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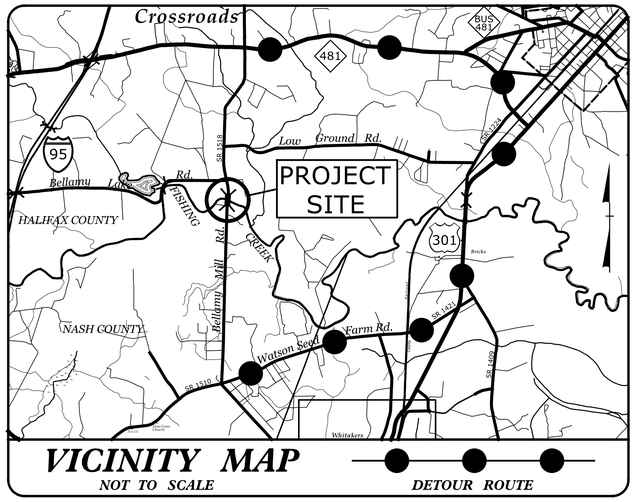
This file or an individual page shall not be considered a certified document.

09/08/99

TIP PROJECT: BP4–R008

CONTRACT: DD00475

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



VICINITY MAP
NOT TO SCALE — DETOUR ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NASH & HALIFAX COUNTIES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP4–R008	1	

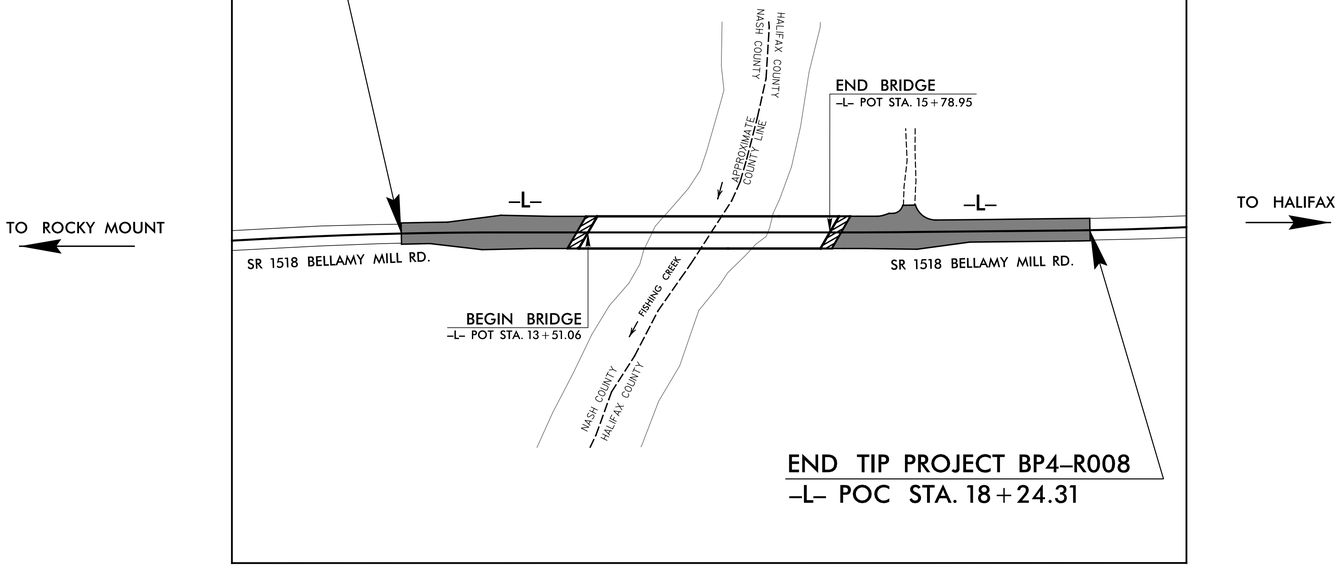
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
BP4.R008.1		PE
BP4.R008.2		R/W
BP4.R008.3		CONST.

LOCATION: BRIDGE NO. 630129 ON SR 1518 (BELLAMY MILL ROAD) OVER FISHING CREEK

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

NAD 83/
NA 2011

4



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS 30 15 0 30 60
PROFILE (HORIZONTAL) 30 15 0 30 60
PROFILE (VERTICAL) 6 3 0 6 12

DESIGN DATA

ADT 2025 = 620
ADT 2044 = 885
K = %
D = %
T = 6 % *
V = 55 MPH
* TTST = 3% DUAL 3%
FUNC CLASS = LOCAL
SUB–REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT BP4–R008	=	0.080 MILES
LENGTH STRUCTURE TIP PROJECT BP4–R008	=	0.043 MILES
TOTAL LENGTH OF TIP TIP PROJECT BP4–R008	=	0.123 MILES

Prepared for the North Carolina Department of Transportation in the office of:
vhb
Venture I
940 Main Campus Drive, Suite 500
Raleigh, NC 27606
NC License No. C-3705

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MARCH 21, 2023

LETTING DATE: APRIL 8, 2025

JONATHAN SOIKA, PE
PROJECT ENGINEER

JERRY JAVELLANA, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT: RACHEL EVANS, PE
DIVISION PROJECT ENGINEER

HYDRAULICS ENGINEER

2/13/2025

NORTH CAROLINA PROFESSIONAL SEAL 033180 ENGINEER MIRANDA LOUISE SALZLER P.E.

DocuSigned by: Miranda L Salzler 7CF9651TC0F448E

SIGNATURE:

ROADWAY DESIGN ENGINEER

2/13/2025

NORTH CAROLINA PROFESSIONAL SEAL 033822 ENGINEER JONATHAN P. SOIKA P.E.

DocuSigned by: AEB3508BFFE34F1

SIGNATURE:

STATE OF NORTH CAROLINA * DEPARTMENT OF TRANSPORTATION *

2/13/2025
630129_rdy_tsh.dgn
JSoika

8/17/99

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

PROJECT REFERENCE NO.	SHEET NO.
BP4-R008	1A

ROADWAY DESIGN
ENGINEER

NORTH CAROLINA
PROFESSIONAL
SEAL
033822
ENGINEER
JONATHAN P. SOMA
12/12/2024

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EFF. 01-16-2024
REV.

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1	MODIFIED CONCRETE FLUME DETAILS
2C-2 THRU 2C-3	GUARDRAIL PLACEMENT DETAILS
3B-1	SUMMARY OF EARTHWORK, REMOVAL OF EXISTING ASPHALT PAVEMENT SUMMARY AND GUARDRAIL SUMMARY
3D-1	DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
4 THRU 5	PLAN AND PROFILE SHEETS
RW01 THRU RW04	RIGHT OF WAY PLAN SHEETS
TMP-1 THRU TMP-2B	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
SGN-1 THRU SGN-3	SIGNING PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-4	CROSS-SECTIONS
S-1 THRU S-24	STRUCTURE PLANS

GENERAL NOTES:

2024 SPECIFICATIONS
EFFECTIVE: 01-16-2024
REVISED:

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

GUARDRAIL:

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

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE CENTURY LINK - TELEPHONE

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

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

2024 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Contracts Standards and Development Unit - N. C. Department of Transportation - Raleigh, N. C., Dated January 16, 2024 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
423.01	Bridge Approach Fills - Type 1 Approach Fill for Bridge Abutment
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
850.01	Concrete Paved Ditches
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Rip Rap in Channels and Ditches
876.02	Guide for Rip Rap at Pipe Outlets

11/22/2024
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JJavell

9/10/2021

PROJECT REFERENCE NO.	SHEET NO.
BP4-R008	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin (EIP)
- Computed Property Corner
- Existing Concrete Monument (ECM)
- Parcel/Sequence Number
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary
- Proposed Wetland Boundary
- Existing Endangered Animal Boundary
- Existing Endangered Plant Boundary
- Existing Historic Property Boundary
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut
- Proposed Slope Stakes Fill
- Proposed Curb Ramp
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert
- Bridge Wing Wall, Head Wall and End Wall

MINOR:

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

UTILITIES:

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

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

PROJECT REFERENCE NO.	SHEET NO.
BP4-R008	2A-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
SEAL 033822 JONATHAN P. SOMA 12/12/2024	SEAL 037392 RACHEL C. EVANS 12/12/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

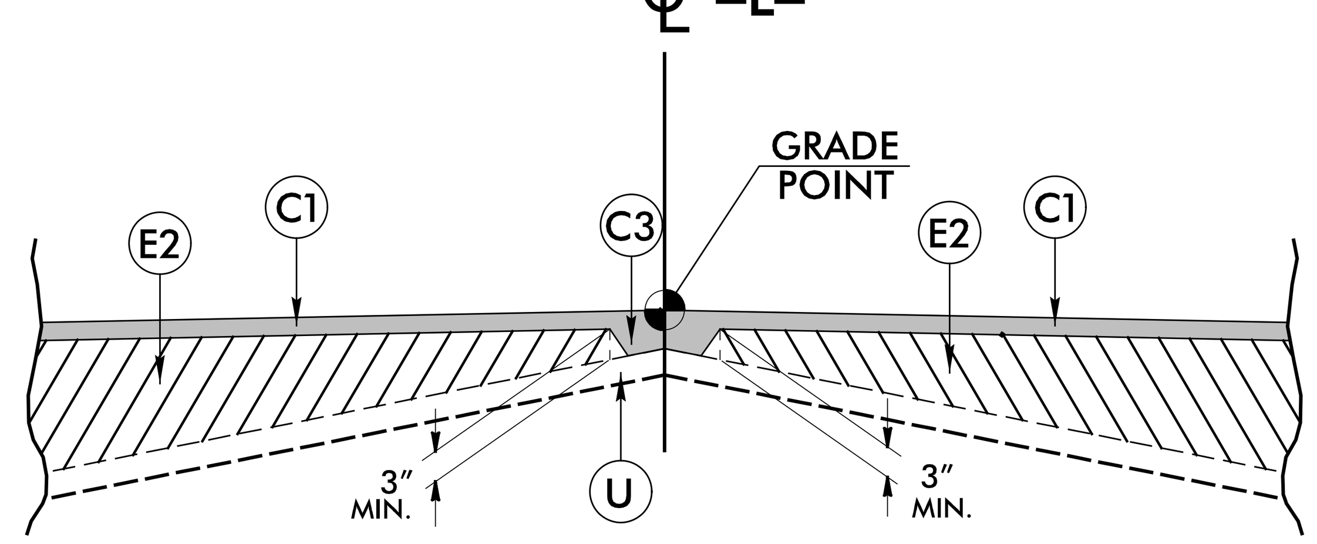
Prepared by vhb
VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

PAVEMENT SCHEDULE

(FINAL PAVEMENT DESIGN: DATED MAY 3, 2022)

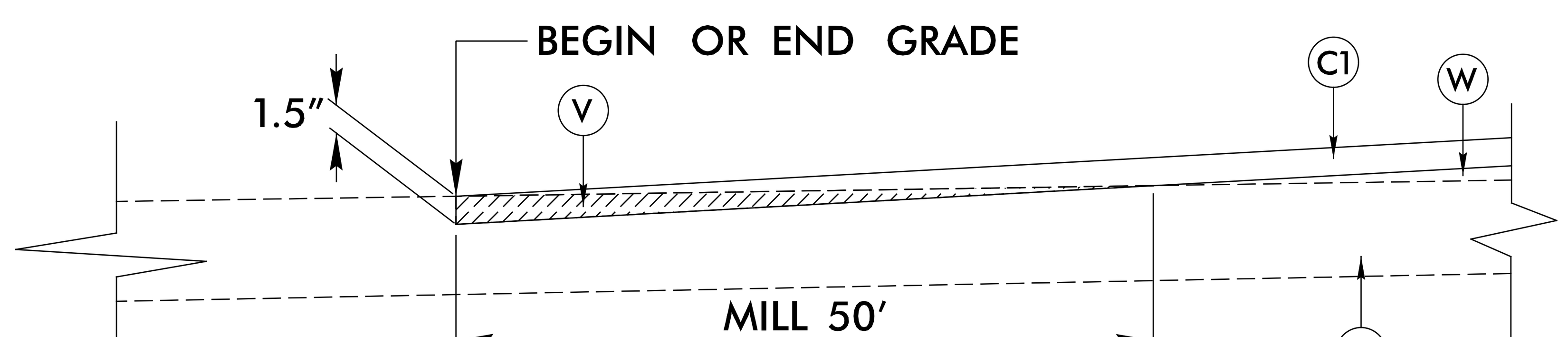
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 1.5" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	INCIDENTAL MILLING
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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



STANDARD WEDGING DETAIL

TIE-IN MILLING DETAIL



MILL 50'
OR AS DIRECTED BY ENGINEER

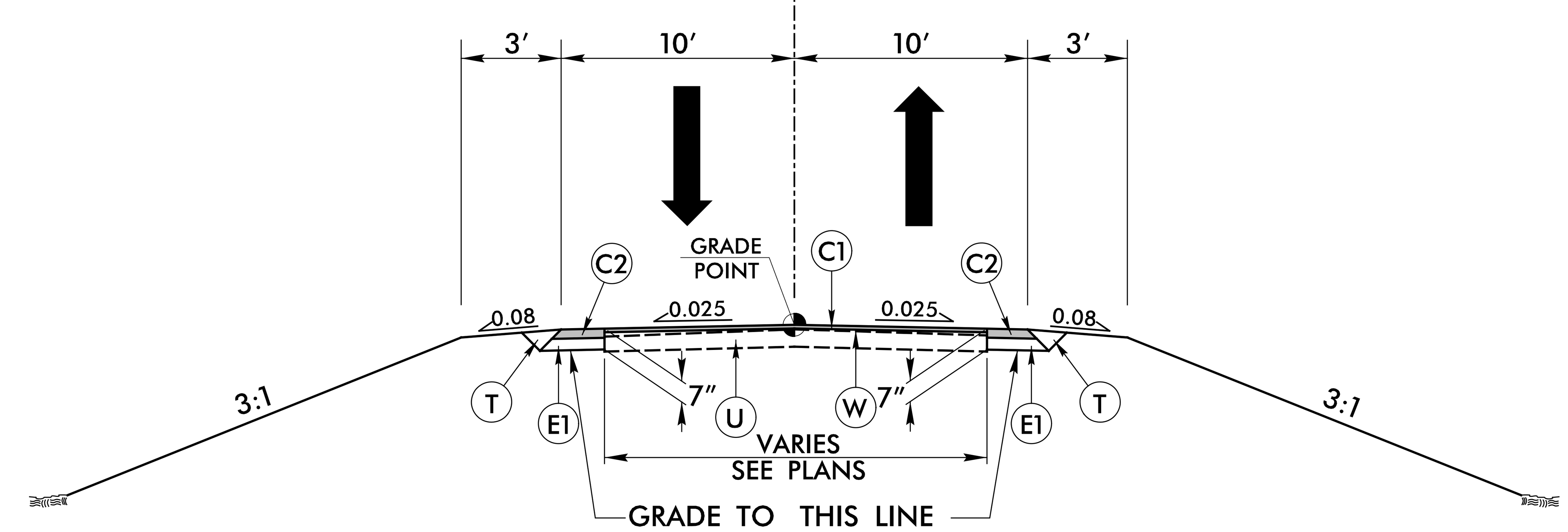
-L- STA. 11+75.00 TO STA. 12+25.00
-L- STA. 17+74.00 TO STA. 18+24.31

NOTES TO CONTRACTOR

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

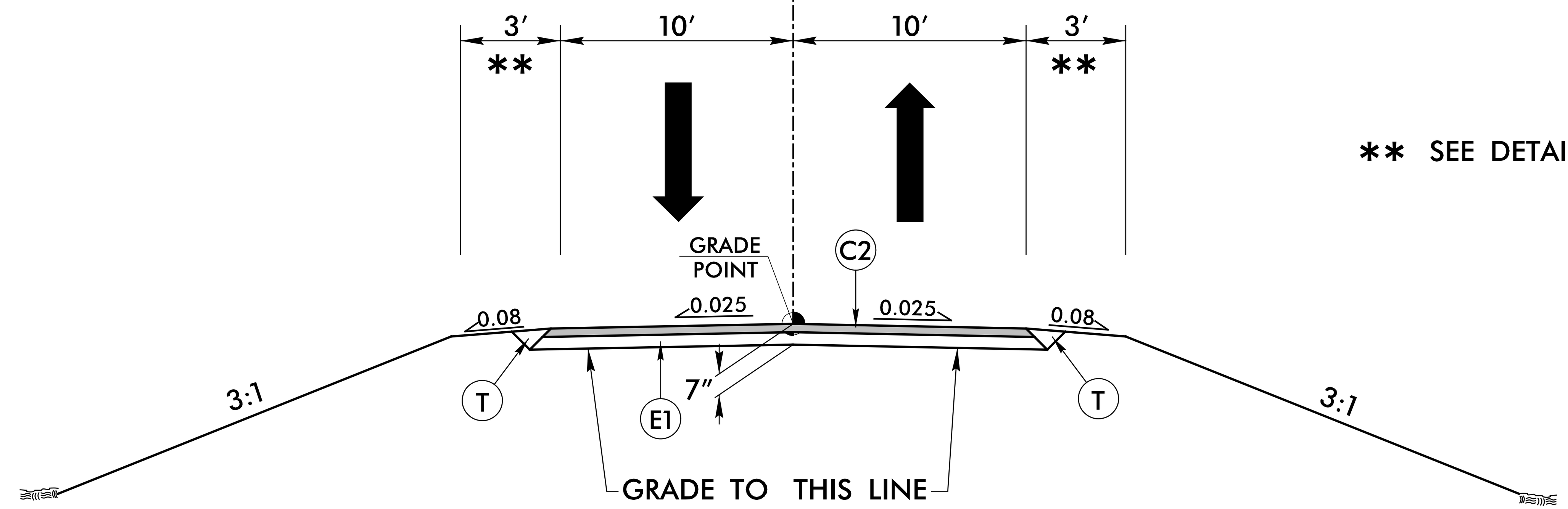
Locations shall include ties into existing concrete pavement, at bridge approaches where the bridge will not be resurfaced, and at the beginning and ending point of each resurfacing map.

Perform the work in accordance with Section 607 of the January 2018 North Carolina Department of Transportation Standard Specifications for Roads and Structures. Resurfacing will be accomplished at the same time as the milling operation.



TYPICAL SECTION NO. 1

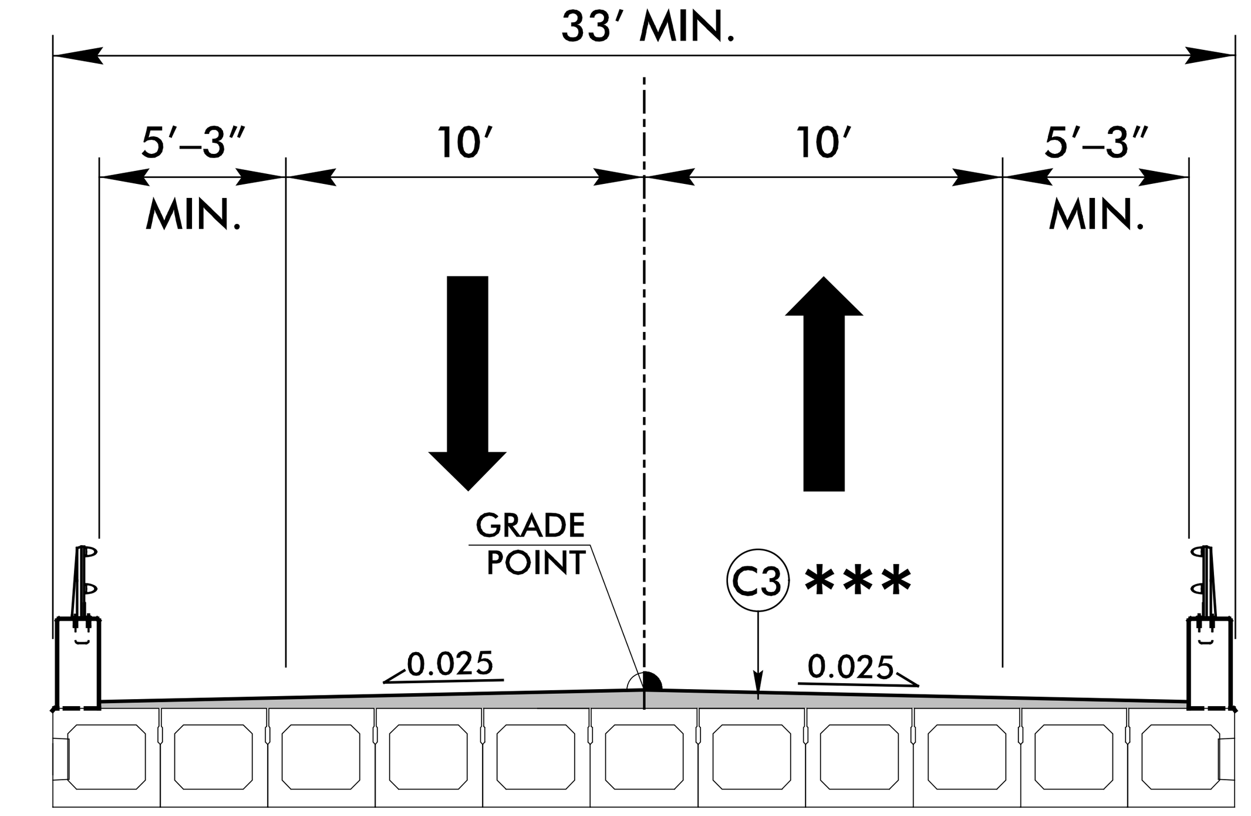
USE TYPICAL SECTION NO. 1
-L- STA. 11+75.00 TO STA. 12+65.00
-L- STA. 16+65.00 TO STA. 18+24.31



TYPICAL SECTION NO. 2

** SEE DETAIL 1 FOR PAVING AT GUARDRAIL LOCATIONS

USE TYPICAL SECTION NO. 2
-L- STA. 12+65.00 TO STA. 13+51.06 (BEGIN BRIDGE)
-L- STA. 15+78.95 (END BRIDGE) TO STA. 16+65.00



11 UNITS @ 3' EACH

TYPICAL SECTION ON STRUCTURE

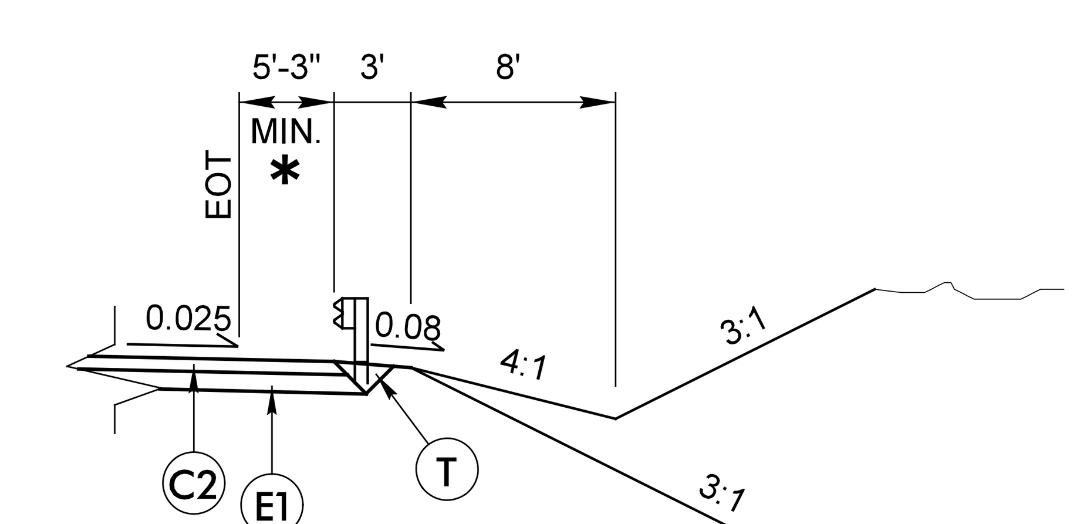
(PROPOSED BOX BEAM STRUCTURE, 2-BAR METAL RAIL REQUIRED)

-L- STA. 13+51.06 (BEGIN BRIDGE) TO STA. 15+78.95 (END BRIDGE)

*** SEE STRUCTURE PLANS FOR VARIABLE DEPTH DIMENSIONS

DETAIL 1

DETAIL OF GUARDRAIL PLACEMENT



-L- STA. 12+66.09 TO BEGIN BRIDGE LT
-L- STA. 12+48.46 TO BEGIN BRIDGE RT
END BRIDGE TO -L- STA. 16+35.05+/- LT
END BRIDGE TO -L- STA. 16+63.76 RT

* SEE PLAN FOR OFFSETS AT ANCHOR UNITS AND SHOP CURVE GUARDRAIL LOCATIONS

6/2/99
10/24/2024
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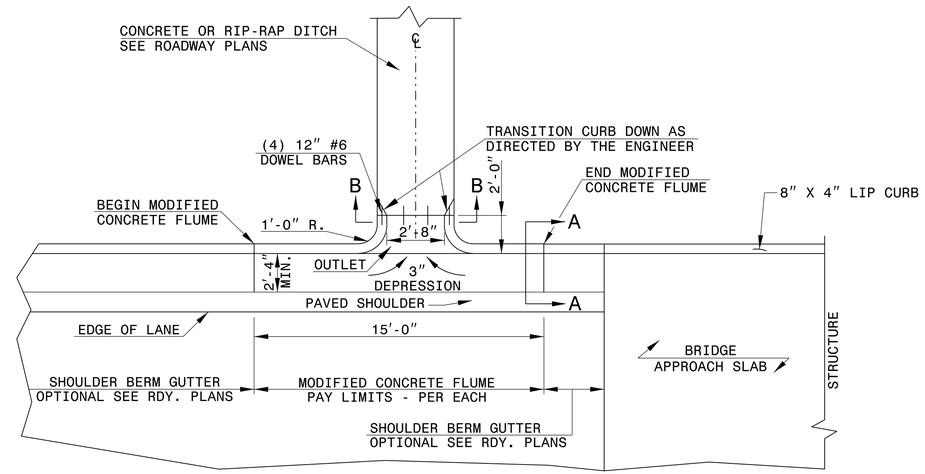
PROJECT REFERENCE NO.	SHEET NO.
BP4-R008	2C-1

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

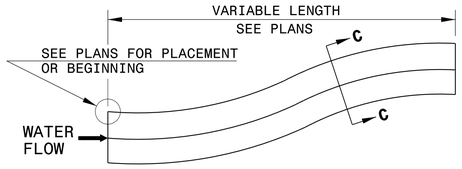
ENGLISH DETAIL DRAWING FOR

MODIFIED CONCRETE FLUME

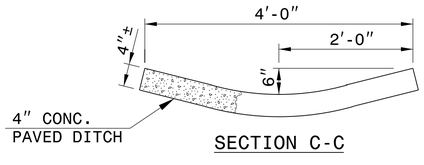
WITH CONCRETE OR RIP-RAP DITCH



PLAN VIEW

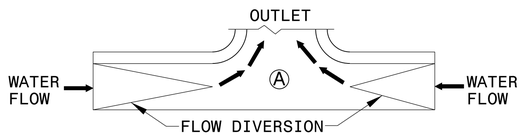


DOWNGRADE OR SAG

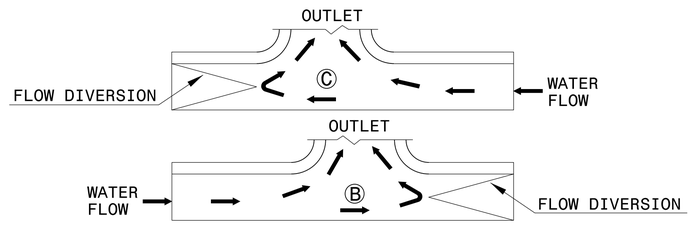


SECTION C-C

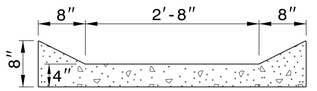
SECTION A-A



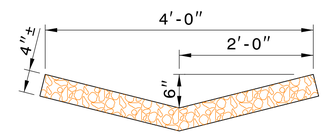
SAG



DOWN GRADE



SECTION B-B



RIP-RAP LINED DITCH

FLOW DIVERSION EXAMPLES

NOTES:

- CONSTRUCT MODIFIED CONCRETE FLUME AND SHOULDER BERM GUTTER IN ACCORDANCE WITH THIS DETAIL.
- CONSTRUCT CONCRETE DITCH IN ACCORDANCE WITH STD. DWG. NO. 850.01.
- CONSTRUCT RIP RAP LINED DITCH IN ACCORDANCE WITH THIS DETAIL, IF CALLED FOR IN PLANS.
- CONCRETE OR RIP RAP LINED DITCH SHALL BE THE TYPE AND LENGTH SPECIFIED BY THE ROADWAY PLANS. THE DITCH SHALL TERMINATE AS SHOWN ON THE PLANS. IF NO TERMINATION IS INDICATED PLACE RIP-RAP AT THE END OF THE DITCH AS INDICATED BY STD. DWG. 876.02 FOR AN 18″ PIPE. TRANSITIONS FROM THE DITCH TO TERMINATION SHALL BE AS DIRECTED BY THE ENGINEER.
- MODIFICATIONS SHALL BE AS DICTATED BY SITE CONDITIONS AND DIRECTED BY THE ENGINEER.

SHEET 1 OF 1

MODFLMDTCH

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

ENGLISH DETAIL DRAWING FOR
MODIFIED CONCRETE FLUME
WITH CONCRETE OR RIP-RAP DITCH

SHEET 1 OF 1
MODFLMDTCH

12/11/2024

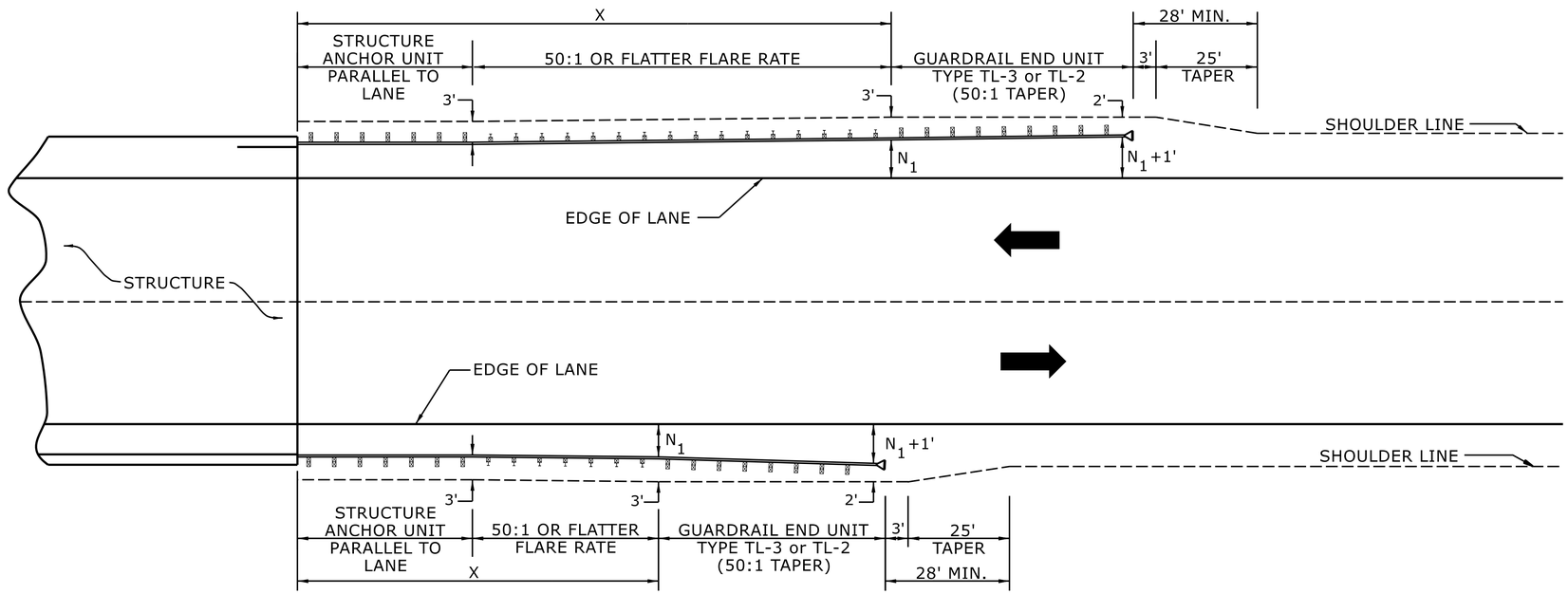
CONTRACT STANDARDS
AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY:	E.E. Ward	DATE:	Apr. 2002
MODIFIED BY:	E.E. Ward	DATE:	July 2004
CHECKED BY:		DATE:	
FILE SPEC.:	w:details\stand\modifiedflume.dgn		

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$DGN$$$$

PROJECT REFERENCE NO.	SHEET NO.
BP4-R008	2C-2



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 ≥ 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

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER
12/11/2024

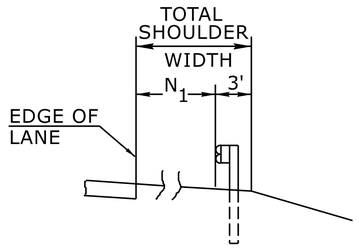
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

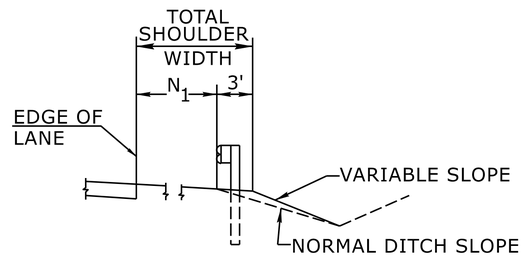
SEE TITLE BLOCK

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

PROJECT REFERENCE NO.	SHEET NO.
BP4-R008	2C-3

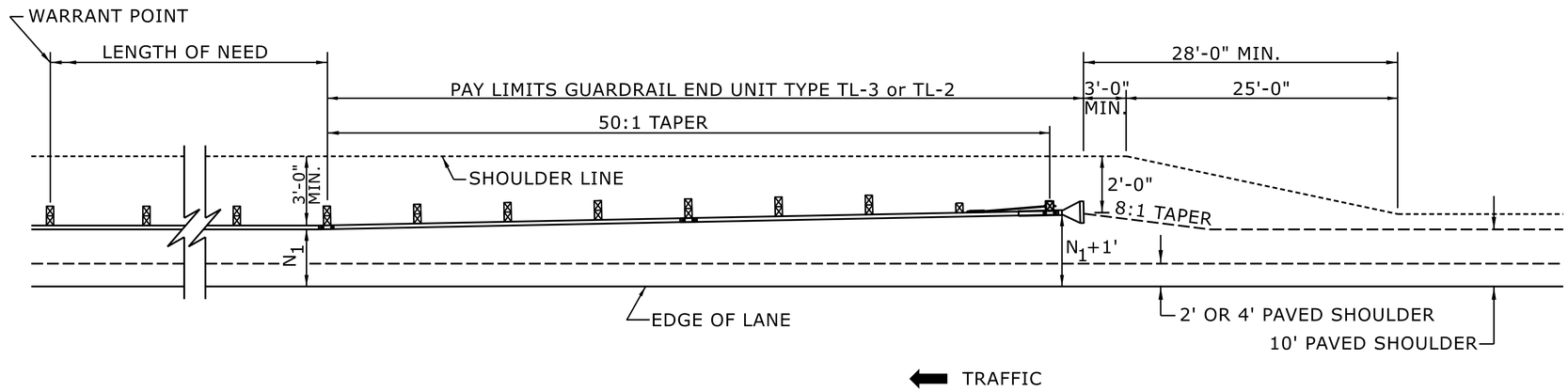


FILL SECTION



CUT SECTION

"N_1"= DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.



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

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 6 OF 15

862D01

12/11/2024

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKLER

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.:

COMPUTED BY: JBJ	DATE: 01-31-2024
CHECKED BY: RCK	DATE: 03-05-2024

PROJECT REFERENCE NO.	SHEET NO.
BP4-R008	3B-1

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK
IN CUBIC YARDS

STATION	STATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT +%	BORROW	WASTE
-L- 11+75.00	13+51.06	28		214	186	
	BEGIN BRIDGE					
-L- 15+78.95	18+24.31	8		71	63	
END BRIDGE						
	SUBTOTAL	**36**		**285**	**249**	
PROJECT TOTAL		**36**		**285**	**249**	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT					12	
GRAND TOTAL		**36**			**261**	
SAY		**50**			**270**	

EST. UNDERCUT AS CONTINGENCY (PER GEOTECH RECOMMENDATION) = 100 CY
EST. SELECT GRANULAR MATERIAL AS CONTINGENCY (PER GEOTECH RECOMMENDATION) = 100 CY

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

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

SUMMARY OF REMOVAL EXISTING ASPHALT PAVEMENT

LINE	STATION	STATION	LOCATION	SQUARE YARDS
L	12+65.00	13+64.8	RT/LT	200.58
L	15+77.00	16+65.2	RT/LT	214.40
			TOTAL	414.98
			SAY	**420**

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL WIDTH	FLARE LENGTH		W		ANCHORS					IMPACT ATTENUATOR TYPE 350		SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	TYPE B-77	TYPE III	GREU TL-3	AT-1		G	NG				
-L-	12+48.46	13+42.28	RT	93.75'				BRIDGE	5.2083'	8.2083'	50'		1'			1	1								
-L-	15+70.17	16+63.76	RT	93.75'			BRIDGE		5.2083'	8.2083'		50'		1'		1	1								
-L-	12+66.09	13+59.84	LT	93.75'			BRIDGE		5.2083'	8.2083'		50'		1'		1	1								
-L-	15+87.73	16+35.45	LT	43.75'	12.50'			BRIDGE	5.2083'	8.2083'						1		1							
			TOTAL	**325.00'**	**12.50'**											**4**	**3**	**1**							
DEDUCTION FOR ANCHORS:																									
TYPE		**QTY**	**LT/EA**																						
GREU TL-3		3.00	50.00	-150.00'																					
TYPE III		4.00	18.75	-75.00'																					
AT-1		1.00	6.25	-6.25'																					
			PROJECT TOTAL	**93.75'**	**12.50'**											**4**	**3**	**1**							
			SAY	**100'**	**12.50'**																				
			ADDITIONAL GUARDRAIL POSTS	**5**	EA																				

5/9/06
10/24/2024
rdy_sum.dgn

Z10267

COMPUTED BY:	VHB	**DATE:**	3/18/2024
CHECKED BY:	VHB	**DATE:**	3/18/2024

PROJECT NO.	SHEET NO.
BP4-R008	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)

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Drainage Pipe (RCP, CSP, CAAP, HDPE, PVC, or PP PIPE) 12	15	18	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	DO NOT USE PP PIPE	C. S. PIPE 12 .064	C. S. PIPE 15 .064	R. C. PIPE CLASS III 12	15	R. C. PIPE CLASS IV 12	15	R. C. PIPE CLASS V 12	15	STRUCTURAL PLATE PIPE 60	66
L 13+22	14 RT	0401																								
L 13+40	14 LT	0402																								
L 16+55	23 LT		0403						20							X										
SHEET TOTALS									20																	
PROJECT TOTALS									20																	

LINE & STATION	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE		ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G		CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28
L 13+22																								
L 13+40																								
L 16+55																								
SHEET TOTALS																								
PROJECT TOTALS																								

LINE & STATION	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE
L 13+22																	
L 13+40																	
L 16+55																	
SHEET TOTALS																	
PROJECT TOTALS																	

LINE & STATION	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING C.B. TO D.I.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.	MODIFIED CONCRETE FLUME	15" DRAINAGE PIPE ELBOW	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 13+22							1									See Sheet 2C-1 for Special Detail
L 13+40							1									See Sheet 2C-1 for Special Detail
L 16+55															20	Replace existing 12" with 15"
SHEET TOTALS							2								20	
PROJECT TOTALS							2								20	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

COMPUTED BY: Nick Moore DATE: 5/1/2023	(2-3-23)	PROJECT NO.	SHEET NO.
CHECKED BY: Jinyoung Park DATE: 5/1/2023		BP4-R008	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

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

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
BP4-R008	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL 033822, JONATHAN P. SOKA, 12/12/2024

HYDRAULICS ENGINEER — SEAL 033180, AMANDA LOUISE SALZER, 12/11/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

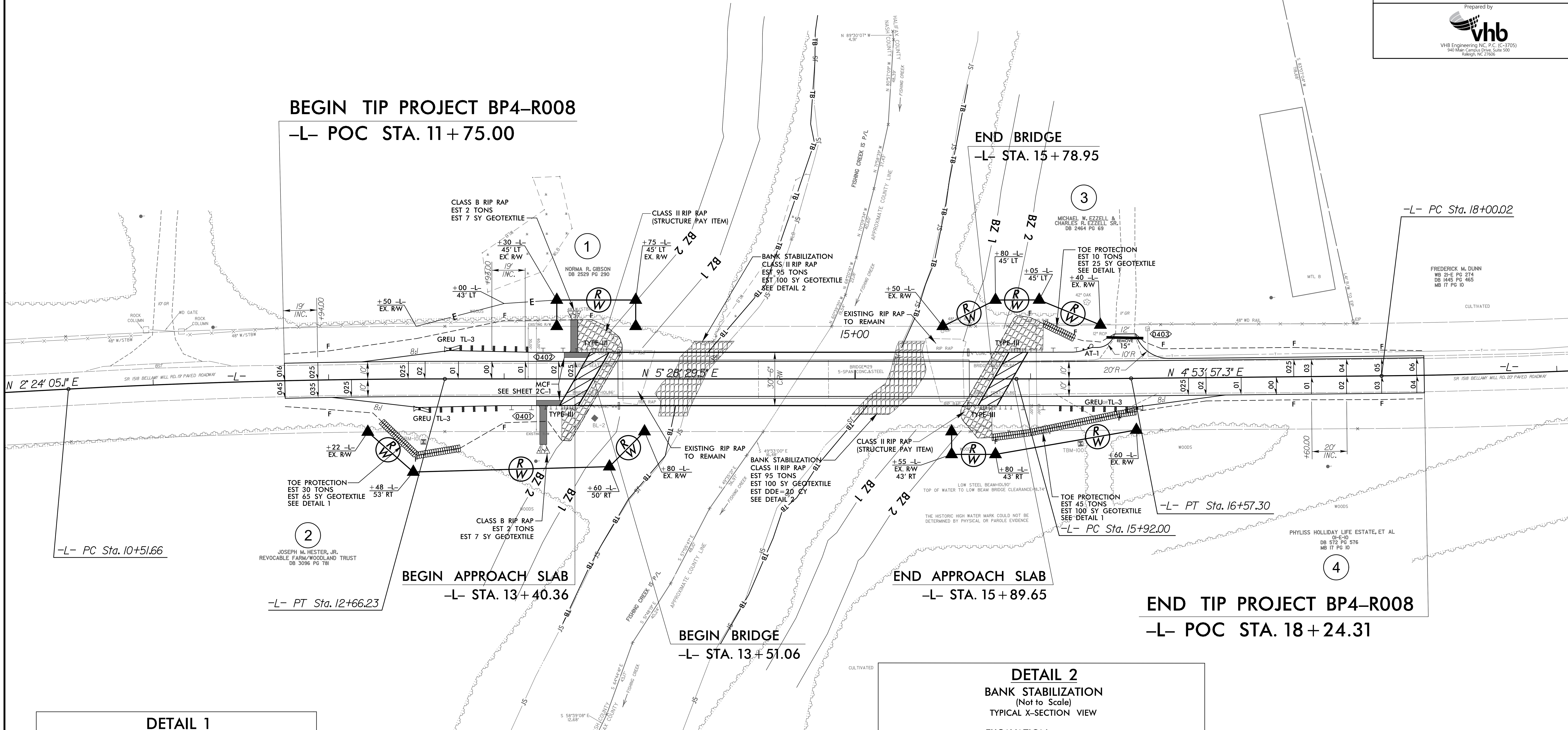
Prepared by vhb

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

NOTE: HORIZONTAL CURVES MEET SUB-REGIONAL TIER GUIDELINES

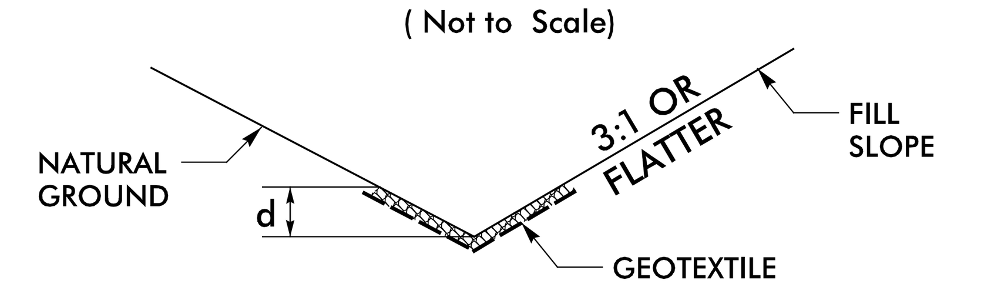
-L- CURVE DATA

PI Sta 11+58.97	PI Sta 16+24.65	PI Sta 18+87.48
Δ = 3° 04' 24.4" (RT)	Δ = 0° 34' 32.2" (LT)	Δ = 3° 02' 09.9" (LT)
D = 1° 25' 56.6"	D = 0° 52' 53.3"	D = 1° 44' 10.4"
L = 214.57'	L = 65.30'	L = 174.87'
T = 107.31'	T = 32.65'	T = 87.45'
R = 4,000.00'	R = 6,500.00'	R = 3,300.00'
DS = 45 MPH	DS = 45 MPH	SE = EXIST
SE = .025	SE = NC	
RO = 47.5'		



DETAIL 1

TOE PROTECTION
(Not to Scale)



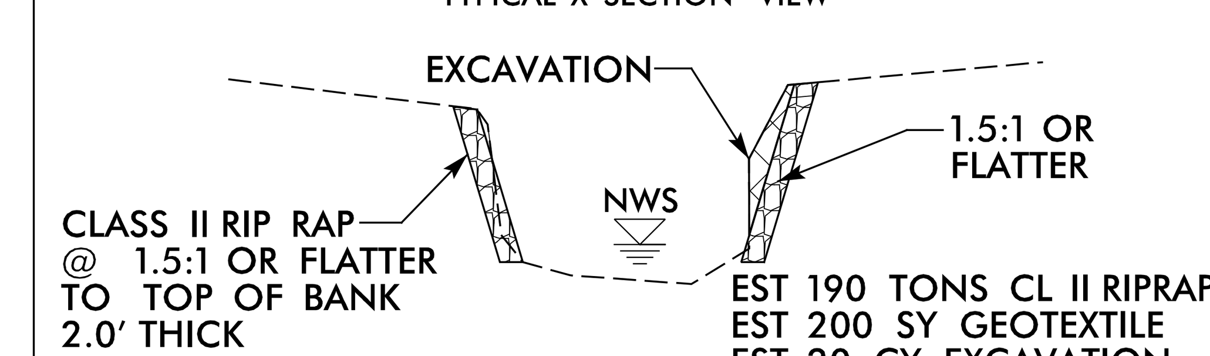
d = 1.5 Ft.

Type of Liner = CLASS B Rip-Rap

FROM STA. 12+30 TO STA. 12+75 -L- RT
FROM STA. 15+78 TO STA. 16+60 -L- RT
FROM STA. 16+07 TO STA. 16+25 -L- LT

DETAIL 2

BANK STABILIZATION
(Not to Scale)
TYPICAL X-SECTION VIEW



EST 190 TONS CL II RIPRAP
EST 200 SY GEOTEXTILE
EST 20 CY EXCAVATION

FROM STA. 13+86 TO STA. 14+31 -L-
FROM STA. 14+98 TO STA. 15+41 -L-

FOR -L- PROFILE SEE SHEET 5

FOR STRUCTURE PLANS SEE SHEETS S-1 THRU S-24

10/24/2024

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
BP4-R008	5

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 033822 ENGINEER JONATHAN P. SOFKA

12/17/2024

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 033180 ENGINEER MARISSA LOUISE SAZLER

12/17/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared by

vhb

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

—L—

TBM-101
NAIL IN BASE OF 10" ELM
ELEV. = 97.76'
-L- STA. 12+54, 36' RT

TBM-100
RR SPIKE IN BASE OF 18" PINE
ELEV. = 105.51'
-L- STA. 16+28, 37' RT

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	15,000 CFS
DESIGN FREQUENCY	=	25 YR YRS
DESIGN HW ELEVATION	=	101.3' FT
BASE DISCHARGE	=	20,802 CFS
BASE FREQUENCY	=	100 YRS
BASE HW ELEVATION	=	102.99 FT
OVERTOPPING DISCHARGE	=	11,000 CFS
OVERTOPPING FREQUENCY	=	10 YRS
OVERTOPPING ELEVATION	=	99.8* FT

*OT APPROX. 500FT BACKLINE OF BEGIN BRIDGE

DATE OF SURVEY = 08/07/19

W.S. ELEVATION AT DATE OF SURVEY = 83.3 FT

BEGIN GRADE
-L- STA. 11+75.00
EL. = 102.78'

BEGIN BRIDGE
-L- STA. 13+51.06

END BRIDGE
-L- STA. 15+78.95

END GRADE
-L- STA. 18+24.31
EL. = 106.67'

PI = 12+00.00
EL = 103.26'
VC = 40'
K = 137

PI = 12+80.00
EL = 105.03'
VC = 120'
K = 63
DS = 45 MPH

CL STA. 14+65.00 -L-
1@76.37', 1@75.15', 1@76.37' (3.3" BOX BEAM)
W/ 2'-6" CAP SKEW=120°

PROPOSED GRADE

EXISTING BRIDGE TO BE REMOVED

(+)1.9200%

(+)2.2113%

(+)0.3000%

(+)0.3000%

EXISTING GROUND

LOWEST CHORD

EXCAVATE TO EL. 99.0' (STRUCTURES PAY ITEM)
CLASS II RIP RAP (TYP)

1.5:1

1.5:1 OR FLATTER

1.5:1

1.5:1 OR FLATTER

EXCAVATE TO EL. 99.0' (STRUCTURES PAY ITEM)
CLASS II RIP RAP (TYP)

BANK STABILIZATION TO EL. 90.0'
CLASS II RIP RAP
KEYED INTO BANK

BANK STABILIZATION TO EL. 94.0'
CLASS II RIP RAP
KEYED INTO BANK

OHW = 83.3'
DATE OF SURVEY
8/7/2019

111
105
99
93
87
81
75

10+90 11+50 12+10 12+70 13+30 13+90 14+50 15+10 15+70 16+30 16+90 17+50 18+10 18+70

NOTE: VERTICAL CURVES MEET SUB-REGIONAL TIER GUIDELINES

FOR -L- PLAN SEE SHEET 4

10/24/2024
C:\Projects\BP4_R008_Plan105.dgn
Layout: Layout1

09/08/99

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP4.R008	RW01	07

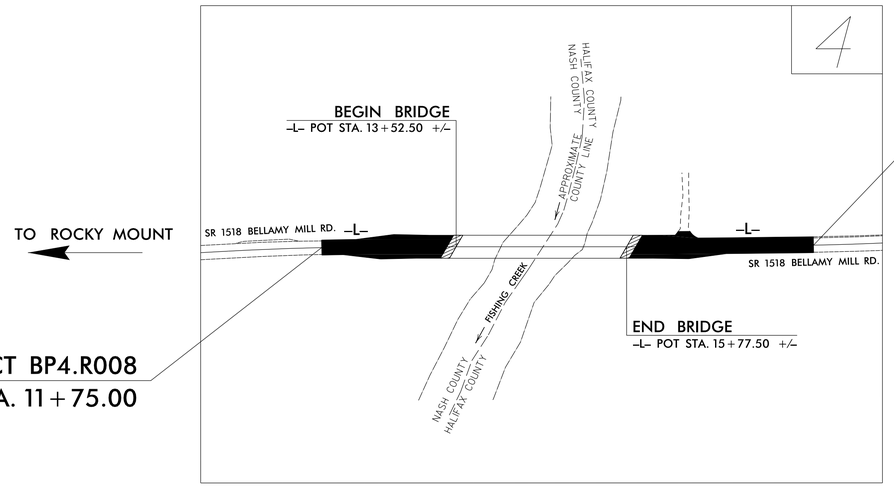
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

NASH & HALIFAX COUNTIES

TIP PROJECT: BP4.R008

NAD 83/
NA 2011



GRAPHIC SCALE

50 25 0 50 100

PLANS

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT
IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY
JKA FOR GPS MONUMENT "630129-3"
WITH NAD 83/NA2011 STATE PLANE GRID COORDINATES OF
NORTHING: 878141.605(ft) EASTING: 2371879.861(ft)
ELEVATION: 105.491(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT
(GROUND TO GRID) IS: 0.999997505
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"630129-3" TO -L- STATION 10+00.00 IS
S 03-26'49.67" W 959.654(ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88/GEOID12B

Prepared in the Office of:

JoynerKeeny, PLC
1051 N. Winstead Avenue
Rocky Mount, NC 27804
252-977-3124
North Carolina Firm Number P-0551

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:	*LETTING DATE:*
03/21/2023	*04/22/2025*

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4468 LAND SURVEYOR JASON E. STONE

DocuSigned by:
Jason E Stone
82435A975745452

SIGNATURE: *Date:*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

01-JUN-2023 17:06
Z:\CAD\2019\19003B_NCDOT_630129_RW_Nash\SURVEY\DGN\WORK\RW\r-w01.dgn
rpoythress AI JKA-021

6/2/99

SURVEY CONTROL SHEET

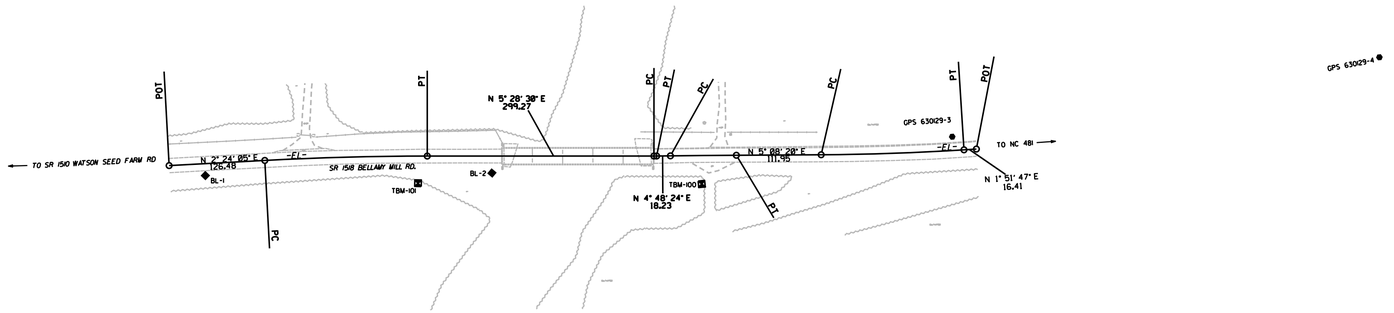
W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
630129	RW02C-1

Location and Surveys

JoynerKeeny, PLC
1051 N. Winstead Avenue
Rocky Mount, NC 27804
252-977-3124
North Carolina Firm Number P-0551

NC GRID NAD 83 NA 2011



SEE SHEETS RW02C-2, RW02C-3 FOR FURTHER ALIGNMENT DETAILS

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.

15-MAY-2019 08:44
Z:\CAD\2019\19003IA_NCDOT_630129_CON_Nash\DGN\WORK\RW02C\630129_1s_rw02c-1.dgn
RPittman AT JKA-021

6/2/99

REVISIONS

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
630129	RW02C-2

Location and Surveys

JoynerKeeny, PLC
1051 N. Winstead Avenue
Rocky Mount, NC 27804
252-977-3124
North Carolina Firm Number P-0551

BL

POINT	DESC.	NORTH	EAST	ELEVATION
1	BL-1	877155.2643	2371836.6632	99.84
2	BL-2	877532.1882	2371869.4494	103.41
3	GPS 630129-3	878141.6050	2371879.8610	105.49
4	GPS 630129-4	878712.9614	2371829.3159	102.87

```
****************************************
100       ELEVATION = 105.51
N 877806      E 2371910
TBM-100 RR SPIKE IN BASE OF 18" PINE
****************************************
```

```
****************************************
101       ELEVATION = 97.76
N 877434      E 2371874
TBM-101 NAIL IN BASE OF 10" ELM
****************************************
```

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.

15-MAY-2019 10:01
Z:\CAD\2019\19003\A_NCDOT_630129_CON_Nash\DGN\WORK\RW02C\630129_LS_rw02c-2.dgn
RPittman AT JKA-021

6/2/99

REVISIONS

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
630129	RW02C-3

Location and Surveys

JoynerKeeny, PLC
1051 N. Winstead Avenue
Rocky Mount, NC 27804
252-977-3124
North Carolina Firm Number P-0551

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	882054.133	2437404.603							
LINE			N 87°06'00.6" E	32.96					
PC	882055.801	2437437.525							
CURVE			N 86°29'09.8" E	62.17	01°13'41.7"(LT)	01°58'32.6"	62.17	31.08	2900.00
PT	882059.611	2437499.574							
LINE			N 85°52'19.0" E	150.60					
PC	882070.452	2437649.778							
CURVE			N 85°06'38.0" E	53.15	01°31'22.0"(LT)	02°51'53.2"	53.15	26.58	2000.00
PT	882074.982	2437702.738							
LINE			N 84°20'57.0" E	32.22					
PC	882078.155	2437734.802							
CURVE			N 80°29'05.5" E	202.18	07°43'43.0"(LT)	03°49'11.0"	202.33	101.32	1500.00
PT	882111.577	2437934.201							
LINE			N 76°37'14.0" E	55.05					
PC	882124.315	2437987.757							
CURVE			N 75°00'29.5" E	84.41	03°13'28.9"(LT)	03°49'11.0"	84.42	42.22	1500.00
PT	882146.151	2438069.295							
LINE			N 73°23'45.1" E	417.99					
POT	882265.595	2438469.855							

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.

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RPittman AT JKA-021

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
BP4.R008	RW02D-1

Location and Surveys

JoynerKeeny, PLC
1051 N. Winstead Avenue
Rocky Mount, NC 27804
252-977-3124
North Carolina Firm Number P-0551

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4468 LAND SURVEYOR KAREN E. STONE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROPOSED ALIGNMENT CONTROL SHEET

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

This 5th day of June, 2023.

DocuSigned by:
Karen E. Stone
Professional Land Surveyor L-4468
82435A975745452...

REVISIONS

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	877183.6870	2371822.1594
PC	10+51.66	877235.3010	2371824.3239
PT	12+66.23	877449.3365	2371839.0585
PC	15+92.00	877773.6233	2371870.1402
PT	16+57.30	877838.6573	2371876.0440
PC	18+00.02	877980.8582	2371888.2330
PT	19+74.89	878155.3996	2371898.5452

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.

6/2/99

REVISIONS

RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
BP4.R008	RW03E-1

Location and Surveys

JoynerKeeny, PLC
1051 N. Winstead Avenue
Rocky Mount, NC 27804
252-977-3124
North Carolina Firm Number P-0551

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4468 LAND SURVEYOR KAREN E. STONE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I , Karen E.Stone , certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed on 17MAY2023 and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 5th day of June, 2023.

DocuSigned by:

Karen E. Stone

Professional Land Surveyor L-4468

82435A975745452...

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+22.00	30.00	877402.7568	2371864.9753
L	12+48.00	53.00	877426.3724	2371890.1416
L	13+30.00	-45.00	877517.1119	2371800.3483
L	13+30.00	-30.00	877515.6807	2371815.2799
L	13+60.00	50.00	877537.9111	2371897.7772
L	13+75.00	-45.00	877561.9066	2371804.6417
L	13+75.00	-30.00	877560.4754	2371819.5733
L	13+80.00	30.00	877559.7281	2371879.7766
L	15+50.00	-30.00	877734.6771	2371836.2699
L	15+55.00	30.00	877733.9298	2371896.4732
L	15+55.00	43.00	877732.6894	2371909.4139
L	15+80.00	43.00	877757.5754	2371911.7992
L	15+80.00	-45.00	877765.9714	2371824.2006
L	16+05.00	-45.00	877790.7690	2371826.5644
L	16+40.00	-30.58	877824.1134	2371844.0836
L	16+60.00	29.45	877838.8306	2371905.6167

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 05/17/2023

01-JUN-2023 17:00
Z:\CAD\2019\190318_NCDOT_630129_RW_Nash\SURVEY\DGN\WORK\RW\rw03e.dgn
rpoythress AT JKA-021

PROJECT REFERENCE NO.	SHEET NO.
BP4.R008	RW04

Location and Surveys

JoynerKeeny, PLC
1051 N. Winstead Avenue
Rocky Mount, NC 27804
252-977-3124
North Carolina Firm Number P-0551

PROJECT SURVEYOR

SEAL L-4468 — NORTH CAROLINA PROFESSIONAL LAND SURVEYOR — KAREN E. STONE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I , Karen E. Stone , certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed on 17MAY2023, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

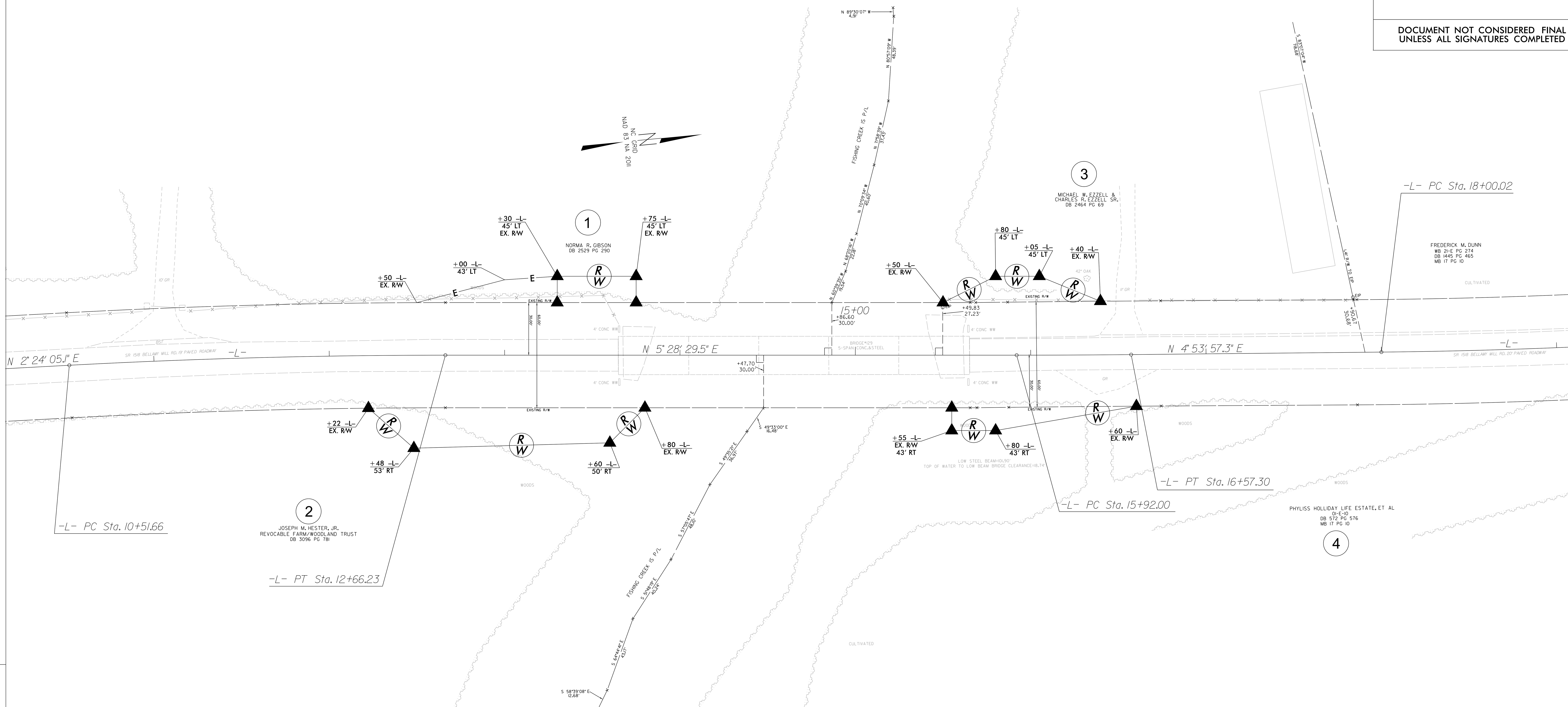
This 7th day of August, 2023.

DocuSigned by: Karen E. Stone

Professional Land Surveyor L-4468

REVISIONS

6/2/99



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 05/17/2023 .

07-AUG-2023 10:44
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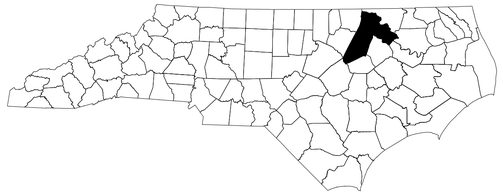
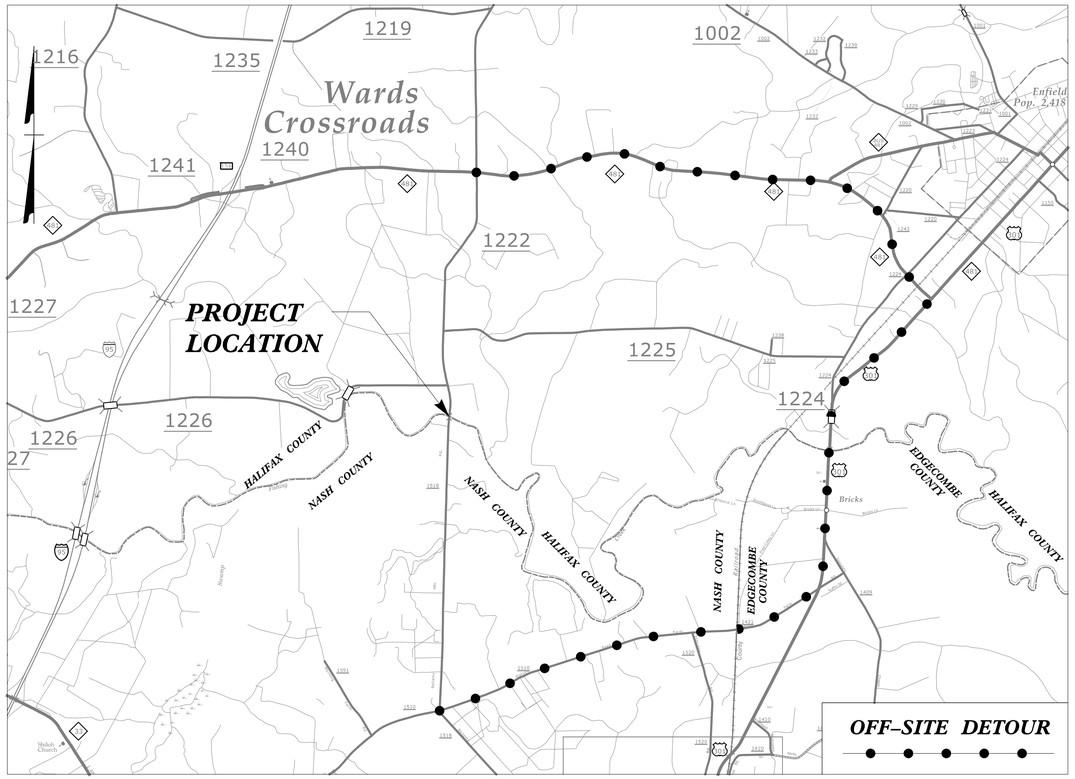
rpoythress AT JKA-021

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

NASH & HALIFAX COUNTIES





VICINITY MAP

INDEX OF SHEETS

SHEET NO.
TMP-1

BP4.R008

TIP PROJECT:

WORK ZONE SAFETY & MOBILITY
"from the MOUNTAINS to the COAST"

PLANS PREPARED BY:

J. TOWNSEND, PE (VHB)

NCDOT CONTACTS:

RACHEL EVANS, PE
PROJECT ENGINEER

COREY McLAMB, PE
DIVISION CONSTRUCTION ENGINEER

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

vhb
940 Main Campus Drive, Suite 500 Raleigh, NC 27606
NC License No. C-3705

APPROVED: _____

DATE: _____

Digitally signed by John G. Townsend
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 031533 JOHN G. TOWNSEND
8/28/2024

8/28/2024
R:\Traffic\TrafficControl\TCP\BP4R008_tmp_TMP-01.dgn
User:jtownsend

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

PROJ. REFERENCE NO.	SHEET NO.
BP4.R008	TMP-1A

LEGEND

GENERAL

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

SIGNALS

EXISTING PROPOSED TEMPORARY

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

APPROVED: _____

DATE: _____

Digitally signed by John G. Townsend
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 031533 JOHN G. TOWNSEND
8/28/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

ROADWAY STANDARD DRAWINGS & LEGEND

8/28/2024
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User:jtownsend

PROJ. REFERENCE NO.	SHEET NO.
BP4.R008	TMP-1B

MANAGEMENT STRATEGIES

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

RECOMMENDED STRATEGIES:

TRAFFIC MANAGEMENT STRATEGIES:

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

CONTRACTING & INNOVATIVE CONTRUCTION STRATEGIES:

- INTERMEDIATE CONTRACT TIMES / LIQUIDATED DAMAGES

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 STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

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

C) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

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

TRAFFIC CONTROL DEVICES

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

LOCAL NOTES

NOTIFY NASH COUNTY, HALIFAX COUNTY AND EDGECOMBE COUNTY EMERGENCY SERVICES AND PUBLIC SCHOOLS AT LEAST THIRTY (30) DAYS PRIOR TO ROAD CLOSURE.

PHASING

NOTES:

MAINTAIN VEHICULAR ACCESS TO ALL RESIDENCES AND BUSINESSES DURING THE LIFE OF THE CONTRACT UNLESS OTHERWISE NOTED IN THE PHASING OR DIRECTED BY THE ENGINEER.

THE TERM RSD REFERS TO ROADWAY STANDARD DRAWINGS.

PHASE I

STEP 1: INSTALL AND COVER DETOUR SIGNS AS SHOWN ON SHEET TMP-2.

STEP 2: USING RSD 1101.03, SHEET 1 OF 9 AND TMP-2, UNCOVER DETOUR SIGNS (PLACED IN STEP 1) AND CLOSE -L- BELLAMY MILL ROAD (SR 1518) AND DETOUR TRAFFIC OFF-SITE AS SHOWN ON TMP-2.

STEP 3: WITH -L- BELLAMY MILL ROAD (SR 1518) CLOSED TO TRAFFIC, PERFORM THE FOLLOWING:

- REMOVE EXISTING BRIDGE
- CONSTRUCT PROPOSED BRIDGE
- CONSTRUCT PROPOSED ROADWAY THROUGH THE FINAL SURFACE COURSE
- PLACE FINAL PAVEMENT MARKINGS AND TIE TO EXISTING MARKINGS.

STEP 4: REMOVE ALL TEMPORARY TRAFFIC CONTROL DEVICES AND OPEN -L- BELLAMY MILL ROAD (SR 1518) TO TRAFFIC.

APPROVED: _____

DATE: _____

DOCUMENTS NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 031533 JOHN G. TOWNSEND 8/28/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES, AND LOCAL NOTES) AND PHASING

8/28/2024
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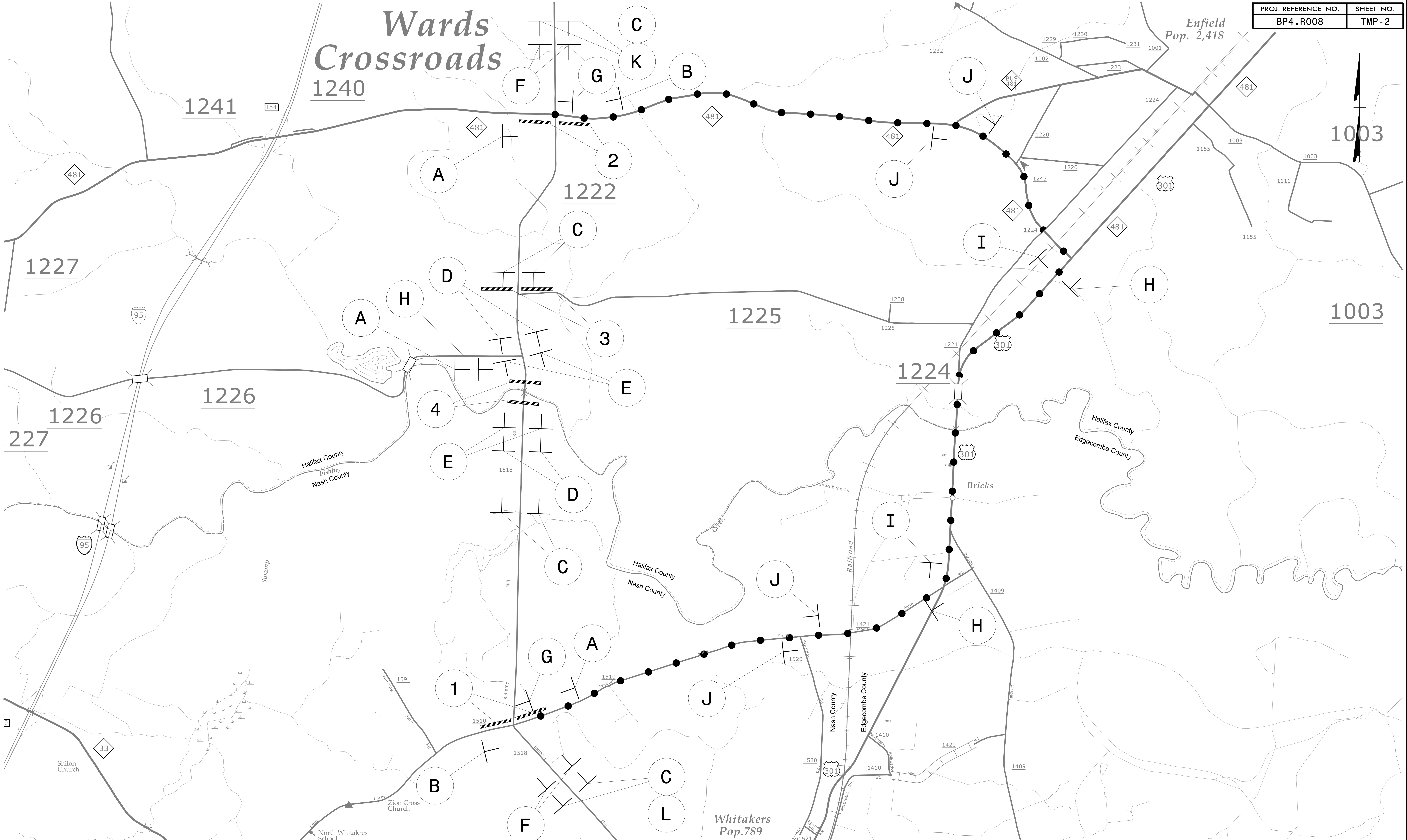
User:jtownsend

PROJ. REFERENCE NO.	SHEET NO.
BP4.R008	TMP-2



DETOUR ROUTE ●

SEE SHEET TMP-2A FOR DETOUR SIGNS

APPROVED:

DATE:

NORTH CAROLINA PROFESSIONAL SEAL 031533 ENGINEER JOHN G. TOWNSEND 8/28/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

DETOUR ROUTE
SR 1518
(BELLAMY MILL ROAD)

8/28/2024
R:\Traffic\TrafficControl\TCP\BP4R008_tmp_TMP-02.dgn
User:jtownsend

PROJ. REFERENCE NO.	SHEET NO.
BP4.R008	TMP-2A

W20-3
48″ x 48″

SP-4R
42″ x 12″

A

W20-3
48″ x 48″

SP-4L
42″ x 12″

B

W20-3
48″ x 48″

C

W20-3
48″ x 48″

D

W20-3
48″ x 48″

E

W20-2
48″ x 48″

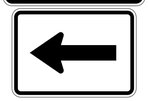
F

M4-8A
24″ x 18″

G

SP-1
42″ x 30″

M4-8
24″ x 12″

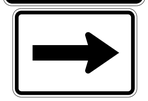


M6-1
21″ x 15″

H

SP-1
42″ x 30″

M4-8
24″ x 12″



M6-1
21″ x 15″

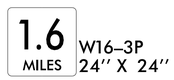
I

SP-1
42″ x 30″

M4-8
24″ x 12″

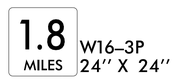
M6-3
21″ x 15″

J



W16-3P
24″ X 24″

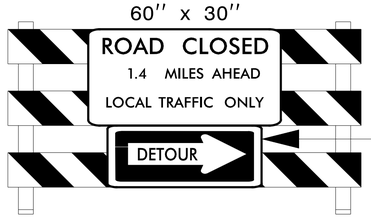
K



W16-3P
24″ X 24″

L

R11-3
60″ x 30″

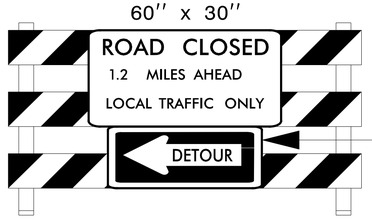


M4-10R
48″ x 18″

TYPE III BARRICADE

1

R11-3
60″ x 30″



M4-10L
48″ x 18″

TYPE III BARRICADE

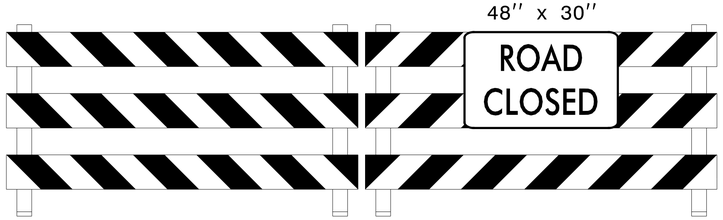
2

R11-3
60″ x 30″

TYPE III BARRICADE

3

R11-2
48″ x 30″



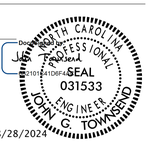
TYPE III BARRICADE(S)

4

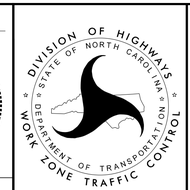
SEE SHEET TMP-2 FOR
DETOUR

APPROVED: _____

DATE: _____



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DETOUR ROUTE
SR 1518
(BELLAMY MILL ROAD)

8/28/2024
R:\Traffic\TrafficControl\TCP\BP4R008_tmp_TMP-02A.dgn
User:jtownsend

PROJ. REFERENCE NO.	SHEET NO.
BP4.R008	TMP-2B

SIGN NUMBER: SP-1
TYPE: D
QUANTITY: 1

BACKG COLOR: Orange
COPY COLOR: Black

SYMBOL	X	Y	WID	HT

SIGN WIDTH: 3′-6″
HEIGHT: 2′-6″
TOTAL AREA: 8.8 Sq.Ft.

BORDER TYPE: FLUSH
RECESS: 0.47″
WIDTH: 0.63″
RADII: 1.5″

NO. Z BARS:
LENGTH:

MAT'L: 0.080″ (2.0 mm) ALUMINUM

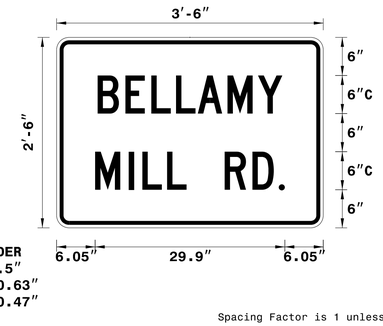
USE NOTES:

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

DESIGN BY: VHB
PROJECT ID: BP4.R008

CHECKED BY:
LOCATION:

Aug 28, 2024
DIV: 04



BORDER
R=1.5″
TH=0.63″
IN=0.47″

Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

																										Series/Size Text Length
		B	E	L	L	A	M	Y																		C 2000
	6.4	4.4	4.1	3.9	3.4	4.7	4.8	3.8	6.5																	29.1
		M	I	L	L		R	D	.																	C 2000
	6.1	5.3	2.2	3.9	3.1	6	4.4	4.1	1	6.1																29.9

FILENAME: BP4R008_tmp_sp-1

NORTH CAROLINA D.O.T. SIGN DETAIL

APPROVED: _____

DATE: _____

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 031533 JOHN G. TOWNSEND
8/28/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

SPECIAL SIGN DESIGN

8/28/2024
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User:jtownsend

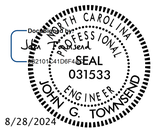
T.I.P.: BP4.R008

TIP NO.	SHEET NO.
BP4.R008	PMP-1

APPROVED: _____

DATE: _____

SEAL



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
NASH & HALIFAX COUNTIES

LOCATION: BRIDGE NO. 630129 ON SR 1518 (BELLAMY MILL ROAD) OVER FISHING CREEK

INDEX

GENERAL NOTES

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

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

ROAD NAME	MARKING	MARKERS
-L- (BELLAMY MILL ROAD)	THERMOPLASTIC	NONE

B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.

D) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.

ROADWAY STANDARD DRAWING

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

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
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

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

PLAN SUBMITTED TO:

Rachel Evans, PE; Project Engineer

PLAN PREPARED BY: VHB Engineering NC, P.C.

John Townsend, PE Project Design Engineer

Alex Ribiakost Project Engineer

vhb
940 Main Campus Drive, Suite 500 Raleigh, NC 27606
NC License No. C-3705

8/28/2024
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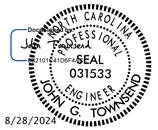
User:jtownsend

TIP NO.	SHEET NO.
BP4.R008	PMP-2

APPROVED: _____

DATE: _____

SEAL



8/28/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

vhb
940 Main Campus Drive, Suite 500 Raleigh, NC 27606
NC License No. C-3705

PAVEMENT MARKING SCHEDULE

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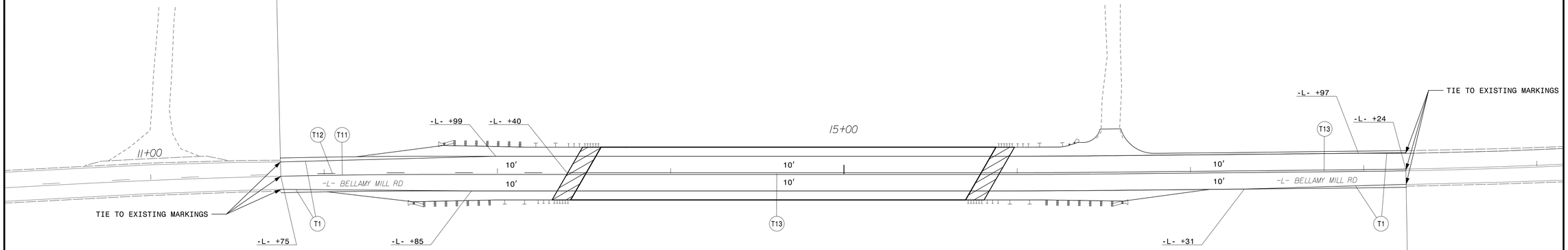
T12	10 FT. YELLOW SKIP (4", 90 MIL)
T13	YELLOW DOUBLE CENTER (4", 90 MIL)

NAD 83/NA 2011

BEGIN TIP PROJECT BP4.R008
–L– POC STA. 11+75.00



END TIP PROJECT BP4.R008
–L– POC STA. 18+24.31

30 15 0 30 60

PAVEMENT MARKING DETAIL

8/28/2024
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User:jtownsend

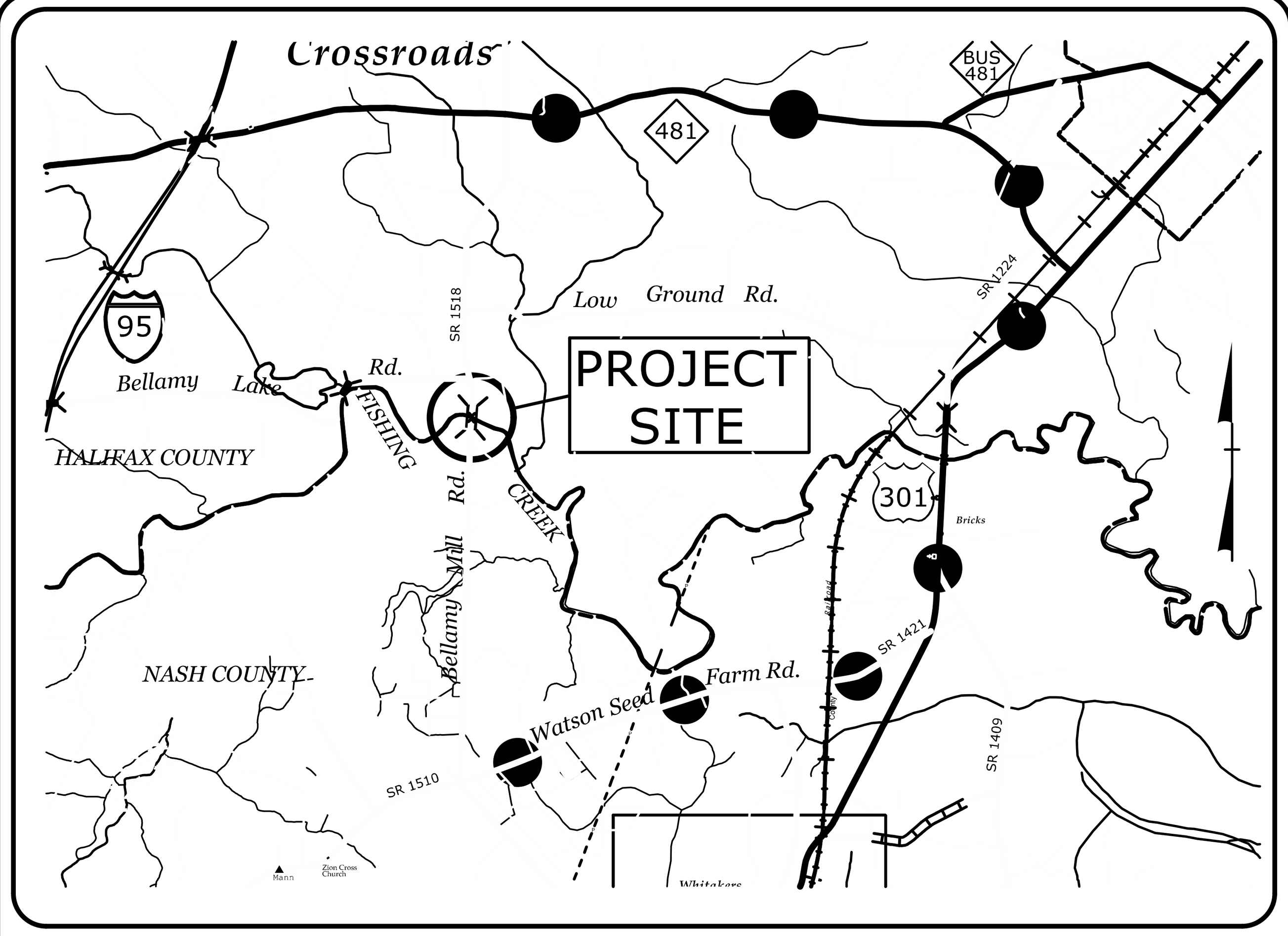
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP4.R008	EC-1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
BP4.R008.1		

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

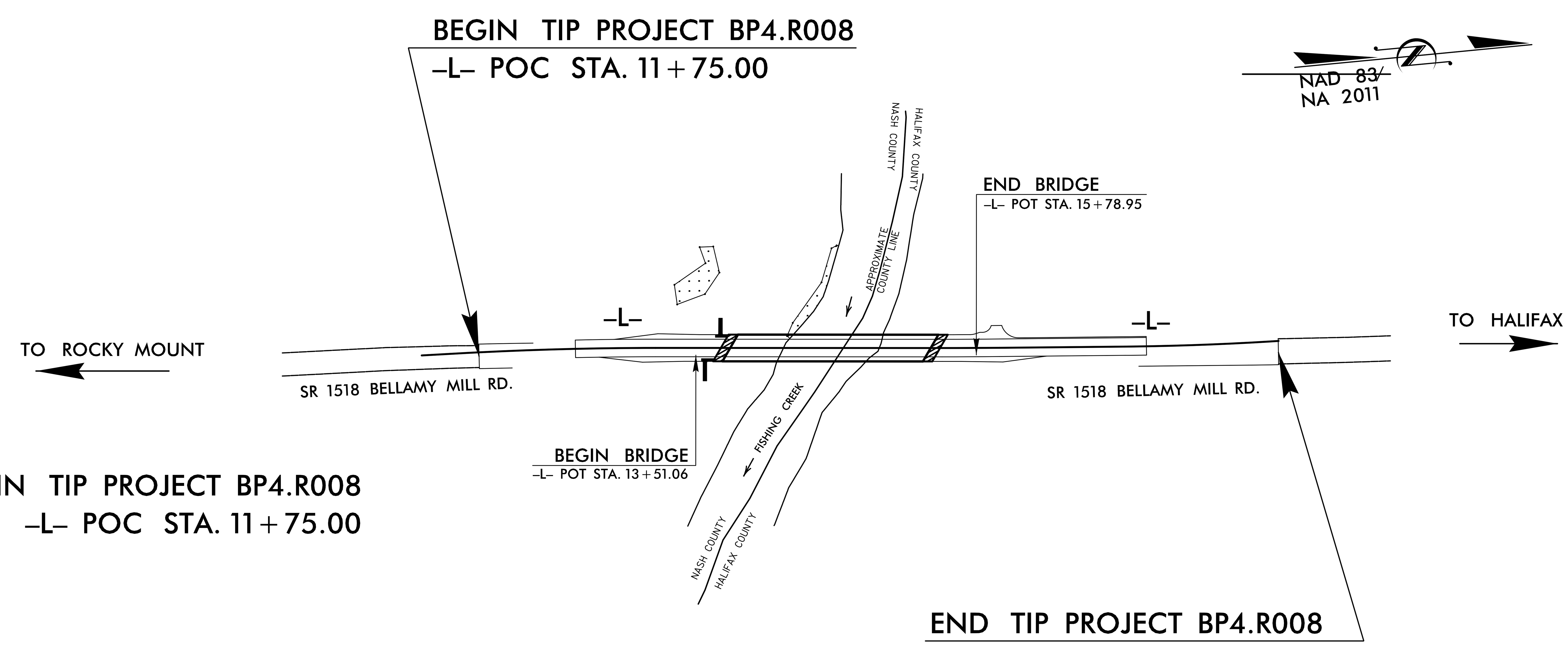
NASH & HALIFAX COUNTIES



VICINITY MAP
NOT TO SCALE

LOCATION: BRIDGE NO. 630129 ON SR 1518 (BELLAMY MILL ROAD) OVER FISHING CREEK

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE



BEGIN TIP PROJECT BP4.R008
-L- POC STA. 11+75.00

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

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

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

GRAPHIC SCALE

50 25 0 50 100
PLANS

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

Prepared In the Office of:

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

Designed by:

GRAYSON AVERETTE — *4468*
NAME — *LEVEL III CERTIFICATION NO.*

Roadway Standard Drawings

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

PROJECT REFERENCE NO.	SHEET NO.
BP4.R008	EC-02
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

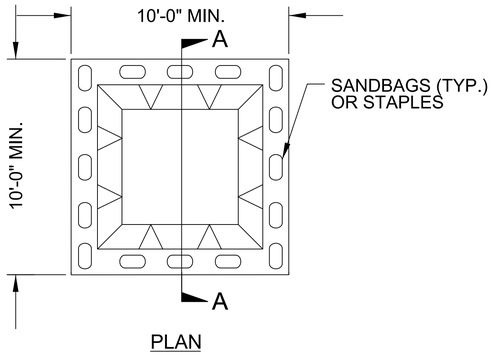
EROSION & SEDIMENT CONTROL LEGEND

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1630.03	Temporary Silt Ditch	TSD
1630.04	Stilling Basin	
1630.05	Temporary Diversion	TD
1630.06	Special Stilling Basin	
1630.07	Skimmer Basin	
1630.08	Tiered Skimmer Basin	
1630.09	Earthen Dam with Skimmer	
	Infiltration Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C

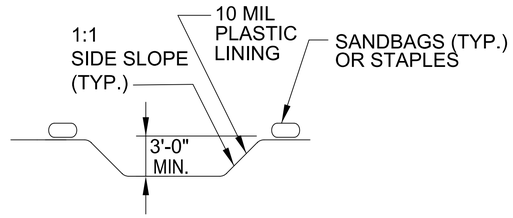
Std. #	Description	Symbol
1633.01	Temporary Rock Silt Check Type A	
1633.02	Temporary Rock Silt Check Type B	
1633.03	Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant	
1634.01	Temporary Rock Sediment Dam Type A	
1634.02	Temporary Rock Sediment Dam Type B	
1635.01	Rock Pipe Inlet Sediment Trap Type A	A
1635.02	Rock Pipe Inlet Sediment Trap Type B	B
1636.01	Excelsior Wattle Check	
1636.01	Excelsior Wattle Check with Flocculant	
1636.01	Coir Fiber Wattle Check	
1636.01	Coir Fiber Wattle Check with Flocculant	
1636.02	Silt Fence Excelsior Wattle Break	FF
	Silt Fence Coir Fiber Wattle Break	FFF
1636.03	Excelsior Wattle Barrier	EW EW EW
1636.03	Coir Fiber Wattle Barrier	CFW CFW CFW

PROJECT REFERENCE NO.	SHEET NO.
BP4.R008	EC-02
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



PLAN



SECTION A-A

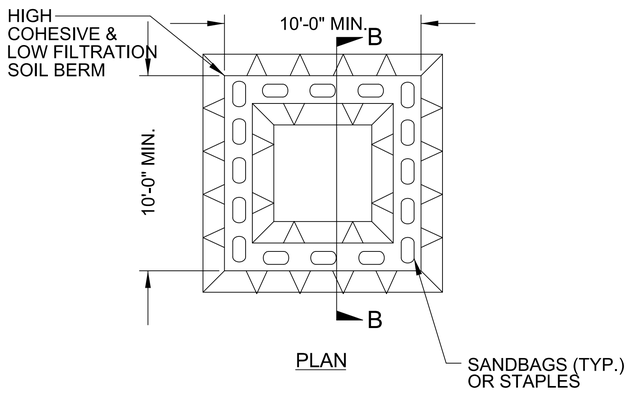
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

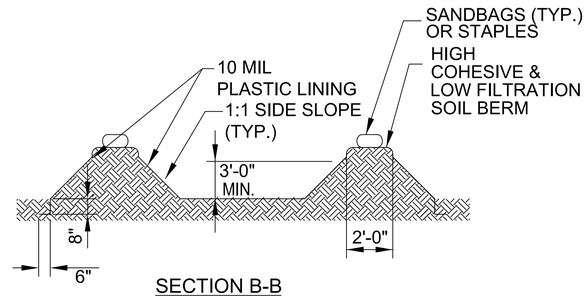
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

BELOW GRADE WASHOUT STRUCTURE

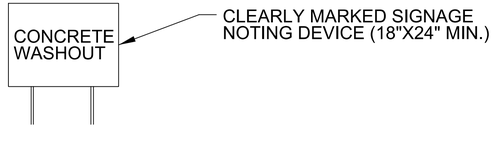
NOT TO SCALE



PLAN



SECTION B-B



NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

ABOVE GRADE WASHOUT STRUCTURE

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
X-XXXX	EC-3A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4					
				SUBTOTAL	0
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					1515
				TOTAL	1515
				SAY	1670

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)

PROJECT REFERENCE NO.	SHEET NO.
BP4.R008	EC-3B
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

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

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
BP4.R008	EC-04/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTE: HORIZONTAL CURVES MEET SUB-REGIONAL TIER GUIDELINES

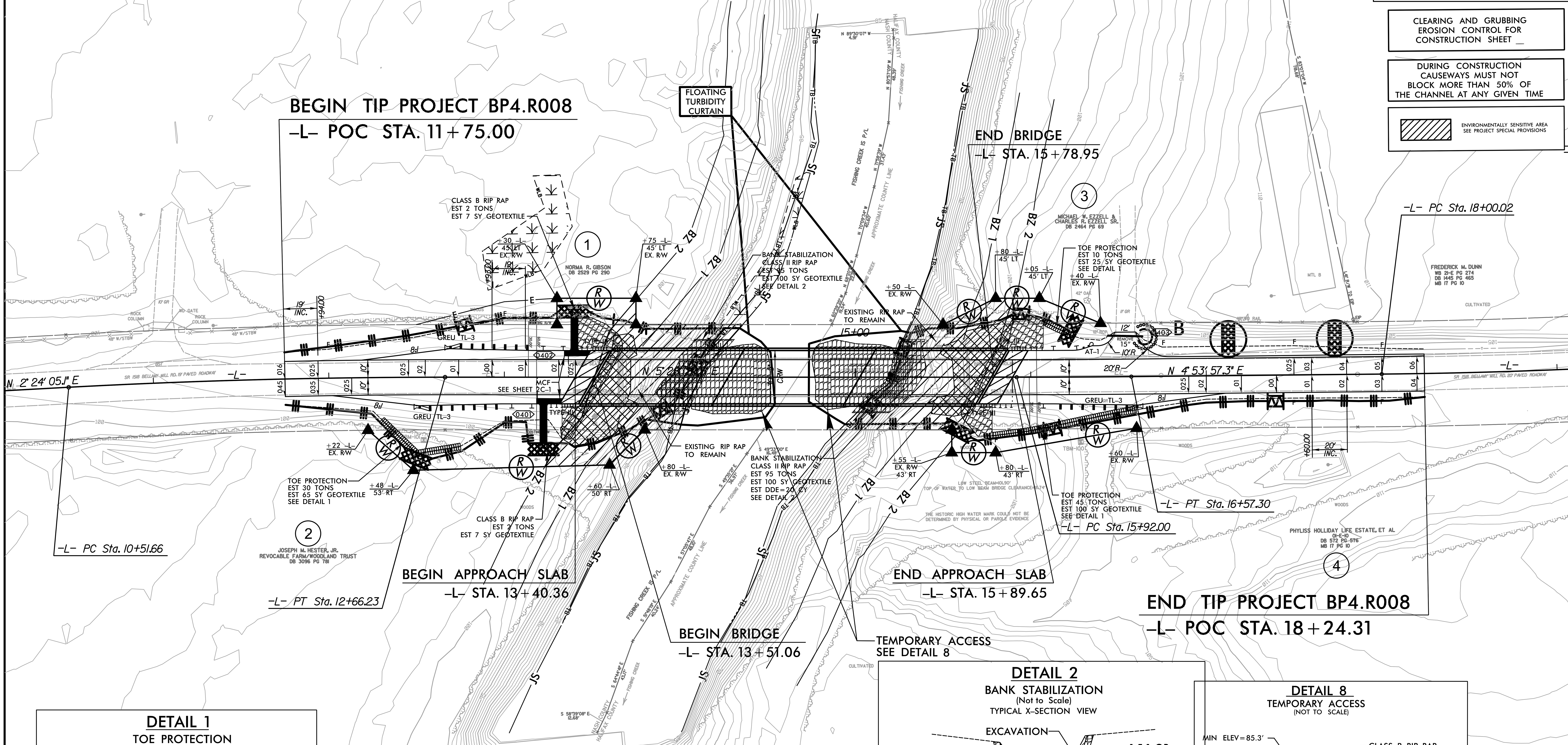
-L- CURVE DATA

PI Sta 11+58.97	PI Sta 16+24.65	PI Sta 18+87.48
△ = 3° 04' 24.4" (RT)	△ = 0° 34' 32.2" (LT)	△ = 3° 02' 09.9" (LT)
D = 1° 25' 56.6"	D = 0° 52' 53.3"	D = 1° 44' 10.4"
L = 214.57'	L = 65.30'	L = 174.87'
T = 107.31'	T = 32.65'	T = 87.45'
R = 4,000.00'	R = 6,500.00'	R = 3,300.00'
DS = 45 MPH	DS = 45 MPH	SE = EXIST
SE = .025	SE = NC	
RO = 47.5'		

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET __

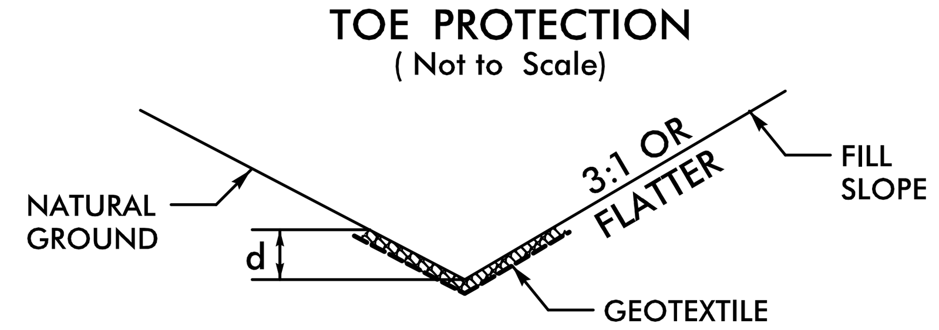
DURING CONSTRUCTION CAUSEWAYS MUST NOT BLOCK MORE THAN 50% OF THE CHANNEL AT ANY GIVEN TIME

ENVIRONMENTALLY SENSITIVE AREA SEE PROJECT SPECIAL PROVISIONS



NAD 83/NA 2011
BEGIN TIP PROJECT BP4.R008
-L- POC STA. 11+75.00
FLOATING TURBIDITY CURTAIN
END BRIDGE
-L- STA. 15+78.95
-L- PC Sta. 18+00.02
CLASS B RIP RAP
EST 2 TONS
EST 7 SY GEOTEXTILE
NORMA R. GIBSON
BANK STABILIZATION
CLASS II RIP RAP
EST 45 TONS
EST 100 SY GEOTEXTILE
SEE DETAIL 2
EXISTING RIP RAP TO REMAIN
MICHAEL W. EZZELL & CHARLES R. EZZELL SR.
TOE PROTECTION
EST 10 TONS
EST 25 SY GEOTEXTILE
SEE DETAIL 1
FREDERICK M. DUNN
N 2° 24' 05.1" E
N 4° 53' 57.3" E
GREU TL-3
TOE PROTECTION
EST 30 TONS
EST 65 SY GEOTEXTILE
SEE DETAIL 1
EXISTING RIP RAP TO REMAIN
BANK STABILIZATION
CLASS II RIP RAP
EST 95 TONS
EST 100 SY GEOTEXTILE
EST DDE=20 CY
SEE DETAIL 2
TOE PROTECTION
EST 45 TONS
EST 100 SY GEOTEXTILE
SEE DETAIL 1
-L- PT Sta. 16+57.30
-L- PC Sta. 15+92.00
CLASS B RIP RAP
EST 2 TONS
EST 7 SY GEOTEXTILE
-L- PC Sta. 10+51.66
JOSEPH M. HESTER, JR. REVOCABLE FARM/WOODLAND TRUST
PHYLISS HOLLIDAY LIFE ESTATE, ET AL
BEGIN APPROACH SLAB
-L- STA. 13+40.36
END APPROACH SLAB
-L- STA. 15+89.65
-L- PT Sta. 12+66.23
END TIP PROJECT BP4.R008
-L- POC STA. 18+24.31
BEGIN BRIDGE
-L- STA. 13+51.06
TEMPORARY ACCESS
SEE DETAIL 8

DETAIL 1
TOE PROTECTION
(Not to Scale)

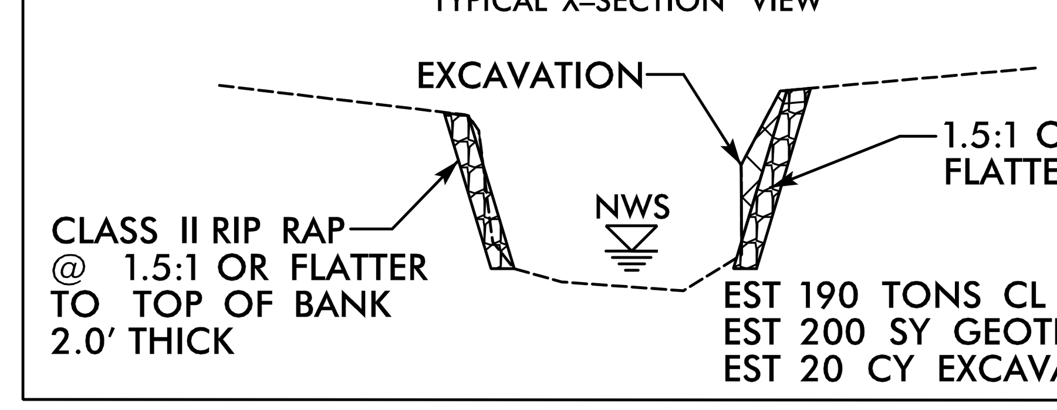


d= 1.5 Ft.

Type of Liner= CLASS B Rip-Rap

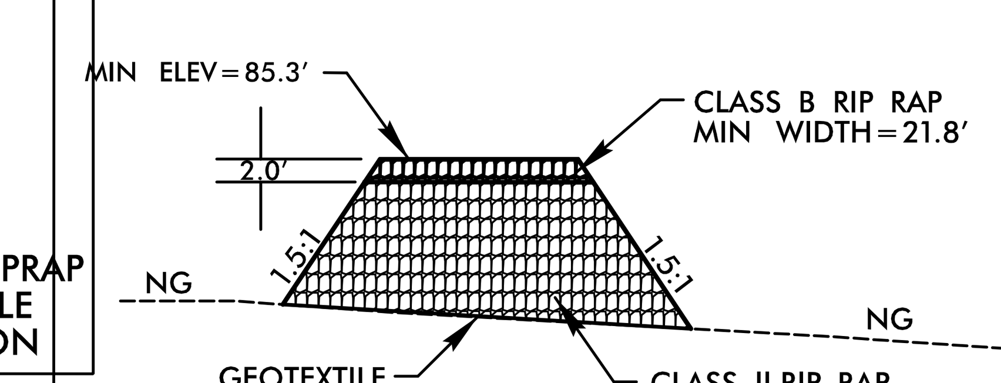
FROM STA. 12+30 TO STA. 12+75 -L- RT
FROM STA. 15+78 TO STA. 16+60 -L- RT
FROM STA. 16+07 TO STA. 16+25 -L- LT

DETAIL 2
BANK STABILIZATION
(Not to Scale)
TYPICAL X-SECTION VIEW



FROM STA. 13+86 TO STA. 14+31 -L-
FROM STA. 14+98 TO STA. 15+41 -L-

DETAIL 8
TEMPORARY ACCESS
(NOT TO SCALE)



FOR -L- PROFILE SEE SHEET 5

FOR STRUCTURE PLANS SEE SHEETS S-1 THRU S-24

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
BP4.R008	EC-05/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTE: HORIZONTAL CURVES MEET SUB-REGIONAL TIER GUIDELINES

-L- CURVE DATA

PI Sta 11+58.97	PI Sta 16+24.65	PI Sta 18+87.48
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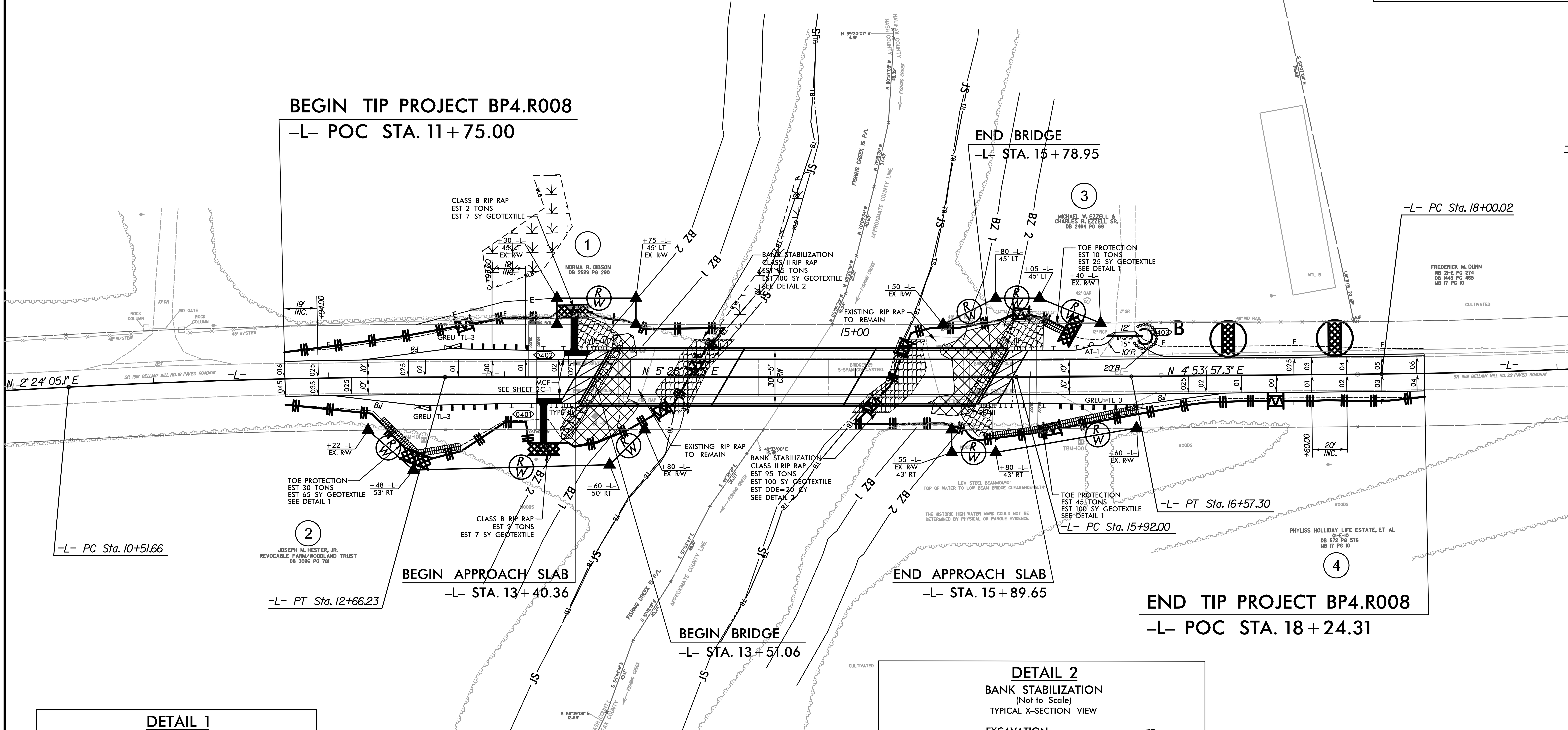
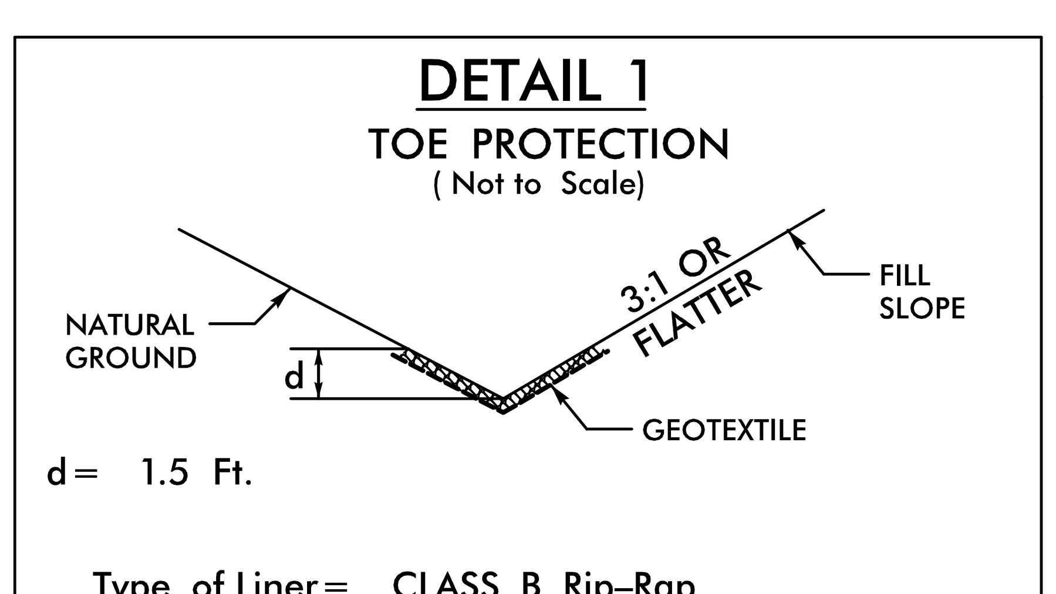
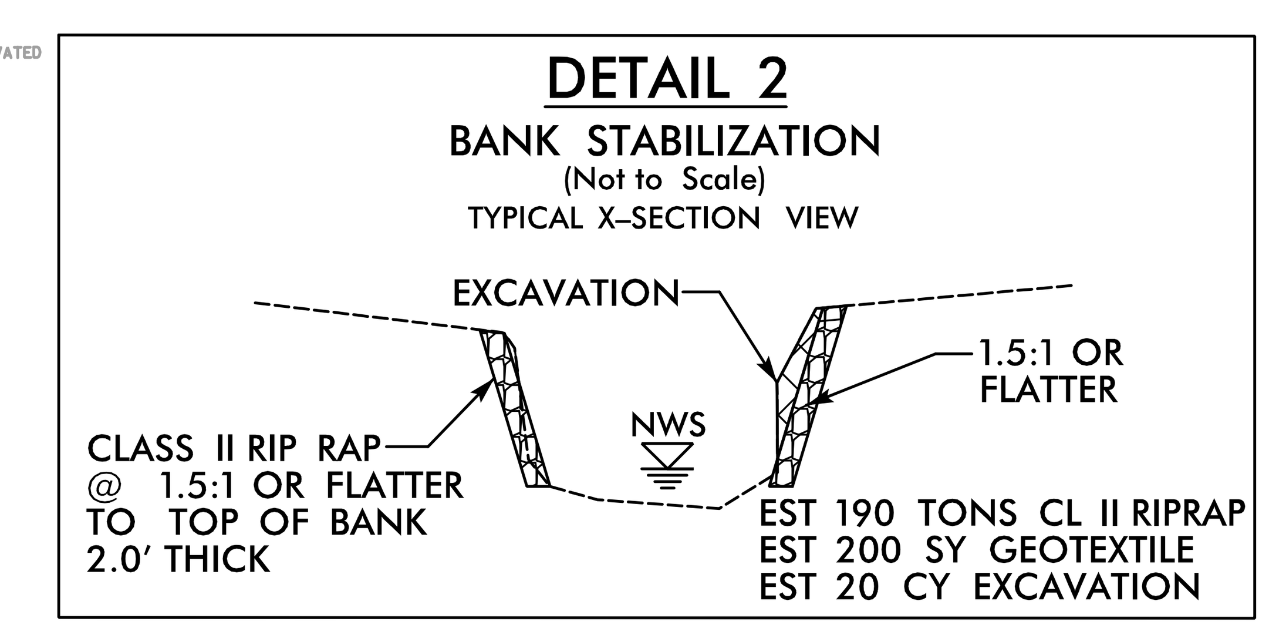


NAD 83/NA 2011
BEGIN TIP PROJECT BP4.R008
-L- POC STA. 11+75.00
END BRIDGE
-L- STA. 15+78.95
CLASS B RIP RAP
EST 2 TONS
EST 7 SY GEOTEXTILE
NORMA R. GIBSON
DB 2529 PG 290
BANK STABILIZATION
CLASS II RIP RAP
EST 95 TONS
EST 100 SY GEOTEXTILE
SEE DETAIL 2
EXISTING RIP RAP
TO REMAIN
15+00
MICHAEL W. EZZELL & CHARLES R. EZZELL SR.
DB 2464 PG 69
TOE PROTECTION
EST 10 TONS
EST 25 SY GEOTEXTILE
SEE DETAIL 1
-L- PC Sta. 18+00.02
FREDERICK M. DUNN
N 2° 24' 05.1" E
N 4° 53' 57.3" E
GREU TL-3
SEE SHEET 2C-1
TOE PROTECTION
EST 30 TONS
EST 65 SY GEOTEXTILE
SEE DETAIL 1
EXISTING RIP RAP
TO REMAIN
BANK STABILIZATION
CLASS II RIP RAP
EST 95 TONS
EST 100 SY GEOTEXTILE
EST DDE=20 CY
SEE DETAIL 2
TOE PROTECTION
EST 45 TONS
EST 100 SY GEOTEXTILE
SEE DETAIL 1
-L- PT Sta. 16+57.30
-L- PC Sta. 15+92.00
-L- PC Sta. 10+51.66
JOSEPH M. HESTER, JR.
REVOCABLE FARM/WOODLAND TRUST
DB 3096 PG 781
CLASS B RIP RAP
EST 2 TONS
EST 7 SY GEOTEXTILE
BEGIN APPROACH SLAB
-L- STA. 13+40.36
END APPROACH SLAB
-L- STA. 15+89.65
-L- PT Sta. 12+66.23
PHYLISS HOLLIDAY LIFE ESTATE, ET AL
END TIP PROJECT BP4.R008
-L- POC STA. 18+24.31
BEGIN BRIDGE
-L- STA. 13+51.06



FROM STA. 12+30 TO STA. 12+75 -L- RT
FROM STA. 15+78 TO STA. 16+60 -L- RT
FROM STA. 16+07 TO STA. 16+25 -L- LT



FROM STA. 13+86 TO STA. 14+31 -L-
FROM STA. 14+98 TO STA. 15+41 -L-

FOR -L- PROFILE SEE SHEET 5

FOR STRUCTURE PLANS SEE SHEETS S-1 THRU S-24

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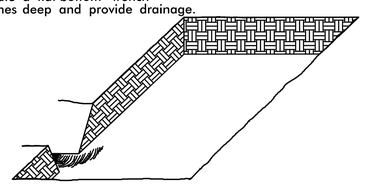
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP4.R008	RF-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

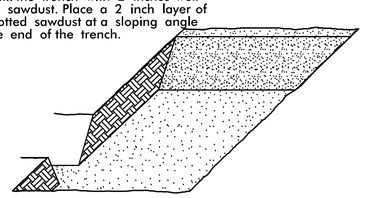
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

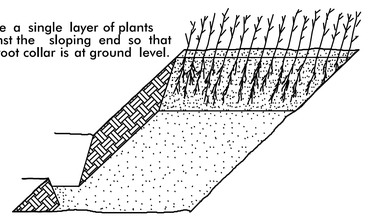
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



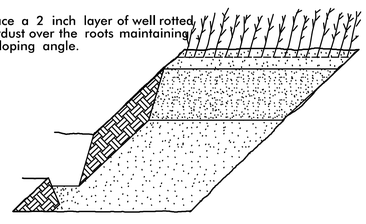
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

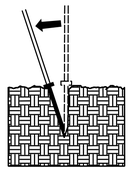


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

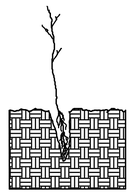


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

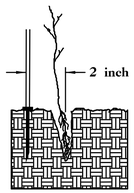
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



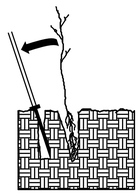
1. Insert planting bar as shown and pull handle toward planter.



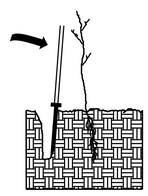
2. Remove planting bar and place seedling at correct depth.



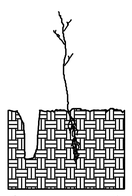
3. Insert planting bar 2 inches toward planter from seedling.



4. Pull handle of bar toward planter, firming soil at bottom.



5. Push handle forward firming soil at top.



6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

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

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

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

REFORESTATION

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

REFORESTATION

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

25%	LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in – 18 in BR
25%	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in – 18 in BR
25%	FRAXINUS PENNSYLVANICA	GREEN ASH	12 in – 18 in BR
25%	BETULA NIGRA	RIVER BIRCH	12 in – 18 in BR

REFORESTATION DETAIL SHEET

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

T.I.P.: BP4.R008

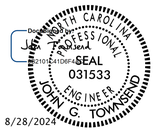
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

TIP NO.	SHEET NO.
BP4.R008	SGN-1

APPROVED: _____

DATE: _____

SEAL



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SIGNING PLAN
NASH & HALIFAX COUNTIES

LOCATION: BRIDGE NO. 630129 ON SR 1518 (BELLAMY MILL ROAD) OVER FISHING CREEK

SUMMARY OF QUANTITIES

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4072000000	903	SUPPORTS, 3 LB STEEL U-CHANNEL	68.7	L.F.
4096000000	904	SIGN ERECTION, TYPE D	2	EA.
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	5	EA.
4192000000	907	DISPOSAL OF SUPPORT, U-CHANNEL	12	EA.
4237000000	907	STOCKPILE SIGN, D, E, OR F	12	EA.

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
904.10	ORIENTATION OF GROUND MOUNTED SIGNS
904.50	MOUNTING OF TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL POSTS

GENERAL NOTES

. SIGNS FURNISHED BY STATE.
. CONFIRM IN WRITING AT LEAST 4 MONTHS IN ADVANCE, THE ACTUAL DATE THE DEPARTMENT FURNISHED SIGNS WILL BE REQUIRED.
. ALL TYPE 'D' SIGNS SHALL BE MOUNTED ON TWO U-CHANNEL POSTS UNLESS OTHERWISE INDICATED ON THE PLANS.
. IF REMOVAL OR RELOCATION OF SIGNS ON PRIVATE STREET (NON-STATE MAINTAINED) IS REQUIRED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL INFORM THE ENGINEER. THE WORK WILL BE COMPLETED BY OTHERS.
. WHEN NOT STATIONED OR DIMENSIONED ON PLANS, ALL 'E' AND 'F' SIGNS SHALL BE FIELD LOCATED BY THE ENGINEER
. ALL EXISTING SIGNS ON "U" CHANNEL POST WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND DISPOSED OF UNLESS OTHERWISE NOTED ON PLANS.
. WHEN EXISTING SIGNS ARE REMOVED AND INSTALLED ON NEW SUPPORTS, THE RE-ERECTION SHALL IMMEDIATELY FOLLOW THE REMOVAL.
. THE BACKGROUND FOR TYPE E & F SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.
. SEE ROADWAY PLANS FOR GUARD/GUIDE RAIL DETAILS.
. NOTIFY THE ENGINEER WHEN NO PARKING SIGNS ARE REMOVED TO ARRANGE PICKUP.

INDEX

PLAN SUBMITTED TO:

Rachel Evans, PE; Project Engineer

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

PLAN PREPARED BY: VHB Engineering NC, P.C.

John Townsend, PE Project Engineer

vhb
940 Main Campus Drive, Suite 500 Raleigh, NC 27606
NC License No. C-3705

08/28/24
R:\Traffic\Signing\CADD\Signing Layout Plans\BP4R008_sgn_psh_01.dgn
User:jtownsend

TIP NO.	SHEET NO.
BP4.R008	SGN-2

APPROVED: _____

DATE: _____

SEAL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

vhb
940 Main Campus Drive, Suite 500 Raleigh, NC 27606
NC License No. C-3705

SIGN NUMBER: 3O1 — BACKG COLOR: Green
TYPE: D — COPY COLOR: White
QUANTITY: 1

SYMBOL	X	Y	WID	HT

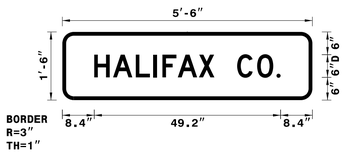
SIGN WIDTH: 5′-6″
HEIGHT: 1′-6″
TOTAL AREA: 8.3 Sq.Ft.

BORDER TYPE: FLUSH
RECESS: 0″
WIDTH: 1″
RADII: 3″

NO. Z BARS:
LENGTH:

MAT'L: 0.125″ (3.2 mm) ALUMINUM

DESIGN BY: VHB — CHECKED BY: — Dec 19, 2022
PROJECT ID: BP4.R008 — LOCATION: — DIV: 4



Spacing Factor is 1 unless specified otherwise

USE NOTES:

1. Legend and border(except those that are colored black) shall be direct applied Grade C sheeting.
2. Background shall be Grade C reflective sheeting.
3. Shields: A, B, and C type arrows shall be on 0.032″ (0.8mm) aluminum with Grade C reflective sheeting and demountable.

LETTER POSITIONS

Letter spacings are to start of next letter

														Series/Size Text Length
		N	A	L	I	F	A	X		C	O	.		D 2000
	8.4	5	6	4.6	2.4	4.1	5.6	4.1	6	5.3	5.1	1.1	8.4	49.2

FILENAME: BP4R008_sgn_3O1 — NORTH CAROLINA D.O.T. SIGN DETAIL

SIGN NUMBER: 3O2 — BACKG COLOR: Green
TYPE: D — COPY COLOR: White
QUANTITY: 1

SYMBOL	X	Y	WID	HT

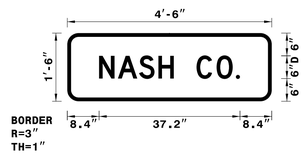
SIGN WIDTH: 4′-6″
HEIGHT: 1′-6″
TOTAL AREA: 6.8 Sq.Ft.

BORDER TYPE: FLUSH
RECESS: 0″
WIDTH: 1″
RADII: 3″

NO. Z BARS:
LENGTH:

MAT'L: 0.125″ (3.2 mm) ALUMINUM

DESIGN BY: VHB — CHECKED BY: — Dec 19, 2022
PROJECT ID: BP4.R008 — LOCATION: — DIV: 4



Spacing Factor is 1 unless specified otherwise

USE NOTES:

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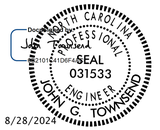
LETTER POSITIONS

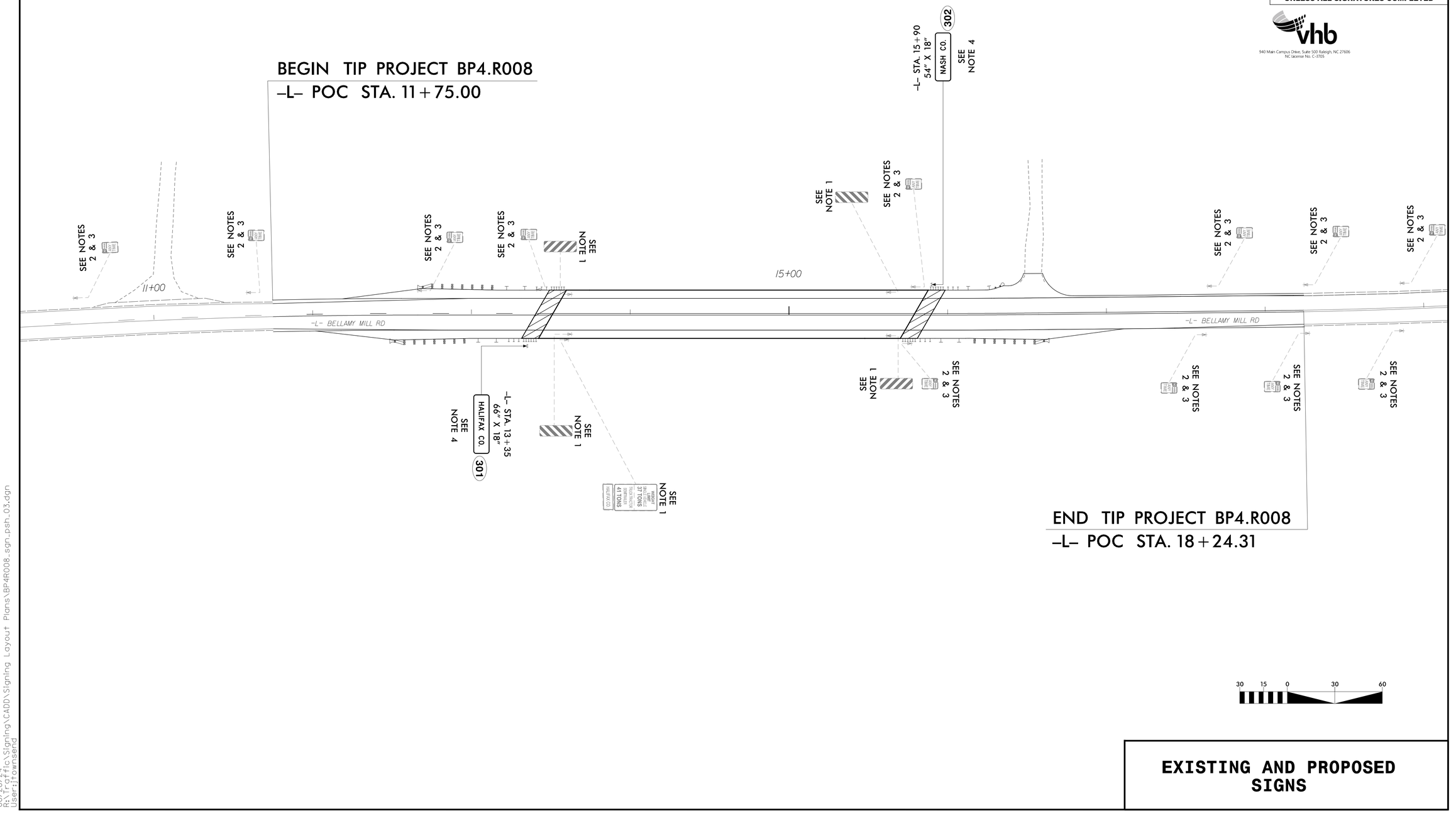
Letter spacings are to start of next letter

													Series/Size Text Length
		N	A	S	H		C	O	.				D 2000
	8.4	5	5.6	5.1	4.1	6	5.3	5.1	1.1	8.4			37.2

FILENAME: BP4R008_sgn_3O2 — NORTH CAROLINA D.O.T. SIGN DETAIL

SIGN DESIGNS





TIP NO.	SHEET NO.
BP4.R008	SGN-3

APPROVED: ____________

DATE: ____________

SEAL

DocuSigned by:
John Townsend
6B2101C41D6F4AC...

SEAL 031533
JOHN G. TOWNSEND
8/28/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

vhb
940 Main Campus Drive, Suite 500 Raleigh, NC 27606
NC License No. C-3705

PROJECT NOTES

1 DISPOSAL OF SIGN SYSTEM, U-CHANNEL
2 DISPOSAL OF SIGN SUPPORT, U-CHANNEL
3 STOCKPILE SIGN, TYPE D, E, OR F
4 SIGN ERECTION, TYPE D, E, AND F

NAD 83/NA 2011

30 15 0 30 60

EXISTING AND PROPOSED SIGNS

08/28/24
R:\Traffic\Signing\CADD\Signing Layout Plans\BP4R008_sgn_psh_03.dgn
User:jtownsend

PROJ. REFERENCE NO.	SHEET NO.
BP4-R008	X-1A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS-SECTION SUMMARY

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station	Uncl. Exc.	Embt	Station	Uncl. Exc.	Embt
11+75.00	0	0	16+00.00	0	0						
12+00.00	1	3	16+50.00	0	43						
12+50.00	1	48	17+00.00	1	6						
13+00.00	1	73	17+50.00	2	5						
13+50.00	25	47	18+00.00	3	3						
			18+24.31	2	0						

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

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP4-R008	X-1

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

110 105 100 95

0.004 0.025
104.48
3:1 3:1
13+00.00

110 105 100 95

0.023 0.025
103.87
3:1 3:1
12+50.00

110 105 100 95

3:1 0.025 0.032 3:1
103.14
12+00.00

110 105 100 95

3:1 0.016 0.045 3:1
102.78
11+75.00
BEGIN PROJECT –L– STA. 11+75.00

110 105 100 95

102.43
11+50.00
—L—

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

10/24/2024
R:\Roads\CorridorModeling\630129_rdy_xpl1.dgn
JJavellana

6/23/16

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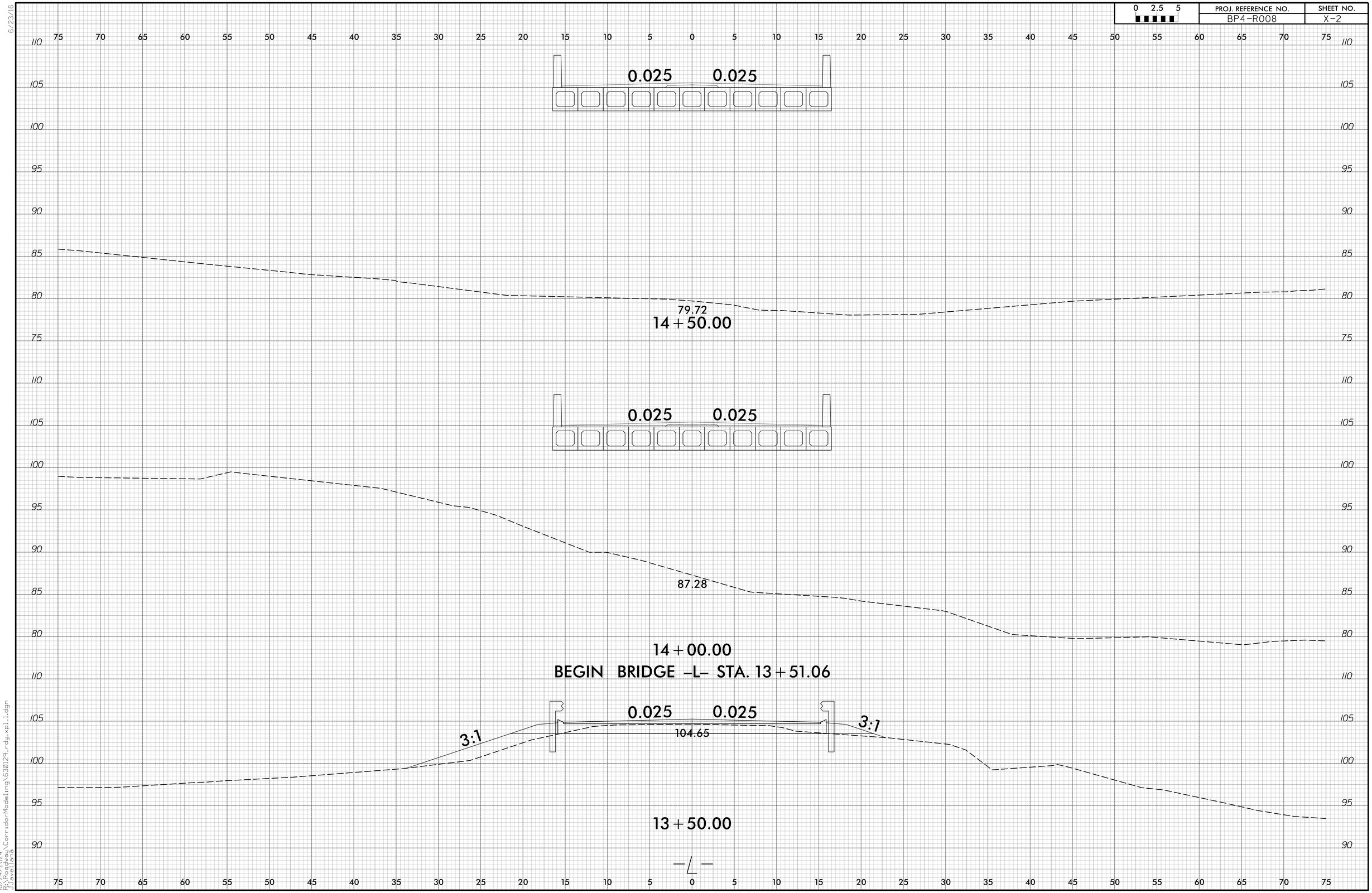
	BP4-R008	X-2



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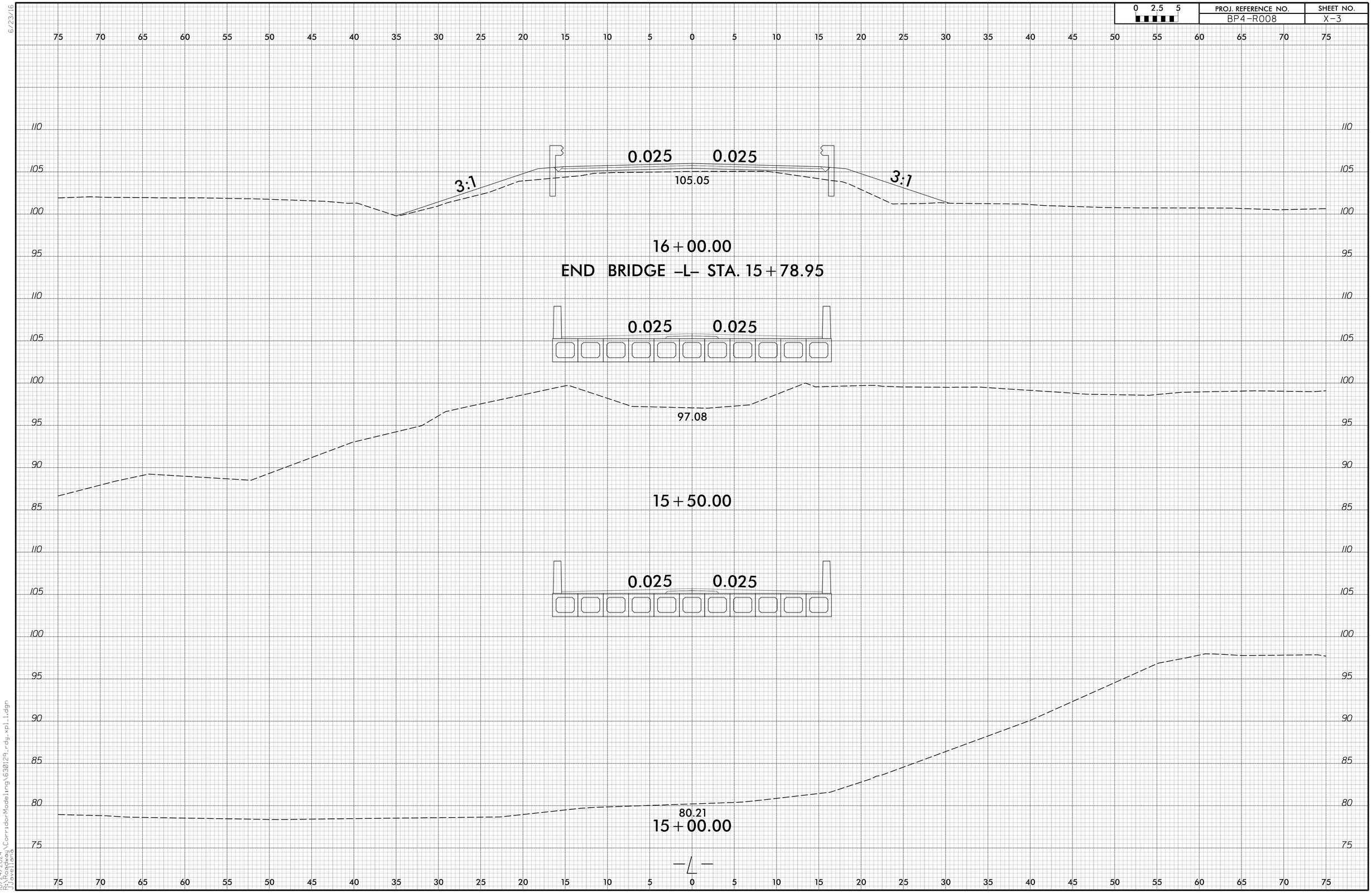


10/24/2024
R:\Roadway\CorridorModeling\630129_rdy_xpl1.dgn
JJavellana

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP4-R008	X-4

END PROJECT –L– STA. 18+24.31

3:1 0.061 0.042 3:1
106.67
18+24.31

3:1 0.050 0.030 3:1
106.46
18+00.00

3:1 0.025 0.005 3:1
106.04
17+50.00

3:1 0.025 0.020 3:1
105.65
17+00.00

DRIVEWAY
SHEARLINE
0.025 0.025 3:1
105.38
16+50.00

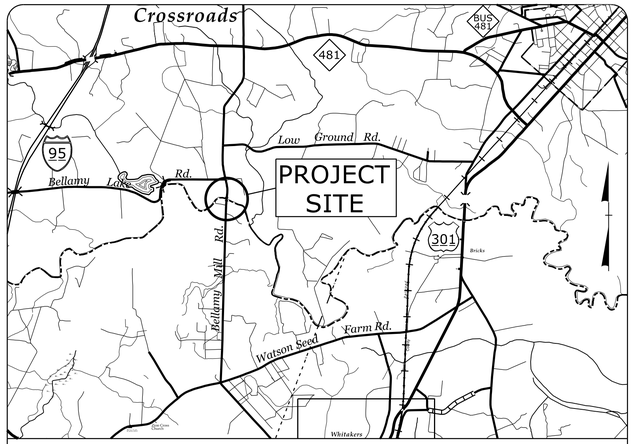
10/24/2024
R:\Roads\CorridorModeling\630129_rdy_xpll.dgn
JJavellana

09/08/99

TIP PROJECT: BP4–R008

CONTRACT: DD00475

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



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NASH & HALIFAX COUNTIES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP4–R008	1	

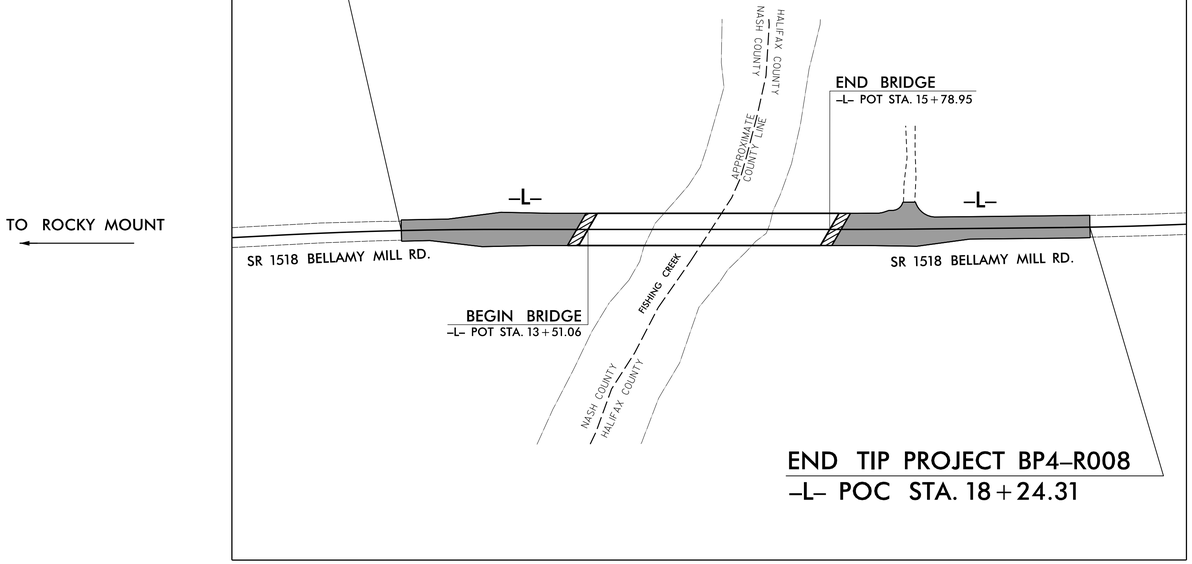
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
BP4.R008.1		PE
BP4.R008.2		R/W
BP4.R008.3		CONST.

LOCATION: BRIDGE NO. 630129 ON SR 1518 (BELLAMY MILL ROAD) OVER FISHING CREEK

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

NAD 83/
NA 2011

4



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DESIGN DATA

ADT 2025 = 620
ADT 2044 = 885
K = ___ %
D = %
T = 6 % *
V = 55 MPH
* TTST = 3% DUAL 3%
FUNC CLASS = LOCAL
SUB–REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT BP4–R008 = 0.080 MILES
LENGTH STRUCTURE TIP PROJECT BP4–R008 = 0.043 MILES
TOTAL LENGTH OF TIP TIP PROJECT BP4–R008 = 0.123 MILES

Prepared for the North Carolina Department of Transportation in the office of:
Venture I
940 Main Campus Drive, Suite 500
Raleigh, NC 27606
NC License No. C-3705

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MARCH 21, 2023

LETTING DATE: FEBRUARY 11, 2025

ELIZABETH PHELPS, PE
PROJECT ENGINEER

NCDOT CONTACT: RACHEL EVANS, PE
DIVISION PROJECT ENGINEER

STRUCTURES ENGINEER

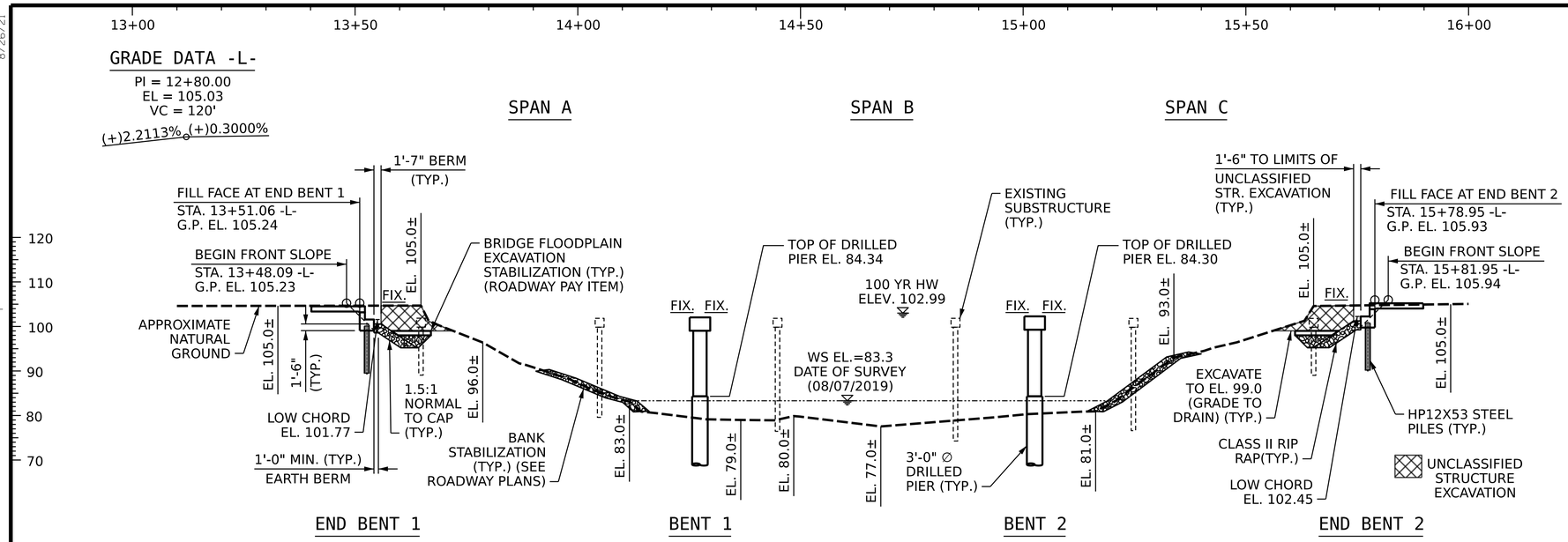
NORTH CAROLINA PROFESSIONAL SEAL 048992 ENGINEER ELIZABETH C. PHELPS

DocuSigned by: Elizabeth Phelps A304098A0627455... 11/5/2024

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

8/26/21



SECTION ALONG -L-

END BENTS AND BENTS SHOWN AT RIGHT ANGLES

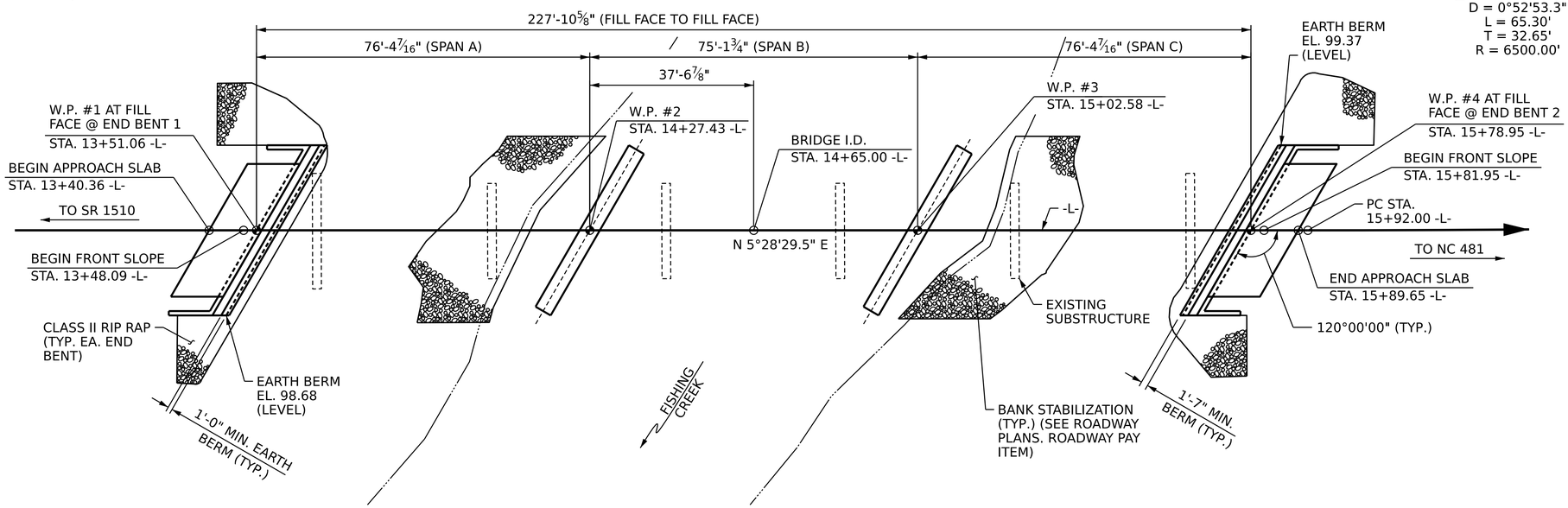
HYDRAULIC DATA	
DESIGN DISCHARGE	= 15000 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 25 YRS.
DESIGN HIGH WATER ELEVATION	= 101.3 FT
DRAINAGE AREA	= 519.0 SQ. MI.
BASIC DISCHARGE (Q100)	= 20802 C.F.S.
BASIC HIGH WATER ELEVATION	= 102.99 FT

OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE	= 11000 C.F.S.
FREQUENCY OF OVERRTOPPING FLOOD	= 10 YRS.
OVERTOPPING FLOOD ELEVATION	= 99.8 FT*

** OT APPROX. 500FT BACKLINE OF BEGIN BRIDGE*

WS EL. Taken @ River Station 242486

NAD 83/NA 2011



PLAN

(PILES AND DRILLED PIERS NOT SHOWN FOR CLARITY)

HORIZONTAL CURVE DATA -L-

PI = 16+24.65
△ = 0°34'32.2" (LT)
D = 0°52'53.3"
L = 65.30'
T = 32.65'
R = 6500.00'

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. BP4-R008

NASH/HALIFAX COUNTY

STATION: 14+65.00 -L-

SHEET 1 OF 4 REPLACES BRIDGE NO. 630129

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

NORTH CAROLINA PROFESSIONAL SEAL 048992 ENGINEER ELIZABETH C. PHELPS

DocuSigned by: Elizabeth Phelps A304598AD627455... 11/5/2024

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER FISHING CREEK ON BELLAMY MILL RD (SR 1518) BETWEEN NC 481 AND WATSON SEED FARM RD (SR 1510)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			24

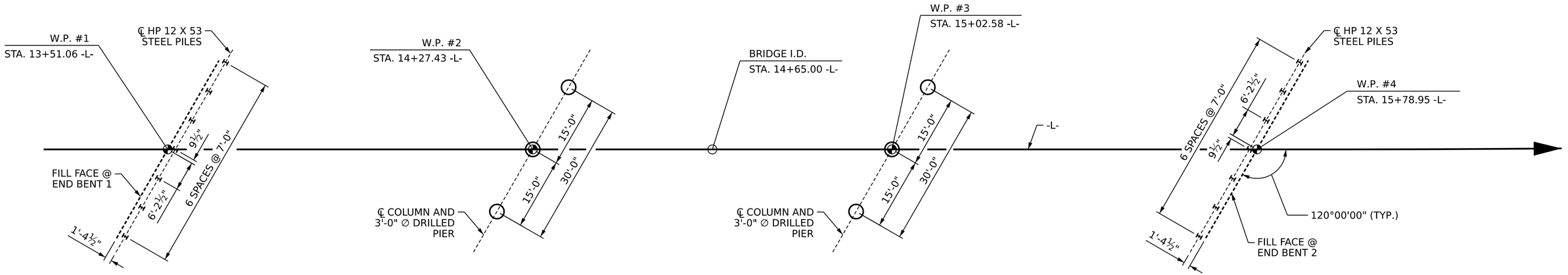
DRAWN BY : D.E. MORRISSETTE DATE : 10/2023
CHECKED BY : E.C. PHELPS DATE : 10/2023
DESIGN ENGINEER OF RECORD: E.C. PHELPS DATE : 10/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

11/5/2024
\\vhb.com\gbl\proj\Raleigh\38974.02 Div 4 Bridge 630129\NCDOT\Structures\drawings\400_001_BP4-R008_SMU_GD01.dgn
dmorrissette

8/26/21

NAD 83/NA 2011



FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES

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

DRAWN BY : D.E. MORRISSETTE DATE : 10/2023
CHECKED BY : E.C. PHELPS DATE : 10/2023
DESIGN ENGINEER OF RECORD: E.C. PHELPS DATE : 10/2023

11/5/2024
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dmorrissette

NORTH CAROLINA PROFESSIONAL SEAL 048992 ENGINEER ELIZABETH C. PHELPS
DocuSigned by: Elizabeth Phelps A304598A0627455...
11/5/2024

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PROJECT NO. BP4-R008
NASH/HALIFAX COUNTY
STATION: 14+65.00 -L-
SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FOUNDATION LAYOUT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			24

SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Resistance per Pile TONS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles*			Drilled-In Piles		
					Min Pile Tip (Tip No Higher Than) Elev FT	Required Driving Resistance (RDR)** per Pile TONS	Total Pile Redrives Quantity EACH	Predrilling Length per Pile Lin FT	Predrilling Elevation (Elev Not To Predrill Below) FT	Maximum Predrilling Dia INCHES	Pile Excavation (Bottom of Hole) Elev FT	Pile Exc Not In Soil per Pile Lin FT	Pile Exc In Soil per Pile Lin FT
END BENT 1, PILE 1-7	95	101.20	35			160							
ENT BENT 2, PILE 1-7	95	101.90	25			160							

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

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

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile TONS	Factored Downdrag Load per Pile TONS	Factored Dead Load* per Pile TONS	Dynamic Resistance Factor	Nominal Downdrag Resistance per Pile TONS	Nominal Scour Resistance per Pile TONS	Scour Resistance Factor (Default = 1.00)
END BENT 1, PILE 1-7	93.5			0.60			1.00
ENT BENT 2, PILE 1-7	93.5			0.60			1.00

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

SUMMARY OF PDA/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Pile Driving Analyzer (PDA)				Pile Order Lengths	
End Bent/ Bent No	PDA Testing Required? YES or MAYBE	PDA Test Pile Length FT	Total PDA Testing Quantity EACH	End Bent/ Bent No(s)	Pile Order Length Basis* EST or PDA
END BENT NO. 1	MAYBE	35	1		
END BENT NO. 2	MAYBE	25			

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

SUMMARY OF PILE ACCESSORIES

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Pipe Pile Plates Required? YES or MAYBE	Steel Pile Points			Steel Pile Tips Required? YES
		Pipe Pile Cutting Shoes Required? YES	Pipe Pile Conical Points Required? YES	H-Pile Points Required? YES	
END BENT 1, PILE 1-7				YES	
ENT BENT 2, PILE 1-7				YES	
TOTAL QTY:				14	

SUMMARY OF DRILLED PIER INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3")	Factored Resistance per Pier TONS	Minimum Pier Tip (Tip No Higher Than) Elevation FT	Required Tip Resistance per Pier TSF	Scour Critical Elevation FT	Minimum Drilled Pier Penetration Into Rock per Pier Lin FT	Drilled Pier Length* per Pier Lin FT	Drilled Pier Length Not In Soil* per Pier Lin FT	Drilled Pier Length In Soil* per Pier Lin FT	Permanent Steel Casing Required? YES or MAYBE	Permanent Steel Casing Tip Elevation (Elev Not To Extend Casing Below) FT	Permanent Steel Casing Length** per Pier Lin FT
BENT NO. 1, PIER 1-3	380	50.0	200	69			17.8	16.5	YES	71.0	14.0
BENT NO. 2, PIER 1-3	380	59.0	200	69			12.7	12.6	YES	71.0	14.0
TOTAL QTY:							91.5	87.3			84

*Drilled Pier Length, Drilled Pier Length Not in Soil and Drilled Pier Length in Soil represent estimated drilled pier quantities and are measured and paid for as either "36 Dia. Drilled Piers" or "36 Dia. Drilled Piers Not in Soil" and "36 Dia. Drilled Piers in Soil" in accordance with Article 411-7 of the *NCDOT Standard Specifications*.
**Permanent Steel Casing Length equals the difference between the ground line or top of drilled pier elevation, whichever is higher, and the permanent casing tip elevation and is measured and paid for as "Permanent Steel Casting for 36" Dia. Drilled Pier" in accordance with Article 411-7 of the *NCDOT Standard Specifications*.

SUMMARY OF DRILLED PIER TESTING

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3")	Standard Penetration Test (SPT) Required? YES or MAYBE	Crosshole Sonic Logging (CSL) Required?* YES or MAYBE	Total CSL Tube Length (For All Tubes) per Pier Lin FT	Shaft Inspection Device (SID) Required? YES or MAYBE	Pile Integrity Test (PIT) Required? MAYBE
BENT NO. 1, PIER 1-3		MAYBE	132.0	MAYBE	
BENT NO. 2, PIER 1-3		MAYBE	108.0	MAYBE	
TOTAL QTY:		2	720.0	2	

*CSL Tubes are required if CSL Testing is or may be required. The number of CSL Tubes per drilled pier is equal to one tube per foot of design pier diameter with at least 4 tubes per pier. The length of each CSL Tube is equal to the drilled pier length plus 1.5 ft.

NOTES:

1. The Pile and Drilled Pier Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Harold D. Pruitt, PE No. 009551) on 08/16/2023.
2. Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
3. The Engineer will determine the need for PDA Testing, Permanent Steel Casing, CSL Testing, SID Inspections and PITs when these items may be required.

PROJECT NO. BP4.R008.1

NASH COUNTY

STATION: 14+65.00-L-

SHEET 3 of 4

NORTH CAROLINA PROFESSIONAL SEAL 048992 ENGINEER ELIZABETH C. PHELPS

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11/5/2024

SIGNATURE DATE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE AND DRILLED PIER FOUNDATION TABLES

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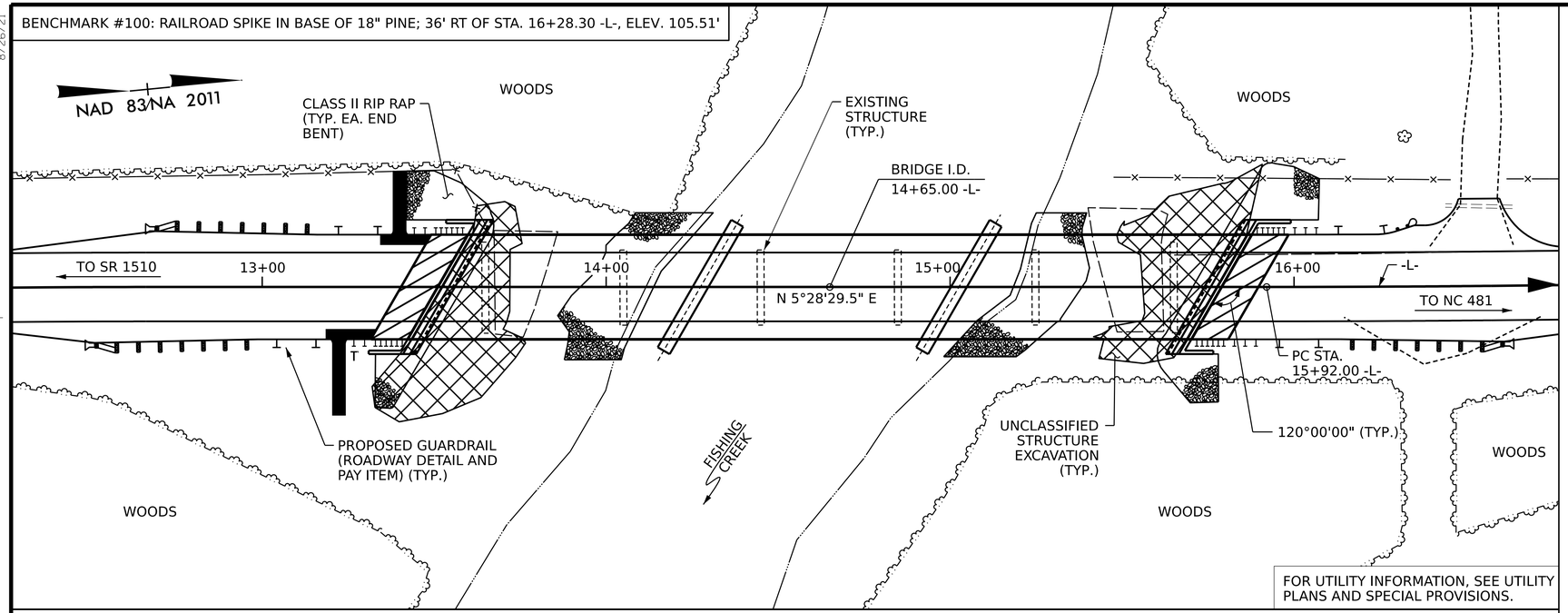
REVISIONS

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

SHEET NO. S-3

TOTAL SHEETS 24

8/26/21



- LOCATION SKETCH -

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STATION 14+65.00 -L-	ASBESTOS ASSESSMENT	3'-0" DRILLED PIERS IN SOIL	3'-0" DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" DIA. DRILLED PIER	SID INSPECTION	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	PILE DRIVING EQUIPMENT SET UP FOR HP 12 X 53 STEEL PILES
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.
SUPERSTRUCTURE										LUMP SUM			
END BENT 1								LUMP SUM	20.7		3562		7
BENT 1			49.5	53.4	42.0	1	1		27.0		13710	2614	
BENT 2			37.8	38.1	42.0	1	1		27.1		12315	2169	
END BENT 2								LUMP SUM	20.7		3562		7
TOTAL	LUMP SUM	LUMP SUM	87.3	91.5	84.0	2	2	LUMP SUM	92.5	LUMP SUM	33149	4783	14

TOTAL BILL OF MATERIAL

	HP 12 X 53 STEEL PILES		STEEL PILE POINTS	DYNAMIC PILE TESTING	2 BAR METAL RAIL	1'-2" X 2'-10" CONCRETE PARAPET	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-9" PRESTRESSED CONCRETE BOX BEAM UNITS		EPOXY PROTECTIVE COATING
	NO.	LIN. FT.	EACH	EACH	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.	LUMP SUM
SUPERSTRUCTURE					435.6	450.6			LUMP SUM	33	2475	
END BENT 1	7	245	7				70	80				LUMP SUM
BENT 1												LUMP SUM
BENT 2												LUMP SUM
END BENT 2	7	175	7				90	95				LUMP SUM
TOTAL	14	420	14	1	435.6	450.6	160	175	LUMP SUM	33	2475	LUMP SUM

NOTES

1. ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
2. THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
3. THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
4. FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
5. FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
6. FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
7. FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
8. FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
9. INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 14+65.00 -L-".
10. THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 25 FT ± LT AND 40 FT ± RT AT END BENT 1 AND 36 FT ± LT AND 22 FT ± RT AT END BENT 2 OF THE CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.
11. THE EXISTING 5 SPAN BRIDGE, WITH SPANS OF 2@40'-3" AND 3@40'-0", WITH A CLEAR ROADWAY WIDTH OF 22'-0", WITH A REINFORCED CONCRETE DECK ON I-BEAMS AND ASPHALT WEARING SURFACE, WITH SUBSTRUCTURE CONSISTING OF CONCRETE CAPS AND TIMBER POSTS/CONCRETE POSTS LOCATED AT THE PROPOSED BRIDGE. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
12. THE SUBSTRUCTURES OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURES SHOWN ON THE PLANS AND ACTUAL CONDITIONS AT THE PROJECT SITE.
13. REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
14. THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES".
15. FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
16. ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.
17. FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

FOUNDATION NOTES

1. FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATION.
2. FOR DRILLED PIERS, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 411 OF THE STANDARD SPECIFICATIONS.
3. DO NOT USE SLURRY CONSTRUCTION FOR DRILLED PIERS AT BENT 1 AND BENT 2.

PROJECT NO. BP4-R008

NASH/HALIFAX COUNTY

STATION: 14+65.00 -L-

SHEET 4 OF 4

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NORTH CAROLINA PROFESSIONAL SEAL 048992 ENGINEER ELIZABETH C. PHELPS

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER FISHING CREEK ON BELLAMY MILL RD (SR 1518) BETWEEN NC 481 AND WATSON SEED FARM RD (SR 1510)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			24

DRAWN BY : D.E. MORRISSETTE DATE : 10/2023
CHECKED BY : E.C. PHELPS DATE : 10/2023
DESIGN ENGINEER OF RECORD: E.C. PHELPS DATE : 10/2023

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1/13/2025
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dmorrissette

8/26/21

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⟩	1.242	--	1.75	0.248	2.25	75'	ER	36.634	0.621	1.24	75'	ER	7.327	0.80	0.248	1.65	75'	ER	36.634	
		HL-93 (OPERATING)	N/A		1.610	--	1.35	0.248	2.92	75'	ER	36.634	0.621	1.61	75'	ER	7.327	N/A	--	--	--	--	--	
		HS-20 (INVENTORY)	36.000	⟨2⟩	1.569	56.490	1.75	0.248	2.96	75'	ER	36.634	0.621	1.57	75'	ER	7.327	0.80	0.248	2.16	75'	ER	36.634	
		HS-20 (OPERATING)	36.000		2.034	73.228	1.35	0.248	3.83	75'	ER	36.634	0.621	2.03	75'	ER	7.327	N/A	--	--	--	--	--	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		4.674	63.099	1.4	0.248	8.35	75'	ER	36.634	0.621	4.67	75'	ER	7.327	0.80	0.248	4.88	75'	ER	36.634	
		SNGARBS2	20.000		3.322	66.437	1.4	0.248	6.22	75'	ER	36.634	0.621	3.32	75'	ER	7.327	0.80	0.248	3.63	75'	ER	36.634	
		SNAGRIS2	22.000		3.083	67.818	1.4	0.248	5.89	75'	ER	36.634	0.621	3.08	75'	ER	7.327	0.80	0.248	3.44	75'	ER	36.634	
		SNCOTTS3	27.250		2.333	63.582	1.4	0.248	4.16	75'	ER	36.634	0.621	2.33	75'	ER	7.327	0.80	0.248	2.43	75'	ER	36.634	
		SNAGGRS4	34.925		1.935	67.585	1.4	0.248	3.47	75'	ER	36.634	0.621	1.94	75'	ER	7.327	0.80	0.248	2.03	75'	ER	36.634	
		SNS5A	35.550		1.959	69.653	1.4	0.248	3.39	75'	ER	36.634	0.621	1.96	75'	ER	7.327	0.80	0.248	1.98	75'	ER	36.634	
		SNS6A	39.950		1.787	71.395	1.4	0.248	3.11	75'	ER	36.634	0.621	1.79	75'	ER	7.327	0.80	0.248	1.82	75'	ER	36.634	
		SNS7B	42.000		1.732	72.729	1.4	0.248	2.96	75'	ER	36.634	0.621	1.76	75'	ER	7.327	0.80	0.248	1.73	75'	ER	36.634	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.127	70.200	1.4	0.248	3.80	75'	ER	36.634	0.621	2.13	75'	ER	7.327	0.80	0.248	2.22	75'	ER	36.634	
		TNT4A	33.075		2.074	68.588	1.4	0.248	3.81	75'	ER	36.634	0.621	2.07	75'	ER	7.327	0.80	0.248	2.23	75'	ER	36.634	
		TNT6A	41.600		1.820	75.725	1.4	0.248	3.12	75'	ER	36.634	0.621	1.87	75'	ER	7.327	0.80	0.248	1.82	75'	ER	36.634	
		TNT7A	42.000		1.829	76.824	1.4	0.248	3.13	75'	ER	36.634	0.621	1.83	75'	ER	7.327	0.80	0.248	1.83	75'	ER	36.634	
		TNT7B	42.000		1.714	71.997	1.4	0.248	3.24	75'	ER	36.634	0.621	1.71	75'	ER	7.327	0.80	0.248	1.89	75'	ER	36.634	
		TNAGRIT4	43.000		1.660	71.366	1.4	0.248	3.08	75'	ER	36.634	0.621	1.66	75'	ER	7.327	0.80	0.248	1.80	75'	ER	36.634	
		TNAGT5A	45.000		1.649	74.196	1.4	0.248	2.91	75'	ER	36.634	0.621	1.65	75'	ER	7.327	0.80	0.248	1.70	75'	ER	36.634	
		TNAGT5B	45.000	⟨3⟩	1.578	71.031	1.4	0.248	2.87	75'	ER	36.634	0.621	1.58	75'	ER	7.327	0.80	0.248	1.68	75'	ER	36.634	
EMERGENCY VEHICLE (EV)		EV2	28.750		2.469	70.979	1.3	0.248	4.80	75'	ER	36.634	0.621	2.47	75'	ER	7.327	0.80	0.248	3.03	75'	ER	36.634	
		EV3	43.000	⟨4⟩	1.664	71.547	1.3	0.248	3.14	75'	ER	36.634	0.621	1.66	75'	ER	7.327	0.80	0.248	1.98	75'	ER	36.634	

LOAD FACTORS:

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

NOTES:

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

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

⟨#⟩ CONTROLLING LOAD RATING

- ⟨1⟩ DESIGN LOAD RATING (HL-93)
- ⟨2⟩ DESIGN LOAD RATING (HS-20)
- ⟨3⟩ LEGAL LOAD RATING **
- ⟨4⟩ EMERGENCY VEHICLE LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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

LRFR SUMMARY

(TYPICAL FOR SPANS A THROUGH C)

PROJECT NO. BP4-R008
NASH/HALIFAX COUNTY
STATION: 14+65.00 -L-

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VHB Engineering NC, P.C. (C-3705)
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NORTH CAROLINA PROFESSIONAL SEAL 048992 ENGINEER ELIZABETH C. PHELPS
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DRAWN BY : D.E. MORRISSETTE DATE : 10/2023
CHECKED BY : E.C. PHELPS DATE : 10/2023
DESIGN ENGINEER OF RECORD: E.C. PHELPS DATE : 10/2023

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR 75' BOX BEAM UNIT 120° SKEW
NON-INTERSTATE TRAFFIC

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			24

11/5/2024
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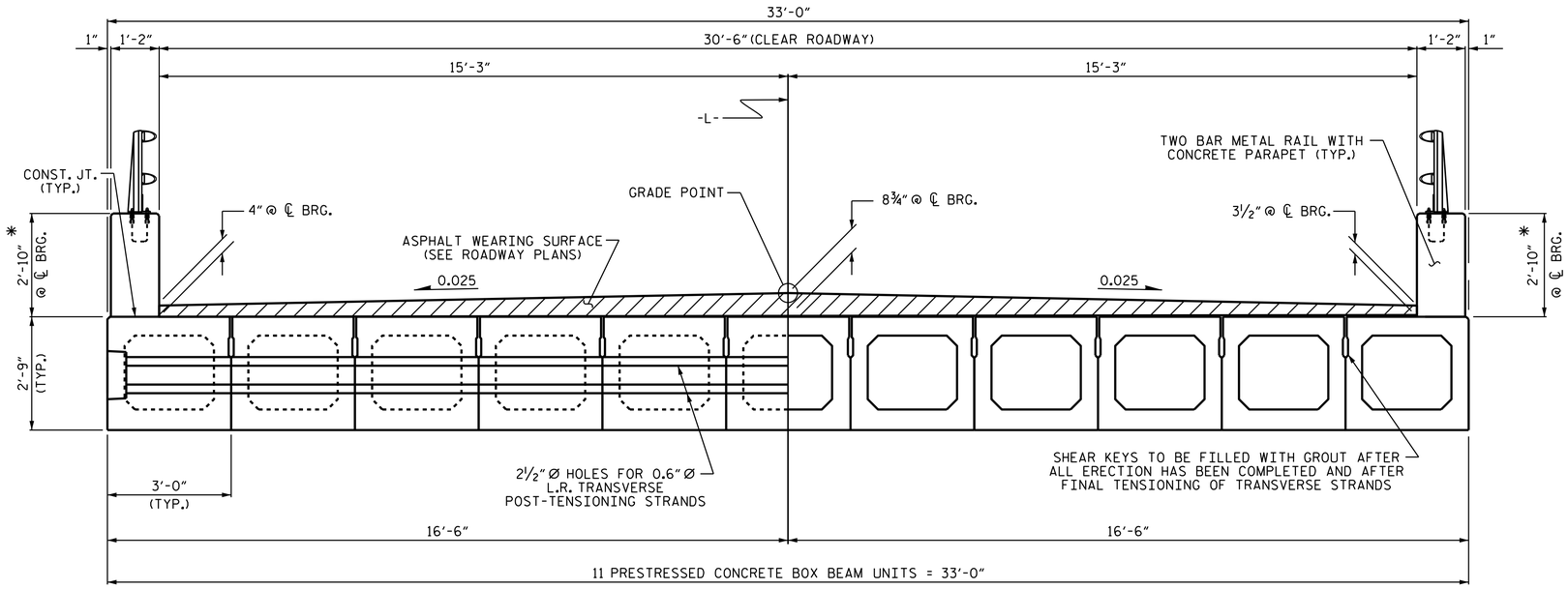
STD.NO.33LRFR1_60&120S_75L

8/26/21

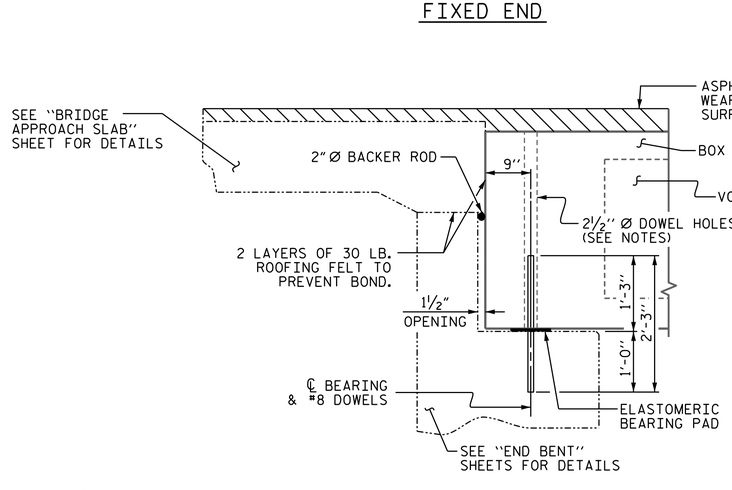


HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

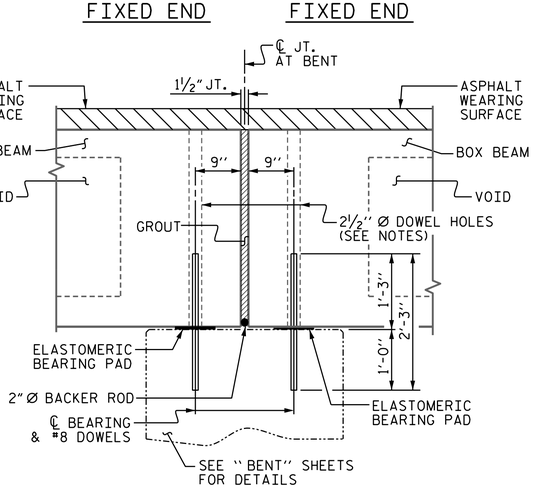
HALF SECTION
THROUGH VOIDS

TYPICAL SECTION

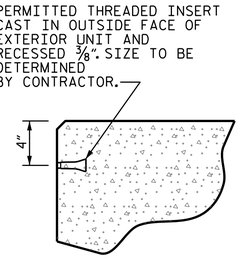
*THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "SECTION THRU PARAPET AND RAIL" DETAIL.



SECTION AT END BENT



SECTION AT BENT



THREADED INSERT DETAIL

NOTES

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

ALL REINFORCING STEEL CAST WITH THE BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

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

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

THE 2½" Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

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

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

ALL REINFORCING STEEL IN THE CONCRETE PARAPET SHALL BE EPOXY COATED.

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

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

VERTICAL GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A VERTICAL CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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

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

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

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PROJECT NO. BP4-R008
NASH/HALIFAX COUNTY
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SHEET 1 OF 5

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DocuSigned by: Elizabeth Phelps 11/5/2024
A304598A0627455...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3'-0" X 2'-9" PRESTRESSED CONCRETE BOX BEAM UNIT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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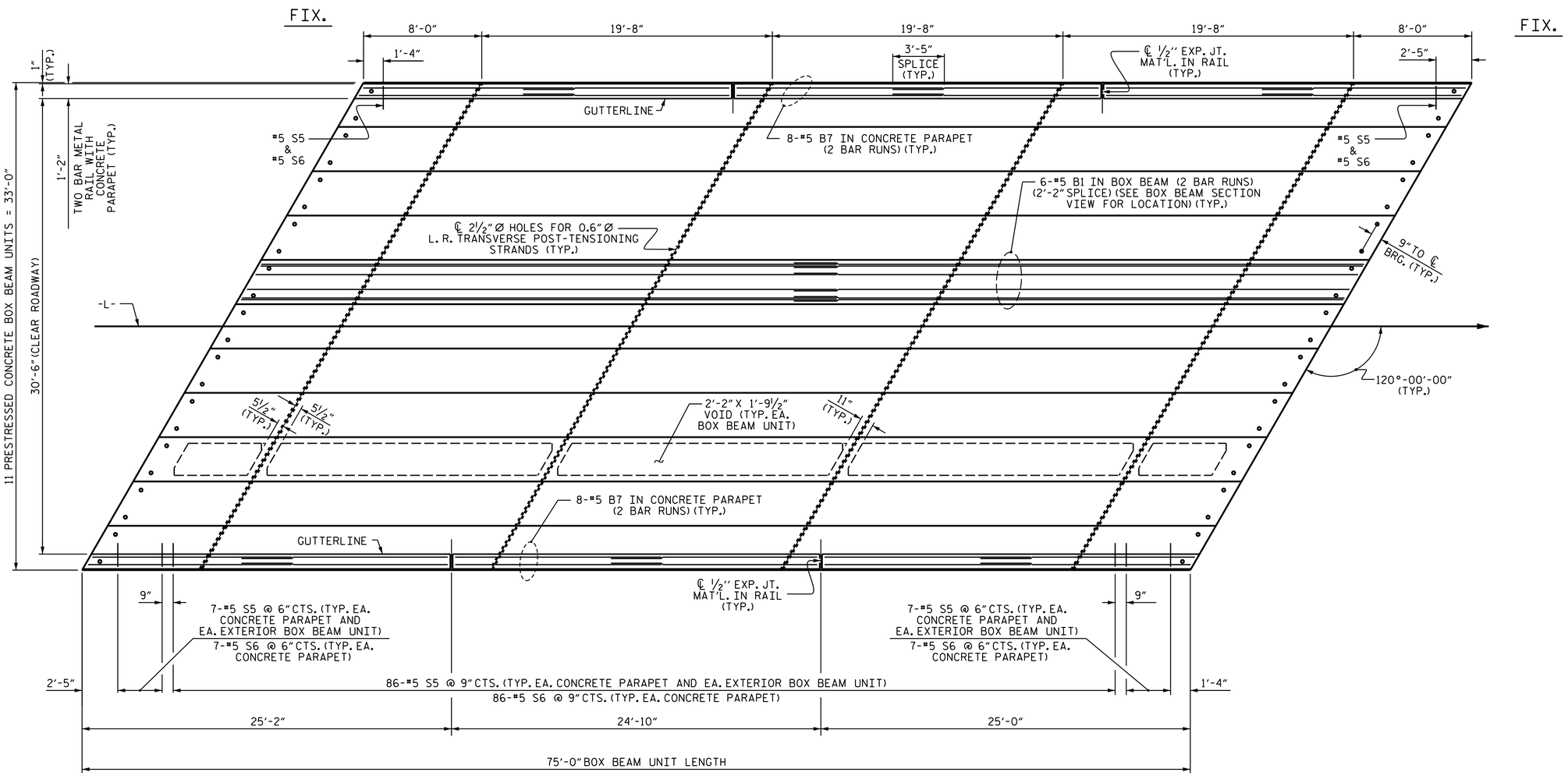
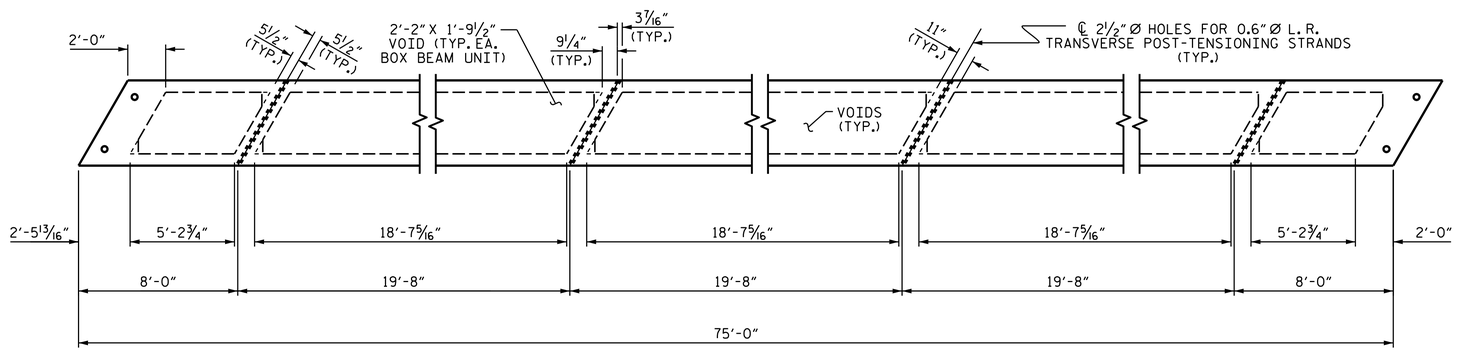
1			3			TOTAL SHEETS
2			4			24

STD.NO.33PCBB_33_90S

8/26/21



PLAN OF UNIT



DIAPHRAGM AND VOID LAYOUT

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STATION: 14+65.00 -L-
SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 75' UNIT 30'-6" CLEAR ROADWAY 120° SKEW

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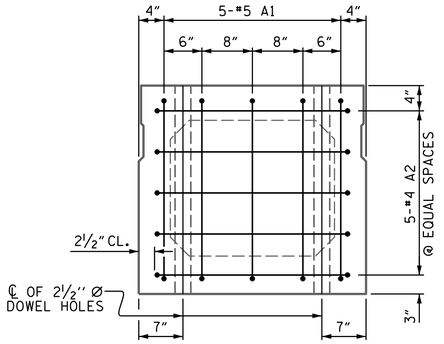
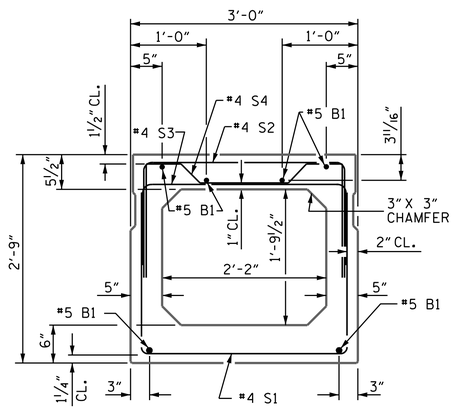


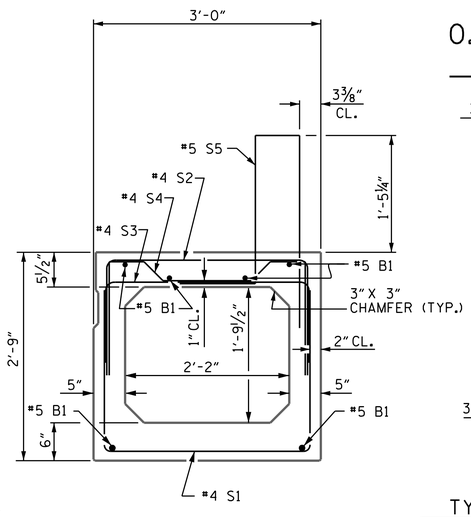
END ELEVATION

SHOWING PLACEMENT OF #5 & #4 "A" BARS
AND LOCATION OF DOWEL HOLES.
(INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR
SECTION SIMILAR EXCEPT SHEAR KEY LOCATION.
STRAND LAYOUT NOT SHOWN.)



INTERIOR BOX BEAM SECTION

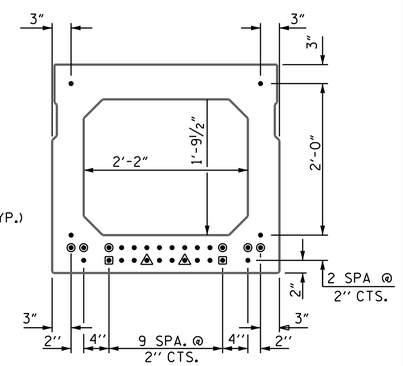
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT



TYPICAL STRAND LOCATION

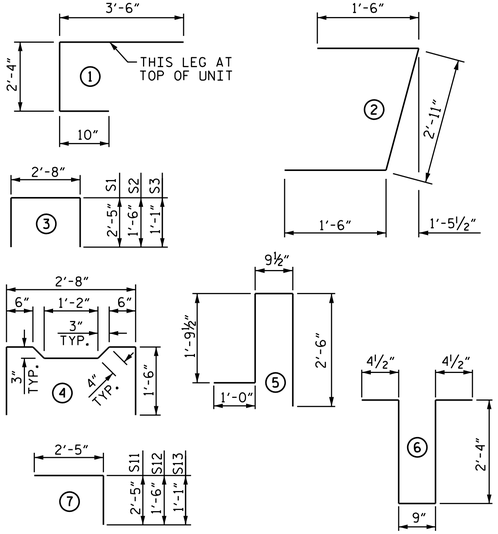
(24 STRANDS REQUIRED)

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ▣ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ◭ STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER
- ◉ OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE BOX BEAM UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST.

BOND SHALL BE BROKEN ON STRANDS AS SHOWN FOR THE SPECIFIED LENGTH FROM EACH END OF THE BOX BEAM. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.

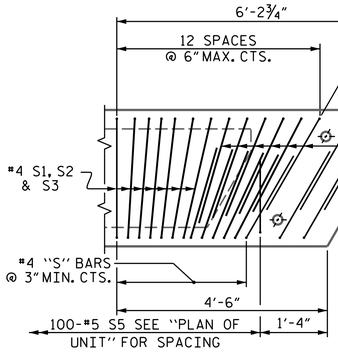
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

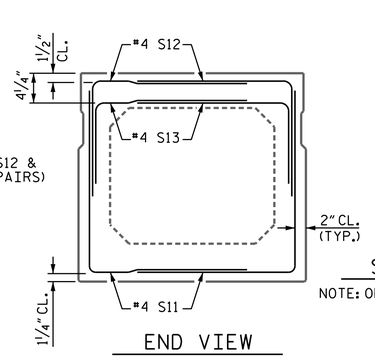
BILL OF MATERIAL FOR ONE BOX BEAM SECTION

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
A1	10	#5	1	6'-8"	70	6'-8"	70
A2	34	#4	2	5'-11"	134	5'-11"	134
B1	12	#5	STR	38'-5"	481	38'-5"	481
K1	12	#4	6	6'-2"	49	6'-2"	49
K2	8	#4	STR	2'-10"	15	2'-10"	15
S1	57	#4	3	7'-6"	286	7'-6"	286
S2	57	#4	3	5'-8"	216	5'-8"	216
S3	99	#4	3	4'-10"	320	4'-10"	320
S4	42	#4	4	5'-10"	164	5'-10"	164
S11	32	#4	7	4'-10"	103	4'-10"	103
S12	32	#4	7	3'-11"	84	3'-11"	84
S13	32	#4	7	3'-6"	75	3'-6"	75
✳ S5	100	#5	5	6'-1"	635	--	--
REINFORCING STEEL					1997 LBS.		1997 LBS.
✳ EPOXY COATED REINF. STEEL					635 LBS.		
8000 P.S.I. CONCRETE				13.5	CU. YDS.	13.4	CU. YDS.
0.6" Ø L.R. STRANDS				No. 24		No. 24	



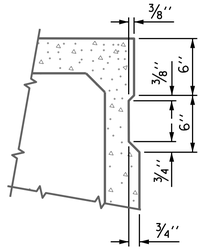
DETAIL "B"

EXTERIOR UNIT SHOWN, INTERIOR UNIT
SIMILAR EXCEPT OMIT #5 S5 BARS.
"B" BARS AND "A" BARS NOT SHOWN.



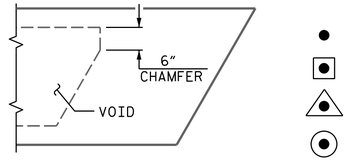
END VIEW

(SHOWING #4 "S" BARS IN END OF BEAM)



SHEAR KEY DETAIL

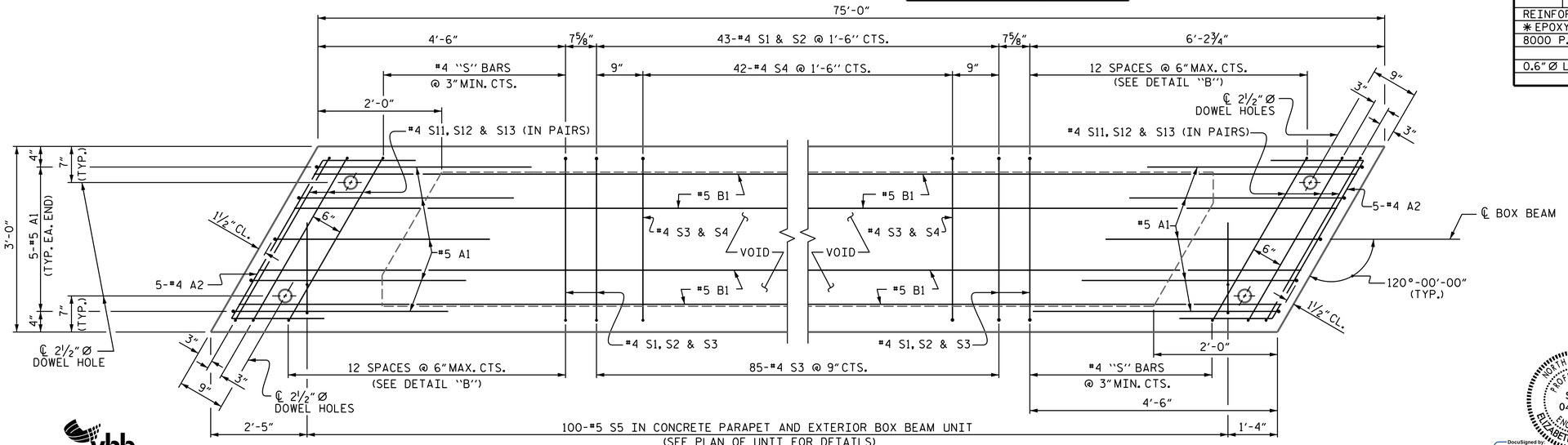
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE
OF EXTERIOR BOX BEAMS.



CHAMFER DETAIL

SHOWING 6" VOID CHAMFER

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



PLAN OF BOX BEAM

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS.
FOR LOCATION OF DIAPHRAGMS, SEE "PLAN OF UNIT".
FOR THREADED INSERTS, SEE "THREADED INSERT DETAIL".
FOR REINFORCING STEEL IN DIAPHRAGMS, SEE "DOUBLE DIAPHRAGM DETAILS".

PROJECT NO. BP4-R008
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SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

3'-0" X 2'-9" PRESTRESSED CONCRETE BOX BEAM UNIT

NORTH CAROLINA PROFESSIONAL SEAL 048992 ENGINEER ELIZABETH C. PHELPS
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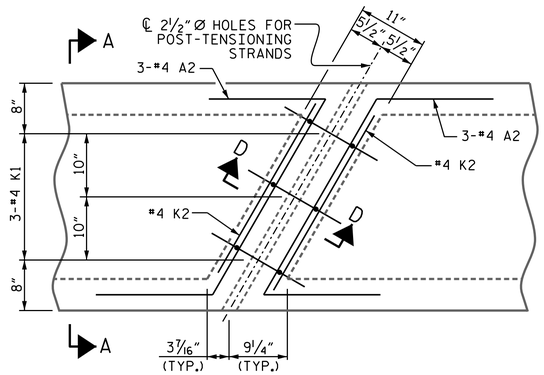
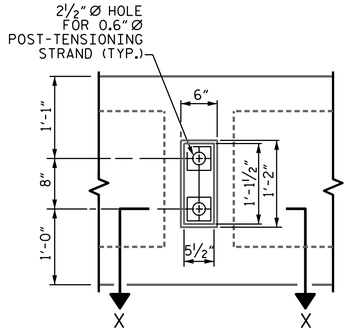
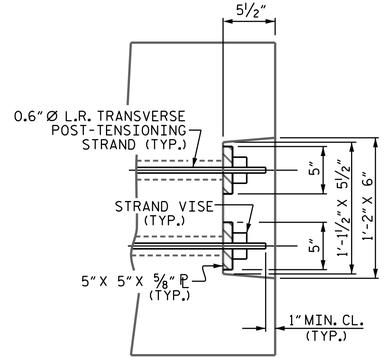


PLAN

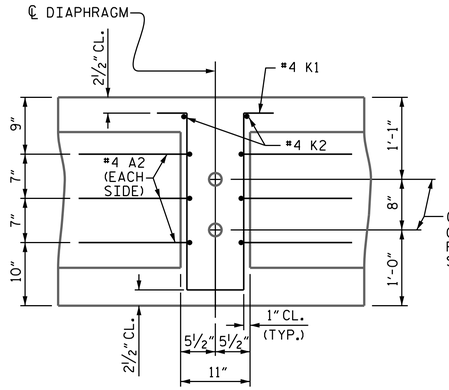


VIEW Y-Y

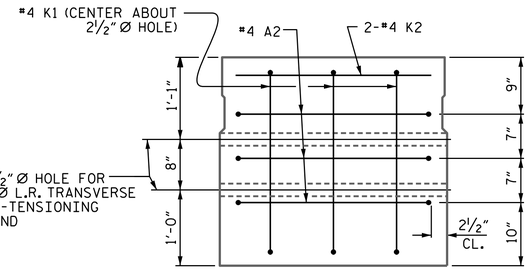
SHOWING ELEVATION VIEW OF GROUTED RECESS



DETAIL "C"

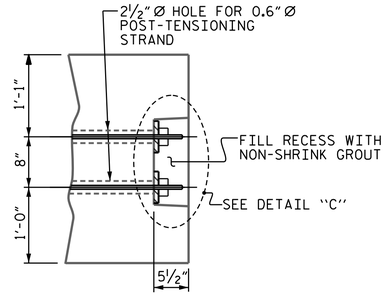


SECTION D-D

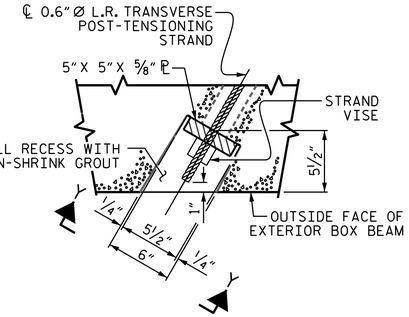


SECTION A-A

VOIDS NOT SHOWN



PART SECTION AT RECESS



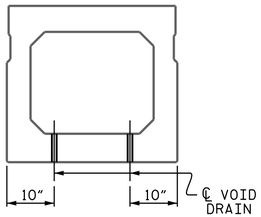
SECTION X-X

SHOWING PLAN VIEW OF GROUTED RECESS

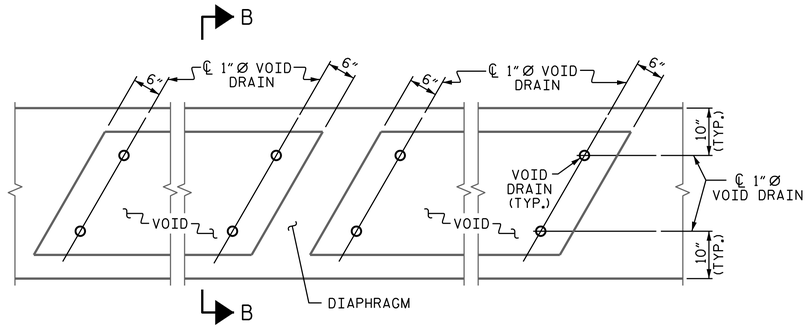
GROUTED RECESS DETAIL AT END OF POST-TENSIONED STRANDS OF EXTERIOR BOX BEAM

DOUBLE DIAPHRAGM DETAILS

#4 "S" BARS NOT SHOWN. #4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2½" Ø HOLE.



SECTION B-B



PART PLAN

VOID DRAIN DETAILS

(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 2'-9"
75' BOX BEAM UNIT (NC)	0.6"Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1¾" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	½" ↓
FINAL CAMBER	1¼" ↑

** INCLUDES FUTURE WEARING SURFACE

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SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

3'-0" X 2'-9" PRESTRESSED CONCRETE BOX BEAM UNIT

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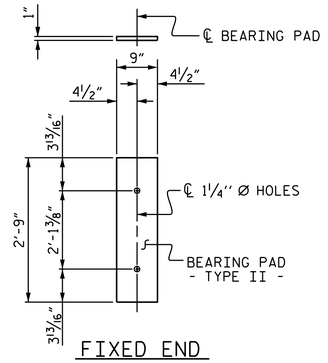


FIXED END

(TYPE II - 66 REQ'D)

ELASTOMERIC BEARING DETAILS

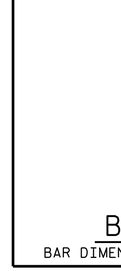
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

BOX BEAM UNITS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR B.B.	6	75'-0"	450'-0"
INTERIOR B.B.	27	75'-0"	2025'-0"
TOTAL	33	———	2475'-0"

GUTTERLINE ASPHALT THICKNESS & CONCRETE PARAPET HEIGHT

	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
75' UNITS	2¼"	2'-8¾"



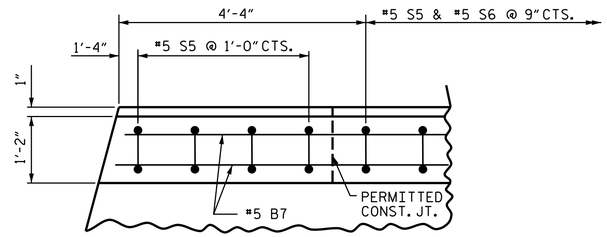
BAR TYPE

BAR DIMENSIONS ARE OUT TO OUT

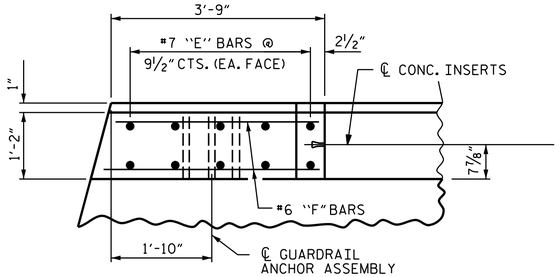
BILL OF MATERIAL FOR PARAPETS AND FOUR END POSTS

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ B7	288	#5	STR	14'-3"	4280
✳ E1	8	#7	STR	3'-0"	50
✳ E2	8	#7	STR	3'-6"	57
✳ E3	8	#7	STR	3'-10"	63
✳ E4	8	#7	STR	4'-4"	71
✳ E5	8	#7	STR	4'-9"	78
✳ F1	8	#6	STR	2'-0"	24
✳ F2	8	#6	STR	3'-5"	41
✳ F3	8	#6	STR	3'-8"	44
✳ S6	584	#5	1	5'-8"	3452

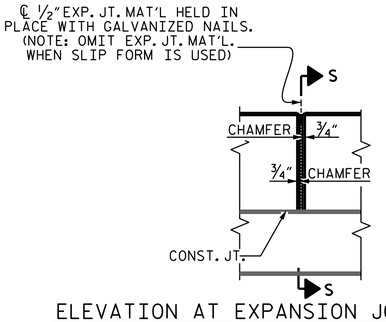
✳EPOXY COATED REINFORCING STEEL	8160 LBS.
CLASS AA CONCRETE	56.0 CU.YDS.
TOTAL PARAPET AND END POSTS	450.6 LN.FT.



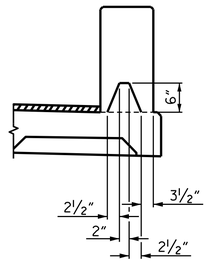
PLAN OF PARAPET



PLAN OF END POST

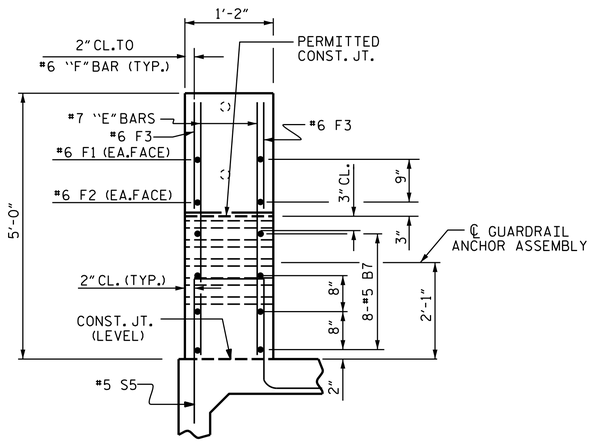


ELEVATION AT EXPANSION JOINTS

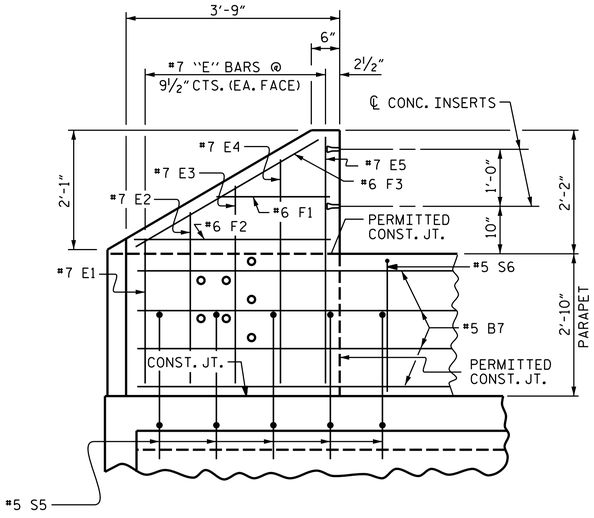


SECTION S-S

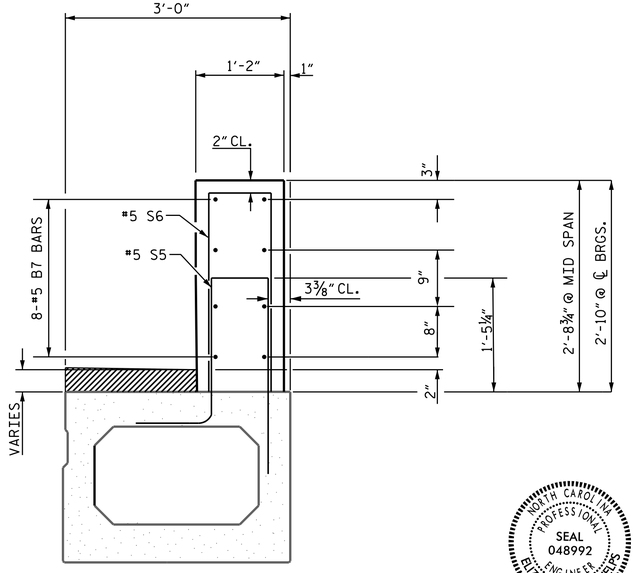
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



END VIEW



ELEVATION



PARAPET SECTION

THE HEIGHT OF THE PARAPET VARIES WHILE THE TOP OF THE PARAPET FOLLOWS THE PROFILE OF THE GUTTERLINE.

PARAPET AND END POST FOR TWO BAR RAIL

PROJECT NO. BP4-R008

NASH/HALIFAX COUNTY

STATION: 14+65.00 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 2'-9" PRESTRESSED CONCRETE BOX BEAM UNIT

NORTH CAROLINA PROFESSIONAL SEAL 048992 ENGINEER ELIZABETH C PHELPS

DocuSigned by: Elizabeth Phelps A304598A0627455... 11/5/2024

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

DRAWN BY : D.E. MORRISSETTE DATE : 10/2023
CHECKED BY : E.C. PHELPS DATE : 10/2023
DESIGN ENGINEER OF RECORD: E.C. PHELPS DATE : 10/2023

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1			3			TOTAL SHEETS
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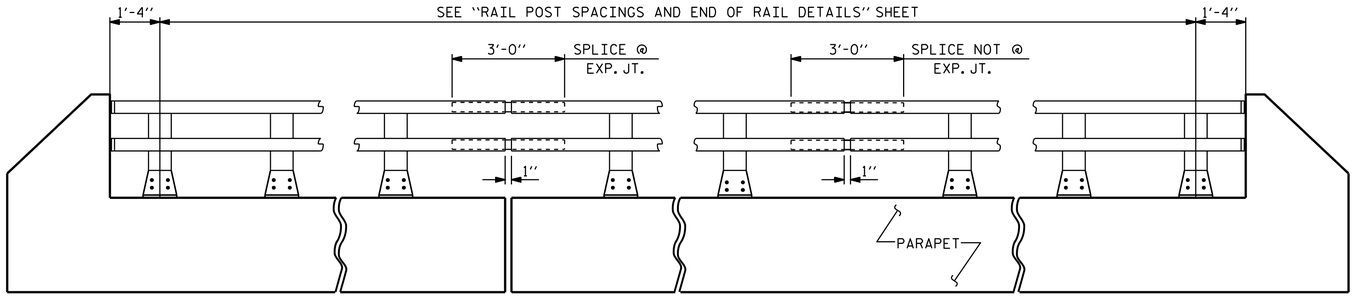
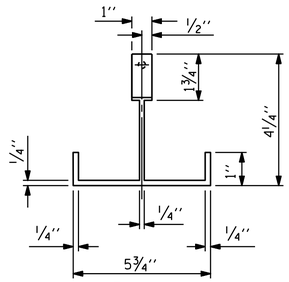
dmorrissette

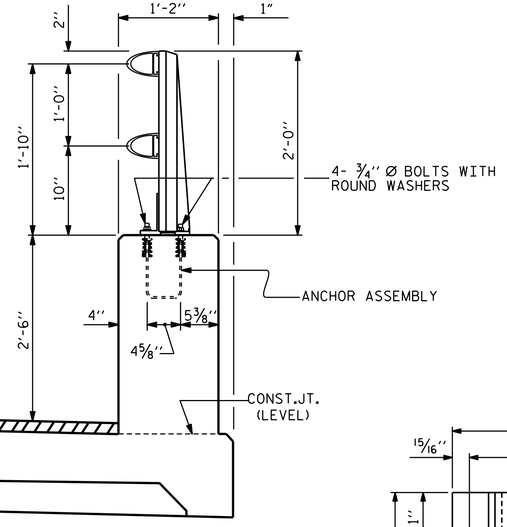


ELEVATION

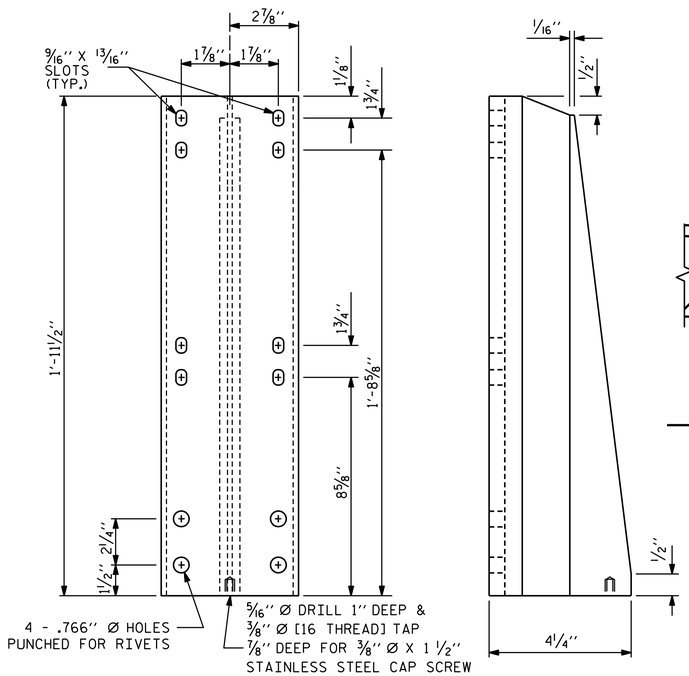
NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE S-13.



PLAN



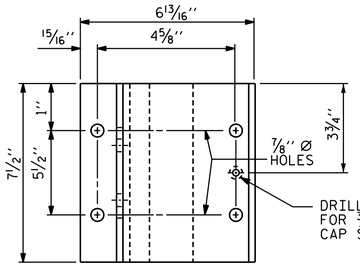
SECTION THRU PARAPET AND RAIL



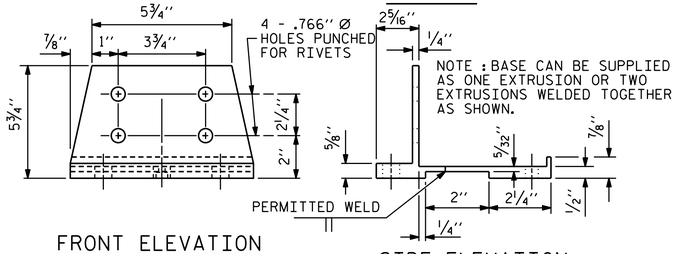
FRONT ELEVATION

SIDE ELEVATION

DETAILS OF POST



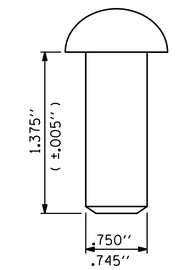
PLAN



FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS



RIVET DETAIL

NOTES

AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER, THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

UNLESS OTHERWISE REQUIRED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR HAS THE OPTION TO USE AN ALTERNATE TO THE 2 BAR METAL RAIL. THE ALTERNATE RAIL SHALL MEET THE REQUIREMENTS OF THE AASHTO LRFDBRIDGE DESIGN SPECIFICATIONS AND MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST (APL) UNDER ''2 BAR METAL RAIL ALTERNATE''. ADJUSTMENTS TO THE CONCRETE PARAPET WILL NOT BE ALLOWED.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6.

MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.

RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE S-13.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

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

PAY LENGTH = 435.6 LIN. FT.

PROJECT NO. **BP4-R008**

NASH/HALIFAX COUNTY

STATION: **14+65.00 -L-**

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

2 BAR METAL RAIL

NORTH CAROLINA PROFESSIONAL SEAL 048992 ENGINEER ELIZABETH C. PHELPS
DocuSigned by: Elizabeth Phelps A304598A0627455...
11/5/2024

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

DRAWN BY : D.E. MORRISSETTE DATE : 10/2023
CHECKED BY : E.C. PHELPS DATE : 10/2023
DESIGN ENGINEER OF RECORD: E.C. PHELPS DATE : 10/2023

11/5/2024
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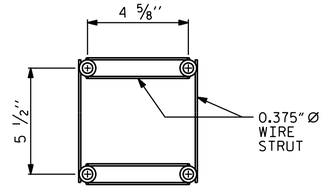
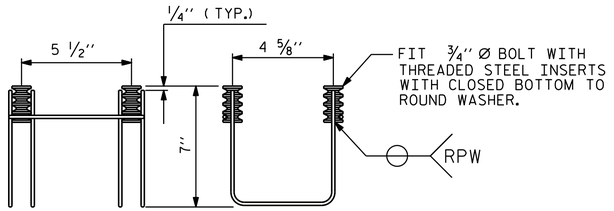
8/26/21

8/26/21



PLAN



SIDE VIEW ELEVATION

4-BOLT METAL RAIL ANCHOR ASSEMBLY

(72 ASSEMBLIES REQUIRED)

NOTES

STRUCTURAL CONCRETE ANCHOR ASSEMBLY

THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS :

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2'' FOR 3/4'' FERRULES.

B. 4 - 3/4'' Ø X 2 1/2'' BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4'' Ø X 2 1/2'' GALVANIZED BOLTS 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.

C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16'' Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

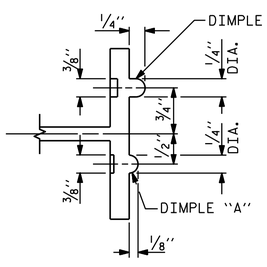
D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.

E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.

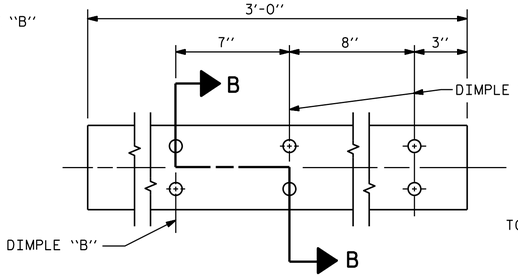
F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

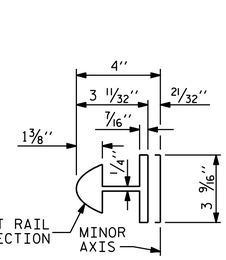
THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4"Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.



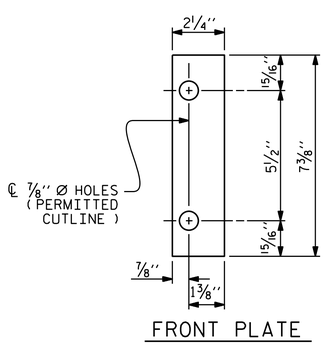
SECTION B - B



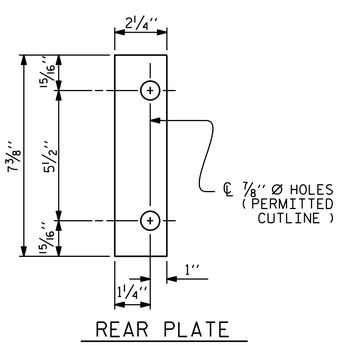


BAR SECTION

EXPANSION BAR DETAILS



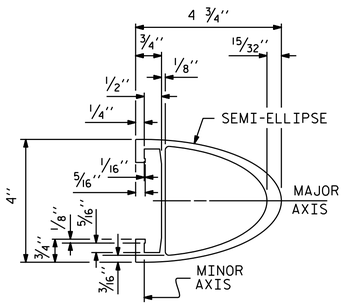
FRONT PLATE



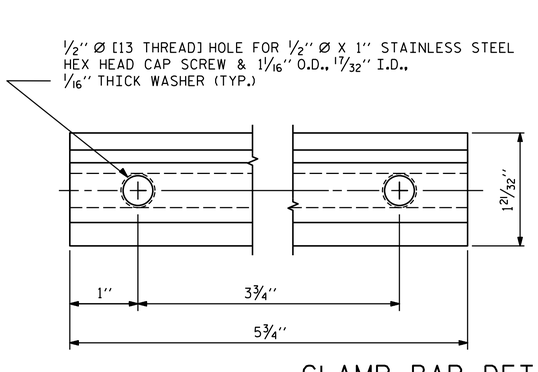
REAR PLATE

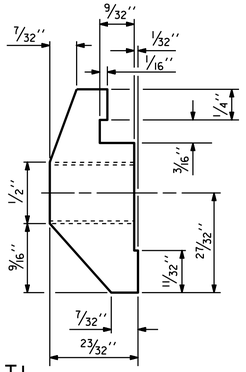
SHIM DETAILS

NOTE :
SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



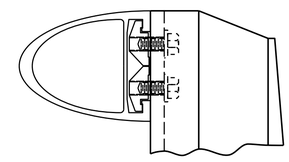
RAIL SECTION



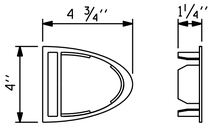


CLAMP BAR DETAIL

(4 REQUIRED PER POST)



CLAMP ASSEMBLY



RAIL CAP

PROJECT NO. **BP4-R008**

NASH/HALIFAX COUNTY

STATION: **14+65.00 -L-**

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

2 BAR METAL RAIL

NORTH CAROLINA PROFESSIONAL SEAL 048992 ENGINEER ELIZABETH C. PHELPS
DocuSigned by: Elizabeth Phelps A304598AD627455...
11/5/2024

vhb
VHB Engineering NC, P.C. (C-3705)
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DRAWN BY : D.E. MORRISSETTE DATE : 10/2023
CHECKED BY : E.C. PHELPS DATE : 10/2023
DESIGN ENGINEER OF RECORD: E.C. PHELPS DATE : 10/2023

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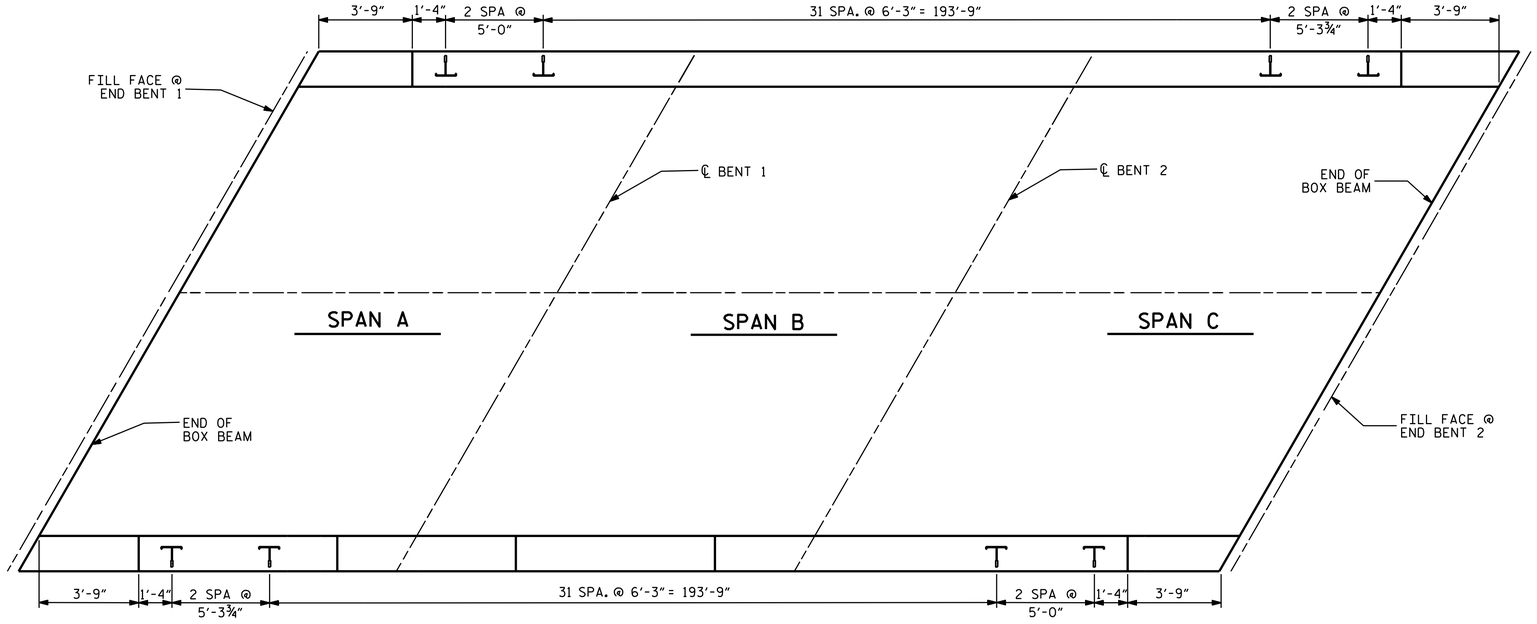
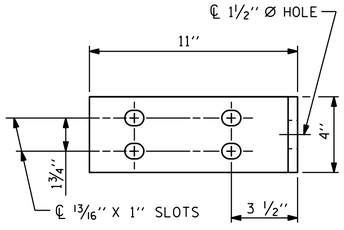


PLAN OF RAIL POST SPACINGS



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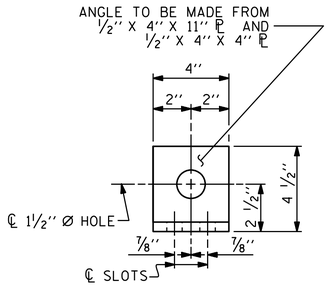
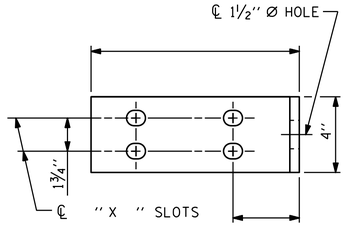


END VIEW (FIX AND EXP.)



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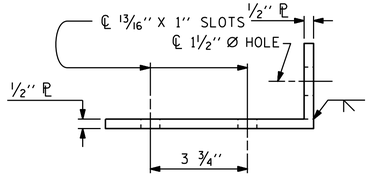
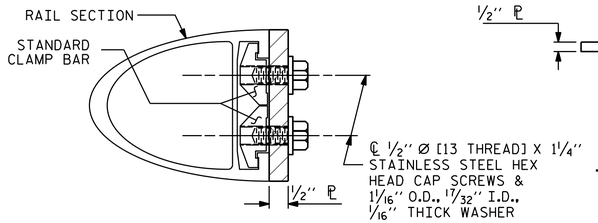
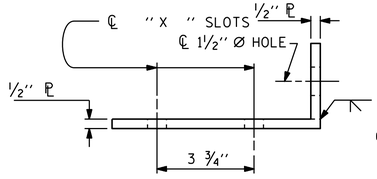


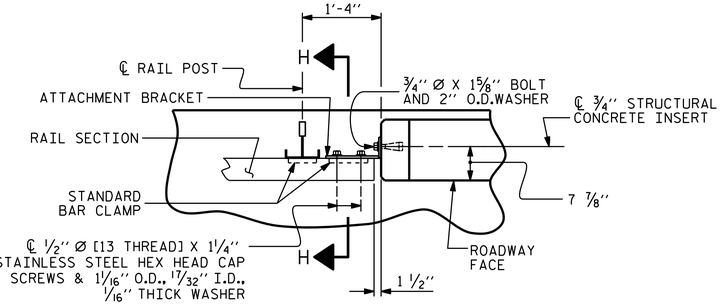
TOP VIEW



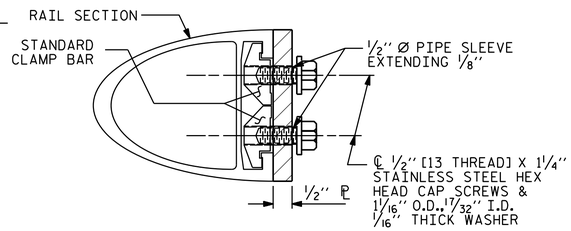
SECTION H-H (FIX)



TOP VIEW



PLAN - RAIL AND END POST



SECTION H-H (EXP.)

FIXED

EXPANSION

DETAILS FOR ATTACHING METAL RAIL TO END POST

NOTES

STRUCTURAL CONCRETE INSERT

THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1½".

B. 1 - ¾" Ø X 1⅝" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE ¾" Ø X 1⅝" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. ½" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.

B. ¾" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A ¾"Ø X 1⅝" BOLT WITH 2" O.D. WASHER IN PLACE. THE ¾"Ø X 1⅝" BOLT SHALL HAVE N. C. THREADS.

C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.

D. STANDARD CLAMP BARS (SEE METAL RAIL SHEET).

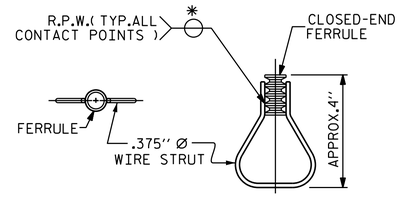
E. ½" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

THE ¾" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE ¾" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE ½" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE ¾" Ø X 1⅝" BOLT WITH WASHER SHALL BE REPLACED WITH A ¾"Ø X 6½" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE ¾" Ø X 1⅝" BOLT SHALL APPLY TO THE ¾"Ø X 6 ½" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



PLAN ELEVATION

STRUCTURAL CONCRETE INSERT

*EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

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SHEET 3 OF 3

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NORTH CAROLINA PROFESSIONAL SEAL 048992 ENGINEER ELIZABETH C. PHELPS

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

RAIL POST SPACINGS AND END OF RAIL DETAILS FOR TWO BAR METAL RAILS

DRAWN BY : D.E. MORRISSETTE	DATE : 10/2023
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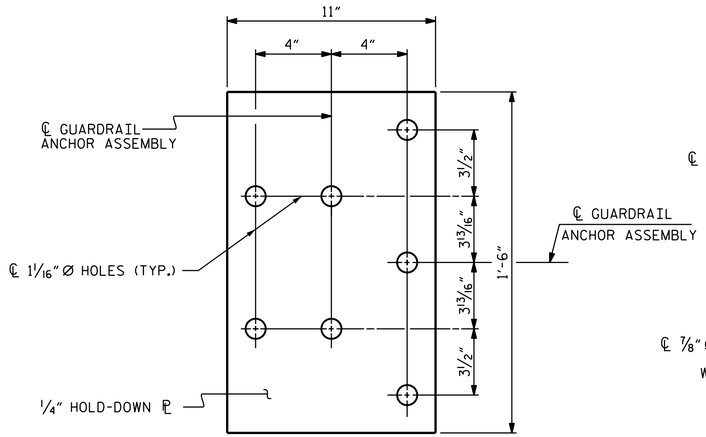
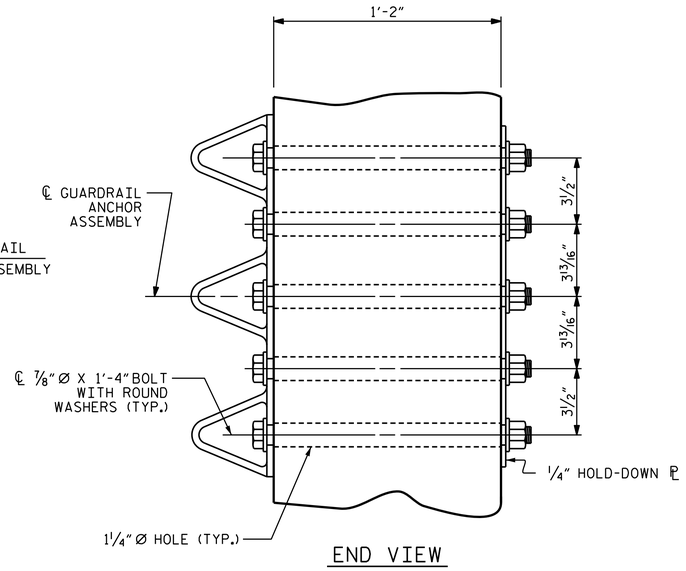


PLAN



END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS

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 THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

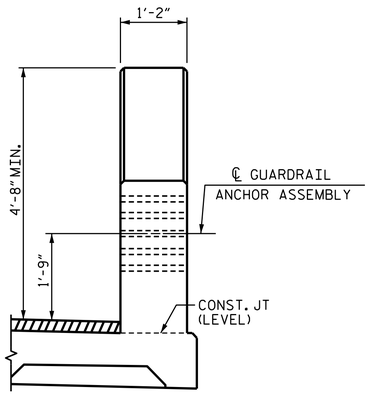
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

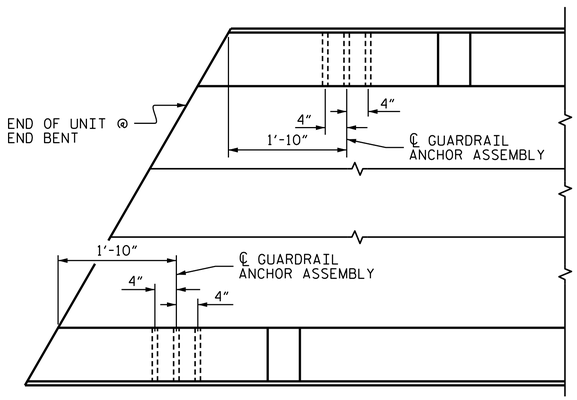
THE 1 1/4'' Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

SKETCH SHOWING POINTS OF ATTACHMENT

*LOCATION OF GUARDRAIL ATTACHMENT



END VIEW
(TWO BAR METAL RAIL)



PLAN

LOCATION OF GUARDRAIL ANCHOR AT END POST

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GUARDRAIL ANCHORAGE DETAILS FOR 2 BAR METAL RAILS

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NOTES

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

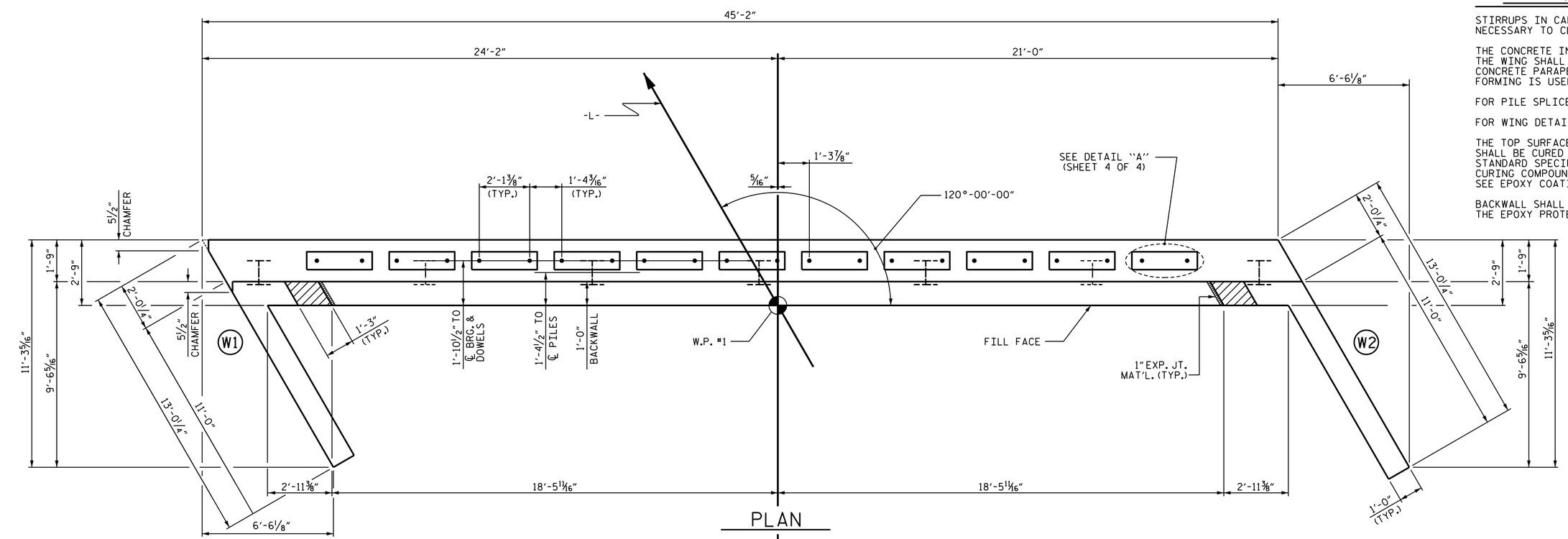
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE CONCRETE PARAPET IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

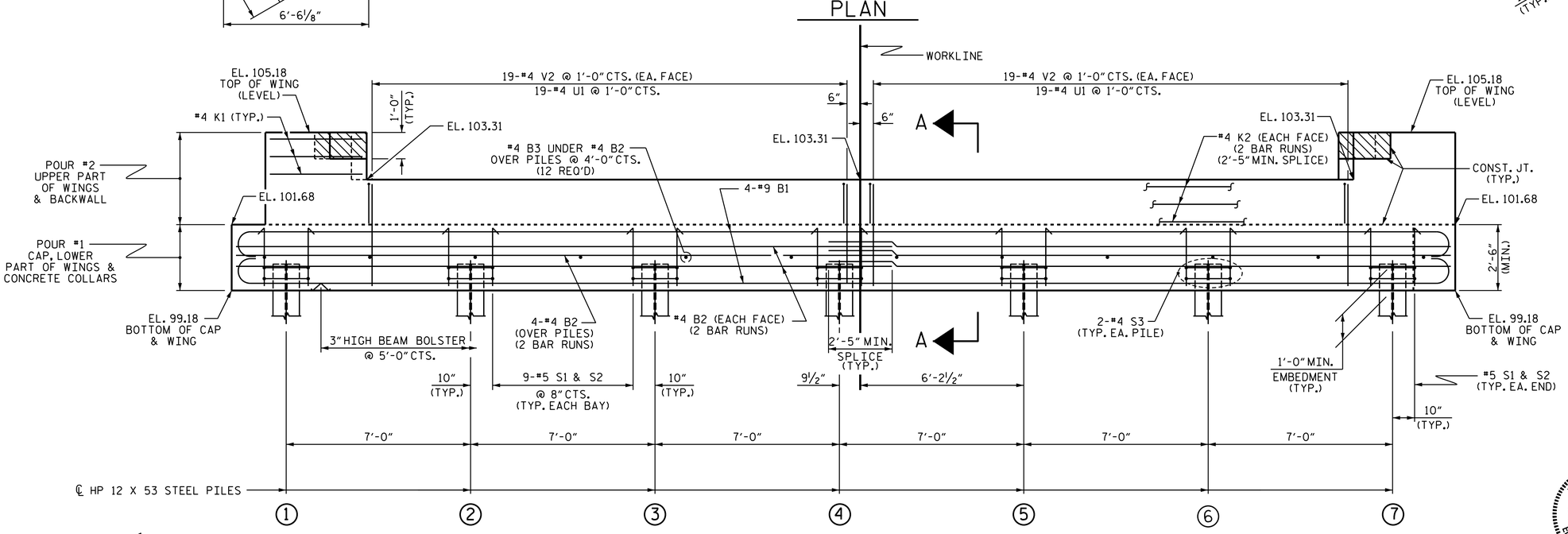
FOR WING DETAILS, SEE SHEET 3 OF 4.

THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED. SEE EPOXY COATING SPECIAL PROVISIONS.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.



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.

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PROJECT NO. **BP4-R008**
NASH/HALIFAX COUNTY
STATION: **14+65.00 -L-**
SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1

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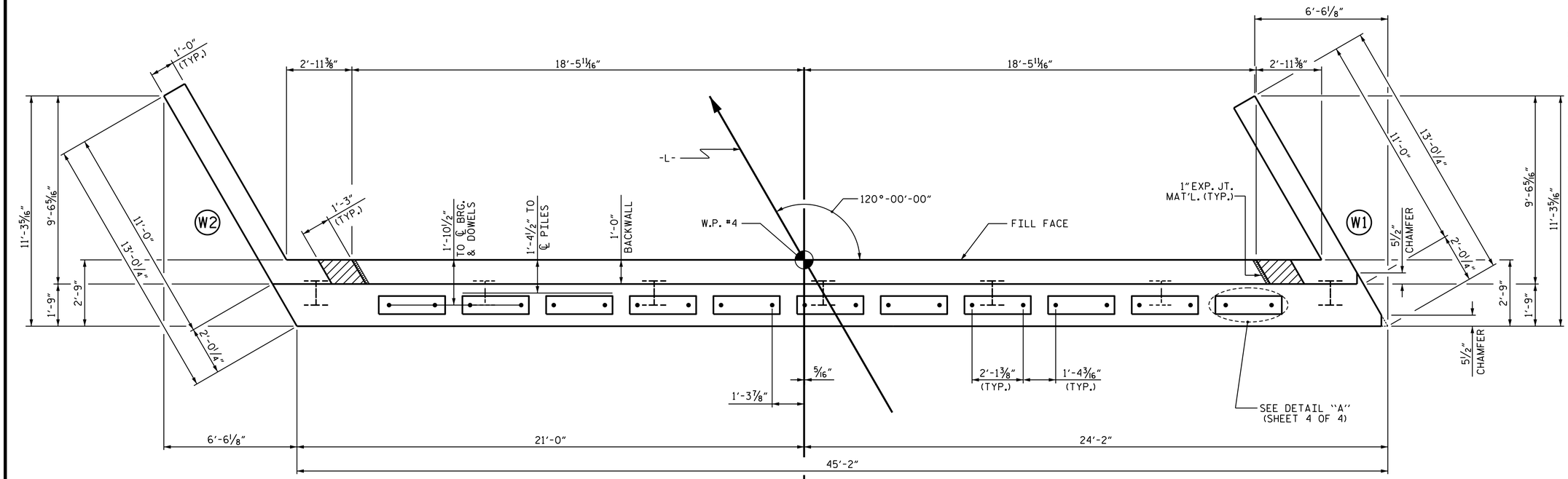
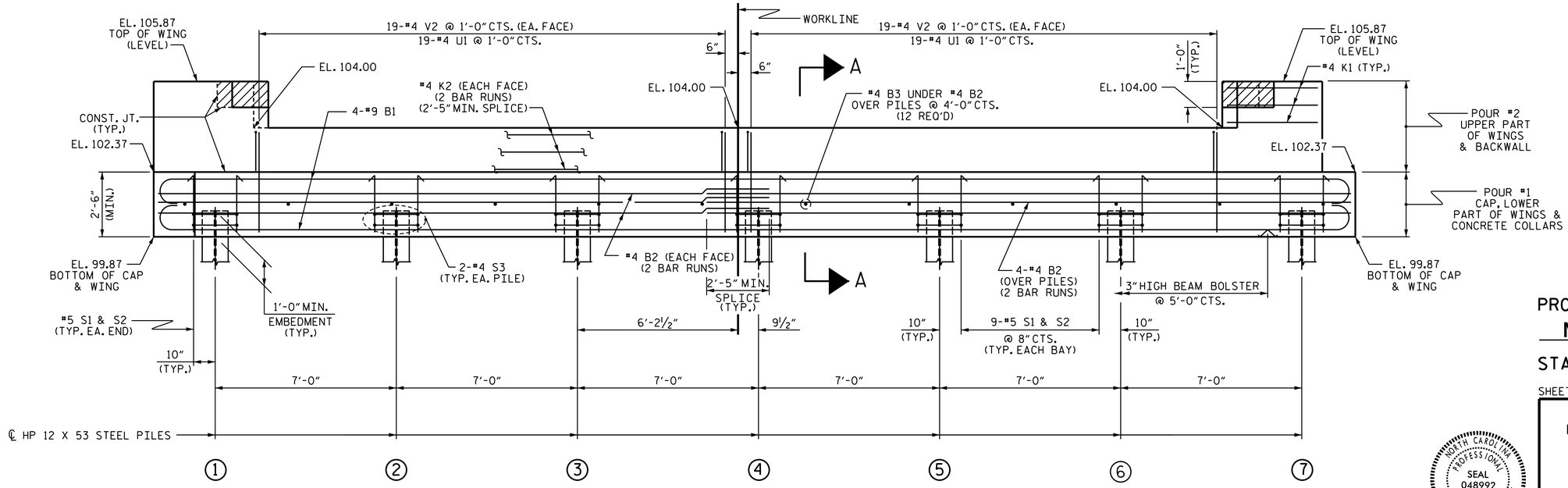


PLAN



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.

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 CONCRETE PARAPET IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED. SEE EPOXY COATING SPECIAL PROVISION.

BACKWALL SHALL BE PLACED BEFORE APPLYING EPOXY PROTECTIVE COATING.

PROJECT NO. **BP4-R008**

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SHEET 2 OF 4

STATE OF NORTH CAROLINA
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SUBSTRUCTURE

END BENT 2

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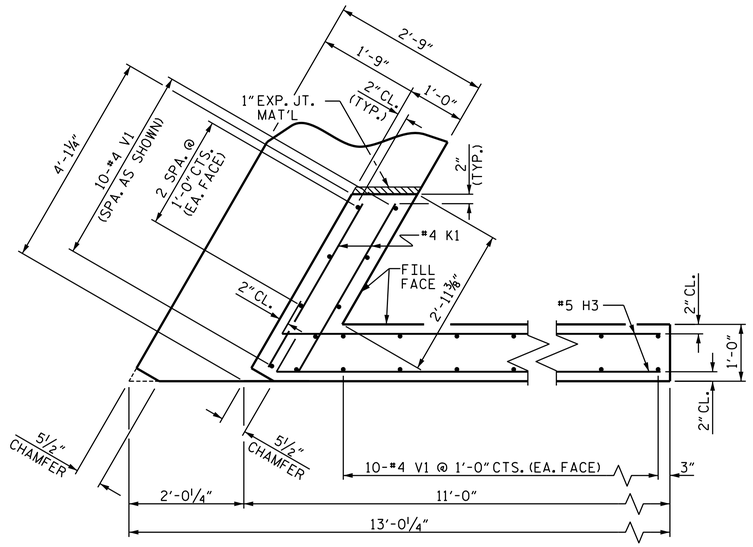
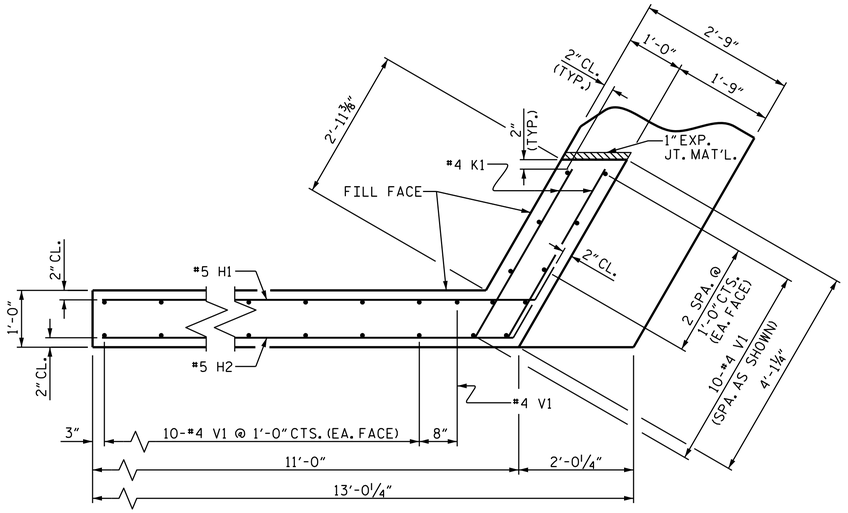
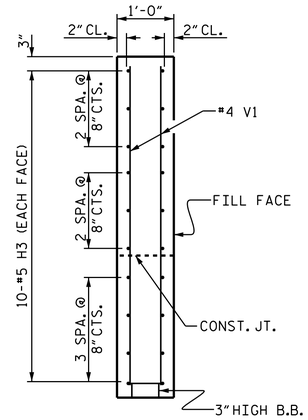


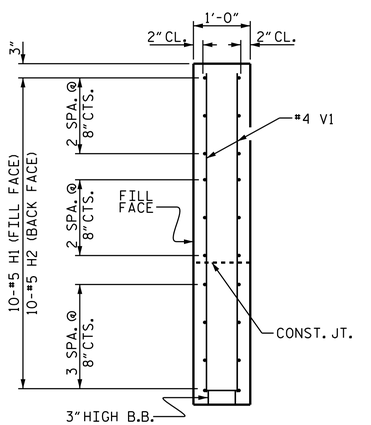
PLAN OF WING (W1)



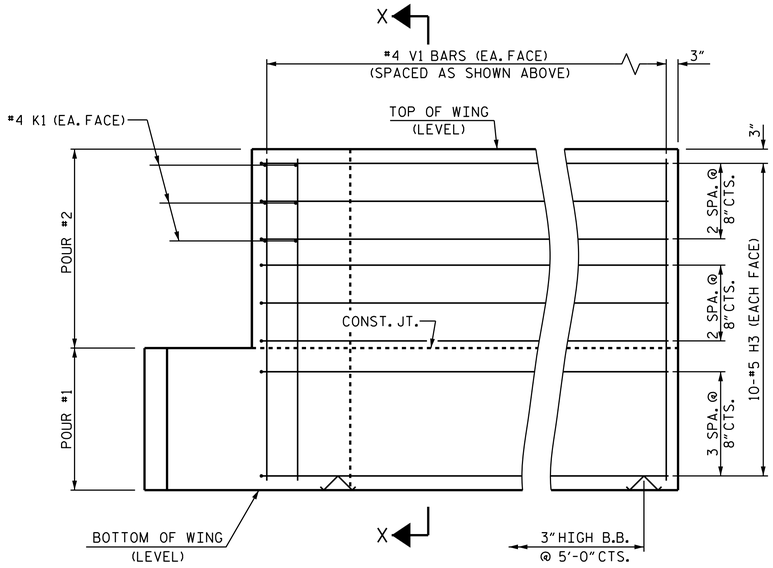
PLAN OF WING (W2)



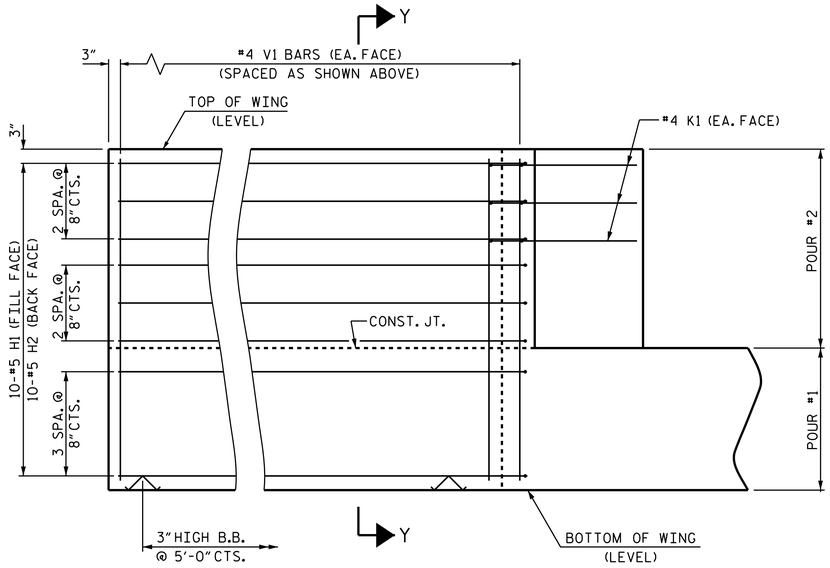
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS

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SUBSTRUCTURE

END BENT
WINGWALL DETAILS

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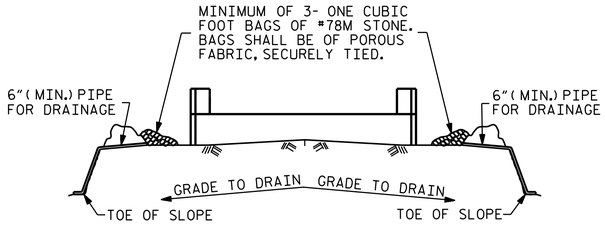
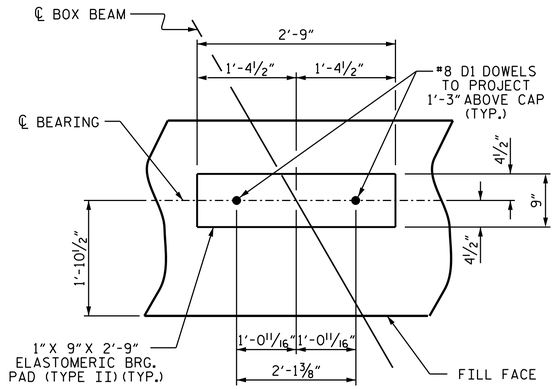


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

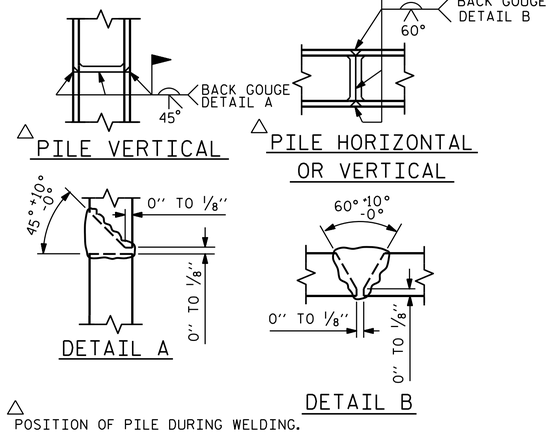
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



DETAIL "A"

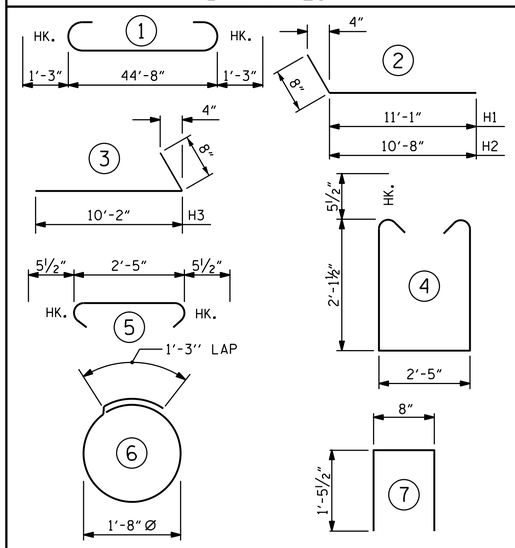
(END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION)



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

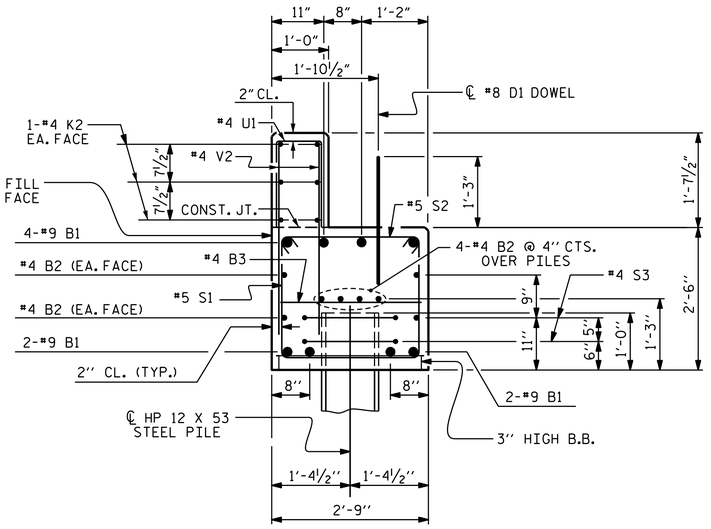
FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	47'-2"	1283
B2	16	#4	STR	23'-8"	253
B3	12	#4	STR	2'-5"	19
D1	22	#8	STR	2'-3"	132
H1	10	#5	2	11'-9"	123
H2	10	#5	2	11'-4"	118
H3	20	#5	3	10'-10"	226
K1	12	#4	STR	3'-3"	26
K2	12	#4	STR	23'-8"	190
S1	56	#5	4	7'-7"	443
S2	56	#5	5	3'-4"	195
S3	14	#4	6	6'-6"	61
U1	38	#4	7	3'-7"	91
V1	61	#4	STR	5'-6"	224
V2	76	#4	STR	3'-6"	178

REINFORCING STEEL (FOR ONE END BENT) 3562 LBS.

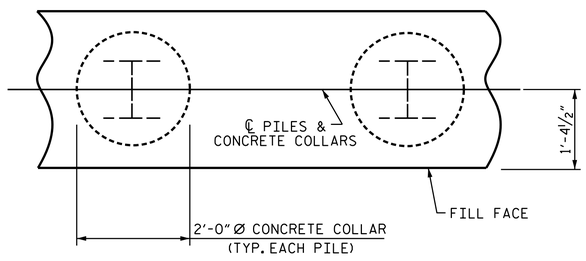
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1	CAP, LOWER PART OF WINGS & COLLARS	14.8 C.Y.
POUR #2	BACKWALL & UPPER PART OF WINGS	5.9 C.Y.
TOTAL CLASS A CONCRETE		20.7 CY

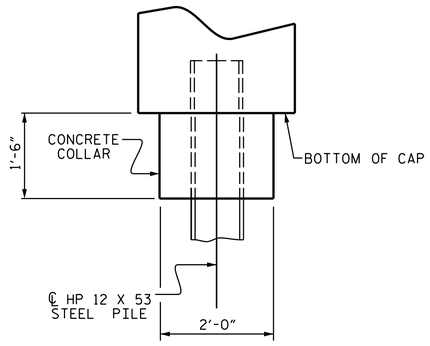


SECTION A-A

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



PLAN



ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

(END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION)

PROJECT NO. **BP4-R008**

NASH/HALIFAX COUNTY

STATION: **14+65.00 -L-**

SHEET 4 OF 4

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SUBSTRUCTURE

END BENT 1 & 2 DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 048992 ENGINEER ELIZABETH C. PHELPS

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Raleigh, NC 27606

DRAWN BY : D.E. MORRISSETTE DATE : 10/2023
CHECKED BY : E.C. PHELPS DATE : 10/2023
DESIGN ENGINEER OF RECORD: E.C. PHELPS DATE : 10/2023

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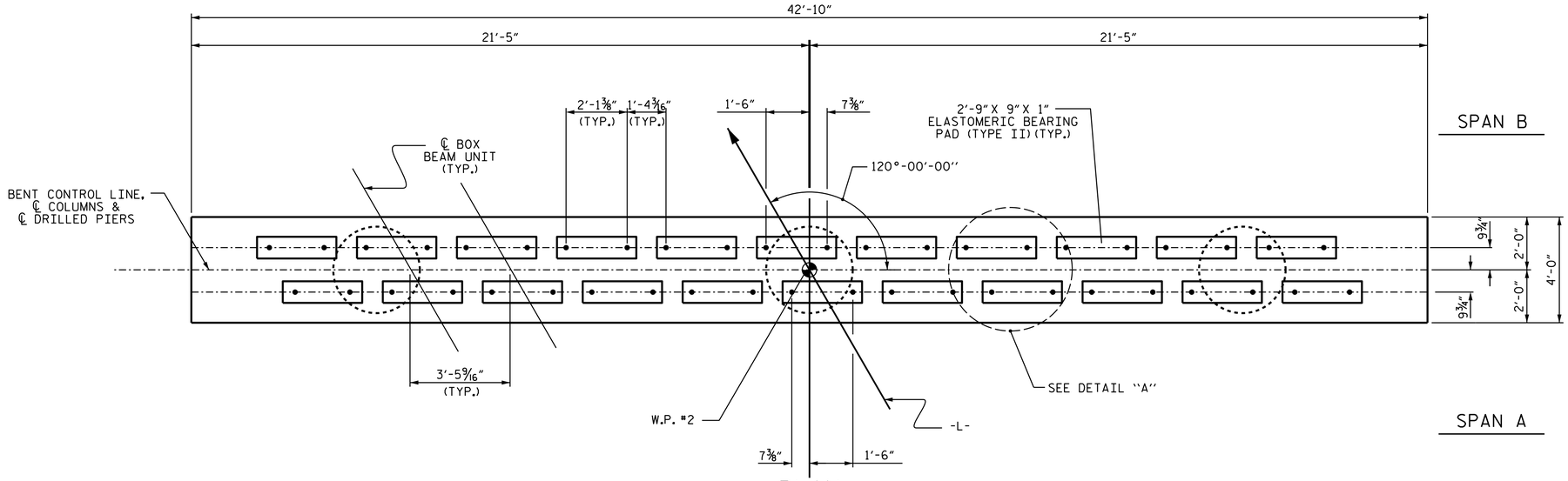
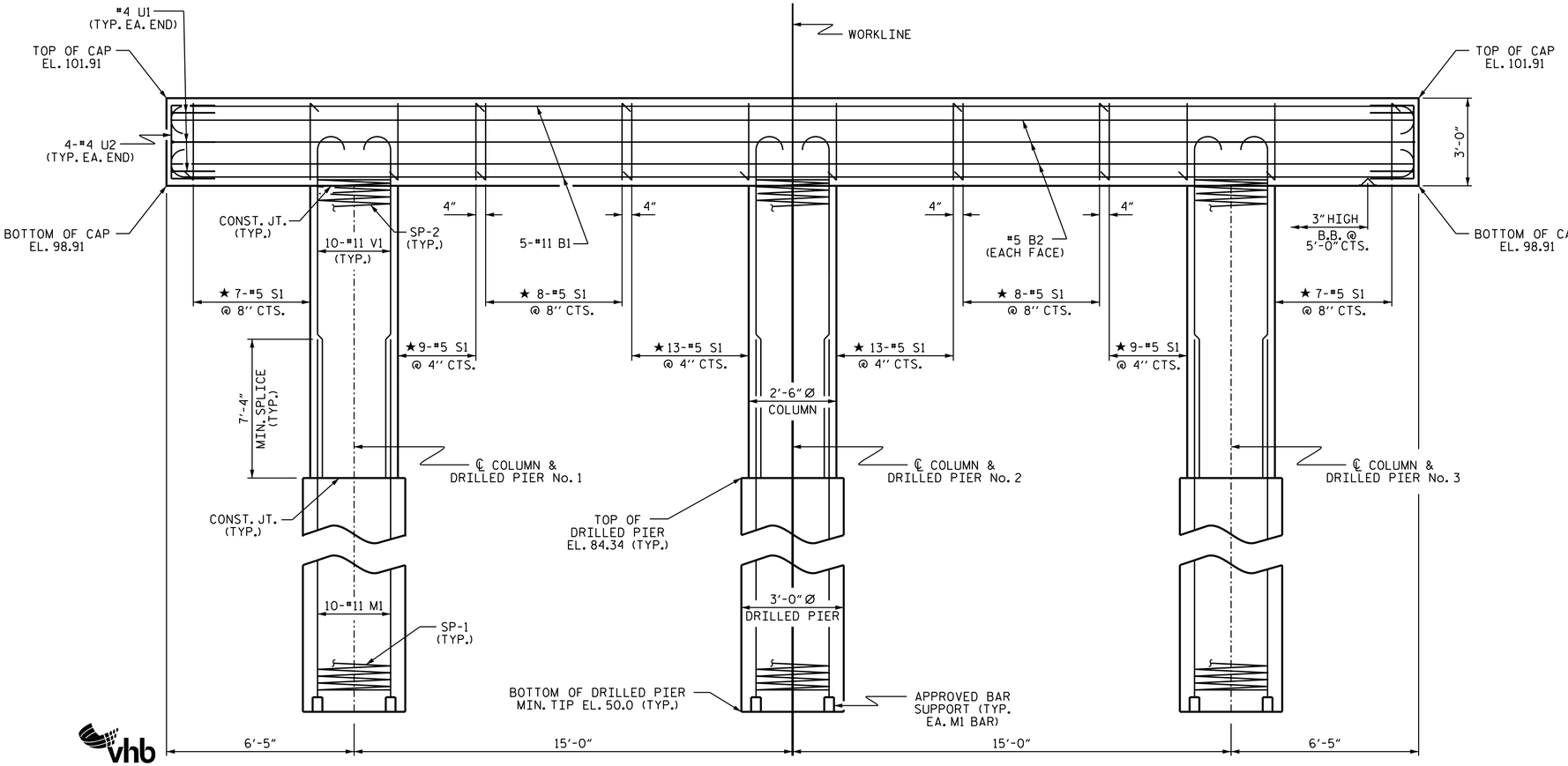
dmorrissette

8/26/21

8/26/21





ELEVATION

DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.

NOTES

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

HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

★ INVERT ALTERNATE STIRRUPS.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT ONE FOOT BELOW THE GROUND LINE.

DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

THE TOP SURFACE AREAS OF THE BENT CAPS SHALL BE CURED IN ACCORDANCE WTH THE STANDARD SPECIFICATIONS, EXCEPT THE MEMBRANCE CURING COMPOUND METHOD SHALL NOT BE USED. SEE EPOXY COATING SPECIAL PROVISIONS.

DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. **BP4-R008**

NASH/HALIFAX COUNTY

STATION: **14+65.00 -L-**

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 048992 ENGINEER ELIZABETH C. PHELPS

DocuSigned by: Elizabeth Phelps A304598A0627455...

1/13/2025

REVISIONS						SHEET NO.
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2			4			24

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Raleigh, NC 27606

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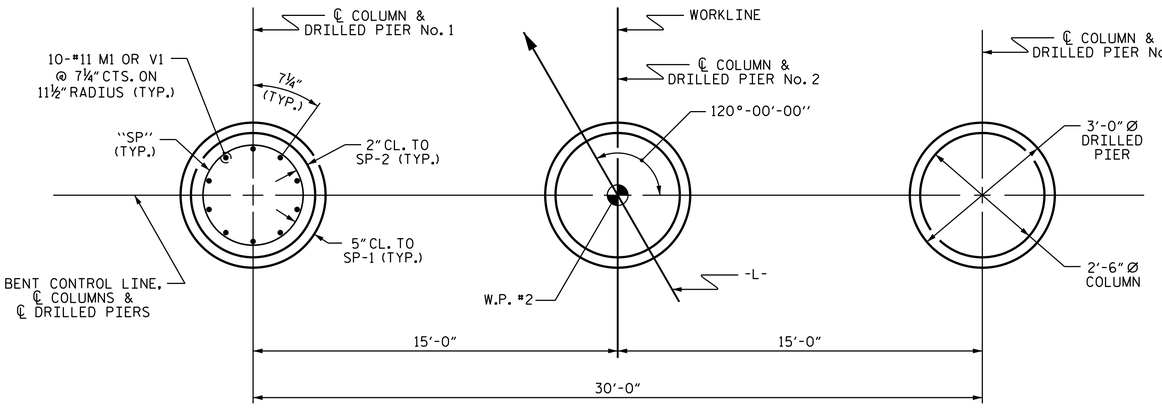
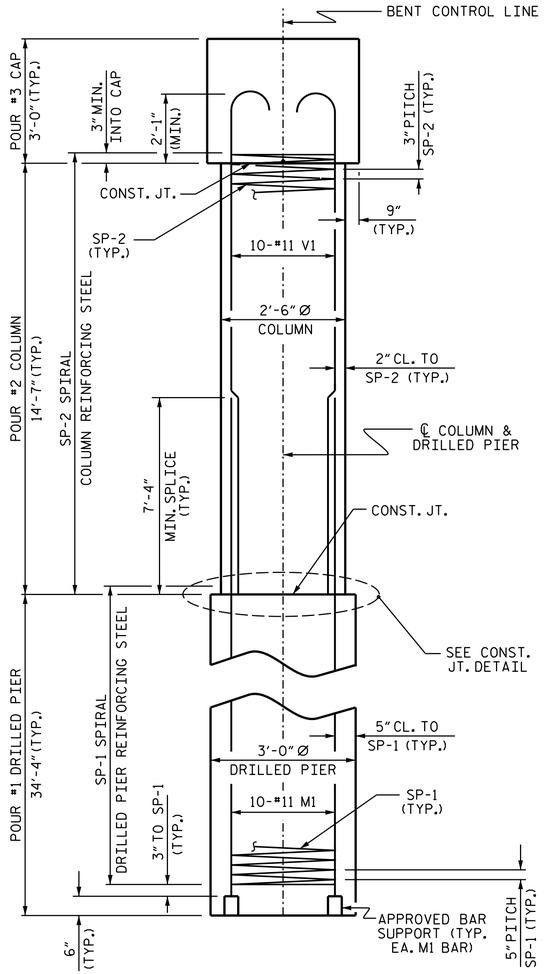
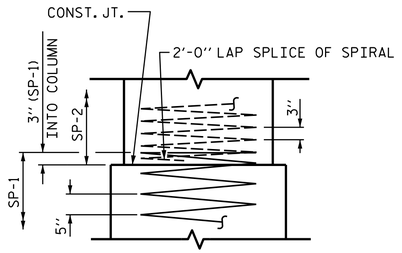
8/26/21



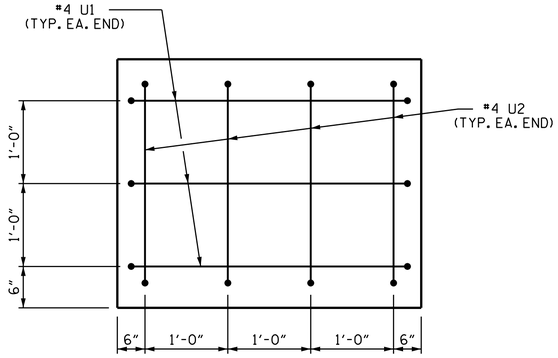
PLAN OF DRILLED PIERS & COLUMNS



END ELEVATION

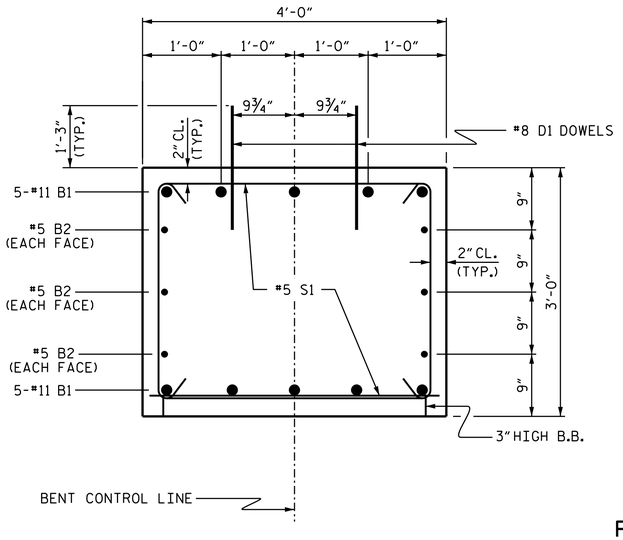


CONSTRUCTION JOINT DETAIL



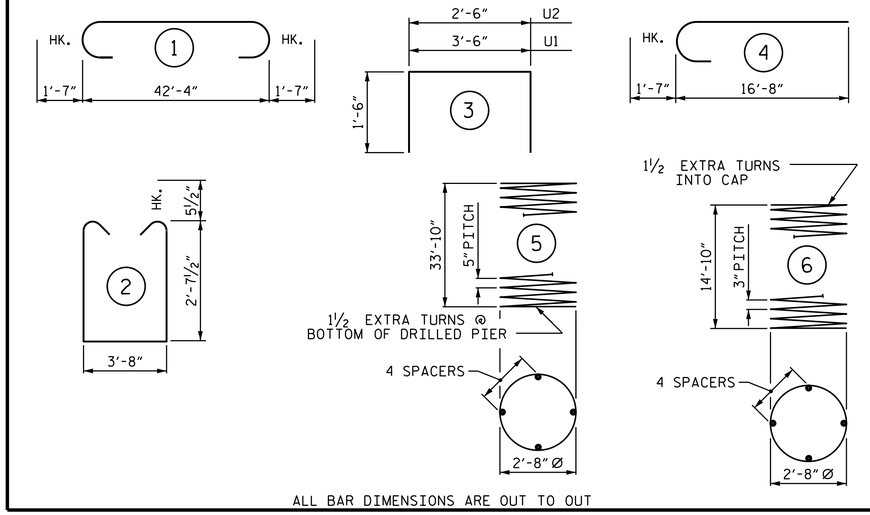
END OF CAP VIEW

(TYPICAL BOTH ENDS)



SECTION THRU CAP

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR ONE BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	1	45'-6"	2417
B2	6	#5	STR	42'-6"	266
D1	44	#8	STR	2'-3"	264
M1	30	#11	STR	44'-2"	7040
S1	74	#5	2	9'-10"	759
U1	6	#4	3	6'-6"	26
U2	8	#4	3	5'-6"	29
V1	30	#11	4	18'-3"	2909

REINFORCING STEEL (FOR ONE BENT) 13710 LBS.

SP-1	3	*	5	565'-9"	1770
SP-2	3	**	6	420'-11"	844

SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT) 2614

* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR

** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR

CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)

POUR #2 (COLUMNS)	8.0 C.Y.
POUR #3 (CAP)	19.0 C.Y.
TOTAL CLASS A CONCRETE	27.0 C.Y.

DRILLED PIERS: (FOR ONE BENT)

DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	27.0 C.Y.

PROJECT NO. **BP4-R008**

NASH/HALIFAX COUNTY

STATION: **14+65.00 -L-**

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 048992 ENGINEER ELIZABETH C. PHELPS

DocuSigned by: Elizabeth Phelps A304598A0627455... 11/5/2024

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

DRAWN BY : D.E. MORRISSETTE DATE : 10/2023
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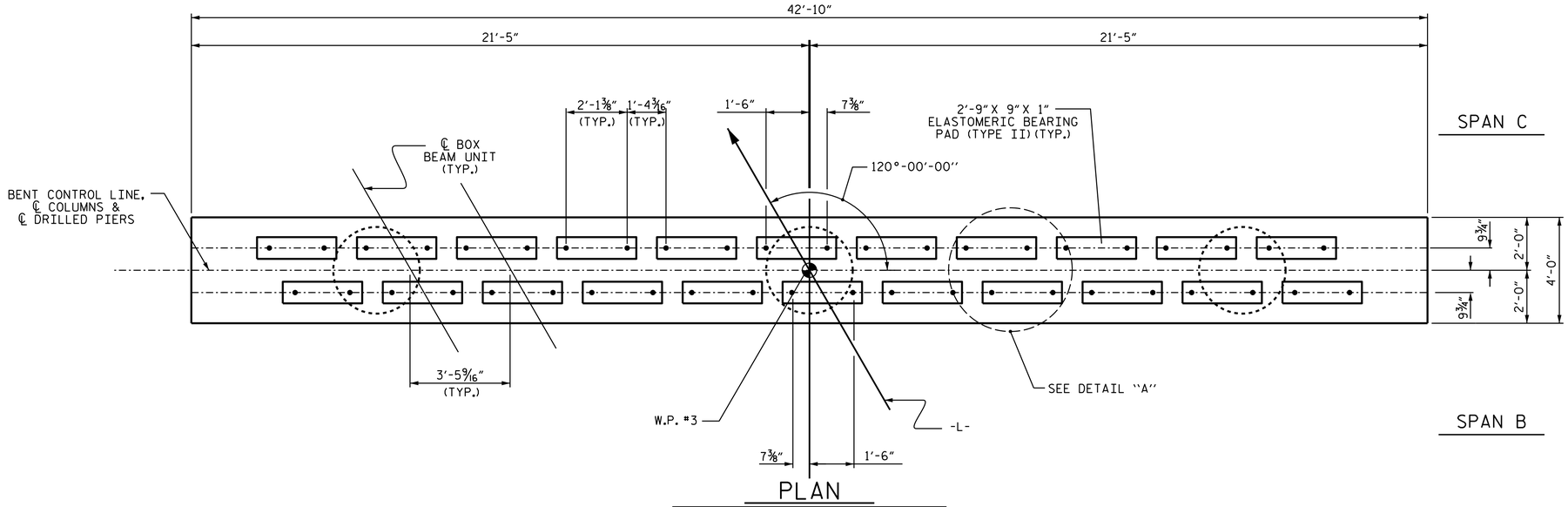
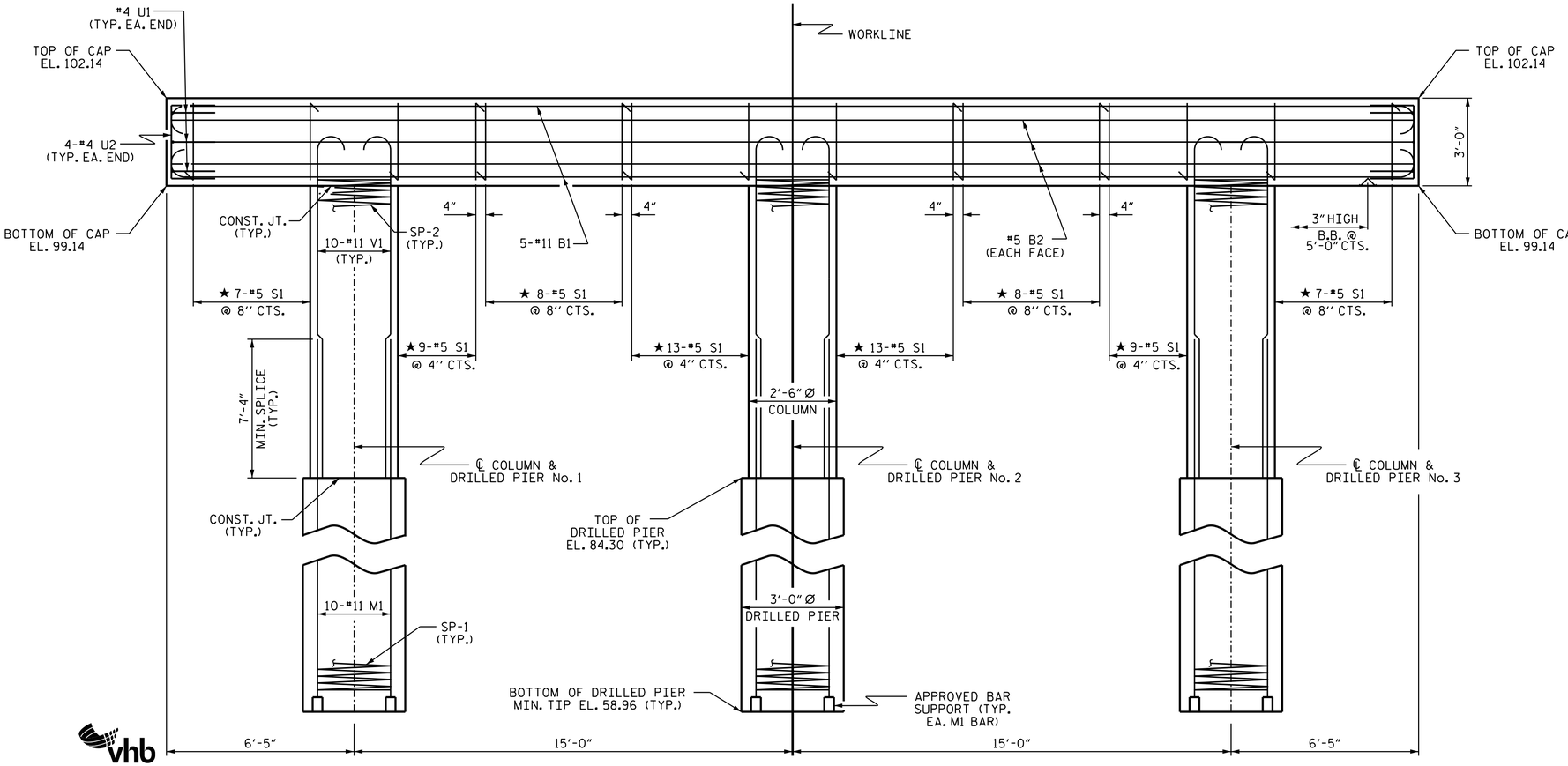
8/26/21





ELEVATION

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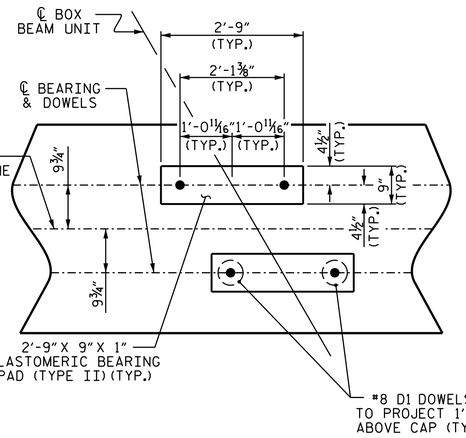

DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. **BP4-R008**

NASH/HALIFAX COUNTY

STATION: **14+65.00 -L-**

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 048992 ENGINEER ELIZABETH C. PHELPS

DocuSigned by: Elizabeth Phelps A304598AD627455...

1/13/2025

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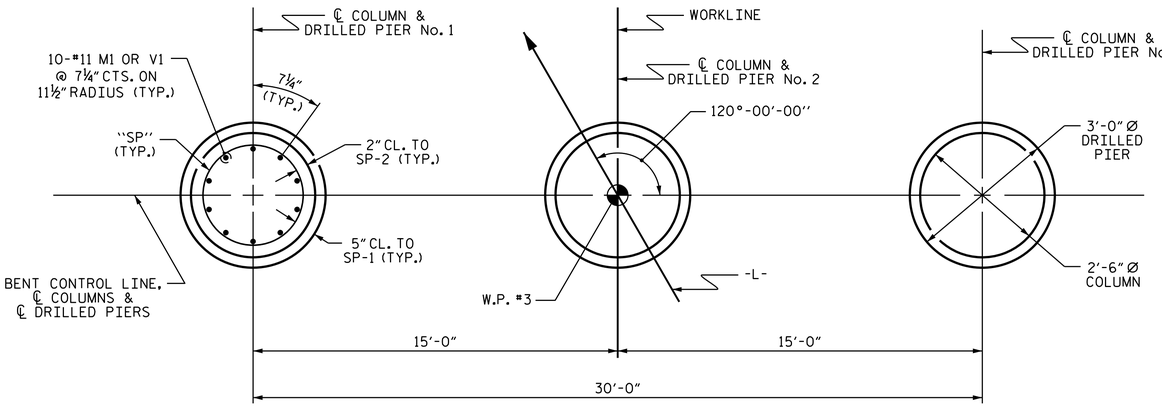
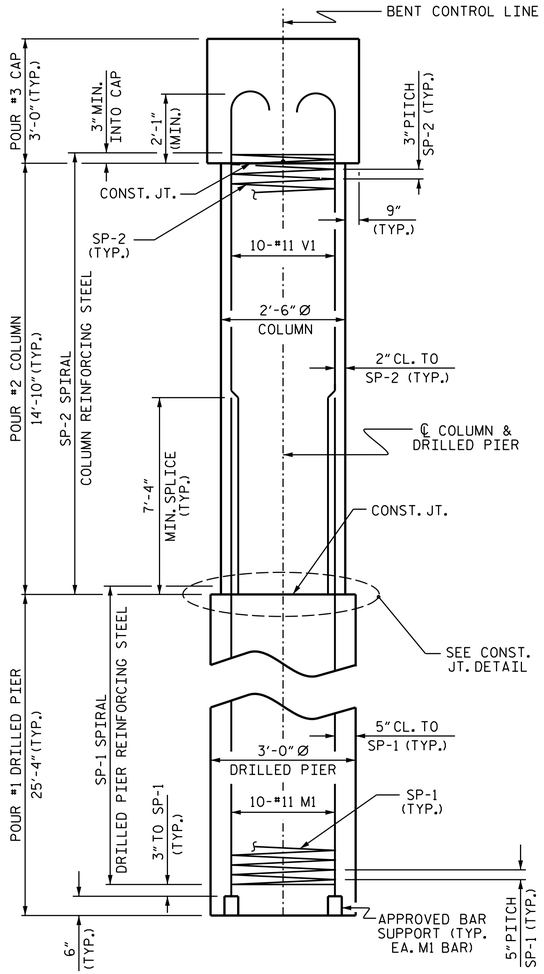
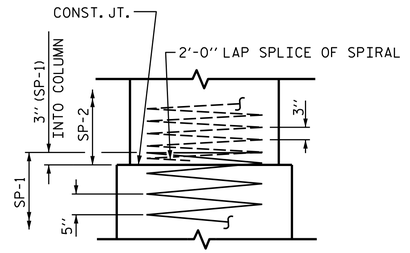


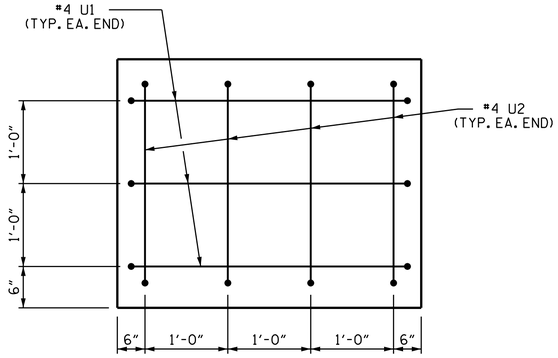
PLAN OF DRILLED PIERS & COLUMNS



END ELEVATION

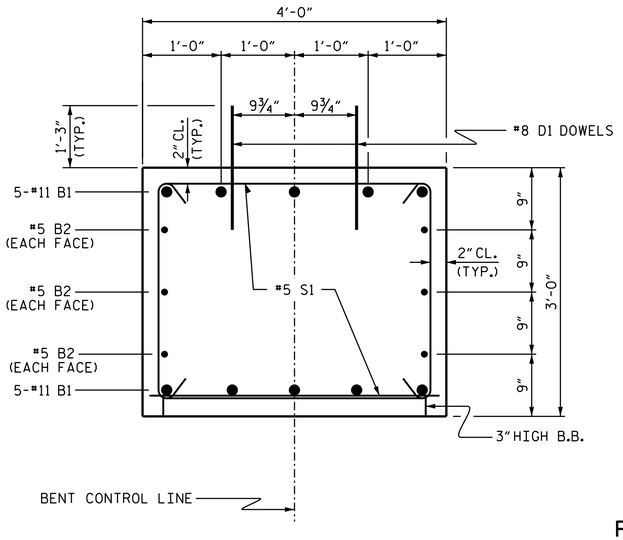


CONSTRUCTION JOINT DETAIL



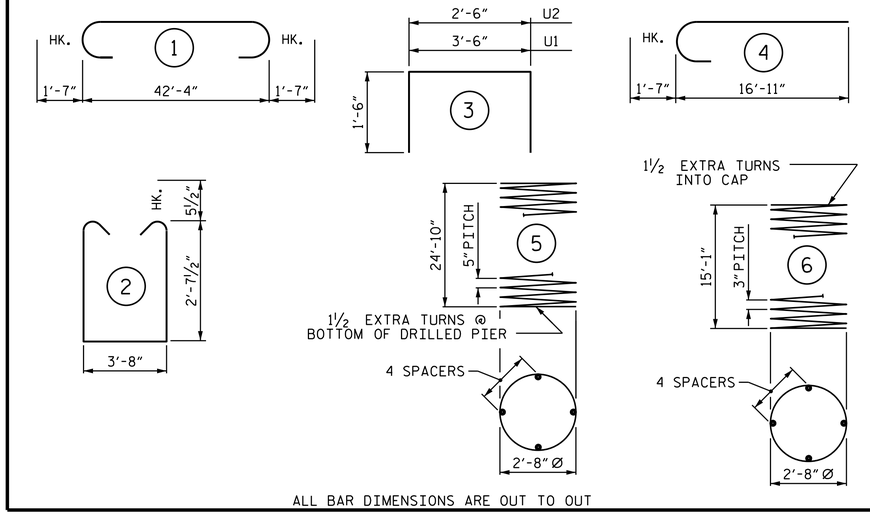
END OF CAP VIEW

(TYPICAL BOTH ENDS)



SECTION THRU CAP

BAR TYPES



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BILL OF MATERIAL

FOR ONE BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
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S1	74	#5	2	9'-10"	759
U1	6	#4	3	6'-6"	26
U2	8	#4	3	5'-6"	29
V1	30	#11	4	18'-6"	2949

REINFORCING STEEL (FOR ONE BENT) 12315 LBS.

SP-1	3	*	5	419'-4"	1312
SP-2	3	**	6	427'-7"	857

SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT) 2169

* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR

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CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)

POUR #2 (COLUMNS)	8.1 C.Y.
POUR #3 (CAP)	19.0 C.Y.
TOTAL CLASS A CONCRETE	27.1 C.Y.

DRILLED PIERS: (FOR ONE BENT)

DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	19.9 C.Y.

PROJECT NO. **BP4-R008**

NASH/HALIFAX COUNTY

STATION: **14+65.00 -L-**

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 048992 ENGINEER ELIZABETH C. PHELPS

DocuSigned by: Elizabeth Phelps 11/5/2024
A304598A0627455...

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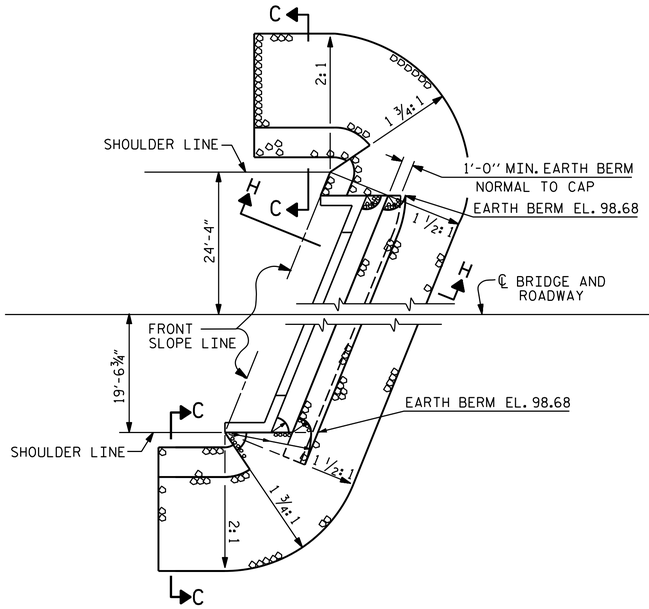
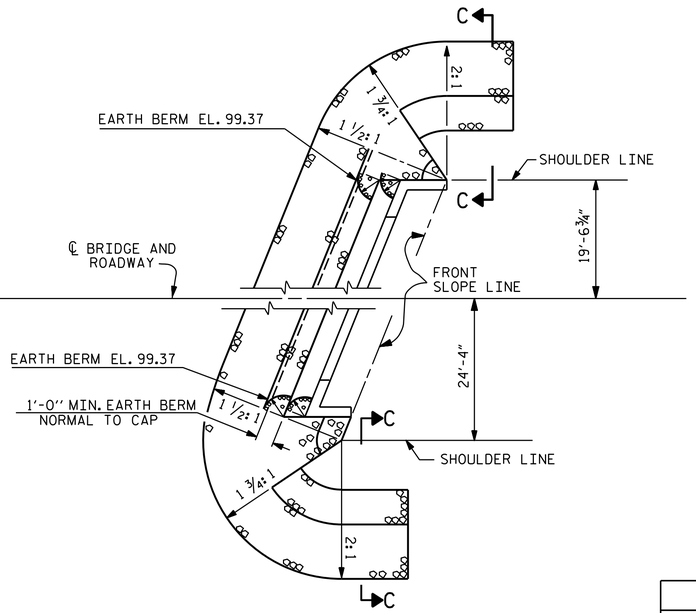
dmorrissette

8/26/21

NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

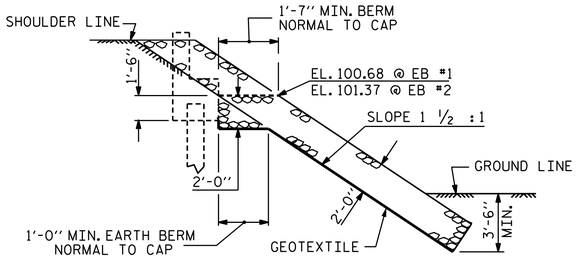


END BENT 1

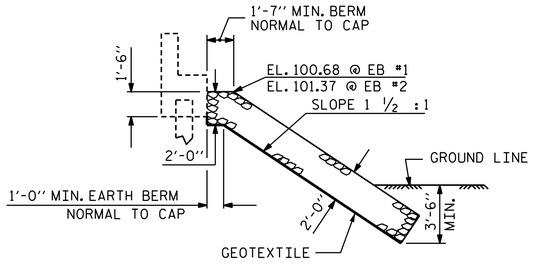


END BENT 2

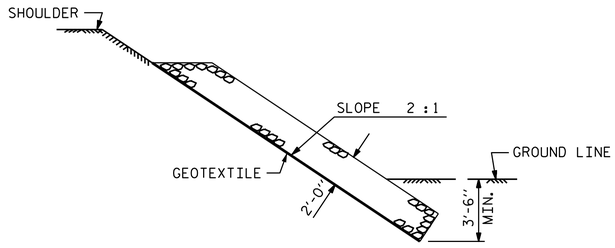
ESTIMATED QUANTITIES		
BRIDGE @ STA. 14+65.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	70	80
END BENT 2	90	100



SECTION H-H



℄ SECTION
BERM RIP RAPPED



SECTION C-C

PROJECT NO. BP4-R008
NASH/HALIFAX COUNTY
STATION: 14+65.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RIP RAP DETAILS

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

SEAL 048992 ENGINEER ELIZABETH C. PHELPS
DocuSigned by: Elizabeth Phelps A304598A0627455... 11/5/2024

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STD.NO.RR1

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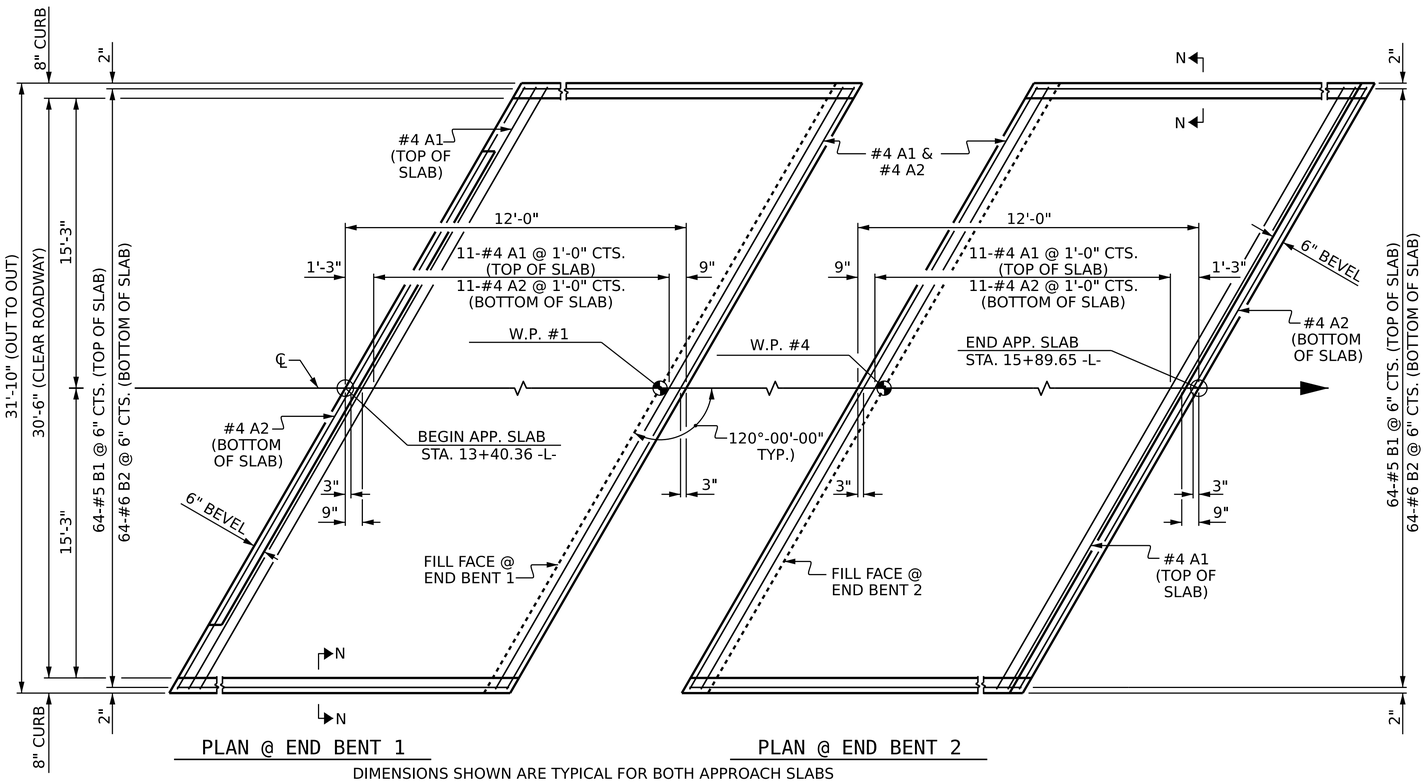
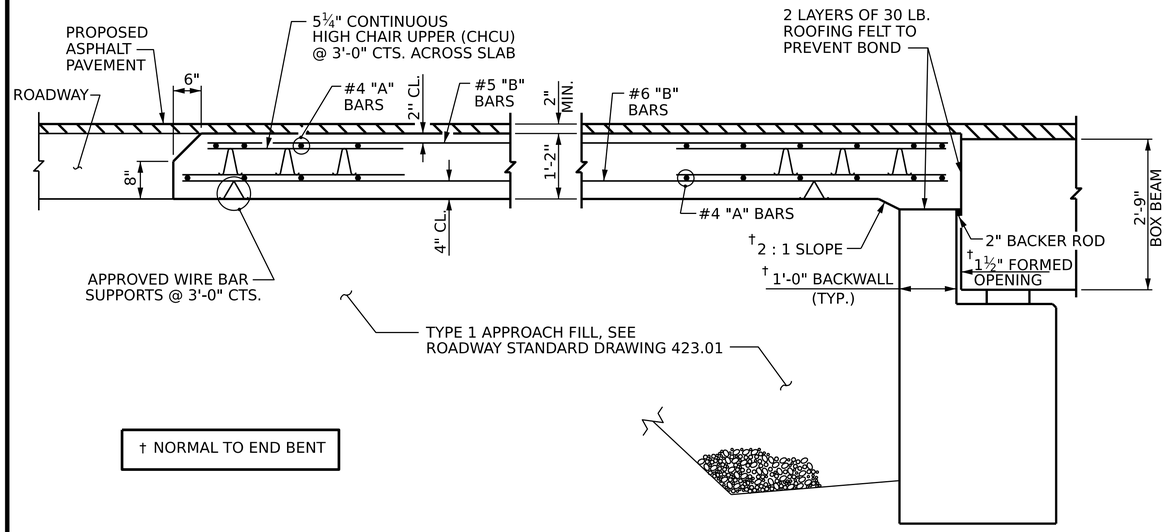


PLAN @ END BENT 1

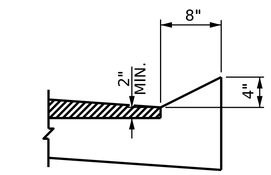
PLAN @ END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

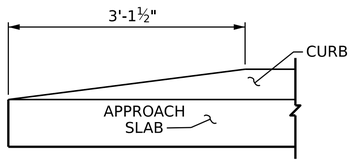


† NORMAL TO END BENT

SECTION THRU SLAB



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

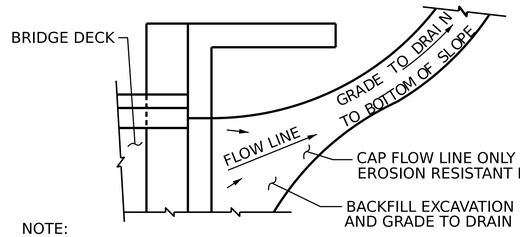
CURB DETAILS

NOTES

FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.

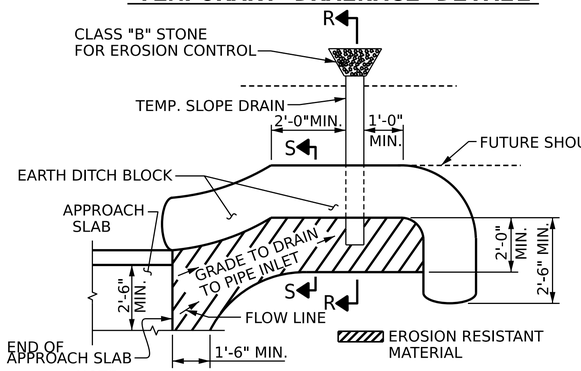
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



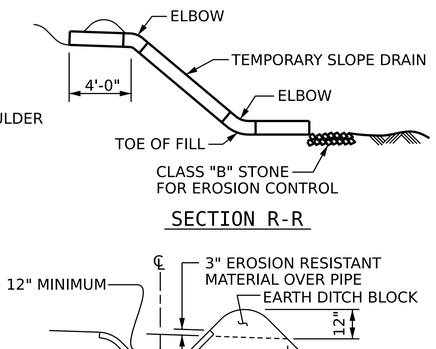
NOTE:
IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

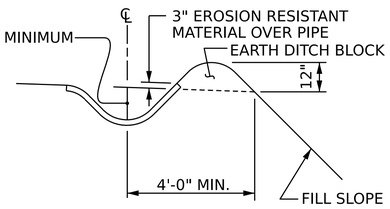


NOTE:
IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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



SECTION R-R



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

BILL OF MATERIAL

APPROACH SLAB AT EB 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A 1	13	#4	STR	36'-4"	316
A 2	13	#4	STR	36'-4"	316
*B 1	64	#5	STR	11'-1"	740
B 2	64	#6	STR	11'-7"	1113
REINFORCING STEEL				LBS.	1429
* EPOXY COATED REINFORCING STEEL				LBS.	1056
CLASS AA CONCRETE				C. Y.	17.0

APPROACH SLAB AT EB 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A 1	13	#4	STR	36'-4"	316
A 2	13	#4	STR	36'-4"	316
*B 1	64	#5	STR	11'-1"	740
B 2	64	#6	STR	11'-7"	1113
REINFORCING STEEL				LBS.	1429
* EPOXY COATED REINFORCING STEEL				LBS.	1056
CLASS AA CONCRETE				C. Y.	17.0

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

PROJECT NO. BP4-R008

NASH/HALIFAX COUNTY

STATION: 14+65.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BOX BEAM UNIT BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE (SUB-REGIONAL TIER) 120° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 048992 ENGINEER ELIZABETH C. PHELPS
DocuSigned by: Elizabeth Phelps A304598A0627455... 11/5/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			24

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

DRAWN BY : D.E. MORRISSETTE DATE : 10/2023
CHECKED BY : E.C. PHELPS DATE : 10/2023
DESIGN ENGINEER OF RECORD: E.C. PHELPS DATE : 10/2023

11/5/2024
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dmorrissette

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A ¼" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE ⅞" ∅ SHEAR STUDS FOR THE ¾" ∅ STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞" ∅ STUDS FOR 4 - ¾" ∅ STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞" ∅ STUDS ALONG THE BEAM AS SHOWN FOR ¾" ∅ STUDS BASED ON THE RATIO OF 3 - ⅞"∅ STUDS FOR 4 - ¾" ∅ STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

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

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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