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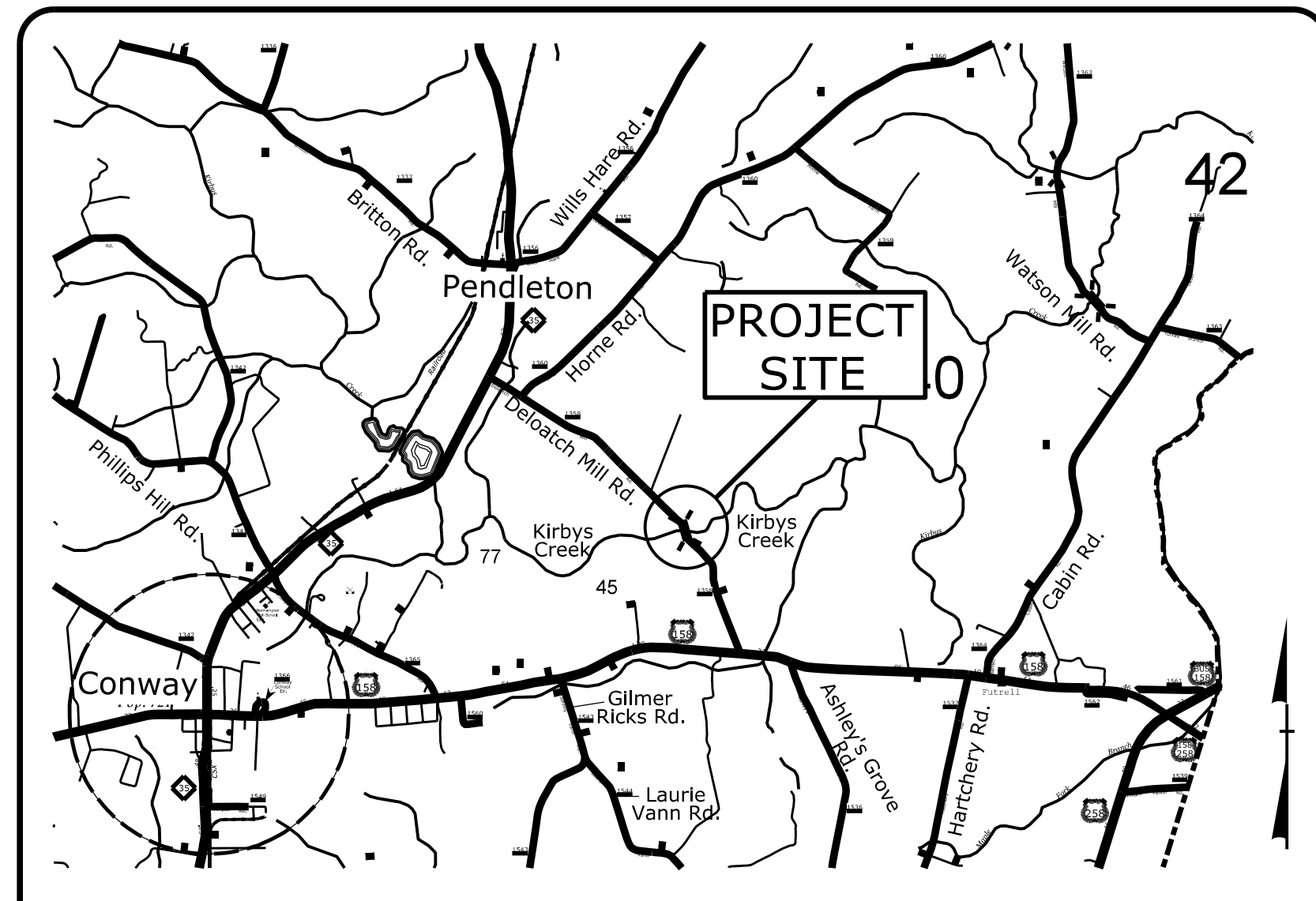
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09/08/99  
 8/16/2023  
 Bp1-R002\_rdy\_tsh.dgn  
 mhusssey

**CONTRACT: DA00589**      **TIP PROJECT: BP1-R002**

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



**VICINITY MAP**  
NOT TO SCALE

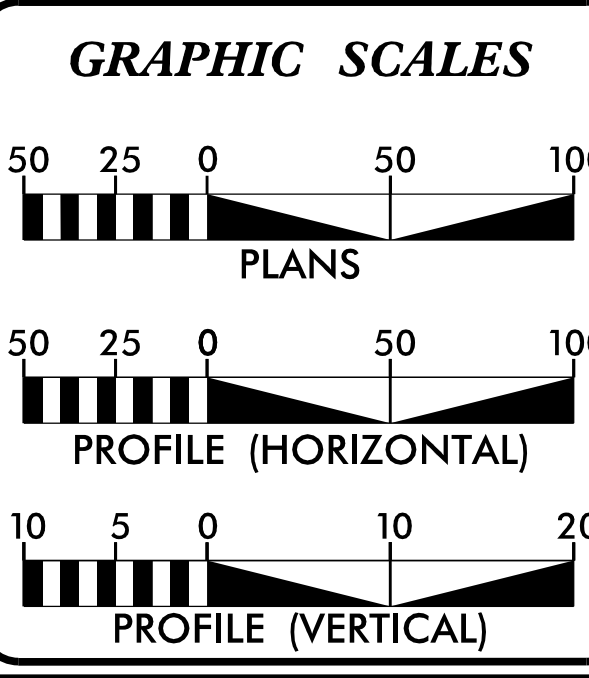
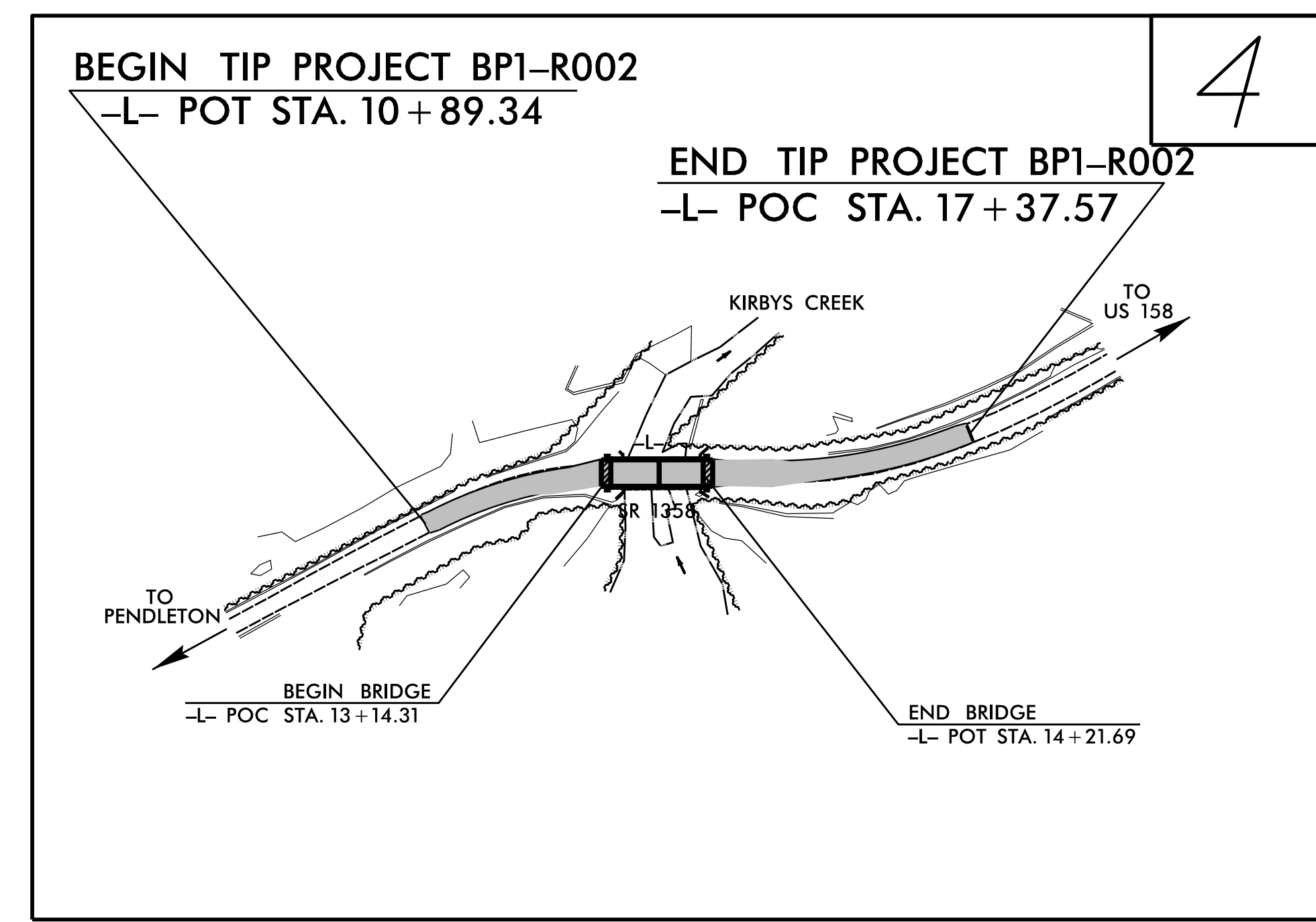
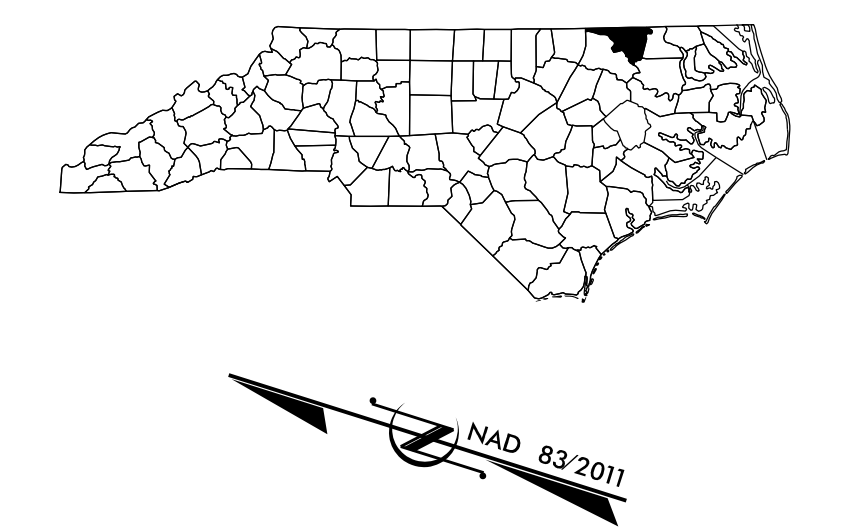
STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS  


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**NORTHAMPTON COUNTY**

**LOCATION: BRIDGE NO. 650045 OVER KIRBY'S CREEK  
 ON DELOATCH MILL ROAD (SR 1358)**  
**TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP1-R002	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BP1.R002.1	STATE FUNDED	PE	
BP1.R002.2	STATE FUNDED	R/W	
BP1.R002.3	STATE FUNDED	CONSTRUCTION	



**DESIGN DATA**

AADT 2022 =	700
ADT 2022 =	N/A
K =	N/A %
D =	N/A %
T =	N/A % *
V =	50 MPH
FUNC CLASS =	LOCAL

SUBREGIONAL TIER DESIGN GUIDELINES

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT BP1-R002 =	0.103 MI.
LENGTH STRUCTURE TIP PROJECT BP1-R002 =	0.020 MI.
TOTAL LENGTH OF TIP PROJECT BP1-R002 =	0.123 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-3705

2018 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE:	TIM GOINS, PE PROJECT ENGINEER
JAN 17, 2023	
LETTING DATE:	MARK HUSSEY PROJECT DESIGN ENGINEER
NCDOT CONTACT	RYAN L. SHOOK BRIDGE PROGRAM MANAGER-NCDOT DIVISION 1

**HYDRAULICS ENGINEER**

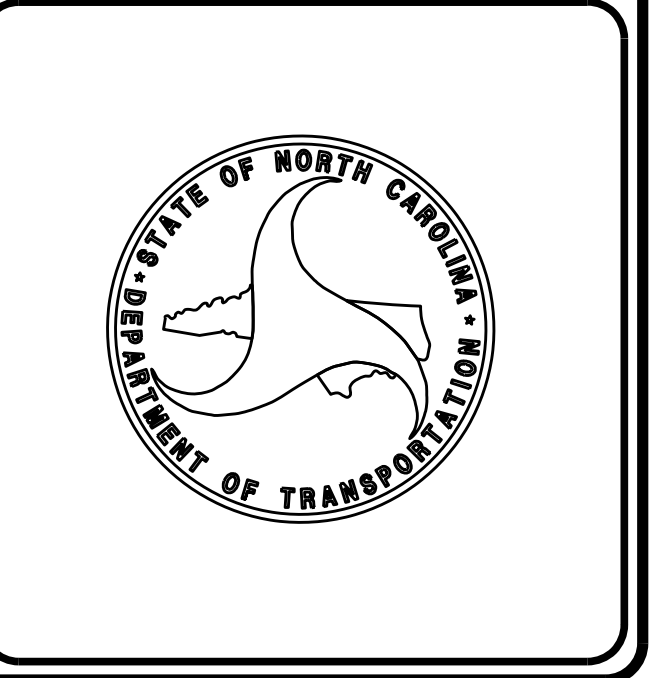
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Miranda Sawyer  
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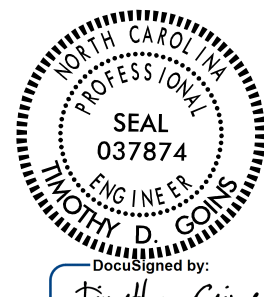
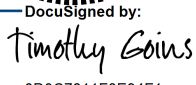
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**ROADWAY DESIGN ENGINEER**

DocuSigned by:  
Timothy Goins  
000C7811F8EAF1...

SIGNATURE: \_\_\_\_\_ P.E.



PROJECT REFERENCE NO. <b>BPI-RO02</b>	SHEET NO. <b>1A</b>
Prepared by  940 Main Campus Drive, Suite 500 Raleigh, NC 27606 NC License No. C-3705	ROADWAY DESIGN ENGINEER  Seal 037874 Timothy D. Goin DocuSign by: 
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

INDEX OF SHEETS

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
2C-1	SPECIAL DETAIL TRAILING END UNIT ASSEMBLY
2C-2	SPECIAL DETAIL TYPE III STRUCTURE ANCHOR UNIT
2C-3	SPECIAL DETAIL BRIDGE APPROACH FILLS TYPE 1
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
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1 THRU X-3	CROSS-SECTIONS
S-1 THRU S-20	STRUCTURE PLANS

2018 ROADWAY ENGLISH STANDARD DRAWINGS  
EFF. 01-16-2018  
REV.

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
<b>DIVISION 2 - EARTHWORK</b>	
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
<b>DIVISION 3 - PIPE CULVERTS</b>	
300.01	Method of Pipe Installation
<b>DIVISION 5 - SUBGRADE, BASES AND SHOULDERS</b>	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
<b>DIVISION 8 - INCIDENTALS</b>	
815.02	Subsurface Drain
840.00	Concrete Base Pad for Drainage Structures
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 (Special Detail for Type III Anchor Units Sheets 1 of 7 and 2 of 7)
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets

GENERAL NOTES: 2018 SPECIFICATIONS  
EFFECTIVE: 01-16-2018  
REVISED:

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

Rock Electric Corporation  
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	⑩ 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	--- FLD ---
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	-----
Proposed Right of Way Line with Concrete or Granite RW Marker	-----
Proposed Control of Access Line with Concrete C/A Marker	-----
Existing Control of Access	-----
Proposed Control of Access	-----
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	--- S ---

### 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	--- HFP ---
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.*)	--- UTL ---
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.



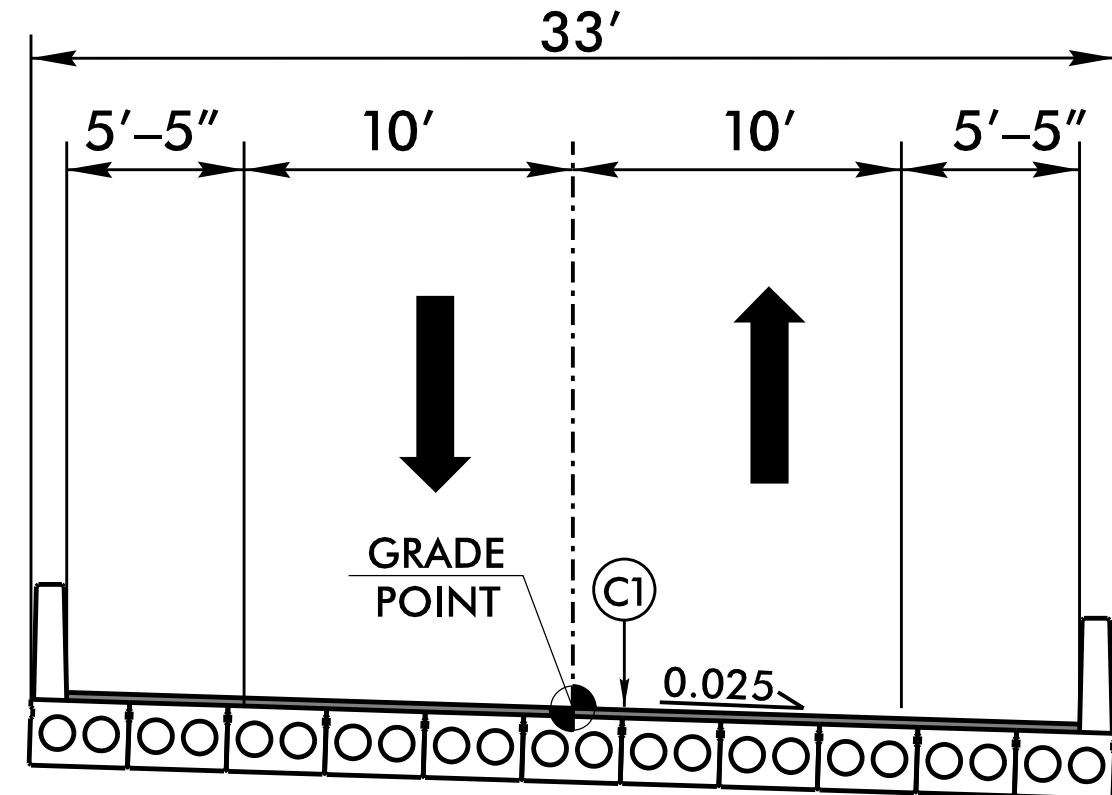
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### FINAL PAVEMENT SCHEDULE TO BE DETERMINED

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
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)
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.

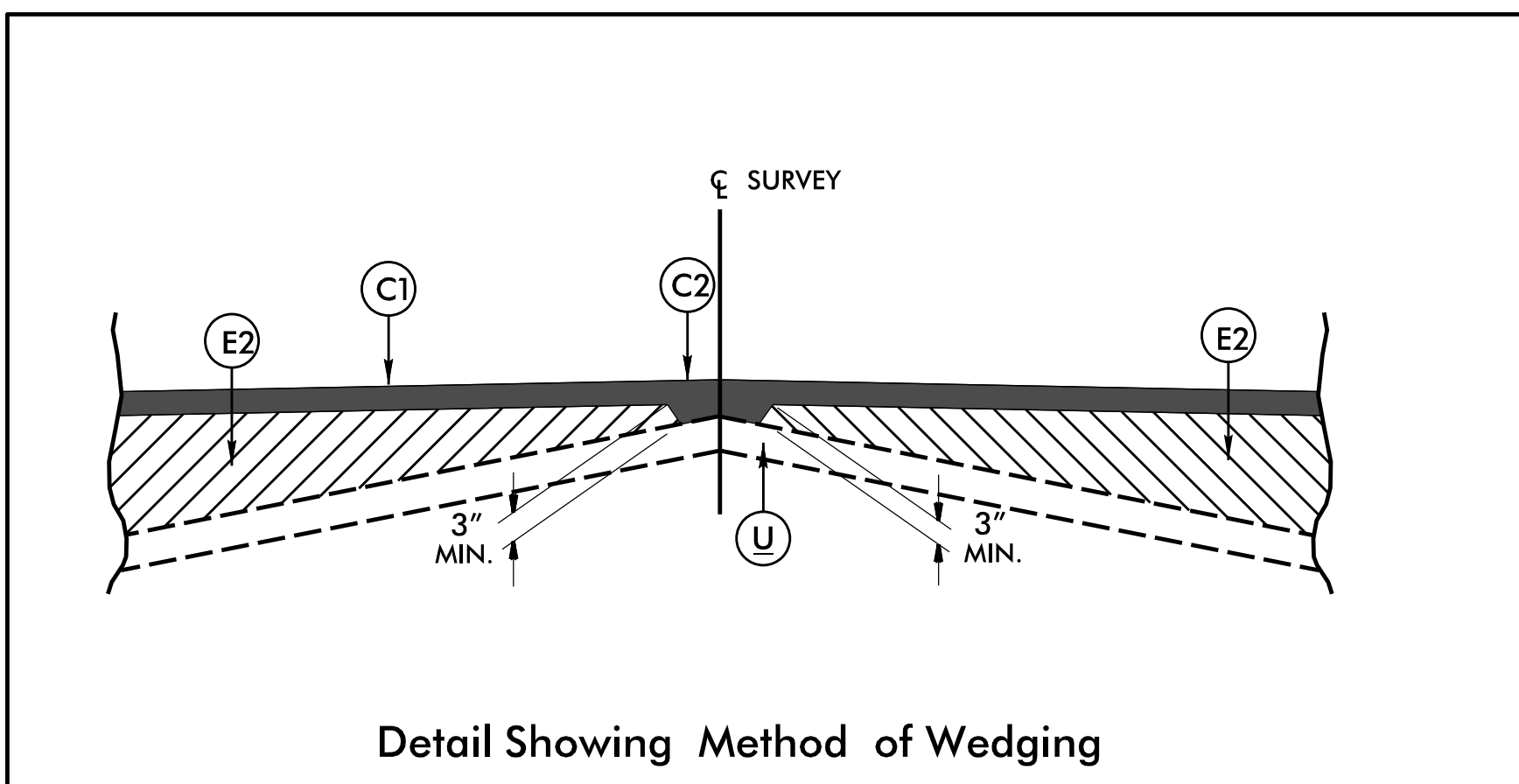
### CL-L- (SR 1358)



11 UNITS @ 3' EACH

### TYPICAL SECTION NO. 2

-L- STA. 13+14.38 TO STA. 14+21.63



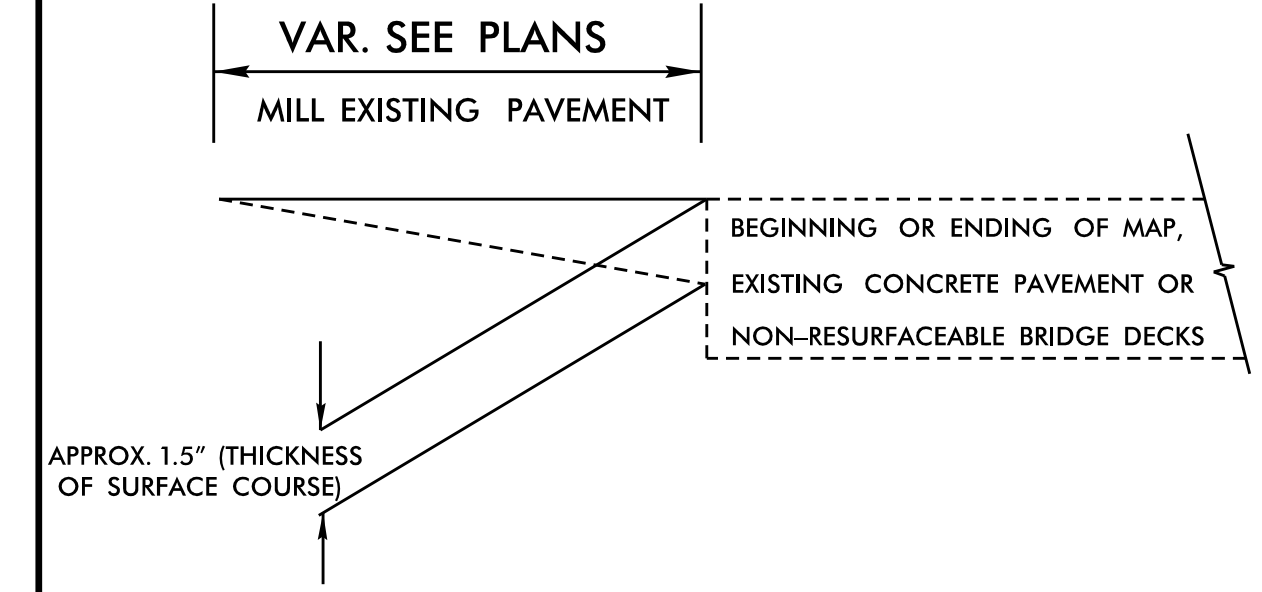
### MILLING AT PAVEMENT TIE-INS

#### NOTES TO CONTRACTOR

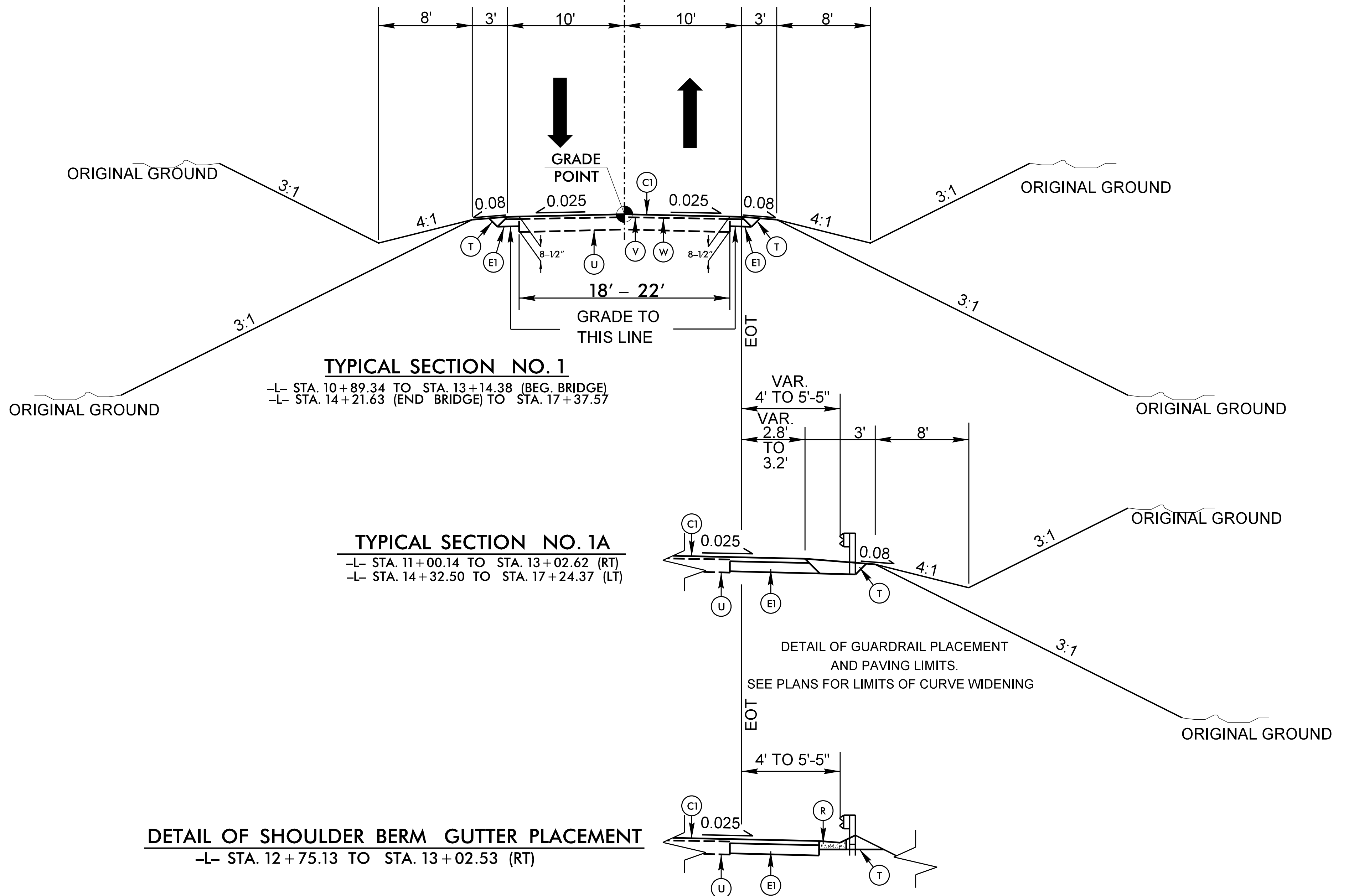
For surface mixes over 1" in thickness, mill the existing pavement in accordance with the following sketch as directed by the Engineer.

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.



### CL-L- (SR 1358)



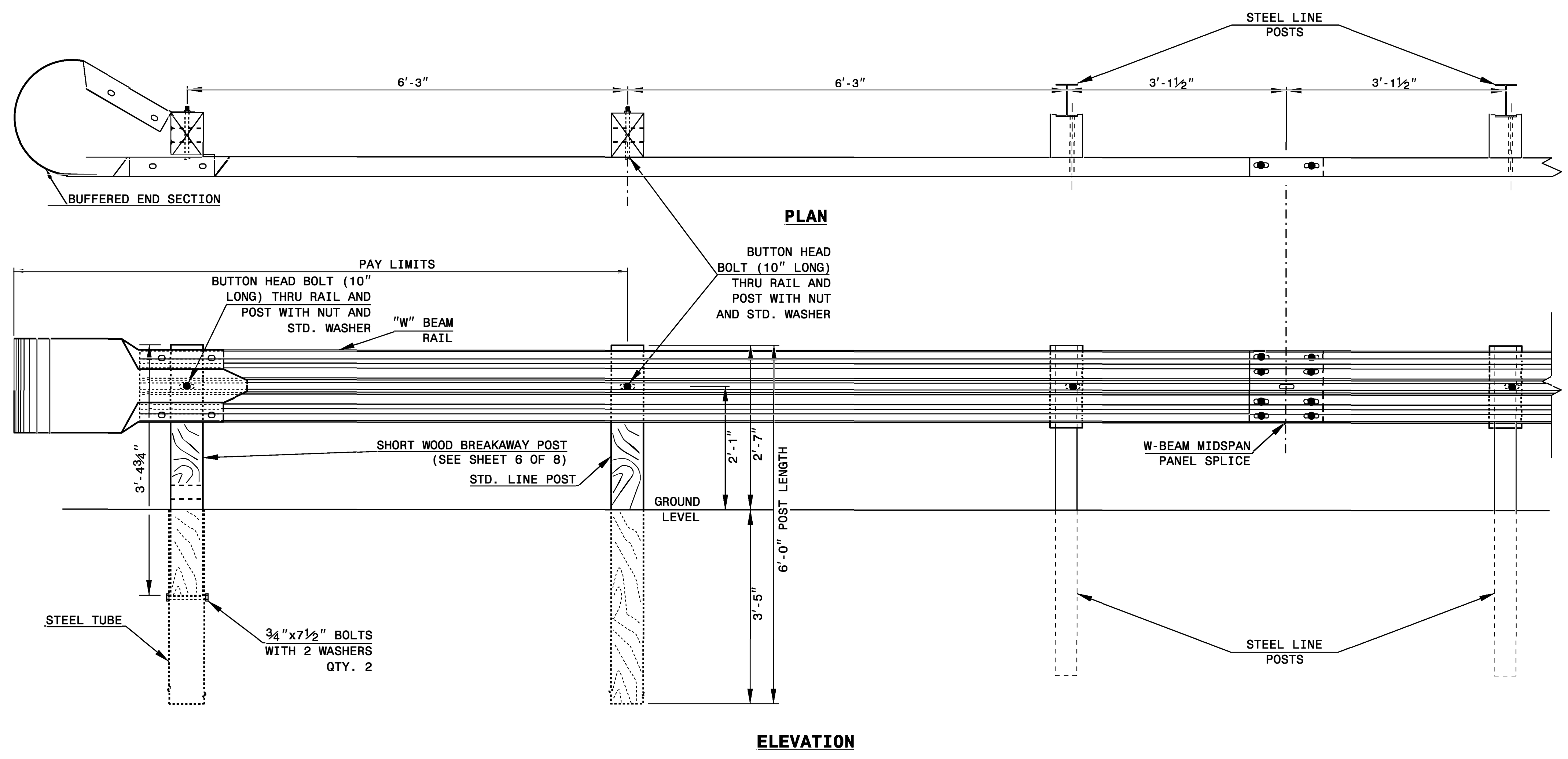
PROJECT REFERENCE NO. <b>BPI-R002</b>	SHEET NO. <b>2A-1</b>
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER
Prepared by 	

8/16/2023 8:16:23 AM rdy\_tup.dgn

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

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET OF



**TRAILING END UNIT ASSEMBLY**  
**A.T. - 1 SYSTEM**

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

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET OF

6/9/2023



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

**A.T. - 1 SYSTEM**

ORIGINAL BY: _____	DATE: _____
MODIFIED BY: _____	DATE: _____
CHECKED BY: _____	DATE: _____
FILE SPEC.: _____	

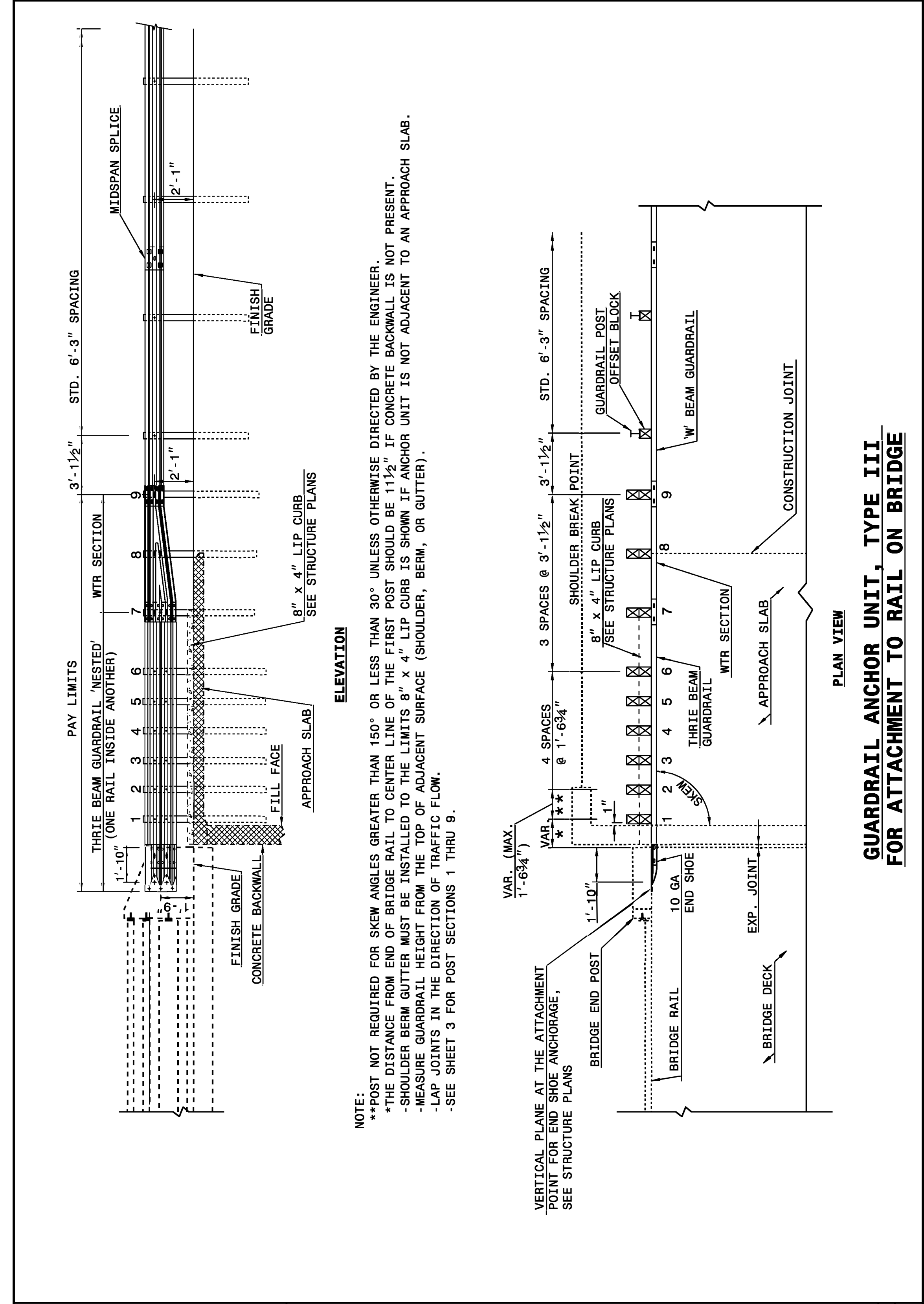


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STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7 **862D03**



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

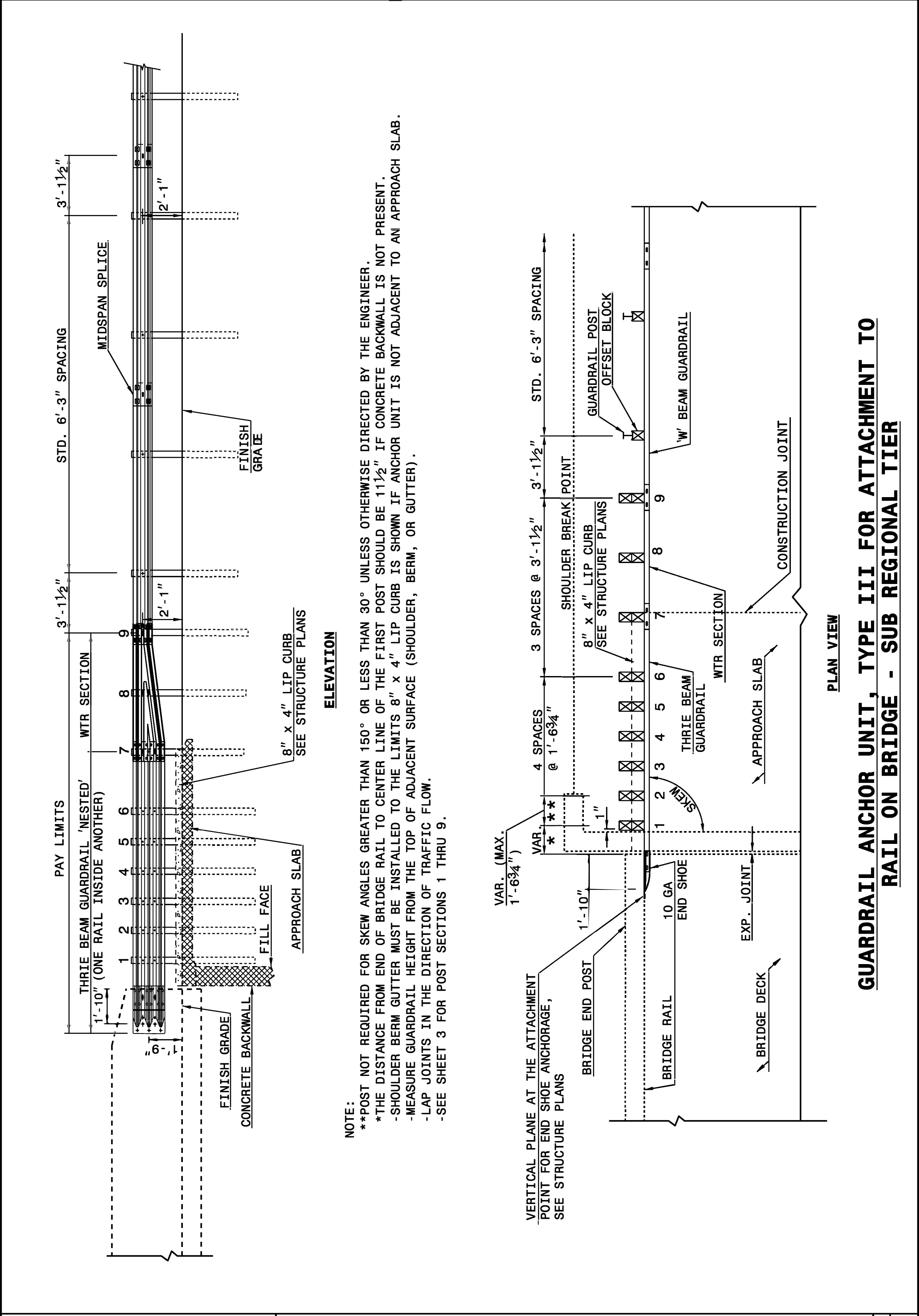
ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7 **862D03**

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

ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7 **862D03**



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

ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7 **862D03**

6/9/2023

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

**SEE TITLE BLOCK**

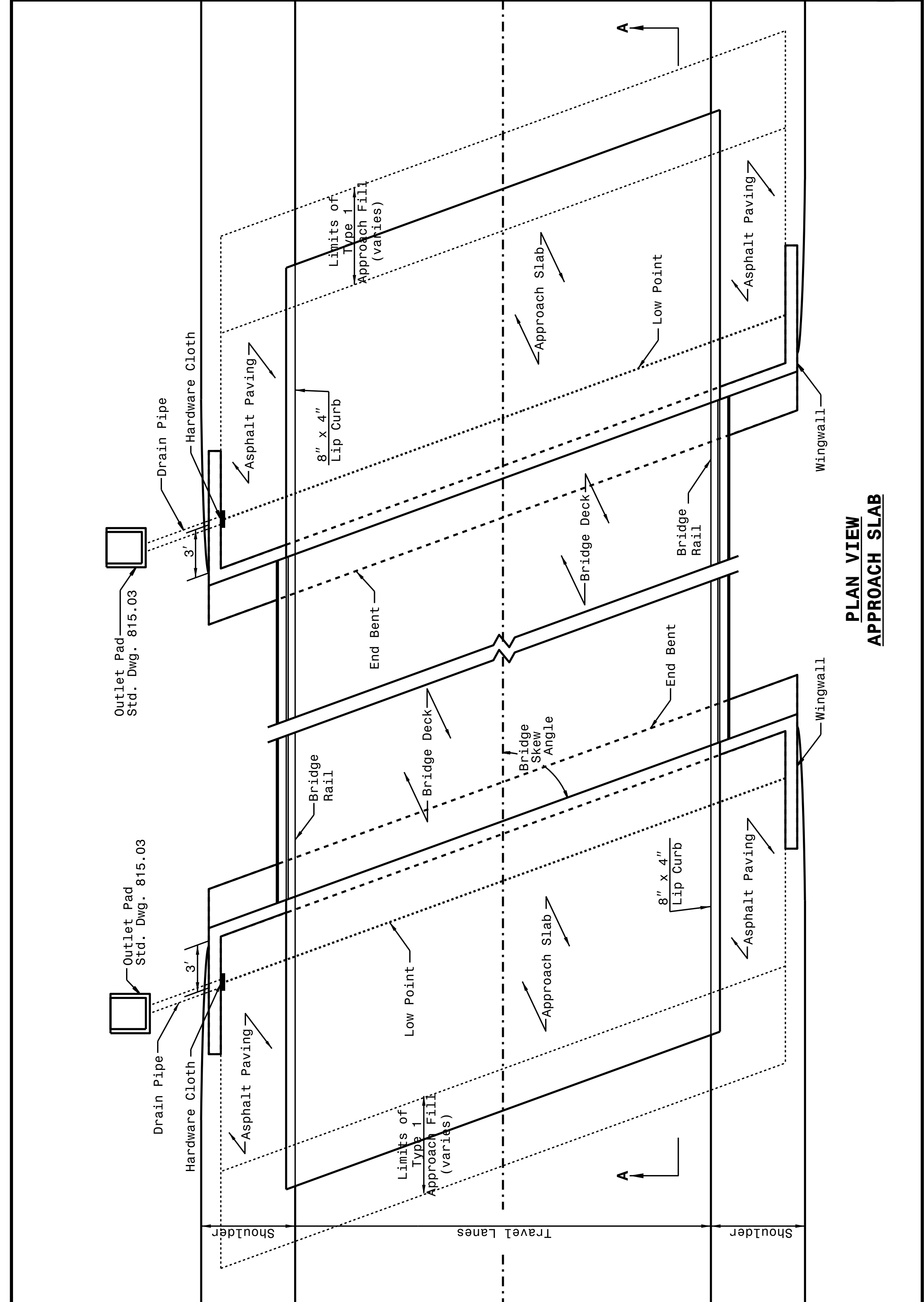
ORIGINAL BY: J. HOWERTON DATE: 06-22-12  
 MODIFIED BY: DATE:  
 CHECKED BY: DATE:  
 FILE SPEC.:



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

ROADWAY DETAIL DRAWING FOR  
**BRIDGE APPROACH FILLS**  
TYPE 1 APPROACH FILL  
APPROACH FILL FOR  
BRIDGE ABUTMENT

SHEET 1 OF 2



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

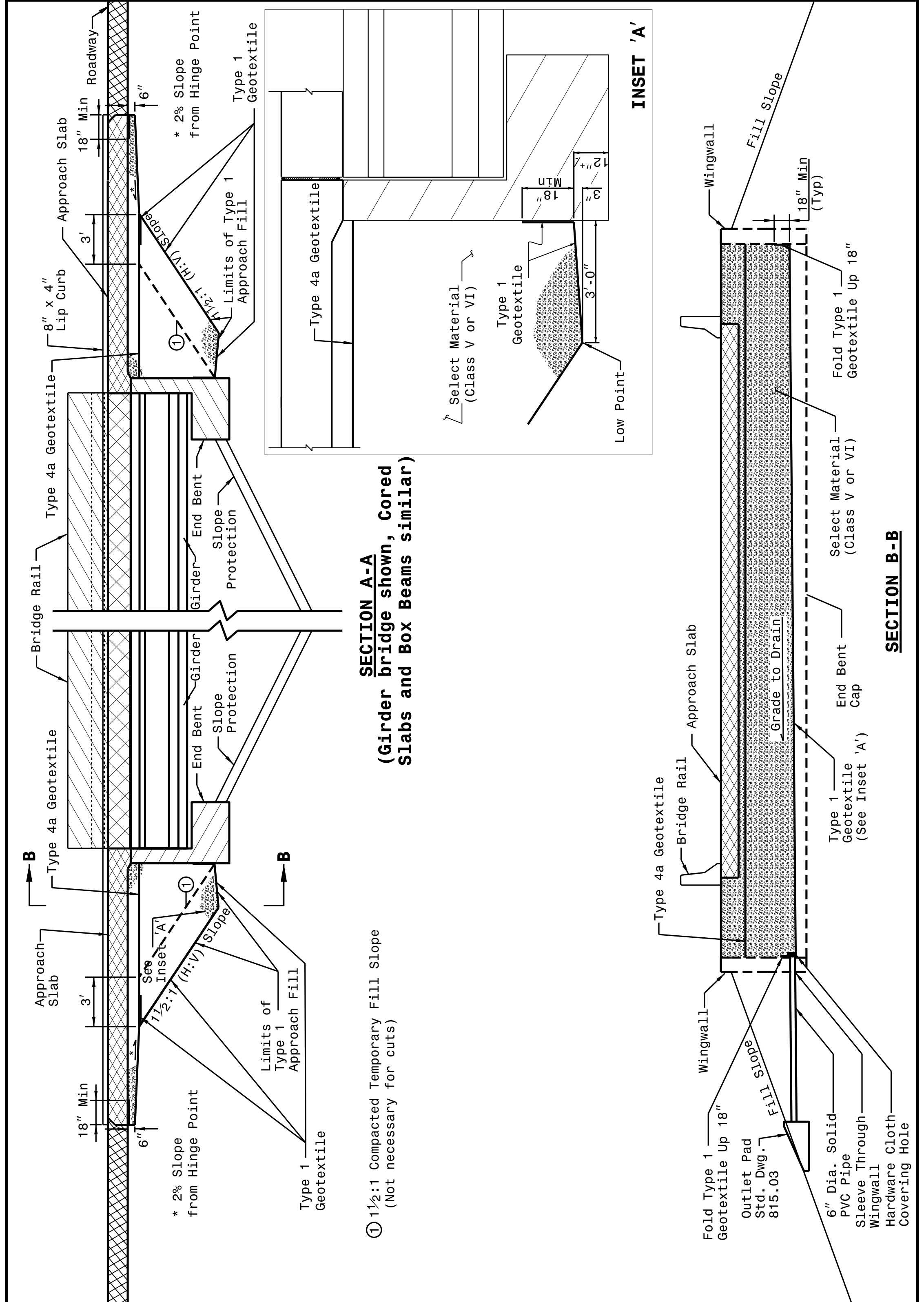
ROADWAY DETAIL DRAWING FOR  
**BRIDGE APPROACH FILLS**  
TYPE 1 APPROACH FILL  
APPROACH FILL FOR  
BRIDGE ABUTMENT

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**BRIDGE APPROACH FILLS**  
TYPE 1 APPROACH FILL  
APPROACH FILL FOR  
BRIDGE ABUTMENT

SHEET 2 OF 2



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

ROADWAY DETAIL DRAWING FOR  
**BRIDGE APPROACH FILLS**  
TYPE 1 APPROACH FILL  
APPROACH FILL FOR  
BRIDGE ABUTMENT

SHEET 2 OF 2

30-JUN-2023 12:42  
C:\Users\scott.h\OneDrive\Documents\scott.h\scott.h.dwg  
\$\$\$\$\$USERNAME\$\$\$\$\$



DocuSigned by:  
**Scott Hidden**  
F760CAE896FC403

10/12/2023

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

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

**SEE TITLE BLOCK**

ORIGINAL BY: K KEMPF DATE: 07-30-23  
MODIFIED BY: DATE: \_\_\_\_\_  
CHECKED BY: DATE: \_\_\_\_\_  
FILE SPEC.: DATE: \_\_\_\_\_

12/06/07

COMPUTED BY: FMM DATE: 10-26-2002  
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, UNCL. EXCAV., EMBANK. +%, BORROW, WASTE. Rows include station ranges and totals for excavation, embankment, borrow, and waste.

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, LOCATION LT/RT/CL, YD'. Rows show removal quantities for different survey lines and stations.

SHOULDER BERM GUTTER SUMMARY

Table with columns: SURVEY LINE, STATION, LENGTH. Rows show gutter removal quantities for different survey lines and stations.

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

Large table listing pipe and endwall details. Columns include: LINE & STATION, OFFSET, STRUCTURE NO., TOP ELEVATION, INVERT ELEVATION, MINIMUM REQUIRED SLOPE, DRAINAGE PIPE, R.C. PIPE CLASS IV, R.C. PIPE CLASS V, STRUCTURAL PLATE PIPE, ENDWALLS, QUANTITIES FOR DRAINAGE STRUCTURES, TYPE OF GRATE, CONCRETE TRANSITIONAL SECTION, PIPE REMOVAL LIN. FT., 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. Columns include: SURVEY LINE, BEG. STA., END STA., LOCATION, LENGTH (STRAIGHT, SHOP CURVED, DOUBLE FACED), WARRANT POINT (APPROACH END, TRAILING END), "N" DIST. FROM E.O.L., TOTAL SHOUL. WIDTH, FLARE LENGTH (APPROACH END, TRAILING END), W (APPROACH END, TRAILING END), ANCHORS (TYPE III, GRAU TL-3, AT-1), IMPACT ATTENUATOR TYPE 350 (EA, G, NG), SINGLE FACED GUARDRAIL, REMOVE EXISTING GUARDRAIL, REMOVE AND STOCKPILE EXISTING GUARDRAIL, and REMARKS.

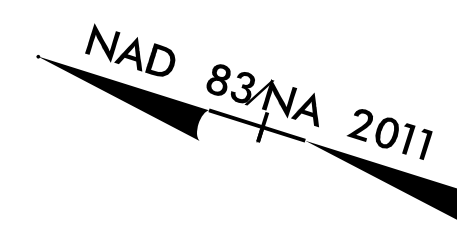
7/1/07  
BPI-R002  
rdy-3B-1.dgn



8/17/99

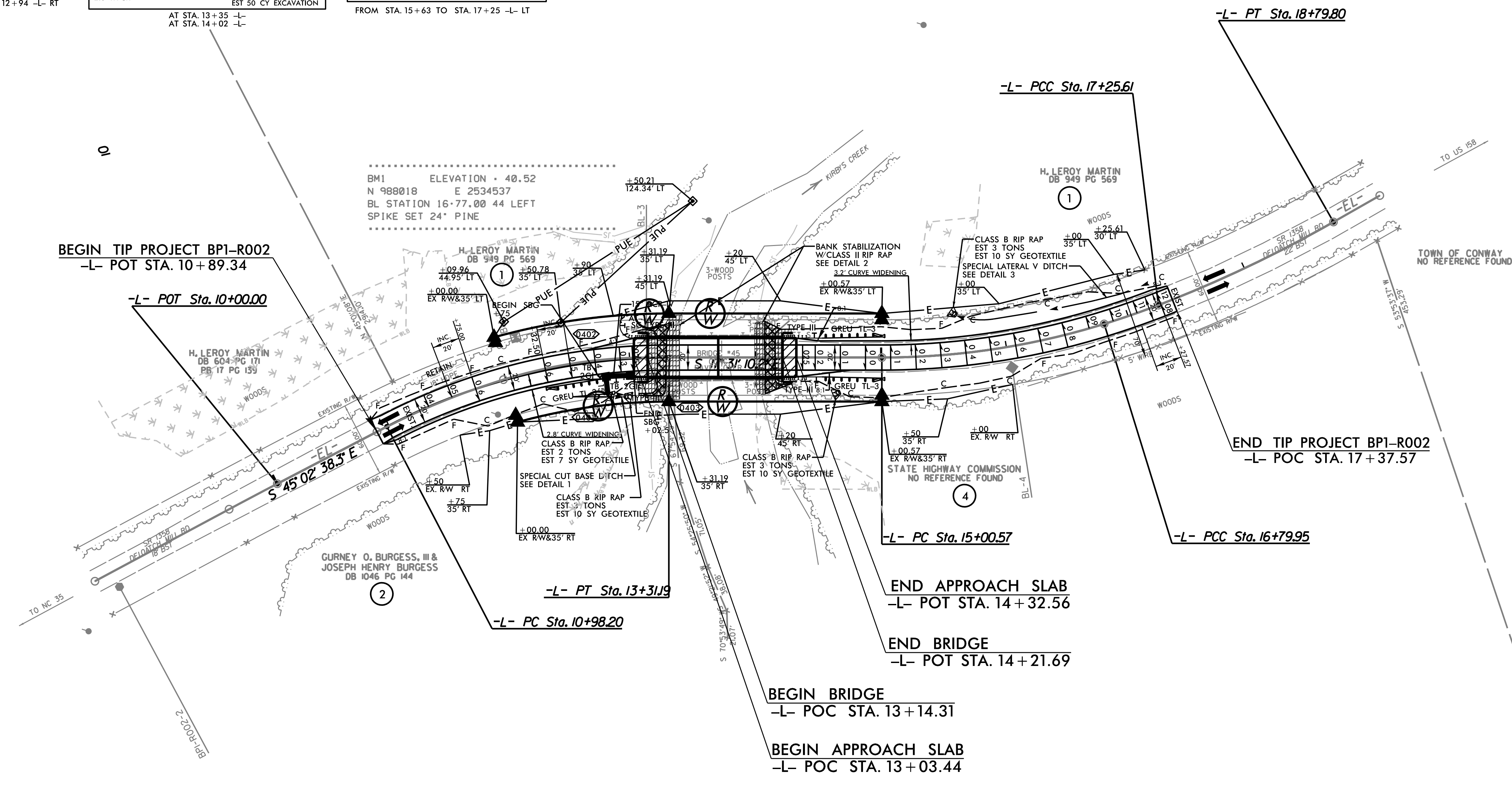
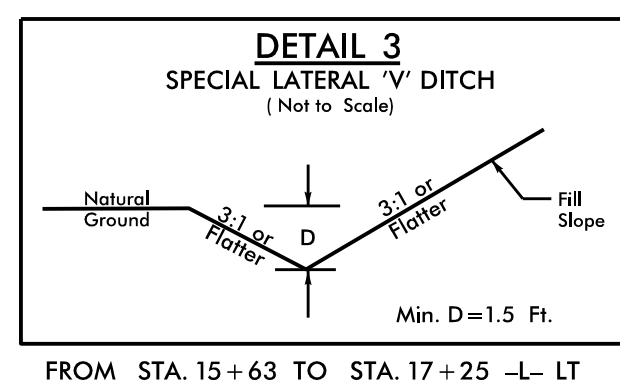
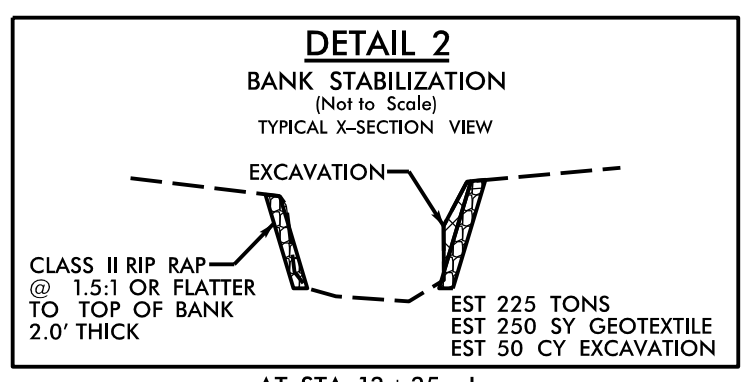
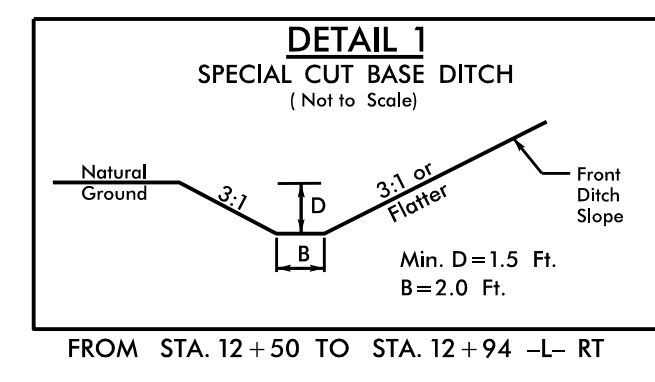
### RIGHT OF WAY AREA DATA

#	NAME	ROW	TCE	PUE
1	H. LEROY MARTIN	1,498 SF	2,748 SF	2,473 SF
2	GURNEY O. BURGESS, III & JOSEPH HENRY BURGESS	742 SF	1,208 SF	
4	STATE HIGHWAY COMMISSION NO REFERENCE FOUND	828 SF	1,602 SF	



PROJECT REFERENCE NO. <b>BPI-R002</b>	SHEET NO. <b>4</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 
Prepared by 	

-L-			
<b>PI Sta 12+16.99</b> $\Delta = 27^{\circ} 31' 28.1''$ (RT) $D = 1^{\circ} 48' 48.8''$ $L = 232.99'$ $T = 118.79'$ $R = 485.00'$ $SE = 0.06$ $RO = 40$ $V = 40\text{mph}$ <b>2.8' CURVE WIDENING</b> <i>(SU-40 DESIGN VEHICLE USED FOR CURVE WIDENING)</i>	<b>PI Sta 15+90.94</b> $\Delta = 17^{\circ} 10' 49.0''$ (LT) $D = 9^{\circ} 34' 40.3''$ $L = 179.37'$ $T = 90.37'$ $R = 598.21'$ $SE = 0.06$ $RO = 40$	<b>PI Sta 17+02.79</b> $\Delta = 3^{\circ} 54' 13.9''$ (LT) $D = 8^{\circ} 33' 01.1''$ $L = 45.66'$ $T = 22.84'$ $R = 670.0'$ $SE = 0.06$ $V = 45\text{mph}$	<b>PI Sta 18+02.85</b> $\Delta = 8^{\circ} 37' 06.6''$ (LT) $D = 5^{\circ} 35' 21.3''$ $L = 154.20'$ $T = 77.24'$ $R = 1,025.11'$ $SE = \text{EXIST.}$



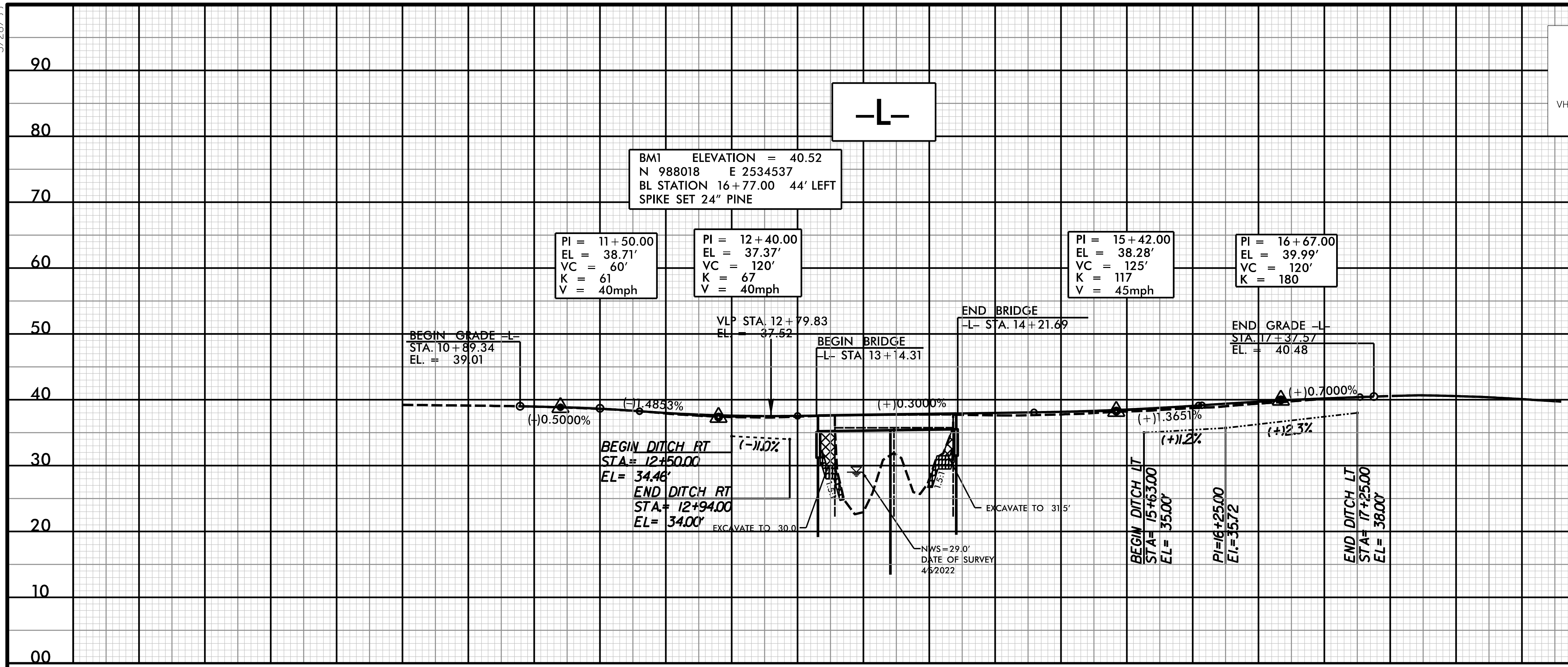
FOR -L- PROFILE SEE SHEET 5

8/6/2023  
BPI-R002\_rdy-psn04.dgn  
chussein



5/28/22

PROJECT REFERENCE NO. <b>BPI-R002</b>	SHEET NO. <b>05</b>
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
RIGHT DITCH	-----
LEFT DITCH	-----
FOR -L- PLAN SEE SHEET 4	

BPI-R002.dwg, p1105.dgn

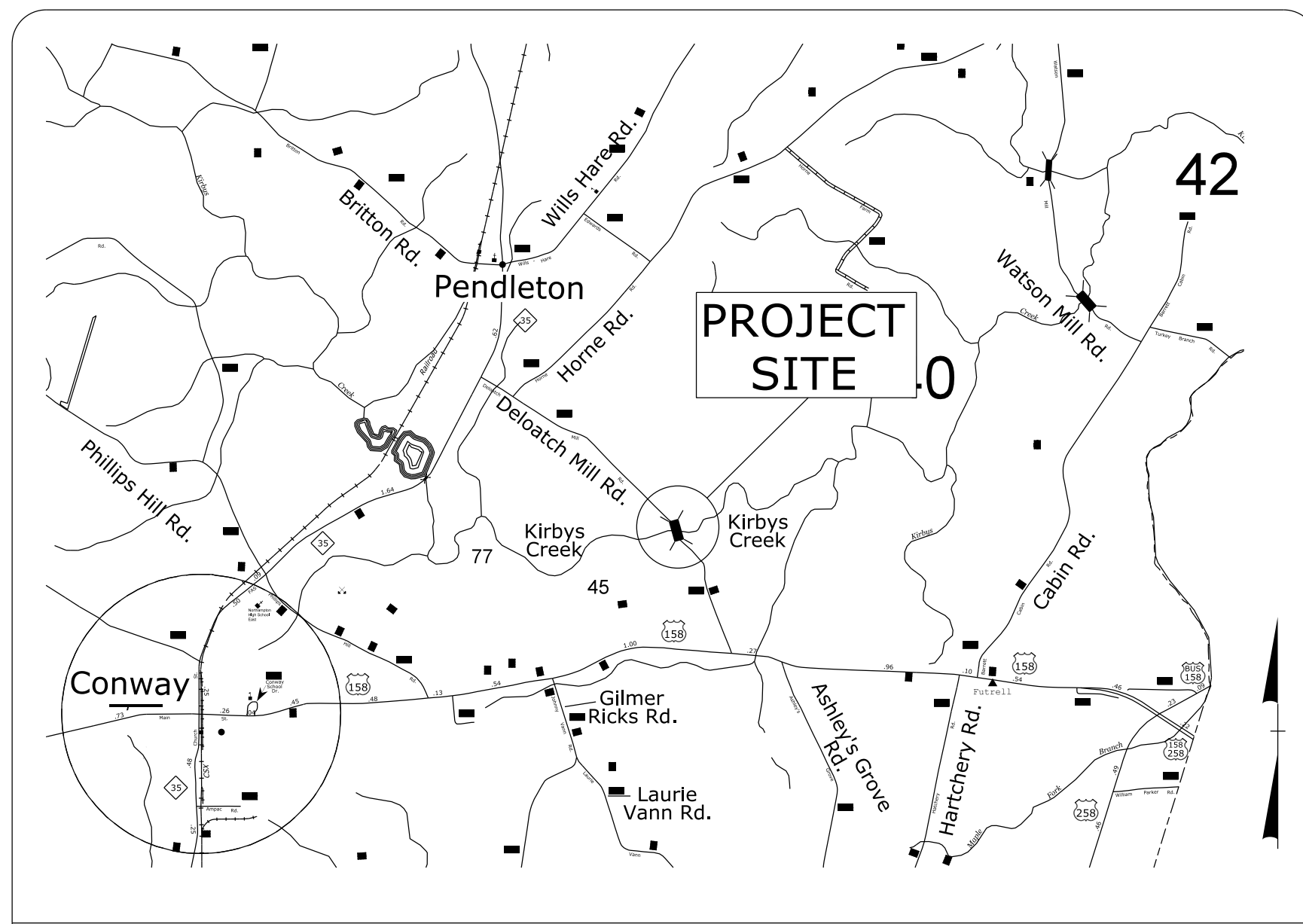
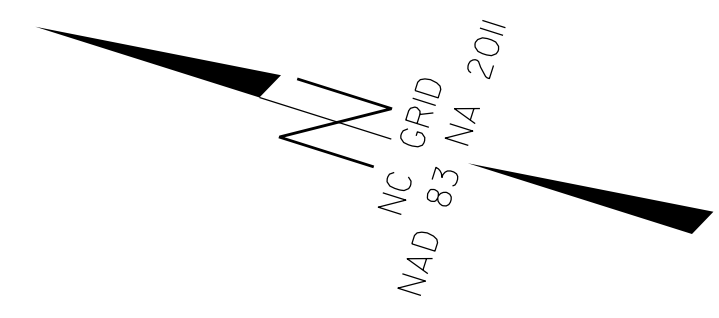
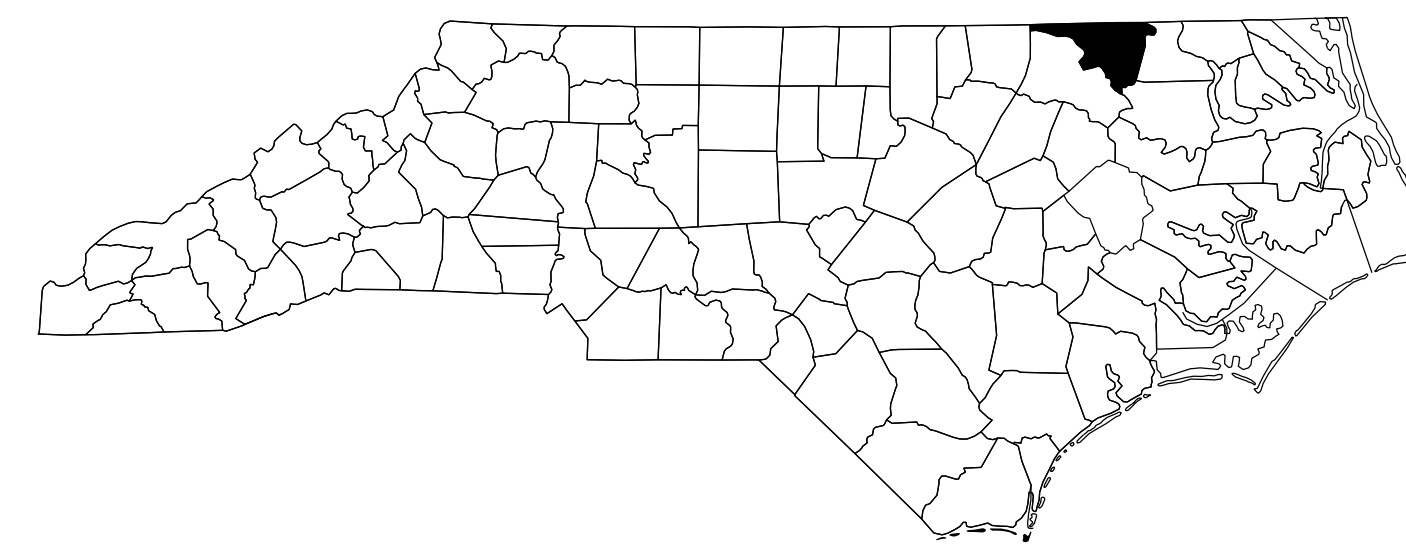
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP1-R002	RW01	6

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

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

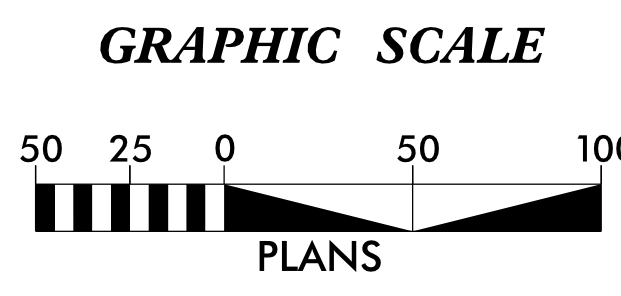
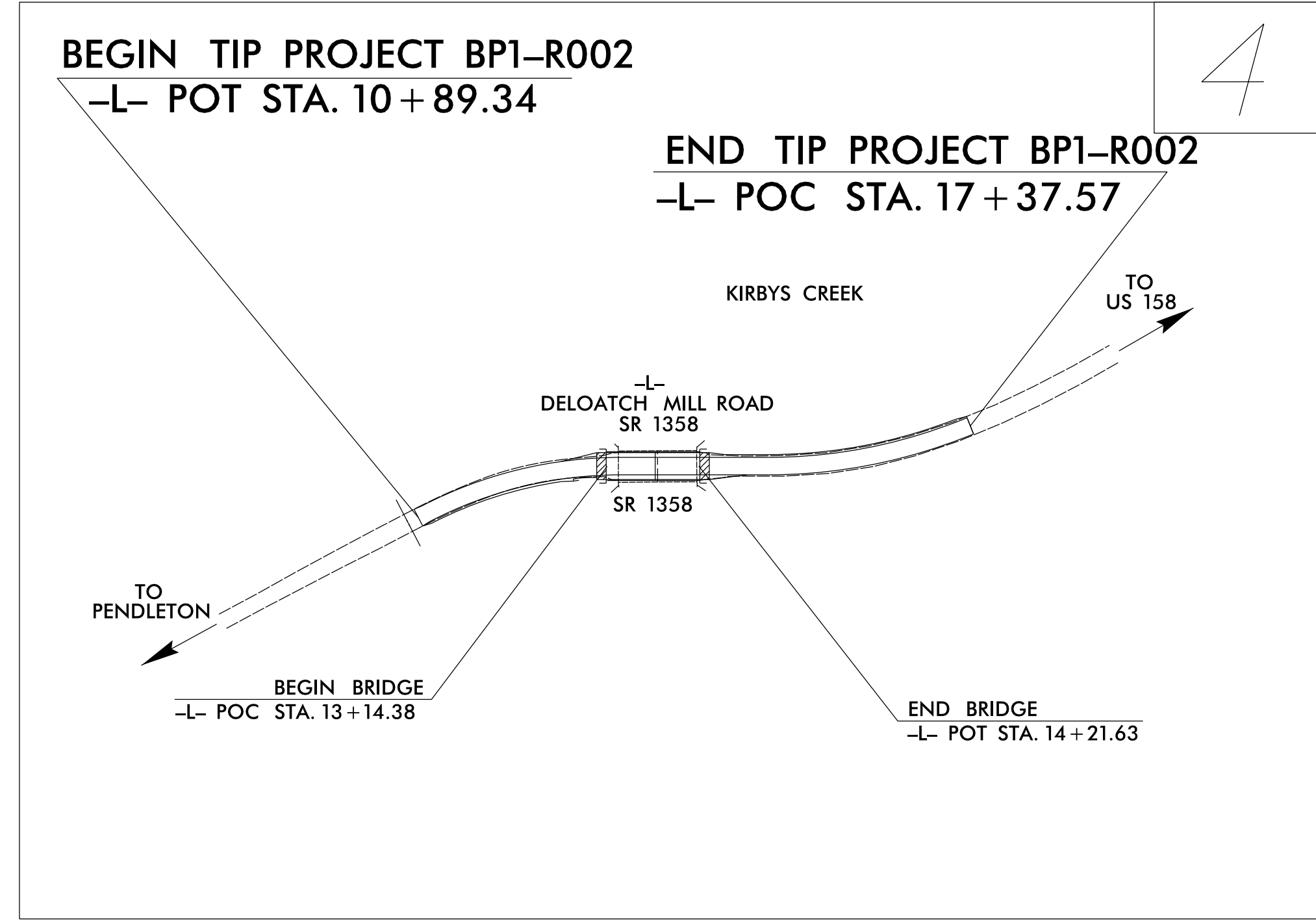
**NORTHAMPTON COUNTY**

**BRIDGE NO. 650045 OVER KIRBY'S CREEK  
ON DELOATCH MILL ROAD (SR 1358)**



**VICINITY MAP**  
NOT TO SCALE

**TIP PROJECT: BP1-R002**



**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "CENTROID" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF  
NORTHING: 987890.000 (ft) EASTING: 2534560.0000 (ft)  
ELEVATION: 37.000 (ft)  
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.0000951562  
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "CENTROID" TO -L- STATION 10+89.34 IS  
N 31°23'51.56" W 246.31 (ft)  
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:

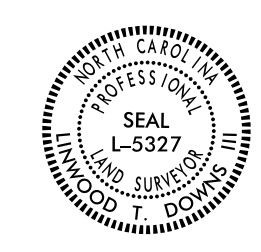
*Location and Surveys  
Division 1  
1300 US HWY 64 W  
Plymouth, NC 27962*

2018 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
12/09/2022

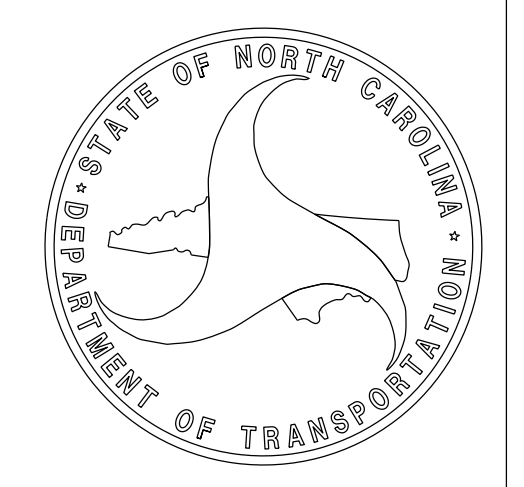
**LETTING DATE:**  
09/20/2023

**PROFESSIONAL LAND SURVEYOR**



DocuSigned by:  
*Linnard T. Downs III*  
SIGNATURE

05/16/2023  
Date:





# SURVEY CONTROL SHEET

## W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

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: 987890.000  
Easting: 2534560.000  
Combined grid factor: 1.0000951562  
Geoid model: 18  
Units: US Survey Feet

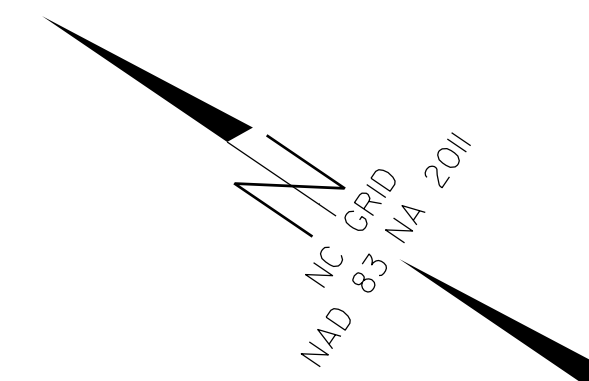
I also certify that the Baseline Control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed from February 21, 2022 to March 11, 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.

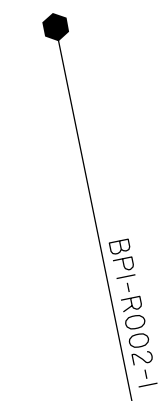
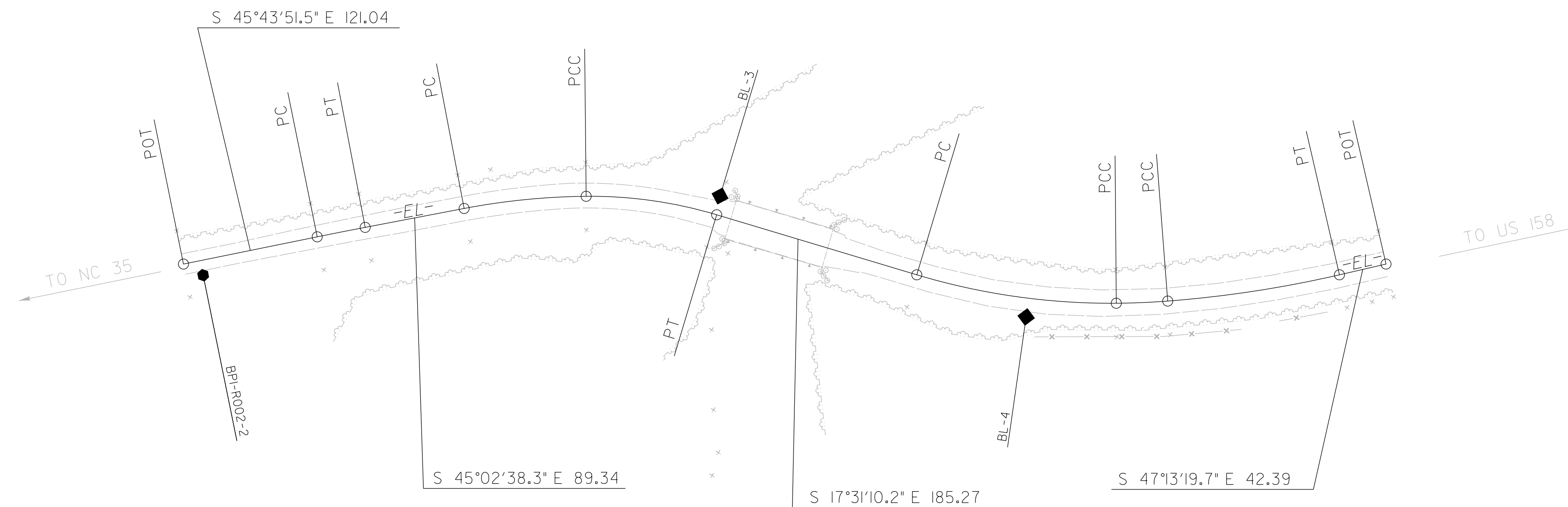
DocuSigned by:  
*Michael W. Zmuda*

Professional Land Surveyor L-5205

SEE SHEET RW02C-2  
FOR FURTHER  
ALIGNMENT DETAILS



PROJECT REFERENCE NO. BP1-R002	SHEET NO. RW02C-1
<b>Location and Surveys</b>	
Johnson, Mirmiran & Thompson, Inc. 9201 Arboretum Parkway, Suite 310 Richmond, VA 23236	
PROJECT SURVEYOR	
DocuSigned by: <i>Michael W. Zmuda</i>	




### 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

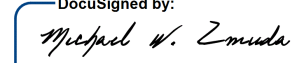
PROJECT REFERENCE NO. BP1-R002	SHEET NO. RW02C-2
<b>Location and Surveys</b>	
Johnson, Mirmiran & Thompson, Inc. 9201 Arboretum Parkway, Suite 310 Richmond, VA 23236	
PROJECT SURVEYOR 	
DocuSigned by: <i>Michael W. Zmuda</i> 015CC338971543A	

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: 987890.000  
 Easting: 2534560.000  
 Combined grid factor: 1.0000951562  
 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 11, 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:  
  
 015CC338971543A  
 Professional Land Surveyor L-5205

REVISIONS

BL	POINT	DESC.	NORTH	EAST	ELEVATION
R0021	BP1-R002-1		988841.7030	2533694.9770	42.11
R0022	BP1-R002-2		988258.3140	2534252.5670	37.82
BL3	BL-3		987918.7920	2534568.3900	37.27
BL4	BL-4		987634.0750	2534632.4500	39.49

\*\*\*\*\*  
 BM1 ELEVATION = 40.52  
 N 988018 E 2534537  
 BL STATION 16+77.00 44 LEFT  
 SPIKE SET 24" PINE  
 \*\*\*\*\*

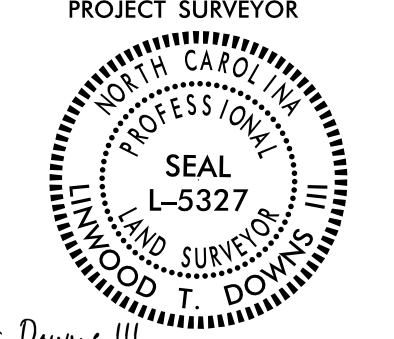
\*\*\*\*\*  
 BM1 ELEVATION = 40.52  
 N 988018 E 2534537  
 BL STATION 16+77.00 44 LEFT  
 SPIKE SET 24" PINE  
 \*\*\*\*\*

EL POINT	N		BEARING	DIST	DELTA	D	L	T	R
	N	E							
POT	988278.311	2534250.915	S 45°43'51.5" E	121.04					
LINE									
PC	988193.818	2534337.591	S 45°23'14.9" E	43.36	00°41'13.2"(RT)	01°35'03.6"	43.36	21.68	3616.37
CURVE									
PT	988163.364	2534368.459	S 45°02'38.3" E	89.34					
LINE									
PC	988100.241	2534431.680	S 39°55'12.4" E	108.73	10°14'51.7"(RT)	09°24'45.6"	108.87	54.58	608.71
CURVE									
PCC	988016.854	2534501.452	S 26°09'28.4" E	116.90	17°16'36.3"(RT)	14°43'22.7"	117.35	59.12	389.16
CURVE									
PT	987911.926	2534552.987	S 17°31'10.2" E	185.27					
LINE									
PC	987735.245	2534608.760	S 26°06'34.7" E	178.71	17°10'49.0"(LT)	09°34'40.0"	179.38	90.37	598.22
CURVE									
PCC	987574.776	2534687.407	S 36°39'06.1" E	45.65	03°54'13.9"(LT)	00°33'01.1"	45.66	22.84	670.10
CURVE									
PCC	987538.153	2534714.657	S 42°54'46.4" E	154.05	08°37'06.6"(LT)	05°35'21.3"	154.20	77.24	1025.11
CURVE									
PT	987425.327	2534819.549	S 47°13'19.7" E	42.39					
LINE									
POT	987396.535	2534850.665							

**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.

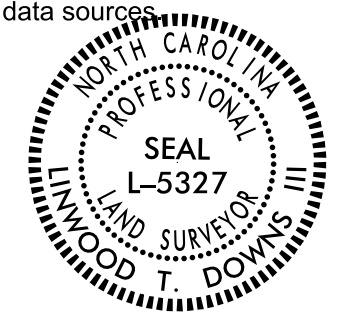
# PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
BPI-R002	RW02D-1
<b>Location and Surveys</b>	
<b>Location &amp; Surveys</b> Division 1 1300 US HWY 64 West Plymouth, NC 27962	
PROJECT SURVEYOR  DocuSigned by: Linwood T. Downs III SEAL L-5327 LAND SURVEYOR LINWOOD T. DOWNS III	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, Linwood T. Downs III, 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 14th day of March, 2023.

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




REVISIONS

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	988163.364	2534368.459							
LINE			S 45°02'38.3" E	98.20					
PC	988093.978	2534437.953							
CURVE			S 31°16'54.2" E	230.76	27°31'28.1"(RT)	11°48'48.8"	232.99	118.79	485.00
PT	987896.768	2534557.772							
LINE			S 17°31'10.2" E	169.38					
PC	987735.245	2534608.761							
CURVE			S 26°06'34.7" E	178.70	17°10'49.0"(LT)	09°34'40.3"	179.37	90.37	598.21
PCC	987574.777	2534687.406							
CURVE			S 36°39'06.1" E	45.65	03°54'13.9"(LT)	08°33'01.1"	45.66	22.84	670.10
PCC	987538.153	2534714.657							
CURVE			S 42°54'46.4" E	154.05	08°37'06.6"(LT)	05°35'21.3"	154.20	77.24	1025.11
PT	987425.327	2534819.549							

**NOTES:**

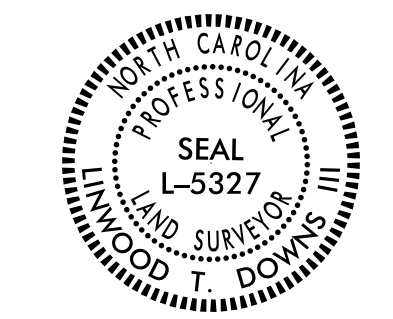
1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

# RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO. BPI-R002	SHEET NO. RW03E-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> BA0002	
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 March 9, 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 14th day of March, 2023.  
 DocuSigned by:  
*Linwood T. Downs III*  
 Professional Land Surveyor L-5327



ROW MARKER IRON PIN AND CAP - E

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+00.00	-35.00	988034.1178	2534531.2883
L	12+00.00	35.00	987995.9746	2534472.5934
L	12+00.00	-30.64	988031.7398	2534527.6291
L	12+00.00	29.39	987999.0341	2534477.3015
L	13+31.19	-35.00	987907.3038	2534591.1486
L	13+31.19	35.00	987886.2316	2534524.3955
L	15+00.57	-35.00	987745.7806	2534642.1371
L	15+00.57	-30.00	987744.2763	2534637.3687
L	15+00.57	30.00	987726.2145	2534580.1518
L	15+00.57	35.00	987724.7085	2534575.3840

ROW MARKER PERMANENT EASEMENT - E

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+09.96	-44.95	988030.3563	2534545.4700
L	12+50.78	-35.00	987986.9975	2534558.5136
L	13+50.21	-124.34	987916.0631	2534682.0716

REVISIONS

**NOTES:**

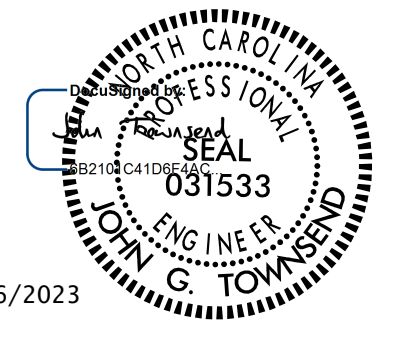
1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED ON MARCH 9, 2023.









TIP NO.	SHEET NO.
BP1-R002	PMP-1
APPROVED: _____	
DATE: _____	
SEAL	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

**STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION**

**PAVEMENT MARKING PLAN  
NORTHAMPTON COUNTY**

**LOCATION: BRIDGE NO. 650045 OVER KIRBY'S CREEK  
ON DELOATCH MILL ROAD (SR 1358)**

**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- (DELOATCH 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 2018 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**

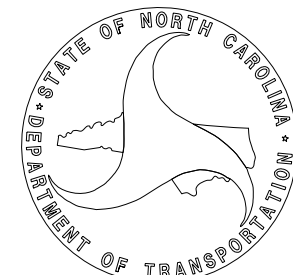
SYMBOL	DESCRIPTION
THERMOPLASTIC	
T1	WHITE EDGELINE (4", 90 MIL)
T11	YELLOW SINGLE CENTER (4", 90 MIL)
T12	10 FT. YELLOW SKIP (4", 90 MIL)
T13	YELLOW DOUBLE CENTER (4", 90 MIL)

**T.I.P.: BP1-R002**

**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



APPROVED: \_\_\_\_\_  
 DATE: \_\_\_\_\_

SEAL

8/16/2023

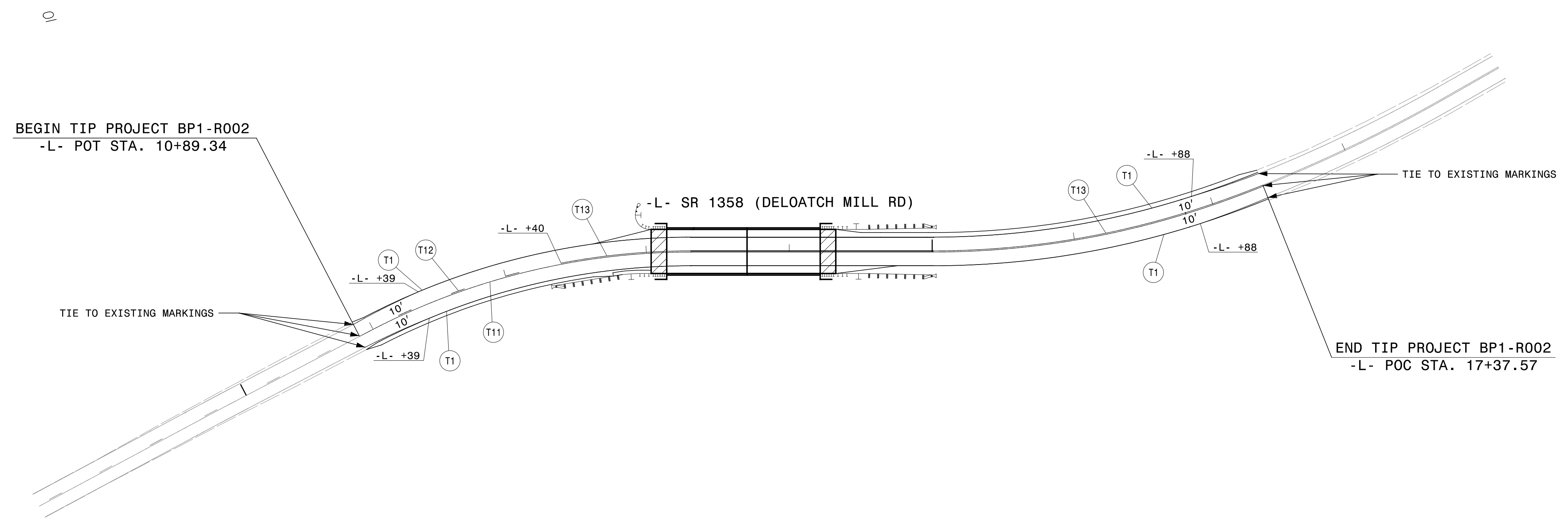
**DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED**



PAVEMENT MARKING SCHEDULE	
SYMBOL	DESCRIPTION
THERMOPLASTIC	
T1	WHITE EDGELINE (4", 90 MIL)
T11	YELLOW SINGLE CENTER (4", 90 MIL)
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NAD 83/2011

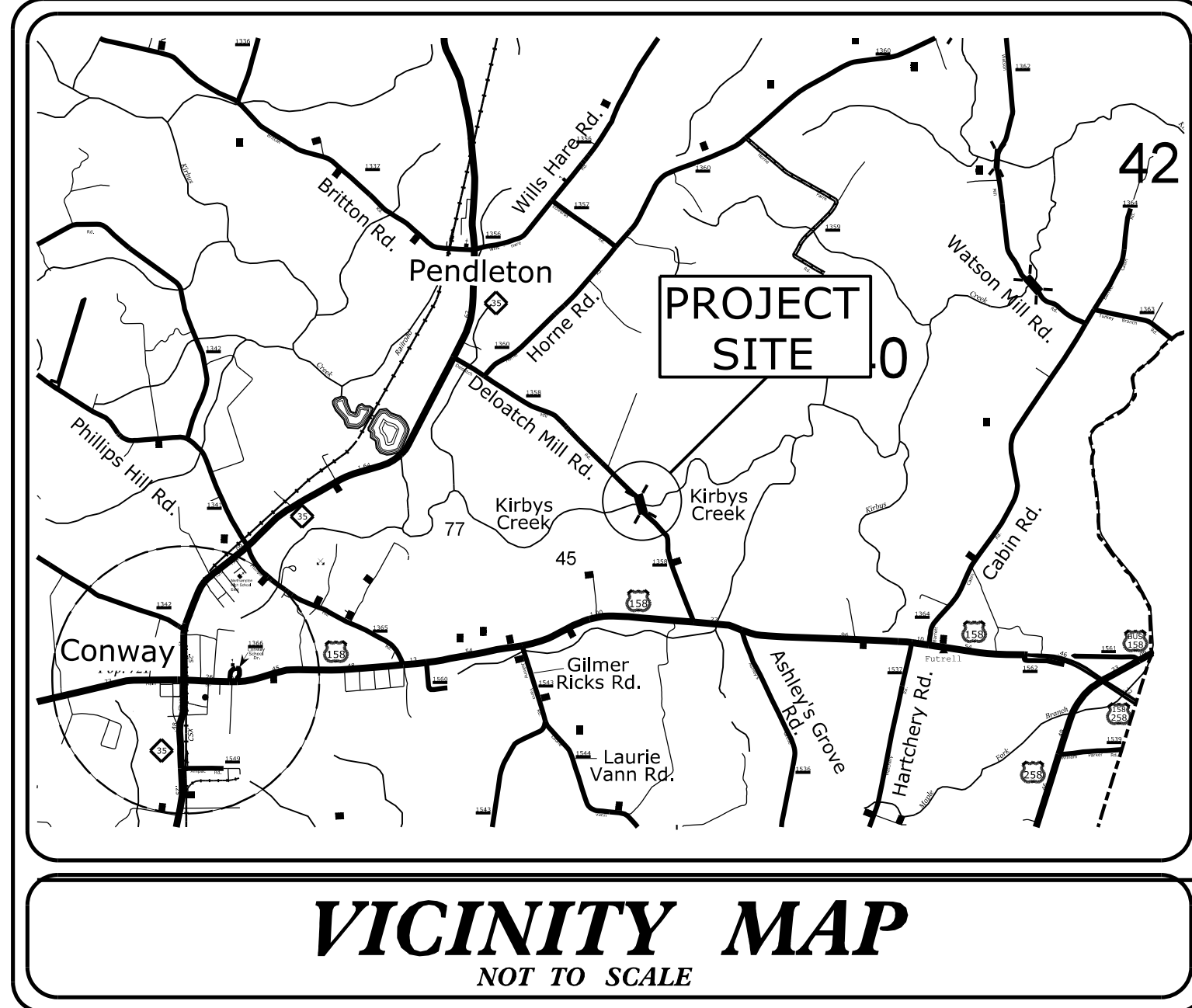
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8/16/2023  
 R:\Traffic\PavementMarking\BP1-R002\_pmp\_psh\_02.dgn  
 User:jtownsend

**PAVEMENT MARKING DETAIL**

**TIP PROJECT: BPI-R002**



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

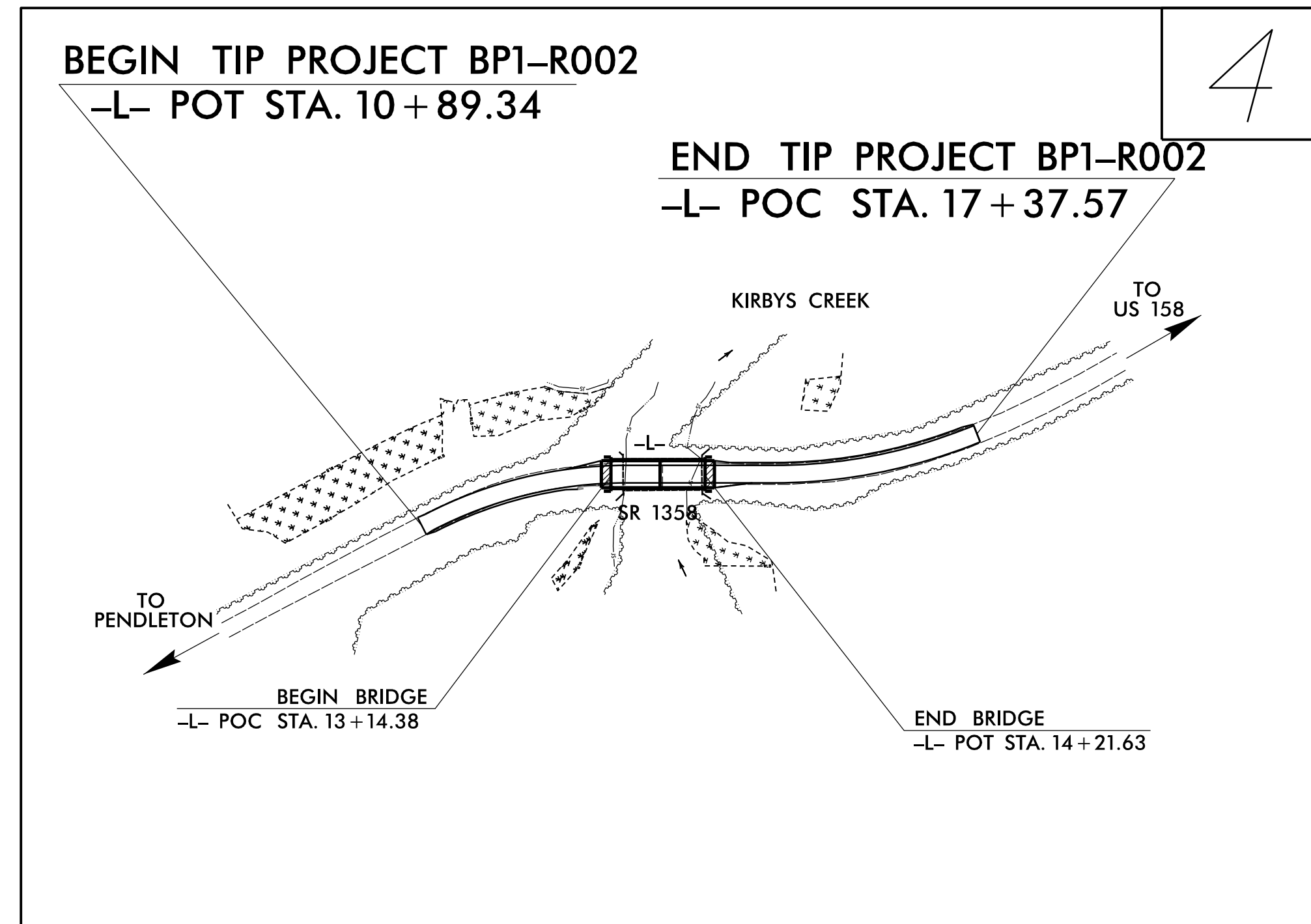
**LOCATION: BRIDGE NO.650045 OVER KIRBY'S CREEK  
ON DELOATCH MILL ROAD (SR 1358)**  
**TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	<b>BPI-R002</b>	<b>EC-1</b>	<b>4</b>
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BPI.R002.1	STATE FUNDED	PE	
BPI.R002.1	STATE FUNDED	R/W	
BPI.R002.1	STATE FUNDED	CONSTRUCTION	

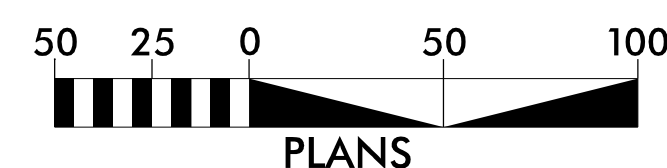
**EROSION AND SEDIMENT CONTROL MEASURES**

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	△△△
1622.01	Temporary Berms and Slope Drains	—
1650.02	Silt Basin Type B	▨
1633.01	Temporary Rock Silt Check Type-A	⊗
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	⊗
1633.02	Temporary Rock Silt Check Type-B	▶
	Wattle / Coir Fiber Wattle	—
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	—
1634.01	Temporary Rock Sediment Dam Type-A	▨
1634.02	Temporary Rock Sediment Dam Type-B	▨
1635.01	Rock Pipe Inlet Sediment Trap Type-A	⊓
1635.02	Rock Pipe Inlet Sediment Trap Type-B	⊓
1630.04	Stilling Basin	▭
1630.06	Special Stilling Basin	▭
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	▭
	Tiered Skimmer Basin	▭
	Infiltration Basin	▭

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



**GRAPHIC SCALE**



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



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:

**BETHANIE DEVEAU**

NAME

**4534**

LEVEL III CERTIFICATION NO.

**Roadway Standard Drawings**

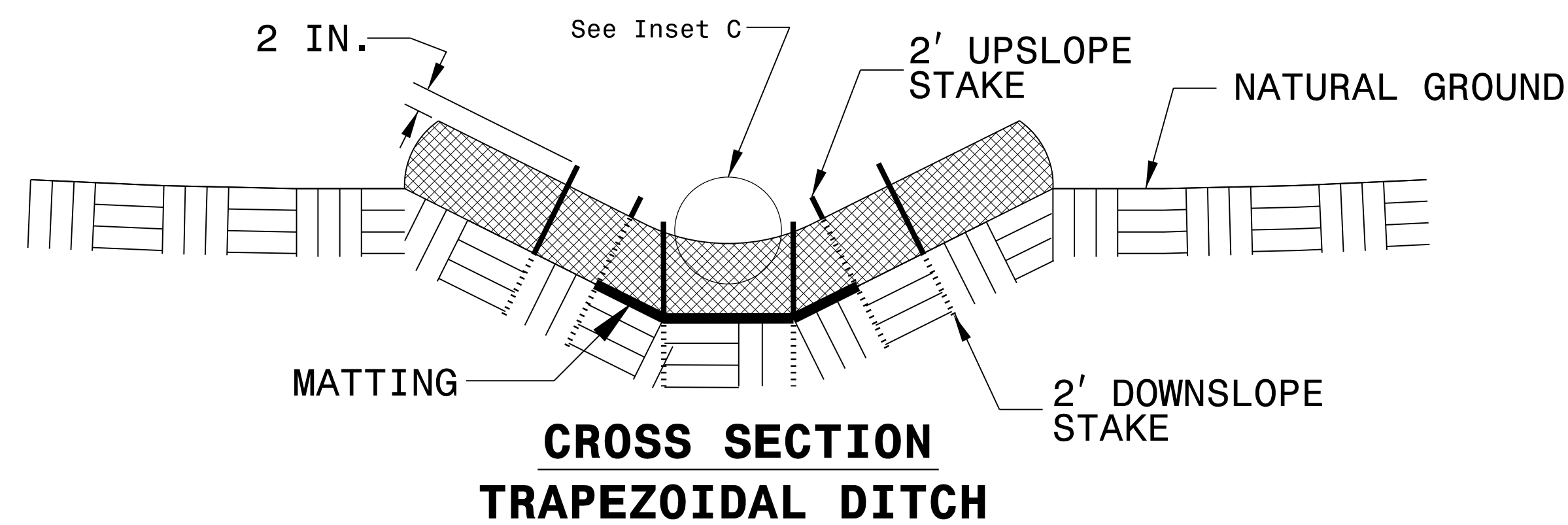
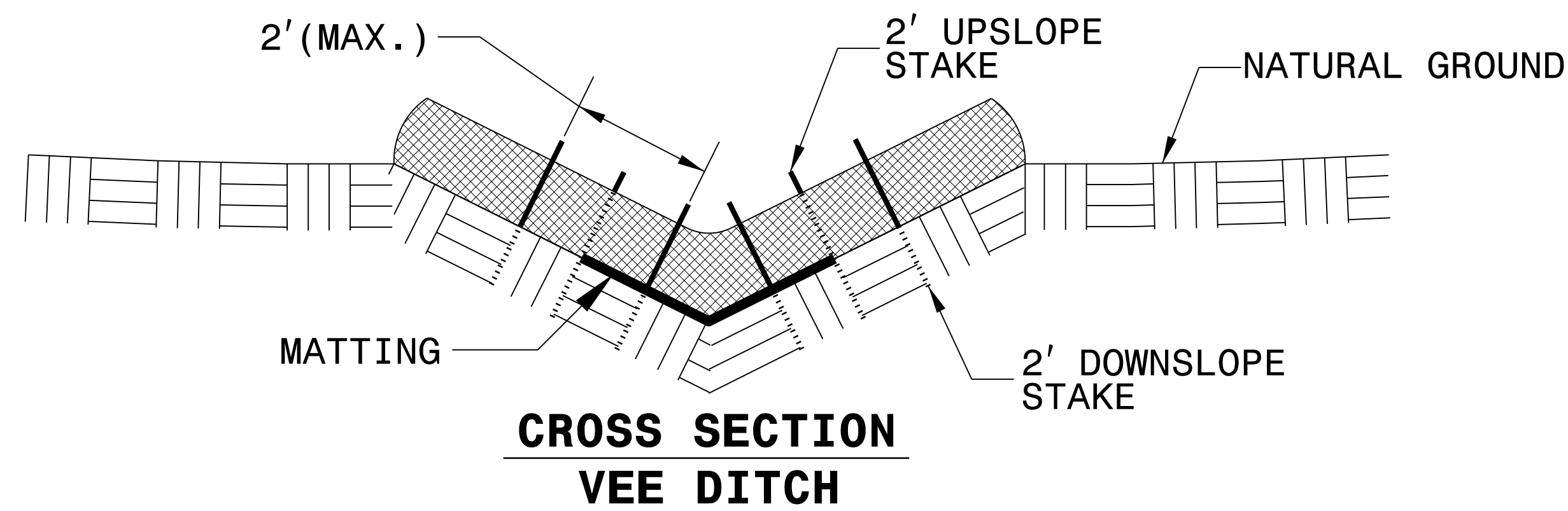
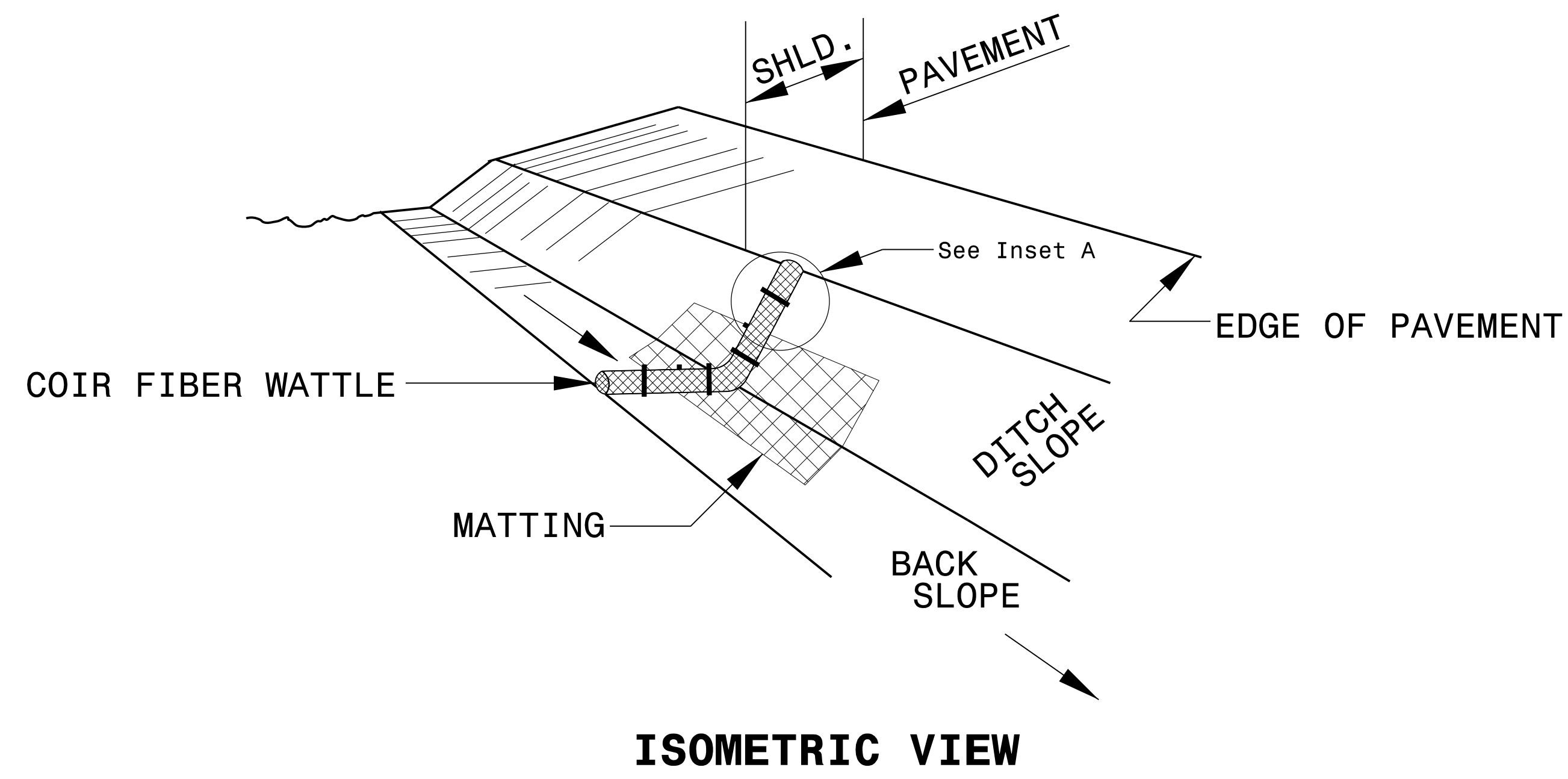
The following roadway english standards as appear in "Roadway Standard Drawings"— Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2018 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01 Railroad Erosion Control Detail	1632.01 Rock Inlet Sediment Trap Type A
1605.01 Temporary Silt Fence	1632.02 Rock Inlet Sediment Trap Type B
1606.01 Special Sediment Control Fence	1632.03 Rock Inlet Sediment Trap Type C
1607.01 Gravel Construction Entrance	1633.01 Temporary Rock Silt Check Type A
1622.01 Temporary Berms and Slope Drains	1633.02 Temporary Rock Silt Check Type B
1630.01 Riser Basin	1634.01 Temporary Rock Sediment Dam Type A
1630.02 Silt Basin Type B	1634.02 Temporary Rock Sediment Dam Type B
1630.03 Temporary Silt Ditch	1635.01 Rock Pipe Inlet Sediment Trap Type A
1630.04 Stilling Basin	1635.02 Rock Pipe Inlet Sediment Trap Type B
1630.05 Temporary Diversion	1640.01 Coir Fiber Baffle
1630.06 Special Stilling Basin	1645.01 Temporary Stream Crossing
1631.01 Matting Installation	



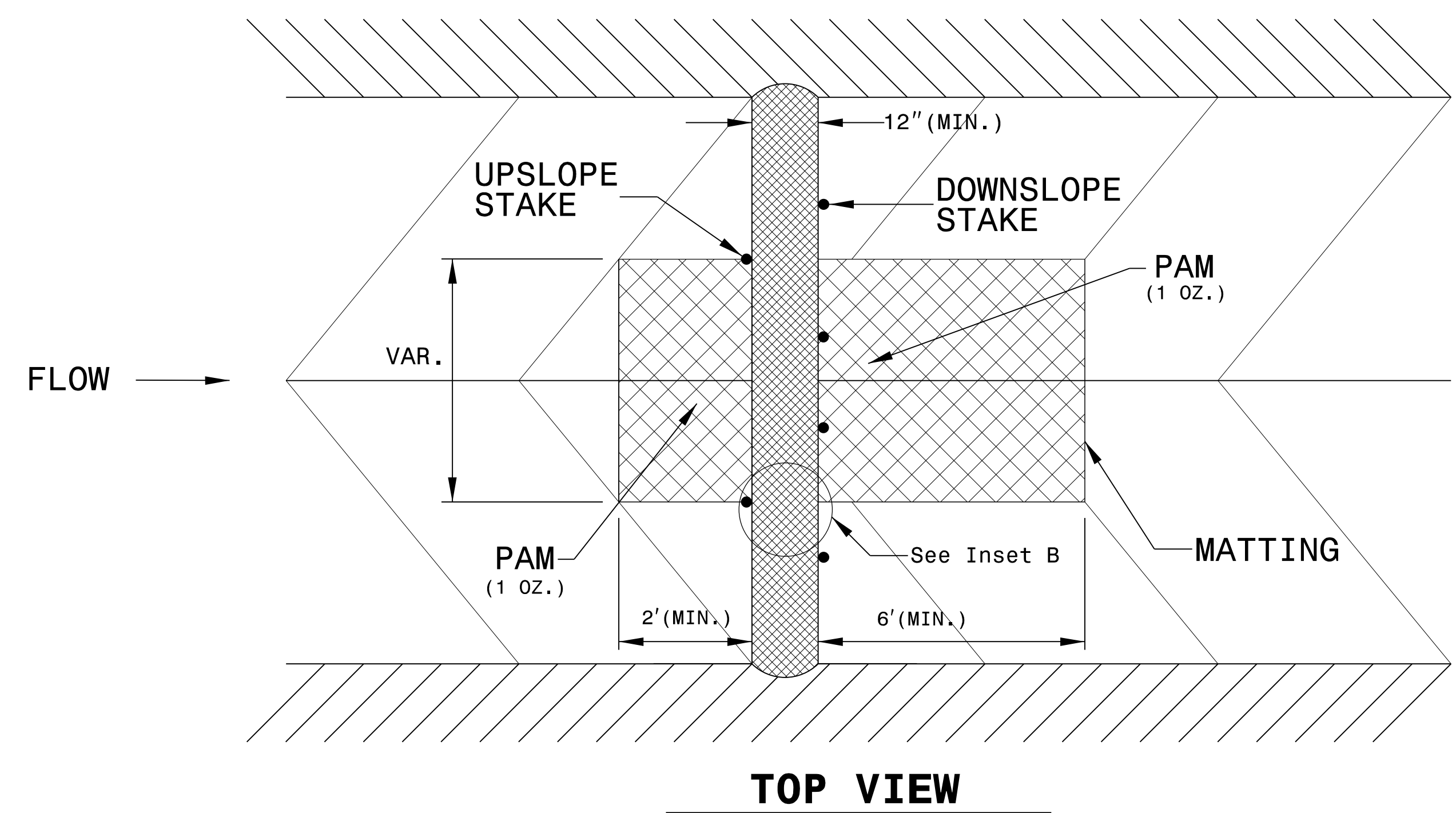
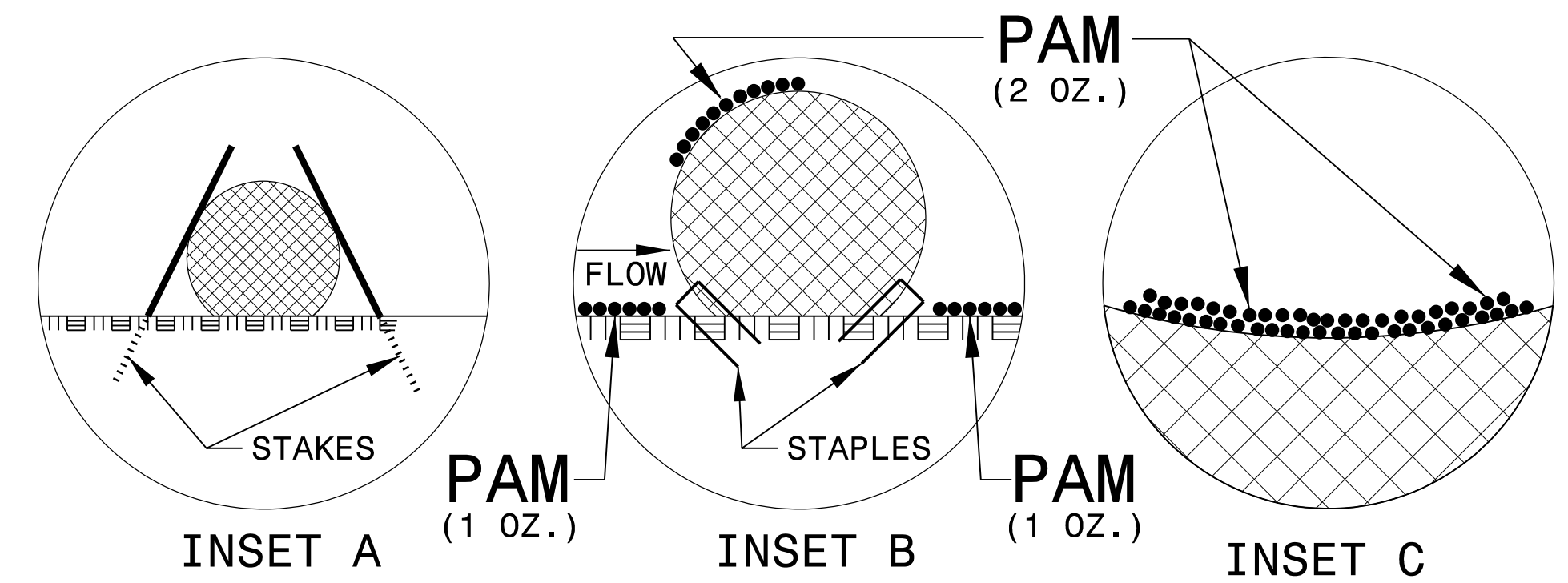
PROJECT REFERENCE NO. <i>BPI-R002</i>	SHEET NO. <i>EC-2</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# COIR FIBER WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



**NOTES:**

- USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE.
- USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.
- ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.
- INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.
- PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.
- INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.
- INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.
- PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.
- INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.







DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

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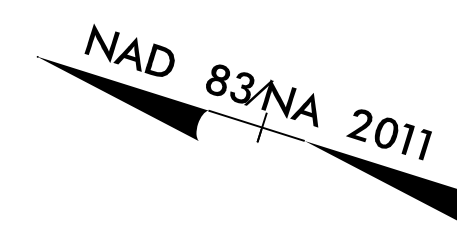
## ***SOIL STABILIZATION TIMEFRAMES***

<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.

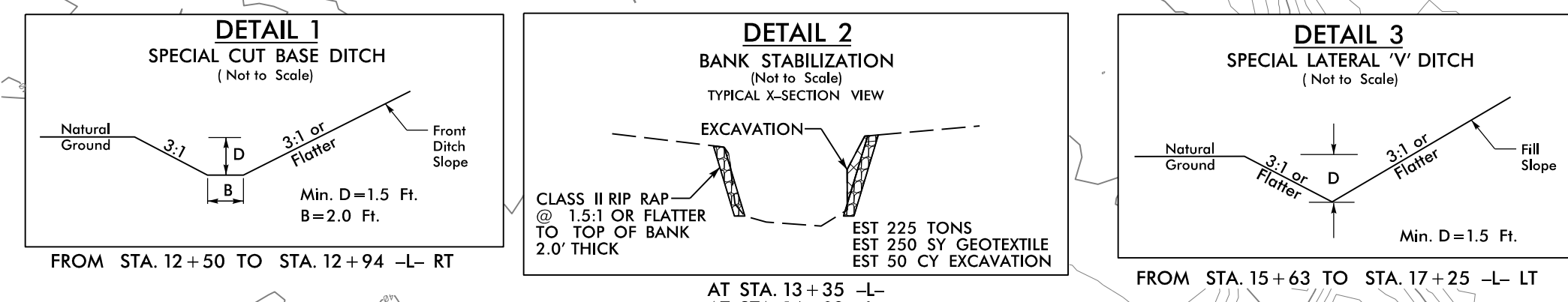
8/17/09

# RIGHT OF WAY AREA DATA

#	NAME	ROW	TCE	PUE
1	H. LEROY MARTIN	1,498 SF	2,748 SF	2,473 SF
2	GURNEY O. BURGESS, III & JOSEPH HENRY BURGESS	742 SF	1,208 SF	
4	STATE HIGHWAY COMMISSION NO REFERENCE FOUND	828 SF	1,602 SF	



-L-			
PI Sta 12+16.99 $\Delta = 27^{\circ} 31' 28.1''$ (RT) $D = 11^{\circ} 48' 48.8''$ $L = 232.99'$ $T = 118.79'$ $R = 485.00'$ $SE = 0.06$ $RO = 40$ $V = 40\text{mph}$ 2.8' CURVE WIDENING (SU-40 DESIGN VEHICLE USED FOR CURVE WIDENING)	PI Sta 15+90.94 $\Delta = 17^{\circ} 10' 49.0''$ (LT) $D = 9^{\circ} 34' 40.3''$ $L = 179.37'$ $T = 90.37'$ $R = 598.21'$ $SE = 0.06$ $RO = 40$ 3.2' CURVE WIDENING (SU-40 DESIGN VEHICLE USED FOR CURVE WIDENING)	PI Sta 17+02.79 $\Delta = 3^{\circ} 54' 13.9''$ (LT) $D = 8^{\circ} 33' 01.1''$ $L = 45.66'$ $T = 22.84'$ $R = 670.10'$ $SE = 0.06$ $V = 45\text{mph}$	PI Sta 18+02.85 $\Delta = 8^{\circ} 37' 06.6''$ (LT) $D = 5^{\circ} 35' 21.3''$ $L = 154.20'$ $T = 77.24'$ $R = 1,025.11'$ $SE = \text{EXIST.}$

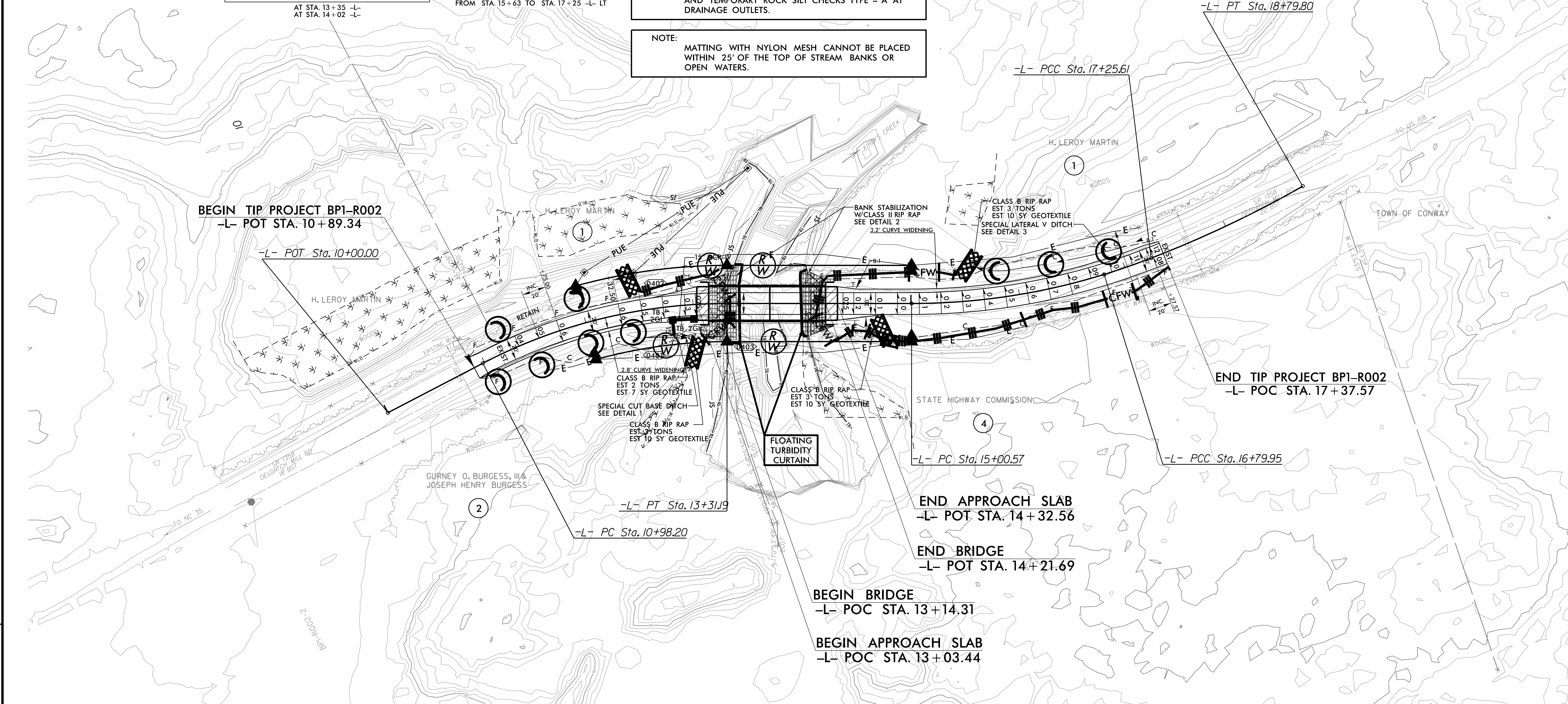


CLEARING AND GRUBBING  
EROSION CONTROL FOR  
CONSTRUCTION SHEET 4

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

NOTE:  
MATting WITH NYLON MESH CANNOT BE PLACED  
WITHIN 25' OF THE TOP OF STREAM BANKS OR  
OPEN WATERS.

PROJECT REFERENCE NO. BPI-R002	SHEET NO. EC-04/CONST.04
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared by <b>vhb</b> 940 Main Campus Drive, Suite 500 Raleigh, NC 27605 NC License No. C-3705	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



5/17/2023 PSH:BP1-R002\_REU:EC-CG.dgn

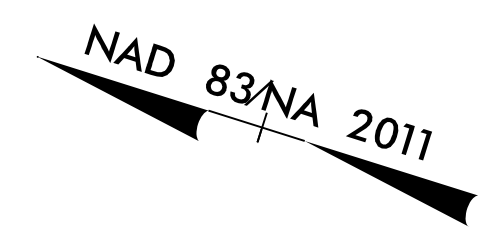


8/17/99

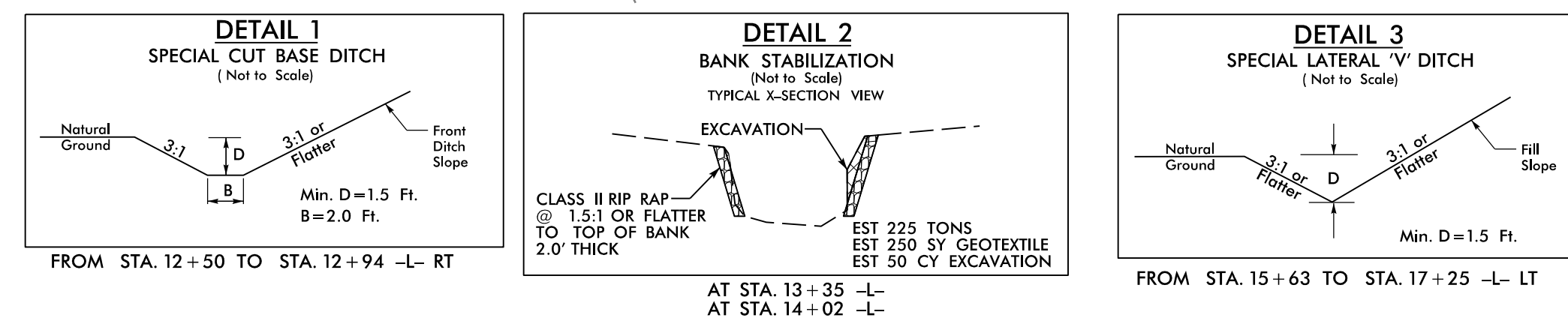
# RIGHT OF WAY AREA DATA

-L-			
PI Sta 12+16.99 Δ = 27° 31' 28.1" (RT) D = 11' 48" 48.8" L = 232.99' T = 118.79' R = 485.00' SE = 0.06 RO = 40 V = 40mph	PI Sta 15+90.94 Δ = 17° 10' 49.0" (LT) D = 9' 34' 40.3" L = 179.37' T = 90.37' R = 598.21' SE = 0.06 RO = 40	PI Sta 17+02.79 Δ = 3° 54' 13.9" (LT) D = 8' 33' 01.1" L = 45.66' T = 22.84' R = 670.10' SE = 0.06 V = 45mph	PI Sta 18+02.85 Δ = 8° 37' 06.6" (LT) D = 5' 35' 21.3" L = 154.20' T = 77.24' R = 1,025.11' SE = EXIST.
2.8' CURVE WIDENING (SU-40 DESIGN VEHICLE USED FOR CURVE WIDENING)		3.2' CURVE WIDENING (SU-40 DESIGN VEHICLE USED FOR CURVE WIDENING)	

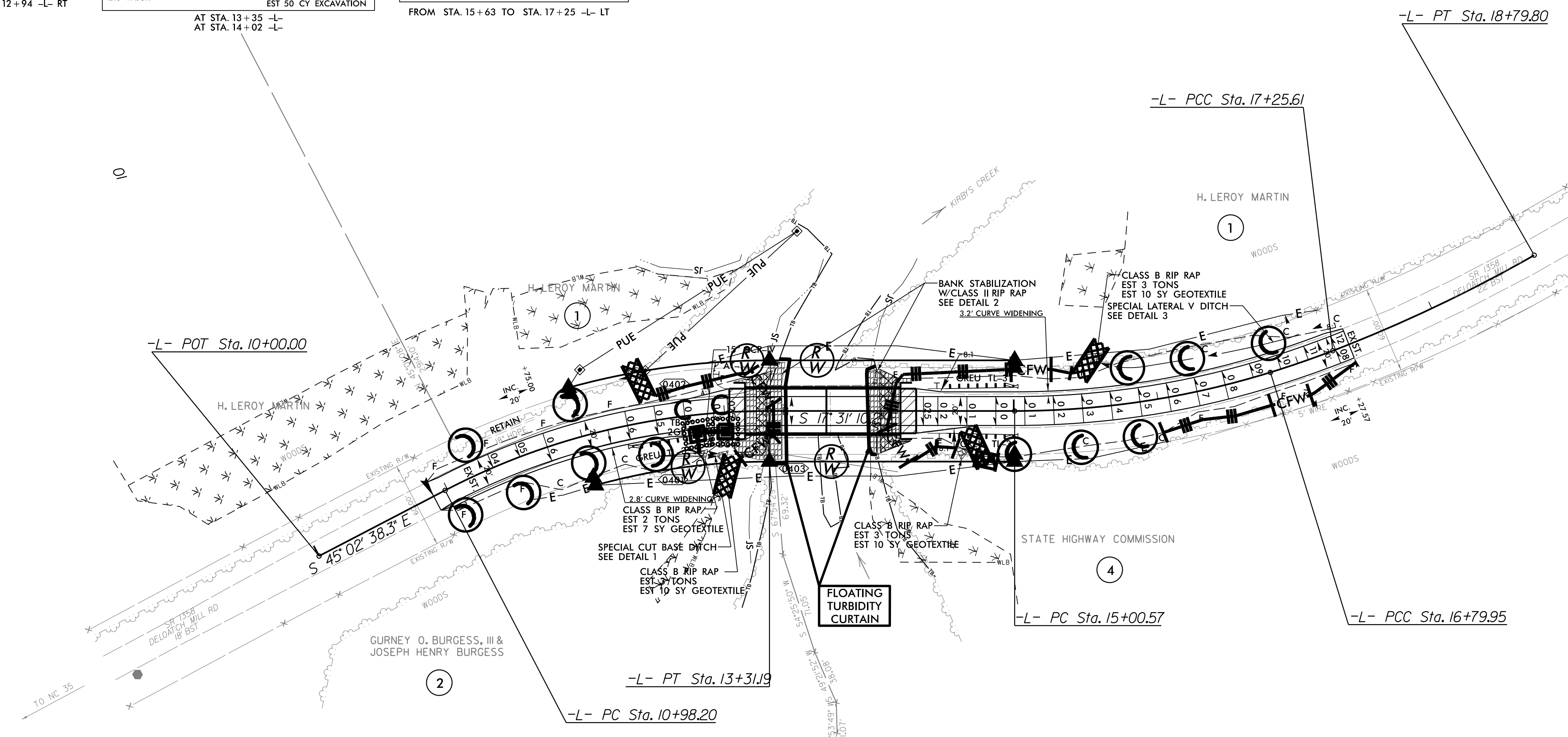
#	NAME	ROW	TCE	PUE
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2	GURNEY O. BURGESS, III & JOSEPH HENRY BURGESS	742 SF	1,208 SF	
4	STATE HIGHWAY COMMISSION NO REFERENCE FOUND	828 SF	1,602 SF	



PROJECT REFERENCE NO. BPI-R002	SHEET NO. EC-05/CONST.04
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared by <b>vhb</b> 940 Main Campus Drive, Suite 500 Raleigh, NC 27605 NC License No. C-3705	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



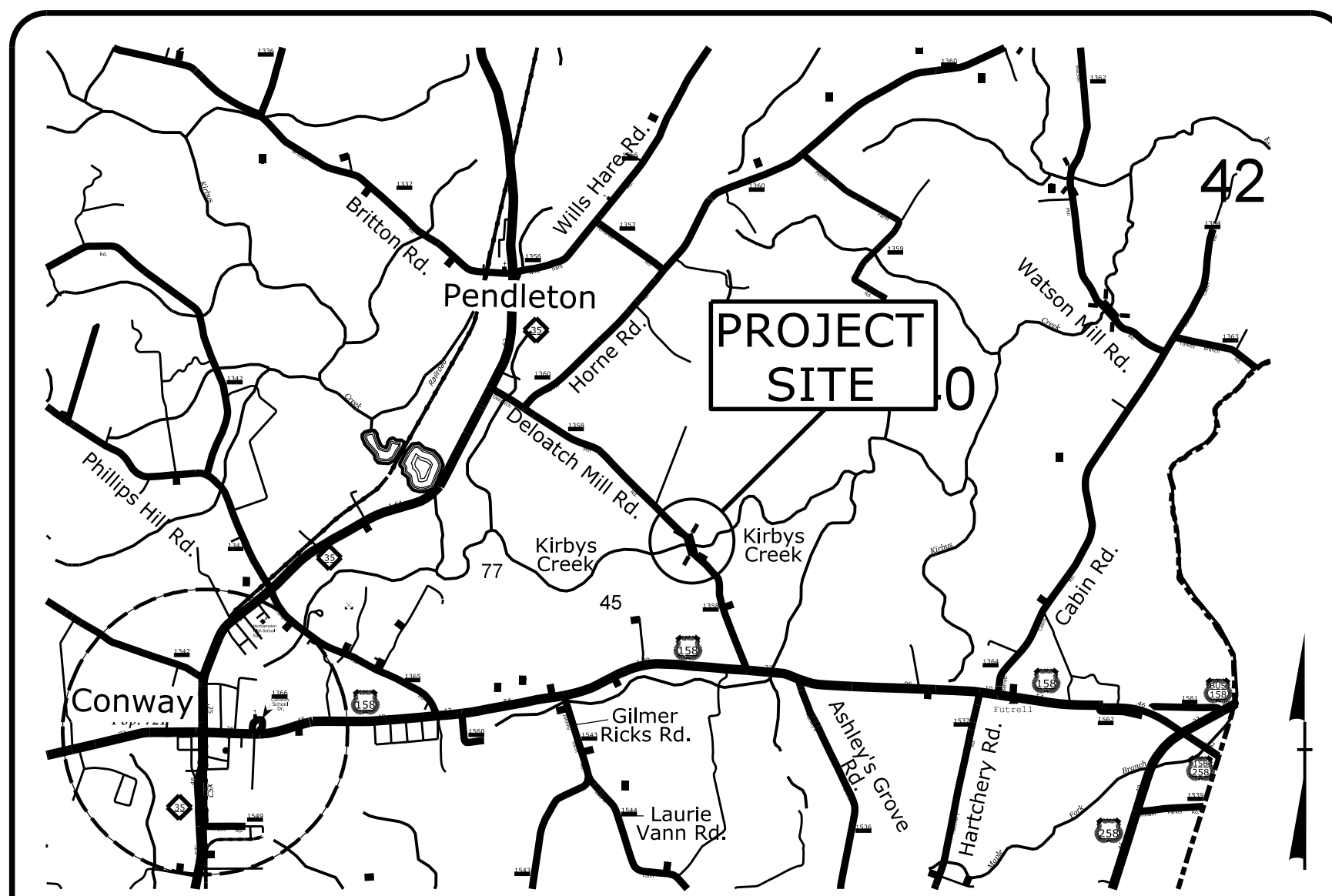
NOTE: MATTING WITH NYLON MESH CANNOT BE PLACED WITHIN 25' OF THE TOP OF STREAM BANKS OR OPEN WATERS.



5/17/2023  
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RUS:RUS

09.08/99

**TIP PROJECT: BPI-R002**



**VICINITY MAP**  
NOT TO SCALE

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

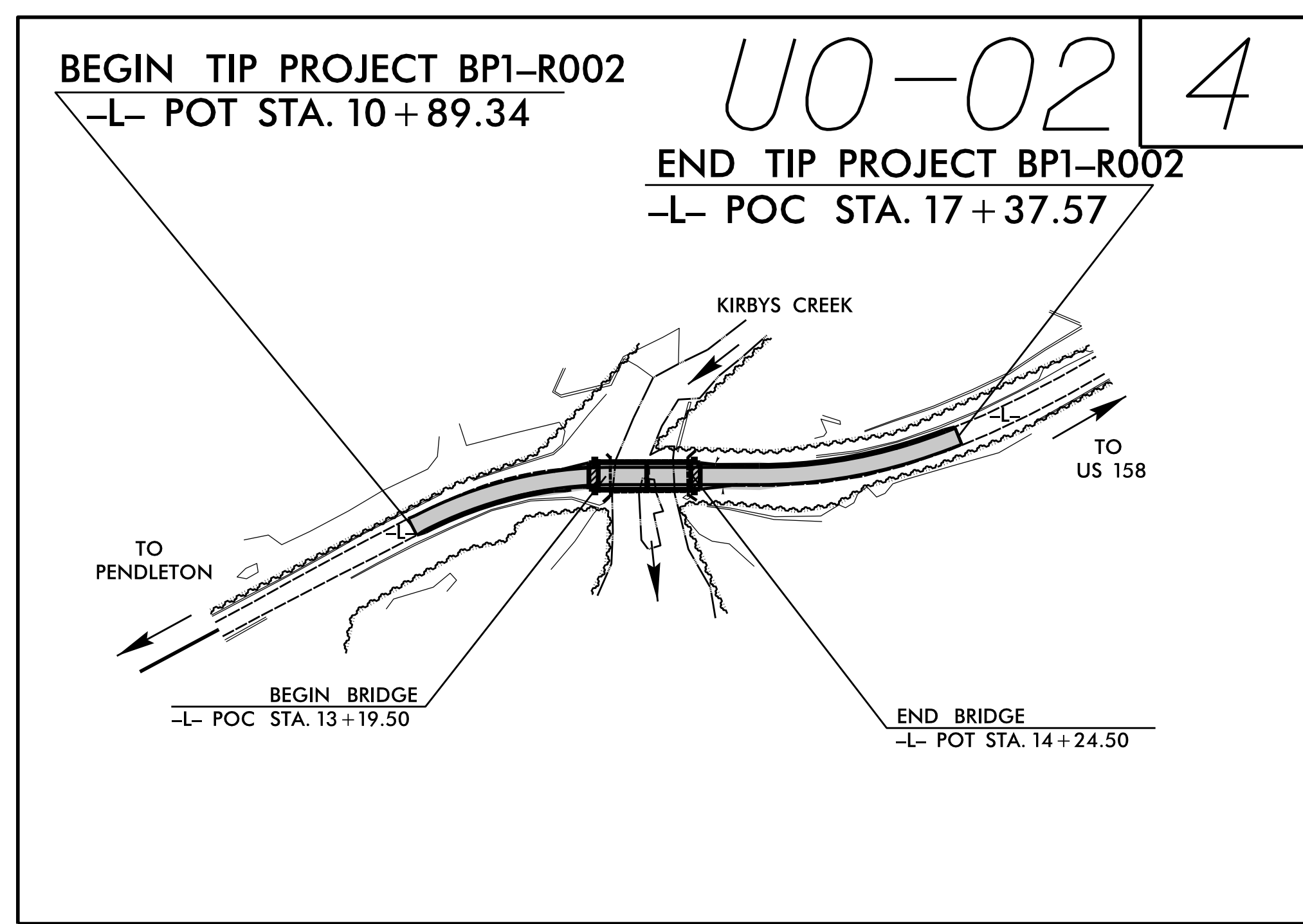
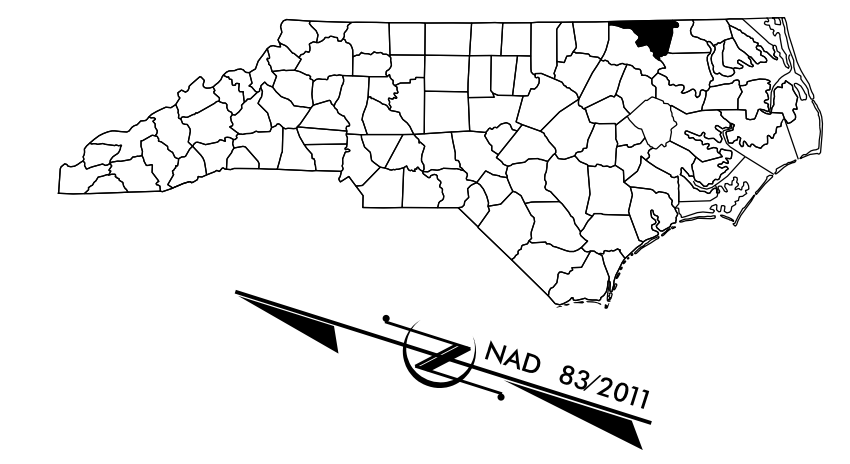
**UTILITIES BY OTHERS PLANS**  
**NORTHAMPTON COUNTY**

**LOCATION: BRIDGE NO. 650045 OVER KIRBY'S CREEK**  
**ON DELOATCH MILL ROAD (SR 1358)**

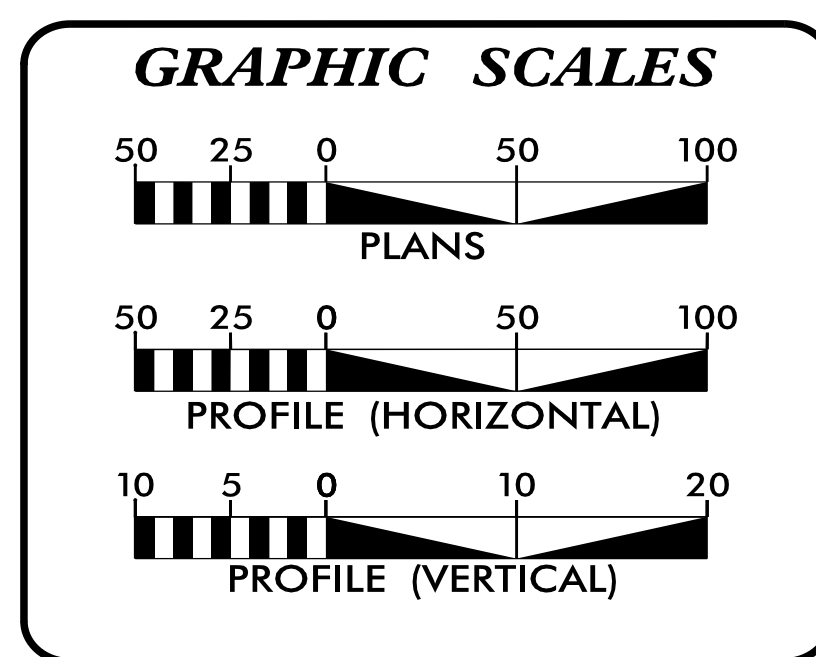
**TYPE OF WORK: POWER (DISTRIBUTION)**

T.I.P. NO.	SHEET NO.
BPI.R002	UO-1

NOTE:  
ALL UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR UTILITY WORK SHOWN ON THIS SHEET.




**CONTRACT:**



INDEX OF SHEETS	
SHEET NO.:	DESCRIPTION:
UO-1	TITLE SHEET
UO-02	UBO PLAN SHEET


UTILITY OWNERS WITH CONFLICTS
(A) POWER - ROANOKE ELECTRIC

PREPARED IN THE OFFICE OF:



2641 Sumner Boulevard  
Suite 116  
Raleigh, NC 27616  
(919) 878-7466

Freddie Bunn                      UTILITY PROJECT MANAGER  
Brian Long                      PROJECT UTILITY COORDINATOR



DIVISION OF HIGHWAYS  
DIVISION 01  
DIV ADDRESS  
113 AIRPORT DRIVE  
SUITE 100  
EDENTON, NC 27932

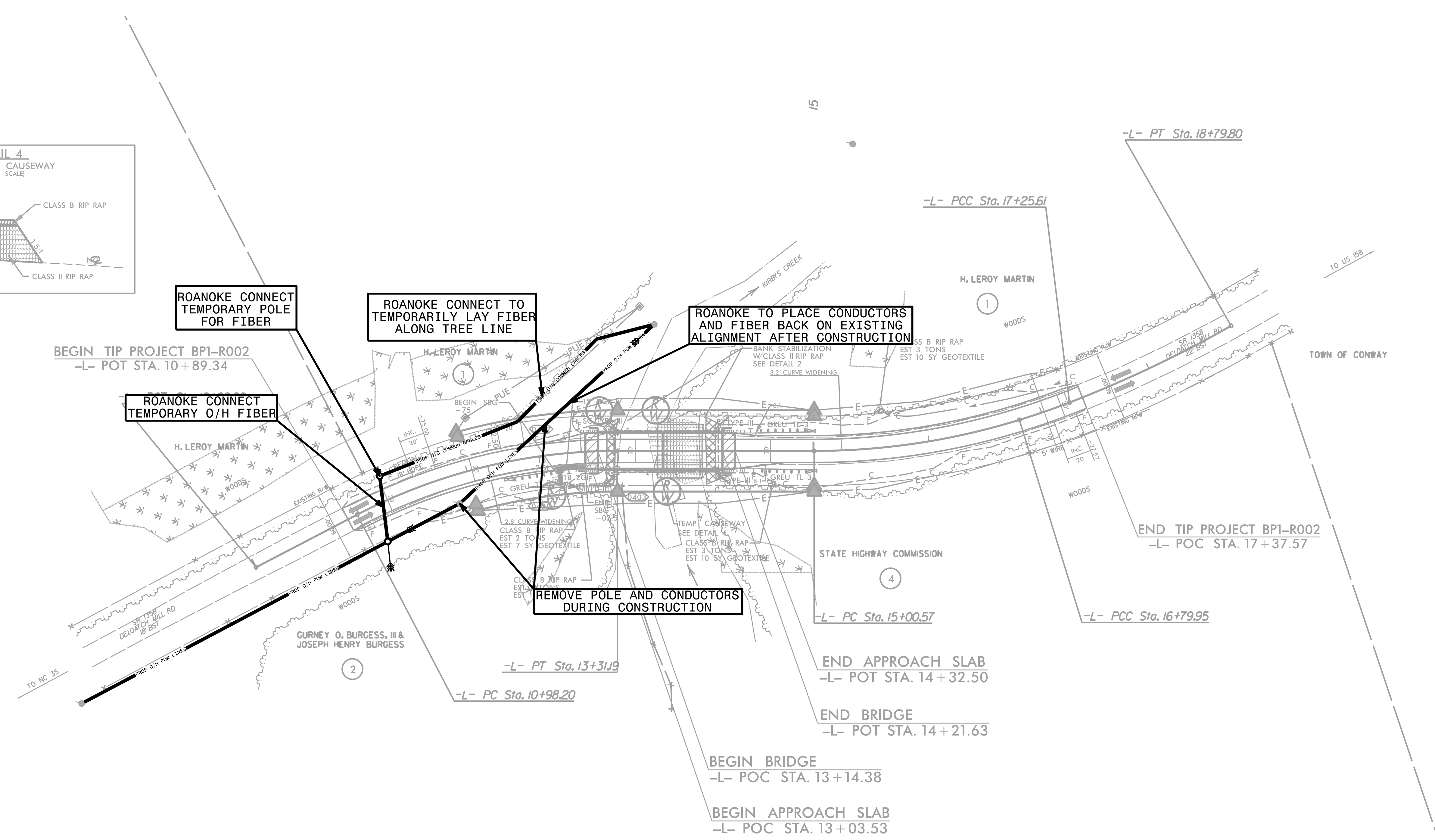
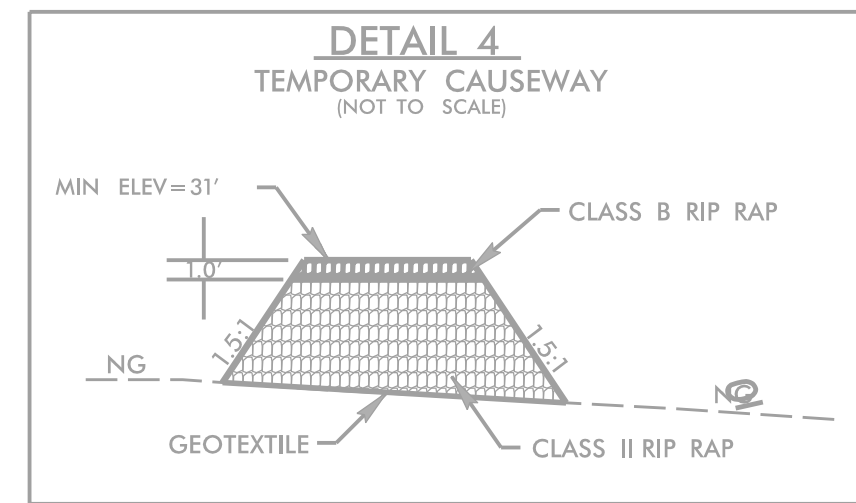
Daniel Merritt                      DIVISION UTILITY COORD.

4/10/2023  
\\work\king\BPI-R002\_rdy\_tsh.dgn  
11:33:14 AM

### UTILITIES BY OTHERS

ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.

NAD 83/NA 2011



ROANOKE CONNECT TEMPORARY POLE FOR FIBER

ROANOKE CONNECT TO TEMPORARILY LAY FIBER ALONG TREE LINE

ROANOKE TO PLACE CONDUCTORS AND FIBER BACK ON EXISTING ALIGNMENT AFTER CONSTRUCTION

ROANOKE CONNECT TEMPORARY O/H FIBER

REMOVE POLE AND CONDUCTORS DURING CONSTRUCTION

BEGIN TIP PROJECT BPI-R002  
-L- POT STA. 10+89.34

END TIP PROJECT BPI-R002  
-L- POC STA. 17+37.57

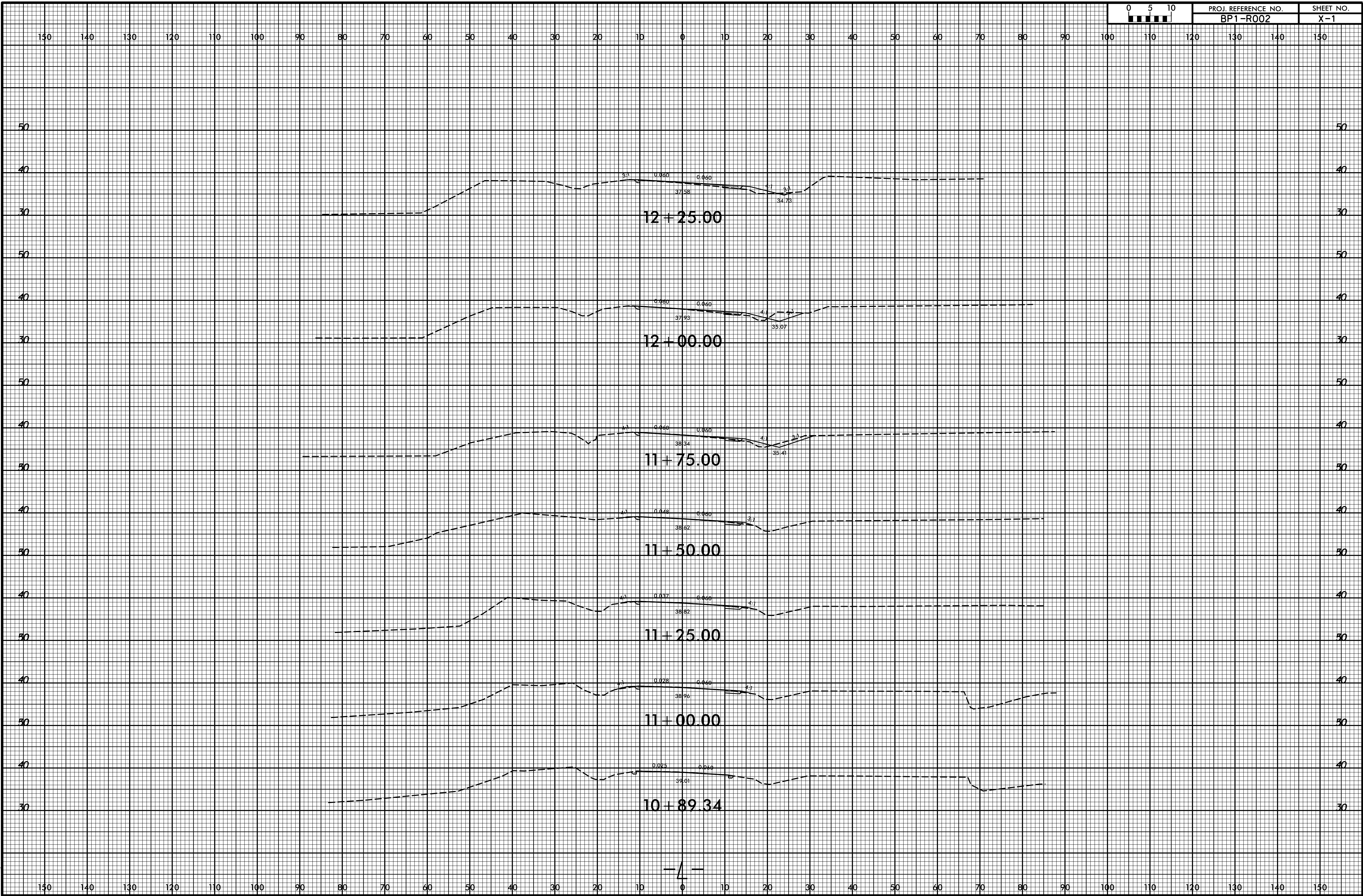
END APPROACH SLAB  
-L- POT STA. 14+32.50

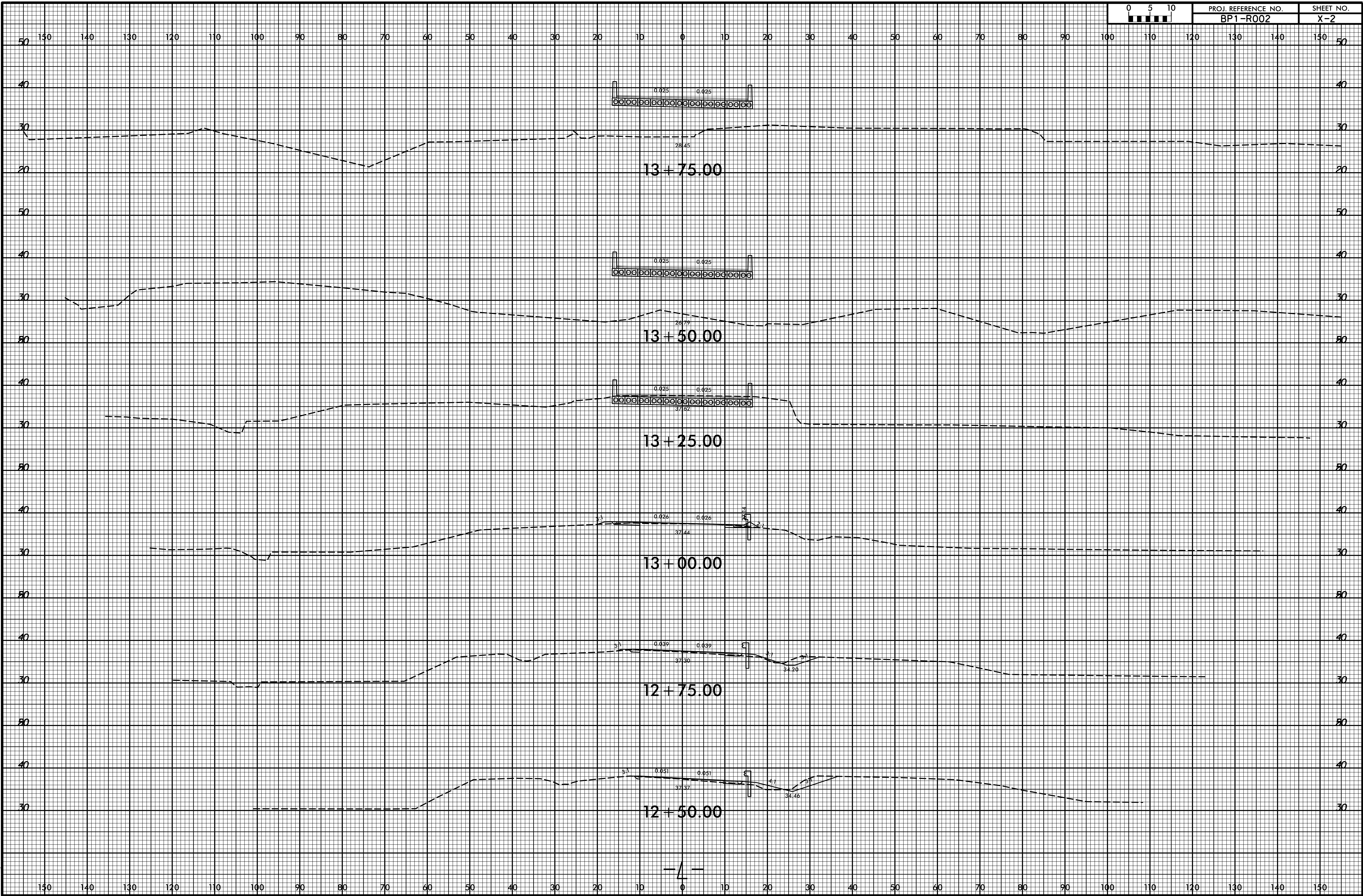
END BRIDGE  
-L- POT STA. 14+21.63

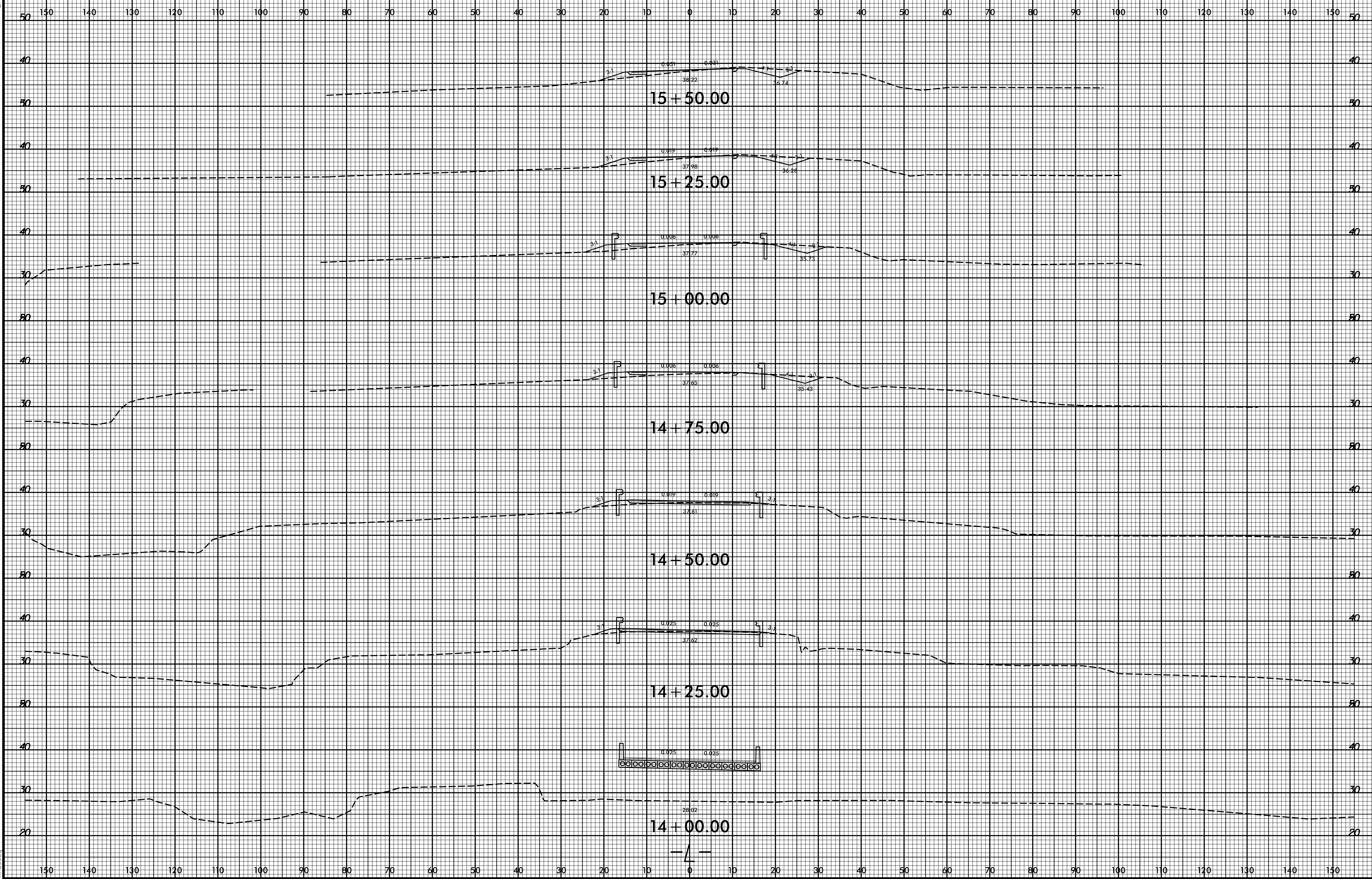
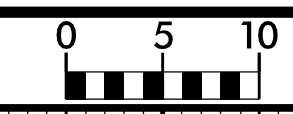
BEGIN BRIDGE  
-L- POC STA. 13+14.38

BEGIN APPROACH SLAB  
-L- POC STA. 13+03.53

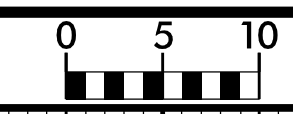












150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

50 50

40 40

17 + 37.57

50 50

40 40

17 + 25.00

50 50

40 40

17 + 00.00

50 50

40 40

16 + 75.00

50 50

40 40

16 + 50.00

50 50

40 40

16 + 25.00

50 50

40 40

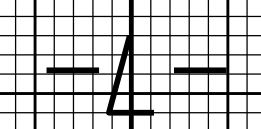
16 + 00.00

50 50

40 40

15 + 75.00

30 30



150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

8/26/21

GRADE DATA -L-

PI = 12+40.00  
EL = 37.37  
VC = 120'  
(-)1.4853% (+)0.3000%

FILL FACE AT END BENT No. 1  
ON EXTENDED TANGENT  
STA. 13+14.31  
-L- OFFSET 0.294' LT  
G.P. EL. 37.59

BEGIN FRONT SLOPE  
ON EXTENDED TANGENT  
-L- OFFSET 0.602' LT  
G.P. EL. 37.57

SPAN A

SPAN B

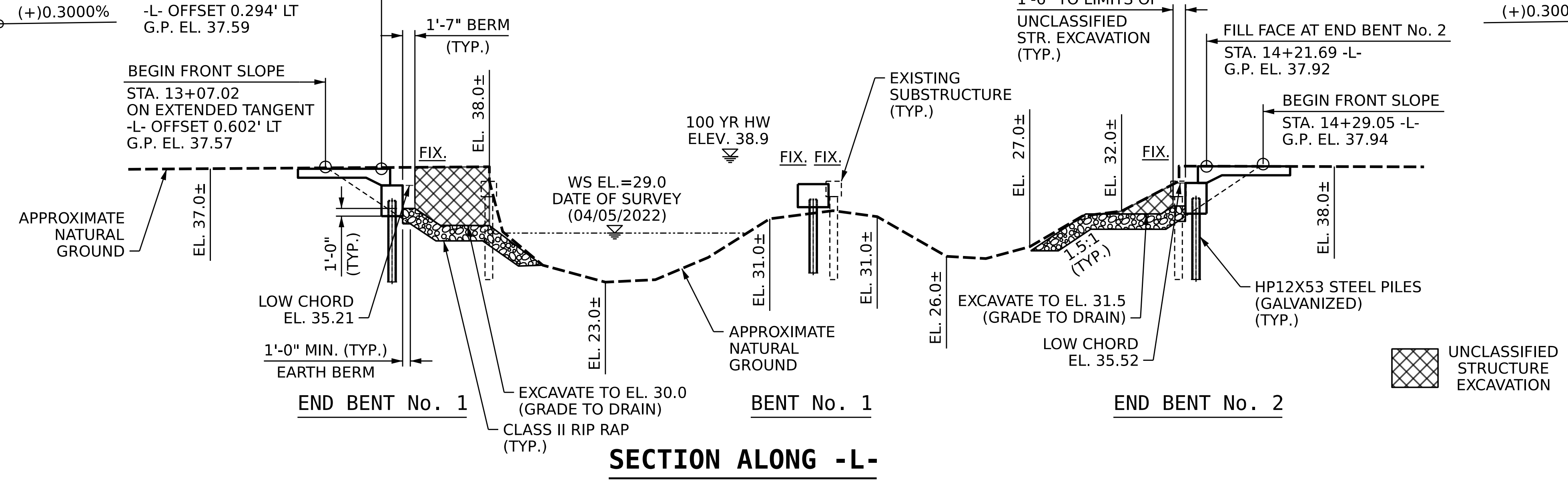
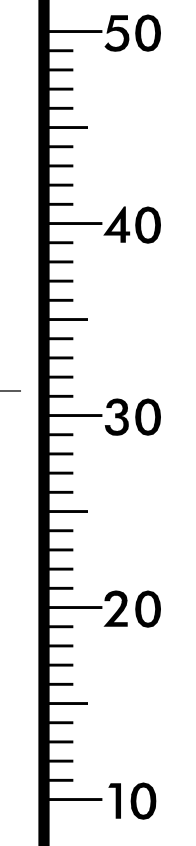
GRADE DATA -L-

PI = 15+42.00  
EL = 38.28  
VC = 125'  
(+)0.3000% (+)1.3651%

FILL FACE AT END BENT No. 2  
STA. 14+21.69 -L-  
G.P. EL. 37.92

BEGIN FRONT SLOPE  
STA. 14+29.05 -L-  
G.P. EL. 37.94

I HEREBY CERTIFY THESE PLANS  
ARE THE AS-BUILT PLANS



SECTION ALONG -L-

NAD 83 NA 2011

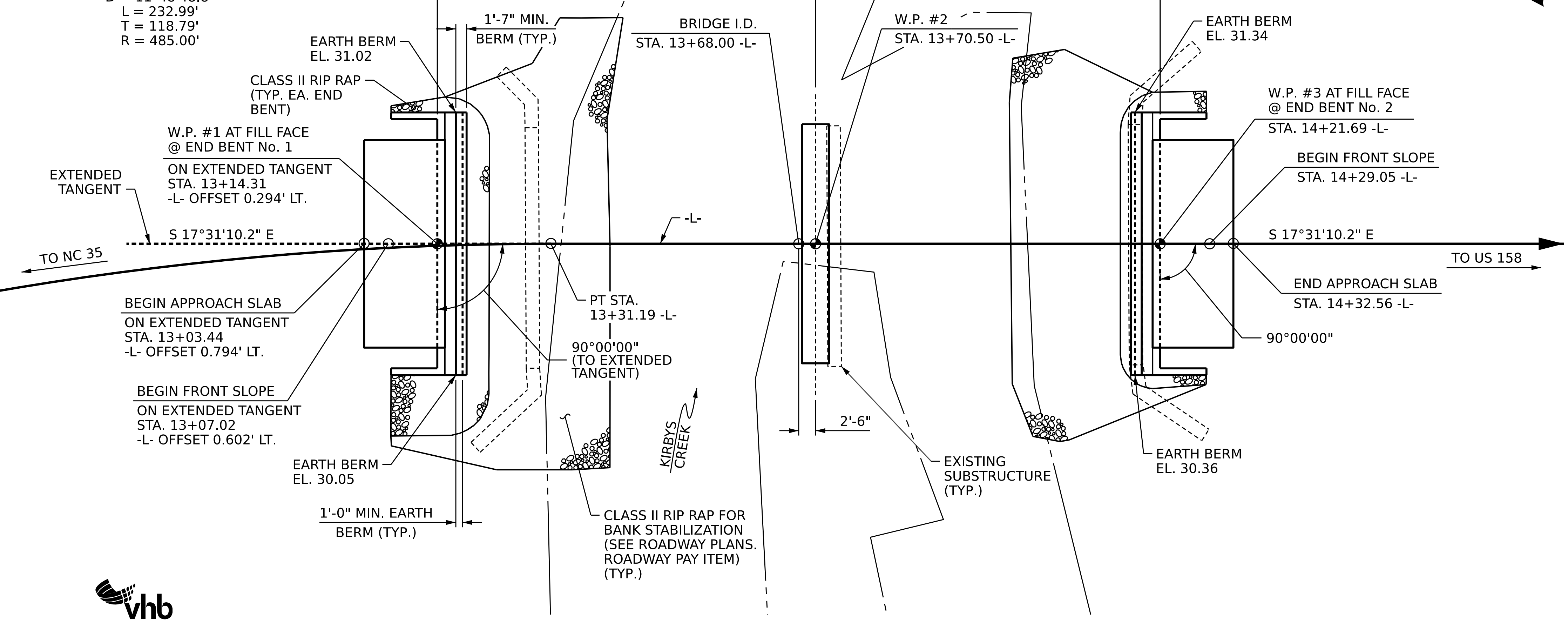
HORIZONTAL CURVE DATA -L-

PI = 12+16.99  
Δ = 27°31'28.1" (RT)  
D = 11°48'48.8"  
L = 232.99'  
T = 118.79'  
R = 485.00'

107'-4 1/2" ALONG -L- AND EXTENDED TANGENT (FILL FACE TO FILL FACE)

56'-2 1/4" (SPAN A)

51'-2 1/4" (SPAN B)



PLAN

(STEEL PILES NOT SHOWN FOR CLARITY)

HYDRAULIC DATA	
DESIGN DISCHARGE	= 2800 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 25 YRS.
DESIGN HIGH WATER ELEVATION	= 37.4 FT
DRAINAGE AREA	= 54.0 SQ. MI.
BASIC DISCHARGE (Q100)	= 4476 C.F.S.
BASIC HIGH WATER ELEVATION	= 38.85 FT
OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE	= 2750 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	< 25 YRS.
OVERTOPPING FLOOD ELEVATION	= 37.2 FT*
* 425' LINE AHEAD OF END PROJECT	
WS EL. Taken @ River Station 45472	

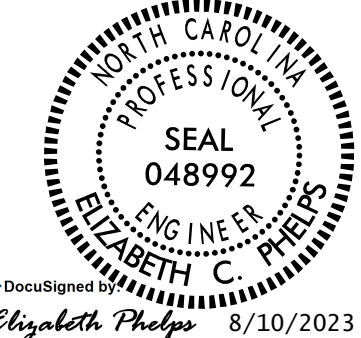
PROJECT NO. **BP1-R002**  
**NORTHAMPTON** COUNTY  
STATION: **13+68.00 -L-**

SHEET 1 OF 2 REPLACES BRIDGE NO. 650045

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER  
KIRBY'S CREEK ON  
DELOATCH MILL ROAD  
(SR 1358) BETWEEN  
NC 35 AND US 158



DocuSigned by:  
Elizabeth Phelps 8/10/2023

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

DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED



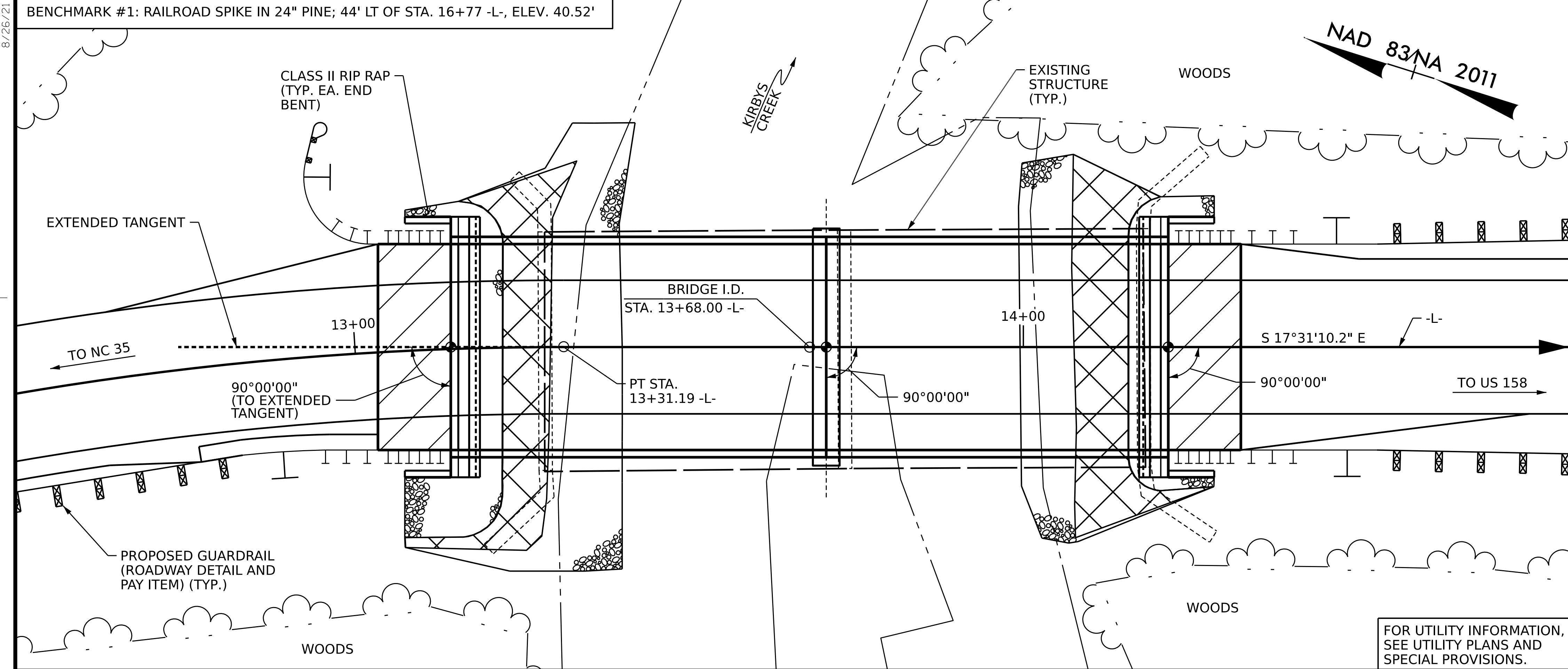
VHB Engineering NC, P.C. (C-3705)  
940 Main Campus Drive, Suite 500  
Raleigh, NC 27606

DRAWN BY : E.C. PHELPS	DATE : 08/2023
CHECKED BY : K.F. SMACH	DATE : 08/2023
DESIGN ENGINEER OF RECORD: E.C. PHELPS	DATE : 08/2023









**- LOCATION SKETCH -**

**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 SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR. THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCE BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
- REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
- THE EXISTING STRUCTURE #650045 CONSISTING OF TWO (2) CORED SLAB GIRDER SPANS @ 45'-0" & 45'-0" (90'-0" TOTAL LENGTH), WITH A CLEAR WIDTH OF 33'-9", WITH AN ASPHALT WEARING SURFACE, WITH SUBSTRUCTURES CONSISTING OF CONCRETE CAPS ON STEEL PILES AND TIMBER LAGGING AND STEEL PILE ABUTMENTS LOCATED AT THE PROPOSED BRIDGE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18 - EVALUATING SCOUR AT BRIDGES."
- 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 MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 28 FT ± (LEFT) AND 31 FT ± (RIGHT) AT END BENT No. 1 AND 29 FT ± (LEFT) AND 29 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.
- ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

**FOUNDATION NOTES**

- FOR PILES, SEE PILES PROVISION AND SECTION 450 OF THE STANDARD SPECIFICATIONS.
- THE SCOUR CRITICAL ELEVATION FOR BENT 1 IS ELEVATION 15.3. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

TOTAL BILL OF MATERIAL												
	REMOVAL OF EXISTING STRUCTURE	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 GALVANIZED STEEL PILES	PILE DRIVING EQUIPMENT SETUP FOR HP 14X73 GALVANIZED STEEL PILES	HP 12 X 53 GALVANIZED STEEL PILES		HP 14 X 73 GALVANIZED STEEL PILES	
	LUMP SUM	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	EACH	EACH	NO.	LIN.FT.	NO.	LIN.FT.
SUPERSTRUCTURE					LUMP SUM							
END BENT NO. 1			LUMP SUM	20.4		2636	7		7	385		
BENT NO. 1				10.7		2136		8			8	600
END BENT NO. 2			LUMP SUM	20.4		2636	7		7	385		
TOTAL	LUMP SUM	1	LUMP SUM	51.5	LUMP SUM	7408	14	8	14	770	8	600

TOTAL BILL OF MATERIAL							
	PILE REDRIVES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS	
	EACH	LIN.FT.	TONS	SQ.YDS.	LUMP SUM	NO.	LIN.FT.
SUPERSTRUCTURE		210.5			LUMP SUM	22	1155.0
END BENT NO. 1			40	45			
BENT NO. 1							
END BENT NO. 2			20	25			
TOTAL	11	210.5	60	70	LUMP SUM	22	1155.0

PROJECT NO. **BP1-R002**  
**NORTHAMPTON** COUNTY  
 STATION: **13+68.00 -L-**

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**

**FOR BRIDGE OVER KIRBY'S CREEK ON DELOATCH MILL ROAD (SR 1358) BETWEEN NC 35 AND US 158**



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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

DRAWN BY : E.C. PHELPS DATE : 08/2023  
 CHECKED BY : K.F. SMIACH DATE : 08/2023  
 DESIGN ENGINEER OF RECORD: E.C. PHELPS DATE : 08/2023



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 (γLL)	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 (γLL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD	HL-93 (INVENTORY)	N/A	①	1.055	--	1.75	0.275	1.23	55'	EL	27	0.523	1.23	55'	EL	5.4	0.80	0.275	1.05	55'	EL	27		
	HL-93 (OPERATING)	N/A		1.591	--	1.35	0.275	1.59	55'	EL	27	0.523	1.59	55'	EL	5.4	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.322	47.585	1.75	0.275	1.54	55'	EL	27	0.523	1.47	55'	EL	5.4	0.80	0.275	1.32	55'	EL	27		
	HS-20 (OPERATING)	36.000		1.900	68.396	1.35	0.275	1.99	55'	EL	27	0.523	1.90	55'	EL	5.4	N/A	--	--	--	--	--		
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH		2.776	37.476	1.4	0.275	4.04	55'	EL	27	0.523	4.17	55'	EL	5.4	0.80	0.275	2.78	55'	EL	27		
		SNGARBS2	20.000		2.155	43.095	1.4	0.275	3.14	55'	EL	27	0.523	3.02	55'	EL	5.4	0.80	0.275	2.15	55'	EL	27	
		SNAGRIS2	22.000		2.079	45.734	1.4	0.275	3.03	55'	EL	27	0.523	2.83	55'	EL	5.4	0.80	0.275	2.08	55'	EL	27	
		SNCOTTS3	27.250		1.384	37.708	1.4	0.275	2.01	55'	EL	27	0.523	2.09	55'	EL	5.4	0.80	0.275	1.38	55'	EL	27	
		SNAGRS4	34.925		1.189	41.527	1.4	0.275	1.73	55'	EL	27	0.523	1.77	55'	EL	5.4	0.80	0.275	1.19	55'	EL	27	
		SNS5A	35.550		1.160	41.255	1.4	0.275	1.69	55'	EL	27	0.523	1.82	55'	EL	5.4	0.80	0.275	1.16	55'	EL	27	
		SNS6A	39.950		1.079	43.102	1.4	0.275	1.57	55'	EL	27	0.523	1.68	55'	EL	5.4	0.80	0.275	1.08	55'	EL	27	
	SNS7B	42.000		1.028	43.175	1.4	0.275	1.50	55'	EL	27	0.523	1.67	55'	EL	5.4	0.80	0.275	1.03	55'	EL	27		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.320	43.556	1.4	0.275	1.92	55'	EL	27	0.523	1.98	55'	EL	5.4	0.80	0.275	1.32	55'	EL	27	
		TNT4A	33.075		1.330	43.979	1.4	0.275	1.94	55'	EL	27	0.523	1.91	55'	EL	5.4	0.80	0.275	1.33	55'	EL	27	
		TNT6A	41.600		1.101	45.811	1.4	0.275	1.60	55'	EL	27	0.523	1.83	55'	EL	5.4	0.80	0.275	1.10	55'	EL	27	
		TNT7A	42.000		1.114	46.804	1.4	0.275	1.62	55'	EL	27	0.523	1.71	55'	EL	5.4	0.80	0.275	1.11	55'	EL	27	
		TNT7B	42.000		1.163	48.848	1.4	0.275	1.69	55'	EL	27	0.523	1.62	55'	EL	5.4	0.80	0.275	1.16	55'	EL	27	
		TNAGRIT4	43.000		1.101	47.330	1.4	0.275	1.60	55'	EL	27	0.523	1.56	55'	EL	5.4	0.80	0.275	1.10	55'	EL	27	
TNAGT5A		45.000		1.031	46.405	1.4	0.275	1.50	55'	EL	27	0.523	1.58	55'	EL	5.4	0.80	0.275	1.03	55'	EL	27		
TNAGT5B	45.000	③	1.013	45.582	1.4	0.275	1.47	55'	EL	27	0.523	1.48	55'	EL	5.4	0.80	0.275	1.01	55'	EL	27			
EMERGENCY VEHICLE (EV)	EV2	28.750		1.617	46.483	1.3	0.275	2.37	55'	EL	27	0.523	2.27	55'	EL	5.4	0.80	0.275	1.62	55'	EL	27		
	EV3	43.000	④	1.049	45.107	1.3	0.275	1.54	55'	EL	27	0.523	1.53	55'	EL	5.4	0.80	0.275	1.05	55'	EL	27		

LOAD FACTORS:

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

NOTES:

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

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

# CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

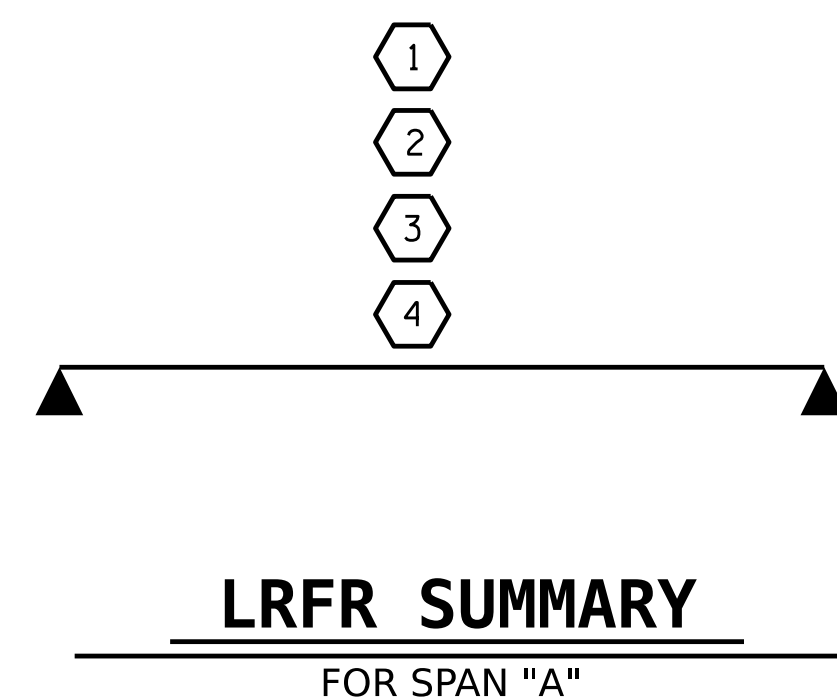
③ LEGAL LOAD RATING \*\*

④ EMERGENCY VEHICLE LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



PROJECT NO. BP1-R002

NORTHAMPTON COUNTY

STATION: 13+68.00 -L-

SHEET 1 OF 2



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

STANDARD  
LRFR SUMMARY FOR  
55' CORED SLAB UNIT  
90° SKEW  
NON-INTERSTATE TRAFFIC

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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 (γLL)	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 (γLL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD	HL-93 (INVENTORY)	N/A	①	1.394	--	1.75	0.276	1.57	50'	EL	24.5	0.531	1.39	50'	EL	2.45	0.80	0.276	1.44	50'	EL	24.5		
	HL-93 (OPERATING)	N/A		1.807	--	1.35	0.276	2.03	50'	EL	24.5	0.531	1.81	50'	EL	2.45	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.667	60.007	1.75	0.276	1.95	50'	EL	24.5	0.531	1.67	50'	EL	2.45	0.80	0.276	1.79	50'	EL	24.5		
	HS-20 (OPERATING)	36.000		2.161	77.787	1.35	0.276	2.52	50'	EL	24.5	0.531	2.16	50'	EL	2.45	N/A	--	--	--	--	--		
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH		3.635	49.079	1.4	0.276	4.95	50'	EL	24.5	0.531	4.70	50'	EL	2.45	0.80	0.276	3.64	50'	EL	24.5		
		SNGARBS2	20.000		2.871	57.420	1.4	0.276	3.91	50'	EL	24.5	0.531	3.42	50'	EL	2.45	0.80	0.276	2.87	50'	EL	24.5	
		SNAGRIS2	22.000		2.778	61.109	1.4	0.276	3.78	50'	EL	19.6	0.531	3.21	50'	EL	2.45	0.80	0.276	2.78	50'	EL	24.5	
		SNCOTTS3	27.250		1.814	49.418	1.4	0.276	2.47	50'	EL	24.5	0.531	2.36	50'	EL	2.45	0.80	0.276	1.81	50'	EL	24.5	
		SNAGRS4	34.925		1.577	55.063	1.4	0.276	2.15	50'	EL	24.5	0.531	2.01	50'	EL	2.45	0.80	0.276	1.58	50'	EL	24.5	
		SNS5A	35.550		1.537	54.657	1.4	0.276	2.09	50'	EL	24.5	0.531	2.07	50'	EL	2.45	0.80	0.276	1.54	50'	EL	24.5	
		SNS6A	39.950		1.438	57.430	1.4	0.276	1.96	50'	EL	24.5	0.531	1.91	50'	EL	2.45	0.80	0.276	1.44	50'	EL	24.5	
	SNS7B	42.000		1.370	57.540	1.4	0.276	1.87	50'	EL	24.5	0.531	1.91	50'	EL	2.45	0.80	0.276	1.37	50'	EL	24.5		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.761	58.118	1.4	0.276	2.40	50'	EL	24.5	0.531	2.25	50'	EL	2.45	0.80	0.276	1.76	50'	EL	24.5	
		TNT4A	33.075		1.777	58.759	1.4	0.276	2.42	50'	EL	24.5	0.531	2.17	50'	EL	2.45	0.80	0.276	1.78	50'	EL	24.5	
		TNT6A	41.600		1.480	61.558	1.4	0.276	2.01	50'	EL	24.5	0.531	2.08	50'	EL	2.45	0.80	0.276	1.48	50'	EL	24.5	
		TNT7A	42.000		1.502	63.087	1.4	0.276	2.05	50'	EL	24.5	0.531	1.94	50'	EL	2.45	0.80	0.276	1.50	50'	EL	24.5	
		TNT7B	42.000		1.566	65.773	1.4	0.276	2.13	50'	EL	24.5	0.531	1.84	50'	EL	2.45	0.80	0.276	1.57	50'	EL	24.5	
		TNAGRIT4	43.000		1.486	63.902	1.4	0.276	2.02	50'	EL	24.5	0.531	1.77	50'	EL	2.45	0.80	0.276	1.49	50'	EL	24.5	
TNAGT5A		45.000		1.388	62.470	1.4	0.276	1.89	50'	EL	24.5	0.531	1.80	50'	EL	2.45	0.80	0.276	1.39	50'	EL	24.5		
TNAGT5B	45.000		③	1.360	61.206	1.4	0.276	1.85	50'	EL	24.5	0.531	1.68	50'	EL	2.45	0.80	0.276	1.36	50'	EL	24.5		
EMERGENCY VEHICLE (EV)	EV2	28.750		2.154	61.929	1.3	0.276	2.97	50'	EL	24.5	0.531	2.50	50'	EL	5.50	0.80	0.276	2.15	50'	EL	24.5		
	EV3	43.000		④	59.852	1.3	0.276	1.92	50'	EL	24.5	0.531	1.69	50'	EL	5.50	0.80	0.276	1.39	50'	EL	24.5		

LOAD FACTORS:

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

NOTES:

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

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

# CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

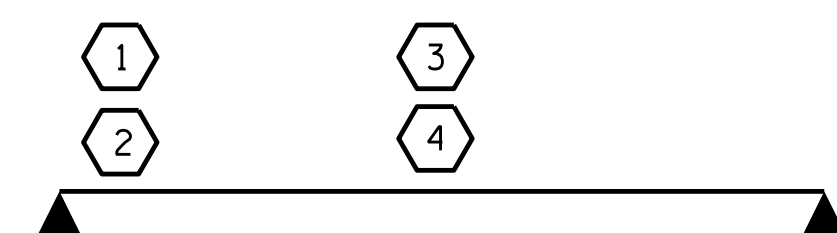
③ LEGAL LOAD RATING \*\*

④ EMERGENCY VEHICLE LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

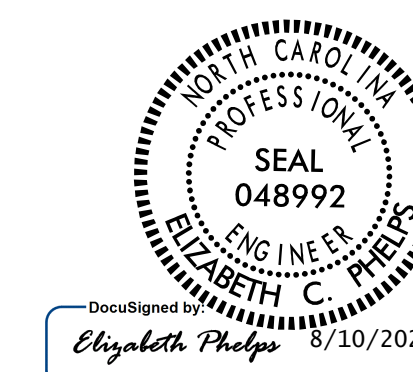
FOR SPAN "B"

PROJECT NO. BP1-R002

NORTHAMPTON COUNTY

STATION: 13+68.00 -L-

SHEET 2 OF 2



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

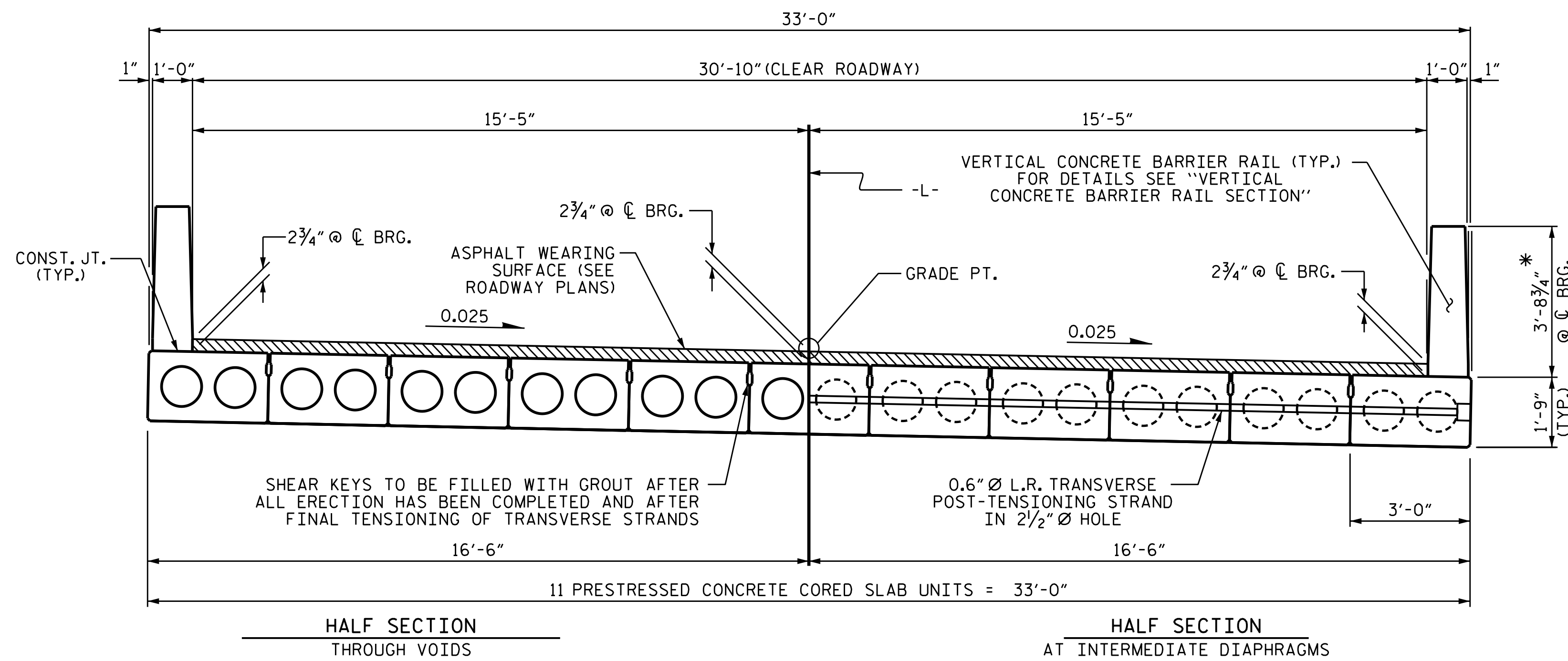
STANDARD  
LRFR SUMMARY FOR  
50' CORED SLAB UNIT  
90° SKEW  
NON-INTERSTATE TRAFFIC

DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED

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

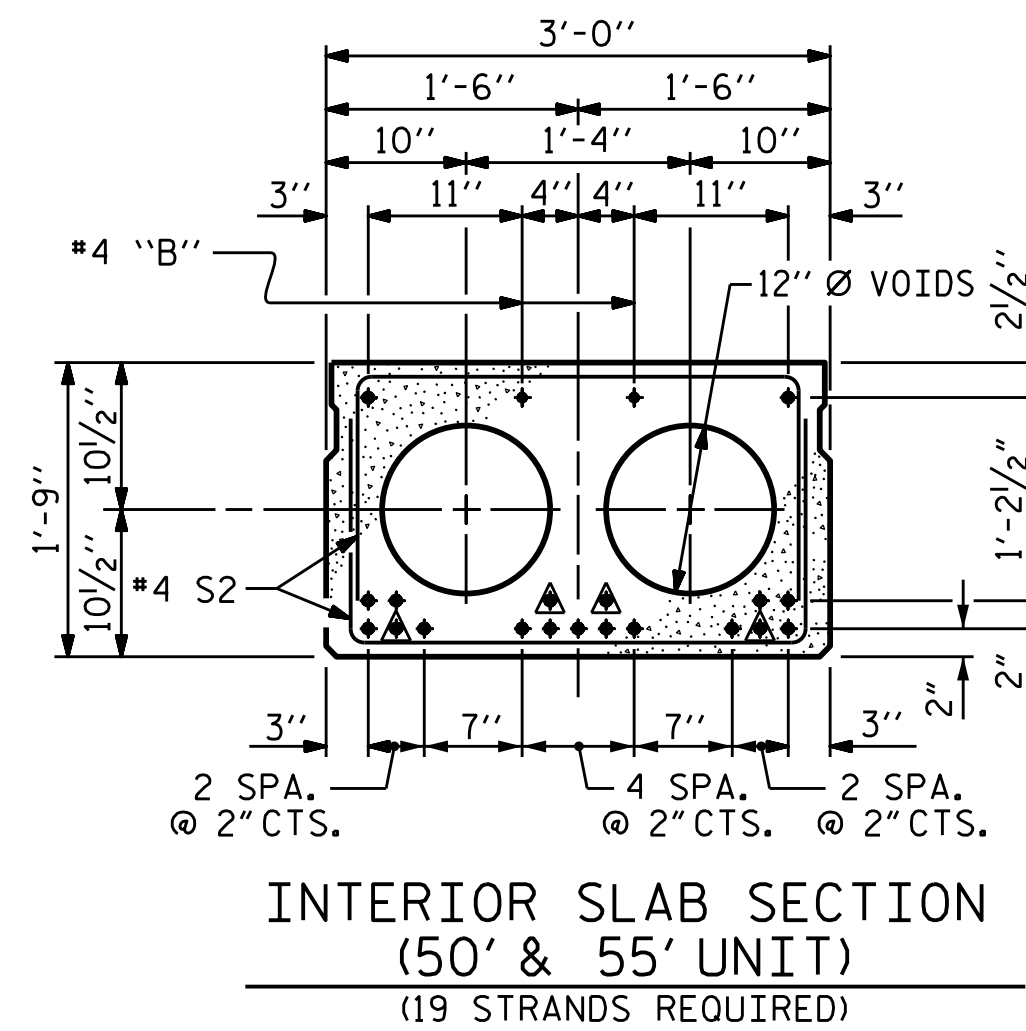
S-5  
TOTAL SHEETS  
19



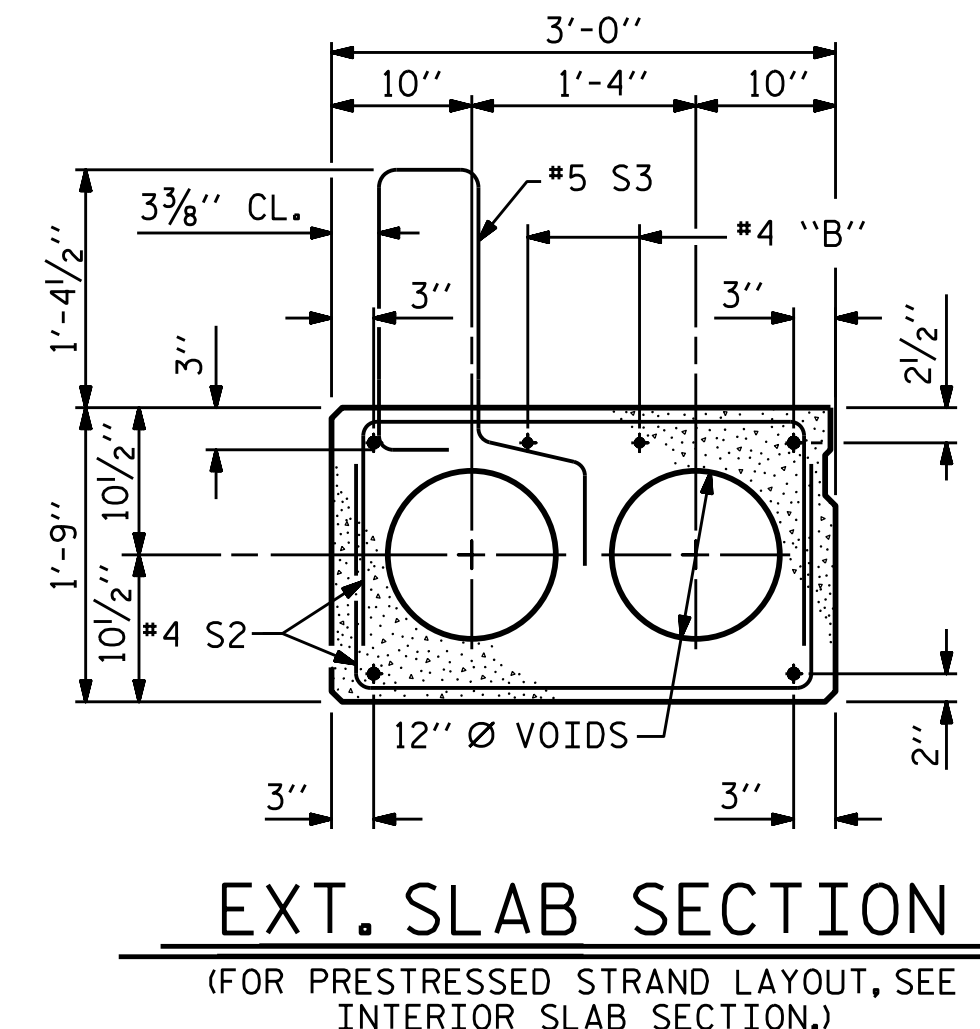


### TYPICAL SECTION

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



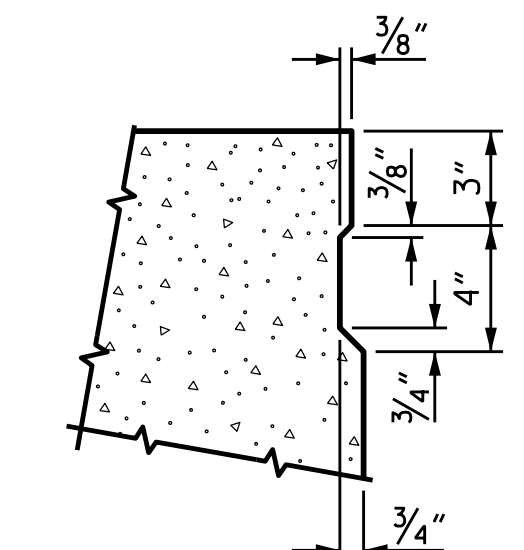
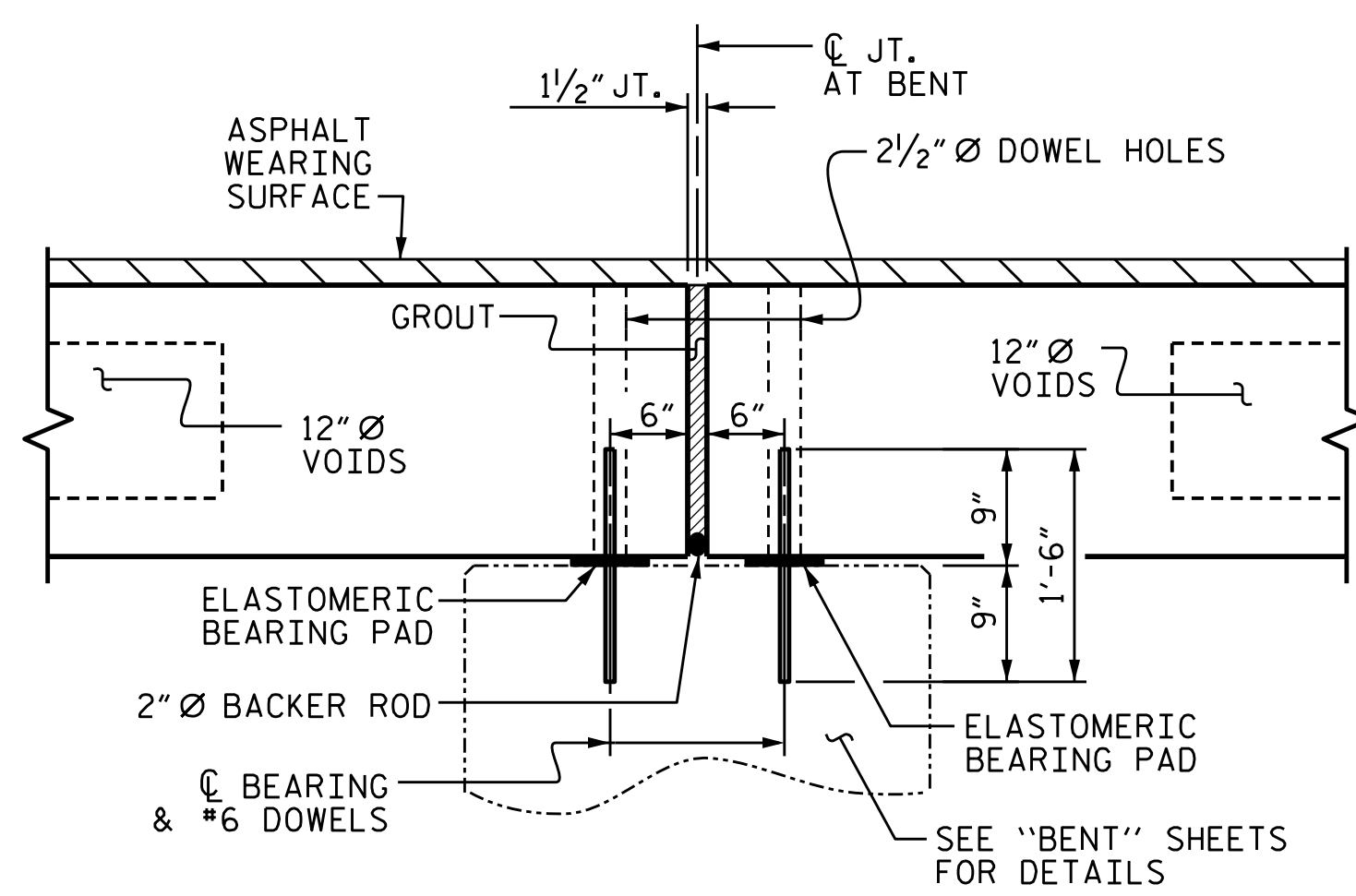
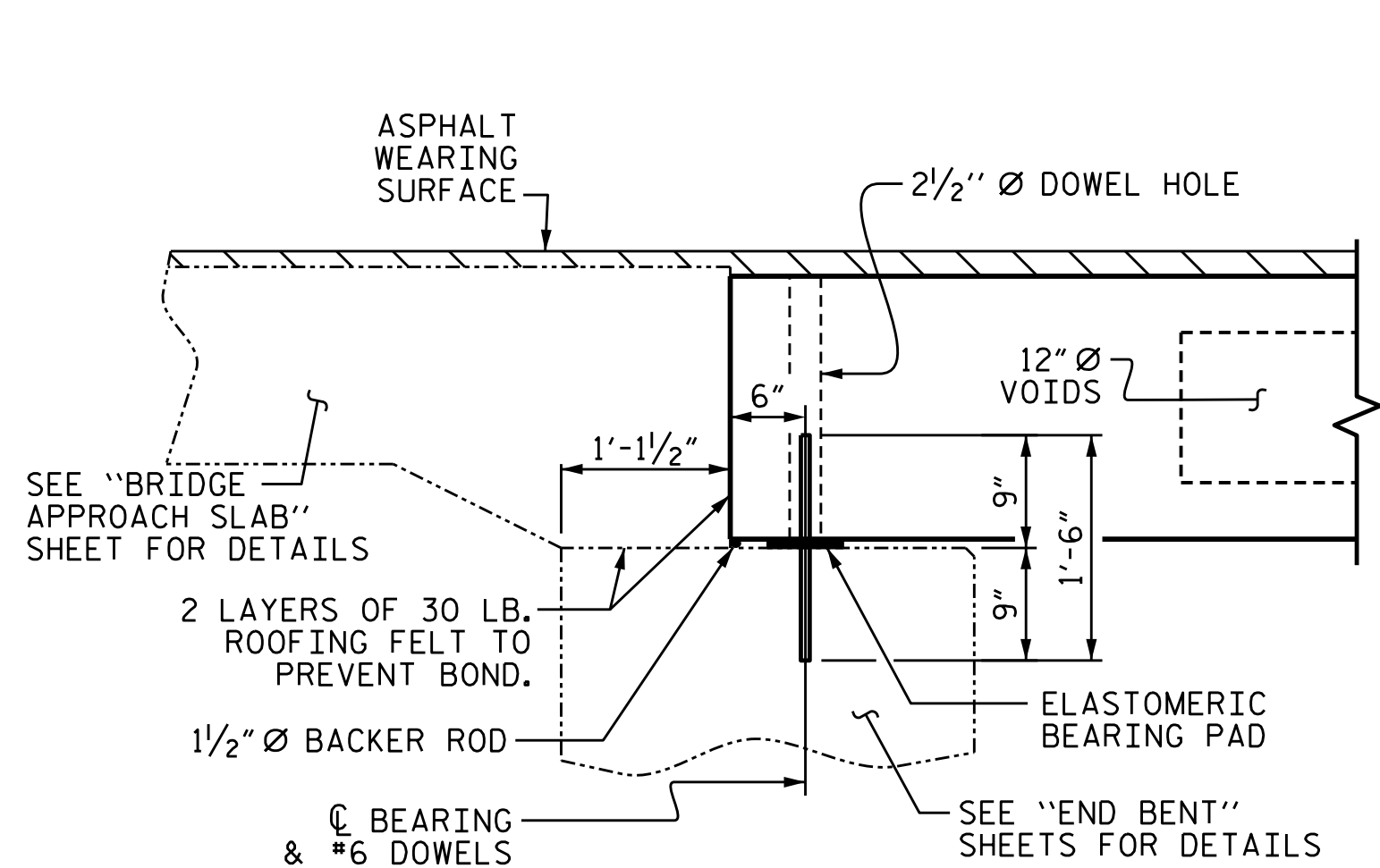
### 0.6" Ø LOW RELAXATION STRAND LAYOUT



### FIXED END

### FIXED END

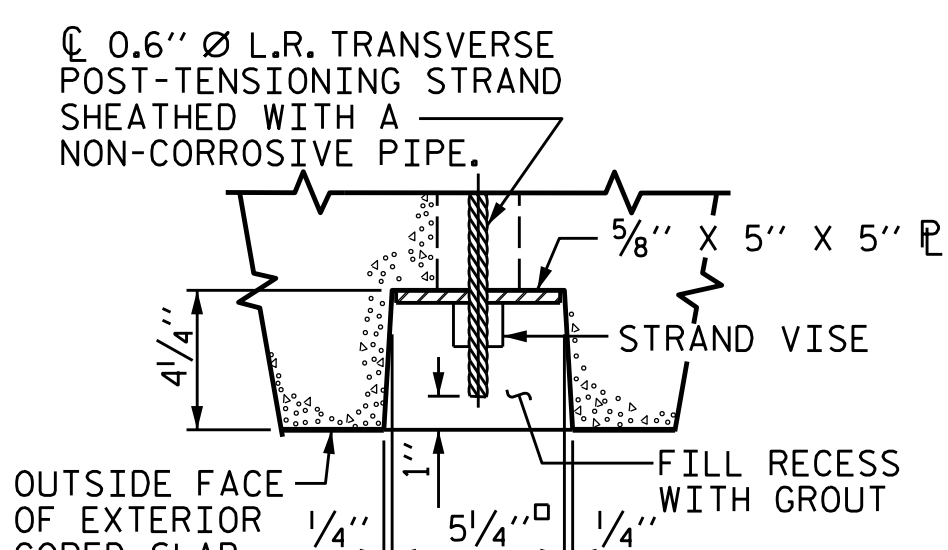
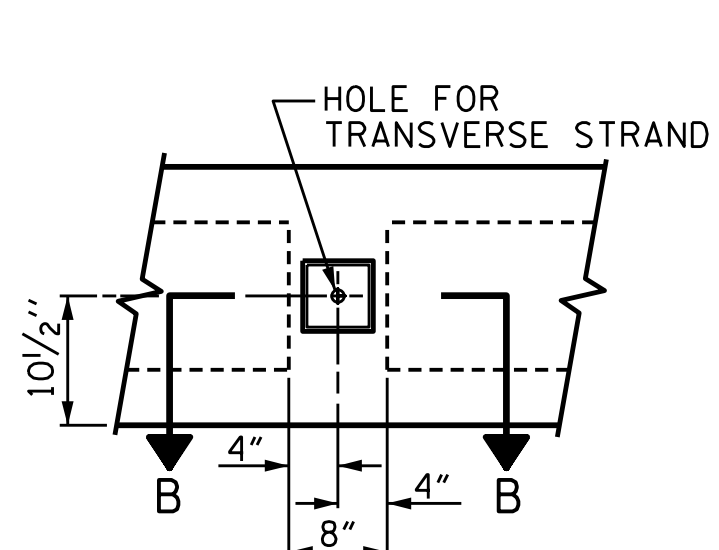
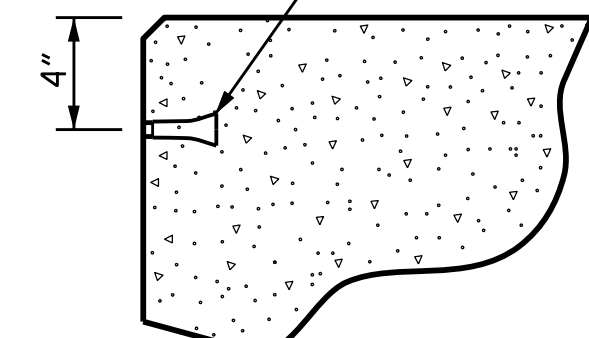
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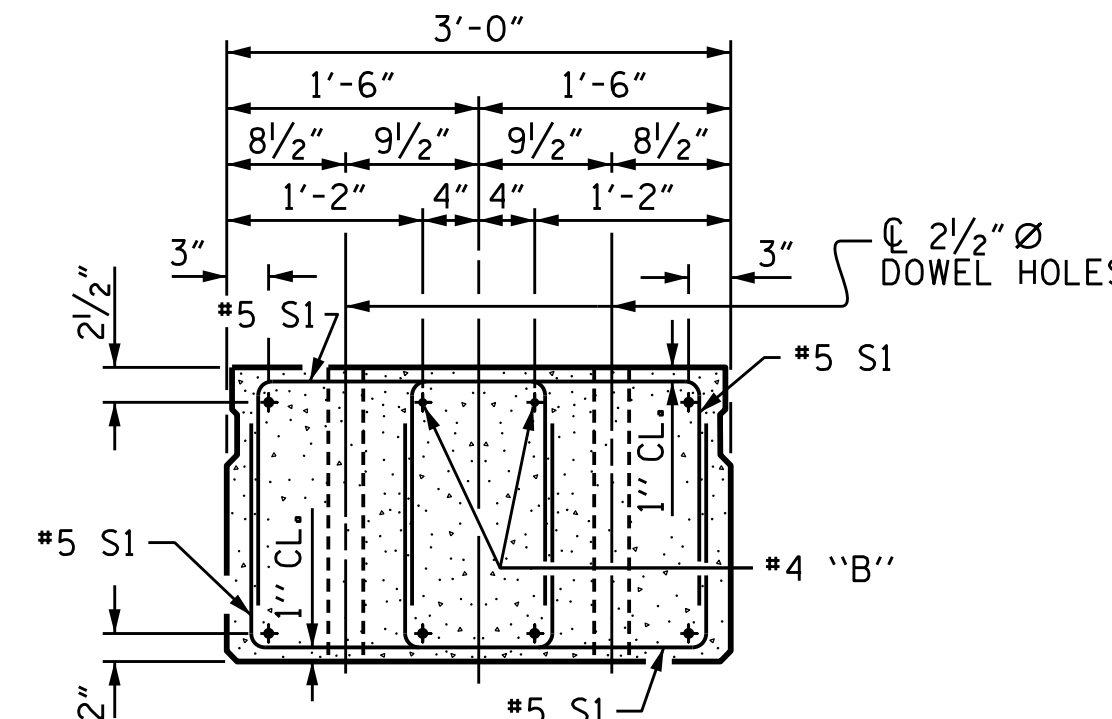
### DEBONDING LEGEND

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

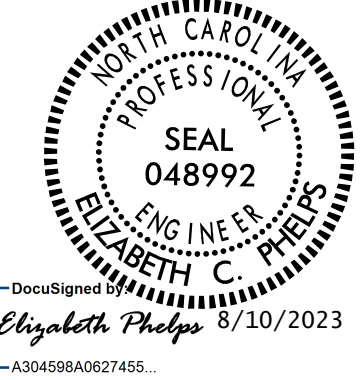
PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8" SIZE TO BE DETERMINED BY CONTRACTOR.



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



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



PROJECT NO. **BP1-R002**  
**NORTHAMPTON** COUNTY  
 STATION: **13+68.00 -L-**  
 SHEET 1 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

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

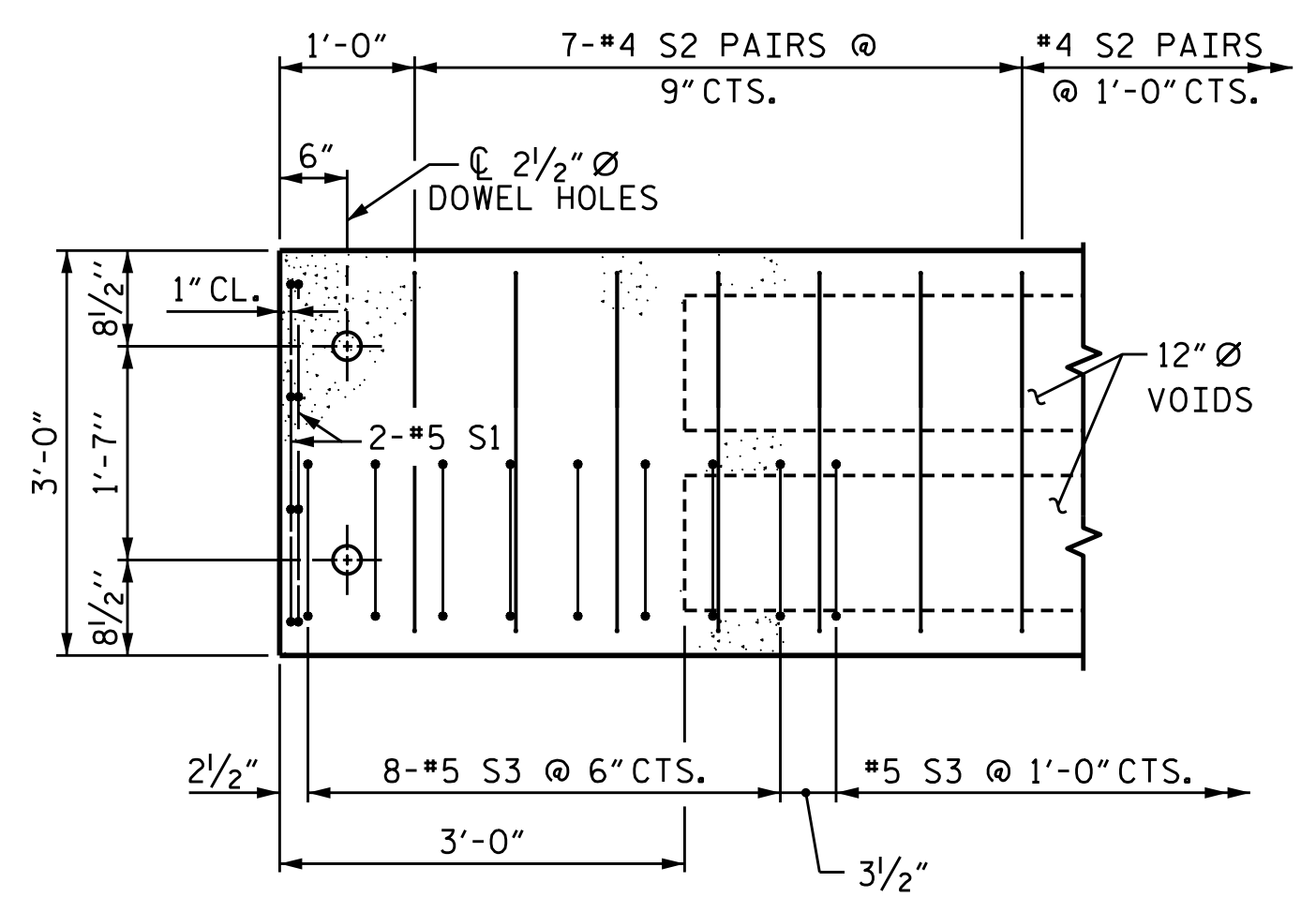
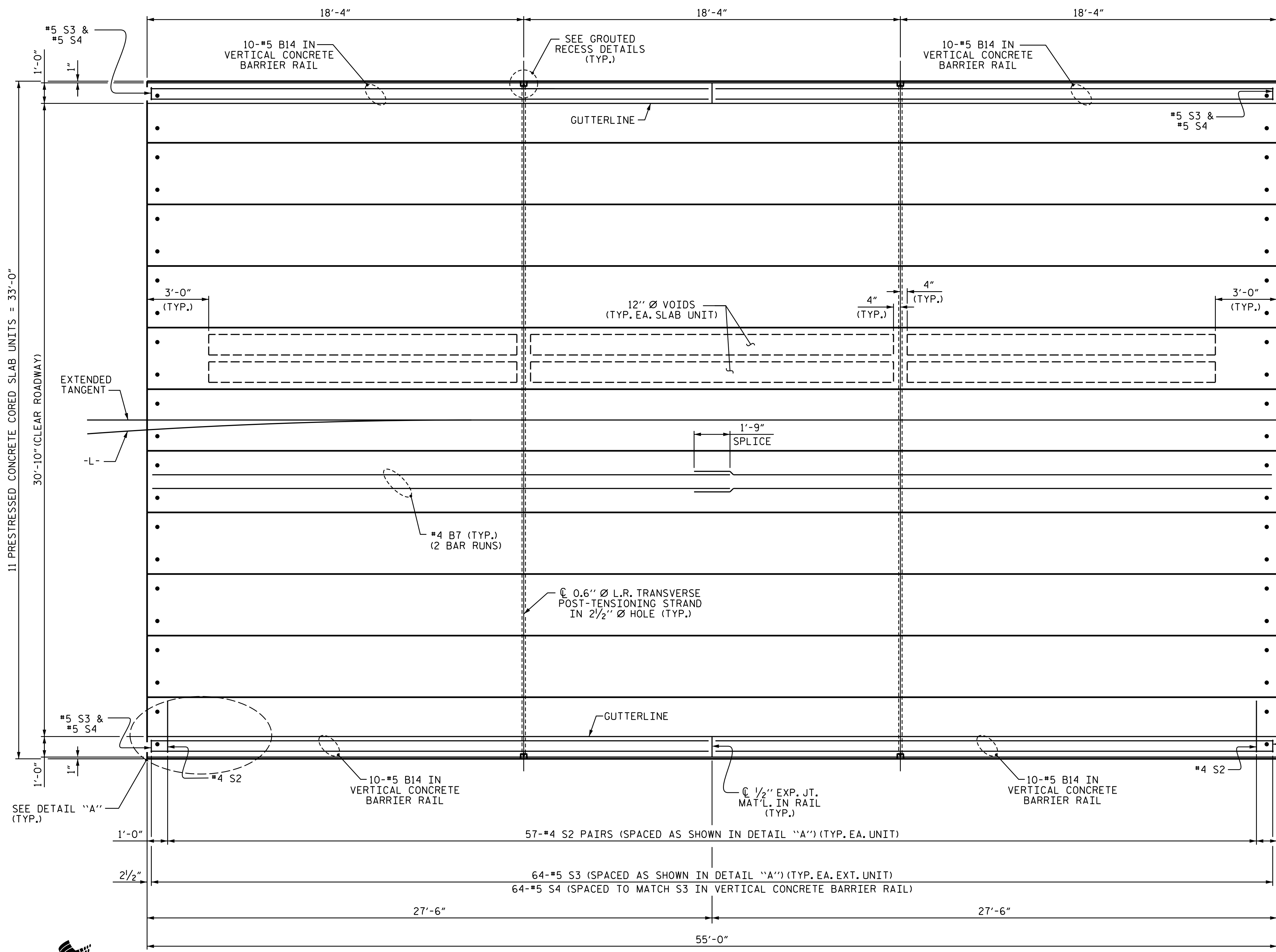
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S-6  
TOTAL SHEETS  
19

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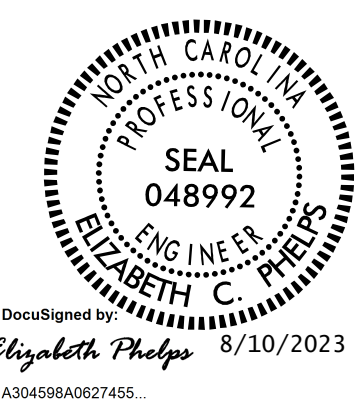
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**DETAIL "A"**  
 (TYPICAL EACH END OF UNIT)  
 NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

**PLAN OF UNIT**

PROJECT NO. **BP1-R002**  
**NORTHAMPTON** COUNTY  
 STATION: **13+68.00 -L-**  
 SHEET 2 OF 5



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

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

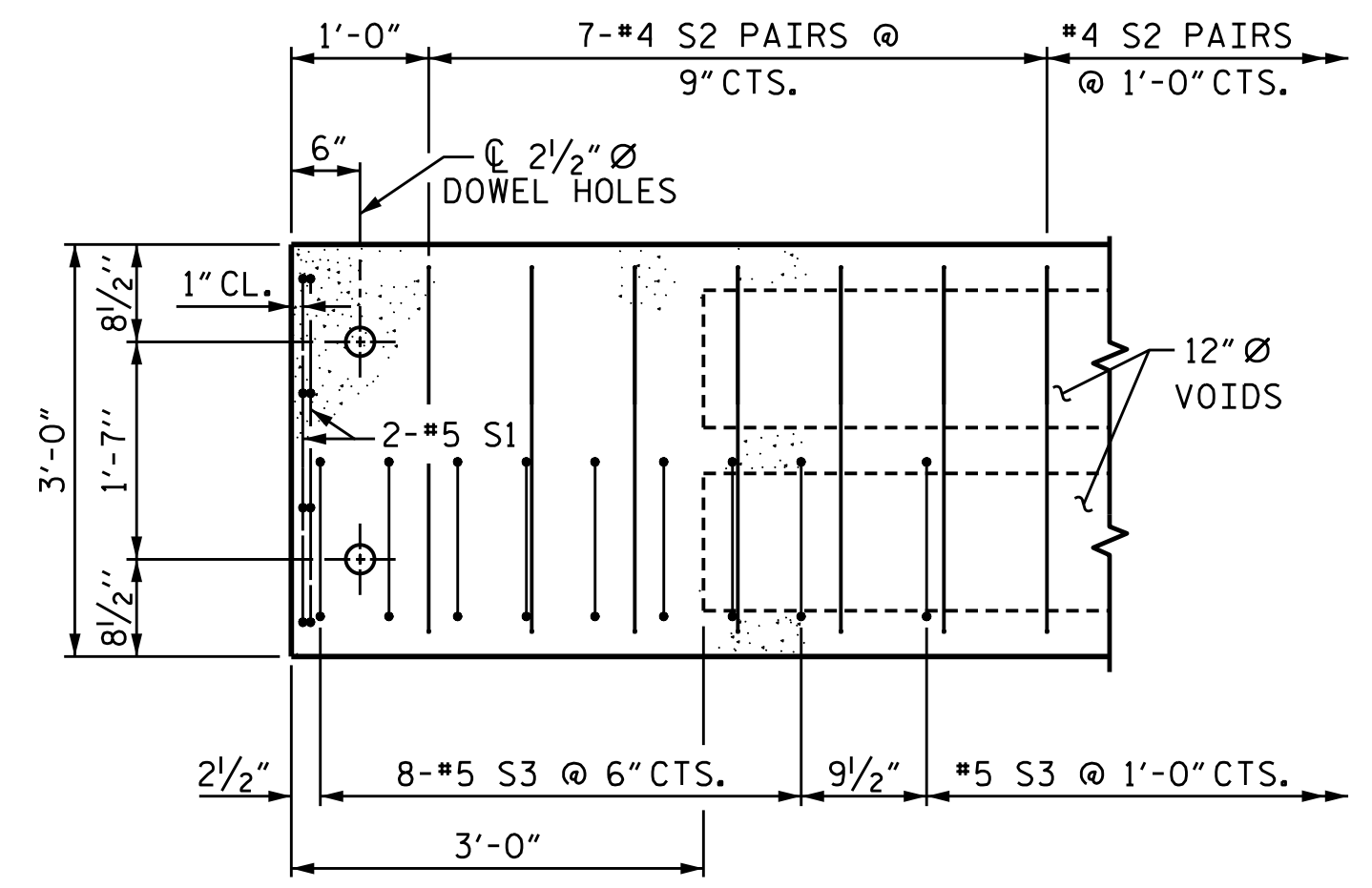
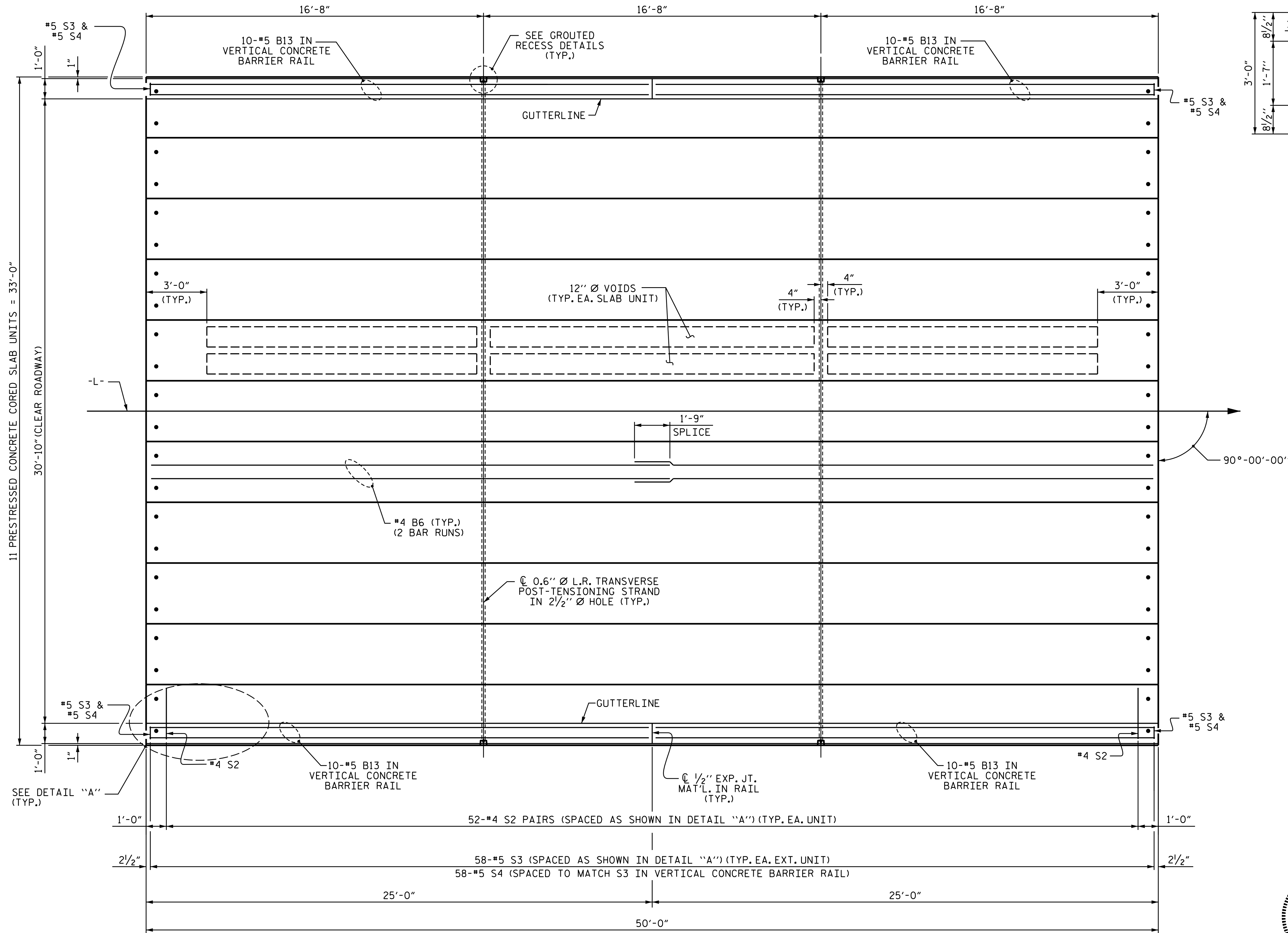
**vhb**  
 VHB Engineering NC, P.C. (C-3705)  
 940 Main Campus Drive, Suite 500  
 Raleigh, NC 27606

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1			3			TOTAL SHEETS
2			4			19





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

**PLAN OF UNIT**

PROJECT NO. **BP1-R002**  
**NORTHAMPTON** COUNTY  
 STATION: **13+68.00 -L-**

SHEET 3 OF 5  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**SPAN B**  
**PLAN OF 50' UNIT**  
**30'-10" CLEAR ROADWAY**  
**90° SKEW**



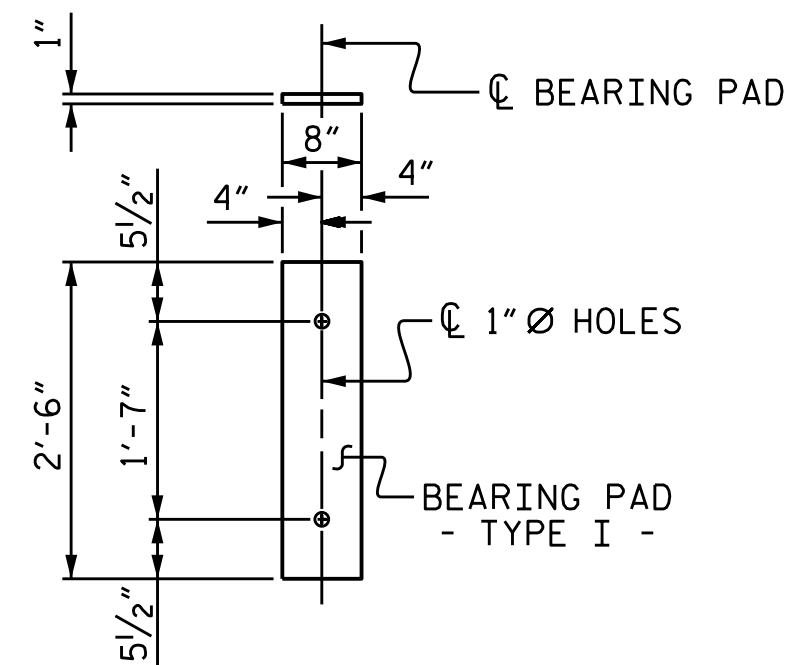
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1			3			TOTAL SHEETS
2			4			19

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 940 Main Campus Drive, Suite 500  
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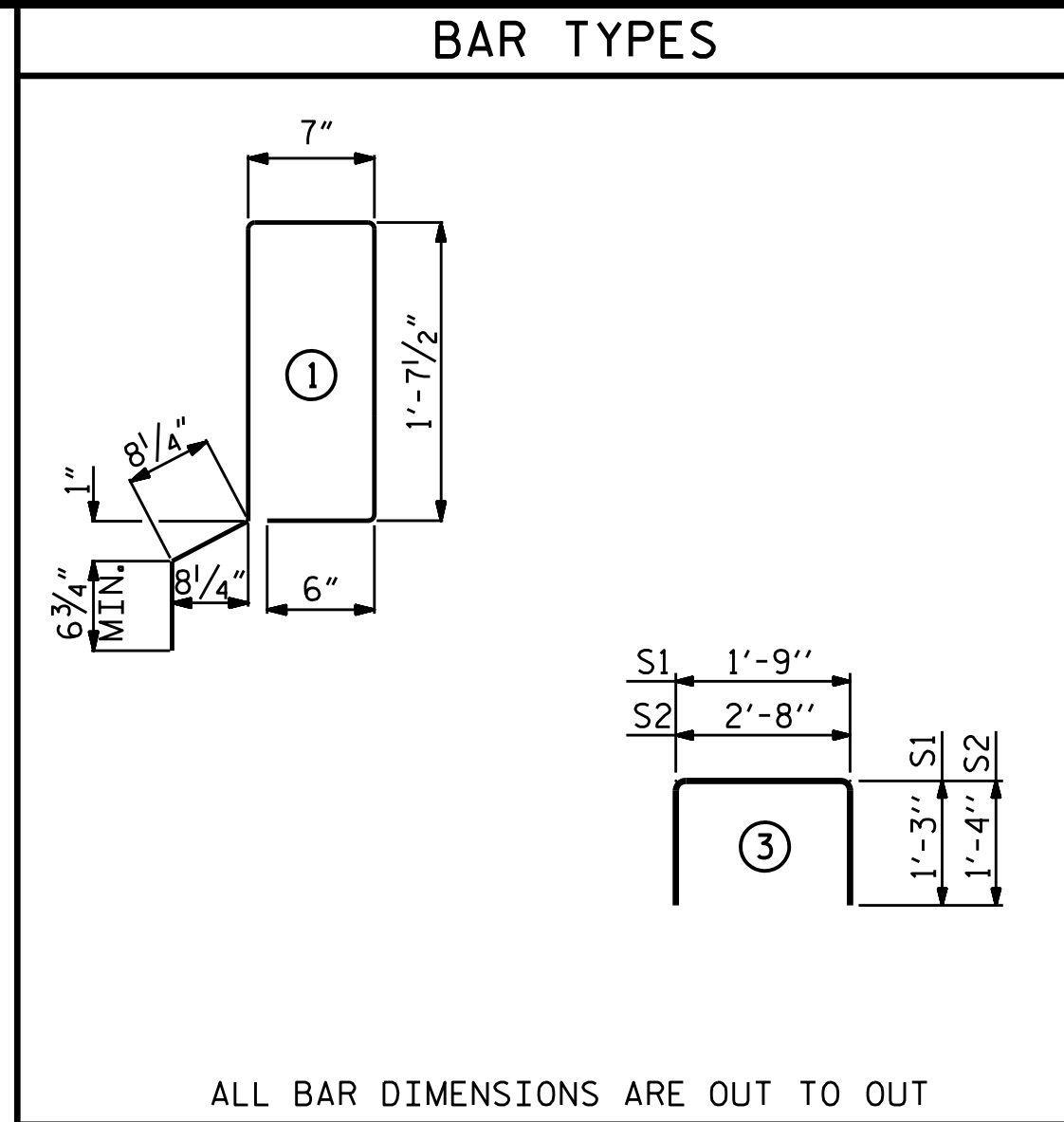
**FIXED END**  
(TYPE I - 44 REQ'D)

**ELASTOMERIC BEARING DETAILS**

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

CORED SLABS REQUIRED			
50' UNIT	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	50'-0"	100'-0"
INTERIOR C.S.	9	50'-0"	450'-0"
TOTAL	11	-	550'-0"

CORED SLABS REQUIRED			
55' UNIT	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	55'-0"	110'-0"
INTERIOR C.S.	9	55'-0"	495'-0"
TOTAL	11	-	605'-0"



ALL BAR DIMENSIONS ARE OUT TO OUT

**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.

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

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.

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.

BILL OF MATERIAL FOR ONE 50' CORED SLAB UNIT							
				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B6	4	#4	STR	25'-9"	69	25'-9"	69
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	104	#4	3	5'-4"	371	5'-4"	371
*S3	58	#5	1	5'-7"	338		
REINFORCING STEEL				LBS.	475		475
* EPOXY COATED REINFORCING STEEL				LBS.	338		
6500 P.S.I. CONCRETE				CU. YDS.	7.1		7.1
0.6" Ø L.R. STRANDS				No.	19		19

DEAD LOAD DEFLECTION AND CAMBER	
50' & 55' CORED SLAB UNIT	3'-0" x 1'-9"
CAMBER (SLAB ALONE IN PLACE)	0.6" Ø L.R. STRAND
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1 1/2" ↓
FINAL CAMBER	3/8" ↓
	1/8" ↓

\*\* INCLUDES FUTURE WEARING SURFACE

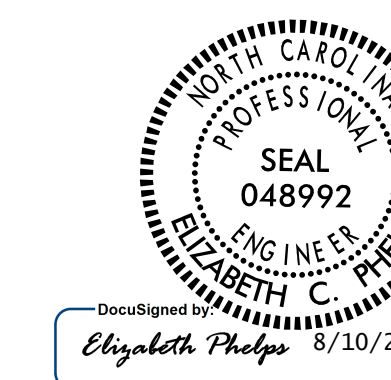
CONCRETE RELEASE STRENGTH	
UNIT	PSI
50' & 55' UNITS	4900

BILL OF MATERIAL FOR ONE 55' CORED SLAB UNIT							
				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B7	4	#4	STR	28'-3"	75	28'-3"	75
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	114	#4	3	5'-4"	406	5'-4"	406
*S3	64	#5	1	5'-7"	373		
REINFORCING STEEL				LBS.	516		516
* EPOXY COATED REINFORCING STEEL				LBS.	373		
6500 P.S.I. CONCRETE				CU. YDS.	7.8		7.8
0.6" Ø L.R. STRANDS				No.	19		19

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

PROJECT NO. **BP1-R002**  
**NORTHAMPTON** COUNTY  
 STATION: **13+68.00 -L-**

SHEET 4 OF 5



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



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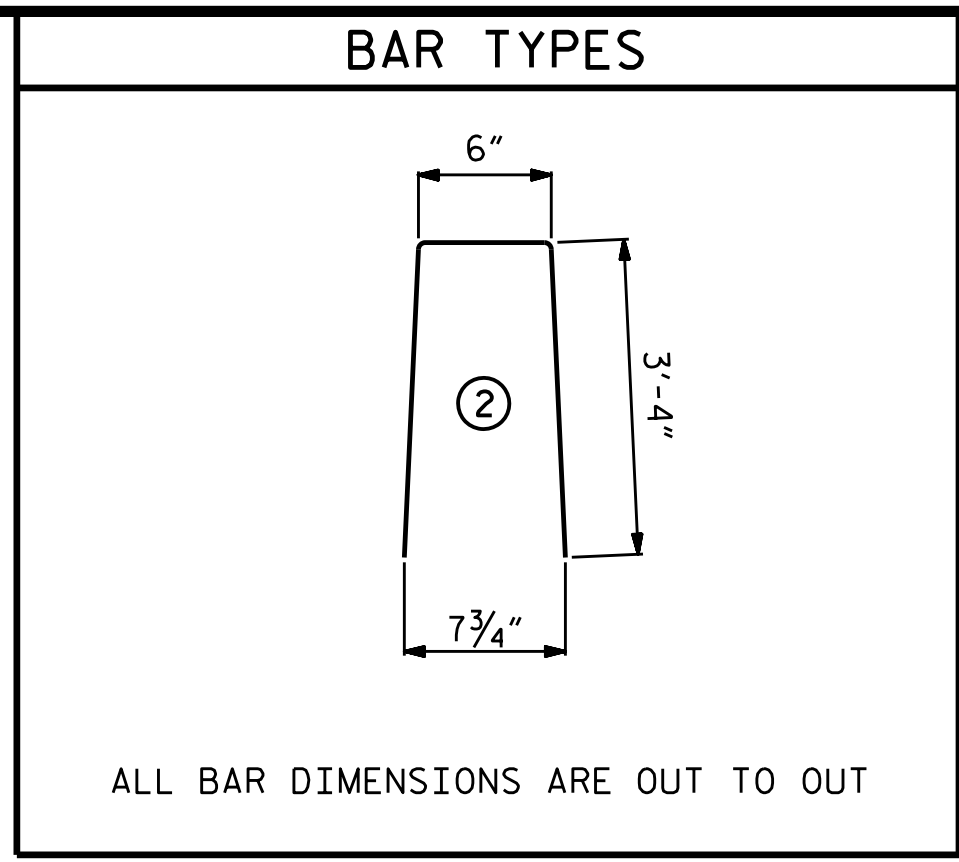
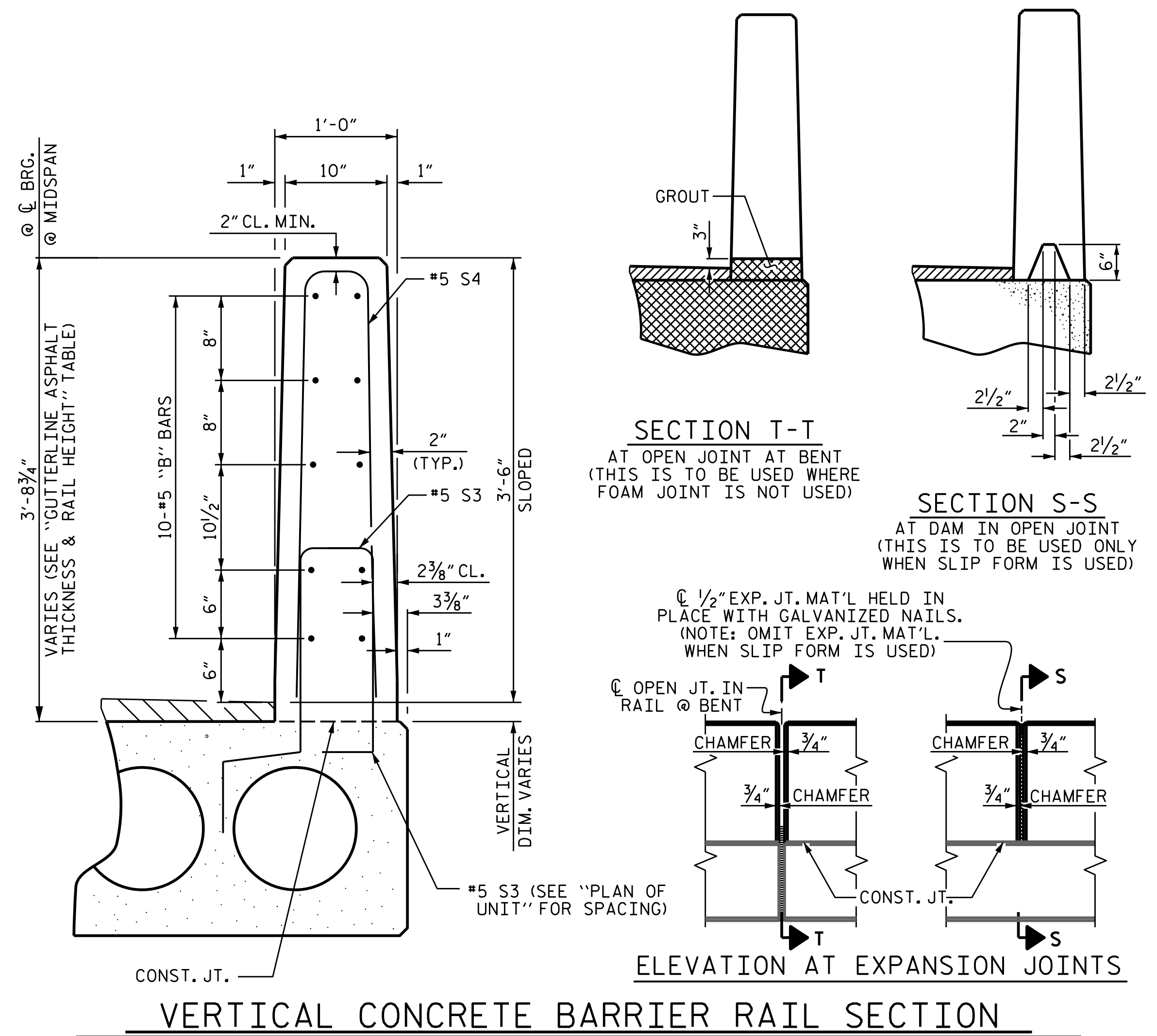
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2			4	

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8/26/21

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS	RAIL HEIGHT
	@ MID-SPAN	@ MID-SPAN
50' & 55' UNITS	1 5/8"	3'-7 5/8"



**NOTES**

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

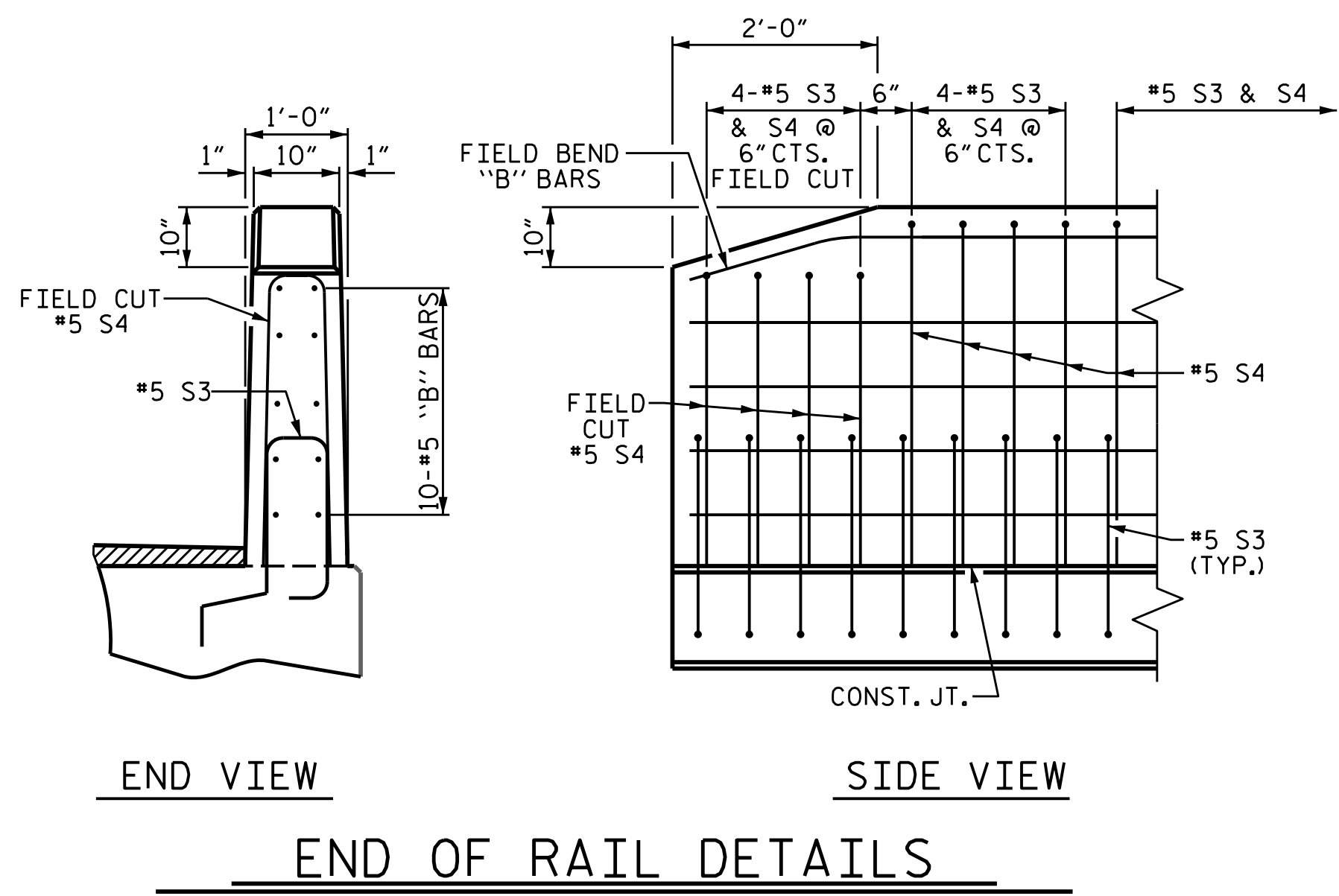
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED 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.

**BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL**

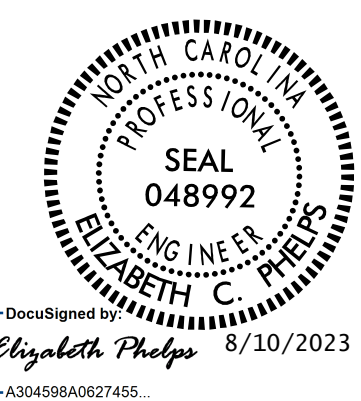
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
50' UNIT						
*B13	40	40	#5	STR	24'-7"	1026
*S4	116	116	#5	2	7'-2"	867
* EPOXY COATED REINFORCING STEEL					LBS.	1893
CLASS AA CONCRETE					CU.YDS.	12.8
TOTAL VERTICAL CONCRETE BARRIER RAIL					LN. FT.	100.25

**BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL**

BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
55' UNIT						
*B14	40	40	#5	STR	27'-1"	1130
*S4	128	128	#5	2	7'-2"	957
* EPOXY COATED REINFORCING STEEL					LBS.	2087
CLASS AA CONCRETE					CU.YDS.	14.1
TOTAL VERTICAL CONCRETE BARRIER RAIL					LN. FT.	110.25



PROJECT NO. **BP1-R002**  
**NORTHAMPTON** COUNTY  
 STATION: **13+68.00 -L-**  
 SHEET 5 OF 5



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

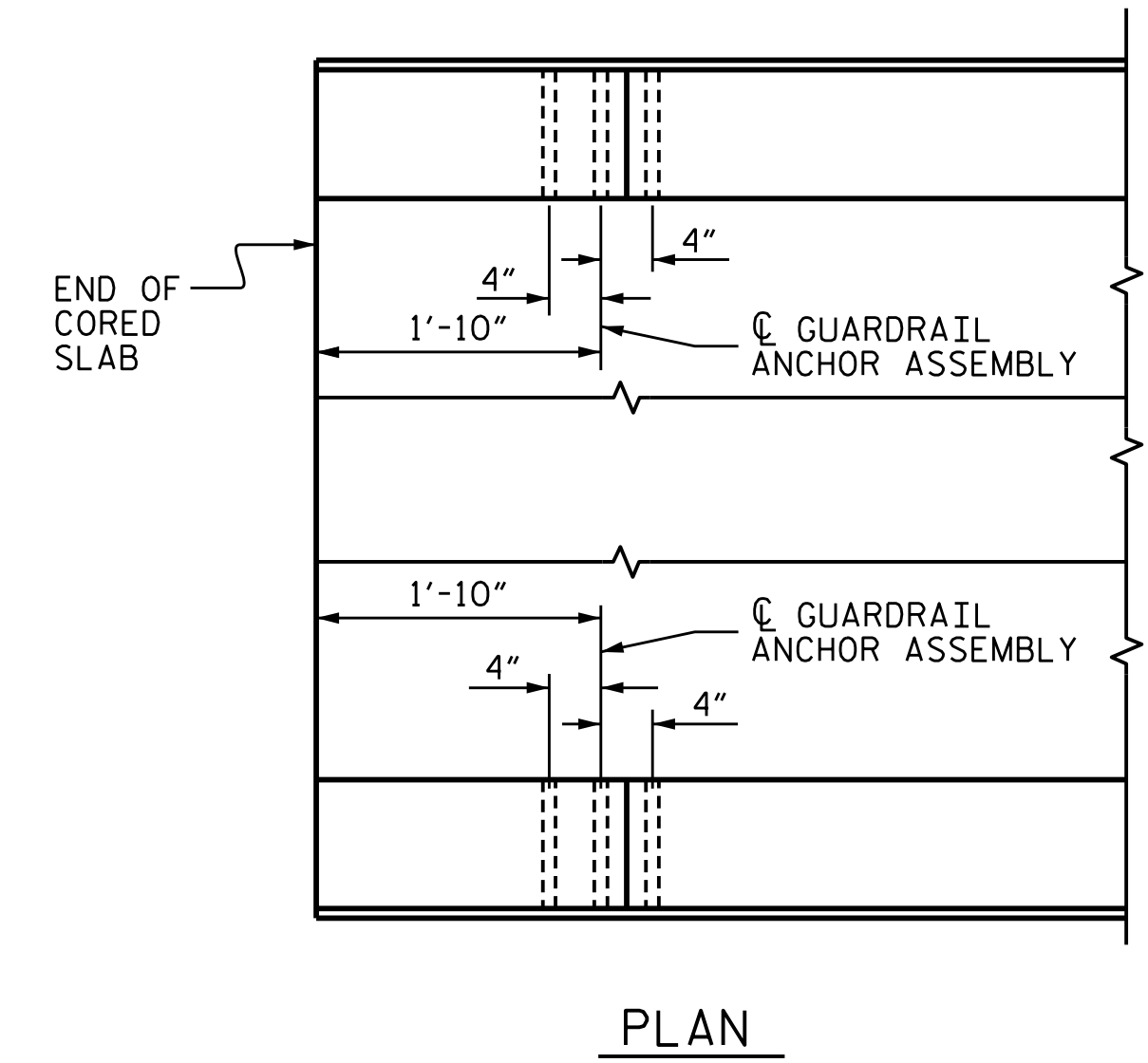
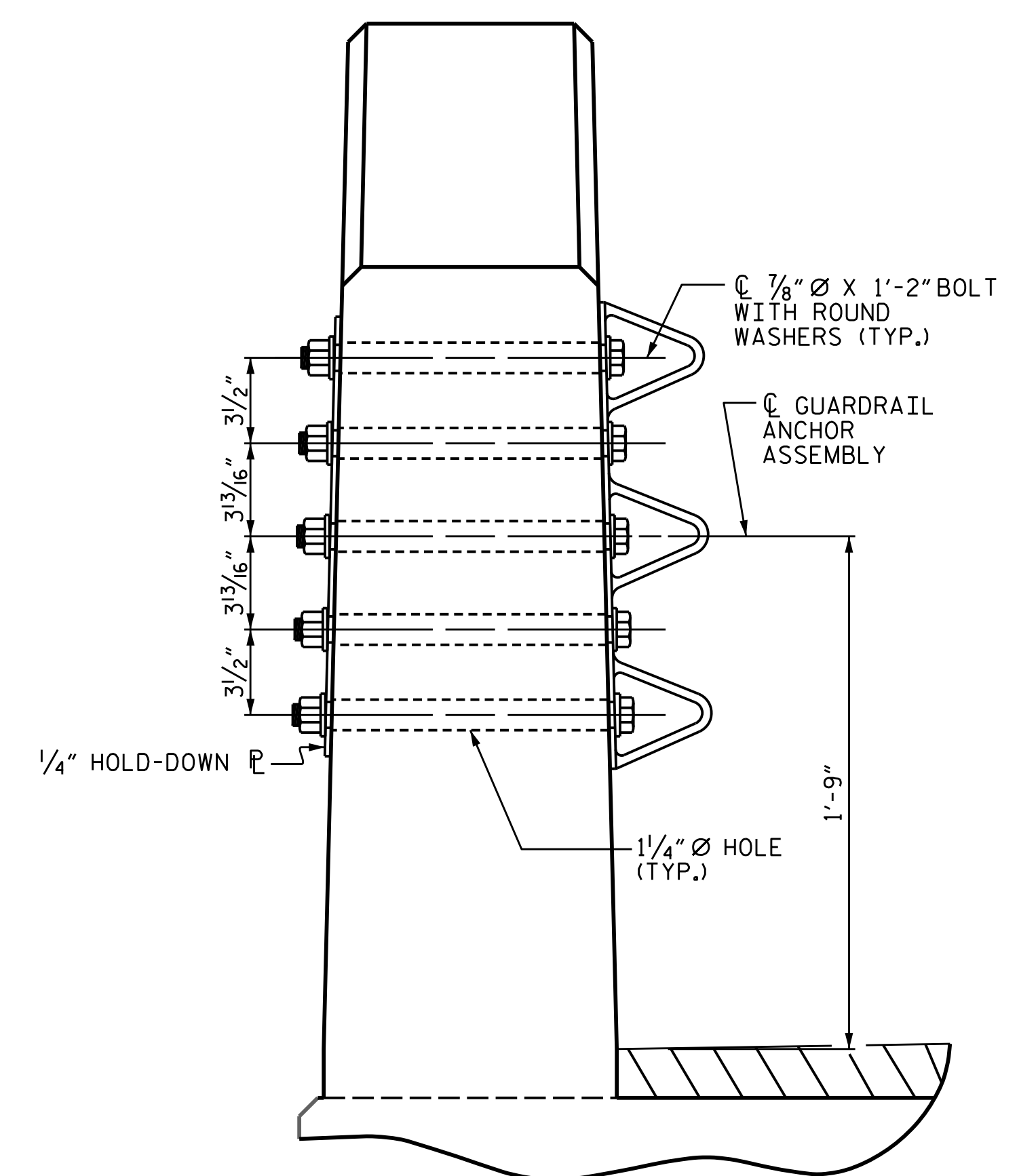
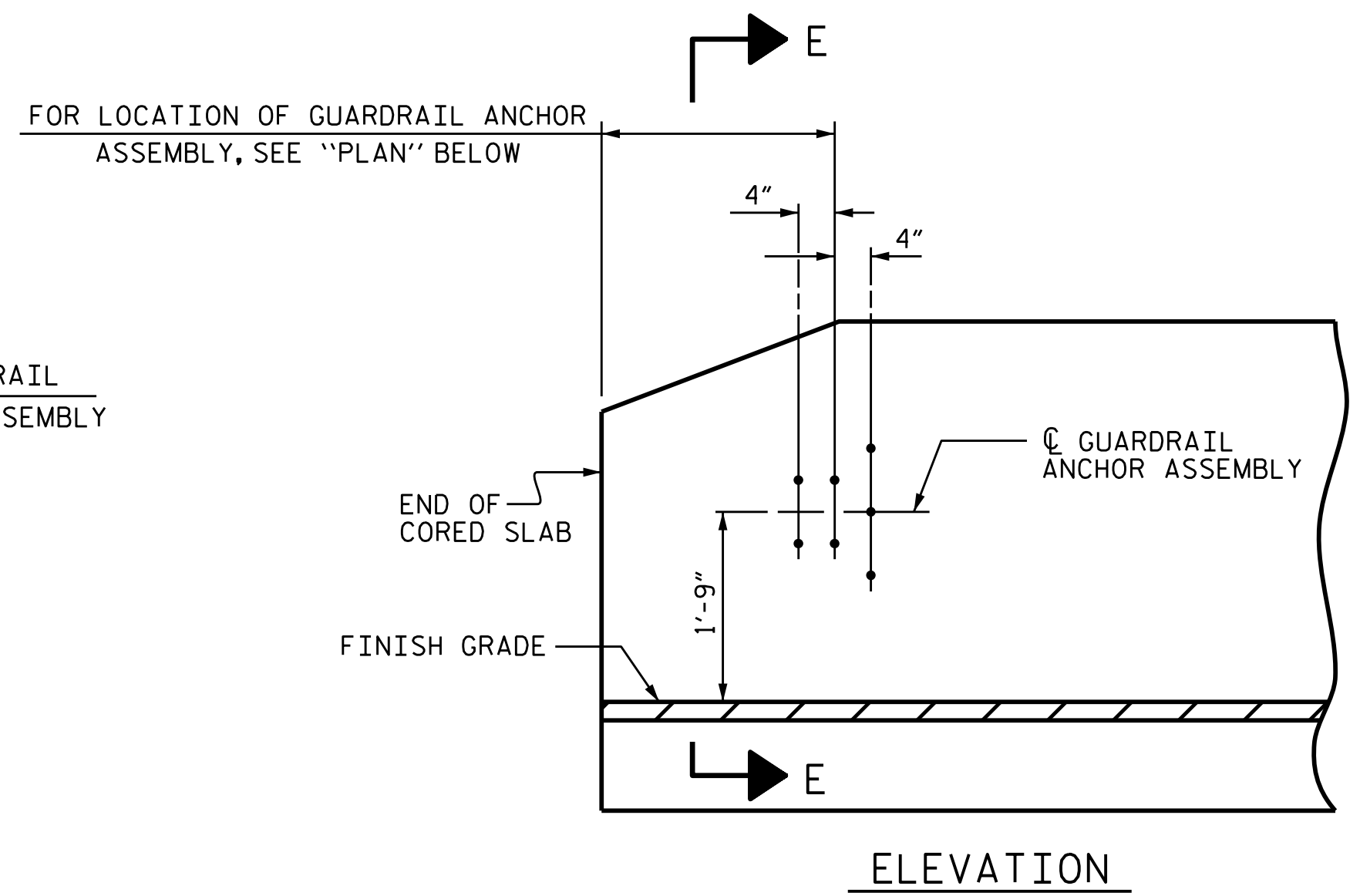
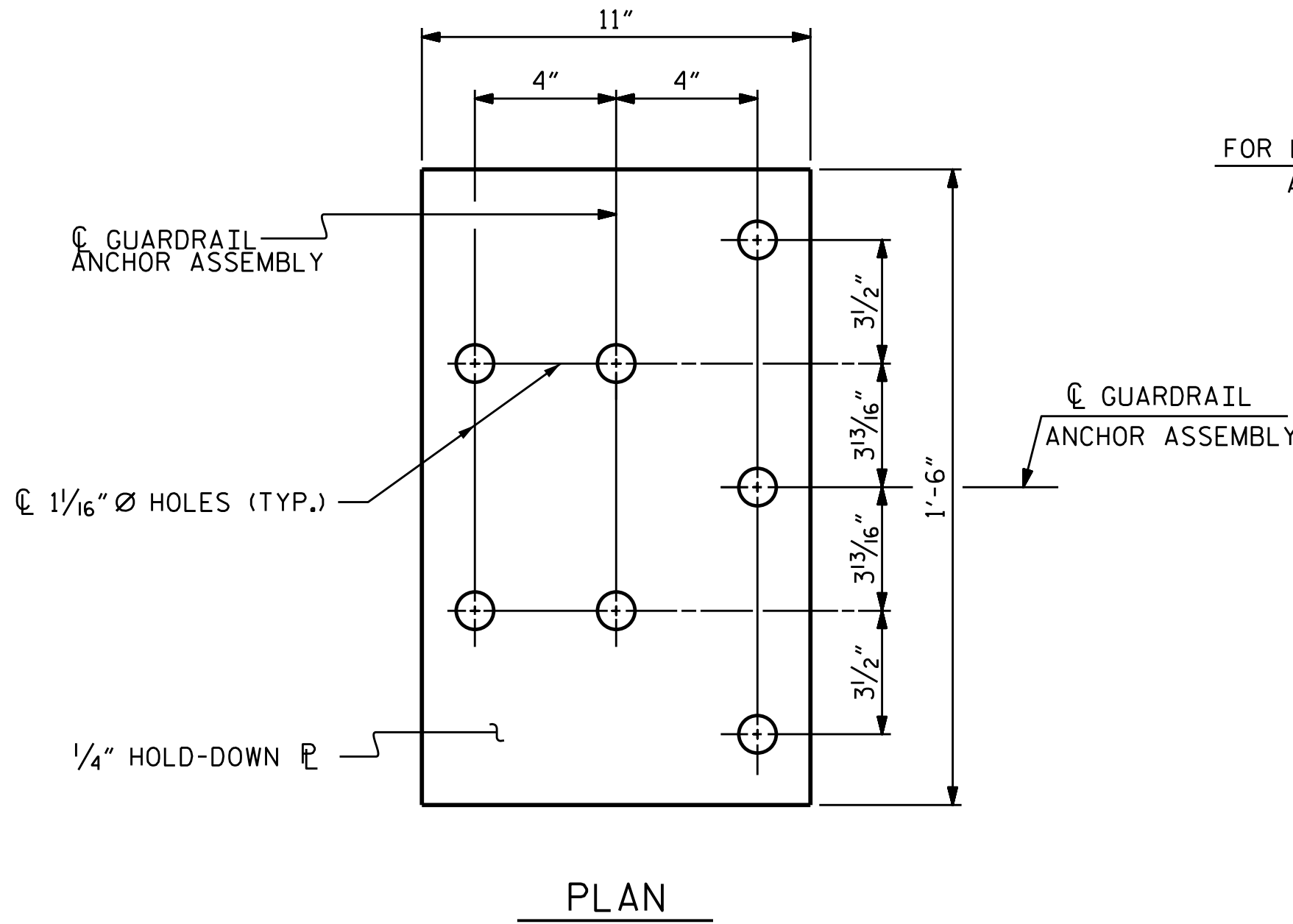
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LOCATION OF ANCHORS FOR GUARDRAIL

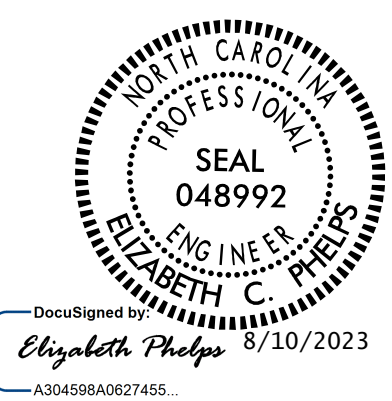


\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

NOTES

- THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" Ø BOLTS WITH NUTS AND WASHERS.
- THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.
- BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.
- AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.
- THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.
- THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.
- THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

PROJECT NO. **BP1-R002**  
**NORTHAMPTON** COUNTY  
 STATION: **13+68.00 -L-**



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



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S-11  
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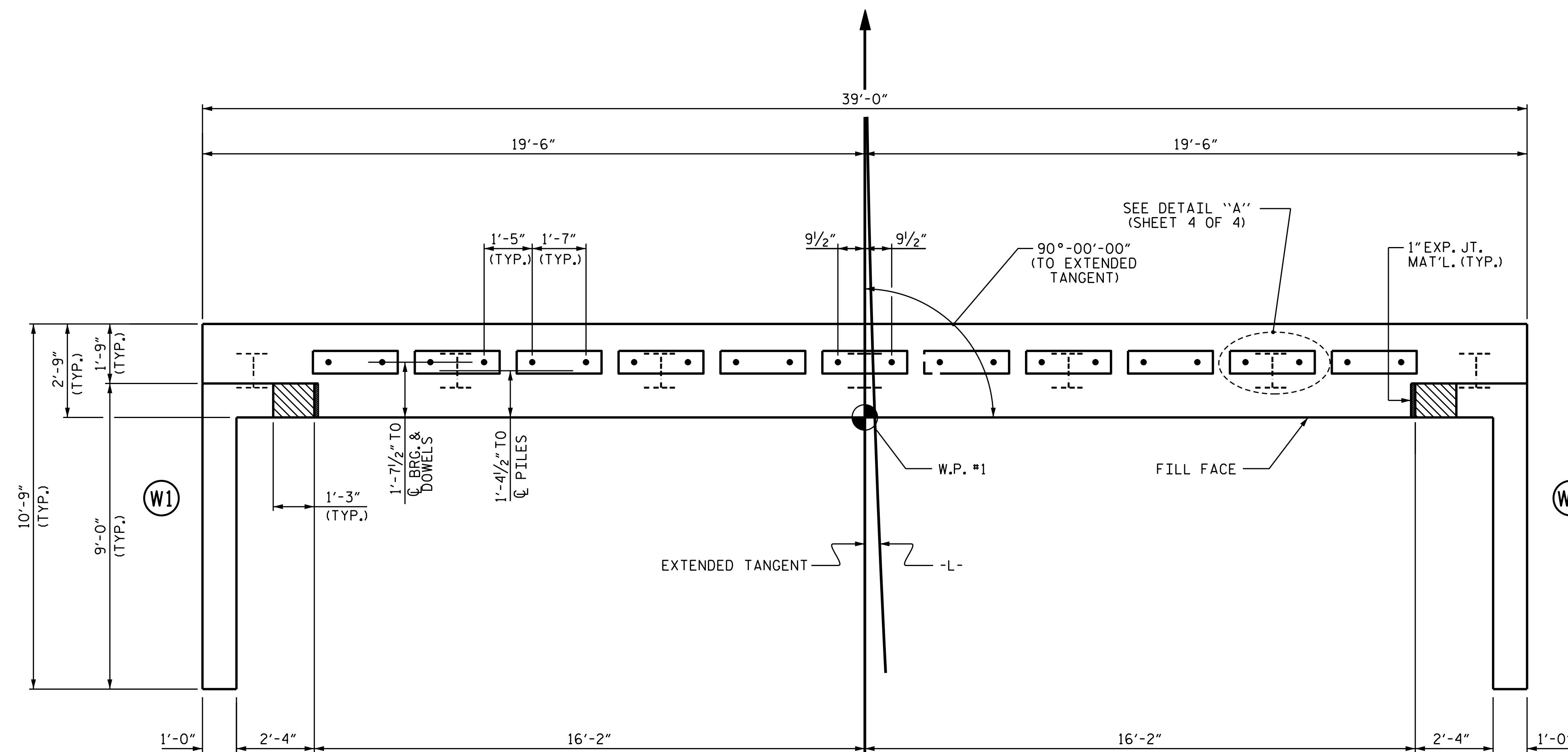
### NOTES

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.

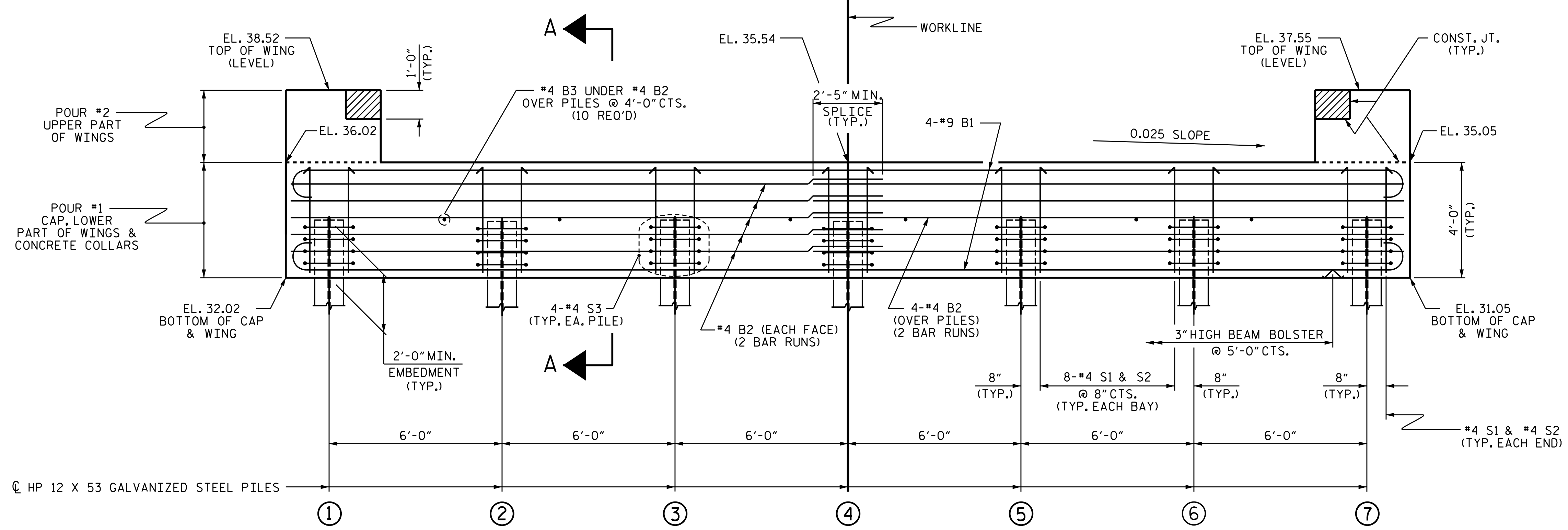
FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN

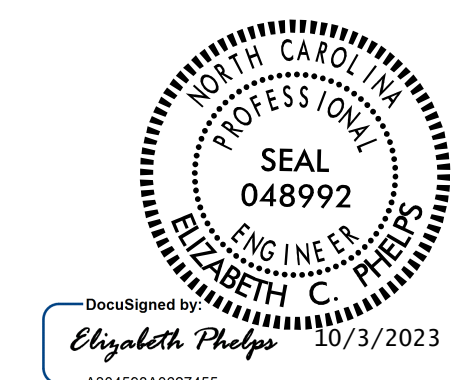
TOP OF PILE ELEVATIONS	
①	33.99
②	33.84
③	33.69
④	33.54
⑤	33.39
⑥	33.24
⑦	33.09



ELEVATION

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

PROJECT NO. **BP1-R002**  
**NORTHAMPTON** COUNTY  
 STATION: **13+68.00 -L-**  
 SHEET 1 OF 4



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE**

**END BENT No. 1**

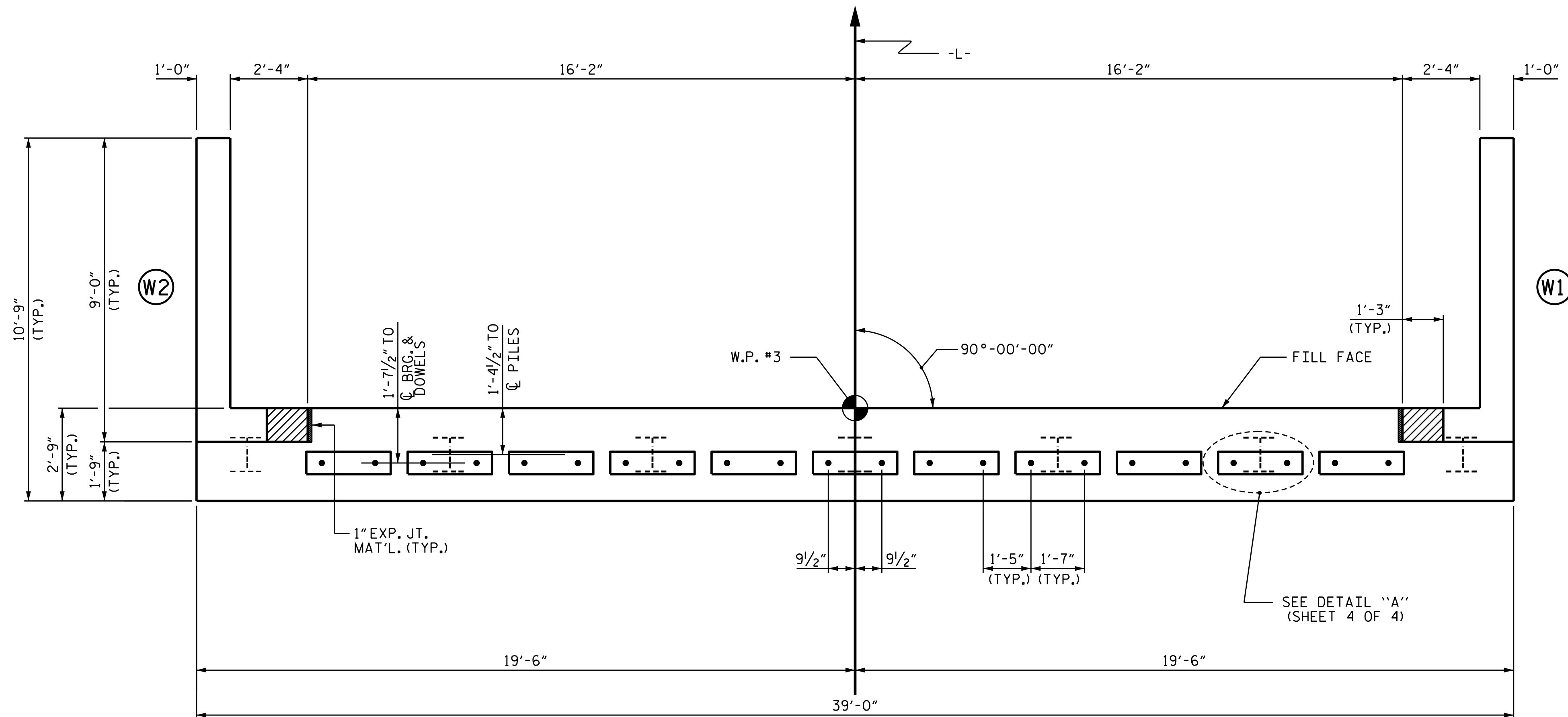
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2			4		

S-12  
TOTAL SHEETS: 19

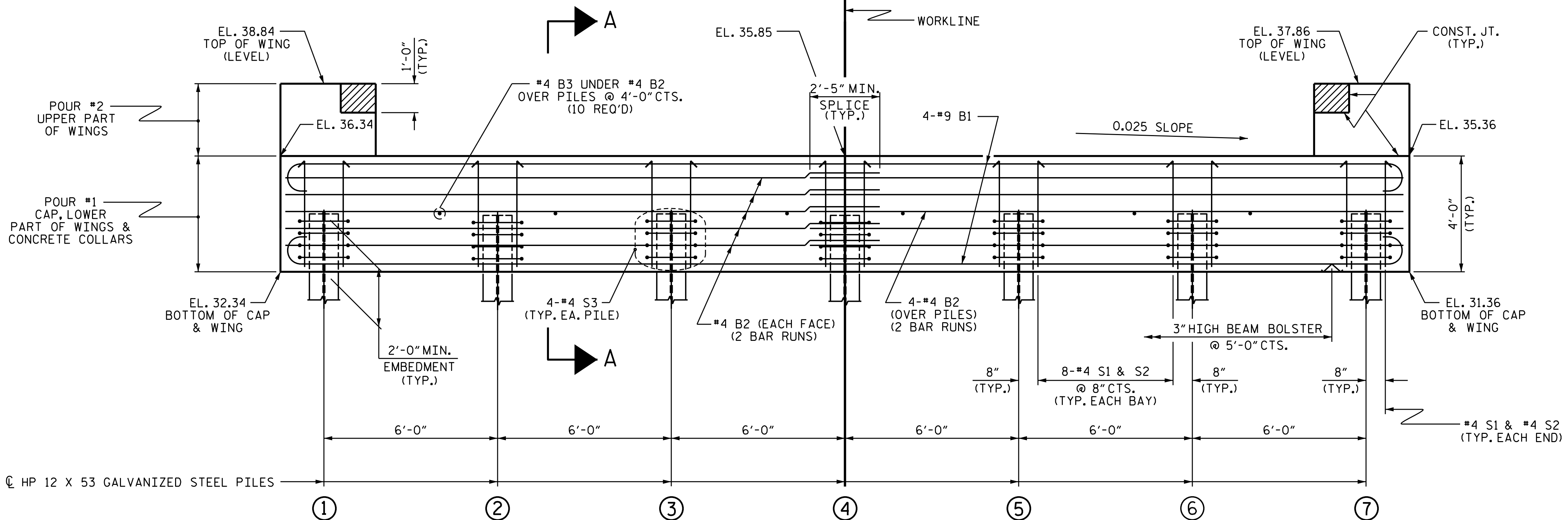
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PLAN



ELEVATION

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

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.

TOP OF PILE ELEVATIONS

①	34.30
②	34.15
③	34.00
④	33.85
⑤	33.70
⑥	33.55
⑦	33.40

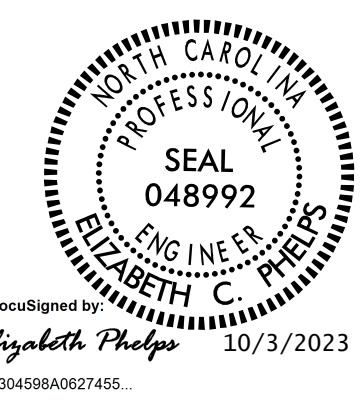
PROJECT NO. **BP1-R002**  
**NORTHAMPTON** COUNTY  
 STATION: **13+68.00 -L-**

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE**

**END BENT No. 2**

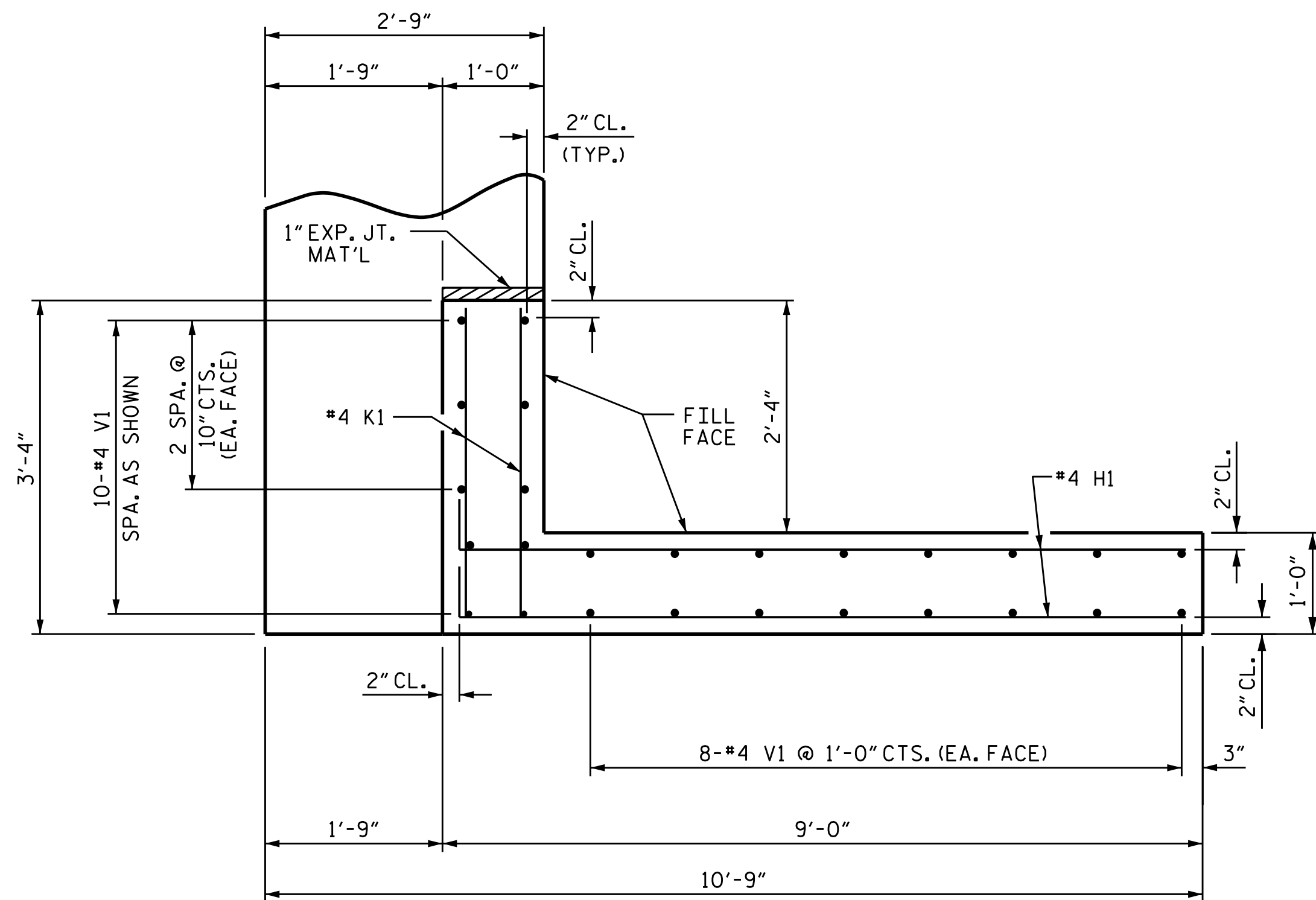


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			19

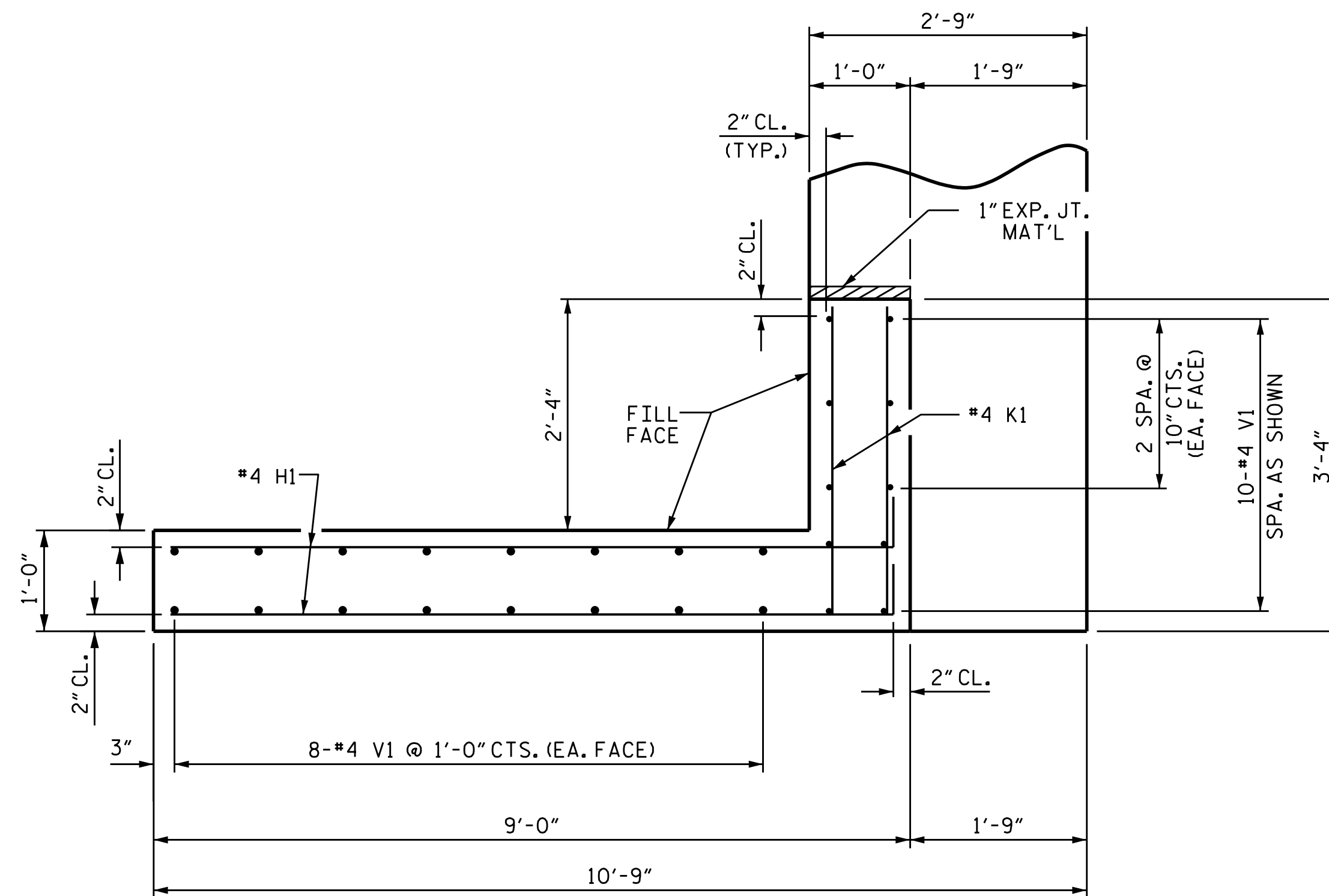
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 DESIGN ENGINEER OF RECORD: E.C. PHELPS DATE : 08/2023

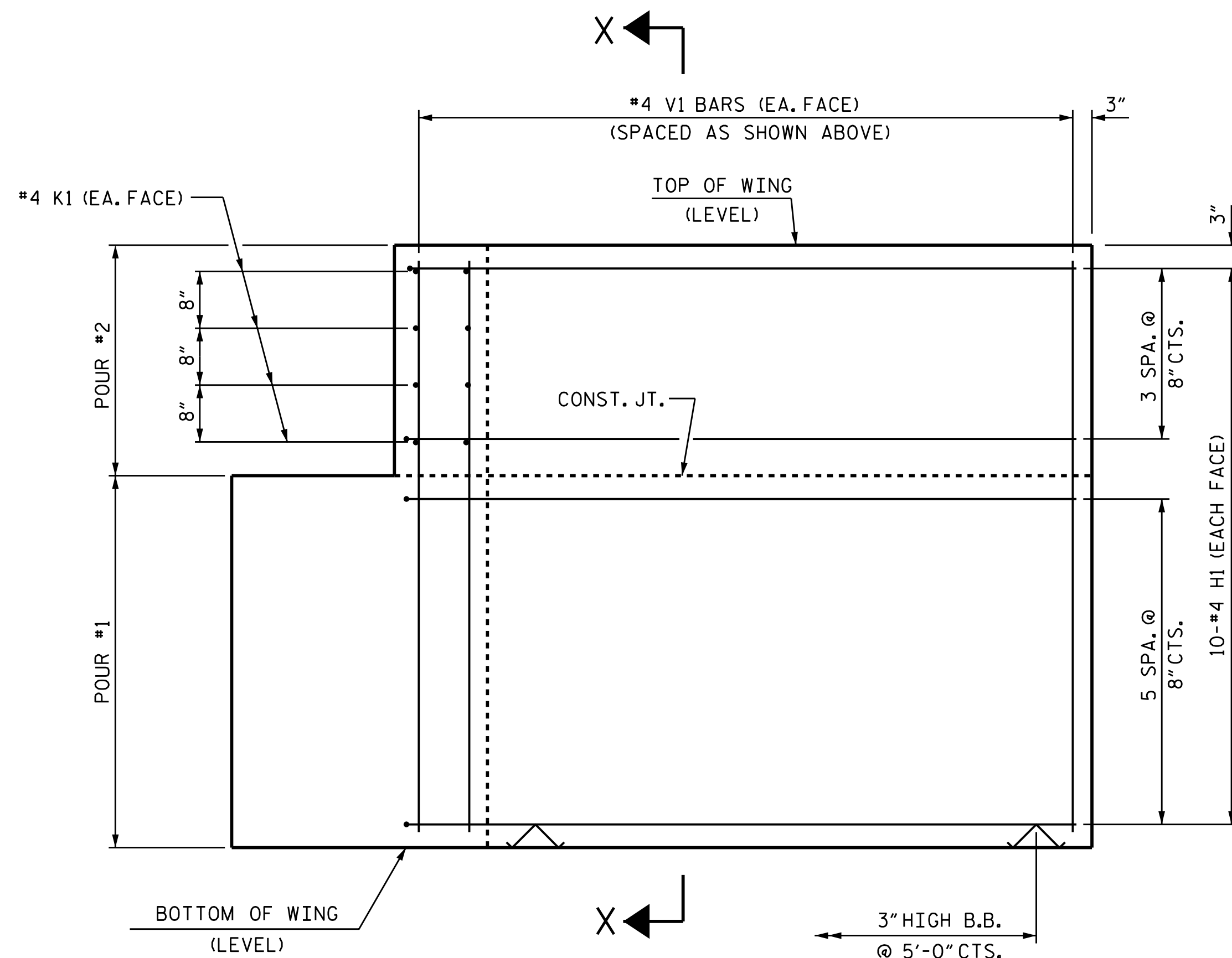




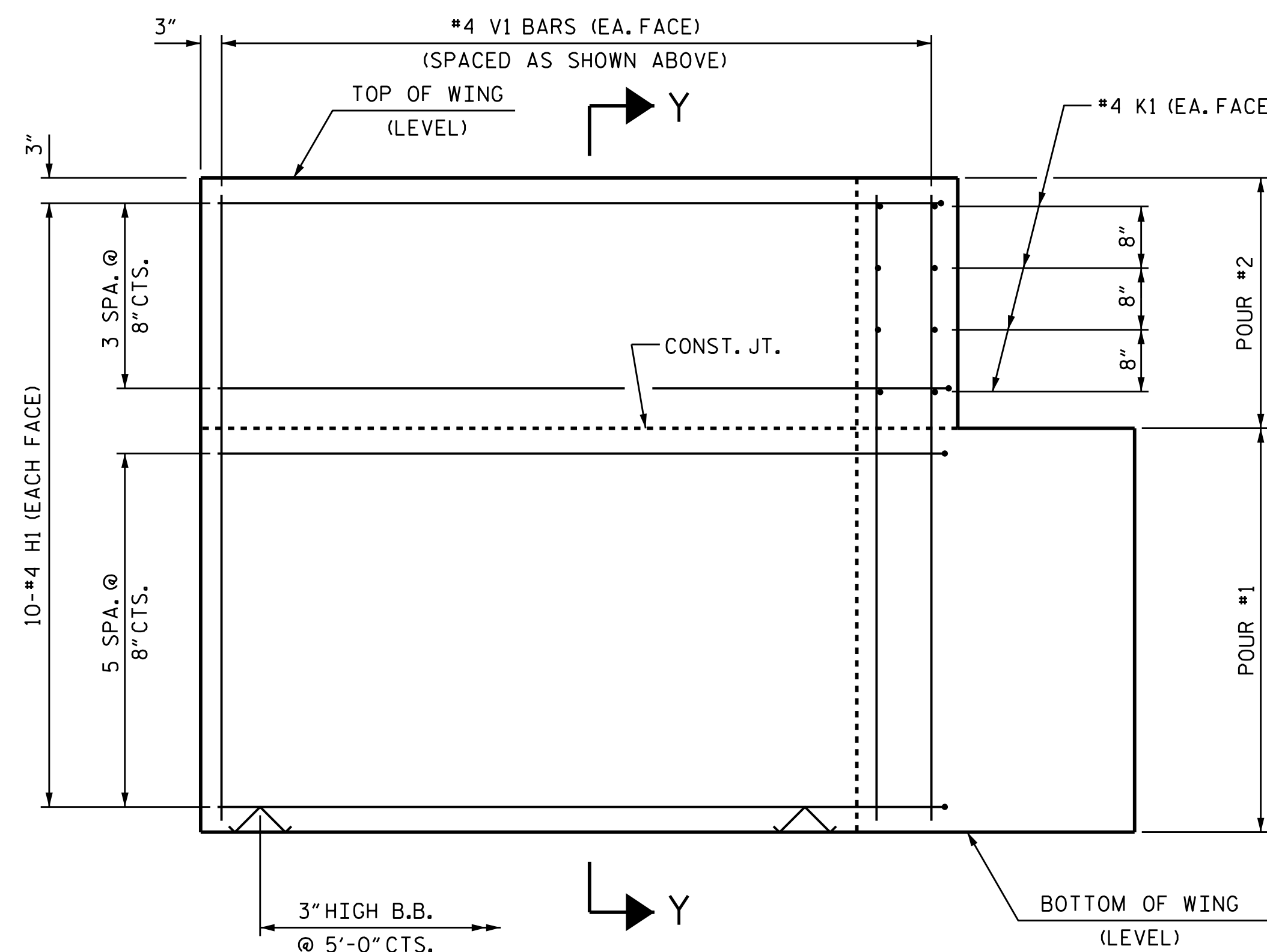
PLAN OF WING (W1)



PLAN OF WING (W2)

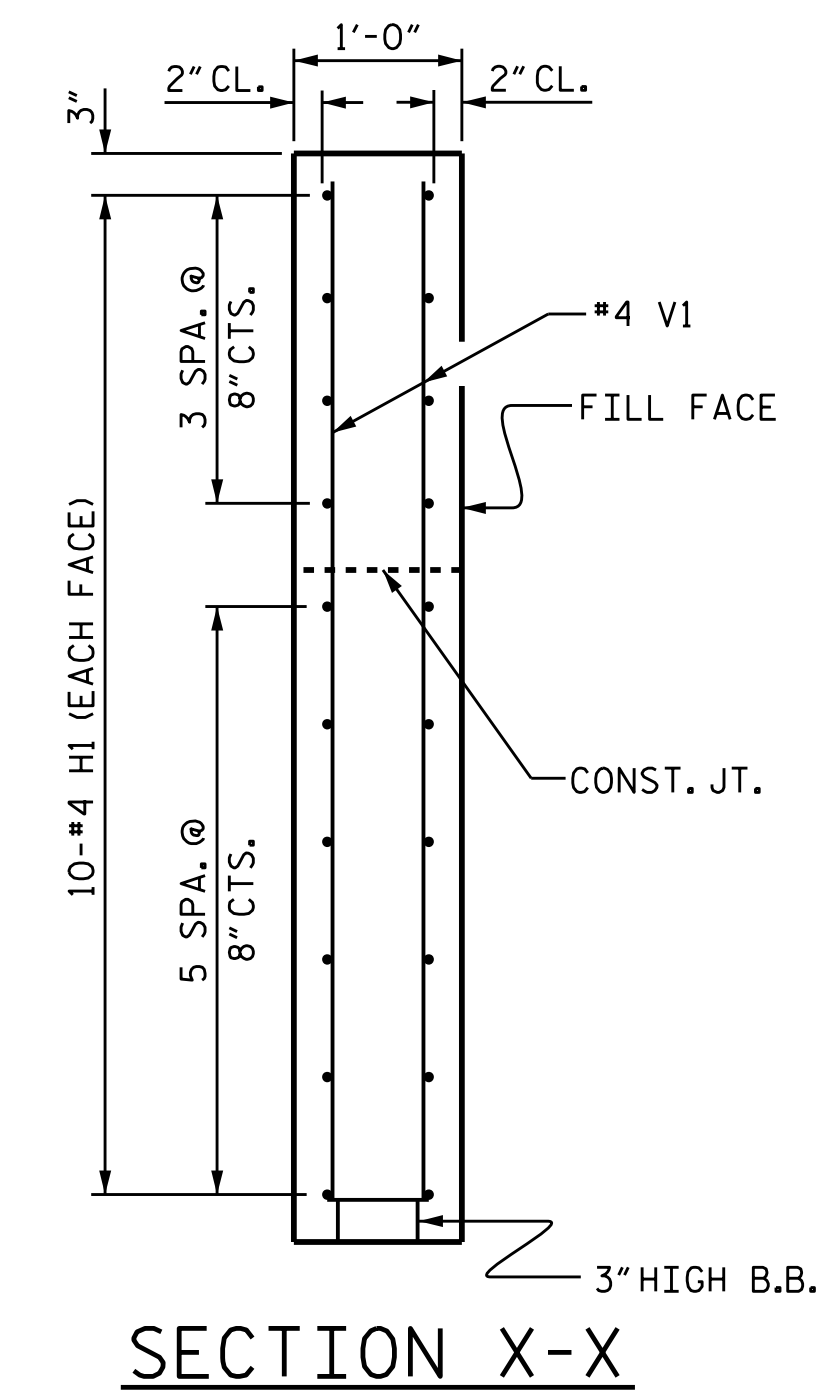


ELEVATION OF WING (W1)

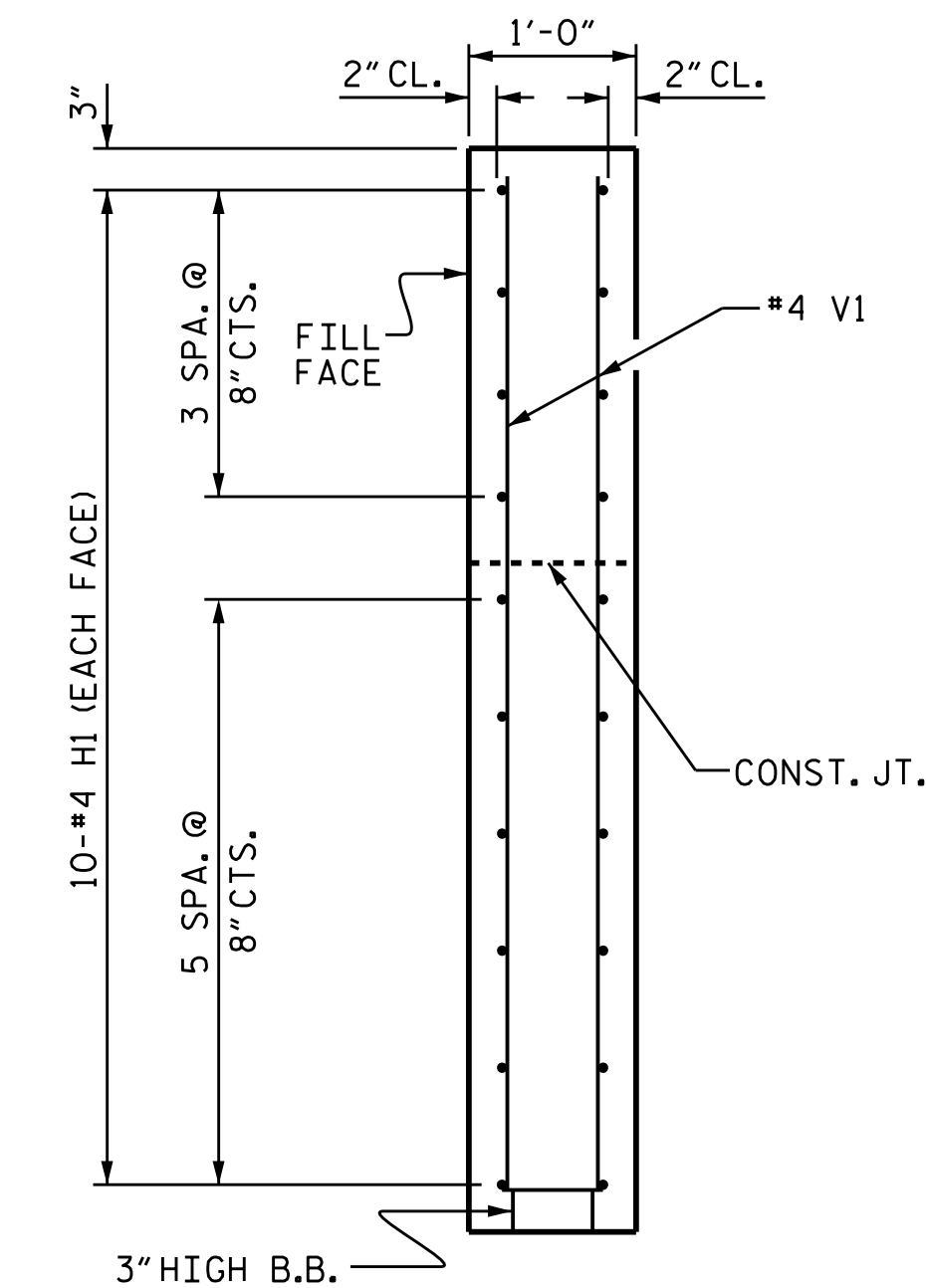


ELEVATION OF WING (W2)

WING DETAILS



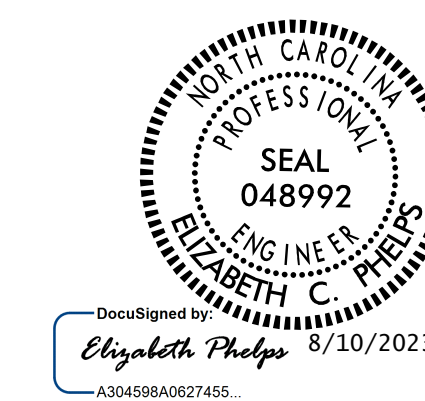
SECTION X-X



SECTION Y-Y

PROJECT NO. **BP1-R002**  
**NORTHAMPTON** COUNTY  
 STATION: **13+68.00 -L-**

SHEET 3 OF 4



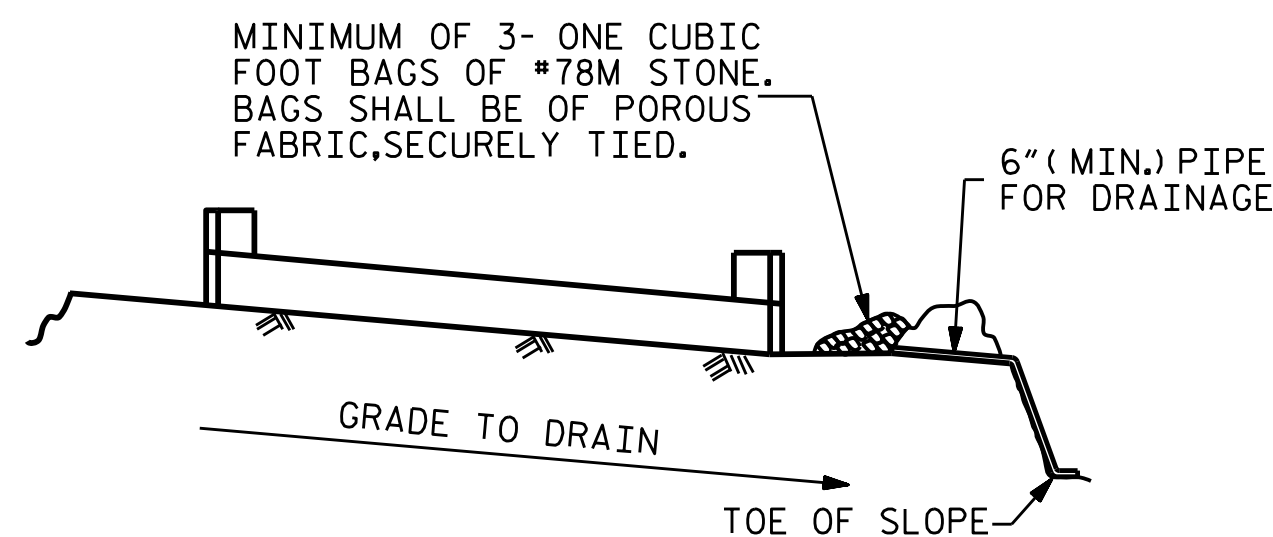
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**SUBSTRUCTURE**  
**END BENT**  
**WING DETAILS**

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

S-14  
TOTAL SHEETS  
19

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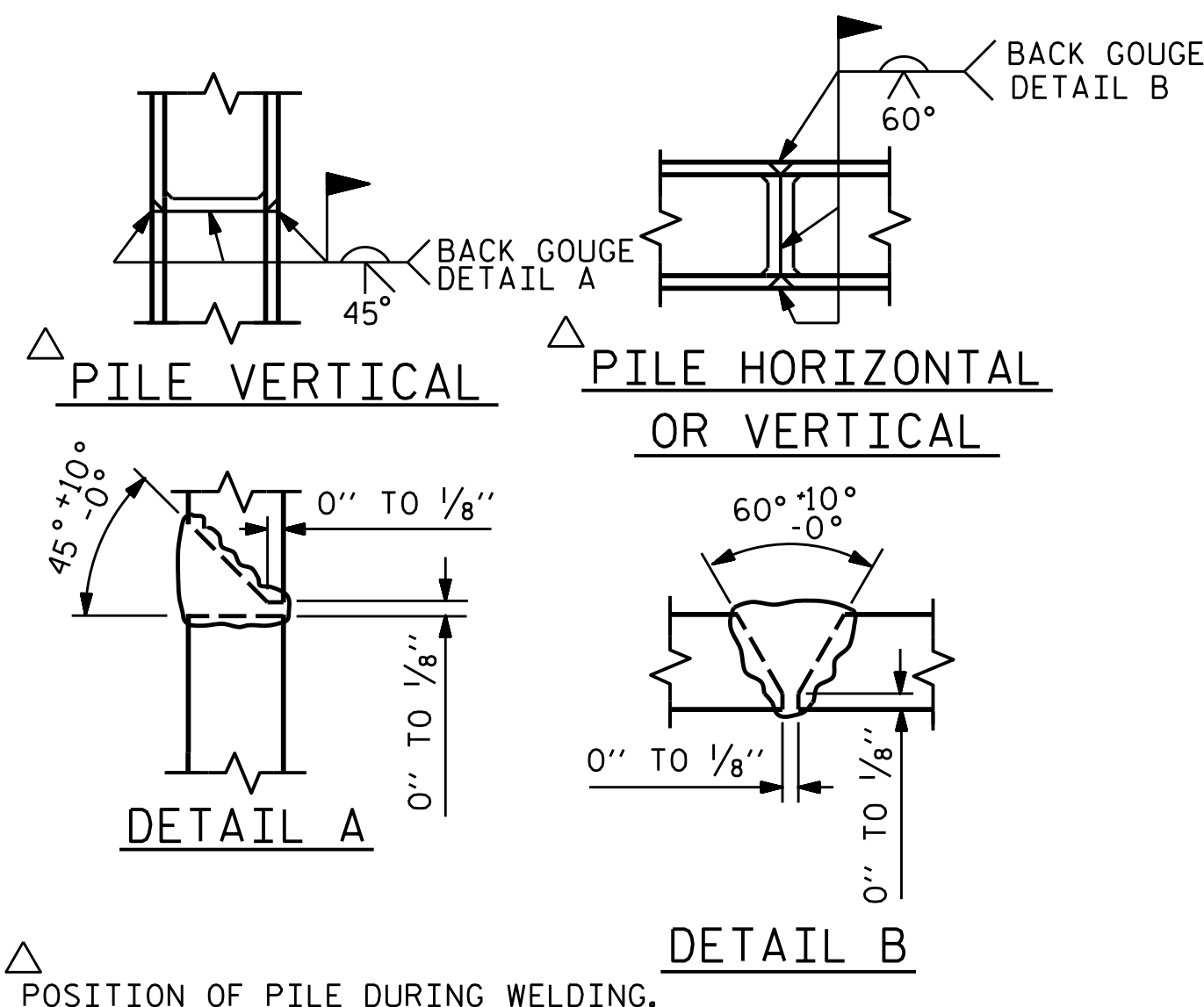


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

**TEMPORARY DRAINAGE AT END BENT**

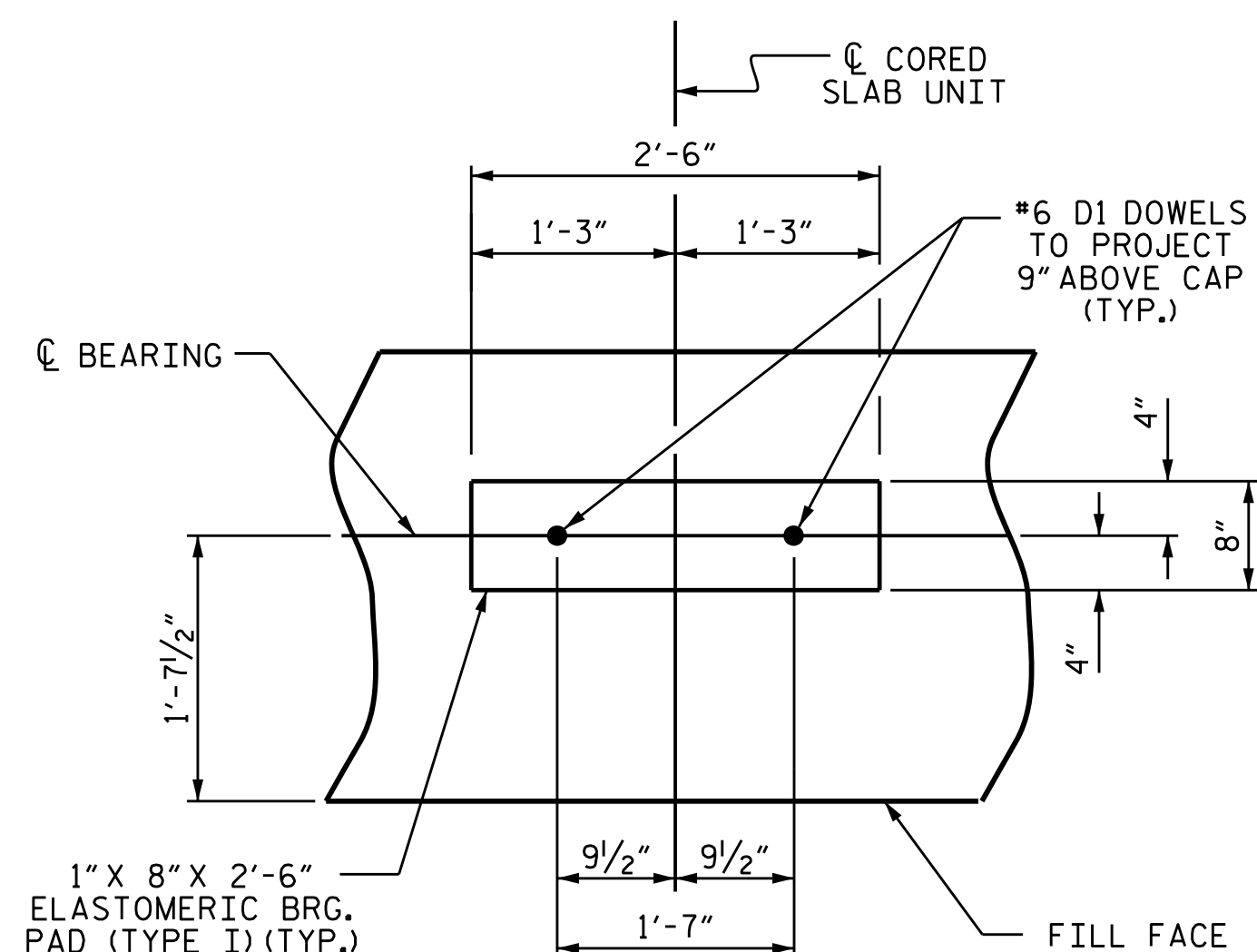


**PILE SPLICE DETAILS**

BAR TYPES		BILL OF MATERIAL FOR ONE END BENT				
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	8	#9	1	41'-0"	1115	
B2	28	#4	STR	20'-7"	385	
B3	10	#4	STR	2'-5"	16	
D1	22	#6	STR	1'-6"	50	
H1	40	#4	2	9'-4"	249	
K1	16	#4	STR	2'-11"	31	
S1	50	#4	3	10'-5"	348	
S2	50	#4	4	3'-2"	106	
S3	28	#4	5	6'-6"	122	
V1	52	#4	STR	6'-2"	214	
REINFORCING STEEL (FOR ONE END BENT)					2636 LBS.	
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)						
POUR #1 CAP, LOWER PART OF WINGS & COLLARS					18.3 C.Y.	
POUR #2 UPPER PART OF WINGS					2.1 C.Y.	
TOTAL CLASS A CONCRETE					20.4 C.Y.	
PILE REDRIVES					NO: 11	

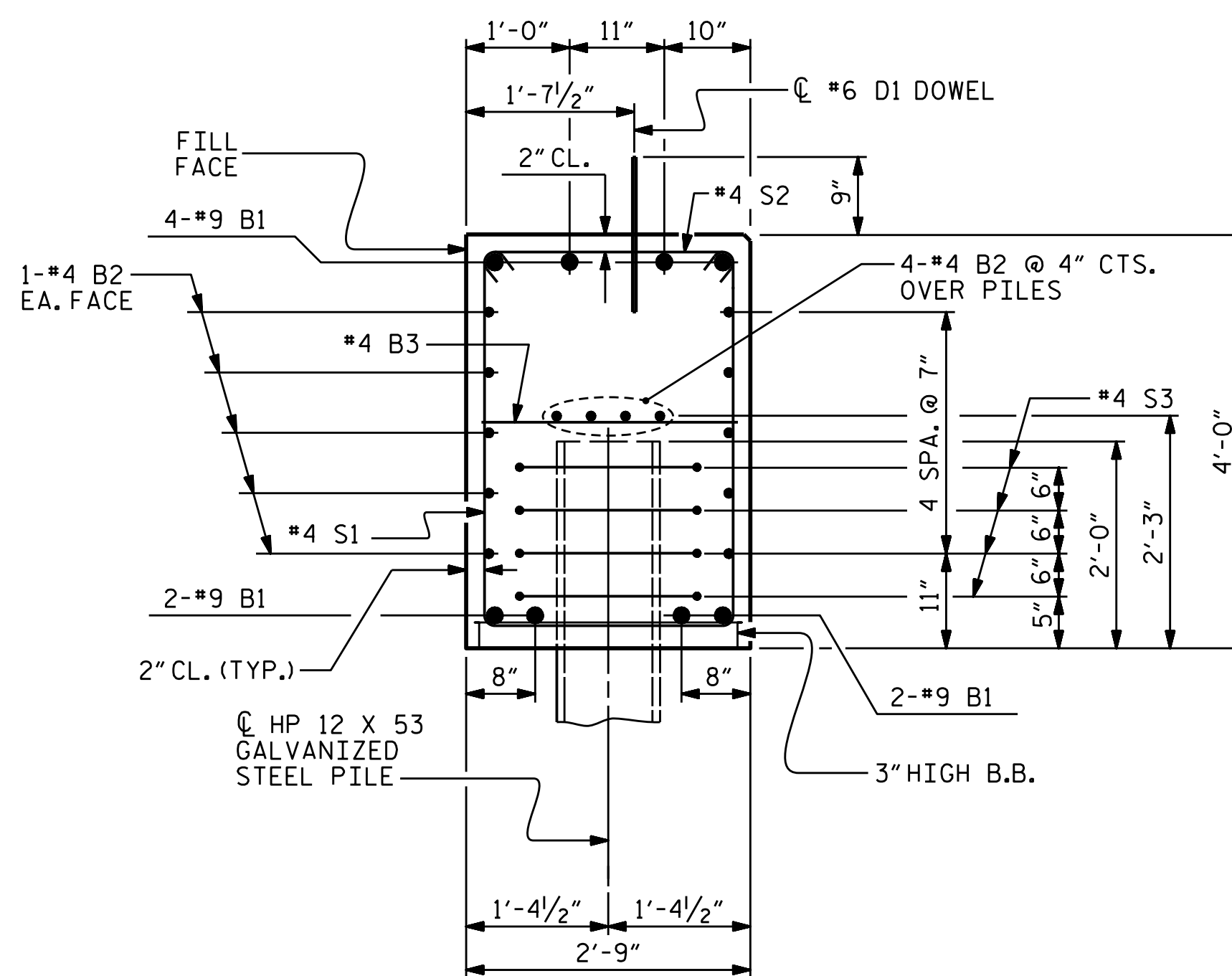
ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT No. 1		END BENT No. 2	
HP 12 X 53 GALVANIZED STEEL PILES		HP 12 X 53 GALVANIZED STEEL PILES	
NO: 7 LIN. FT.= 385		NO: 7 LIN. FT.= 385	
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 GALVANIZED STEEL PILES	NO: 7	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 GALVANIZED STEEL PILES	NO: 7

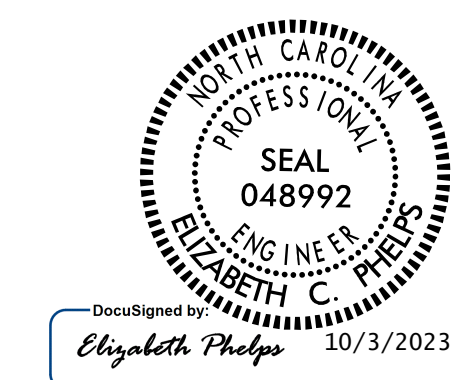


**DETAIL "A"**

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



**SECTION A-A**



PROJECT NO. **BP1-R002**  
**NORTHAMPTON** COUNTY  
 STATION: **13+68.00 -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		

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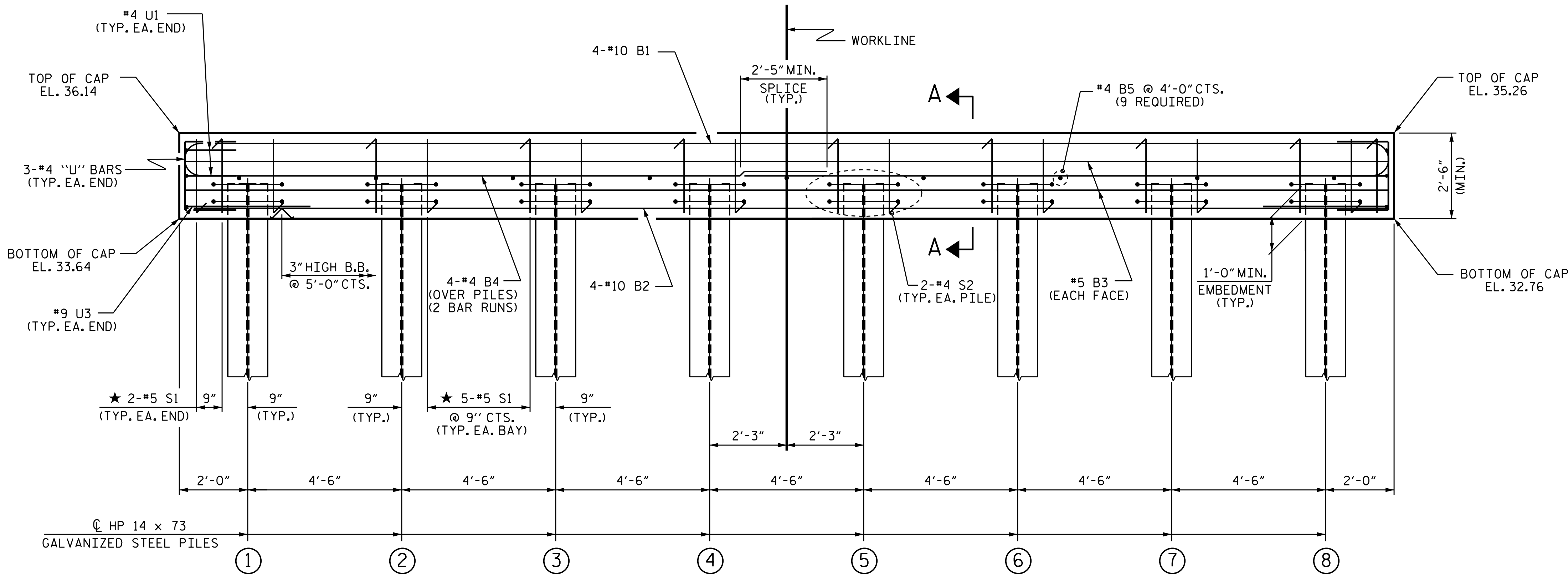
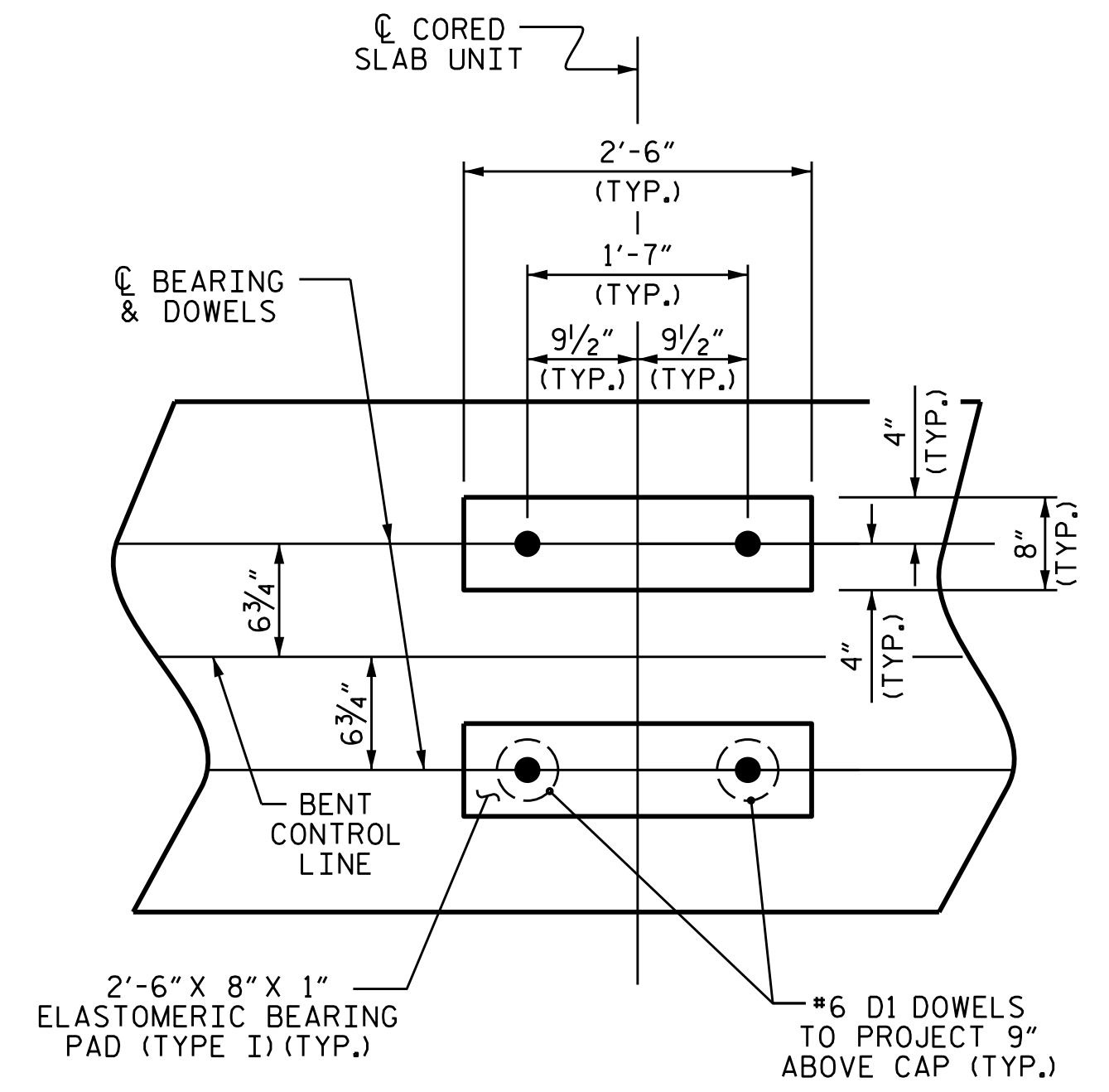
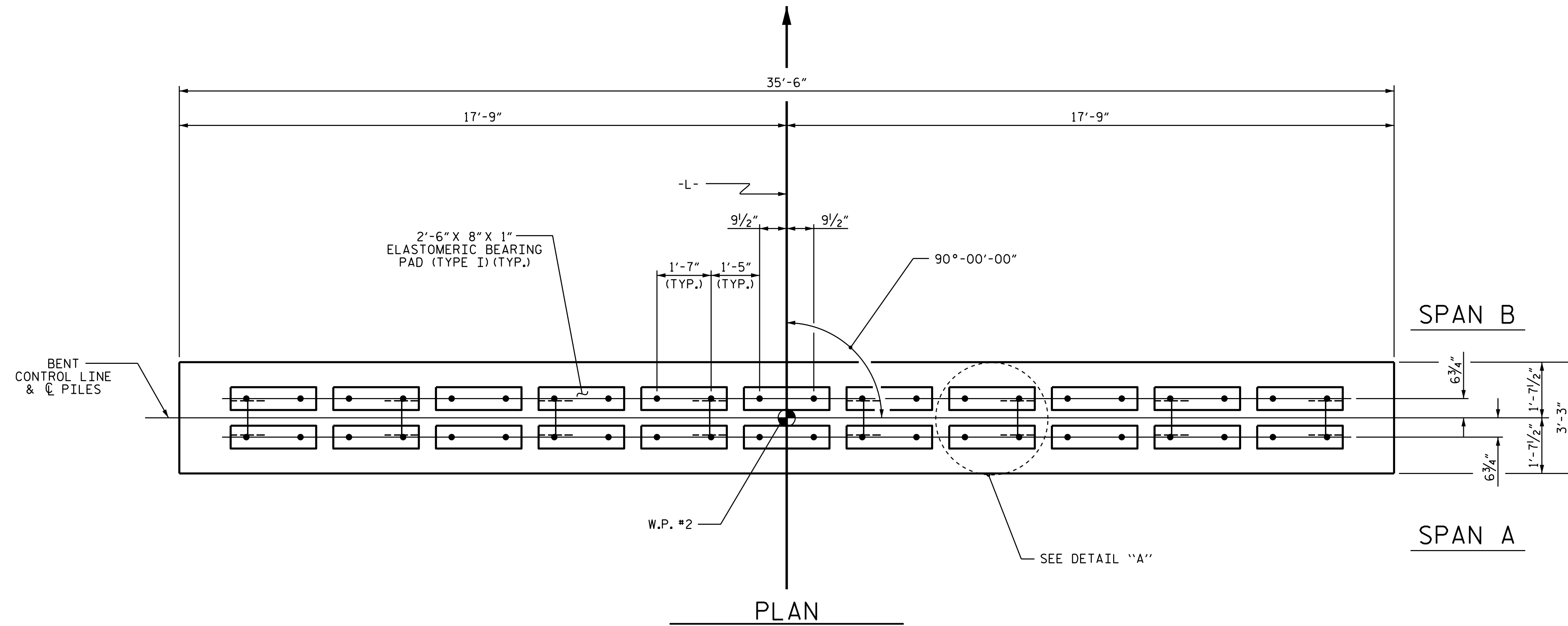
8/26/21

### NOTES

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

★ INVERT ALTERNATE STIRRUPS.

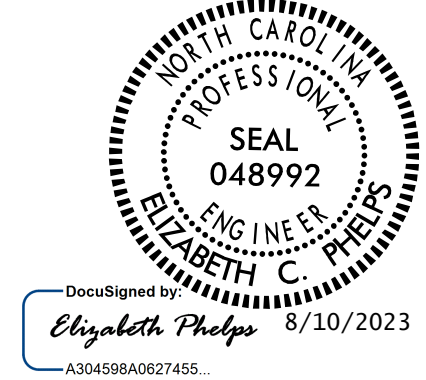
GALVANIZE THE FULL LENGTH OF EACH INTERIOR BENT PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



TOP OF PILE ELEVATIONS	
①	34.59
②	34.48
③	34.37
④	34.26
⑤	34.14
⑥	34.03
⑦	33.92
⑧	33.81

PROJECT NO. **BP1-R002**  
**NORTHAMPTON** COUNTY  
 STATION: **13+68.00 -L-**

SHEET 1 OF 2



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE**

**BENT No. 1**

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

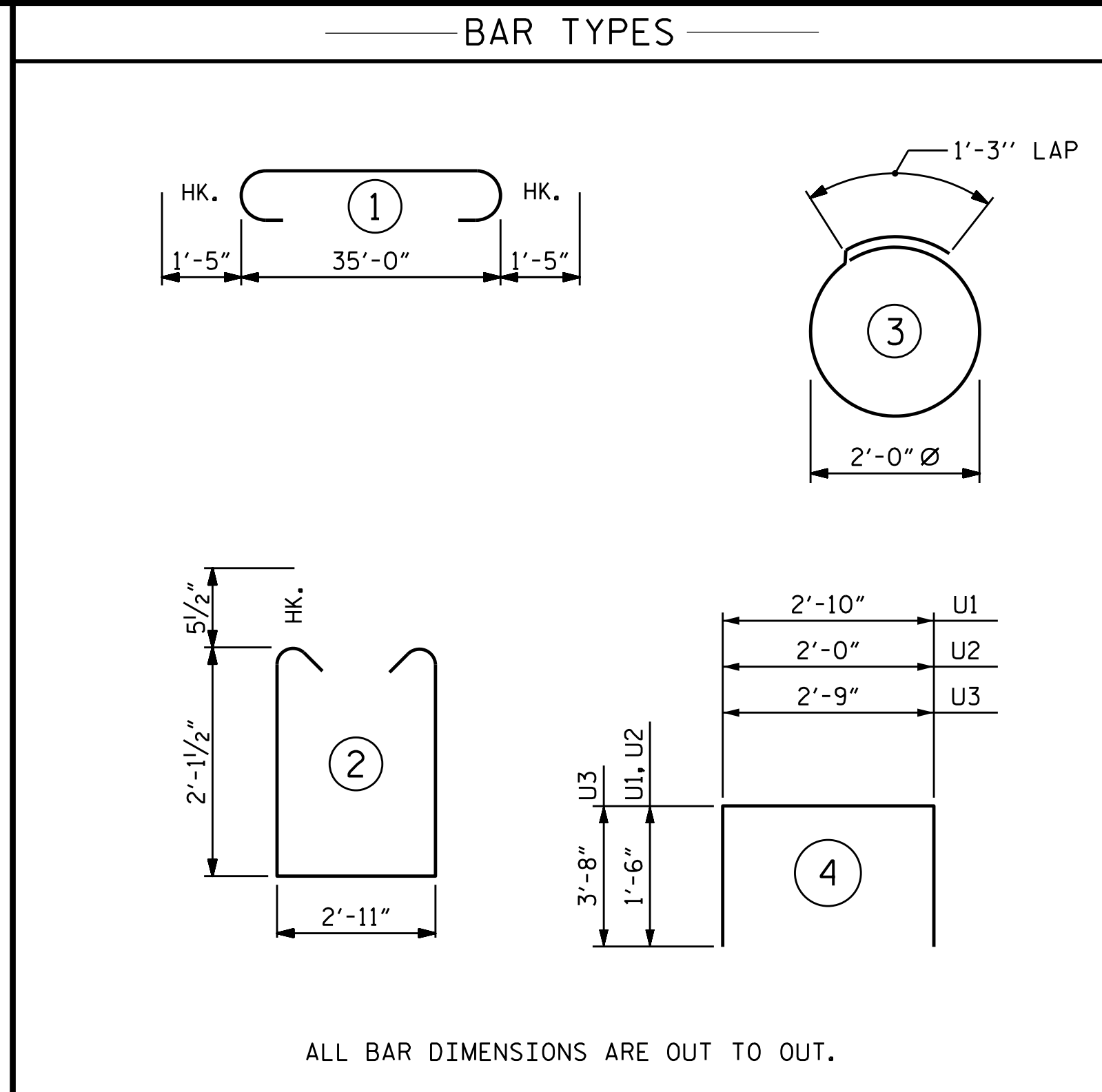
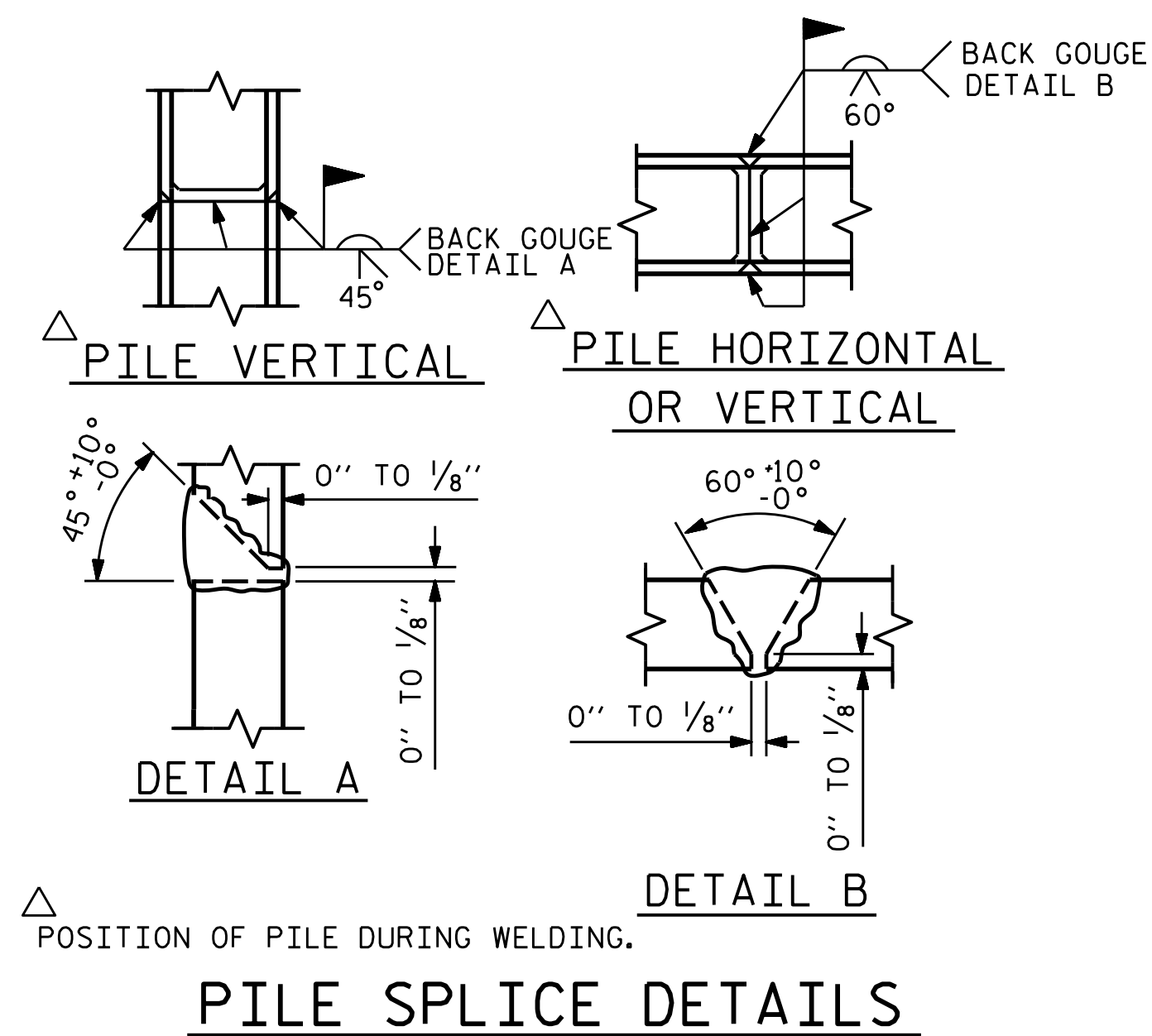
TOTAL SHEETS: 19

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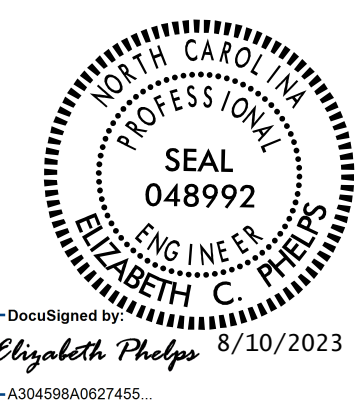
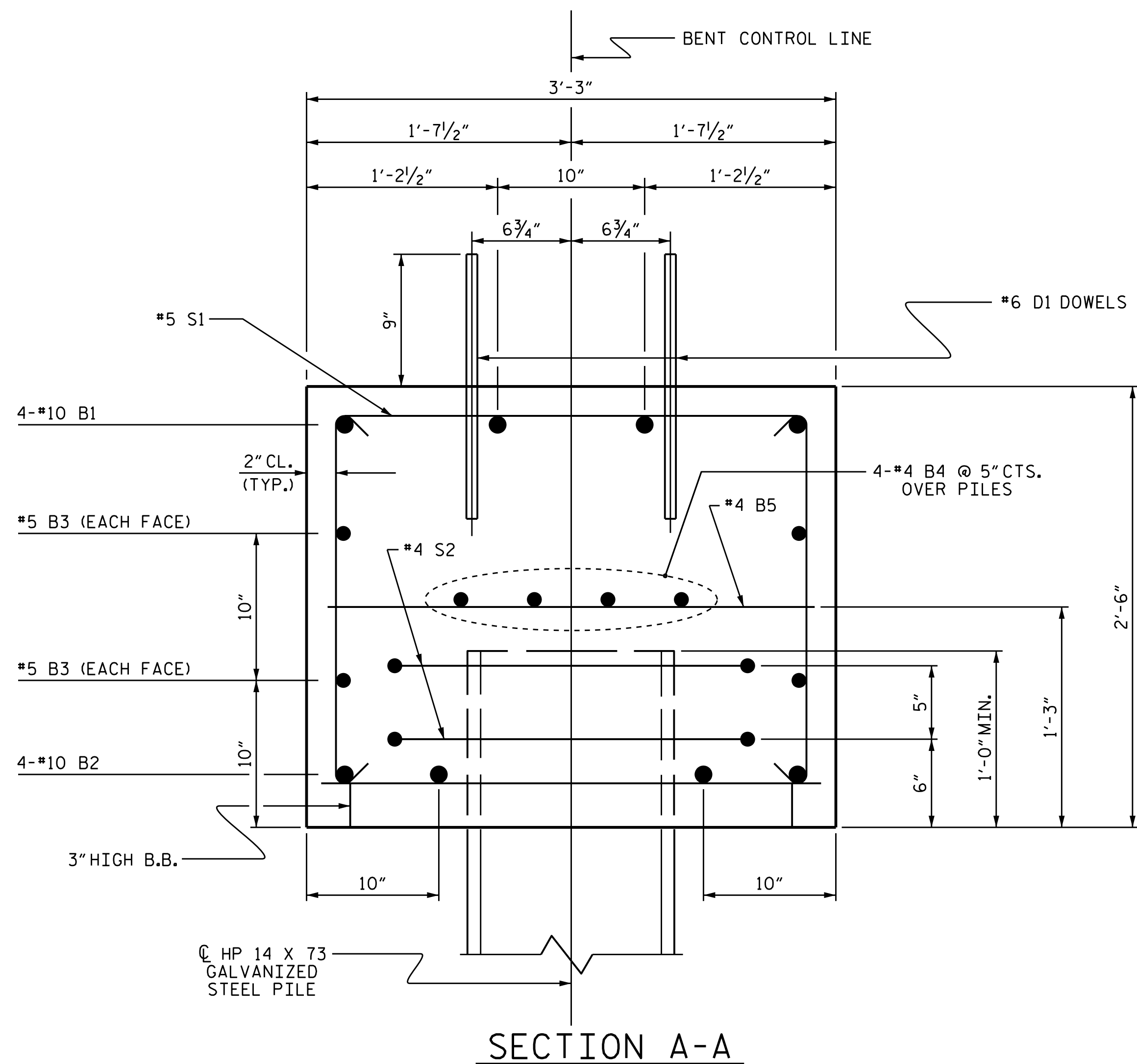
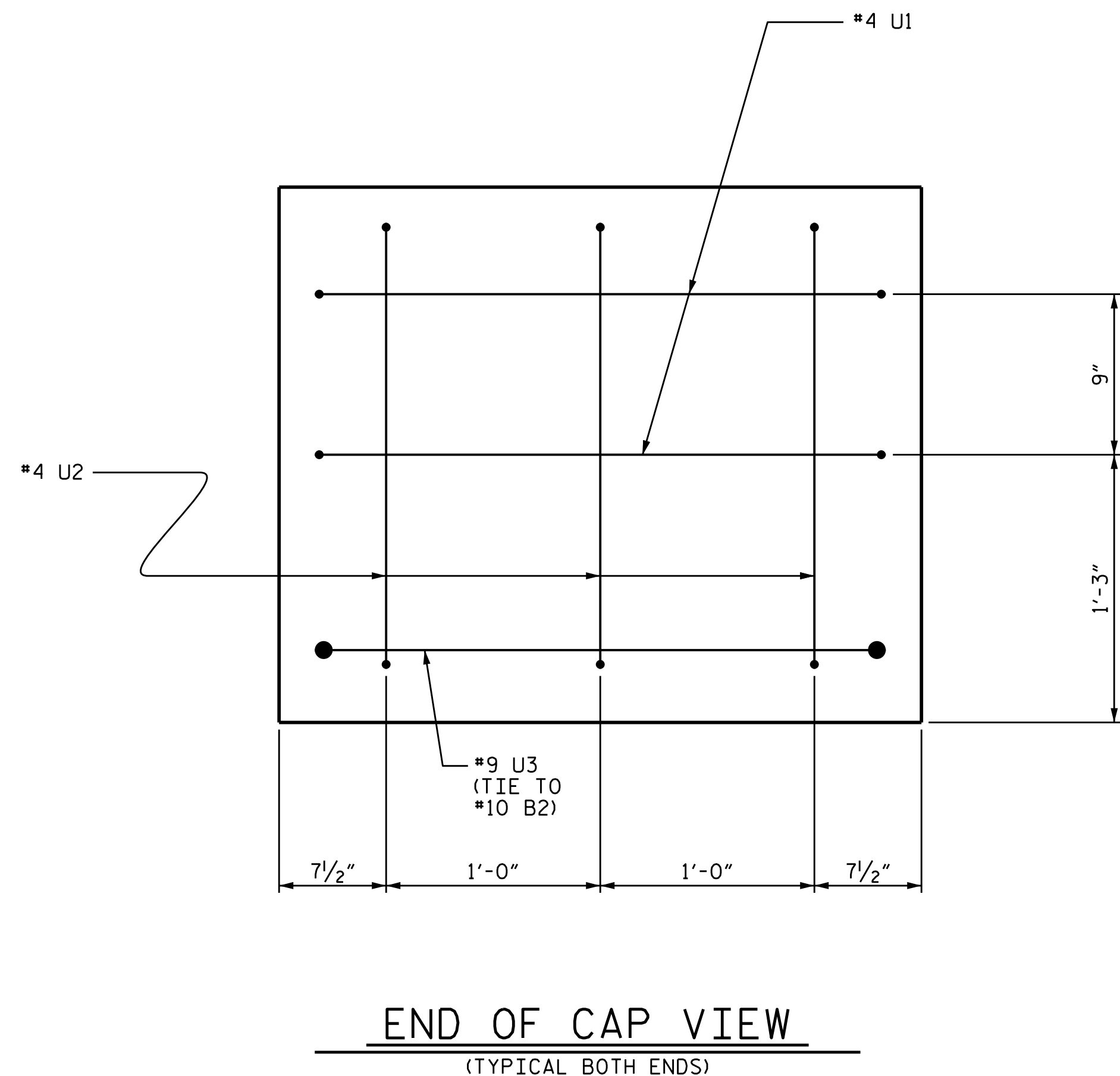
STD.NO.14"HP\_BT\_33\_90S\_<60'

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

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BILL OF MATERIAL FOR ONE BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	37'-10"	651
B2	4	#10	STR	35'-2"	605
B3	4	#5	STR	35'-2"	147
B4	8	#4	STR	18'-10"	101
B5	9	#4	STR	2'-11"	18
D1	44	#6	STR	1'-6"	99
S1	39	#5	2	8'-1"	329
S2	16	#4	3	7'-7"	81
U1	4	#4	4	5'-10"	16
U2	6	#4	4	5'-0"	20
U3	2	#9	4	10'-1"	69
REINFORCING STEEL (FOR ONE BENT)					2136 LBS
CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)					
TOTAL CLASS A CONCRETE					10.7 C.Y.
HP 14 X 73 GALVANIZED STEEL PILES (FOR ONE BENT)					
No. 8					LIN. FT. 600
PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 GALVANIZED STEEL PILES (FOR ONE BENT)					NO: 8



PROJECT NO. **BP1-R002**  
**NORTHAMPTON** COUNTY  
 STATION: **13+68.00 -L-**  
 SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH			
<b>SUBSTRUCTURE</b>			
<b>BENT No. 1</b>			
SHEET NO. S-17			

REVISIONS				SHEET NO.
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1			3	
2			4	

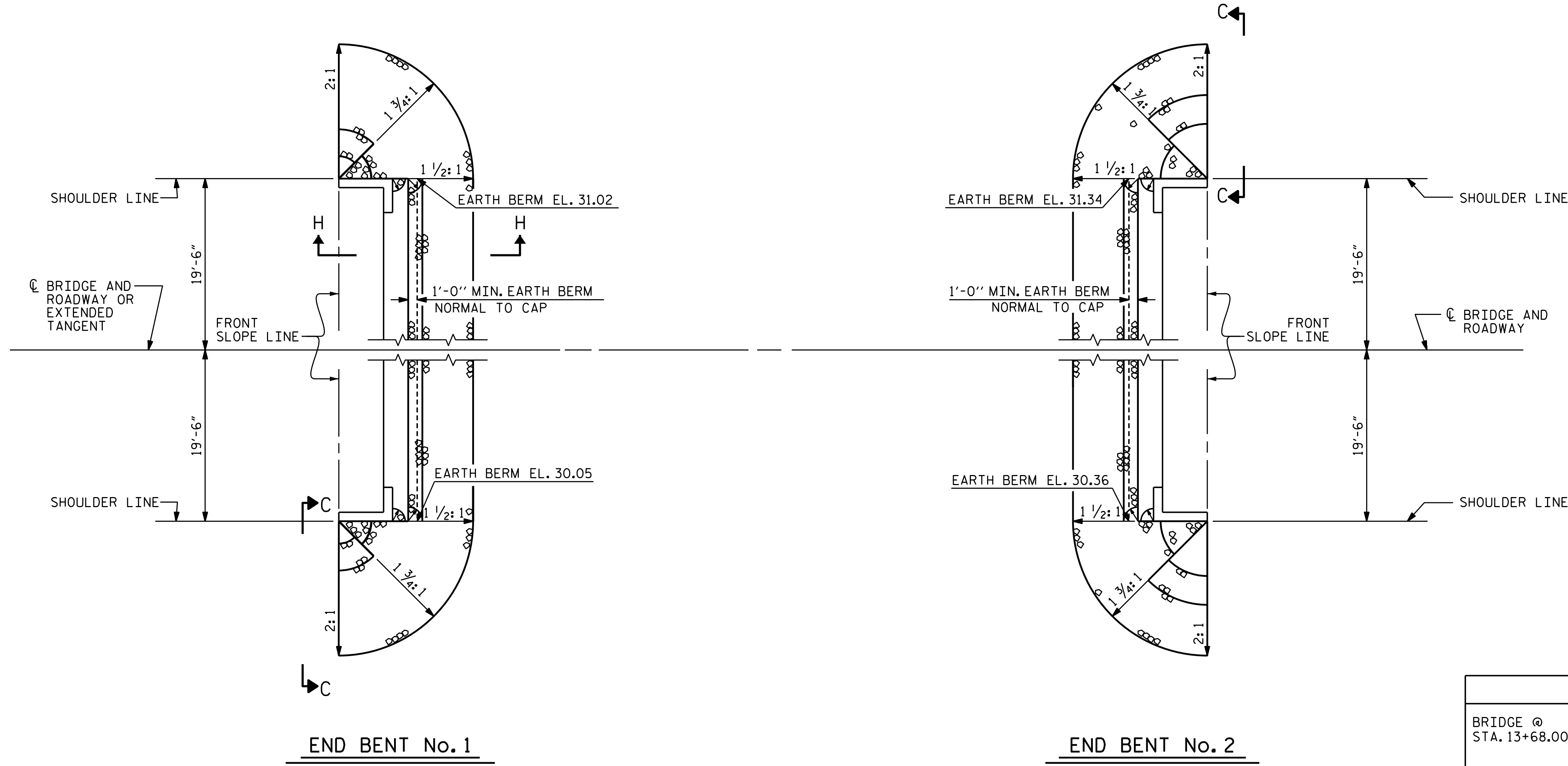
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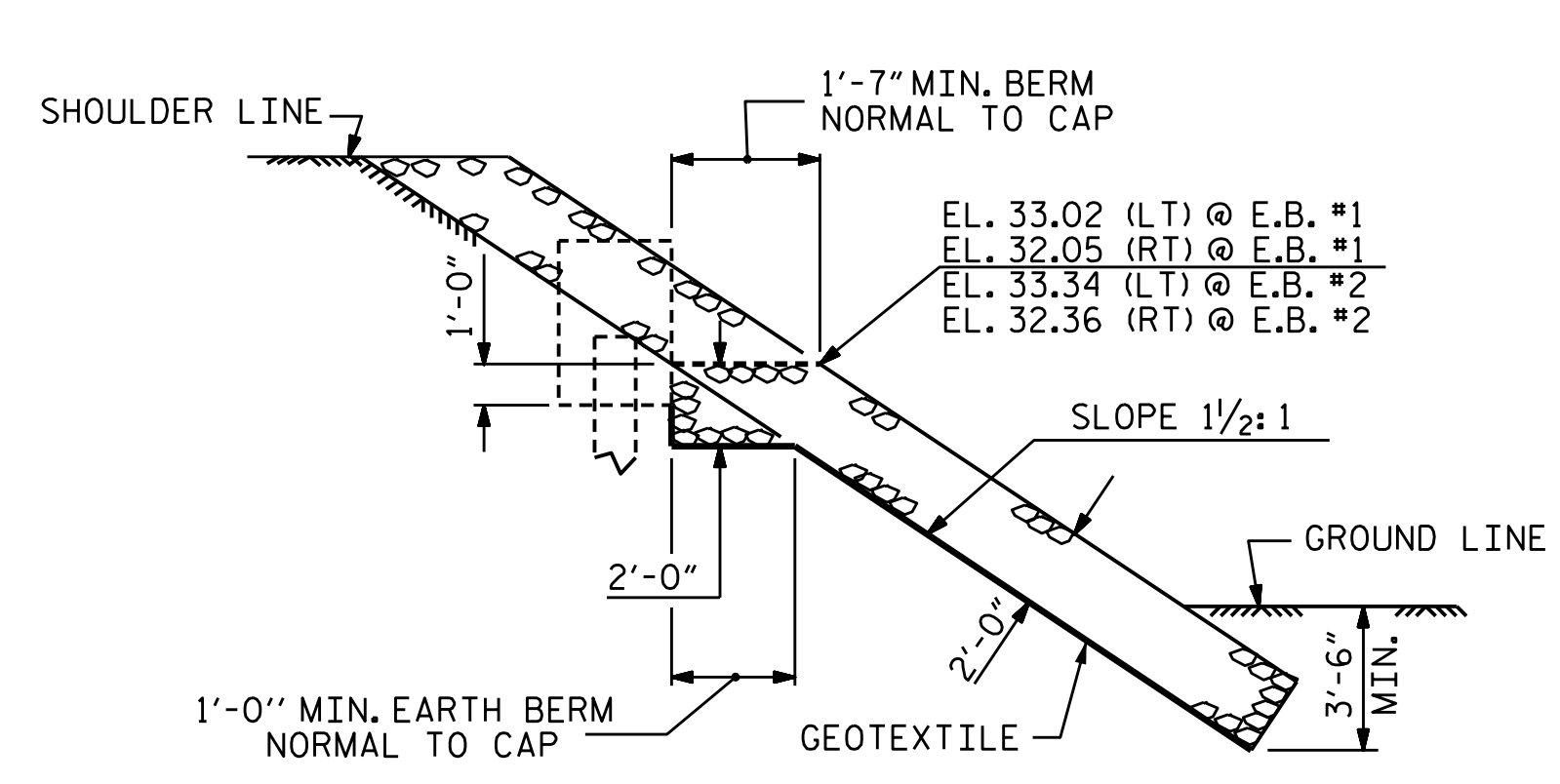


NOTES :  
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

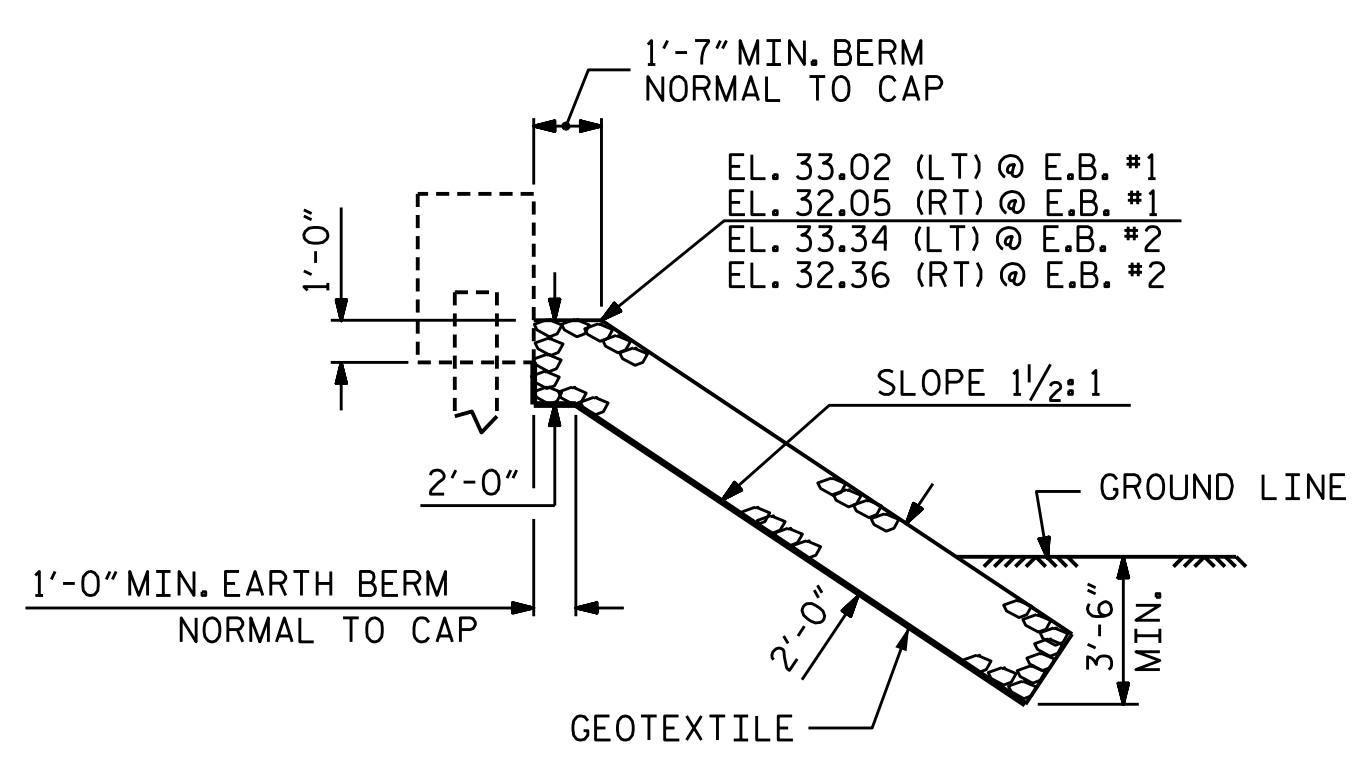


PLAN

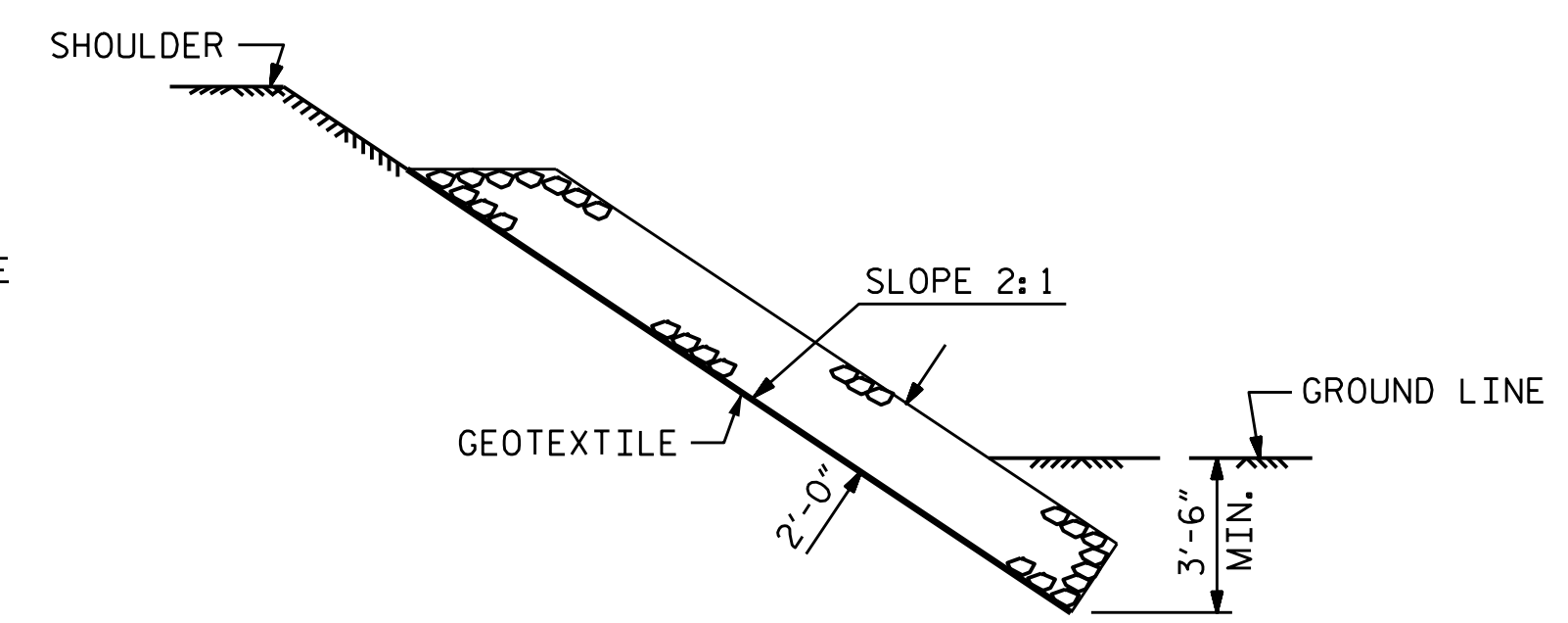
ESTIMATED QUANTITIES		
BRIDGE @ STA. 13+68.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT No. 1	40	45
END BENT No. 2	20	25



SECTION H-H



SECTION C-C  
BERM RIP RAPPED



SECTION C-C

PROJECT NO. **BP1-R002**  
**NORTHAMPTON** COUNTY  
STATION: **13+68.00 -L-**



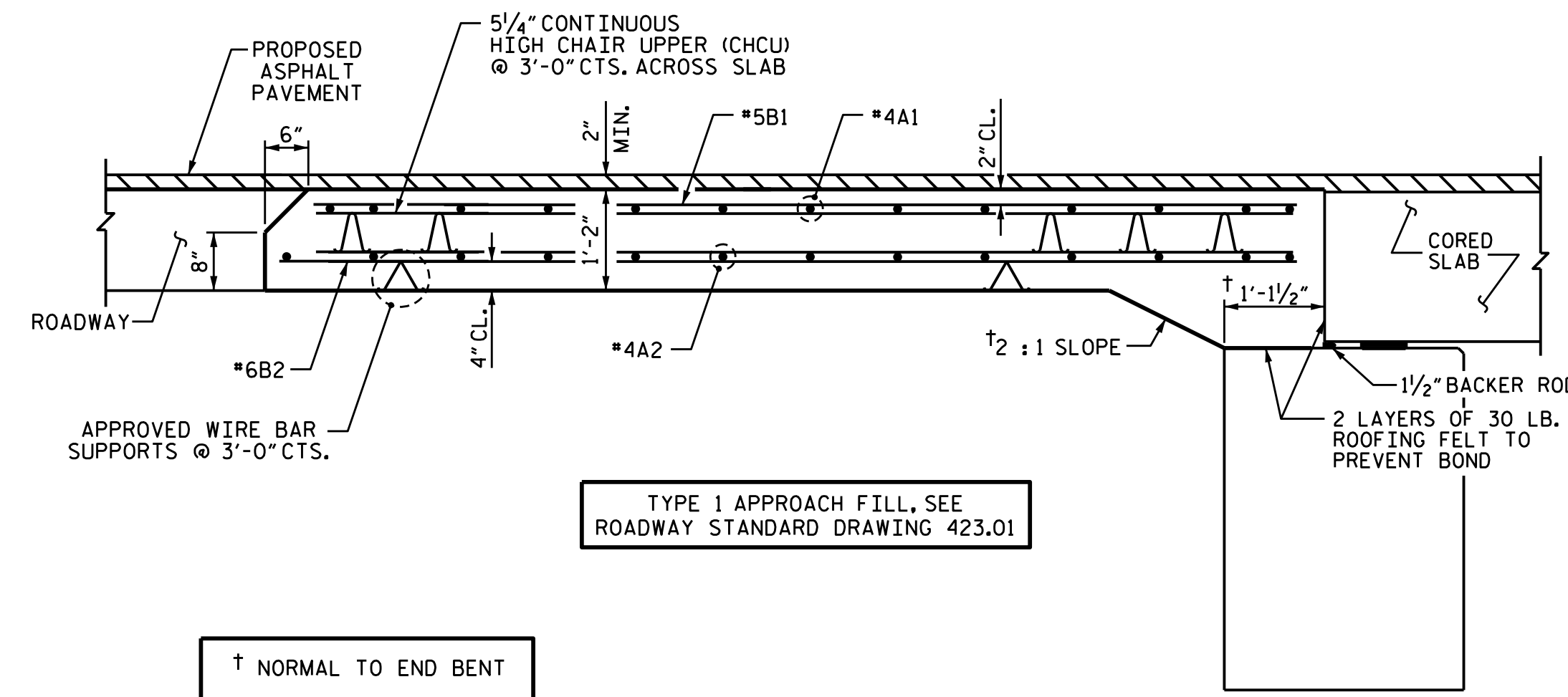
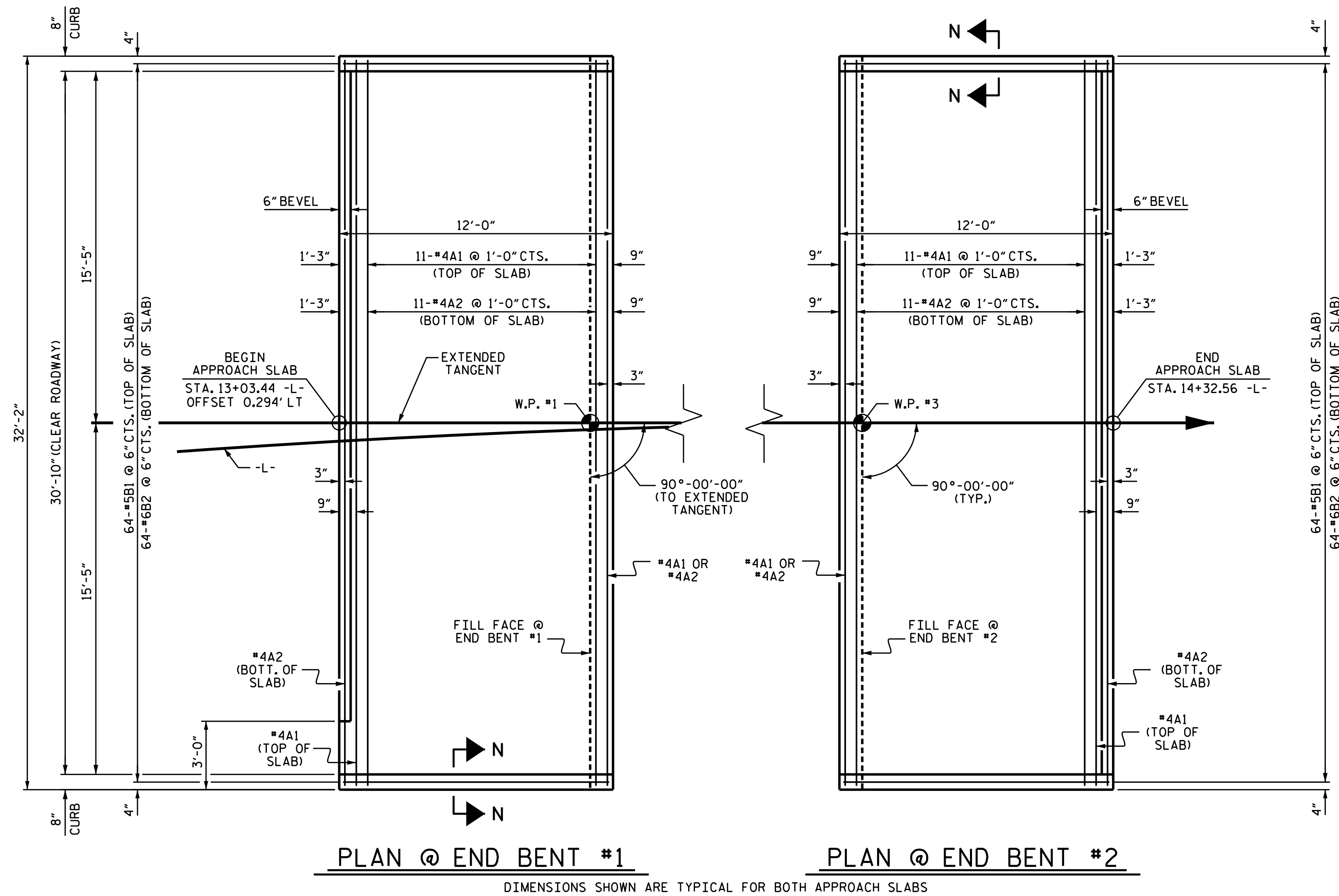
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
**RIP RAP DETAILS**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			19

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

**NOTES**

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

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

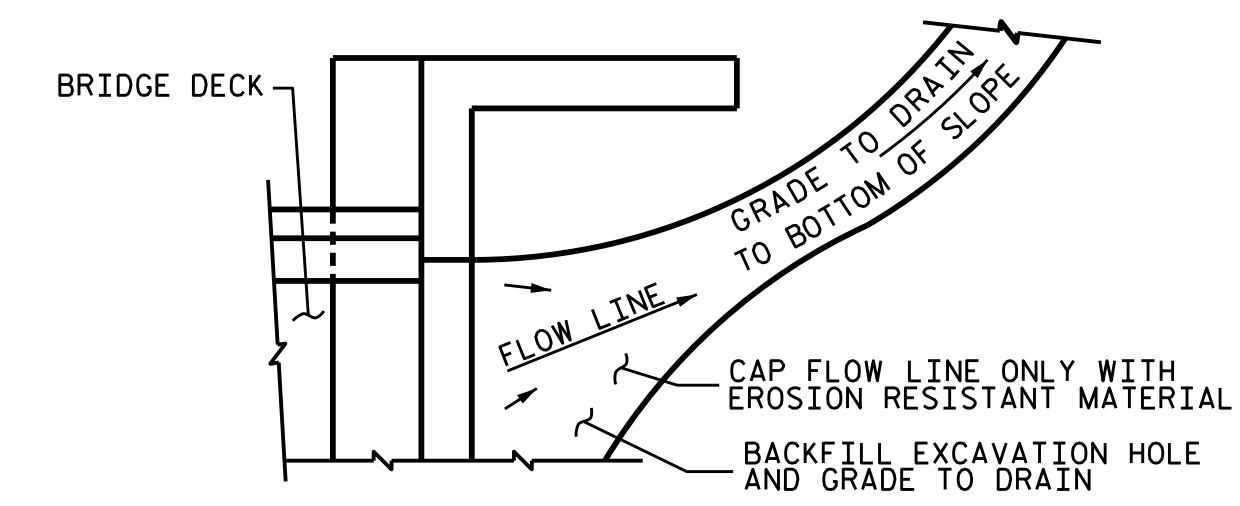
SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

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

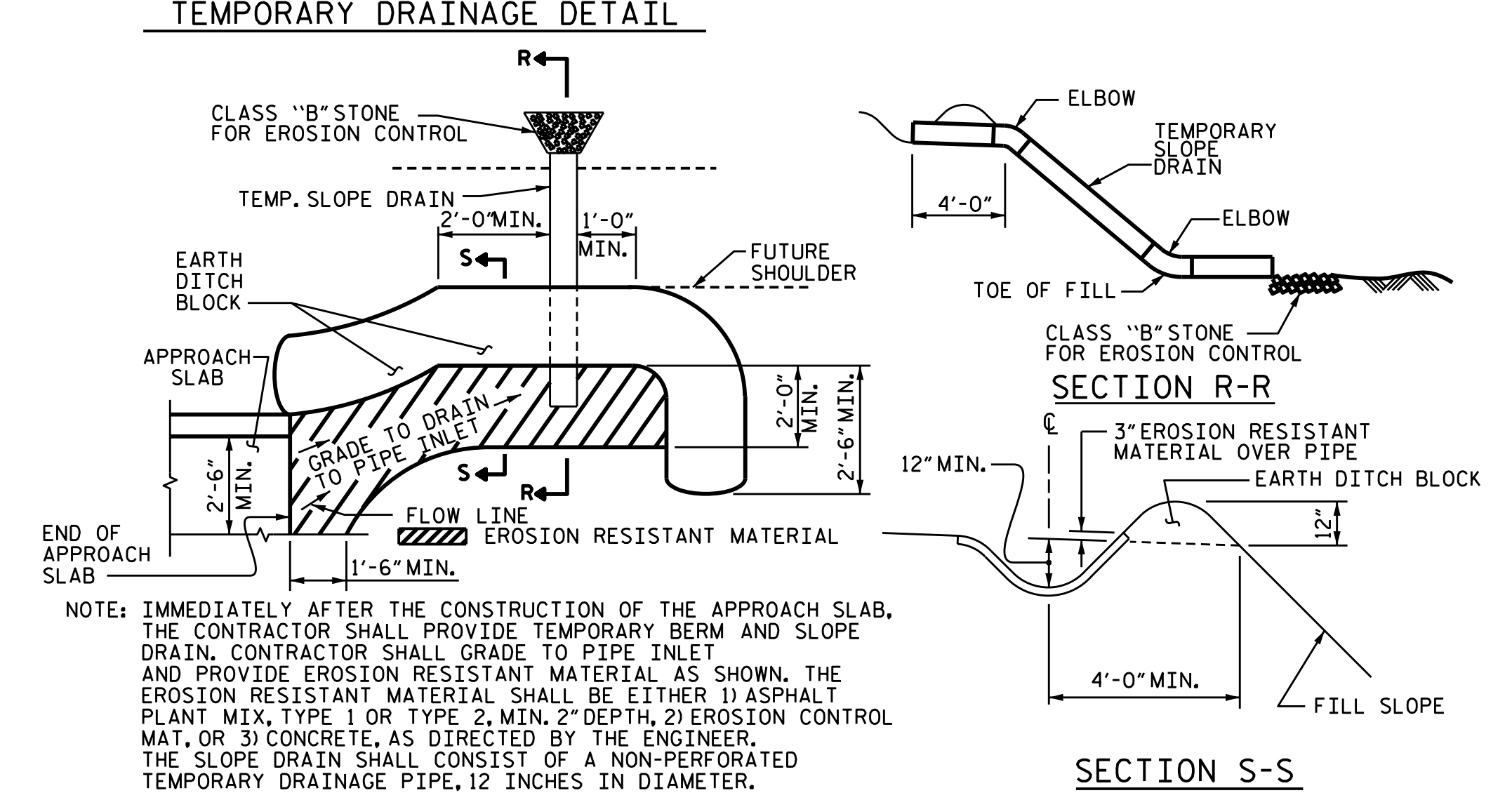
FOR THE DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

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.

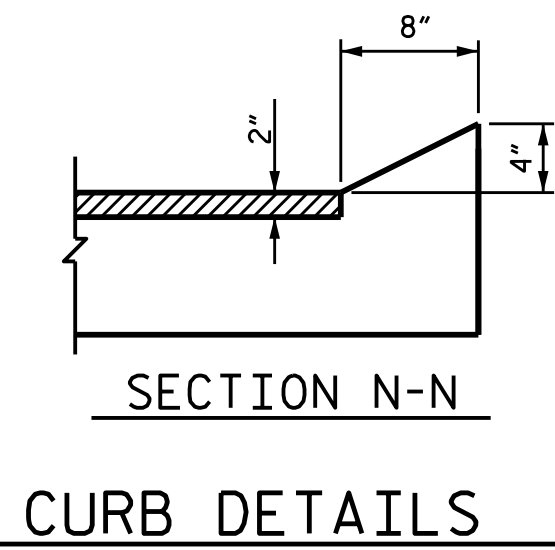
APPROACH SLAB GROOVING IS NOT REQUIRED.



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.

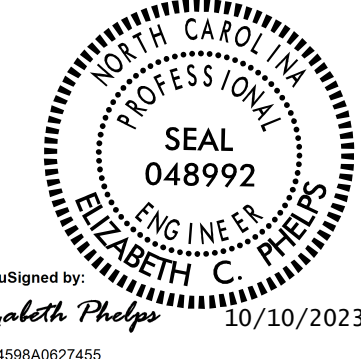


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 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.



BILL OF MATERIAL						
APPROACH SLAB AT EB #1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	13	#4	STR	31'-10"	276	
A2	13	#4	STR	31'-10"	276	
*B1	64	#5	STR	11'-2"	745	
B2	64	#6	STR	11'-8"	1121	
REINFORCING STEEL					LBS.	1397
*EPOXY COATED REINFORCING STEEL					LBS.	1021
CLASS AA CONCRETE					C. Y.	18.4
APPROACH SLAB AT EB #2						
*A1	13	#4	STR	31'-10"	276	
A2	13	#4	STR	31'-10"	276	
*B1	64	#5	STR	11'-2"	745	
B2	64	#6	STR	11'-8"	1121	
REINFORCING STEEL					LBS.	1397
*EPOXY COATED REINFORCING STEEL					LBS.	1021
CLASS AA CONCRETE					C. Y.	18.4

PROJECT NO. **BP1-R002**  
**NORTHAMPTON** COUNTY  
 STATION: **13+68.00 -L-**



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

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

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DRAWN BY : **E.C. PHELPS** DATE : **08/2023**  
 CHECKED BY : **K.F. SMIACH** DATE : **08/2023**  
 DESIGN ENGINEER OF RECORD : **E.C. PHELPS** DATE : **08/2023**



## 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.
	--	27,000 LBS. PER SQ. IN.
	--	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  $\frac{1}{2}$ " 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  $\frac{7}{8}$ "  $\emptyset$  SHEAR STUDS FOR THE  $\frac{3}{4}$ "  $\emptyset$  STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 -  $\frac{7}{8}$ "  $\emptyset$  STUDS FOR 4 -  $\frac{3}{4}$ "  $\emptyset$  STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF  $\frac{7}{8}$ "  $\emptyset$  STUDS ALONG THE BEAM AS SHOWN FOR  $\frac{3}{4}$ "  $\emptyset$  STUDS BASED ON THE RATIO OF 3 -  $\frac{7}{8}$ "  $\emptyset$  STUDS FOR 4 -  $\frac{3}{4}$ "  $\emptyset$  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  $\frac{3}{16}$ " IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY  $\frac{1}{16}$ " 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

JANUARY, 1990

STD. NO. SN



REFERENCE: SF-650045

PROJECT: BPI.R002

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
GEOTECHNICAL ENGINEERING UNIT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SF-650045	1	6

CONTENTS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN
4	PROFILE
5-6	BORE LOGS

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

COUNTY NORTHAMPTON  
PROJECT DESCRIPTION BRIDGE NO. 45 ON -L- (SR 1358)  
OVER KIRBY'S CREEK AT STA. 13+68

**REVISED**

**CAUTION NOTICE**

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

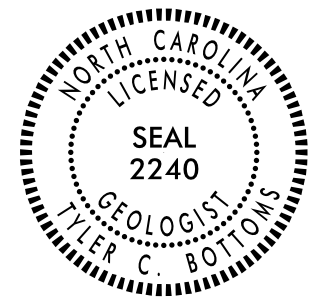
THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO PERFORM INDEPENDENT SUBSURFACE INVESTIGATIONS AND MAKE INTERPRETATIONS AS NECESSARY TO CONFIRM CONDITIONS ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES:
1. THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
  2. BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

S.N. ZIMARINO  
T.W. MILLER  
R.E. SMITH  
C.M. WALKER

INVESTIGATED BY T.C. BOTTOMS  
DRAWN BY S.N. ZIMARINO  
CHECKED BY D.N. ARGENBRIGHT  
SUBMITTED BY D.N. ARGENBRIGHT  
DATE JANUARY 2023



DocuSigned by:  
Tyler Bottoms 01/10/2023  
48A2D3BDD8CF446 SIGNATURE DATE

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

**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
GEOTECHNICAL ENGINEERING UNIT  
SUBSURFACE INVESTIGATION  
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS**

SOIL DESCRIPTION										GRADATION										ROCK DESCRIPTION										TERMS AND DEFINITIONS																													
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (ASTM T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>										WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.										HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED, AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:										ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. AQUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC. ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLOGGED FROM PARENT MATERIAL. FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.																													
<b>SOIL LEGEND AND AASHTO CLASSIFICATION</b>										<b>ANGULARITY OF GRAINS</b>										<b>WEATHERED ROCK (WR)</b>										<b>NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES &gt; 100 BLOWS PER FOOT IF TESTED.</b>																													
<b>MINERALOGICAL COMPOSITION</b>										<b>CRYSTALLINE ROCK (CR)</b>										<b>FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.</b>										<b>NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.</b>																													
<b>COMPRESSIBILITY</b>										<b>NON-CRYSTALLINE ROCK (NCR)</b>										<b>FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.</b>										<b>COASTAL PLAIN SEDIMENTARY ROCK (CPI)</b>										<b>COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.</b>																			
<b>PERCENTAGE OF MATERIAL</b>										<b>WEATHERING</b>										<b>FRESH</b>										<b>ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.</b>																													
<b>GROUND WATER</b>										<b>VERY SLIGHT (V SLI.)</b>										<b>ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN. CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.</b>										<b>SLIGHT (SLI.)</b>										<b>ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.</b>																			
<b>MISCELLANEOUS SYMBOLS</b>										<b>MODERATE (MOD.)</b>										<b>SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.</b>										<b>MODERATELY SEVERE (MOD. SEV.)</b>										<b>ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. IF TESTED, WOULD YIELD SPT REFUSAL</b>																			
<b>RECOMMENDATION SYMBOLS</b>										<b>SEVERE (SEV.)</b>										<b>ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. IF TESTED, WOULD YIELD SPT N VALUES &gt; 100 BPF</b>										<b>VERY SEVERE (V SEV.)</b>										<b>ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. IF TESTED, WOULD YIELD SPT N VALUES &lt; 100 BPF</b>																			
<b>ABBREVIATIONS</b>										<b>COMPLETE</b>										<b>ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.</b>										<b>ROCK HARDNESS</b>										<b>VERY HARD</b>										<b>CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.</b>									
<b>TEXTURE OR GRAIN SIZE</b>										<b>UNDERCUT</b>										<b>HARD</b>										<b>CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.</b>																													
<b>SOIL MOISTURE - CORRELATION OF TERMS</b>										<b>SHALLOW UNDERCUT</b>										<b>MODERATELY HARD</b>										<b>CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.</b>																													
<b>PLASTICITY</b>										<b>UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE</b>										<b>MEDIUM HARD</b>										<b>CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.</b>																													
<b>EQUIPMENT USED ON SUBJECT PROJECT</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK</b>										<b>SOFT</b>										<b>CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.</b>																													
<b>FRACATURE SPACING</b>										<b>UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL</b>										<b>VERY SOFT</b>										<b>CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGER NAIL.</b>																													
<b>FRACATURE SPACING</b>										<b>ABBREVIATIONS</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.</b>																			
<b>FRACATURE SPACING</b>										<b>DRILL UNITS:</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>									
<b>FRACATURE SPACING</b>										<b>ADVANCING TOOLS:</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>									
<b>FRACATURE SPACING</b>										<b>CLAY BITS</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>									
<b>FRACATURE SPACING</b>										<b>6" CONTINUOUS FLIGHT AUGER</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>									
<b>FRACATURE SPACING</b>										<b>8" HOLLOW AUGERS</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>									
<b>FRACATURE SPACING</b>										<b>HARD FACED FINGER BITS</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>									
<b>FRACATURE SPACING</b>										<b>TUNG-CARBIDE INSERTS</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>									
<b>FRACATURE SPACING</b>										<b>CASING w/ ADVANCER</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>									
<b>FRACATURE SPACING</b>										<b>TRICONE 2 1/8" STEEL TEETH</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>									
<b>FRACATURE SPACING</b>										<b>TRICONE * TUNG-CARB.</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>									
<b>FRACATURE SPACING</b>										<b>CORE BIT</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>									
<b>FRACATURE SPACING</b>										<b>HAND TOOLS:</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>									
<b>FRACATURE SPACING</b>										<b>POST HOLE DIGGER</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>									
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<b>FRACATURE SPACING</b>										<b>SOUNDING ROD</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>										<b>INDURATION</b>									
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PROJECT REFERENCE NO.	SHEET NO.
SF-650045	3
<b>SITE PLAN</b>	
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SKEW: 90°

