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STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

12/2/2016

Note: Not to Scale

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin (EIP)	○
Computed Property Corner	×
Existing Concrete Monument (ECM)	□
Parcel/Sequence Number	(123)
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	---WLB---
Proposed Wetland Boundary	WLB
Existing Endangered Animal Boundary	---EAB---
Existing Endangered Plant Boundary	---EPB---
Existing Historic Property Boundary	---HPB---
Known Contamination Area: Soil	---S---
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	○
Well	○
Small Mine	×
Foundation	□
Area Outline	□
Cemetery	□
Building	□
School	□
Church	□
Dam	□

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

Primary Horiz Control Point	○
Primary Horiz and Vert Control Point	●
Secondary Horiz and Vert Control Point	◆
Vertical Benchmark	⊠
Existing Right of Way Monument	△
Proposed Right of Way Monument (Rebar and Cap)	▲
Proposed Right of Way Monument (Concrete)	▲
Existing Permanent Easement Monument	◇
Proposed Permanent Easement Monument (Rebar and Cap)	◆
Existing C/A Monument	▲
Proposed C/A Monument (Rebar and Cap)	▲
Proposed C/A Monument (Concrete)	▲
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Existing Control of Access Line	-----
Proposed Control of Access Line	-----
Proposed ROW and CA Line	-----
Existing Easement Line	-----
Proposed Temporary Construction Easement	-----
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	-----
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊕
Pavement Removal	-----
VEGETATION:	
Single Tree	○
Single Shrub	○
Hedge	-----

Woods Line	-----
Orchard	-----
Vineyard	-----

EXISTING STRUCTURES:

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

UTILITIES:

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

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

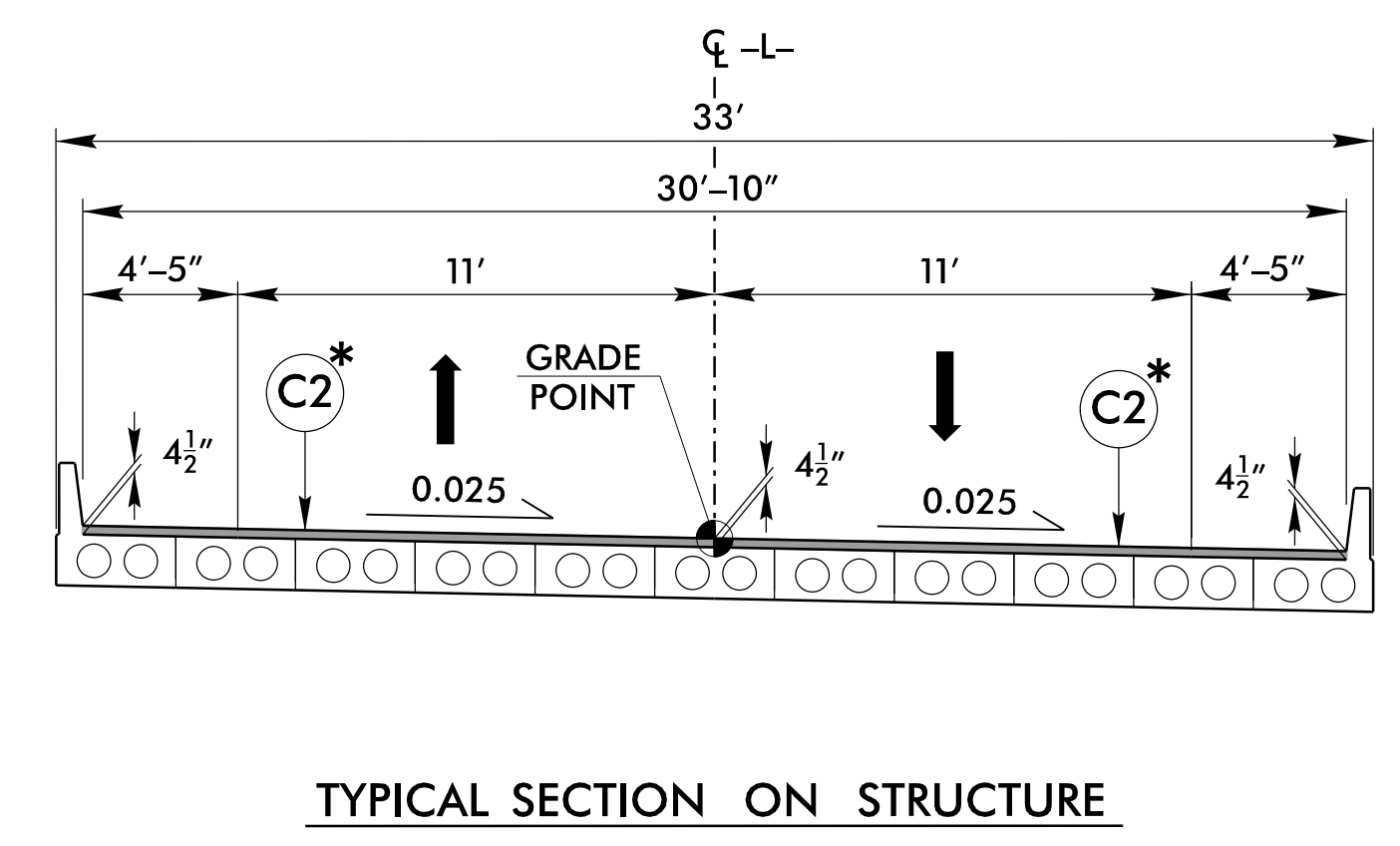
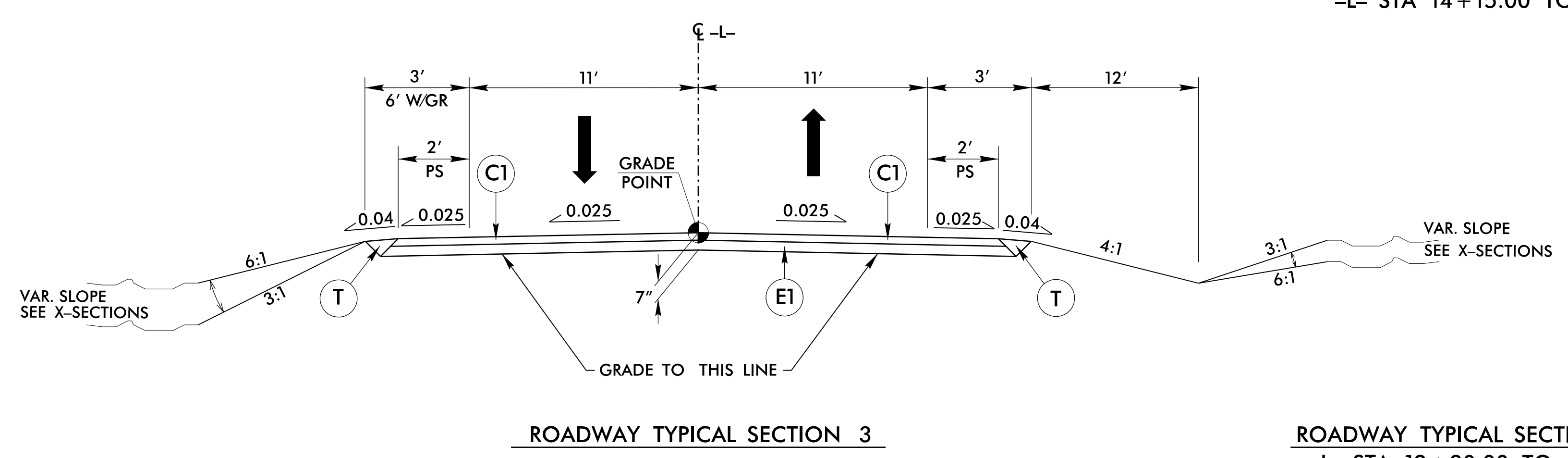
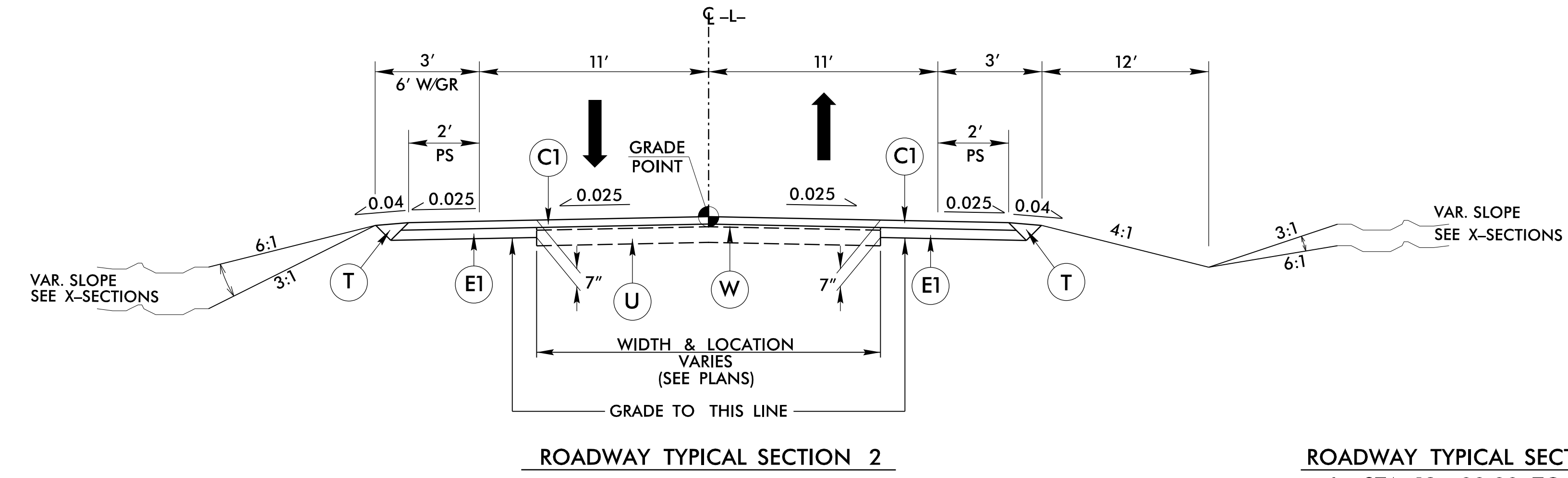
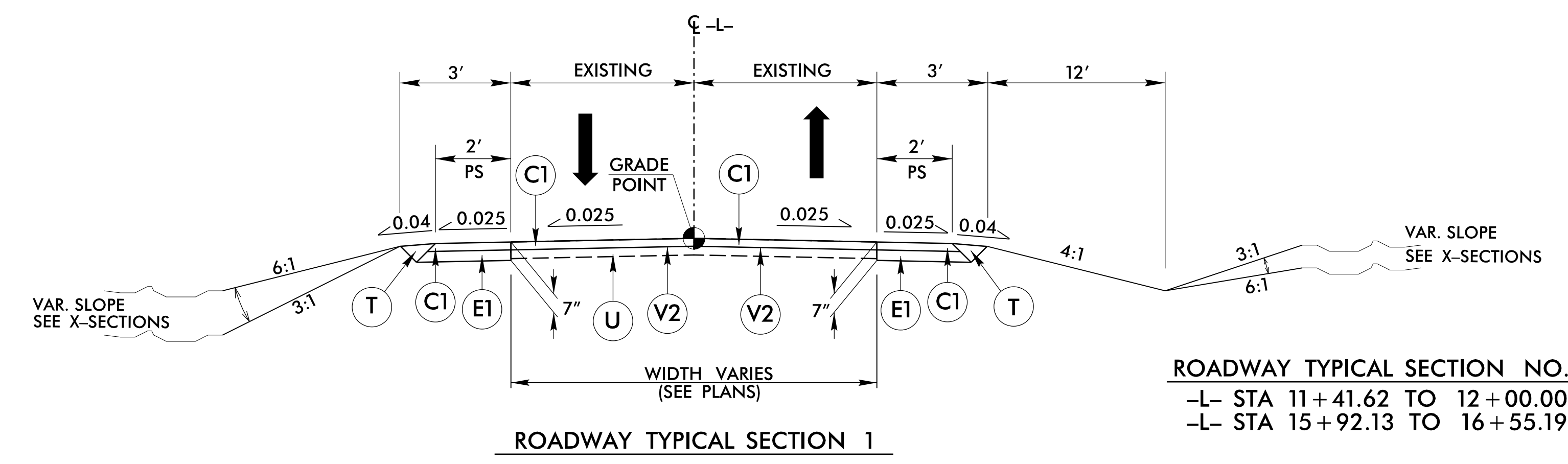
MISCELLANEOUS:

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

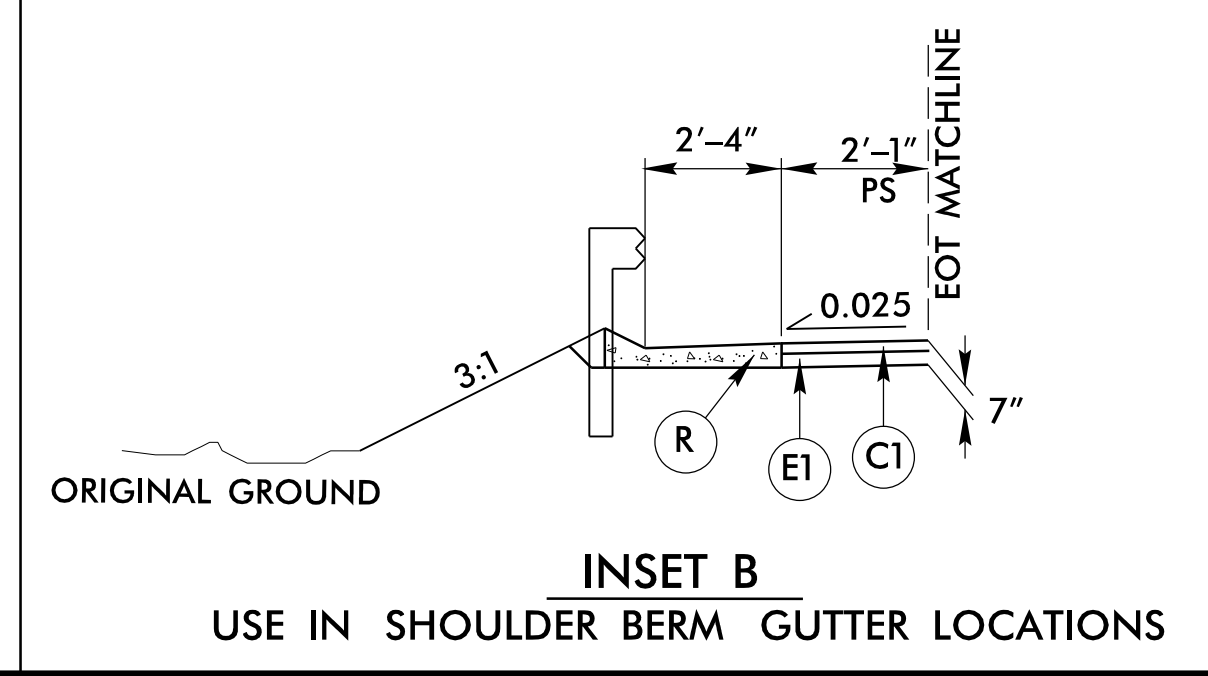
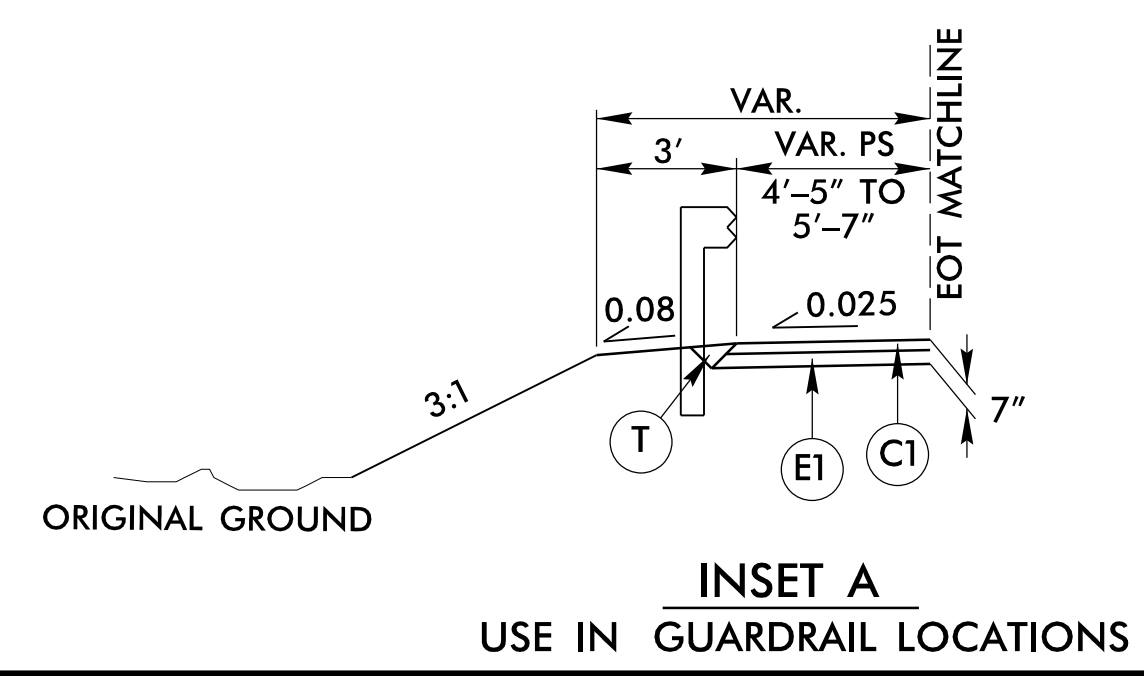
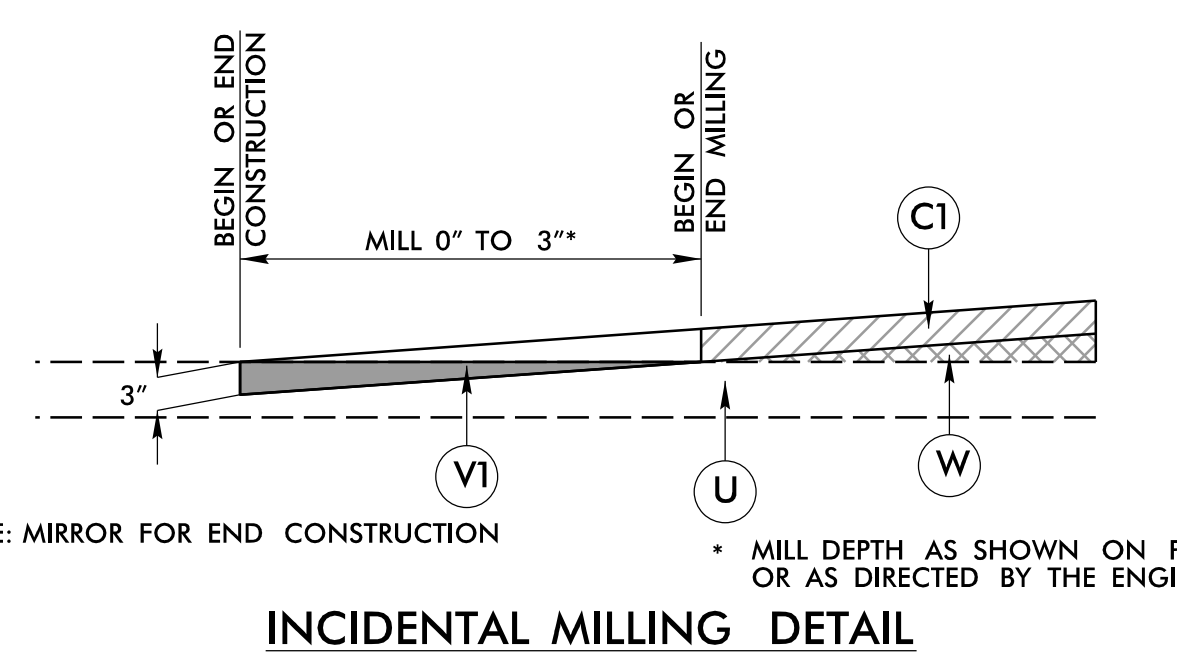
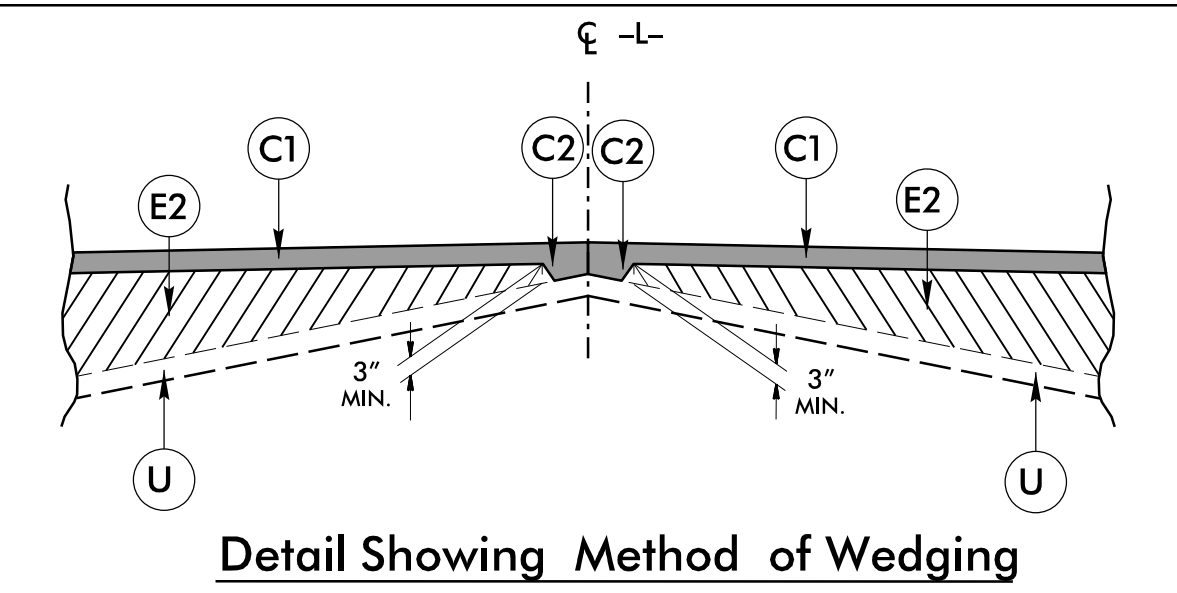
8/17/99

PAVEMENT SCHEDULE FINAL DESIGN	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
R	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V1	INCIDENTAL MILLING.
V2	3" MILLING.
W	WEDGING DETAIL.

ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.



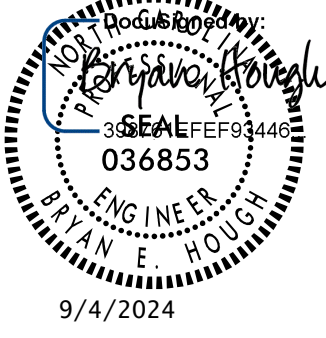


TYPICAL SECTION ON STRUCTURE
 -L- STA 13+10.84 TO 13+83.16
 * SEE STRUCTURES PLANS S-06 AND S-08 FOR DEPTH OF ASPHALT WEARING SURFACE ON BRIDGE

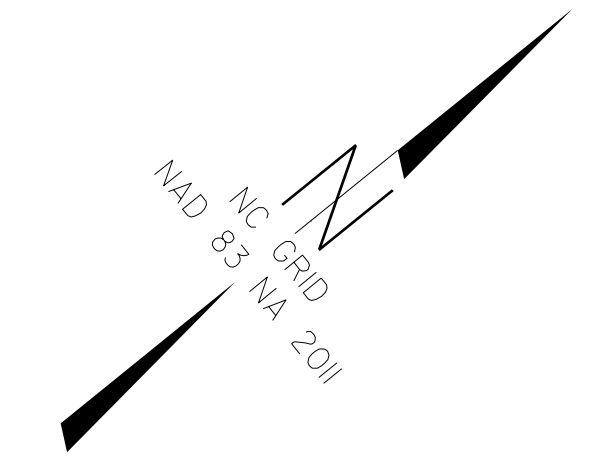
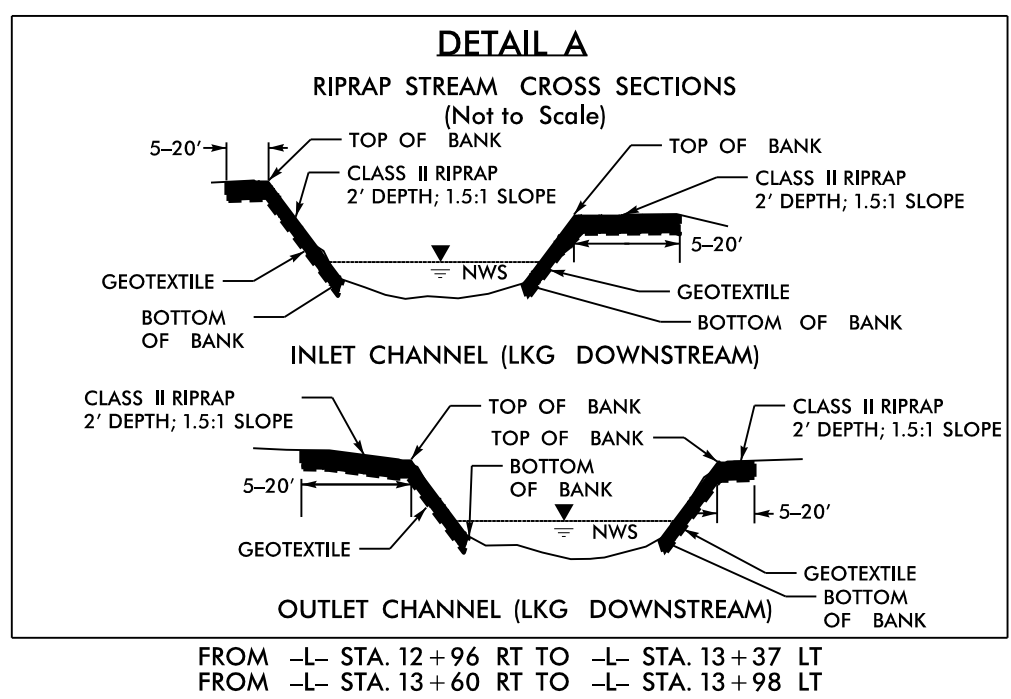


PROJECT REFERENCE NO. BP6.R008	SHEET NO. 2A-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER <i>[Signature]</i> SEAL 036853 9/4/2024	PAVEMENT DESIGN ENGINEER <i>[Signature]</i> SEAL 038176 9/4/2024
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
KCI ASSOCIATES OF N.C., P.A. 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-9214 NC Firm License No. C-0764	

REVISIONS

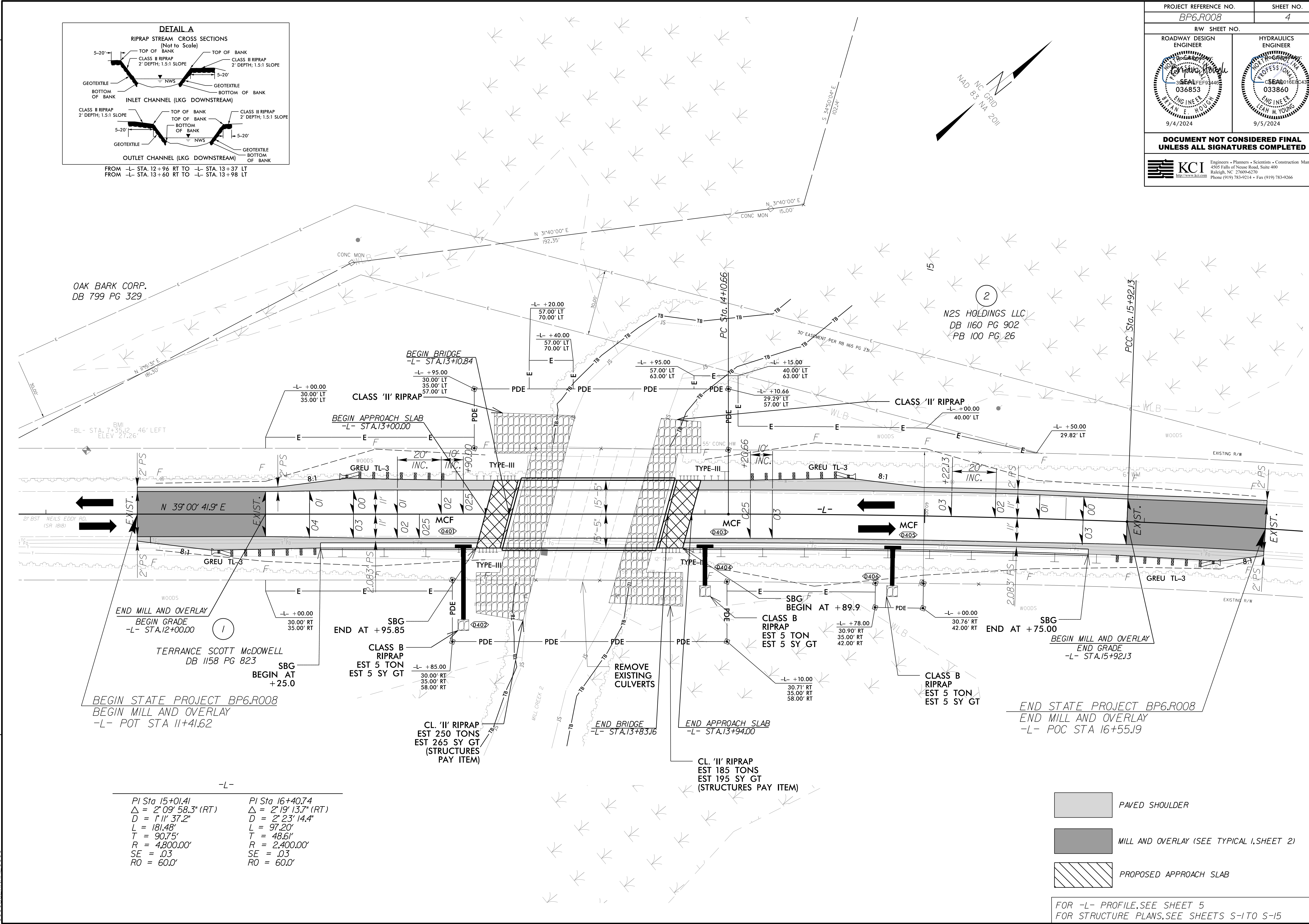
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PROJECT REFERENCE NO. <i>BP6.R008</i>		SHEET NO. <i>4</i>	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		PROFESSIONAL SEAL	
 036853 LEAH M. YOUNG 9/4/2024		 033860 LEAH M. YOUNG 9/5/2024	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
 KCI Engineers • Planners • Scientists • Construction Managers Raleigh, NC 27609-6270 Phone (919) 783-9214 • Fax (919) 783-9266			






8/17/19
 03-SEP-2024 16:25
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 USER:VNF

REVISIONS




-L-	
PI Sta 15+01.41	PI Sta 16+40.74
$\Delta = 2' 09" 58.3" (RT)$	$\Delta = 2' 19" 13.7" (RT)$
$D = 1' 11" 37.2"$	$D = 2' 23" 14.4"$
$L = 181.48'$	$L = 97.20'$
$T = 90.75'$	$T = 48.61'$
$R = 4,800.00'$	$R = 2,400.00'$
$SE = .03$	$SE = .03$
$RO = 60.0'$	$RO = 60.0'$

-  PAVED SHOULDER
-  MILL AND OVERLAY (SEE TYPICAL 1, SHEET 2)
-  PROPOSED APPROACH SLAB

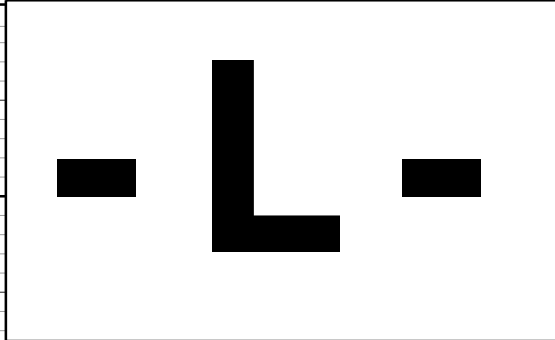
FOR -L- PROFILE, SEE SHEET 5
FOR STRUCTURE PLANS, SEE SHEETS S-1 TO S-15

5/14/99

PROJECT REFERENCE NO. <i>BP6.R008</i>		SHEET NO. 5
ROADWAY DESIGN ENGINEER <i>Seal</i> SEAL 036853 9/4/2024	HYDRAULICS ENGINEER <i>Seal</i> SEAL 033880 9/5/2024	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		
 KCI <small>Engineers • Planners • Scientists • Construction Managers 4305 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-9214 • Fax (919) 783-9266</small>		

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 720	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 10.2	FT
BASE DISCHARGE	= 1282	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 11.58	FT
OVERTOPPING DISCHARGE	= 3600	CFS
OVERTOPPING FREQUENCY	= >500+	YRS
OVERTOPPING ELEVATION	= 16.5	FT
DATE OF SURVEY	= 5/5/2022	
W.S. ELEVATION AT DATE OF SURVEY	= 7.3	FT



BMI
-L- STA. 11+18.53, 29.04' LT
EL = 27.26'

**BEGIN GRADE -L- STA 12+00.00
ELEV. 22.86'**

*PI = 13+25.00
EL = 17.73'
VC = 130'
K = 51
DS = 35 mph*

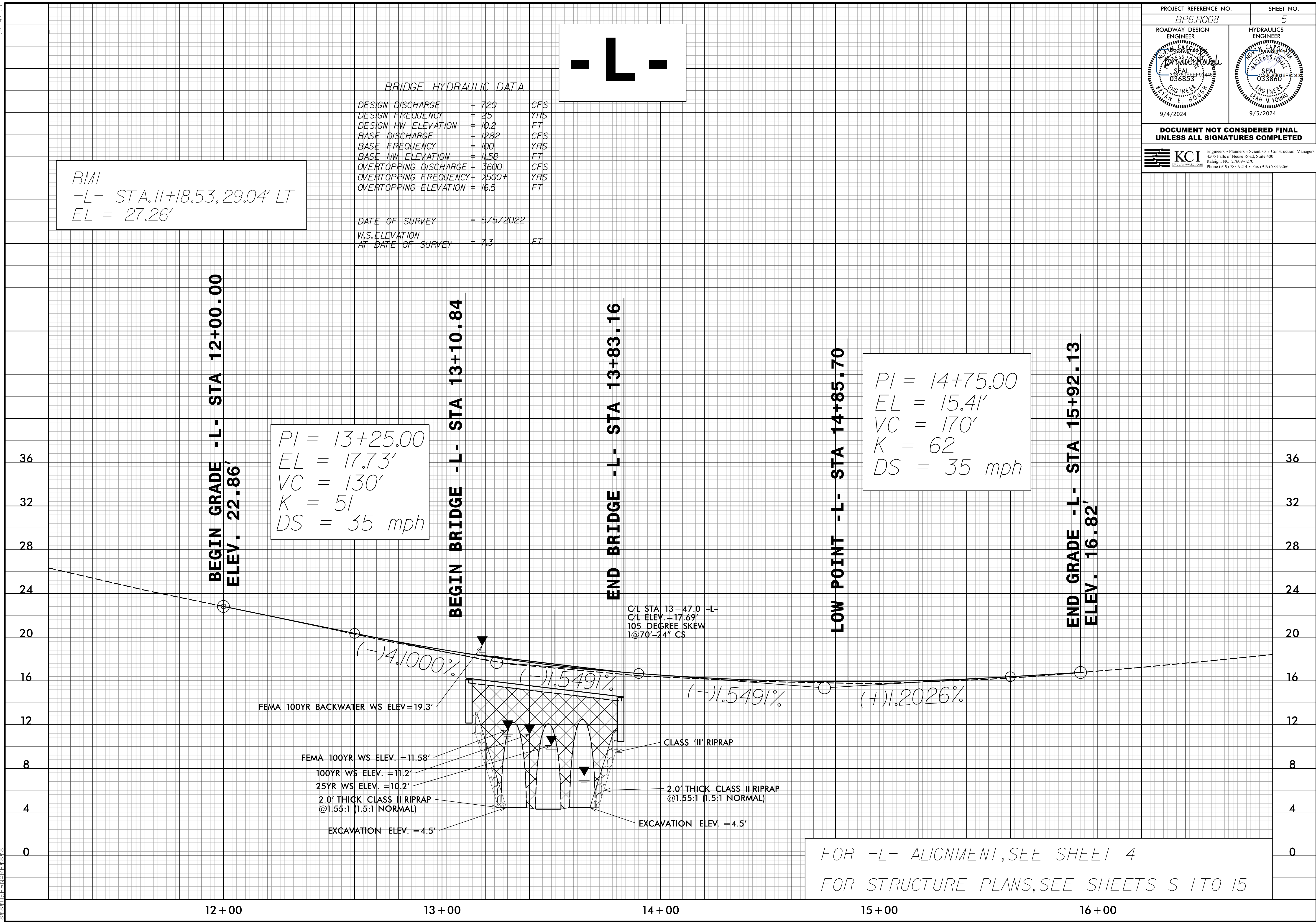
BEGIN BRIDGE -L- STA 13+10.84

END BRIDGE -L- STA 13+83.16

LOW POINT -L- STA 14+85.70

*PI = 14+75.00
EL = 15.41'
VC = 170'
K = 62
DS = 35 mph*

**END GRADE -L- STA 15+92.13
ELEV. 16.82'**



C/L STA 13+47.0 -L-
C/L ELEV. = 17.69'
105 DEGREE SKEW
1@70'-24" CS

FEMA 100YR BACKWATER WS ELEV = 19.3'

FEMA 100YR WS ELEV. = 11.58'
 100YR WS ELEV. = 11.2'
 25YR WS ELEV. = 10.2'
 2.0' THICK CLASS II RIPRAP
 @1.55:1 (1.5:1 NORMAL)

EXCAVATION ELEV. = 4.5'

CLASS 'II' RIPRAP

2.0' THICK CLASS II RIPRAP
@1.55:1 (1.5:1 NORMAL)

EXCAVATION ELEV. = 4.5'

FOR -L- ALIGNMENT, SEE SHEET 4
FOR STRUCTURE PLANS, SEE SHEETS S-1 TO 15

07 SEP 2024 10:27 AM
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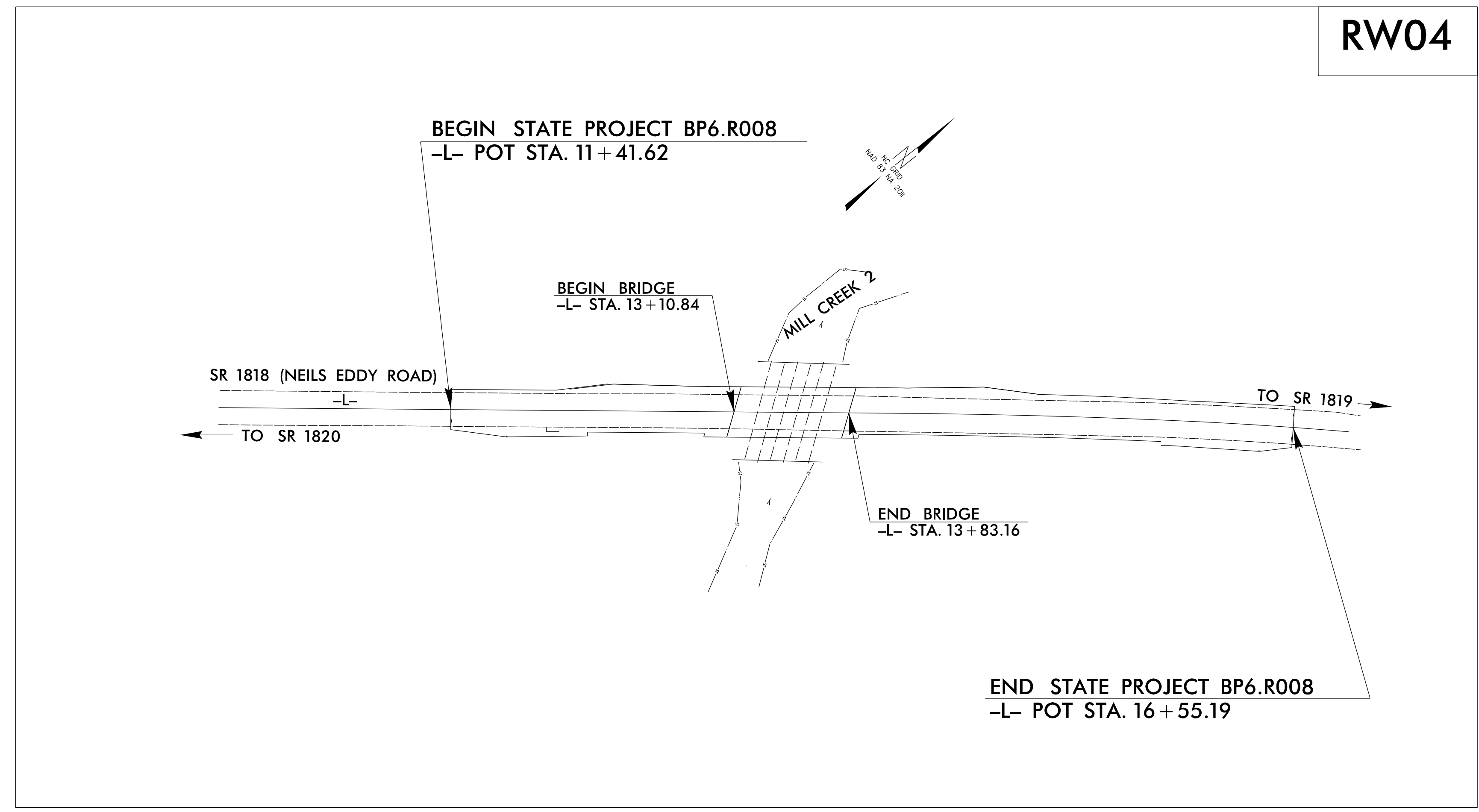
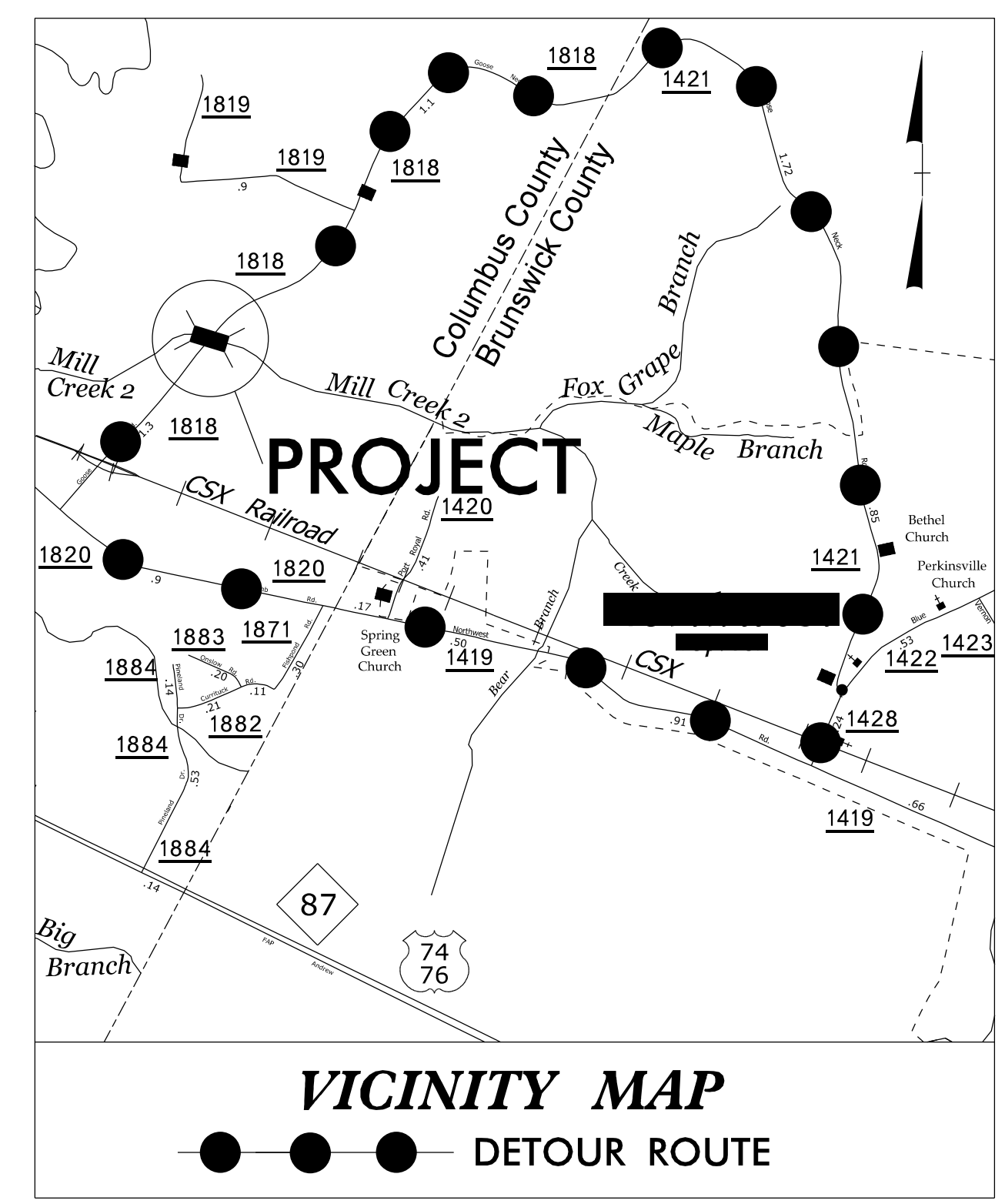
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP6.R008	RW01	05

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

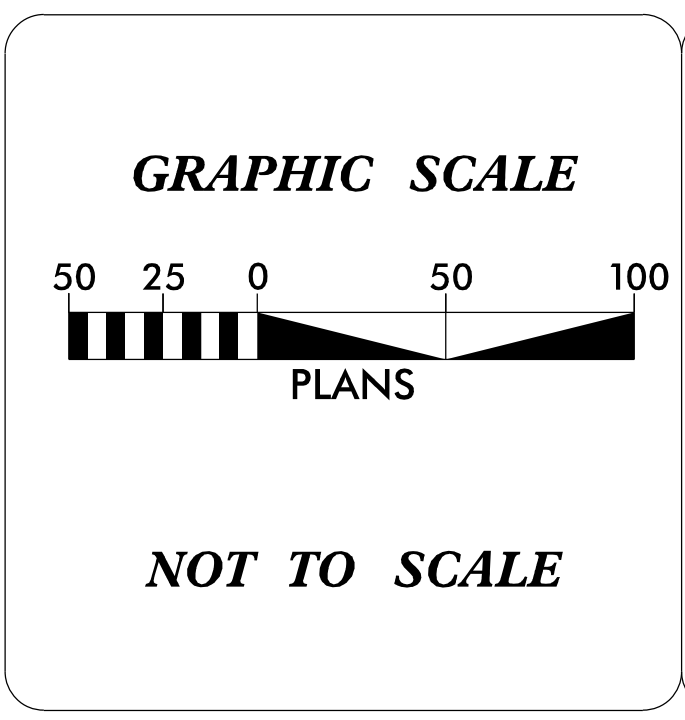
SURVEY CONTROL, EXISTING CENTERLINES,
RIGHT OF WAY, EASEMENTS AND PROPERTY TIES

COLUMBUS COUNTY

TIP PROJECT: BP6.R008



RW04



DATUM DESCRIPTION
 THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "230271-102" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 211499.9490 (ft) EASTING: 2242584.8795 (ft) ELEVATION: 44.83 (ft)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GRID TO GROUND) IS: 0.9999995030
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "230271-102" TO -L- STATION 10+00.00 IS N 37-40'48.5" E 956.85 (ft)
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

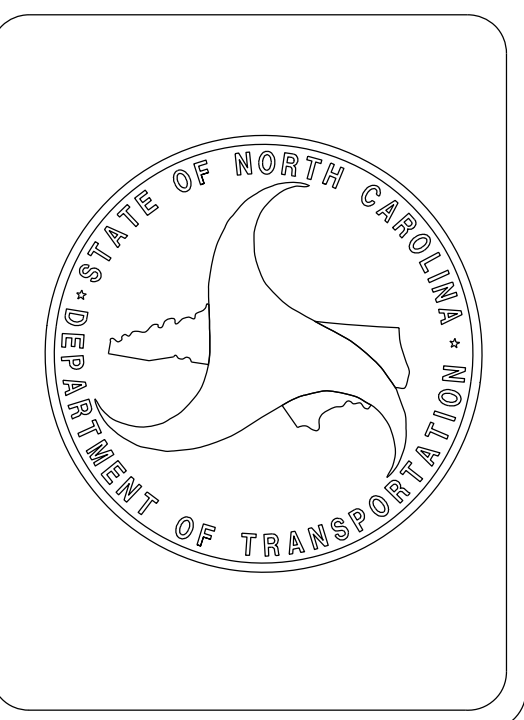
GEL SOLUTIONS
 an Affiliate of THE GEL GROUP, INC.
 2700 SUMNER BLVD.
 SUITE 106
 RALEIGH, NC 27616
 (919) 544-1100
 WWW.GEL-SOLUTIONS.COM

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: 10/30/2023	LETTING DATE: 09/17/2025
---	------------------------------------

Digitally signed by
Parks H. Icenhour, Jr.
 Date: 2025.06.23
 09:49:35 -04'00'


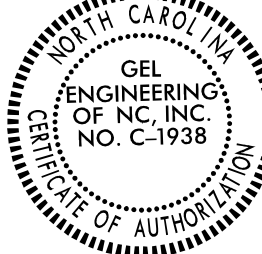

SIGNATURE: _____ Date: _____



23-JUN-2025 09:28 C:\Projects\NCDOT\divisions\6_group\rw_jobs\ss4\BP6.R008\BP6.R008 Files\BP6.R008 Files\Microstation files\B0271_RW01.dgn Jason.Prevatte

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO. BP6.R008	SHEET NO. RW02C-1
Location and Surveys	
 <small>an Affiliate of THE GEL GROUP, INC. 2700 SUMNER BLVD. SUITE 106 RALEIGH, NC 27616 (919) 544-1100 WWW.GEL-SOLUTIONS.COM</small>	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, Parks H. Icenhour Jr., PLS, certify that the Project Control was verified under my supervision from an actual GPS survey made by others and the following information was used to perform the survey:

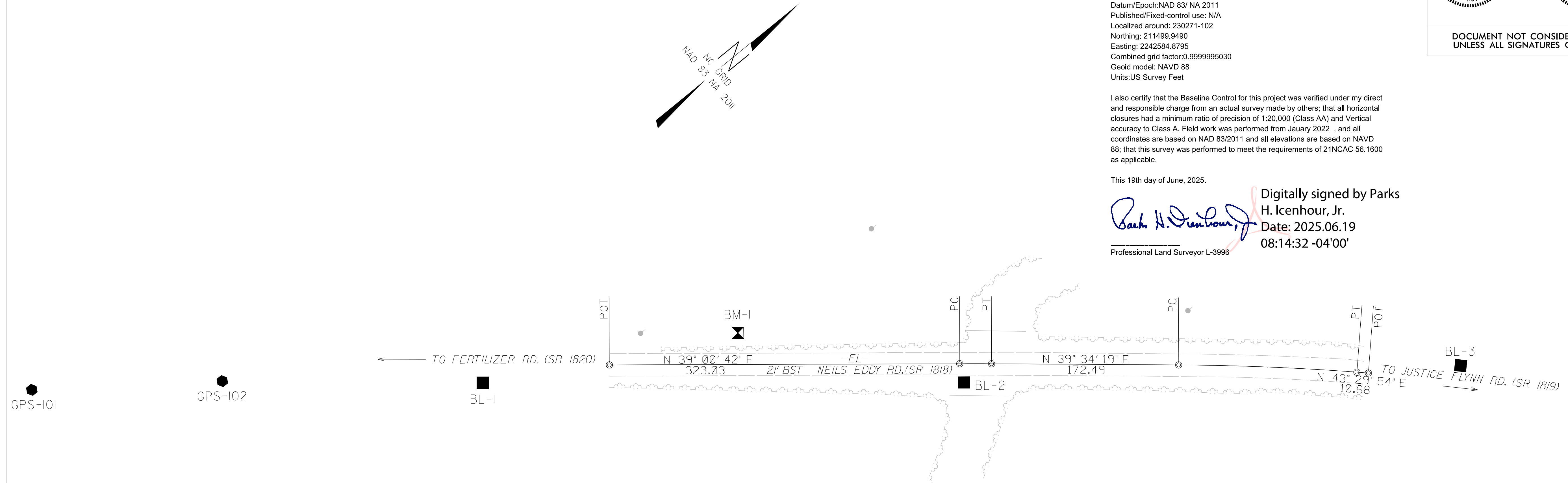
Class of survey: **AA**
 Type of GPS field procedure: RTN
 Dates of survey: JANUARY 2022
 Datum/Epoch: NAD 83/ NA 2011
 Published/Fixed-control use: N/A
 Localized around: 230271-102
 Northing: 211499.9490
 Easting: 2242584.8795
 Combined grid factor: 0.9999995030
 Geoid model: NAVD 88
 Units: US Survey Feet

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

This 19th day of June, 2025.

Digitally signed by Parks
 H. Icenhour, Jr.
 Date: 2025.06.19
 08:14:32 -04'00'

Parks H. Icenhour, Jr.
 Professional Land Surveyor L-3996



BL	POINT	DESC.	NORTH	EAST	ELEVATION
1	230271	BL-1	212156.5320	2243108.6232	33.57
2	230271	BL-2	212500.3276	2243388.9738	16.36
3	230271	BL-3	212864.9186	2243666.3448	20.89

 BM1 ELEVATION = 27.26
 N 212367 E 2243221
 RR SPIKE IN BASE OF 30" PINE TREE

EL	POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT		212257.238	2243169.760							
LINE				N 39°00'41.9" E	323.03					
PC		212508.238	2243373.100							
CURVE				N 39°17'30.3" E	29.33	00°33'36.7"(RT)	01°54'35.5"	29.33	14.67	3000.00
PT		212530.938	2243391.674							
LINE				N 39°34'18.6" E	172.49					
PC		212663.895	2243501.556							
CURVE				N 41°32'06.3" E	164.44	03°55'35.3"(RT)	02°23'14.4"	164.47	82.27	2400.00
PT		212786.986	2243610.592							
LINE				N 43°29'53.9" E	10.68					
POT		212794.735	2243617.945							


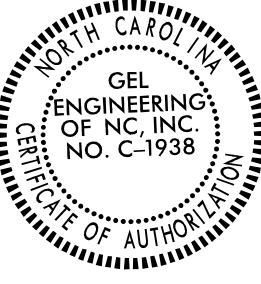

NOTES:

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

REVISIONS

I:\JUN-2025\14206\15-16-2025\NCDOT\division_6_group_rw_jobs\ss4\BPG.R008\BPG.R008 Files\Microstation files (4)\Microstation files\BPG.R008.LS.RW02D.DGN

PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO. BP6.R008	SHEET NO. RW02D-1
Location and Surveys	
 GEL SOLUTIONS <small>an Affiliate of THE GEL GROUP, INC.</small> 2700 SUMNER BLVD. SUITE 106 RALEIGH, NC 27616 (919) 544-1100 WWW.GEL-SOLUTIONS.COM	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

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 19th day of June, 2025.

 Digitally signed by Parks H. Icenhour, Jr.
Date: 2025.06.19 08:15:57 -04'00'

Professional Land Surveyor L-3996


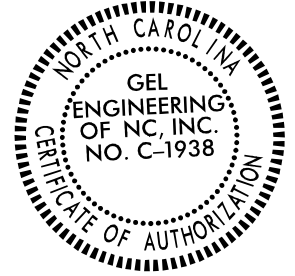

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	212257.2381	2243169.7599
PC	14+10.66	212576.3262	2243428.2598
PCC	15+92.13	212715.1429	2243545.1326
PT	16+89.33	212786.9862	2243610.5923

NOTES:


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

RIGHT OF WAY CONTROL SHEET

<small>PROJECT REFERENCE NO.</small> BP6.R008	<small>SHEET NO.</small> RW03E-1
Location and Surveys	
 <small>an Affiliate of THE GEL GROUP, INC. 2700 SUMNER BLVD. SUITE 105 RALEIGH, NC 27616 (919) 544-1100 WWW.GEL-SOLUTIONS.COM</small>	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, Parks H. Icenhour Jr., 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 5/12/2025 to 5/15/2025, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 19th day of June, 2025.


 Digitally signed by
 Parks H. Icenhour, Jr.
 Date: 2025.06.19
 08:14:01 -04'00'
Professional Land Surveyor L-3996

IRON PIN & CAP PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+85.00	30.00	212459.8039	2243372.4718
L	12+85.00	58.00	212442.1785	2243394.2283
L	12+95.00	-57.00	212522.3387	2243311.1660
L	12+95.00	-30.00	212505.3427	2243332.1455
L	14+10.00	58.00	212539.3057	2243472.9131
L	14+10.00	30.71	212556.4852	2243451.7070
L	14+10.66	-57.00	212612.2065	2243383.9698
L	14+10.66	-29.29	212594.7624	2243405.5025
L	14+78.00	30.90	212608.5680	2243494.7506
L	14+78.00	42.00	212601.4603	2243503.2769
L	15+00.00	42.00	212618.1788	2243517.2790
L	15+00.00	30.76	212625.4177	2243508.6759

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED 5/12/2025 TO 5/15/2025 .


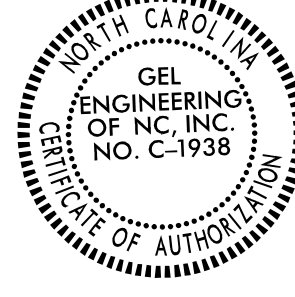
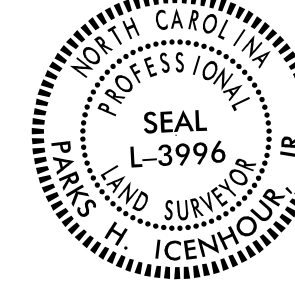
REVISIONS

6/2/199

19 JUN 2025 07:50
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 Jason.Prewett

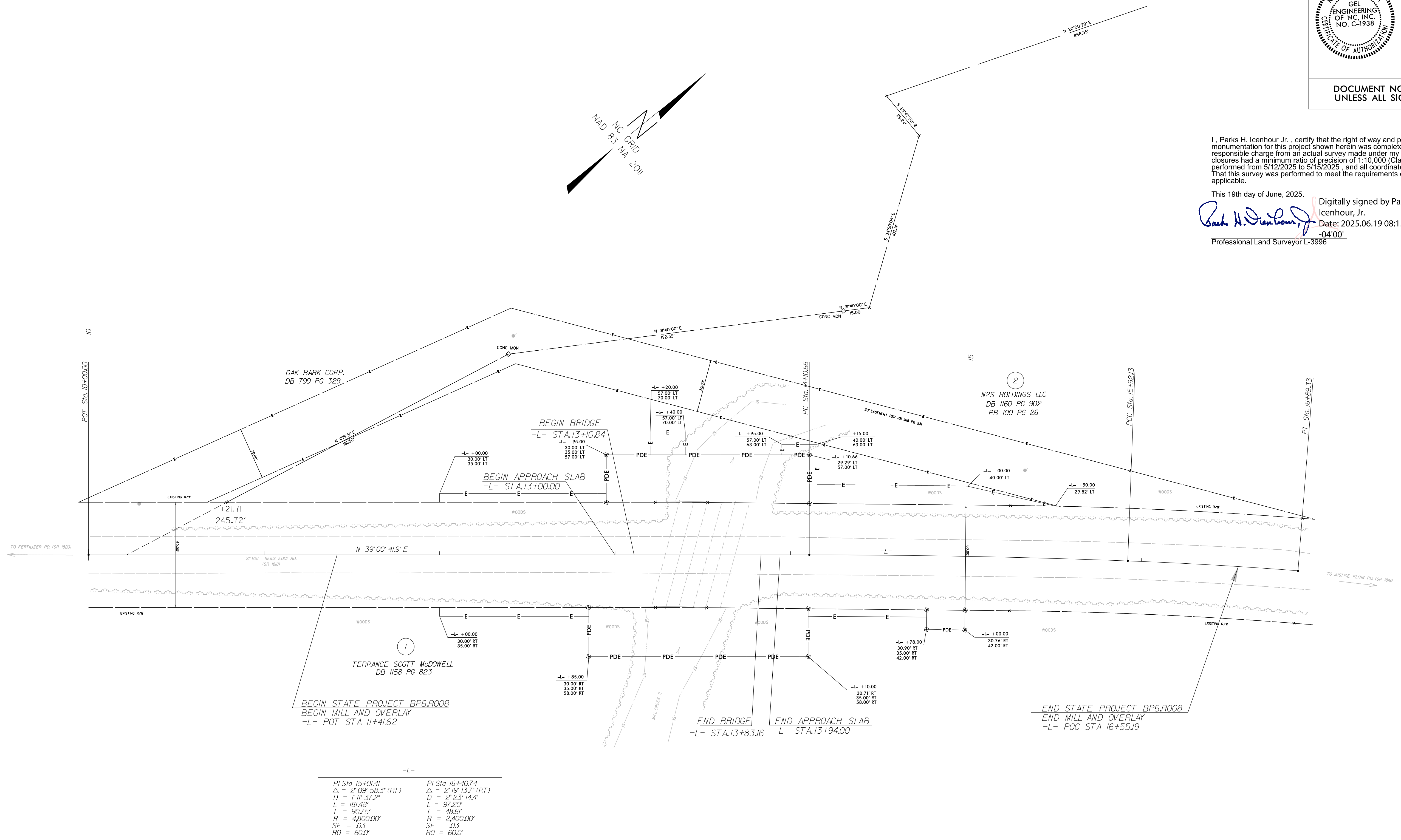
REVISIONS

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PROJECT REFERENCE NO. BP6.R008	SHEET NO. RW04
Location and Surveys	
 GEL SOLUTIONS an Affiliate of THE GEL GROUP, INC. 2700 SUMNER BLVD. SUITE 106 RALEIGH, NC 27616 (919) 544-1100 WWW.GEL-SOLUTIONS.COM	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, Parks H. Icenhour Jr., 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 5/12/2025 to 5/15/2025, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21 NCAC 56.1600 as applicable.

This 19th day of June, 2025.
 Digitally signed by Parks H. Icenhour, Jr.
 Date: 2025.06.19 08:15:28 -04'00'
 Professional Land Surveyor L-3996

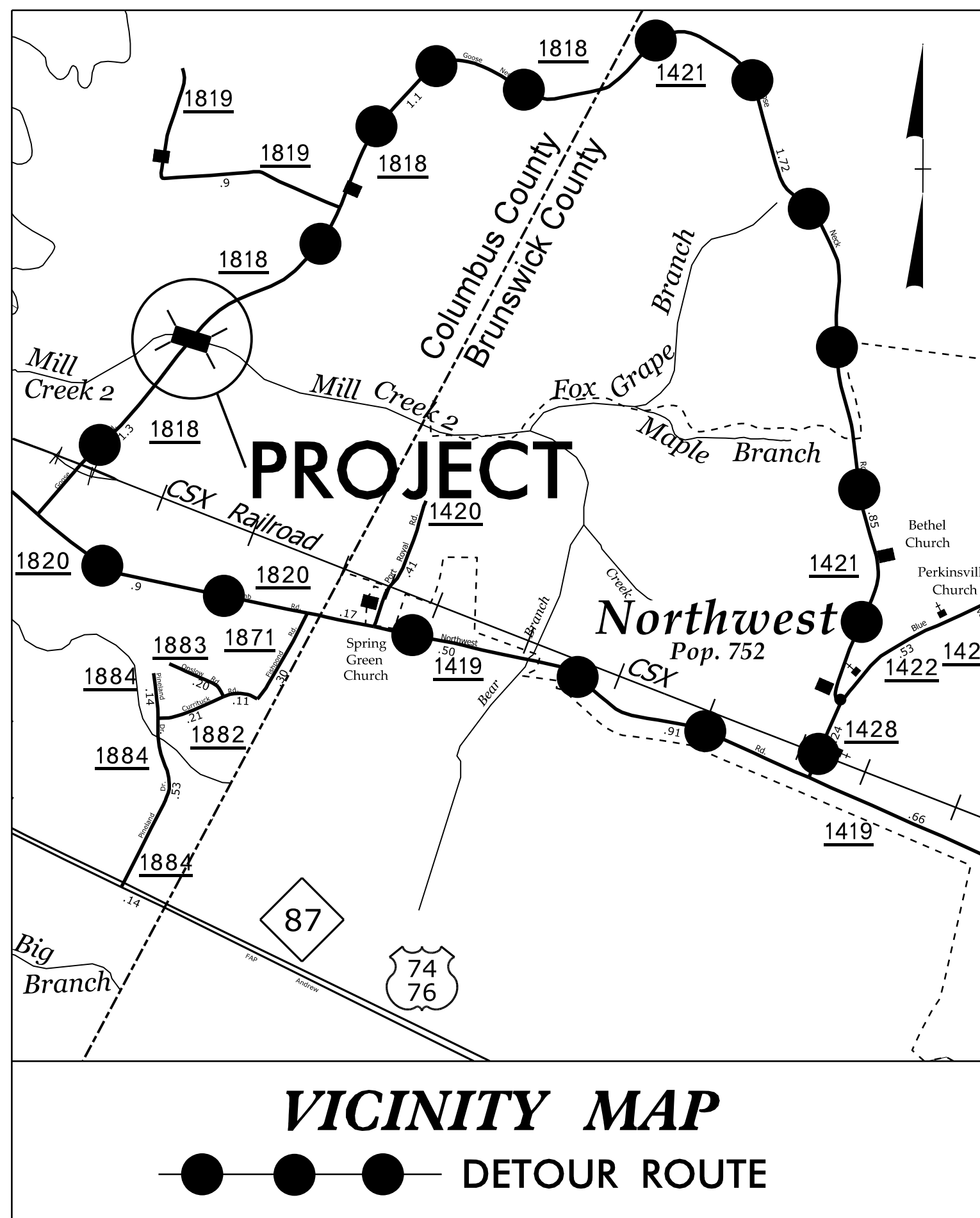
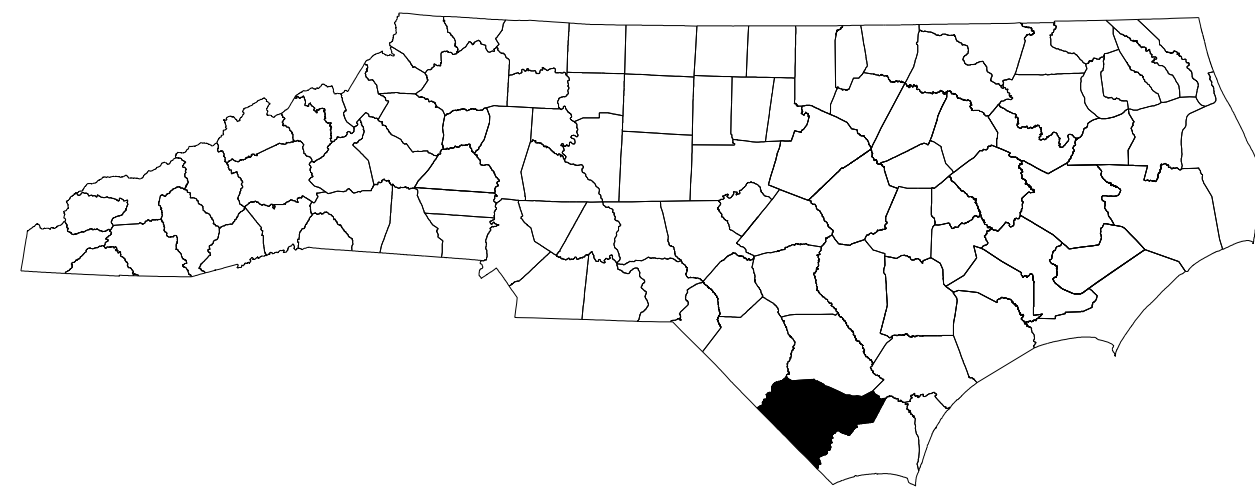


- NOTES:**
- IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
 - PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
 - RIGHT OF WAY MONUMENTATION ESTABLISHED 5/12/2025 TO 5/15/2025..

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

COLUMBUS COUNTY



**LOCATION: BRIDGE NO. 271 OVER
MILL CREEK ON
SR 1818 (NEILS EDDY ROAD)**

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

VICINITY MAP

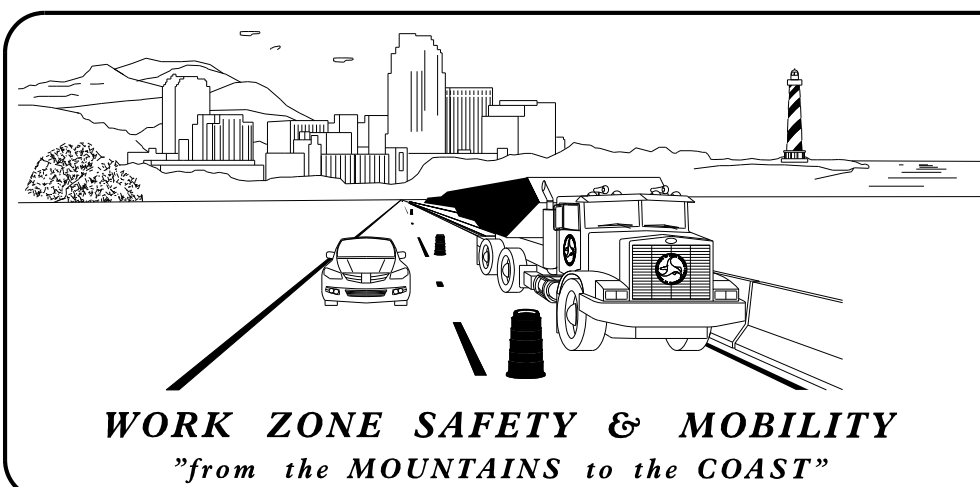
● ● ● DETOUR ROUTE

INDEX OF SHEETS

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	OFFSITE DETOUR
TMP-4	OFFSITE DETOUR (INSET A)

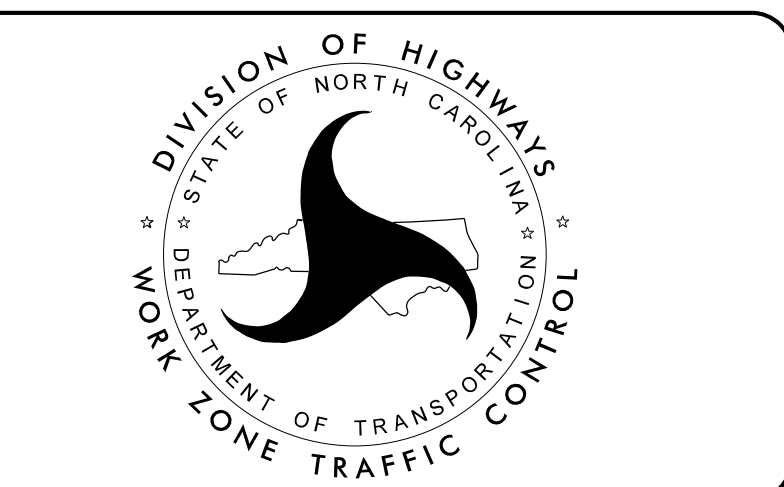
SHEET NO.
TMP-1

PROJECT: BP6.R008 CONTRACT:



N.C.D.O.T. WORK ZONE TRAFFIC CONTROL
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)
PHONE: (919) 773-2800 FAX: (919) 771-2745

J. E. HUMMER	STATE TRAFFIC MANAGEMENT ENGINEER
-----	TRAFFIC CONTROL PROJECT ENGINEER
ALLA LYNDMIRSKAYA	TRAFFIC CONTROL PROJECT DESIGN ENGINEER
WILLIAM DEBREW	TRAFFIC CONTROL DESIGN ENGINEER



KCI ASSOCIATES OF N.C., P.A.
4505 Falls of Neuse Road, Suite 400
Raleigh, NC 27609
Phone (919) 783-9214
NC Firm License No: C-0764

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

APPROVED: _____
DATE: 9/4/2024

SEAL

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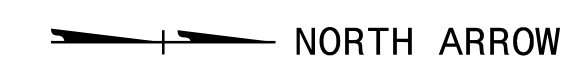
ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUM
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1165.01	WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION

LEGEND

GENERAL



TRAFFIC CONTROL DEVICES

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

TEMPORARY SIGNING

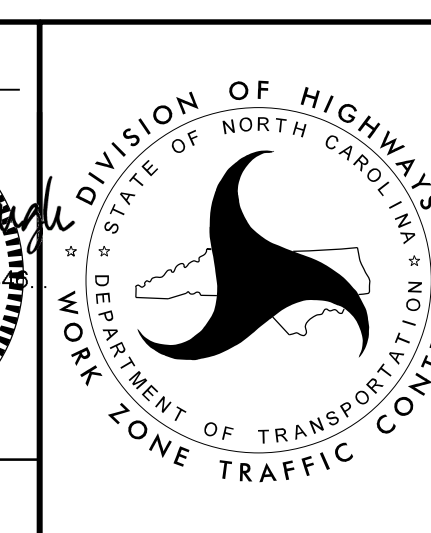
- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

03-SEP-2024 17:17
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APPROVED: _____
DATE: 9/4/2024

SEAL



ROADWAY STANDARD DRAWINGS & LEGEND

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJ. REFERENCE NO.	SHEET NO.
BP6.R008	TMP-1B

MANAGEMENT STRATEGIES

1. CLOSE SR 1818 (NEILS EDDY ROAD) AND DETOUR TRAFFIC OFF-SITE VIA SR 1421, SR 1422, SR 1419, SR 1420, SR 1820, SR 1818.
2. LOCAL ACCESS TO ALL RESIDENCES AND BUSINESSES WILL BE MAINTAINED BETWEEN CLOSURE POINTS AT ALL TIMES DURING CONSTRUCTION.

GENERAL NOTES

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

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

TRAFFIC PATTERN ALTERATIONS

- A) NOTIFY THE ENGINEER, COUNTY EMS, AND COUNTY SCHOOL OFFICIALS THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.
- B) NOTIFY THE ENGINEER FIFTEEN (15) DAYS PRIOR TO INSTALLATION OF A LANE CLOSURE AND SUBMIT DETAILS FOR APPROVAL BY THE ENGINEER.
- C) AS APPROVED BY THE ENGINEER, LANE CLOSURES WILL BE ALLOWED FOR GEOTECHNICAL BORINGS AND THE RELOCATION OF UTILITIES PRIOR TO THE ROAD CLOSURE.

SIGNING

- D) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC MANAGEMENT PLANS.

PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.
- E) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.
- F) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC CONTROL DEVICES

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

PAVEMENT MARKINGS AND MARKERS

- N) INSTALL PAVEMENT MARKINGS ON THE FINAL SURFACE AS SHOWN IN THE FINAL PAVEMENT MARKING PLANS.
- O) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

PHASING

NOTE: BEFORE BEGINNING CONSTRUCTION THE CONTRACTOR SHALL PLACE ADVANCE WORK ZONE WARNING SIGNS ALONG NEILS EDDY ROAD, (SEE RSD 1101.01, SHEET 3 OF 3)

- STEP 1) USING ROADWAY STD. DRAWING 1101.03, SHEET 1 OF 9, CLOSE NEILS EDDY ROAD (SR 1818) AND DETOUR TRAFFIC OFF-SITE AS SHOWN ON TMP-3.
- STEP 2) REMOVE THE EXISTING STRUCTURE.
- STEP 3) CONSTRUCT THE PROPOSED STRUCTURE AND ROADWAY.
- STEP 4) PLACE FINAL PAVEMENT MARKINGS AND MARKERS ACCORDING TO THE FINAL PAVEMENT MARKING PLANS.
- STEP 5) REMOVE ALL WORK ZONE TRAFFIC CONTROL DEVICES AND SIGNING. OPEN NEILS EDDY ROAD (SR 1818) AND PLACE TRAFFIC ONTO THE FINAL PATTERN.

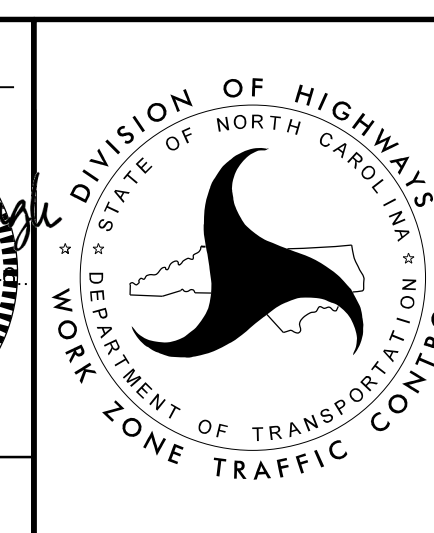
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APPROVED: _____
DATE: 9/4/2024

SEAL

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UNLESS ALL SIGNATURES COMPLETED**



TRANSPORTATION
OPERATIONS
PLAN

PROJ. REFERENCE NO.	SHEET NO.
BP6.R008	TMP-2

SP-1

<p>SIGN NUMBER: SP-1 TYPE: D QUANTITY: 1 SIGN WIDTH: 2'-6" HEIGHT: 3'-0" TOTAL AREA: 7.5 Sq.Ft. BORDER TYPE: RECESSED RECESS: 0.38" WIDTH: 0.63" RADII: 1.50" NO. Z BARS: N/A LENGTH: N/A</p>	<p>BACKG COLOR: Fluorescent Orange COPY COLOR: Black</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>SYMBOL</th> <th>X</th> <th>Y</th> <th>WID</th> <th>HT</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table> <p>MAT'L: 0.063" ALUMINUM</p>	SYMBOL	X	Y	WID	HT																																																			<p>DESIGN BY: ECD PROJECT ID: BP6.R008</p> <p>CHECKED BY: --- DIV: 6</p> <p>DATE: January 25, 2023</p> <div style="text-align: center;"> </div> <p style="text-align: right; font-size: small;">Spacing Factor is 1 unless specified otherwise</p>
SYMBOL	X	Y	WID	HT																																																					

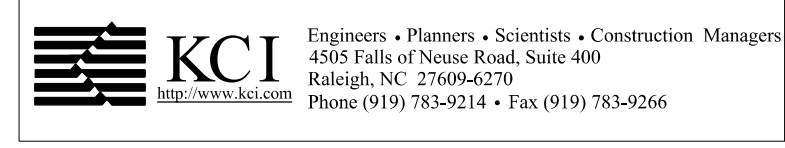
LETTER POSITIONS

Letter spacings are to start of next letter

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		E	D	D	Y																		C 2000 13.84
			R	D																			C 2000 6.52
	11.74	3.79	2.74	11.74																			

FILENAME: B-221 DETOUR SIGN FACE LAYOUT **NORTH CAROLINA D.O.T. SIGN DETAIL**

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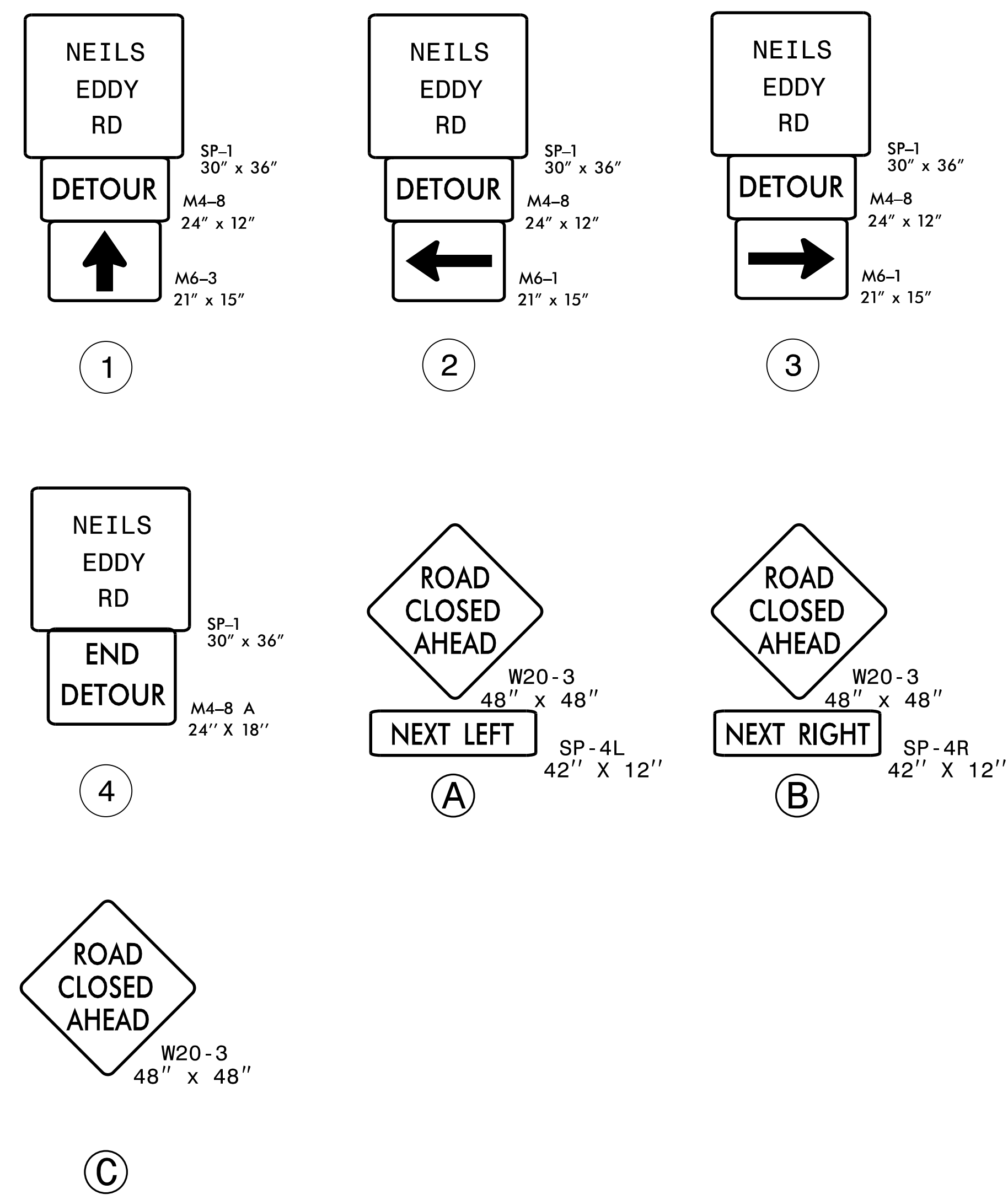
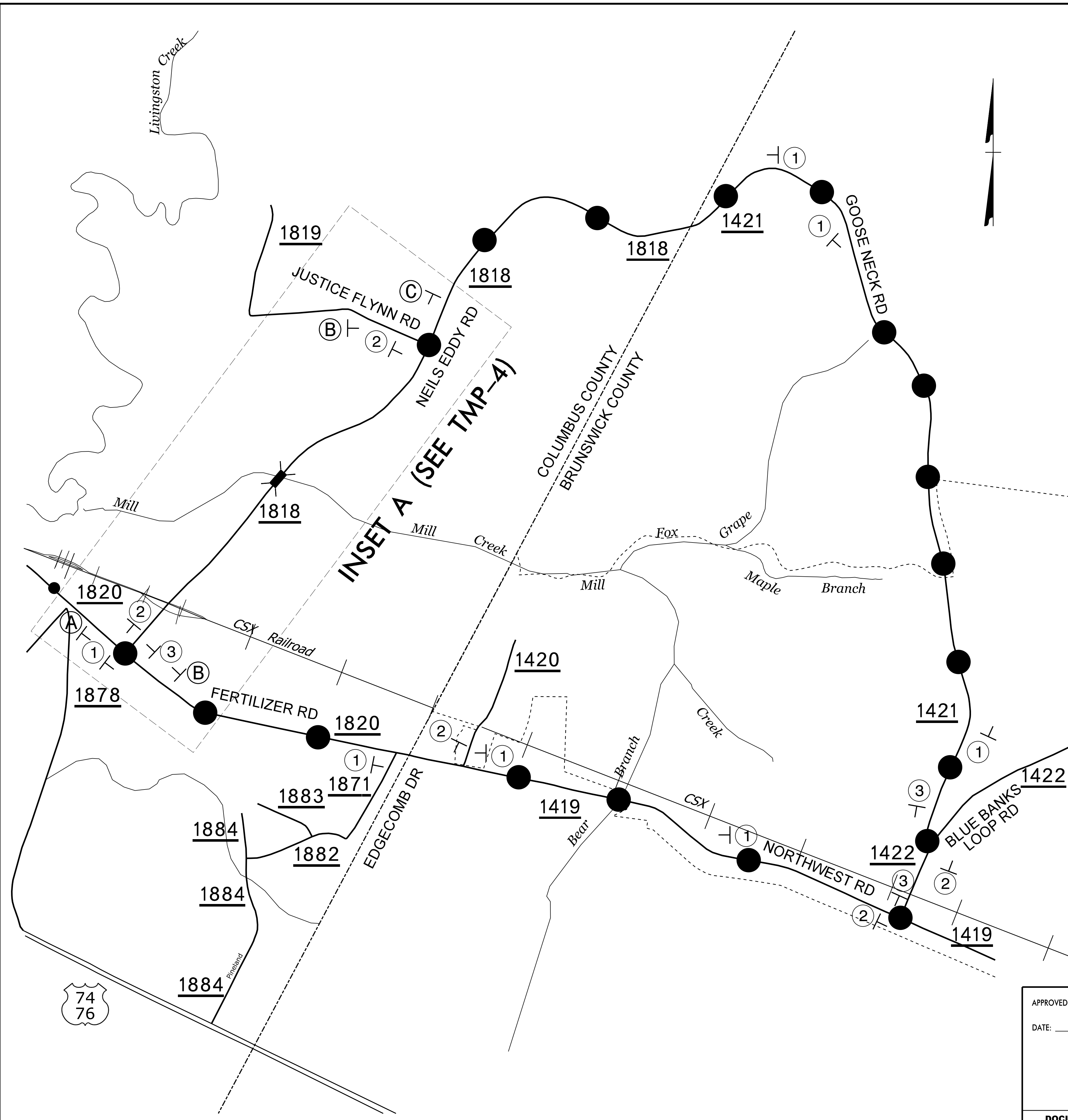
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**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

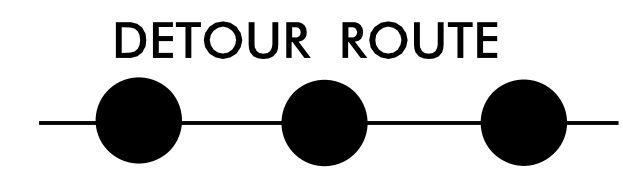


**SPECIAL SIGN
DESIGN**



NOTES:

1. REFER TO ROADWAY STANDARD DRAWING 1101.03, SHEET 1 OF 9 FOR APPLICABLE NOTES.
2. ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE. FIELD ADJUST AS NECESSARY OR AS DIRECTED BY THE ENGINEER.
3. SEE SHEET TCP-2 FOR THE SPECIAL SIGN DESIGN
4. ALL DETOUR SIGN LOCATIONS ARE APPROXIMATE.



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APPROVED: _____
 DATE: 9/4/2024

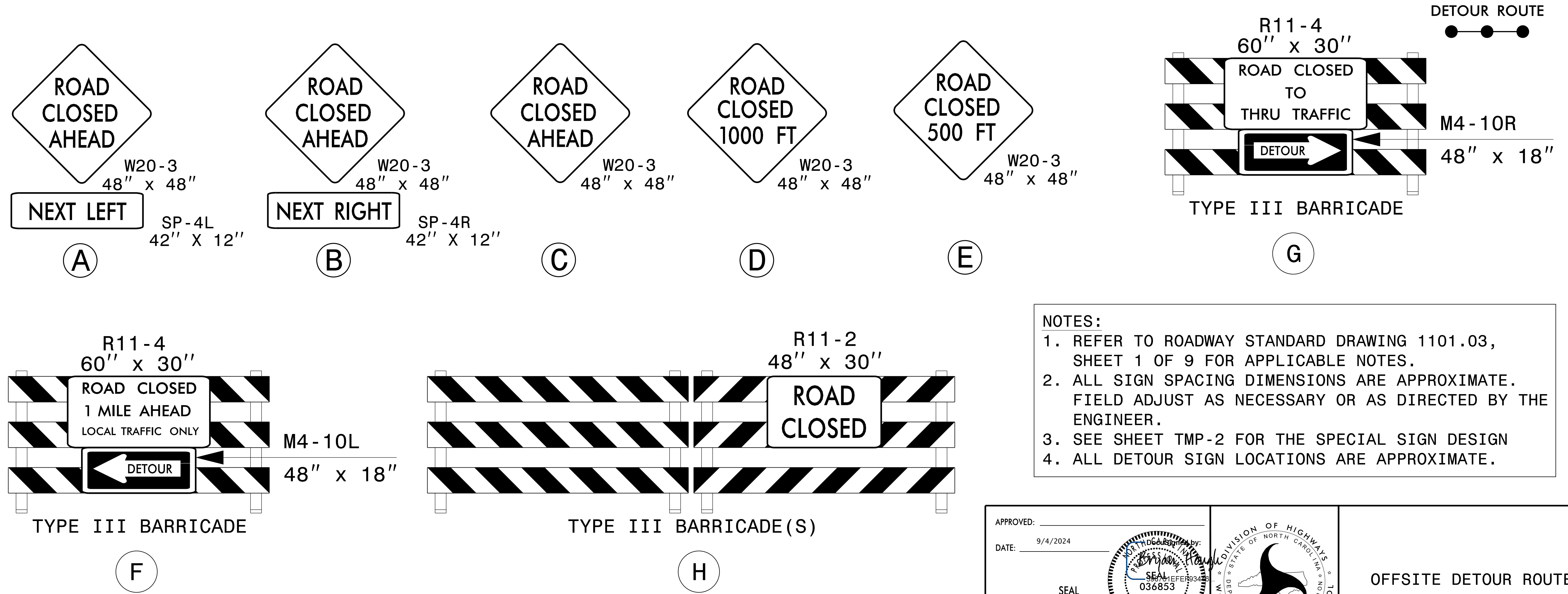
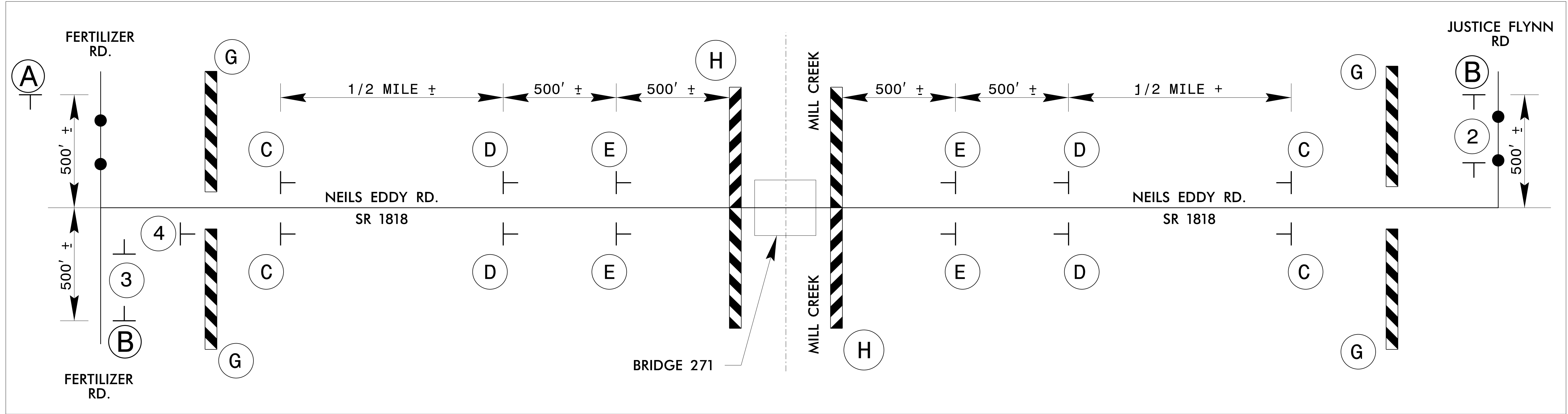
SEAL

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

KCI ASSOCIATES OF N.C., P.A.
 4505 Falls of Neuse Road, Suite 400
 Raleigh, NC 27609-6270
 Phone (919) 783-9214
 NC Firm License No: C-0764

OFFSITE DETOUR ROUTE

INSET A



- NOTES:**
1. REFER TO ROADWAY STANDARD DRAWING 1101.03, SHEET 1 OF 9 FOR APPLICABLE NOTES.
 2. ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE. FIELD ADJUST AS NECESSARY OR AS DIRECTED BY THE ENGINEER.
 3. SEE SHEET TMP-2 FOR THE SPECIAL SIGN DESIGN
 4. ALL DETOUR SIGN LOCATIONS ARE APPROXIMATE.

NOTE: SEE SHEET TMP-3 FOR SIGNS 2, 3 AND 4.

KCI
 KCI ASSOCIATES OF N.C., P.A.
 4505 Falls of Neuse Road, Suite 400
 Raleigh, NC 27609-6270
 Phone (919) 783-9214
 NC Firm License No: C-0764

APPROVED: _____
 DATE: 9/4/2024
 SEAL

SEAL
 DIVISION OF HIGHWAYS
 NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 WORK ZONE TRAFFIC CONTROL

OFFSITE DETOUR ROUTE

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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

COLUMBUS COUNTY

**LOCATION: BRIDGE NO. 271 OVER MILL CREEK 2
ON SR 1818 (NEILS EDDY ROAD)**

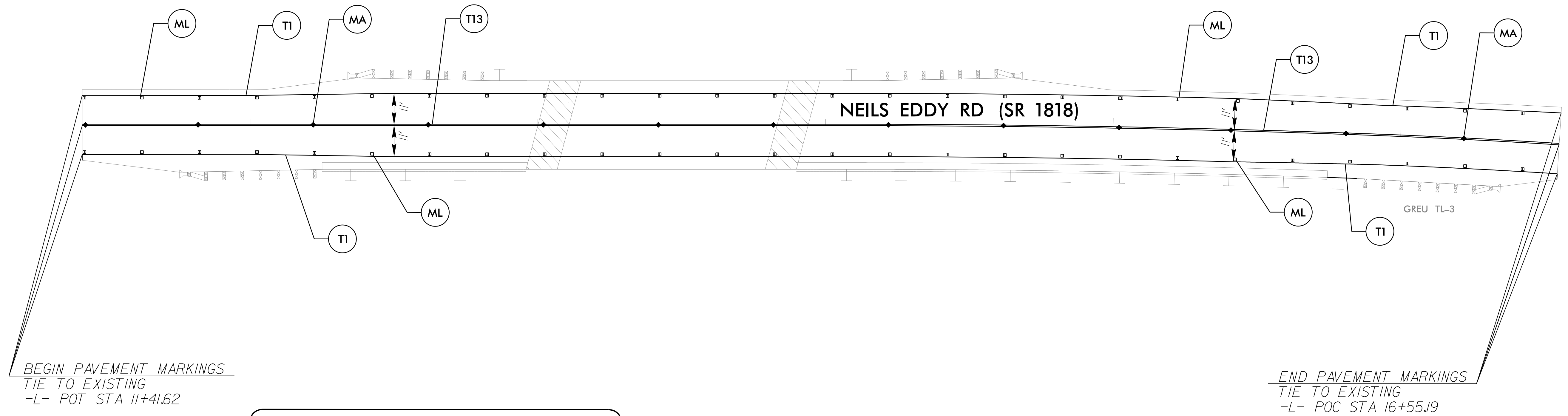
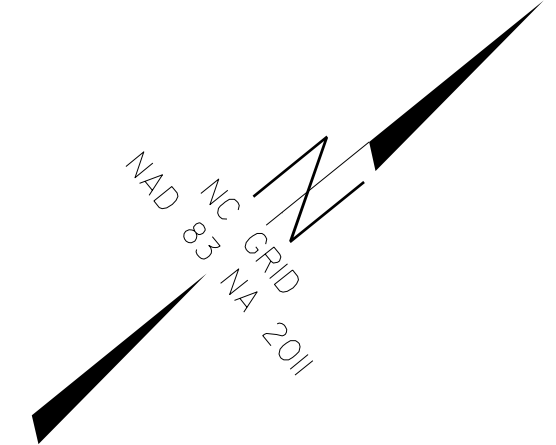
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

PAVEMENT MARKING SCHEDULE	
T1	WHITE EDGELINE, THERMOPLASTIC (4", 90 MILS)
T13	YELLOW DOUBLE CENTER, THERMOPLASTIC (4", 90 MILS)
MA	PERMANENT RAISED MARKER, YELLOW & YELLOW
ML	PERMANENT RAISED MARKER, CRYSTAL & CRYSTAL

PROJECT REFERENCE NO. BP6.R008	SHEET NO. PMP-01
RW SHEET NO.	
PAVEMENT MARKING ENGINEER	
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>	

GENERAL NOTES

- THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN, OR DIRECTED BY THE ENGINEER.
- A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:
- | ROAD NAME | MARKING | MARKER |
|---------------------|---------------|-------------------|
| -L- NEILS EDDY ROAD | THERMOPLASTIC | RAISED REFLECTIVE |
- B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
 - C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.



ROADWAY STANDARD DRAWING

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

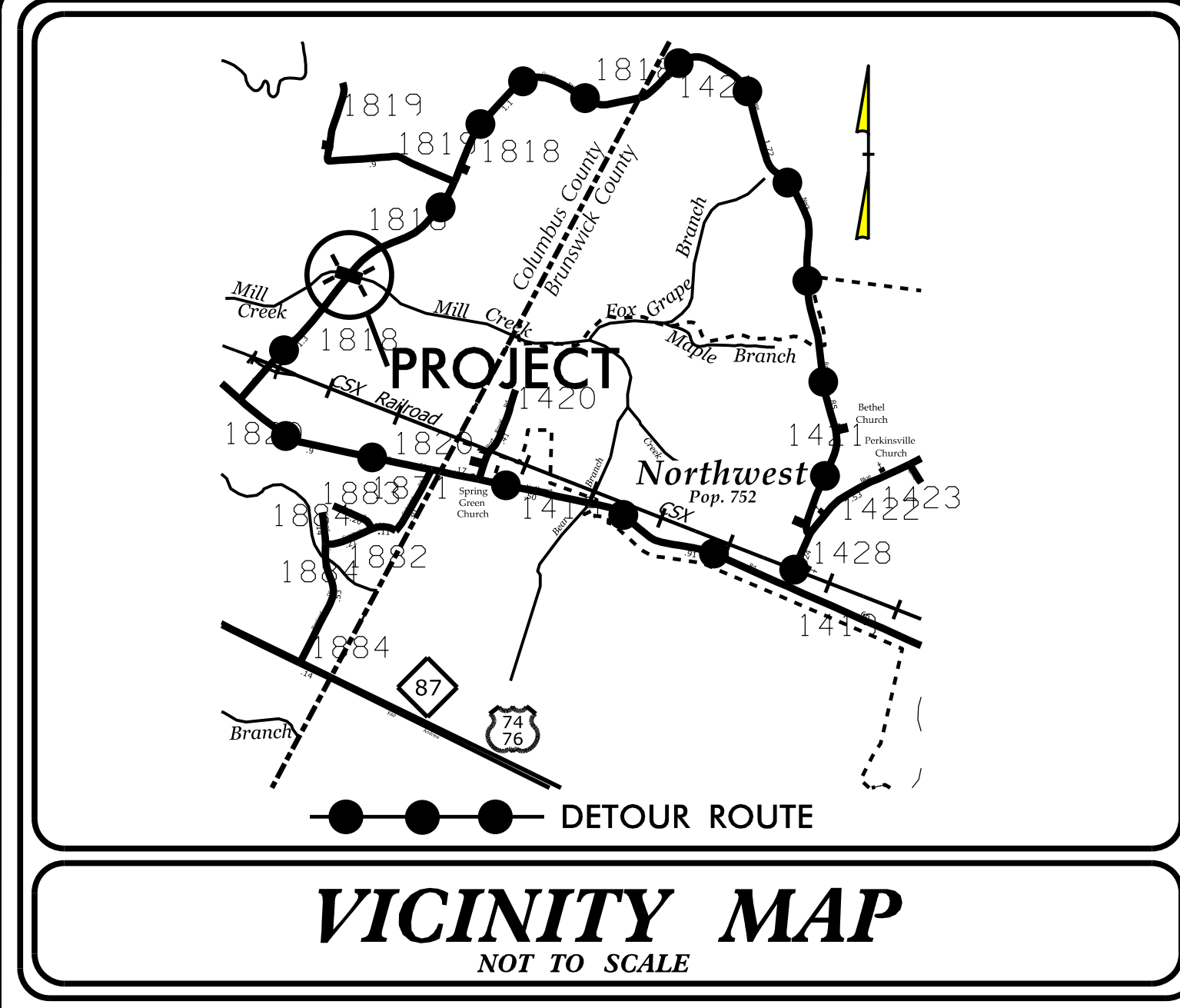
STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY

SUMMARY OF QUANTITIES

ITEM NO.	SECTION NO.	ITEM DESCRIPTION	QUANTITY	UNIT
4685000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	2,055	LF
4900000000-N	1205	PERMANENT RAISED PAVEMENT MARKERS	80	EA

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP6.R008	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

TIP PROJECT: BP6.R008



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

**PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL**

COLUMBUS COUNTY

**LOCATION: REPLACE CULVERT BARRELS OVER MILL CREEK WITH
A BRIDGE ON SR 1818 (NEILS EDDY ROAD)**
TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURE

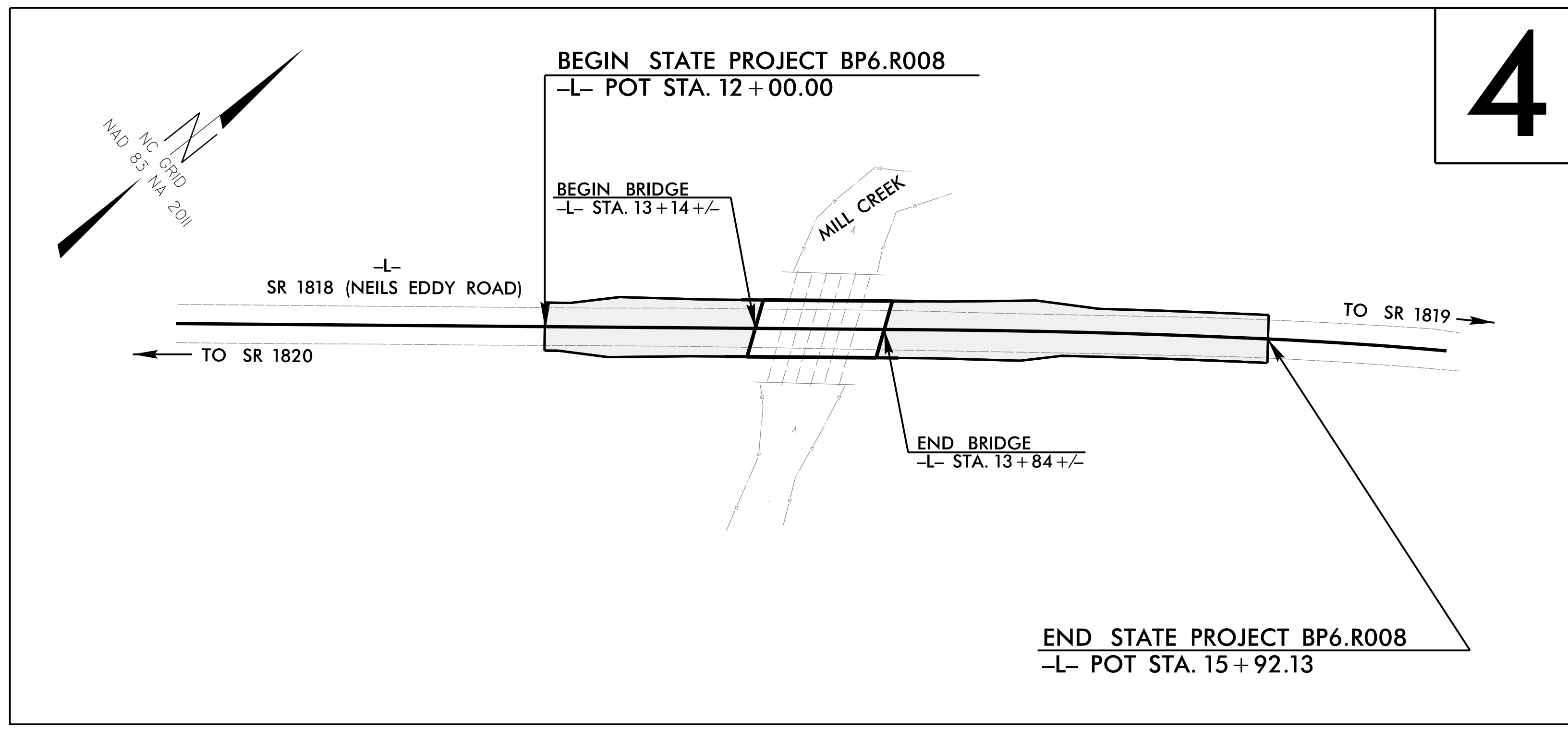
303(d) IMPAIRED WATER(S) EXIST ON THIS PROJECT

303(d) Impaired Water Zone(s) Exist
From Sta. 12 + 63.31
to Sta. 14 + 38.70

Refer To E. C. Special Provisions for Special Considerations.

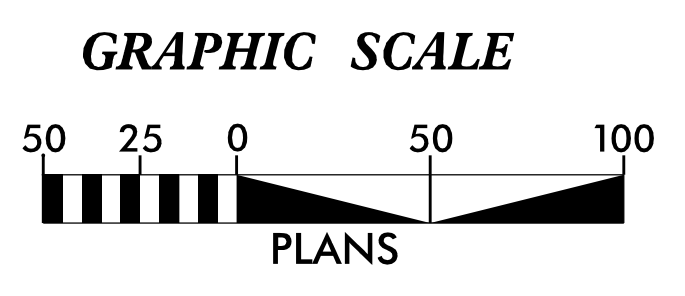
ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

Refer To E. C. Special Provisions for Special Considerations.



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

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.



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

ROADSIDE ENVIRONMENTAL UNIT
1 South Wilmington St.
Raleigh, NC 27611
2024 STANDARD SPECIFICATIONS

LEAH M. YOUNG, PE #3157
NAME LEVEL III CERTIFICATION NO.

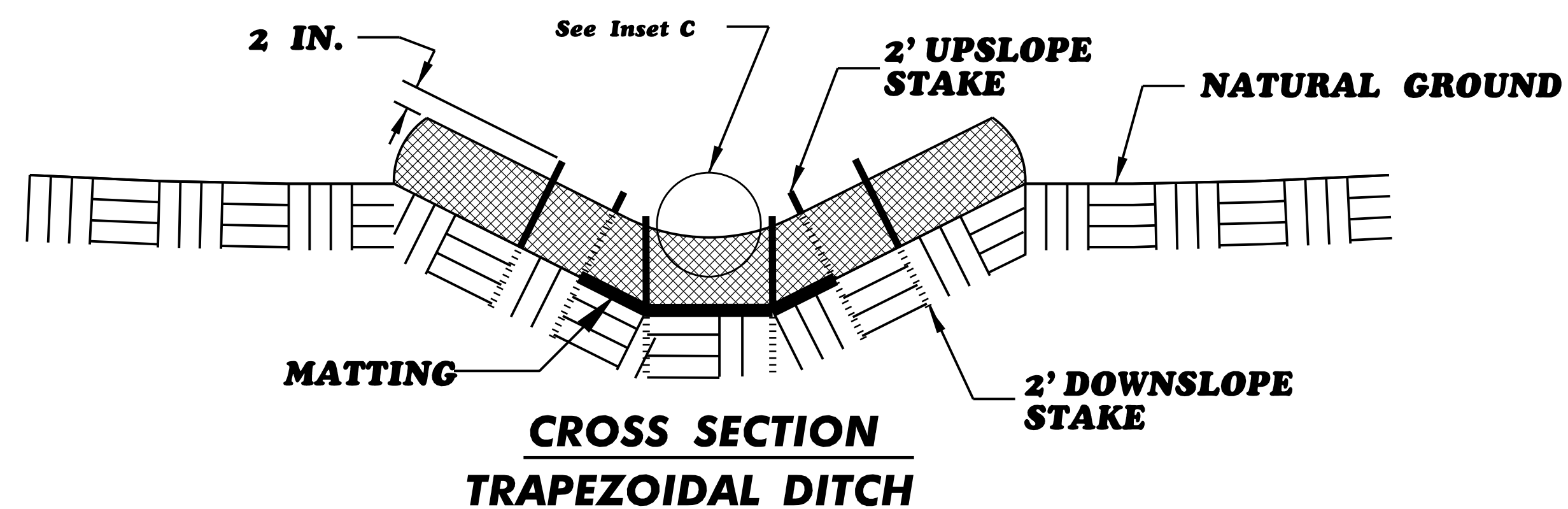
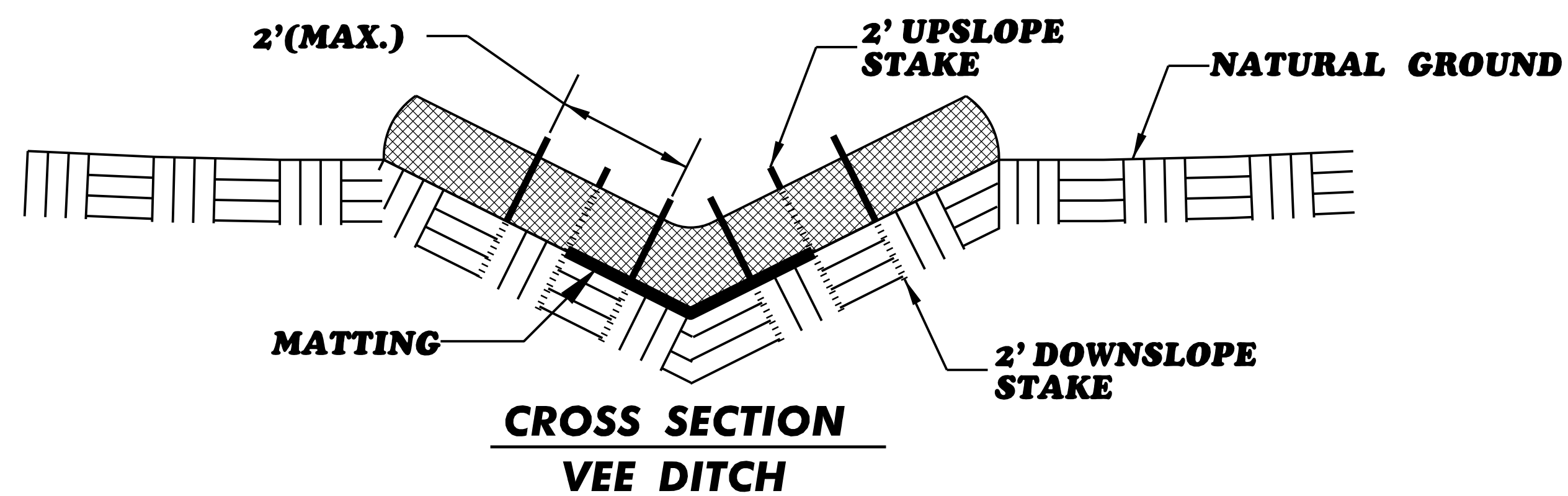
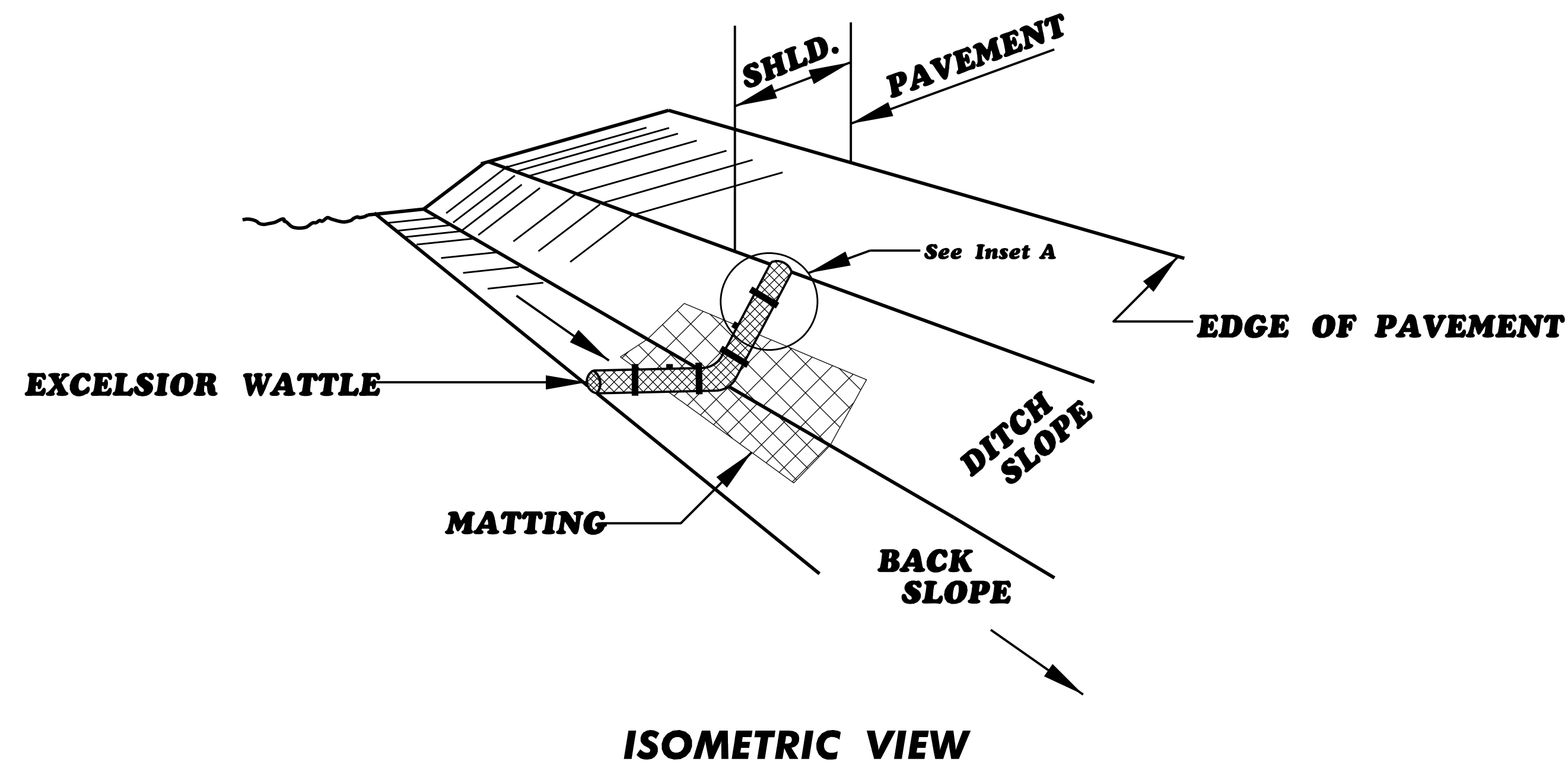
Roadway Standard Drawings

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.

9/2/2025 271\Roadside Environmental\CHDD\BP6.R008.I.reu.01.tsh.dgn

PROJECT REFERENCE NO. <i>BP6-R008</i>	SHEET NO. <i>EC-2</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

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

ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

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

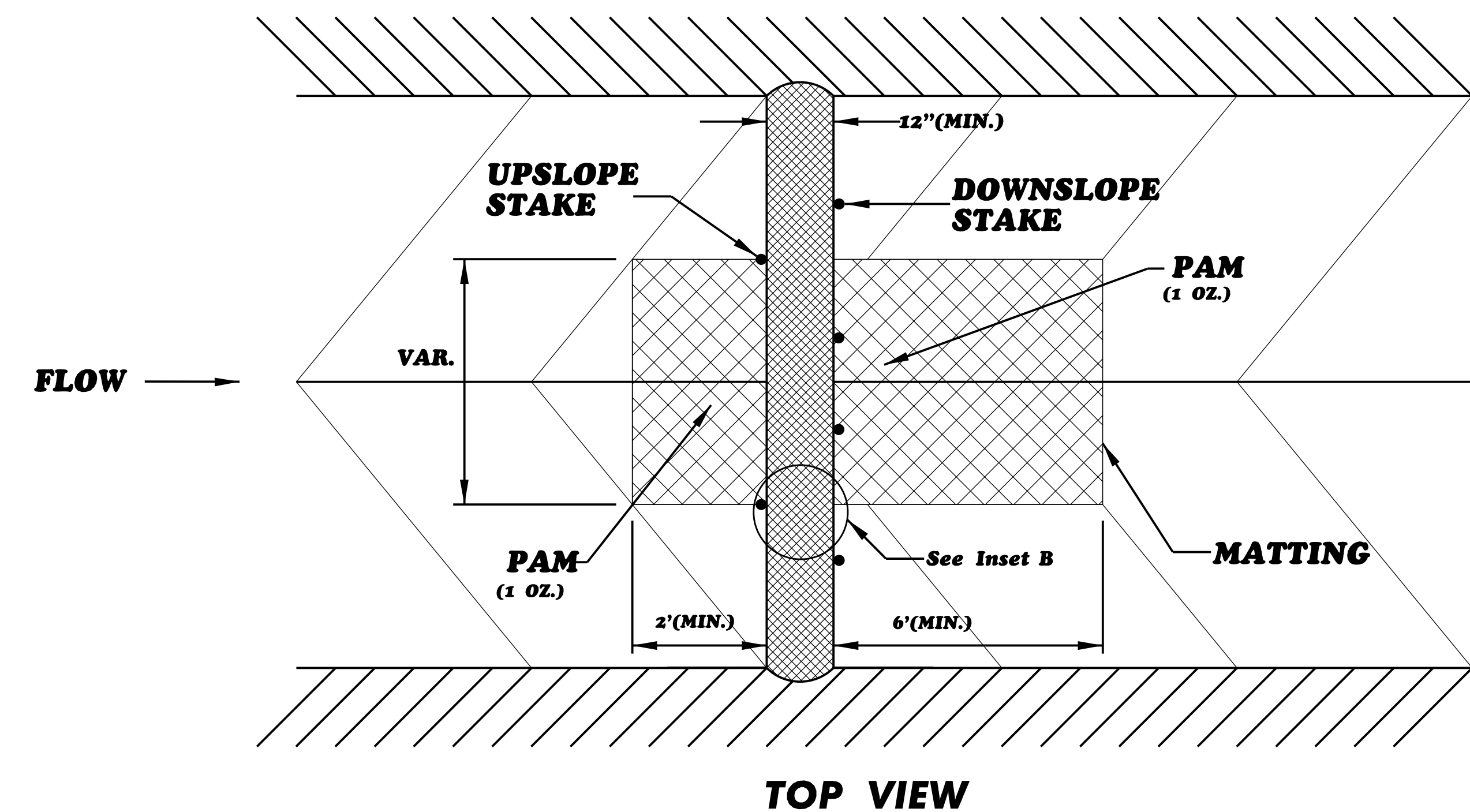
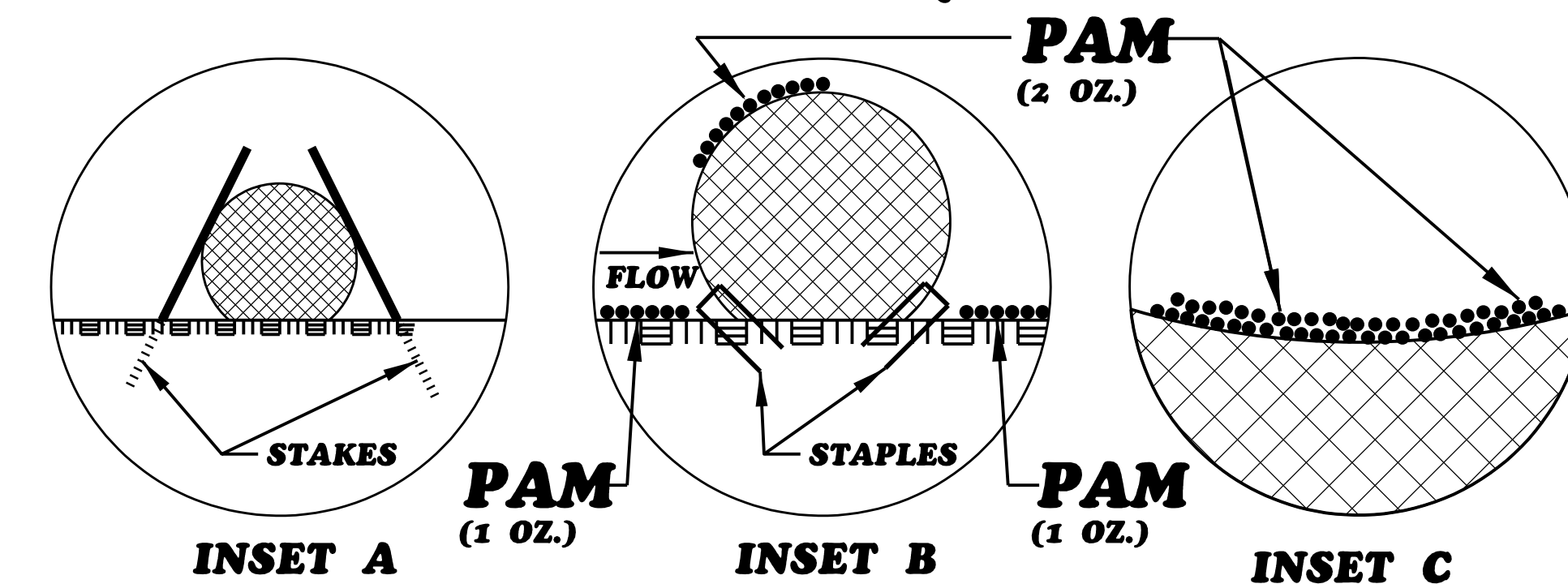
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

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

INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.

INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.



DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA


PROJECT REFERENCE NO.	SHEET NO.
<i>BP6-R008</i>	<i>EC-3</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

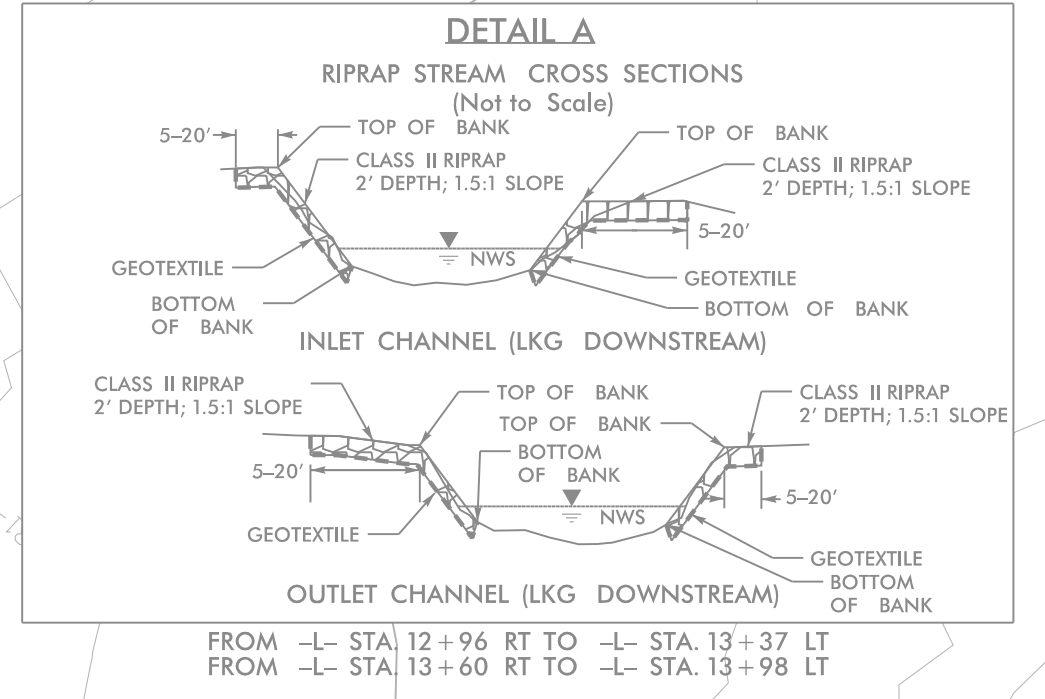
SOIL STABILIZATION TIMEFRAMES

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

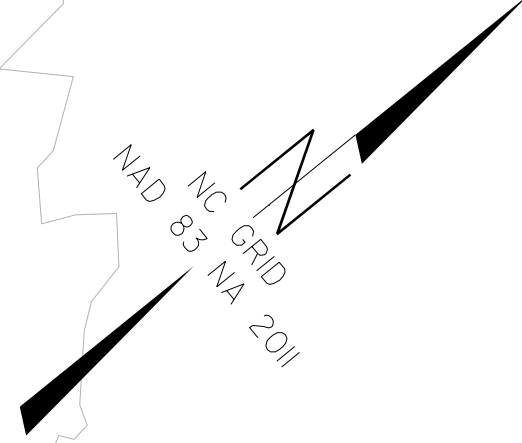
REVISIONS

8/17/99
8/29/2025
M:\2025\252203229\01 NCDOT BP6.R008.1 Columbus Bridge 271\Roadside Environmental\CADD\BP6.R008.1_reu.03_summary-stabilization.dgn

PROJECT REFERENCE NO.	SHEET NO.
BP6.R008	EC-4/CONST.4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
 KCI Engineers • Planners • Scientists • Construction Managers 4800 Falls of Noce Road, Suite 200 Raleigh, NC 27609-8143 Phone (919) 783-9214 • Fax (919) 783-9266	



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

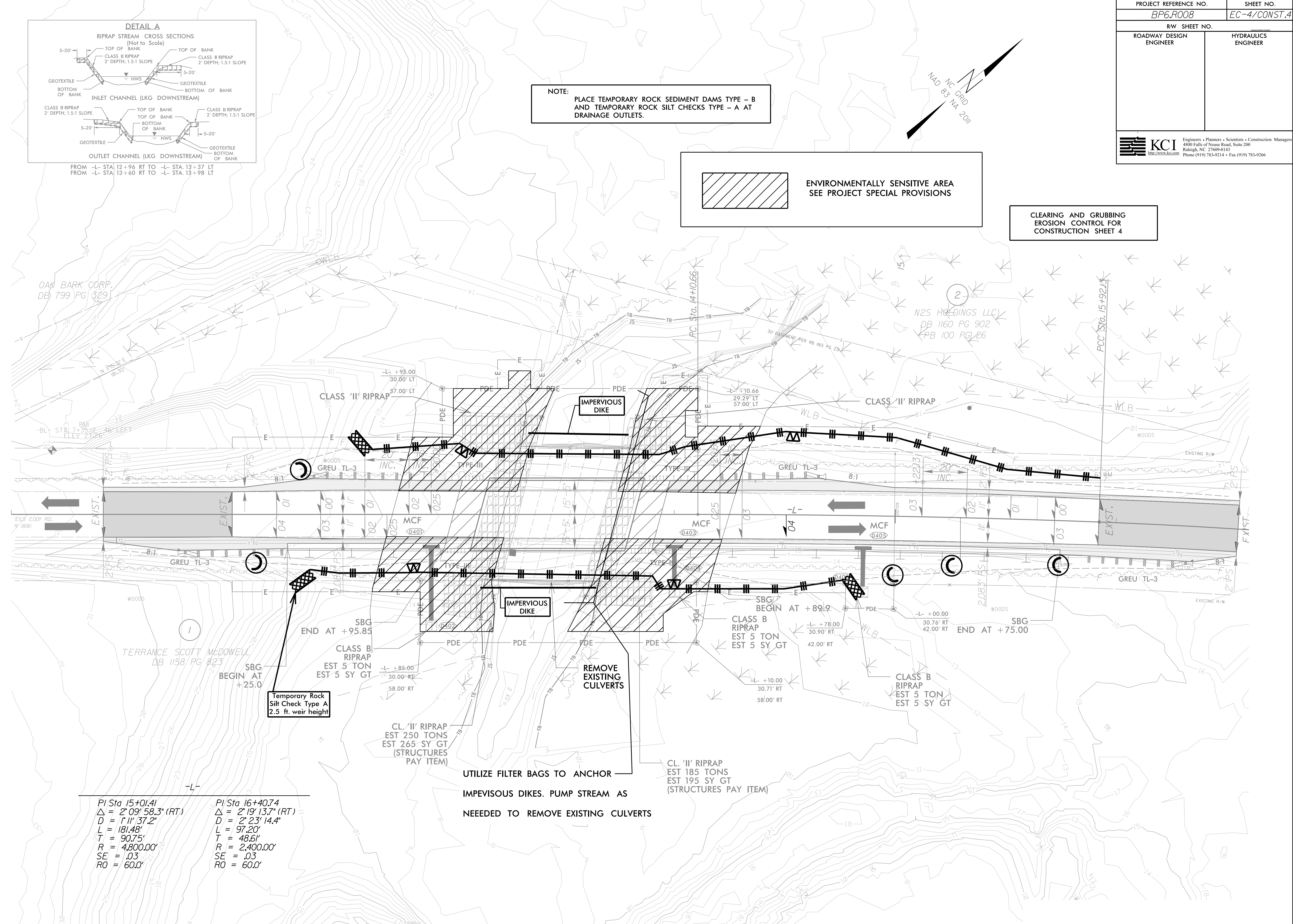


 ENVIRONMENTALLY SENSITIVE AREA
 SEE PROJECT SPECIAL PROVISIONS

CLEARING AND GRUBBING
 EROSION CONTROL FOR
 CONSTRUCTION SHEET 4

REVISIONS

9/10/2025
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 8/17/99



PI Sta 15+01.41	PI Sta 16+40.74
$\Delta = 2' 09" 58.3" (RT)$	$\Delta = 2' 19" 13.7" (RT)$
$D = 1' 11" 37.2"$	$D = 2' 23" 14.4"$
$L = 181.48'$	$L = 97.20'$
$T = 90.75'$	$T = 48.61'$
$R = 4,800.00'$	$R = 2,400.00'$
$SE = .03$	$SE = .03$
$RO = 60.0'$	$RO = 60.0'$

UTILIZE FILTER BAGS TO ANCHOR
 IMPEVIOUS DIKES. PUMP STREAM AS
 NEEDED TO REMOVE EXISTING CULVERTS

09_08/2019

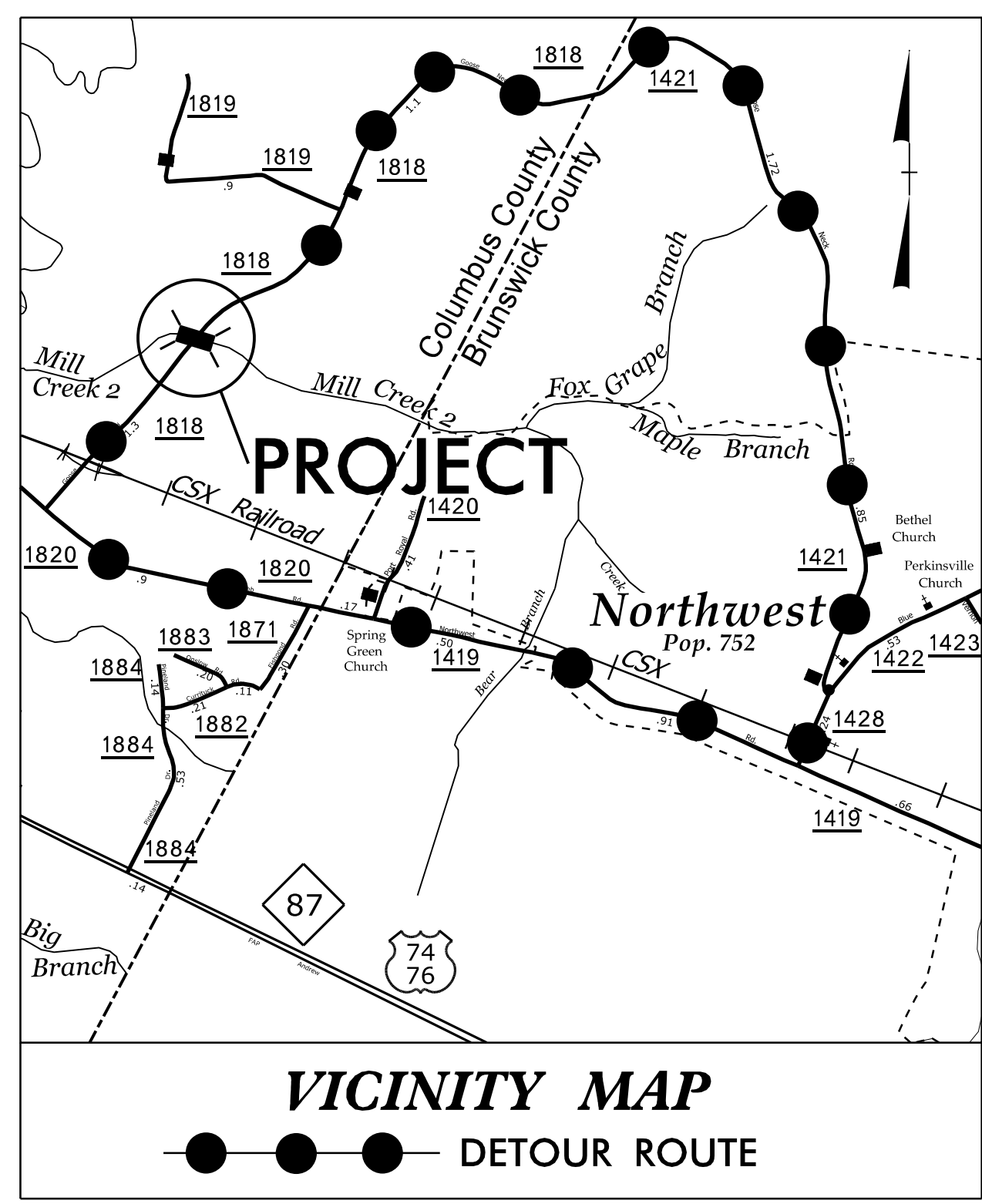
See Sheet 1-A For Index of Sheets
See Sheet 1B for Conventional Symbols

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE PROJ.NO.	SHEET NO.
BP6.R008	UC-1

PLANS APPROVED BY DIVISION 6 ON 8/26/2025

PROJECT: BP6.R008



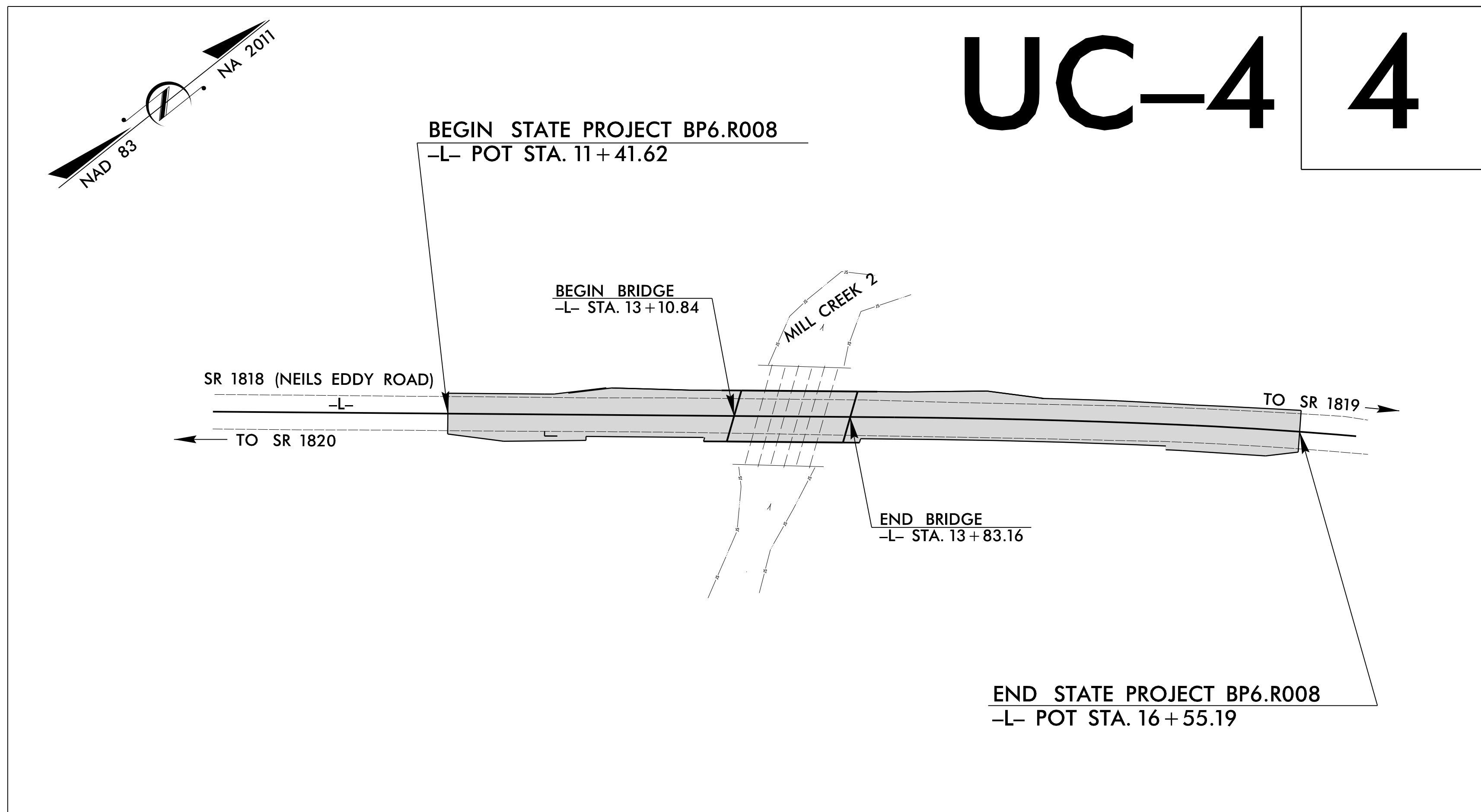
UTILITY CONSTRUCTION PLANS

COLUMBUS COUNTY

**LOCATION: BRIDGE NO. 271 OVER MILL CREEK 2
ON SR 1818 (NEILS EDDY ROAD)**

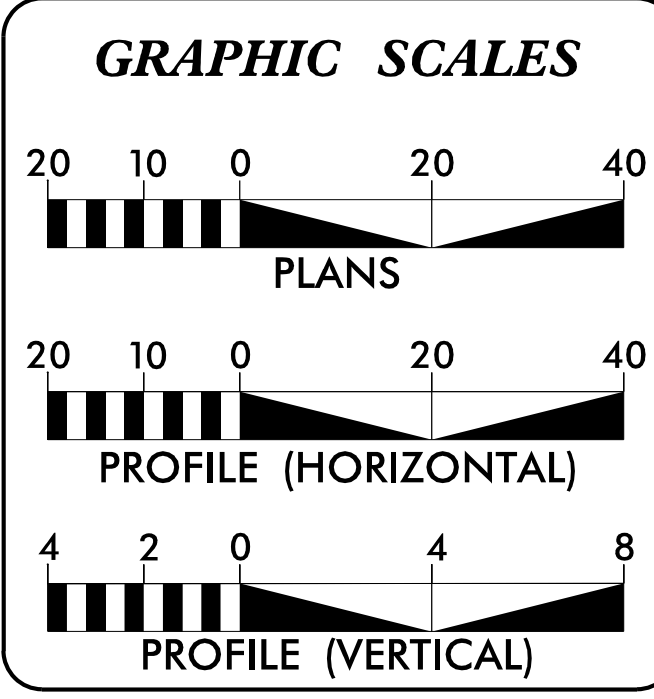
TYPE OF WORK: WATER LINE RELOCATION

UC-4 4



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

CONTRACT:



INDEX OF SHEETS	
SHEET NO.:	DESCRIPTION:
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES
UC-3A TO UC-3B	DETAILS
UC-4	PLAN SHEETS
UC-5	PROFILE SHEET

**WATER AND SEWER
OWNER ON PROJECT**

**COLUMBUS COUNTY
PUBLIC UTILITIES**

205 LEE AVENUE
WHITEVILLE, NC 28472

PREPARED IN THE OFFICE OF

KCI
KCI ASSOCIATES OF N.C., P.A.
4800 Falls of Neuse Road, Suite 200
Raleigh, NC 27609
Phone (919) 783-9214
NC Firm License No: C-0764

<u>MARCO MENENDEZ, PE</u>	PROJECT MANAGER
<u>CHARLES SHEARON, PE</u>	PROJECT ENGINEER
<u>LOGAN BALDWIN, EIT</u>	DRAFTER

SEAL

HIGHWAY DIVISION 6
558 GILLESPIE ST.
FAYETTEVILLE NC 28301
PHONE (910) 486-1959

<u>RICK HANDLIN</u>	DIVISION UTILITY ENGINEER
<u>LOUIS CANIAC</u>	DIVISION UTILITY COORDINATOR
<u>ADAM BRITT</u>	DIVISION BRIDGE PROGRAM MANAGER

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\$\$\$\$\$SERVNAME\$\$\$\$\$

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	12" WL
11¼ Degree Bend	+
22½ Degree Bend	+x
45 Degree Bend	+x
90 Degree Bend	+†
Plug	⊥
Tee	⊥
Cross	⊥
Reducer	▶
Gate Valve	GV
Butterfly Valve	BV
Tapping Valve	TGV
Line Stop	LS
Line Stop with Bypass	LS/BP
Blow Off	BO
Fire Hydrant	PFH
Relocate Fire Hydrant	RFH
Remove Fire Hydrant	REM FH
Water Meter	PWM
Relocate Water Meter	RWM
Remove Water Meter	REM WM
Water Pump Station	PS(W)
RPZ Backflow Preventer	RPZ
DCV Backflow Preventer	PBFP
Relocate RPZ Backflow Preventer	RRPZ
Relocate DCV Backflow Preventer	RBFP

PROPOSED SEWER SYMBOLS

Gravity Sewer Line (Sized as Shown)	12" SS
Force Main Sewer Line (Sized as Shown)	12" FSS
Manhole (Sized per Note)	•
Sewer Pump Station	PS(SS)

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Power Pole	o
Telephone Pole	o
Joint Use Pole	o
Telephone Pedestal	TEL PED
Utility Line by Others (Type as Shown)	PROP O/H POW LINES
Trenchless Installation	12" TL INSTALL
Encasement by Open Cut	24" ENCAS BY OC
Encasement	24" ENCASUREMENT

Thrust Block	⊥
Air Release Valve	AR
Utility Vault	UV
Concrete Pier	CP
Steel Pier	SP
Plan Note	NOTE
Pay Item Note	PAY ITEM

EXISTING UTILITIES SYMBOLS

Power Pole	•	*Underground Power Line	-----
Telephone Pole	•	*Underground Telephone Cable	-----
Joint Use Pole	•	*Underground Telephone Conduit	-----
Utility Pole	•	*Underground Fiber Optics Telephone Cable	-----
Utility Pole with Base	□	*Underground TV Cable	-----
H-Frame Pole	•—•	*Underground Fiber Optics TV Cable	-----
Power Transmission Line Tower	⊠	*Underground Gas Pipeline	-----
Water Manhole	⊙	Aboveground Gas Pipeline	A/G Gas
Power Manhole	⊙	*Underground Water Line	-----
Telephone Manhole	⊙	Aboveground Water Line	A/G Water
Sanitary Sewer Manhole	⊙	*Underground Gravity Sanitary Sewer Line	ss
Hand Hole for Cable	⊠	Aboveground Gravity Sanitary Sewer Line	A/G Sanitary Sewer
Power Transformer	⊠	*Underground SS Forced Main Line	-----
Telephone Pedestal	⊠	Underground Unknown Utility Line	-----
CATV Pedestal	⊠	SUE Test Hole	•
Gas Valve	◇	Water Meter	⊙
Gas Meter	◇	Water Valve	⊙
Located Miscellaneous Utility Object	⊙	Fire Hydrant	◇
Abandoned According to Utility Records	AATUR	Sanitary Sewer Cleanout	⊙
End of Information	E.O.I.		

*For Existing Utilities
 Utility Line Drawn from Record (Type as Shown) -----
 Designated Utility Line (Type as Shown) -----tc-----

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UTILITY CONSTRUCTION

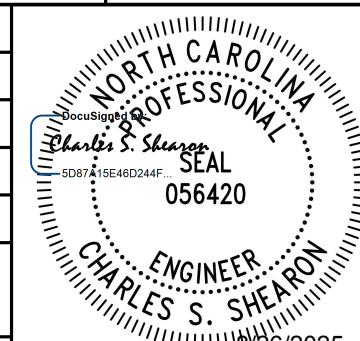

GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2024.
2. THE EXISTING UTILITIES BELONG TO COLUMBUS COUNTY PUBLIC UTILITIES.
3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, PUBLIC WATER SUPPLY SECTION. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, WATER QUALITY SECTION. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.
4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.
5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPORTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.

6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT.
7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.
8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.
9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, " SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

PROJECT SPECIFIC NOTES:

1. PROPOSED WATER LINE FROM -W/L- LINE STATION 0+00 TO -W/L- LINE STATION 0+41.10 AND -W/L- STATION 3+64.50 TO -W/L- STATION 4+01.50 SHALL BE 6" CLASS 350 RESTRAINED JOINT DUCTILE IRON PIPE (RJ DIP). -W/L- LINE STATION 0+41.10 TO -W/L- LINE STATION 3+64.50 SHALL BE 8" SDR 9 HIGH DENISTY POLYETHYLENE (HDPE).
2. CONTRACTOR'S ATTENTION IS DIRECTED TO SECTIONS 102, 107, AND 1550 OF THE STANDARD SPECIFICATIONS CONCERNING TRENCHLESS INSTALLATION. IT IS CONTRACTOR'S RESPONSIBILITY TO HAVE BORE DESIGNED AND SEALED BY A LICENSED NORTH CAROLINA PROFESSIONAL ENGINEER. NO DAMAGE IS ALLOWED TO RIVER, WETLANDS, OR BUFFER ZONES.
3. CONTRACTOR SHALL NOT MAKE CONNECTION TO EXISTING WATER MAIN UNTIL NEW WATER MAIN HAS BEEN SUCCESSFULLY TESTED AND DISINFECTED.
4. IF HDPE PIPE IS INSTALLED BY DIRECTIONAL DRILL, IT SHALL BE FILLED WITH WATER AND NOT BE CONNECTED TO ANY OTHER PIPE OR FITTINGS FOR ONE WEEK FROM THE TIME OF INSTALLATION.
5. CONTRACTOR SHALL COORDINATE WITH COLUMBUS COUNTY PUBLIC UTILITIES TO SCHEDULE SHUT OFF IN ADVANCE. CONTACT CHRIS NOBLES BY PHONE AT 910-840-4525 AND BY EMAIL AT CNOBLES@COLUMBUSCO.ORG.
6. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO PROVIDE A SMOOTH MATERIAL TRANSITION FROM PVC TO DUCTILE IRON AND DICTILE IRON TO HDPE.
7. COLUMBUS COUNTY PUBLIC UTILITIES ENCOURAGES THE USE OF MECHANICAL JOINT RESTRAINTS FOR DUCTILE IRON PIPE AND GRIP RING PIPE RESTRAINTS ON PVC PIPE.

PROJECT REFERENCE NO. <i>BP6.R008</i>	SHEET NO. <i>UC-3</i>
DESIGNED BY: CS	
DRAWN BY: LB	
CHECKED BY: TB	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
 KCI ASSOCIATES OF N.C., P.A. 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone: (919) 783-9214 NC Firm License No: C-0764	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

UTILITY CONSTRUCTION

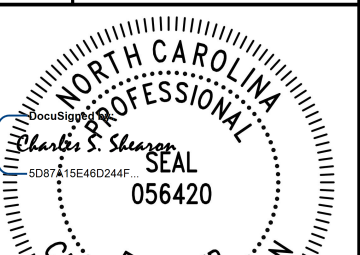
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8/17/99

WATER LINE DETAILS

PROJECT REFERENCE NO. **BP6.R008** SHEET NO. **UC-3A**

DESIGNED BY: **CS**
DRAWN BY: **LB**
CHECKED BY: **TB**
APPROVED BY:
REVISED:



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SEC.
PHONE: (919) 707-6690
FAX: (919) 250-4151

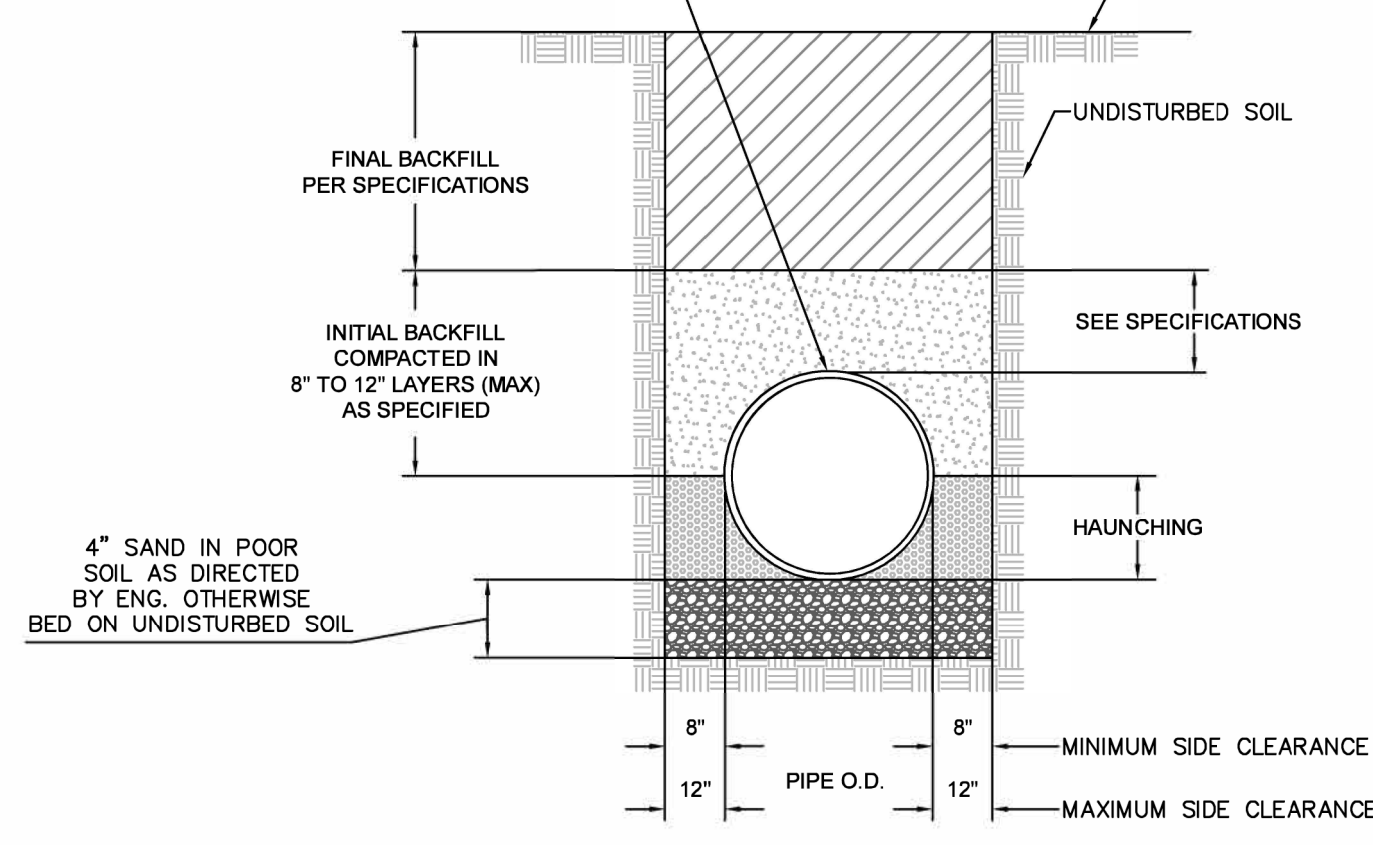
UTILITY CONSTRUCTION PLANS ONLY

KCI ASSOCIATES OF N.C., P.A.
4800 Falls of Neuse Road, Suite 200
Raleigh, NC 27609-6570
Phone: (919) 783-9214
NC Firm License No. C-0764

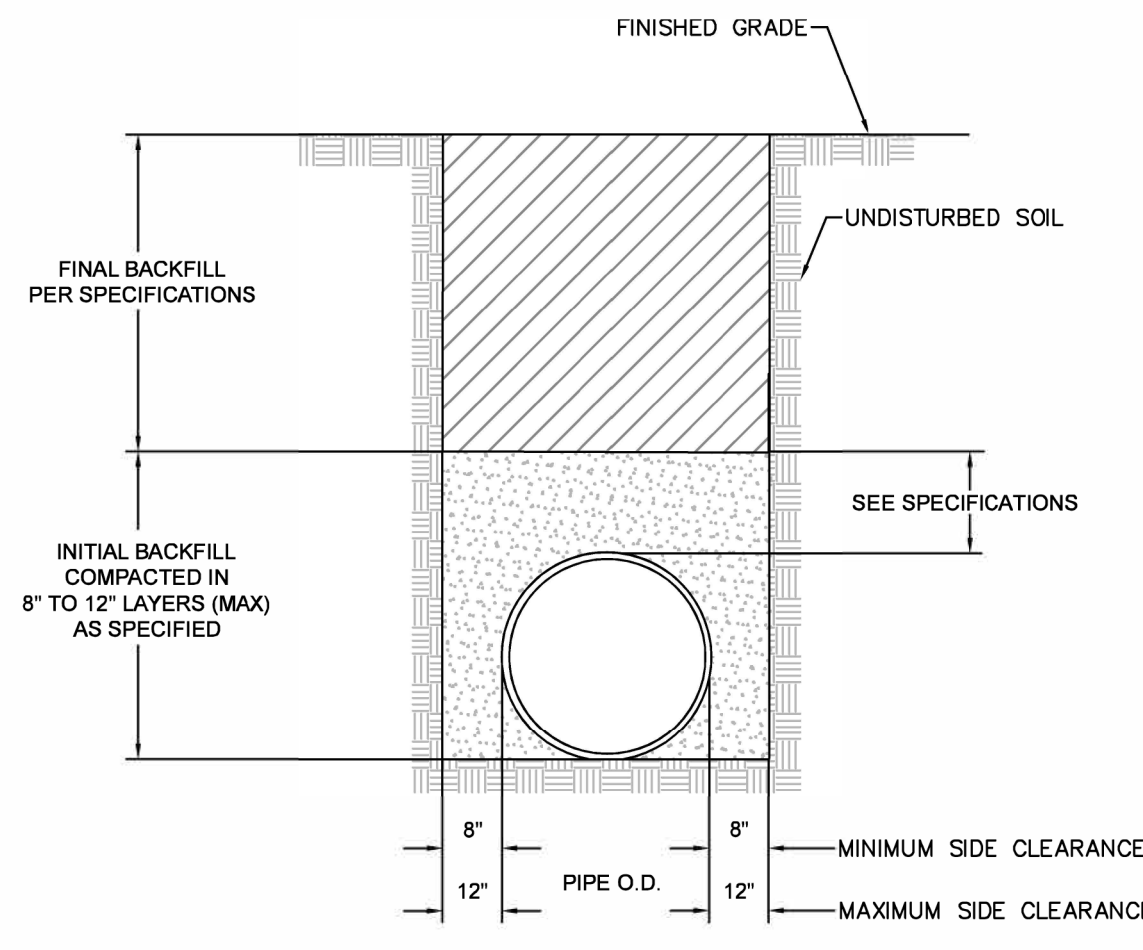
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

UTILITY CONSTRUCTION

TRACER WIRE SHALL BE #14 COPPER CLAD STEEL WITH 30 MIL HDPE INSULATION. SECURE TO PIPE WITH DUCT TAPE AT 10" INTERVALS. INSTALL ON ALL NON-METALLIC PIPES EXCEPT PIPES INSTALLED IN A STRAIGHT LINE BETWEEN STRUCTURES



BEDDING REQUIRED FOR PVC

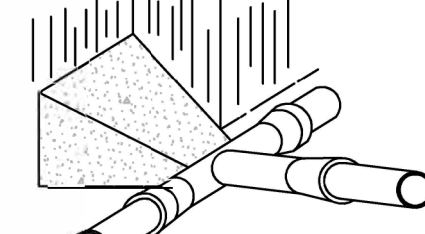


BEDDING REQUIRED FOR DIP

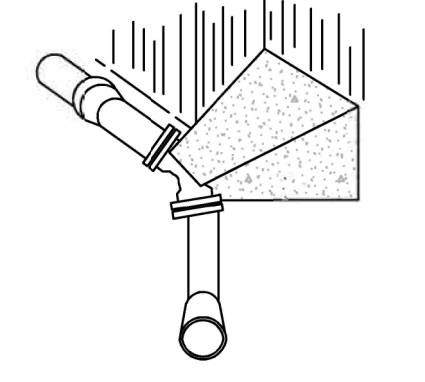
PIPE TRENCH NOT TO SCALE

REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS
BASED ON TEST PRESSURE OF 150 PSI
ALL AREAS GIVEN IN SQUARE FEET

SIZE AND DEGREE OF BEND	STAY THRU IN	STAY THRU IN	STAY THRU IN	STAY THRU IN	STAY THRU IN	STAY THRU IN	STAY THRU IN	STAY THRU IN	STAY THRU IN
2"									
11 1/4"	93	0.14	0.09	0.07	0.03	0.03	0.02	0.02	0.01
22 1/2"	184	0.28	0.17	0.14	0.07	0.07	0.03	0.03	0.03
45"	360	0.54	0.34	0.27	0.14	0.14	0.07	0.07	0.05
90"	666	1.00	0.62	0.50	0.25	0.25	0.12	0.12	0.10
PLUG	471	0.71	0.44	0.35	0.18	0.18	0.09	0.09	0.07
4"									
11 1/4"	369	0.55	0.35	0.28	0.14	0.14	0.07	0.07	0.06
22 1/2"	735	1.10	0.69	0.55	0.28	0.28	0.14	0.14	0.11
45"	1,442	2.16	1.35	1.08	0.54	0.54	0.27	0.27	0.22
90"	2,665	4.00	2.50	2.00	1.00	1.00	0.50	0.50	0.40
PLUG	1,884	2.83	1.77	1.41	0.71	0.71	0.35	0.35	0.28
6"									
11 1/4"	831	1.25	0.78	0.62	0.31	0.31	0.16	0.16	0.12
22 1/2"	1,654	2.48	1.55	1.24	0.62	0.62	0.31	0.31	0.25
45"	3,244	4.87	3.04	2.43	1.22	1.22	0.61	0.61	0.49
90"	5,995	9.00	5.62	4.50	2.25	2.25	1.12	1.12	0.90
PLUG	4,239	6.36	3.97	3.18	1.59	1.59	0.79	0.79	0.64
8"									
11 1/4"	1,477	2.22	1.39	1.11	0.55	0.55	0.28	0.28	0.22
22 1/2"	2,940	4.41	2.76	2.21	1.10	1.10	0.55	0.55	0.44
45"	5,768	8.66	5.41	4.33	2.16	2.16	1.08	1.08	0.87
90"	10,658	16.00	9.99	7.99	4.00	4.00	2.00	2.00	1.60
PLUG	7,536	11.31	7.07	5.65	2.83	2.83	1.41	1.41	1.13
10"									
11 1/4"	2,308	3.46	2.16	1.73	0.87	0.87	0.43	0.43	0.35
22 1/2"	4,595	6.90	4.31	3.45	1.72	1.72	0.86	0.86	0.69
45"	9,012	13.53	8.45	6.78	3.36	3.36	1.69	1.69	1.35
90"	16,653	24.99	15.61	12.49	6.25	6.25	3.12	3.12	2.50
PLUG	11,776	17.67	11.04	8.83	4.42	4.42	2.21	2.21	1.77
12"									
11 1/4"	3,016	4.52	2.82	2.63	1.14	1.14	0.56	0.56	0.46
22 1/2"	6,004	9.02	5.63	4.91	2.25	2.25	1.12	1.12	0.90
45"	11,776	17.68	11.04	8.84	4.41	4.41	2.21	2.21	1.76
90"	21,760	32.65	20.40	16.32	8.17	8.17	4.08	4.08	3.27
PLUG	15,366	23.09	14.43	11.54	5.78	5.78	2.89	2.89	2.31



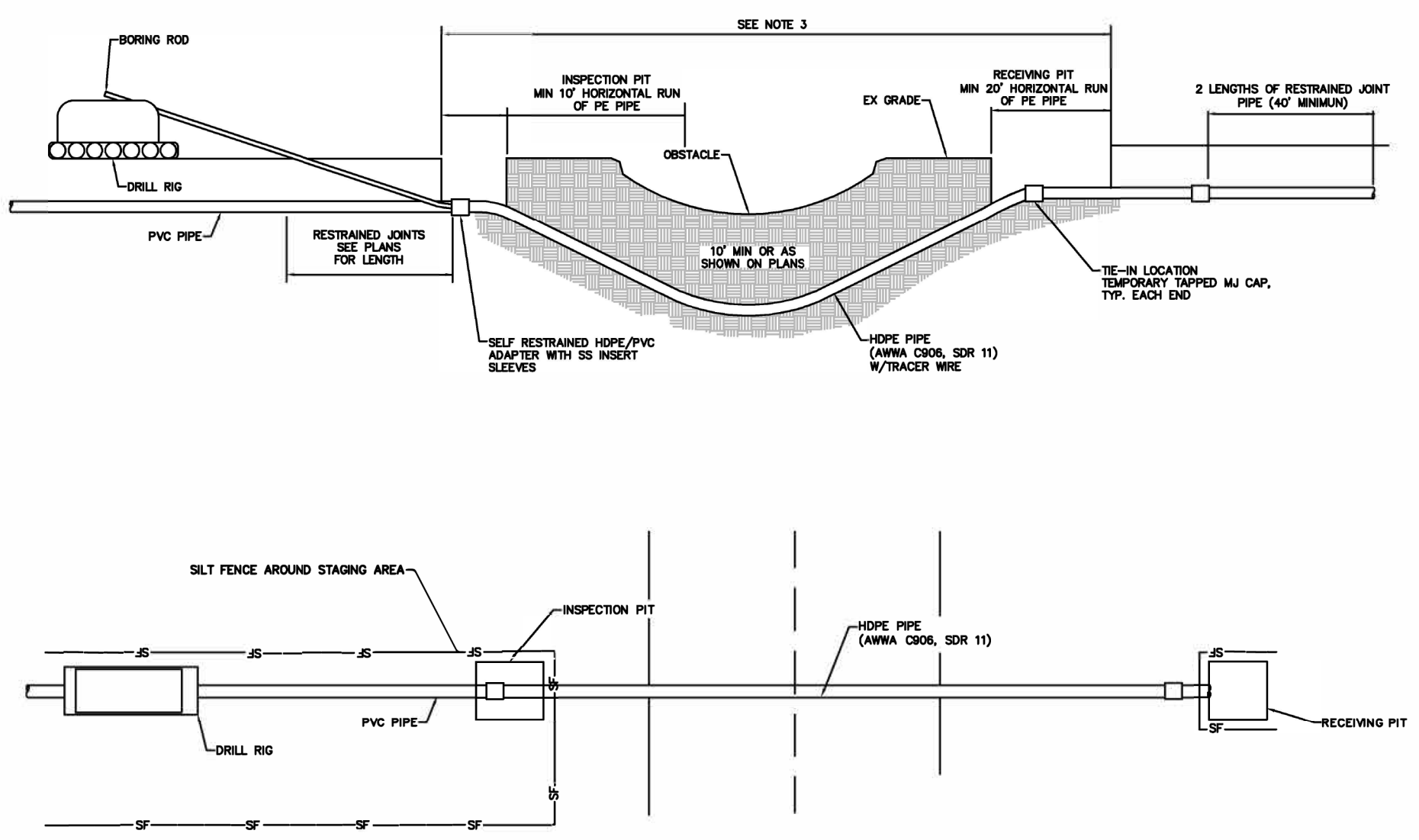
TEE INTERSECTION



BEND

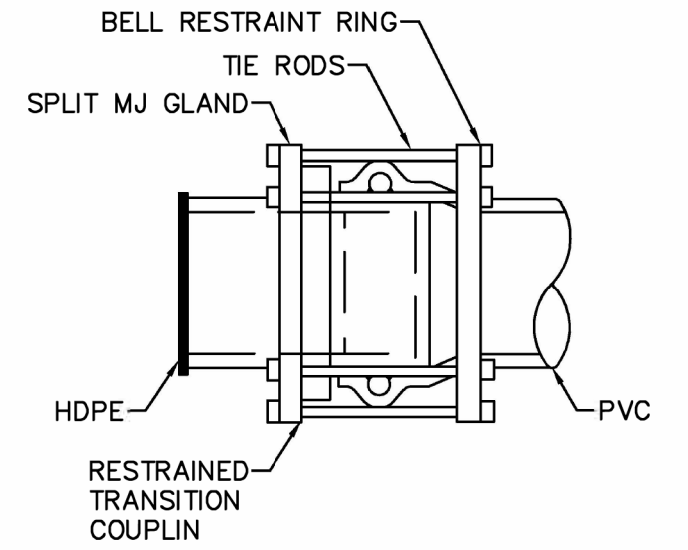
- NOTES:
1. CONCRETE SHALL BE 3,000 PSI.
 2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
 3. ALL BENDS AND INTERSECTIONS SHALL HAVE CONCRETE THRUST BLOCKING.
 4. TRENCH SIDE TO BE AT AN ANGLE OF 90° TO THE THRUST VECTOR.

CONCRETE THRUST BLOCKING NOT TO SCALE

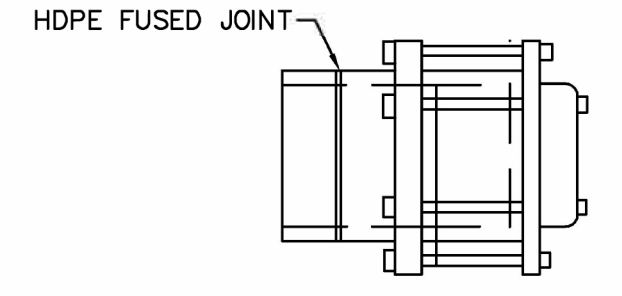


- NOTES:
1. A PLAN & PROFILE SHALL BE PROVIDED FROM ENTRY TO EXIT FOR EACH DIRECTIONAL BORE SECTION BY THE BORE CONTRACTOR.
 2. ALL BORE SECTIONS SHALL BE HYDROSTATICALLY TESTED PER SPECIFICATIONS UPON COMPLETION OF INSTALLATION & PRIOR TO PLACING THE PIPELINE INTO SERVICE.
 3. LENGTH OF CROSSING, LOCATION OF INSPECTION PIT, NUMBER OF HDPE PIPE JOINTS, LOCATION OF BORE MACHINE, AUGER ENTRANCE LOCATION, & TIE-IN POINTS ARE TO BE APPROVED BY ENGINEER PRIOR TO START OF WORK.
 4. THE BORE DEVELOPED FOR THE LEAD-IN END OF THE PIPE SHALL BE KEPT TO A MINIMUM DIAMETER FOR THE PIPE INSTALLATION. THE LEAD-IN END SHALL BE PULLED THROUGH WITHOUT THE MJ FLANGE. ATTACHED FOR LARGER THAN 6" PIPE INSTALLATIONS. THE MJ FLANGE FOR SAID LEAD-IN END SHALL BE INSTALLED AFTER THE PIPE INSTALLATION WITH THE USE OF A SPLIT MJ FLANGE.
 5. TRACER WIRE SHALL BE #12 AWG COPPER CLAD STEEL WITH A MINIMUM 1,150 LB. BREAK LOAD AND A MINIMUM 45 MIL HDPE INSULATION THICKNESS.

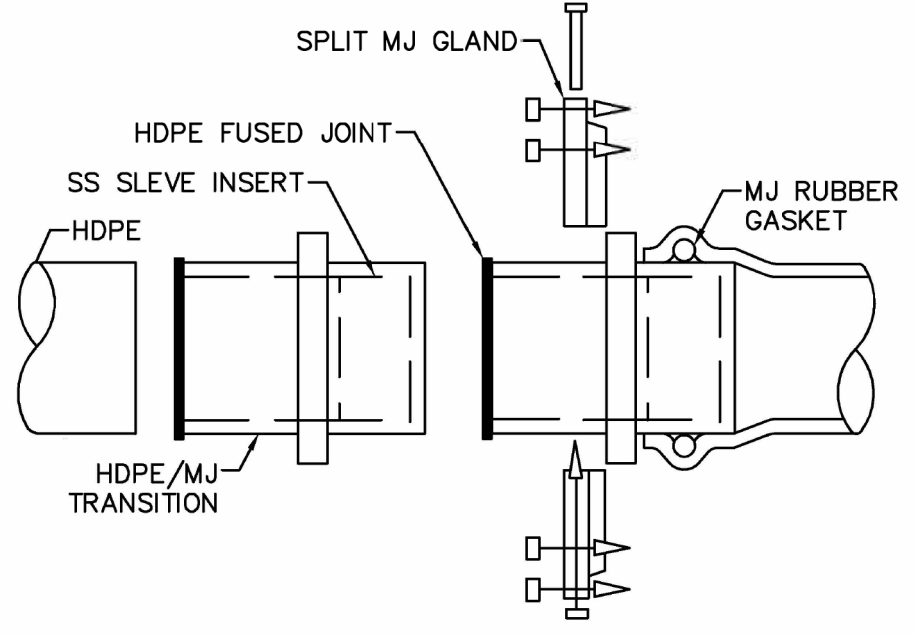
HORIZONTAL DIRECTIONAL DRILL NOT TO SCALE



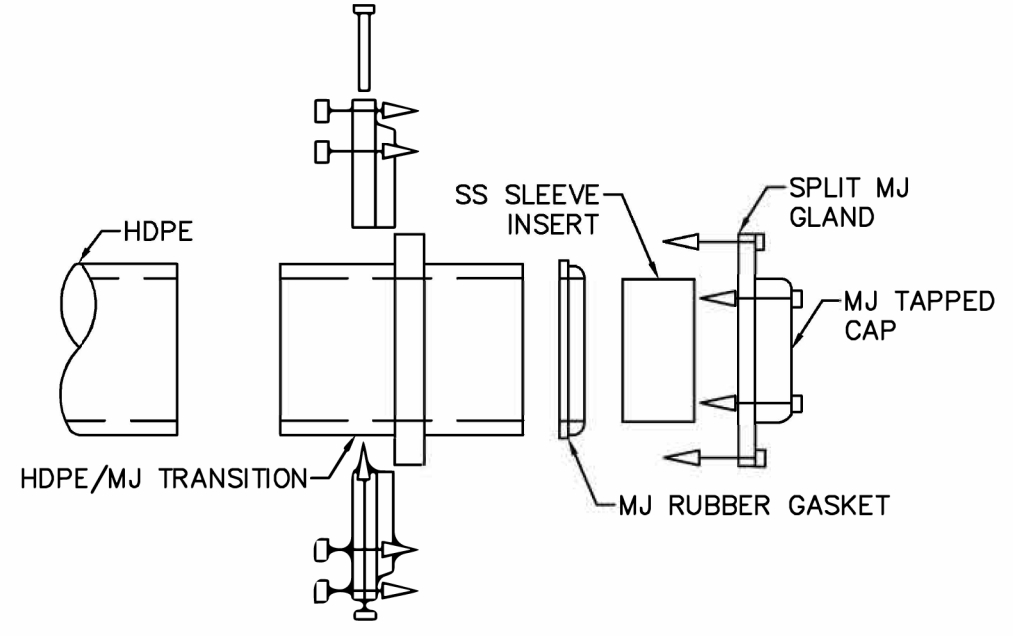
HDPE / PVC TRANSITION ASSEMBLED



HDPE / MJ TRANSITION ASSEMBLED



HDPE / PVC TRANSITION ASSEMBLY

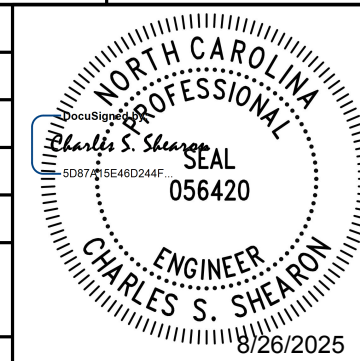



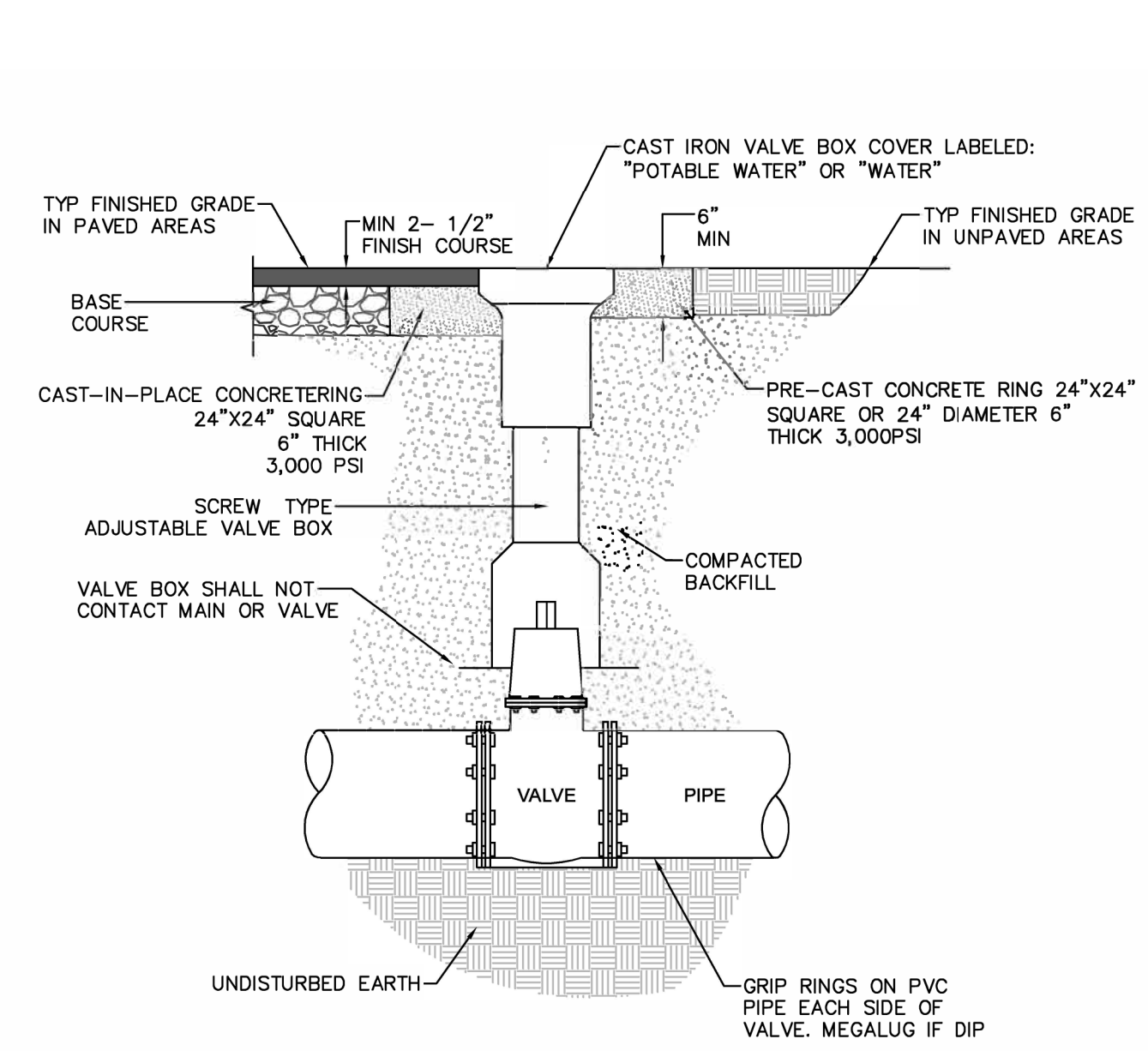
HDPE / MJ TRANSITION ASSEMBLY

I:\JUN-2025\1430-M-2025\2025-01-NCDDT-BP6.R008.1-Columbus Bridge 271\Wastewater\Drawings\BP6.R008-ut.dtl UC-3A_psh.dgn

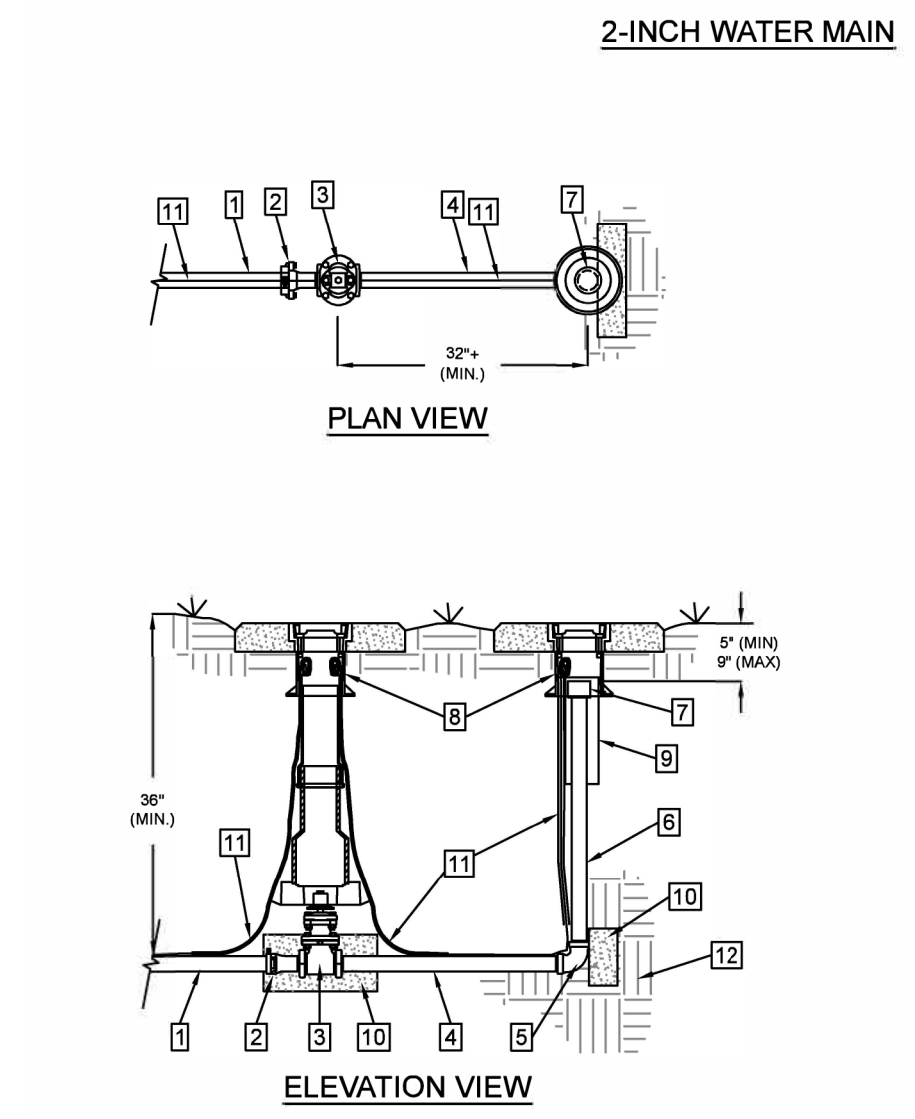
8/17/99

WATER LINE DETAILS

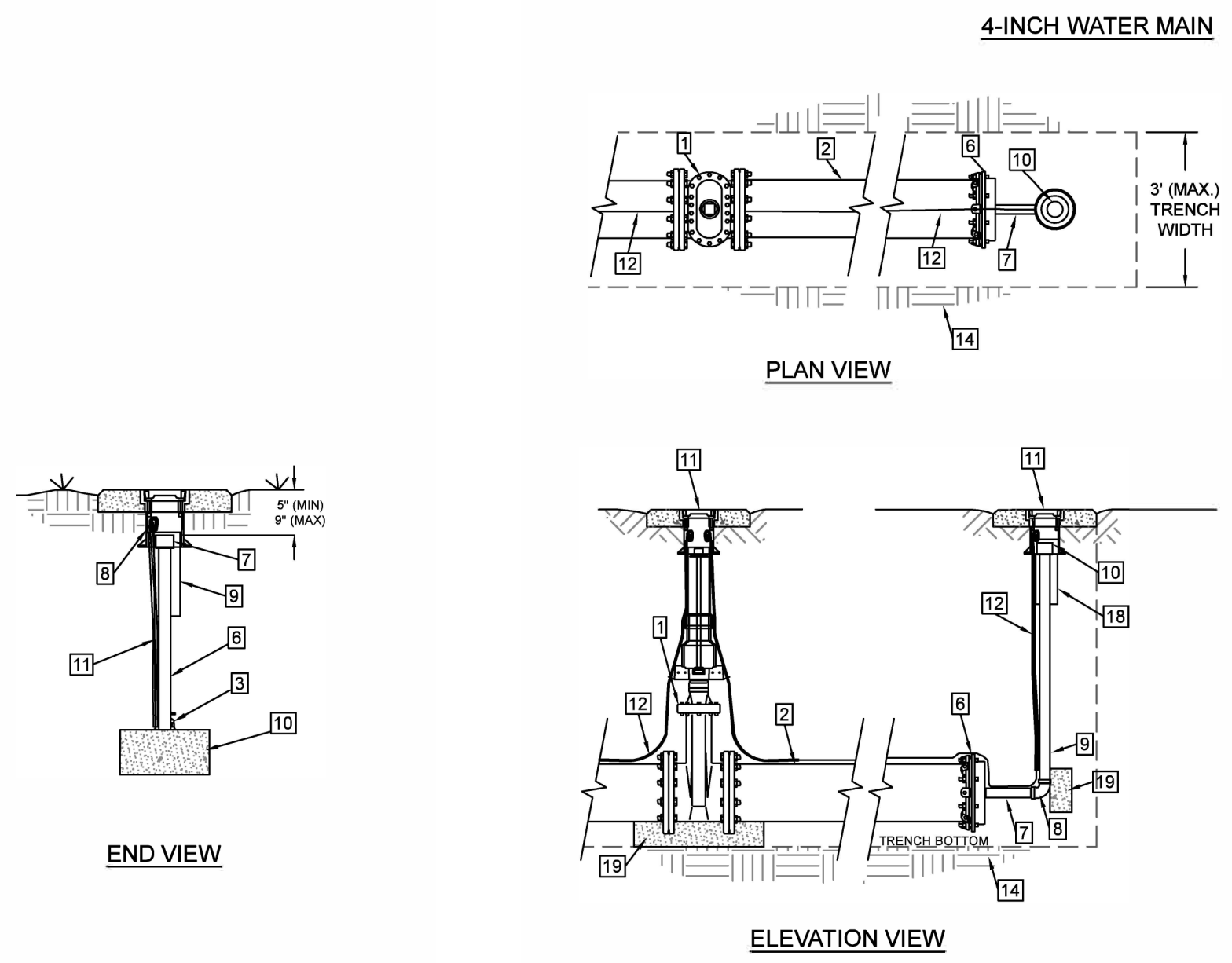
PROJECT REFERENCE NO. BP6.R008		SHEET NO. UC-3B	
DESIGNED BY: CS	DRAWN BY: LB		
CHECKED BY: TB	APPROVED BY:		
REVISED:			
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION			
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151		UTILITY CONSTRUCTION PLANS ONLY	
		KCI ASSOCIATES OF N.C., P.A. 4800 Falls of Neuse Road, Suite 200 Raleigh, NC 27609-6270 Phone: (919) 783-9214 NC Firm License No: C-0764	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
UTILITY CONSTRUCTION			



VALVE AND VALVE BOX
NOT TO SCALE



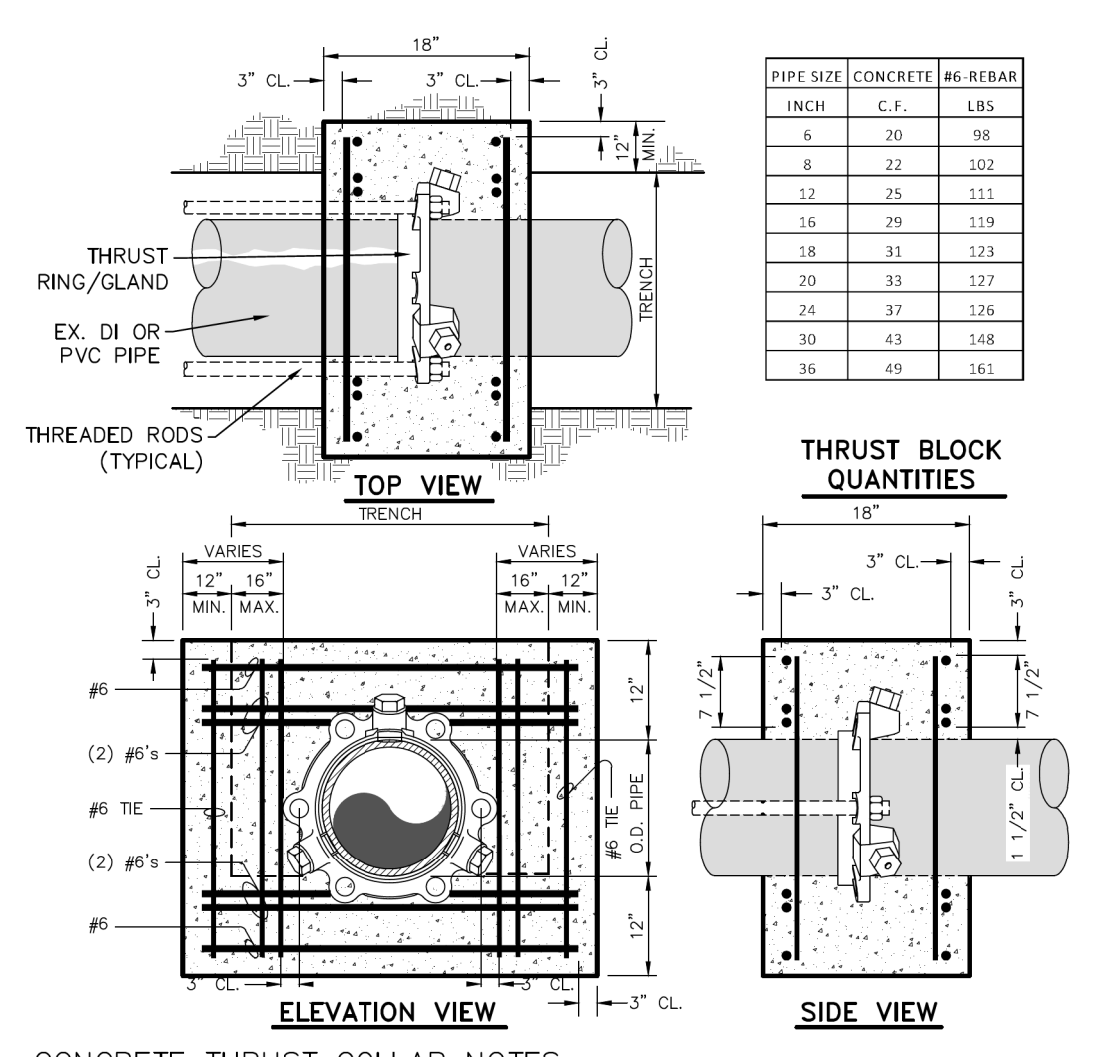
- NO. DESCRIPTION**
- 2" DR 13.5 PVC WATER MAIN (IPS)
 - 2" D.I. PC 350 ADAPTOR (BELL x MNPT) - FUSION BONDED EPOXY - HARCO OR APPROVED EQUAL WITH HARCO KNUCKLE JOINT RESTRAINT
 - 2" GATE VALVE (FNPT x FNPT)
 - 2" RED BRASS NIPPLE - SCH 40 - (MNPT x MNPT) - L=30" (MIN.)
 - 2" RED BRASS 90° BEND (FNPT x FNPT)
 - 2" RED BRASS NIPPLE - SCH 40 - (MNPT x MNPT) - LENGTH AS REQUIRED
 - 2" THREADED COUPLING (FNPT x FNPT) - PVC SCH 40 WITH 2" MNPT PLUG



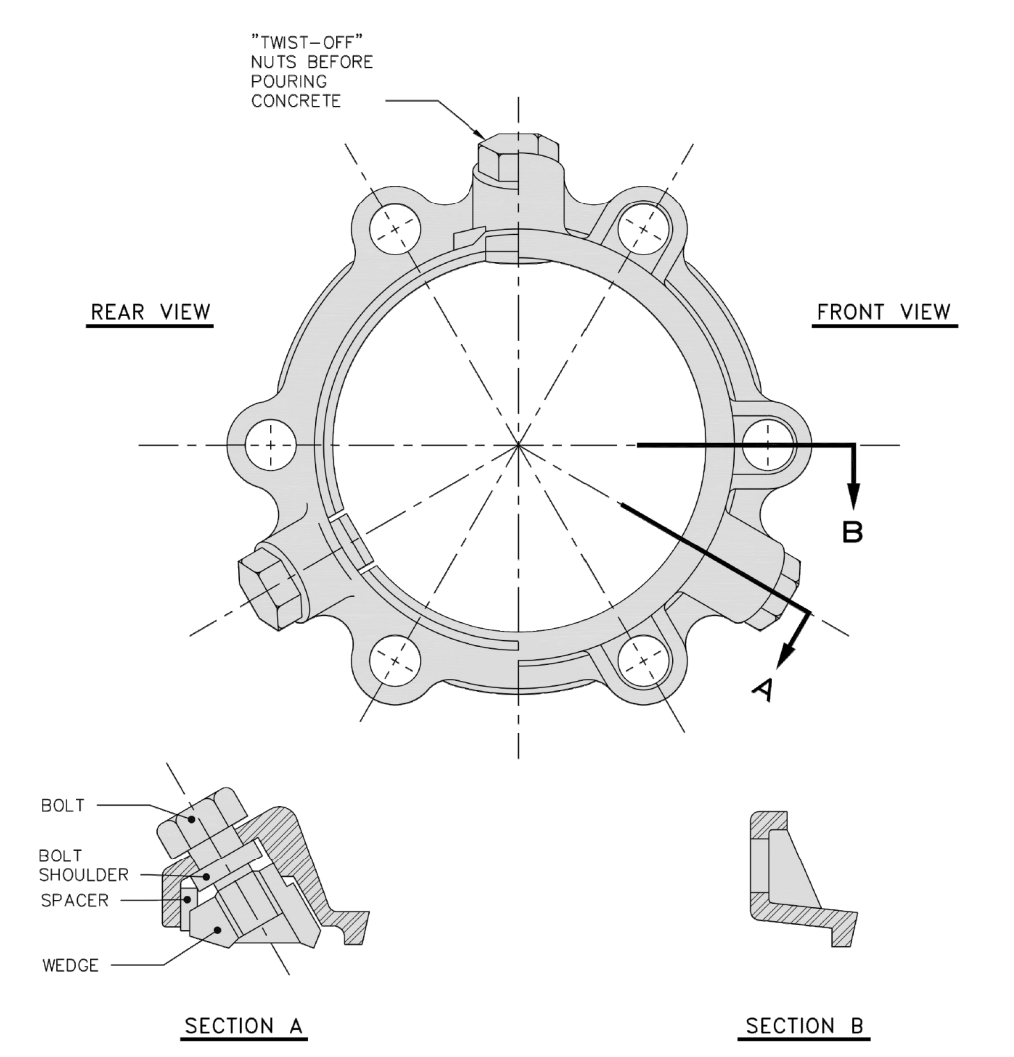
- STANDARD VALVE BOX ASSEMBLY - SEE DETAILS
- 5" CAST IRON SOIL PIPE, L=15", OR VALVE BOX BOTTOM SECTION
- POURED THRUST BLOCKING
- AWG #12 GAUGE COPPER TRACER WIRE WITH BLUE INSULATION (30MIL HDPE) - TERMINATE WITH 24" EXCESS WIRE (COILED) IN VALVE BOX (TYP.)
- UNDISTURBED OR COMPACTED SOIL - 100% STANDARD PROCTOR

- NO. DESCRIPTION**
- END OF LINE GATE VALVE (MJ x MJ)
 - DIP - (PE x PE) - REMOVAL BELL - LENGTH = 20FT
 - MJ GAP - WITH WEDGE ACTION RESTRAINT GLAND, TAP 2" THREADED OUTLET (FNPT)
 - 2" RED BRASS NIPPLES SCH 40 (MNPT x MNPT) - LENGTH = 12 INCH
 - 2" RED BRASS 90° BEND (FNPT x FNPT)
 - 2" RED BRASS NIPPLE SCH 40 (MNPT x MNPT) - LENGTH AS REQUIRED
 - 2" GALVANIZED MALLEABLE IRON COUPLING (FNPT x FNPT)
 - STANDARD VALVE BOX ASSEMBLY - SEE DETAILS
 - AWG #12 GAUGE COPPER TRACER WIRE - WITH BLUE INSULATION (30MIL HDPE) TERMINATE WITH 24-INCH EXCESS WIRE (COILED) IN VALVE BOX (TYP.)
 - UNDISTURBED SOIL
 - 5" CAST IRON SOIL PIPE (L=15") VALVE BOX BOTTOM SECTION
 - POURED THRUST BLOCKING

2IN BLOWOFF ASSEMBLY
NOT TO SCALE



- CONCRETE THRUST COLLAR NOTES:**
- CONCRETE SHALL BE 3,000 P.S.I. MINIMUM.
 - REINFORCING BARS SHALL BE DEFORMED, AND TIED TOGETHER.
 - TRENCH BOTTOM WIDTH IN VICINITY OF THRUST BLOCK(S) INSTALLATION SHALL BE THE MINIMUM WIDTH.
 - BACKFILL AND COMPACT IN 6 LAYERS.
 - PLACE RESTRAINED JOINT THRUST RING 4" MINIMUM FROM END OF EXISTING PIPE.
 - ROD THRUST RING/GLAND TO PROPOSED VALVE OR RESTRAINED FITTING.
 - SEE DETAILS FOR THRUST RING/GLAND AND THE ROD ANCHORS.



- THRUST RING/GLAND NOTES:**
- ON EXISTING DUCTILE IRON PIPE (DIP) USE EBAA IRON MEGALUG GLAND SERIES 1100SDB OR EQUAL.
 - ON EXISTING POLYVINYL CHLORIDE PIPE (PVC) USE EBAA IRON MEGALUG GLAND SERIES 2000SV OR EQUAL.

CONCRETE THRUST COLLAR DETAIL
NOT TO SCALE

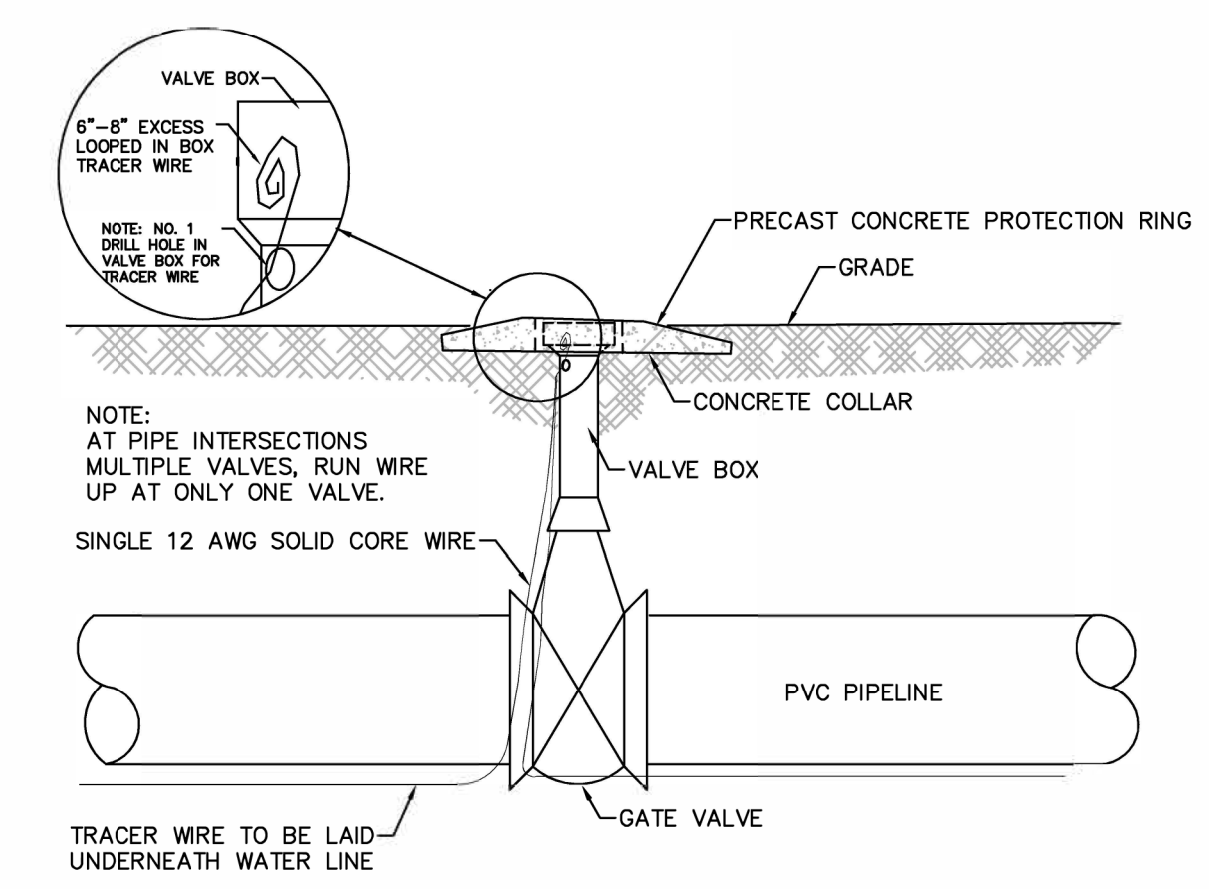
THRUST RING/GLAND
NOT TO SCALE

TIE ROD ANCHORS DATUM

PIPE SIZE (INCHES)	ROD DIAMETER (INCHES)	NUMBER OF A316 RODS REQUIRED
TEST PRESSURE = 150 P.S.I. & BELOW		
6	3/4	2
8	3/4	2
10	3/4	2
12	3/4	4
16	3/4	6
20	3/4	8
24	1	8
30	1	10
36	1	14
TEST PRESSURE = 151 P.S.I. to 200 P.S.I.		
6	3/4	2
8	3/4	2
10	3/4	4
12	3/4	6
16	3/4	8
20	3/4	12
24	1	10
30	1	14
36	1	16
TEST PRESSURE = 201 P.S.I. to 250 P.S.I.		
6	3/4	4
8	3/4	4
10	3/4	4
12	3/4	6
16	3/4	12
20	3/4	14
24	1	16
30	1	20
36	1	20

- RODS SHALL BE A316 STAINLESS STEEL TIE RODS.
- ALL RODS SHALL BE EQUALLY SPACED

TIE ROD ANCHORS
NOT TO SCALE



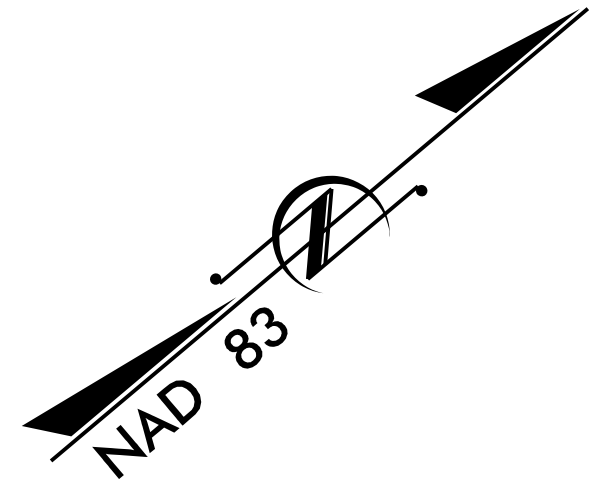
- NOTES:**
- DRILL HOLE IN VALVE BOX TO INSERT TRACER WIRE, BRING UP TO INSIDE AND ROLL UP AT LEAST 6"-8" EXCESS
 - PLACE TRACER WIRE IN VALVE BOX AT 1,000" INTERVALS OR AS NOTED ON THE PLANS, TYPICAL
 - DO NOT SPICE WIRE WHEN BEGINNING A NEW SPOOL. INSTEAD INSTALL A VALVE BOX AND ATTACH EACH WIRE WITH A BRASS SCREW TO THE VALVE BOX.

TRACER WIRES
NOT TO SCALE

18 JUN 2025 09:41 M:\2025\250329\01 NCDOT_BP6.R008\Drawings\Drawings\BP6.R008_ut.dtl UC_3A_psh.dgn

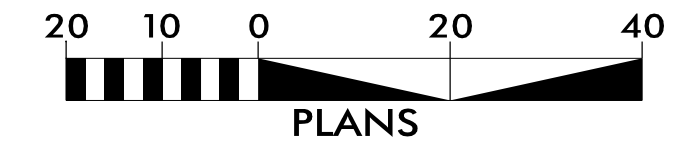
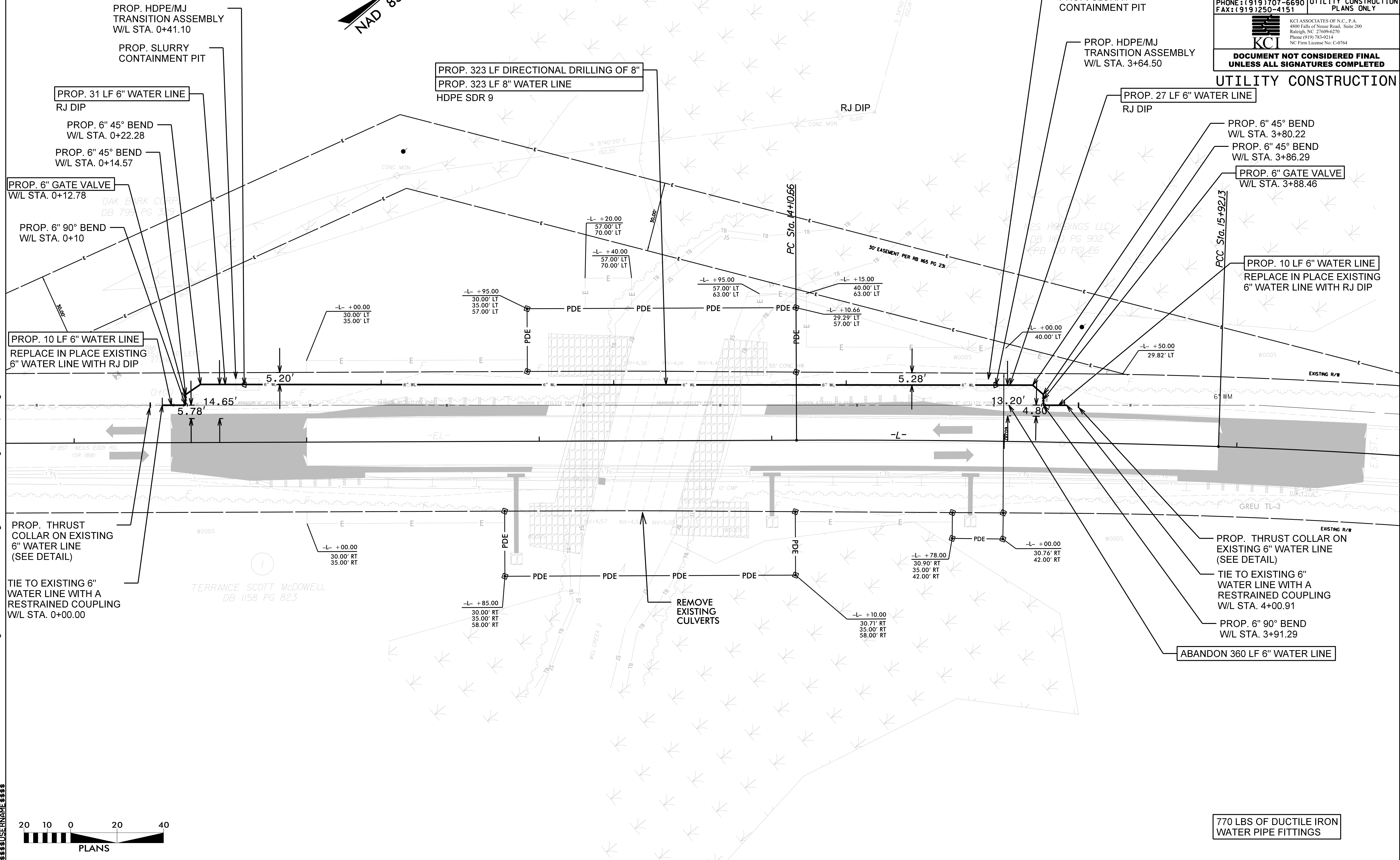
5/14/99

NOTE:
PRIOR TO COMMENCING ANY WORK ON
TRENCHLESS INSTALLATION CERTIFIED BY AN
ENGINEER LICENSED BY THE STATE OF NORTH
CAROLINA, AS REQUIRED BY SUB-ARTICLE
1550-3(B) OF THE STANDARD SPECIFICATIONS.



PROJECT REFERENCE NO.	SHEET NO.
BP6.R008	UC-4
DESIGNED BY: CS	
DRAWN BY: LB	
CHECKED BY: TB	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	
KCI ASSOCIATES OF N.C., P.A. 4800 Falls of Neuse Road, Suite 200 Raleigh, NC 27609-4270 Phone (919) 783-9214 NC Firm License No: C-0764	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

UTILITY CONSTRUCTION



770 LBS OF DUCTILE IRON WATER PIPE FITTINGS

C:\MS05\151229\01 NCDOT BP6.R008\1 Columbus Bridge 271\Westwater\Drawings\BP6.R008.ut.rdy\4_UC04_psh.dgn

STATE OF NORTH CAROLINA

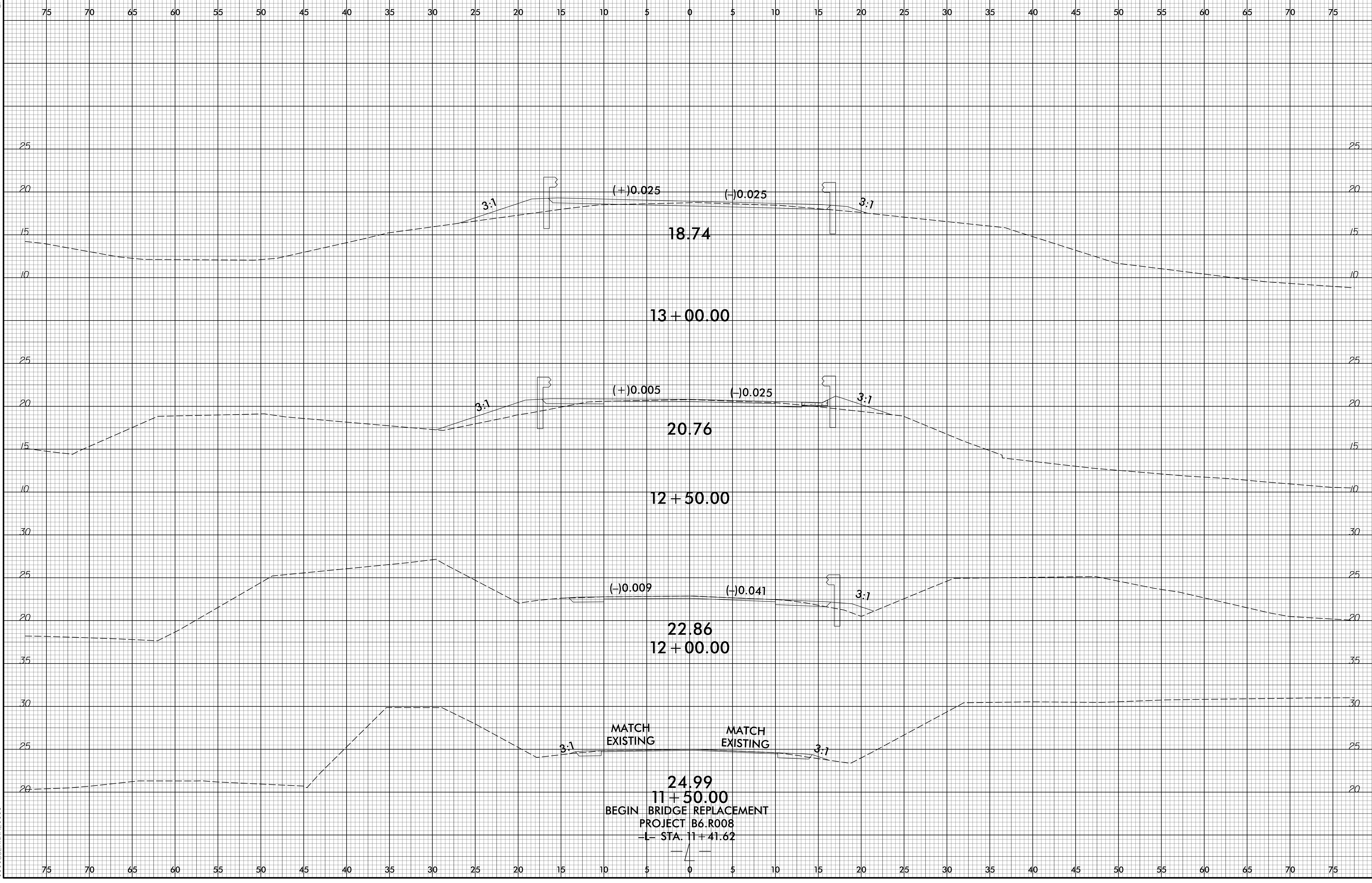
PROJ. REFERENCE NO.	SHEET NO.
BP6.R008	X-1

Approximate quantities only. Unclassified excavation, borrow excavation, fine grading, clearing and grubbing, and removal of existing asphalt pavement will be paid for at the contract lump sum

CROSS-SECTION SUMMARY

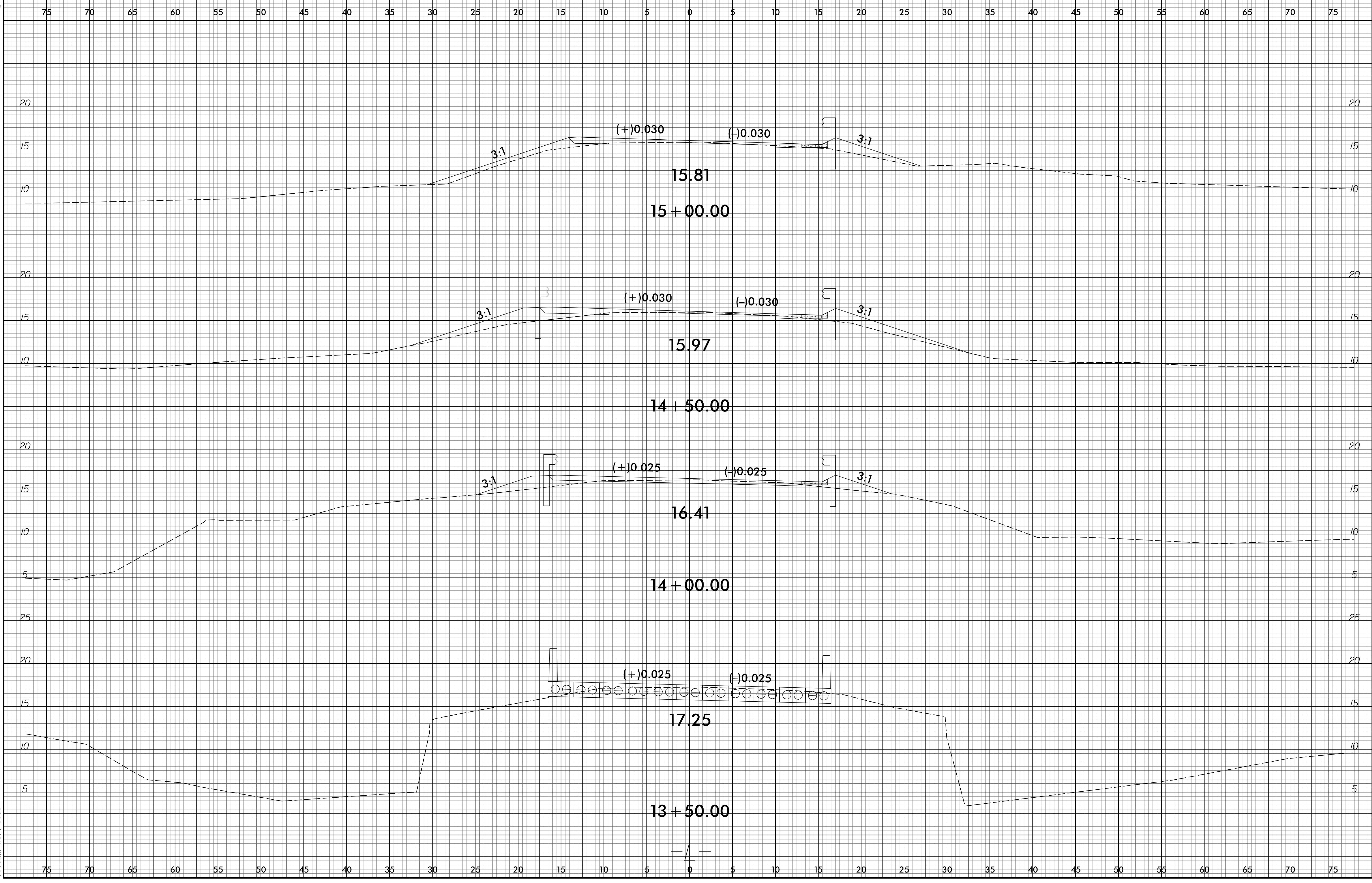
NOTE: Embankment column does not include backfill for undercut

Station	Uncl. Exc.	Embt
L (ft)	(cu. yd.)	(cu. yd.)
11+41.62	0	0
11+50.00	1	1
12+00.00	6	6
12+50.00	6	30
13+00.00	7	57
13+10.84	2	11
Station	Uncl. Exc.	Embt
L (ft)	(cu. yd.)	(cu. yd.)
13+83.16	2	23
14+00.00	7	67
14+50.00	7	67
15+00.00	2	59
15+50.00	2	36
16+00.00	4	15
16+50.00	6	3



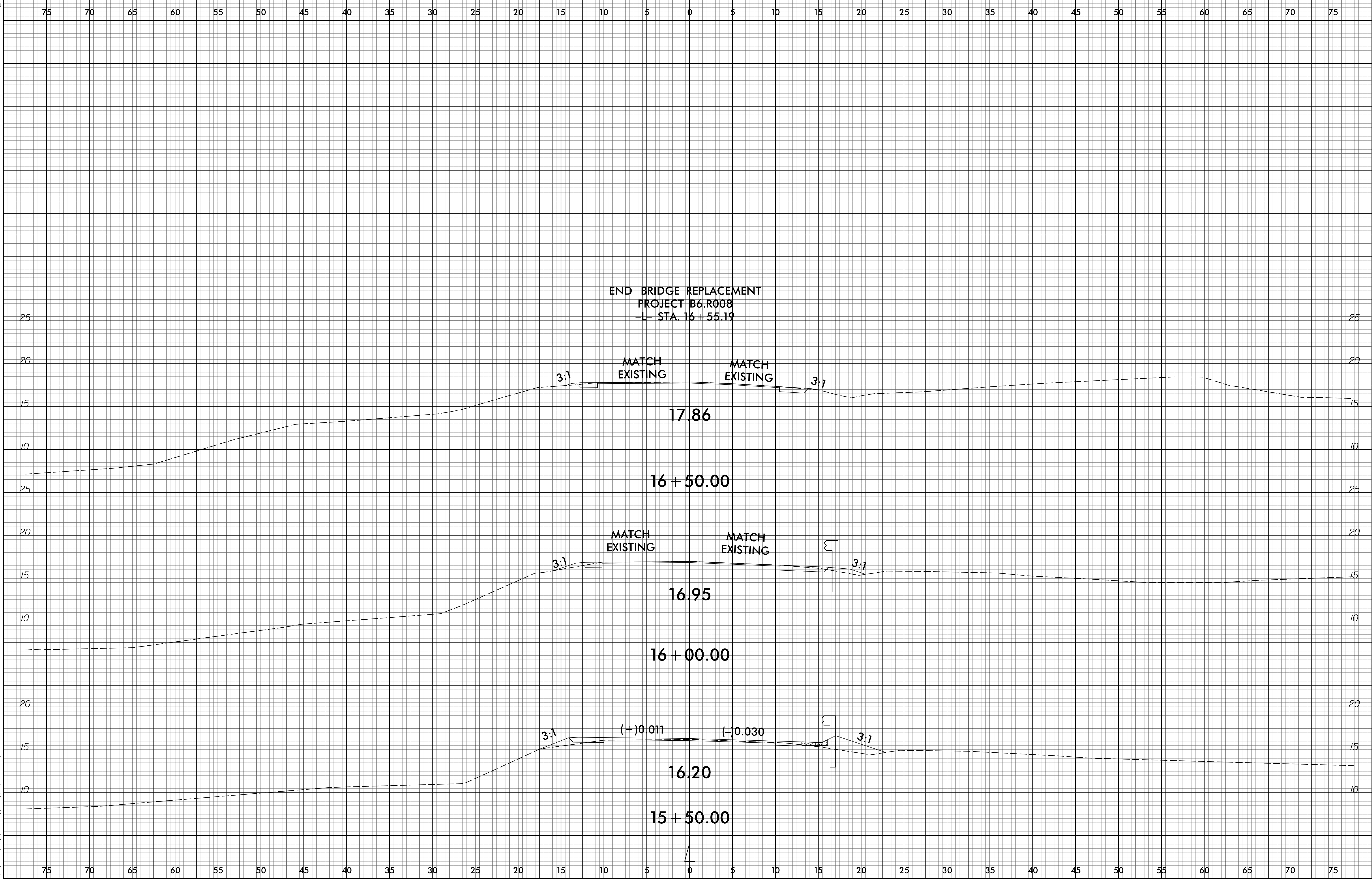
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 \$\$\$\$USE PRINT AREA\$\$\$\$

6/23/16



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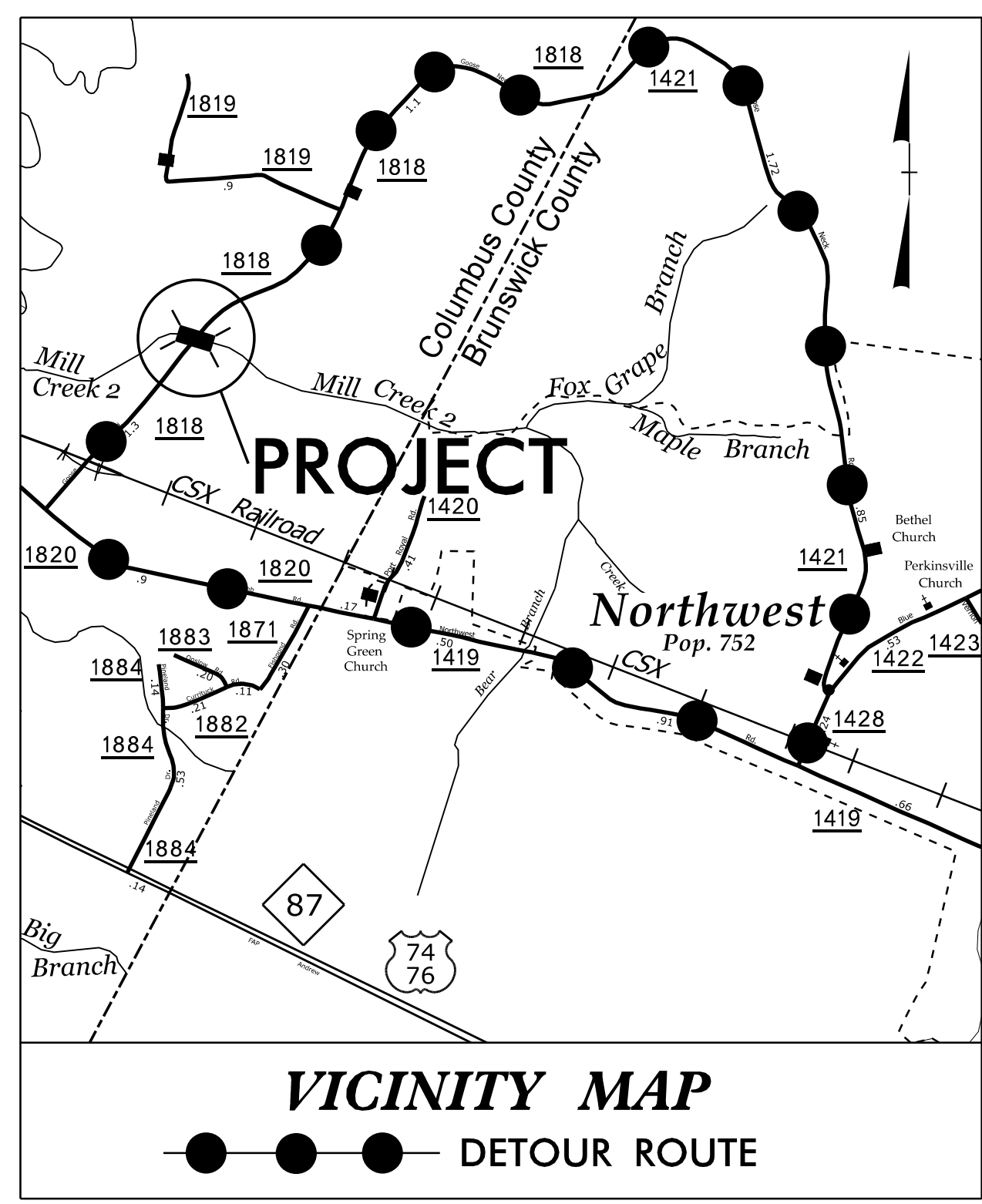
09.08/299

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

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS **COLUMBUS COUNTY**

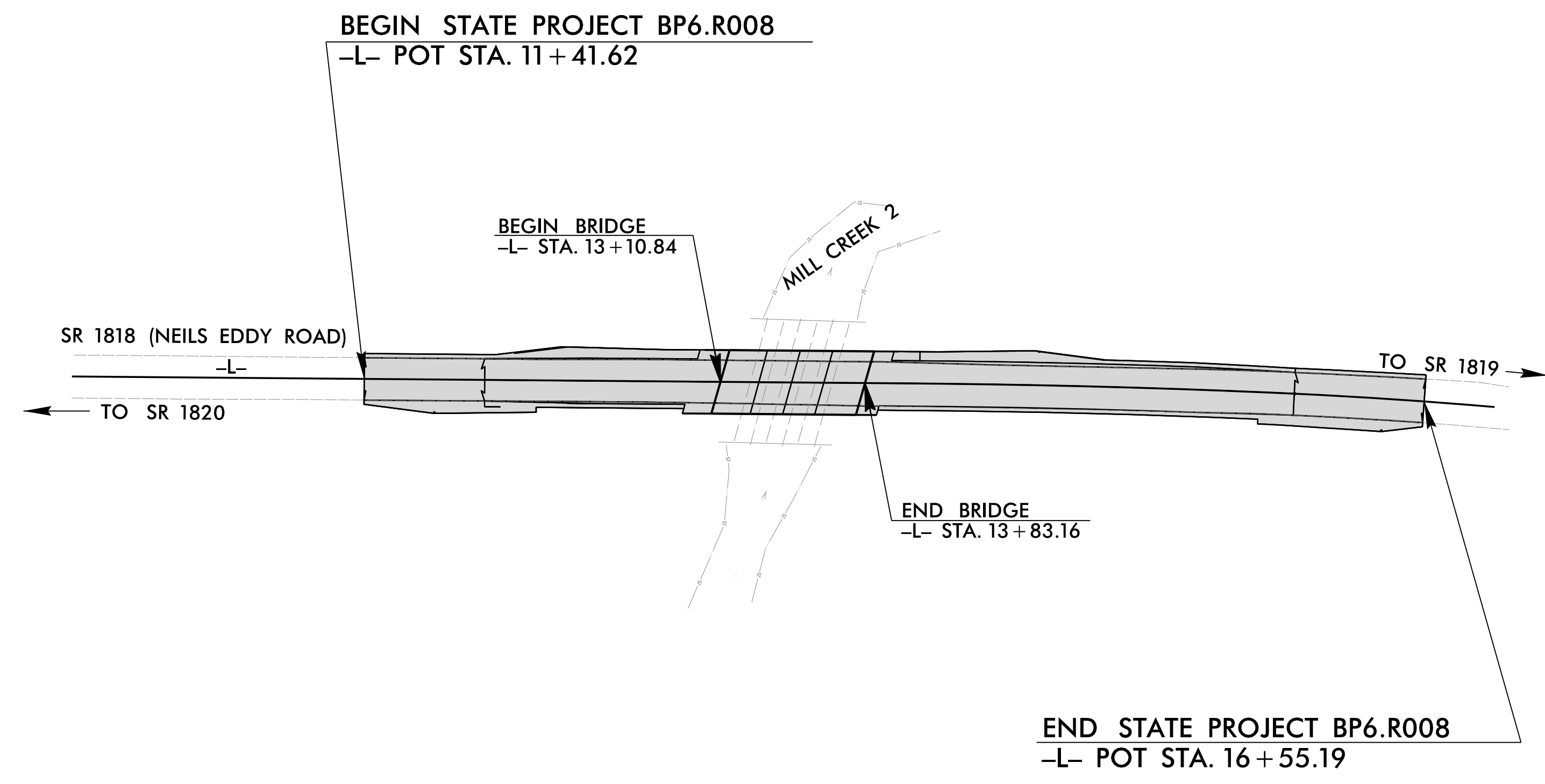
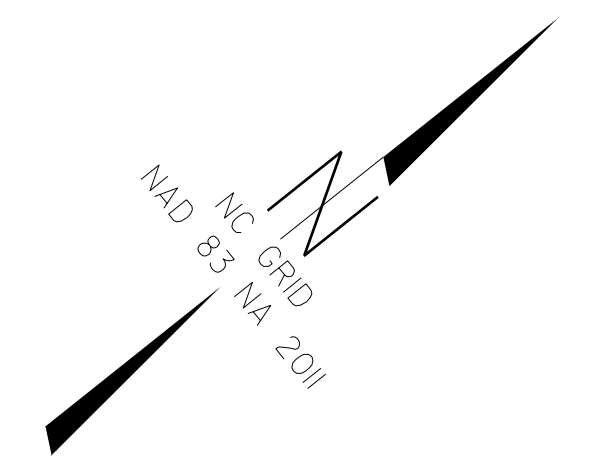
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP6.R008		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BP6.R008.1		PE	
BP6.R008.2		RW, UTIL.	
BP6.R008.3		CONST.	

PROJECT: BP6.R008



**LOCATION: BRIDGE NO. 271 OVER MILL CREEK 2
ON SR 1818 (NEILS EDDY ROAD)**

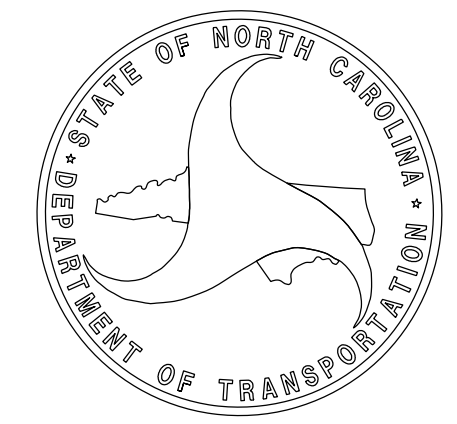
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE



STRUCTURES

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

CONTRACT:



DESIGN DATA

ADT 2022 = 780
V = 50 MPH

FUNC CLASS = RURAL LOCAL
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY STATE PROJECT BP6.R008 = 0.061 MILES

LENGTH OF STRUCTURE STATE PROJECT BP6.R008 = 0.013 MILES

TOTAL LENGTH OF STATE PROJECT BP6.R008 = 0.074 MILES



9/5/2024

DocuSigned by:
Robert Decola
C91B1B6B95184FF

Prepared in the Office of:
KCI Associates of N.C., P.A.
4601 Six Forks Road
Landmark Center II, Suite 220
Raleigh, NC 27609
Phone (919) 783-9214
Fax (919) 783-9266
<http://www.kci.com>

Plans Prepared For:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr.
Raleigh, NC, 27610

2012 STANDARD SPECIFICATIONS

LETTING DATE:
JUNE 5, 2024

MATTHEW G. ARMSTRONG, PE
PROJECT ENGINEER

ROBERT F. DECOLA, P.E.
PROJECT DESIGN ENGINEER

NCDOT CONTACT: ADAM BRITT
DIVISION 6 - BRIDGE PROGRAM MANAGER

5-SEP-2024 16:01
M:\2022\252203229\01NCDOT_BP6.R008.I.Columbus Bridge 27\Structures\Drawings\TITLE SHEET\B027L_Str_1.tsh.dgn
\$\$\$\$\$USERNAME\$\$\$\$\$

9/26/20

VERTICAL CURVE DATA -L-

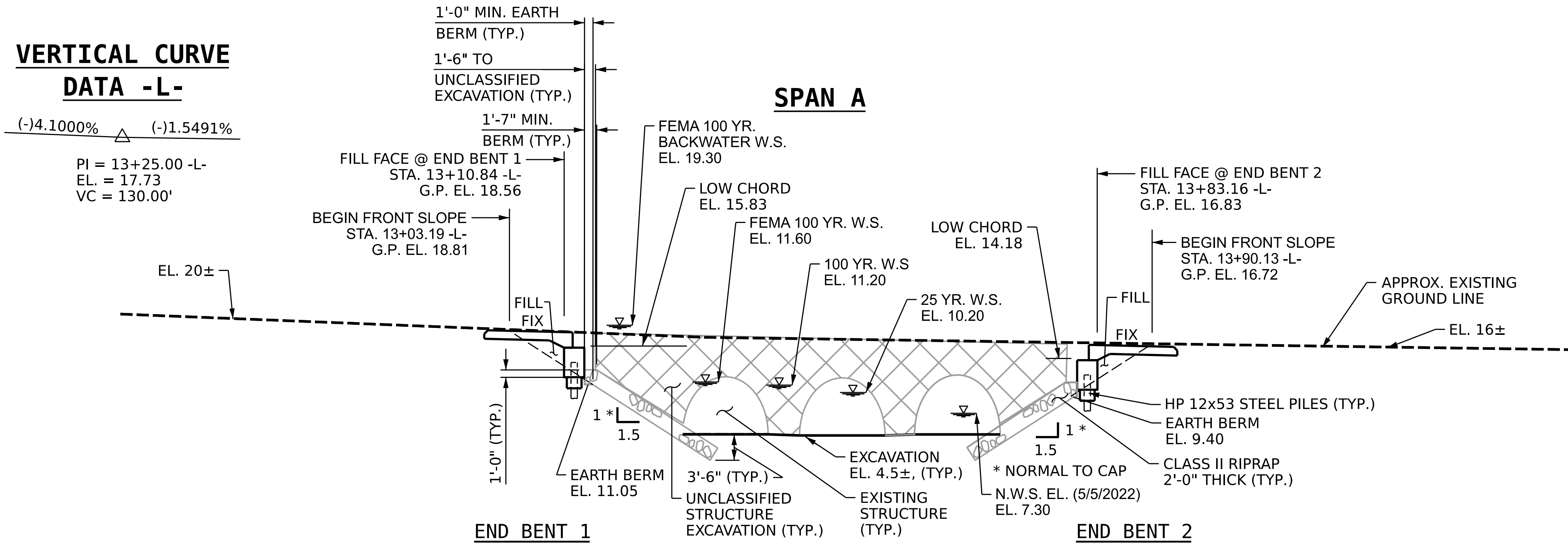
(-)4.1000% Δ (-)1.5491%

PI = 13+25.00 -L-
EL. = 17.73
VC = 130.00'

VERTICAL CURVE DATA -L-

(-)1.5491% Δ (+)1.2026%

PI = 14+75.00 -L-
EL. = 15.41
VC = 170.00'



SECTION ALONG -L-
(SECTIONS AT END BENTS TAKEN AT RIGHT ANGLES)

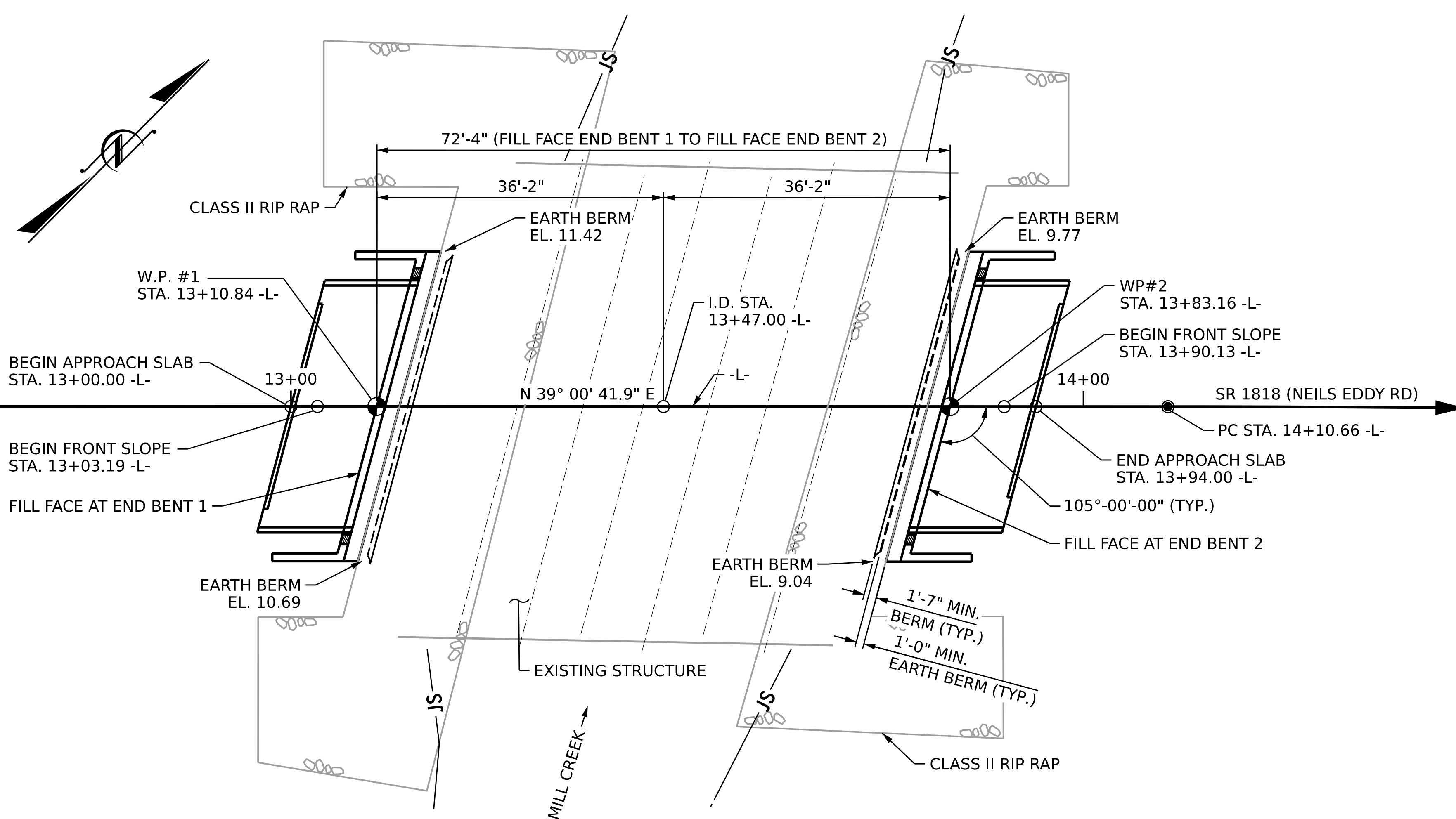
HYDRAULIC DATA:

DESIGN DISCHARGE: = 720 CFS
 FREQUENCY OF DESIGN FLOOD: = 25 YRS
 DESIGN HIGH WATER ELEVATION: = 10.20 FT
 DRAINAGE AREA: = 5.90 SQ. MI.
 BASE DISCHARGE (Q100): = 1282 (FEMA) CFS
 BASE HIGH WATER ELEVATION: = 11.60 FT

OVERTOPPING FLOOD DATA:

OVERTOPPING DISCHARGE: = 3600 CFS
 FREQUENCY OF OVERTOPPING: = >500 YRS
 OVERTOPPING FLOOD ELEVATION: = 16.3 FT
 SAG @ 14+85.70 -L-

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS



PLAN
(PILES NOT SHOWN FOR CLARITY)

HORIZONTAL CURVE DATA -L-

PI STA. = 15+01.14 -L-	PI STA. = 16+40.74 -L-
Δ = 2°-09'-58.3" (RT)	Δ = 2°-19'-13.7" (RT)
D = 1°-11'-37.2"	D = 2°-23'-14.4"
L = 181.48'	L = 97.20'
T = 90.75'	T = 48.61'
R = 4,800.00'	R = 2,400.00'

DRAWN BY : M.G. Armstrong DATE : 1/27/23
 CHECKED BY : R.F. DeCola DATE : 2/17/23
 DESIGN ENGINEER OF RECORD: R.F. DeCola DATE :

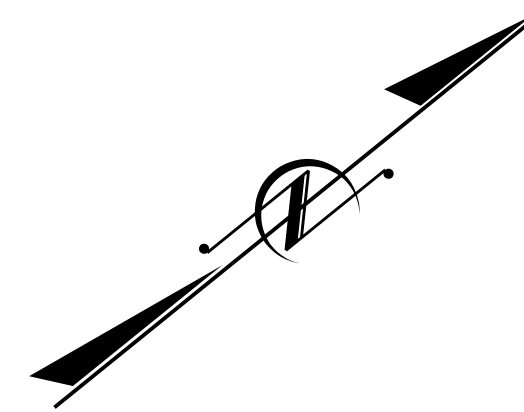
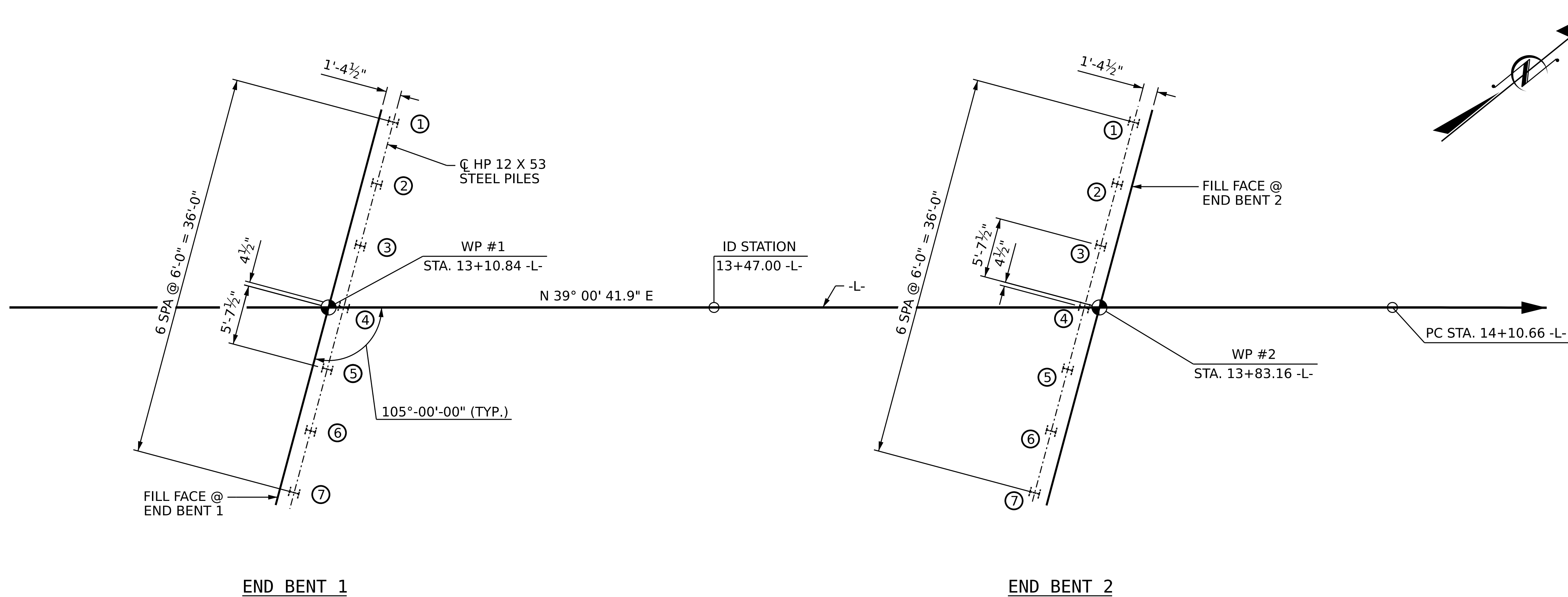
KCI Associates
 of North Carolina, P.A.
 ENGINEERS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. **BP6.R008.1**
COLUMBUS COUNTY
 STATION: **13+47.00 -L-**
 SHEET 1 OF 4 REPLACES BRIDGE 230271

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON SR 1818 (NEILS EDDY RD) OVER MILL CREEK 2 BETWEEN SR 1820 (FERTILIZER RD) AND SR 1819 (JUSTICE FLYNN RD)

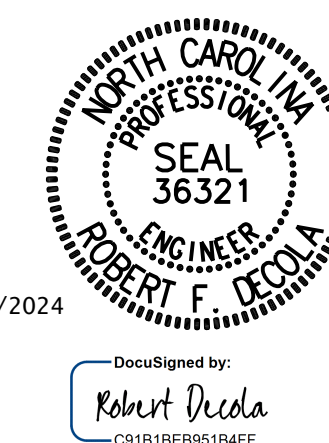
REVISIONS		SHEET NO.
NO.	DATE	
1		S-01
2		TOTAL SHEETS
		15



FOUNDATION LAYOUT
 DIMENSIONS LOCATING PILES ARE
 SHOWN TO CENTERLINE OF PILE

PROJECT NO. **BP6.R008.1**
COLUMBUS COUNTY
 STATION: **13+47.00 -L-**

SHEET 2 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON SR 1818 (NEILS
 EDDY RD) OVER MILL CREEK 2
 BETWEEN SR 1820 (FERTILIZER RD)
 AND SR 1819 (JUSTICE FLYNN RD)

DRAWN BY : M.G. Armstrong DATE : 1/27/23
 CHECKED BY : R.F. DeCola DATE : 2/17/23
 DESIGN ENGINEER OF RECORD : R.F. DeCola DATE :



DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

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

TOTAL SHEETS: 15

SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #-# (e.g., "Bent 1, Piles 1-5")	Factored Resistance per Pile TONS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles*			Drilled-In Piles		
					Min Pile Tip (Tip No Higher Than) Elev FT	Required Driving Resistance (RDR)** per Pile TONS	Total Pile Redrives Quantity EACH	Predrilling Length per Pile Lin FT	Predrilling Elevation (Elev Not To Predrill Below) FT	Maximum Predrilling Dia INCHES	Pile Excavation (Bottom of Hole) Elev FT	Pile Exc Not In Soil per Pile Lin FT	Pile Exc In Soil per Pile Lin FT
End Bent No 1, Piles 1-7	85	See Substructure Plans	60			145	8						
End Bent No 2, Piles 1-7	85		50			145							

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

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

SUMMARY OF DPT/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

DYNAMIC PILE TESTING (DPT)				Pile Order Lengths	
End Bent/ Bent No	DPT Testing Required? YES or MAYBE	DPT Test Pile Length FT	Total DPT Testing Quantity EACH	End Bent/ Bent No(s)	Pile Order Length Basis* EST or DPT
End Bent No 1	MAYBE	65	1		
End Bent No 2	MAYBE	55			

*EST = Pile order lengths from estimated pile lengths; DPT = Pile order lengths based on DPT 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.

PILE DESIGN INFORMATION

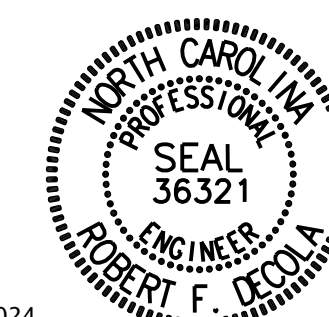
(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #-# (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile TONS	Factored Downdrag Load per Pile TONS	Factored Dead Load* per Pile TONS	Dynamic Resistance Factor	Nominal Downdrag Resistance per Pile TONS	Nominal Scour Resistance per Pile TONS	Scour Resistance Factor (Default = 1.00)
End Bent No 1, Piles 1-7	81			0.60			
End Bent No 2, Piles 1-7	81			0.60			

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

Notes:

- The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Michael J. Walko, #026917) on 05-11-2023.
- Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance
- The Engineer will determine the need for DPT Testing when DPTs may be required.
- For Piles, See Piles Provision and Section 450 of the Standard Specifications.



9/5/2024

DocuSigned by:
Robert DeCola
C91818E85104FF

PROJECT NO. **BP6.R008.1**
COLUMBUS COUNTY
STATION: **13+47.00 -L-**

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
FOR BRIDGE ON SR 1818 (NEILS
EDDY RD) OVER MILL CREEK 2
BETWEEN SR 1820 (FERTILIZER RD)
AND SR 1819 (JUSTICE FLYNN RD)

DRAWN BY : M.G. Armstrong DATE : 1/27/23
CHECKED BY : R.F. DeCola DATE : 2/17/23
DESIGN ENGINEER OF RECORD: R.F. DeCola DATE :

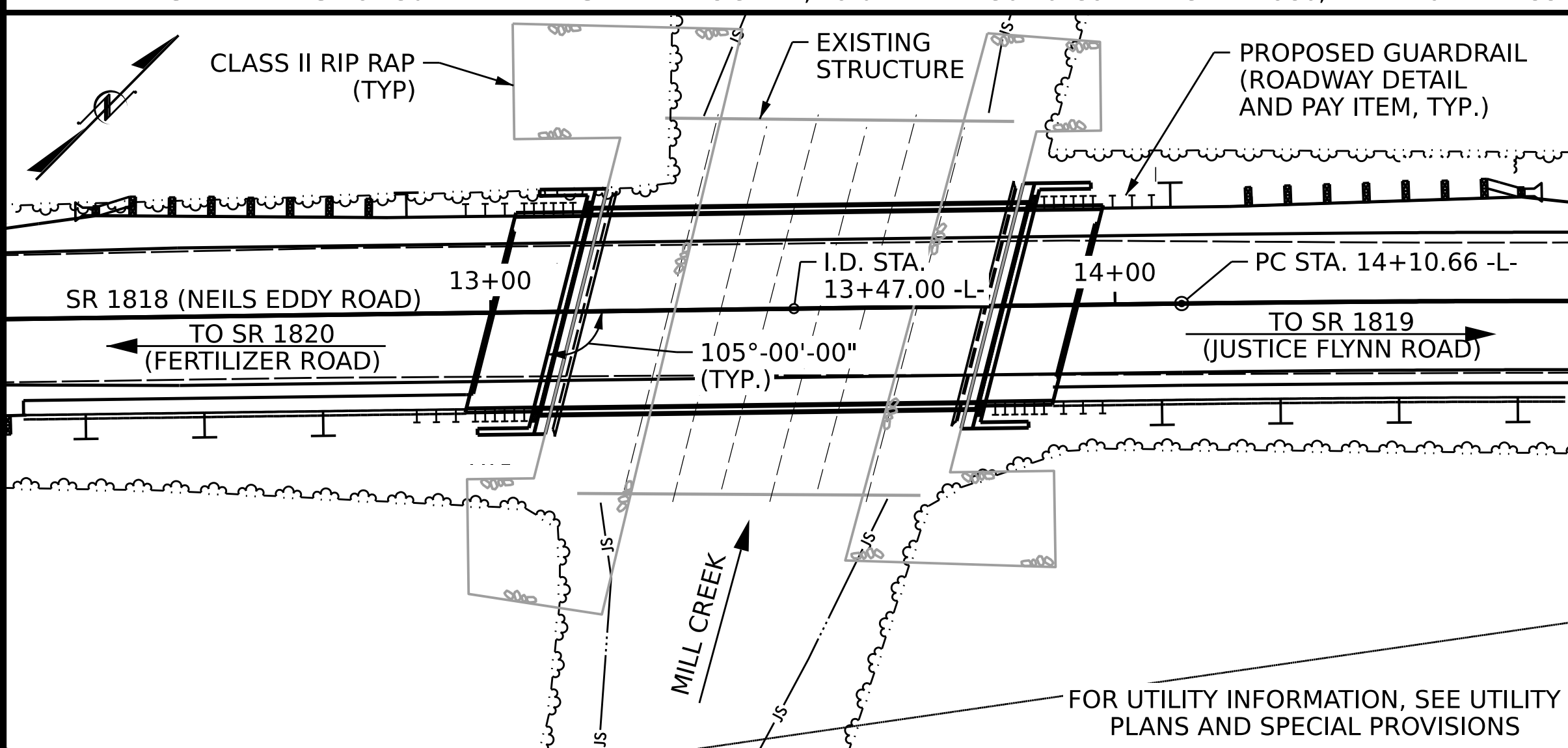


DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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

S-03
TOTAL SHEETS
15

BM #1 - RR SPIKE IN BASE OF 30" PINE TREE STA. 11+18.52 -L-, 29.0 LT N 212367.6159 E 2243221.7986, EL 27.26 NAVD 88



LOCATION SKETCH

NOTES:

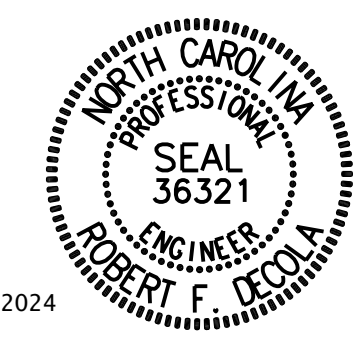
- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- 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 UNCLASSIFIED STRUCTURE EXCAVATION
- 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.
- THE EXISTING STRUCTURE CONSISTING OF (3) 12'x7.8' CORRUGATED METAL ARCH CULVERTS AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING STRUCTURE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE STRUCTURE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT. PAYMENT FOR THE REMOVAL OF EXISTING STRUCTURE SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR UNCLASSIFIED STRUCTURE EXCAVATION.
- THE EXISTING METAL ARCH CULVERT 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 METAL ARCH CULVERT SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
- REMOVAL OF THE EXISTING STRUCTURE 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 STRUCTURE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18 - EVALUATING SCOUR AT BRIDGES."
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

TOTAL BILL OF MATERIAL

	UNCLASSIFIED STRUCTURE EXCAVATION AT STA. 13+47.00 -L-	CLASS A CONCRETE	BRIDGE APPROACH SLABS @ STA. 13+47.00 -L-	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES	HP 12X53 STEEL PILES		PILE REDRIVES	DYNAMIC PILE TESTING	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS	
						NO.	LIN.FT.							NO.	LIN.FT.
	LUMP SUM	CU.YDS.	LUMP SUM	LBS.	EACH			EACH	EA.	LIN.FT.	TONS	SQ.YDS.	LUMP SUM	NO.	LIN.FT.
SUPERSTRUCTURE	LUMP SUM		LUMP SUM							140.26			LUMP SUM	11	770
END BENT 1		22.4		2,714	7	7	420				502	452			
END BENT 2		22.4		2,714	7	7	350				416	374			
TOTAL	LUMP SUM	44.8	LUMP SUM	5,428	14	14	770	8	1	140.26	918	826	LUMP SUM	11	770

PROJECT NO. **BP6.R008.1**
COLUMBUS COUNTY
 STATION: **13+47.00 -L-**

SHEET 4 OF 4



9/5/2024
 DocuSigned by:
 Robert DeCola
 C01B1BEB9518AFF

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON SR 1818 (NEILS EDDY RD) OVER MILL CREEK 2 BETWEEN SR 1820 (FERTILIZER RD) AND SR 1819 (JUSTICE FLYNN RD)

DRAWN BY : M.G. Armstrong DATE : 1/27/23
 CHECKED BY : R.F. DeCola DATE : 2/17/23
 DESIGN ENGINEER OF RECORD : R.F. DeCola DATE :



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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1			3		
2			4		

S-04
 TOTAL SHEETS
 15

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

LEVEL	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			
						LIVELOAD FACTORS	MOMENT					SHEAR					LIVELOAD FACTORS	MOMENT						
							DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.014	--	1.75	0.269	1.04	70'	EL	34.482	0.608	1.10	70'	EL	3.448	0.80	0.269	1.01	70'	EL	34.482		
	HL-93(Opr)	N/A	--	1.355	--	1.35	0.269	1.35	70'	EL	34.482	0.608	1.43	70'	EL	3.448	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.315	47.356	1.75	0.269	1.36	70'	EL	34.482	0.608	1.38	70'	EL	3.448	0.80	0.269	1.32	70'	EL	34.482		
	HS-20(Opr)	36.000	--	1.757	63.236	1.35	0.269	1.76	70'	EL	34.482	0.608	1.79	70'	EL	3.448	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.938	39.656	1.40	0.269	3.78	70'	EL	34.482	0.608	4.12	70'	EL	3.448	0.80	0.269	2.94	70'	EL	34.482	
		SNGARBS2	20.000	--	2.203	44.052	1.40	0.269	2.84	70'	EL	34.482	0.608	2.93	70'	EL	3.448	0.80	0.269	2.20	70'	EL	34.482	
		SNAGRIS2	22.000	--	2.092	46.016	1.40	0.269	2.69	70'	EL	34.482	0.608	2.72	70'	EL	3.448	0.80	0.269	2.09	70'	EL	34.482	
		SNCOTTS3	27.250	--	1.462	39.844	1.40	0.269	1.88	70'	EL	34.482	0.608	2.06	70'	EL	3.448	0.80	0.269	1.46	70'	EL	34.482	
		SNAGGRS4	34.925	--	1.227	42.856	1.40	0.269	1.58	70'	EL	34.482	0.608	1.71	70'	EL	3.448	0.80	0.269	1.23	70'	EL	34.482	
		SNS5A	35.550	--	1.200	42.646	1.40	0.269	1.54	70'	EL	34.482	0.608	1.73	70'	EL	3.448	0.80	0.269	1.20	70'	EL	34.482	
		SNS6A	39.950	--	1.103	44.058	1.40	0.269	1.42	70'	EL	34.482	0.608	1.58	70'	EL	3.448	0.80	0.269	1.10	70'	EL	34.482	
	SNS7B	42.000	--	1.050	44.113	1.40	0.269	1.35	70'	EL	34.482	0.608	1.55	70'	EL	3.448	0.80	0.269	1.05	70'	EL	34.482		
	TTST	TNAGRIT3	33.000	--	1.345	44.401	1.40	0.269	1.73	70'	EL	34.482	0.608	1.88	70'	EL	3.448	0.80	0.269	1.35	70'	EL	34.482	
		TNT4A	33.075	--	1.352	44.717	1.40	0.269	1.74	70'	EL	34.482	0.608	1.83	70'	EL	3.448	0.80	0.269	1.35	70'	EL	34.482	
		TNT6A	41.600	--	1.108	46.073	1.40	0.269	1.43	70'	EL	34.482	0.608	1.65	70'	EL	3.448	0.80	0.269	1.11	70'	EL	34.482	
		TNT7A	42.000	--	1.114	46.794	1.40	0.269	1.43	70'	EL	34.482	0.608	1.62	70'	EL	3.448	0.80	0.269	1.11	70'	EL	34.482	
		TNT7B	42.000	--	1.155	48.526	1.40	0.269	1.49	70'	EL	34.482	0.608	1.51	70'	EL	3.448	0.80	0.269	1.16	70'	EL	34.482	
		TNAGRIT4	43.000	--	1.097	47.174	1.40	0.269	1.41	70'	EL	34.482	0.608	1.46	70'	EL	3.448	0.80	0.269	1.10	70'	EL	34.482	
TNAGT5A		45.000	--	1.033	46.505	1.40	0.269	1.33	70'	EL	34.482	0.608	1.45	70'	EL	3.448	0.80	0.269	1.03	70'	EL	34.482		
TNAGT5B	45.000	3	1.020	45.905	1.40	0.269	1.31	70'	EL	34.482	0.608	1.39	70'	EL	3.448	0.80	0.269	1.02	70'	EL	34.482			
EMERGENCY VEHICLE (EV)	EV2	28.750		1.829	52.587	1.30	0.269	2.13	70'	EL	34.482	0.608	2.20	70'	EL	3.448	0.80	0.269	1.83	70'	EL	34.482		
	EV3	43.000	4	1.196	51.434	1.30	0.269	1.39	70'	EL	34.482	0.608	1.48	70'	EL	3.448	0.80	0.269	1.19	70'	EL	34.482		

LOAD FACTORS:

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

NOTES:

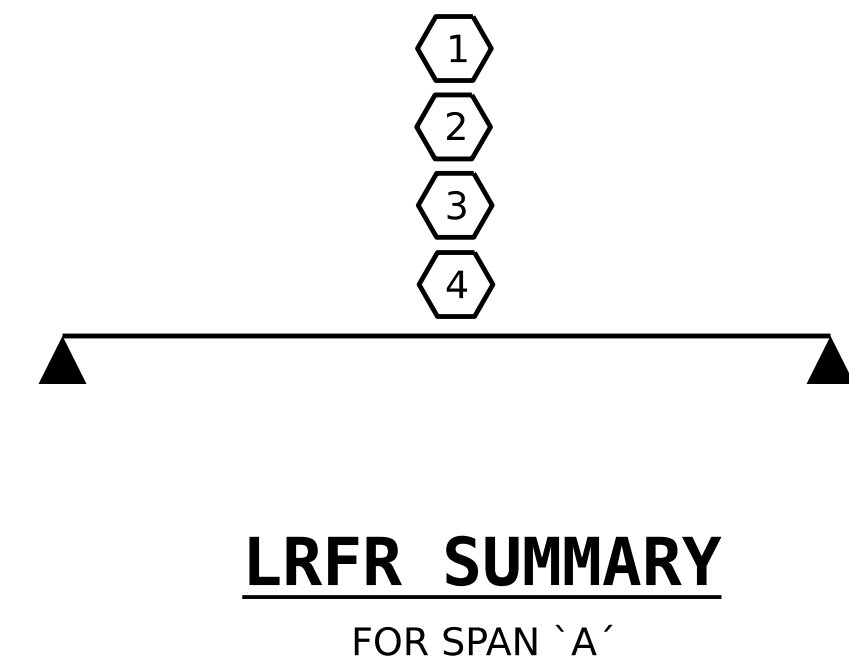
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

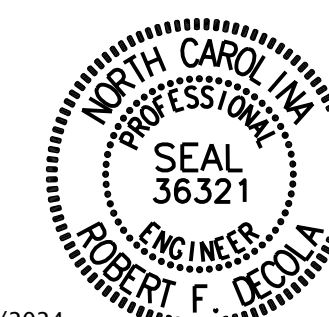
COMMENTS:

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

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



PROJECT NO. **BP6.R008.1**
COLUMBUS COUNTY
 STATION: **13+47.00 -L-**



9/5/2024

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Robert DeCola
CS1818889116A9F...

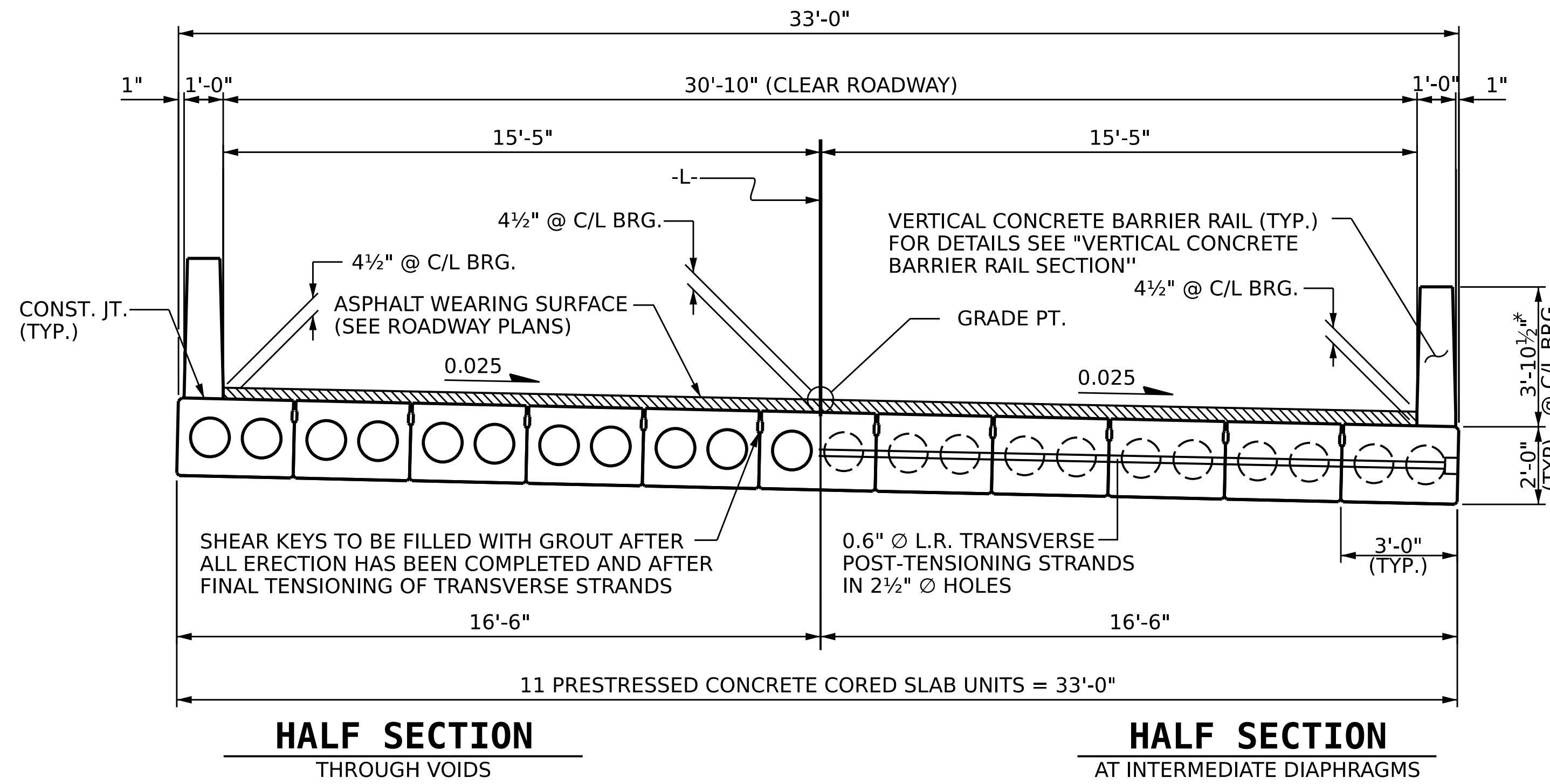
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
**LRFR SUMMARY FOR
 70' CORED SLAB UNIT
 105° SKEW**
 (NON-INTERSTATE TRAFFIC)

DRAWN BY: M.G. Armstrong DATE: 1/27/23
 CHECKED BY: R.F. DeCola DATE: 2/17/23
 DESIGN ENGINEER OF RECORD: R.F. DeCola DATE:



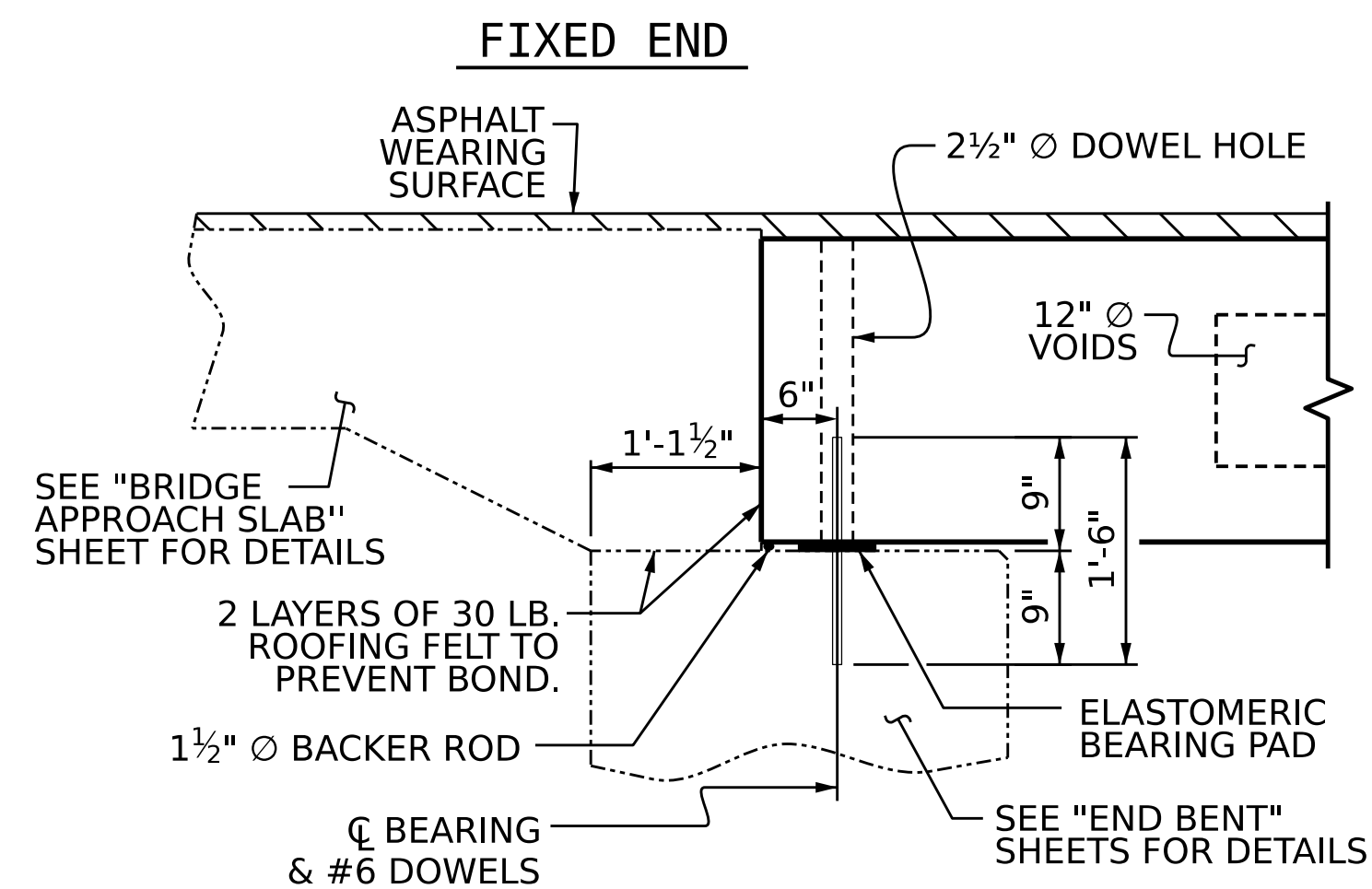
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1			3	
2			4	
TOTAL SHEETS				15



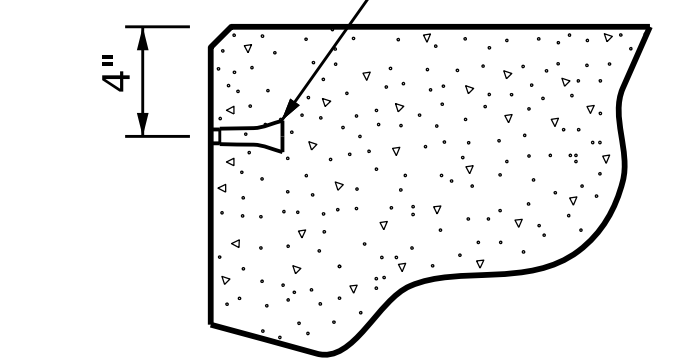
TYPICAL SECTION

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

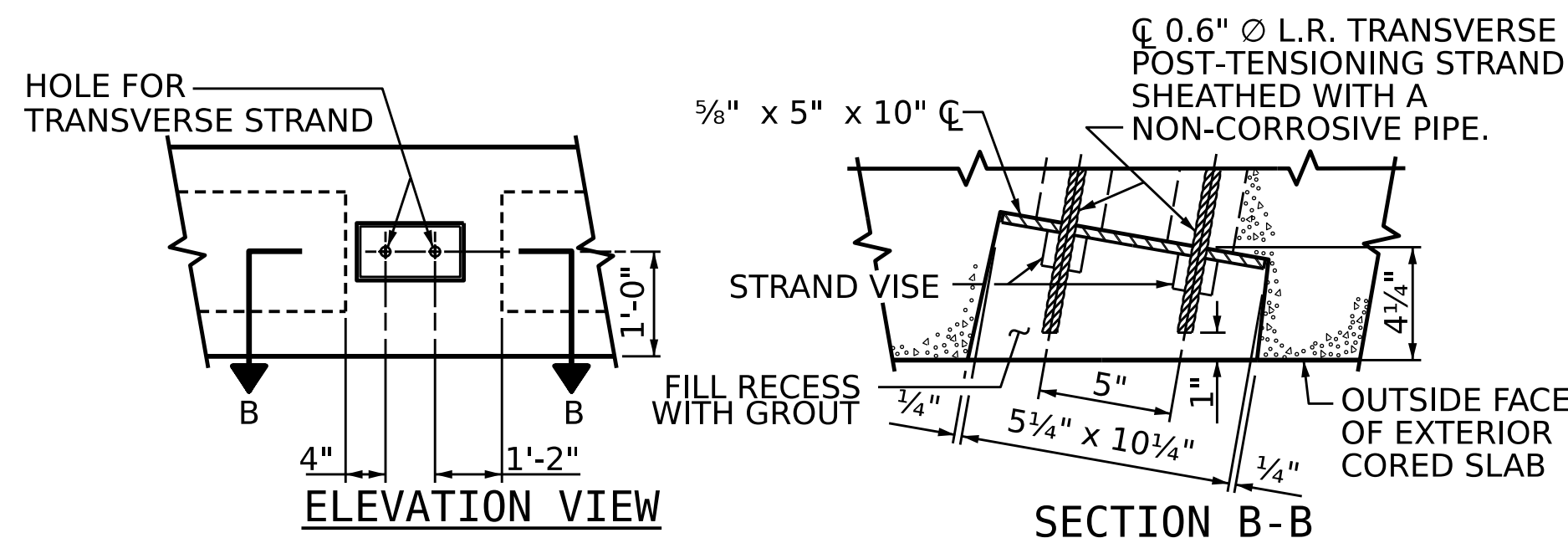


SECTION AT END BENT

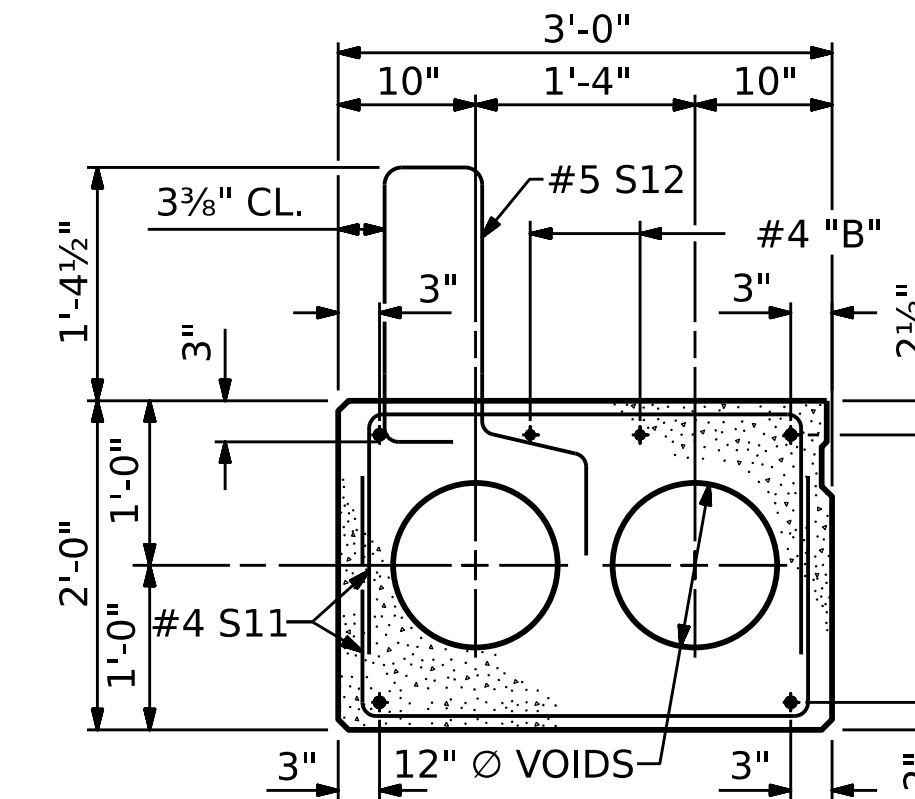
PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8". SIZE TO BE DETERMINED BY CONTRACTOR.



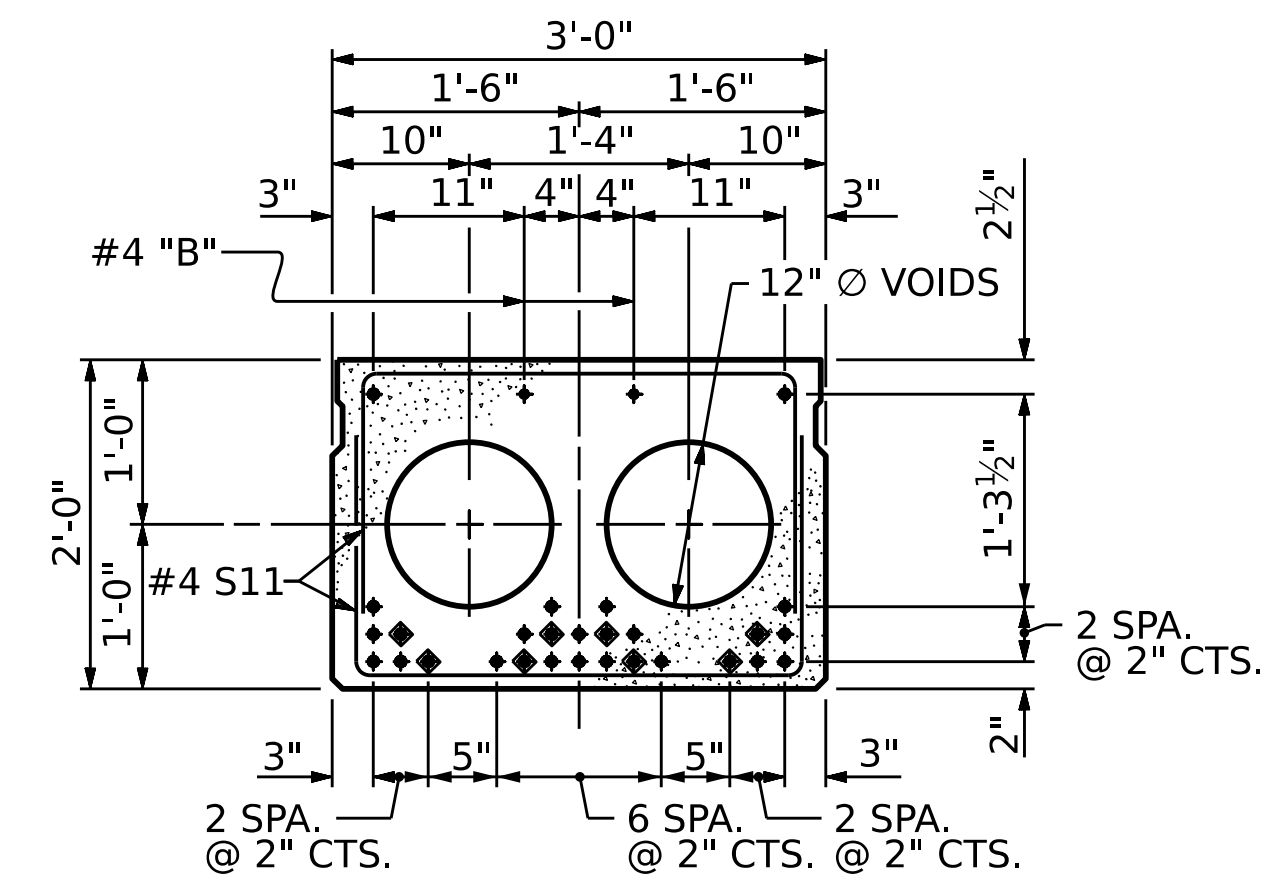
THREADED INSERT DETAIL



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



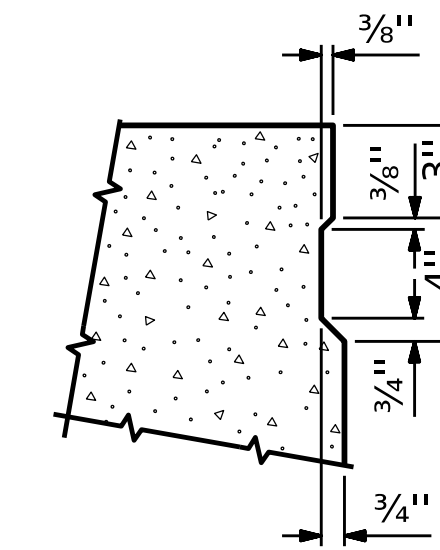
EXTERIOR SLAB SECTION
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



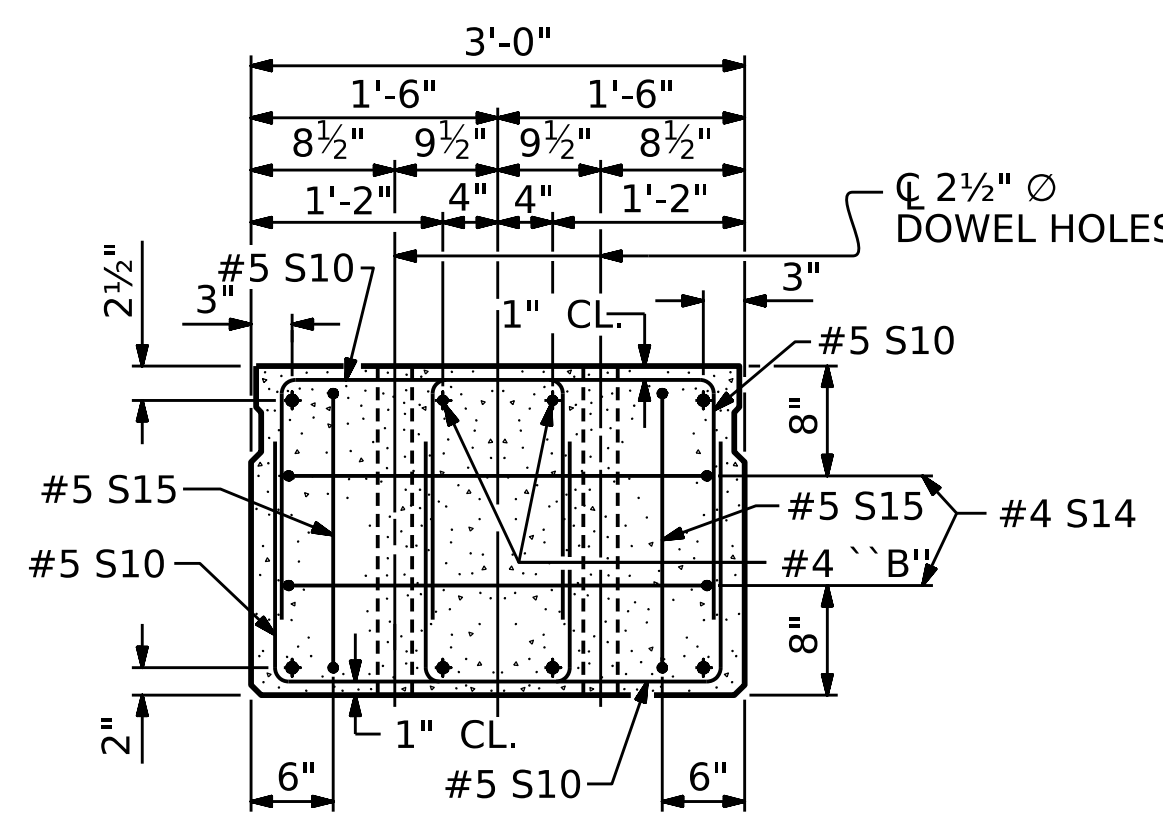
INTERIOR SLAB SECTION
(28 STRANDS REQUIRED)
0.6" Ø LOW RELAXATION STRAND LAYOUT

- ◆ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



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



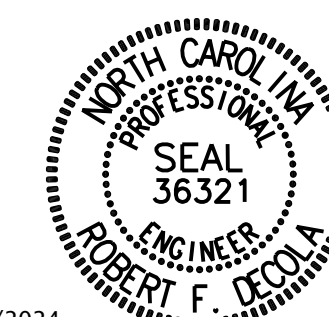
END ELEVATION

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

PROJECT NO. **BP6.R008.1**
COLUMBUS COUNTY
STATION: **13+47.00 -L-**

SHEET 1 OF 3

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



9/5/2024

Designed by: Robert DeCola

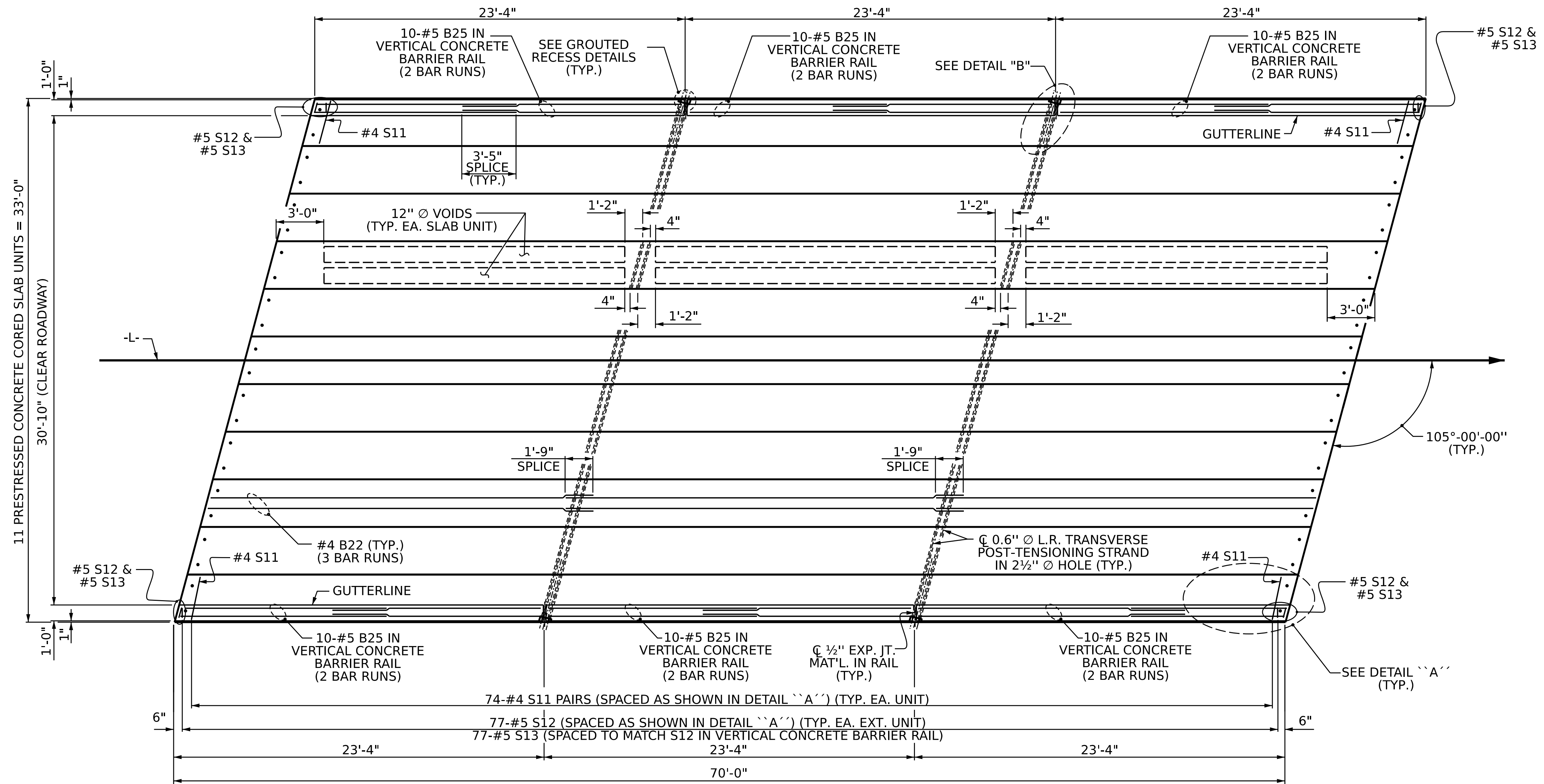
DRAWN BY: M.G. Armstrong DATE: 1/27/23
CHECKED BY: R.F. DeCola DATE: 2/17/23
DESIGN ENGINEER OF RECORD: R.F. DeCola DATE:

KCI Associates
of North Carolina, P.A.
2025 Code of Ethics: 10/1/2024

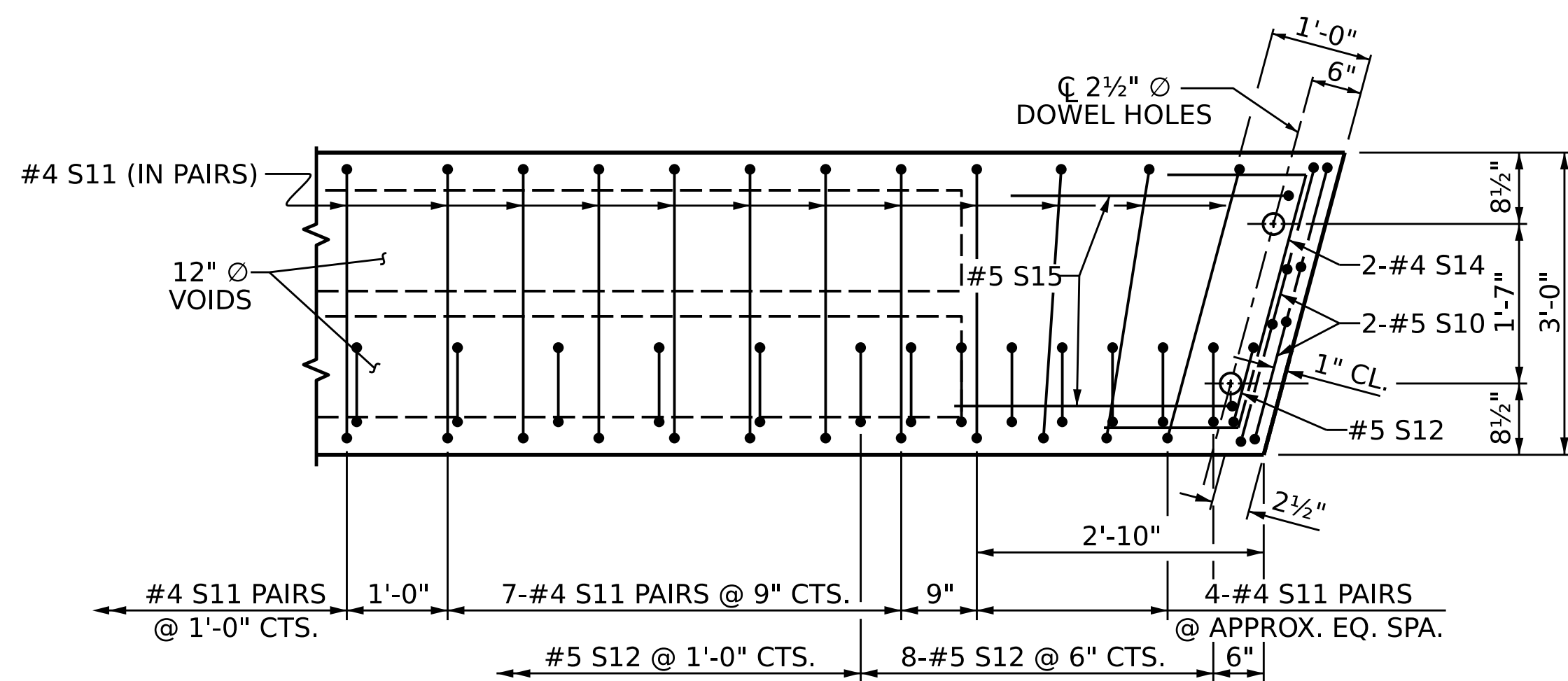
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S-06
TOTAL SHEETS
15

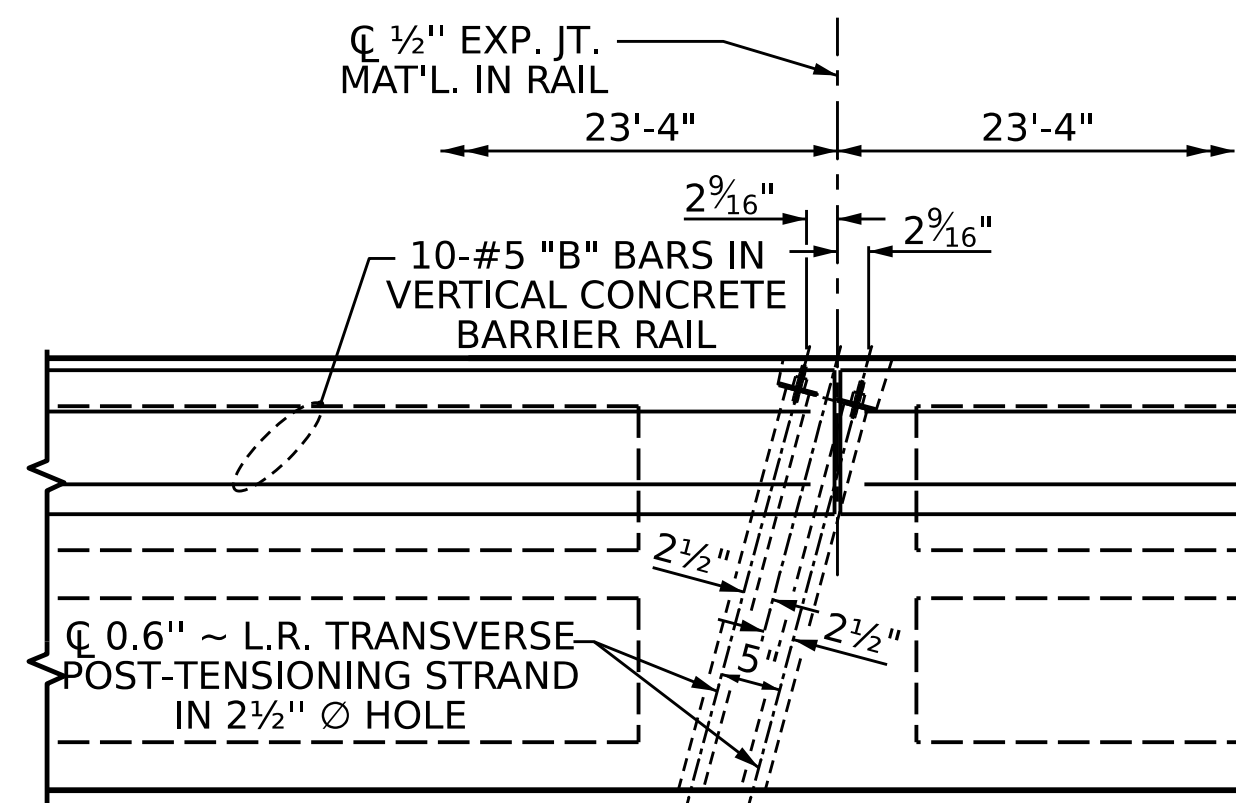


PLAN OF UNIT



DETAIL "A"

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



DETAIL "B"

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



9/5/2024

DocuSigned by:
Robert DeCola
C0181BC85194FF

PROJECT NO. **BP6.R008.1**
COLUMBUS COUNTY
STATION: **13+47.00 -L-**

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**PLAN OF 70' UNIT
30'-10" CLEAR ROADWAY
105° SKEW**

REVISIONS

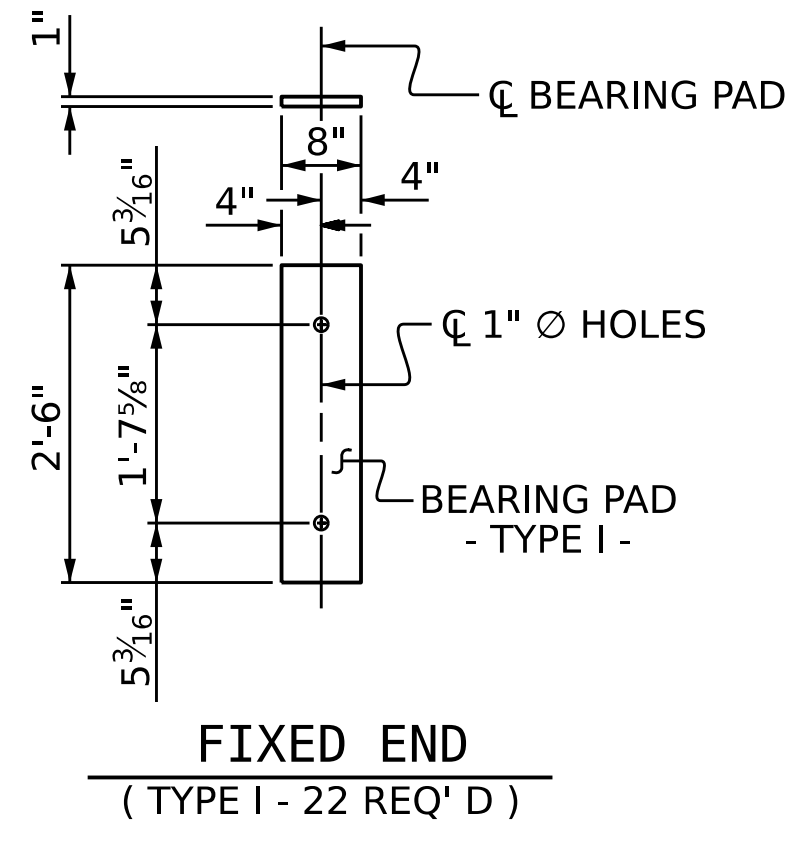
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-07
2			4			TOTAL SHEETS 15

DRAWN BY: M.G. Armstrong DATE: 1/27/23
CHECKED BY: R.F. DeCola DATE: 2/17/23
DESIGN ENGINEER OF RECORD: R.F. DeCola DATE:



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FINAL UNLESS ALL
SIGNATURES COMPLETED

5/26/20



ELASTOMERIC BEARING DETAILS

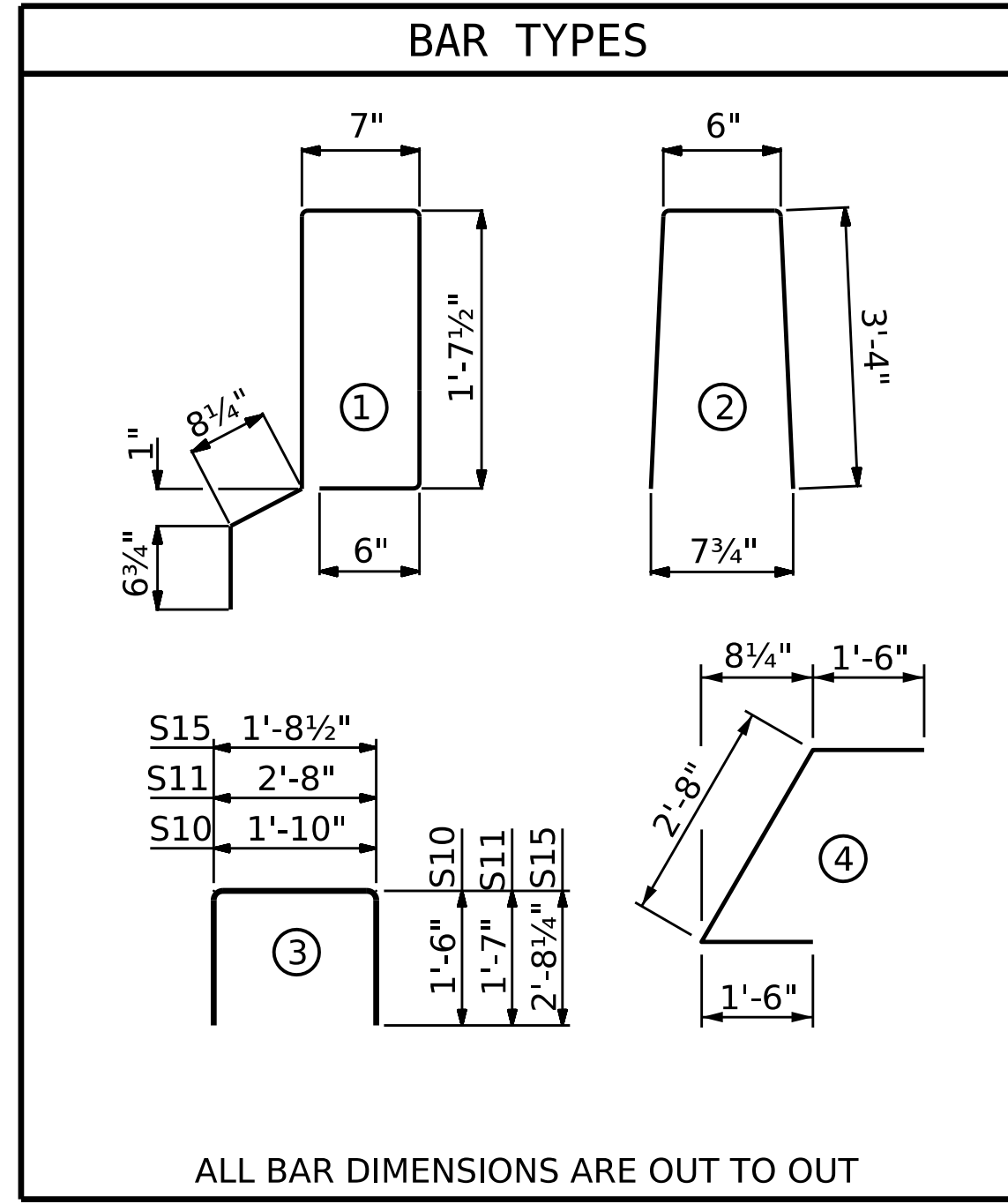
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

CORED SLABS REQUIRED			
70' UNIT	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	70'-0"	140'-0"
INTERIOR C.S.	9	70'-0"	630'-0"
TOTAL			770'-0"

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

** INCLUDES FUTURE WEARING SURFACE

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



BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS 70' UNIT	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
*B25	120	120	#5	STR	13'-8"	1711
*S13	158	158	#5	2	7'-2"	1181
* EPOXY COATED REINFORCING STEEL			LBS.			2892
CLASS AA CONCRETE			CU. YDS.			18.4
TOTAL VERTICAL CONCRETE BARRIER RAIL			LN. FT.			140.26

BILL OF MATERIAL FOR ONE 70' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B22	6	#4	STR	24'-6"	98	24'-6"	98
S10	8	#5	3	4'-10"	40	4'-10"	40
S11	148	#4	3	5'-10"	577	5'-10"	577
*S12	79	#5	1	5'-7"	460		
S14	4	#4	4	5'-8"	15	5'-8"	15
S15	4	#5	3	7'-1"	30	7'-1"	30
REINFORCING STEEL				LBS.	760		760
* EPOXY COATED REINFORCING STEEL				LBS.	460		
7000 P.S.I. CONCRETE				CU. YDS.	12.0		12.0
0.6" Ø L.R. STRANDS				No.	28		28

NOTES

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

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

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

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

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

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

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

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

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

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

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

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

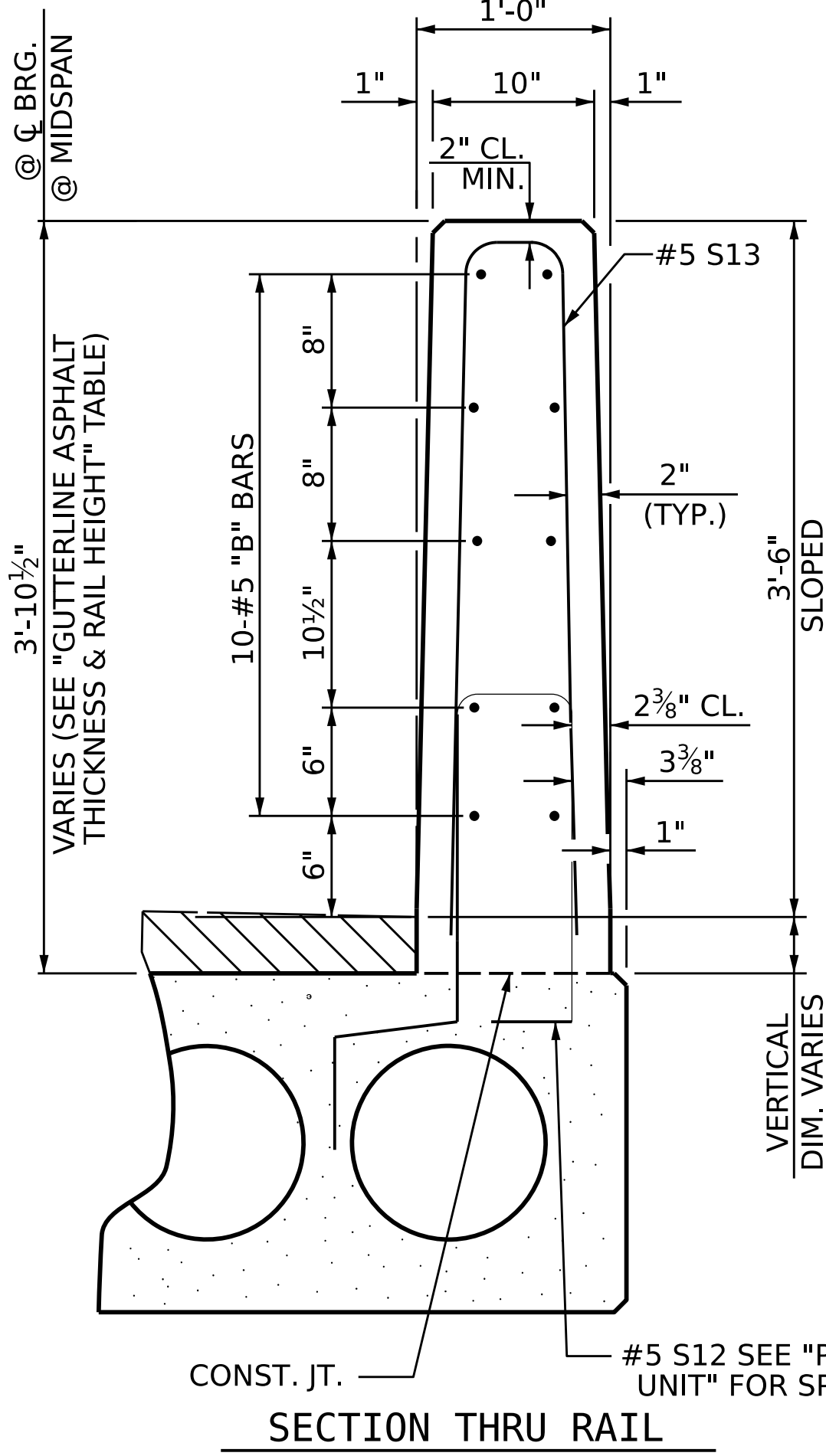
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

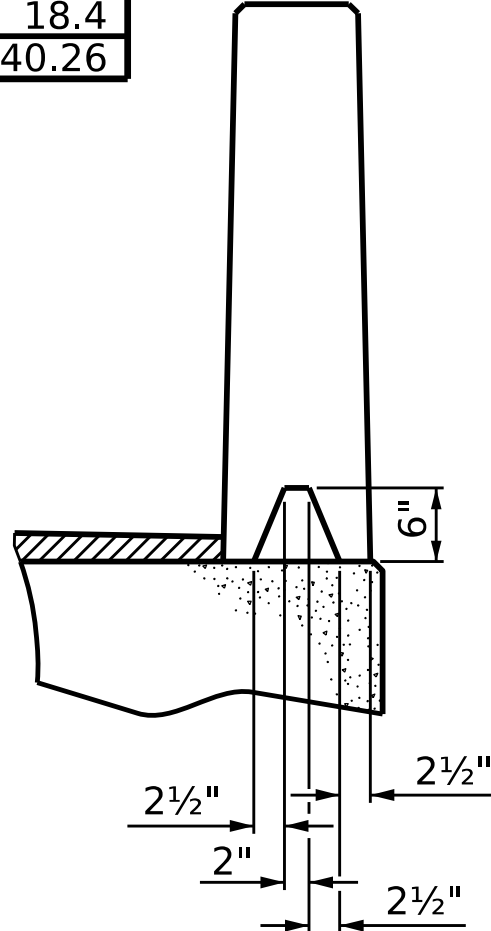
THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

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

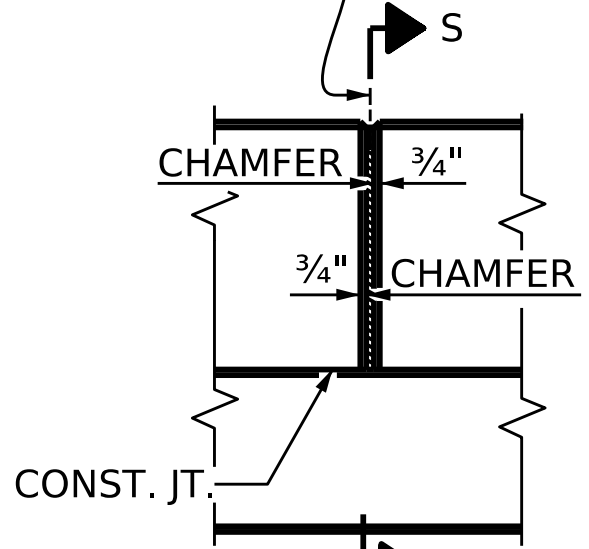
THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.



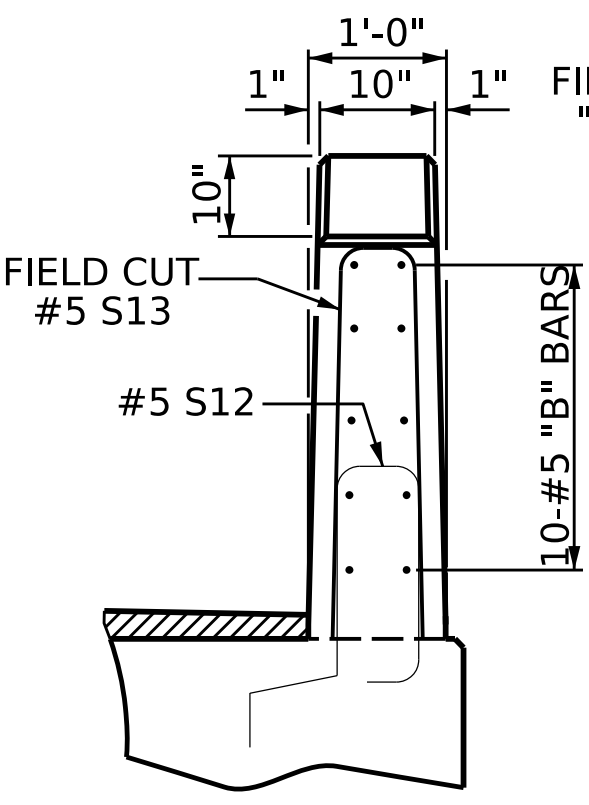
CL 1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS. (NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED)



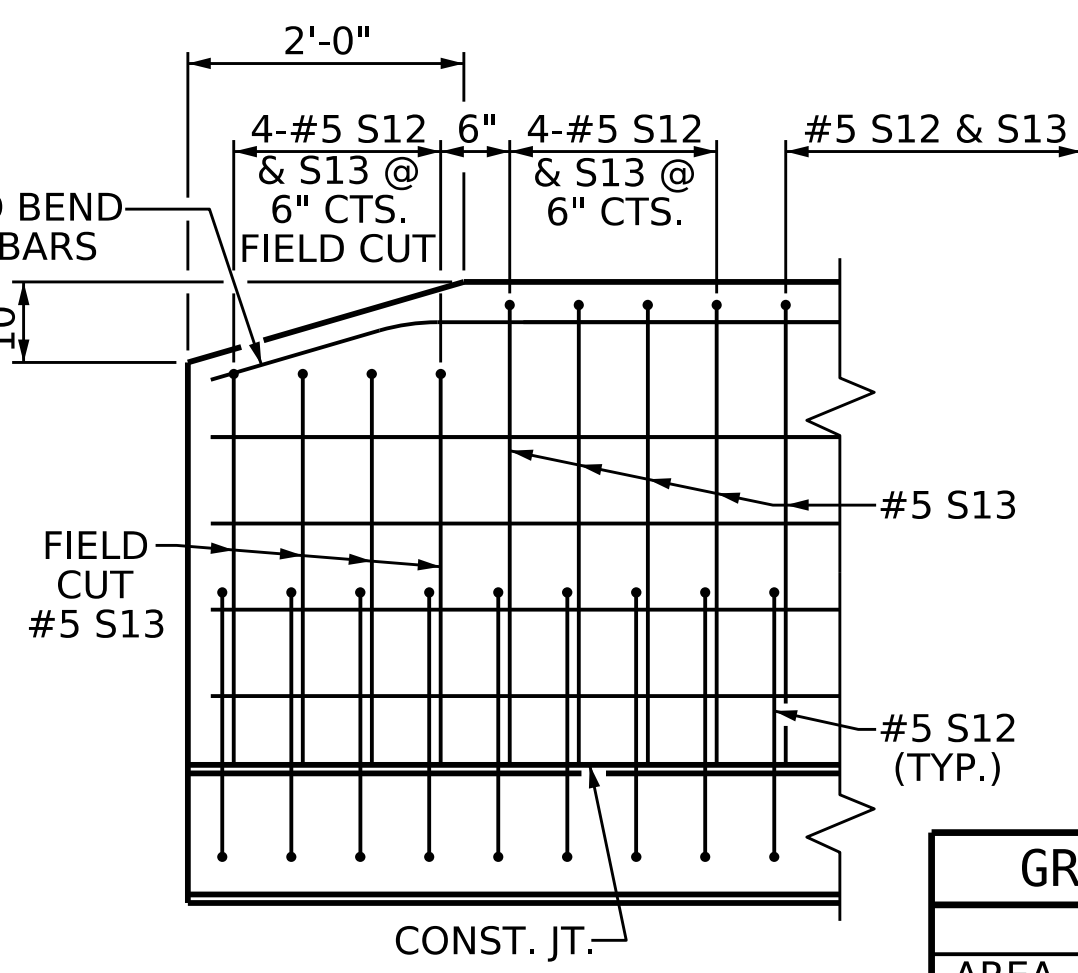
SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



ELEVATION AT EXPANSION JOINTS



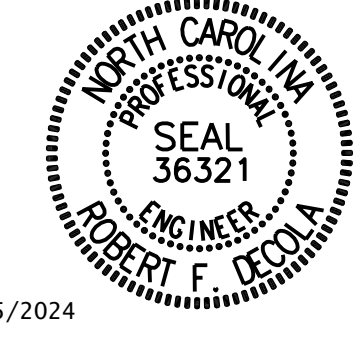
END VIEW



SIDE VIEW

CONCRETE RELEASE STRENGTH	
UNIT	PSI
70' UNITS	5500

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



PROJECT NO. **BP6.R008.1**
COLUMBUS COUNTY
STATION: **13+47.00 -L-**

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3'-0" X 2'-0"
PRESTRESSED CONCRETE
CORED SLAB UNIT
105° SKEW

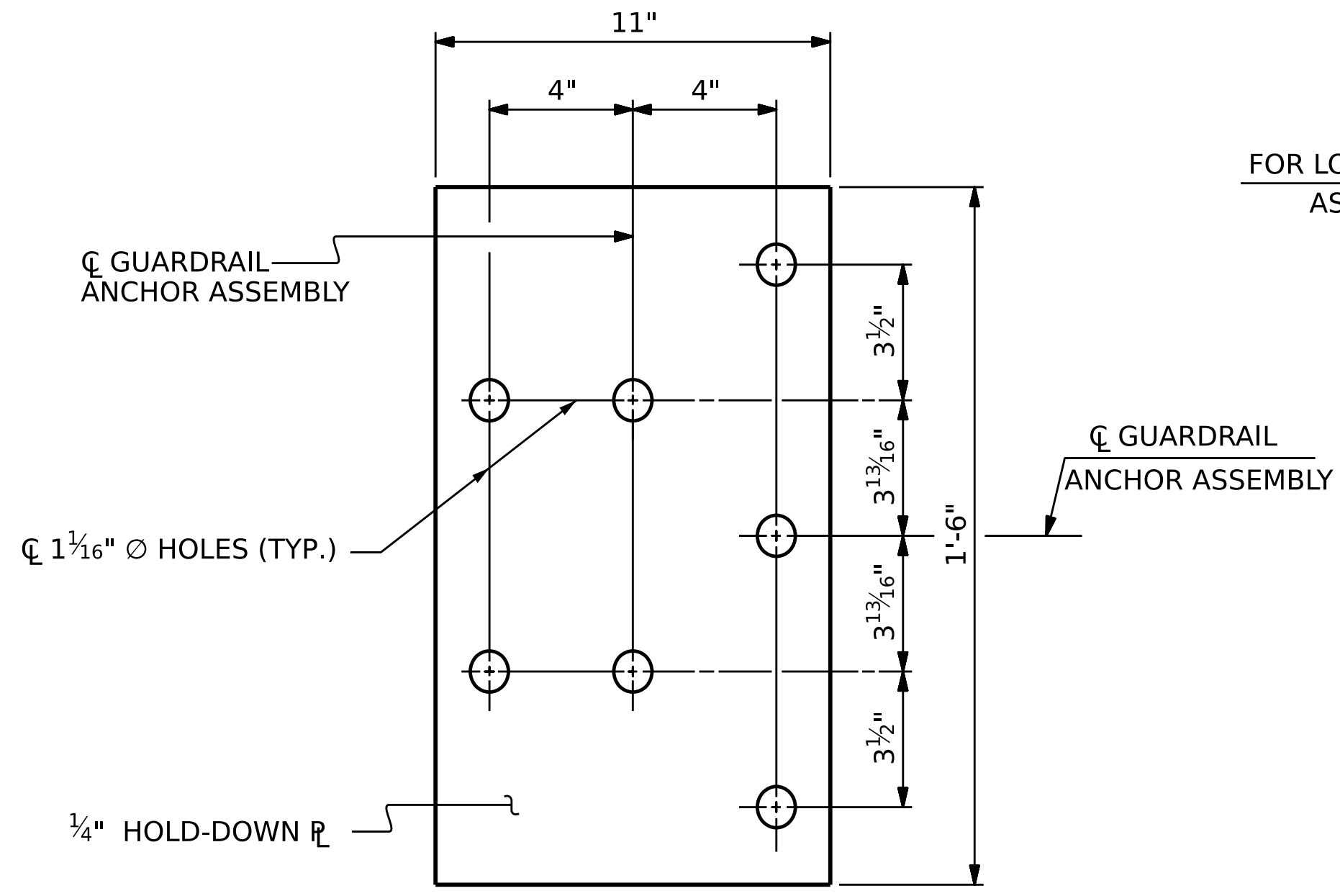
DRAWN BY: M.G. Armstrong DATE: 1/27/23
CHECKED BY: R.F. DeCola DATE: 2/17/23
DESIGN ENGINEER OF RECORD: R.F. DeCola DATE:



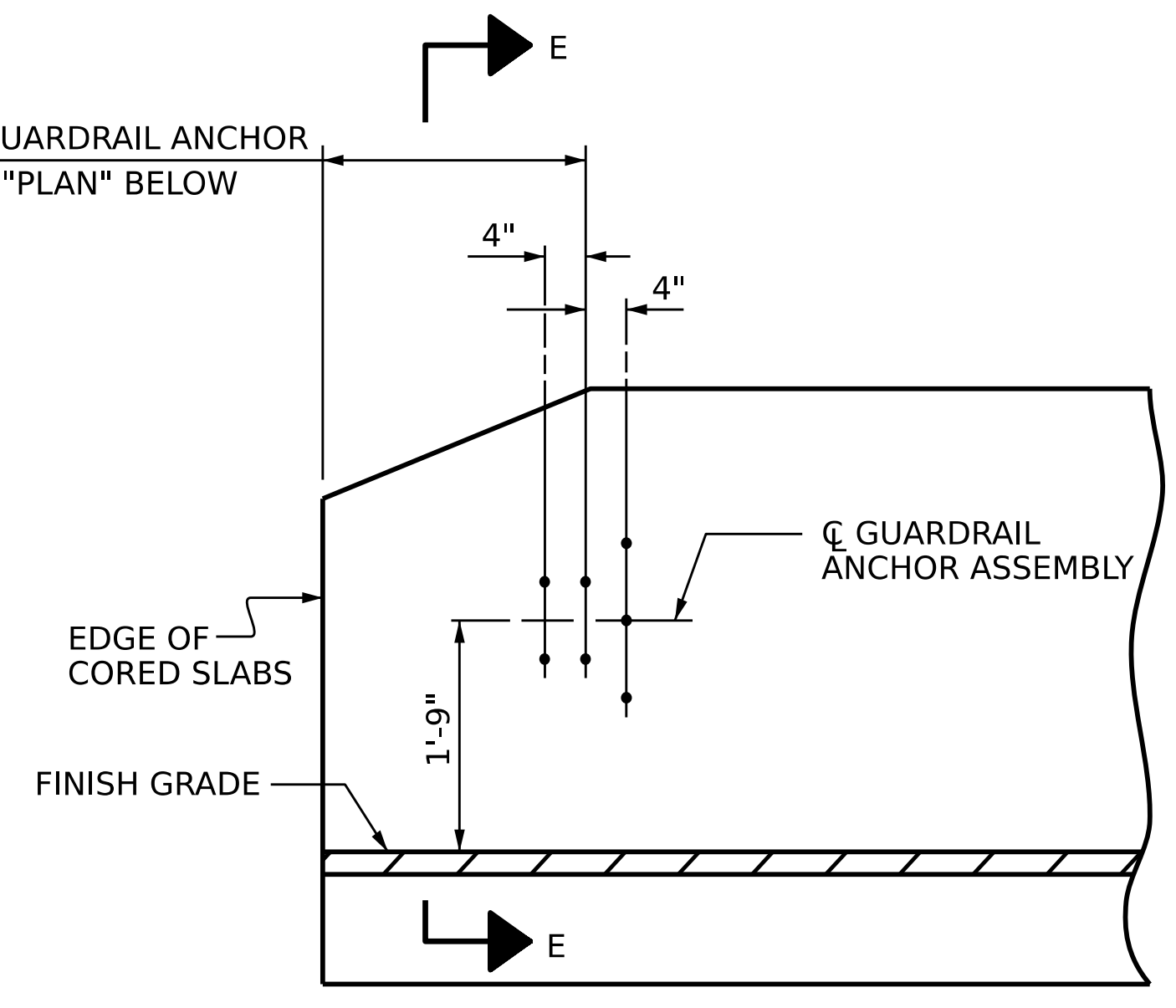
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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NO.	BY:	DATE:	NO.	DATE:
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2			4	

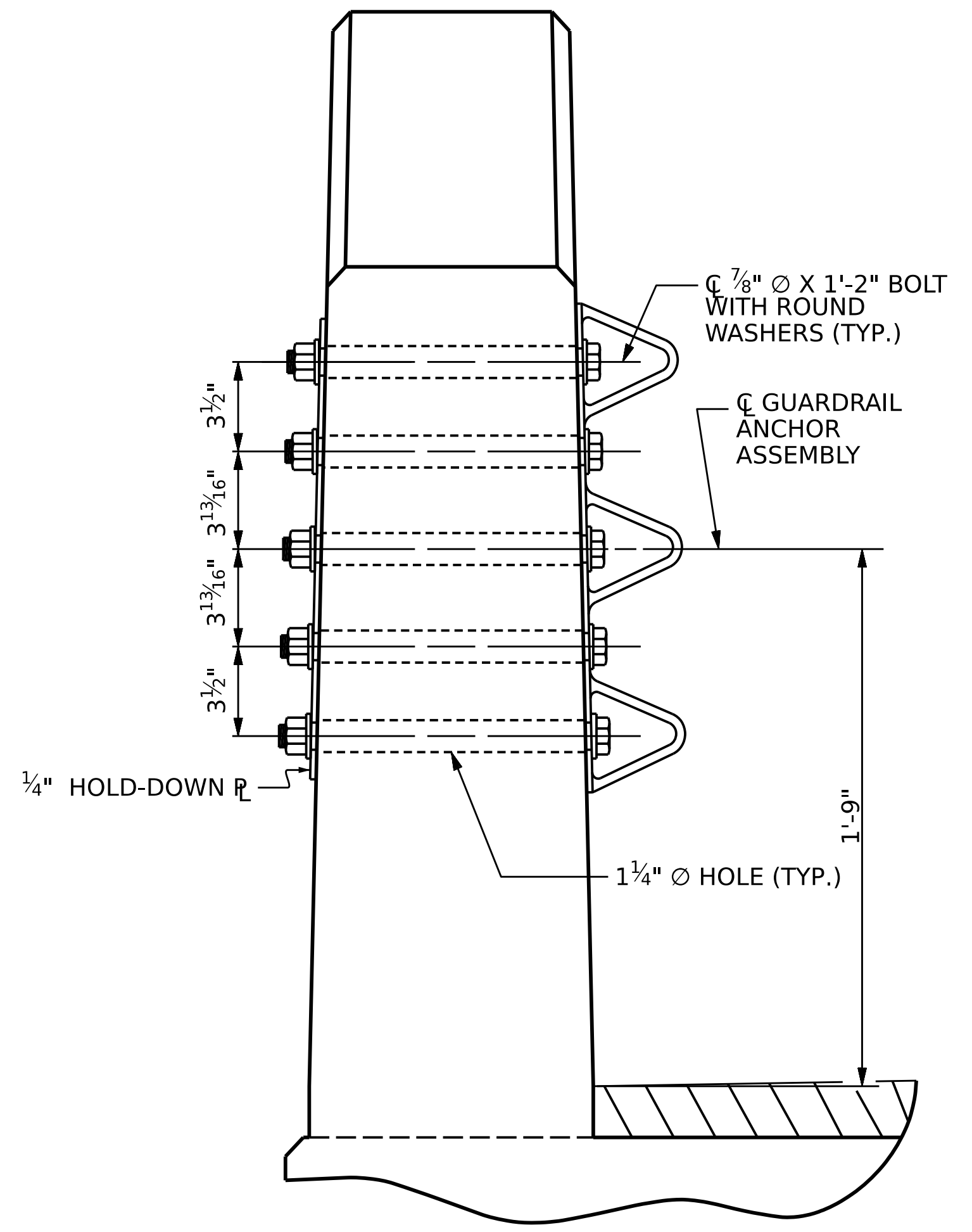
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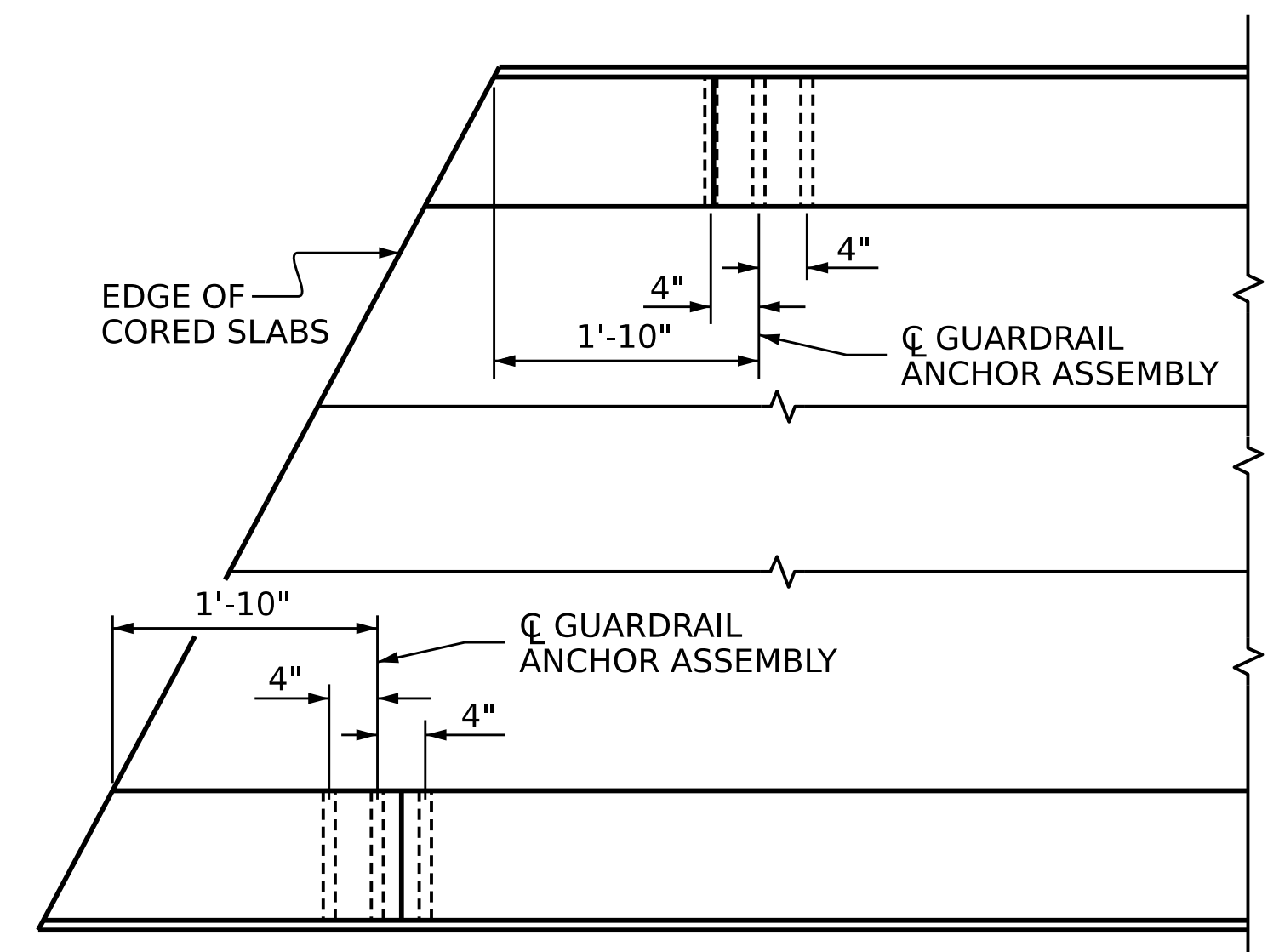
PLAN



ELEVATION

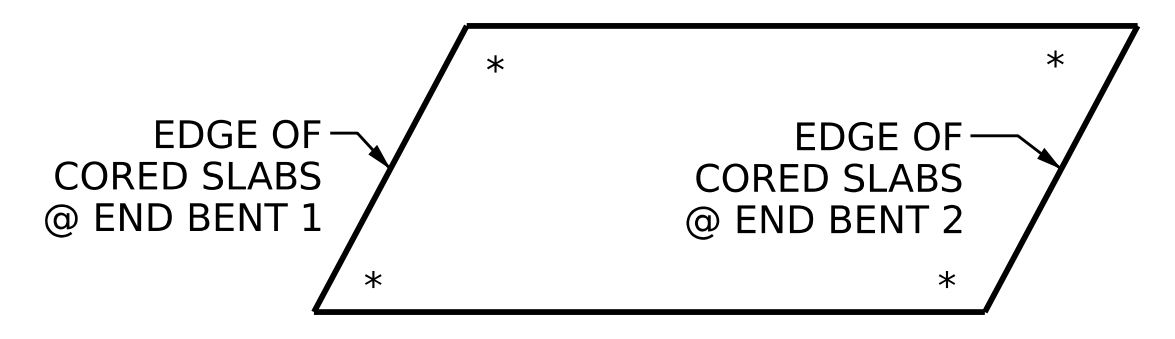


SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

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" O 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" O 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.

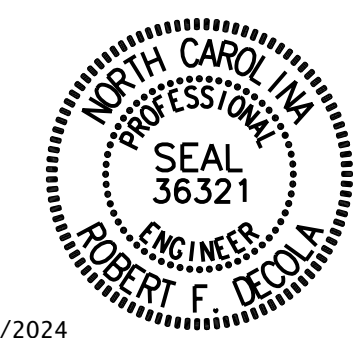
AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

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" O HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

PROJECT NO. **BP6.R008.1**
COLUMBUS COUNTY
STATION: **13+47.00 -L-**



9/5/2024

DocuSigned by:
Robert DeCola
C91818E895184FF

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

DRAWN BY: M.G. Armstrong DATE: 1/27/23
CHECKED BY: R.F. DeCola DATE: 2/17/23
DESIGN ENGINEER OF RECORD: R.F. DeCola DATE:

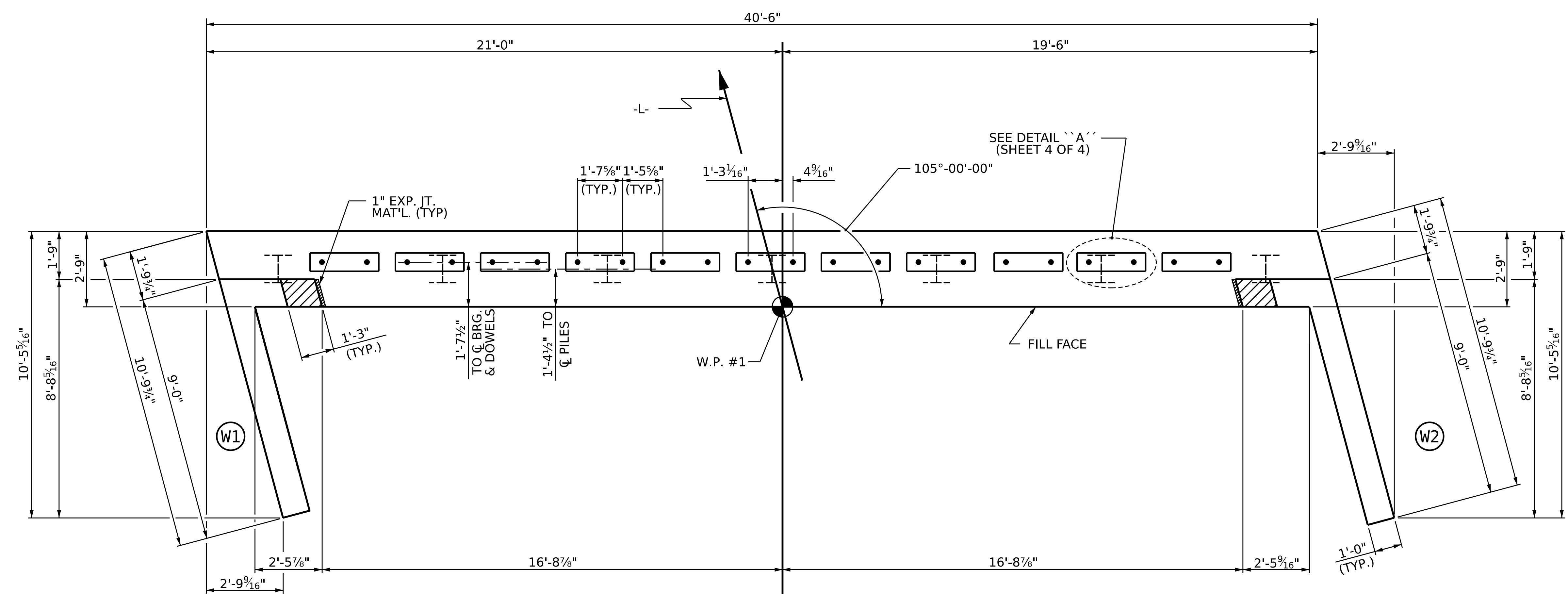
KCI Associates
of North Carolina, P.A.
2025 Code of Ethics: 10/1/2024

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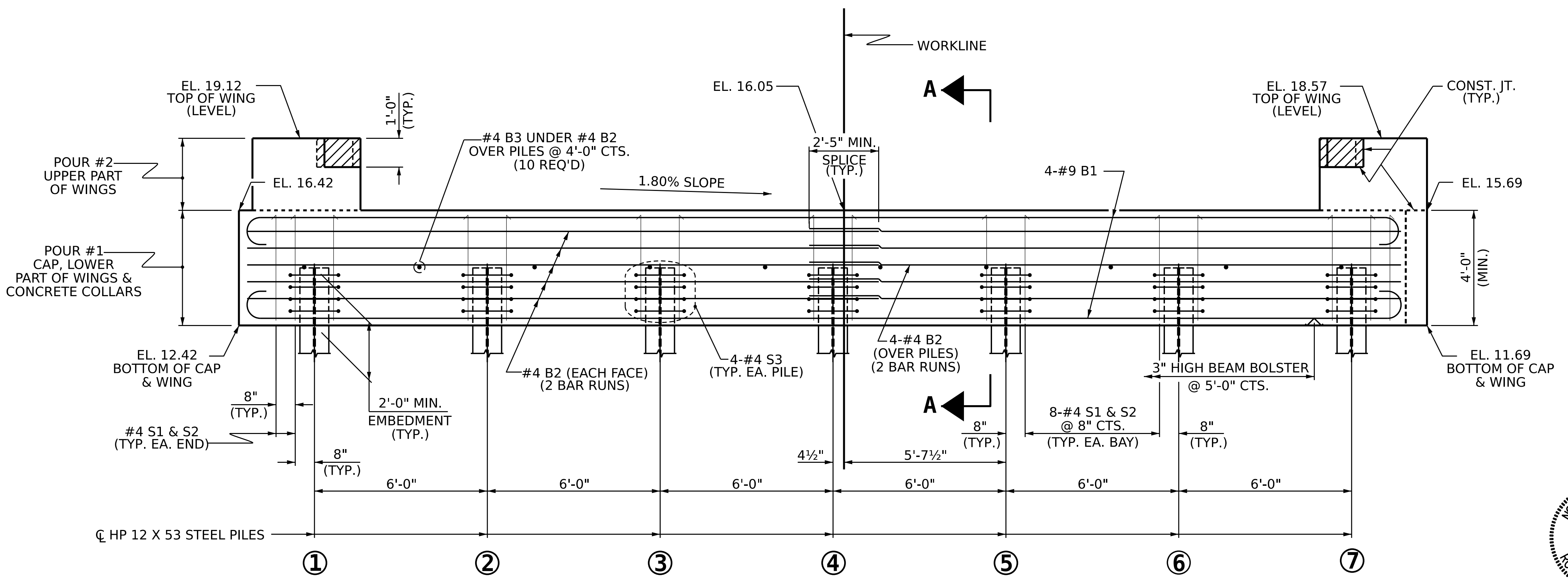
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

S-09
TOTAL SHEETS
15

5/26/20



PLAN



ELEVATION

NOTES

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

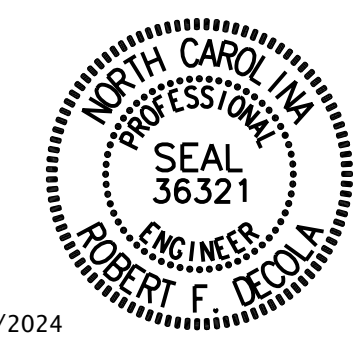
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

TOP OF PILE ELEVATIONS	
①	14.38
②	14.28
③	14.17
④	14.06
⑤	13.95
⑥	13.85
⑦	13.74

PROJECT NO. **BP6.R008.1**
COLUMBUS COUNTY
 STATION: **13+47.00 -L-**
 SHEET 1 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE

END BENT No. 1

DRAWN BY: M.G. Armstrong DATE: 1/27/23
 CHECKED BY: R.F. DeCola DATE: 2/17/23
 DESIGN ENGINEER OF RECORD: R.F. DeCola DATE:

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



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REVISIONS		SHEET NO.	
NO.	DATE	NO.	DATE
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2		4	

S-10
TOTAL SHEETS: 15

5/26/20

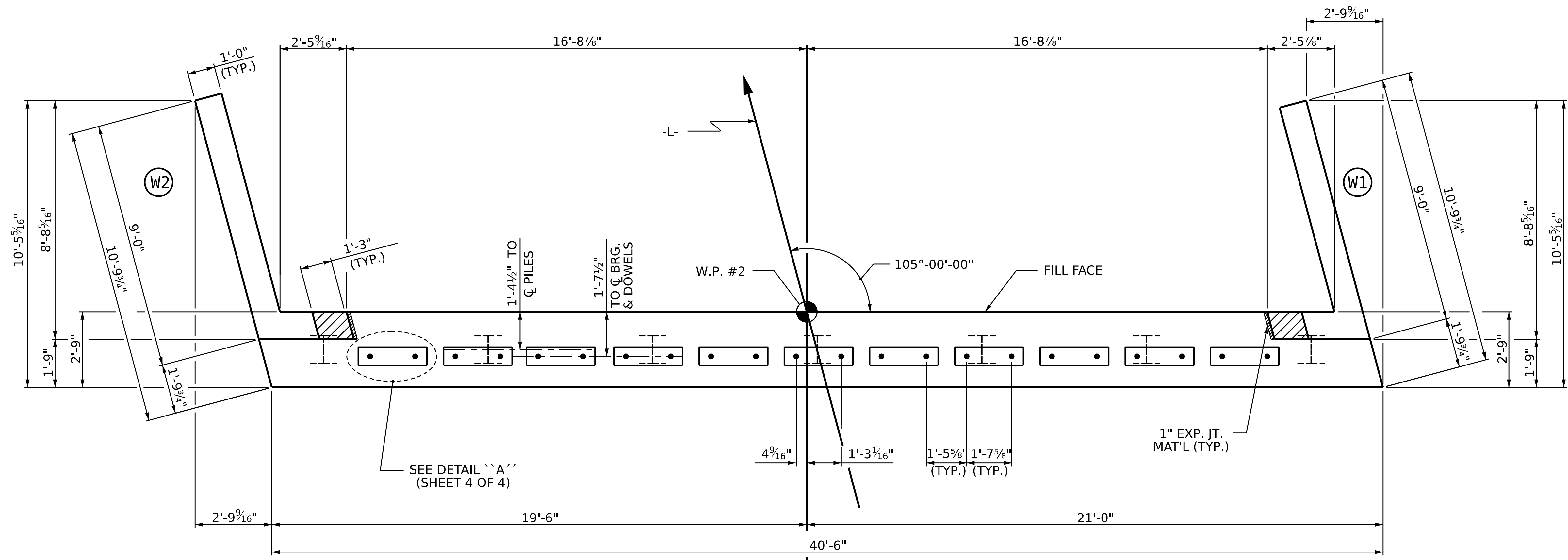
NOTES

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

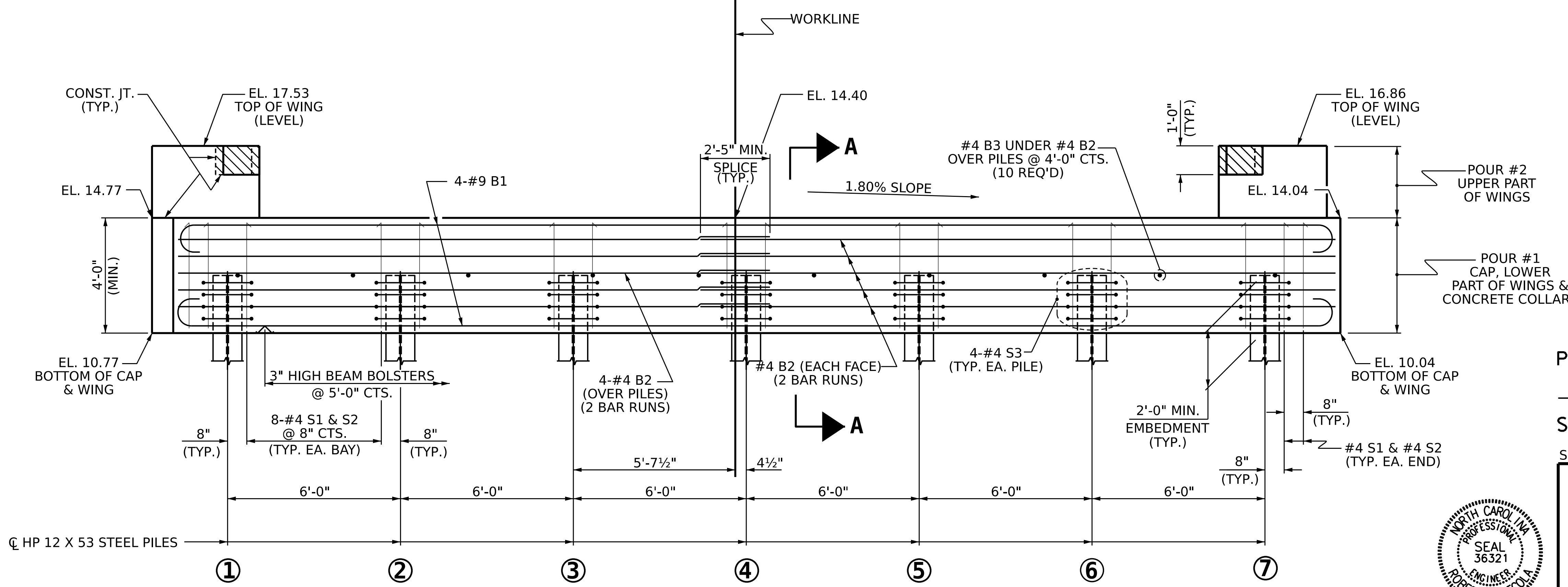
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

TOP OF PILE ELEVATIONS	
①	12.72
②	12.61
③	12.50
④	12.40
⑤	12.30
⑥	12.19
⑦	12.08

PROJECT NO. **BP6.R008.1**

COLUMBUS COUNTY

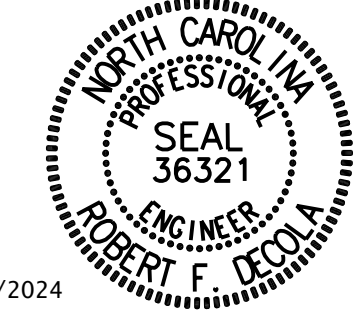
STATION: **13+47.00 -L-**

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 2



9/5/2024

DocuSign by: Robert DeCola

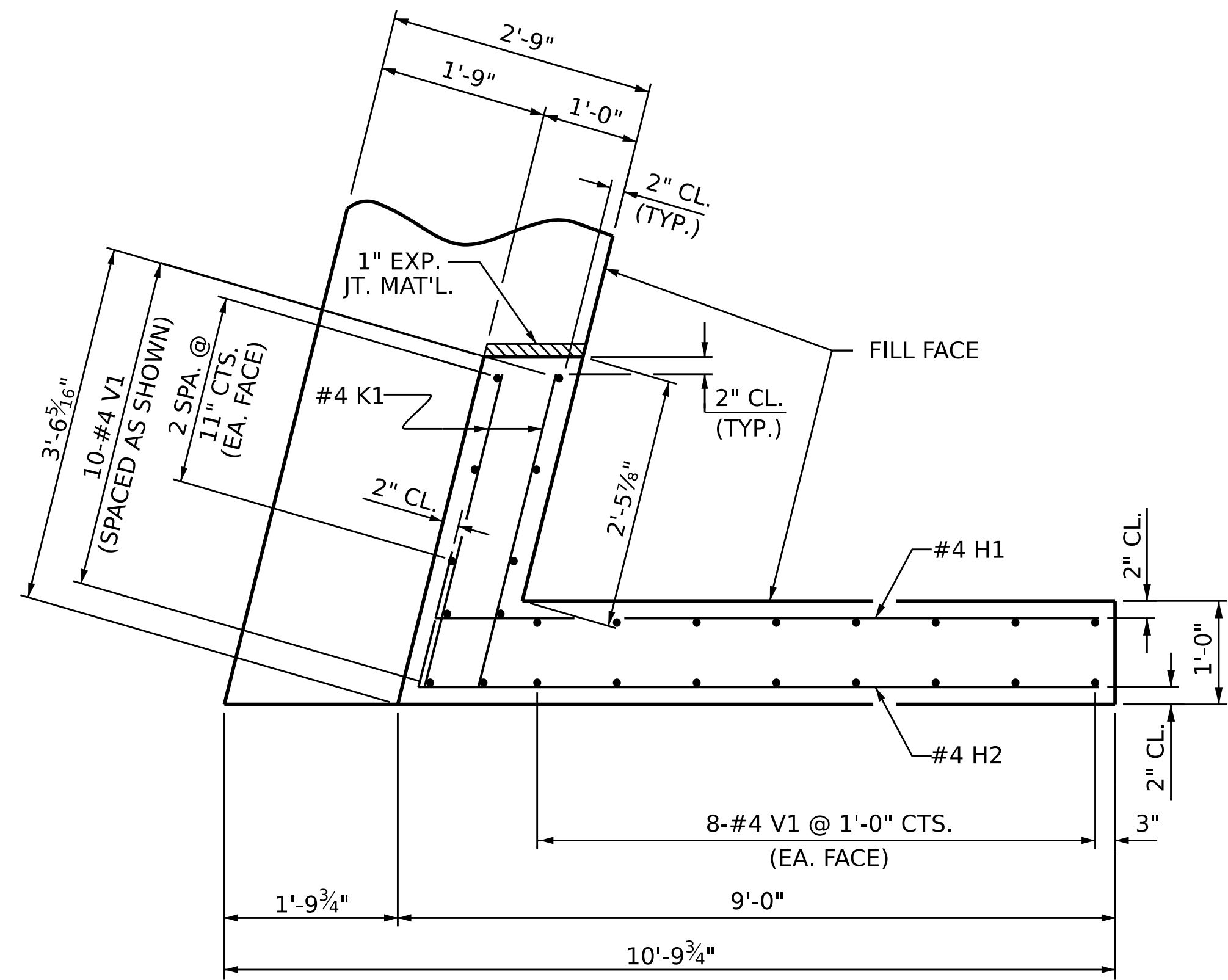
WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

DRAWN BY: M.G. Armstrong DATE: 1/27/23
 CHECKED BY: R.F. DeCola DATE: 2/17/23
 DESIGN ENGINEER OF RECORD: R.F. DeCola DATE:

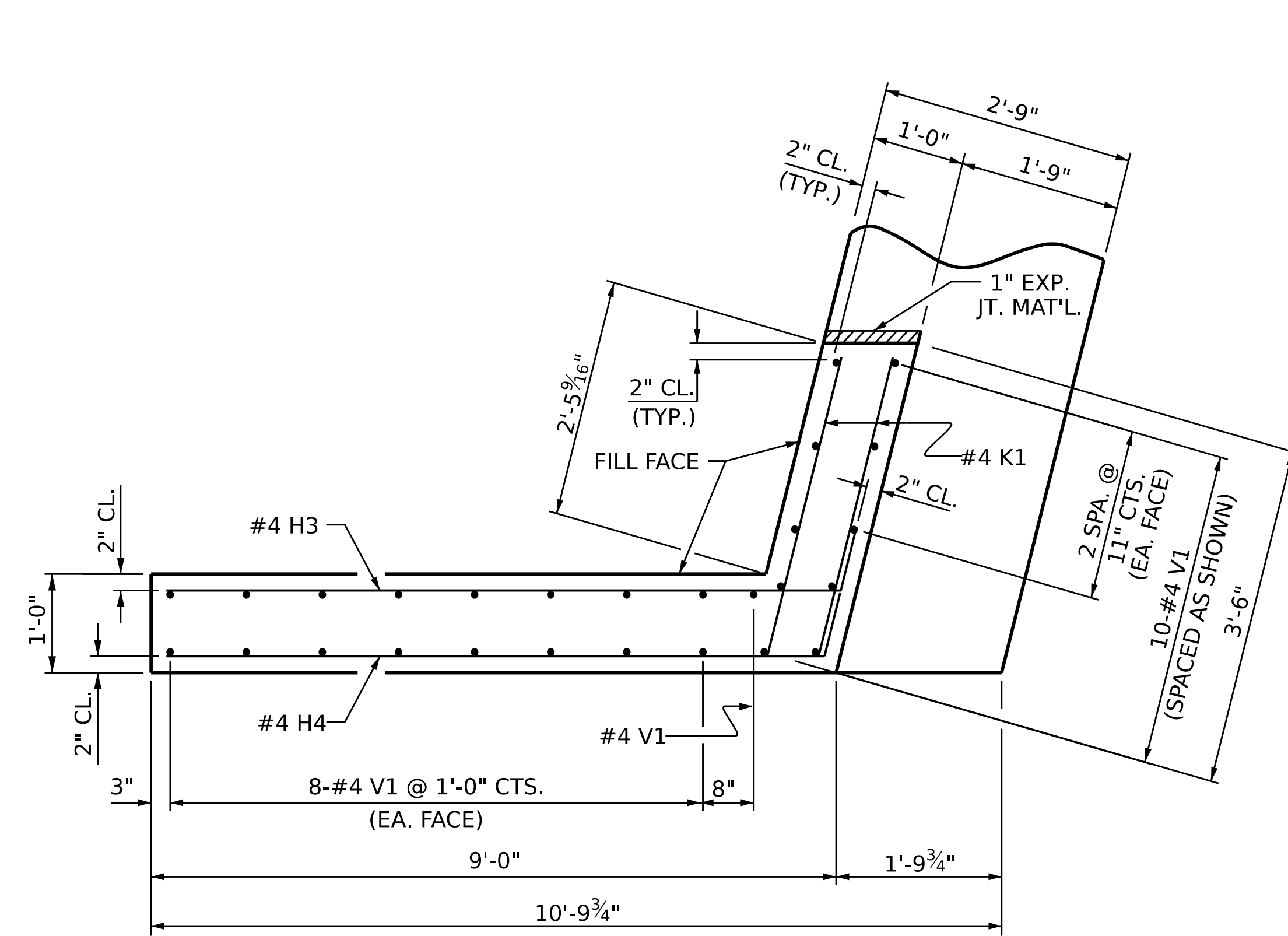


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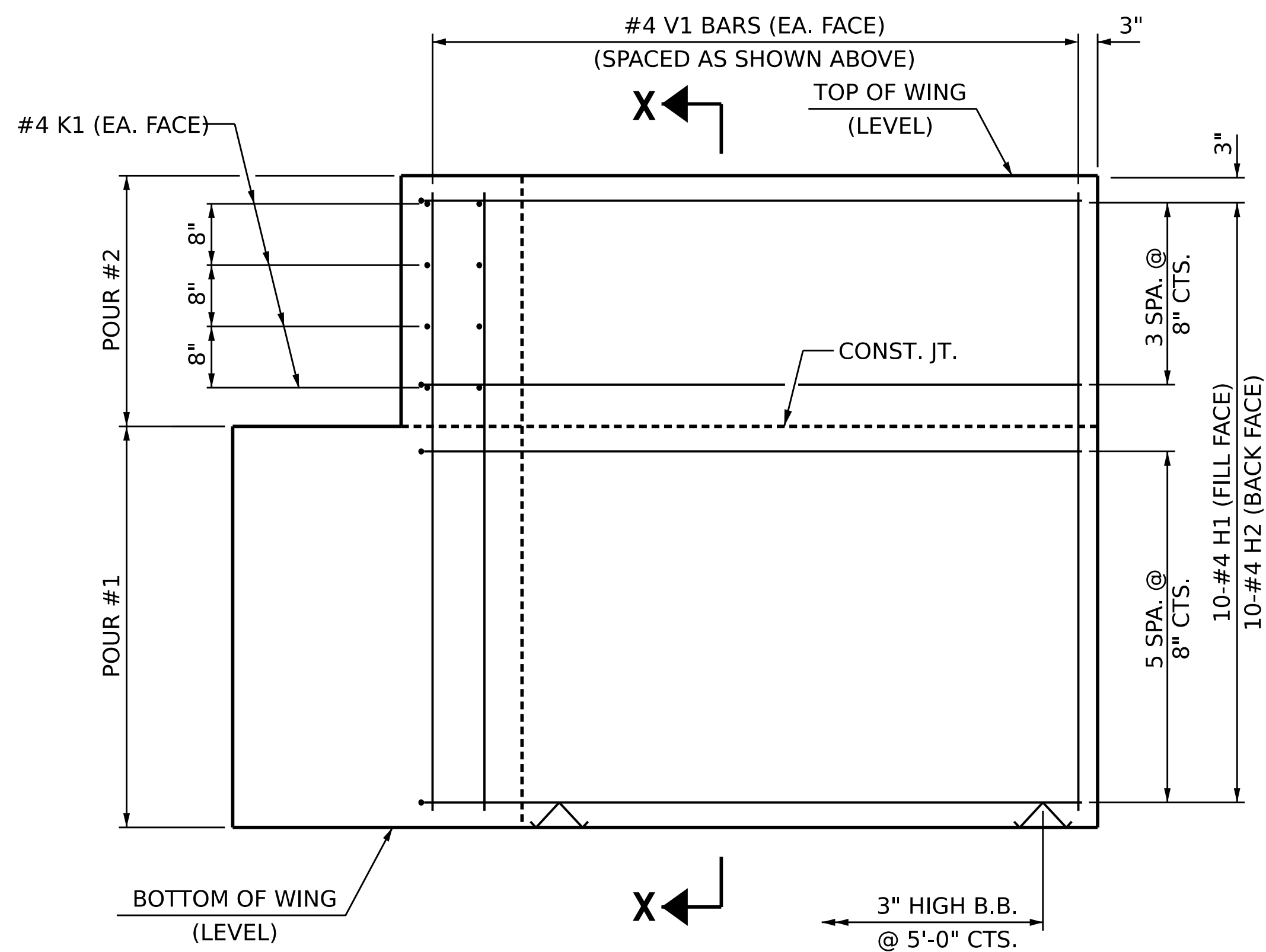
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NO.	DATE	
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2		TOTAL SHEETS 15



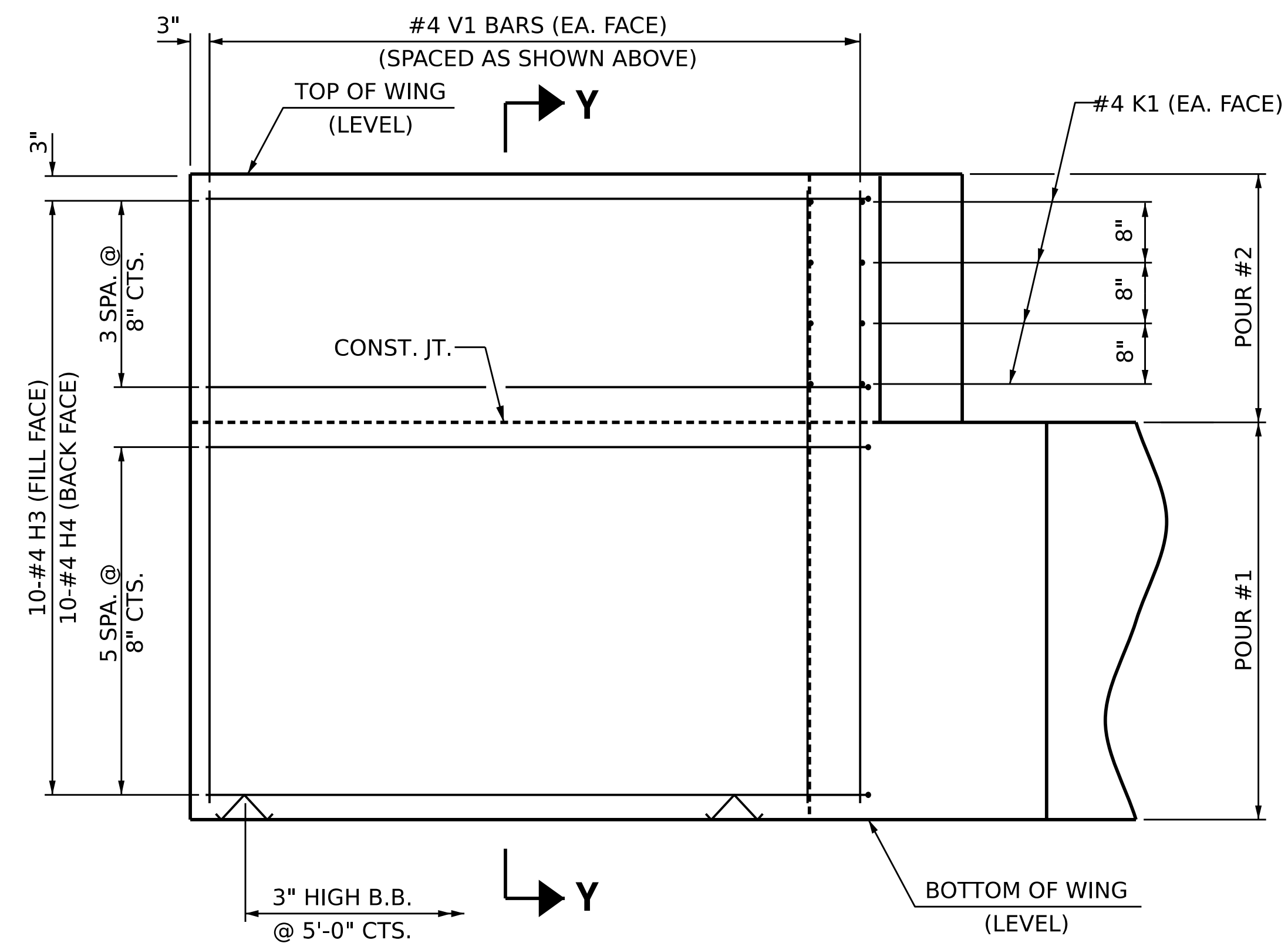
PLAN OF WING (W1)



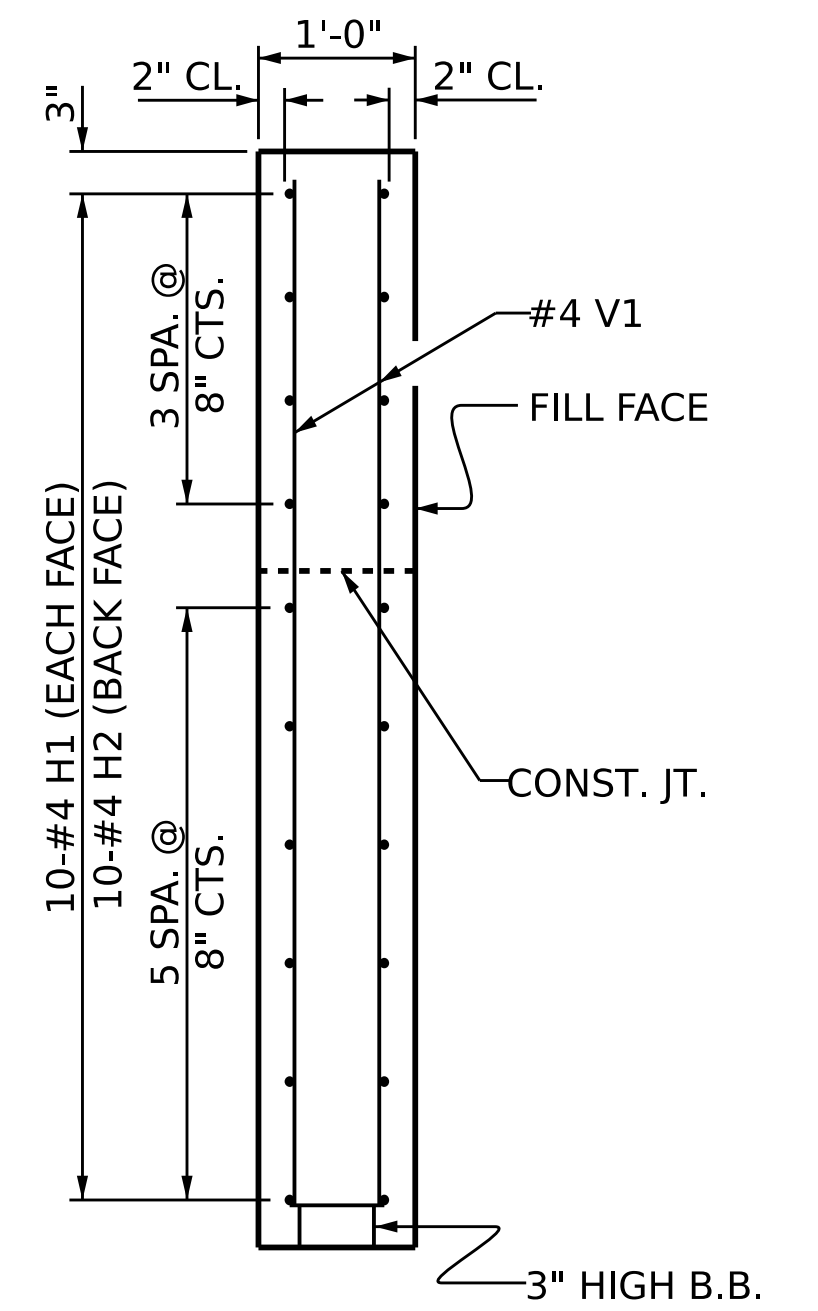
PLAN OF WING (W2)



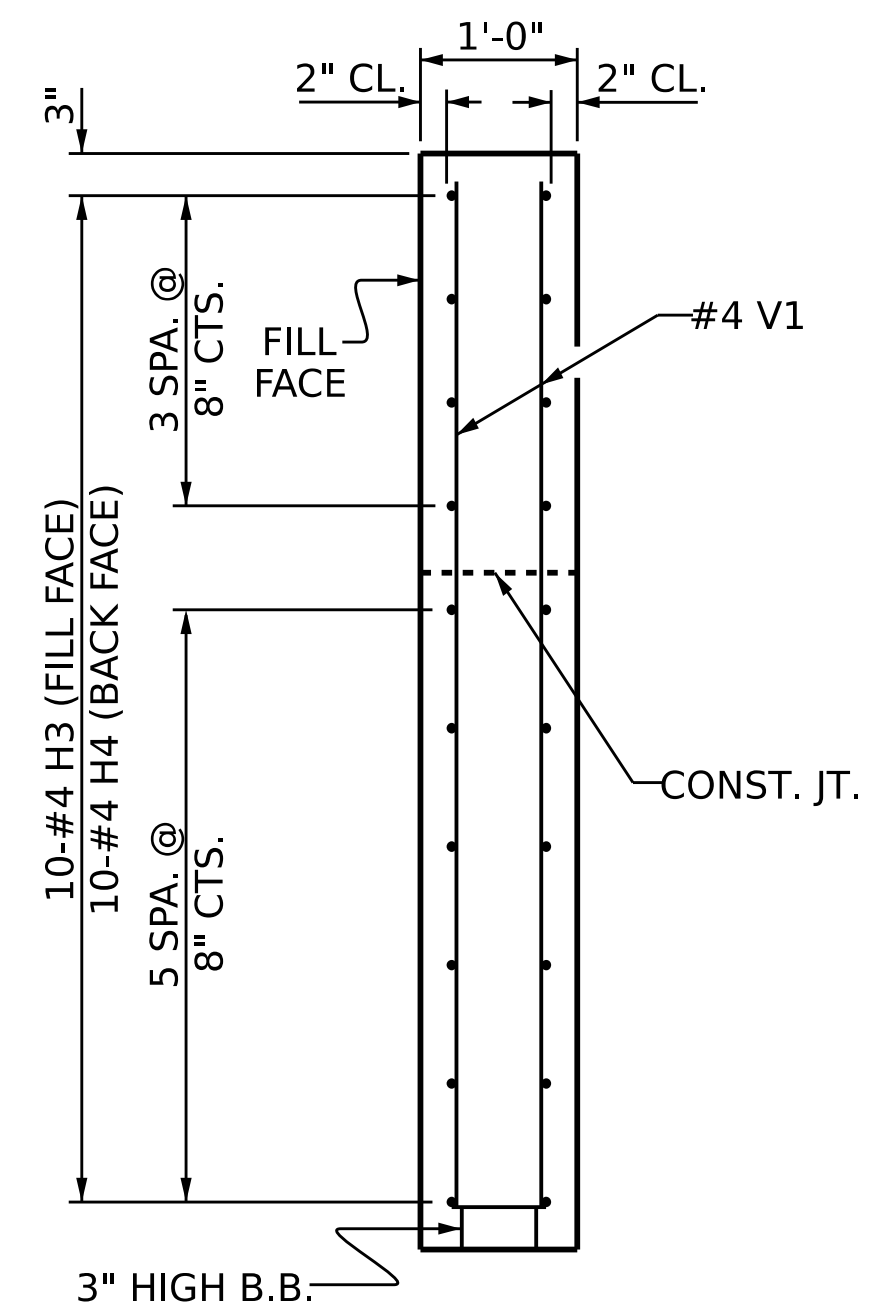
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



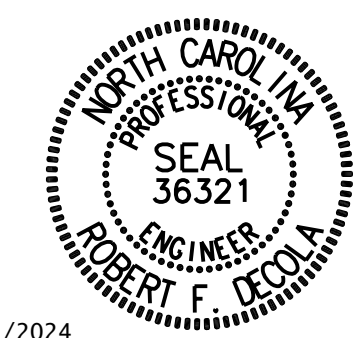
SECTION X-X



SECTION Y-Y

PROJECT NO. **BP6.R008.1**
COLUMBUS COUNTY
 STATION: **13+47.00 -L-**

SHEET 3 OF 4



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

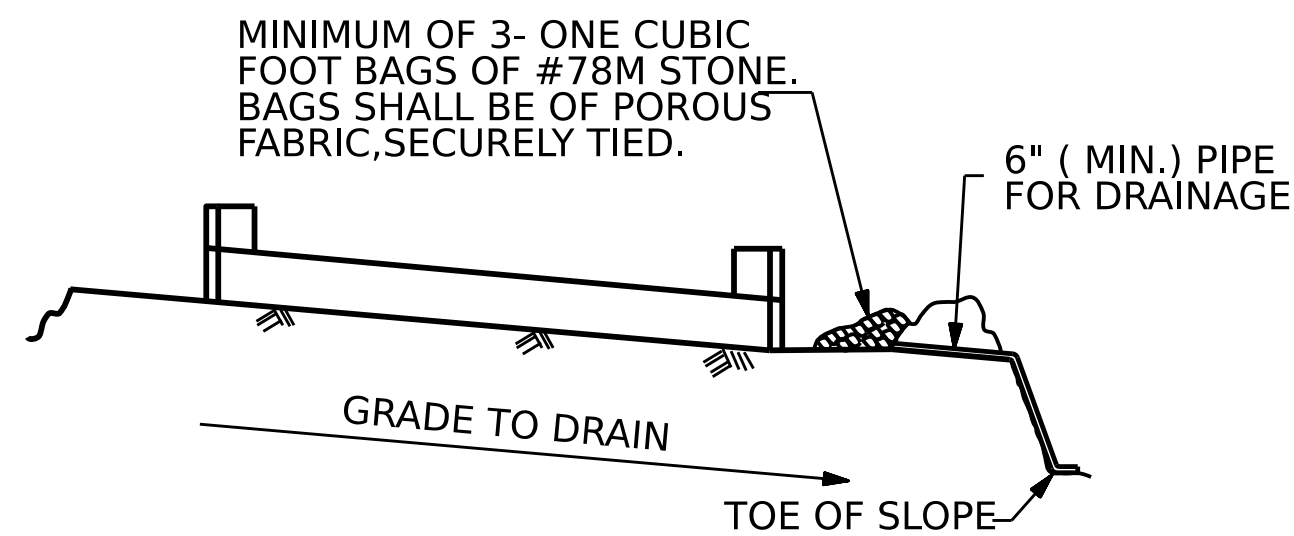
DRAWN BY: M.G. Armstrong DATE: 1/27/23
 CHECKED BY: R.F. DeCola DATE: 2/17/23
 DESIGN ENGINEER OF RECORD: R.F. DeCola DATE:

WING DETAILS



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NO.	BY					
1		3				S-12
2		4				TOTAL SHEETS 15

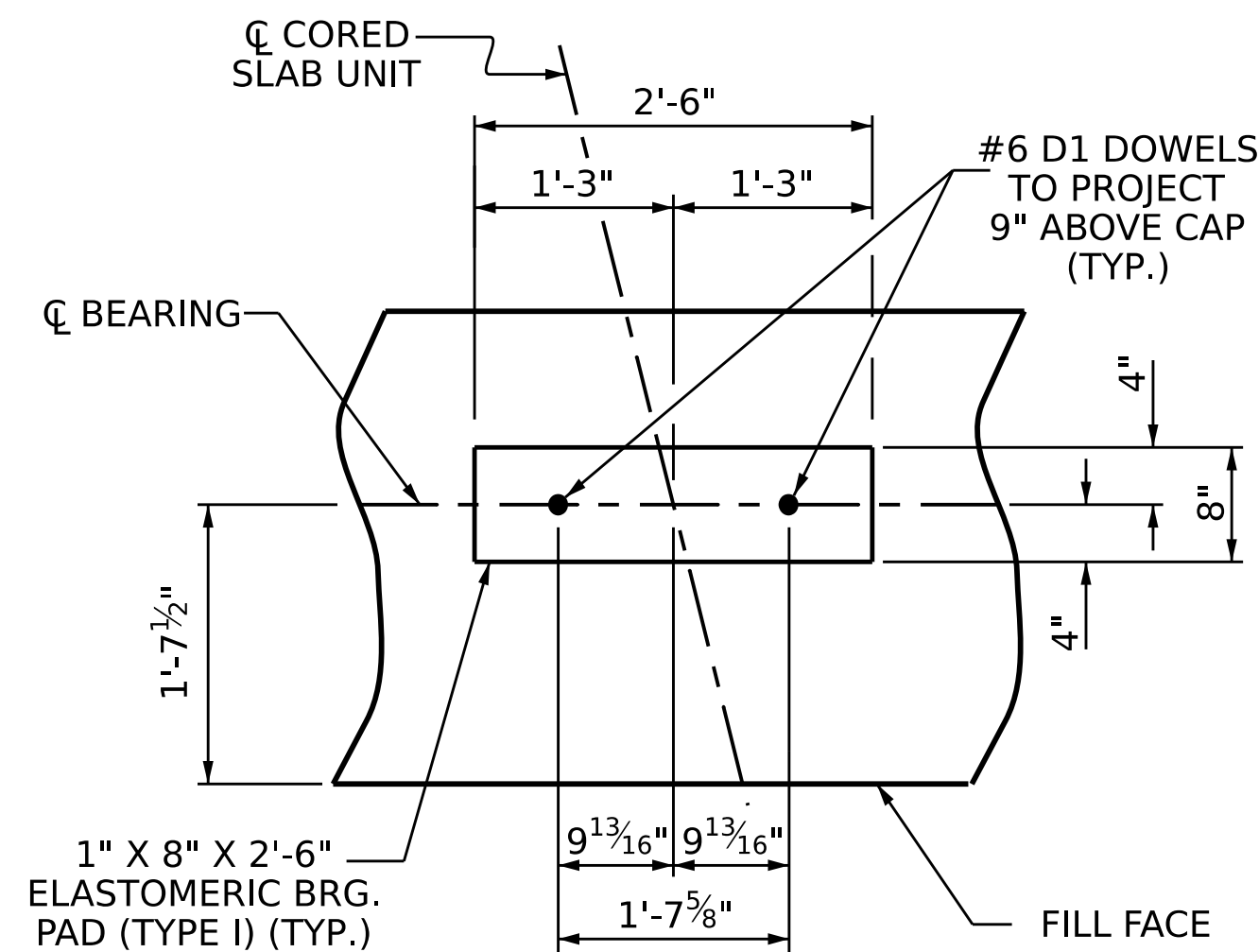


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

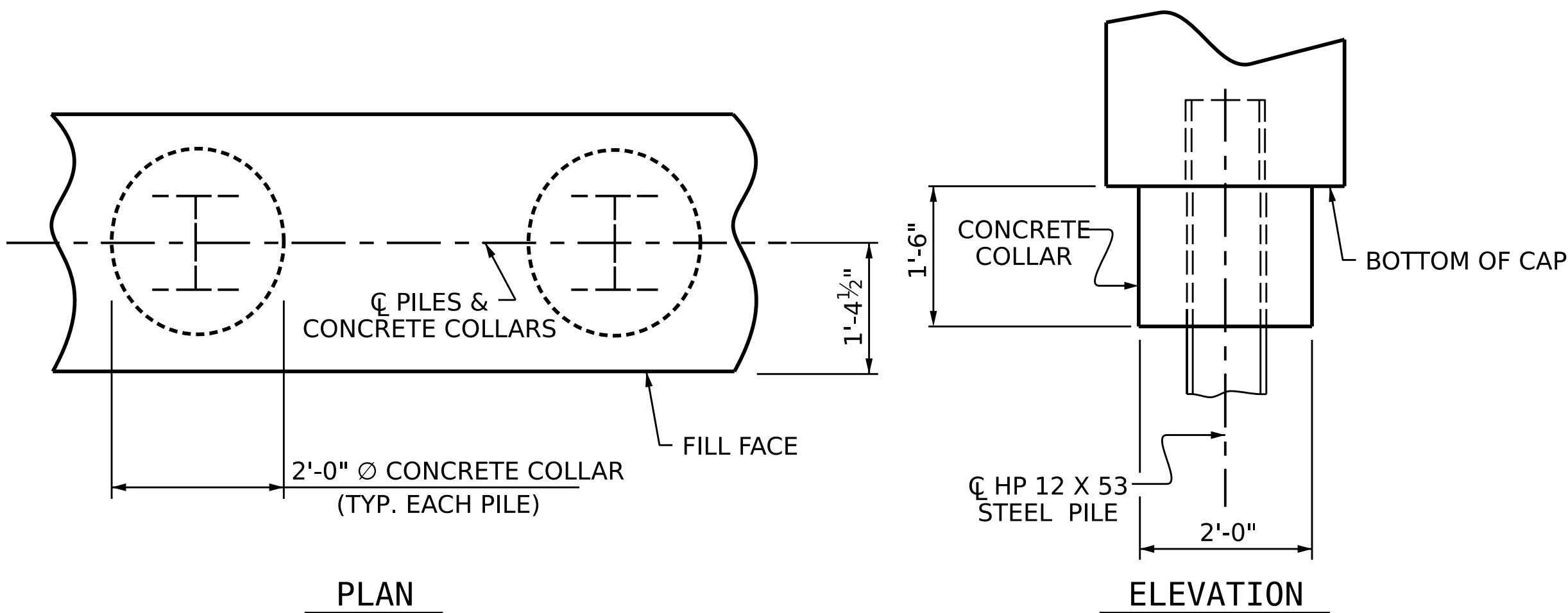
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



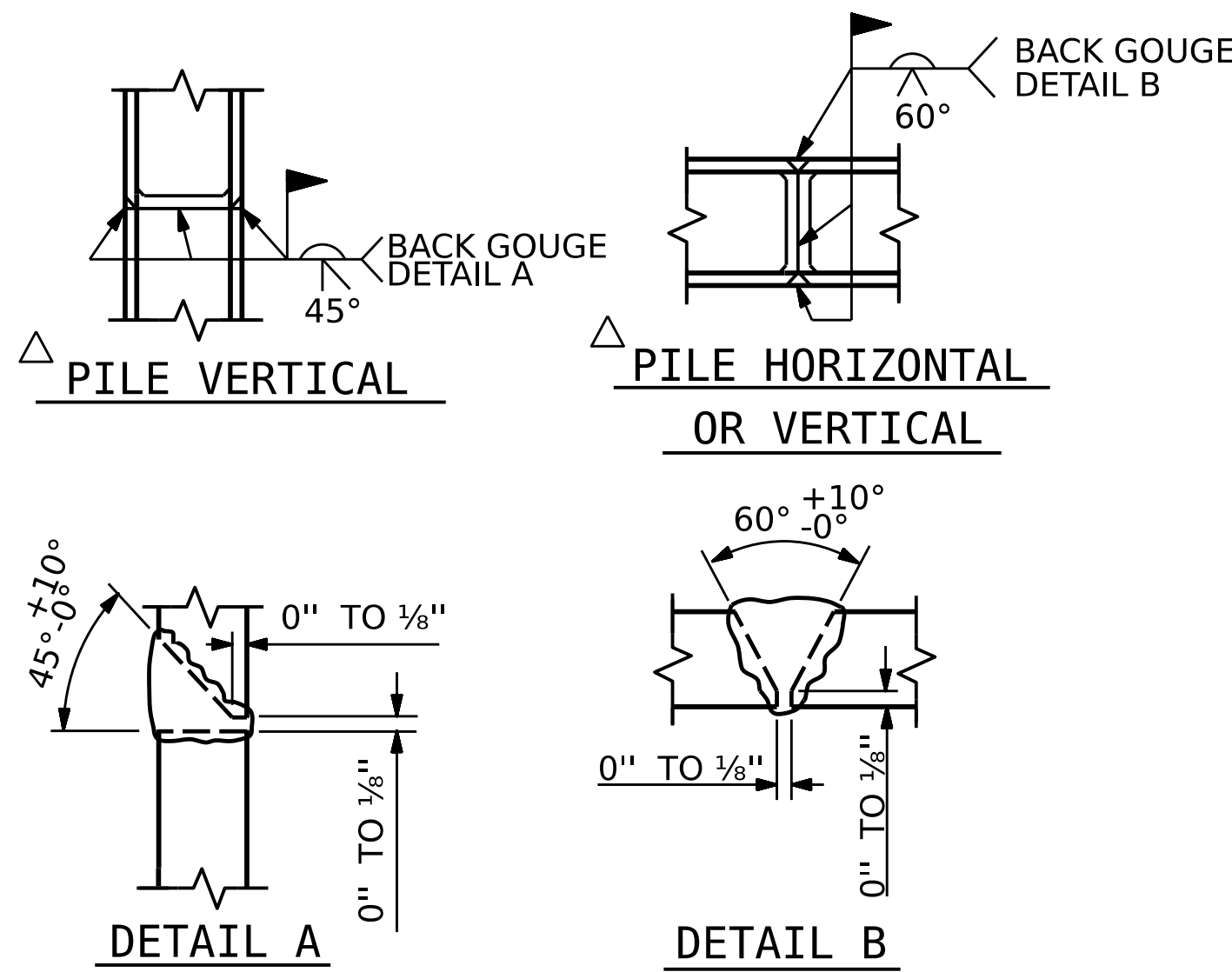
DETAIL "A"

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



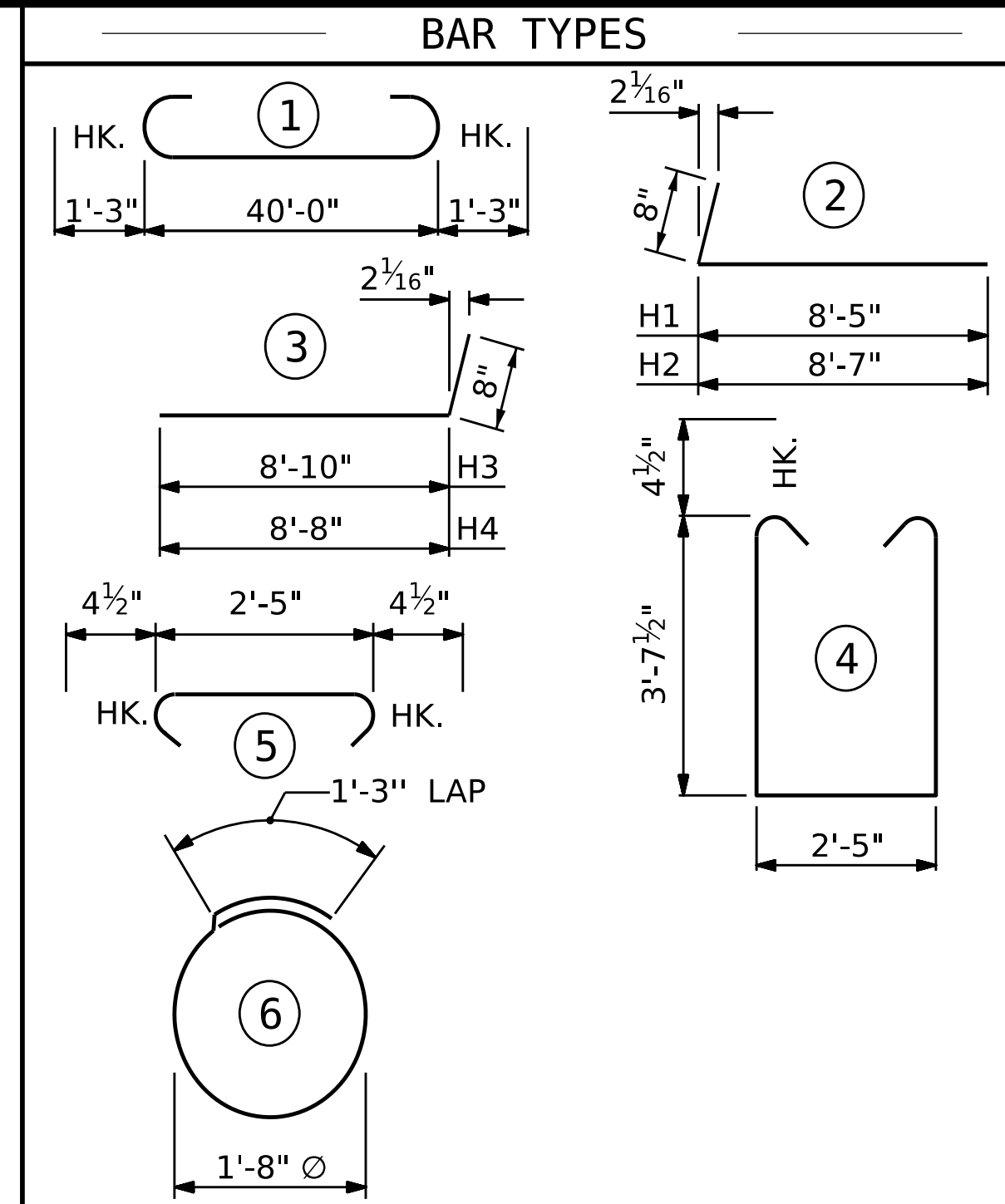
CORROSION PROTECTION FOR STEEL PILES DETAIL

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



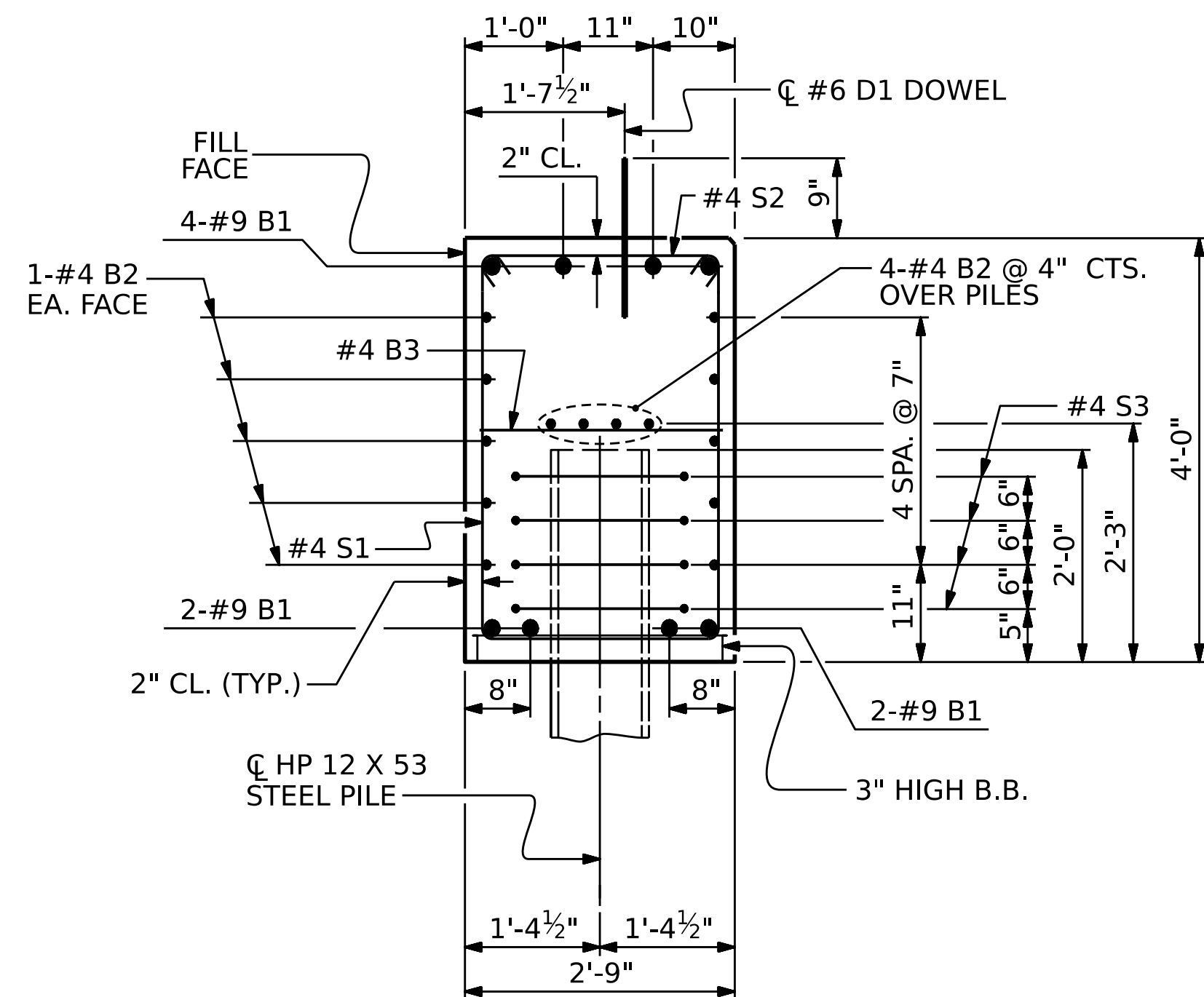
PILE SPLICE DETAILS

△ POSITION OF PILE DURING WELDING.



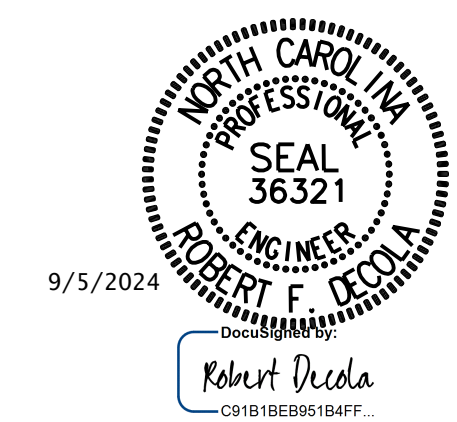
BAR TYPES	
END BENT No. 1	END BENT No. 2
HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 60	HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 50
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 7	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 7
PILE REDRIVES	NO: 8

BILL OF MATERIAL					
FOR ONE END BENT					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	#8		42'-6"	1156	
B2	#4	STR	21'-4"	399	
B3	#4	STR	2'-5"	16	
D1	#6	STR	1'-6"	50	
H1	#4	2	9'-1"	61	
H2	#4	2	9'-3"	62	
H3	#4	3	9'-6"	63	
H4	#4	3	9'-4"	62	
K1	#4	STR	3'-1"	33	
S1	#4	4	10'-5"	362	
S2	#4	5	3'-2"	110	
S3	#4	6	6'-6"	122	
V1	#4	STR	6'-2"	218	
REINFORCING STEEL (FOR ONE END BENT)				2714 LBS.	
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
POUR #1 CAP, LOWER PART OF WINGS & COLLARS			20.1 C.Y.		
POUR #2 UPPER PART OF WINGS			2.3 C.Y.		
TOTAL CLASS A CONCRETE			22.4 C.Y.		



SECTION A-A

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



PROJECT NO. **BP6.R008.1**
COLUMBUS COUNTY
 STATION: **13+47.00 -L-**

SHEET 4 OF 4
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
END BENT No. 1 & 2
DETAILS

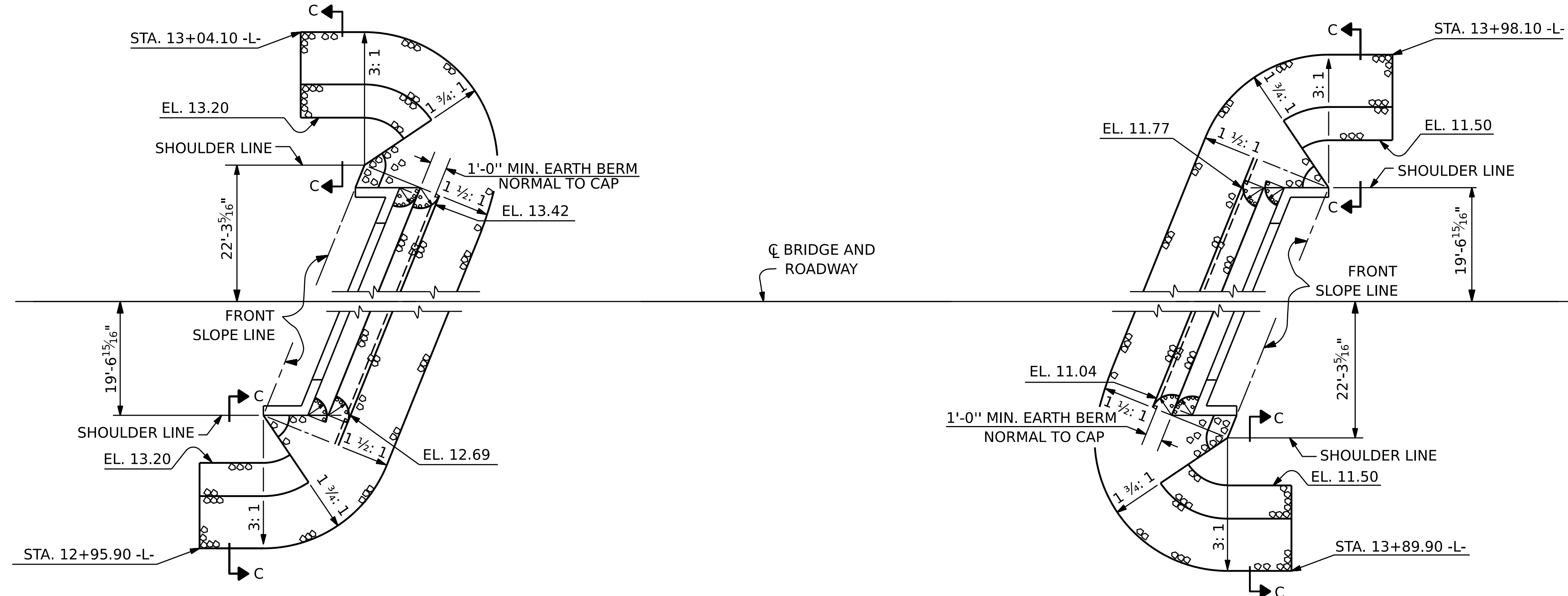
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

DRAWN BY: M.G. Armstrong DATE: 1/27/23
 CHECKED BY: R.F. DeCola DATE: 2/17/23
 DESIGN ENGINEER OF RECORD: R.F. DeCola DATE:

KCI Associates
 of North Carolina, P.A.
 2025 Fee of \$1000.00 per hour. 400 Raleigh, NC 27601-6170. PHONE 919-353-1551

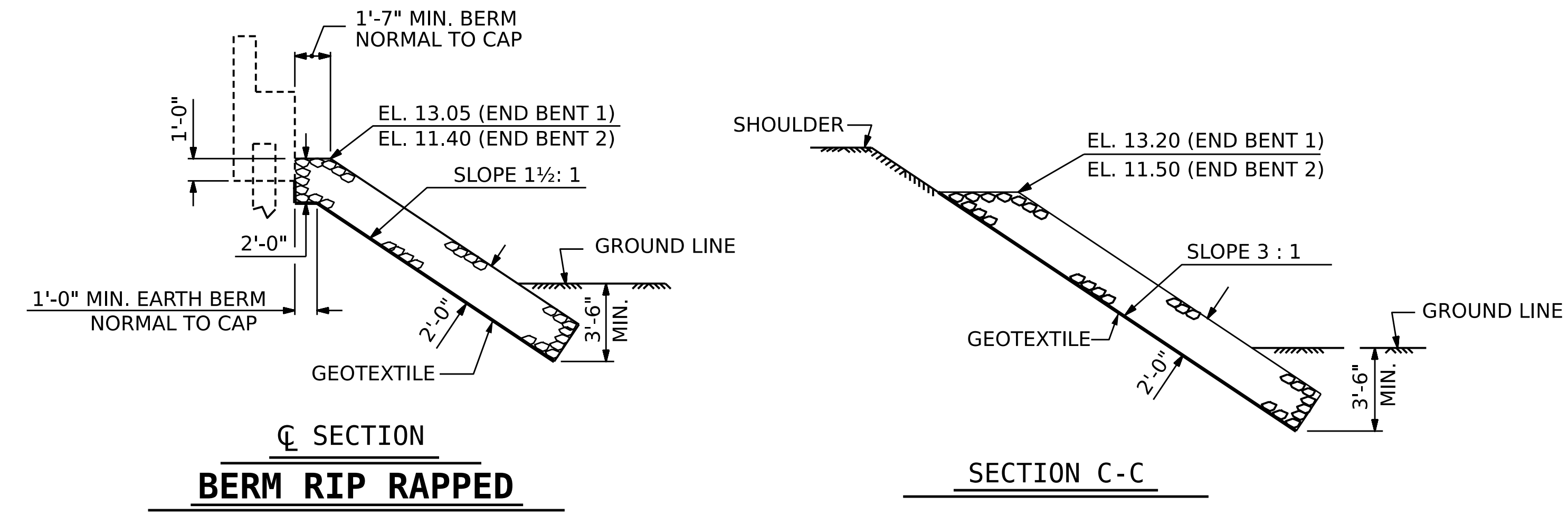
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTES:
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.



BERM RIP RAPPED

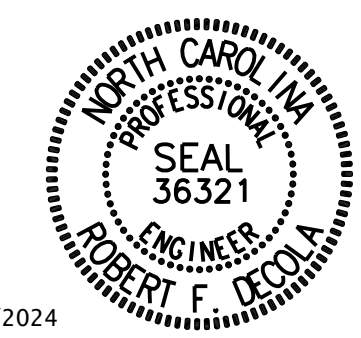
ESTIMATED QUANTITIES		
BRIDGE @ STA. 13+47.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	502	452
END BENT 2	416	374



SECTION C-C
BERM RIP RAPPED

SECTION C-C

PROJECT NO. **BP6.R008.1**
COLUMBUS COUNTY
STATION: **13+47.00 -L-**



9/5/2024
DocuSigned by:
Robert DeCola
C0181B89518A9F...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

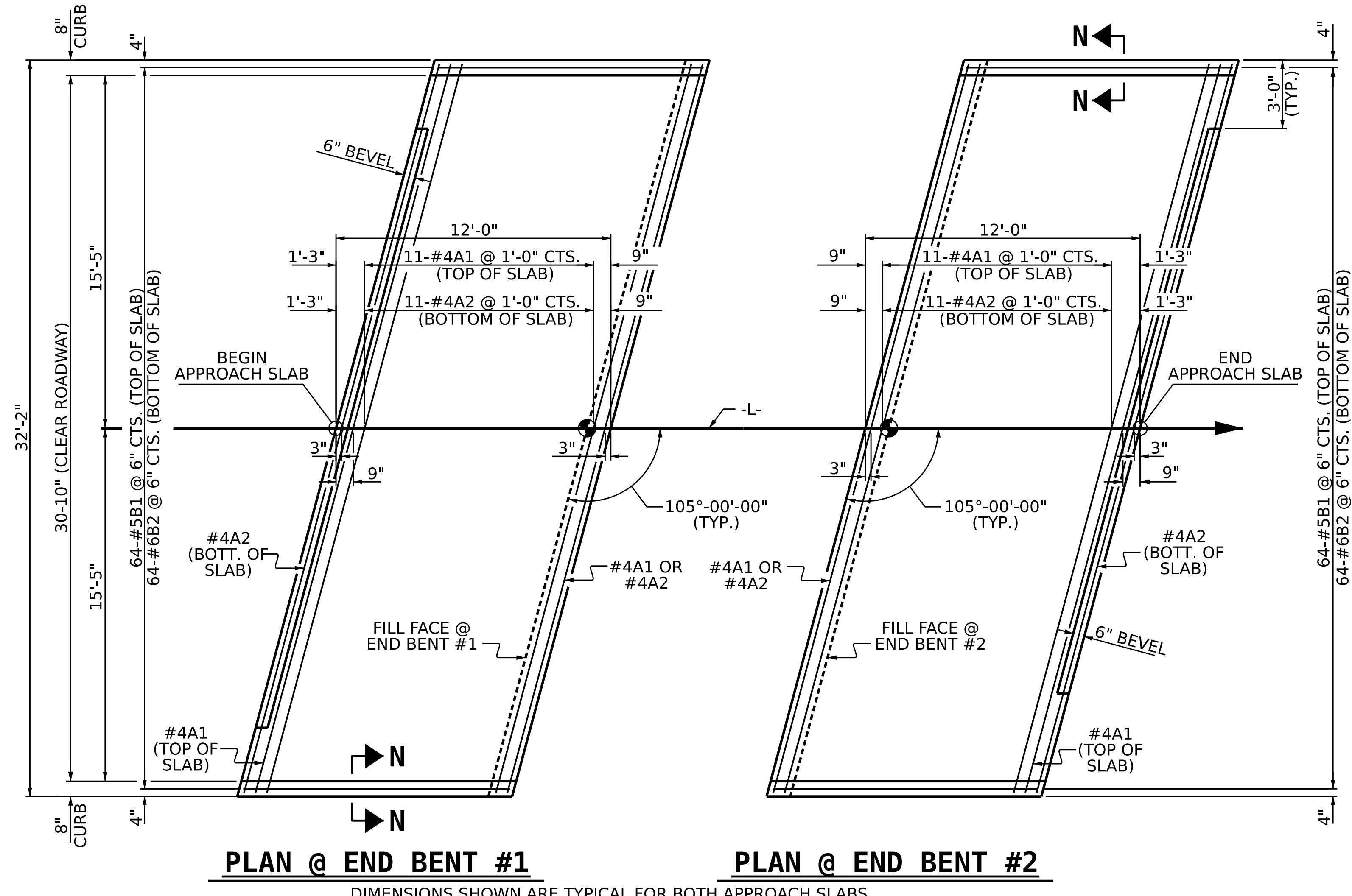
RIP RAP DETAILS

DRAWN BY: M.G. Armstrong DATE: 1/27/23
CHECKED BY: R.F. DeCola DATE: 2/17/23
DESIGN ENGINEER OF RECORD: R.F. DeCola DATE:

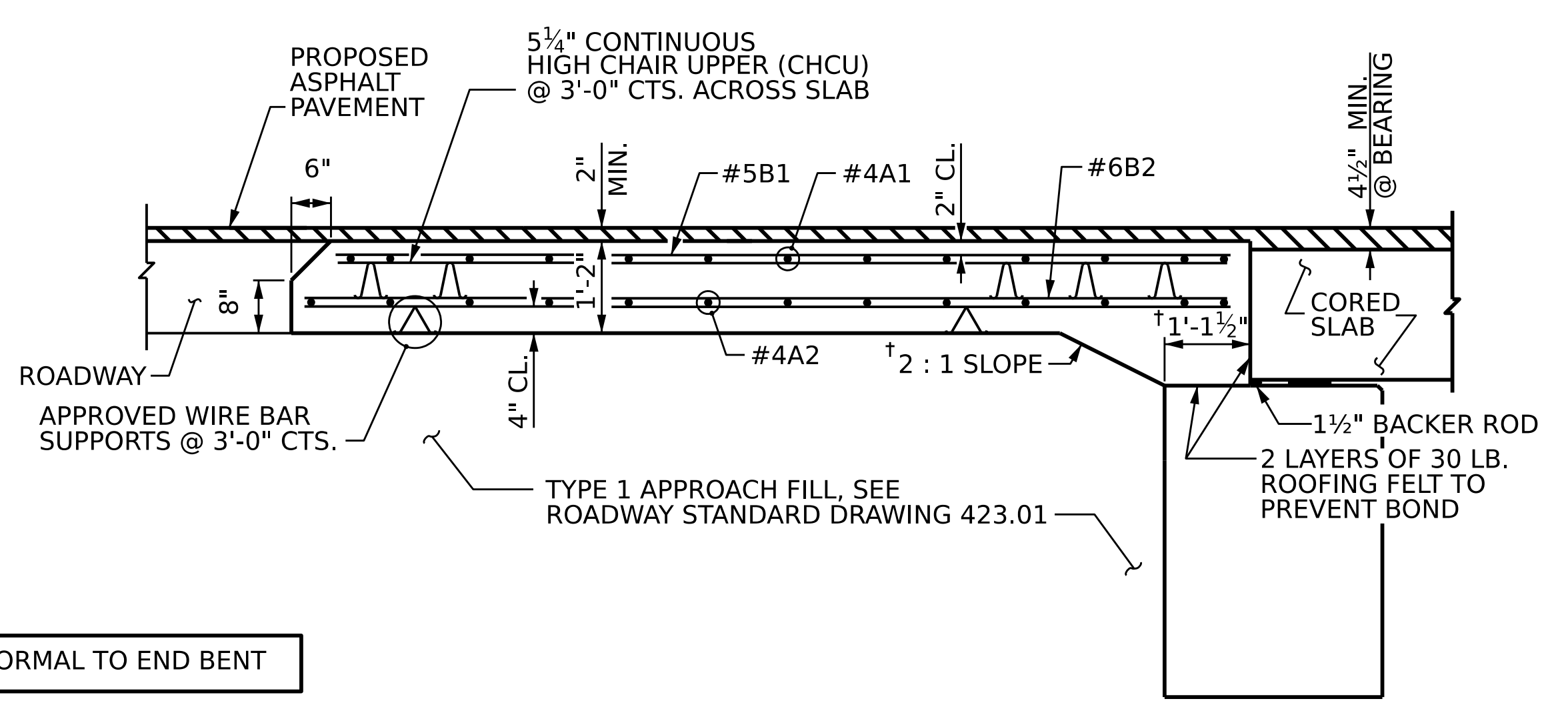


DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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

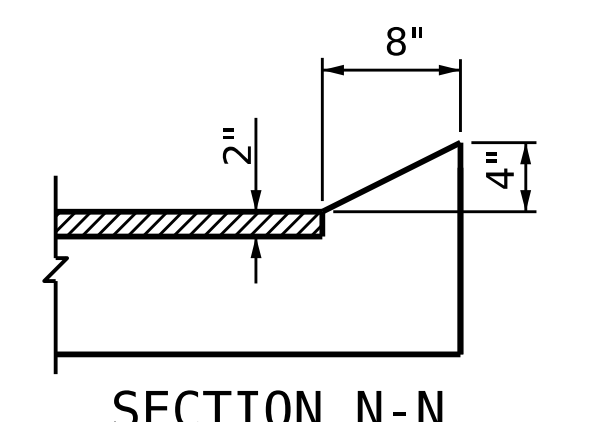


PLAN @ END BENT #1 **PLAN @ END BENT #2**
 DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



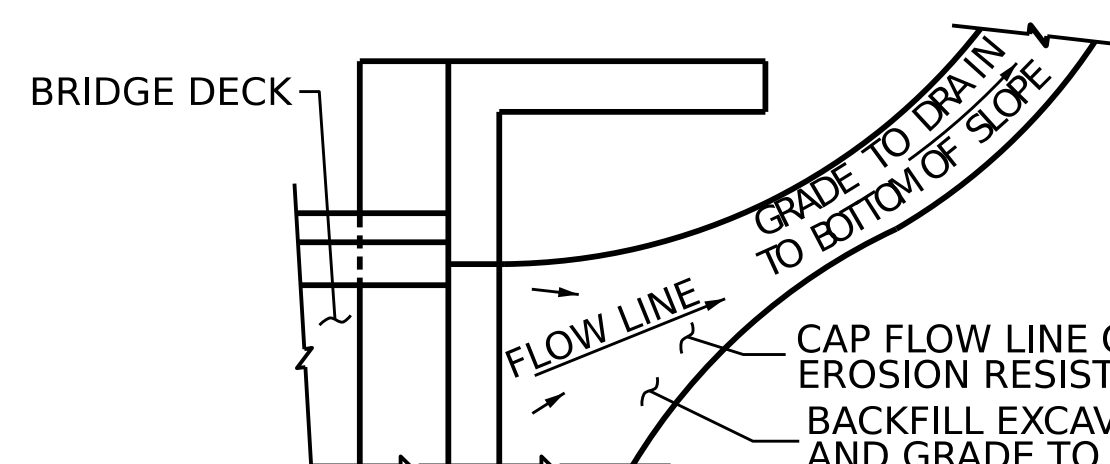
SECTION THRU SLAB

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

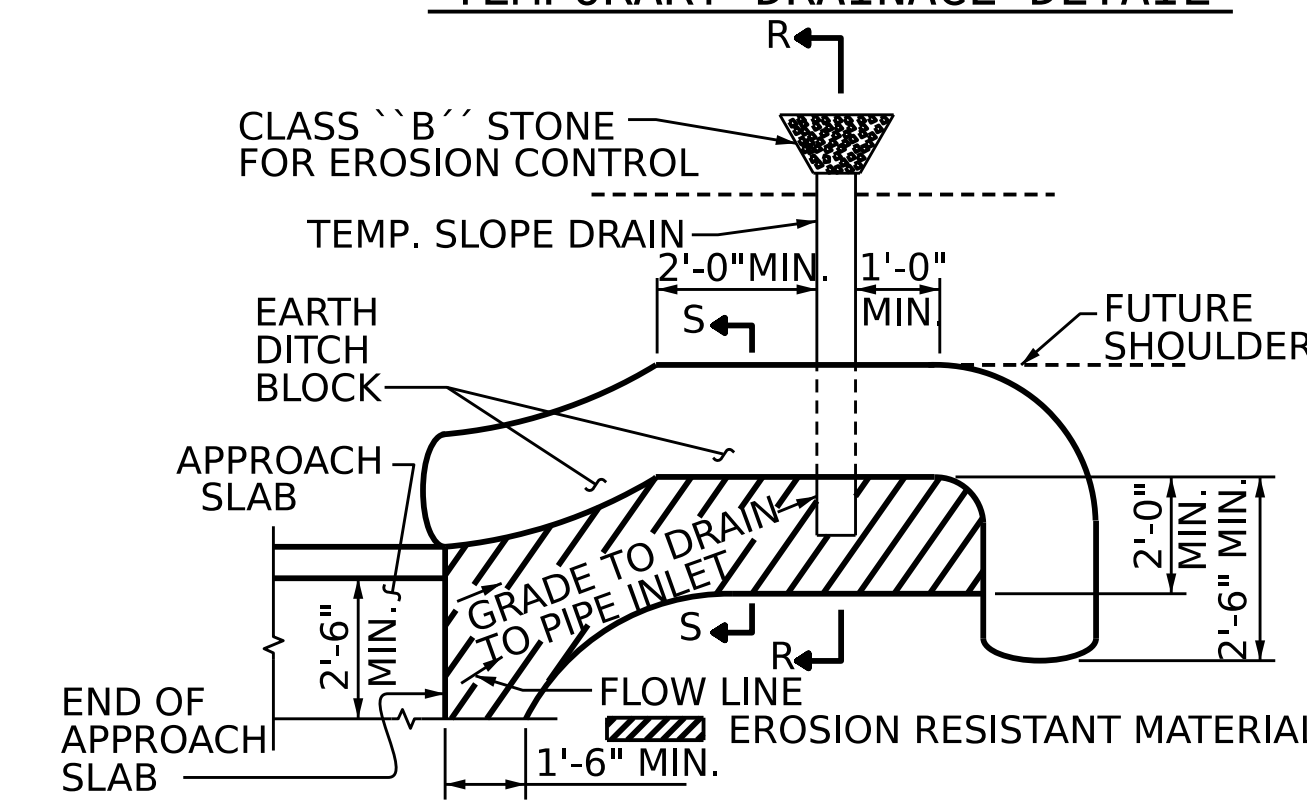


CURB DETAILS

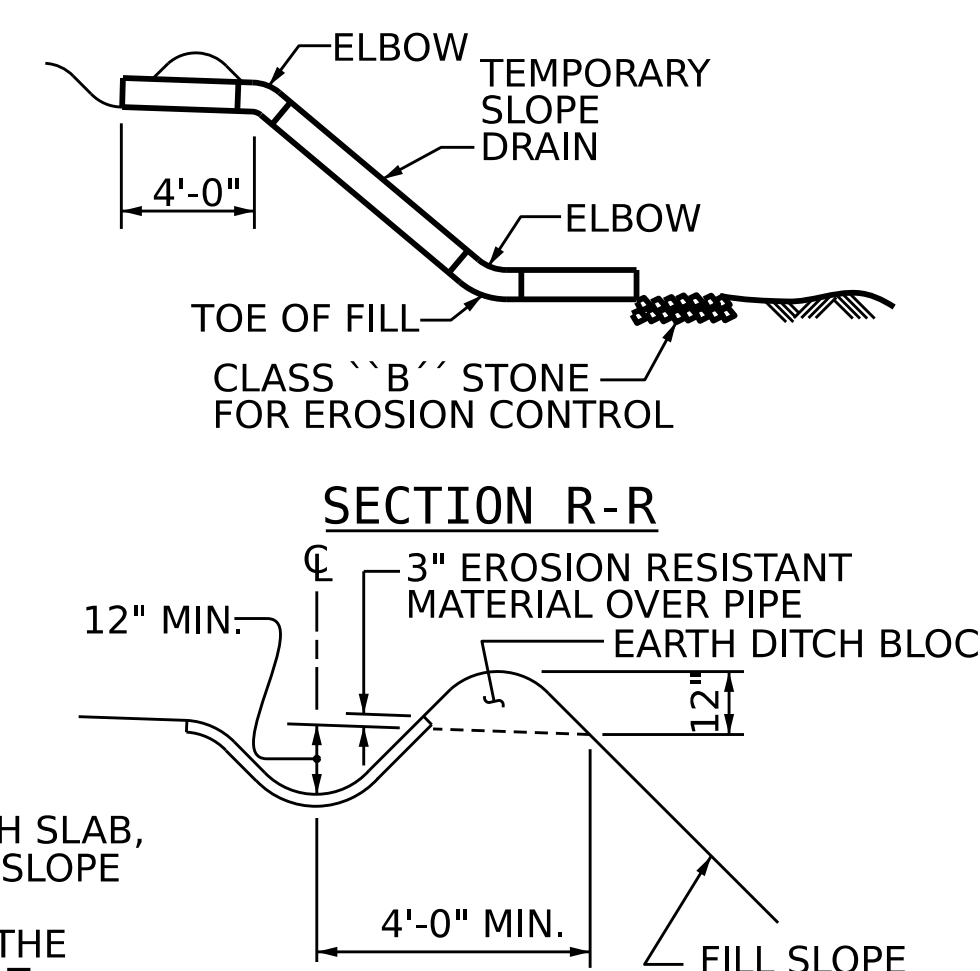
NOTES
 FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.
 AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.
 APPROACH SLAB GROOVING IS NOT REQUIRED.



TEMPORARY DRAINAGE DETAIL
 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.



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



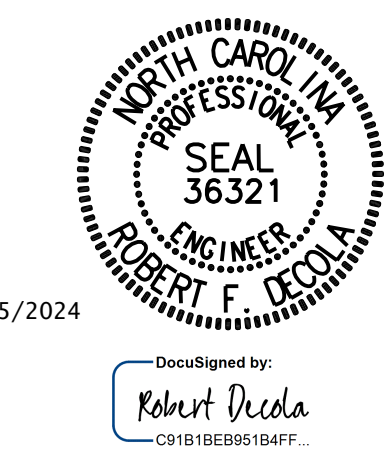
SECTION S-S

BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	13	#4	STR	32'-11"	286
A2	13	#4	STR	32'-11"	286
* B1	64	#5	STR	11'-1"	740
B2	64	#6	STR	11'-7"	1113
REINFORCING STEEL	LBS.	1399			
* EPOXY COATED REINFORCING STEEL	LBS.	1026			
CLASS AA CONCRETE	C. Y.	19.5			
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	13	#4	STR	32'-11"	286
A2	13	#4	STR	32'-11"	286
* B1	64	#5	STR	11'-1"	740
B2	64	#6	STR	11'-7"	1113
REINFORCING STEEL	LBS.	1399			
* EPOXY COATED REINFORCING STEEL	LBS.	1026			
CLASS AA CONCRETE	C. Y.	19.5			

DRAWN BY: M.G. Armstrong DATE: 1/27/23
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KCI Associates
 ENGINEERS
 OF NORTH CAROLINA, P.A.
 2025 Foot of South Main Street, Raleigh, NC 27601-6170, Phone 919-333-3531

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PROJECT NO. **BP6.R008.1**
COLUMBUS COUNTY
 STATION: **13+47.00 -L-**

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR PRESTRESSED CONCRETE
 CORED SLAB UNIT
 (SUB-REGIONAL TIER)
 105° SKEW

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

S-15
 TOTAL SHEETS
 15

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

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

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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