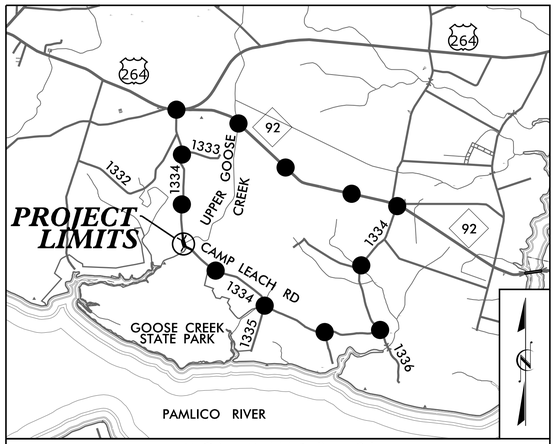
Docusign Envelope ID: 2CF0E562-A9FA-4805-B9A7-732EBA6E7DA1

09/08/99

TIP PROJECT: BP2–R017

CONTRACT: DB00647

See Sheet 1A For Index of Sheets
See Sheet 1B For Standard Symbology Sheet



VICINITY MAP (N.T.S.)
OFFSITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

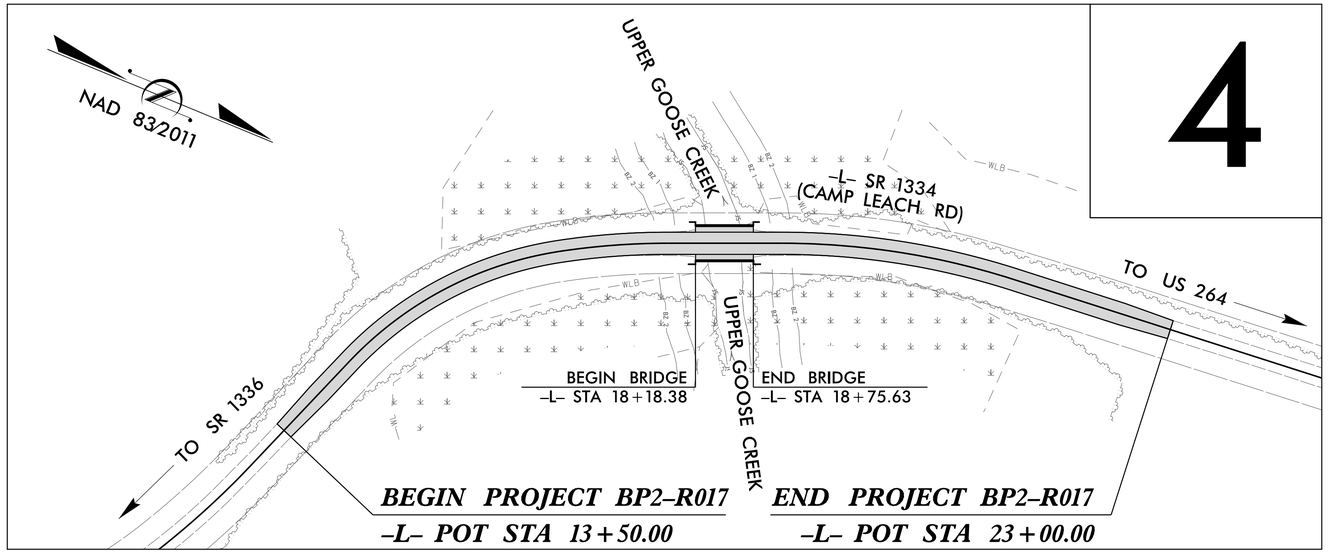
BEAUFORT COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP2–R017	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
BP2.R017.1		PE
BP2.R017.2		RW & UTILITIES
BP2.R017.3		CONSTRUCTION

LOCATION: REPLACE BRIDGE NO. 115 OVER UPPER GOOSE CREEK ON SR 1334 (CAMP LEACH RD)

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



4

DESIGN EXCEPTION APPROVED FOR: MIN. HORIZONTAL CURVE RADIUS, HORIZONTAL SSD, & SUPERELEVATION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2026 = 290
ADT 2046 = 320
K = 10 %
D = 60 %
T = 6 % *
V = 60 MPH
* TTST = 2% DUAL = 4%
FUNC CLASS = LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT BP2–R017	=	0.169 MI
LENGTH OF STRUCTURES PROJECT BP2–R017	=	0.011 MI
TOTAL LENGTH OF PROJECT BP2–R017	=	0.180 MI

Prepared In the Office of:
HNTB NORTH CAROLINA, P.C.
4000 Center at North Hills St.
Suite 500
Raleigh, North Carolina 27609
NC License No: C-1554

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JUNE 1, 2023

LETTING DATE:
JUNE 10, 2026

BRIAN P. BLACKWELL, PE
PROJECT ENGINEER

ROY H. TELLIER, PE
PROJECT DESIGN ENGINEER

CATHRINE A. HOSSACK, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040801 ENGINEER PAUL M CAMERON
Signed by: Paul Cameron 03TE387AD87F426...
P.E. 4/29/2026
SIGNATURE:

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 043122 ENGINEER BRIAN P BLACKWELL
DocuSigned by: Brian Blackwell 0C4D73BE1E8D4B7...
P.E. 4/29/2026
SIGNATURE:

STATE OF NORTH CAROLINA * DEPARTMENT OF TRANSPORTATION *

28-APR-2026 14:25
\Roadway\Proj\BP2R017_rdy_tsh.dgn
HNTB

Docusign Envelope ID: 2CF0E562-A9FA-4805-B9A7-732EBA6E7DA1

8/17/99

HNTB NORTH CAROLINA, P.C.
4000 Center at North Hills St
Suite 500
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
BP2-R017	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 043122 ENGINEER
Emily Lauterwell
DC4D738E1E8F4...
4/30/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 & TYPICAL SECTIONS
2C-1 THRU 2C-3	SPECIAL DETAILS
3B-1	ROADWAY & DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
4	PLAN AND PROFILE SHEET
RW-1 THRU RW-04	SURVEY CONTROL, EXISTING CENTERLINES, RIGHT OF WAY, EASEMENT AND PROPERTY TIES
TMP-1 THRU TMP-2A	TRAFFIC MANAGEMENT PLANS
EC-1 THRU EC-4	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
UC-1 THRU UC-4	UTILITIES CONSTRUCTION PLANS
UO-1 THRU UO-3	UTILITIES BY OTHERS PLANS
X-1	CROSS-SECTION SUMMARY SHEET
X-2 THRU X-9	CROSS-SECTIONS
S-1 THRU S-18	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 II.

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

SUBSURFACE DRAINS:

SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.

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

CATV - RIVERSTREET NETWORKS

POWER - CITY OF WASHINGTON

WATER - BEAUFORT COUNTY WATER DISTRICT

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

RIGHT-OF-WAY MARKERS:

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

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

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	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
275.01	Rock Plating
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	
815.02	Subsurface Drain
846.01	Concrete Curb, Gutter and Curb & Gutter
862.01	Guardrail Placement (Use Details in Lieu of Standards for Sheets 4, 6, 11, 12, and 14 of 15)
862.02	Guardrail Installation (Use Detail in Lieu of Standard for Sheet 5 of 9)
862.03	Structure Anchor Units (Use Detail in Lieu of Standards for Sheet 6 and 8 of 9)
876.02	Guide for Rip Rap at Pipe Outlets

15 APR 2026 08:02
H:\Projects\BP2R017_rdy_gen.dgn
HNTB

9/10/2021

PROJECT REFERENCE NO.	SHEET NO.
BP2-R017	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 (123)
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary (WLB)
- Proposed Wetland Boundary (WLB)
- Existing Endangered Animal Boundary (EAB)
- Existing Endangered Plant Boundary (EPB)
- Existing Historic Property Boundary (HPB)
- Known Contamination Area: Soil (S)
- Potential Contamination Area: Soil (S)
- Known Contamination Area: Water (W)
- Potential Contamination Area: Water (W)
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

- Standard Gauge (CSX TRANSPORTATION)
- RR Signal Milepost (MILEPOST 35)
- Switch (SWITCH)
- RR Abandoned
- RR Dismantled

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert (CONC)
- Bridge Wing Wall, Head Wall and End Wall (CONC WW)

MINOR:

- Head and End Wall (CONC HW)
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB (CB)
- Paved Ditch Gutter
- Storm Sewer Manhole (S)
- Storm Sewer (S)

UTILITIES:

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

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

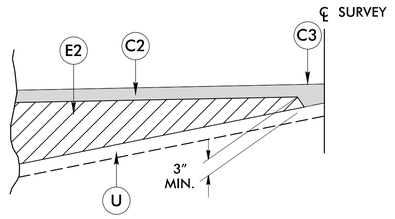
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box (S)
- Utility Unknown U/G Line (SUE – LOS B)* (?UTL)
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. (UST)
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- Abandoned According to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

Docusign Envelope ID: 2CF0E562-A9FA-4805-B9A7-732EBA6E7DA1

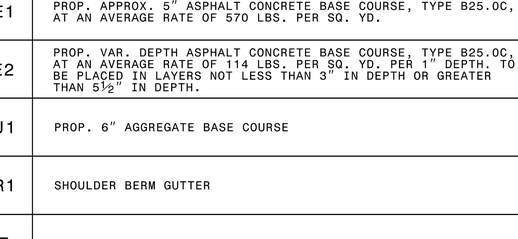
6/2/99

FINAL PAVEMENT SCHEDULE

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. PLACED IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1″ DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1″ IN DEPTH OR GREATER THAN 1½″ IN DEPTH.
E1	PROP. APPROX. 5″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 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 5½″ IN DEPTH.
J1	PROP. 6″ AGGREGATE BASE COURSE
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	INCIDENTAL MILLING
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL, THIS SHEET)

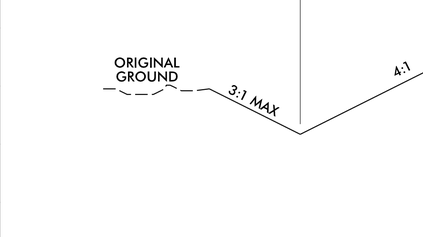


DETAIL SHOWING METHOD OF WEDGING



DETAIL A

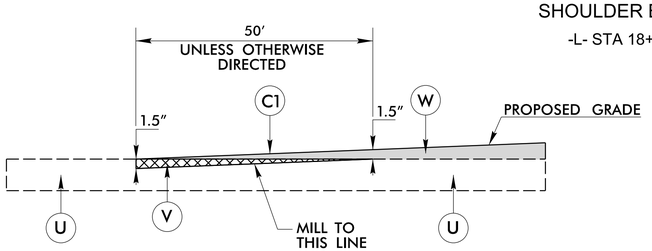
GUARDRAIL LOCATIONS



SHOULDER BERM GUTTER DETAIL

SHOULDER BERM GUTTER LOCATIONS

-L- STA 18+86.50 RT TO STA 19+20.55 RT



DETAIL FOR INCIDENTAL MILLING

23-MAR-2026 16:58
C:\Projects\BP2R017_rdy_typ.dgn
HNTB

HNTB NORTH CAROLINA, P.C.
4000 CENTER AT NORTH HILLS ST, SUITE 500
Raleigh, North Carolina 27609
NC License No: C-1554

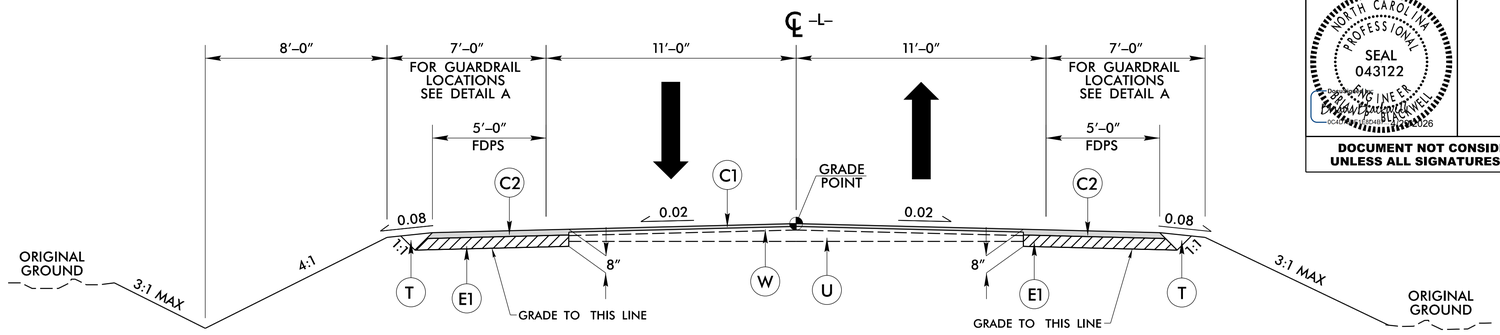
PROJECT REFERENCE NO.	SHEET NO.
BP2–R017	2A–1

ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 043122 ENGINEER Bridget Blackwell BLACKWELL 3/26/2026

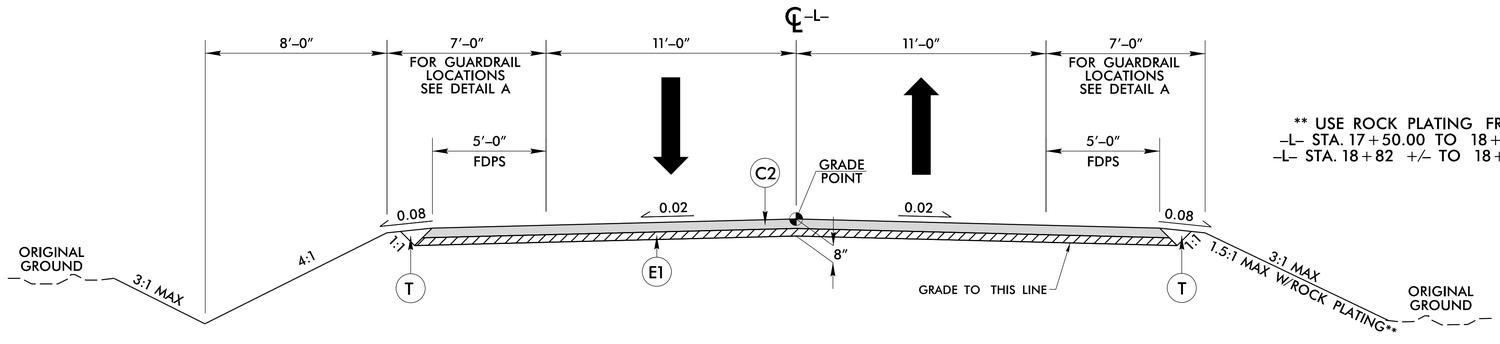
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



TYPICAL SECTION NO. 1

–L– SR 1334 (CAMP LEACH RD)

USE TYPICAL SECTION NO. 1 FROM:
–L– STA 13+50.00 TO STA 16+50.00
–L– STA 22+00.00 TO STA 23+00.00

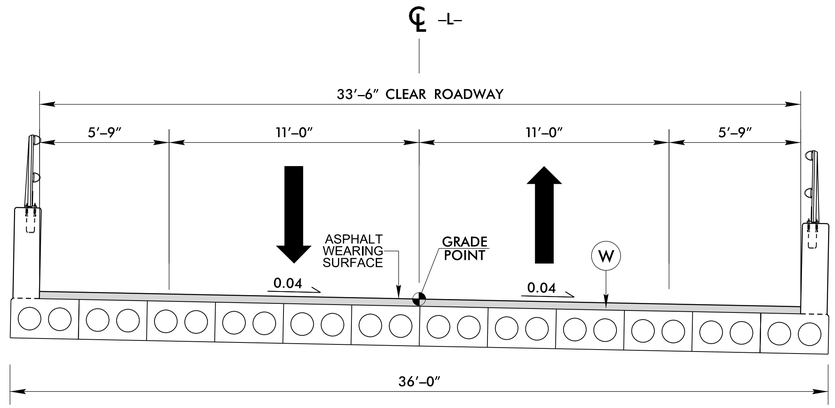


** USE ROCK PLATING FROM
–L– STA. 17+50.00 TO 18+12 +/–
–L– STA. 18+82 +/– TO 18+90.00

TYPICAL SECTION NO. 2

–L– SR 1334 (CAMP LEACH RD)

USE TYPICAL SECTION NO. 2 FROM:
–L– STA 16+50.00 TO STA 18+18.38 (BEGIN BRIDGE)
–L– STA 18+75.63 (END BRIDGE) TO STA 22+00.00



TYPICAL SECTION NO. 3

–L– SR 1334 (CAMP LEACH RD)

CORED SLAB BRIDGE

USE TYPICAL SECTION NO. 3 FROM:
–L– STA 18+18.38 TO STA 18+75.63

Docusign Envelope ID: 02271B85-114E-4ED2-B38B-24BC94989575

PROJECT REFERENCE NO.	SHEET NO.
BP2-R017	2C-1

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

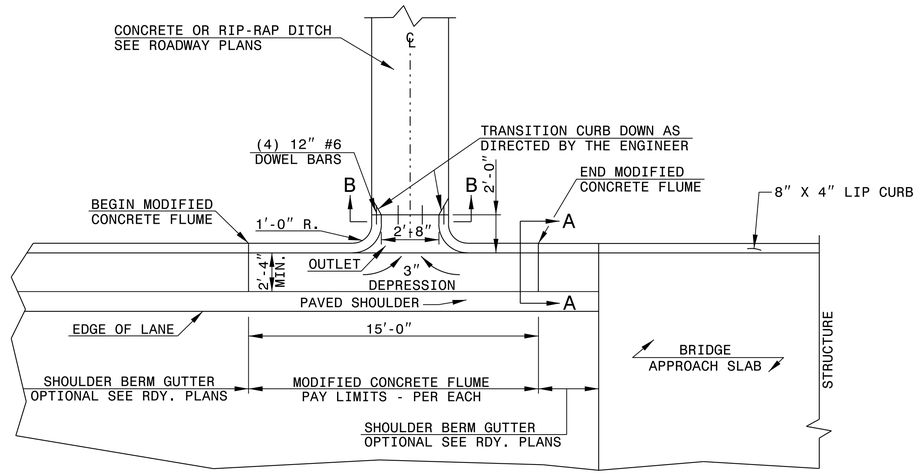
ENGLISH DETAIL DRAWING FOR

MODIFIED CONCRETE FLUME

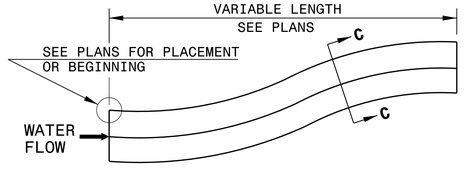
WITH CONCRETE OR RIP-RAP DITCH

SHEET 1 OF 1

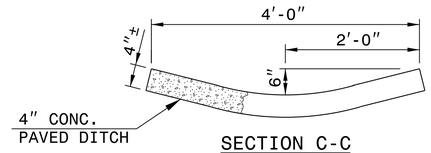
MODFLMDTCH



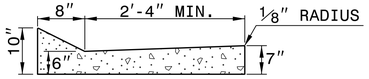
PLAN VIEW



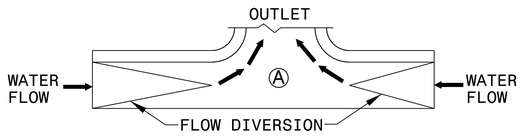
DOWNGRADE OR SAG



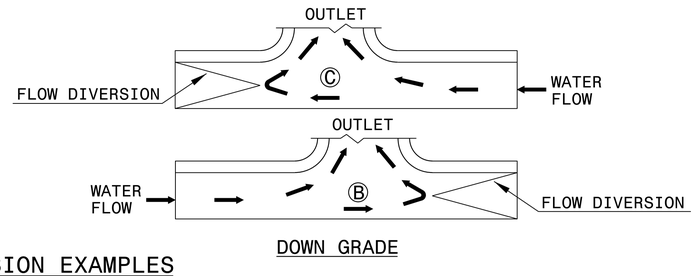
SECTION C-C



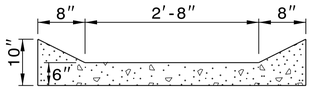
SECTION A-A



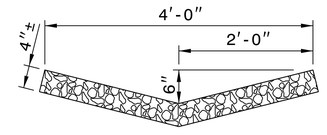
SAG



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.

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

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 33144 ENGINEER NICHOLAS WILLIAM KICHLER
Signed by: Nicholas Kichler
588432303416405
4/28/2026

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

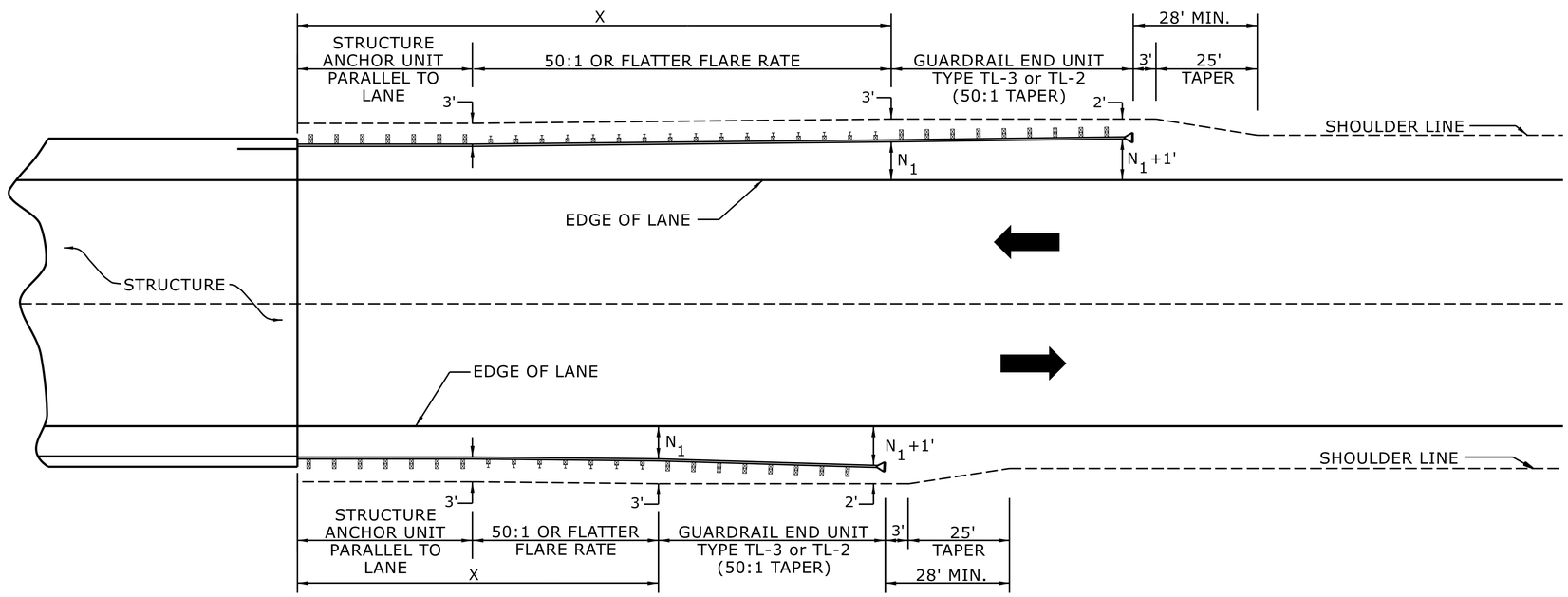
SEE PLATE FOR TITLE

ORIGINAL BY: E.E. Ward DATE: Apr. 2002
MODIFIED BY: J.S. Howerton DATE: October 2017
CHECKED BY: DATE:
FILE SPEC.: w:details\stand\modifiedflume.dgn

18-OCT-2017 14:17
S:\Contracts\Contracts\Special Details\ericward\usr\details\stand\modifiedflume.dgn
jhowerton AT CSD-212595

Docusign Envelope ID: 02271B85-114E-4ED2-B38B-24BC94989575

PROJECT REFERENCE NO.	SHEET NO.
BP2-R017	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 HACKLER
Signed by: Nicole Hackler 588432303434164CF...
4/28/2026

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

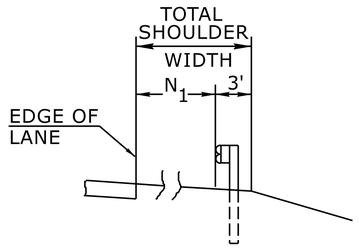
CONTRACTS STANDARDS
AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

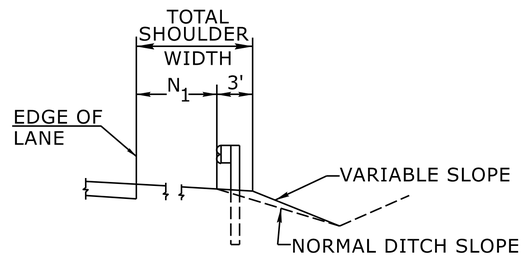
ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

Docusign Envelope ID: 02271B85-114E-4ED2-B38B-24BC94989575

PROJECT REFERENCE NO.	SHEET NO.
BP2-R017	2C-3

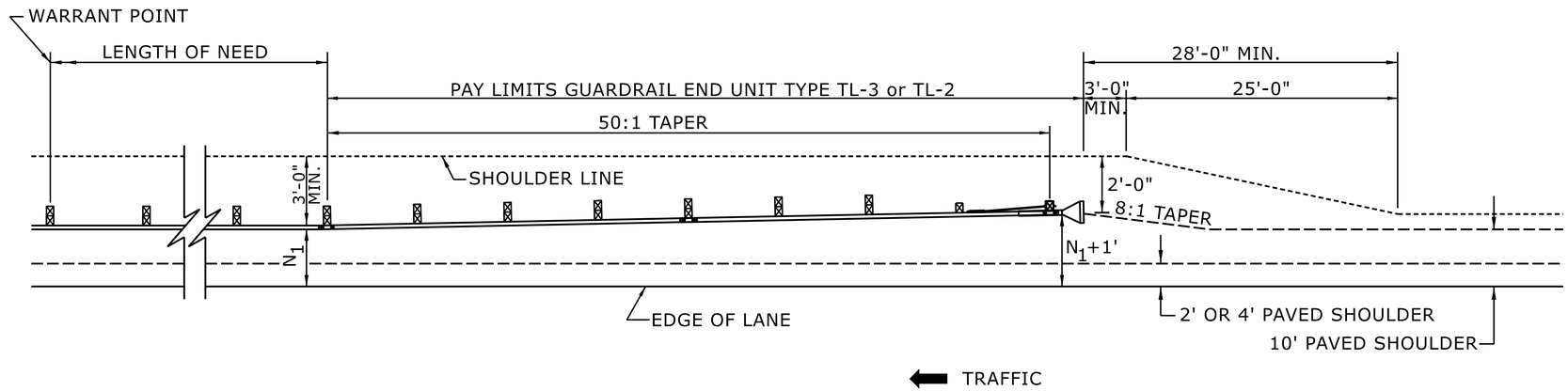


FILL SECTION



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

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKLER

Signature: Nicole M. Hackler
5884323D34164C5...

4/28/2026

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.:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK IN CUBIC YARDS

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
–L– STA 13+50.00	–L– STA 18+18.38 (BRIDGE)	14	601	587	
–L– STA 18+75.63 (BRIDGE)	–L– STA 23+00.00	144	548	404	
TOTALS:		158	1149	991	
PROJECT TOTALS:		158	1149	991	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				50	
GRAND TOTALS:		158	1149	1041	
SAY:		160		1050	

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
–L–	16+50.00	18+21.82	CL	410.85
–L–	18+73.73	22+00.00	CL	739.52
			TOTAL:	1150.37
			SAY:	1160

UNDERCUT EXCAVATION PER GEOTECH RECS (CONTINGENCY): 300 CY
SELECT GRANULAR MATERIAL PER GEOTECH RECS (CONTINGENCY): 300 CY
GEOTEXTILE FOR SOIL STABILIZATION PER GEOTECH RECS (CONTINGENCY): 300 SY

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."

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

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH (FT)
–L– (RT)	18+86.50	19+20.55	34.05′
		TOTAL:	34.05′
		SAY:	35′

ROW AREA DATA SUMMARY

PARCEL NO.	PROPERTY OWNERS NAMES	PROP. R/W	PERM. UTILITY EASE.	PERM. DRAIN. UTILITY EASE.	PERM. DRAIN. EASE.	CONST. EASE.
1	RUFUS H. KNOTT III		1813.67 SF	1599.57 SF	1077.35 SF	5015.27 SF
2	JACKIE P. JONES AND WIFE, SUZANNE P. JONES		4125.73 SF			2017.33 SF

"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 TL–3
NG = NON–GATING IMPACT ATTENUATOR TL–3

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS XI MOD	ANCHORS TYPE III	ANCHORS GREU TL–3	ANCHORS M–350	ANCHORS XIII	ANCHORS CAT–1	ANCHORS VI MOD	ANCHORS BIC	ANCHORS AT–1	IMPACT ATTENUATOR TYPE 350 EA	G	NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
–L–	17+26.95	18+18.38 (BRIDGE)	LT	93.75′				18+18.38 (BRIDGE)	7′	11.5′		50′		1.0′		1	1													WIDEN SHLDR 4.5′ IN ROCK PLATING SECTIONS
–L–	15+94.05	18+18.38 (BRIDGE)	RT	218.75′			18+18.38 (BRIDGE)		7′	10′	50′		1.0′			1	1													
–L–	18+75.63 (BRIDGE)	20+16.08	LT	143.75′			18+75.63 (BRIDGE)		7′	10′ – 11.5′	50′		1.0′			1	1													WIDEN SHLDR 4.5′ IN ROCK PLATING SECTIONS
–L–	18+75.63 (BRIDGE)	20+21.58	RT	143.75′				18+75.63 (BRIDGE)	7′	10′		50′		1.0′		1	1													
			SUBTOTAL:	600′												4	4													
			GREU TL–3: 4@50′	–200′																										
			TYPE III: 4@18.75′	–75′																										
			TOTAL:	325′												4	4													
			SAY:	350′												4	4													
			5 ADDITIONAL POST																											

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, OR PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE PVC	CAAP 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G			D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	GDI (N.S. FLAT) FRAME W/2 GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	TB D.I., STD. 840.35	M.H. FRAME AND COVER STD 840.54		MODIFIED CONCRETE FLUME (SEE SHEET 2C–1)		CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
–L– 19+28	RT	0401																																																										1						
TOTAL																																																												1						

ABBREVIATIONS

C.B. CATCH BASIN
N.D.I. NARROW DROP INLET
D.I. DROP INLET
G.D.I. GRATED DROP INLET
G.D.I. (N.S.) GRATED DROP INLET (NARROW SLOT)
J.B. JUNCTION BOX
M.H. MANHOLE
T.B.D.I. TRAFFIC BEARING DROP INLET
T.B.J.B. TRAFFIC BEARING JUNCTION BOX

12/06/07
22-MAR-2026 12:17
\Roadway\Proj\BP2R017_rdy_sum.dgn
HNTB

COMPUTED BY: Tyler C. Bottoms DATE: 8/16/2022
CHECKED BY: Thein Tun Zan DATE: 8/24/2022

(9-17-24)

PROJECT NO.	SHEET NO.
BP2-R017	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
-L-	16+50	18+20	RT	SD	170
-L-	18+75	23+00	RT	SD	425
CONTINGENCY				SD	200
				TOTAL LF:	795

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

SUMMARY OF BRIDGE WAITING PERIODS

Bridge Description	End Bent/ Bent No.	MONTHS
Bridge No. 115 on SR 1334 over Upper Goose Creek	1	1
Bridge No. 115 on SR 1334 over Upper Goose Creek	2	1

SUMMARY OF ROCK PLATING

LINE	Beginning Slope (H:V)	Approx. Station	Ending Slope (H:V)	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	Rock Plating SY
-L-	2.5:1	17+50 +/-	1.5:1	18+12 +/-	LT	1	*	50
-L-	2:1	18+82 +/-	2.5:1	18+90 +/-	LT	1	*	20
							TOTAL SY:	70

***Use Class 1, 2 or B riprap if riprap class is not shown for rock plating location.**

Docusign Envelope ID: 2CF0E562-A9FA-4805-B9A7-732EBA6E7DA1

HNTB
HNTB NORTH CAROLINA, P.C.
4000 CENTER AT NORTH HILLS ST, SUITE 500
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
BP2–R017	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL 043122 — 4/29/2026
HYDRAULICS ENGINEER — SEAL 040801 — 4/29/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

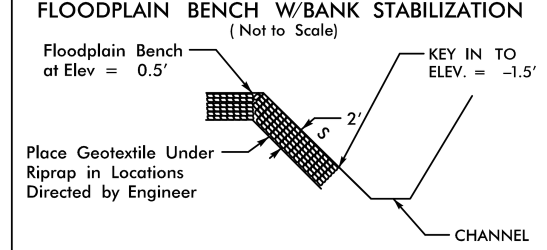
8/17/99

REVISIONS

–L–

PI Sta 12+39.47	PI Sta 15+68.67	PI Sta 17+37.16	PI Sta 20+21.43
△ = 8° 25′ 00.2″ (LT)	△ = 37° 51′ 54.0″ (RT)	△ = 8° 38′ 50.2″ (RT)	△ = 17° 44′ 58.5″ (RT)
D = 6° 52′ 58.1″	D = 15° 54′ 55.8″	D = 8° 00′ 48.2″	D = 7° 38′ 22.0″
L = 122.29′	L = 237.91′	L = 107.91′	L = 232.34′
T = 61.25′	T = 123.48′	T = 54.06′	T = 117.11′
R = 832.45′	R = 360.00′	R = 715.00′	R = 750.00′
SE = EXIST	SE = 04	SE = 04	SE = 04
RO = EXIST	RO = 88′	RO = 88′	RO = 88′
	V = 20 MPH	V = 25 MPH	V = 25 MPH

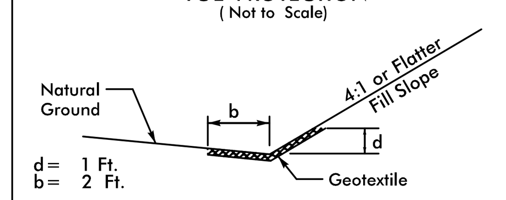
DETAIL B1
FLOODPLAIN BENCH W/BANK STABILIZATION
(Not to Scale)



S= 1.5:1 OR FLATTER
CL II Rip–Rap, Keyed–In 2′

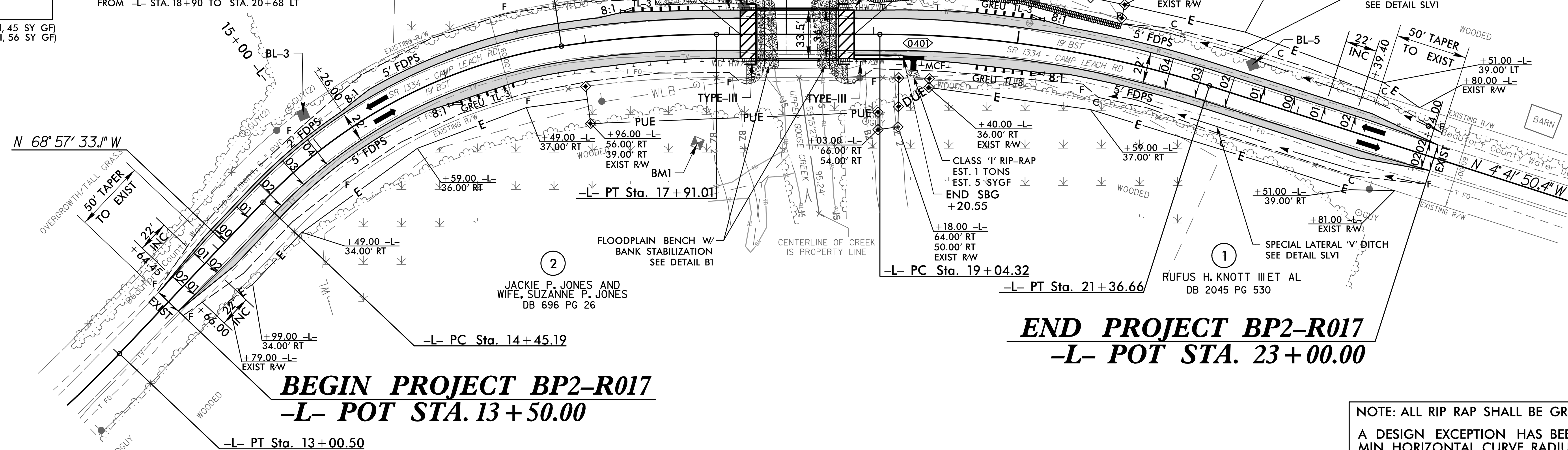
END BENT 1: –L– 18+24 (40 TONS CL II, 45 SY GF)
END BENT 2: –L– 18+70 (48 TONS CL II, 56 SY GF)

DETAIL TP1
TOE PROTECTION
(Not to Scale)



d= 1 Ft.
b= 2 Ft.
Type of Liner= Class 'B' Rip–Rap

FROM –L– STA. 18+90 TO STA. 20+68 LT



BEGIN PROJECT BP2–R017
–L– POT STA. 13+50.00

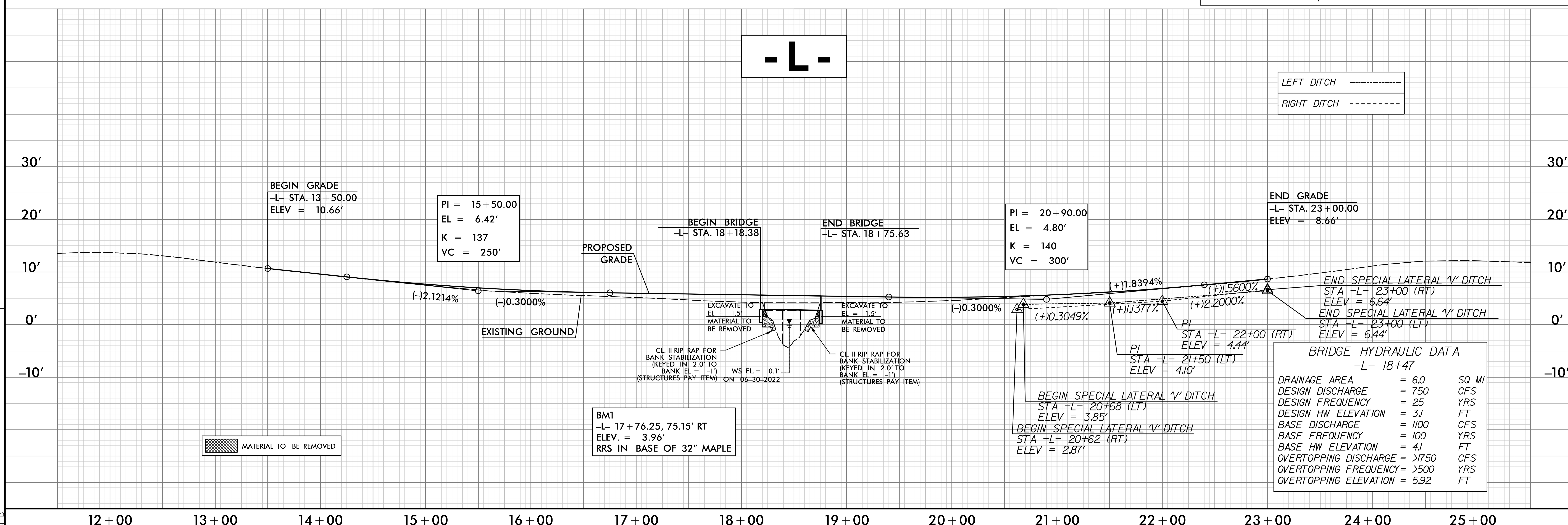
END PROJECT BP2–R017
–L– POT STA. 23+00.00

NOTE: ALL RIP RAP SHALL BE GRANITE RIP RAP

A DESIGN EXCEPTION HAS BEEN APPROVED FOR:
MIN. HORIZONTAL CURVE RADIUS, HORIZONTAL SSD, AND SUPERELEVATION

FOR STRUCTURE PLANS, SEE SHEETS S–1 THRU S–18

-L-



BM1
–L– 17+76.25, 75.15′ RT
ELEV. = 3.96′
RRS IN BASE OF 32″ MAPLE

BRIDGE HYDRAULIC DATA
–L– 18+47

DRAINAGE AREA	= 6.0	SQ MI
DESIGN DISCHARGE	= 750	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 3.1	FT
BASE DISCHARGE	= 1100	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 4.1	FT
OVERTOPPING DISCHARGE	= >1750	CFS
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING ELEVATION	= 5.92	FT

09/08/99

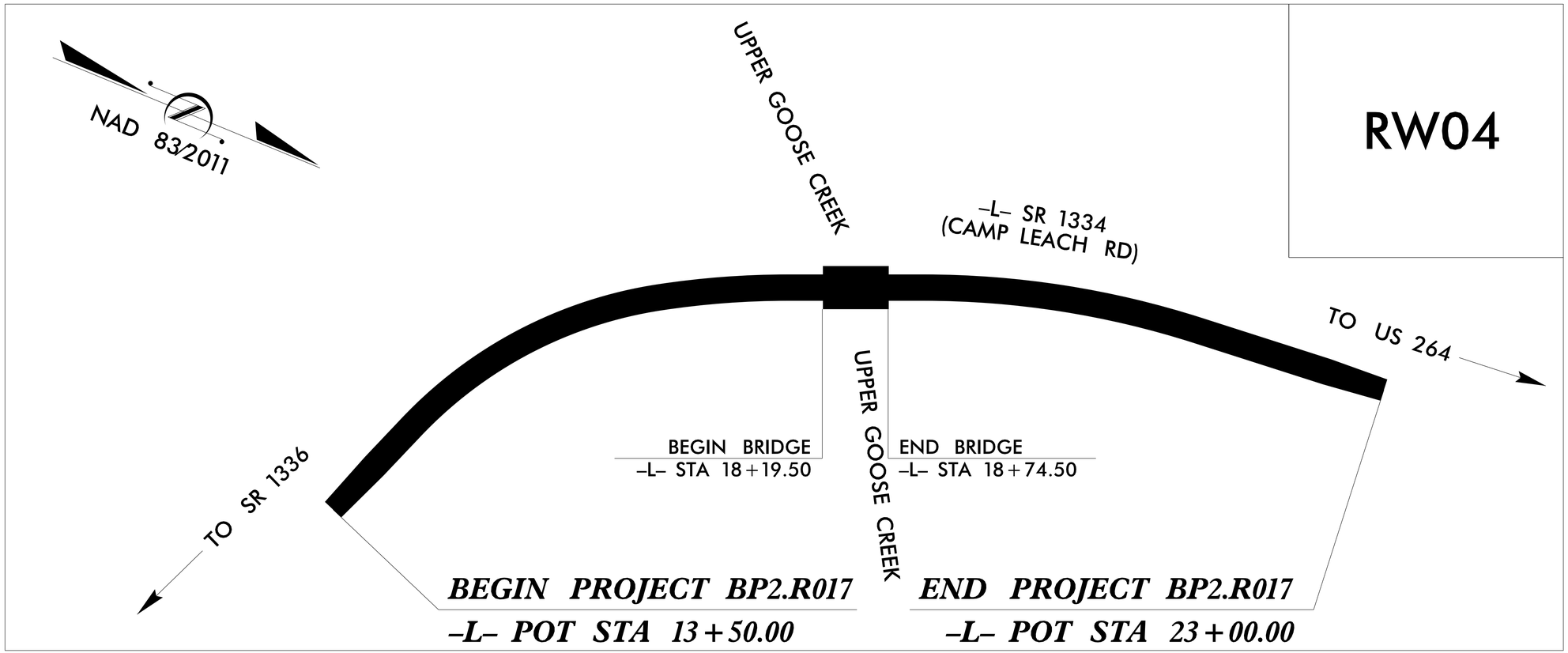
TIP PROJECT: BP2.R017

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP2.R017	RW01	6

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

BEAUFORT COUNTY



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
NCDOT FOR MONUMENT "BP2R017-2"
WITH NAD 83/NSRS 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 637,491.5971(ft) EASTING: 2,624,274.0338(ft)
ELEVATION: 13.54(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT
(GROUND TO GRID) IS: 0.999885987
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"BP2R017-2" TO -L- STATION 13+50 IS
N 70°36'43"W 173.74(ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:

LOCATION AND SURVEYS
DIVISION 2
NEW BERN NC

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:	*LETTING DATE:*
05/25/2023	*04/22/2026*

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-3726 LAND SURVEYOR MICHAEL W. STAHL

DocuSigned by: Michael Stahl 3ABCF22A5F72430...

11/25/2025

SIGNATURE: *Date:*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

18-NOV-2025 09:25
N:\BRIDGE-JOBS\BP2.R017.1\RW STAKING II-2025\rw-sheets\BP2R017_ls_rw01.dgn
mwstahl AT LS-328780L

6/2/99

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
BP2.R017.1	RW02C-1

Location and Surveys

WITHERSRAVENEL

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-5146 LAND SURVEYOR RUDOLF A. VANDERVELDE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, RUDOLF A. VANDERVELDE JR., PLS, certify certify that the Baseline Control (BL3 - BL6) for this project 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 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed from 11/12/2021 to 11/22/2021 , and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 1ST day of DECEMBER, 2021.

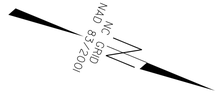
DocuSigned by:
Rudolf A. VanderVelde Jr. 12/1/2021
2C303795E8FD436...

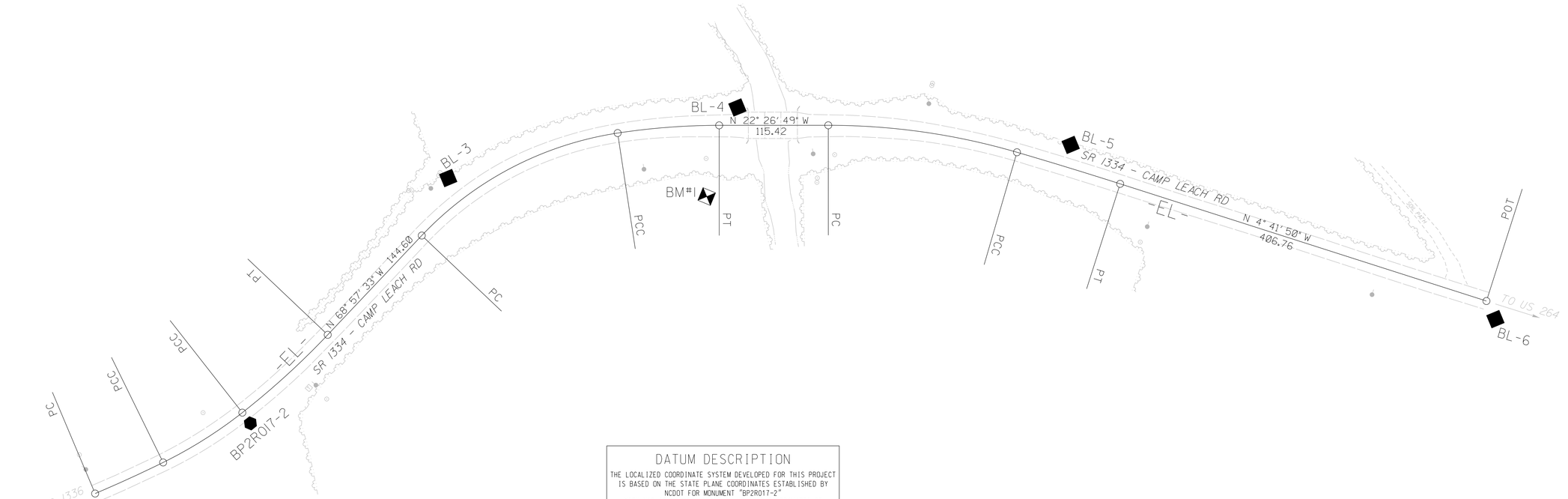
Professional Land Surveyor L-5146

GPS POINTS PROVIDED BY NCDOT

BP2R017-1
BP2R017-2

SEE DATUM DESCRIPTION





DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BP2R017-2"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 637491.5971(ft) EASTING: 2624274.0338(ft)
ELEVATION: 13.541(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99985987
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"BP2R017-2" TO -L- STATION IS

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

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.

01-DEC-2021 13:15
K:\20_20-0620_200626.18-BP2-R017 Bridge Survey Conventional\Geomatics\NCDOT\Submittal\bp2-r017.ls-rw02c-1.dgn
rvandervelde AT WRI701

6/2/99

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
BP2.R017.1	RW02C-2

Location and Surveys

WITHERSRAVENEL

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-5146 LAND SURVEYOR RUDOLF A. VANDERVELDE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, RUDOLF A. VANDERVELDE JR., PLS, certify certify that the Baseline Control (BL3 - BL6) for this project 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 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed from 11/12/2021 to 11/22/2021 , and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 1ST day of DECEMBER, 2021.

DocuSigned by:
Rudolf A. VanderVelde Jr. 12/1/2021
2A2017B5B1D49E...
Professional Land Surveyor L-5146

GPS POINTS PROVIDED BY NCDOT

BP2R017-1
BP2R017-2

SEE DATUM DESCRIPTION

BL

POINT	DESC.	NORTH	EAST	ELEVATION
1	BP2R017-1	637059.2874	2624733.1717	9.68
2	BP2R017-2	637491.5971	2624274.0338	13.54
3	BL-3	637586.0470	2623954.5170	6.25
4	BL-4	637840.3920	2623768.8350	3.61
5	BL-5	638181.3330	2623670.9600	5.18
6	BL-6	638666.8700	2623669.7880	11.36

BM1 ELEVATION = 3.96
N 637846 E 2623868
BL STATION 17+25.00 84 RIGHT
RRS IN BASE OF 32" MAPLE

EL

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
PC	637368.075	2624405.288							
CURVE			N 46°57'59.4" W	79.09	03°18'24.5"(LT)	04°10'50.3"	79.10	39.56	1370.50
PCC	637422.046	2624347.479							
CURVE			N 54°34'52.3" W	98.94	11°55'21.3"(LT)	12°01'44.1"	99.12	49.74	476.32
PCC	637479.385	2624266.851							
CURVE			N 64°45'03.0" W	122.18	08°25'00.2"(LT)	06°52'58.1"	122.29	61.25	832.45
PT	637531.500	2624156.348							
LINE			N 68°57'33.1" W	144.60					
PC	637583.416	2624021.389							
CURVE			N 50°01'28.8" W	233.79	37°52'08.7"(RT)	15°54'17.6"	238.10	123.58	360.24
PCC	637733.614	2623842.233							
CURVE			N 26°46'06.7" W	107.70	08°38'35.5"(RT)	08°01'02.2"	107.81	54.01	714.65
PT	637829.777	2623793.725							
LINE			N 22°26'49.0" W	115.42					
PC	637936.456	2623749.652							
CURVE			N 14°17'47.4" W	201.58	16°18'03.1"(RT)	08°03'33.7"	202.26	101.82	710.92
PCC	638131.792	2623699.874							
CURVE			N 05°25'18.2" W	114.16	01°26'55.5"(RT)	01°16'08.5"	114.16	57.08	4514.95
PT	638245.440	2623689.088							
LINE			N 04°41'50.4" W	406.76					
POT	638650.837	2623655.777							

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.

01-DEC-2021 13:5
K:\20_20-0620_200626_18-BP2-R017 Bridge Survey Conventional\Geomatics\NCDOT\Submittal\bp2-r017_ls_rw02c-2.dgn
rvandervelde AT WRI701

6/2/99

REVISIONS

PROPOSED ALIGNMENT CONTROL SHEET

L

TYPE	STATION	NORTH	EAST
PC	10+00.00	637368.0750	2624405.2883
PCC	10+79.10	637422.0461	2624347.4792
PCC	11+78.21	637479.3851	2624266.8515
PT	13+00.50	637531.5000	2624156.3479
PC	14+45.19	637583.4479	2624021.3064
PCC	16+83.10	637733.5241	2623842.2832
PT	17+91.01	637829.7768	2623793.7245
PC	19+04.32	637934.5030	2623750.4591
PT	21+36.66	638159.4545	2623696.1534
POT	26+29.70	638650.8373	2623655.7773

PROJECT REFERENCE NO.	SHEET NO.
BP2.R017	RW02D-1

Location and Surveys

LOCATION AND SURVEYS
DIVISION 2
NEW BERN, NC

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-3726 LAND SURVEYOR MICHAEL W. STAHL

11/25/2025

DocuSigned by:
Michael Stahl
3A8CF22A5F72430...

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

I, Michael W. Stahl, 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 25th day of November, 2025.

DocuSigned by:
Michael Stahl
3A8CF22A5F72430...

Professional Land Surveyor L-3726

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.

25-NOV-2025 08:01
C:\Projects\BP2.R017.1\RW STAKING 11-2025\rw-sheets\BP2-R017_LS_rw02d-1.dgn
mwstahl
AT LS-328780

6/2/99

REVISIONS

RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
BP2.R017	RW03E-1

Location and Surveys

LOCATION AND SURVEYS
DIVISION 2
NEW BERN, NC

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-3726 LAND SURVEYOR MICHAEL W. STAHL

11/25/2025

DocuSigned by:
Michael Stahl
3A8CF22A5F72430...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I , Michael W. Stahl , certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from Nov. 5 2025 to Nov. 11 2025, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 25th day of November, 2025.

DocuSigned by:
Michael Stahl
Professional Land Surveyor L-3726

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	16+96.00	30.00	637759.6578	2623861.6894
L	16+96.00	56.00	637772.6801	2623884.1896
L	18+79.00	-37.00	637896.9709	2623725.9315
L	18+79.00	-30.00	637899.6436	2623732.4012
L	19+03.00	54.00	637953.8988	2623800.8729
L	19+03.00	66.00	637958.4807	2623811.9637
L	19+18.00	64.00	637970.5448	2623804.9392
L	19+18.00	29.97	637958.1267	2623773.2552
L	19+18.00	50.00	637965.4360	2623791.9046
L	19+40.00	29.94	637977.8927	2623765.8133
L	19+40.00	36.00	637979.9363	2623771.5143
L	19+50.00	-41.00	637963.9044	2623695.5382
L	19+90.00	-41.00	638004.1493	2623682.9033
L	19+90.00	-29.98	638007.1680	2623693.4993
L	20+05.00	-53.00	638016.3498	2623667.1170
L	20+05.00	-65.00	638013.2934	2623655.5128
L	20+15.00	-65.00	638023.8199	2623652.8152
L	20+15.00	-51.00	638027.2048	2623666.3998
L	20+44.00	-39.00	638059.8443	2623671.2415
L	20+67.00	-39.00	638083.6030	2623666.6672
L	20+67.00	-29.51	638085.2537	2623676.0106

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 NOV. 5 2025 TO NOV. 11 2025 .

25-NOV-2025 08:07
C:\MicroStation\BP2.R017.1\RW STAKING 11-2025\rw-sheets\BP2-R017_LS_rw03e-1.dgn
mwstahl AT LS_328780

6/2/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
BP2.R017	RW04

Location and Surveys

LOCATION AND SURVEYS
DIVISION 2
NEW BERN, NC

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-3726 LAND SURVEYOR

11/25/2025

DocuSigned by: Michael Stahl 3A8CF22A5F72430...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I , Michael W. Stahl , certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from Nov. 5, 2025 to Nov. 11, 2025, and all coordinates are based on NAD83/2011. That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 25th day of November, 2025.

DocuSigned by: Michael Stahl

Professional Land Surveyor L-3726

NAD 83/NA 2011

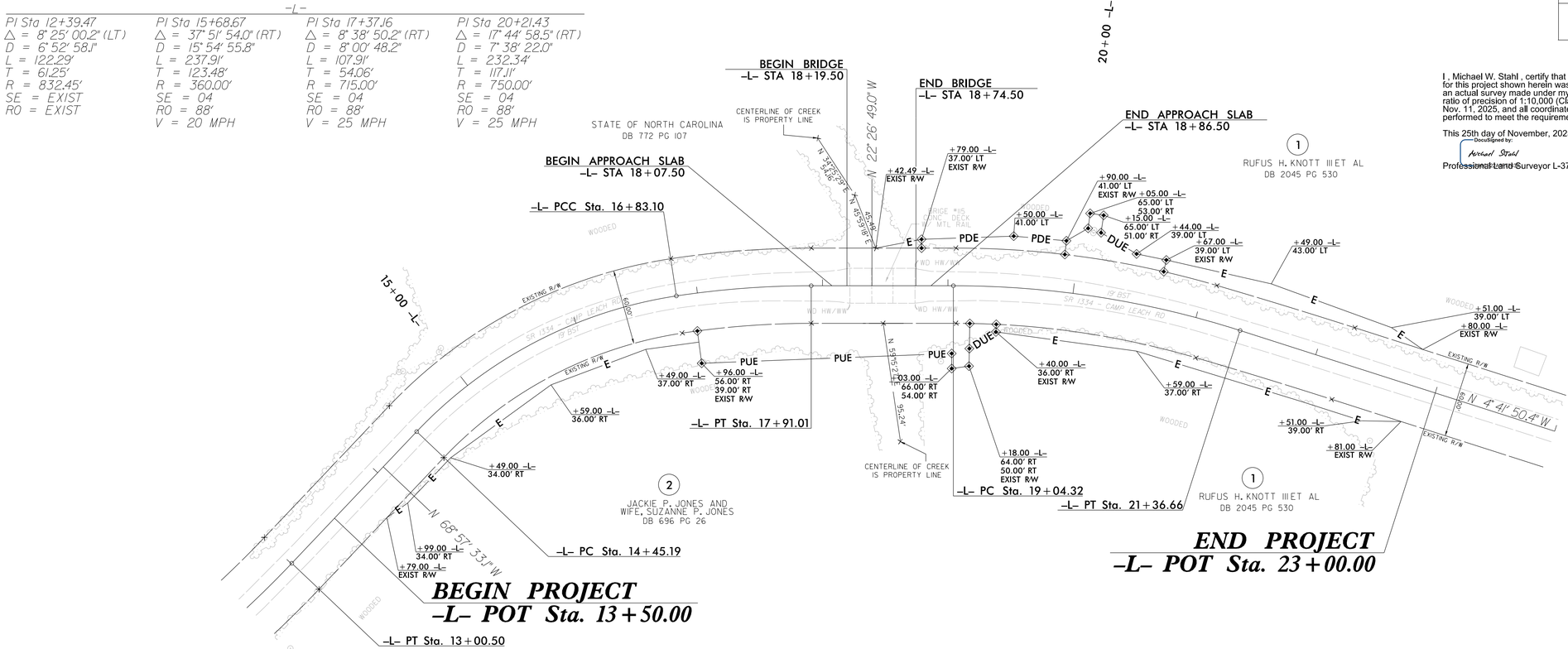
–L–

PI Sta 12+39.47
△ = 8° 25' 00.2" (LT)
D = 6° 52' 58.1"
L = 122.29'
T = 61.25'
R = 832.45'
SE = EXIST
RO = EXIST

PI Sta 15+68.67
△ = 37° 51' 54.0" (RT)
D = 15° 54' 55.8"
L = 237.91'
T = 123.48'
R = 360.00'
SE = 04
RO = 88'
V = 20 MPH

PI Sta 17+37.16
△ = 8° 38' 50.2" (RT)
D = 8° 00' 48.2"
L = 107.91'
T = 54.06'
R = 715.00'
SE = 04
RO = 88'
V = 25 MPH

PI Sta 20+21.43
△ = 17° 44' 58.5" (RT)
D = 7° 38' 22.0"
L = 232.34'
T = 117.11'
R = 750.00'
SE = 04
RO = 88'
V = 25 MPH



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 Nov. 5, 2025 TO Nov. 11, 2025 .

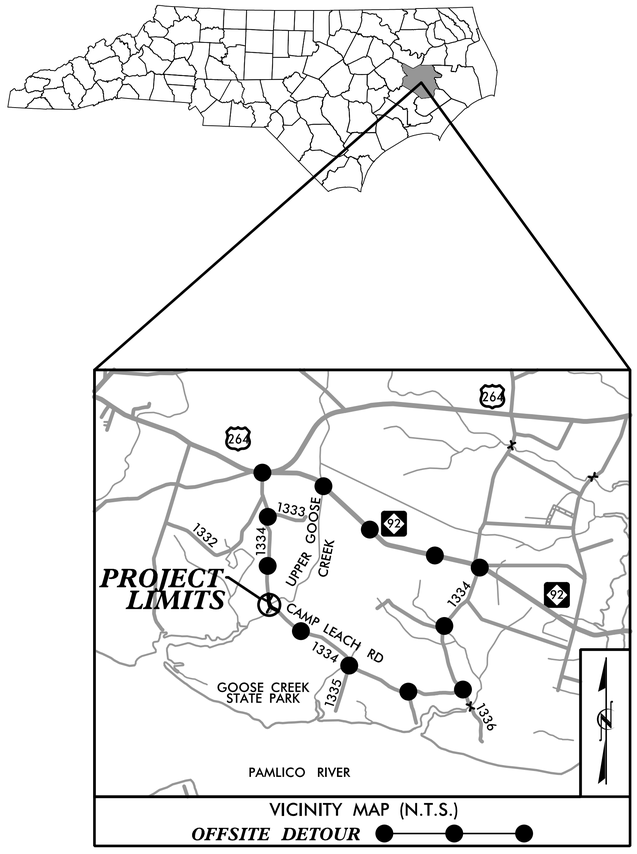
25-NOV-2025 08:41
K:\DOT\LOCATION\BP2.R017.1\RW STAKING 11-2025\rw-sheets\BP2R017_1s_rw04.dgn
mwstahl AT LS-328780

Docusign Envelope ID: F7D23235-55F4-4C02-B0C4-0235BCC37432

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

BEAUFORT COUNTY



LOCATION: REPLACE BRIDGE NO. 115 OVER UPPER GOOSE CREEK ON SR 1334 (CAMP LEACH RD)

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

PLANS PREPARED BY: HNTB	*NCDOT CONTACTS:*	
H. SHYU, P.E. *PROJECT ENGINEER*	C. A. HOSSACK, P.E. *DIVISION TRAFFIC ENGINEER*	
G. RODRIGUEZ, E.I. *PROJECT DESIGN ENGINEER*		

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY, INDEX OF SHEETS, LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND
TMP-2	GENERAL NOTES, PHASING, AND DETOUR
TMP-2A	TEMPORARY SIGN DESIGN

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" CONTRACT STANDARDS AND DEVELOPMENT UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C. DATED JAN 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
1205.01	PAVEMENT MARKINGS - LINE TYPES & OFFSETS
1205.02	PAVEMENT MARKINGS - 2 LANE & MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY

LEGEND

GENERAL

NORTH ARROW

TRAFFIC CONTROL DEVICES

BARRICADE (TYPE III)

TEMPORARY SIGNING

STATIONARY SIGN

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB NORTH CAROLINA, P.C.
4000 Center at North Hills St.
Suite 500
Raleigh, North Carolina 27609
NC License No: C-1554

APPROVED: DocuSigned by: Helen Shyu 0F1507SA9DE44EF

DATE: 4/29/2026

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 042517 ENGINEER HELEN SHYU

SHEET NO. TMP-1

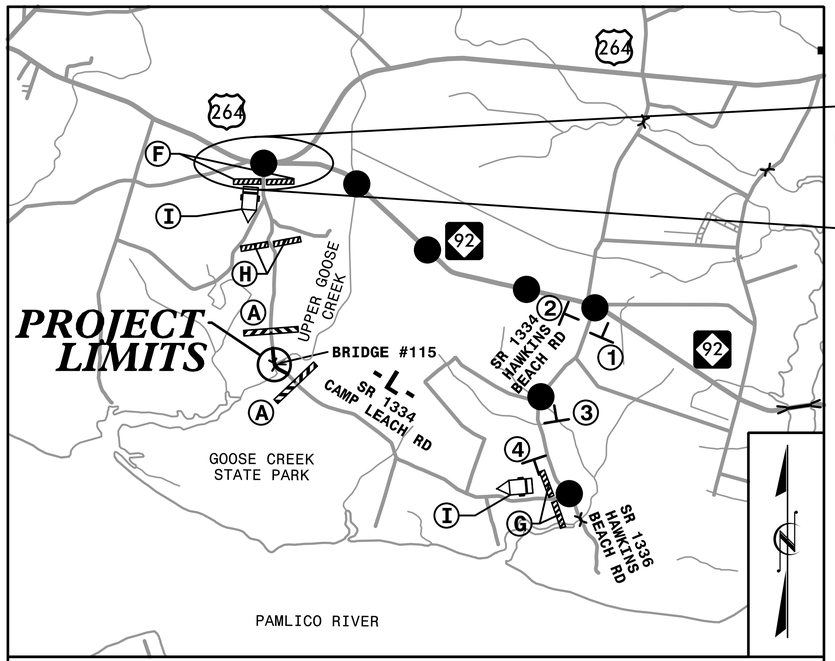
BP2-R017

TIP PROJECT:

1:29:54 PM
\BP2_R017_tc_TCP_01_title.dgn
4/8/2026

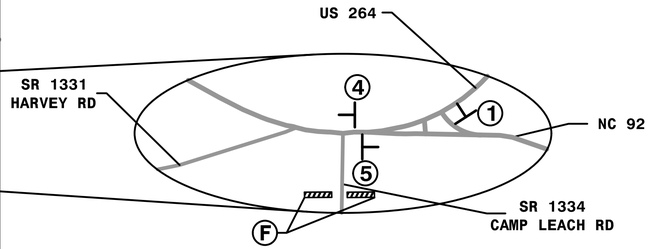
Docusign Envelope ID: F7D23235-55F4-4C02-B0C4-0235BCC37432

PROJ. REFERENCE NO.	SHEET NO.
BP2-R017	TMP-2



VICINITY MAP (N.T.S.)

OFFSITE DETOUR



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 THE DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATIONS MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

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

LANE AND SHOULDER CLOSURE REQUIREMENTS

A) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.

TRAFFIC PATTERN ALTERATIONS

B) NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

C) 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 ON THIS SHEET.

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

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

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

SEE RSD 1101.03 (SHEET 1 OF 9) FOR ADDITIONAL TRAFFIC CONTROL DEVICES

GENERAL NOTES (CONT.)

TRAFFIC CONTROL DEVICES

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

G) STATE FORCES WILL INSTALL MARKINGS AND MARKERS ON THE FINISHED PROJECT

MISCELLANEOUS

H) COORDINATE WITH GOOSE CREEK STATE PARK TO NOTIFY GOOSE CREEK STATE PARK VISITORS OF THE ROAD CLOSURE AND SIGNED OFFSITE DETOUR.

I) COORDINATE WITH BEAUFORT COUNTY EMERGENCY SERVICES AND BEAUFORT COUNTY SCHOOLS TRANSPORTATION BEFORE CONSTRUCTION BEGINS.

PHASING

PHASE I

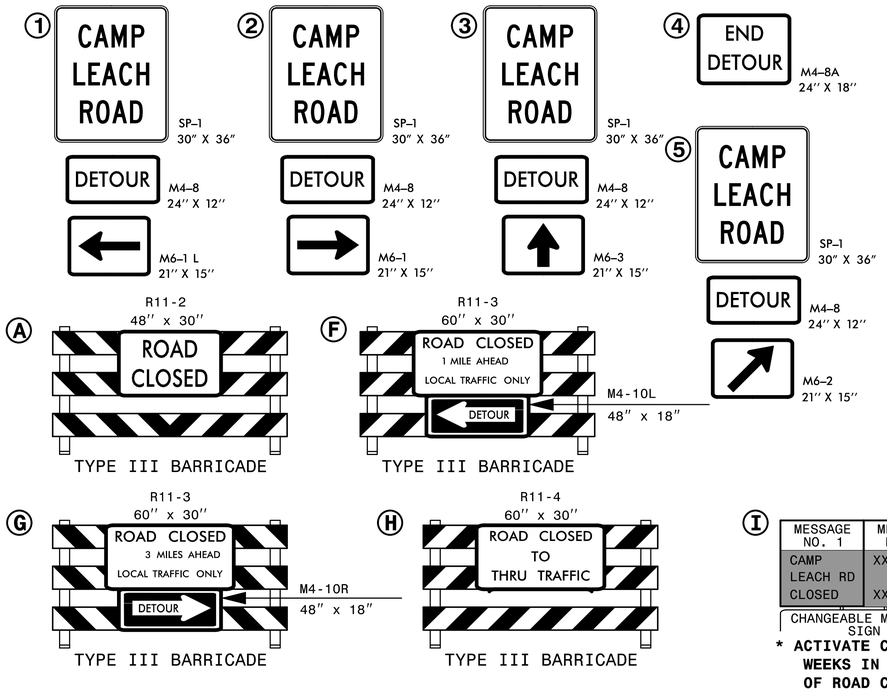
PRIOR TO ANY CONSTRUCTION OPERATIONS, PLACE AND COVER OFF-SITE DETOUR SIGNS AS SHOWN ON TMP-2 AND IN ACCORDANCE WITH RSD 1101.03 (SHEET 1 OF 9).

PHASE II

UNCOVER DETOUR SIGNS, CLOSE -L- (SR 1334 / CAMP LEACH RD) TO TRAFFIC AND CONSTRUCT PROPOSED BRIDGE AND ROADWAY UP TO AND INCLUDING THE FINAL LAYER OF SURFACE COURSE.

PHASE III

UPON COMPLETION OF BRIDGE AND ROADWAY, PLACE FINAL PAVEMENT MARKINGS AND MARKERS IN ACCORDANCE WITH RSD 1205.01, 1205.02, 1205.12, 1250.01 AND 1251.01. REMOVE BARRICADES AND DETOUR SIGNS AND OPEN -L- (SR 1334 / CAMP LEACH RD) TO TRAFFIC.



I

MESSAGE NO. 1	MESSAGE NO. 2
CAMP	XX-XX-XX
LEACH RD	TO
CLOSED	XX-XX-XX

CHANGEABLE MESSAGE SIGN

*** ACTIVATE CMS TWO WEEKS IN ADVANCE OF ROAD CLOSURE.**

DURING CLOSURE, USE FOR GOOSE CREEK STATE PARK NOTICES PER DIRECTION OF THE ENGINEER.

HNTB NORTH CAROLINA, P.C.
4000 Center at North Hills St.
Suite 500
Raleigh, North Carolina 27609
NC License No: C-1554

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

APPROVED DocuSigned by: Helen Shyu DF1597C5A35E4EF...

DATE: 4/29/2026

NORTH CAROLINA PROFESSIONAL SEAL 042517 ENGINEER HELEN SHYU

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

TRANSPORTATION MANAGEMENT PLAN

GENERAL NOTES, PHASING, AND DETOUR

11:59:49 PM
BP2_R017_tc_TCP_02_detour.dgn
4/1/2026

Docusign Envelope ID: F7D23235-55F4-4C02-B0C4-0235BCC37432

PROJ. REFERENCE NO.	SHEET NO.
BP2-R017	TMP-2A

SIGN NUMBER: SP-1
TYPE: D
QUANTITY: 5

SIGN WIDTH: 2'-6"
HEIGHT: 3'-0"
TOTAL AREA: 7.5 Sq.Ft.

BORDER TYPE: RECESSED
RECESS: 0.38"
WIDTH: 0.38"
RADII: 1.5"

NO. Z BARS: N/A
LENGTH: N/A

BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

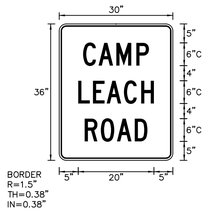
SYMBOL	X	Y	WID	HT

MAT'L: 0.080" ALUMINUM

NOTES:

1. Legend and border shall be direct applied non-reflective sheeting.
2. Background shall be Grade B, fluorescent orange, reflective sheeting.
3. To be mounted with Detour signing.

DESIGN BY: TRT
PROJECT ID: BP2-R017
CHECKED BY: ADK
DIV: 02
DATE: September 2022



Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

																													Series/Size Text Length
		C	A	M	P																								C 2000
	6.3	4.1	4.7	5.3	3.4	6.3																							17.4
		L	E	A	C	H																							C 2000
	5	3.9	3.6	4.6	4.6	3.4	5																						20
		R	O	A	D																								C 2000
	6.7	4.3	4.3	4.7	3.4	6.7																							16.6

HNTB
HNTB NORTH CAROLINA, P.C.
4000 Center at North Hills St.
Suite 500
Raleigh, North Carolina 27609
NC License No: C-1554

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

APPROVED: Docusigned by: Helen Shyu DF15975A95E44EF...
DATE: 4/29/2026

NORTH CAROLINA PROFESSIONAL SEAL 042517 ENGINEER HELEN SHYU

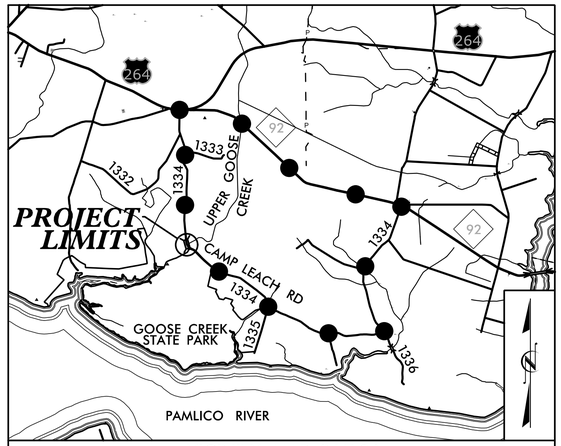
DIVISION OF HIGHWAYS * STATE OF NORTH CAROLINA * DEPARTMENT OF TRANSPORTATION * WORK ZONE TRAFFIC CONTROL

TRANSPORTATION MANAGEMENT PLAN

TEMPORARY SIGN DESIGN

11:59:51 PM
...\BP2_R017_tc_TCP_02A_spcl-signs.dgn
4/7/2026

TIP PROJECT: BP2.R017



VICINITY MAP (N.T.S.)

OFFSITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

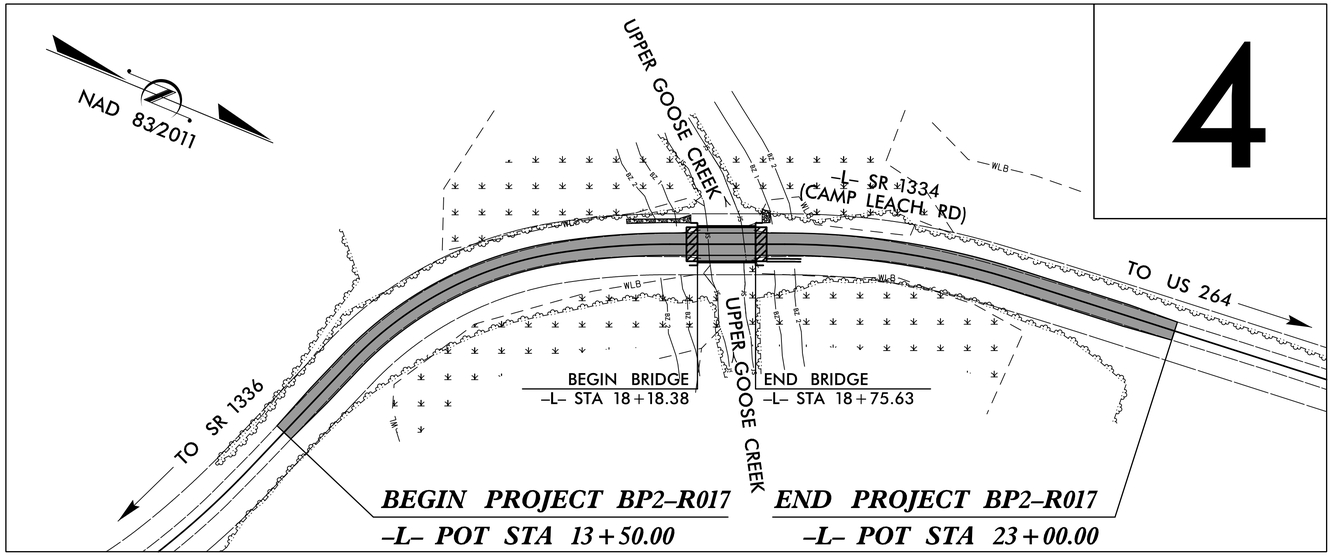
BEAUFORT COUNTY

LOCATION: REPLACE BRIDGE NO. 115 OVER UPPER GOOSE CREE ON SR 1334 (CAMP LEACH RD)

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP2-R017	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION



4

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.

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

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 STORMWATER CONSTRUCTION PERMIT ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF ENERGY, MINERAL, AND LAND RESOURCES.

HNTB

Prepared In the Office of:

HNTB HNTB NORTH CAROLINA, P.C.
4000 Center at North Hills St.
Suite 500
Raleigh, North Carolina 27609
NC License No: C-1554

Designed by:

NATALIE CHAN, P.E. — *NAME*

3444 — *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.

USER NAME = CHAN
DESIGN = EXISTING
DATE = 8/8/2024
TIME = 8:08:08 AM

PROJECT REFERENCE NO.	SHEET NO.
BP2-R017	EC-2
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

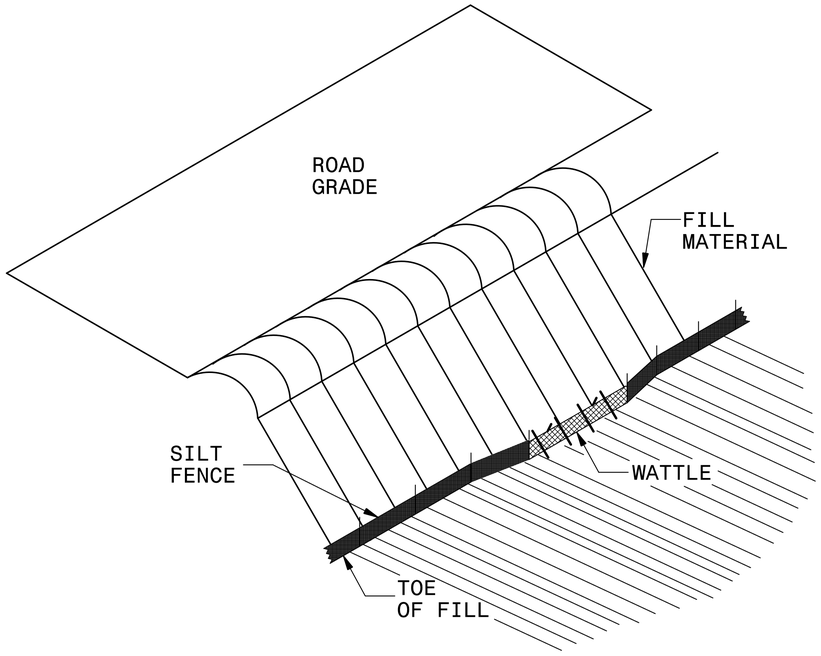
EROSION & SEDIMENT CONTROL LEGEND

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

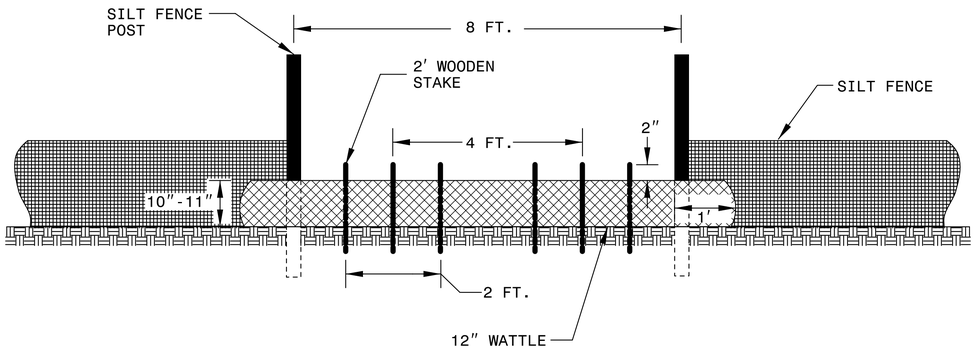
Std. #	Description	Symbol
1633.01	Temporary Rock Silt Check Type A	
1633.02	Temporary Rock Silt Check Type B	
1633.03	Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant	
1634.01	Temporary Rock Sediment Dam Type A	
1634.02	Temporary Rock Sediment Dam Type B	
1635.01	Rock Pipe Inlet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

PROJECT REFERENCE NO.	SHEET NO.
BP2-R017	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SILT FENCE COIR FIBER WATTLE BREAK DETAIL



ISOMETRIC VIEW



VIEW FROM SLOPE

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 1 TO 2 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLE ON TOE OF SLOPE.

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

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

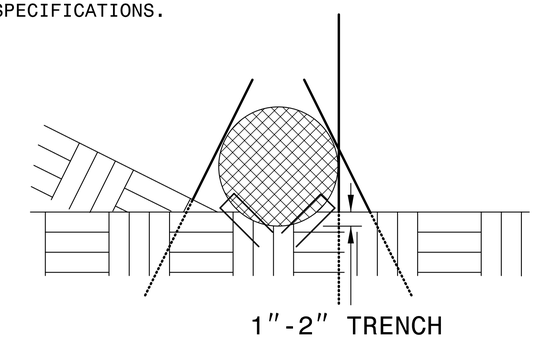
PROVIDE STAPLES MADE OF 11 GUAGE STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 6" IN LENGTH.

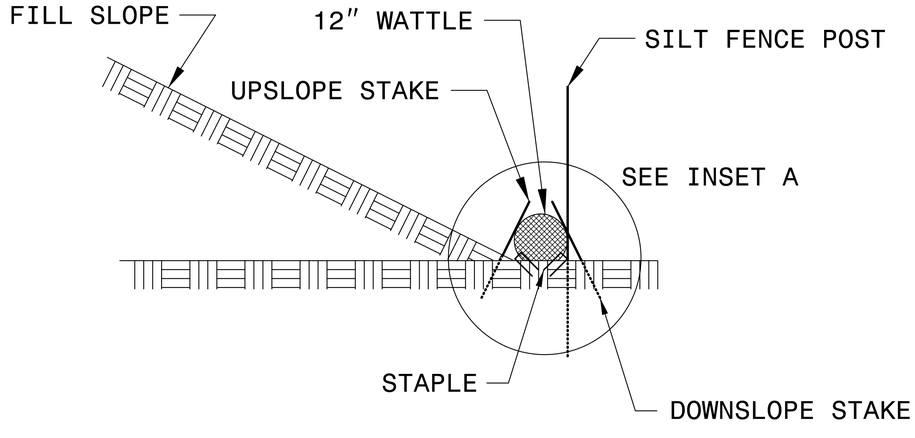
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

WATTLE INSTALLATION CAN BE ON OUTSIDE OF THE SILT FENCE AS DIRECTED.

INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A

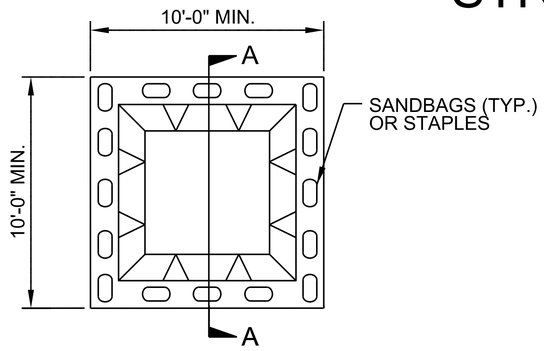




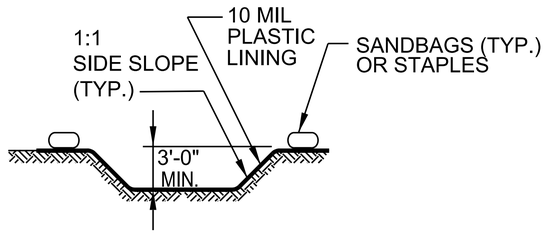
SIDE VIEW

PROJECT REFERENCE NO.	SHEET NO.
BP2-R017	EC-28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

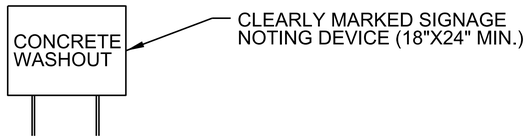
ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



PLAN



SECTION A-A



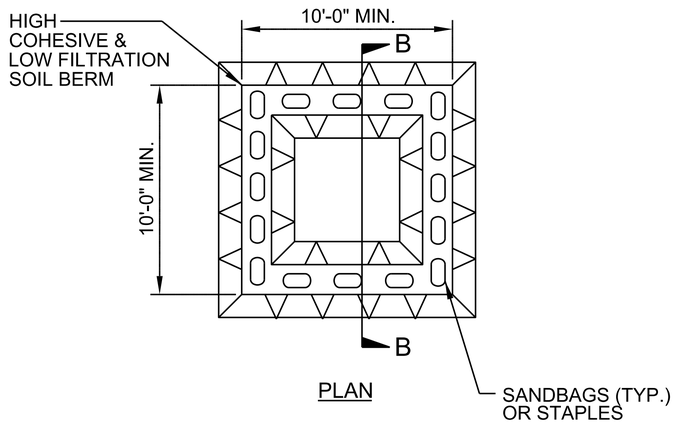
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

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.

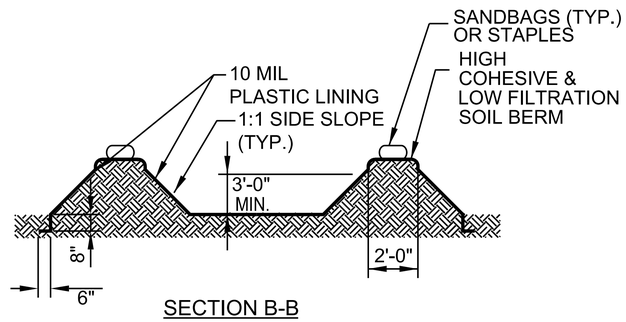
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

BELOW GRADE WASHOUT STRUCTURE

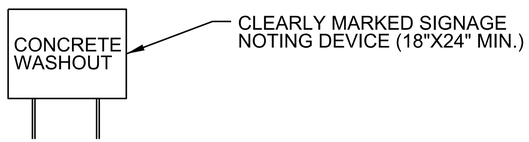
NOT TO SCALE



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 CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

ABOVE GRADE WASHOUT STRUCTURE

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
BP2-R017	EC-3
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	L	13+50	15+50	LT	180
4	L	21+50	23+00	LT	135
4	L	20+62	23+00	RT	215
				SUBTOTAL	530
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					1545
				TOTAL	2075
				SAY	2200

MATTING FOR EROSION CONTROL

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

PROJECT REFERENCE NO.	SHEET NO.
BP2-R017	EC-3A
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 TO 4:1	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH WITH SLOPES STEEPER THAN 4:1. 7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES

8/17/99

HNTB	HNTB NORTH CAROLINA, P.C. 4000 CENTER AT NORTH HILLS ST, SUITE 500 Raleigh, North Carolina 27609 NC License No: C-1554	PROJECT REFERENCE NO.	SHEET NO.
		BBP2–R017	EC–4/CONST.4
		R/W SHEET NO.	

NATALIE CHAN P.E.
EROSION CONTROL
LEVEL III
CERTIFICATION #3444

–L–

PI Sta 12+39.47
Δ = 8° 25′ 00.2″ (LT)
D = 6° 52′ 58.1″
L = 122.29′
T = 61.25′
R = 832.45′
SE = EXIST
R0 = EXIST

PI Sta 15+68.67
Δ = 37° 51′ 54.0″ (RT)
D = 15° 54′ 55.8″
L = 237.91′
T = 123.48′
R = 360.00′
SE = 04
R0 = 88′
V = 20 MPH

PI Sta 17+37.16
Δ = 8° 38′ 50.2″ (RT)
D = 8° 00′ 48.2″
L = 107.91′
T = 54.06′
R = 715.00′
SE = 04
R0 = 88′
V = 25 MPH

PI Sta 20+21.43
Δ = 17° 44′ 58.5″ (RT)
D = 7° 38′ 22.0″
L = 232.34′
T = 117.11′
R = 750.00′
SE = 04
R0 = 88′
V = 25 MPH

DETAIL B1
FLOODPLAIN BENCH W/BANK STABILIZATION
(Not to Scale)

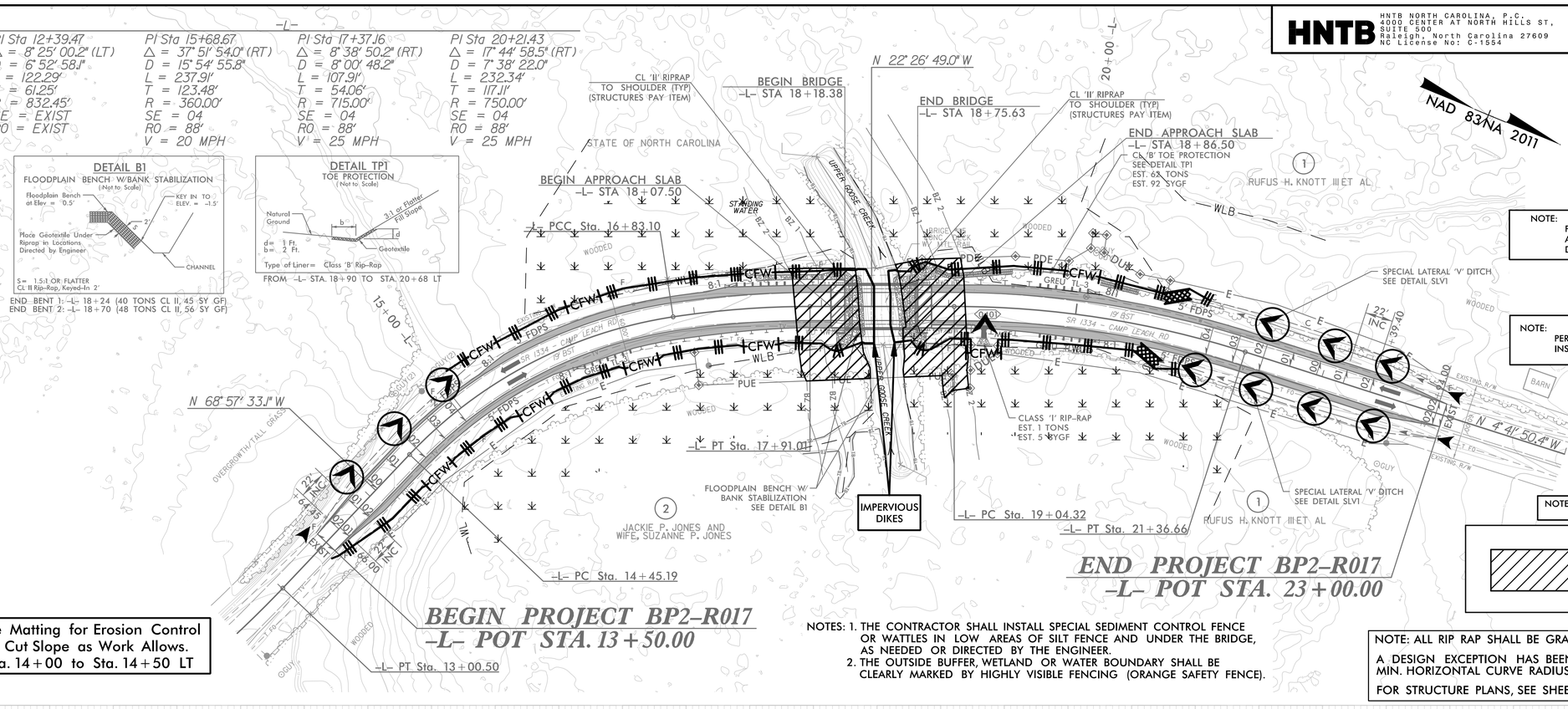
S = 1.5:1 OR FLATTER
CL II Rip–Rap, Keyed–In 2'

END BENT 1: –L– 18+24 (40 TONS CL II, 45 SY GF)
END BENT 2: –L– 18+70 (48 TONS CL II, 56 SY GF)

DETAIL TP1
TOE PROTECTION
(Not to Scale)

d = 1 Ft.
b = 2 Ft.
Type of Liner = Class 'B' Rip–Rap

FROM –L– STA. 18+90 TO STA. 20+68 LT



Place Matting for Erosion Control on Cut Slope as Work Allows.
Sta. 14+00 to Sta. 14+50 LT

NOTES: 1. THE CONTRACTOR SHALL INSTALL SPECIAL SEDIMENT CONTROL FENCE OR WATTLES IN LOW AREAS OF SILT FENCE AND UNDER THE BRIDGE, AS NEEDED OR DIRECTED BY THE ENGINEER.
2. THE OUTSIDE BUFFER, WETLAND OR WATER BOUNDARY SHALL BE CLEARLY MARKED BY HIGHLY VISIBLE FENCING (ORANGE SAFETY FENCE).

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

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4

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

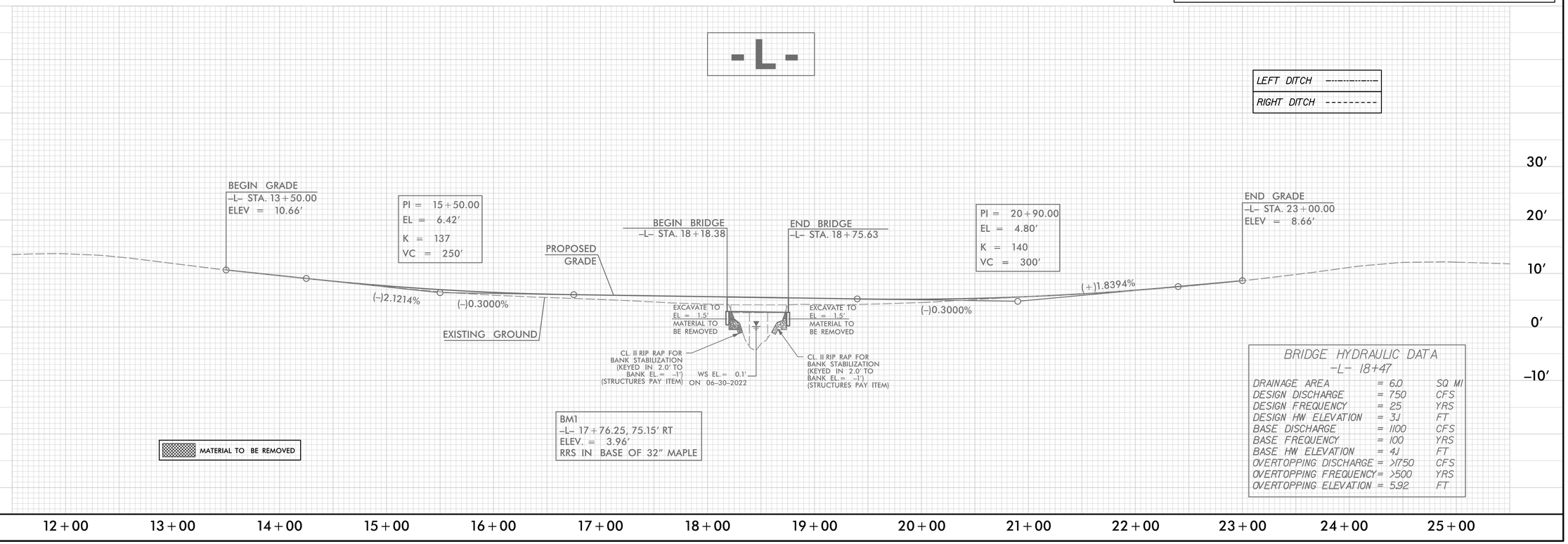
NOTE: NYLON MESH MATTING SHOULD NOT BE USED WITHIN 25 FT OF TOP OF STREAM BANK.

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

NOTE: ALL RIP RAP SHALL BE GRANITE RIP RAP

A DESIGN EXCEPTION HAS BEEN APPROVED FOR:
MIN. HORIZONTAL CURVE RADIUS, HORIZONTAL SSD, AND SUPERELEVATION

FOR STRUCTURE PLANS, SEE SHEETS S–1 THRU S–18



BRIDGE HYDRAULIC DATA
–L– 18+47

DRAINAGE AREA	= 6.0	SQ MI
DESIGN DISCHARGE	= 750	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 3.1	FT
BASE DISCHARGE	= 1100	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 4.1	FT
OVERTOPPING DISCHARGE	= >1750	CFS
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING ELEVATION	= 5.92	FT

$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$FILENAME$$$$

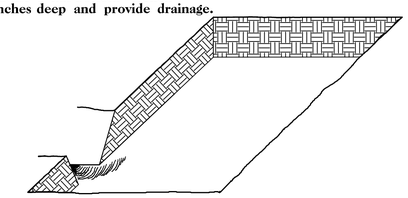
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP2-R017	RF-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

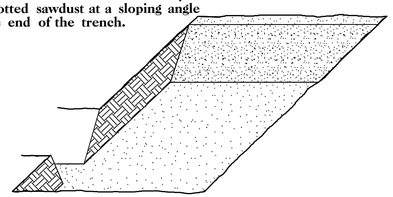
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

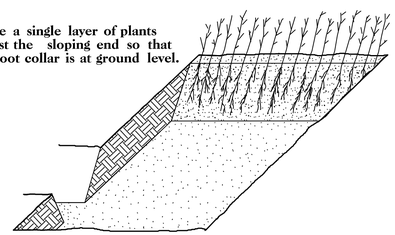
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



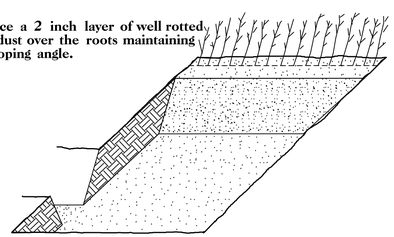
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

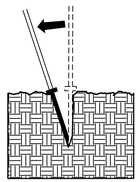


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

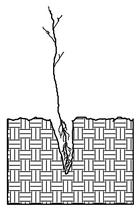


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

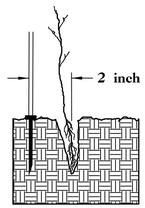
DIBBLE PLANTING METHOD USING THE KBC PLANTING BAR



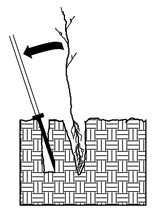
1. Insert planting bar as shown and pull handle toward planter.



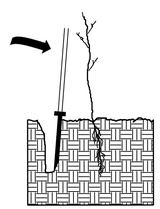
2. Remove planting bar and place seedling at correct depth.



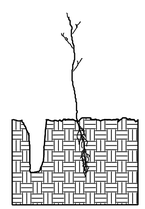
3. Insert planting bar 2 inches toward planter from seedling.



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:

30%	LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in – 18 in BR
40%	SALIX NIGRA	BLACK WILLOW	12 in – 18 in BR
30%	PINUS TAEDA	LOBLOLLY PINE	12 in – 18 in BR

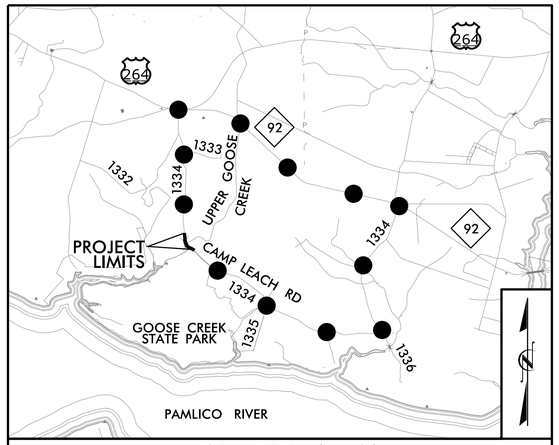
REFORESTATION DETAIL SHEET

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

Docusign Envelope ID: BA5E0EB8-E878-45FA-9EB1-7559F26FD86F

09/08/99

CONTRACT: DB00647 TIP PROJECT: BP2–R017



VICINITY MAP (N.T.S.)

OFFSITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BEAUFORT COUNTY

T.I.P. NO.	SHEET NO.
BP2–R017	UC–1

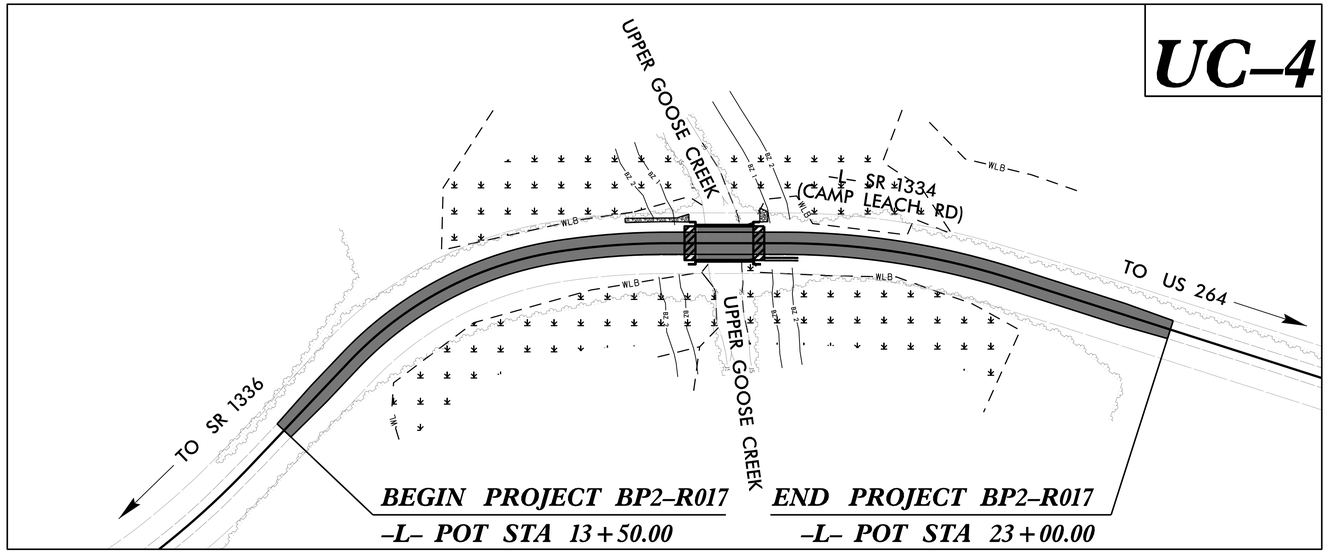
DOCUMENT NOT CONSIDERED FINAL UNTIL ALL SIGNATURES ARE COMPLETED

NAD 83/2001

LOCATION: REPLACE BRIDGE NO. 115 OVER UPPER GOOSE CREEK ON SR 1334 (CAMP LEACH RD)

TYPE OF WORK: WATER LINE RELOCATION

UC–4



BEGIN PROJECT BP2–R017 ***END PROJECT BP2–R017***

–L– POT STA 13+50.00 ***–L– POT STA 23+00.00***

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

SHEET NO.:	*DESCRIPTION:*
UC–1	*TITLE SHEET*
UC–2	*UTILITY SYMBOLOGY*
UC–3	*NOTES*
UC–3A THRU UC–3B	*DETAILS*
UC–4	*UTILITY PLAN /PROFILE SHEET*

WATER AND SEWER OWNERS ON PROJECT

(A) WATER LINE – BEAUFORT COUNTY WATER DEPARTMENT

PREPARED IN THE OFFICE OF

Weston & Sampson℠
WSE of North Carolina, PC
2052 Energy Drive
Apex, NC 27502
Phone: 919.297.0220
NC License: C-4847

FOR

HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

KEVIN HUTCHENS, PE	*PROJECT ENGINEER*
KATERINA DOMINGUEZ	*PROJECT DESIGN ENGINEER*
JIM FORBES	*PROJECT UTILITY MANAGER*

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 38283 ENGINEER KEVIN S. HUTCHENS
4/28/2026

DIVISION OF HIGHWAYS
HIGHWAY DIVISION 2

2815 ROUSE ROAD EXTENSION
KINGSTON, NC 27504
PHONE (252) 775–6100
FAX (252) 208–7862

CATHRINE HOSSACK, PE	*DIVISION PROJECT ENGINEER*
MICHAEL AMAN, PE	*DIVISION PROJECT MANAGER*
DAVID KRAMER	*DIVISION UTILITY ENGINEER*
CHAD MILLS	*DIVISION UTILITY COORDINATOR*

4/28/2026
\\wse03.local\WSE\Projects\NC\HNTB\Division 2\ENG22-0442_BP2_R017_LBR-115_Beaufort\Utilities\Engineering\BP2R017_ut_UC-01_tsh.dgn
7:06:02 PM

Docusign Envelope ID: ED33AB57-828D-4936-89EE-1EB2DDF83A10

PROJECT REFERENCE NO.	SHEET NO.
BP2-R017	UC-2

8/17/99

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

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

PROPOSED SEWER SYMBOLS

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

PROPOSED MISCELLANOUS UTILITIES SYMBOLS

- Power Pole
- Telephone Pole
- Joint Use Pole
- Telephone Pedestal — TEL PED
- Utility Line by Others (Type as Shown) — PROP O/H POW LINES
- Trenchless Installation — 12" TL INSTALL
- Encasement by Open Cut — 24" ENCAS BY OC
- Encasement — 24" ENCASEMENT
- Thrust Block
- Air Release Valve — AR
- Utility Vault — UV
- Concrete Pier — CP
- Steel Pier — SP
- Plan Note — NOTE
- Pay Item Note — PAY ITEM

EXISTING UTILITIES SYMBOLS

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

*For Existing Utilities

- Utility Line Drawn from Record (Type as Shown)
- Designated Utility Line (Type as Shown)

REV: 2/1/2012

3/23/2026
6:53:04 PM
\\wse01\Local\WSE\Projects\NC\HNTB\Division 2\ENG22-0442_BP2.R017.LBR-I15_Beaufort\Utilities\Engineering\BP2R017_ut_UC-02_sym.dgn

Docusign Envelope ID: ED33AB57-828D-4936-89EE-1EB2DDF83A10

8/17/99

UTILITY CONSTRUCTION

GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2024.

2. THE EXISTING WATER LINE UTILITIES BELONG TO BEAUFORT COUNTY.

   CONTACT: ERICK JENNINGS
   PHONE: 252-402-6547

   EMAIL:ERICK.JENNINGS@CO.BEAUFORT.NC.US

3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, PUBLIC WATER SUPPLY SECTION. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, WATER QUALITY SECTION. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.

4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.

5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPORTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.

6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT.

7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.

8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.

9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, " SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

PROJECT NOTES:

1. CONTRACTOR'S ATTENTION IS DIRECTED TO SECTIONS 102, 107, AND 1550 OF THE STANDARD SPECIFICATIONS CONCERNING TRENCHLESS INSTALLATION. IT IS CONTRACTOR'S RESPONSIBILITY TO HAVE BORE DESIGNED AND SEALED BY A LICENSED NORTH CAROLINA PROFESSIONAL ENGINEER. NO DAMAGE IS ALLOWED TO RIVER, STREAM, CREEK, WETLANDS, OR BUFFER ZONES.

2. PROPOSED WATER LINE FOR OPEN TRENCH CONSTRUCTION SHALL BE 6" DUCTILE IRON PIPE CLASS 350, OR SDR-21 PVC PIPE. PIPE JOINTS REQUIRING JOINT RESTRAINT SHALL BE DONE SO USING RESTRAINED JOINT CONSTRUCTION OR GRIP RINGS THAT PROVIDE FULL CIRCUMFERENTIAL PIPE RESTRAINT.

3. PROPOSED WATER LINE FOR DIRECTIONAL DRILLING SHALL BE FUSIBLE PVC C-900 DR-18 PRESSURE CLASS 235 PIPE THAT CONFORMS TO NSF-61.

4. ALL WATER LINE FITTINGS, 4-INCHES THROUGH 12-INCHES IN DIAMETER, SHALL BE DUCTILE IRON. WATER LINE FITTINGS SHALL BE OF THE SAME MANUFACTURER AS THE DUCTILE IRON PIPE. DUCTILE IRON FITTINGS SHALL BE PRESSURE CLASS 350.

5. ALL PROPOSED FITTINGS (BENDS, TEES, CROSSES, REDUCERS, PLUGS, ETC.) SHALL BE ADEQUATELY RESTRAINED BY THE USE OF RESTRAINED JOINT CONSTRUCTION, GRIP RINGS THAT PROVIDE FULL CIRCUMFERENTIAL PIPE RESTRAINT. CAST IN PLACE CONCRETE THRUST RESTRAINTS AS DETAILED ON THESE DRAWINGS SHALL ONLY BE USED WITH PRIOR APPROVAL BY THE RESIDENT ENGINEER.

6. ALL VALVES ON THE WATER LINE SHALL BE GATE VALVES WITH MECHANICAL JOINT ENDS.

7. IN THE EVENT THAT EXCESSIVE GROUND WATER OR SPRINGS ARE ENCOUNTERED DURING PIPE CONSTRUCTION, THE CONTRACTOR SHALL EMPLOY ALL METHODS NECESSARY TO KEEP THE TRENCHLESS DRY AS DIRECTED BY ENGINEER.

8. DOCUMENTS THAT MUST BE RECEIVED PRIOR TO BCWD SIGNING THE NCDEQ-PWSS APPLICANT CERTIFICATION INCLUDE THE FOLLOWING: BACTERIOLOGICAL TEST, PRESSURE TESTS, WARRANTY, AND AS-BUILT PLANS PROVIDED AS PDF FILES AND AN AUTOCAD (.DGN) FILES, LATEST VERSION OF AUTOCAD.

9. CONTRACTOR SHALL NOT OPERATE ANY VALVES ON THE EXISTING UTILITY SYSTEMS. CONTRACTOR SHALL CONTACT THE UTILITY OWNER TO CONDUCT STRATEGIC OPERATION OF VALVES FOR SERVICE INTERRUPTION IN ORDER TO PERFORM SPECIFIC WORK.

10. WORK SHALL BE PERFORMED BY THE HORIZONTAL DIRECTIONAL DRILL (HDD) TECHNIQUE. INSTALLATION TECHNIQUES AND DETAILS ARE CONTRACTOR'S RESPONSIBILITY AND MUST FULLY COMPLY WITH THE PIPE MANUFACTURER'S INSTALLATION RECOMMENDATIONS.

11. THE CONTRACTOR IS RESPONSIBLE FOR HORIZONTAL AND VERTICAL ALIGNMENT OF THE PILOT DRILL AND FINAL INSTALLED PIPE. THE UTILITY CONTRACTOR SHALL SUBMIT ALL PROPOSED CHANGES TO THE VERTICAL ALIGNMENT SHOWN ON DRAWINGS TO THE ENGINEER FOR APPROVAL PRIOR TO STARTING WORK.

12. CONTRACTOR SHALL DELIVER THE DRILLING LOG TO THE ENGINEER AS A PART OF FINAL AS-BUILT DRAWINGS.

13. THE UTILITY OWNER WILL COLLECT ALL BACTERIOLOGICAL SAMPLES FOR RELOCATION PROJECTS. THE UTILITY OWNER REPRESENTATIVE SHALL BE PRESENT FOR ALL PRESSURE TESTS, CHLORINATION, AND FLUSHING OF ALL NEW WATER LINES.

14. A 2" OR GREATER TEMPORARY BLOW-OFF SHALL BE INSTALLED FOR THE PURPOSE OF DISCHARGING SUPER-CHLORINATED WATER. ALL DISCHARGED WATER SHALL BE DECHLORINATED. SEE DETAIL ON SHEET UC-03A.

14. THE UTILITY OWNER SHALL BE PROVIDED WITH TWO (2) COPIES OF SURVEYED AS-BUILTS OF THE INSTALLED UTILITY - (1) PAPER COPY AND (1) ELECTRONIC. THE AS-BUILTS SHALL INCLUDE NOTATIONS OF THE SIZE AND TYPE OF MATERIAL INSTALLED; GPS COORDINATES FOR ALL-FITTINGS, UTILITY CONTROLS, AND THE HORIZONTAL AND VERTICAL LOCATIONS OF THE PIPING. PROVIDE BORING LOGS FROM TRENCHLESS INSTALLATIONS.

15. CONTRACTOR SHALL ADHERE TO SECTION 1530 "ABANDON OR REMOVE UTILITIES" FOR ABANDONMENT OF PIPE, UNLESS OTHERWISE SPECIFIED.

14. THE UTILITY OWNER SHALL OPEN AND CLOSE ALL VALVES.

15. TWO (2) TRACER WIRES MUST BE ATTACHED TO FUSIBLE HDD PVC AS REQUIRED BY NC GENERAL STATUTES CHAPTER 87-121G. USE #12 AWG SOLID-COPPER WIRE FOR TRACER WIRE. THE UTILITY OWNER WILL CONDUCT A CONTINUITY TEST ON ALL TRACER WIRE AFTER INSTALLATION.

Weston & Sampson
WSE of North Carolina, PC
2052 Energy Drive
Phone: 919.297.0220
NC License: C-4647
Apex, NC 27502
westonandsampson.com

PROJECT REFERENCE NO.	SHEET NO.
BP2-R017	UC-3
DESIGNED BY: KCZ	
DRAWN BY: KCZ/KD	
CHECKED BY: KD	
APPROVED BY: KSH	
REVISED:	

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

NORTH CAROLINA PROFESSIONAL SEAL 39283 ENGINEER KEVIN S. HUTCHENS
Digitally signed by Kevin S. Hutchens
3/26

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNTIL ALL SIGNATURES ARE COMPLETED

3/23/2026
7:45:06 PM
J:\wse03\Local\WSE\Projects\NC\HNTB\Division 2\ENG22-0442_BP2,R017,I,BR-II5_Beaufort\Utilities\Engineering\BP2R017_ut_UC-03_not.dgn

Docusign Envelope ID: ED33AB57-828D-4936-89EE-1EB2DDF83A10

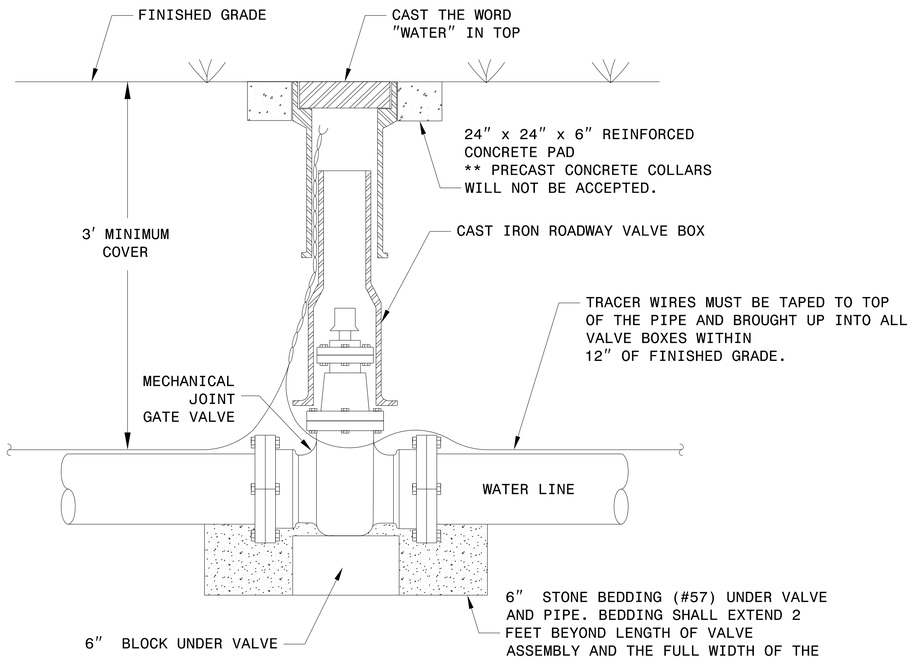
Weston & Sampson
WSE of North Carolina, PC
2052 Energy Drive
Phone: 919.297.0220
NC License: C-4647
Apex, NC 27502
westonandsampson.com

PROJECT REFERENCE NO.	SHEET NO.
BP2-R017	UC-3A
DESIGNED BY: KCZ	
DRAWN BY: MH/KD	
CHECKED BY: KD	
APPROVED BY: KSH	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

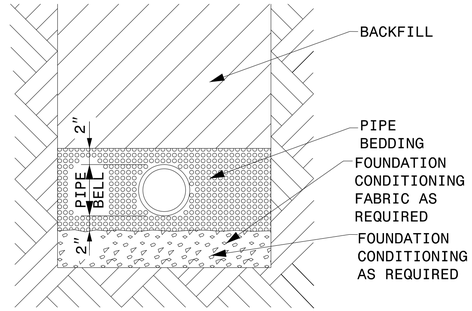
NORTH CAROLINA PROFESSIONAL SEAL 39283 ENGINEER KEVIN S. HUTCHINGS 6/30/2026

UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNTIL ALL SIGNATURES ARE COMPLETED

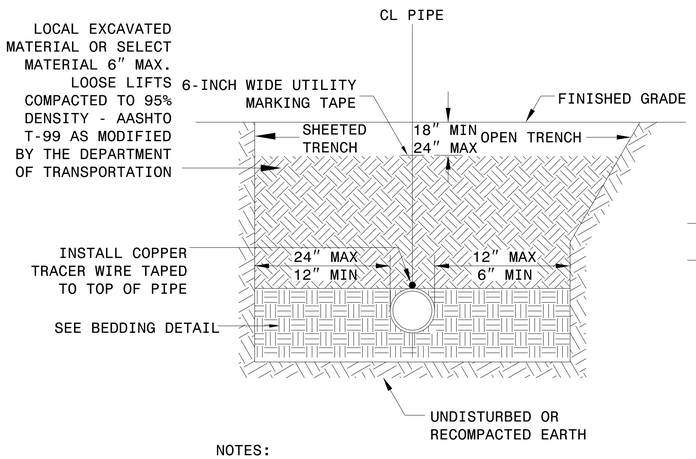


GATE VALVE DETAIL
NOT TO SCALE



NOTES:
1. PLACE FOUNDATION CONDITIONING MATERIAL BELOW BEDDING IF REQUIRED, AS DIRECTED BY ENGINEER.
2. PIPE BEDDED IN SELECT MATERIAL, CLASS II (TYPE 1) OR CLASS III.
3. TRENCH BACKFILLED IN LOOSE 6" LAYERS COMPACTED TO TOP OF TRENCH USING LOCAL EXCAVATED MATERIAL IF APPROVED BY THE ENGINEER, OR SELECT MATERIAL. ALL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH.
4. COMPACTION SHALL BE TO APPROXIMATELY 95% DENSITY IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY THE DEPARTMENT OF TRANSPORTATION.

PIPE BEDDING DETAIL
NOT TO SCALE

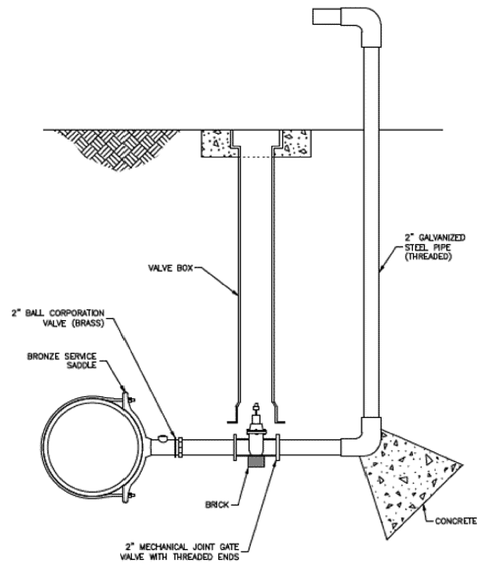


NOTES:
1. ALL SHORING & TRENCHING SHALL COMPLY WITH OSHA SAFETY STANDARDS FOR THE CONSTRUCTION INDUSTRY.
2. BELL HOLES NOT SHOWN.
3. ALL BACKFILL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH.

GENERAL TRENCH DETAIL
NOT TO SCALE

MAXIMUM OPEN TRENCH WIDTH AT TOP OF PIPE

NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)	NOMINAL PIPE SIZE (INCHES)	NOMINAL PIPE SIZE (INCHES)
4	28	20	44
6	30	24	48
8	32	30	54
10	34	36	60
12	36	42	66
14	38	48	72
16	40	54	78
18	42		



NOTES:
1. CONTRACTOR SHALL REMOVE TEMPORARY BLOW-OFF FOLLOWING FLUSHING AND CHLORINATION OF NEW WATER LINE.
2. BALL CORPORATION VALVE IS TO BE PLUGGED OR CAPPED FOLLOWING REMOVAL OF TEMPORARY BLOW-OFF.

2" TEMPORARY BLOW OFF DETAIL

8/17/99

3/23/2026
7:47:51 PM
C:\Users\kzoglio\Local\WSE\Projects\NC\HNTB\Division 2\ENG22-0442.BP2.R017_BR-II5_Beaufort\Utilities\Engineering\BP2R017_ut_UC-03A_dtl.dgn

Docusign Envelope ID: ED33AB57-828D-4936-89EE-1EB2DDF83A10

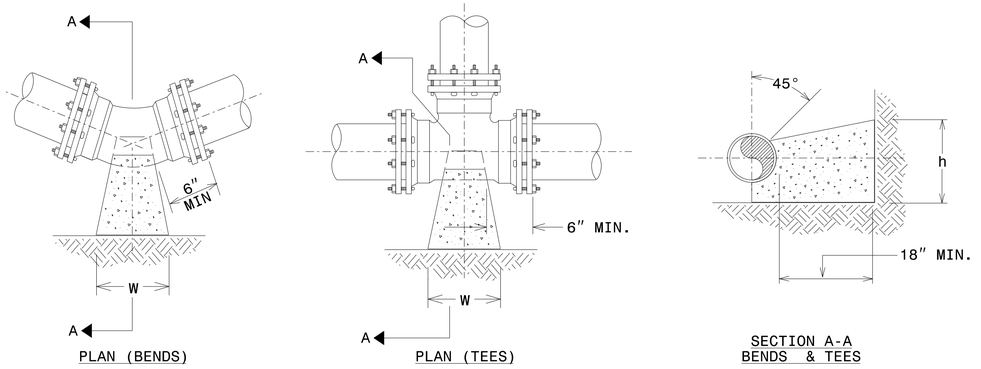
Weston & Sampson
WSE of North Carolina, PC
2052 Energy Drive
Phone: 919.297.0220
NC License: C-4647
Apex, NC 27502
westonandsampson.com

PROJECT REFERENCE NO.	SHEET NO.
BP2-R017	UC-3B
DESIGNED BY: KCZ	
DRAWN BY: MH/KD	
CHECKED BY: KD	
APPROVED BY: KCZ	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 39283 ENGINEER KEVIN S. HUTCHENS

UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNTIL ALL SIGNATURES ARE COMPLETED



THRUST RESTRAINT FOR PIPE LINES

BASED ON TEST PRESSURE OF 200 P.S.I.

HORIZONTAL RESTRAINT

(ALL AREAS GIVEN ARE IN SQUARE FEET)

PIPE SIZE	DEGREE OF BEND	LBS. STATIC THRUST *	ALLOWABLE SOIL BEARING (PSF) 1000	2000	3000	4000	5000	6000	7000	8000
4"	11.25°	616	1	1	1	1	1	1	1	1
	22.5°	1226	1	1	1	1	1	1	1	1
	45°	2405	2	1	1	1	1	1	1	1
	90°	4444	4	2	1	1	1	1	1	1
	TEE/PLUG	3143	3	2	1	1	1	1	1	1
6"	11.25°	1385	2	1	1	1	1	1	1	1
	22.5°	2758	3	2	1	1	1	1	1	1
	45°	5409	5	3	2	2	1	1	1	1
	90°	9999	10	5	3	3	2	2	2	1
	TEE/PLUG	7068	7	4	3	2	2	1	1	1
8"	11.25°	2424	3	1	1	1	1	1	1	1
	22.5°	4904	5	3	2	1	1	1	1	1
	45°	9619	10	5	3	2	2	2	2	1
	90°	17773	18	9	6	4	4	3	3	2
	TEE/PLUG	12568	13	6	4	3	3	2	2	2
10"	11.25°	3846	4	2	2	1	1	1	1	1
	22.5°	7661	8	4	3	2	2	2	1	1
	45°	15028	15	8	5	4	3	3	2	2
	90°	27768	28	14	9	7	6	5	4	3
	TEE/PLUG	19635	20	10	7	5	4	3	3	2
12"	11.25°	5543	6	3	2	2	1	1	1	1
	22.5°	11032	11	6	4	3	2	2	2	2
	45°	21641	22	11	7	5	4	4	3	3
	90°	39987	40	20	13	10	8	7	6	5
	TEE/PLUG	28274	28	14	9	7	6	5	4	4
14"	11.25°	7544	8	4	3	2	2	2	1	1
	22.5°	15016	15	8	5	4	3	3	2	2
	45°	29455	29	15	10	7	6	5	4	4
	90°	54426	54	27	18	14	11	9	8	7
	TEE/PLUG	38485	38	19	13	10	8	6	5	5
16"	11.25°	9854	10	5	3	3	2	2	2	2
	22.5°	19612	20	10	7	5	4	3	3	3
	45°	38471	38	17	13	10	8	6	5	5
	90°	71085	71	36	24	18	14	12	10	9
	TEE/PLUG	50265	50	25	17	13	10	8	7	6

*INCLUDES 1.50 SAFETY FACTOR

VERTICAL RESTRAINT

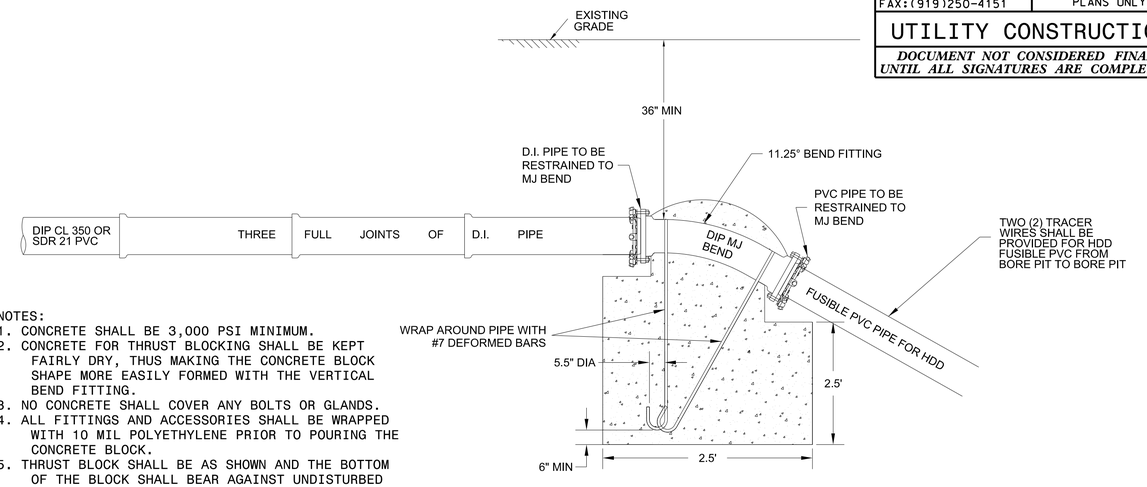
(ALL VOLUMES GIVEN ARE IN CUBIC YARDS)**

PIPE SIZE	RESTRAINING RODS NO. REQ'D	RESTRAINING RODS DIA.	DEGREE OF BEND 11.25°	22.5°	45°
4"	2	½"	0.25	0.50	0.75
6"	2	½"	0.50	1.00	1.75
8"	2	⅝"	0.75	1.50	3.00
10"	2	¾"	1.25	2.25	4.50
12"	2	⅞"	1.75	3.25	6.50
14"	4	⅝"	2.25	4.50	8.75
16"	4	¾"	3.00	6.00	11.5

**INCLUDES 1.50 SAFETY FACTOR

NOTES:
1. CONCRETE SHALL BE CLASS "B".
2. CONCRETE SHALL NOT CONTACT BOLTS ENDS OF MECHANICAL JOINT FITTINGS.
3. CONSULT WITH ENGINEER FOR CONCRETE REQUIREMENTS ON MAINS LARGER THAN 16 INCHES.(FOR VERTICAL & HORIZONTAL BENDS)
4. ALLOWABLE SOIL BEARING SHALL BE DETERMINED BY THE ENGINEER.

THRUST RESTRAINT FOR WATER MAINS



NOTES:
1. CONCRETE SHALL BE 3,000 PSI MINIMUM.
2. CONCRETE FOR THRUST BLOCKING SHALL BE KEPT FAIRLY DRY, THUS MAKING THE CONCRETE BLOCK SHAPE MORE EASILY FORMED WITH THE VERTICAL BEND FITTING.
3. NO CONCRETE SHALL COVER ANY BOLTS OR GLANDS.
4. ALL FITTINGS AND ACCESSORIES SHALL BE WRAPPED WITH 10 MIL POLYETHYLENE PRIOR TO POURING THE CONCRETE BLOCK.
5. THRUST BLOCK SHALL BE AS SHOWN AND THE BOTTOM OF THE BLOCK SHALL BEAR AGAINST UNDISTURBED SOIL.

OPEN-CUT PIPE TO HDD FUSIBLE PVC PIPE TRANSITION ASSEMBLY

NOT TO SCALE

RESTRAINED JOINT LENGTH TABLE FOR 6" D.I. PIPE (BARE)

FITTING TYPE	REQUIRED LENGTH (IN FEET) OF RESTRAINT PER DEPTH OF COVER 3 FT	4 FT	5 FT	6 FT	7 FT	8 FT	9 FT	10 FT
11.25° HOR.	2	2	2	2	2	1	1	1
22.5° HOR.	4	3	3	3	3	2	2	2
45° HOR.	8	7	6	5	5	4	4	4
11.25° DOWN	5	4	4	3	3	3	2	2
22.5° DOWN	9	8	7	6	5	5	4	4
45° DOWN	18	15	13	12	10	9	8	8
11.25° UP	2	2	2	2	2	1	1	1
22.5° UP	4	3	3	3	3	2	2	2
45° UP	8	7	6	5	5	4	4	4

DESIGN ASSUMPTIONS:

PIPE LAYING CONDITION = TYPE 4
SOIL DESIGNATION = GC = COHESIVE GRANULAR
DESIGN PRESSURE = 200 PSI
SAFETY FACTOR = 1.5

NOTES:
1. RESTRAINED LENGTH IS MEASURED FROM THE CENTER OF THE BEND AS FOLLOWS:
   A. HORIZONTAL AND VERTICAL BENDS: ALONG EACH SIDE OF BEND.
   B. HORIZONTAL AND VERTICAL BENDS - OFFSET OR COMBINED: ALONG THE OUTER SIDE OF EACH BEND. ALL PIPE BETWEEN THE TWO BENDS SHALL BE RESTRAINED JOINT WHEN THE DISTANCE BETWEEN THEM IS EQUAL TO OR LESS THAN THE REQUIRED RESTRAINED LENGTH SHALL BE ADDED ON TO THE LENGTH ALONG THE OUTSIDE OF EACH BEND RESPECTIVELY TO MAKE UP FOR THE DEFICIENCY IN THAT DIRECTION.
2. WHEN IT IS NOT POSSIBLE TO INSTALL THE RESTRAINED LENGTHS AS NOTED BY THIS TABLE, THE CONTRACTOR SHALL INSTALL THE APPROPRIATE CONCRETE THRUST RESTRAINT AS PER THE DETAILS HEREIN.

RESTRAINED JOINT LENGTH TABLE FOR 6" PVC PIPE

FITTING TYPE	REQUIRED LENGTH (IN FEET) OF RESTRAINT PER DEPTH OF COVER 3 FT	4 FT	5 FT	6 FT	7 FT	8 FT	9 FT	10 FT
11.25° HOR.	3	2	2	2	2	2	2	1
22.5° HOR.	5	4	4	3	3	3	3	2
45° HOR.	10	8	7	6	6	5	5	5
11.25° DOWN	8	7	6	5	5	4	4	4
22.5° DOWN	17	14	12	10	9	8	7	7
45° DOWN	34	28	24	21	18	16	15	14
11.25° UP	3	2	2	2	2	2	2	1
22.5° UP	5	4	4	3	3	3	3	2
45° UP	10	8	7	6	6	5	5	5

DESIGN ASSUMPTIONS:

PIPE LAYING CONDITION = TYPE 4
SOIL DESIGNATION = GC = COHESIVE GRANULAR
DESIGN PRESSURE = 200 PSI
SAFETY FACTOR = 1.5

NOTES:
1. RESTRAINED LENGTH IS MEASURED FROM THE CENTER OF THE BEND AS FOLLOWS:
   A. HORIZONTAL AND VERTICAL BENDS: ALONG EACH SIDE OF BEND.
   B. HORIZONTAL AND VERTICAL BENDS - OFFSET OR COMBINED: ALONG THE OUTER SIDE OF EACH BEND. ALL PIPE BETWEEN THE TWO BENDS SHALL BE RESTRAINED JOINT WHEN THE DISTANCE BETWEEN THEM IS EQUAL TO OR LESS THAN THE REQUIRED RESTRAINED LENGTH SHALL BE ADDED ON TO THE LENGTH ALONG THE OUTSIDE OF EACH BEND RESPECTIVELY TO MAKE UP FOR THE DEFICIENCY IN THAT DIRECTION.
2. WHEN IT IS NOT POSSIBLE TO INSTALL THE RESTRAINED LENGTHS AS NOTED BY THIS TABLE, THE CONTRACTOR SHALL INSTALL THE APPROPRIATE CONCRETE THRUST RESTRAINT AS PER THE DETAILS HEREIN.

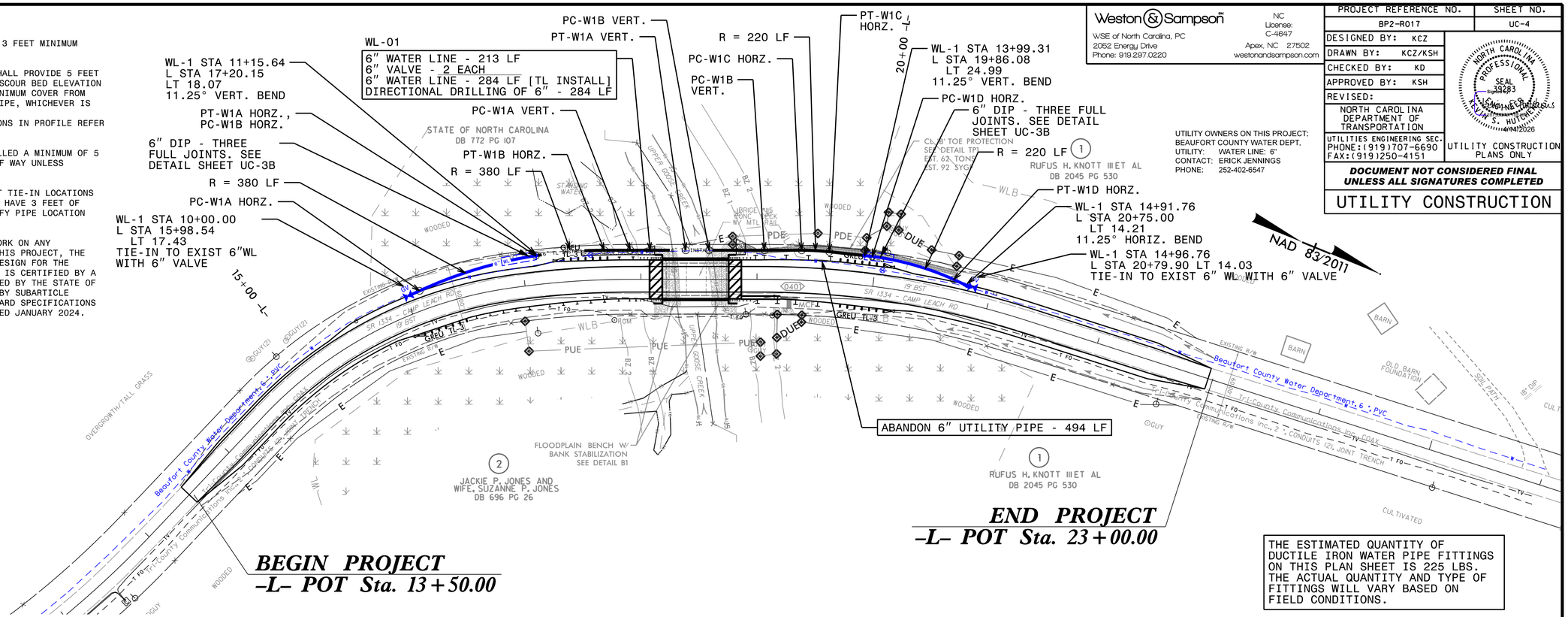
8/17/99
C:\Users\kzimmerman\Desktop\Projects\NC\HNTB\Division 2\ENG22-0442_BP2_R017_UT_BR-I15_Beaufort\Utilities\Engineering\BP2R017_ut_UC-03B_dtl.dgn
3/23/2026
9:46:13 PM

Docusign Envelope ID: 5EE2E4BD-0E86-47C5-94E4-FA84CABE8A18

8/17/99

NOTES:

1. PIPE TO BE INSTALLED WITH 3 FEET MINIMUM COVER TO TOP OF PIPE.
2. TRENCHLESS INSTALLATION SHALL PROVIDE 5 FEET MINIMUM COVER FROM 100 YEAR SCOUR BED ELEVATION TO TOP OF PIPE OR 15 FEET MINIMUM COVER FROM BOTTOM OF STREAM TO TOP OF PIPE, WHICHEVER IS GREATER.
3. ALL PROPOSED PIPE ELEVATIONS IN PROFILE REFER TO CENTER OF PIPE.
4. WATER LINE SHALL BE INSTALLED A MINIMUM OF 5 FEET INSIDE EXISTING RIGHT OF WAY UNLESS OTHERWISE INDICATED.
5. EXISTING PIPE ELEVATION AT TIE-IN LOCATIONS ARE ESTIMATED AND ASSUMED TO HAVE 3 FEET OF COVER. CONTRACTOR SHALL VERIFY PIPE LOCATION BEFORE STARTING WORK.
6. PRIOR TO COMMENCING ANY WORK ON ANY TRENCHLESS INSTALLATION ON THIS PROJECT, THE CONTRACTOR SHALL PROVIDE A DESIGN FOR THE TRENCHLESS INSTALLATION THAT IS CERTIFIED BY A PROFESSIONAL ENGINEER LICENSED BY THE STATE OF NORTH CAROLINA, AS REQUIRED BY SUBARTICLE 1550-3(B) OF THE NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES DATED JANUARY 2024.



BEGIN PROJECT
–L– POT Sta. 13+50.00

END PROJECT
–L– POT Sta. 23+00.00

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 225 LBS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

Weston & Sampson
WSE of North Carolina, PC
2052 Energy Drive
Phone: 919.297.0220
NC License: C-4647
Apex, NC 27502
westonandsampson.com

PROJECT REFERENCE NO.	SHEET NO.
BP2-R017	UC-4
DESIGNED BY: KCZ	
DRAWN BY: KCZ/KSH	
CHECKED BY: KD	
APPROVED BY: KSH	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	

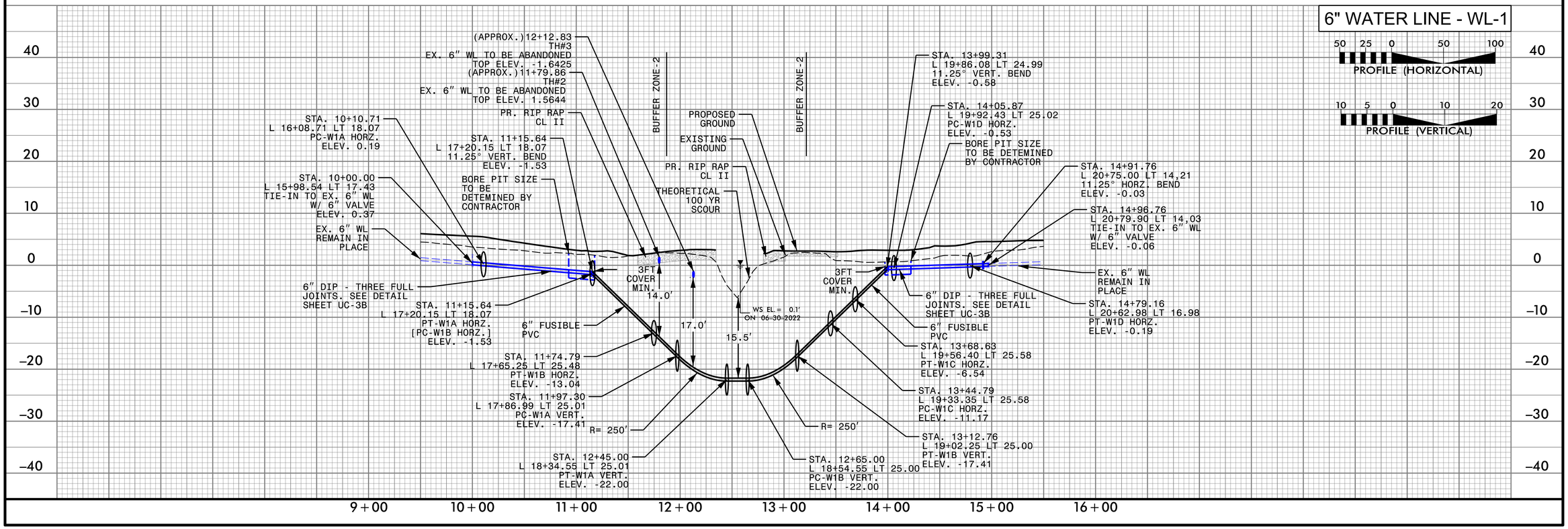
NORTH CAROLINA PROFESSIONAL SEAL 33283 ENGINEER KSH HUTTON 6/4/2026

UTILITY CONSTRUCTION PLANS ONLY

UTILITY OWNERS ON THIS PROJECT:
BEAUFORT COUNTY WATER DEPT.
UTILITY: WATER LINE: 6"
CONTACT: ERICK JENNINGS
PHONE: 252-402-6547

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

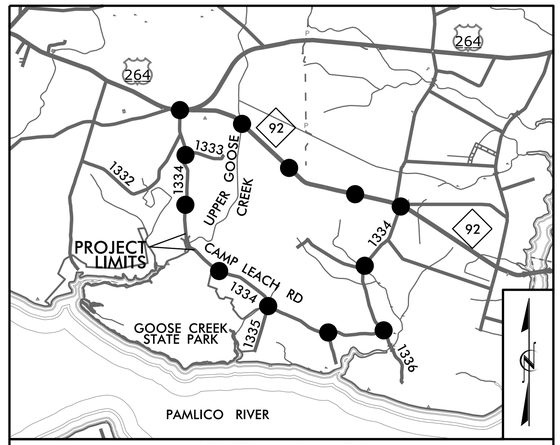
UTILITY CONSTRUCTION



09/08/99

TIP PROJECT: BP2–R017

CONTRACT: DB00647



VICINITY MAP (N.T.S.)

OFFSITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES BY OTHERS PLANS
BEAUFORT COUNTY

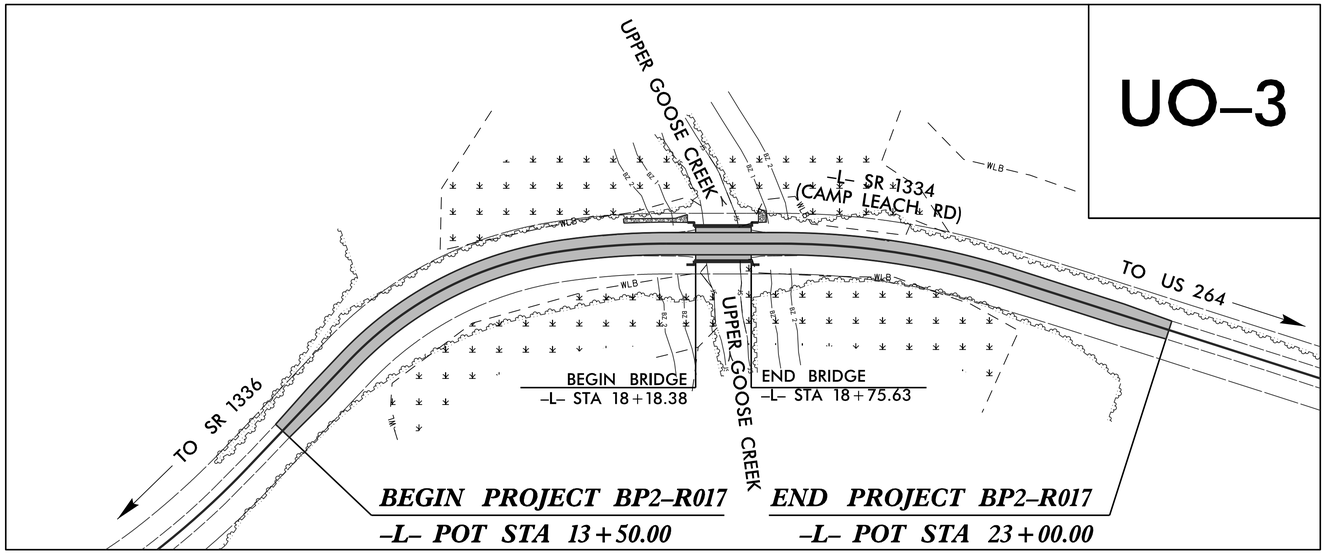
LOCATION: REPLACE BRIDGE NO. 115 OVER UPPER GOOSE CREEK ON SR 1334 (CAMP LEACH RD.)

TYPE OF WORK: UTILITY RELOCATION

T.I.P. NO.	SHEET NO.
BP2–R017	UO–1

NOTE:
ALL UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR UTILITY WORK SHOWN ON THIS SHEET.

NAD 832001



UO–3

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

SHEET NO.:	*DESCRIPTION:*
UO–1	*TITLE SHEET*
UO–2	*SYMBOLOGY*
UO–3	*UTILITIES BY OTHERS SHEETS*

UTILITY OWNERS WITH CONFLICTS

(A) POWER – CITY OF WASHINGTON
(B) COMMUNICATIONS – RIVERSTREET NETWORKS

PREPARED IN THE OFFICE OF:

Weston & Sampson℠
WSE of North Carolina, PC
2052 Energy Drive
Phone: 919.297.0220
NC License: C-4647
Apex, NC 27502
westonandsampson.com

JIM FORBES	*PROJECT UTILITY COORD. MANAGER*
D. VONDENHUEVEL	*PROJECT UTILITY COORDINATOR*
KATERINA DOMINGUEZ	*PROJECT UTILITY ENGINEER*

DIVISION OF HIGHWAYS
UTILITIES UNIT
HIGHWAY DIVISION 2
2815 ROUSE ROAD EXTENSION
KINGSTON NC 28504
PHONE (252) 775-6100
FAX (252) 208-7862

CATHRINE A. MEYER, PE	*DIVISION PROJECT ENGINEER*
MICHAEL AMAN, PE	*DIVISION PROJECT MANAGER*
DAVID KRAMER	*DIVISION UTILITY ENGINEER*
CHAD MILLS	*DIVISION UTILITY COORDINATOR*

4/28/2026
P:\NC\HNTB\Division 2\ENG22-0442_BP2.R017_BR-115_Beaufort\Utilities\Coordination\Ub0\BP2R017_ut_tsh_U001_psh.dgn
4:52:07 PM

PROJECT REFERENCE NO.	SHEET NO.
BP2-R017	UO-2

Weston & Sampson
WSE of North Carolina, PC
2052 Energy Drive
Phone: 919.297.0220
NC License: C-4647
Apex, NC 27502
westonandsampson.com

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

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

PROPOSED SEWER SYMBOLS

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

PROPOSED MISCELLANOUS UTILITIES SYMBOLS

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

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

EXISTING UTILITIES SYMBOLS

- Power Pole
- Telephone Pole
- Joint Use Pole
- Utility Pole
- Utility Pole with Base
- H-Frame Pole
- Power Transmission Line Tower
- Water Manhole
- Power Manhole
- Telephone Manhole
- Sanitary Sewer Manhole
- Hand Hole for Cable
- Power Transformer
- Telephone Pedestal
- CATV Pedestal
- Gas Valve
- Gas Meter
- Located Miscellaneous Utility Object
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

- *Underground Power Line — P
- *Underground Telephone Cable — T
- *Underground Telephone Conduit — TC
- *Underground Fiber Optics Telephone Cable — T FO
- *Underground TV Cable — TV
- *Underground Fiber Optics TV Cable — TV FO
- *Underground Gas Pipeline — G
- Aboveground Gas Pipeline — A/G Gas
- *Underground Water Line — W
- Aboveground Water Line — A/G Water
- *Underground Gravity Sanitary Sewer Line — SS
- Aboveground Gravity Sanitary Sewer Line — A/G Sanitary Sewer
- *Underground SS Forced Main Line — FSS
- Underground Unknown Utility Line — ?UTL
- SUE Test Hole
- Water Meter
- Water Valve
- Fire Hydrant
- Sanitary Sewer Cleanout

*For Existing Utilities

- Utility Line Drawn from Record (Type as Shown) — W
- Designated Utility Line (Type as Shown) — W

REV: 2/1/2012

5/14/99
4/7/2026 4:10:38 PM
...\ENG22-0442\BP2R017.1.BR-115.Beaufort\Utilities\Coordination\UkO\BP2R017_ut_tsh_U001_psh.dgn

Weston & Sampson
WSE of North Carolina, PC
2052 Energy Drive
Phone: 919.297.0220
NC License: C-4647
Apex, NC 27502
westonandsampson.com

PROJECT REFERENCE NO.	SHEET NO.
BP2-R017	UO-3
THIS SHEET CORRESPONDS TO RDY-4	

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.

NAD 83/2011

CITY OF WASHINGTON - EXIST OH POWER LINE & POLE TO BE REMOVED

CITY OF WASHINGTON - PROP OH POWER LINE & POLE

RIVERSTREET - UG TV LINE TO BE ABANDONED

RIVERSTREET - UG TEL FO LINE TO BE ABANDONED

CITY OF WASHINGTON - PROP OH POWER LINE TO REPLACEMENT POLE

RIVERSTREET - 5′ x 4′ TIE IN PIT & (2) UG FO LINES TO EXIST

CITY OF WASHINGTON - EXIST OH POWER LINE & POLE

CITY OF WASHINGTON - EXIST OH POWER LINE & POLE

CITY OF WASHINGTON - PROP OH POWER LINE & POLE

CITY OF WASHINGTON - EXIST OH POWER LINE & POLE TO BE REMOVED

RIVERSTREET - 5′ x 4′ TIE IN PIT & (2) UG FO LINES TO EXIST

CITY OF WASHINGTON - PROP OH POWER LINE TO REPLACEMENT POLE

BEGIN BRIDGE
-L- STA 18+18.38

END BRIDGE
-L- STA 18+75.63

BEGIN APPROACH SLAB
-L- STA 18+07.50

END APPROACH SLAB
-L- STA 18+86.50
CL 'B' TOE PROTECTION
SEE DETAIL TP1
EST. 62 TONS
EST. 92 SYGF

STATE OF NORTH CAROLINA

ROCK PLATING

TYPE-III

PDE

PUE

DUE

END SBG
+20.55

FLOODPLAIN BENCH W/ BANK STABILIZATION
SEE DETAIL B1

JACKIE P. JONES AND WIFE, SUZANNE P. JONES

RUFUS H. KNOTT III ET AL

BARN

Beaufort County Water Dept

BEGIN PROJECT BP2-R017
-L- POT STA. 13+50.00

END PROJECT BP2-R017
-L- POT STA. 23+00.00

-L-

EXIST POWER POLE

EXIST OH POWER LINE

PROP OH POWER POLE

PROP OH POWER LINE

BEGIN GRADE
-L- STA. 13+50.00
ELEV = 10.66′

EXIST SAG
ELEV. = 28.42′

EXIST SAG
ELEV. = 27.94′

EXIST SAG
ELEV. = 28.38′

END GRADE
-L- STA. 23+00.00
ELEV = 8.66′

PROPOSED GRADE

EXISTING GROUND

WS EL = 0.1′
ON 06-30-2022

PROP U/G TEL & FO CABLES

RIVERSTREET - HORIZONTAL DRILL (2) UG FO CABLES AT MINIMUM DEPTH OF 15′ UNDER UPPER GOOSE CREEK

30′
20′
10′
0′
-10′

14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00

8/17/99

4/14/2026
P:\NCDOT\B3\Division 2\ENG22-0442_BP2_R017_LBR-115_Beaufort\Utilities\Coordination\Ub0\BP2R017_ut_rdy02_psh.dgn
5:17:43 PM

PROJ. REFERENCE NO.	SHEET NO.
BP2-R017	X-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS-SECTION SUMMARY

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".

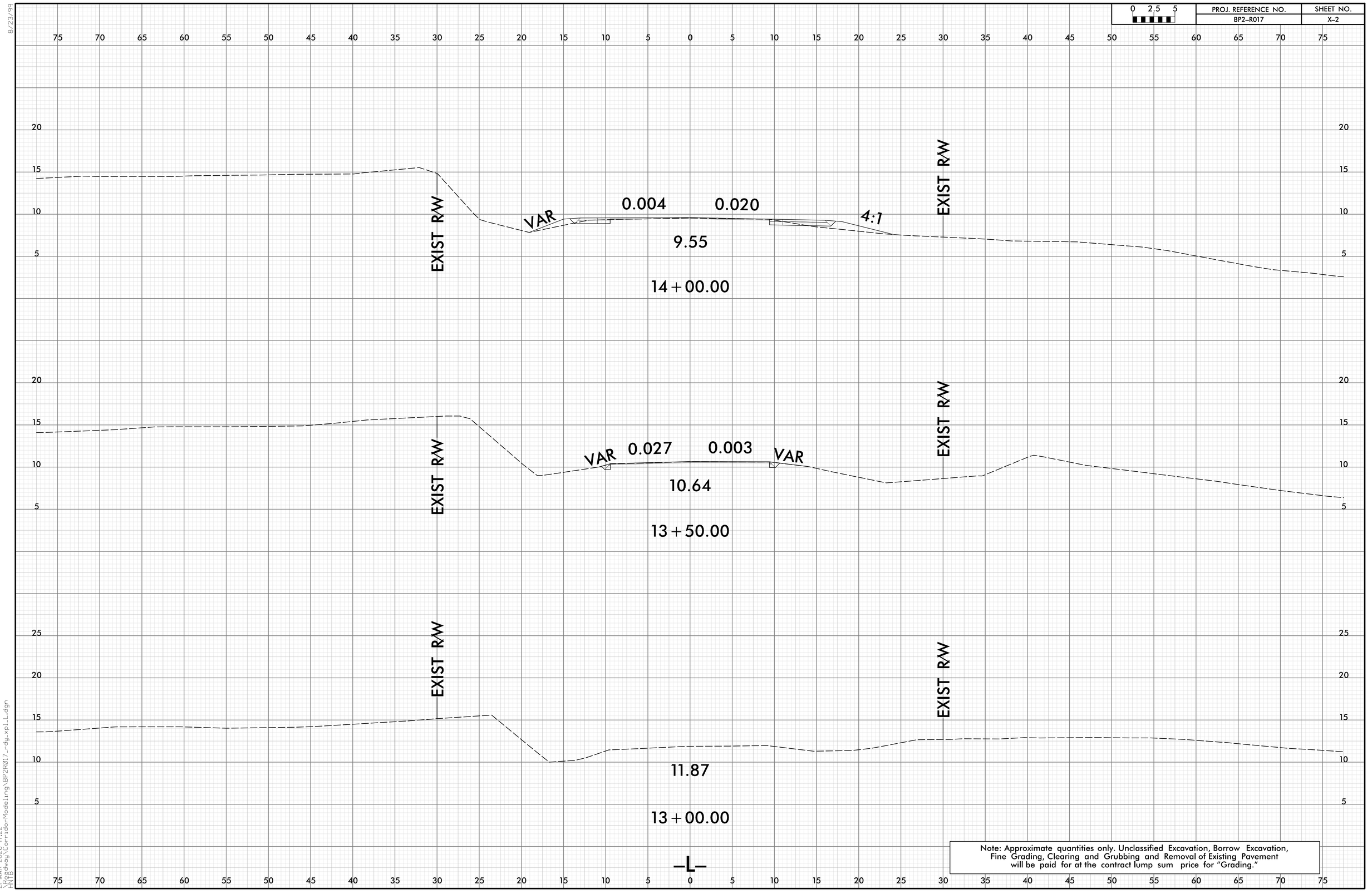
NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
13+50.00	0	0
14+00.00	4	6
14+50.00	5	14
15+00.00	3	21
15+50.00	1	35
16+00.00	0	53
16+50.00	0	63
17+00.00	0	66
17+50.00	0	78
18+00.00	0	94
18+18.38	1	32

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
18+75.63	0	0
19+00.00	3	34
19+50.00	0	84
20+00.00	1	88
20+50.00	8	59
21+00.00	26	42
21+50.00	39	39
22+00.00	32	34
22+50.00	22	28
23+00.00	13	13

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP2-R017	X-2



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."

21-MAR-2026 17:22
\Roadway\Corridor Modeling\BP2R017_rdy_xpl_L.dgn
HNTB

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP2-R017	X-3

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

15
10
5

EXIST R/W

3:1

0.040

0.040

4:1

EXIST R/W

WLB

6.58

15+50.00

20
15
10
5

EXIST R/W

3:1

0.040

0.040

4:1

EXIST R/W

WLB

7.50

15+00.00

20
15
10
5

EXIST R/W

VAR

0.019

0.020

4:1

EXIST R/W

WLB

8.51

14+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

21-MAR-2026 17:22
\Roadway\Corridor Modeling\BP2R017_rdy_xpl_L.dgn
HNTB

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP2-R017	X-4

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

15 10 5

EXIST R/W WLB 3:1 0.040 0.040 3:1 EXIST R/W WLB

5.14

17+00.00

EXIST R/W WLB 3:1 0.040 0.040 3:1 EXIST R/W WLB

5.51

16+50.00

WLB 3:1 0.040 0.040 3:1 EXIST R/W WLB

EXIST R/W

5.93

16+00.00

–L–

21-MAR-2026 17:22
\Roadway\CorridorModeling\BP2R017_rdy_xpl_L.dgn
HNTB

8/23/99

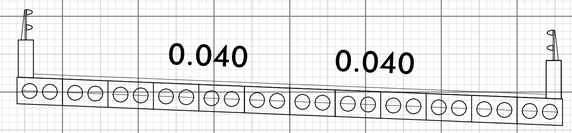
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP2–R017	X–5

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 5 0 –5

JS

EXIST R/W



EXIST R/W

–3.14

18+50.00

BEGIN BRIDGE –L– STA. 18+18.38

15 10 5 0

WLB

EXIST R/W

1.50:1

0.040 0.040

3:1

EXIST R/W

WLB

4.27

18+00.00

15 10 5

WLB

2.50:1

0.040 0.040

3:1

EXIST R/W

WLB

EXIST R/W

4.67

17+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

23-MAR-2026 13:37
\\Roadway\Corridor Modeling\BP2R017_rdy_xpl_L.dgn
MHTB

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP2-R017	X-6

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

15
10
5

EXIST R/W
WLB
3:1
0.040
0.040
4.57
3:1
WLB
EXIST R/W

20+00.00

EXIST R/W
WLB
3:1
0.040
0.040
4.25
3:1
WLB
EXIST R/W

19+50.00

EXIST R/W
WLB
3:1
0.040
0.040
4.70
3:1
WLB
EXIST R/W

4.20

19+00.00

END BRIDGE -L- STA. 18+75.63

-L-

23-MAR-2026 13:38
\Roadway\CorridorModeling\BP2R017_rdy_xpl_L.dgn
MKTB

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP2-R017	X-7

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

20 15 10 5

EXIST R/W

3:1 4.10 4:1 0.021 0.021 6.24 4:1 3.87 3:1

EXIST R/W

WLB

21+50.00

15 10 5

EXIST R/W

3:1 3.95 4:1 0.040 0.040 5.68 4:1 3.30 3:1

EXIST R/W

WLB

21+00.00

15 10 5

WLB WLB

4:1 0.040 0.040 4:1

WLB

EXIST R/W

5.12

EXIST R/W

20+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

21-MAR-2026 17:22
\Roadway\CorridorModeling\BP2R017_rdy_xpl_L.dgn
NNB

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP2-R017	X-8

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

20 15 10 5

EXIST R/W

VAR 0.023 0.020 VAR

EXIST R/W

8.63

23+00.00

20 15 10 5

EXIST R/W

4:1 3:1

0.020 0.020

4:1 3:1

EXIST R/W

5.66 7.63 5.54

22+50.00

20 15 10 5

EXIST R/W

4:1 3:1

0.002 0.020

4:1 3:1

EXIST R/W

4.88 6.84 4.44

22+00.00

—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

21-MAR-2026 17:22
\Roadway\Corridor Modeling\BP2R017_rdy_xpl_L.dgn
HNTB

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP2-R017	X-9

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

20
15
10
5

EXIST R/W

EXIST R/W

9.81

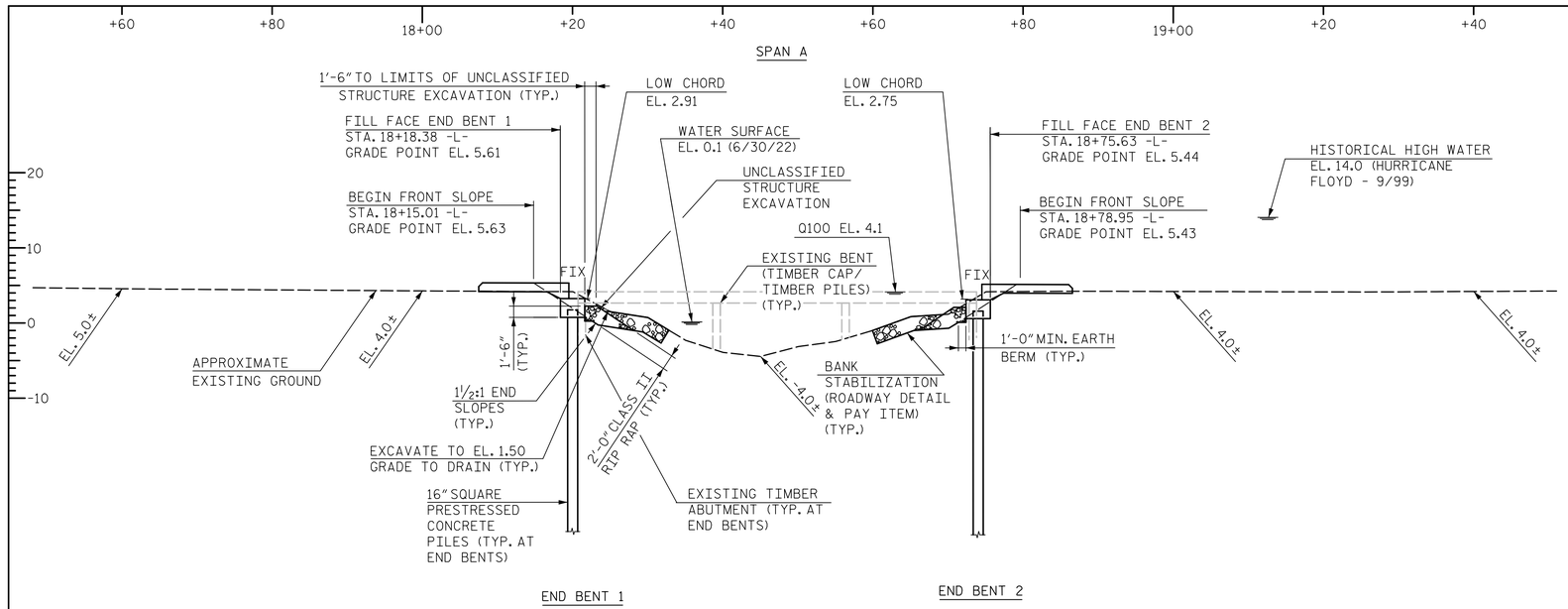
23+50.00

—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

21-MAR-2026 17:22
\Roadway\CorridorModeling\BP2R017_rdy_xpl_L.dgn
MNTB

Docusign Envelope ID: C2DA368C-3C73-41CB-9389-8C57E5CFDF19



SECTION ALONG -L-

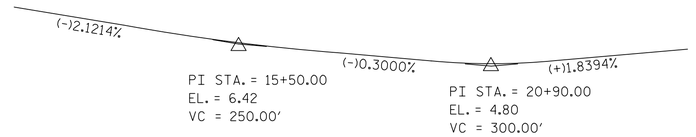
BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	750 CFS
FREQUENCY OF DESIGN FLOOD	=	25 YRS
DESIGN HIGH WATER ELEVATION	=	3.1 FT.
DRAINAGE AREA	=	6.0 SQ. MI.
BASIC DISCHARGE (Q100)	=	1,100 CFS
BASIC HIGH WATER ELEVATION	=	4.1 FT.

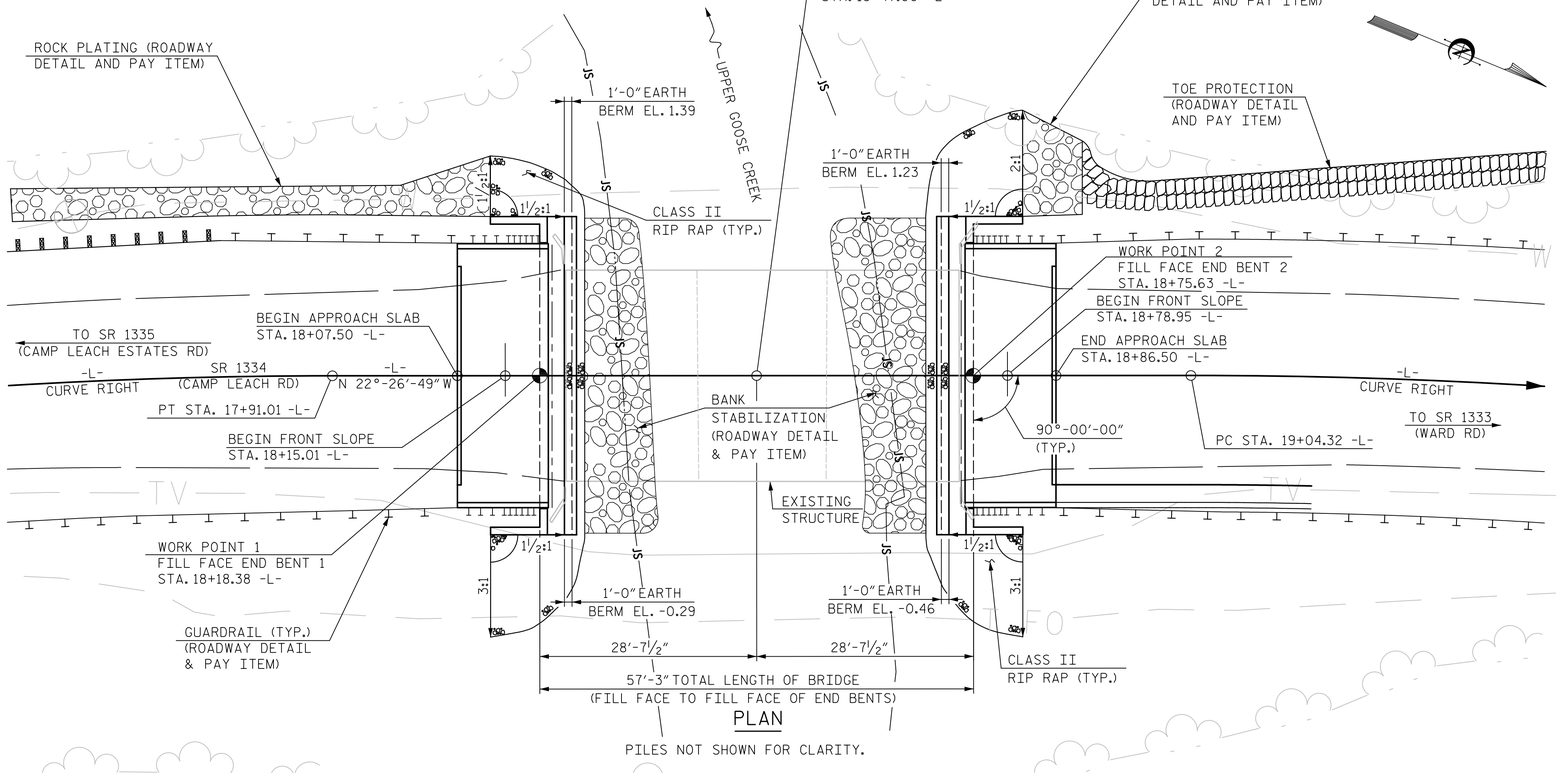
OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	=	>1,750 CFS
FREQUENCY OF OVERTOPPING FLOOD	=	>500 YRS.
OVERTOPPING FLOOD ELEVATION	=	5.92 FT.

NOTE: OVERTOPS AT STA. 19+82.07 -L-, LT. SHOULDER



GRADE DATA -L-



PLAN

PILES NOT SHOWN FOR CLARITY.

PROJECT NO. BP2-R017

BEAUFORT **COUNTY**

STATION: 18+47.00 -L-

SHEET 1 OF 2 REPLACES BRIDGE NO. 060115

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE ON SR 1334 OVER UPPER GOOSE CREEK BETWEEN SR 1335 AND SR 1333

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS
Signed by: David W. Hawkins
4/15/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY	M. WRIGHT	DATE	9/22
CHECKED BY	D. HAWKINS	DATE	2/23
DESIGN ENGINEER OF RECORD	D. HAWKINS	DATE	8/24

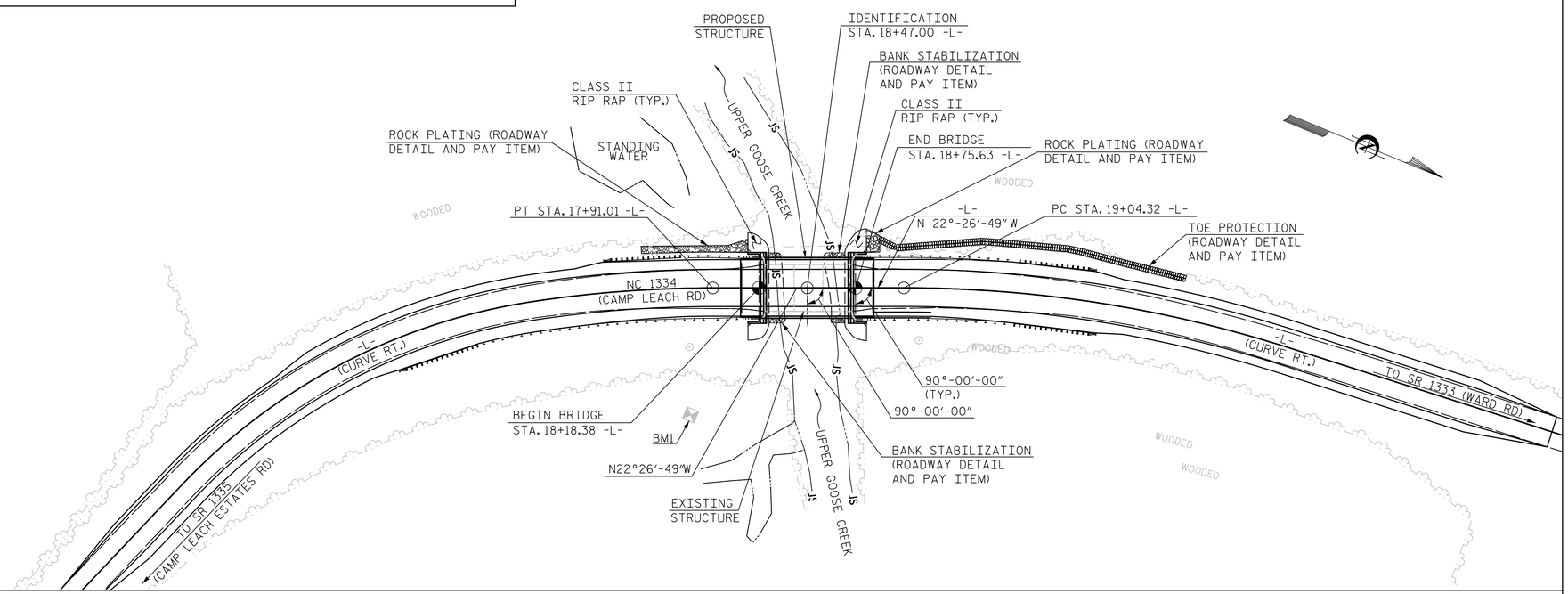
DWG. NO. 1

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

4/2/2026
1:27:23 PM
\\Gwlvdotvprfs1\projects\69063 2019 East Region LSC - Division 2\BP2-R017.1_Beaufort BR 115\Structures\DSN\401.001_BP2R017.1_SMU_0001.001_060115.dgn

Docusign Envelope ID: C2DA368C-3C73-41CB-9389-8C57E5CFDF19

BM: "BM1" - RR SPIKE IN 32" MAPLE, 75.15' RT. OF STA. 17+76.25 -L-, EL. 3.96



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

FOUNDATION NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

OBSERVE A ONE MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FT. OF FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT NO. 1 AND END BENT NO. 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STATION 18+47.00 -L-	ASBESTOS ASSESSMENT	DYNAMIC PILE TESTING	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION 18+47.00 -L-	CLASS AA CONCRETE	BRIDGE APPROACH SLABS AT STATION 18+47.00 -L-	EPOXY COATED REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR 16" SQUARE PRESTRESSED CONCRETE PILES	16" SQUARE PRESTRESSED CONCRETE PILES		PILE REDRIVES	TWO BAR METAL RAIL	1'-2" x 2'-8¾" CONCRETE PARAPET	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0"x1'-9" PRESTRESSED CONCRETE CORED SLABS	
	LUMP SUM	LUMP SUM	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	EACH	NO.	LIN. FT.	EACH	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE	LUMP SUM	———	———	———	———	LUMP SUM	———	———	———	———	———	95.00	110.00	———	———	LUMP SUM	12	660
END BENT 1	———	———	———	LUMP SUM	15.3	———	2,228	7	7	490	———	———	———	65	75	———	———	———
END BENT 2	———	———	———	LUMP SUM	15.3	———	2,228	7	7	490	———	———	———	70	75	———	———	———
TOTAL	LUMP SUM	LUMP SUM	2	LUMP SUM	30.6	LUMP SUM	4,456	14	14	980	7	95.00	110.00	135	150	LUMP SUM	12	660

GENERAL NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

THIS BRIDGE SHALL BE CONSTRUCTED USING TOP-DOWN CONSTRUCTION METHODS. THE USE OF A TEMPORARY CAUSEWAY OR WORK BRIDGE IS NOT PERMITTED.

THIS STRUCTURE CONTAINS THE NECESSARY CORROSION PROTECTION REQUIRED FOR A CORROSIVE SITE.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 18+47.00 -L-."

THE CONCRETE IN THE END BENT CAPS AND PILES OF END BENT NO. 1, AND END BENT NO 2 SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB OF CEMENT. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.

ALL BAR SUPPORTS USED IN THE PARAPET, END BENT CAPS AND ALL INCIDENTAL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 21.0 FT EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE EXISTING STRUCTURE CONSISTING OF ONE 19'-0" SPAN, ONE 17'-10" SPAN, AND ONE 19'-0" SPAN; 28'-1" CLEAR ROADWAY WIDTH AND REINFORCED CONCRETE DECK ON 23 TIMBER JOISTS ON TIMBER CAPS AND TIMBER PILES SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

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.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

CLASS AA CONCRETE SHALL BE USED IN ALL CAST-IN-PLACE END BENT CAPS AND SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

PAVEMENT ALONG THE TRANSVERSE CENTERLINE OF ALL CAPS SHALL BE SAW CUT TO A DEPTH OF ¾"±, CLEANED AND FILLED WITH AN APPROVED ASPHALT SEALANT IN ACCORDANCE WITH SECTION 1028 OF THE STANDARD SPECIFICATIONS. PAYMENT FOR THIS WORK SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE FOR VARIOUS PAY ITEMS.

APPLY AN APPROVED EPOXY PROTECTIVE COATING TO THE TOPS OF ALL CAPS. PAYMENT FOR THIS WORK SHALL BE INCIDENTAL TO OTHER PAY ITEMS IN THE CONTRACT AND NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK.

THE TOP SURFACE AREAS OF THE BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS — Signed by: David W. Hawkins — 4/15/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY M. WRIGHT DATE 2/23
CHECKED BY D. HAWKINS DATE 2/23
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 8/24

DWG. NO. 2

PROJECT NO. BP2-R017
BEAUFORT COUNTY
STATION: 18+47.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING LOCATION SKETCH, GENERAL NOTES, FOUNDATION NOTES, & BILL OF MATERIALS

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

4/8/2026 1:46:44 PM
V:\Raw\Projects\63963 2019 East Region LSC - Division 2\BP2-R017\1_Beaufort BR115\Structures\GSW\401_003_BP2R017_SMU_GD02_002_060115.dgn

Docusign Envelope ID: C2DA368C-3C73-41CB-9389-8C57E5CFDF19

SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Resistance per Pile TONS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles*			Drilled-In Piles		
					Min Pile Tip (Tip No Higher Than) Elev FT	Required Driving Resistance (RDR)** per Pile TONS	Total Pile Redrives Quantity EACH	Predrilling Length per Pile Lin FT	Predrilling Elevation (Elev Not To Predrill Below) FT	Maximum Predrilling Dia INCHES	Pile Excavation (Bottom of Hole) Elev FT	Pile Exc Not In Soil per Pile Lin FT	Pile Exc In Soil per Pile Lin FT
End Bent No. 1, Piles 1-7	75	"See Substructure	70			100	7						
End Bent No. 2, Piles 1-7	75	Plans"	70			100							

*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.

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

SUMMARY OF DPT/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Dynamic Pile Testing (DPT)				Pile Order Lengths	
End Bent/ Bent No	DPT Testing Required? YES or MAYBE	DPT Test Pile Length FT	Total DPT Testing Quantity EACH	End Bent/ Bent No(s)	Pile Order Length Basis* EST or DPT
End Bent No. 1	YES	75	2	End Bent No. 1	EST
End Bent No. 2	YES	75		End Bent No. 2	EST

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

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile TONS	Factored Downdrag Load per Pile TONS	Factored Dead Load* per Pile TONS	Dynamic Resistance Factor	Nominal Downdrag Resistance per Pile TONS	Nominal Scour Resistance per Pile TONS	Scour Resistance Factor (Default = 1.00)
End Bent No. 1, Piles 1-7	74			0.75			1.00
End Bent No. 2, Piles 1-7	74			0.75			1.00

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

PROJECT NO. BP2-R017

BEAUFORT COUNTY

STATION: 18+47 -L-

NOTES:

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Thein Tun Zan, PE seal #030943) on 03-27-2024.
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 DPT when DPTs may be required.

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS 4/15/2026

Signed by: David W. Hawkins
A9ED7524B855487...
SIGNATURE DATE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE FOUNDATION TABLES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

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

SHEET NO. S-3

TOTAL SHEETS 18

Docusign Envelope ID: C2DA368C-3C73-41CB-9389-8C57E5CFDF19

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

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

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

1.

2.

3.

4.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING * *

(4) EMERGENCY VEHICLE LOAD RATING **

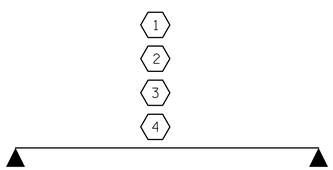
* * SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER

EL - EXTERIOR LEFT GIRDER

ER- EXTERIOR RIGHT GIRDER



LRFR SUMMARY

FOR SPAN " A "

PROJECT NO. BP2-R017

BEAUFORT COUNTY

STATION: 18+47.00 -L-

STD. NO. 21LRFR1_90S_55L

ASSEMBLED BY: M. WRIGHT	DATE : 2/23		
CHECKED BY : D. HAWKINS	DATE : 2/23		
DRAWN BY : MAA 1/08	REV. 11/12/08RR	MAA/GM	
CHECKED BY : GM/DI 2/08	REV. 10/1/11	MAA/GM	
	REV. 04/23	BNB/AAI	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY	M. WRIGHT	DATE 2/23
CHECKED BY	D. HAWKINS	DATE 2/23
DESIGN ENGINEER OF RECORD	D. HAWKINS	DATE 8/24

DWG. NO. 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

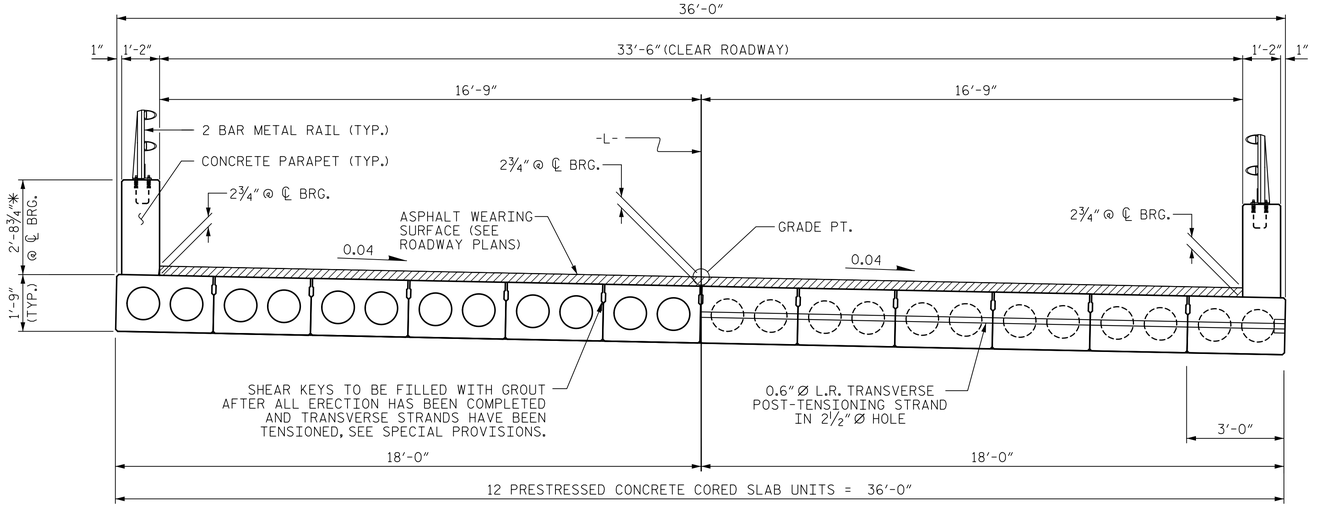
LRFR SUMMARY FOR 55' CORED SLAB UNIT 90° SKEW

(NON-INTERSTATE TRAFFIC)

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

3/26/2026 1:03:00 PM
\\nwoDrp\bet\HS9063 2019 East Region LSC - Division 2\BP2-R017.1_Beaufort BR 115\Structures\GDN401_007_BP2R0171_SMU_LRFR01_004_060115.dgn

Docusign Envelope ID: C2DA368C-3C73-41CB-9389-8C57E5CFDF19

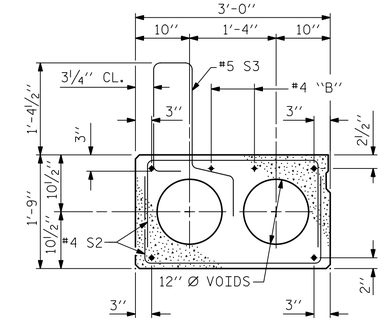


HALF SECTION THROUGH VOIDS

HALF SECTION AT INTERMEDIATE DIAPHRAGMS

TYPICAL SECTION

*- THE MAXIMUM PARAPET HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE PARAPET AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE PARAPET FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR PARAPET HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "SECTION THRU PARAPET" DETAIL ON SHEET 3 OF 3.



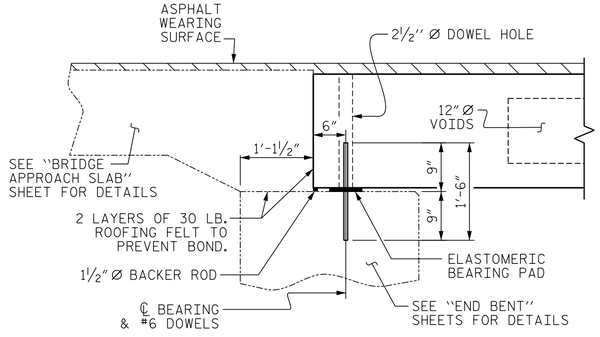
EXT. SLAB SECTION

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

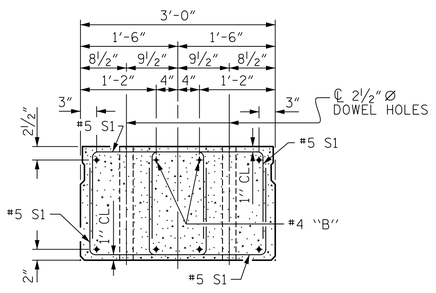
BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6′-0″ FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND

FIXED END

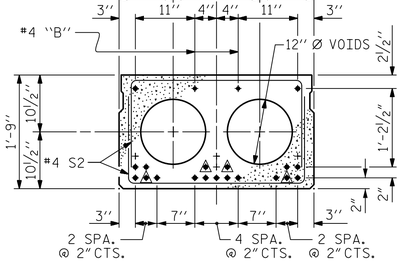


SECTION AT END BENT



END ELEVATION

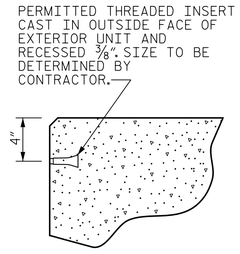
SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



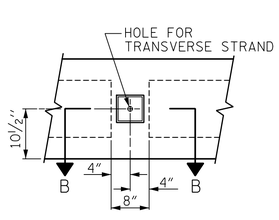
INTERIOR SLAB SECTION (55′ UNIT)

(19 STRANDS REQUIRED)

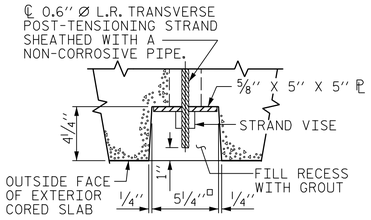
0.6″ Ø LOW RELAXATION STRAND LAYOUT



THREADED INSERT DETAIL

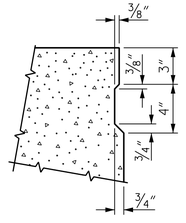


ELEVATION VIEW



SECTION B-B

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



SHEAR KEY DETAIL

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

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS
Signed by: David W. Hawkins
4/15/2026

PROJECT NO. BP2-R017

BEAUFORT COUNTY

STATION: 18+47.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD 3′-0″ X 1′-9″ PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW

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

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY M. WRIGHT DATE 2/23
CHECKED BY D. HAWKINS DATE 2/23
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 8/24
DWG. NO. 5

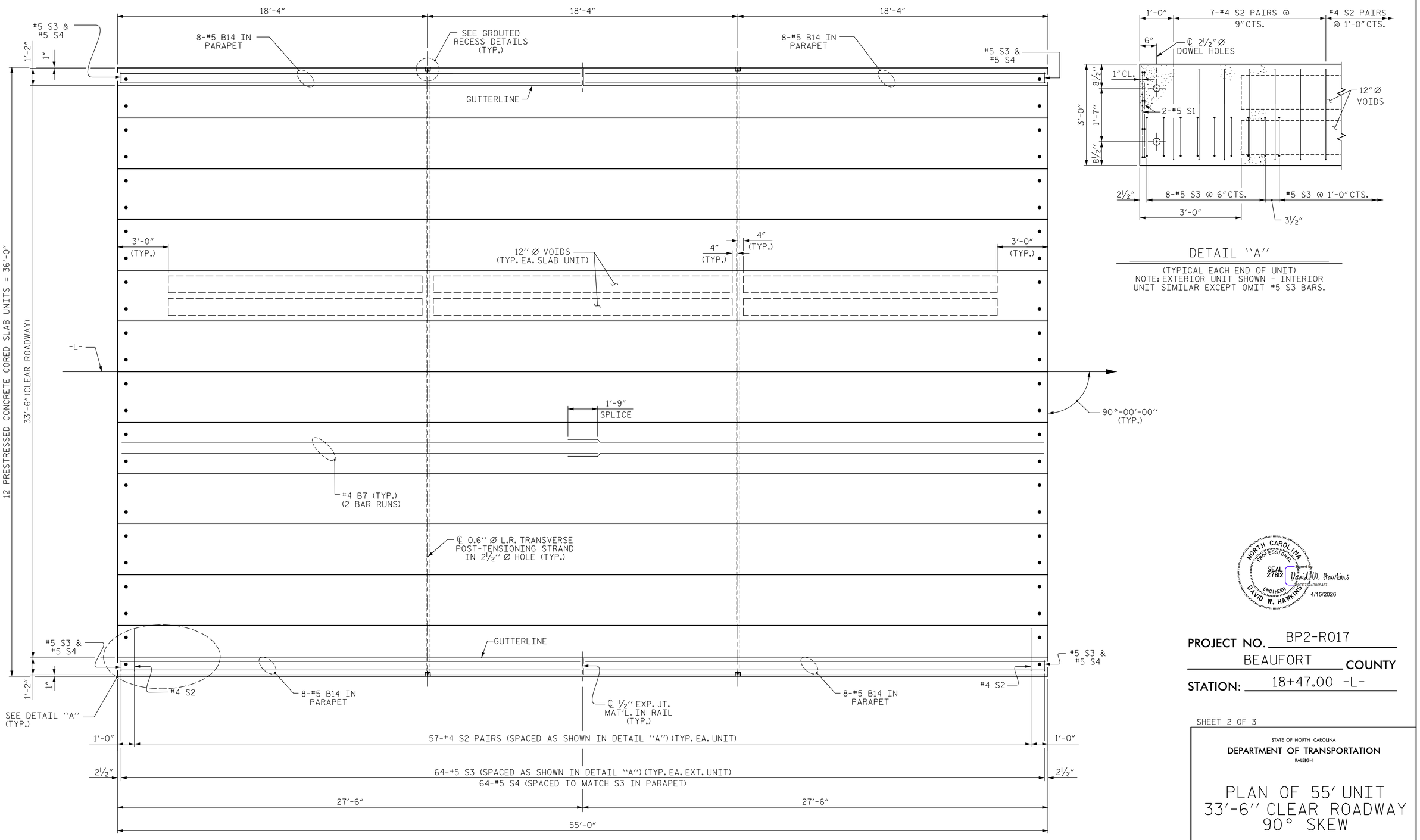
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STD. NO. 21"PCS2_36_90S

ASSEMBLED BY : M. WRIGHT	DATE : 2/23		
CHECKED BY : D. HAWKINS	DATE : 2/23		
DRAWN BY : DGE 5/09	REV. 9/14	MAA/TMG	
CHECKED BY : BCH 6/09			

3/26/2026 1:06:22 PM
V:\Raw\DOT\projects\69063 2019 East Region LSC - Division 2\BP2\R017.1_Beaufort BR115\Structures\DGN\401_009_BP2R017.1_SMU_CS01_005_060115.dgn

Docusign Envelope ID: C2DA368C-3C73-41CB-9389-8C57E5CFDF19



DETAIL ″A″

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

PLAN OF UNIT

STD. NO. 21″PCS_36_90S_55L

ASSEMBLED BY : M. WRIGHT	DATE : 2/23		
CHECKED BY : D. HAWKINS	DATE : 2/23		
DRAWN BY : DGE 5/09	REV. 12/5/11	MAA/AAC	
CHECKED BY: BCH 6/09	REV. 8/14	MAA/TMG	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY	M. WRIGHT	DATE	2/23
CHECKED BY	D. HAWKINS	DATE	2/23
DESIGN ENGINEER OF RECORD	D. HAWKINS	DATE	8/24

DWG. NO. 6

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS
Signed by: David W. Hawkins
DocuSigned by: 5ED7B48855487...
4/15/2026

PROJECT NO. BP2-R017

BEAUFORT COUNTY

STATION: 18+47.00 -L-

SHEET 2 OF 3

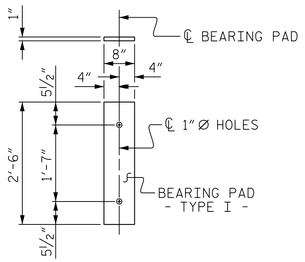
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 55′ UNIT
33′-6″ CLEAR ROADWAY
90° SKEW

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-6
1			3			TOTAL SHEETS
2			4			18

3/26/2026 10:56:56 PM
\\Raleigh\projects\69063 2019 East Region LSC - Division 2\BP2R017.1_Beaufort EB1\15\Structures\DGN\401_011_BP2R017.1_SMU_LC02_006_060115.dgn

Docusign Envelope ID: C2DA368C-3C73-41CB-9389-8C57E5CFDF19



FIXED END
(TYPE I - 24 REQ'D)

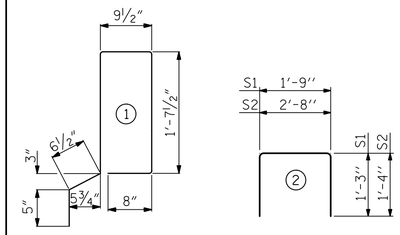
ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

BILL OF MATERIAL FOR ONE 55' CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B7	4	#4	STR	28'-3"	75	28'-3"	75
S1	8	#5	2	4'-3"	35	4'-3"	35
S2	114	#4	2	5'-4"	406	5'-4"	406
✳ S3	64	#5	1	5'-7"	373		
REINFORCING STEEL			LBS.		516		516
✳EPOXY COATED REINFORCING STEEL			LBS.		373		
6500 P.S.I. CONCRETE			CU. YDS.		7.8		7.8
0.6"Ø L.R. STRANDS			No.		19		19

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

CORED SLABS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
55' UNIT			
EXTERIOR C.S.	2	55'-0"	110'-0"
INTERIOR C.S.	10	55'-0"	550'-0"
TOTAL	12		660'-0"

GUTTERLINE ASPHALT THICKNESS & PARAPET HEIGHT

	ASPHALT OVERLAY THICKNESS	PARAPET HEIGHT
	@ MID-SPAN	@ MID-SPAN
55' UNITS	1⅛"	2'-7⅝"

CONCRETE RELEASE STRENGTH

UNIT	PSI
55' UNITS	4900

GRADE 270 STRANDS

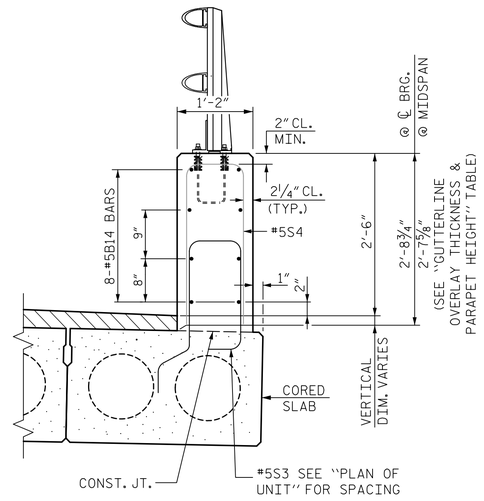
	0.6"Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

DEAD LOAD DEFLECTION AND CAMBER

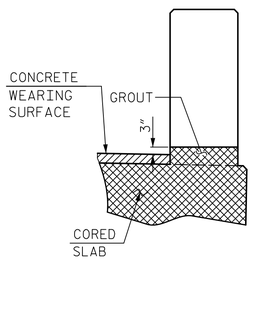
	3'-0" x 1'-9"
55' CORED SLAB UNIT	0.6"Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1½" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD✳✳	⅜" ↓
FINAL CAMBER	1⅛" ↑

✳✳ INCLUDES FUTURE WEARING SURFACE

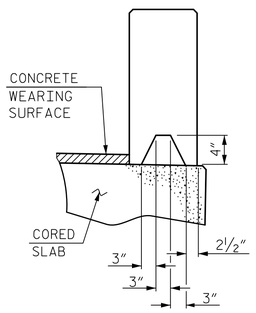
NOTE: FOR END POST REINFORCING DETAILS AND PARAPET BILL OF MATERIAL, SEE SHEET "RAIL POST SPACINGS AND END OF RAIL DETAILS FOR TWO BAR METAL RAILS".



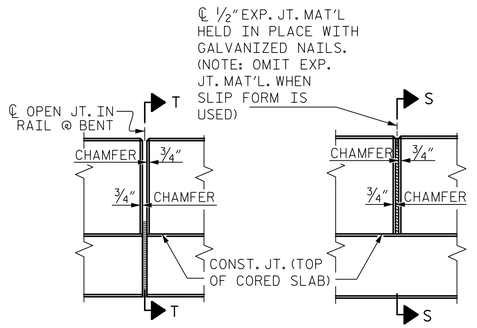
SECTION THRU PARAPET



SECTION T-T
AT OPEN JOINT AT BENT
(THIS IS TO BE USED WHERE FOAM JOINT IS NOT USED)



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



ELEVATION AT EXPANSION JOINTS

PARAPET DETAILS

NOTES

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

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

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

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

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

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

ALL REINFORCING STEEL IN THE PARAPETS SHALL BE EPOXY COATED.

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, ½" 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.

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

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

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.

PRESTRESSED CONCRETE CORED SLAB UNITS ARE DESIGNED FOR 0 PSI TENSION IN THE PRECOMPRESSED TENSILE ZONE UNDER ALL LOADING CONDITIONS.

PRESTRESSED CONCRETE CORED SLAB UNITS SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

PROJECT NO. BP2-R017
BEAUFORT COUNTY
STATION: 18+47.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3'-0" X 1'-9"
PRESTRESSED CONCRETE
CORED SLAB UNIT
90° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS
Signed by: David W. Hawkins
4/15/2026

STD. NO. 21"PCS3_36_90S

ASSEMBLED BY : M. WRIGHT	DATE : 2/23	
CHECKED BY : D. HAWKINS	DATE : 2/23	
DRAWN BY : DGE 5/09	REV. 5/18	MAA/THC
CHECKED BY : BCH 6/09		

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY	M. WRIGHT	DATE 2/23
CHECKED BY	D. HAWKINS	DATE 2/23
DESIGN ENGINEER OF RECORD	D. HAWKINS	DATE 8/24

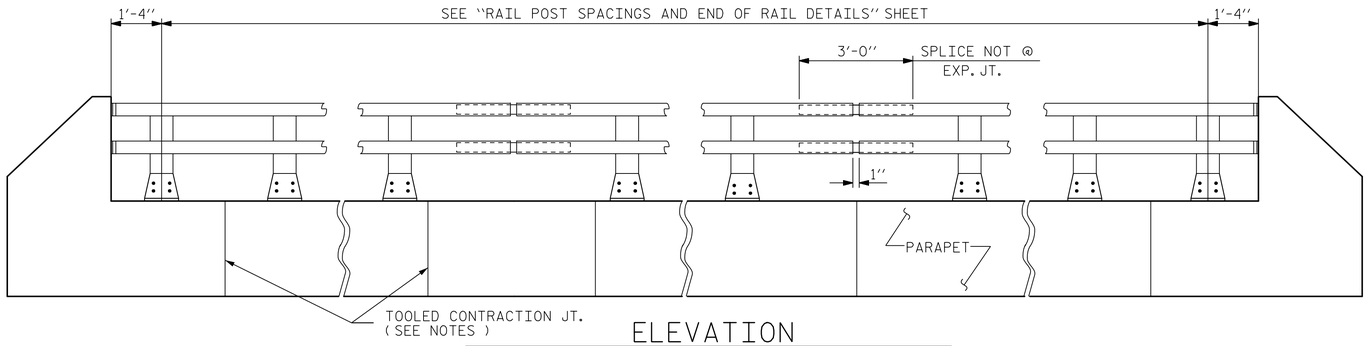
DWG. NO. 7

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-7
1			3			TOTAL SHEETS
2			4			18

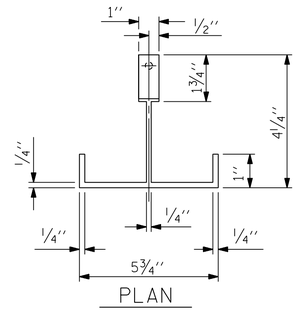
3/26/2026 10:25 PM
\\raw00vprojects\69063 2019 East Region LSC - Division 2\BP2-R017.1_Beaufort BR1195\Structures\DGN\401_013_BP2R0171_SMU_CS03_007_080115.dgn

Docusign Envelope ID: C2DA368C-3C73-41CB-9389-8C57E5CFDF19

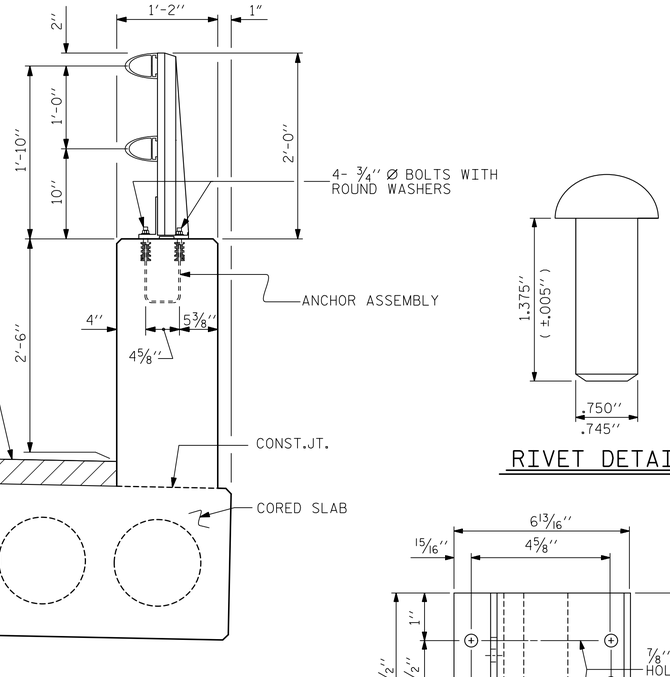


ELEVATION

NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2.

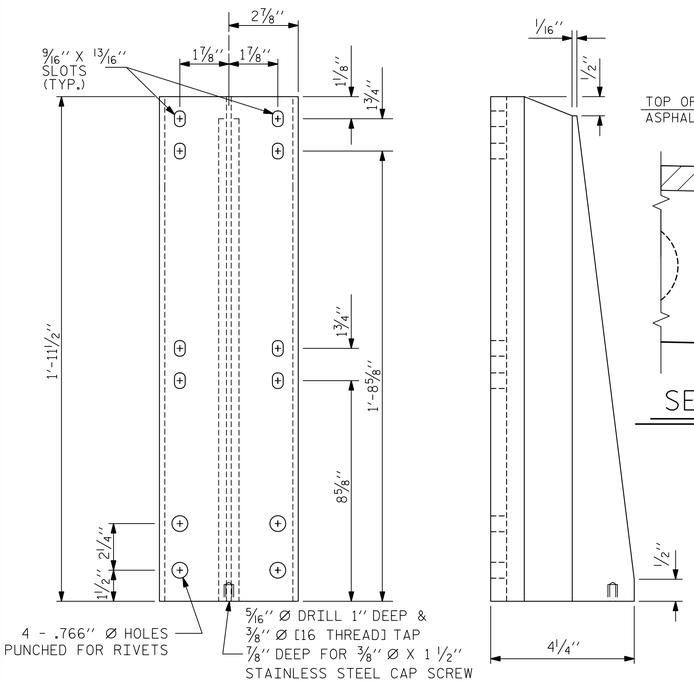


PLAN



SECTION THRU PARAPET

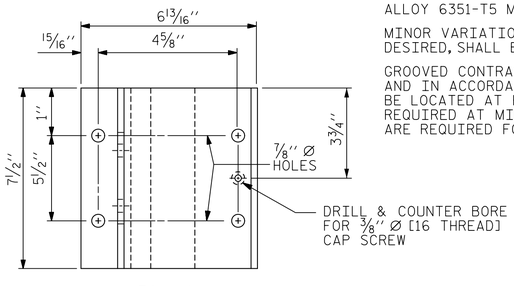
RIVET DETAIL



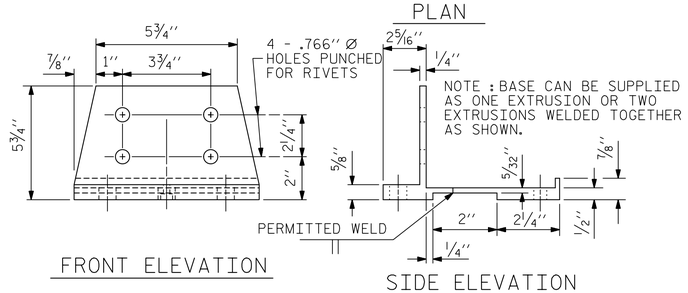
FRONT ELEVATION

SIDE ELEVATION

DETAILS OF POST



PLAN



FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS

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 STANDARD NO. BMR2.

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, ½" 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 = 95.00 LIN. FT.

PROJECT NO. BP2-R017

BEAUFORT **COUNTY**

STATION: 18+47.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

2 BAR METAL RAIL

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS
Signed by: David W. Hawkins
DocuSigned by: 4/15/2026

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-8
1			3			TOTAL SHEETS
2			4			18

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY M. WRIGHT DATE 2/23
CHECKED BY D. HAWKINS DATE 2/23
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 8/24

DWG. NO. 8

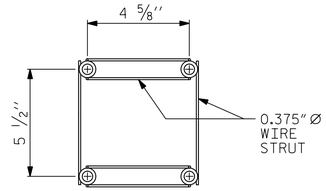
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STD. NO. BMR3 (SHT 1)

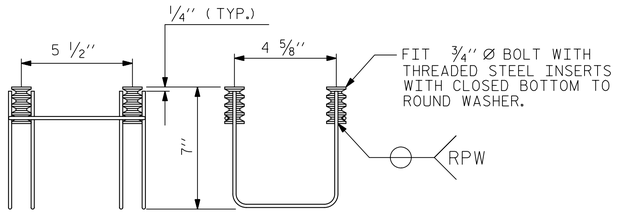
ASSEMBLED BY : M. WRIGHT	DATE : 2/23
CHECKED BY : D. HAWKINS	DATE : 2/23
DRAWN BY : EEM 6/94	REV. 10/1/11 MAA/GM
CHECKED BY : RGW 6/94	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

3/26/2026 1:07:57 PM
\\rdu\Dfs\Jobs\63963 2019 East Region LSC - Division 2\BP2\R017\1_Beaufort BR115\Structures\DGN\401_015_BP2R017I_SMU_2MR01_008_060115.dgn

Docusign Envelope ID: C2DA368C-3C73-41CB-9389-8C57E5CFDF19



PLAN



SIDE VIEW ELEVATION

4-BOLT METAL RAIL ANCHOR ASSEMBLY

(20 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.

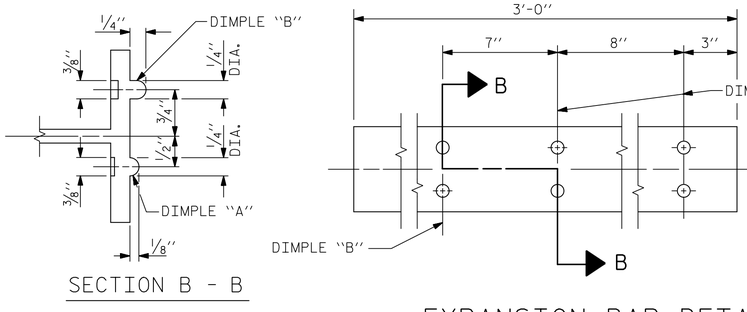
D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.

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.

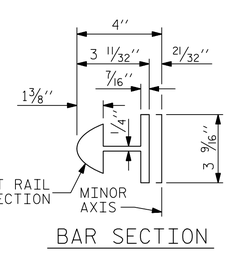
F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

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.

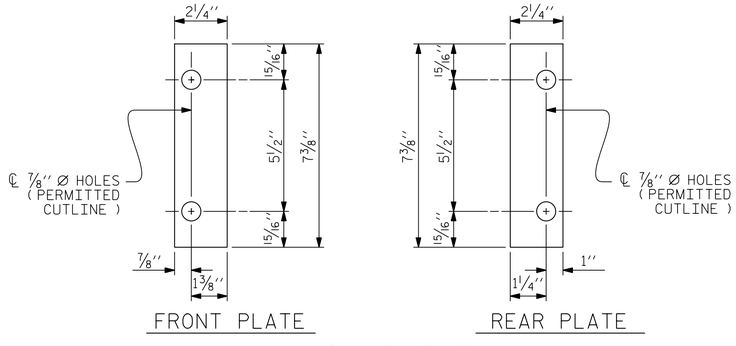


SECTION B - B



BAR SECTION

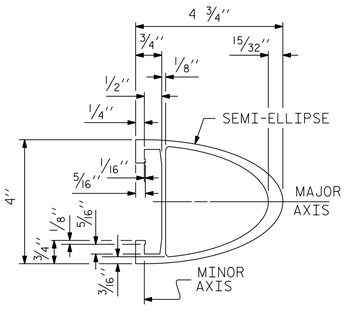
EXPANSION BAR DETAILS



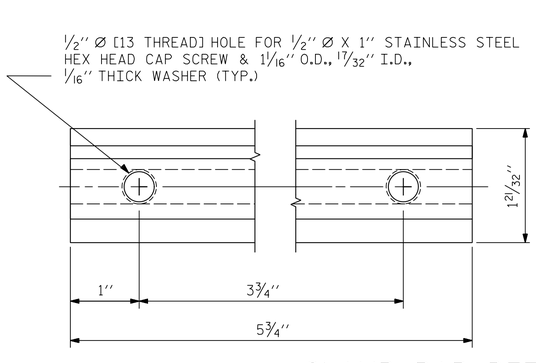
FRONT PLATE REAR PLATE

SHIM DETAILS

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

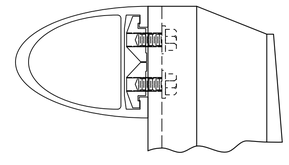


RAIL SECTION

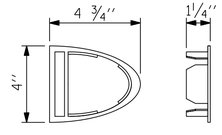


CLAMP BAR DETAIL

(4 REQUIRED PER POST)



CLAMP ASSEMBLY



RAIL CAP

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS
Signed by: David W. Hawkins
4/15/2026

PROJECT NO. BP2-R017

BEAUFORT COUNTY

STATION: 18+47.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

2 BAR METAL RAIL

STD. NO. BMR4

ASSEMBLED BY : M. WRIGHT	DATE : 2/23	
CHECKED BY : D. HAWKINS	DATE : 2/23	
DRAWN BY : EEM 6/94	REV. 5/1/06R	KMM/GM
CHECKED BY : RGW 6/94	REV. 10/1/11	MAA/GM
	REV. 12/17	MAA/THC

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

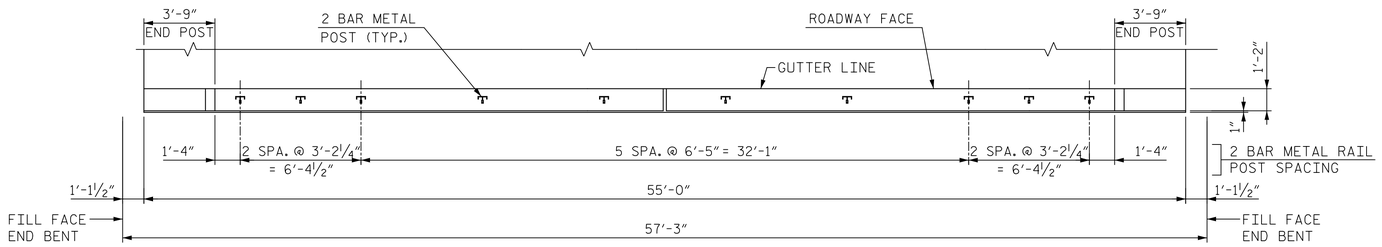
DRAWN BY	M. WRIGHT	DATE 2/23
CHECKED BY	D. HAWKINS	DATE 2/23
DESIGN ENGINEER OF RECORD	D. HAWKINS	DATE 8/24

DWG. NO. 9

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-9
1			3			TOTAL SHEETS
2			4			18

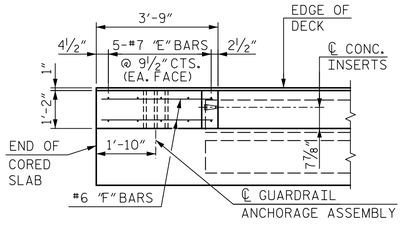
3/25/2026 1:08:29 PM \\Ntlwk001\proj\ets\69063 2019 East Region LSC - Division 2\BP2-R017.1_Beaufort BR 115\Structures\004\401_017_BP2R017.1_SMU_BMR02_009_060115.dgn

Docusign Envelope ID: C2DA368C-3C73-41CB-9389-8C57E5CFDF19

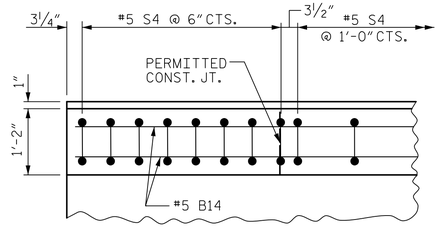


PLAN OF RAIL POST SPACINGS AT SPAN A

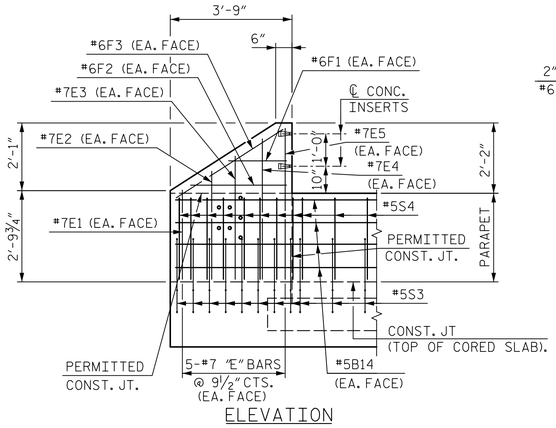
RIGHT SIDE PLAN SHOWN. LEFT SIDE OPPOSITE HAND.



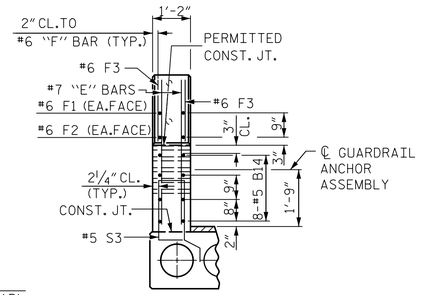
PLAN OF END POST



PLAN OF PARAPET



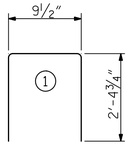
ELEVATION



END VIEW

PARAPET AND END POST FOR TWO BAR METAL RAIL

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR PARAPET & END POSTS

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳B14	32	# 5	STR	27'-1"	904
✳E1	8	# 7	STR	2'-8"	44
✳E2	8	# 7	STR	3'-2"	52
✳E3	8	# 7	STR	3'-8"	60
✳E4	8	# 7	STR	4'-2"	68
✳E5	8	# 7	STR	4'-7"	75
✳F1	8	# 6	STR	1'-9"	21
✳F2	8	# 6	STR	2'-11"	35
✳F3	8	# 6	STR	3'-10"	46
✳S4	128	#5	1	5'-7"	745

✳EPOXY COATED REINFORCING STEEL	LBS. 2,050
CLASS AA CONCRETE	CU. YDS. 13.8
TOTAL LIN. FT. OF 1'-2" × 2'-8¾" CONCRETE PARAPET	110.00'

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 7/16" 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).

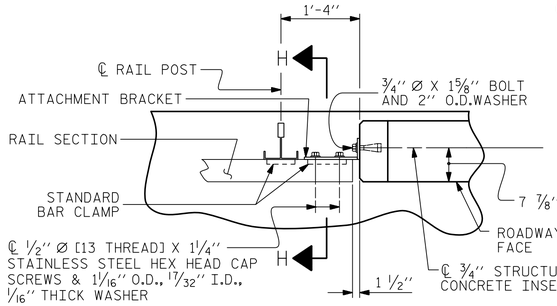
E. ½" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

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.

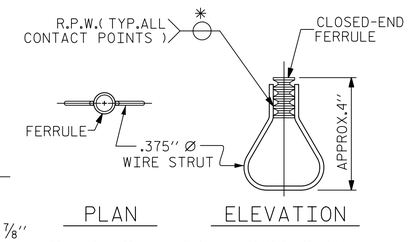
THE ¾" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

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.



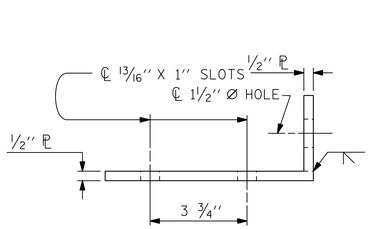
PLAN - RAIL AND END POST



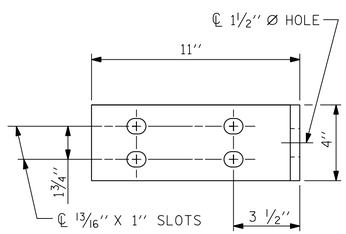
PLAN ELEVATION

STRUCTURAL CONCRETE INSERT

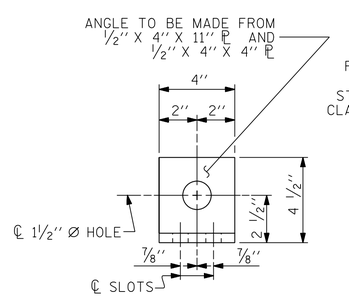
✳EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.



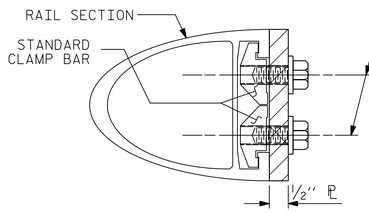
TOP VIEW



ELEVATION



END VIEW



SECTION H-H

DETAILS FOR ATTACHING METAL RAIL TO END POST

PROJECT NO. BP2-R017

BEAUFORT COUNTY

STATION: 18+47.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

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

STD. NO. BMR2

ASSEMBLED BY : M. WRIGHT	DATE : 2/23
CHECKED BY : D. HAWKINS	DATE : 2/23
DRAWN BY : FCJ 1/88	REV. 5/1/06 TLA/GM
CHECKED BY : CRK 3/89	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY	M. WRIGHT	DATE	2/23
CHECKED BY	D. HAWKINS	DATE	2/23
DESIGN ENGINEER OF RECORD	D. HAWKINS	DATE	8/24

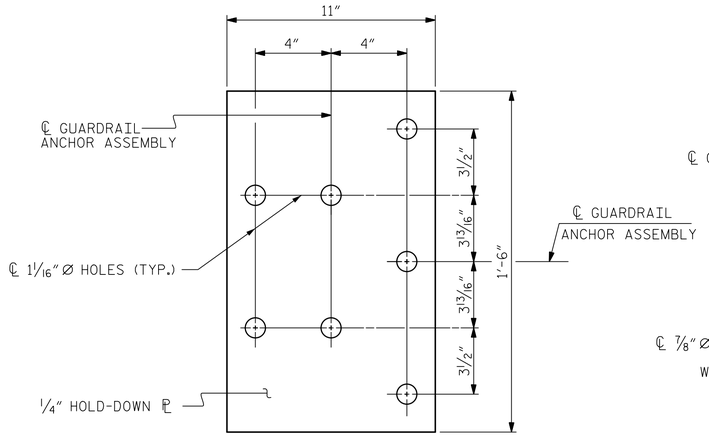
DWG. NO. 10

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

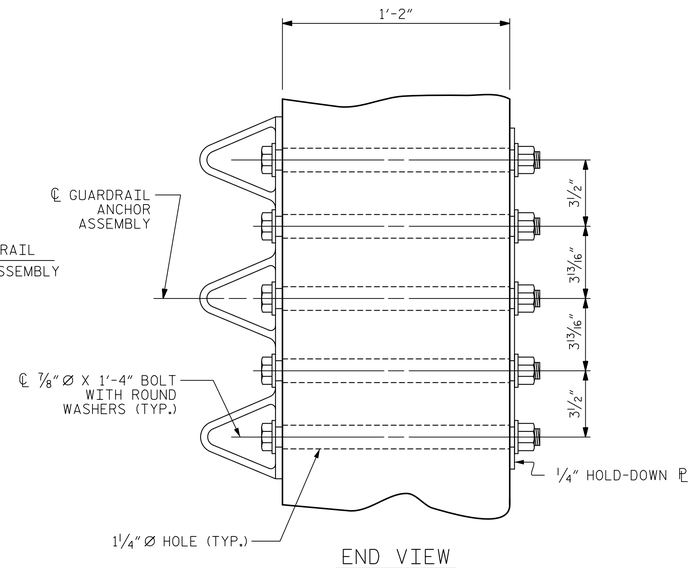
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-10
1			3			TOTAL SHEETS
2			4			18

4/22/2026 6:56:36 AM
\\raw00\Projects\60063 2019 East Region LSC - Division 2\BP2-R017.1_Beaufort BR115\Structures\DGN\401_019_BP2R017.1_SMU_2MR03_010_080115.dgn

Docusign Envelope ID: C2DA368C-3C73-41CB-9389-8C57E5CFDF19



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.

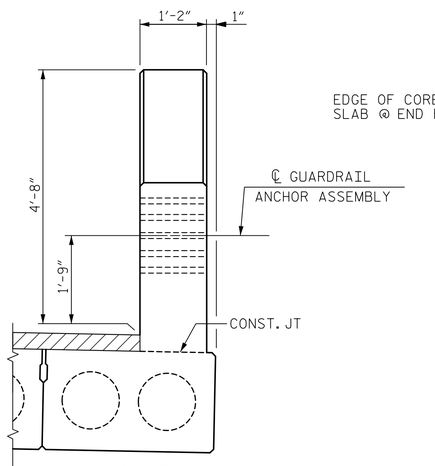
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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

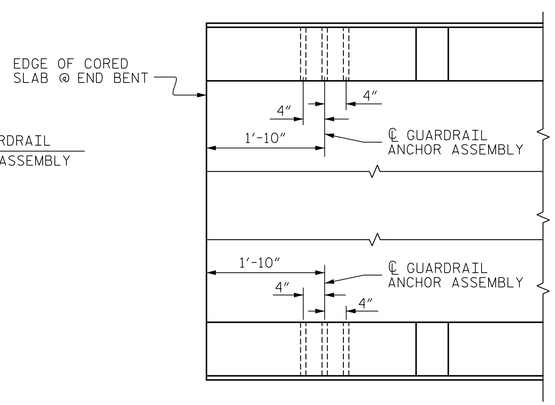
THE 1 1/4″ Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

SKETCH SHOWING POINTS OF ATTACHMENT

✳ LOCATION OF GUARDRAIL ATTACHMENT



END VIEW
(TWO BAR METAL RAIL)



PLAN

LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. BP2-R017
BEAUFORT COUNTY
STATION: 18+47.00 -L-

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS
Signed by: David W. Hawkins
4/15/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS

STD. NO. GRA3

ASSEMBLED BY : M. WRIGHT		DATE : 2/23	
CHECKED BY : D. HAWKINS		DATE : 2/23	
DRAWN BY : MAA 5/10	REV. 1/15	MAA/TMG	
CHECKED BY : GM 5/10	REV. 12/17	MAA/THC	
	REV. 5/18	MAA/THC	

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY M. WRIGHT DATE 2/23
CHECKED BY D. HAWKINS DATE 2/23
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 8/24

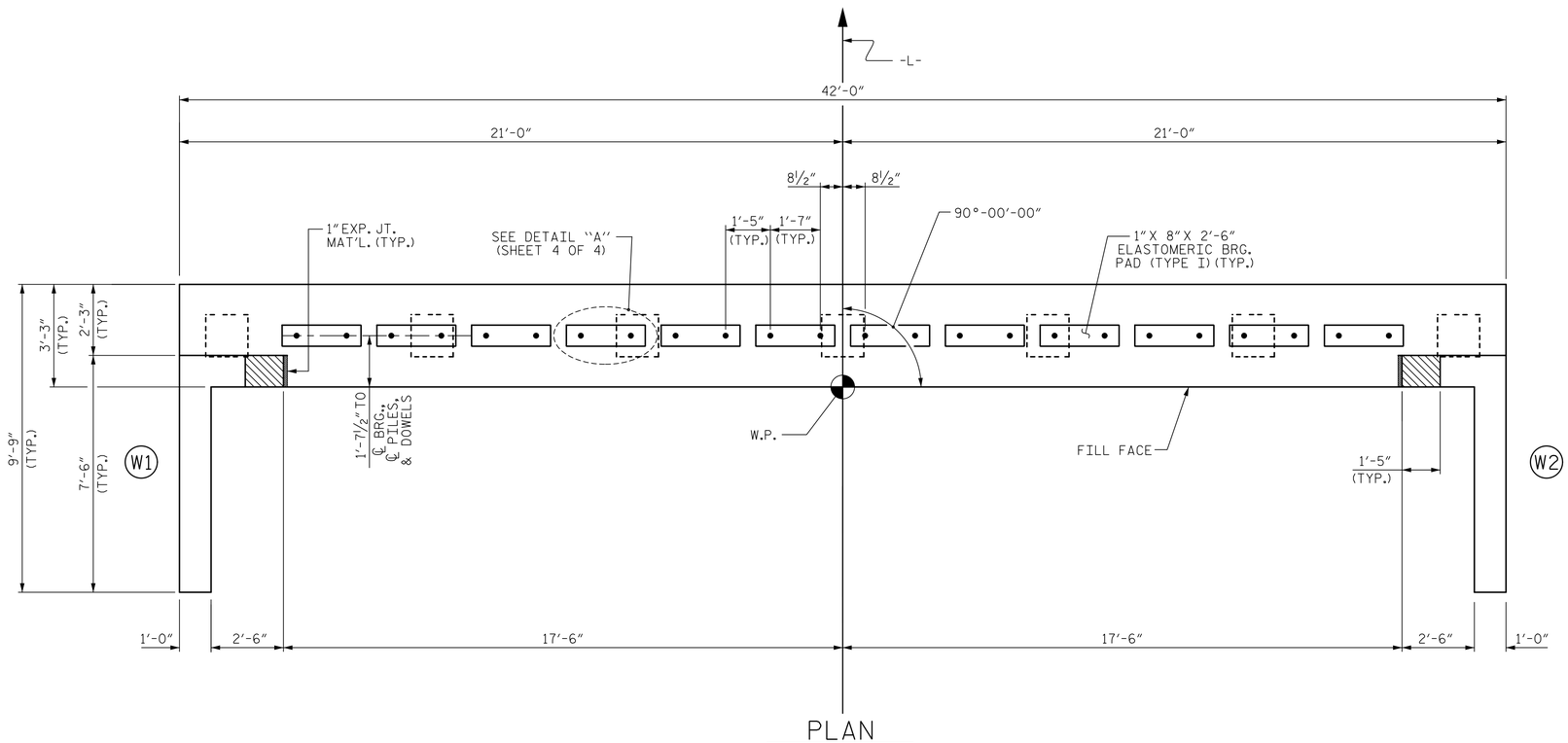
DWG. NO. II

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

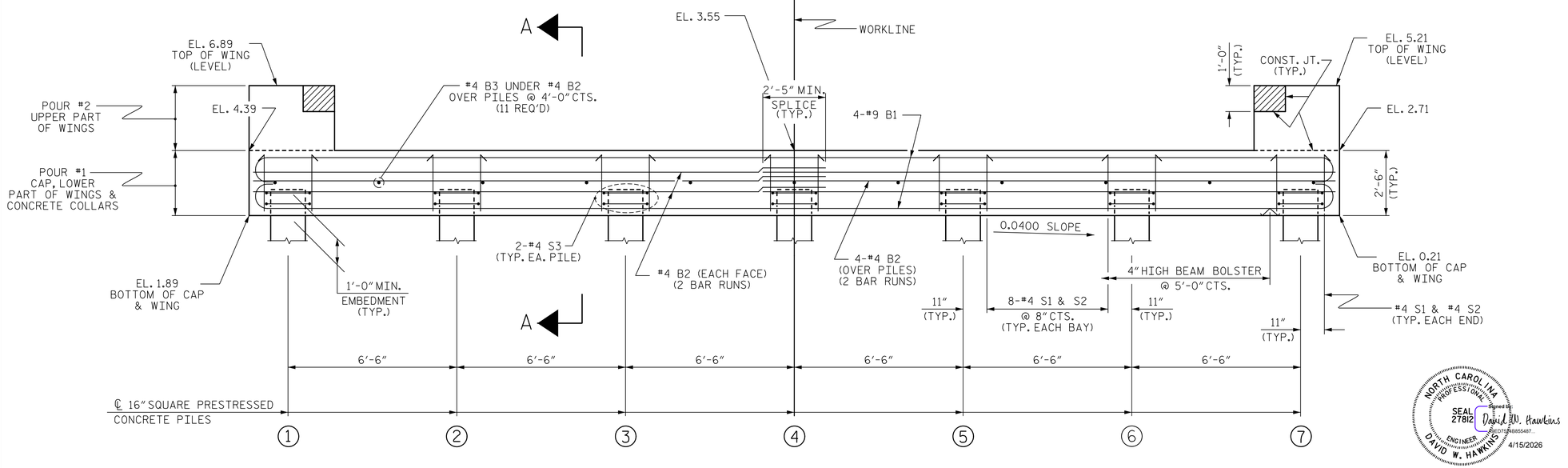
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-11
1			3			TOTAL SHEETS
2			4			18

3/26/2026
1:10:01 PM
\\Cdw00vpro\tech\60863 2019 East Region LSC - Division 2\BP2.R017.1_Beaufort BR115\Structures\DGN\401_021_BP2R0171_SWLGR01_011_D601115.dgn

Docusign Envelope ID: C2DA368C-3C73-41CB-9389-8C57E5CFDF19



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE 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 PARAPET IS CAST IF SLIP FORMING IS USED.

CLASS AA CONCRETE SHALL BE USED IN ALL CAST-IN-PLACE END BENT CAPS AND SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL BAR SUPPORTS USED IN THE END BENT CAP AND ALL INCIDENTAL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE CONCRETE IN THE END BENT CAPS OF END BENT NO.1 SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB OF CEMENT. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTIAL TO THE VARIOUS PAY ITEMS.

FOR WING DETAILS, SEE SHEET 3 OF 4.

TOP OF PILE ELEVATIONS	
①	2.83
②	2.57
③	2.31
④	2.05
⑤	1.79
⑥	1.53
⑦	1.27

PROJECT NO. BP2-R017

BEAUFORT COUNTY

STATION: 18+47.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No.1

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27812 DAVID W. HAWKINS
Signed by: David W. Hawkins
4/15/2026

STD. NO. EB_36_90S

ASSEMBLED BY : M. WRIGHT	DATE : 2/23		
CHECKED BY : D. HAWKINS	DATE : 2/23		
DRAWN BY : DGE 01/10	REV. 4/15	MAA/TMG	
CHECKED BY : MKT 01/10			

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY	M. WRIGHT	DATE	2/23
CHECKED BY	D. HAWKINS	DATE	2/23
DESIGN ENGINEER OF RECORD	D. HAWKINS	DATE	8/24

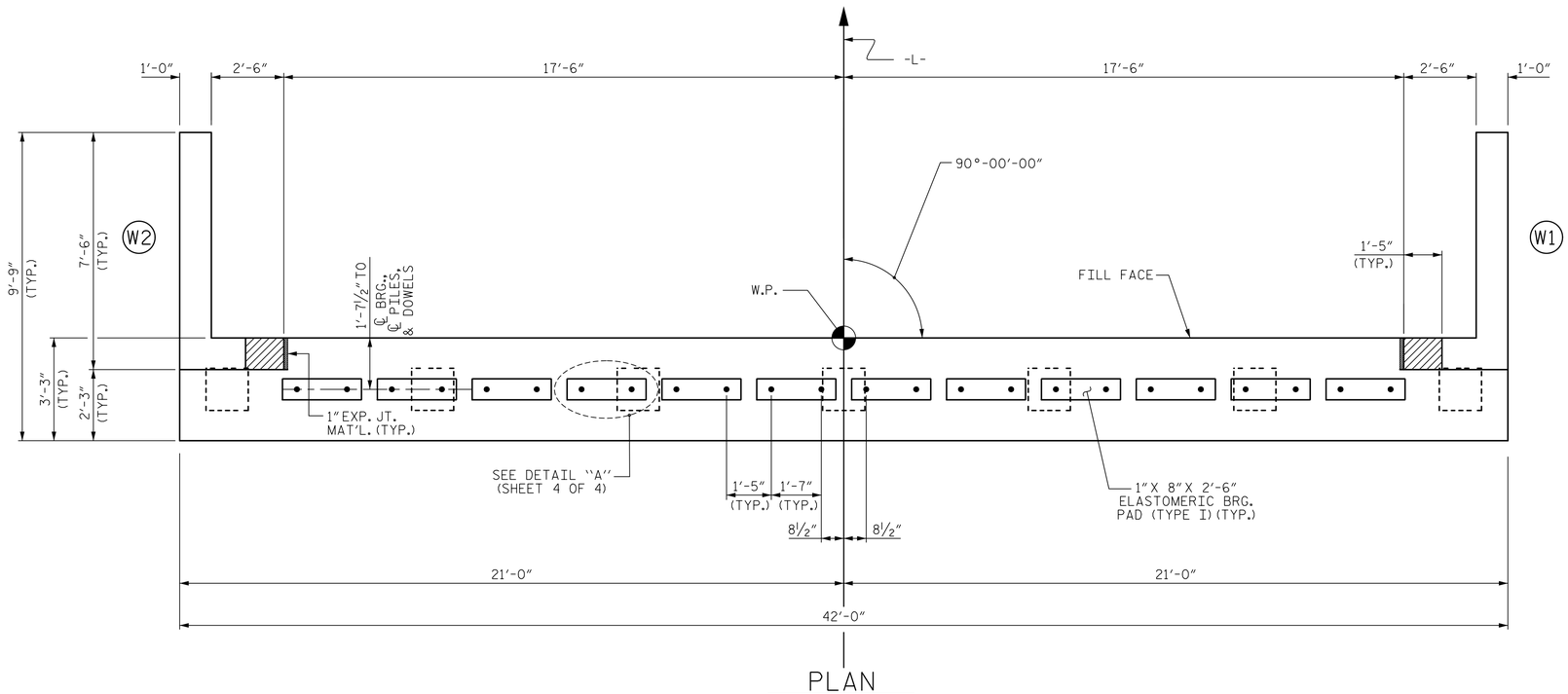
DWG. NO. 12

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

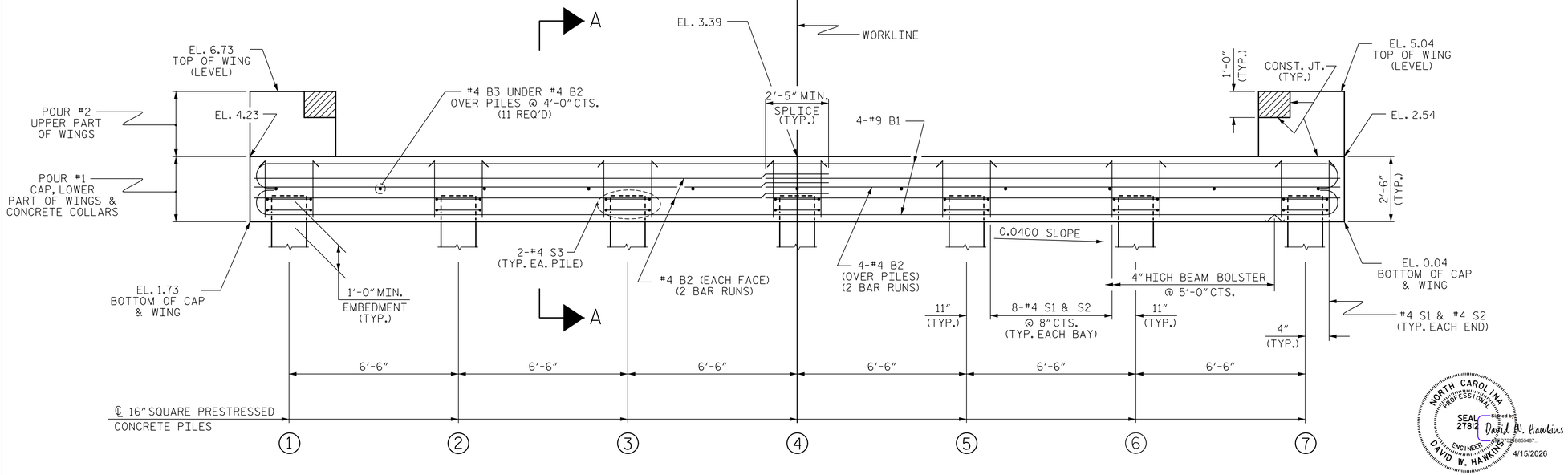
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-12
1			3			TOTAL SHEETS
2			4			18

3/26/2026 1:10:27 PM
\\eliwDOtprojects\69363 2019 East Region LSC - Division 2\BP2R017.1_Beaufort BR115\Structures\DGN\401_023_BP2R017I_SWJ_E01_012_060115.dgn

Docusign Envelope ID: C2DA368C-3C73-41CB-9389-8C57E5CFDF19



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE 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 PARAPET IS CAST IF SLIP FORMING IS USED.

CLASS AA CONCRETE SHALL BE USED IN ALL CAST-IN-PLACE END BENT CAPS AND SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL BAR SUPPORTS USED IN THE END BENT CAP AND ALL INCIDENTAL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE CONCRETE IN THE END BENT CAPS OF END BENT NO. 2 SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB OF CEMENT. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTIAL TO THE VARIOUS PAY ITEMS.

FOR WING DETAILS, SEE SHEET 3 OF 4.

TOP OF PILE ELEVATIONS	
①	2.67
②	2.40
③	2.14
④	1.88
⑤	1.62
⑥	1.36
⑦	1.10

PROJECT NO. BP2-R017
BEAUFORT COUNTY
STATION: 18+47.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 2

STD. NO. EB_36_90S

ASSEMBLED BY : M. WRIGHT		DATE : 2/23
CHECKED BY : D. HAWKINS		DATE : 2/23
DRAWN BY : DGE 01/10	REV. 4/15	MAA/TMG
CHECKED BY : MKT 01/10		

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27812 DAVID W. HAWKINS
Signed by: David W. Hawkins
4/15/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

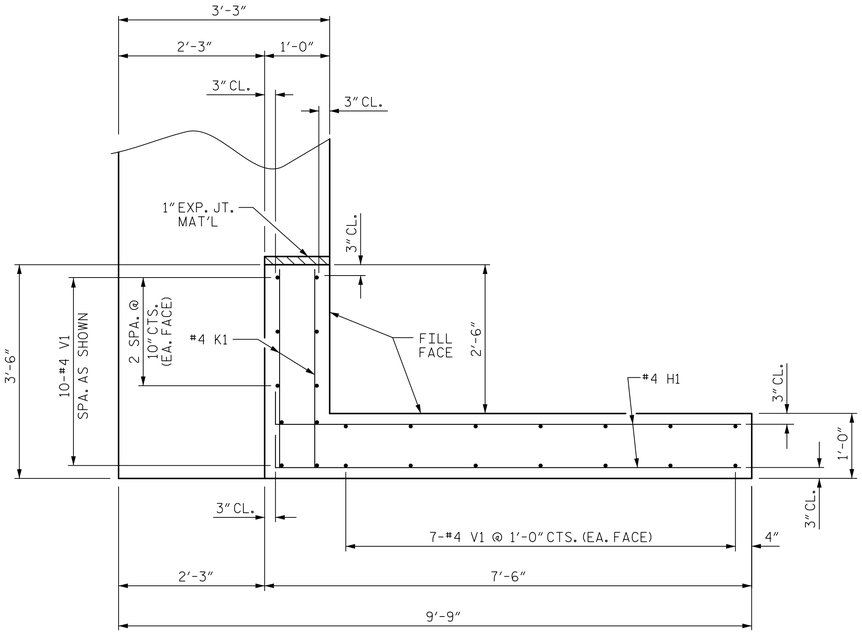
DRAWN BY	M. WRIGHT	DATE 2/23
CHECKED BY	D. HAWKINS	DATE 2/23
DESIGN ENGINEER OF RECORD	D. HAWKINS	DATE 8/24

DWG. NO. 13

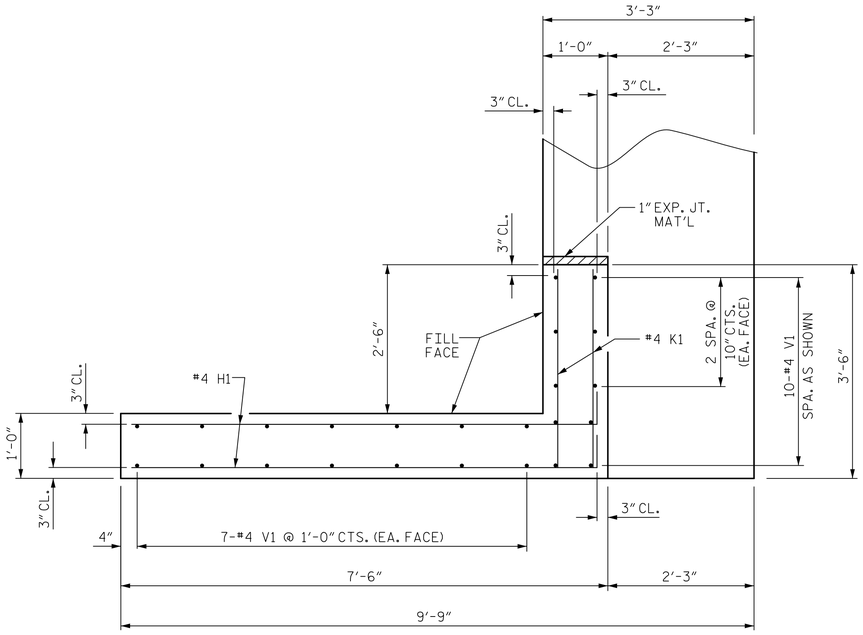
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-13
1			3			TOTAL SHEETS
2			4			18

3/26/2026 1:10:57 PM
\\eallNDOprojects\69363 2019 East Region LSC - Division 2\BP2R017.1_Beaufort BR115\Structures\DGN\401_025_BP2R017.1_SMU_E02_013_D601154.dgn

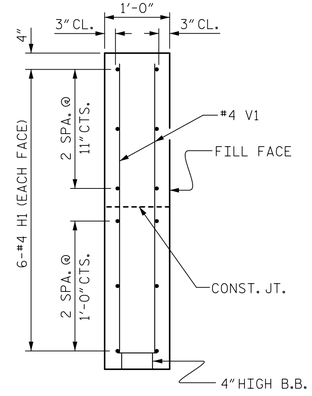
Docusign Envelope ID: C2DA368C-3C73-41CB-9389-8C57E5CFDF19



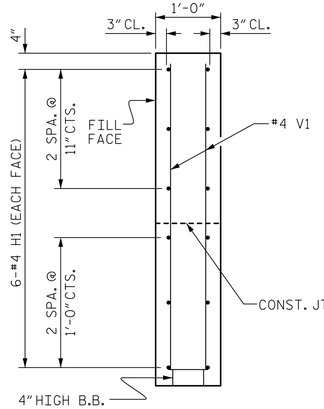
PLAN OF WING (W1)



PLAN OF WING (W2)



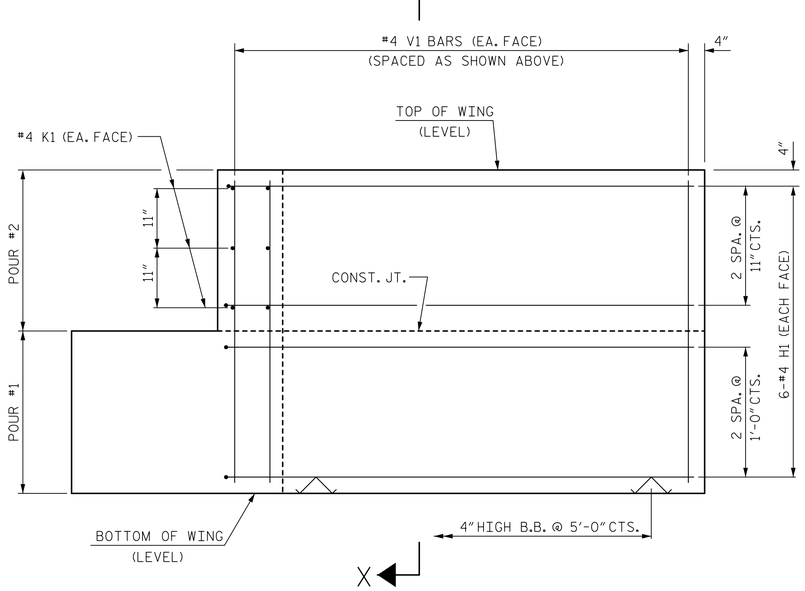
SECTION X-X



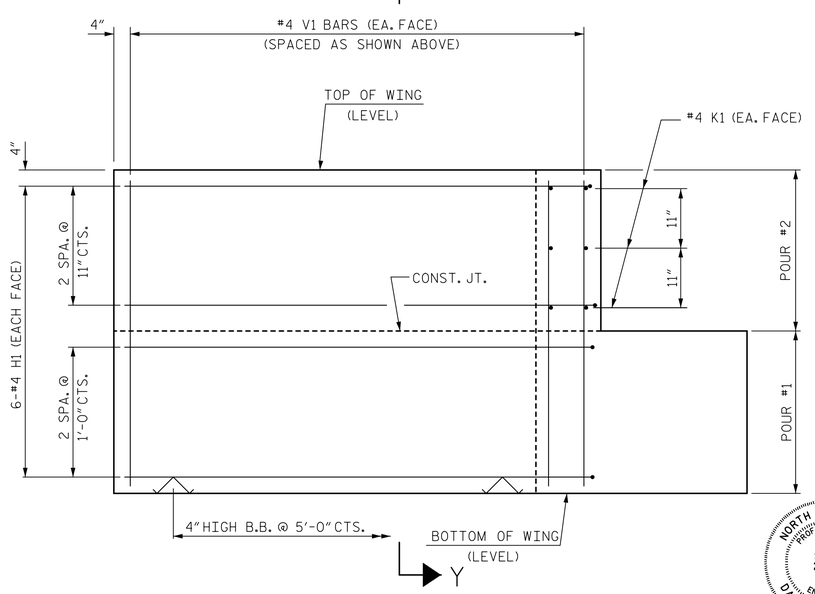
SECTION Y-Y

X

Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS

STD. NO. EB_36_90S

ASSEMBLED BY : M. WRIGHT	DATE : 2/23	
CHECKED BY : D. HAWKINS	DATE : 2/23	
DRAWN BY : DGE 02/10	REV. 4/15	MAA/TMG
CHECKED BY : MKT 02/10		

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY	M. WRIGHT	DATE	2/23
CHECKED BY	D. HAWKINS	DATE	2/23
DESIGN ENGINEER OF RECORD	D. HAWKINS	DATE	8/24

DWG. NO. 14

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS
Signed by: David W. Hawkins
4/15/2026

PROJECT NO. BP2-R017
BEAUFORT COUNTY
STATION: 18+47.00 -L-

SHEET 3 OF 4

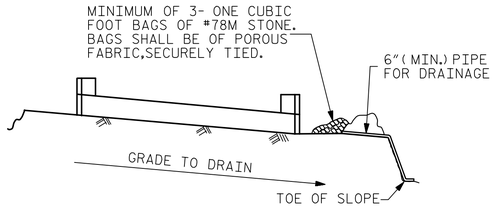
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT
WING DETAILS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-14
1			3			TOTAL SHEETS
2			4			18

3/25/2026
1:11:36 PM
V:\raw\Out\projects\69063 2019 East Peyton LSC - Division 2\BP2R017.1_Beaufort BR115\Structures\DGN\401_027_BP2R017.1_SMU_E03.014_060115.dgn

Docusign Envelope ID: C2DA368C-3C73-41CB-9389-8C57E5CFDF19



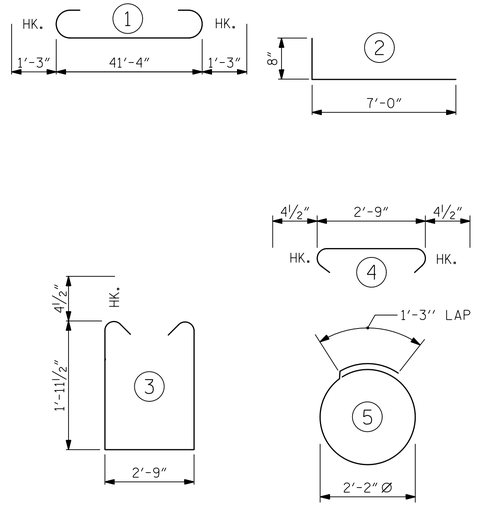
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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	43'-10"	1,192
B2	16	#4	STR	22'-1"	236
B3	11	#4	STR	2'-9"	20
D1	24	#6	STR	1'-6"	54
H1	24	#4	2	7'-8"	123
K1	12	#4	STR	2'-11"	23
S1	50	#4	3	7'-5"	248
S2	50	#4	4	3'-6"	117
S3	14	#4	5	8'-1"	76
V1	48	#4	STR	4'-4"	139

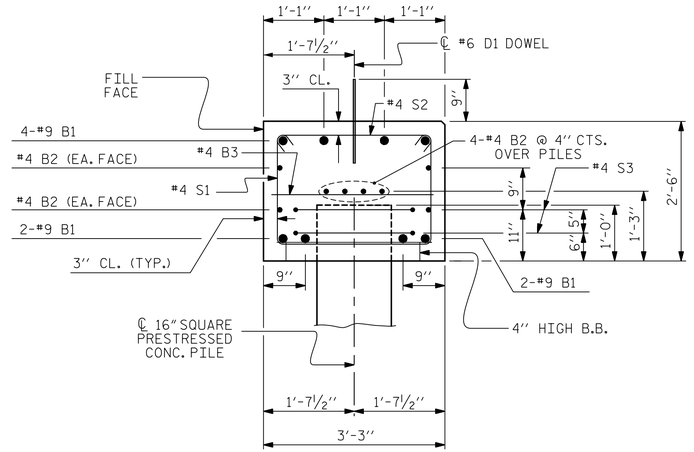
EPOXY COATED REINFORCING STEEL (FOR ONE END BENT) 2,228 LBS.

CLASS AA CONCRETE BREAKDOWN (FOR ONE END BENT)

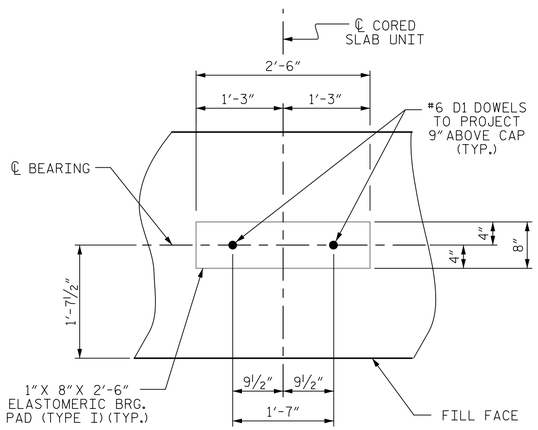
POUR #1 CAP, & LOWER PART OF WINGS 13.4 C.Y.

POUR #2 UPPER PART OF WINGS 1.9 C.Y.

TOTAL CLASS AA CONCRETE 15.3 C.Y.



SECTION A-A



DETAIL "A"

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

PROJECT NO. BP2-R017

BEAUFORT COUNTY

STATION: 18+47.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1 & 2 DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS
Signed by: David W. Hawkins
4/15/2026

STD. NO. EB_36_90S

ASSEMBLED BY : M. WRIGHT	DATE : 2/23	
CHECKED BY : D. HAWKINS	DATE : 2/23	
DRAWN BY : DGE 12/09	REV. 4/17	MAA/THC
CHECKED BY : MKT 01/10		

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

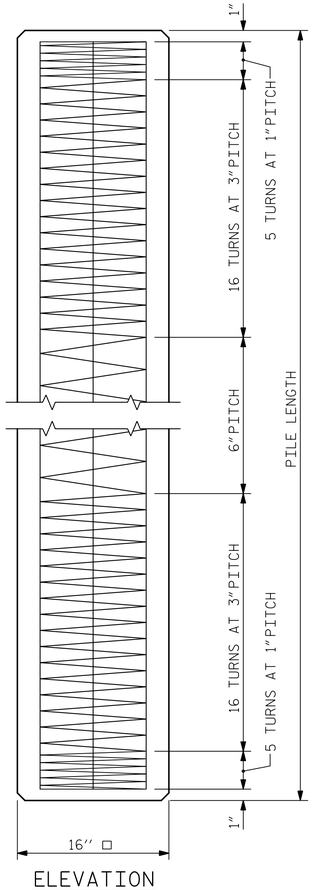
DRAWN BY	M. WRIGHT	DATE	2/23
CHECKED BY	D. HAWKINS	DATE	2/23
DESIGN ENGINEER OF RECORD	D. HAWKINS	DATE	8/24

DWG. NO. 15

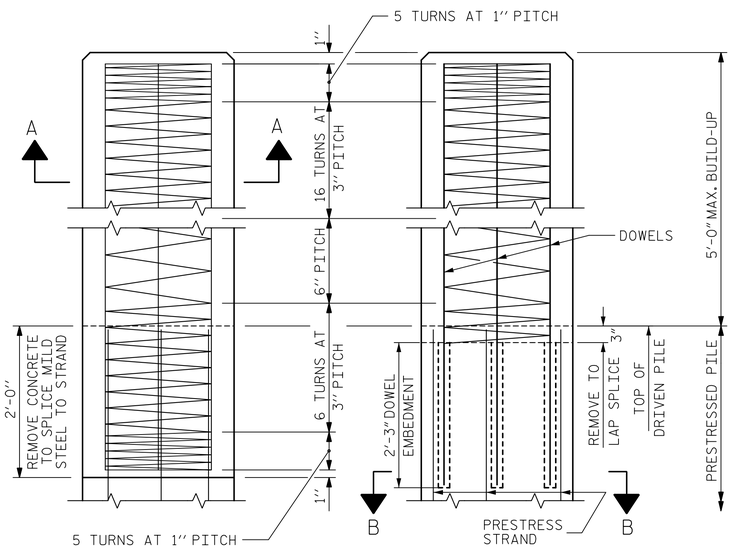
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-15
1			3			TOTAL SHEETS
2			4			18

3/26/2026
1:12:11 PM
\\Gdwc00vpr\projects\69063 2019 East Region LSC - Division 2\BP2.R017.1_Beaufort BR 115\Structures\DGN\401_029_BP2R017.1_SMU_E04_015_060115.dgn

Docusign Envelope ID: C2DA368C-3C73-41CB-9389-8C57E5CFDF19

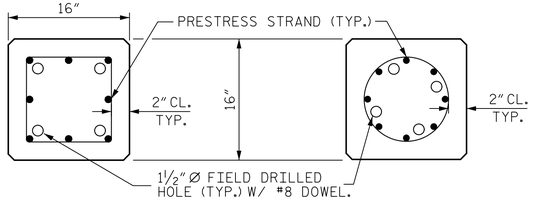


ELEVATION



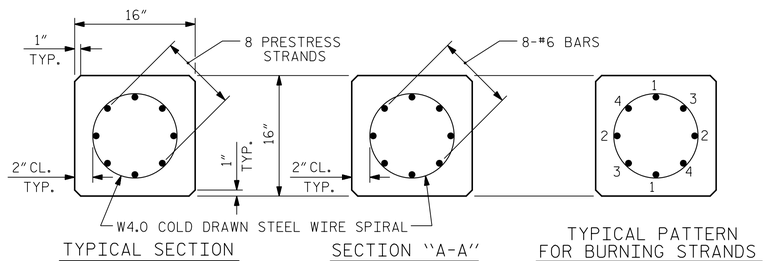
BUILD-UP AND SPIRAL REINFORCING

OPTIONAL BUILD-UP WITH DOWELS



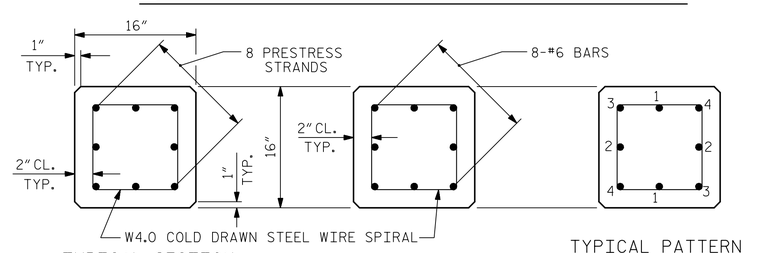
SECTION "B-B"

(AT THE CONTRACTOR'S OPTION, PILE BUILD-UP MAY BE CONSTRUCTED WITH DOWELS.)



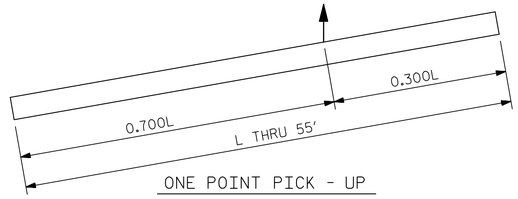
TYPICAL SECTION — SECTION "A-A" — TYPICAL PATTERN FOR BURNING STRANDS

0.6" Ø GRADE 270 L.R. PRESTRESS STRANDS

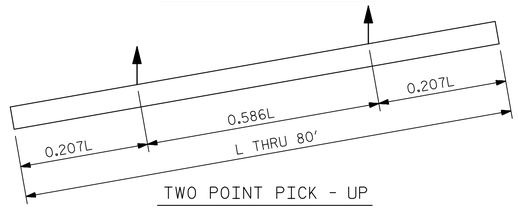


TYPICAL SECTION — SECTION "A-A" — TYPICAL PATTERN FOR BURNING STRANDS

0.6" Ø GRADE 270 L.R. PRESTRESS STRANDS



ONE POINT PICK - UP



TWO POINT PICK - UP

PICK - UP POINTS

QUANTITIES FOR ONE 16" PRESTRESSED PILE

LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE POINT PICK-UP 0.300L	ONE POINT PICK-UP 0.700L	TWO POINT PICK-UP 0.207L	TWO POINT PICK-UP 0.586L
25'-0"	1.63	3.31	7'-6"	17'-6"	5'-2"	14'-8"
30'-0"	1.96	3.97	9'-0"	21'-0"	6'-2½"	17'-7"
35'-0"	2.29	4.63	10'-6"	24'-6"	7'-3"	20'-6"
40'-0"	2.61	5.29	12'-0"	28'-0"	8'-3½"	23'-5"
45'-0"	2.94	5.95	13'-6"	31'-6"	9'-4"	26'-4"
50'-0"	3.27	6.61	15'-0"	35'-0"	10'-4"	29'-4"
55'-0"	3.59	7.28	16'-6"	38'-6"	11'-4½"	32'-3"
60'-0"	3.92	7.94			12'-5"	35'-2"
65'-0"	4.25	8.60			13'-5½"	38'-1"
70'-0"	4.57	9.26			14'-6"	41'-0"
75'-0"	4.90	9.92			15'-6½"	43'-11"
80'-0"	5.23	10.58			16'-7"	46'-10"

NOTES

PRESTRESSED CONCRETE STRENGTH : f'c= 7,500 PSI

BUILD-UP CONCRETE STRENGTH : f'c= 7,500 PSI

STRAND DATA:

SIZE	GRADE	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
0.6"	270 L.R.	0.217	58,600# PER STRAND	43,940# PER STRAND

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS CONFORMING TO AASHTO M203. STRAND SAMPLING REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

TRANSFER THE LOAD FROM THE ANCHORAGES TO THE PILE AFTER THE CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI.

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN OPPOSITE PAIRS AS INDICATED IN THE TYPICAL PATTERN SHOWN. FOR ANY NUMBER OF STRANDS, BURN IN OPPOSITE PAIRS AND SYMMETRICALLY ABOUT BOTH THE VERTICAL AND HORIZONTAL AXES. STRANDS 1-1 SHALL BE BURNED BEFORE 2-2, ETC. NOT MORE THAN 4 STRANDS, SAY 3-3 AND 4-4, MAY BE BURNED AT ANY ONE SECTION BEFORE THESE SAME PAIRS OF STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS ARE TO BE INDICATED WITH A 2" WIDE BLACK MARK.

DRIVE PILES USING A METHOD APPROVED BY THE ENGINEER, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

DRIVING OF THE BUILT-UP PILE WILL NOT BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 5,000 PSI AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

THE WATER/CEMENT RATIO FOR CONCRETE PILES SHALL NOT EXCEED 0.40.

PRESTRESSED PILES SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE CONCRETE IN THE PILES OF END BENT NO. 1 AND END BENT NO. 2 SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.

DOWEL INSTALLATION FOR OPTIONAL BUILD-UP

GROUT COMPRESSIVE STRENGTH: f'c= 5,000 PSI

BEFORE DRILLING DOWEL HOLES, REMOVE THE UPPER 3" OF CONCRETE FROM THE TOP OF THE PILE WITHOUT DAMAGE TO THE REINFORCING STEEL. THE REMOVAL PLANE SHOULD BE NORMAL TO THE EDGE OF THE PILE.

DOWEL HOLES SHALL BE POSITIONED TO MAINTAIN ½" CLEAR TO ALL EXISTING PRESTRESSING STRANDS IN THE CONCRETE PILE.

FIELD DRILLED HOLES SHALL BE CLEAN AND FREE OF ANY OBSTRUCTIONS BEFORE GROUTING OF DOWELS. DOWEL BARS SHALL BE INSTALLED AND GROUTED WITH AN APPROVED NON-SHRINK GROUT.

THE SPIRAL REINFORCING IN ALL BUILD-UPS SHALL BE W4.0 COLD DRAWN WIRE WHICH SHALL BE SECURED TO THE LONGITUDINAL REINFORCEMENT TO MAINTAIN PITCH.

THE SPIRAL REINFORCING IN THE BUILD-UP AND THE PRESTRESSED CONCRETE PILE SHALL BE SPLICED BY OVERLAPPING A MIN. OF ONE TURN.

PROJECT NO. BP2-R017

BEAUFORT COUNTY

STATION: 18+47.00 -L-

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS

Signed by: David W. Hawkins

4/15/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

16" PRESTRESSED CONCRETE PILE

STD. NO. PCP2 (SHT 1)

ASSEMBLED BY : M. WRIGHT		DATE : 2/23
CHECKED BY : D. HAWKINS		DATE : 2/23
DRAWN BY : RH 9/98	REV. 12/14	MAA/TMG
CHECKED BY : LES 10/98	REV. 12/17	MAA/THC
	REV. 12/20	BNB/THC

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY M. WRIGHT DATE 2/23
CHECKED BY D. HAWKINS DATE 2/23
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 8/24

DWG. NO. 16

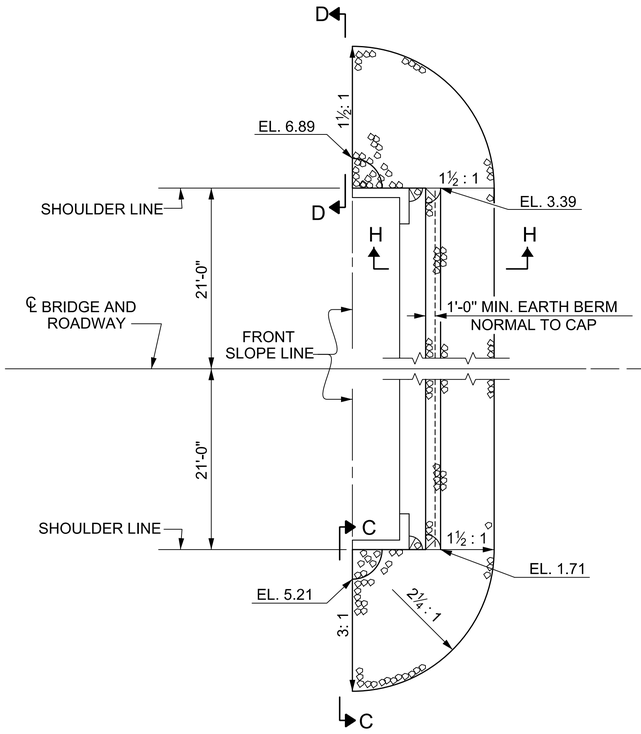
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-16
1			3			TOTAL SHEETS
2			4			18

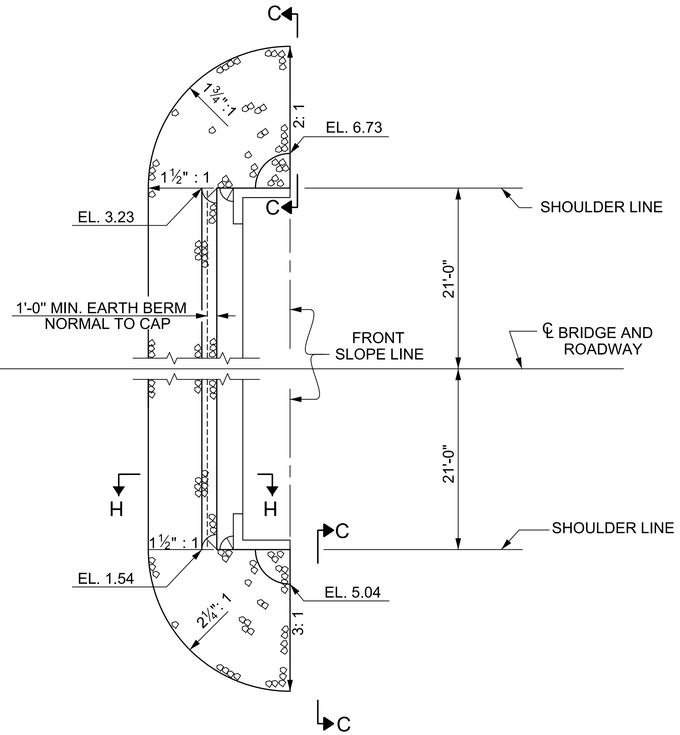
3/26/2026 1:12:38 PM
\\civil\Drafting\letd\69063 2019 East Region LSC - Division 2\BP2-R017.1_Beaufort BR 115\Structures\GDN\401_031_BP2R017.1_SMU_E05_016_080115.dgn

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$

Docusign Envelope ID: C2DA368C-3C73-41CB-9389-8C57E5CFDF19



END BENT 1

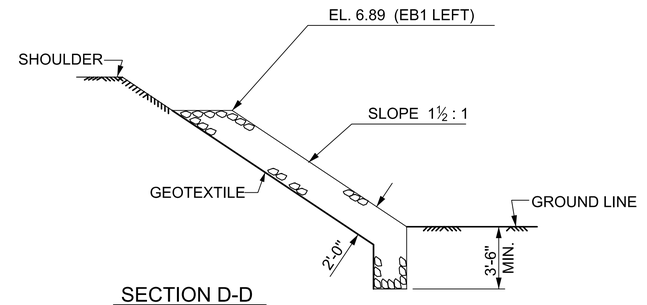


END BENT 2

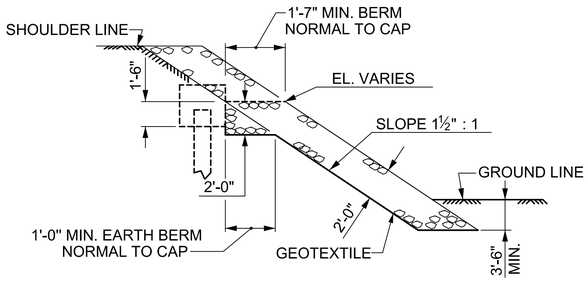
NOTES :

FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

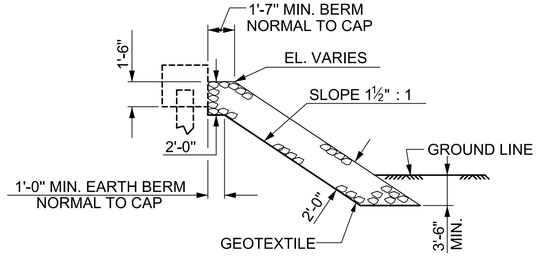
ESTIMATED QUANTITIES		
BRIDGE @ STA. 18+47.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	65	75
END BENT 2	70	75



SECTION D-D

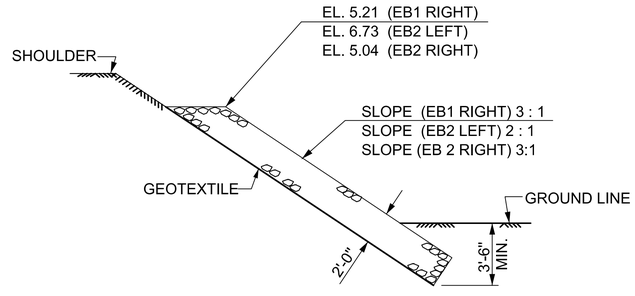


SECTION H-H



℄ SECTION

BERM RIP RAPPED



SECTION C-C

PROJECT NO. BP2-R017

BEAUFORT COUNTY

STATION: 18+47.00 -L-

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS
Signed by: David W. Hawkins
4/15/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RIP RAP DETAILS

ASSEMBLED BY : M. WRIGHT	DATE : 8/24
CHECKED BY : D. HAWKINS	DATE : 10/24

DRAWN BY : REK 1/84	REV. 10/1/11 MAA/GM
CHECKED BY : RDU 1/84	REV. 12/21/11 MAA/CM
	REV. 12/17 MAA/THC

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY	M. WRIGHT	DATE	8/24
CHECKED BY	D. HAWKINS	DATE	10/24
DESIGN ENGINEER OF RECORD	D. HAWKINS	DATE	8/24

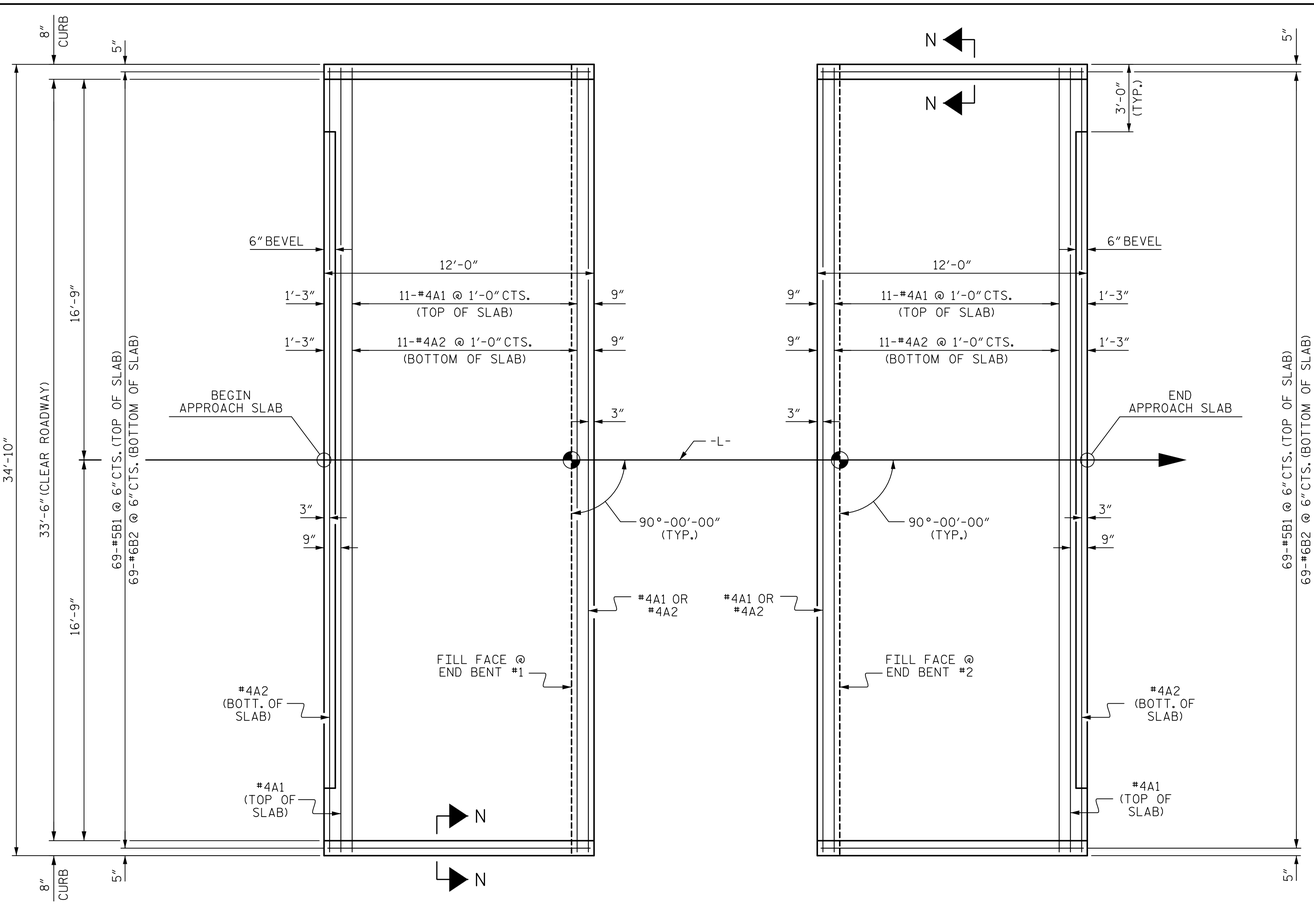
DWG. NO. 17

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-17
1			3			TOTAL SHEETS
2			4			18

STD. NO. RR1 Sht. 2

3/26/2026 1:13:01 PM
\\raliwd0\proj\eds\69063 2019 East Peyton LSC - Division 2\BP2\R017\1_Beaufort BR115\Structures\00#\401_033_BP2R017_SMU_RR01_017_060115.dgn

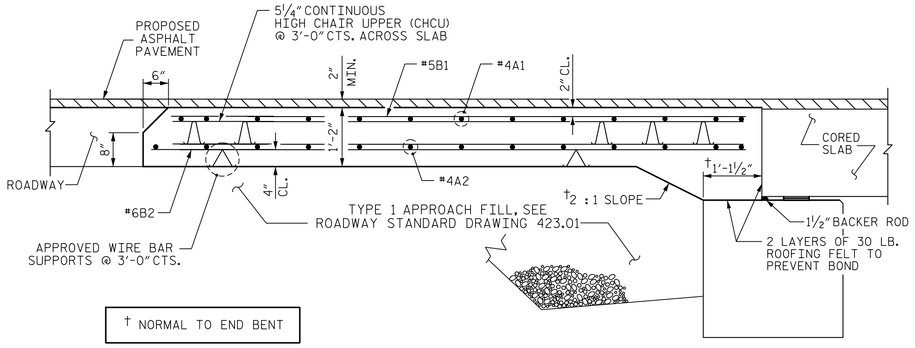
Docusign Envelope ID: C2DA368C-3C73-41CB-9389-8C57E5CFDF19



PLAN @ END BENT #1

PLAN @ END BENT #2

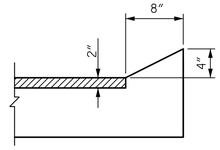
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



† NORMAL TO END BENT

SECTION THRU SLAB

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



SECTION N-N

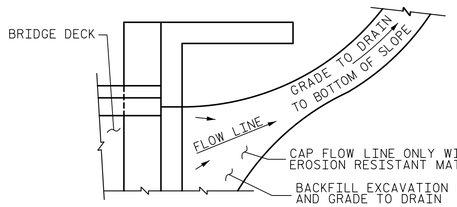
CURB DETAILS

NOTES

FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.

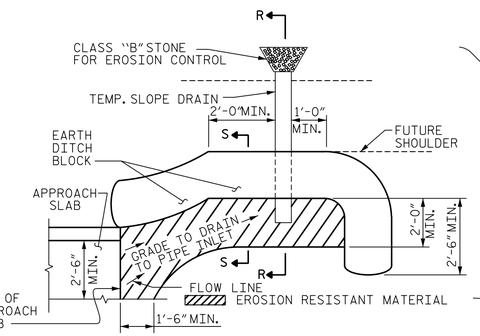
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



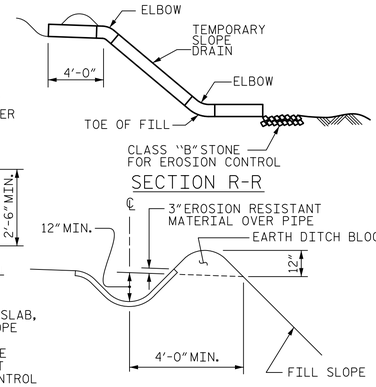
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT 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
✳ A1	13	#4	STR	34'-6"	300
A2	13	#4	STR	34'-6"	300
✳ B1	69	#5	STR	11'-2"	804
B2	69	#6	STR	11'-8"	1209
REINFORCING STEEL				LBS.	1,509
✳ EPOXY COATED REINFORCING STEEL				LBS.	1,104
CLASS AA CONCRETE				C. Y.	19.8
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	13	#4	STR	34'-6"	300
A2	13	#4	STR	34'-6"	300
✳ B1	69	#5	STR	11'-2"	804
B2	69	#6	STR	11'-8"	1,209
REINFORCING STEEL				LBS.	1,509
✳ EPOXY COATED REINFORCING STEEL				LBS.	1,104
CLASS AA CONCRETE				C. Y.	19.8

PROJECT NO. BP2-R017

BEAUFORT COUNTY

STATION: 18+47.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27812 DAVID W. HAWKINS
Signed by: David W. Hawkins
4/15/2026

STD. NO. BAS_36_90S

ASSEMBLED BY : M. WRIGHT	DATE : 2/23	
CHECKED BY : D. HAWKINS	DATE : 2/23	
DRAWN BY : SHS/MAA 5-09	REV. 12-17	MAA/THC
CHECKED BY : BCH 5-09	REV. 08-19	BNB/THC

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY	M. WRIGHT	DATE 2/23
CHECKED BY	D. HAWKINS	DATE 2/23
DESIGN ENGINEER OF RECORD	D. HAWKINS	DATE 8/24

DWG. NO. 18

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

3/26/2026
1:13:28 PM
\\civil\Drfo\Jects\69063 2019 East Region LSC - Division 2\BP2-R017.1_Beaufort BR 115\Structures\GDN401_035_BP2R017.1_SMU_AS01_018_060115.dgn

Docusign Envelope ID: C2DA368C-3C73-41CB-9389-8C57E5CFDF19

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

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

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

HANDRAILS AND POSTS:

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

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. 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.