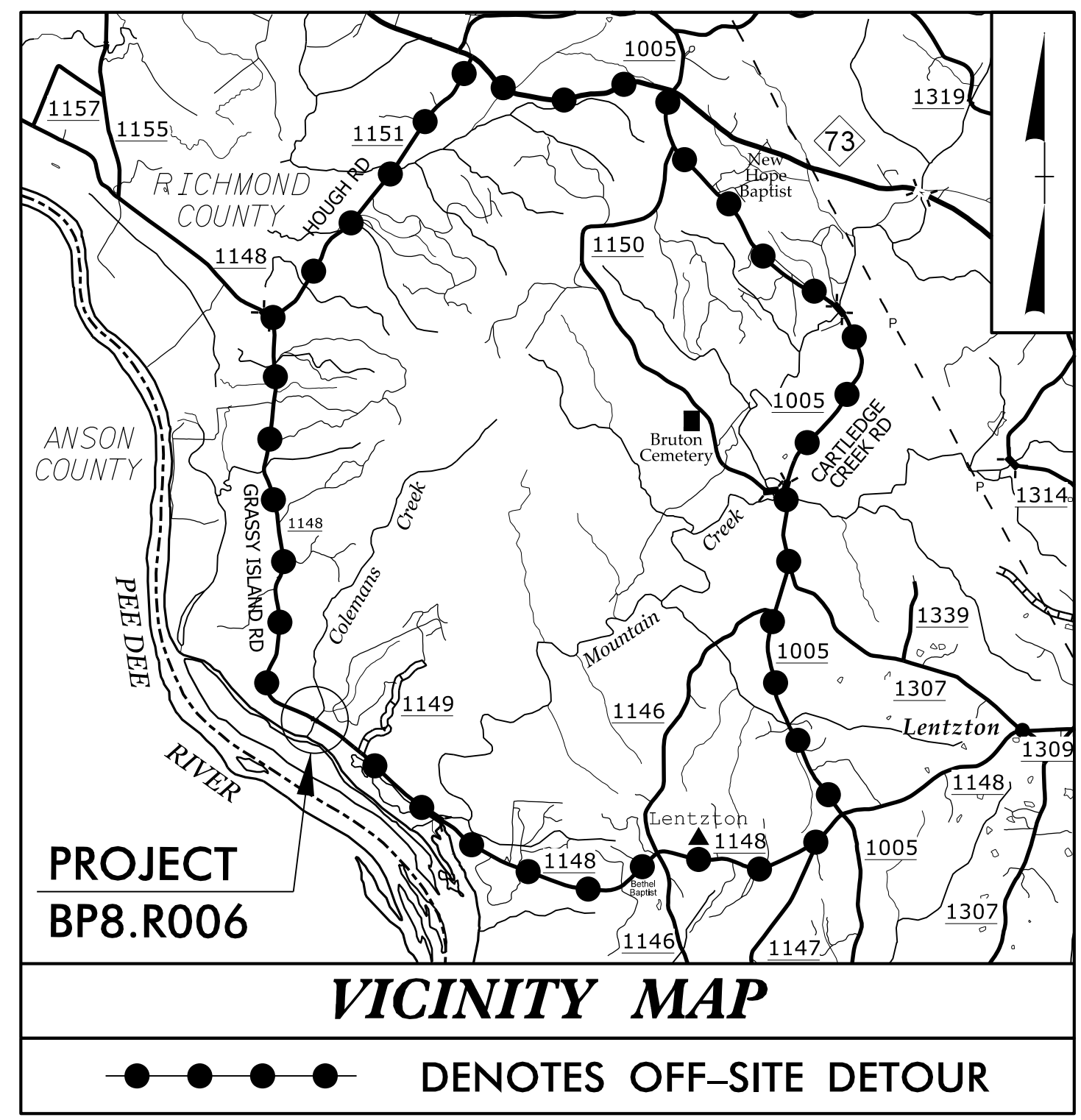


09/08/2025

**PROJECT: BP8.R006**

**CONTRACT: DH00548**

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



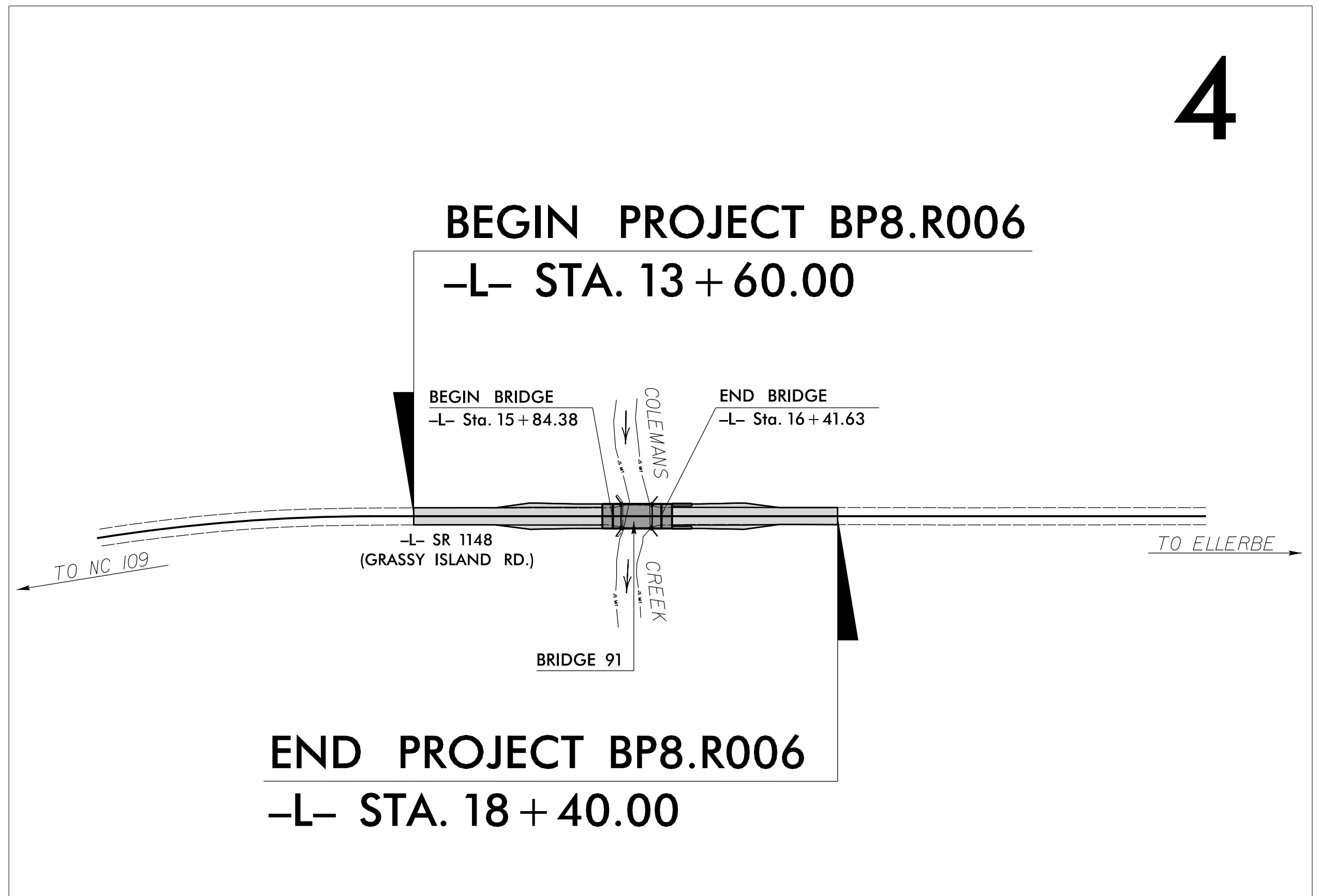
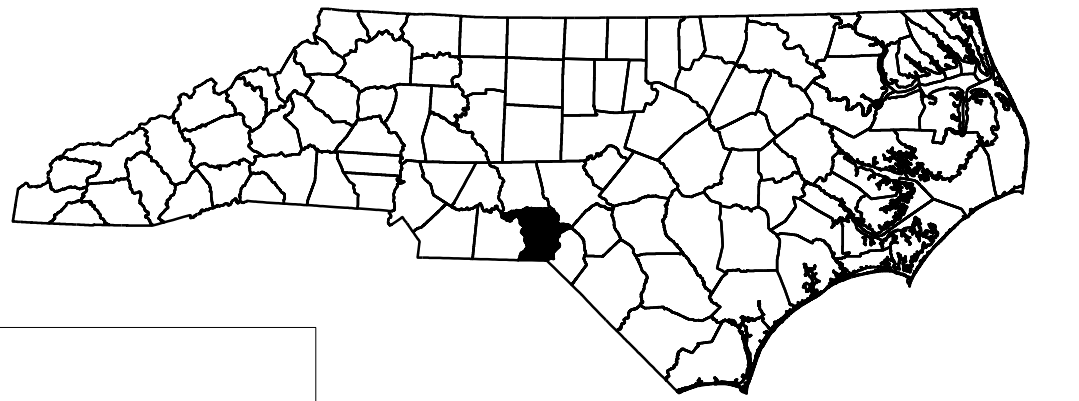
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**RICHMOND COUNTY**

**LOCATION: BRIDGE NO. 91 ON SR 1148 (GRASSY ISLAND RD)  
OVER COLEMANS CREEK**

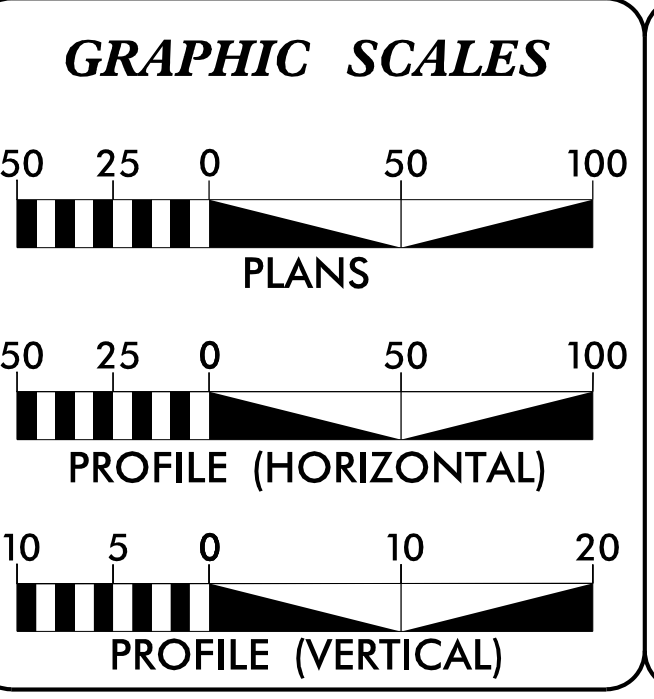
**TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	<b>BP8.R006</b>	<b>1</b>	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BP8.R006.1		PE	
BP8.R006.2		ROW & UTIL	
BP8.R006.3		CONST	



**4**

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



**DESIGN DATA**

ADT 2025 =	170
ADT 2045 =	310
K =	%
D =	%
T =	% *
V =	60 MPH
* (TTST = % + DUAL %)	
FUNC CLASS =	
LOCAL	
SUBREGIONAL TIER	

**PROJECT LENGTH**

LENGTH ROADWAY PROJECT BP8.R006 =	0.080 MILES
LENGTH STRUCTURE PROJECT BP8.R006 =	0.011 MILES
TOTAL LENGTH PROJECT BP8.R006 =	0.091 MILES

NCDOT CONTACT: TIMOTHY F. WELCH, PE

Prepared in the Office of:

**Dewberry**  
2610 WICKLIFF ROAD  
SUITE 410  
RALEIGH, NC 27607  
PHONE: 919.881.9939  
NC COA No. F-0929

**DIVISION OF HIGHWAYS**

2024 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE: AUGUST 26, 2022	BENJAMIN STORMER, P.E. PROJECT ENGINEER
LETTING DATE: SEPTEMBER 23, 2025	BRYAN LAMBETH, P.E. PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

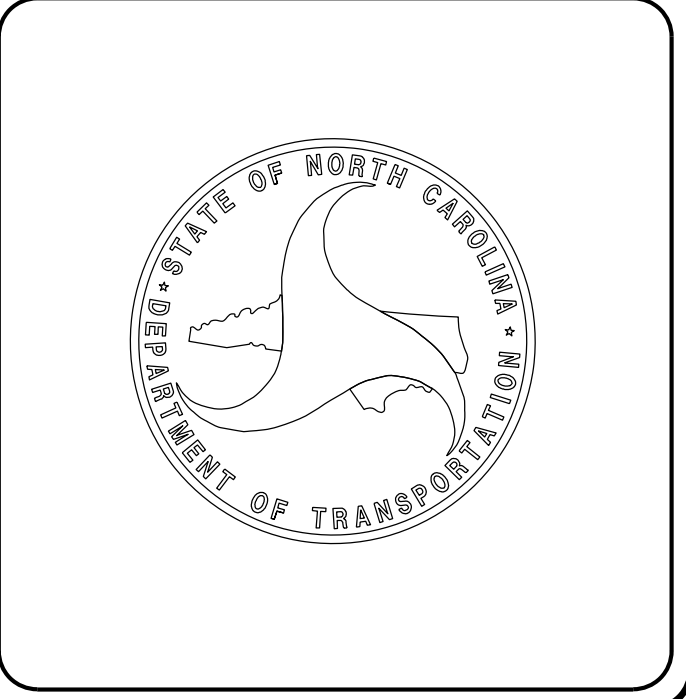
8/26/2025

Signed by: *Andrea Hayden*  
FE#16A02228254F1  
SIGNATURE:

**ROADWAY DESIGN ENGINEER**

8/26/2025

Signed by: *Benjamin Stormer*  
AS#16A02228254F1  
SIGNATURE:



Invalid expression  
User: bstormer



Note: Not to Scale

# STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

## CONVENTIONAL PLAN SHEET SYMBOLS

PROJECT REFERENCE NO. BP8.R006	SHEET NO. 1B
-----------------------------------	-----------------

### BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin (EIP)	○ EIP
Computed Property Corner	×
Existing Concrete Monument (ECM)	◻ ECM
Parcel / Sequence Number	⑫③
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	▣
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	---WLB---
Proposed Wetland Boundary	---WLB---
Existing Endangered Animal Boundary	---EAB---
Existing Endangered Plant Boundary	---EPB---
Existing Historic Property Boundary	---HPB---
Known Contamination Area: Soil	---S---S---
Potential Contamination Area: Soil	---S---S---
Known Contamination Area: Water	---W---W---
Potential Contamination Area: Water	---W---W---
Contaminated Site: Known or Potential	☠ ?

### BUILDINGS AND OTHER CULTURE:

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

### HYDROLOGY:

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

### RAILROADS:

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

### RIGHT OF WAY & PROJECT CONTROL:

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

### ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	---C---
Proposed Slope Stakes Fill	---F---
Proposed Curb Ramp	○ CR
Existing Metal Guardrail	---T---
Proposed Guardrail	---T---
Existing Cable Guiderail	---P---
Proposed Cable Guiderail	---P---
Equality Symbol	⊕
Pavement Removal	▣
VEGETATION:	
Single Tree	☼
Single Shrub	☼
Hedge	~~~~~

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

### EXISTING STRUCTURES:

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

### UTILITIES:

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

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

### TELEPHONE:

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

### WATER:

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

### TV:

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

### GAS:

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

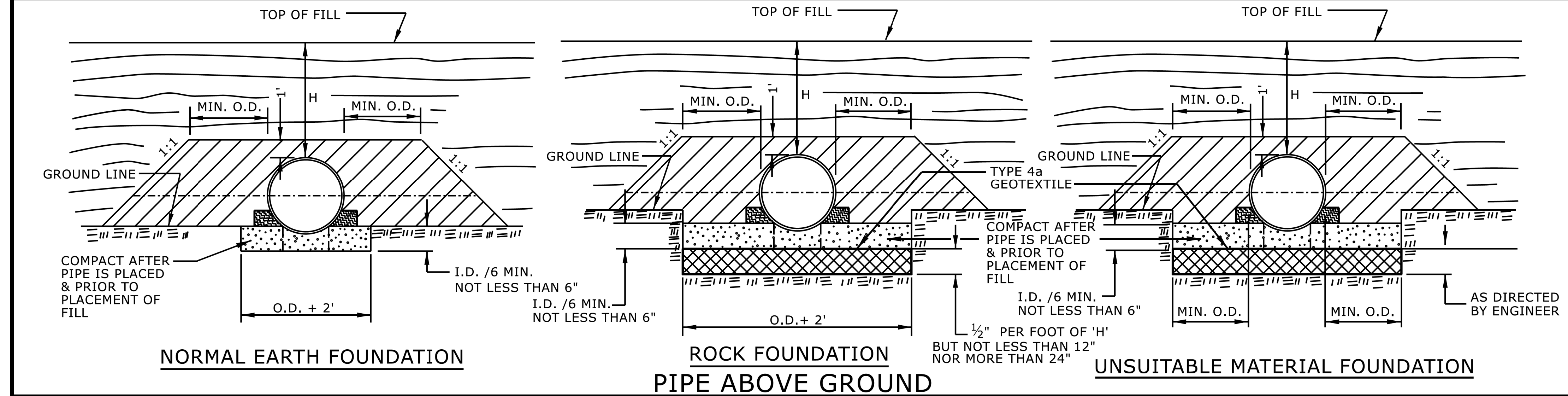
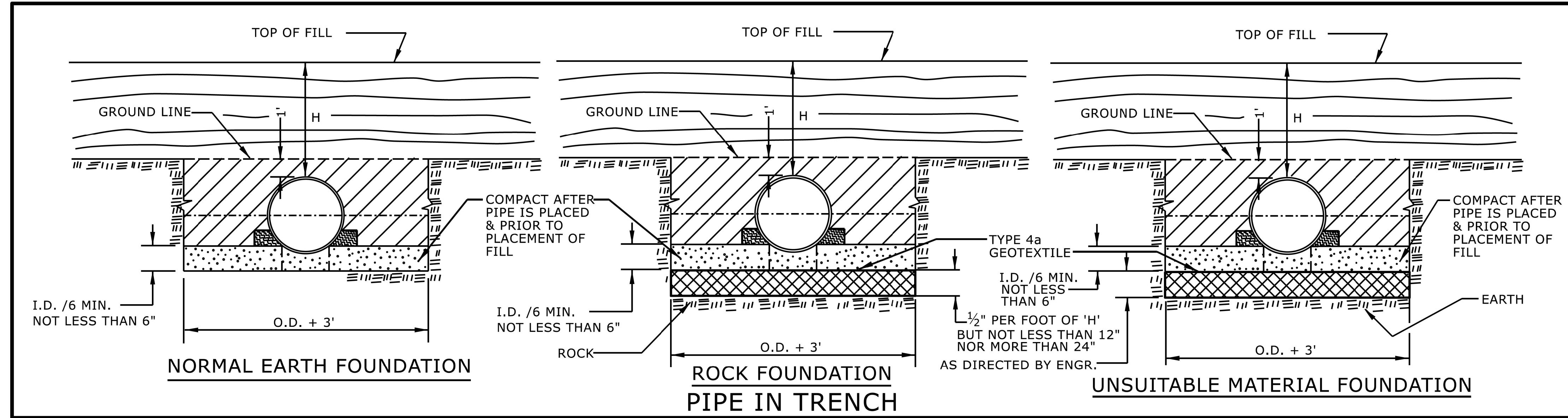
### SANITARY SEWER:

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

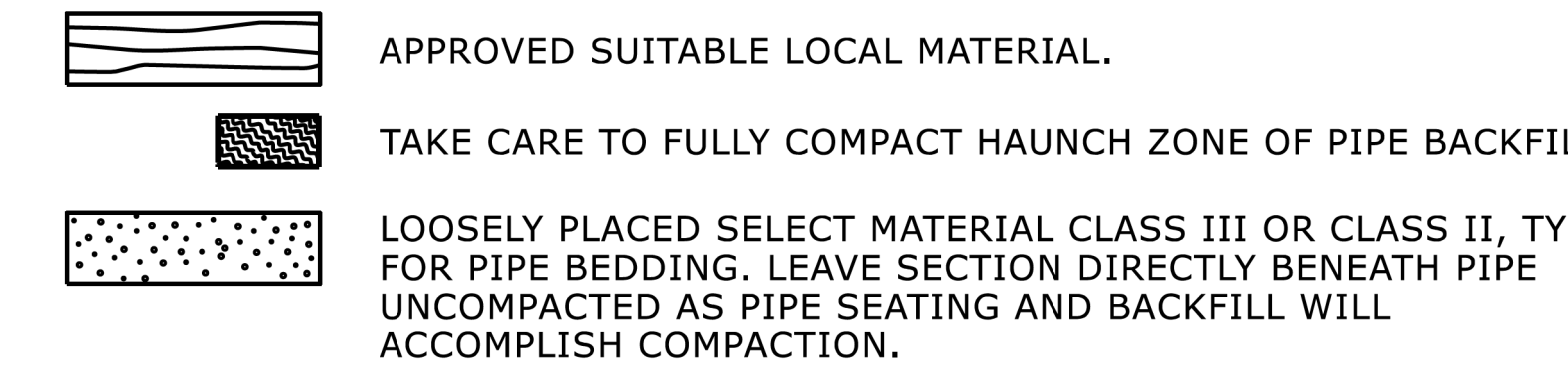
### MISCELLANEOUS:

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



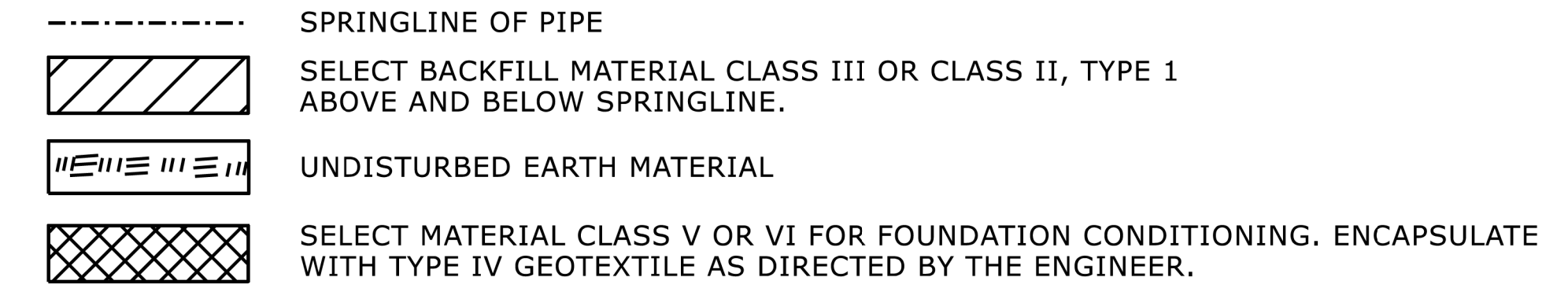


**GENERAL NOTES:**  
 I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.  
 O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.  
 H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.



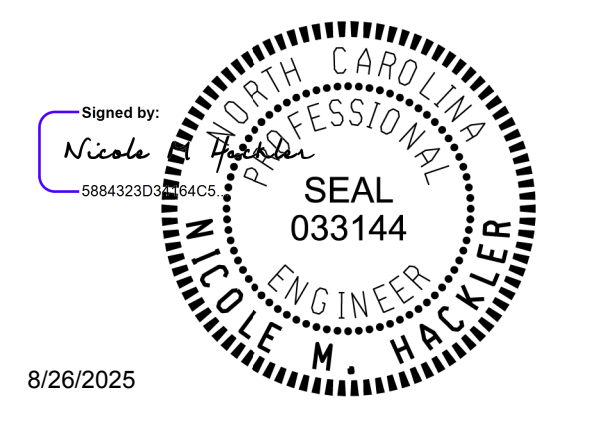
DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

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



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

ROADWAY DETAIL DRAWING FOR  
**METHOD OF PIPE INSTALLATION**  
FLEXIBLE PIPE



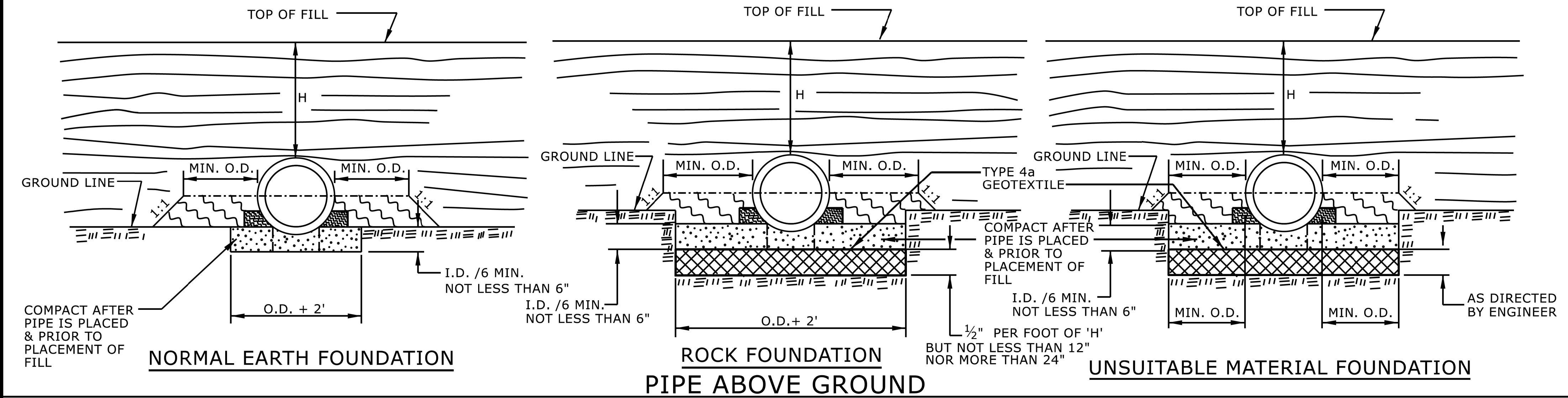
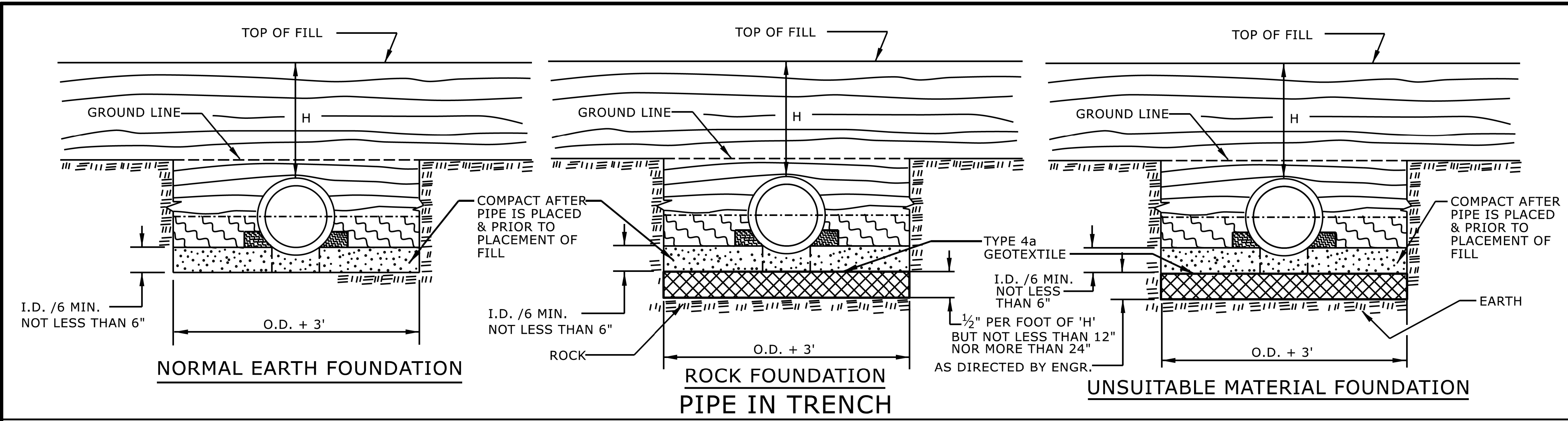
SHEET 1 OF 2  
**300.01**

DOCUMENT NOT CONSIDERED FINAL  
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**CONTRACTS STANDARDS AND DEVELOPMENT UNIT**  
Office 919-707-6950 FAX 919-250-4119

**SEE TITLE BLOCK**

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



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

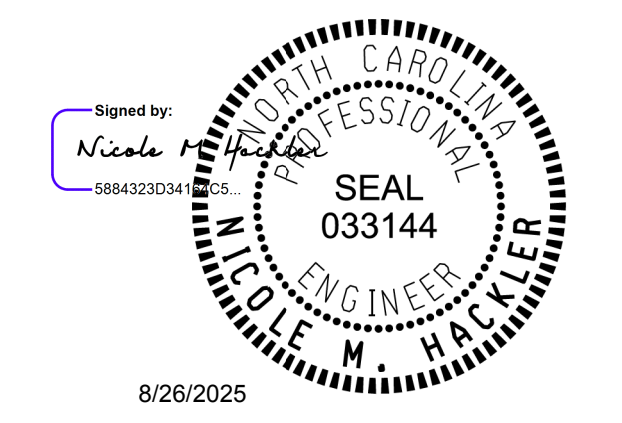
APPROVED SUITABLE LOCAL MATERIAL.  
 TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.  
 LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.  
 REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.

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

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

ROADWAY DETAIL DRAWING FOR  
**METHOD OF PIPE INSTALLATION**  
 RIGID PIPE



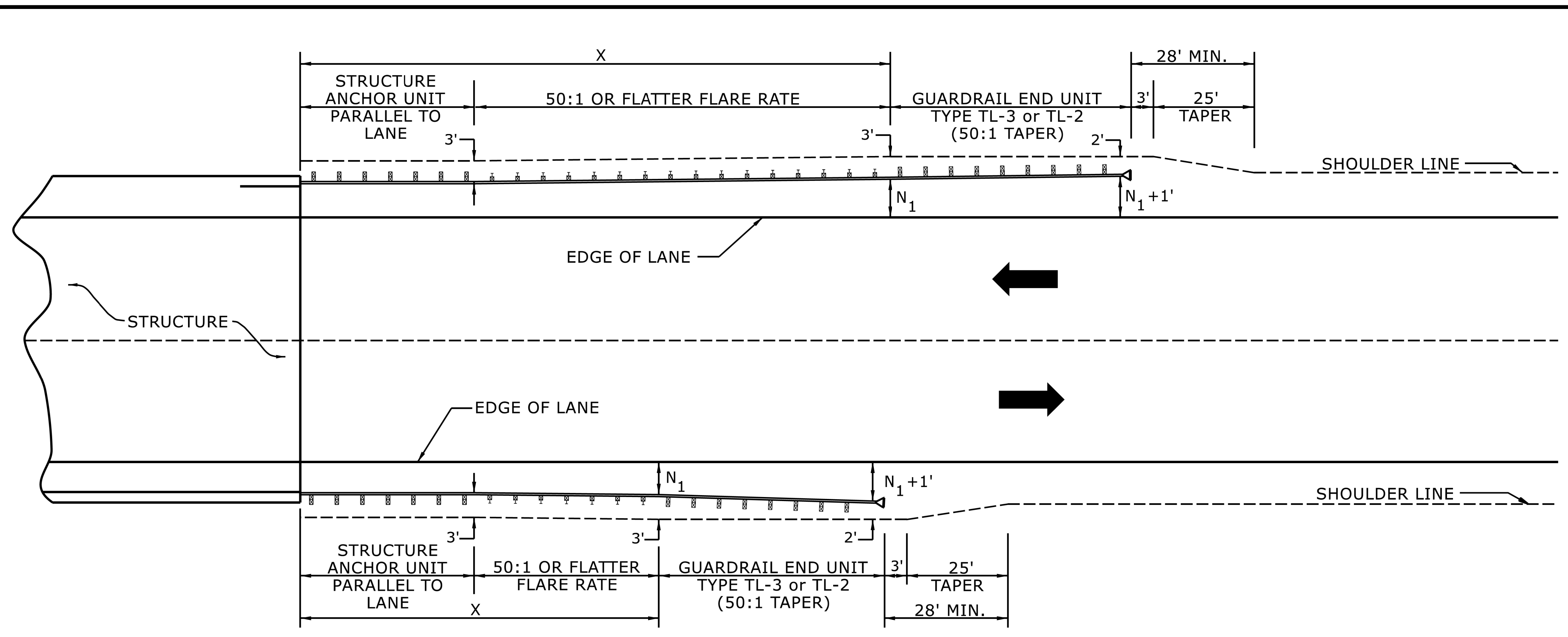
SHEET 2 OF 2  
**300.01**

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 UNLESS ALL SIGNATURES COMPLETED

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

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 CHECKED BY: DATE: \_\_\_\_\_  
 FILE SPEC.: \_\_\_\_\_

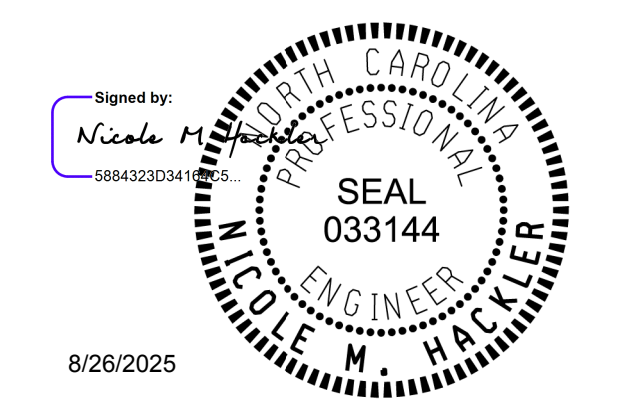


USE FLARE RATE AS THE CONTROL IF THE " $N_1$ " DISTANCE IS NOT OBTAINED.  
 (" $N_1$ " IS BASED ON SHOULDER WIDTHS IN THE ROADWAY DESIGN MANUAL)  
 SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS  
 FOR POSTED SPEEDS  $\geq$  45MPH USE GREU TYPE TL-3  
 FOR POSTED SPEEDS  $<$  45MPH USE GREU TYPE TL-2  
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

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

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

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL PLACEMENT**



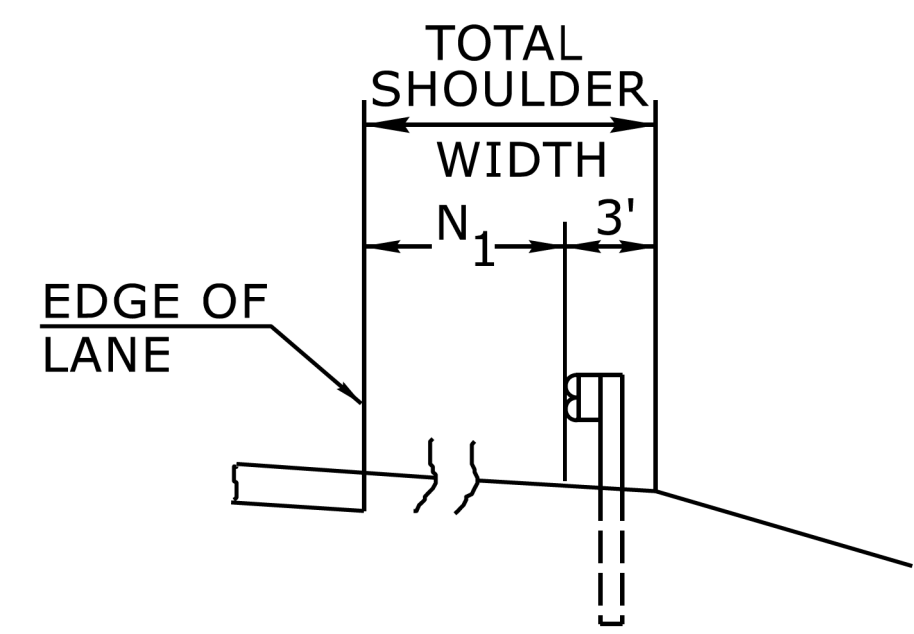
SHEET 4 OF 15  
**862D01**

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

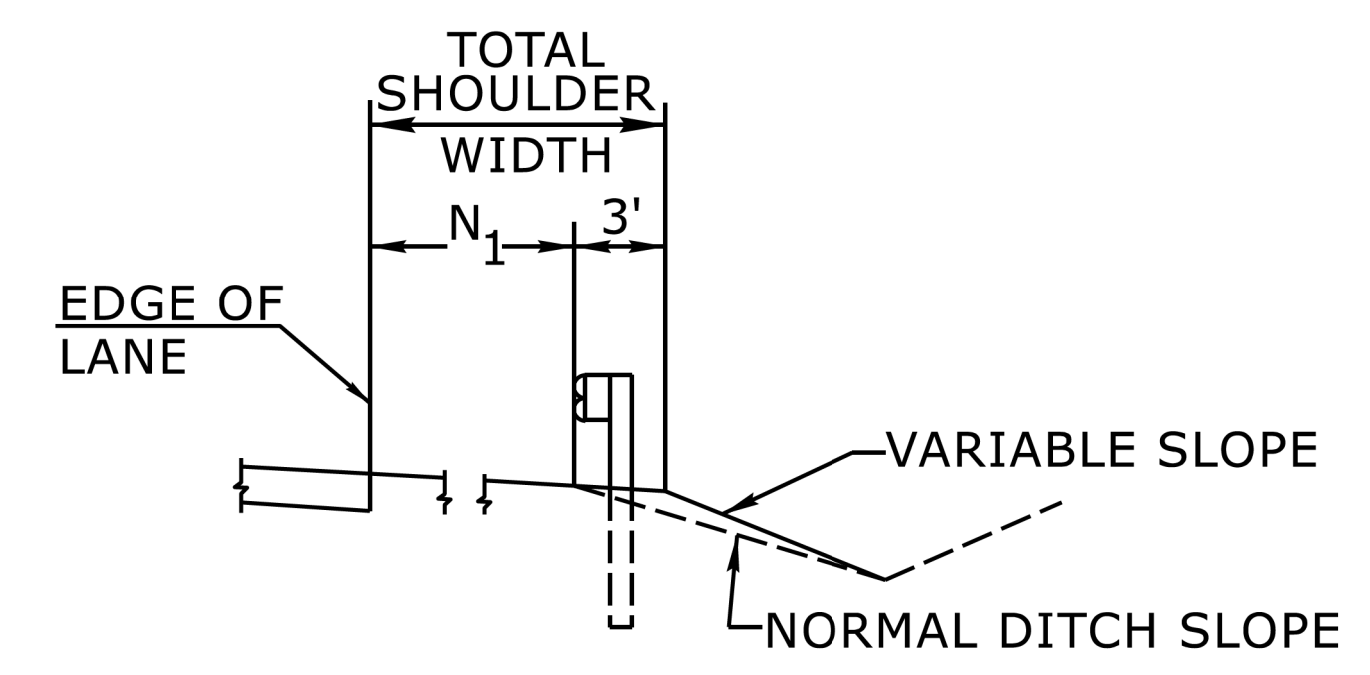
**CONTRACTS STANDARDS  
 AND DEVELOPMENT UNIT**  
 Office 919-707-6950 FAX 919-250-4119

**SEE TITLE BLOCK**

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

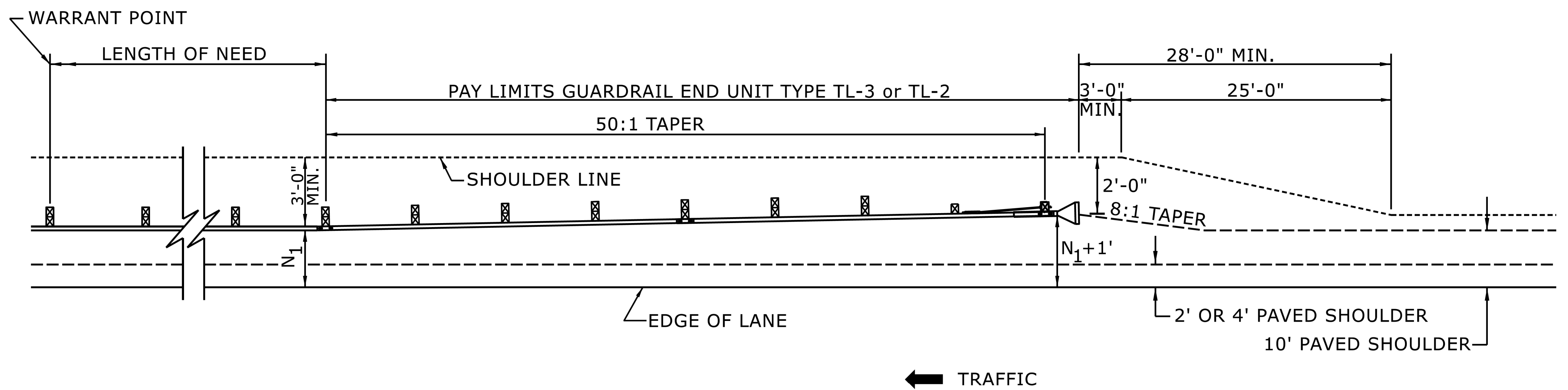


**FILL SECTION**



**CUT SECTION**

"N<sub>1</sub>" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.



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

**DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION**

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

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL PLACEMENT**



8/26/2025

SHEET 6 OF 15  
**862D01**

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

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

**SEE TITLE BLOCK**

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

# SURVEY CONTROL SHEET

*W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION*

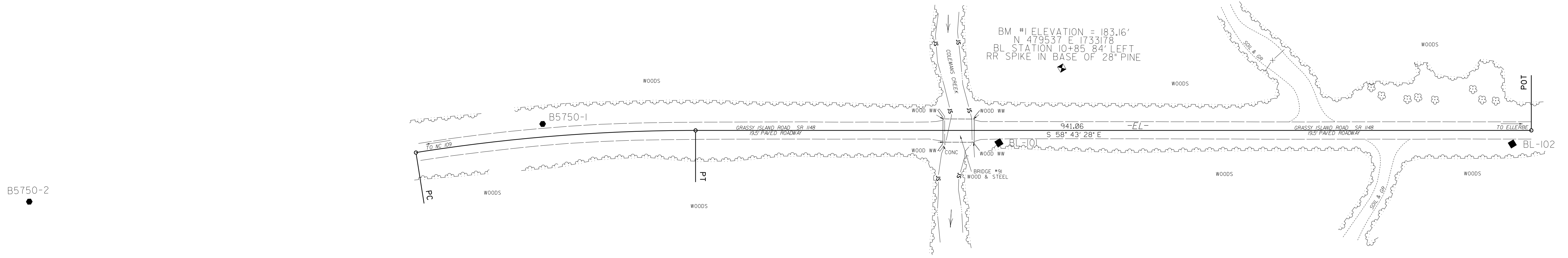
**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5750-2" WITH NAD 83/NSRS 2011 STATE PLANE GRID COORDINATES OF NORTHING: 480012.111(±) EASTING: 1732106.299(±) ELEVATION: 192.756(±±)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998735818

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5750-2" TO -L- STATION IS

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



BL	POINT	DESC.	NORTH	EAST	ELEVATION
1		B5750-1	479786.8200	1732645.8110	190.65
2		B5750-2	480012.1110	1732106.2990	192.76
101		BL - 101	479501.9820	1733073.8630	185.04
102		BL - 102	479200.7370	1733567.2520	186.85

\*\*\*\*\*  
 BM1            ELEVATION = 183.16  
 N 479537       E 1733178  
 RR SIPKE IN BASE OF 28 INCH PINE  
 \*\*\*\*\*

**NOTES:**

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

6/2/19

# PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
BFB.R006	RW02D
Location and Surveys	

L

TYPE	STATION	NORTH	EAST
PC	10+00.00	479833.3788	1732507.1378
PT	13+16.20	479691.2235	1732789.2146
POT	22+57.26	479202.6680	1733593.5210

### 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.

in:\p\191906\res\191906\_r02.dwg  
15:11:11

6/2/19

# RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
BP8.R006	RW02E
Location and Surveys	

## ROW MARKER PERMANENT EASEMENT - E

ALIGN	STATION	OFFSET	NORTH	EAST
L	16+57.00	45.00	479475.8360	1733057.1263
L	16+57.00	30.00	479488.6563	1733064.9136
L	16+83.00	30.00	479475.1582	1733087.1353
L	16+83.00	45.00	479462.3380	1733079.3480

### 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 \_\_\_\_\_ TO \_\_\_\_\_.

inv:\p8\006\res\03e.dgn  
15:51:41 6/2/19



PC0106PHU

COMPUTED BY: RS DATE: 3/16/2022  
CHECKED BY: JRH DATE: 3/16/2022

PROJECT NO. BP8.R006 SHEET NO. 3D-1

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

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

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

Table with columns for Line & Station, Offset, Structure Number, Invert Elevation, Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC), C.S. PIPE, R.C. PIPE CLASS III, R.C. PIPE CLASS IV, Quantities for Drainage Structures, Frame, Grates, and Hood, Grate Type, and Remarks. Includes summary rows for SHEET TOTALS and PROJECT TOTALS.

ABBREVIATIONS table listing materials like CORRUGATED ALUMINIUM ALLOY, CATCH BASIN, CORRUGATED STEEL, DROP INLET, GRATED DROP INLET, HIGH DENSITY POLYETHYLENE, JUNCTION BOX, MANHOLE, NARROW SLOT, POLYVINYL CHLORIDE, REINFORCED CONCRETE, TRAFFIC BEARING DROP INLET, TRAFFIC BEARING JUNCTION BOX, WIDE SLOT.

COMPUTED BY: Joey Daily DATE: 1/24/2022  
 CHECKED BY: Stewart Laney DATE: 1/24/2022

(12-17-19)

PROJECT NO.	SHEET NO.
BP8.R006	3G-1

**STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS**

**SUMMARY OF SUBSURFACE DRAINAGE**

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
	CONTINGENCY			SD	200
				<b>TOTAL LF:</b>	200

\*UD = Underdrain  
 \*BD = Blind Drain  
 \*SD = Subsurface Drain

**SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION**

LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
	CONTINGENCY		ASU	12	100	200	300		
			<b>TOTAL CY/TONS/SY:</b>		100	200**	300**	0	0

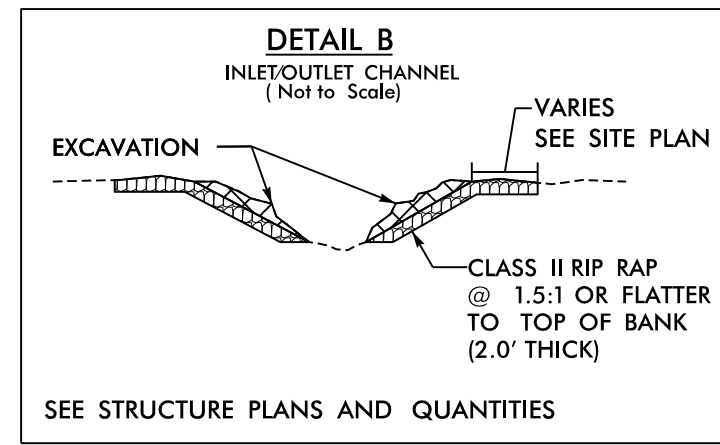
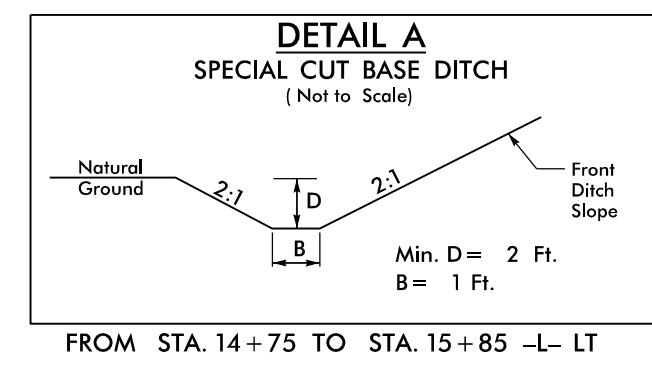
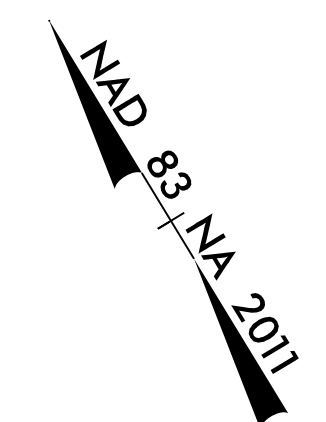
\*ASU(1/2) = Aggregate Subgrade (Type 1 or 2)  
 \*AST = Aggregate Stabilization  
 \*\*Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Soil Stabilization" are only the estimated quantities for ASU(1/2)/AST and may only represent a portion of the subgrade stabilization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

**Dewberry**

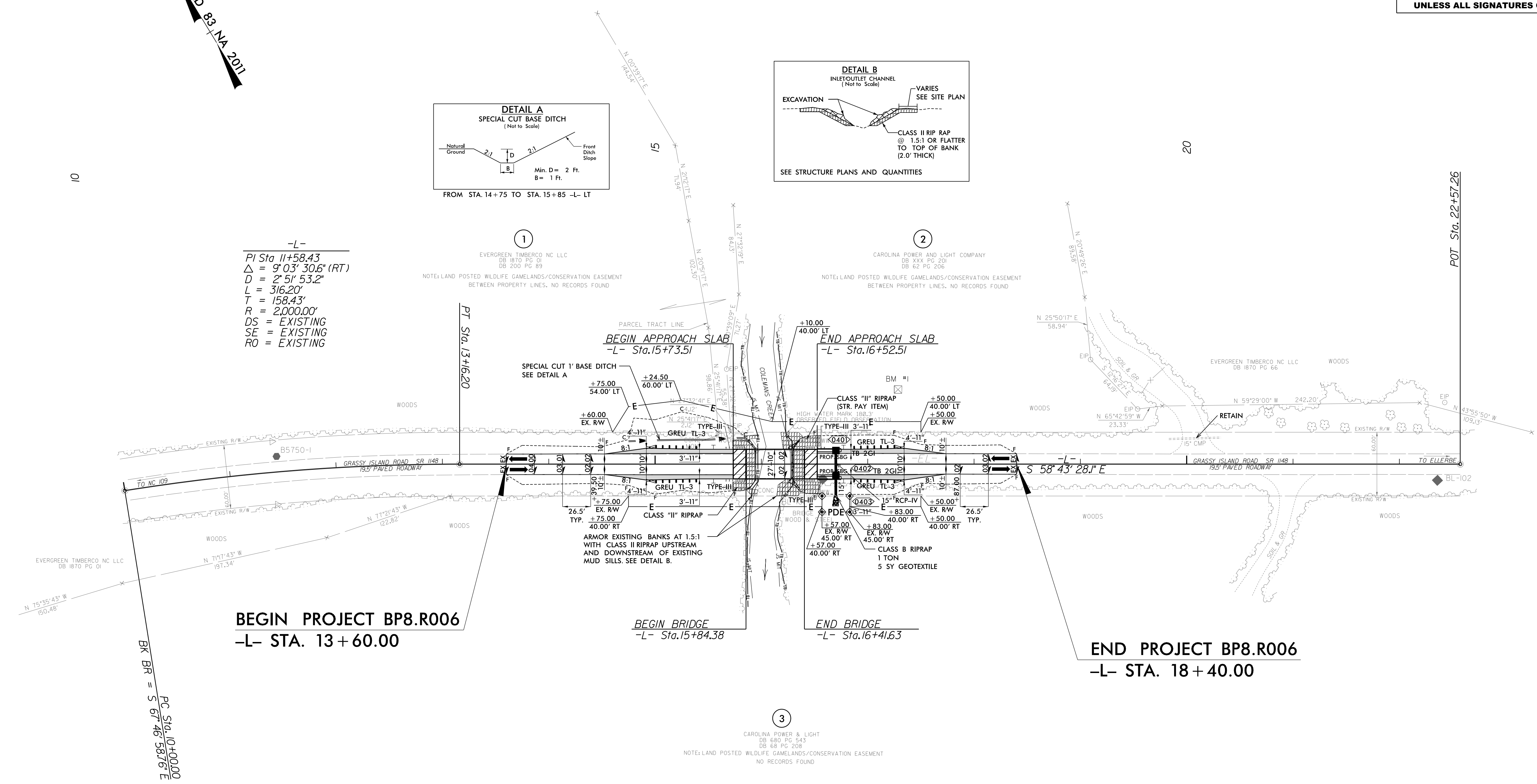
2610 WYCLIFF ROAD  
SUITE 410  
RALEIGH, NC 27607  
PHONE: 773.881.9299  
NC CCA No. F-0929

PROJECT REFERENCE NO. BP8.R006	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
8/26/2025	8/26/2025

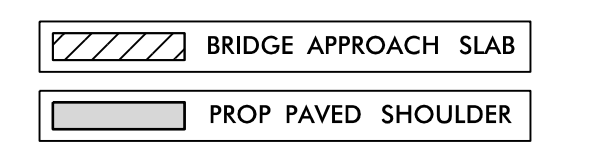
**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**



-L-  
PI Sta 11+58.43  
 $\Delta = 9^{\circ}03'30.6''$  (RT)  
D = 2'51'53.2"  
L = 316.20'  
T = 158.43'  
R = 2,000.00'  
DS = EXISTING  
SE = EXISTING  
RO = EXISTING



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JUSTIN.P.SCHUMER



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

B.17/99



2610 WYCLIFF ROAD  
SUITE 410  
RALEIGH, NC 27607  
PHONE: 772.881.9299  
NC CCR No. F-0629

PROJECT REFERENCE NO. BPB.R006		SHEET NO. 5
RW SHEET NO. ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>		

**BRIDGE HYDRAULIC DATA**

DESIGN DISCHARGE = 920 CFS  
DESIGN FREQUENCY = 25 YRS  
DESIGN HW ELEVATION = 181.0 FT  
BASE DISCHARGE = 1320 CFS  
BASE FREQUENCY = 100 YRS  
BASE HW ELEVATION = 181.8 FT  
OVERTOPPING DISCHARGE = 3800 CFS  
OVERTOPPING FREQUENCY = 500+ YRS  
OVERTOPPING ELEVATION = 185.7 FT

DATE OF SURVEY = 10/13/2021  
W.S. ELEVATION AT DATE OF SURVEY = 173.8 FT

**-L-**

BM #1 ELEVATION = 183.16'  
N 47°55'37" E 173.3178'  
-L- STATION 17+29 TO LEFT  
RR SPIKE IN BASE OF 28" PINE

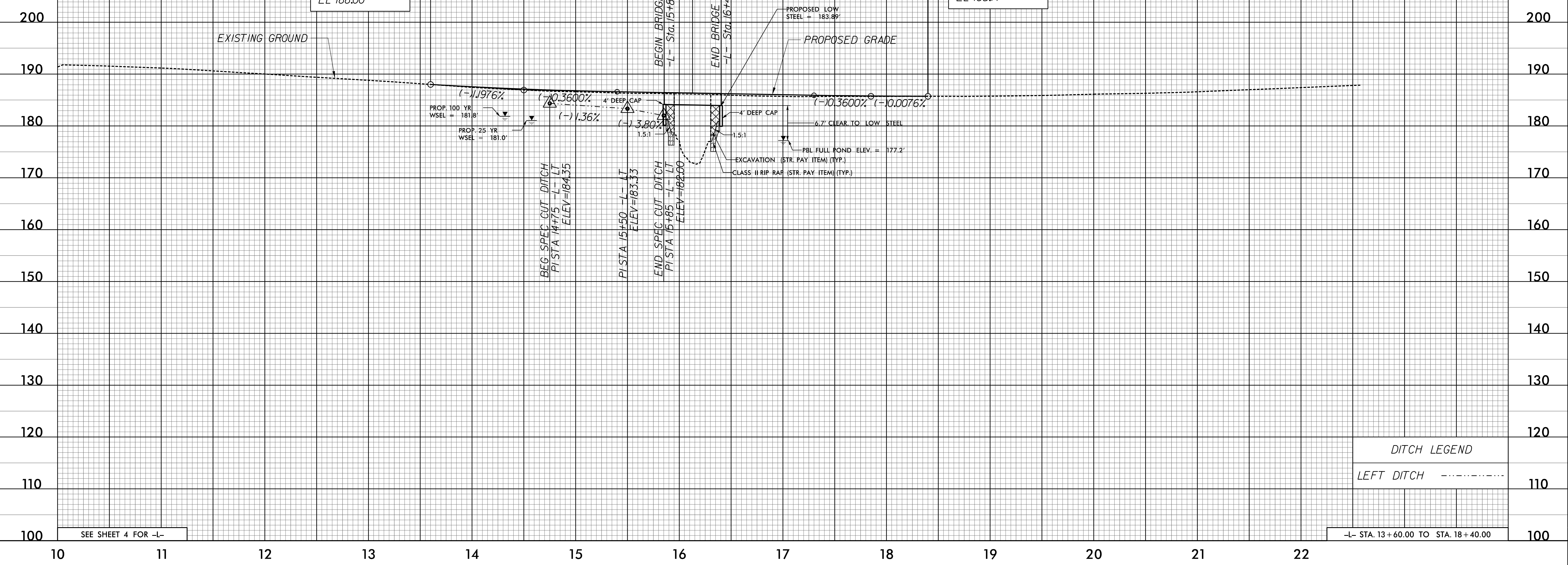
PI = 14+50.00  
EL = 186.92'  
VC = 180'  
K = 215

STA. 16+13 -L-  
1 @ 55' 21" CORED SLAB BRIDGE  
CL G.P. ELEV = 186.29'  
SKEW = 90°

PI = 17+85.00  
EL = 185.72'  
VC = 110'  
K = 312

-L- Sta. 13+60.00  
BEGIN GRADE  
EL 188.00'

-L- Sta. 18+40.00  
END GRADE  
EL 185.71'



DITCH LEGEND  
LEFT DITCH - - - - -

SEE SHEET 4 FOR -L-

-L- STA. 13 + 60.00 TO STA. 18 + 40.00

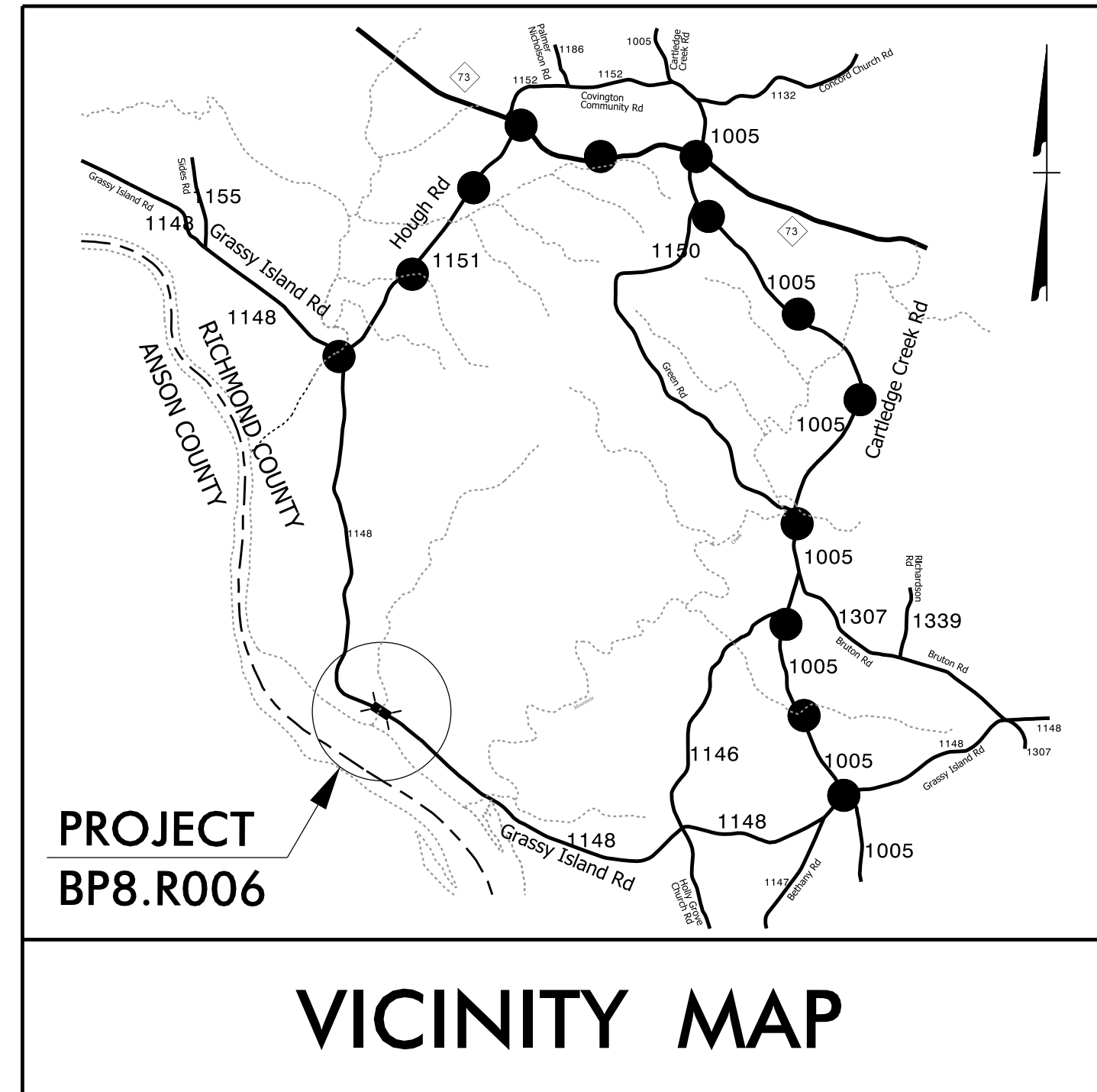
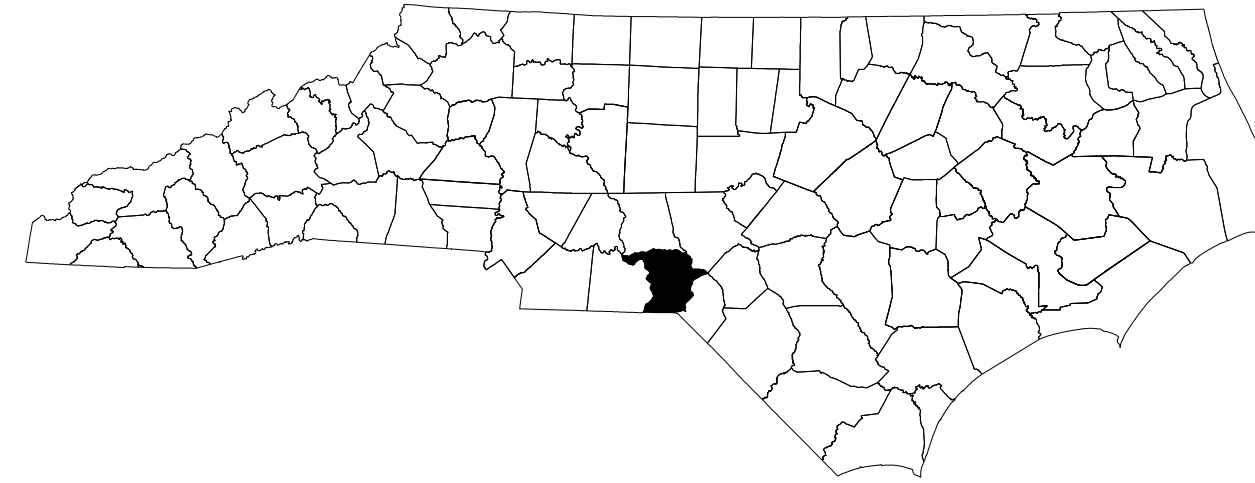
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STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**TRANSPORTATION MANAGEMENT PLAN**

**RICHMOND COUNTY**

LOCATION: BRIDGE NO. 91 ON SR 1148 (GRASSY ISLAND RD)  
OVER COLEMANS CREEK

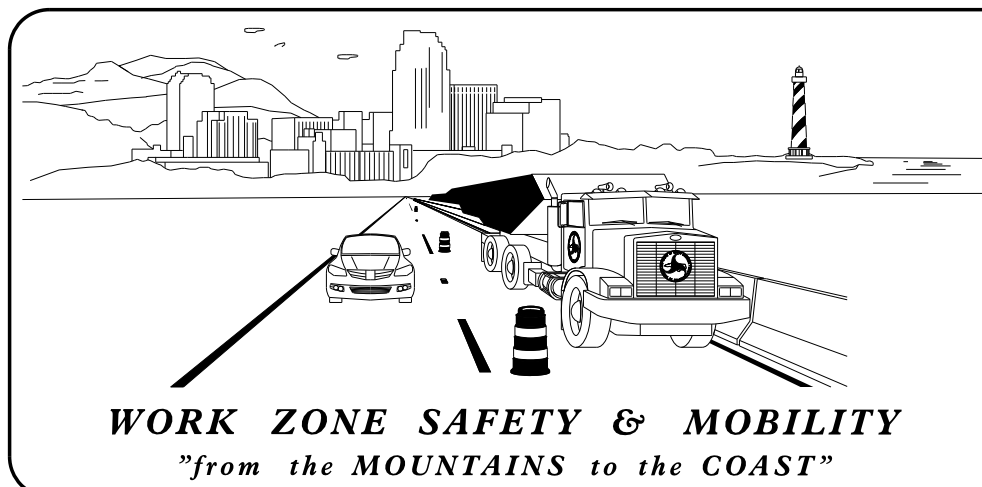


**DETOUR ROUTE** ● ● ● ● ● ●

<b>INDEX OF SHEETS</b>	
SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	ROADWAY STANDARD DRAWINGS & LEGEND
TMP-1B	TRANSPORTATION OPERATIONS PLAN
TMP-2	TEMPORARY SIGN DESIGN
TMP-3	OFF-SITE DETOUR DETAIL
TMP-4	ROAD CLOSURE DETAIL

SHEET NO.  
TMP-1

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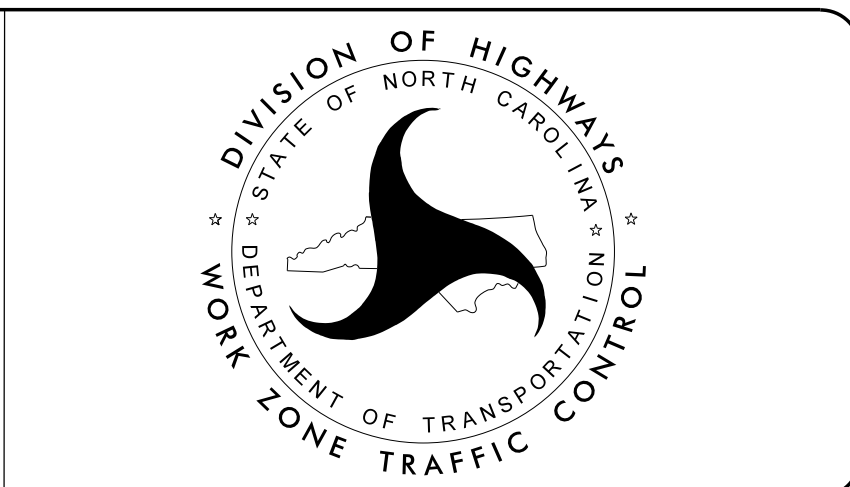
**PLANS PREPARED BY:**

J. TODD BROOKS, PE  
PROJECT ENGINEER

J. ABRAHAM WILES  
PROJECT DESIGN ENGINEER

**NCDOT CONTACTS:**

TIMOTHY F. WELCH, PE  
PROJECT MANAGER



PLAN PREPARED FOR N.C.D.O.T. BY:

**Dewberry**

2610 WYCLIFF ROAD  
SUITE 410  
RALEIGH, NC 27607  
PHONE: 919.881.9939  
NC COA No. F-0929

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UNLESS ALL SIGNATURES COMPLETED

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

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

SEAL

8/27/2025

**PROJECT: BP8R006**

# ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.03	TEMPORARY ROAD CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES - TYPE III

# LEGEND

## GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- TEMP. SHORING (LOCATION PURPOSES ONLY)
- WORK AREA
- REMOVAL

## SIGNALS

- EXISTING
- PROPOSED

## PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

## 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

## PAVEMENT MARKERS

- CRYSTAL/CRYSTAL
- CRYSTAL/RED
- YELLOW/YELLOW


## PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

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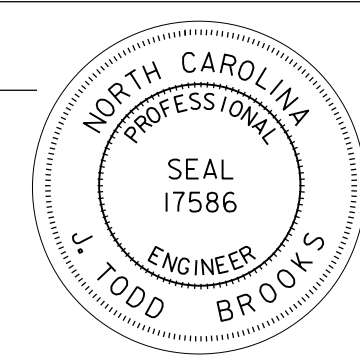
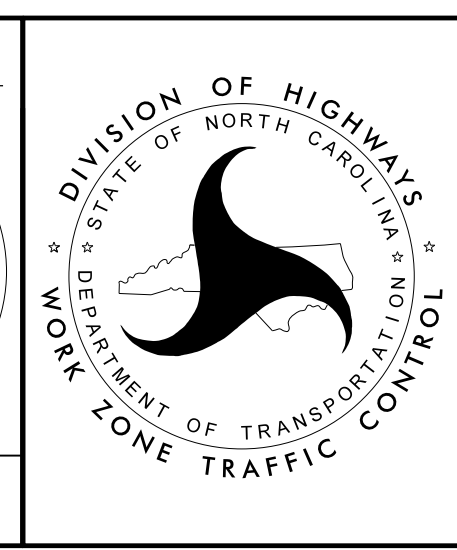


2610 WYCLIFF ROAD  
 SUITE 410  
 RALEIGH, NC 27607  
 PHONE: 919.881.9939  
 NC COA No. F-0929

APPROVED:   
Signed by: J. Todd Brooks  
 0136C848C9884EA

DATE: 8/27/2025

SEAL

ROADWAY STANDARD  
 DRAWINGS & LEGEND

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

## MANAGEMENT STRATEGIES

- CLOSE SR 1148 (GRASSY ISLAND ROAD) AND DETOUR TRAFFIC OFF-SITE
- LOCAL ACCESS TO ALL RESIDENCES AND BUSINESSES WILL BE MAINTAINED BETWEEN CLOSURE POINTS AT ALL TIMES DURING CONSTRUCTION
- PROVIDE THIRTY (30) CALENDAR DAYS NOTICE TO THE ENGINEER, RICHMOND COUNTY EMERGENCY SERVICES, AND RICHMOND COUNTY SCHOOL OFFICIALS PRIOR TO ROAD CLOSURE

## 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 THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

### SIGNING

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

PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR AS SHOWN IN THE TRAFFIC CONTROL PLANS

- C) COVER AND 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 ROAD CLOSURE IS NOT IN OPERATION.

- D) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERNS.

### TRAFFIC CONTROL DEVICES

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

### BOATER SAFETY PLAN

- F) PROVIDE SIGNING DOWNSTREAM OF THE BRIDGE PROJECT TO INFORM BOATERS OF IMPACTS TO WATERWAY ACCESS. SIGNAGE MUST BE DISPLAYED FOR A MINIMUM OF TWO (2) WEEKS PRIOR TO START OF CONSTRUCTION, INCLUDING DEMOLITION OF THE EXISTING BRIDGE. SIGNAGE SHALL INCLUDE INFORMATION ABOUT THE PROJECT, CONTRACTOR, AND APPLICABLE POSTAL ADDRESSES AND TELEPHONE NUMBERS TO ACCOMMODATE WRITTEN AND VERBAL INQUIRIES, REPORTS OF DAMAGE, REPORTS OF CONCERN, AND GENERAL COMMENTS. THE SIGN DESIGN SHALL BE SUBMITTED TO NCDOT FOR REVIEW AND APPROVAL PRIOR TO FABRICATION AND PLACEMENT.

## PHASING

- STEP 1: USING RSD 1101.03 SHEET 1 OF 9, CLOSE GRASSY ISLAND ROAD (SR 1148) AND DETOUR TRAFFIC OFF-SITE AS SHOWN ON TMP-3. MAINTAIN ACCESS TO ALL RESIDENCES AND BUSINESSES BETWEEN CLOSURE POINTS.
- STEP 2: REMOVE THE EXISTING STRUCTURE AND CONSTRUCT THE PROPOSED STRUCTURE AND ROADWAY.
- STEP 3: PLACE FINAL PAVEMENT MARKINGS ACCORDING TO THE PAVEMENT MARKING PLANS.
- STEP 4: OPEN GRASSY ISLAND ROAD (SR 1148) TO TRAFFIC AND REMOVE ALL WORK ZONE TRAFFIC CONTROL DEVICES.

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2610 WYCLIFF ROAD  
 SUITE 410  
 RALEIGH, NC 27607  
 PHONE: 919.881.9939  
 NC COA No. F-0929

APPROVED: DATE: 8/27/2025  <div style="text-align: center;">                       SEAL                 </div>	 DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL	<h3>TRANSPORTATION OPERATIONS PLAN</h3>
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>		

<b>SIGN NUMBER:</b> T400 <b>TYPE:</b> E <b>QUANTITY:</b> 14 <b>SIGN WIDTH:</b> 2'-6" <b>HEIGHT:</b> 2'-6" <b>TOTAL AREA:</b> 6.3 Sq.Ft. <b>BORDER TYPE:</b> RECESSED <b>RECESS:</b> 0.47" <b>WIDTH:</b> 0.63" <b>RADII:</b> 1.5" <b>NO. Z BARS:</b> <b>LENGTH:</b>	<b>BACKG COLOR:</b> Orange <b>COPY COLOR:</b> Black <table border="1"> <tr> <th>SYMBOL</th> <th>X</th> <th>Y</th> <th>WID</th> <th>HT</th> </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> </table> <b>MAT'L:</b> 0.063" (1.6 mm) ALUMINUM	SYMBOL	X	Y	WID	HT																																														<b>DESIGN BY:</b> M. ISHAK <b>PROJECT ID:</b> BP8R006 <b>CHECKED BY:</b> T. BROOKS <b>LOCATION:</b> RICHMOND COUNTY <b>Aug 27, 2021</b> <b>DIV:</b> 8
SYMBOL	X	Y	WID	HT																																																

**USE NOTES:**

- Legend and border shall be non-reflective black
- Background shall be Grade B reflective sheeting.

BORDER R=1.5"  
 TH=0.63"  
 IN=0.47"

Panel Style: construction\_guide.ssi  
 M.U.T.C.D.: 2009 Edition

Spacing Factor is 1 unless specified otherwise

**LETTER POSITIONS**

**Letter spacings are to start of next letter**

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		I	S	L	A	N	D															C 2000 18.7
		R	O	A	D																	C 2000 13.8
	8.1	3.5	3.5	3.9	2.8	8.1																

FILENAME: \_\_\_\_\_ NORTH CAROLINA D.O.T. SIGN DETAIL

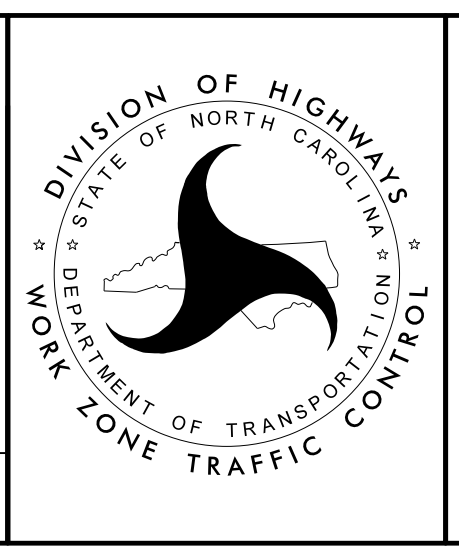
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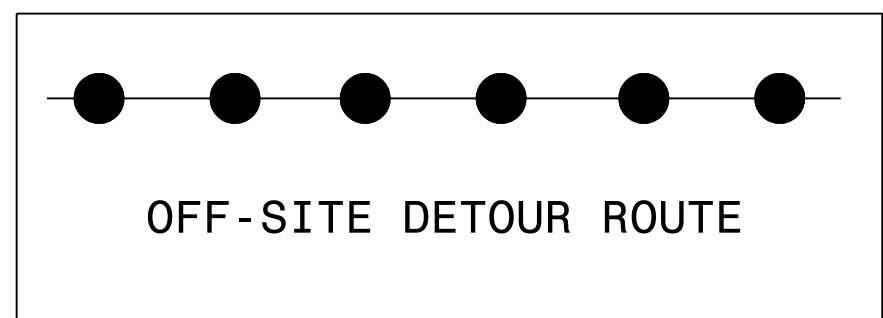
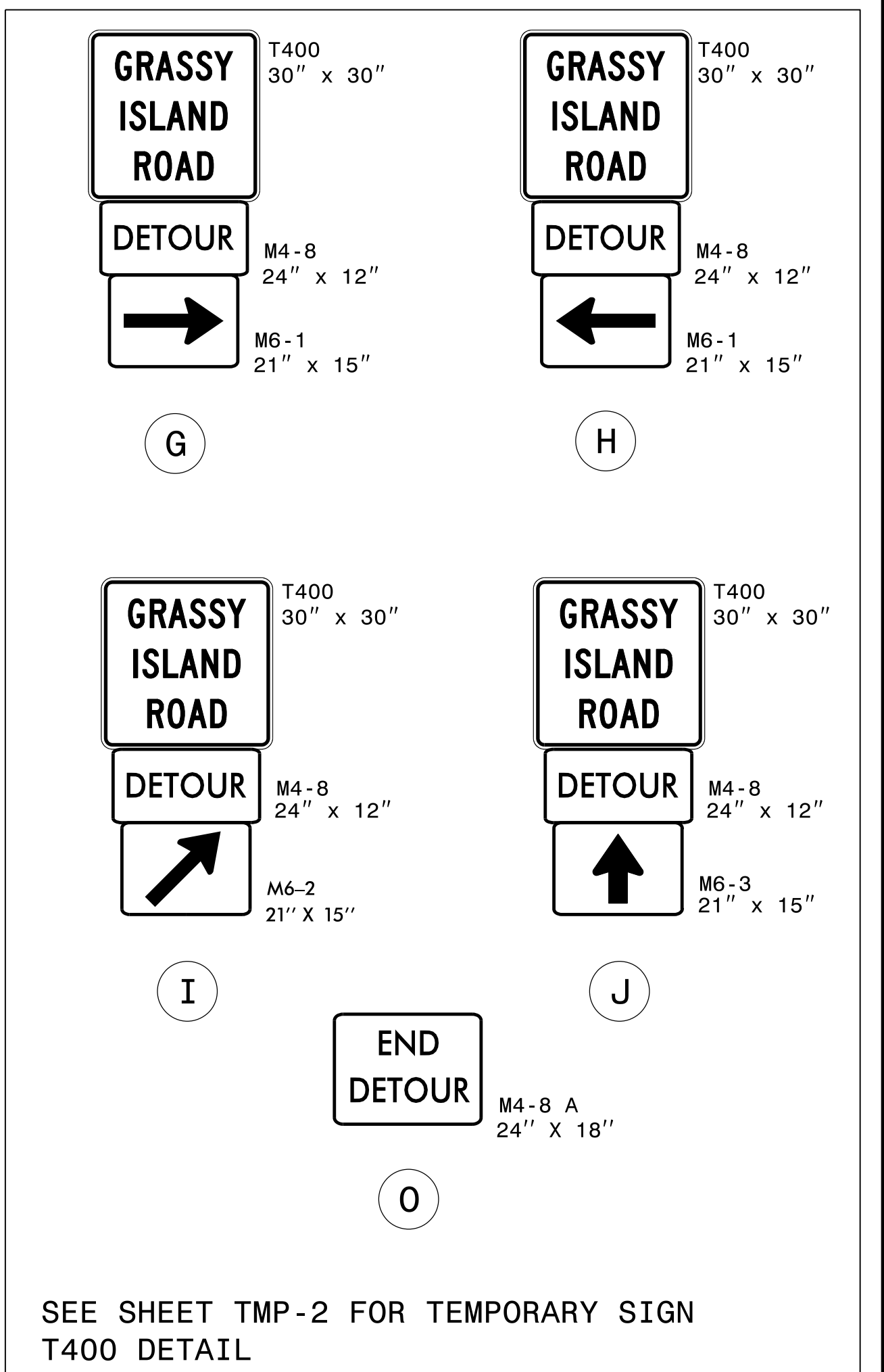
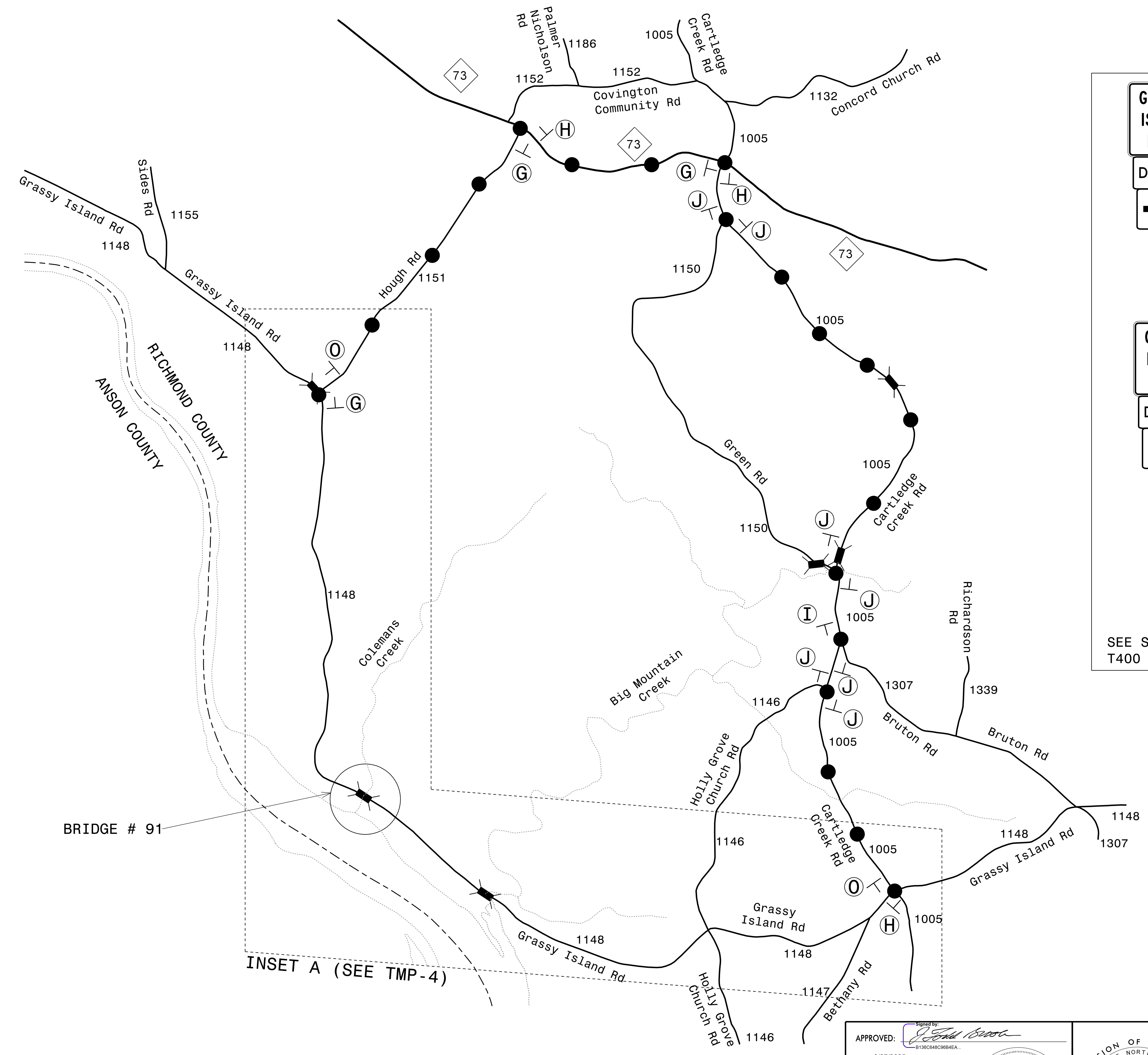
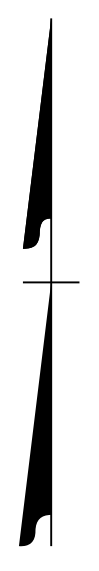
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 DATE: 8/27/2025

SEAL

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**TEMPORARY  
 SIGN DESIGNS**




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BRIDGE # 91

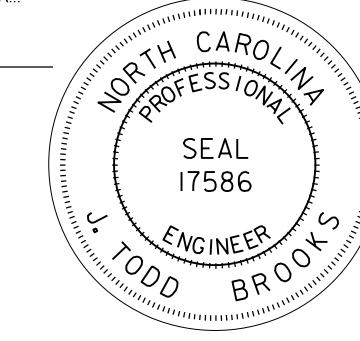
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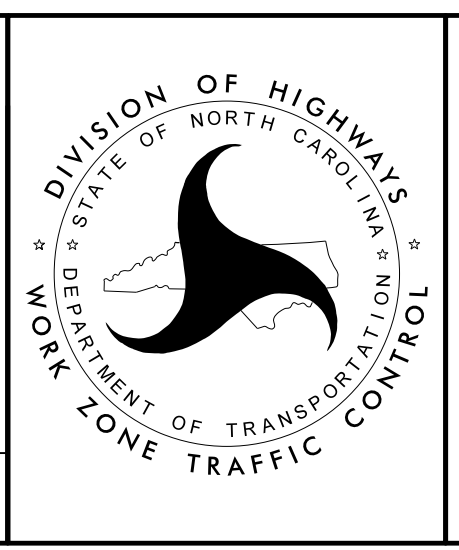
2610 WYCLIFF ROAD  
 SUITE 410  
 RALEIGH, NC 27607  
 PHONE: 919.881.9939  
 NC COA No. F-0929

APPROVED:   
 DATE: 8/27/2025

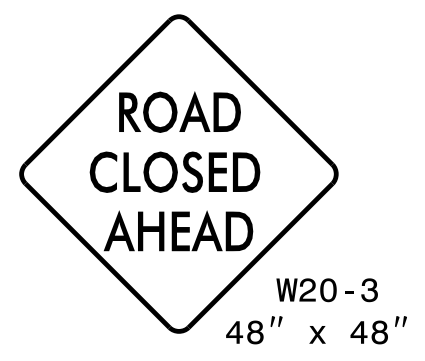
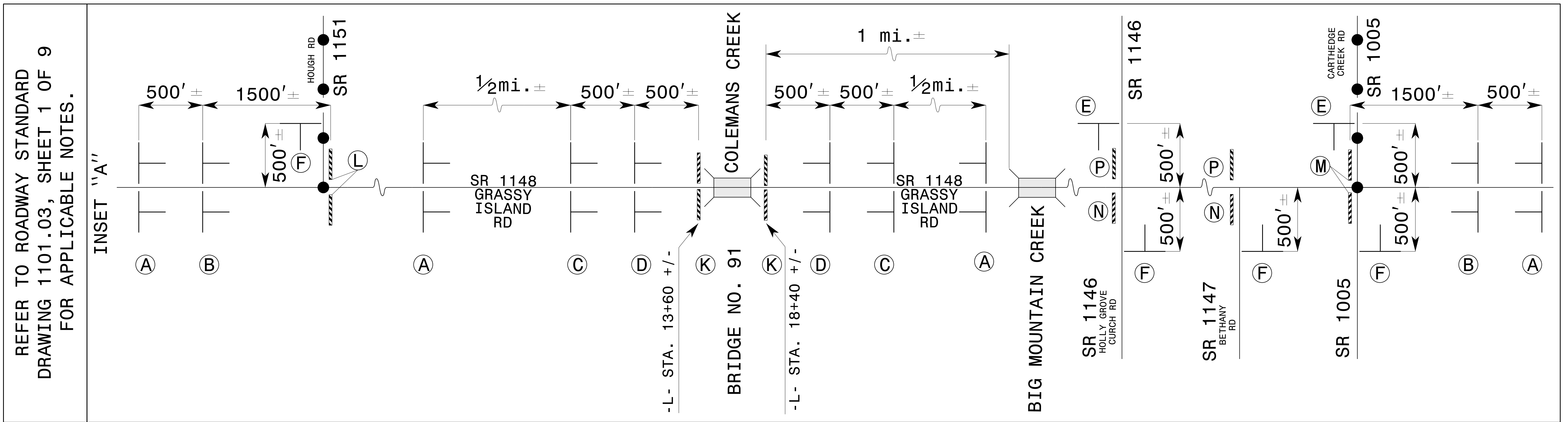
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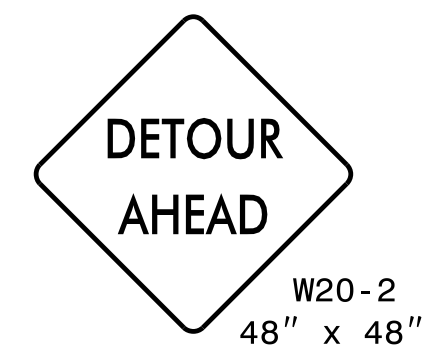
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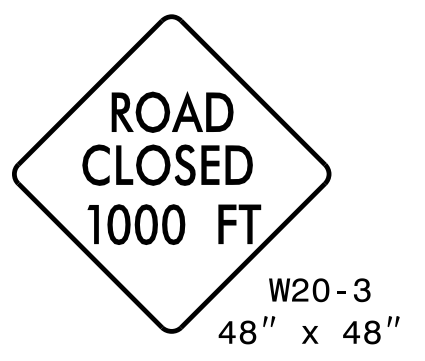
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 DETAIL



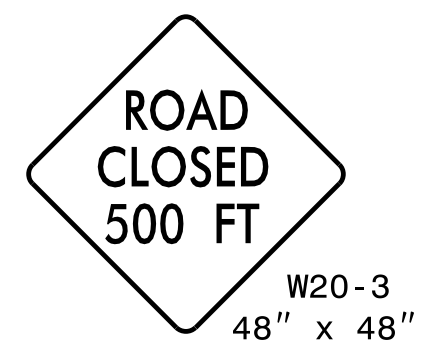
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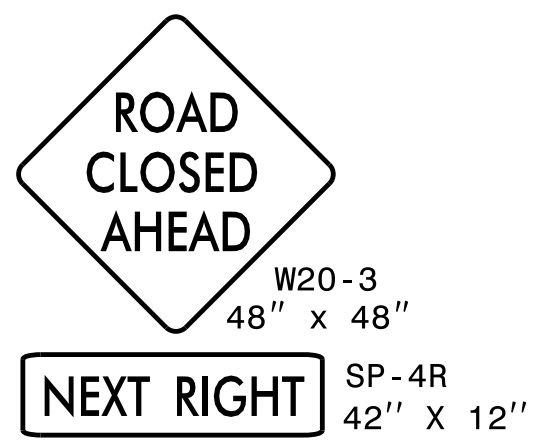
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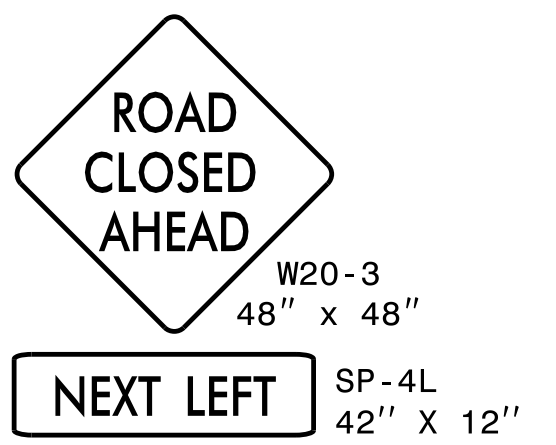
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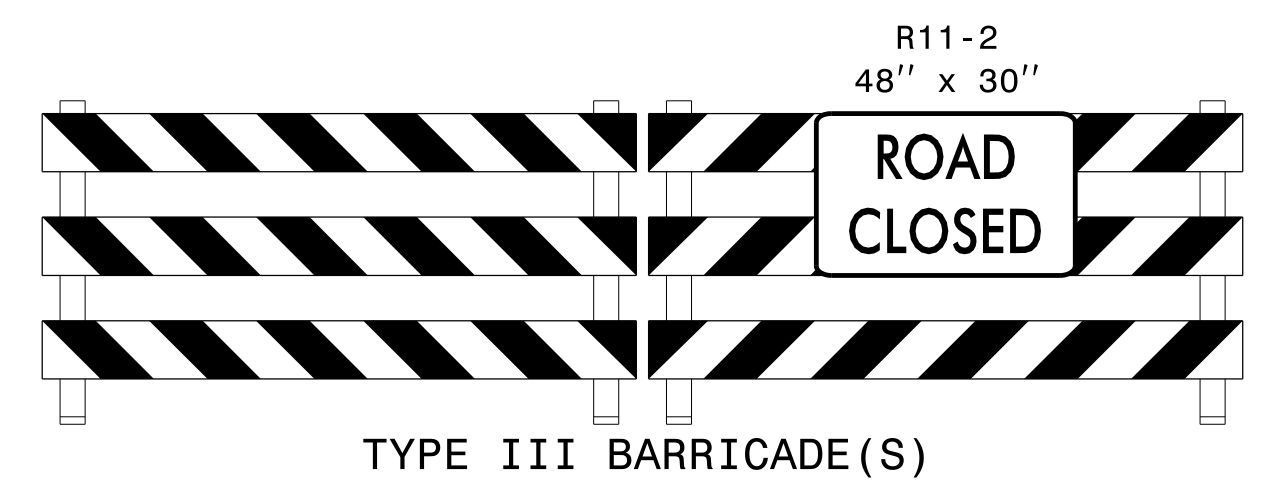
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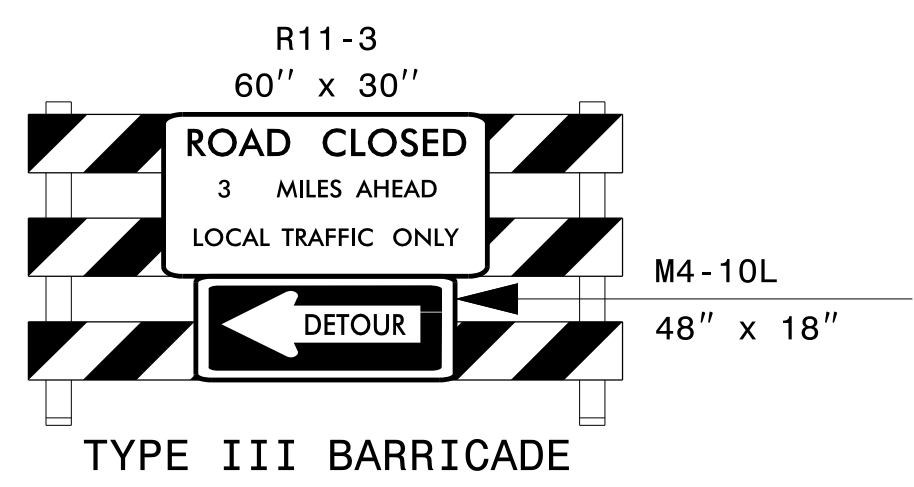
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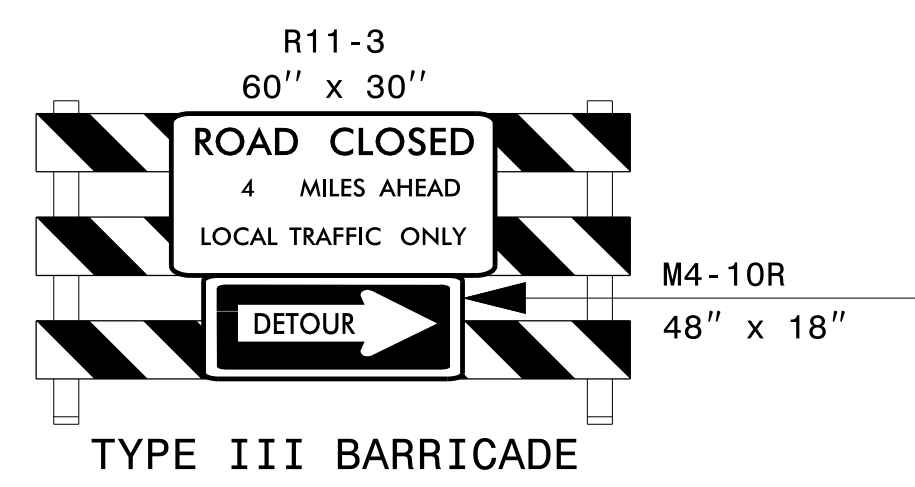
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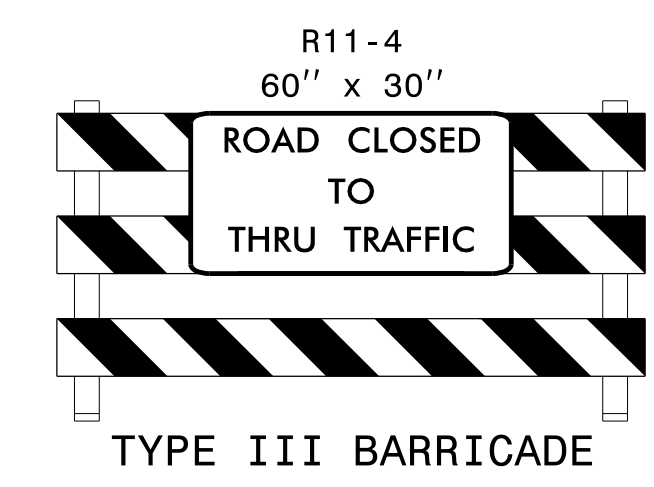
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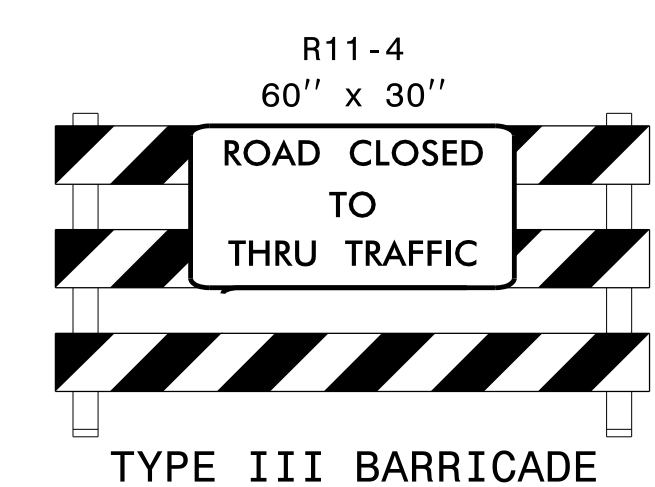
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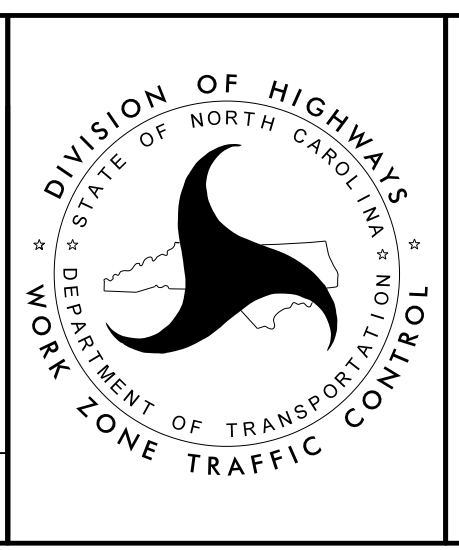
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APPROVED:

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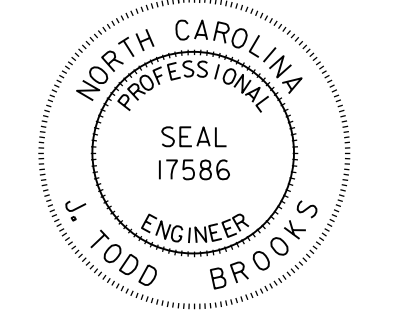
SEAL

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ROAD CLOSURE  
DETAIL

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

TIP NO. BP8.R006	SHEET NO. PMP - 1
APPROVED: <i>J. Todd Brooks</i> <small>0130048C9B54EA</small>	
DATE: 8/27/2025	
SEAL 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

SIGNING & PAVEMENT MARKING PLAN  
RICHMOND COUNTY

SIGNING  
GENERAL NOTES

ALL EXISTING SIGNS ON "U" CHANNEL POST WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND DISPOSED OF UNLESS OTHERWISE NOTED ON PLANS.

SIGNING SUMMARY OF QUANTITIES

ITEM NO.	ITEM DESCRIPTION		QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	6	EA.

SIGNING PAY ITEM NOTES

- DISPOSAL OF SIGN SYSTEM, U-CHANNEL

INDEX

SHEET NO.	DESCRIPTION
PMP-1	SIGNING & PAVEMENT MARKING PLAN TITLE, GENERAL NOTES, SIGNING SUMMARY OF QUANTITIES, SIGNING PAY ITEMS, ROADWAY STANDARD DRAWINGS, PAVEMENT MARKING SCHEDULE AND INDEX OF SHEETS
PMP-2	EXISTING SIGNING AND PROPOSED PAVEMENT MARKING DETAILS

PAVEMENT MARKING  
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.

- INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:
 

ROAD NAME	MARKING	MARKER
SR 1148 (GRASSY ISLAND RD)	THERMOPLASTIC	NONE
- TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.
- REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.

ROADWAY STANDARD DRAWINGS

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

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

PAVEMENT MARKING SCHEDULE

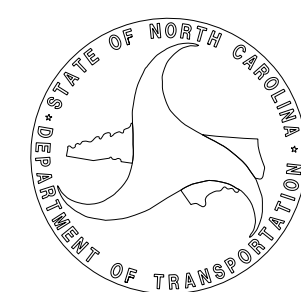
	PAVEMENT MARKING LINES
T1	WHITE SOLID EDGELINE THERMOPLASTIC (4") (90 MILS)
T11	YELLOW SINGLE CENTER LINE THERMOPLASTIC (4") (90 MILS)
T12	10' YELLOW SKIP THERMOPLASTIC (4") (90 MILS)
T13	YELLOW DOUBLE CENTER LINE THERMOPLASTIC (4") (90 MILS)

T.I.P.: BP8.R006

CONTRACT: DH00548

PLAN SUBMITTED TO:

MITCH EATON, PE SIGNING & DELINEATION REGIONAL ENGINEER  
PERI E. AKOZER SIGNING & DELINEATION PROJECT DESIGN ENGINEER

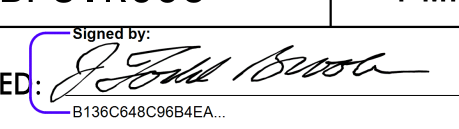
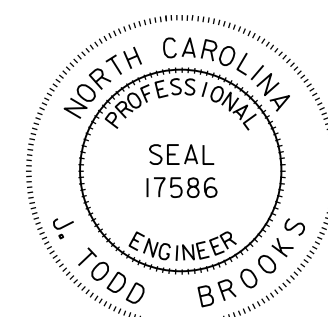


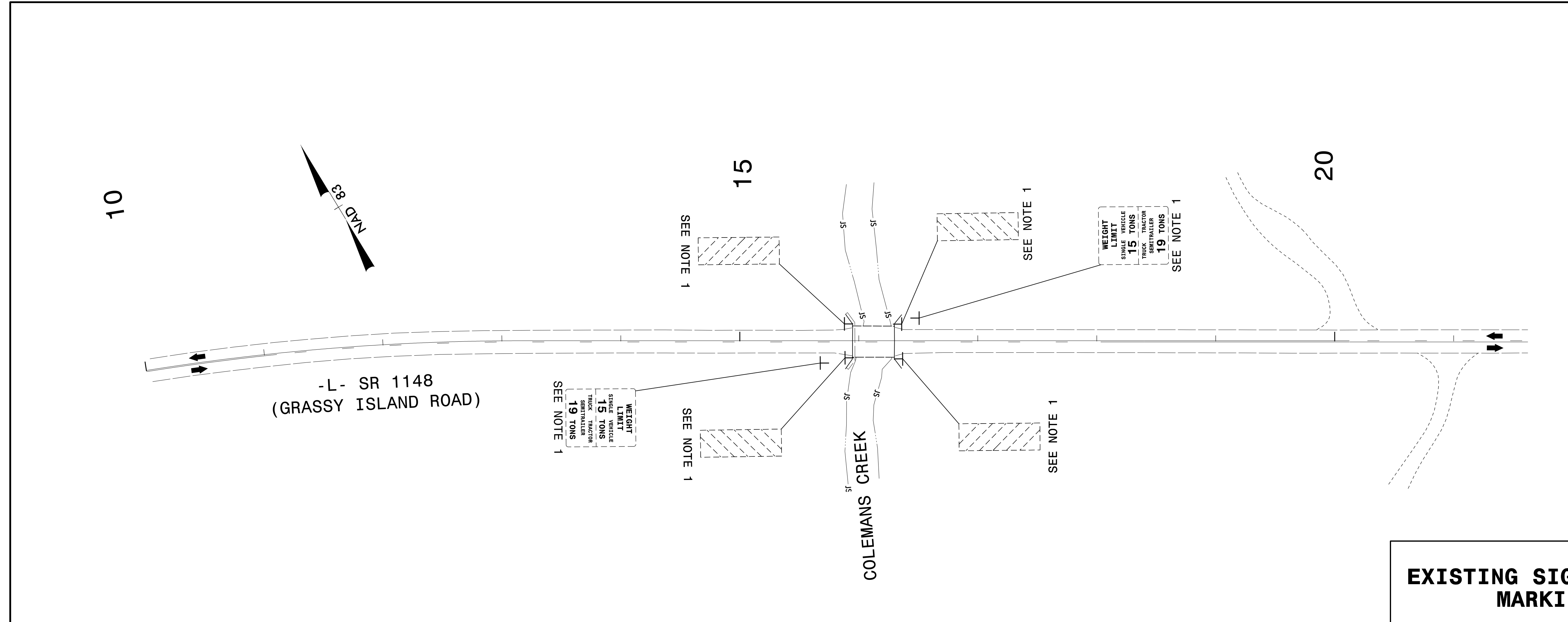
PLAN PREPARED BY: DEWBERRY ENGINEERS, INC

J. TODD BROOKS, PE PROJECT ENGINEER  
ABRAHAM WILES PROJECT DESIGN ENGINEER

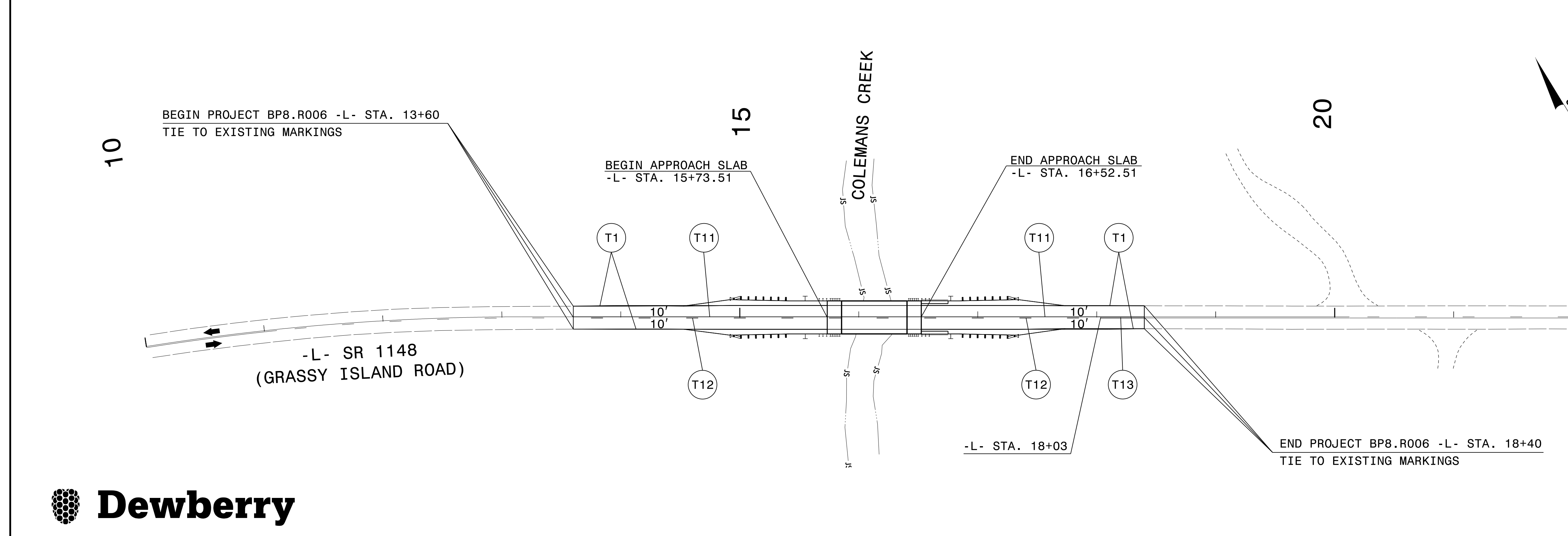


2610 WYCLIFF ROAD  
 SUITE 410  
 RALEIGH, NC 27607  
 PHONE: 919-881-9939  
 NC COA No. F-0929

TIP NO. BP8.R006	SHEET NO. PMP-2
APPROVED: 	
DATE: 8/27/2025	
SEAL 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



**EXISTING SIGNING & PAVEMENT MARKING DETAIL**



**PROPOSED SIGNING & PAVEMENT MARKING DETAIL**

Invalid expression  
...Plans\BP8R006\_SIGN\_SIGN\_2.dgn  
USER: jwiles



2610 WYCLIFF ROAD  
SUITE 410  
RALEIGH, NC 27607  
PHONE: 919-881-9939  
NC COA No. F-0929



# DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. <b>BP8.R006</b>	SHEET NO. <b>EC-02</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

## EROSION & SEDIMENT CONTROL LEGEND

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

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. <i>BP8.R006</i>	SHEET NO. <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 TO 4:1	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH WITH SLOPES STEEPER THAN 4:1. 7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES

8/17/2025

**Dewberry**  
 2610 WYCLIFF ROAD  
 SUITE 410  
 RALEIGH, NC 27607  
 PHONE: 919.883.9200  
 NC CCA No. F-0929

PROJECT REFERENCE NO. BP8.R006	SHEET NO. EC-4/CONST.4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<i>[Signature]</i> SEAL 050342	<i>[Signature]</i> SEAL 028933
8/26/2025	8/26/2025

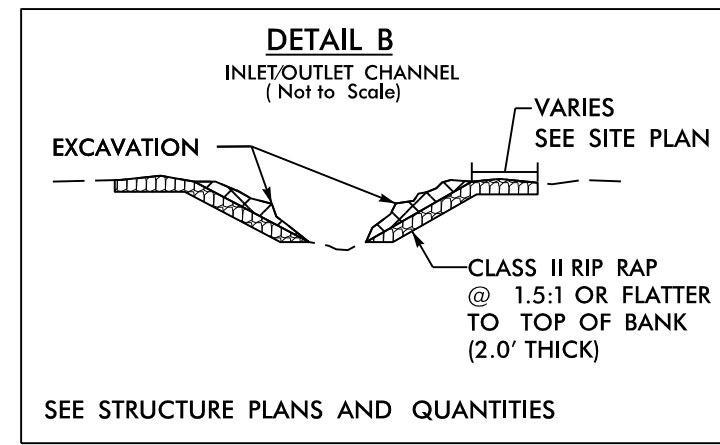
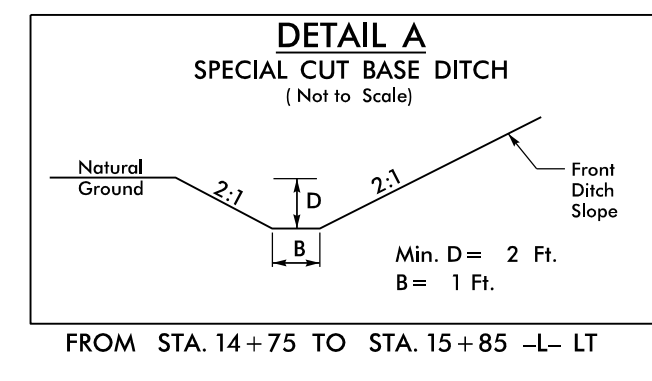
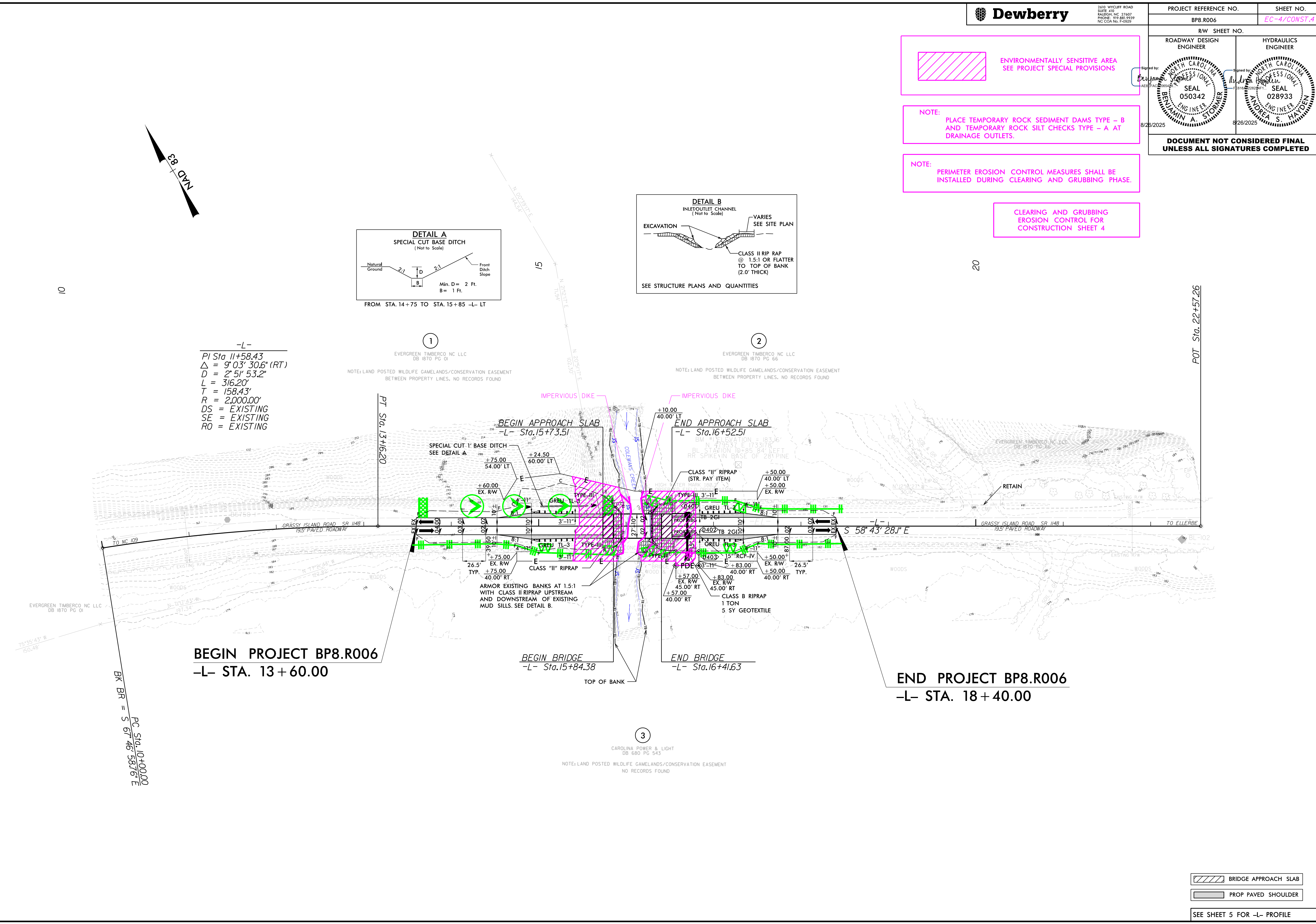
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

**ENVIRONMENTALLY SENSITIVE AREA**  
 SEE PROJECT SPECIAL PROVISIONS

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

**NOTE:**  
 PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.

**CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4**



-L-  
 PI Sta 11+58.43  
 $\Delta = 9^{\circ}03'30.6''$  (RT)  
 $D = 2^{\circ}51'53.2''$   
 $L = 316.20'$   
 $T = 158.43'$   
 $R = 2,000.00'$   
 $DS = EXISTING$   
 $SE = EXISTING$   
 $RO = EXISTING$

1  
 EVERGREEN TIMBERCO NC LLC  
 DB 1870 PG 01  
 NOTE: LAND POSTED WILDLIFE GAMLANDS/CONSERVATION EASEMENT BETWEEN PROPERTY LINES. NO RECORDS FOUND

2  
 EVERGREEN TIMBERCO NC LLC  
 DB 1870 PG 66  
 NOTE: LAND POSTED WILDLIFE GAMLANDS/CONSERVATION EASEMENT BETWEEN PROPERTY LINES. NO RECORDS FOUND

IMPervIOUS DIKE  
 BEGIN APPROACH SLAB -L- Sta. 15+73.51  
 END APPROACH SLAB -L- Sta. 16+52.51

**BEGIN PROJECT BP8.R006**  
 -L- STA. 13+60.00

BEGIN BRIDGE  
 -L- Sta. 15+84.38

END BRIDGE  
 -L- Sta. 16+41.63

**END PROJECT BP8.R006**  
 -L- STA. 18+40.00

3  
 CAROLINA POWER & LIGHT  
 DB 680 PG 543  
 NOTE: LAND POSTED WILDLIFE GAMLANDS/CONSERVATION EASEMENT NO RECORDS FOUND

BRIDGE APPROACH SLAB  
 PROP PAVED SHOULDER

SEE SHEET 5 FOR -L- PROFILE

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**Dewberry**  
 2610 WYCLIFF ROAD  
 SUITE 410  
 RALEIGH, NC 27607  
 PHONE: 773.883.9209  
 NC CCR No. F-0929

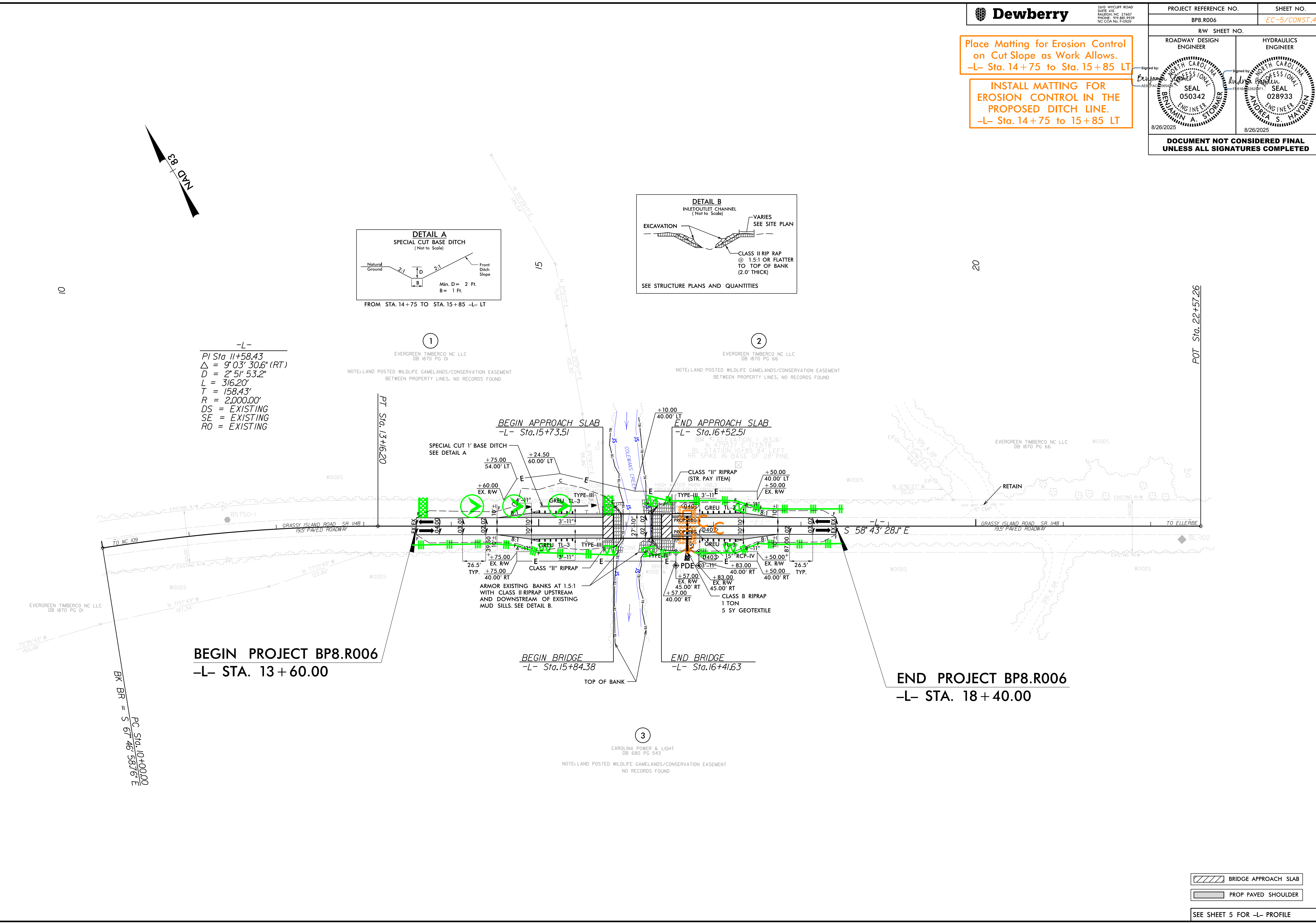
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RW SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Place Matting for Erosion Control on Cut Slope as Work Allows. -L- Sta. 14+75 to Sta. 15+85 LT

INSTALL MATTING FOR EROSION CONTROL IN THE PROPOSED DITCH LINE. -L- Sta. 14+75 to 15+85 LT

8/26/2025

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



CAD\CAD\2025\13745\Utilities\Erosion Control\Plan Sheets\BP8R006-HYD-EC\_PSH05.dgn

BRIDGE APPROACH SLAB  
 PROP PAVED SHOULDER  
 SEE SHEET 5 FOR -L- PROFILE

PROJ. REFERENCE NO.	SHEET NO.
BP8.R006	X-1
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

# BP8.R006 CROSS-SECTIONS

## INDEX OF SHEETS

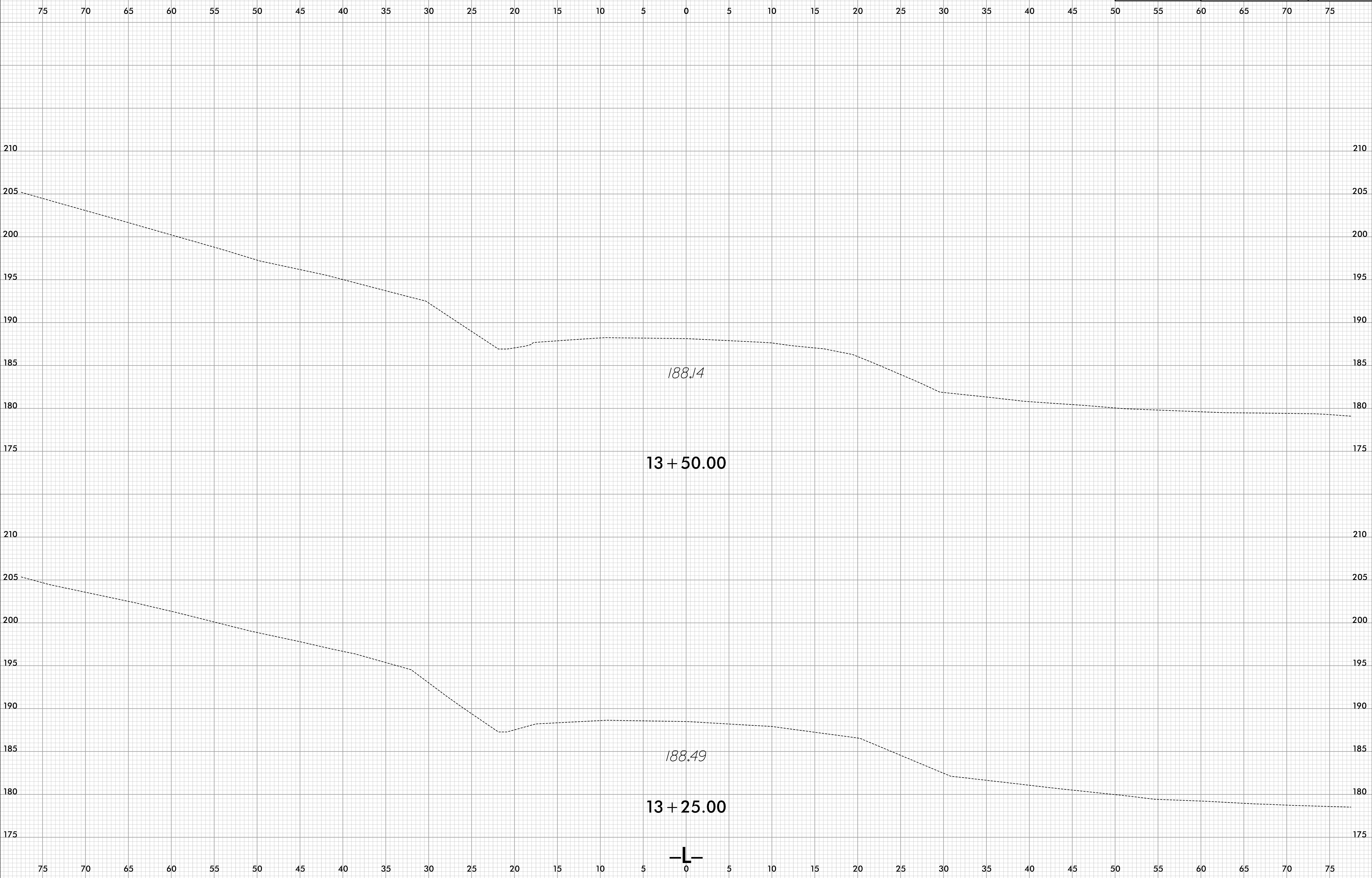
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CROSS SECTION SUMMARY	X-1 THRU X-1A
-L-	X-2 THRU X-10



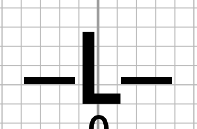
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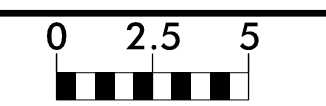
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BP8.R006	X-2



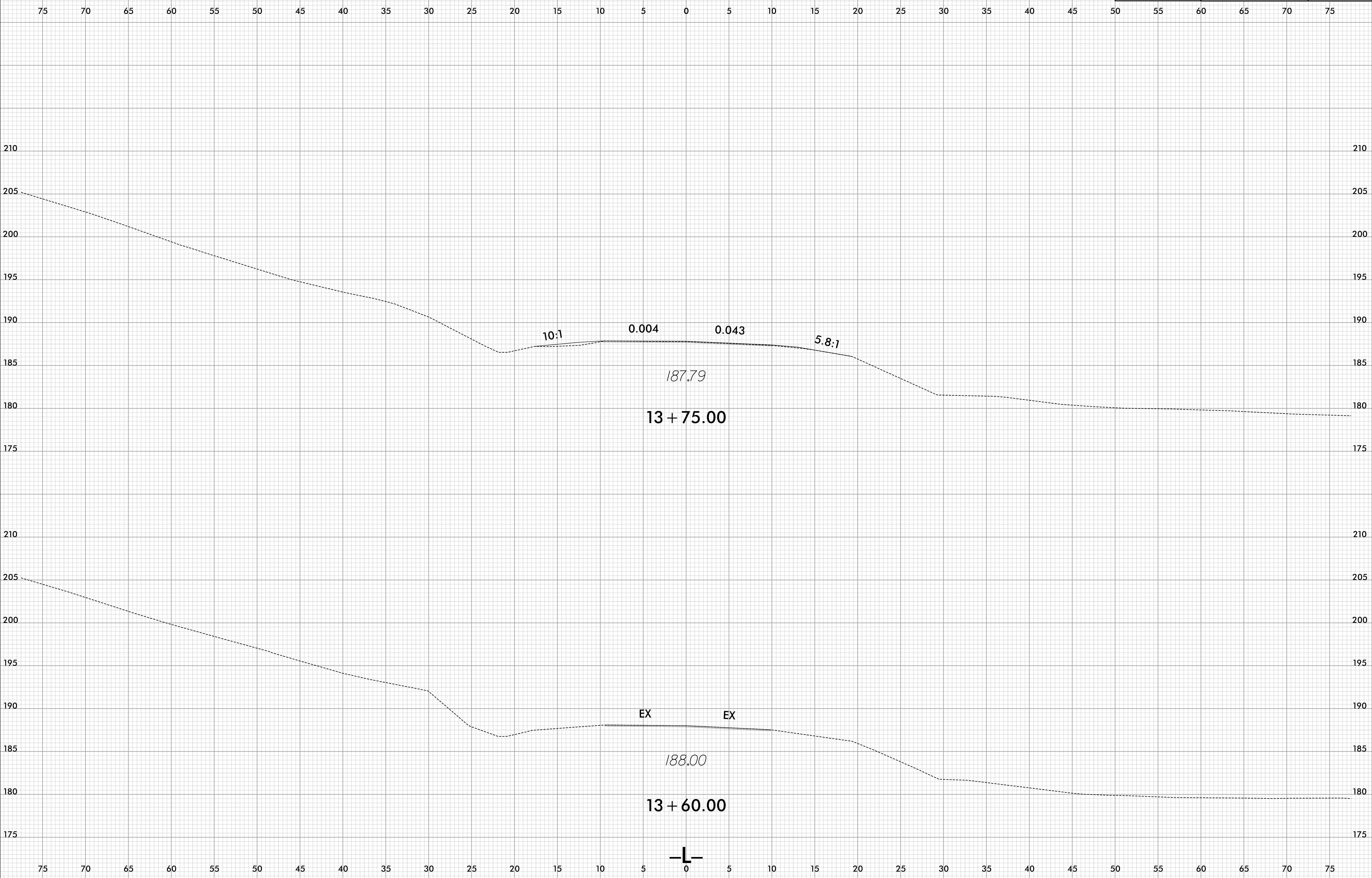
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6/23/16



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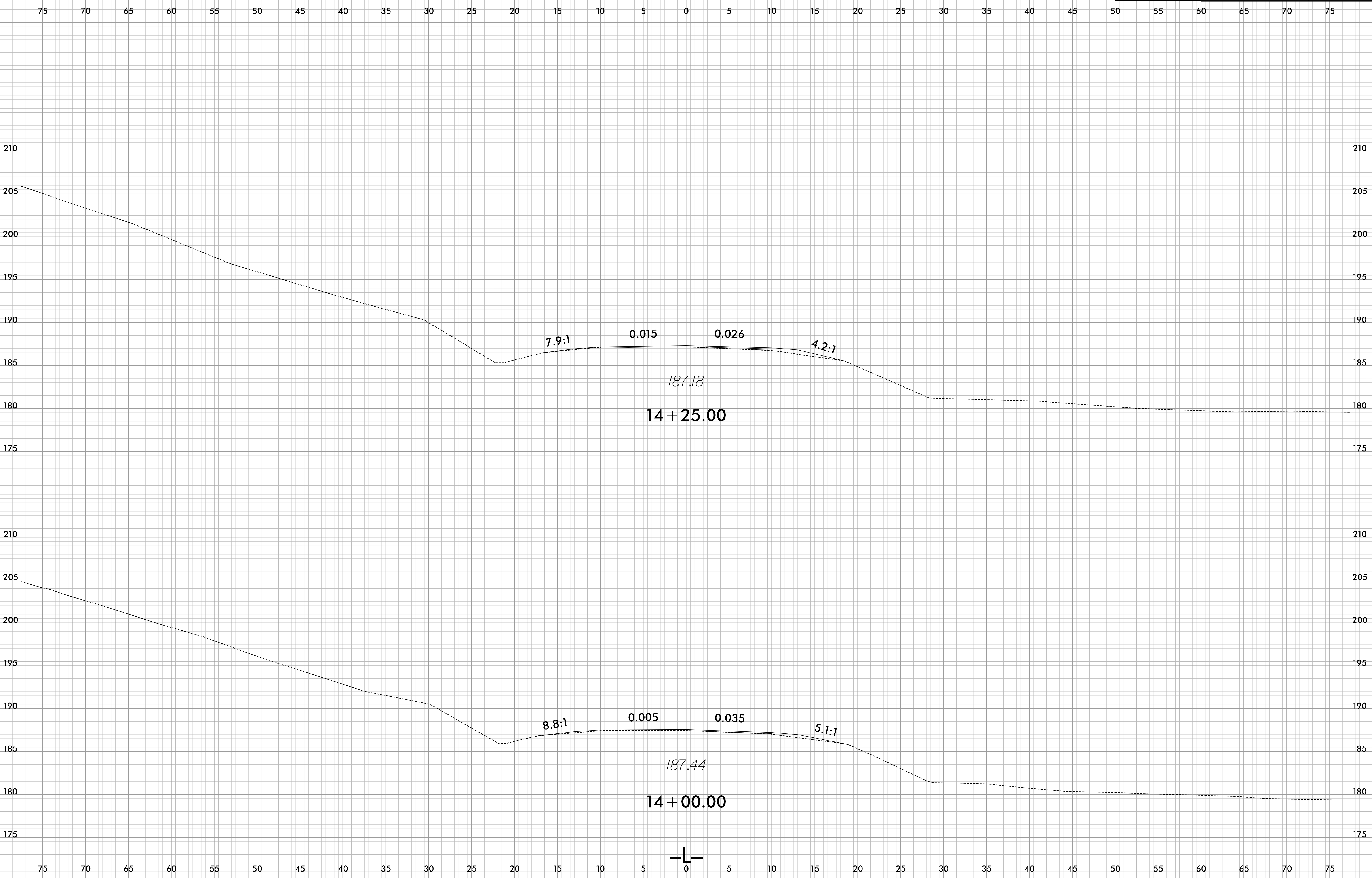


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6/23/16

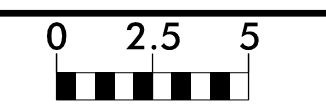


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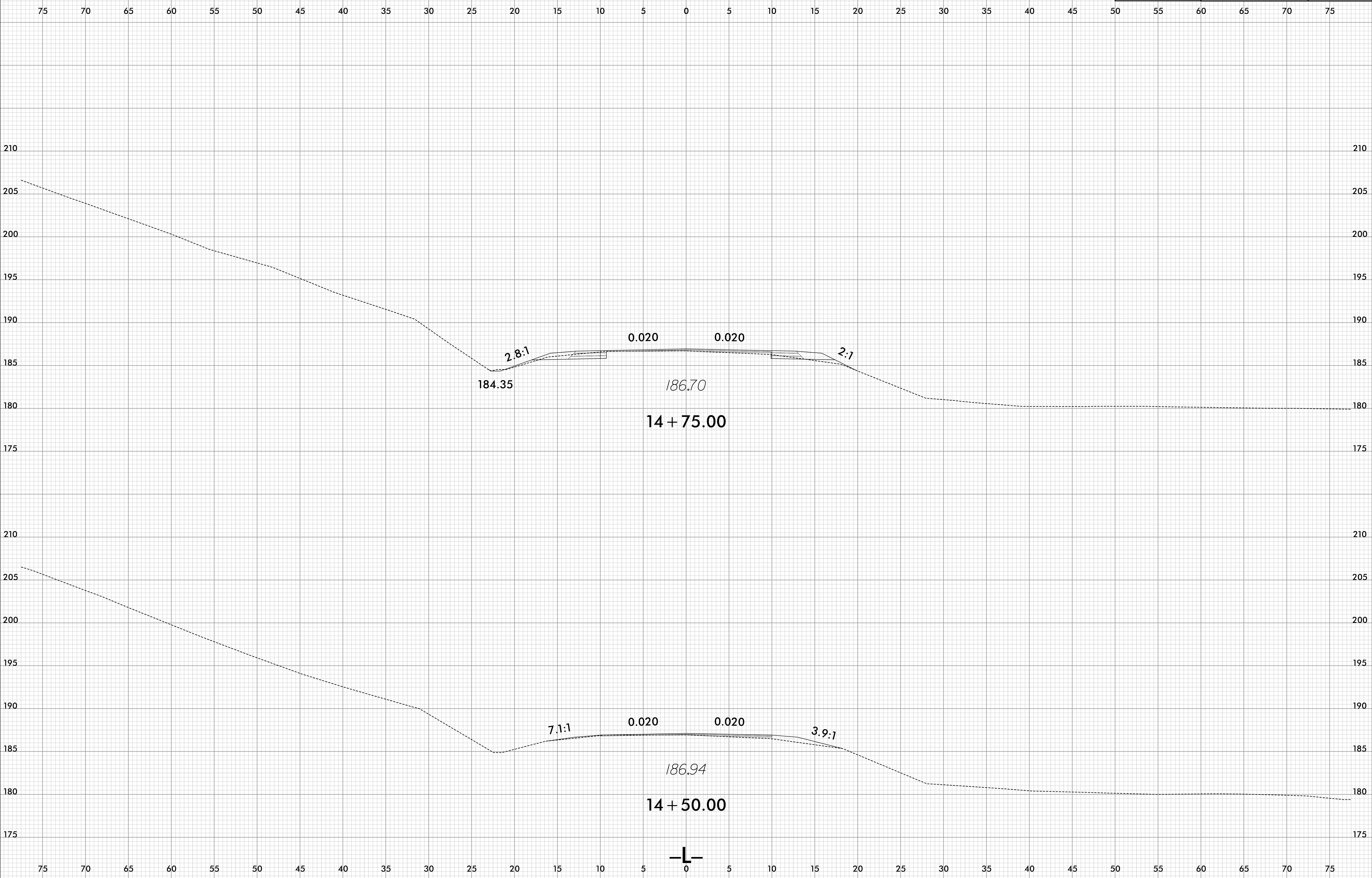


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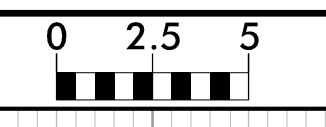


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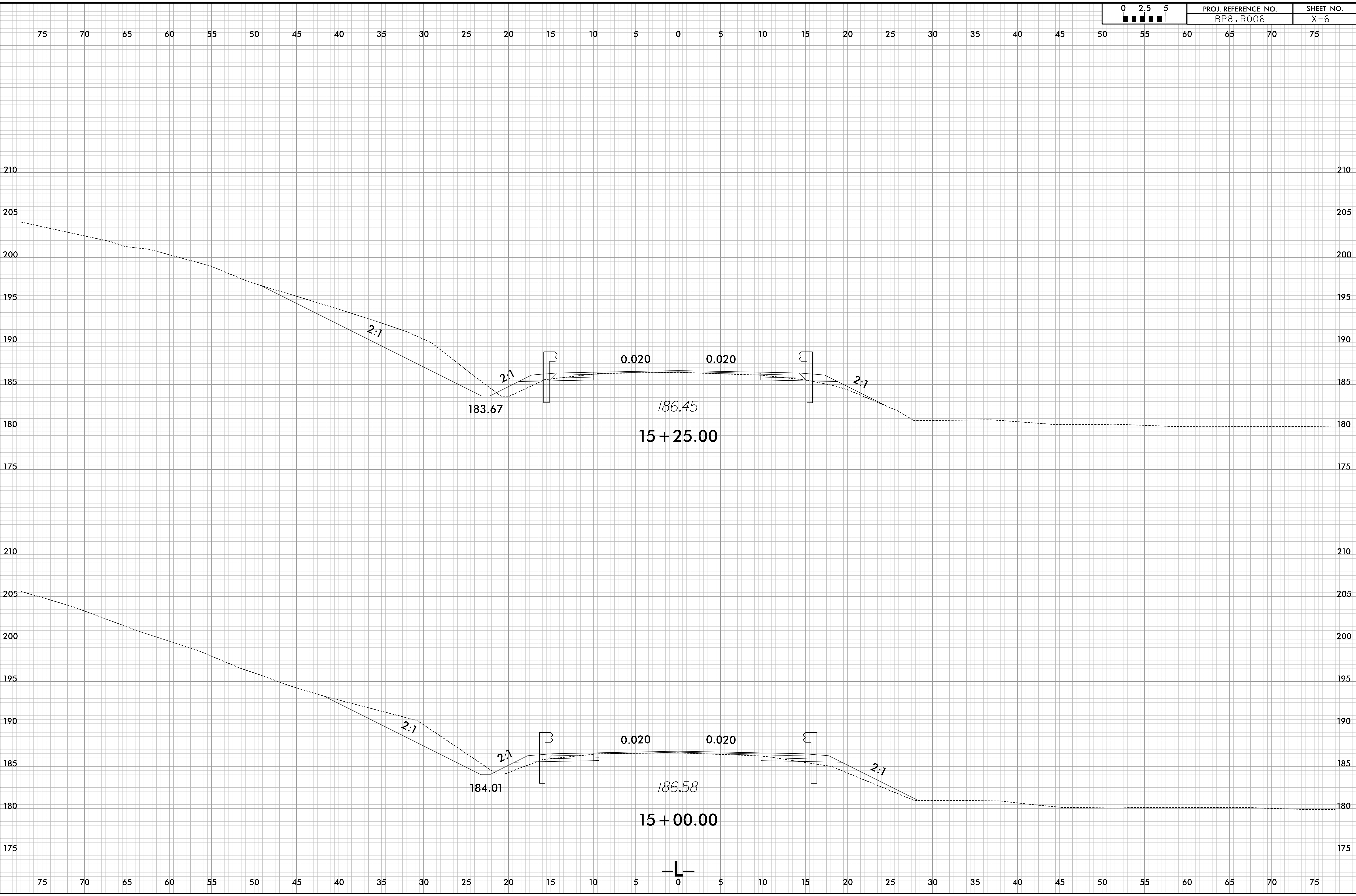


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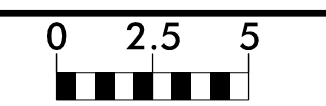


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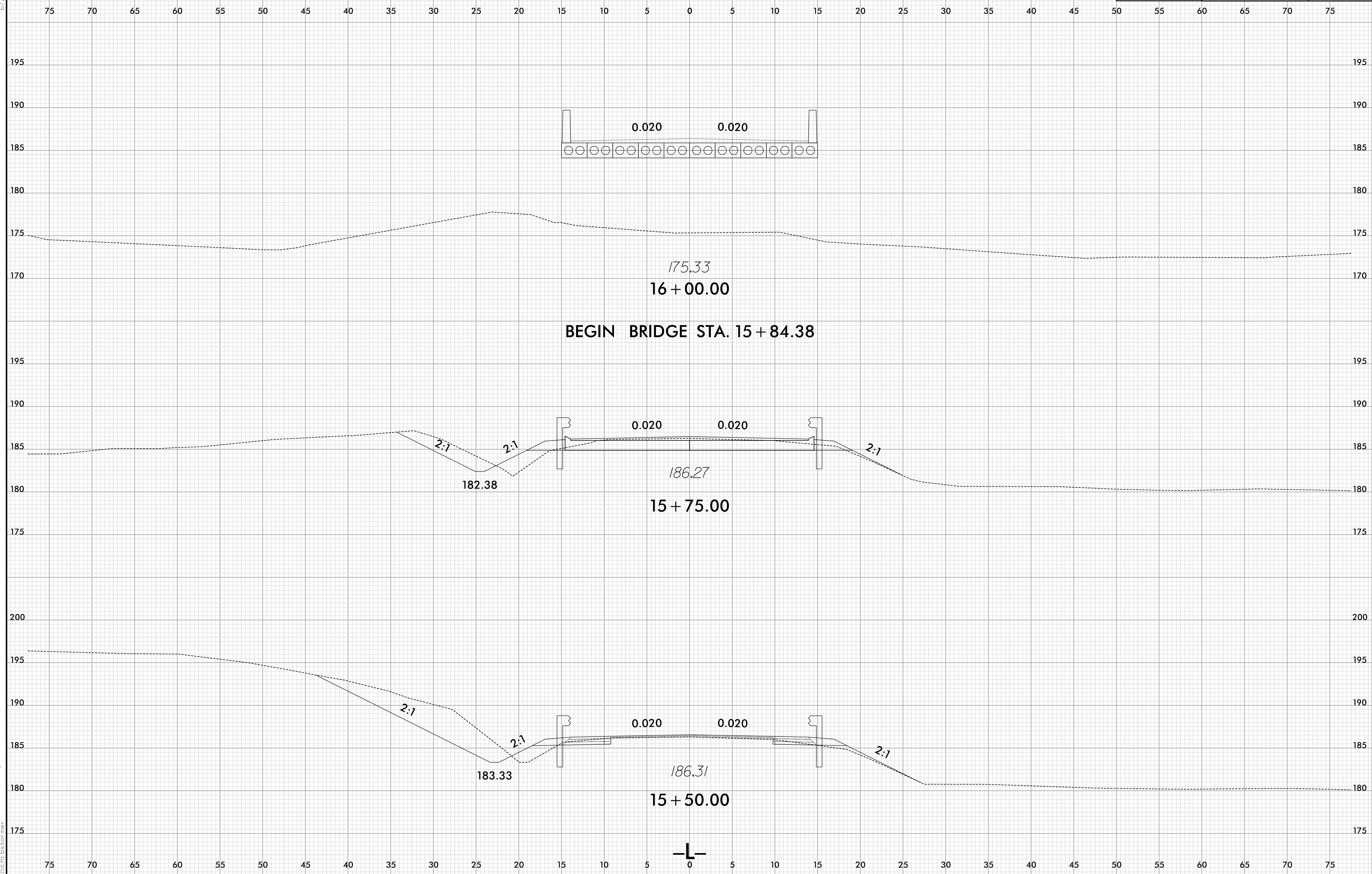


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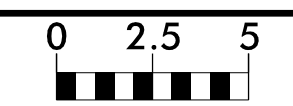
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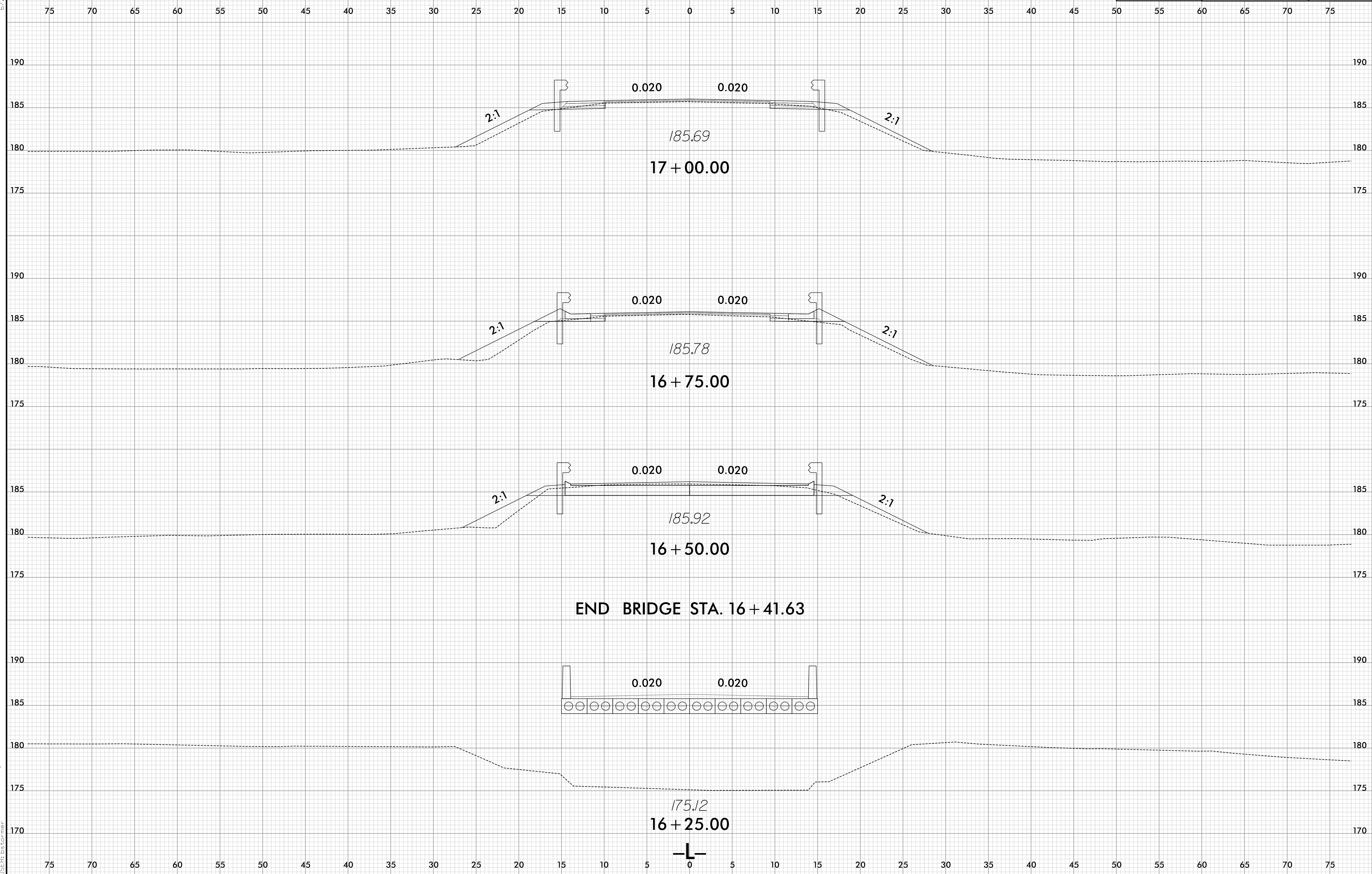
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6/23/16



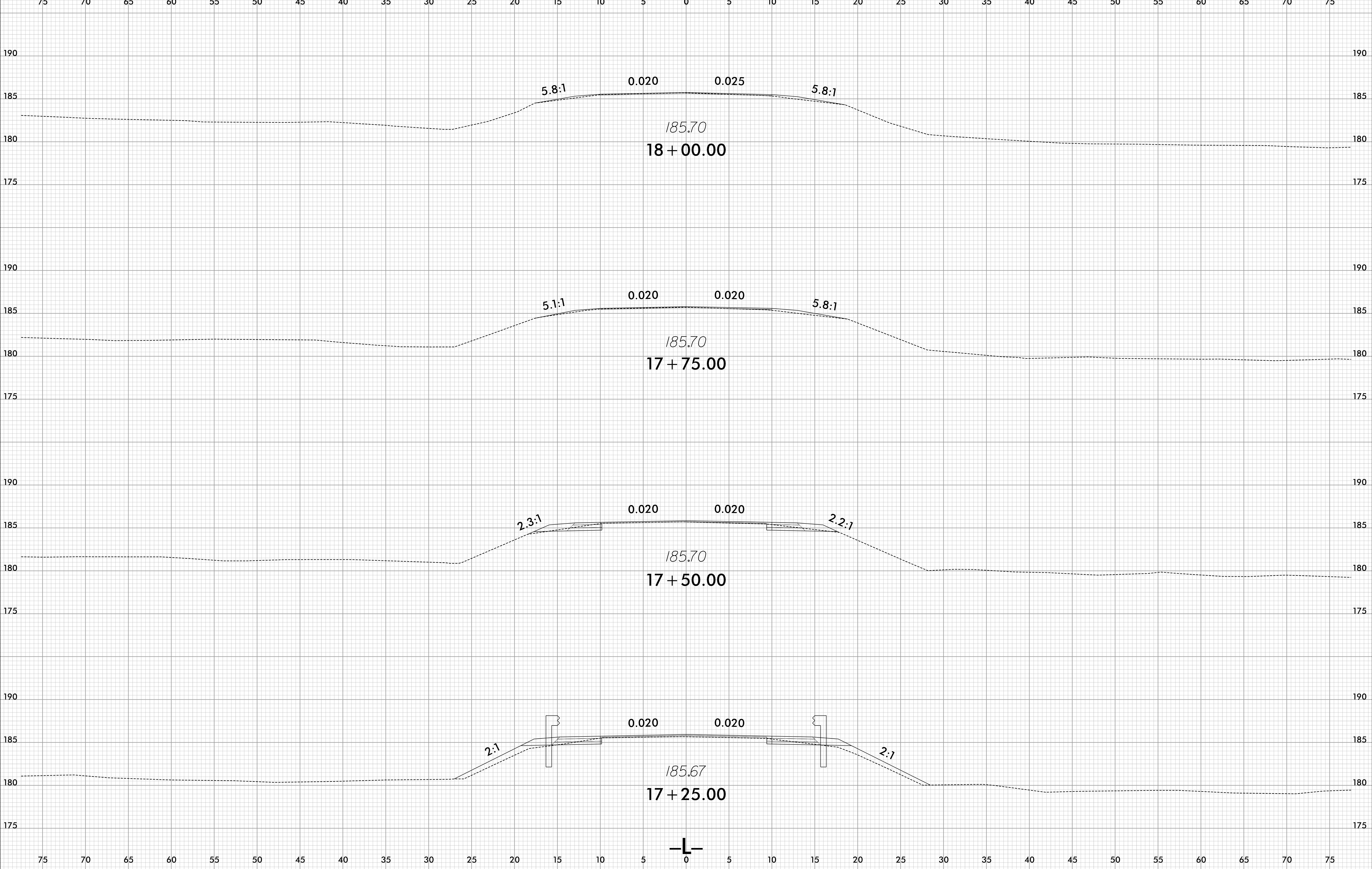
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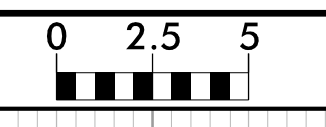
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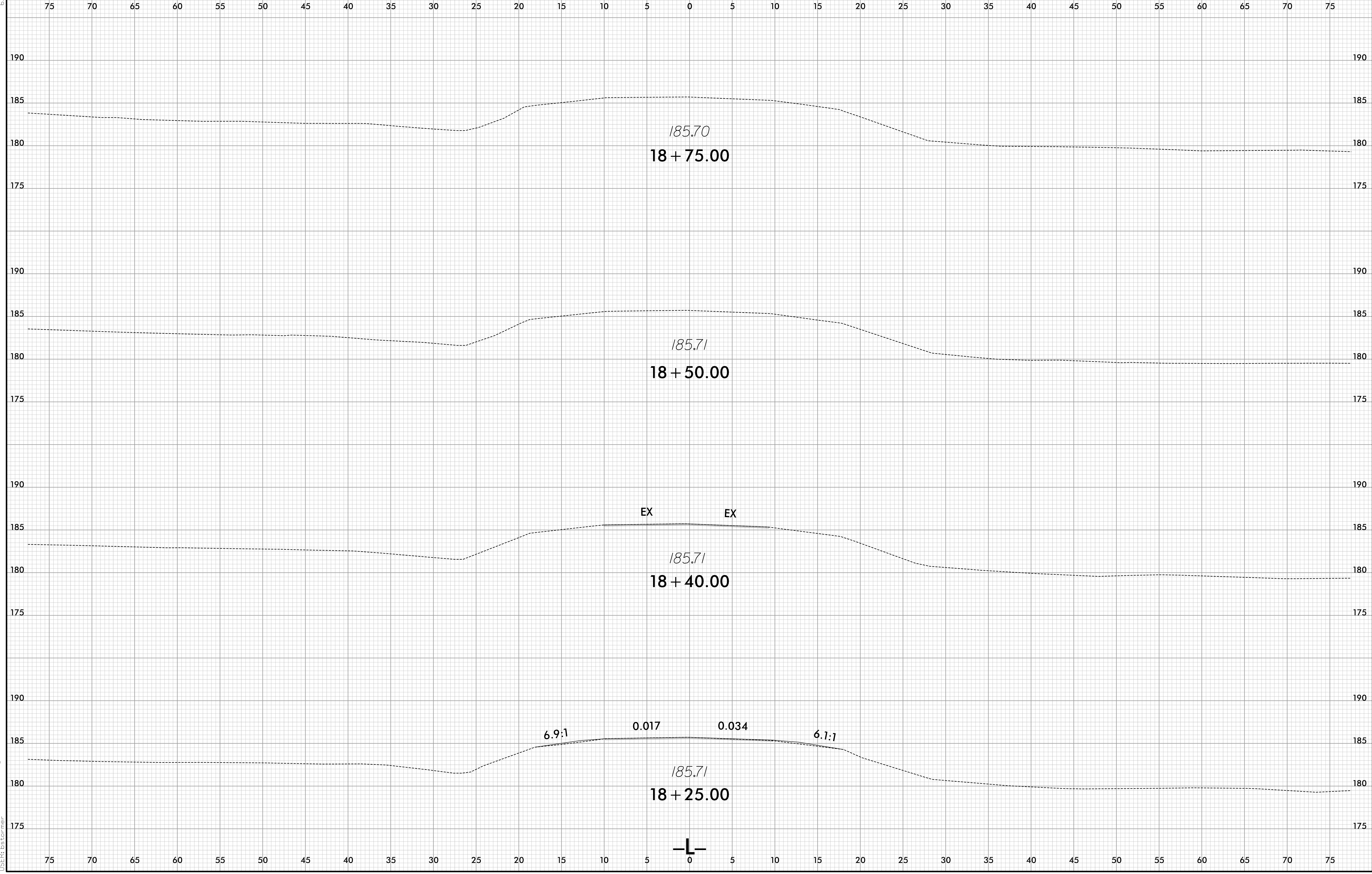


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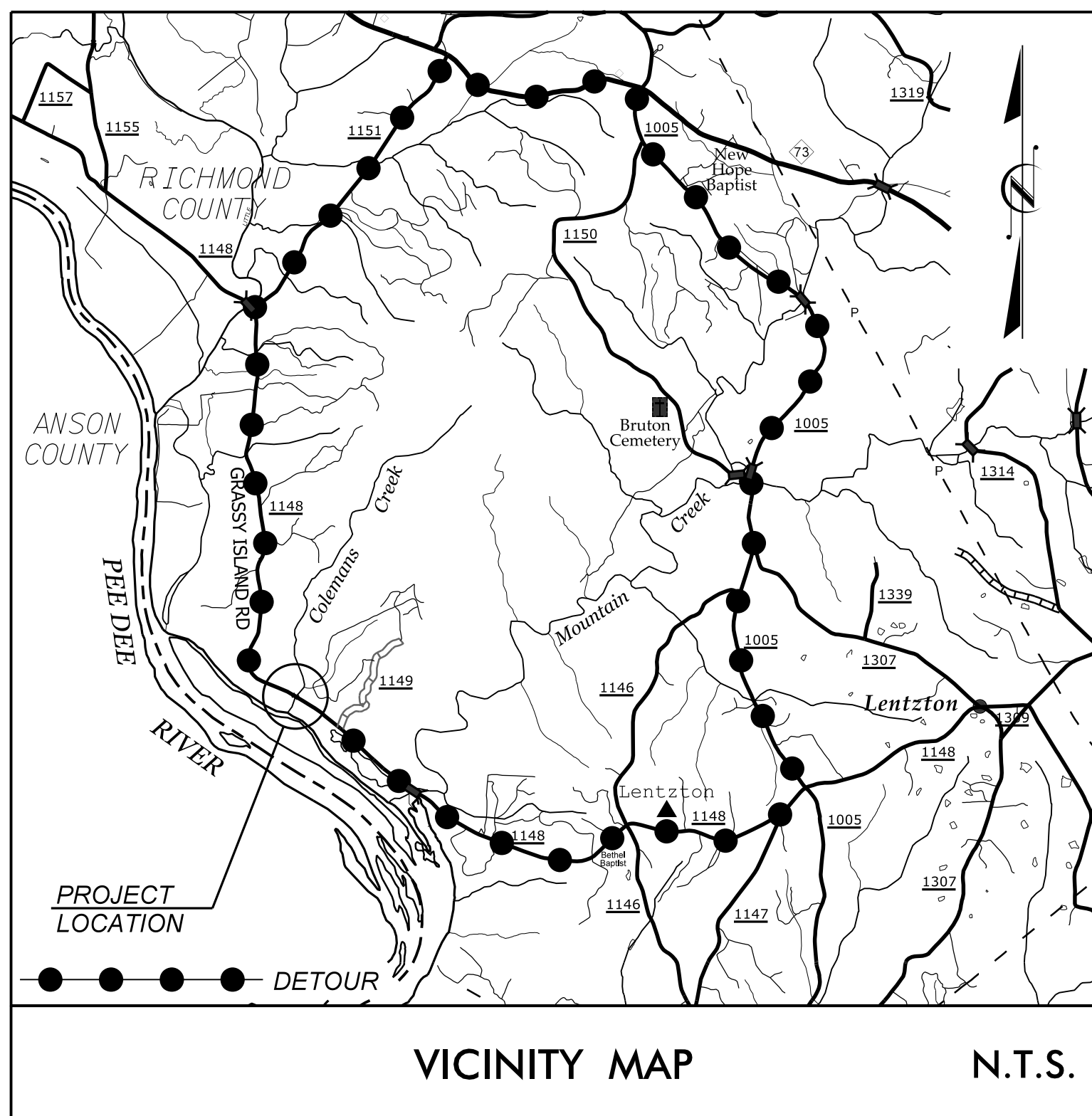
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**PROJECT: BP8.R006**

**CONTRACT: DH00548**

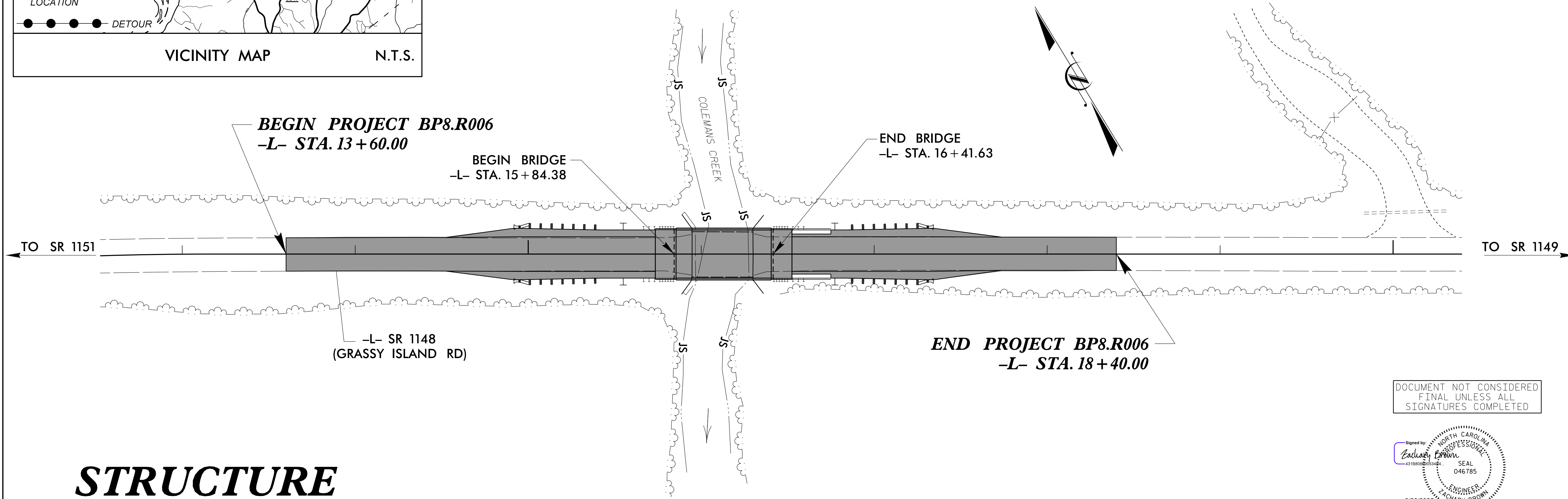


STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# RICHMOND COUNTY

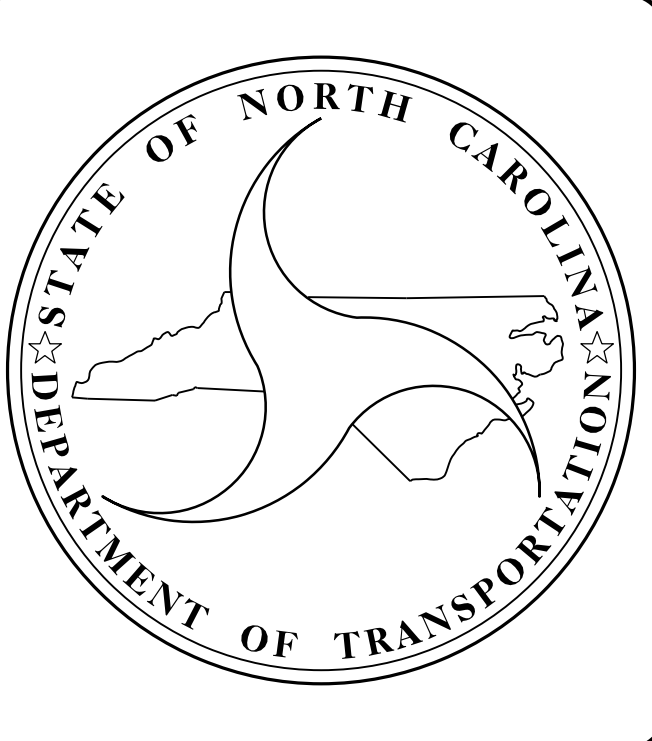
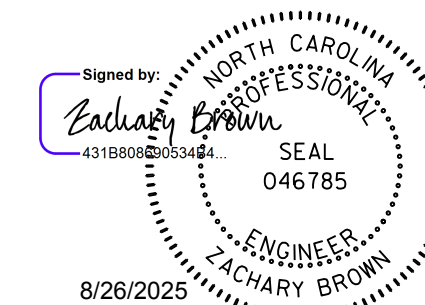
BRIDGE NO. 91 ON SR 1148 (GRASSY ISLAND RD)  
OVER COLEMANS CREEK

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP8.R006		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BP8.R006	-	P.E.	



## STRUCTURE

DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED



**DESIGN DATA**

ADT 2024 = 170  
ADT 2044 = 300  
K = %  
D = %  
T = % \*  
V = 60 MPH  
\* (TTST = % + DUAL %)  
FUNC CLASS =  
LOCAL  
SUBREGIONAL TIER

**PROJECT LENGTH**

LENGTH ROADWAY PROJECT BP8.R006 = 0.080 MILES  
LENGTH STRUCTURE PROJECT BP8.R006 = 0.011 MILES  
TOTAL LENGTH PROJECT BP8.R006 = 0.091 MILES

Prepared in the Office of:  
**Dewberry**  
2410 WYCLIFF ROAD  
SUITE 410  
RALEIGH, NC 27607  
PHONE: 919 881 9939  
NC CCA No. P-0259

FOR THE NORTH CAROLINA DIVISION OF HIGHWAYS

2018 STANDARD SPECIFICATIONS

LETTING DATE:  
SEPTEMBER 23, 2025

CHRISTOPHER CORDELL, P.E.  
PROJECT ENGINEER

ZACHARY BROWN, P.E.  
PROJECT DESIGN ENGINEER

STRUCTURES MANAGEMENT UNIT  
1000 BIRCH RIDGE DR.  
RALEIGH, N.C. 27610

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

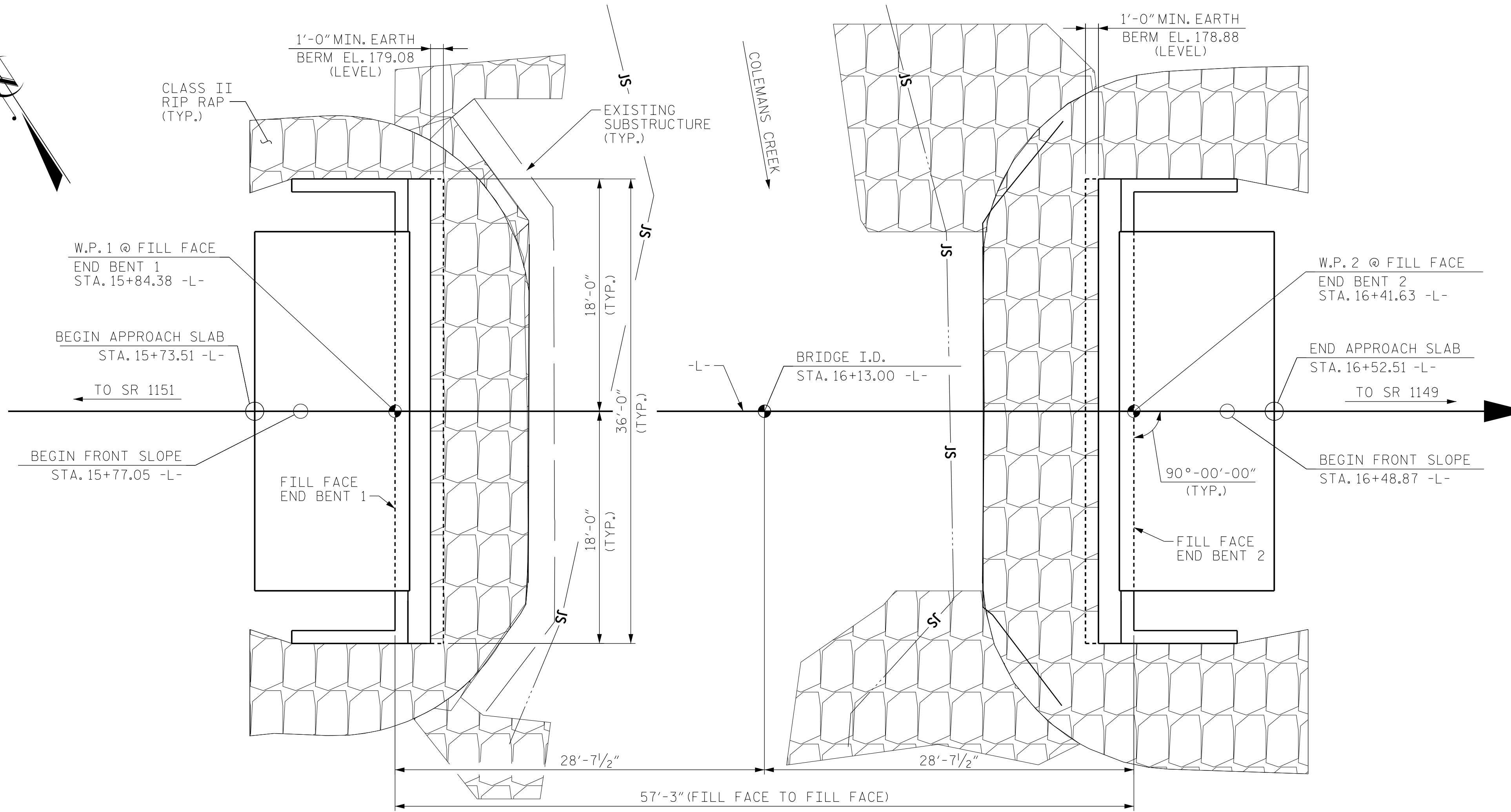
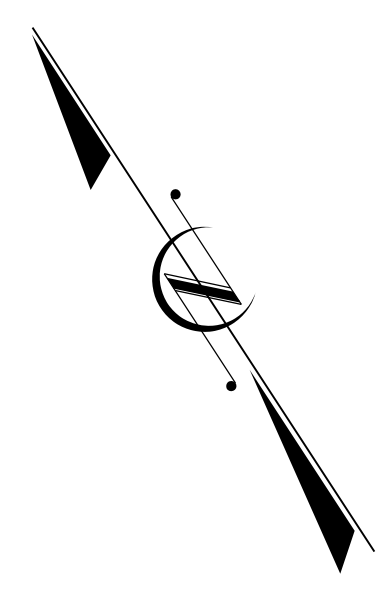
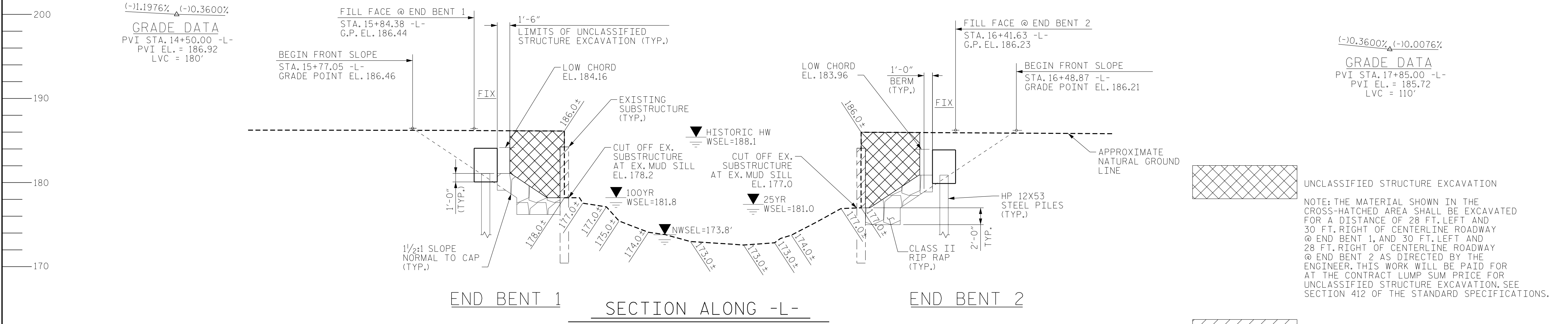
TIMOTHY WELCH P.E.  
STATE DESIGN ENGINEER

APPROVED  
DIVISION ADMINISTRATOR

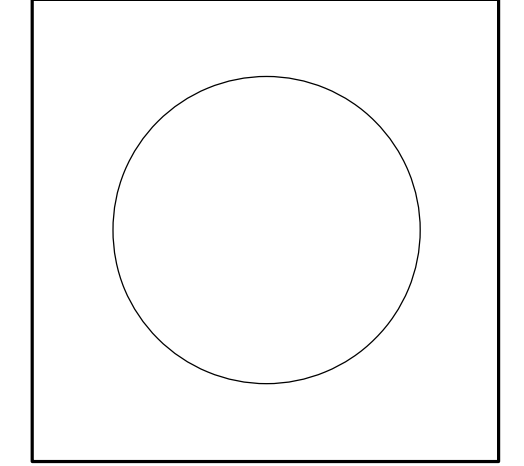
DATE

16+00 16+50

SPAN A



I HEREBY CERTIFY THAT THESE PLANS ARE THE AS-BUILT PLANS.



PROJECT NO. BP8.R006  
RICHMOND COUNTY  
 STATION: 16+13.00 -L-  
 SHEET 1 OF 4 REPLACES BRIDGE NO. 760091

**Dewberry**  
 2610 WYCLIFF ROAD  
 SUITE 410  
 RALEIGH, NC 27607  
 PHONE: 919.881.9939  
 NC COA No. F-0929

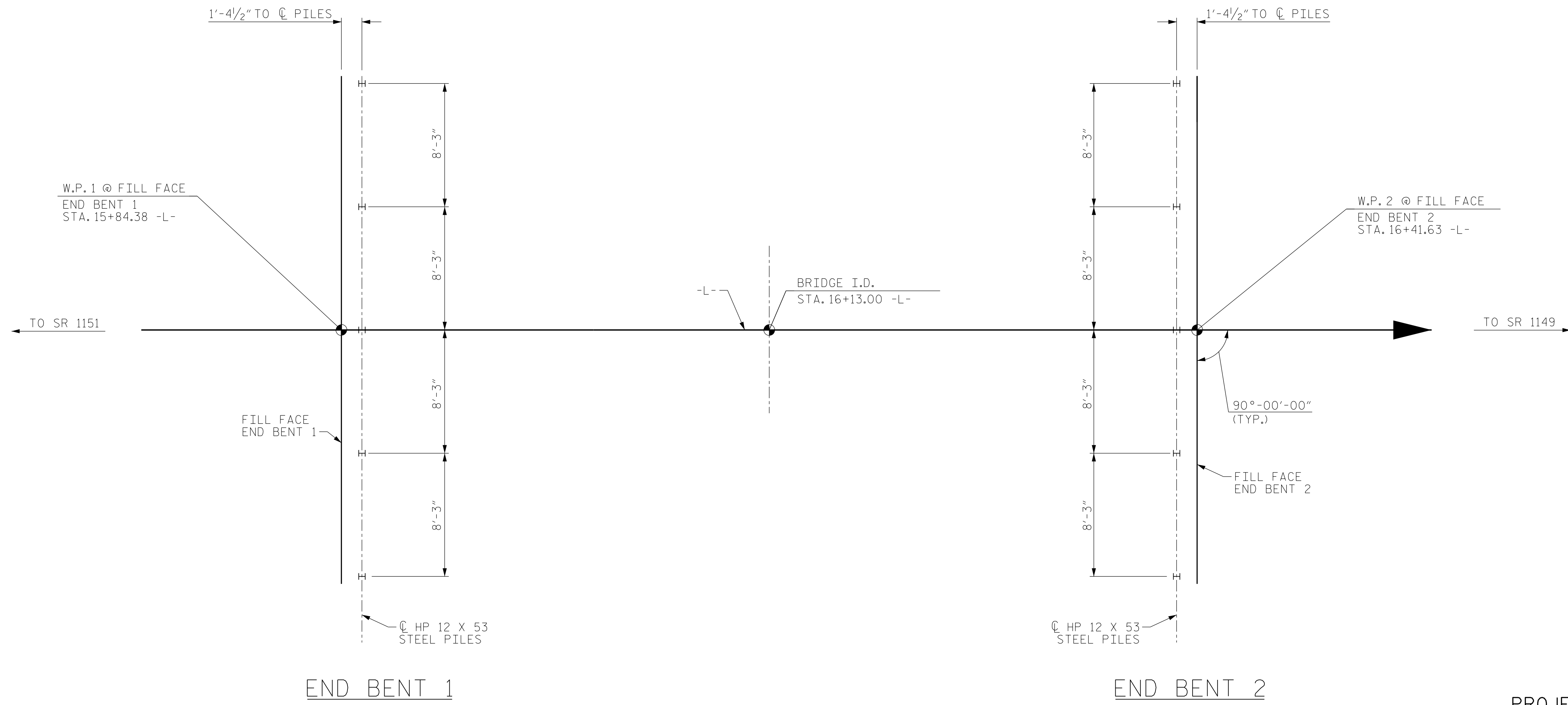
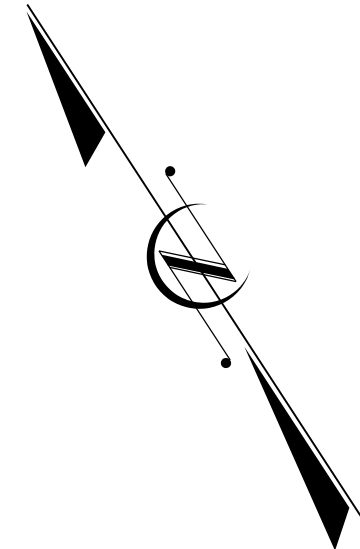
North Carolina Professional Engineer Seal  
 Signed by: **Zachary Brown**  
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 SEAL 046785  
 ENGINEER  
 ZACHARY BROWN

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE OVER  
 COLEMANS CREEK ON SR 1148  
 GRASSY ISLAND ROAD  
 BETWEEN SR 1151 AND SR 1149

DRAWN BY : S. K. CHRISTOPH DATE : 01-2022  
 CHECKED BY : C.B. CORDELL DATE : 02-2022  
 DESIGN ENGINEER OF RECORD: Z.H. BROWN DATE : 11-2023

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

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END BENT 1

END BENT 2

**FOUNDATION LAYOUT PLAN**  
(DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE)

PROJECT NO. BP8.R006  
RICHMOND COUNTY  
 STATION: 16+13.00 -L-

SHEET 2 OF 4

**FOUNDATION NOTES:**

FOR PILES, SEE PILES PROVISION AND SECTION 450 OF THE STANDARD SPECIFICATIONS.  
 BEFORE FILLING HOLES FOR PILE EXCAVATION AT END BENT NO.1, DRIVE PILES TO THE REQUIRED DRIVING RESISTANCE.  
 FILL HOLES FOR PILE EXCAVATION AT END BENT NO.1 WITH CONCRETE OR GROUT.

DRAWN BY :	S. K. CHRISTOPH	DATE :	01-2022
CHECKED BY :	C.B. CORDELL	DATE :	02-2022
DESIGN ENGINEER OF RECORD:	Z.H. BROWN	DATE :	11-2023

1:47:09 PM  
 ...\\01-003\_BP8.R006\_SMU.GD\_002\_760091.dgn  
 USER: atysinger

**Dewberry**  
 2610 WYCLIFF ROAD  
 SUITE 410  
 RALEIGH, NC 27607  
 PHONE: 919.881.9939  
 NC COA No. F-0929

Signed by:  
  
 8/26/2025

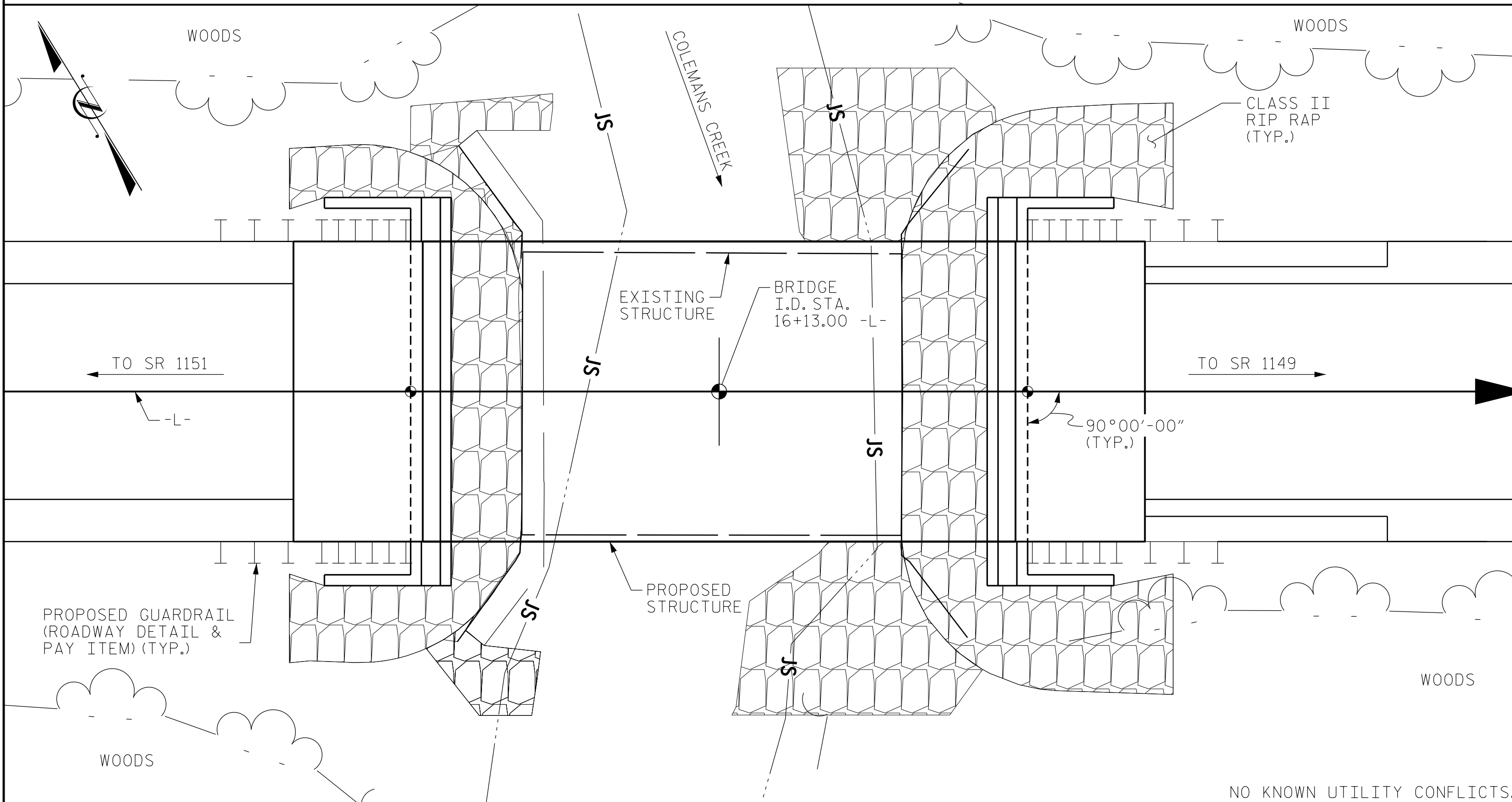
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE OVER  
 COLEMANS CREEK ON SR 1148  
 GRASSY ISLAND ROAD  
 BETWEEN SR 1151 AND SR 1149

DOCUMENT NOT CONSIDERED  
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 SIGNATURES COMPLETED

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



BENCH MARK 1: RR SPIKE IN BASE OF 28" PINE -L- 17+28.50, 70' LT, EL. 183.16, N479537 E1733178



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.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18 - EVALUATING SCOUR AT BRIDGES."
- THE EXISTING STRUCTURE CONSISTING OF A SINGLE 35'-7" SPAN, 18'-5" WIDE, TIMBER DECK ON STEEL I-BEAMS WITH TIMBER GAP & PILES, CONCRETE ENCLOSED TIMBER BULKHEADS AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT.
- REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER, THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
- THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OF ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 2.
- INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXSTING STRUCTURE AT STATION 16+13.00."
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL											
	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARING	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS
	LUMP SUM	LUMP SUM	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	LN. FT.	TONS	SQ. YARDS	LUMP SUM	NO. LIN. FT.
SUPERSTRUCTURE					LUMP SUM		110.25			LUMP SUM	10 550.00
END BENT NO. 1				20.0		2449		55	60		
END BENT NO. 2				20.0		2449		120	130		
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	40.0	LUMP SUM	4898	110.25	175	190	LUMP SUM	10 550.00

HYDRAULIC DATA		
DESIGN DISCHARGE	= 920	CFS
DESIGN FREQUENCY	= 25	YR
DESIGN HW ELEVATION	= 181.0	FT
DRAINAGE AREA	= 2.43	SQ. MI.
BASE DISCHARGE	= 1320	CFS
BASE FREQUENCY	= 100	YR
BASE HW ELEVATION	= 181.8	FT

OVERTOPPING FLOOD DATA		
OVERTOPPING DISCHARGE	= 3800	CFS
OVERTOPPING FREQUENCY	= >500	YR
OVERTOPPING ELEVATION	= 185.7	FT

PROJECT NO. BP8.R006  
RICHMOND COUNTY  
 STATION: 16+13.00 -L-

SHEET 4 OF 4

**Dewberry**  
 2610 WYCLIFF ROAD  
 SUITE 410  
 RALEIGH, NC 27607  
 PHONE: 919.881.9939  
 NC COA No. F-0929

Signed by: *Zachary Brown*  
 431800000344  
 046785  
 NORTH CAROLINA PROFESSIONAL ENGINEER  
 ZACHARY BROWN

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE OVER  
 COLEMAN'S CREEK ON SR 1148  
 GRASSY ISLAND ROAD  
 BETWEEN SR 1151 AND SR 1149

DRAWN BY : S. K. CHRISTOPH DATE : 01-2022  
 CHECKED BY : C.B. CORDELL DATE : 02-2022  
 DESIGN ENGINEER OF RECORD: Z.H. BROWN DATE : 11-2023

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-4
2			4			15

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

LOAD TYPE	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γ LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD	HL-93 (INVENTORY)	N/A	①	1.055	-	1.75	0.275	1.23	55'	EL	27	0.523	1.23	55'	EL	5.4	0.80	0.275	1.05	55'	EL	27		
	HL-93 (OPERATING)	N/A		1.591	-	1.35	0.275	1.59	55'	EL	27	0.523	1.59	55'	EL	5.4	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.322	47.585	1.75	0.275	1.54	55'	EL	27	0.523	1.47	55'	EL	5.4	0.80	0.275	1.32	55'	EL	27		
	HS-20 (OPERATING)	36.000		1.900	68.396	1.35	0.275	1.99	55'	EL	27	0.523	1.90	55'	EL	5.4	N/A	--	--	--	--	--		
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		2.776	37.476	1.4	0.275	4.04	55'	EL	27	0.523	4.17	55'	EL	5.4	0.80	0.275	2.78	55'	EL	27	
		SNGARBS2	20.000		2.155	43.095	1.4	0.275	3.14	55'	EL	27	0.523	3.02	55'	EL	5.4	0.80	0.275	2.15	55'	EL	27	
		SNAGRIS2	22.000		2.079	45.734	1.4	0.275	3.03	55'	EL	27	0.523	2.83	55'	EL	5.4	0.80	0.275	2.08	55'	EL	27	
		SNCOTTS3	27.250		1.384	37.708	1.4	0.275	2.01	55'	EL	27	0.523	2.09	55'	EL	5.4	0.80	0.275	1.38	55'	EL	27	
		SNAGGRS4	34.925		1.189	41.527	1.4	0.275	1.73	55'	EL	27	0.523	1.77	55'	EL	5.4	0.80	0.275	1.19	55'	EL	27	
		SNS5A	35.550		1.160	41.255	1.4	0.275	1.69	55'	EL	27	0.523	1.82	55'	EL	5.4	0.80	0.275	1.16	55'	EL	27	
		SNS6A	39.950		1.079	43.102	1.4	0.275	1.57	55'	EL	27	0.523	1.68	55'	EL	5.4	0.80	0.275	1.08	55'	EL	27	
	SNS7B	42.000		1.028	43.175	1.4	0.275	1.50	55'	EL	27	0.523	1.67	55'	EL	5.4	0.80	0.275	1.03	55'	EL	27		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.320	43.556	1.4	0.275	1.92	55'	EL	27	0.523	1.98	55'	EL	5.4	0.80	0.275	1.32	55'	EL	27	
		TNT4A	33.075		1.330	43.979	1.4	0.275	1.94	55'	EL	27	0.523	1.91	55'	EL	5.4	0.80	0.275	1.33	55'	EL	27	
		TNT6A	41.600		1.101	45.811	1.4	0.275	1.60	55'	EL	27	0.523	1.83	55'	EL	5.4	0.80	0.275	1.10	55'	EL	27	
		TNT7A	42.000		1.114	46.804	1.4	0.275	1.62	55'	EL	27	0.523	1.71	55'	EL	5.4	0.80	0.275	1.11	55'	EL	27	
		TNT7B	42.000		1.163	48.848	1.4	0.275	1.69	55'	EL	27	0.523	1.62	55'	EL	5.4	0.80	0.275	1.16	55'	EL	27	
		TNAGRIT4	43.000		1.101	47.330	1.4	0.275	1.60	55'	EL	27	0.523	1.56	55'	EL	5.4	0.80	0.275	1.10	55'	EL	27	
TNAGT5A		45.000		1.031	46.405	1.4	0.275	1.50	55'	EL	27	0.523	1.58	55'	EL	5.4	0.80	0.275	1.03	55'	EL	27		
TNAGT5B	45.000	③	1.013	45.582	1.4	0.275	1.47	55'	EL	27	0.523	1.48	55'	EL	5.4	0.80	0.275	1.01	55'	EL	27			
EMERGENCY VEHICLE (EV)	EV2	28.750		1.617	46.483	1.3	0.275	2.37	55'	EL	27	0.523	2.27	55'	EL	5.4	0.80	0.275	1.62	55'	EL	27		
	EV3	43.000	④	1.049	45.107	1.3	0.275	1.54	55'	EL	27	0.523	1.53	55'	EL	5.4	0.80	0.275	1.05	55'	EL	27		

LOAD FACTORS:

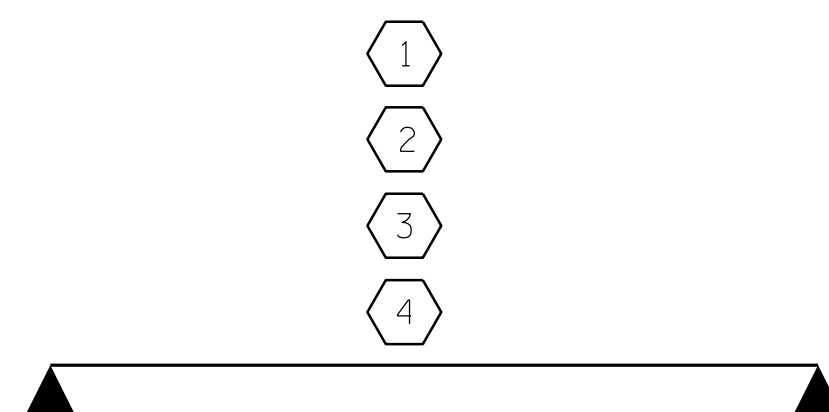
DESIGN LOAD RATING FACTORS	LIMIT STATE	γ DC	γ DW
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

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

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

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



LRFR SUMMARY  
FOR SPAN "A"

PROJECT NO. BP8.R006  
RICHMOND COUNTY  
 STATION: 16+13.00 -L-

**Dewberry**  
 2610 WYCLIFF ROAD  
 SUITE 410  
 RALEIGH, NC 27607  
 PHONE: 919.881.9939  
 NC COA No. F-0929

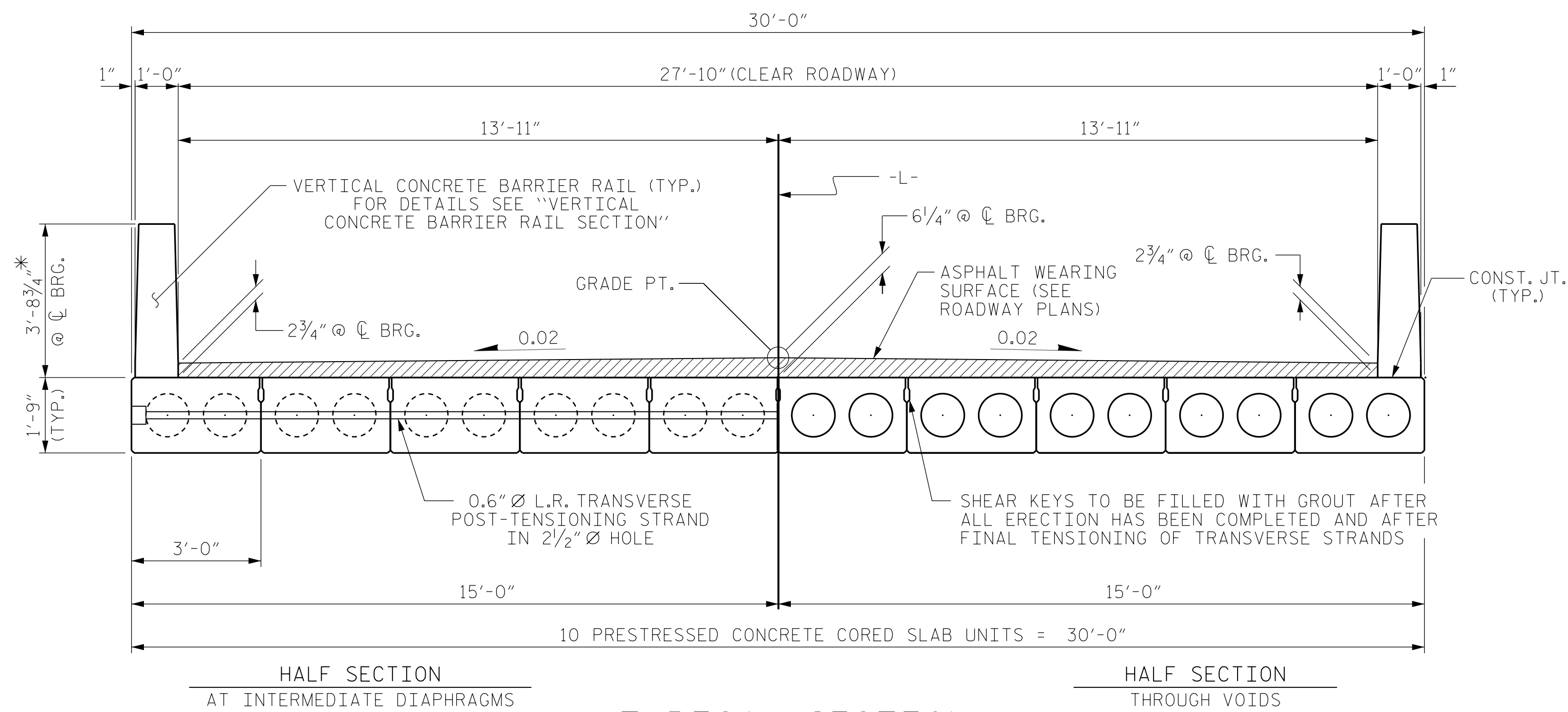
Signed by  
  
 ZACHARY BROWN  
 ENGINEER

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
①			③			TOTAL SHEETS
②			④			15

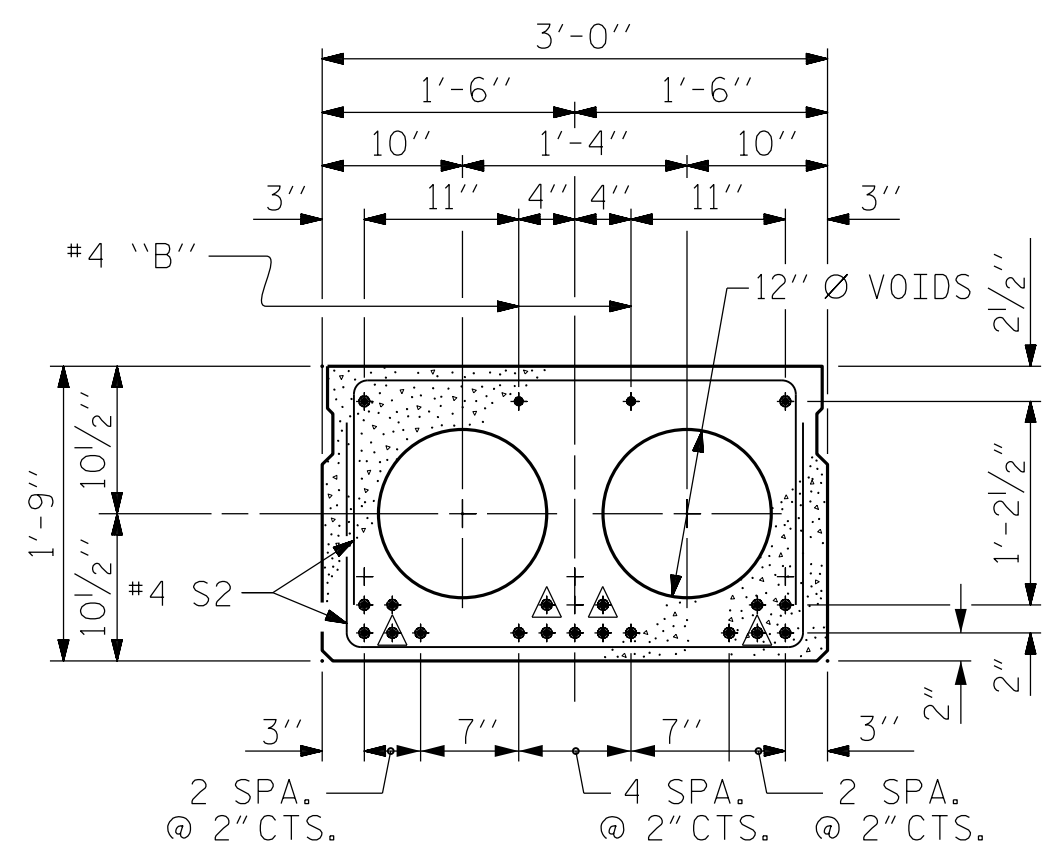
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DRAWN BY : S. K. CHRISTOPH DATE : 01-2022  
 CHECKED BY : C.B. CORDELL DATE : 02-2022  
 DESIGN ENGINEER OF RECORD: Z.H. BROWN DATE : 11-2023

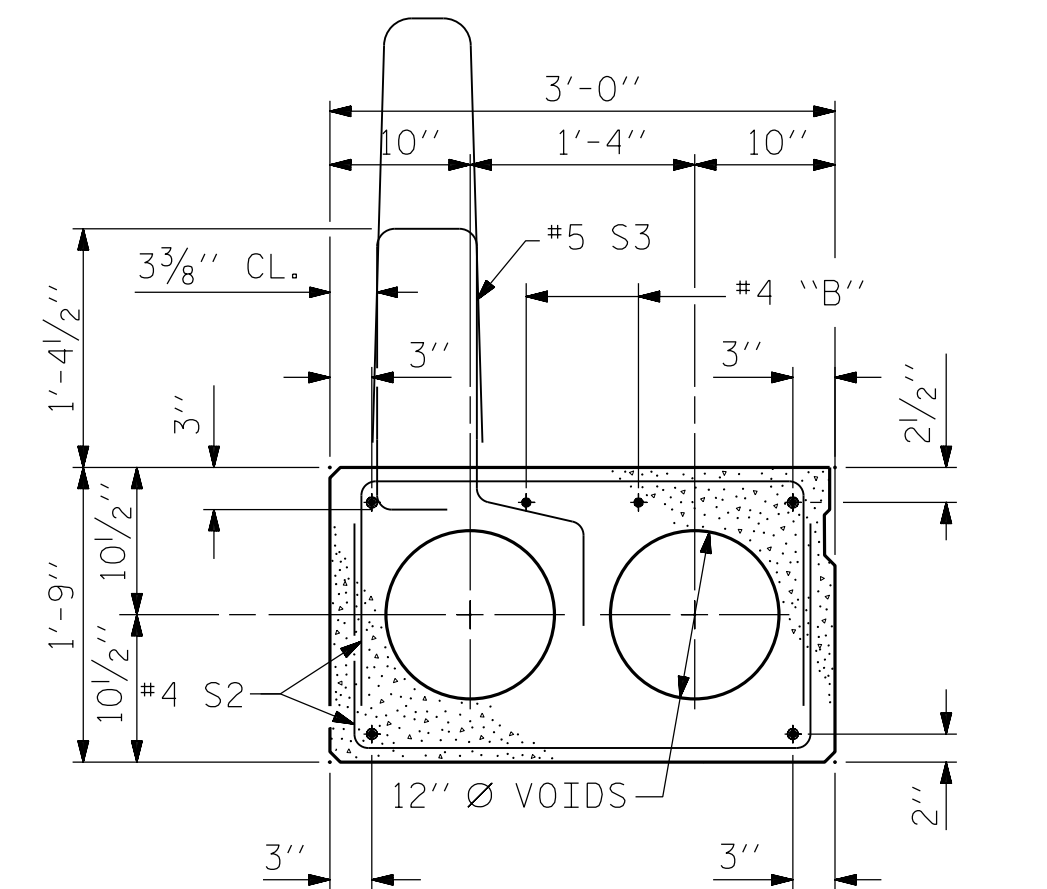


TYPICAL SECTION

\* - 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.



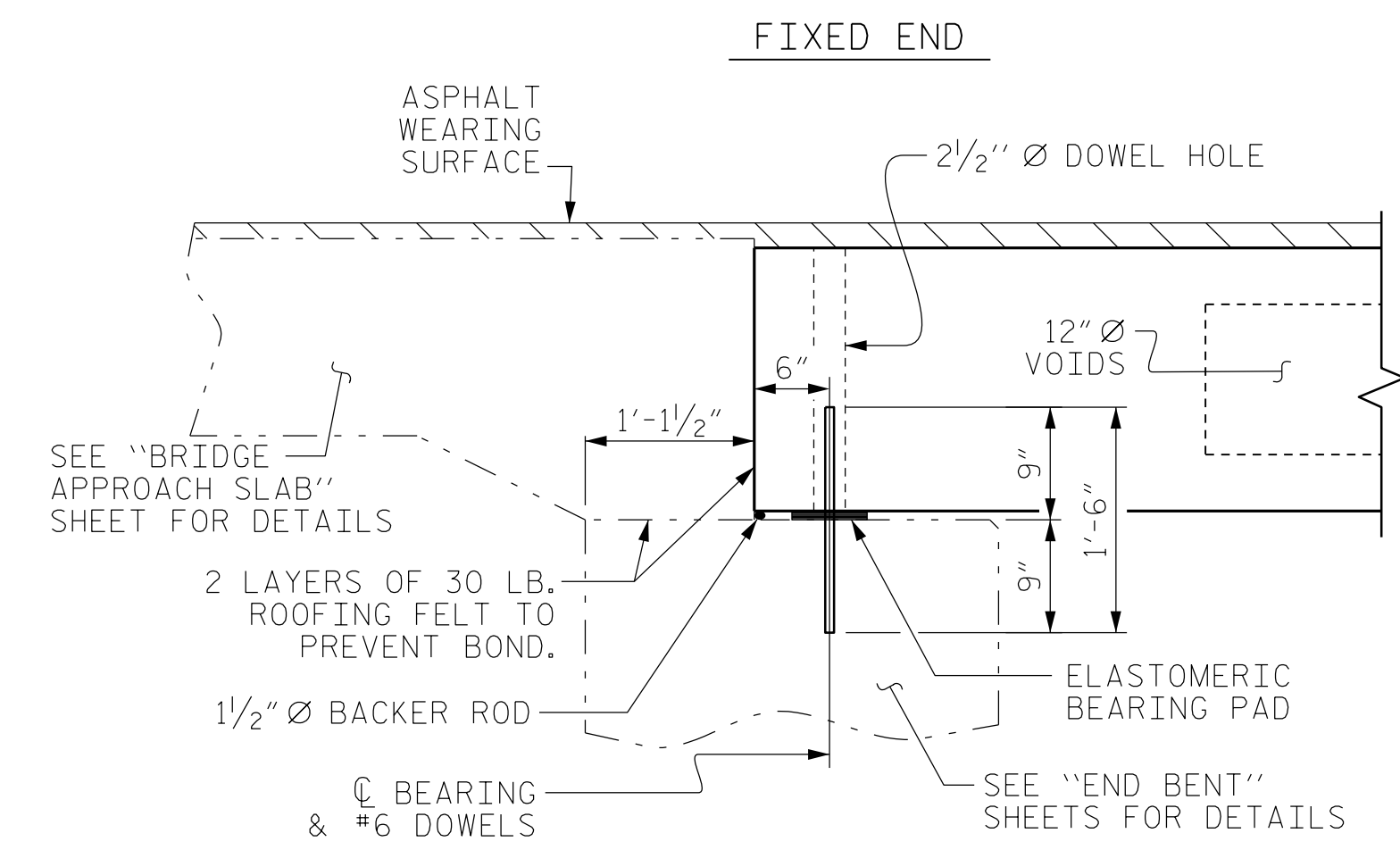
INTERIOR SLAB SECTION (55' UNIT)  
19 STRANDS REQUIRED  
0.6" Ø LOW RELAXATION STRAND LAYOUT



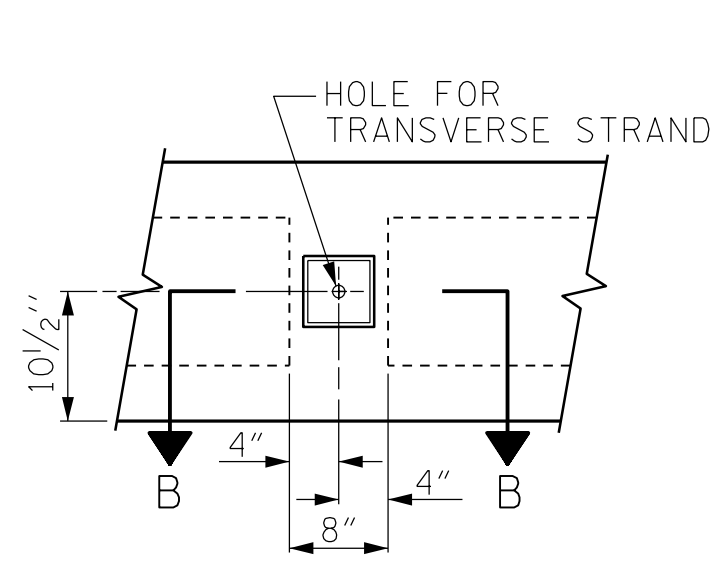
EXT. SLAB SECTION  
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)

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

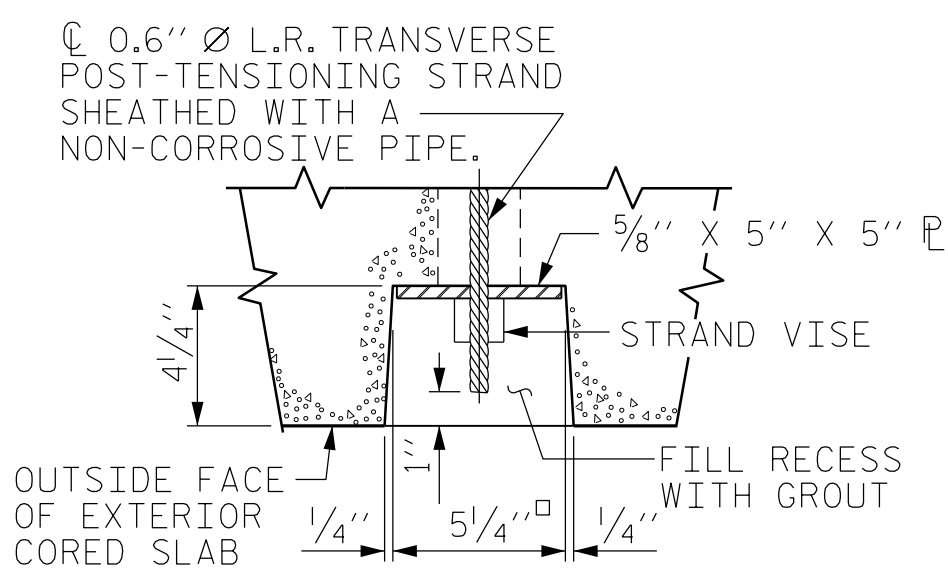
DEBONDING LEGEND



SECTION AT END BENT

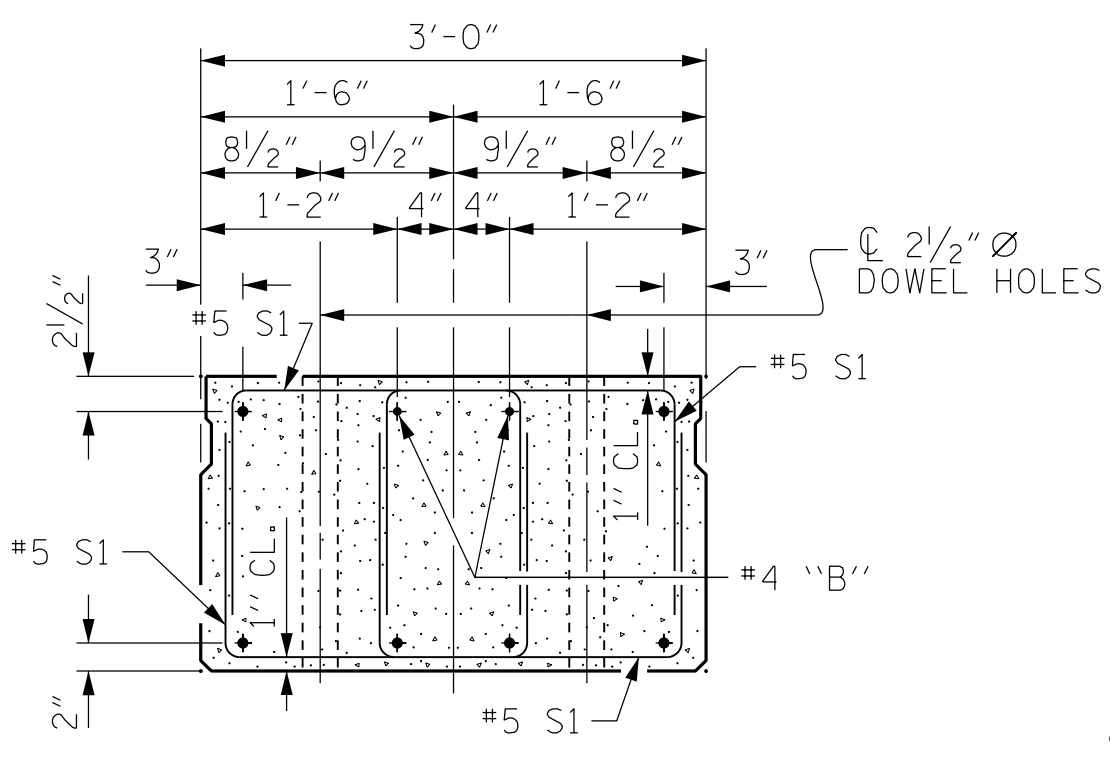


ELEVATION VIEW



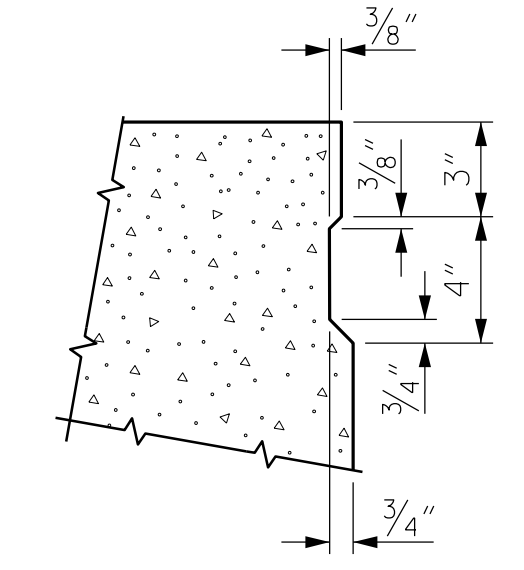
SECTION B-B

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



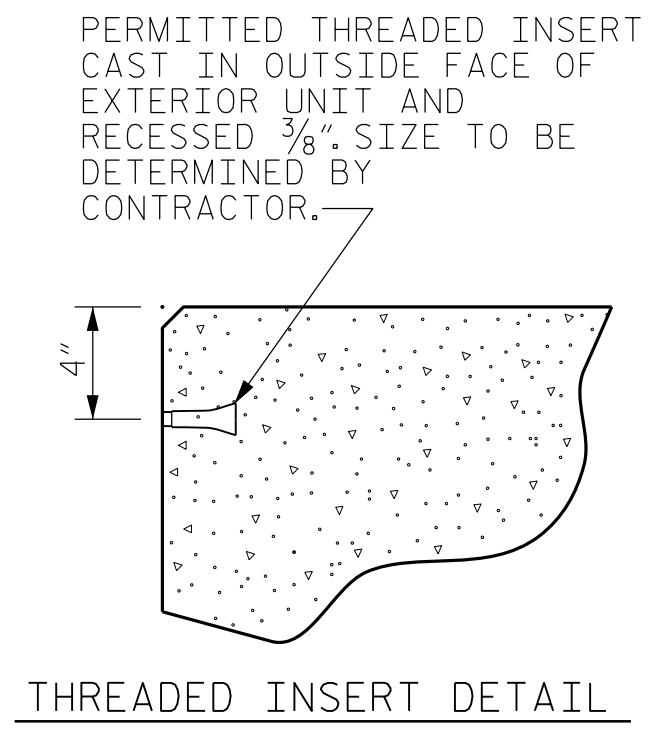
END ELEVATION

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.



SHEAR KEY DETAIL

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



THREADED INSERT DETAIL

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

PROJECT NO. BP8.R006  
RICHMOND COUNTY  
STATION: 16+13.00 -L-

SHEET 1 OF 3

**Dewberry**  
2610 WYCLIFF ROAD  
SUITE 410  
RALEIGH, NC 27607  
PHONE: 919.881.9939  
NC COA No. F-0929

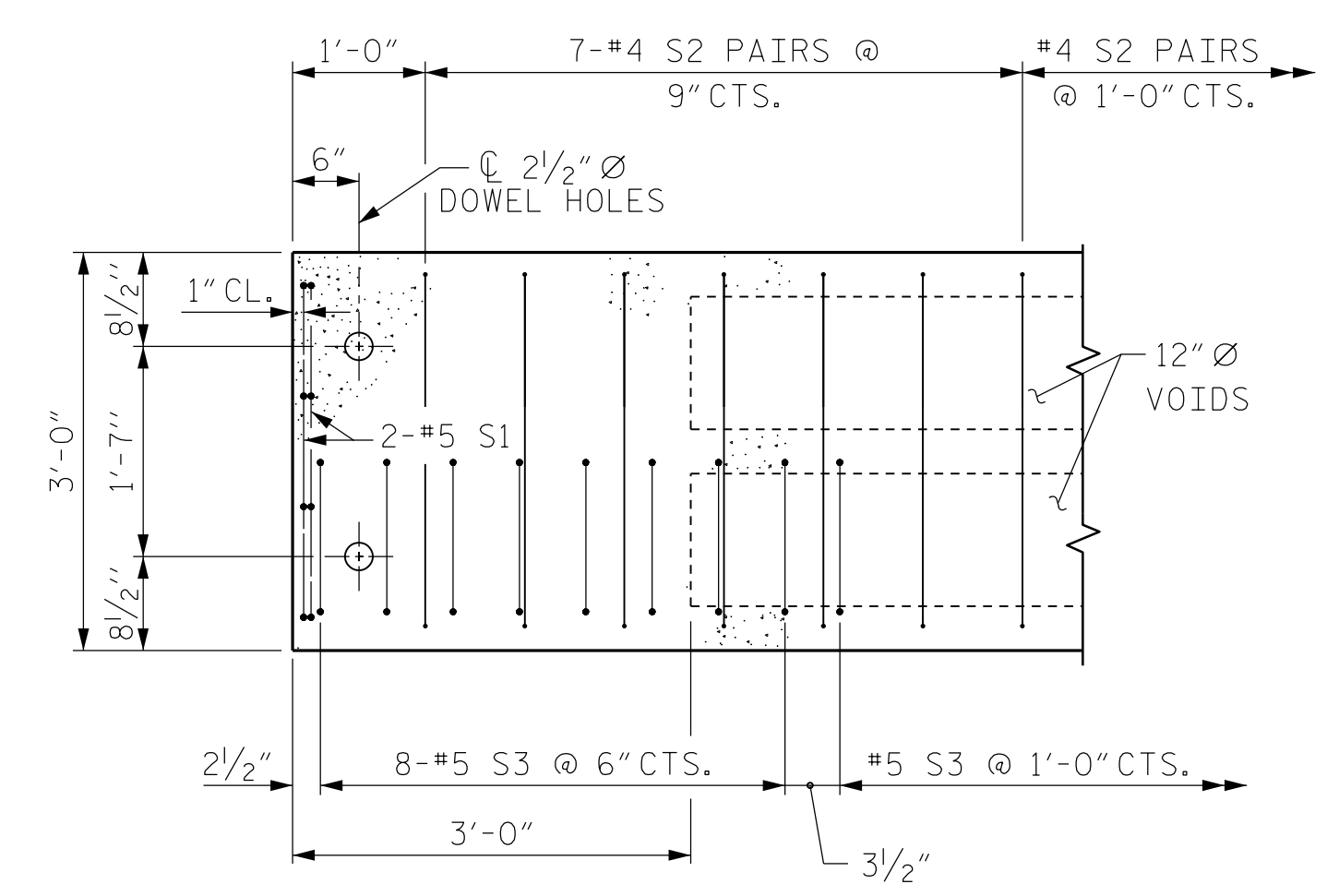
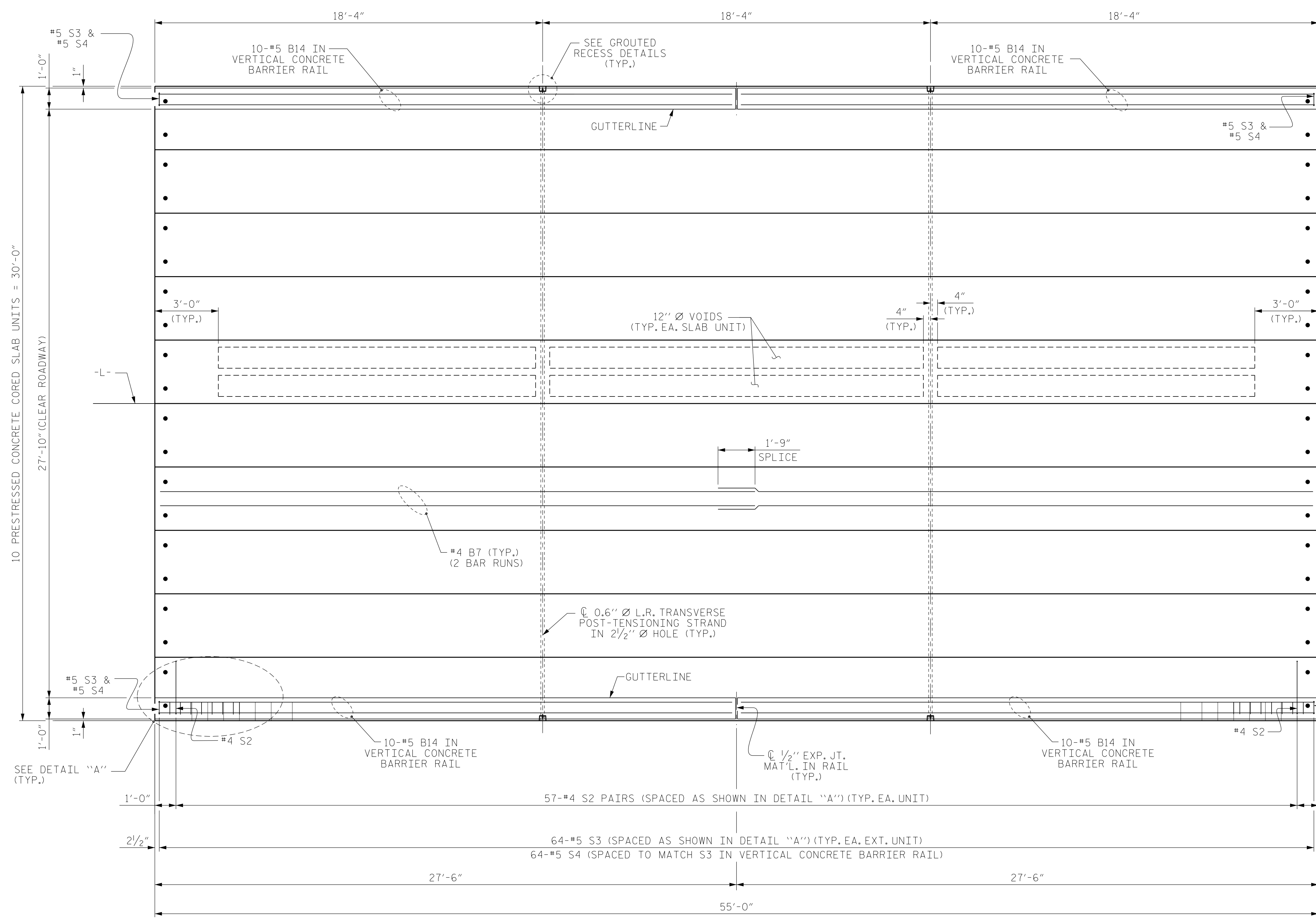
Signed by  
**Zachary Brown**  
NORTH CAROLINA PROFESSIONAL ENGINEER  
SEAL  
046785  
ZACHARY BROWN

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-6
2			4			15

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DRAWN BY: S. K. CHRISTOPH DATE: 01-2022  
CHECKED BY: C.B. CORDELL DATE: 02-2022  
DESIGN ENGINEER OF RECORD: Z.H. BROWN DATE: 11-2023



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

**PLAN OF UNIT**

PROJECT NO. BP8.R006  
RICHMOND COUNTY  
 STATION: 16+13.00 -L-  
 SHEET 2 OF 3

**Dewberry**  
 2610 WYCLIFF ROAD  
 SUITE 410  
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 PHONE: 919.881.9939  
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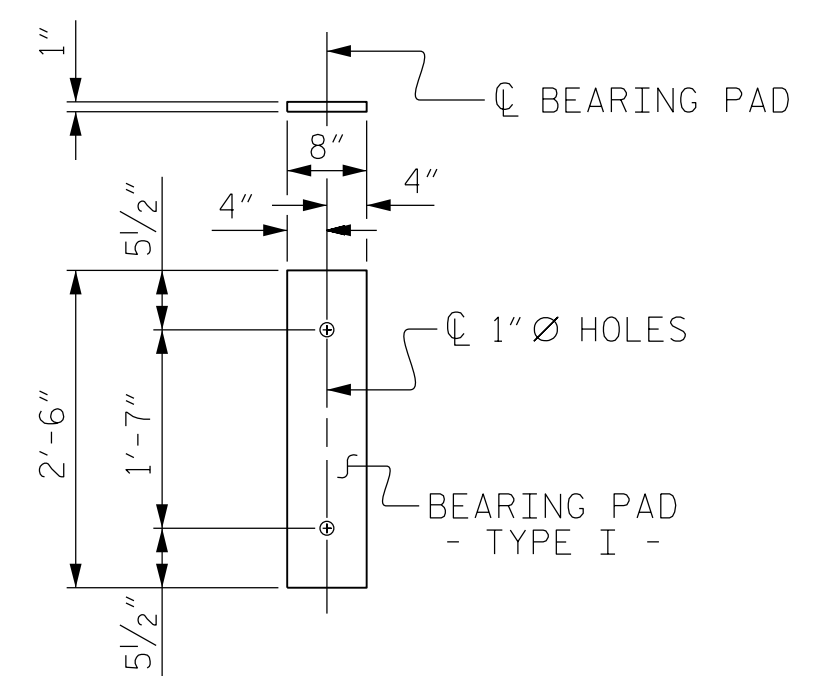
Signed by:  
  
 SEAL 046785  
 ENGINEER  
 ZACHARY BROWN

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**PLAN OF 55' UNIT  
 27'-10" CLEAR ROADWAY  
 90° SKEW**

DRAWN BY :	S. K. CHRISTOPH	DATE :	01-2022
CHECKED BY :	C.B. CORDELL	DATE :	02-2022
DESIGN ENGINEER OF RECORD:	Z.H. BROWN	DATE :	11-2023

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			15



FIXED END  
(TYPE I - 20 REQ'D)

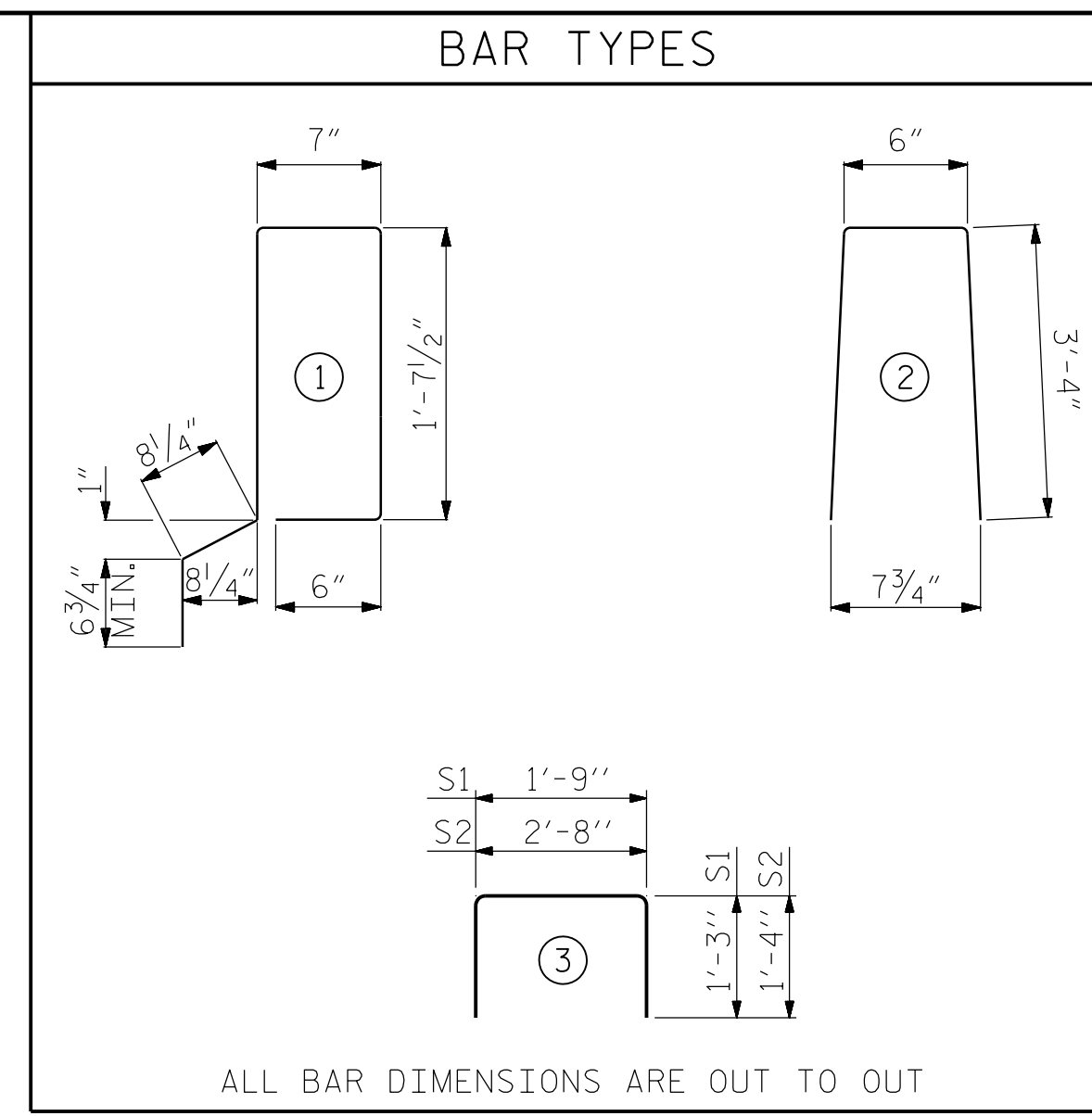
**ELASTOMERIC BEARING DETAILS**

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

CORED SLABS REQUIRED			
55' UNIT	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	55'-0"	110'-0"
INTERIOR C.S.	8	55'-0"	440'-0"
TOTAL	10		550'-0"

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

\*\* INCLUDES FUTURE WEARING SURFACE



**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 SIDWAYS. 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.

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

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

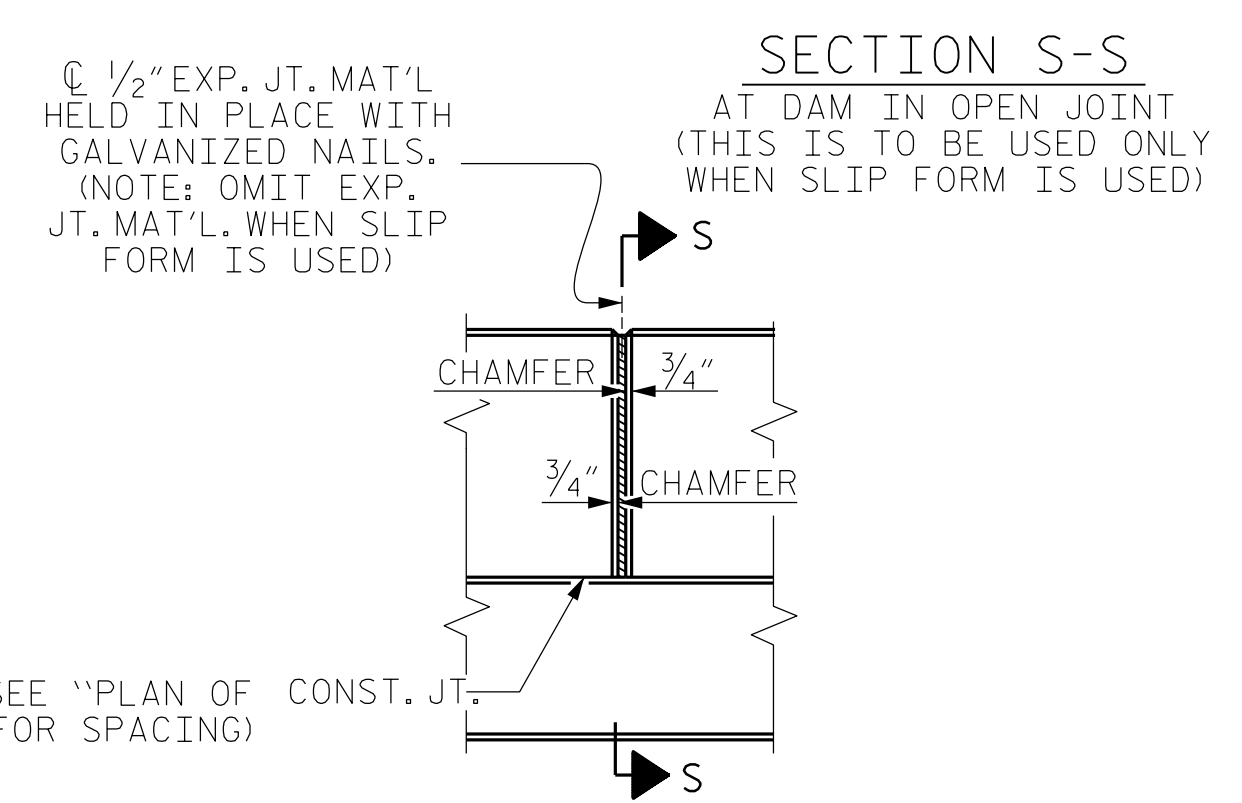
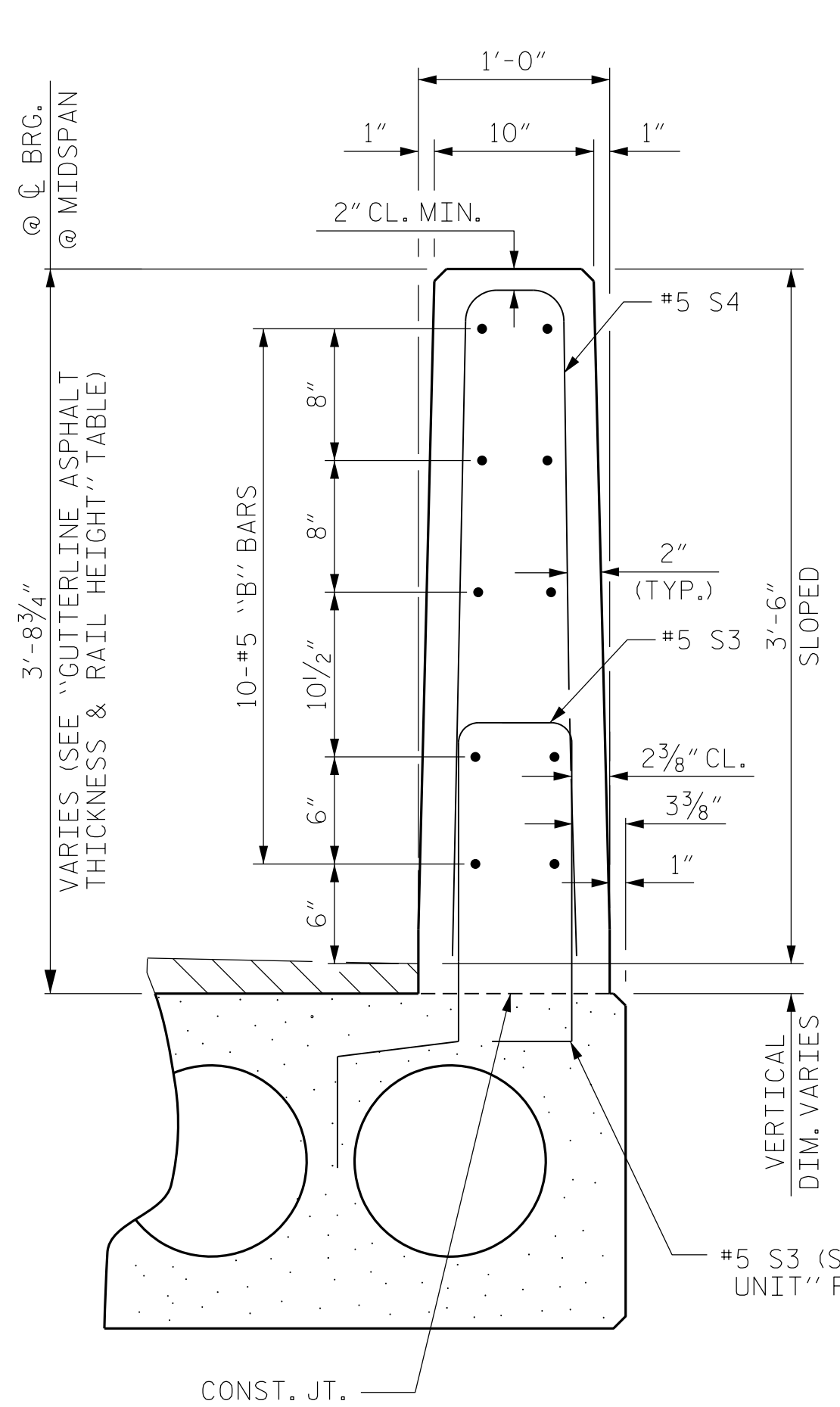
APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

CONCRETE RELEASE STRENGTH	
UNIT	PSI
55' UNITS	4900

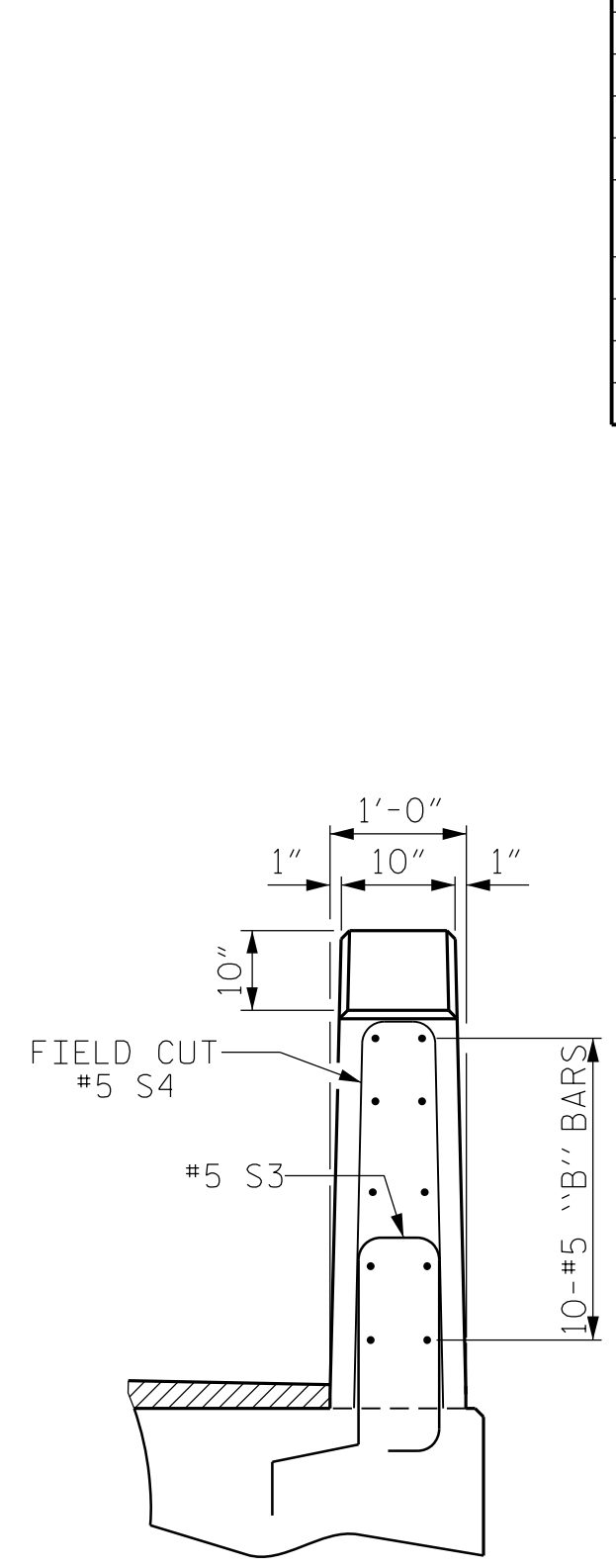
BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
55' UNIT						
*B14	40	40	#5	STR	27'-1"	1130
*S4	128	128	#5	2	7'-2"	957
*EPOXY COATED REINFORCING STEEL			LBS.		2087	
CLASS AA CONCRETE			CU.YDS.		14.1	
TOTAL VERTICAL CONCRETE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

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

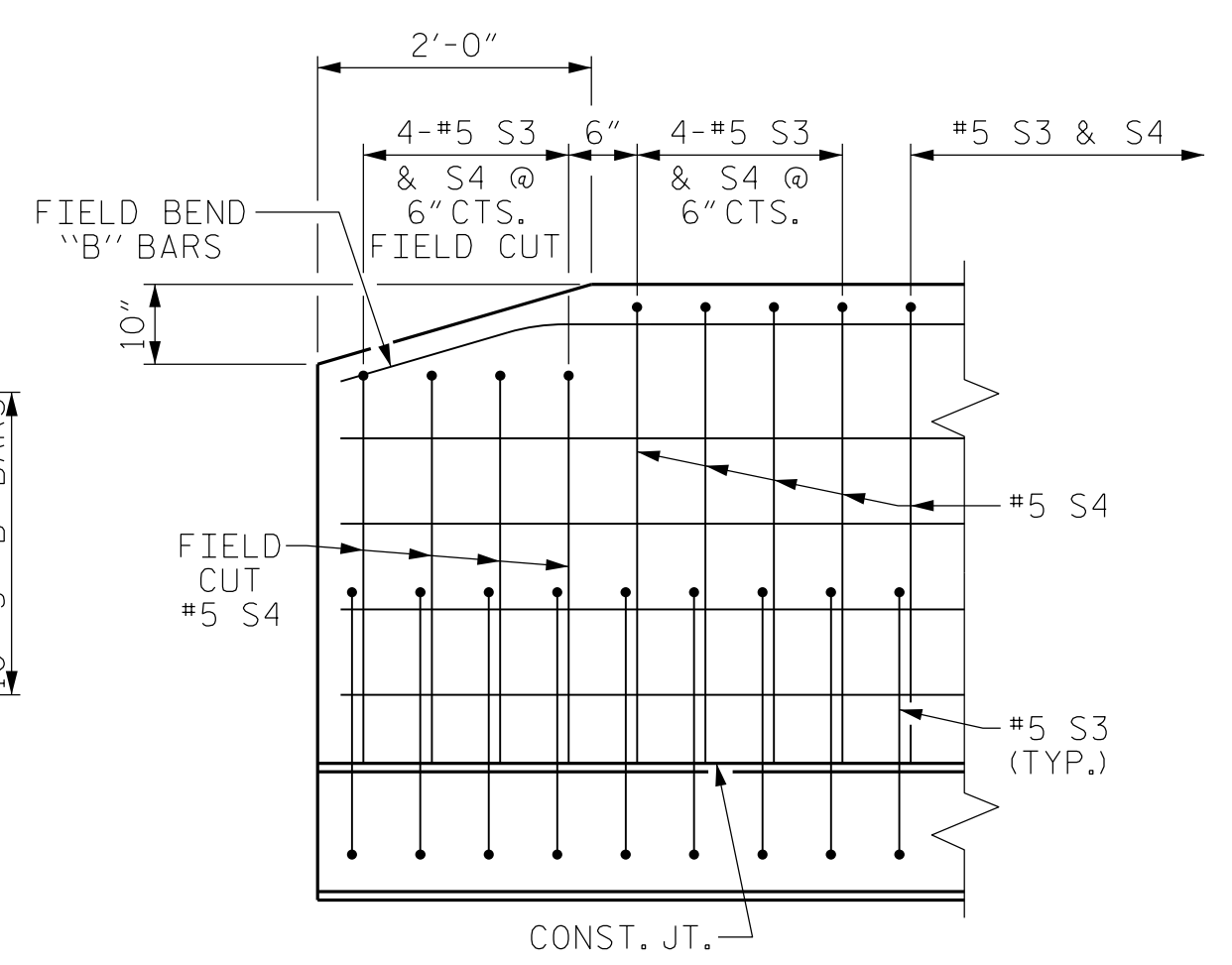
BILL OF MATERIAL FOR ONE 55' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
B7	4	#4	STR	28'-3"	75	28'-3"	75
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	114	#4	3	5'-4"	406	5'-4"	406
*S3	64	#5	1	5'-7"	373		
REINFORCING STEEL				LBS.		516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



ELEVATION AT EXPANSION JOINTS  
VERTICAL CONCRETE BARRIER RAIL SECTION



END VIEW



SIDE VIEW

END OF RAIL DETAILS

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

PROJECT NO. BP8.R006  
RICHMOND COUNTY  
STATION: 16+13.00 -L-  
SHEET 3 OF 3

**Dewberry**  
2610 WYCLIFF ROAD  
SUITE 410  
RALEIGH, NC 27607  
PHONE: 919.881.9939  
NC COA No. F-0929

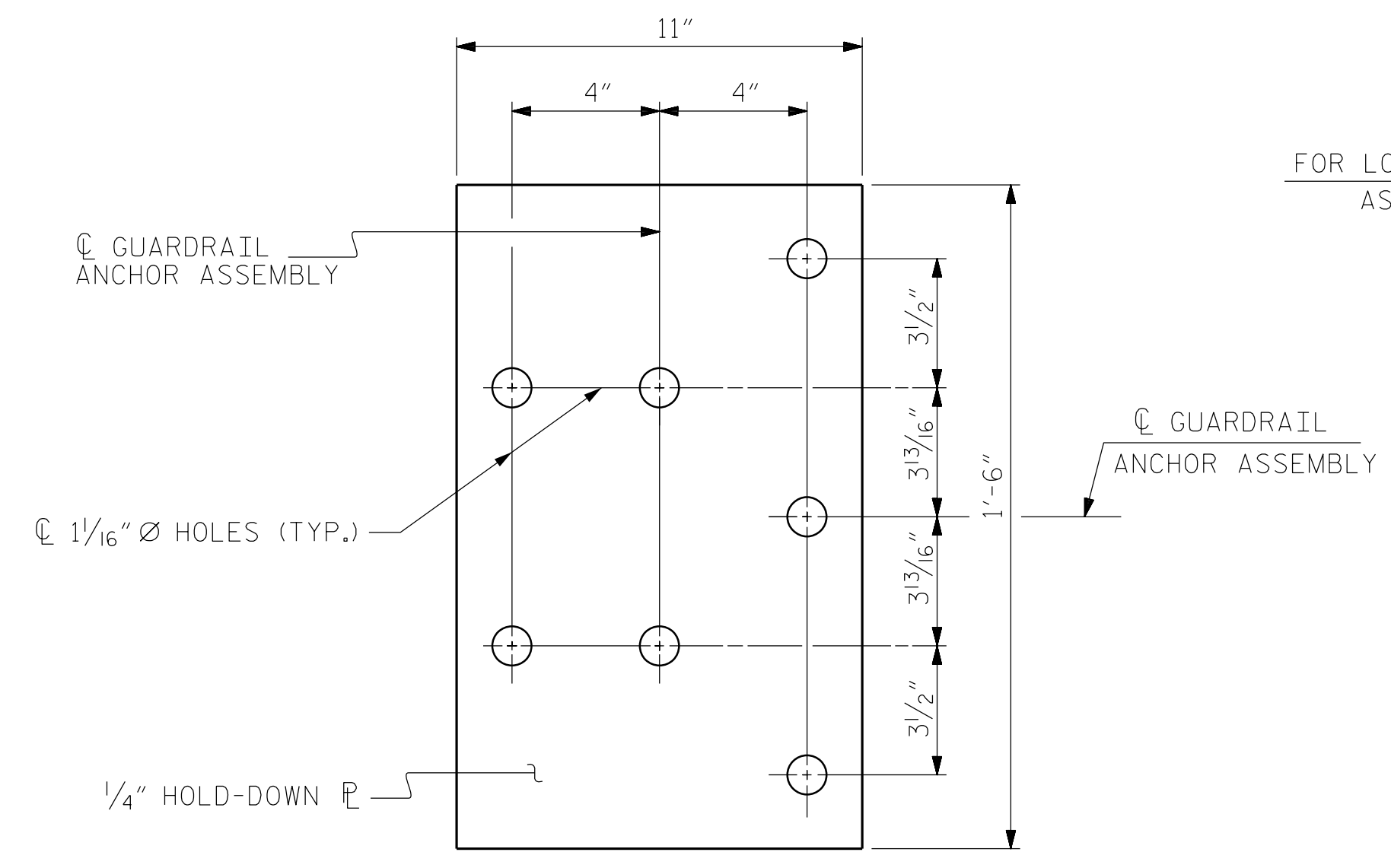
Signed by  
**Zachary Brown**  
Professional Engineer  
046785  
ZACHARY BROWN

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

DRAWN BY :	S. K. CHRISTOPH	DATE :	01-2022
CHECKED BY :	C.B. CORDELL	DATE :	02-2022
DESIGN ENGINEER OF RECORD:	Z.H. BROWN	DATE :	11-2023

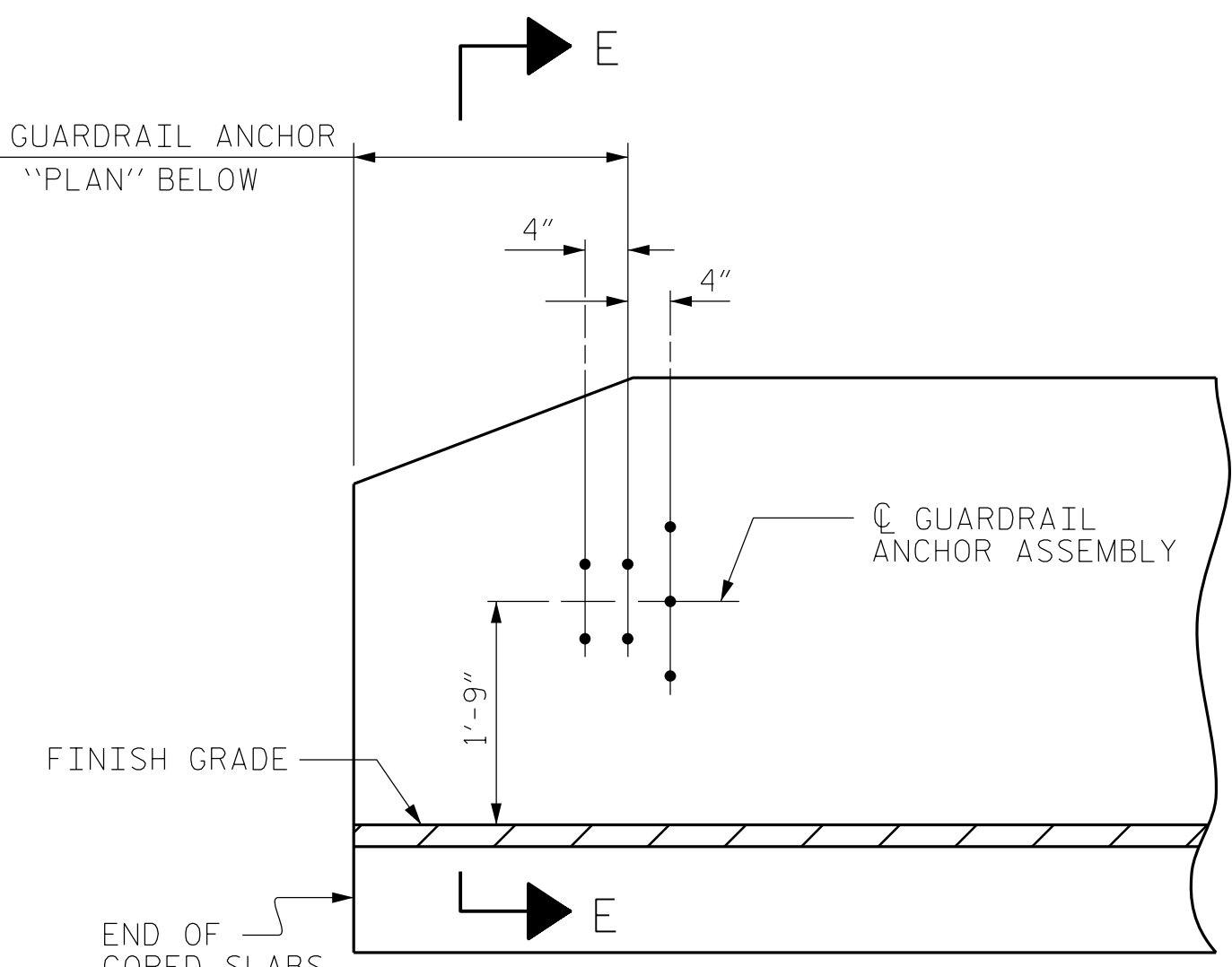
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			15

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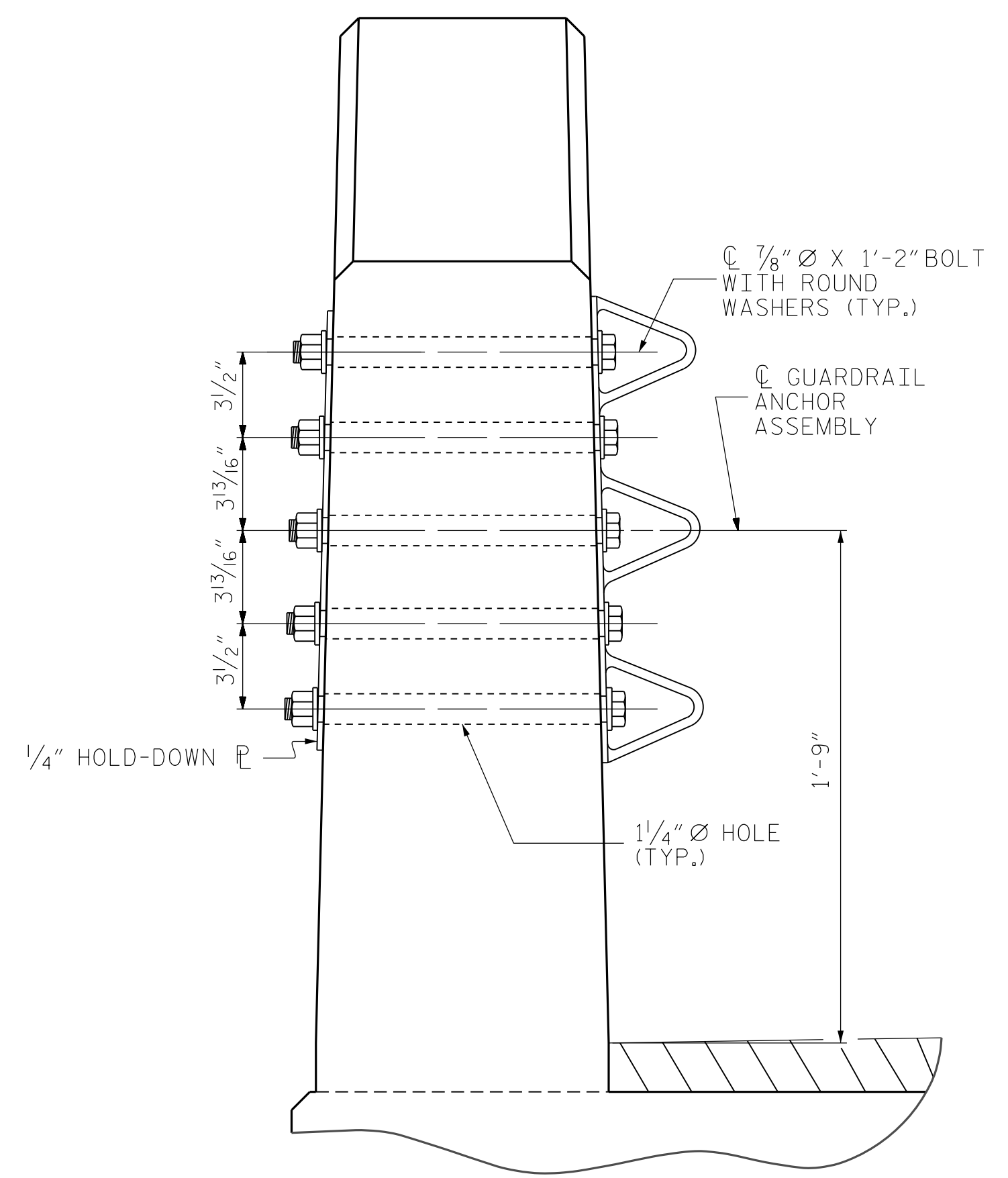


PLAN

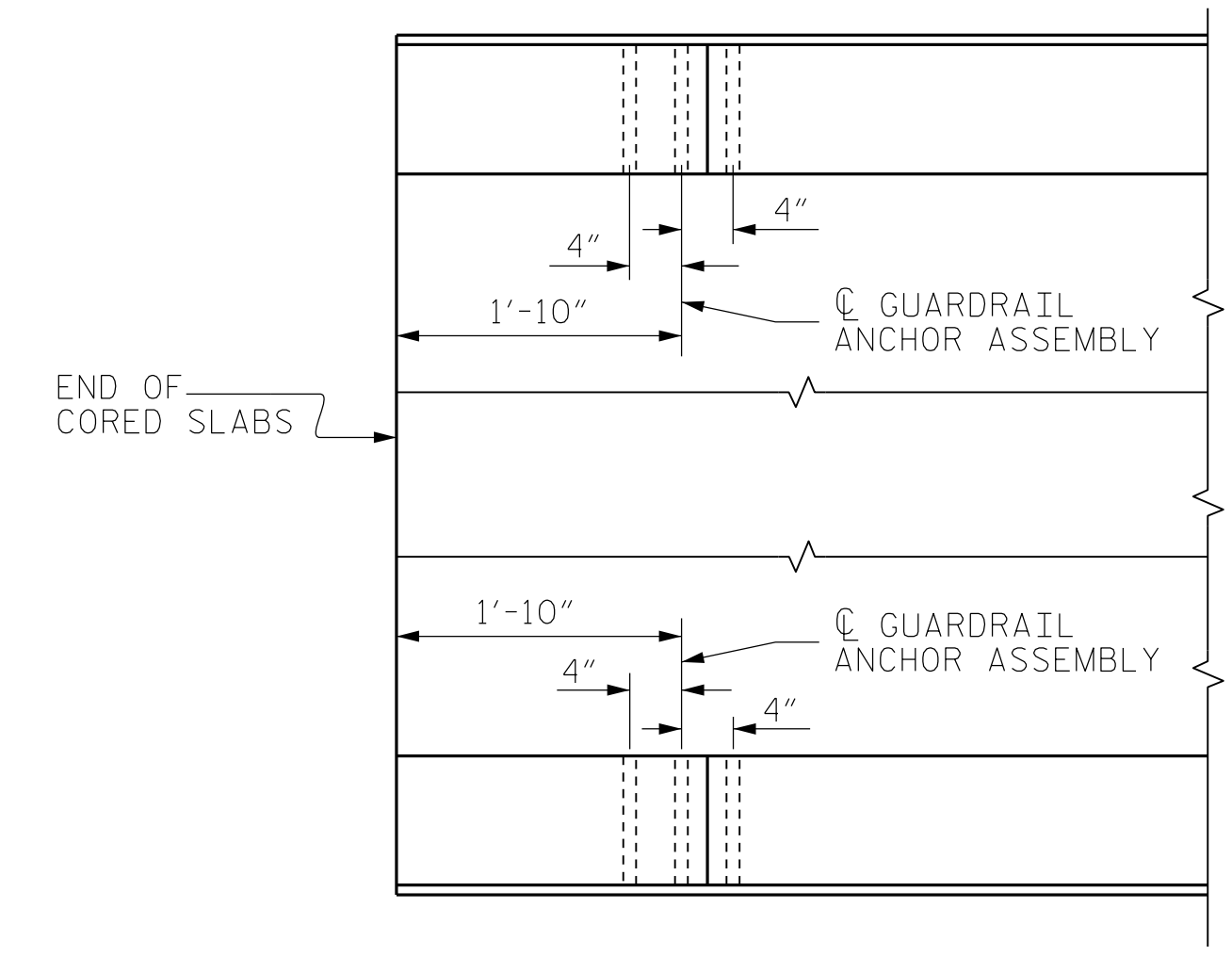
FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



ELEVATION



SECTION E-E  
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN  
LOCATION OF ANCHORS FOR GUARDRAIL  
END BENT #1 SHOWN, END BENT #2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENT  
\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

NOTES

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

PROJECT NO. BP8.R006  
RICHMOND COUNTY  
 STATION: 16+13.00 -L-

**Dewberry**  
 2610 WYCLIFF ROAD  
 SUITE 410  
 RALEIGH, NC 27607  
 PHONE: 919.881.9939  
 NC COA No. F-0929

Signed by: *Zachary Brown*  
 NORTH CAROLINA PROFESSIONAL SEAL  
 4318808853461  
 ENGINEER  
 ZACHARY BROWN  
 8/26/2025

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

DRAWN BY :	S. K. CHRISTOPH	DATE :	01-2022
CHECKED BY :	C.B. CORDELL	DATE :	02-2022
DESIGN ENGINEER OF RECORD:	Z.H. BROWN	DATE :	11-2023

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-9
2			4			15

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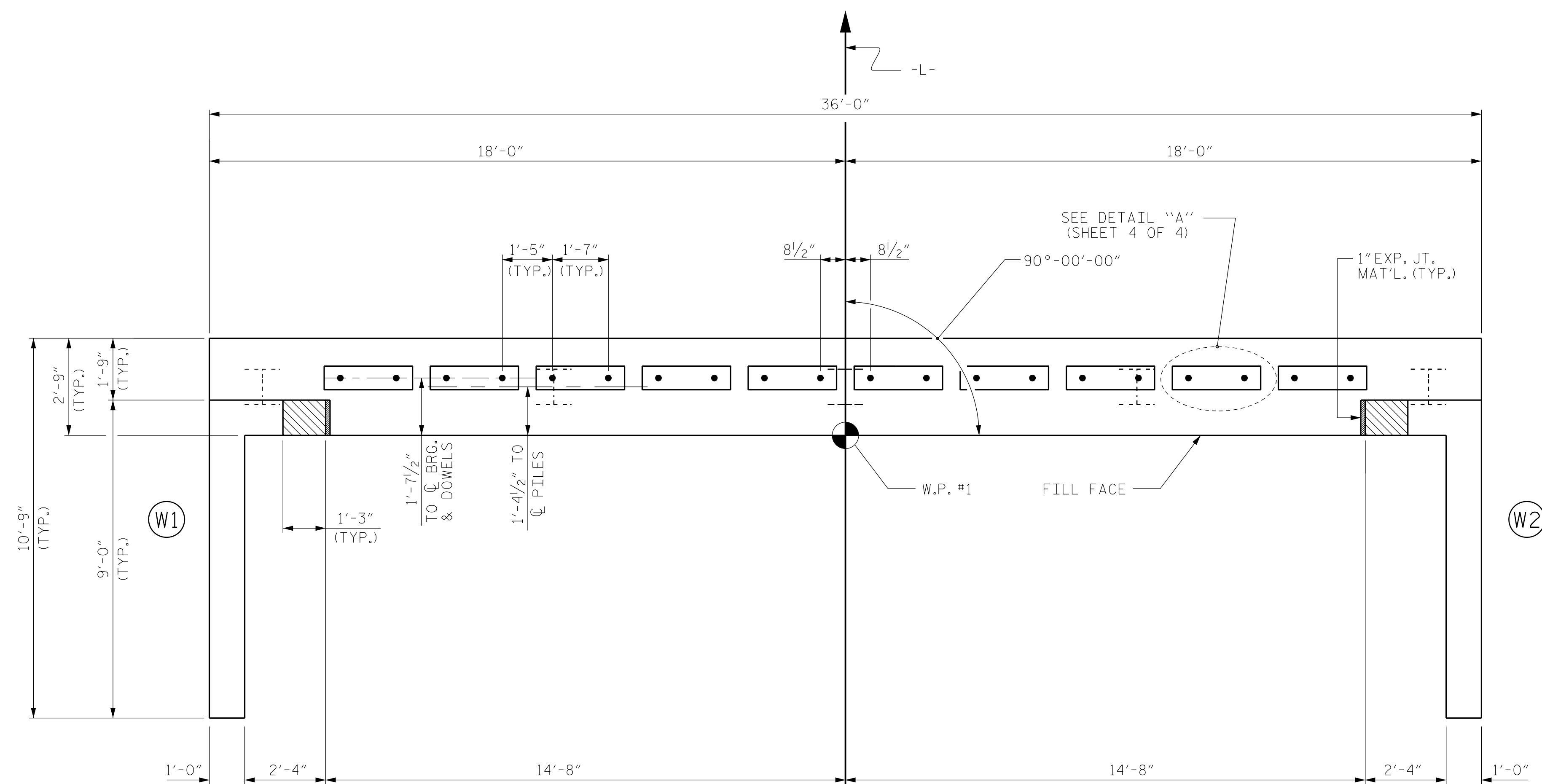
### NOTES

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

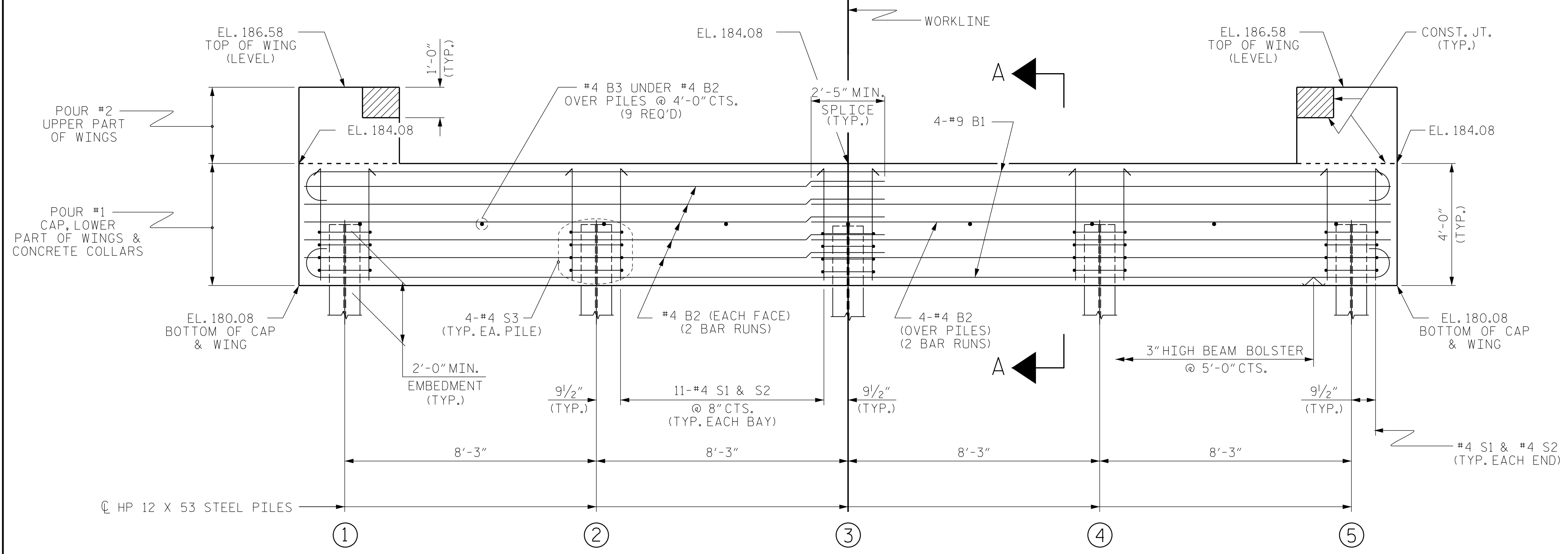
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

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

PROJECT NO. BP8.R006

RICHMOND COUNTY

STATION: 16+13.00 -L-

SHEET 1 OF 4

**Dewberry**  
2610 WYCLIFF ROAD  
SUITE 410  
RALEIGH, NC 27607  
PHONE: 919.881.9939  
NC COA No. F-0929

Signed by  
**Zachary Brown**  
NORTH CAROLINA PROFESSIONAL ENGINEER  
43188-0005-0184-046785  
ENGINEER  
ZACHARY BROWN

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

### SUBSTRUCTURE END BENT No. 1

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

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CHECKED BY: C.B. CORDELL DATE: 02-2022  
DESIGN ENGINEER OF RECORD: Z.H. BROWN DATE: 11-2023

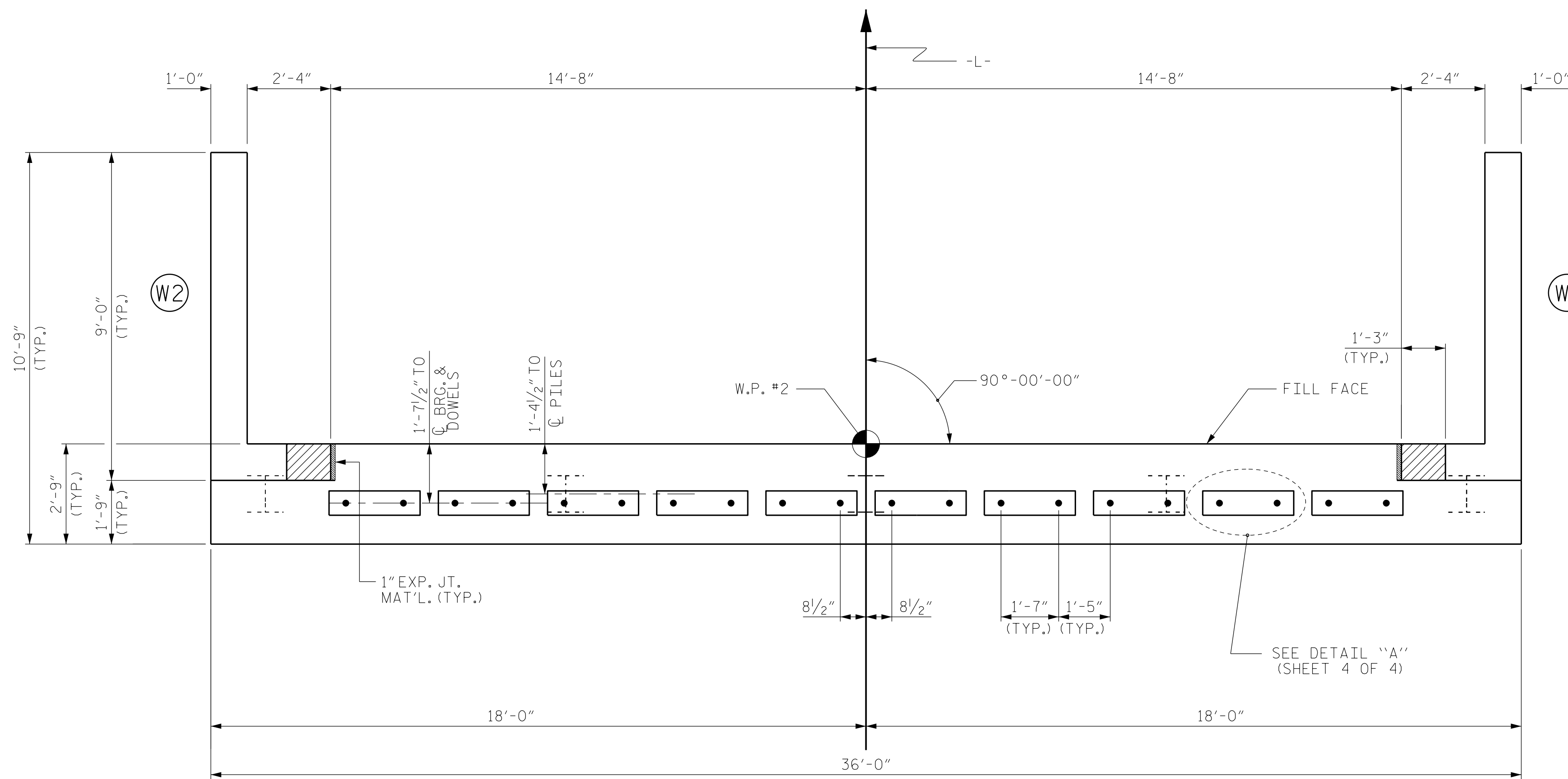
NOTES

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

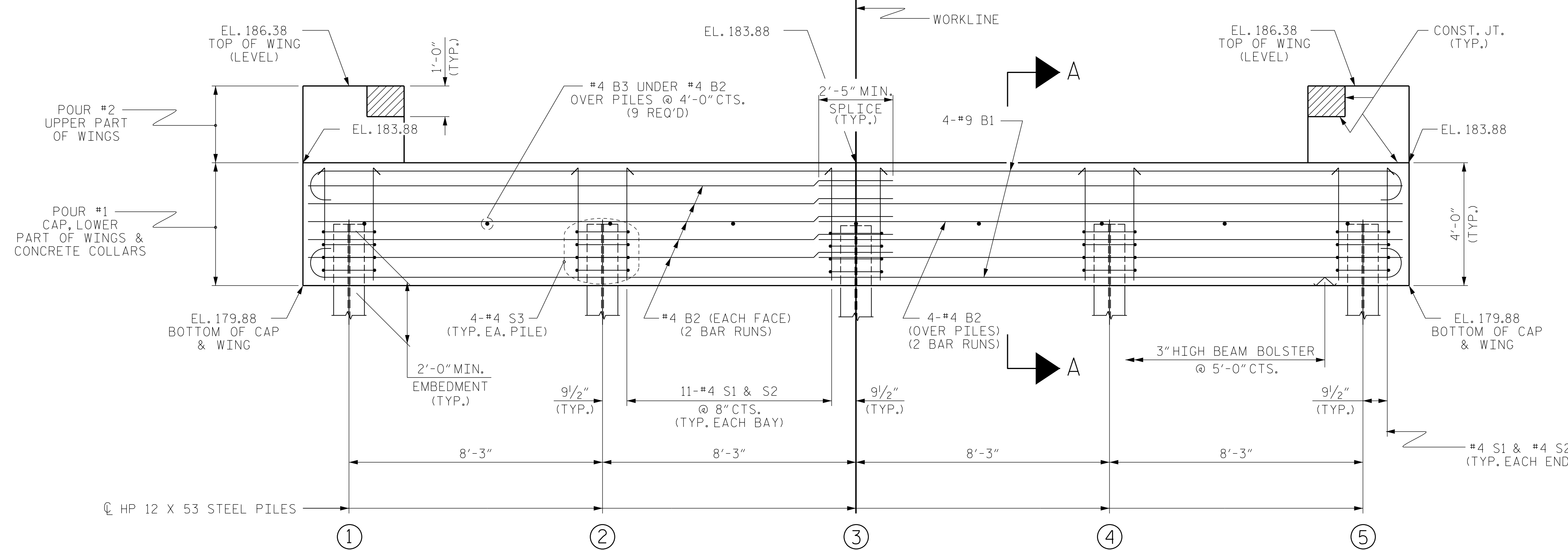
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

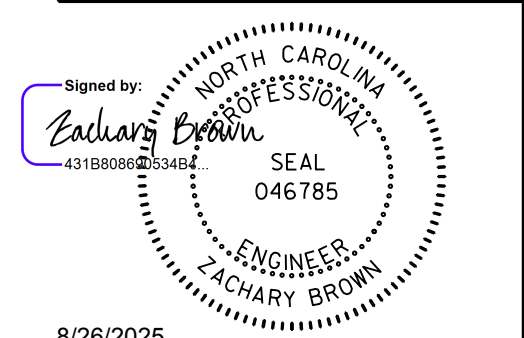
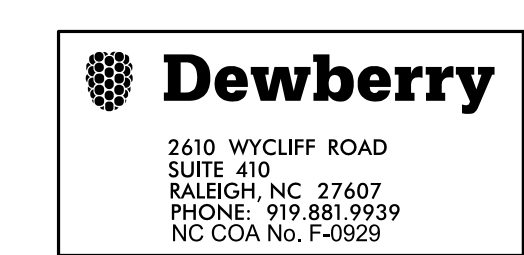
WINGS NOT SHOWN FOR CLARITY.  
FOR SECTION A-A, SEE SHEET 4 OF 4.  
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.  
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

PROJECT NO. BP8.R006

RICHMOND COUNTY

STATION: 16+13.00 -L-

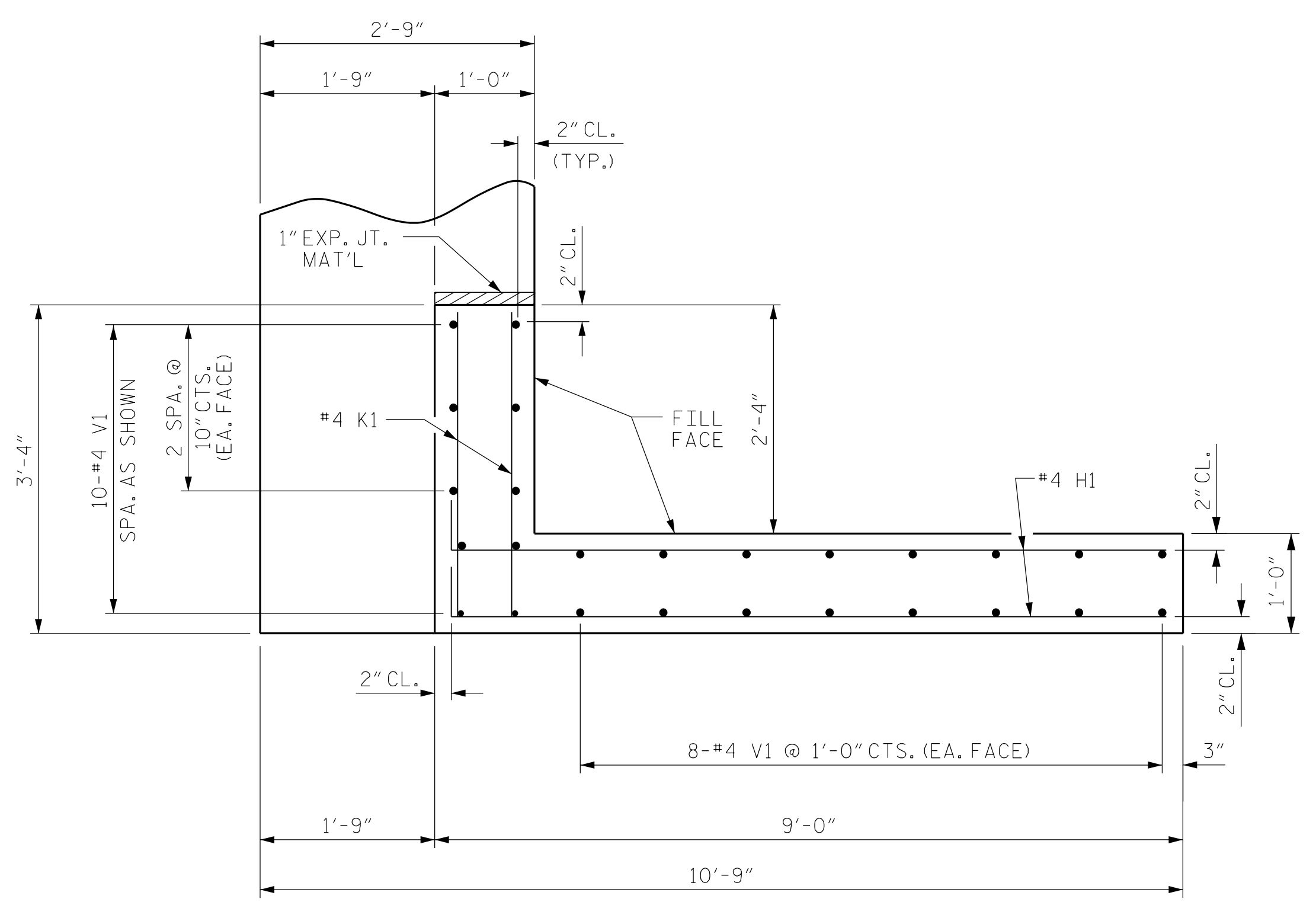
SHEET 2 OF 4



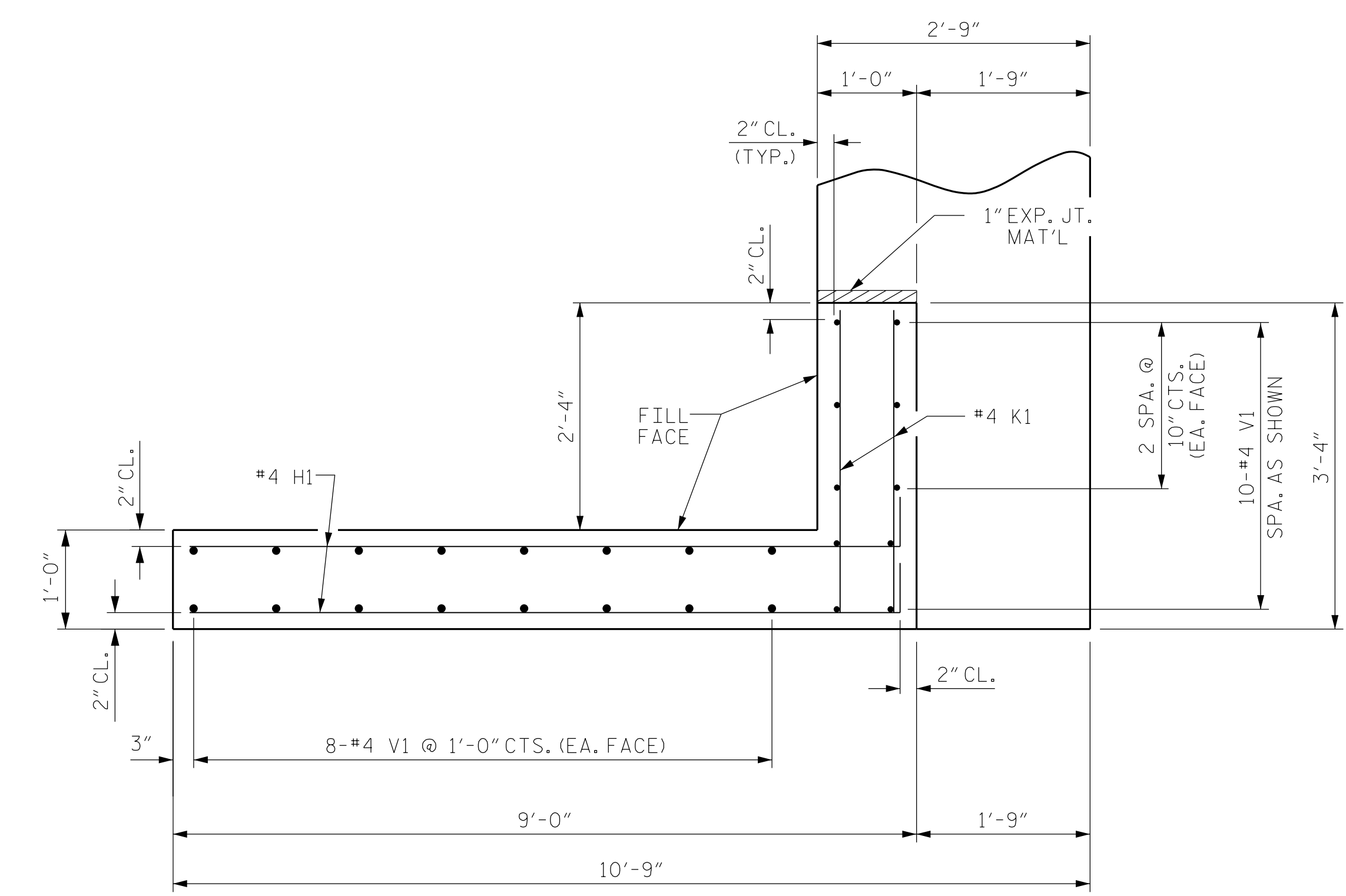
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-11
SUBSTRUCTURE END BENT No. 2						TOTAL SHEETS 15
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

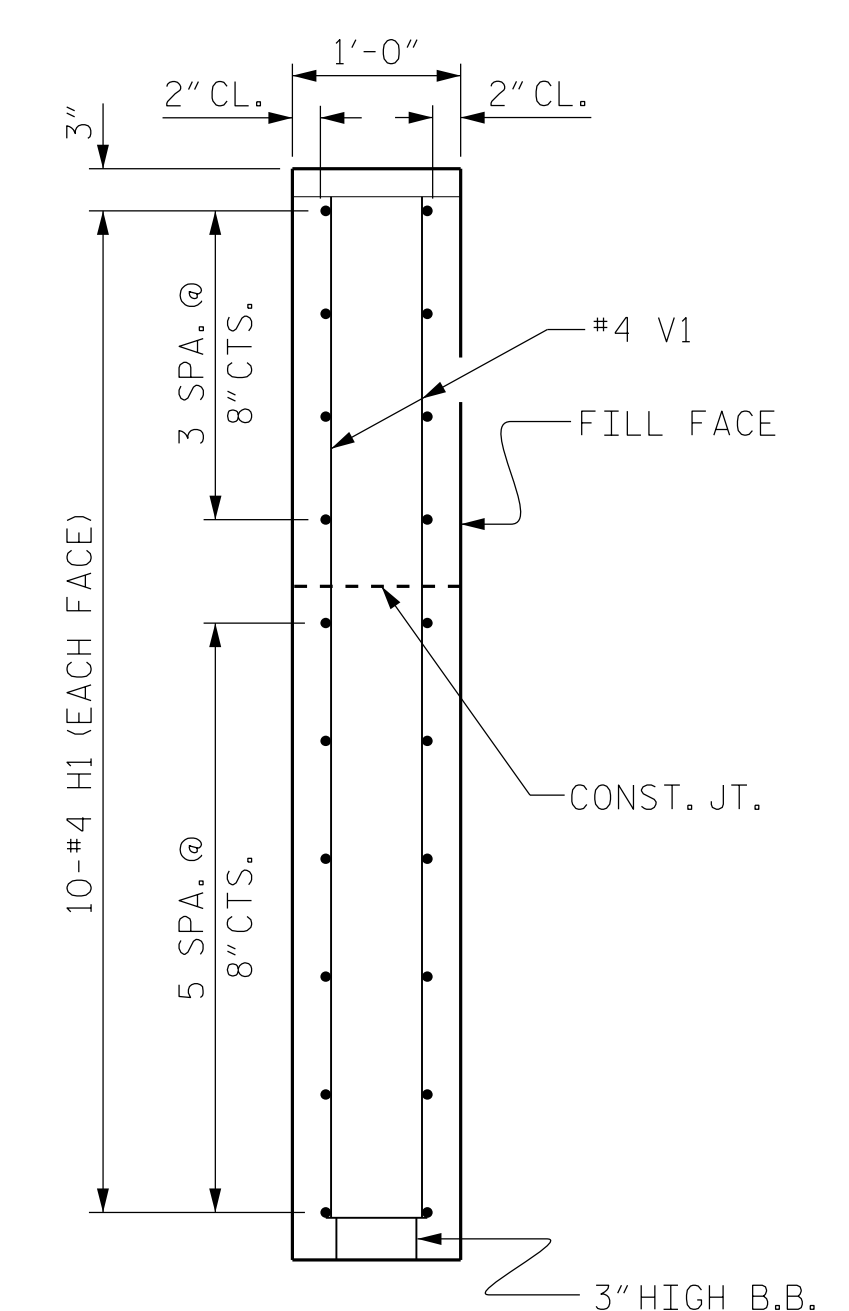
DRAWN BY: S. K. CHRISTOPH DATE: 01-2022  
CHECKED BY: C.B. CORDELL DATE: 02-2022  
DESIGN ENGINEER OF RECORD: Z.H. BROWN DATE: 11-2023



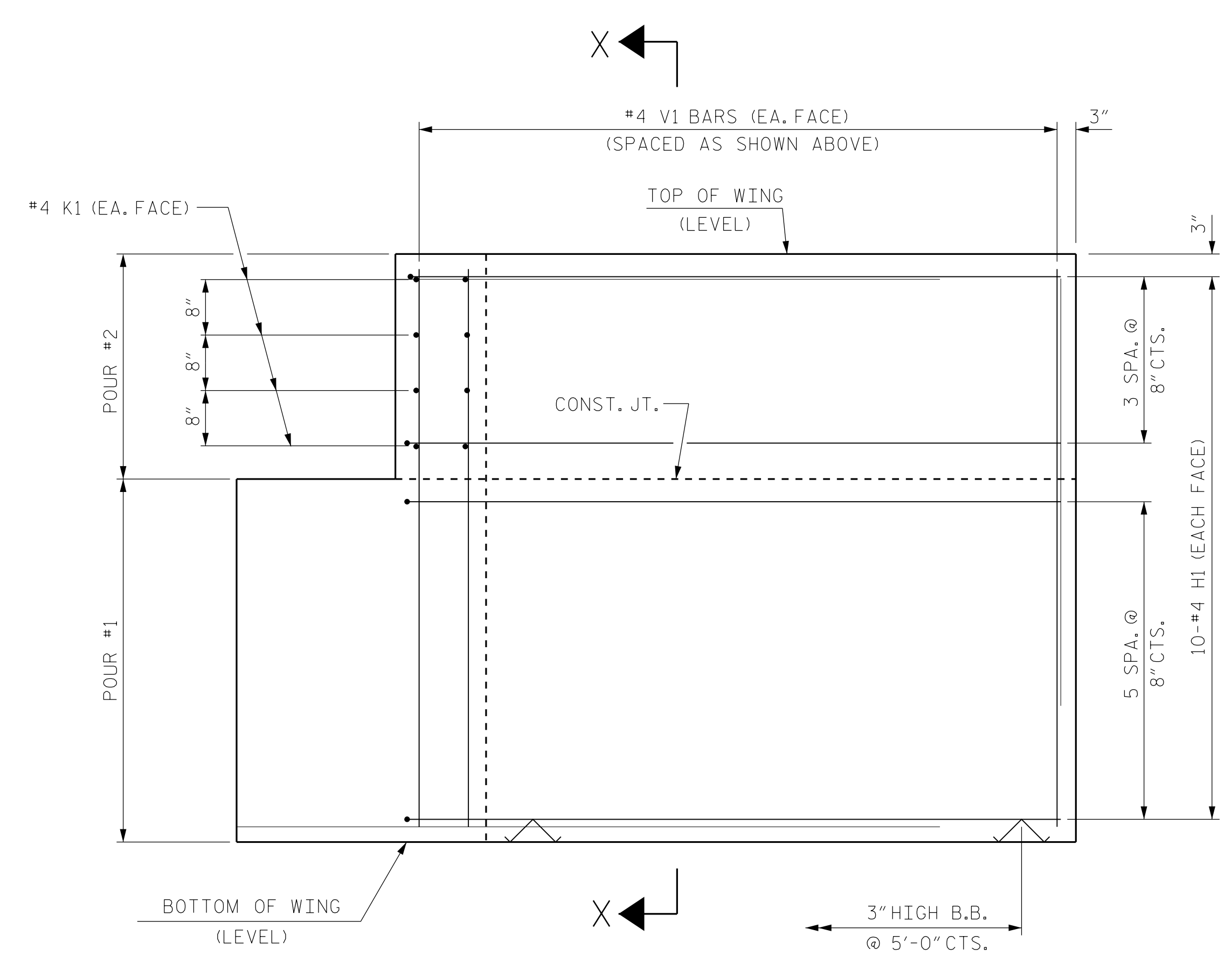
PLAN OF WING (W1)



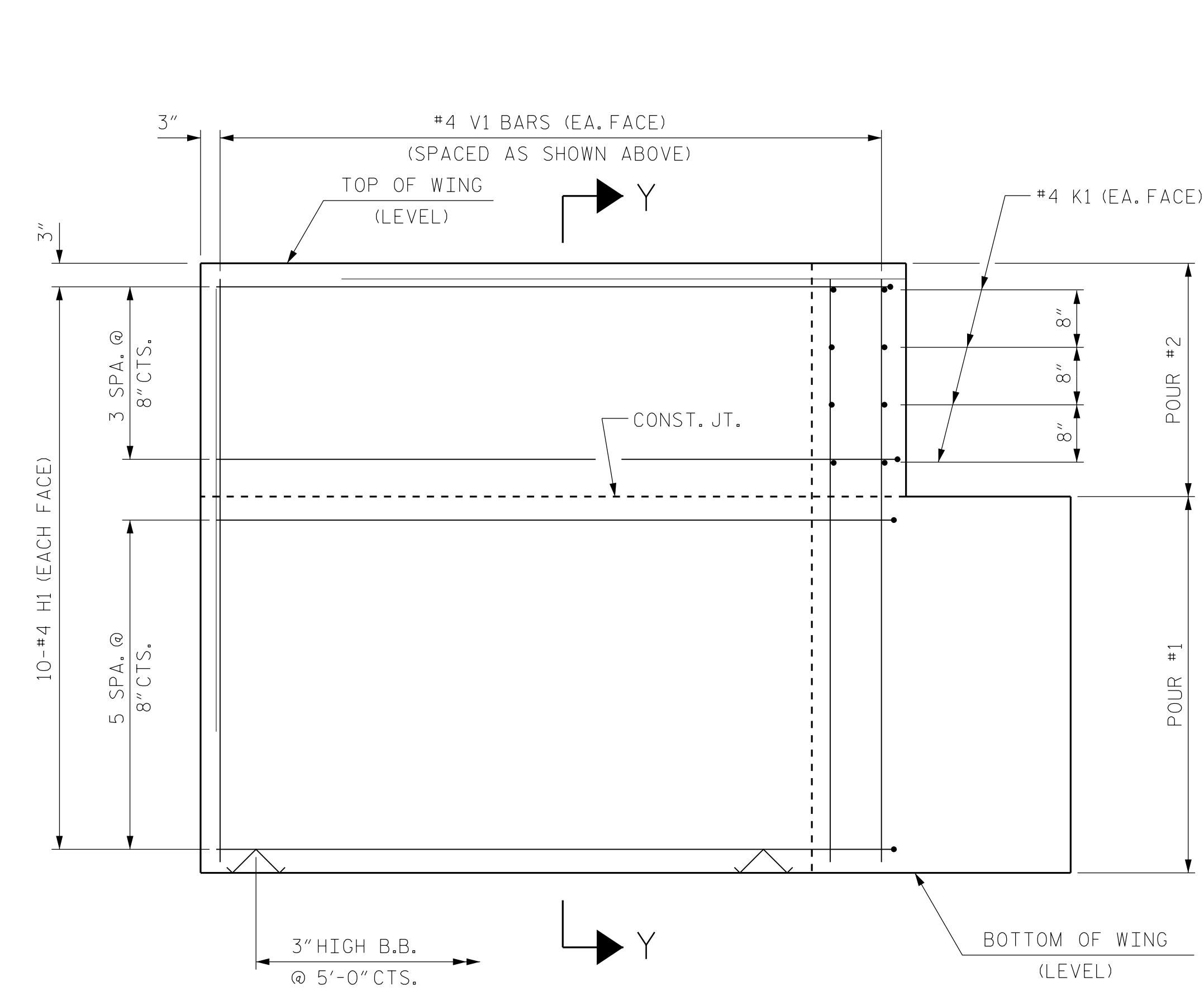
PLAN OF WING (W2)



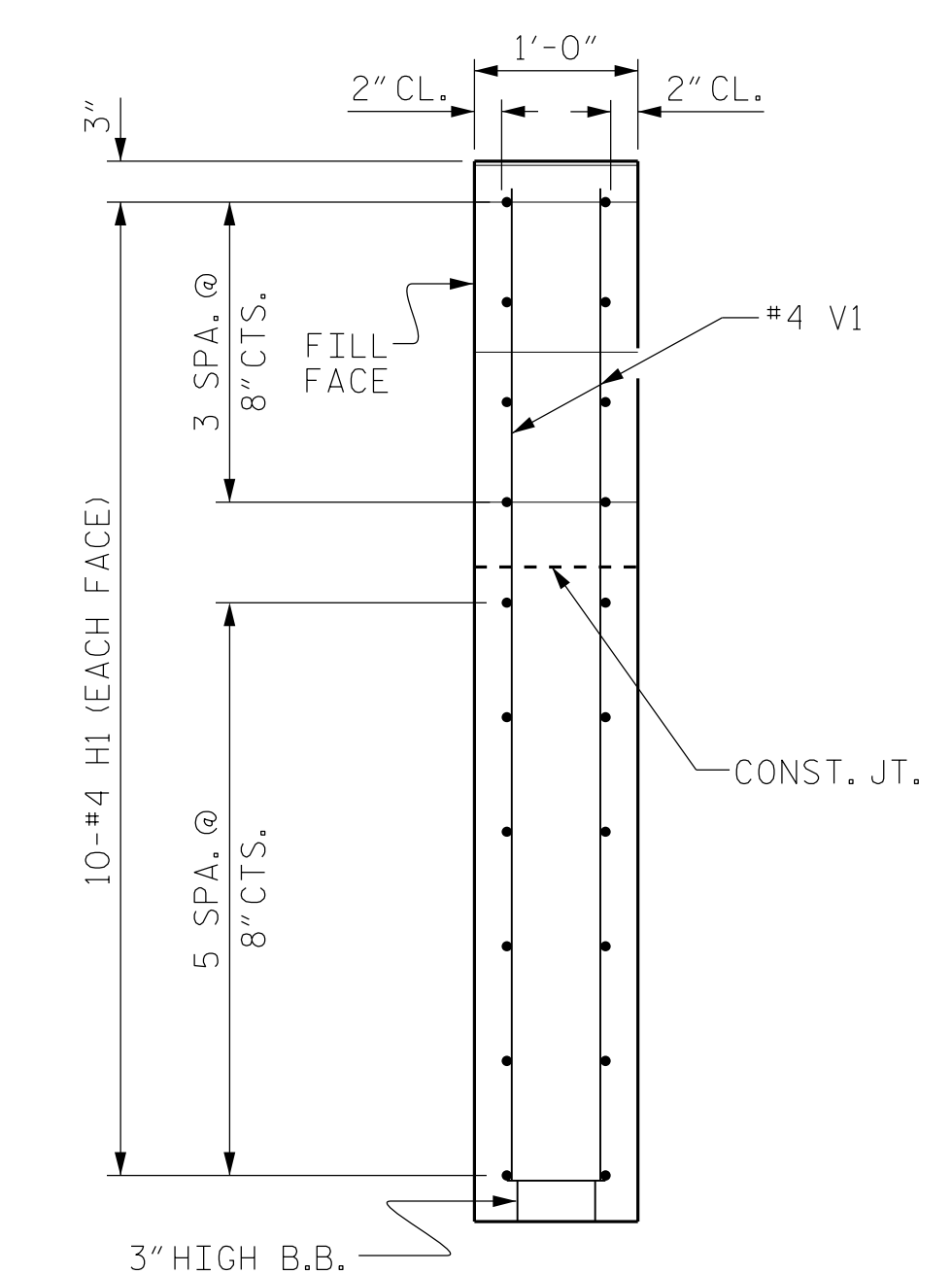
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION Y-Y

PROJECT NO. BP8.R006  
 RICHMOND COUNTY  
 STATION: 16+13.00 -L-  
 SHEET 3 OF 4

**Dewberry**  
 2610 WYCLIFF ROAD  
 SUITE 410  
 RALEIGH, NC 27607  
 PHONE: 919.881.9939  
 NC COA No. F-0929

Signed by: **Zachary Brown**  
 NORTH CAROLINA PROFESSIONAL SEAL  
 046785  
 ENGINEER  
 ZACHARY BROWN

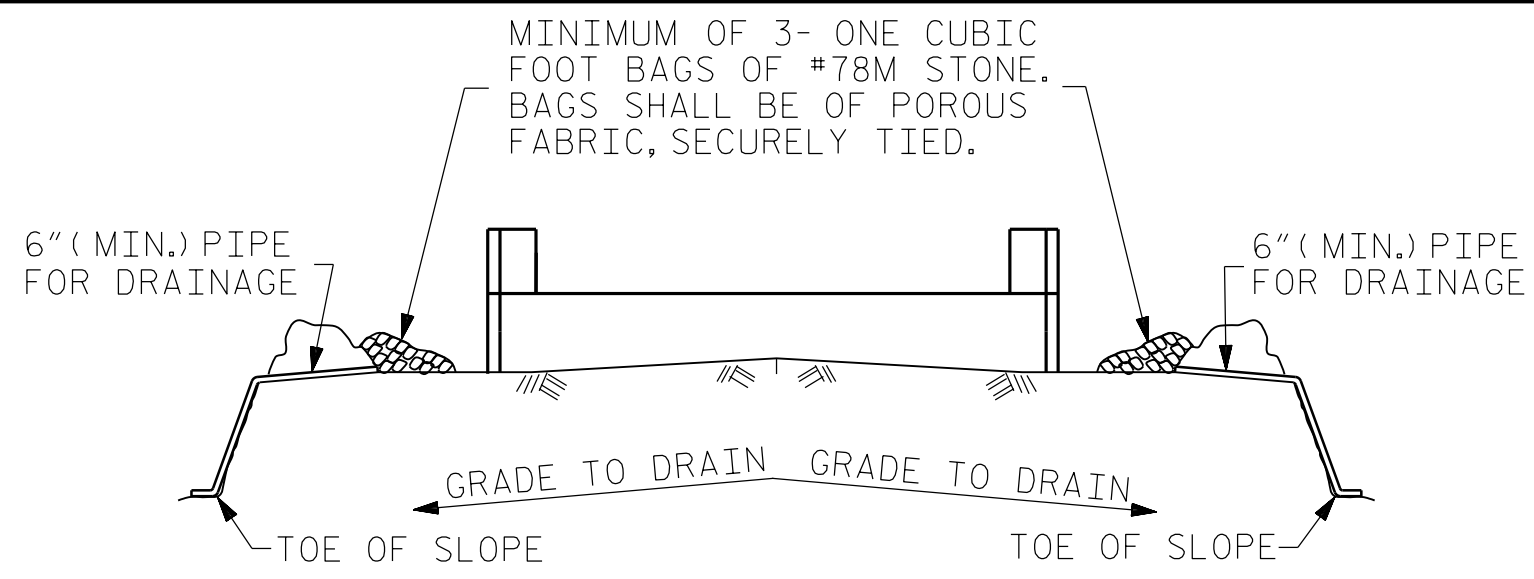
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT  
 WING DETAILS

DRAWN BY: S.K. CHRISTOPH DATE: 01-2022  
 CHECKED BY: C.B. CORDELL DATE: 02-2022  
 DESIGN ENGINEER OF RECORD: Z.H. BROWN DATE: 11-2023

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			15

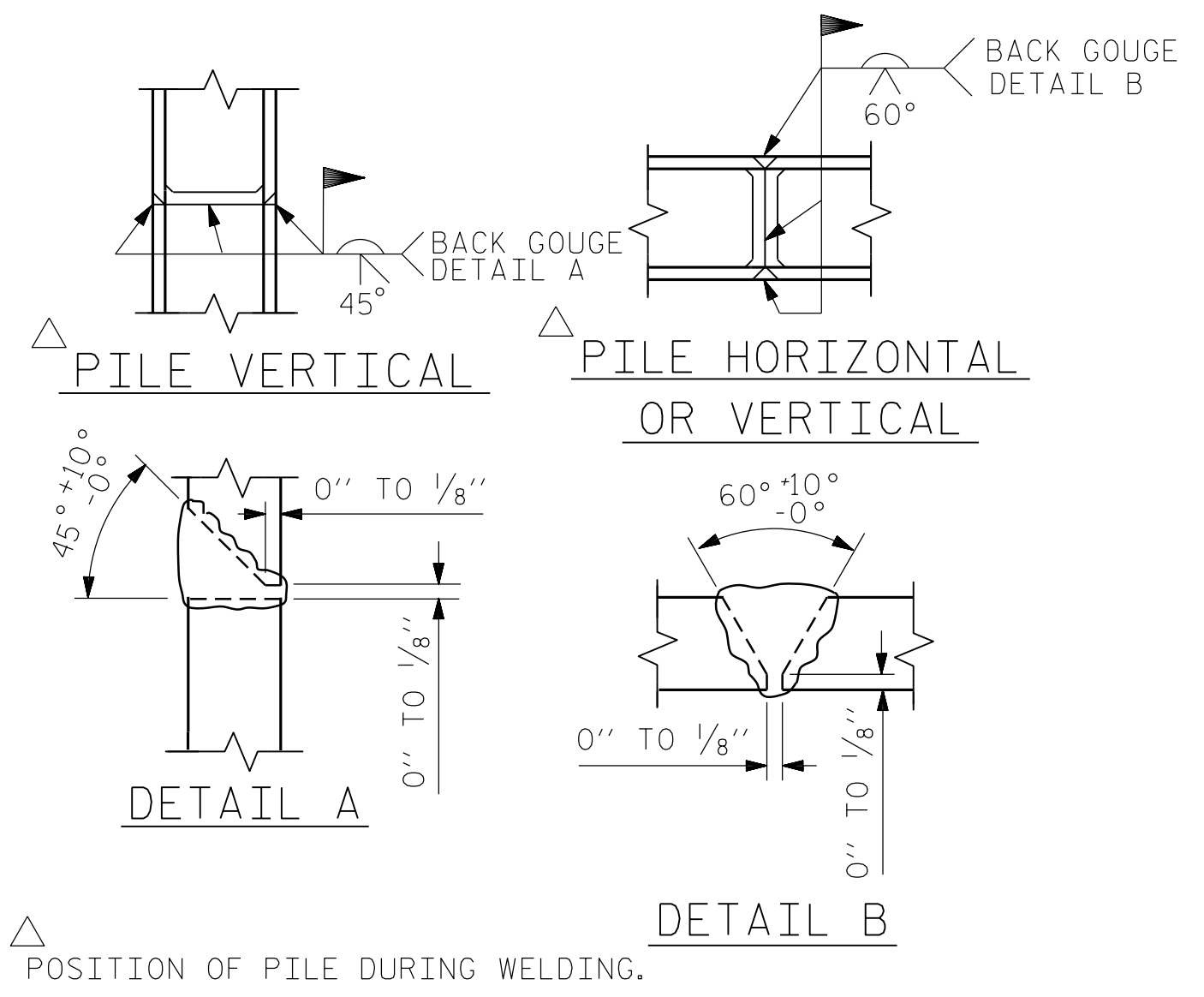


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

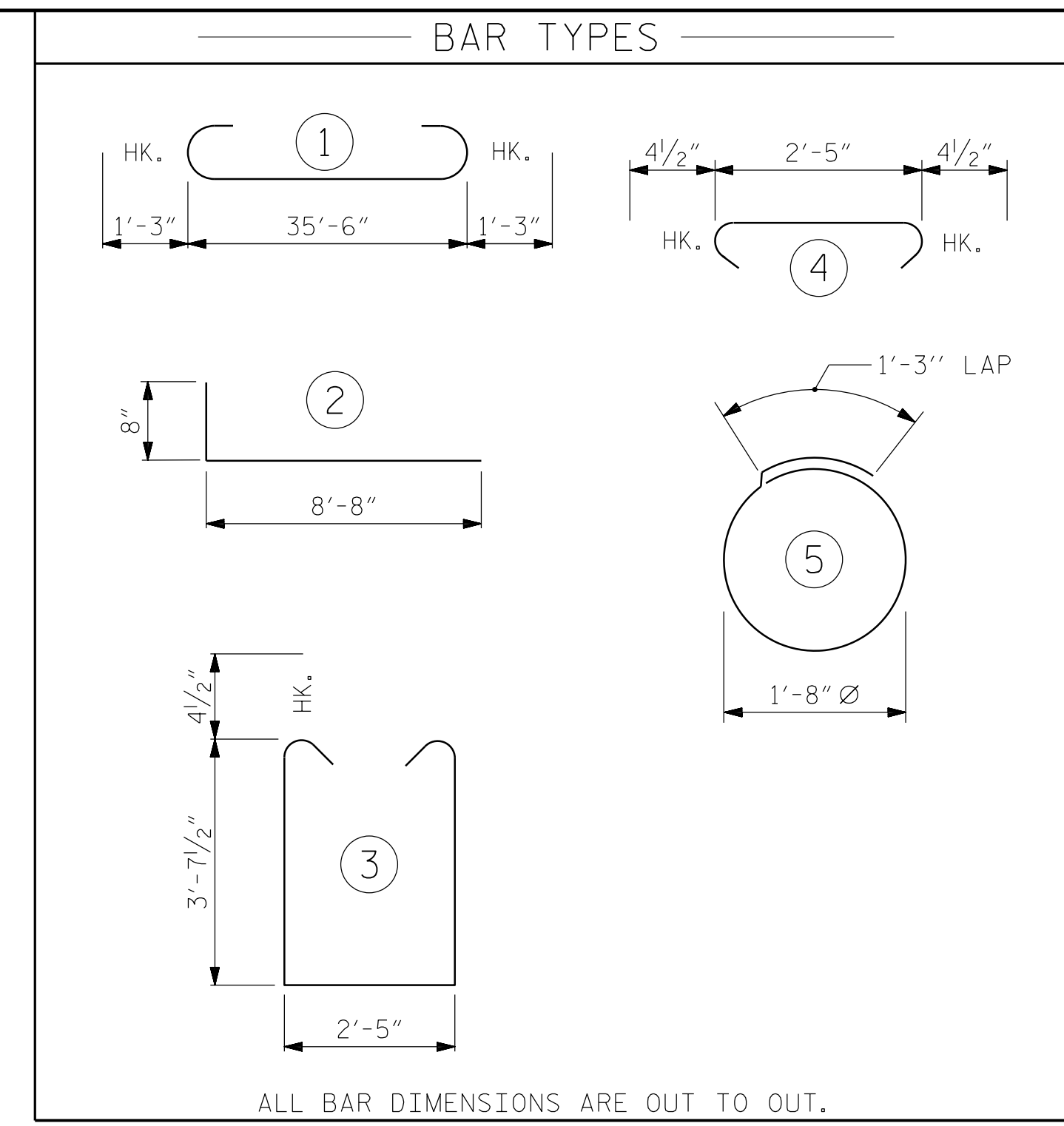
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

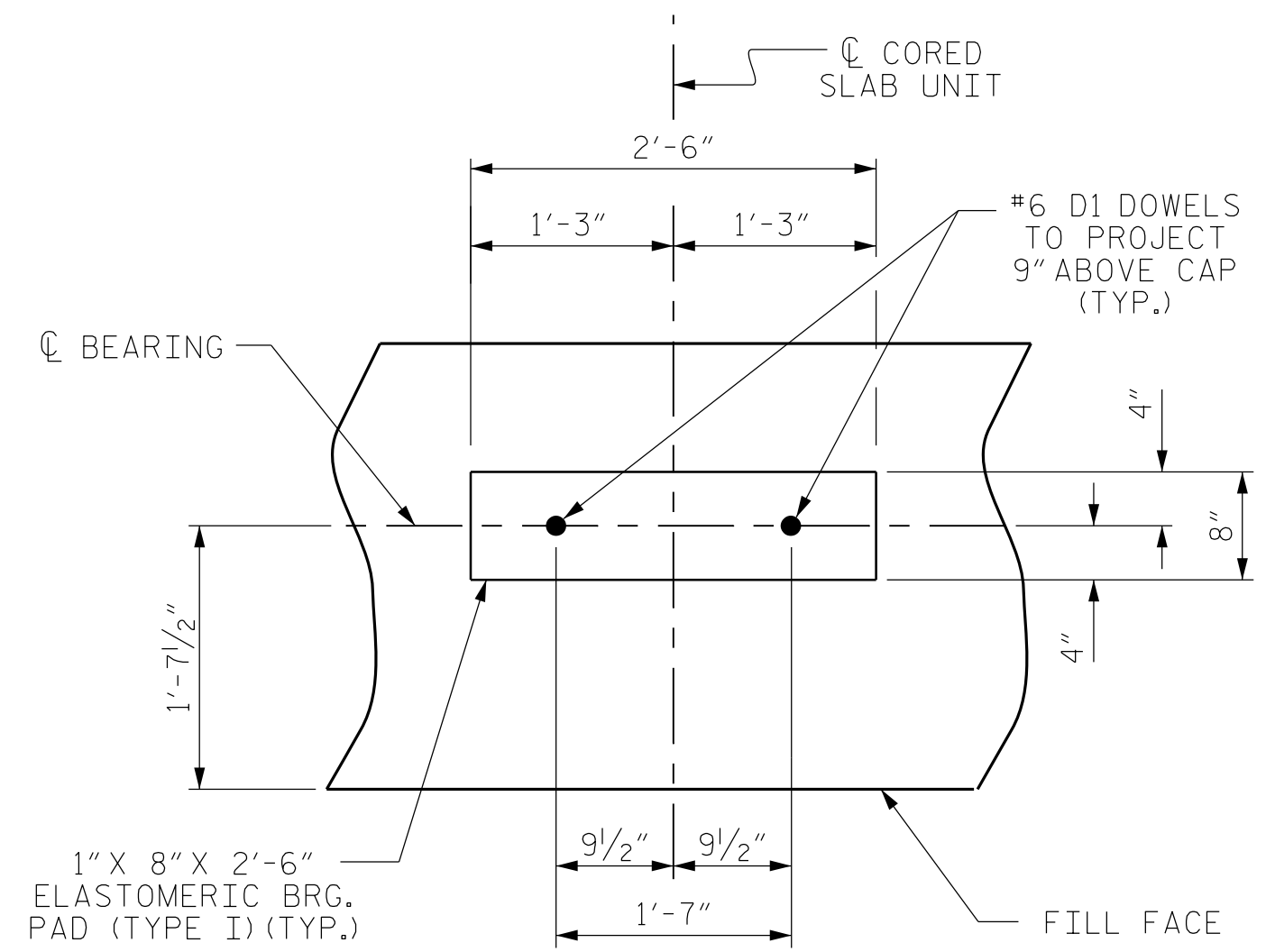
**TEMPORARY DRAINAGE AT END BENT**



**PILE SPLICE DETAILS**

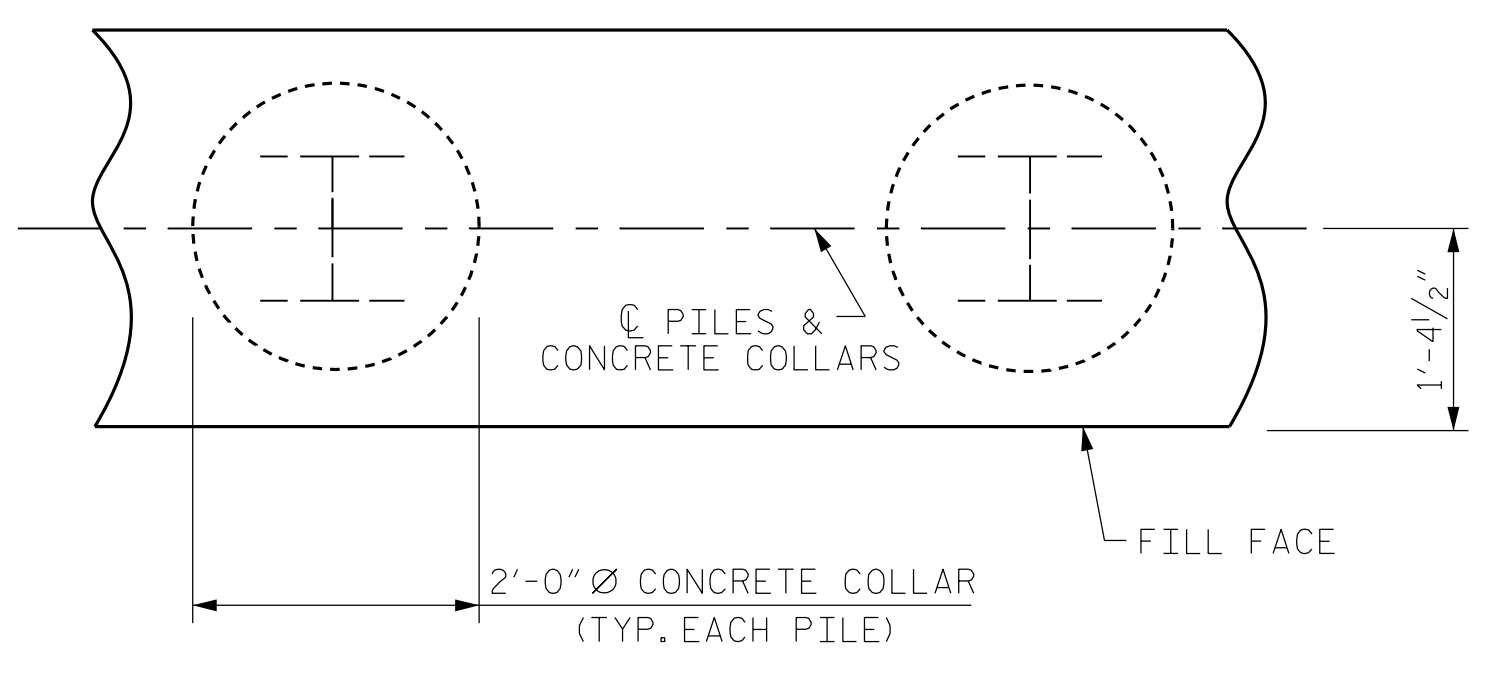


BILL OF MATERIAL FOR ONE END BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	38'-0"	1034
B2	28	#4	STR	19'-1"	357
B3	9	#4	STR	2'-5"	15
D1	20	#6	STR	1'-6"	45
H1	40	#4	2	9'-4"	249
K1	16	#4	STR	2'-11"	31
S1	46	#4	3	10'-5"	320
S2	46	#4	4	3'-2"	97
S3	20	#4	5	6'-6"	87
V1	52	#4	STR	6'-2"	214
REINFORCING STEEL (FOR ONE END BENT)				2449 LBS.	
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
POUR #1	CAP, LOWER PART OF WINGS & COLLARS			17.9 C.Y.	
POUR #2	UPPER PART OF WINGS			2.1 C.Y.	
TOTAL CLASS A CONCRETE				20.0 C.Y.	



**DETAIL "A"**

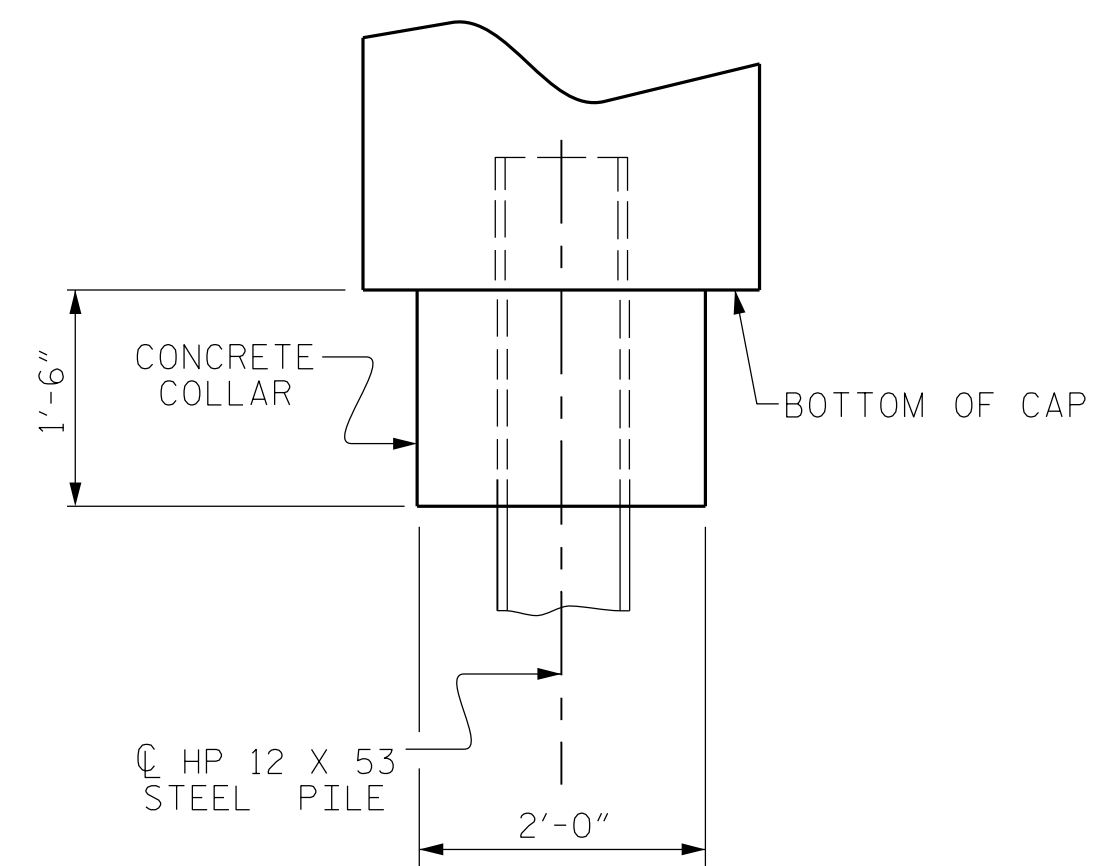
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



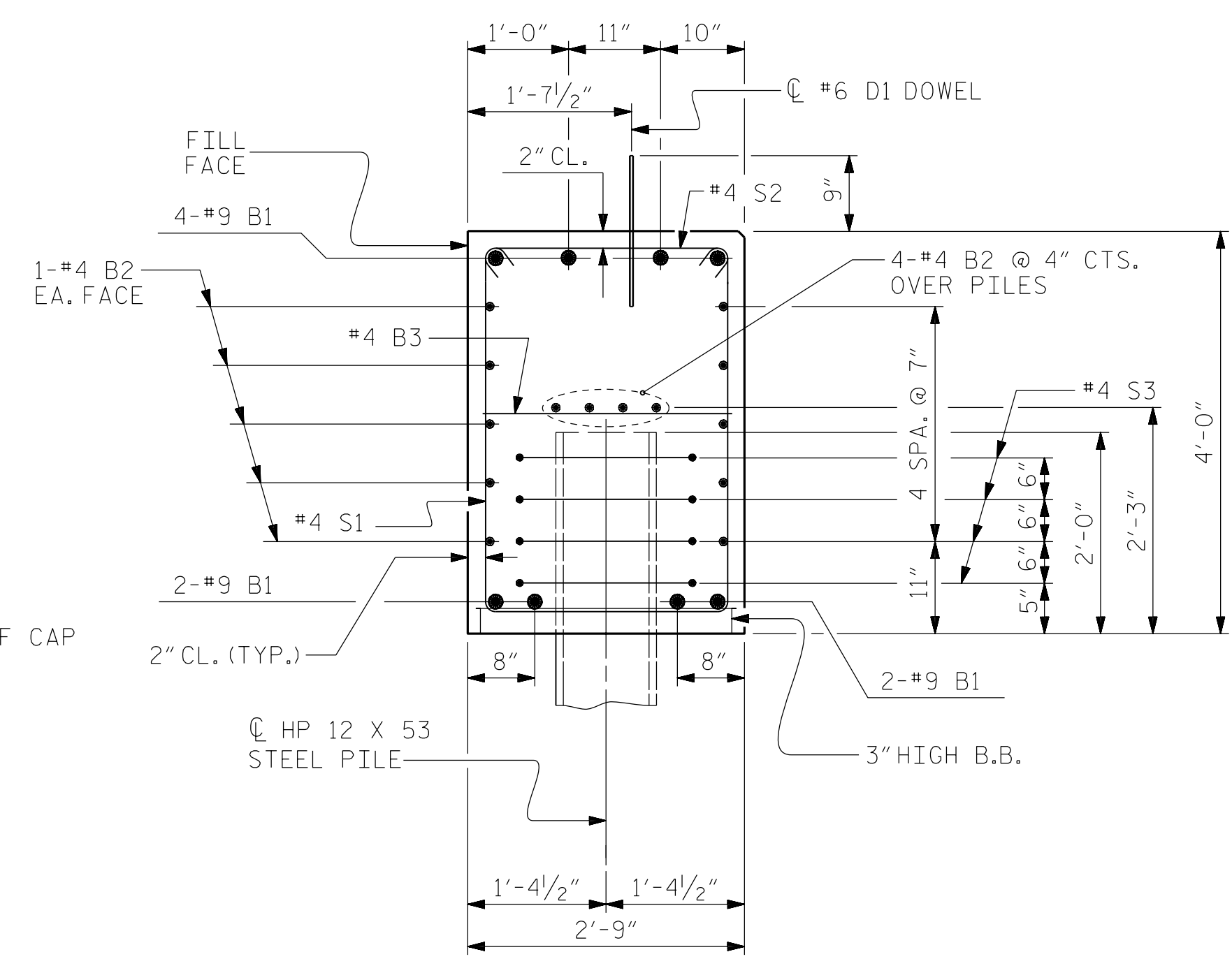
**PLAN**

**CORROSION PROTECTION FOR STEEL PILES DETAIL**

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



**ELEVATION**



**SECTION A-A**

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

PROJECT NO. BP8.R006  
RICHMOND COUNTY  
 STATION: 16+13.00 -L-  
 SHEET 4 OF 4

**Dewberry**  
 2610 WYCLIFF ROAD  
 SUITE 410  
 RALEIGH, NC 27607  
 PHONE: 919.881.9939  
 NC COA No. F-0929

Signed by: *Zachary Brown*  
 NORTH CAROLINA PROFESSIONAL SEAL  
 046785  
 ENGINEER  
 ZACHARY BROWN

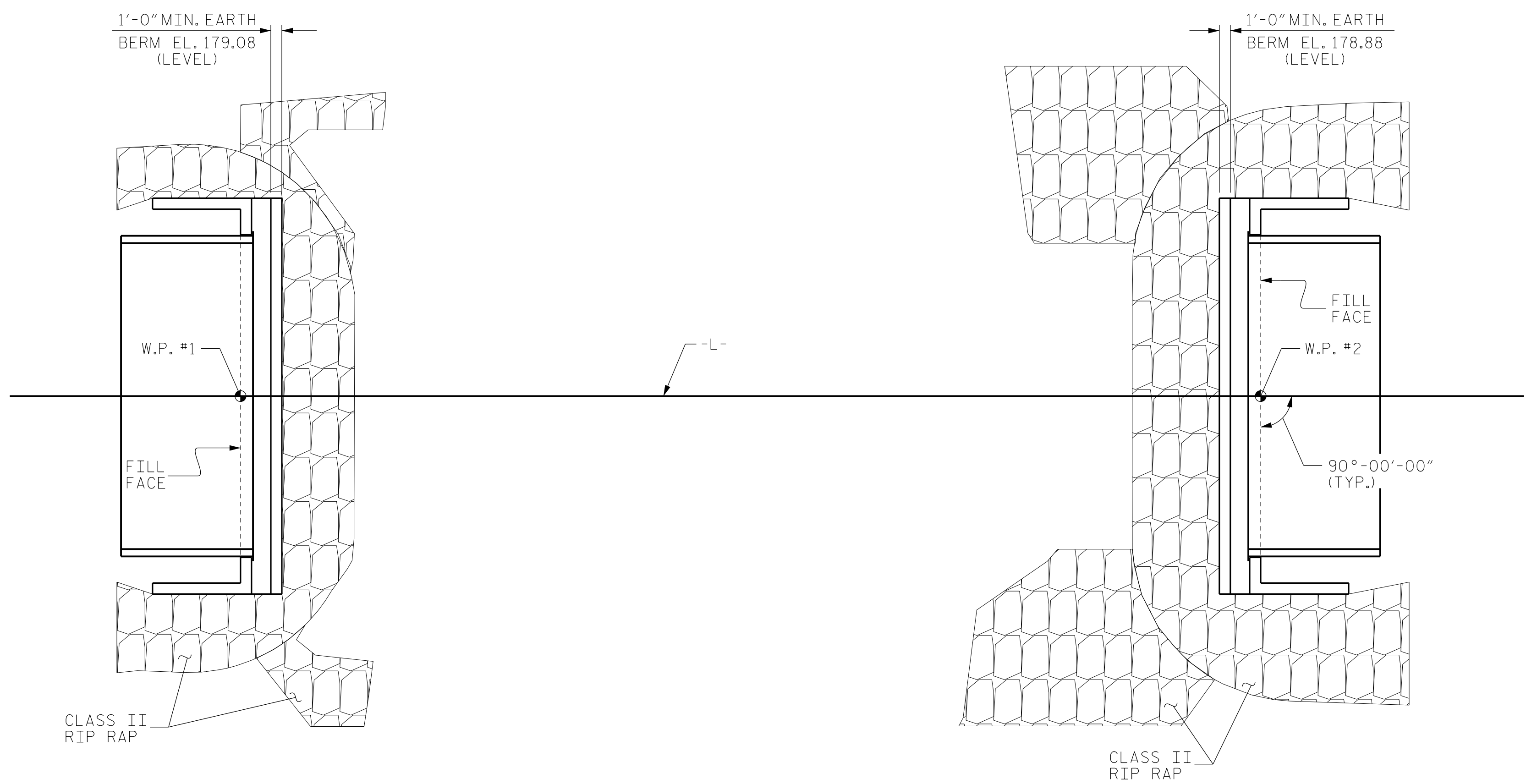
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT No. 1 & 2  
 DETAILS

DRAWN BY :	S. K. CHRISTOPH	DATE :	01-2022
CHECKED BY :	C.B. CORDELL	DATE :	02-2022
DESIGN ENGINEER OF RECORD:	Z.H. BROWN	DATE :	11-2023

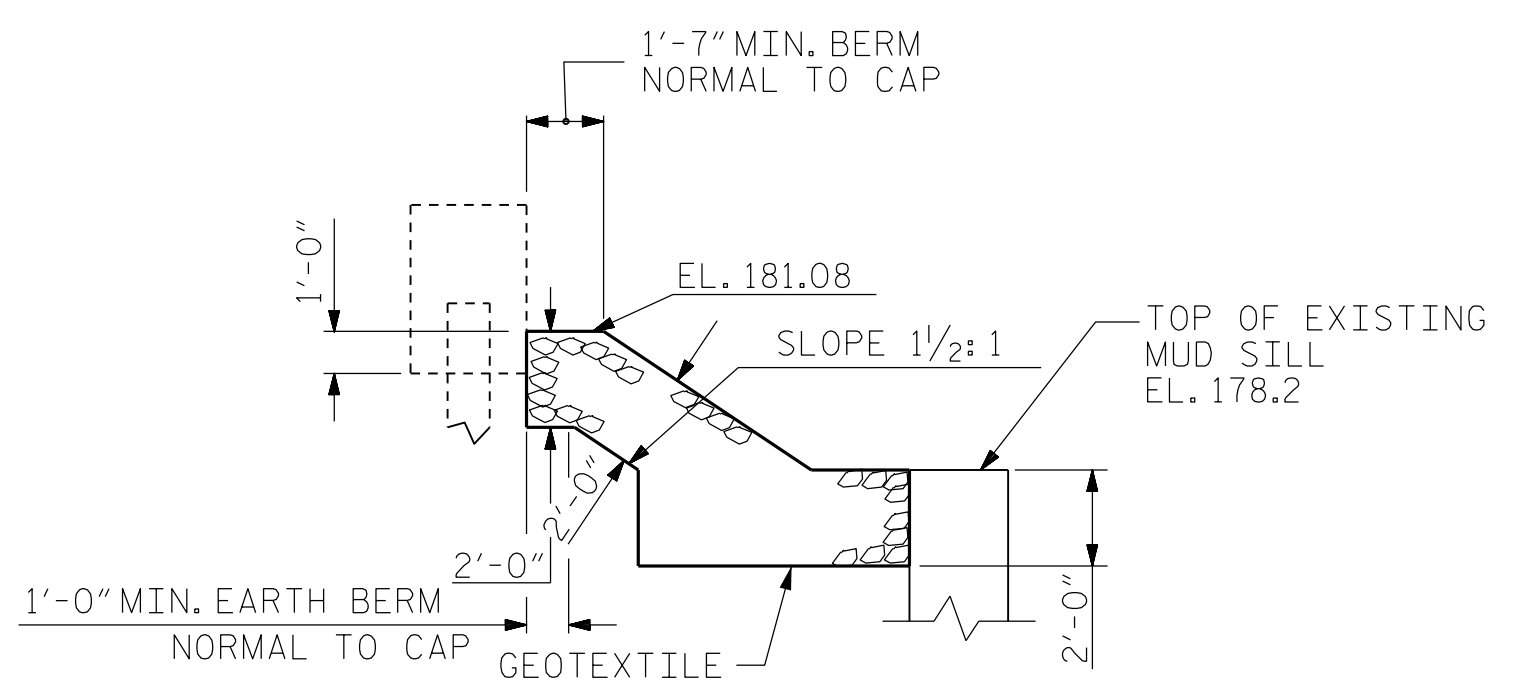
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
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REVISIONS						SHEET NO.
						S-13
						TOTAL SHEETS
						15

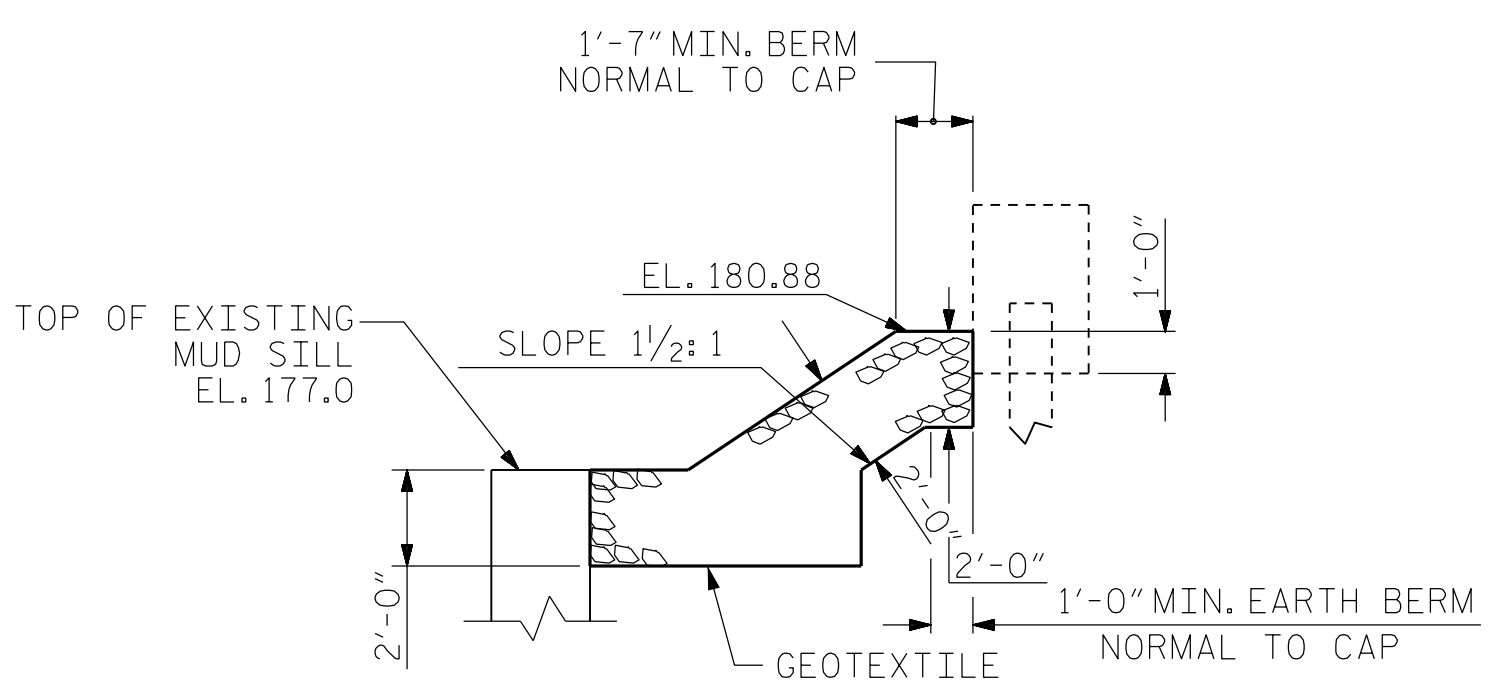


PLAN OF RIP RAP

ESTIMATED QUANTITIES		
BRIDGE @ STA. 16+13.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	55	60
END BENT 2	120	130
TOTAL	170	190



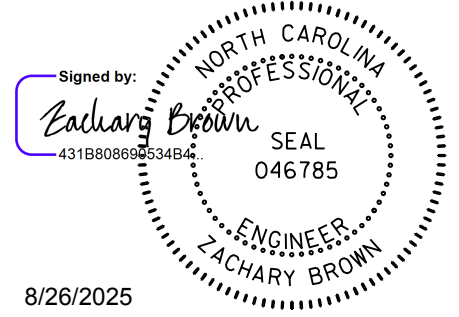
SECTION @ END BENT NO. 1



SECTION @ END BENT NO. 2

PROJECT NO. BP8.R006  
RICHMOND COUNTY  
 STATION: 16+13.00 -L-

**Dewberry**  
 2610 WYCLIFF ROAD  
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 PHONE: 919.881.9939  
 NC COA No. F-0929



8/26/2025

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

RIP RAP DETAILS

DRAWN BY : S. K. CHRISTOPH DATE : 01-2022  
 CHECKED BY : C.B. CORDELL DATE : 02-2022  
 DESIGN ENGINEER OF RECORD: Z.H. BROWN DATE : 11-2023

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1			3		
2			4		

SHEET NO.  
S-14  
 TOTAL SHEETS  
15

**NOTES**

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

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

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

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

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

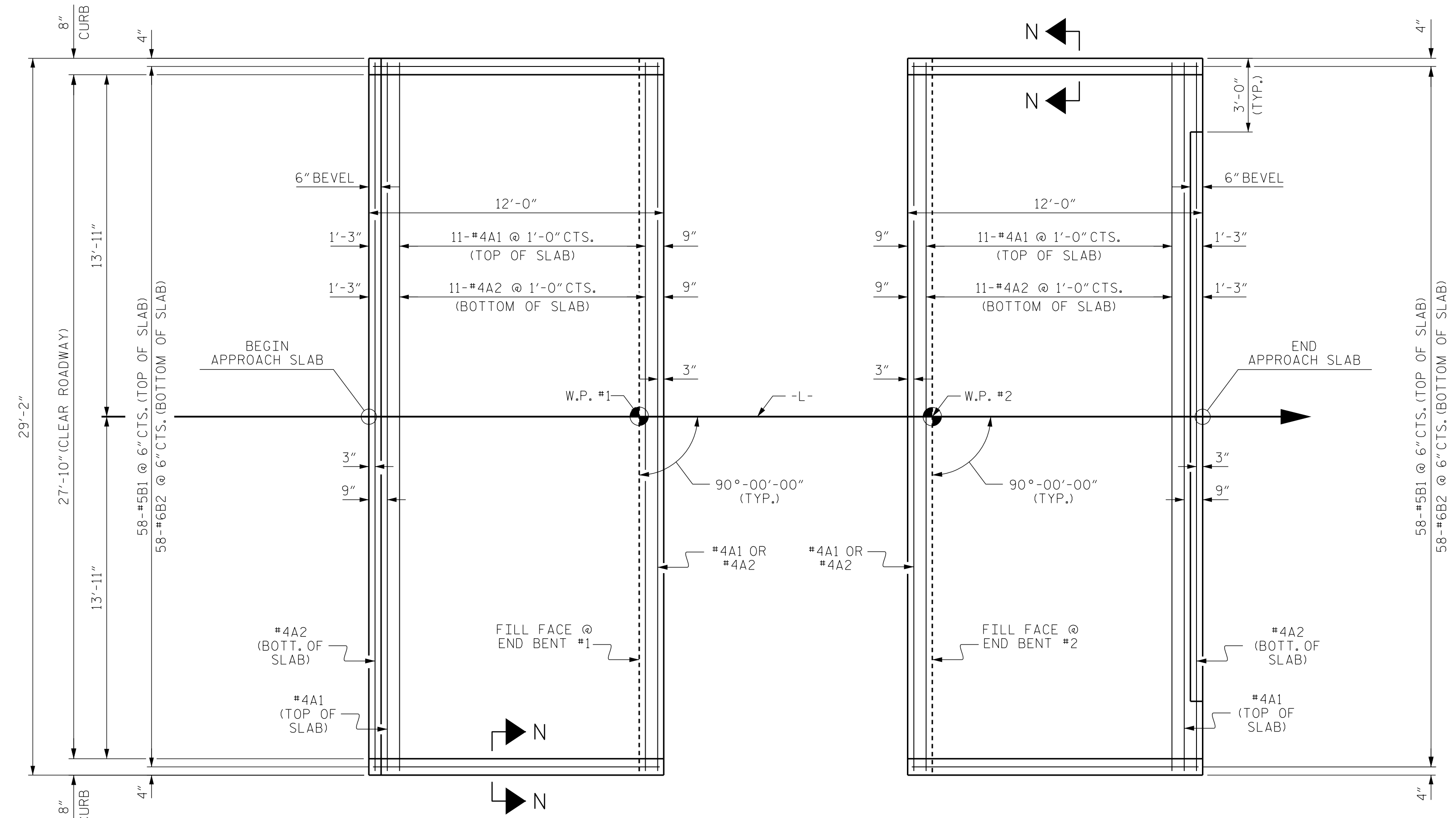
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

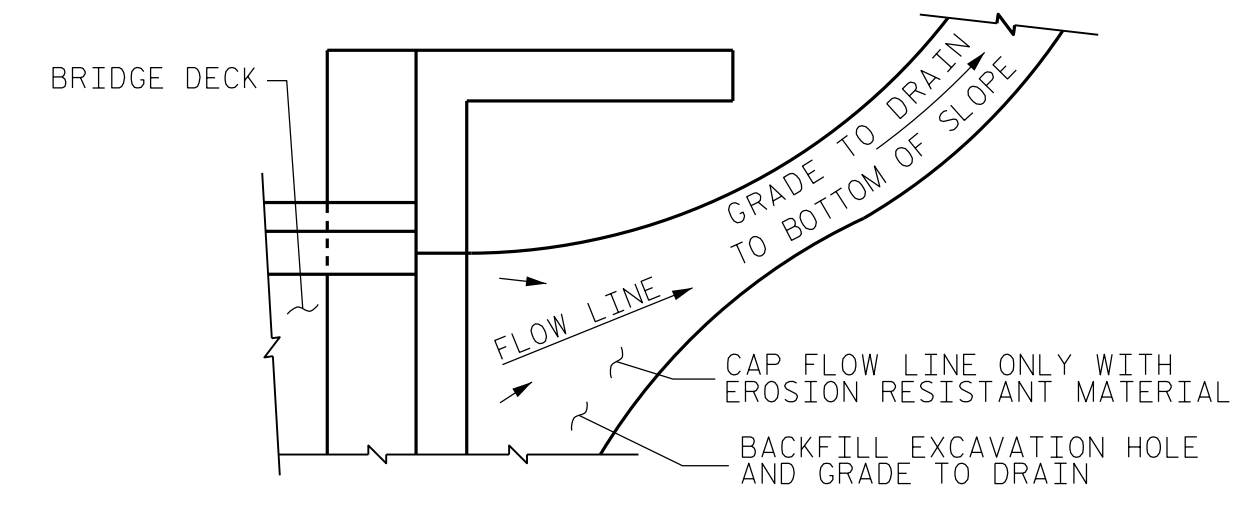
BILL OF MATERIAL						
APPROACH SLAB AT EB #1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
* A1	13	#4	STR	28'-10"	250	
A2	13	#4	STR	28'-10"	250	
* B1	58	#5	STR	11'-2"	676	
B2	58	#6	STR	11'-8"	1016	
REINFORCING STEEL					LBS.	1266
* EPOXY COATED REINFORCING STEEL					LBS.	926
CLASS AA CONCRETE					C. Y.	16.7

APPROACH SLAB AT EB #2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
* A1	13	#4	STR	28'-10"	250	
A2	13	#4	STR	28'-10"	250	
* B1	58	#5	STR	11'-2"	676	
B2	58	#6	STR	11'-8"	1016	
REINFORCING STEEL					LBS.	1266
* EPOXY COATED REINFORCING STEEL					LBS.	926
CLASS AA CONCRETE					C. Y.	16.7

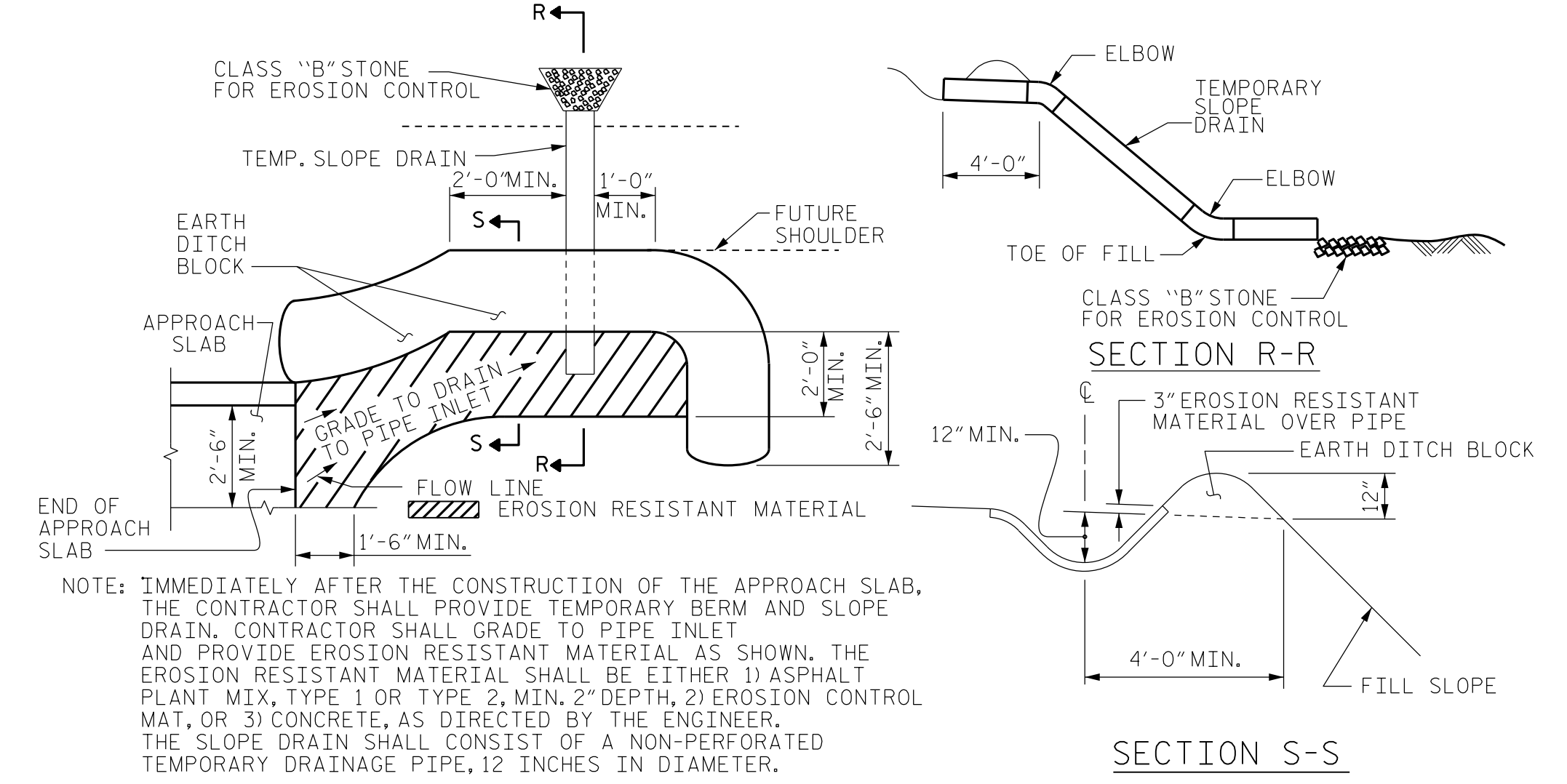


**PLAN @ END BENT #1**      **PLAN @ END BENT #2**  
 DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



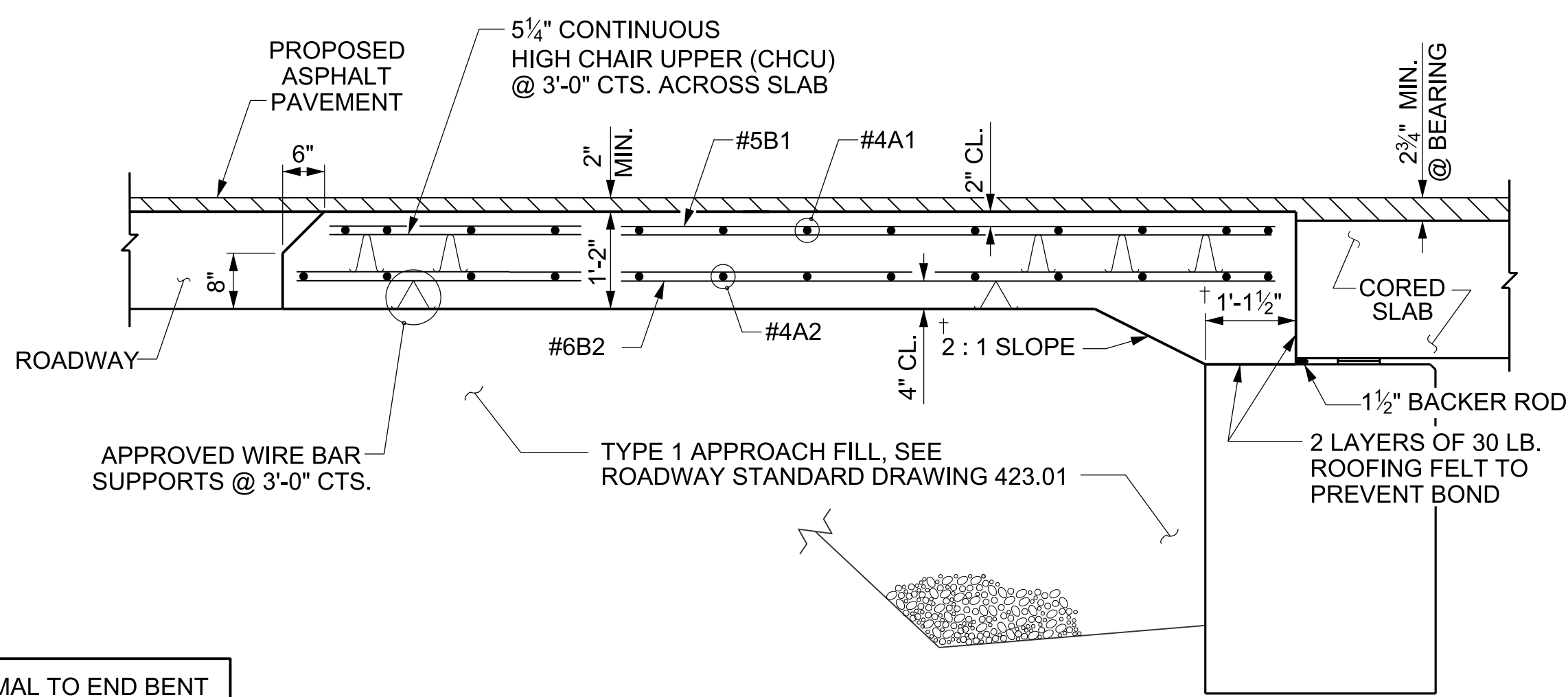
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

**TEMPORARY DRAINAGE DETAIL**



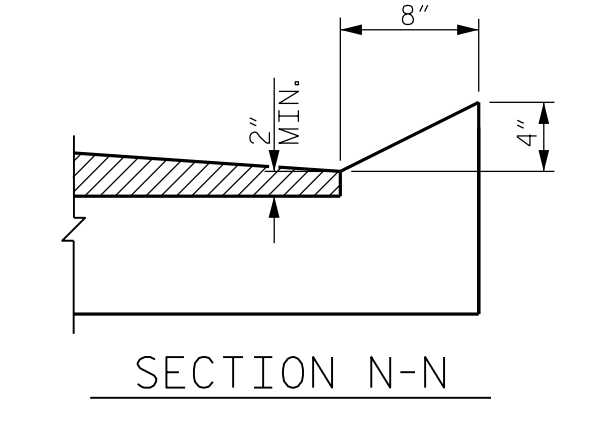
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

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



**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**

DRAWN BY : S. K. CHRISTOPH      DATE : 01-2022  
 CHECKED BY : C.B. CORDELL      DATE : 02-2022  
 DESIGN ENGINEER OF RECORD : Z.H. BROWN      DATE : 11-2023

1:46:10 PM  
 ...\\01-029\_BP8\_R006\_SMU\_AS\_015\_760091.dgn  
 USER: atysinger

**Dewberry**  
 2610 WYCLIFF ROAD  
 SUITE 410  
 RALEIGH, NC 27607  
 PHONE: 919.881.9939  
 NC COA No. F-0929

Signed by:  
*Zachary Brown*  
 4318809955384      046785  
 NORTH CAROLINA PROFESSIONAL SEAL  
 ENGINEER  
 ZACHARY BROWN

8/26/2025

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

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

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

