

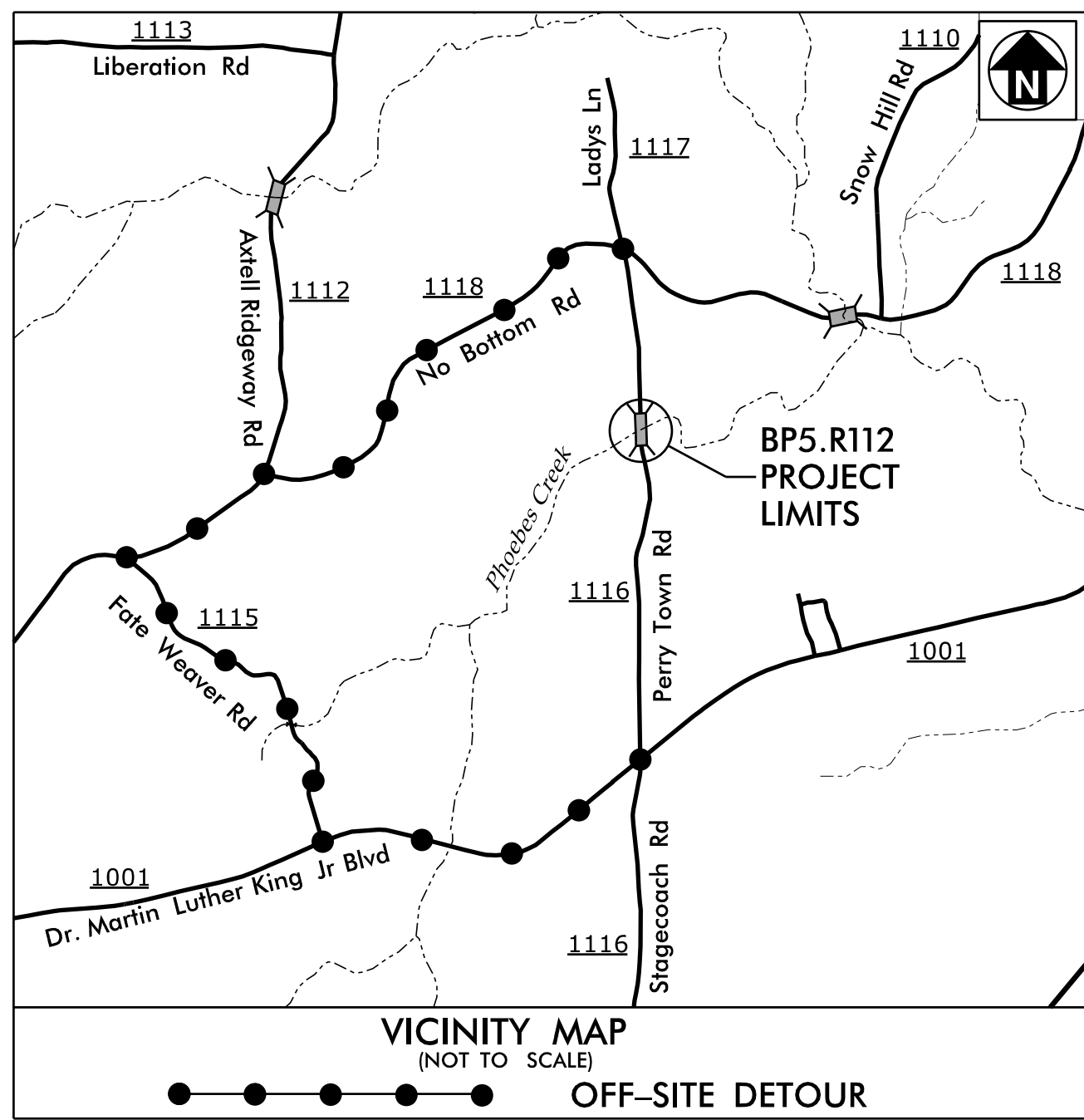
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PROJECT: BP5.R112

CONTRACT: DE00383



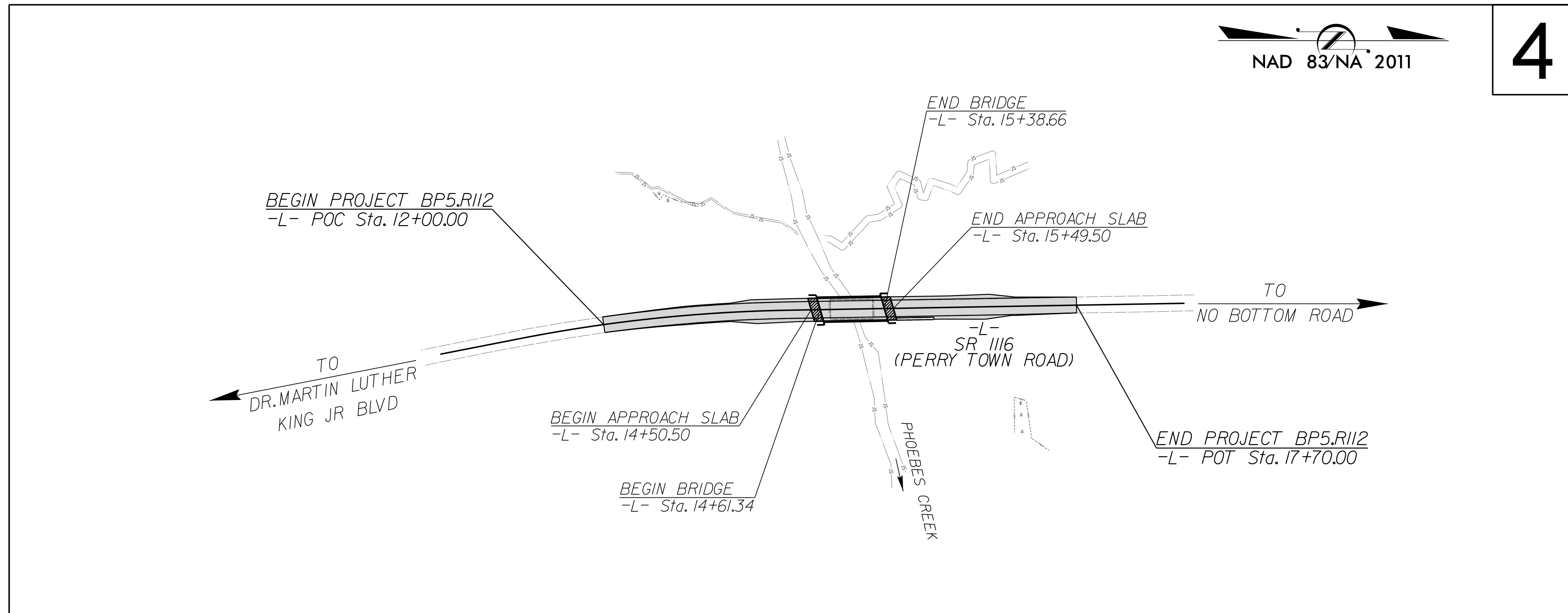
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WARREN COUNTY

LOCATION: BRIDGE NO. 126 OVER PHOEBES CREEK
ON SR 1116 (PERRY TOWN ROAD)

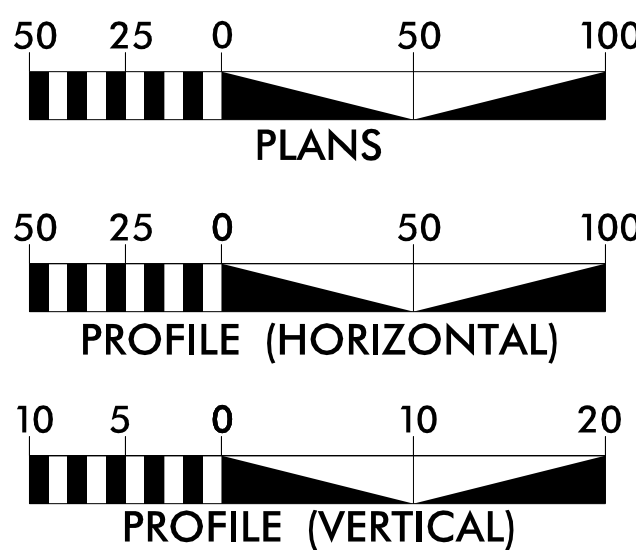
TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP5.R112	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BP5.R112.1		PE	
BP5.R112.2		R/W	
BP5.R112.3		CONST	



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UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT (2012) = 630
ADT (2025) = 1260

V = 55 MPH

FUNC CLASS = RURAL LOCAL

SUB REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT = 0.093 MILES

LENGTH STRUCTURE PROJECT = 0.015 MILES

TOTAL LENGTH PROJECT = 0.108 MILES

Prepared in the Office of WGI for

DIVISION 5

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JUNE 28, 2022

LETTING DATE:
JULY 10, 2024

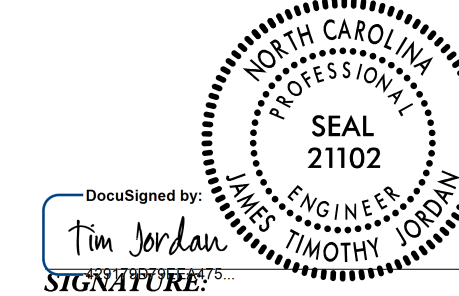
NCDOT CONTACT:

TIM JORDAN, PE
PROJECT ENGINEER

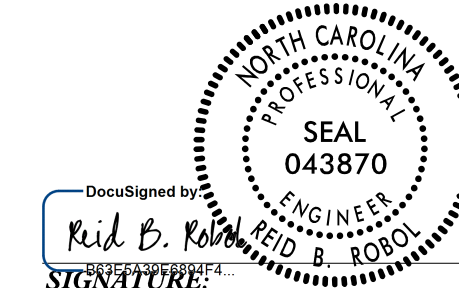
REID ROBOL, PE
HYDRAULIC ENGINEER

LISA GILCHRIST, EI
DIVISION BRIDGE PROGRAM MANAGER

ROADWAY DESIGN ENGINEER



HYDRAULICS ENGINEER



PLANS PREPARED BY:

M MOTT
MACDONALD
930 Main Campus Drive, Suite 200
Raleigh, NC 27606
(919) 552-2253
www.mottmac.com

LICENSE NO. F-0669



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

PROJECT REFERENCE	SHEET NO.
BPS.R112 – WARREN 126	1A
ROADWAY DESIGN ENGINEER	
MOTT MACDONALD 1 & E, LLC LICENSE NO. F-0669	
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Prepared in the Office of:	<p>M 930 Main Campus Drive, Suite 200 Raleigh, NC 27606 MOTT MACDONALD www.mottmac.com</p>

GENERAL NOTES

GENERAL NOTES: 2024 SPECIFICATIONS EFFECTIVE: 01-16-24

GRADING AND SURFACING:

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

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

GUARDRAIL:

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

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-SECTIONS PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE POWER: DUKE ENERGY, COMMUNICATIONS: LUMEN AND WATER: WARREN COUNTY PUBLIC UTILITIES.
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

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

LIST OF ROADWAY STANDARD DRAWINGS

EFF. 01-16-2024

2024 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 – EARTHWORK	
200.03	Method of Clearing – Method III
225.02	Guide for Grading Subgrade – Secondary and Local
225.04	Method of Obtaining Superelevation – Two Lane Pavement
DIVISION 3 – PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4 – MAJOR STRUCTURES	
423.01	Bridge Approach Fills – Type 1 Approach Fill for Bridge Abutment
DIVISION 5 – SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction – High Side of Superelevated Curve – Method I
DIVISION 8 – INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
840.00	Concrete Base Pad for Drainage Structures
840.25	Anchorage for Frames – Brick or Concrete or Precast
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet – for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Rip Rap in Channels and Ditches
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

INDEX OF SHEETS

SHEET NUMBER	DESCRIPTION
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
3B-1	GUARDRAIL, EARTHWORK, PAVEMENT REMOVAL AND SHOULDER BERM GUTTER SUMMARY
3D-1	DRAINAGE SUMMARY
3G-1	GEOTECHNICAL SUMMARIES
4	PLAN SHEET
5	PROFILE SHEET
RW01 THRU RW04	SURVEY CONTROL SHEETS
TMP-1 THRU TMP-3	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION DETAIL SHEET
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1 THRU X-3	CROSS-SECTIONS
S-0 THRU S-16	STRUCTURE PLANS
SN	STRUCTURE NOTES

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin (EIP)	○
Computed Property Corner	×
Existing Concrete Monument (ECM)	□
Parcel/Sequence Number	(123)
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	☠-s-☠-s-
Potential Contamination Area: Soil	☠-s-☠-s-
Known Contamination Area: Water	☠-w-☠-w-
Potential Contamination Area: Water	☠-w-☠-w-
Contaminated Site: Known or Potential	☠ ?

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○
Switch	□
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY & PROJECT CONTROL:

Primary Horiz Control Point	○
Primary Horiz and Vert Control Point	●
Secondary Horiz and Vert Control Point	◆
Vertical Benchmark	⊠
Existing Right of Way Monument	△
Proposed Right of Way Monument (Rebar and Cap)	▲
Proposed Right of Way Monument (Concrete)	▲
Existing Permanent Easement Monument	◇
Proposed Permanent Easement Monument (Rebar and Cap)	◇
Existing C/A Monument	△
Proposed C/A Monument (Rebar and Cap)	▲
Proposed C/A Monument (Concrete)	▲
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Existing Control of Access Line	-----
Proposed Control of Access Line	-----
Proposed ROW and CA Line	-----
Existing Easement Line	-----
Proposed Temporary Construction Easement	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

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	T
Proposed Guardrail	T
Existing Cable Guiderail	□
Proposed Cable Guiderail	□
Equality Symbol	⊕
Pavement Removal	⊗
VEGETATION:	
Single Tree	○
Single Shrub	○
Hedge	~~~~~

Woods Line	~~~~~
Orchard	○
Vineyard	□

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	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:

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

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

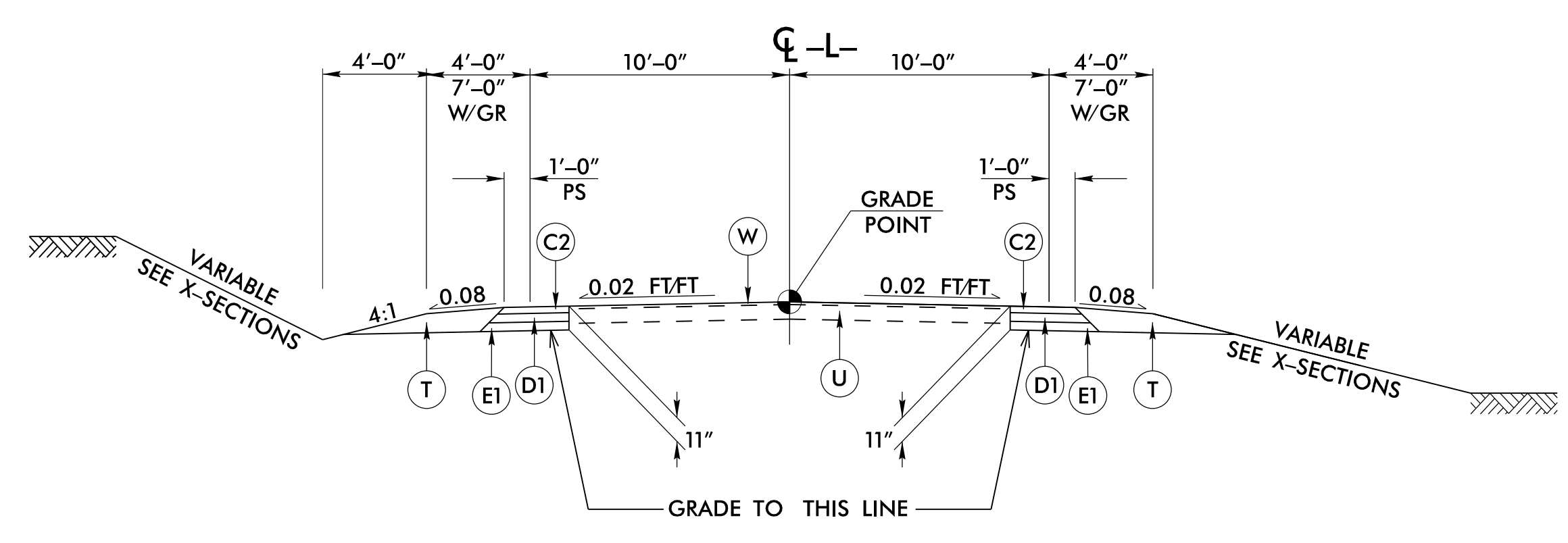
SANITARY SEWER:

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

MISCELLANEOUS:

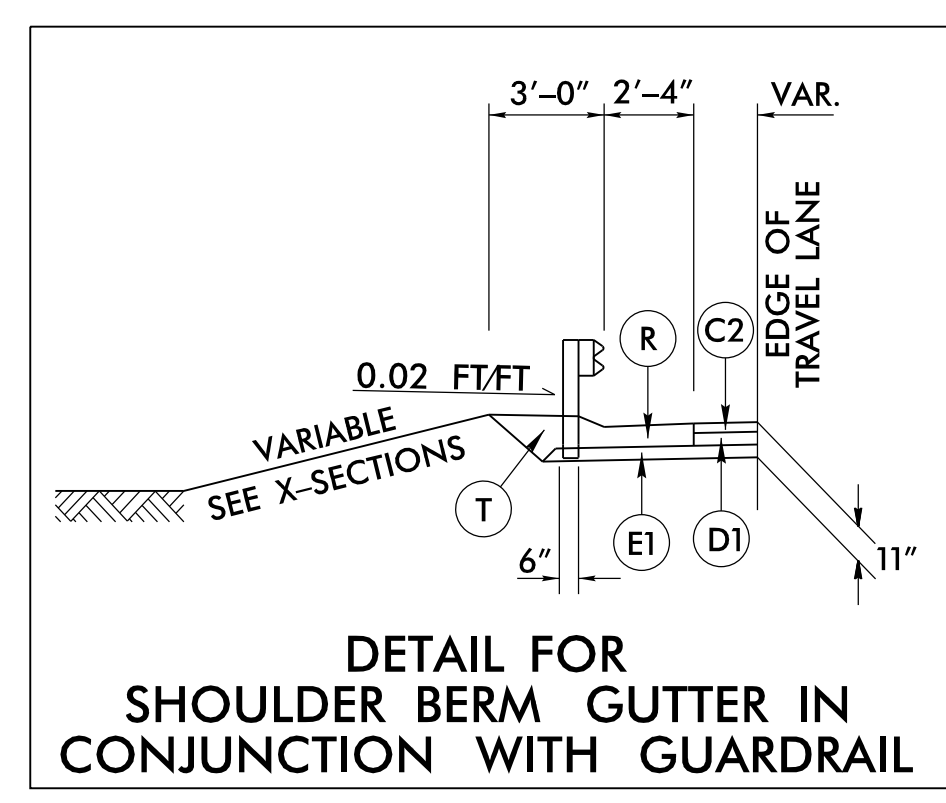
Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊠
Utility Unknown U/G Line (SUE - LOS B)*	-----
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	UST
A/G Tank; Water, Gas, Oil	□
Geoenvironmental Boring	⊕
Abandoned According to Utility Records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

PROJECT REFERENCE BPS.R112 - WARREN 126	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER TIMOTHY JOHNSON NORTH CAROLINA PROFESSIONAL SEAL 21102 08/17/2024	PAVEMENT DESIGN ENGINEER JINHAI ZHANG NORTH CAROLINA PROFESSIONAL SEAL 938174 5/14/2024
MOTT MACDONALD 1 & E, LLC Raleigh, NC 27606 LICENSE NO. P-0669	
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Prepared in the Office of:	M MOTT MACDONALD 930 Main Campus Drive, Suite 200 Raleigh, NC 27606 www.mottmac.com

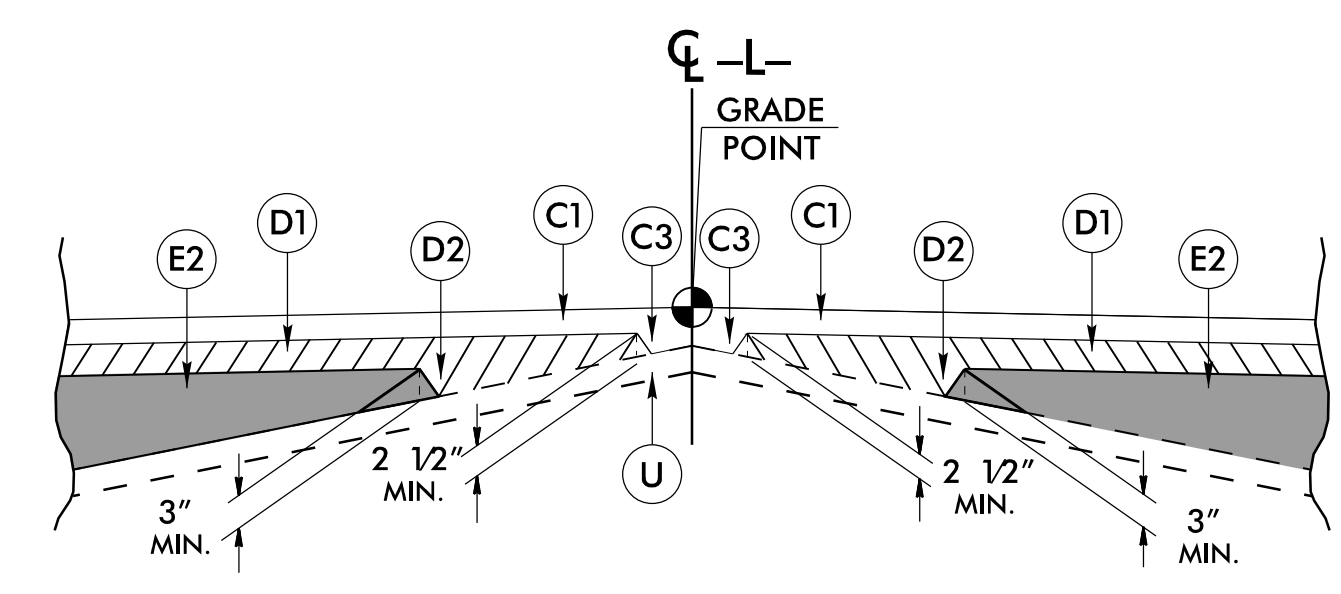


TYPICAL SECTION NO. 1

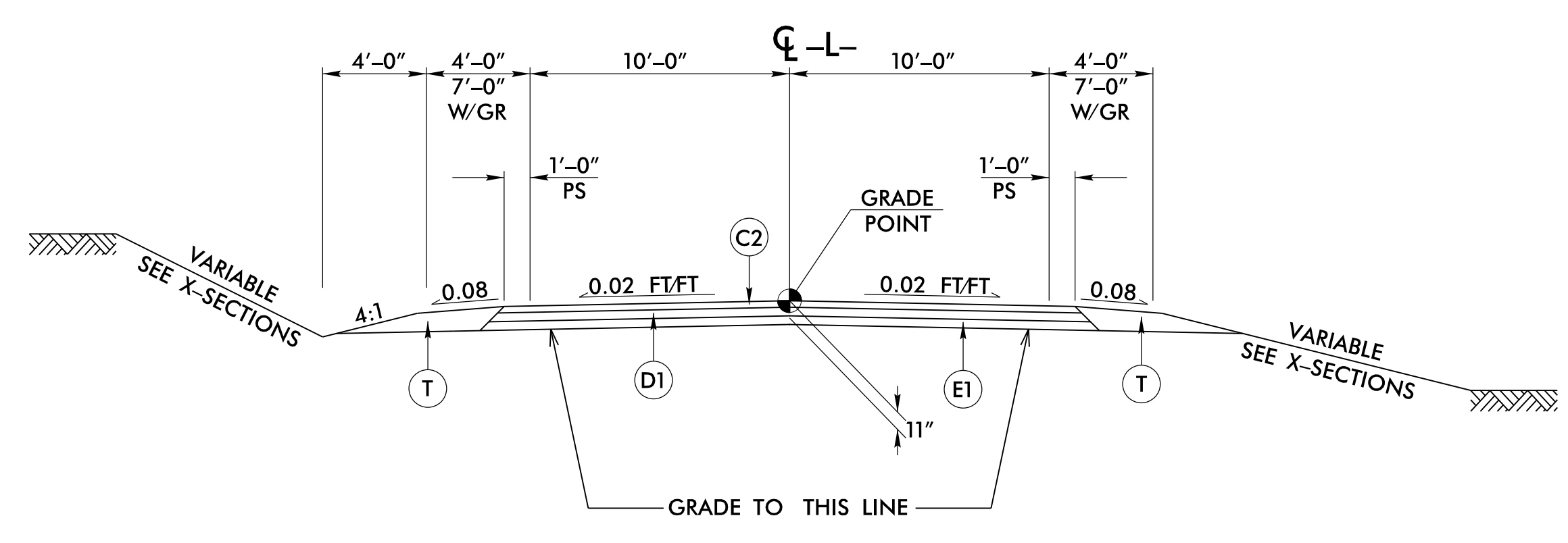
- TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 1:**
 -L- STA 12+00.00 TO 13+00.00
- USE TYPICAL SECTION NO. 1:**
 -L- STA 13+00.00 TO 14+25.00
 -L- STA 15+75.00 TO 17+00.00
- TRANSITION FROM TYPICAL SECTION NO. 1 TO EXISTING:**
 -L- STA 17+00.00 TO 17+70.00



DETAIL FOR SHOULDER BERM GUTTER IN CONJUNCTION WITH GUARDRAIL
 -L- STA 15+53.23 TO 15+98.00 RT

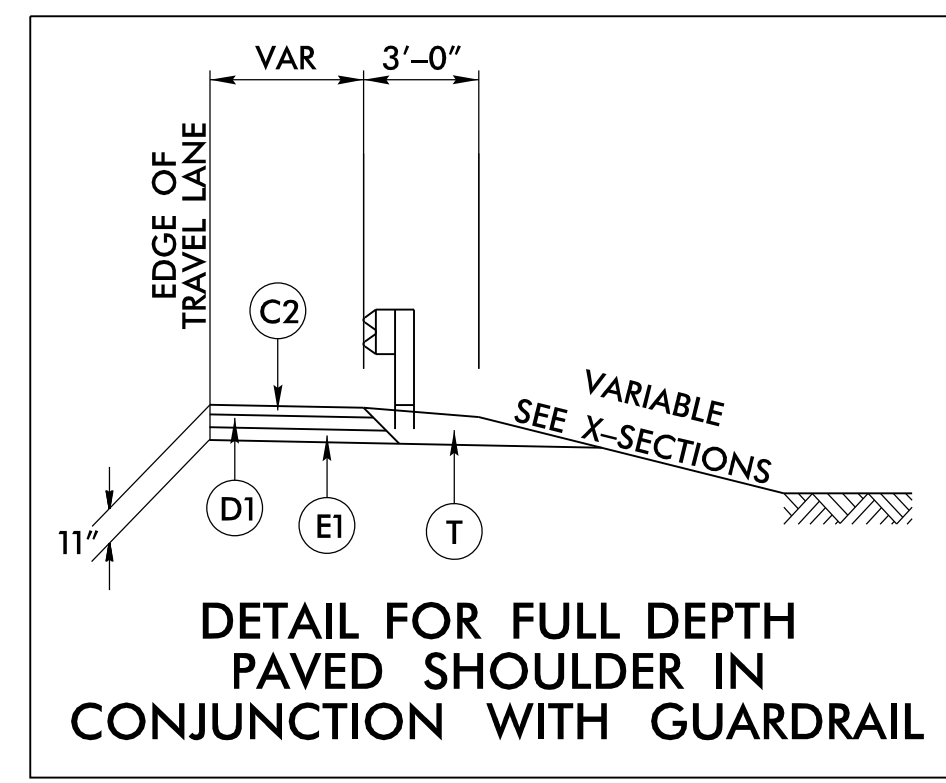


Detail Showing Method of Wedging



TYPICAL SECTION NO. 2

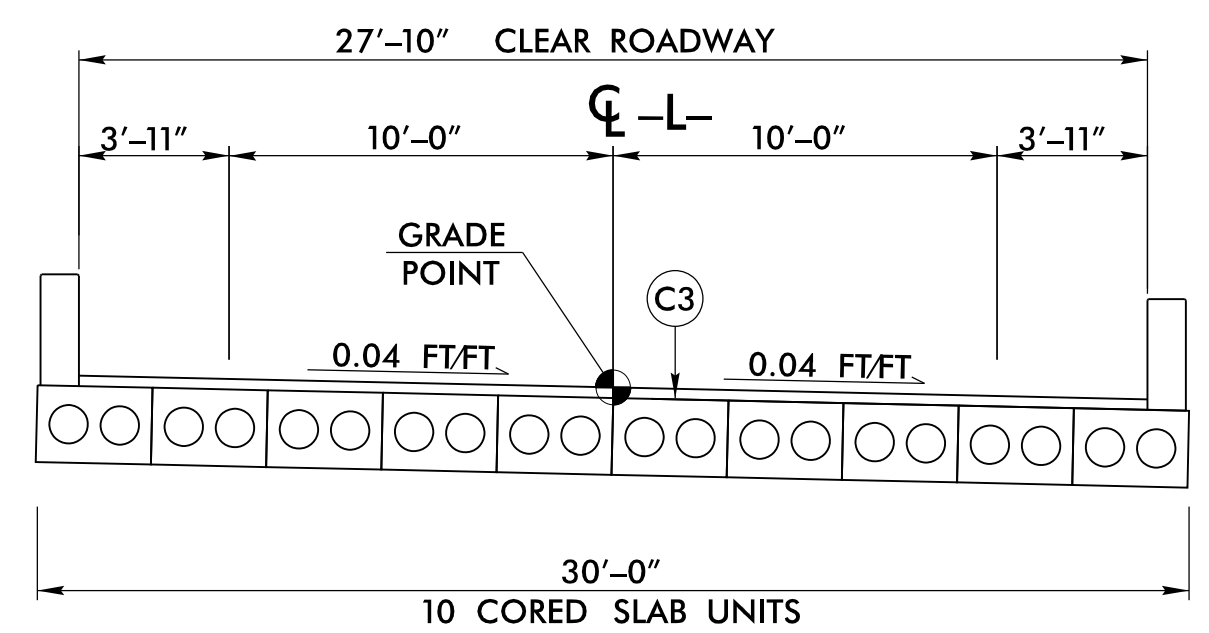
- USE TYPICAL SECTION NO. 2:**
 -L- STA 14+25.00 TO 14+61.34 (BEGIN BRIDGE)
 -L- STA 15+38.66 (END BRIDGE) TO 15+75.00



DETAIL FOR FULL DEPTH PAVED SHOULDER IN CONJUNCTION WITH GUARDRAIL

FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	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.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 1 1/2" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 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	WEDGING (SEE DETAIL SHOWING METHOD OF WEDGING).

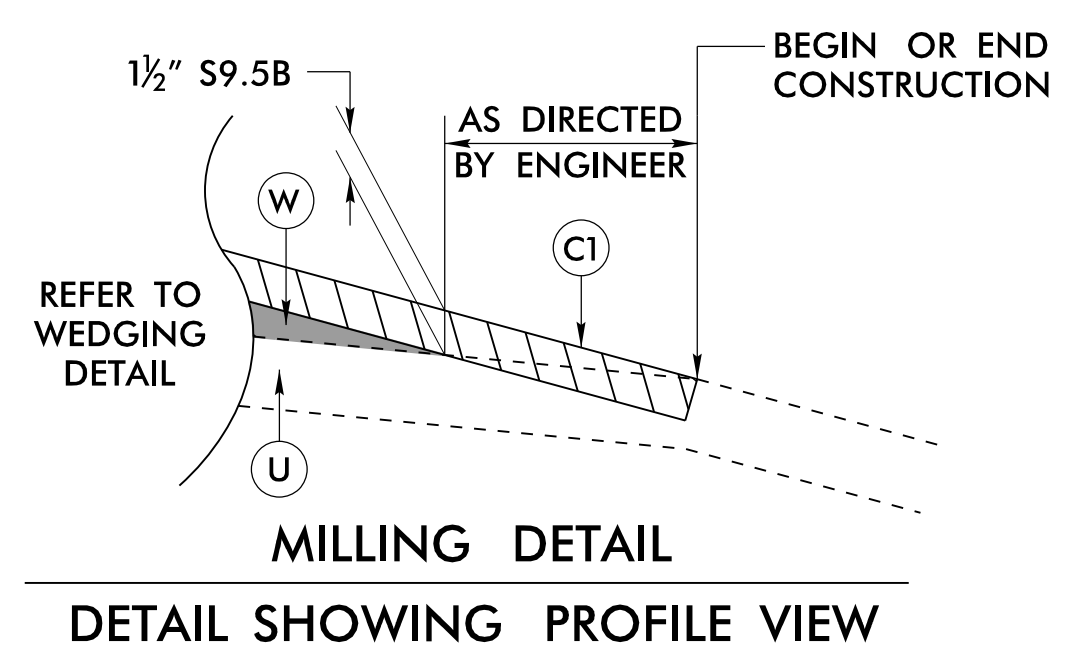
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



TYPICAL SECTION NO. 3

- USE TYPICAL SECTION NO. 3:**
 -L- STA 14+61.34 (BEGIN BRIDGE) TO 15+38.66 (END BRIDGE)

NOTE: SEE STRUCTURE PLANS FOR PAVEMENT DEPTHS ON STRUCTURE



MILLING DETAIL
 DETAIL SHOWING PROFILE VIEW

JDR66165
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"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

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE 350 NO.	REMARKS		
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	AT-1	GREU TL-3	TYPE III								PERMITTED G NG	
-L-	13 + 83.82	14 + 65.07	RT	81.25'			14 + 65.07 (BRIDGE)		4'	7'	50'		1'				1	1								
-L-	13 + 76.36	14 + 57.61	LT	81.25'				14 + 57.61 (BRIDGE)	4'	7'	50'		1'				1	1								
-L-	15 + 42.39	16 + 73.64	RT	131.25'				15 + 42.39 (BRIDGE)	4'	7'	50'		1'				1	1								
-L-	15 + 34.93	16 + 53.68	LT	118.75'			15 + 34.93 (BRIDGE)		4'	7'	50'		1'				1	1								
SUBTOTAL				412.50'																						
LESS ANCHOR DEDUCTIONS																										
GREU TL-3 4 x 50.00'				=																						
TYPE III 4 x 18.75'				=																						
TOTAL				137.50'																					5 ADDITIONAL GUARDRAIL POSTS	

SUMMARY OF EARTHWORK IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
-L- 12 + 00.00 TO 14 + 61.34 (BEGIN BRIDGE)	148		122		26
-L- 15 + 38.66 (END BRIDGE) TO 17 + 70.00	22		344	322	
SUBTOTAL	170		466	322	26
WASTE IN LIEU OF BORROW				-26	-26
PROJECT TOTAL	170			296	0
5% TO REPLACE BORROW				15	
GRAND TOTAL	170			311	0
SAY	180			330	

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	SY
-L-	14 + 25.00	14 + 72.33	CL	100.58
-L-	15 + 26.03	15 + 75.00	CL	110.99
TOTAL:				211.57
SAY:				225

SUMMARY OF SHOULDER BERM GUTTER

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	LENGTH
-L-	15 + 53.23	15 + 98.00	RT	44.77'
TOTAL:				44.77'
SAY:				50'

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

NOTE: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Fine Grading, Clearing and Grubbing and Removal of Existing Asphalt Pavement will be paid for at the contract Lump Sum price for "Grading".

(12-17-19)

**STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS**

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

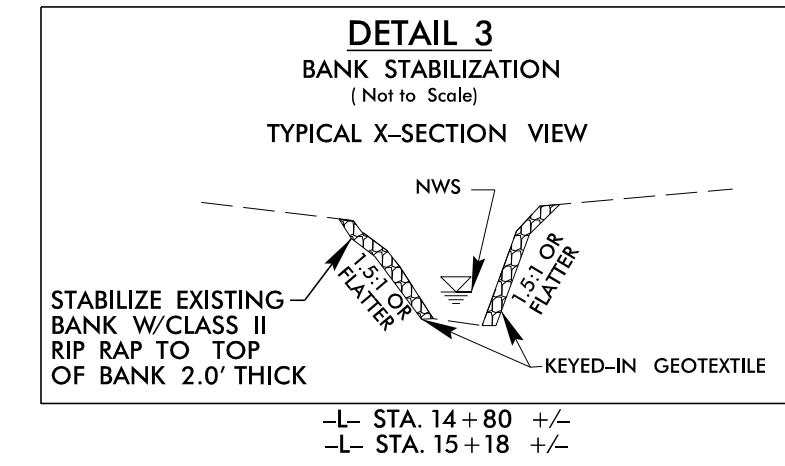
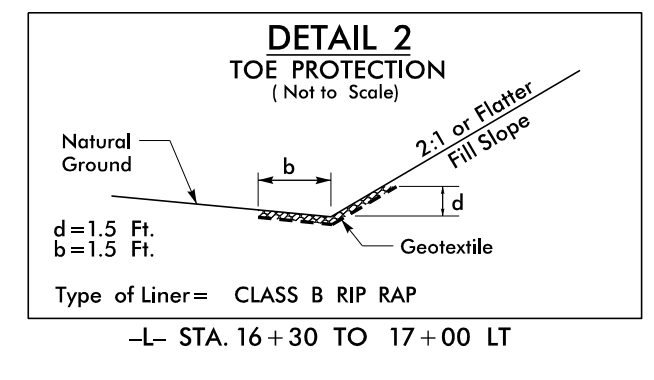
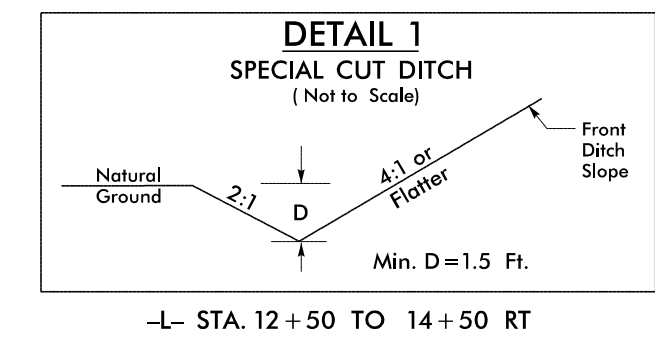
LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
			ASU (1/2)	24	200	400	100		
			TOTAL CY/TONS/SY:		200	400**	100**	0	0

*ASU(1/2) = Aggregate Subgrade (Type 1 or 2)

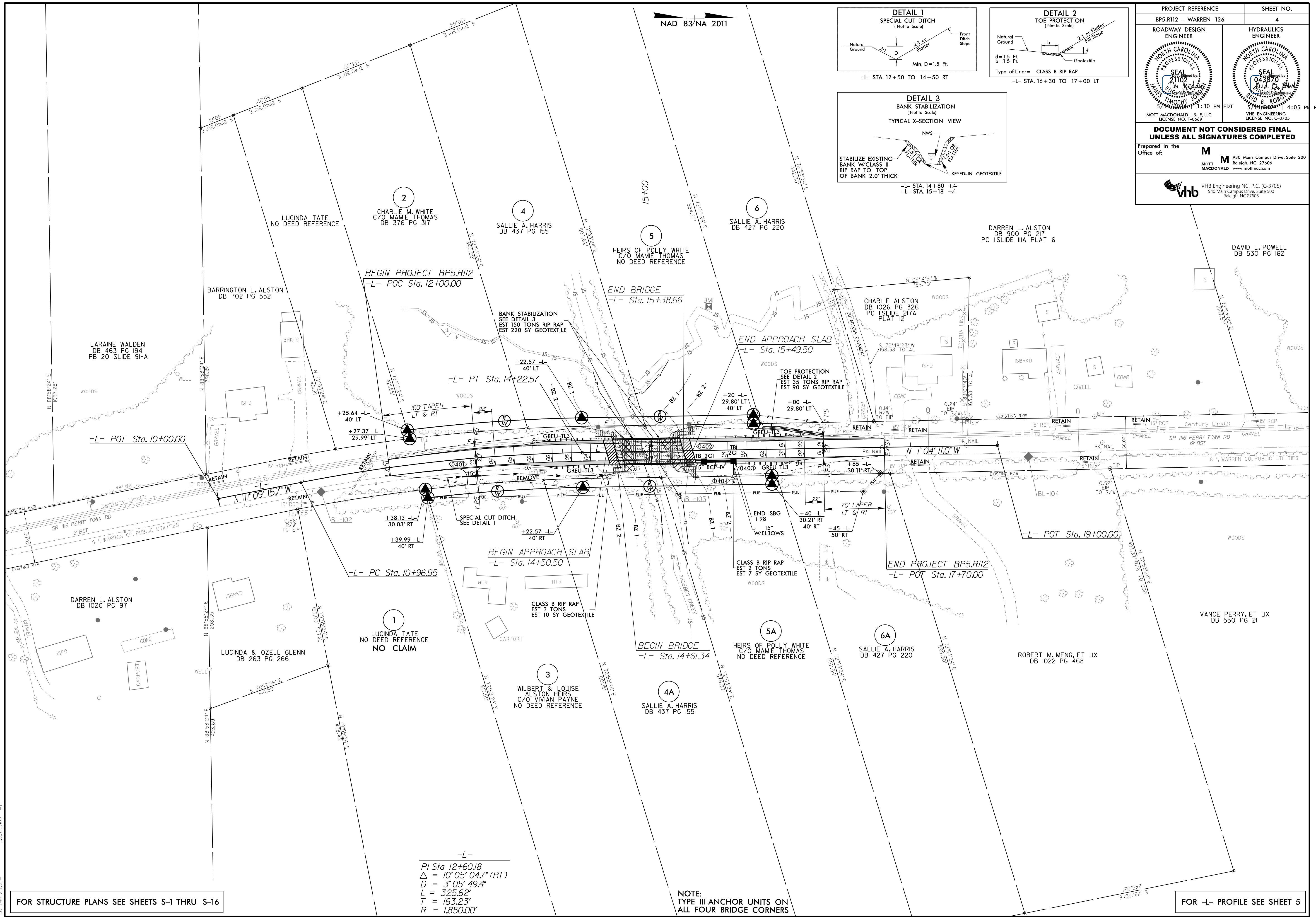
*AST = Aggregate Stabilization

**Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Soil Stabilization" are only the estimated quantities for ASU(1/2)/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.

NAD 83/NA 2011



PROJECT REFERENCE		SHEET NO.	
BP5.R112 - WARREN 126		4	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
MOTT MACDONALD I & E, LLC LICENSE NO. F-0669		VHB ENGINEERING LICENSE NO. C-3705	
5/11/2024 1:30 PM EDT		5/11/2024 4:05 PM EDT	
DOCUMENT NOT CONSIDERED FINAL			
UNLESS ALL SIGNATURES COMPLETED			
Prepared in the Office of:			
MOTT MACDONALD		VHB ENGINEERING	
930 Main Campus Drive, Suite 200 Raleigh, NC 27606		930 Main Campus Drive, Suite 200 Raleigh, NC 27606	



-L-

PI Sta 12+60.18
 $\Delta = 10^{\circ} 05' 04.7''$ (RT)
 $D = 3^{\circ} 05' 49.4''$
 $L = 325.62'$
 $T = 163.23'$
 $R = 1,850.00'$

NOTE:
TYPE III ANCHOR UNITS ON ALL FOUR BRIDGE CORNERS

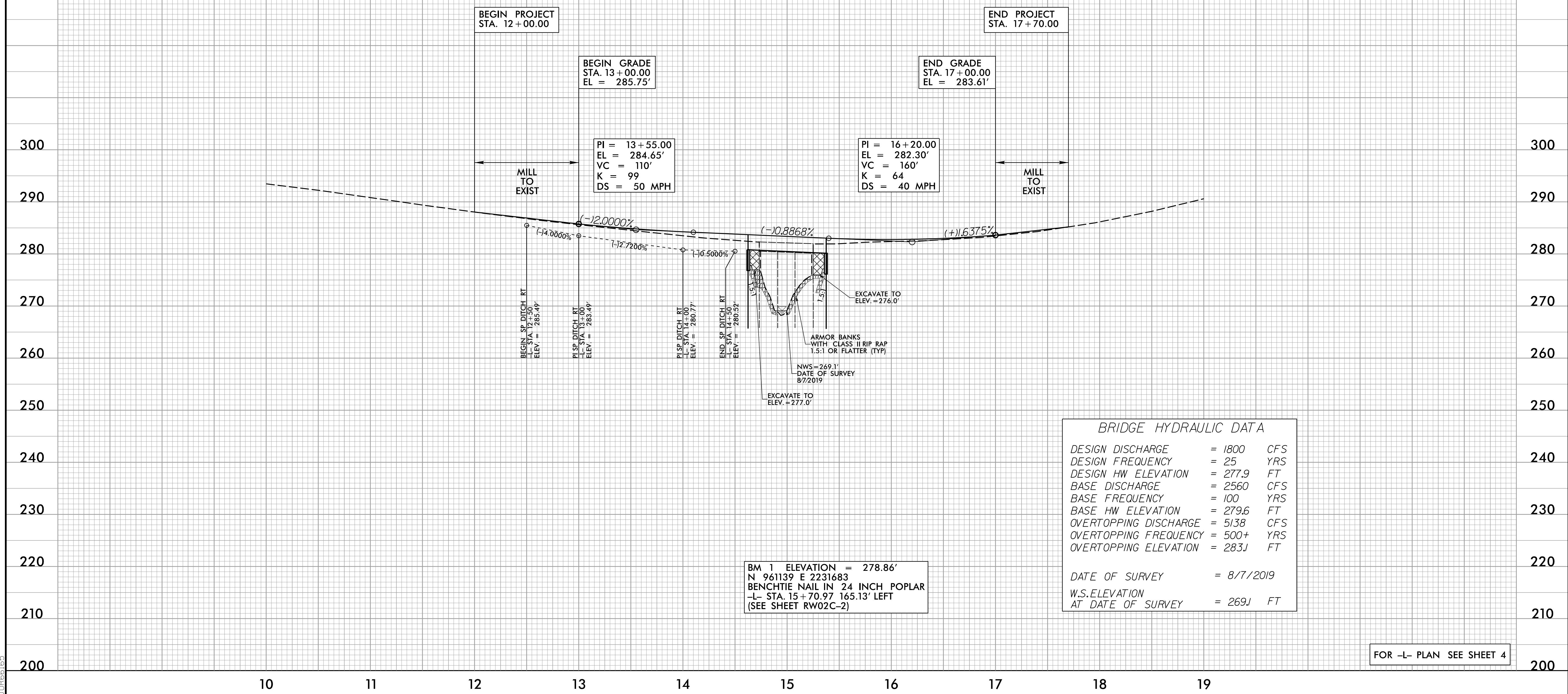
FOR STRUCTURE PLANS SEE SHEETS S-1 THRU S-16

FOR -L- PROFILE SEE SHEET 5

JOR56882
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PROJECT REFERENCE		SHEET NO.	
BPS.R112 - WARREN 126		5	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
5/13/2019 1:30 PM EDT		5/13/2019 4:05 PM EDT	
MOTT MACDONALD I & E, LLC		VHB ENGINEERING	
LICENSE NO. F-0669		LICENSE NO. C-3705	
DOCUMENT NOT CONSIDERED FINAL			
UNLESS ALL SIGNATURES COMPLETED			
Prepared in the Office of:		M MOTT MACDONALD 930 Main Campus Drive, Suite 200 Raleigh, NC 27606 www.mottmac.com	
		VHB Engineering NC, P.C. (C-3705) 940 Main Campus Drive, Suite 500 Raleigh, NC 27606	
VERTICAL SCALE 5' 0 5' 10'		HORIZONTAL SCALE 25' 0 25' 50'	

-L-



BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	= 1800	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 277.9	FT
BASE DISCHARGE	= 2560	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 279.6	FT
OVERTOPPING DISCHARGE	= 5138	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 283.1	FT
DATE OF SURVEY	= 8/7/2019	
W.S. ELEVATION AT DATE OF SURVEY	= 269.1	FT

BM 1 ELEVATION = 278.86'
 N 961139 E 2231683
 BENCHTIE NAIL IN 24 INCH POPLAR
 -L- STA. 15+70.97 165.13' LEFT
 (SEE SHEET RW02C-2)

FOR -L- PLAN SEE SHEET 4

2/23/2024 9:22:08 AM
 R:\Roadway\Pro\1920126-r-dj_psh_pfl.dgn
 JOR66165

09/08/19

09-SEP-2022 08:17
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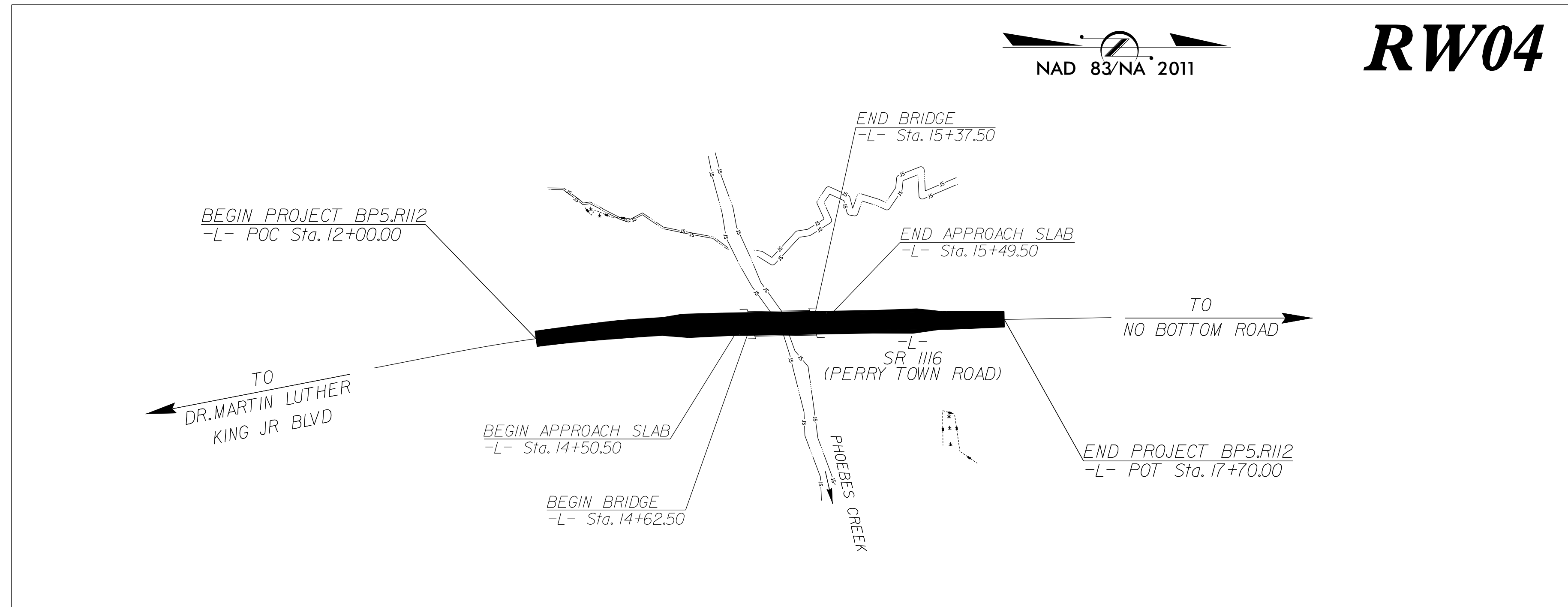
TIP PROJECT: BP5.R112

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP5.R112	RW01	

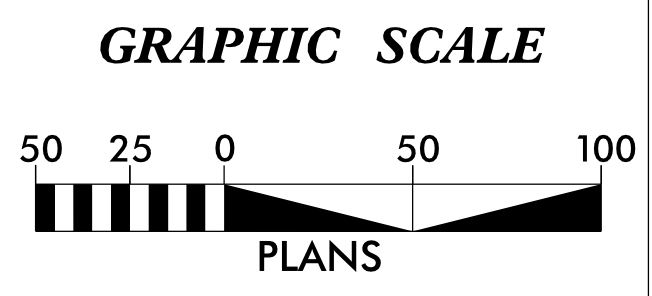
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

WARREN COUNTY



RW04



DATUM DESCRIPTION

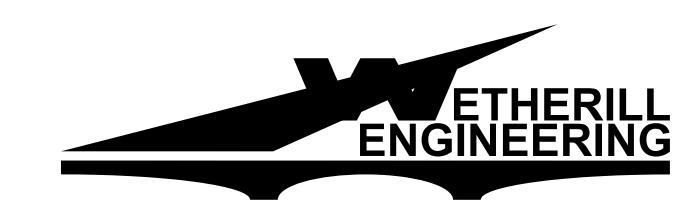
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "920126-1" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 958,974.844(ft) EASTING: 2,231,867.829(ft) ELEVATION: 358.369(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.00005674

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GRID DISTANCE FROM "920126-1" TO -L- STATION 10+00 IS N 01°18'53" E 1600.94(ft)

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88 G12NC

Prepared in the Office of:



1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8102

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

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
06/28/2022

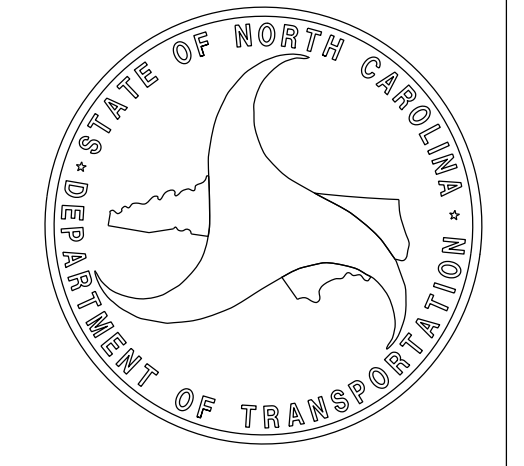
LETTING DATE:
04/12/2023

PROFESSIONAL LAND SURVEYOR



DocuSigned by:
Anthony K. Alford
SIGNATURE:

9/9/2022
Date:





6/2/19

REVISIONS

09_5FB_2022_0820
R1_2021\N\001\Location and Surveys\BP5R112 RW Staking 22154.30\80-Drawings\RW Sheets\BP5R112.LS.rw02d-1.dgn
enore
AT RAL-WS094

PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO. BP5.R112	SHEET NO. RW02D-1
Location and Surveys	
	
1223 Jones Franklin Rd. Raleigh, N.C. 27606 License No. F-4377 Bus: 919 851 8077 Fax: 919 851 8107	
<small>TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN CIVIL/SITE DESIGN - SURVEYING - CONSTRUCTION OBSERVATION</small>	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

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

This 7th day of September, 2022.

DocuSigned by:



 22BA2902F0A44E
 Professional Land Surveyor L-4372

		L	
TYPE	STATION	NORTH	EAST
POT	10+00.00	960575.3640	2231904.5592
PC	10+96.95	960670.4829	2231885.8038
PT	14+22.57	960993.8327	2231851.1790
POT	19+00.00	961471.1806	2231842.2658

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. BPS.R112	SHEET NO. RW03E-1
Location and Surveys	
	
1223 Jones Franklin Rd. Raleigh, N.C. 27606 License No. F-0377 Bus: 919 851 8077 Fax: 919 851 8107	
<small>TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN CIVIL/SITE DESIGN - SURVEYING - CONSTRUCTION OBSERVATION</small>	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, Anthony K. Alford, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from 9/6/2022 to 9/6/2022, and all coordinates are based on NAD83/2011. That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 7th day of Septmeber, 2022.

DocuSigned by:

 Professional Land Surveyor L-4372

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+25.64	-40.00	960792.5177	2231825.6303
L	12+27.37	-29.99	960795.5070	2231835.3411
L	12+38.13	30.03	960813.4468	2231893.6189
L	12+39.99	40.00	960816.4295	2231903.3080
L	14+22.57	40.00	960994.5795	2231891.1720
L	14+22.57	-40.00	960993.0859	2231811.1859
L	16+20.00	-40.00	961190.4826	2231807.5001
L	16+20.00	-29.80	961190.6731	2231817.7021
L	16+40.00	30.21	961211.7900	2231877.3275
L	16+40.00	40.00	961211.9727	2231887.1128



REVISIONS

09_5FR_2022_0822
 BPS.R112\N\001\Section and Surveys\BPSR112 RW Staking 22154.30\80-Drawings\RM Sheets\BPSR112.LS.rw03e-1.dgn
 AT RAL-WS094

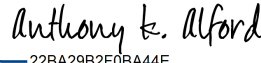
NOTES:

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 9/6/2022 TO 9/6/2022 .

RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO. BPS.R112	SHEET NO. RW03E-2
Location and Surveys	
	
1223 Jones Franklin Rd. Raleigh, N.C. 27606 License No. F-0377 Bus: 919 851 8077 Fax: 919 851 8107	
<small>TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN CIVIL/SITE DESIGN - SURVEYING - CONSTRUCTION OBSERVATION</small>	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, Anthony K. Alford, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from 09/06/2022 to 02/09/2023, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 9th day of February, 2023.
 DocuSigned by:

 228A29E2F58A44E
 Professional Land Surveyor L-4372

REVISIONS



10-FEB-2023 08:53
 P:\2023\NCDOT\Section and Surveys\bp5-104_bp5-112.con_wet Revised RW 23123.30\80-Drawings\FOR REVIEW\BPSR112_bp5-112.ls_rw03e-2.230209.dgn
 AT RAL-WS094
 amore

ROW MARKER PERMANENT EASEMENT

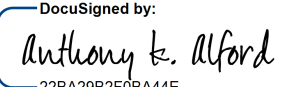
ALIGN	STATION	OFFSET	NORTH	EAST
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L	17+65.00	30.11	961336.7662	2231874.8865

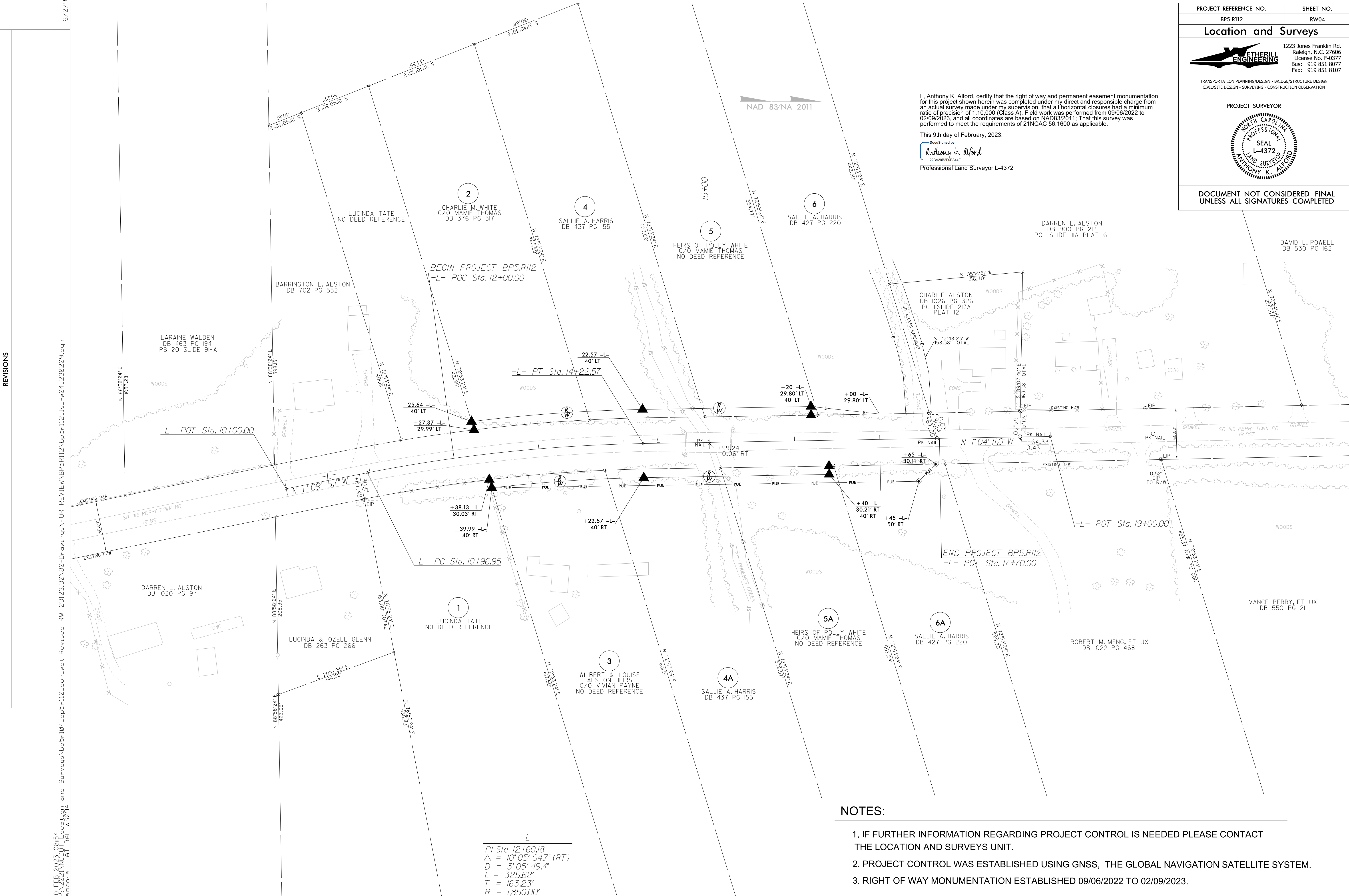
NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED 09/06/2022 TO 02/09/2023.

PROJECT REFERENCE NO. BP5.R112	SHEET NO. RW04
Location and Surveys	
	
1223 Jones Franklin Rd. Raleigh, N.C. 27606 License No. F-0377 Bus: 919 851 8077 Fax: 919 851 8107	
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN CIVIL/SITE DESIGN - SURVEYING - CONSTRUCTION OBSERVATION	
PROJECT SURVEYOR	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, Anthony K. Alford, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from 09/06/2022 to 02/09/2023, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 9th day of February, 2023.
 DocuSigned by:

 Professional Land Surveyor L-4372




REVISIONS

I:\FEB_2023_08\F4
 P:\2023\NCDOT\Location and Surveys\bp5r104_bp5r112.con_wet Revised RW 23123.30\80-Drawings\FOR REVIEW\BP5R112_bp5r112.is_rw04_230209.dgn
 AT_RAL-WS094

-L-
 PI Sta 12+60.18
 $\Delta = 10' 05' 04.7'' (RT)$
 $D = 3' 05' 49.4''$
 $L = 325.62'$
 $T = 163.23'$
 $R = 1,850.00'$

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED 09/06/2022 TO 02/09/2023.

PROJ. REFERENCE NO.	SHEET NO.
BP5.R112	TMP-1A
 HDR Engineering, Inc. of the Carolinas 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	


ROADWAY STANDARD DRAWINGS

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

<u>STD. NO.</u>	<u>TITLE</u>
1101.03	TEMPORARY ROAD CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES

LEGEND

GENERAL

 NORTH ARROW

 WORK AREA

TRAFFIC CONTROL DEVICES

 BARRICADE (TYPE III)

TEMPORARY SIGNING


 STATIONARY SIGN

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 USER: CHARNDEN DATE: 3/19/2024
 PENTABLE: NCDOT_tcp.tbl
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APPROVED: <i>Michael T. Rzepka</i> DATE: 3/19/2024 		ROADWAY STANDARD DRAWINGS & LEGEND
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

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REVISIONS

PROJ. REFERENCE NO. BP5.R112	SHEET NO. TMP-1B
 HDR Engineering, Inc. of the Carolinas 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	

GENERAL NOTES

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

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

TRAFFIC PATTERN ALTERATIONS

- A) NOTIFY THE ENGINEER, WARREN COUNTY EMS, AND WARREN COUNTY SCHOOLS THIRTY (30) CALENDAR DAYS PRIOR TO ROAD CLOSURE.
- B) CHRIS PEGRAM WITH WARREN COUNTY EMS WILL BE CONTACTED BY THE RESIDENT ENGINEER AT LEAST THIRTY (30) CALENDAR DAYS PRIOR TO ROAD CLOSURE AND CAN BE CONTACTED AT 252-257-1191 AND chrispegram@warrencounty.gov.
- RC CREECH WITH WARREN COUNTY SCHOOLS WILL BE CONTACTED BY THE RESIDENT ENGINEER AT LEAST THIRTY (30) CALENDAR DAYS PRIOR TO ROAD CLOSURE AND CAN BE CONTACTED AT 252-257-3184 AND https://www.warrenk12nc.org/staff?filter_ids=62207.

SIGNING

- C) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS TRAFFIC CONTROL PLANS.
- PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.
- D) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.
- COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.
- E) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC CONTROL DEVICES

- F) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

LOCAL NOTES

- 1) MAINTAIN ACCESS TO ALL RESIDENCES AND BUSINESSES BETWEEN THE CLOSURE POINTS AT ALL TIMES DURING CONSTRUCTION.

MANAGEMENT STRATEGIES

THE FOLLOWING LISTED WORK ZONE STRATEGIES ARE RECOMMENDED FOR INCLUSION WITHIN THIS TRANSPORTATION MANAGEMENT PLAN (TMP).

RECOMMENDED STRATEGIES:

TRAFFIC MANAGEMENT STRATEGIES:

- FULL ROADWAY CLOSURE
- OFF-SITE DETOURS / USE OF ALTERNATIVE ROUTES

PHASING

STEP 1

USING LANE CLOSURES (RSD 1101.02, SHEET 1 OF 14), INSTALL PROPOSED WATERLINE.

STEP 2

USING TMP-3 AND RSD 1101.03, SHEET 1 OF 9, INSTALL ROAD CLOSURE AND DETOUR SIGNS, THEN CLOSE SR 1116 (PERRYTOWN RD) AND DETOUR TRAFFIC (SEE LOCAL NOTE 1).

STEP 3

REMOVE EXISTING BRIDGE.

STEP 4

CONSTRUCT PROPOSED STRUCTURE AND ROADWAY.

STEP 5

PLACE FINAL MARKINGS AND MARKERS (SEE FINAL PAVEMENT MARKING PLANS).

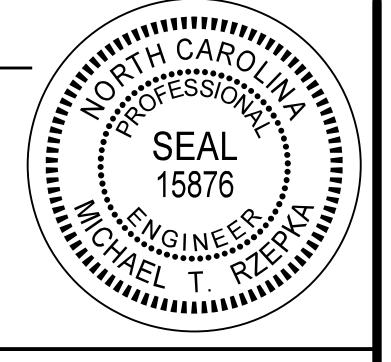
STEP 6

REMOVE ALL WORK ZONE TRAFFIC CONTROL SIGNS AND DEVICES AND OPEN SR 1116 (PERRYTOWN RD) TO TRAFFIC.

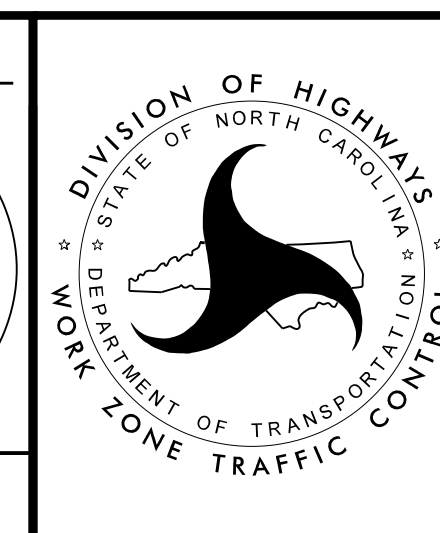
APPROVED: Michael T. Rzepka

DATE: 3/19/2024

SEAL



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



TRANSPORTATION OPERATIONS PLAN AND PHASING

PROJ. REFERENCE NO.	SHEET NO.
BP5.R112	TMP-2

HDR HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

SIGN NUMBER: SP-01 **BACKG COLOR: Fluorescent Orange**
TYPE: STATIONARY **COPY COLOR: Black**
QUANTITY: SEE PLANS

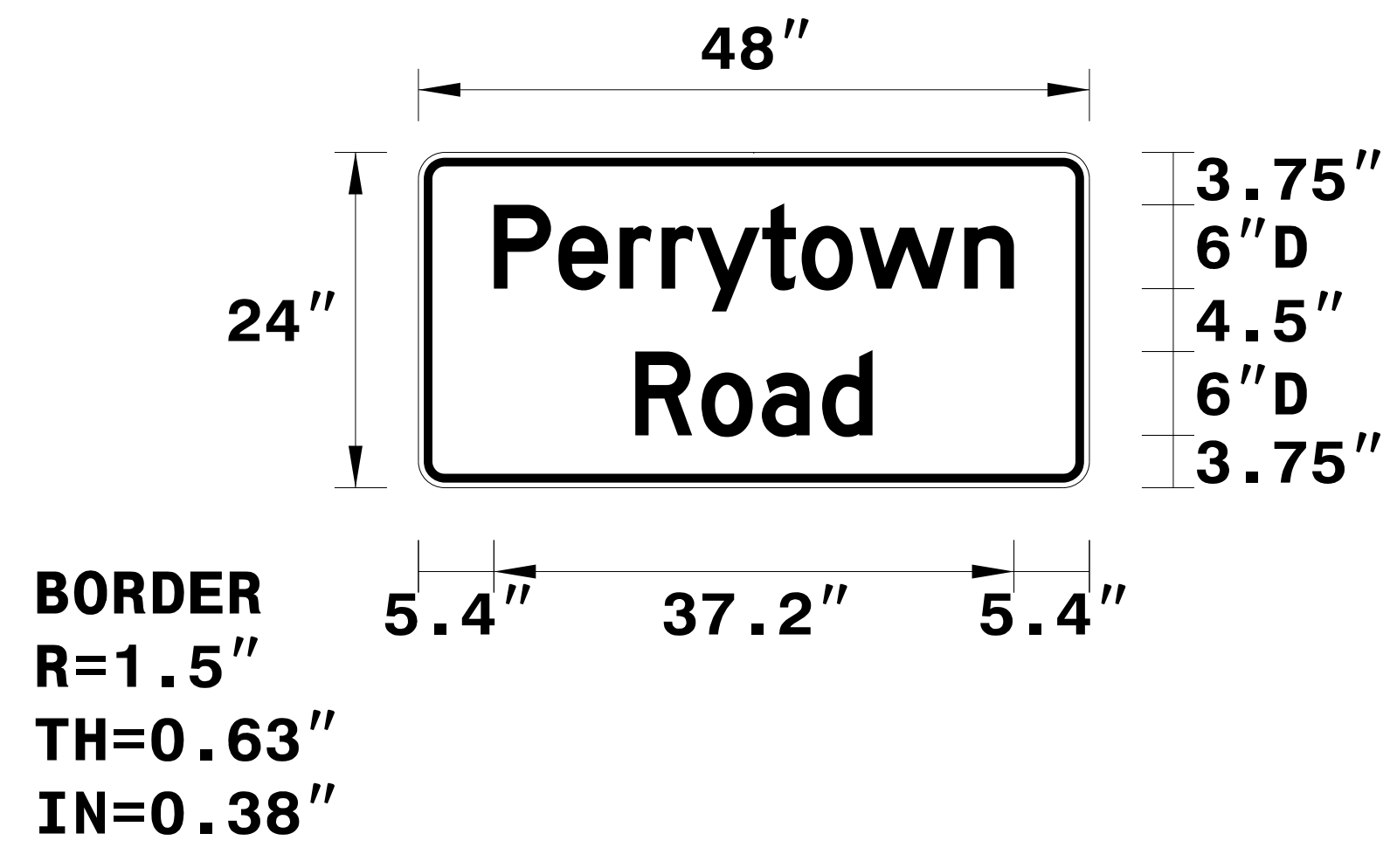
SYMBOL	X	Y	WID	HT

SIGN WIDTH: 4'-0"
HEIGHT: 2'-0"
TOTAL AREA: 8.0 Sq.Ft.

BORDER TYPE: INSET
RECESS: 0.38"
WIDTH: 0.63"
RADII: 1.5"

MAT'L: 0.080" (2.0 mm) ALUMINUM

DESIGN BY: R DRAYTON **CHECKED BY: M. RZEPKA** **Jul 11, 2022**
PROJECT ID: 920126 **DIV: 5**



- USE NOTES: 1,2**
- Legend and border shall be direct applied black non-reflective sheeting.
 - Background shall be NC GRADE B fluorescent orange retroreflective sheeting.

Spacing Factor is 1 unless specified otherwise

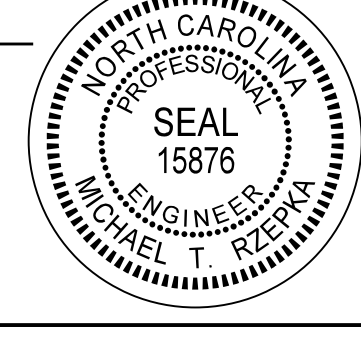
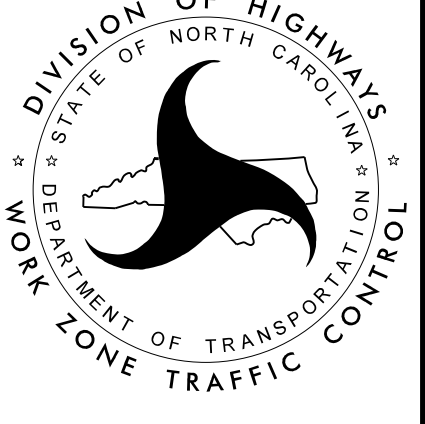
LETTER POSITIONS

Letter spacings are to start of next letter

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		R	o	a	d							D 2000 17
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FILENAME: 920126_TC_TMP02 **NORTH CAROLINA D.O.T. SIGN DETAIL**

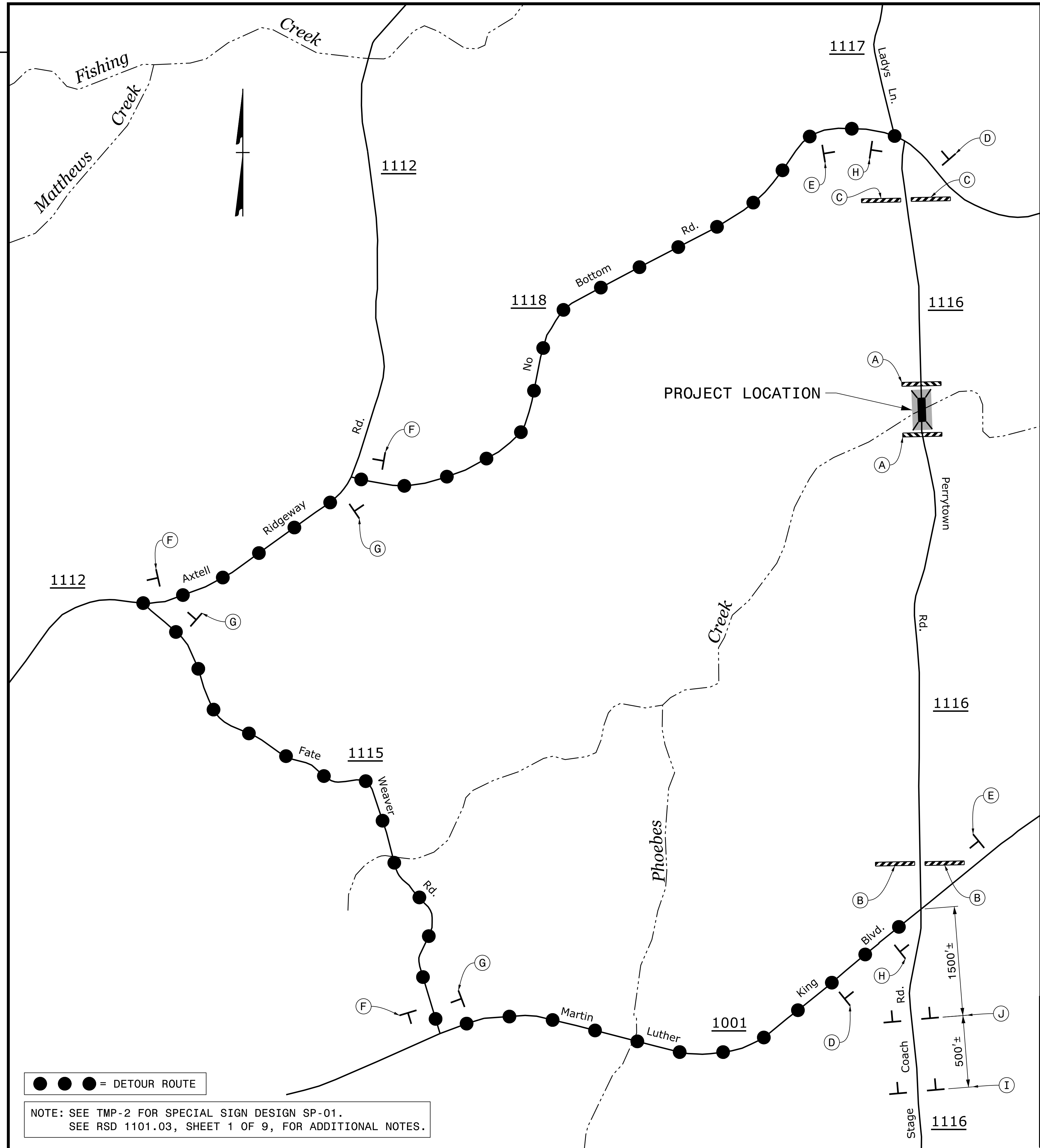
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APPROVED: <i>Michael T. Rzepka</i> DATE: 3/19/2024 SEAL: 		SPECIAL SIGN DESIGN
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

PROJ. REFERENCE NO. BP5.R112	SHEET NO. TMP-3
HDR Engineering, Inc. of the Carolinas 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	

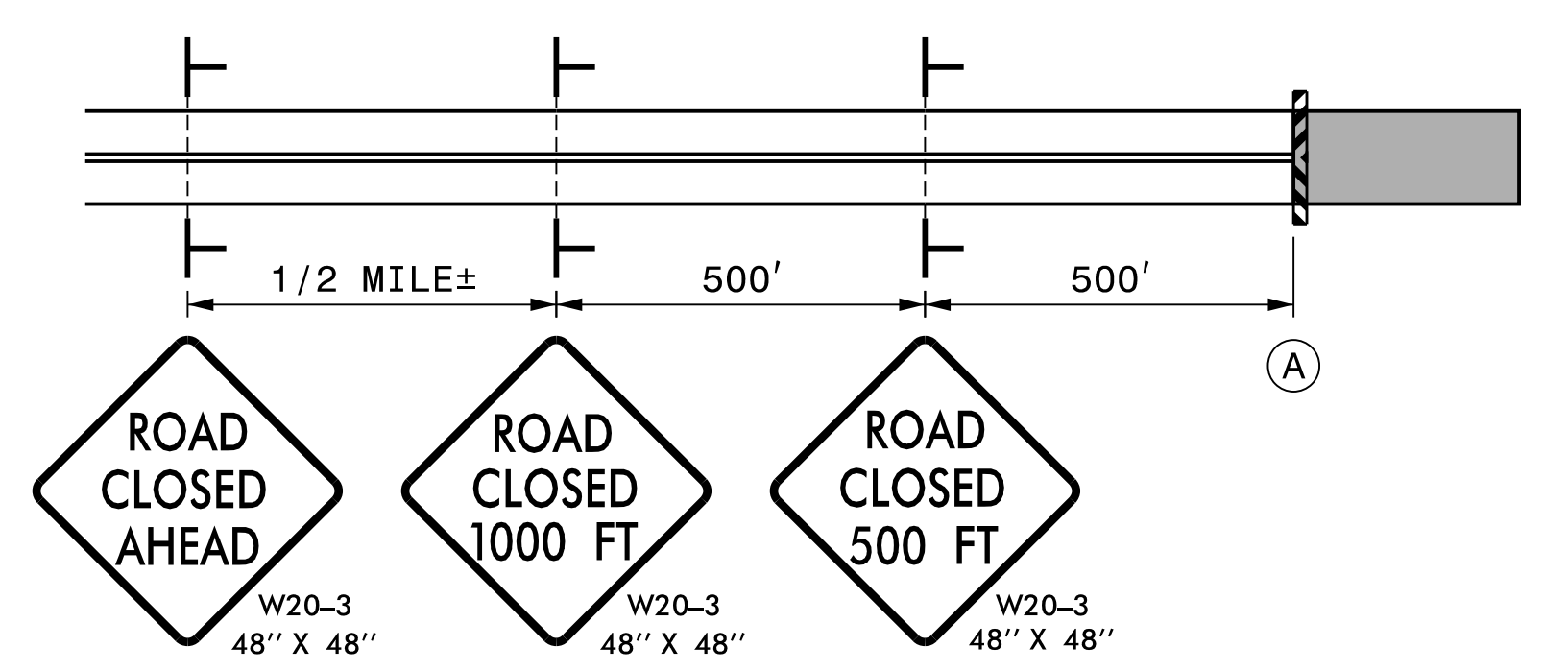
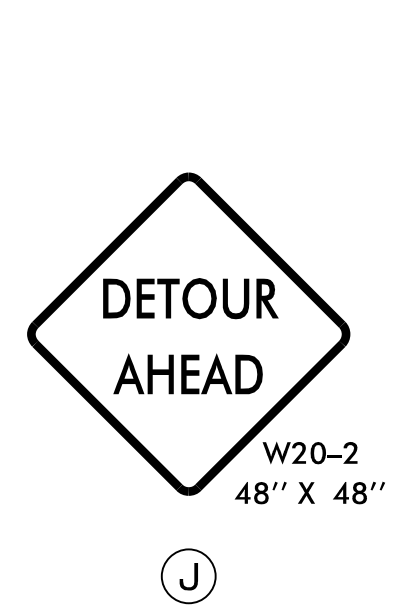
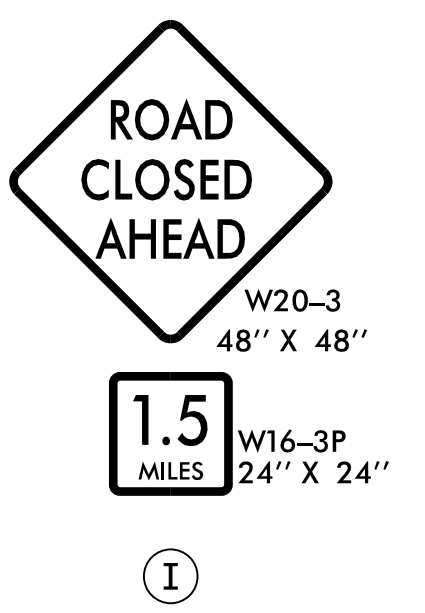
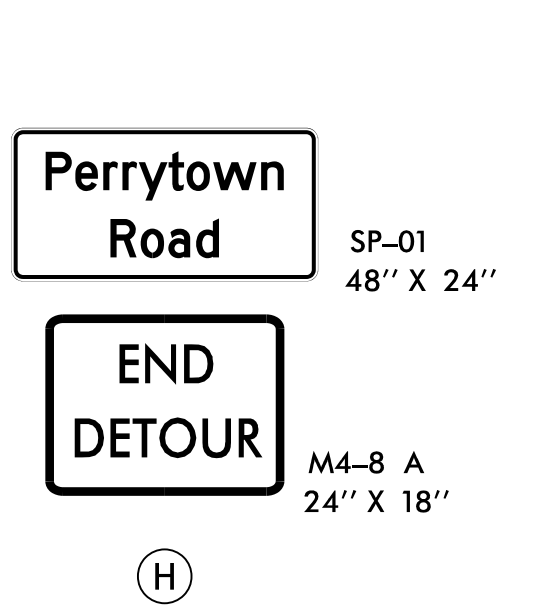
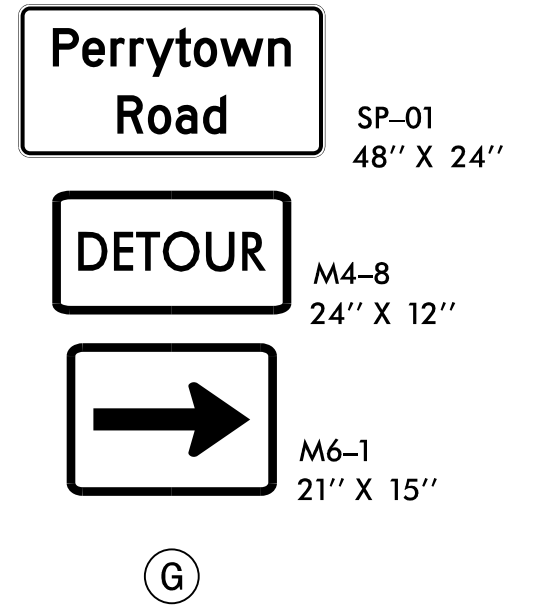
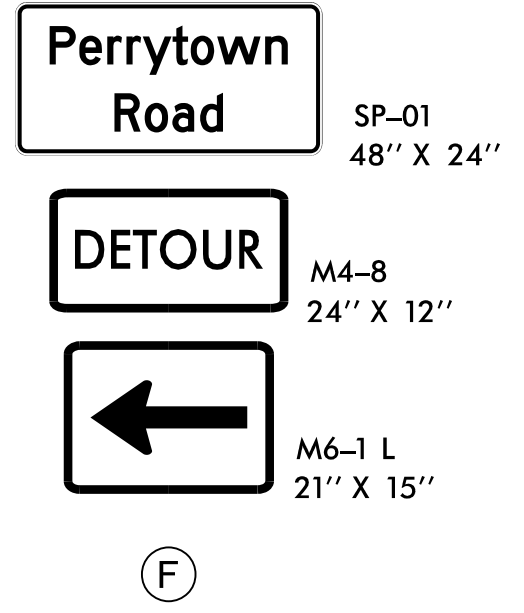
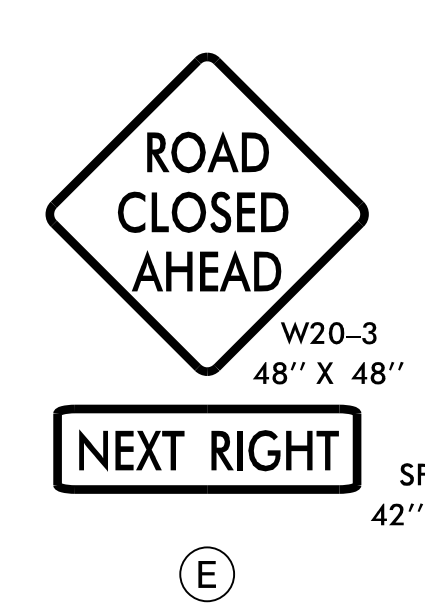
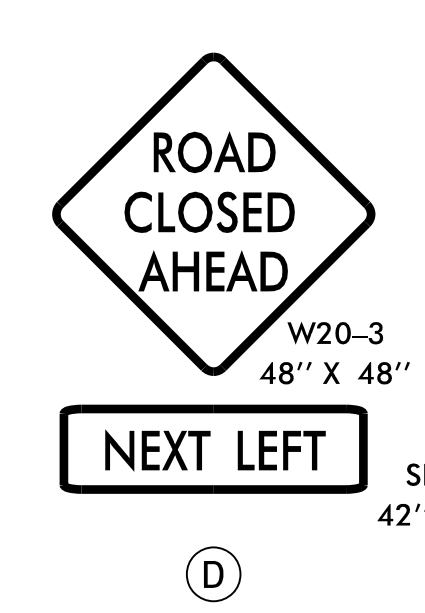
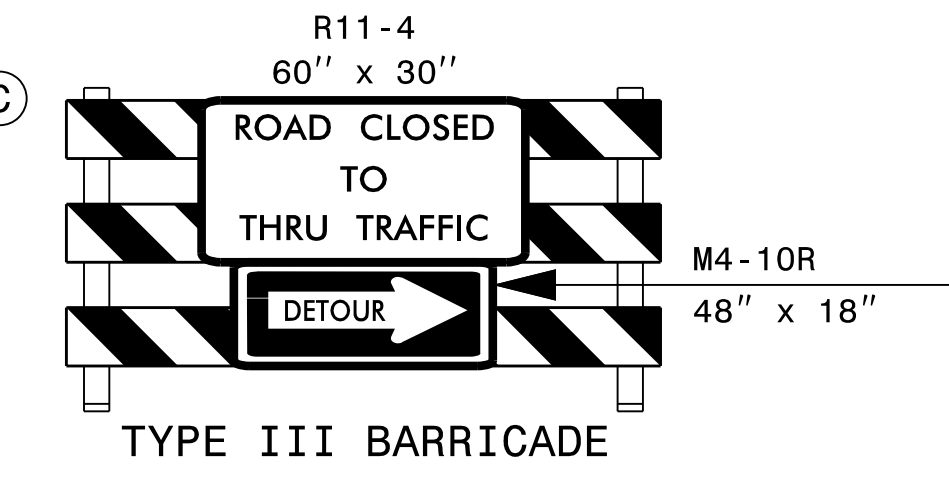
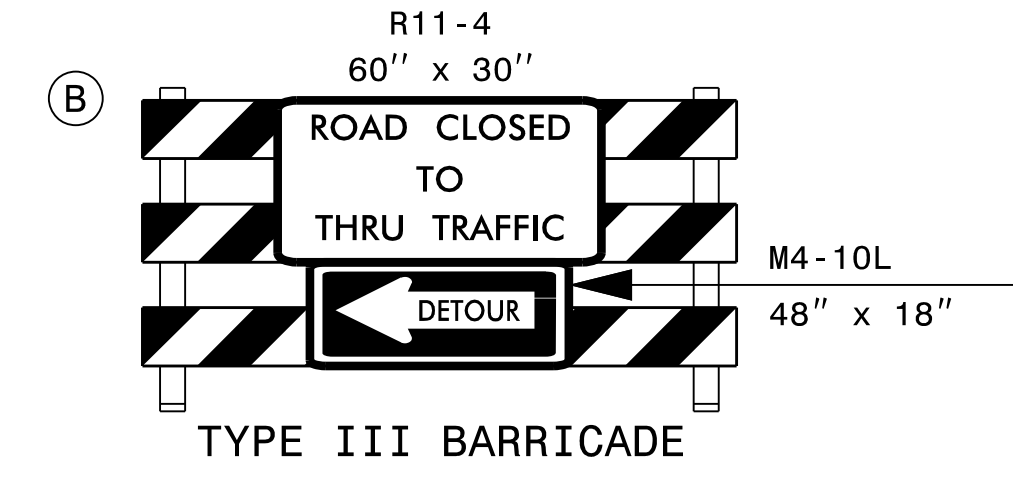
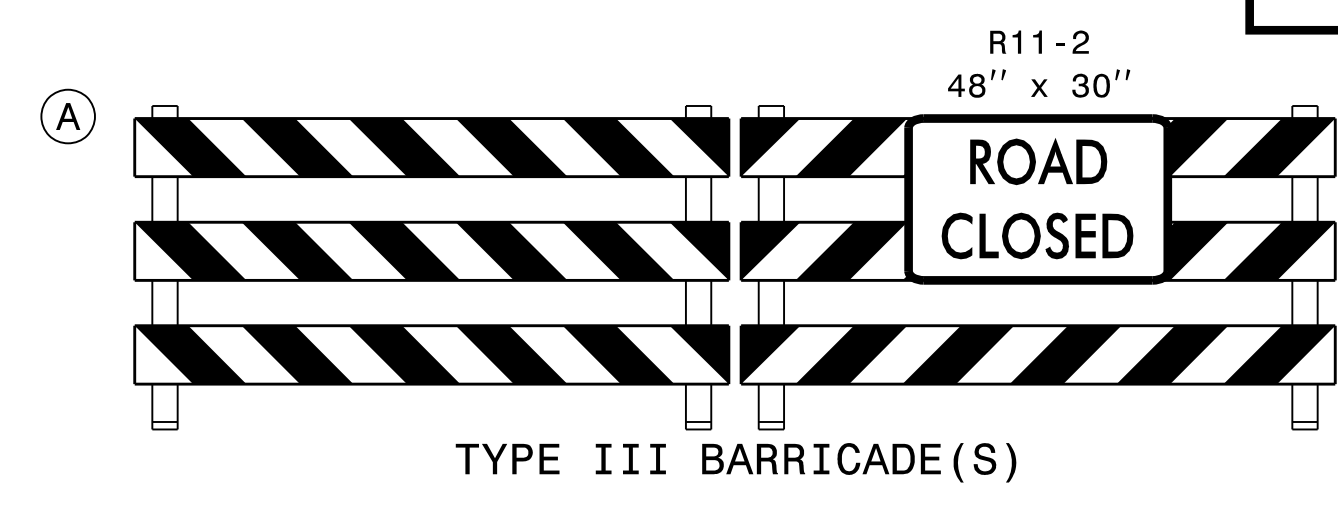
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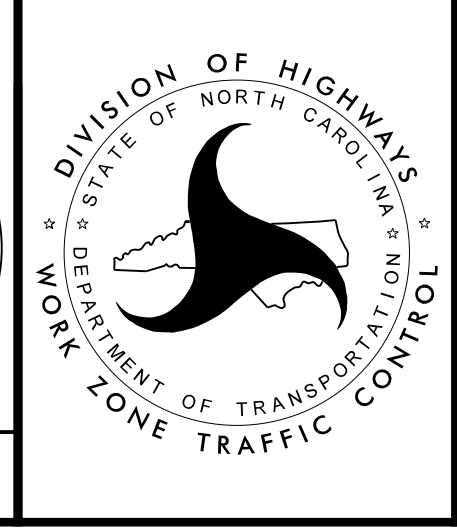


● ● ● = DETOUR ROUTE

NOTE: SEE TMP-2 FOR SPECIAL SIGN DESIGN SP-01.
SEE RSD 1101.03, SHEET 1 OF 9, FOR ADDITIONAL NOTES.



APPROVED: *Michael T. Rzepka*
 DATE: 3/19/2024
 SEAL



OFFSITE DETOUR ROUTE
FOR PERRYTOWN RD
CLOSURE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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PROJECT: BP5.R112

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN

WARREN COUNTY

LOCATION: BRIDGE NO. 126 OVER PHOEBES CREEK ON SR 1116 (PERRYTOWN ROAD)

PROJECT NO. BP5.R112	SHEET NO. PMP - 1
APPROVED: <i>Michael T. Rzepka</i>	
DATE: 5/9/2024	
SEAL 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

INDEX

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

GENERAL NOTES

- THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN, OR DIRECTED BY THE ENGINEER.
- A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	MARKER
SR 1116 (PERRYTOWN RD)	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.

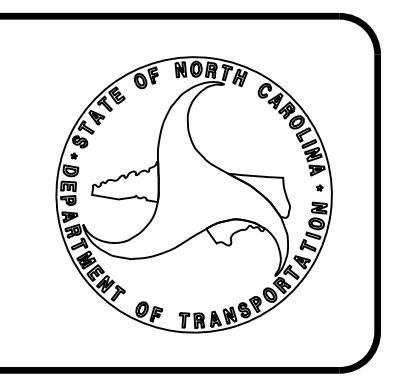
ROADWAY STANDARD DRAWING

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

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

PLAN SUBMITTED TO: N.C.D.O.T. SIGNING AND DELINEATION UNIT

A. ALQUDWAH, P.E.	SIGNING & DELINEATION STANDARDS ENGINEER
_____	SIGNING & DELINEATION PROJECT DESIGN ENGINEER



PLAN PREPARED BY: HDR ENGINEERING, INC. OF THE CAROLINAS

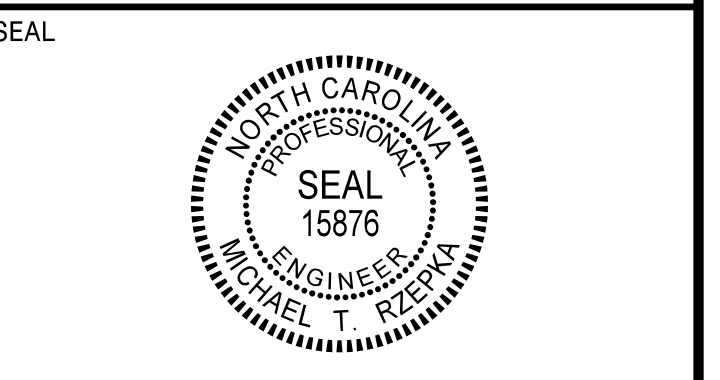
MIKE RZEPKA, P.E.	SIGNING & DELINEATION PROJECT DESIGN ENGINEER
CHRIS HARNDEN	SIGNING & DELINEATION PROJECT DESIGN TECHNICIAN



HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

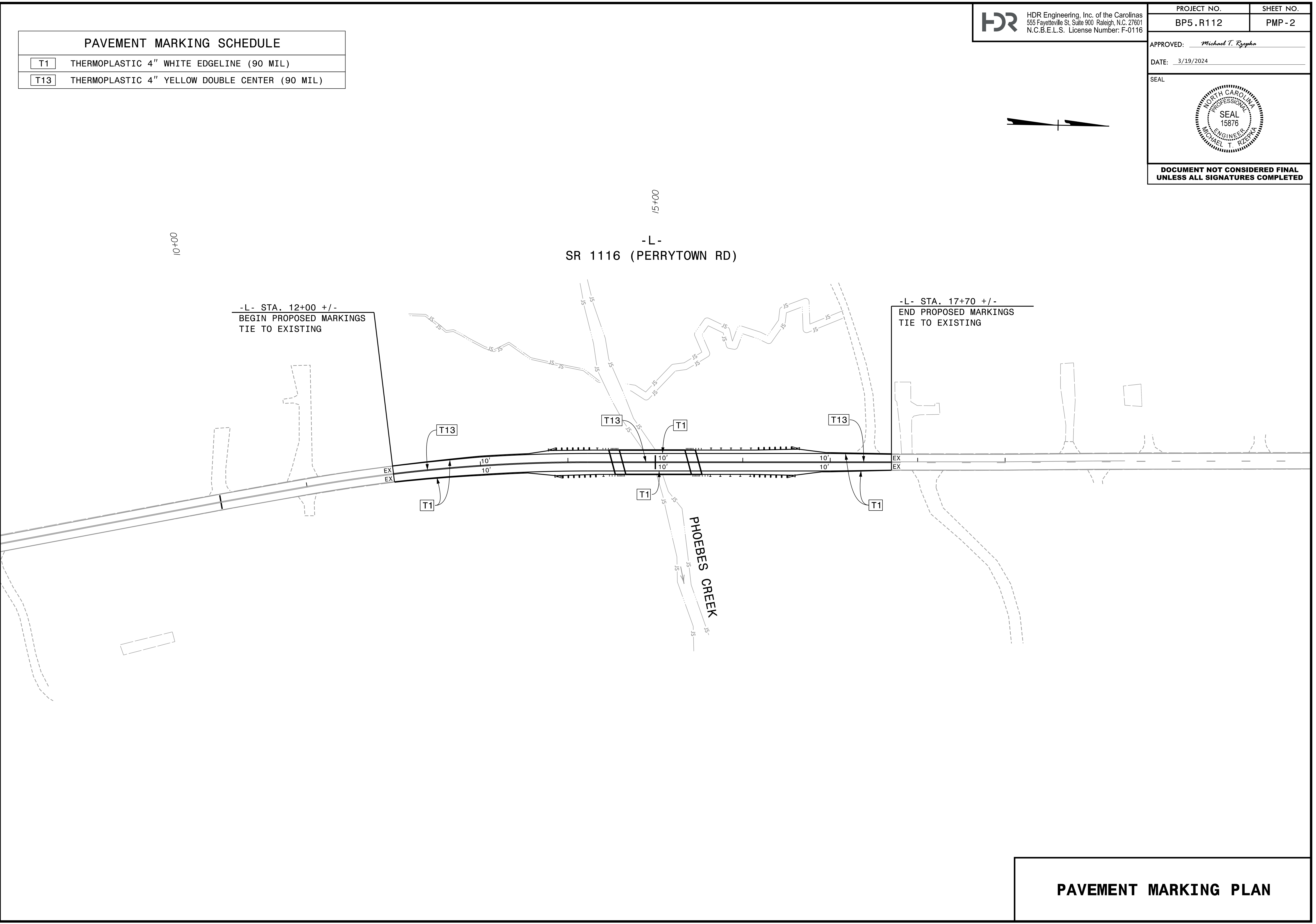
PAVEMENT MARKING SCHEDULE	
T1	THERMOPLASTIC 4" WHITE EDGELINE (90 MIL)
T13	THERMOPLASTIC 4" YELLOW DOUBLE CENTER (90 MIL)

APPROVED: *Michael T. Ryzka*
DATE: 3/19/2024



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

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PAVEMENT MARKING PLAN

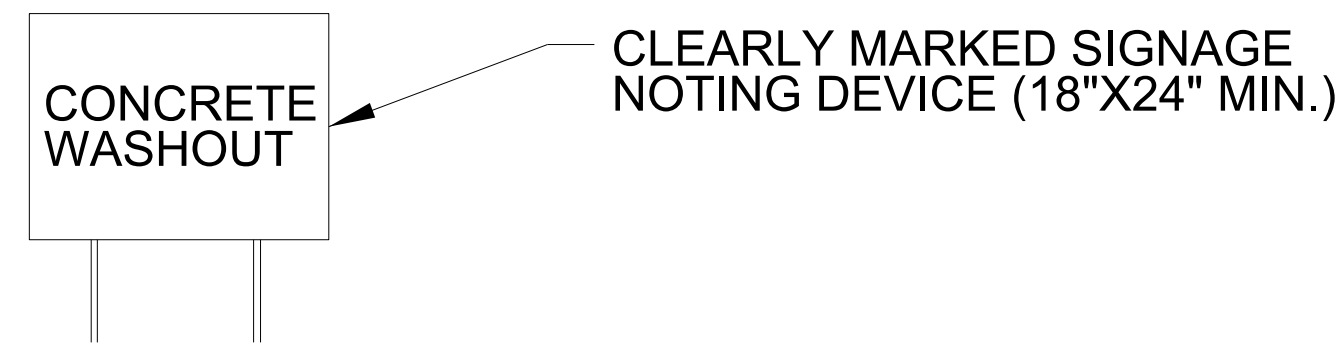
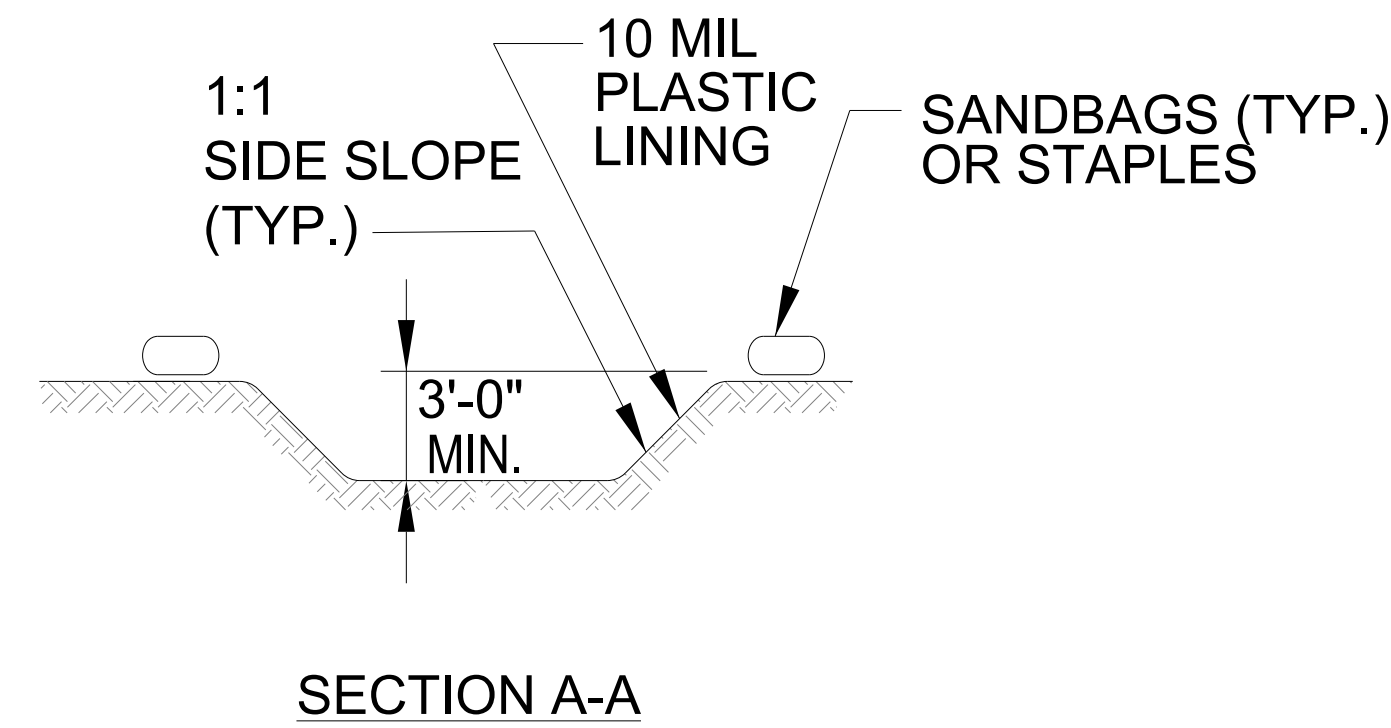
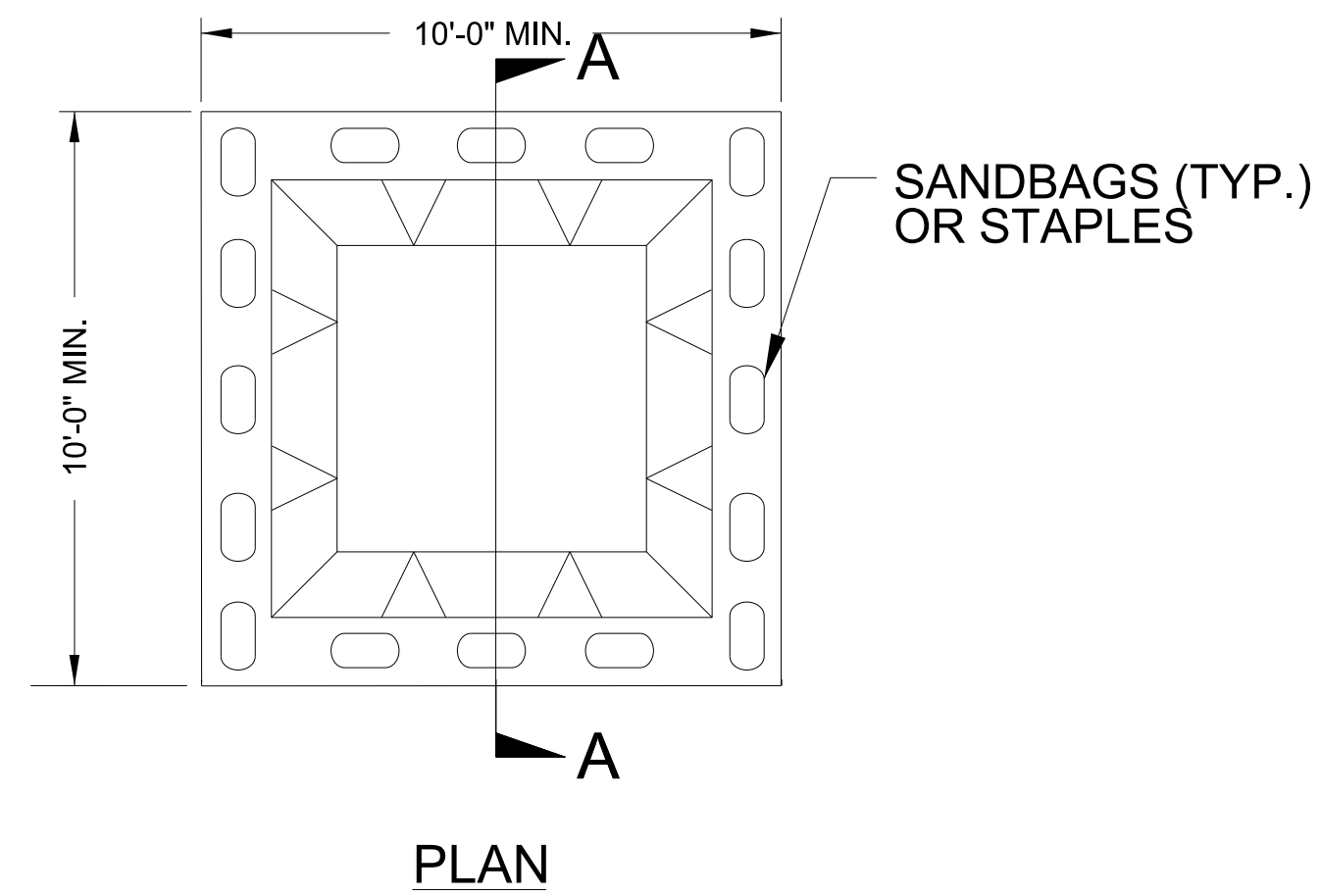
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
BP5.R112	EC-2
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

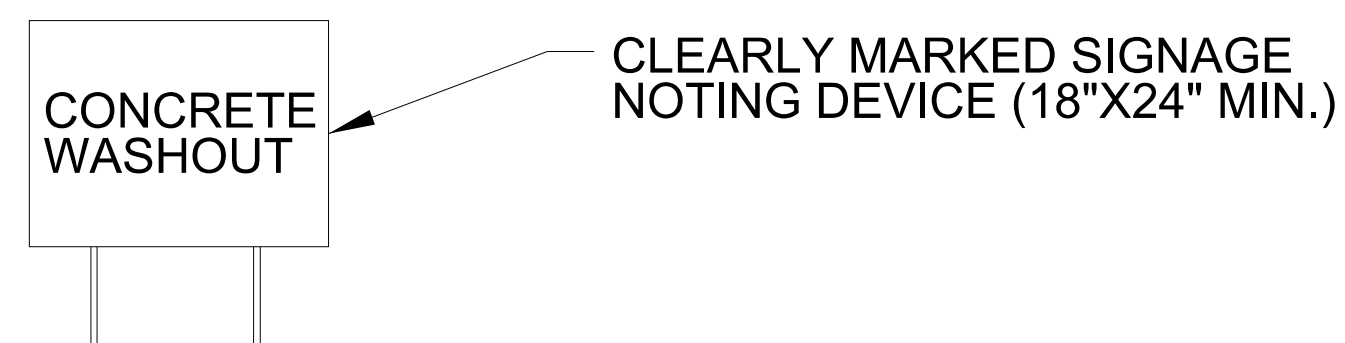
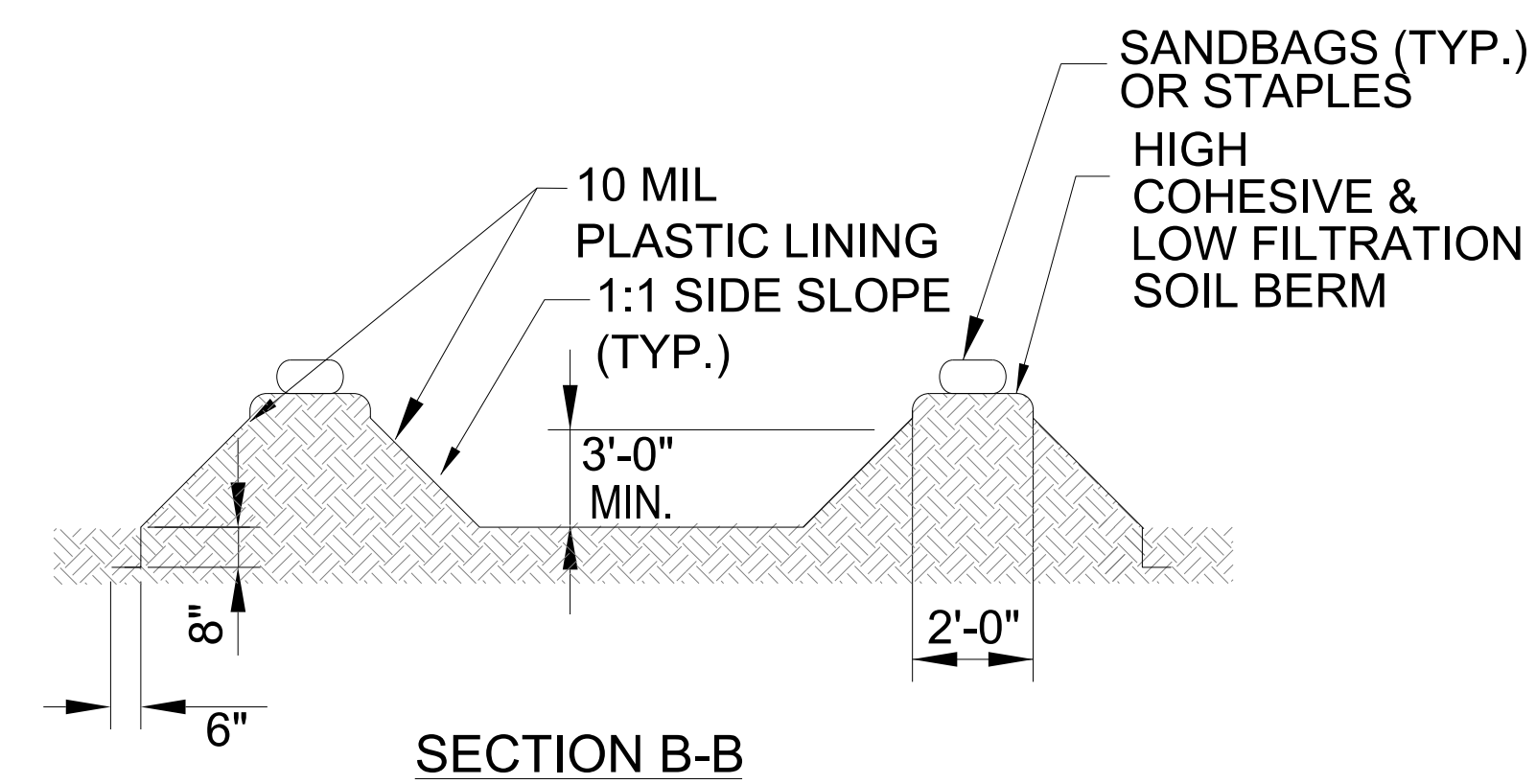
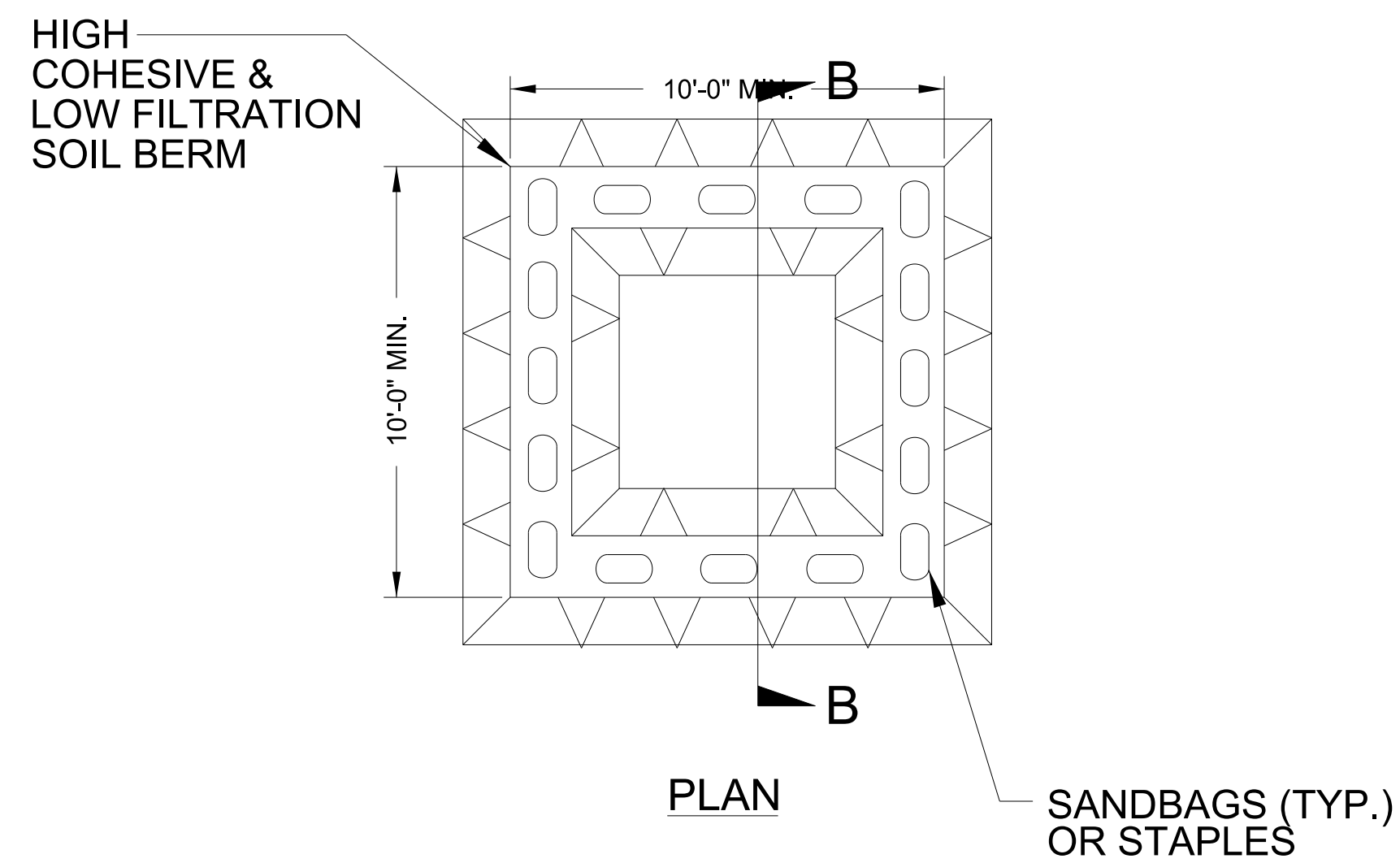
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RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



BELOW GRADE WASHOUT STRUCTURE
NOT TO SCALE

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



ABOVE GRADE WASHOUT STRUCTURE
NOT TO SCALE

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

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

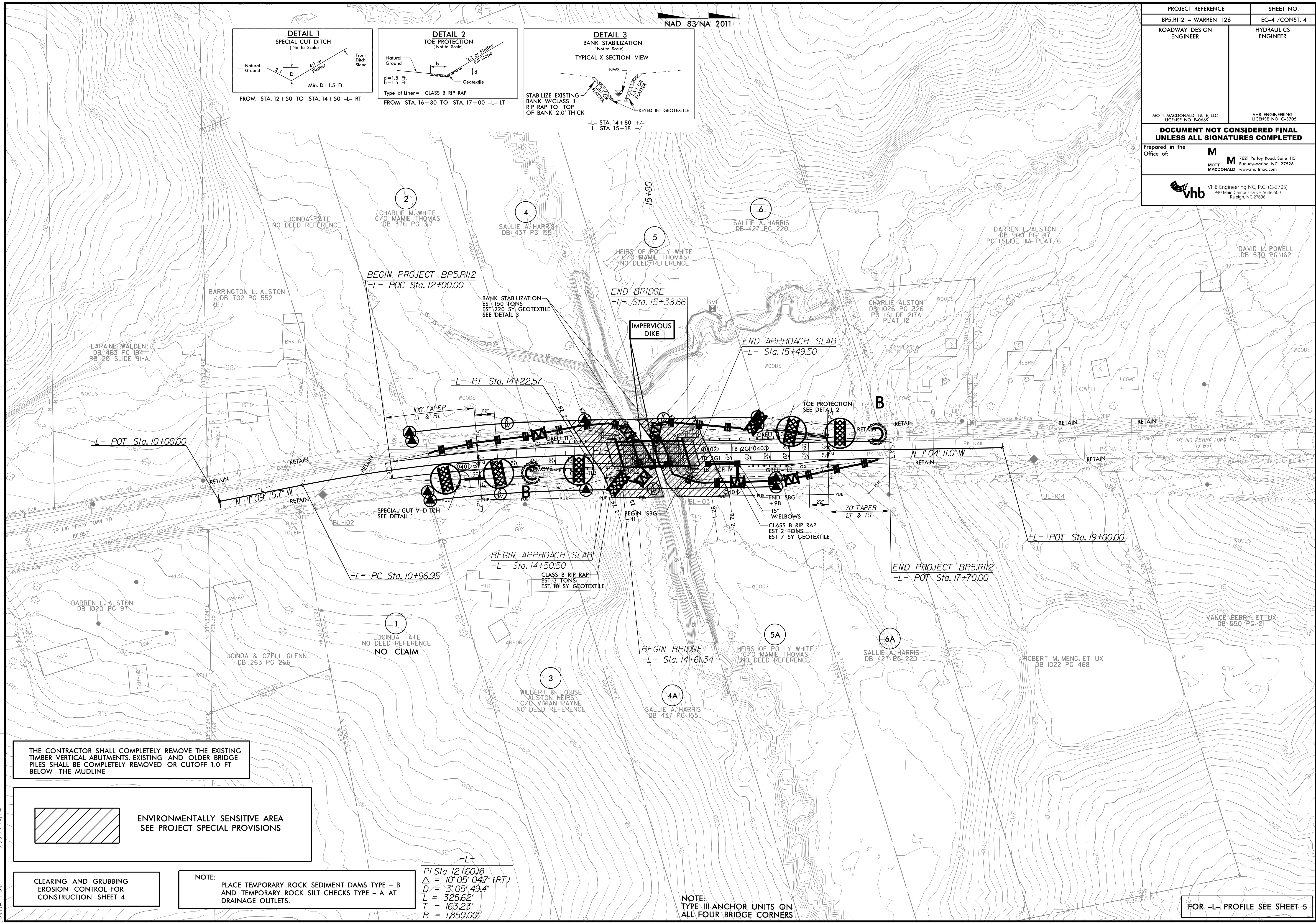
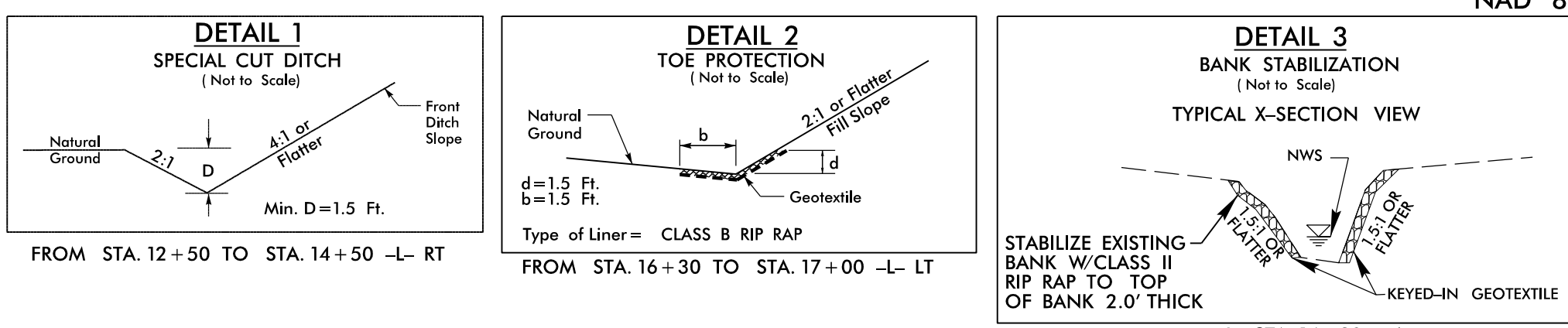
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ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION TIMEFRAMES

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

PROJECT REFERENCE BP5.R112 - WARREN 126	SHEET NO. EC-4 / CONST. 4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
MOTT MACDONALD 1 & E, LLC LICENSE NO. F-06697	VHB ENGINEERING LICENSE NO. C-3705
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
Prepared in the Office of: M MOTT MACDONALD 7621 Purfoy Road, Suite 115 Fuquay-Varina, NC 27526 www.mottmac.com	
vhb VHB Engineering NC, P.C. (C-3705) 940 Main Campus Drive, Suite 500 Raleigh, NC 27605	

NAD 83/NA 2011



REVISIONS
DATE: 9-13-2022 - RW REV1: CHANGE PARCELS 4, 5 & 6 ON THE EAST SIDE OF THE ROAD TO 4A, 5A & 6A.
DATE: 10-12-2022 - RW REV2: ELIMINATED PUE ON PARCEL 1 (NO CLAIM); REVISED PUE ON PARCELS 3, 4A, 5A AND 6A.

THE CONTRACTOR SHALL COMPLETELY REMOVE THE EXISTING
TIMBER VERTICAL ABUTMENTS. EXISTING AND OLDER BRIDGE
PILES SHALL BE COMPLETELY REMOVED OR CUTOFF 1.0 FT
BELOW THE MUDLINE



CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

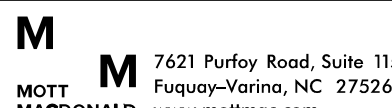

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B
AND TEMPORARY ROCK SILT CHECKS TYPE - A AT
DRAINAGE OUTLETS.

PI Sta 12+60.18
 $\Delta = 10^{\circ} 05' 04.7''$ (RT)
 $D = 3^{\circ} 05' 49.4''$
 $L = 325.62'$
 $T = 163.23'$
 $R = 1,850.00'$

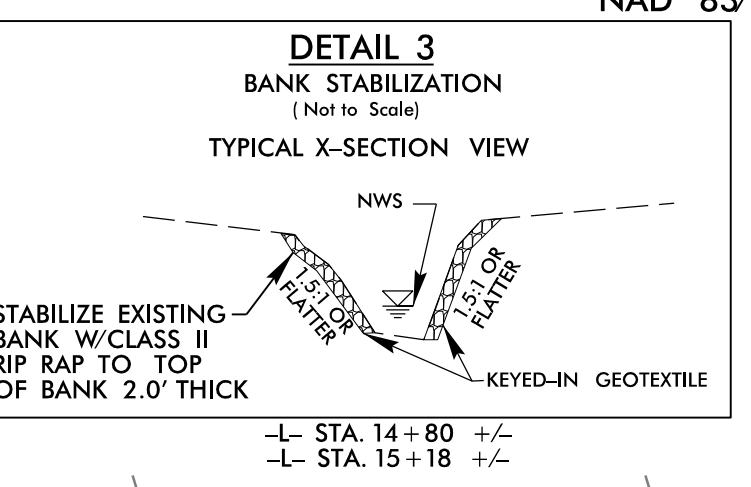
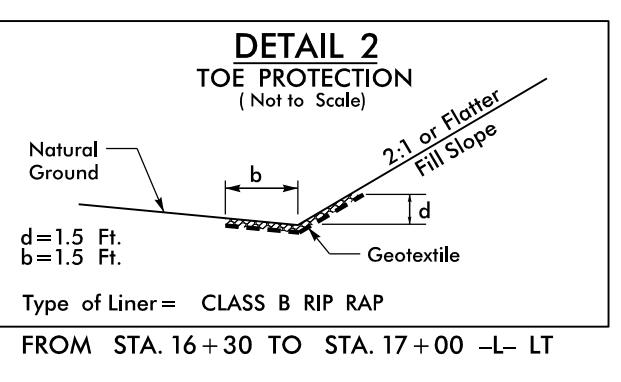
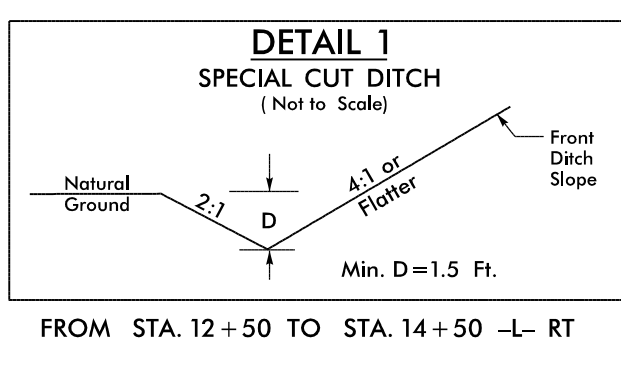
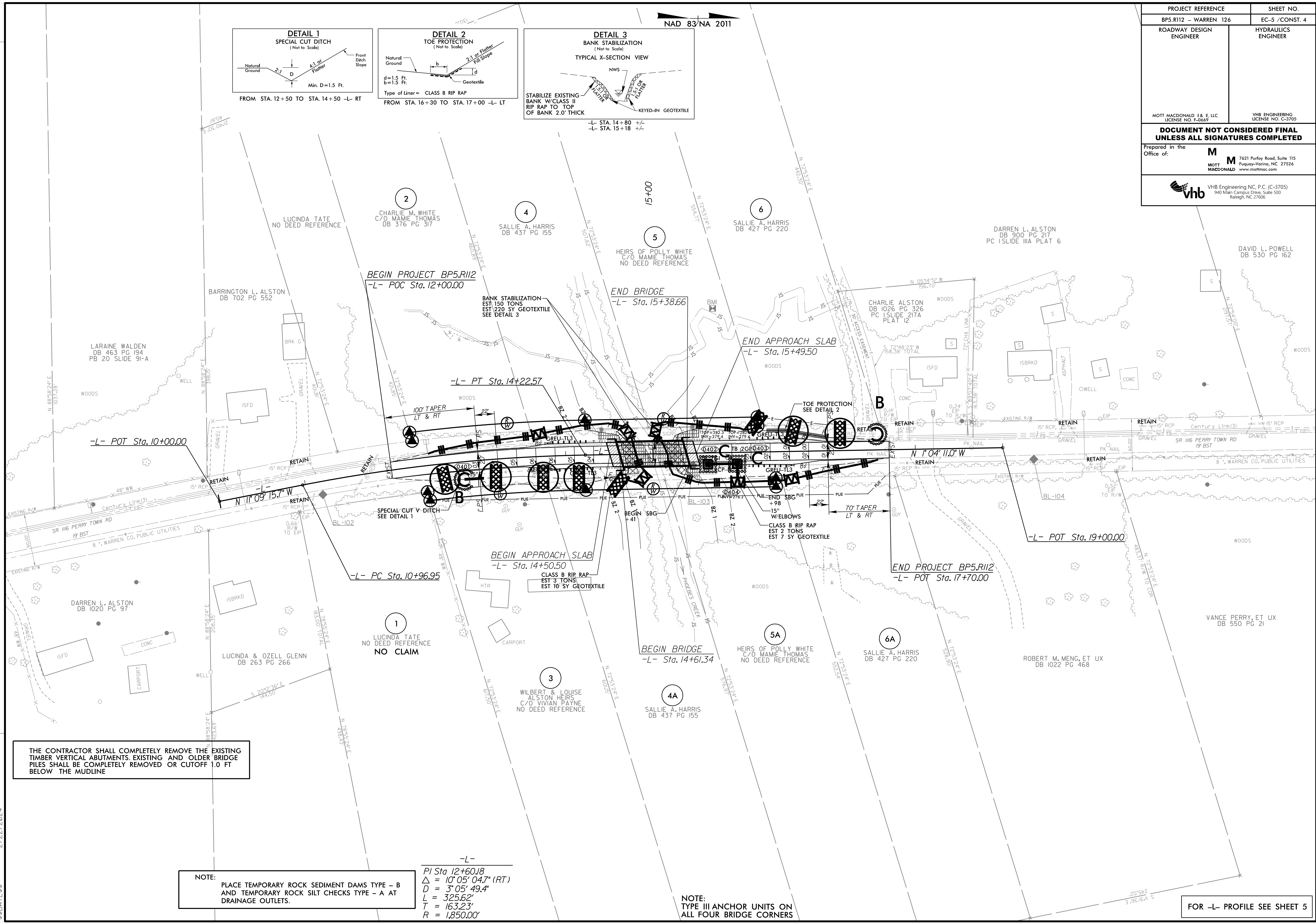
NOTE:
TYPE III ANCHOR UNITS ON
ALL FOUR BRIDGE CORNERS

FOR -L- PROFILE SEE SHEET 5

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27/22/2024

PROJECT REFERENCE BP5.R112 - WARREN 126	SHEET NO. EC-5 /CONST. 4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
MOTT MACDONALD 1 & E, LLC LICENSE NO. F-0669	VHB ENGINEERING LICENSE NO. C-3705
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
Prepared in the Office of:	
	
	

REVISIONS
DATE: 9-13-2022 - RW REV1: CHANGE PARCELS 4, 5 & 6 ON THE EAST SIDE OF THE ROAD TO 4A, 5A & 6A.
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-L-
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Δ = 10' 05' 04" (RT)
D = 3' 05' 49.4"
L = 325.62'
T = 163.23'
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NOTE:
TYPE III ANCHOR UNITS ON ALL FOUR BRIDGE CORNERS

FOR -L- PROFILE SEE SHEET 5

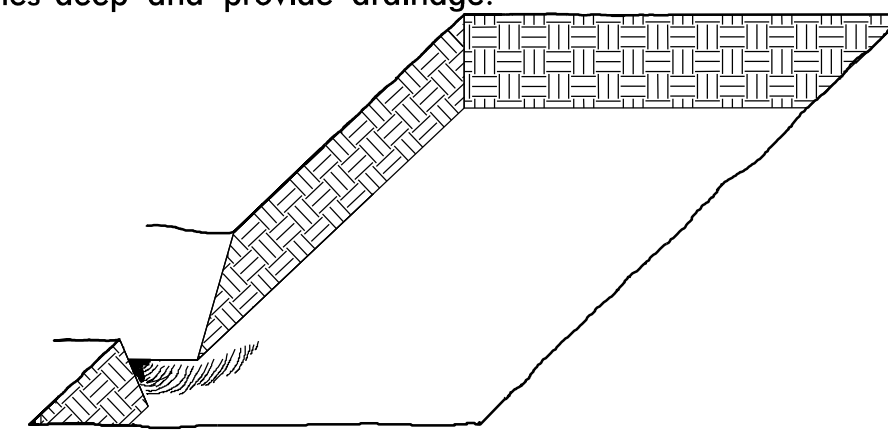
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PLANTING DETAILS

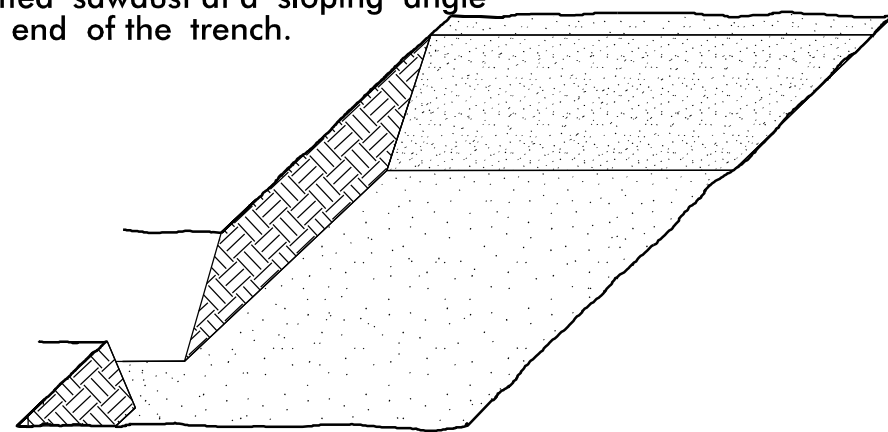
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

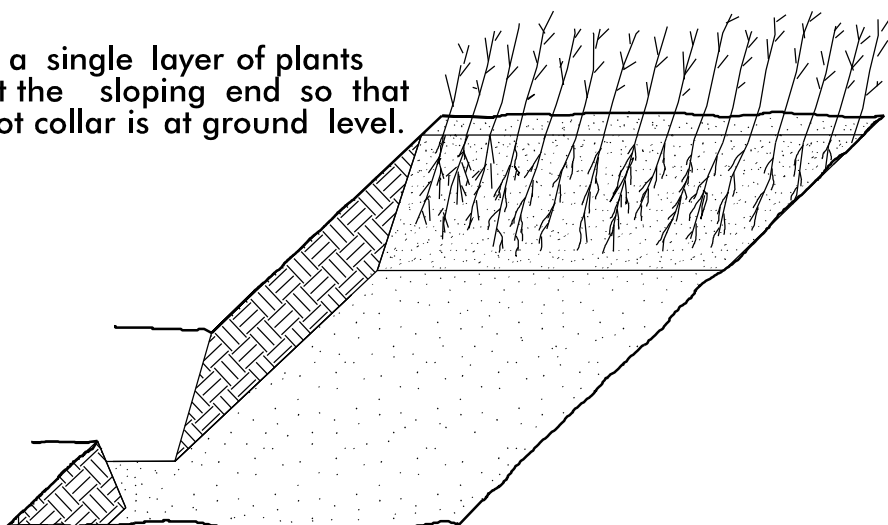
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



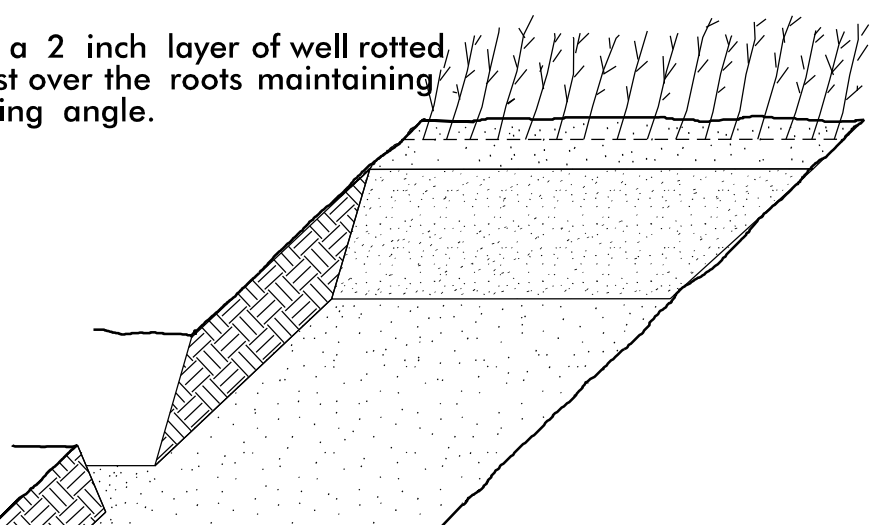
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

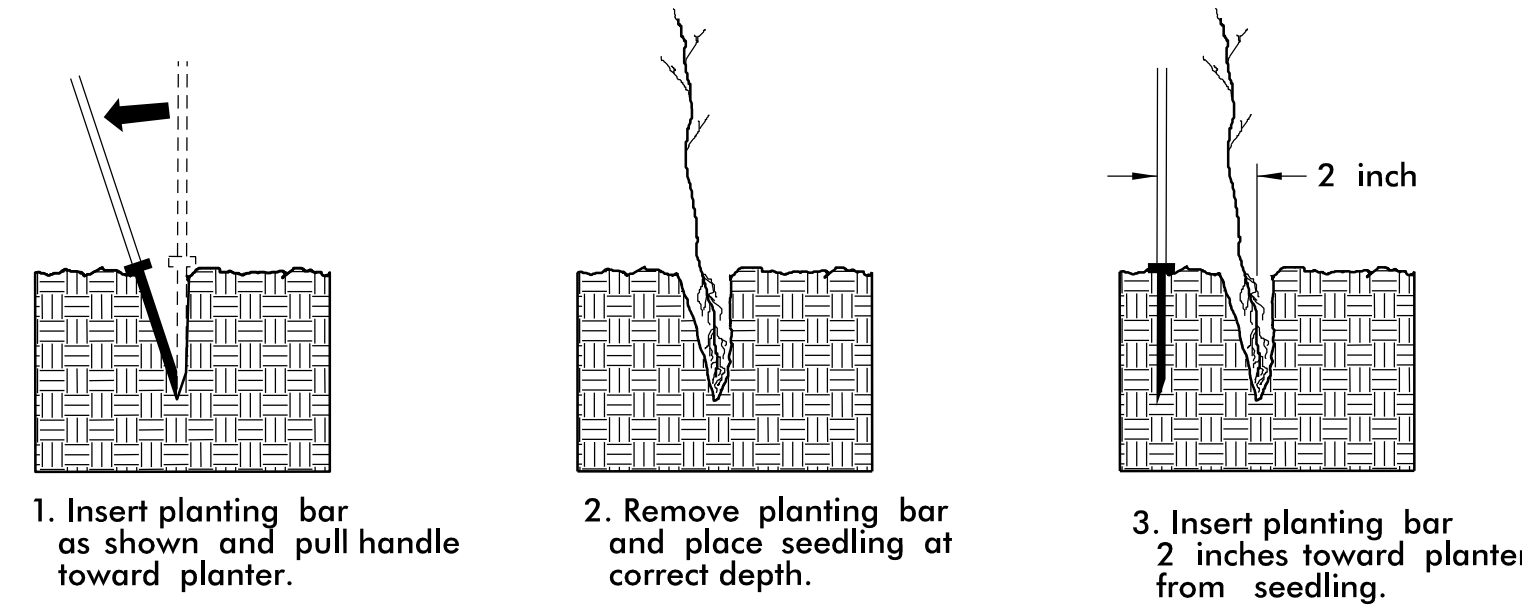


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

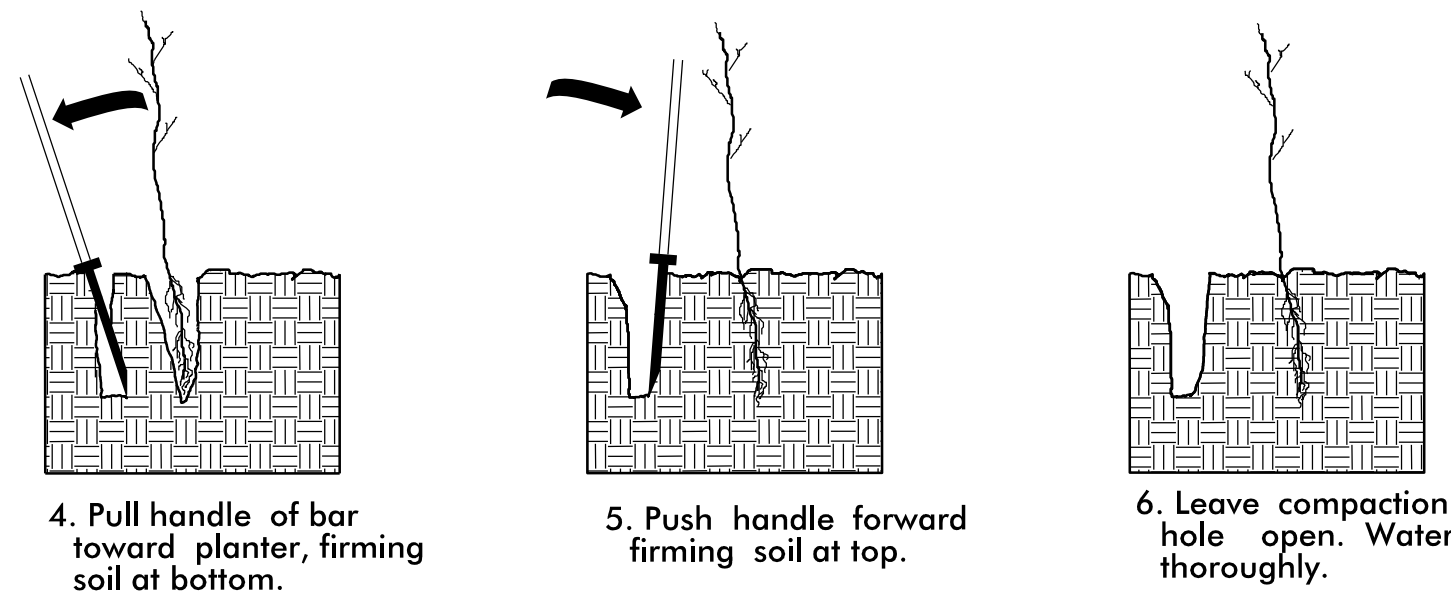


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

DIBBLE PLANTING METHOD USING THE KBC PLANTING BAR



1. Insert planting bar as shown and pull handle toward planter.
2. Remove planting bar and place seedling at correct depth.
3. Insert planting bar 2 inches toward planter from seedling.



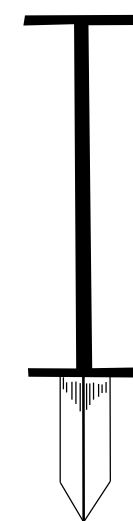
4. Pull handle of bar toward planter, firming soil at bottom.
5. Push handle forward firming soil at top.
6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.



KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.



ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

REFORESTATION

- TREE REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

40%	LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in – 18 in BR
30%	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in – 18 in BR
30%	BETULA NIGRA	RIVER BIRCH	12 in – 18 in BR

REFORESTATION DETAIL SHEET

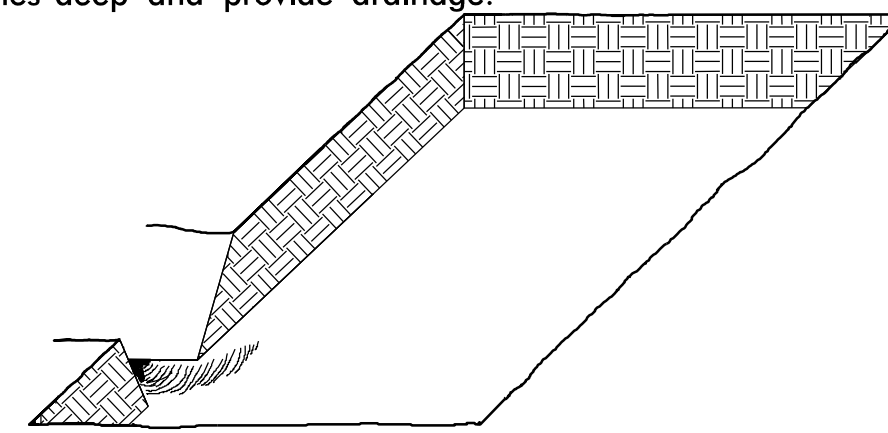
N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

PLANTING DETAILS

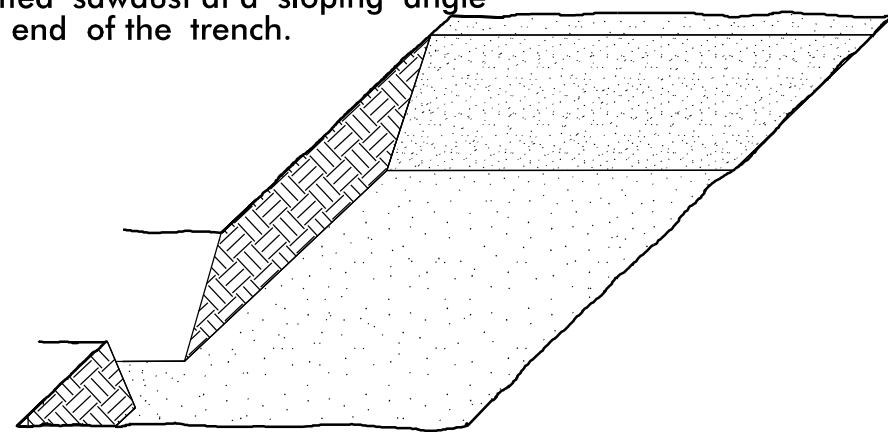
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

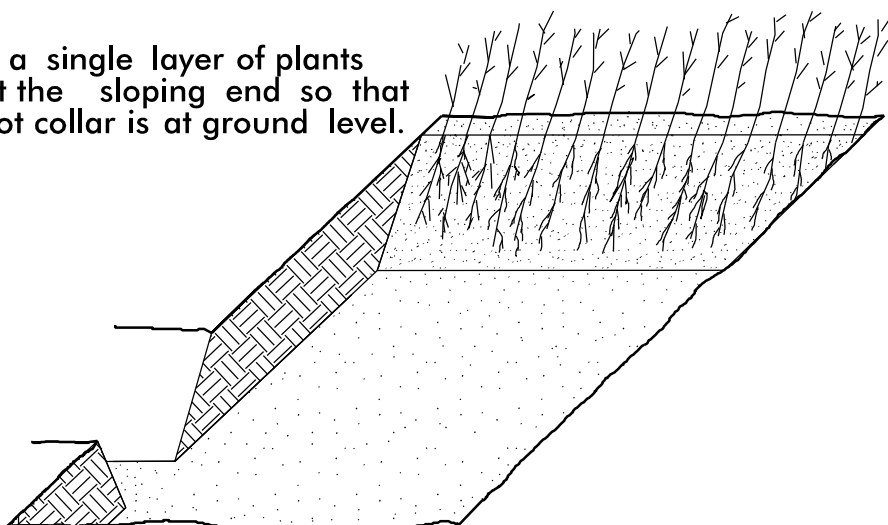
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



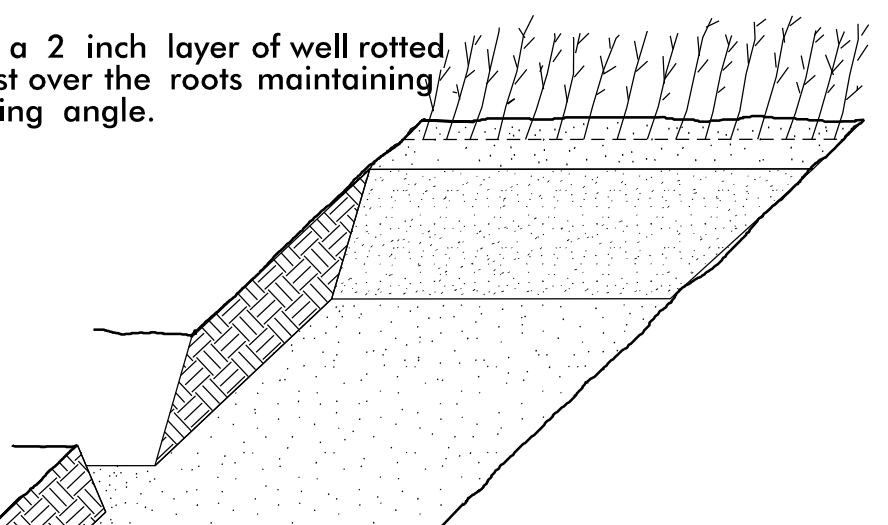
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

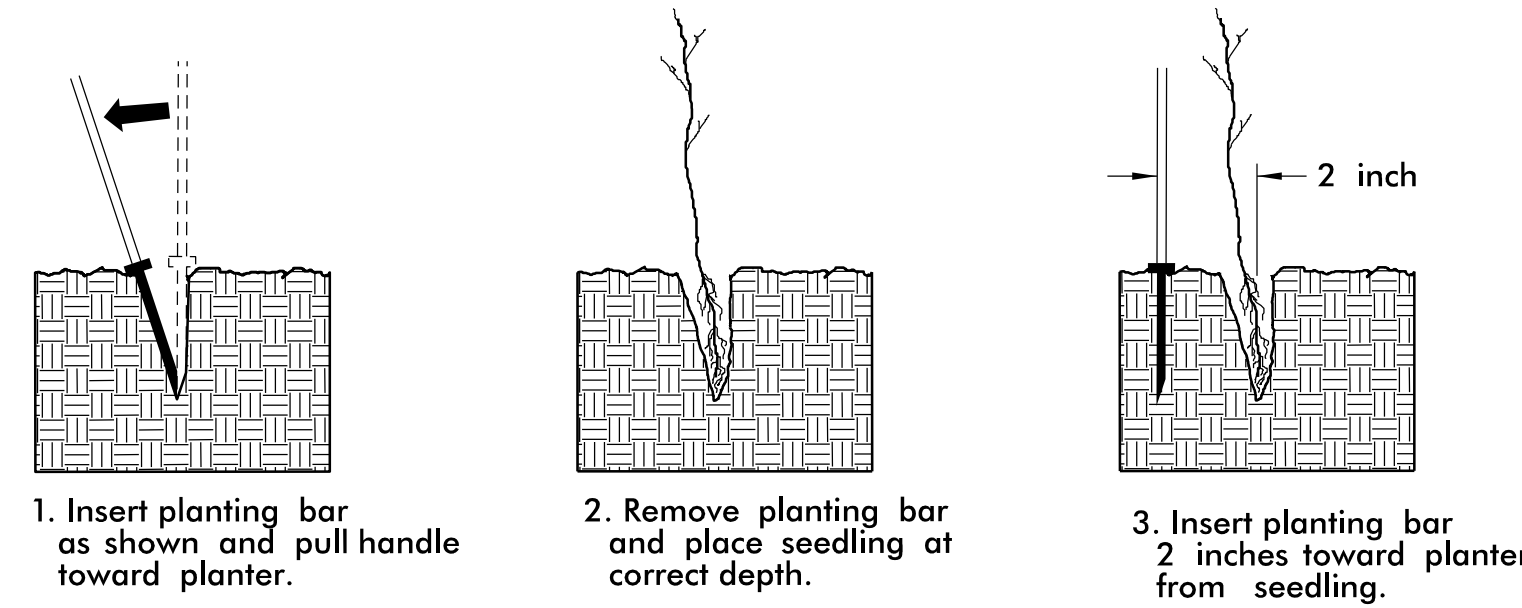


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

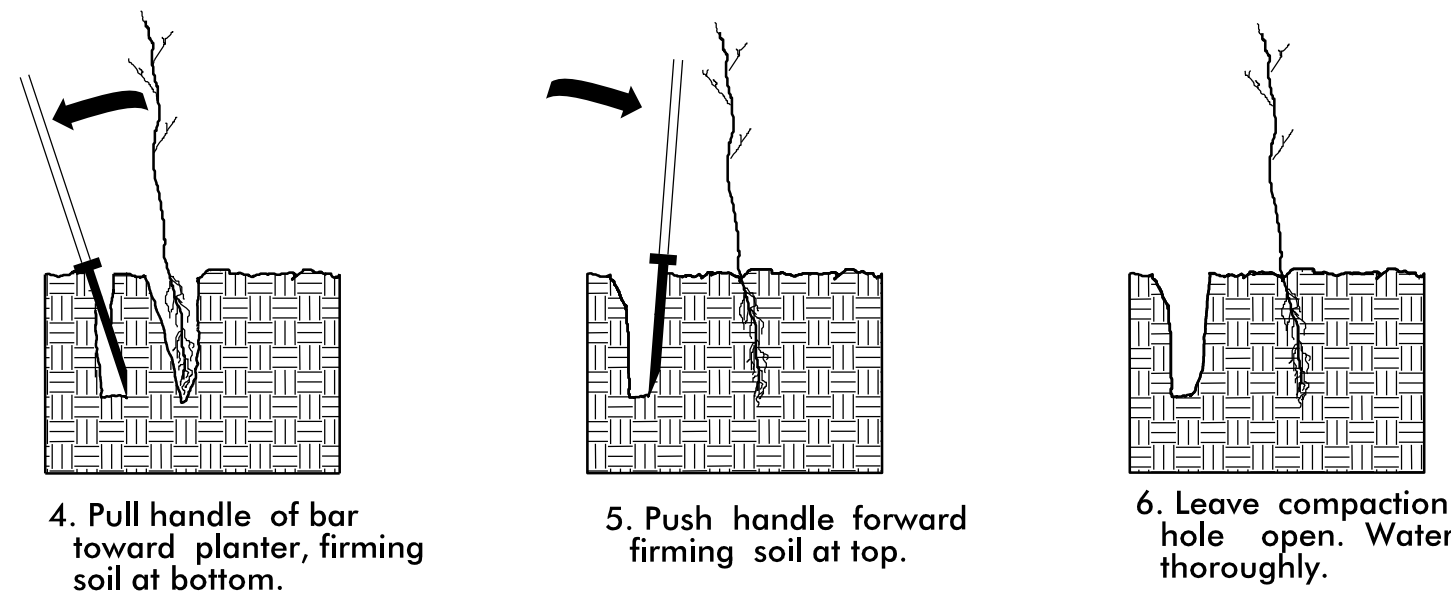


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

DIBBLE PLANTING METHOD USING THE KBC PLANTING BAR



1. Insert planting bar as shown and pull handle toward planter.
2. Remove planting bar and place seedling at correct depth.
3. Insert planting bar 2 inches toward planter from seedling.



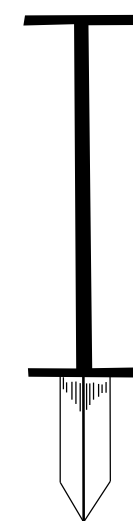
4. Pull handle of bar toward planter, firming soil at bottom.
5. Push handle forward firming soil at top.
6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.



KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.



ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

REFORESTATION

- TREE REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

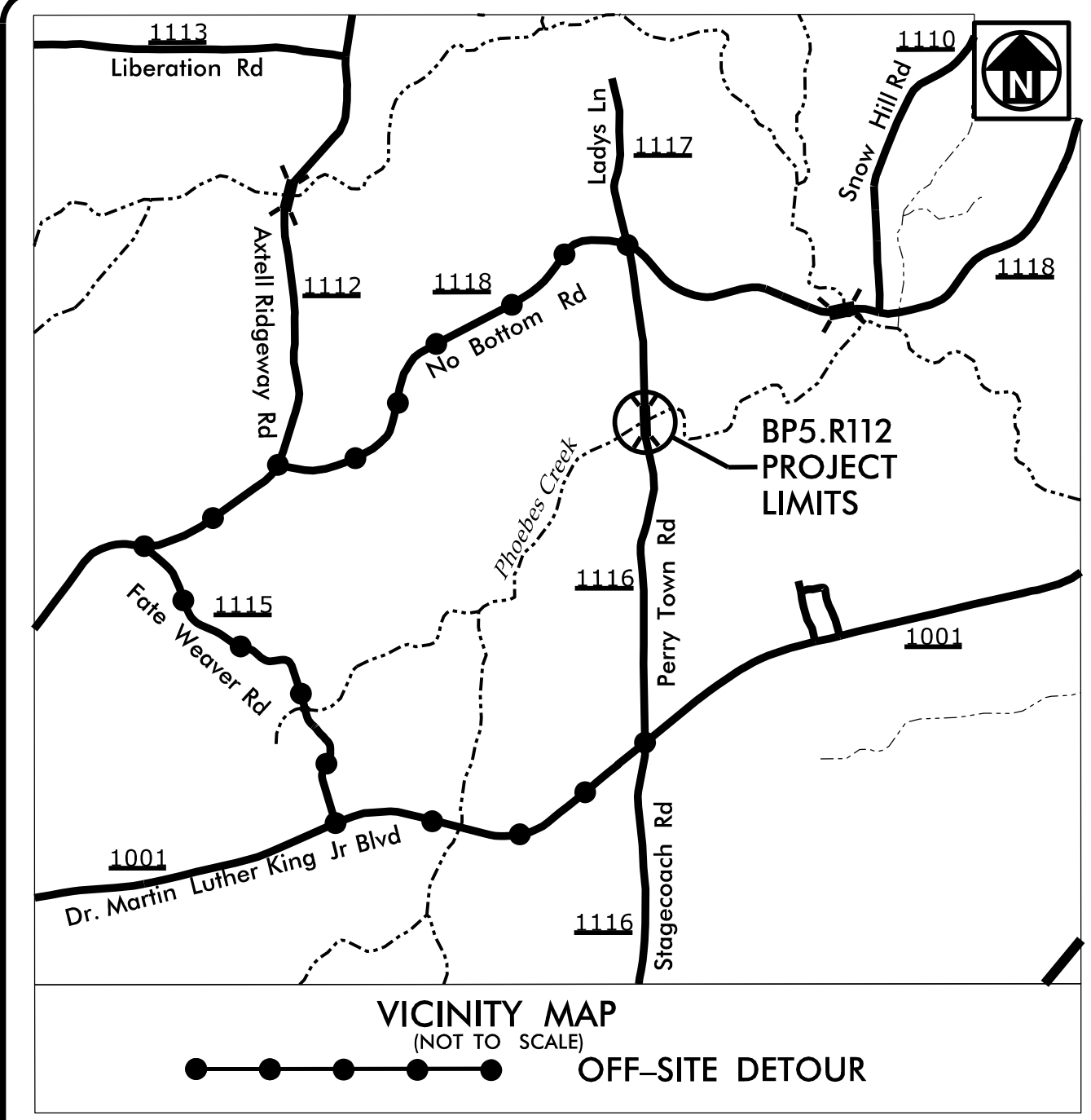
40%	LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in – 18 in BR
30%	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in – 18 in BR
30%	BETULA NIGRA	RIVER BIRCH	12 in – 18 in BR

REFORESTATION DETAIL SHEET

N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

09.08/2019

PROJECT: BP5.R112



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

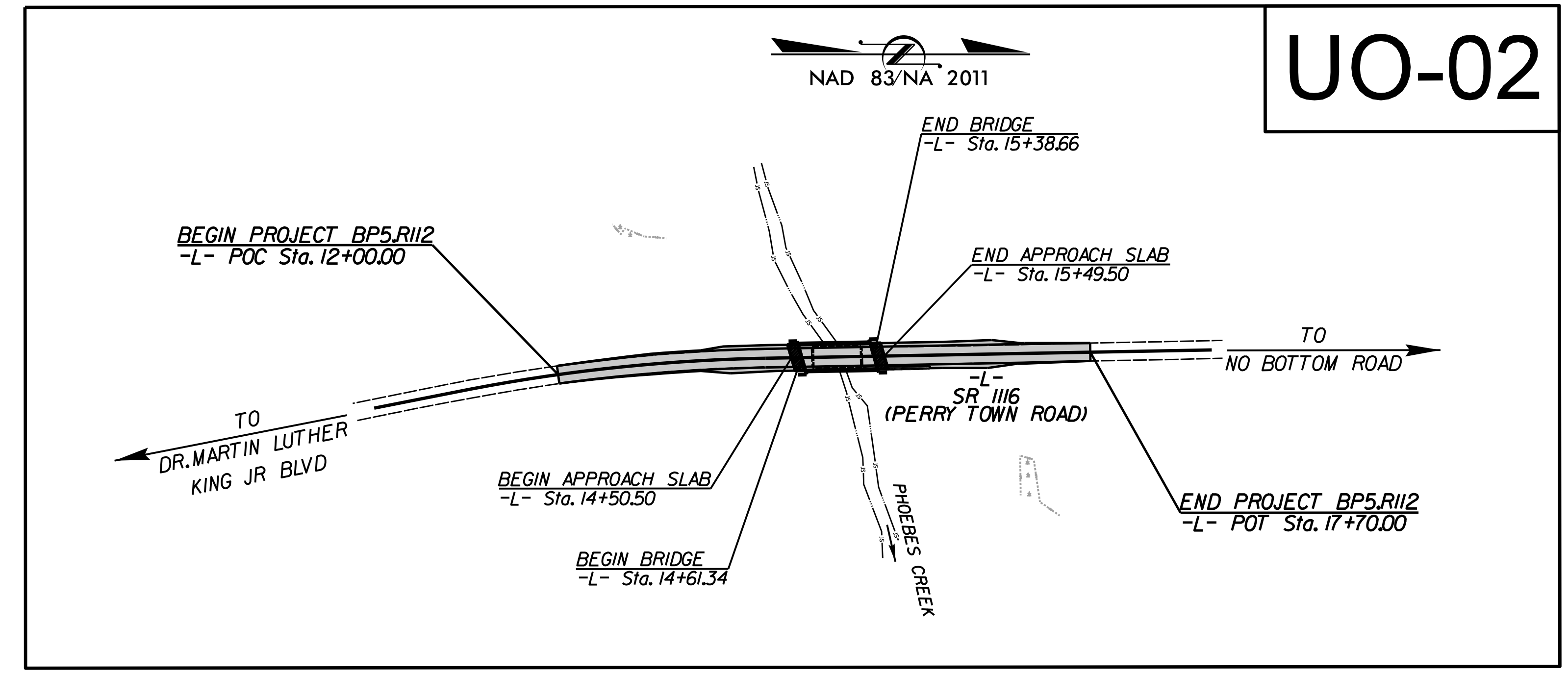
WARREN COUNTY

**LOCATION: BRIDGE NO.126 OVER PHOEBES CREEK
ON SR 1116 (PERRY TOWN ROAD)**

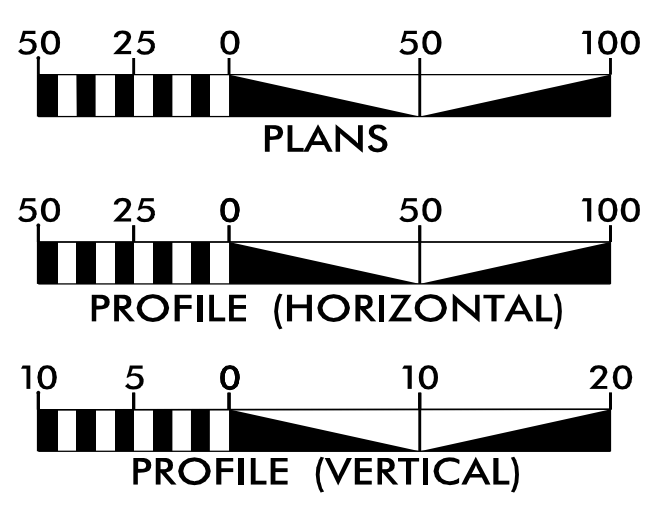
TYPE OF WORK: POWER (DISTRIBUTION) AND COMMUNICATIONS

T.I.P. NO.	SHEET NO.
BP5.R112	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.



GRAPHIC SCALES



INDEX OF SHEETS

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

UTILITY OWNERS WITH CONFLICTS

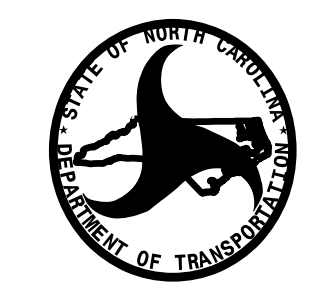
- (A) POWER - DUKE ENERGY
- (B) COMMUNICATIONS - LUMEN
- (C) WATER - WARREN COUNTY PUBLIC UTILITIES

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 05
DIV ADDRESS
2612 N. Duke Street
Durham, NC 27704

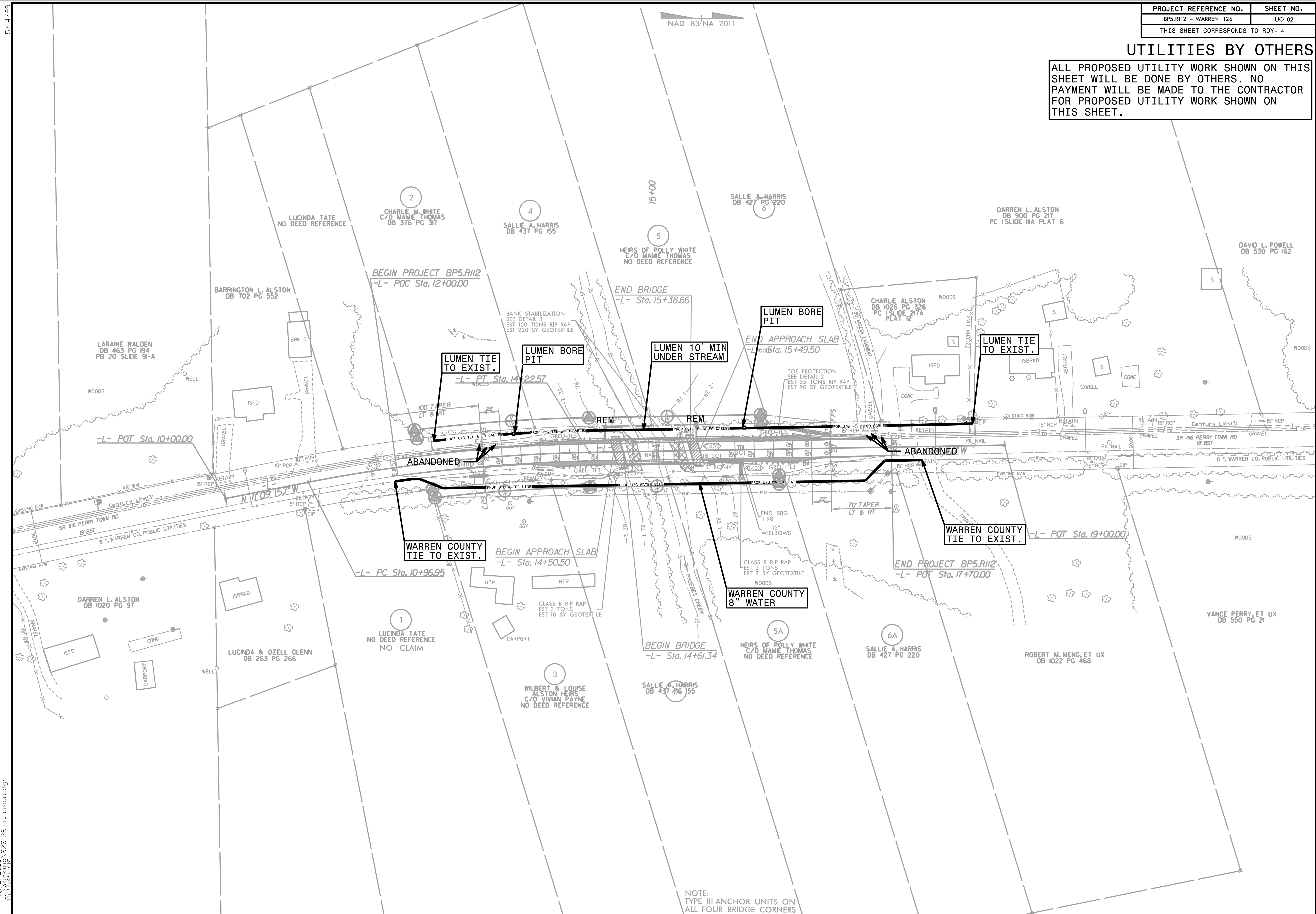
Lisa Gilchrist BRIDGE PROGRAM MANAGER

5/9/2024
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2:26:45 PM

PROJECT REFERENCE NO.	SHEET NO.
BP5.R112 - WARREN 126	UO-02
THIS SHEET CORRESPONDS TO RDY- 4	

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.

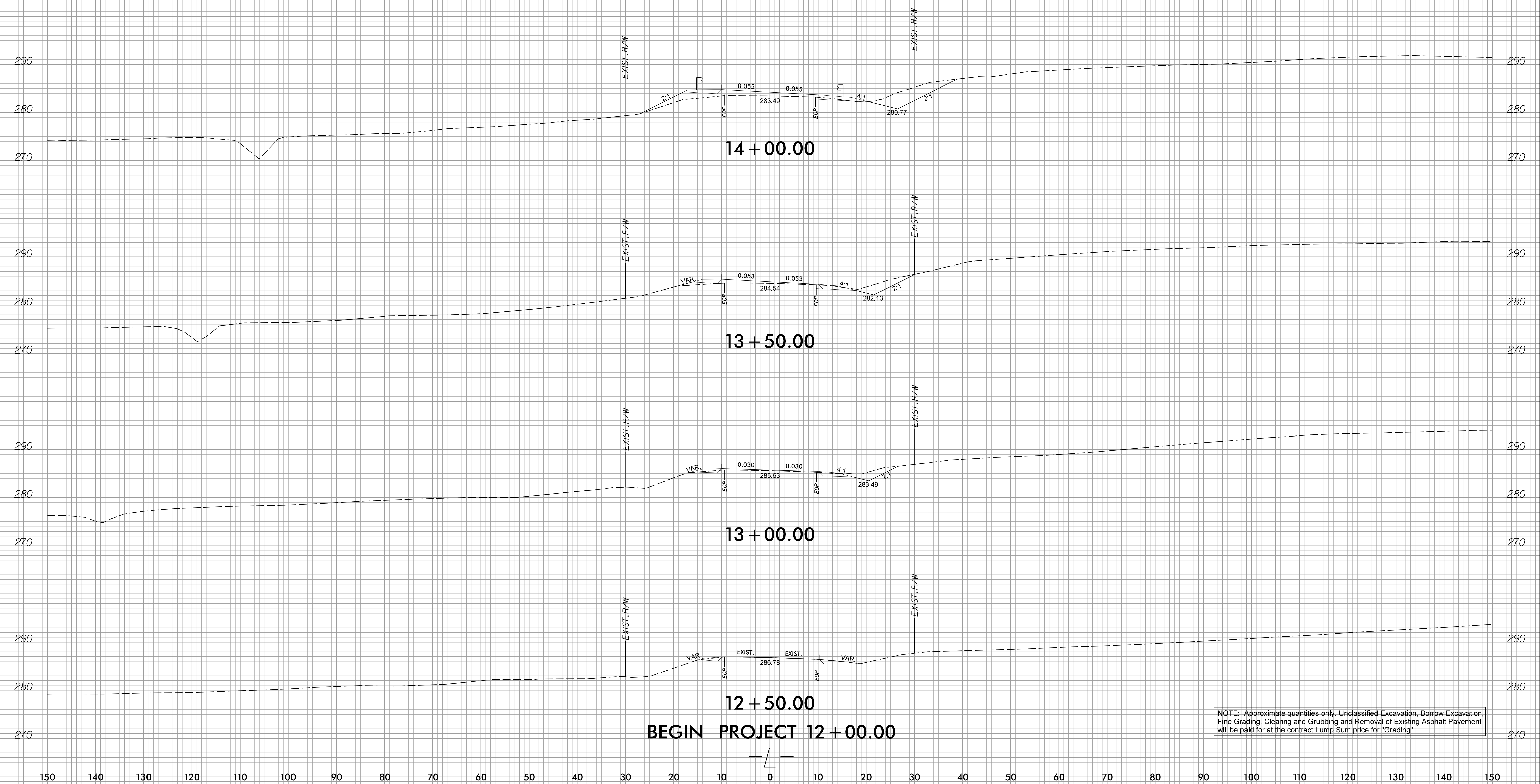


NAD 83/NA 2011

5/14/99
 10/12/2022 9:20:26 ut_vopout.dgn
 11/27/21

NOTE:
TYPE III ANCHOR UNITS ON ALL FOUR BRIDGE CORNERS

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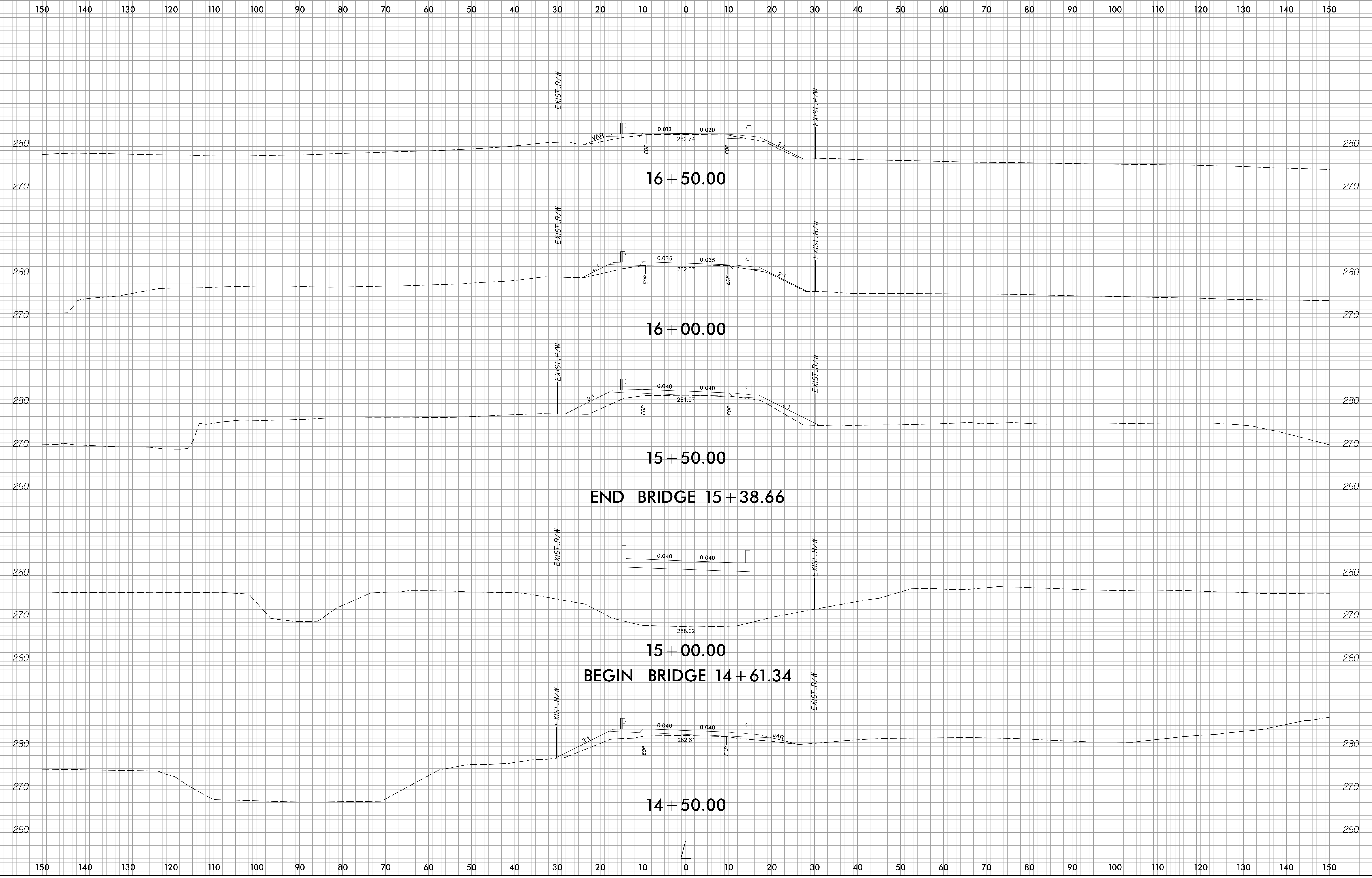


BEGIN PROJECT 12 + 00.00

NOTE: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Fine Grading, Clearing and Grubbing and Removal of Existing Asphalt Pavement will be paid for at the contract Lump Sum price for "Grading".

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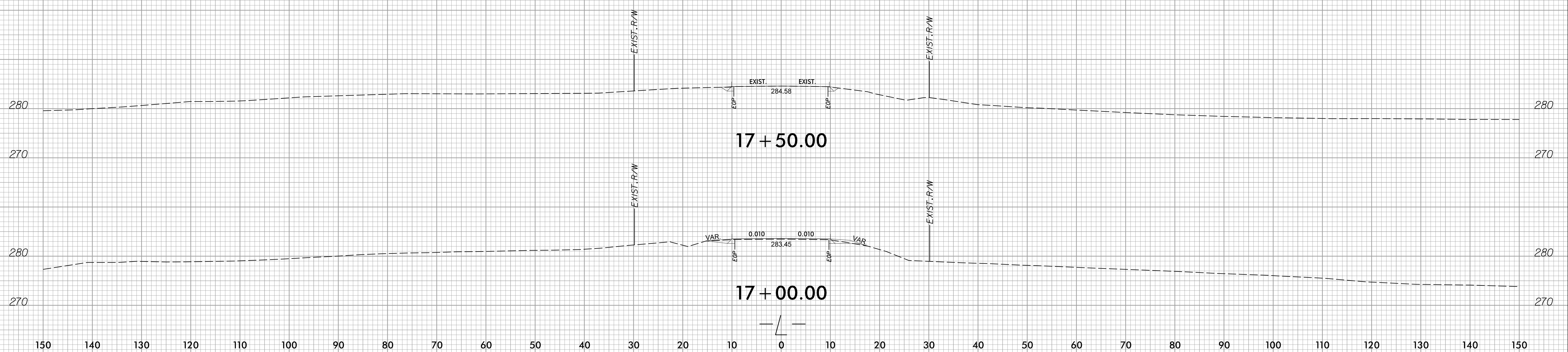
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END PROJECT 17+70.00



17+50.00

17+00.00

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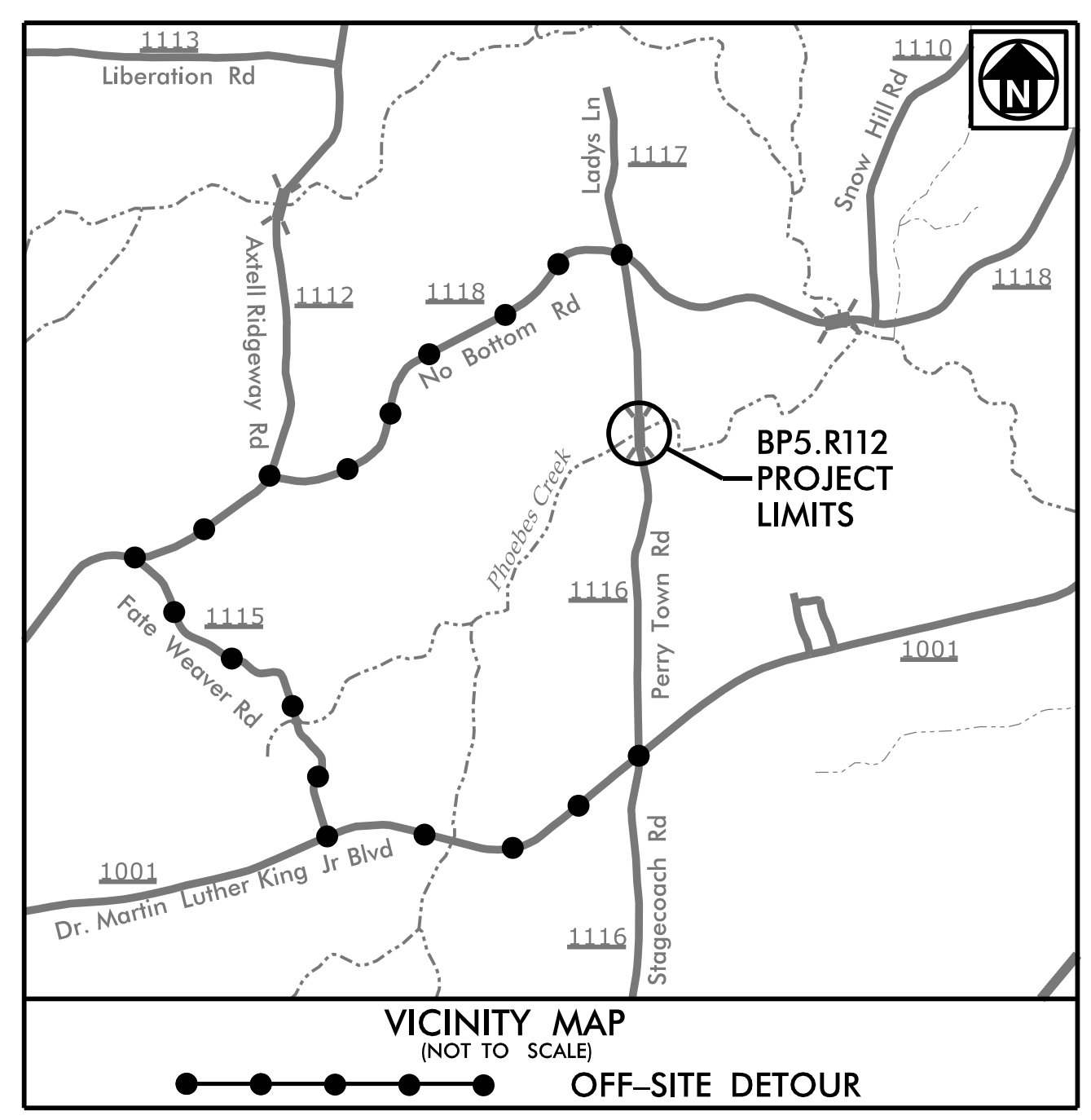
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3/1/2024
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 Thomas.Bankovitch

PROJECT: BP5.R112

CONTRACT:



STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

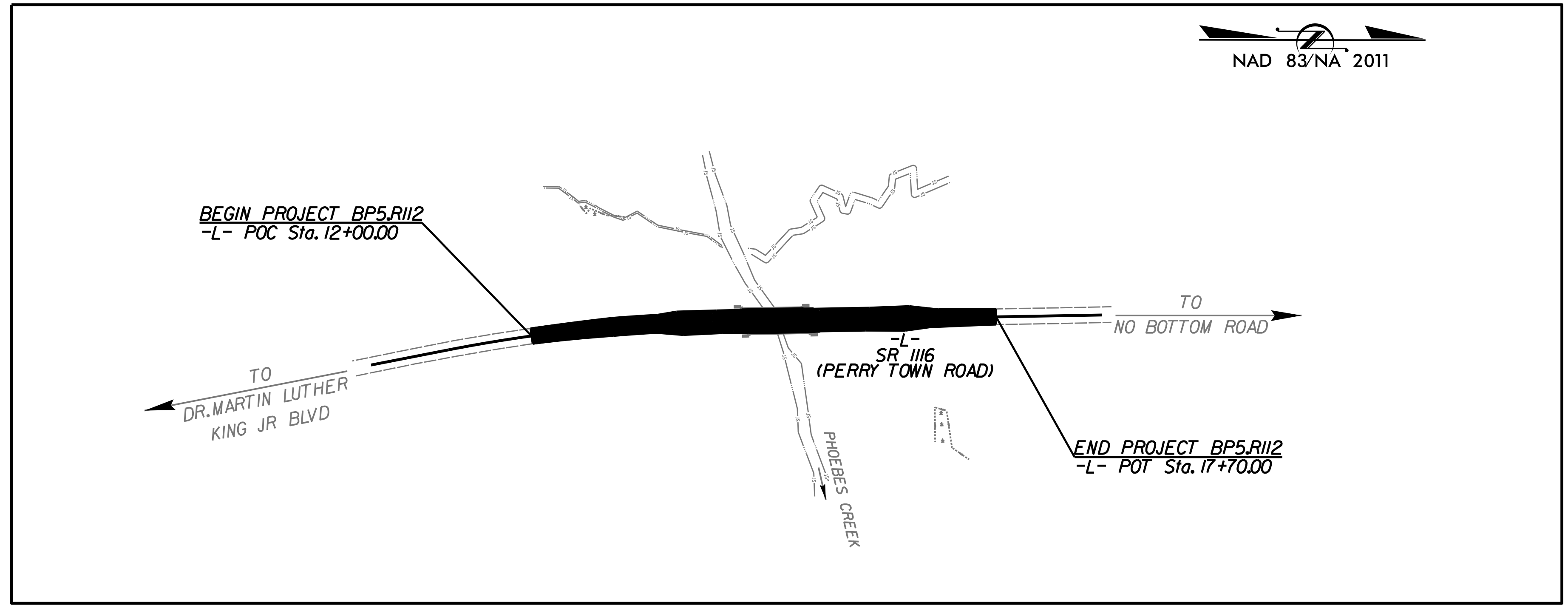
WARREN COUNTY

**LOCATION: BRIDGE NO. 126 OVER PHOEBES CREEK
 ON SR 1116 (PERRYTOWN ROAD)**

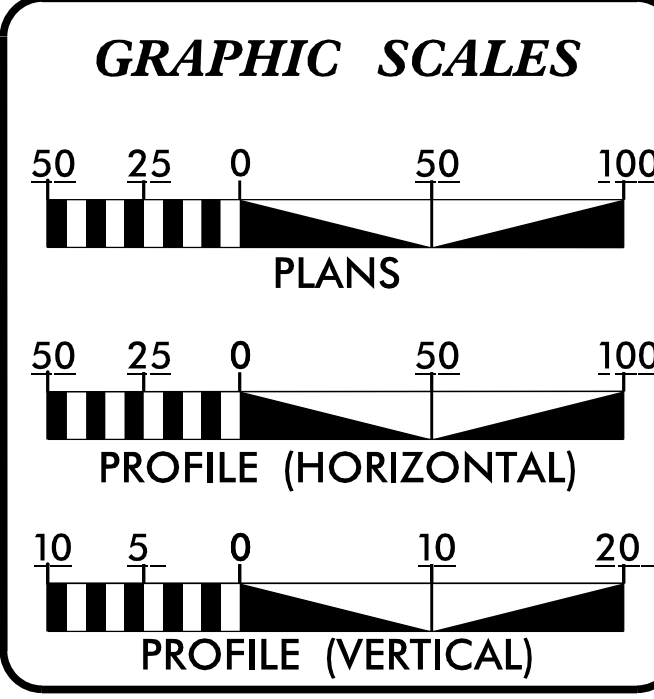
TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

STRUCTURE PLANS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP5.R112		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BP5.R112.1	N/A	PE	
BP5.R112.2	N/A	R/W	
BP5.R112.3	N/A	CONST	



THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
 CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.



DESIGN DATA

ADT (2012) =	630
ADT (2025) =	1260
V =	55 MPH
FUNC CLASS =	RURAL LOCAL
SUB REGIONAL TIER	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT =	0.094 MILES
LENGTH STRUCTURE TIP PROJECT =	0.014 MILES
TOTAL LENGTH TIP PROJECT =	0.108 MILES

Prepared in the Office of WGI for
DIVISION 5
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2024 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE: JUNE 28, 2022	DAVID SIMPSON, PE PROJECT ENGINEER
LETTING DATE: JULY 24, 2024	REID ROBOL, PE HYDRAULIC ENGINEER
NCDOT CONTACT:	LISA GILCHRIST, EI DIVISION BRIDGE PROGRAM MANAGER

ENGINEER

3/4/2024 | 8:07 AM PST

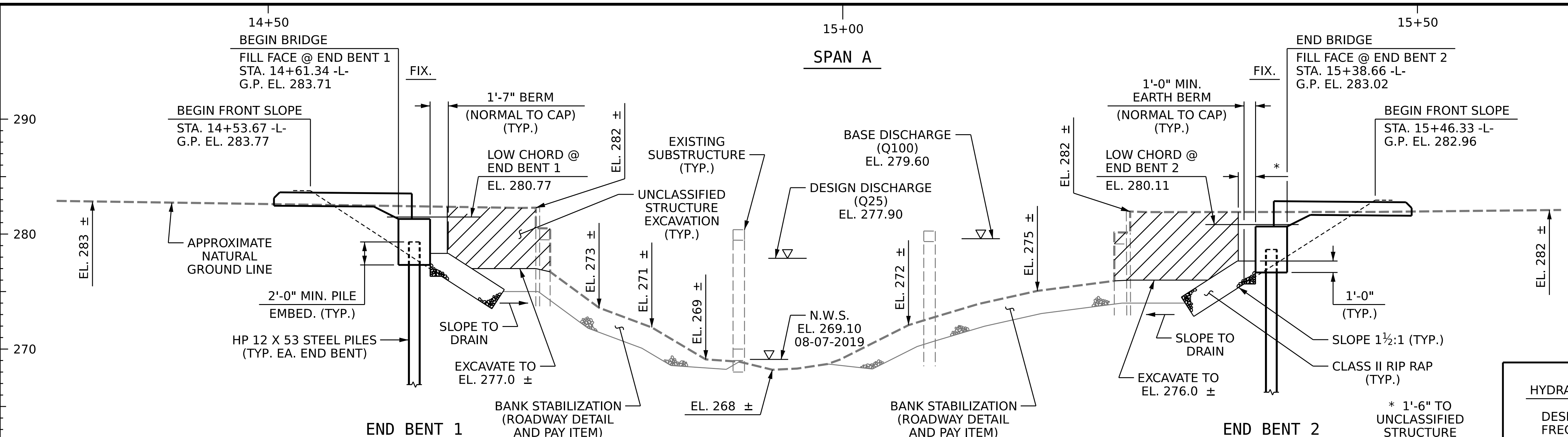
DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:

5640 Dillard Drive, Suite 200
 Cary, NC 27518

LICENSURE NO. C-4434

3/1/2024 1:34:17 PM P:\Raleigh\Projects\2018\Division 5 (SEA)\BP5R112 - Warren 126 Perrytown Structures Drawings\Final\BP5R112_SMU_GD_920126.dgn



SECTION ALONG -L-

(SECTIONS @ END BENTS ARE AT RIGHT ANGLES TO END BENTS)

TOTAL BRIDGE LENGTH = 77'-3¹³/₁₆" (FILL FACE TO FILL FACE)

(-) 2.0000% (-) 0.8868%

PVI STA. 13+55.00
EL. = 284.65
VC = 110'

(-) 0.8868% (+) 1.6375%

PVI STA. 16+20.00
EL. = 282.30
VC = 160'

GRADE DATA -L-

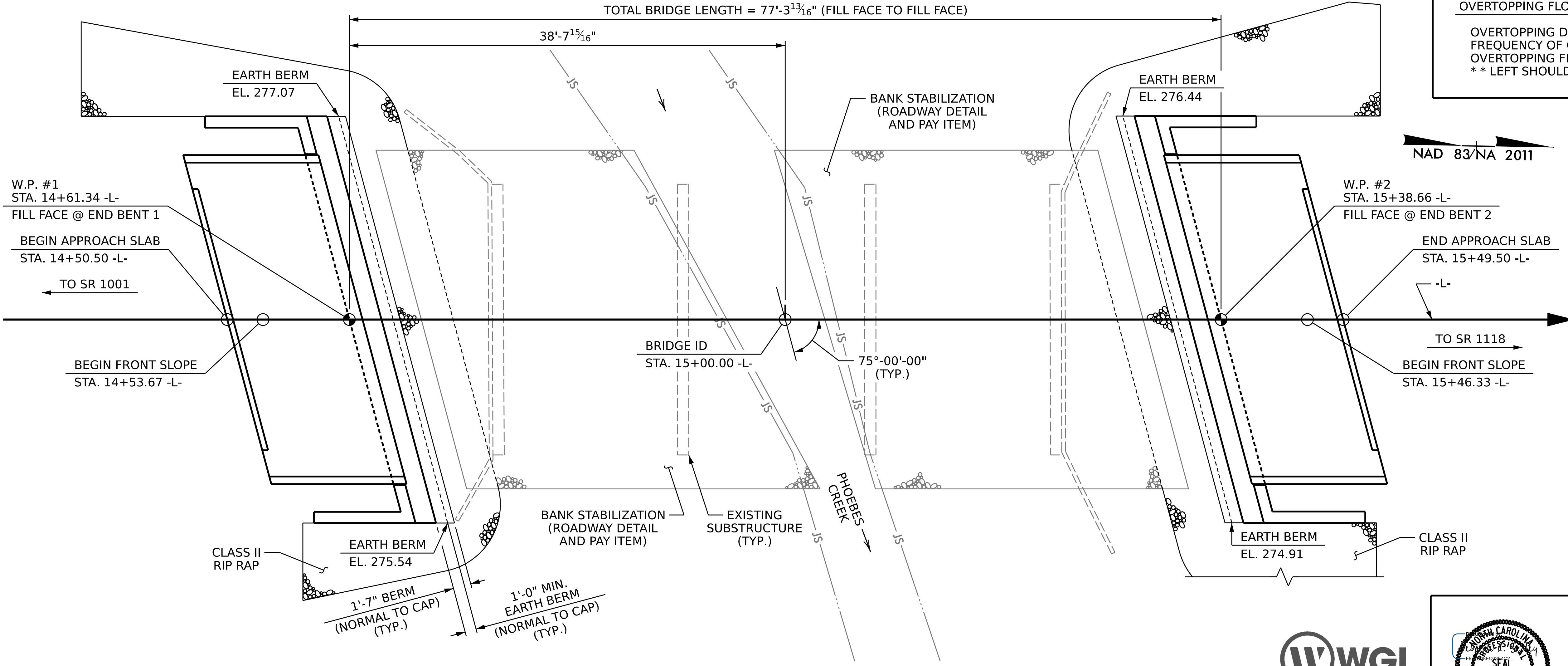
HYDRAULIC DATA:

DESIGN DISCHARGE = 1800 CFS
 FREQUENCY OF DESIGN FLOOD = 25 YEAR
 DESIGN HIGH WATER ELEVATION = 277.9
 DRAINAGE AREA = 7.2 SQ. MI.
 BASE DISCHARGE (Q 100) = 2560 CFS
 BASE HIGH WATER ELEVATION = 279.6

OVERTOPPING FLOOD DATA:

OVERTOPPING DISCHARGE = 5138 CFS
 FREQUENCY OF OVERTOPPING FLOOD = 500+ YEAR
 OVERTOPPING FLOOD ELEVATION = 283.1 **
 ** LEFT SHOULDER AT STA. 15+96.00 -L-

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS



PLAN

(PILES NOT SHOWN IN PLAN VIEW)

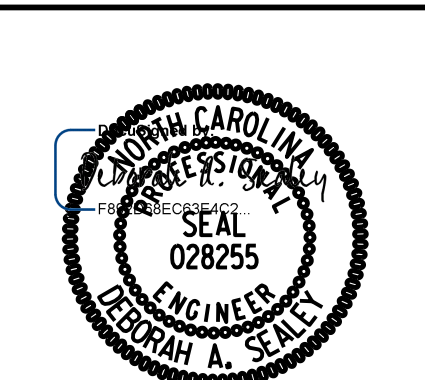
NAD 83/NA 2011

PROJECT NO. BP5.R112
 WARREN COUNTY
 STATION: 15+00.00 -L-

SHEET 1 OF 3 REPLACES BRIDGE #920126

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON SR 1116
 (PERRYTOWN ROAD)
 OVER PHOEBES CREEK
 BETWEEN SR 1001 AND SR 1118



DRAWN BY : T. BANKOVICH DATE : 9-22
 CHECKED BY : B.S. COX DATE : 9-22
 DESIGN ENGINEER OF RECORD : D.A. SEALEY DATE : 9-22

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

3/4/2024 | 8:07 AM PS

LICENSURE NO. C-4434

SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) ## (e.g., "Bent 1, Piles 1-5")	Factored Resistance per Pile TONS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles*			Drilled-In Piles		
					Min Pile Tip (Tip No Higher Than) Elev FT	Required Driving Resistance (RDR)** per Pile TONS	Total Pile Redrives Quantity EACH	Predrilling Length per Pile Lin FT	Predrilling Elevation (Elev Not To Predrill Below) FT	Maximum Predrilling Dia INCHES	Pile Exc Excavation (Bottom of Hole) Elev FT	Pile Exc Not In Soil per Pile Lin FT	Pile Exc In Soil per Pile Lin FT
End Bent 1, Piles 1-5	100	See Structure Plans	15		266.6	167					266.6	3.0	7.0
End Bent 2, Piles 1-5	100	See Structure Plans	20		265.9	167							

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

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

SUMMARY OF PDA/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Dynamic Pile Testing				Pile Order Lengths	
End Bent/ Bent No	Dynamic Pile Testing Required? YES or MAYBE	Dynamic Pile Testing Test Pile Length FT	Total Dynamic Pile Testing Quantity EACH	End Bent/ Bent No(s)	Pile Order Length Basis* EST or PDA
End Bent 1	MAYBE	15	1		
End Bent 2	MAYBE	20			

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

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

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

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

SUMMARY OF PILE ACCESSORIES

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) ## (e.g., "Bent 1, Piles 1-5")	Pipe Pile Plates Required? YES or MAYBE	Steel Pile Points			Steel Pile Tips Required? YES
		Pipe Pile Cutting Shoes Required? YES	Pipe Pile Conical Points Required? YES	H-Pile Points Required? YES	
End Bent 1, Piles 1-5				Yes	
End Bent 2, Piles 1-5				Yes	
TOTAL QTY:				10	

NOTES:

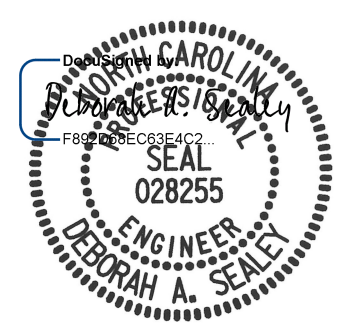
- The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Kenneth R. Bussey, Jr. PE 038206) on 09-21-2022.
- Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
- The Engineer will determine the need for Dynamic Pile Testing when Dynamic Pile Testing may be required.

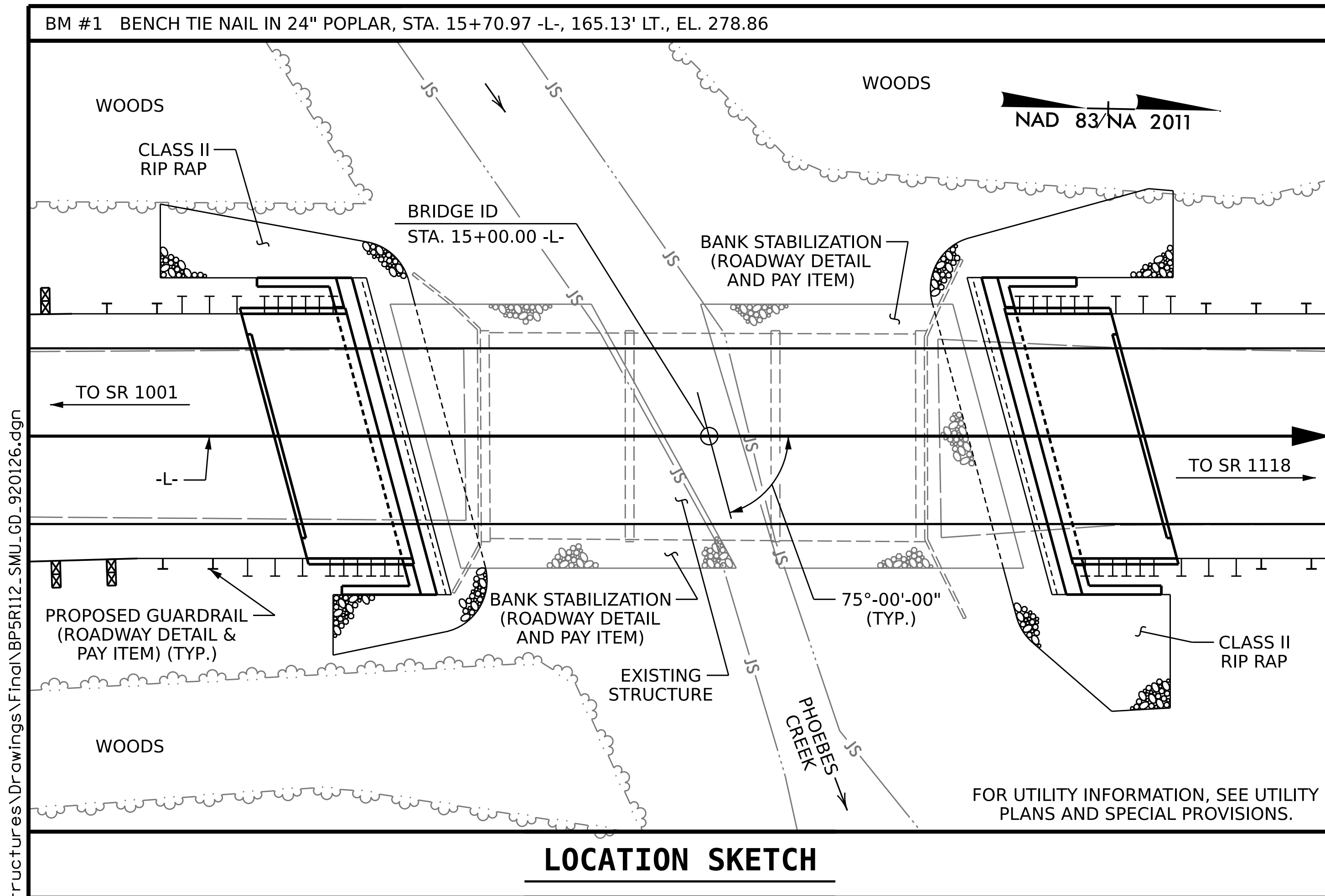
PROJECT NO. BP5.R112

WARREN COUNTY

STATION: 15+00 -L-

SHEET 2 OF 3

 3/4/2024 8:07 AM PST	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH PILE FOUNDATION TABLES						SHEET NO. S-2
	REVISIONS						TOTAL SHEETS 16
SIGNATURE _____ DATE _____		NO.	BY:	DATE:	NO.	BY:	DATE:
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		1			3		
		2			4		



LOCATION SKETCH

NOTES:

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
- THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 30 FT. LEFT AND RIGHT OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.
- THE EXISTING STRUCTURE CONSISTS OF 3 SPANS. 1 @ 17'-6", 1 @ 16'-6" AND 1 @ 18'-0". THE SUPERSTRUCTURE HAS A CLEAR ROADWAY WIDTH OF 24'-1" WITH STEEL DECK ON STEEL I BEAMS. THE END BENTS CONSIST OF TIMBER ABUTMENTS ON TIMBER PILES. THE BENTS CONSIST OF TIMBER CAPS ON TIMBER PILES WITH CONCRETE SILL AT BENT 1 AND CONCRETE COLLARS AT BENT 2. THE EXISTING STRUCTURE, WHICH IS LOCATED AT THE SITE OF THE PROPOSED STRUCTURE, SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, THE LOAD LIMIT MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
- THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.
- INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 15+00.00 -L-."
- FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXIST. STRUCTURE @ STA. 15+00.00 -L-	ASBESTOS ASSESSMENT	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES		STEEL PILE POINTS	DYNAMIC PILE TESTING	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLAB	
										EA	NO.							LF	EA
SUPERSTRUCTURE	LS	LS	LF	LF	LS	CY	LS	LB	EA	NO.	LF	EA	EA	LF	TON	SY	LS	NO.	LF
END BENT 1			35.0	15.0	LS	20.7		2,531	5	5	75	5		150.00	85	95	LS	10	750
END BENT 2					LS	20.7		2,531	5	5	100	5			90	100			
TOTAL	LS	LS	35.0	15.0	LS	41.4	LS	5,062	10	10	175	10	1	150.00	175	195	LS	10	750

FOUNDATION NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 25 TO 35 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENTS 1 AND 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D) (2) OF THE STANDARD SPECIFICATIONS.

BEFORE FILLING HOLES FOR PILE EXCAVATION AT END BENT 1, DRIVE PILES TO THE REQUIRED DRIVING RESISTANCE.

FILL HOLES FOR PILE EXCAVATION AT END BENT 1 WITH CONCRETE OR GROUT.

PROJECT NO. BP5.R112
WARREN COUNTY
 STATION: 15+00.00 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON SR 1116
 (PERRYTOWN ROAD)
 OVER PHOEBES CREEK
 BETWEEN SR 1001 AND SR 1118

DRAWN BY :	T. BANKOVICH	DATE :	9-22
CHECKED BY :	B.S. COX	DATE :	9-22
DESIGN ENGINEER OF RECORD:	D.A. SEALEY	DATE :	9-22

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

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

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

LOAD TYPE	VEHICLE	WEIGHT (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD	HL-93 (INVENTORY)	N/A	①	1.23	--	1.75	0.275	1.23	75'	EL	37.5	0.506	2.45	75'	EL	3	0.80	0.275	1.43	75'	EL	37.5		
	HL-93 (OPERATING)	N/A		1.59	--	1.35	0.275	1.59	75'	EL	37.5	0.506	3.21	75'	EL	3	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.61	58.0	1.75	0.275	1.61	75'	EL	37.5	0.506	3.16	75'	EL	3	0.80	0.275	1.87	75'	EL	37.5		
	HS-20 OPERATING	36.000		2.09	75.2	1.35	0.275	2.09	75'	EL	37.5	0.506	4.13	75'	EL	3	N/A	--	--	--	--	--		
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		4.24	57.2	1.40	0.275	4.56	75'	EL	37.5	0.506	9.74	75'	EL	3	0.80	0.275	4.24	75'	EL	37.5	
		SNGARBS2	20.000		3.15	63.0	1.40	0.275	3.39	75'	EL	37.5	0.506	6.85	75'	EL	3	0.80	0.275	3.15	75'	EL	37.5	
		SNAGRIS2	22.000		2.98	65.6	1.40	0.275	3.21	75'	EL	37.5	0.506	6.34	75'	EL	3	0.80	0.275	2.98	75'	EL	37.5	
		SNCOTTS3	27.250		2.11	57.5	1.40	0.275	2.27	75'	EL	37.5	0.506	4.80	75'	EL	3	0.80	0.275	2.11	75'	EL	37.5	
		SNAGGRS4	34.925		1.76	61.5	1.40	0.275	1.89	75'	EL	37.5	0.506	3.94	75'	EL	3	0.80	0.275	1.76	75'	EL	37.5	
		SNS5A	35.550		1.72	61.1	1.40	0.275	1.85	75'	EL	37.5	0.506	3.98	75'	EL	3	0.80	0.275	1.72	75'	EL	37.5	
		SNS6A	39.950		1.58	63.1	1.40	0.275	1.70	75'	EL	37.5	0.506	3.61	75'	EL	3	0.80	0.275	1.58	75'	EL	37.5	
	SNS7B	42.000		1.50	63.0	1.40	0.275	1.62	75'	EL	37.5	0.506	3.53	75'	EL	3	0.80	0.275	1.50	75'	EL	37.5		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.92	63.4	1.40	0.275	2.07	75'	EL	37.5	0.506	4.33	75'	EL	3	0.80	0.275	1.92	75'	EL	37.5	
		TNT4A	33.075		1.93	63.8	1.40	0.275	2.08	75'	EL	37.5	0.506	4.22	75'	EL	3	0.80	0.275	1.93	75'	EL	37.5	
		TNT6A	41.600		1.68	69.9	1.40	0.275	1.70	75'	EL	37.5	0.506	3.75	75'	EL	3	0.80	0.275	1.68	75'	EL	37.5	
		TNT7A	42.000		1.59	66.8	1.40	0.275	1.71	75'	EL	37.5	0.506	3.68	75'	EL	3	0.80	0.275	1.59	75'	EL	37.5	
		TNT7B	42.000		1.64	68.9	1.40	0.275	1.77	75'	EL	37.5	0.506	3.45	75'	EL	3	0.80	0.275	1.64	75'	EL	37.5	
		TNAGRIT4	43.000		1.56	67.1	1.40	0.275	1.68	75'	EL	37.5	0.506	3.34	75'	EL	3	0.80	0.275	1.56	75'	EL	37.5	
TNAGT5A		45.000		1.47	66.2	1.40	0.275	1.58	75'	EL	37.5	0.506	3.31	75'	EL	3	0.80	0.275	1.47	75'	EL	37.5		
TNAGT5B	45.000		③	1.46	65.7	1.40	0.275	1.57	75'	EL	37.5	0.506	3.18	75'	EL	3	0.80	0.275	1.46	75'	EL	37.5		
EMERGENCY VEHICLE (EV)	EV2	28.750		2.19	63.0	1.30	0.275	2.54	75'	EL	37.5	0.506	5.10	75'	EL	3	0.80	0.275	2.19	75'	EL	37.5		
	EV3	43.000		④	1.43	61.5	1.30	0.275	1.66	75'	EL	37.5	0.506	3.40	75'	EL	3	0.80	0.275	1.43	75'	EL	37.5	

LOAD FACTORS:

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

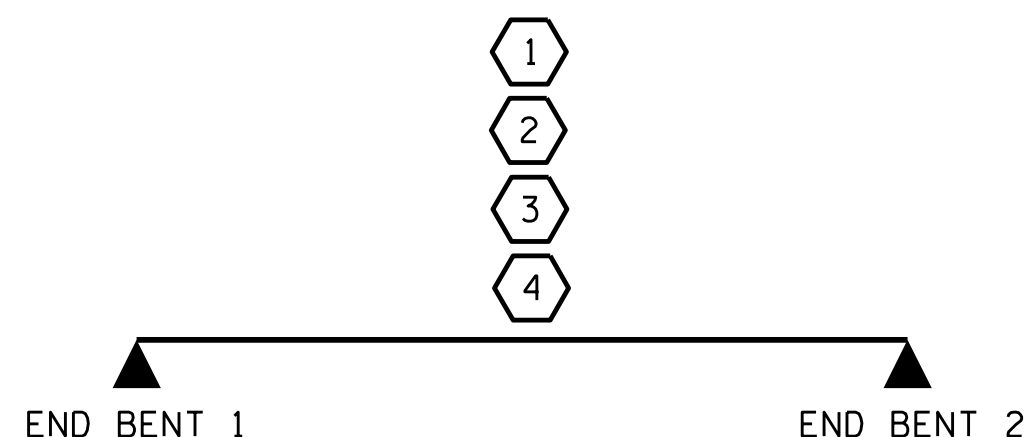
NOTES:

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

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

COMMENTS:

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



LRFR SUMMARY
FOR SPAN 'A'

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

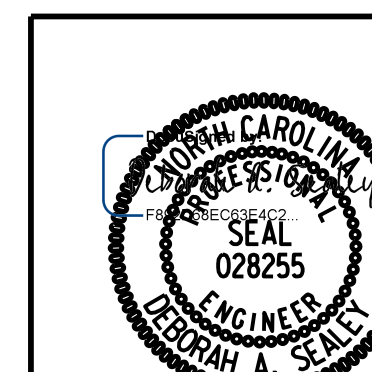
I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER

PROJECT NO. BP5.R112
WARREN COUNTY
STATION: 15+00.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**LRFR SUMMARY FOR
75' CORED SLAB UNIT
75° SKEW**

(NON-INTERSTATE TRAFFIC)



LICENSURE NO. C-4434

3/4/2024 | 8:07 AM PS

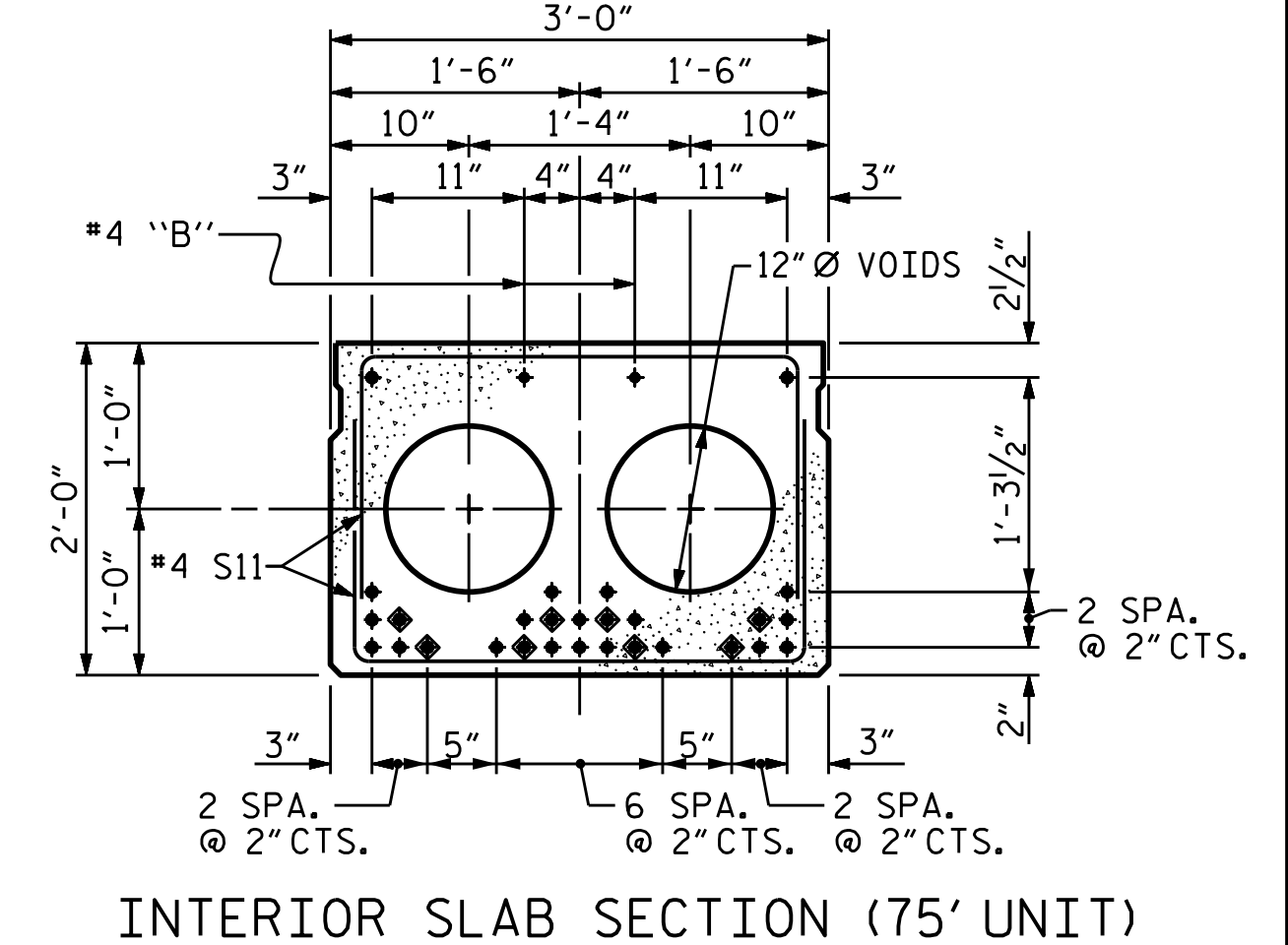
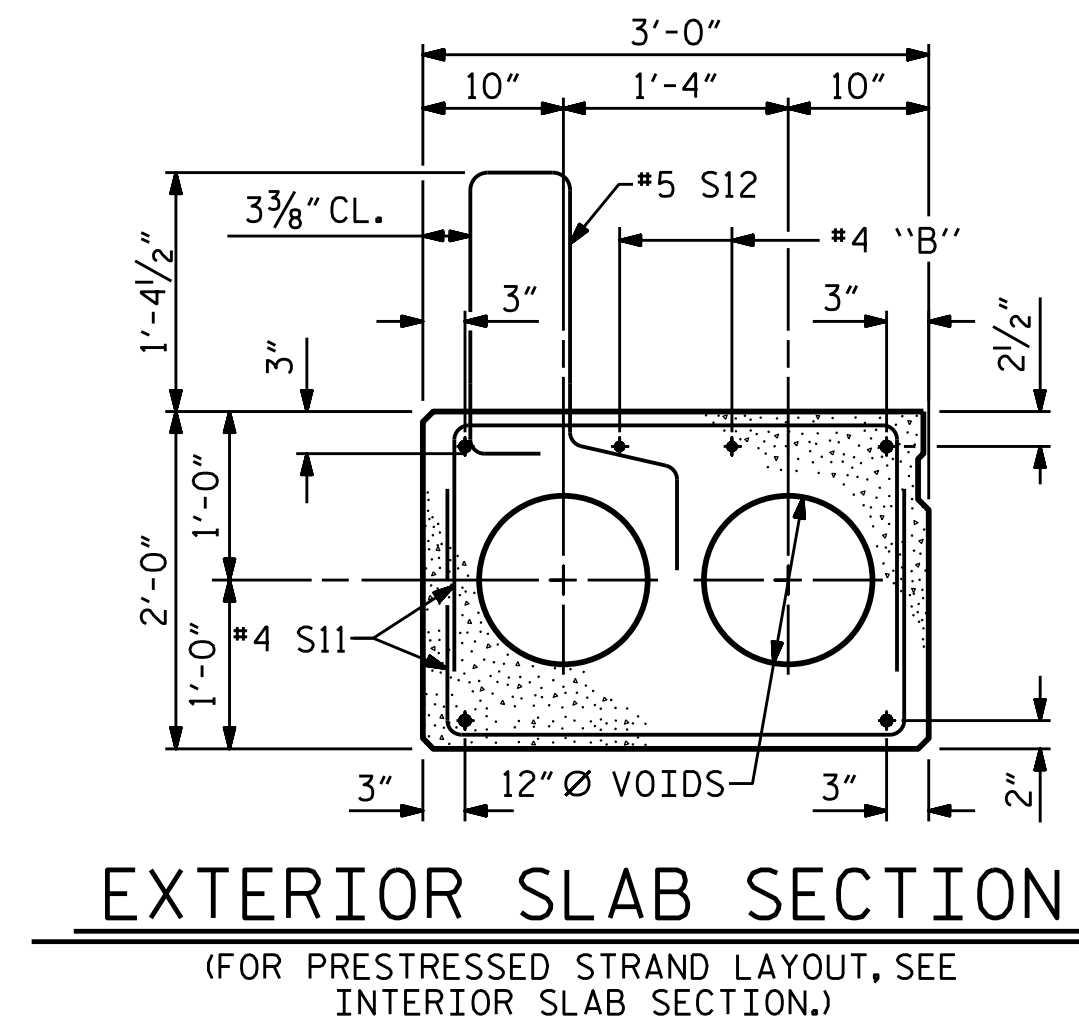
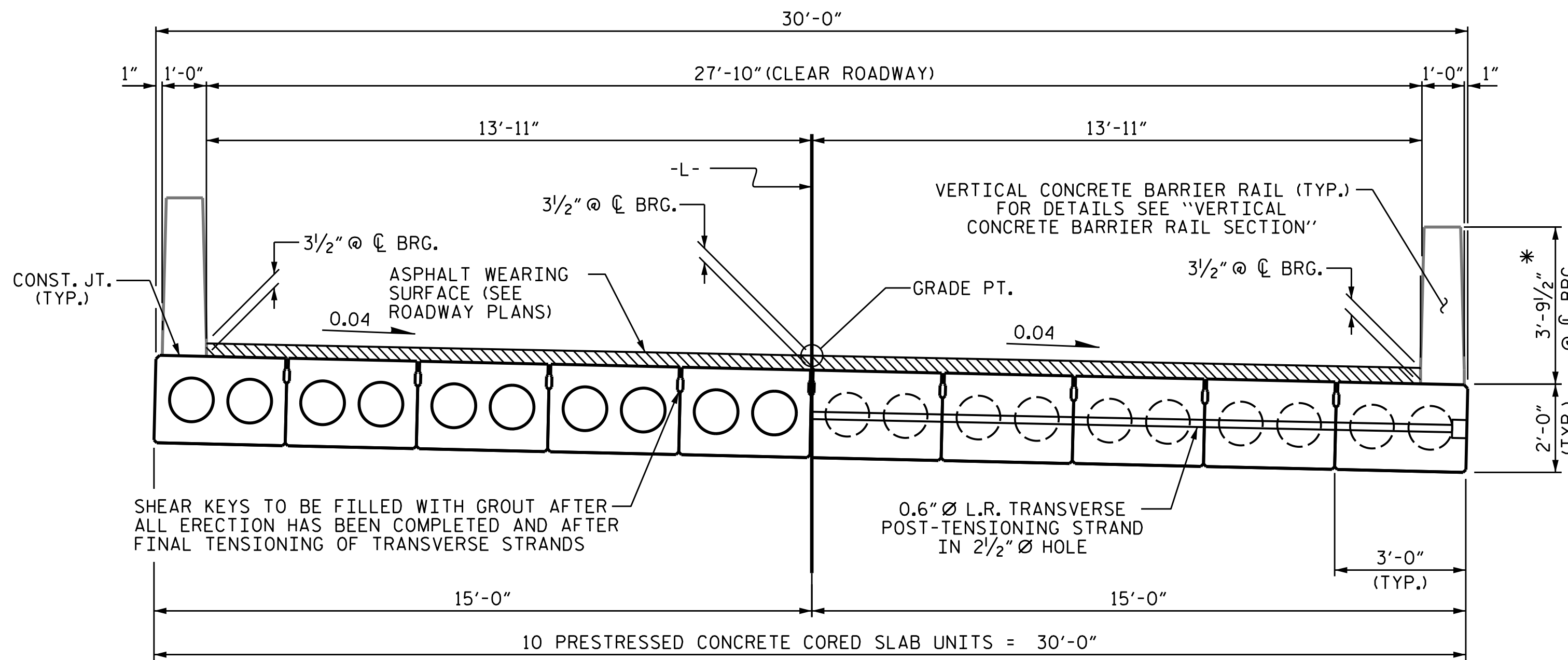
DRAWN BY : S.D. COOPER DATE : 9-22
CHECKED BY : B.S. COX DATE : 9-22
DESIGN ENGINEER OF RECORD: D.A. SEALEY DATE : 9-22

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2			4	

SHEET NO. **S-4**
TOTAL SHEETS **16**

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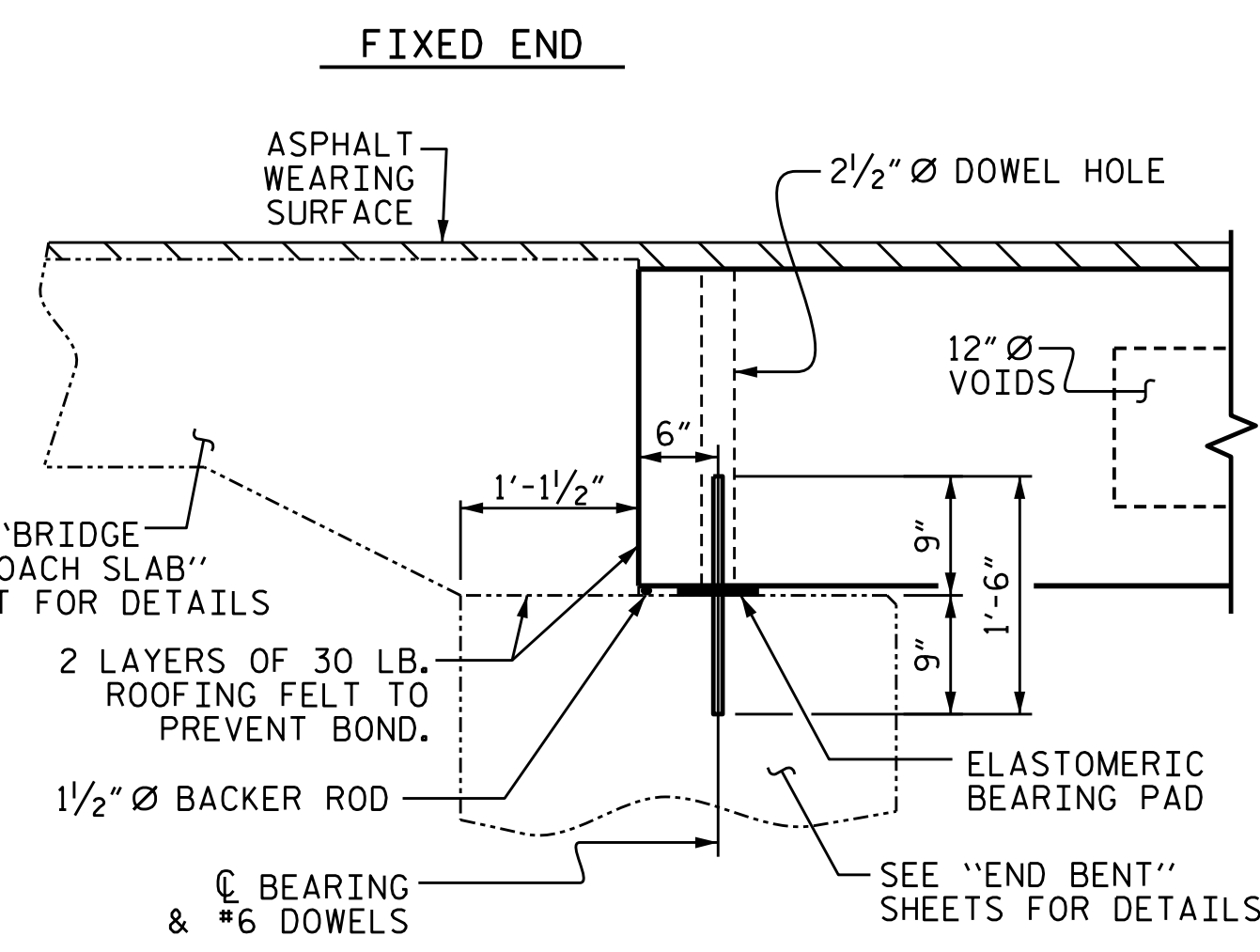
EXTERIOR SLAB SECTION
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)

INTERIOR SLAB SECTION (75' UNIT)
(28 STRANDS REQUIRED)
0.6" Ø LOW RELAXATION STRAND LAYOUT

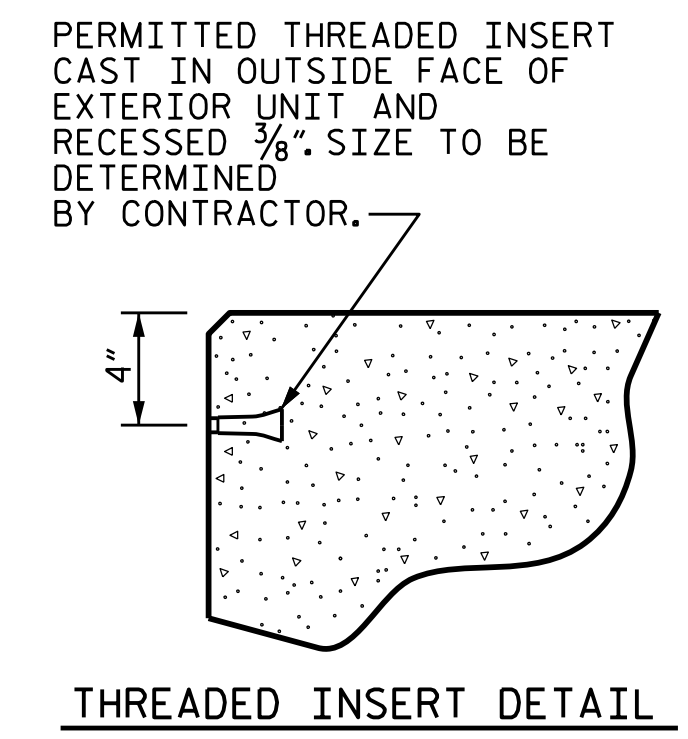
◆ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

HALF SECTION THROUGH VOIDS **TYPICAL SECTION** **HALF SECTION AT INTERMEDIATE DIAPHRAGMS**

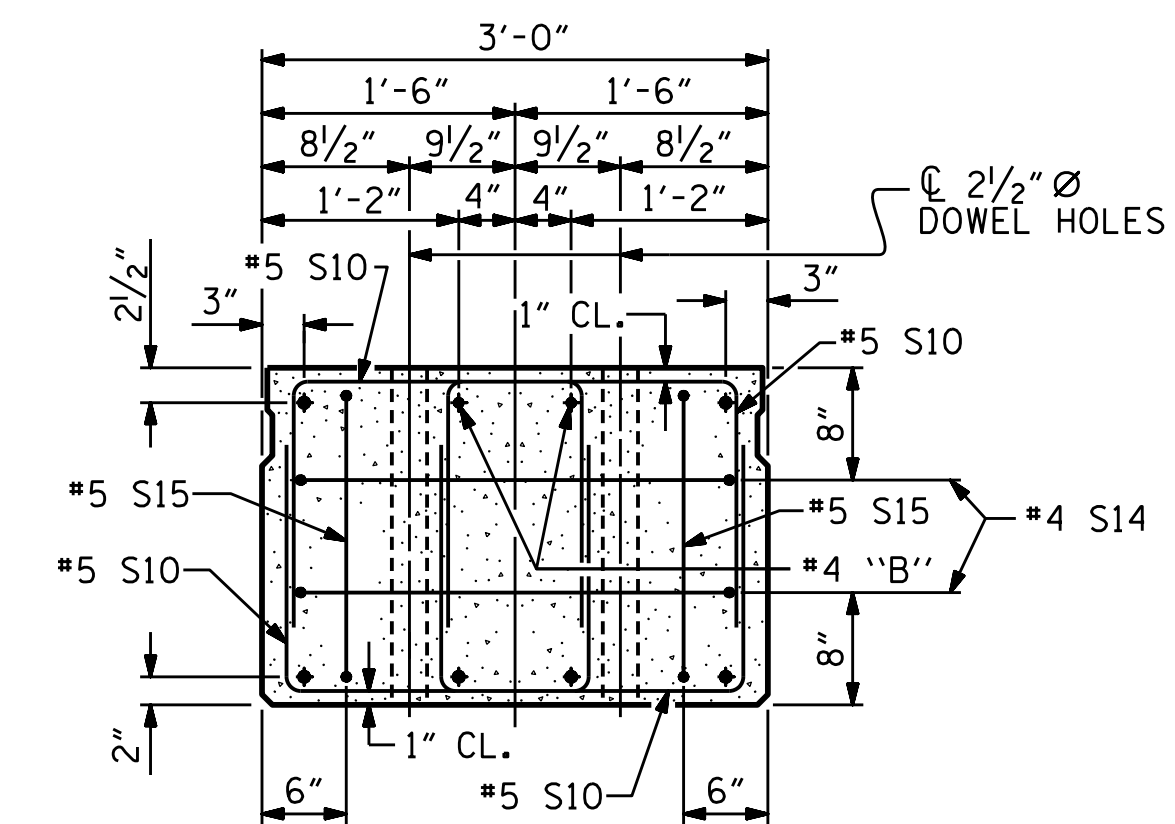
* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



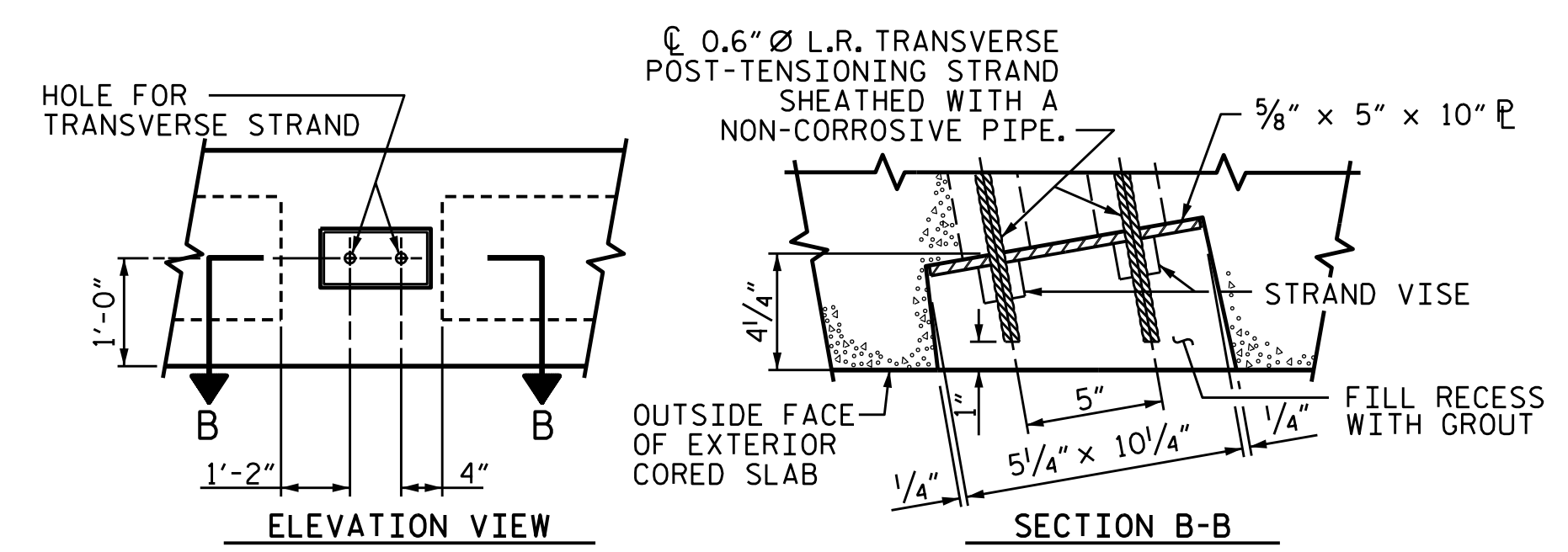
SECTION AT END BENT



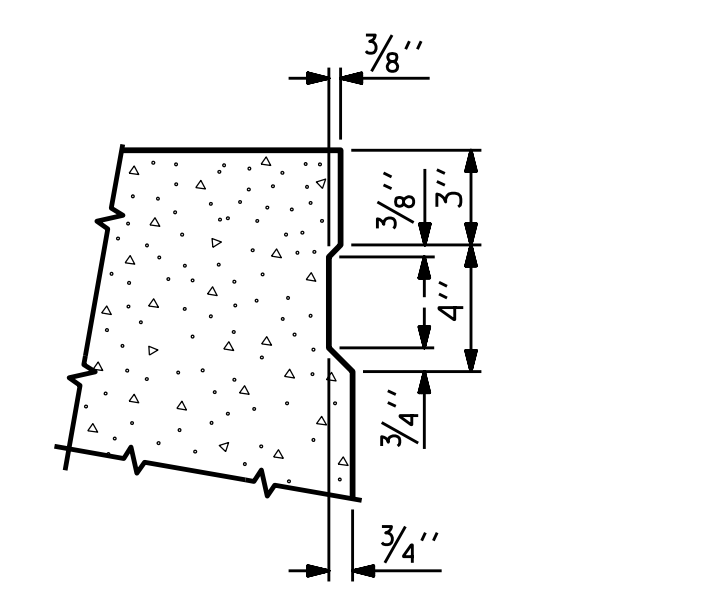
THREADED INSERT DETAIL



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



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

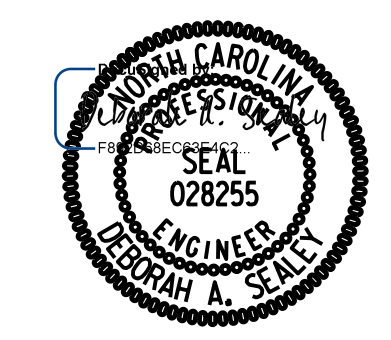


SHEAR KEY DETAIL
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

PROJECT NO. BP5.R112
WARREN COUNTY
STATION: 15+00.00 -L-
SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
3'-0" x 2'-0" PRESTRESSED CONCRETE CORED SLAB UNIT
75° SKEW

W WGI
5640 Dillard Drive, Suite 200
Cary, NC 27518
LICENSURE NO. C-4434



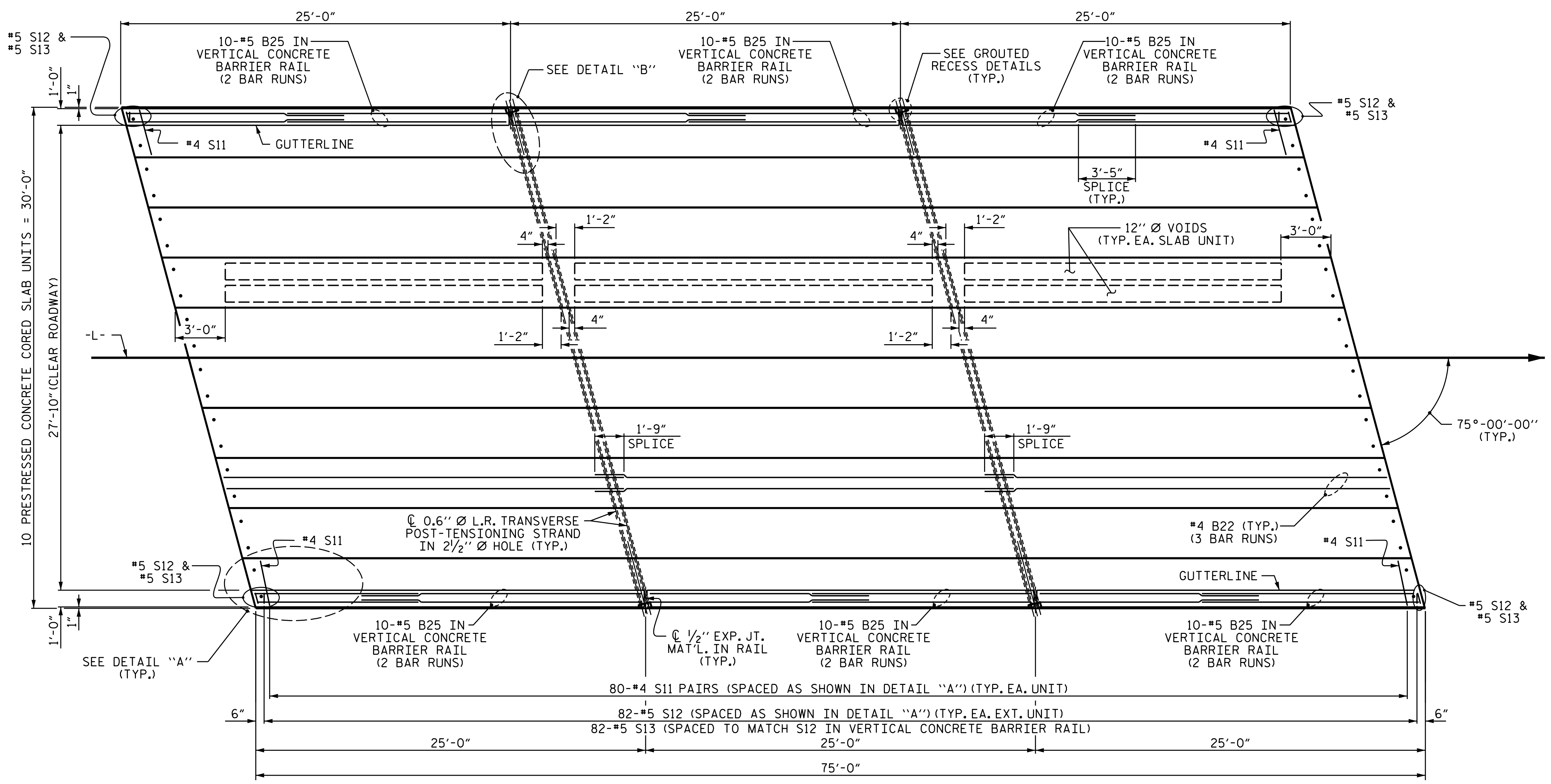
DRAWN BY: S.D. COOPER DATE: 9-22
CHECKED BY: B.S. COX DATE: 9-22
DESIGN ENGINEER OF RECORD: D.A. SEALEY DATE: 9-22

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2			4		

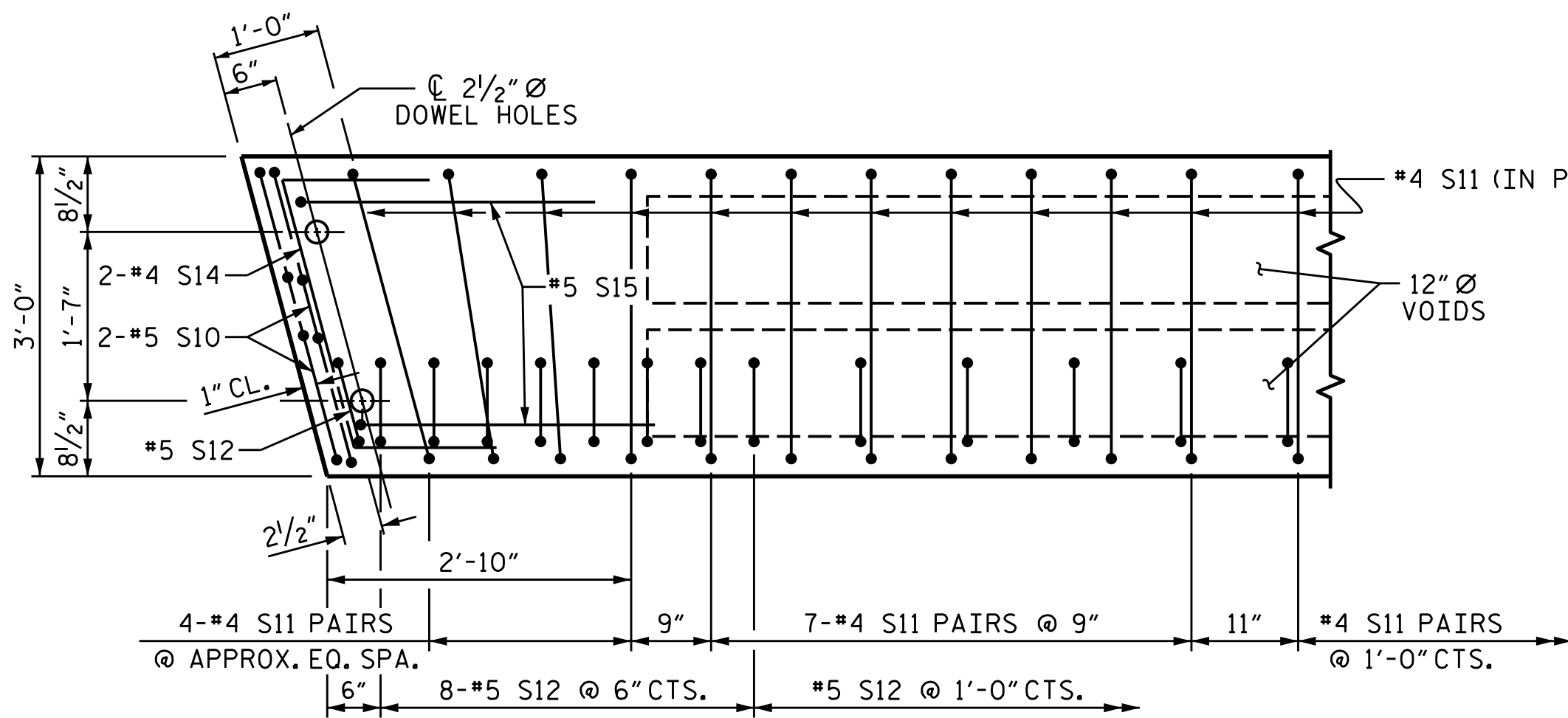
TOTAL SHEETS: 16

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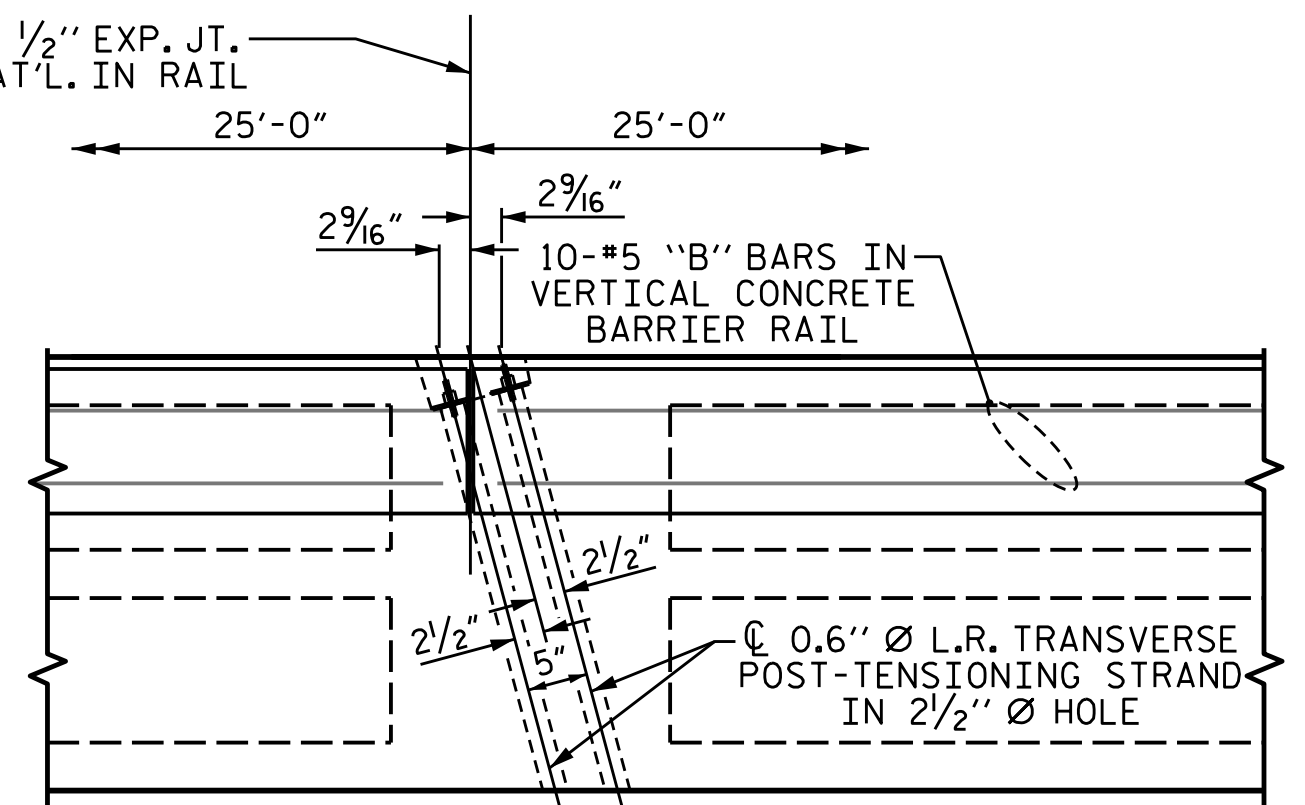


PLAN OF UNIT
SPAN A



DETAIL "A"

(SIMILAR EACH END OF UNIT)
NOTE: EXTERIOR UNIT RESS AND
UNIT SIMILAR EXCEPT OMIT #5 S12 BARS.

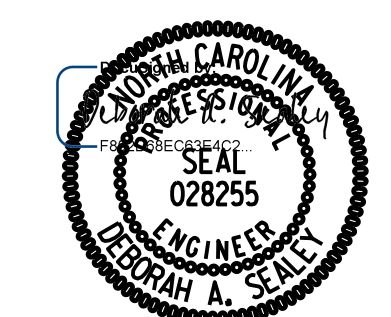


DETAIL "B"

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

PROJECT NO. BP5.R112
WARREN COUNTY
STATION: 15+00.00 -L-
SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
**PLAN OF SPAN A
(75'-0" UNIT)
27'-10" CLEAR ROADWAY**
75° SKEW



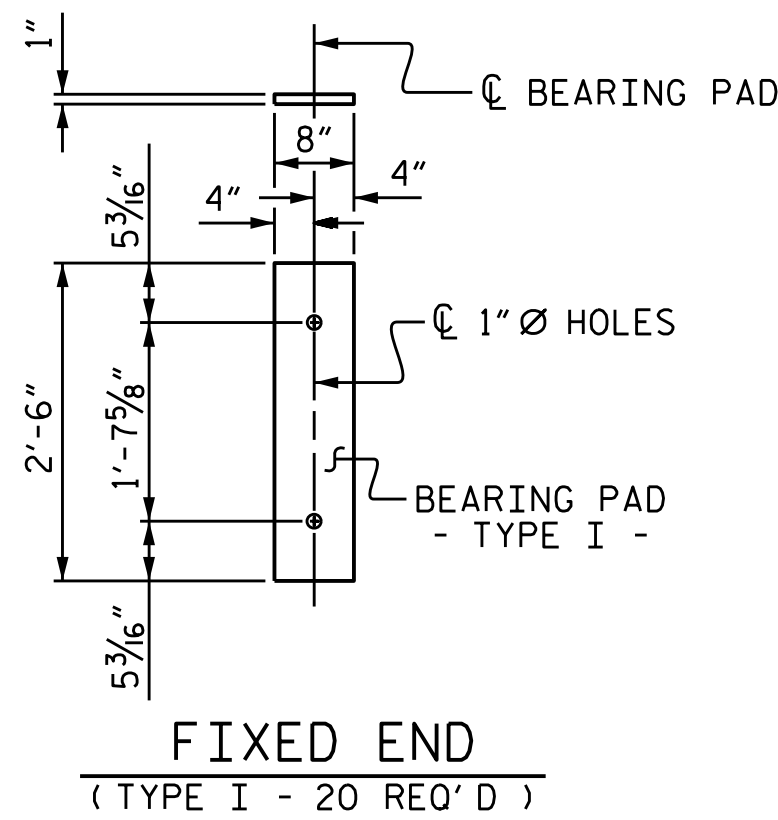
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TOTAL SHEETS
16

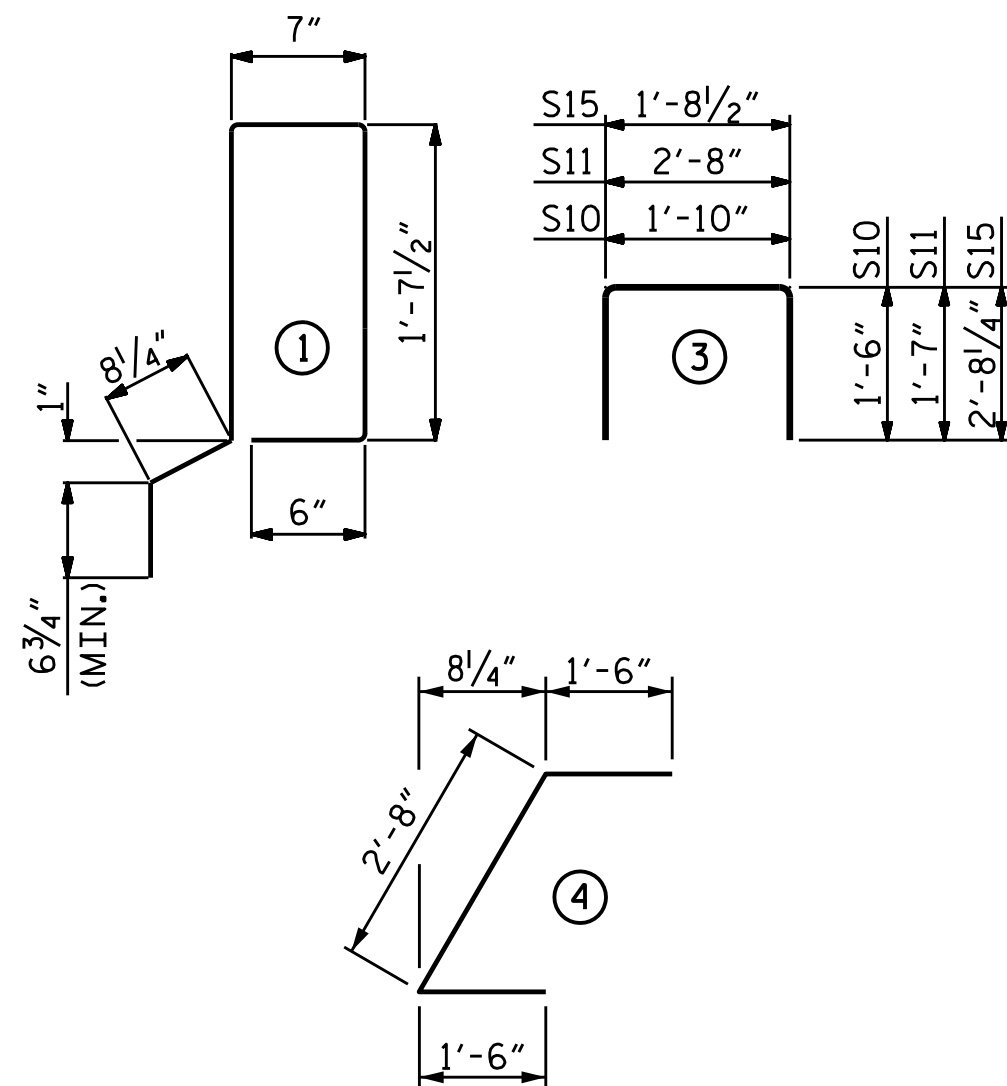
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ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE 75' CORED SLAB UNIT

			EXTERIOR UNIT		INTERIOR UNIT	
BAR NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B22	#6	STR	26'-2"	105	26'-2"	105
S10	#5	3	4'-10"	40	4'-10"	40
S11	#4	3	5'-10"	623	5'-10"	623
*S12	#5	1	5'-7"	489		
S14	#4	4	5'-8"	15	5'-8"	15
S15	#5	3	7'-1"	30	7'-1"	30
REINFORCING STEEL			LBS.	813		813
* EPOXY COATED REINFORCING STEEL			LBS.	489		
8000 P.S.I. CONCRETE			CU. YDS.	12.8		12.8
0.6" Ø L.R. STRANDS			No.	28		28

NOTES

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

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

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

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

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

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

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

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

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

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

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

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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

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

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

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

** INCLUDES FUTURE WEARING SURFACE

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
75' UNIT			
EXTERIOR C.S.	2	75'-0"	150'-0"
INTERIOR C.S.	8	75'-0"	600'-0"
TOTAL	10	75'-0"	750'-0"

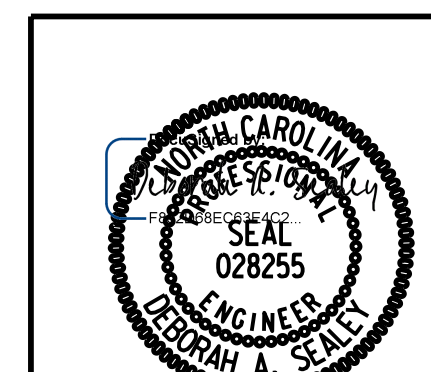
GRADE 270 STRANDS	
	0.6" Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
75' UNITS	2 1/4"	3'-8 1/4"

CONCRETE RELEASE STRENGTH	
UNIT	PSI
75' UNITS	6000

PROJECT NO. BP5.R112
WARREN COUNTY
 STATION: 15+00.00 -L-

SHEET 3 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
3'-0" x 2'-0"
PRESTRESSED CONCRETE
CORED SLAB UNIT
 75° SKEW

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

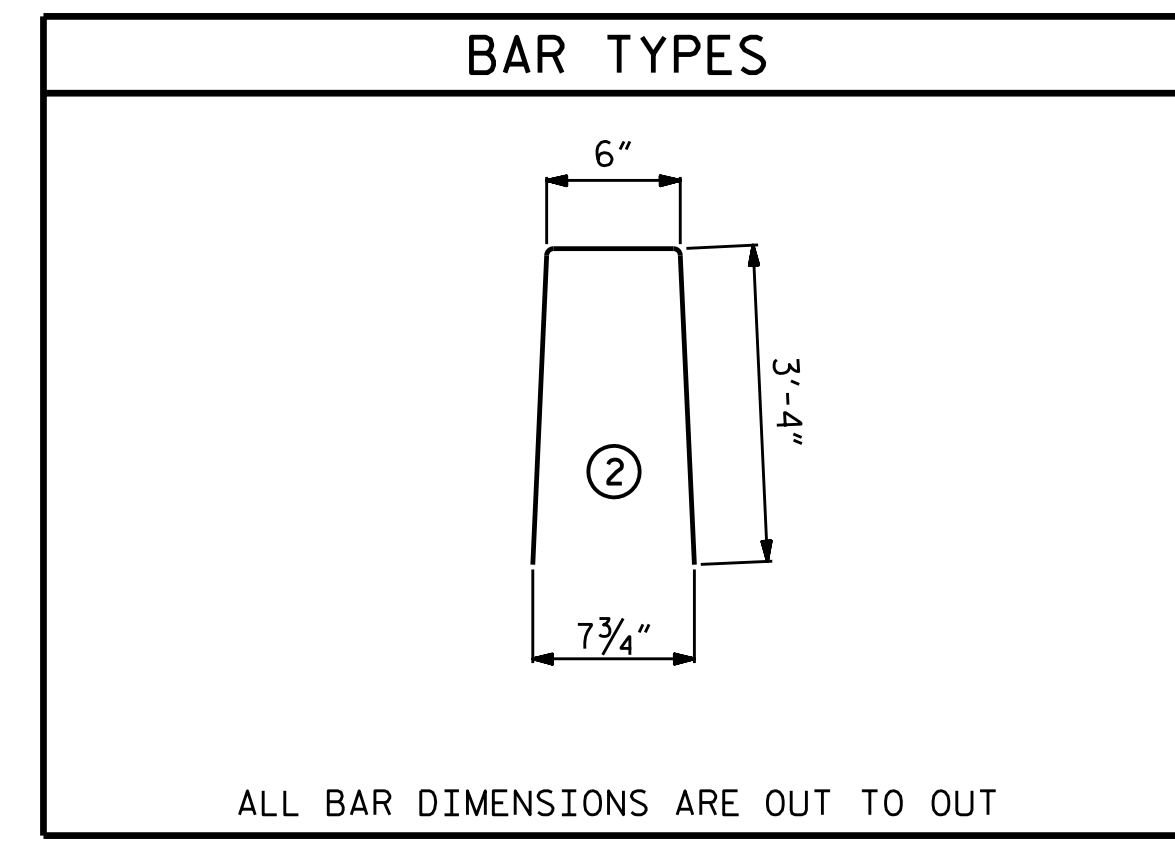
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LICENSURE NO. C-4434

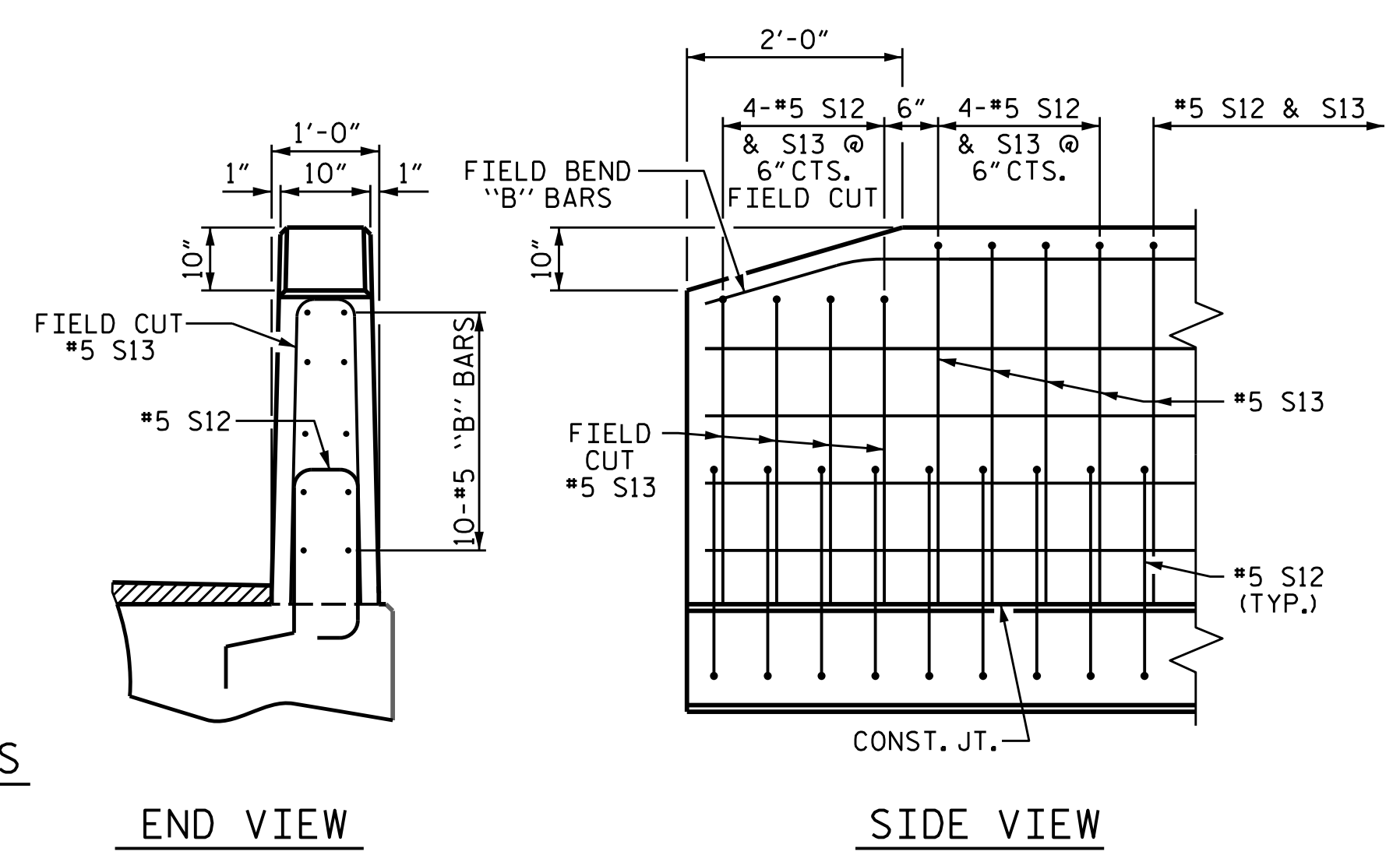
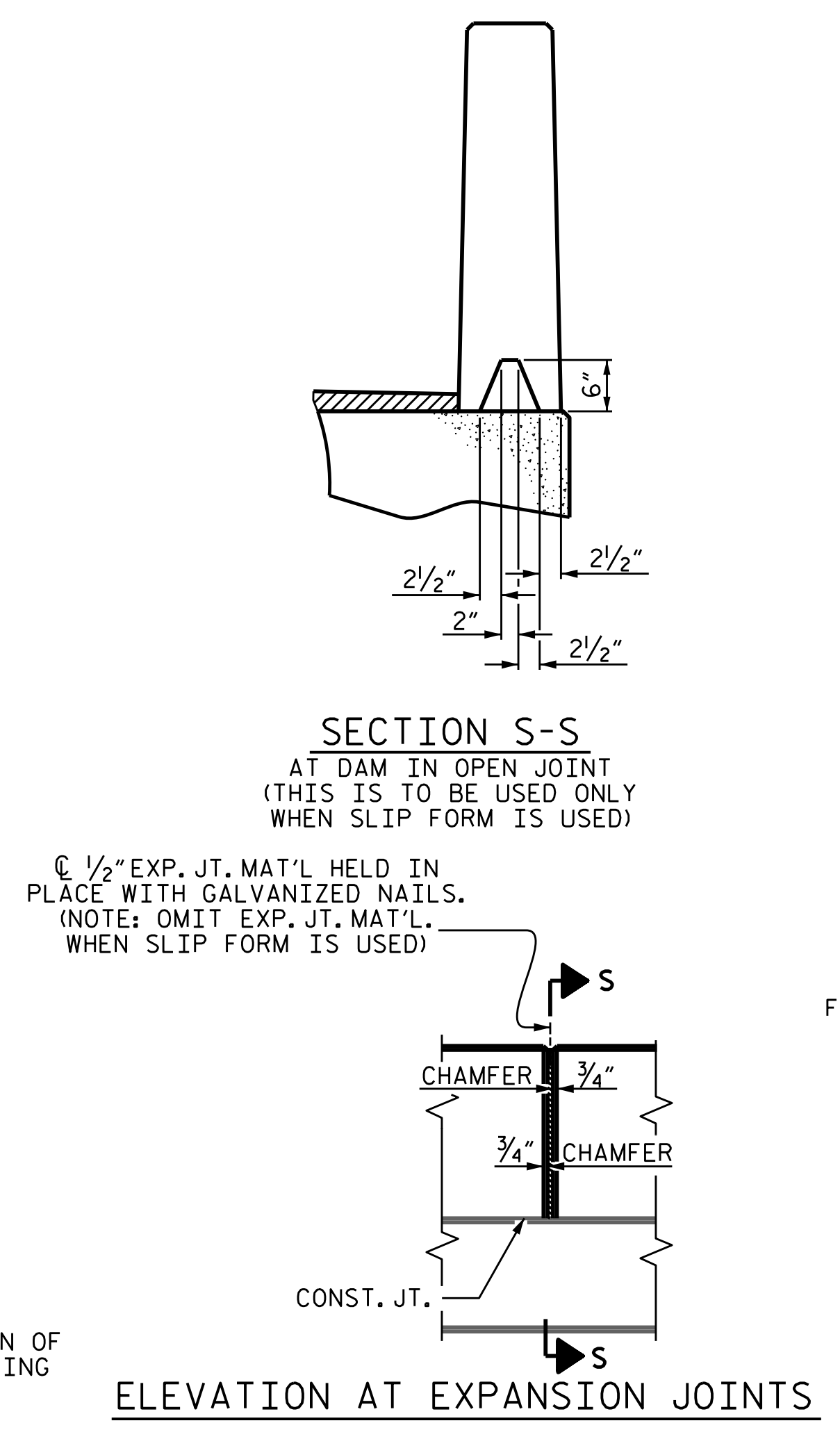
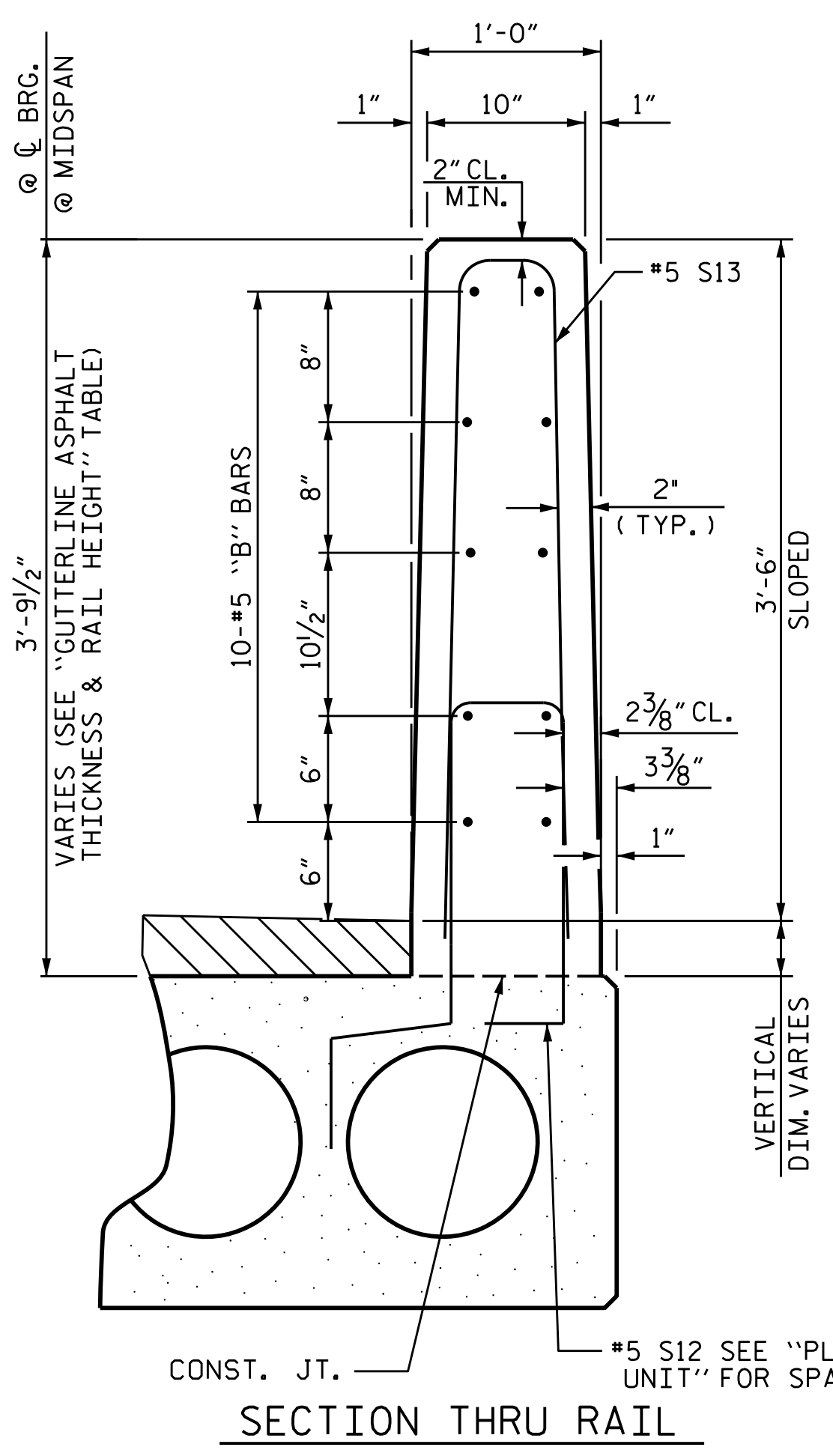
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BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	75' UNIT					
*B25	120	120	#5	STR	14'-3"	1784
*S13	168	168	#5	2	7'-2"	1256
* EPOXY COATED REINFORCING STEEL				LBS.		3040
CLASS AA CONCRETE				CU.YDS.		19.4
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		150.0

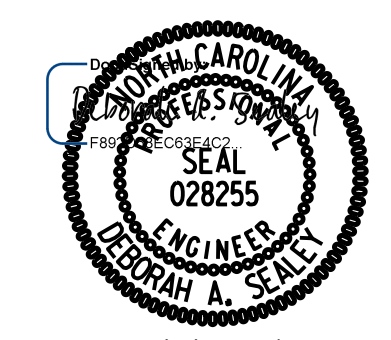


END OF RAIL DETAILS

VERTICAL CONCRETE
BARRIER RAIL DETAILS

PROJECT NO. BP5.R112
WARREN COUNTY
 STATION: 15+00.00 -L-
 SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
3'-0" x 2'-0"
PRESTRESSED CONCRETE
CORED SLAB UNIT
 75° SKEW

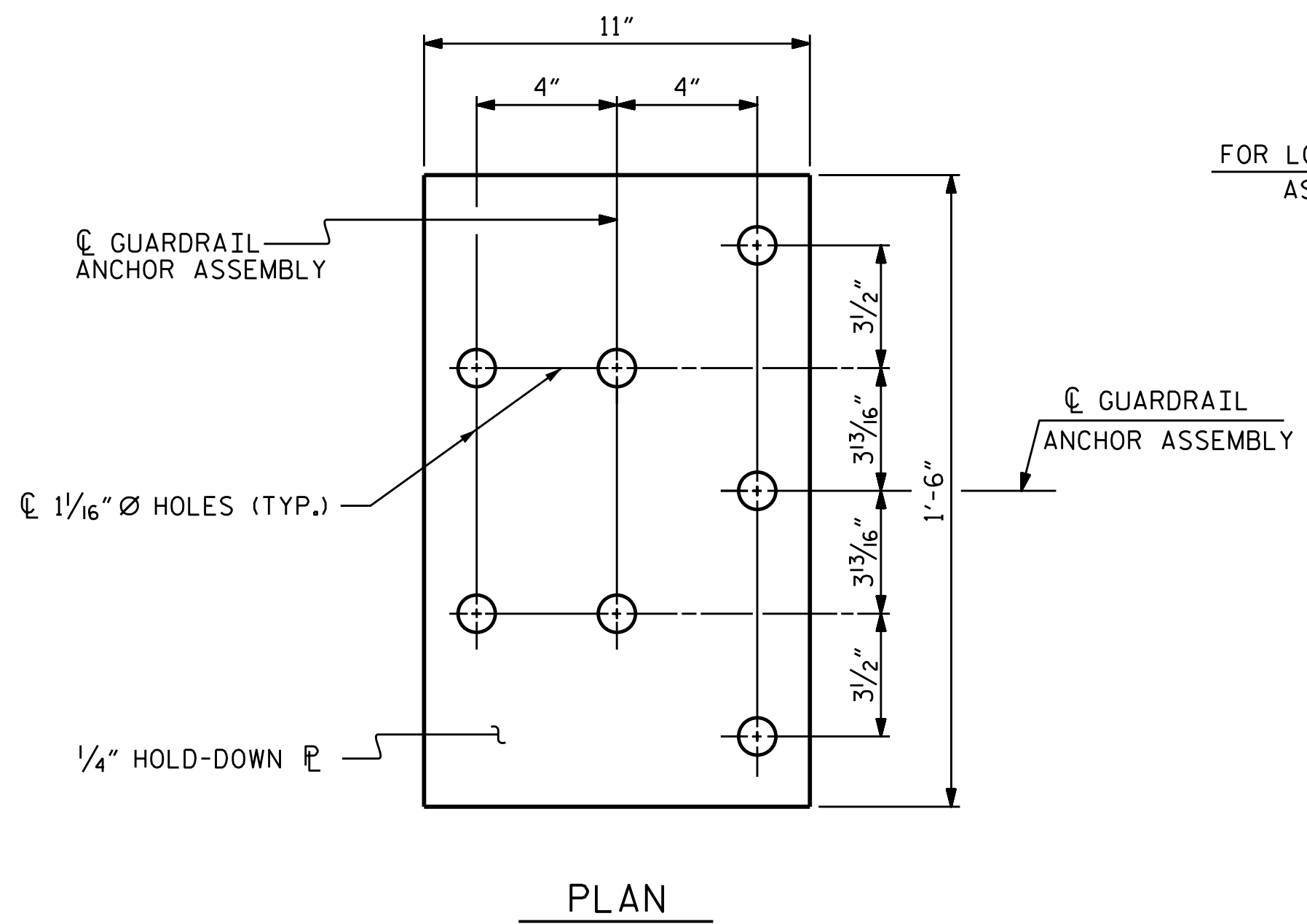


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CHECKED BY :	B.S. COX	DATE :	9-22
DESIGN ENGINEER OF RECORD :	D.A. SEALEY	DATE :	9-22

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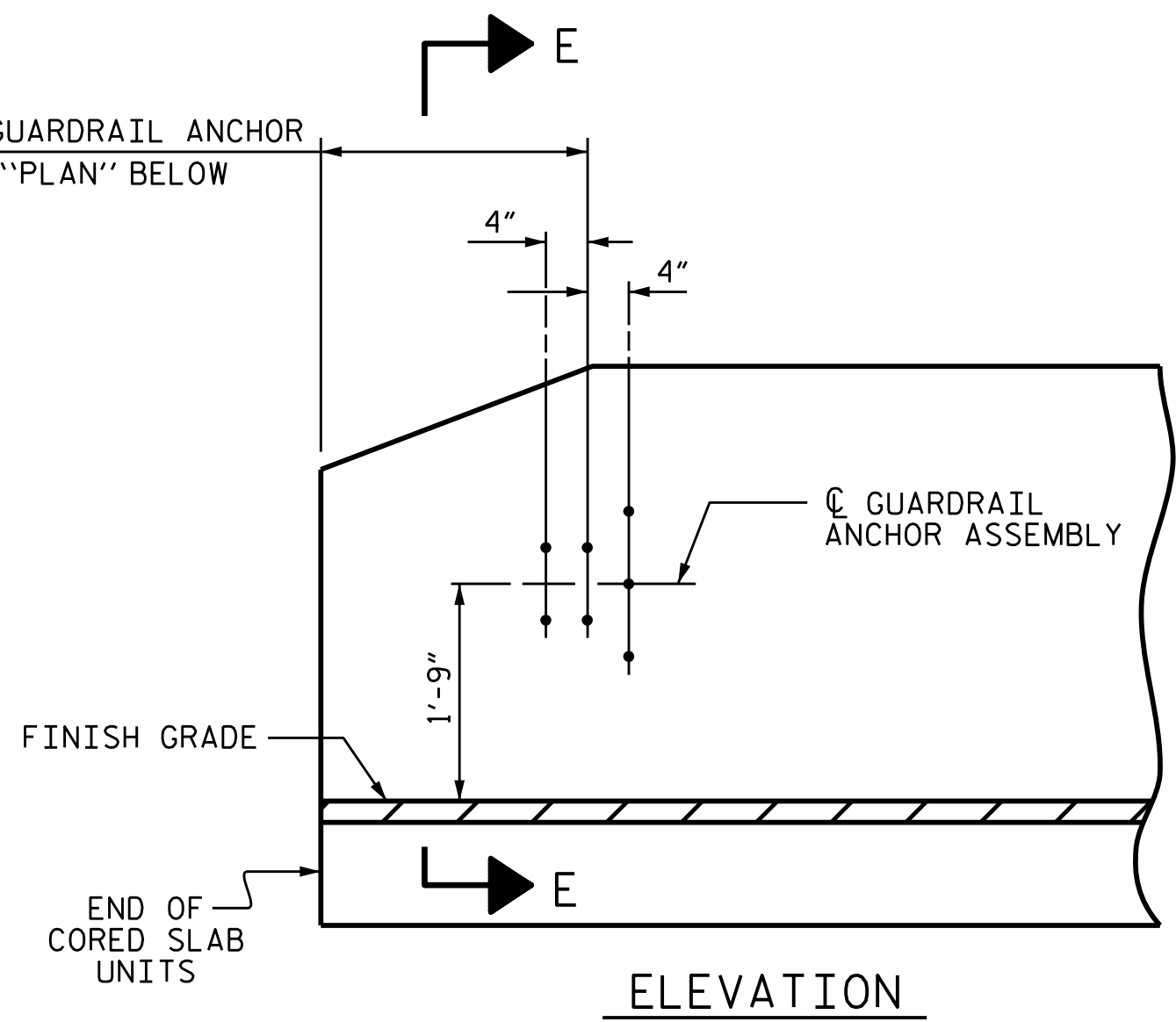
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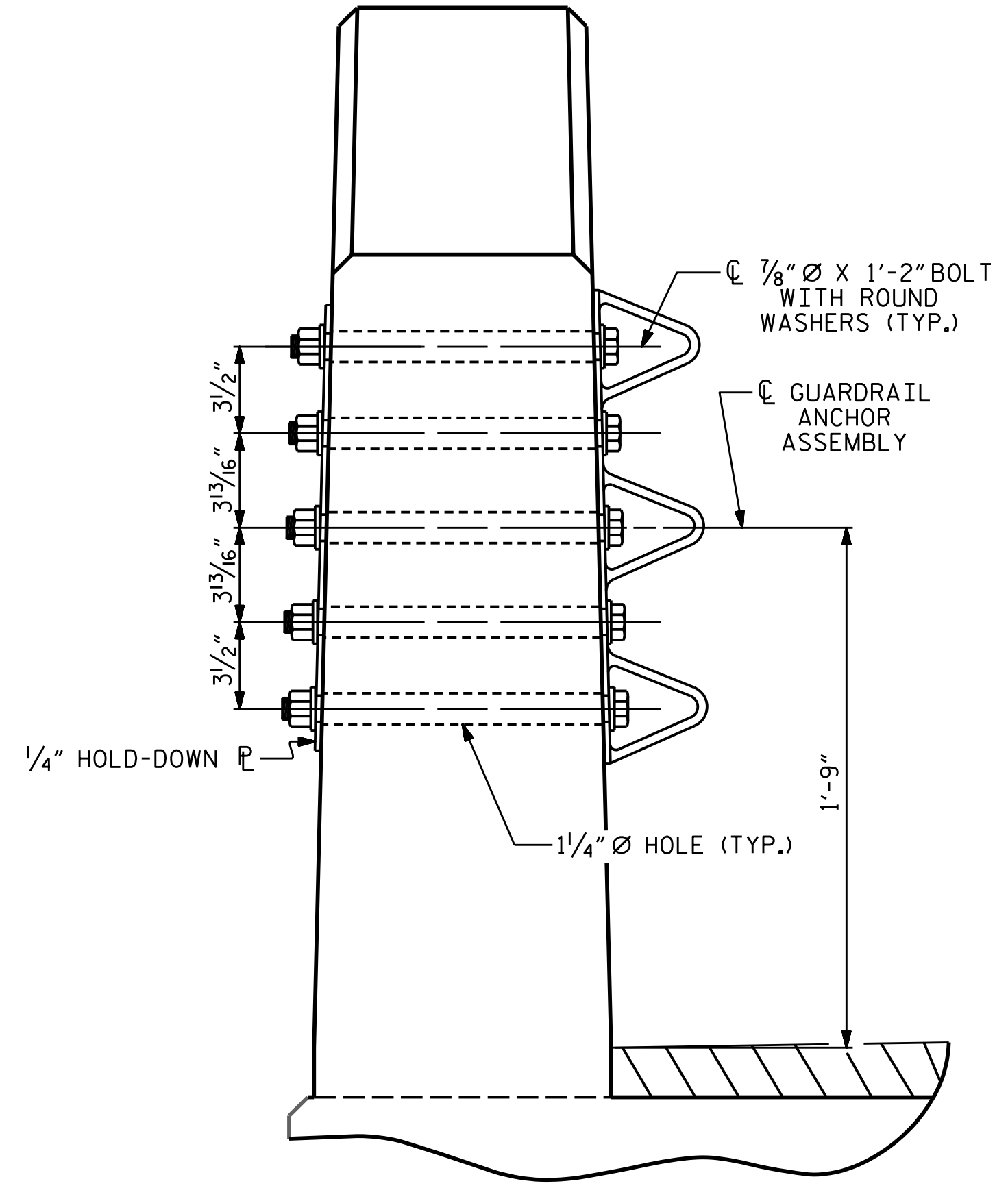


PLAN

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

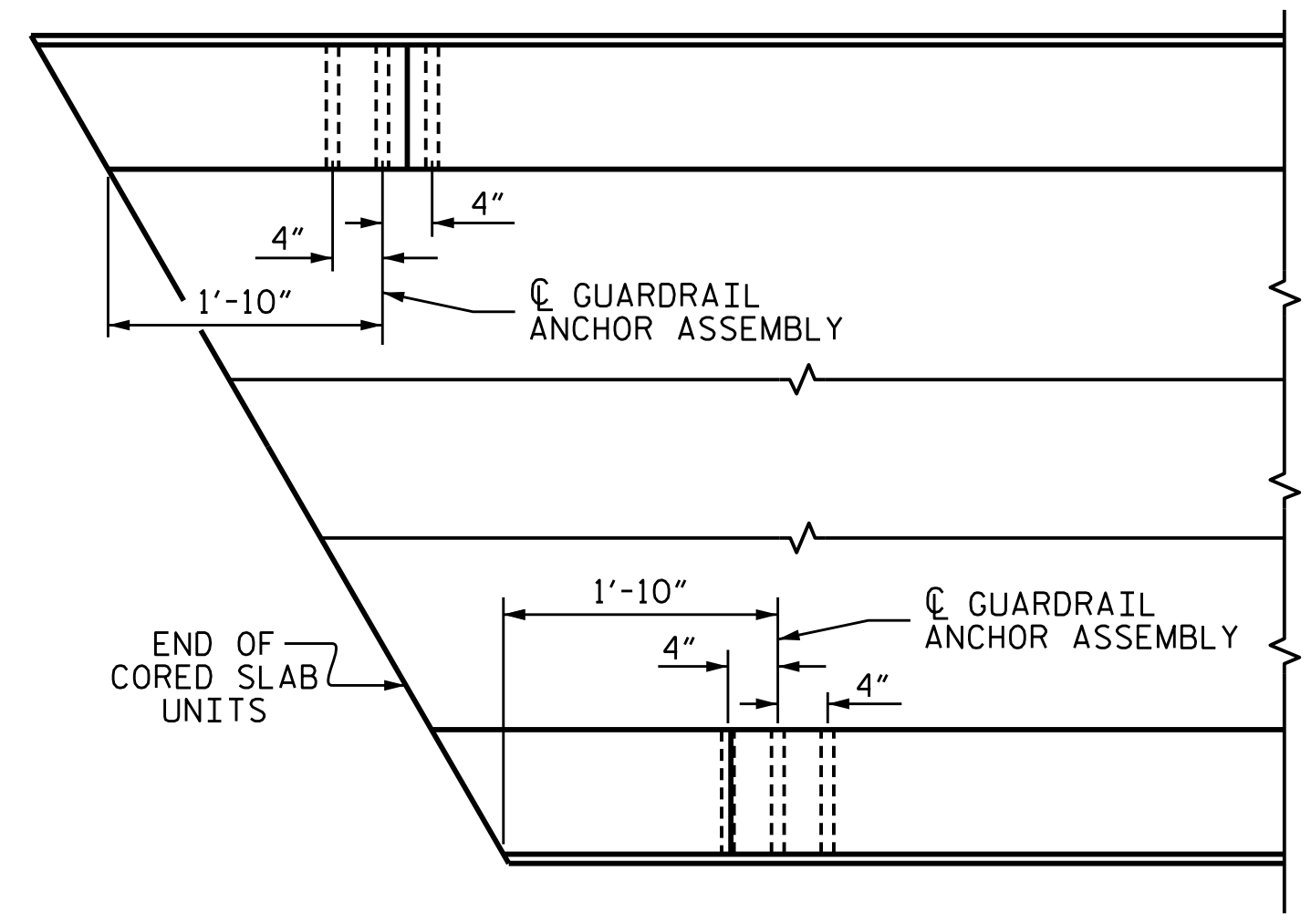


ELEVATION



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 3/8" 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 3/8" 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.



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. BP5.R112
 WARREN COUNTY
 STATION: 15+00.00 -L-

DRAWN BY : S.D. COOPER DATE : 9-22
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 DESIGN ENGINEER OF RECORD: D.A. SEALEY DATE : 9-22



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
GUARDRAIL ANCHORAGE FOR VERTICAL CONCRETE BARRIER RAIL

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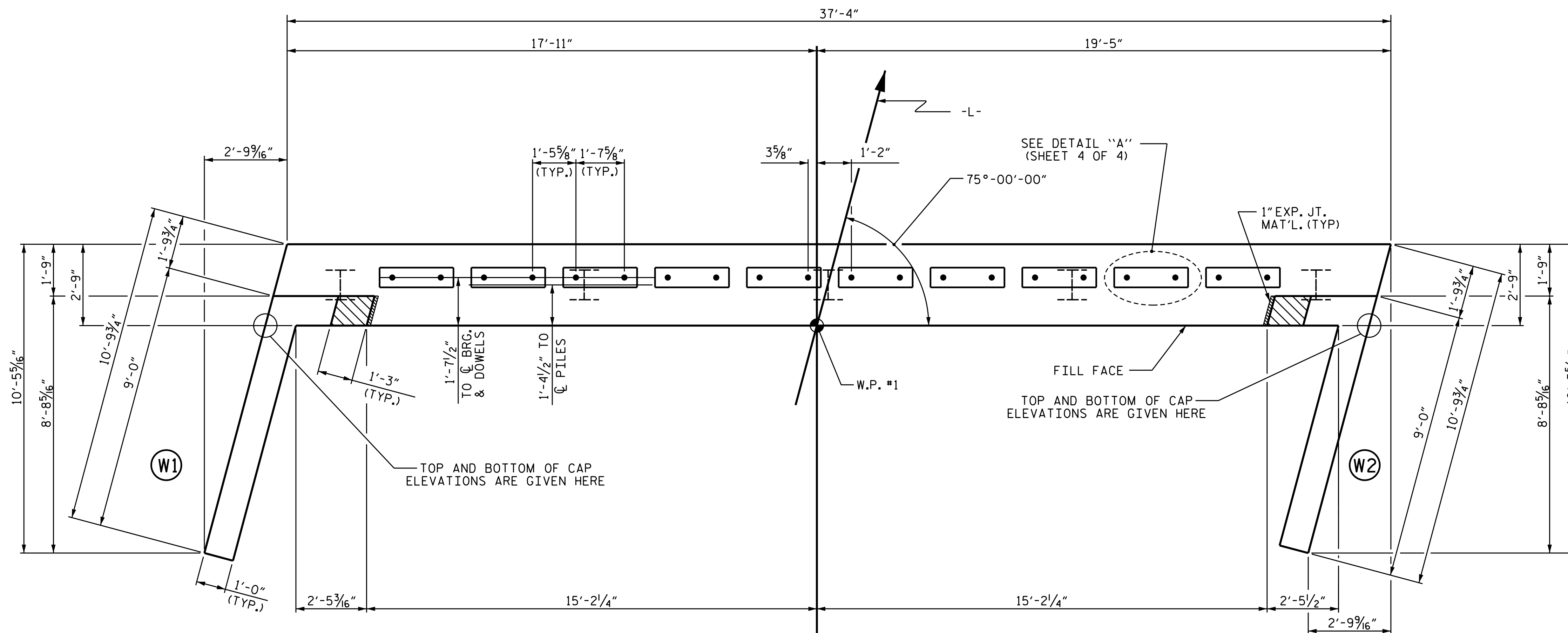
NOTES

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

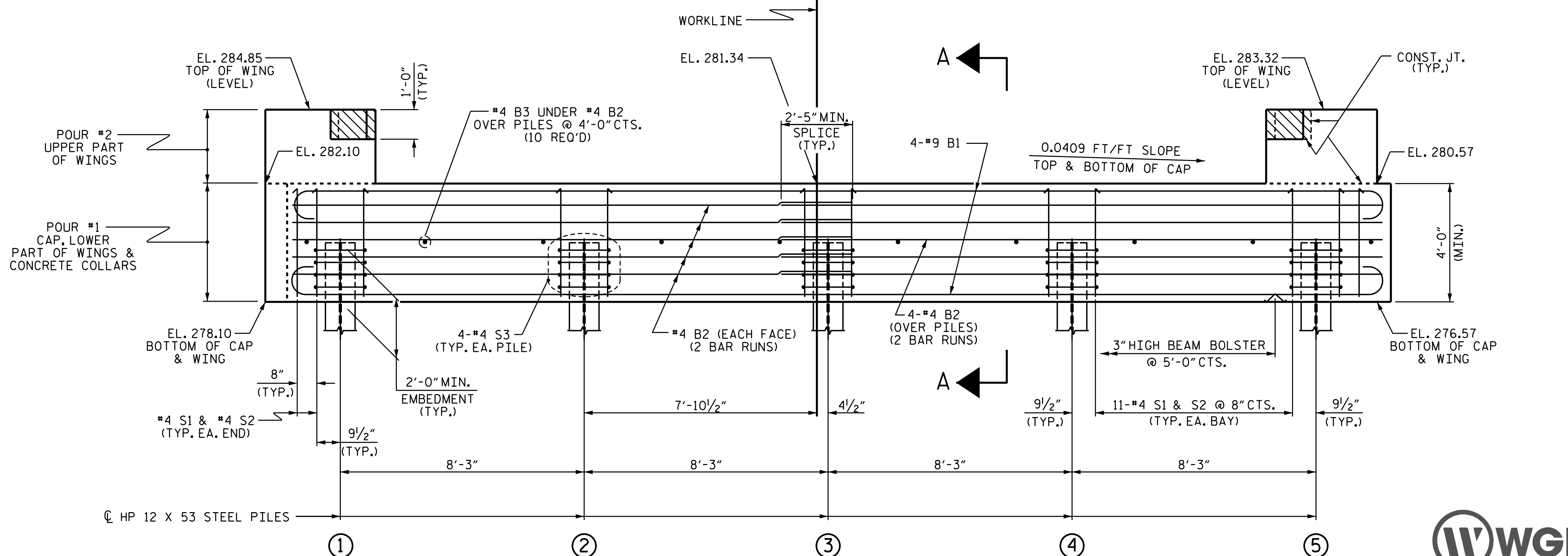
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

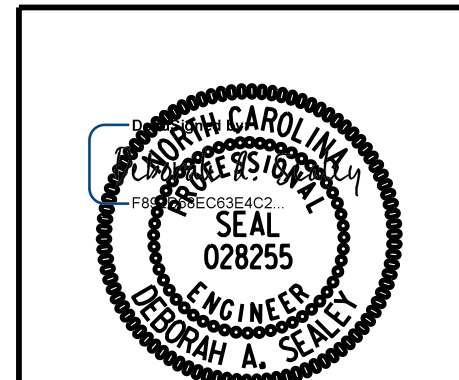
TOP OF PILE ELEVATIONS	
①	280.02
②	279.68
③	279.34
④	279.00
⑤	278.67

PROJECT NO. BP5.R112
WARREN COUNTY
 STATION: 15+00.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE

END BENT 1



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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-10
1			3			TOTAL SHEETS
2			4			16

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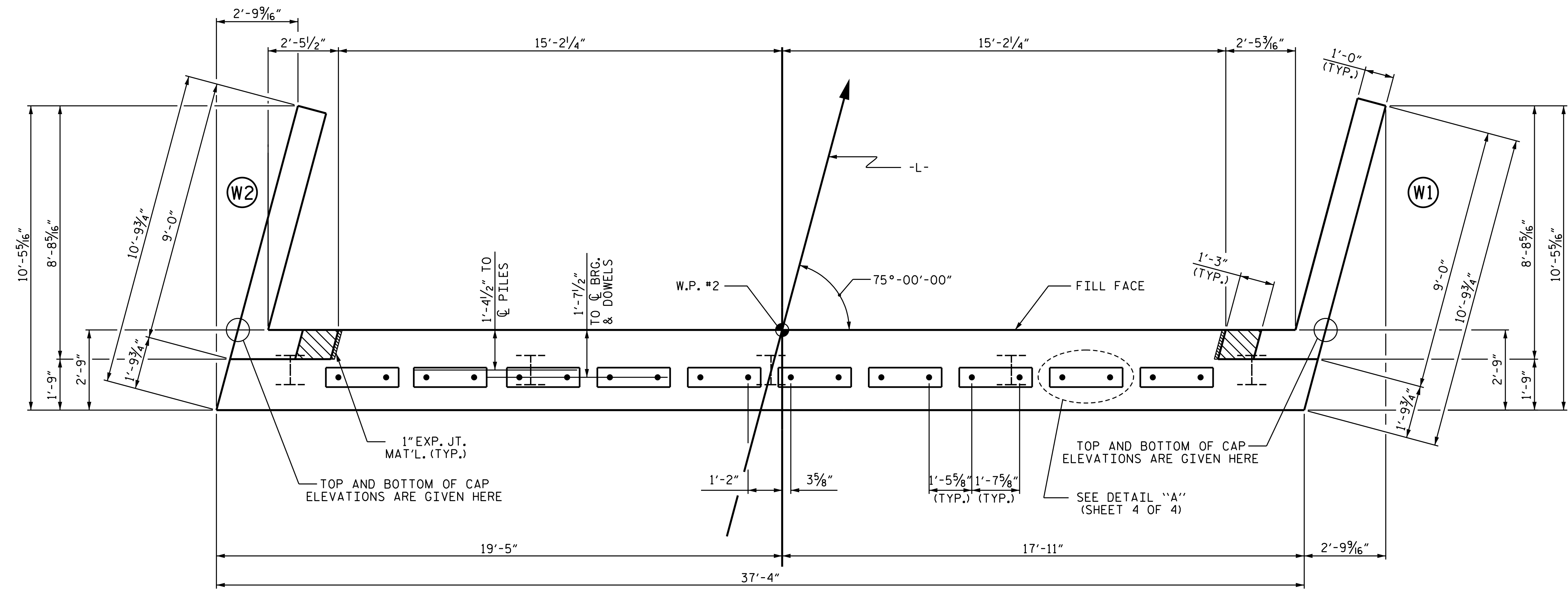
NOTES

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.

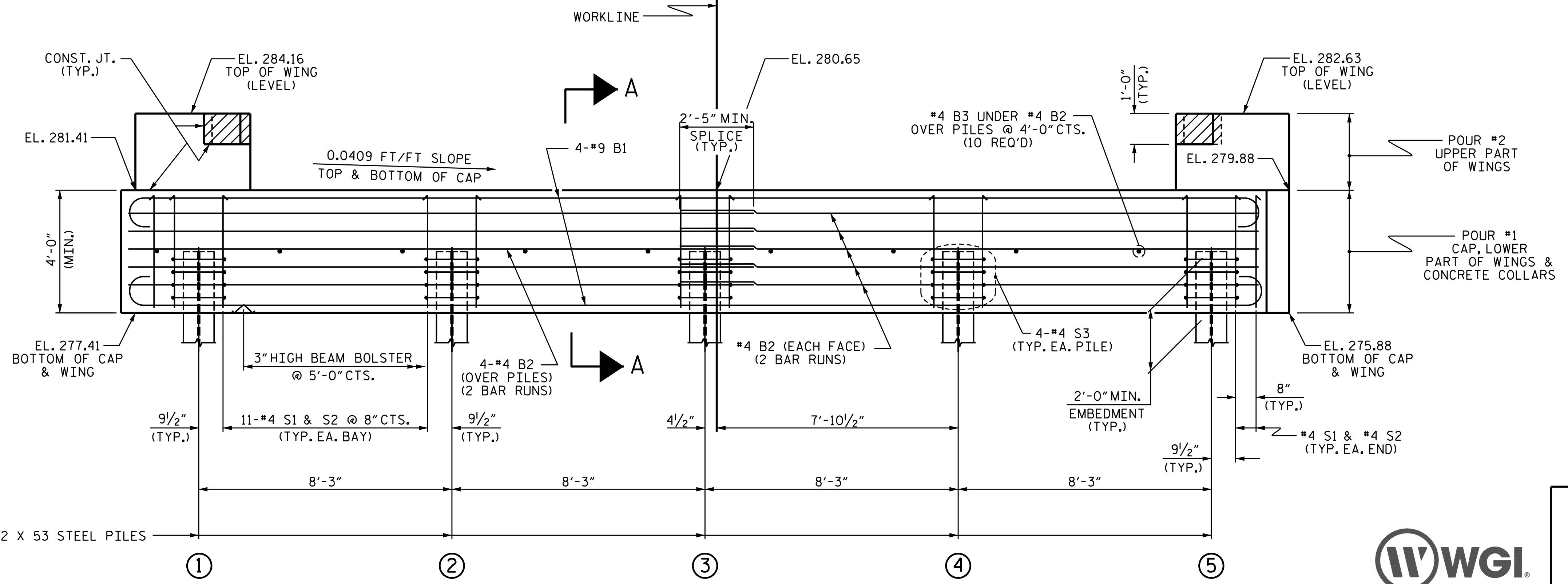
FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN

TOP OF PILE ELEVATIONS	
①	279.35
②	279.02
③	278.68
④	278.34
⑤	278.00



ELEVATION

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

PROJECT NO. BP5.R112
WARREN COUNTY
STATION: 15+00.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

END BENT 2

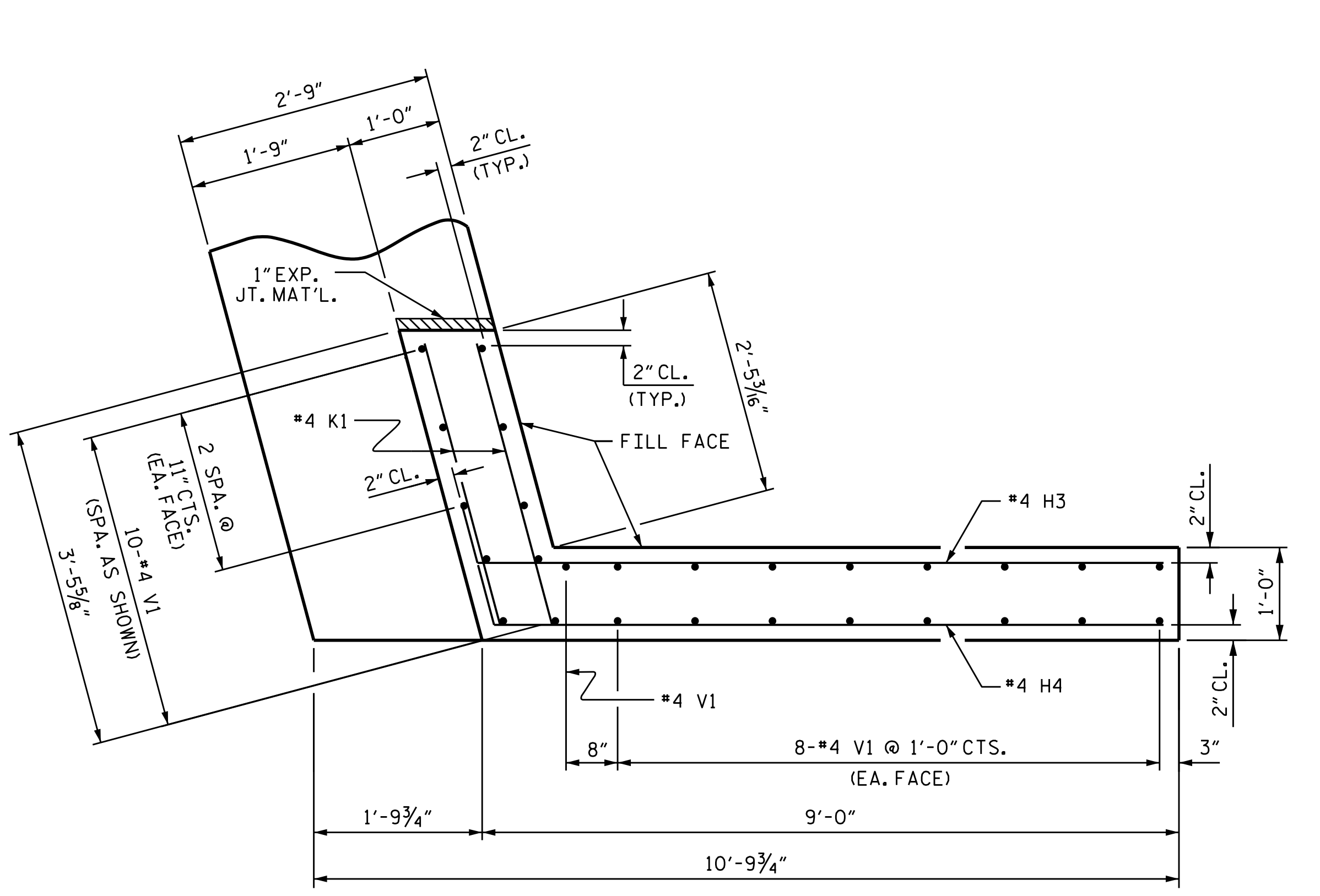


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CHECKED BY : B.S. COX DATE : 9-22
DESIGN ENGINEER OF RECORD : D.A. SEALEY DATE : 9-22

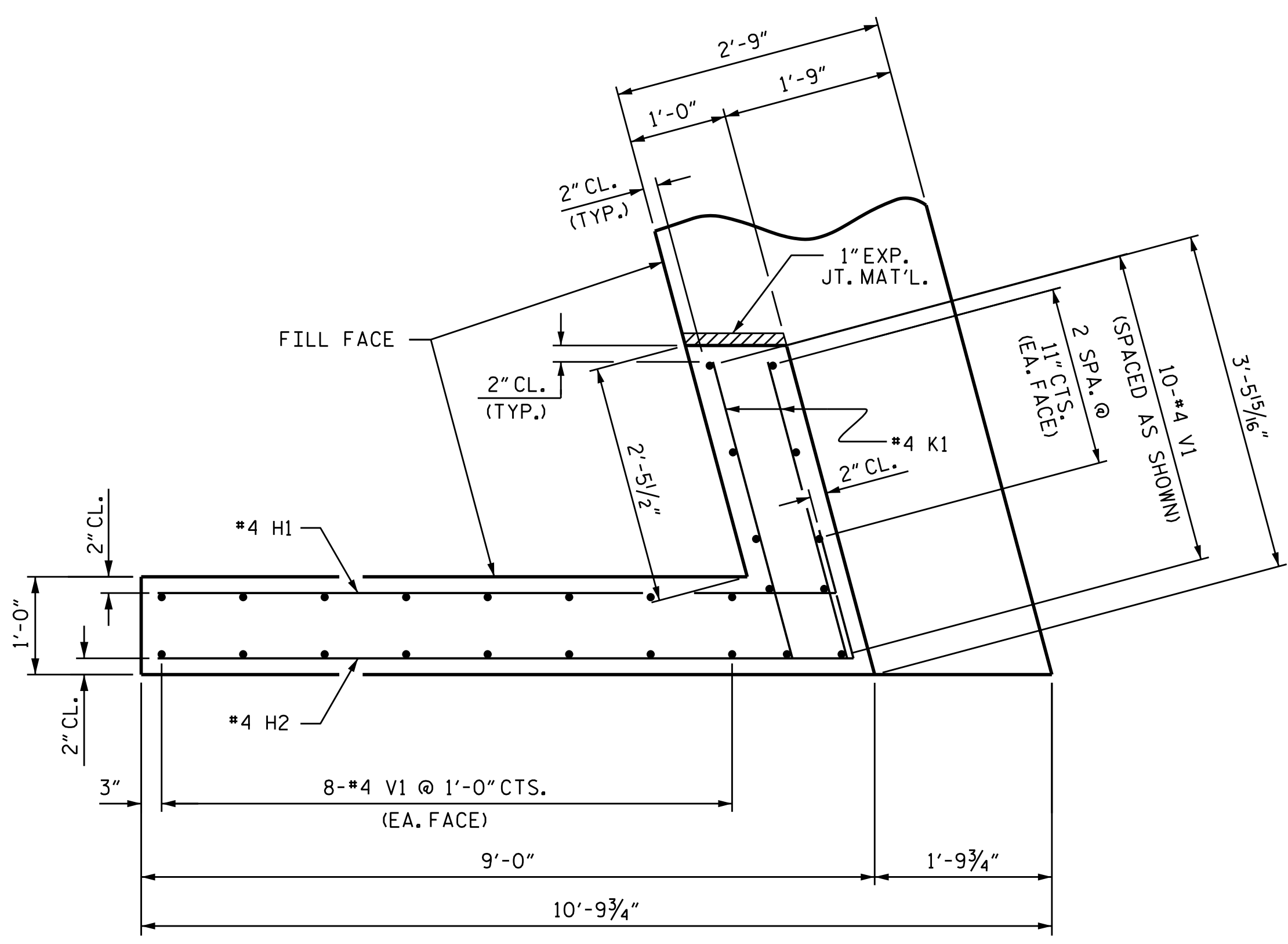
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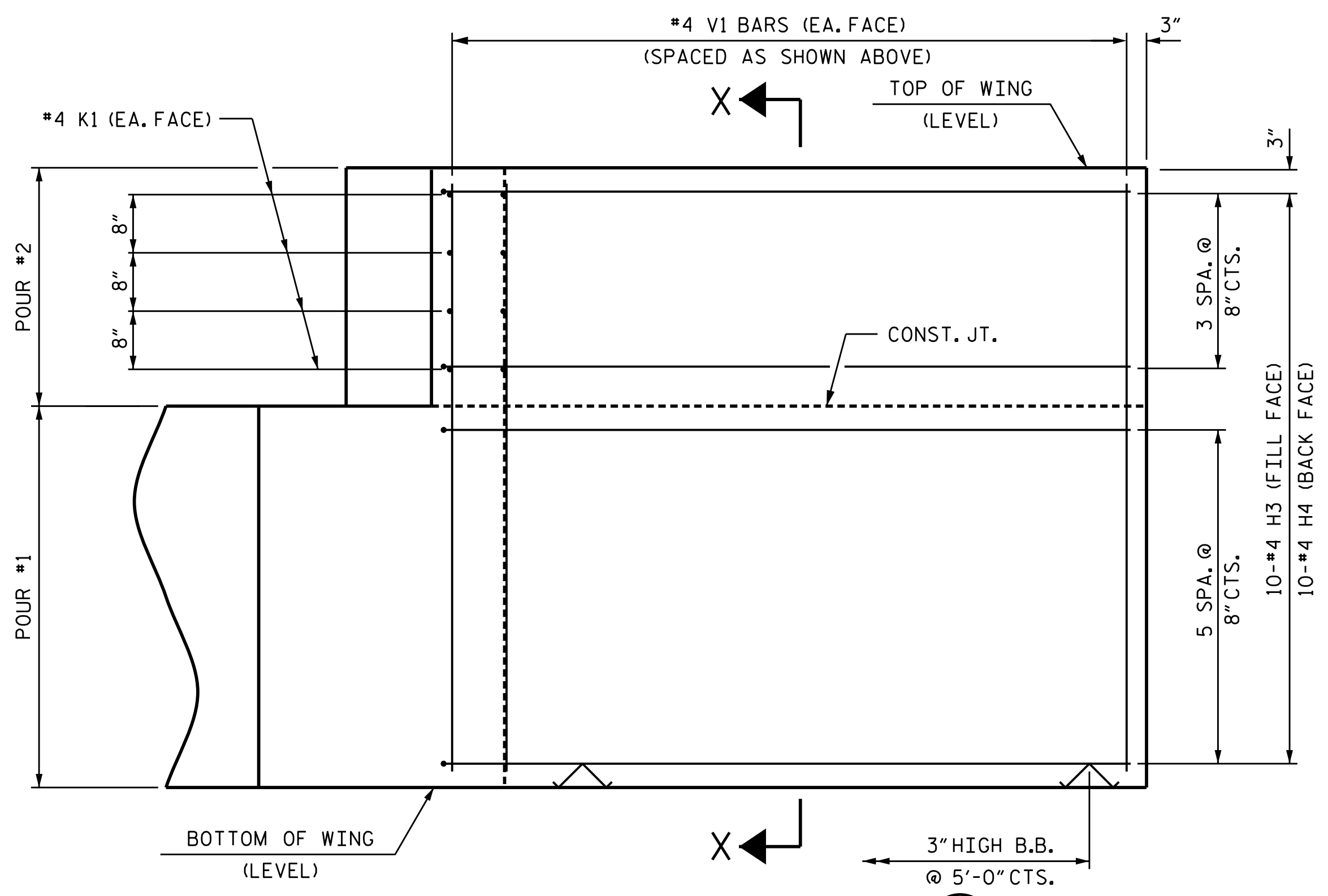
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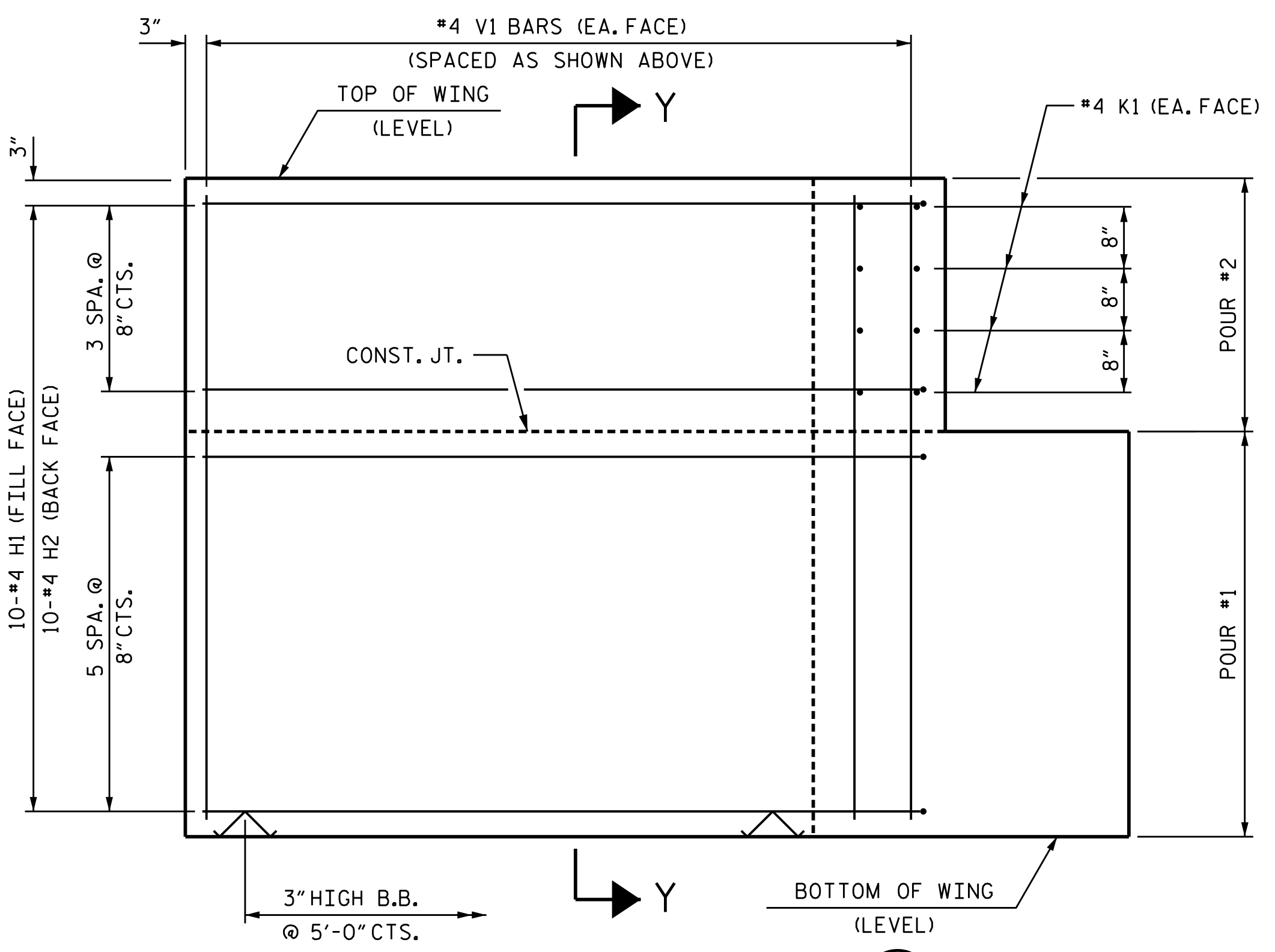
PLAN OF WING (W1)



PLAN OF WING (W2)

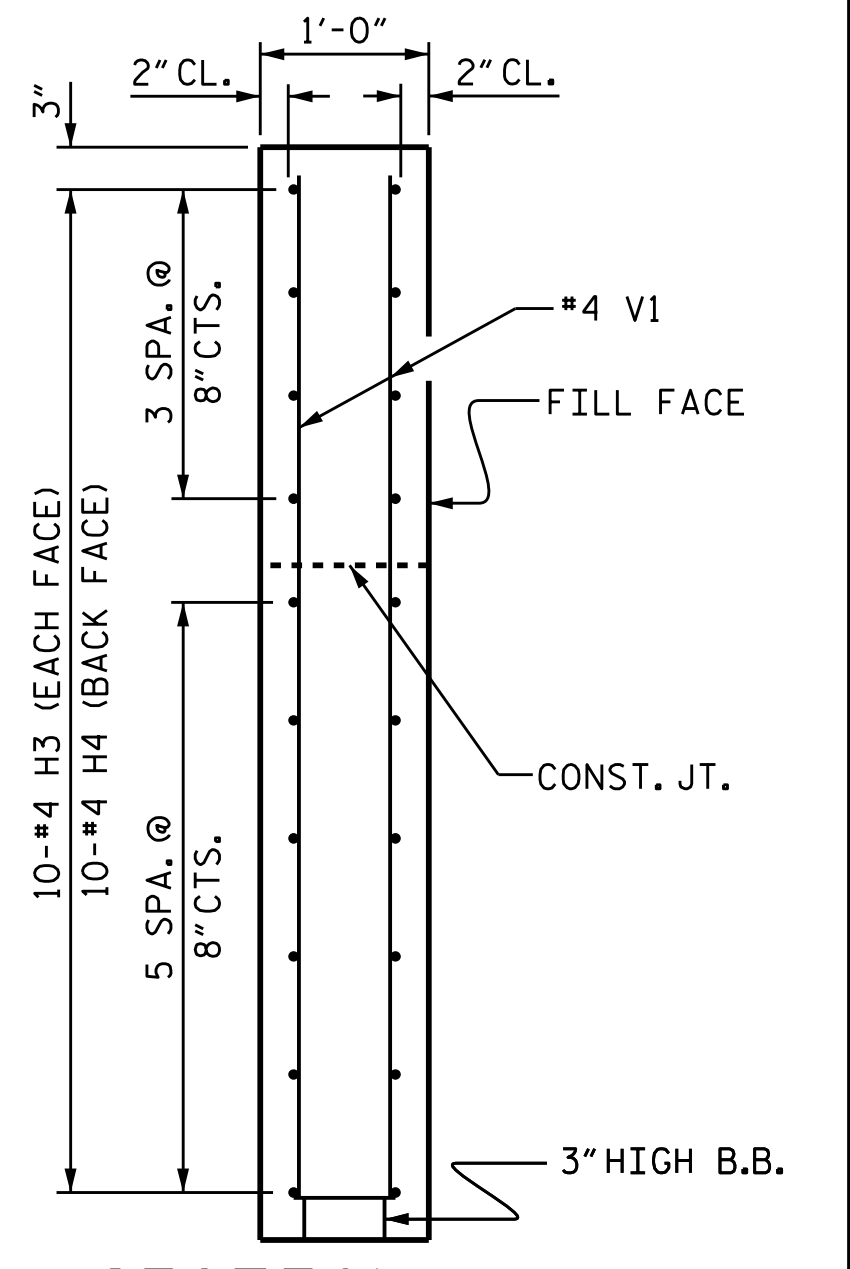


ELEVATION OF WING (W1)

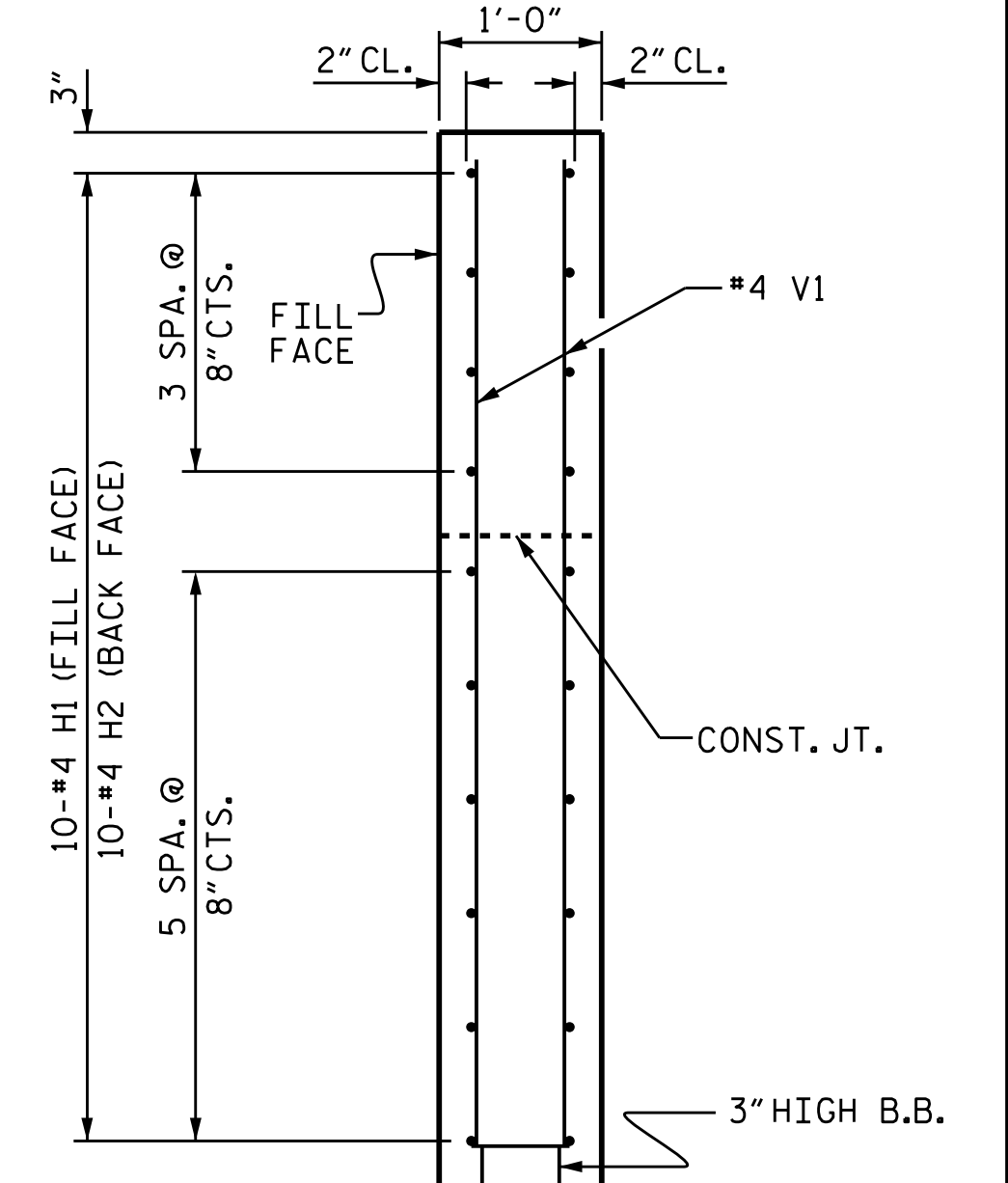


ELEVATION OF WING (W2)

WING DETAILS



SECTION X-X



SECTION Y-Y

PROJECT NO. BP5.R112
 WARREN COUNTY
 STATION: 15+00.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
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 SUBSTRUCTURE

END BENT WING DETAILS



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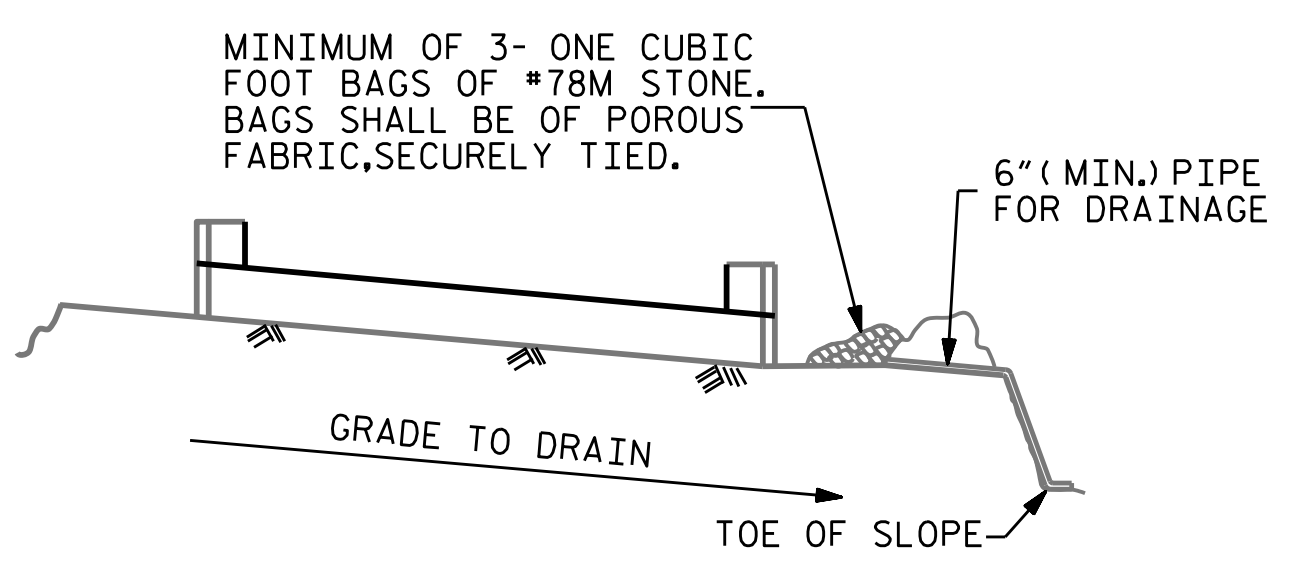
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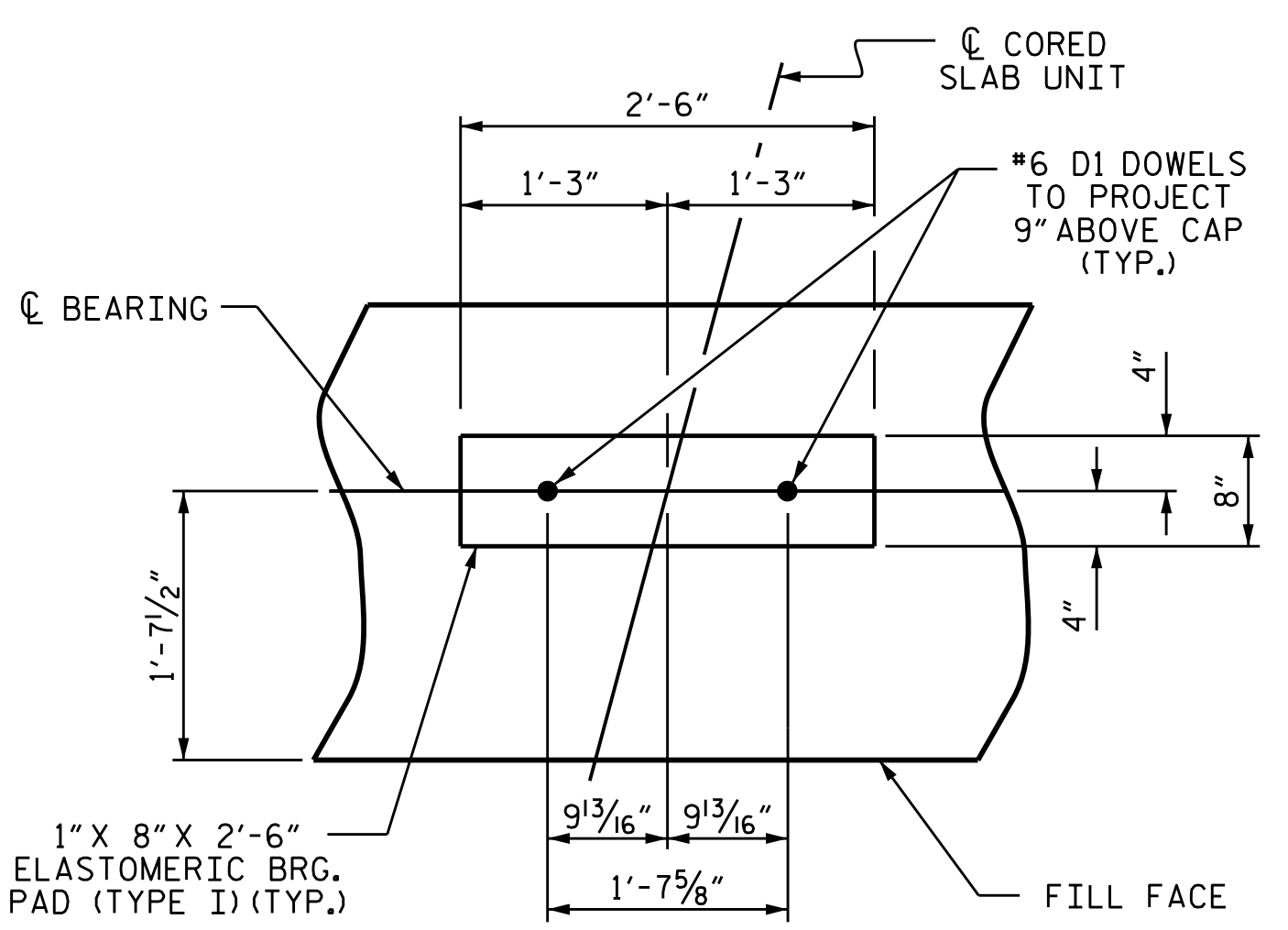


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

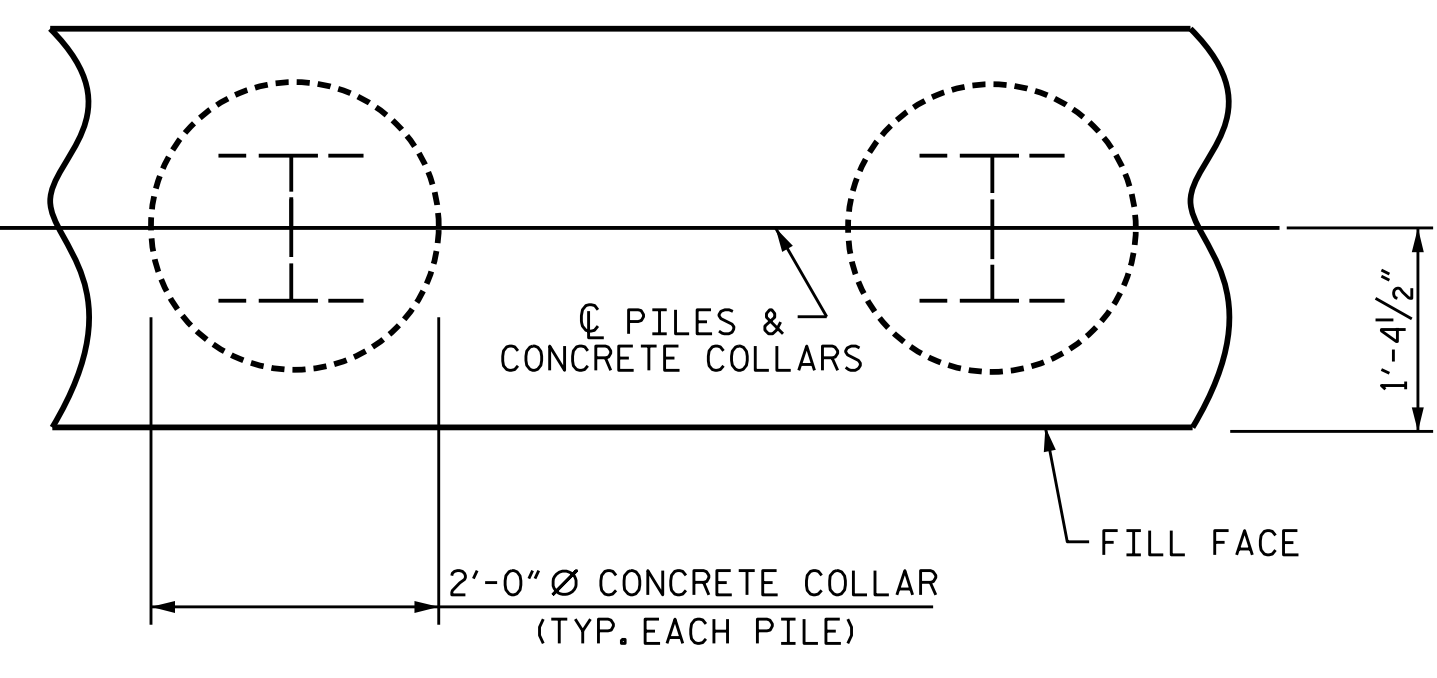
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



DETAIL "A"

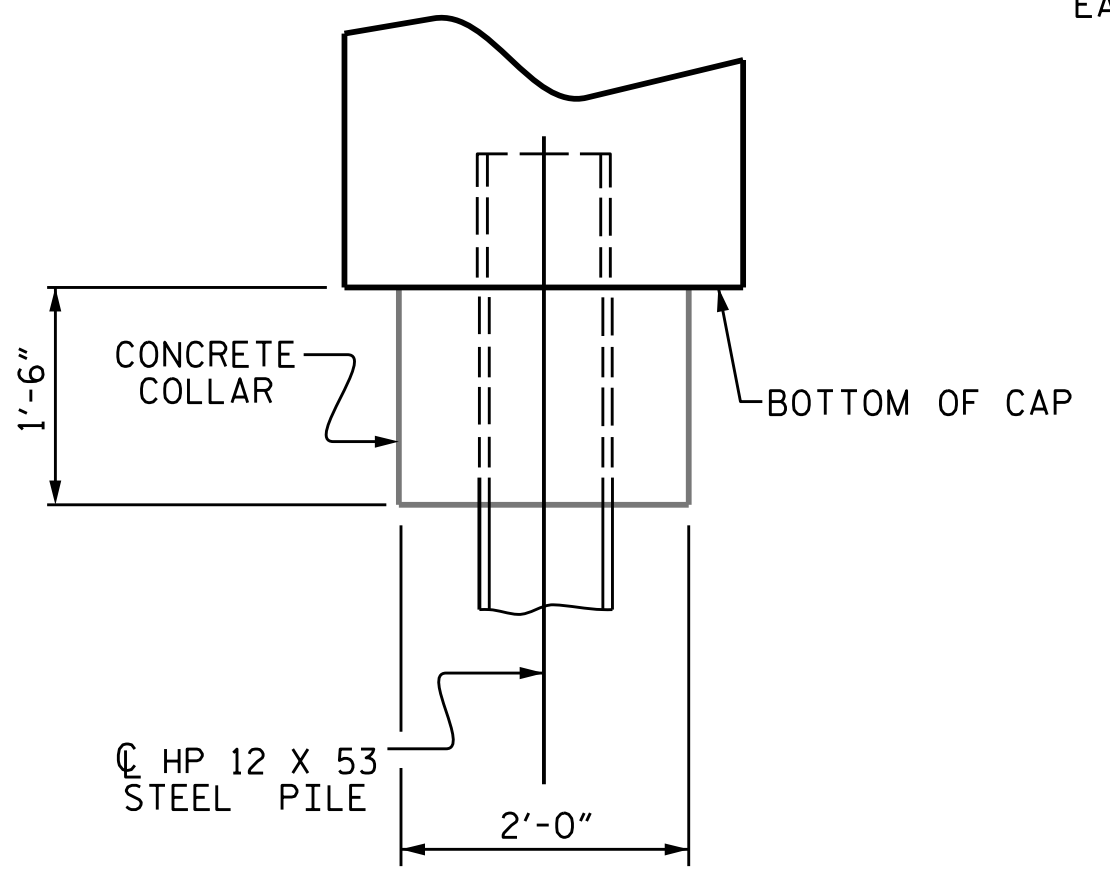
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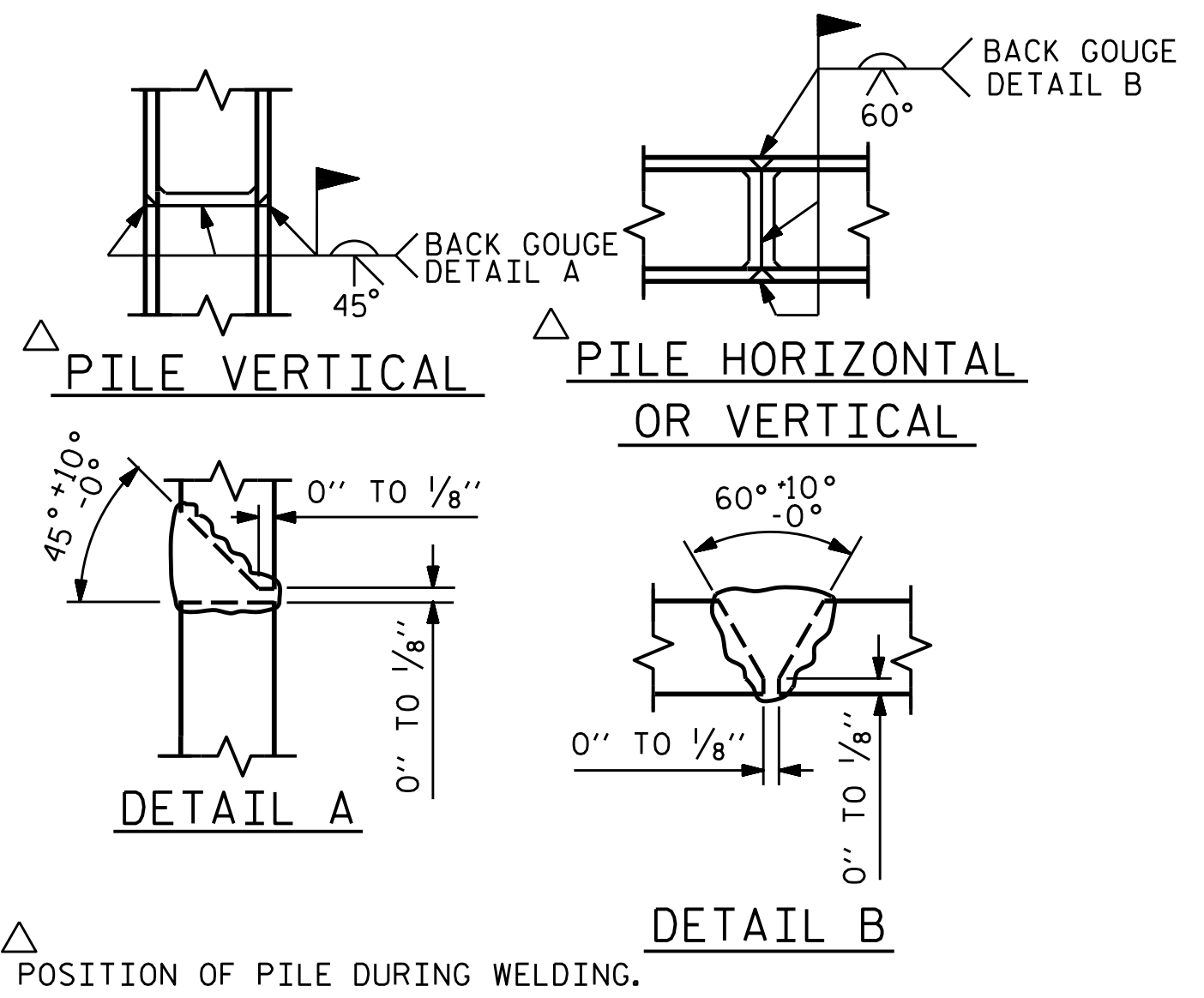
PLAN

CORROSION PROTECTION FOR STEEL PILES DETAIL

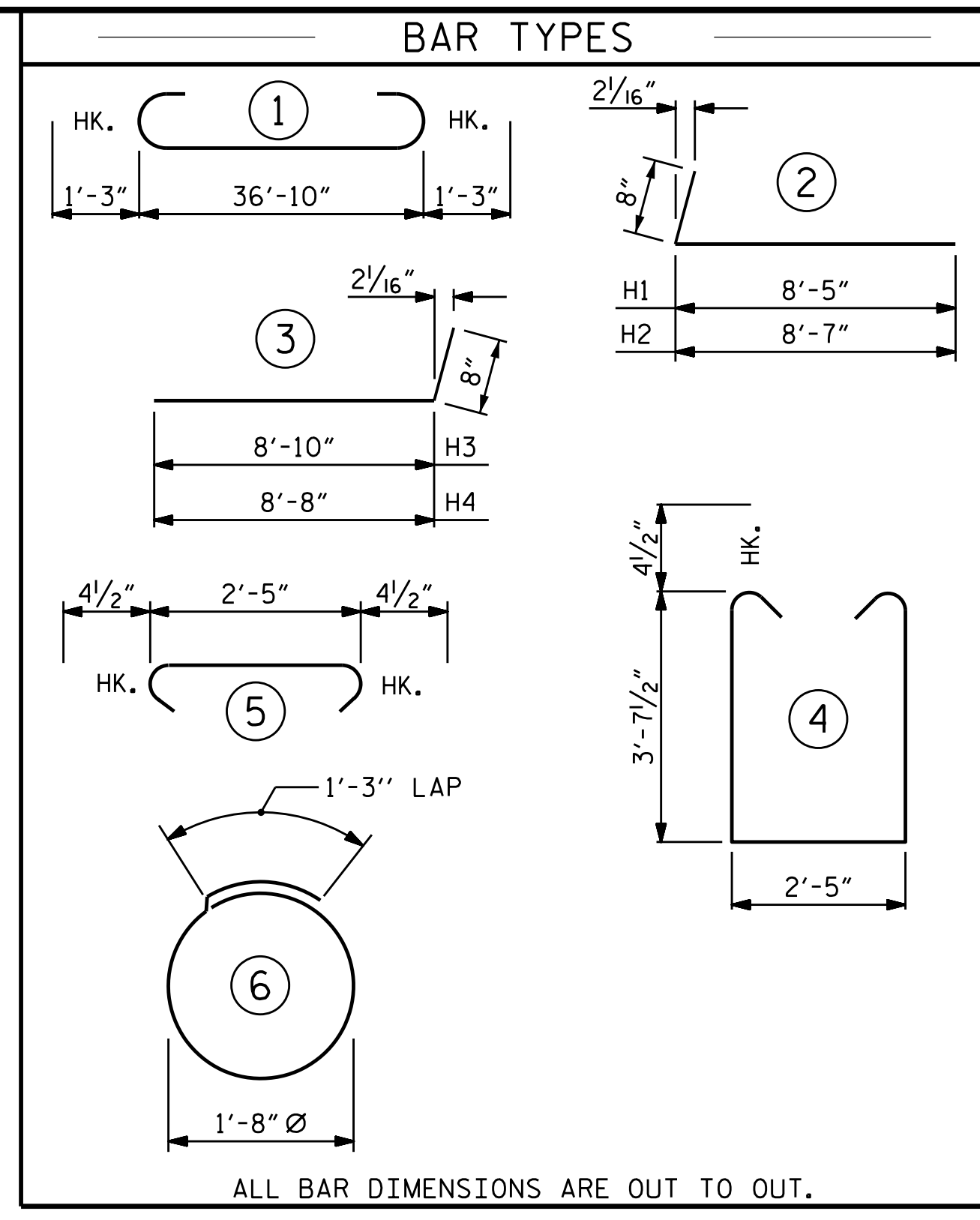
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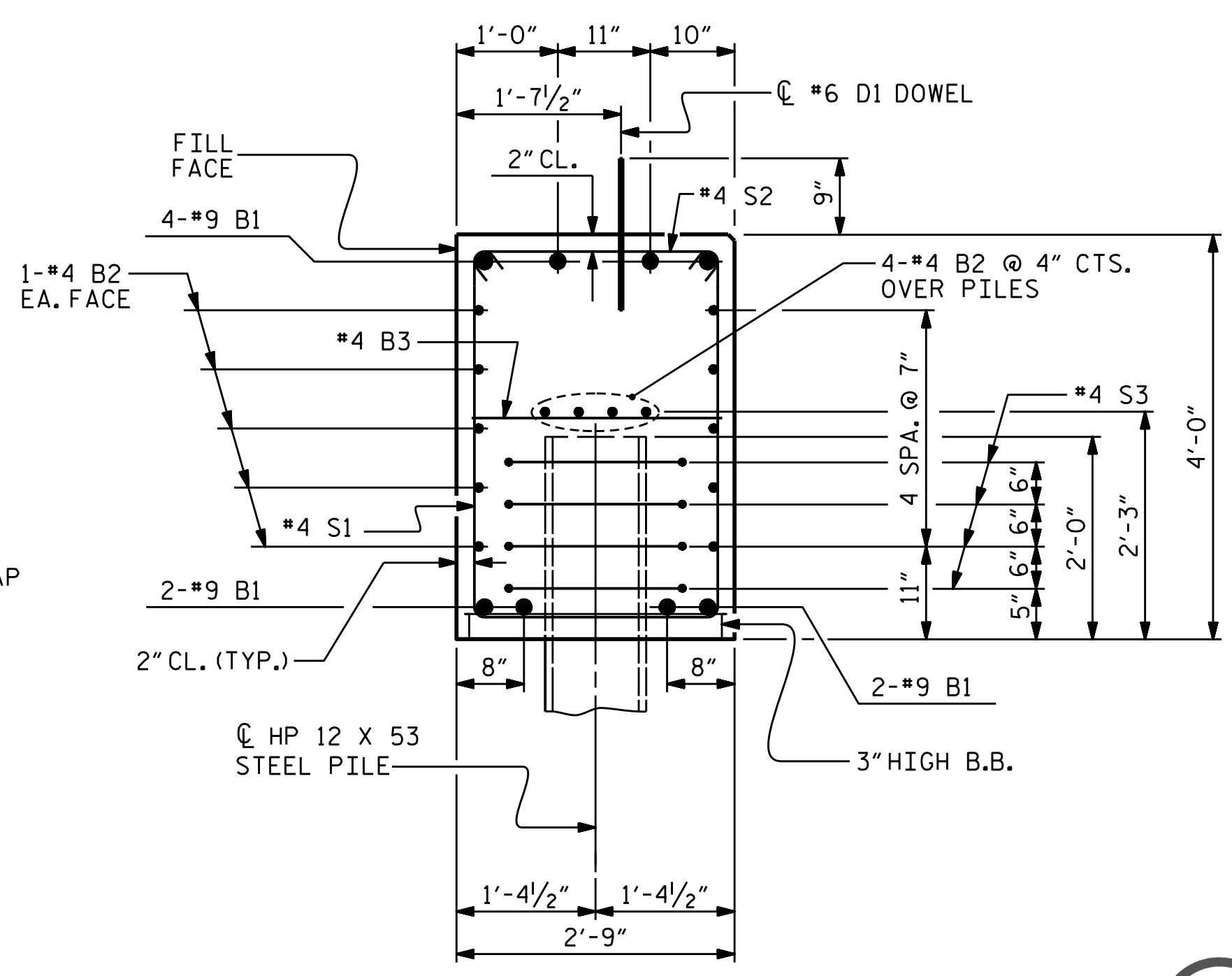
ELEVATION



PILE SPLICE DETAILS



BILL OF MATERIAL FOR ONE END BENT					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		39'-4"	1070
B2	28	#4	STR	19'-9"	369
B3	10	#4	STR	2'-5"	16
D1	20	#6	STR	1'-6"	45
H1	10	#4		9'-1"	61
H2	10	#4		9'-3"	62
H3	10	#4		9'-6"	63
H4	10	#4		9'-4"	62
K1	16	#4	STR	3'-1"	33
S1	48	#4		10'-5"	334
S2	48	#4		3'-2"	102
S3	20	#4		6'-6"	87
V1	53	#4	STR	6'-5"	227
REINFORCING STEEL (FOR ONE END BENT)					2531 LBS.
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
POUR #1 CAP, LOWER PART OF WINGS & COLLARS					18.4 C.Y.
POUR #2 UPPER PART OF WINGS					2.3 C.Y.
TOTAL CLASS A CONCRETE					20.7 C.Y.



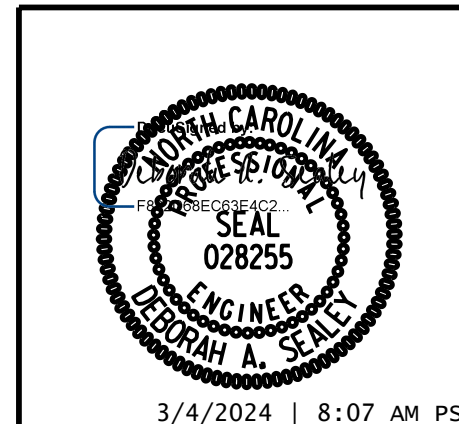
SECTION A-A

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

PROJECT NO. BP5.R112
WARREN COUNTY
 STATION: 15+00.00 -L-
 SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
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 SUBSTRUCTURE

END BENT 1 & 2 DETAILS



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 Cary, NC 27518
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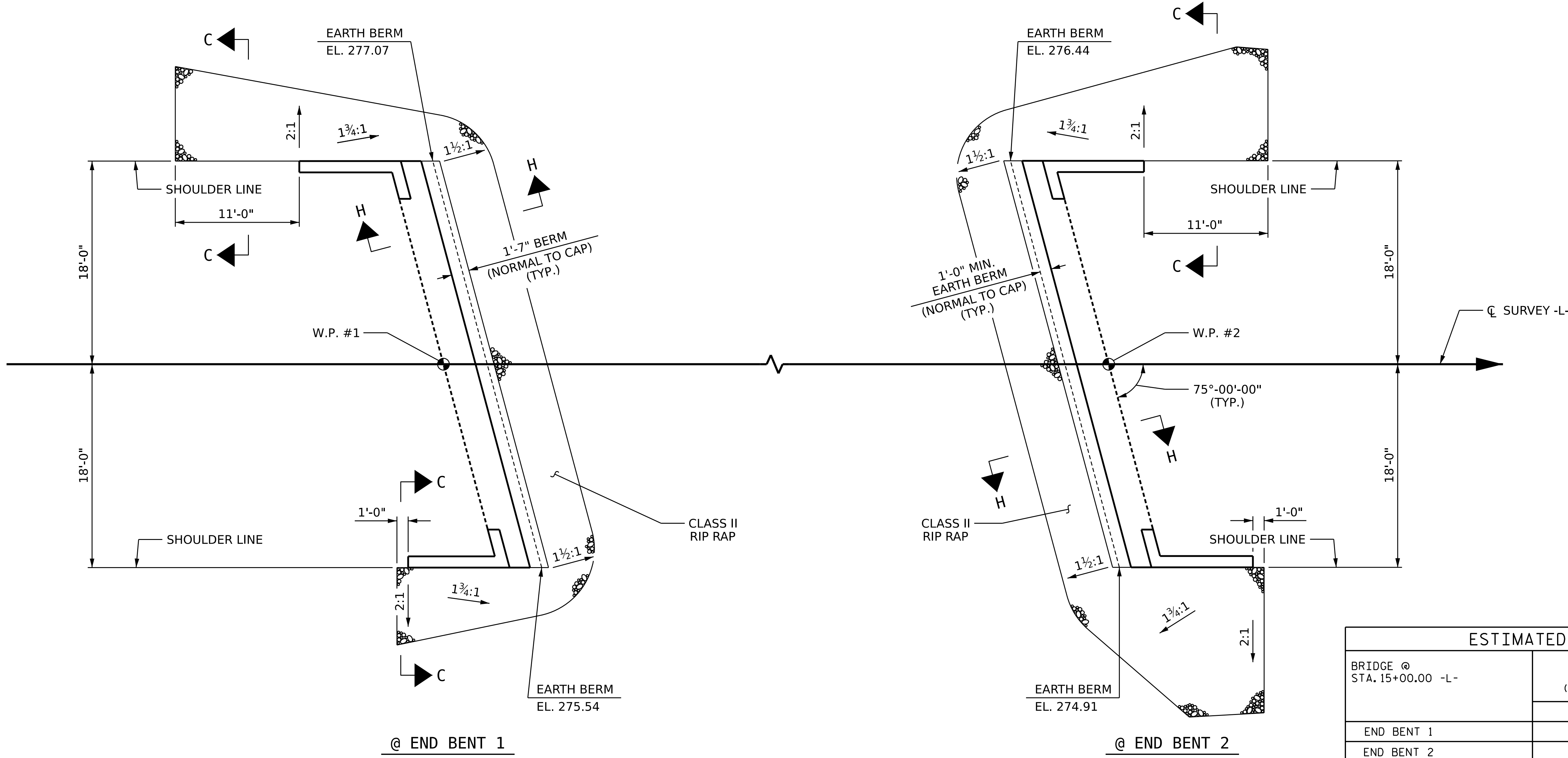
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 CHECKED BY : B.S. COX DATE : 9-22
 DESIGN ENGINEER OF RECORD : D.A. SEALEY DATE : 9-22

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TOTAL SHEETS: 16

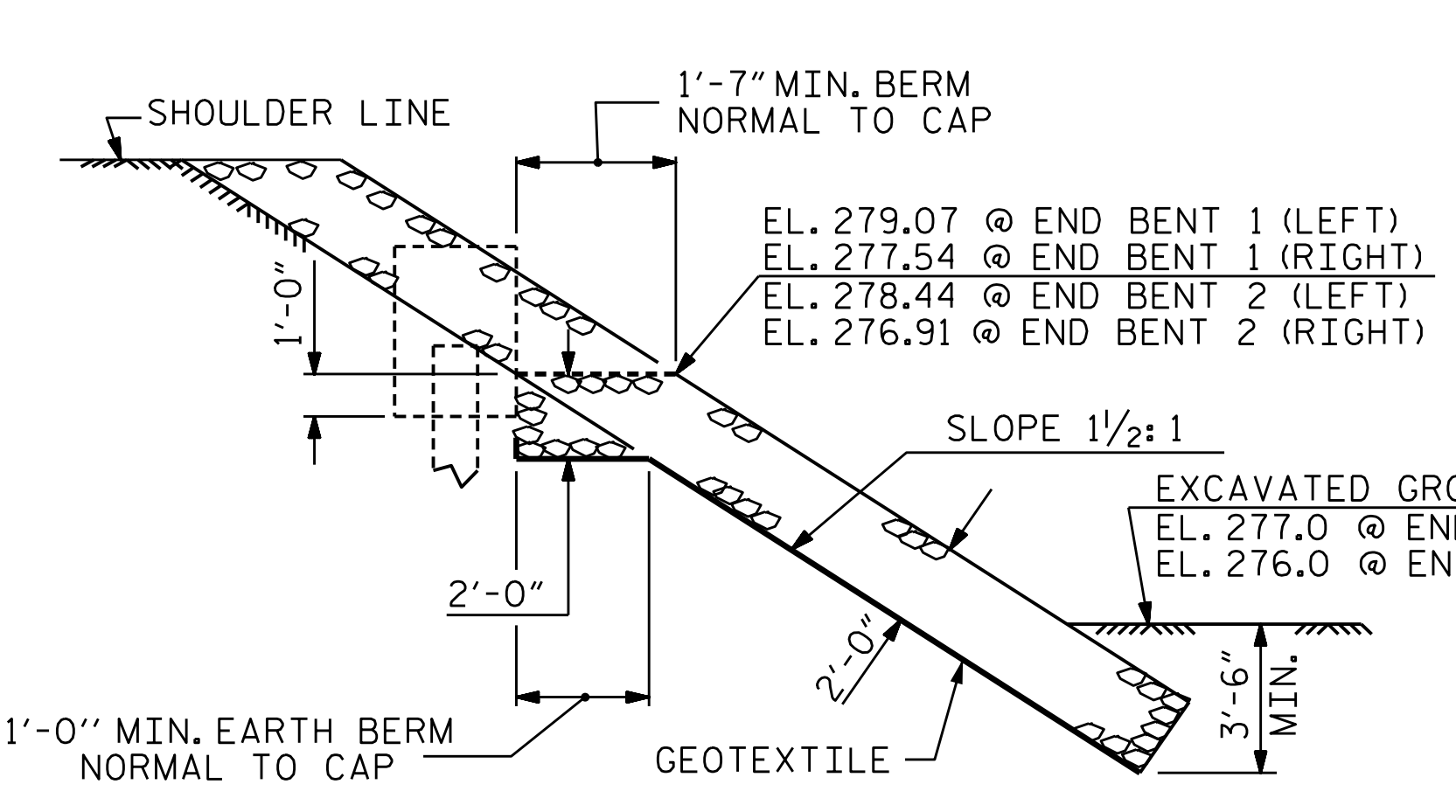
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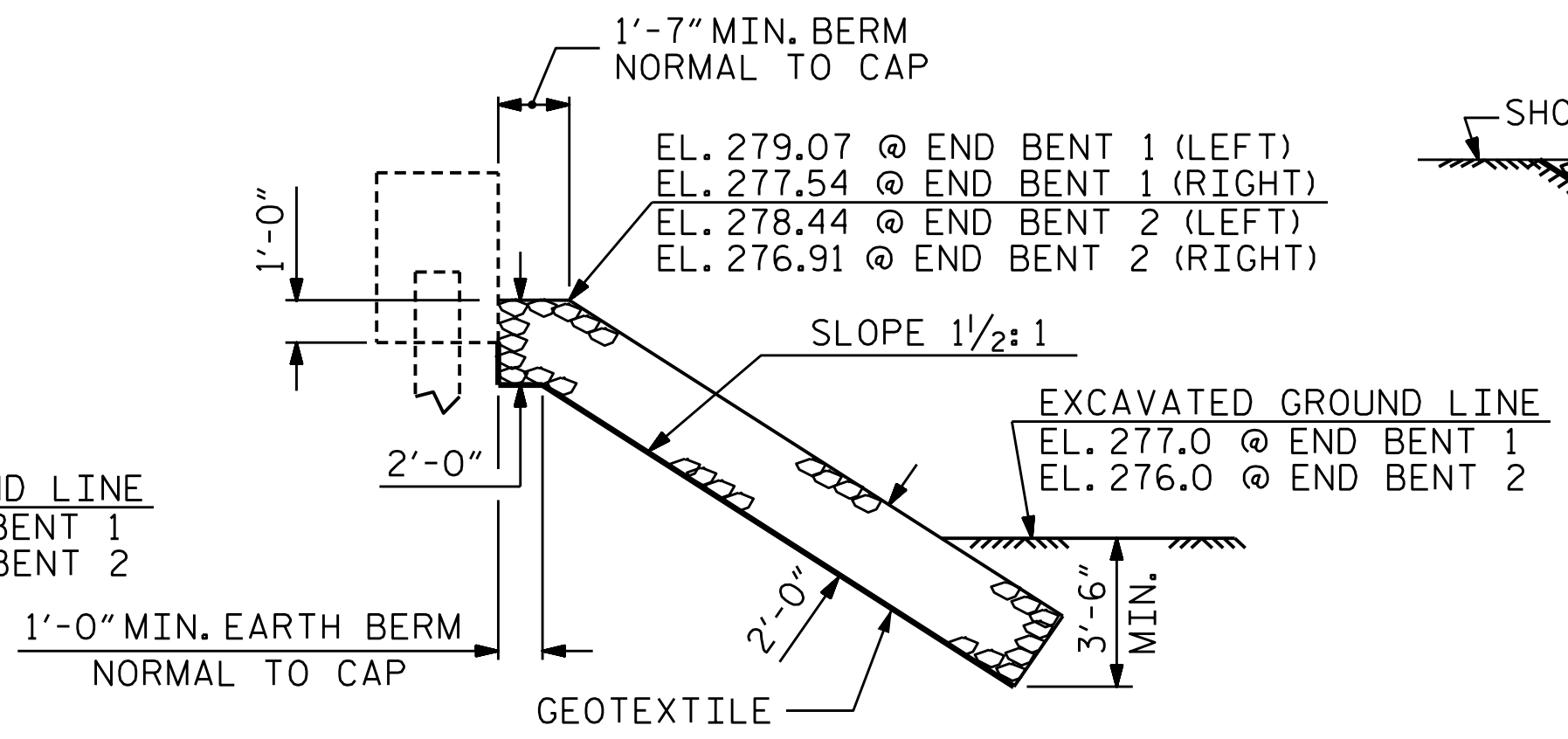


ESTIMATED QUANTITIES		
BRIDGE @ STA. 15+00.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	85	95
END BENT 2	90	100

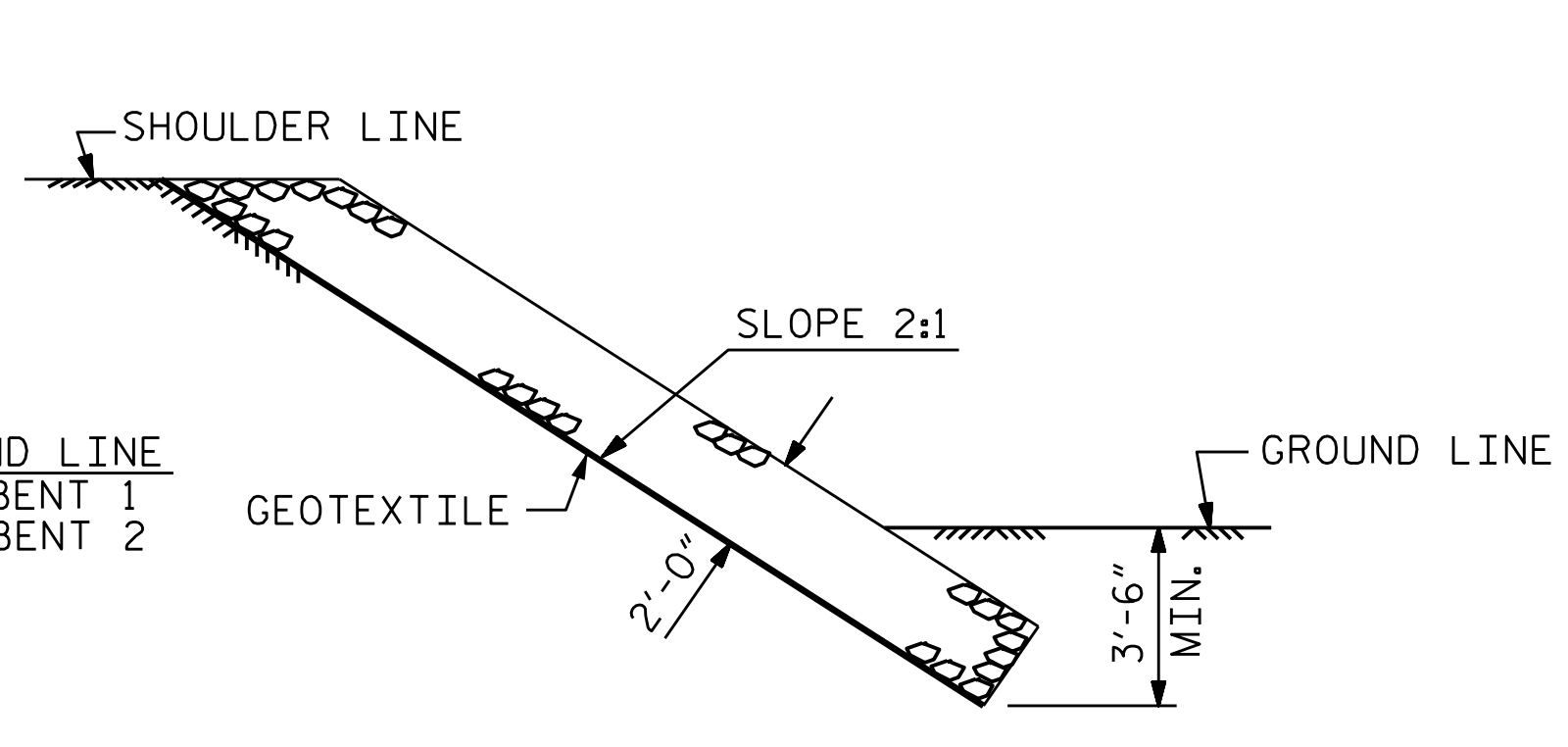
PLAN OF RIP RAP



SECTION H-H



SECTION C-C

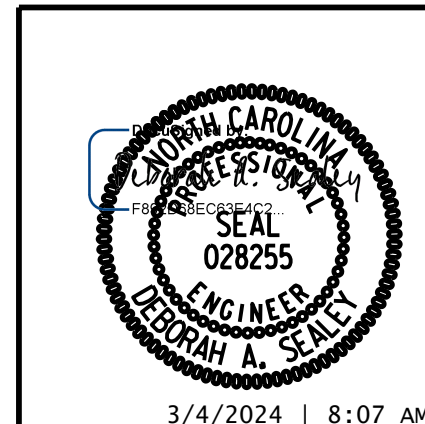


SECTION BERM RIP RAPPED

PROJECT NO. BP5.R112
 WARREN COUNTY
 STATION: 15+00.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
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RIP RAP DETAILS



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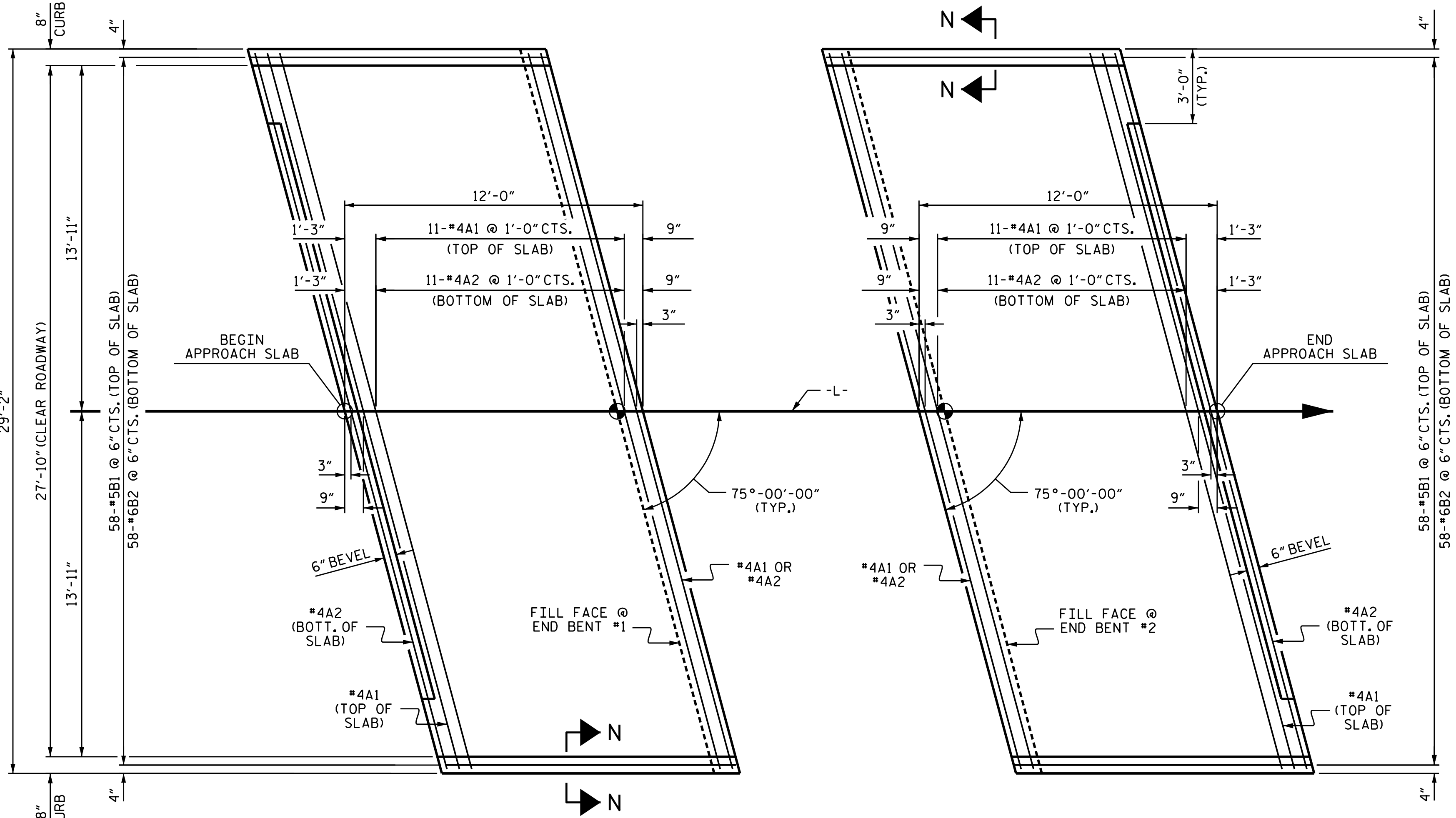
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 DESIGN ENGINEER OF RECORD: D.A. SEALEY DATE : 9-22

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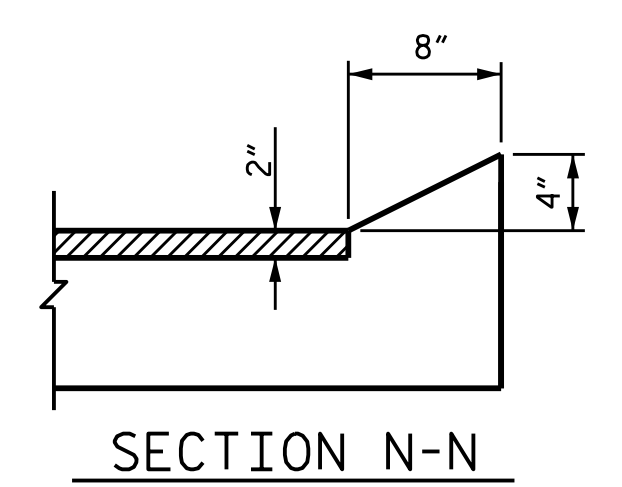
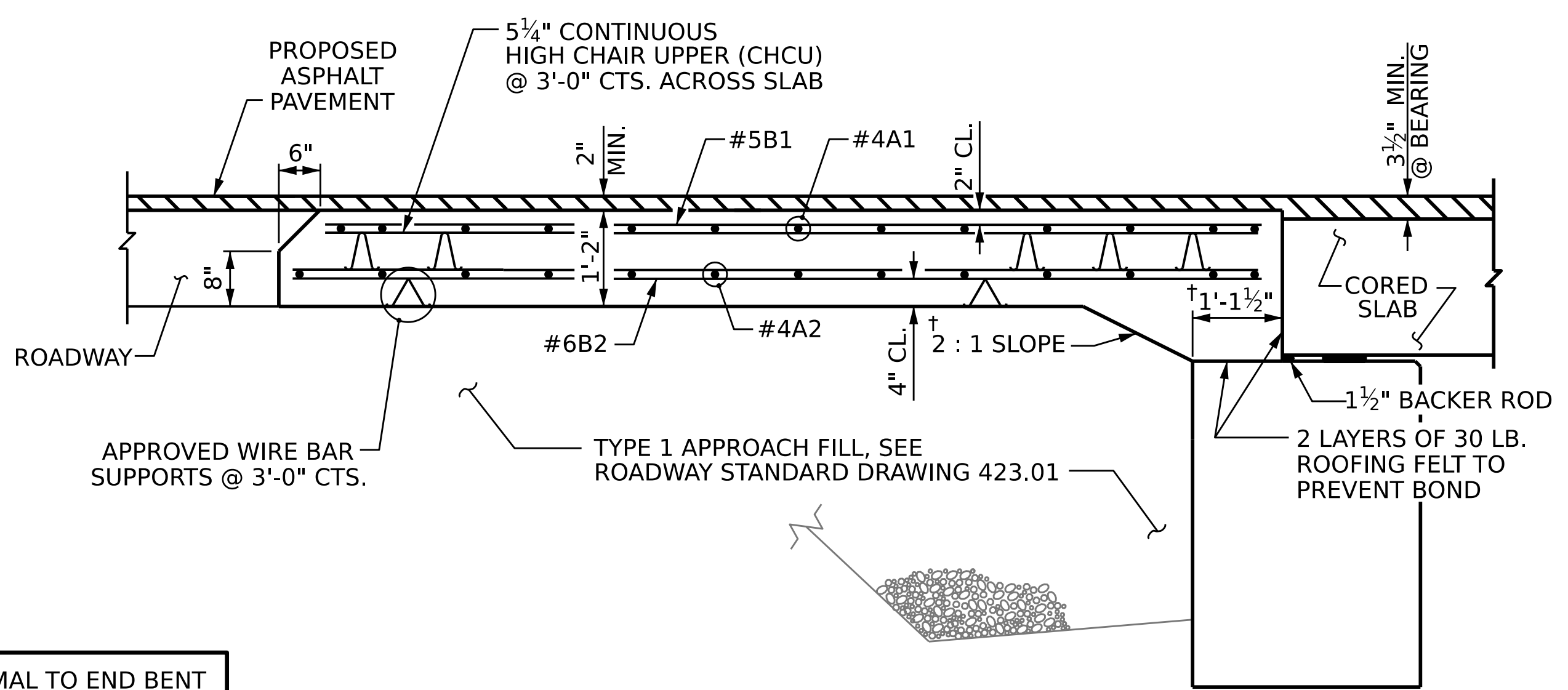
PLAN @ END BENT #1 **PLAN @ END BENT #2**
 DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

NOTES

FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.
 AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.
 APPROACH SLAB GROOVING IS NOT REQUIRED.

BILL OF MATERIAL						
APPROACH SLAB AT EB #1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
* A1	13	#4	STR	29'-10"	259	
A2	13	#4	STR	29'-10"	259	
* B1	58	#5	STR	11'-1"	670	
B2	58	#6	STR	11'-7"	1009	
REINFORCING STEEL					LBS.	1268
* EPOXY COATED REINFORCING STEEL					LBS.	929
CLASS AA CONCRETE					C. Y.	17.7
APPROACH SLAB AT EB #2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
* A1	13	#4	STR	29'-10"	259	
A2	13	#4	STR	29'-10"	259	
* B1	58	#5	STR	11'-1"	670	
B2	58	#6	STR	11'-7"	1009	
REINFORCING STEEL					LBS.	1268
* EPOXY COATED REINFORCING STEEL					LBS.	929
CLASS AA CONCRETE					C. Y.	17.7

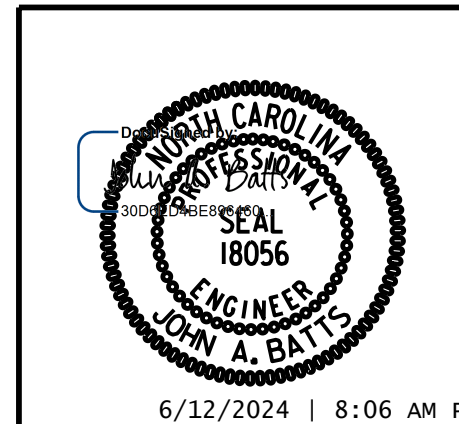
SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"



SECTION N-N
CURB DETAILS

SECTION THRU SLAB

PROJECT NO. BP5.R112
 WARREN COUNTY
 STATION: 15+00.00 -L-
 SHEET 1 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT
 (SUB-REGION TIER) - 75° SKEW

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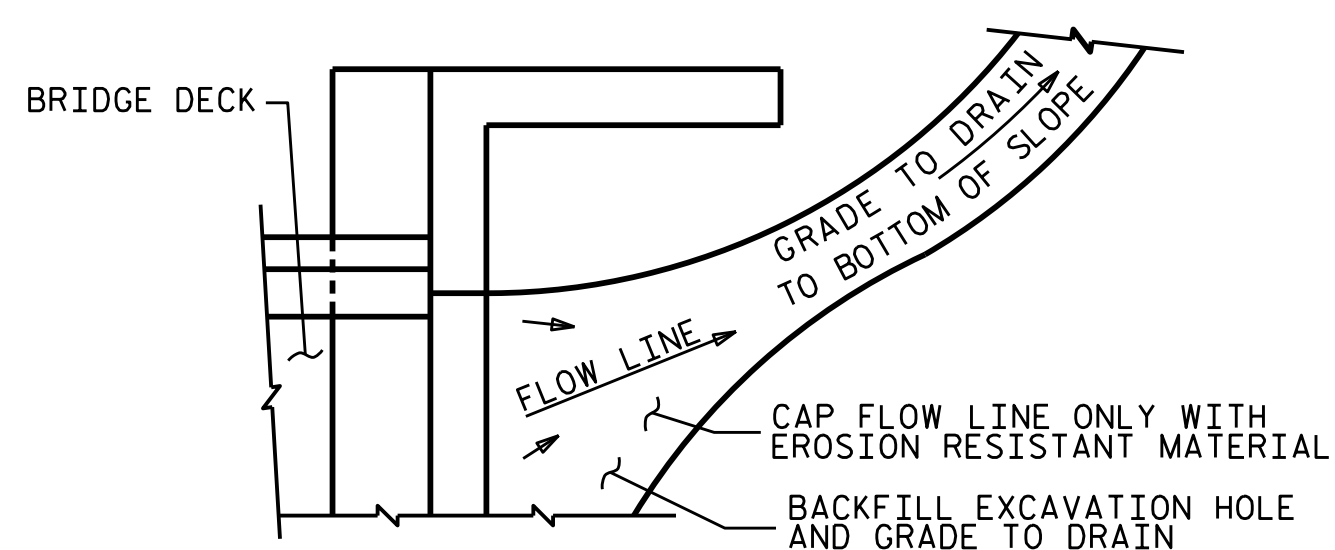
TOTAL SHEETS: 16

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 DESIGN ENGINEER OF RECORD: D.A. SEALEY DATE: 9-22

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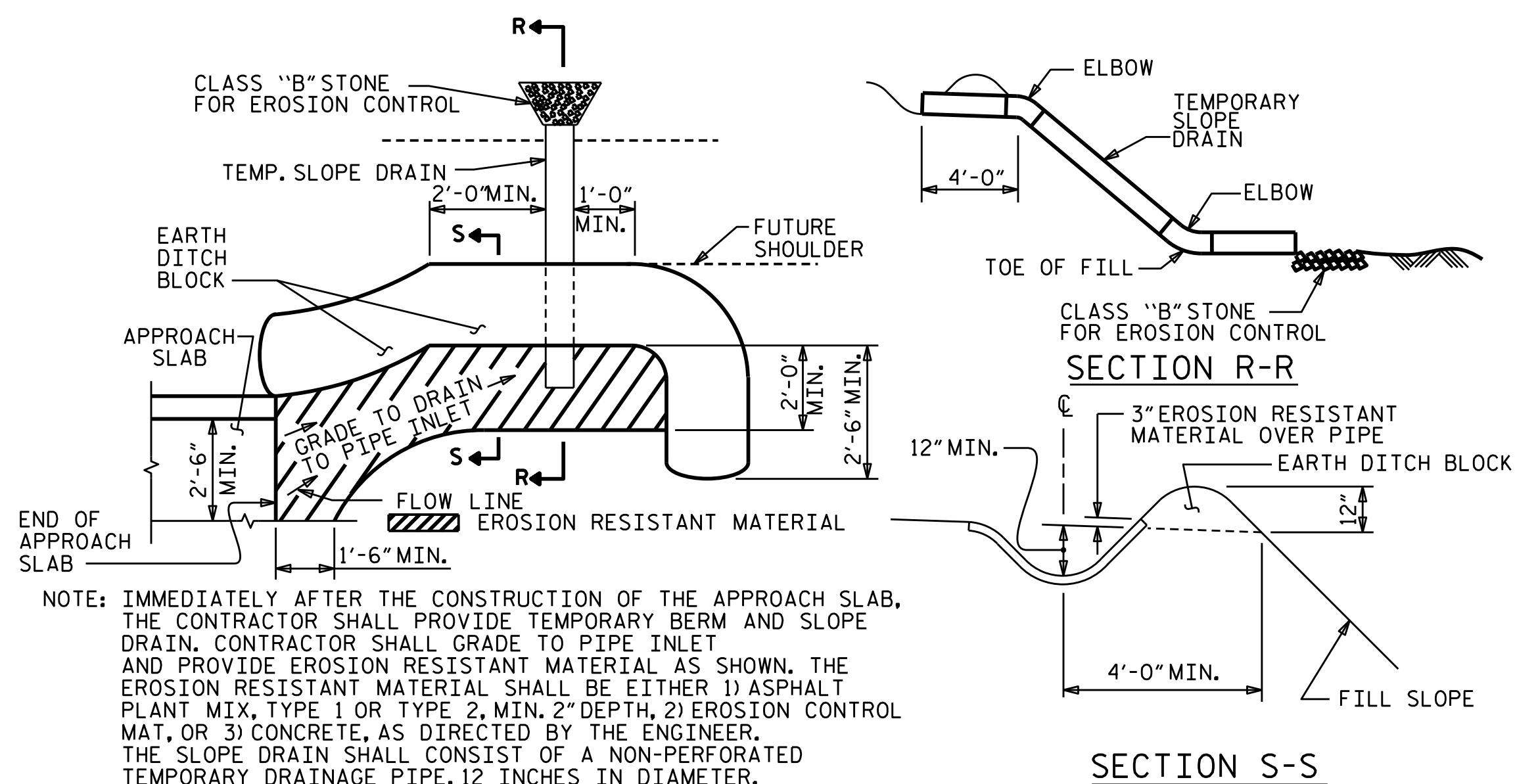
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NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO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

TEMPORARY DRAINAGE DETAIL



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

PLAN VIEW

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

PROJECT NO. BP5.R112
WARREN COUNTY
 STATION: 15+00.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**BRIDGE APPROACH SLAB
 FOR PRESTRESSED
 CONCRETE CORED
 SLAB UNIT**

(SUB-REGION TIER) - 75° SKEW

REVISIONS

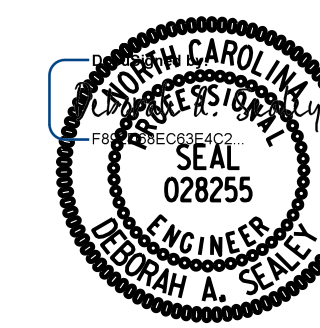
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
 5-16
 TOTAL SHEETS
 16



5640 Dillard Drive, Suite 200
 Cary, NC 27518

LICENSURE NO. C-4434



3/4/2024 | 8:07 AM P

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

DRAWN BY : S.D. COOPER DATE : 9-22
 CHECKED BY : B.S. COX DATE : 9-22
 DESIGN ENGINEER OF RECORD: D.A. SEALEY DATE : 9-22

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE :

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

CONCRETE CHAMFERS:

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

DOWELS :

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

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

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

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

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

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

REINFORCING STEEL :

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

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

STRUCTURAL STEEL :

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

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

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