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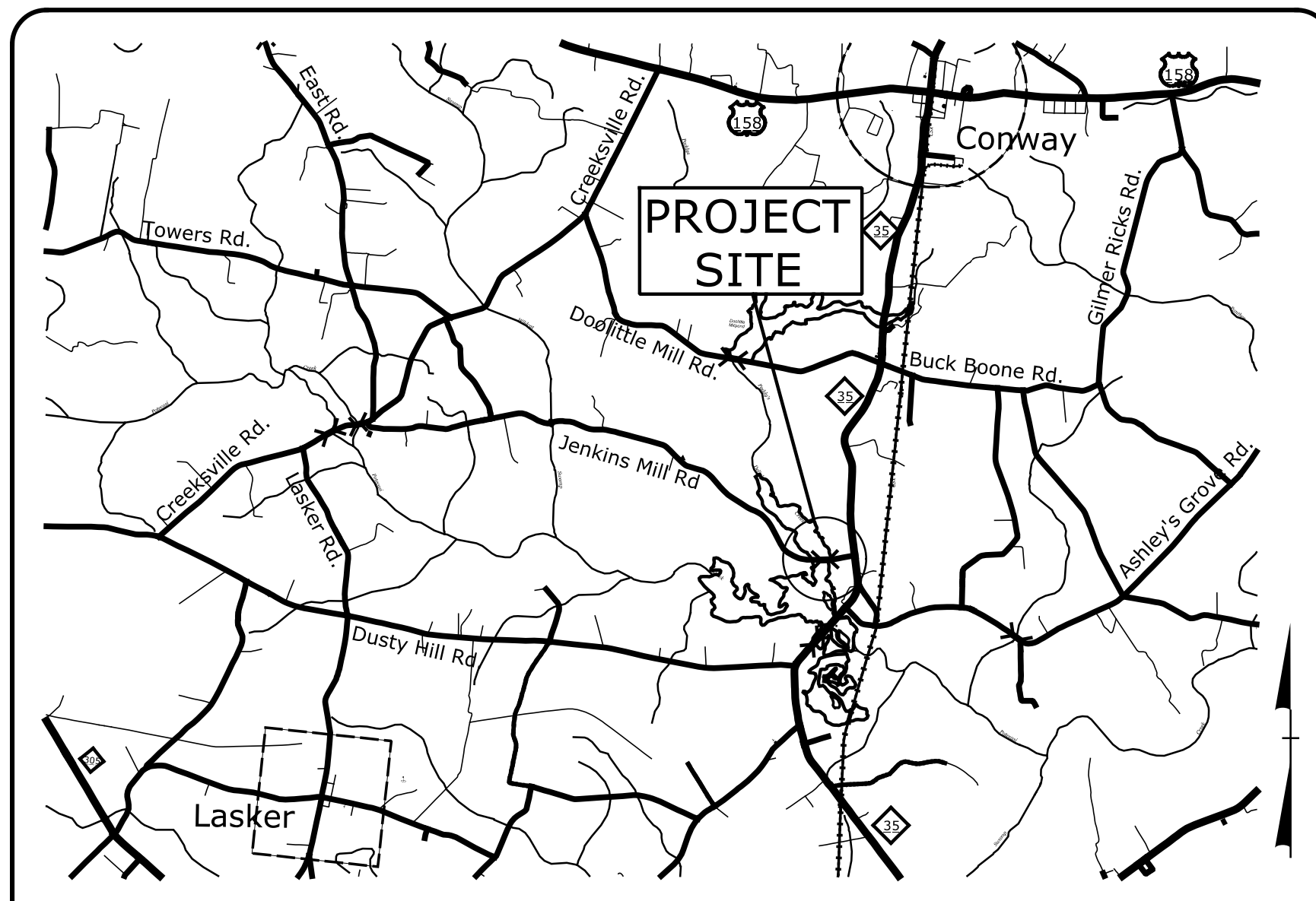
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09_08/2019

TIP PROJECT: BPI-R009

CONTRACT: DA00597

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



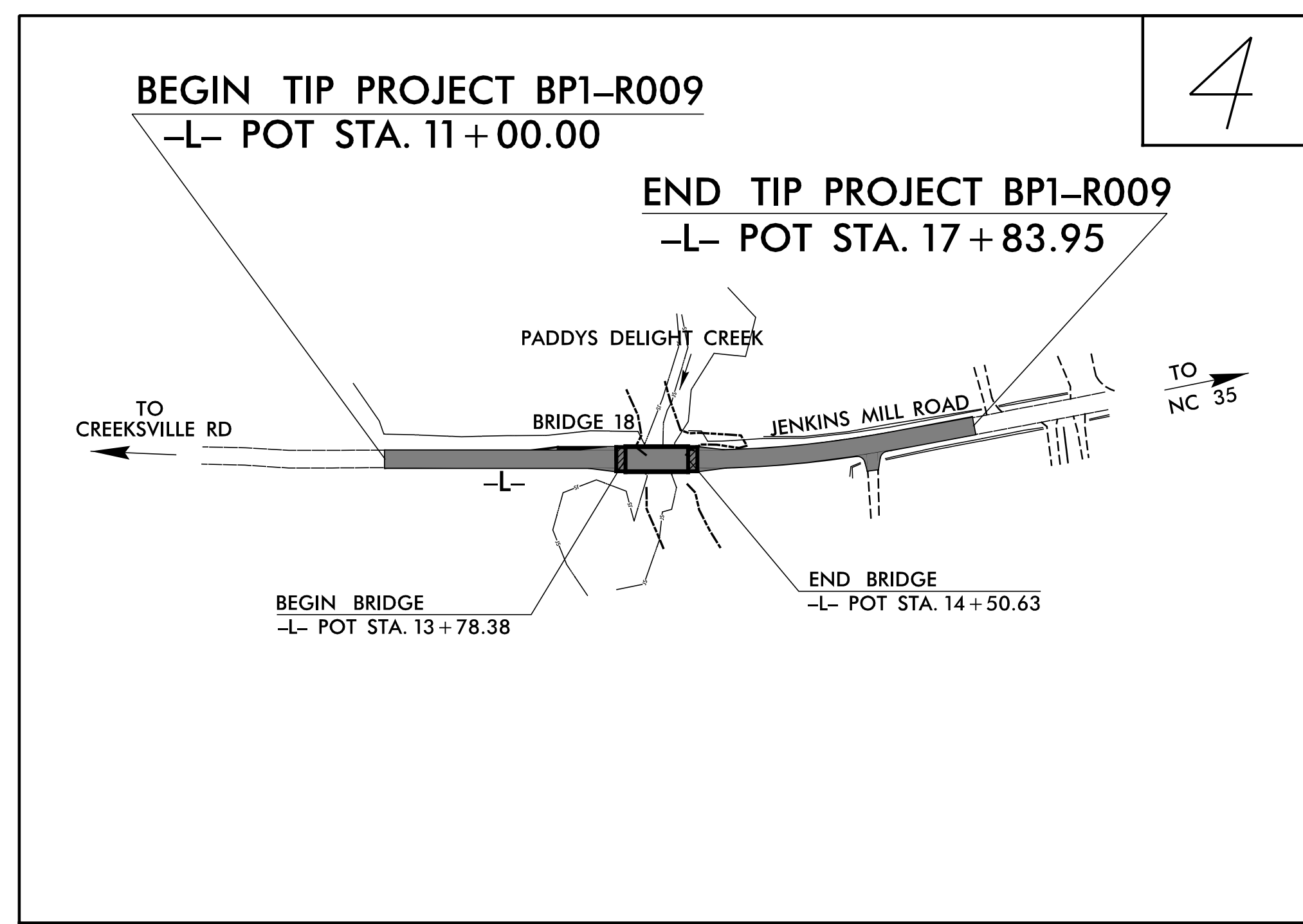
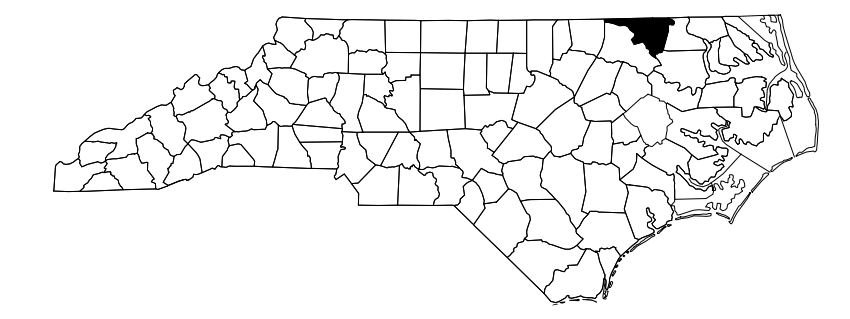
VICINITY MAP
NOT TO SCALE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

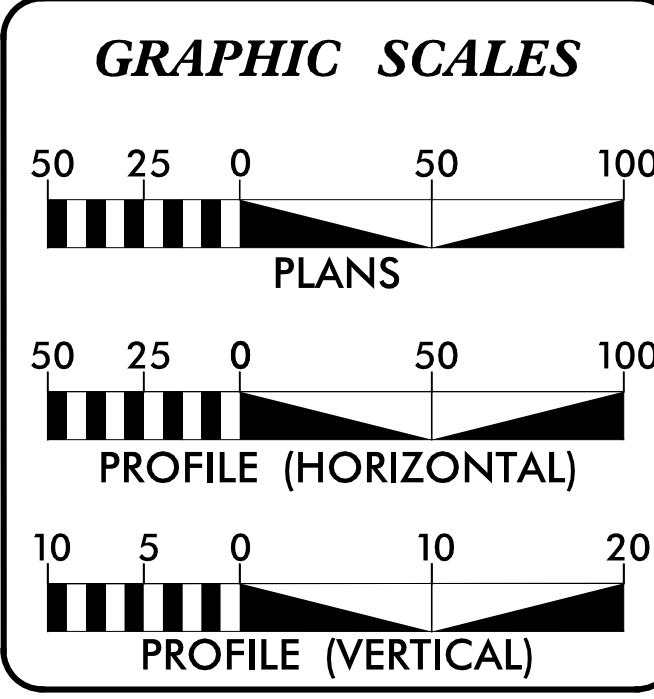
NORTHAMPTON COUNTY

**LOCATION: BRIDGE NO. 650018 OVER PADDYS DELIGHT CREEK
ON JENKINS MILL ROAD (SR 1510)**
TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BPI-R009	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BPI.R009.1	STATE FUNDED	PE	
BPI.R009.2	STATE FUNDED	RW&UTIL.	
BPI.R009.3	STATE FUNDED	CONSTRUCTION	



**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**



DESIGN DATA

AADT 2020 = 220
ADT 2022 = N/A

K = N/A %
D = N/A %
T = N/A % *
V = 40 MPH
FUNC CLASS = LOCAL

SUBREGIONAL TIER
DESIGN GUIDELINES

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT BPI-R009 = 0.116 MI.
LENGTH STRUCTURE TIP PROJECT BPI-R009 = 0.014 MI.
TOTAL LENGTH OF TIP PROJECT BPI-R009 = 0.130 MI.

Prepared for the North Carolina Department of Transportation
In the Office of:

940 Main Campus Drive, Suite 500
Raleigh, NC 27606
NC License No. C-3105

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
February 24, 2023

LETTING DATE:

NCDOT CONTACT

TIM GOINS, PE
PROJECT ENGINEER

MARK HUSSEY
PROJECT DESIGN ENGINEER

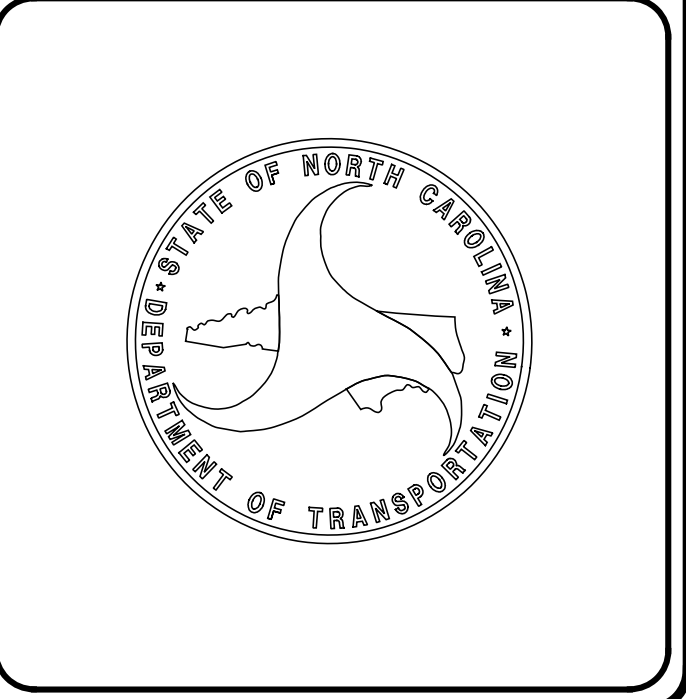
RYAN L. SHOOK
PROJECT ENGINEER-ROADWAY DESIGN


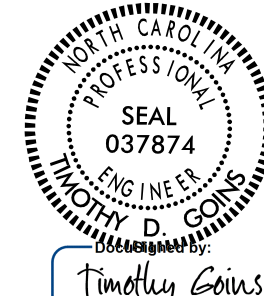
HYDRAULICS ENGINEER

DocuSigned by:
Miranda Salzer 12/13/2023
7CF95517C0F448E...
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

DocuSigned by:
Timothy Goins
000C7811F8E04F1...
SIGNATURE: P.E.



PROJECT REFERENCE NO. <i>BPI-R009</i>	SHEET NO. <i>1A</i>
Prepared by  940 Main Campus Drive, Suite 500 Raleigh, NC 27605 NC License No. C-3705	ROADWAY DESIGN ENGINEER  Timothy Coars 00027811F8E94F1...

INDEX OF SHEETS

2024 ROADWAY ENGLISH STANDARD DRAWINGS

EFF. 01-16-2024
REV.

GENERAL NOTES: 2024 SPECIFICATIONS

EFFECTIVE: 01-16-2024
REVISED:

SHEET NUMBER SHEET

1 TITLE SHEET

1A INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS

1B CONVENTIONAL SYMBOLS

2A-1 PAVEMENT SCHEDULE AND TYPICAL SECTIONS

2G-1 ROCK EMBANKMENT DETAILS

3B-1 SUMMARY OF EARTHWORK, REMOVAL OF EXISTING ASPHALT PAVEMENT,
DRAINAGE SUMMARY, GUARDRAIL SUMMARY

3G-1 GEOTECHNICAL SUMMARY TABLES

4 PLAN SHEET

5 PROFILE SHEET

TMP-1 TRANSPORTATION MANAGEMENT PLANS

PMP-1 THRU PMP-2 PAVEMENT MARKING PLANS

EC-1 THRU EC-5 EROSION CONTROL PLANS

SIGN-1 THRU SIGN-2 SIGNING PLANS

UC-1 THRU UC-5 UTILITY CONSTRUCTION PLANS

X-1 THRU X-7 CROSS-SECTIONS

S-1 THRU S-14 STRUCTURE PLANS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch -
N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 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

DIVISION 3 - PIPE CULVERTS

- 300.01 Method of Pipe Installation
- 310.10 Driveway Pipe Construction

DIVISION 4 - MAJOR STRUCTURES

- 423.01 Bridge Approach Fills - Type I Standard Approach Fill

DIVISION 5 - SUBGRADE, BASES AND SHOULDERS

- 560.01 Method of Shoulder Construction - High Side of Superelevated Curve - Method I

DIVISION 8 - INCIDENTALS

- 815.02 Subsurface Drain
- 840.00 Concrete Base Pad for Drainage Structures
- 840.25 Anchorage For Frames
- 840.29 Frames and Narrow Slot Flat Grates
- 840.35 Traffic Bearing Grated Drop Inlet
- 840.46 Traffic Bearing Precast Drainage Structure
- 840.66 Drainage Structure Steps
- 846.01 Concrete Curb, Gutter and Curb and Gutter
- 846.04 Drop Inlet Installation in Shoulder Berm Gutter
- 862.01 Guardrail Placement
- 862.02 Guardrail Installation
- 862.03 Structure Anchor Units
- 876.01 Rip Rap in Channels
- 876.02 Guide for Rip Rap at Pipe Outlets

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED 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.

SUBSURFACE DRAINS:

SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.

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.

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

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.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE

Dominion Energy

Northampton County Public Works

Brightspeed (No Functioning Facilities)

Roanoke Connect (No Functioning Facilities)

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale *S.U.E. = *Subsurface Utility Engineering*

04/06/15

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EP
Property Corner	-----
Property Monument	□ EGM
Parcel/Sequence Number	① 23
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	--- WLB ---
Proposed Wetland Boundary	--- WLB ---
Existing Endangered Animal Boundary	--- EAB ---
Existing Endangered Plant Boundary	--- EPB ---
Existing Historic Property Boundary	--- HPB ---
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	○ S
Well	○ W
Small Mine	✕
Foundation	□
Area Outline	□
Cemetery	□ †
Building	□
School	□
Church	□
Dam	▬

HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	-----
Jurisdictional Stream	--- JS ---
Buffer Zone 1	--- BZ 1 ---
Buffer Zone 2	--- BZ 2 ---
Flow Arrow	←
Disappearing Stream	-----
Spring	○
Wetland	--- W ---
Proposed Lateral, Tail, Head Ditch	-----
False Sump	▽

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	○ R/W
Proposed Right of Way Line with Concrete or Granite RW Marker	△ R/W
Proposed Control of Access Line with Concrete C/A Marker	○ C/A
Existing Control of Access	○ C/A
Proposed Control of Access	○ C/A
Existing Easement Line	--- E ---
Proposed Temporary Construction Easement	--- E ---
Proposed Temporary Drainage Easement	--- TDE ---
Proposed Permanent Drainage Easement	--- PDE ---
Proposed Permanent Drainage / Utility Easement	--- DUE ---
Proposed Permanent Utility Easement	--- PUE ---
Proposed Temporary Utility Easement	--- TUE ---
Proposed Aerial Utility Easement	--- AUE ---
Proposed Permanent Easement with Iron Pin and Cap Marker	◆

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	--- C ---
Proposed Slope Stakes Fill	--- F ---
Proposed Curb Ramp	○ CR
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	□ Vineyard

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	CONC
Bridge Wing Wall, Head Wall and End Wall	CONC WW
MINOR:	
Head and End Wall	CONC HW
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	□ CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	⊕
Storm Sewer	-----

UTILITIES:

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 LOS B (S.U.E.*)	----- P -----
U/G Power Line LOS C (S.U.E.*)	----- P -----
U/G Power Line LOS D (S.U.E.*)	----- P -----

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Pedestal	⊠
Telephone Cell Tower	⊠
U/G Telephone Cable Hand Hole	□
U/G Telephone Cable LOS B (S.U.E.*)	----- T -----
U/G Telephone Cable LOS C (S.U.E.*)	----- T -----
U/G Telephone Cable LOS D (S.U.E.*)	----- T -----
U/G Telephone Conduit LOS B (S.U.E.*)	----- TC -----
U/G Telephone Conduit LOS C (S.U.E.*)	----- TC -----
U/G Telephone Conduit LOS D (S.U.E.*)	----- TC -----
U/G Fiber Optics Cable LOS B (S.U.E.*)	----- T FO -----
U/G Fiber Optics Cable LOS C (S.U.E.*)	----- T FO -----
U/G Fiber Optics Cable LOS D (S.U.E.*)	----- T FO -----

WATER:

Water Manhole	⊕
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
U/G Water Line LOS B (S.U.E.*)	----- W -----
U/G Water Line LOS C (S.U.E.*)	----- W -----
U/G Water Line LOS D (S.U.E.*)	----- W -----
Above Ground Water Line	----- A/G Water -----

TV:

TV Pedestal	□
TV Tower	⊗
U/G TV Cable Hand Hole	□
U/G TV Cable LOS B (S.U.E.*)	----- TV -----
U/G TV Cable LOS C (S.U.E.*)	----- TV -----
U/G TV Cable LOS D (S.U.E.*)	----- TV -----
U/G Fiber Optic Cable LOS B (S.U.E.*)	----- TV FO -----
U/G Fiber Optic Cable LOS C (S.U.E.*)	----- TV FO -----
U/G Fiber Optic Cable LOS D (S.U.E.*)	----- TV FO -----

GAS:

Gas Valve	◇
Gas Meter	⊕
U/G Gas Line LOS B (S.U.E.*)	----- G -----
U/G Gas Line LOS C (S.U.E.*)	----- G -----
U/G Gas Line LOS D (S.U.E.*)	----- G -----
Above Ground Gas Line	----- A/G Gas -----

SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	----- SS -----
Above Ground Sanitary Sewer	----- A/G Sanitary Sewer -----
SS Forced Main Line LOS B (S.U.E.*)	----- FSS -----
SS Forced Main Line LOS C (S.U.E.*)	----- FSS -----
SS Forced Main Line LOS D (S.U.E.*)	----- FSS -----

MISCELLANEOUS:

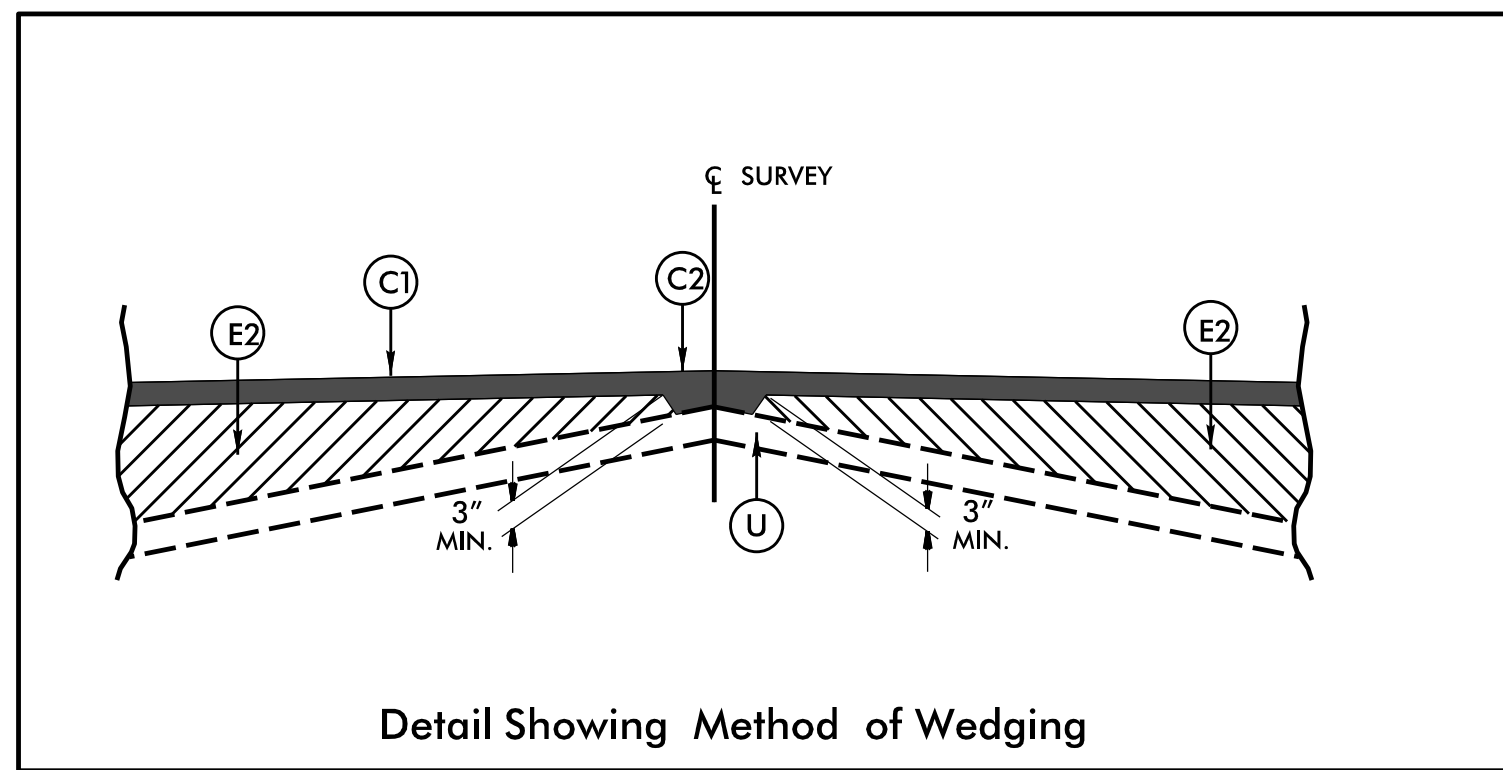
Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊠
Utility Unknown U/G Line LOS B (S.U.E.*)	----- TUL -----
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	⊠ UST
A/G Tank; Water, Gas, Oil	□
Geoenvironmental Boring	⊕
U/G Test Hole LOS A (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

6/2/09

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 165 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 1-1/2" IN DEPTH.
E1	PROP. APPROX. 5-1/2" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
R	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING ASPHALT PAVEMENT 1.5" DEPTH
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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



MILLING AT PAVEMENT TIE-INS

NOTES TO CONTRACTOR

For surface mixes over 1" in thickness, mill the existing pavement in accordance with the following sketch as directed by the Engineer.

Locations shall include ties into existing concrete pavement, at bridge approaches where the bridge will not be resurfaced, and at the beginning and ending point of each resurfacing map.

Perform the work in accordance with Section 607 of the January 2012 North Carolina Department of Transportation Standard Specifications for Roads and Structures. Resurfacing will be accomplished at the same time as the milling operation.

VAR. SEE PLANS

MILL EXISTING PAVEMENT

APPROX. 1.5" (THICKNESS OF SURFACE COURSE)

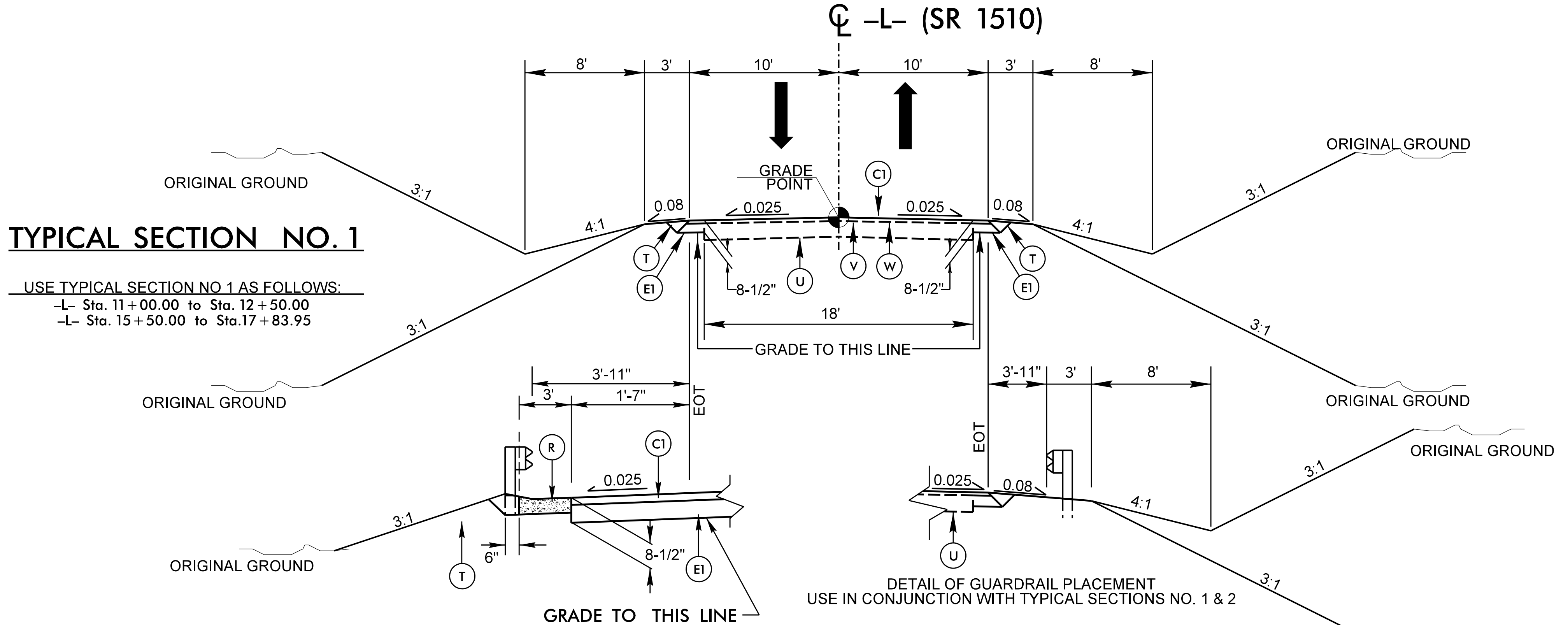
BEGINNING OR ENDING OF MAP

EXISTING CONCRETE PAVEMENT OR NON-RESURFACEABLE BRIDGE DECKS

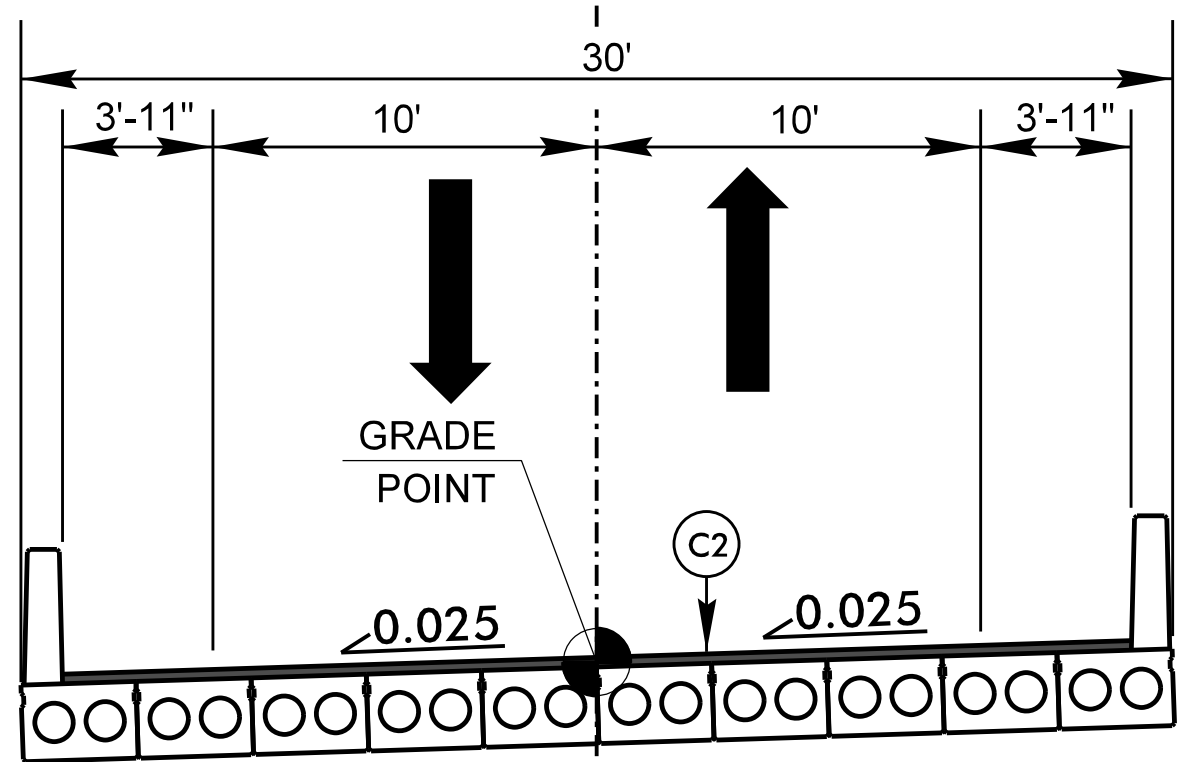
PROJECT REFERENCE NO. BPI-009	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> <p>Prepared by</p>	

TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO 1 AS FOLLOWS:
 -L- Sta. 11+00.00 to Sta. 12+50.00
 -L- Sta. 15+50.00 to Sta.17+83.95



-L- (SR 1510)



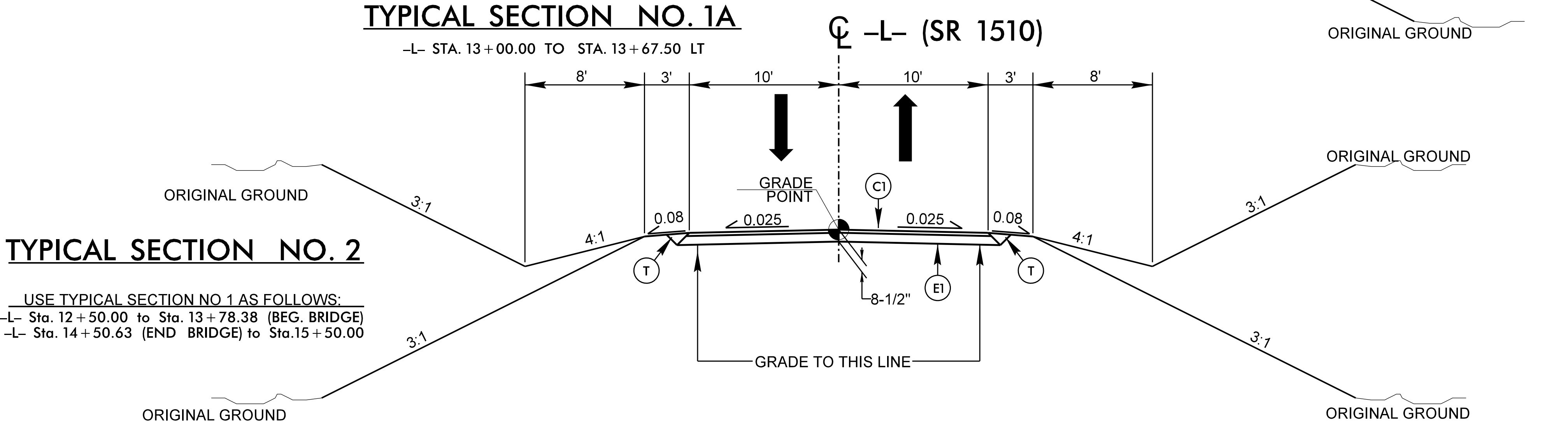
10 UNITS @ 3' EACH

TYPICAL SECTION NO. 3


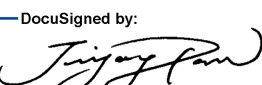
-L- Sta. 13+78.38 to Sta. 14+50.63

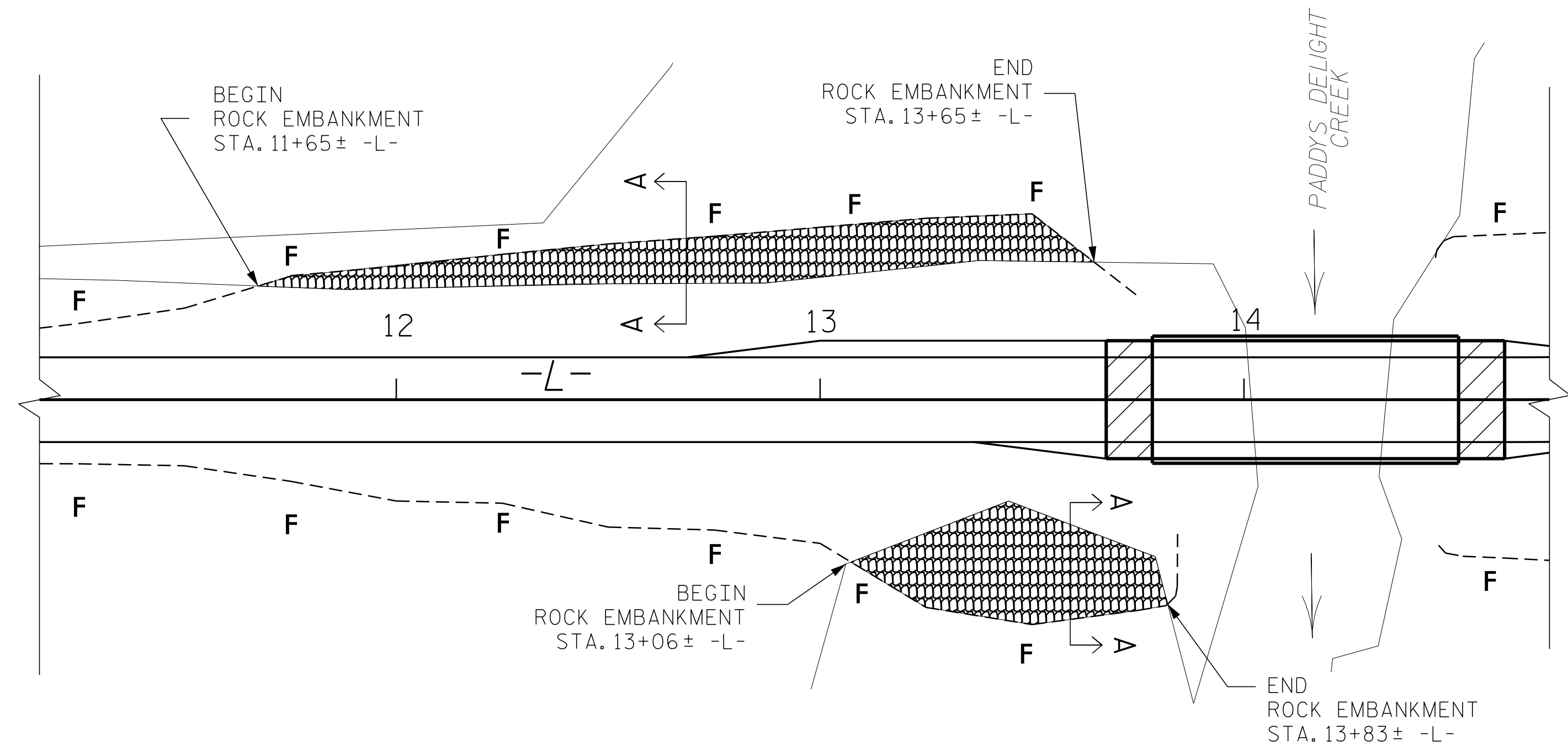
TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO 1 AS FOLLOWS:
 -L- Sta. 12+50.00 to Sta. 13+78.38 (BEG. BRIDGE)
 -L- Sta. 14+50.63 (END BRIDGE) to Sta.15+50.00

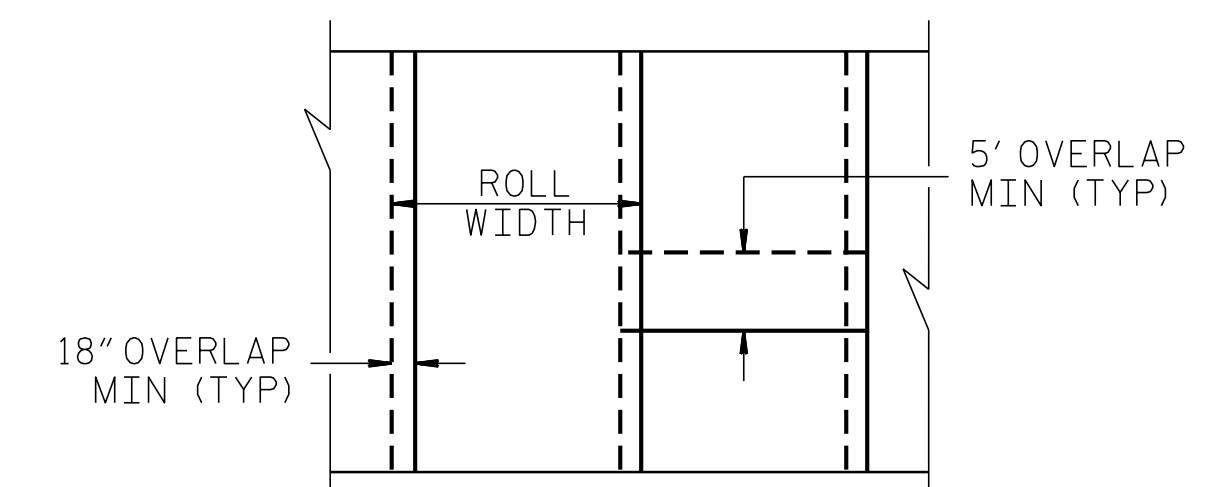


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PROJECT REFERENCE NO. BP1.R009 (SF-650018)	SHEET NO. 2G-1
GEOTECHNICAL ENGINEER  GEOTECHNICAL ENGINEER	ENGINEER ENGINEER
Designed by:  DATE: 04/20/2023	SIGNATURE: _____ DATE: _____
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

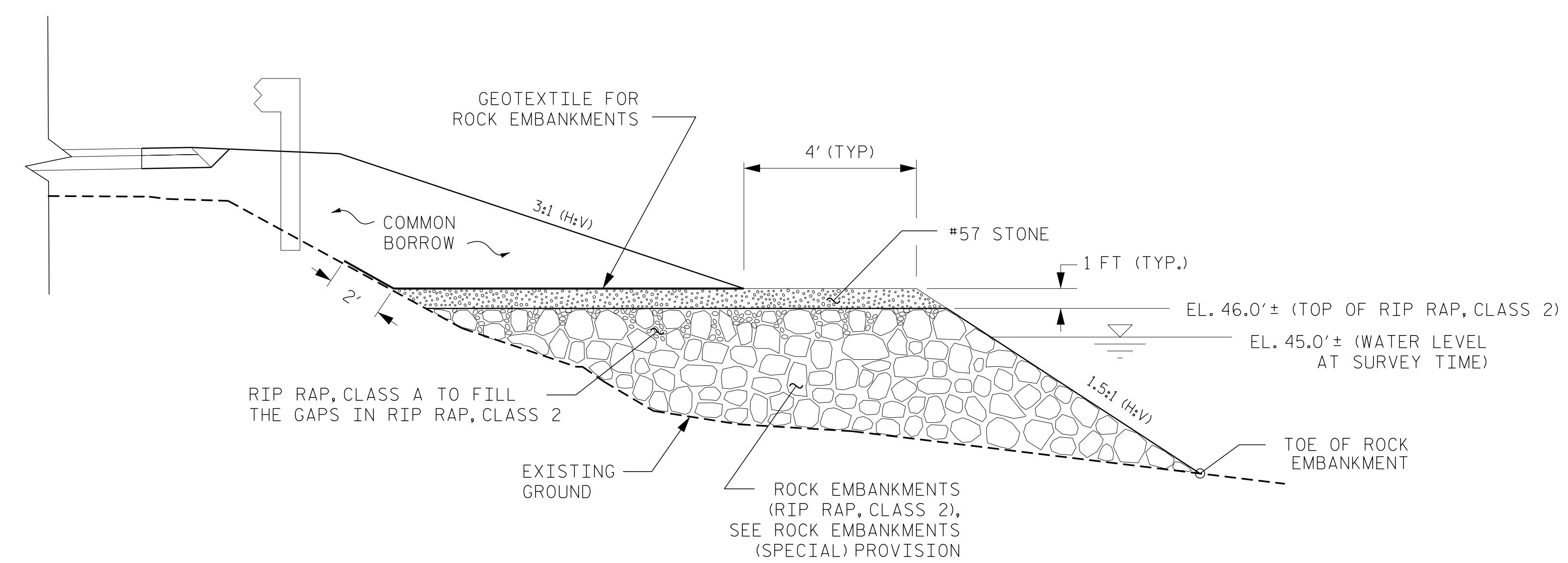


PLAN VIEW
NOT TO SCALE



GEOTEXTILE OVERLAP DETAIL
(PLAN VIEW)

ESTIMATED QUANTITIES	
RIP RAP, CLASS 2	500 TONS
RIP RAP, CLASS A	120 TONS
#57 STONE (SELECT MATERIAL, CLASS VI)	120 TONS
GEOTEXTILE FOR ROCK EMBANKMENTS	230 SY

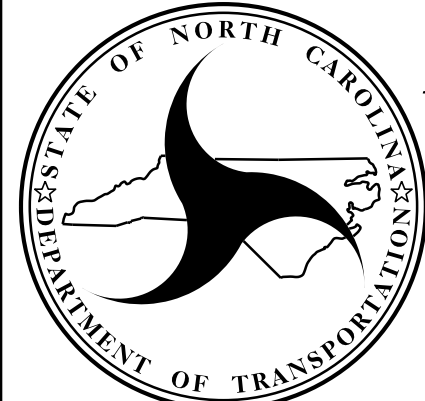


ROCK EMBANKMENT TYPICAL SECTION A-A
NOT TO SCALE

NOTES

- FOR ROCK EMBANKMENTS, SEE ROCK EMBANKMENTS (SPECIAL) PROVISION.
- INSTALL ROCK EMBANKMENTS USING RIP RAP, CLASS 2 AS SHOWN IN THE PLAN.
- FILL VOIDS IN THE TOP OF ROCK EMBANKMENTS WITH RIP RAP, CLASS A.
- PLACE #57 STONE (SELECT MATERIAL, CLASS VI) 1 FT. ABOVE RIP RAP, CLASS 2 AS SHOWN IN THE PLAN.
- INSTALL GEOTEXTILE FOR ROCK EMBANKMENT BETWEEN #57 STONE AND COMMON BORROW MATERIAL.
- THE ROLL DIRECTION OF GEOTEXTILE FOR ROCK EMBANKMENT CAN BE EITHER PARALLEL OR PERPENDICULAR TO THE -L- ALIGNMENT.

PREPARED BY: J. PARK	DATE: 04 / 2023
REVIEWED BY:	DATE:



**NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS**

**GEOTECHNICAL
ENGINEERING UNIT**

ROCK EMBANKMENT DETAILS					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

12/06/07

COMPUTED BY: FMM DATE: 11/22/2022
CHECKED BY: DATE:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. SHEET NO.
BPI-R002 3B-1

SUMMARY OF EARTHWORK

Table with columns: STATION, STATION, UNCL. EXCAV., EMBANK. +%, BORROW, WASTE. Includes subtotals for project and grand totals.

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

PAVEMENT REMOVAL SUMMARY

Table with columns: SURVEY LINE, STATION, STATION, LOCATION LT/RT/CL, YD'. Includes total and say values.

SUMMARY OF BREAKING EXISTING ASPHALT PAVEMENT

Table with columns: SURVEY LINE, STATION, STATION, LOCATION LT/RT/CL, YD'. Includes total and say values.

SHOULDER BERM GUTTER SUMMARY

Table with columns: SURVEY LINE, STATION, STATION, LENGTH. Includes total and say values.

COMPUTED BY: DATE:
CHECKED BY: DATE:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NOTE: Invert Elevations are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

SUB-REGIONAL & REGIONAL

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

Large table listing pipe details including station, size, thickness, drainage pipe type, R.C. pipe class, endwalls, quantities, and remarks.

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 TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

Table summarizing guardrail details including survey line, station, location, length, warrant point, total shoulder width, flare length, anchors, impact attenuator, and remarks.

12/06/07 11:51:00 AM 3B-1.dgn

12/06/07

COMPUTED BY: Tyler C. Bottoms DATE: 3/1/23
CHECKED BY: Jinyoung Park DATE: 4/20/23

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. SHEET NO.
BPI-R002 3B-1

SUMMARY OF SUBSURFACE DRAINAGE

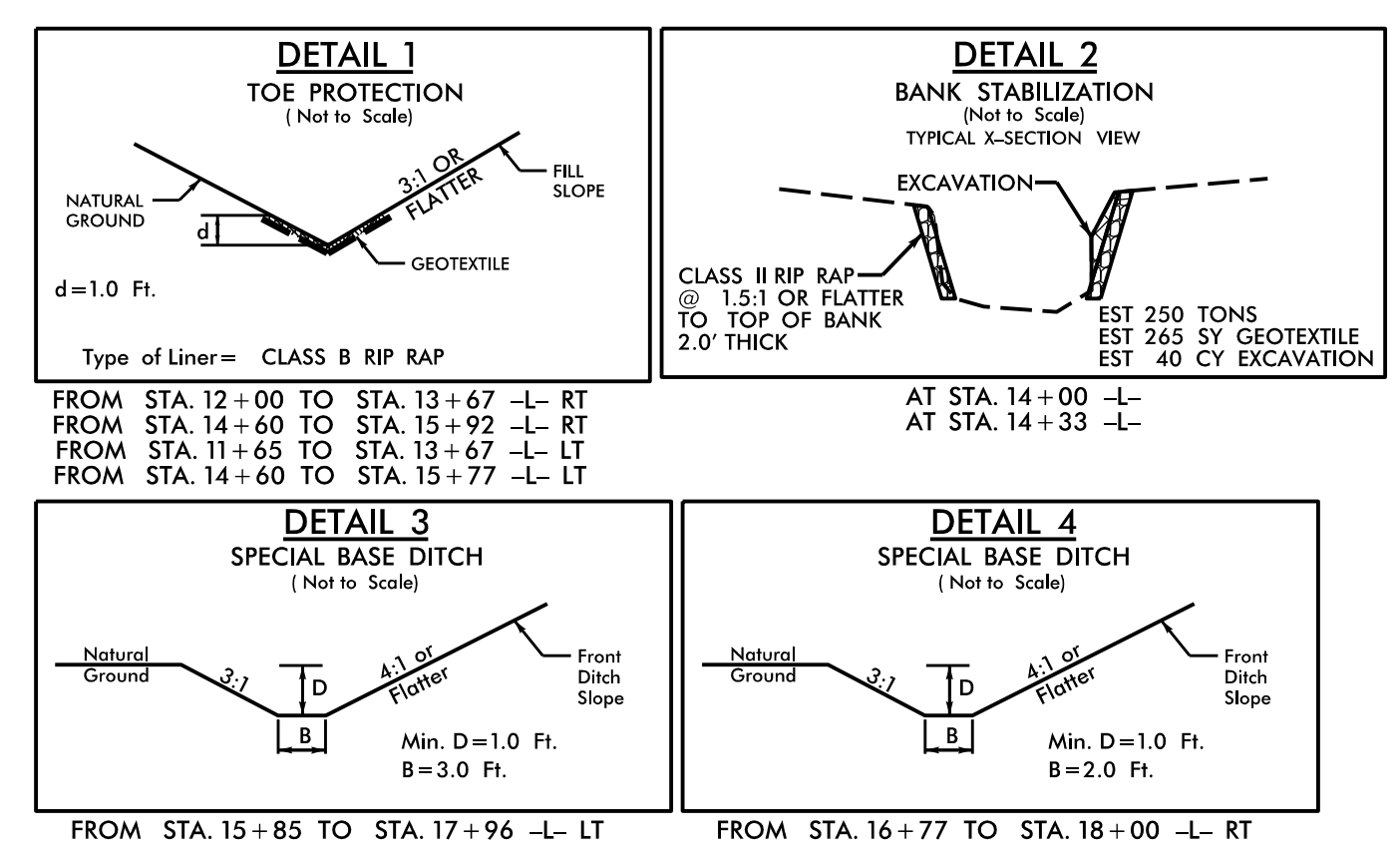
LINE	STATION	STATION	LOCATION LT/RT/CL	Drain Type UD/BD/SD	LF
				SD	
CONTINGENCY					200
TOTAL LF:					200

BPI-R002-3B-1-rdy-sum-30-1.dgn
12/06/07

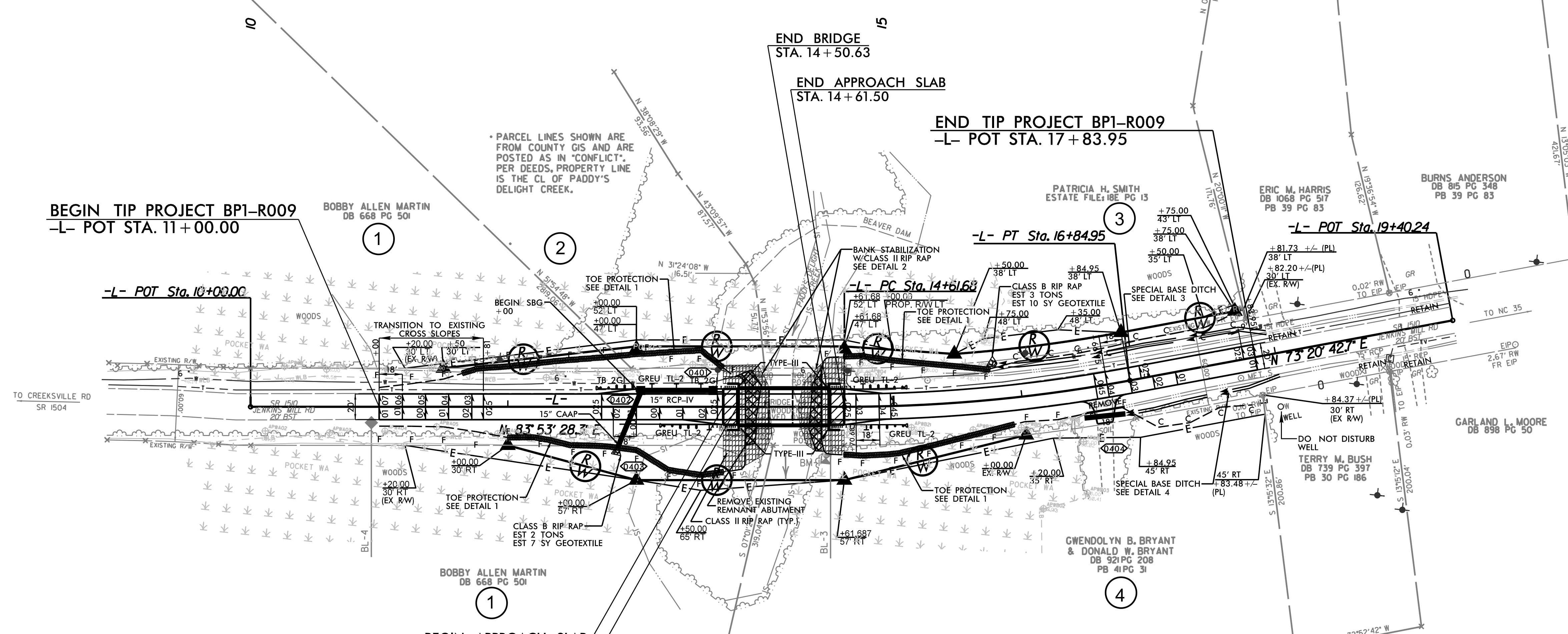
8/17/99

PROJECT REFERENCE NO. BPI-R009		SHEET NO. 4	
RW SHEET NO. ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
Prepared by 940 Main Campus Drive, Suite 500 Raleigh, NC 27605 NC License No. C-3705			

-L-
PI Sta 15+73.63
 $\Delta = 10' 32' 45.5" (LT)$
 $D = 4' 43' 24.5"$
 $L = 223.27'$
 $T = 111.95'$
 $R = 1,213.00'$
 $SE = 0.045$
 $RO = 8'$



NAD 83 NA 2011



DATUM DESCRIPTION
 THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY JMT FOR MONUMENT "CENTROID"
 WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 962810.000(ft) EASTING: 2518860.000(ft) ELEVATION: 59.000(ft)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.0000703084
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "CENTROID" TO -L- STATION IS
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

RIGHT OF WAY AREA DATA

PARCEL NO.	PROPERTY OWNER NAME	RW AREA	TCE
1	BOBBY ALLEN MARTIN	5214.5 SF	2187.9 SF
2	BOBBY ALLEN MARTIN	1872.6 SF	593.6 SF
3	PATRICIA H. SMITH	4010.9 SF	1376.9 SF
4	GWENDOLYN B. BRYANT & DONALD W. BRYANT	3300.5 SF	2724.8 SF

FOR -L- PROFILE SEE SHEET 5

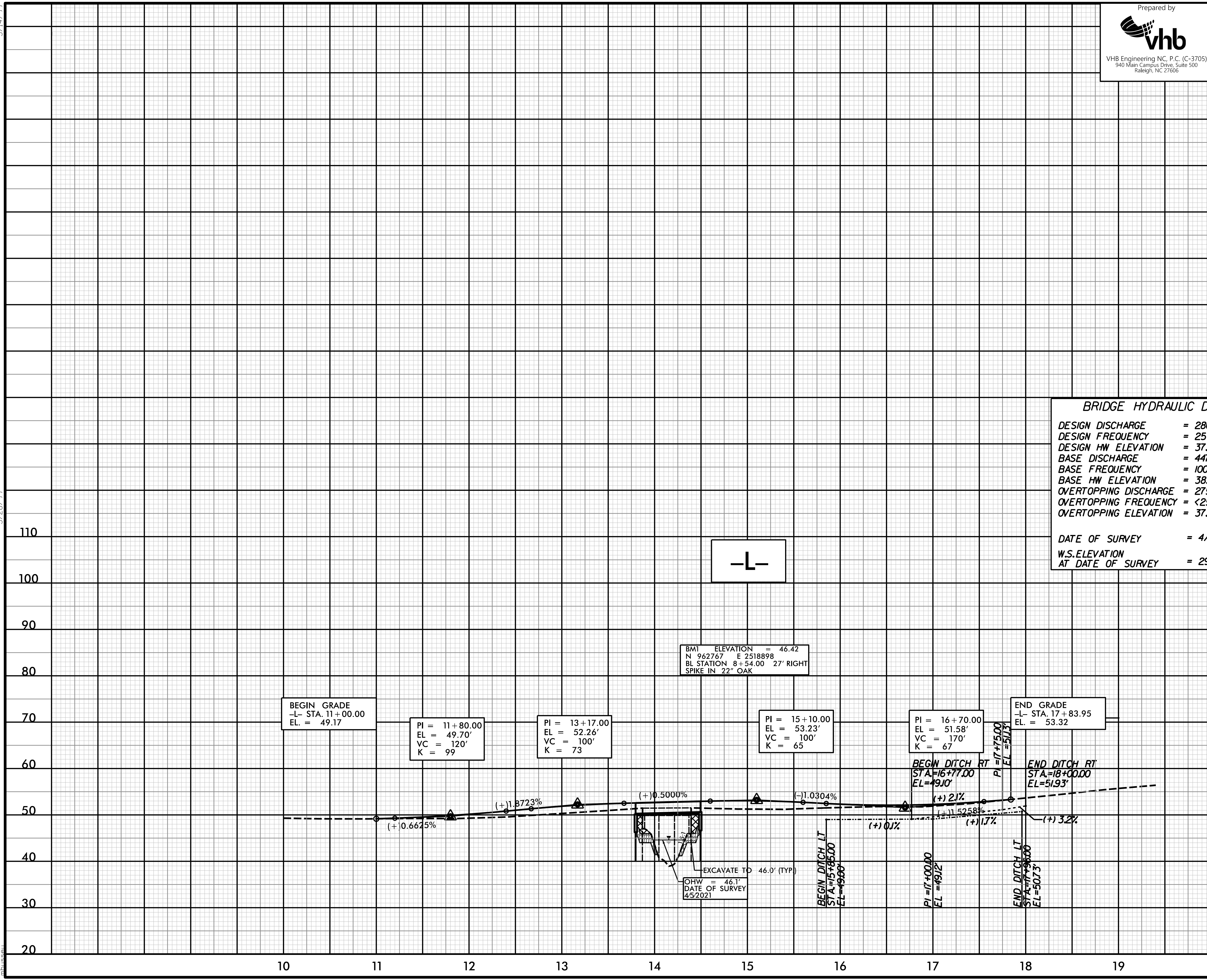
8/13/2023
Bpi-R009_rdy-psn04.dgn

5/14/99
5/28/99
8/13/2023
BPI-60031-rdy.plt105.dgn
BPI



VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

PROJECT REFERENCE NO. BPI-R009	SHEET NO. 5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



BRIDGE HYDRAULIC DATA	
DESIGN DISCHARGE	= 2800 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 37.4 FT
BASE DISCHARGE	= 4476 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 38.85 FT
OVERTOPPING DISCHARGE	= 2750 CFS
OVERTOPPING FREQUENCY	= <25 YRS
OVERTOPPING ELEVATION	= 37.2 FT
DATE OF SURVEY	= 4/5/2022
W.S. ELEVATION AT DATE OF SURVEY	= 29.0 FT

BM1 ELEVATION = 46.42
N 962767 E 2518898
BL STATION 8+54.00 27' RIGHT
SPIKE IN 22" OAK

BEGIN GRADE
-L- STA. 11+00.00
EL. = 49.17

PI = 11+80.00
EL = 49.70'
VC = 120'
K = 99

PI = 13+17.00
EL = 52.26'
VC = 100'
K = 73

PI = 15+10.00
EL = 53.23'
VC = 100'
K = 65

PI = 16+70.00
EL = 51.58'
VC = 170'
K = 67

END GRADE
-L- STA. 17+83.95
EL. = 53.32

BEGIN DITCH RT
STA. 16+77.00
EL = 49.10'

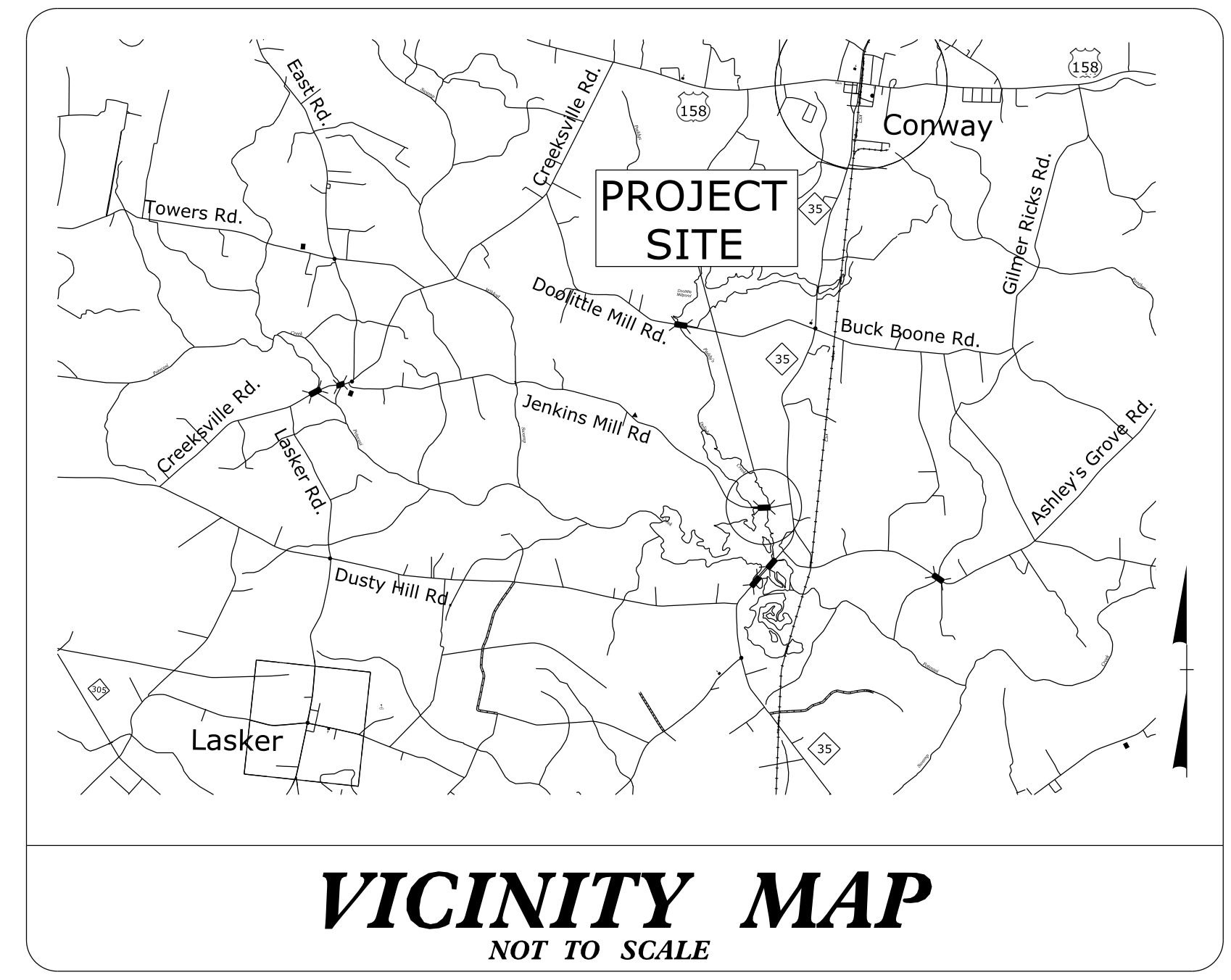
END DITCH RT
STA. 18+00.00
EL = 51.93'

EXCAVATE TO 46.1' (TYP)
OHW = 46.1'
DATE OF SURVEY 4/5/2021

RIGHT DITCH -----
LEFT DITCH -----

TIP PROJECT: BP1-R009

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP1-R009	RW01	6



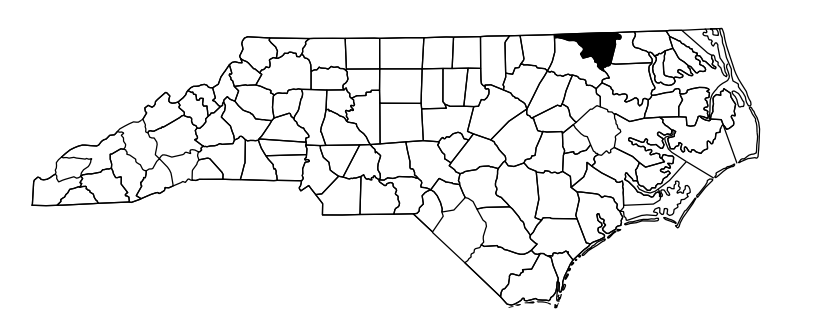
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

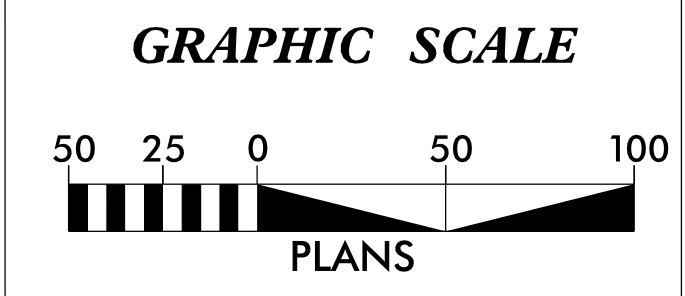
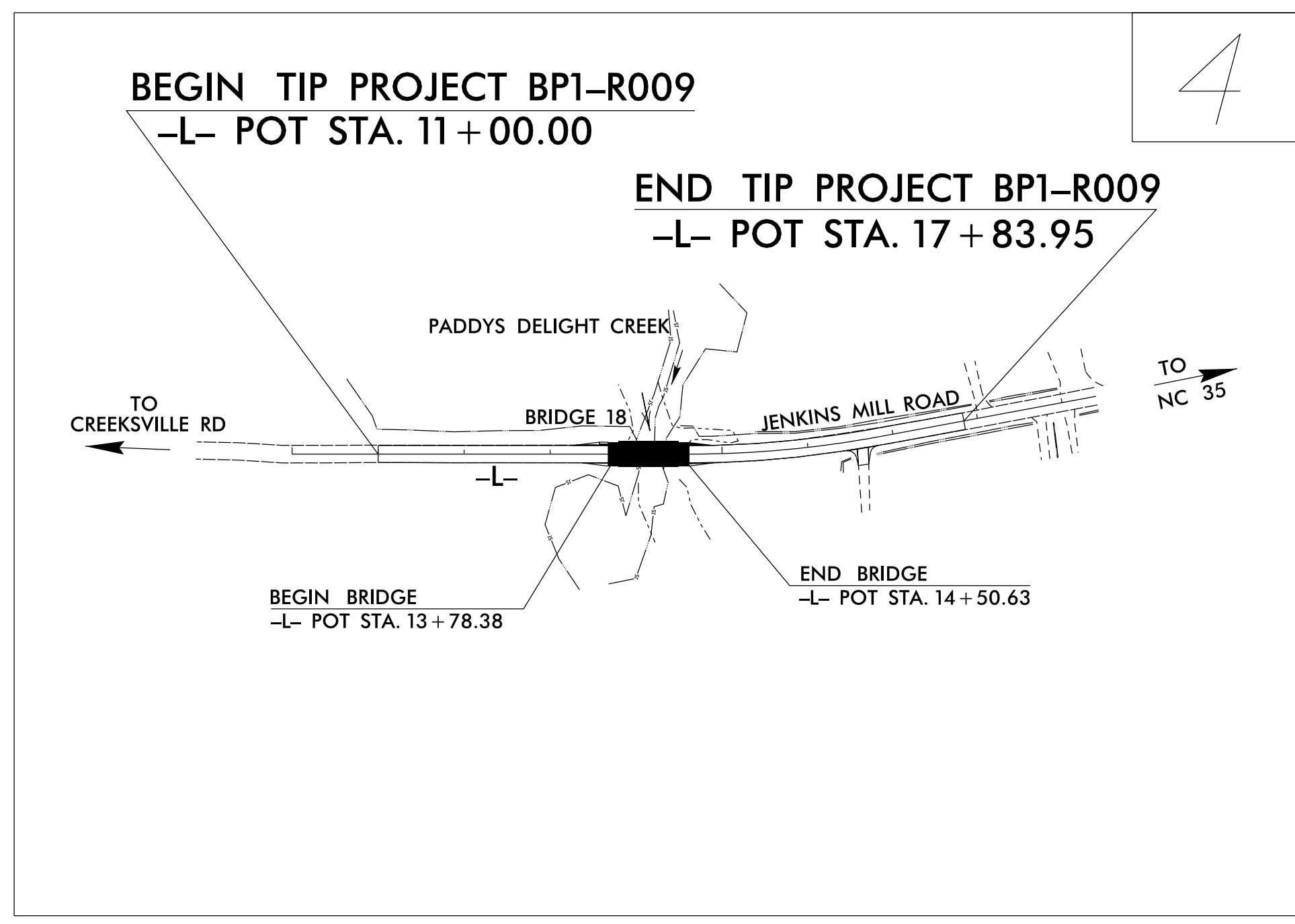
NORTHAMPTON COUNTY

**LOCATION: BRIDGE NO. 650018 OVER PADDYS DELIGHT CREEK
ON JENKINS MILL ROAD (SR 1510)**

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE



RIGHT OF WAY PLANS



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY JMT FOR MONUMENT "CENTROID" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 962,810.000(ft) EASTING: 2,518,860.0000(ft) ELEVATION: 66.00(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.0000703084 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "CENTROID" TO -L- STATION 11+00.00 IS S 82°41'09.97" W 314.42(ft) ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

Prepared In the Office of:

Location and Surveys
Division 1
1300 US HWY 64 W
Plymouth, NC 27962

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
04/10/2023

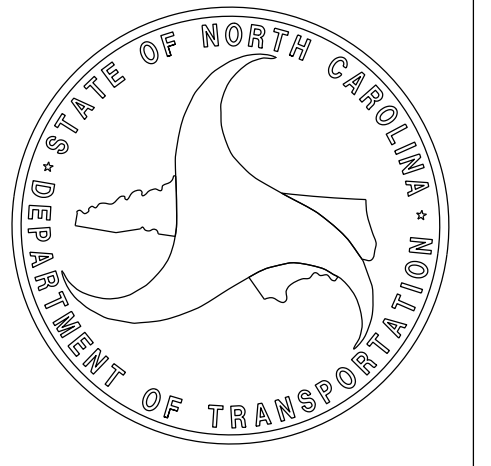
LETTING DATE:
2/15/2024

PROFESSIONAL LAND SURVEYOR



DocuSigned by:
Linwood T. Downs III
SIGNATURE

09/28/2023
Date:



SURVEY CONTROL SHEET

I, Michael W. Zmuda, PLS, certify that the Project Control was verified under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

Class of survey: AA
Type of GPS field procedure: RTN
Dates of survey: February 21, 2022
Datum/Epoch: NAD83/2011
Published/Fixed-control use: N/A
Localized around: CENTROID
Northing: 962810.000
Easting: 2518860.000
Combined grid factor: 1.0000703084
Geoid model: 18
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 February 21, 2022 to March 18, 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.

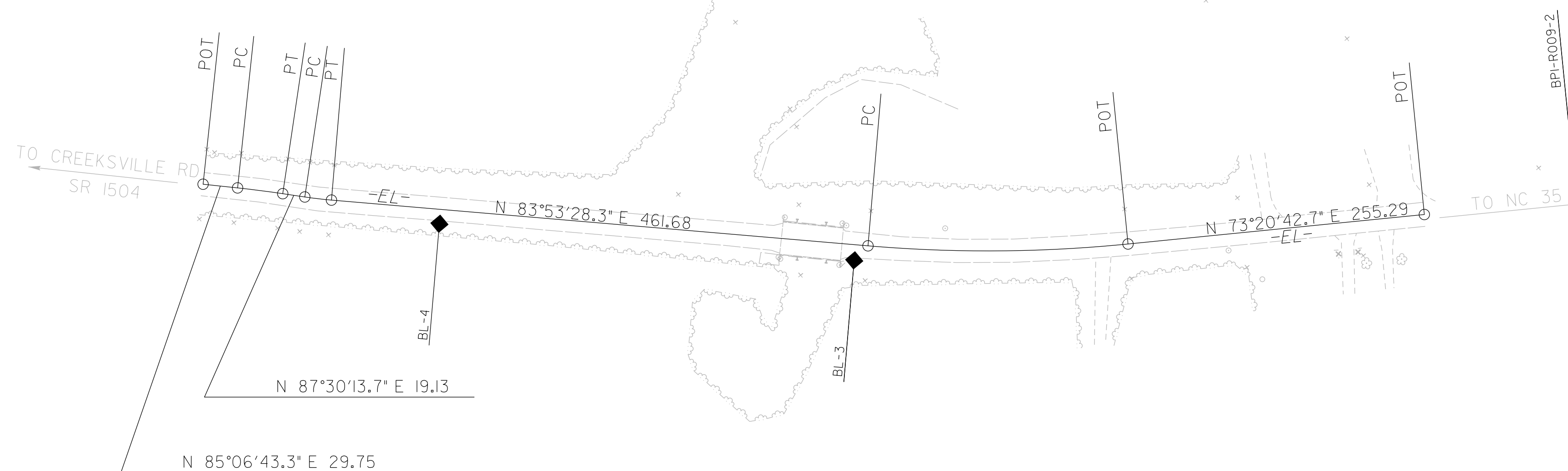
This 18th day of March, 2022.

DocuSigned by:
Michael W. Zmuda
015CC338971543A
Professional Land Surveyor L-5205

SEE SHEET RW02C-2
FOR FURTHER
ALIGNMENT DETAILS



PROJECT REFERENCE NO. BPI-R009	SHEET NO. RW02C-1
Location and Surveys	
Johnson, Mirmiran & Thompson, Inc. 9201 Arboretum Parkway, Suite 310 Richmond, VA 23236	
PROJECT SURVEYOR 	
DocuSigned by: <i>Michael W. Zmuda</i> 015CC338971543A	


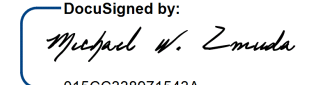


NOTES:

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.

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

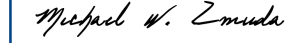
PROJECT REFERENCE NO. BP1-R009	SHEET NO. RW02C-2
Location and Surveys	
Johnson, Mirmiran & Thompson, Inc. 9201 Arboretum Parkway, Suite 310 Richmond, VA 23236	
PROJECT SURVEYOR 	
DocuSigned by:  015CC33821543A	

I, Michael W. Zmuda, PLS, certify that the Project Control was verified 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: February 21, 2022
 Datum/Epoch: NAD83/2011
 Published/Fixed-control use: N/A
 Localized around: CENTROID
 Northing: 962810.000
 Easting: 2518860.000
 Combined grid factor: 1.0000703084
 Geoid model: 18
 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 February 21, 2022 to March 18, 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 18th day of March, 2022.

DocuSigned by:

 015CC33821543A
 Professional Land Surveyor L-5205

REVISIONS

BL	POINT	DESC.	NORTH	EAST	ELEVATION
BL4		BL - 4	962757.1010	2518543.4080	48.81
BL3		BL - 3	962794.0530	2518898.5020	51.12
R0092		BP1-R009-2	962975.6500	2519492.4680	58.28
R0091		BP1-R009-1	962880.7010	2520035.9490	59.44


 BM1 ELEVATION = 46.42
 N 962767 E 2518898
 BL STATION 8+54.00 27 RIGHT
 SPIKE IN 22' OAK

EL		N	E	BEARING	DIST	DELTA	D	L	T	R
POT		962751.724	2518338.065							
LINE				N 85°06'43.3" E	29.75					
PC		962754.259	2518367.709							
CURVE				N 86°18'28.5" E	39.03	02°23'30.4"(RT)	06°07'40.4'	39.03	19.52	935.00
PT		962756.772	2518406.657							
LINE				N 87°30'13.7" E	19.13					
PC		962757.605	2518425.764							
CURVE				N 85°41'51.0" E	23.01	03°36'45.4"(LT)	15°41'50.9'	23.01	11.51	365.00
PT		962759.331	2518448.710							
LINE				N 83°53'28.3" E	461.68					
PC		962808.462	2518907.768							
CURVE				N 78°37'05.5" E	222.95	10°32'45.5"(LT)	04°43'24.5'	223.27	111.95	1213.00
PT		962852.461	2519126.335							
LINE				N 73°20'42.7" E	255.29					
POT		962925.629	2519370.920							

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.


PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO. BP1-R009	SHEET NO. RW02D-1
Location and Surveys	
Location & Surveys Division 1 1300 US HWY 64 West Plymouth, NC 27962	
PROJECT SURVEYOR	
	
DocuSigned by: <i>Linwood T. Downs III</i>	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, Linwood T. Downs, 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 10th day of August, 2023.

DocuSigned by:
Linwood T. Downs III
 Professional Land Surveyor L-5327



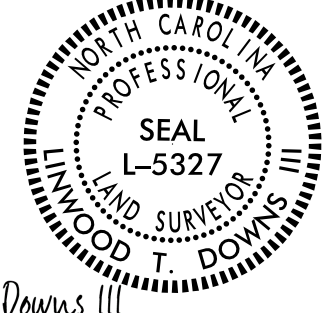
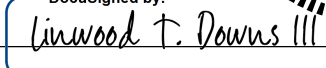
REVISIONS

	L									
POINT	N	E	BEARING	DIST	DELTA	D	L	T	R	
POT	962759.331	2518448.710								
LINE			N 83°53'28.3" E	461.68						
PC	962808.462	2518907.768								
CURVE			N 78°37'05.5" E	222.95	10°32'45.5"(LT)	04°43'24.5"	223.27	111.95	1213.00	
PT	962852.461	2519126.335								
LINE			N 73°20'42.7" E	255.29						
POT	962925.629	2519370.920								

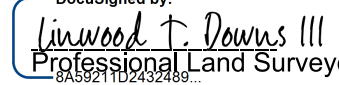
NOTES:

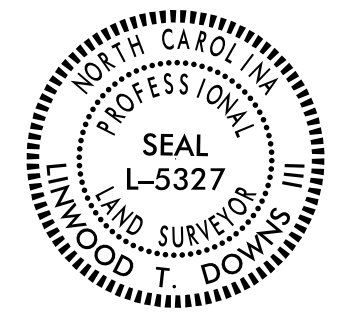
1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO. BP1-R009	SHEET NO. RW03E-1
Location and Surveys	
Location & Surveys Division 1 1300 US HWY 64 West Plymouth, NC 27962	
PROJECT SURVEYOR	
	
DocuSigned by: 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, Linwood T. Downs III, 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 on April 17, 2023 and all coordinates are based on NAD83/2011; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 10th day of August, 2023.
 DocuSigned by:

 Professional Land Surveyor L-5327



ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	11+50.00	-30.00	962805.1237	2518594.6655
L	12+00.00	30.00	962750.7852	2518650.7666
L	13+00.00	57.00	962734.5802	2518753.0720
L	13+00.00	-45.00	962836.0010	2518742.2175
L	14+61.68	57.00	962751.7857	2518913.8335
L	14+61.68	-45.00	962853.2065	2518902.9790
L	15+50.00	-38.00	962858.4381	2518988.3852
L	16+00.00	30.00	962801.7111	2519050.7322
L	16+84.95	-38.00	962888.8666	2519115.4445
L	17+75.00	-38.00	962914.6762	2519201.7197

**

* = NOT SET DUE TO INACCESSIBILITY

NOTES:

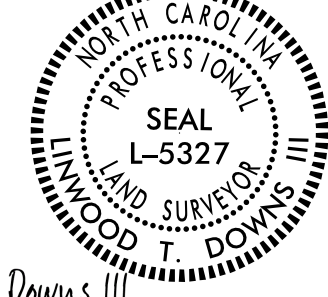
1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED ON APRIL 17, 2023.

REVISIONS

Location and Surveys

Location & Surveys
Division 1
1300 US HWY 64 West
Plymouth, NC 27962

PROJECT SURVEYOR



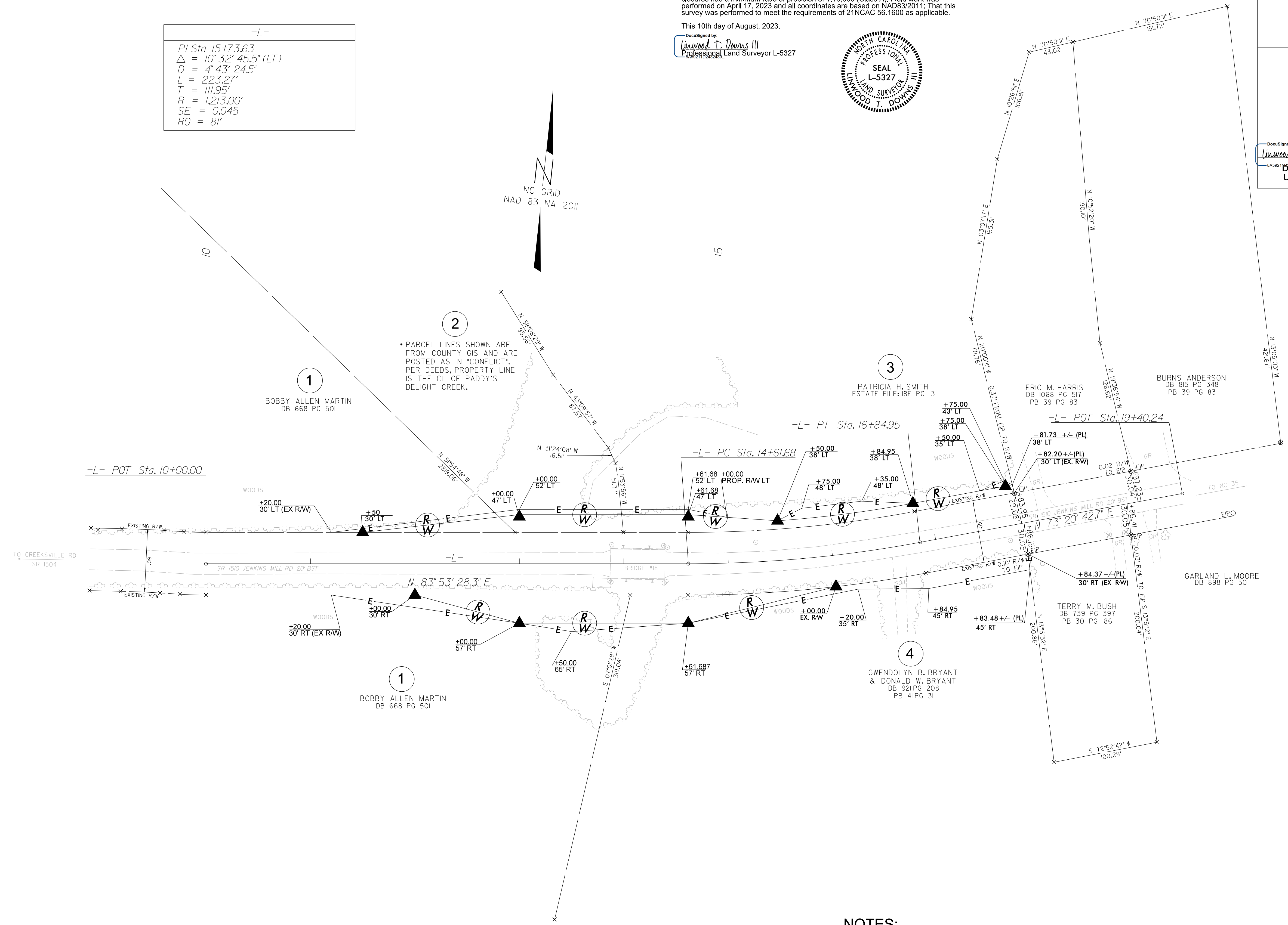
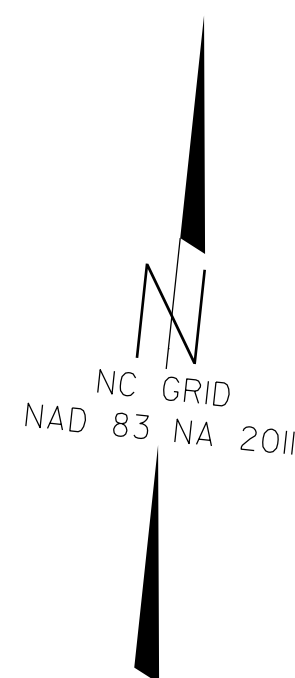
DocuSigned by:
Linwood T. Downs III
8A5021
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

I, Linwood T. Downs III, 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 on April 17, 2023 and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 10th day of August, 2023.
DocuSigned by:
Linwood T. Downs III
Professional Land Surveyor L-5327



-L-
PI Sta 15+73.63
 $\Delta = 10^{\circ} 32' 45.5''$ (LT)
D = 4' 43" 24.5"
L = 223.27'
T = 111.95'
R = 1,213.00'
SE = 0.045
RO = 81'



REVISIONS

RR_SFP-2023_0814.dwg (NcCo 18\Jenkins_Mill1)\Control Sheets\BPI-R009_Ls_rw04.dgn
6/2/09
LTDOWNS

NOTES:

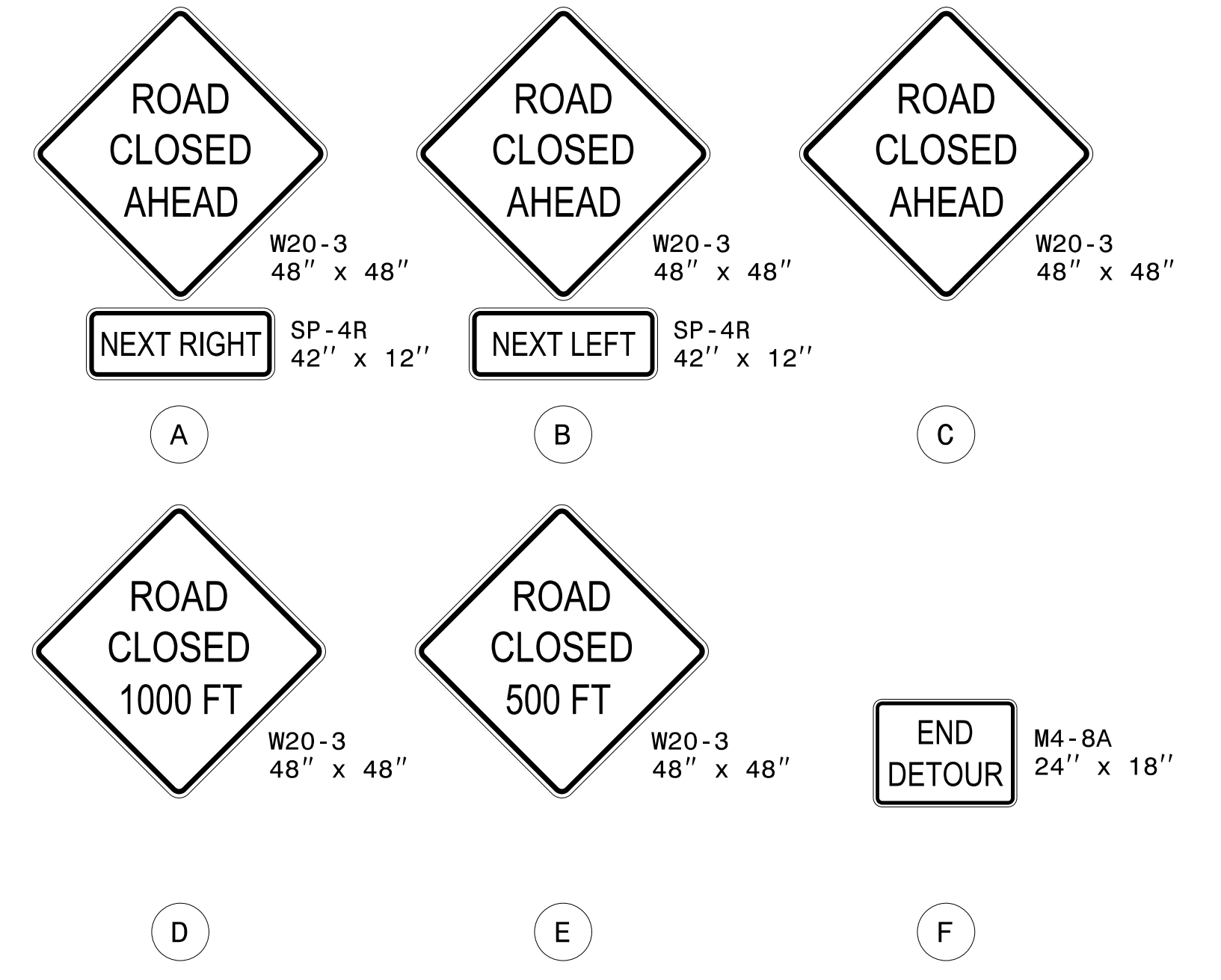
1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED ON APRIL 17, 2023.

TRAFFIC CONTROL FOR TEMPORARY ROAD CLOSURE



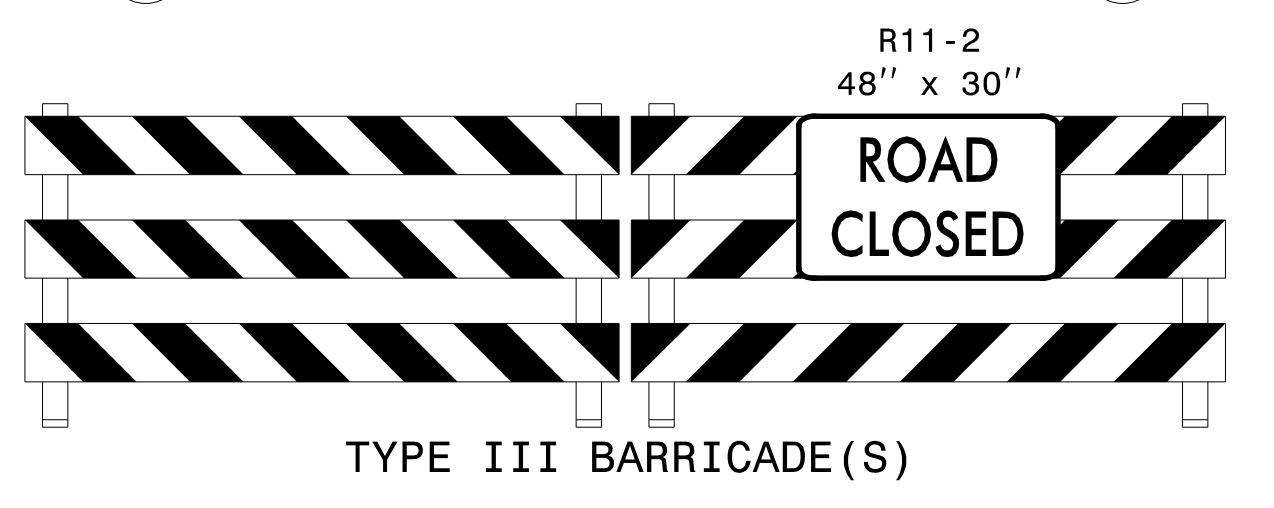
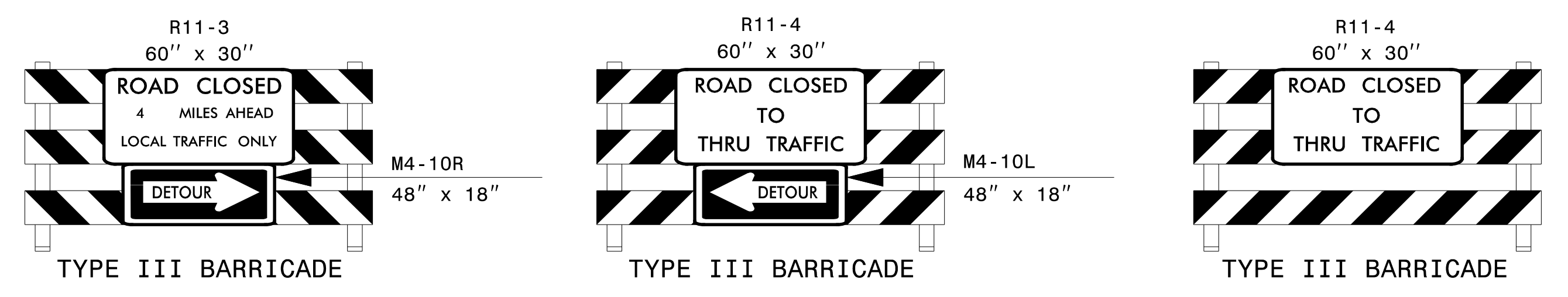
VICINITY MAP
(NOT TO SCALE)

● ● ● ● ● DETOUR ROUTE (APPROX. LENGTH = 10.8 MILES) —|— STATIONARY SIGN



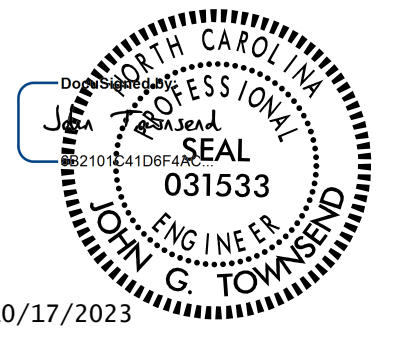
GENERAL NOTES

- 1- INSTALLATION OF DETOUR ROUTING PANELS, TEMPORARY ROUTE MARKERS, DESTINATION SIGNS, AND ANY NECESSARY MODIFICATIONS TO EXISTING OR PROPOSED REGULATORY OR WARNING SIGNS WILL BE MADE BY OTHERS (STATE OR CITY FORCES) UNLESS OTHERWISE DESIGNATED IN THE PLANS. PROVIDE A MINIMUM 30 CALENDAR DAY NOTICE TO STATE FORCES BEFORE A ROADWAY IS CLOSED TO TRAFFIC SUCH THAT THE NECESSARY PROVISIONS CAN BE MADE TO INSTALL DETOUR ROUTE SIGNS, INFORM LOCAL EMERGENCY AND LAW ENFORCEMENT PERSONNEL, SCHOOLS, OR ANY OTHER PARTIES AFFECTED BY THE ROAD CLOSURE.
- 2- DO NOT INSTALL ADVANCE WARNING SIGNS MORE THAN 3 DAYS PRIOR TO THE BEGINNING OF WORK.
- 3- INSTALL SIGNS BEFORE THE BARRICADES WHEN CLOSING THE ROADWAY TO TRAFFIC. REMOVE BARRICADES BEFORE SIGNS WHEN OPENING THE ROADWAY TO TRAFFIC. INSTALL/REMOVE SIGNS AND BARRICADES WITHIN THE SAME CALENDAR DAY.
- 4- USE ADDITIONAL TYPE III BARRICADES IN STAGGERED LOCATIONS SUPPLEMENTED WITH SIGN R11-4 "ROAD CLOSED TO THRU TRAFFIC" IN THE EVENT THAT TRAFFIC MUST BE MAINTAINED BEYOND THE DETOUR POINT.
- 5- DO NOT DISPLAY FRACTIONS OR DECIMALS ON SIGN R11-3 "ROAD CLOSED XX MILES AHEAD".
- 6- POSITION WING BARRICADES ON THE SHOULDERS AND SLOPE THE STRIPES DOWNWARD IN THE DIRECTION TOWARD WHICH TRAFFIC MUST TURN IN DETOURING.
- 7- USE PORTABLE SIGNS IF ROAD CLOSURE IS TO BE IMPLEMENTED FOR LESS THAN THREE DAYS, OR FOR EMERGENCIES.



APPROVED: _____ DATE: _____			<h2>TRANSPORTATION MANAGEMENT PLAN</h2>
<p>8/11/2023</p> <p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>			

8/11/2023
 R:\Tg\Fic\TrafficControl\TCP\BP1-R009_rmp_psh_01.dgn
 User: jtownsend

TIP NO.	SHEET NO.
BP1-R009	PMP-1
APPROVED: _____	
DATE: _____	
SEAL	
	
10/17/2023	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

**PAVEMENT MARKING PLAN
NORTHAMPTON COUNTY**

**LOCATION: BRIDGE NO. 650018 OVER PADDYS
DELIGHT CREEK ON JENKINS MILL
ROAD (SR 1510)**

INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN TITLE SHEET
PMP-2	PAVEMENT MARKING DETAIL

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
-L- (JENKINS MILL ROAD)	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.

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - 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

**PAVEMENT
MARKING SCHEDULE**

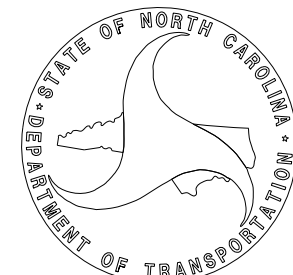
SYMBOL	DESCRIPTION
THERMOPLASTIC	
T1	WHITE EDGELINE (4", 90 MIL)
T13	YELLOW DOUBLE CENTER (4", 90 MIL)

T.I.P.: BPI-R009

CONTRACT:

PLAN SUBMITTED TO:

John Abel; Project Engineer



PLAN PREPARED BY: VHB Engineering NC, P.C.

John Townsend, PE Project Engineer



940 Main Campus Drive, Suite 500 Raleigh, NC 27606
NC License No. C-3705

TIP NO.	SHEET NO.
BP1-R009	PMP-2

APPROVED: _____
 DATE: _____

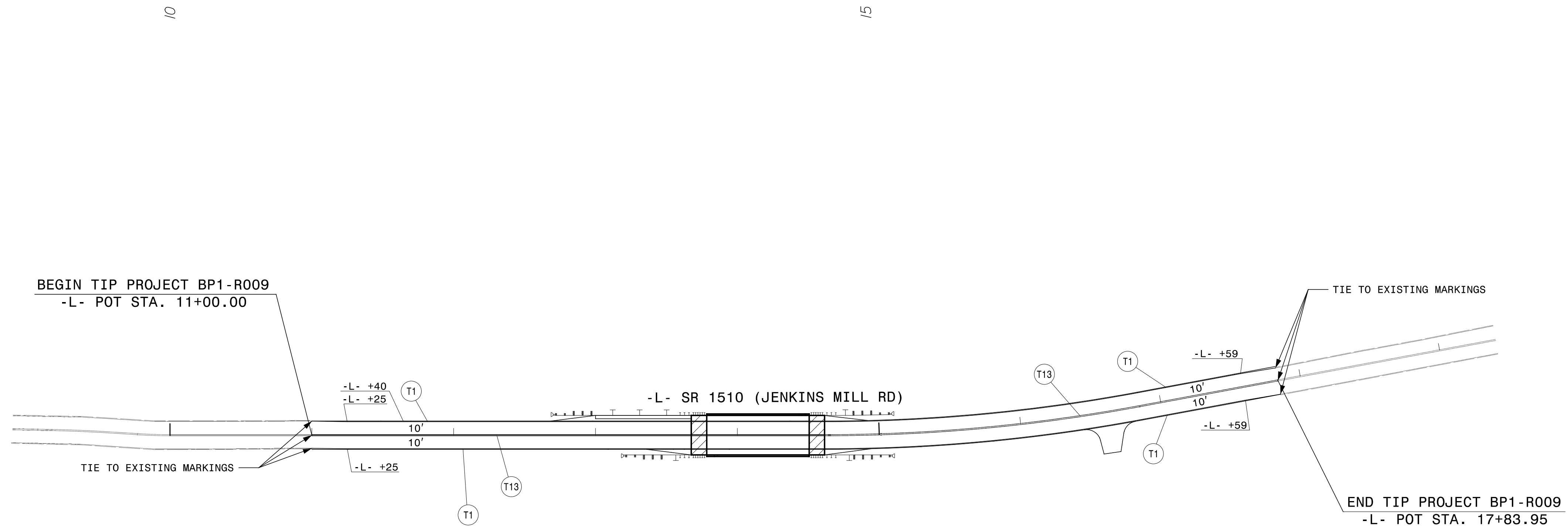
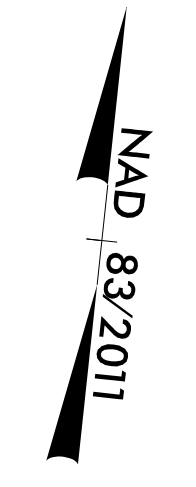
SEAL

8/16/2023

**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**



PAVEMENT MARKING SCHEDULE	
SYMBOL	DESCRIPTION
THERMOPLASTIC	
T1	WHITE EDGELINE (4", 90 MIL)
T13	YELLOW DOUBLE CENTER (4", 90 MIL)

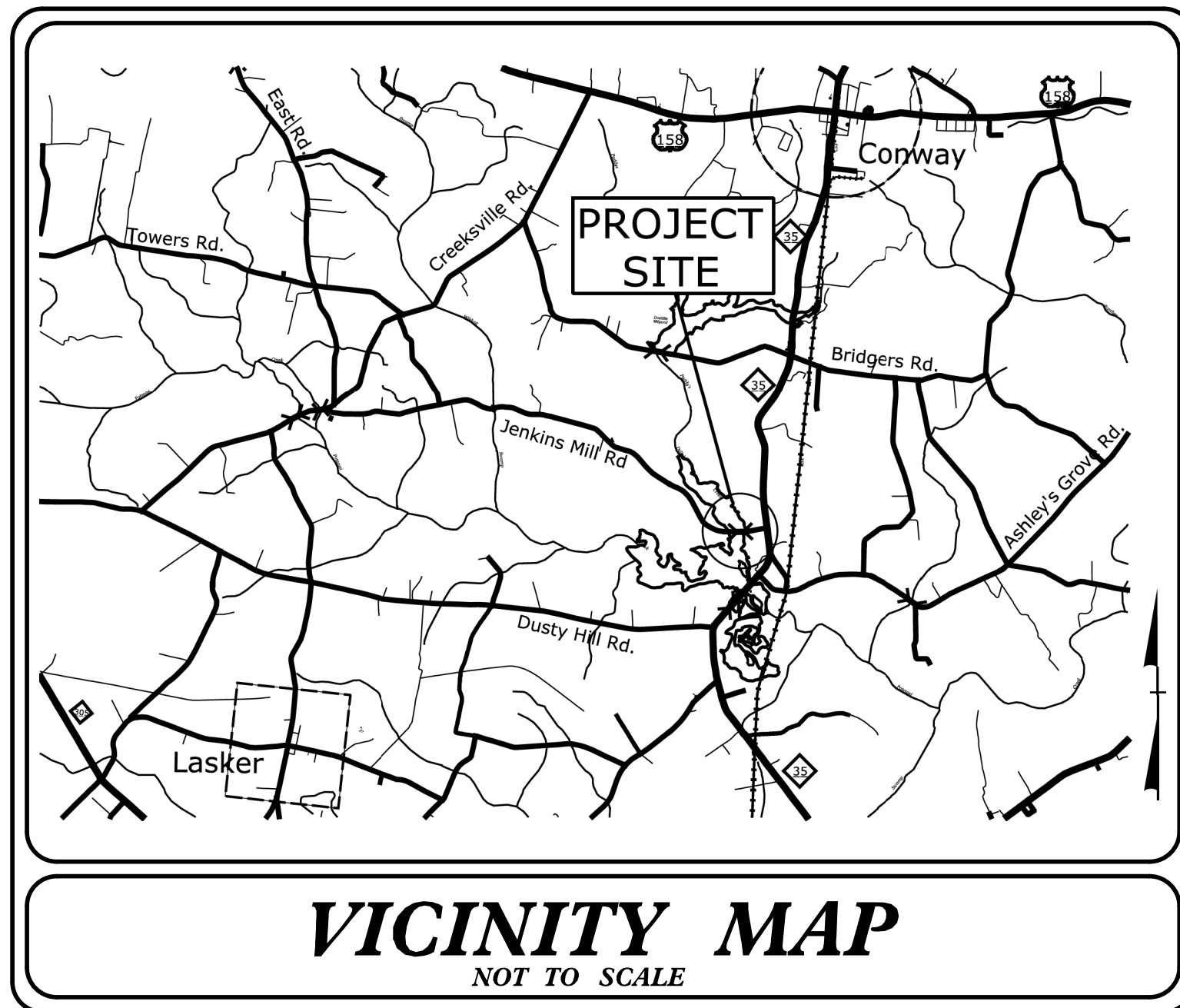


8/16/2023
 R:\Traffic\PavementMarking\BP1-R009_pmp_psh_02.dgn
 User:jtownsend

PAVEMENT MARKING DETAIL

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP1-R009	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

TIP PROJECT: BP1-R009



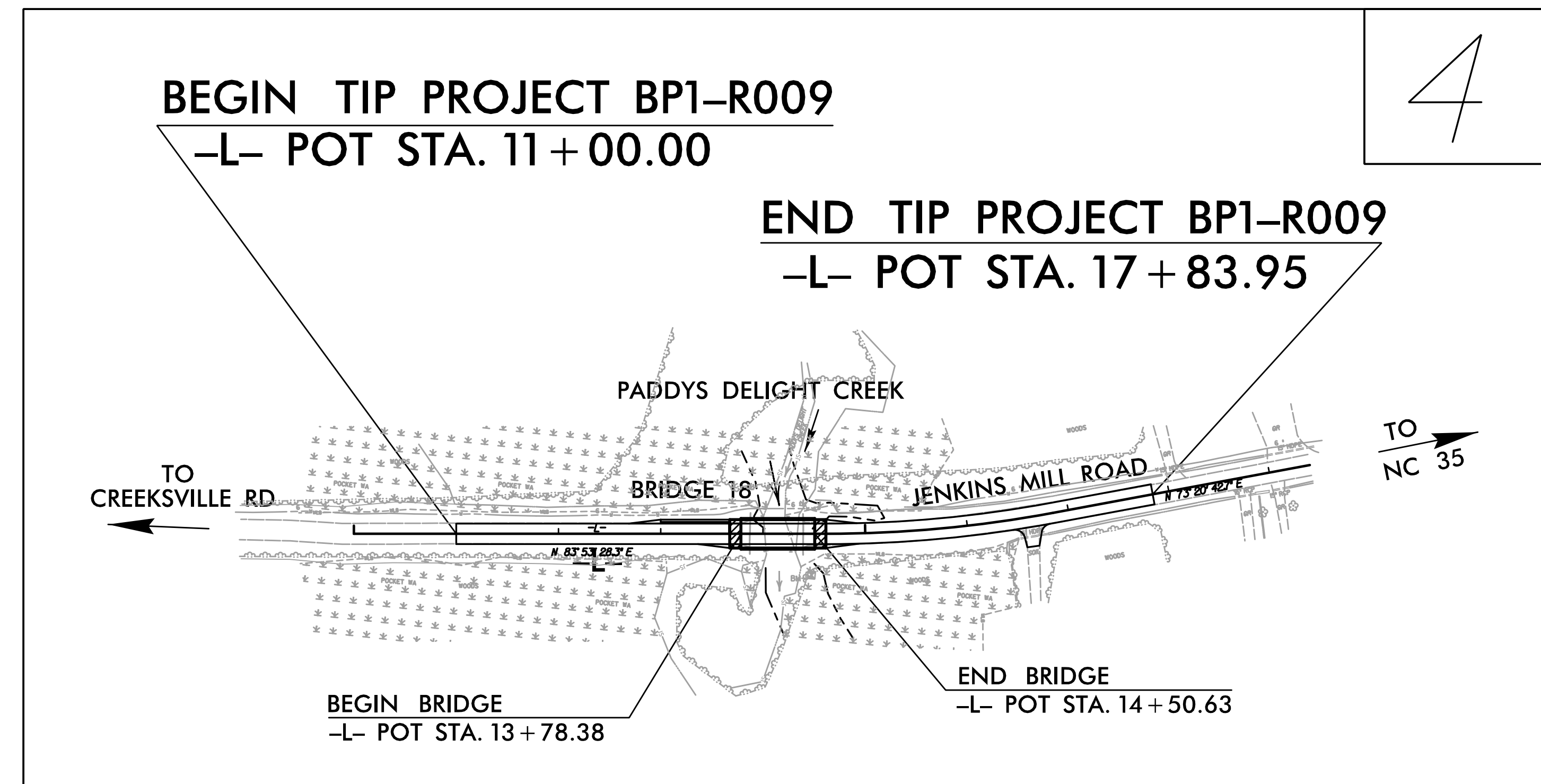
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

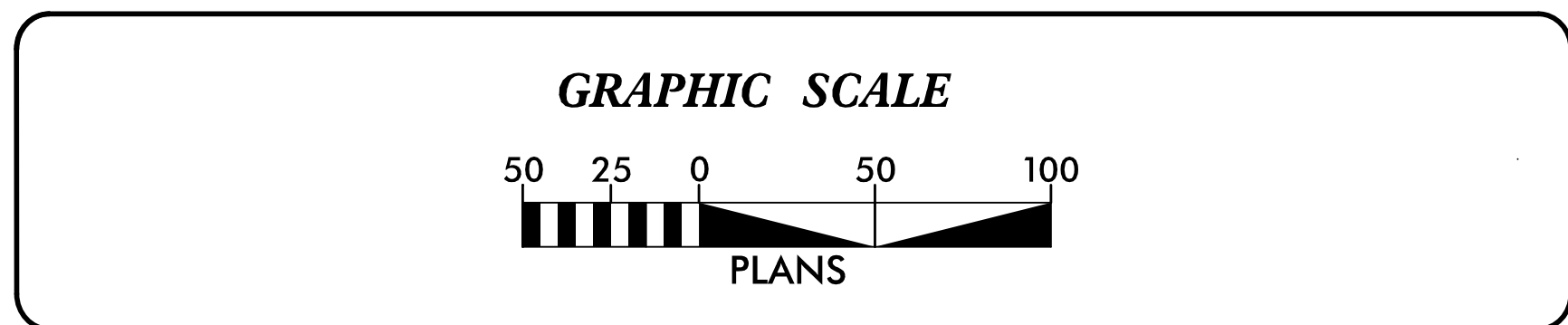
NORTHAMPTON COUNTY

**LOCATION: BRIDGE NO. 650018 OVER PADDYS DELIGHT CREEK
ON JENKINS MILL ROAD (SR 1510)**

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE




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



**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.**


VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

Prepared In the Office of:

 VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

Designed by:

ERIC BERGER **4036**
NAME 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 STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. BP1.R009	SHEET NO. EC-02
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

EROSION & SEDIMENT CONTROL LEGEND

Std. #	Description	Symbol	Std. #	Description	Symbol
1605.01	Temporary Silt Fence		1633.01	Temporary Rock Silt Check Type A	
1606.01	Special Sediment Control Fence		1633.02	Temporary Rock Silt Check Type B	
1622.01	Temporary Berms and Slope Drains		1633.03	Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant	
1630.02	Silt Basin Type B		1634.01	Temporary Rock Sediment Dam Type A	
1630.03	Temporary Silt Ditch		1634.02	Temporary Rock Sediment Dam Type B	
1630.04	Stilling Basin		1635.01	Rock Pipe Inlet Sediment Trap Type A	
1630.05	Temporary Diversion		1635.02	Rock Pipe Inlet Sediment Trap Type B	
1630.06	Special Stilling Basin		1636.01	Excelsior Wattle Check	
1630.07	Skimmer Basin		1636.01	Excelsior Wattle Check with Flocculant	
1630.08	Tiered Skimmer Basin		1636.01	Coir Fiber Wattle Check	
1630.09	Earthen Dam with Skimmer		1636.01	Coir Fiber Wattle Check with Flocculant	
	Infiltration Basin		1636.02	Silt Fence Excelsior Wattle Break	
	Rock Inlet Sediment Trap:			Silt Fence Coir Fiber Wattle Break	
1632.01	Type A		1636.03	Excelsior Wattle Barrier	
1632.02	Type B		1636.03	Coir Fiber Wattle Barrier	
1632.03	Type C				

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. <i>BPI-R009</i>	SHEET NO. <i>EC-3A</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

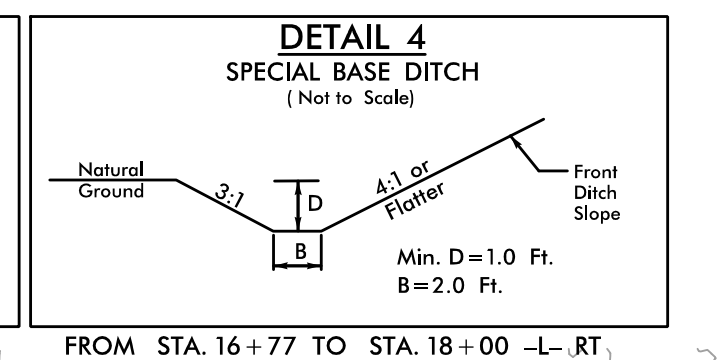
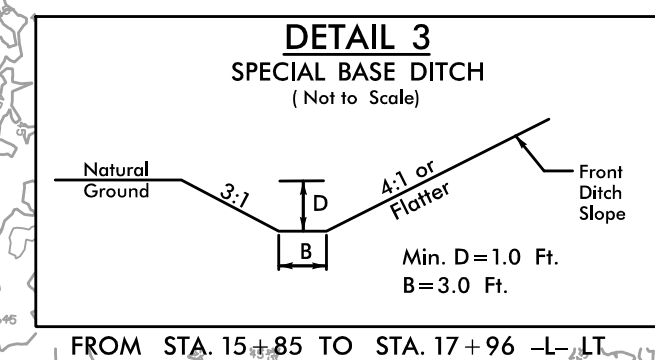
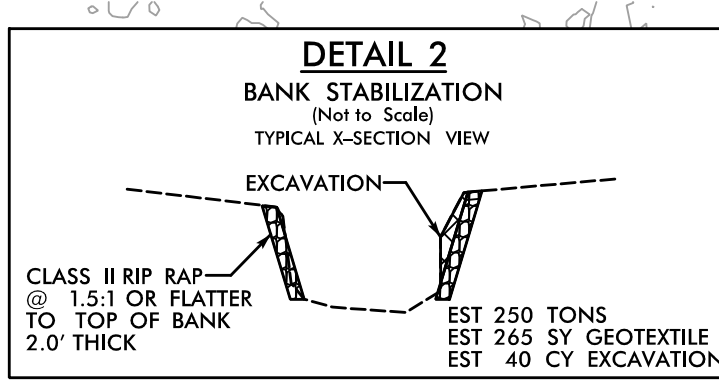
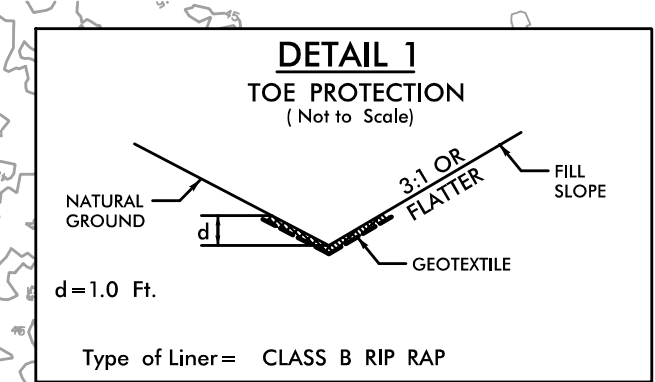
SOIL STABILIZATION TIMEFRAMES

<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
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 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 04

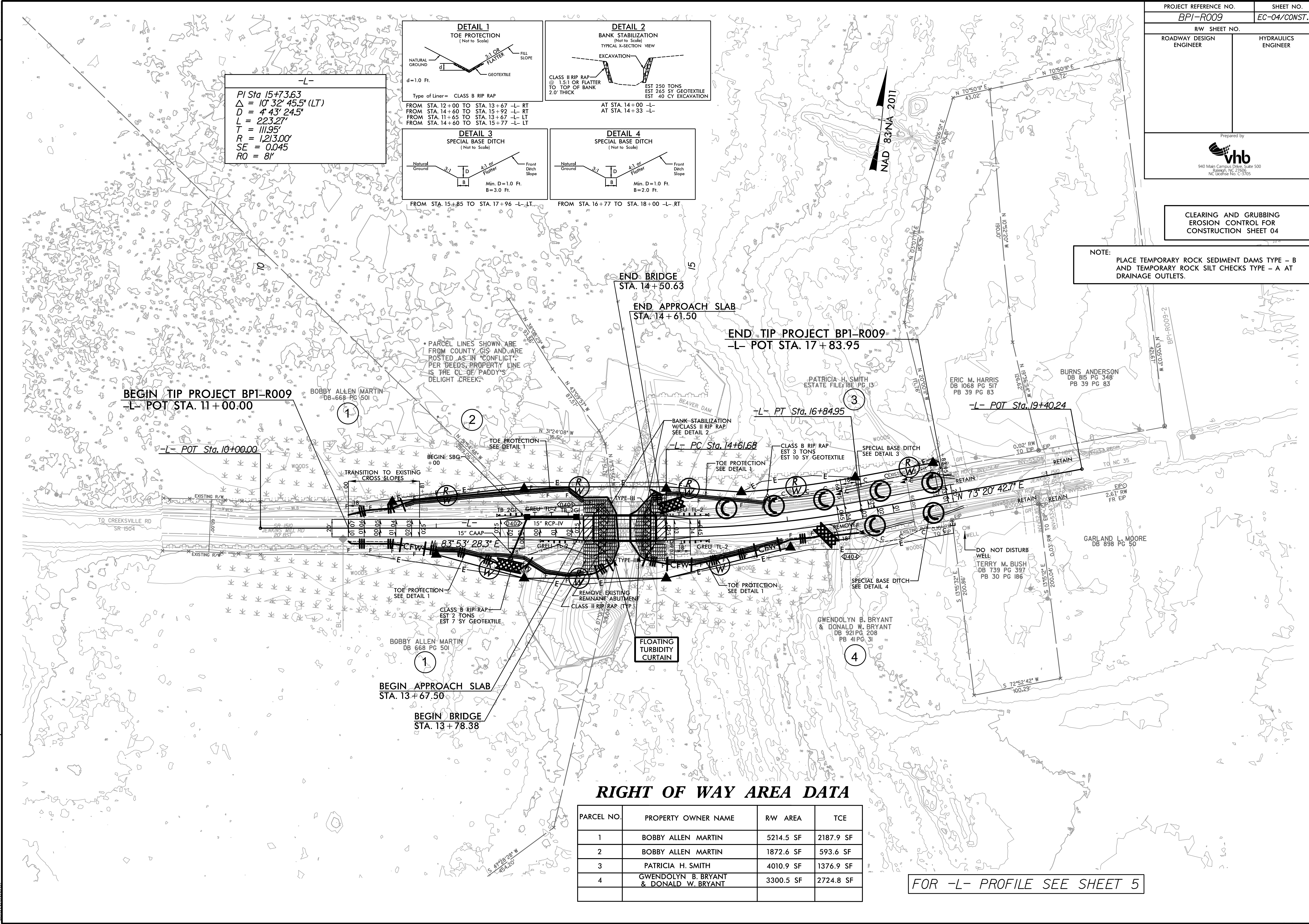
NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B
AND TEMPORARY ROCK SILT CHECKS TYPE - A AT
DRAINAGE OUTLETS.

-L-
PI Sta 15+73.63
Δ = 10° 32' 45.5" (LT)
D = 4 43' 24.5"
L = 223.27'
T = 111.95'
R = 1,213.00'
SE = 0.045
RO = 8'



FROM STA. 15+85 TO STA. 17+96 -L- LT

FROM STA. 16+77 TO STA. 18+00 -L- RT



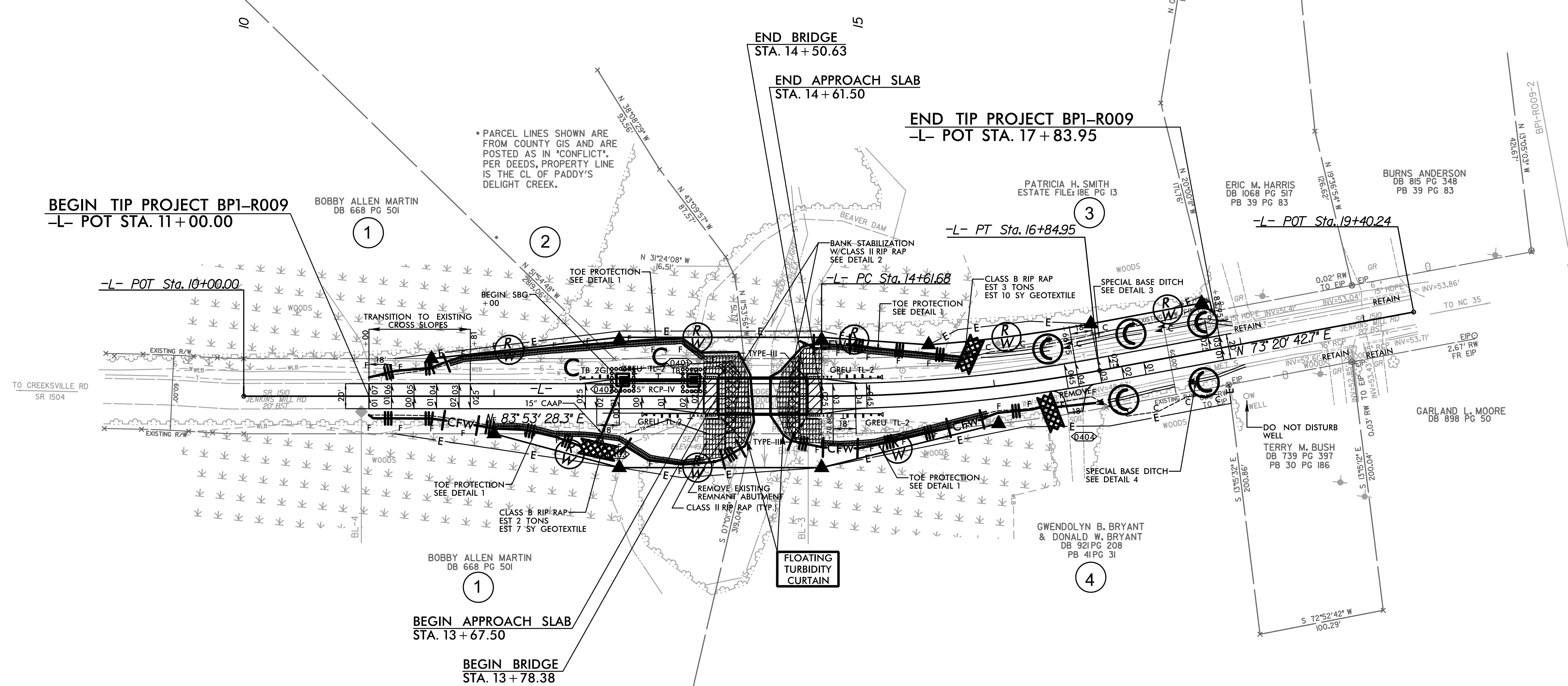
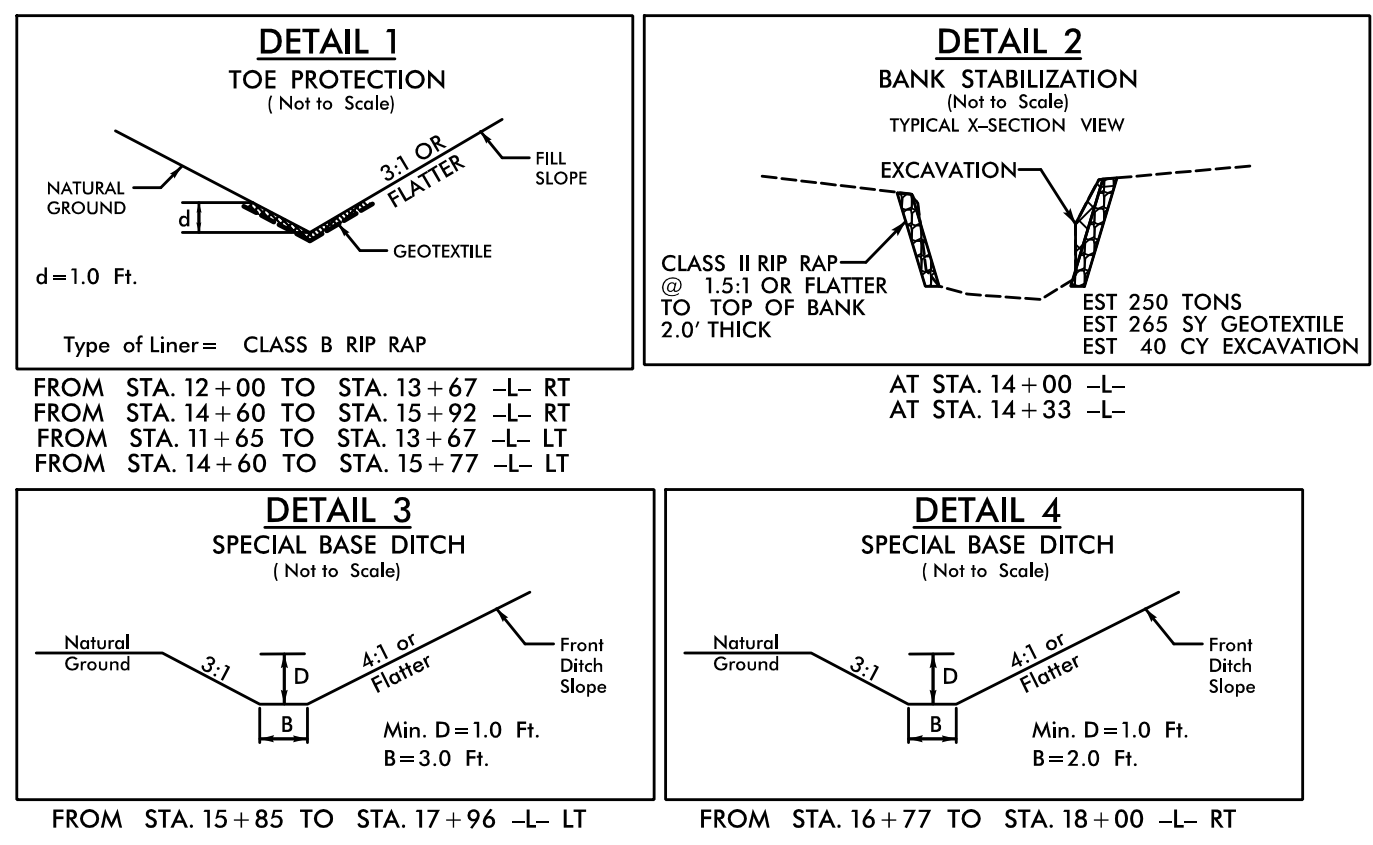
RIGHT OF WAY AREA DATA

PARCEL NO.	PROPERTY OWNER NAME	RW AREA	TCE
1	BOBBY ALLEN MARTIN	5214.5 SF	2187.9 SF
2	BOBBY ALLEN MARTIN	1872.6 SF	593.6 SF
3	PATRICIA H. SMITH	4010.9 SF	1376.9 SF
4	GWENDOLYN B. BRYANT & DONALD W. BRYANT	3300.5 SF	2724.8 SF

FOR -L- PROFILE SEE SHEET 5

-L-

PI Sta 15+73.63
 $\Delta = 10^\circ 32' 45.5" (LT)$
 $D = 4' 43" 24.5"$
 $L = 223.27'$
 $T = 111.95'$
 $R = 1,213.00'$
 $SE = 0.045$
 $RO = 8'$

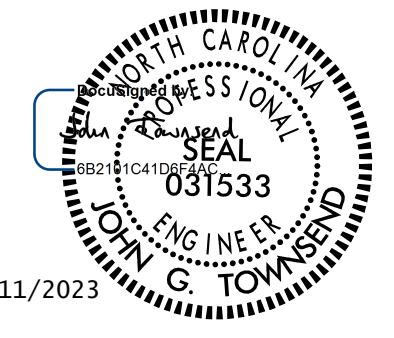


RIGHT OF WAY AREA DATA

PARCEL NO.	PROPERTY OWNER NAME	RW AREA	TCE
1	BOBBY ALLEN MARTIN	5214.5 SF	2187.9 SF
2	BOBBY ALLEN MARTIN	1872.6 SF	593.6 SF
3	PATRICIA H. SMITH	4010.9 SF	1376.9 SF
4	GWENDOLYN B. BRYANT & DONALD W. BRYANT	3300.5 SF	2724.8 SF

FOR -L- PROFILE SEE SHEET 5

8/17/99
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 10/10/2009

TIP NO.	SHEET NO.
BP1-R009	SGN-1
APPROVED: _____	
DATE: _____	
SEAL	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

**SIGNING PLAN
NORTHAMPTON COUNTY**

LOCATION: BRIDGE NO. 650018 OVER PADDYS DELIGHT CREEK ON JENKINS MILL ROAD (SR 1510)

T.I.P.: BP1-R009

CONTRACT:

SUMMARY OF QUANTITIES

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	2	EA.
4158000000	907	DISPOSAL OF SIGN SYSTEM, WOOD	2	EA.

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

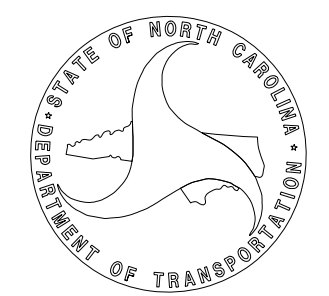
<u>STD. NO.</u>	<u>TITLE</u>
-----------------	--------------


GENERAL NOTES

- . IF REMOVAL OR RELOCATION OF SIGNS ON PRIVATE STREET (NON-STATE MAINTAINED) IS REQUIRED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL INFORM THE ENGINEER. THE WORK WILL BE COMPLETED BY OTHERS.
- . ALL EXISTING SIGNS ON "U" CHANNEL POST WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND DISPOSED OF UNLESS OTHERWISE NOTED ON PLANS.
- . WHEN EXISTING SIGNS ARE REMOVED AND INSTALLED ON NEW SUPPORTS, THE RE-ERECTION SHALL IMMEDIATELY FOLLOW THE REMOVAL.
- . SEE ROADWAY PLANS FOR GUARD/GUIDE RAIL DETAILS.

INDEX

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
SGN-1	TITLE SHEET
SGN-2	EXISTING SIGNS

PLAN SUBMITTED TO:	
<i>John Abel, Project Engineer</i>	

PLAN PREPARED BY: VHB Engineering NC, P.C.	 <small>940 Main Campus Drive, Suite 500 Raleigh, NC 27606 NC License No. C-3705</small>
<i>John Townsend, PE</i> Project Engineer	

TIP NO.	SHEET NO.
BP1-R009	SGN-2

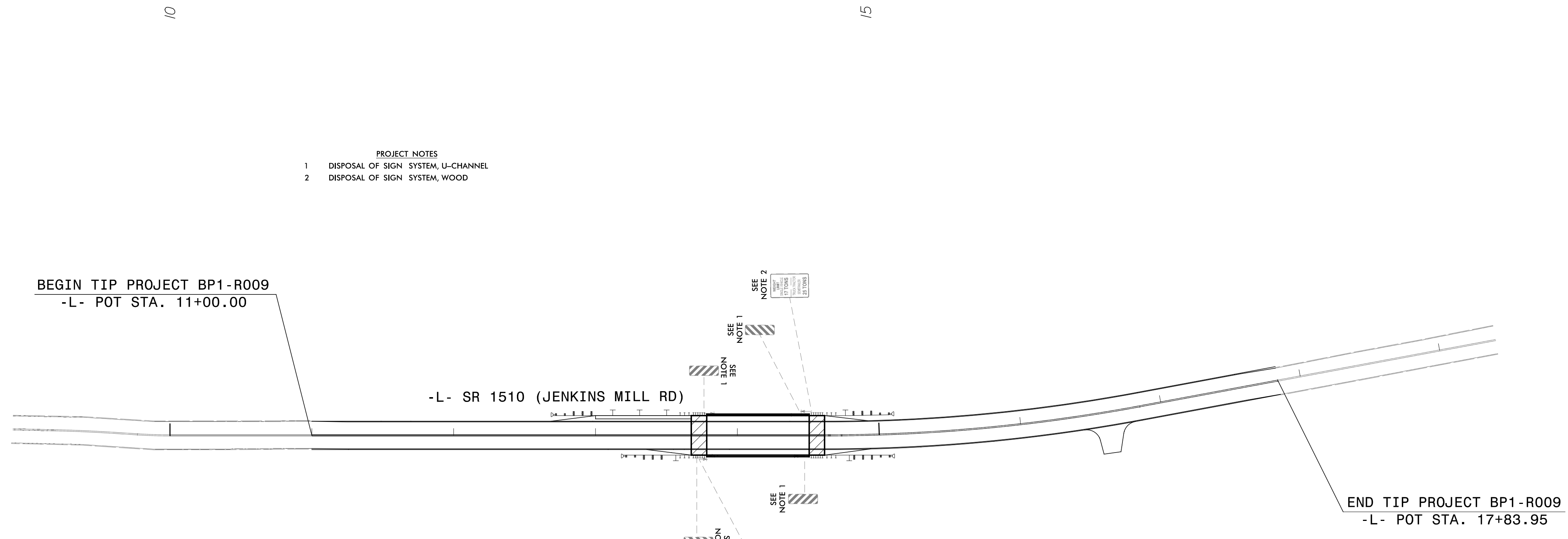
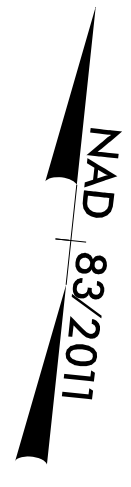
APPROVED: _____

DATE: _____

SEAL

8/11/2023

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

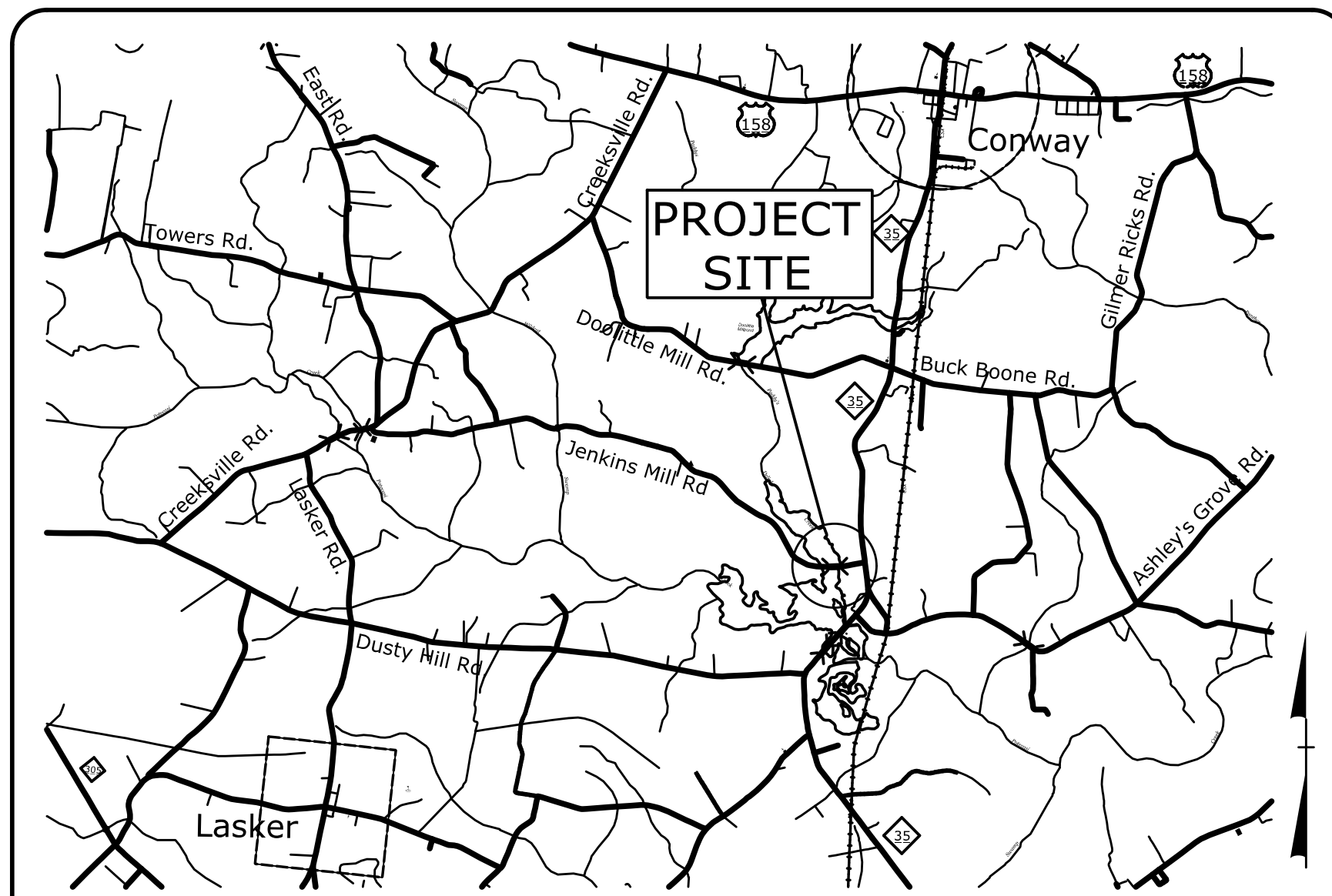


8/11/2023
R:\Traffic\Signing\CADD\Signing_Layout_Plane\BP1-R009_sgn_psh_02.dgn
User:jtownsend

EXISTING SIGNS

09_08/2019

CONTRACT: TIP PROJECT: BPI-R009

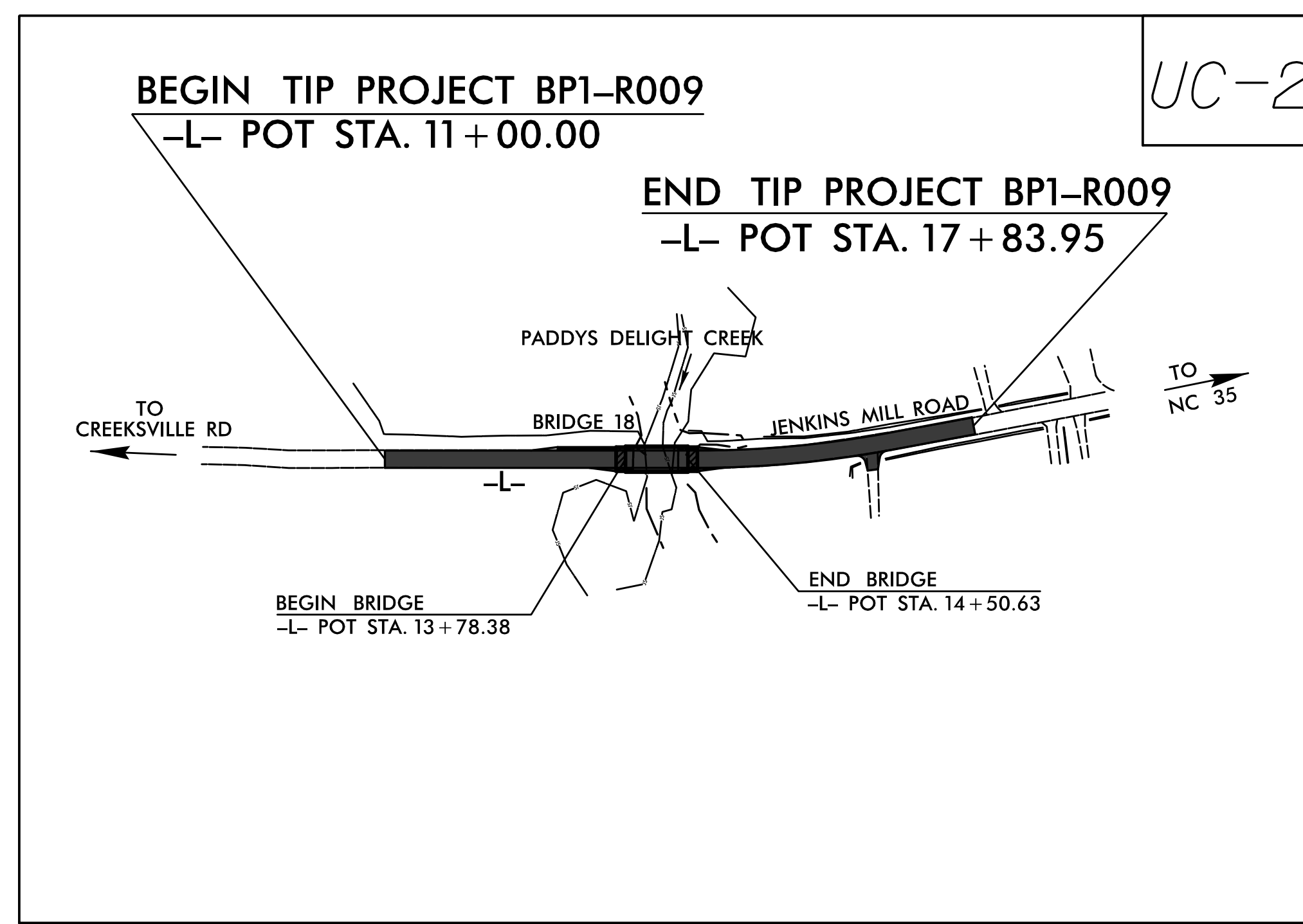
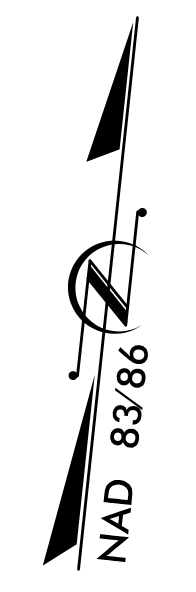
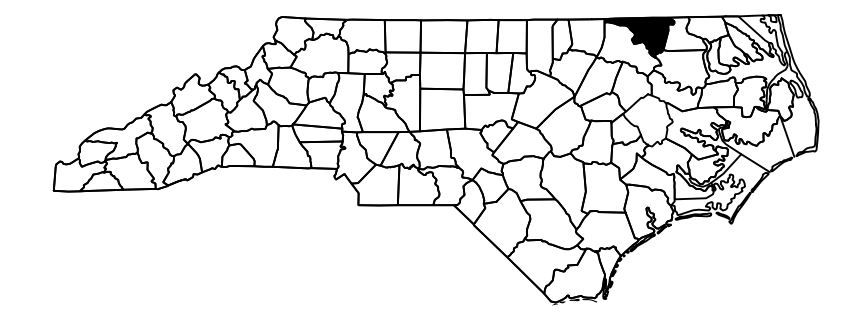


VICINITY MAP
NOT TO SCALE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
NORTHAMPTON COUNTY

**LOCATION: BRIDGE NO. 650018 OVER PADDYS DELIGHT CREEK
ON JENKINS MILL ROAD (SR 1510)**
TYPE OF WORK: WATER MAIN RELOCATION

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BPI-R009	UC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BPI-R009.1	STATE FUNDED	PE	
BPI-R009.2	STATE FUNDED	RW&UTIL.	
BPI-R009.3	STATE FUNDED	CONSTRUCTION	

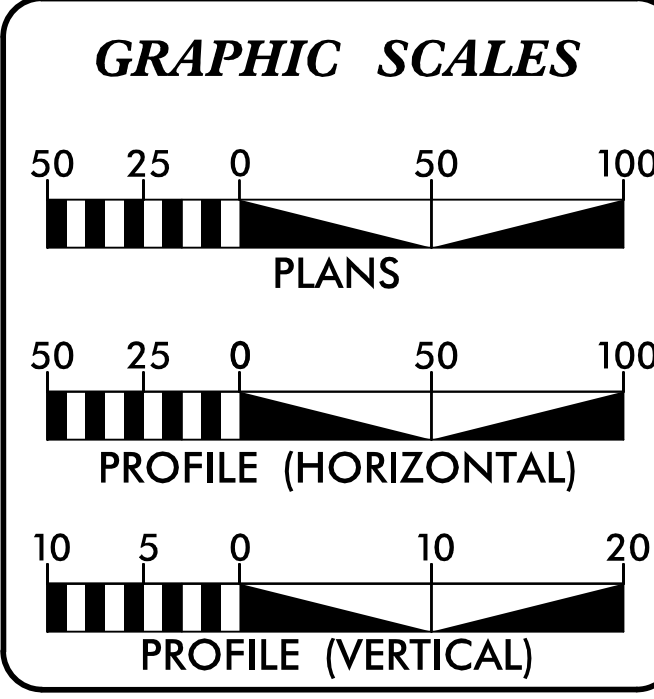


INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UC-1	TITLE SHEET
UC-2	UTILITY CONSTRUCTION PLAN VIEW
UC-3	UTILITY CONSTRUCTION PROFILE
UC-4, UC-5	CONSTRUCTION DETAILS

ALL WORK ASSOCIATED WITH THE INSTALLATION OF WATER MAINS SHALL BE IN ACCORDANCE WITH THE NCDOT STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, LATEST EDITION.

CONTRACT:



DESIGN DATA

AADT 2020 =	220
ADT 2022 =	N/A
K =	N/A %
D =	N/A %
T =	N/A % *
V =	40 MPH
FUNC CLASS =	LOCAL

SUBREGIONAL TIER DESIGN GUIDELINES

WATER AND SEWER OWNERS ON PROJECT

NORTHAMPTON COUNTY PUBLIC WORKS DEPARTMENT

LENGTH OF WATER MAINS ON PROJECT

6" WATER MAIN - 275 LF
8" HDD WATER MAIN - 310 LF

Prepared for the North Carolina Department of Transportation
In the Office of:

940 Main Campus Drive, Suite 500
Raleigh, NC 27606
NC License No. C-3105

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
February 24, 2023

LETTING DATE:
October 10, 2023

NCDOT CONTACT

UTILITIES DESIGN ENGINEER

10/16/2023

BRANDON BARHAM, PE
UTILITIES PROJECT ENGINEER

JOHN M. KAMPRATH, PE
UTILITIES PROJECT DESIGN ENGINEER

JOHN ABEL
PROJECT ENGINEER-ROADWAY DESIGN

DIVISION OF HIGHWAYS DIVISION 1

113 AIRPORT DRIVE
SUITE 100
EDENTON, NC 27932

STEPHEN G. SEALY - DIVISION UTILITIES ENGINEER

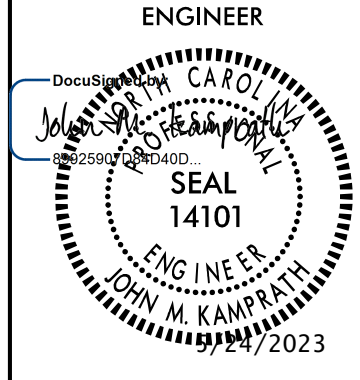

DANIEL MERRITT - DIVISION UTILITIES COORDINATOR

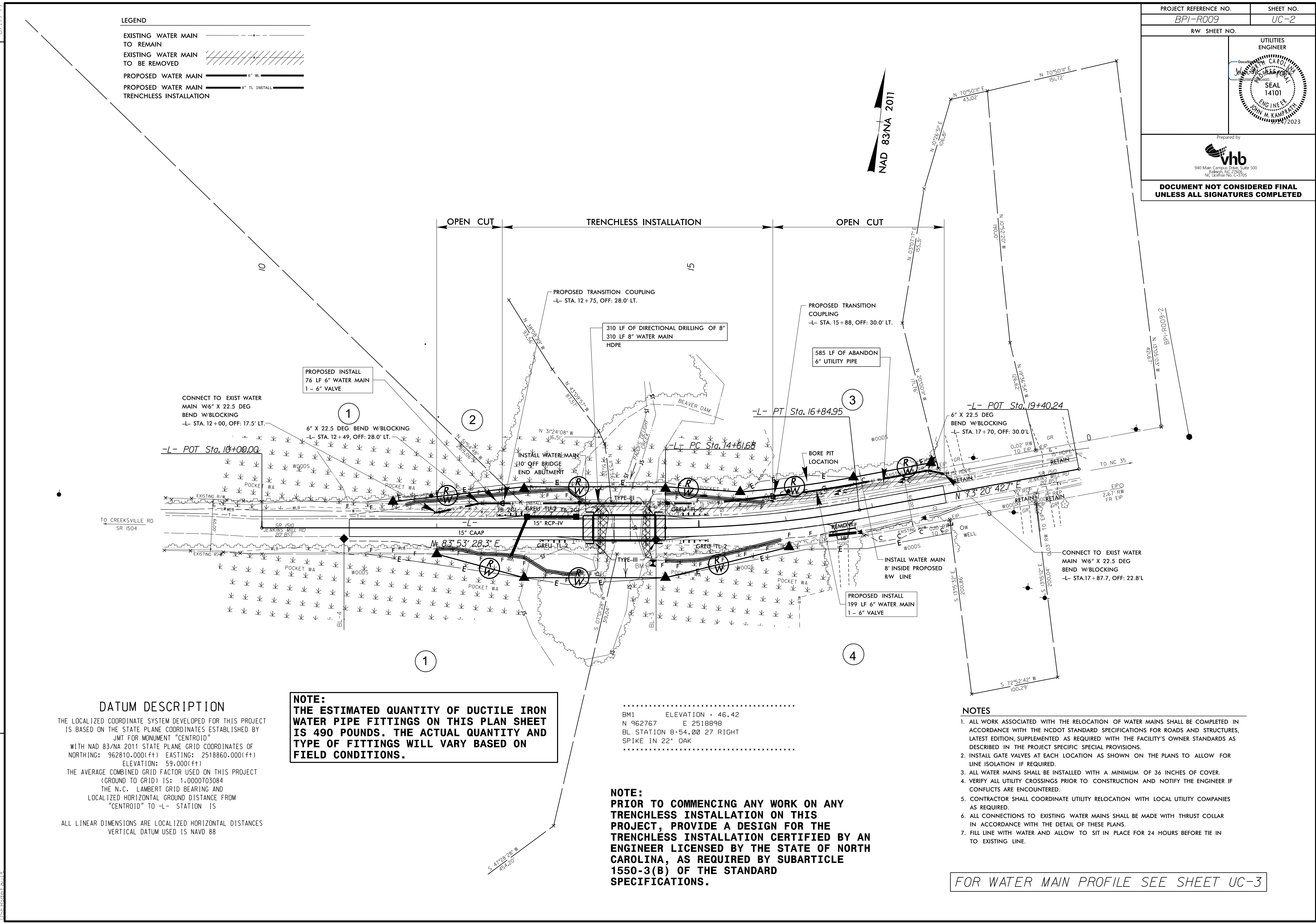
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8/17/99

LEGEND

EXISTING WATER MAIN TO REMAIN	
EXISTING WATER MAIN TO BE REMOVED	
PROPOSED WATER MAIN TO BE REMOVED	
PROPOSED WATER MAIN TRENCHLESS INSTALLATION	
PROPOSED WATER MAIN TO REMAIN	
PROPOSED WATER MAIN TRENCHLESS INSTALLATION	

PROJECT REFERENCE NO. <i>BPI-R009</i>	SHEET NO. <i>UC-2</i>
RW SHEET NO.	
UTILITIES ENGINEER	
	
Prepared by	
	
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>	



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY JMT FOR MONUMENT "CENTROID"

WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 962810.000(±ft) EASTING: 2518860.000(±ft) ELEVATION: 59.000(±ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.0000703084

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "CENTROID" TO -L- STATION IS

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTE:
 THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 490 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

.....
 BM1 ELEVATION = 46.42
 N 962767 E 2518898
 BL STATION 8+54.00 27 RIGHT
 SPIKE IN 22' OAK

NOTE:
 PRIOR TO COMMENCING ANY WORK ON ANY TRENCHLESS INSTALLATION ON THIS PROJECT, PROVIDE A DESIGN FOR THE TRENCHLESS INSTALLATION CERTIFIED BY AN ENGINEER LICENSED BY THE STATE OF NORTH CAROLINA, AS REQUIRED BY SUBARTICLE 1550-3(B) OF THE STANDARD SPECIFICATIONS.

- NOTES**
1. ALL WORK ASSOCIATED WITH THE RELOCATION OF WATER MAINS SHALL BE COMPLETED IN ACCORDANCE WITH THE NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, LATEST EDITION, SUPPLEMENTED AS REQUIRED WITH THE FACILITY'S OWNER STANDARDS AS DESCRIBED IN THE PROJECT SPECIFIC SPECIAL PROVISIONS.
 2. INSTALL GATE VALVES AT EACH LOCATION AS SHOWN ON THE PLANS TO ALLOW FOR LINE ISOLATION IF REQUIRED.
 3. ALL WATER MAINS SHALL BE INSTALLED WITH A MINIMUM OF 36 INCHES OF COVER.
 4. VERIFY ALL UTILITY CROSSINGS PRIOR TO CONSTRUCTION AND NOTIFY THE ENGINEER IF CONFLICTS ARE ENCOUNTERED.
 5. CONTRACTOR SHALL COORDINATE UTILITY RELOCATION WITH LOCAL UTILITY COMPANIES AS REQUIRED.
 6. ALL CONNECTIONS TO EXISTING WATER MAINS SHALL BE MADE WITH THRUST COLLAR IN ACCORDANCE WITH THE DETAIL OF THESE PLANS.
 7. FILL LINE WITH WATER AND ALLOW TO SIT IN PLACE FOR 24 HOURS BEFORE TIE IN TO EXISTING LINE.

FOR WATER MAIN PROFILE SEE SHEET UC-3

5/24/2009
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 J:\Projects\BPI-R009\ut1.psh\UC-2.dgn

5/14/99

5/28/99

5/24/2023
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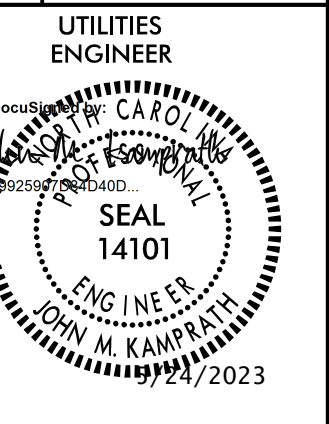
Prepared by



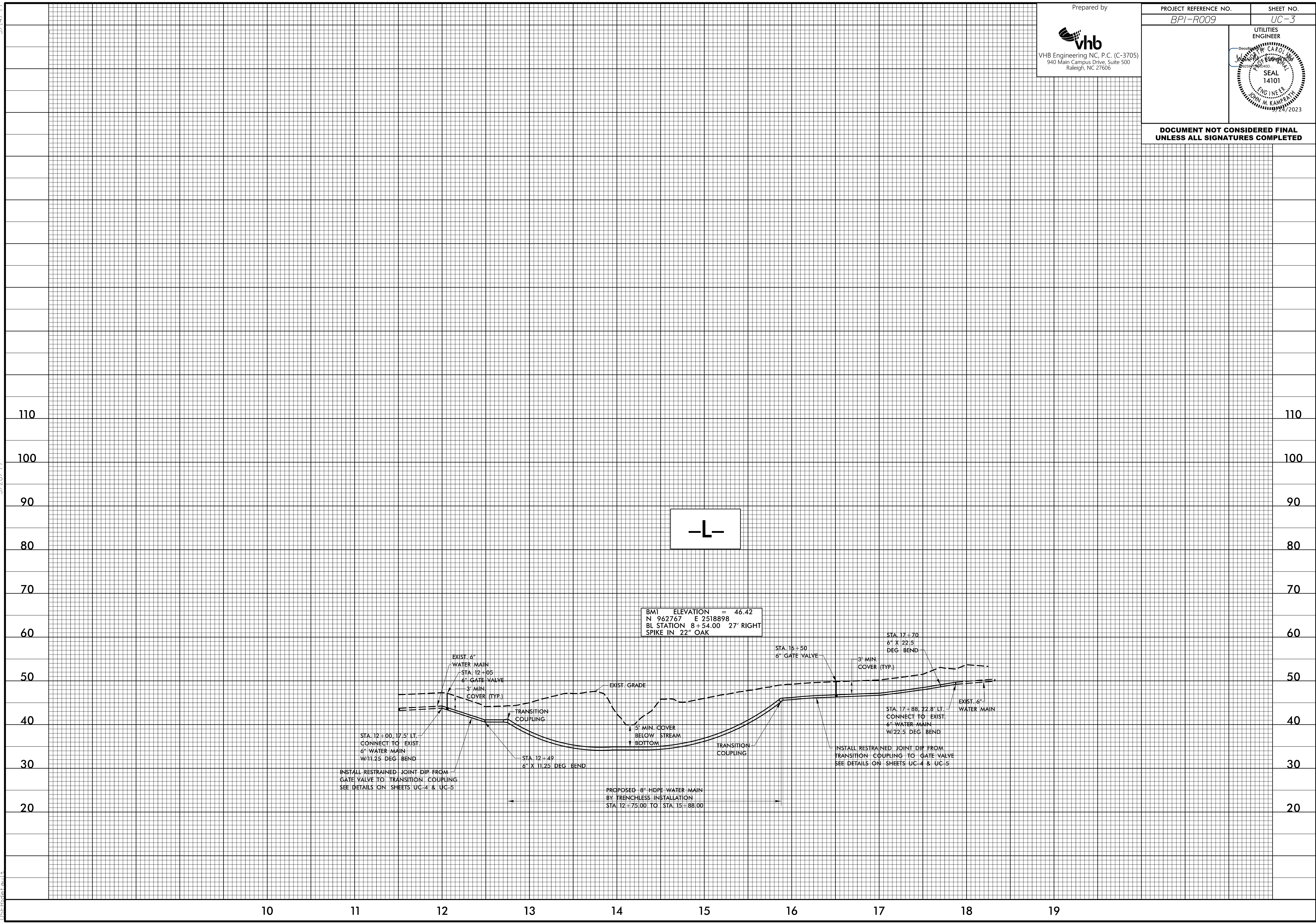
VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

PROJECT REFERENCE NO.
BPI-R009

SHEET NO.
UC-3



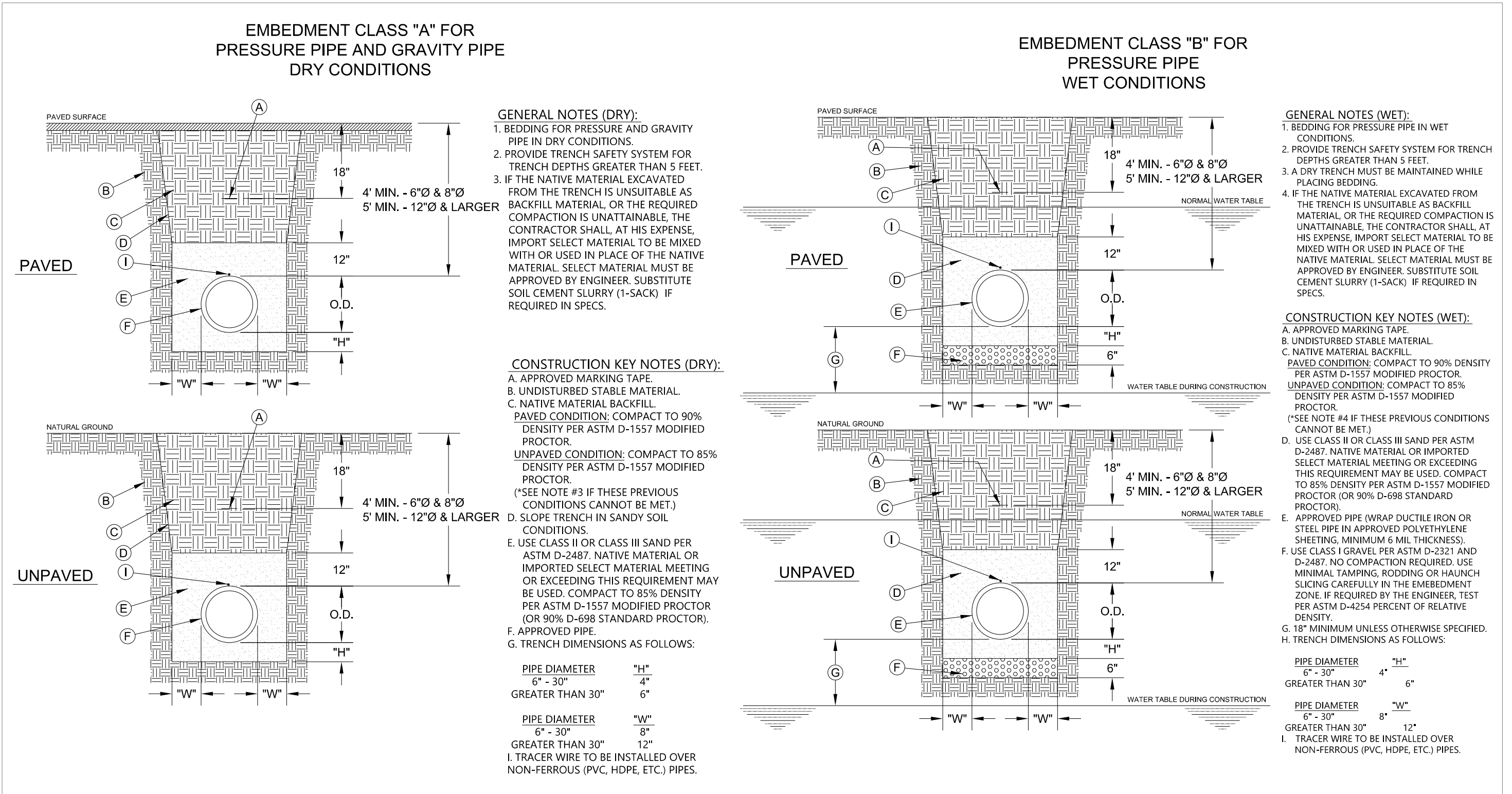
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**



10 11 12 13 14 15 16 17 18 19

110
100
90
80
70
60
50
40
30
20

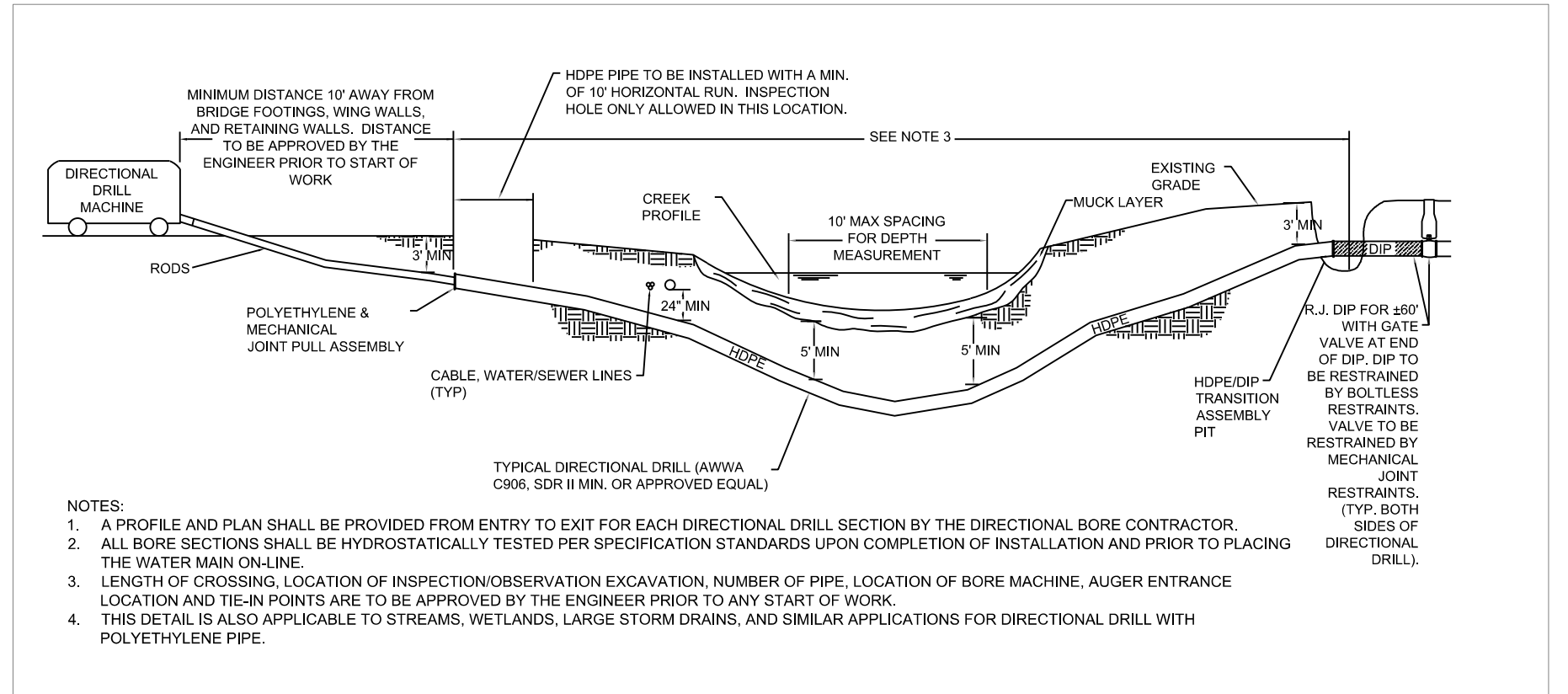
5/14/99



Utility Trench

N.T.S.

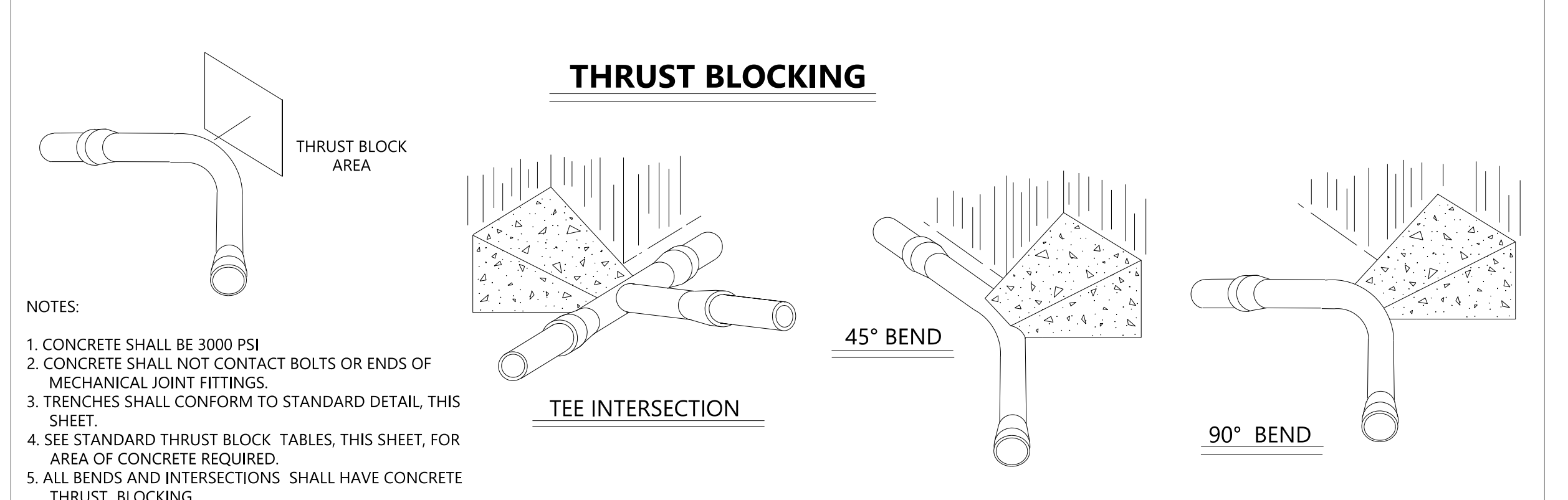
Source: VHB



Horizontal Directional Drill (HDD) HDPE

N.T.S.

Source: VHB



Standard Thrust Block Views

N.T.S.

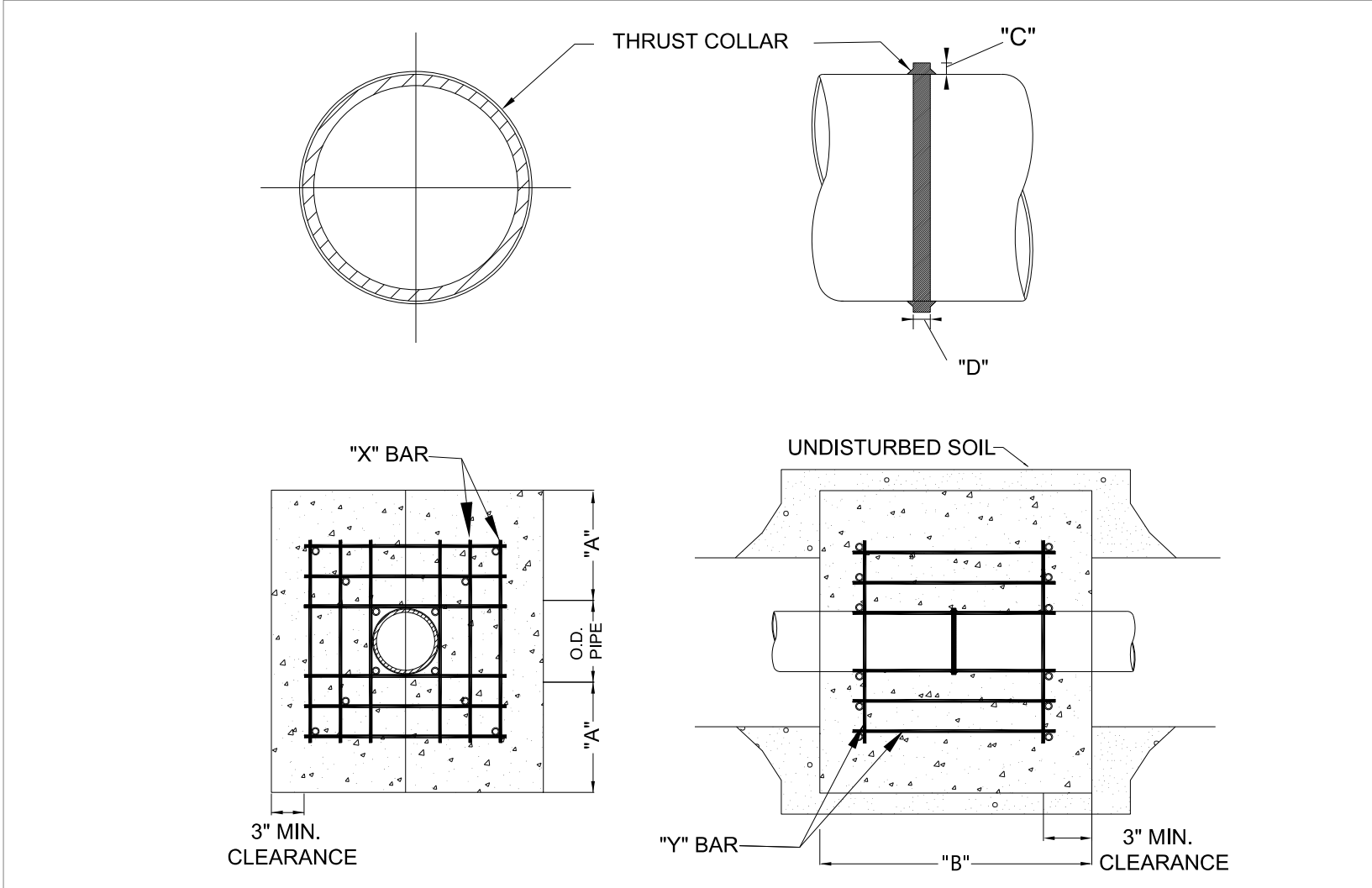
Source: VHB

REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS BASED ON TEST PRESSURE OF 200 P.S.I.										REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS BASED ON TEST PRESSURE OF 200 P.S.I.											
SIZE AND DEGREE OF BEND	STATIC THRUST IN POUNDS	ALL AREAS GIVEN IN SQUARE FEET.								SIZE AND DEGREE OF BEND	STATIC THRUST IN POUNDS	ALL AREAS GIVEN IN SQUARE FEET.									
		MODERATELY DRY CLAY 4000 LBS/FT ³	SOFT CLAY 2000 LBS/FT ³	GRAVEL / COARSE SAND 8000 LBS/FT ³	ALWAYS DRY	SAND / CLEAN DRY 8000 LBS/FT ³	SOIL 1000 LBS/FT ³	ROCK - POOR 10,000 LBS/FT ³	QUICKSAND / VERY POOR 10,000 LBS/FT ³			MODERATELY DRY CLAY 4000 LBS/FT ³	SOFT CLAY 2000 LBS/FT ³	GRAVEL / COARSE SAND 8000 LBS/FT ³	ALWAYS DRY	SAND / CLEAN DRY 8000 LBS/FT ³	SOIL 1000 LBS/FT ³	ROCK - POOR 10,000 LBS/FT ³	QUICKSAND / VERY POOR 10,000 LBS/FT ³		
6"	11 1/4°	1,108	1	1	1	1	1	1	2	1	24"	11 1/4°	17,734	5	9	11	3	3	5	18	2
	22 1/2°	2,207	1	2	2	1	1	1	3	1		22 1/2°	35,305	9	18	22	5	5	9	36	4
	45°	4,328	2	3	3	1	1	2	5	1		45°	69,252	18	35	42	9	9	18	70	7
	90°	7,996	2	4	5	1	1	2	8	1		90°	127,936	32	64	77	16	16	32	128	13
	PLUG	5,655	2	3	4	1	1	2	6	1		PLUG	90,478	23	46	55	12	12	23	91	10
8"	11 1/4°	1,970	1	1	2	1	1	1	2	1	30"	11 1/4°	27,709	7	14	17	4	4	7	2	3
	22 1/2°	3,922	1	2	3	1	1	1	4	1		22 1/2°	55,163	14	28	34	7	7	14	56	6
	45°	7,694	2	4	5	1	1	2	8	1		45°	108,206	28	55	65	14	14	28	109	11
	90°	14,215	4	8	9	2	2	4	15	2		90°	199,900	50	100	120	25	25	50	200	20
	PLUG	10,053	3	5	6	2	2	3	10	1		PLUG	141,372	36	71	85	18	18	36	142	15
12"	11 1/4°	4,433	2	3	3	1	1	2	5	1	36"	11 1/4°	39,901	10	20	24	5	5	10	40	4
	22 1/2°	8,826	3	5	6	2	2	3	9	1		22 1/2°	79,439	20	40	48	10	10	20	30	8
	45°	17,312	5	9	11	3	3	5	18	2		45°	155,816	39	78	94	20	20	39	156	16
	90°	31,983	8	16	19	4	4	8	32	4		90°	287,855	72	144	172	36	36	72	288	29
	PLUG	22,619	6	12	14	3	3	6	23	3		PLUG	203,575	51	102	122	26	26	51	204	21
16"	11 1/4°	7,881	2	4	5	1	1	2	8	1	48"	11 1/4°	70,935	18	36	43	9	9	18	71	8
	22 1/2°	15,691	4	8	10	2	2	4	16	2		22 1/2°	141,218	36	71	85	18	18	36	142	15
	45°	30,779	8	16	19	4	4	8	31	4		45°	277,007	70	139	166	35	35	70	277	28
	90°	56,861	15	29	35	8	8	15	57	6		90°	511,742	128	256	320	64	64	128	512	52
	PLUG	40,213	10	21	25	5	5	10	41	5		PLUG	361,911	91	181	217	46	46	91	362	37

REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.

USE 6" - 90 BEND VALUE FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR.

THRUST BLOCKING DESIGN QUANTITY TABLE				THRUST BLOCKING DESIGN QUANTITY TABLE			
REVISIONS	DATE	REVISIONS	DATE	REVISIONS	DATE	REVISIONS	DATE



REINFORCING REQUIREMENTS

I.D. PIPE	REBAR SIZE	"X" BAR LENGTH	"X" BAR WEIGHT	"Y" BAR LENGTH	"Y" BAR WEIGHT	NO. REQUIRED
6" - 36"	#5	2'-2" + O.D. PIPE	1.043 LBS/FT	1'-1"	1.1 LBS EACH	X-24, Y-12
36" & GREATER	#6	3'-0" + O.D. PIPE	1.502 LBS/FT	1'-3"	1.9 LBS EACH	X-24, Y-12

THRUST COLLAR, AND THRUST SCHEDULE

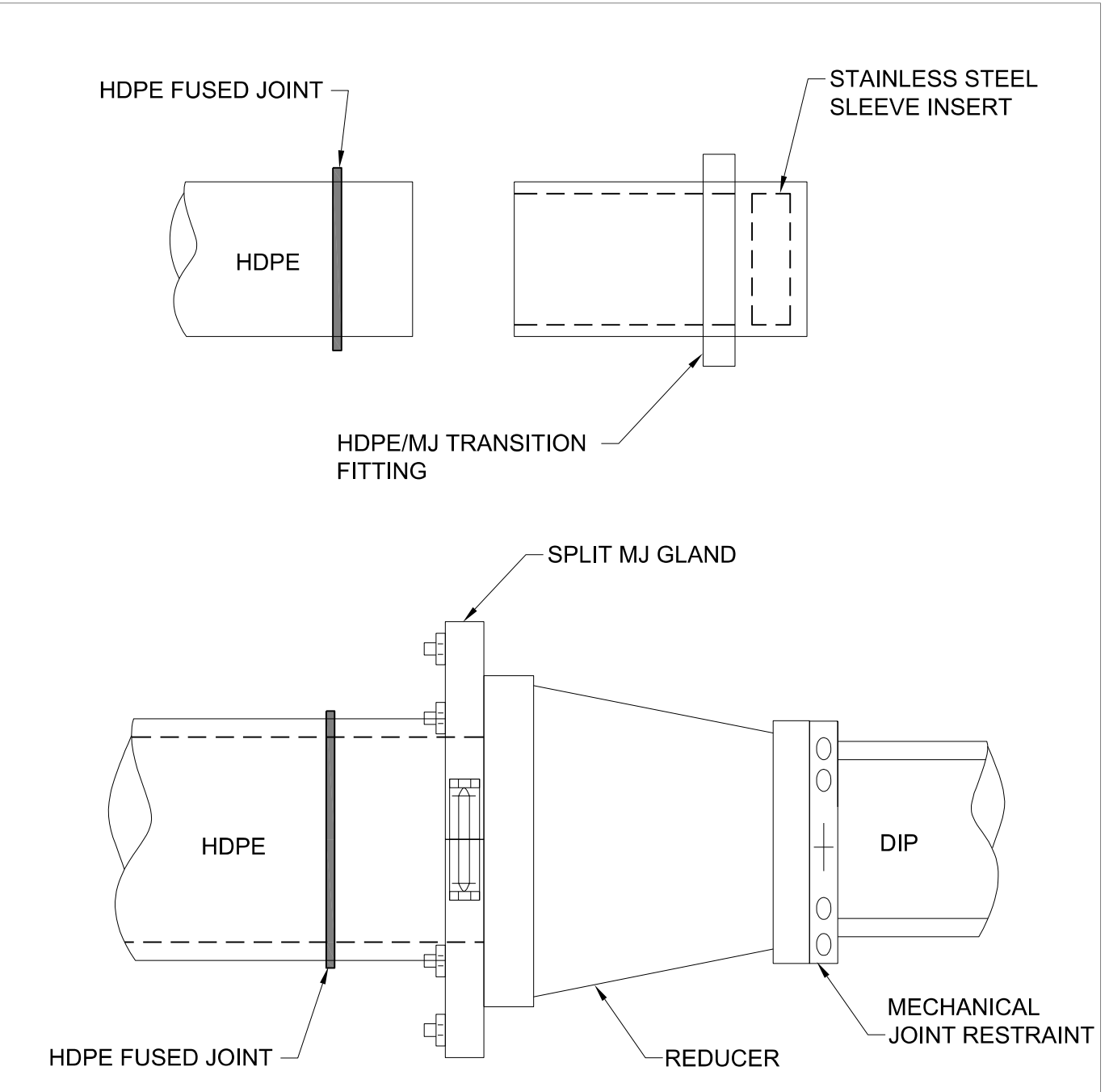
I.D. PIPE	"A"	"B"	"C"	"D"
6" - 16"	1'-4"	1'-7"	0'-2"	3/8"
20" - 24"	1'-4"	1'-7"	0'-3"	1/2"
30" - 36"	1'-4"	1'-7"	0'-4"	5/8"
48" & GREATER	1'-8"	1'-9"	0'-6"	7/8"

Thrust Collar Detail

N.T.S.

Source: VHB

5/9



HDPE/DIP Transition Assembly

N.T.S.

Source: VHB

5/24/2007 BPI-R009_url_details.dgn

5/28/99

Prepared by

VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

PROJECT REFERENCE NO. **BPI-R009**

SHEET NO. **UC-4**

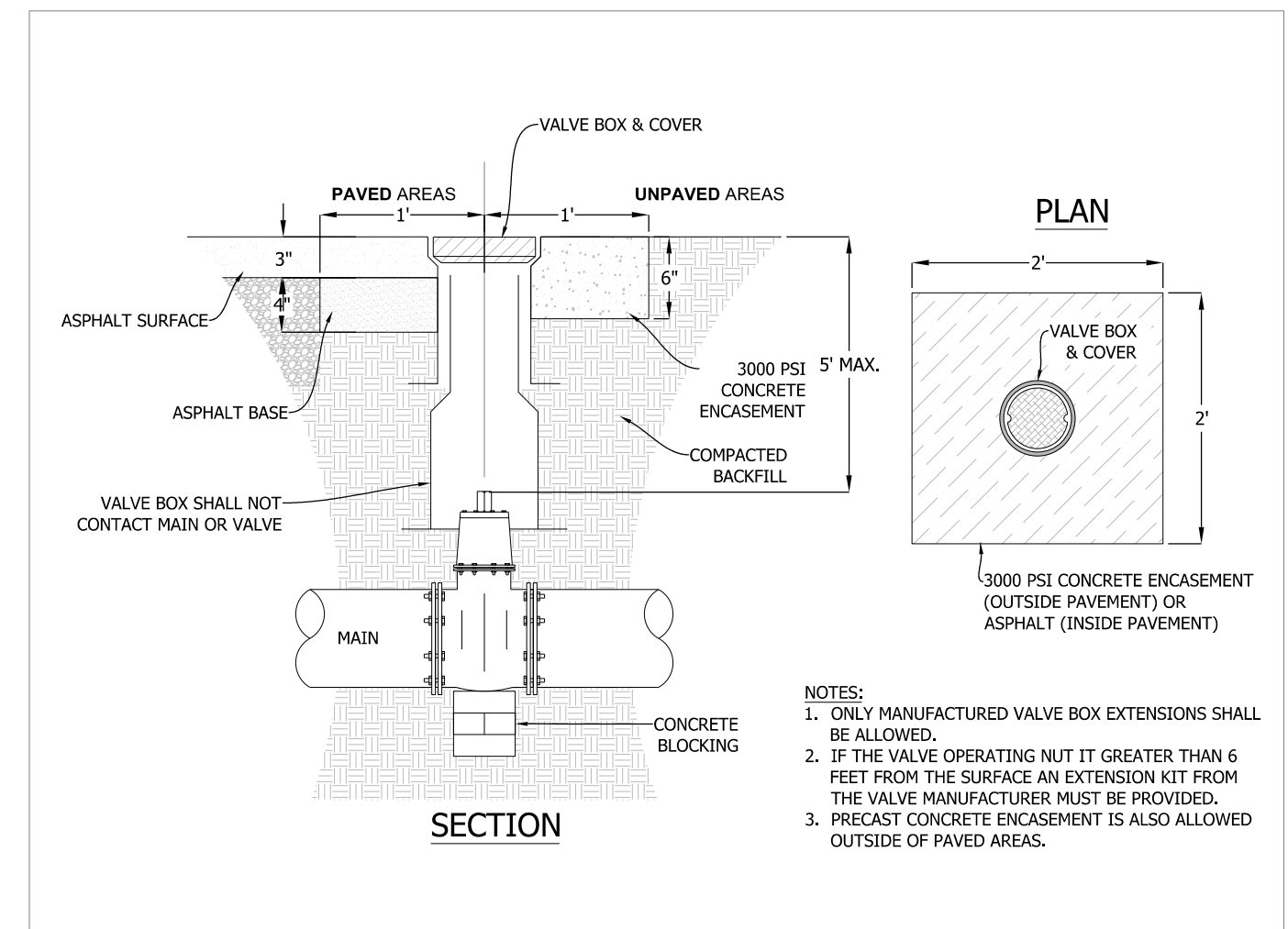
UTILITIES ENGINEER

SEAL 14101

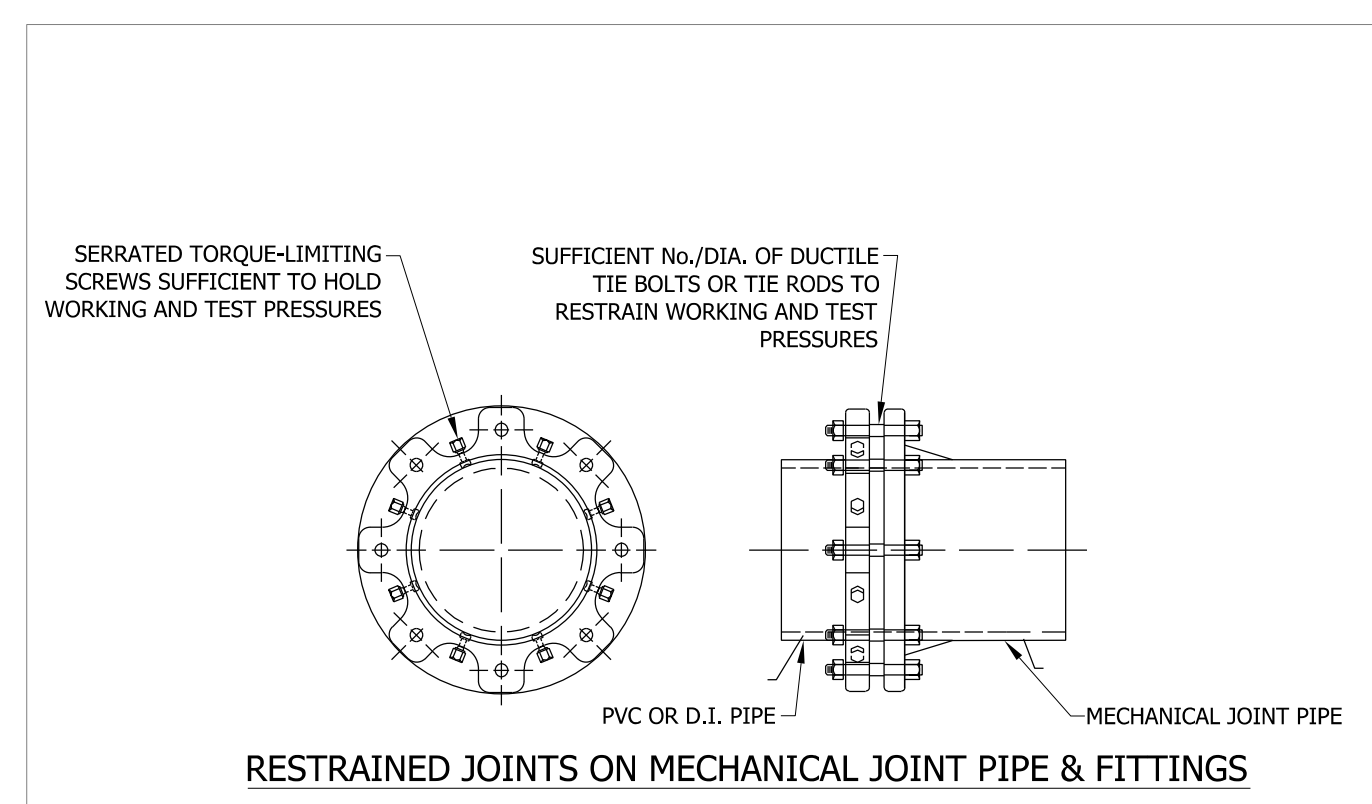
ENGINEER JOHN M. KAMPLATZ

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



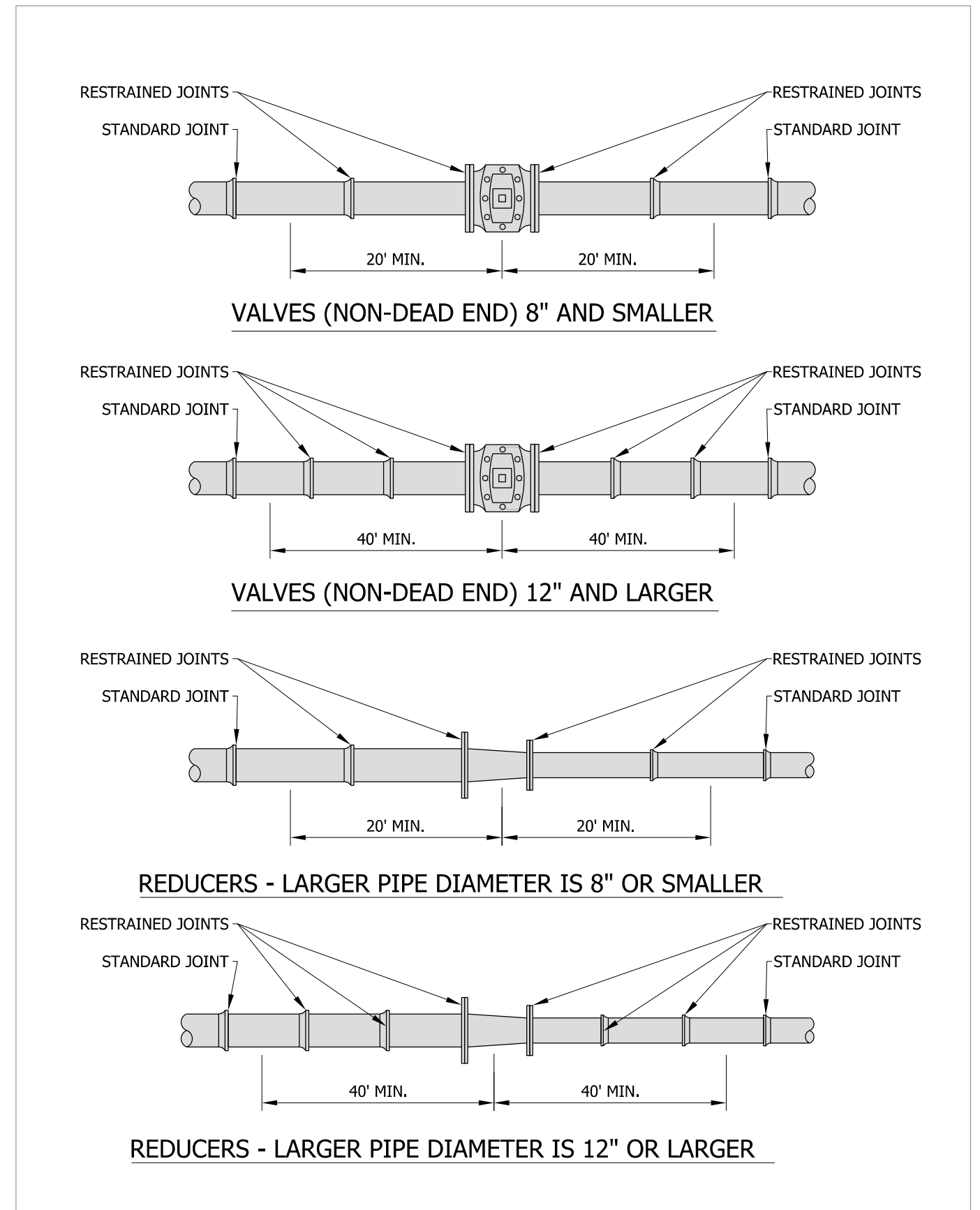
VALVE BOX INSTALLATION 9/20/19
 N.T.S. Source: VHB 0



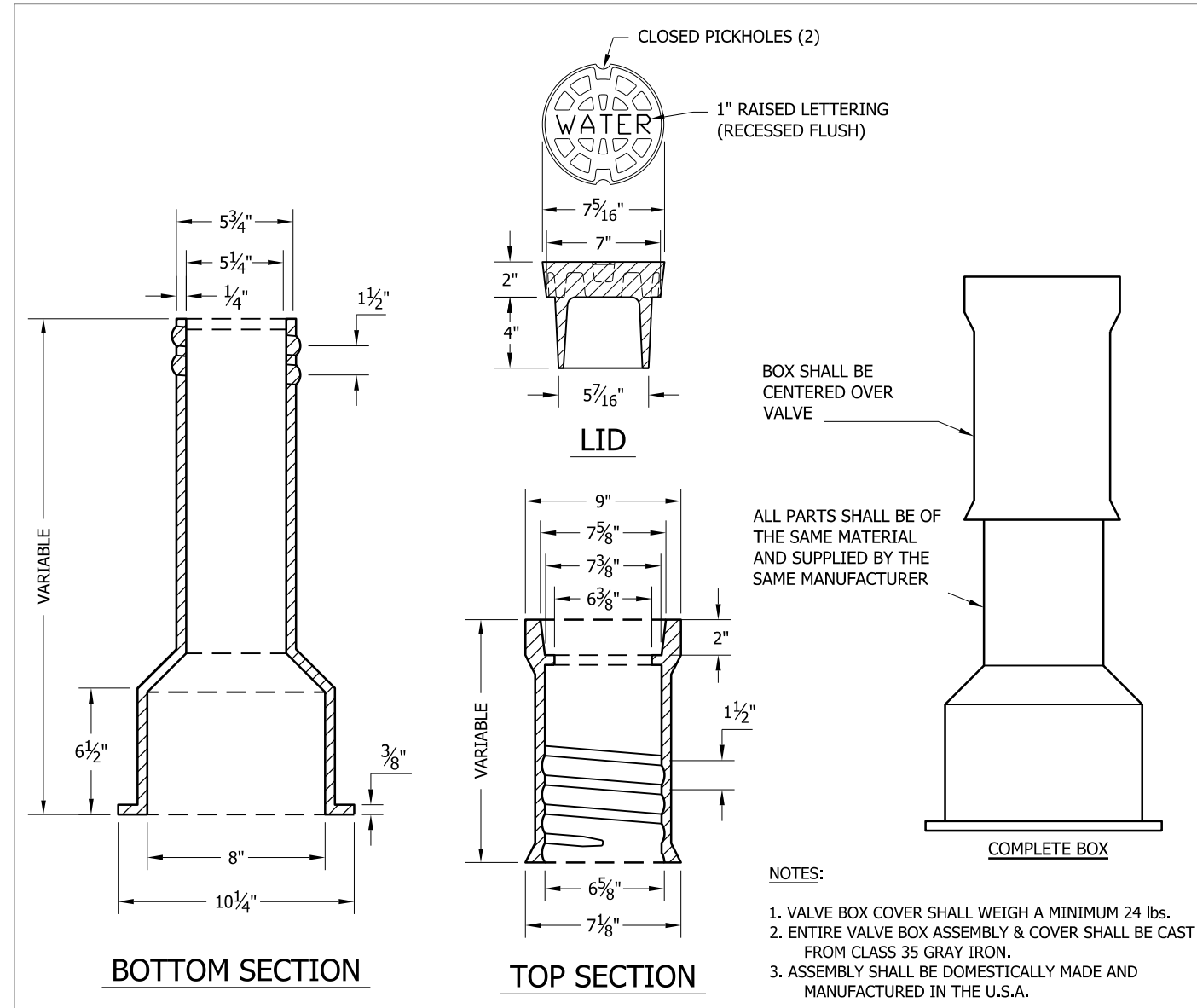
MINIMUM FOOTAGE OF RESTRAINED PIPE FOR VARIOUS DIAMETERS & DEGREES CAST & DUCTILE IRON ELBOWS

COVER	DEGREE OF ELBOW				VERTICAL OFFSET 45°		BRANCH OF TEE	REDUCER (LARGE SIDE ONLY)
					UPPER BEND (3')	LOWER BEND (3')		
	11.25°	22.5°	45°	90°				
DIA. MAIN	3'	3'	3'	3'	15'	10'	3'	3'
6"	2'	5'	10'	25'	15'	10'	15'	20'
8"	4'	6'	14'	33'	25'	15'	30'	40'
10"	5'	8'	18'	42'	27'	18'	40'	40'
12"	5'	10'	20'	50'	30'	20'	55'	45'
16"	7'	13'	28'	67'	45'	30'	80'	45'
20"	8'	17'	35'	84'	55'	35'	105'	45'

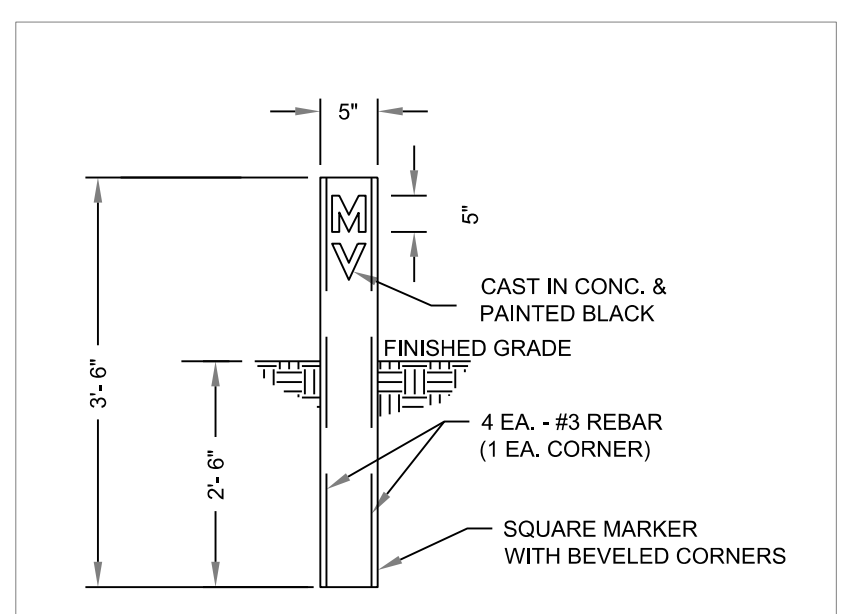
RESTRAINED JOINT DETAIL 9/20/19
 N.T.S. Source: VHB 0



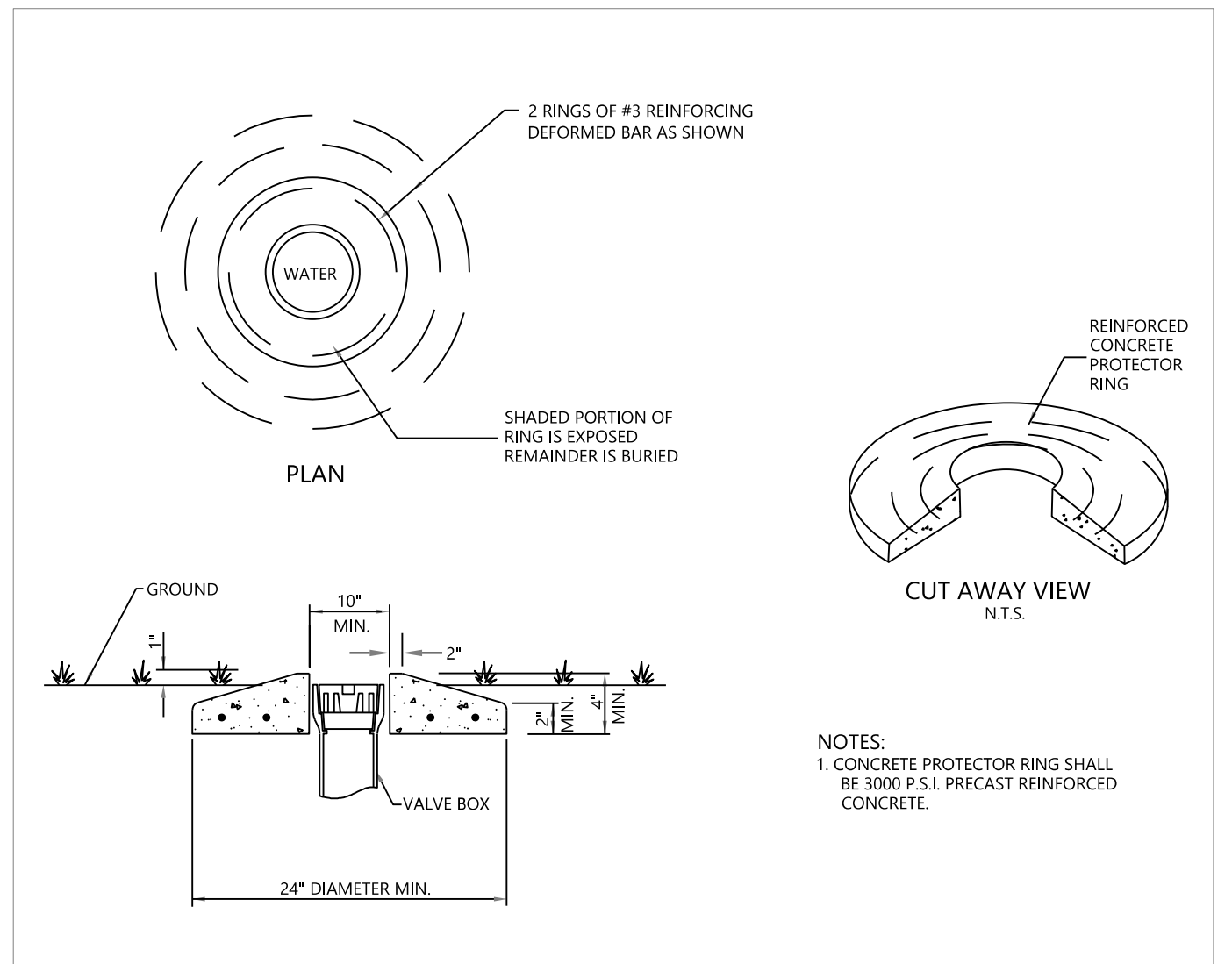
TYP. RESTRAINING FOR VALVES AND REDUCERS 9/20/19
 N.T.S. Source: VHB 0



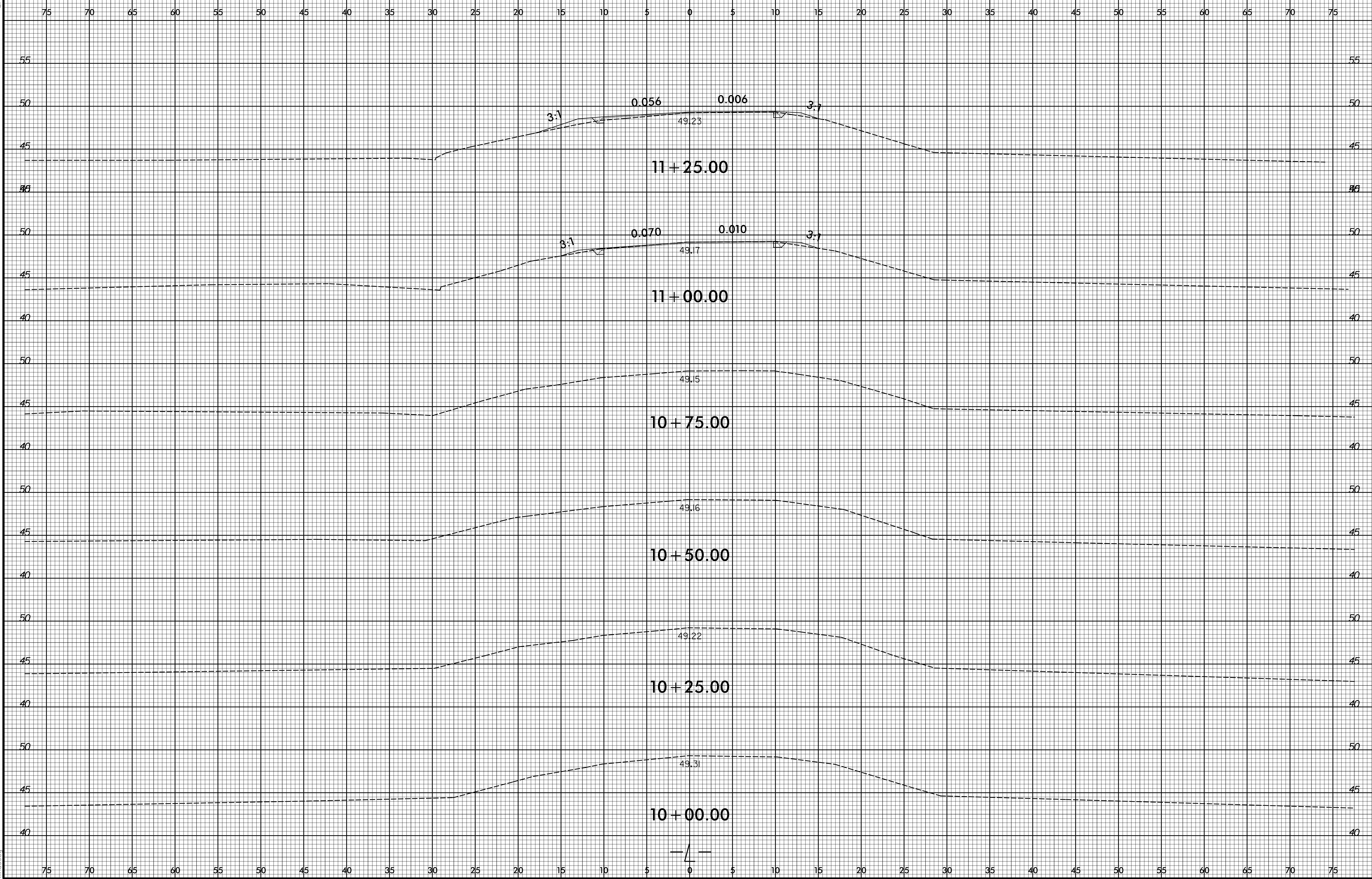
STANDARD WATER VALVE BOX 9/20/19
 N.T.S. Source: VHB 0



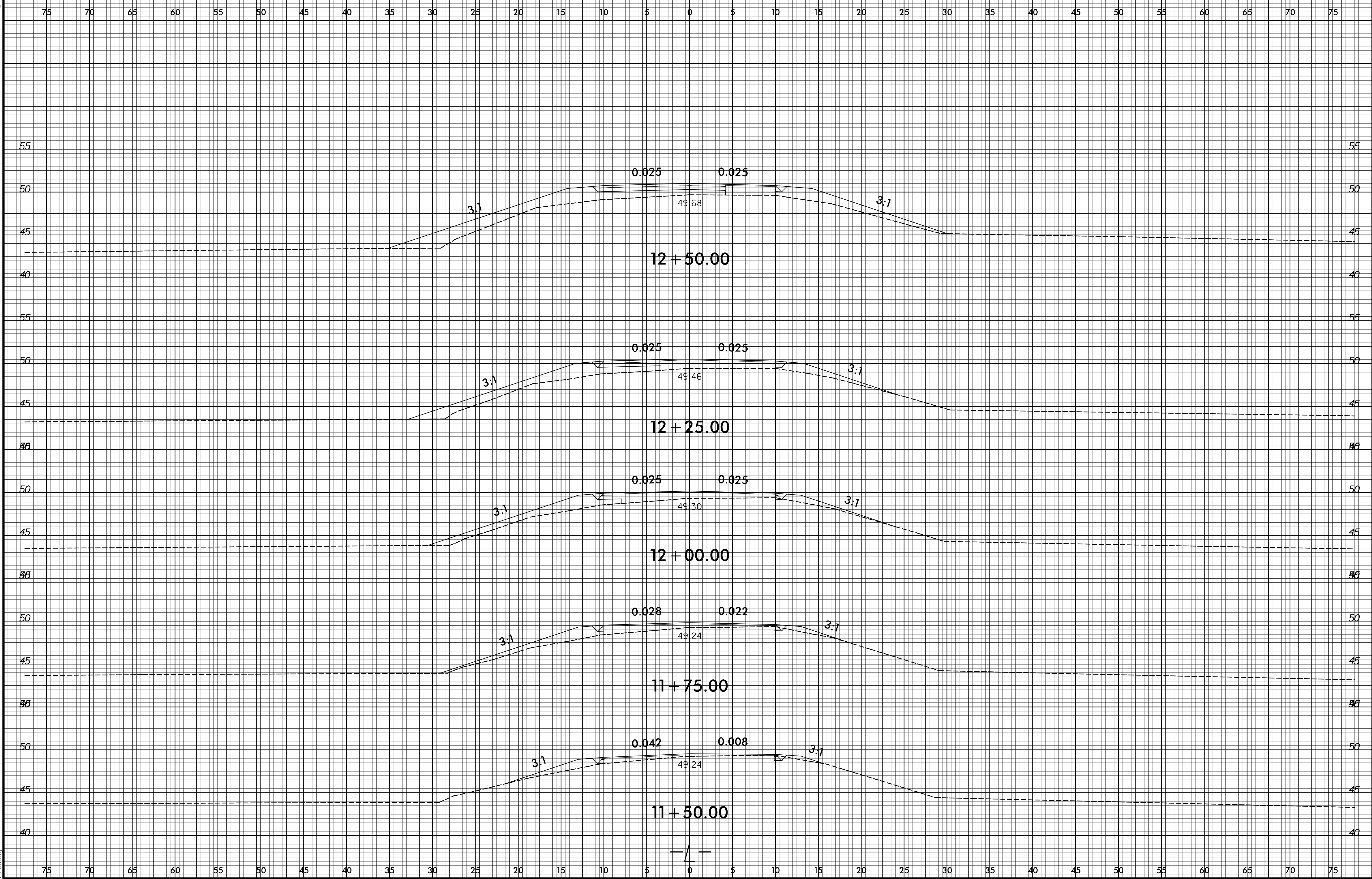
VALVE MARKER
 N.T.S. Source: VHB



CONCRETE PROTECTOR RING
 N.T.S. Source: VHB

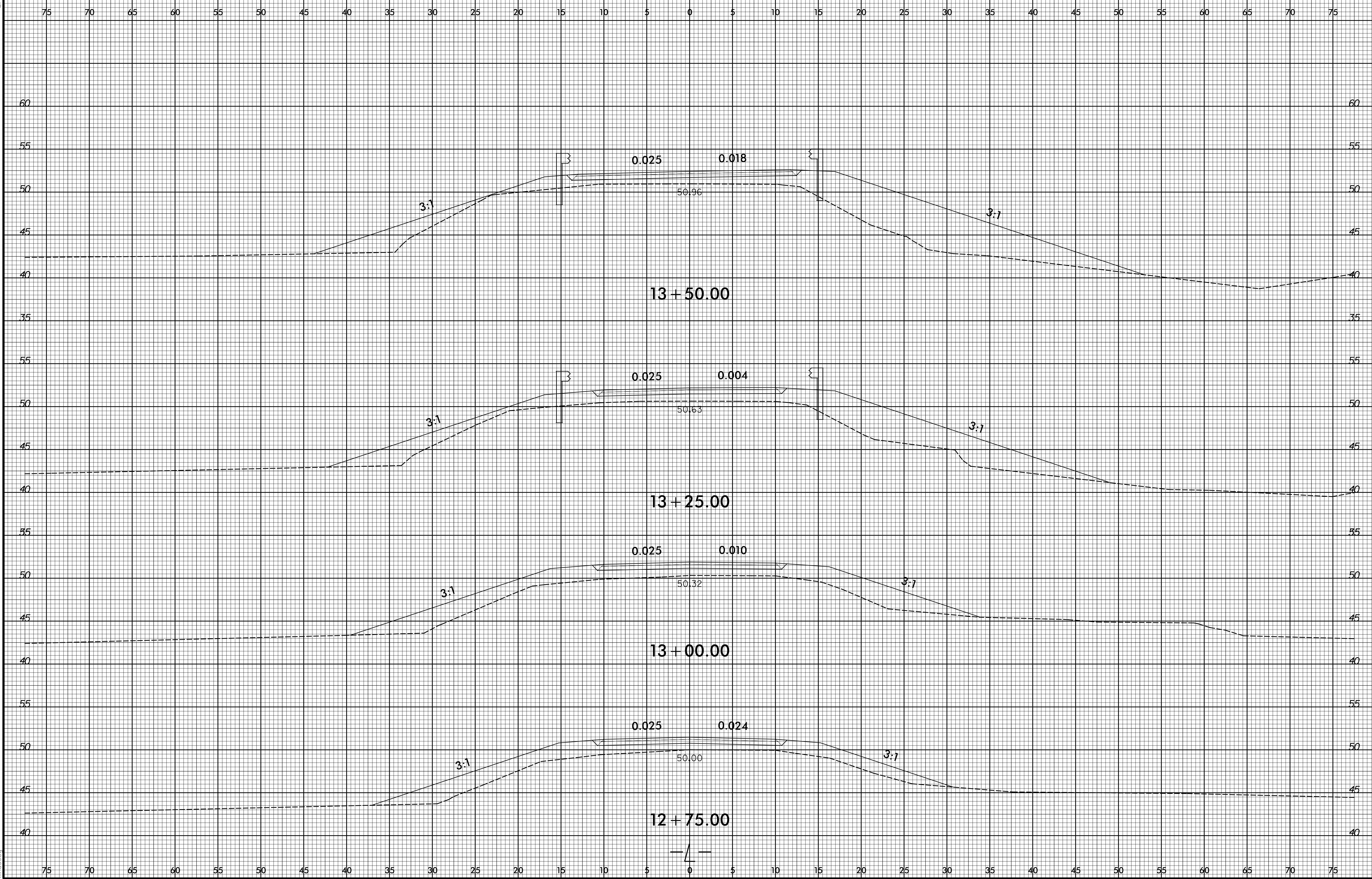


6/23/16

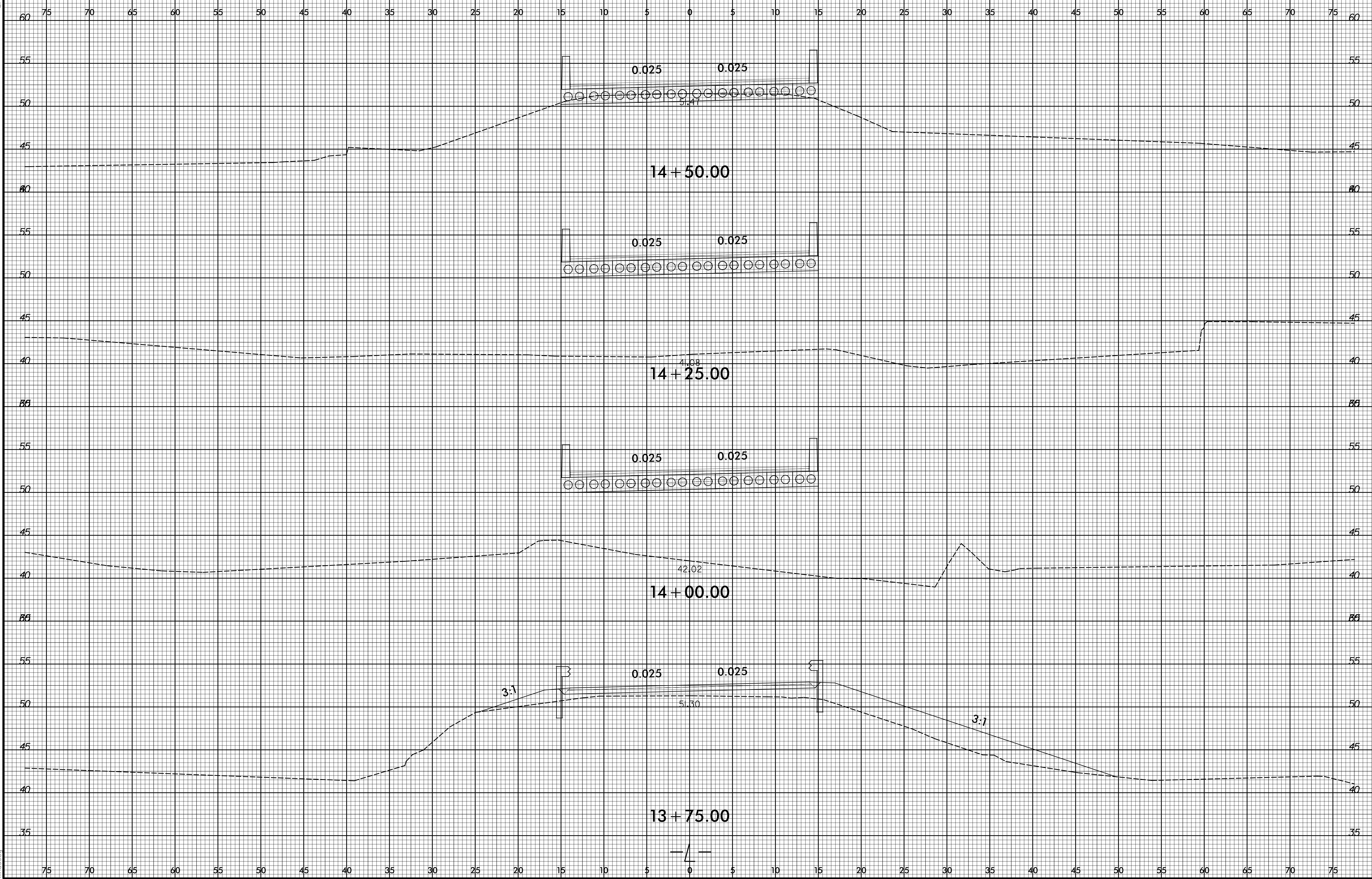


1/11/2023
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mhussel

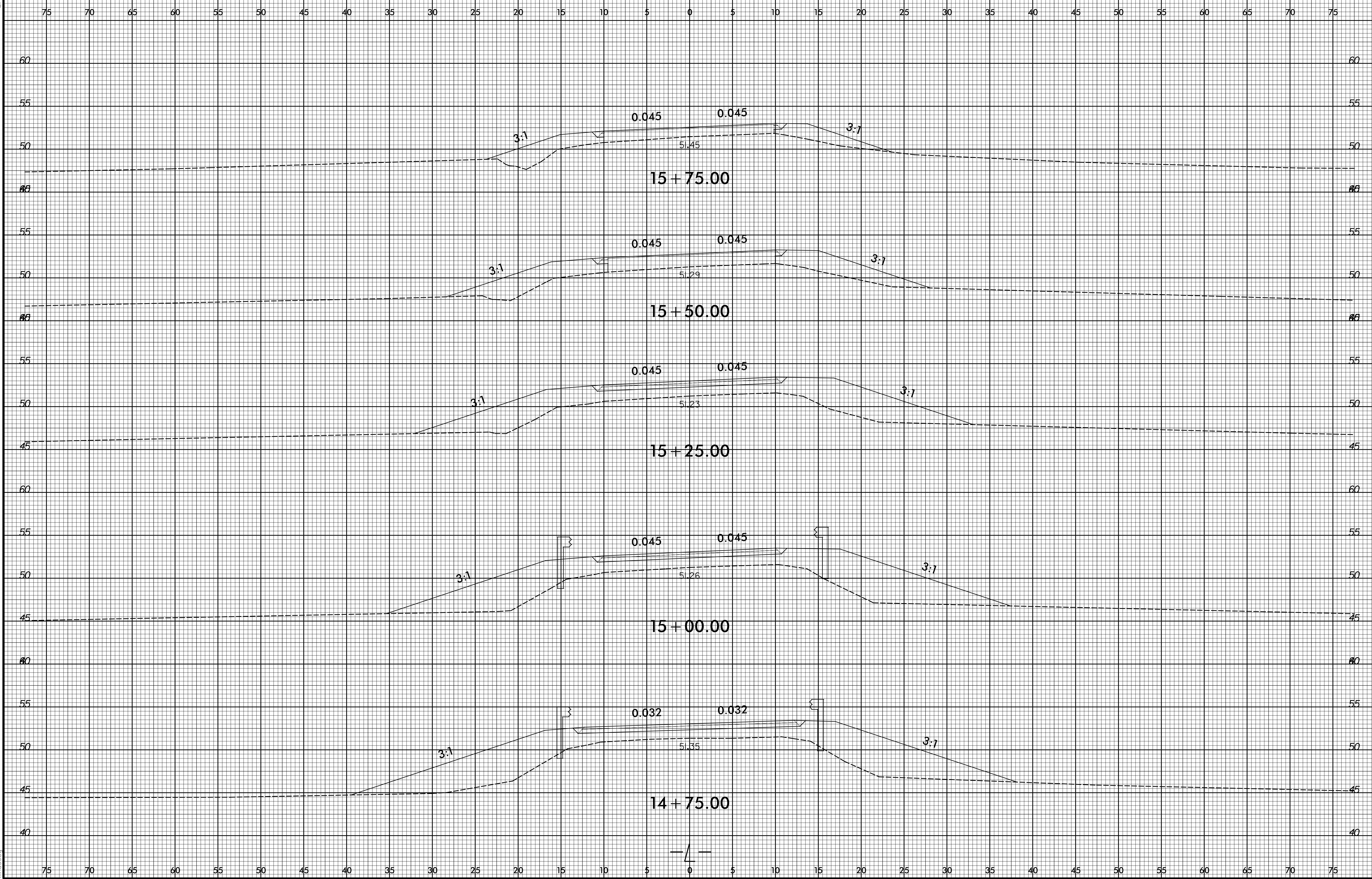
6/23/16



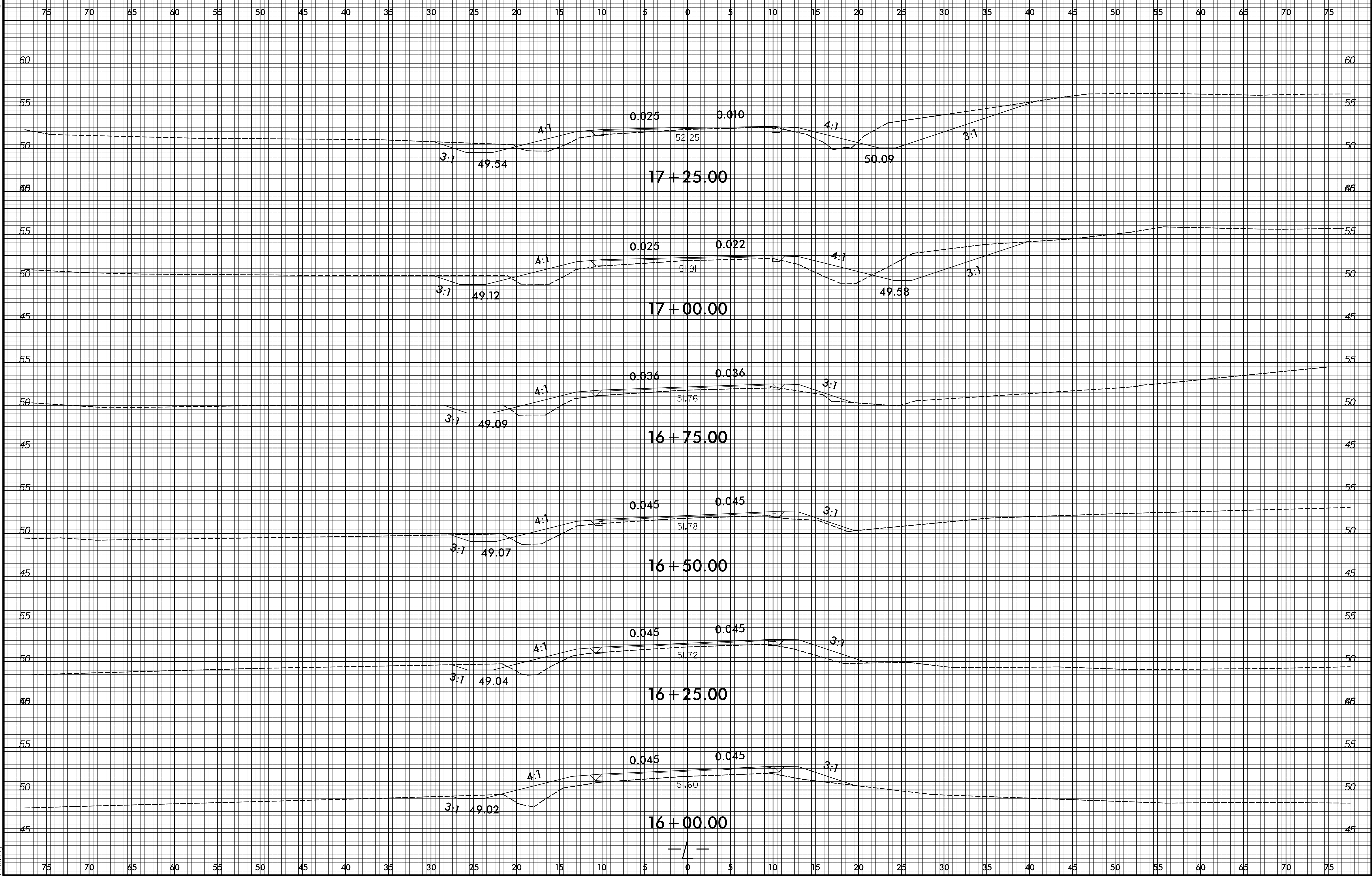
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mhussel

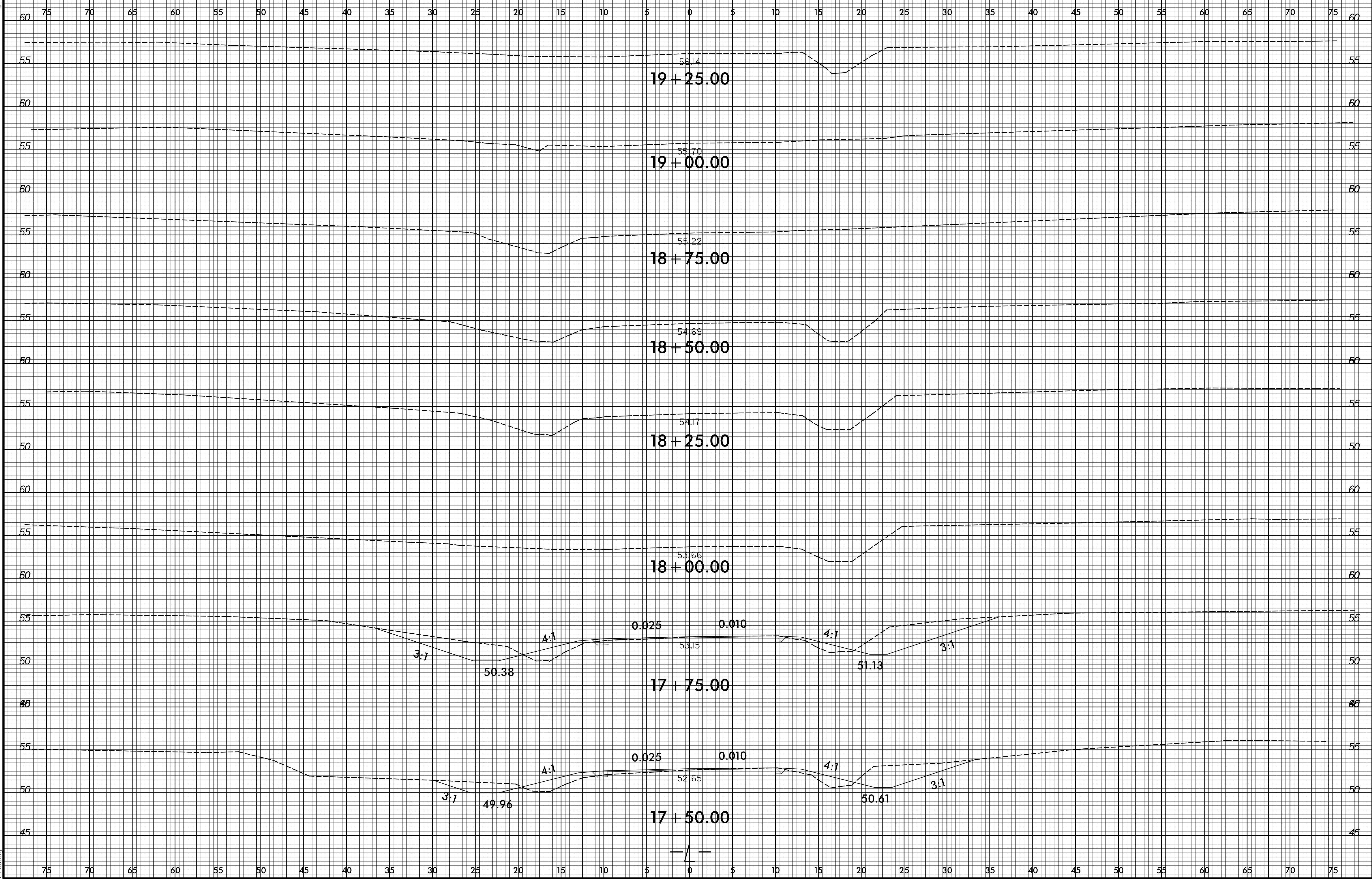


6/23/16



1/11/2023
BP1-R009_r.dwg_xpl.dgn
mhussel





8/26/21

13+50

14+00

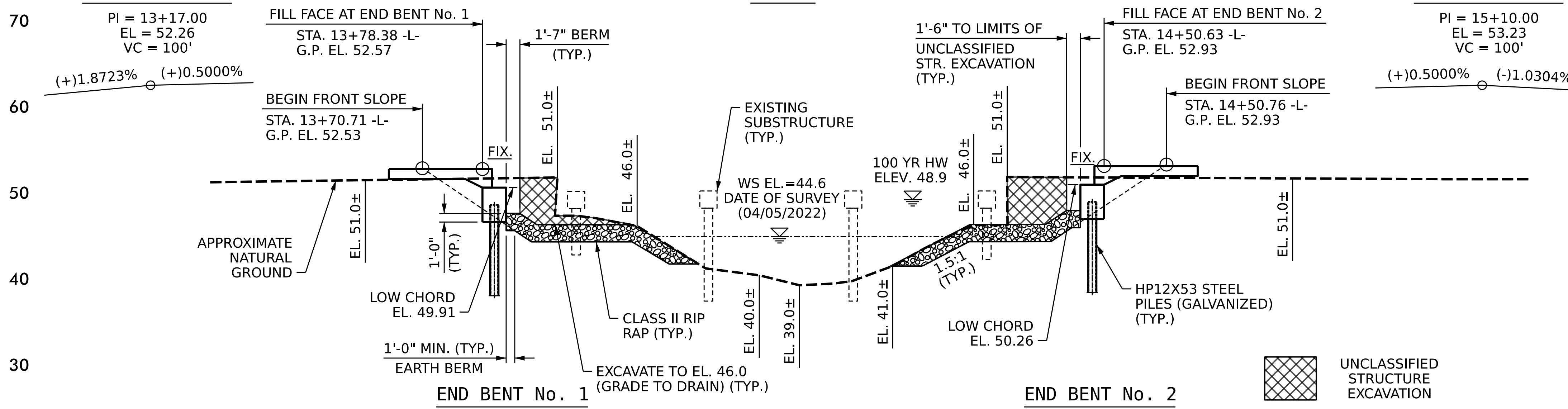
14+50

15+00

GRADE DATA -L-

SPAN A

GRADE DATA -L-

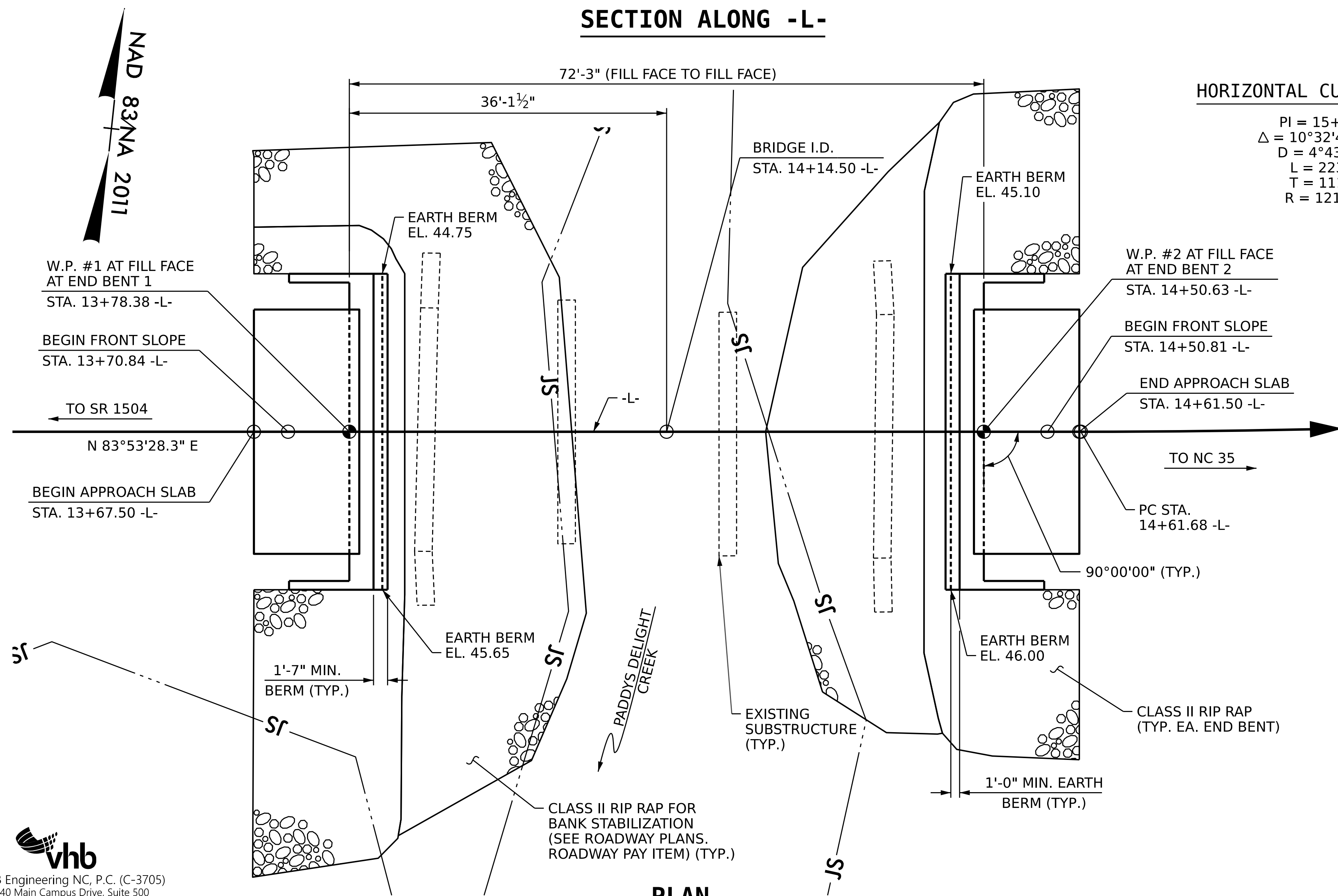


I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

HYDRAULIC DATA	
DESIGN DISCHARGE	= 1000 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 25 YRS.
DESIGN HIGH WATER ELEVATION	= 47.4 FT
DRAINAGE AREA	= 9.8 SQ. MI.
BASIC DISCHARGE (Q100)	= 1765 C.F.S.
BASIC HIGH WATER ELEVATION	= 48.9 FT
OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE	= 3000 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	= 500+ YRS.
OVERTOPPING FLOOD ELEVATION	= 49.2 FT*
*OT @ 10+88 -L- EOP	
WS EL. Taken @ River Station 2347	

SECTION ALONG -L-

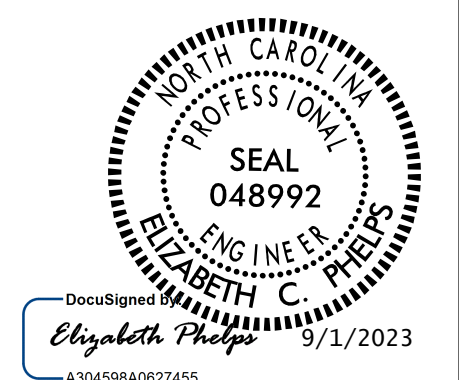
HORIZONTAL CURVE DATA -L-



PLAN

(STEEL PILES NOT SHOWN FOR CLARITY)

NAD 83/NA 2011



PROJECT NO. **BP1-R009**
NORTHAMPTON COUNTY
 STATION: **14+14.50 -L-**
 SHEET 1 OF 2 REPLACES BRIDGE NO. 650018

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER
 PADDYS DELIGHT CREEK
 ON JENKINS MILL RD
 (SR 1510) BETWEEN
 NC 35 AND SR 1504
 (CREEKSVILLE RD)

DRAWN BY : D.E. MORRISSETTE	DATE : 04/2023
CHECKED BY : E.C. PHELPS	DATE : 04/2023
DESIGN ENGINEER OF RECORD: E.C. PHELPS	DATE : 05/2023

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

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SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Resistance per Pile TONS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles*			Drilled-In Piles			
					Min Pile Tip (Tip No Higher Than) Elev FT	Required Driving Resistance (RDR)** per Pile TONS	Total Pile Redrives Quantity EACH	Predrilling Length per Pile Lin FT	Predrilling Elevation (Elev Not To Predrill Below) FT	Maximum Predrilling Dia INCHES	Pile Excavation (Bottom of Hole) Elev FT	Pile Exc Not In Soil per Pile Lin FT	Pile Exc In Soil per Pile Lin FT	
End Bent No. 1, Piles 1-5	100	See Substructure	70			170								
End Bent No. 2, Piles 1-5	100	Plans	65			170								
							5							

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

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

SUMMARY OF PDA/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Pile Driving Analyzer (PDA)				Pile Order Lengths	
End Bent/ Bent No	PDA Testing Required? YES or MAYBE	PDA Test Pile Length FT	Total PDA Testing Quantity EACH	End Bent/ Bent No(s)	Pile Order Length Basis* EST or PDA
End Bent No. 1	MAYBE	75	1		
End Bent No. 2	MAYBE	70			

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

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile TONS	Factored Downdrag Load per Pile TONS	Factored Dead Load* per Pile TONS	Dynamic Resistance Factor	Nominal Downdrag Resistance per Pile TONS	Nominal Scour Resistance per Pile TONS	Scour Resistance Factor (Default = 1.00)
End Bent No. 1, Piles 1-5	97			0.60			
End Bent No. 2, Piles 1-5	97			0.60			

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

SUMMARY OF PILE ACCESSORIES

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Pipe Pile Plates Required? YES or MAYBE	Steel Pile Points			Steel Pile Tips Required? YES
		Pipe Pile Cutting Shoes Required? YES	Pipe Pile Conical Points Required? YES	H-Pile Points Required? YES	
TOTAL QTY:					

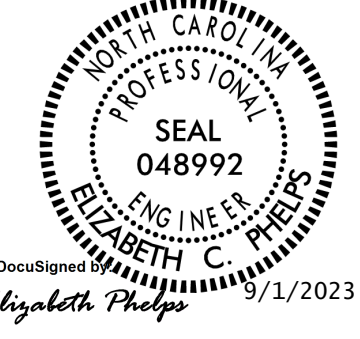
NOTES:

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Stephen Crockett #048207) on 5-1-2023
2. Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
3. The Engineer will determine the need for PDA Testing when PDAs may be required.

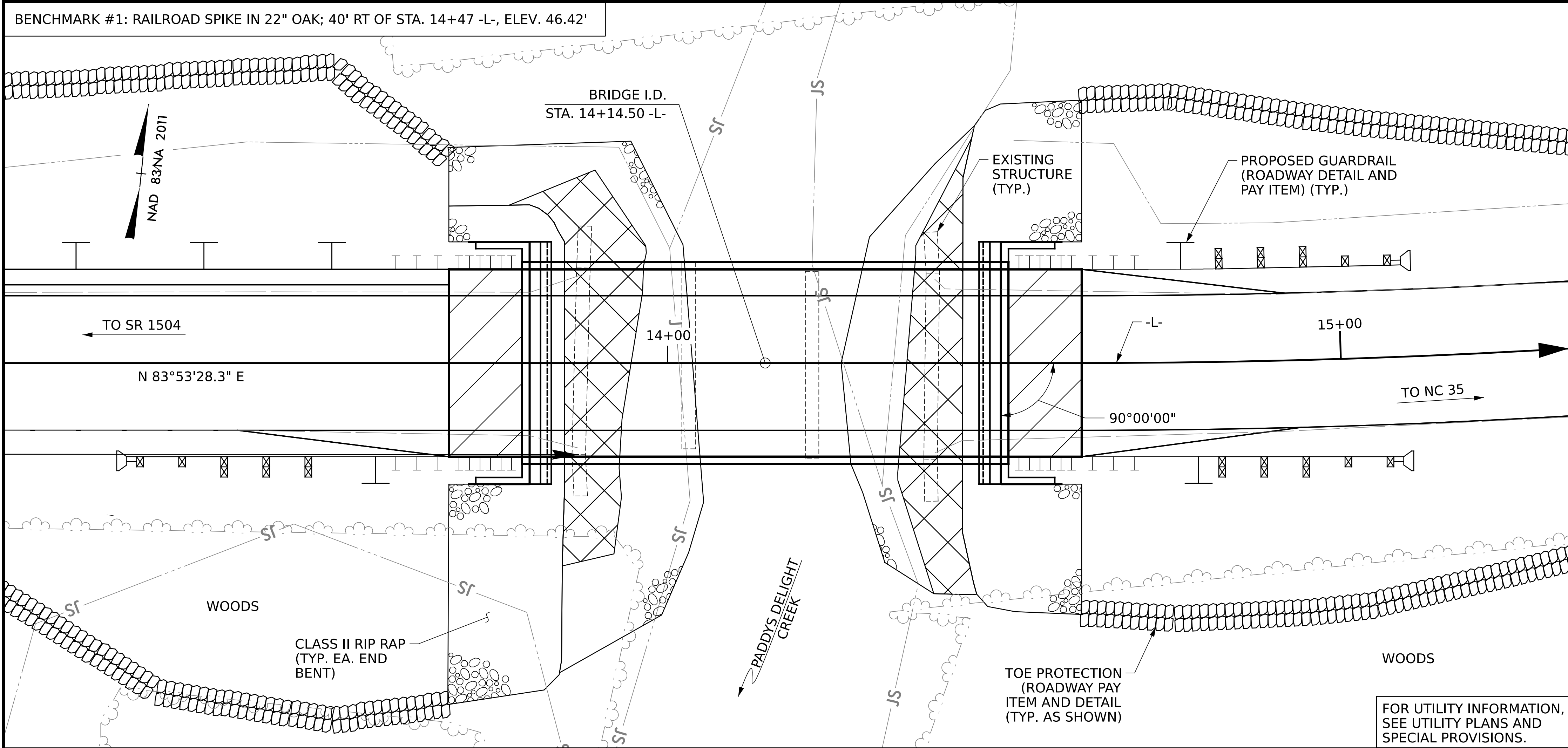
PROJECT NO. BP1-R009

NORTHAMPTON COUNTY

STATION: 14+14.50 -L-

	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH			
	PILE FOUNDATION TABLES			
SIGNATURE: <u>Elizabeth Phelps</u> DATE: <u>5/1/2023</u>	REVISIONS			SHEET NO. S-2
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	NO. <u>1</u>	BY: <u>EL</u>	DATE: <u>5/1/2023</u>	TOTAL SHEETS 14
	NO. <u>2</u>	BY: <u>EL</u>	DATE: <u>5/1/2023</u>	

8/26/21



- LOCATION SKETCH -

TOTAL BILL OF MATERIAL

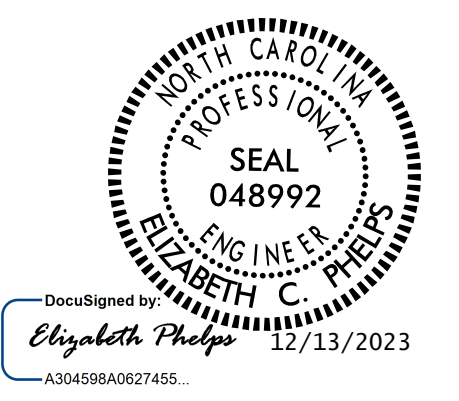
	REMOVAL OF EXISTING STRUCTURE AT STATION 14+14.50 -L-	DYNAMIC PILE TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	PILE DRIVING EQUIPMENT SET UP FOR HP 12 X 53 GALVANIZED STEEL PILES	HP 12 X 53 GALVANIZED STEEL PILES	PILE REDRIVES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS	
	LUMP SUM	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	NO.	NO.	LIN. FT.	EACH	LIN. FT.	SQ. YDS.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE					LUMP SUM						140.25		LUMP SUM	10	700.00
END BENT 1			LUMP SUM	19.3		2449	5	5	350		90	100			
END BENT 2			LUMP SUM	19.3		2449	5	5	325		100	110			
TOTAL	LUMP SUM	1	LUMP SUM	38.6	LUMP SUM	4898	10	10	675	5	140.25	210	LUMP SUM	10	700.00

NOTES:

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- THE EXISTING SINGLE SPAN BRIDGE, WITH SPANS OF 1 @ 17'-9", 1 @ 16'-10", AND 1 @ 17'-10", WITH A CLEAR ROADWAY WIDTH OF 28'-0", WITH A REINFORCED CONCRETE DECK AND ASPHALT WEARING SURFACE ON TIMBER JOISTS, WITH SUBSTRUCTURES CONSISTING OF TIMBER CAP/TIMBER POSTS LOCATED AT THE PROPOSED BRIDGE. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
- REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
- INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE".
- THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. THE 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 MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 29 FT (LEFT) AND 30 FT (RIGHT) AT END BENT No. 1 AND 34 FT (LEFT) AND 34 FT (RIGHT) AT END BENT No. 2, OF THE CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18 - EVALUATING SCOUR AT BRIDGES".
- FOR 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.

FOUNDATION NOTES:

- FOR PILES, SEE PILES PROVISION AND SECTION 450 OF THE STANDARD SPECIFICATIONS.



PROJECT NO. **BP1-R009**
NORTHAMPTON COUNTY
STATION: **14+14.50 -L-**
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
FOR BRIDGE OVER
PADDY'S DELIGHT CREEK
ON JENKINS MILL RD
(SR 1510) BETWEEN
NC 35 AND SR 1504
(CREEKSVILLE RD)

DRAWN BY : **D.E. MORRISSETTE** DATE : **04/2023**
CHECKED BY : **E.C. PHELPS** DATE : **04/2023**
DESIGN ENGINEER OF RECORD: **E.C. PHELPS** DATE : **05/2023**

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FINAL UNLESS ALL
SIGNATURES COMPLETED

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

S-3
TOTAL SHEETS
14

12/13/2023
*****SDGN*****
ephelps

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

LOAD TYPE	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD	HL-93 (INVENTORY)	N/A	1	1.006	--	1.75	0.273	1.03	70'	EL	34.5	0.507	1.32	70'	EL	6.9	0.80	0.273	1.01	70'	EL	34.5		
	HL-93 (OPERATING)	N/A		1.341	--	1.35	0.273	1.34	70'	EL	34.5	0.507	1.72	70'	EL	6.9	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	2	1.306	47.02	1.75	0.273	1.34	70'	EL	34.5	0.507	1.65	70'	EL	6.9	0.80	0.273	1.31	70'	EL	34.5		
	HS-20 (OPERATING)	36.000		1.740	62.64	1.35	0.273	1.74	70'	EL	34.5	0.507	2.14	70'	EL	6.9	N/A	--	--	--	--	--		
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH		2.917	39.379	1.4	0.273	3.75	70'	EL	34.5	0.507	4.87	70'	EL	6.9	0.80	0.273	2.92	70'	EL	34.5		
		SNGARBS2	20.000		2.187	43.741	1.4	0.273	2.81	70'	EL	34.5	0.507	3.47	70'	EL	6.9	0.80	0.273	2.19	70'	EL	34.5	
		SNAGRIS2	22.000		2.077	45.690	1.4	0.273	2.67	70'	EL	34.5	0.507	3.23	70'	EL	6.9	0.80	0.273	2.08	70'	EL	34.5	
		SNCOTTS3	27.250		1.452	39.565	1.4	0.273	1.87	70'	EL	34.5	0.507	2.43	70'	EL	6.9	0.80	0.273	1.45	70'	EL	34.5	
		SNAGGRS4	34.925		1.218	42.554	1.4	0.273	1.57	70'	EL	34.5	0.507	2.03	70'	EL	6.9	0.80	0.273	1.22	70'	EL	34.5	
		SNS5A	35.550		1.191	42.346	1.4	0.273	1.53	70'	EL	34.5	0.507	2.06	70'	EL	6.9	0.80	0.273	1.19	70'	EL	34.5	
		SNS6A	39.950		1.095	43.747	1.4	0.273	1.41	70'	EL	34.5	0.507	1.88	70'	EL	6.9	0.80	0.273	1.10	70'	EL	34.5	
	SNS7B	42.000		1.043	43.801	1.4	0.273	1.34	70'	EL	34.5	0.507	1.85	70'	EL	6.9	0.80	0.273	1.04	70'	EL	34.5		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.336	44.087	1.4	0.273	1.72	70'	EL	34.5	0.507	2.23	70'	EL	6.9	0.80	0.273	1.34	70'	EL	34.5	
		TNT4A	33.075		1.342	44.401	1.4	0.273	1.72	70'	EL	34.5	0.507	2.17	70'	EL	6.9	0.80	0.273	1.34	70'	EL	34.5	
		TNT6A	41.600		1.100	45.746	1.4	0.273	1.41	70'	EL	34.5	0.507	1.98	70'	EL	6.9	0.80	0.273	1.10	70'	EL	34.5	
		TNT7A	42.000		1.106	46.462	1.4	0.273	1.42	70'	EL	34.5	0.507	1.94	70'	EL	6.9	0.80	0.273	1.11	70'	EL	34.5	
		TNT7B	42.000		1.147	48.180	1.4	0.273	1.47	70'	EL	34.5	0.507	1.80	70'	EL	6.9	0.80	0.273	1.15	70'	EL	34.5	
		TNAGRIT4	43.000		1.089	46.838	1.4	0.273	1.40	70'	EL	34.5	0.507	1.74	70'	EL	6.9	0.80	0.273	1.09	70'	EL	34.5	
TNAGT5A		45.000		1.026	46.175	1.4	0.273	1.32	70'	EL	34.5	0.507	1.74	70'	EL	6.9	0.80	0.273	1.03	70'	EL	34.5		
TNAGT5B	45.000	3	1.013	45.579	1.4	0.273	1.30	70'	EL	34.5	0.507	1.66	70'	EL	6.9	0.80	0.273	1.01	70'	EL	34.5			
EMERGENCY VEHICLE (EV)	EV2	28.750		1.816	52.212	1.3	0.273	2.11	70'	EL	34.5	0.507	2.59	70'	EL	6.9	0.80	0.273	1.82	70'	EL	34.5		
	EV3	43.000	4	1.188	51.068	1.3	0.273	1.38	70'	EL	34.5	0.507	1.75	70'	EL	6.9	0.80	0.273	1.19	70'	EL	34.5		

LOAD FACTORS:

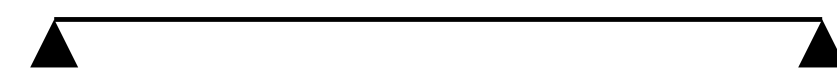
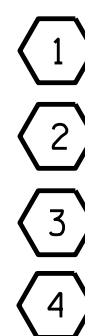
DESIGN LOAD RATING FACTORS	LIMIT STATE	γ _{DC}	γ _{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

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

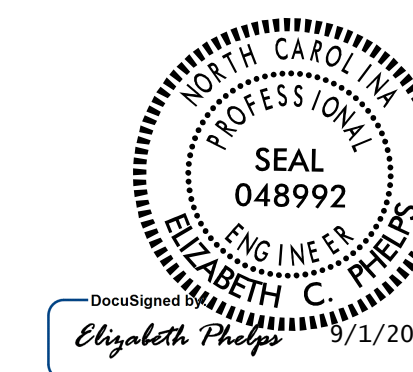
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

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



LRFR SUMMARY

PROJECT NO. **BP1-R009**
NORTHAMPTON COUNTY
 STATION: **14+14.50 -L-**



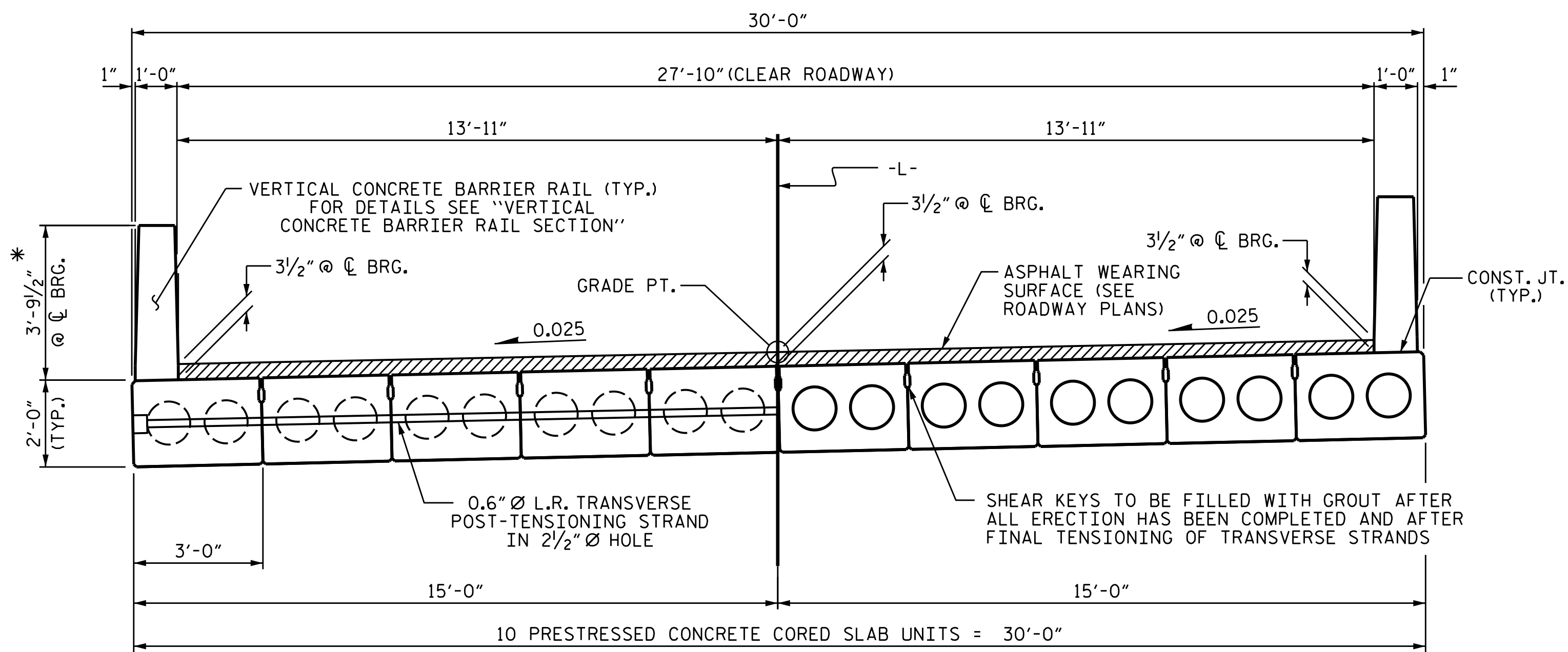
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
STANDARD
LRFR SUMMARY FOR
70' CORED SLAB UNIT
90° SKEW
NON-INTERSTATE TRAFFIC

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

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



DRAWN BY : **D.E. MORRISSETTE** DATE : **04/2023**
 CHECKED BY : **E.C. PHELPS** DATE : **04/2023**
 DESIGN ENGINEER OF RECORD: **E.C. PHELPS** DATE : **05/2023**



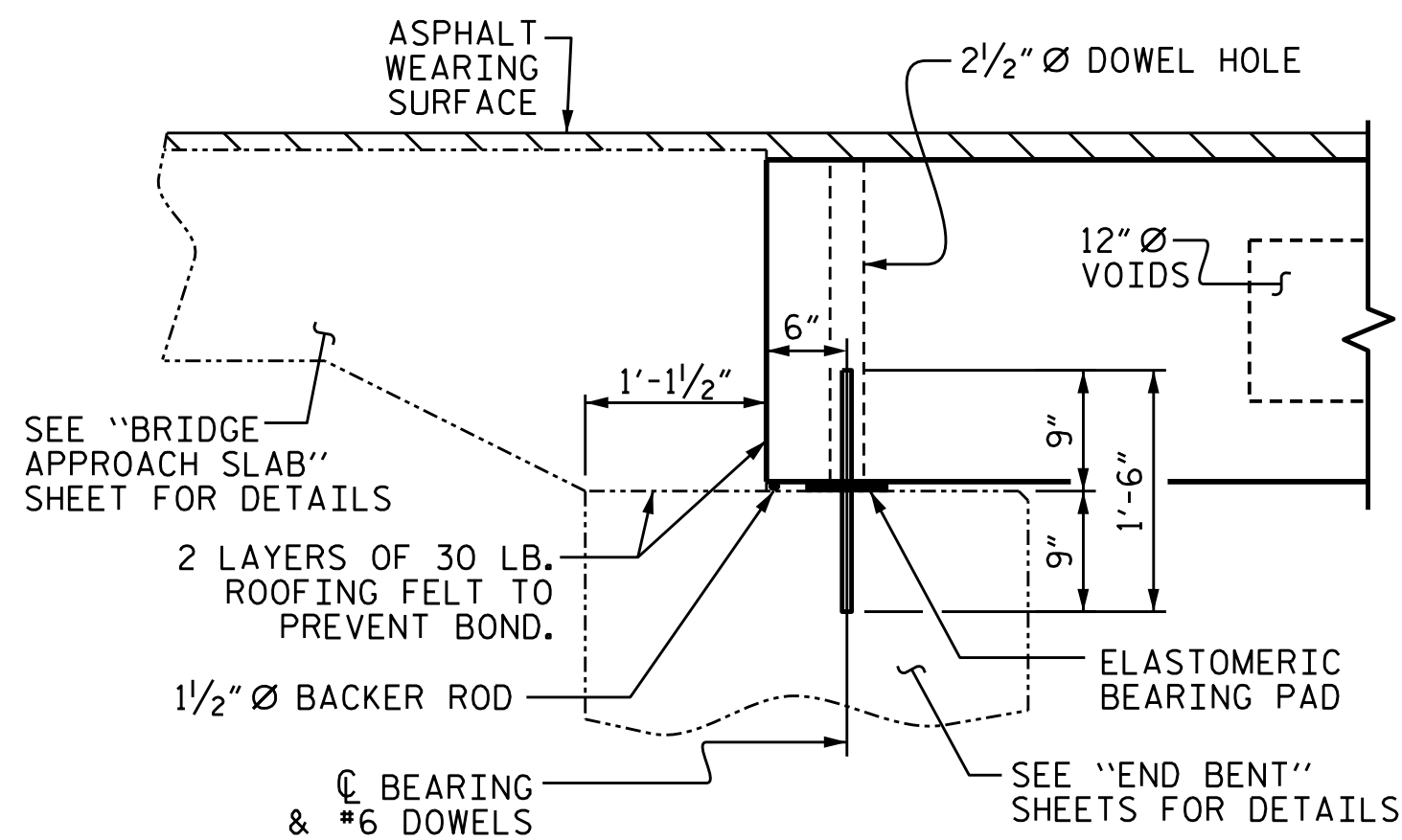
HALF SECTION AT INTERMEDIATE DIAPHRAGMS

TYPICAL SECTION

HALF SECTION THROUGH VOIDS

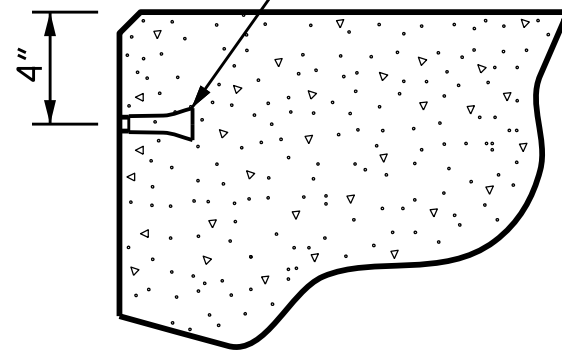
* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.

FIXED END

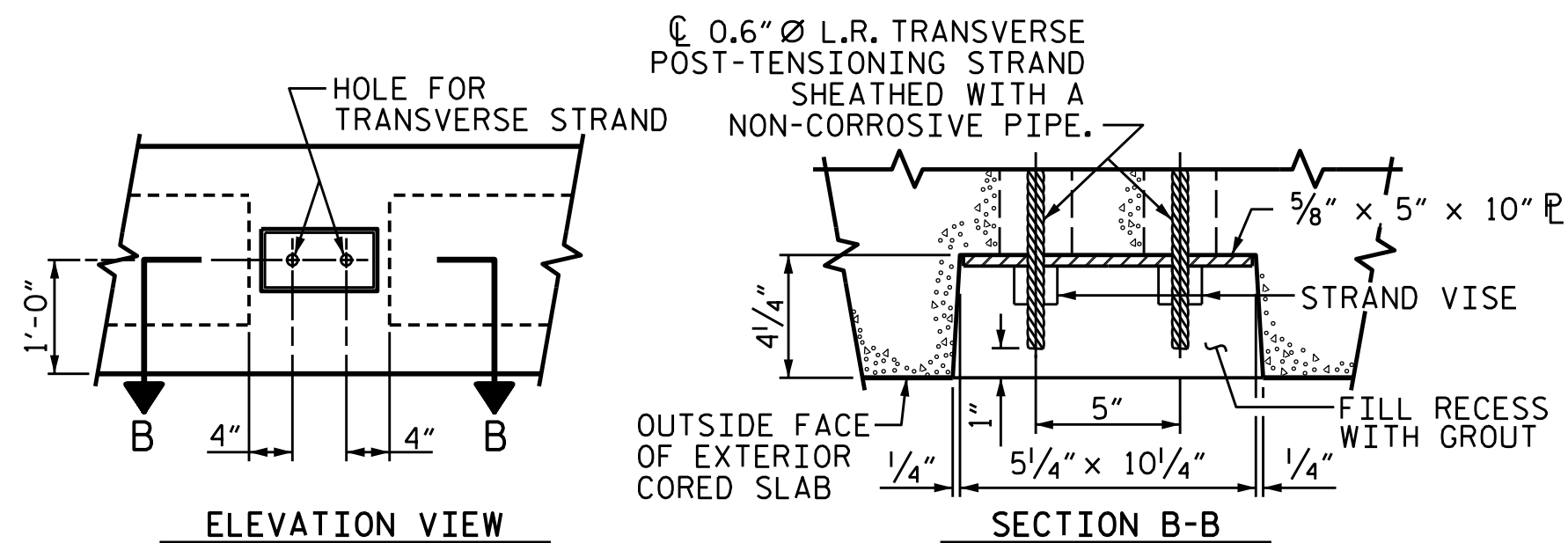


SECTION AT END BENT

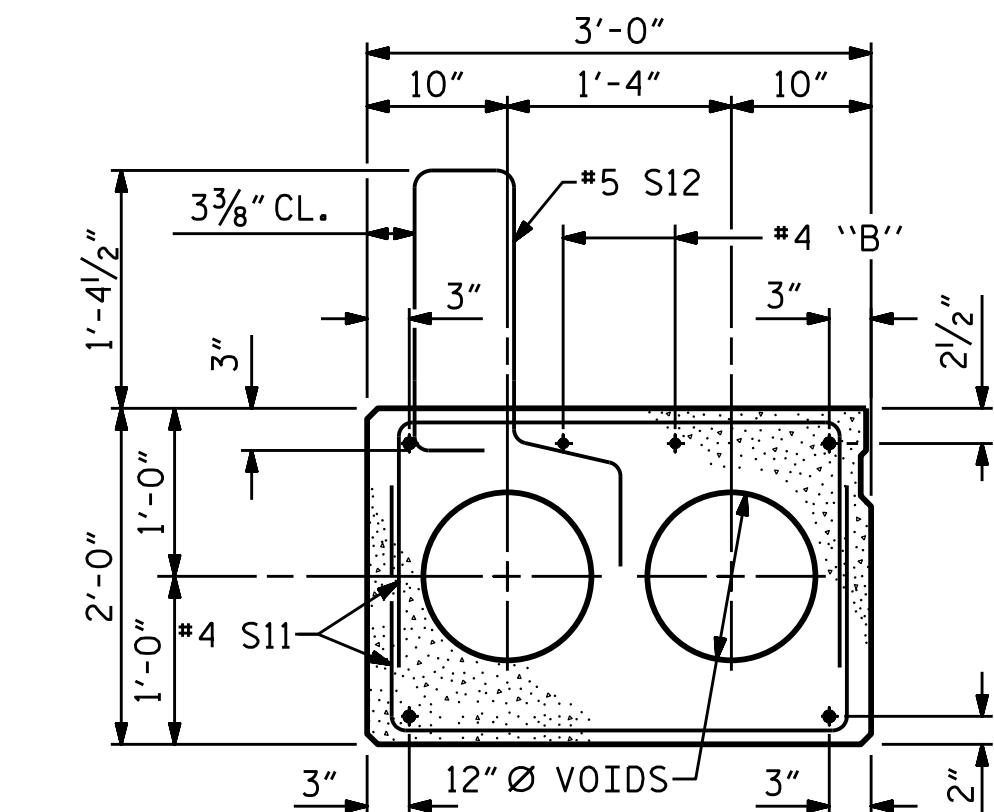
PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8" SIZE TO BE DETERMINED BY CONTRACTOR.



THREADED INSERT DETAIL

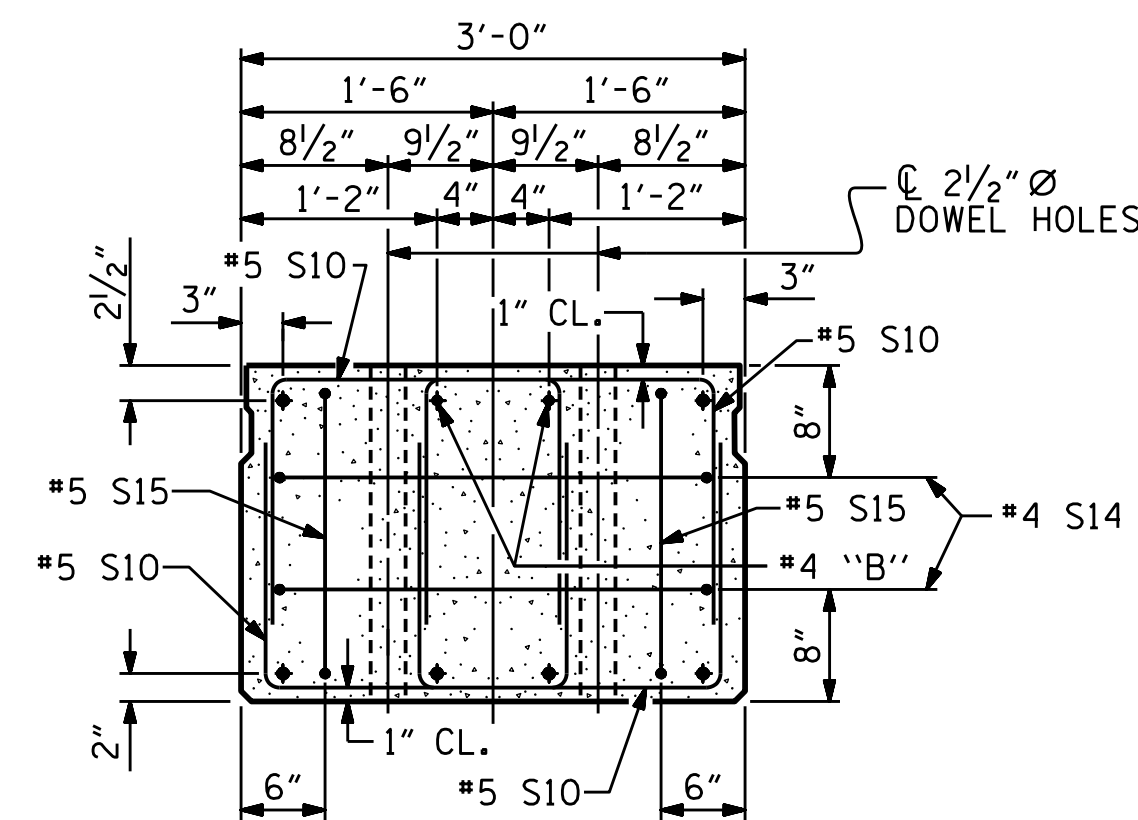


GROUTED RECESS AT END OF POST-TENSIONED STRAND CORED SLABS



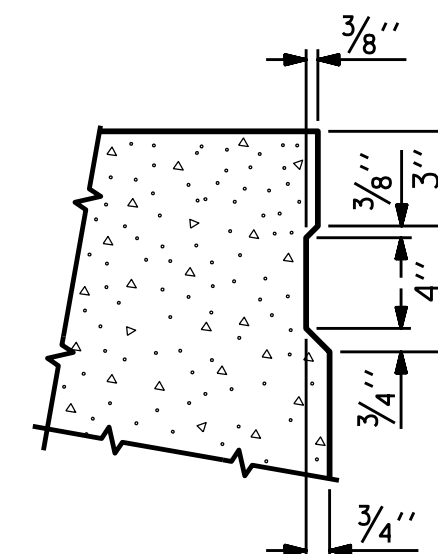
EXTERIOR SLAB SECTION

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



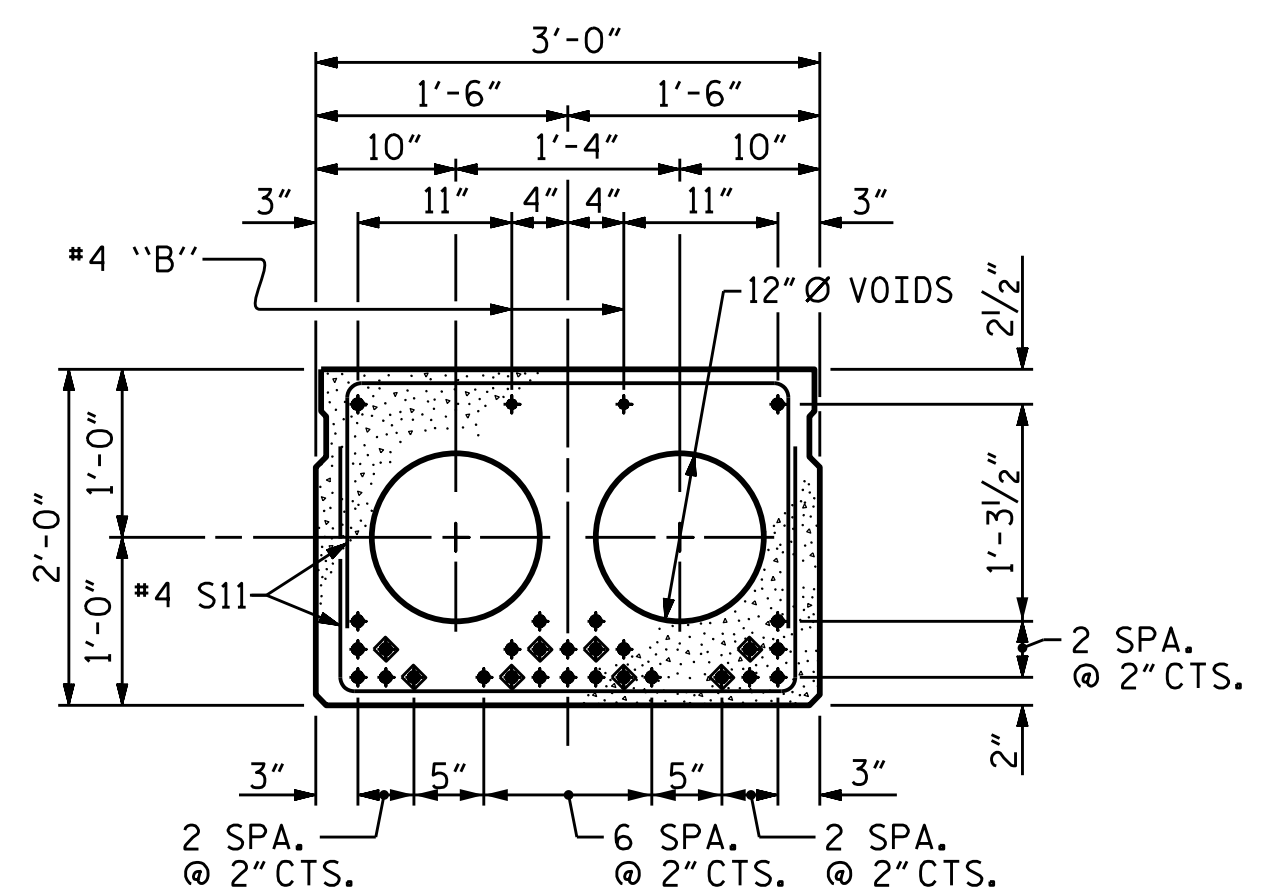
END ELEVATION

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.



SHEAR KEY DETAIL

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



INTERIOR SLAB SECTION (70' UNIT)

(28 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT

◆ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND

PROJECT NO. **BP1-R009**

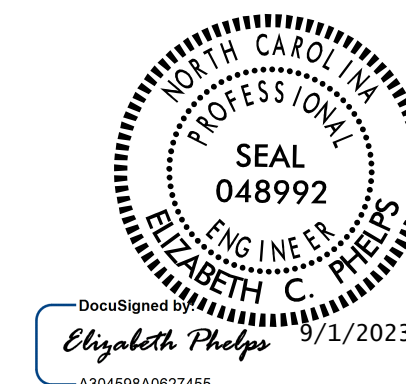
NORTHAMPTON COUNTY

STATION: **14+14.50 -L-**

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

3'-0" X 2'-0"
PRESTRESSED CONCRETE
CORED SLAB UNIT

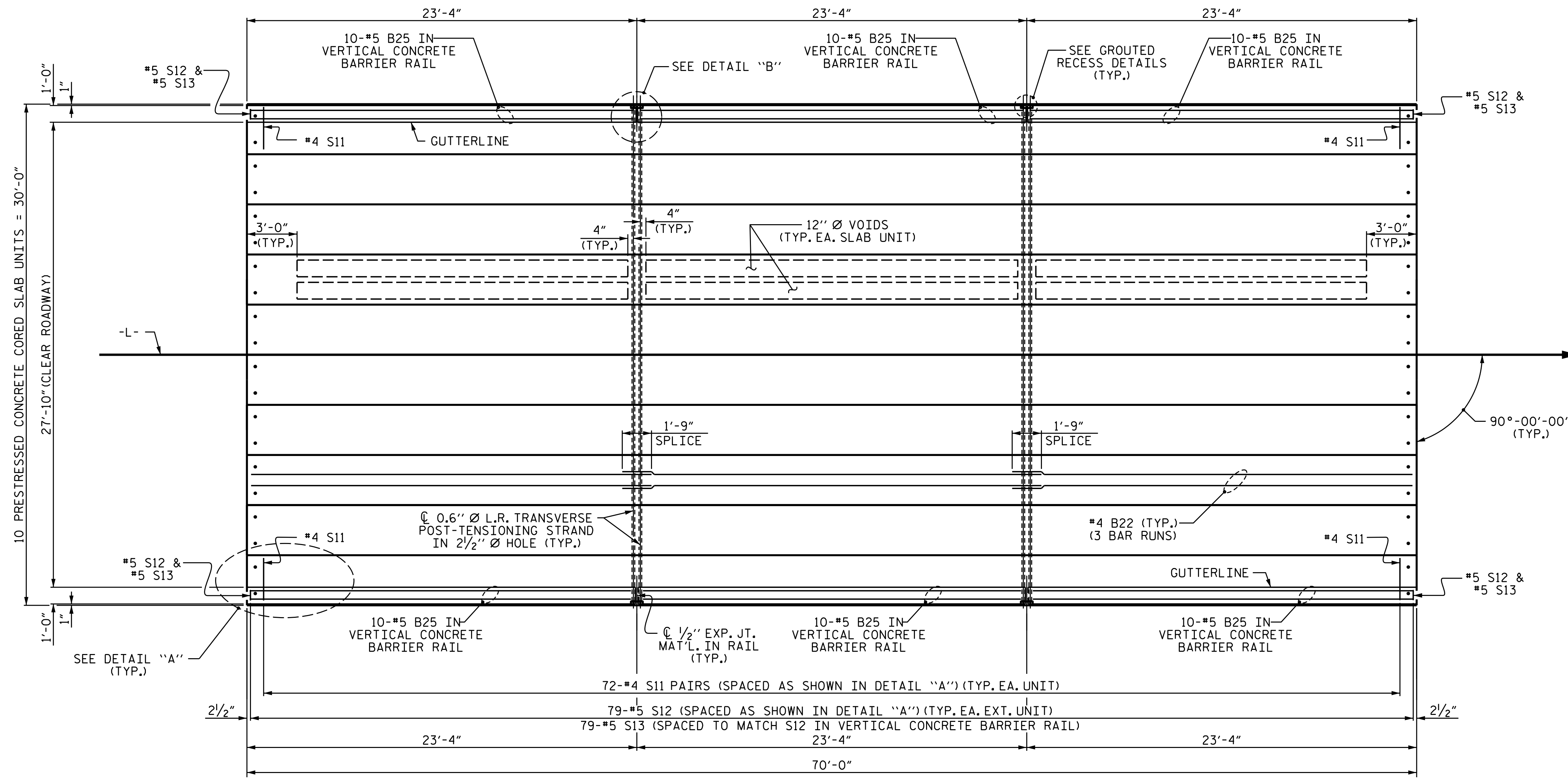


REVISIONS		SHEET NO.				
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			14
2			4			

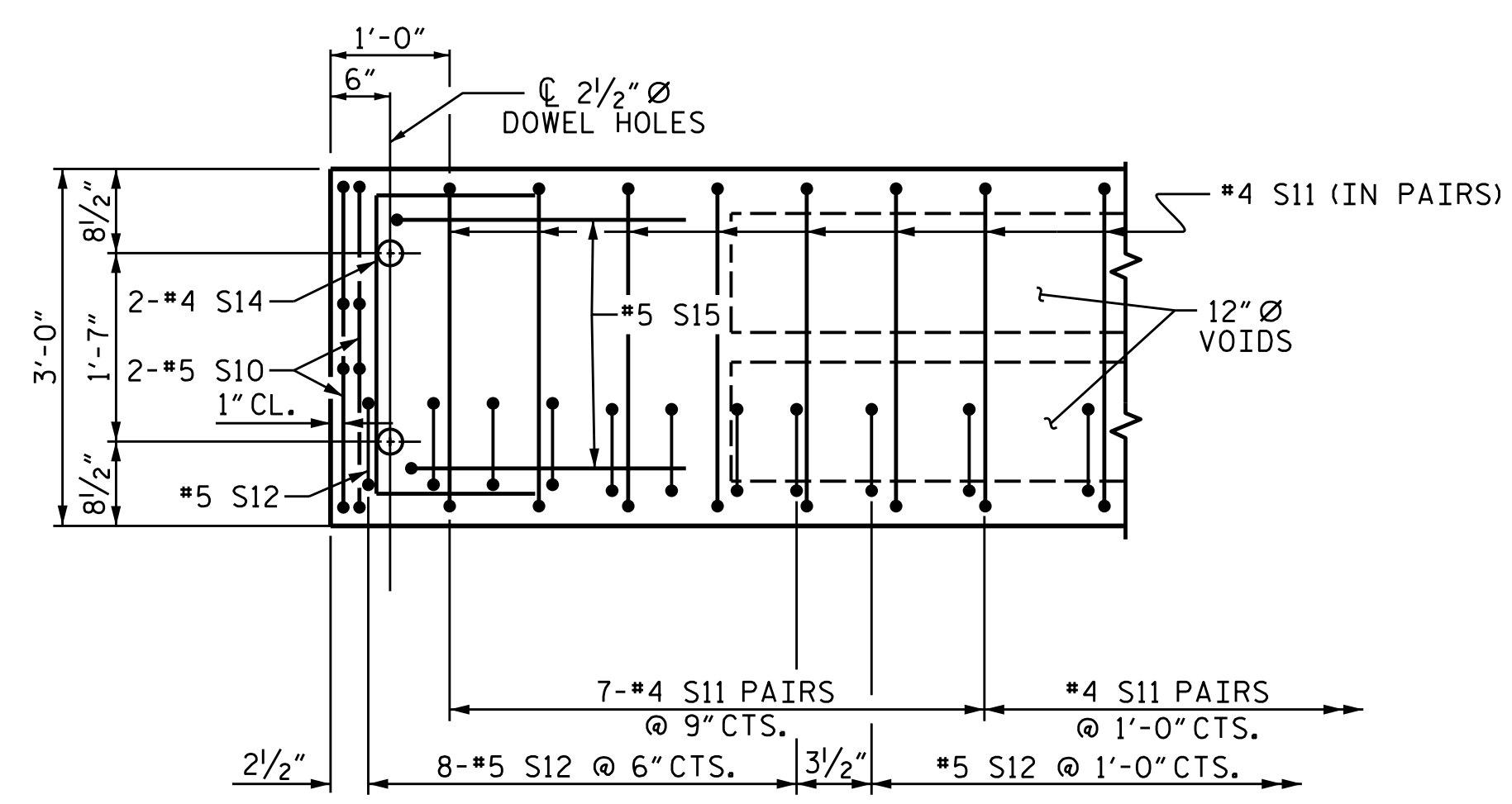
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

vhb
VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

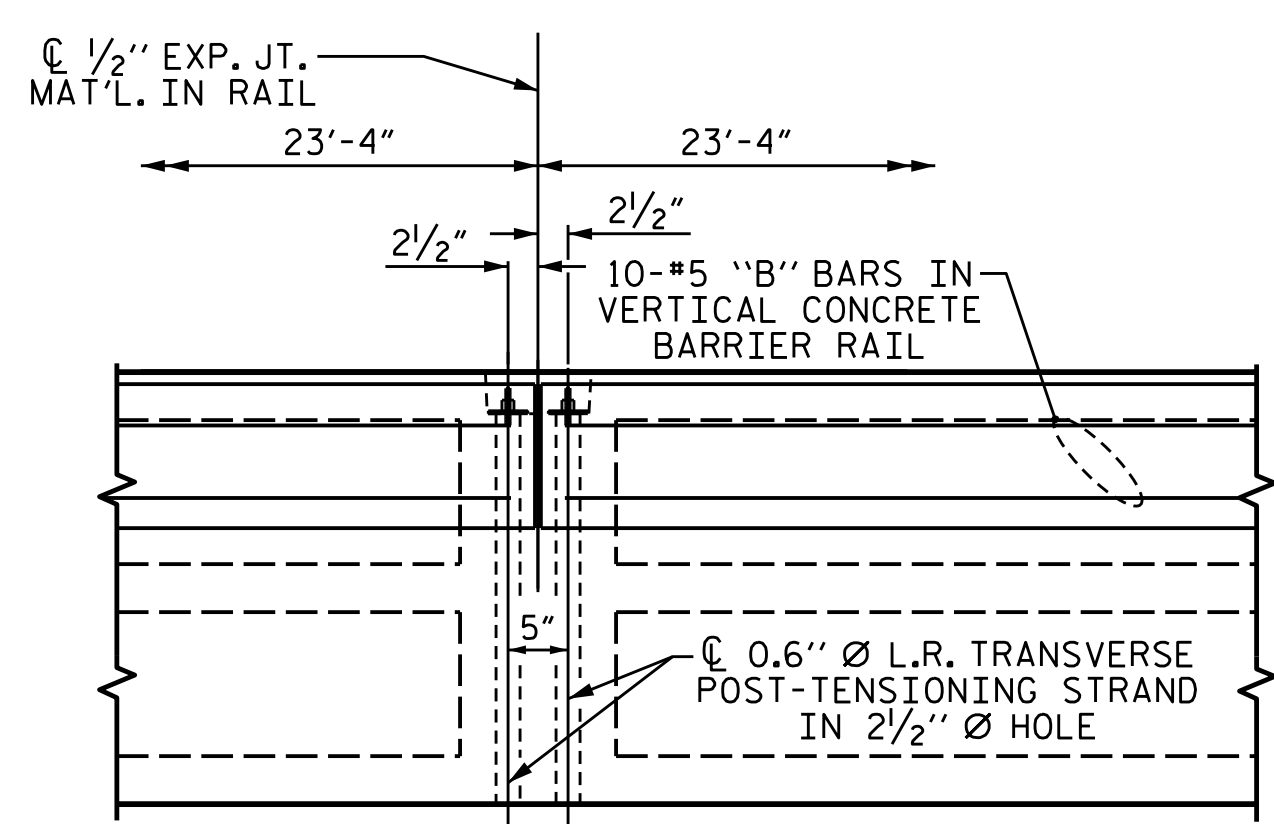
DRAWN BY : **D.E. MORRISSETTE** DATE : **04/2023**
CHECKED BY : **E.C. PHELPS** DATE : **04/2023**
DESIGN ENGINEER OF RECORD : **E.C. PHELPS** DATE : **05/2023**



PLAN OF UNIT



DETAIL "A"



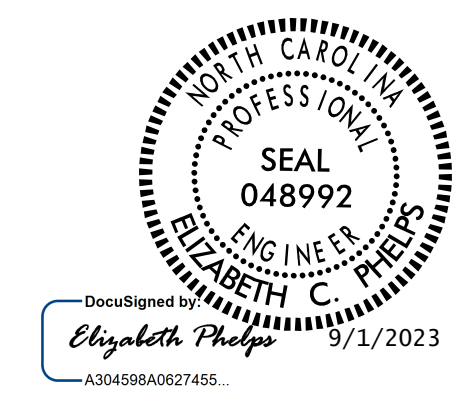
DETAIL "B"

#4 S11 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUDED RECESS AND 2 1/2" Ø TRANSVERSE POST-TENSIONING STRAND HOLES



DRAWN BY : D.E. MORRISSETTE DATE : 04/2023
 CHECKED BY : E.C. PHELPS DATE : 04/2023
 DESIGN ENGINEER OF RECORD: E.C. PHELPS DATE : 05/2023

(TYPICAL EACH END OF UNIT)
 NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S12 BARS.



PROJECT NO. **BP1-R009**
NORTHAMPTON COUNTY
 STATION: **14+14.50 -L-**
 SHEET 2 OF 3

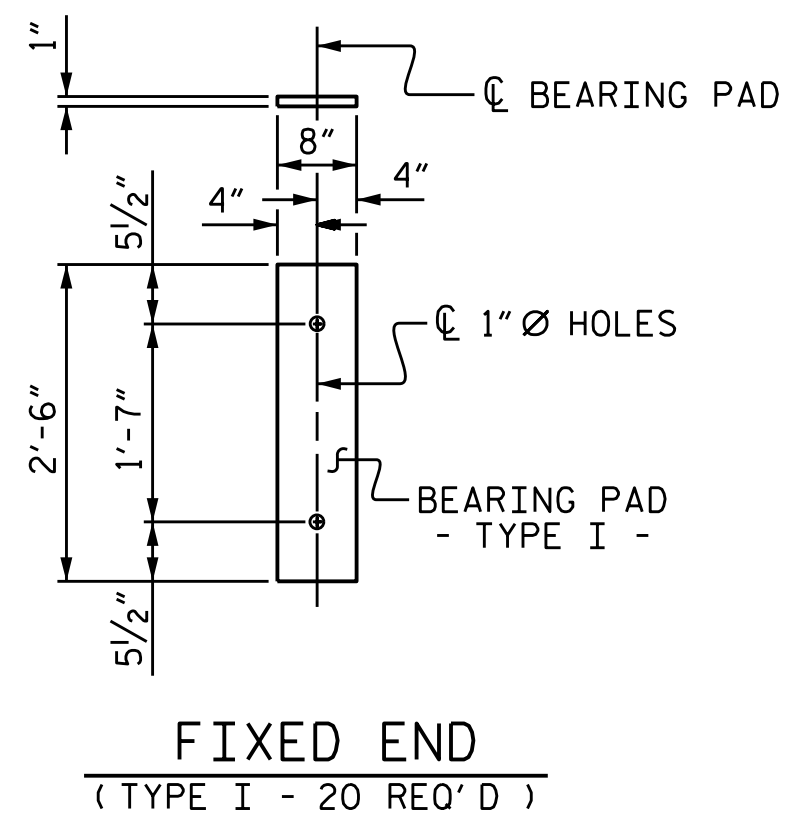
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD

**PLAN OF 70' UNIT
 27'-10" CLEAR ROADWAY
 90° SKEW**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			14

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
70' UNIT			
EXTERIOR C.S.	2	70'-0"	140'-0"
INTERIOR C.S.	8	70'-0"	560'-0"
TOTAL	10	-	700'-0"

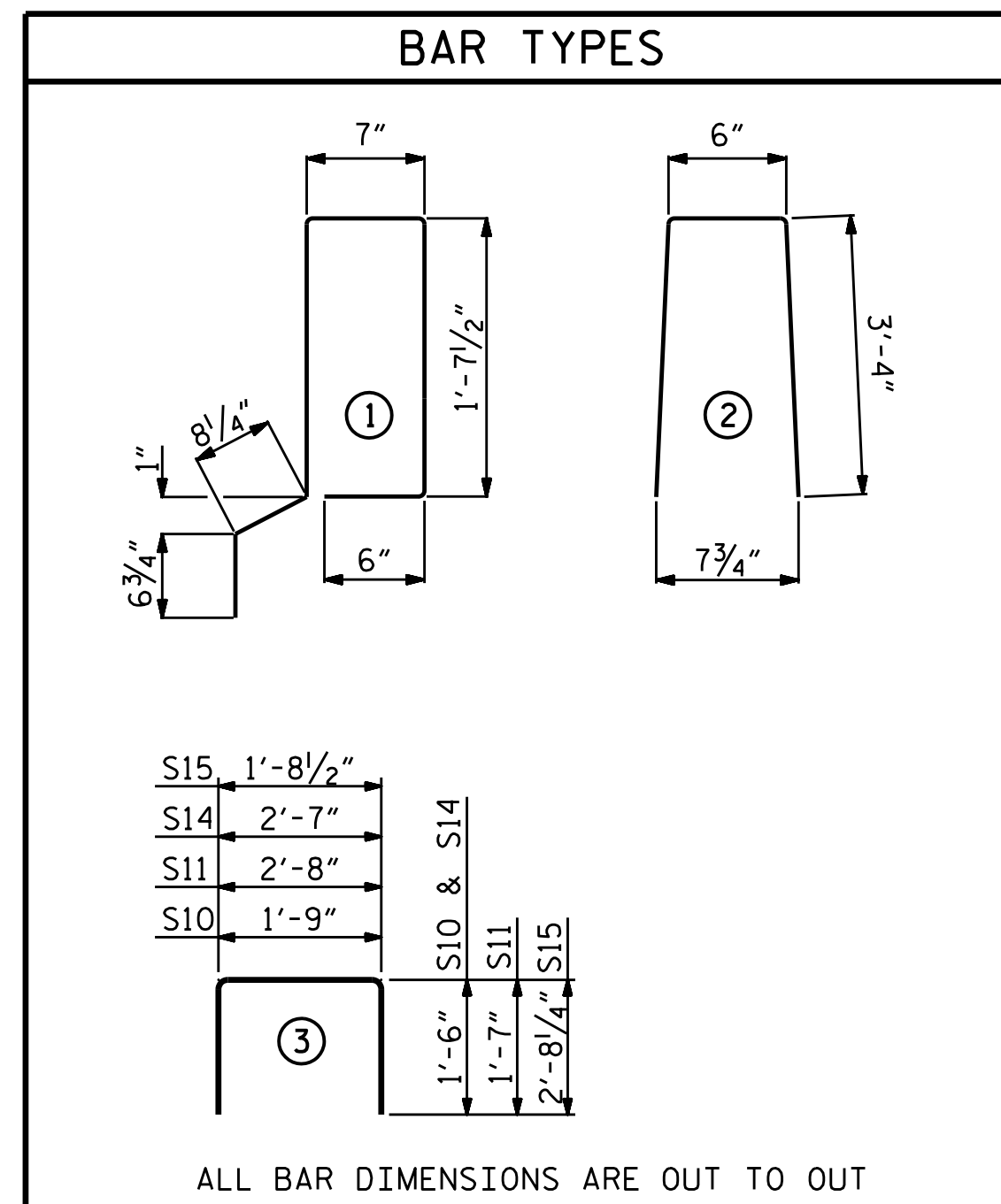


ELASTOMERIC BEARING DETAILS
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

DEAD LOAD DEFLECTION AND CAMBER	
70' CORED SLAB UNIT	3'-0" x 2'-0" 0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2 1/4" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	3/4" ↓
FINAL CAMBER	1 1/2" ↑

** INCLUDES FUTURE WEARING SURFACE

BILL OF MATERIAL FOR ONE 70' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
B22	6	#4	STR	24'-6"	98	24'-6"	98
S10	8	#5	3	4'-9"	40	4'-9"	40
S11	144	#4	3	5'-10"	561	5'-10"	561
*S12	79	#5	1	5'-7"	460		
S14	4	#4	3	5'-7"	15	5'-7"	15
S15	4	#5	3	7'-1"	30	7'-1"	30
REINFORCING STEEL				LBS.	744		744
* EPOXY COATED REINFORCING STEEL				LBS.	460		
7000 P.S.I. CONCRETE				CU. YDS.	11.8		11.8
0.6" Ø L.R. STRANDS				No.	28		28



NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

ALL REINFORCING STEEL IN VERTICAL CONCRETE BARRIER RAILS SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

MAINTAIN A SYMMETRIC TENSION FORCE BETWEEN EACH PAIR OF TRANSVERSE POST TENSIONING STRANDS IN THE DIAPHRAGM.

THE #4 S11 STIRRUPS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO THE GROUTED RECESS.

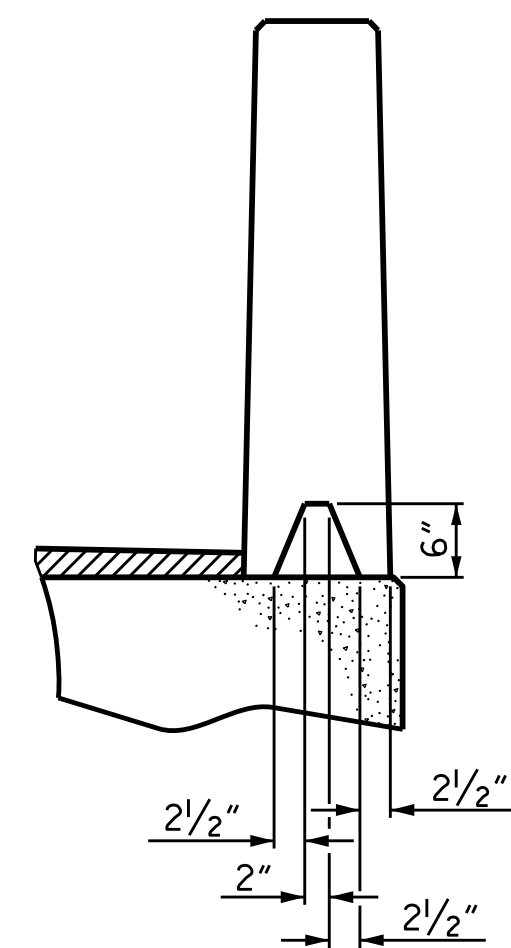
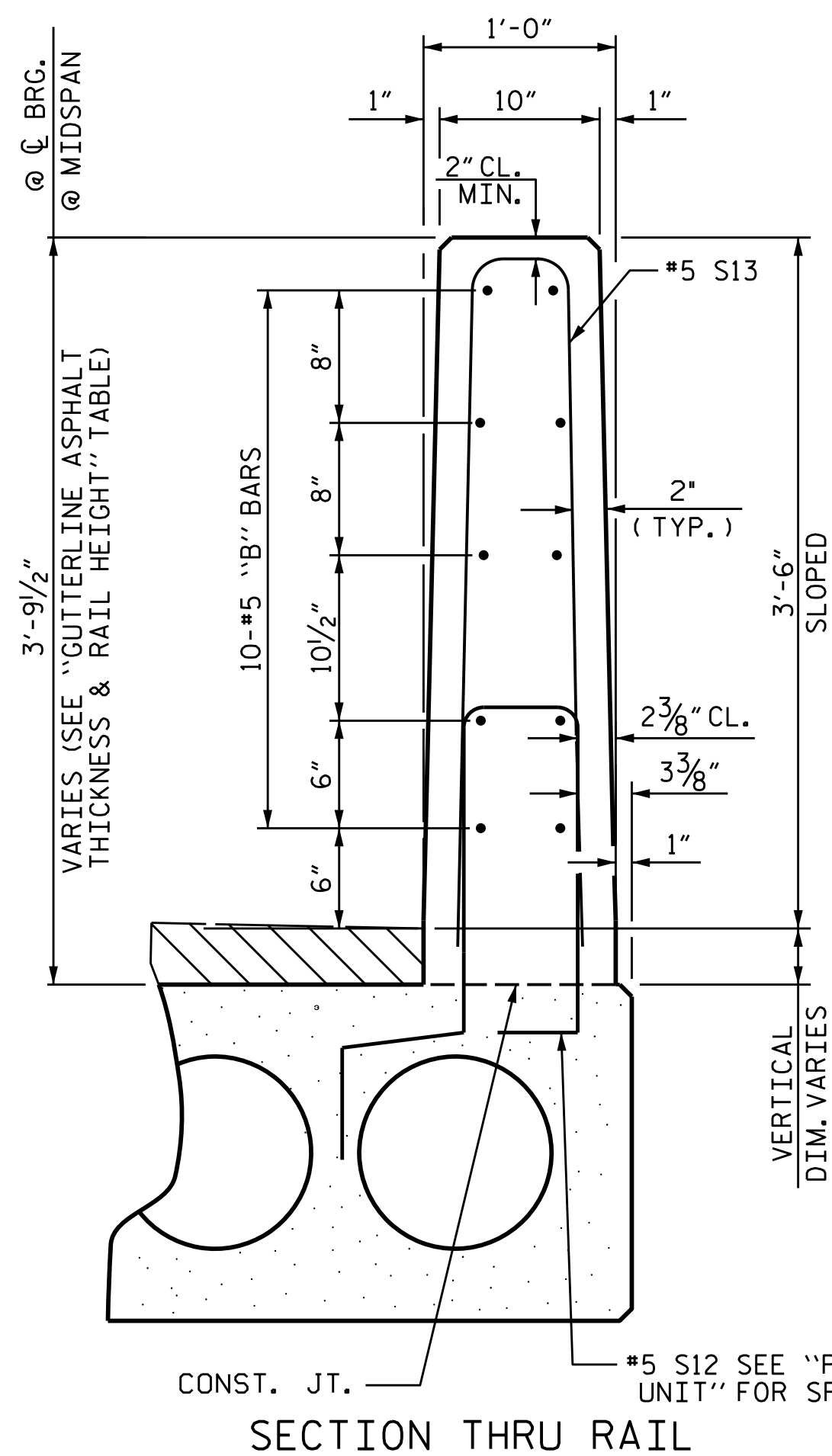
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

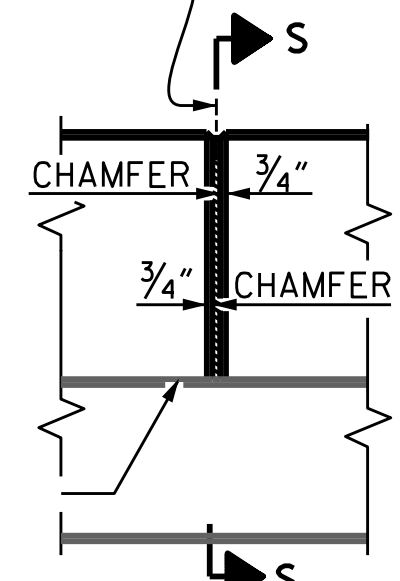
THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.



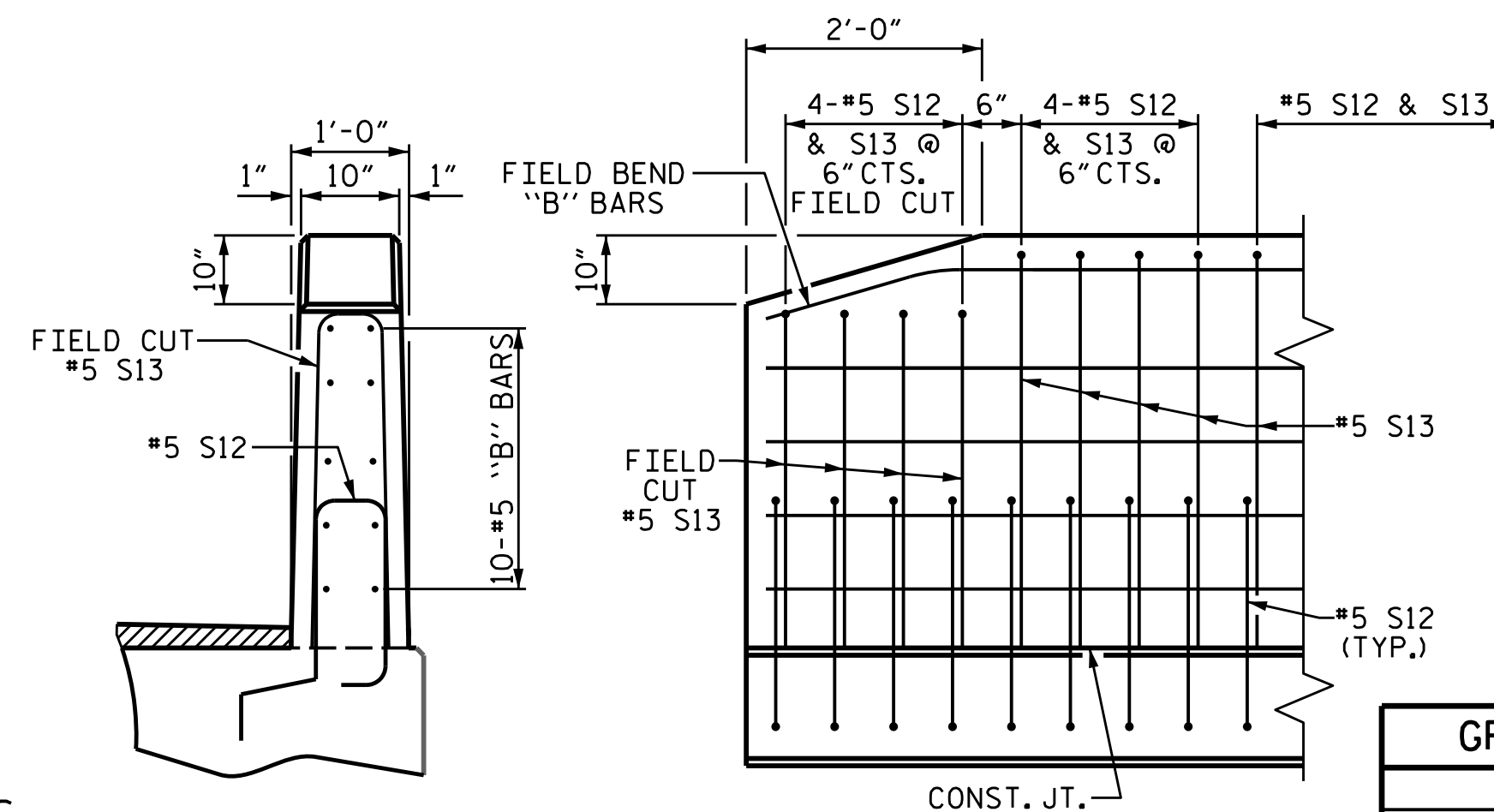
SECTION S-S AT DAM IN OPEN JOINT (THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)
1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS. (NOTE: OMIT EXP. JT. MAT'L WHEN SLIP FORM IS USED)



ELEVATION AT EXPANSION JOINTS

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
70' UNIT						
*B25	60	60	#5	STR	22'-11"	1434
*S13	158	158	#5	2	7'-2"	1181
* EPOXY COATED REINFORCING STEEL				LBS.		2615
CLASS AA CONCRETE				CU. YDS.		18.1
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		140.25

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
70' UNITS	2"	3'-8"



END VIEW

SIDE VIEW

END OF RAIL DETAILS

CONCRETE RELEASE STRENGTH	
UNIT	PSI
70' UNITS	5500

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



PROJECT NO. **BP1-R009**
NORTHAMPTON COUNTY
STATION: **14+14.50 -L-**

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 2'-0"
PRESTRESSED CONCRETE
CORED SLAB UNIT

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

S-7
TOTAL SHEETS
14

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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.)

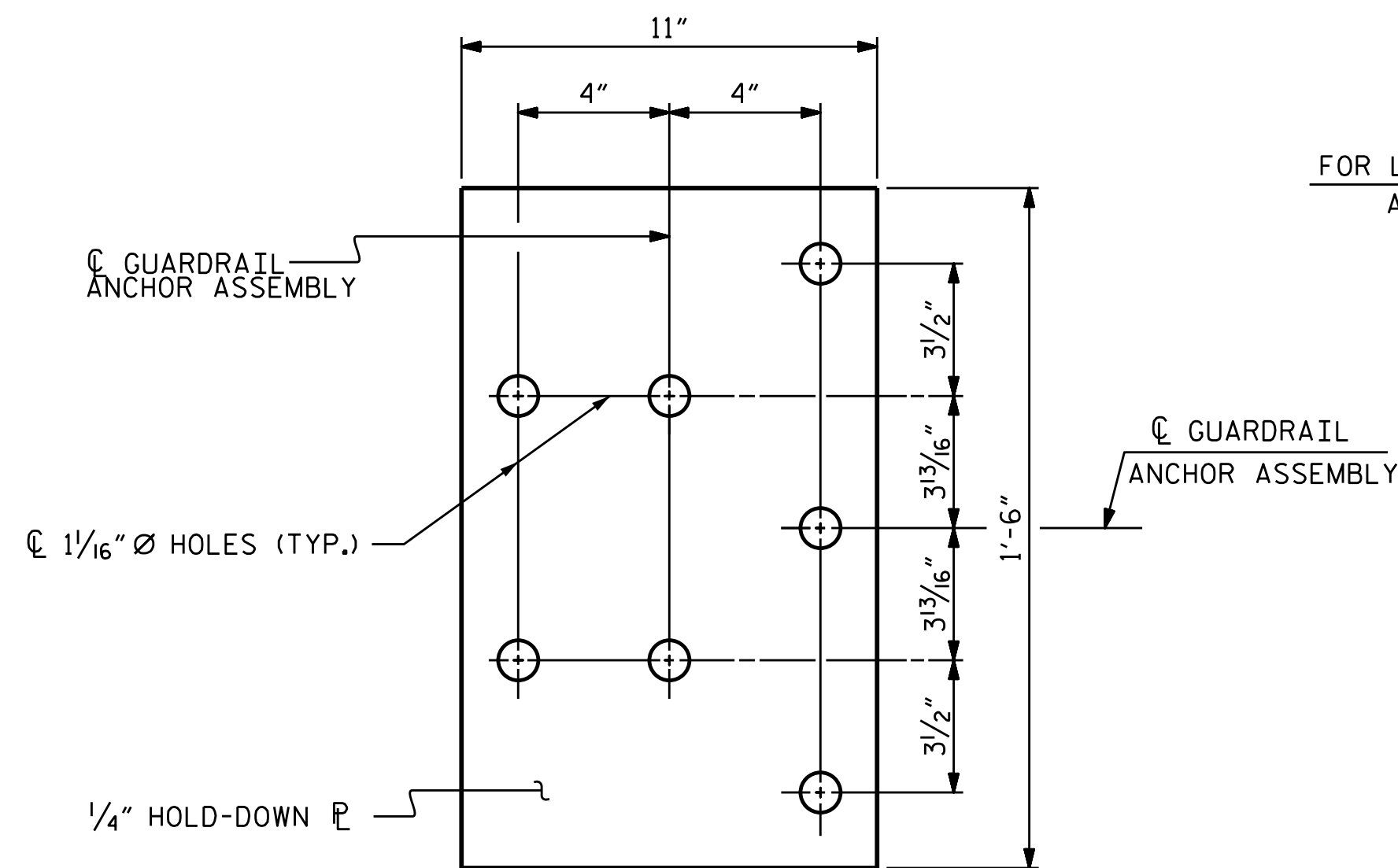
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

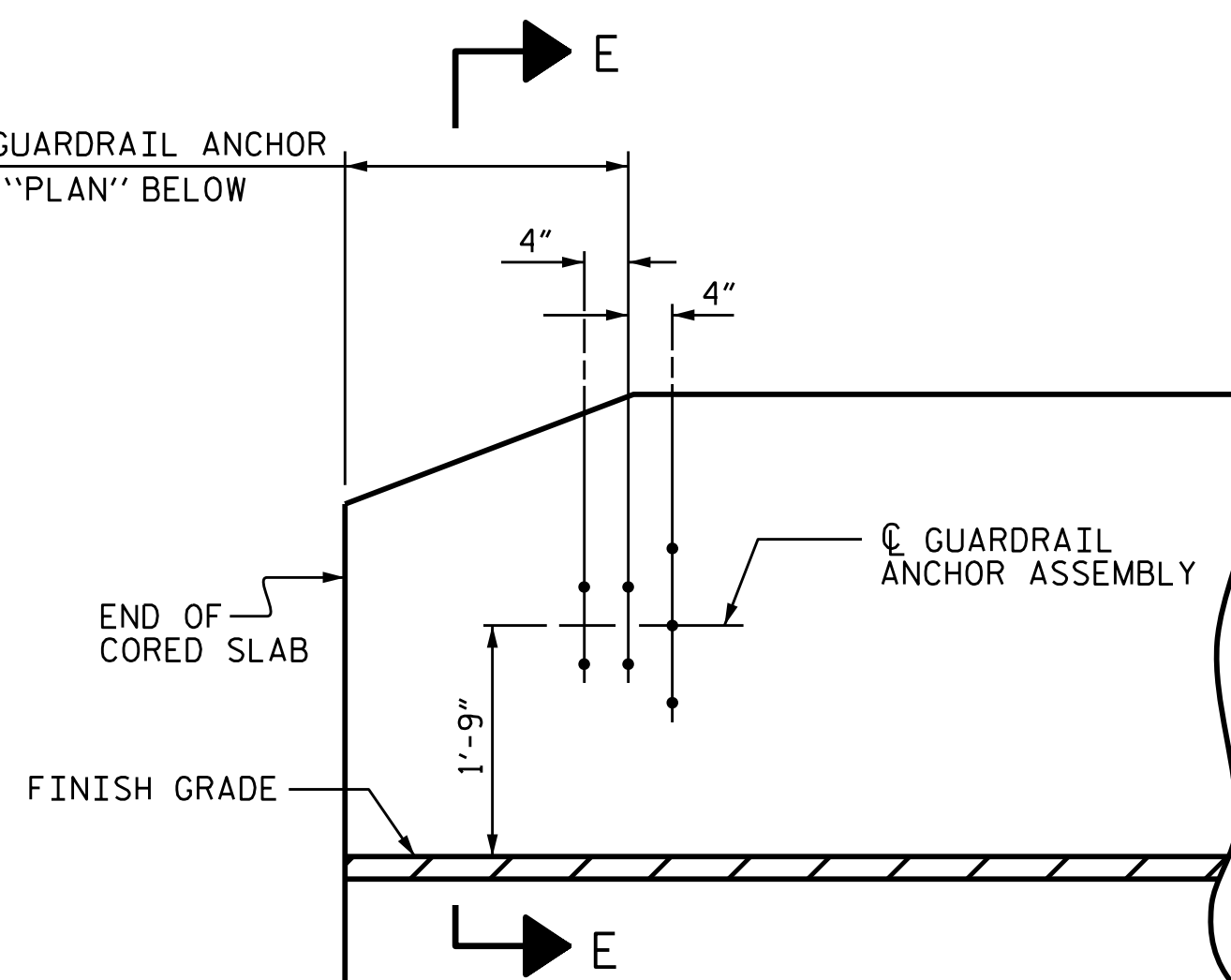
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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.

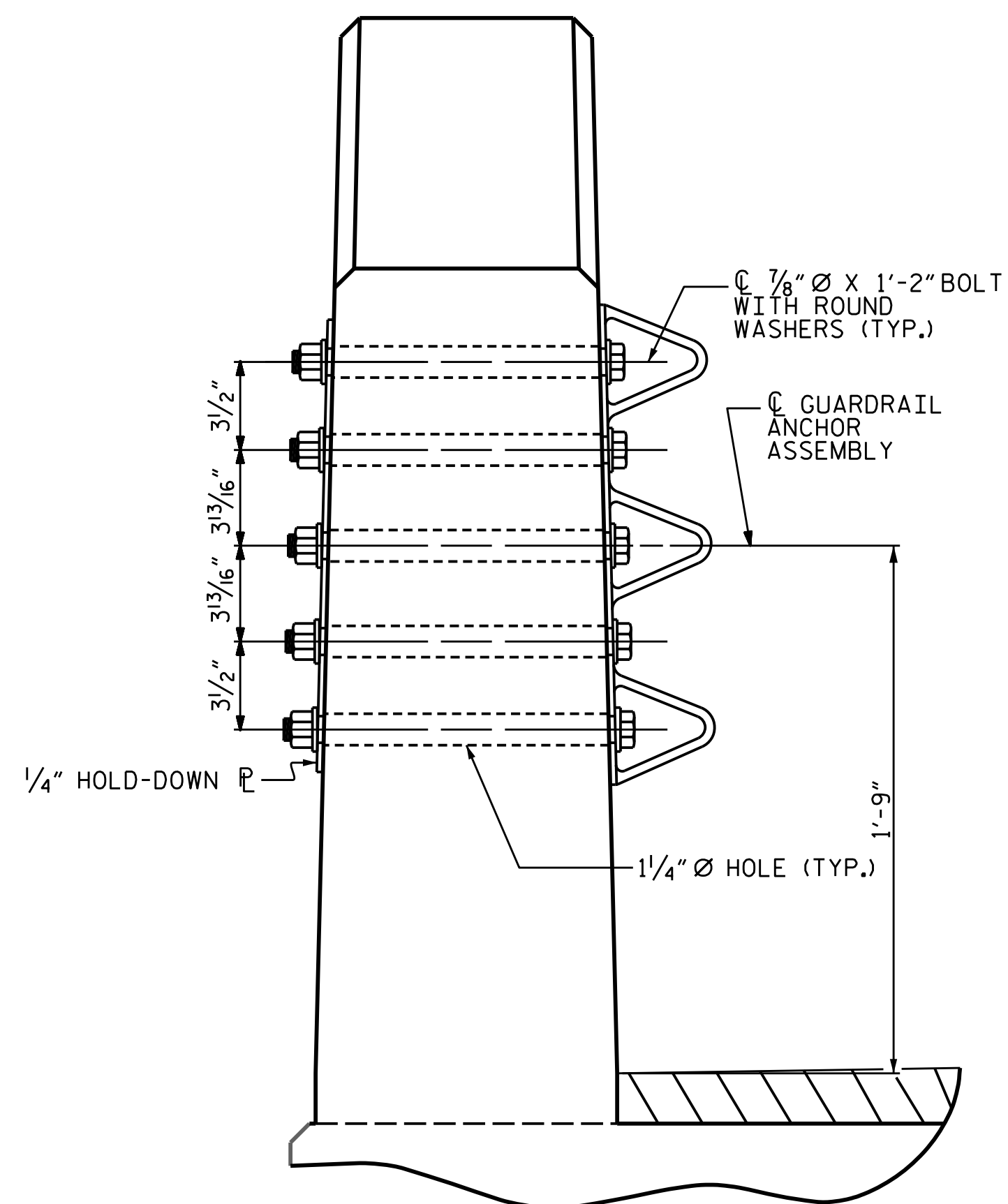


PLAN

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

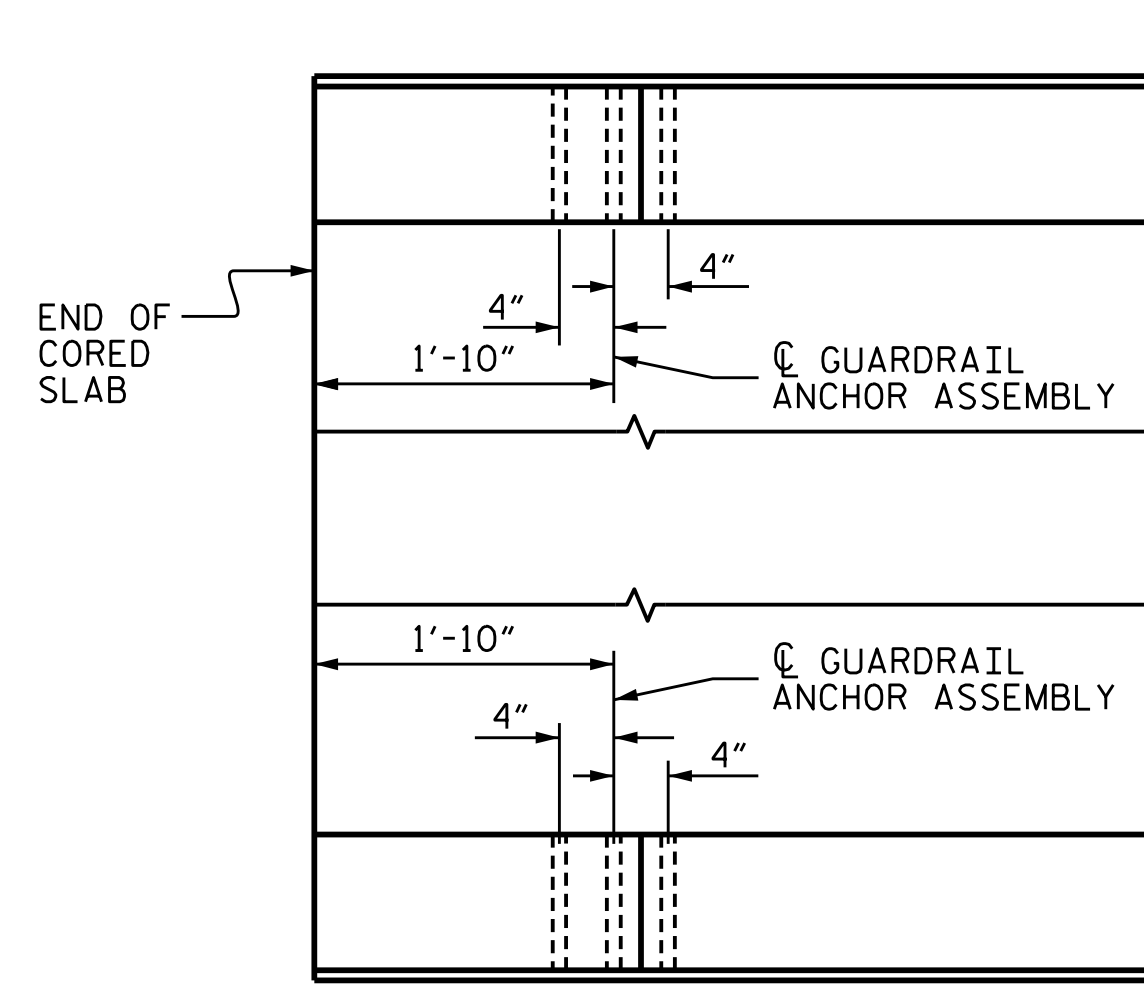


ELEVATION



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

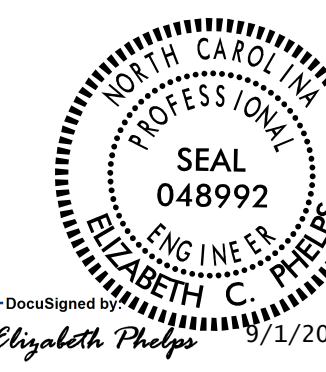
LOCATION OF ANCHORS FOR GUARDRAIL



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. **BP1-R009**
NORTHAMPTON COUNTY
STATION: **14+14.50 -L-**



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
**GUARDRAIL ANCHORAGE
DETAILS
FOR VERTICAL CONCRETE
BARRIER RAIL**

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			14



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CHECKED BY : E.C. PHELPS	DATE : 04/2023
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8/26/21

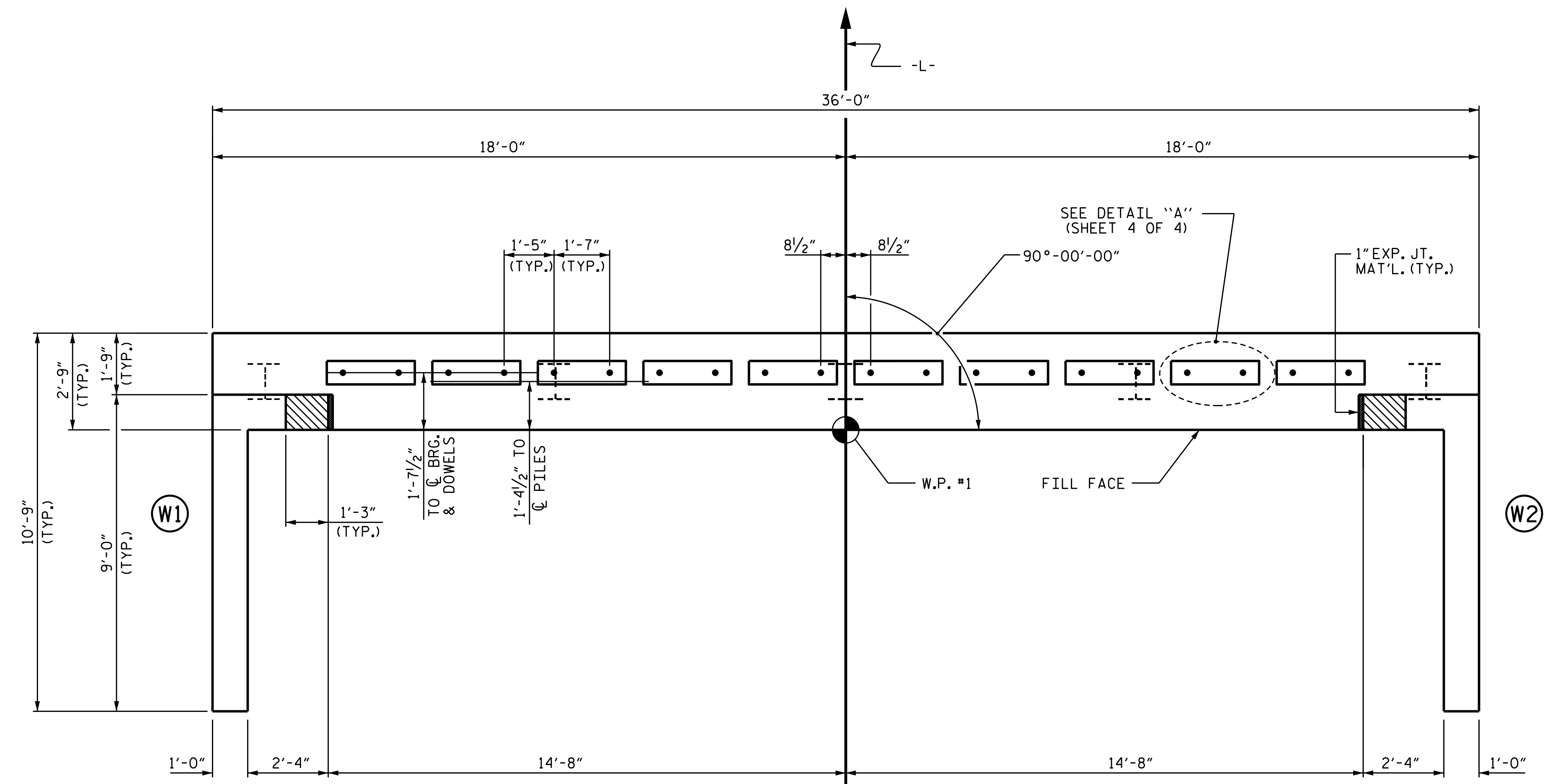
NOTES

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.

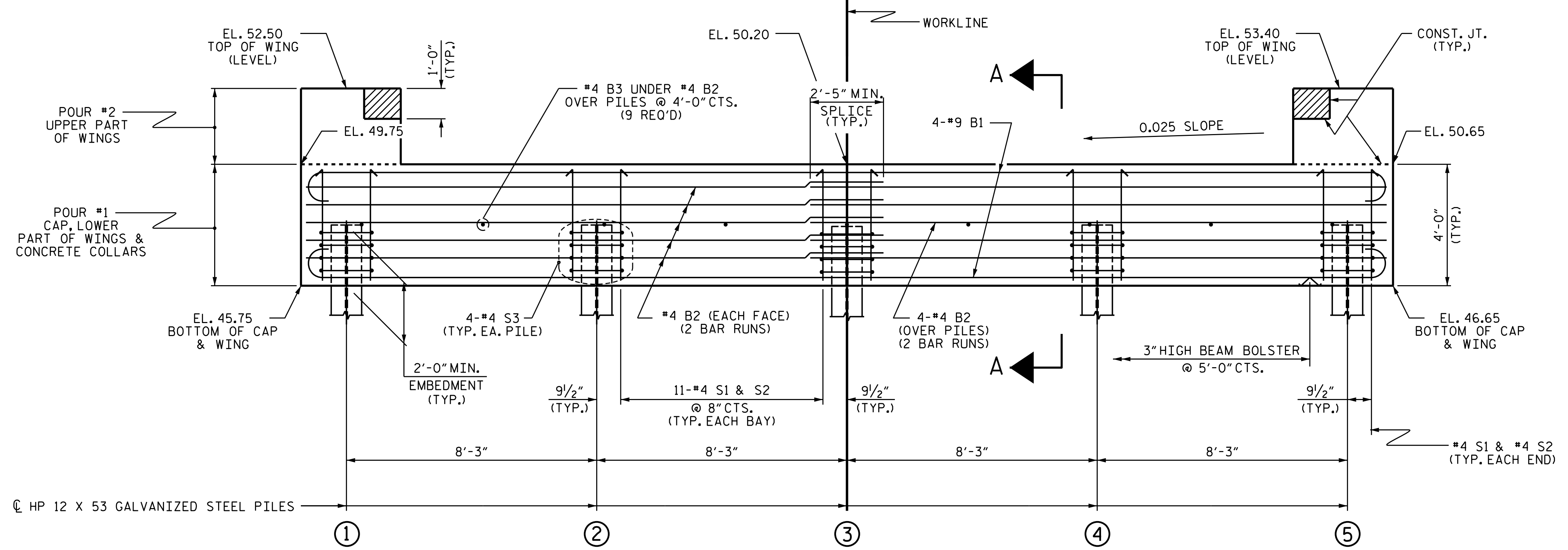
FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN

TOP OF PILE ELEVATIONS	
①	47.79
②	47.99
③	48.20
④	48.41
⑤	48.61



ELEVATION

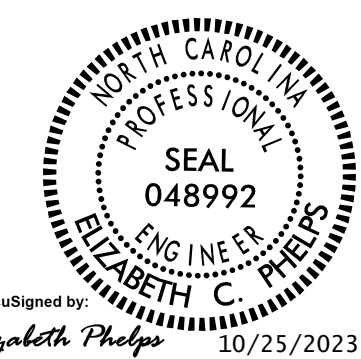
WINGS NOT SHOWN FOR CLARITY. FOR SECTION A-A, SEE SHEET 4 OF 4.

PROJECT NO. **BP1-R009**
NORTHAMPTON COUNTY
 STATION: **14+14.50 -L-**
 SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE

END BENT No. 1



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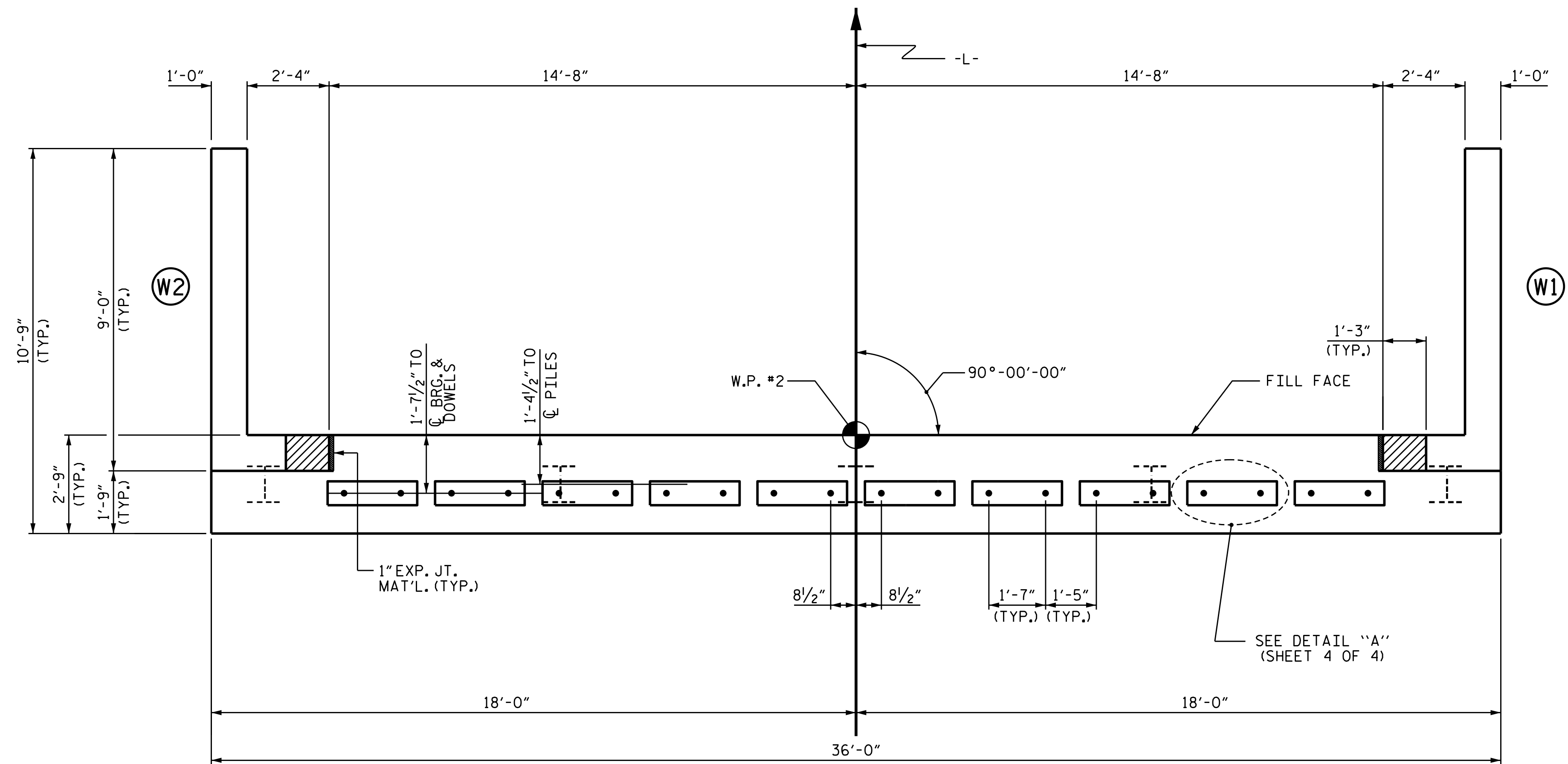
NOTES

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

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

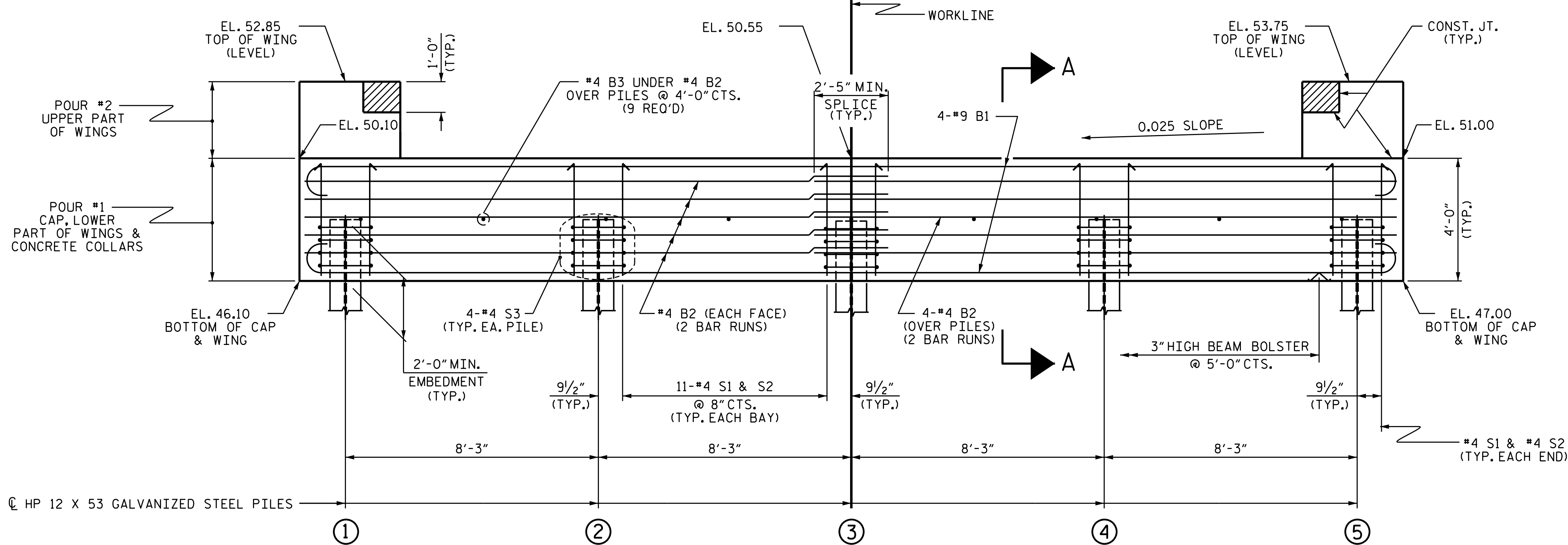
FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN

TOP OF PILE ELEVATIONS	
①	48.14
②	48.35
③	48.55
④	48.76
⑤	48.97



ELEVATION

PROJECT NO. **BP1-R009**

NORTHAMPTON COUNTY

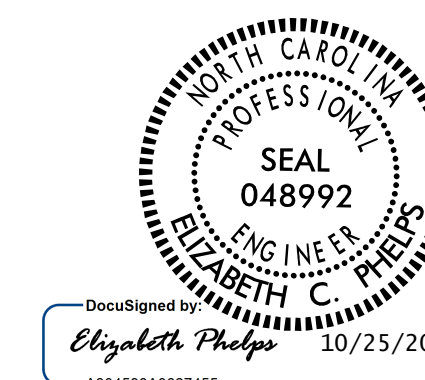
STATION: **14+14.50 -L-**

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 2



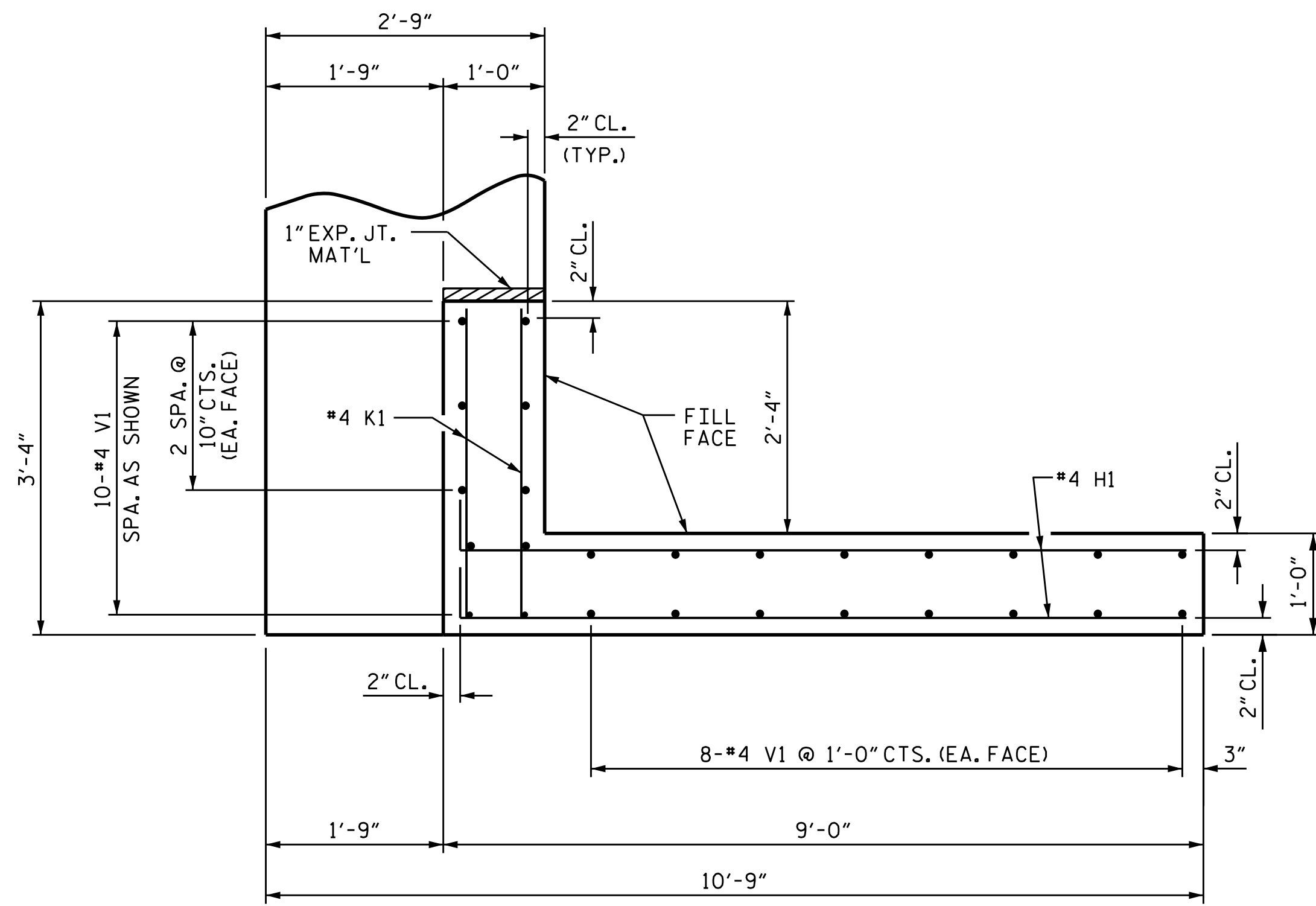
REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			14

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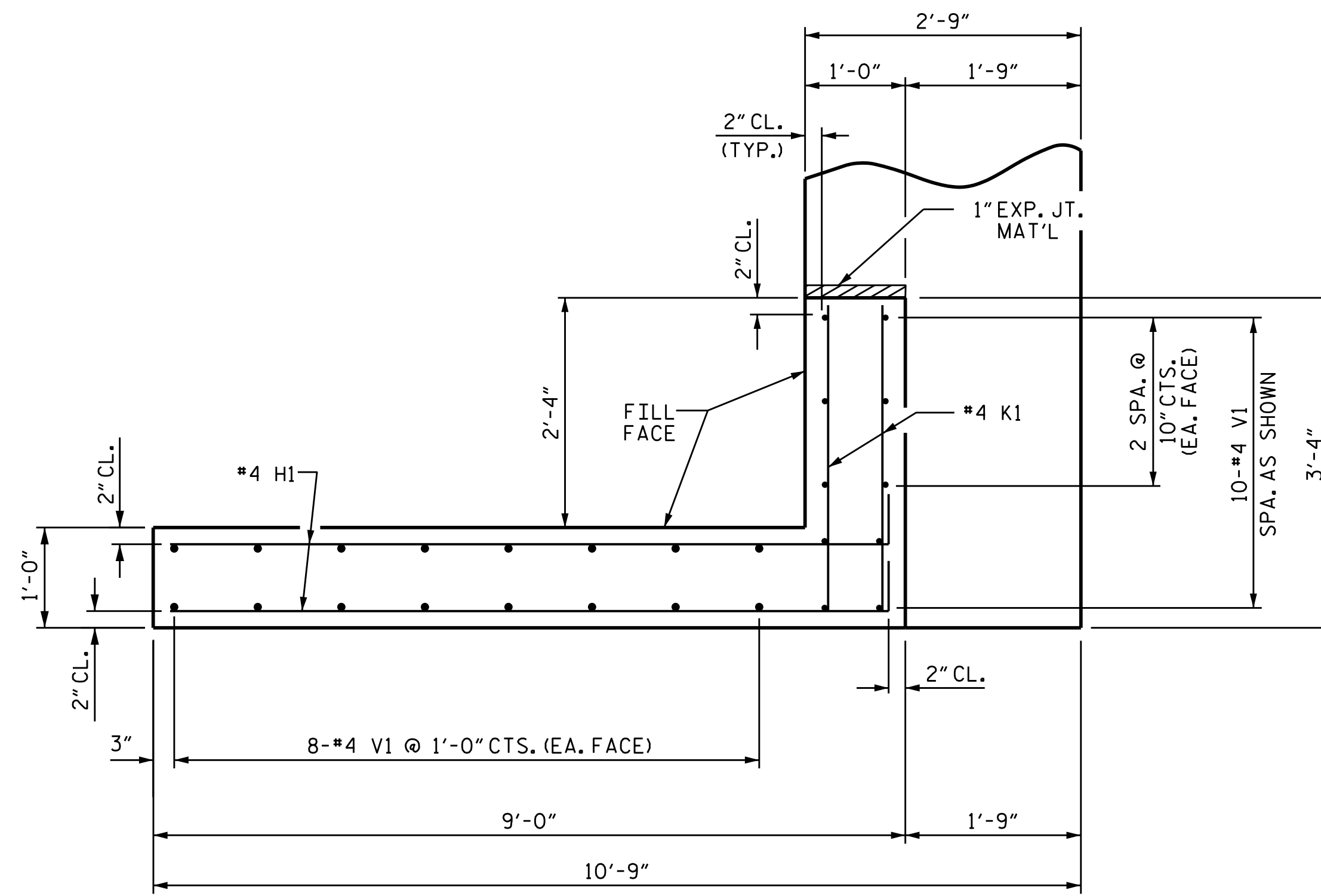
STD. NO. EB_30_9054

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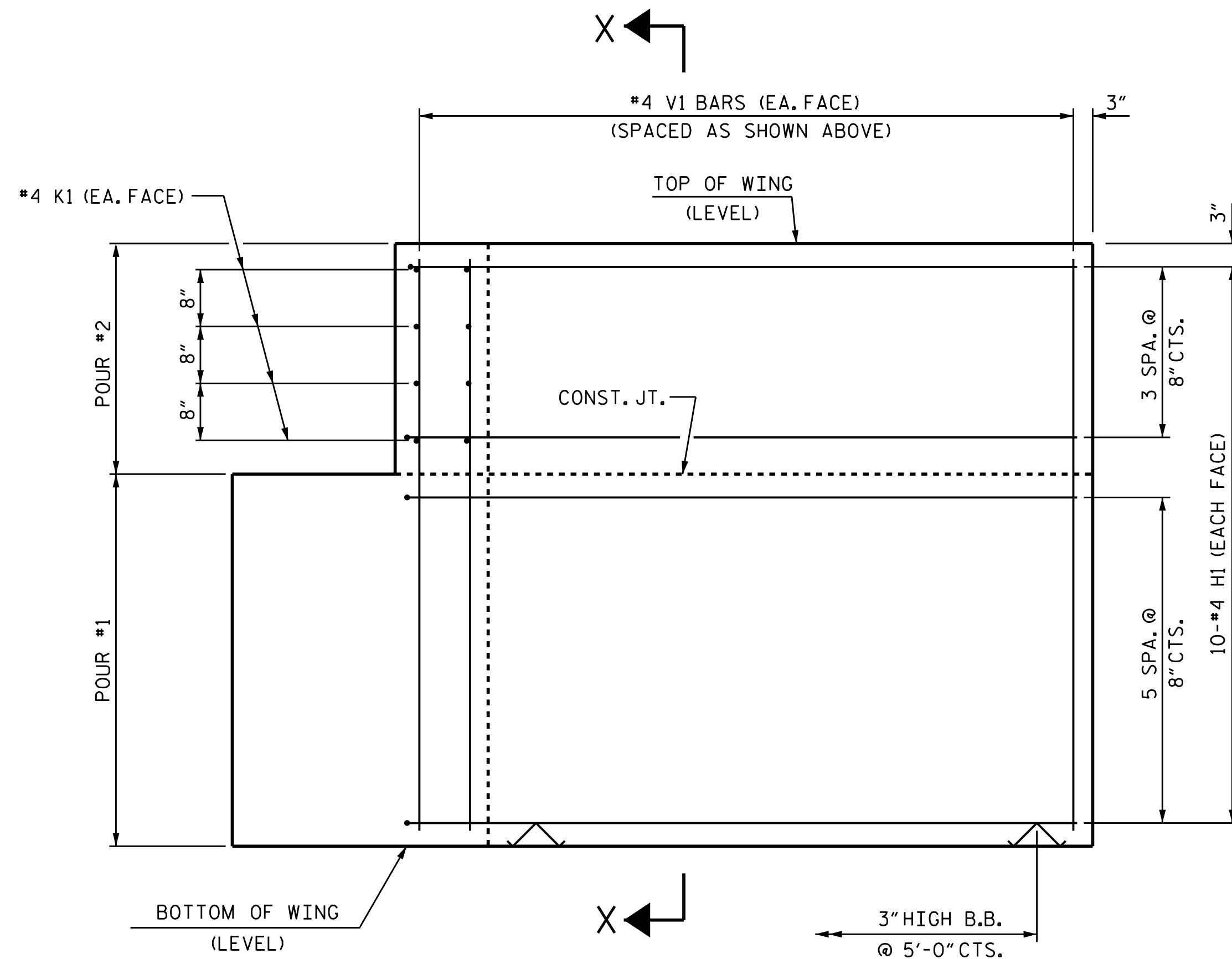




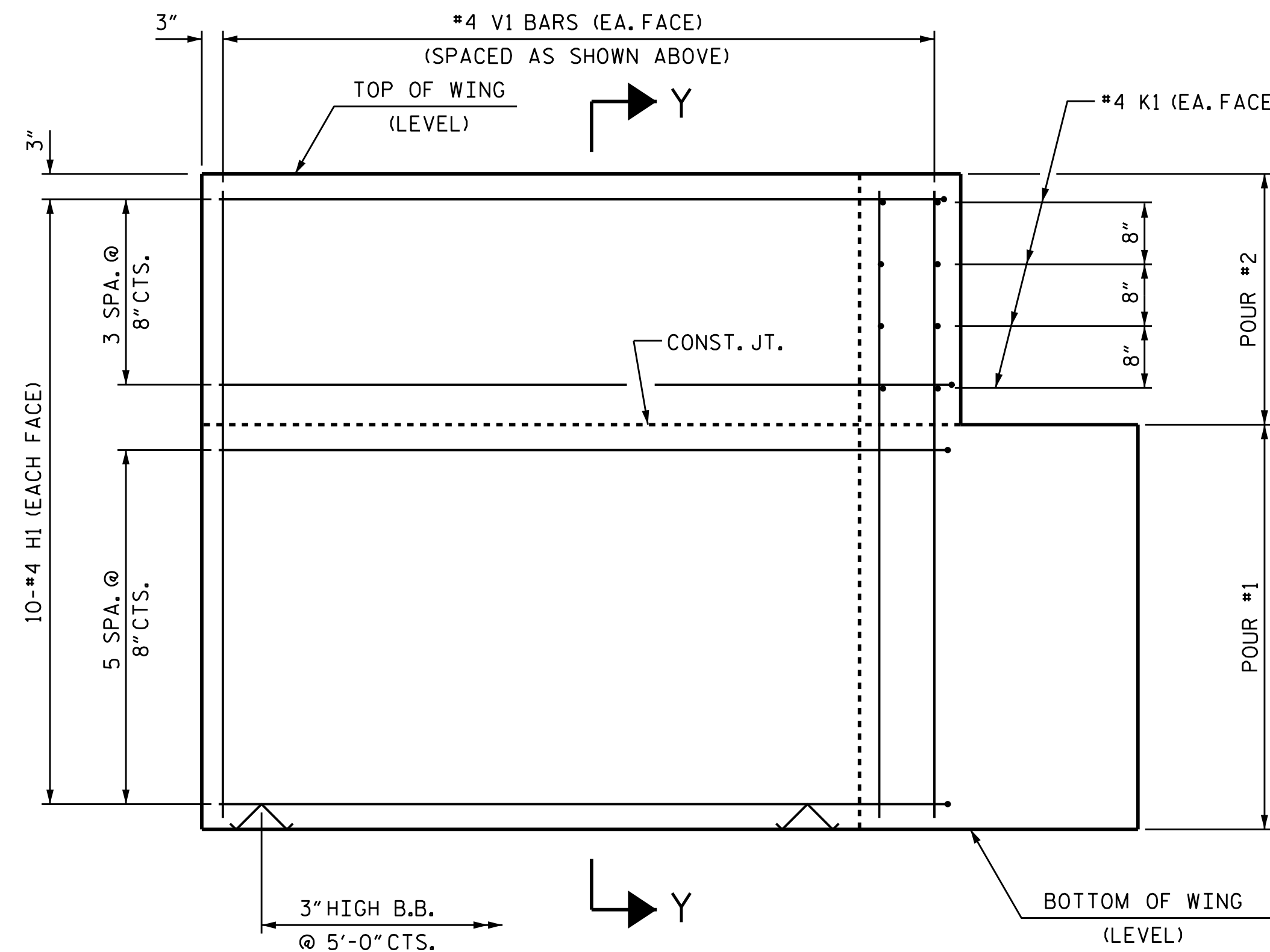
PLAN OF WING (W1)



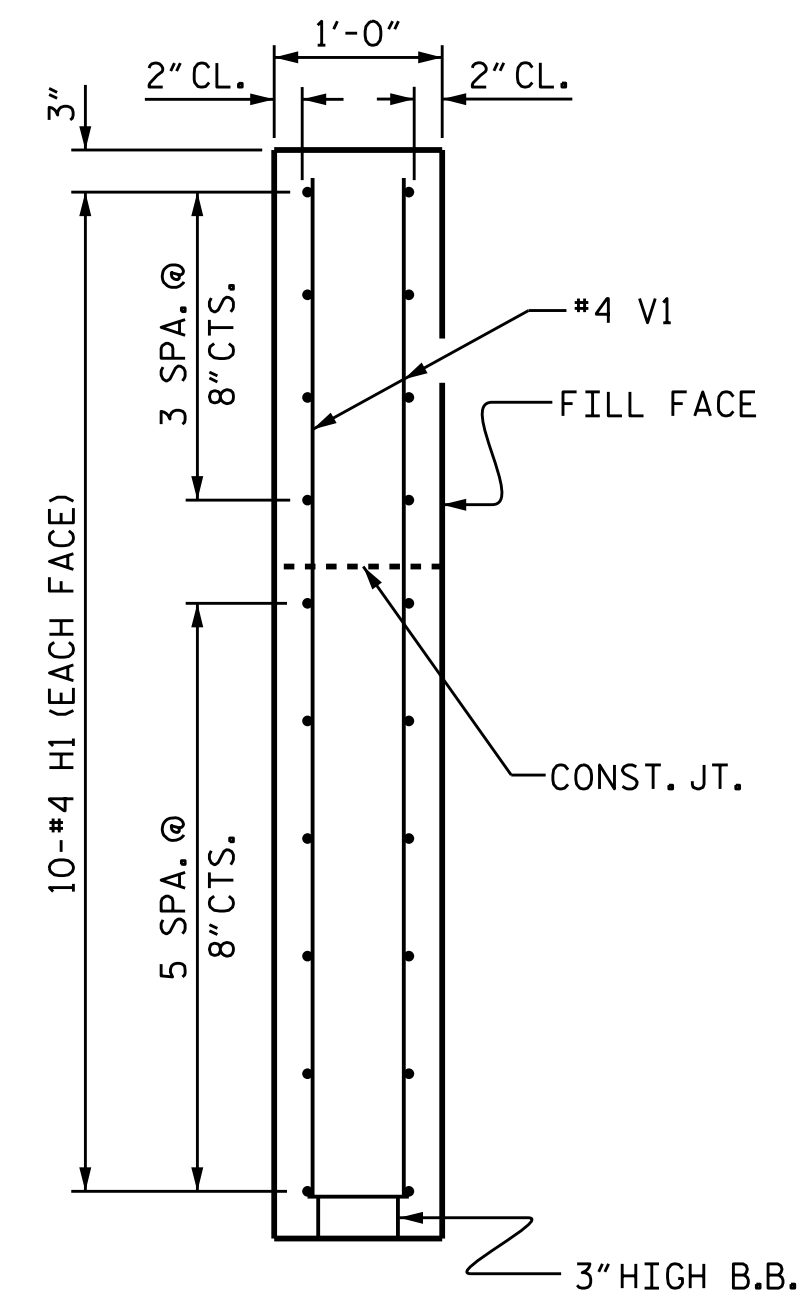
PLAN OF WING (W2)



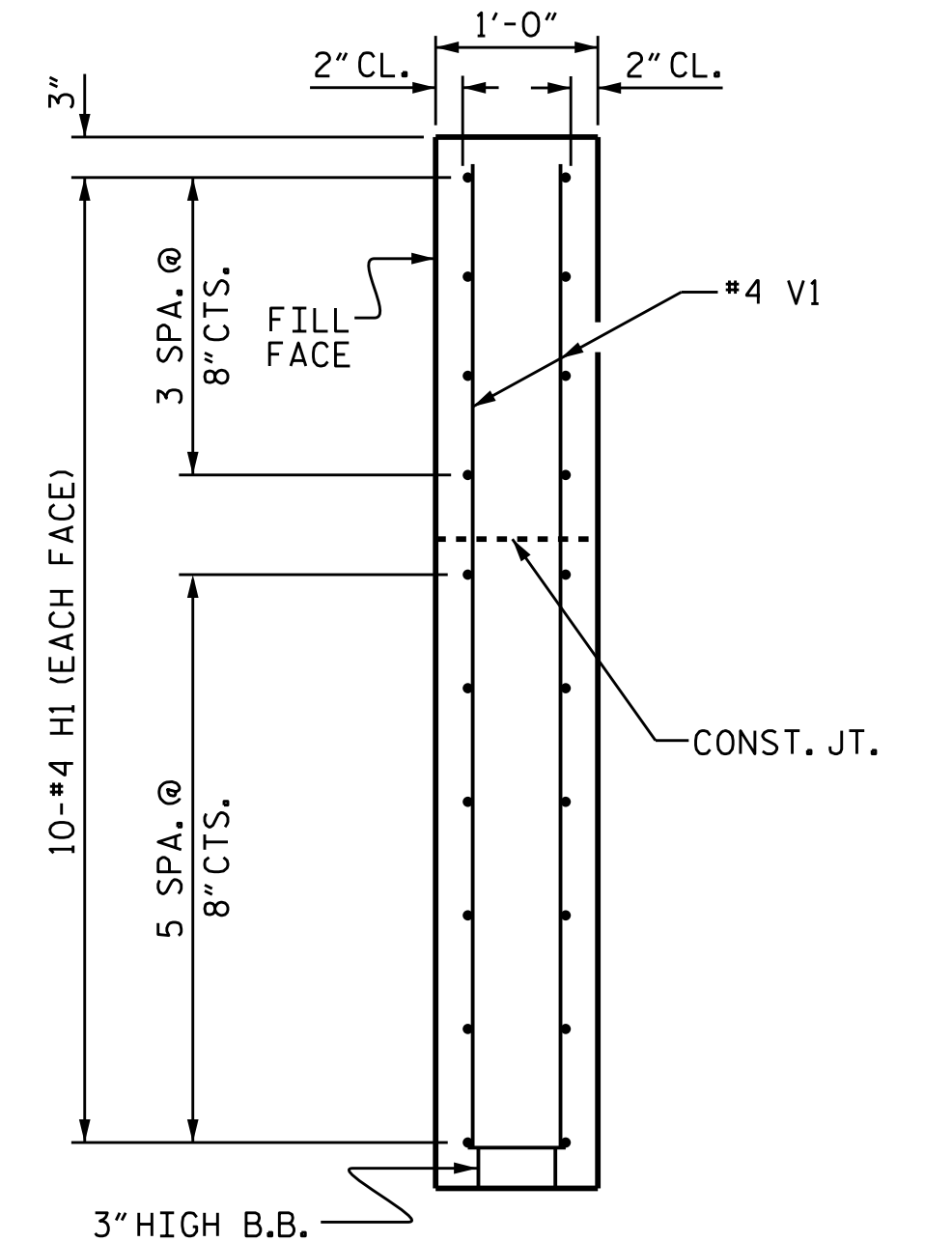
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



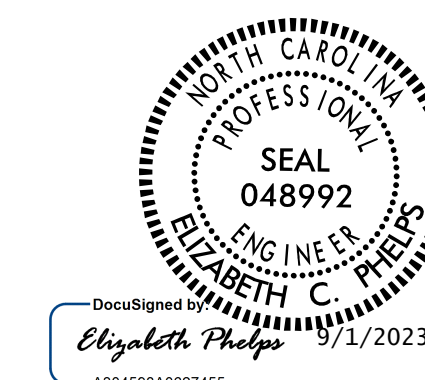
SECTION X-X



SECTION Y-Y

PROJECT NO. **BP1-R009**
NORTHAMPTON COUNTY
 STATION: **14+14.50 -L-**

SHEET 3 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
SUBSTRUCTURE
END BENT
WING DETAILS

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1			3		
2			4		

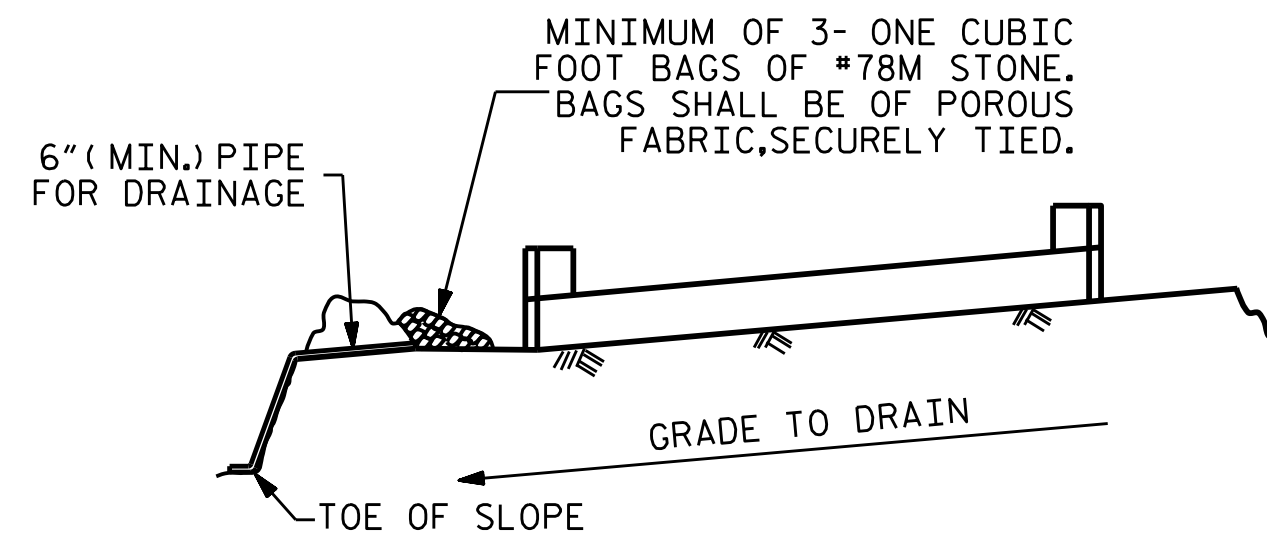
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 940 Main Campus Drive, Suite 500
 Raleigh, NC 27606

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WING DETAILS

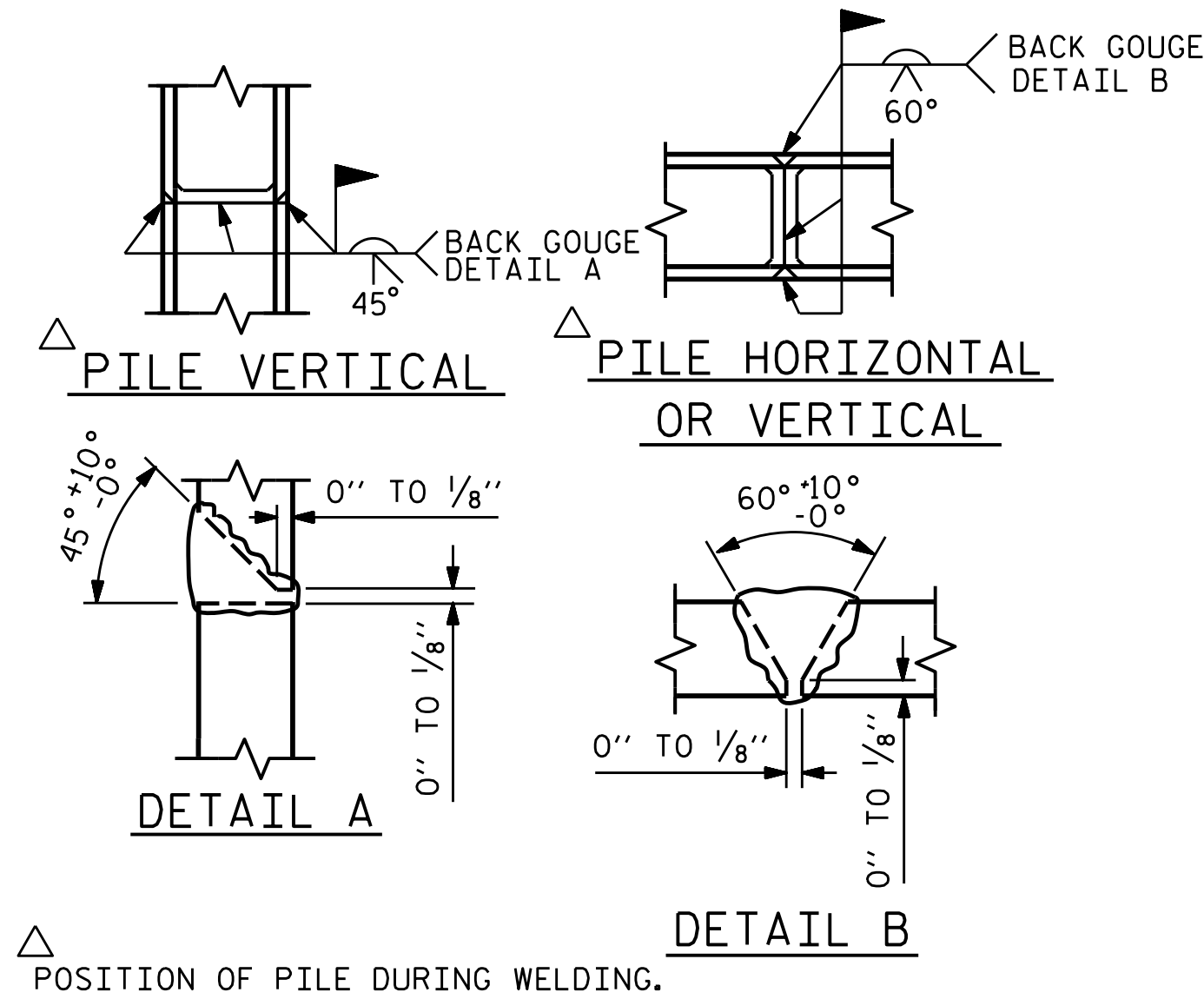


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

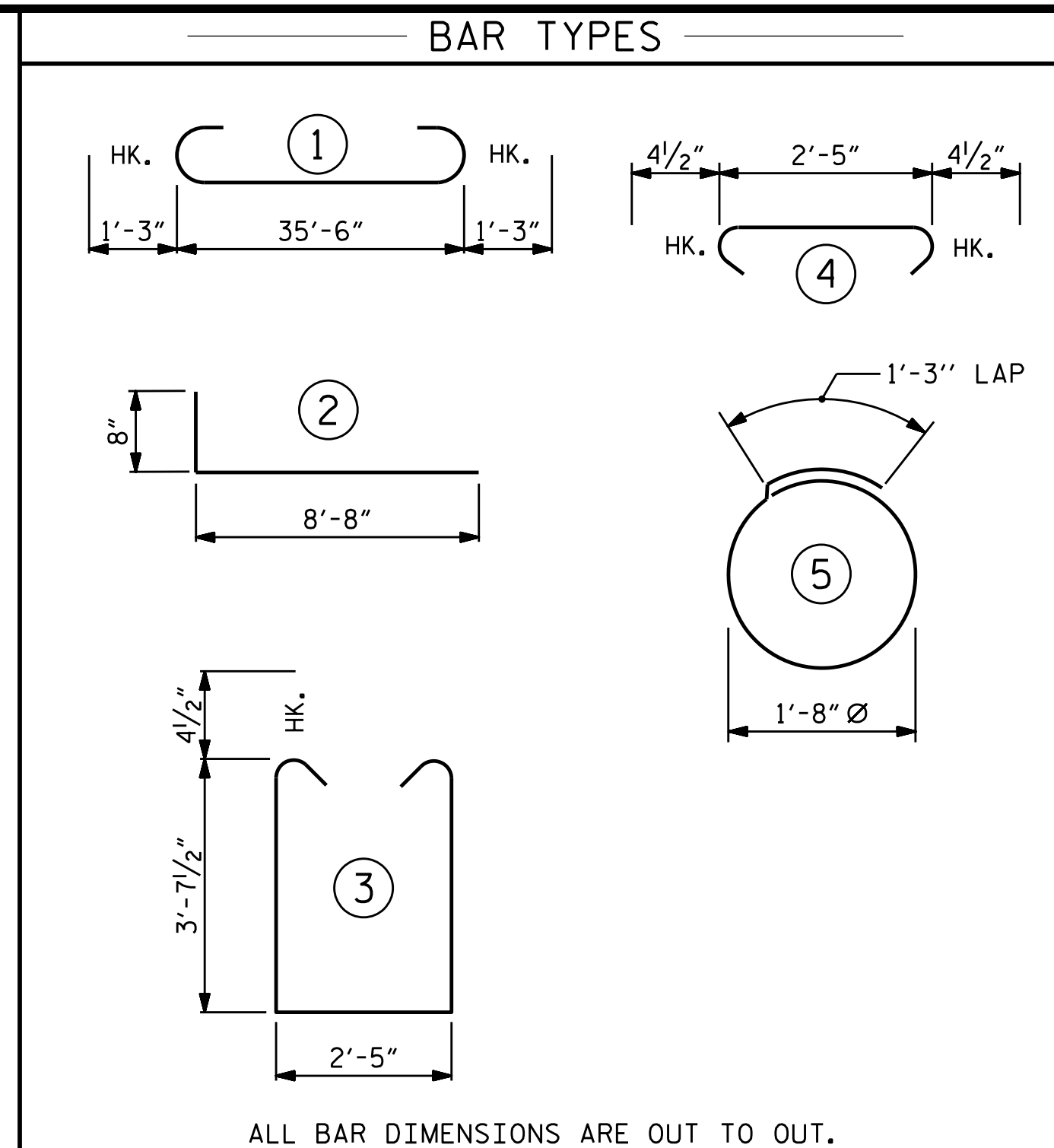
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

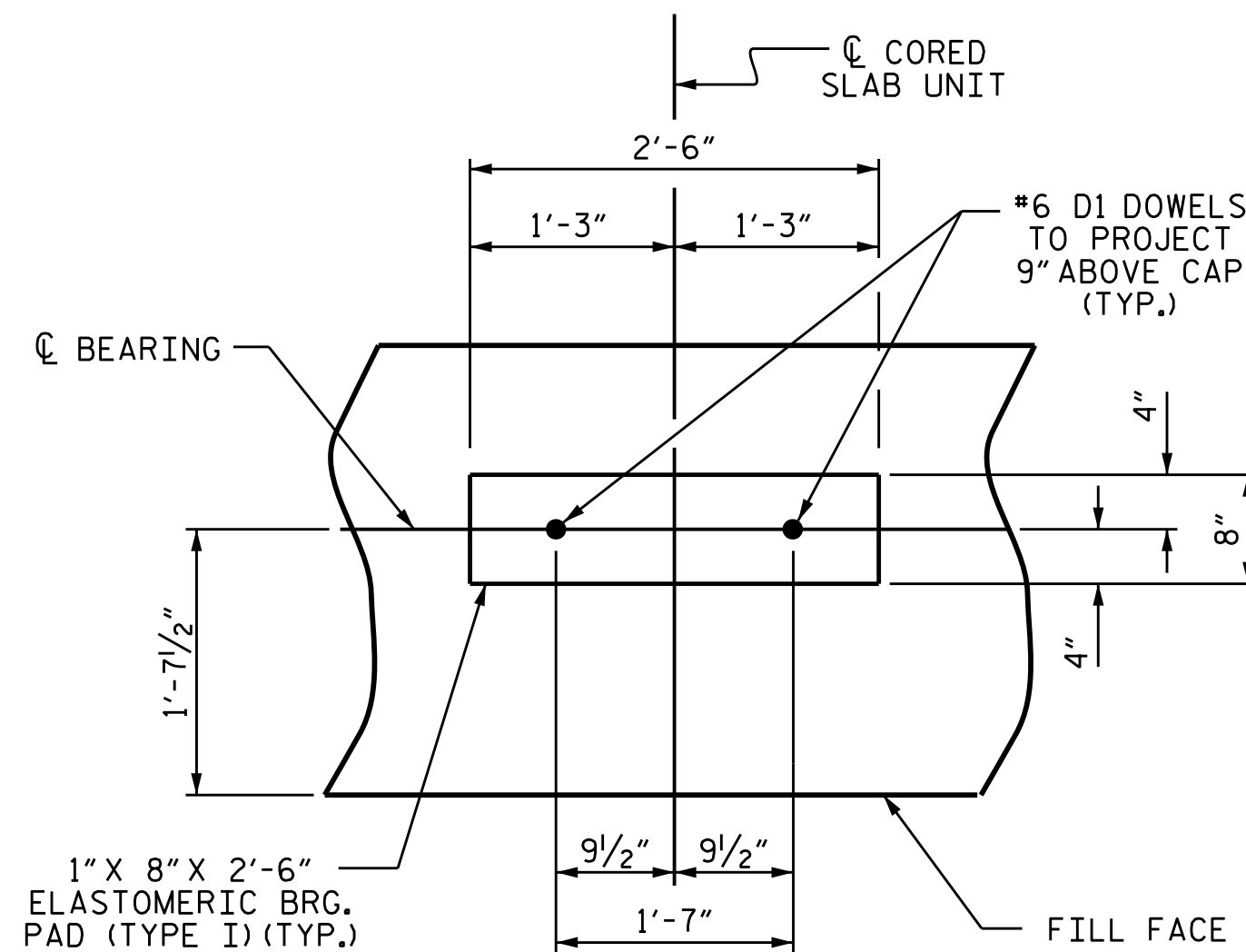
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

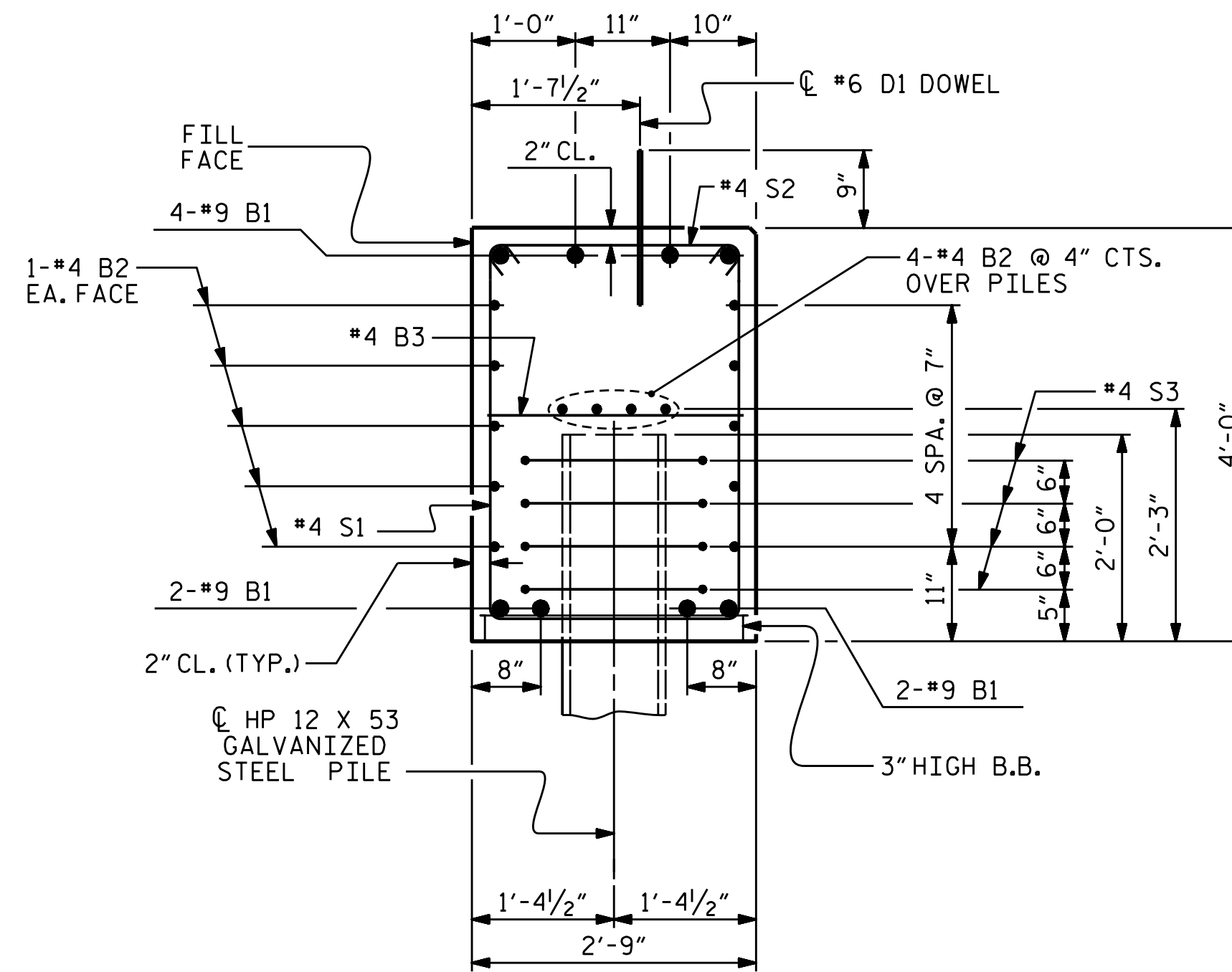


BILL OF MATERIAL FOR ONE END BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		38'-0"	1034
B2	28	#4	STR	19'-1"	357
B3	9	#4	STR	2'-5"	15
D1	20	#6	STR	1'-6"	45
H1	40	#4	2	9'-4"	249
K1	16	#4	STR	2'-11"	31
S1	46	#4	3	10'-5"	320
S2	46	#4	4	3'-2"	97
S3	20	#4	5	6'-6"	87
V1	52	#4	STR	6'-2"	214
REINFORCING STEEL (FOR ONE END BENT)					2449 LBS.
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
POUR #1	CAP, LOWER PART OF WINGS				17.0 C.Y.
POUR #2	UPPER PART OF WINGS				2.3 C.Y.
TOTAL CLASS A CONCRETE					19.3 C.Y.



DETAIL "A"

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



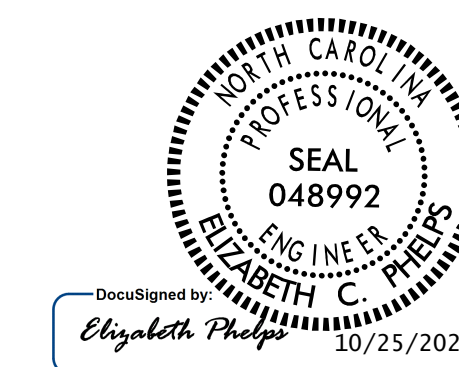
SECTION A-A

PROJECT NO. **BP1-R009**
NORTHAMPTON COUNTY
 STATION: **14+14.50 -L-**

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
END BENT No. 1 & 2
DETAILS



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2			4			TOTAL SHEETS 14

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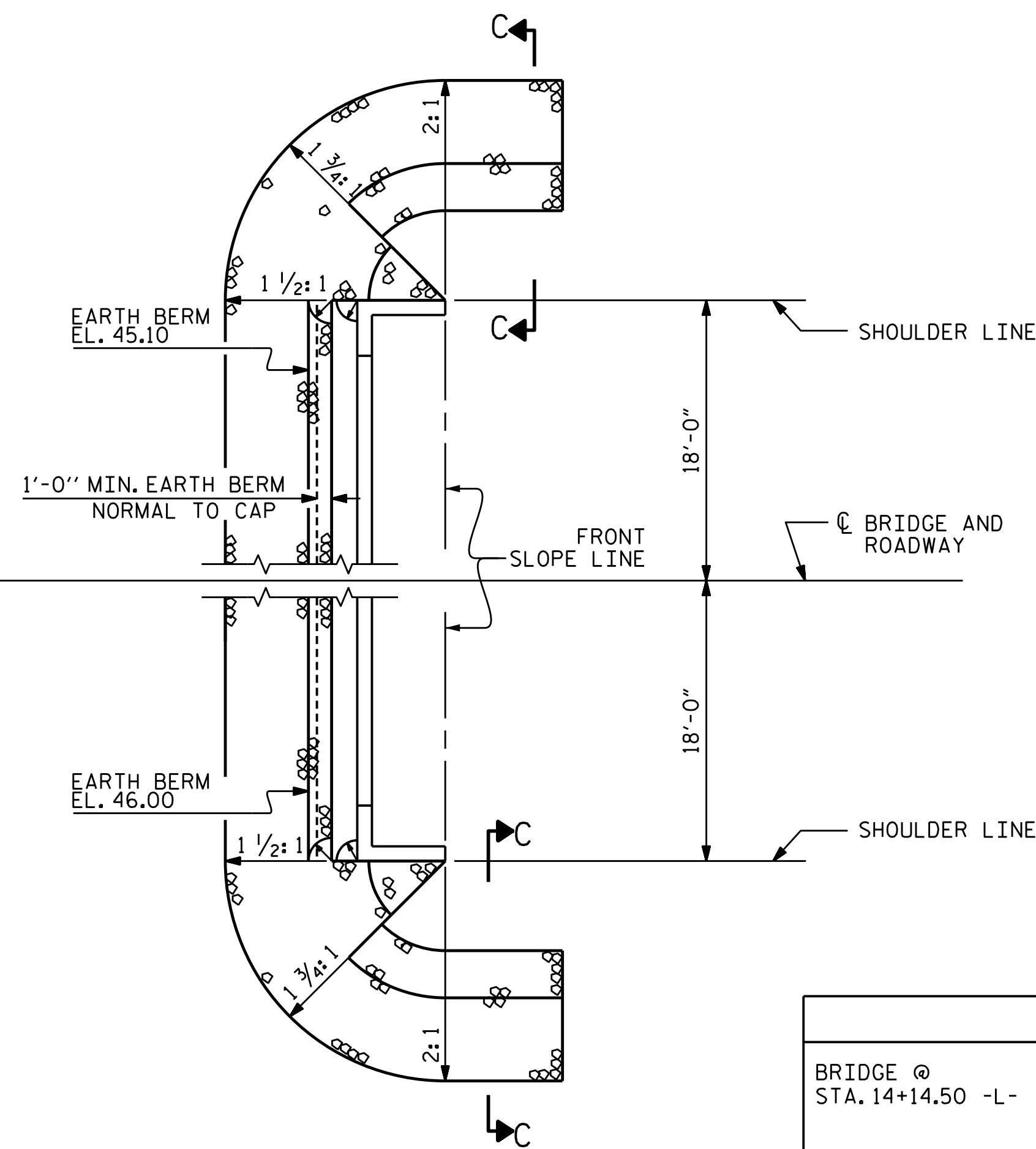
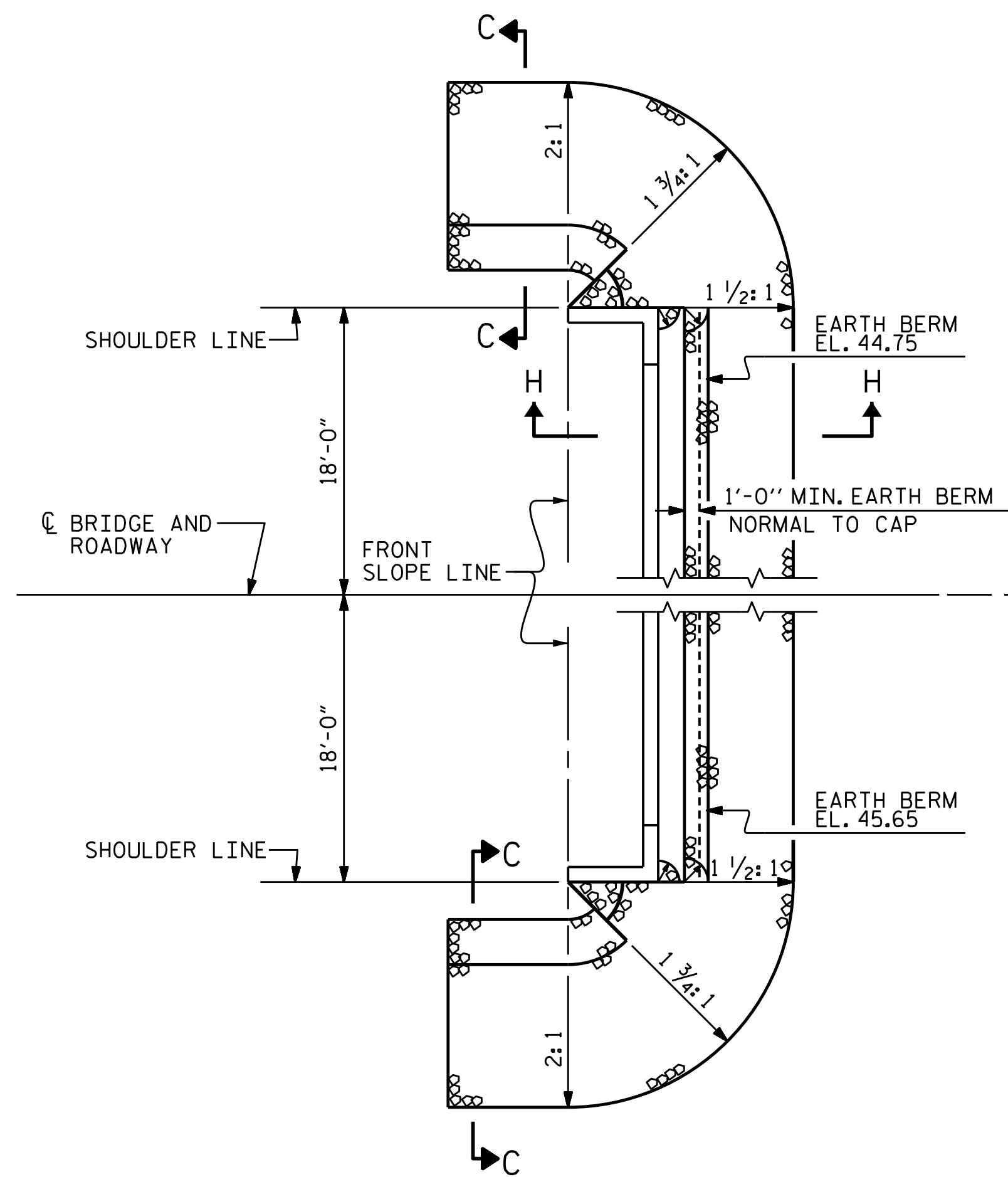
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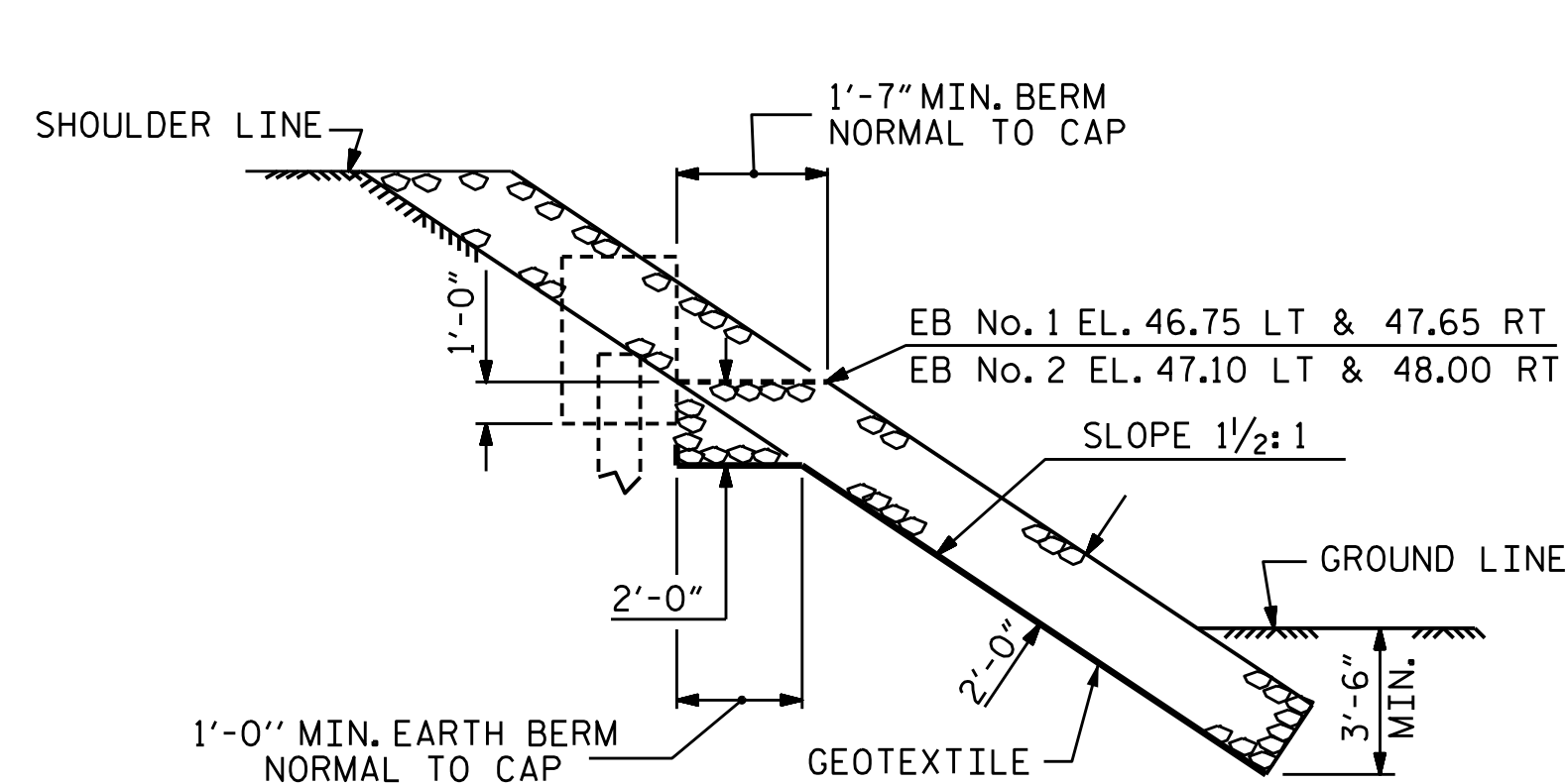
NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.



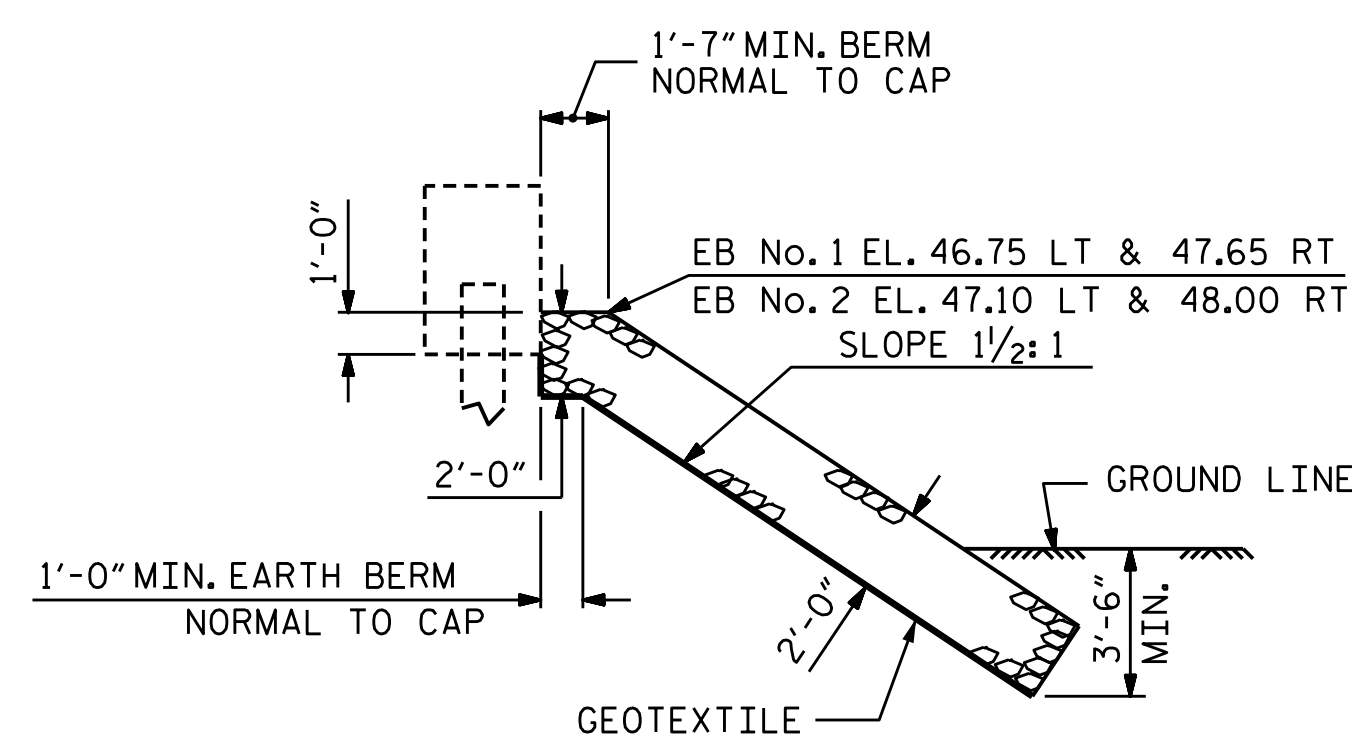
ESTIMATED QUANTITIES		
BRIDGE @ STA. 14+14.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	90	100
END BENT 2	100	110

SHOULDER RIP RAP IS HIGHER THAN END BENT No.1 RIP RAP

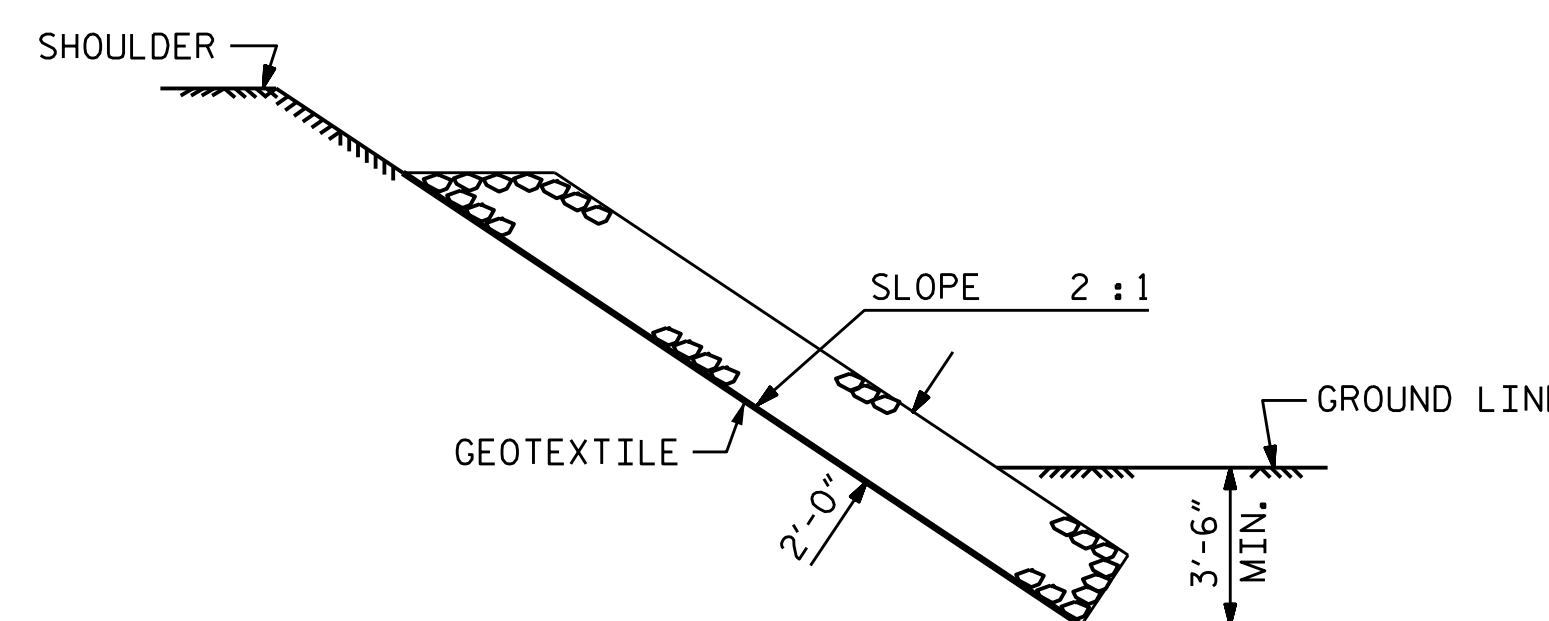
END BENT No.2 RIP RAPPED



SECTION H-H



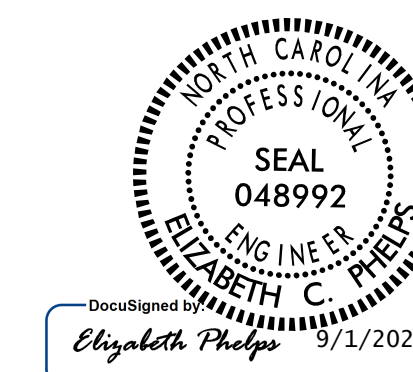
SECTION C-C
BERM RIP RAPPED



SECTION C-C

PROJECT NO. BP1-R009
NORTHAMPTON COUNTY
STATION: 14+14.50 -L-

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

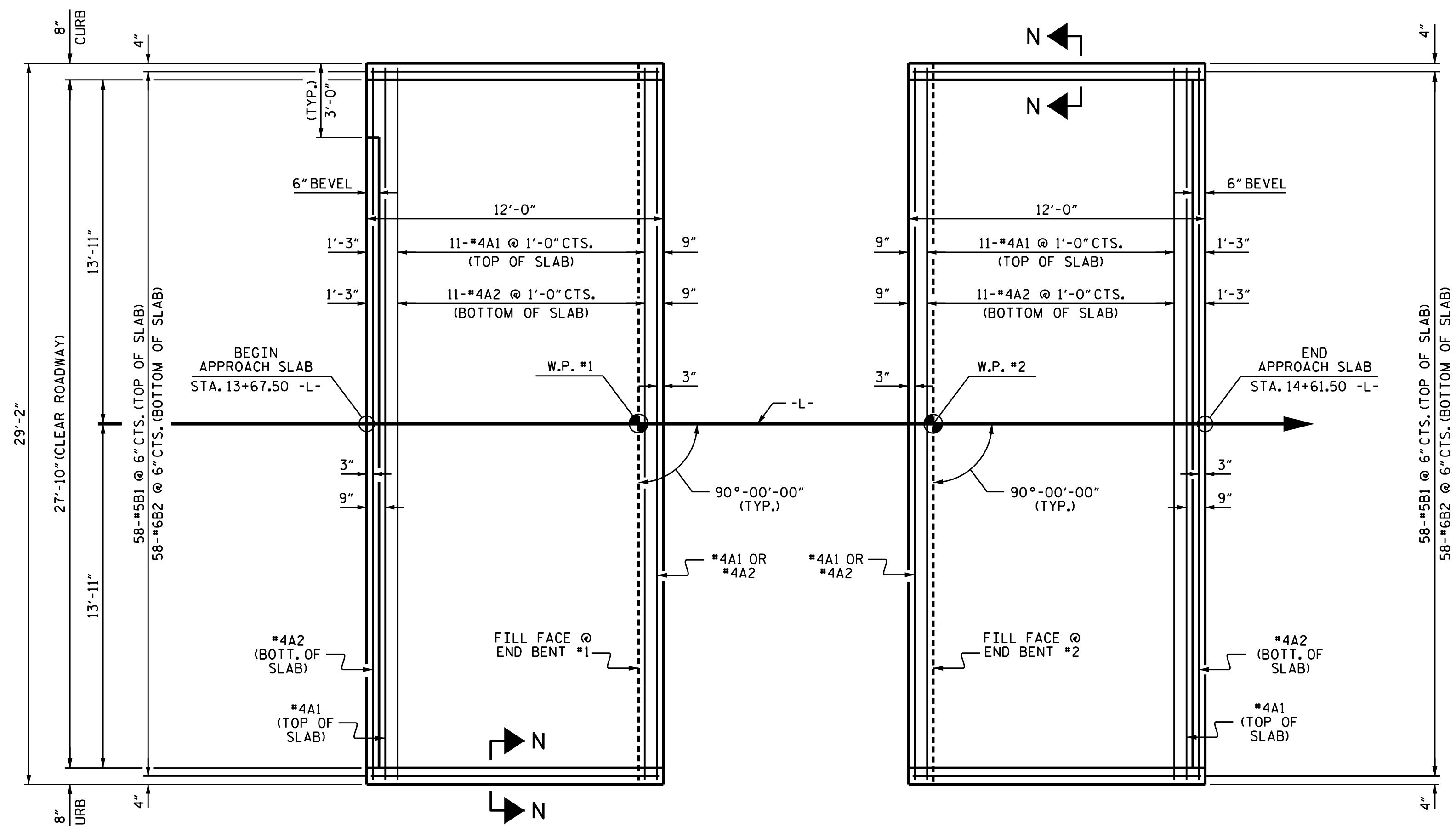


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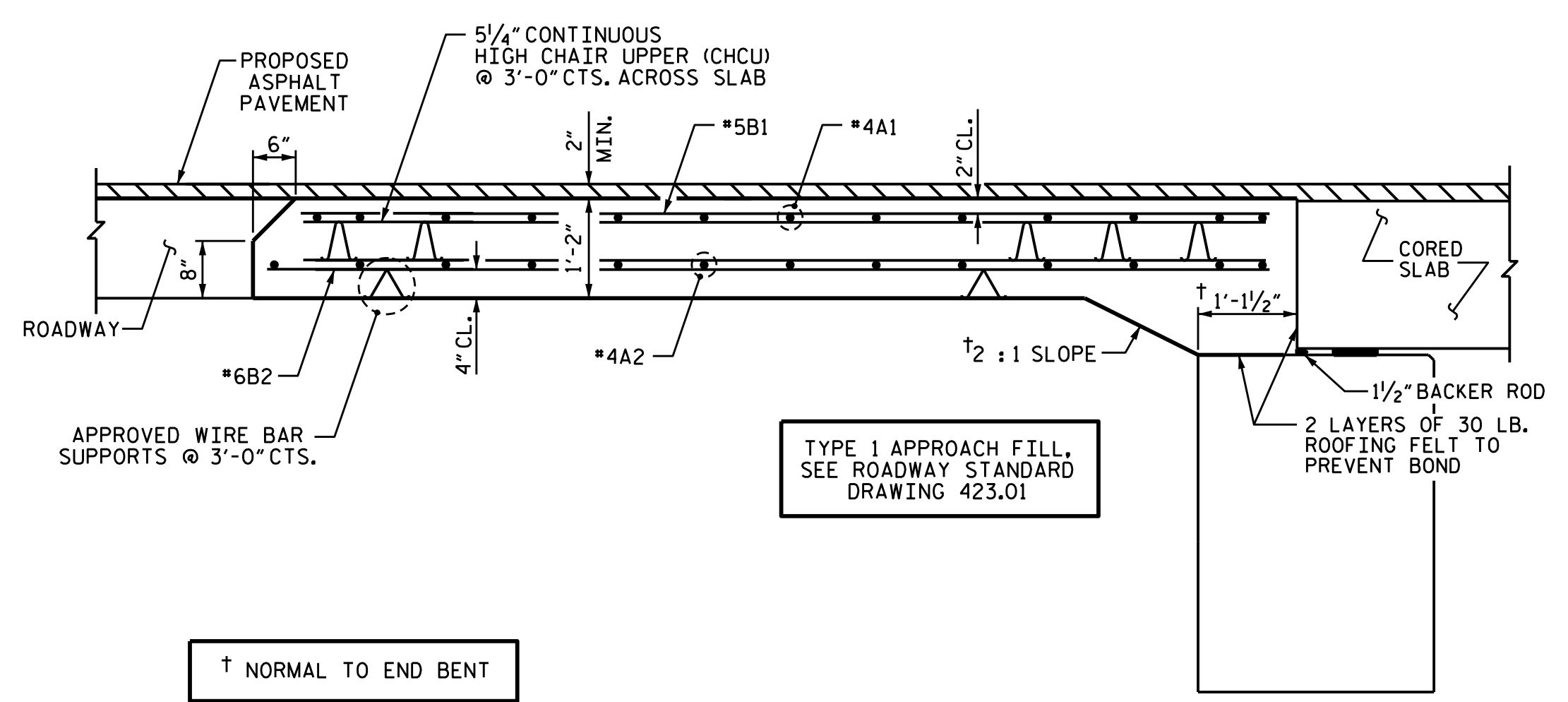
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PLAN @ END BENT #1 PLAN @ END BENT #2
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB

NOTES

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

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

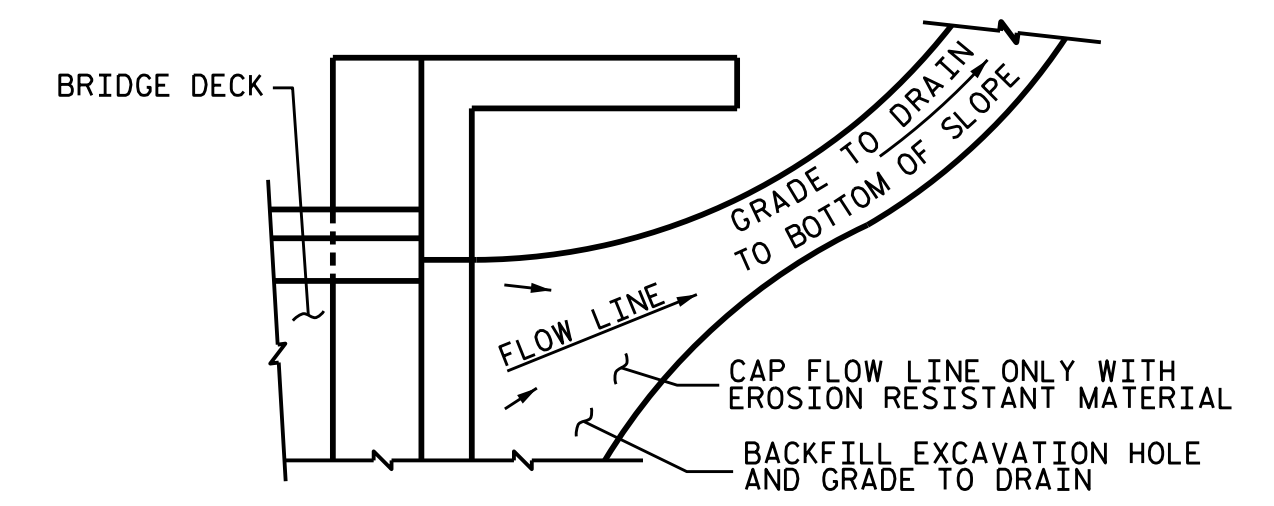
SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

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

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

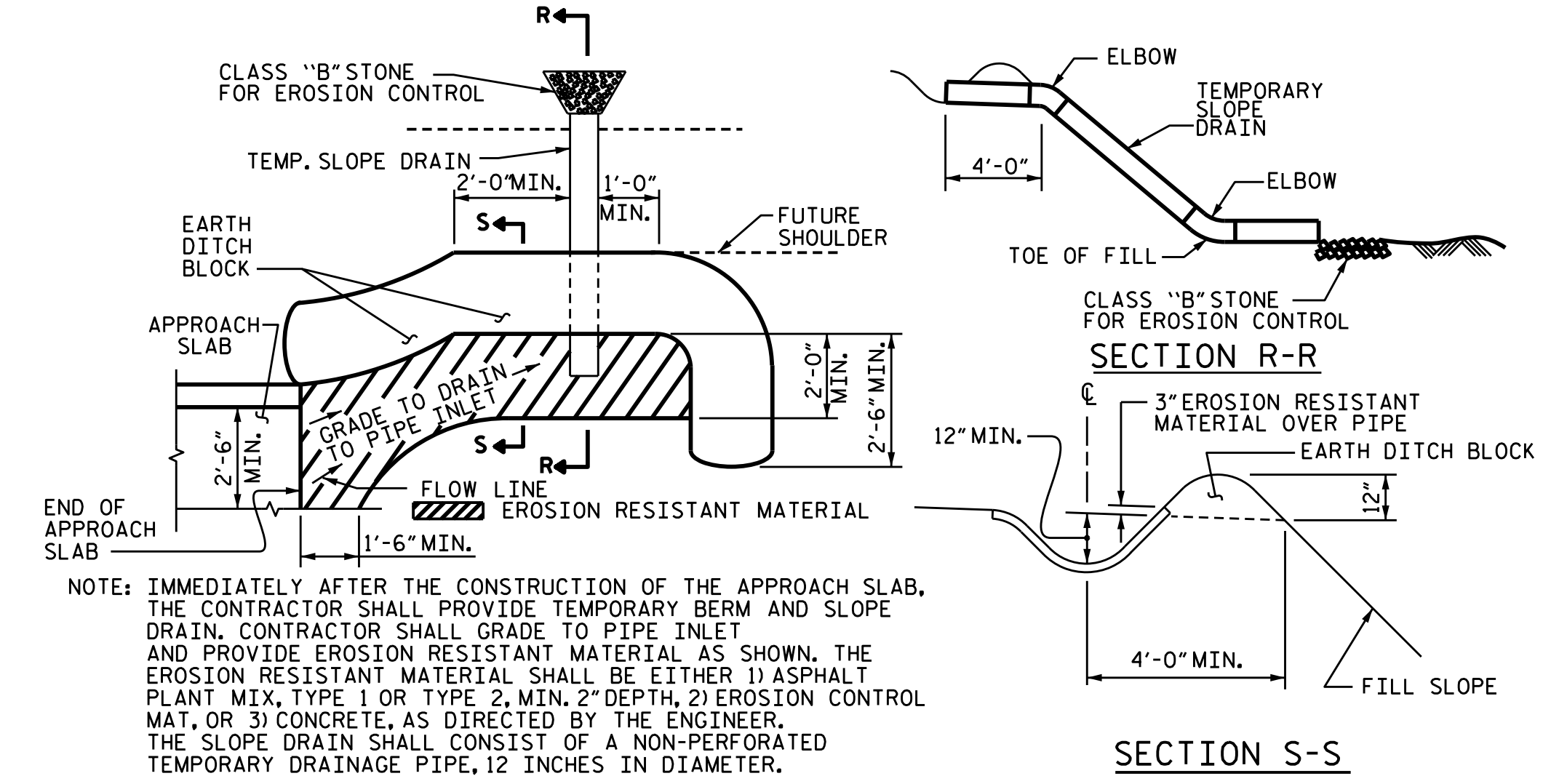
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



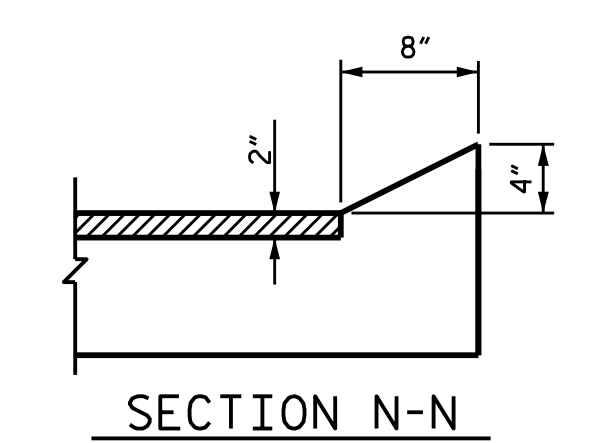
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAIL



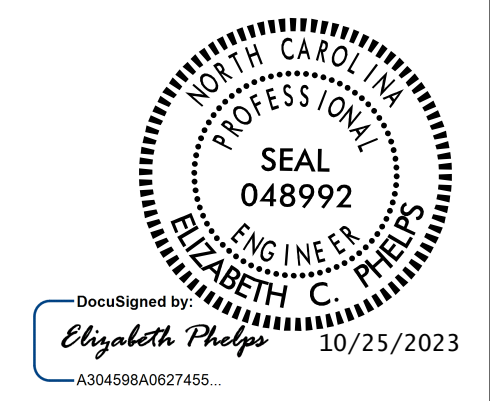
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

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



CURB DETAILS

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



BILL OF MATERIAL						
APPROACH SLAB AT EB #1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	13	#4	STR	28'-10"	250	
A2	13	#4	STR	28'-10"	250	
*B1	58	#5	STR	11'-2"	676	
B2	58	#6	STR	11'-8"	1016	
REINFORCING STEEL					LBS.	1266
*EPOXY COATED REINFORCING STEEL					LBS.	926
CLASS AA CONCRETE					C. Y.	17.7
APPROACH SLAB AT EB #2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	13	#4	STR	28'-10"	250	
A2	13	#4	STR	28'-10"	250	
*B1	58	#5	STR	11'-2"	676	
B2	58	#6	STR	11'-8"	1016	
REINFORCING STEEL					LBS.	1266
*EPOXY COATED REINFORCING STEEL					LBS.	926
CLASS AA CONCRETE					C. Y.	17.7

PROJECT NO. **BP1-R009**
NORTHAMPTON COUNTY
 STATION: **14+14.50 -L-**

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

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1			3	
2			4	

TOTAL SHEETS: 14

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 CHECKED BY : **E.C. PHELPS** DATE : **04/2023**
 DESIGN ENGINEER OF RECORD: **E.C. PHELPS** DATE : **05/2023**



STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2018 "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 $\frac{3}{4}$ " WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO $1\frac{1}{2}$ " RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A $\frac{1}{4}$ " FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A $\frac{1}{4}$ " RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

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

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

ENGLISH

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