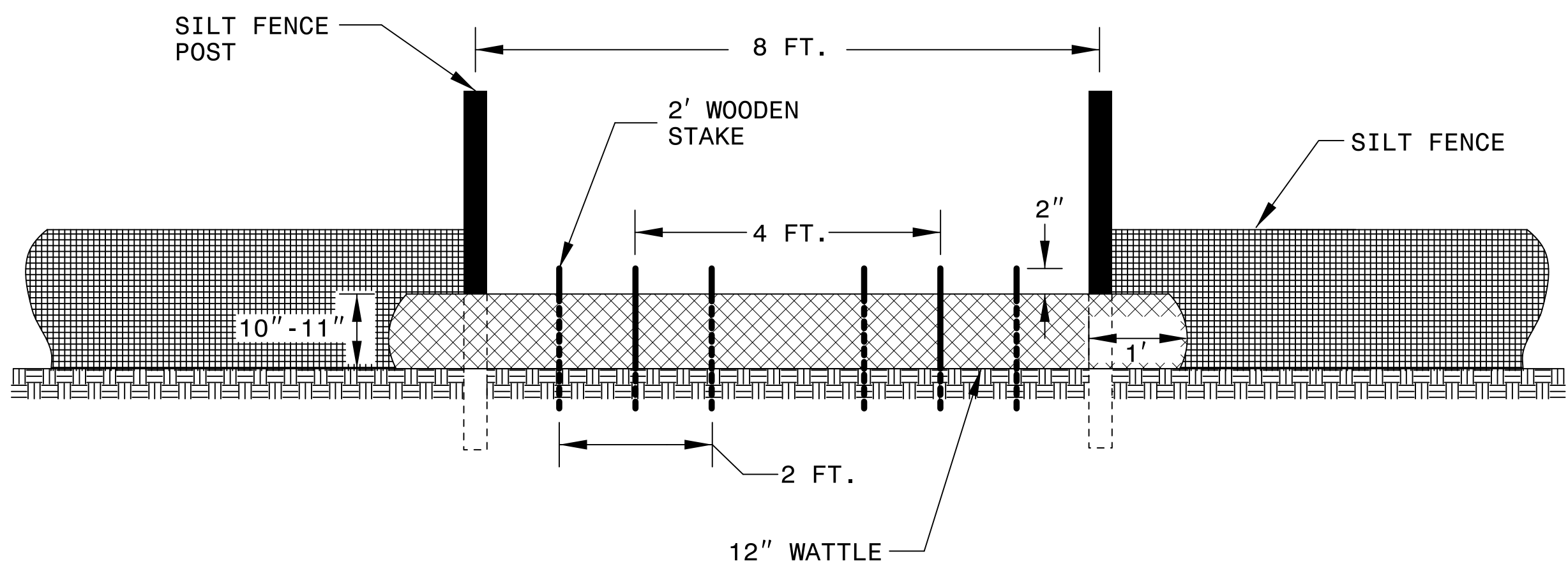
Std. #	Description	Symbol
1633.01	Temporary Rock Silt Check Type A	
1633.02	Temporary Rock Silt Check Type B	
1633.03	Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant	
1634.01	Temporary Rock Sediment Dam Type A	
1634.02	Temporary Rock Sediment Dam Type B	
1635.01	Rock Pipe Inlet Sediment Trap Type A	
1635.02	Rock Pipe Inlet Sediment Trap Type B	
1636.01	Excelsior Wattle Check	
1636.01	Excelsior Wattle Check with Flocculant	
1636.01	Coir Fiber Wattle Check	
1636.01	Coir Fiber Wattle Check with Flocculant	
1636.02	Silt Fence Excelsior Wattle Break	
	Silt Fence Coir Fiber Wattle Break	
1636.03	Excelsior Wattle Barrier	
1636.03	Coir Fiber Wattle Barrier	

SILT FENCE COIR FIBER WATTLE BREAK DETAIL

PROJECT REFERENCE NO.		SHEET NO.
BP6.R013		EC-2A
RW SHEET NO.		
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER



ISOMETRIC VIEW



VIEW FROM SLOPE

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 1 TO 2 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLE ON TOE OF SLOPE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.

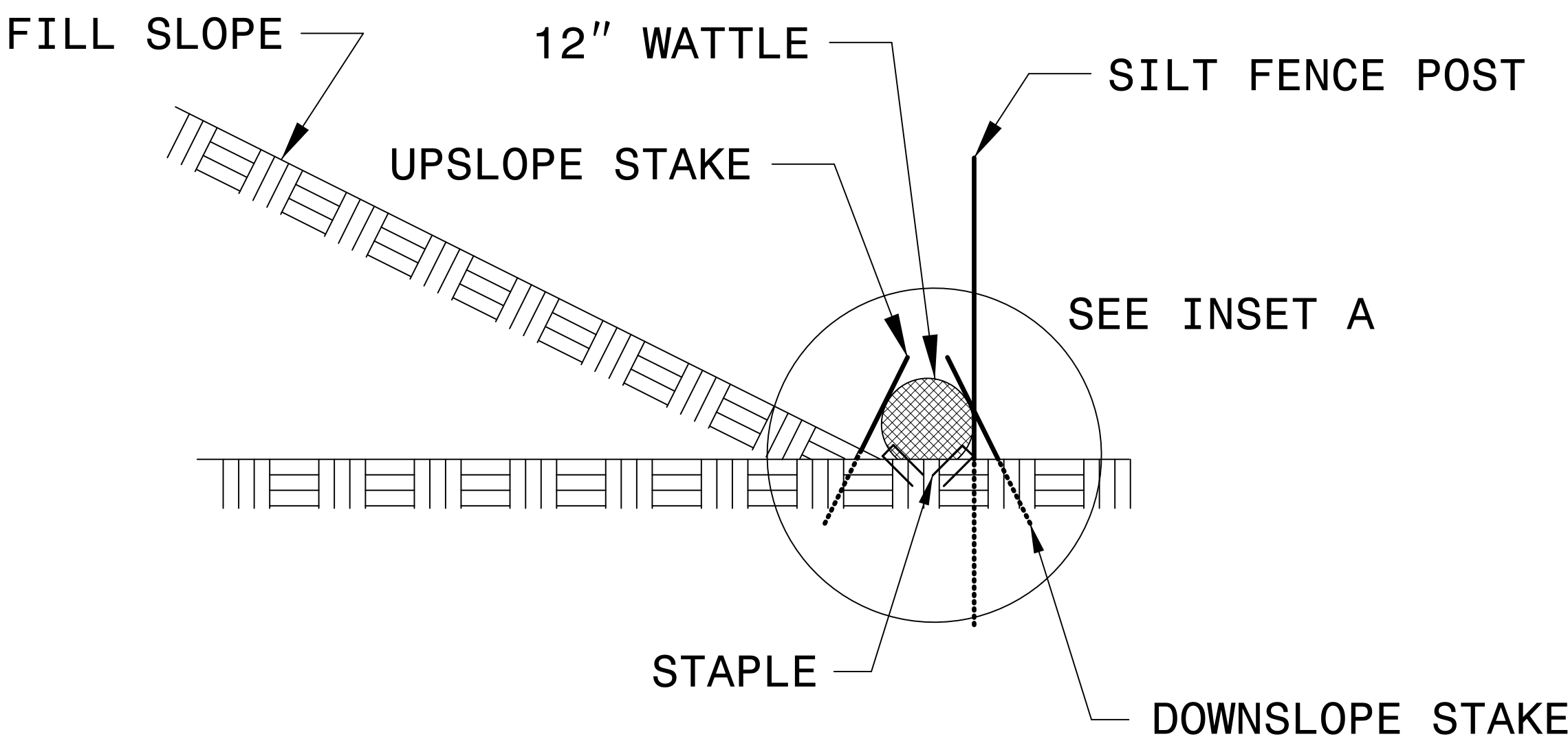
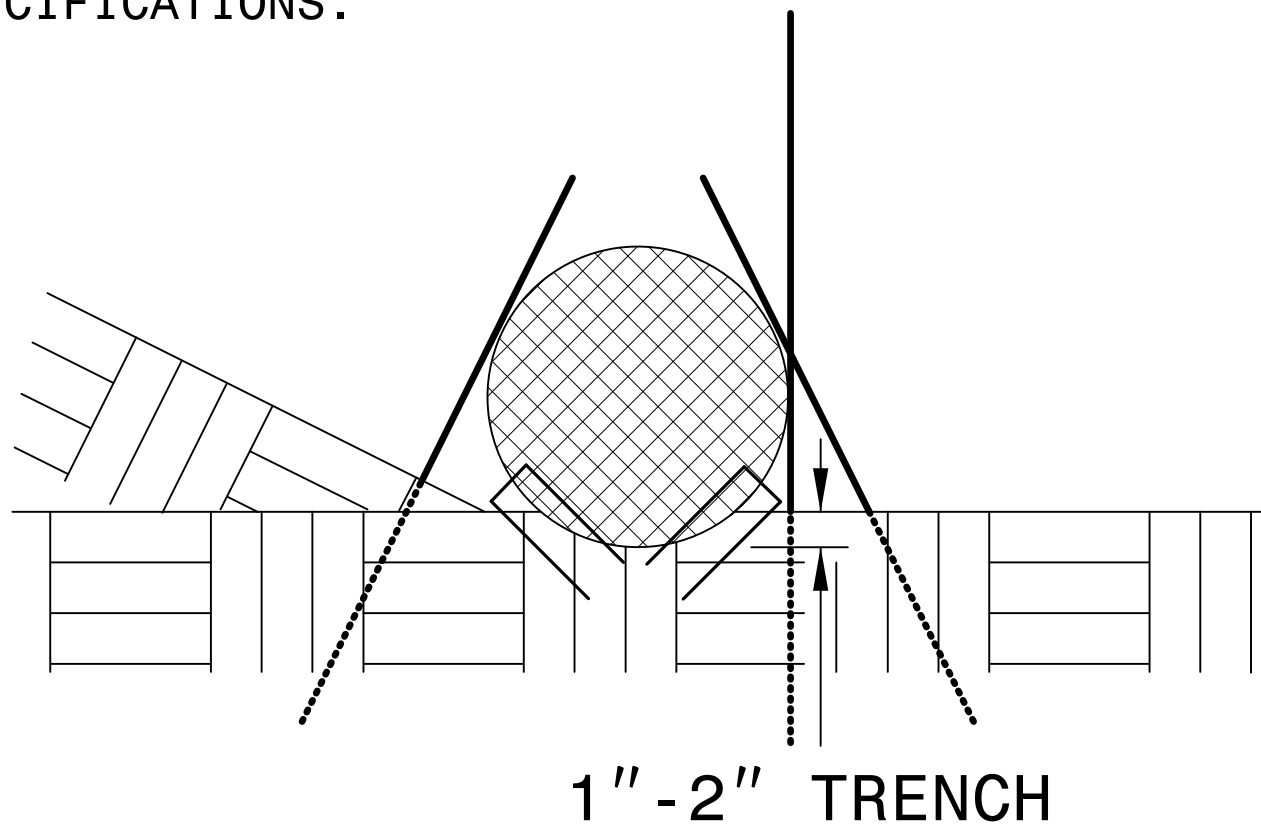
PROVIDE STAPLES MADE OF 11 GUAGE STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 6" IN LENGTH.

INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

WATTLE INSTALLATION CAN BE ON OUTSIDE OF THE SILT FENCE AS DIRECTED.

INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

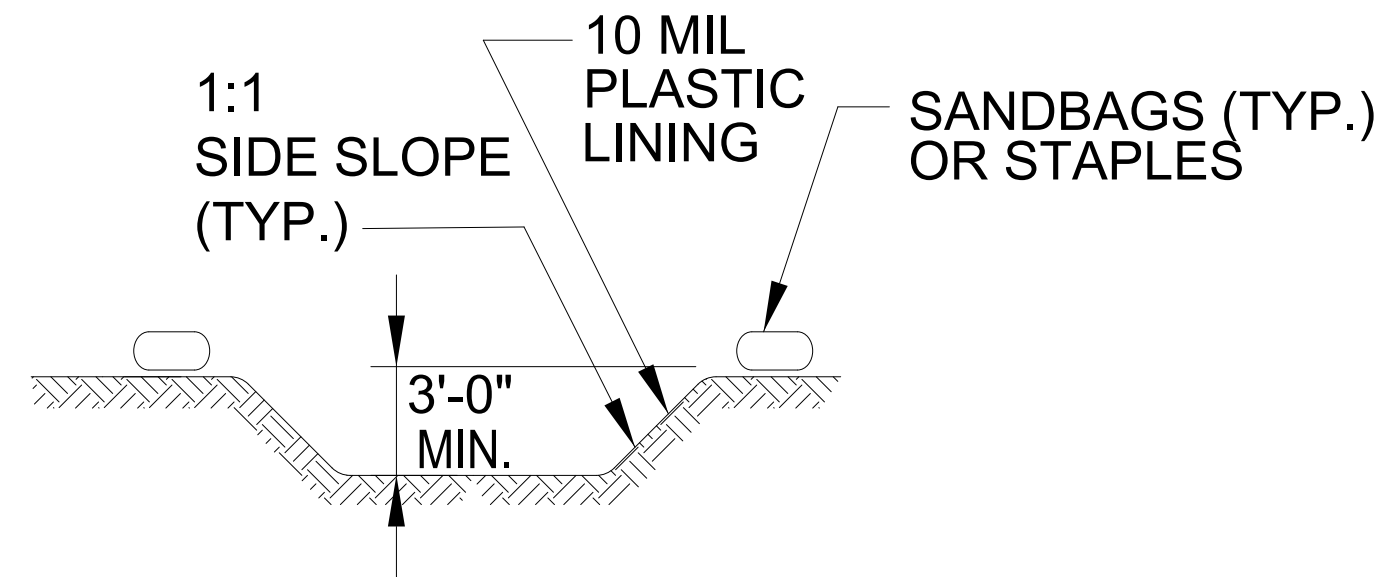
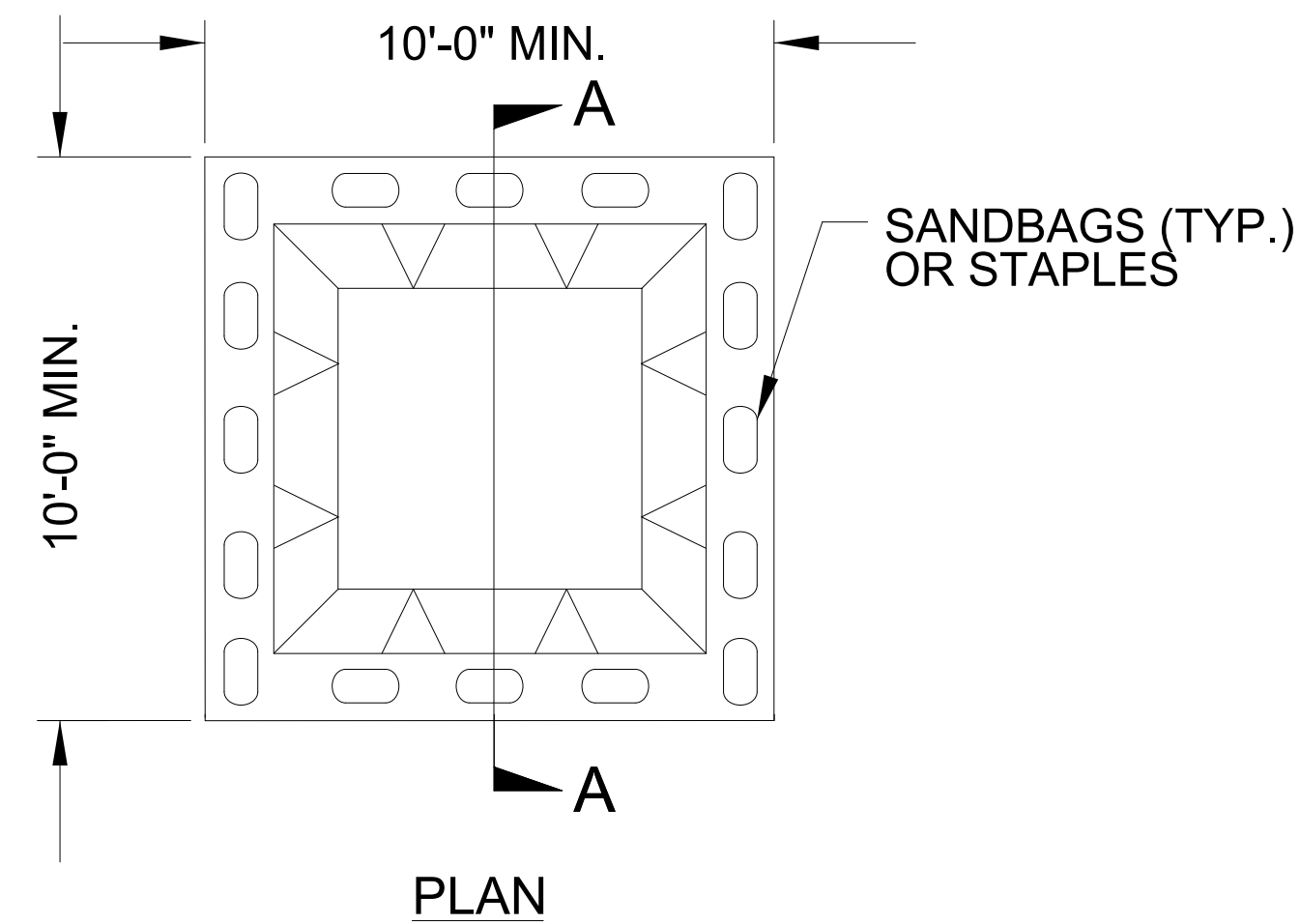
INSET A



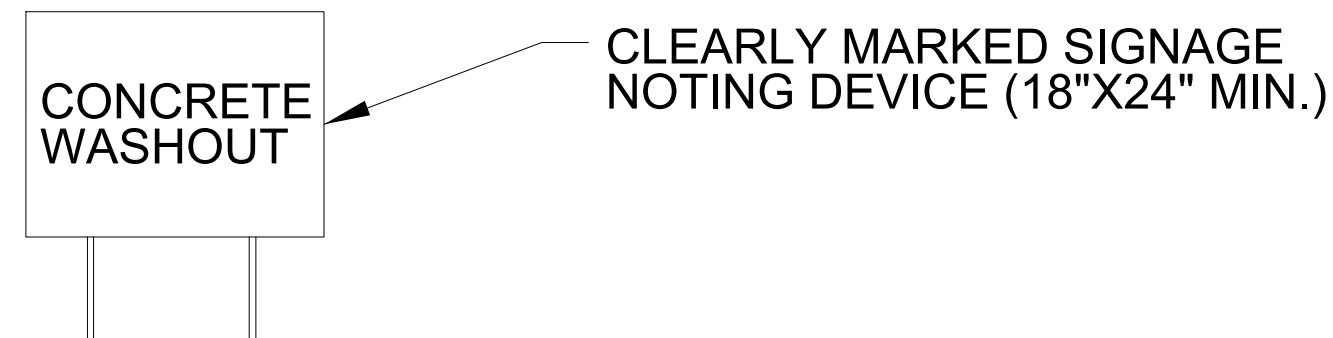
SIDE VIEW

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER

PROJECT REFERENCE NO.	SHEET NO.
BP6.R013	EC-2B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

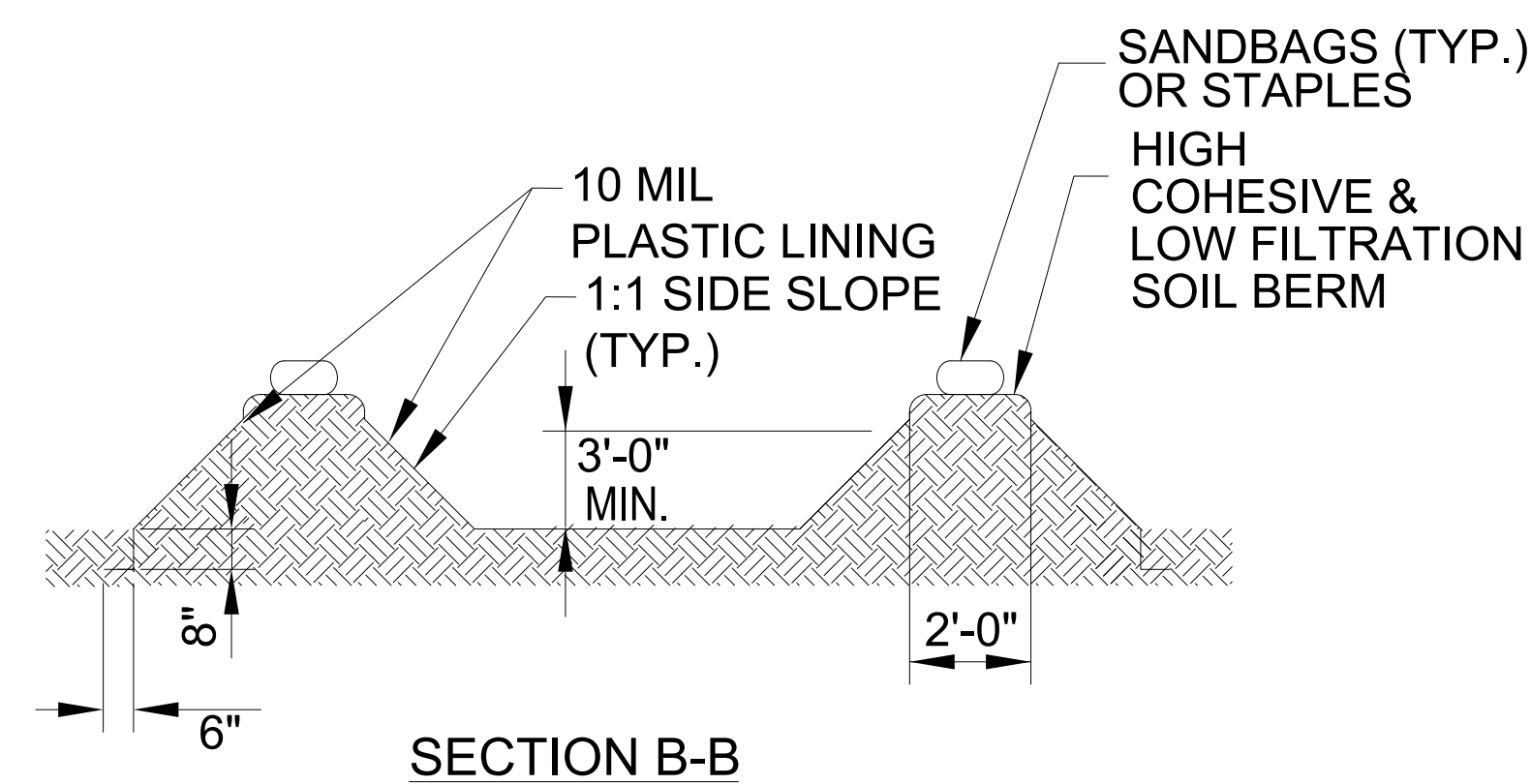
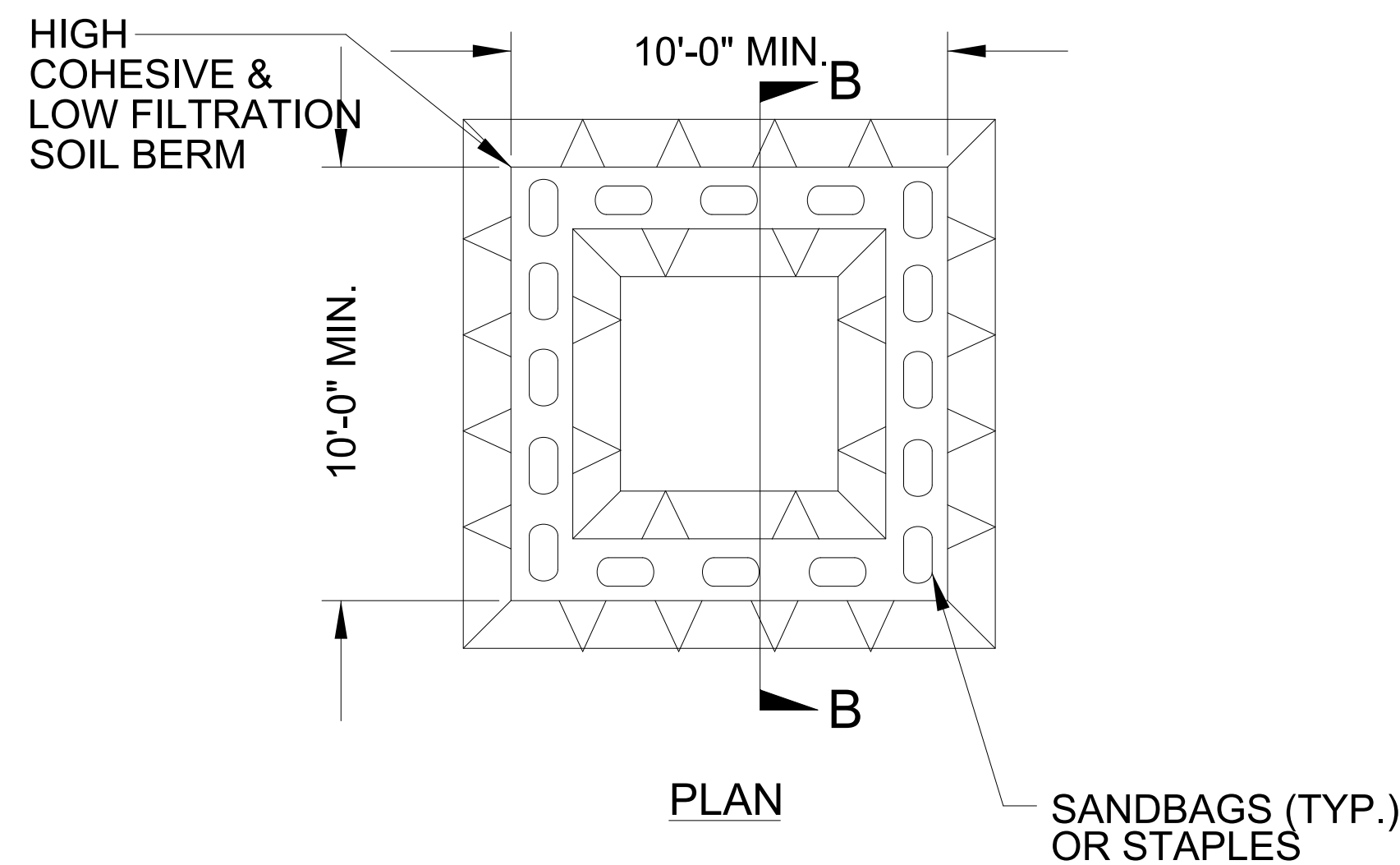


SECTION A-A

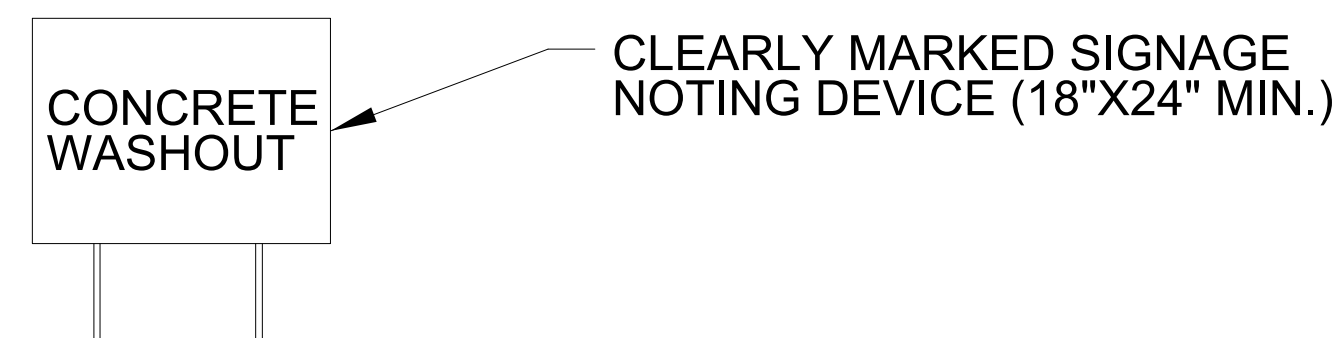


BELOW GRADE WASHOUT STRUCTURE
NOT TO SCALE

- NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD
 2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.
 3. CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.



SECTION B-B



ABOVE GRADE WASHOUT STRUCTURE
NOT TO SCALE

- NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD
 2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.
 3. CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

ALL MATTING TO BE STRAW / EXCELSIOR

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
<i>BP6.R013</i>	<i>EC-3</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION SUMMARY SHEET

DITCH MATTING FOR EROSION CONTROL

[illegible]

*SEE PLAN SHEETS

SLOPE MATTING FOR EROSION CONTROL

[illegible]

*SEE PLAN SHEETS; INCLUDES MATTING ADJACENT TO WETLANDS

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

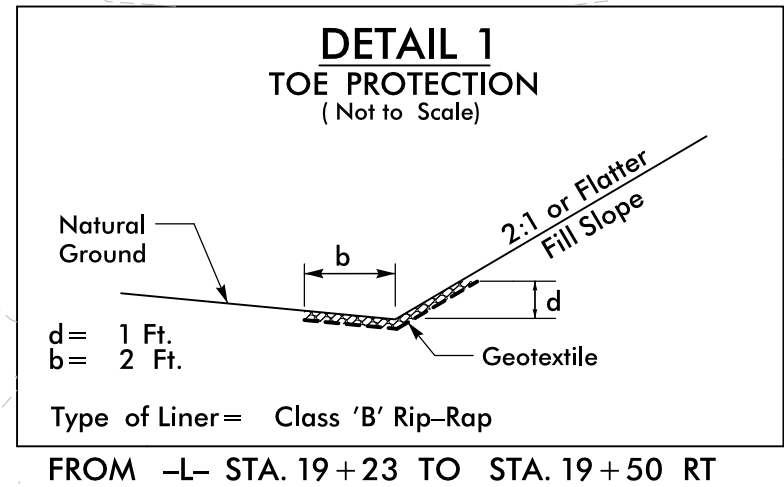
PROJECT REFERENCE NO.	SHEET NO.
BP6.R013	EC-3A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 TO 4:1	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH WITH SLOPES STEEPER THAN 4:1. 7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES

NOTE: BRIDGE REMOVAL AND BRIDGE CONSTRUCTION SHALL BE PER REQUIREMENTS IN THE NCDOT BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL.

NOTE: PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.

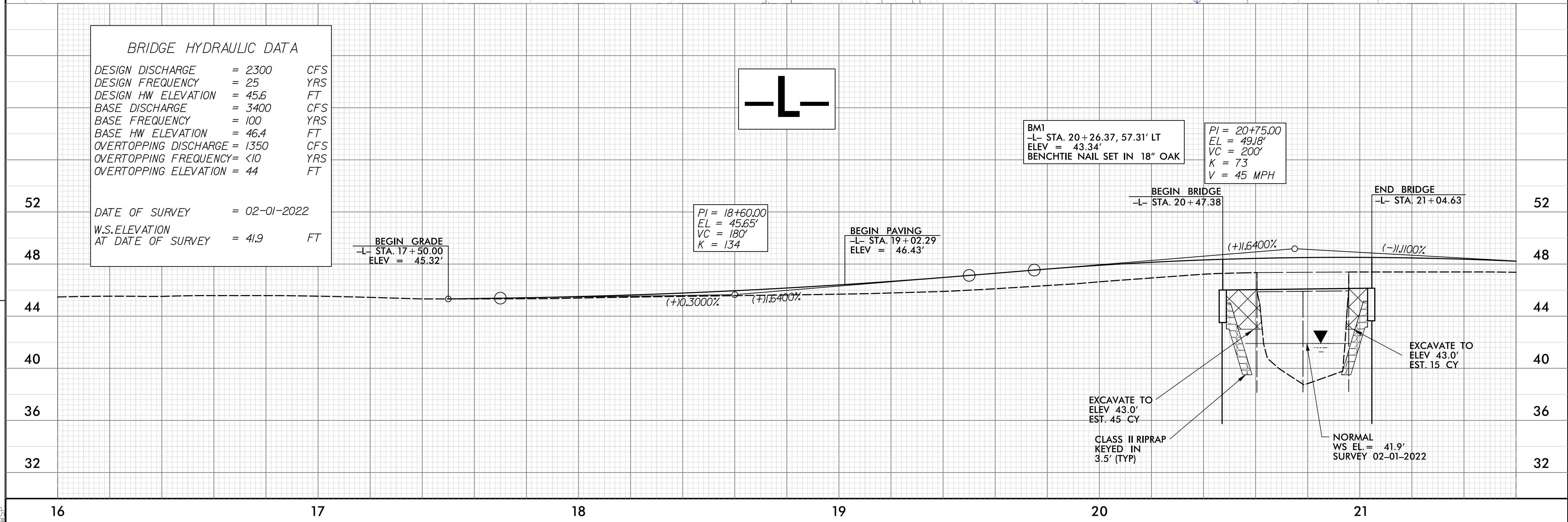


-L- CURVE DATA
 PI Sta 15+89.20
 $\Delta = 63^{\circ} 27' 30.0''$ (LT)
 $D = 19^{\circ} 40' 54.6''$
 $L = 322.42'$
 $T = 180.00'$
 $R = 291.11'$
 $e = \text{EXIST}$
 $RO = \text{N/A}$

NOTE: CONTRACTOR SHALL INSTALL AN ONSITE CONCRETE WASHOUT STRUCTURE PER THE NCDOT DETAIL AND SPECIAL PROVISIONS. ACTUAL LOCATION OF THE STRUCTURE SHALL BE DETERMINED BY THE CONTRACTOR. ALL CONCRETE TRUCKS SHALL USE THE CONCRETE WASHOUT STRUCTURE. NO WASHOUT OF CONCRETE TRUCKS SHALL BE ALLOWED EXCEPT IN THE CONCRETE WASHOUT STRUCTURE.

NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE – B AND TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.

BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	= 2300	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 45.6	FT
BASE DISCHARGE	= 3400	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 46.4	FT
OVERTOPPING DISCHARGE	= 1350	CFS
OVERTOPPING FREQUENCY	= <10	YRS
OVERTOPPING ELEVATION	= 44	FT
DATE OF SURVEY	= 02-01-2022	
W.S.ELEVATION		
AT DATE OF SURVEY	= 41.9	FT



03-MAY-2024 09:07 C:\NTFTR\PSH\BP6R013_hyd_EC_psh4.dgr WSP	8/17/99
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8/17/99

LANES TO BE PAVED
SHOULDERS TO BE PAVED

NOTE: BRIDGE REMOVAL AND BRIDGE CONSTRUCTION SHALL BE PER REQUIREMENTS IN THE NCDOT BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL.

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 6
NOTE: PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.

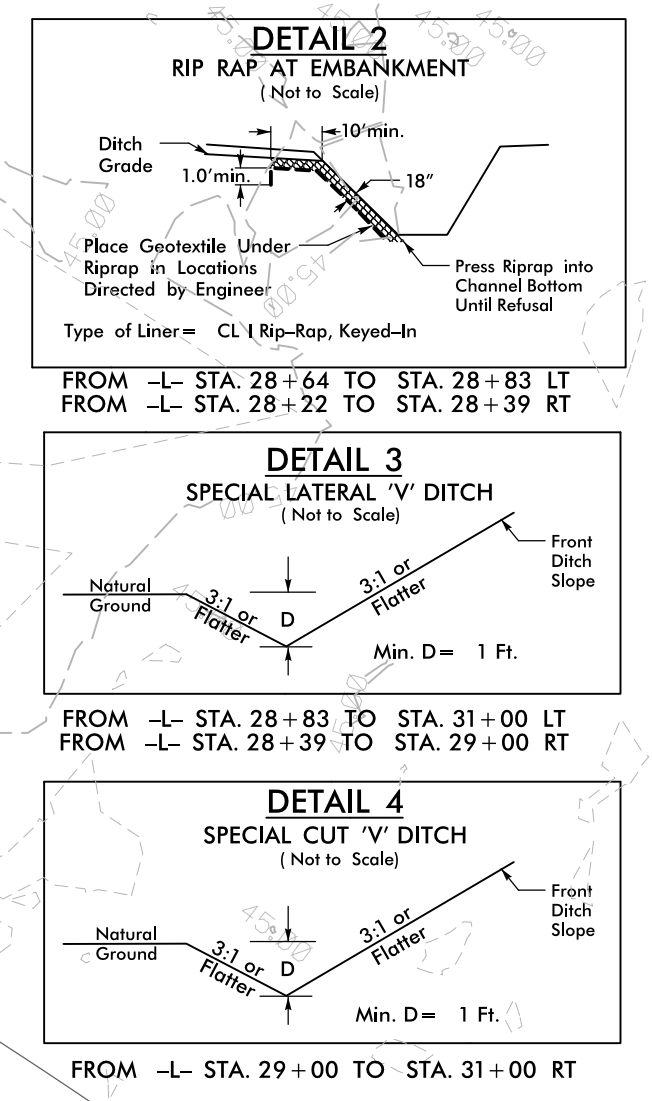
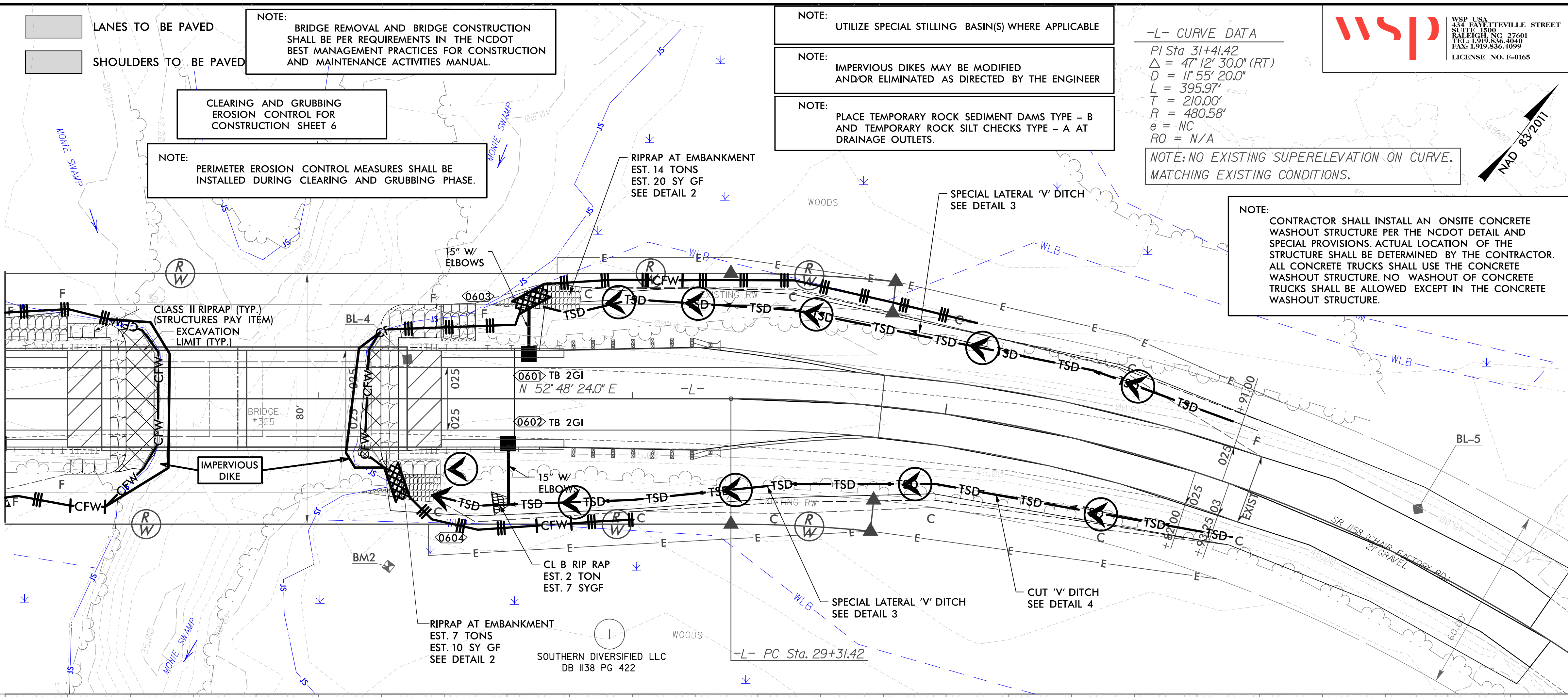
NOTE: UTILIZE SPECIAL STILLING BASIN(S) WHERE APPLICABLE
NOTE: IMPERVIOUS DIKES MAY BE MODIFIED AND/OR ELIMINATED AS DIRECTED BY THE ENGINEER
NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

-L- CURVE DATA
PI Sta 31+41.42
 $\Delta = 47^{\circ}12'30.0''$ (RT)
 $D = 11^{\circ}55'20.0''$
 $L = 395.97'$
 $T = 210.00'$
 $R = 480.58'$
 $e = NC$
 $RO = N/A$
NOTE: NO EXISTING SUPERELEVATION ON CURVE. MATCHING EXISTING CONDITIONS.

WSP
WSP USA
484 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 919.836.4040
FAX: 919.836.4099
LICENSE NO. F-0165

PROJECT REFERENCE NO.		SHEET NO.
BP6.R013		EC-06/CONST.06
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	

MATCHLINE
-L- STA. 27+00.00



PI = 27+85.00
EL = 48.96'
VC = 150'
K = 64
V = 45 MPH

BEGIN BRIDGE
-L- STA. 27+30.81
END BRIDGE
-L- STA. 28+28.19

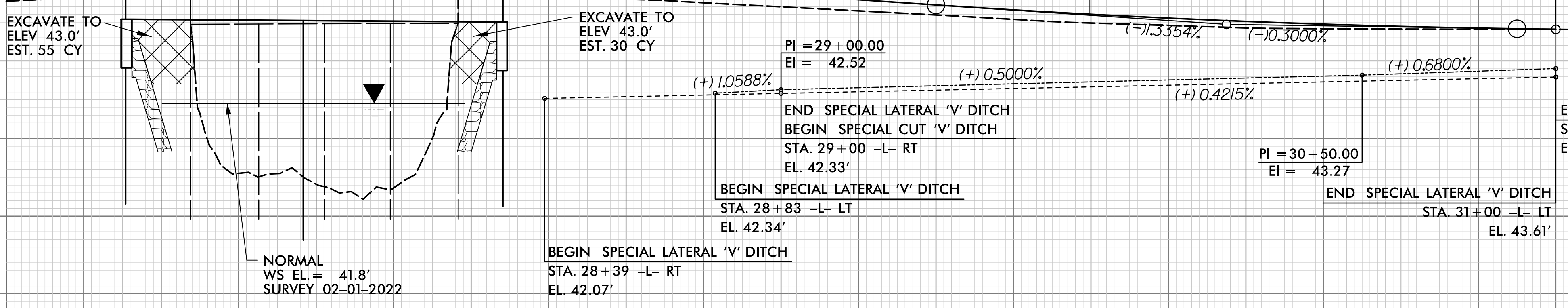
BM2
-L- STA. 28+22.24, 53.47' RT
ELEV = 43.89'
BENCHMARK NAIL SET IN 16" CYPRESS

END PAVING
-L- STA. 29+79.52
ELEV = 46.41'

PI = 30+15.00
EL = 45.89'
VC = 150'
K = 145

END GRADE
-L- STA. 31+00.00
ELEV = 45.63'

BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	= 2300	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 45.6	FT
BASE DISCHARGE	= 3400	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 46.4	FT
OVERTOPPING DISCHARGE	= 1350	CFS
OVERTOPPING FREQUENCY	= <10	YRS
OVERTOPPING ELEVATION	= 44	FT
DATE OF SURVEY	= 02-01-2022	
W.S.ELEVATION AT DATE OF SURVEY	= 41.8	FT



END SPECIAL CUT 'V' DITCH
STA. 31+00 -L- RT
EL. 43.17'

END SPECIAL LATERAL 'V' DITCH
STA. 31+00 -L- LT
EL. 43.61'

END SPECIAL LATERAL 'V' DITCH
STA. 29+00 -L- RT
EL. 42.33'

BEGIN SPECIAL LATERAL 'V' DITCH
STA. 28+83 -L- LT
EL. 42.34'

BEGIN SPECIAL LATERAL 'V' DITCH
STA. 28+39 -L- RT
EL. 42.07'

NORMAL
WS. EL. = 41.8'
SURVEY 02-01-2022

27

28

29

30

31

32

52

48

44

40

36

32

REVISIONS

02-MAY-2024 08:45
VERIFICATION CONTROL PSH:BP6R013_hyd_EC_pah6.dgn
WSP

8/17/99

REVISIONS

02-MAY-2024 09:07
VERIFICATION CONTROL PSH-BP6R013_hyd_EC_pah4.dgn
WSP

LANES TO BE PAVED
SHOULDERS TO BE PAVED

WALTER H. POWELL SR.
FAMILY FARMS LLC
DB 819 PG 325

NOTE:
INSTALL TEMPORARY SLOPE DRAINS TO CONVEY RUNOFF
FROM ROAD GRADE INTO PROPOSED DITCHES WITH
A SPACING OF 1000 FT. OR AS DIRECTED.

NOTE:
UTILIZE SPECIAL STILLING BASIN(S) WHERE APPLICABLE

NOTE:
IMPERVIOUS DIKES MAY BE MODIFIED
AND/OR ELIMINATED AS DIRECTED BY THE ENGINEER

WSP
WSP USA
484 FAYETTEVILLE STREET
SUITE 1500
FAYETTEVILLE, NC 27601
TEL: 704.336.4040
FAX: 704.336.4099
LICENSE NO. F-0165

PROJECT REFERENCE NO.		SHEET NO.
BP6.R013		EC-07/CONST.04
RW SHEET NO.		
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER

Place Matting for Erosion Control
on Slopes Adjacent to Permitted
Wetlands as Work Allows.

Place Matting for Erosion Control
on Slope as Work Allows.
Sta. 21+15 to Sta. 21+60 LT

BEGIN TIP PROJECT BP6.R013

-L- STA. 17+50.00

BEGIN ROCK PLATING
18+00.00 LT

BEGIN PAVING
-L- STA. 19+02.29

BEGIN BRIDGE
-L- STA. 20+47.38

BEGIN APP. SLAB
-L- STA. 20+36.50

END ROCK PLATING
20+36.50 LT/RT
B.M.

CL B RIP RAP
EST. 1 TON
EST. 5 SYGF

CLASS II RIPRAP (TYP.)
(STRUCTURES PAY ITEM)

EST. 1 TON
EST. 5 SYGF
15" W/
ELBOWS

15' x 10' SPECIAL
STILLING BASIN

BEGIN ROCK PLATING
21+15.50 LT/RT

EXCAVATION
LIMIT (TYP.)

PROF. SBG
TB 2GI
0403
0404

PROF. SBG
TB 2GI
0403
0404

PROF. SBG
TB 2GI
0403
0404

PROF. SBG
TB 2GI
0403
0404

PROF. SBG
TB 2GI
0403
0404

PROF. SBG
TB 2GI
0403
0404

PROF. SBG
TB 2GI
0403
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PROF. SBG
TB 2GI
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PROF. SBG
TB 2GI
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PROF. SBG
TB 2GI
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TB 2GI
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PROF. SBG
TB 2GI
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0404

PROF. SBG
TB 2GI
0403
0404

PROF. SBG
TB 2GI
0403
0404

PROF. SBG
TB 2GI
0403
0404

PROF. SBG
TB 2GI
0403
0404

DETAIL 1
TOE PROTECTION
(Not to Scale)

Natural
Ground
d = 1 Ft.
b = 2 Ft.
Type of Liner = Class 'B' Rip-Rap
FROM -L- STA. 19+23 TO STA. 19+50 RT

-L- CURVE DATA

PI Sta. 15+89.20
 $\Delta = 63^\circ 27' 30.0''$ (LT)
D = 19' 40' 54.6"
L = 322.42'
T = 180.00'
R = 291.11'
e = EXIST
RO = N/A

TEMPORARY EARTH BERM
(Not to Scale)

Natural
Ground
D = 2 Ft.
B = 1 Ft.
STABILIZE EARTH BERM

-L-

B.M.
-L- STA. 20+26.37, 57.31' LT
ELEV = 43.34'
BENCHTIE NAIL SET IN 18" OAK

PI = 20+75.00
EL = 49.18'
VC = 200'
K = 73
V = 45 MPH

BEGIN BRIDGE
-L- STA. 20+47.38

END BRIDGE
-L- STA. 21+04.63

PI = 18+60.00
EL = 45.65'
VC = 180'
K = 134

BEGIN PAVING
-L- STA. 19+02.29
ELEV = 46.43'

BEGIN GRADE
-L- STA. 17+50.00
ELEV = 45.32'

EXCAVATE TO
ELEV 43.0'
EST. 45 CY

CLASS II RIPRAP
KEYED IN
3.5' (TYP)

NORMAL
WS EL. = 41.9'
SURVEY 02-01-2022

EXCAVATE TO
ELEV 43.0'
EST. 15 CY

52

48

44

40

36

32

16

17

18

19

20

21

52

48

44

40

36

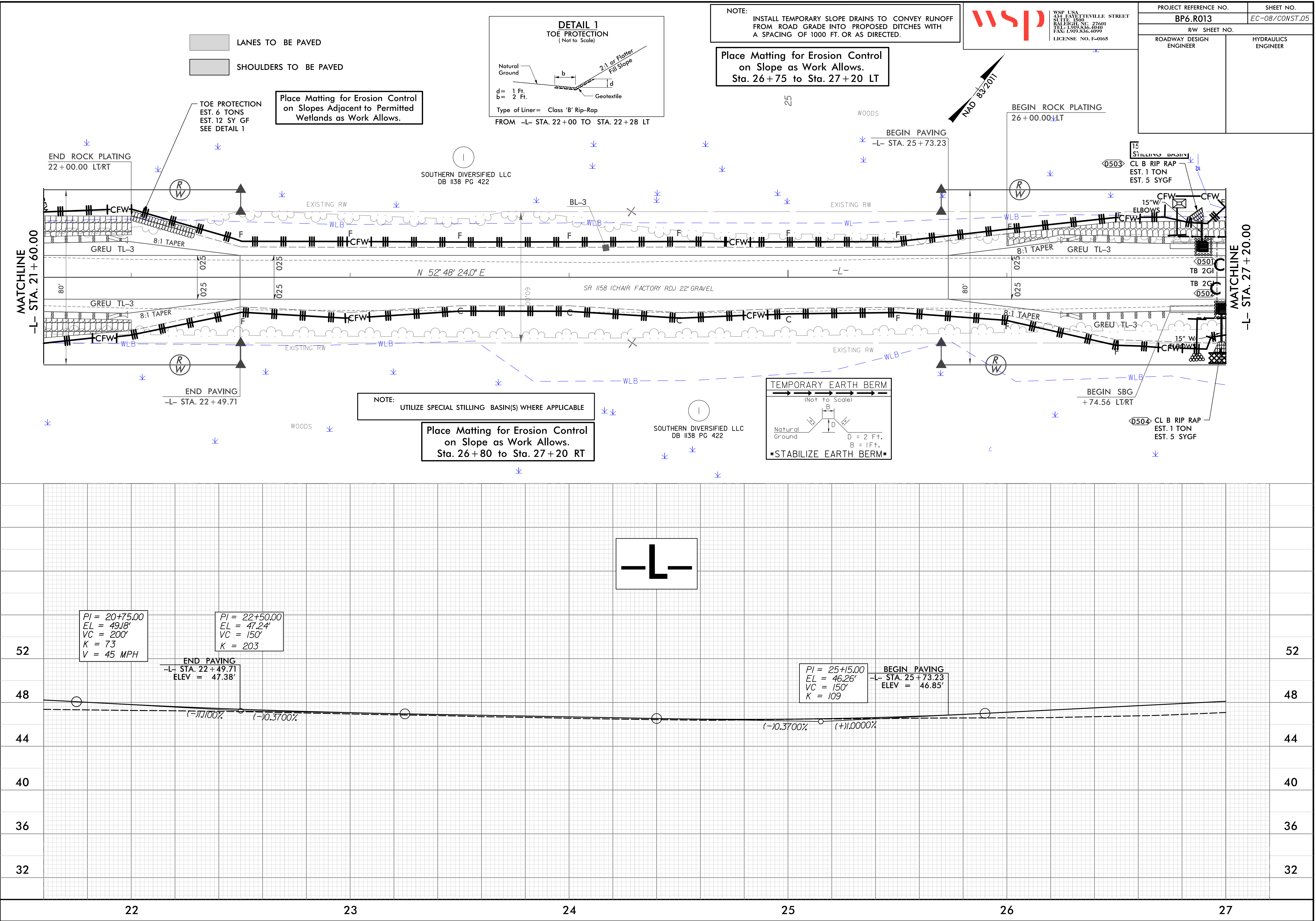
32

MATCHLINE
-L- STA. 21+60.00

8/17/99

REVISIONS

07-MAY-2024 09:00
VERIFICATION CONTROL
P:\SH\BP6R013_hyd_EC_pah5.dgn
WSP



8/17/99

LANES TO BE PAVED
SHOULDERS TO BE PAVED

Place Matting for Erosion Control
on Slopes Adjacent to Permitted
Wetlands as Work Allows.

NOTE:
UTILIZE SPECIAL STILLING BASIN(S) WHERE APPLICABLE

NOTE:
IMPERVIOUS DIKES MAY BE MODIFIED
AND/OR ELIMINATED AS DIRECTED BY THE ENGINEER

-L- CURVE DATA

PI Sta 31+41.42
 $\Delta = 47^{\circ}12'30.0''$ (RT)
 $D = 11^{\circ}55'20.0''$
 $L = 395.97'$
 $T = 210.00'$
 $R = 480.58'$
 $e = NC$
 $RO = N/A$

NOTE: NO EXISTING SUPERELEVATION ON CURVE.
MATCHING EXISTING CONDITIONS.



WSP US
484 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 919.836.4040
FAX: 919.836.4099
LICENSE NO. F-0165

PROJECT REFERENCE NO.		SHEET NO.
BP6.R013		EC-09/CONST.06
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	

MATCHLINE
-L- STA. 27+00.00

CLASS II RIPRAP (TYP.)
(STRUCTURES PAY ITEM)
EXCAVATION LIMIT (TYP.)

BRIDGE #325

80'

15" W/
ELBOWS

0601 TB 2GI

0602 TB 2GI

15" W/
ELBOWS

CL B RIP RAP

EST. 2 TON

EST. 7 SYGF

RIPRAP AT EMBANKMENT

EST. 7 TONS

EST. 10 SY GF

SEE DETAIL 2

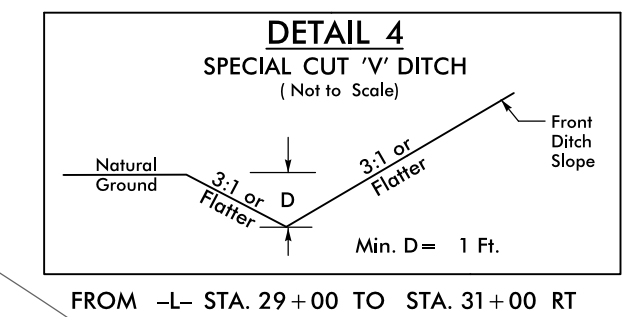
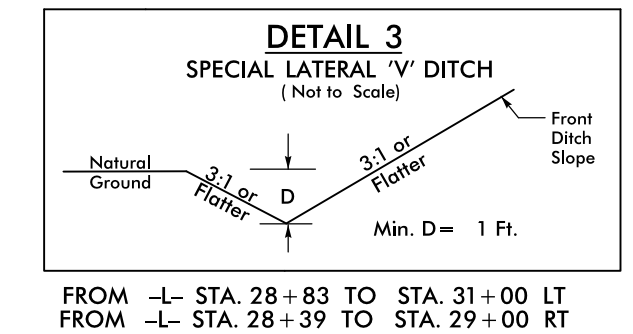
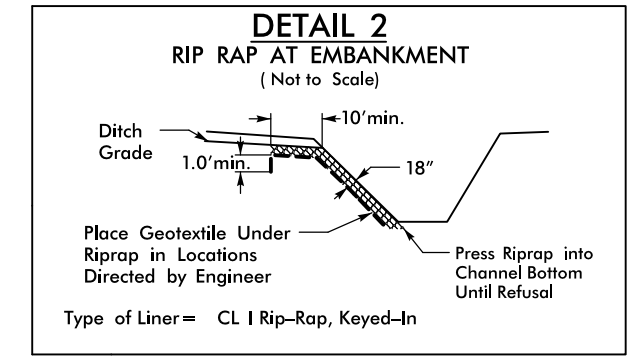
SOUTHERN DIVERSIFIED LLC
DB 1138 PG 422

-L- PC Sta. 29+31.42

SPECIAL LATERAL 'V' DITCH
SEE DETAIL 3

SPECIAL LATERAL 'V' DITCH
SEE DETAIL 3

CUT 'V' DITCH
SEE DETAIL 4



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE = 2300 CFS
DESIGN FREQUENCY = 25 YRS
DESIGN HW ELEVATION = 45.6 FT
BASE DISCHARGE = 3400 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 46.4 FT
OVERTOPPING DISCHARGE = 1350 CFS
OVERTOPPING FREQUENCY = <10 YRS
OVERTOPPING ELEVATION = 44 FT

DATE OF SURVEY = 02-01-2022
W.S. ELEVATION AT DATE OF SURVEY = 41.8 FT

PI = 27+85.00
EL = 48.96'
VC = 150'
K = 64
V = 45 MPH

BEGIN BRIDGE
-L- STA. 27+30.81

END BRIDGE
-L- STA. 28+28.19

BM2
-L- STA. 28+22.24, 53.47' RT
ELEV = 43.89'
BENCHMARK NAIL SET IN 16" CYPRESS

END PAVING
-L- STA. 29+79.52
ELEV = 46.41'

PI = 30+15.00
EL = 45.89'
VC = 150'
K = 145

END GRADE
-L- STA. 31+00.00
ELEV = 45.63'

EXCAVATE TO
ELEV 43.0'
EST. 55 CY

EXCAVATE TO
ELEV 43.0'
EST. 30 CY

PI = 29+00.00
EI = 42.52

END SPECIAL LATERAL 'V' DITCH
BEGIN SPECIAL CUT 'V' DITCH
STA. 29+00 -L- RT
EL. 42.33'

BEGIN SPECIAL LATERAL 'V' DITCH
STA. 28+83 -L- LT
EL. 42.34'

BEGIN SPECIAL LATERAL 'V' DITCH
STA. 28+39 -L- RT
EL. 42.07'

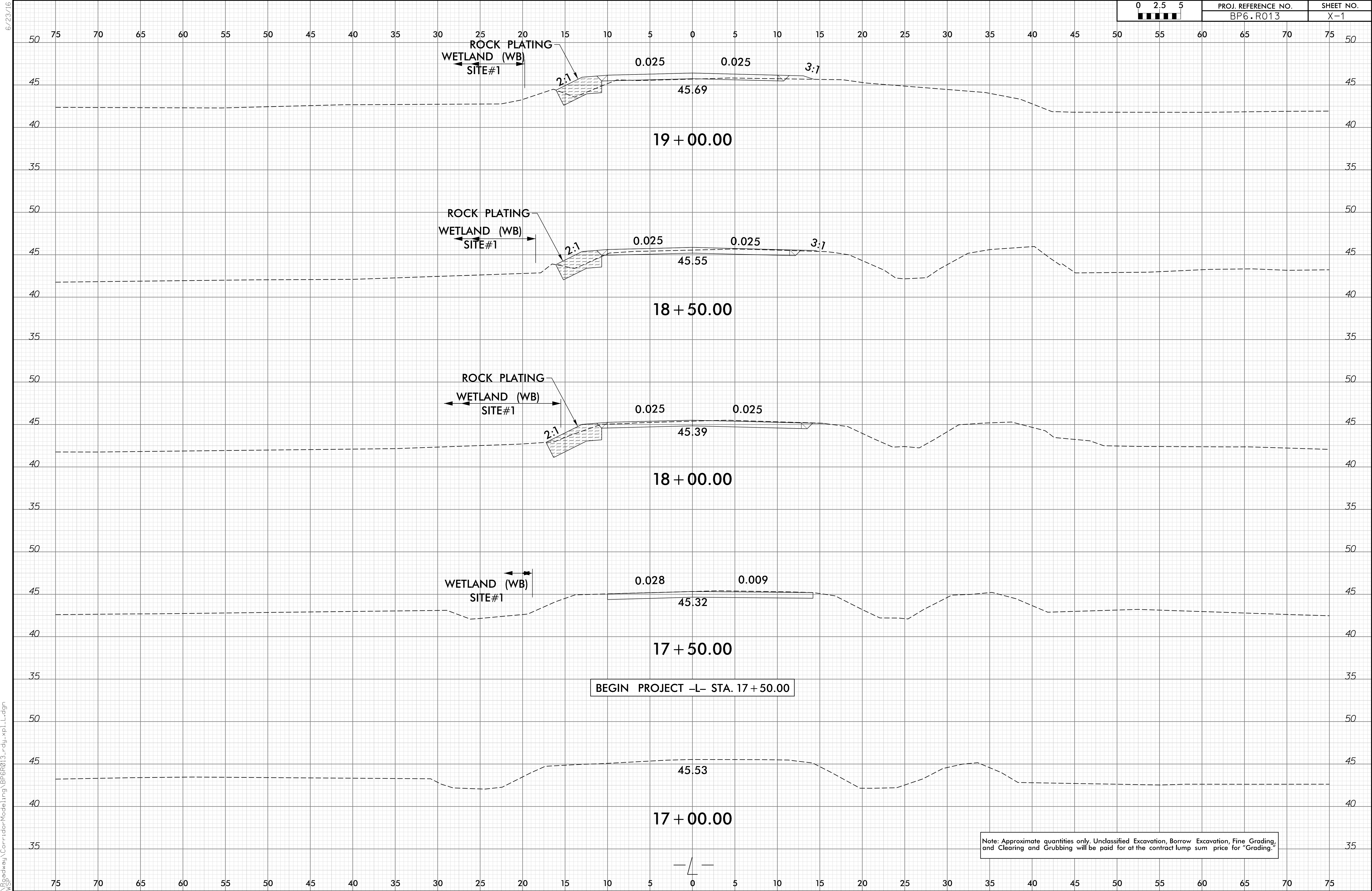
NORMAL
WS. EL. = 41.8'
SURVEY 02-01-2022

END SPECIAL CUT 'V' DITCH
STA. 31+00 -L- RT
EL. 43.17'

PI = 30+50.00
EI = 43.27

END SPECIAL LATERAL 'V' DITCH
STA. 31+00 -L- LT
EL. 43.61'

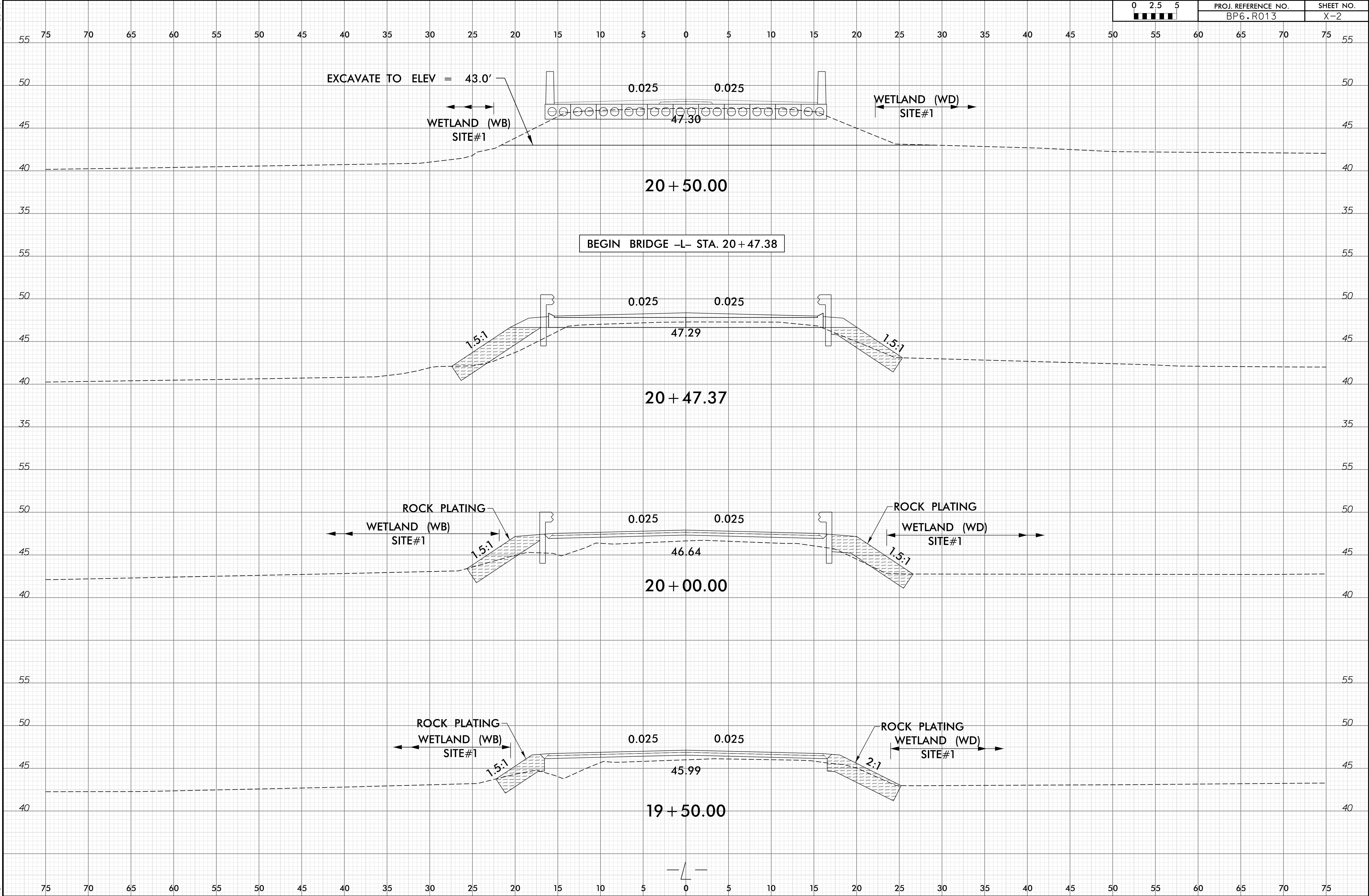
REVISIONS
02-MAY-2024 08:45
VERIFICATION CONTROL PSH\BP6R013_hyd_EC_pah6.dgn
WSP



6/23/16

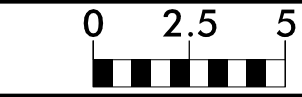


PROJ. REFERENCE NO.	SHEET NO.
BP6.R013	X-2

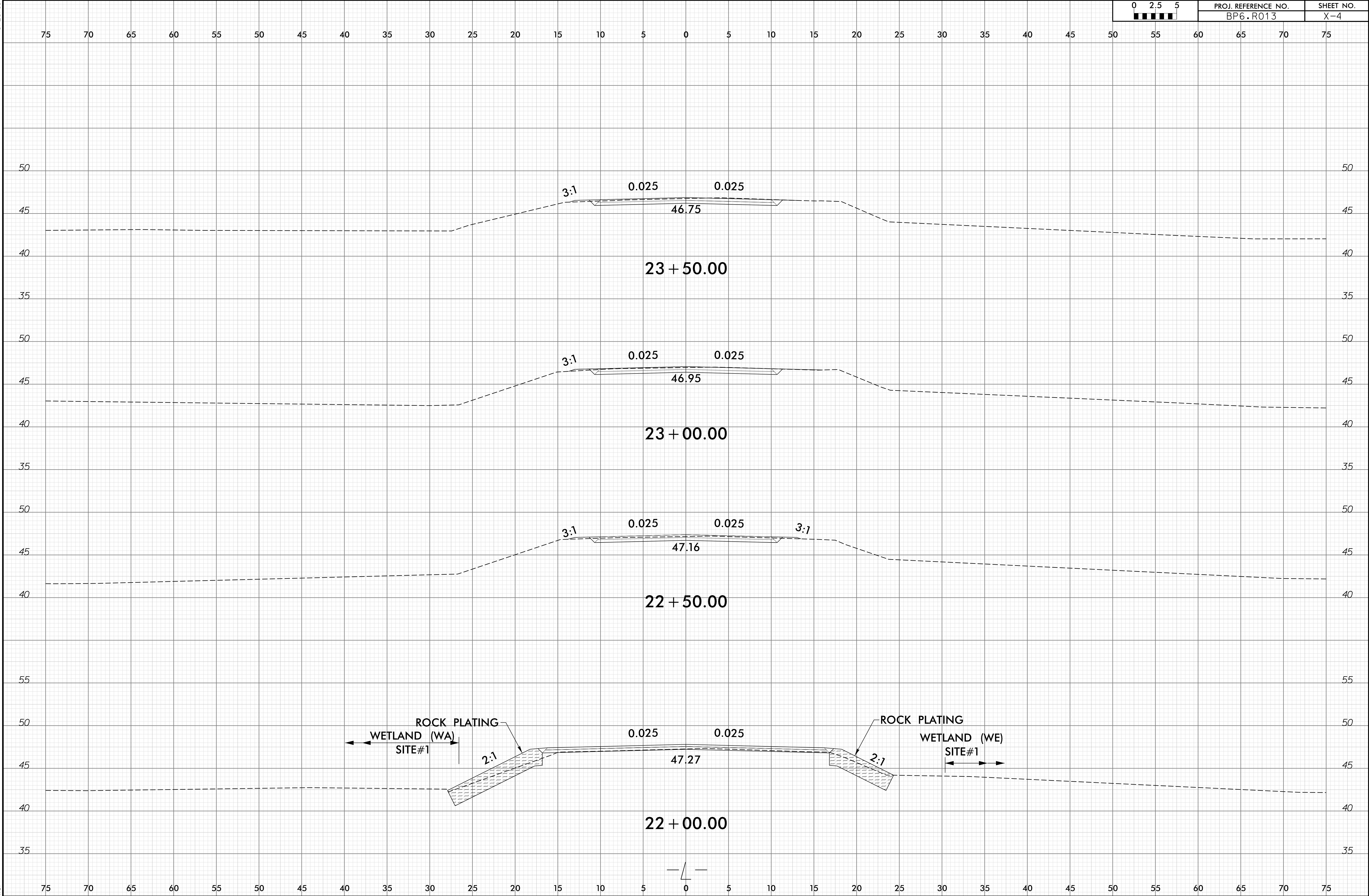




6/23/16



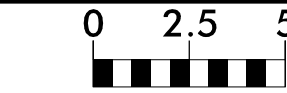
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BP6.R013	X-4



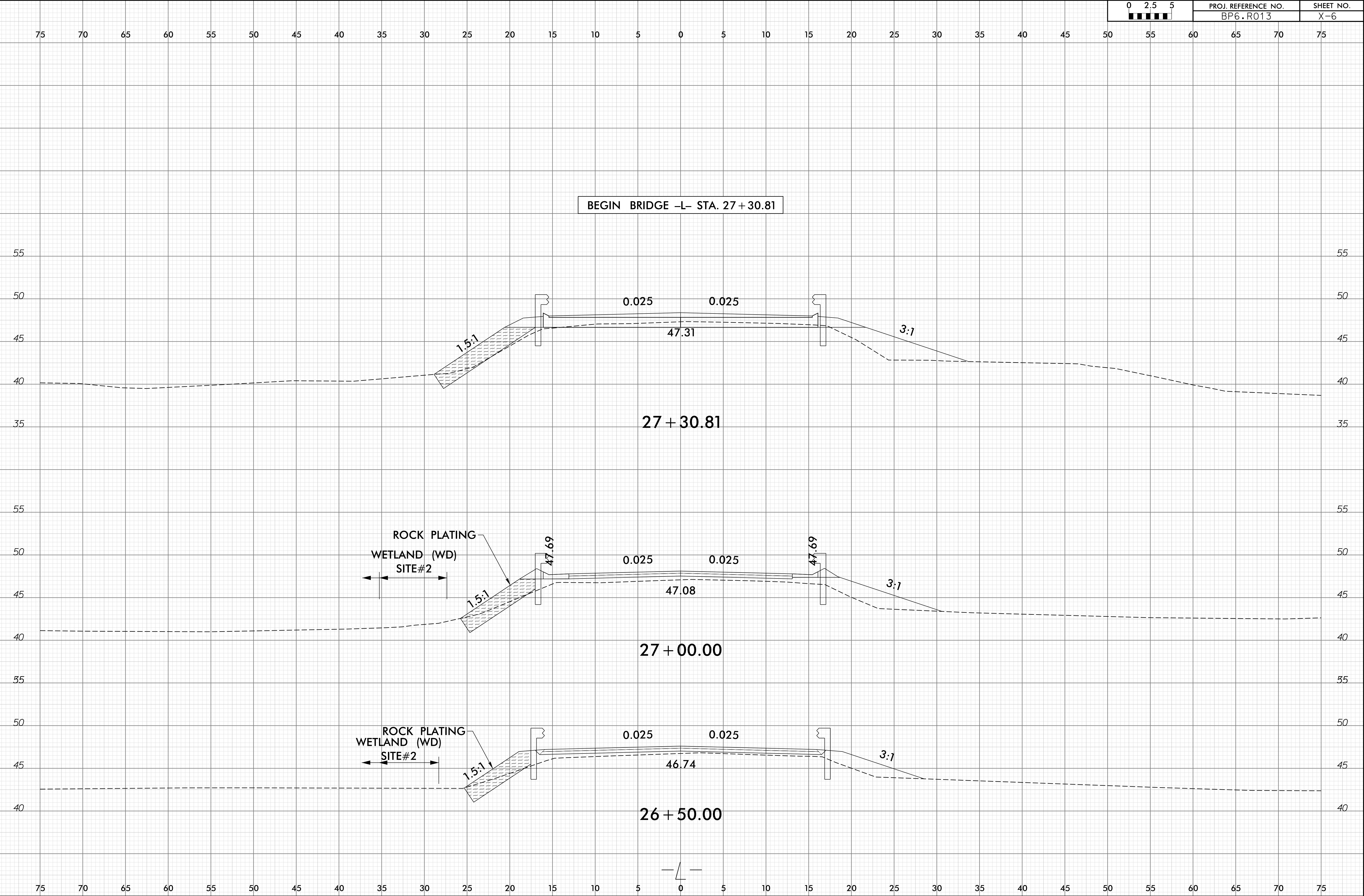
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WSP

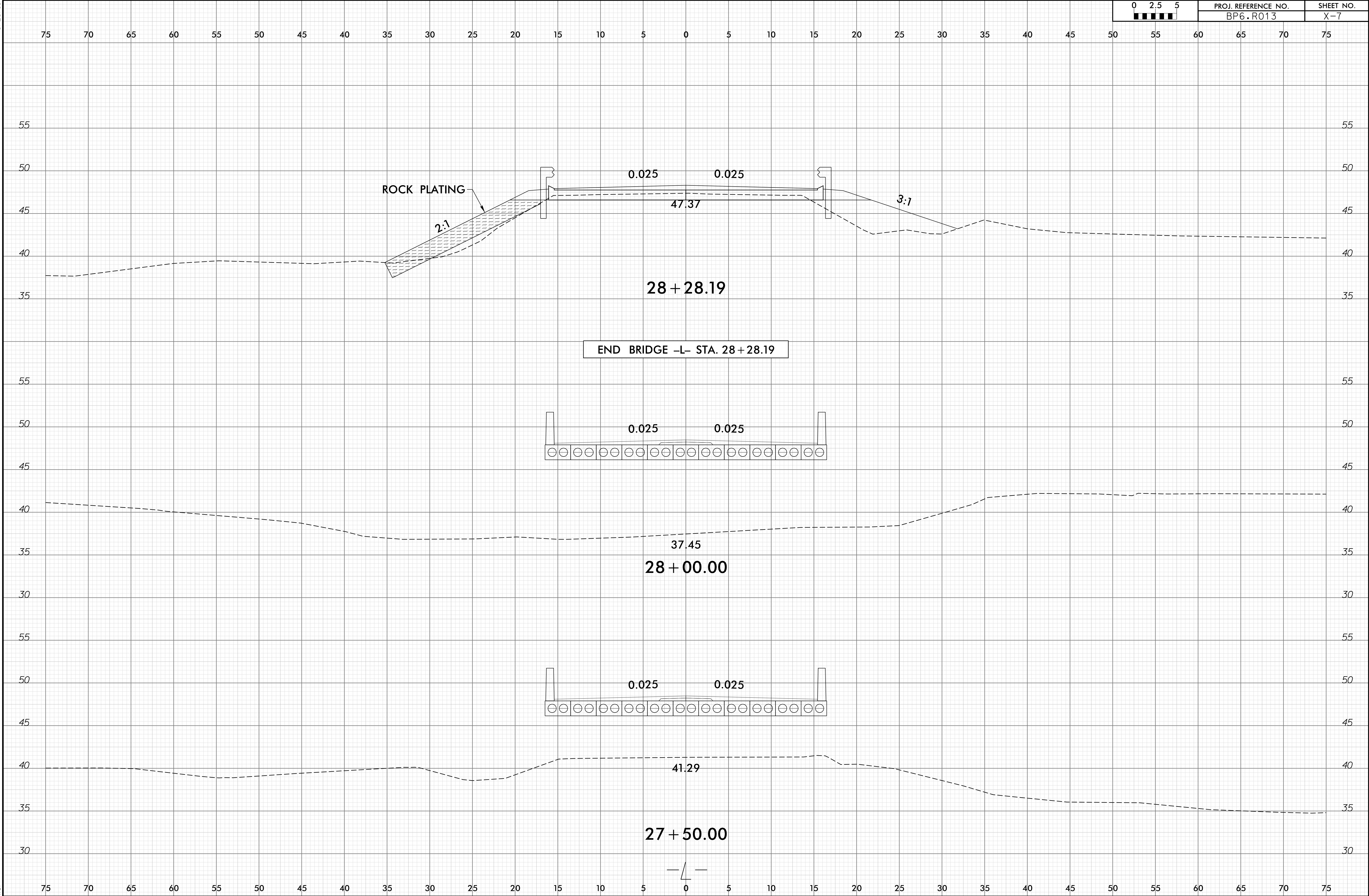


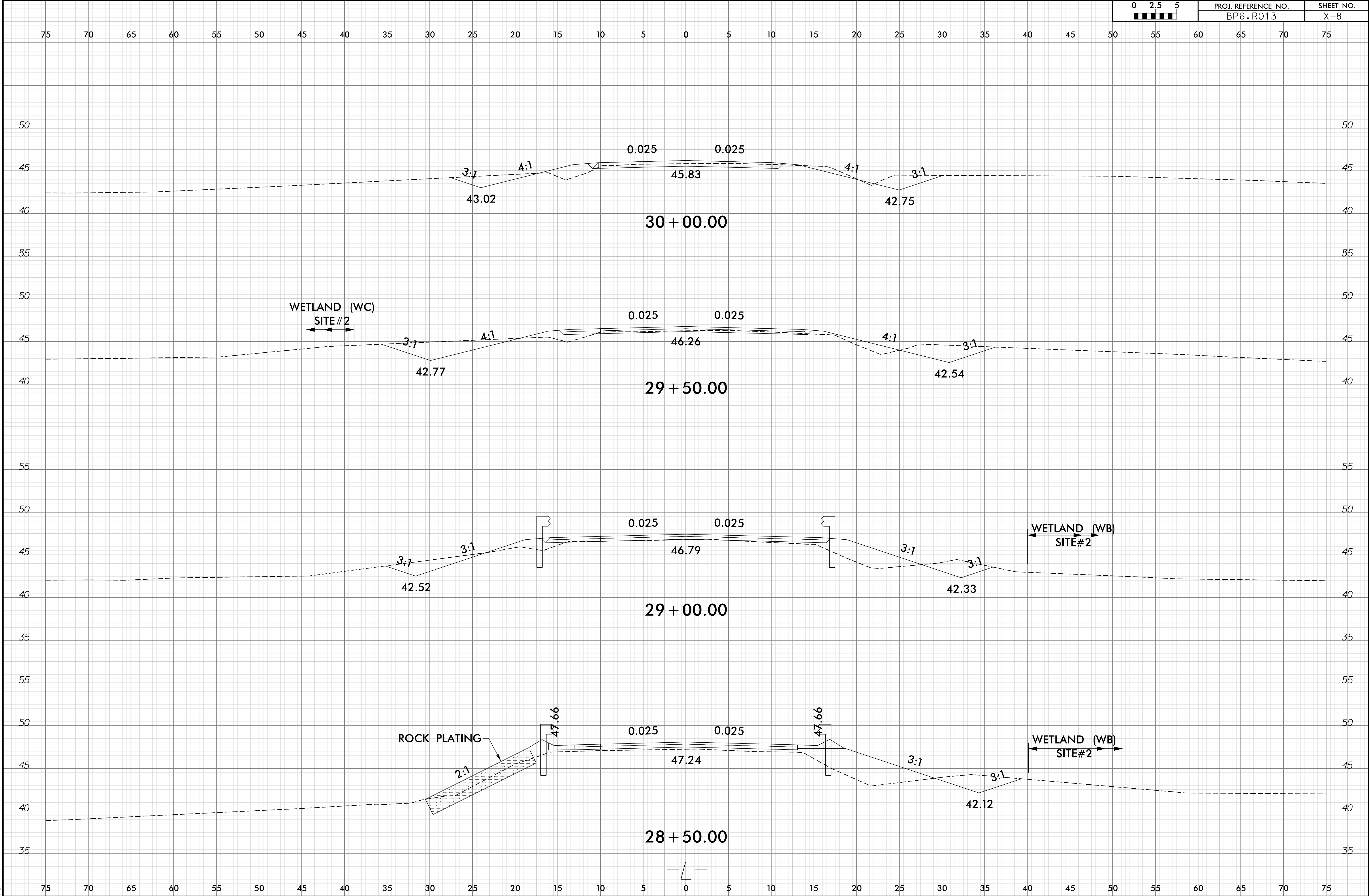
6/23/16



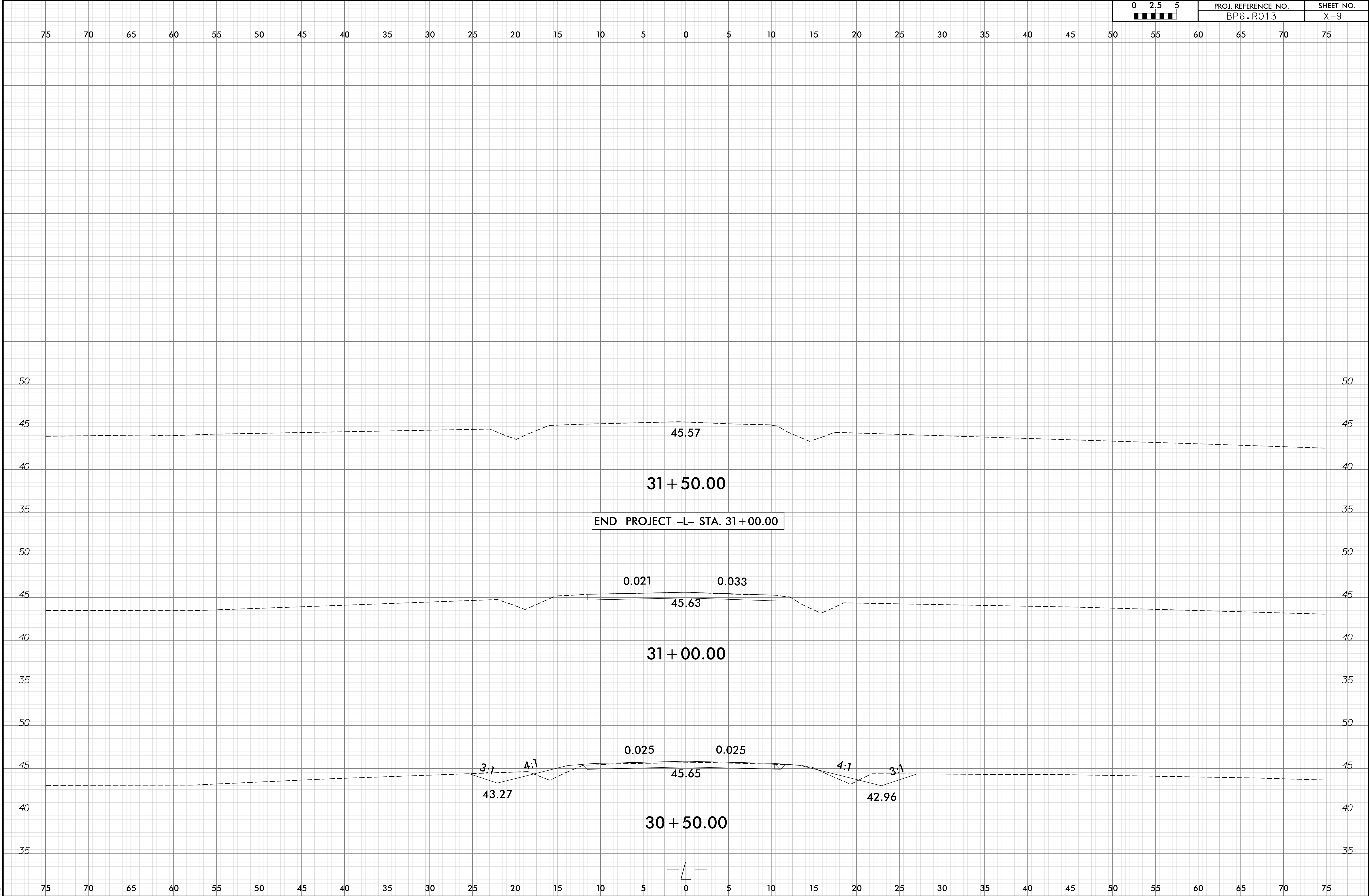
PROJ. REFERENCE NO.	SHEET NO.
BP6.R013	X-6

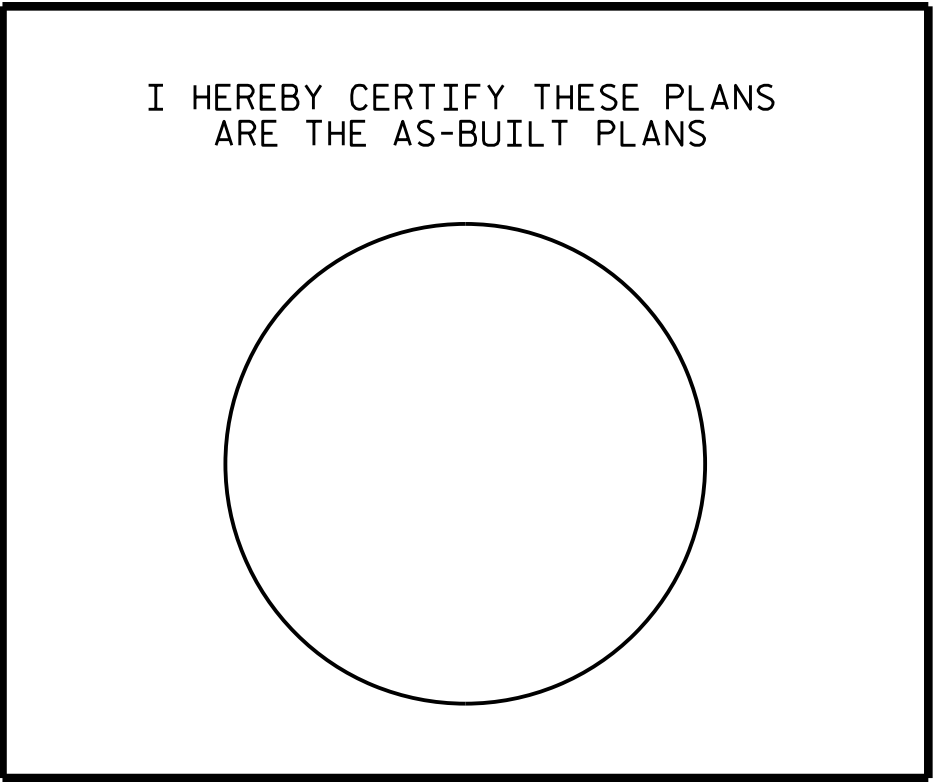
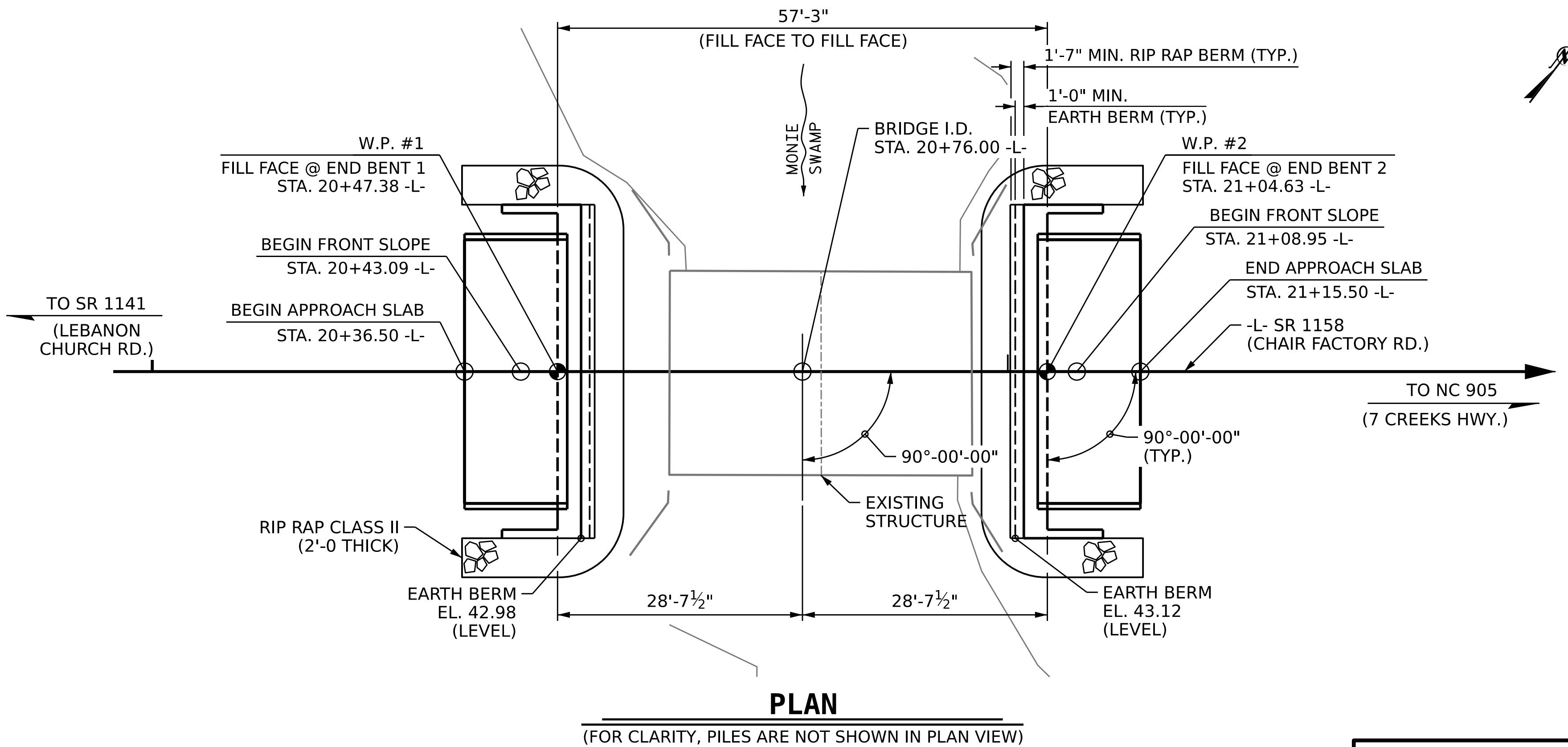
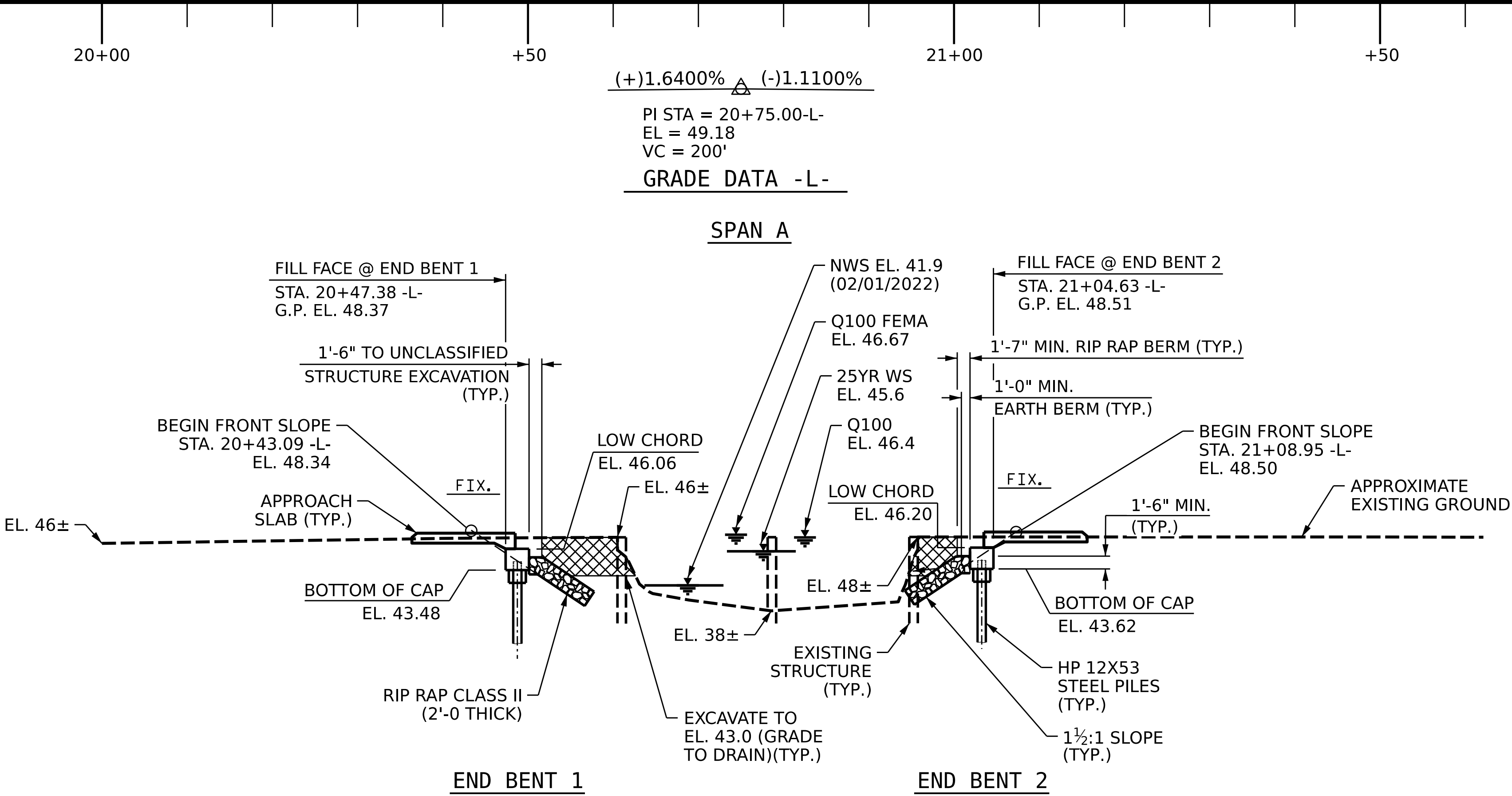






6/23/16





PROJECT NO. **BP6-R013**
COLUMBUS COUNTY
STATION: **20+76.00-L-**

SHEET 1 OF 4 REPLACES BRIDGE 230324

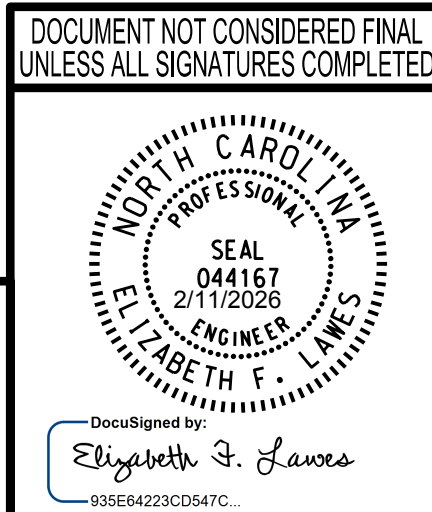
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

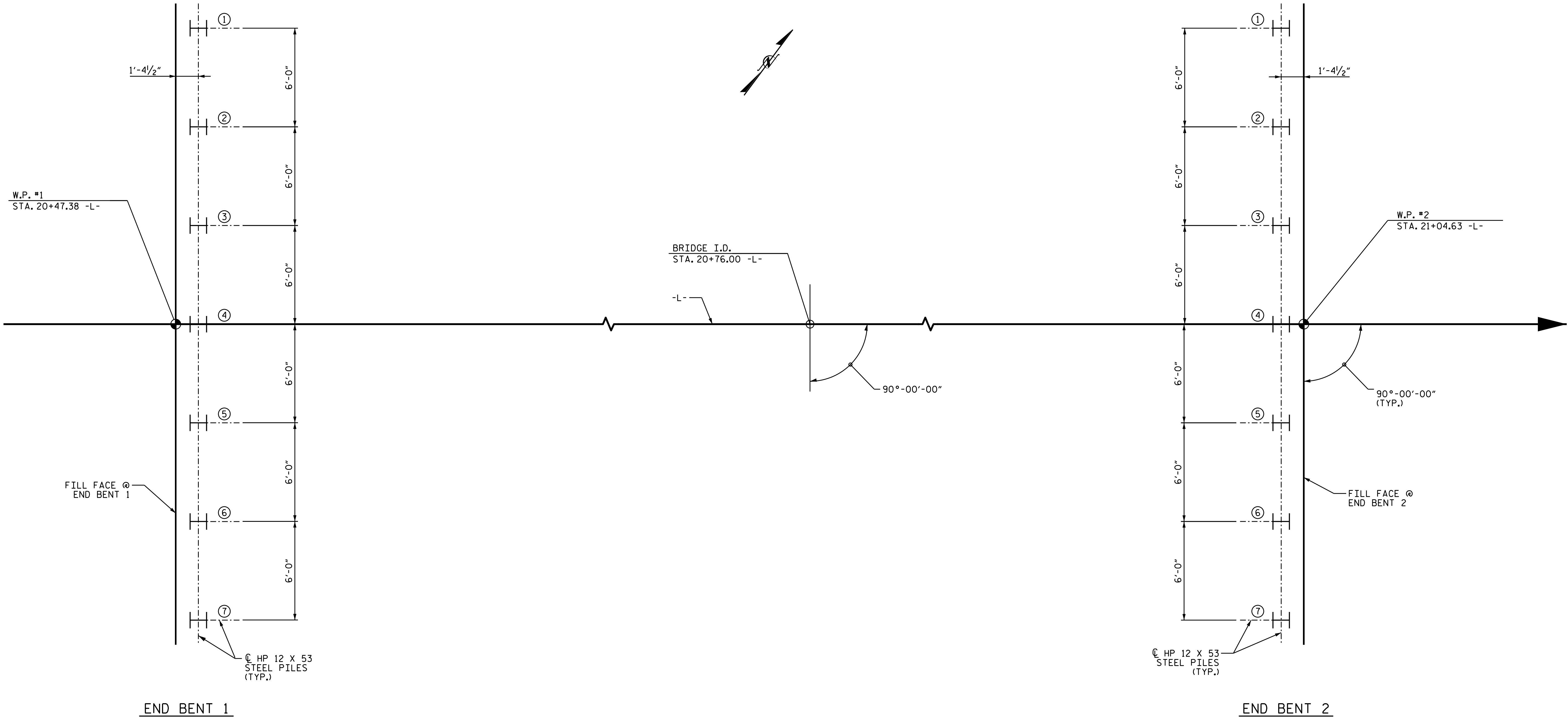
GENERAL DRAWING
BRIDGE OVER MONIE SWAMP ON
SR 1158 (CHAIR FACTORY RD.)
BETWEEN SR 1141 & NC 905

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S1-1
2			4			TOTAL SHEETS 15

DESIGNED BY: P. GALLAGHER DATE: DEC 2025
DRAWN BY: D. KULKARNI DATE: DEC 2025
CHECKED BY: P. GALLAGHER DATE: DEC 2025
DESIGN ENGINEER OF RECORD: E. LAWES DATE: DEC 2025

wsp
WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165





NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 31,000 TO 45,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENTS NO. 1 AND 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

DESIGNED BY:	P. GALLAGHER	DATE :	DEC 2025
DRAWN BY:	D. KULKARNI	DATE :	DEC 2025
CHECKED BY:	P. GALLAGHER	DATE :	DEC 2025
DESIGN ENGINEER OF RECORD:	E. LAWES	DATE :	DEC 2025

PROJECT NO. **BP6-R013**
COLUMBUS COUNTY
STATION: **20+76.00-L-**

SHEET 2 OF 4

STATE OF NORTH CAROLINA
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RALEIGH

GENERAL DRAWING
BRIDGE OVER MONIE SWAMP ON
SR 1158 (CHAIR FACTORY RD.)
BETWEEN SR 1141 & NC 905

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S1-2
2			4			TOTAL SHEETS 15

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LICENSE NO. F-0165

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UNLESS ALL SIGNATURES COMPLETED

Elizabeth F. Lawes
935E64223CD547C...

SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Number of Piles per Line	Factored Resistance per Pile KIPS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles **			Drilled-In Piles		
						Minimum Pile Tip (Tip No Higher Than) Elevation FT	Required Driving Resistance (RDR)* per pile KIPS	Pile Redrives Quantity EACH	Predrilling Length per Pile LIN FT	Predrilling Elevation (Elevation Not To Predrill Below) FT	Maximum Predrilling Diameter INCHES	Pile Excavation (Bottom of Hole) Elevation FT	Pile Excavation Not In Soil per Pile LIN FT	Pile Excavation In Soil per Pile LIN FT
End Bent 1, Piles 1-7	7	142	44.48	90	39.00	24.00	210							
End Bent 2, Piles 1-7	7	142	44.62	95	39.00	19.00	210							
TOTAL QUANTITY:														

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

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

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile KIPS	Factored Drag Load per Pile KIPS	Factored Dead Load * per Pile KIPS	Dynamic Resistance Factor	Nominal Drag Resistance per Pile KIPS	Nominal Scour Resistance per Pile KIPS
End Bent 1, Piles 1-7	142			0.70		3.6
End Bent 2, Piles 1-7	142			0.70		3.6

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

SUMMARY OF DPT/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Dynamic Pile Testing (DPT)		
End Bent / Bent No (e.g., "Bent 1 - Bent 3")	DPT Test Pile Length FT	DPT Testing Quantity EACH
End Bent 1	90	1
End Bent 2	95	1
TOTAL QUANTITY:		2

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

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

NOTES:

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Andrew A. Nash, #031022) on 01-27-2026.
2. Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
3. The Engineer may adjust the quantity for DPT Testing and Pipe Pile Plates when necessary.

PROJECT NO. BP6.R013 (BRIDGE #324)

COLUMBUS COUNTY

STATION: 20+76.00 -L-

SHEET 3 OF 4



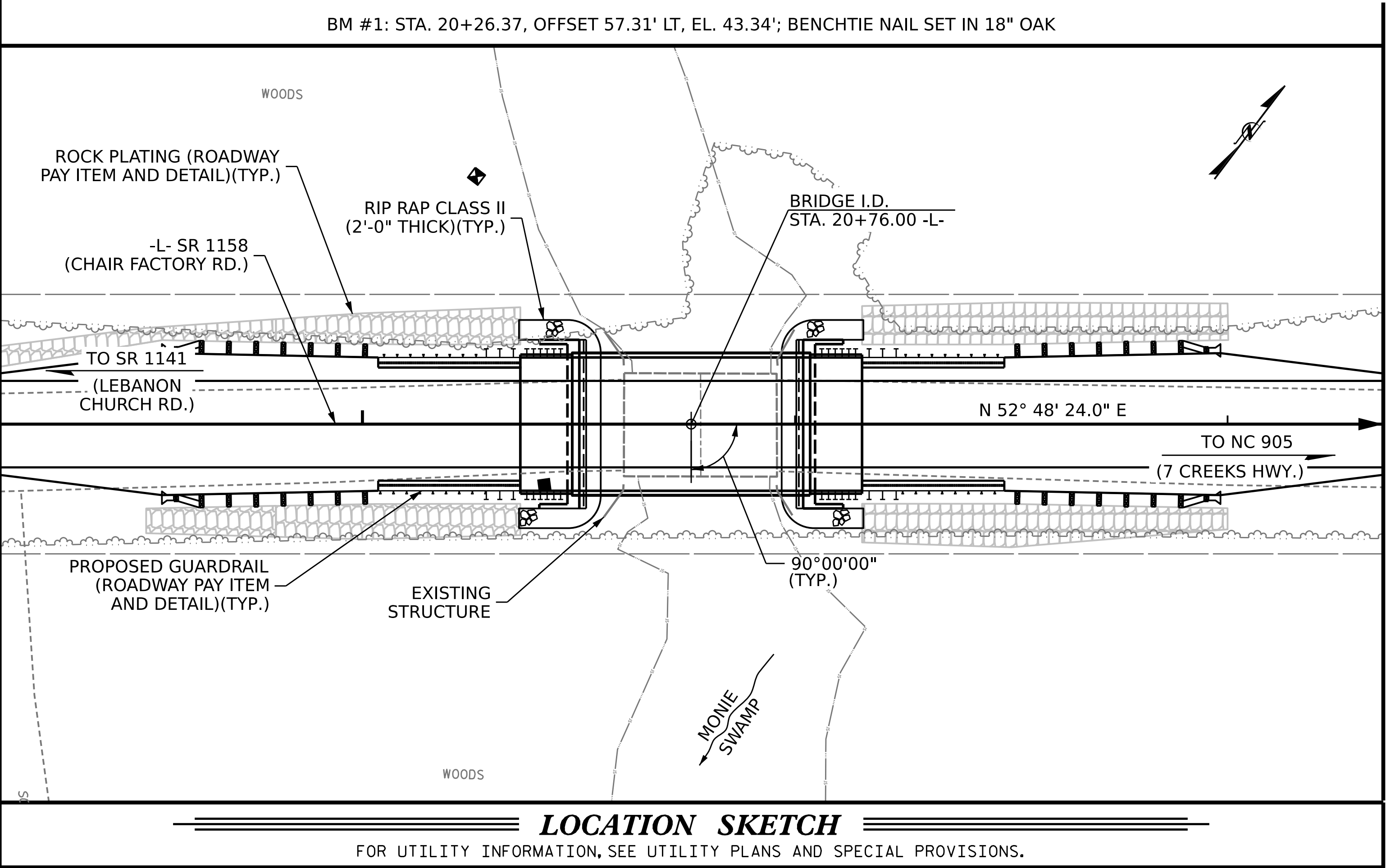
DocuSigned by:
Elizabeth F. Laves
SIGNATURE: DATE:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE
FOUNDATION
TABLES

REVISIONS						SHEET NO. S1-3 TOTAL SHEETS 15
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

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FINAL UNLESS ALL
SIGNATURES COMPLETED



NOTES

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 2.
- THIS STRUCTURE CONTAINS THE NECESSARY CORROSION PROTECTION REQUIRED FOR A HIGHLY CORROSIVE SITE.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 24 FT (LEFT) AND 24 FT. (RIGHT) 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.

THE EXISTING STRUCTURE CONSISTING OF TWO 18FT SPANS OF TIMBER BEAMS; 24FT CLEAR ROADWAY WIDTH AND CONCRETE DECK ON TIMBER ABUTMENTS AND LOCATED AT EXISTING STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. DURING CONSTRUCTION OF THE PROPOSED BRIDGE, THE EXISTING BRIDGE SHALL BE CLOSED TO TRAFFIC AND SHALL REMAIN CLOSED TO TRAFFIC FOR THE DURATION OF THE BRIDGE REPLACEMENT WORK.

CLASS AA CONCRETE SHALL BE USED IN ALL CAST-IN-PLACE PILE CAPS, AND SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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

THE CONCRETE IN THE PILE CAPS OF END BENT 1 AND END BENT 2 SHALL CONTAIN SILICA FUME, SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB OF CEMENT, NO PAYMENT WILL BE MADE FOR SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS ITEMS.

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.

THE SCOUR CRITICAL ELEVATION FOR END BENT NO.1 AND END BENT NO.2 IS ELEVATION 41 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

STEEL PILES SHALL BE COATED WITH COAL TAR EPOXY PER THE STANDARD SPECIFICATIONS.

FOR END BENT NO.1 AND END BENT NO.2, ONLY PARTIAL EPOXY COATING OF THE PILES IS REQUIRED. SEE END BENT SHEETS FOR THE REQUIRED EPOXY COATING LENGTHS. PAYMENT FOR PARTIALLY EPOXY COATED PILES WILL BE MADE UNDER THE CONTRACT UNIT PRICE FOR EPOXY COATED STEEL PILES.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

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

ASPHALT WEARING SURFACE IS INCLUDED IN THE ROADWAY QUANTITY ON ROADWAY PLANS.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR CORED SLAB AND BOX BEAM POST TENSIONING, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL															
	REMOVAL OF EXISTING STRUCTURE @ STA. 20+76.00 -L-	ASBESTOS ASSESSMENT	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS AA CONCRETE	BRIDGE APPROACH SLABS	EPOXY COATED REINFORCING STEEL (BRIDGE)	PILE DRIVING EQUIPMENT SETUP FOR HP 12 x 53 STEEL PILES	HP 12 X 53 STEEL PILES		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	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	No.	No.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	No.	LIN. FT.
SUPERSTRUCTURE					LUMP SUM					110.25			LUMP SUM	11	605
END BENT 1			LUMP SUM	14.2		2,077	7	7	637		69	76			
END BENT 2			LUMP SUM	14.2		2,077	7	7	672		69	76			
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	28.4	LUMP SUM	4,154	14	14	1,309	110.25	138	152	LUMP SUM	11	605

PROJECT NO. **BP6-R013**

COLUMBUS COUNTY

STATION: **20+76.00-L-**

SHEET 4 OF 4

STATE OF NORTH CAROLINA
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RALEIGH

GENERAL DRAWING
BRIDGE OVER MONIE SWAMP ON
SR 1158 (CHAIR FACTORY RD.)
BETWEEN SR 1141 & NC 905

REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	
1			3		S1-4
2			4		TOTAL SHEETS 15

DESIGNED BY: P. GALLAGHER DATE : DEC 2025
DRAWN BY: D. KULKARNI DATE : DEC 2025
CHECKED BY: P. GALLAGHER DATE : DEC 2025
DESIGN ENGINEER OF RECORD: E. LAWES DATE : DEC 2025

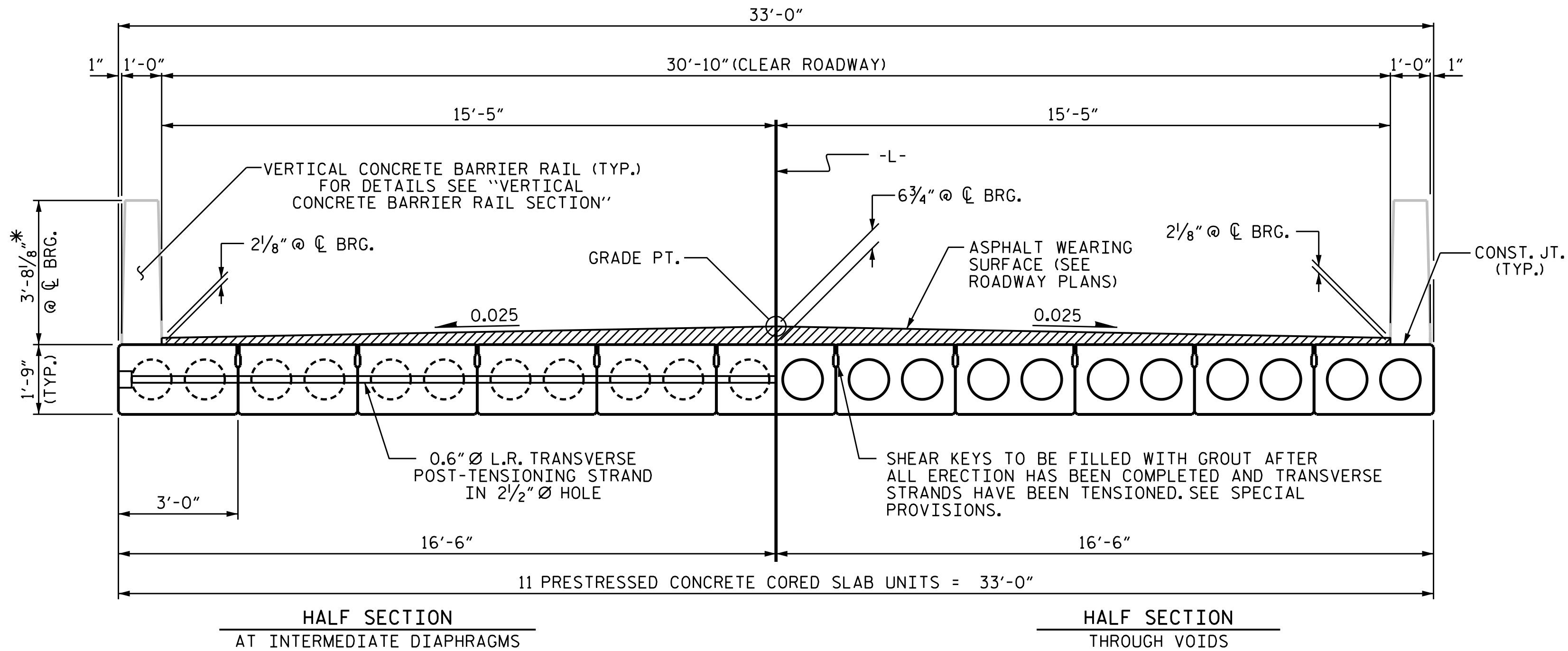
wsp

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SUITE 1500
RALEIGH, NC 27601
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LICENSE NO. F-0165

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SEAL
044167
2/11/2026
ENGINEER
ELIZABETH F. LAWES

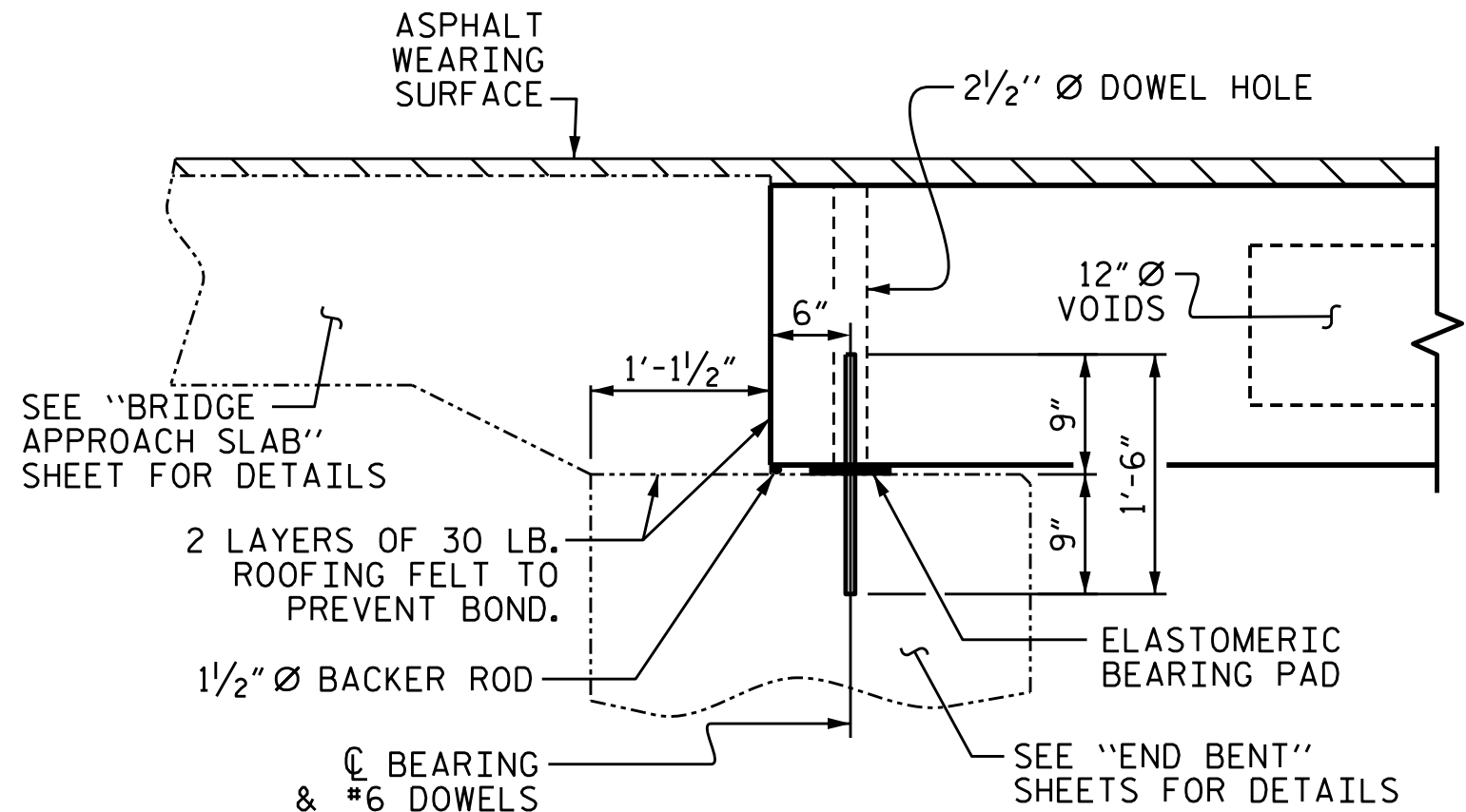
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Elizabeth F. Lawes
935E423CD547C...



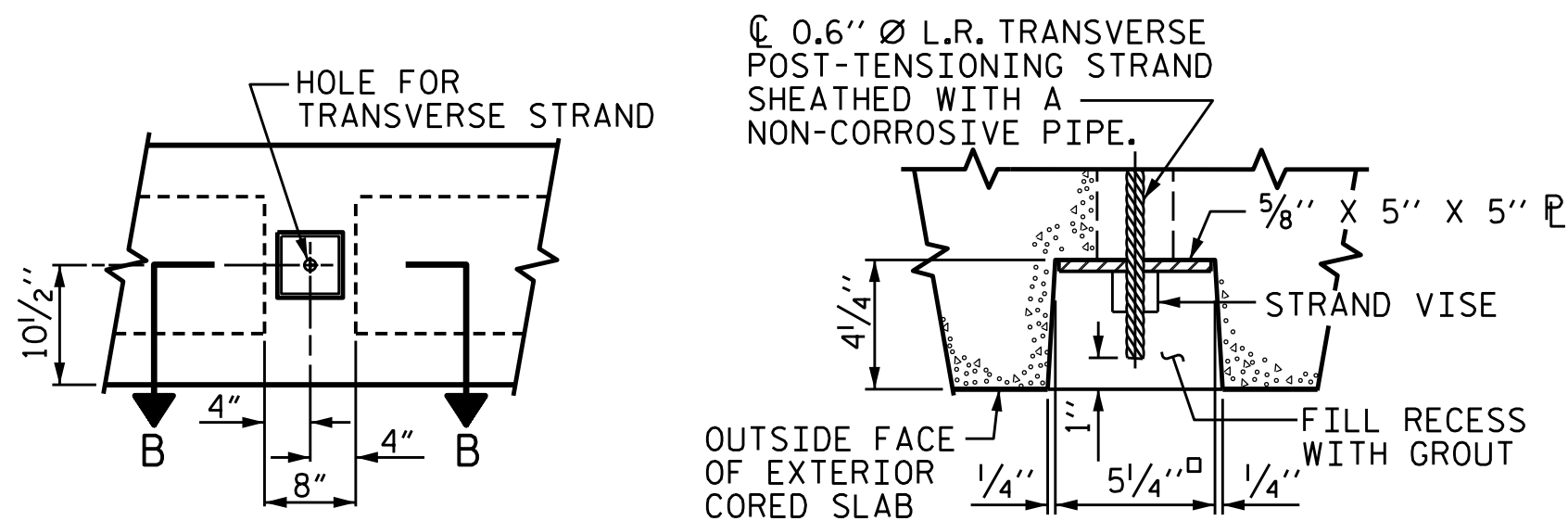
TYPICAL SECTION

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

FIXED END



SECTION AT END BENT



ELEVATION VIEW

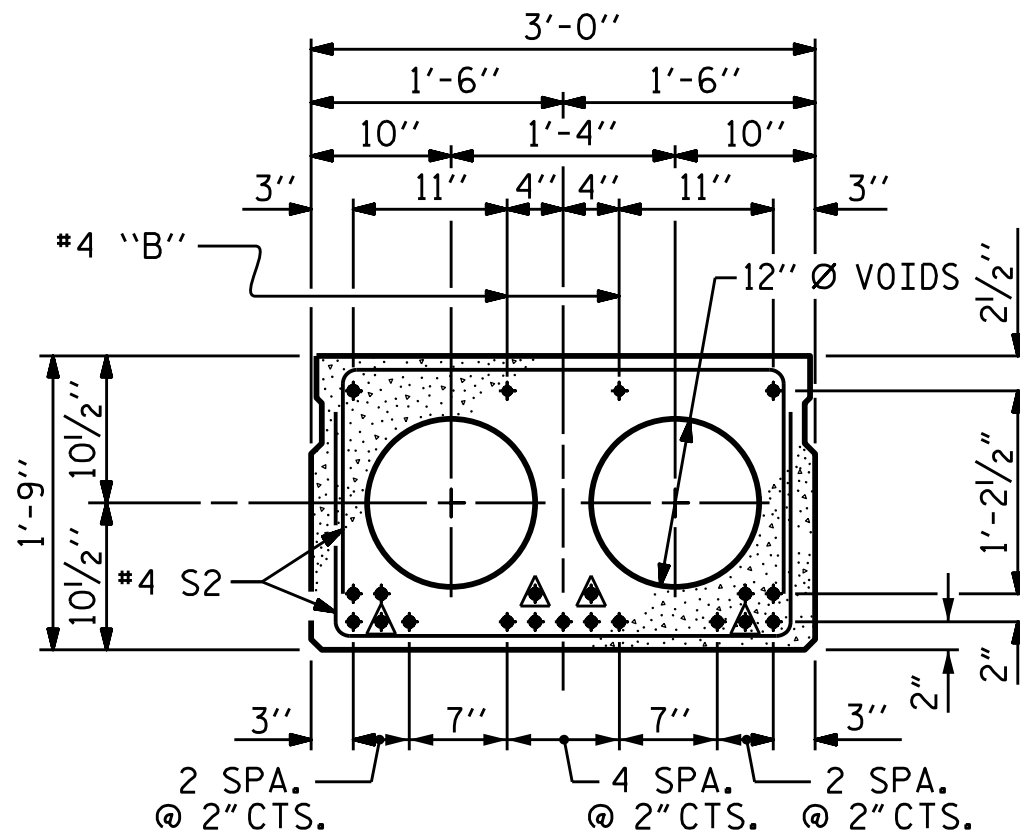
SECTION B-B

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

DESIGNED BY: P. GALLAGHER DATE: DEC 2025
DRAWN BY: D. KULKARNI DATE: DEC 2025
CHECKED BY: P. GALLAGHER DATE: DEC 2025
DESIGN ENGINEER OF RECORD: E. LAWES DATE: DEC 2025

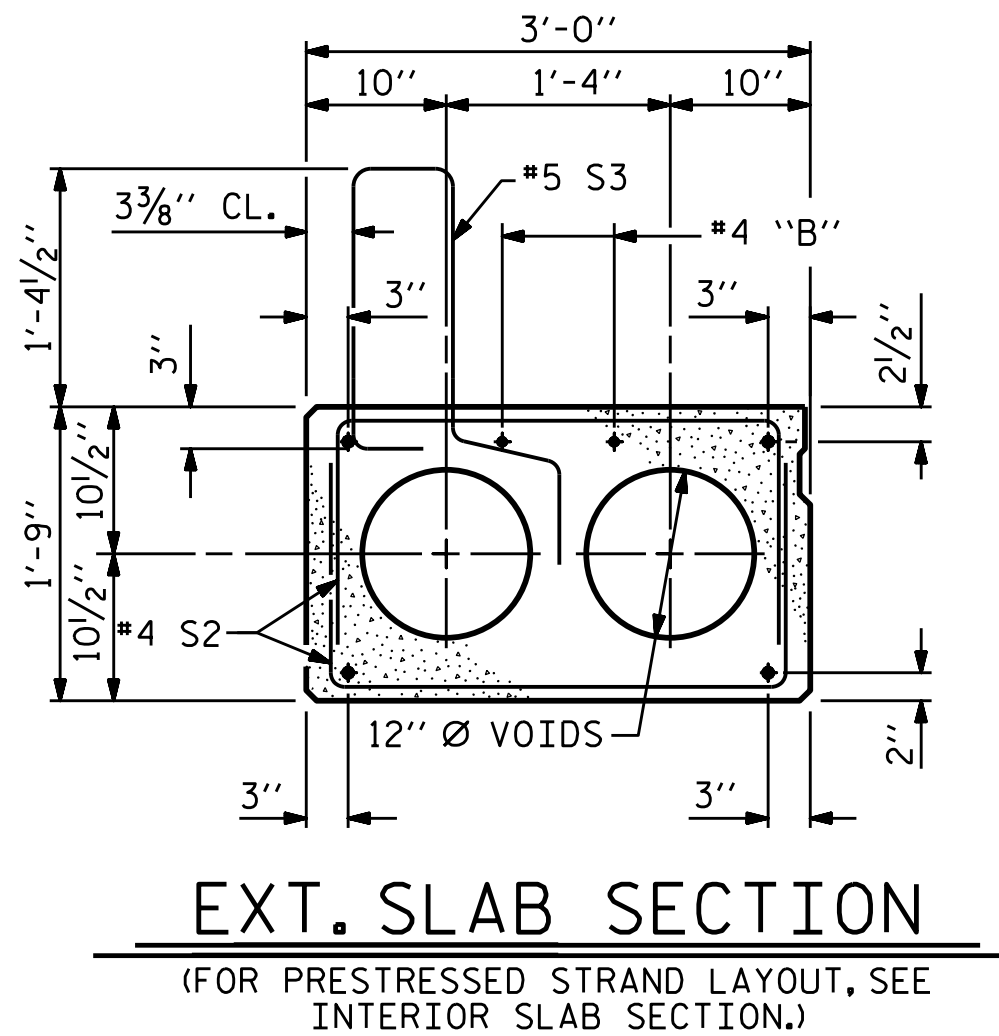
DRAWN BY: DGE 5/09 REV. 8/14 MAA/TMG
CHECKED BY: BCH 6/09 REV. 5/23 BNB/AAI

2/9/2026
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USL722989



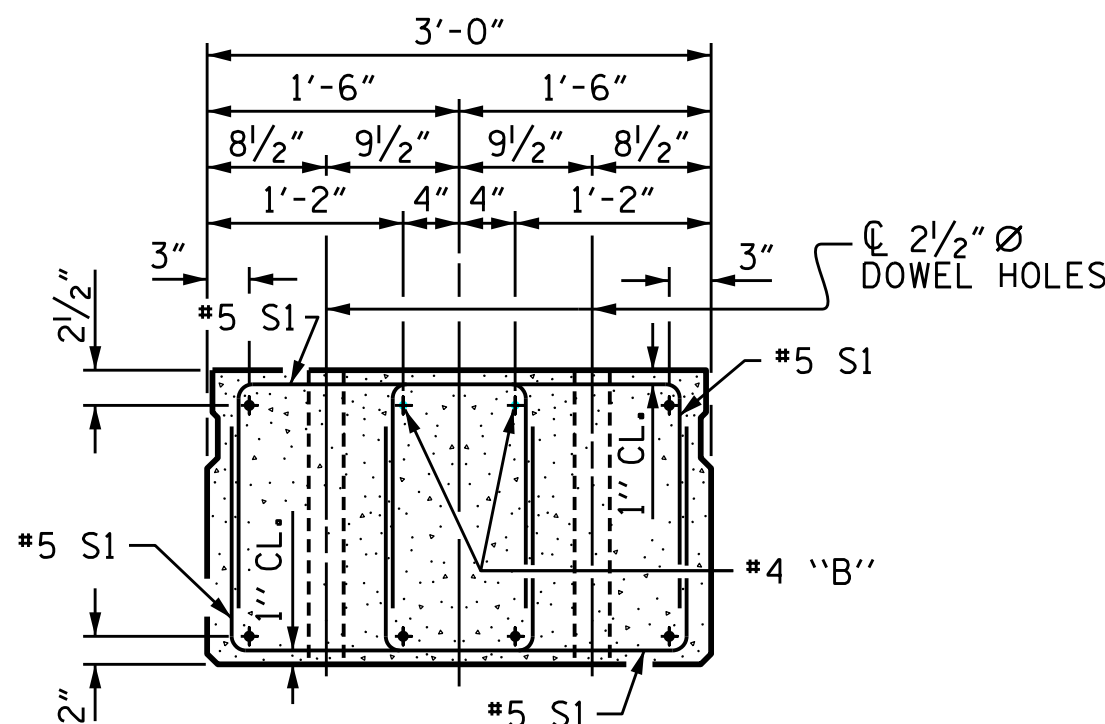
INTERIOR SLAB SECTION (55' UNIT)
(19 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT



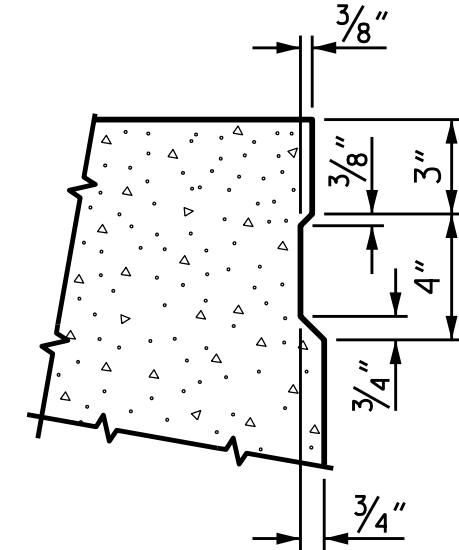
△ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



END ELEVATION

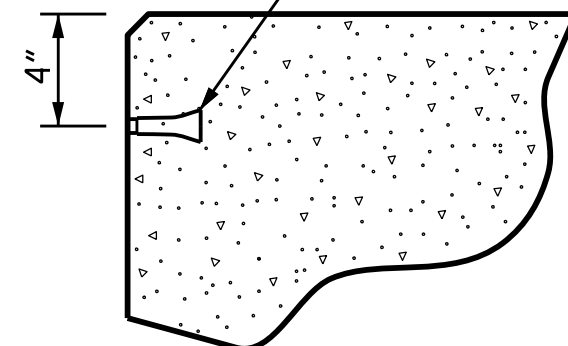
SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



SHEAR KEY DETAIL

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

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



THREADED INSERT DETAIL

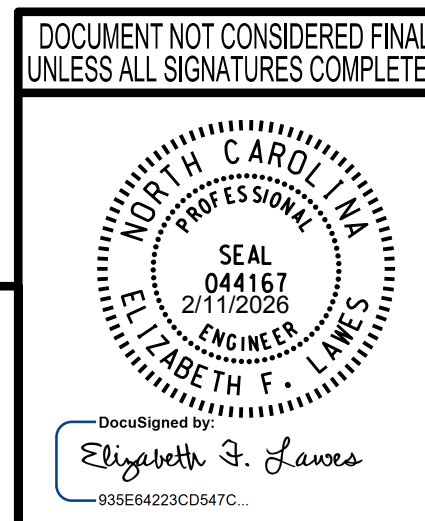
PROJECT NO. **BP6-R013**
COLUMBUS COUNTY
STATION: **20+76.00-L-**

SHEET 1 OF 3

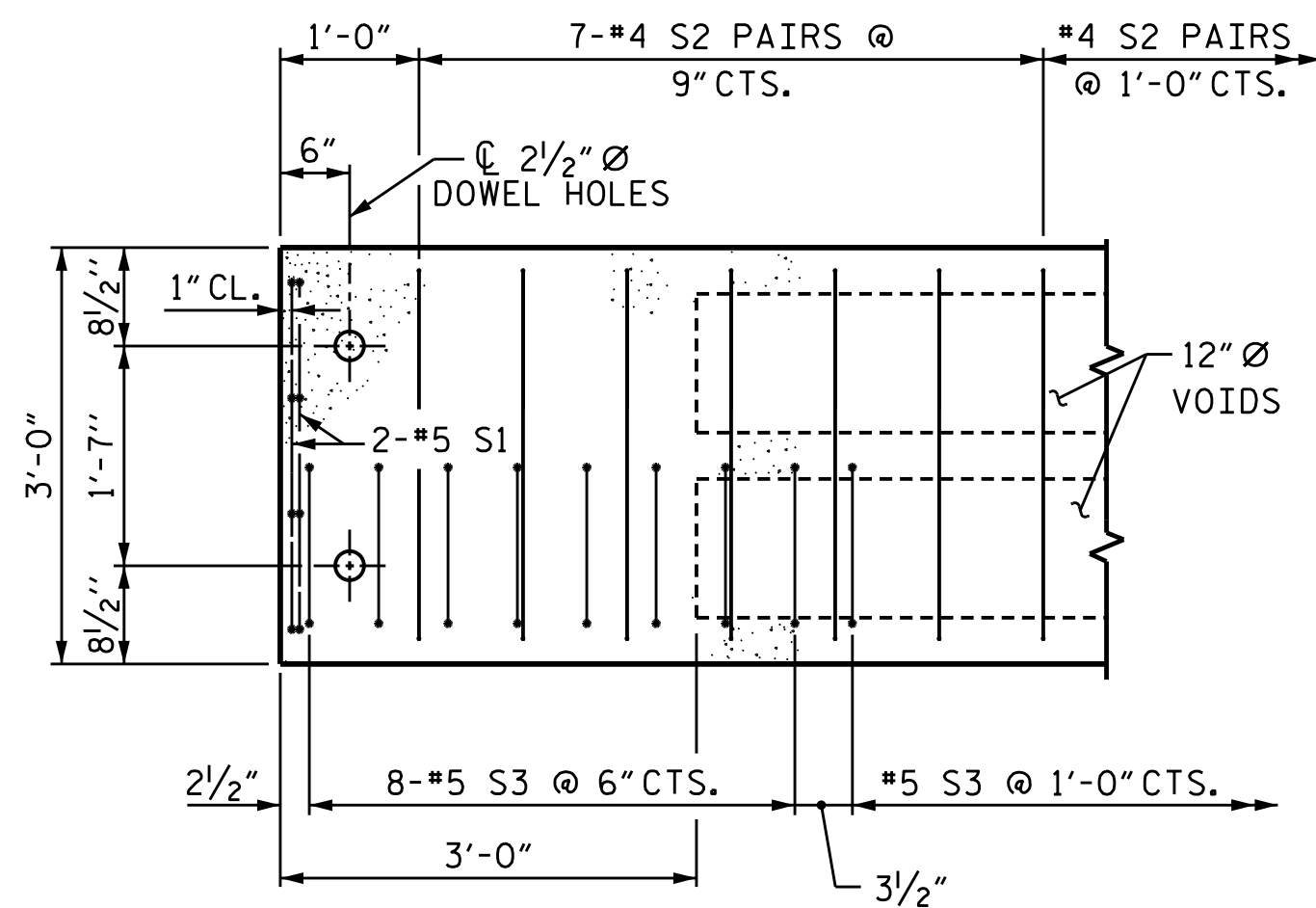
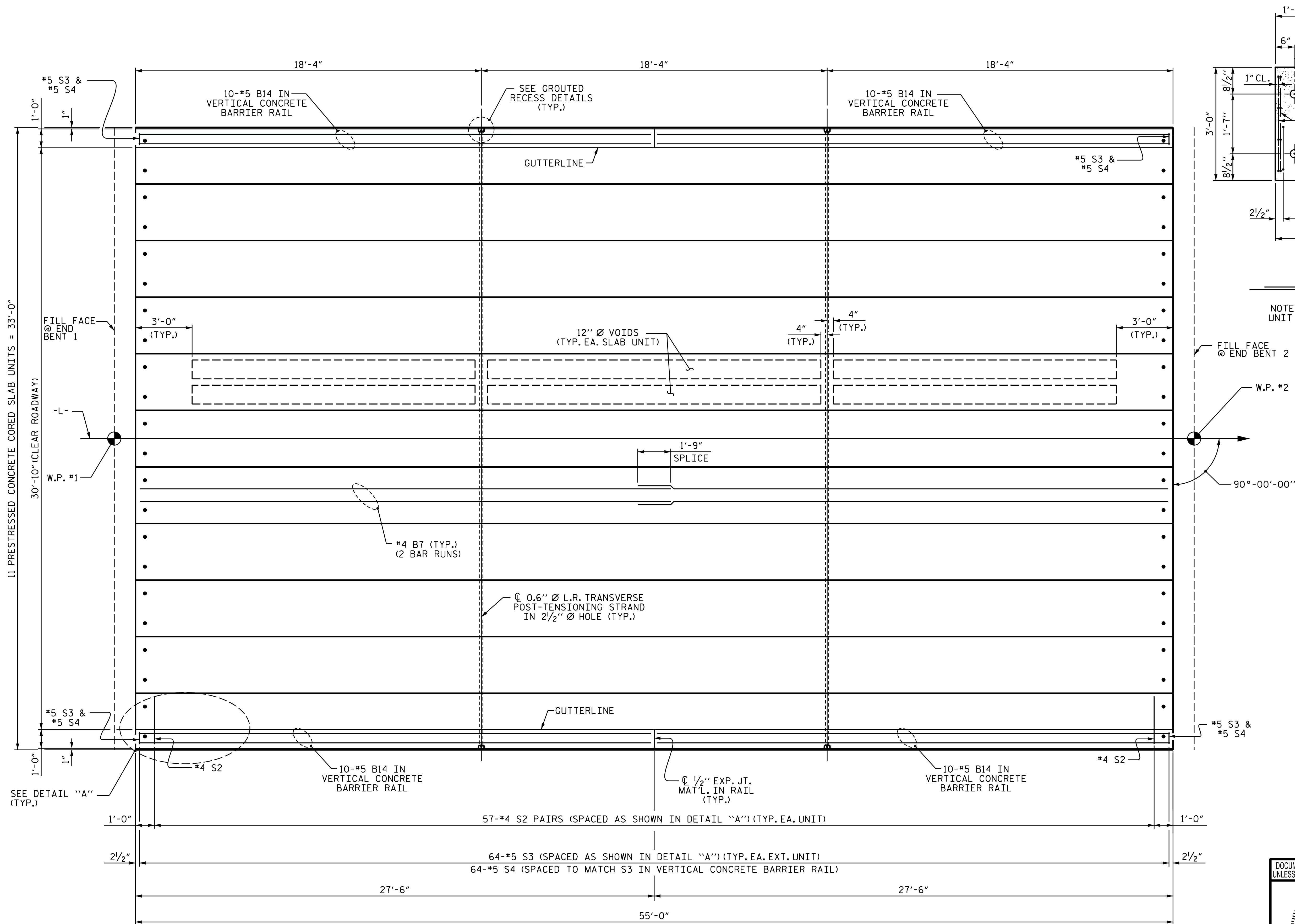
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 1'-9"
PRESTRESSED CONCRETE
CORED SLAB UNIT
90° SKEW

REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	
1			3		S1-6
2			4		TOTAL SHEETS 15



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

PLAN OF UNIT

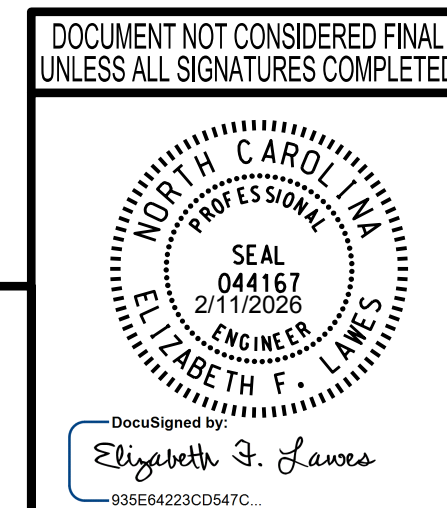
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DRAWN BY: D. KULKARNI DATE: DEC 2025
CHECKED BY: P. GALLAGHER DATE: DEC 2025
DESIGN ENGINEER OF RECORD: E. LAWES DATE: DEC 2025

DRAWN BY: DGE 3/09 REV. 12/5/11 MAA/AAC
CHECKED BY: BCH 3/09 REV. 8/14 MAA/TMG

2/9/2026
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USEL722989



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COLUMBUS COUNTY
STATION: **20+76.00-L-**

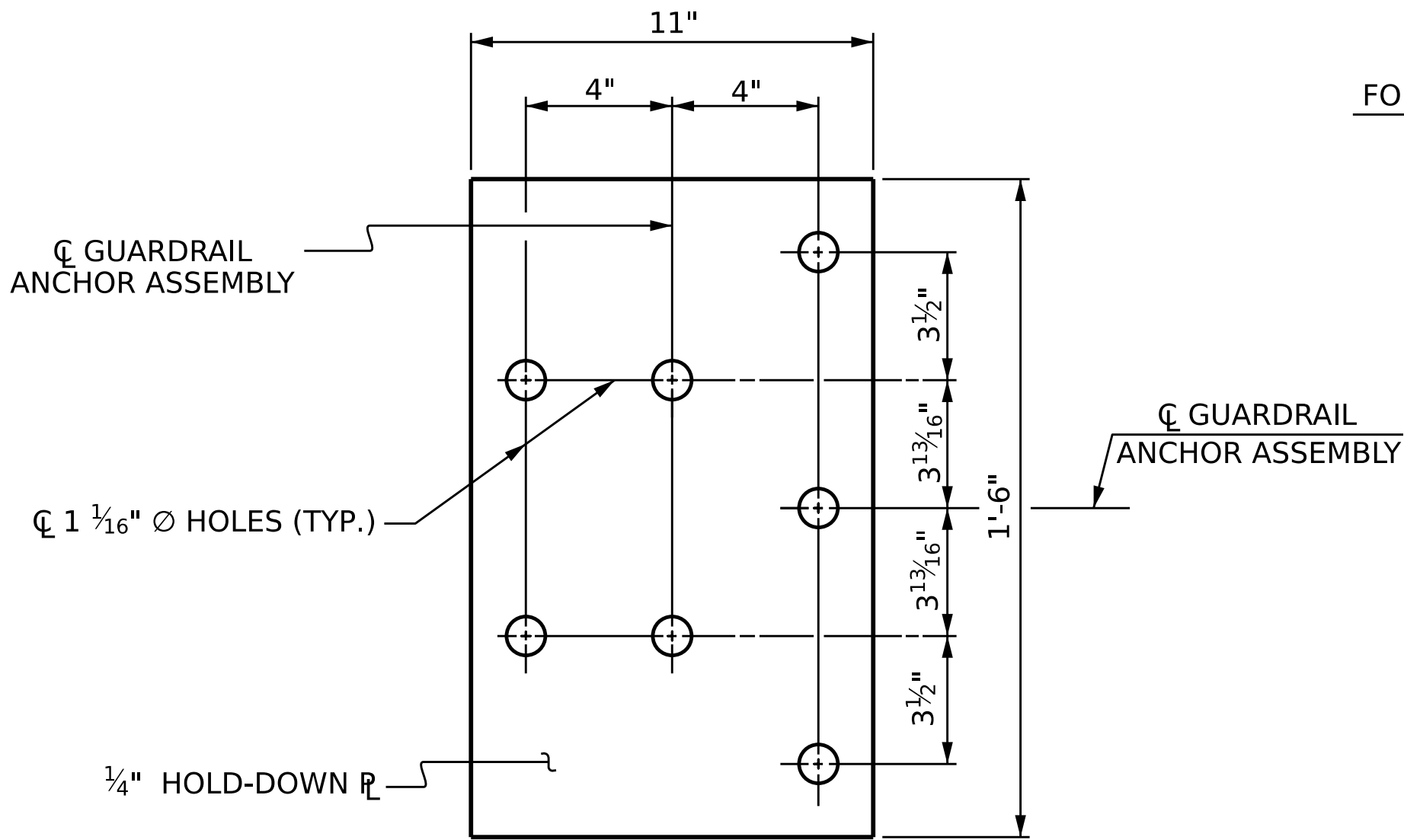
SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 55' UNIT
30'-10" CLEAR ROADWAY
90° SKEW

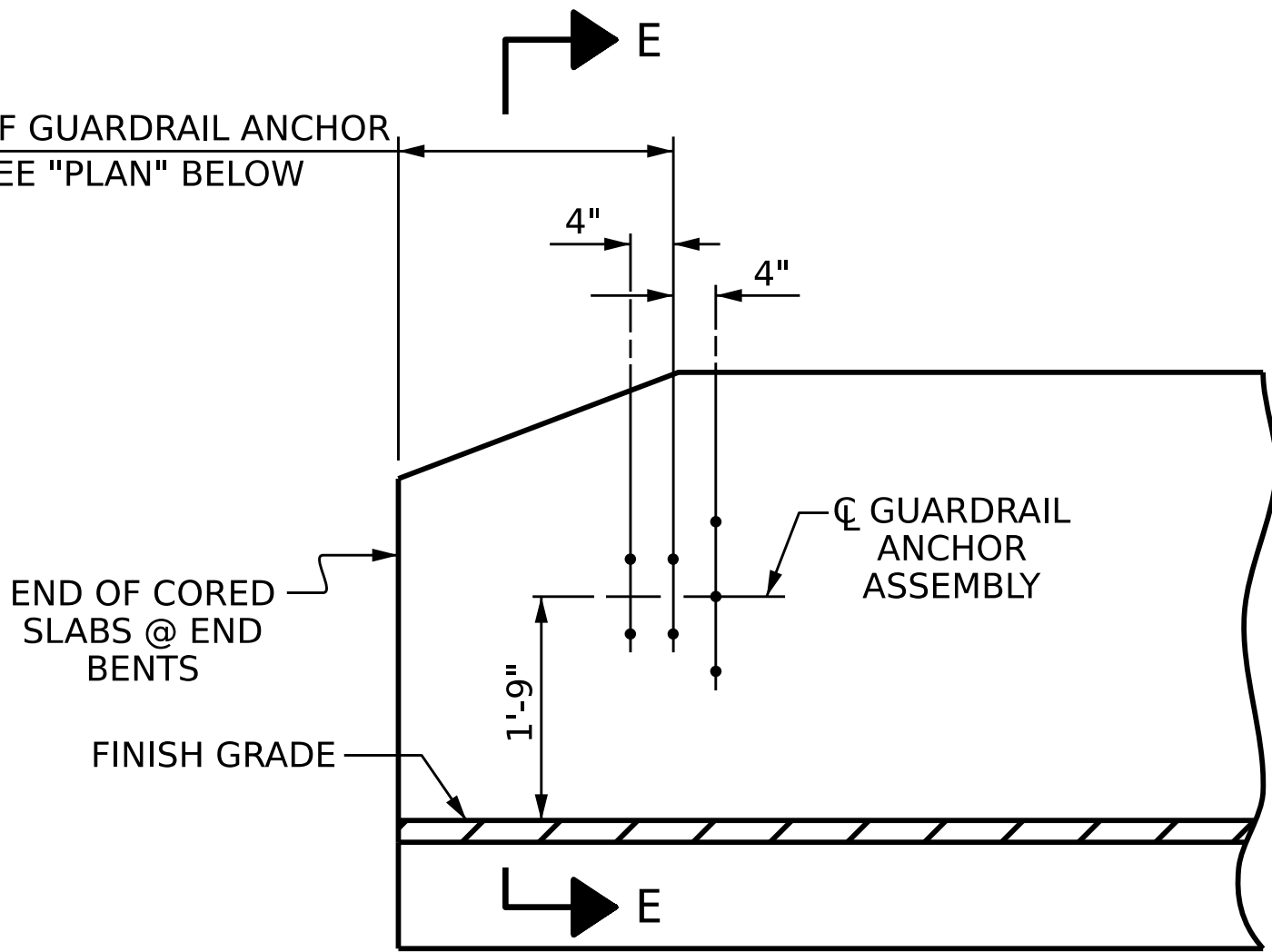
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S1-7
2			4			TOTAL SHEETS 15

STD. NO. 21" PCS-33-90S-55L

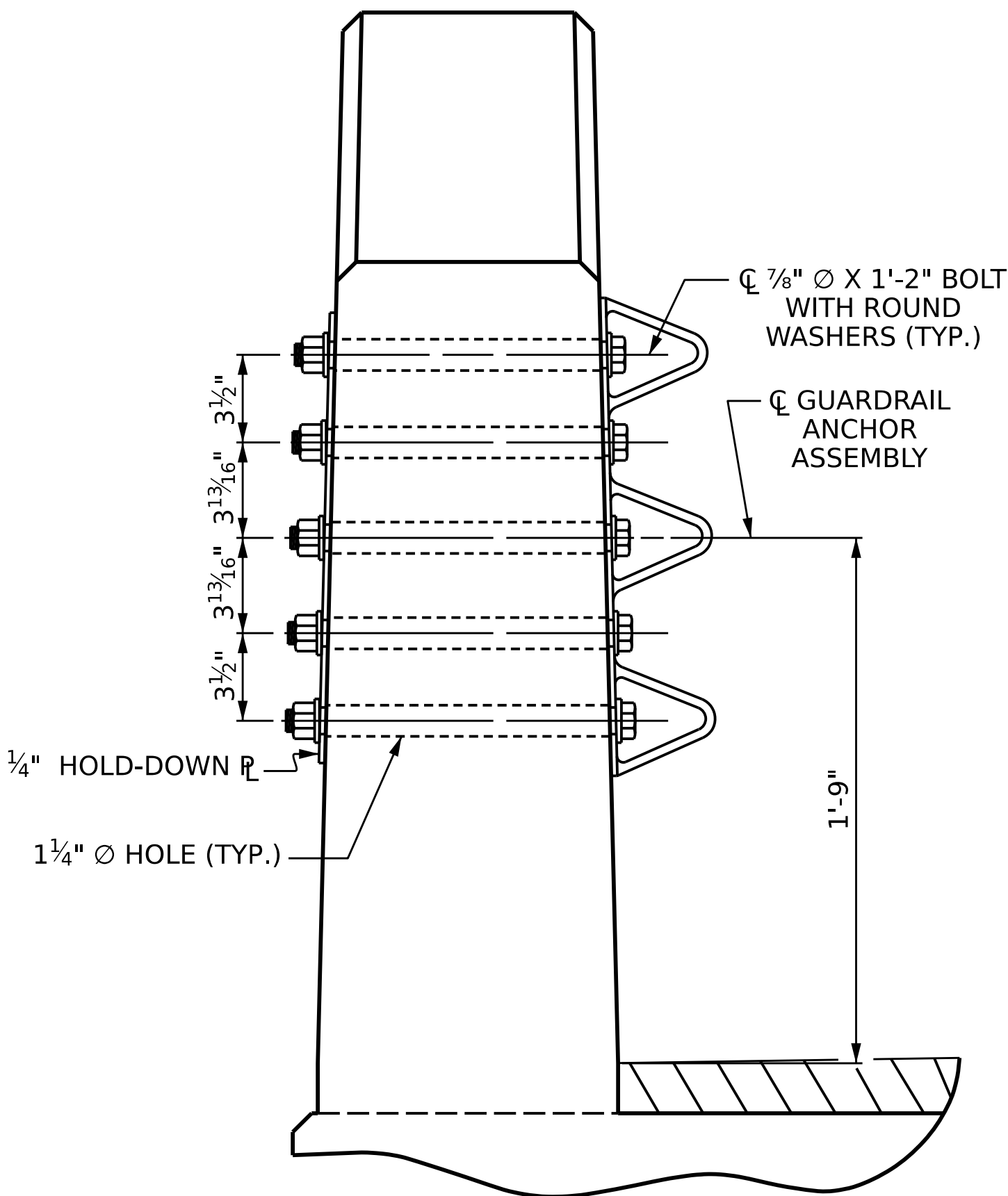


PLAN

FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW

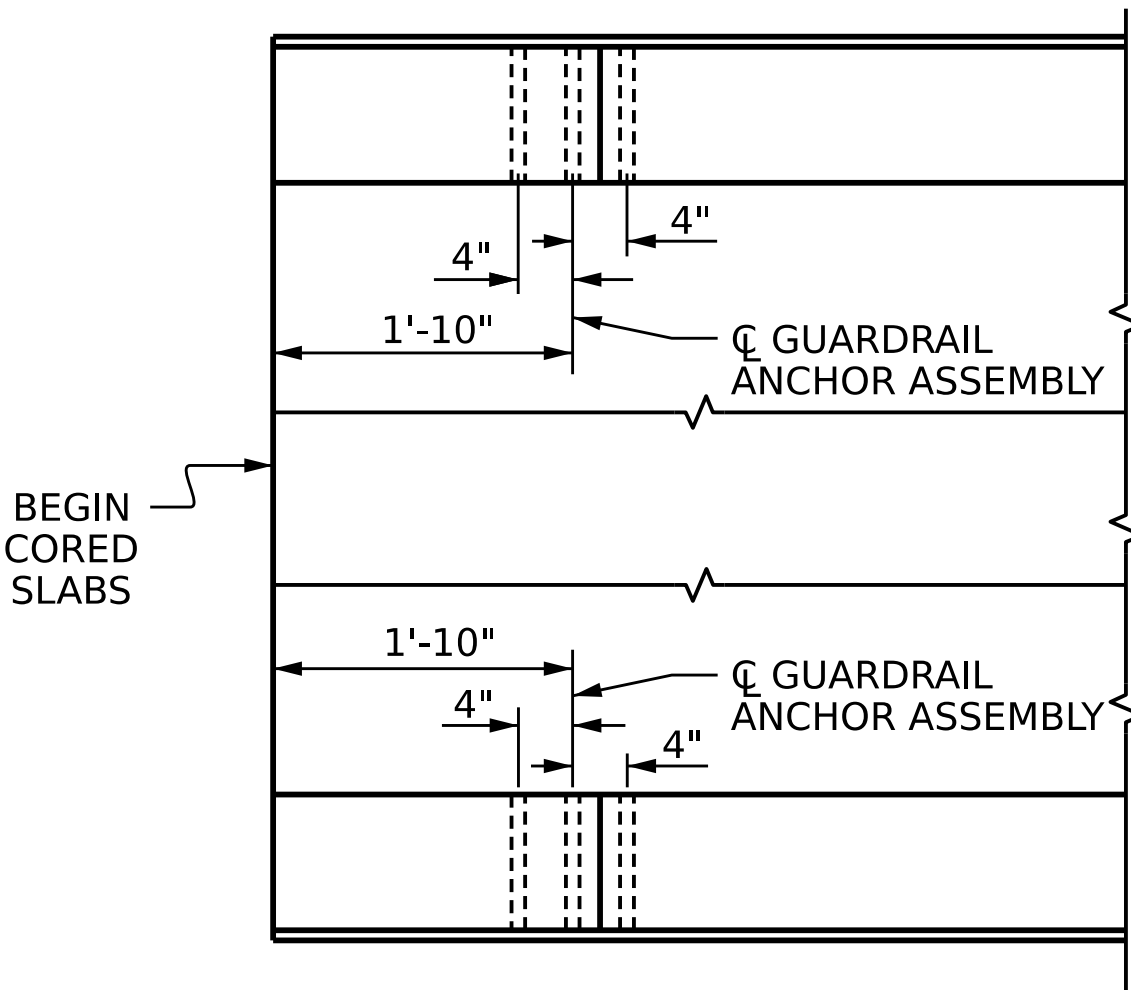


ELEVATION



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. **BP6-R013**
COLUMBUS COUNTY
STATION: **20+76.00-L-**

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE DETAILS
FOR VERTICAL CONCRETE BARRIER RAIL

REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	
1			3		S1-9
2			4		TOTAL SHEETS 15

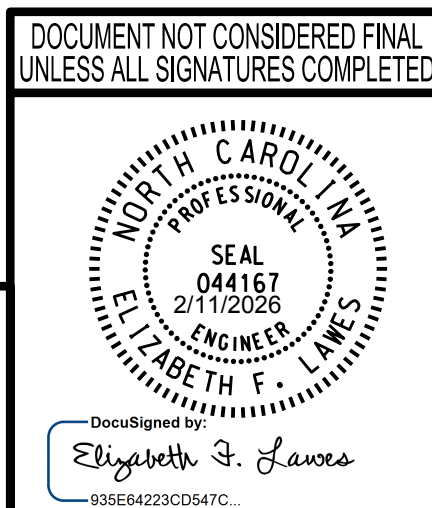
DESIGNED BY: P. GALLAGHER DATE : DEC 2025
DRAWN BY: D. KULKARNI DATE : DEC 2025
CHECKED BY: P. GALLAGHER DATE : DEC 2025
DESIGN ENGINEER OF RECORD: E. LAWES DATE : DEC 2025

DRAWN BY : MAA 5/10 REV. 1/15 MAA/TMG
CHECKED BY : CM 5/10 REV. 12/17 MAA/THC
REV. 5/18 MAA/THC

2/9/2026
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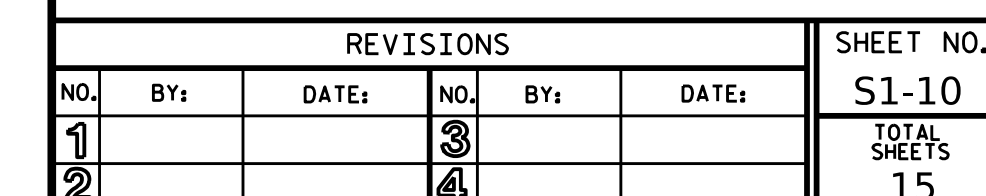
EPOXY COAT THE TOP OF EACH END BENT PILE
A MINIMUM OF 25.0 FEET.

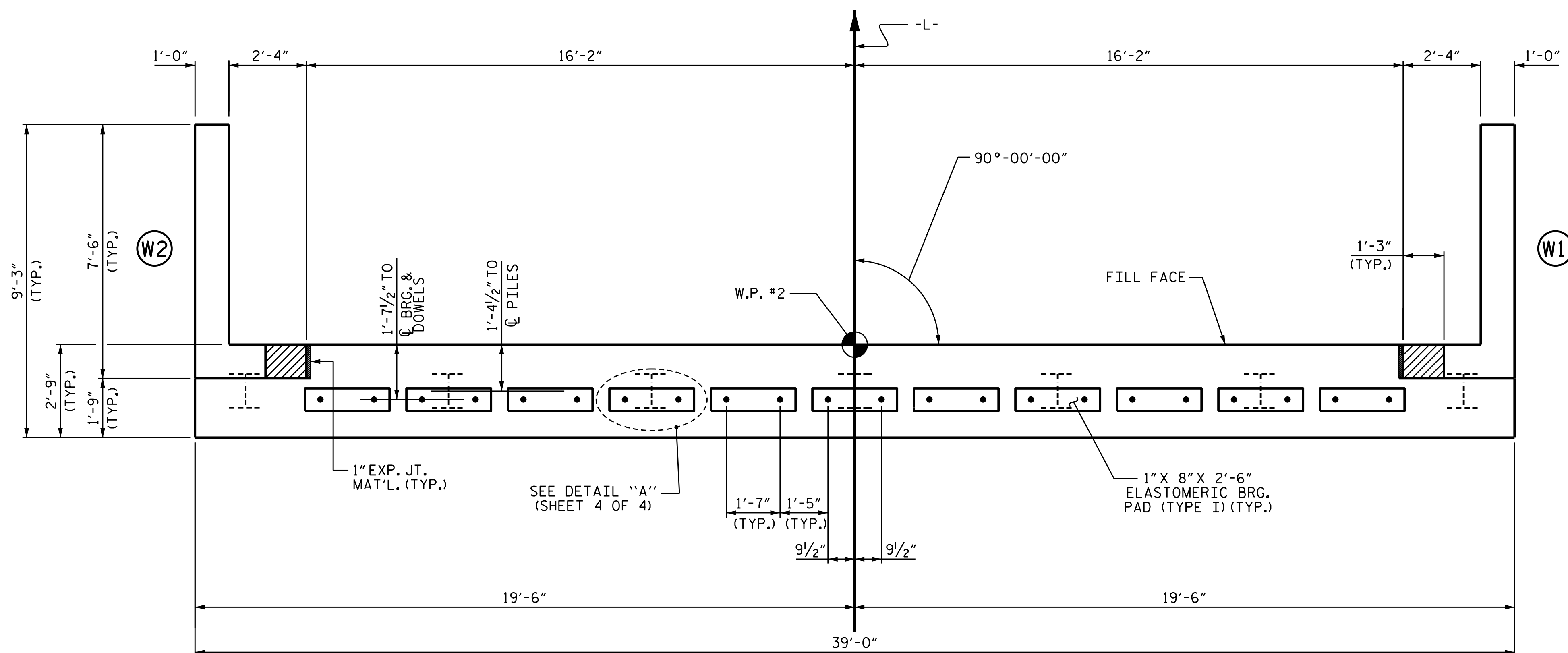


WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

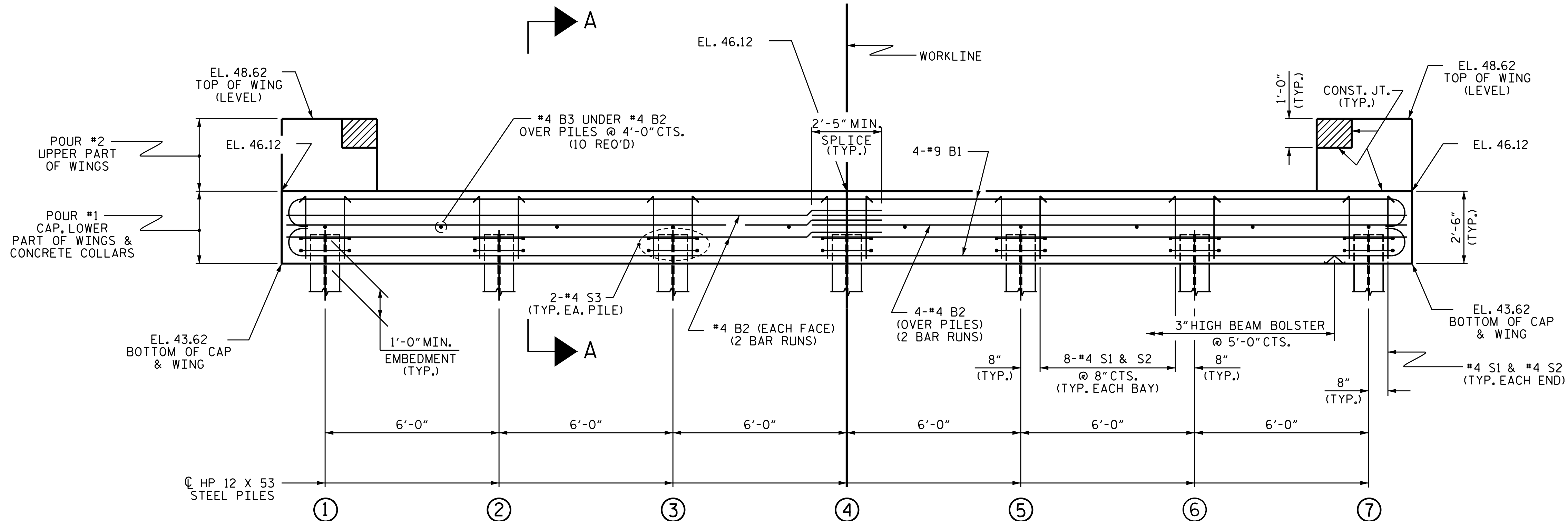
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CHECKED BY : MKT	01/10		

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USF 722989





PLAN



ELEVATION

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

DESIGNED BY:	<u>P. GALLAGHER</u>	DATE :	<u>DEC 2025</u>
DRAWN BY:	<u>D. KULKARNI</u>	DATE :	<u>DEC 2025</u>
CHECKED BY:	<u>P. GALLAGHER</u>	DATE :	<u>DEC 2025</u>
DESIGN ENGINEER OF RECORD:	<u>E. LAWES</u>	DATE :	<u>DEC 2025</u>

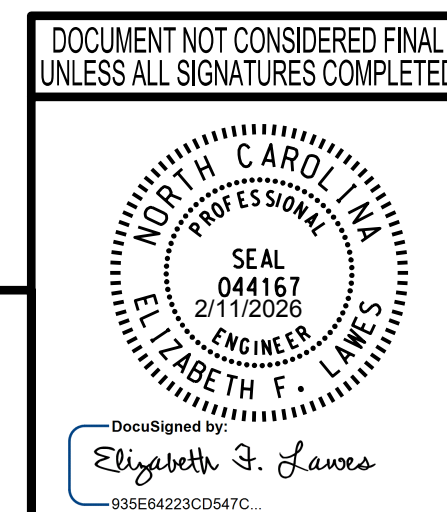
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CHECKED BY : MKT	01/10		

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USEL722989



WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040

LICENSE NO. F-0165



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 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

EPOXY COAT THE TOP OF EACH END BENT PILE
A MINIMUM OF 25.0 FEET.

PROJECT NO. **BP6-R013**
COLUMBUS COUNTY
 STATION: **20+76.00-L-**

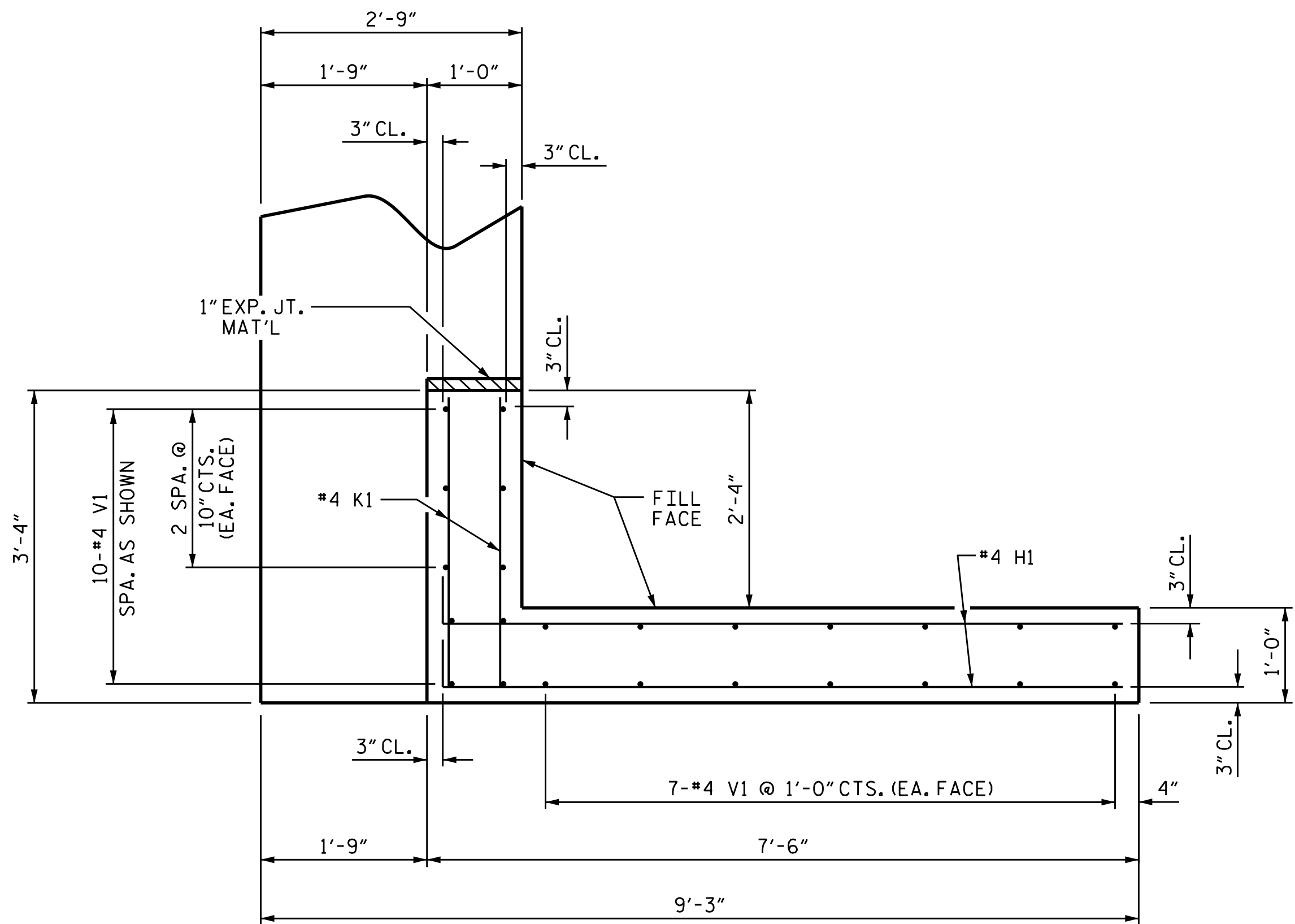
SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

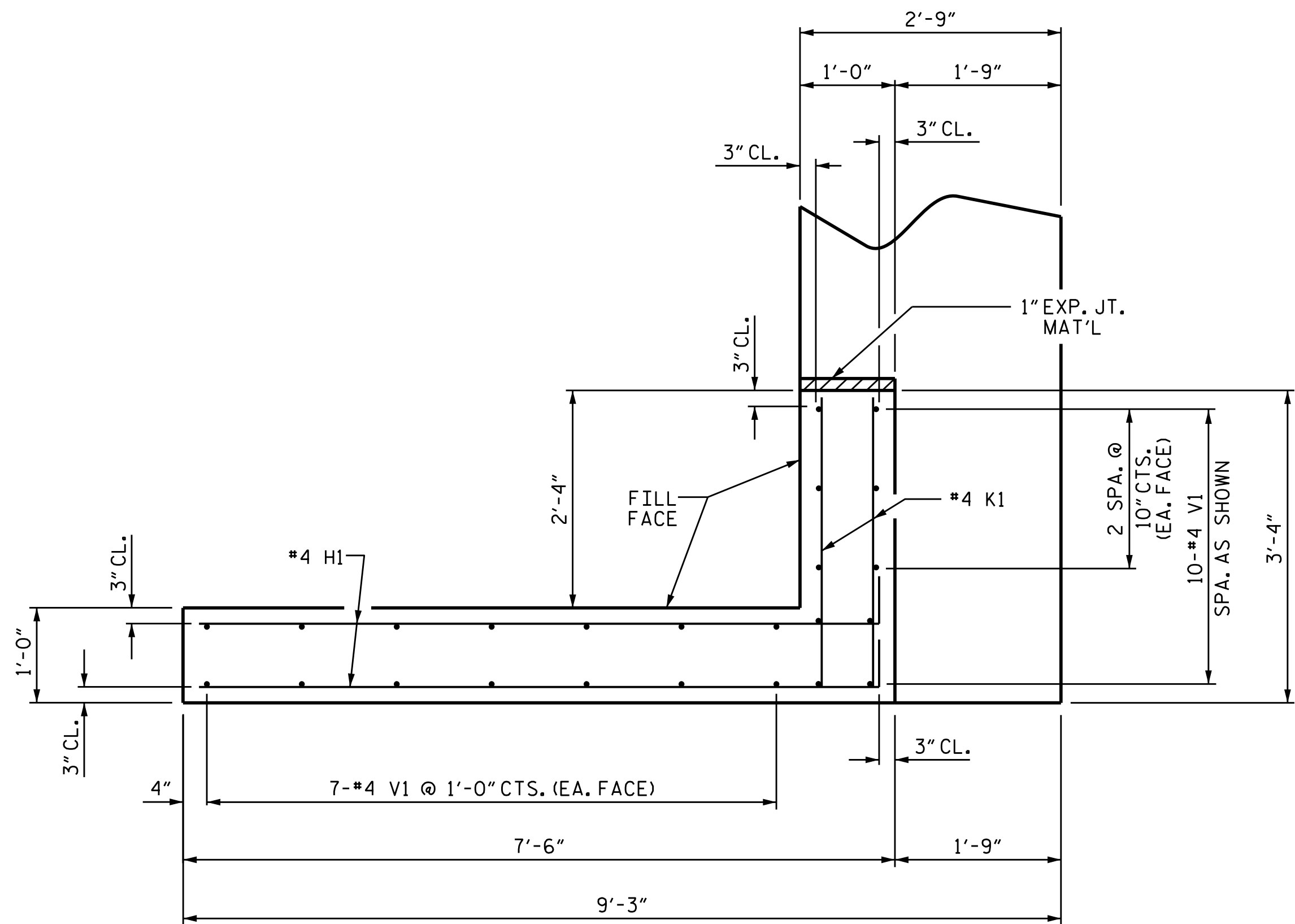
SUBSTRUCTURE
END BENT No. 2

REVISIONS						SHEET NO. S1-11 TOTAL SHEETS 15
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

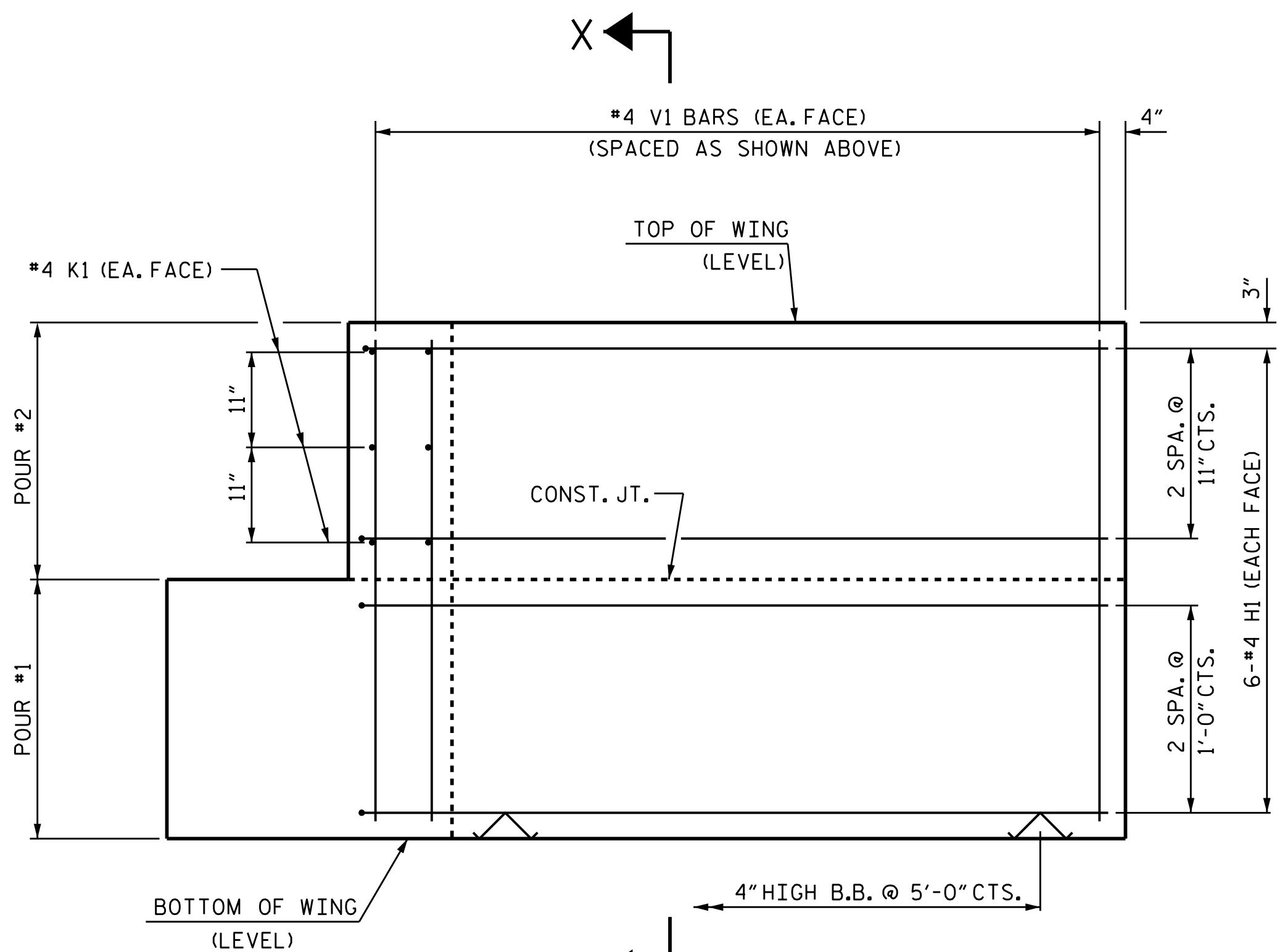
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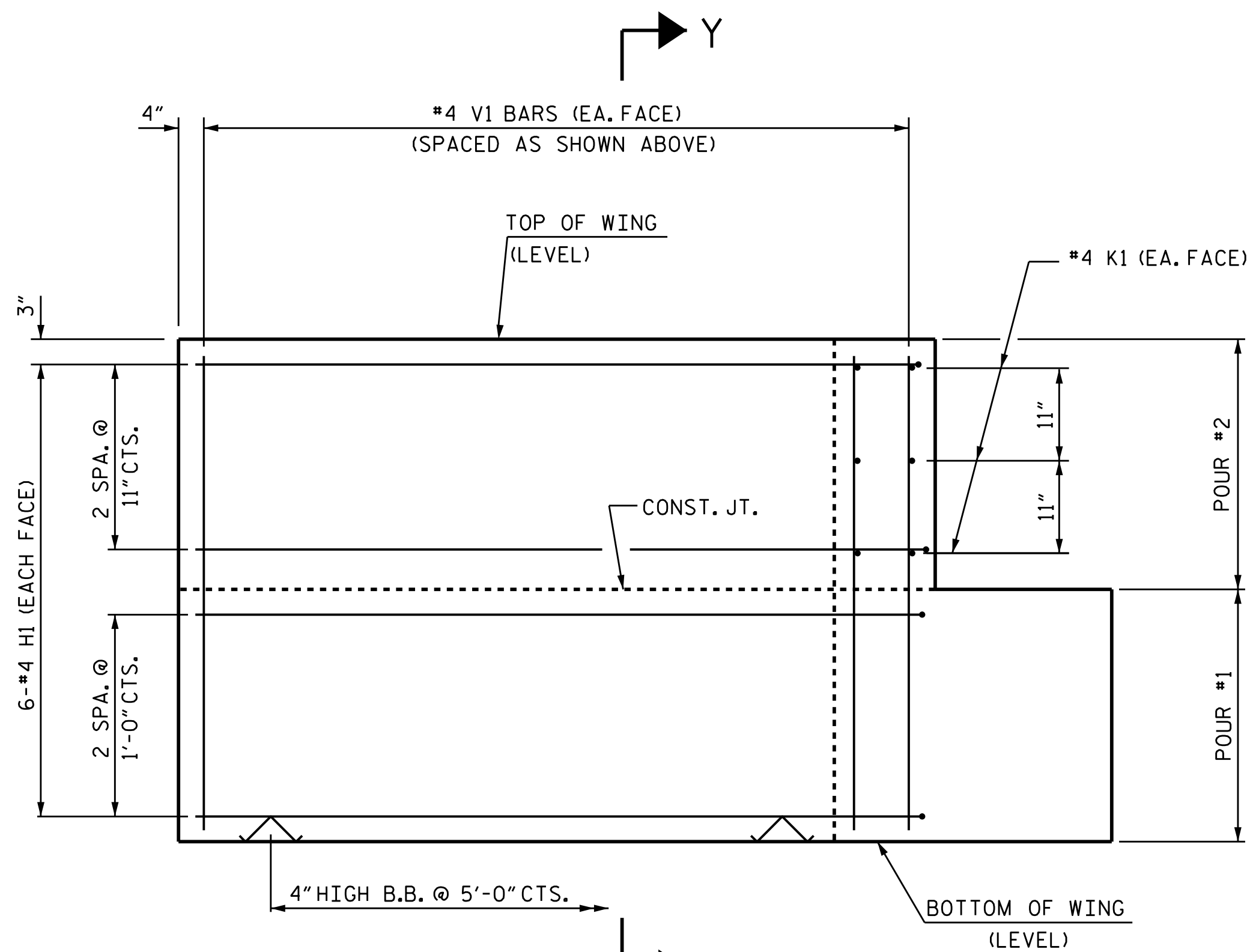
PLAN OF WING (W1)



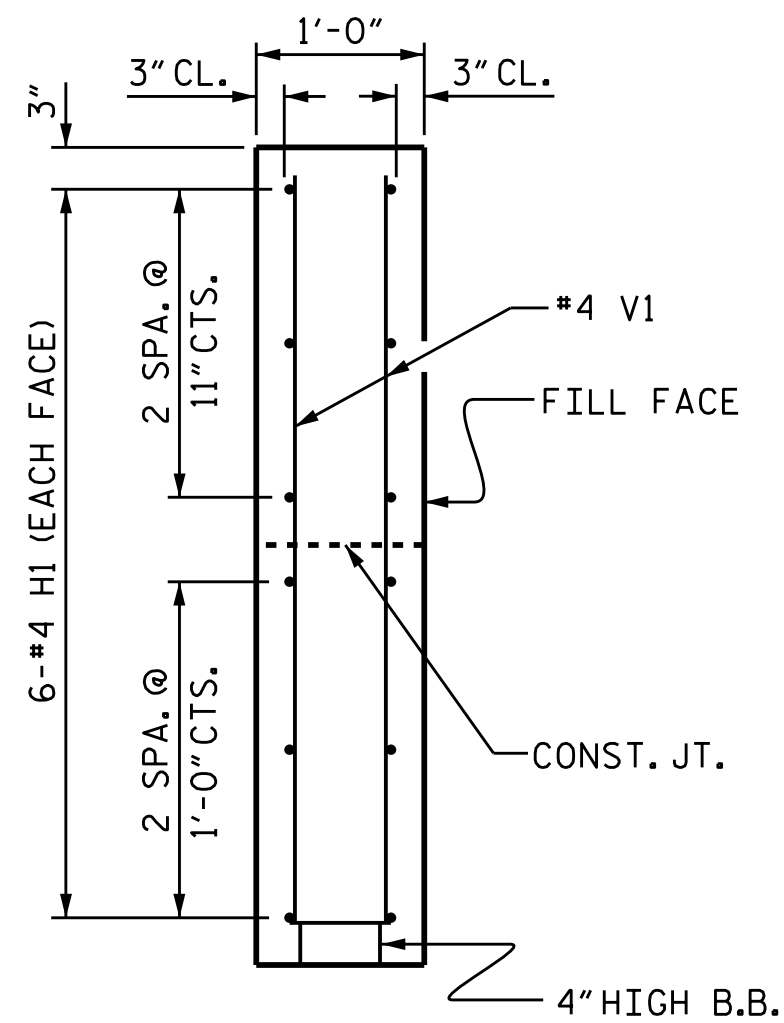
PLAN OF WING (W2)



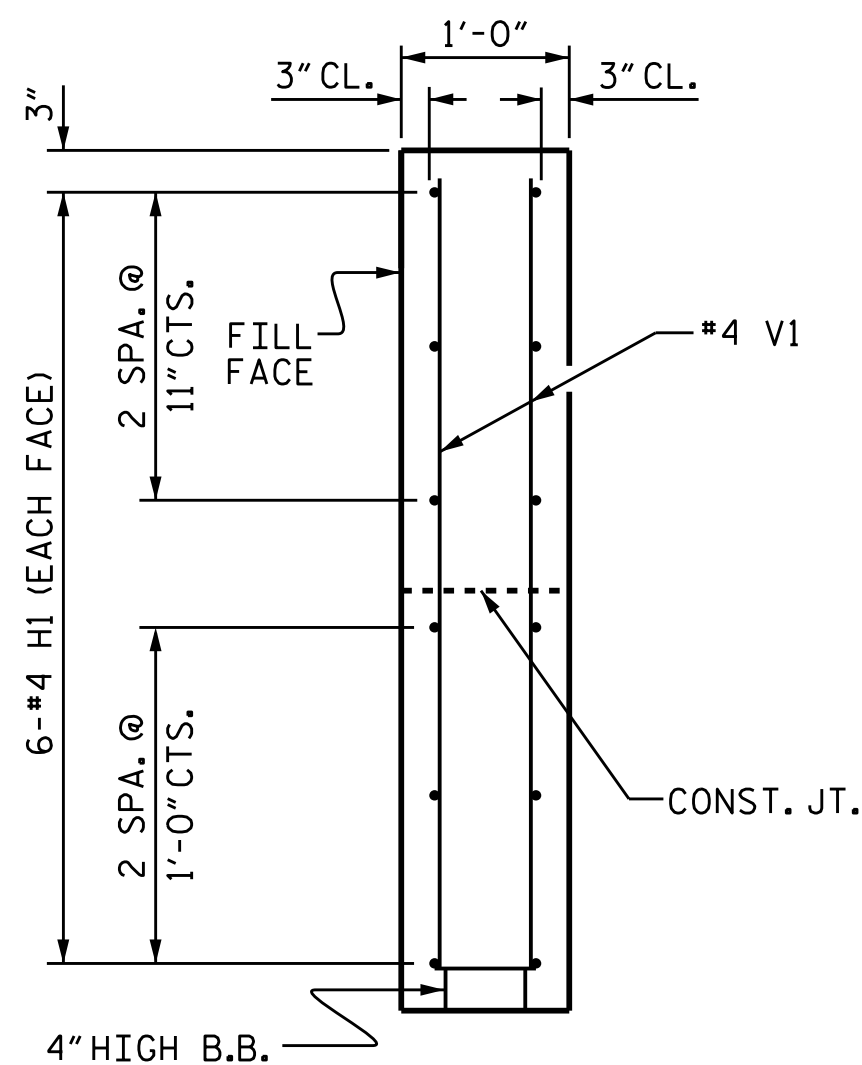
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION X-X



SECTION Y-Y

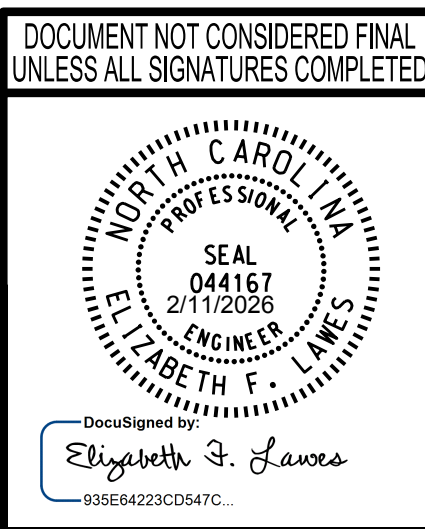
PROJECT NO. **BP6-R013**
COLUMBUS COUNTY
STATION: **20+76.00-L-**

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT
WING DETAILS

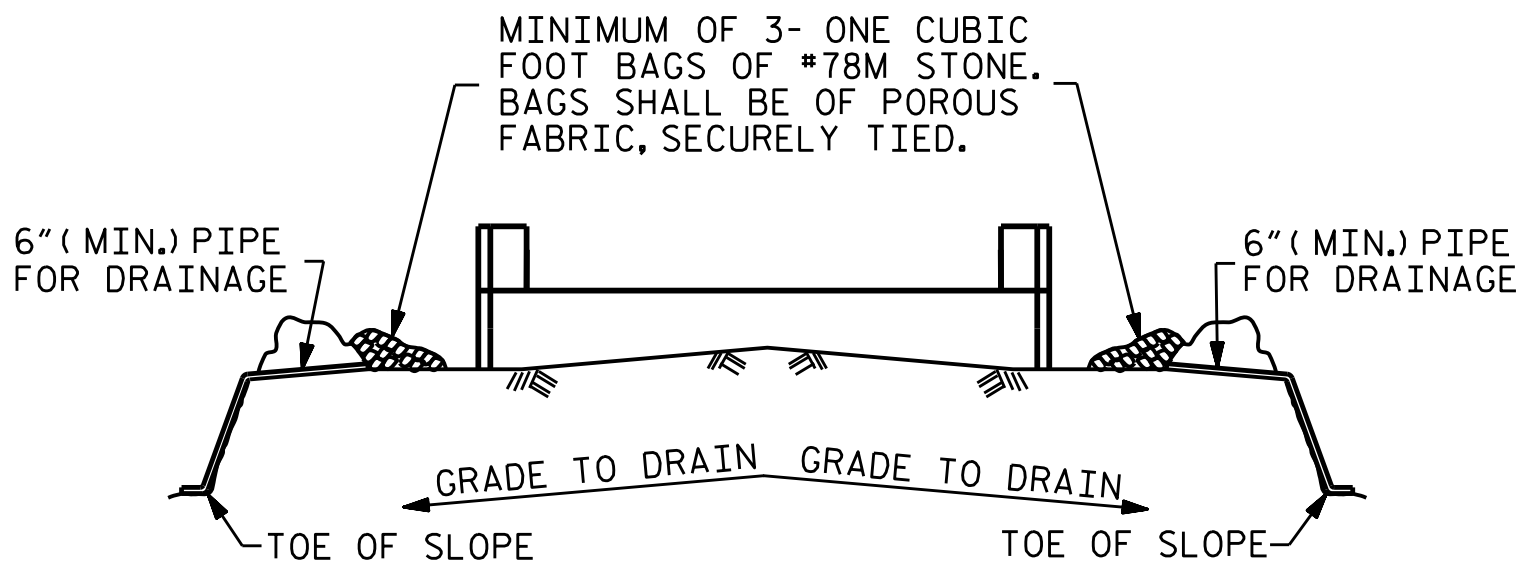
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NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS				15	



DESIGNED BY:	P. GALLAGHER	DATE :	DEC 2025	DRAWN BY : DGE 02/10 CHECKED BY : MKT 02/10 REV. 4/15 MAA/TMG
DRAWN BY:	D. KULKARNI	DATE :	DEC 2025	
CHECKED BY:	P. GALLAGHER	DATE :	DEC 2025	
DESIGN ENGINEER OF RECORD:	E. LAWES	DATE :	DEC 2025	

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STD. NO. EB-33-90S

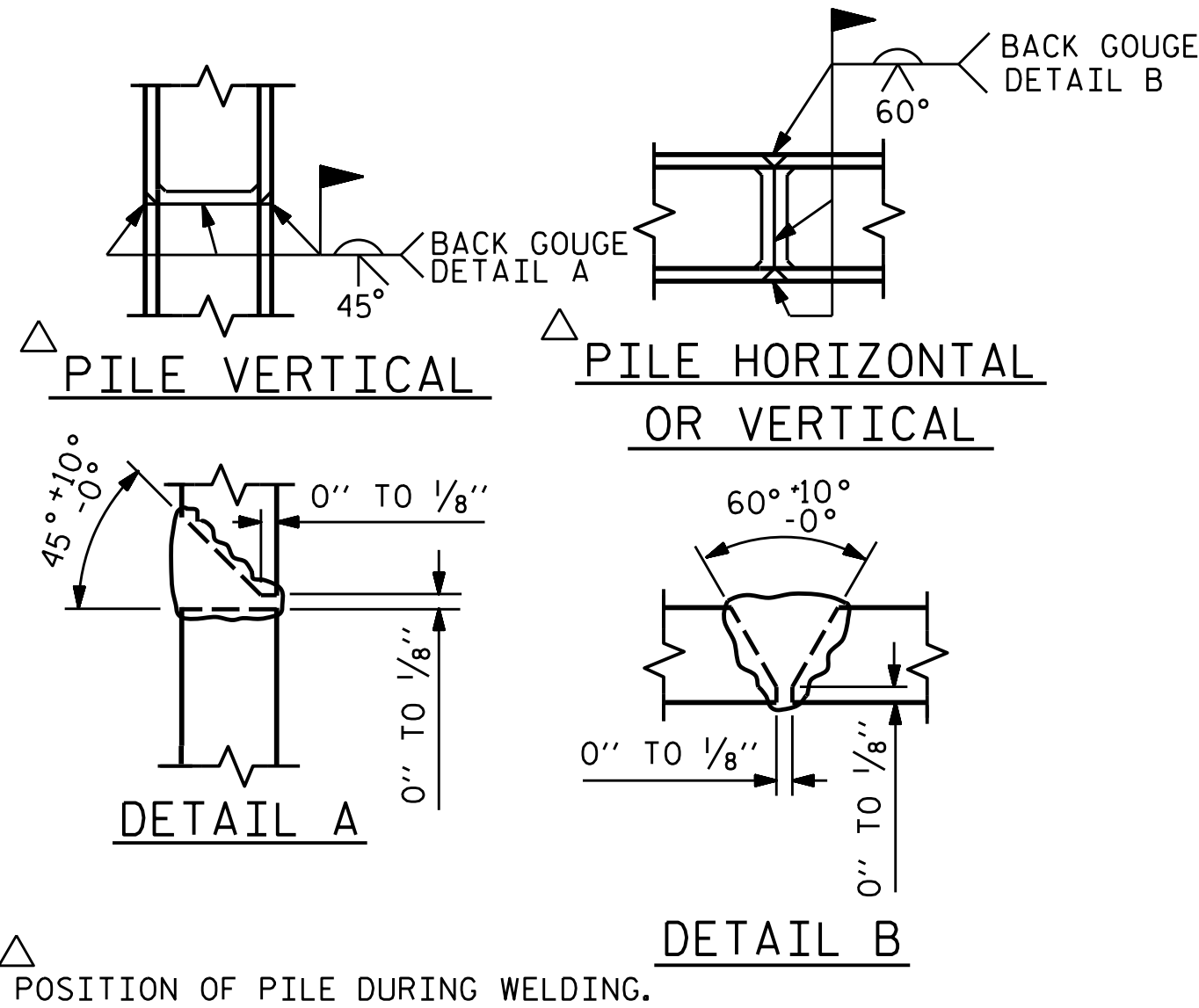


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

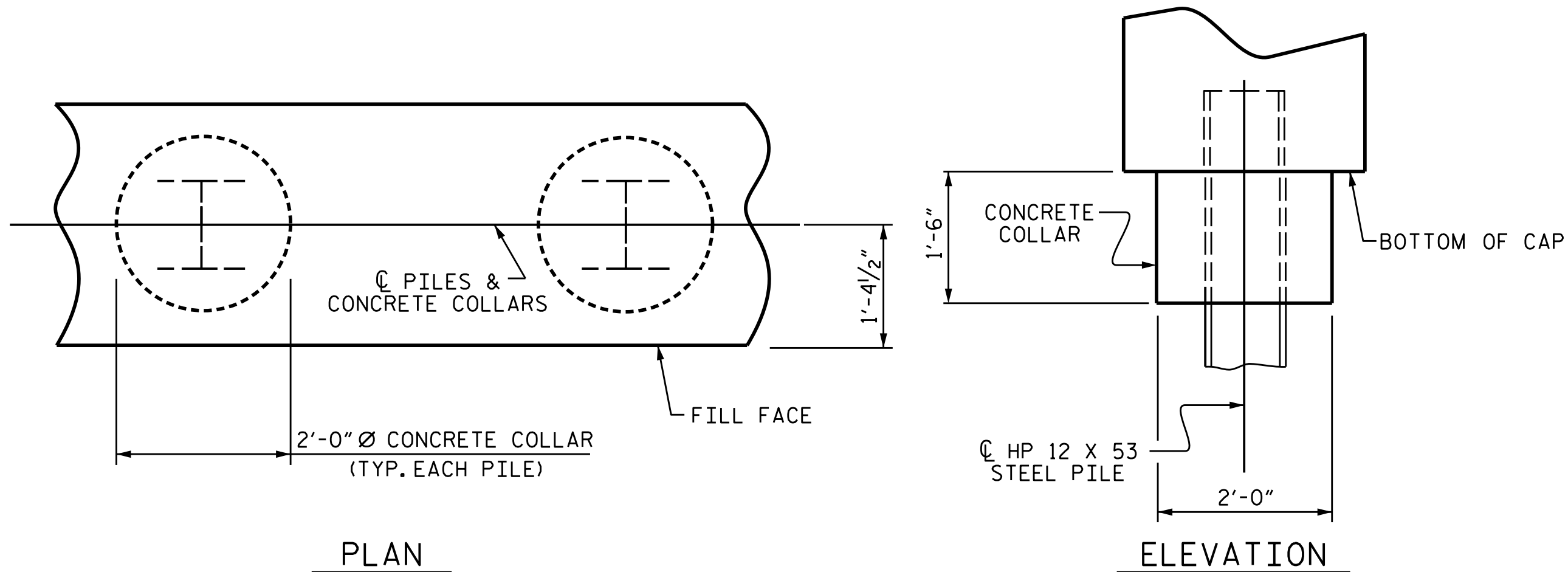
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

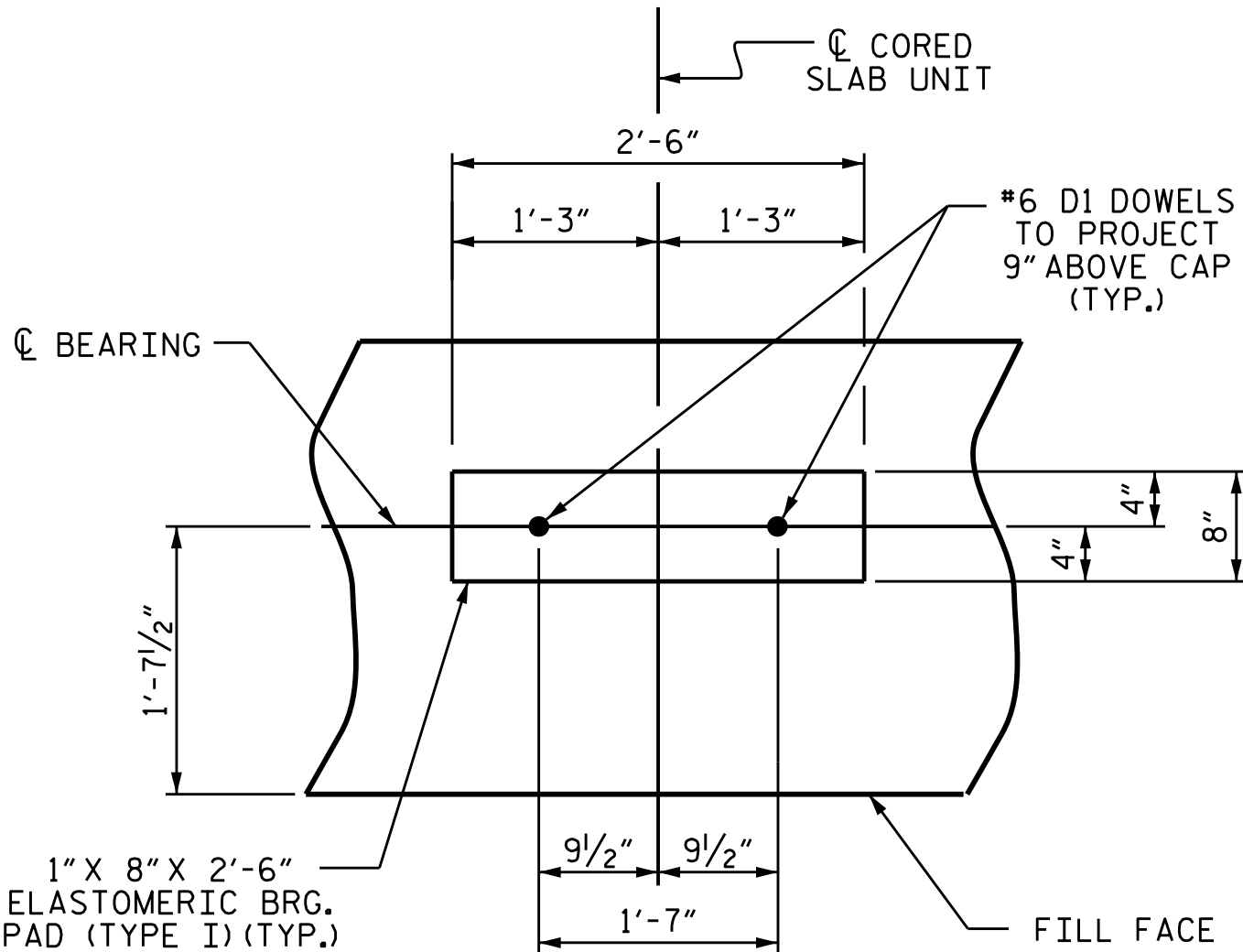


PILE SPLICE DETAILS



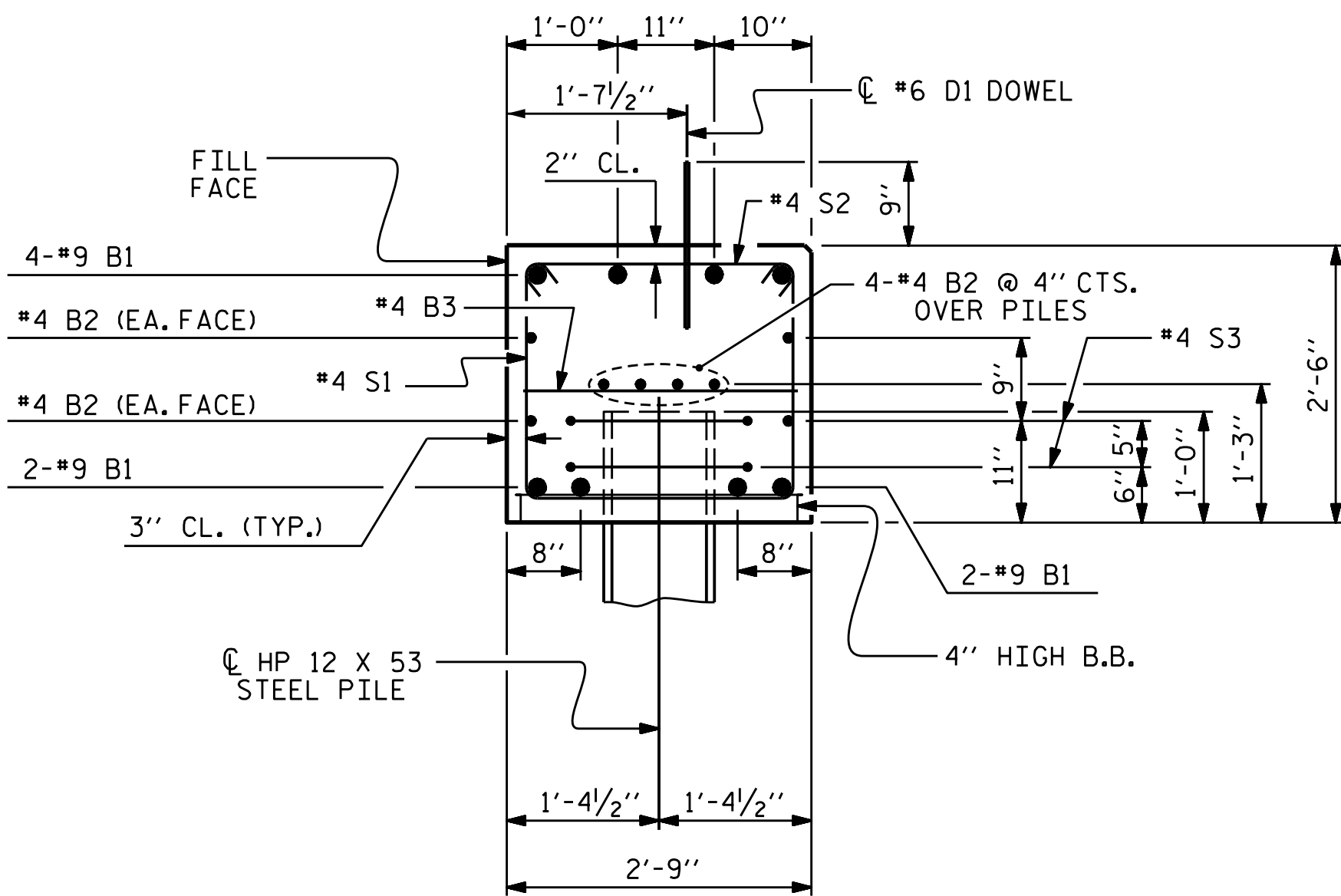
CORROSION PROTECTION FOR STEEL PILES DETAIL

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

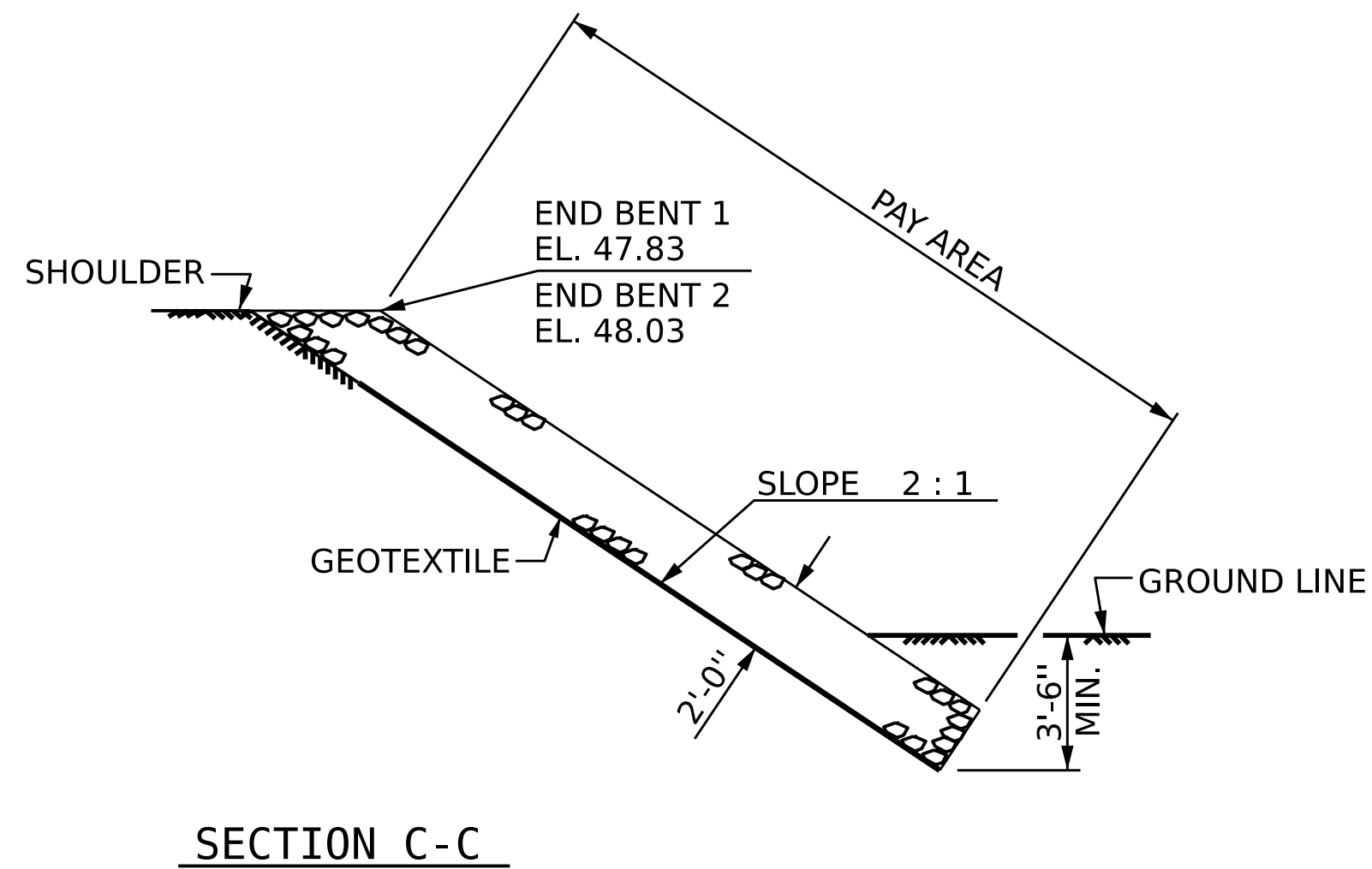
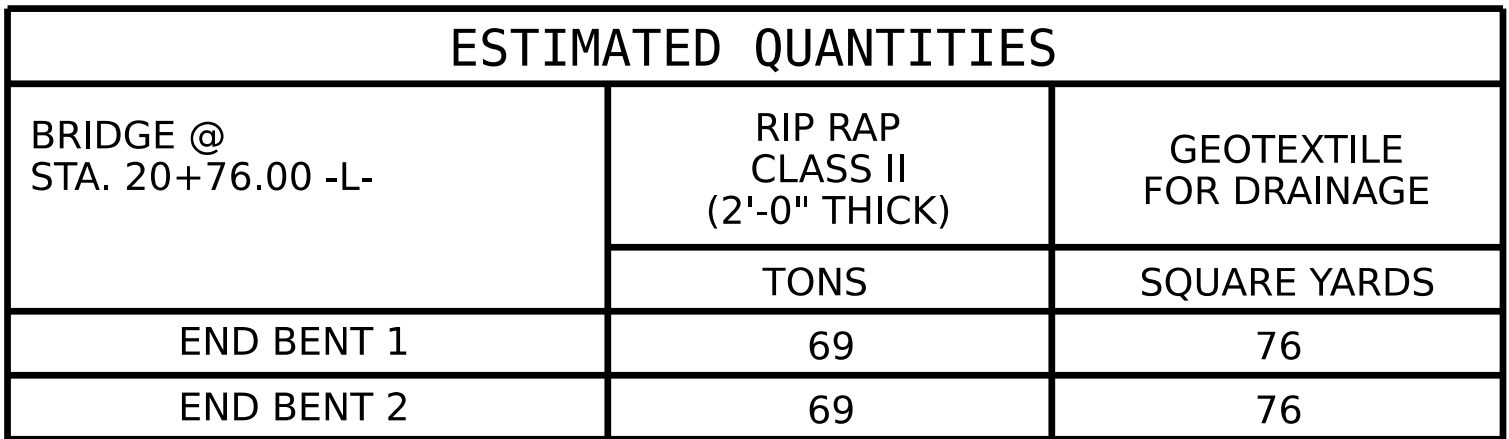


DETAIL "A"

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



BAR TYPES		BILL OF MATERIAL					
		FOR ONE END BENT					
		BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
		*B1	8	#9	1	40'-10"	1,111
		*B2	16	#4	STR	20'-6"	219
		*B3	10	#4	STR	2'-3"	15
		*D1	22	#6	STR	1'-6"	50
		*H1	24	#4	2	7'-8"	123
		*K1	12	#4	STR	2'-11"	23
		*S1	50	#4	3	6'-11"	231
		*S2	50	#4	4	3'-0"	100
		*S3	14	#4	5	6'-6"	61
		*V1	48	#4	STR	4'-6"	144
		*EPOXY COATED REINFORCING STEEL					
CLASS AA CONCRETE BREAKDOWN (FOR ONE END BENT)							
POUR #1 CAP, LOWER PART OF WINGS & COLLARS				12.4 C.Y.			
POUR #2 UPPER PART OF WINGS				1.8 C.Y.			
TOTAL CLASS AA CONCRETE				14.2 C.Y.			
END BENT No. 1		END BENT No. 2					
HP 12 X 53 STEEL PILES		HP 12 X 53 STEEL PILES					
NO: 7 LIN. FT.= 637		NO: 7 LIN. FT.= 672					
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES		PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES					
NO: 7		NO: 7					



PROJECT NO. BP6-R013
COLUMBUS COUNTY
 STATION: 20+76.00-L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

RIP RAP DETAILS

REVISIONS						SHEET NO. S1-14
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 15
2			4			

STD. NO. RR1 Sht. 2

DESIGNED BY:	<u>P. GALLAGHER</u>	DATE :	<u>DEC 2025</u>
DRAWN BY:	<u>D. KULKARNI</u>	DATE :	<u>DEC 2025</u>
CHECKED BY:	<u>P. GALLAGHER</u>	DATE :	<u>DEC 2025</u>
DESIGN ENGINEER OF RECORD:	<u>E. LAWES</u>	DATE :	<u>DEC 2025</u>

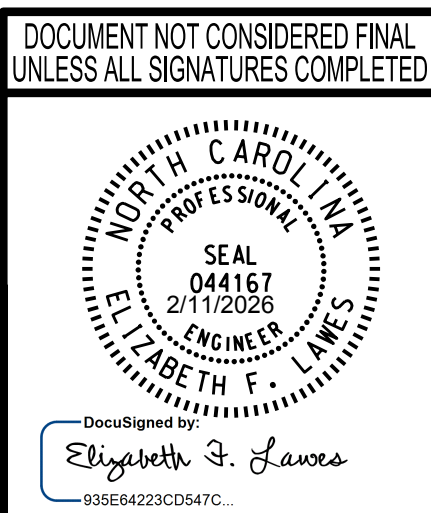
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	REV. 12/17	MAA/THC

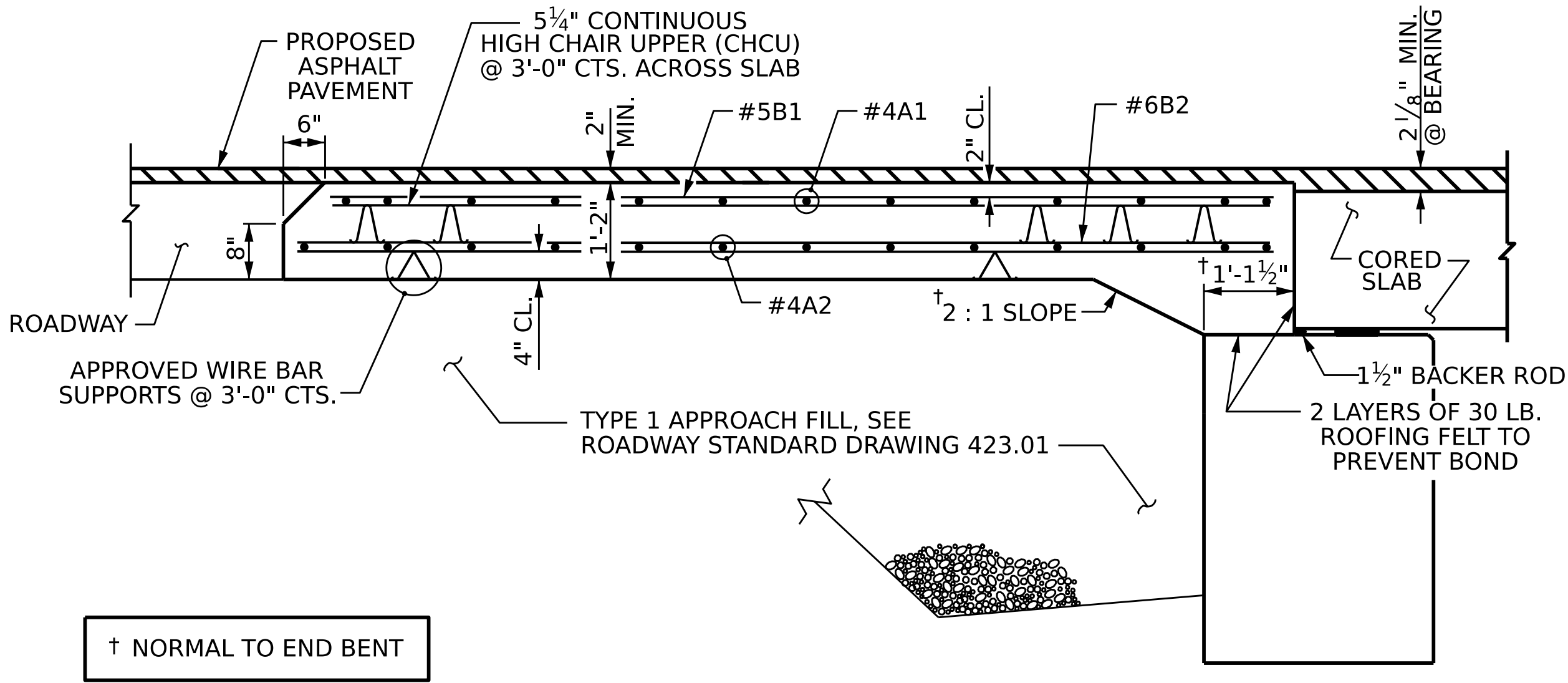
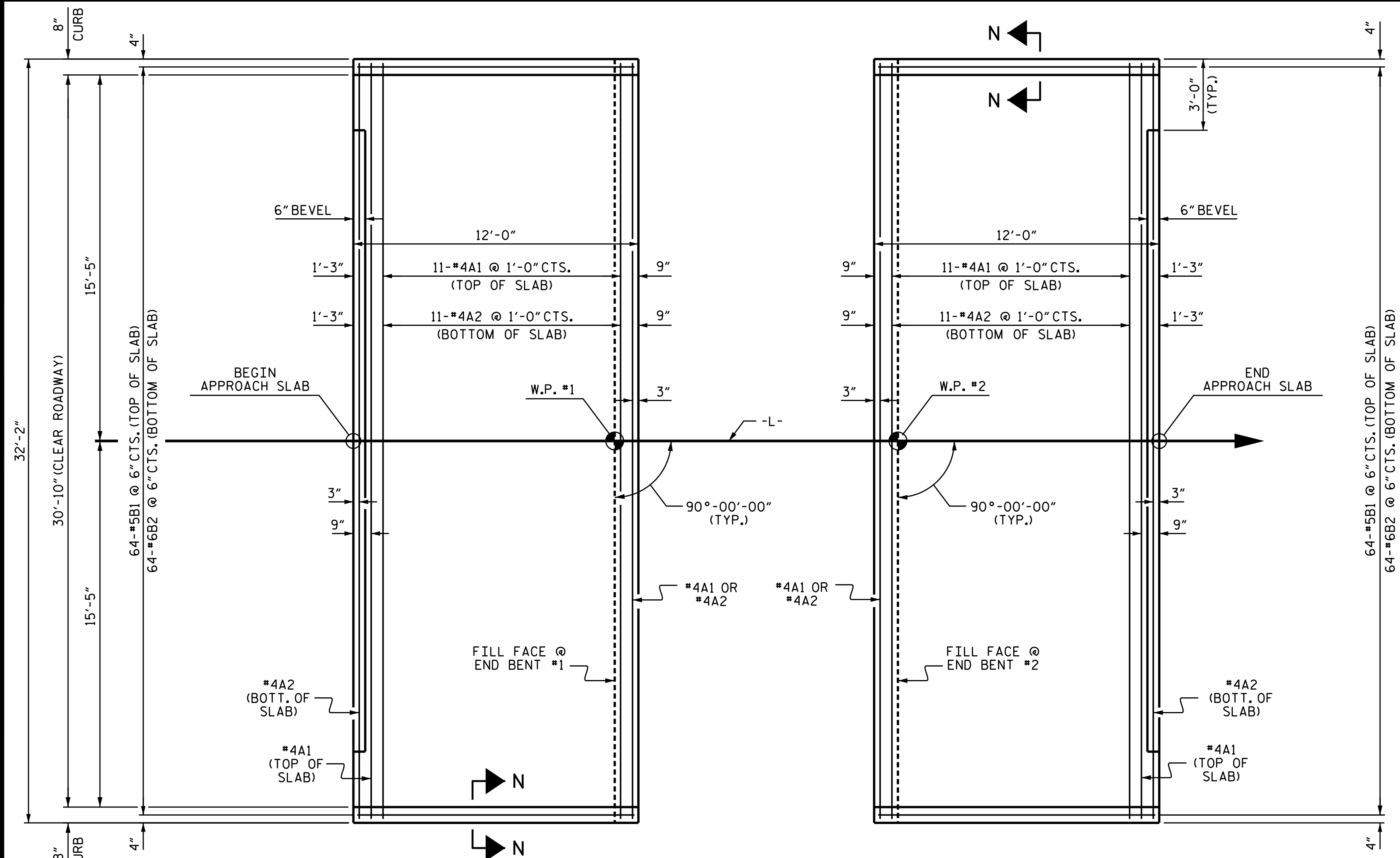
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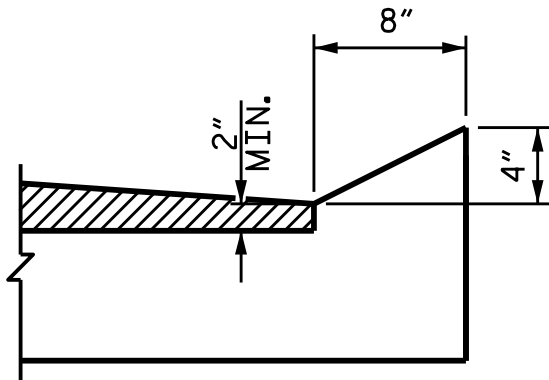
WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040

LICENSE NO. F-0165





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

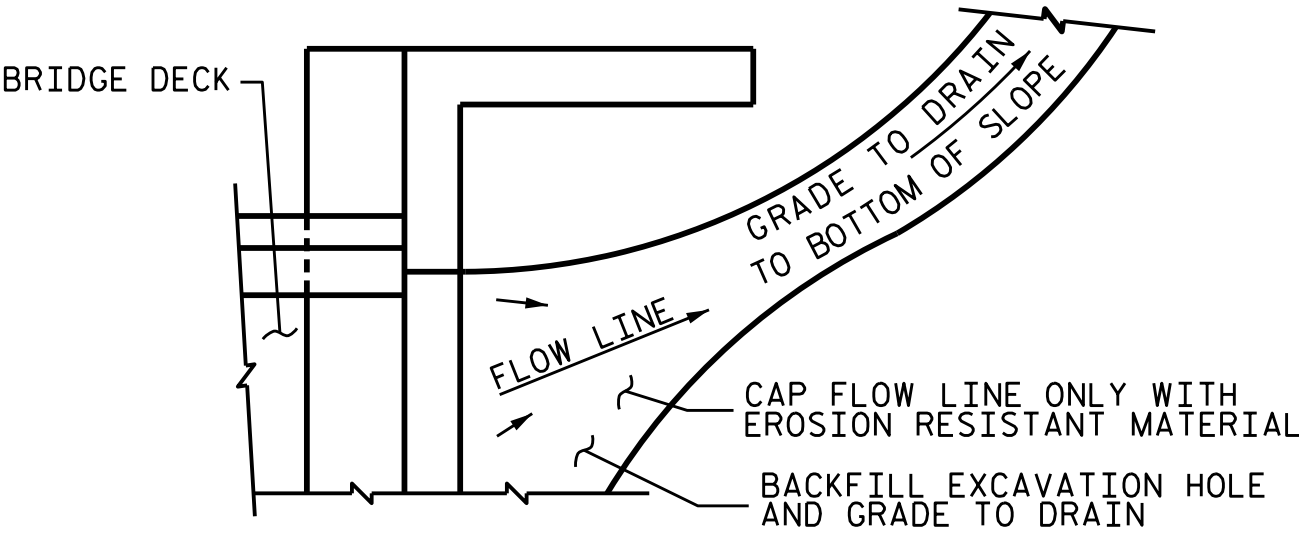


NOTES

FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.

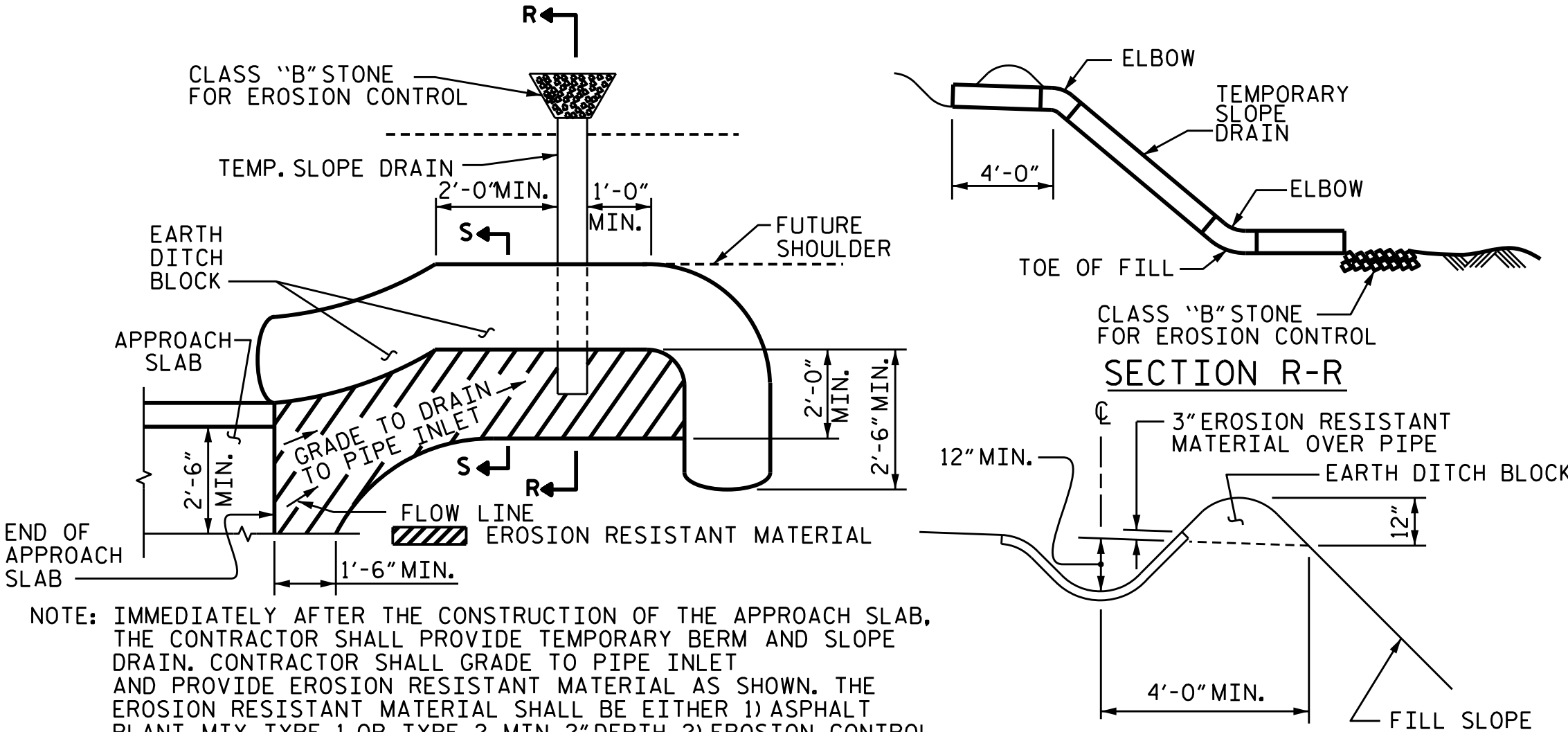
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

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)

PROJECT NO. **BP6-R013**
COLUMBUS COUNTY
STATION: **20+76.00-L-**

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BRIDGE APPROACH SLAB
FOR PRESTRESSED CONCRETE
CORED SLAB UNIT
(SUB-REGIONAL TIER)
90° SKEW

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

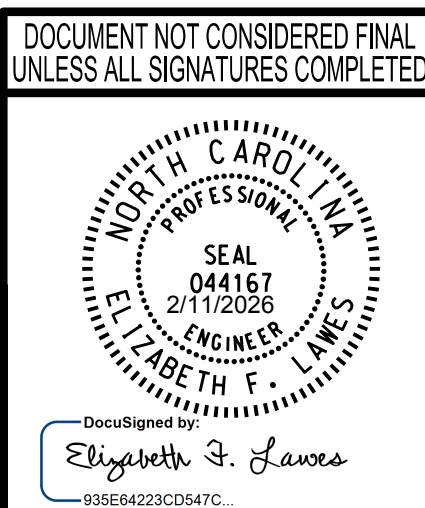
DESIGNED BY: P. GALLAGHER
DRAWN BY: D. KULKARNI
CHECKED BY: P. GALLAGHER
DESIGN ENGINEER OF RECORD: E. LAWES
DATE: DEC 2025

DRAWN BY : SHS/MAA 5-09
CHECKED BY : BCH 5-09
REV. 12-17
REV. 08-19
MAA/THC
BNB/THC

2/9/2026
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WSP USA Inc.
434 FAYETTEVILLE STREET
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LICENSE NO. F-0165



STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A ¼" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE ⅞" Ø SHEAR STUDS FOR THE ¾" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞" Ø STUDS FOR 4 - ¾" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞" Ø STUDS ALONG THE BEAM AS SHOWN FOR ¾" Ø STUDS BASED ON THE RATIO OF 3 - ⅞"Ø STUDS FOR 4 - ¾" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST ⅝" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY ⅛" OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

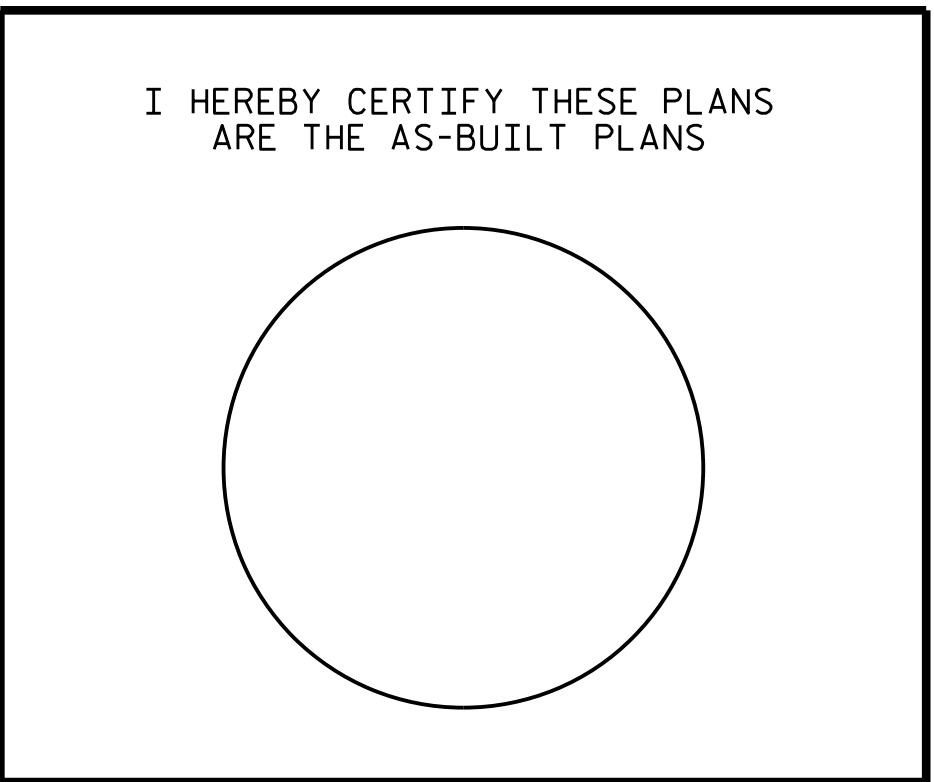
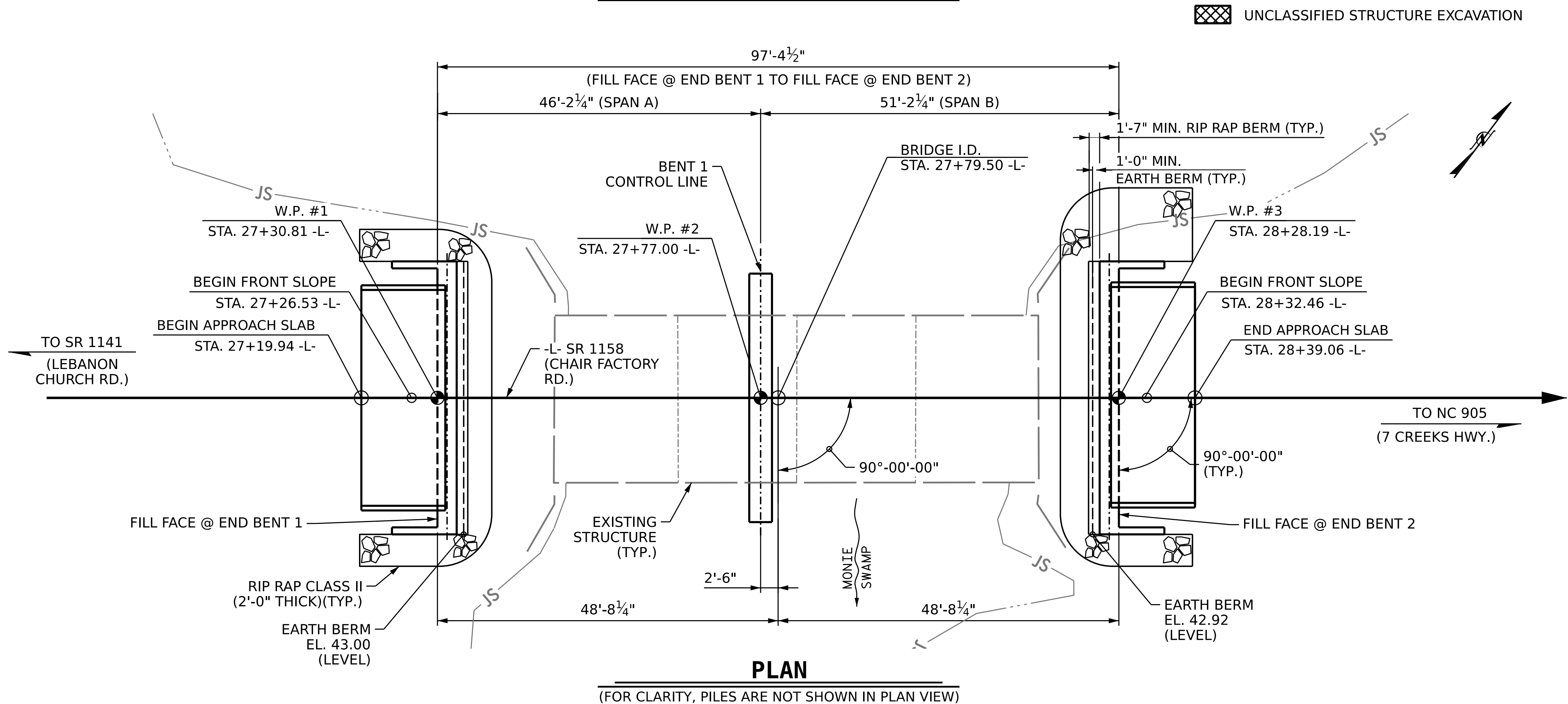
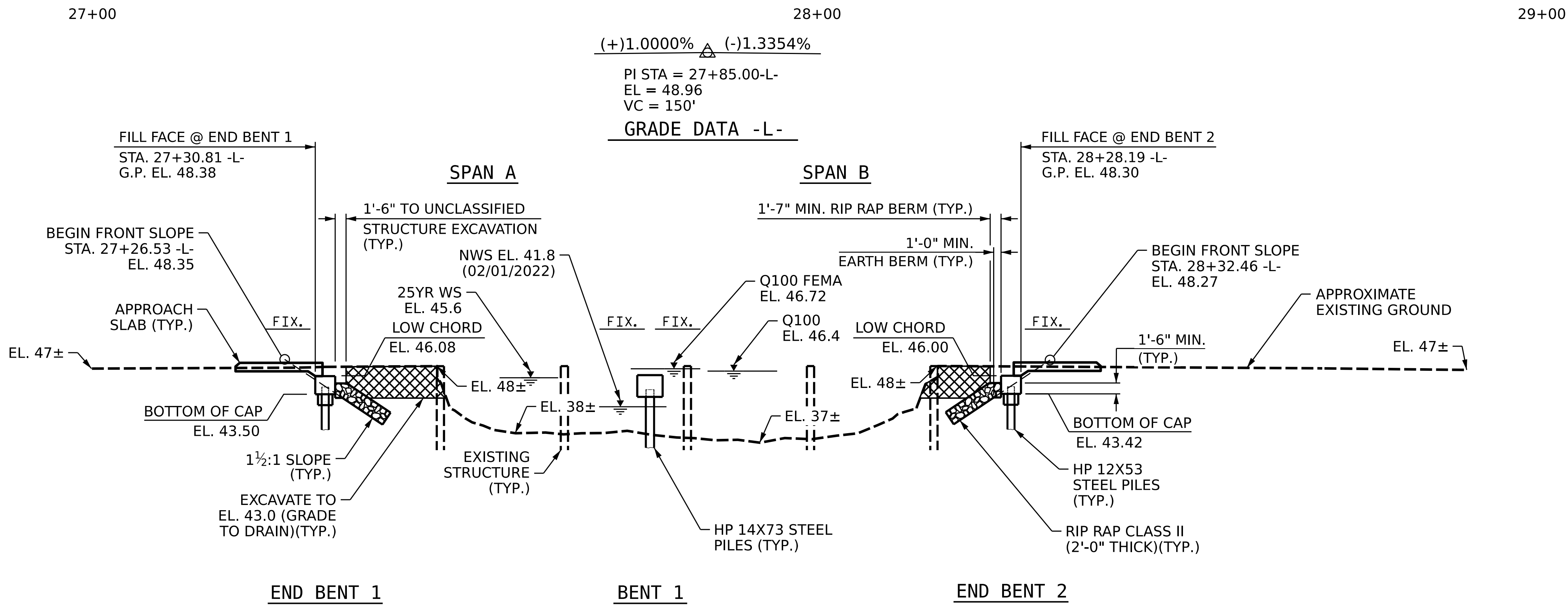
HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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



PROJECT NO. **BP6-R013**
COLUMBUS COUNTY
STATION: **27+79.50 -L-**

SHEET 1 OF 4 REPLACES BRIDGE 230325

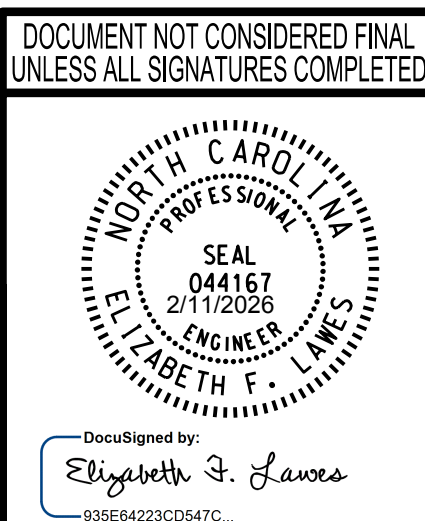
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

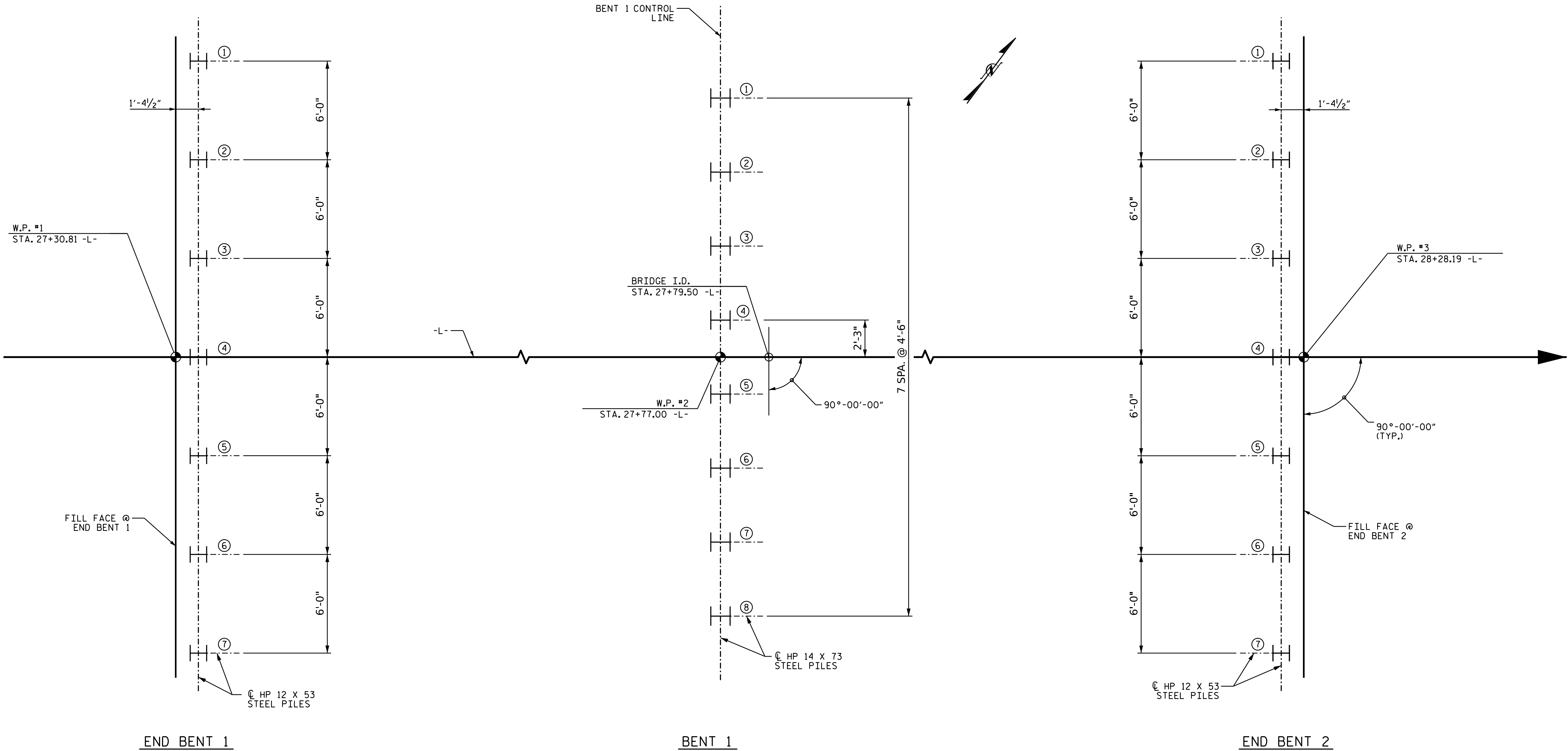
GENERAL DRAWING
BRIDGE OVER MONIE SWAMP ON
SR 1158 (CHAIR FACTORY RD.)
BETWEEN SR 1141 & NC 905

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S2-1
2			4			TOTAL SHEETS 20

DESIGNED BY: P. GALLAGHER DATE : DEC 2024
DRAWN BY: D. KULKARNI DATE : DEC 2024
CHECKED BY: P. GALLAGHER DATE : DEC 2024
DESIGN ENGINEER OF RECORD: E. LAWES DATE : DEC 2024

wsp
WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165





FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES.

NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 31,000 TO 45,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENTS NO.1 AND 2, AND INTERIOR BENT NO.1. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

DESIGNED BY:	P. GALLAGHER	DATE :	DEC 2024
DRAWN BY:	D. KULKARNI	DATE :	DEC 2024
CHECKED BY:	P. GALLAGHER	DATE :	DEC 2024
DESIGN ENGINEER OF RECORD:	E. LAWES	DATE :	DEC 2024

PROJECT NO. **BP6-R013**

COLUMBUS COUNTY

STATION: **27+79.50 -L-**

SHEET 2 OF 4

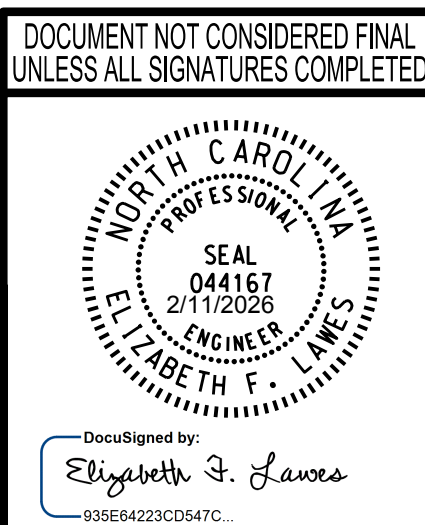
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE OVER MONIE SWAMP ON
SR 1158 (CHAIR FACTORY RD.)
BETWEEN SR 1141 & NC 905

REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	
1			3		S2-2
2			4		TOTAL SHEETS 20

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SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

[illegible]

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

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

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile KIPS	Factored Drag Load per Pile KIPS	Factored Dead Load * per Pile KIPS	Dynamic Resistance Factor	Nominal Drag Resistance per Pile KIPS	Nominal Scour Resistance per Pile KIPS
End Bent 1, Piles 1-7	135			0.70		2.5
Bent 1, Piles 1-8	235			0.70		3.5
End Bent 2, Piles 1-7	135			0.70		3.5

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

SUMMARY OF DPT/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Dynamic Pile Testing (DPT)		
End Bent / Bent No (e.g., "Bent 1 - Bent 3")	DPT Test Pile Length FT	DPT Testing Quantity EACH
End Bent 1	110	1
Bent 1	115	1
End Bent 2	95	1
TOTAL QUANTITY:		3

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

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

PROJECT NO. BP6.R013 (BRIDGE #325)

COLUMBUS COUNTY

STATION: 27+79.50 -L-

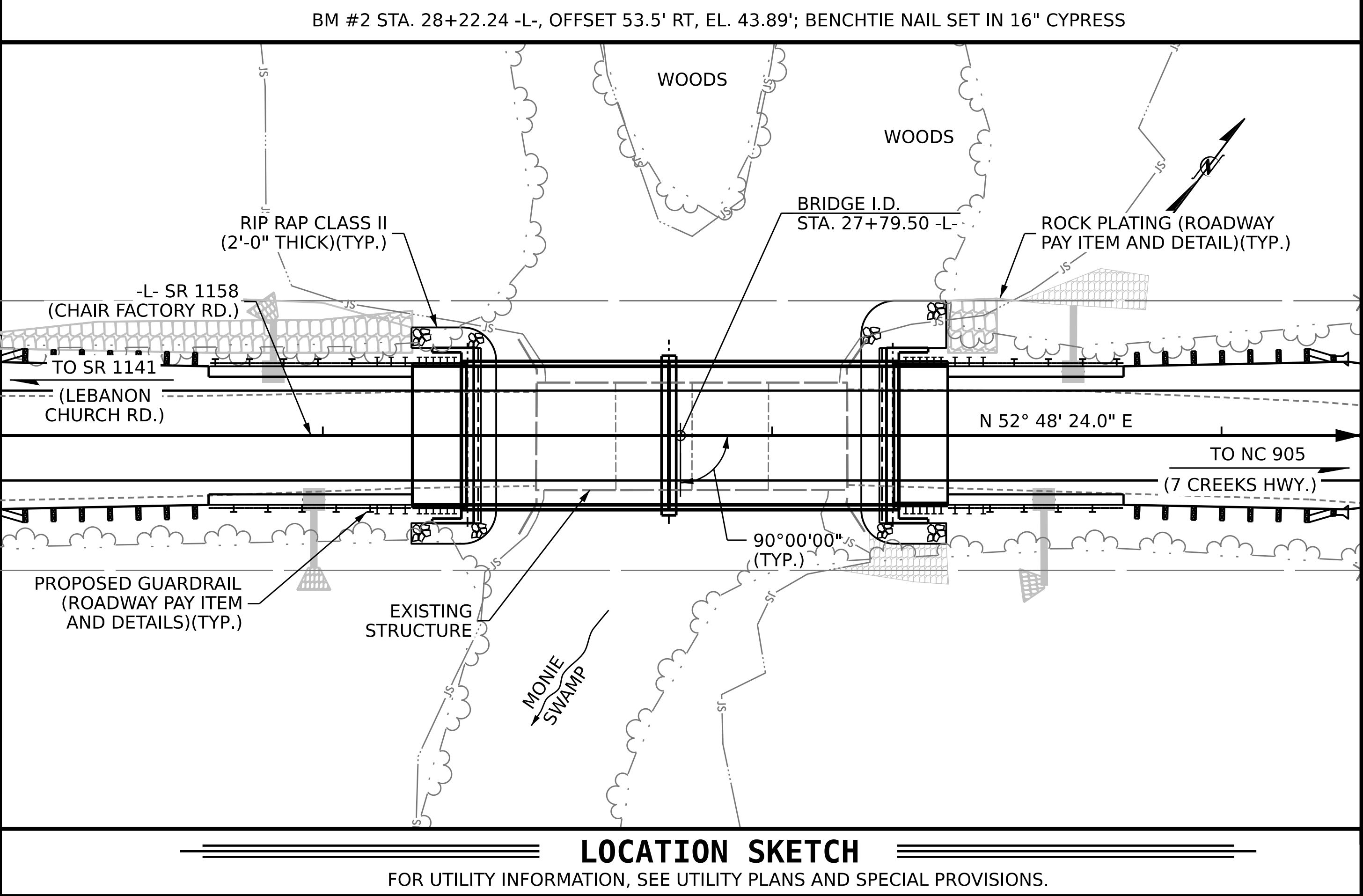
SHEET 3 OF 4

NOTES:

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Andrew A. Nash, #031022) on 01-27-2026.
2. Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
3. The Engineer may adjust the quantity for DPT Testing and Pipe Pile Plates when necessary.

	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH PILE FOUNDATION TABLES
DocuSigned by: <i>Elizabeth F. Laves</i> STATE OF NORTH CAROLINA SIGNATURE	DATE

REVISIONS						SHEET NO. S2-3
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 20
1			3			
2			4			



NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 2.

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

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 24 FT (LEFT) AND 24 FT. (RIGHT) 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.

THE EXISTING STRUCTURE CONSISTING OF TWO 18FT SPANS AND TWO 17FT SPANS OF TIMBER BEAMS; 24FT CLEAR ROADWAY WIDTH AND CONCRETE DECK ON TIMBER ABUTMENTS AND LOCATED AT EXISTING STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. DURING CONSTRUCTION OF THE PROPOSED BRIDGE, THE EXISTING BRIDGE SHALL BE CLOSED TO TRAFFIC AND SHALL REMAIN CLOSED TO TRAFFIC FOR THE DURATION OF THE BRIDGE REPLACEMENT WORK.

CLASS AA CONCRETE SHALL BE USED IN ALL CAST-IN-PLACE PILE CAPS, AND SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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

THE CONCRETE IN THE PILE CAPS OF END BENT 1, BENT1, AND END BENT 2 SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED. THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB OF CEMENT. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS ITEMS.

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.

THE SCOUR CRITICAL ELEVATION FOR END BENT NO.1 AND END BENT NO.2 IS ELEVATION 41.5 FT. AND 39.2 FT. RESPECTIVELY. THE DESIGN SCOUR ELEVATION AT BENT NO.1 IS 30.9 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

STEEL PILES SHALL BE COATED WITH COAL TAR EPOXY PER THE STANDARD SPECIFICATIONS.

FOR END BENTS 1 AND 2, ONLY PARTIAL EPOXY COATING OF THE PILES IS REQUIRED. SEE END BENT SHEETS FOR REQUIRED EPOXY COATING LENGTHS. PAYMENT FOR PARTIALLY EPOXY COATED PILES WILL BE MADE UNDER THE CONTRACT UNIT PRICE FOR EPOXY COATED STEEL PILES.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

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

ASPHALT WEARING SURFACE IS INCLUDED IN THE ROADWAY QUANTITY ON ROADWAY PLANS.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR CORED SLABS AND BOX BEAM POST TENSIONING, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL							
	REMOVAL OF EXISTING STRUCTURE @ STA. 27+79.50 -L-	ASBESTOS ASSESSMENT	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS AA CONCRETE	BRIDGE APPROACH SLABS	EPOXY COATED REINFORCING STEEL (BRIDGE)	PILE DRIVING EQUIPMENT SETUP FOR HP 12 x 53 STEEL PILES
	LUMP SUM	LUMP SUM	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	No.
SUPERSTRUCTURE					LUMP SUM		
END BENT 1			LUMP SUM	14.2		2,077	7
BENT 1				10.7		2,104	
END BENT 2			LUMP SUM	14.2		2,077	7
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	39.1	LUMP SUM	6,258	14

TOTAL BILL OF MATERIAL											
	PILE DRIVING EQUIPMENT SETUP FOR HP 14 x 73 STEEL PILES	HP 12 X 53 STEEL PILES		HP 14 X 73 STEEL PILES		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	
	No.	No.	LIN. FT.	No.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	No.	LIN. FT.
SUPERSTRUCTURE						190.50			LUMP SUM	22	1,045
END BENT 1		7	777				69	76			
BENT 1	8			8	928						
END BENT 2		7	672				87	96			
TOTAL	8	14	1,449	8	928	190.50	156	172	LUMP SUM	22	1,045

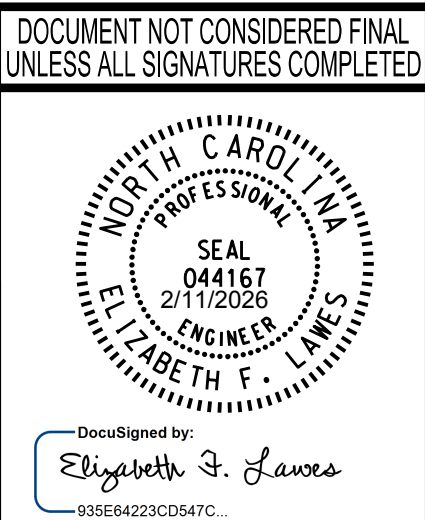
PROJECT NO. **BP6-R013**
COLUMBUS COUNTY
STATION: **27+79.50 -L-**

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE OVER MONIE SWAMP ON
SR 1158 (CHAIR FACTORY RD.)
BETWEEN SR 1141 & NC 905

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			52-4
2			4			20



WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

DESIGNED BY:	P. GALLAGHER	DATE :	DEC 2024
DRAWN BY:	D. KULKARNI	DATE :	DEC 2024
CHECKED BY:	P. GALLAGHER	DATE :	DEC 2024
DESIGN ENGINEER OF RECORD:	E. LAWES	DATE :	DEC 2024

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	1.121	--	1.75	0.274	1.45	45'	EL	22.00	0.543	1.40	45'	EL	2.20	0.80	0.274	1.12	45'	EL	22.00	
	HL-93 (OPERATING)	N/A		1.813	--	1.35	0.274	1.87	45'	EL	22.00	0.543	1.81	45'	EL	2.20	N/A	--	--	--	--	--	
	HS-20 (INVENTORY)	36.000	Ⓜ2	1.377	49.561	1.75	0.274	1.77	45'	EL	22.00	0.543	1.65	45'	EL	2.20	0.80	0.274	1.38	45'	EL	22.00	
	HS-20 (OPERATING)	36.000		2.142	77.130	1.35	0.274	2.30	45'	EL	22.00	0.543	2.14	45'	EL	2.20	N/A	--	--	--	--	--	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH		2.690	36.319	1.40	0.274	4.33	45'	EL	22.00	0.543	4.56	45'	EL	2.20	0.80	0.274	2.69	45'	EL	22.00	
		SNGARBS2		2.172	43.443	1.40	0.274	3.50	45'	EL	22.00	0.543	3.35	45'	EL	2.20	0.80	0.274	2.17	45'	EL	22.00	
		SNAGRIS2		2.136	46.991	1.40	0.274	3.39	45'	EL	26.40	0.543	3.15	45'	EL	2.20	0.80	0.274	2.14	45'	EL	22.00	
		SNCOTTS3		1.343	36.603	1.40	0.274	2.16	45'	EL	22.00	0.543	2.29	45'	EL	2.20	0.80	0.274	1.34	45'	EL	22.00	
		SNAGGRS4		1.185	41.398	1.40	0.274	1.91	45'	EL	22.00	0.543	1.97	45'	EL	2.20	0.80	0.274	1.18	45'	EL	22.00	
		SNS5A		1.155	41.048	1.40	0.274	1.86	45'	EL	22.00	0.543	2.04	45'	EL	2.20	0.80	0.274	1.15	45'	EL	22.00	
		SNS6A		1.088	43.452	1.40	0.274	1.75	45'	EL	22.00	0.543	1.90	45'	EL	2.20	0.80	0.274	1.08	45'	EL	22.00	
		SNS7B	Ⓜ3	1.037	43.549	1.40	0.274	1.67	45'	EL	22.00	0.543	1.91	45'	EL	2.20	0.80	0.274	1.04	45'	EL	22.00	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3		1.335	44.054	1.40	0.274	2.15	45'	EL	22.00	0.543	2.23	45'	EL	2.20	0.80	0.274	1.33	45'	EL	22.00	
		TNT4A		1.349	44.617	1.40	0.274	2.17	45'	EL	22.00	0.543	2.14	45'	EL	2.20	0.80	0.274	1.35	45'	EL	22.00	
		TNT6A		1.132	47.097	1.40	0.274	1.82	45'	EL	22.00	0.543	2.08	45'	EL	2.20	0.80	0.274	1.13	45'	EL	22.00	
		TNT7A		1.154	48.468	1.40	0.274	1.86	45'	EL	22.00	0.543	1.92	45'	EL	2.20	0.80	0.274	1.15	45'	EL	22.00	
		TNT7B		1.201	50.459	1.40	0.274	1.94	45'	EL	22.00	0.543	1.83	45'	EL	2.20	0.80	0.274	1.20	45'	EL	22.00	
		TNAGRIT4		1.144	49.203	1.40	0.274	1.84	45'	EL	22.00	0.543	1.76	45'	EL	2.20	0.80	0.274	1.14	45'	EL	22.00	
		TNAGT5A		1.065	47.914	1.40	0.274	1.72	45'	EL	22.00	0.543	1.80	45'	EL	2.20	0.80	0.274	1.06	45'	EL	22.00	
		TNAGT5B		1.040	46.783	1.40	0.274	1.67	45'	EL	22.00	0.543	1.67	45'	EL	2.20	0.80	0.274	1.04	45'	EL	22.00	
EMERGENCY VEHICLE (EV)	EV2	28.750		1.558	44.784	1.30	0.274	2.69	45'	EL	22.00	0.543	2.54	45'	EL	2.20	0.80	0.274	1.56	45'	EL	22.00	
	EV3	43.000	Ⓜ4	1.001	43.053	1.30	0.274	1.74	45'	EL	22.00	0.543	1.72	45'	EL	2.20	0.80	0.274	1.00	45'	EL	22.00	

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 **

* *

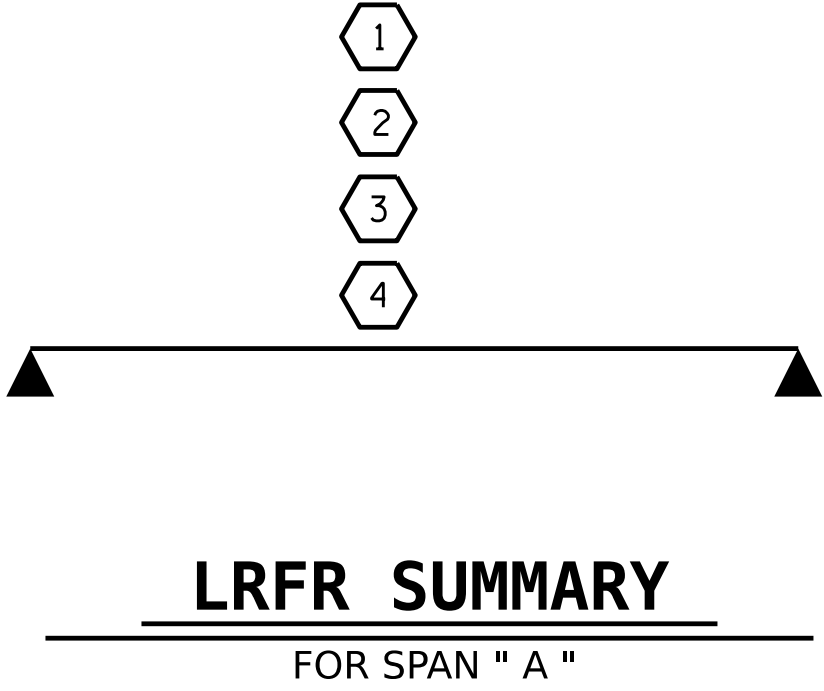
SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER

EL - EXTERIOR LEFT GIRDER

ER - EXTERIOR RIGHT GIRDER



PROJECT NO. **BP6-R013**

COLUMBUS COUNTY

STATION: **27+79.50 -L-**

DESIGNED BY:	P. GALLAGHER	DATE :	DEC 2024
DRAWN BY:	D. KULKARNI	DATE :	DEC 2024
CHECKED BY:	P. GALLAGHER	DATE :	DEC 2024
DESIGN ENGINEER OF RECORD:	E. LAWES	DATE :	DEC 2024

DRAWN BY :	MAA I/08	REV. 11/2/08RR	MAA/GM
CHECKED BY :	GM/DI 2/08	REV. 10/1/11	MAA/GM
		REV. 04/23	BNB/AAI

wsp

WSP USA Inc.

434 FAYETTEVILLE STREET

SUITE 1500

RALEIGH, NC 27601

TEL: 1.919.836.4040

LICENSE NO. F-0165

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

SEAL

044167

2/11/2026

ELIZABETH F. LAWES

ENGINEER

Docusigned by:

Elizabeth F. Lawes

935644233C0547C

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

STANDARD

LRFR SUMMARY FOR

45' CORED SLAB UNIT

90° SKEW

(NON-INTERSTATE TRAFFIC)

NO.

BY:

DATE:

NO.

BY:

DATE:

NO.

BY:

DATE:

1

2

3

4

SHEET NO.

S2-5

TOTAL SHEETS

20

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																							
LOAD TYPE	VEHICLE	WEIGHT (W) (TONS)		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		1.394	--	1.75	0.276	1.57	50'	EL	24.5	0.531	1.39	50'	EL	2.45	0.80	0.276	1.44	50'	EL	24.5	
	HL-93 (OPERATING)	N/A		1.807	--	1.35	0.276	2.03	50'	EL	24.5	0.531	1.81	50'	EL	2.45	N/A	--	--	--	--	--	
	HS-20 (INVENTORY)	36.000		1.667	60.007	1.75	0.276	1.95	50'	EL	24.5	0.531	1.67	50'	EL	2.45	0.80	0.276	1.79	50'	EL	24.5	
	HS-20 (OPERATING)	36.000		2.161	77.787	1.35	0.276	2.52	50'	EL	24.5	0.531	2.16	50'	EL	2.45	N/A	--	--	--	--	--	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH		3.635	49.079	1.4	0.276	4.95	50'	EL	24.5	0.531	4.70	50'	EL	2.45	0.80	0.276	3.64	50'	EL	24.5	
		SNGARBS2		2.871	57.420	1.4	0.276	3.91	50'	EL	24.5	0.531	3.42	50'	EL	2.45	0.80	0.276	2.87	50'	EL	24.5	
		SNAGRIS2		2.778	61.109	1.4	0.276	3.78	50'	EL	19.6	0.531	3.21	50'	EL	2.45	0.80	0.276	2.78	50'	EL	24.5	
		SNCOTTS3		1.814	49.418	1.4	0.276	2.47	50'	EL	24.5	0.531	2.36	50'	EL	2.45	0.80	0.276	1.81	50'	EL	24.5	
		SNAGGRS4		1.577	55.063	1.4	0.276	2.15	50'	EL	24.5	0.531	2.01	50'	EL	2.45	0.80	0.276	1.58	50'	EL	24.5	
		SNS5A		1.537	54.657	1.4	0.276	2.09	50'	EL	24.5	0.531	2.07	50'	EL	2.45	0.80	0.276	1.54	50'	EL	24.5	
		SNS6A		1.438	57.430	1.4	0.276	1.96	50'	EL	24.5	0.531	1.91	50'	EL	2.45	0.80	0.276	1.44	50'	EL	24.5	
		SNS7B		1.370	57.540	1.4	0.276	1.87	50'	EL	24.5	0.531	1.91	50'	EL	2.45	0.80	0.276	1.37	50'	EL	24.5	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3		1.761	58.118	1.4	0.276	2.40	50'	EL	24.5	0.531	2.25	50'	EL	2.45	0.80	0.276	1.76	50'	EL	24.5	
		TNT4A		1.777	58.759	1.4	0.276	2.42	50'	EL	24.5	0.531	2.17	50'	EL	2.45	0.80	0.276	1.78	50'	EL	24.5	
		TNT6A		1.480	61.558	1.4	0.276	2.01	50'	EL	24.5	0.531	2.08	50'	EL	2.45	0.80	0.276	1.48	50'	EL	24.5	
		TNT7A		1.502	63.087	1.4	0.276	2.05	50'	EL	24.5	0.531	1.94	50'	EL	2.45	0.80	0.276	1.50	50'	EL	24.5	
		TNT7B		1.566	65.773	1.4	0.276	2.13	50'	EL	24.5	0.531	1.84	50'	EL	2.45	0.80	0.276	1.57	50'	EL	24.5	
		TNAGRIT4		1.486	63.902	1.4	0.276	2.02	50'	EL	24.5	0.531	1.77	50'	EL	2.45	0.80	0.276	1.49	50'	EL	24.5	
		TNAGT5A		1.388	62.470	1.4	0.276	1.89	50'	EL	24.5	0.531	1.80	50'	EL	2.45	0.80	0.276	1.39	50'	EL	24.5	
		TNAGT5B		1.360	61.206	1.4	0.276	1.85	50'	EL	24.5	0.531	1.68	50'	EL	2.45	0.80	0.276	1.36	50'	EL	24.5	
EMERGENCY VEHICLE (EV)	EV2	28.750		2.154	61.929	1.3	0.276	2.97	50'	EL	24.5	0.531	2.50	50'	EL	5.50	0.80	0.276	2.15	50'	EL	24.5	
	EV3	43.000		1.392	59.852	1.3	0.276	1.92	50'	EL	24.5	0.531	1.69	50'	EL	5.50	0.80	0.276	1.39	50'	EL	24.5	

LOAD FACTORS:

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

NOTES:

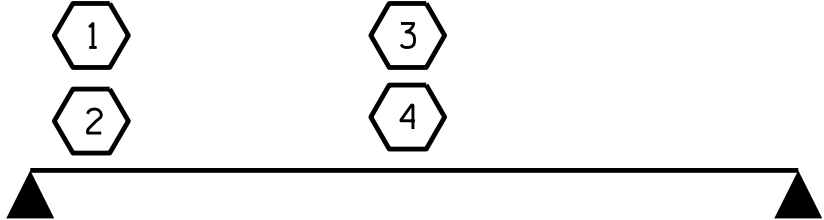
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

COMMENTS:

1.
2.
3.
4.

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



LRFR SUMMARY
FOR SPAN " B "

PROJECT NO. **BP6-R013**
COLUMBUS COUNTY
STATION: **27+79.50 -L-**

DESIGNED BY:	P. GALLAGHER	DATE :	DEC 2024
DRAWN BY:	D. KULKARNI	DATE :	DEC 2024
CHECKED BY:	P. GALLAGHER	DATE :	DEC 2024
DESIGN ENGINEER OF RECORD:	E. LAWES	DATE :	DEC 2024

DRAWN BY :	MAA I/08	REV. 11/2/08RR	MAA/GM
CHECKED BY :	GM/DI 2/08	REV. 10/1/11	MAA/GM
		REV. 04/23	BNB/AAI

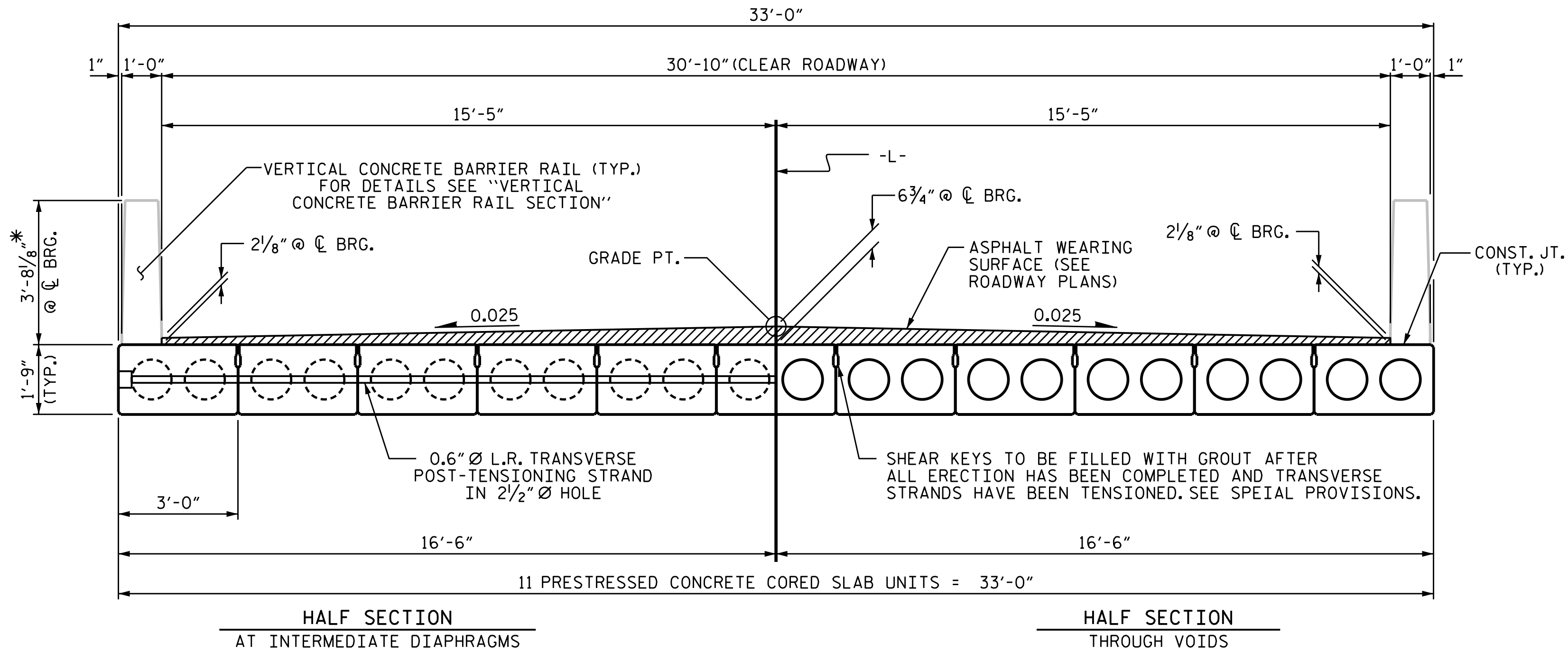
WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

DocuSigned by:
Elizabeth F. Lawes
9356A423C0547C

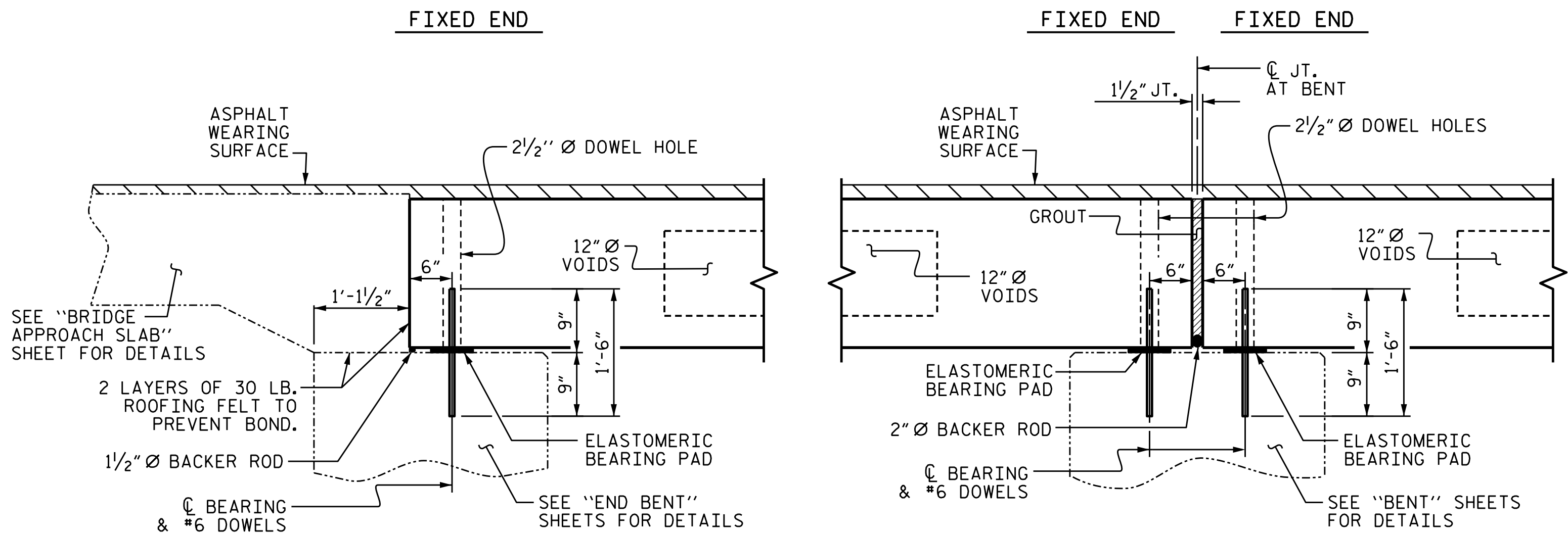
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
LRFR SUMMARY FOR
50' CORED SLAB UNIT
90° SKEW
(NON-INTERSTATE TRAFFIC)

REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	
1			3	S2-6
2			4	TOTAL SHEETS 20



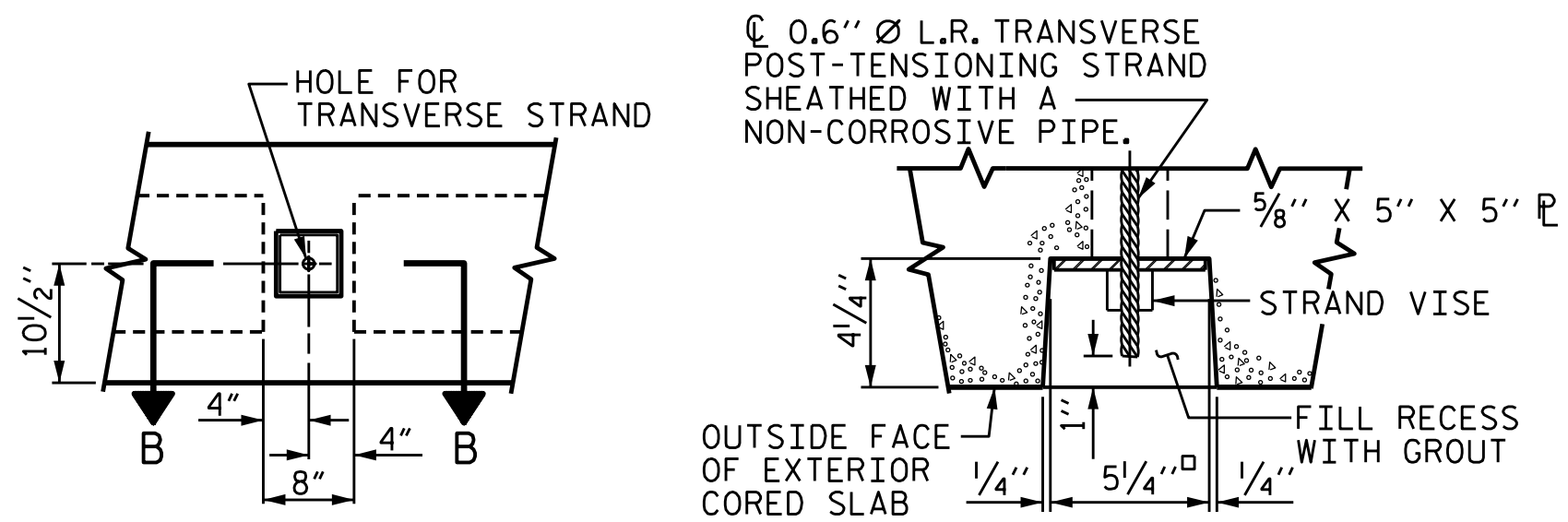
TYPICAL SECTION

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



SECTION AT END BENT

SECTION AT BENT

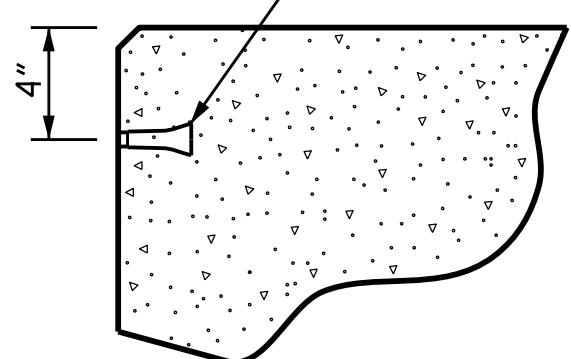


ELEVATION VIEW

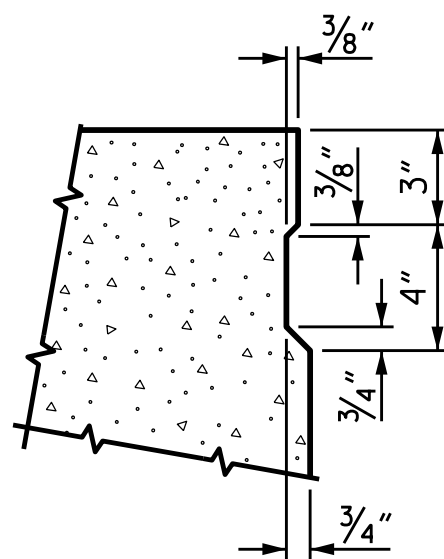
SECTION B-B

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

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

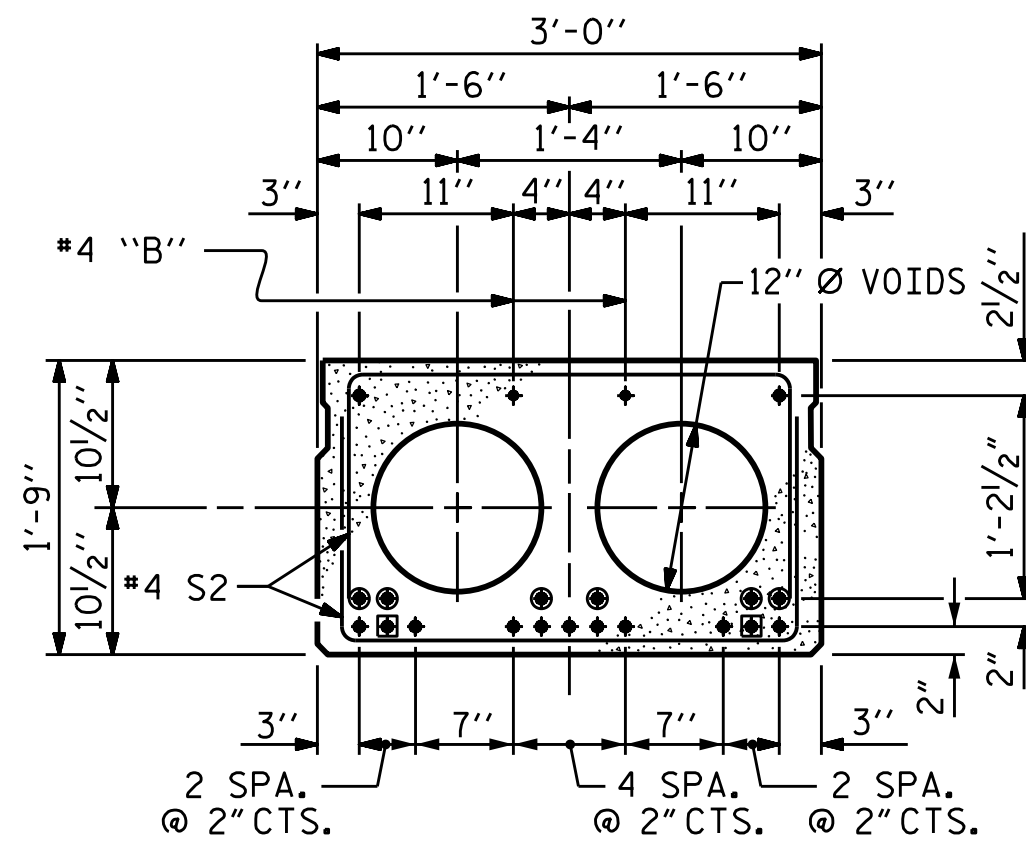


THREADED INSERT DETAIL

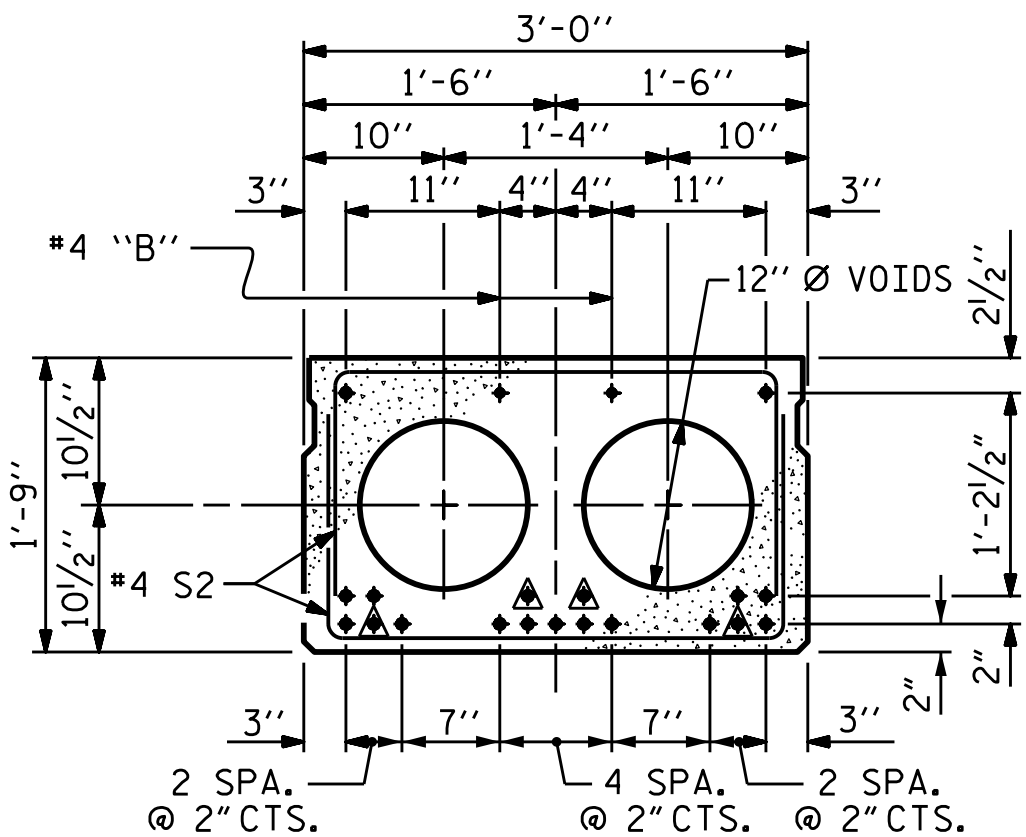


SHEAR KEY DETAIL

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



INTERIOR SLAB SECTION (45' UNIT) (13 STRANDS REQUIRED)

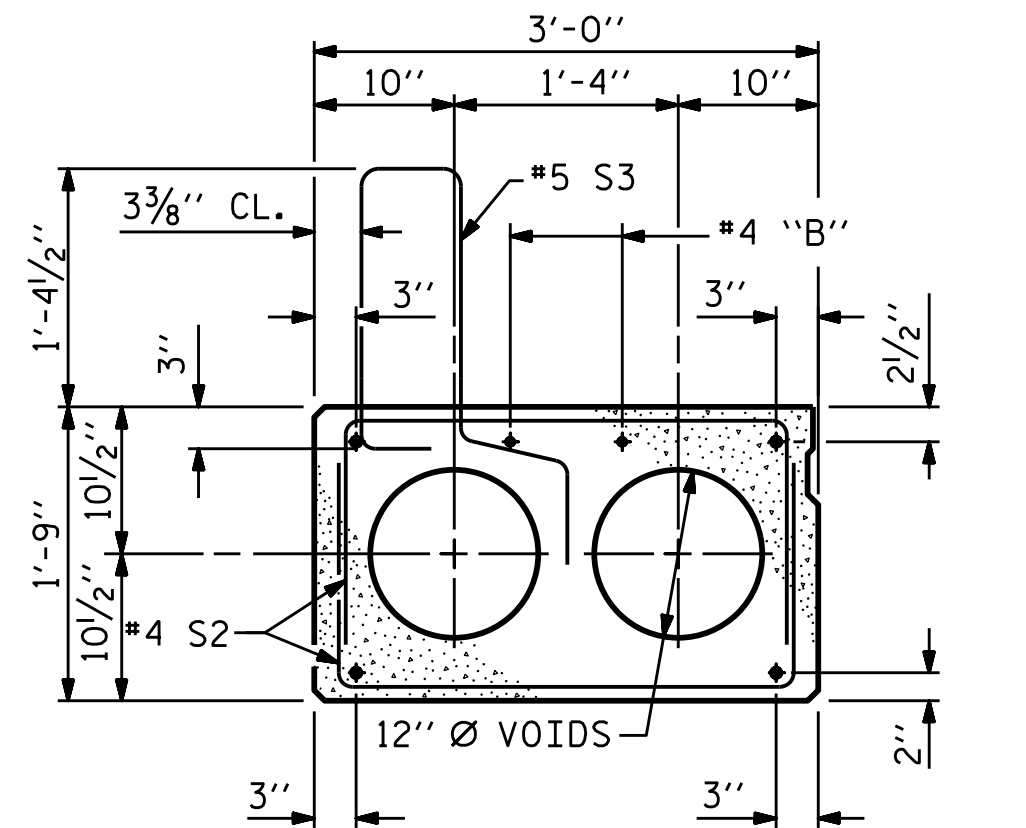


INTERIOR SLAB SECTION (50' UNIT) (19 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT

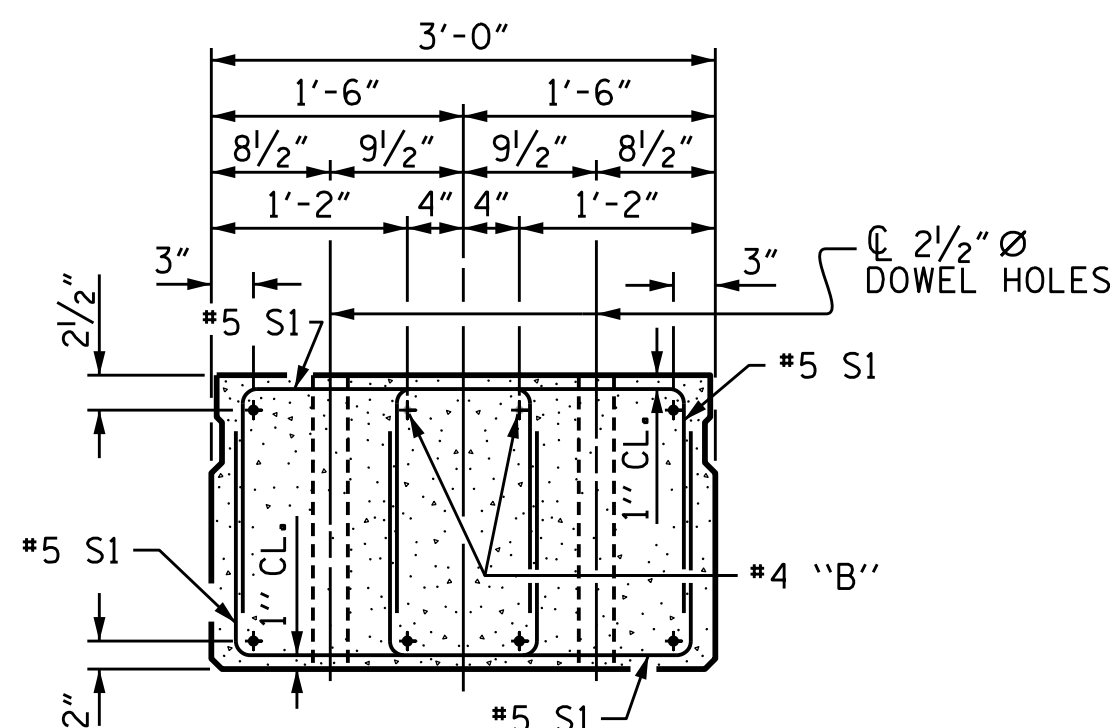
- ▲ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED, IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



EXT. SLAB SECTION

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



END ELEVATION

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.

PROJECT NO. **BP6-R013**

COLUMBUS COUNTY

STATION: **27+79.50 -L-**

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 1'-9"
PRESTRESSED CONCRETE
CORED SLAB UNIT
90° SKEW

REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	
1			3	S2-7
2			4	TOTAL SHEETS 20

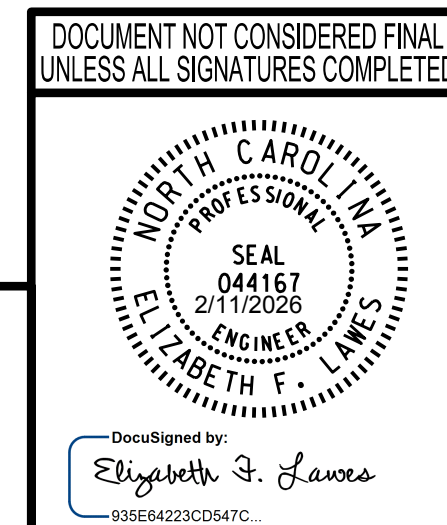
DESIGNED BY: P. GALLAGHER
DRAWN BY: D. KULKARNI
CHECKED BY: P. GALLAGHER
DESIGN ENGINEER OF RECORD: E. LAWES
DATE: DEC 2024
DATE: DEC 2024
DATE: DEC 2024
DATE: DEC 2024

DRAWN BY: DGE 5/09
CHECKED BY: BCH 6/09
REV. 8/14
REV. 5/23
MAA/TMG
BNB/AAI

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\\Corp.pbwon.net\us\CentralData\USRAIG100\Jobs\30902581.003.BP6-R013 Bridges 324 325\BP6.R013 Columbus 324\Structures\Bridge *230325\2.0 Plans.CADD (325)\2.0 Final\402.013.BP6.R013.SMU.CS01.dgn
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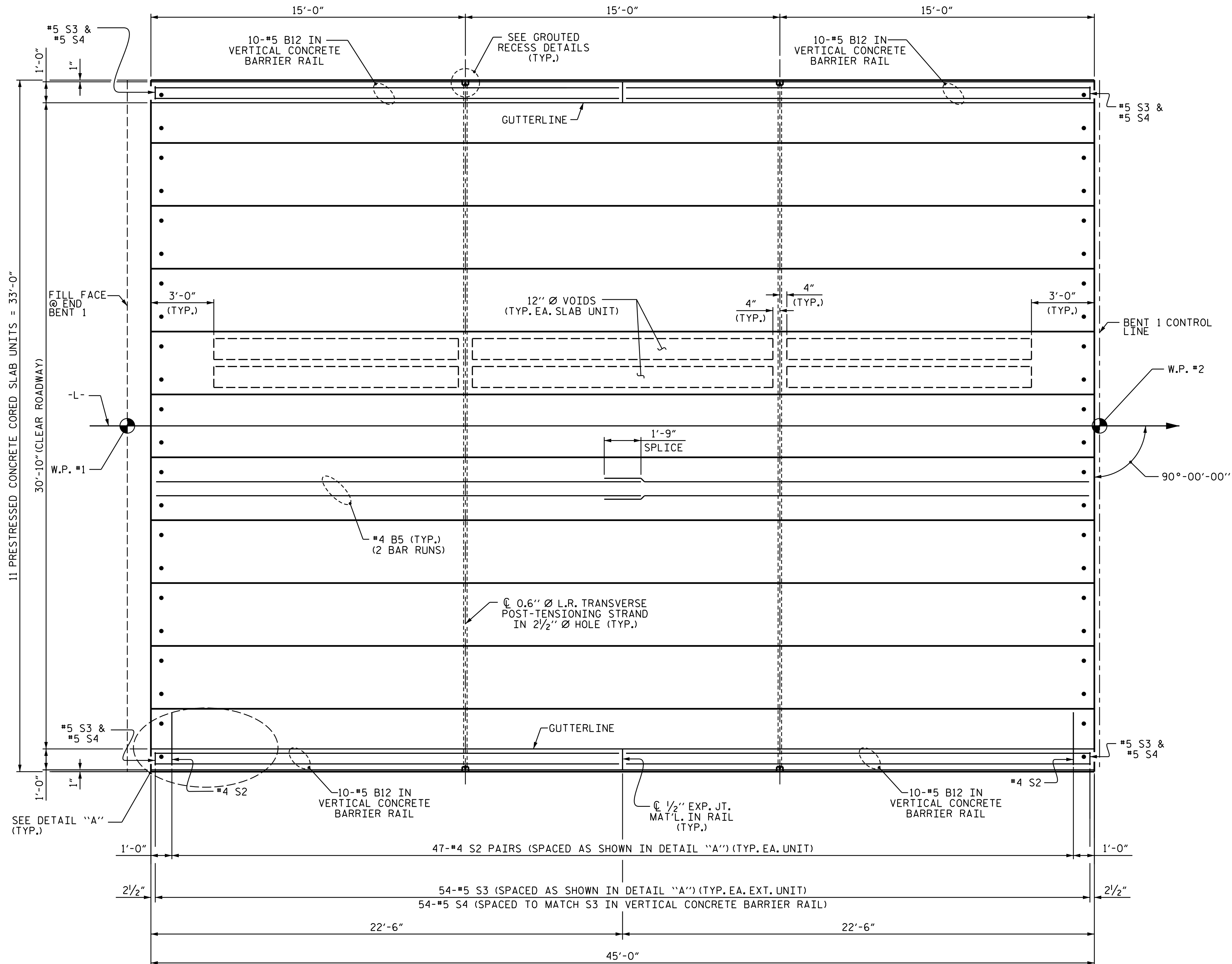
wsp

WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165



STD. NO. 21" PCS2-33.90S

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

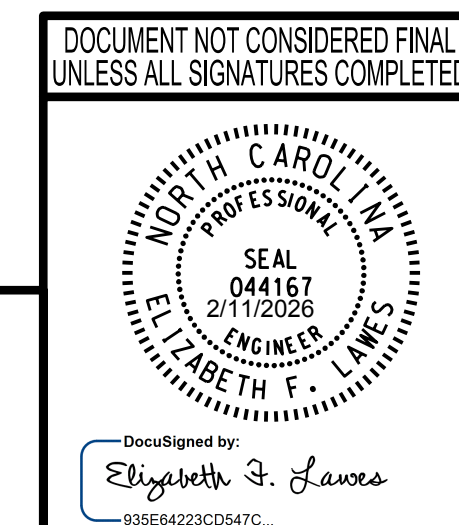


PLAN OF UNIT



WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040

LICENSE NO. F-0165



PROJECT NO. **BP6-R013**
COLUMBUS COUNTY
STATION: **27+79.50 -L-**

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 45' UNIT
30'-10" CLEAR ROADWAY
90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-8
1			3			TOTAL SHEETS
2			4			20

DESIGNED BY:	<u>P. GALLAGHER</u>	DATE :	<u>DEC 2024</u>
DRAWN BY:	<u>D. KULKARNI</u>	DATE :	<u>DEC 2024</u>
CHECKED BY:	<u>P. GALLAGHER</u>	DATE :	<u>DEC 2024</u>
DESIGN ENGINEER OF RECORD:	<u>E. LAWES</u>	DATE :	<u>DEC 2024</u>

DRAWN BY : DGE 3/09	REV. 12/5/11	MAA/AAC
CHECKED BY : BCH 3/09	REV. 8/14	MAA/TMG

2/9/2026
\\Corp.pbwan.net\us\CentralData\USRAG100\Jobs\30902581.003_BP6-R013 Bridges 324 325_BP6.R013 Columbus 324\Structures\Bridge *230325\2.0 Plans.CADD (325)\2.0 Final\402.015_BP6.R013_SMU_CS02.dgn
USEL722989

STD. NO. 21" PCS_33_90S_45L

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

— W.P. #3

90°-00'-00''

PROJECT NO. BP6-R013

COLUMBUS COUNTY

STATION: 27+79.50 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 50' UNIT
30'-10" CLEAR ROADWAY
90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S2-9
2			4			TOTAL SHEETS 20

DESIGNED BY:	<u>P. GALLAGHER</u>	DATE :	<u>DEC 2024</u>
DRAWN BY:	<u>D. KULKARNI</u>	DATE :	<u>DEC 2024</u>
CHECKED BY:	<u>P. GALLAGHER</u>	DATE :	<u>DEC 2024</u>
DESIGN ENGINEER OF RECORD:	<u>E. LAWES</u>	DATE :	<u>DEC 2024</u>

DRAWN BY : DGE	3/09	REV. 12/5/11	MAA/AAC
CHECKED BY : BCH	3/09	REV. 8/14	MAA/TMG

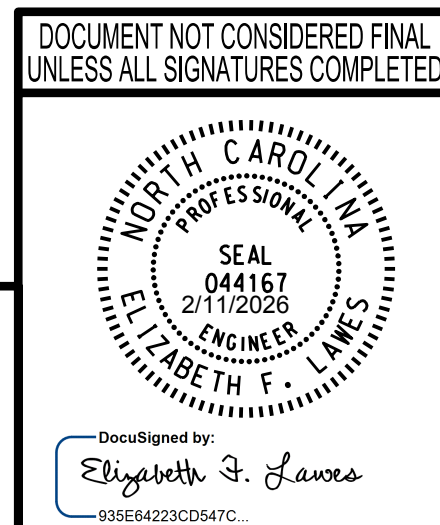
2/9/2026
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USFL722989

PLAN OF UNIT



**WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040**

LICENSE NO. F-0165

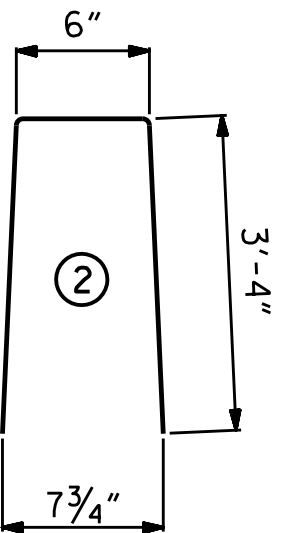


STD. NO. 21" PCS_33_90S_50L

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	45' UNIT					
*B12	40	40	#5	STR	22'-1"	921
* S4	108	108	#5	2	7'-2"	807
* EPOXY COATED REINFORCING STEEL				LBS.		1728
CLASS AA CONCRETE				CU.YDS.		11.5
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		90.25

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	50' UNIT					
*B13	40	40	#5	STR	24'-7"	1026
* S4	116	116	#5	2	7'-2"	867
* EPOXY COATED REINFORCING STEEL				LBS.		1893
CLASS AA CONCRETE				CU.YDS.		12.8
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		100.25

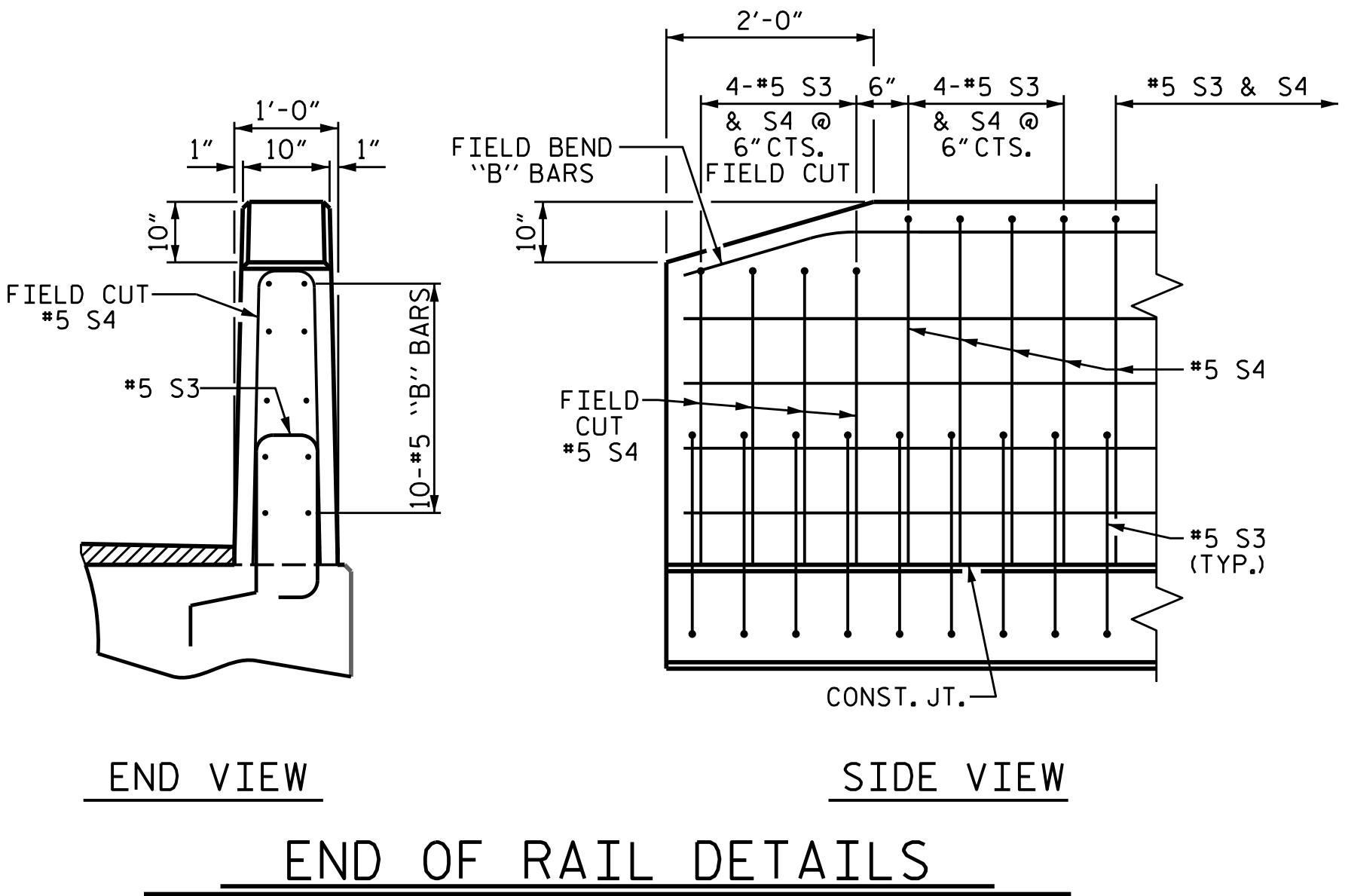
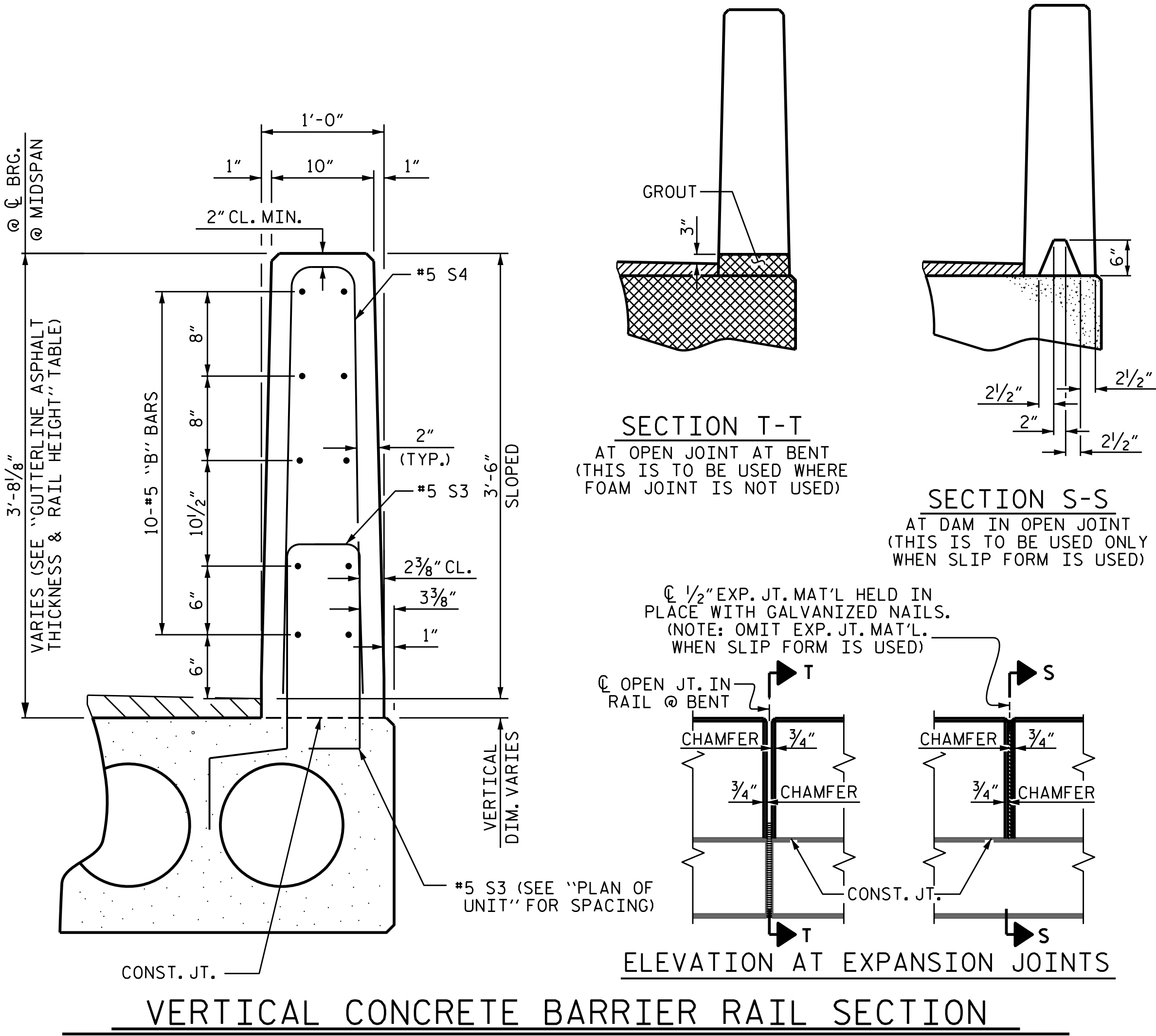
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

	ASPHALT OVERLAY THICKNESS	RAIL HEIGHT
	@ MID-SPAN	@ MID-SPAN
45' UNITS	1 15/16"	3'-7 15/16"
50' UNITS	1 9/16"	3'-7 9/16"



PROJECT NO. **BP6-R013**
COLUMBUS COUNTY
STATION: **27+79.50 -L-**

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 1'-9"
PRESTRESSED CONCRETE
CORED SLAB UNIT
90° SKEW

DESIGNED BY: P. GALLAGHER
DRAWN BY: D. KULKARNI
CHECKED BY: P. GALLAGHER
DESIGN ENGINEER OF RECORD: E. LAWES

DATE : DEC 2024
DATE : DEC 2024
DATE : DEC 2024
DATE : DEC 2024

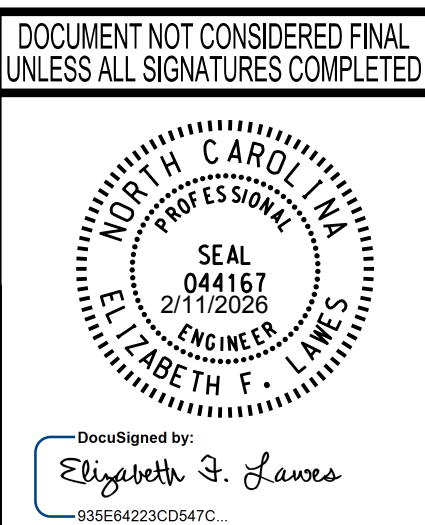
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CHECKED BY : BCH 6/09

REV. 5/18
REV. 5/23

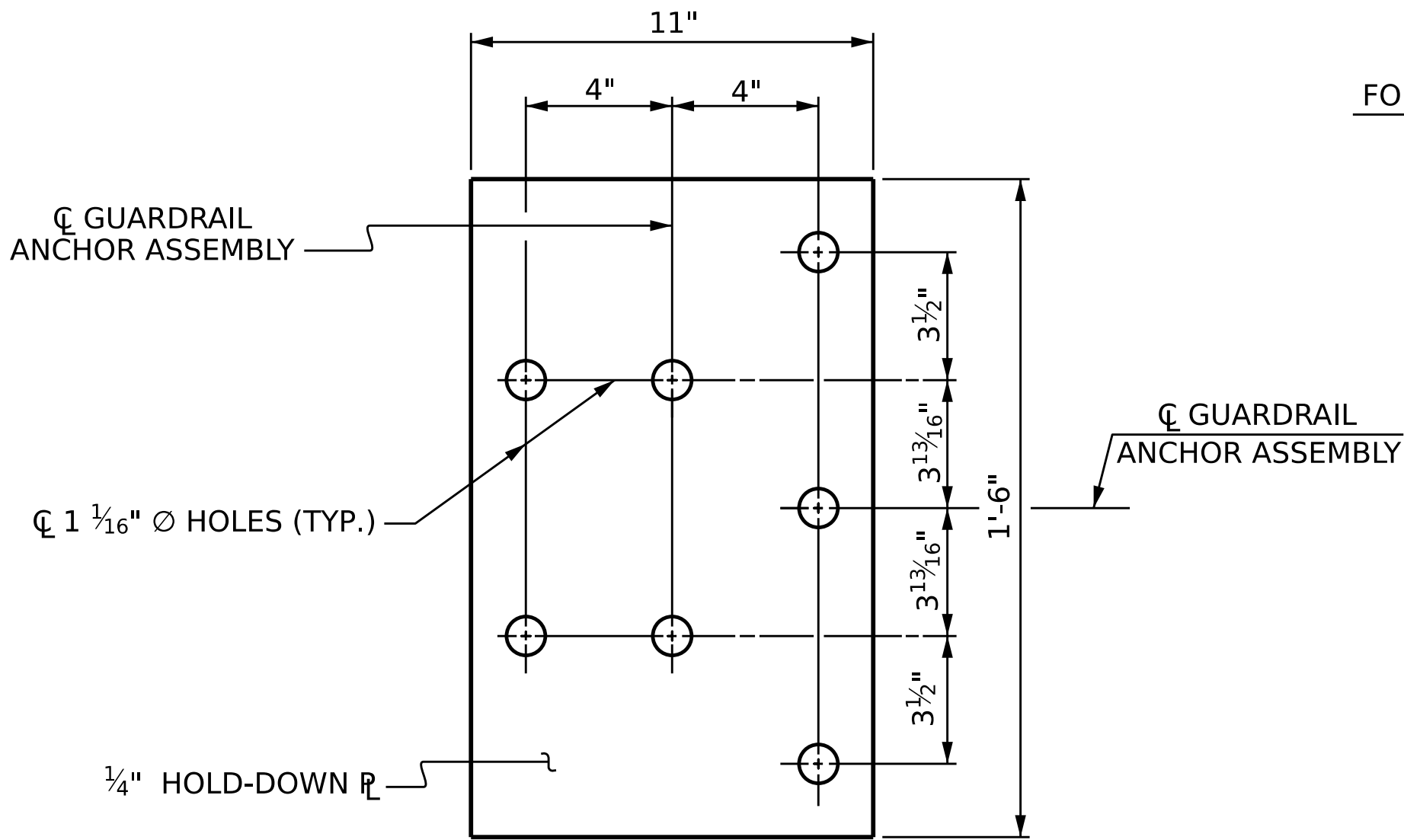
MAA/THC
BNB/AAI



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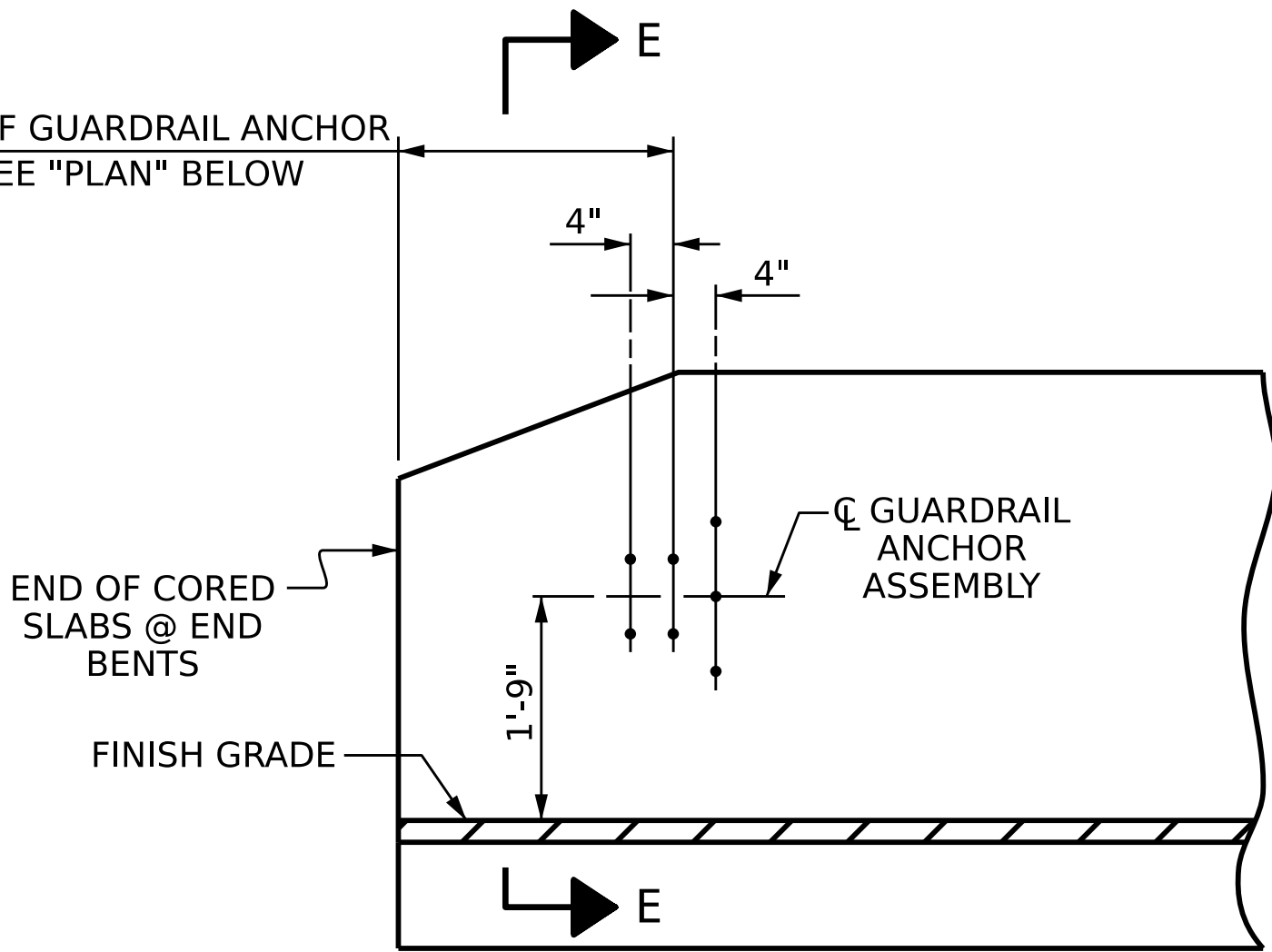


REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	
1			3	S2-11
2			4	TOTAL SHEETS 20

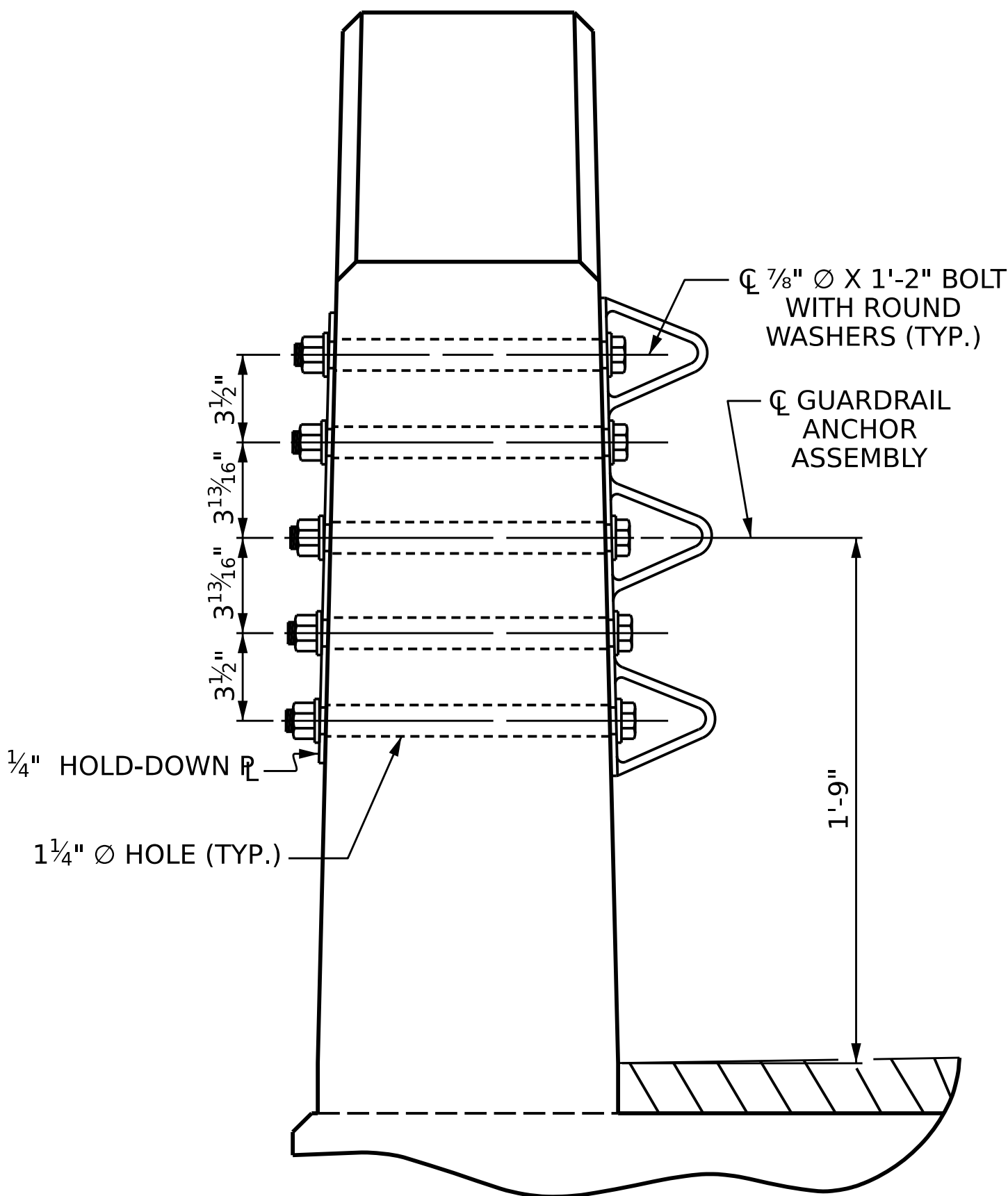


PLAN

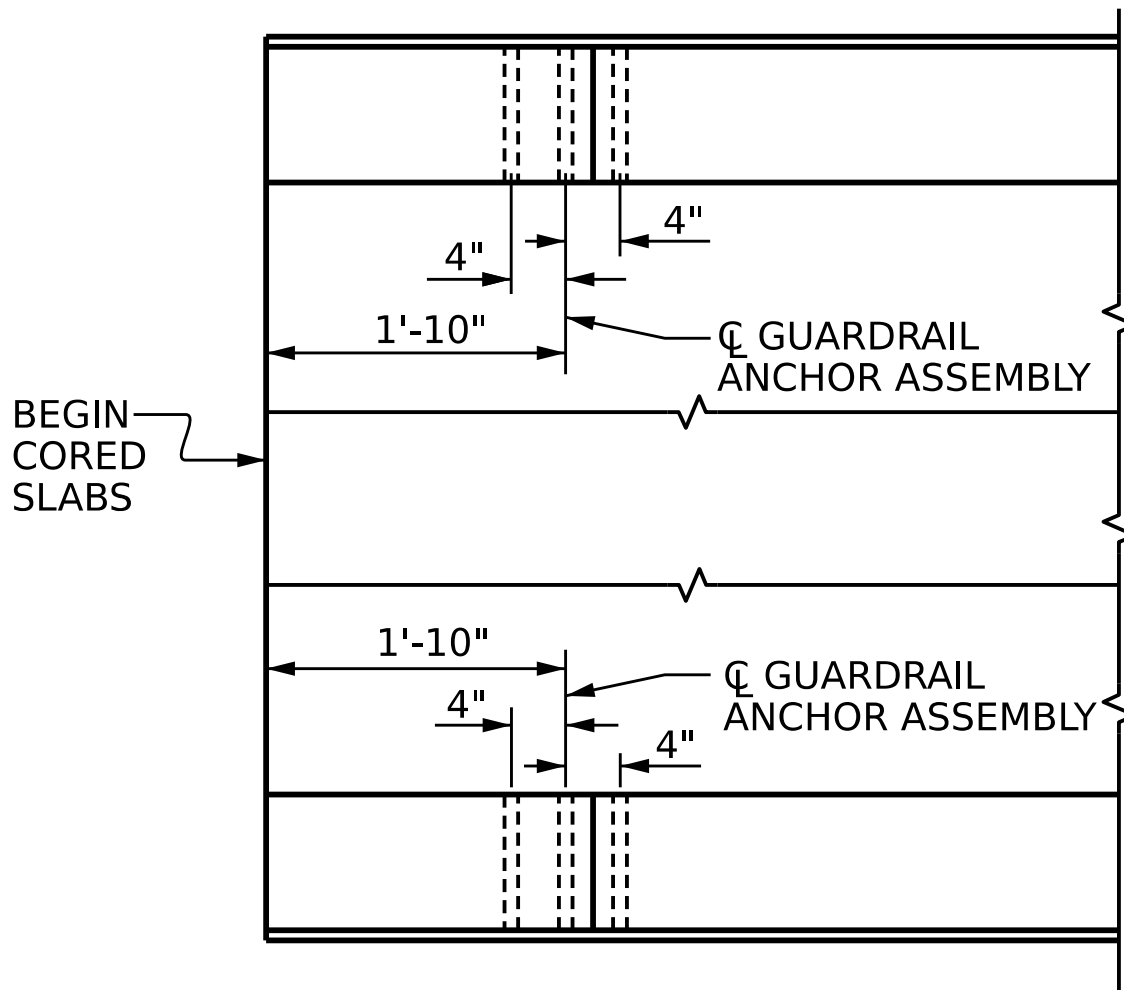
FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



ELEVATION



GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

NOTES

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

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

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

THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF 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 VERTICAL CONCRETE BARRIER RAIL.

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

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.

PROJECT NO. **BP6-R013**
COLUMBUS COUNTY
STATION: **27+79.50 -L-**

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

**GUARDRAIL ANCHORAGE
DETAILS
FOR VERTICAL CONCRETE
BARRIER RAIL**

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

DESIGNED BY: P. GALLAGHER DATE : DEC 2024
DRAWN BY: D. KULKARNI DATE : DEC 2024
CHECKED BY: P. GALLAGHER DATE : DEC 2024
DESIGN ENGINEER OF RECORD: E. LAWES DATE : DEC 2024

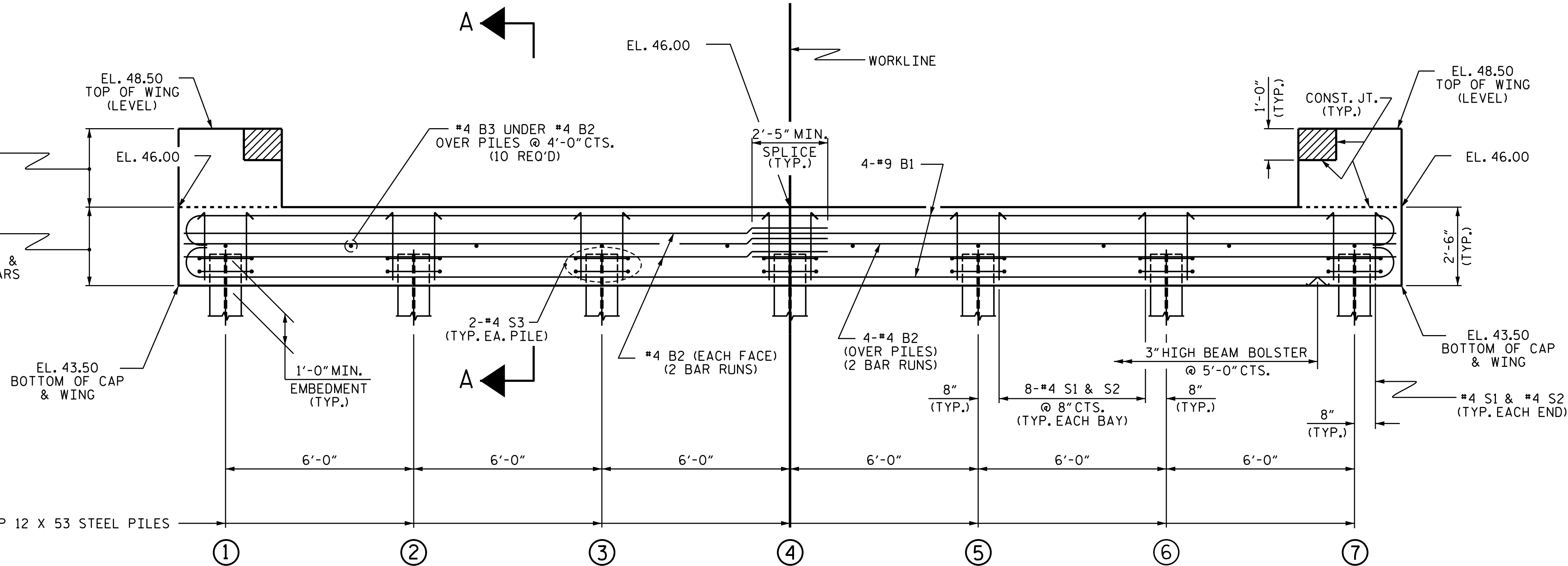
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CHECKED BY : CM 5/10 REV. 12/17 MAA/THC
REV. 5/18 MAA/THC

2/9/2026
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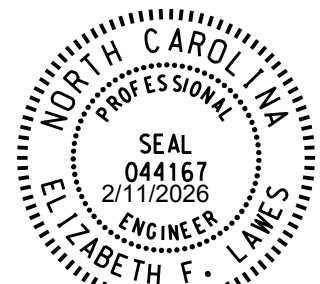


WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

2/9/2026
\\Corp.pbwan.net\us\CentralData\USRAG100\Jobs\30902581.003_BP6-R013 Bridges 324 325_BP6.R013 Columbus 324\Structures\Bridge *230325\2.0 Plans_CADD (325)\2.0 Final\402.025_BP6.R013.SMU.EBI.dgn
USEL 722989

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SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040

LICENSE NO. F-0165



EPOXY COAT THE TOP OF EACH END BENT
PILE A MINIMUM OF 27 FEET.

STD. NO. EB_33_90S

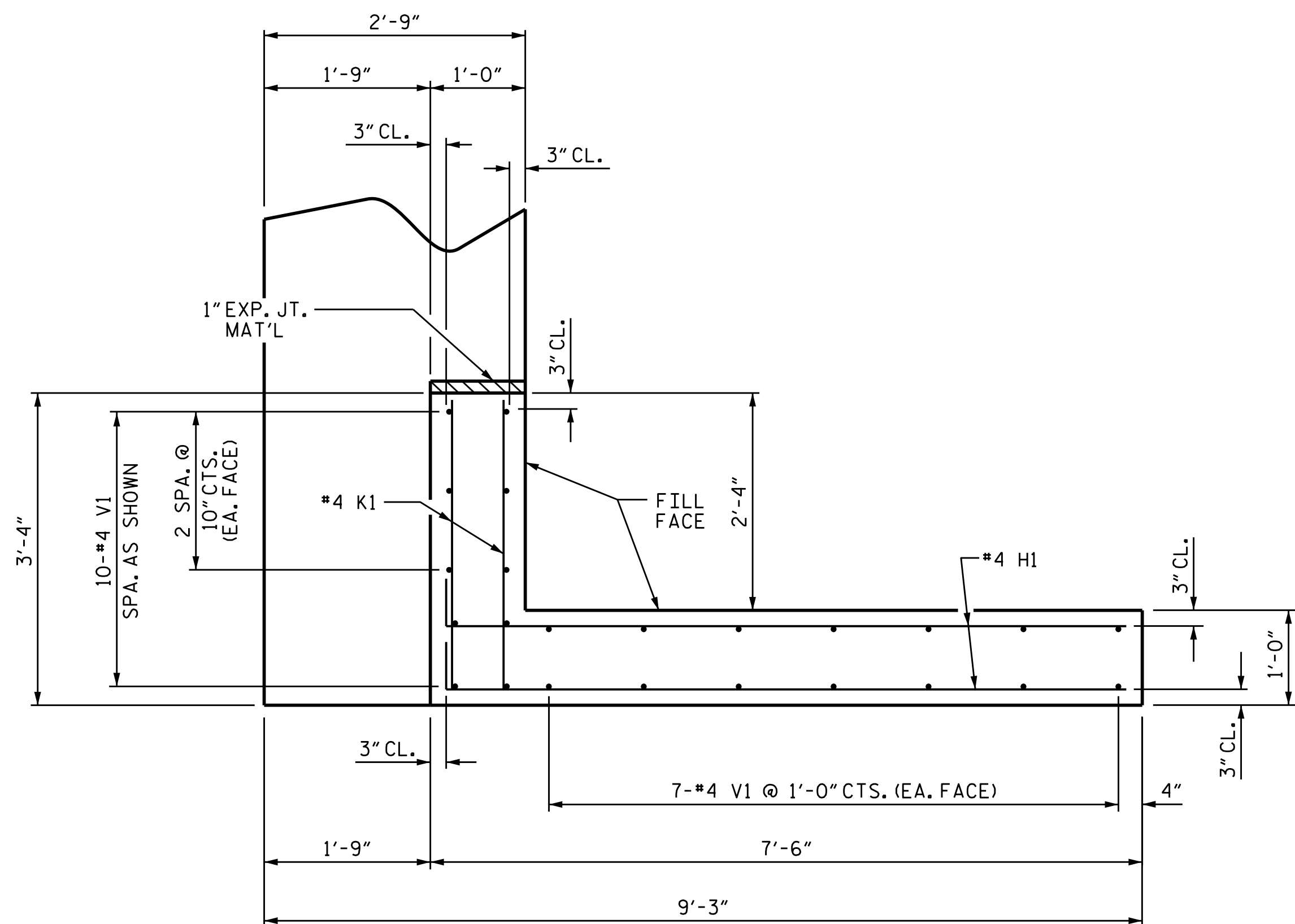
PLAN

ELEVATION

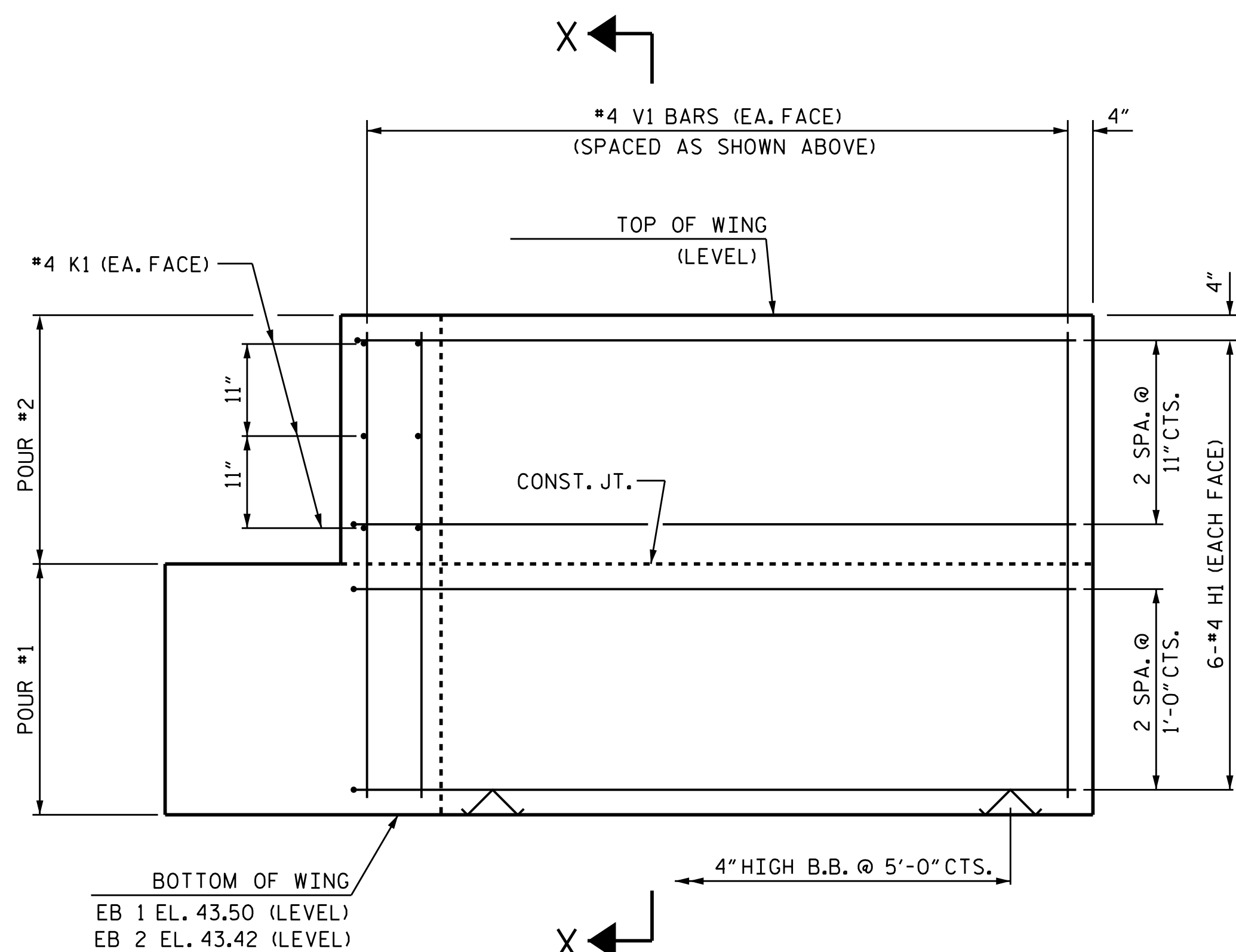
STD. NO. EB_33_90S

EPOXY COAT THE TOP OF EACH END BENT
PILE A MINIMUM OF 27 FEET.

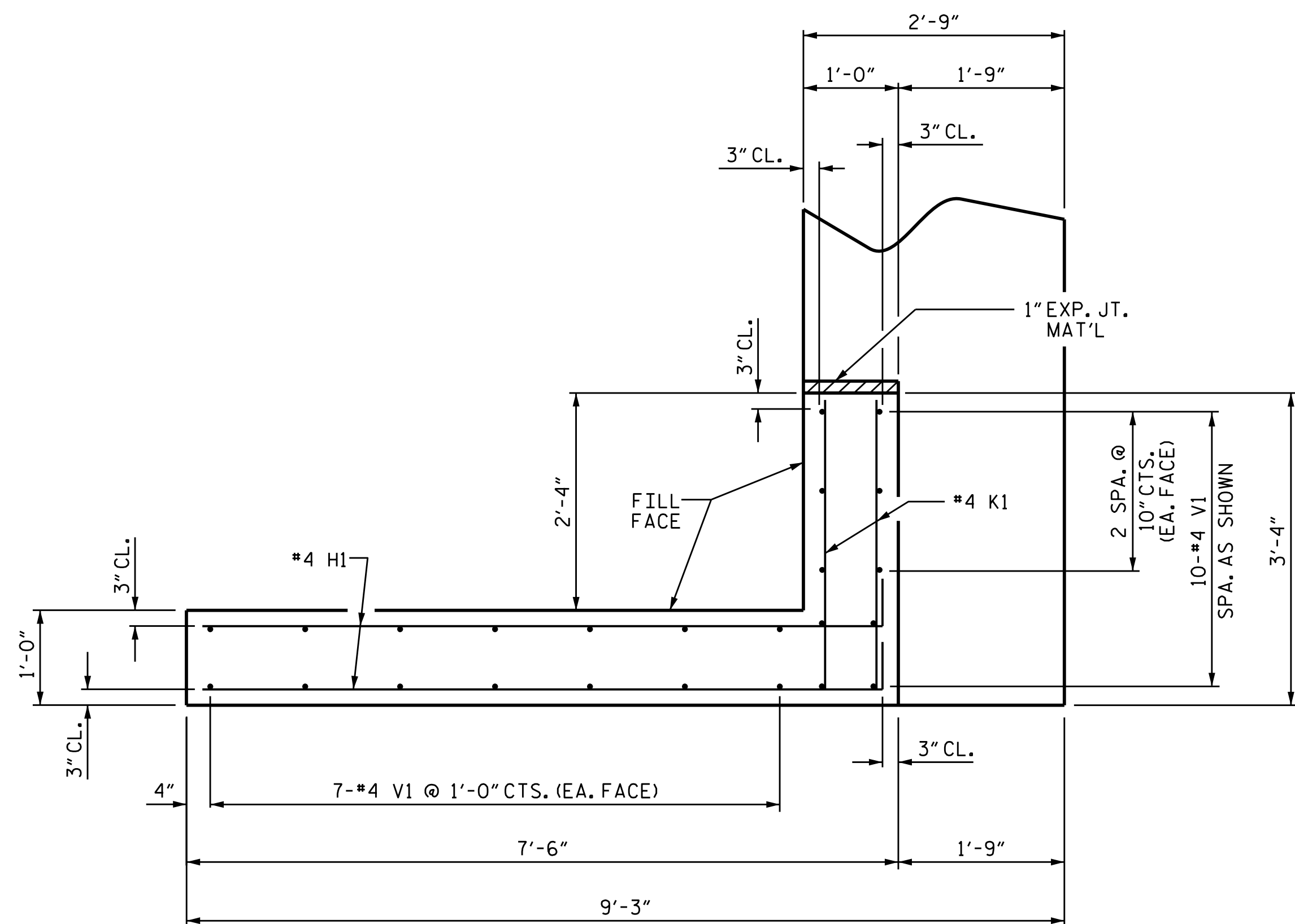
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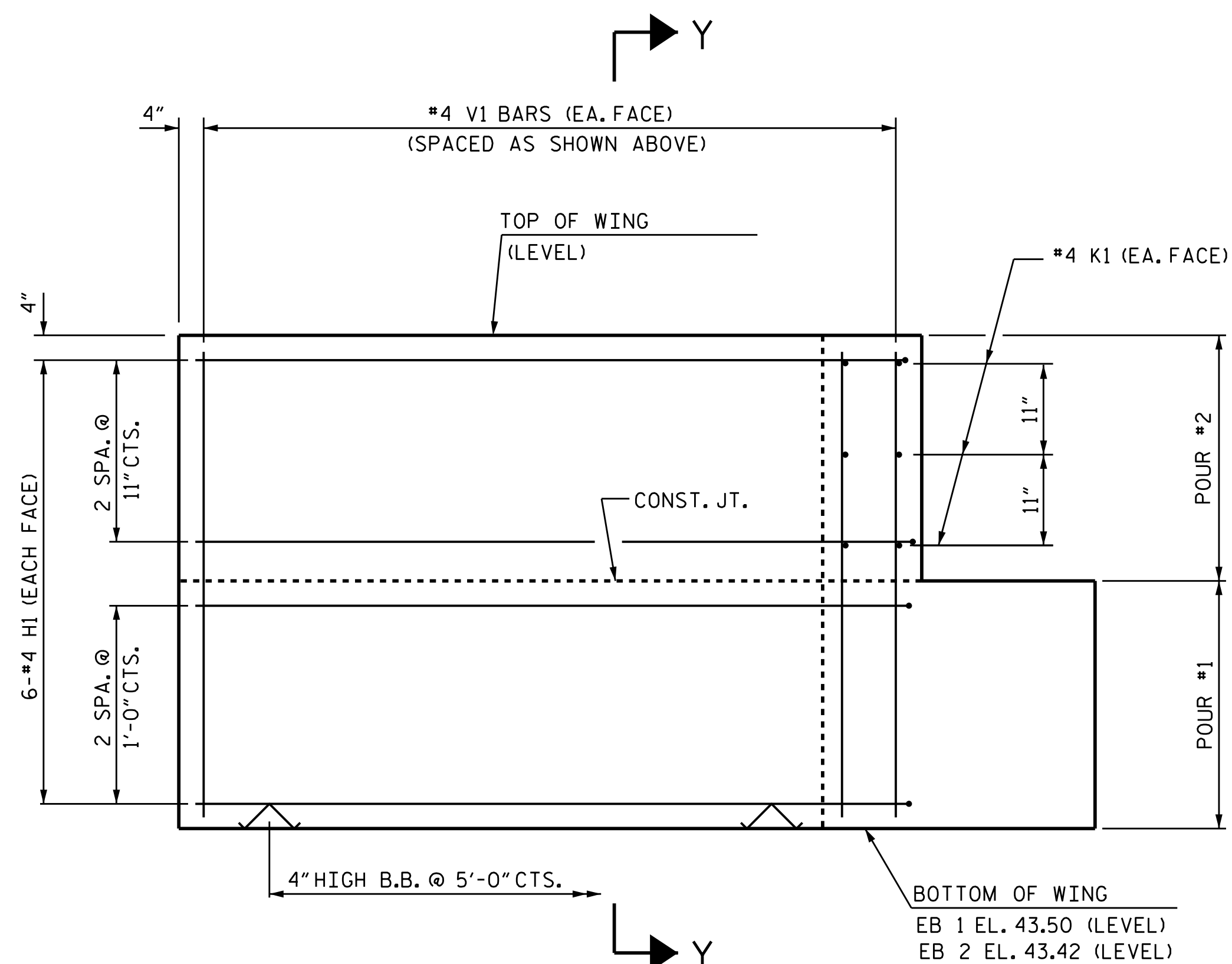
PLAN OF WING (W1)



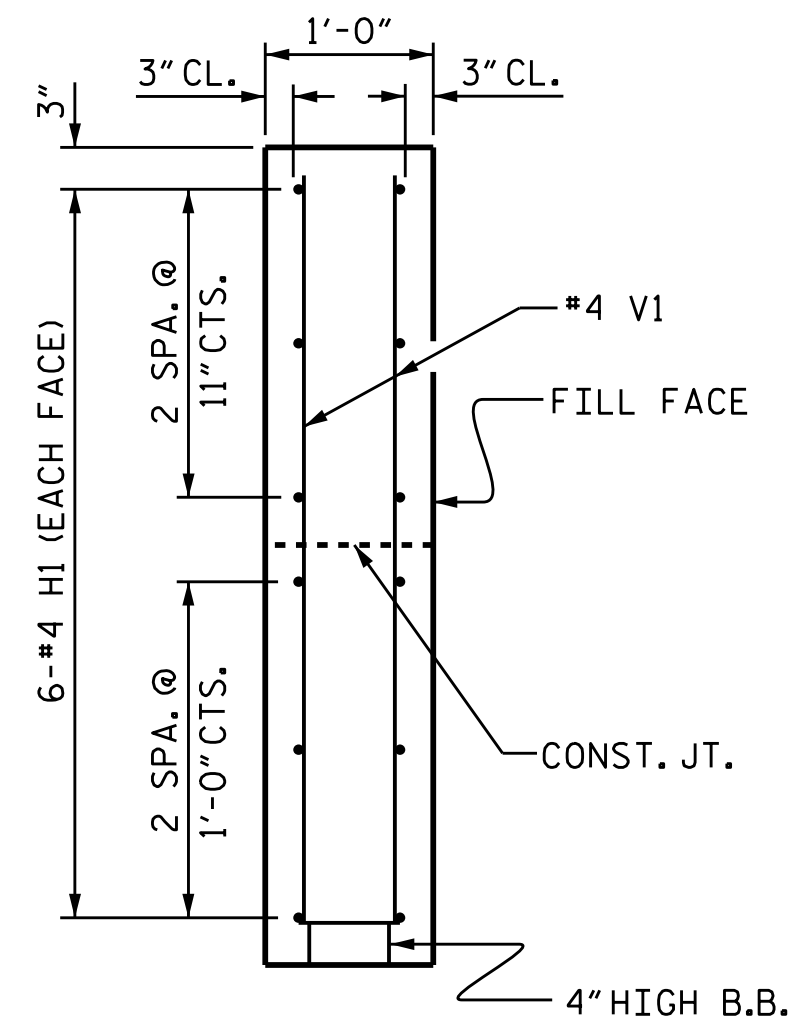
ELEVATION OF WING (W1)



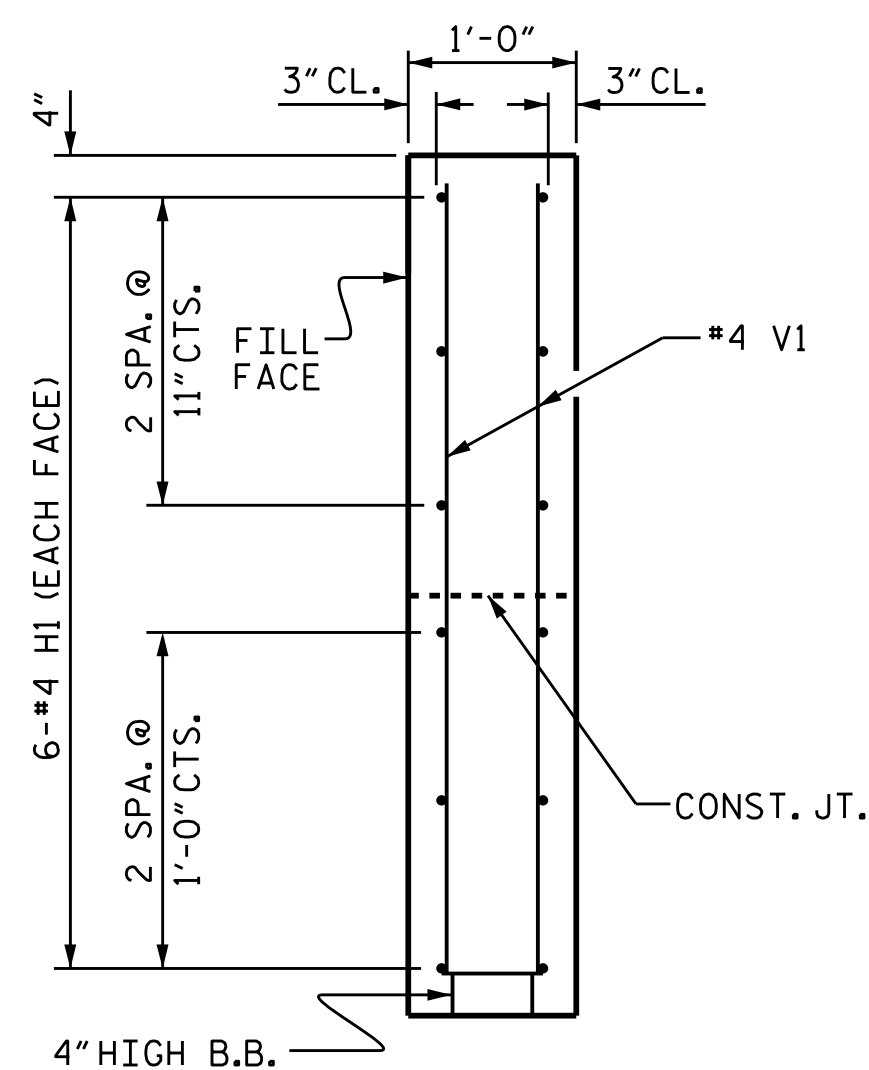
PLAN OF WING (W2)



ELEVATION OF WING (W2)



SECTION X-X



SECTION Y-Y

PROJECT NO. BP6-R013

COLUMBUS COUNTY

STATION: 27+79.50 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT
WING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S2-15 TOTAL SHEETS 20
2			4			

STD. NO. EB_33_90S

DESIGNED BY:	<u>P. GALLAGHER</u>	DATE :	<u>DEC 2024</u>
DRAWN BY:	<u>D. KULKARNI</u>	DATE :	<u>DEC 2024</u>
CHECKED BY:	<u>P. GALLAGHER</u>	DATE :	<u>DEC 2024</u>
DESIGN ENGINEER OF RECORD:	<u>E. LAWES</u>	DATE :	<u>DEC 2024</u>

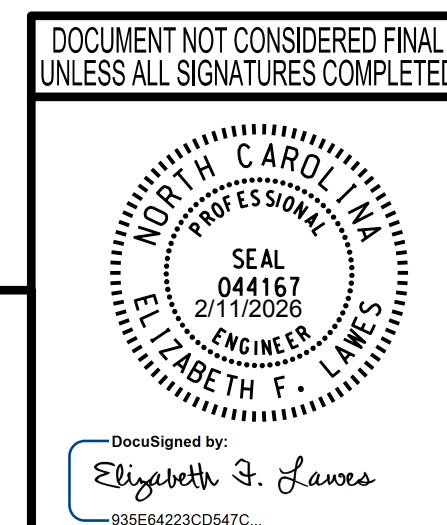
DRAWN BY : DGE	02/10	REV. 4/15	MAA/TMG
CHECKED BY : MKT	02/10		

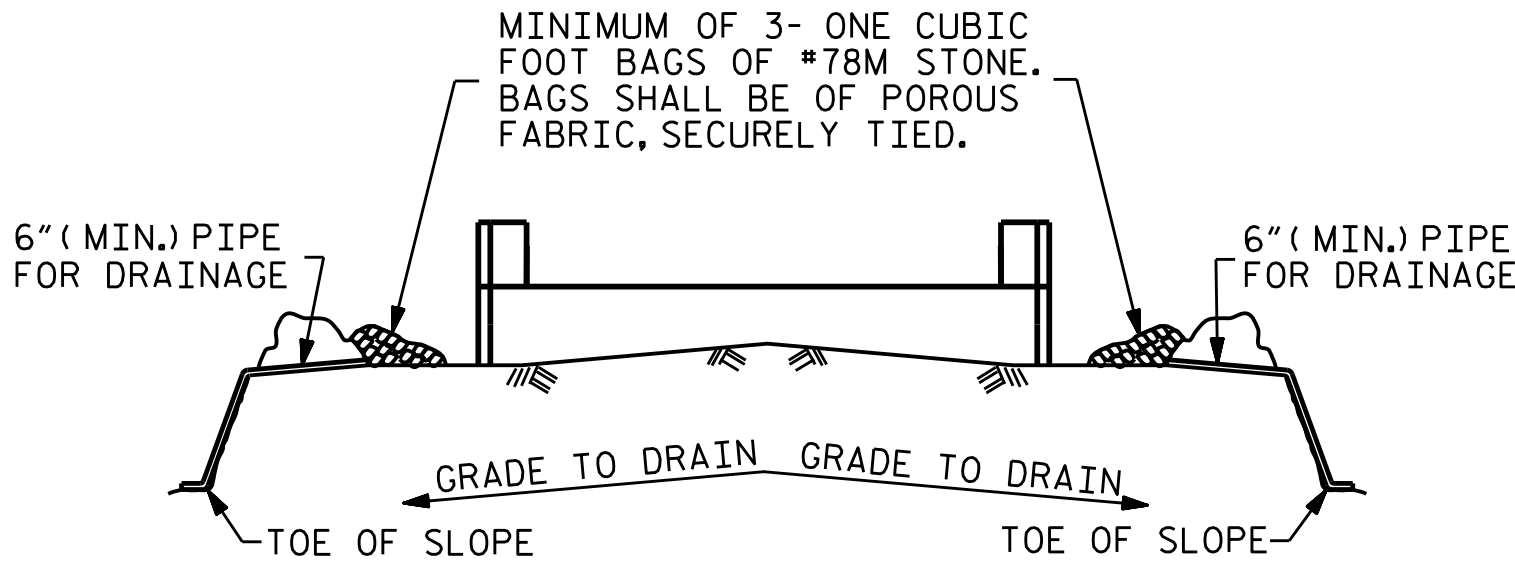
WING DETAILS



WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040

LICENSE NO. F-0165



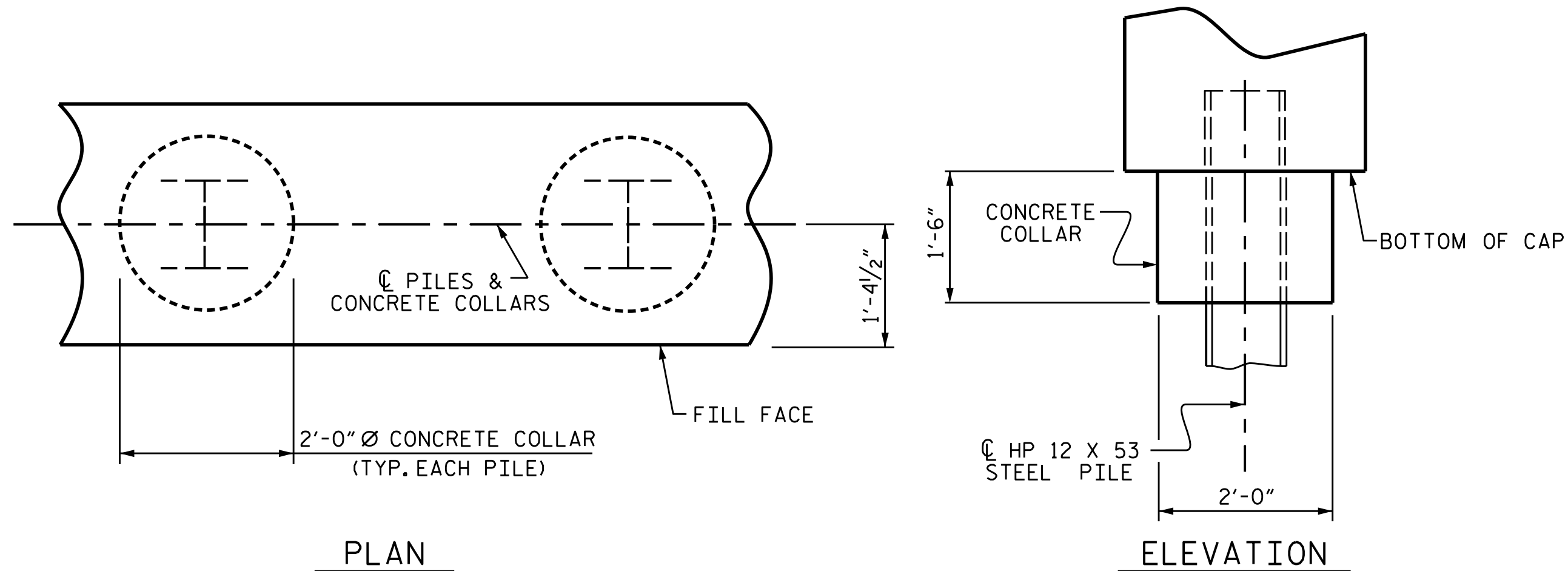


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

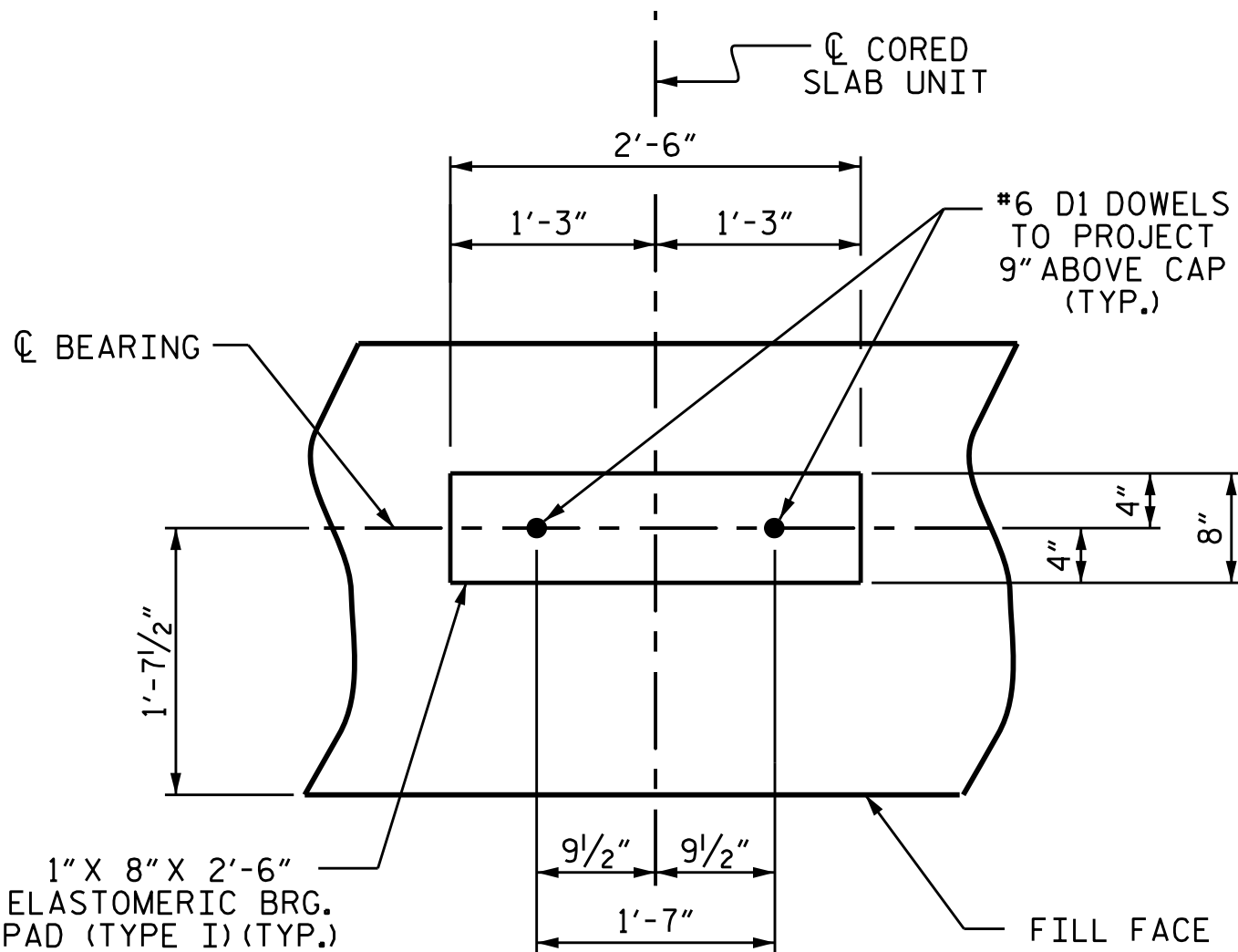
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



CORROSION PROTECTION FOR STEEL PILES DETAIL

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

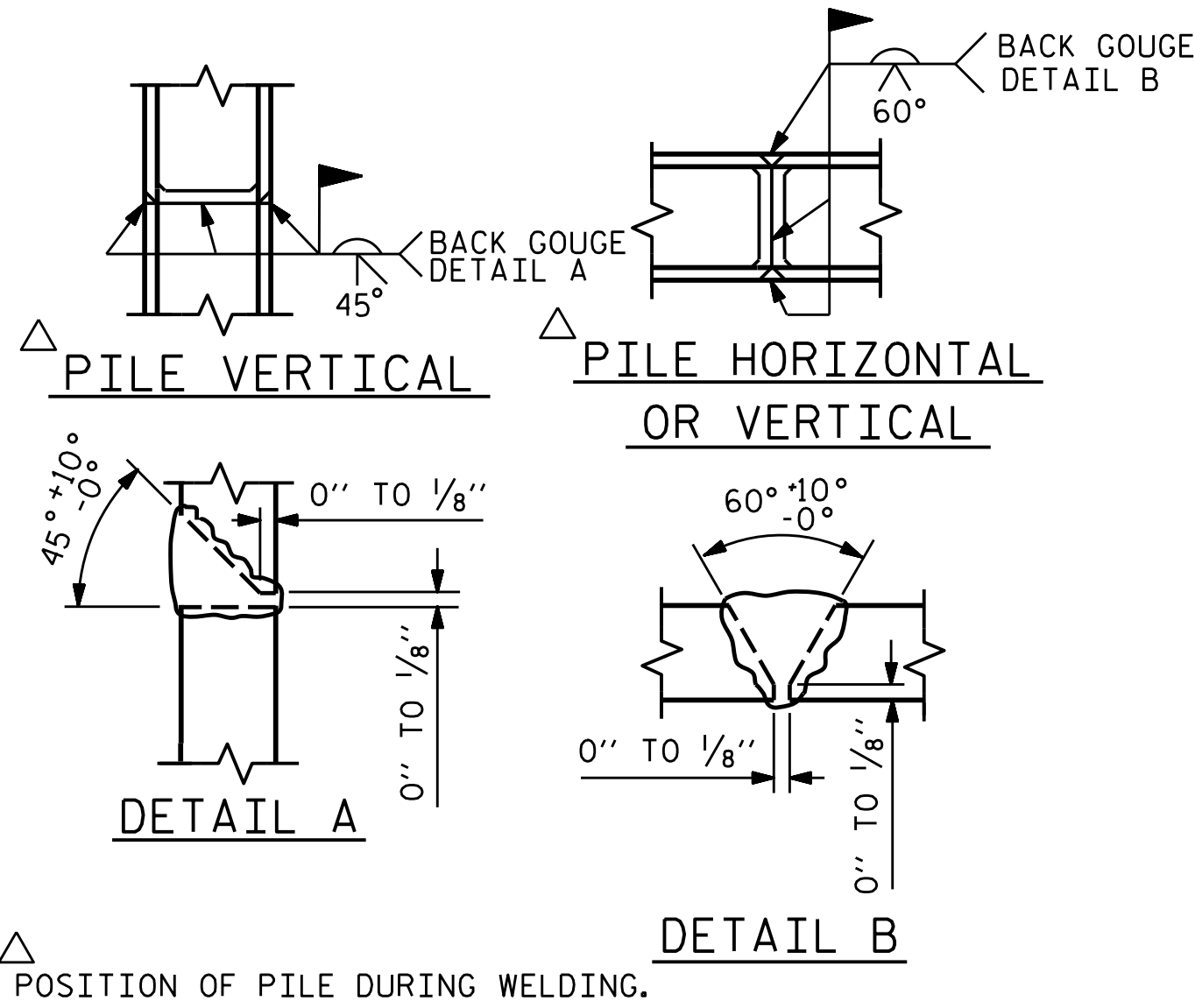


DESIGNED BY: P. GALLAGHER DATE: DEC 2024
DRAWN BY: D. KULKARNI DATE: DEC 2024
CHECKED BY: P. GALLAGHER DATE: DEC 2024
DESIGN ENGINEER OF RECORD: E. LAWES DATE: DEC 2024

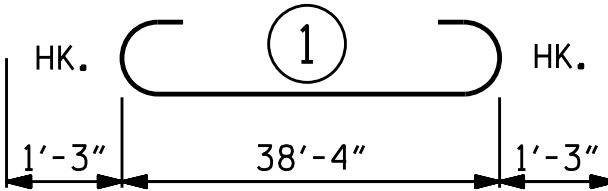
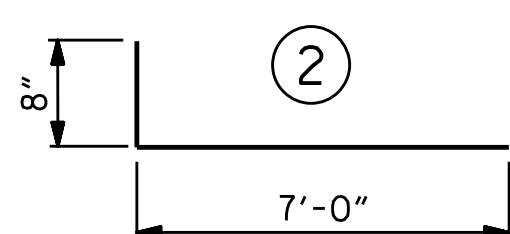
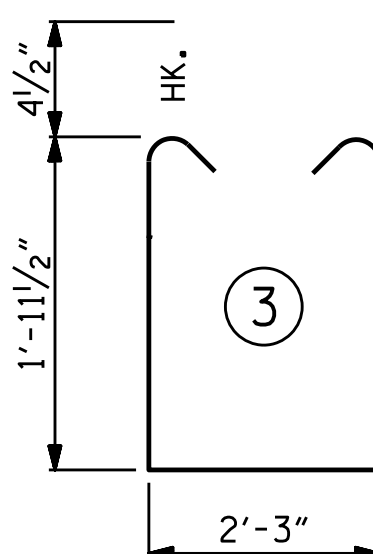
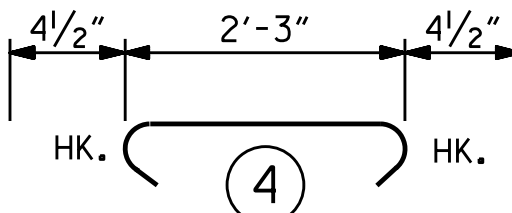
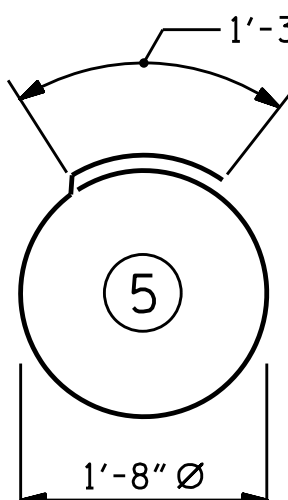
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CHECKED BY: MKT 01/10

REV. 4/17 MAA/THC

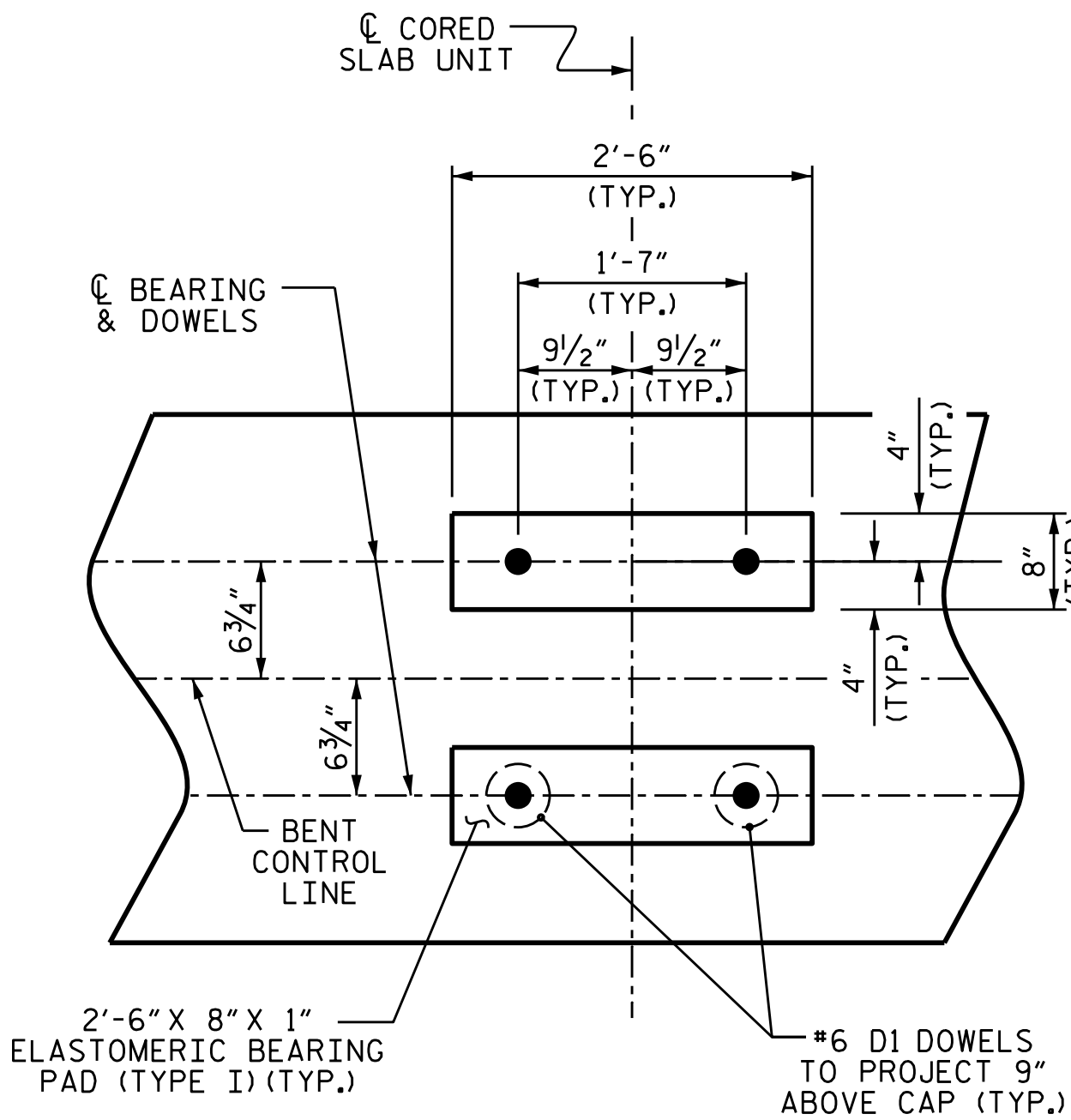
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



PILE SPLICE DETAILS

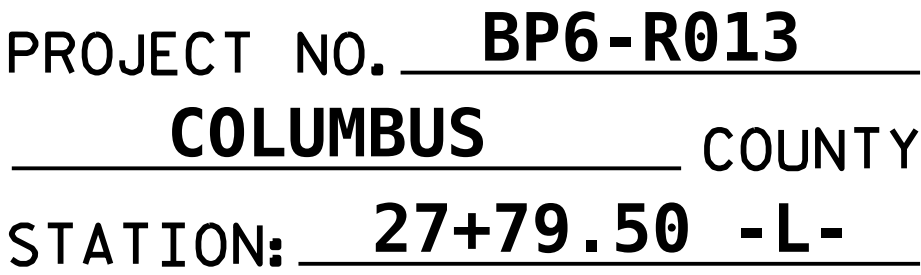
BAR TYPES			BILL OF MATERIAL FOR ONE END BENT					
								
								
								
ALL BAR DIMENSIONS ARE OUT TO OUT.								
END BENT No. 1			END BENT No. 2					
HP 12 X 53 STEEL PILES			HP 12 X 53 STEEL PILES					
NO: 7 LIN. FT.= 777			NO: 7 LIN. FT.= 672					
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 7			PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 7					

* EPOXY COATED REINFORCING STEEL						2,077 LBS.
CLASS AA CONCRETE BREAKDOWN (FOR ONE END BENT)						
POUR #1		CAP, LOWER PART OF WINGS & COLLARS				12.4 C.Y.
POUR #2		UPPER PART OF WINGS				1.8 C.Y.
TOTAL CLASS AA CONCRETE						14.2 C.Y.



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)



SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 1

REVISIONS						SHEET NO. S2-17
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 20
2			4			

STD. NO. 14" HP_BT_33_90S_<60

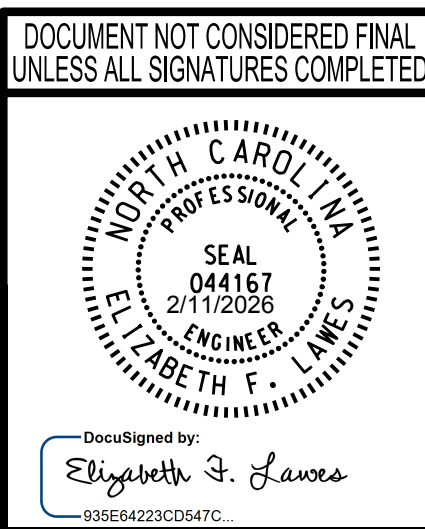
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CHECKED BY : MKT 05/10		

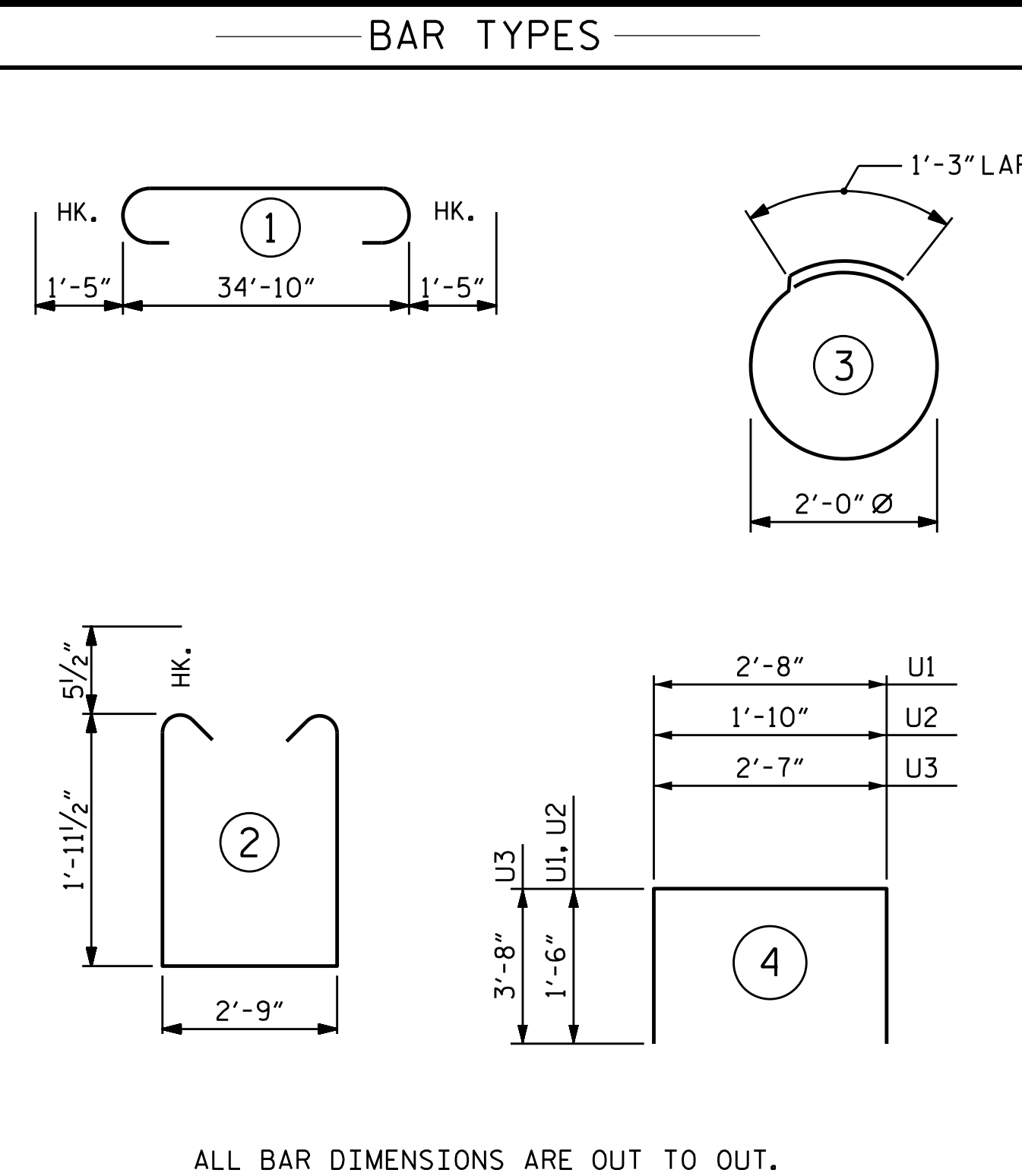
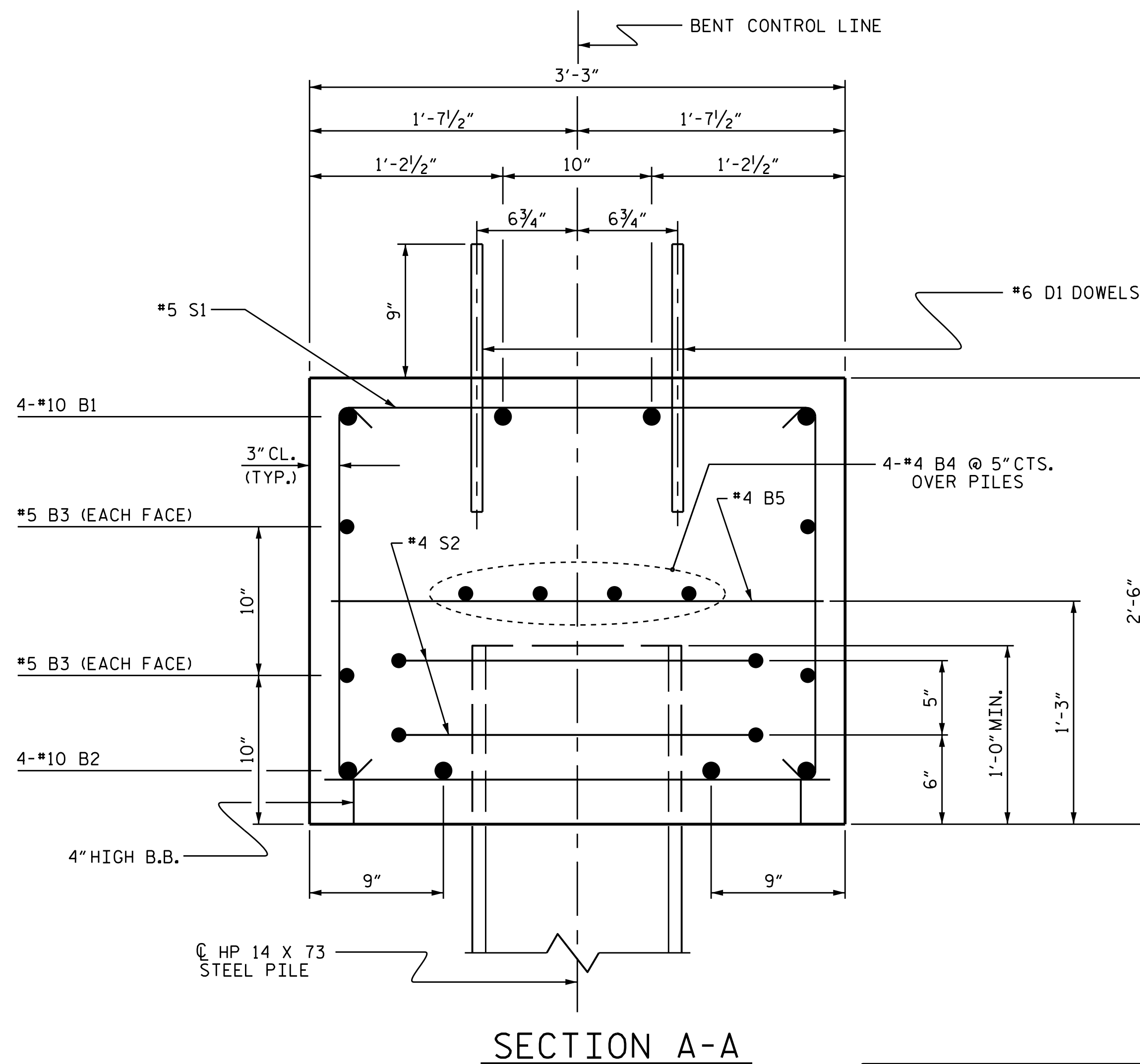
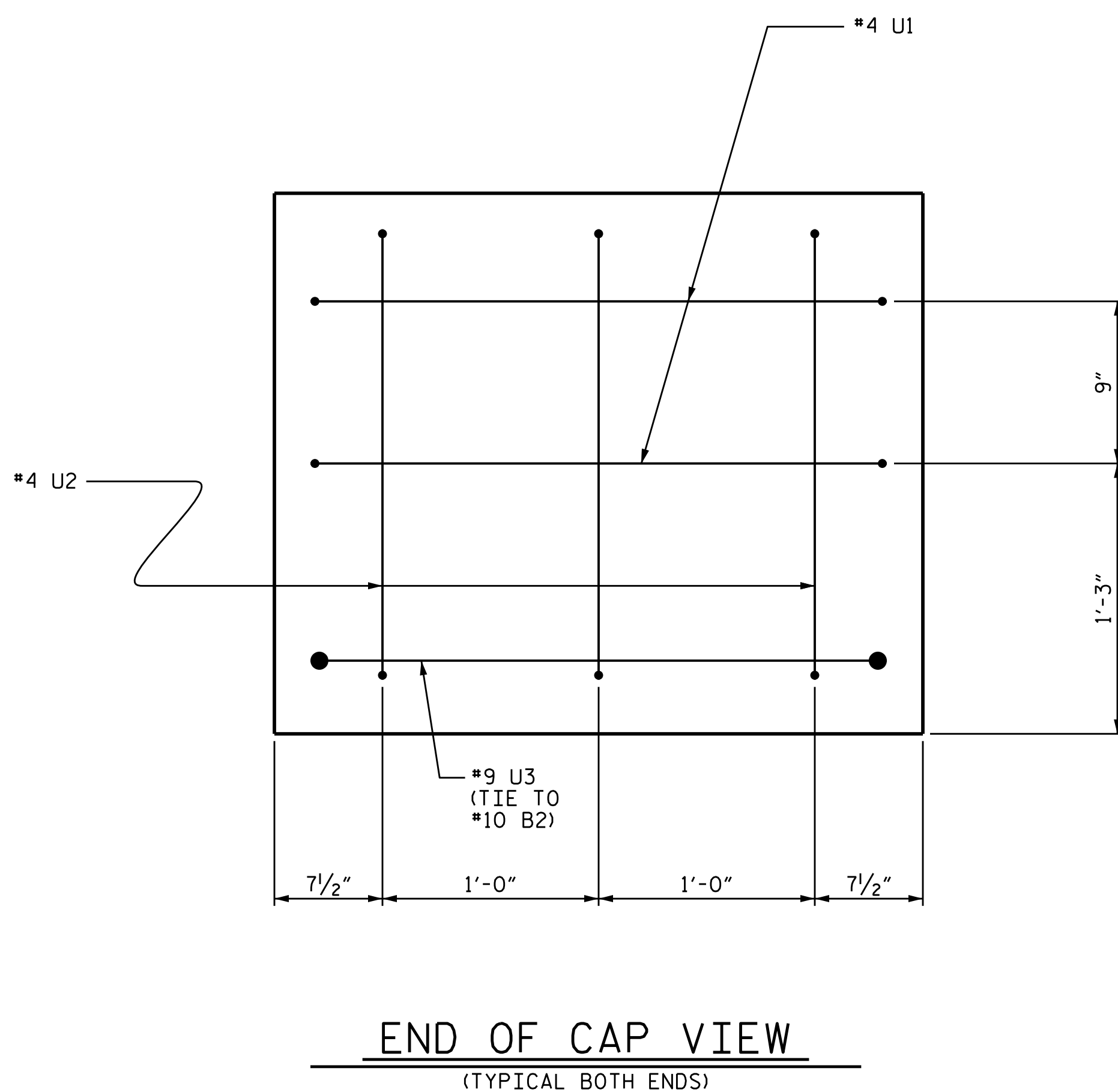
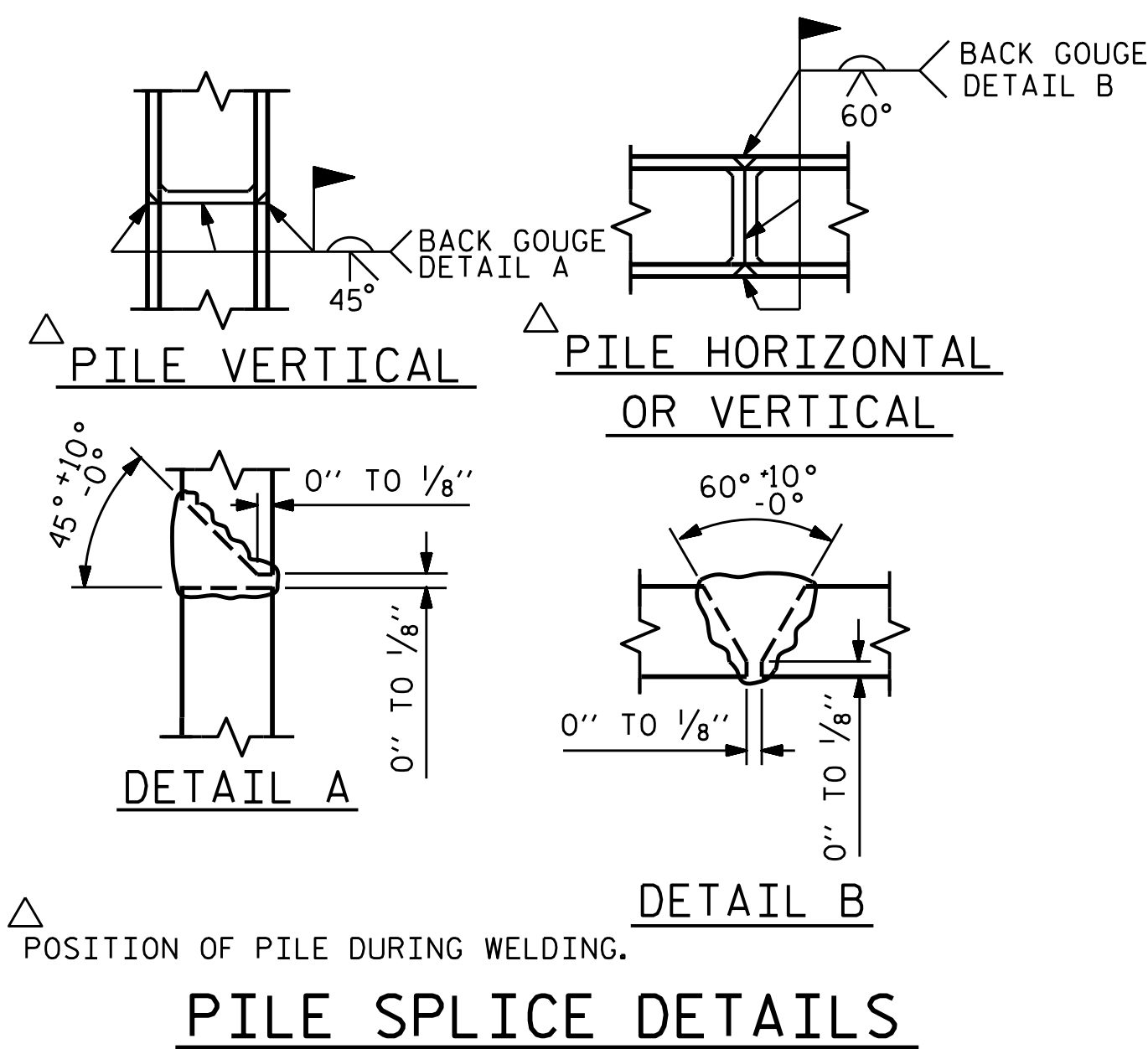
2/9/2026
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USFL722989



**WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040**

LICENSE NO. F-0165





BILL OF MATERIAL					
FOR ONE BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	4	*10	1	37'-8"	648
*B2	4	*10	STR	35'-0"	602
*B3	4	*5	STR	35'-0"	146
*B4	8	*4	STR	18'-9"	100
*B5	9	*4	STR	2'-9"	17
*D1	44	*6	STR	1'-6"	99
*S1	39	*5	2	7'-7"	308
*S2	16	*4	3	7'-7"	81
*U1	4	*4	4	5'-8"	15
*U2	6	*4	4	4'-10"	19
*U3	2	*9	4	9'-11"	67
* EPOXY COATED REINFORCING STEEL					2,104 LBS
CLASS AA CONCRETE BREAKDOWN (FOR ONE BENT)					
TOTAL CLASS AA CONCRETE					10.7 C.Y.
HP 14 X 73 STEEL PILES (FOR ONE BENT)					
No. 8				LIN. FT.	928
PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 STEEL PILES (FOR ONE BENT)					
NO: 8					

PROJECT NO. **BP6-R013**
COLUMBUS COUNTY
 STATION: **27+79.50 -L-**

COLUMBUS COUNTY

STATION: 27+79.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DEPARTMENT OF TRANSPORTATION
RALEIGH

RALEIGH

SUBSTRUCTURE
BENT No. 1

BENT No. 1

REVISIONS						SHEET NO. S2-18
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 20
2			4			

DESIGNED BY:	<u>P. GALLAGHER</u>	DATE :	<u>DEC 2024</u>
DRAWN BY:	<u>D. KULKARNI</u>	DATE :	<u>DEC 2024</u>
CHECKED BY:	<u>P. GALLAGHER</u>	DATE :	<u>DEC 2024</u>
DESIGN ENGINEER OF RECORD:	<u>E. LAWES</u>	DATE :	<u>DEC 2024</u>

DATE : DEC 2024

DRAWN BY: D. KULKARNI DATE: DEC 2024

DATE : DEC 2024

CHECKED BY: P. GALLAGHER DATE: DEC 2024

OF RECORD: E. LAWES DATE : DEC 2024

DRAWN BY : DGE 05/10

CHECKED BY : MKT 05/10

1. *Journal of the American Medical Association*, 2000; 284: 2689-2694.

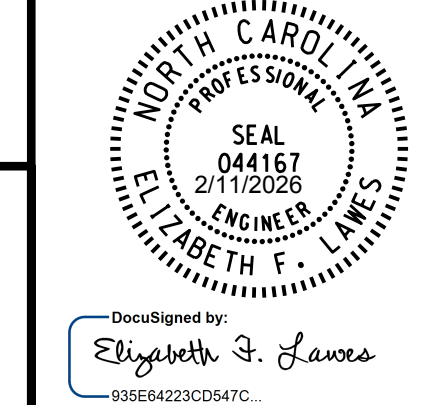
2/9/2026

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USF 722889

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USEI 722989

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETE

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DocuSigned by

Elizabeth F. Lawe

935E64223CD547

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434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040

LICENSE NO. F-0165

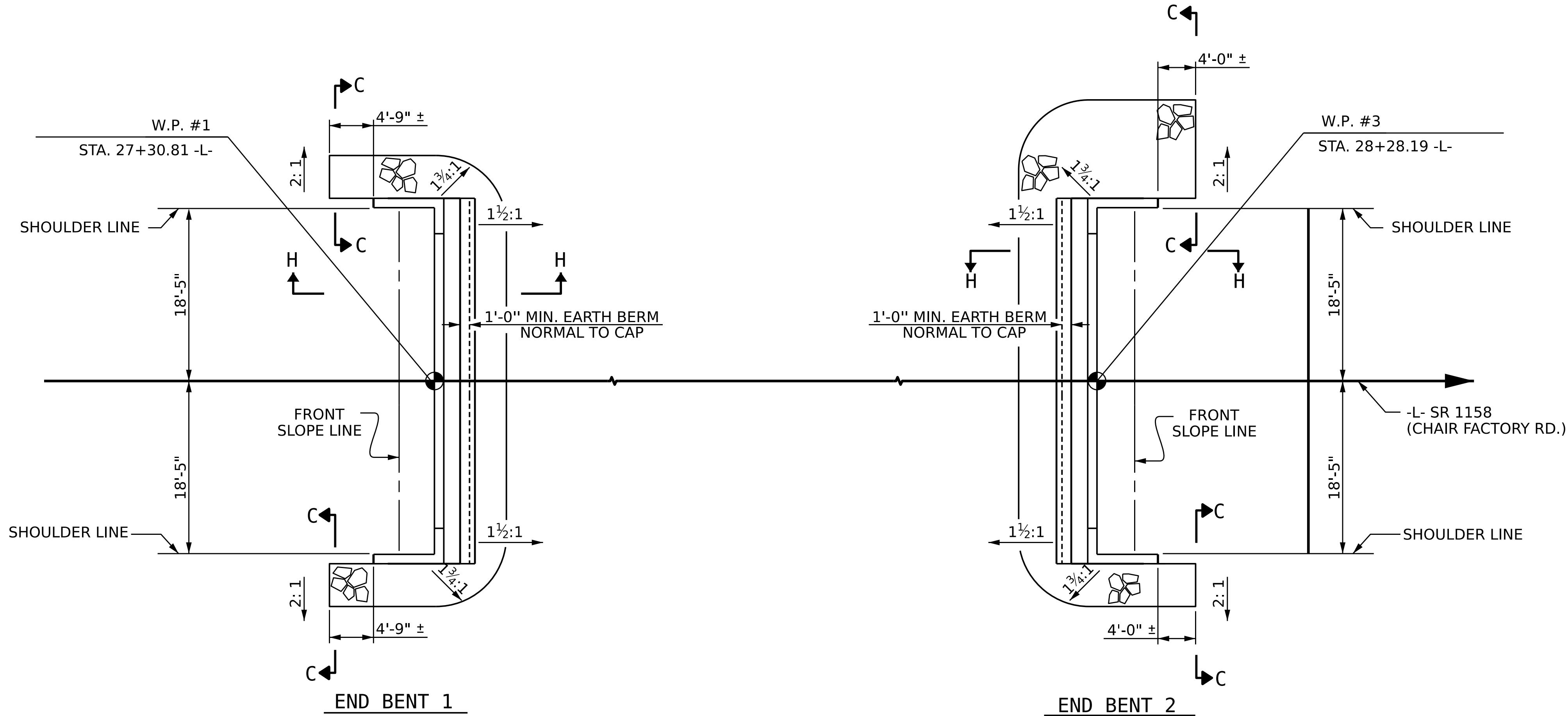
WSP USA Inc.

434 FAYETTEVILLE STREET
SUITE 1500

RALEIGH, NC 27601

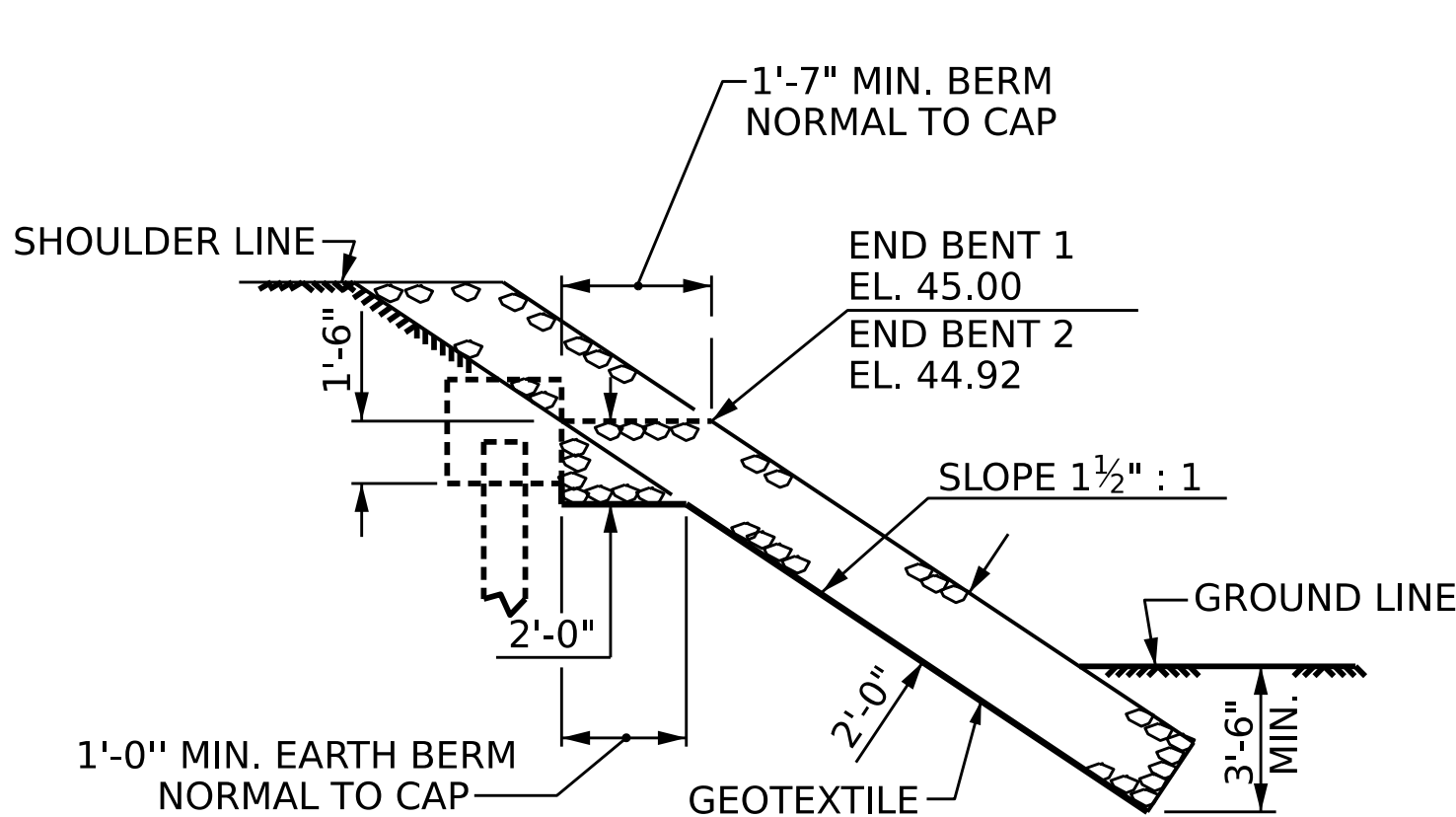
TEL: 1.919.836.4040

LICENSE NO. F-0165

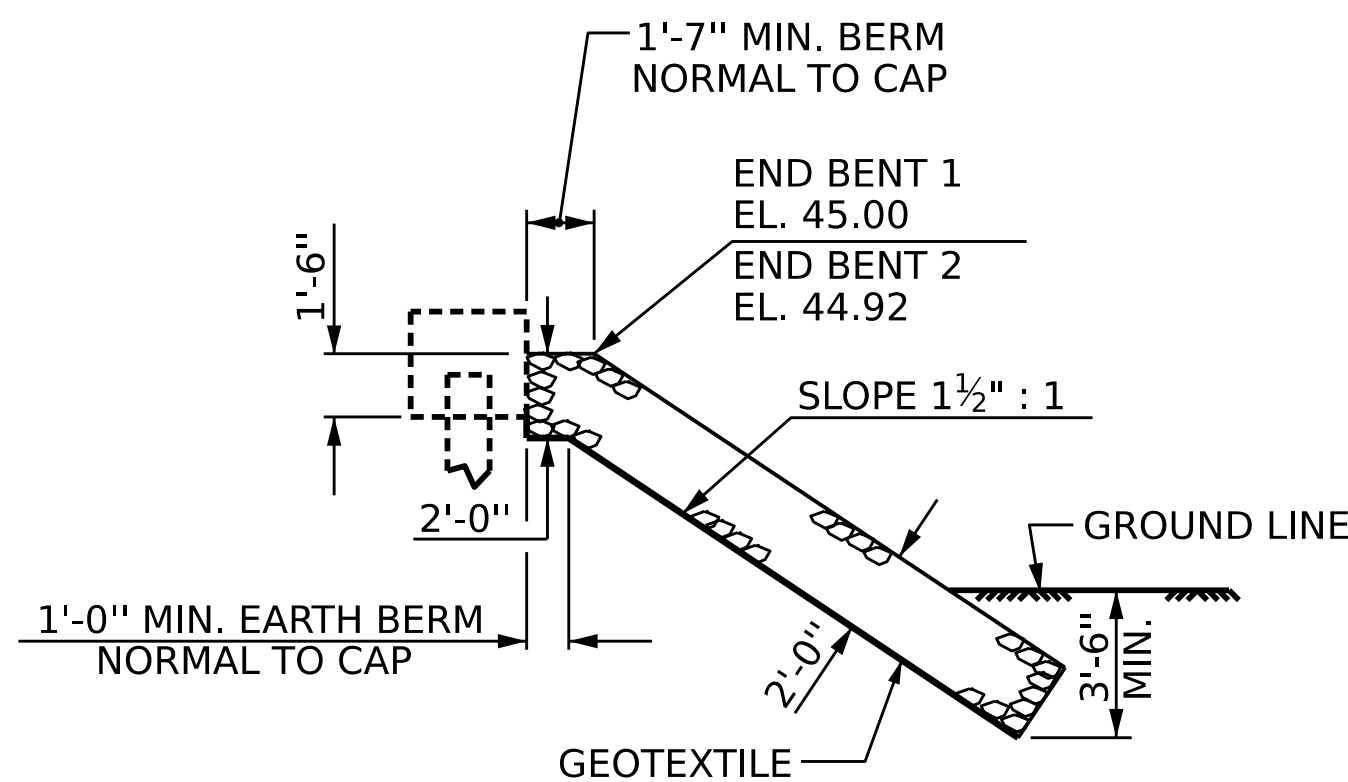


PLAN

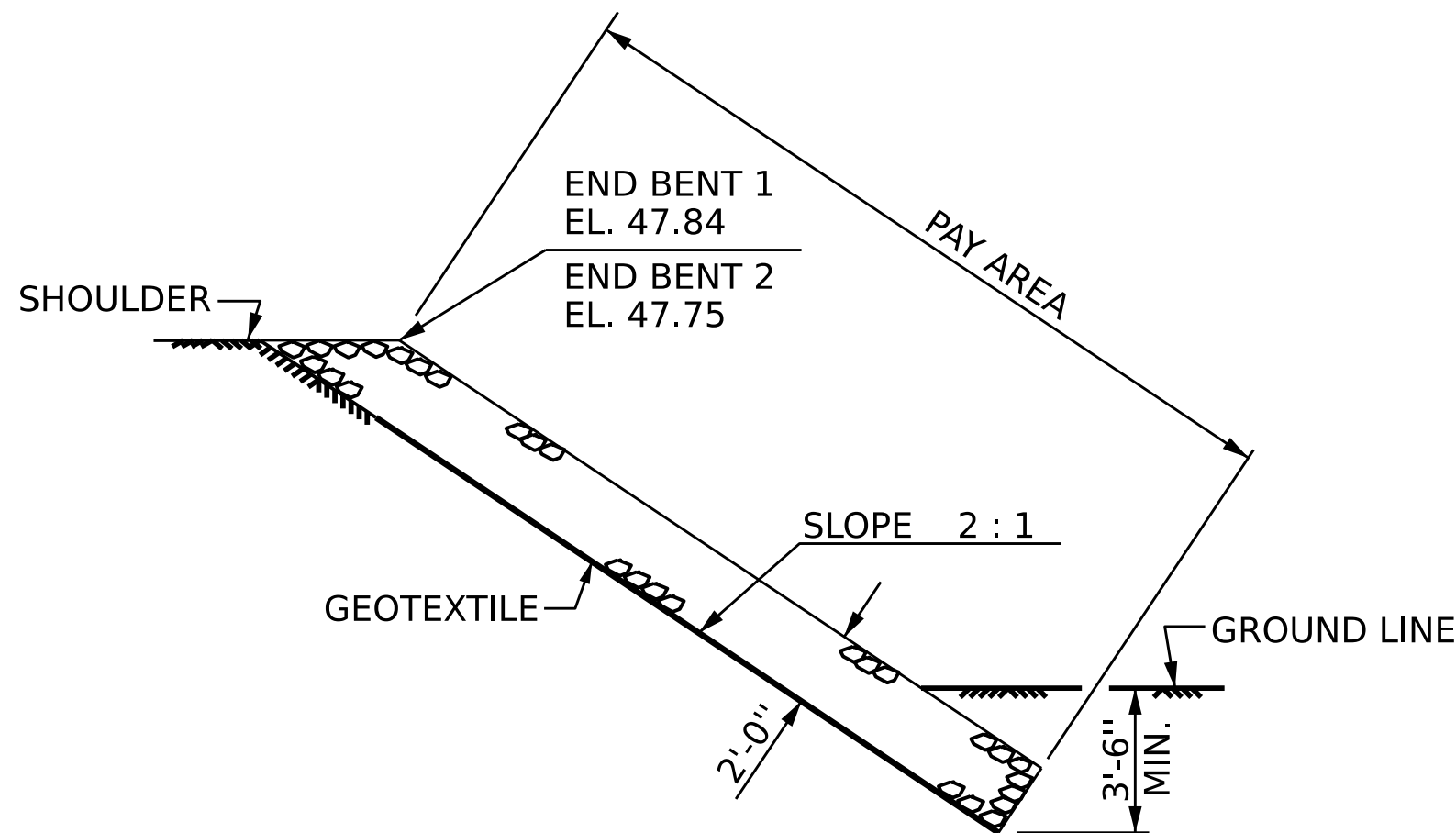
ESTIMATED QUANTITIES		
BRIDGE @ STA. 27+79.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	69	76
END BENT 2	87	96



SECTION H-H



SECTION C-C



SECTION C-C

PROJECT NO. **BP6-R013**
COLUMBUS COUNTY
STATION: **27+79.50 -L-**

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

RIP RAP DETAILS

REVISIONS				SHEET NO. S2-19
NO.	BY:	DATE:	NO.	
1			3	TOTAL SHEETS
2			4	20

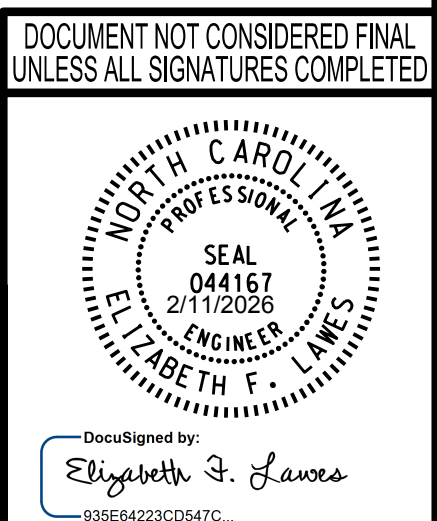
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DRAWN BY: D. KULKARNI DATE : DEC 2024
CHECKED BY: P. GALLAGHER DATE : DEC 2024
DESIGN ENGINEER OF RECORD: E. LAWES DATE : DEC 2024

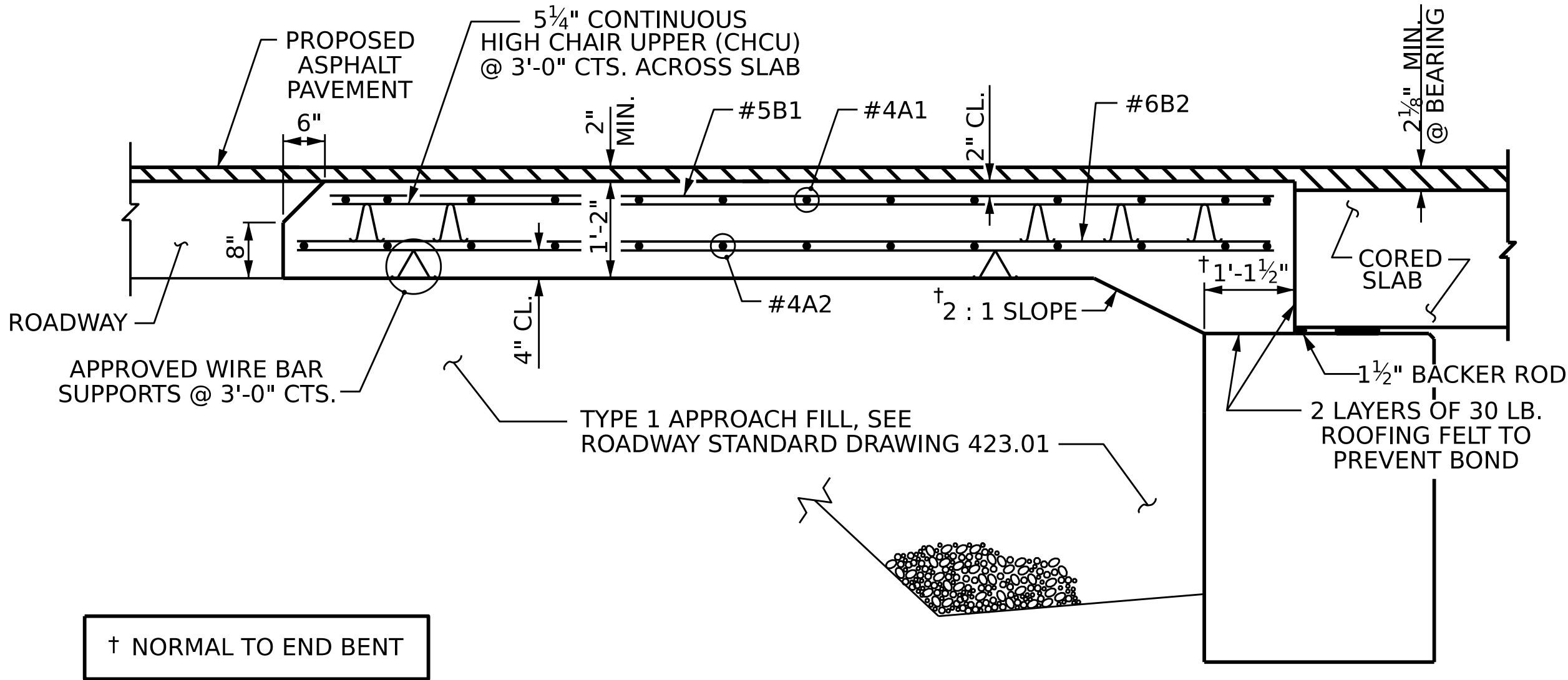
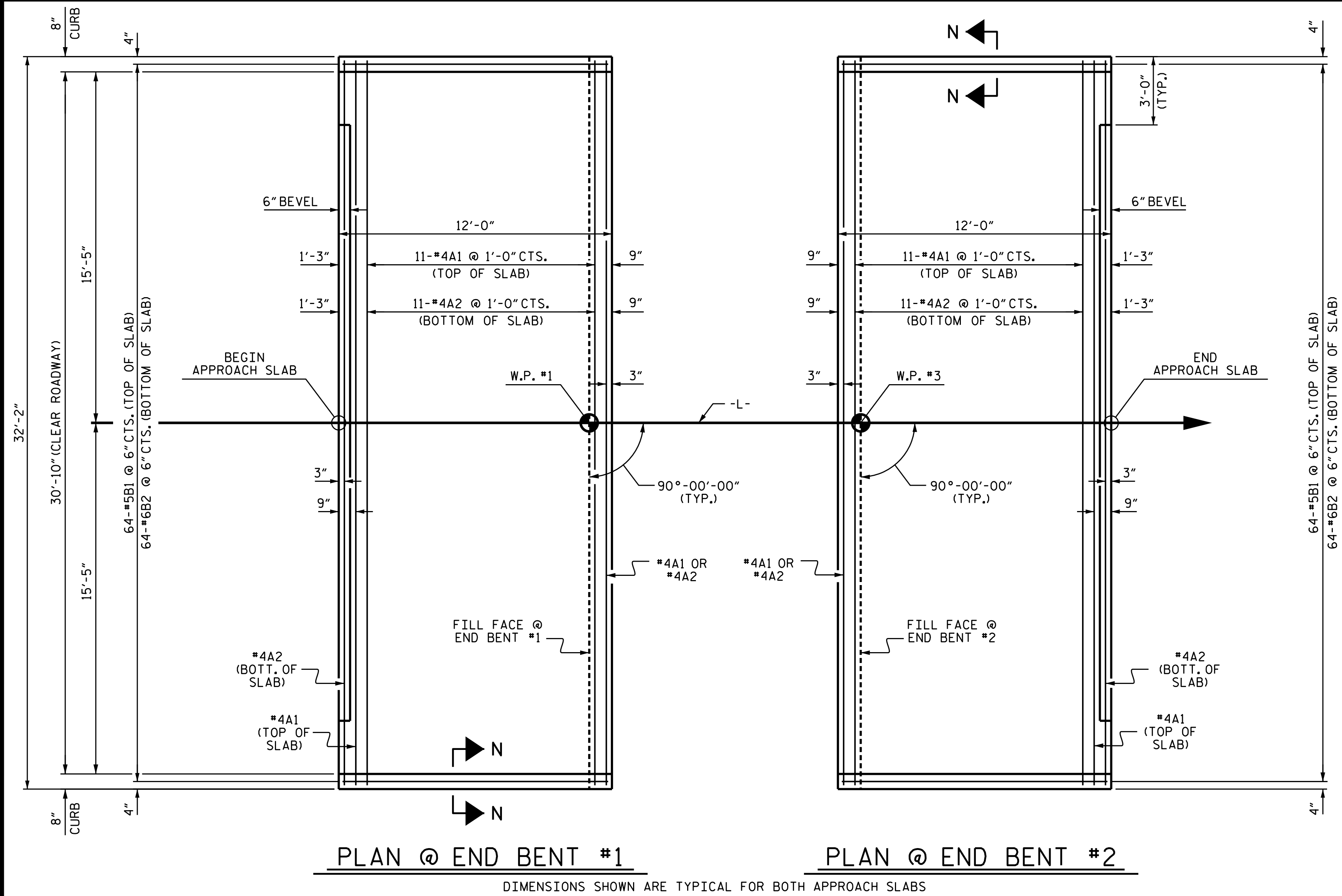
DRAWN BY : REK 1/84
CHECKED BY : RDU 1/84
REV. 10/1/II MAA/GM
REV. 12/21/II MAA/GM
REV. 12/17 MAA/THC

2/9/2026
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USEL722989

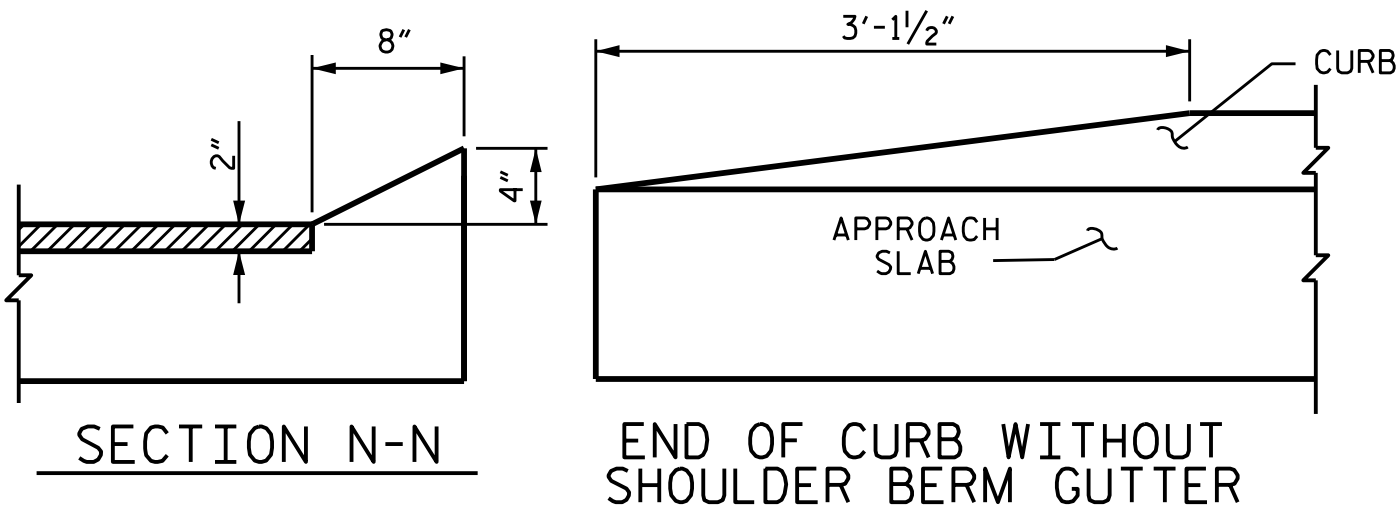


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SUITE 1500
RALEIGH, NC 27601
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SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"



NOTES

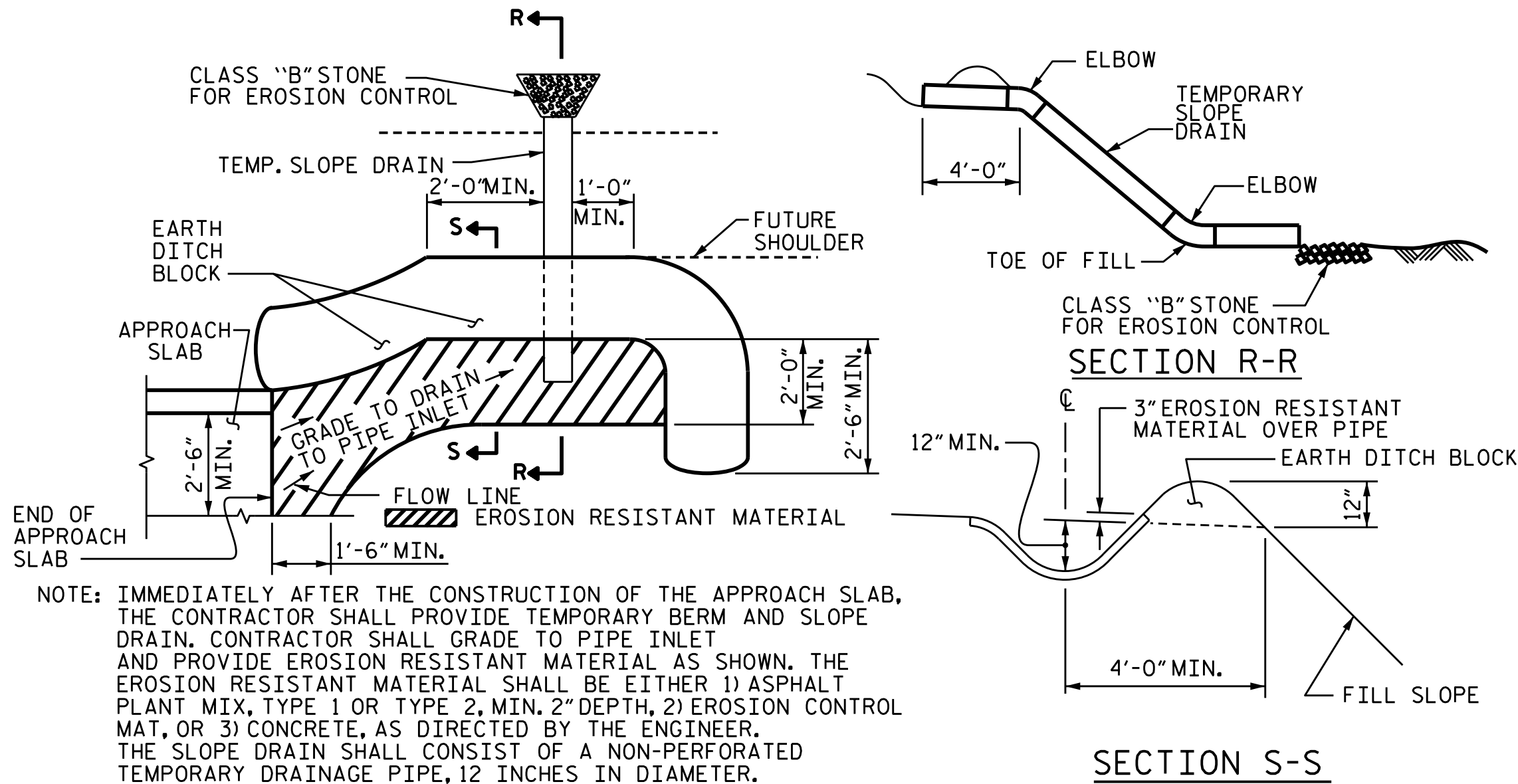
FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.

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



PLAN VIEW

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

PROJECT NO. **BP6-R013**

COLUMBUS COUNTY

STATION: **27+79.50 -L-**

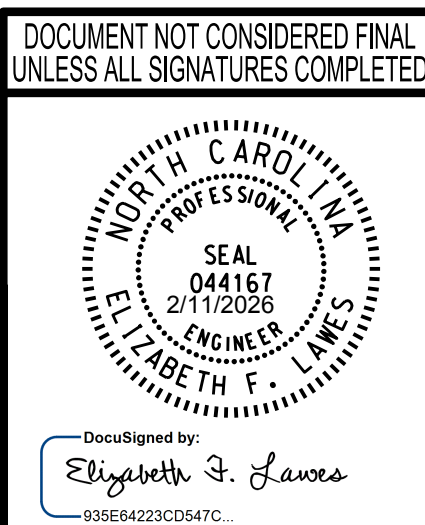
DESIGNED BY: P. GALLAGHER DATE : DEC 2024
DRAWN BY: D. KULKARNI DATE : DEC 2024
CHECKED BY: P. GALLAGHER DATE : DEC 2024
DESIGN ENGINEER OF RECORD: E. LAWES DATE : DEC 2024

DRAWN BY : SHS/MAA 5-09 REV. 12-17 MAA/THC
CHECKED BY : BCH 5-09 REV. 08-19 BNB/THC

2/9/2026
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wsp

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434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH SLAB
FOR PRESTRESSED CONCRETE
CORED SLAB UNIT
(SUB-REGIONAL TIER)
90° SKEW

REVISIONS

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

SHEET NO.
S2-20
TOTAL SHEETS
20

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A ¼" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE ⅞" Ø SHEAR STUDS FOR THE ¾" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞" Ø STUDS FOR 4 - ¾" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞" Ø STUDS ALONG THE BEAM AS SHOWN FOR ¾" Ø STUDS BASED ON THE RATIO OF 3 - ⅞"Ø STUDS FOR 4 - ¾" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST ⅝" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY ⅛" OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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