

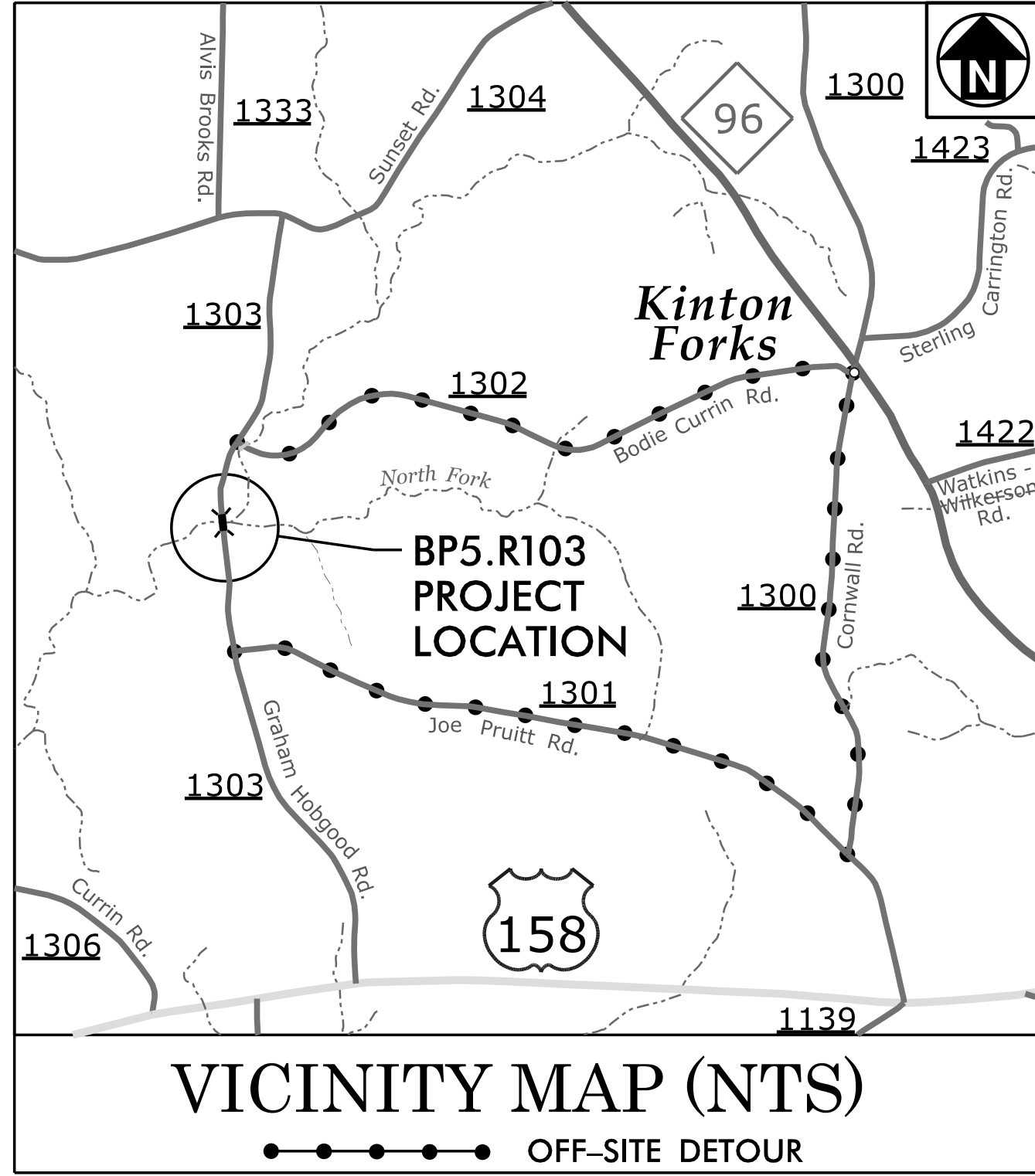
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CONTRACT: PROJECT: BP5.R103

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



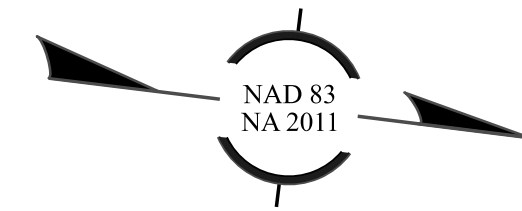
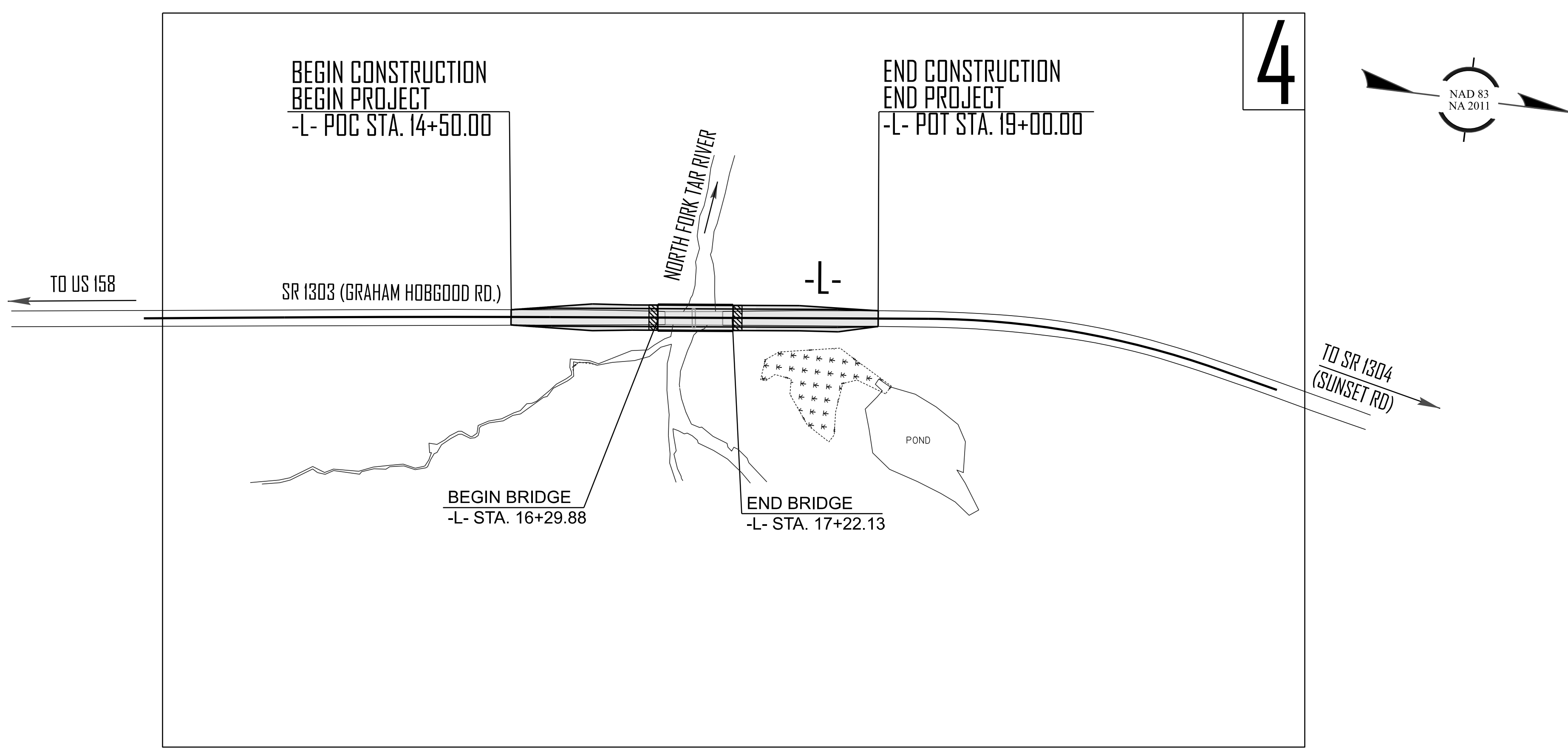
STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

GRANVILLE COUNTY

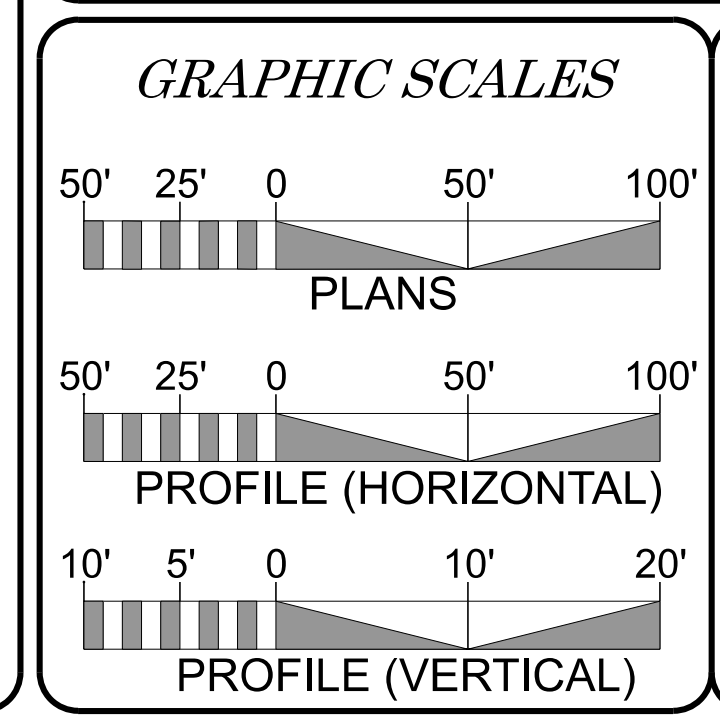
LOCATION: *BRIDGE NO. 107 OVER NORTH FORK TAR RIVER
ON SR 1303 (GRAHAM HOBGOOD RD.)*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING, AND STRUCTURE*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP5.R103	11	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
BP5.R103.1	N/A	PE	
BP5.R103.2	N/A	ROW/UTIL	
BP5.R103.3	N/A	CONST.	



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DESIGN DATA

ADT 2000 =	190
ADT 2025 =	380
V =	55 MPH
FUNC CLASS =	LOCAL SUB REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT	=	0.068 MILES
LENGTH STRUCTURE PROJECT	=	0.017 MILES
TOTAL LENGTH PROJECT	=	0.085 MILES

Prepared in the Office of WGI for:

DIVISION 5
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2024 STANDARD SPECIFICATIONS	PROJECT ENGINEER
RIGHT OF WAY DATE: NOVEMBER 14, 2024	TIM JORDAN, PE
LETTING DATE: JUNE 24, 2026	PADDY JORDAN PROJECT DESIGN ENGINEER
	LISA GILCHRIST, EI NCDOT CONTACT

ROADWAY DESIGN ENGINEER

Signed by: *James Timoley*
SEAL 21102
01-Jun-2026
P.E.

HYDRAULICS ENGINEER

Signed by: *Courtney Carpenter*
SEAL 045893
01-Jun-2026
P.E.

PLANS PREPARED BY:

M M
MOTT MACDONALD

930 Main Campus Drive, Suite 200
Raleigh, NC 27606
(919) 552-2253
(919) 552-2254 (Fax)
License No. F-0669
www.mottmac.com

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

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.

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.

RIGHT-OF-WAY MARKERS:

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

LIST OF ROADWAY STANDARD DRAWINGS

EFF. 08-11-2025
REV. 11-26-2025

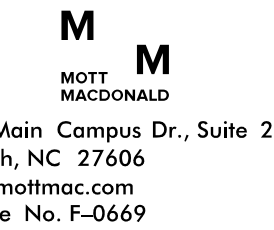
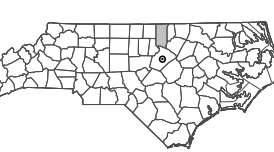
2024 ROADWAY ENGLISH STANDARD DRAWINGS

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 Superlevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation (Use Detail in Lieu of Standards for Sheets 1 and 2 of 2)
DIVISION 4 - MAJOR STRUCTURES	
423.01	Bridge Approach Fills - Type 1 Approach Fill for Bridge Abutment
423.02	Bridge Approach Fills - Type 1A Alternate Approach Fill for Intergral 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 (Use Details in Lieu of Standards for Sheets 4, 6, 12, and 14 of 15)
862.02	Guardrail Installation
862.03	Structure Anchor Units (Use Detail in Lieu of Standard for Sheet 8 of 9)
876.01	Rip Rap in Channels and Ditches
876.02	Guide for Rip Rap at Pipe Outlets

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
2C-1 THRU 2C-2	METHOD OF PIPE INSTALLATION DETAILS
2C-3 THRU 2C-4	GUARDRAIL PLACEMENT DETAILS
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
RW-01 THRU RW-04	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
X-1	CROSS-SECTION SUMMARY SHEET
X-2 THRU X-7	CROSS-SECTIONS
ST	STRUCTURE TITLE SHEET
S-1 THRU S-18	STRUCTURE PLANS
SN	STRUCTURE NOTES



Note: Not to Scale

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin (EIP)	○ EIP
Computed Property Corner	×
Existing Concrete Monument (ECM)	◻ 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---
Potential Contamination Area: Soil	---S---
Known Contamination Area: Water	---W---
Potential Contamination Area: Water	---W---
Contaminated Site: Known or Potential	☠ ?

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○ S
Well	○ W
Small Mine	✕
Foundation	▭
Area Outline	▭
Cemetery	▭ +
Building	▭
School	▭
Church	▭
Dam	▭

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	---C---
Proposed Slope Stakes Fill	---F---
Proposed Curb Ramp	○ CR
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊕
Pavement Removal	▣

VEGETATION:

Single Tree	☼
Single Shrub	☼
Hedge	~~~~~

Woods Line	~~~~~
Orchard	☼ ☼ ☼ ☼
Vineyard	▭ Vineyard

EXISTING STRUCTURES:

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

UTILITIES:

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

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

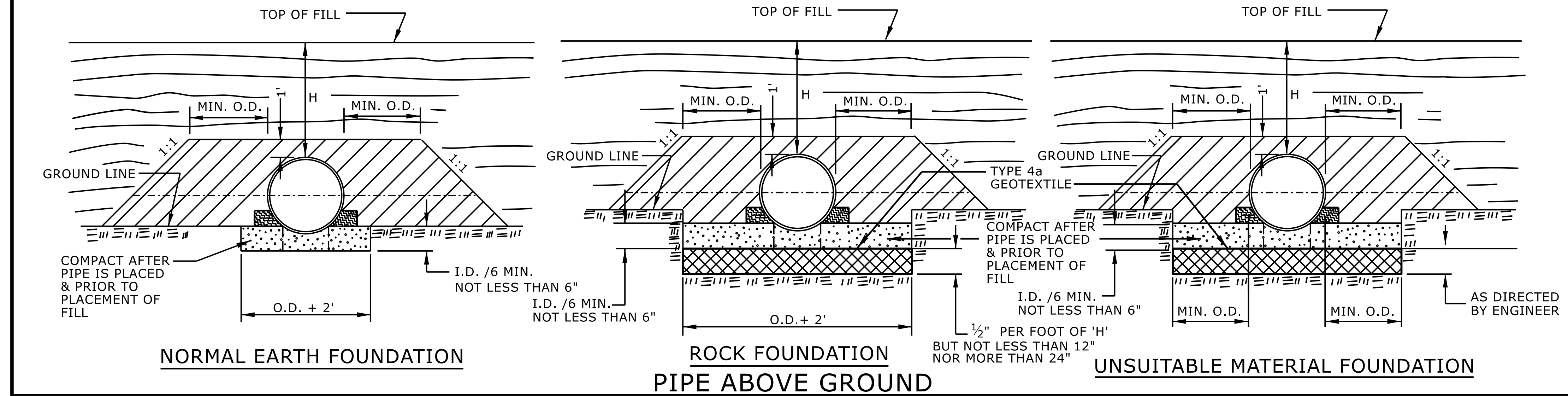
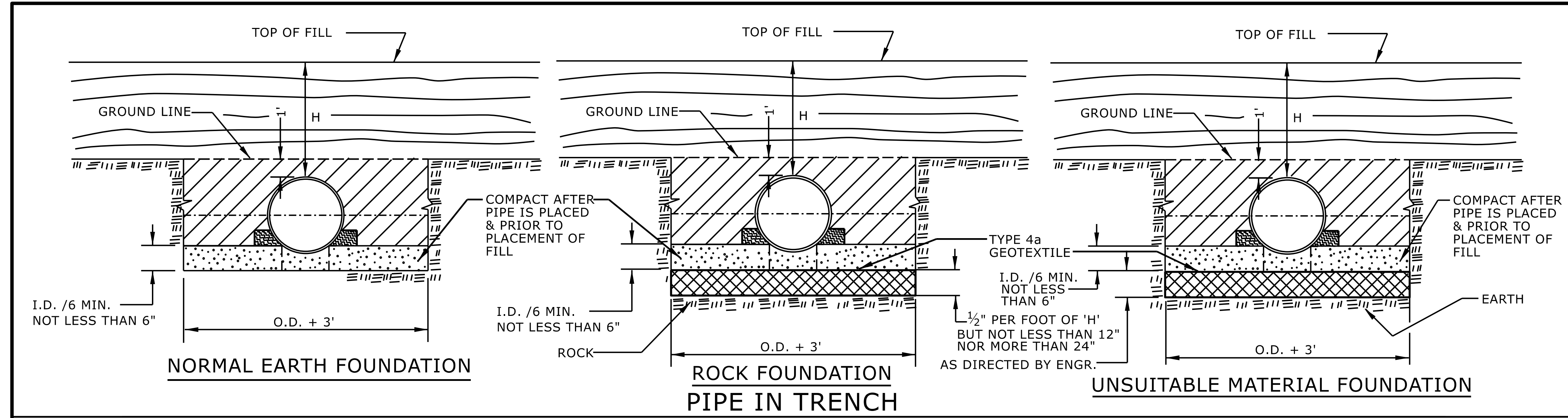
Gas Valve	◇
Gas Meter	◇
U/G Gas Line Test Hole (SUE - LOS A)*	⊙
U/G Gas Line (SUE - LOS B)*	-----
U/G Gas Line (SUE - LOS C)*	-----
U/G Gas Line (SUE - LOS D)*	-----
Above Ground Gas Line	-----

SANITARY SEWER:

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

MISCELLANEOUS:

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



GENERAL NOTES:
 I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
 O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.
 H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

APPROVED SUITABLE LOCAL MATERIAL.
 TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.
 LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.

SPRINGLINE OF PIPE
 SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.
 UNDISTURBED EARTH MATERIAL
 SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

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

ROADWAY DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
 FLEXIBLE PIPE



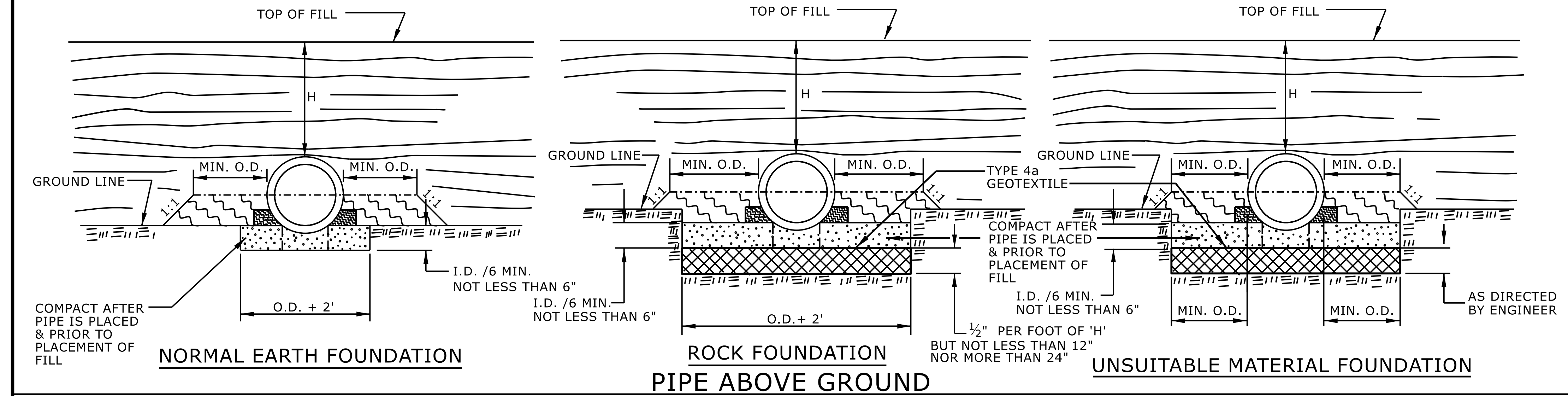
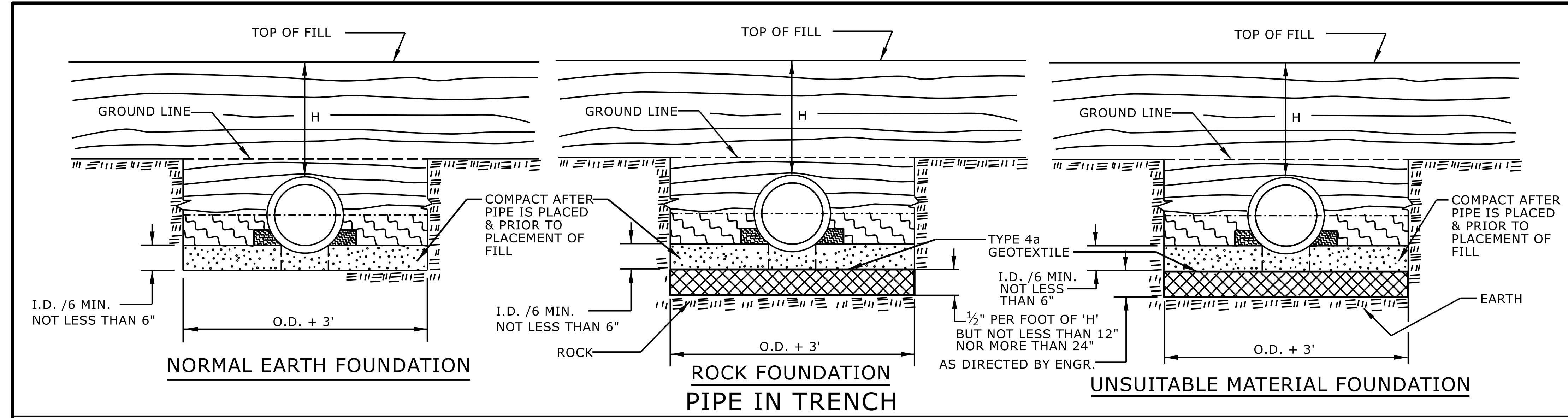
SHEET 1 OF 2
300.01

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 FILE SPEC: DATE:

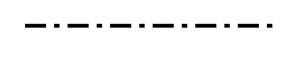

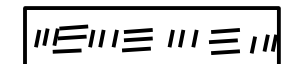



GENERAL NOTES:
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-  TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.
-  LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

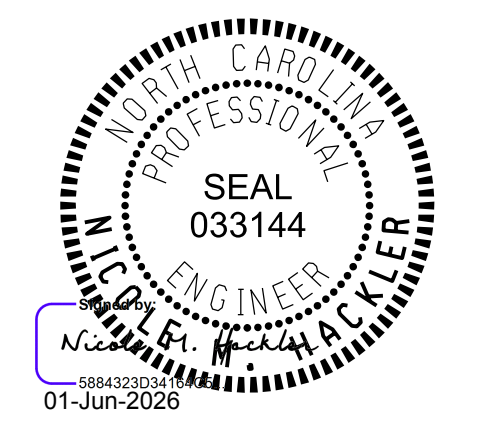
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REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.

-  SPRINGLINE OF PIPE
-  SELECT BACKFILL MATERIAL CLASS III OR CLASS II, BELOW SPRINGLINE.
-  UNDISTURBED EARTH MATERIAL
-  SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

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

ROADWAY DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
RIGID PIPE



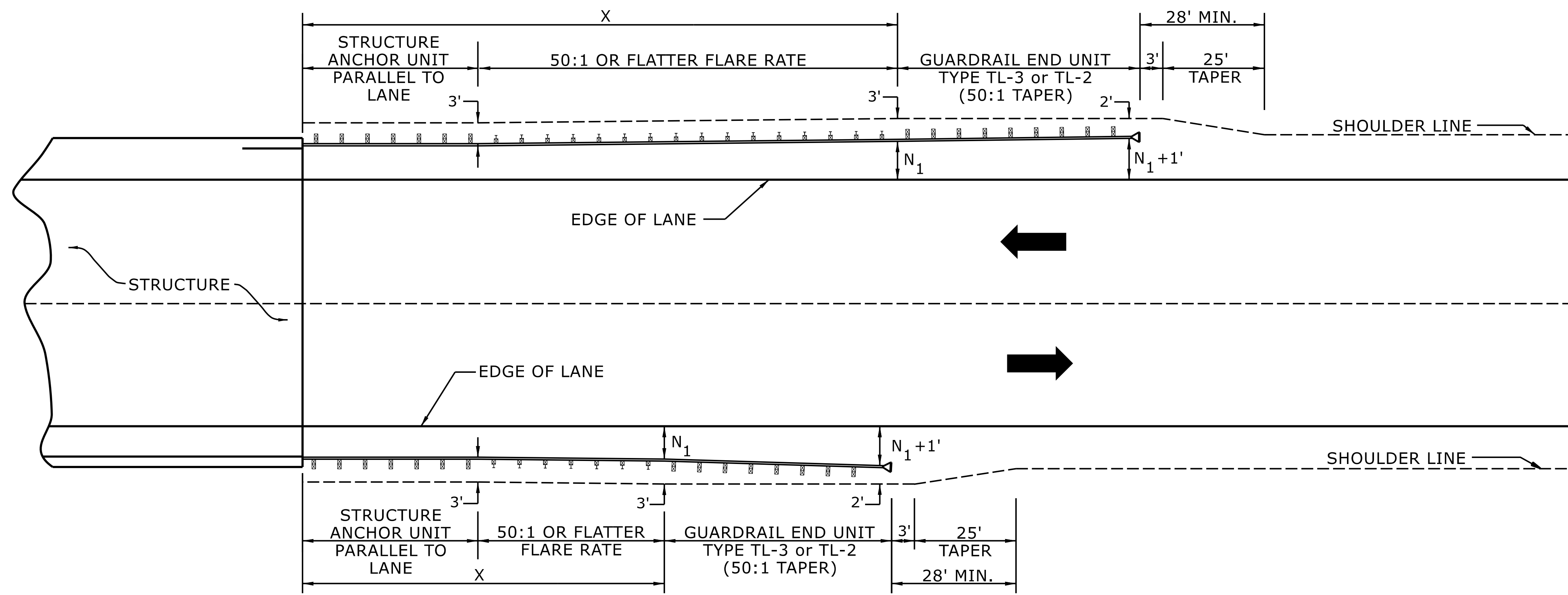
SHEET 2 OF 2
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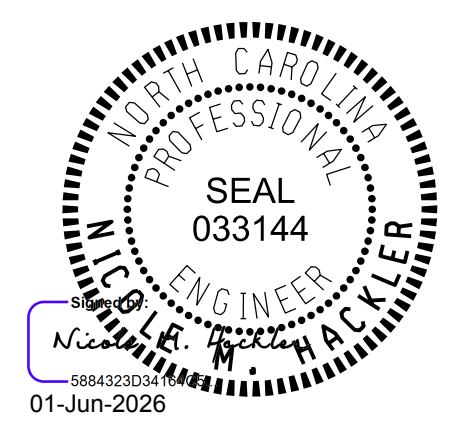


USE FLARE RATE AS THE CONTROL IF THE " N_1 " DISTANCE IS NOT OBTAINED.
 (" N_1 " IS BASED ON SHOULDER WIDTHS IN THE ROADWAY DESIGN MANUAL)
 SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS
 FOR POSTED SPEEDS \geq 45MPH USE GREU TYPE TL-3
 FOR POSTED SPEEDS $<$ 45MPH USE GREU TYPE TL-2
 GUARDRAIL LENGTH OF NEED (X) IS CALCULATED BASED ON THE AASHTO ROADSIDE DESIGN GUIDE.

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

STATE OF
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 RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT



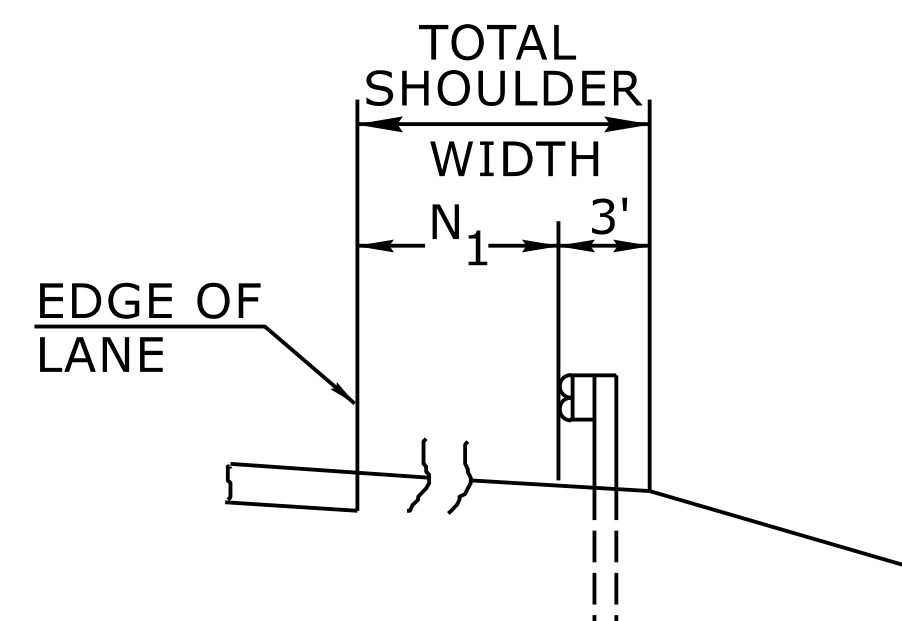
SHEET 4 OF 15
862D01

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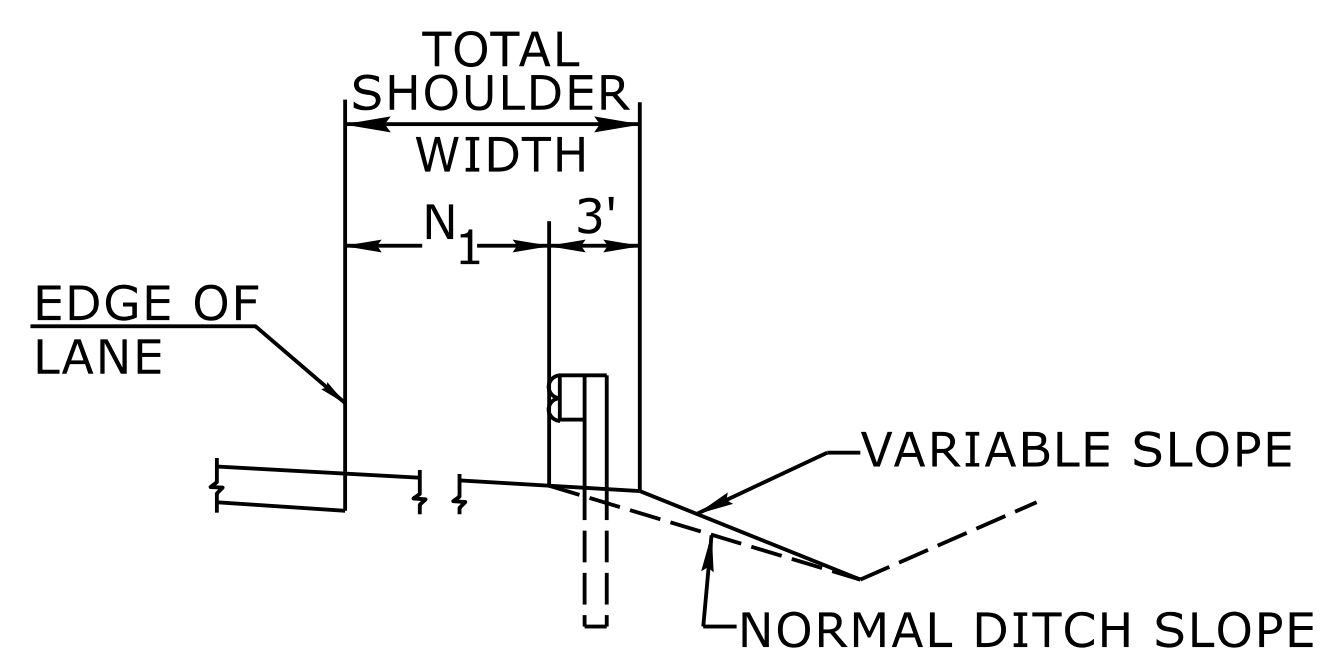
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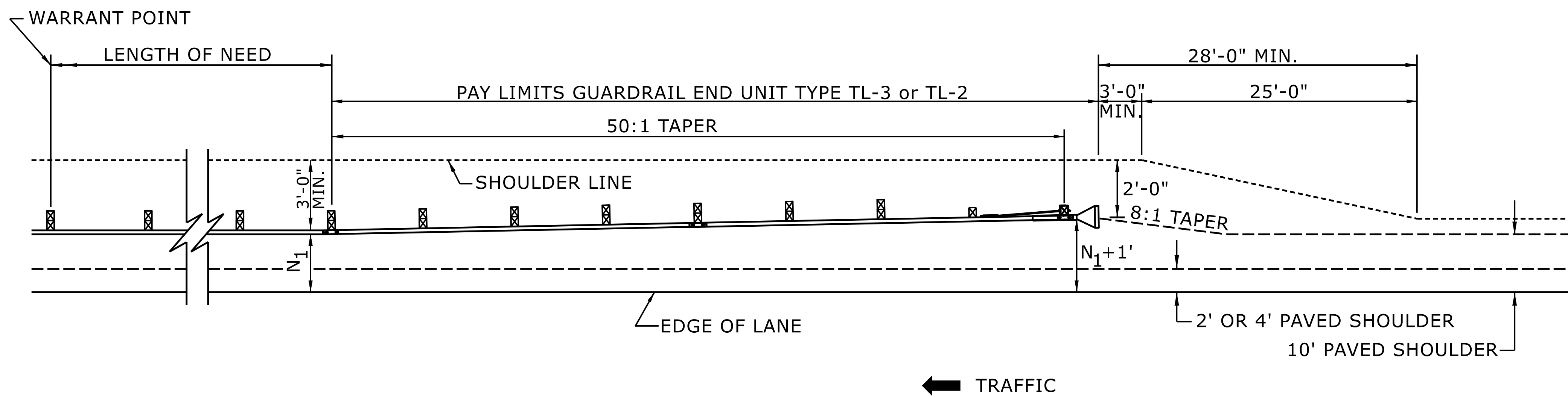


FILL SECTION



CUT SECTION

"N₁" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.

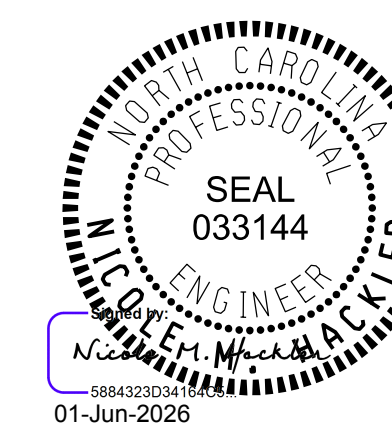


FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT



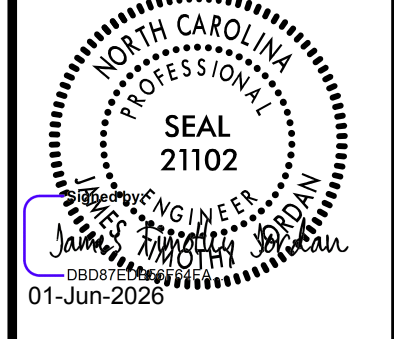
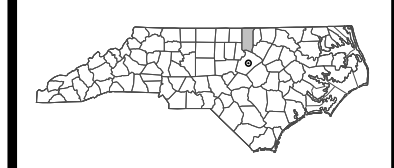
SHEET 6 OF 15
862D01

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

SEE TITLE BLOCK

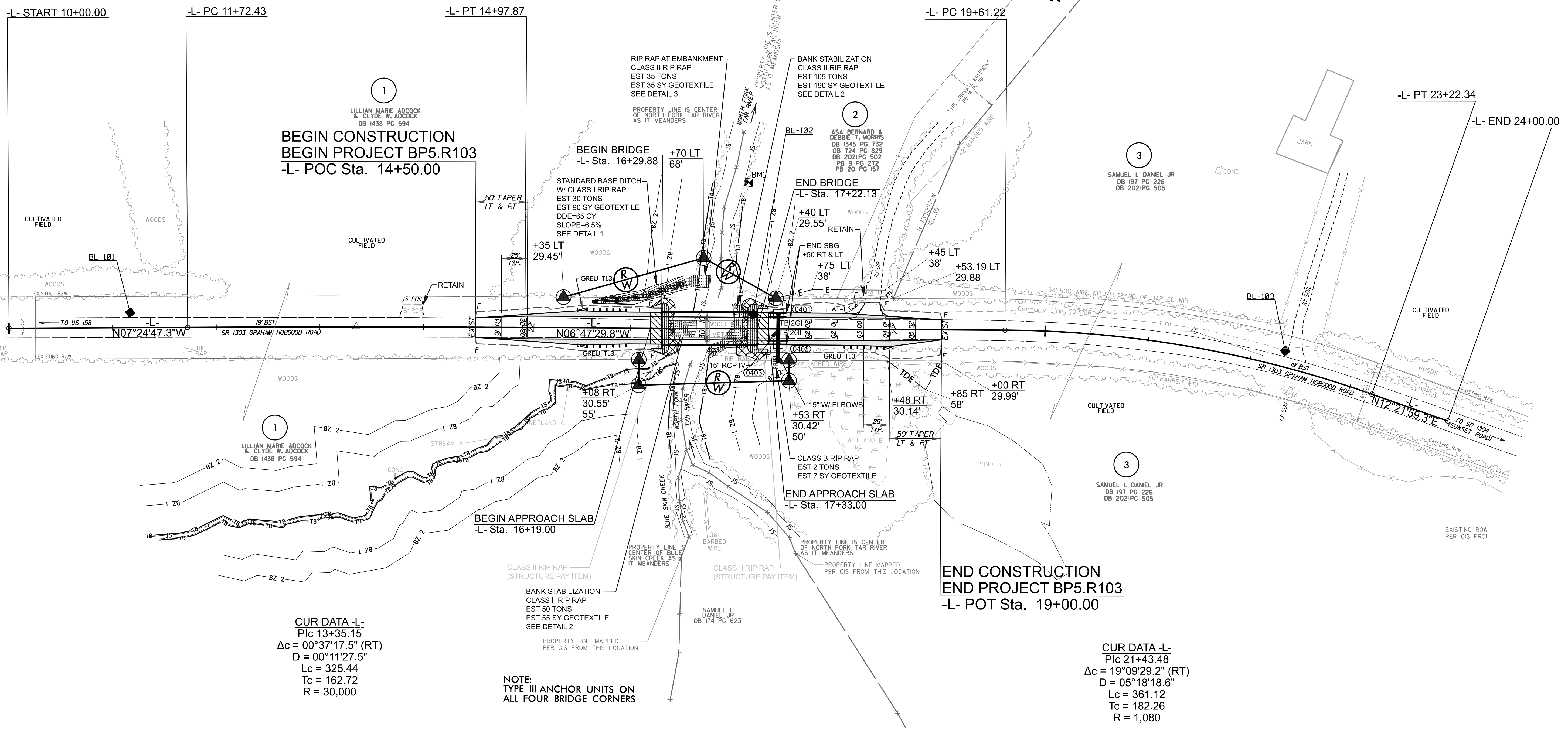
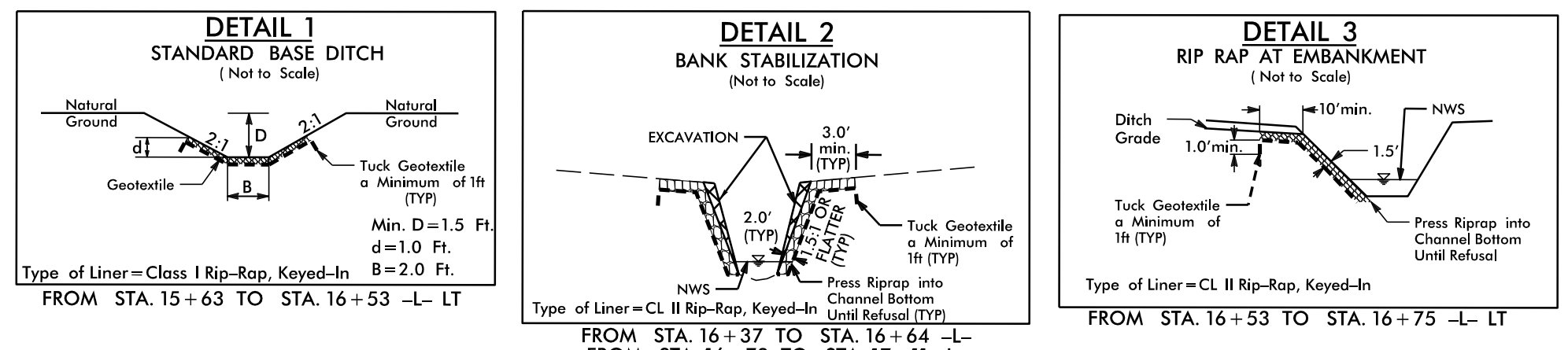
ORIGINAL BY: S.CALHOUN	DATE: 7-25-2024
MODIFIED BY: _____	DATE: _____
CHECKED BY: _____	DATE: _____
FILE SPEC.: _____	



M M MOTT MACDONALD 930 Main Campus Dr., Suite 200 Raleigh, NC 27606 www.mottmac.com License No. F-0669

vhb VHB Engineering NC, P.C. (C-3705) 940 Main Campus Drive, Suite 300 Raleigh, NC 27606

REVISIONS



BEGIN CONSTRUCTION
BEGIN PROJECT BP5.R103
-L- POC Sta. 14+50.00

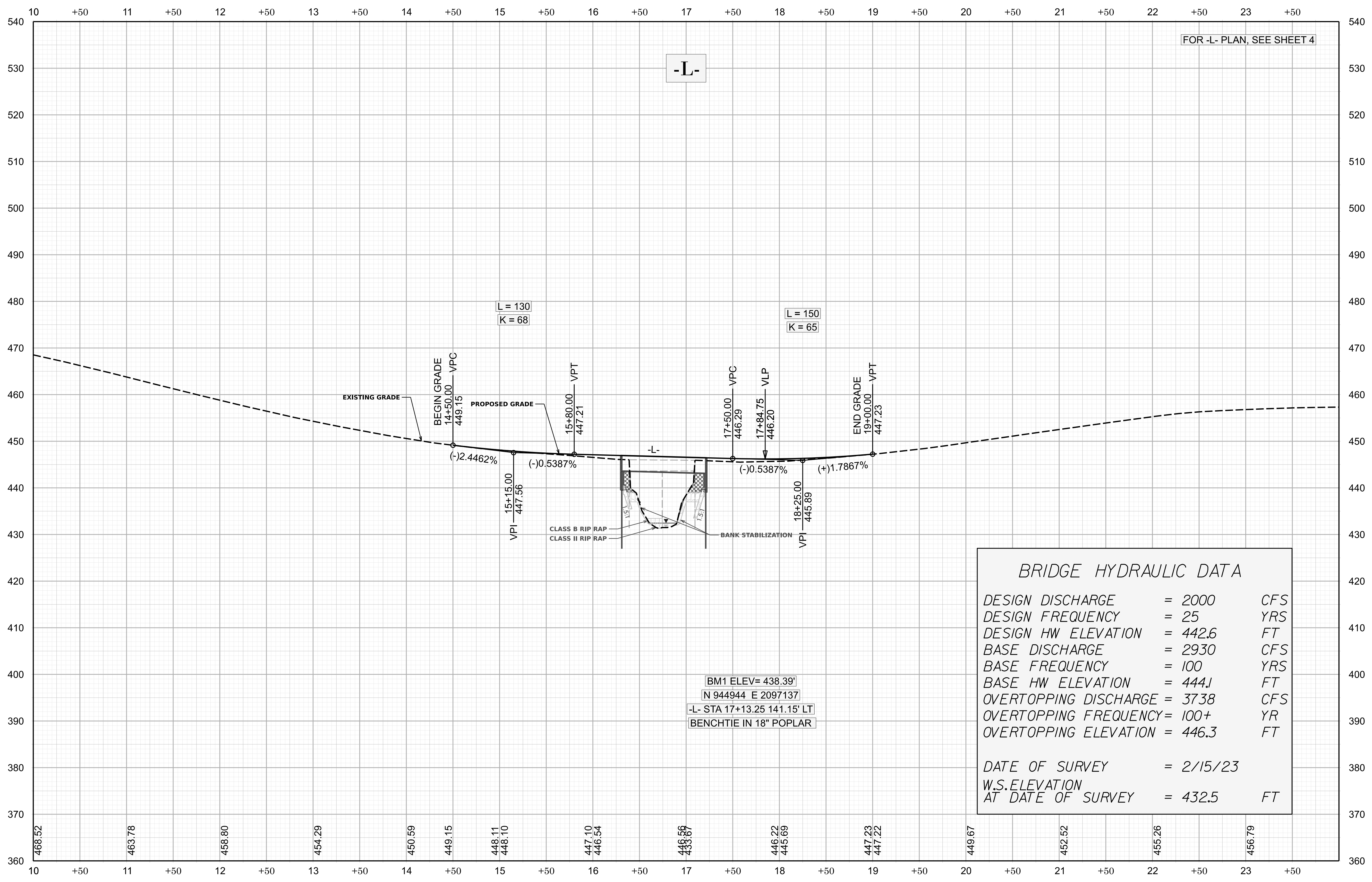
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END PROJECT BP5.R103
-L- POT Sta. 19+00.00

CUR DATA -L-
P/c 13+35.15
 $\Delta c = 00^\circ 37' 17.5''$ (RT)
D = 00' 11' 27.5"
Lc = 325.44
Tc = 162.72
R = 30,000

CUR DATA -L-
P/c 21+43.48
 $\Delta c = 19^\circ 09' 29.2''$ (RT)
D = 05' 18' 18.6"
Lc = 361.12
Tc = 182.26
R = 1,080

NOTE:
TYPE III ANCHOR UNITS ON
ALL FOUR BRIDGE CORNERS

FOR -L- PROFILE, SEE SHEET 5



FOR -L- PLAN, SEE SHEET 4

-L-

L = 130
K = 68

L = 150
K = 65

EXISTING GRADE

PROPOSED GRADE

BEGIN GRADE
14+50.00
449.15 VPC

15+80.00
447.21 VPT

17+50.00
446.29 VPC

17+84.75
446.20 VLP

END GRADE
19+00.00
447.23 VPT

(-)2.4462%

(-)0.5387%

(-)0.5387%

(+)1.7867%

15+15.00
447.56 VPI

18+25.00
445.89 VPI

CLASS B RIP RAP
CLASS II RIP RAP

BANK STABILIZATION

BM1 ELEV= 438.39'
N 944944 E 2097137
-L- STA 17+13.25 141.15' LT
BENCHTIE IN 18" POPLAR

BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	= 2000	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 442.6	FT
BASE DISCHARGE	= 2930	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 444.1	FT
OVERTOPPING DISCHARGE	= 3738	CFS
OVERTOPPING FREQUENCY	= 100+	YR
OVERTOPPING ELEVATION	= 446.3	FT
DATE OF SURVEY = 2/15/23		
W.S. ELEVATION AT DATE OF SURVEY = 432.5 FT		

BPS.R103
SHEET NO. **5**

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
GRANVILLE COUNTY

ROADWAY DESIGN UNIT
ROADWAY DESIGN
ENGINEER

NORTH CAROLINA
PROFESSIONAL
SEAL
21102
JAMES W. MOFFITT
01-Jun-2026

HYDRAULICS
ENGINEER

NORTH CAROLINA
PROFESSIONAL
SEAL
045893
C. MOTT
01-Jun-2026

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

HORIZONTAL SCALE
25' 0" 25' 50'

VERTICAL SCALE
5' 0" 5' 10'

PREPARED BY
M M
MOTT
MACDONALD
930 Main Campus Dr., Suite 200
Raleigh, NC 27606
www.mottmac.com
License No. F-0669

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

REVISIONS

00/00/99

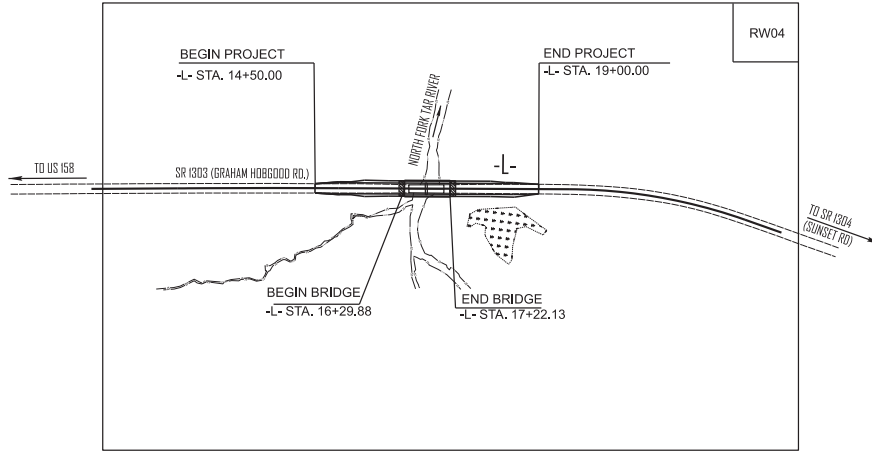
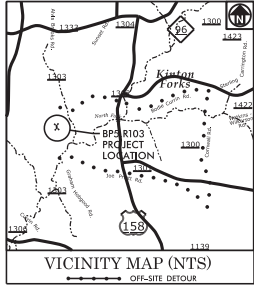
TIP PROJECT: BP5.R103

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP5.R103	RW01	6

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

GRANVILLE COUNTY



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



NOT TO SCALE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "380107-2" WITH NAD 83/NA2011 STATE PLANE GRID COORDINATES OF
 NORTHING: 943754.668 EASTING: 2097437.974
 ELEVATION: 488.172
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.00003514
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
 VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:

GEL SOLUTIONS
 an Affiliate of THE GEL GROUP, INC.
 2700 SUMNER BLVD.
 SUITE 106
 RALEIGH, NC 27616
 (919) 544-1100
 WWW.GEL-SOLUTIONS.COM

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 14 2024

LETTING DATE:
MAY 13 2026

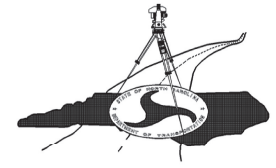
PROFESSIONAL LAND
SURVEYOR



Park H. Icenhour, Jr.

Digitally signed by
 Park H. Icenhour, Jr.
 Date: 2025.01.06
 11:14:30 -05'00'

SIGNATURE DATE



PROPOSED ALIGNMENT CONTROL SHEET

I, PARKS H. ICENHOUR JR., 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 6th DAY OF JANUARY, 2025, Digitally signed by

Parks H. Icenhour Jr.
Parks H. Icenhour Jr.

PROFESSIONAL LAND SURVEYOR

Date: 2025-01-06 11:13:05 -0500

PROFESSIONAL LAND SURVEYOR L-3996



BP5.R103

R/W 02D-3

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION



PROFESSIONAL LAND SURVEYOR



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

SEE STANDARD SPECIFICATIONS

PROPOSED ALIGNMENT: L												
POINT	STATION	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R	LT	ST
POT	10+00.00	944252.7340	2097365.1510	N07°24'47.3"W	172.43							
PC	11+72.43	944423.7275	2097342.9029	N07°06'08.6"W	325.43	00°37'17.5"	00°11'27.5"	325.43	162.72	30000.00		
PT	14+97.87	944746.6612	2097302.6658	N06°47'29.8"W	463.35							
PC	19+61.22	945206.7634	2097247.8701	N02°47'14.8"E	359.44	19°09'29.2"	05°18'18.6"	361.12	182.26	1080.00		
PT	23+22.34	945565.7800	2097265.3500	N12°21'59.3"E	77.66							
POT	24+00.00	945641.6356	2097281.9814									

TIP PROJECT: BP5.R103
County: GRANVILLE

PREPARED FOR



LOCATION AND SURVEYS UNIT

PREPARED BY

NOTES:

1. 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.

GEL SOLUTIONS
an Affiliates of THE GEL GROUP, INC.
2707 SUMNER BLVD.
SUITE 100
RALEIGH, NC 27616
(919) 544-0700
WWW.GEL-SOLUTIONS.COM

RIGHT OF WAY CONTROL SHEET

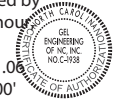
I, PARKS H. ICENHOUR JR., PLS. CERTIFY THAT THE RIGHT OF WAY AND PERMANENT EASEMENT MONUMENTATION FOR THIS PROJECT SHOWN HEREIN WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION; THAT ALL HORIZONTAL CLOSURES HAD A MINIMUM RATIO OF PRECISION OF 1:10,000 (CLASS A); FIELD WORK WAS PERFORMED FROM DECEMBER 2024 TO JANUARY 2025, AND ALL COORDINATES ARE BASED ON NAD83NA 2011; THAT THIS SURVEY WAS PERFORMED TO MEET THE REQUIREMENTS OF 21NCAC 56.1600 AS APPLICABLE.

THIS 6th DAY OF JANUARY, 2025.

Digitally signed by
Parks H. Icenhour Jr.

Date: 2025.01.06

PROFESSIONAL LAND SURVEYOR L-3996



PERMANENT ROW MARKER IRON PIN AND CAP: L			
STATION	OFFSET	NORTH	EAST
15+35.00	-29.45	944780.05	2097269.03
16+08.00	30.55	944859.64	2097319.97
16+08.00	55.00	944862.55	2097344.40
16+70.00	-68.00	944909.55	2097214.79
17+40.00	-29.55	944983.60	2097244.69
17+53.00	50.00	945005.92	2097322.14
17+53.01	30.42	945003.61	2097302.69

BP5.R103

R/W 03E-1

NORTH CAROLINA
DEPARTMENT
OF TRANSPORTATION



PROFESSIONAL LAND
SURVEYOR



DOCUMENT NOT CONSIDERED
FINAL UNTIL ALL SIGNATURES
ARE COMPLETED

SEE STANDARD
APPLICATION

TIP PROJECT: BP5.R103
County: GRANVILLE

PREPARED FOR



LOCATION AND
SURVEYS UNIT

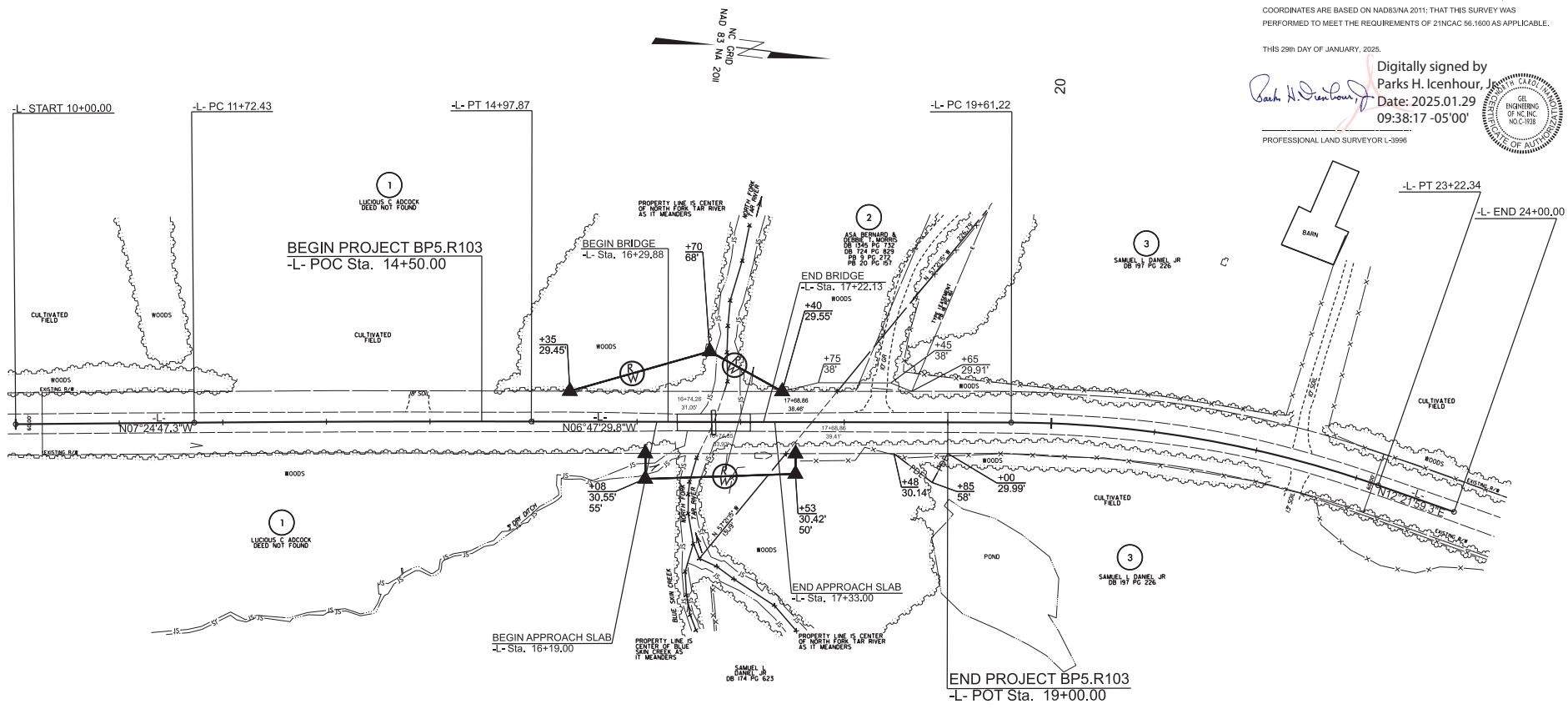
PREPARED BY

GEL SOLUTIONS
an ARMOR of THE GEL GROUP, INC.
2107 SHILOH BLVD.
SUITE 106
RALEIGH, NC 27616
(919) 541-1100
WWW.GEL-SOLUTIONS.COM

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

5/25/20



CUR DATA -L-
 P/c 13+35.15
 $\Delta c = 00^{\circ}37'17.5"$ (RT)
 $D = 00^{\circ}11'27.5"$
 $Lc = 325.43$
 $Tc = 162.72$
 $R = 30,000$

CUR DATA -L-
 P/c 21+43.48
 $\Delta c = 19^{\circ}09'29.2"$ (RT)
 $D = 05^{\circ}18'18.6"$
 $Lc = 361.12$
 $Tc = 182.26$
 $R = 1,080$



I, PARKS H. ICENHOUR JR., PLS. CERTIFY THAT THE RIGHT OF WAY AND PERMANENT EASEMENT MONUMENTATION FOR THIS PROJECT SHOWN HEREIN WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION; THAT ALL HORIZONTAL CLOSURES HAD A MINIMUM RATIO OF PRECISION OF 1:10,000 (CLASS A). FIELD WORK WAS PERFORMED FROM DECEMBER 2024 TO JANUARY 2025, AND ALL COORDINATES ARE BASED ON NAD83/NA 2011; THAT THIS SURVEY WAS PERFORMED TO MEET THE REQUIREMENTS OF 21NCAC 56.1600 AS APPLICABLE.

THIS 29th DAY OF JANUARY, 2025.

Digitally signed by
 Parks H. Icenhour, Jr.
 Date: 2025.01.29
 09:38:17 -05'00'

PROFESSIONAL LAND SURVEYOR L-3996



BP5.R103
 R/W 004

NORTH CAROLINA
 DEPARTMENT
 OF TRANSPORTATION



PROFESSIONAL LAND
 SURVEYOR



DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL SIGNATURES
 ARE COMPLETED

2024 STANDARD
 SPECIFICATIONS

TIP PROJECT: BP5.R103
 County: GRANVILLE

PREPARED FOR



LOCATION AND
 SURVEYS UNIT

PREPARED BY

GEL SOLUTIONS
 an Arrow of the GEL GROUP, INC.
 2705 SPOONER ROAD
 SUITE 106
 RALEIGH, NC 27616
 (919) 566-1100
 WWW.GEL-SOLUTIONS.COM

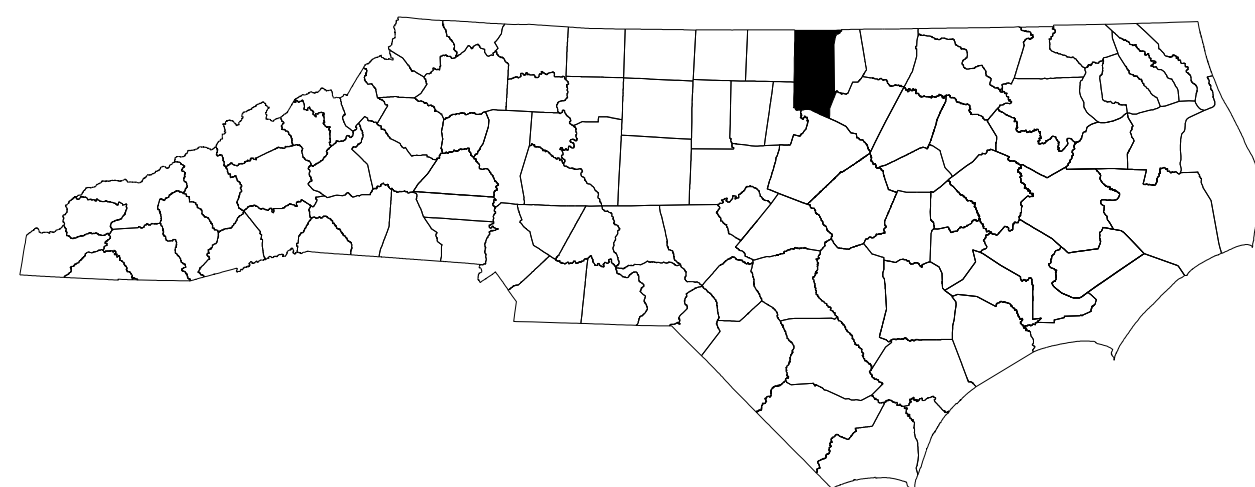
NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

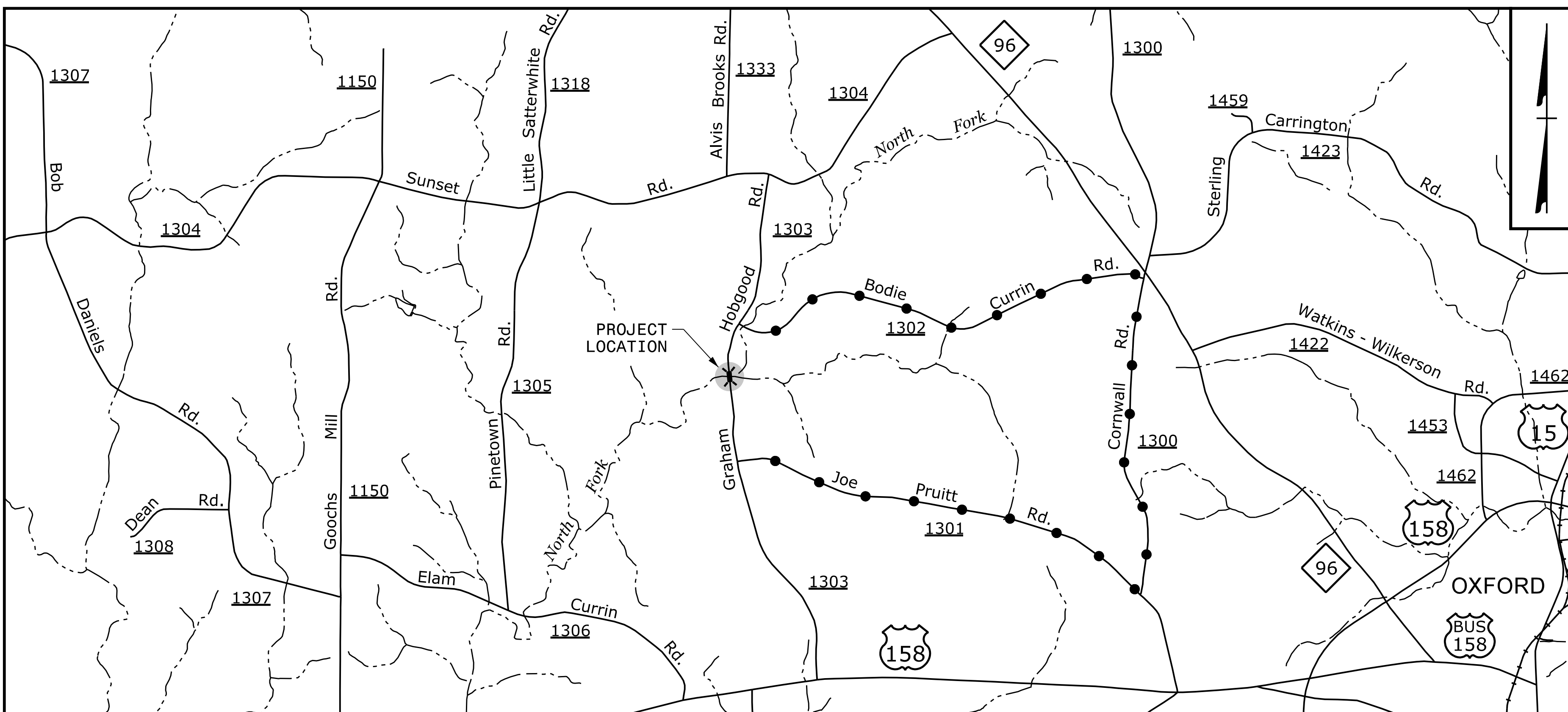
TRANSPORTATION MANAGEMENT PLAN

GRANVILLE COUNTY

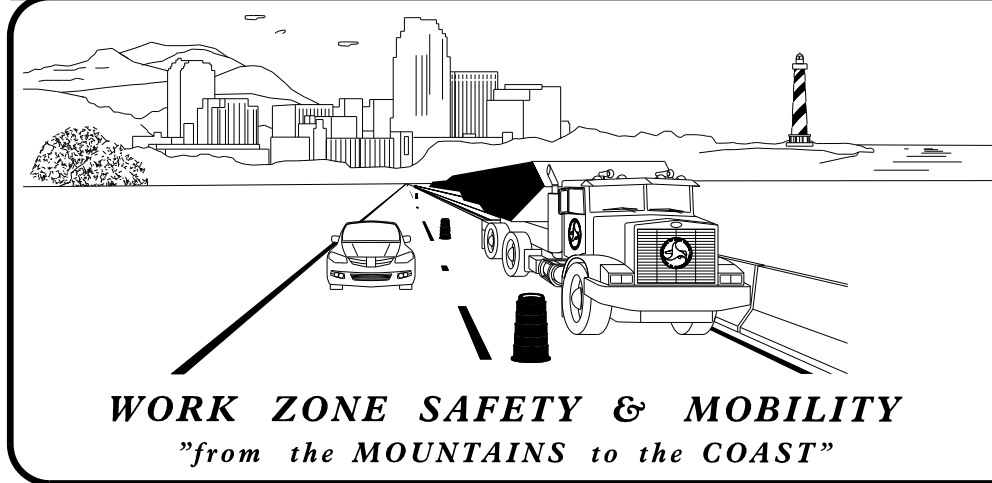


**LOCATION: BRIDGE 107 OVER N. FORK TAR RIVER ON
SR 1303 (GRAHAM HOBGOOD RD)**

**TYPE OF WORK: TEMPORARY TRAFFIC CONTROL FOR GRADING, PAVING,
DRAINAGE, AND STRUCTURE**



PLOT DRIVER: NCDOT_pdf_color_eng_50.plt
PENTABLE: NCDOT_tcp.tbl
USER: CHARNDEN
DATE: 5/29/2026
TIME: 10:26:34 AM
FILE: p:\nhdr\users01\HDR_US_East_01\Documents\5705\10393945\6.0_CAD_BIM\6.2_WIP\TrafficControl\TCP\380107_TC_TMP01.dgn



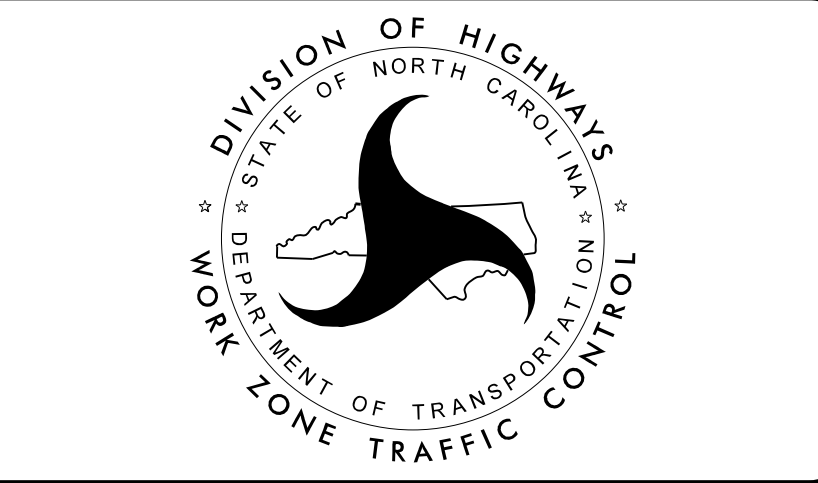
PLANS PREPARED BY:

MIKE RZEPKA, P.E.
TRAFFIC CONTROL PROJECT ENGINEER

CHRIS HARNDEN
TRAFFIC CONTROL DESIGN ENGINEER

NCDOT CONTACTS:

LISA B. GILCHRIST, E.I.
DIV. 5 BRIDGE PROGRAM MANAGER



PLAN PREPARED BY:
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

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


APPROVED: *Michael T. Rzepka*

DATE: 5/29/2026

SEAL

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES, LOCAL NOTES, AND TEMPORARY TRAFFIC CONTROL PHASING)
TMP-2	SPECIAL SIGN DESIGN
TMP-3	TEMPORARY TRAFFIC OFFSITE DETOUR

SHEET NO. TMP-1
TIP PROJECT: BP5.R103

PROJ. REFERENCE NO.	SHEET NO.
BP5.R103	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	

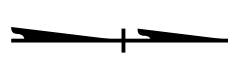
ROADWAY STANDARD DRAWINGS

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

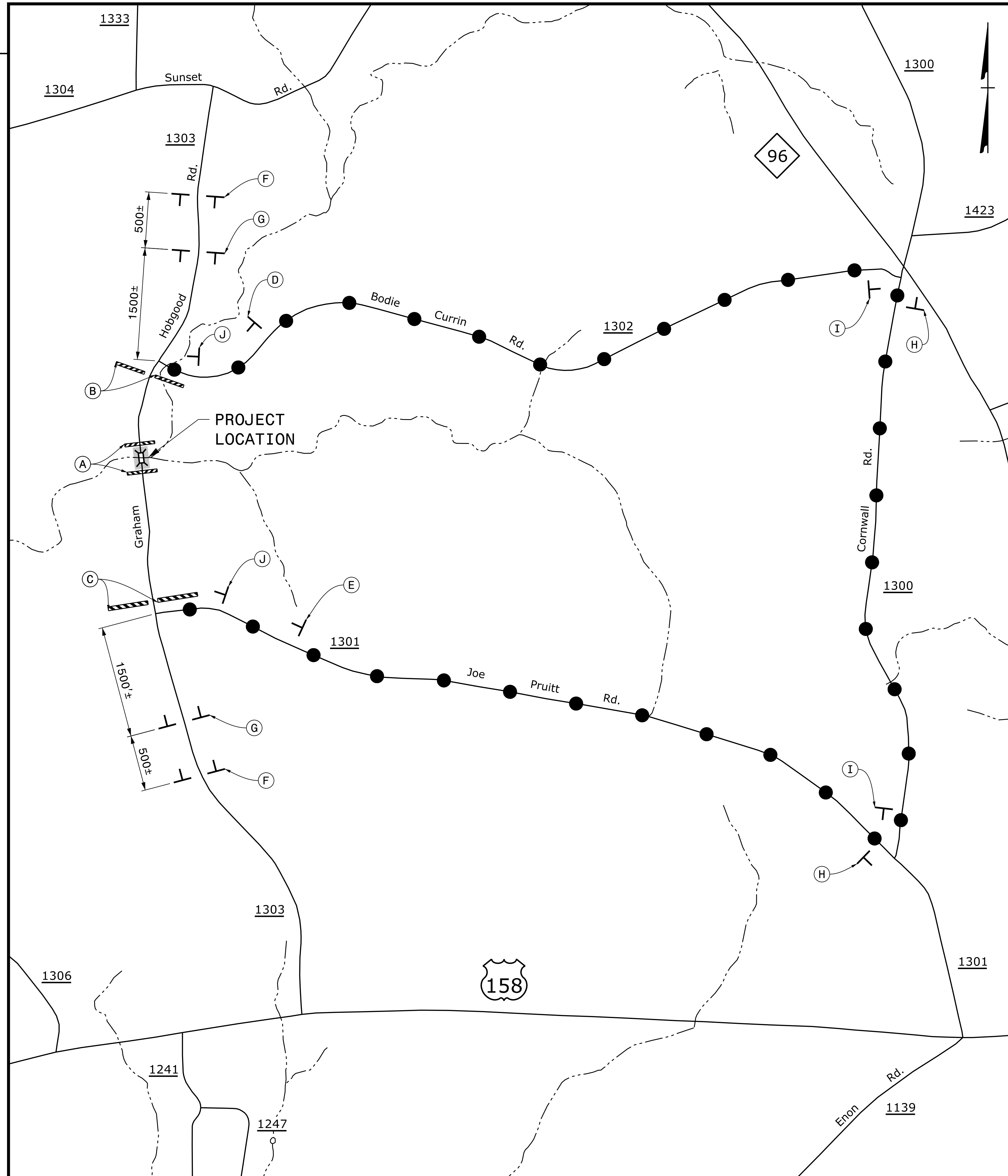
 STATIONARY SIGN

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 USER: CHARNDEN DATE: 5/29/2026
 PENTABLE: NCDOT_tcp.tbl
 TIME: 10:59:26 AM
 FILE: p:\pwhdr\users\01\HDE.US-East-01\Documents\5705\10393945\6.0-CAD-BIM\6.2-WIP\TrafficControl\TCP_380107_TC_TMP01A.dgn

APPROVED: <i>Michael T. Rzepka</i> DATE: 5/29/2026 		ROADWAY STANDARD DRAWINGS & LEGEND
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

PLOT DRIVER: NCDOT_pdf_color_eng_50.pit
 USER: CHARNDEN
 DATE: 5/29/2026
 TIME: 10:34:10 AM
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REVISIONS



PROJ. REFERENCE NO. BP5-R103	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	

(A) R11-2
48" x 30"

TYPE III BARRICADE(S)

(B) R11-3
60" x 30"

TYPE III BARRICADE

(C) R11-3
60" x 30"

TYPE III BARRICADE

(D) W20-3
48" x 48"

SP-4L
42" x 12"

NEXT LEFT

(E) W20-3
48" x 48"

SP-4R
42" x 12"

NEXT RIGHT

(F) W20-3
48" x 48"

W16-3P
24" x 24"

0.7 MILES

(G) W20-2
48" x 48"

DETOUR AHEAD

(H) SP-01
42" x 36"

Graham Hobgood Road

M4-8
24" x 12"

DETOUR

M6-1 L
21" x 15"

(I) SP-01
42" x 36"

Graham Hobgood Road

M4-8
24" x 12"

DETOUR

M6-1
21" x 15"

(J) SP-01
42" x 36"

Graham Hobgood Road

M4-8 A
24" x 18"

END DETOUR

(A)

ROAD CLOSED 1000 FT
W20-3 48" x 48"

ROAD CLOSED 500 FT
W20-3 48" x 48"

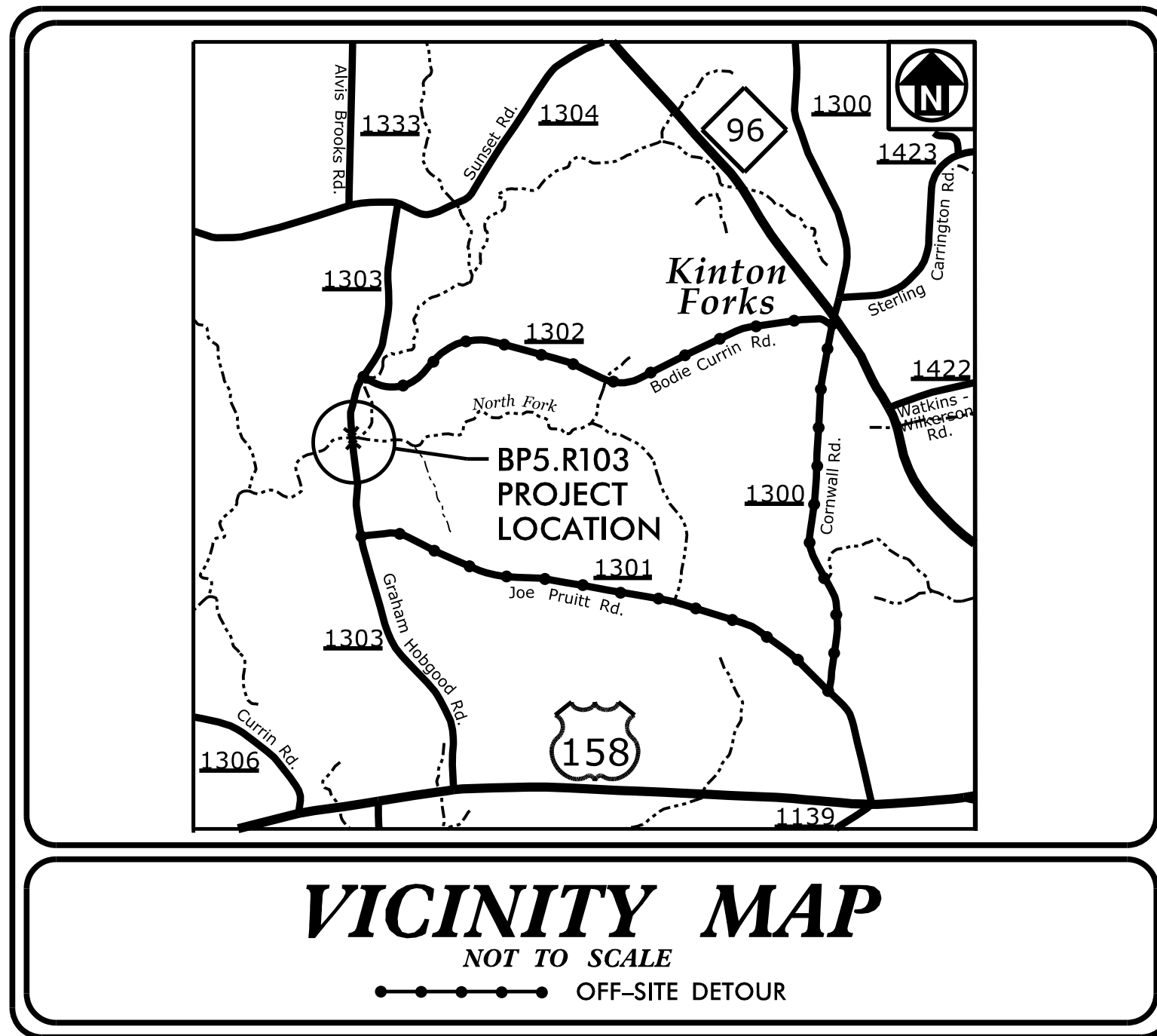
NOTE: SEE TMP-2 FOR SPECIAL SIGN DESIGN SP-01.
SEE RSD 1101.03, SHEET 1 OF 9, FOR ADDITIONAL NOTES.

● ● ● = DETOUR ROUTE

APPROVED: <i>Michael T. Rzepka</i> DATE: 5/29/2026 SEAL		<p>DETOUR ROUTE FOR GRAHAM HOBGOOD RD CLOSURE</p>
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

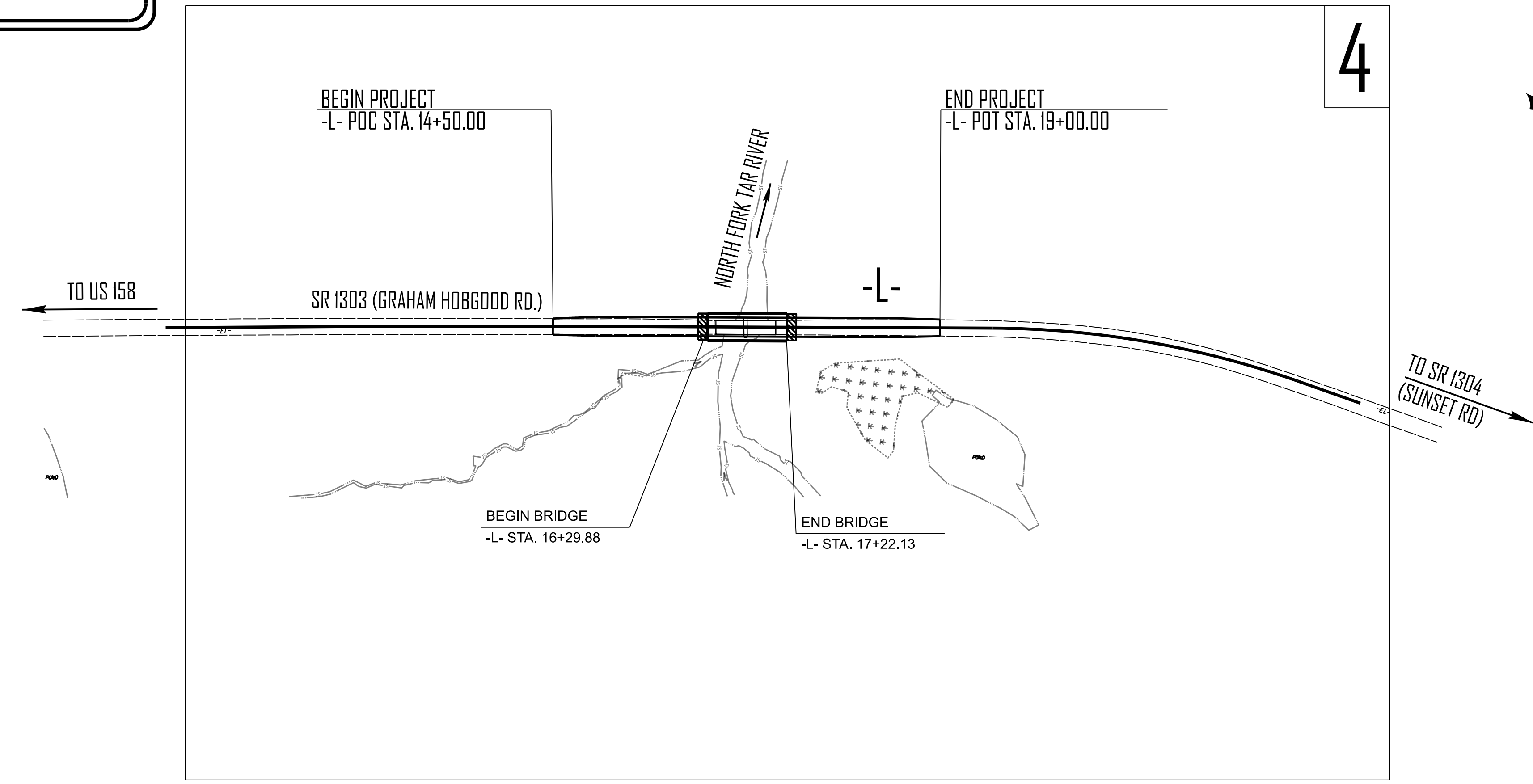
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP5.R103	EC-1	
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
BP5.R103.1		PE	
BP5.R103.2		ROW/UTIL	
BP5.R103.3		CONST.	

TIP PROJECT: BP5.R103



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

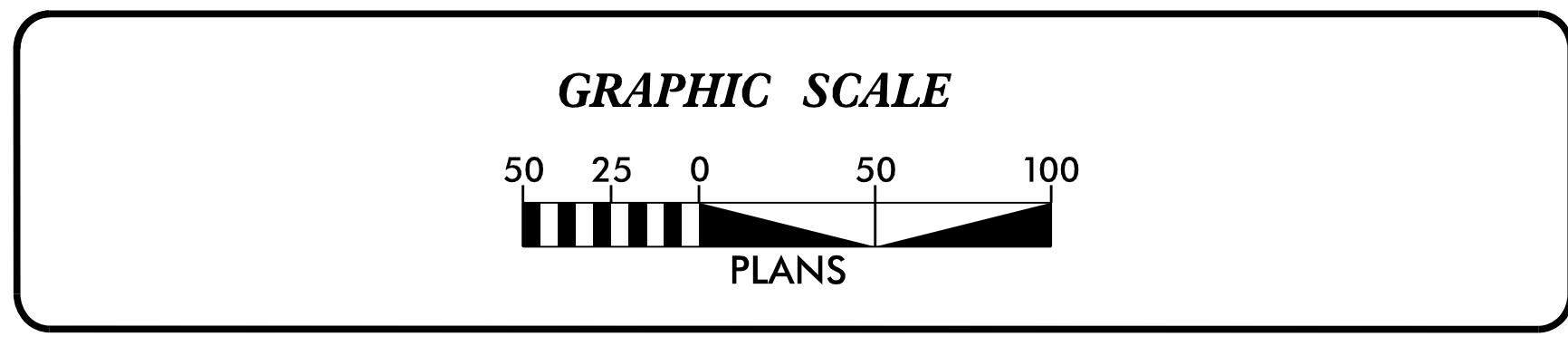
LOCATION: *BRIDGE NO. 107 OVER NORTH FORK TAR RIVER
 ON SR 1303 (GRAHAM HOBGOOD RD.)*
 TYPE OF WORK: *GRADING, DRAINAGE, PAVING, AND STRUCTURE*



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

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT
Refer To E. C. Special Provisions for Special Considerations.



THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE APPLICABLE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2024 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.

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

Prepared In the Office of:

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

Designed by:

Courtney A. Carpenter, PE **3811**
 NAME LEVEL III CERTIFICATION NO.

Roadway Standard Drawings

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

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

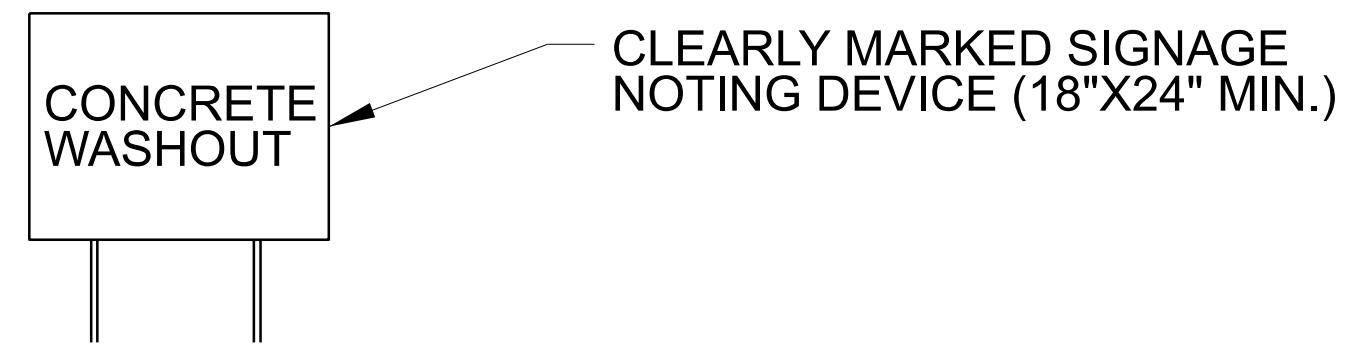
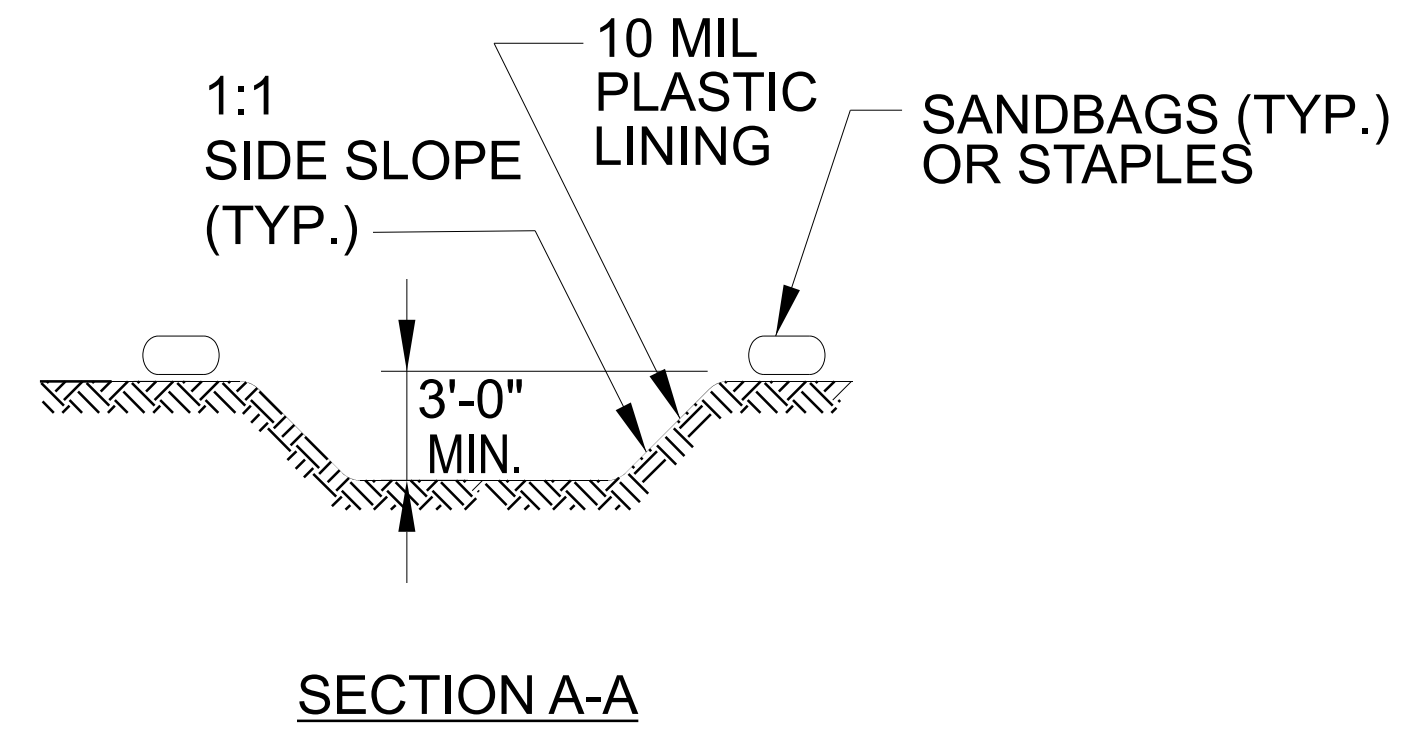
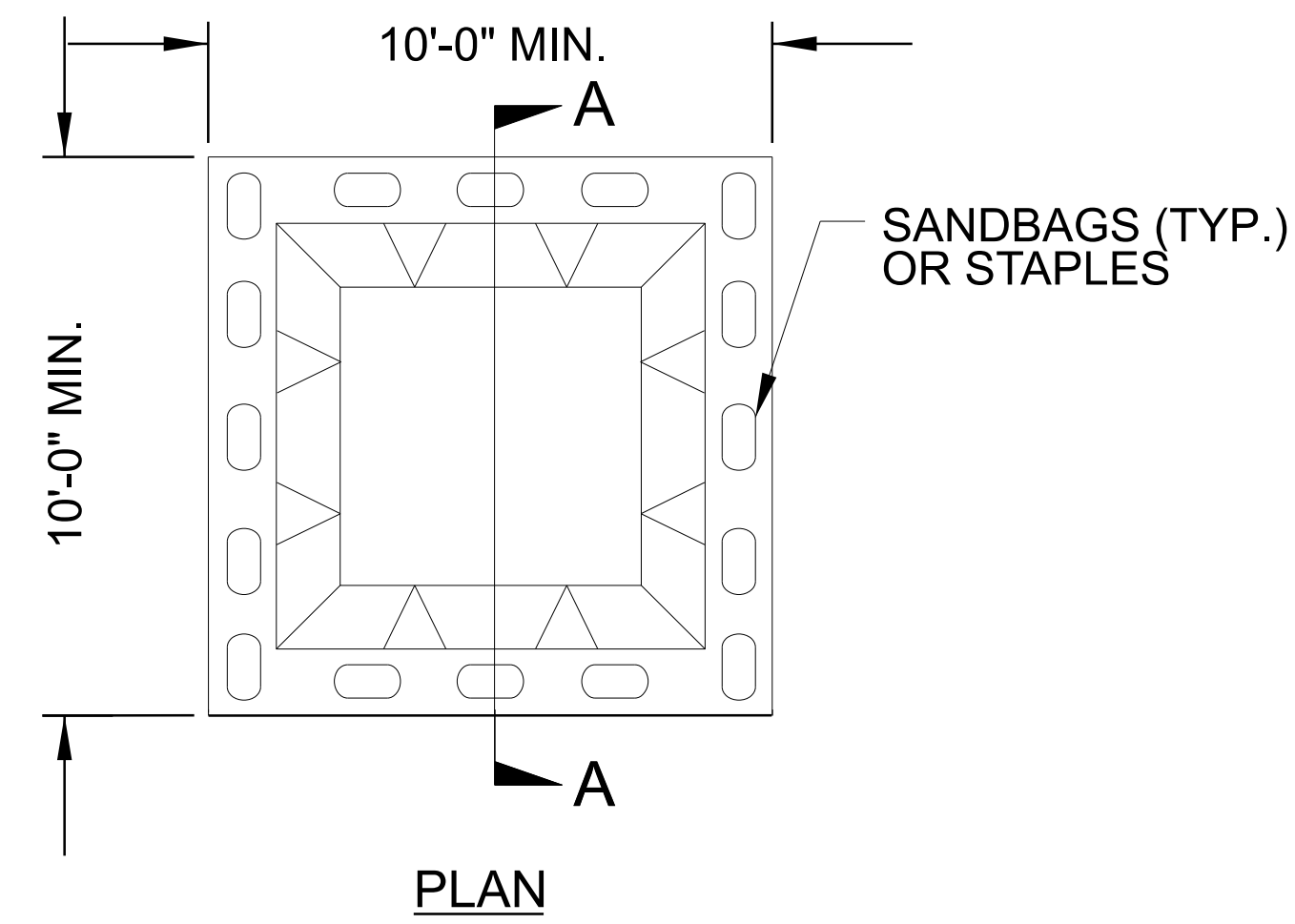
PROJECT REFERENCE NO. BP5.R103	SHEET NO. EC-02
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

EROSION & SEDIMENT CONTROL LEGEND

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

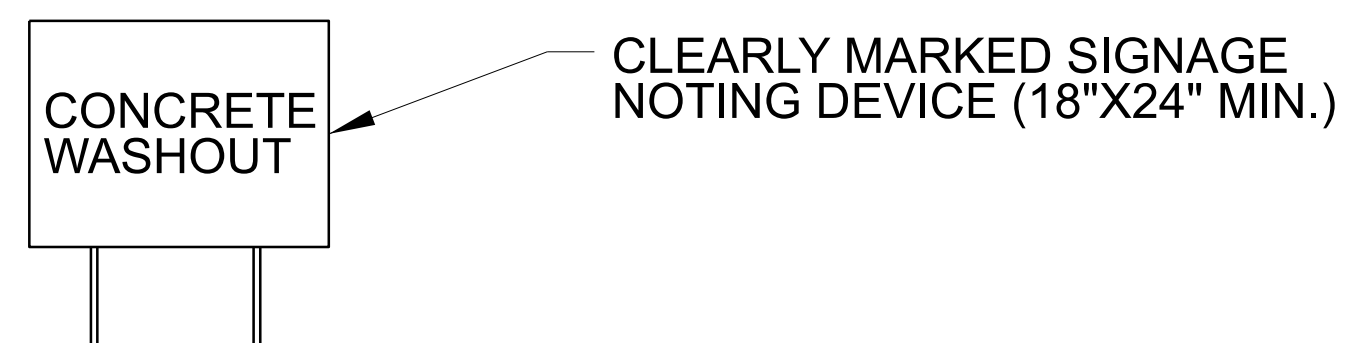
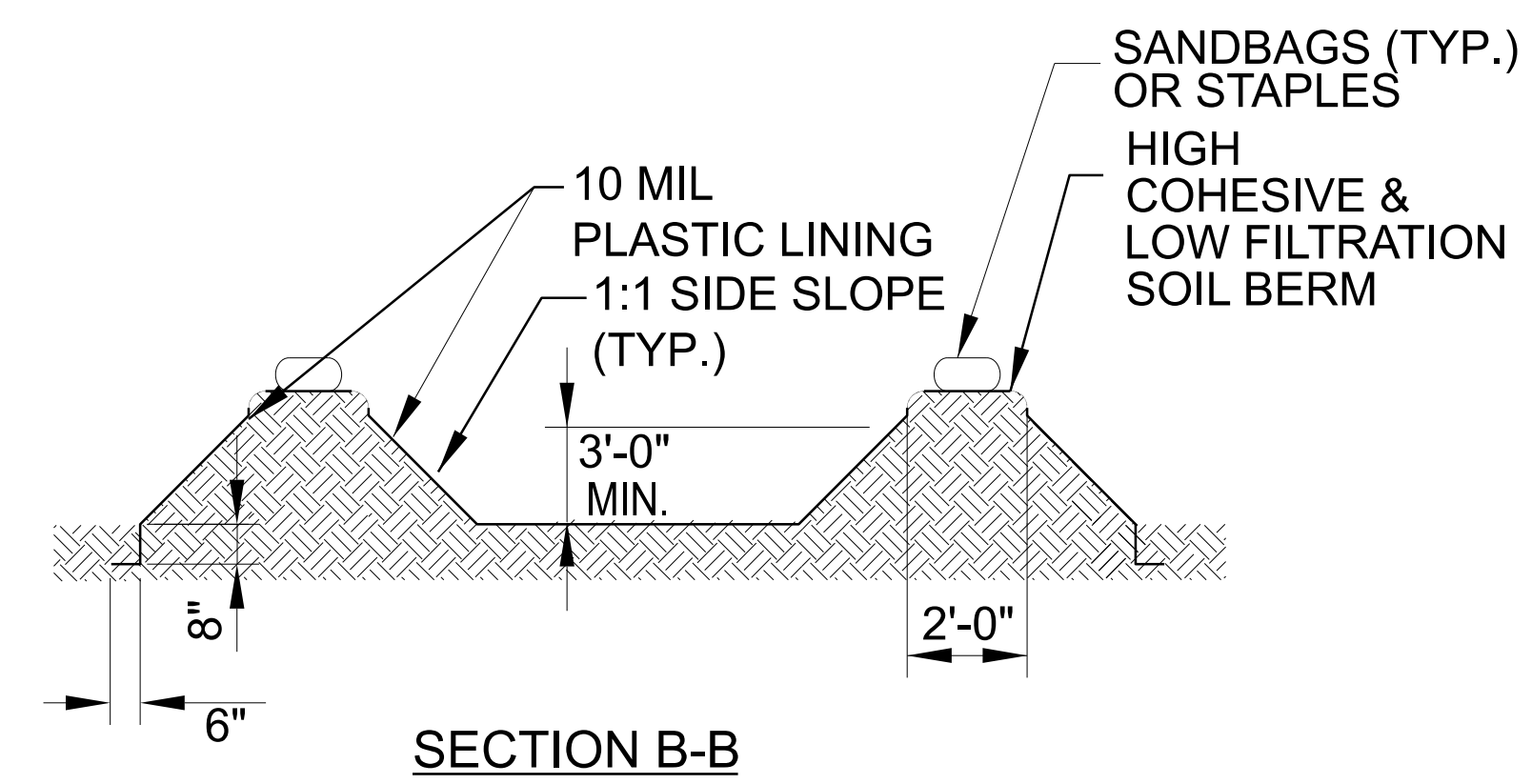
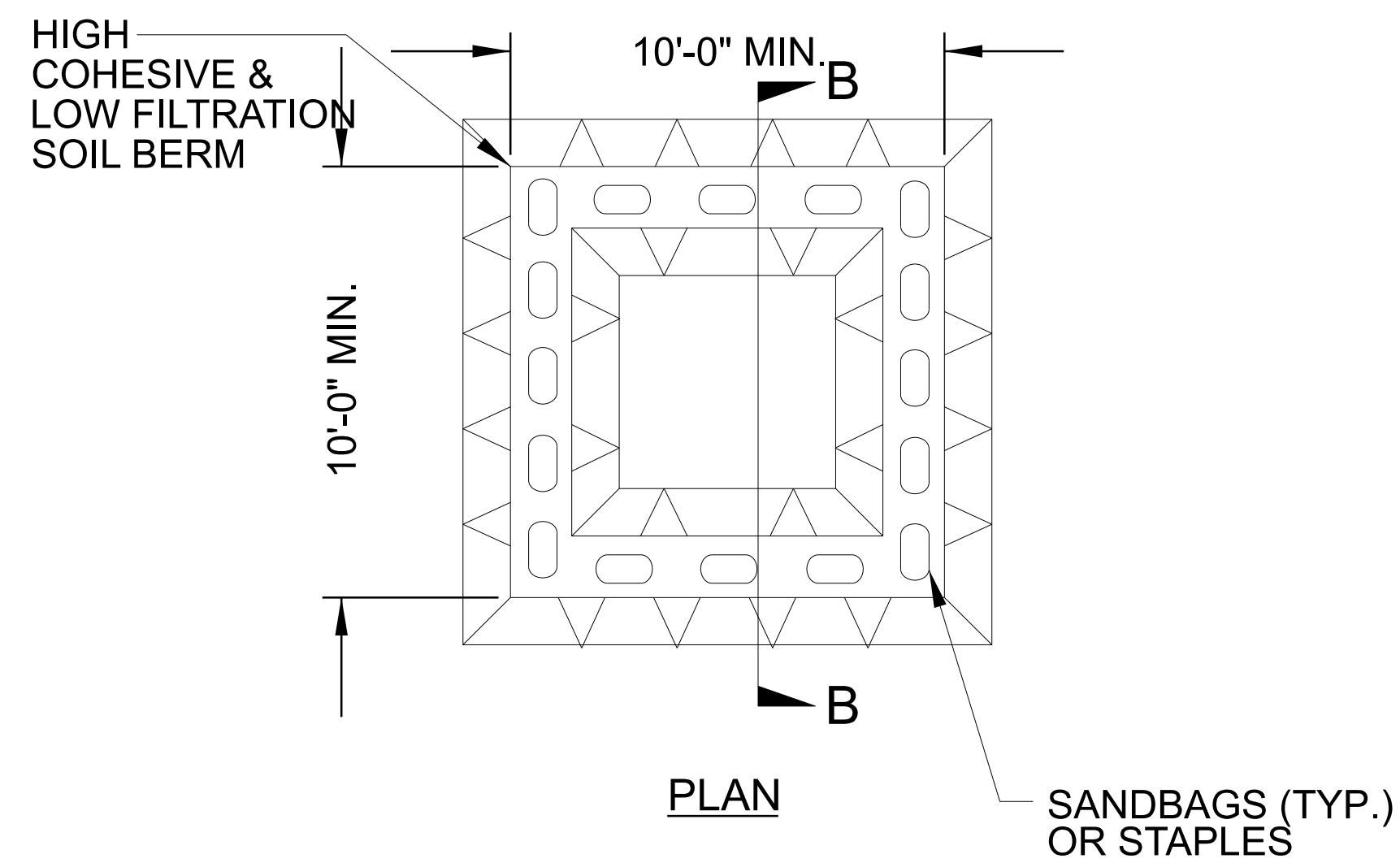
PROJECT REFERENCE NO. <i>BP5.R103</i>	SHEET NO. <i>EC-2A</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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.

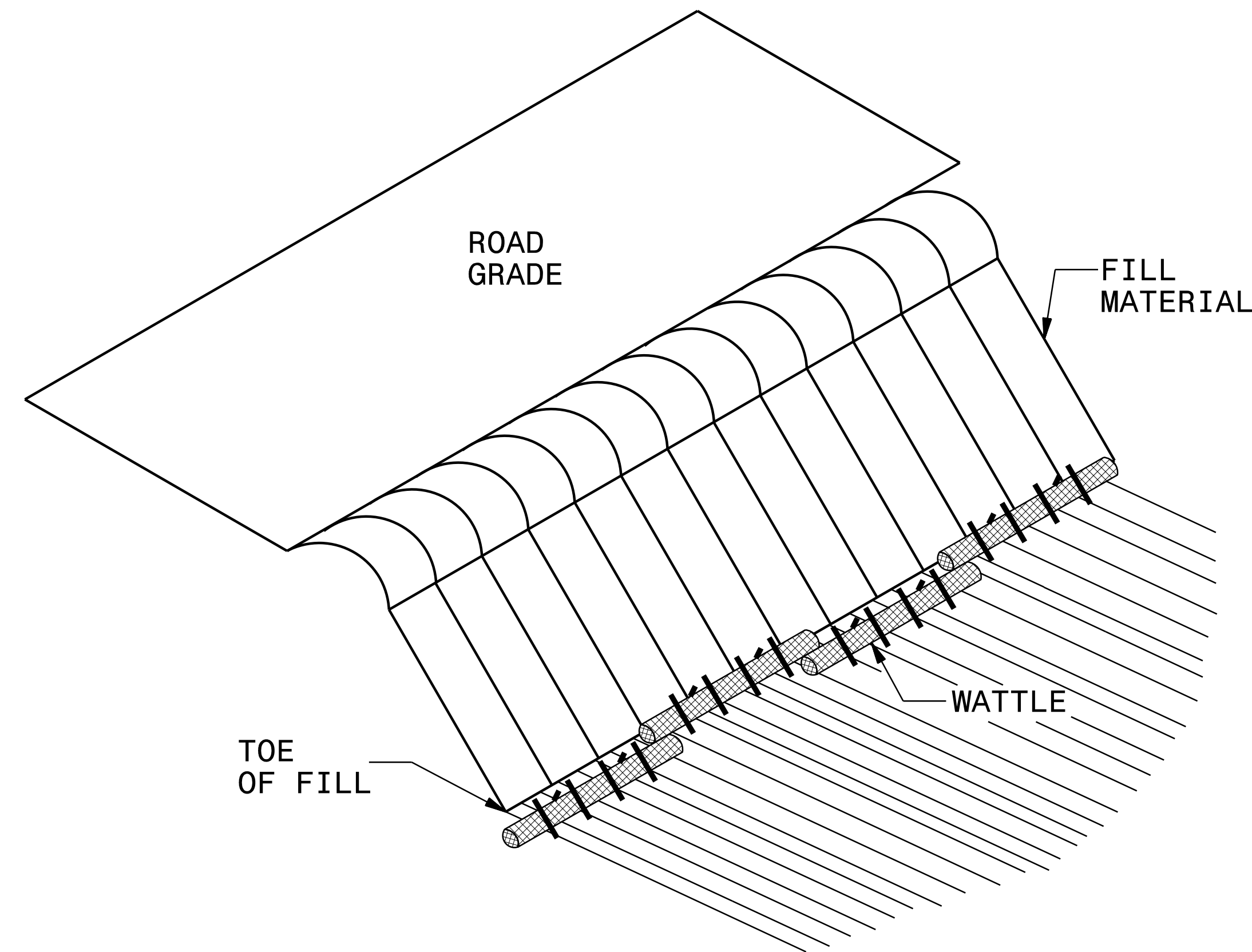


ABOVE GRADE WASHOUT STRUCTURE
NOT TO SCALE

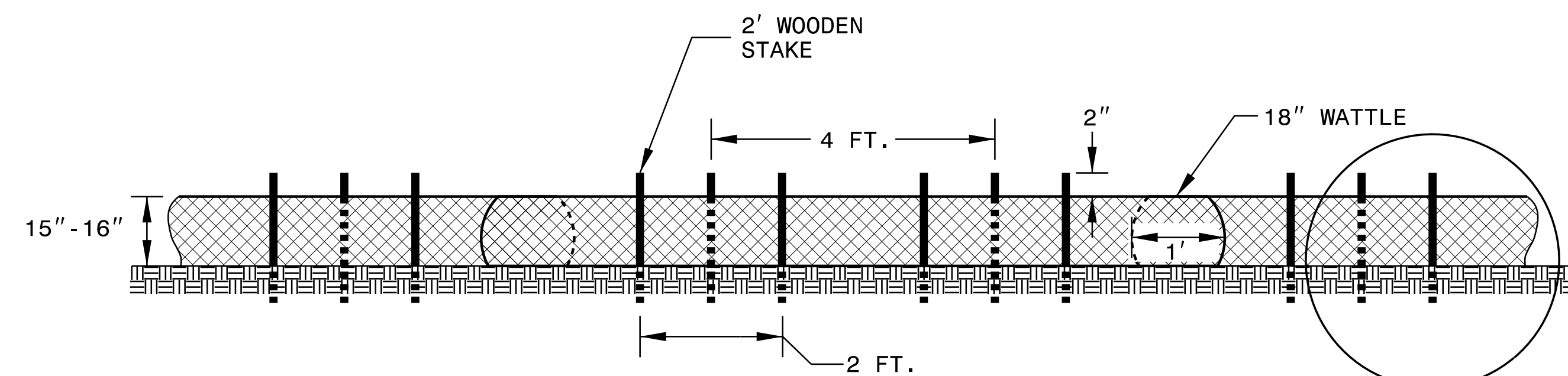
- NOTES:**
1. ACTUAL LOCATION DETERMINED IN FIELD
 2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.
 3. CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY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

PROJECT REFERENCE NO. <i>BP5.R103</i>	SHEET NO. <i>EC-2B</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

COIR FIBER WATTLE BARRIER DETAIL



ISOMETRIC VIEW



FRONT VIEW

NOTES:

USE MINIMUM 18 IN. NOMINAL DIAMETER COIR FIBER (COCONUT) WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 2 TO 3 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLES ON TOE OF SLOPE.

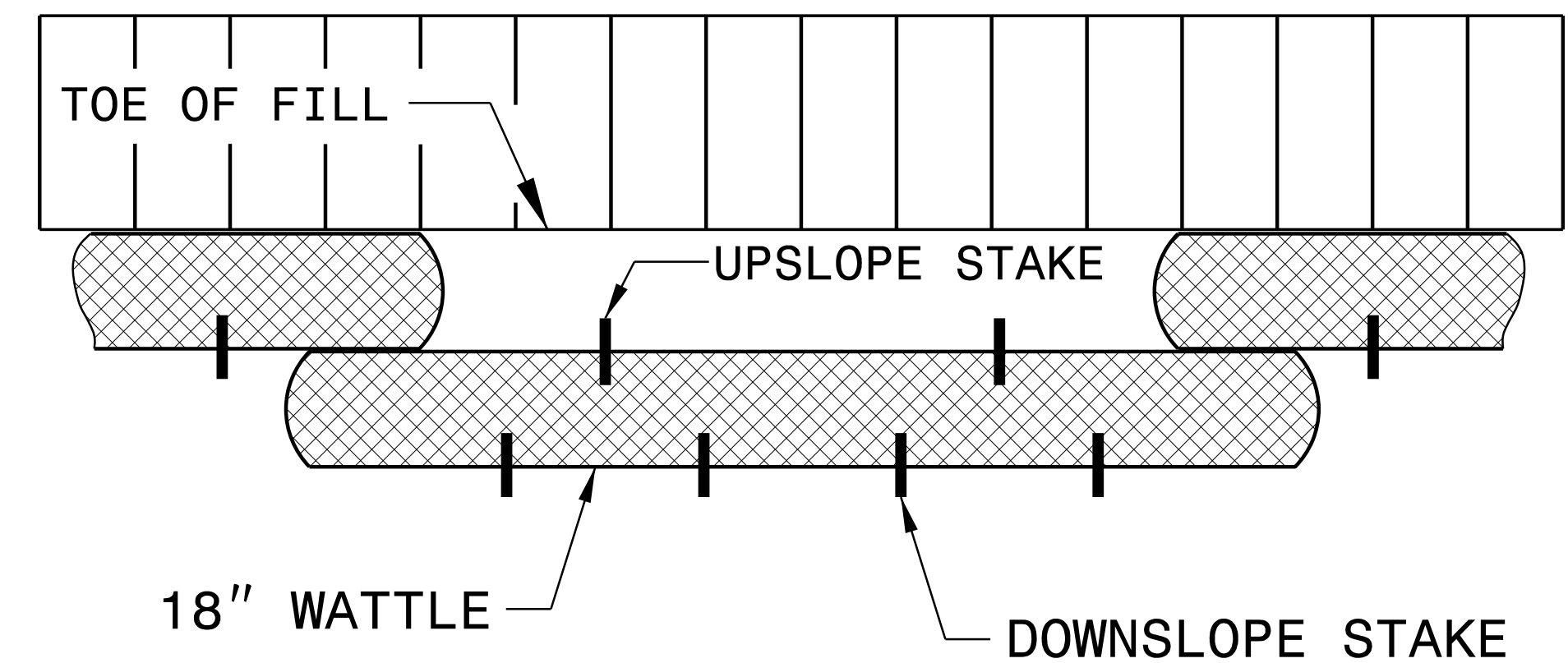
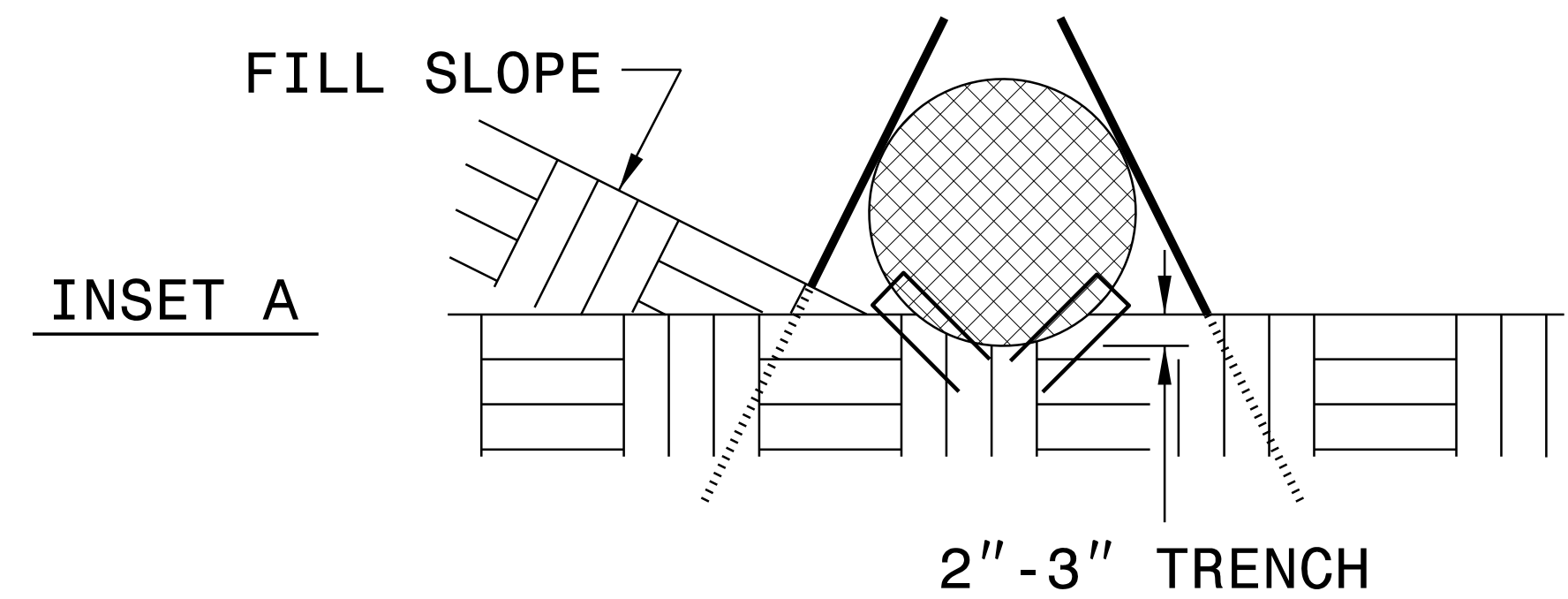
USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

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

PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

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

FOR BREAKS ALONG LARGE SLOPES, USE MAXIMUM SPACING OF 25 FT.



TOP VIEW

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
<i>BP5.R103</i>	<i>EC-03</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION TIMEFRAMES

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

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. <i>BP5,R103</i>	SHEET NO. <i>EC-3A</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

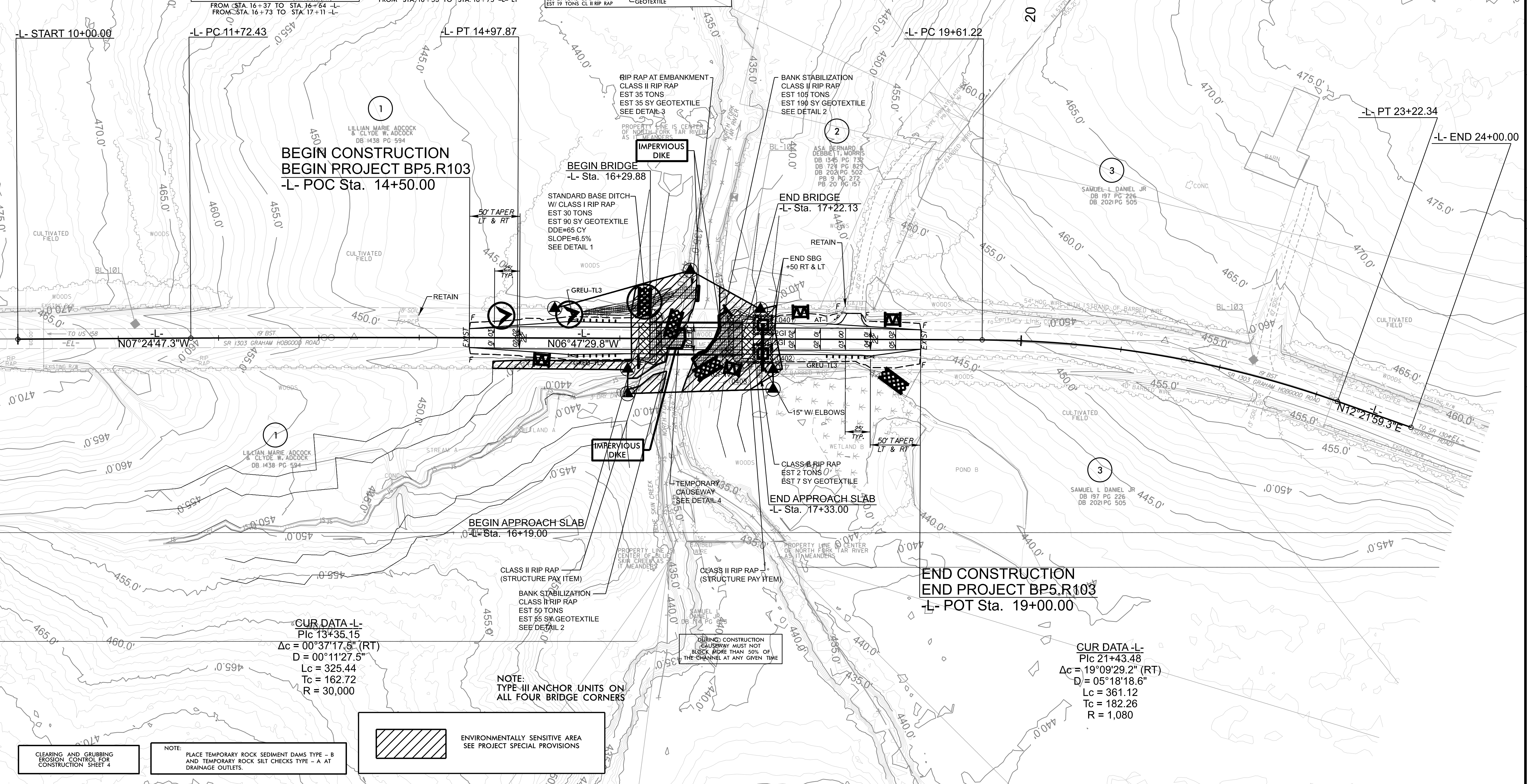
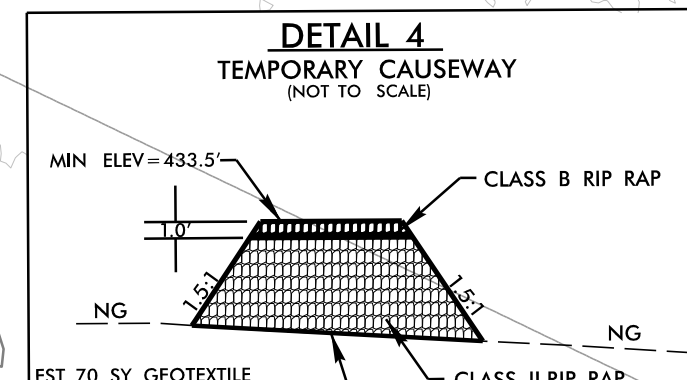
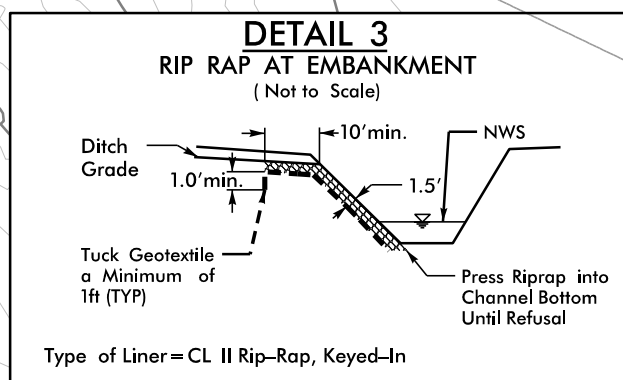
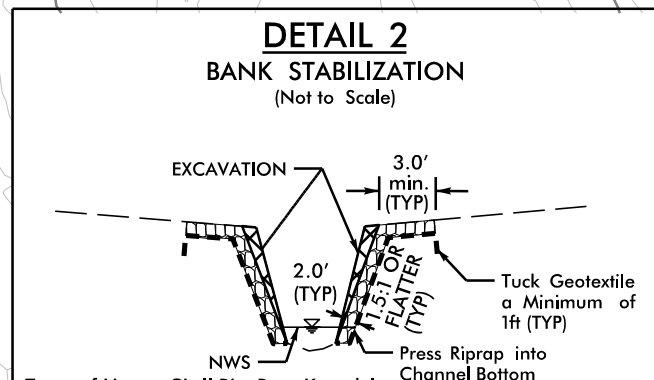
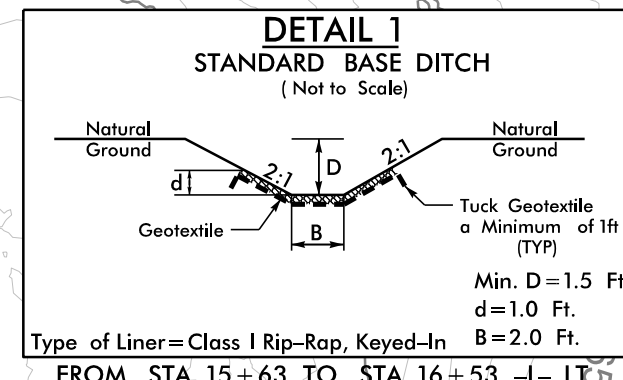
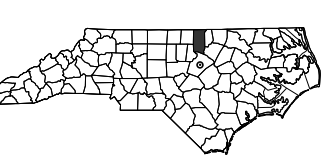
***CONSERVATION MEASURES
FOR AQUATIC SPECIES***

Embankment construction and grading shall be managed in such a manner as to prevent surface runoff/drainage from discharging untreated into the riparian buffer. All interim surfaces will be graded to drain to temporary erosion control devices. Temporary berms, ditches, etc. will be incorporated, as necessary, to treat runoff before discharging into the riparian buffer (as specified in NCDOT BMP manuals).

All sedimentation and erosion control measures will be appropriately maintained following NCDOT standards to ensure proper function of the measures. The NCDOT adheres to the permit conditions of General Permit NCG 010000 to Discharge Stormwater under the National Pollutant Discharge Elimination System for Construction Activities. NCDOT is required to "select, install, implement and maintain best management practices (BMPs) and control measures that minimize pollutants in the discharge to meet the requirements of this permit." Among other conditions, the permit requires: 1) all erosion and sedimentation control measures must be inspected at least once every seven calendar days and 2) within 24 hours after any storm event of greater than 1.0 inch of rain per 24-hour period. It is understood that these requirements and implementation of other appropriate BMPs are monitored through multiple layers of oversight. At a minimum, the following personnel monitor erosion control measures:

- Contractor project manager
- NCDOT Division Environmental Officers and Environmental Specialists
- NCDOT Roadside Environmental Field Operations staff

In the event of any visible sediment loss from any individual project site, a review of turbidity levels will be made upstream and downstream 400 meters (0.25 mile) to determine if sedimentation effects are occurring beyond 400 meters downstream. If visual observation of turbidity levels downstream appears to be elevated beyond upstream observations, the project inspector will contact the Division Environmental Officer and the Division Roadside Environmental Field Operations Engineer. If determined that project-related sedimentation is occurring beyond 400 meters, the United States Fish and Wildlife Service (USFWS) must be contacted immediately to discuss potential remediation.



CUR DATA -L-
P/C 13+35.15
 $\Delta c = 00^{\circ}37'17.5''$ (RT)
 $D = 00^{\circ}11'27.5''$
 $Lc = 325.44$
 $Tc = 162.72$
 $R = 30,000$

CUR DATA -L-
P/C 21+43.48
 $\Delta c = 19^{\circ}09'29.2''$ (RT)
 $D = 05^{\circ}18'18.6''$
 $Lc = 361.12$
 $Tc = 182.26$
 $R = 1,080$

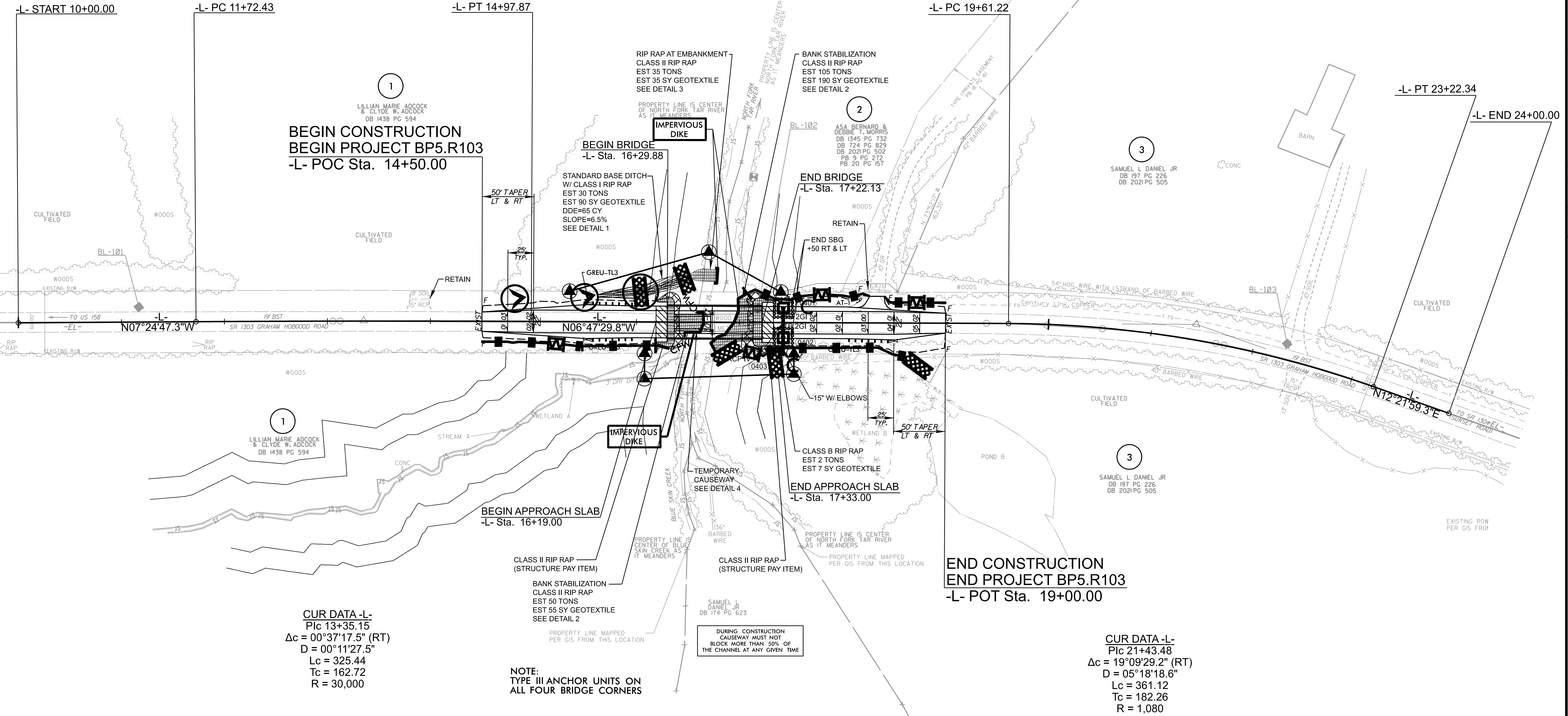
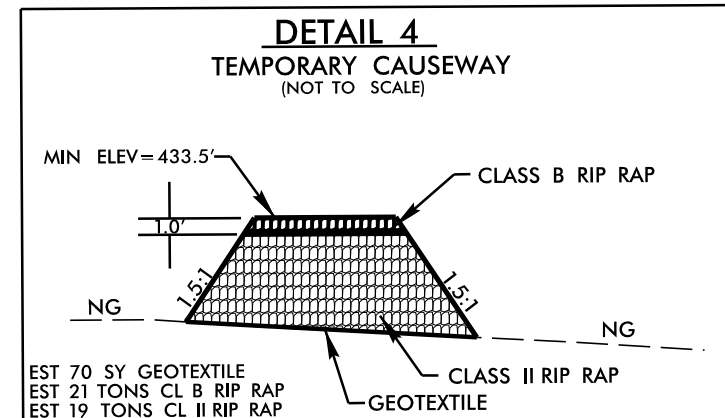
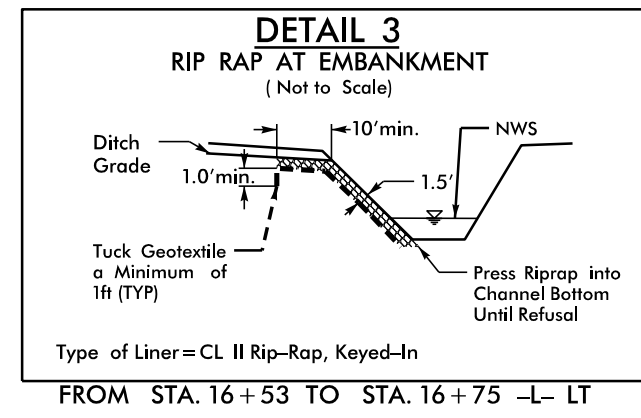
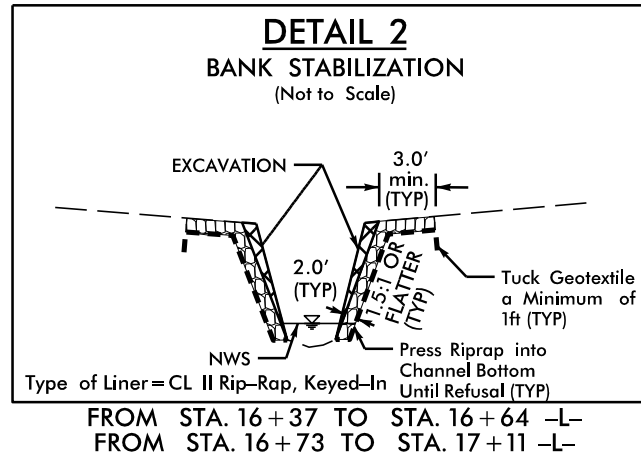
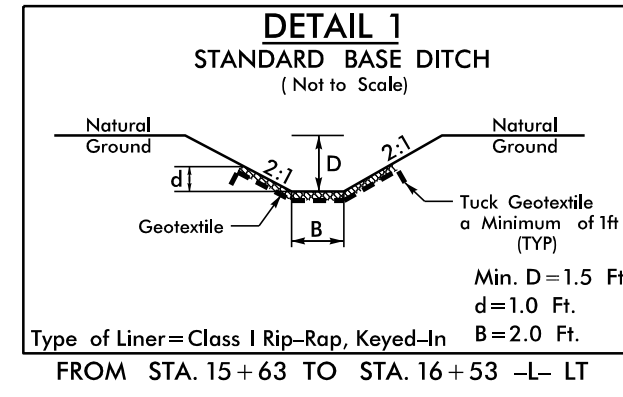
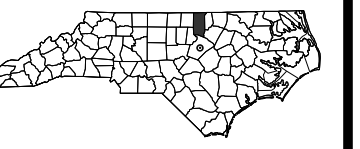
NOTE:
TYPE-III ANCHOR UNITS ON
ALL FOUR BRIDGE CORNERS

 ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

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.

FOR -L- PROFILE, SEE SHEET 5



**BEGIN CONSTRUCTION
BEGIN PROJECT BP5.R103
-L- POC Sta. 14+50.00**

**END CONSTRUCTION
END PROJECT BP5.R103
-L- POT Sta. 19+00.00**

**CUR DATA -L-
Pc 13+35.15
Δc = 00°37'17.5" (RT)
D = 00°11'27.5"
Lc = 325.44
Tc = 162.72
R = 30,000**

**CUR DATA -L-
Pc 21+43.48
Δc = 19°09'29.2" (RT)
D = 05°18'18.6"
Lc = 361.12
Tc = 182.26
R = 1,080**

**NOTE:
TYPE III ANCHOR UNITS ON
ALL FOUR BRIDGE CORNERS**

**DURING CONSTRUCTION
CAUSEWAY MUST NOT
BLOCK MORE THAN 50% OF
THE CHANNEL AT ANY GIVEN TIME**

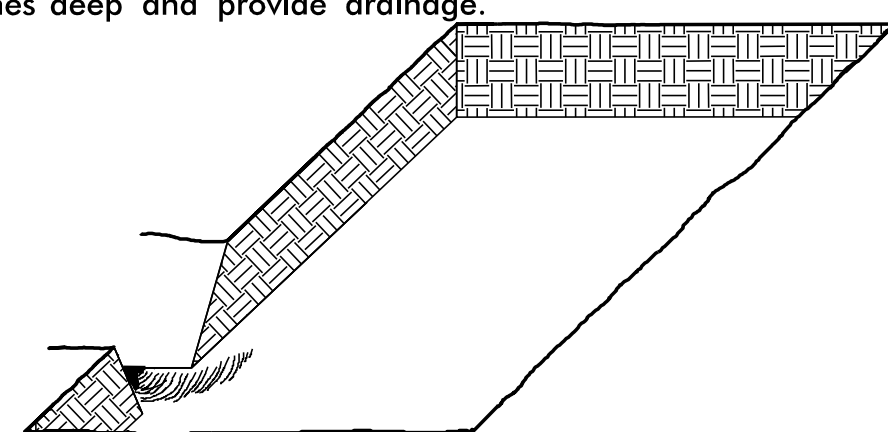
REVISIONS

PLANTING DETAILS

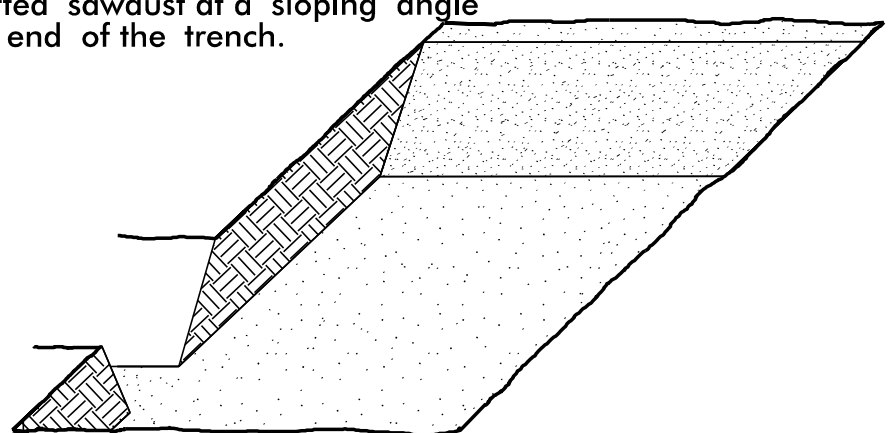
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

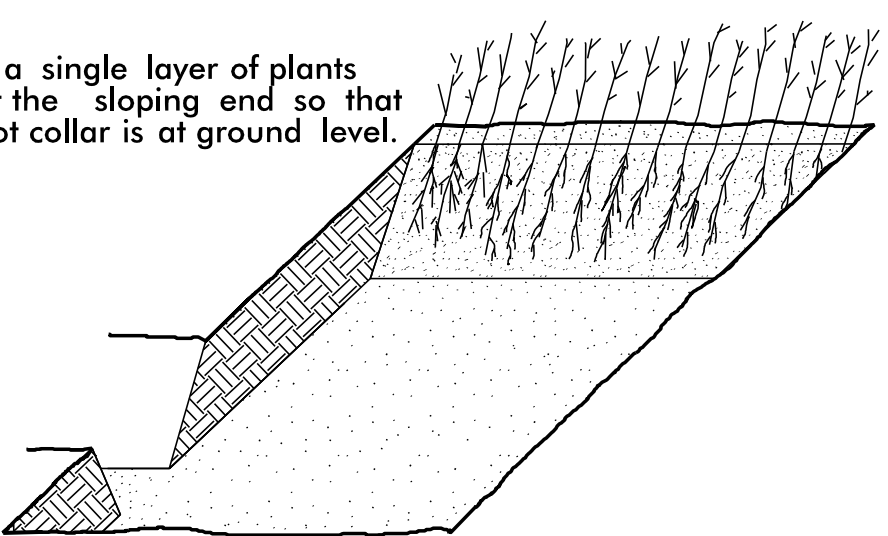
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



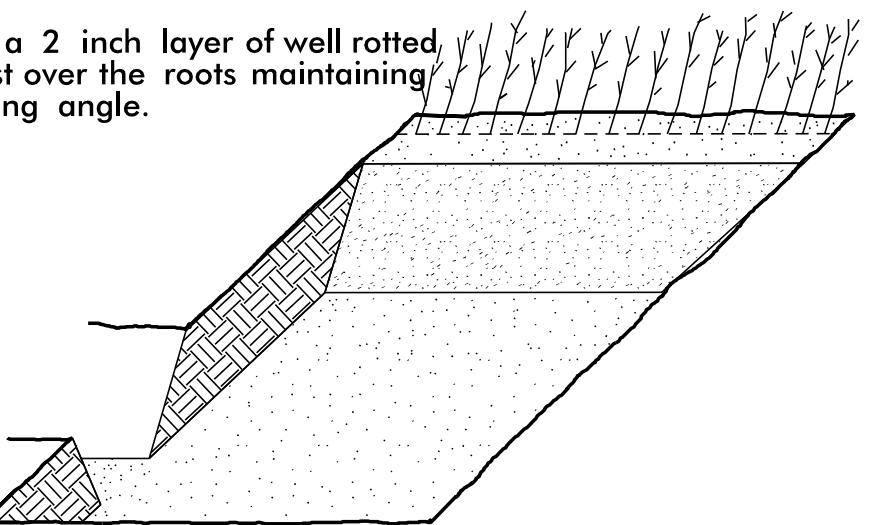
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

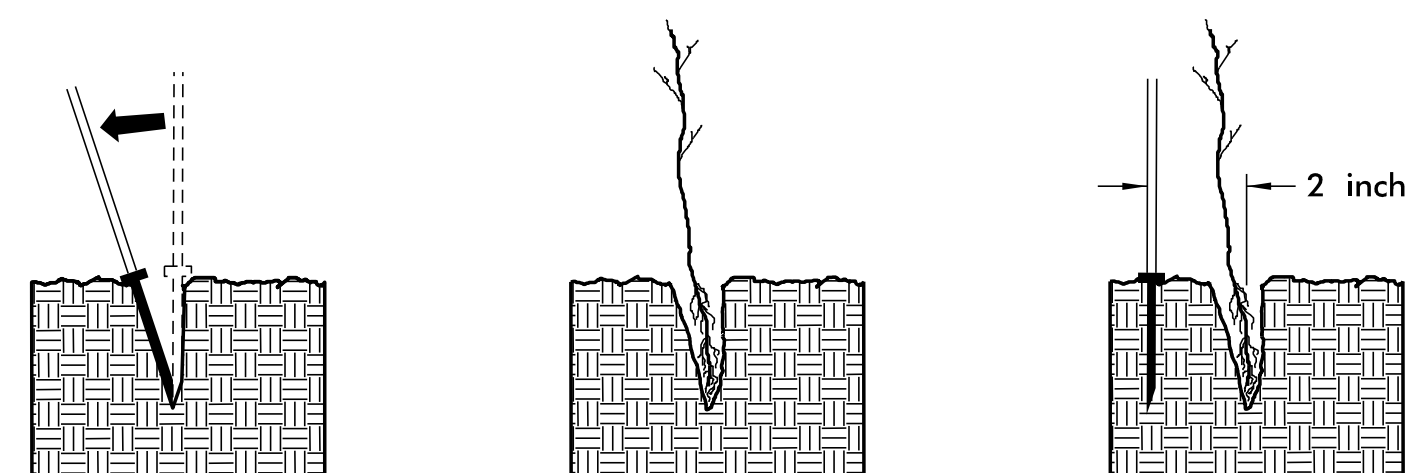


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.



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

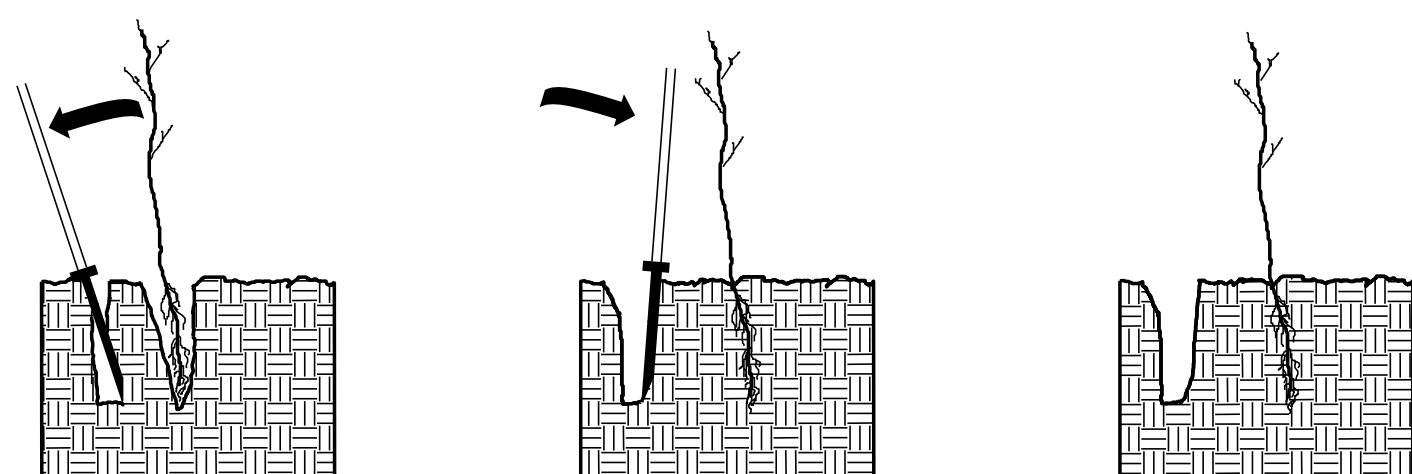
DIBBLE PLANTING METHOD USING THE KBC PLANTING BAR



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.

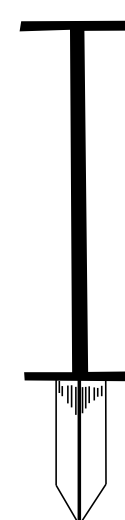
6. Leave compaction hole open. Water thoroughly.

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

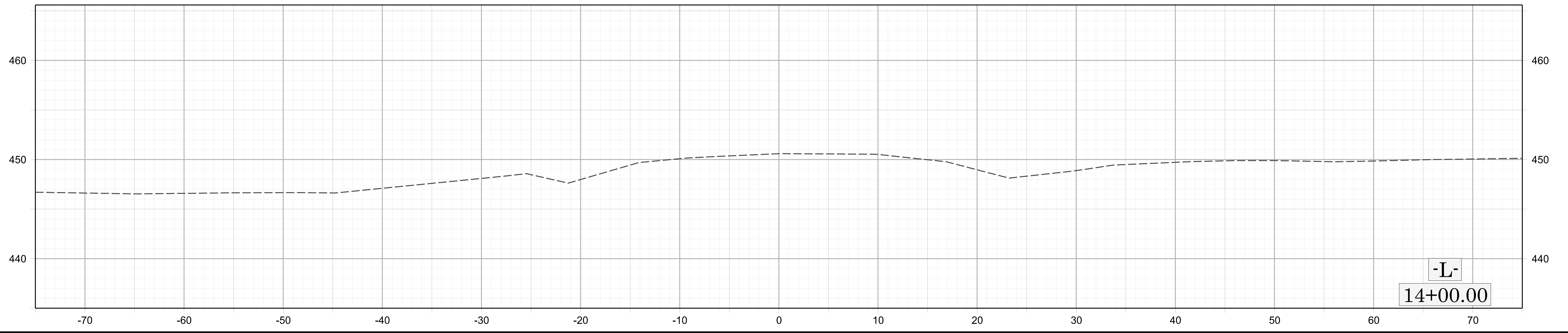
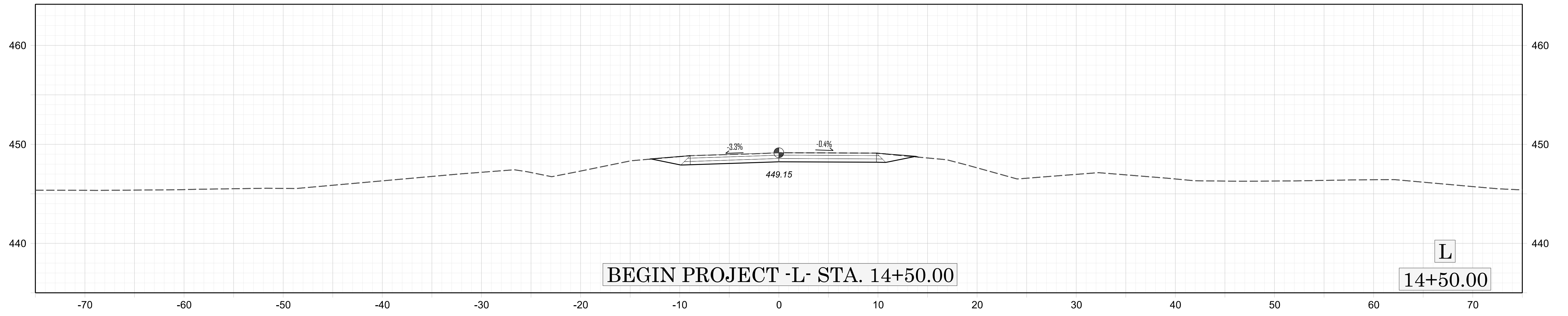
STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

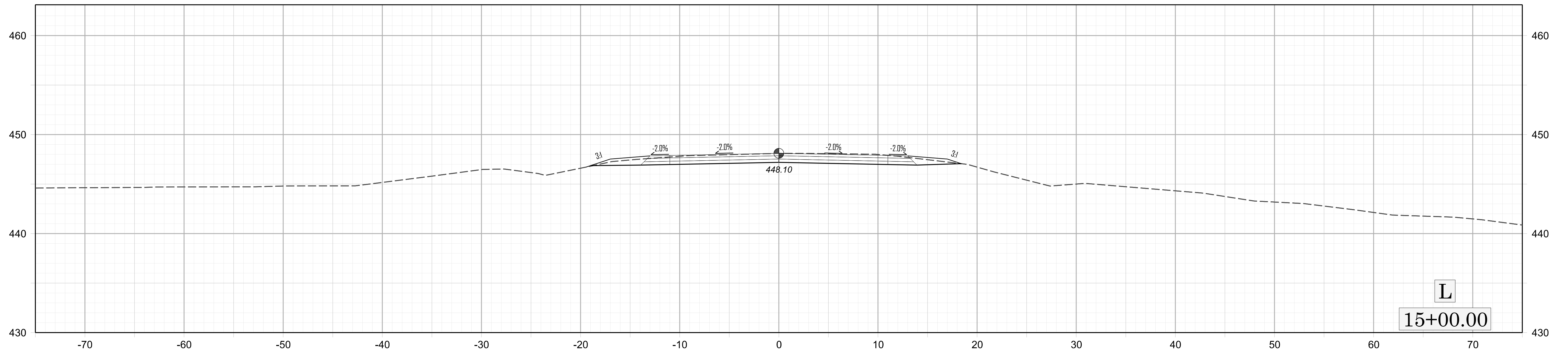
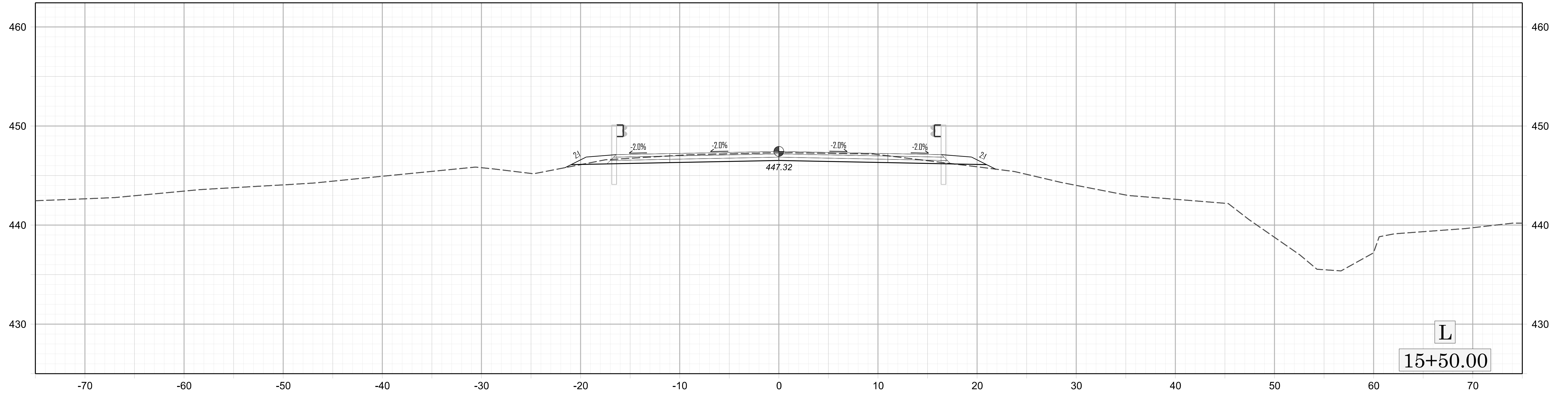
CROSS-SECTION SUMMARY

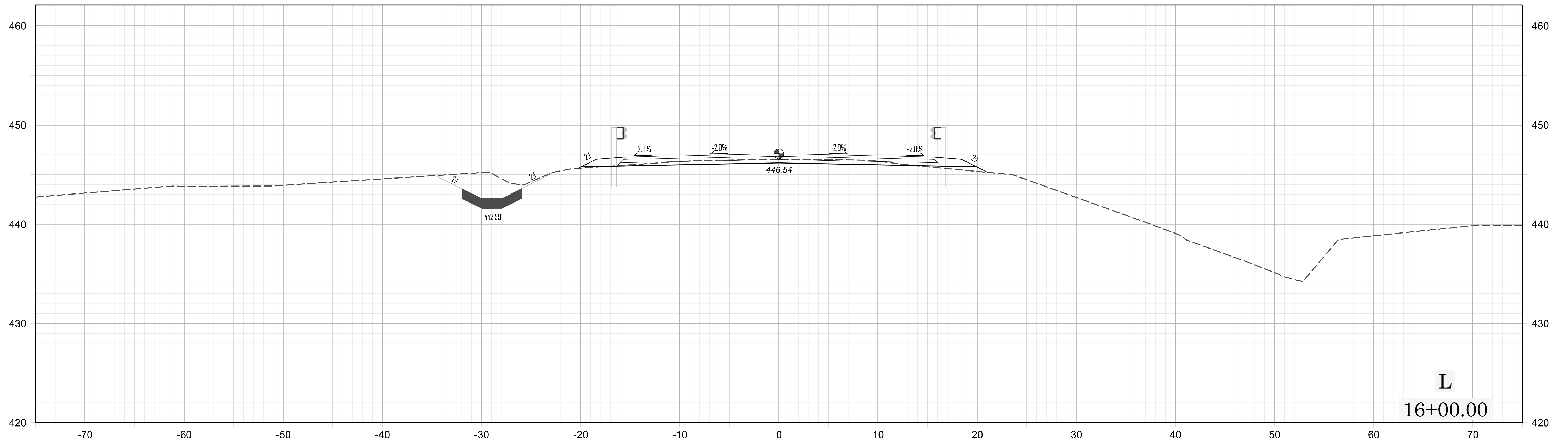
NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

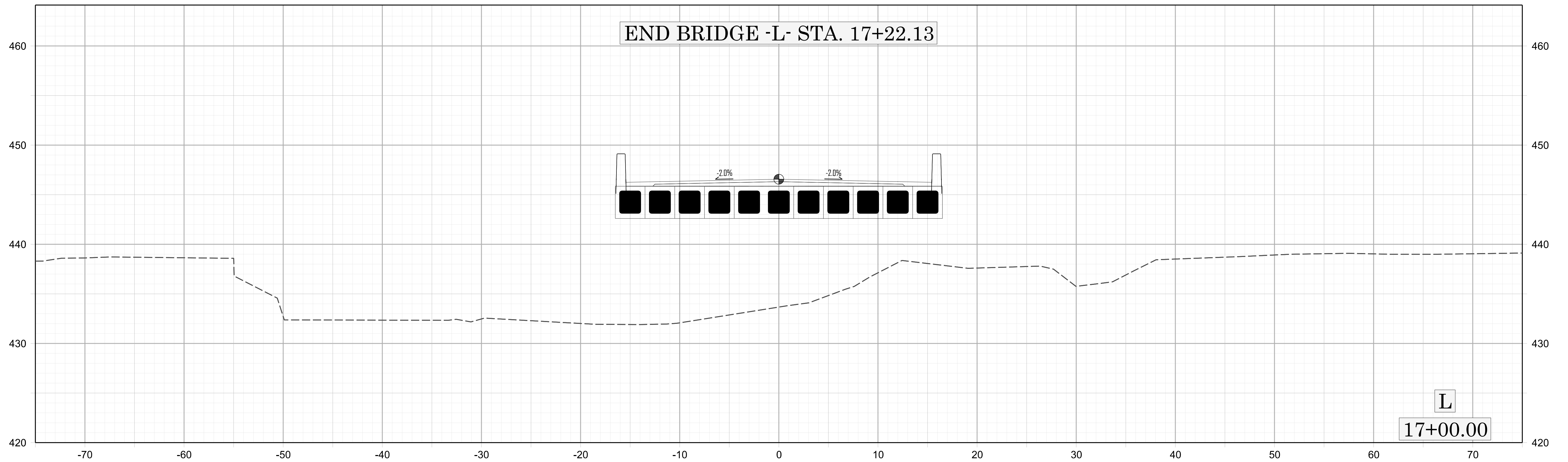
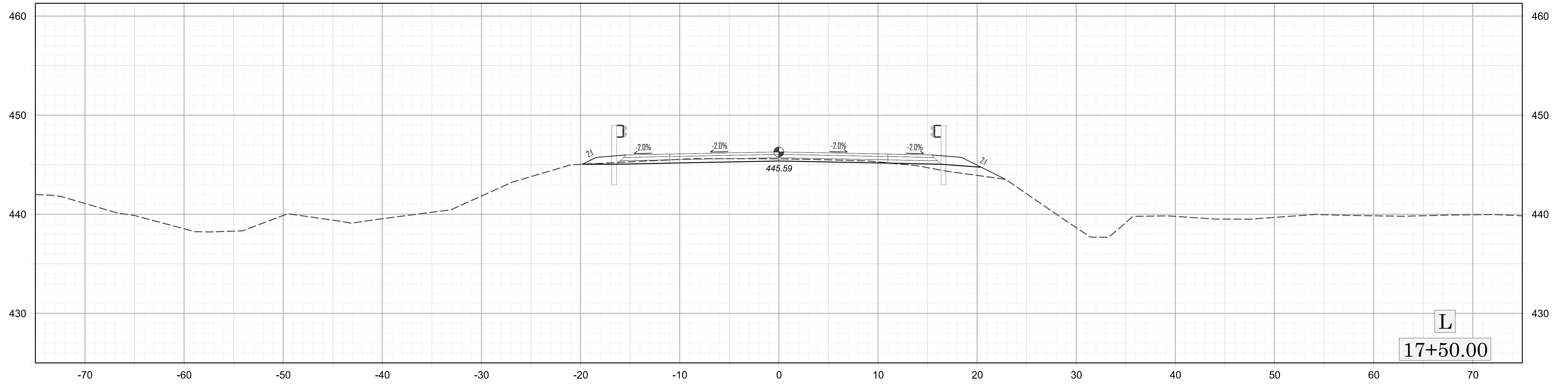
Station	Uncl. Exc.	Embt												
L	(cu. yd.)	(cu. yd.)												
14+50.00	0	0												
15+00.00	26	0												
15+50.00	48	1												
16+00.00	31	3												
16+19.00	5	1												
16+29.88	1	0												
	111	5												
Station	Uncl. Exc.	Embt												
L	(cu. yd.)	(cu. yd.)												
17+22.13	0	0												
17+33.00	2	1												
17+50.00	5	4												
18+00.00	15	16												
18+50.00	29	15												
19+00.00	20	3												
	71	39												

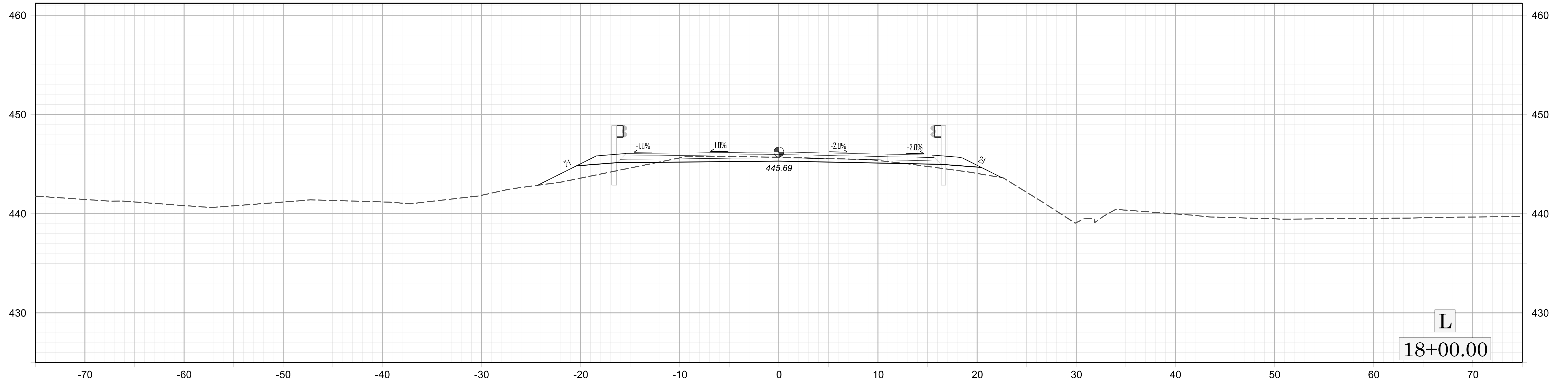
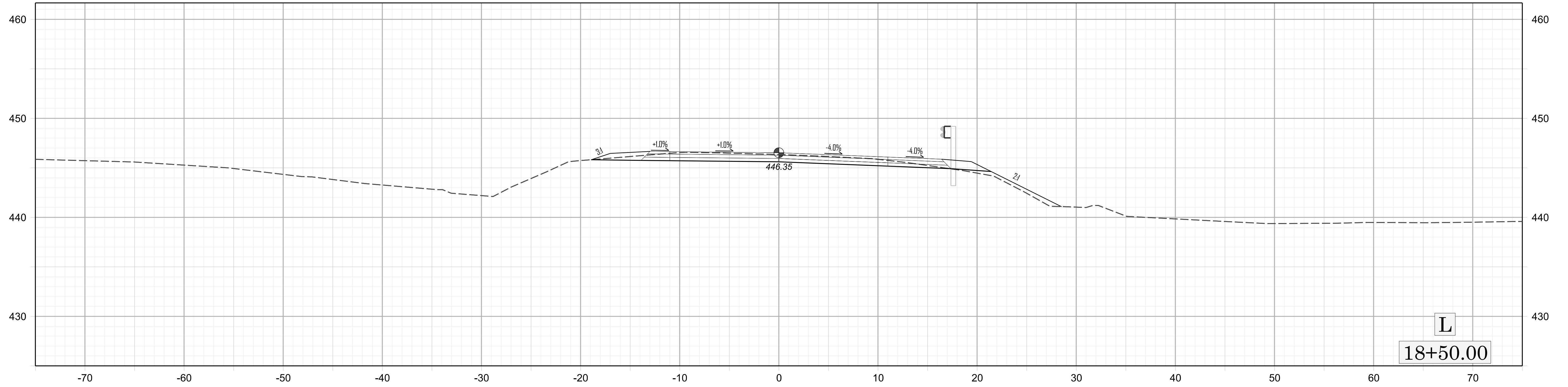
Note: Approximate quantities only. Unclassified Excavation, Borrow, Fine Grading, Clearing and Grubbing, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."

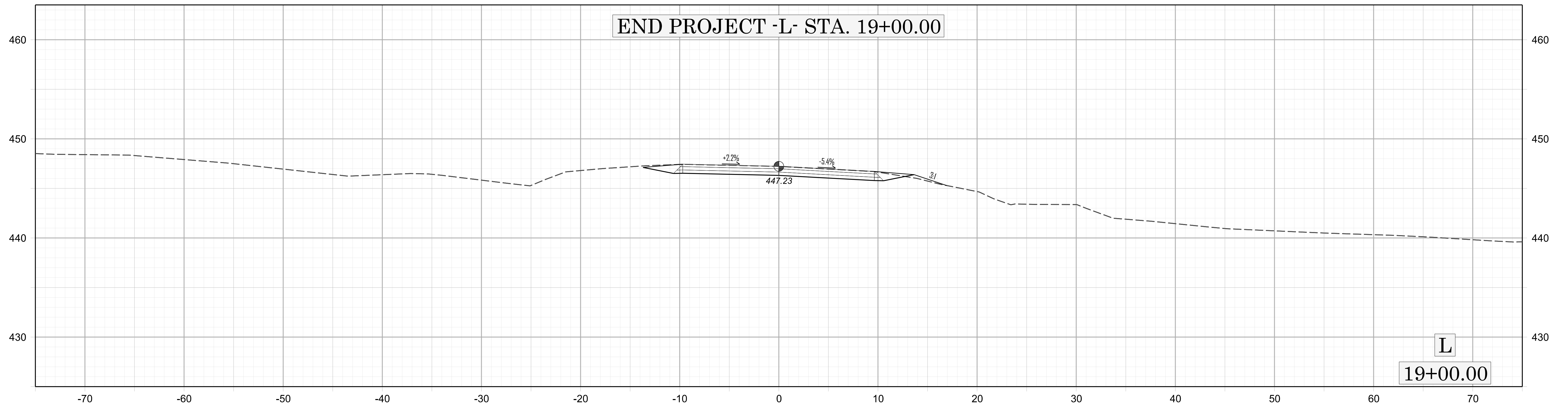
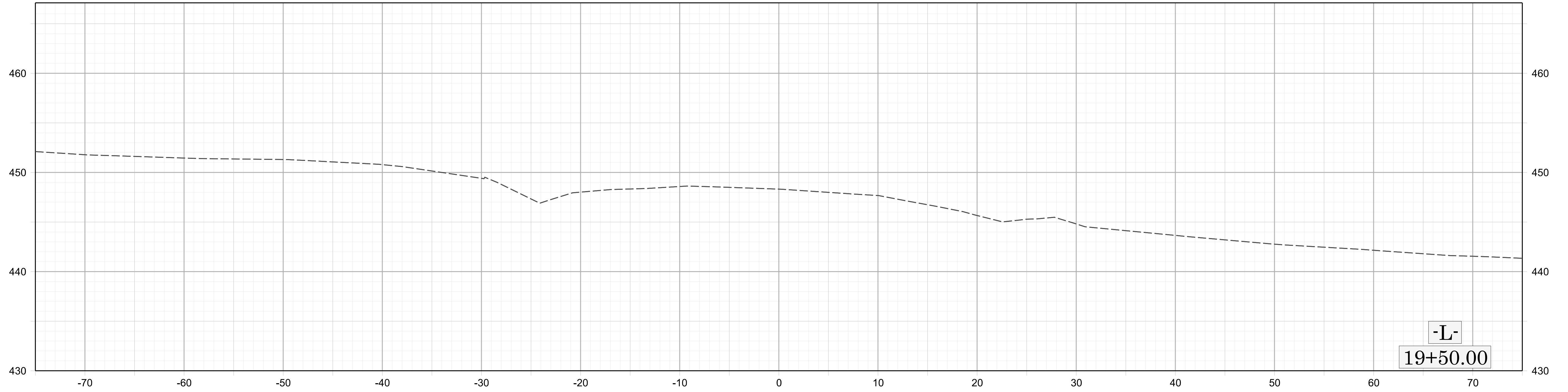




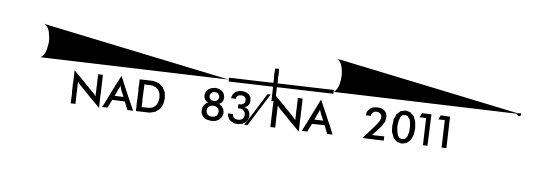
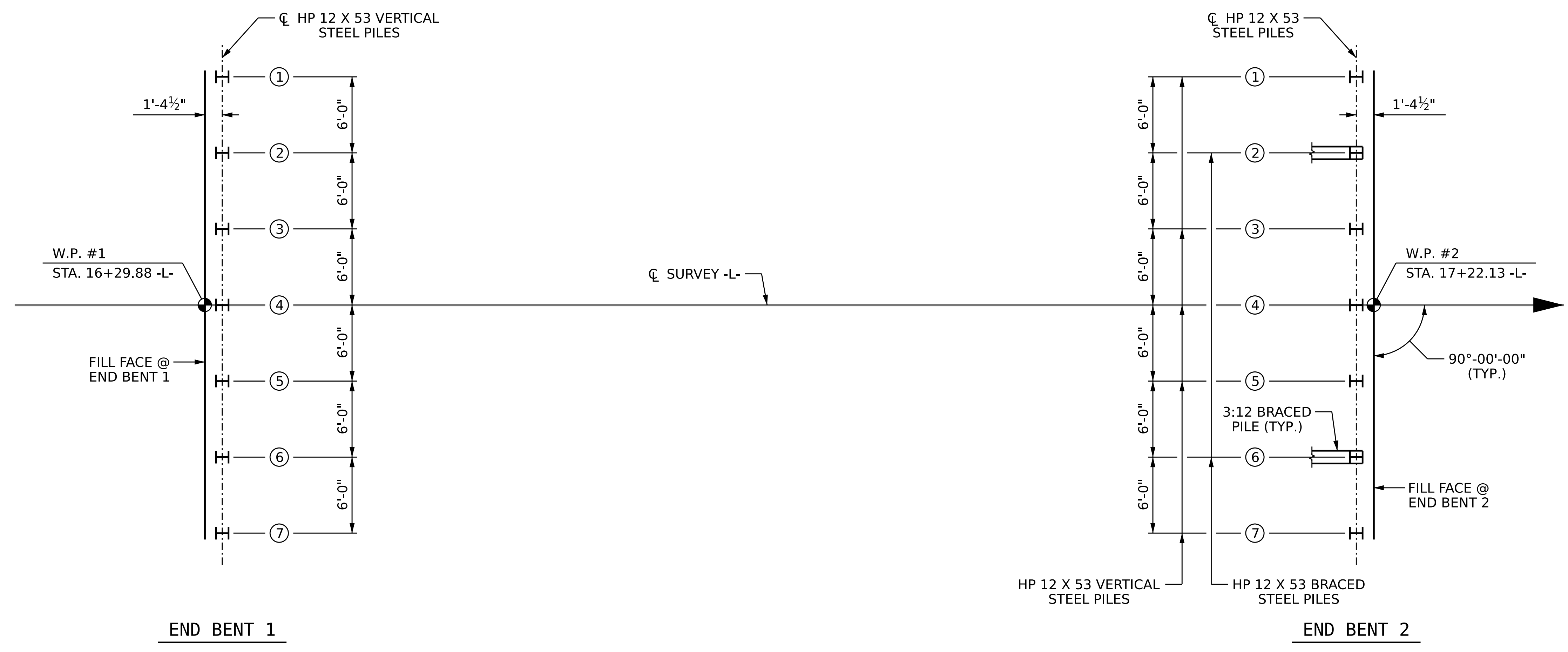








6/2/2026 6:41:29 AM P:\Raleigh\Projects\2022\Div 5 (WCI)\BP5R103_Granville 107_Graham Hobgood\Structures\Drawings\Final\BP5R103_SMJ_FL.dgn



FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES AT BOTTOM OF END BENT CAPS

Ⓝ INDICATES PILE NUMBER

FOUNDATION NOTES:

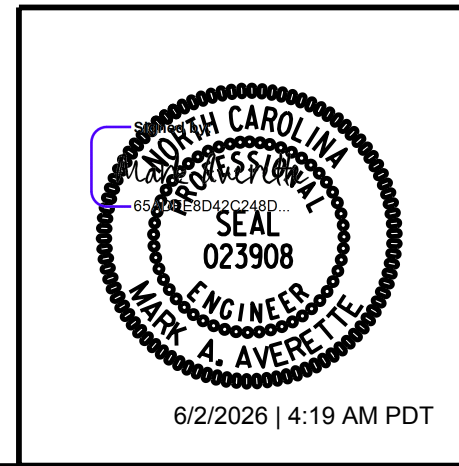
- FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- FILL HOLES FOR PILE EXCAVATION AT END BENT 1 WITH CONCRETE OR GROUT.
- THE STANDARD HAMMER, A DELMAG D19-32, IS SUFFICIENT TO DRIVE PILES TO THE REQUIRED DRIVING RESISTANCE AT END BENT 2.
- FOR END BENT 2 USE HAMMER WITH LOWER FUEL SETTINGS.

PROJECT NO. BP5.R103
GRANVILLE COUNTY
 STATION: 16+76.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON SR 1303
 (GRAHAM HOBGOOD ROAD)
 OVER NORTH FORK TAR RIVER
 BETWEEN SR 1301 AND SR 1302



DRAWN BY :	T. BANKOVICH	DATE :	6-24
CHECKED BY :	J.A. BATTS	DATE :	6-24
DESIGN ENGINEER OF RECORD:	M.A. AVERETTE	DATE :	6-24

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

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Number of Piles per Line	Factored Resistance per Pile KIPS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles **			Drilled-In Piles		
						Minimum Pile Tip (Tip No Higher Than) Elevation FT	Required Driving Resistance (RDR)* per pile KIPS	Pile Redrives Quantity EACH	Predrilling Length per Pile LIN FT	Predrilling Elevation (Elevation Not To Predrill Below) FT	Maximum Predrilling Diameter INCHES	Pile Excavation (Bottom of Hole) Elevation FT	Pile Excavation Not In Soil per Pile LIN FT	Pile Excavation In Soil per Pile LIN FT
END BENT NO. 1, PILES 1-7	7	250	441.50	15								429.50	7	3
END BENT NO.2, PILES 1-7	7	250	441.00	15		428.60	420							
TOTAL QUANTITY:													49	21

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

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

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile KIPS	Factored Drag Load per Pile KIPS	Factored Dead Load * per Pile KIPS	Dynamic Resistance Factor	Nominal Drag Resistance per Pile KIPS	Nominal Scour Resistance per Pile KIPS
END BENT NO. 1, PILES 1-7	250					
END BENT NO. 2, PILES 1-7	250			0.60		

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

SUMMARY OF PILE ACCESSORIES

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Pipe Pile Plates EACH	Steel Pile Points		
		Pipe Pile Cutting Shoes EACH	Pipe Pile Conical Points EACH	H-Pile Points EACH
END BENT NO. 1, PILES 1-7				
END BENT NO. 2, PILES 1-7				7
TOTAL QUANTITY:				7

SUMMARY OF DPT/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Dynamic Pile Testing (DPT)		
End Bent / Bent No (e.g., "Bent 1 - Bent 3")	DPT Test Pile Length FT	DPT Testing Quantity EACH
END BENT NO. 1, PILES 1-7		
END BENT NO.2, PILES 1-7	15	1
TOTAL QUANTITY:		1

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

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

PROJECT NO. BPR.R103

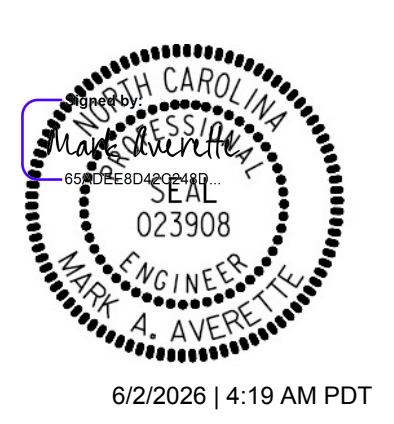
GRANVILLE COUNTY

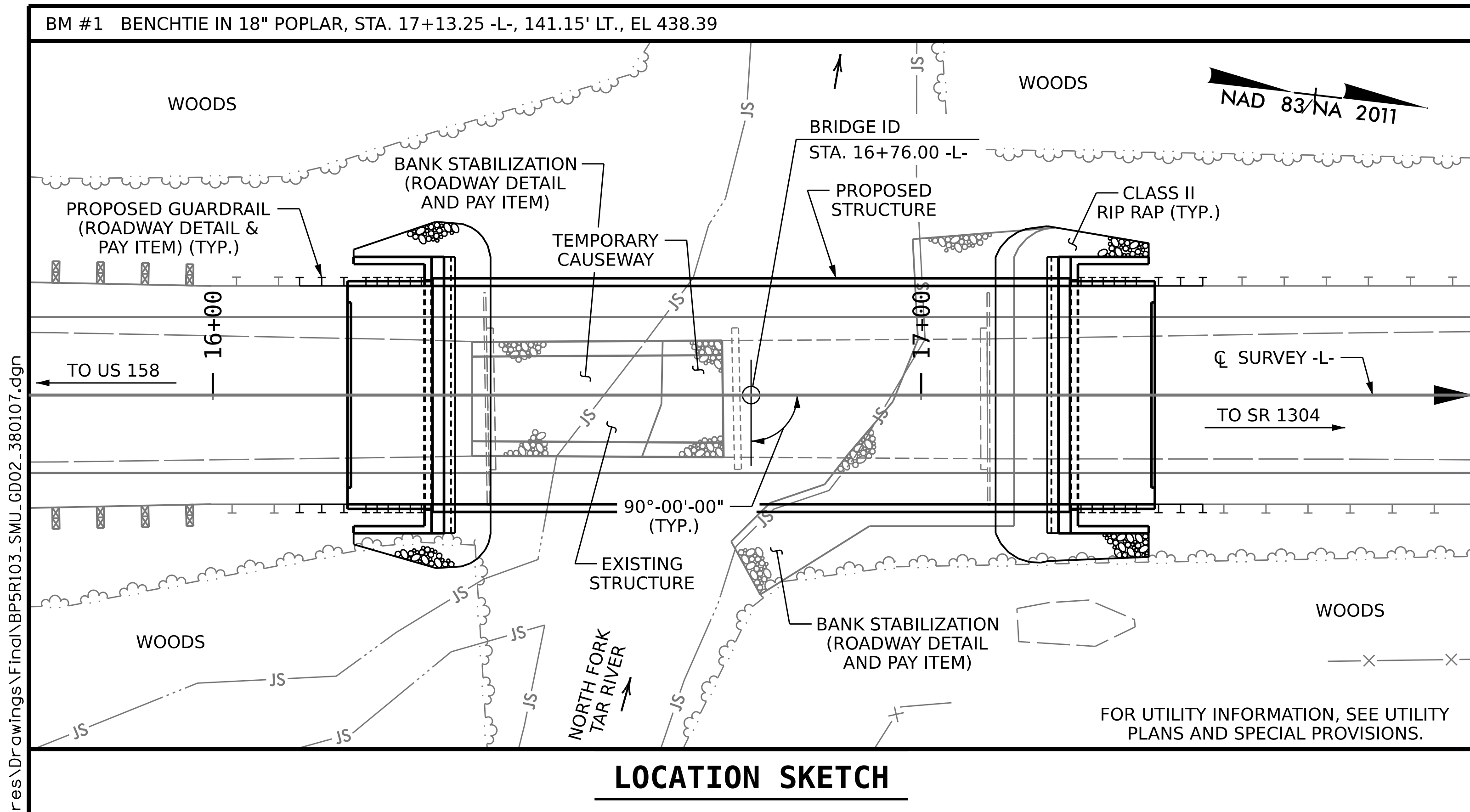
STATION: 16+76.00 -L-

SHEET 3 OF 4

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., #038206) on 010-24-2024.
- 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 may adjust the quantity for DPT Testing and Pipe Pile Plates when necessary.

	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH <h2 style="margin: 0;">PILE FOUNDATION TABLES</h2>						SHEET NO. S-3 TOTAL SHEETS 18
	REVISIONS						
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.
- THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 30 FT EACH SIDE 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.
- 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 EXISTING STRUCTURE CONSISTS OF 2 SPANS @ 35'-3" EACH. THE SUPERSTRUCTURE HAS A CLEAR ROADWAY WIDTH OF 19'-1" WITH TIMBER DECK ON STEEL I-BEAMS. THE END BENTS CONSIST OF TIMBER CAPS, POSTS AND SILLS. THE EXISTING BRIDGE SHALL BE REMOVED IN ITS ENTIRETY.
- 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.

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 16+76.00 -L-."

FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS BANK STABILIZATION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 16+76.00 -L-.

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP. ACCESS AT STA. 16+76.00 -L-	REMOVAL OF EXISTING STRUCTURE	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
	LS	LS	LS	LF	LF	LS	CY	LS	LB	EA
SUPERSTRUCTURE										
END BENT 1				21.0	49.0		25.5		3,576	7
END BENT 2							25.5		3,576	7
TOTAL	LS	LS	LS	21.0	49.0	LS	51.0	LS	7,152	14

TOTAL BILL OF MATERIAL

	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'-9" PRESTRESSED CONCRETE BOX BEAMS	
	NO.	LF	EA	EA	TON	SY	LS	NO.	LF
SUPERSTRUCTURE					180.0			11	990.00
END BENT 1	7	105			90	95			
END BENT 2	7	105	7	1	80	85			
TOTAL	14	210	7	1	180.0	180	LS	11	990.00

PROJECT NO. BP5.R103
GRANVILLE COUNTY
 STATION: 16+76.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON SR 1302
 (GRAHAM HOBGOOD ROAD)
 OVER NORTH FORK TAR RIVER
 BETWEEN SR 1301 AND SR 1302



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

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DRAWN BY : T. BANKOVICH DATE : 6-24
 CHECKED BY : J.A. BATTS DATE : 6-24
 DESIGN ENGINEER OF RECORD: M.A. AVERETTE DATE : 6-24

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LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																							
LOAD TYPE	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER		
						MOMENT					SHEAR					MOMENT							
						LIVE-LOAD FACTORS (γLL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γLL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)
DESIGN LOAD	HL-93 (INVENTORY)	N/A	①	1.109	--	1.75	0.272	1.47	90'	EL	44.250	0.493	1.26	90'	EL	4.425	0.80	0.272	1.11	90'	EL	44.250	
	HL-93 (OPERATING)	N/A		1.633	--	1.35	0.272	1.90	90'	EL	44.250	0.493	1.63	90'	EL	4.425	N/A	--	--	--	--	--	
	HS-20 (INVENTORY)	36.000	②	1.507	54.255	1.75	0.272	1.99	90'	EL	44.250	0.493	1.65	90'	EL	4.425	0.80	0.272	1.51	90'	EL	44.250	
	HS-20 (OPERATING)	36.000		2.140	77.039	1.35	0.272	2.59	90'	EL	44.250	0.493	2.14	90'	EL	4.425	N/A	--	--	--	--	--	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		3.519	47.501	1.4	0.272	5.82	90'	EL	44.250	0.493	5.05	90'	EL	4.425	0.80	0.272	3.52	90'	EL	44.250
		SNGARBS2	20.000		2.572	51.43	1.4	0.272	4.25	90'	EL	44.250	0.493	3.55	90'	EL	4.425	0.80	0.272	2.57	90'	EL	44.250
		SNAGRIS2	22.000		2.415	53.122	1.4	0.272	4.00	90'	EL	44.250	0.493	3.27	90'	EL	4.425	0.80	0.272	2.41	90'	EL	44.250
		SNCOTTS3	27.250		1.749	47.674	1.4	0.272	2.89	90'	EL	44.250	0.493	2.52	90'	EL	4.425	0.80	0.272	1.75	90'	EL	44.250
		SNAGGRS4	34.925		1.443	50.381	1.4	0.272	2.39	90'	EL	44.250	0.493	2.06	90'	EL	4.425	0.80	0.272	1.44	90'	EL	44.250
		SNS5A	35.550		1.412	50.195	1.4	0.272	2.34	90'	EL	44.250	0.493	2.07	90'	EL	4.425	0.80	0.272	1.41	90'	EL	44.250
		SNS6A	39.950		1.287	51.435	1.4	0.272	2.13	90'	EL	44.250	0.493	1.88	90'	EL	4.425	0.80	0.272	1.29	90'	EL	44.250
	SNS7B	42.000		1.226	51.483	1.4	0.272	2.03	90'	EL	44.250	0.493	1.83	90'	EL	4.425	0.80	0.272	1.23	90'	EL	44.250	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.568	51.733	1.4	0.272	2.59	90'	EL	44.250	0.493	2.24	90'	EL	4.425	0.80	0.272	1.57	90'	EL	44.250
		TNT4A	33.075		1.572	52.007	1.4	0.272	2.60	90'	EL	44.250	0.493	2.20	90'	EL	4.425	0.80	0.272	1.57	90'	EL	44.250
		TNT6A	41.600		1.278	53.170	1.4	0.272	2.11	90'	EL	44.250	0.493	1.92	90'	EL	4.425	0.80	0.272	1.28	90'	EL	44.250
		TNT7A	42.000		1.281	53.782	1.4	0.272	2.12	90'	EL	44.250	0.493	1.89	90'	EL	4.425	0.80	0.272	1.28	90'	EL	44.250
		TNT7B	42.000		1.315	55.229	1.4	0.272	2.18	90'	EL	44.250	0.493	1.79	90'	EL	4.425	0.80	0.272	1.31	90'	EL	44.250
		TNAGRIT4	43.000		1.258	54.101	1.4	0.272	2.08	90'	EL	44.250	0.493	1.74	90'	EL	4.425	0.80	0.272	1.26	90'	EL	44.250
TNAGT5A		45.000		1.190	53.537	1.4	0.272	1.97	90'	EL	44.250	0.493	1.71	90'	EL	4.425	0.80	0.272	1.19	90'	EL	44.250	
TNAGT5B	45.000	③	1.178	53.027	1.4	0.272	1.95	90'	EL	44.250	0.493	1.66	90'	EL	4.425	0.80	0.272	1.18	90'	EL	44.250		
EMERGENCY VEHICLE (EV)	EV2	28.750		2.296	66.005	1.3	0.272	3.25	90'	EL	44.250	0.493	2.49	90'	EL	4.425	0.80	0.272	2.30	90'	EL	44.250	
	EV3	43.000	④	1.510	64.924	1.3	0.272	2.14	90'	EL	44.250	0.493	1.67	90'	EL	4.425	0.80	0.272	1.51	90'	EL	44.250	

LOAD FACTORS:

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

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

-
-
-
-

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

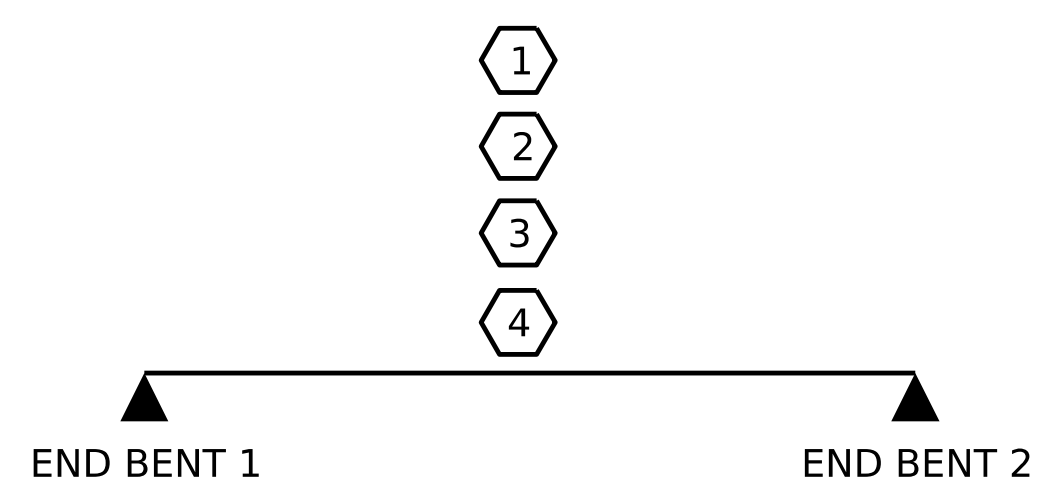
③ LEGAL LOAD RATING **

④ EMERGENCY VEHICLE LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

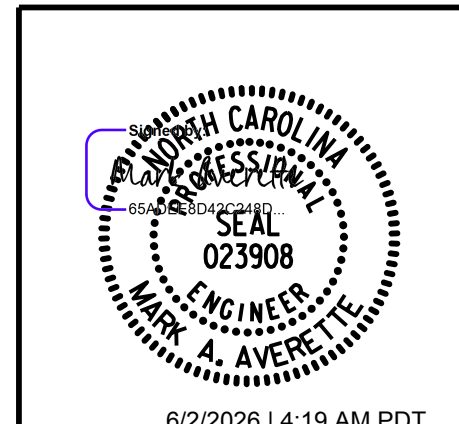
I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY
FOR SPAN "A"

PROJECT NO. BP5.R103
GRANVILLE COUNTY
STATION: 16+76.00 -L-

DRAWN BY: T. BANKOVICH DATE: 6-24
CHECKED BY: J.A. BATTS DATE: 6-24
DESIGN ENGINEER OF RECORD: M.A. AVERETTE DATE: 6-24



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**LRFR SUMMARY FOR
90' BOX BEAM UNIT
90°**

(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			18

LICENSURE NO. C-5315

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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 BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

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

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

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM 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.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6000 PSI.

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

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

VERTICAL 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 VERTICAL 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.

THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.

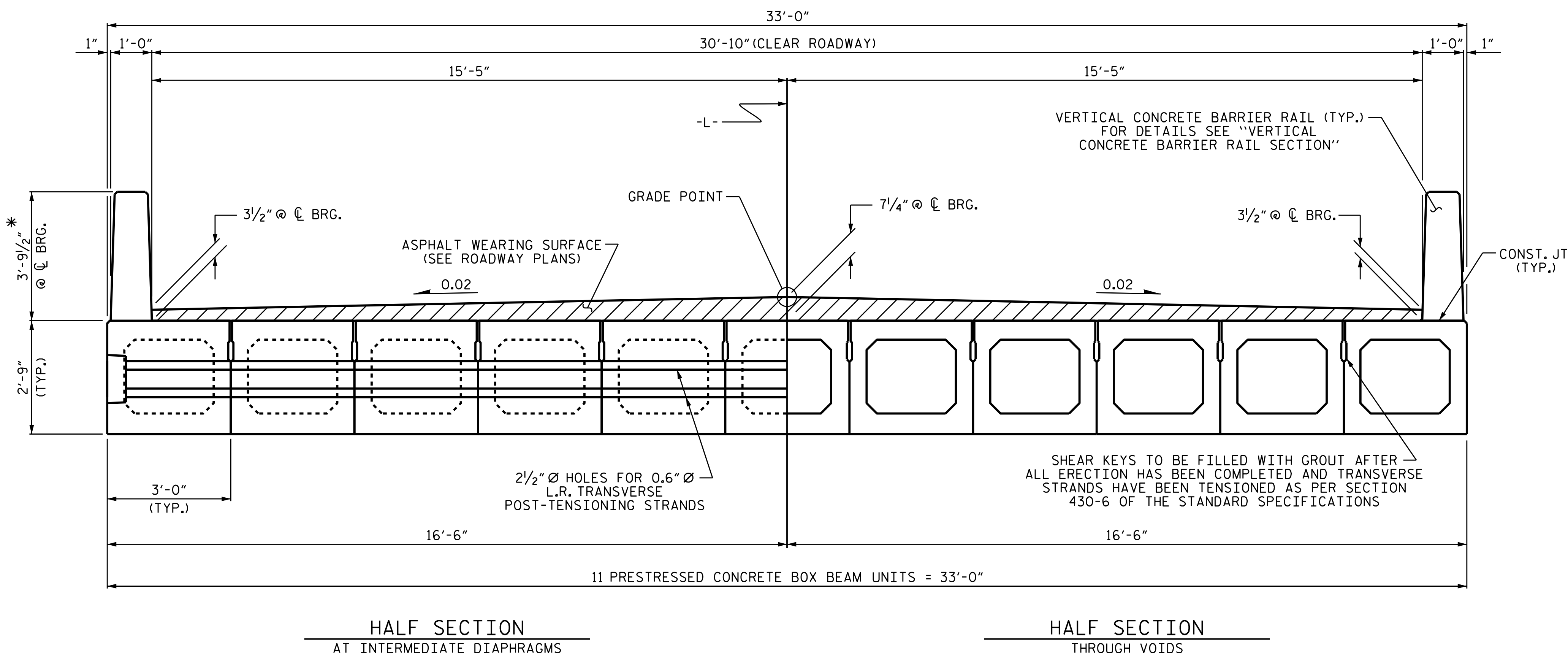
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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.



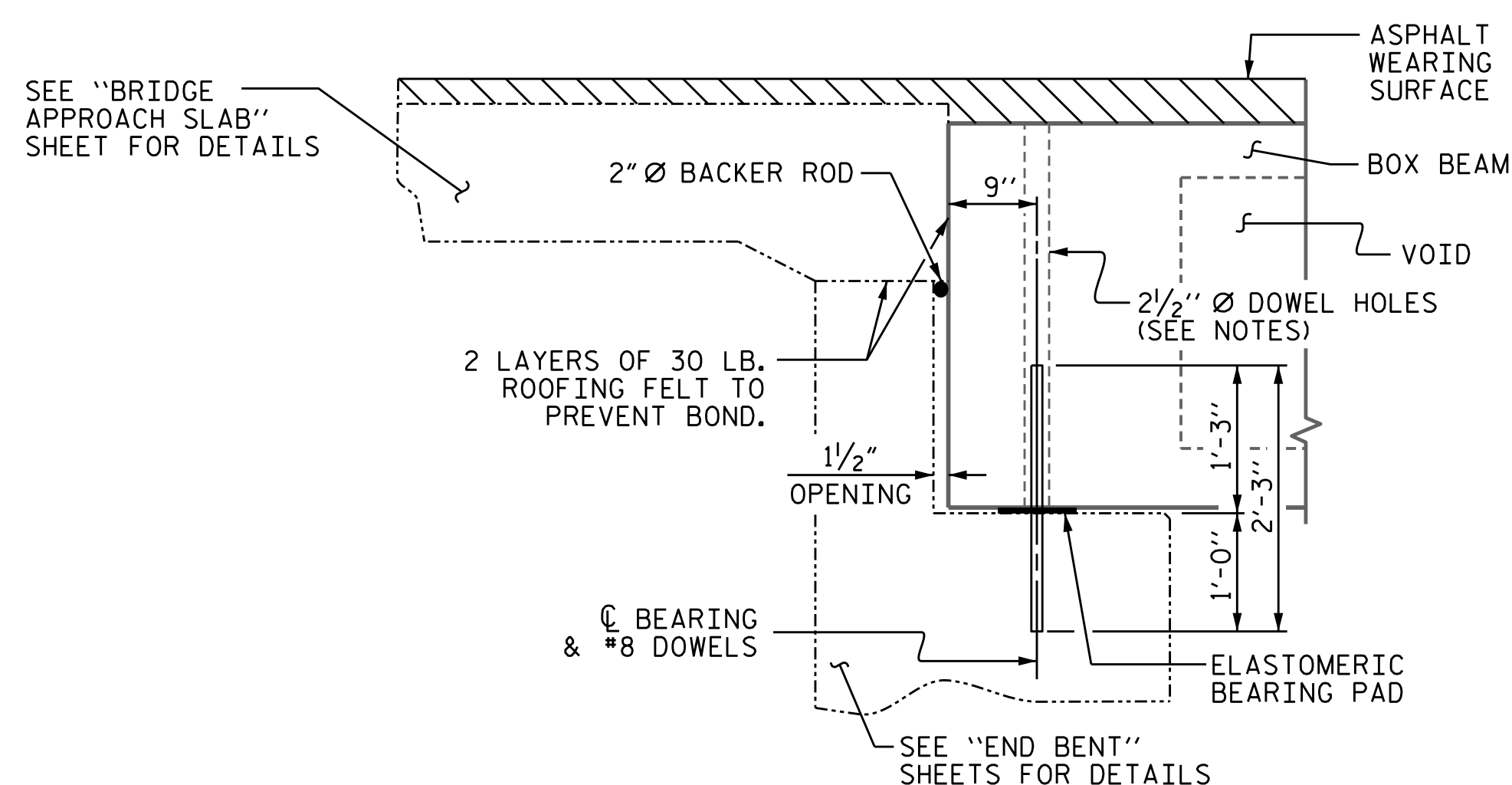
HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

HALF SECTION
THROUGH VOIDS

TYPICAL SECTION

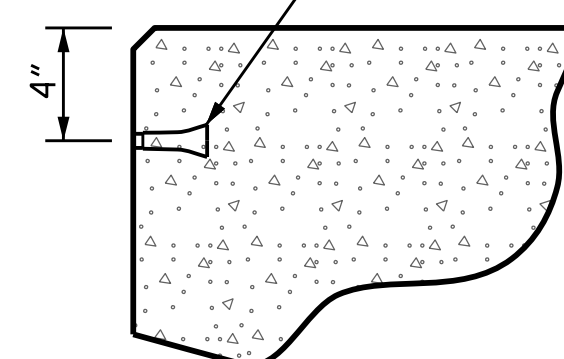
* THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.

FIXED END



SECTION AT END BENT

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



THREADED INSERT DETAIL

PROJECT NO. BP5.R103
GRANVILLE COUNTY
STATION: 16+76.00 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
3'-0" X 2'-9"
PRESTRESSED CONCRETE
BOX BEAM UNIT

REVISIONS

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

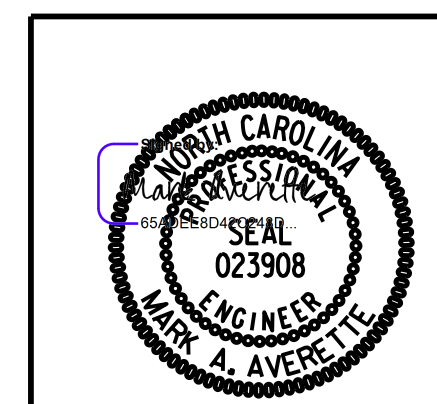
SHEET NO.
S-6

TOTAL SHEETS
18



5640 Dillard Drive, Suite 200
Cary, NC 27518

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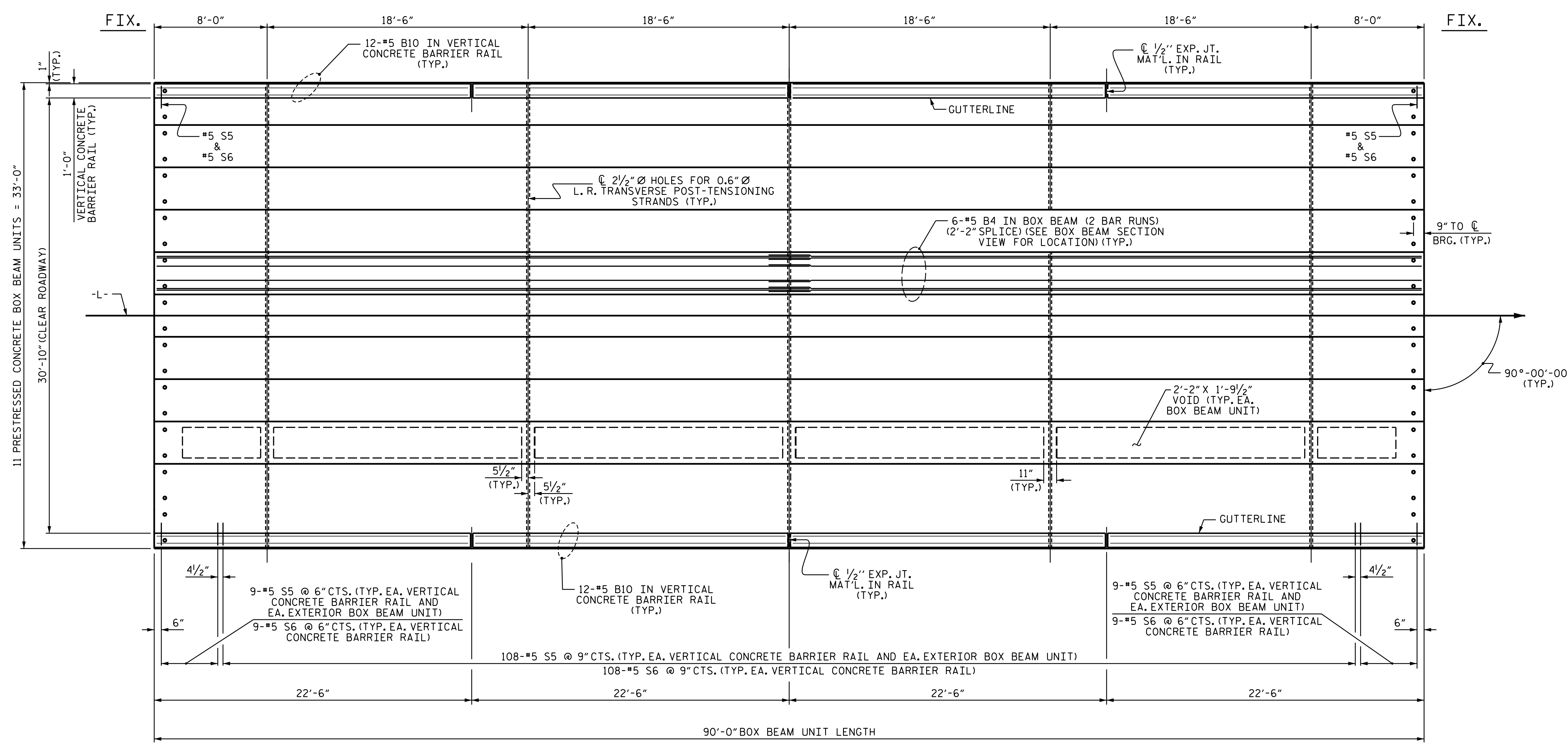


6/2/2026 | 4:19 AM PDT

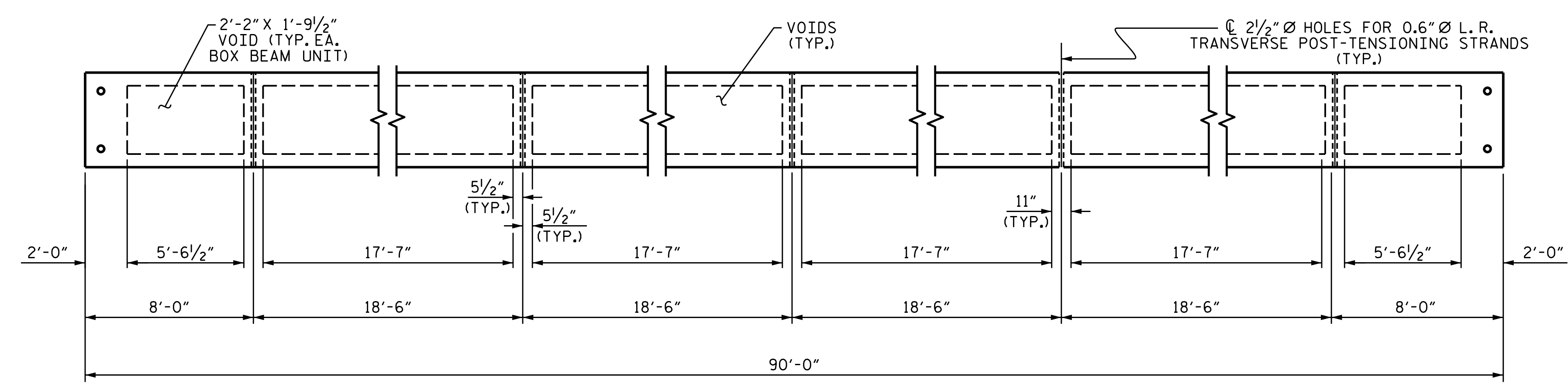
DRAWN BY : T. BANKOVICH DATE : 6-24
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PLAN OF SPAN A



DIAPHRAGM AND VOID LAYOUT

PROJECT NO. BP5.R103
GRANVILLE COUNTY
 STATION: 16+76.00 -L-
 SHEET 2 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
PLAN OF SPAN A
30'-10" CLEAR ROADWAY
90° SKEW

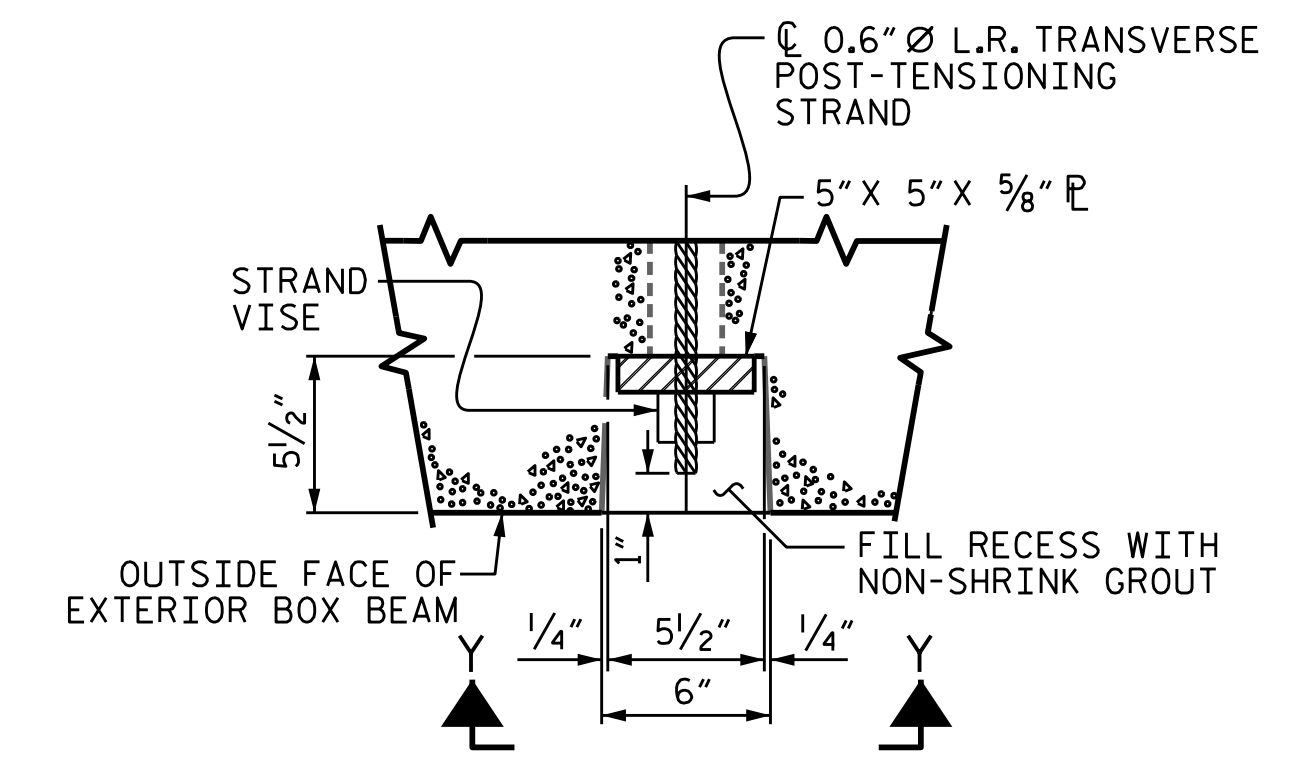
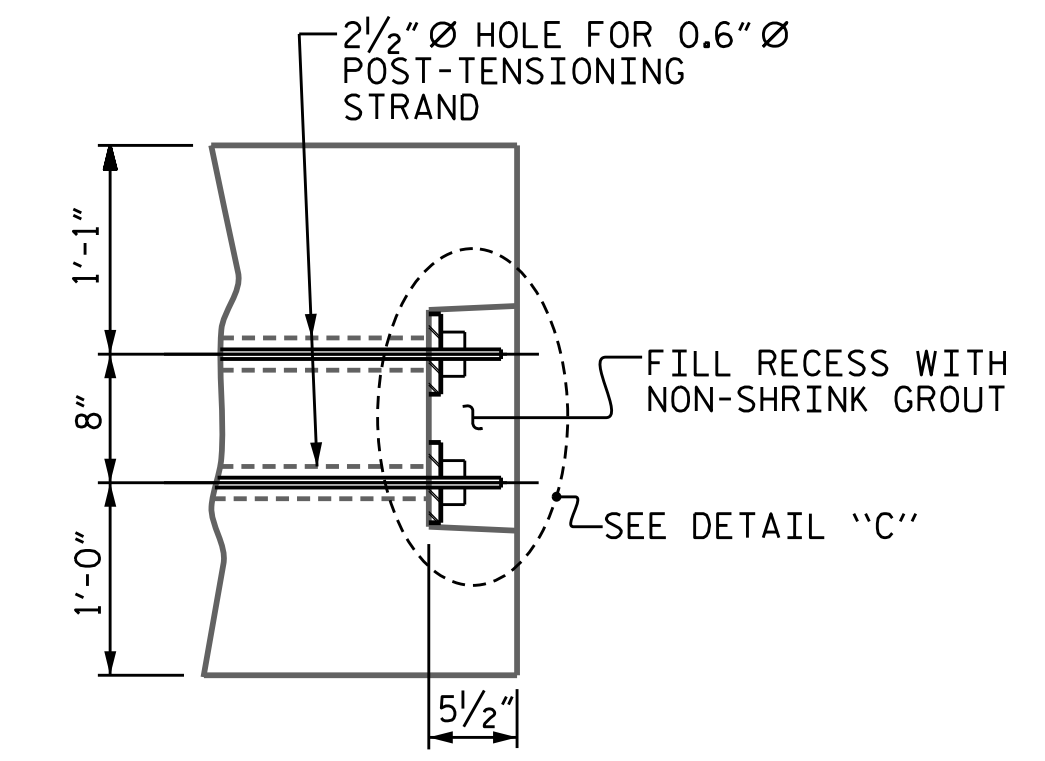
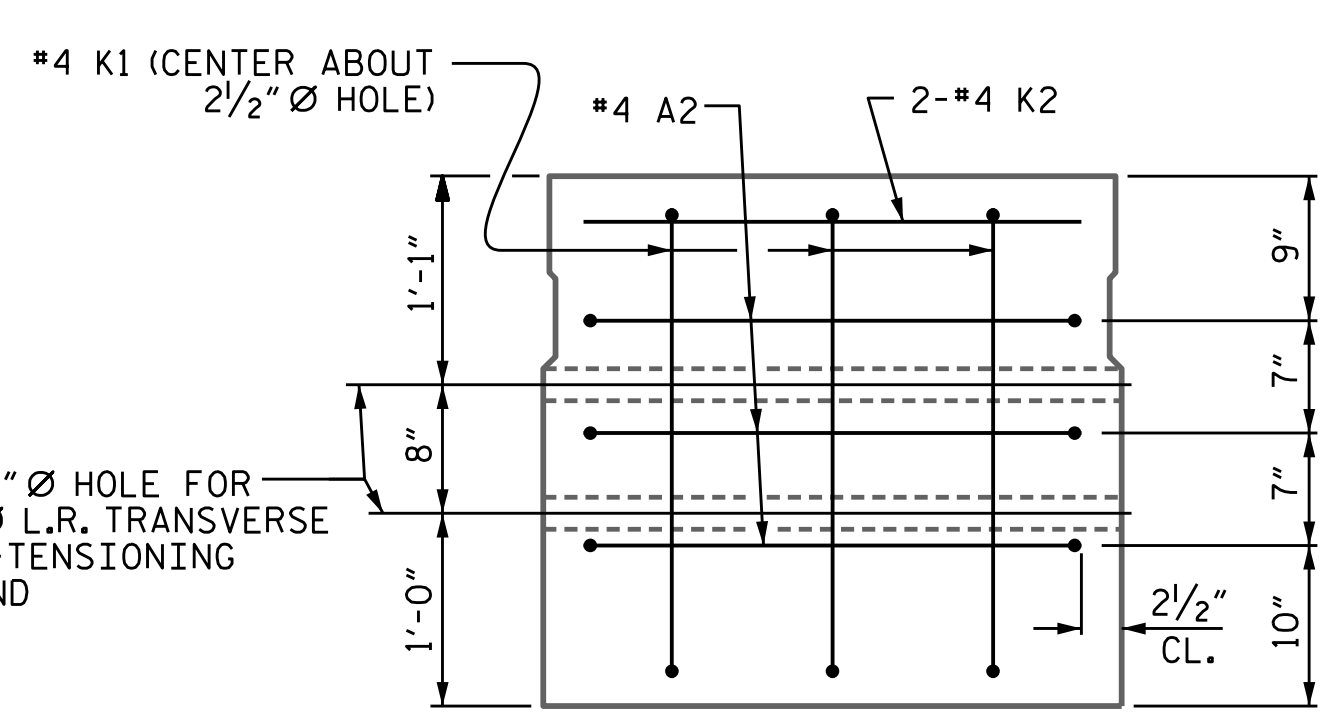
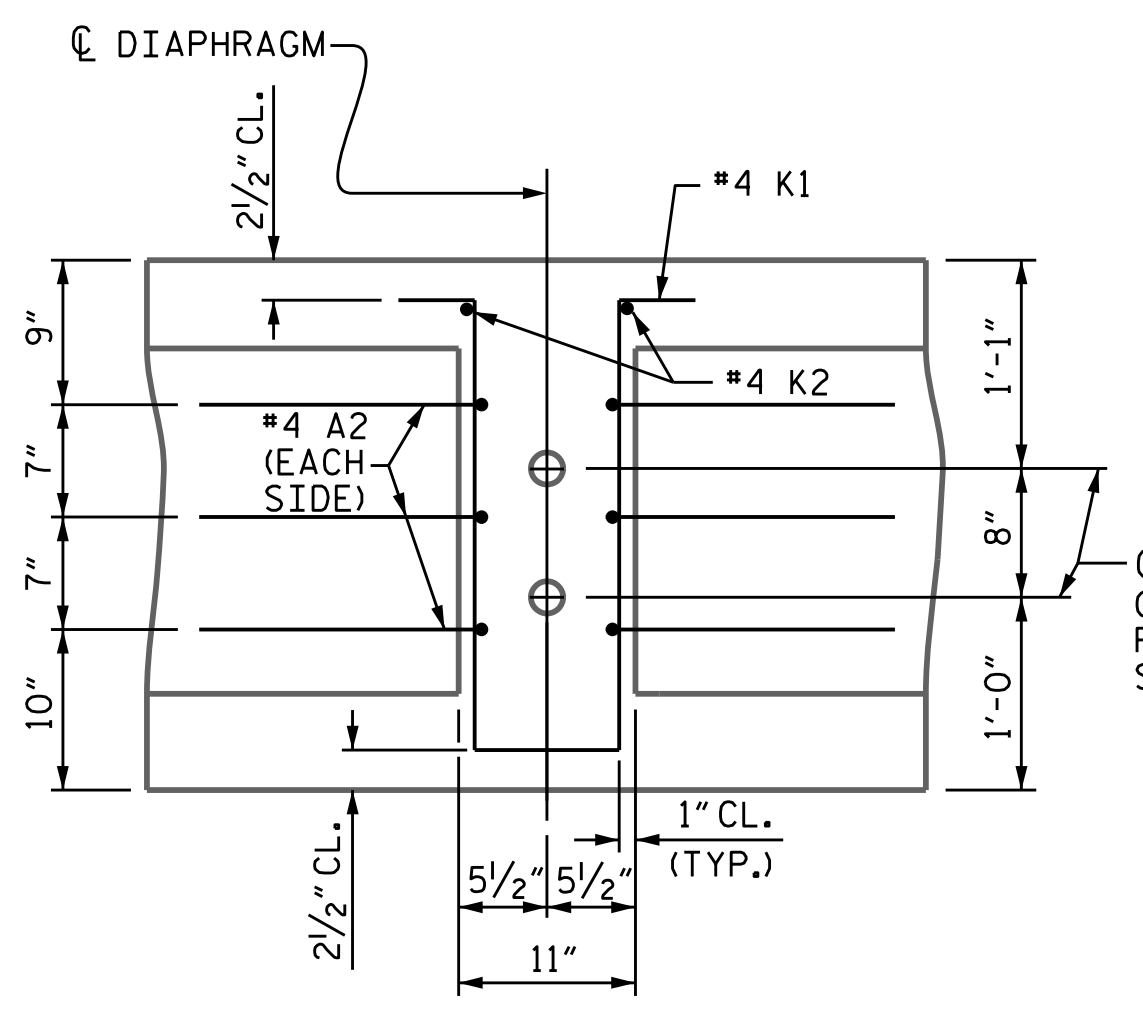
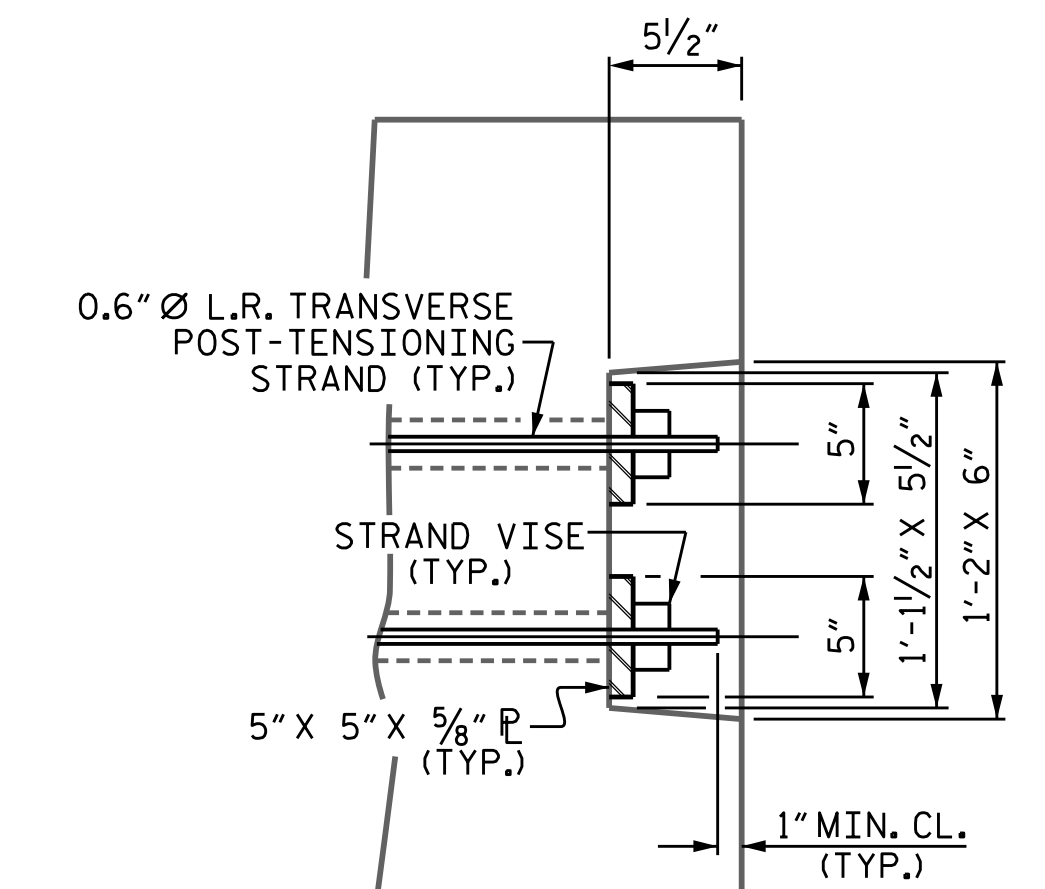
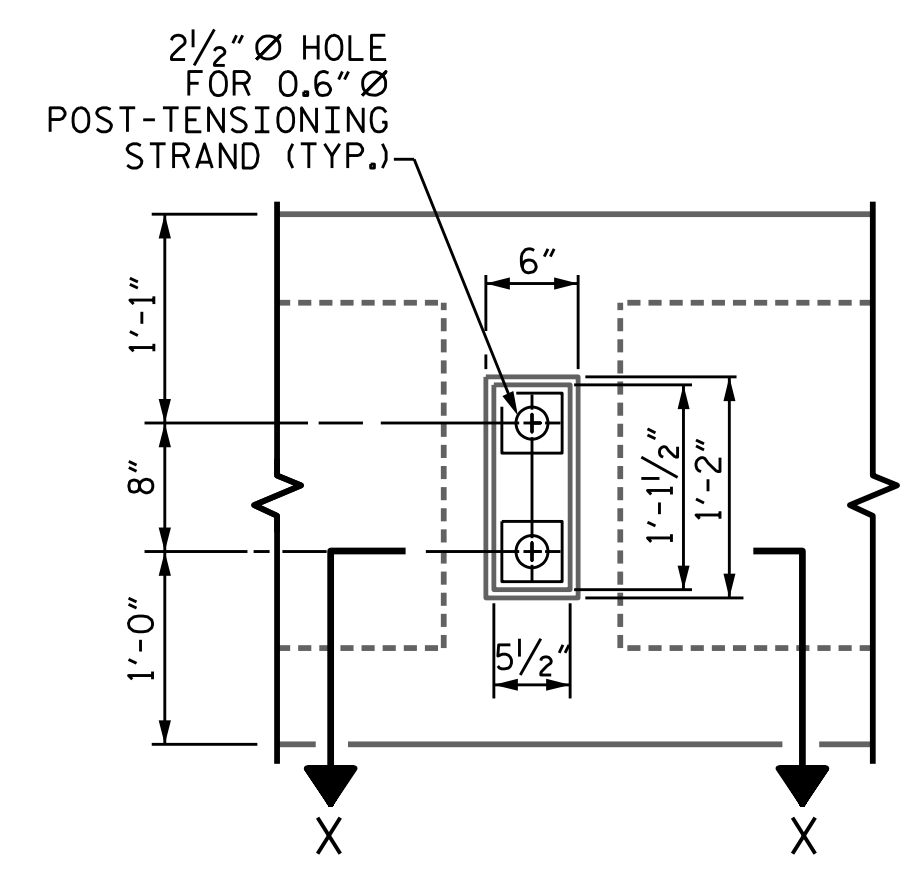
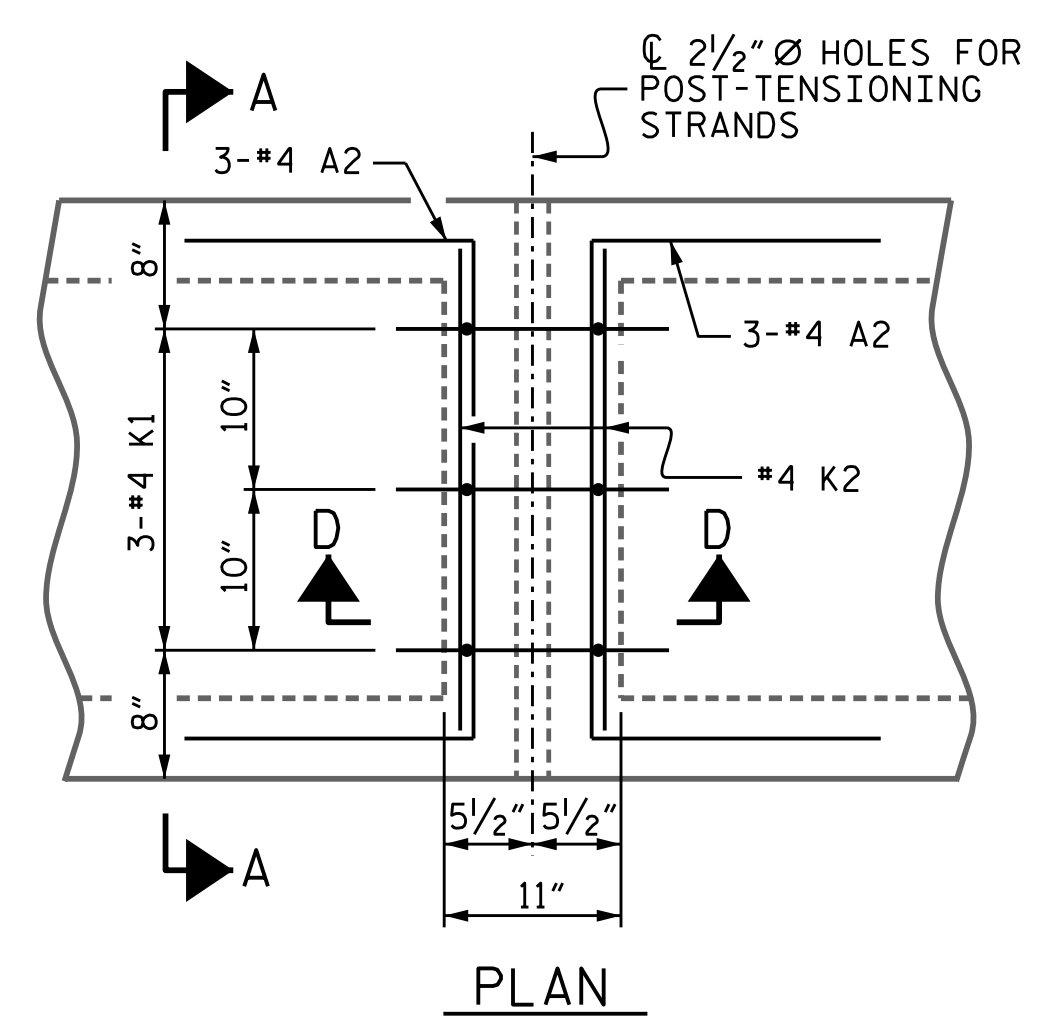


DRAWN BY : T. BANKOVICH DATE : 6-24
 CHECKED BY : J.A. BATTS DATE : 6-24
 DESIGN ENGINEER OF RECORD: M.A. AVERETTE DATE : 6-24

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
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2			4			18

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SECTION D-D

SECTION A-A
VOIDS NOT SHOWN

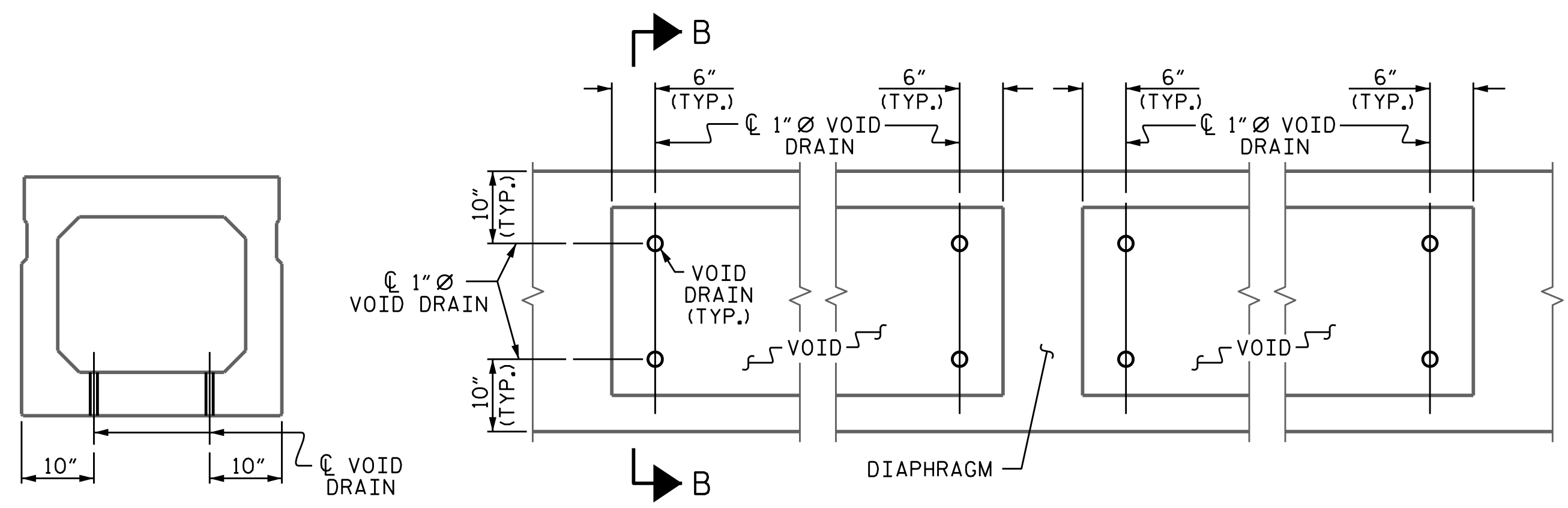
PART SECTION AT RECESS

SECTION X-X
SHOWING PLAN VIEW OF GROUDED RECESS

DOUBLE DIAPHRAGM DETAILS

#4 "S" BARS NOT SHOWN. #4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2 1/2" Ø HOLE.

GROUDED RECESS DETAIL AT END OF POST-TENSIONED STRANDS OF EXTERIOR BOX BEAM



SECTION B-B

PART PLAN

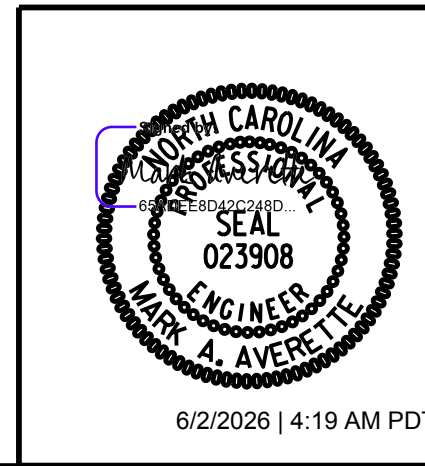
VOID DRAIN DETAILS

(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

DEAD LOAD DEFLECTION AND CAMBER	
90" BOX BEAM UNIT (NC)	3'-0" x 2'-9" 0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2 3/4" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	3/4" ↓
FINAL CAMBER	2" ↑

** INCLUDES FUTURE WEARING SURFACE

PROJECT NO. BP5.R103
GRANVILLE COUNTY
 STATION: 16+76.00 -L-
 SHEET 4 OF 5



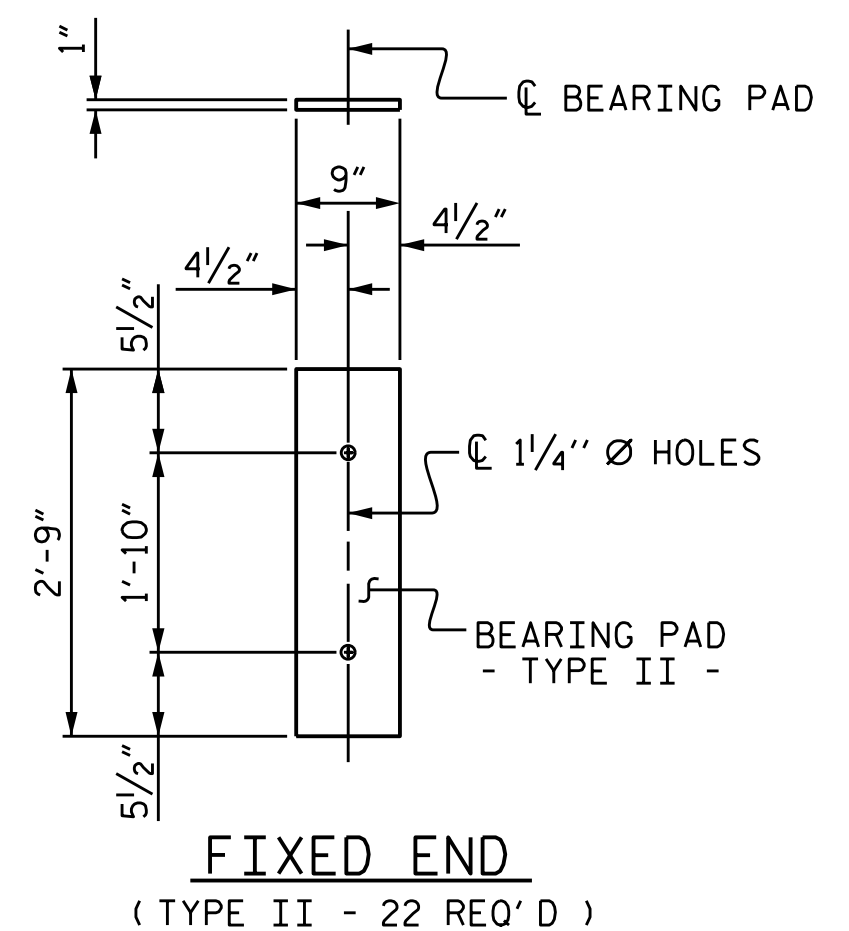
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
3'-0" X 2'-9"
PRESTRESSED CONCRETE
BOX BEAM UNIT

DRAWN BY : T. BANKOVICH DATE : 6-24
 CHECKED BY : J.A. BATTS DATE : 6-24
 DESIGN ENGINEER OF RECORD: M.A. AVERETTE DATE : 6-24

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1			3			TOTAL SHEETS
2			4			18

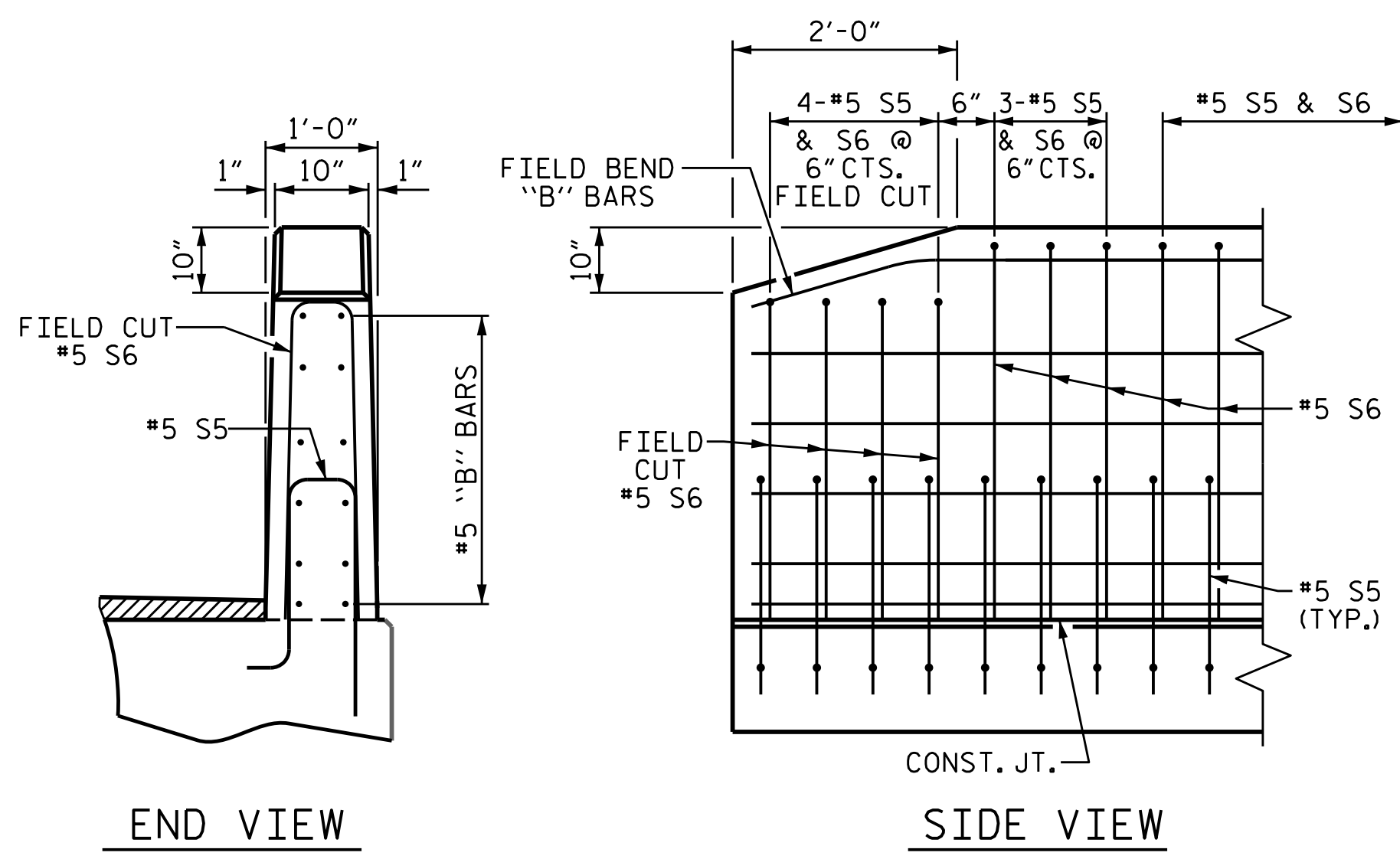
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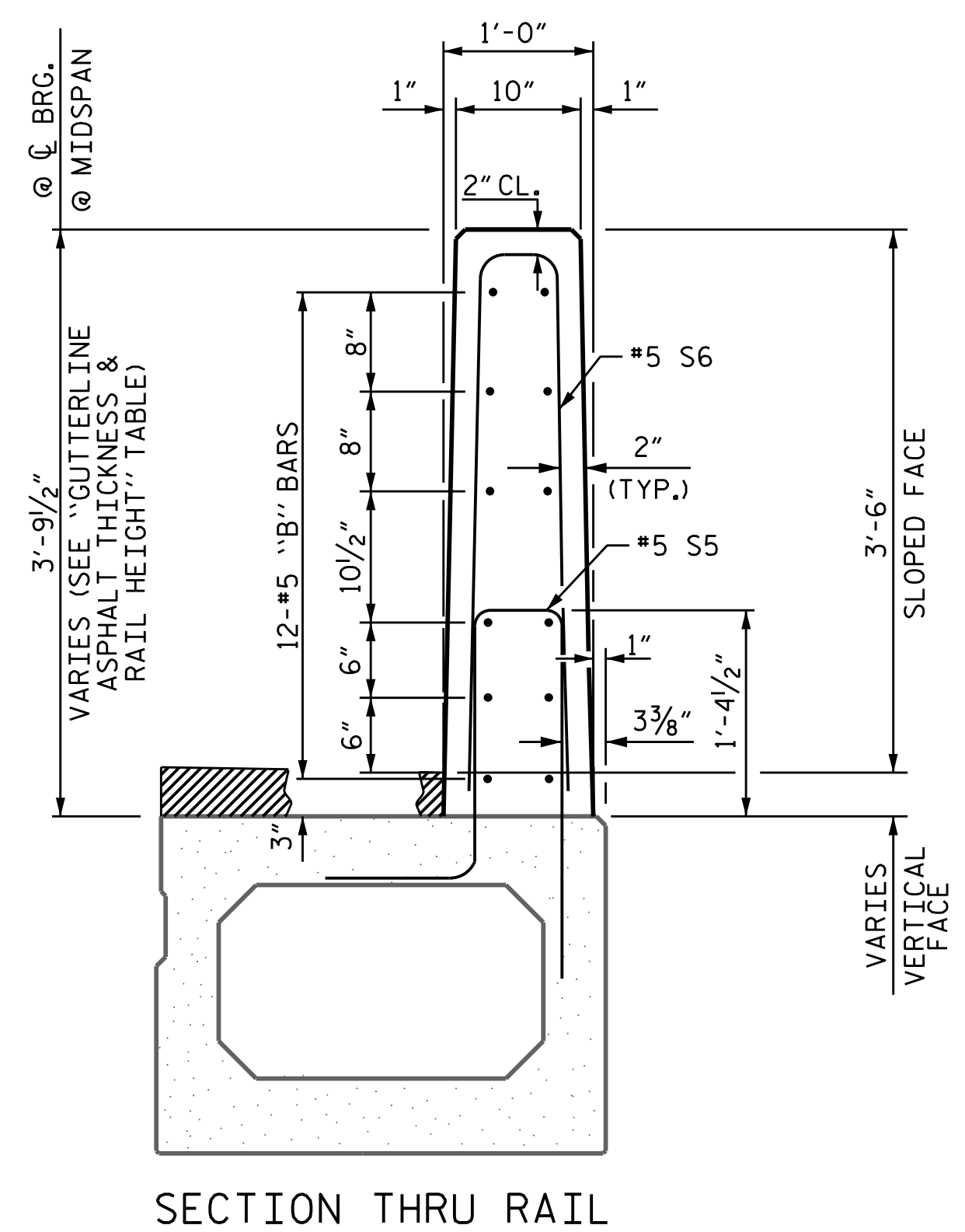


ELASTOMERIC BEARING DETAILS

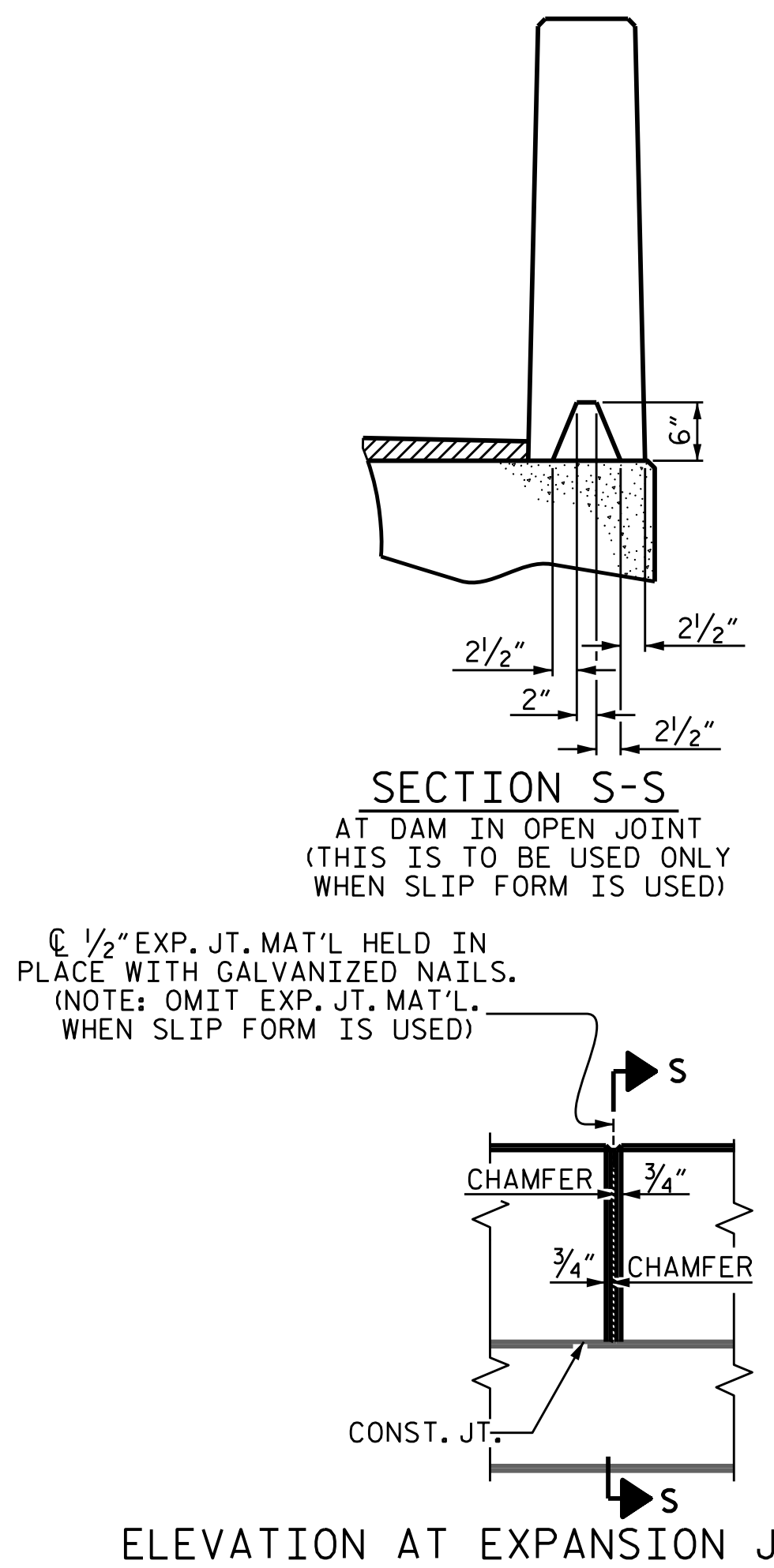
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



END OF RAIL DETAILS

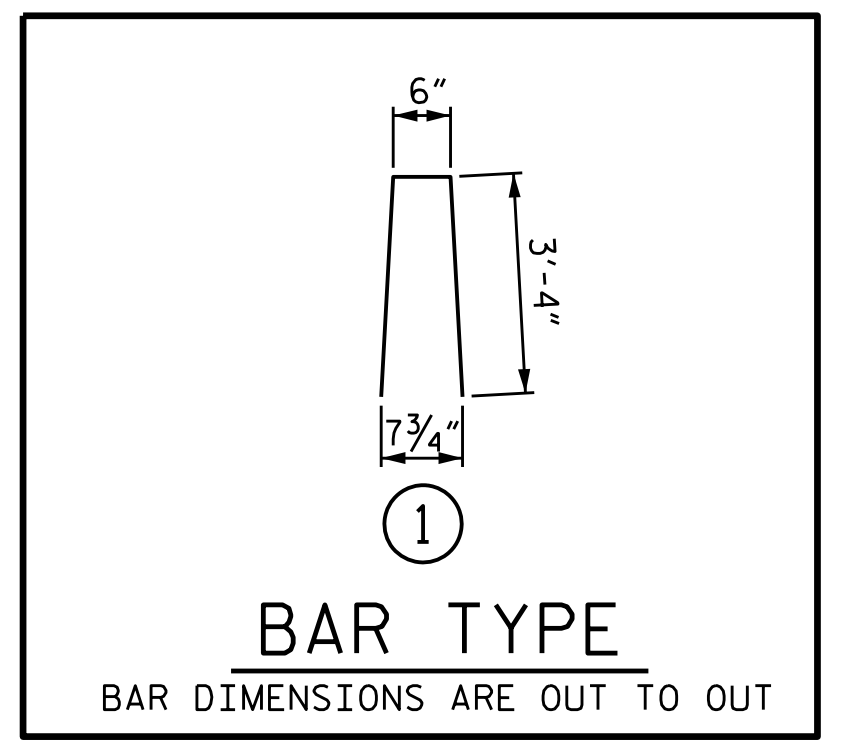


VERTICAL CONCRETE BARRIER RAIL DETAILS



BOX BEAM UNITS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR B.B.	2	90'-0"	180'-0"
INTERIOR B.B.	9	90'-0"	810'-0"
TOTAL	11		990'-0"



GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

33' NC	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
90' UNITS	1 1/2"	3'-7 1/2"

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS	SIZE	TYPE	LENGTH	WEIGHT
	90' UNIT				
*B10	96	#5	STR	22'-1"	2211
*S6	252	#5	1	7'-2"	1884
* EPOXY COATED REINFORCING STEEL				LBS.	4095
CLASS AA CONCRETE				CU.YDS.	23.3
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.	180.0

PROJECT NO. BP5.R103
GRANVILLE COUNTY
 STATION: 16+76.00 -L-
 SHEET 5 OF 5



STATE OF NORTH CAROLINA
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 RALEIGH
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3'-0" X 2'-9"
PRESTRESSED CONCRETE
BOX BEAM UNIT

DRAWN BY : T. BANKOVICH DATE : 6-24
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 DESIGN ENGINEER OF RECORD: M.A. AVERETTE DATE : 6-24

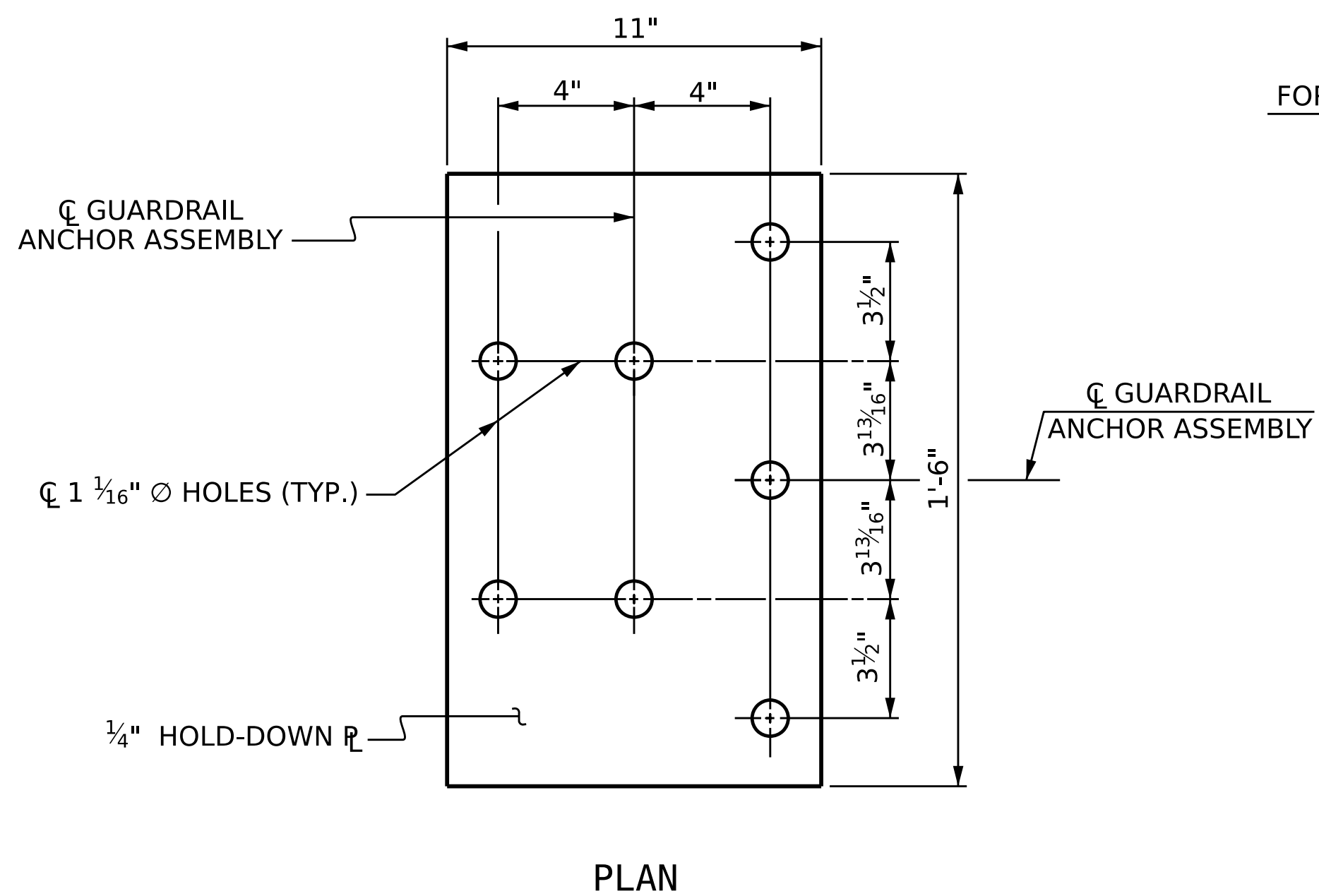
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NO.	BY:	DATE:	NO.	BY:	DATE:
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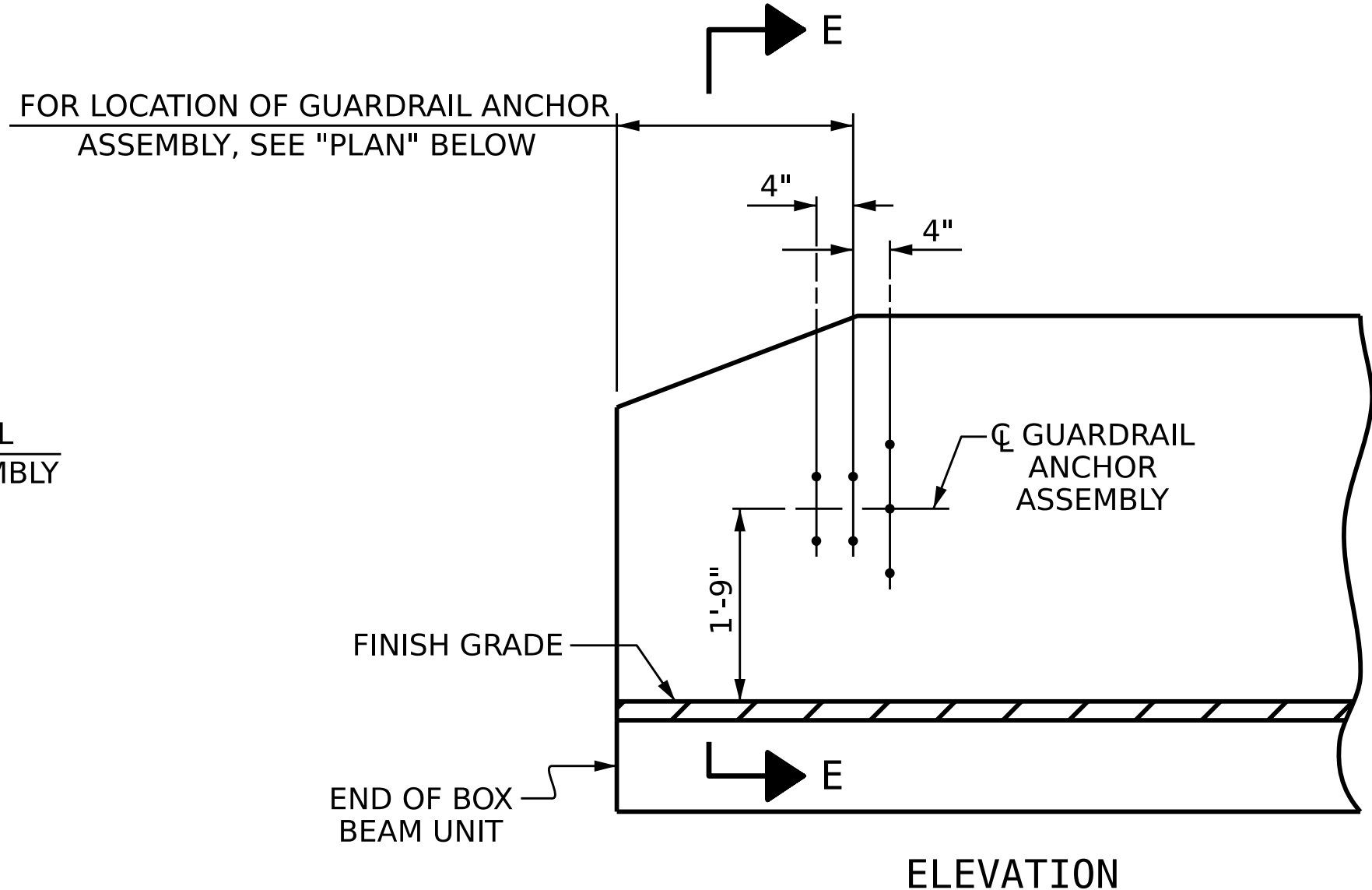
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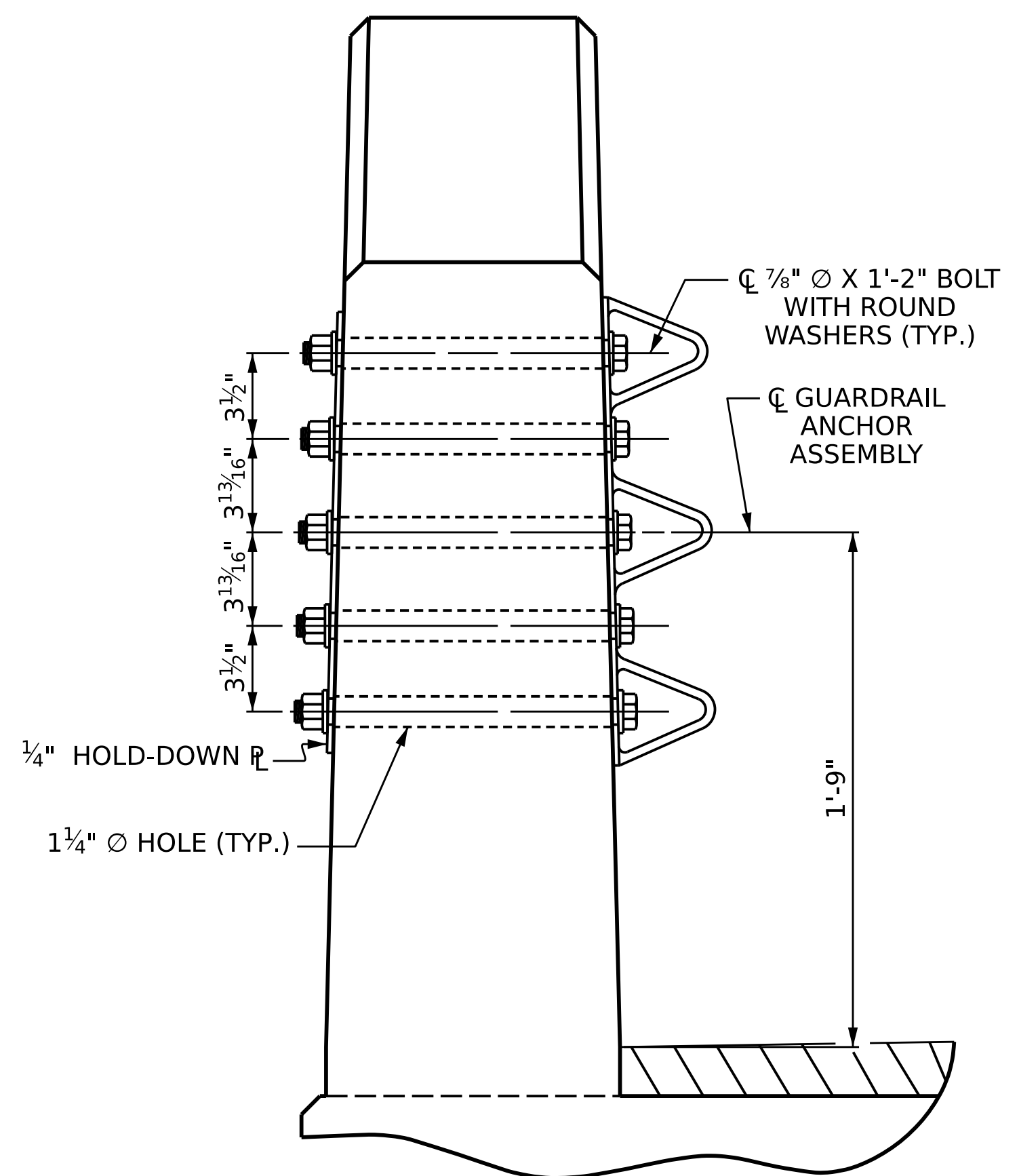


PLAN

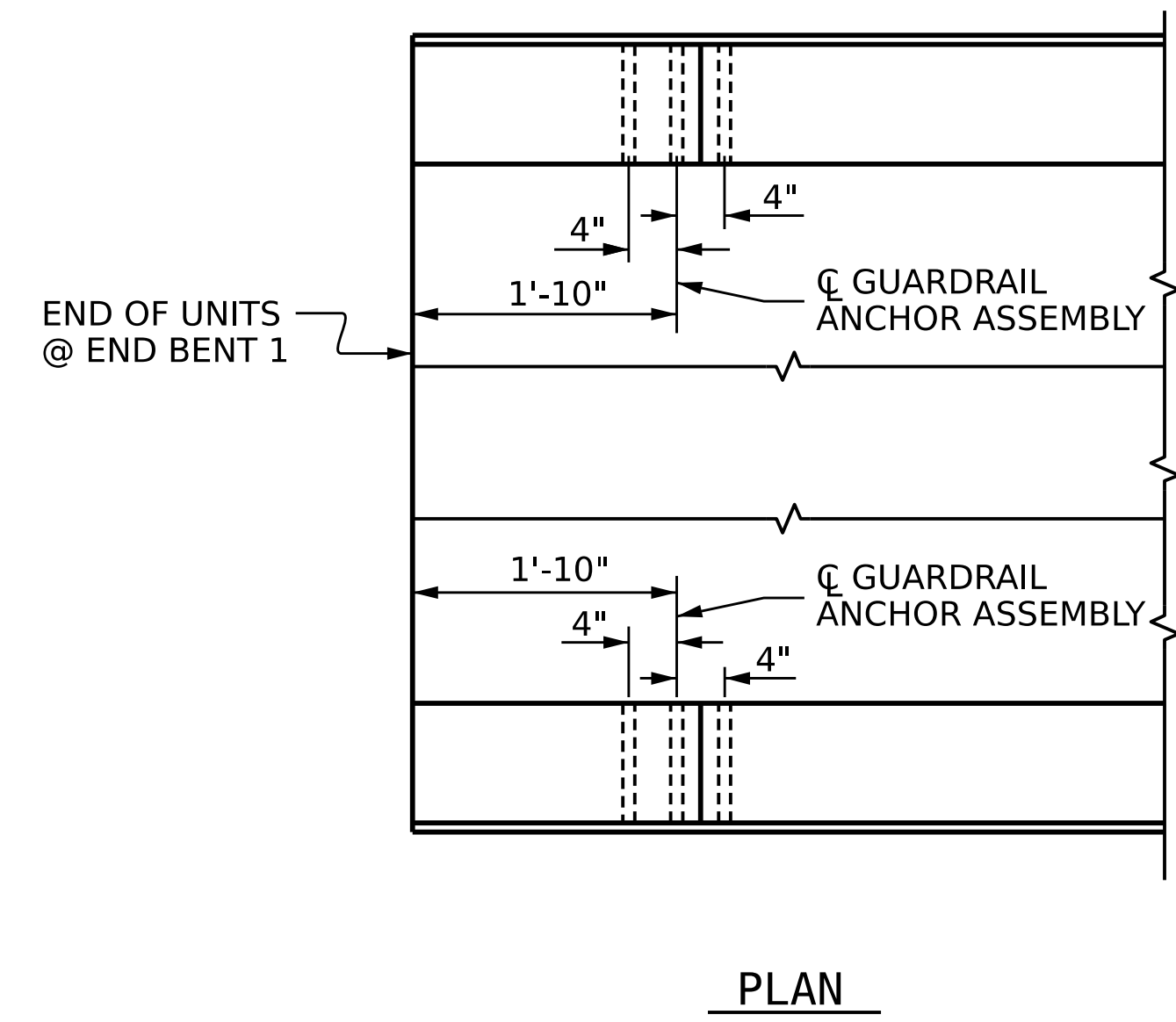


ELEVATION

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



SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

NOTES

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

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GRANVILLE COUNTY
 STATION: 16+76.00 -L-

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 DESIGN ENGINEER OF RECORD: M.A. AVERETTE DATE : 6-24



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

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1			3			TOTAL SHEETS
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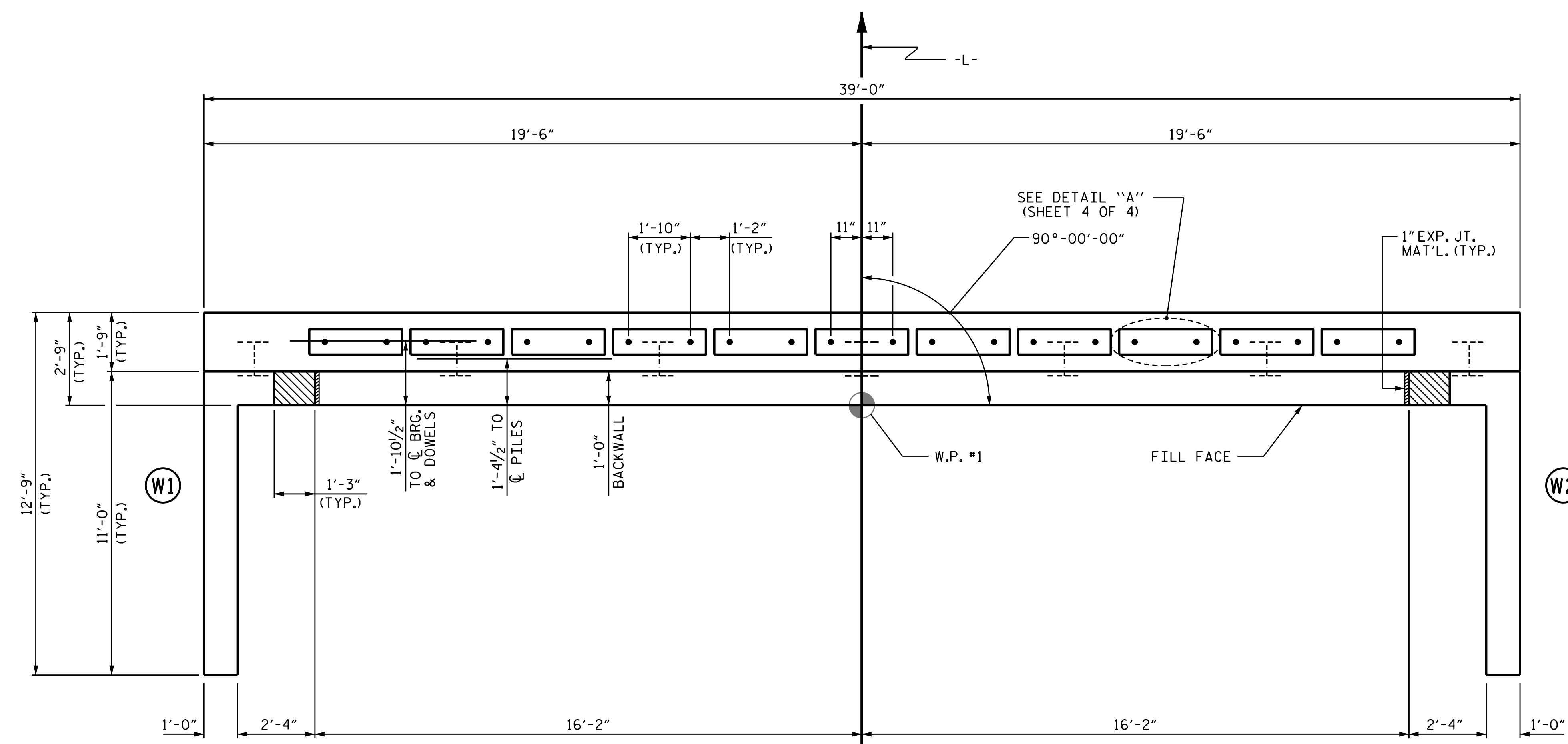
NOTES

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

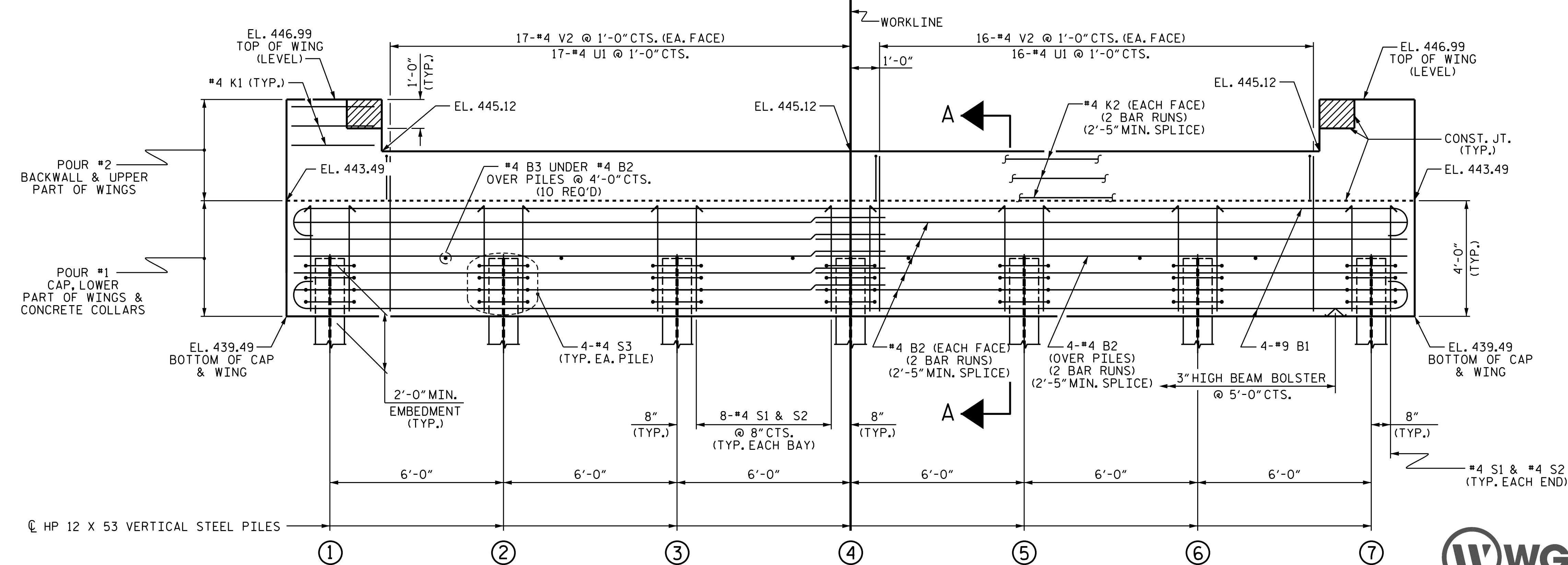
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

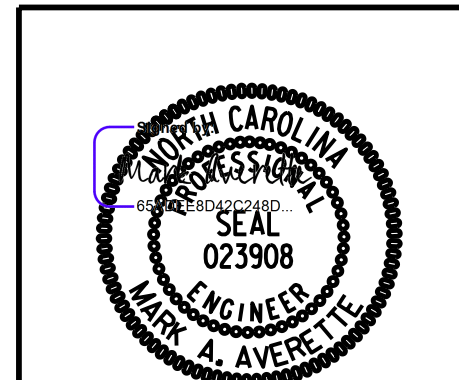
WINGS NOT SHOWN FOR CLARITY.
 FOR SECTION A-A, SEE SHEET 4 OF 4.
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

PROJECT NO. BP5.R103
GRANVILLE COUNTY
 STATION: 16+76.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE

END BENT 1



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 DESIGN ENGINEER OF RECORD: M.A. AVERETTE DATE : 6-24

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NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
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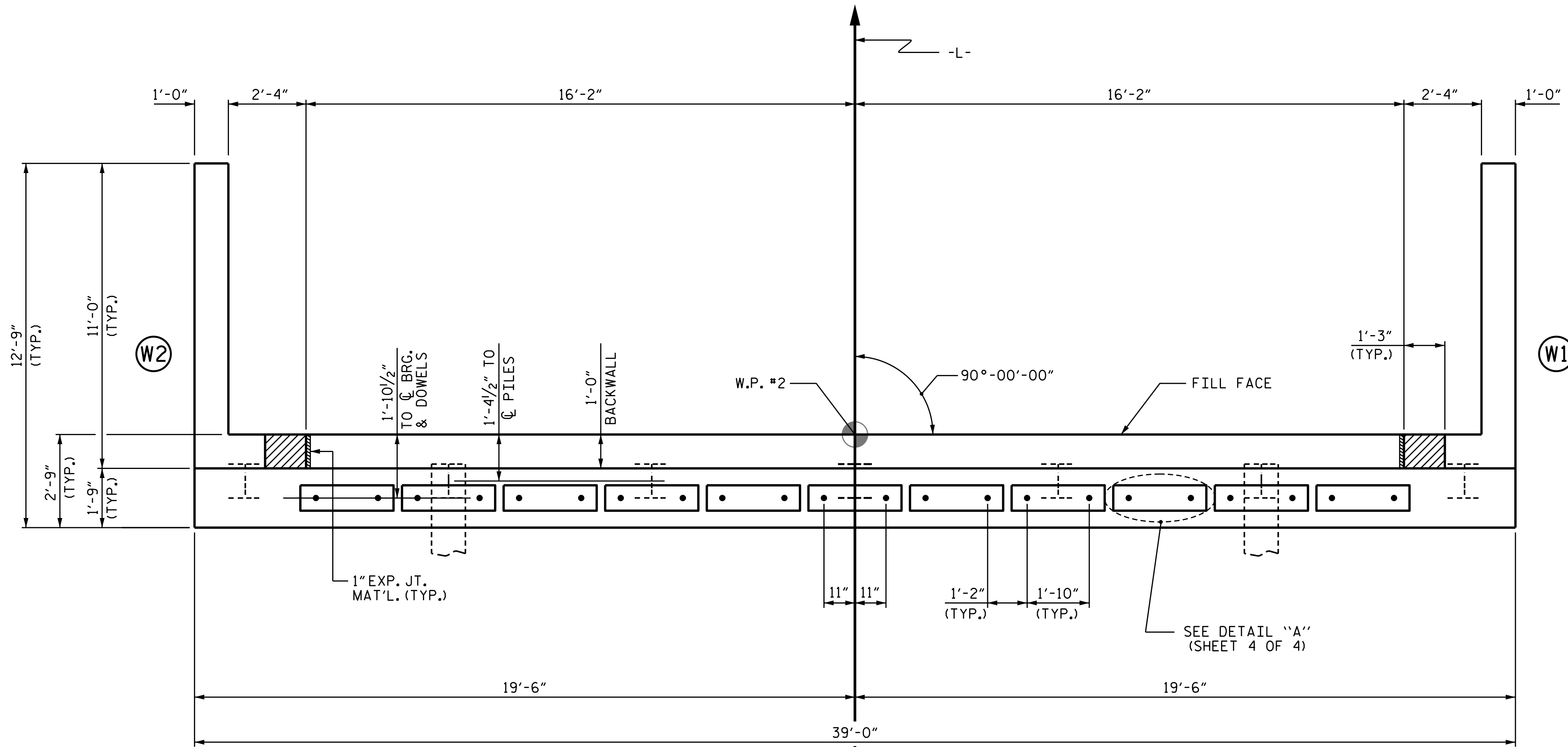
NOTES

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

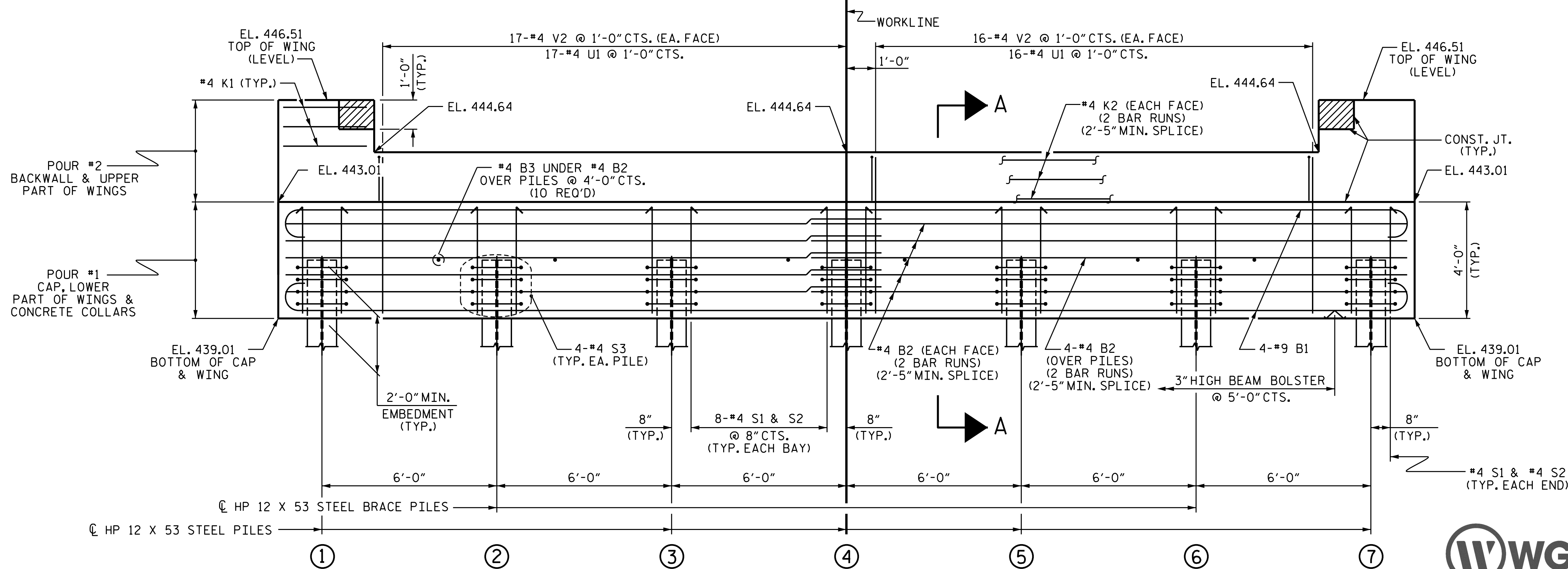
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

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.R103
GRANVILLE COUNTY
STATION: 16+76.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
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END BENT 2



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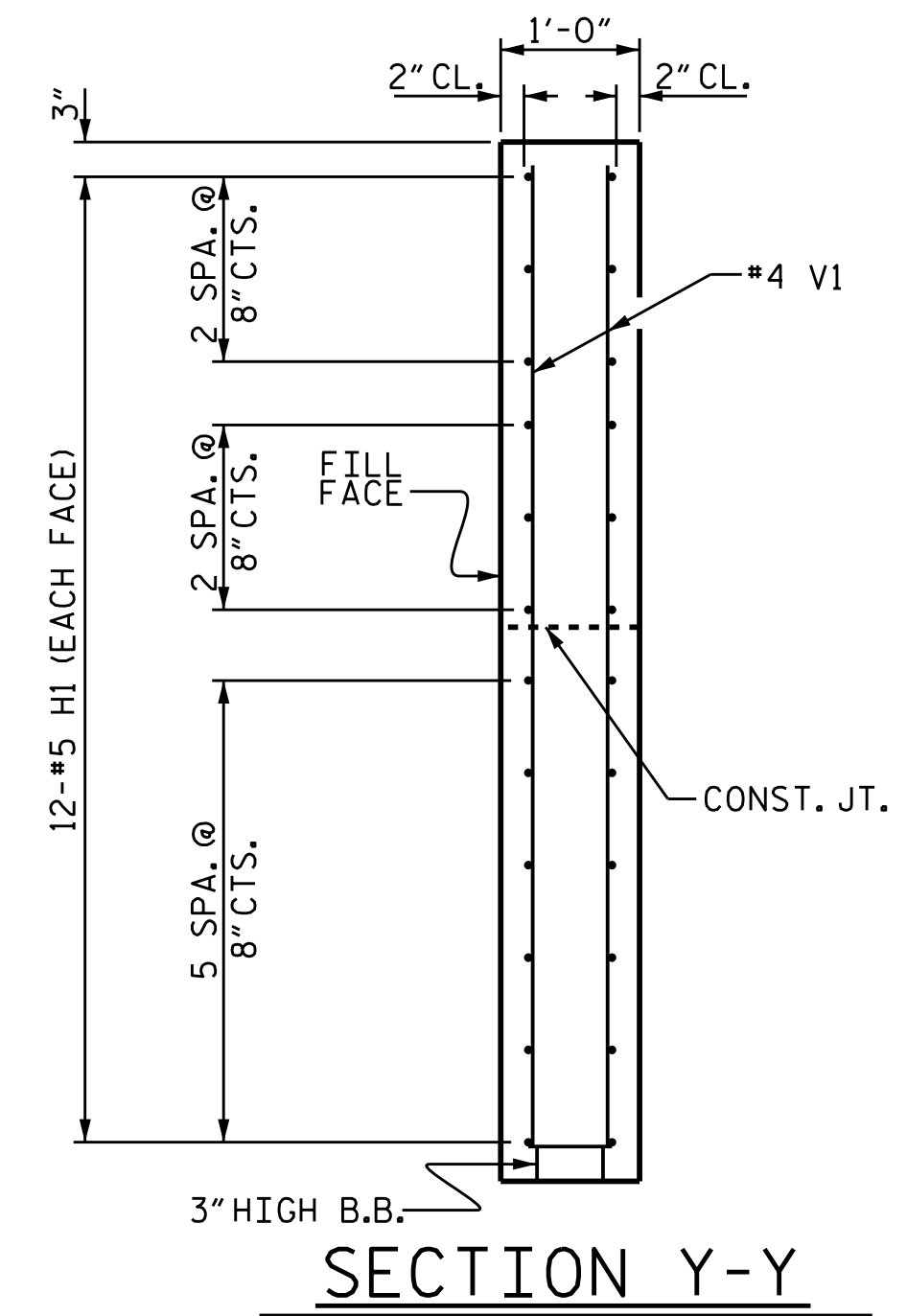
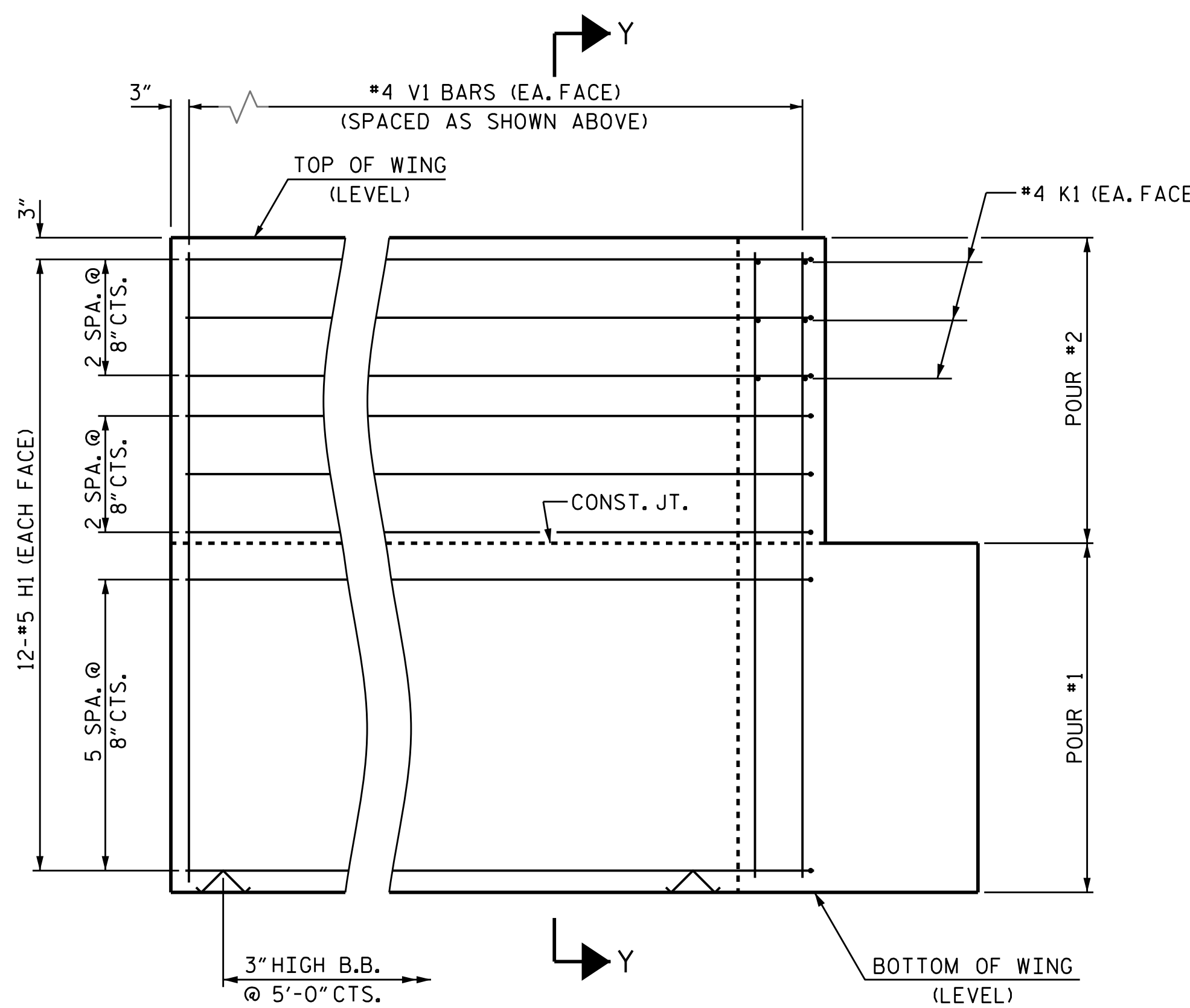
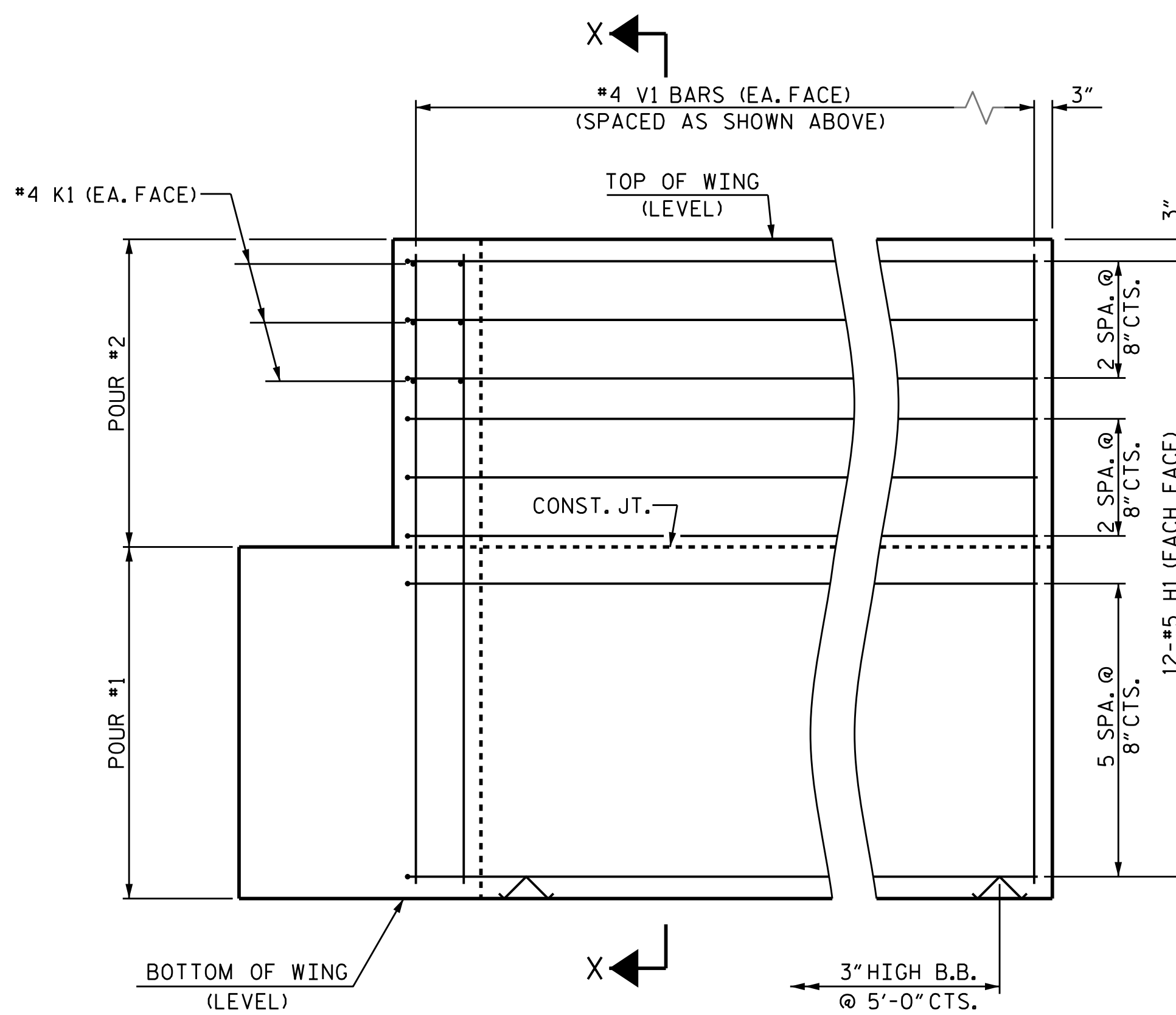
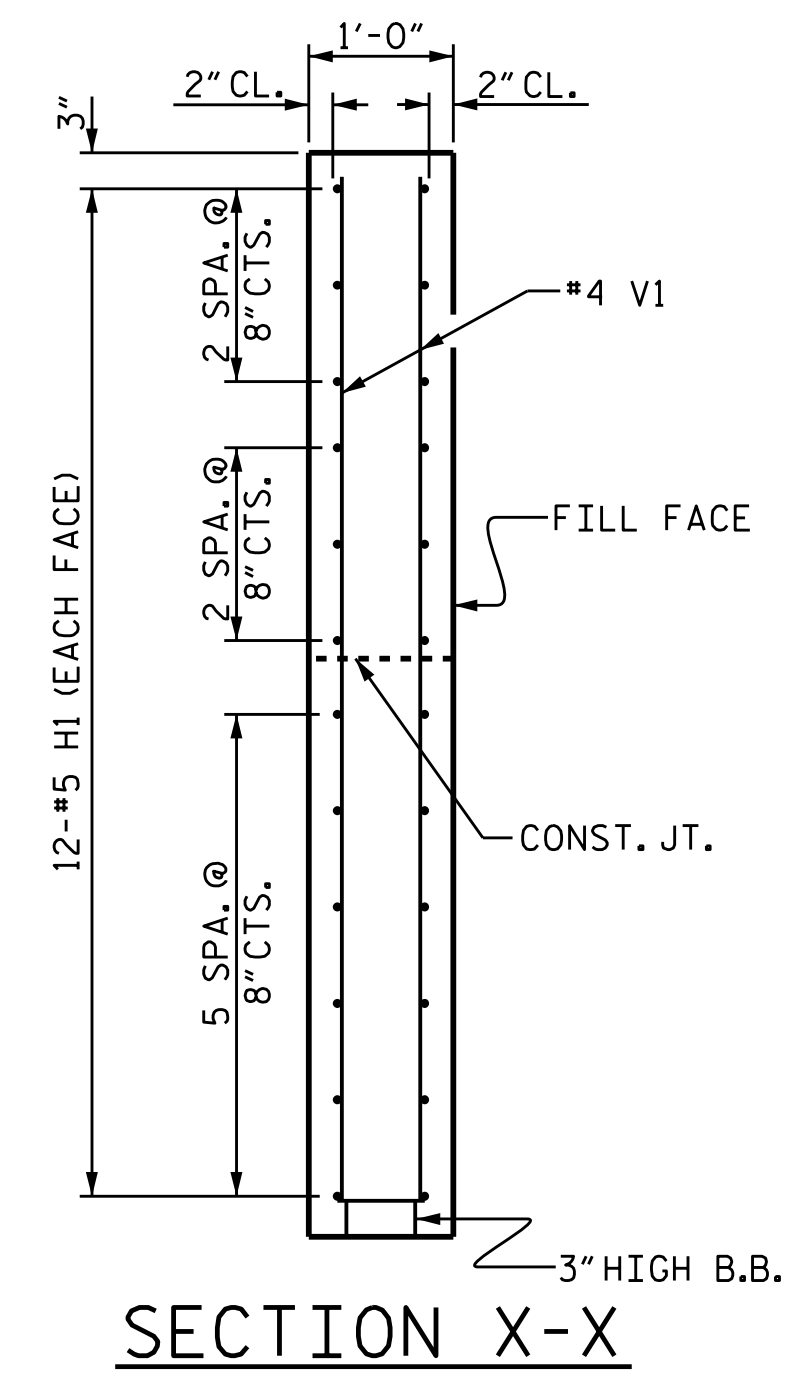
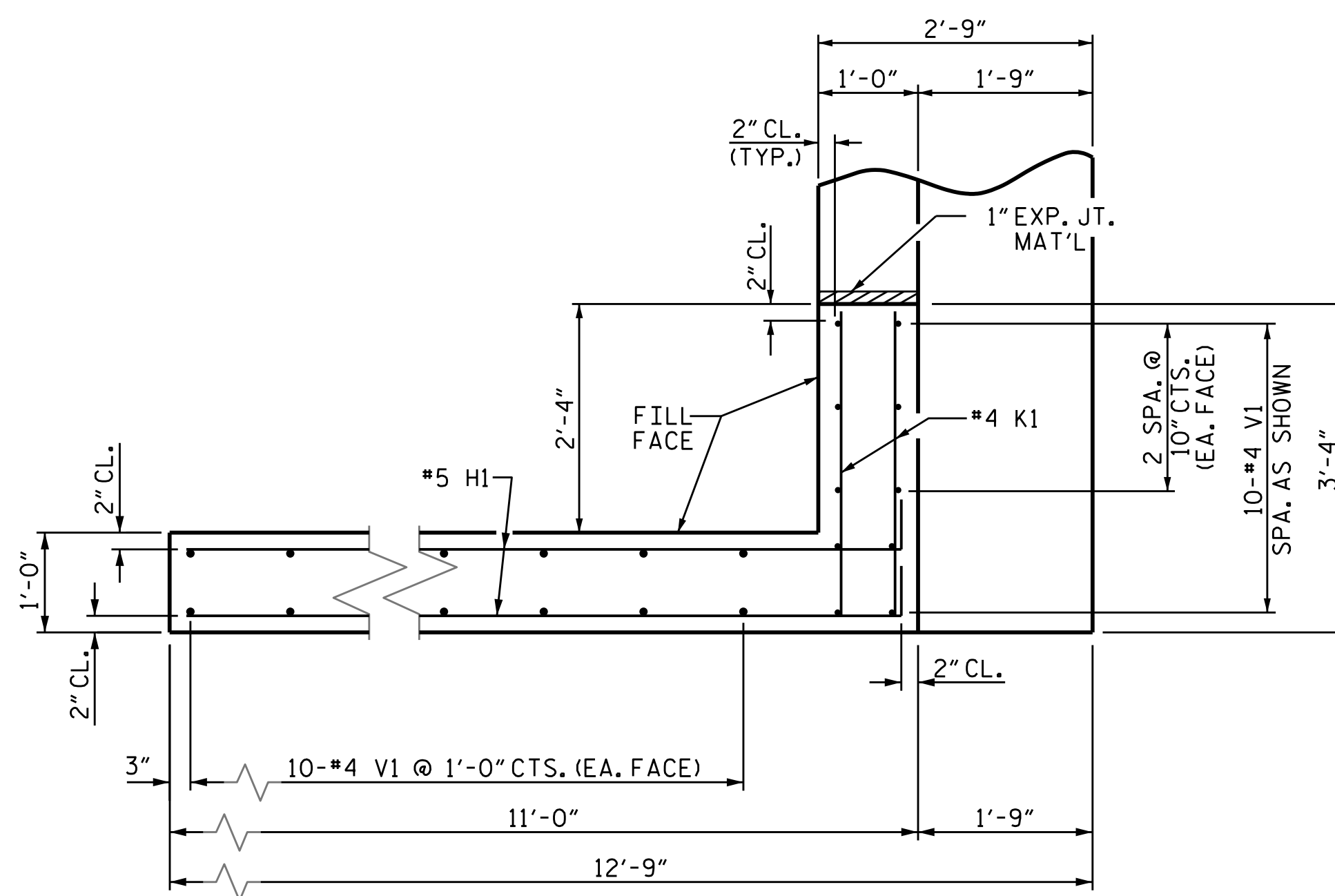
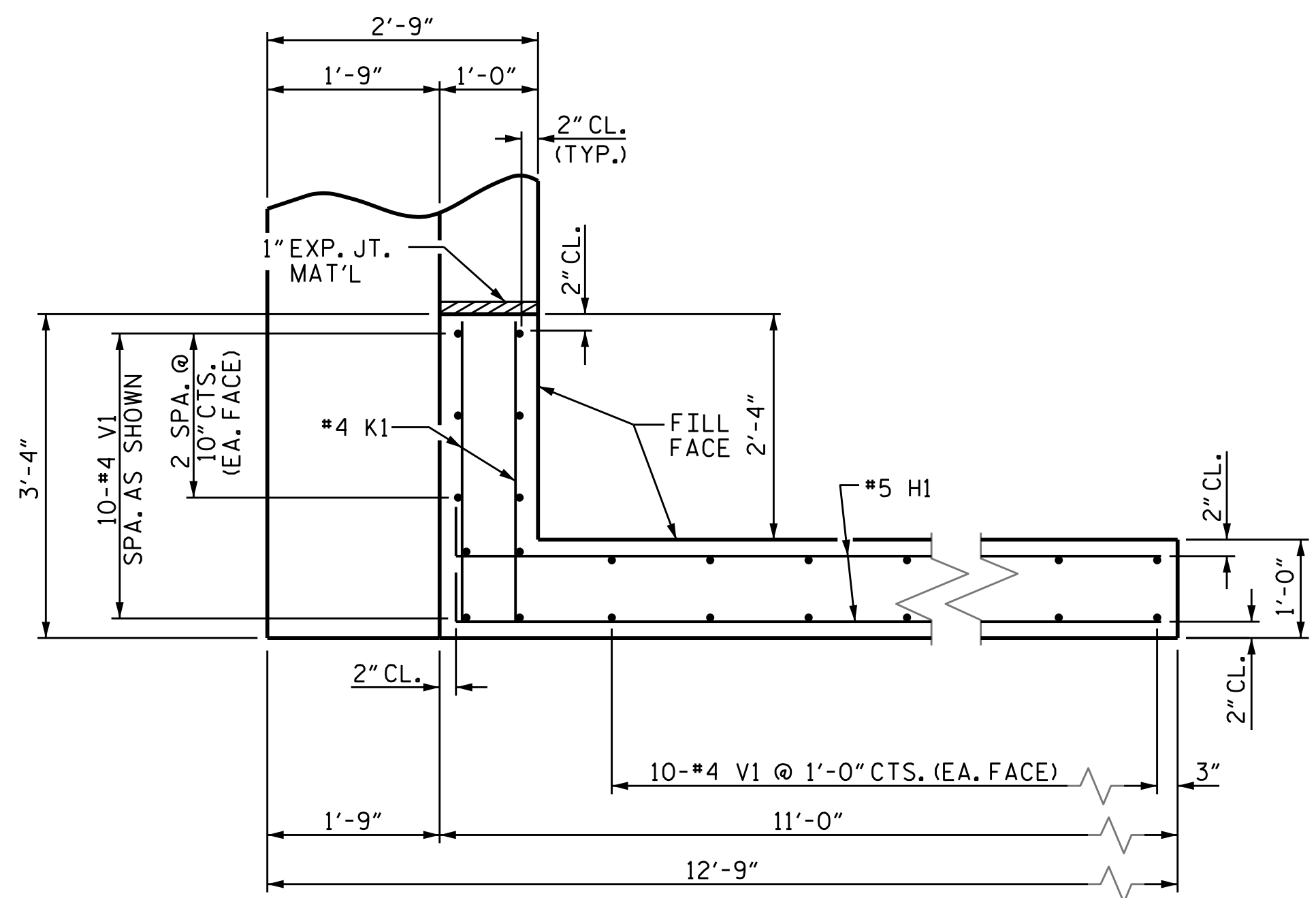
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ELEVATION OF WING (W1)

ELEVATION OF WING (W2)

WING DETAILS

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GRANVILLE COUNTY
 STATION: 16+76.00 -L-
 SHEET 3 OF 4

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

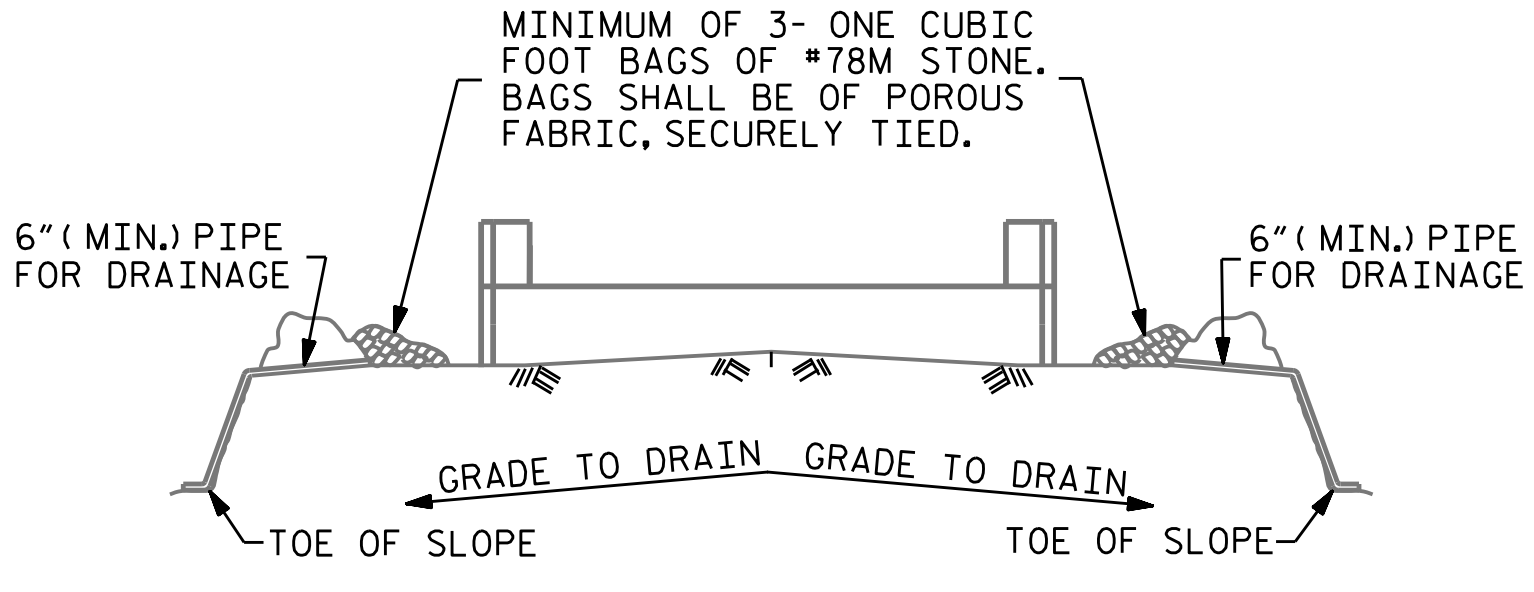


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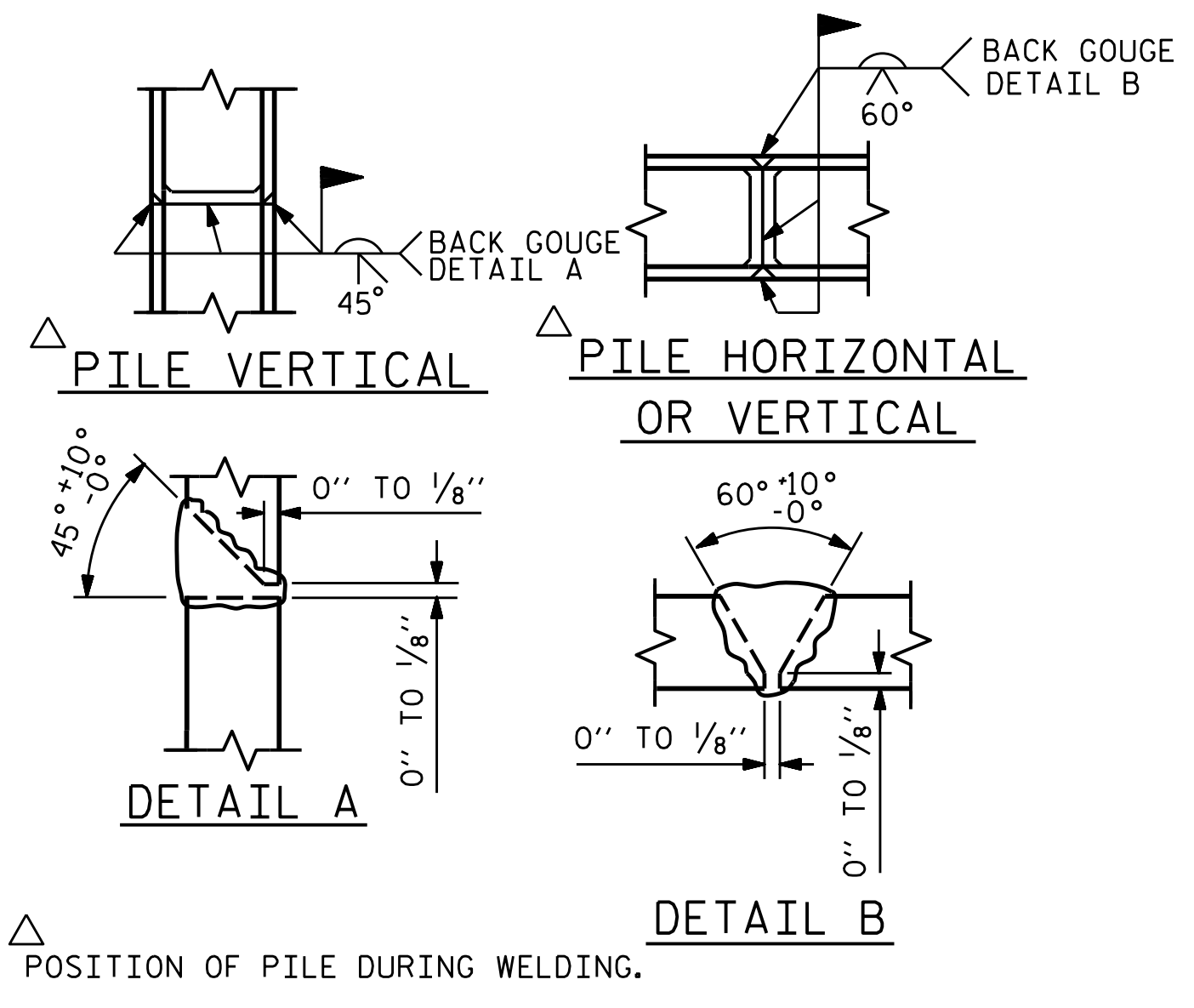


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

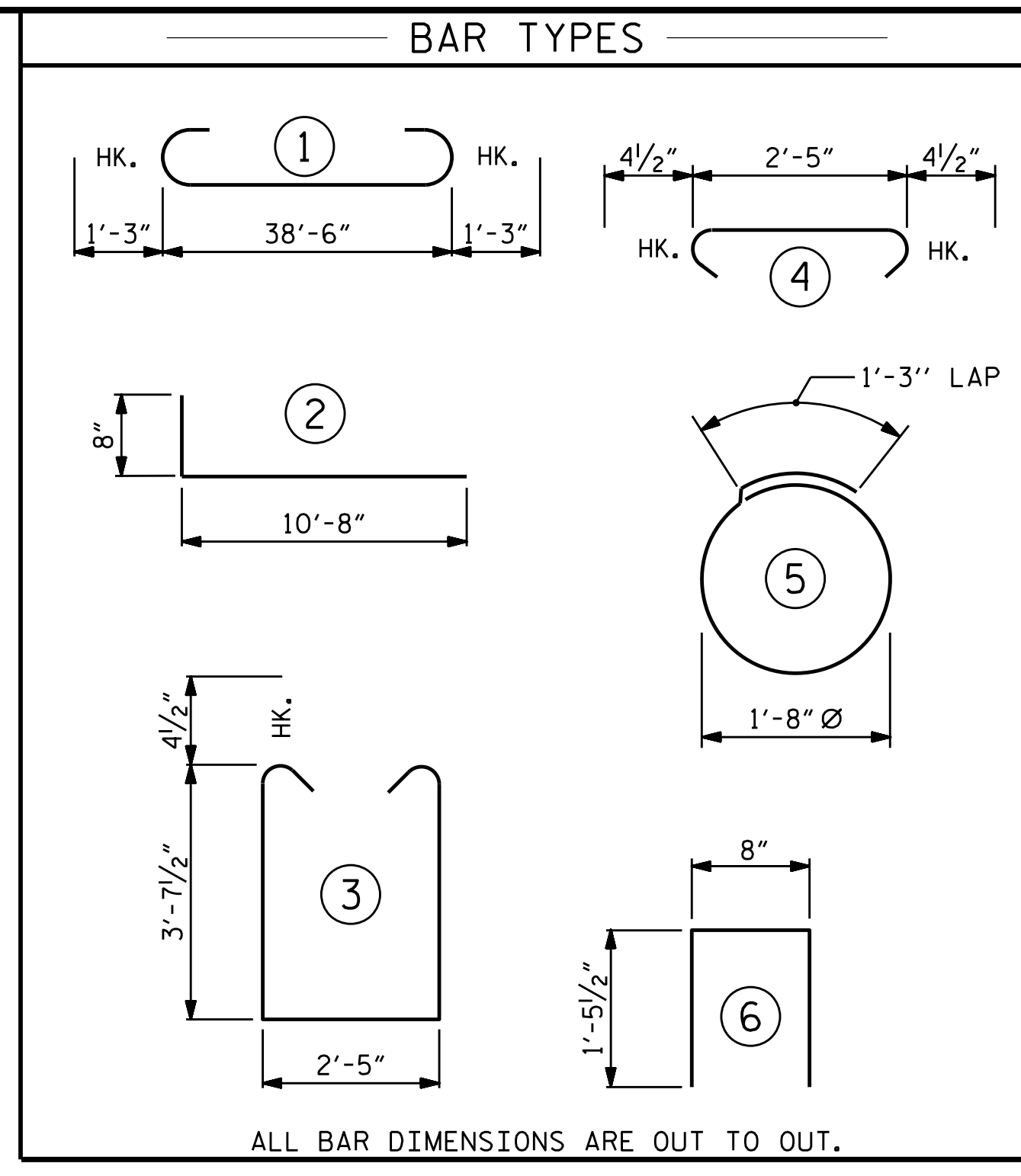
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

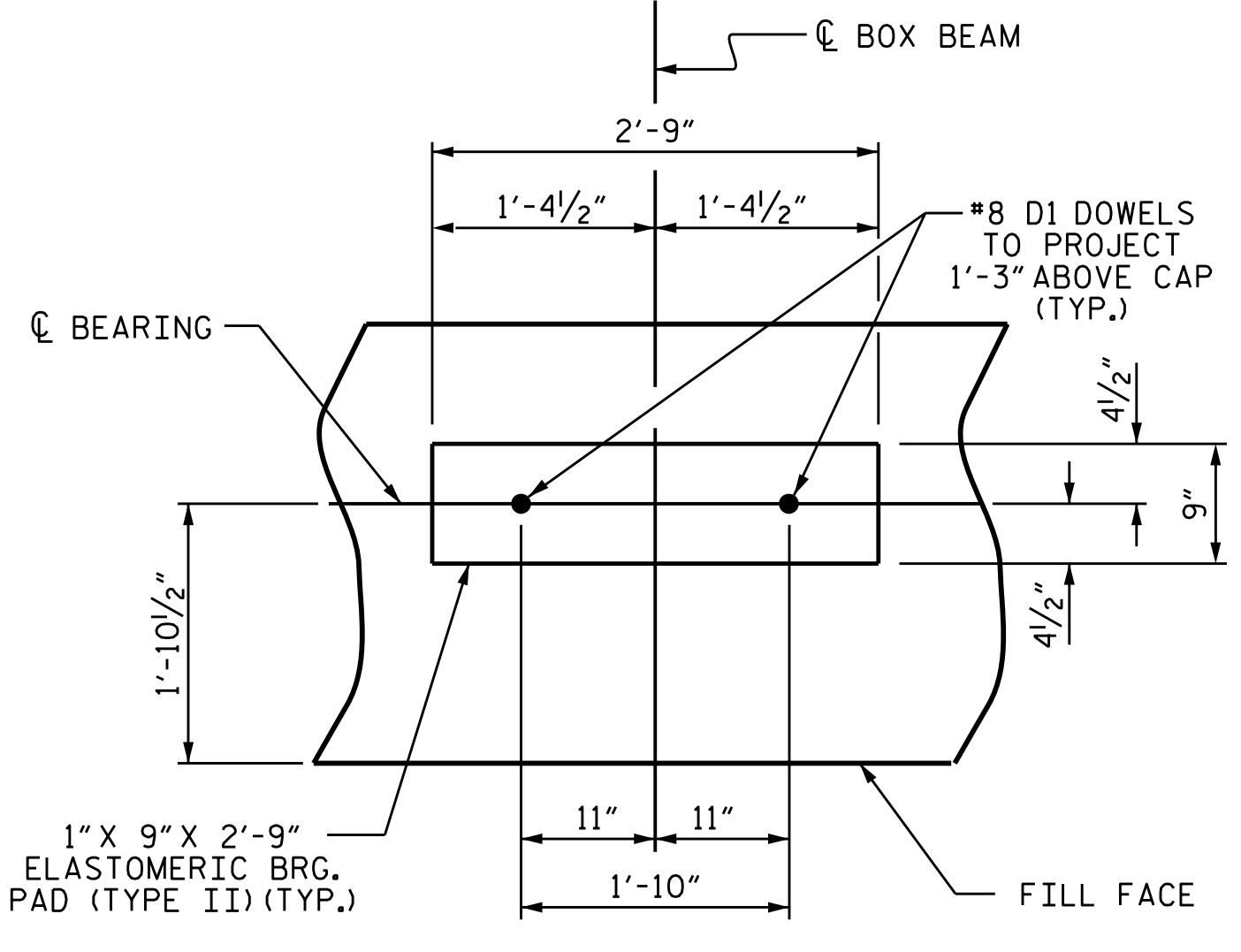
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

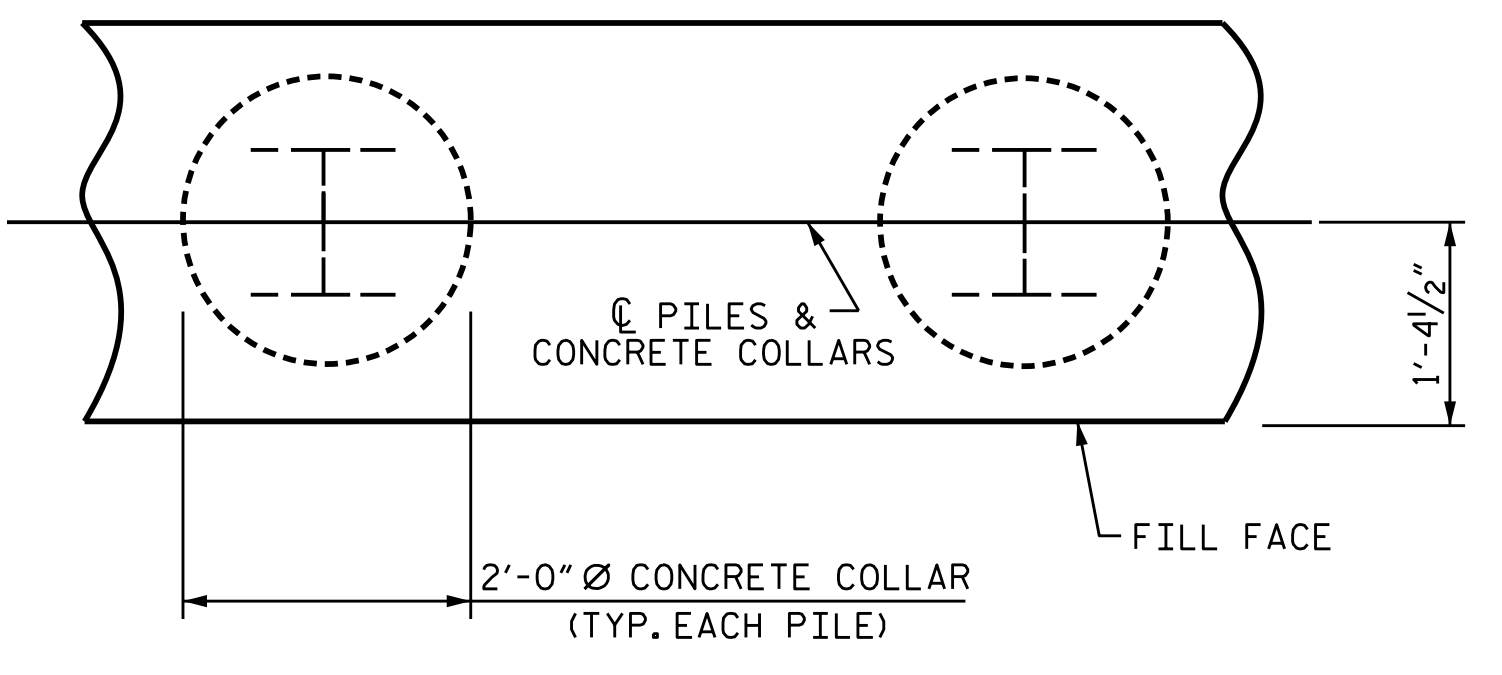


BILL OF MATERIAL FOR ONE END BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	41'-0"	1115
B2	28	#4	STR	20'-7"	385
B3	10	#4	STR	2'-5"	16
D1	22	#8	STR	2'-3"	132
H1	48	#5	2	11'-4"	567
K1	12	#4	STR	2'-11"	23
K2	12	#4	STR	20'-7"	165
S1	50	#4	3	10'-5"	348
S2	50	#4	4	3'-2"	106
S3	28	#4	5	6'-6"	122
U1	33	#4	6	3'-7"	79
V1	60	#4	STR	7'-2"	287
V2	66	#4	STR	5'-3"	231
REINFORCING STEEL					3576 LBS.
CLASS A CONCRETE BREAKDOWN					
POUR #1 CAP, LOWER PART OF WINGS & COLLARS				20.1 C.Y.	
POUR #2 BACKWALL & UPPER PART OF WINGS				5.4 C.Y.	
TOTAL CLASS A CONCRETE				25.5 C.Y.	



DETAIL "A"

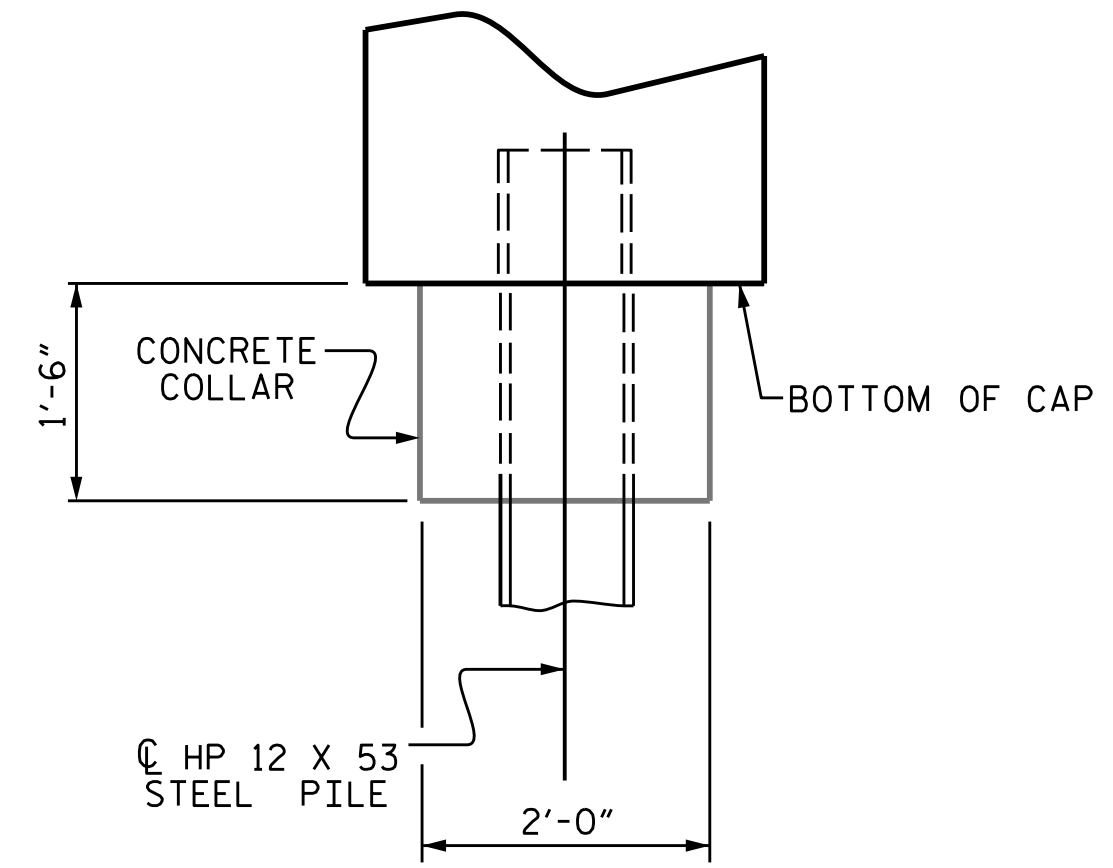
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



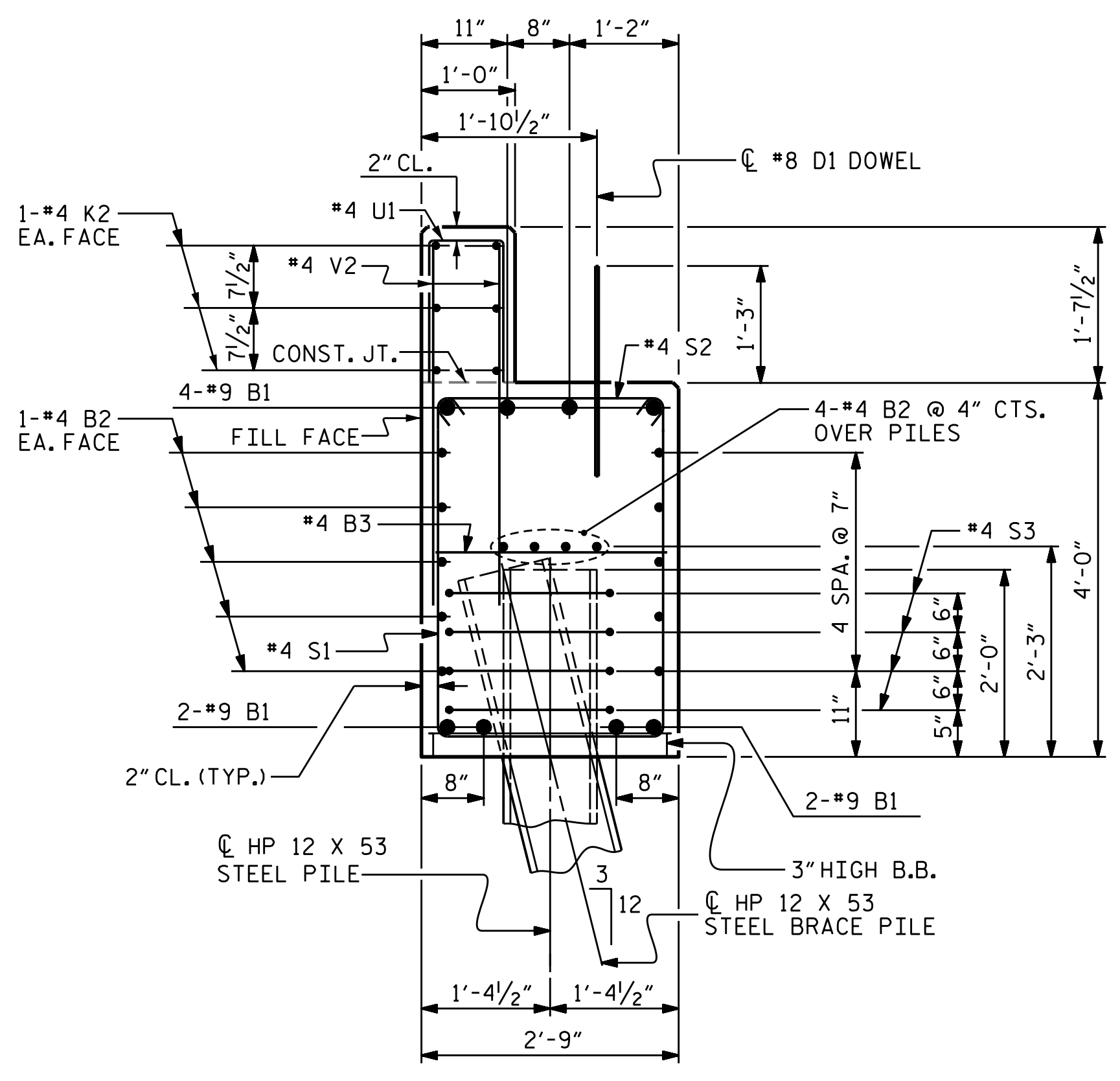
PLAN

CORROSION PROTECTION FOR STEEL PILES DETAIL

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



ELEVATION



SECTION A-A

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

NOTE: END BENT 1 HAS VERTICAL PILES ONLY (NO BRACE PILES)

PROJECT NO. BP5.R103

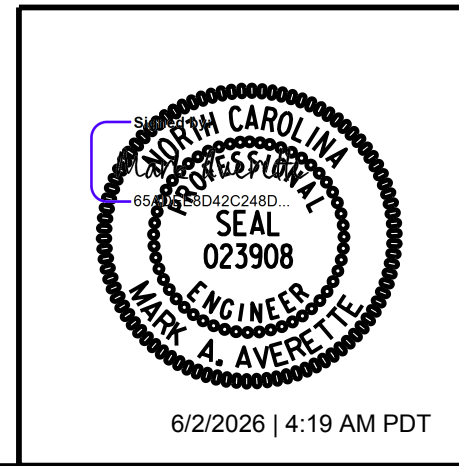
GRANVILLE COUNTY

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SHEET 4 OF 4

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RALEIGH
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END BENT 1 & 2 DETAILS



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2			4		

TOTAL SHEETS: 18

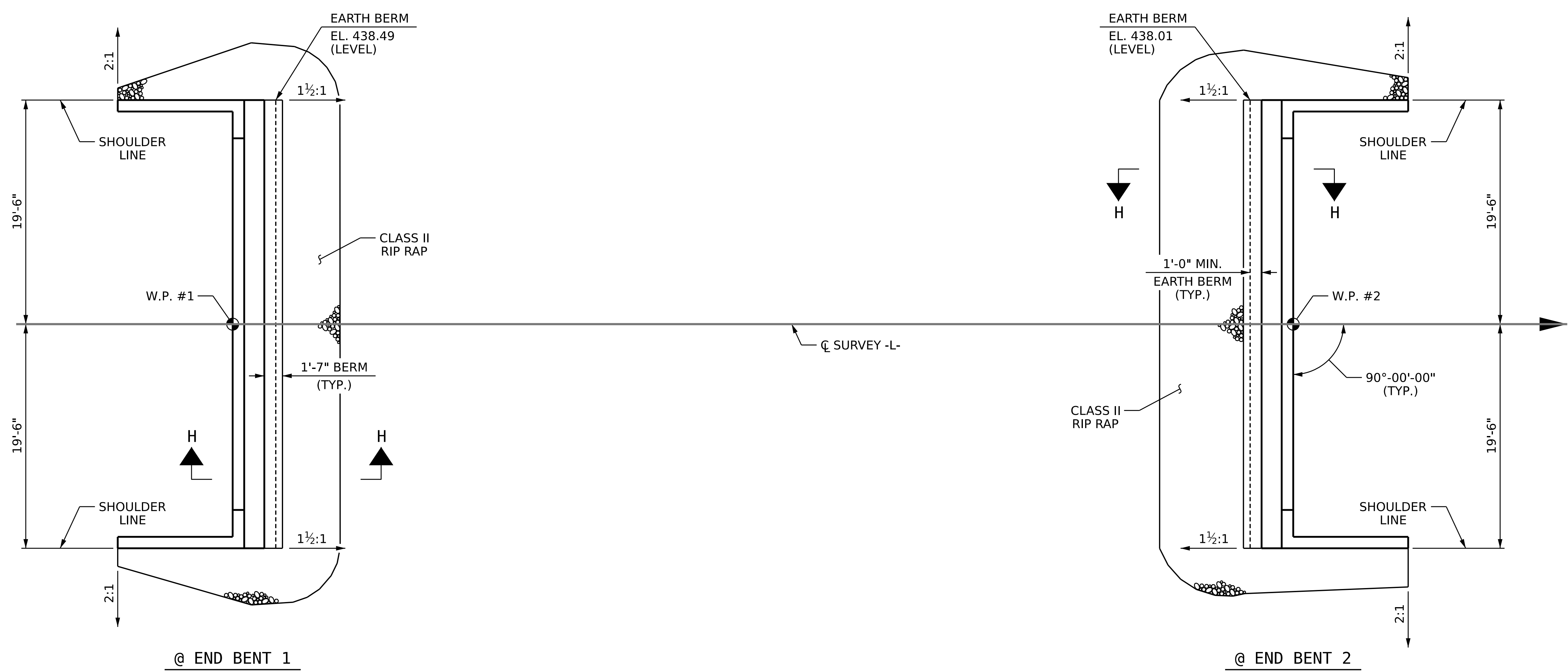
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CHECKED BY : J.A. BATTS DATE : 6-24

DESIGN ENGINEER OF RECORD: M.A. AVERETTE DATE : 6-24

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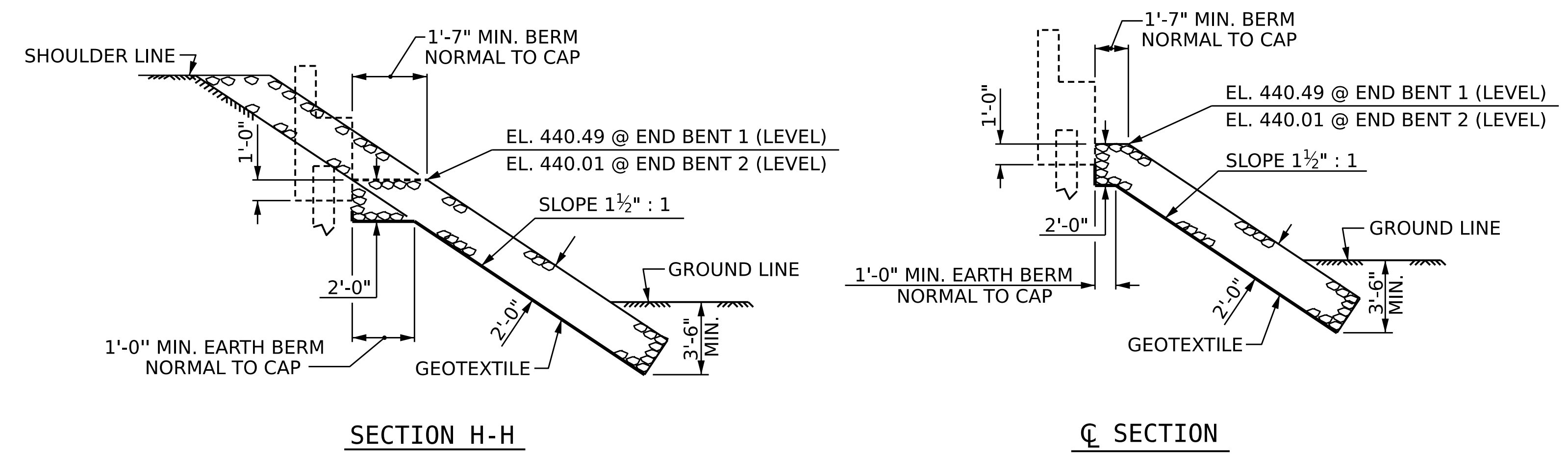
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NOTES:
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

PLAN OF RIP RAP

ESTIMATED QUANTITIES		
BRIDGE @ STA. 16+76.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	90	95
END BENT 2	80	85

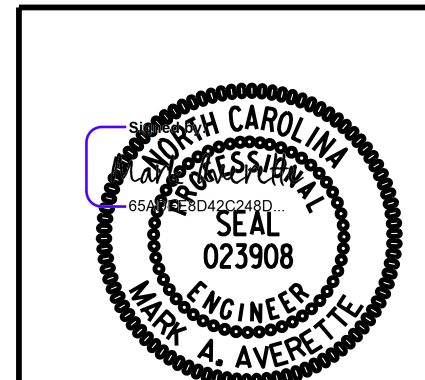


BERM RIP RAPPED

PROJECT NO. BP5.R103
GRANVILLE COUNTY
STATION: 16+76.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS



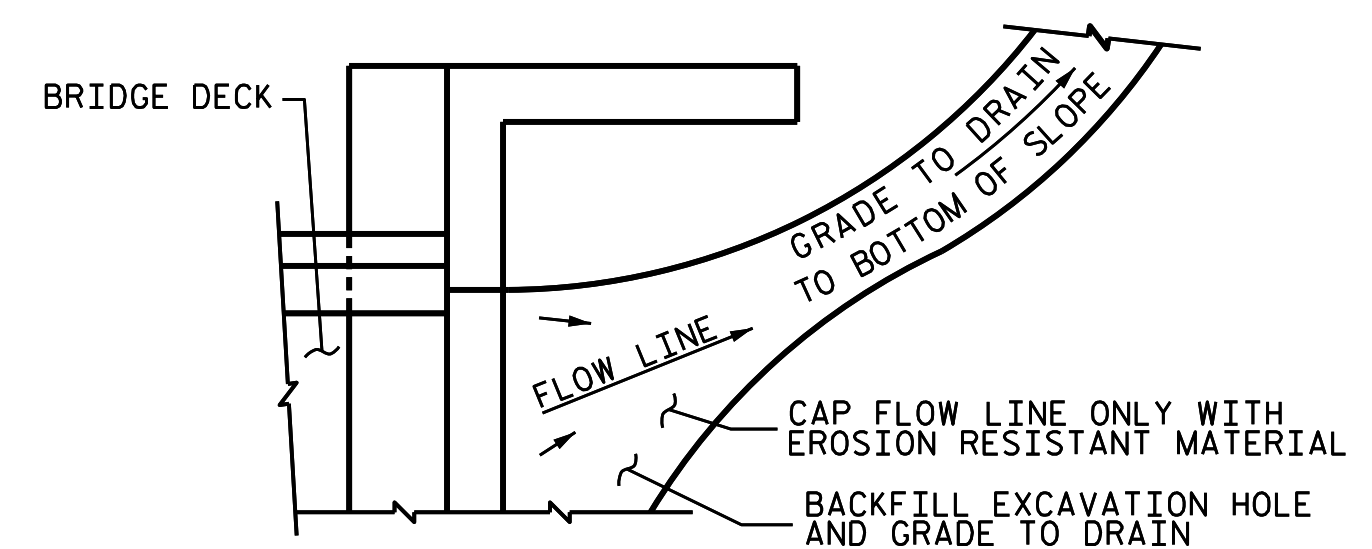
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5640 Dillard Drive, Suite 200
Cary, NC 27518
LICENSURE NO. C-5315

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DESIGN ENGINEER OF RECORD: M.A. AVERETTE DATE : 6-24

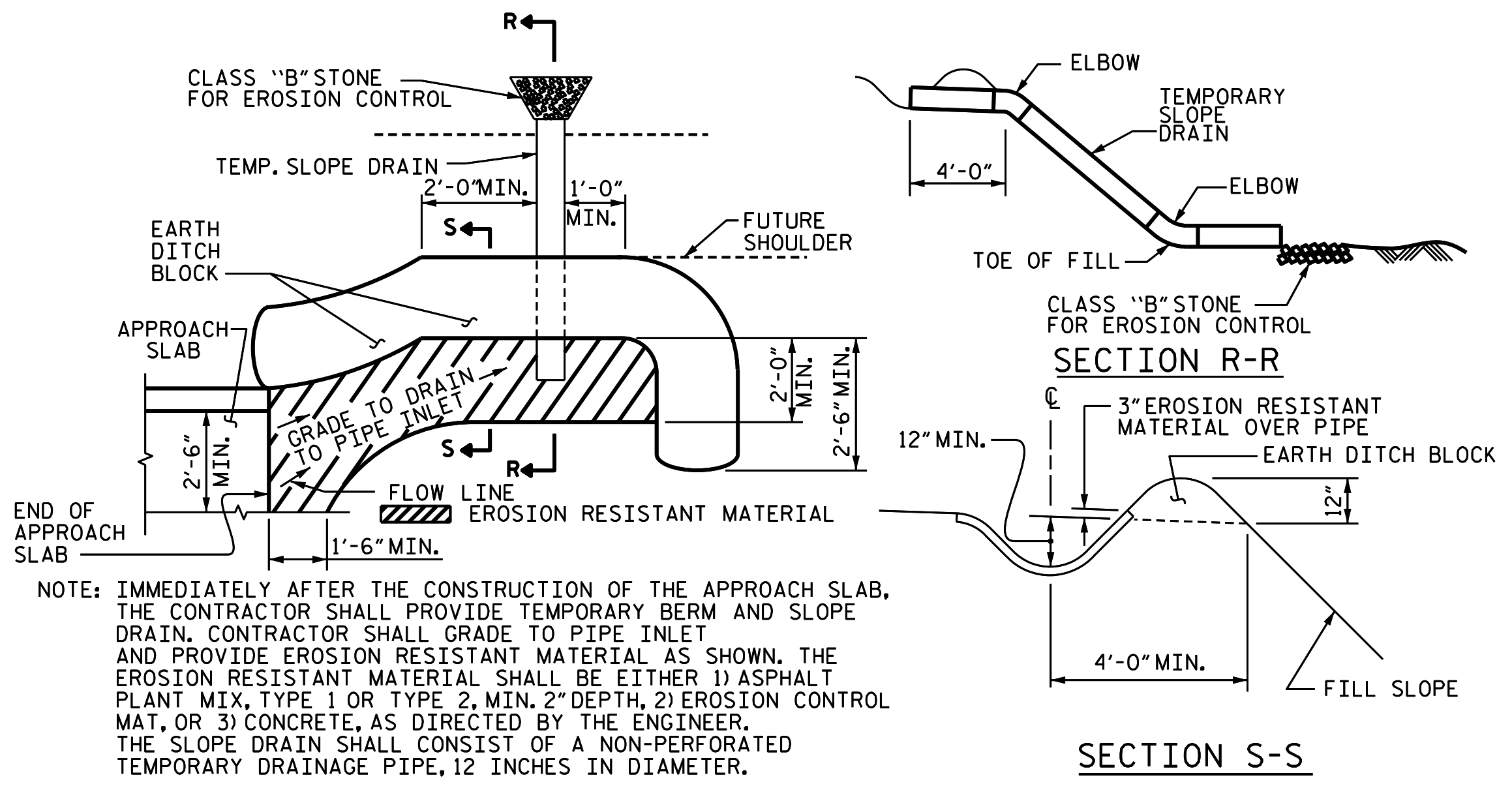
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UNLESS ALL SIGNATURES COMPLETED**

6/2/2026 6:42:00 AM P:\Raleigh\Projects\2022\Div 5 (WG)\BP5R103_Granville_107_Graham_Hobgood\Structures\Drawings\Final\BP5R103_SMJ_AS2.dgn



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

TEMPORARY DRAINAGE DETAIL



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

TEMPORARY BERM AND SLOPE DRAIN DETAILS

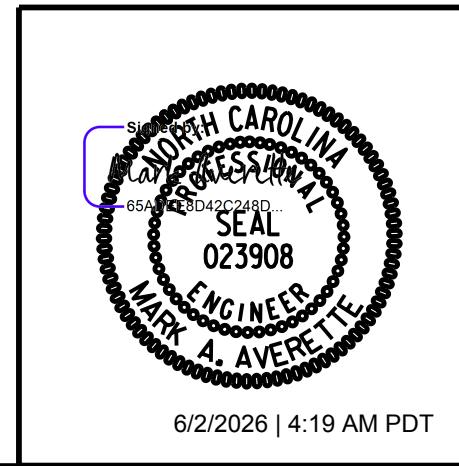
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

PROJECT NO. BP5.R103
GRANVILLE COUNTY
 STATION: 16+76.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

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



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-18
1			3			TOTAL SHEETS
2			4			18

DRAWN BY : T. BANKOVICH DATE : 6-24
 CHECKED BY : J.A. BATTS DATE : 6-24
 DESIGN ENGINEER OF RECORD: M.A. AVERETTE DATE : 6-24

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

