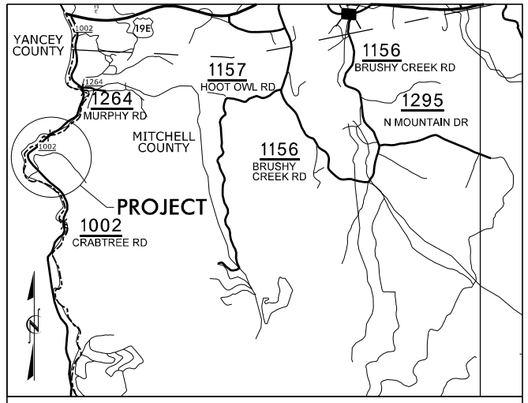
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09/08/99

TIP PROJECT: 17BP.13.R.184

CONTRACT: DM00528

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MITCHELL COUNTY & YANCEY COUNTY

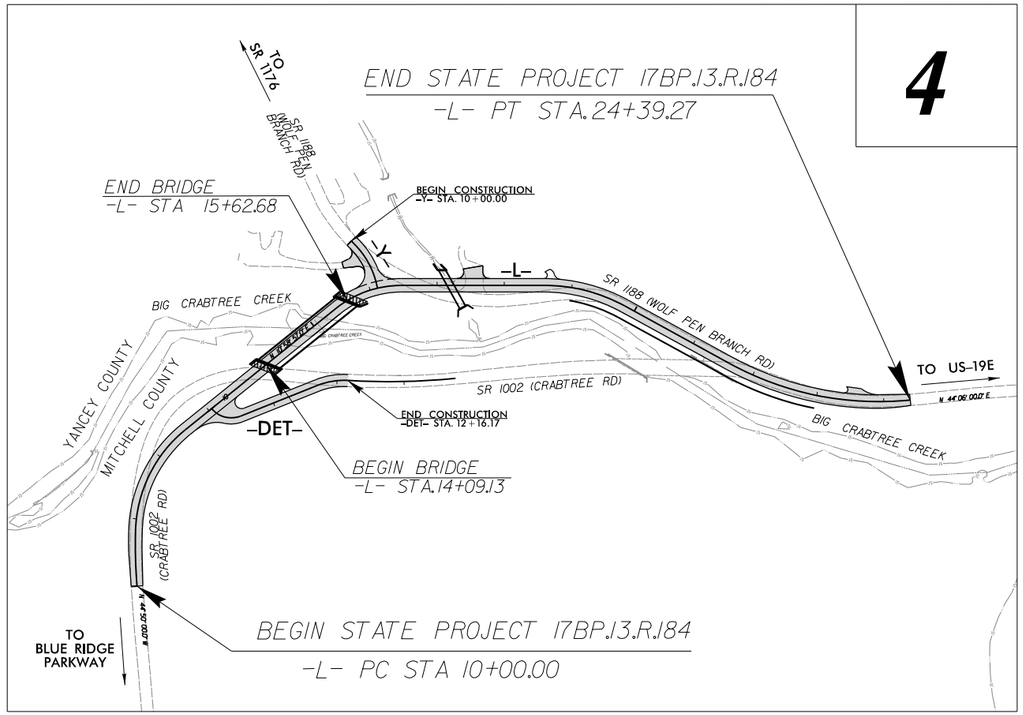
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.184	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.13.PE.184		PE
17BP.13.ROW.184		RW, UTIL
17BP.13.R.184		CON

LOCATION: REPLACE BRIDGE NO. 600101 OVER BIG CRABTREE CREEK ON SR 1002 (CRABTREE RD.)

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURES

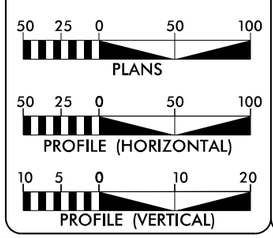
4



SUNGATE DESIGN GROUP
5400 Etta Burke Ct., STE. 100 • Raleigh, North Carolina 27606
Phone: (919) 859-2243 • Eng Firm License No. C-890

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GRAPHIC SCALES



DESIGN DATA

ADT 2016 = 554
ADT 2036 = 708
K = 12 %
D = 60 %
T = 15 % *
V = 30 MPH
* TTST =2 DUAL=13
FUNC CLASS = Rural Local

SUBREG TIER

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT 17BP.13.R.184	=	.244 MILES
LENGTH OF STRUCTURE PROJECT 17BP.13.R.184	=	.029 MILES
TOTAL LENGTH OF PROJECT 17BP.13.R.184	=	.273 MILES

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

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JANUARY 30, 2024

LETTING DATE: NOVEMBER 18, 2026

NCDOT CONTACT: MARK HILL, P.E.
NCDOT DIVISION 13

Plans Prepared For:
DIVISION 13
55 Orange Street
Asheville, NC 28801

ROBERT F. DECOLA, P.E.
KCI PROJECT MANAGER

CHARLES L. FLOWE, P.E.
KCI ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON
Signed by: Josh Dalton 10/13/2026 P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 12300 ENGINEER CHARLES LEE FLOWE
Docu Signed by: Charlie Flowe 10/13/2026 P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.184	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12300 ENGINEER CHARLES LEE FLOWE

Docusigned by: Charles Flowe 10/26/2026

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INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1 THRU 2A-2	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1	TEMPORARY DETOUR DETAIL
2C-1THRU 2C-5	SPECIAL DETAILS
3B-1	ROADWAY SUMMARIES
3D-1	DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
4 THRU 5	PLAN AND PROFILE SHEET
RW01	TITLE SHEET FOR SURVEY & RW SHEETS
RW02C-1 THRU RW02C-2	SURVEY CONTROL SHEETS
RW02D-1	PROPOSED ALIGNMENT CONTROL SHEET
RW03E-1	RIGHT OF WAY CONTROL SHEET
RW04	RIGHT OF WAY SHEET
TMP-1 THRU TMP-8	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-6	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-0	CROSS-SECTION SUMMARY
X-1 THRU X-40	CROSS-SECTIONS
SO1-1 THRU SO1-23	STRUCTURE PLANS (BOX BEAM)
SO2-1 THRU SO2-05	STRUCTURE PLANS (CMPA)
W-1 THRU W-2	WALL 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

SIDE ROADS:

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

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3 FOOT RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS 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.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE DUKE ENERGY (POWER)

AT&T (COMMUNICATIONS).

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

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

ROCK

ROCK IS ANTICIPATED BETWEEN 20+50 AND 21+50. BLASTING MAY BE REQUIRED FOR EXCAVATION ON THE PROJECT. SEE SECTION 220 OF THE STANDARD SPECIFICATIONS AND IF APPLICABLE, ROCK BLASTING PROVISION.

EFF. 01-16-2024
REV.

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
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation (Use Details in Lieu of Standards for Sheets 1 and 2 of 2)
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
423.01	Bridge Approach Fills - Type 1 Approach Fill for Bridge Abutment
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
840.00	Concrete Base Pad for Drainage Structure
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames - Brick, Concrete, Precast Concrete
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.02	Driveway Turnout - Radius Type
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Rip Rap in Channels and Ditches
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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05/29/25

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

PROJECT REFERENCE NO.	SHEET NO.
I7BPJ3.RJ84	1B

Note: Not to Scale

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin (EIP) — EIP
- Computed Property Corner
- Existing Concrete Monument (ECM) — ECM
- Parcel / Sequence Number — 123
- Existing Fence Line
- 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
- Permanent Construction Easement — PE
- 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:

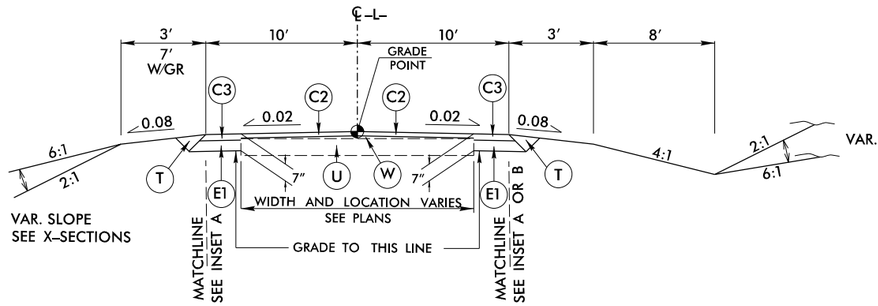
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line (SUE - LOS B)* — PUTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- Abandoned According to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

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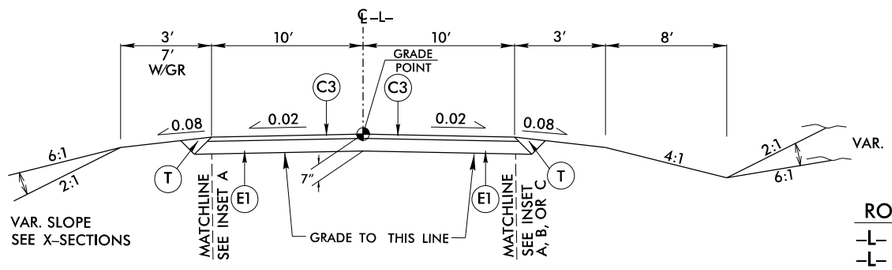
FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1¼" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD.
C2	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C3	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
J1	PROP. 6" AGGREGATE BASE COURSE
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING - SEE WEDGING DETAIL

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



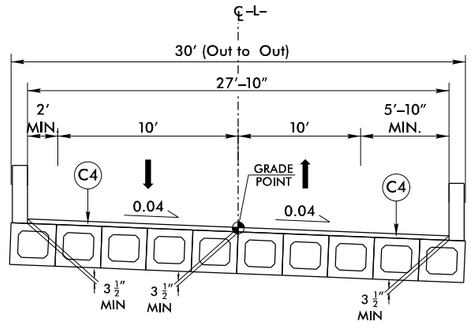
ROADWAY TYPICAL SECTION NO. 1

ROADWAY TYPICAL SECTION NO. 1
–L– STA. 10+00.00 TO STA. 11+00.00
–L– STA. 22+00.00 TO STA. 24+39.27



ROADWAY TYPICAL SECTION NO. 2

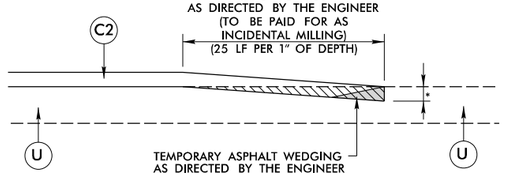
ROADWAY TYPICAL SECTION NO. 2
–L– STA. 11+00.00 TO STA. 14+09.13
–L– STA. 15+62.68 TO STA. 22+00.00



BRIDGE TYPICAL SECTION
SEE STRUCTURE PLANS FOR CONSTRUCTION

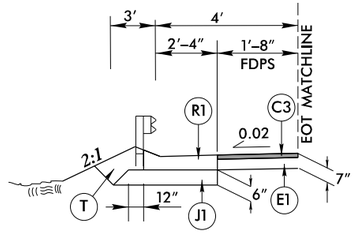
–L– BRIDGE TYPICAL SECTION
–L– STA. 14+09.13 TO STA. 15+62.68

PROFILE KEY–IN DETAIL



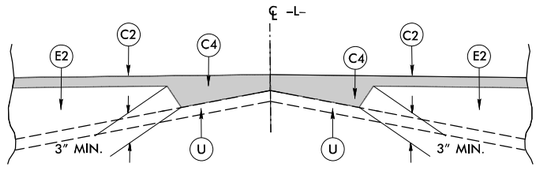
* MILL DEPTH AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER

** SEE TYPICALS FOR MIX TYPE

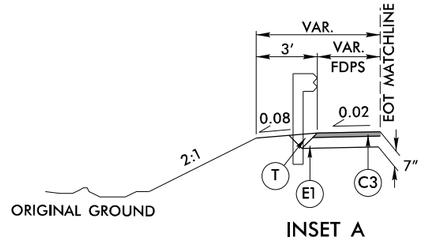


SHOULDER BERM GUTTER DETAIL 1

–L– STA. 13+90.00 TO STA. 14+06.22
–L– STA. 15+86.48 TO STA. 16+05.00

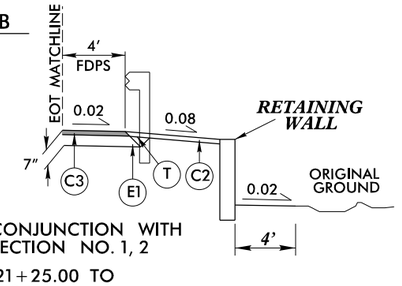


Detail Showing Method of Wedging



INSET A
USE IN GUARDRAIL LOCATIONS

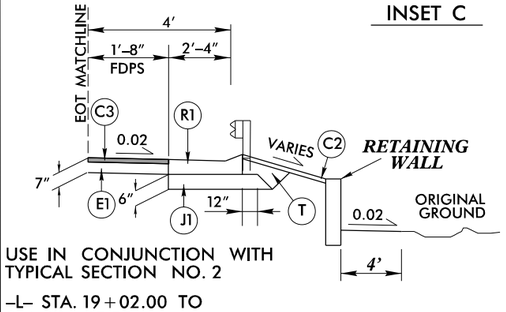
INSET B



USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1, 2

–L– STA. 21+25.00 TO STA. 23+00.00

INSET C



USE IN CONJUNCTION WITH TYPICAL SECTION NO. 2

–L– STA. 19+02.00 TO STA. 21+25.00

PROJECT REFERENCE NO.	SHEET NO.
17BPJ13.RJ84	2A-1

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12300 ENGINEER CHARLES LEE FLOWE

Docusigned by: Charlie Flowe 10/19/2026

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024964 ENGINEER JOSEPH T HOLLAND

Signed by: Joseph T Holland 10/19/2026

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KCI ASSOCIATES OF N.C., P.A.
4900 Falls of Neuse Road, Suite 200
Raleigh, NC 27609-0270
Phone (919) 783-9214
NC Firm License No: C-0764

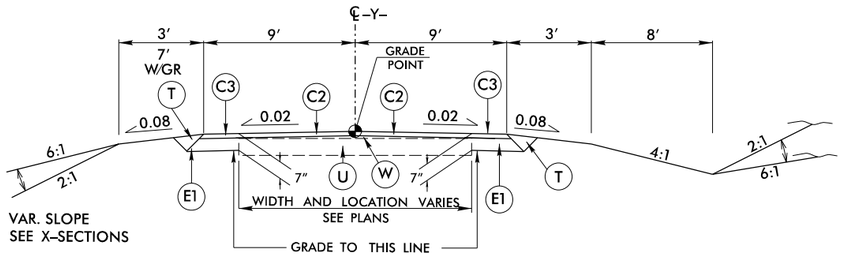
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6/2/99

FINAL PAVEMENT SCHEDULE

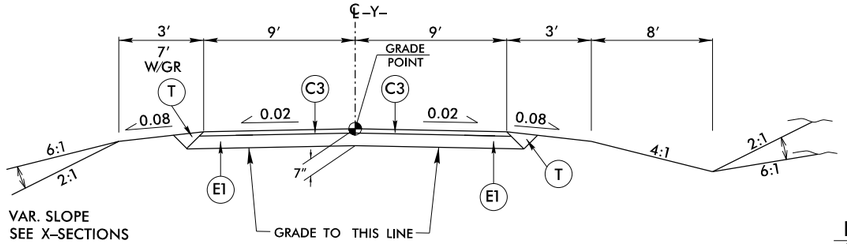
C1	PROP. APPROX. 1¼" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD.
C2	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C3	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
J1	PROP. 6" AGGREGATE BASE COURSE
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING - SEE WEDGING DETAIL

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



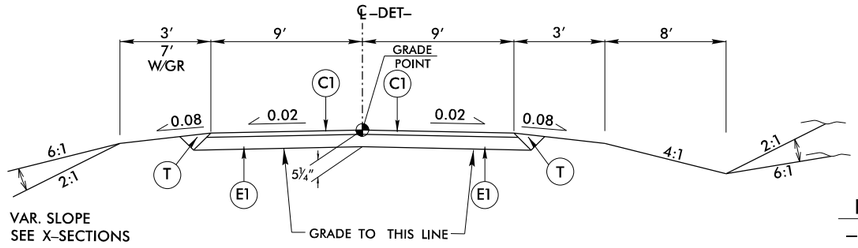
ROADWAY TYPICAL SECTION NO. 3

ROADWAY TYPICAL SECTION NO. 3
–Y– STA. 10+00.00 TO STA. 10+44.24



ROADWAY TYPICAL SECTION NO. 4

ROADWAY TYPICAL SECTION NO. 4
–Y– STA. 10+44.24 TO STA. 10+71.21



ROADWAY TYPICAL SECTION NO. 5

ROADWAY TYPICAL SECTION NO. 5
–DET– STA. 10+10.13 TO STA. 12+16.17

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.RJ84	2A–2

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12300 ENGINEER CHARLIE LEE FLOWE

Docusigned by: Charlie Flowe 9/4/2026

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024964 ENGINEER JOSEPH T. HOLLAND

Signed by: Joseph Holland 9/4/2026

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KCI ASSOCIATES OF N.C., P.A.
4800 Falls of Neuse Road, Suite 200
Raleigh, NC 27609-0270
Phone (919) 783-9214
NC Firm License No: C-0764

Docusign Envelope ID: D23C3D38-2769-86AC-80BE-4ECA7BD6EA0C

TEMPORARY DETOUR DETAIL SHEET

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.184	2B-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12300 ENGINEER CHARLIE FLOWE

Docusigned by: Charlie Flowe 9/4/2026

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON

Docusigned by: Josh Dalton 9/4/2026

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KCI ASSOCIATES OF N.C., P.A.
4900 Falls of Neuse Road, Suite 200
Raleigh, NC 27609-6270
Phone (919) 783-9214
NC Firm License No: C-0764

SUNGATE DESIGN GROUP
5400 Ella Burke Ct., STE. 100 • Raleigh, North Carolina 27606
Phone: (919) 859-2243 • Eng Firm License No. C-890

(1) JOE GRINDSTAFF
DB 188 PG 313
DB 147 PG 59
DB 139 PG 469
DB 126 PG 257

(5) ALMA H. PARKER (PATE)
DB 106 PG 227

(6) CRABTREE PROPERTIES, LLLP
DB 484 PG 433
(MITCHELL CO.)

-L- POT Sta. 13+05.00 =
-DET- PC Sta. 10+00.00

N 10°58'57.0" E

SPEC. LAT. 'V' DITCH SEE DETAIL 9

END DETOUR -DET- STA. 11+73.69

STD. 'V' DITCH
EST. DDE 11 CY
SEE DETAIL 10
LENGTH = 133 LF
SLOPE = 0.5%

TIE TO EXISTING DITCH
RETAIN

CL B RIPRAP
EST. 2 TONS
EST. 7 SY GF

-DET- PRC Sta. 12+16.17

-DET- PC Sta. 11+70.36

-DET- PT Sta. 13+76.66

-DET- PT Sta. 10+47.06
BEARING AH = N 28° 06' 48.0" E

COUNTY LINE IS PROPERTY LINE

BM #3 ELEV. 2561.39' NAIL SET IN BASE OF 15" TWIN BUCKEYE

BM #2 ELEV. 2559.30' BL-11 STA. 40+34 15.74' LT. IC SET IN BASE OF 15" WHITE PINE

SR 1002 CRABTREE CREEK RD

BRIDGE #101

BIG CRABTREE CREEK

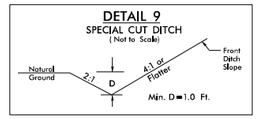
YANCEY COUNTY
MITCHELL COUNTY

N 44° 06' 0

-DET- CURVE DATA

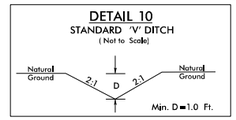
PI Sta 10+27.31	PI Sta 11+93.63	PI Sta 12+96.57
Δ = 72° 52' 09.0" (LT)	Δ = 24° 59' 48.9" (RT)	Δ = 8° 49' 36.8" (LT)
D = 154° 51' 12.4"	D = 54° 34' 02.7"	D = 5° 30' 00.0"
L = 47.06'	L = 45.81'	L = 160.49'
T = 27.31'	T = 23.27'	T = 80.40'
R = 37.00'	R = 105.00'	R = 1,041.74'

DETAIL 9
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 11+20 TO STA. 11+75 -DET- LT
FROM STA. 10+10.13 TO STA. 12+00 -DET- RT

DETAIL 10
STANDARD 'V' DITCH
(Not to Scale)



FROM STA. 12+00 TO STA. 13+48 -DET- RT

-DET-

RIGHT DITCH ---------
LEFT DITCH -·-·-·-·-·-

BEGIN GRADE -DET- STA 10+10.13
ELEV. 2,562.70'

END GRADE -DET- STA 11+73.69
ELEV. 2560.81'

PI = 10+89.94
EL = 2,561.49'
VC = 105'
K = 180
DS = 65 MPH

BEG DITCH
PI STA 11+20 -DET- LT
ELEV=2559.10

END DITCH
PI STA 11+75 -DET- LT
ELEV=2559.60

(-)13.7996% (-)11.5057% (-)7.6587% (+)0.9091% (-)0.8119% (-)0.3600%

15" RCP

BEG DITCH
PI STA 10+10.13 -DET- RT
ELEV=2562.20

PI STA 11+50 -DET- RT
ELEV=2558.88

END DITCH
PI STA 12+00 -DET- RT
ELEV=2558.70

PIPE HYDRAULIC DATA
15" RCP Sta. 11+55 -DET-

DRAINAGE AREA	= 0.3	AC
DESIGN FREQUENCY	= 10	YRS
DESIGN DISCHARGE	= 1.1	CFS
DESIGN HW ELEVATION	= 2559.7	FT
100 YEAR DISCHARGE	= 1.5	CFS
100 YEAR HW ELEVATION	= 2559.8	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= >1.8	CFS
OVERTOPPING ELEVATION	= 2560.4	FT

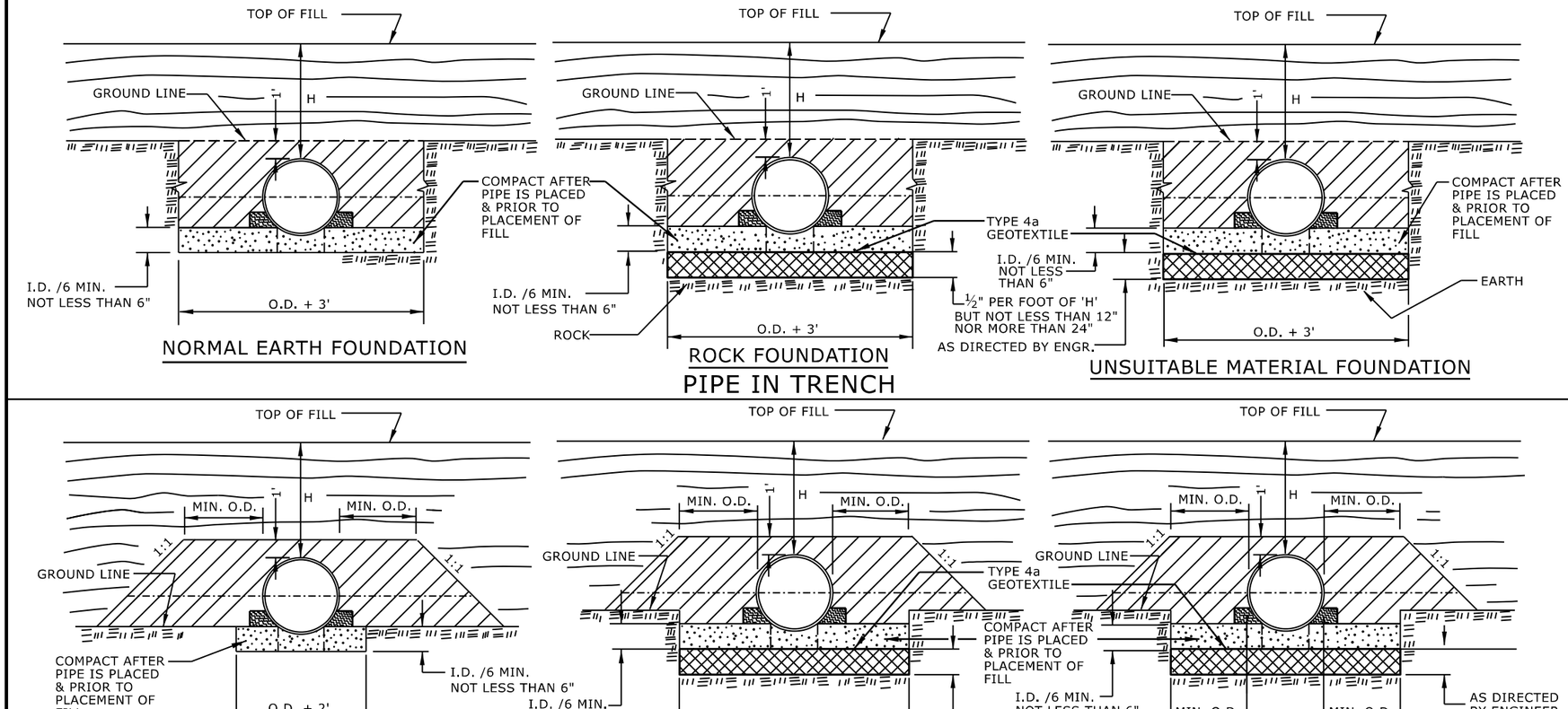
2,590 2,580 2,570 2,560 2,550

10 11 12 13 14

02-SEP-2026 11:58
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PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.184	2C-1



GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

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

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

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.

UNDISTURBED EARTH MATERIAL

SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

FLEXIBLE PIPE

SHEET 1 OF 2

300.01

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by: Nicole M Hackler 11/7/2025
5884323D34164C5...

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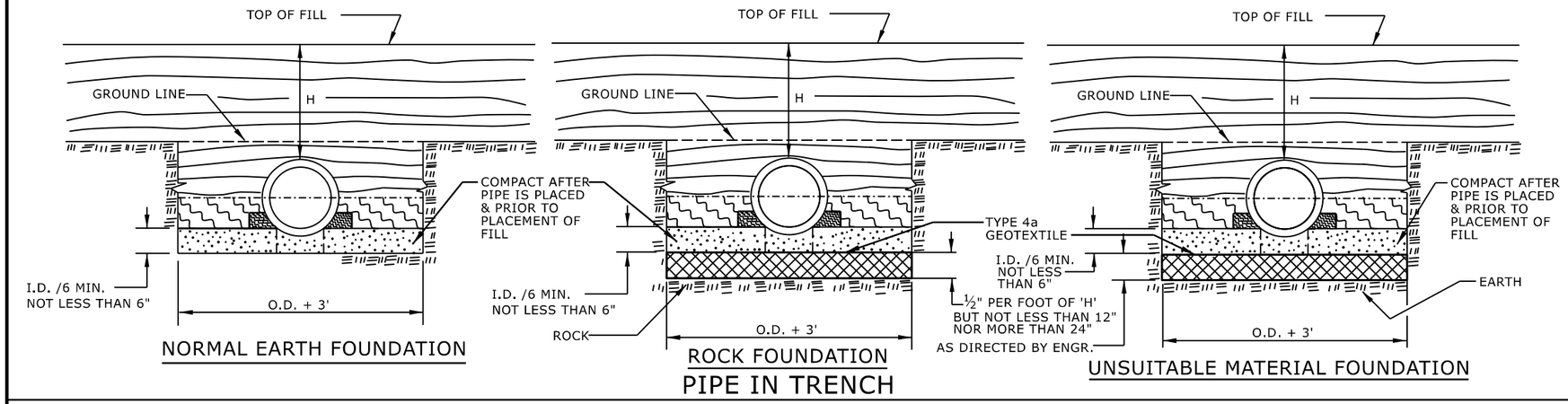
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Office 919-707-6950 FAX 919-250-4119

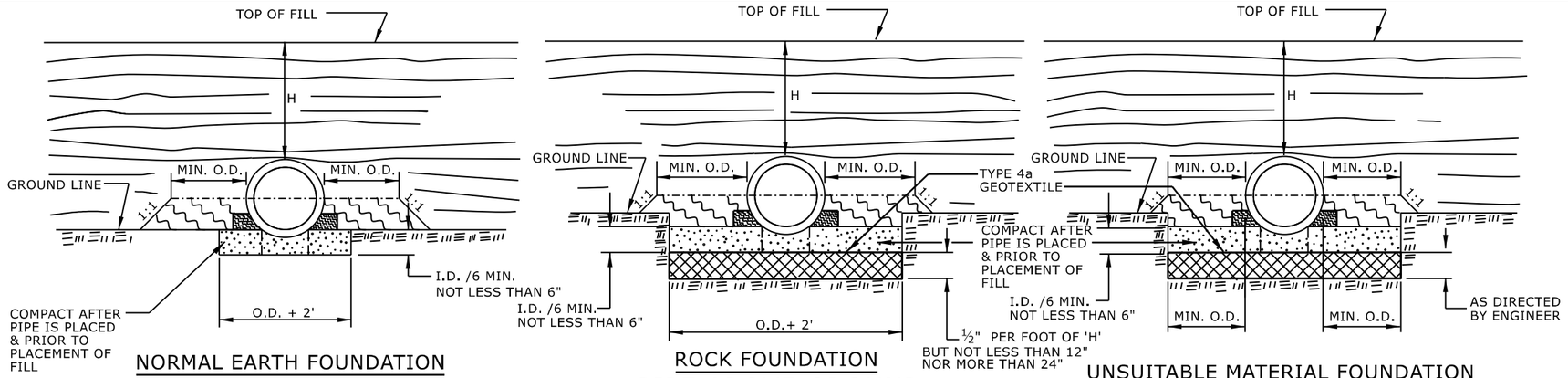
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CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

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PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.184	2C-2





GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

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

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

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, BELOW SPRINGLINE.

UNDISTURBED EARTH MATERIAL

SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

STATE OF
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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

RIGID PIPE

SHEET 2 OF 2

300.01

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by: Nicole M Hackler 11/7/2025

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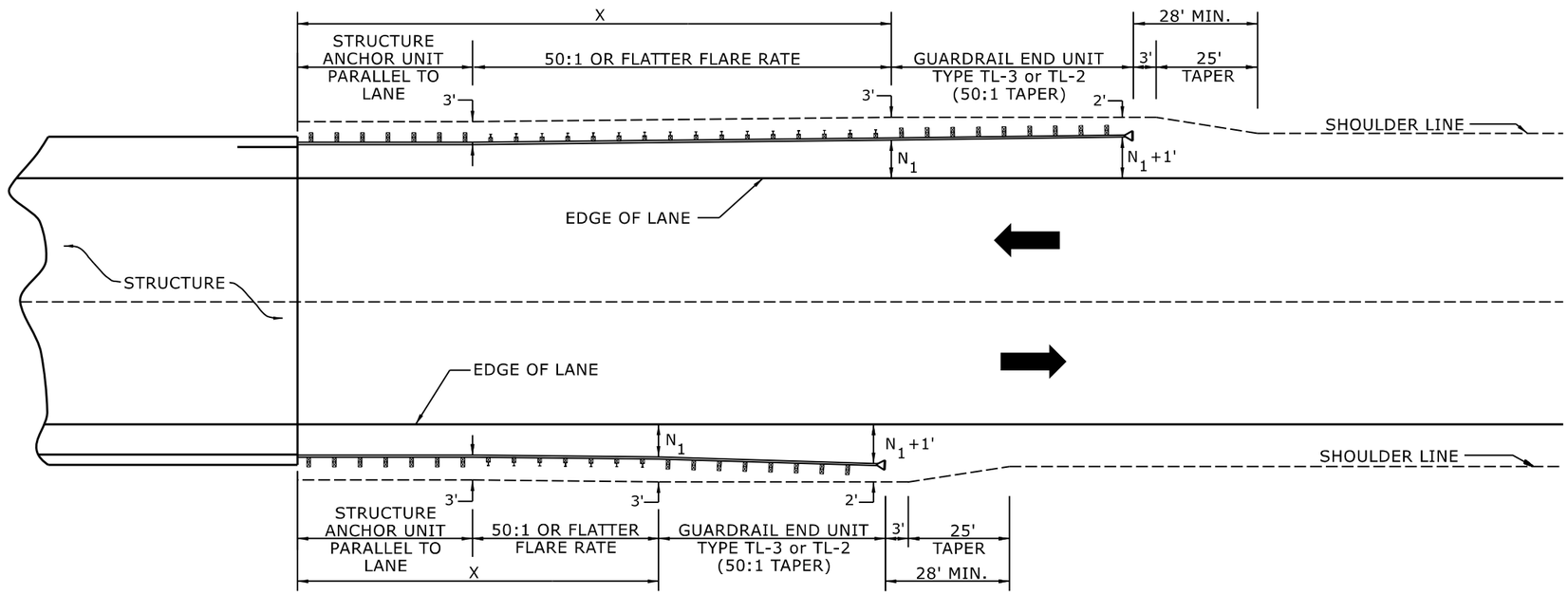
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USE FLARE RATE AS THE CONTROL IF THE "N_1" DISTANCE IS NOT OBTAINED.
("N_1" IS BASED ON SHOULDER WIDTHS IN THE ROADWAY DESIGN MANUAL)

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

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

GUARDRAIL LENGTH OF NEED (X) IS CALCULATED BASED ON THE AASHTO ROADSIDE DESIGN GUIDE.

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

STATE OF
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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Nicole M Hackler
10/13/2026

SHEET 4 OF 15

862D01

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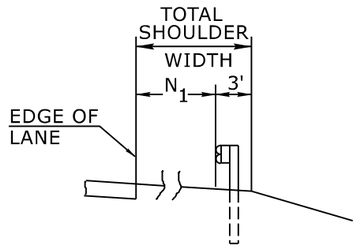
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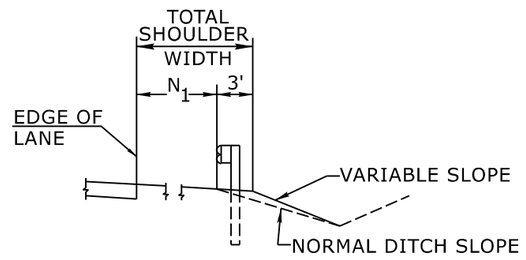
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17BP.13.R.184	2C-4

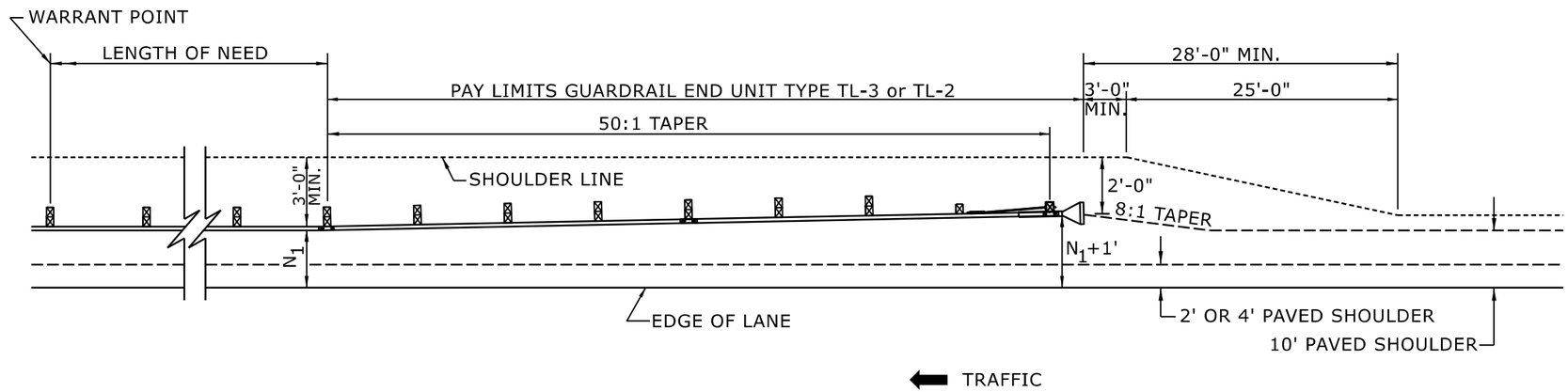


FILL SECTION



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

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ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 6 OF 15

862D01

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by: Nicole M Hackler
10/13/2026

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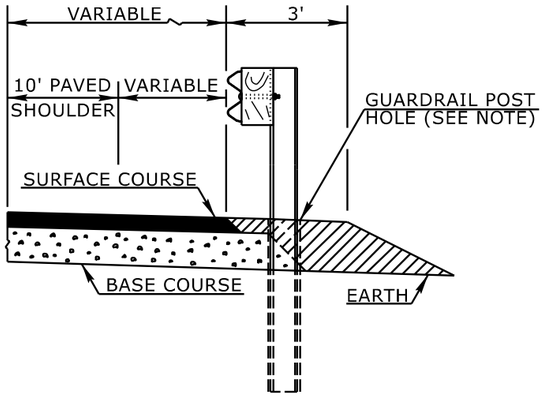
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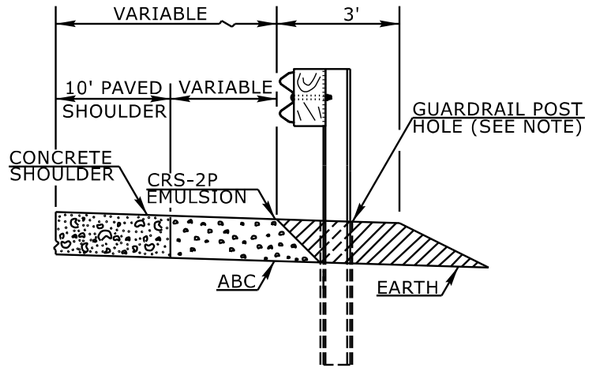
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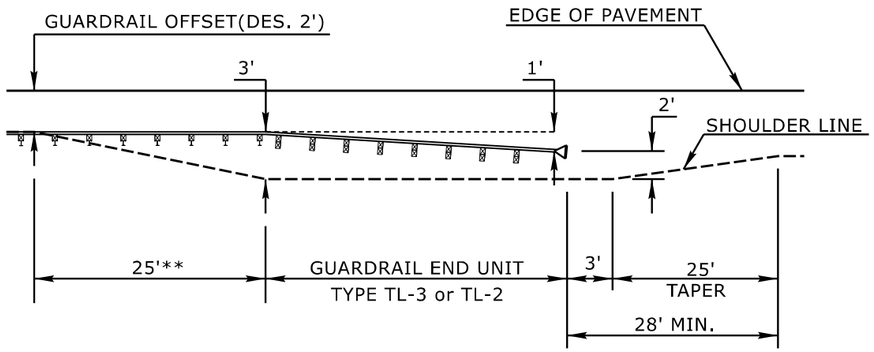
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17BP.13.R.184	2C-5



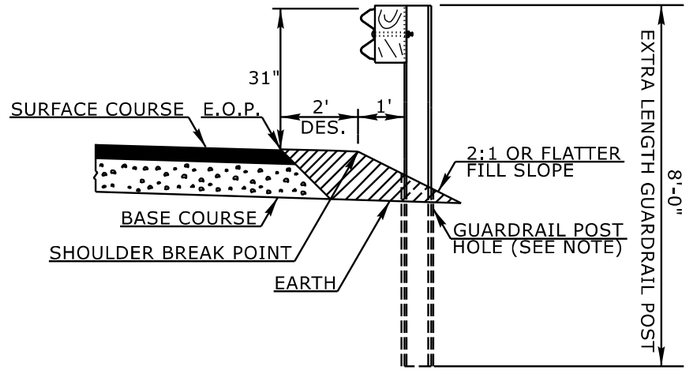
FLEXIBLE PAVED SHOULDER



CONCRETE PAVED SHOULDER



8' GUARDRAIL POST ON 2:1 SLOPE-END UNIT TRANSITION*
PLAN VIEW



8' GUARDRAIL POST ON 2:1 SLOPE*

* THE 8' GUARDRAIL POST ON 2:1 SLOPE DETAIL IS INTENDED FOR USE ONLY IN SEVERELY CONSTRAINED AREAS WITH A POSTED SPEED ≤ 60 MPH. GUARDRAIL END UNITS MAY NOT BE PLACED ON THE 2:1 SLOPE AND MUST TRANSITION TO THE SHOULDER.
** 8' GUARDRAIL POST SHOULD BE USED IN THIS RANGE

NOTE:
WHEN WOODEN GUARDRAIL POSTS ARE USED, DRILL HOLES THROUGH EARTH MATERIAL AND BASE COURSE.THE POST MAY THEN BE DRIVEN TO THE PROPER DEPTH. DRILL THE HOLE OF SUFFICIENT SIZE TO ACCOMMODATE THE PARTICULAR POST BEING USED. BACKFILL AND TAMP HOLES USING THE EXCAVATED MATERIAL.

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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 11OF 15

862D01

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M HACKLER

Signed by: Nicole M Hackler
10/13/2026

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MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

12/06/07

COMPUTED BY: E. DECOLA DATE: 1/8/2023
CHECKED BY: T. KRAUSS DATE: 1/8/2023

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.RJ84	3B-1

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	UNDERCUT	EMBANK. +15%	BORROW	WASTE
–L– 10+00.00	14+09.13	2920		536	0	2384
–DET– 10+10.13	12+16.17	4235		0	0	4235
SUBTOTALS:		7155		536	0	6619
–L– 15+62.68	24+39.27	858	350	1330	472	350
–Y– 10+00.00	10+71.21	20		35	15	0
SUBTOTALS:		878	350	1365	487	350
TOTALS:		8033	350	1901	487	6969
LOSS DUE TO CLEARING & GRUBBING		–230				–230
ADDITIONAL UNDERCUT			360	299	299	360
SELECT GRANULAR MATERIAL, CLASS III						
WASTE IN LIEU OF BORROW:					–786	–786
PROJECT TOTALS:		7803	710	2200	0	6313
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT:					0	
GRAND TOTALS:		7803	710	2200	0	6313
SAY (10%):		8583				6945

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

Note: Approximate quantities only. Borrow excavation, shoulder borrow, fine grading, clearing and grubbing, breaking of existing pavement, and removal of pavement will be paid for at the contract lump sum price for grading

REMOVAL OF EXISTING ASPHALT PAVEMENT SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
–L–	11+17	20+50	CL	1625.78
–L–	16+06	16+72	CL	108.38
–L–	16+83	19+29	CL	299.74
–DET–	10+00	12+16	CL	373.43
			TOTAL:	2407.51
			SAY:	2410

SUMMARY OF BREAKING EXISTING ASPHALT PAVEMENT

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
–L–	16+33	22+00	CL	837.70
			TOTAL:	837.70
			SAY:	840

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH (LF)
–L– (RT)	13+90	14+07	17
–L– (RT)	15+86	16+05	19
–L– (RT)	19+02	21+25	223
		TOTAL:	259
		SAY:	259

RIP RAP, FABRIC & DDE

DDE – DRAINAGE DITCH EXCAVATION
GT – GEOTEXTILE FABRIC
CFM – COIR FIBER MAT

LINE	STATION	STATION	LOC	CLASS & TONS I	II	B	GT (SY)	DDE (CY)	CFM (SY)	DETAIL	COMMENTS
–L–	17+40		RT		95		115			6	112" x 75" CMPA OUTLET
–L–	16+00		RT	22			35			7	18" DRAINAGE PIPE OUTLET
–L–	11+60		LT			5	14				24" RCP–IV PIPE OUTLET
–L–	13+95		RT			2	7				15" DRAINAGE PIPE OUTLET
–L–	17+82		RT			2	7				15" RCP–IV PIPE OUTLET
–L–	18+70		RT			3	10				18" DRAINAGE PIPE OUTLET
–L–	19+00	21+50	RT		158		235			8	BEHIND RETAINING WALL
–L–	24+02		RT			2	7				15" RCP–III PIPE OUTLET
–DET–	11+95		RT			2	7				15" RCP–V PIPE OUTLET
–DET–	12+00	13+48	RT					11		10	133 LF STANDARD 'V' DITCH
TOTALS				22	253	16	437	11			
SAY				22	253	16	437	11			

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	SHOP CURVED	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 TL–2	TL–3	GRAU 350	M–350	TYPE III	CAT–1	VI MOD	BIC	AT–1	IMPACT ATTENUATOR TYPE 350 EA	G	NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
–L–	13+63 +/–	14+20 +/–	RT	56.25			14+19.55 BRIDGE		4'	7'	25'		6"		1				1											
–L–	13+47 +/–	14+03 +/–	LT	56.25				14+03.57 BRIDGE	4'	7'		25'		6"	1				1											
–L–	15+72 +/–	23+76 +/–	RT	756.25	50.00		15+72.44 BRIDGE	23+00.00	4'	7'	25'		6"		1				1											
–L–	15+52 +/–	15+92 +/–	LT	25.00	12.50			15+52.83 BRIDGE	4'	7'									1				1							
–EL–	43+60 +/–	44+95 +/–	LT																									136		
–EL–	44+05 +/–	45+43 +/–	RT																									136		
		SUBTOTAL		893.75	62.50										3				4				1							
		LESS ANCHOR DEDUCTIONS:																												
		GREU TL–2	3 @ 25.00' =	75.00																										
		AT–1	1 @ 6.25' =	6.25																										
		TYPE III	4 @ 18.75' =	75.00																										
		ANCHOR DEDUCTION TOTAL:		156.25																										
			PROJECT TOTAL	737.50	62.50										3				4				1					272		
			SAY	737.50	62.50										3				4				1					272		
		ADDITIONAL GUARDRAIL POST =		5																										

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Division

12/06/07

COMPUTED BY: BNE DATE: 10/13/2026
CHECKED BY: JGD DATE: 10/13/2026

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.184	3D-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

| STATION | LOCATION (LT,RT, OR CL) | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE 12" | 15" | 18" | 24" | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | C.S. PIPE (UNLESS NOTED OTHRWISE) SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | CLASS IV R.C. PIPE (UNLESS OTHERWISE NOTED) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 15" CLASS V R.C. 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. | CU. YDS. C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL."B") PER EACH (0' THRU 5.0') | LIN. FT. A 5.0' THRU 10.0' | LIN. FT. 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 | J.B. STD. 840.31 OR 840.32 | G.D.I. (N.S. FLAT) FRAME W/2 GRATES STD. 840.29 | T.B.D.I. STD. 840.35 | 15" DRAINAGE PIPE ELBOW | 18" DRAINAGE PIPE ELBOW | MODIFIED CONCRETE FLUME W/CONC. PAVED DITCH | CONC. COLLARS CL. "B" C.Y. STD 840.72 | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | PIPE REMOVAL LIN.FT. | REMARKS |
|---|---|---

6/2/99

COMPUTED BY: H. ALMULLA DATE: JUNE 2023
CHECKED BY: A.F. RIGGS, JR. DATE: JUNE 2023

(2-3-23)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
17BP.13.R.184	3G-1

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Subgrade Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS

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PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.184	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 12300 ENGINEER CHARLES LEE FLOWE — DocuSigned by: Charlie Flower 9/4/2026 — PE/AE/PLS/Other Title

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON — Signed by: Josh Dalton 9/4/2026 — Signature Date

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

KCI ASSOCIATES OF N.C., P.A.
4800 Falls of Neuse Road, Suite 200
Raleigh, NC 27609-6270
Phone (919) 783-9214
NC Firm License No. C-0764

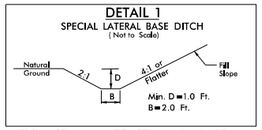
SUNGATE DESIGN GROUP
5400 Etta Burke Ct., STE. 100 • Raleigh, North Carolina 27606
Phone: (919) 859-2243 • Eng Firm License No. C-890

BRIDGE APPROACH SLAB

PAVEMENT REMOVAL

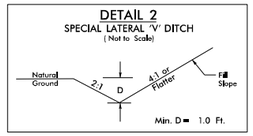
-Y-
PI Sta 10+41.47
△ = 31° 01' 30.9" (RT)
D = 45° 50' 11.8"
L = 67.69'
T = 34.70'
R = 125.00'
SE = SEE PLANS

DETAIL 1
SPECIAL LATERAL BASE DITCH
(Not to Scale)



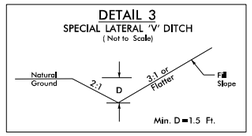
FROM STA. 11+00 TO STA. 11+60 -L- RT

DETAIL 2
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



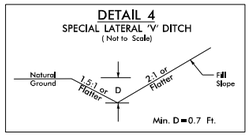
FROM STA. 11+60 TO STA. 12+50 -L- RT
FROM STA. 12+00 TO STA. 13+70 -L- LT
FROM STA. 15+60 TO STA. 15+85 -L- LT
FROM STA. 19+07 TO STA. 20+00 -L- LT

DETAIL 3
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



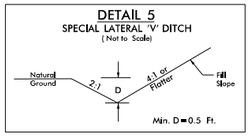
FROM STA. 17+60 TO STA. 18+70 -L- RT

DETAIL 4
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 21+50 TO STA. 22+20 -L- LT

DETAIL 5
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 17+82 TO STA. 18+50 -L- LT
FROM STA. 23+80 TO STA. 24+02 -L- LT
FROM STA. 24+02 TO STA. 24+35 -L- LT

DETAIL 6
OUTLET CHANNEL
(LOOKING DOWNSTREAM)
(NOT TO SCALE)

d= 2.0FT
EST. 90 TONS
EST. 115 SY GEOTEXTILE

DETAIL 7
RIP RAP AT EMBANKMENT
(Not to Scale)

Type of Liner= 22 TONS,CL 'I' Rip-Rap
Geotextile= 35 sy
STA. 16+00 -L- RT

DETAIL 8
RIP RAP AT RETAINING WALL
(Not to Scale)

EST. 158 TONS
EST. 235 SY GF
FROM STA. 19+00 TO STA. 21+50 -L- RT

-L-
PI Sta 10+41.03
△ = 6° 09' 50.8" (RT)
D = 7° 31' 09.0"
L = 81.98'
T = 41.03'
R = 762.00'
SE = 04
RUNOFF = 60'

-L-
PI Sta 11+74.50
△ = 49° 39' 06.2" (RT)
D = 28° 38' 52.6"
L = 173.32'
T = 92.52'
R = 200.00'
SE = 04
RUNOFF = 60'

-L-
PI Sta 15+96.93
△ = 38° 50' 23.0" (RT)
D = 37° 12' 18.2"
L = 104.39'
T = 54.29'
R = 154.00'
SE = 04
RUNOFF = 60'

-L-
PI Sta 19+22.63
△ = 28° 42' 40.0" (RT)
D = 22° 55' 05.9"
L = 125.28'
T = 63.98'
R = 250.00'
SE = 04
RUNOFF = 45'

-L-
PI Sta 23+04.53
△ = 34° 26' 00.0" (LT)
D = 12° 22' 42.7"
L = 278.17'
T = 143.43'
R = 462.86'
SE = 04
RUNOFF = 60'

FOR -L- PROFILE, SEE SHEET NO. 5
FOR -Y- PROFILE, SEE SHEET NO. 5
FOR -DET- PLAN & PROFILE, SEE SHEET NO. 2B-1
FOR ADDITIONAL ROADWAY DIMENSIONS, SEE SHEET 4A

8/17/99

REVISIONS

02-SEP-2026 20:36
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Docusign Envelope ID: D23C3D38-2769-86AC-80BE-4ECA7BD6EA0C

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.184	4A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12300 ENGINEER CHARLES LEE FLOWE

Docusigned by: Charlie Flowe 9/4/2026

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON

Docusigned by: Josh Dalton 9/4/2026

PRELIMINARY PLANS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

KCI ASSOCIATES OF N.C., P.A.
4800 Falls of Neuse Road, Suite 200
Raleigh, NC 27609-6270
Phone (919) 783-9214
NC Firm License No: C-0764

SUNGATE DESIGN GROUP
5400 Ehtz Burke Ct., STE. 100 • Raleigh, North Carolina 27606
Phone: (919) 859-2243 • Eng Firm License No. C-890

BRIDGE APPROACH SLAB

PAVEMENT REMOVAL

REVISIONS

8/17/99

-Y-
PI Sta 10+41.47
Δ = 31° 01' 30.9" (RT)
D = 45° 50' 11.8"
L = 67.69'
T = 34.70'
R = 125.00'
SE = SEE PLANS

BEGIN CONST.
-Y- POT STA. 10+00.00

-Y- POT Sta. 10+00.00
BEARING AH=
S 84° 33' 59.9" E

-Y- PC Sta. 10+06.77

N 25° 13' 48" E
222.44'

-Y- PT Sta. 10+74.46
BEARING AH =
S 53° 32' 29.0" E

-L- PT Sta. 19+83.92
BEARING AH =
N 78° 32' 00.0" E

-L- PC Sta. 21+16.10

-L- PT Sta. 24+39.27

NAD 83/NA 2011

1 JOE GRINDSTAFF
DB 188 PG 313
DB 147 PG 59
DB 139 PG 469
DB 126 PG 257

JOHN GRINDSTAFF
DB 623 PG 297

2 DOUGLAS WILLIS
DB 332 PG II

3 CHRISTOPHER L. RENFRO
DB 792 PG 348

4 KENNETH WINTERS, ET AL
DB 244 PG 389

5 ALMA H. PARKER (PATE)
DB 106 PG 227

6 CRABTREE PROPERTIES, LLLP
DB 484 PG 433
(MITCHELL CO.)

CRABTREE PROPERTIES, LLLP
DB 484 PG 433
(MITCHELL CO.)

COUNTY LINE IS PROPERTY LINE

YANCEY COUNTY
MITCHELL COUNTY

BEGIN STATE PROJECT 17BP.13.R.184
-L- PC STA. 10+00.00

END STATE PROJECT 17BP.13.R.184
-L- PT STA. 24+39.27

-L- PCC Sta. 10+81.98

-L- PC Sta. 10+00.00

-L- PT Sta. 12+55.30

-Y- PC Sta. 15+42.64
-L- POT Sta. 10+81.21

-L- PT Sta. 16+47.03
BEARING AH =
N 49° 49' 20.0" E

-L- PC Sta. 18+58.65

-L-
PI Sta 10+41.03
Δ = 6° 09' 50.8" (RT)
D = 7° 31' 09.0"
L = 81.98'
T = 41.03'
R = 762.00'
SE = 04
RUNOFF = 60'

-L-
PI Sta 11+74.50
Δ = 49° 39' 06.2" (RT)
D = 28° 38' 52.6"
L = 173.32'
T = 92.52'
R = 200.00'
SE = 04
RUNOFF = 60'

-L-
PI Sta 15+96.93
Δ = 38° 50' 23.0" (RT)
D = 37° 12' 18.2"
L = 104.39'
T = 54.29'
R = 154.00'
SE = 04
RUNOFF = 60'

-L-
PI Sta 19+22.63
Δ = 28° 42' 40.0" (RT)
D = 22° 55' 05.9"
L = 125.28'
T = 63.98'
R = 250.00'
SE = 04
RUNOFF = 45'

-L-
PI Sta 23+04.53
Δ = 34° 26' 00.0" (LT)
D = 12° 22' 42.7"
L = 278.17'
T = 143.43'
R = 462.86'
SE = 04
RUNOFF = 60'

FOR -L- PROFILE, SEE SHEET NO. 5
FOR -Y- PROFILE, SEE SHEET NO. 5
FOR -DET- PLAN & PROFILE, SEE SHEET NO. 2B-1
FOR DRAINAGE INFO, SEE SHEET 4

02-SEP-2026 20:38
M:\2016\2016601\09 NCDOT Division 13 Bridge Replacements\G_17BP.13.R.184_Mitchell_600101_B5158\Roadway\Pr-o_\B5158_Rdy_psh_4A.dgn
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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.184	5

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12300 ENGINEER CHARLES LEE FLOWE

Docusigned by: Charlie Flowe 9/4/2026

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON

Signed by: Josh Dalton 9/4/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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NC Firm License No: C-0764

SUNGATE DESIGN GROUP
5400 Etta Burke Ct., STE. 100 • Raleigh, North Carolina 27606
Phone: (919) 859-2243 • Eng Firm License No. C-890

RIGHT DITCH ---------
LEFT DITCH ----·----

PIPE HYDRAULIC DATA
24" RCP Sta. 11+60 -L-

DRAINAGE AREA	= 6.3	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 14	CFS
DESIGN HW ELEVATION	= 2561.1	FT
100 YEAR DISCHARGE	= 16	CFS
100 YEAR HW ELEVATION	= 2561.3	FT
OVERTOPPING FREQUENCY	= 50	YRS
OVERTOPPING DISCHARGE	= 15	CFS
OVERTOPPING ELEVATION	= 2561.2	FT

BEGIN GRADE -L- STA 10+00.00
ELEV. 2565.58'

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 2,800	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 2,558.0	FT
BASE DISCHARGE	= 3,900	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2,559.9	FT
OVERTOPPING DISCHARGE	= >5,300	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 2,563.0	FT
DATE OF SURVEY	= 1-10-2019	
W.S. ELEVATION AT DATE OF SURVEY	= 2549.1	FT

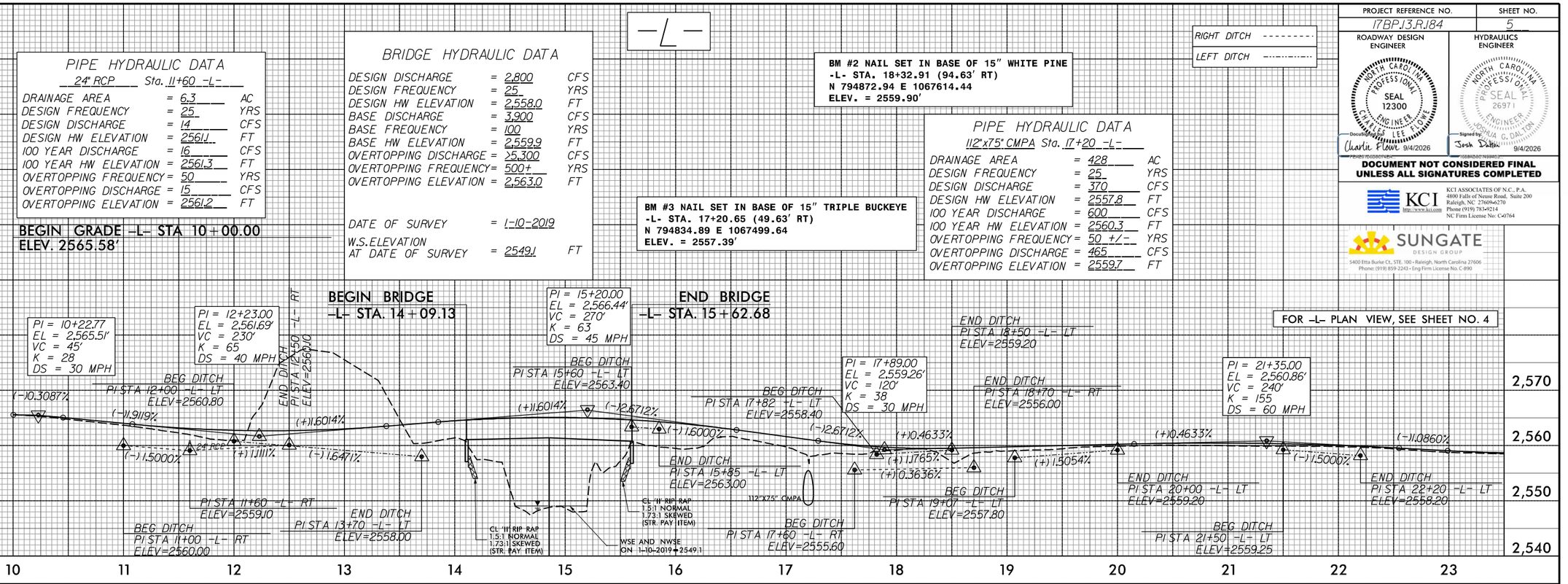
-L-

BM #2 NAIL SET IN BASE OF 15" WHITE PINE
-L- STA. 18+32.91 (94.63' RT)
N 794872.94 E 1067614.44
ELEV. = 2559.90'

BM #3 NAIL SET IN BASE OF 15" TRIPLE BUCKEYE
-L- STA. 17+20.65 (49.63' RT)
N 794834.89 E 1067499.64
ELEV. = 2557.39'

PIPE HYDRAULIC DATA
112"x75" CMPA Sta. 17+20 -L-

DRAINAGE AREA	= 428	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 370	CFS
DESIGN HW ELEVATION	= 2557.8	FT
100 YEAR DISCHARGE	= 600	CFS
100 YEAR HW ELEVATION	= 2560.3	FT
OVERTOPPING FREQUENCY	= 50 +/-	YRS
OVERTOPPING DISCHARGE	= 465	CFS
OVERTOPPING ELEVATION	= 2559.7	FT

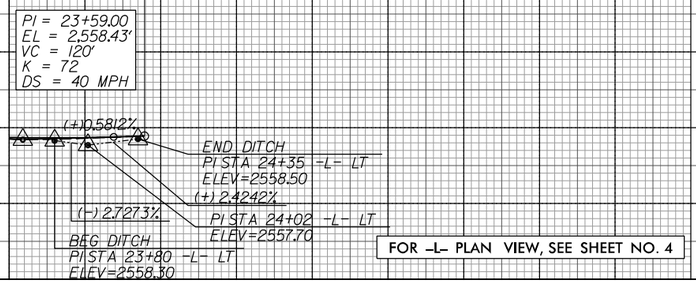


FOR -L- PLAN VIEW, SEE SHEET NO. 4

-L-

RIGHT DITCH ---------
LEFT DITCH ----·----

END GRADE -L- STA 24+39.27
ELEV. 2558.89'

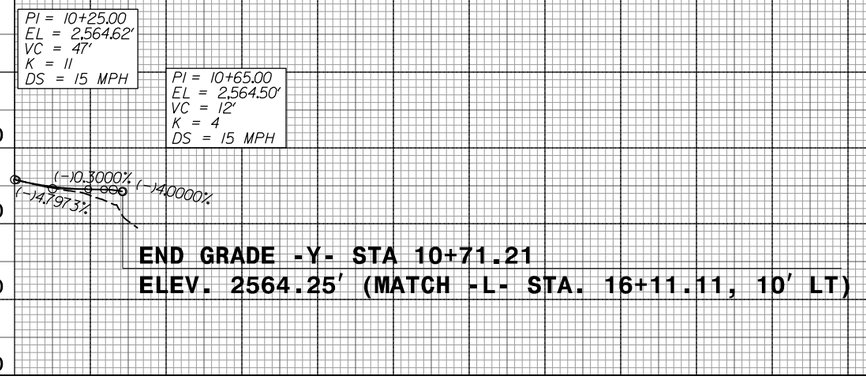


FOR -L- PLAN VIEW, SEE SHEET NO. 4

-Y-

RIGHT DITCH ---------
LEFT DITCH ----·----

BEGIN GRADE -Y- STA 10+00.00
ELEV. 2565.82'



END GRADE -Y- STA 10+71.21
ELEV. 2564.25' (MATCH -L- STA. 16+11.11, 10' LT)

FOR -Y- PLAN VIEW, SEE SHEET NO. 4

02-SEP-2026 08:46:09 N:\Projects\B5158.Rdy_pfl.sheets.dgn
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09/08/99

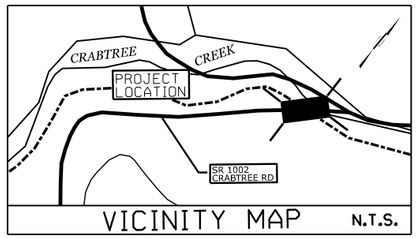
TIP PROJECT: 17BP.13.R.184

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.184	RW01	6

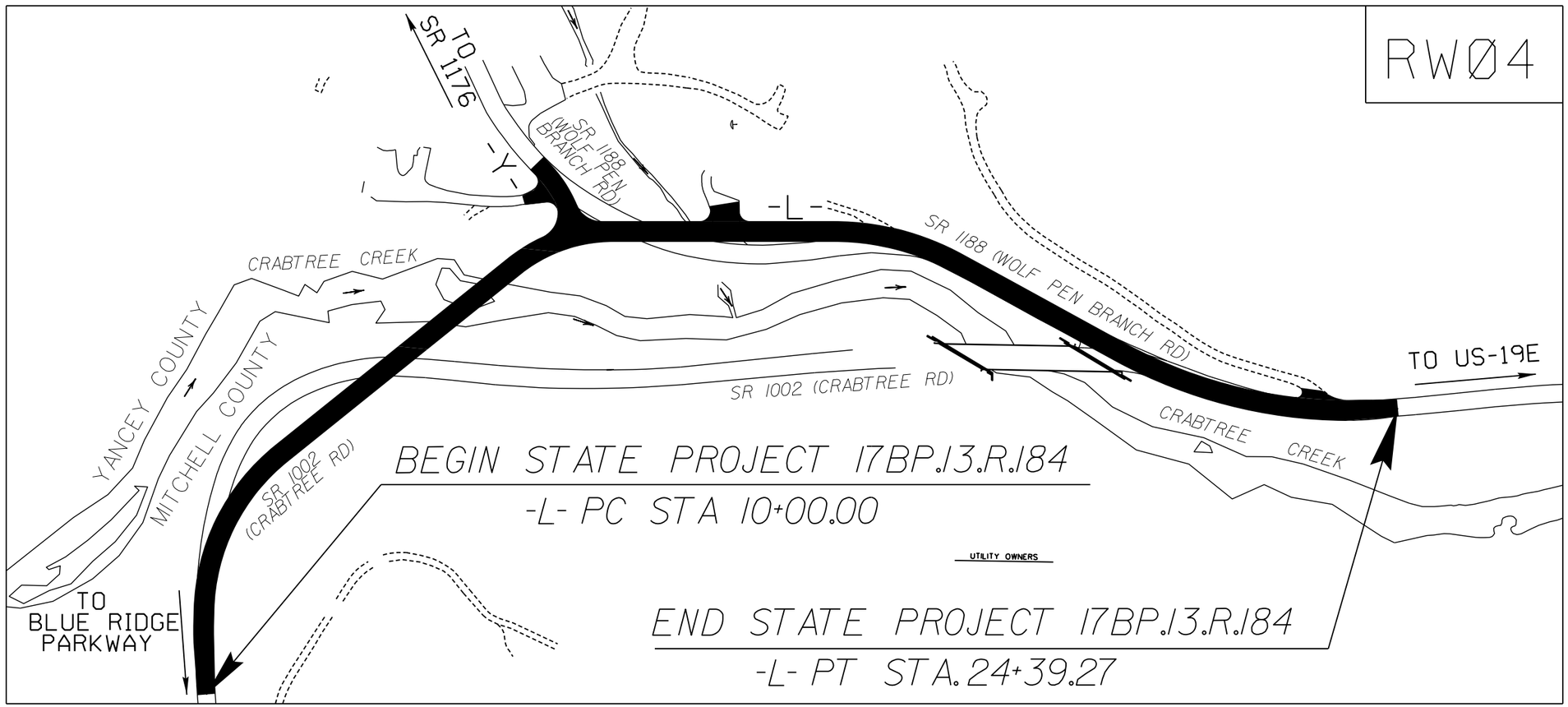
SURVEY CONTROL, EXISTING CENTERLINES, RIGHT OF WAY, EASEMENTS AND PROPERTY TIES

MITCHELL & YANCEY COUNTY



DIVISION 13





DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50' 25' 0' 50' 100'

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2519A-1" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 803,347.2483(ft) EASTING: 1,007,340.1900(ft) ELEVATION: 2,561.62(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99982200
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2519A-1" TO -L- STATION 10+00 IS S 81-22'07.9" E 60,747.33(ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:

FIRM LICENSE # C-3097
108 ASHEVILLE COMMERCE PKWY.,
CANDLER, NC 28715
828-253-2796

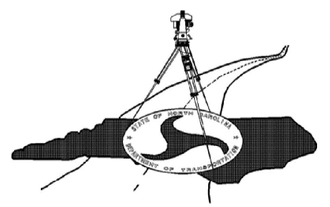
PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4529 LAND SURVEYOR MARK A PARRIS

Signed by: Mark A Parris F5E7CC2B0C7248A...

10/14/2026 | 10:21:30 AM PDT

SIGNATURE: DATE:



DocuSign Envelope ID: D94E1F74-6F15-422E-91E4-A7A5416D9FD7

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.184	RW02C-1

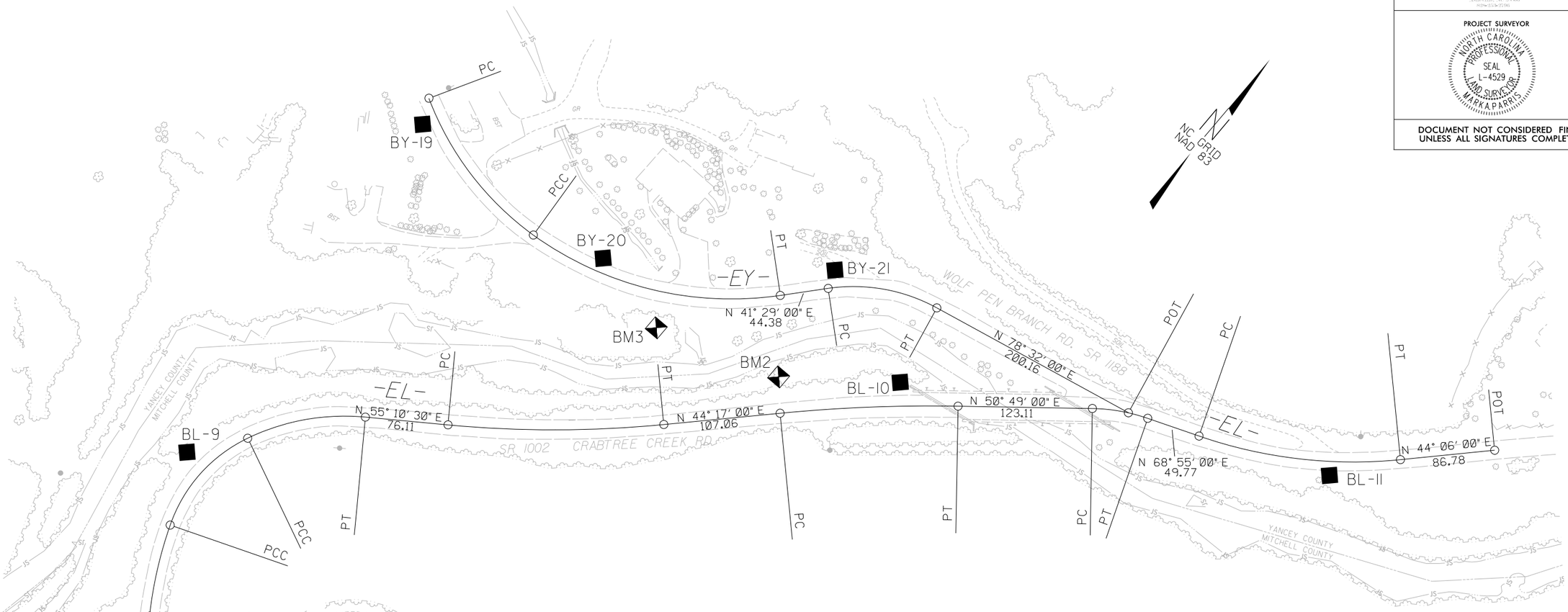
Location and Surveys

NC FIRM LICENSE # C-0897
131-G-1 PATTON AVENUE
Asheville, NC 28801
828-253-3586

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4529 LAND SURVEYOR MARK A PARRIS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



I, Mark A. Parris, PLS, certify that the Project Control was verified under my supervision from an actual GPS survey made by NCDOT and the following information was used to perform the survey:

Class of survey: *AA*
Type of GPS field procedure: Static
Dates of survey: Aug. 1998
Datum/Epoch:NAD83
Published/Fixed-control use: HARN
Localized around: R2519A-1
Northing:803347.2483
Easting:1007340.1900
Combined grid factor:0.99982200
Geoid model:GEOID 93
Units:US Survey Ft.

I also certify that the Baseline Control 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 March 2016 to April 2016 , 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 2nd day of February, 2024.

DocuSigned by:
F1E7CB66C7B7A1A...

Professional Land Surveyor L-4529

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.

REVISIONS

6/2/99

14-FEB-2024 11:44
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jgordon
AT P40V-21HI-34

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6/2/99

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.184	RW02C-2

Location and Surveys

JMT
NC FIRM LICENSE # C-3892
1514-1 PATTON AVENUE
Asheville, NC 28806
828-350-2700

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4529 LAND SURVEYOR MARK A PARRIS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BL

POINT	DESC.	NORTH	EAST	ELEVATION
8	BL-8	794090.1500	1067506.9920	2564.13
9	BL-9	794470.3100	1067244.5620	2562.80
10	BL-10	794940.9450	1067702.5930	2558.82
11	BL-11	795129.5550	1068058.2680	2558.29

BY

POINT	DESC.	NORTH	EAST	ELEVATION
19	BY-19	794839.3550	1067215.6510	2570.56
20	BY-20	794852.1790	1067421.2080	2560.01
21	BY-21	794980.9240	1067590.5320	2558.82
Y11	BL-11	795129.5550	1068058.2680	2558.29

****
BM2 ELEVATION = 2559.90
N 794873 E 1067614
NAIL SET IN BASE OF 15" WHITE PINE
****
****
BM3 ELEVATION = 2557.39
N 794835 E 1067500
NAIL SET IN BASE OF 15" TRIPLE BUCKEYE
****

EL

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	794147.303	1067482.486							
LINE			N 44°50'00.0" W	117.62					
PC	794230.717	1067399.556							
CURVE			N 39°20'49.5" W	132.80	10°58'21.0"(RT)	08°15'00.0"	133.00	66.70	694.49
PCC	794333.411	1067315.361							
CURVE			N 27°25'35.9" W	85.61	12°52'06.2"(RT)	15°00'00.0"	85.79	43.08	381.97
PCC	794409.398	1067275.928							
CURVE			N 01°33'42.4" E	106.67	45°06'30.5"(RT)	41°12'17.5"	109.47	57.75	139.05
PCC	794516.027	1067278.835							
CURVE			N 39°38'43.9" E	109.57	31°03'32.3"(RT)	28°00'00.0"	110.92	56.86	204.63
PT	794600.398	1067348.746							
LINE			N 55°10'30.0" E	76.11					
PC	794643.859	1067411.221							
CURVE			N 49°43'45.0" E	197.73	10°53'30.0"(LT)	05°30'00.0"	198.03	99.31	1041.74
PT	794771.674	1067562.090							
LINE			N 44°17'00.0" E	107.06					
PC	794848.315	1067636.838							
CURVE			N 47°33'00.0" E	163.24	06°32'00.0"(RT)	04°00'00.0"	163.33	81.76	1432.39
PT	794958.497	1067757.291							
LINE			N 50°49'00.0" E	123.11					
PC	795036.276	1067852.714							
CURVE			N 59°52'00.0" E	51.50	18°06'00.0"(RT)	35°00'00.0"	51.71	26.07	163.70
PT	795062.129	1067897.254							
LINE			N 68°55'00.0" E	49.77					
PC	795080.031	1067943.687							
CURVE			N 56°30'30.0" E	185.83	24°49'00.0"(LT)	13°15'00.0"	187.30	95.14	432.42
PT	795182.577	1068098.667							
LINE			N 44°06'00.0" E	86.78					
POT	795244.896	1068159.059							

EY

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
PC	794861.331	1067204.711							
CURVE			S 77°31'52.2" E	157.72	33°36'44.4"(LT)	21°00'27.7"	160.00	82.38	272.74
PCC	794827.279	1067358.706							
CURVE			N 63°34'22.8" E	232.94	44°10'45.6"(LT)	18°30'00.0"	238.81	125.69	309.71
PT	794930.948	1067567.300							
LINE			N 41°29'00.0" E	44.38					
PC	794964.195	1067596.698							
CURVE			N 60°00'30.0" E	101.13	37°03'00.0"(RT)	36°00'00.0"	102.92	53.33	159.15
PT	795014.749	1067684.289							
LINE			N 78°32'00.0" E	200.16					
POT	795054.541	1067880.457							

I, Mark A. Parris, PLS, certify that the Project Control was verified under my supervision from an actual GPS survey made by NCDOT and the following information was used to perform the survey:

Class of survey: ***AA***
Type of GPS field procedure: Static
Dates of survey: Aug. 1998
Datum/Epoch:NAD83
Published/Fixed-control use: HARN
Localized around: R2519A-1
Northing:803347.2483
Easting:1007340.1900
Combined grid factor:0.99982200
Geoid model:GEOID 93
Units:US Survey Ft.

I also certify that the Baseline Control 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 March 2016 to April 2016 , 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 2nd day of February, 2024.

DocuSigned by:
F157CCB6C7245A...

Professional Land Surveyor L-4529

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.

REVISIONS

14-FEB-2024 12:06
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jcgordon
AT P40V-21H1-34

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6/2/99

REVISIONS

PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.184	RW02D-1

Location and Surveys

NC FIRM LICENSE # C-3097
1515-F PATTON AVENUE
Asheville, NC 28806
828-255-9196

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4529 LAND SURVEYOR MARK A PARRIS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, Mark A. Parris, 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 2nd day of February, 2024.

DocuSigned by:
F1E70CB09C7249A...

Professional Land Surveyor L-4529

L

TYPE	STATION	NORTH	EAST
PC	10+00.00	794230.7169	1067399.5560
PCC	10+81.98	794291.8471	1067344.9928
PT	12+55.30	794454.9133	1067304.8090
PC	15+42.64	794736.9940	1067359.5506
PT	16+47.03	794825.3188	1067411.3753
PC	18+58.65	794961.8441	1067573.0583
PT	19+83.92	795015.8426	1067684.6492
PC	21+61.10	795051.0648	1067858.2887
PT	24+39.27	795182.5775	1068098.6675

Y

TYPE	STATION	NORTH	EAST
POT	10+00.00	794827.7230	1067312.2548
PC	10+06.77	794827.0816	1067318.9982
PT	10+74.46	794803.1790	1067381.4425
POT	10+81.21	794799.1689	1067386.8700

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 INFORMATINO REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

02-FEB-2024 11:12
V:\NCSCore\WP\23-005572-050_600101_con_jmt\Survey\Data - Work\B5158_ls_RW02D-1.dgn
jgordon
AT P40V-21H1-17

DocuSign Envelope ID: D94E1F74-6F15-422E-91E4-A7A5416D9FD7

6/2/99

REVISIONS

RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.184	RW03E-1

Location and Surveys

NC FIRM LICENSE # C-3097
1315-F PATTON AVENUE
Asheville, NC 28806
828-255-2196

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4529 LAND SURVEYOR MARK A PARRIS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST	
L	10+00.00	13.00	794239.8825	1067408.7751	NOT SET IN ROCK
L	10+00.00	-13.00	794221.5513	1067390.3369	
L	10+00.00	-30.00	794209.5655	1067378.2811	
L	10+00.00	30.00	794251.8683	1067420.8308	
L	10+81.98	-30.00	794273.1024	1067321.5698	
L	10+81.98	30.00	794310.5918	1067368.4158	
L	11+85.25	-30.00	794380.5023	1067274.0302	
L	12+06.80	-37.66	794404.7408	1067263.7908	
L	12+55.30	30.00	794449.1980	1067334.2596	
L	13+13.30	-49.80	794521.3382	1067266.9699	
L	13+74.94	-25.00	794577.1315	1067303.0607	
L	14+02.84	30.00	794594.0374	1067362.3676	
L	14+51.99	77.79	794633.1877	1067418.6451	
L	15+42.64	-25.00	794741.7568	1067335.0084	
L	15+65.05	-26.91	794767.5160	1067340.0074	
L	17+04.60	-20.00	794877.7369	1067442.4525	NOT SET IN WALL
L	17+28.83	151.16	794762.5971	1067571.3970	
L	18+00.00	-25.00	794943.1086	1067512.1204	
L	18+35.39	140.83	794839.2386	1067646.1447	
L	18+58.65	-20.00	794977.1250	1067560.1551	
L	18+90.00	-20.14	794997.4124	1067587.2500	
L	19+83.41	-29.00	795044.1504	1067678.3248	NOT SET IN ROCK
L	20+49.76	82.15	794948.4201	1067765.5045	
L	20+57.67	97.20	794935.2430	1067776.2451	
L	21+66.21	39.97	795013.0218	1067871.6680	
L	21+87.92	30.00	795028.1485	1067892.0611	
L	21+88.19	31.21	795027.0521	1067892.6527	
L	22+77.23	-14.98	795101.5921	1067961.5032	
L	24+39.27	13.00	795173.5306	1068108.0031	
L	24+39.27	30.00	795161.7001	1068120.2113	
L	24+39.27	-13.00	795191.6244	1068089.3318	

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y	10+08.12	29.89	794797.2191	1067317.1903

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST	
L	10+45.00	30.00	794283.4060	1067391.2754	
L	11+48.00	-45.00	794334.0000	1067270.5659	
L	11+48.00	-30.00	794339.0656	1067284.6846	
L	11+48.00	41.00	794363.0685	1067351.5043	
L	11+69.00	-45.00	794358.6225	1067263.1565	
L	11+69.00	-30.00	794362.1851	1067277.7273	
L	12+62.00	71.00	794447.9687	1067375.7859	
L	13+05.00	125.00	794479.8937	1067436.9888	
L	13+51.00	-53.00	794558.9618	1067271.0123	
L	13+88.00	125.00	794561.3736	1067452.8011	
L	14+03.00	-40.00	794607.5329	1067293.6807	NOT SET IN STREAM
L	14+03.00	-25.00	794604.6752	1067308.4059	
L	14+56.00	115.00	794630.0333	1067455.9389	MAGNAIL
L	16+69.00	-34.07	794865.5249	1067406.1766	
L	16+80.00	-40.00	794877.1499	1067410.7574	
L	17+20.00	-40.00	794902.9563	1067441.3193	
L	17+28.83	178.00	794742.0883	1067588.7147	
L	17+38.00	-21.75	794900.6259	1067466.8458	
L	18+90.00	-35.00	795009.8748	1067579.1592	
L	19+20.00	-35.00	795026.7339	1067608.8915	
L	19+20.00	-24.92	795017.6826	1067613.3290	
L	22+06.00	-26.95	795087.8794	1067893.9016	
L	23+00.00	-21.00	795116.9653	1067978.1995	
L	23+92.00	30.00	795127.4049	1068083.4013	
L	23+92.00	43.00	795117.4535	1068091.7660	
L	24+14.00	30.00	795142.8985	1068100.9688	
L	24+14.00	43.00	795133.3557	1068109.7969	
L	24+15.00	-25.00	795183.9150	1068064.3129	
L	24+15.00	-13.04	795175.1568	1068072.4504	

I , Mark A. Parris , 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 1/18/24 to 1/31/24, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 2nd day of February, 2024.

Professional Land Surveyor L-4529

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 1/18/24 TO 1/31/24 .

02-FEB-2024 11:03
V:\NCSurvey\17BP-005572-050_600101.con_jmt\Survey\Data - Work\B5158.ls_RW03E-1.dgn
jgordon
AT P40V-21HI-17

DocuSign Envelope ID: 483019A5-54A1-4B3A-9F88-8FE760DD46F6

6/2/99

REVISIONS

I, Mark A. Parris , 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 1/18/24 to 1/31/24, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 2nd day of February, 2024.

Professional Land Surveyor L-4529

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.184	RW04

Location and Surveys

NC FIRM LICENSE # C-3095
1315-F PATTON AVENUE
Asheville, NC 28806
828-255-5780

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4529 LAND SURVEYOR MARK A. PARRIS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-Y-
PI Sta 10+41.47
△ = 31° 01' 30.9" (RT)
D = 45° 50' 11.8"
L = 67.69'
T = 34.70'
R = 125.00'

-Y- POT Sta. 10+00.00
S 84° 33' 59.9" E
-Y- PC Sta. 10+06.77

-Y- PT Sta. 10+74.46
S 53° 32' 29.0" E

N 49° 49' 20.0" E

-L- PT Sta. 19+83.92

-L- PC Sta. 21+61.10

-L- PT Sta. 24+39.27

-L- PT Sta. 16+47.03

-L- POC Sta. 16+11.11=
-Y- POT Sta. 10+81.21

-L- PC Sta. 15+42.64

-L- PC Sta. 18+58.65

-L- PT Sta. 12+55.30

-L- PCC Sta. 10+81.98

-L- PC Sta. 10+00.00

N 10° 58' 51.0" E

N 78° 32' 00.0" E

COUNTY LINE IS PROPERTY LINE

1 JOE GRINDSTAFF
DB 188 PG 313
DB 147 PG 59
DB 139 PG 469
DB 126 PG 257

2 DOUGLAS WILLIS
DB 332 PG 11

3 CHRISTOPHER L. RENFRO
DB 792 PG 348

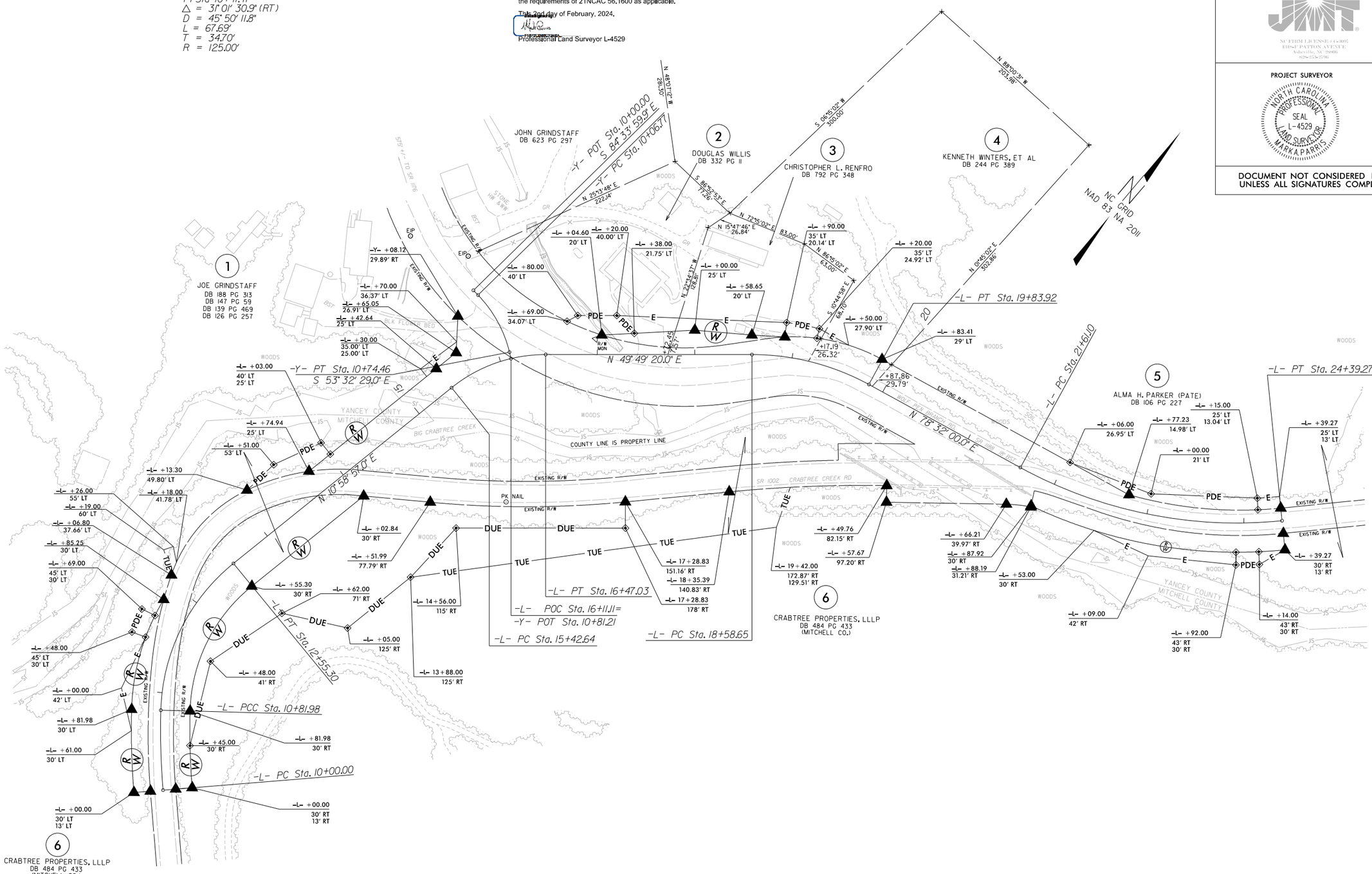
4 KENNETH WINTERS, ET AL
DB 244 PG 389

5 ALMA H. PARKER (PATE)
DB 106 PG 227

6 CRABTREE PROPERTIES, LLLP
DB 484 PG 433
(MITCHELL CO.)

JOHN GRINDSTAFF
DB 623 PG 297

NC GRID
NAD 83 NA 2011



-L-

PI Sta 10+41.03	PI Sta 11+74.50	PI Sta 15+96.93	PI Sta 19+22.63	PI Sta 23+04.53
△ = 6° 09' 50.8" (RT)	△ = 49° 39' 06.2" (RT)	△ = 38° 50' 23.0" (RT)	△ = 28° 42' 40.0" (RT)	△ = 34° 26' 00.0" (LT)
D = 7° 31' 09.0"	D = 28° 38' 52.6"	D = 37° 12' 18.2"	D = 22° 55' 05.9"	D = 12° 22' 42.7"
L = 81.98'	L = 173.32'	L = 104.39'	L = 125.28'	L = 278.17'
T = 41.03'	T = 92.52'	T = 54.29'	T = 63.98'	T = 143.43'
R = 762.00'	R = 200.00'	R = 154.00'	R = 250.00'	R = 462.86'

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 1/18/24 TO 1/31/24.

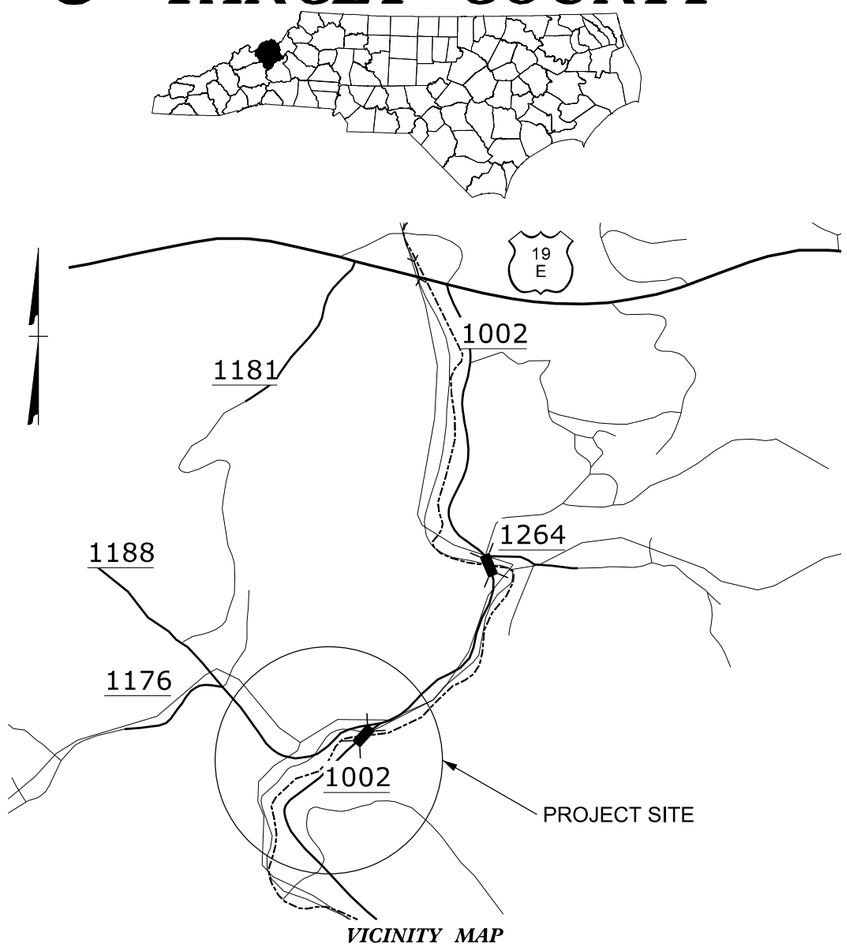
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MLV Survey
jcgor-don
Al PE-VDF-39

Docusign Envelope ID: EA0F128F-6346-8AA1-8121-3A298B587F06

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

MITCHELL COUNTY & YANCEY COUNTY



VICINITY MAP

NOT TO SCALE

LOCATION: REPLACE BRIDGE NO. 600101 OVER BIG CRABTREE CREEK ON SR 1002 (CRABTREE RD.)
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURES



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

PLANS PREPARED BY:

BARRY C. SMITH, PE
KCI PROJECT MANAGER

CHARLES L. FLOWE, PE
KCI DESIGN ENGINEER

NCDOT CONTACTS:

MARK E. HILL, PE, CPM
PROJECT ENGINEER

PROJECT DESIGN ENGINEER

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

INDEX OF SHEETS

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TMP-1B	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES, AND LOCAL NOTES)
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APPROVED: DocuSigned by: Charlie Flowe

DATE: 10/13/2026

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 12300 ENGINEER CHARLES LEE FLOWE

SHEET NO.
TMP-1

TIP PROJECT: 17BP.13.R.184
DM00528

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PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.184	TMP-1A

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.01	WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.06	WARNING SIGNS FOR BLASTING ZONES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1170.01	PORTABLE CONCRETE BARRIER
1180.01	SKINNY - DRUMS
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- TEMP. SHORING (LOCATION PURPOSES ONLY)
- WORK AREA
- REMOVAL
- WEDGE AND OVERLAY
- USER DEFINED (IF NEEDED)

SIGNALS

EXISTING PROPOSED TEMPORARY PORTABLE

DS DRIVEWAY SIGNAL

PAVEMENT MARKINGS

EXISTING LINES

——TEMPORARY LINES

TRAFFIC CONTROL DEVICES

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

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

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

PAVEMENT MARKING SYMBOLS

PAVEMENT MARKING SYMBOLS

TEMPORARY PAVEMENT MARKING

P1 - WHITE EDGELINE	(PAINT - 4")
P13 - DOUBLE YELLOW CENTER	(PAINT - 4")
P61 - WHITE STOPBAR	(PAINT - 24")

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APPROVED: Charlie Flowe (DocuSigned by: 7EA8D7D0D8C74EA...)

DATE: 9/3/2026

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 12300 ENGINEER CHARLES LEE FLOWE

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

ROADWAY STANDARD DRAWINGS & LEGEND

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charlie.flowe AT KCI-CHZDR03

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PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.184	TMP-1B

GENERAL NOTES

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

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

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.

B) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.

C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 5 FT OF AN OPEN TRAVEL LANE ON AN UNDIVIDED FACILITY, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

E) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

PAVEMENT EDGE DROP OFF REQUIREMENTS

F) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

G) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 100 FT IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

H) NOTIFIY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATIONS.

SIGNING

I) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

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

K) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 100 FT IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC BARRIER

L) INSTALL TEMPORARY BARRIER ACCORDING TO THE TRANSPORATION MANAGEMENT PLANS A MAXIMUM OF TWO (2) WEEKS PRIOR TO BEGINNING WORK IN ANY LOCATION, ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION PROCEED IN A CONTINUOUS MANNER TO COMPLETE THE PROPOSED WORK IN THAT LOCATION UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS OR AS DIRECTED BY THE ENGINEER.

DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE.

ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION AND NO WORK IS PERFORMED BEHIND THE TEMPORARY BARRIER FOR A PERIOD LONGER THAN TWO (2) MONTHS, REMOVE / RESET TEMPORARY BARRIER AT NO COST TO THE DEPARTMENT UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS, TEMPORARY BARRIER IS PROTECTING A HAZARD, OR AS DIRECTED BY THE ENGINEER.

INSTALL TEMPORARY BARRIER WITH THE TRAFFIC FLOW BEGINNING WITH THE UPSTREAM SIDE OF TRAFFIC. REMOVE TEMPORARY BARRIER AGAINST THE TRAFFIC FLOW BEGINNING WITH THE DOWNSTREAM SIDE OF TRAFFIC.

INSTALL AND SPACE DRUMS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH) TO CLOSE OR KEEP THE SECTION OF THE ROADWAY CLOSED UNTIL THE TEMPORARY BARRIER CAN BE PLACED OR AFTER THE TEMPORARY BARRIER IS REMOVED.

M) PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER AT ALL TIMES DURING THE INSTALLATION AND REMOVAL OF THE BARRIER BY EITHER A TRUCK MOUNTED ATTENUATOR (MAXIMUM 72 HOURS) OR A TEMPORARY CRASH CUSHION.

PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER FROM ONCOMING TRAFFIC AT ALL TIMES BY A TEMPORARY CRASH CUSHION UNLESS THE APPROACH END OF MOVABLE/PORTABLE OR AS SHOWN IN THE PLANS: (SEE ALSO 1101.05)

POSTED SPEED LIMIT	MINIMUM OFFSET
40 OR LESS	15 FT
45 - 50	20 FT
55	25 FT
60 MPH OR HIGHER	30 FT

TRAFFIC CONTROL DEVICES

N) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

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

P) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD NAME:	MARKING	MARKER
SR 1002 (CRABTREE ROAD)	PAINT	NONE

Q) PLACE ON APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.

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

S) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

MISCELLANEOUS

T) IN THE EVENT OF A TIE-IN CANNOT BE MADE IN ONE DAY'S TIME, BRING THE TIE-IN AREA TO AN APPROPRIATE ROADWAY ELEVATION AS DETERMINED BY THE ENGINEER. PLACE BLACK ON ORANGE "LOOSE GRAVEL" SIGNS (W8-7) AND BLACK ON ORANGE "PAVEMENT ENDS" SIGNS (W8-3) 100 FT AND 200 FT RESPECTIVELY IN ADVANCE OF THE UNEVEN AREAS. USE DRUMS TO DELINEATE THE EDGE OF ROADWAY ALONG UNPAVED AREAS.

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TRANSPORTATION OPERATIONS PLAN

10/20/2026
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PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.184	TMP-2

PHASING

IN A CONTINUOUS MANNER, COMPLETE THE FOLLOWING PHASES:

PHASE 1 (SEE TMP-4)

STEP 1: INSTALL WORK ZONE ADVANCE WARNING SIGNS (STD. 1101.01, SHEET 3 OF 3) PER ROADWAY STANDARD DRAWINGS.

STEP 2: MAINTAIN TRAFFIC ALONG EXISTING ROADWAY (SR 1002) AND INSTALL TYPE III BARRICADES (STD 1145.01) AND DRUMS (STD 1130.01) AT -L- STA. 12+00+/- AND -L- STA. 13+45+/-. USING FLAGGERS AS NEEDED, CONSTRUCT NEW PAVEMENT FROM -L- STA. 11+00+/- TO -L- STA. 13+45+/-.

STEP 3: WEDGE AND RESURFACE (UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE) FROM -L- STA. 10+00 TO -L-STATION 12+25 +/- AND CONSTRUCT TEMPORARY DETOUR FROM -DET- STA. 10+00 +/- TO TIE INTO EXISTING SR 1002 (-DET- STA. 12+16 +/-). USE FLAGGERS (STD 1101.02, SHEET 1 OF 19 AND 1150.01, SHEET 1 OF 1) TO MAINTAIN TRAFFIC WHILE CONSTRUCTING TIE-INS.

STEP 4: USING FLAGGERS AS NEEDED, START CLEARING NORTH END OF PROPOSED BRIDGE LOCATION AND BEGIN END BENT CONSTRUCTION FROM -L- STA. 15+73 +/- TO STA. 16+51 +/-.

PHASE 2 (SEE TMP-5)

STEP 1: COMPLETE TIE-IN OF -DET- LINE. USE FLAGGERS (STD 1101.02, SHEET 1 OF 19 AND 1150.01, SHEET 1 OF 1) TO MAINTAIN TRAFFIC WHILE CONSTRUCTING TIE-INS.

WORKING IN A CONTINUOUS MANNER, COMPLETE STEPS 2 THROUGH 4:

STEP 2: INSTALL TRAFFIC CONTROL DEVICES FOR ON-SITE DETOUR AS SHOWN ON TMP-5.

STEP 3: INSTALL TEMPORARY PAVEMENT MARKINGS FROM -L- STA. 11+00+/- TO STA. 13+25+/- AND -DET- STA. 10+00+/- TO STA. 12+16+/-.

STEP 4: SHIFT TRAFFIC ONTO NEW PAVEMENT AND TEMPORARY PAVEMENT CONSTRUCTED IN PHASE I.

STEP 5: CONSTRUCT PROPOSED BRIDGE (-L- STA. 14+21 +/- TO -L- STA. 15+51 +/-).

STEP 6: USING LANE CLOSURES AND FLAGGERS AS NEEDED, CONSTRUCT -L- UP TO BUT NOT INCLUDING THE FINAL LAYER OF PAVEMENT FROM END OF BRIDGE (-L- STA. 15+51+/-) TO -L- STA. 16+83+/-. CONSTRUCT GUARDRAIL AND ANCHOR UNIT FROM END OF BRIDGE TO -L- STA. 15+93+/- LT. CONSTRUCT GUARDRAIL FROM END OF BRIDGE TO -L- STA. 16+45+/- RT.

STEP 7: COMPLETE WEDGING AND RESURFACING OF -Y- LINE (SR 1188) FROM STA. 10+00 +/- TO STA. 11+00 +/- USING FLAGGERS (STD 1101.02, SHEET 1 OF 19 AND 1150.01, SHEET 1 OF 1).

PHASE 3 (SEE TMP-6)

PHASE 3, STEPS 1 AND 2 TO BE COMPLETED IN A CONTINUOUS MANNER.

STEP 1: UPON COMPLETION OF THE BRIDGE AND CONSTRUCTION OF THE NORTH END APPROACH FILL, USING RSD 1101.03 SHEET 3 OF 9, INSTALL TRAFFIC CONTROL DEVICES FOR ONSITE DETOUR AS SHOWN ON TMP-6 AND TEMPORARY PAVEMENT MARKINGS FROM -L- STA. 13+25+/- TO -L- 16+50+/- AND -Y- STA. 10+00+/- TO 10+81+/-.

STEP 2: SWITCH TRAFFIC ONTO ONSITE DETOUR USING THE NEWLY CONSTRUCTED BRIDGE, TEMPORARY PAVEMENT, AND THE STOP SIGN AT THE -L- AND -DET- INTERSECTION.

STEP 3: MAINTAIN THE STOP SIGN AT -L- AND -DET- INTERSECTION UNTIL THE COMPLETION OF PHASE 3.

STEP 4: AWAY FROM TRAFFIC, CONSTRUCT 112″ X 75″ CMPA AT APPROXIMATE -L- STA. 17+20 +/-.

STEP 5: CONSTRUCT NEW MAINLINE PAVEMENT FROM -L- STA. 16+70 +/- TO -L- STA. 21+85 +/- INCLUDING CONSTRUCTION OF RETAINING WALL. CONSTRUCT GUARDRAIL FROM -L- STA. 16+45+/- TO STA. 20+95+/-. CONTRACTOR TO MAINTAIN ACCESS TO DRIVEWAY ON PARCEL 3.

PHASE 4 (SEE TMP-7)

STEP 1: USING FLAGGERS AS NEEDED, INSTALL TEMPORARY PAVEMENT MARKINGS ON NEWLY CONSTRUCTED PAVEMENT. INSTALL TEMPORARY TRAFFIC SIGNALS AND WARNING SIGNS TO MAINTAIN TRAFFIC AS A ONE-LANE, TWO-WAY TRAFFIC PATTERN ON THE WESTBOUND LANE FROM -L- STA. 21+00+/- TO -L- STA. 24+39+/- (STD 1101.02, SHEET 17 of 19 AND 1101.11, SHEET 4 OF 4). BEGIN REMOVAL OF THE EXISTING NORTH END BRIDGE ABUTMENT, TEMPORARY PAVEMENT, AND EXISTING PAVEMENT.

STEP 2: RESURFACE PAVEMENT IN THE EASTBOUND LANE AND CONSTRUCT RETAINING WALL FROM RT -L- STA. 21+00 +/- TO RT -L- STA. 24+39 +/-.

STEP 3: UPON COMPLETION, USING FLAGGERS AS NEEDED, ADJUST TEMPORARY PAVEMENT MARKINGS, TEMPORARY SIGNALS, AND WARNING SIGNS ACCORDINGLY AND SHIFT ALL TRAFFIC ONTO THE EASTBOUND LANE AS A ONE-LANE, TWO-WAY TRAFFIC PATTERN.

PHASE 5 (SEE TMP-8)

STEP 1: UTILIZING THE EASTBOUND LANE AND TEMPORARY SIGNALS IN A ONE-LANE, TWO-WAY TRAFFIC PATTERN, RESURFACE PAVEMENT IN WESTBOUND LANE.

STEP 2: USING FLAGGERS AS NEEDED, CONTINUE PAVEMENT REMOVAL THROUGHOUT THE PROJECT.

STEP 3: REMOVE TEMPORARY SIGNALS AND SHIFT TRAFFIC TO PROPOSED PATTERN.

PHASE 6

STEP 1: USING FLAGGERS AS NEEDED, REMOVE REMAINDER OF THE EXISTING BRIDGE AT -L- STA. 20+80 +/- RT. AND EXISTING PAVEMENT THAT HAS NOT BEEN COMPLETED DURING PRIOR PHASES AS DESIGNATED ON PLANS.

STEP 2: USE FLAGGERS AND WARNING SIGNS (STD 1101.02, SHEET 1 OF 19 AND 1150.01, SHEET 1 OF 1) AS NEEDED TO MAINTAIN TRAFFIC TO PAVE THE FINAL LAYER OF SURFACE COURSE AND INSTALL FINAL PAVMENT MARKINGS.

STEP 3: USING FLAGGERS, REMOVE REMAINING TRAFFIC CONTROL DEVICES AND OPEN TRAFFIC TO FINAL PATTERN.

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DATE: 9/3/2026
SEAL

NORTH CAROLINA PROFESSIONAL SEAL 12300 ENGINEER CHARLES LEE FLOWE

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TEMPORARY TRAFFIC CONTROL PHASING

9/3/2026
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User:charlie.flowe

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PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.184	TMP-3

SP-1

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

SIGN WIDTH: 3′-6″
HEIGHT: 3′-0″
TOTAL AREA: 10.50 Sq.Ft.

BORDER TYPE: RECESSED
RECESS: 0.63″
WIDTH: 0.88″
RADII: 2.25″

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

BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

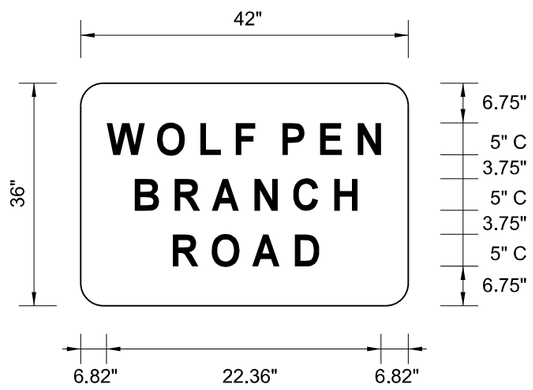
SYMBOL	X	Y	WID	HT

MAT′L: 0.080″ ALUMINUM

USE NOTES: 1,2

1. Legend and border shall be direct applied black non-reflective sheeting.
2. Background shall be Type VII, VIII, or IX (prismatic) fluorescent orange retroreflective sheeting.

DESIGN BY: T. KRAUSS
PROJECT ID: 600101
CHECKED BY: B. SMITH
DIV: 13
DATE: Nov. 14, 2023



Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

																											Series/Size Text Length
		W	O	L	F		P	E	N																		C 2000
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		R	O	A	D																						C 2000
	13.99	3.58	3.73	3.97	2.74	13.99																					14.02

FILENAME: MITCHELL 600101 DETOUR SIGN FACE LAYOUT

NORTH CAROLINA D.O.T. SIGN DETAIL

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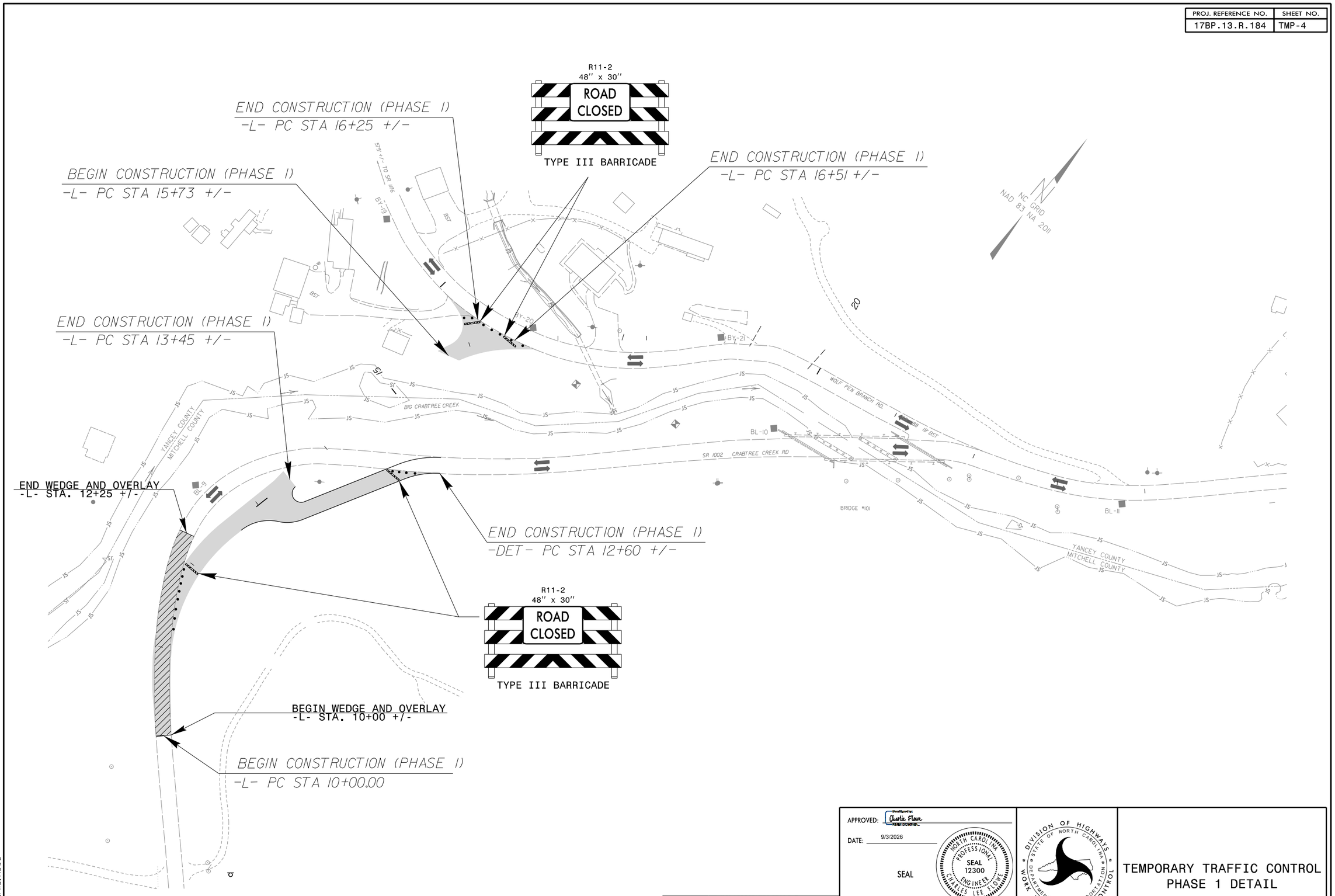
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SPECIAL SIGN DESIGN

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DATE: 9/3/2026

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 12300 ENGINEER CHARLES LEE FLOWE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

TEMPORARY TRAFFIC CONTROL PHASE 1 DETAIL

Docusign Envelope ID: 7B8FE0A6-DCC6-83FC-8187-0886898A3D89

PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.184	TMP-5

R11-2
48" x 30"
ROAD CLOSED
TYPE III BARRICADE

END CONSTRUCTION (PHASE 2)
-L- STA 16+83 +/-

NC GRID
NAD 83 NA 2011

BEGIN WEDGE AND OVERLAY
STA 10+00 +/-
END WEDGE AND OVERLAY
STA 11+00 +/-

BEGIN CONSTRUCTION (PHASE 2)
-L- STA 13+70 +/-

N 10°58'57.0" E

N 44°50'00.0" W

N 44°06'00.0" E

SR 1002 CRABTREE CREEK RD

WOLF PEN BRANCH RD.

YANCEY COUNTY
MITCHELL COUNTY

BRIDGE #101

STOP
R1-1

R11-2
48" x 30"
ROAD CLOSED
DETOUR
M4-10R
48" x 18"
TYPE III BARRICADE

R11-2
48" x 30"
ROAD CLOSED
DETOUR
M4-10L
48" x 18"
TYPE III BARRICADE

R11-2
48" x 30"
ROAD CLOSED
DETOUR
M4-10R
48" x 18"
TYPE III BARRICADE

B-B
STA. 11+75 -DET-
VAR. 9' 9'
EXIST PVMT
NEW PVMT
VAR.

A-A
STA. 11+50 -L-
VAR. 10' 10'
WEDGE AND OVERLAY
NEW PVMT

APPROVED: Charlie Flowe
DATE: 9/3/2026
SEAL

NORTH CAROLINA PROFESSIONAL SEAL 12300 ENGINEER CHARLES LEE FLOWE

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

TEMPORARY TRAFFIC CONTROL
PHASE 2 DETAIL

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

8/31/2026
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PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.184	TMP-6

R11-2
48" x 30"
ROAD CLOSED
DETOUR
M4-10R
48" x 18"
TYPE III BARRICADE

R11-2
48" x 30"
ROAD CLOSED
DETOUR
M4-10L
48" x 18"
TYPE III BARRICADE

BEGIN CONSTRUCTION (PHASE 3)
-L- PC STA 16+70 +/-

CONTRACTOR TO MAINTAIN ACCESS TO DRIVEWAY

R11-2
48" x 30"
ROAD CLOSED
DETOUR
M4-10L
48" x 18"
TYPE III BARRICADE

R11-2
48" x 30"
ROAD CLOSED
DETOUR
M4-10L
48" x 18"
TYPE III BARRICADE

END CONSTRUCTION (PHASE 3)
-L- PC STA 21+85 +/-

WOLF PEN BRANCH ROAD
SP-1
48" x 42"
DETOUR
M4-8
24" x 12"
M6-1
21" x 15"

STOP
R1-1

STOP
R1-1

R11-2
48" x 30"
ROAD CLOSED
DETOUR
M4-10L
48" x 18"
TYPE III BARRICADE

WOLF PEN BRANCH ROAD
SP-1
48" x 42"
DETOUR
M4-8
24" x 12"
M6-1
21" x 15"

R11-2
48" x 30"
ROAD CLOSED
DETOUR
M4-10R
48" x 18"
TYPE III BARRICADE

575' +/- TO SR 1176 -EY-
GARAGE
STONE H/W & W/W
BST
GR
SR DRIVE
36" WD RAIL
ROCK WALL
STONE WALK
MOBILE HOME
WD. DECK
2 S BR D
1 S BR D
BLOCK WALLS
BLK GARAGE
S
TILE FLOOR BED
42" WD PLANTER
RR MON
WELL HOUSE
LANDSCAPED AREA
SOIL
WOLF PEN BRANCH RD. / SR 1884
-EY-
-EL-
SR 1002 CRABTREE CREEK RD
BRIDGE #101
SIGN
CONC
WD RAIL
YANCEY COUNTY
MITCHELL COUNTY
BIG CRABTREE CREEK
JS
P1
P13
NC GRID
NAD 83 NA 2011

APPROVED: Charlie Flowe
DATE: 9/3/2026
SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 12300 CHARLES LEE FLOWE
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

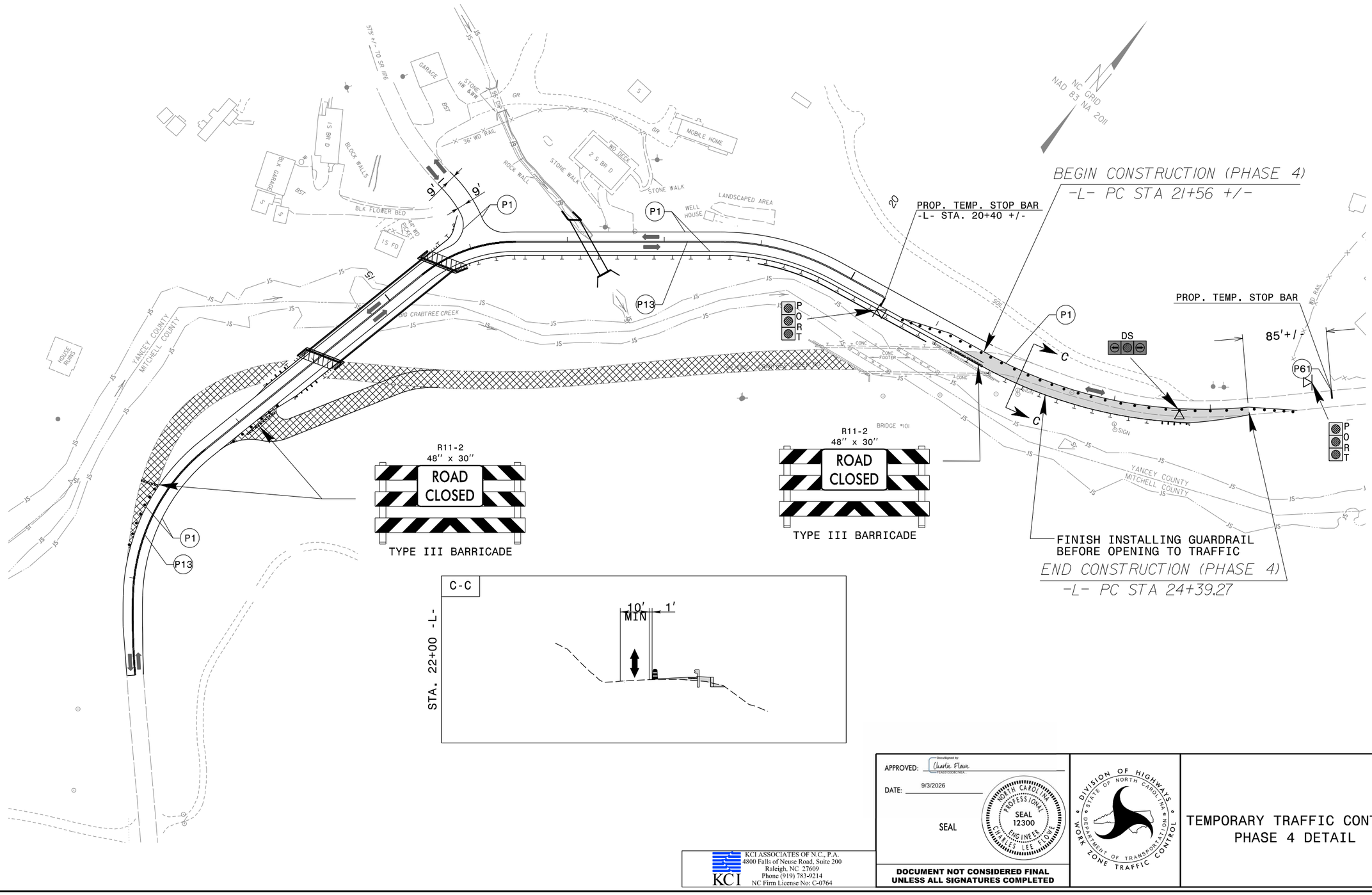
TEMPORARY TRAFFIC CONTROL
PHASE 3 DETAIL

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

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PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.184	TMP-7



APPROVED: Charlie Flowe

DATE: 9/3/2026

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 12300 ENGINEER CHARLES LEE FLOWE

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

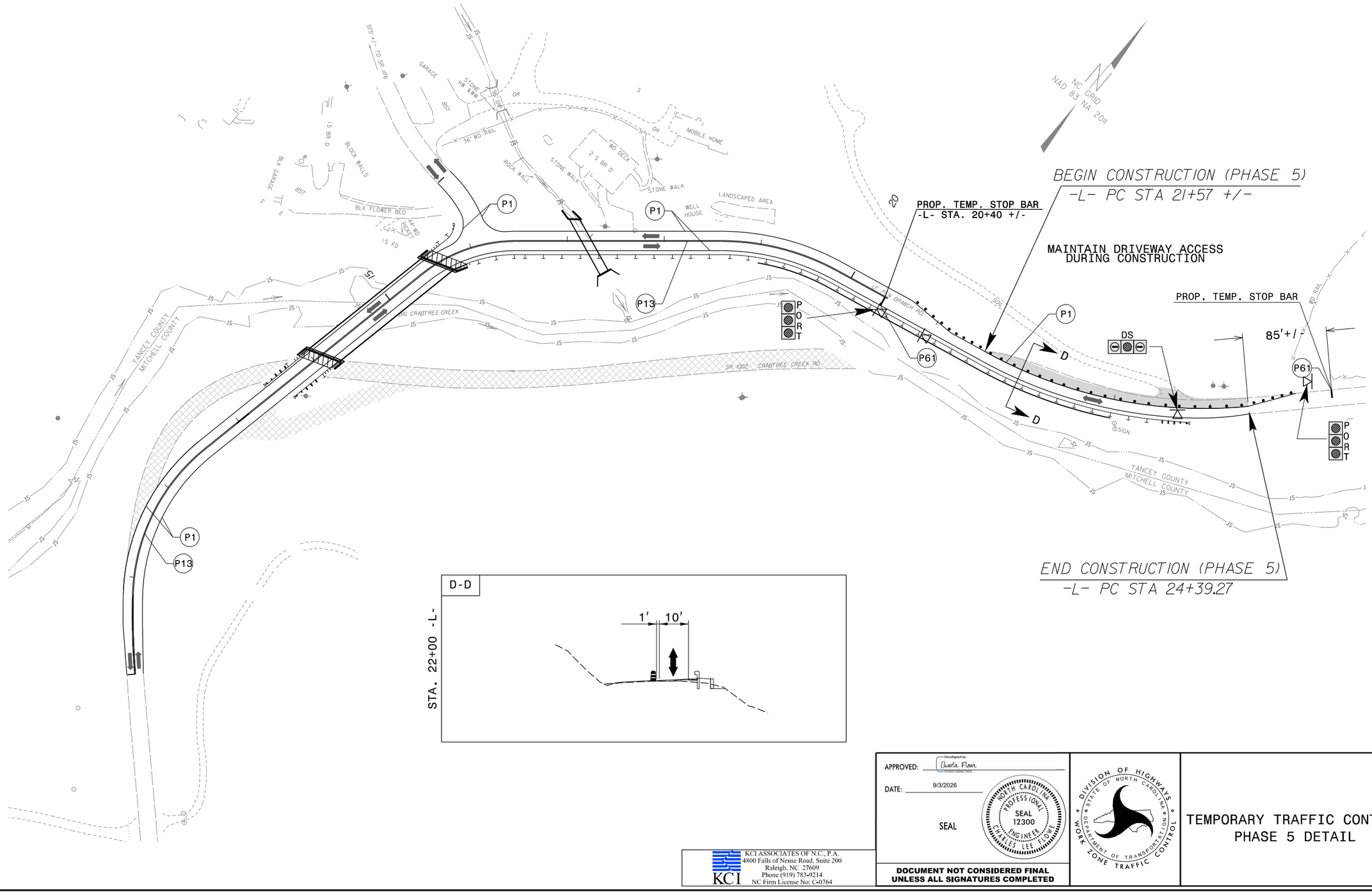
DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

TEMPORARY TRAFFIC CONTROL PHASE 4 DETAIL

9/2/2026
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PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.184	TMP-8



9/2/2026
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KCI ASSOCIATES OF N.C., P.A.
4800 Falls of Neuse Road, Suite 200
Raleigh, NC 27609
Phone (919) 783-9214
NC Firm License No: C-0764

APPROVED: DocuSigned by: Charlie Flowe
DATE: 9/3/2026
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 12300 ENGINEER CHARLES LEE FLOWE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

TEMPORARY TRAFFIC CONTROL PHASE 5 DETAIL

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PROJECT: 17BP.13.R.184

CONTRACT: DM00528

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PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.184	PMP-1

APPROVED: Charlie Flowe
DATE: 10/13/2026

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 12300 ENGINEER CHARLES LEE FLOWE

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4505 Falls of Neuse Road, Suite 400
Raleigh, NC 27609-6270
Phone (919) 783-9214
NC Firm License No: C-0764

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PAVEMENT MARKING PLANS

MITCHELL COUNTY & YANCEY COUNTY

LOCATION: BRIDGE No. 101 ON SR 1002 (CRABTREE ROAD) OVER BIG CRABTREE CREEK

ROADWAY STANDARD DRAWING

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

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

GENERAL NOTES

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

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

ROADWAY	MARKING	MARKER
SR 1002	PAINT	NONE

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

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

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

PAVEMENT MARKING SCHEDULE

FINAL PAVEMENT MARKING

SYMB	DESCRIPTION
P1	PAINT (4") WHITE EDGELINE
P5	PAINT (4") 2FT. - 6FT./SP WHITE MINISKIP
P13	PAINT (4") YELLOW DOUBLE CENTER
P61	PAINT (24") WHITE STOPBAR

INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN TITLE AND SCHEDULE SHEET
PMP-1A	PAVEMENT MARKINGS - LINES AND OFFSETS
PMP-2	PAVEMENT MARKING DETAIL

KELVIN L. JORDAN — SIGNING & DELINEATION REGIONAL ENGINEER

RENEE B. ROACH, PE, CPM — STATE SIGNING & DELINEATION ENGINEER

STATE OF NORTH CAROLINA * DEPARTMENT OF TRANSPORTATION *

PLANS PREPARED BY:

BARRY C. SMITH, PE — KCI PROJECT MANAGER

CHARLES L. FLOWE, PE — KCI PROJECT DESIGN ENGINEER

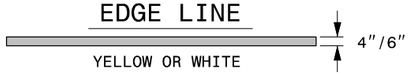
KCI ASSOCIATES OF N.C., P.A.
4800 Falls of Neuse Road, Suite 200
Raleigh, NC 27609
Phone (919) 783-9214
NC Firm License No: C-0764

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PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.184	PMP-1A

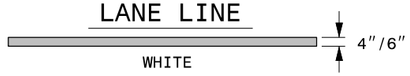
CONTINUOUS LINES

EDGE LINE



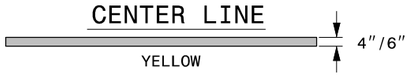
YELLOW OR WHITE

LANE LINE



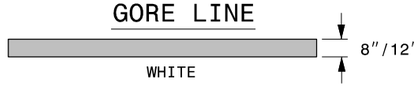
WHITE

CENTER LINE



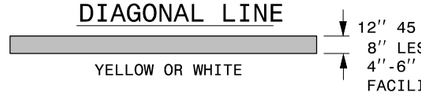
YELLOW

GORE LINE



WHITE

DIAGONAL LINE



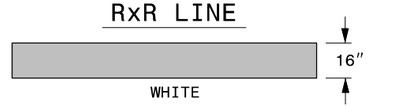
YELLOW OR WHITE

CROSSWALK LINE



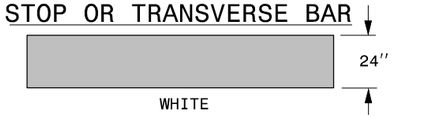
WHITE

RxR LINE



WHITE

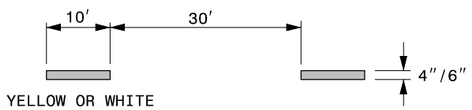
STOP OR TRANSVERSE BAR



WHITE

10′-30′/SP SKIP LINE

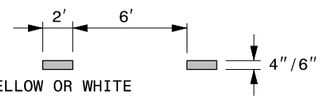
UNLESS OTHERWISED SHOWN, USE 10′-30′/SP SKIPS FOR SKIP LANE LINES AND SKIP CENTER LINES.



YELLOW OR WHITE

2′-6′/SP MINI-SKIP LINE

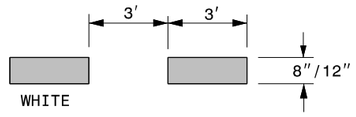
UNLESS OTHERWISED SHOWN, USE 2′-6′/SP MINI-SKIPS FOR LANE LINE EXTENSIONS THROUGH INTERSECTIONS, EDGE LINE EXTENSIONS THROUGH INTERSECTIONS AND BICYCLE LANE EXTENSIONS.



YELLOW OR WHITE

3′-3′/SP MINI-SKIP LINE

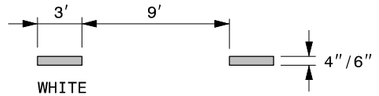
UNLESS OTHERWISED SHOWN, USE 3′-3′/SP MINI-SKIPS FOR THE WHITE EDGE LINE ENTENSIONS AT ROUNDABOUTS.



WHITE

3′-9′/SP MINI-SKIP LINE

UNLESS OTHERWISED SHOWN, USE 3′-9′/SP MINI-SKIPS FOR MINI-SKIP LANE LINES, LINE EXTENSIONS THROUGH TAPERS, AND MINI-SKIPS USED FOR BICYCLE LANE LINES.



WHITE

GENERAL NOTES:

1- USE 6″ LANE, EDGE, AND CENTER LINES ON ALL FULL CONTROL OF ACCESS FACILITIES AND OTHER ROUTES AS DIRECTED BY THE ENGINEER.

2- LANE LINES INDICATED AS "WIDE" ON THE ROADWAY STANDARD DRAWINGS SHALL BE AT LEAST TWICE THE WIDTH OF THE NORMAL LINE.

3- GORE LINES SHALL BE TWICE THE WIDTH OF THE NORMAL LINE.

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

ROADWAY DETAIL DRAWING FOR

PAVEMENT MARKINGS

LINE TYPES AND OFFSETS

SHEET 1 OF 2

1205D01



Matthew V Springer, PE
10/13/2026

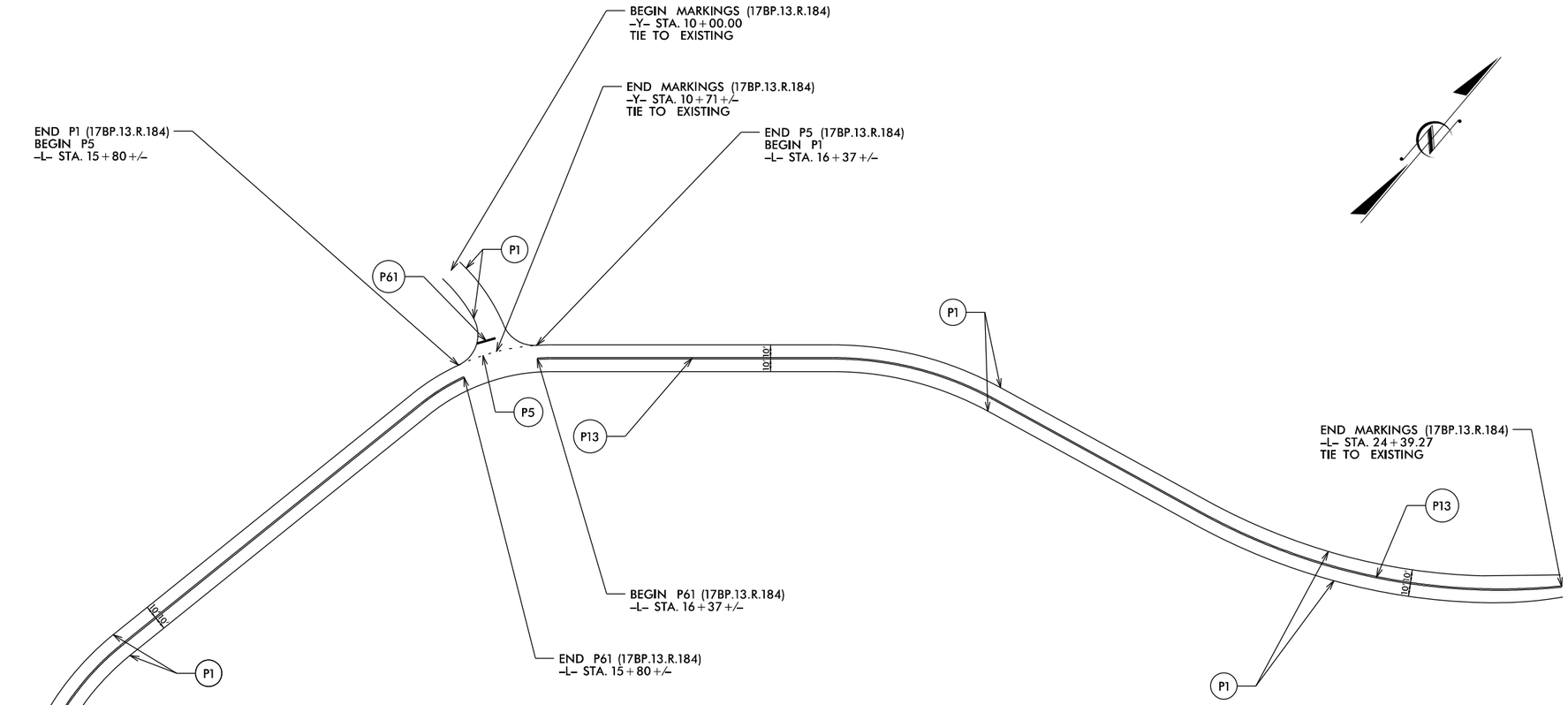
CONTRACTS STANDARDS AND DEVELOPMENT UNIT
Office 919-707-8950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: M.V. SPRINGER DATE: 2-15-24
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

Docusign Envelope ID: C0D74A77-B406-8AE0-839F-3A068BC4AE37

PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.184	PMP-02



PAVEMENT MARKING LEGEND	
P1	WHITE EDGELINE (4")
P5	2FT. – 6FT./SP WHITE MINISKIP (4")
P13	YELLOW DOUBLE CENTER (4")
P61	WHITE STOPBAR (24")

KCI ASSOCIATES OF N.C., P.A.
4800 Falls of Neuse Road, Suite 200
Raleigh, NC 27609-6270
Phone (919) 783-9214
NC Firm License No: C-0764

APPROVED: Docusigned by: Charlie Flowe

DATE: 9/3/2026

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 12300 ENGINEER CHARLES LEE FLOWE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

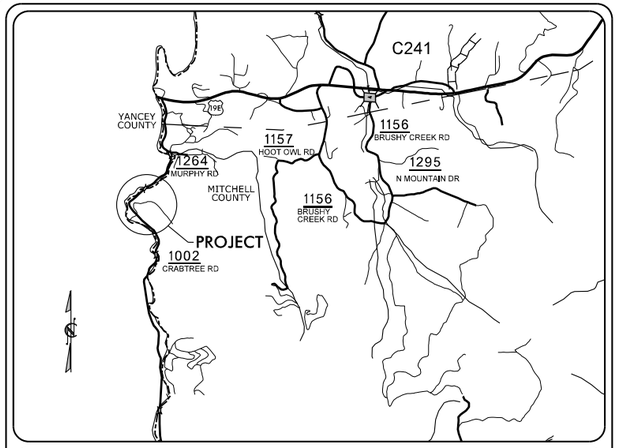
DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

PAVEMENT MARKING DETAIL

9/3/2026
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User:charlie.flowe

TIP PROJECT: 17BP.13.R.184

CONTRACT: DM00426



VICINITY MAP
NOT TO SCALE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.184	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.13.PE.184		PE
17BP.13.ROW.184		RW, UTIL
17BP.13.R.184		CON

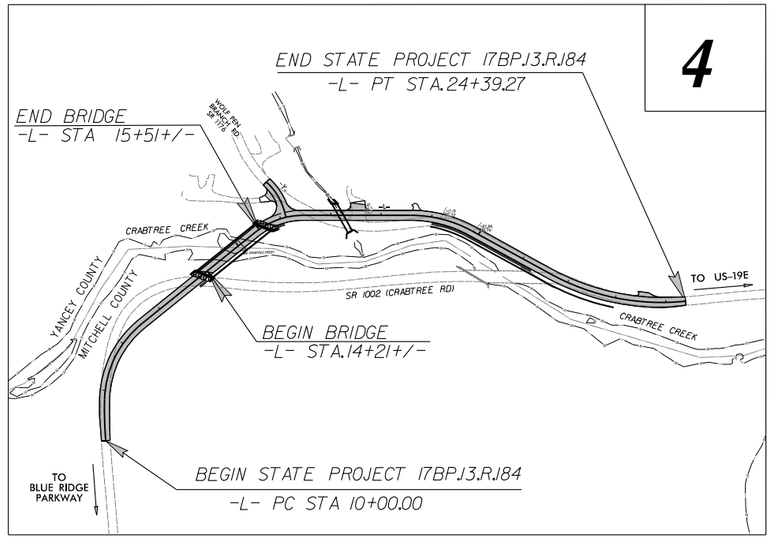
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

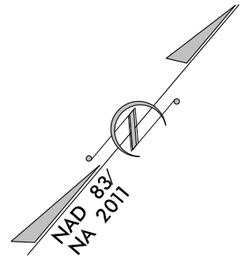
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

MITCHELL COUNTY & YANCEY COUNTY

LOCATION: REPLACE BRIDGE NO. 600101 OVER BIG CRABTREE CREEK ON SR 1002 (CRABTREE RD.)

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE





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

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

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

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.

Prepared in the Office of:
SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
ENG FIRM LICENSE NO. C-890

2024 STANDARD SPECIFICATIONS

Designed by:

BRIAN N. ELAM, PE ***3195***
NAME *LEVEL III CERTIFICATION NO.*

Roadway Standard Drawings

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

1/22/2026
17BP.13.R.184_EC_dsn_psh_01.dgn
MEdwards

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.RJ84	EC-02
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

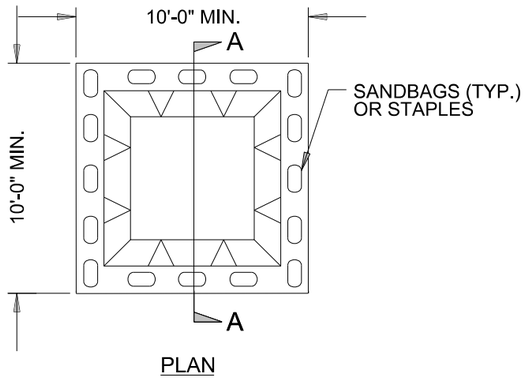
EROSION & SEDIMENT CONTROL LEGEND

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

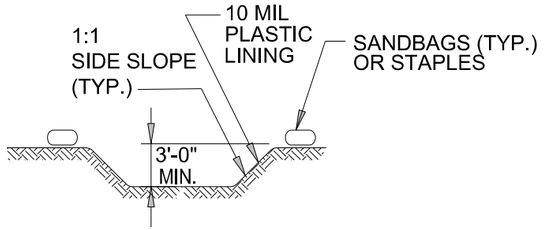
Std. #	Description	Symbol
1633.01	Temporary Rock Silt Check Type A	
1633.02	Temporary Rock Silt Check Type B	
1633.03	Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant	
1634.01	Temporary Rock Sediment Dam Type A	
1634.02	Temporary Rock Sediment Dam Type B	
1635.01	Rock Pipe Inlet Sediment Trap Type A	A
1635.02	Rock Pipe Inlet Sediment Trap Type B	B
1636.01	Excelsior Wattle Check	
1636.01	Excelsior Wattle Check with Flocculant	
1636.01	Coir Fiber Wattle Check	
1636.01	Coir Fiber Wattle Check with Flocculant	
1636.02	Silt Fence Excelsior Wattle Break	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.
17BPJ3.RJ84	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

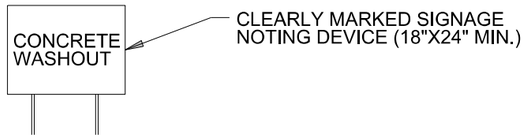
ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



PLAN



SECTION A-A



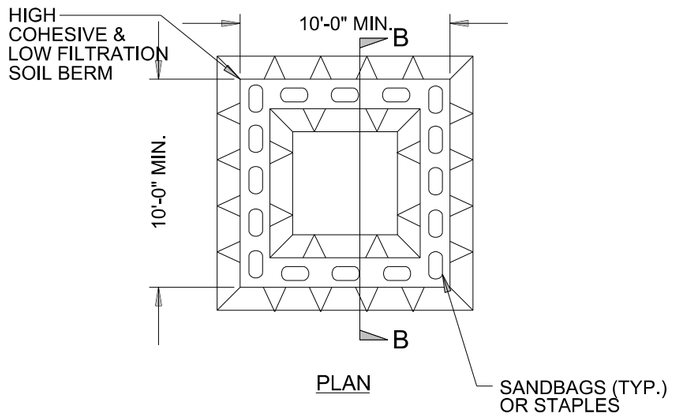
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

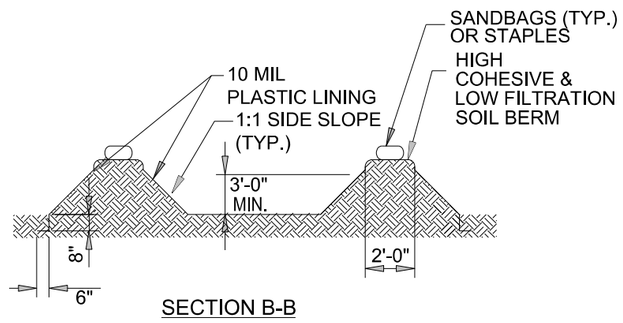
2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

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

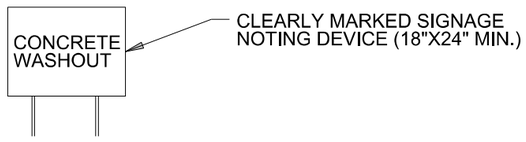
BELOW GRADE WASHOUT STRUCTURE

NOT TO SCALE





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.
17BPJ3.RJ84	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL (STRAW)

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	11+00	11+60	RT	65
4	-L-	11+60	12+50	RT	70
4	-L-	12+00	13+70	LT	135
4	-L-	15+60	15+85	LT	20
4	-L-	17+82	18+50	LT	55
4	-L-	19+07	20+00	LT	75
4	-L-	21+50	22+20	LT	35
4	-L-	23+80	24+02	LT	20
4	-L-	24+02	24+35	LT	30
4A	-DET-	10+10	12+00	RT	150
4A	-DET-	11+20	11+75	LT	45
			SUBTOTAL		700
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					7,645
				TOTAL	8,345
				SAY	8,400

MATTING FOR EROSION CONTROL

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

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.184	EC-3A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

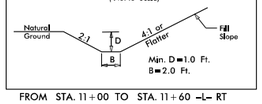
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

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

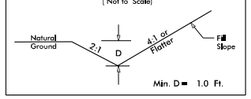
PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.184	EC-04/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DETAIL 1
SPECIAL LATERAL BASE DITCH
(Not to Scale)



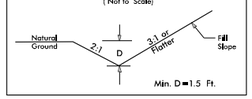
FROM STA. 11+00 TO STA. 11+60 –L– RT

DETAIL 2
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



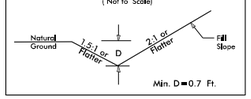
FROM STA. 11+60 TO STA. 12+50 –L– RT
FROM STA. 12+00 TO STA. 13+70 –L– LT
FROM STA. 15+60 TO STA. 15+85 –L– LT
FROM STA. 19+07 TO STA. 20+00 –L– LT

DETAIL 3
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



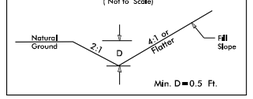
FROM STA. 17+60 TO STA. 18+70 –L– RT

DETAIL 4
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 21+50 TO STA. 22+20 –L– LT

DETAIL 5
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 17+82 TO STA. 18+50 –L– LT
FROM STA. 23+80 TO STA. 24+02 –L– LT
FROM STA. 24+02 TO STA. 24+35 –L– LT

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

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 04

BEGIN CONST.
–Y– POT STA. 10+00.00

END APPROACH SLAB
–L– STA. 15+74.73

END BRIDGE
–L– STA. 15+62.68

NAD 83/NA 2011

BRIDGE APPROACH SLAB

PAVEMENT REMOVAL

JOHN GRINDSTAFF
DB 623 PG 297

DOUGLAS WILLIS
DB 332 PG 11

CHRISTOPHER L. RENFRO
DB 792 PG 348

KENNETH WINTERS, ET AL
DB 244 PG 389

JOE GRINDSTAFF
DB 186 PG 314
DB 141 PG 53
DB 139 PG 469
DB 125 PG 257

ALMA H. PARKER (DATE)
DB 106 PG 221

CRABTREE PROPERTIES, LLLP
DB 484 PG 433
(MITCHELL CO.)

DO NOT DISTURB

IMPERVIOUS DIKE

SHOULDER BERM GUTTER FROM STA. 19+02 –L– RT TO STA. 21+25 –L– RT

CL II RIP RAP AT RETAINING WALL SEE DETAIL 8

SHOULDER BERM GUTTER FROM END APP SLAB TO STA. 16+05 –L–

CL II RIP RAP TO TOP OF BERM

DRYLIGHT DITCH

RIP RAP AT ENDWALL SEE DETAIL 7

COUNTY LINE & PROPERTY LINE

CULVERT OUTLET CHANNEL W/ CL II RIP RAP SEE DETAIL 6

CL B RIPRAP EST. 2 TONS EST. 7 SY GF

RETAIN SPEC. LAT. 'V' DITCH CONSTRUCTED FOR DETOUR

REMOVE TEMP. 15" PIPE AND GRADE TO DRAIN

RETAIN STD. 'V' DITCH CONSTRUCTED FOR DETOUR

CL B RIPRAP EST. 5 TONS EST. 14 SY GF

SPEC LAT 2' BASE DITCH SEE DETAIL #1

EXISTING BRIDGE TO BE REMOVED

BEGIN RETAINING WALL
–L– Sta. 19+00.00
O/S = 19.5' RT

END RETAINING WALL
–L– Sta. 23+00.00
O/S = 19.5' RT

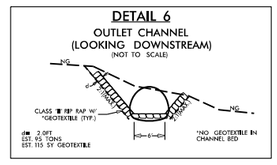
END STATE PROJECT 17BP.13.R.184
–L– PT STA. 24+39.27

BEGIN BRIDGE
–L– STA. 14+09.13

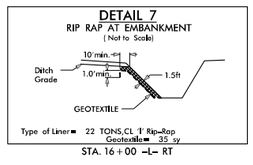
BEGIN APPROACH SLAB
–L– STA. 13+98.43

BEGIN STATE PROJECT 17BP.13.R.184
–L– PC STA. 10+00.00

DETAIL 6
OUTLET CHANNEL
(LOOKING DOWNSTREAM)
(NOT TO SCALE)

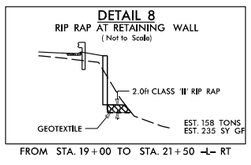


DETAIL 7
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner = 22 TONS, CL 'I' Rip-Rap
Geotextile = 35 sy
STA. 16+00 –L– RT

DETAIL 8
RIP RAP AT RETAINING WALL
(Not to Scale)



FROM STA. 19+00 TO STA. 21+50 –L– RT

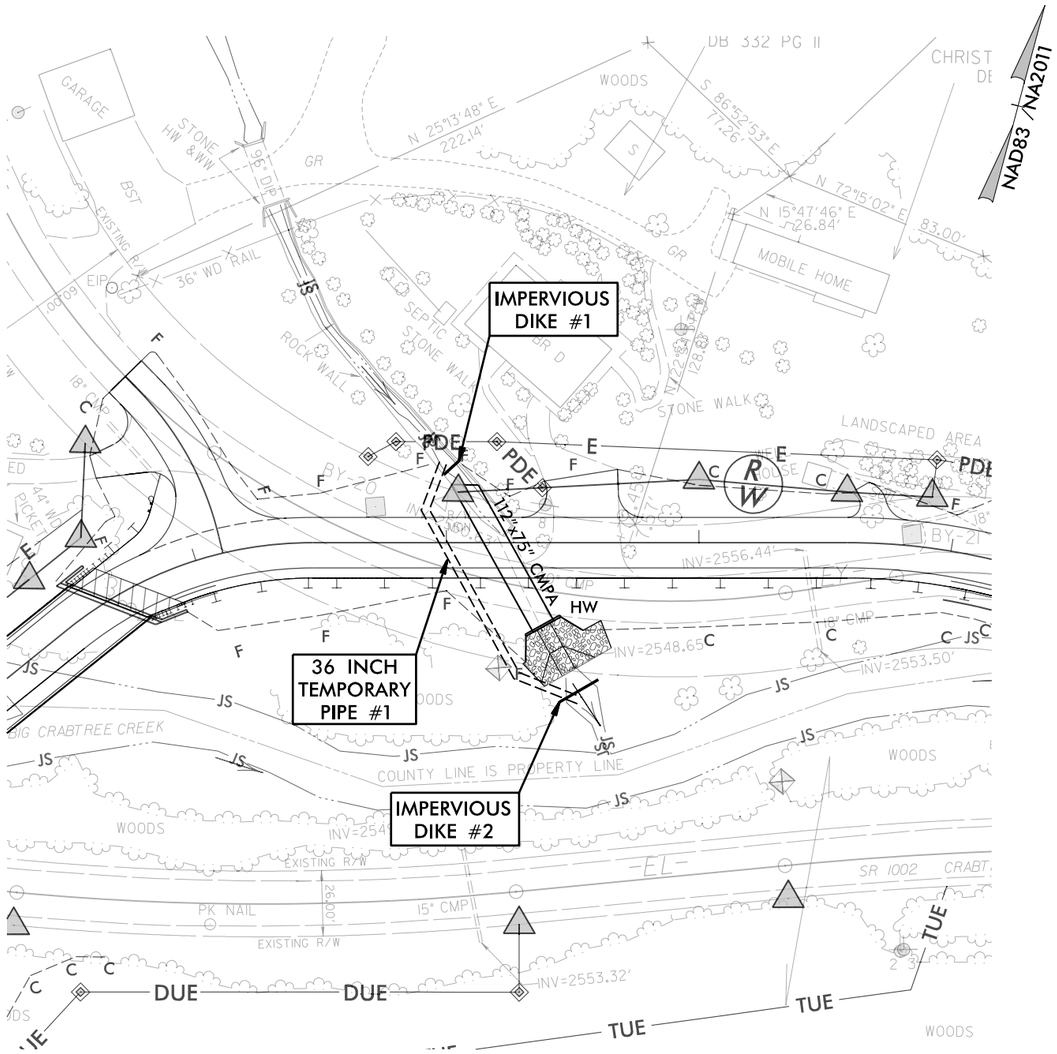
FOR –L– PROFILE, SEE SHEET NO. 5
FOR –Y– PROFILE, SEE SHEET NO. 5
FOR –DET– PLAN & PROFILE, SEE SHEET NO. 2B-1
FOR ADDITIONAL ROADWAY DIMENSIONS, SEE SHEET 4A

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.184	EC-04A/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

112"X75" CMPA CONSTRUCTION SEQUENCE
STA. 17+20 –L– UT TO CRABTREE CREEK

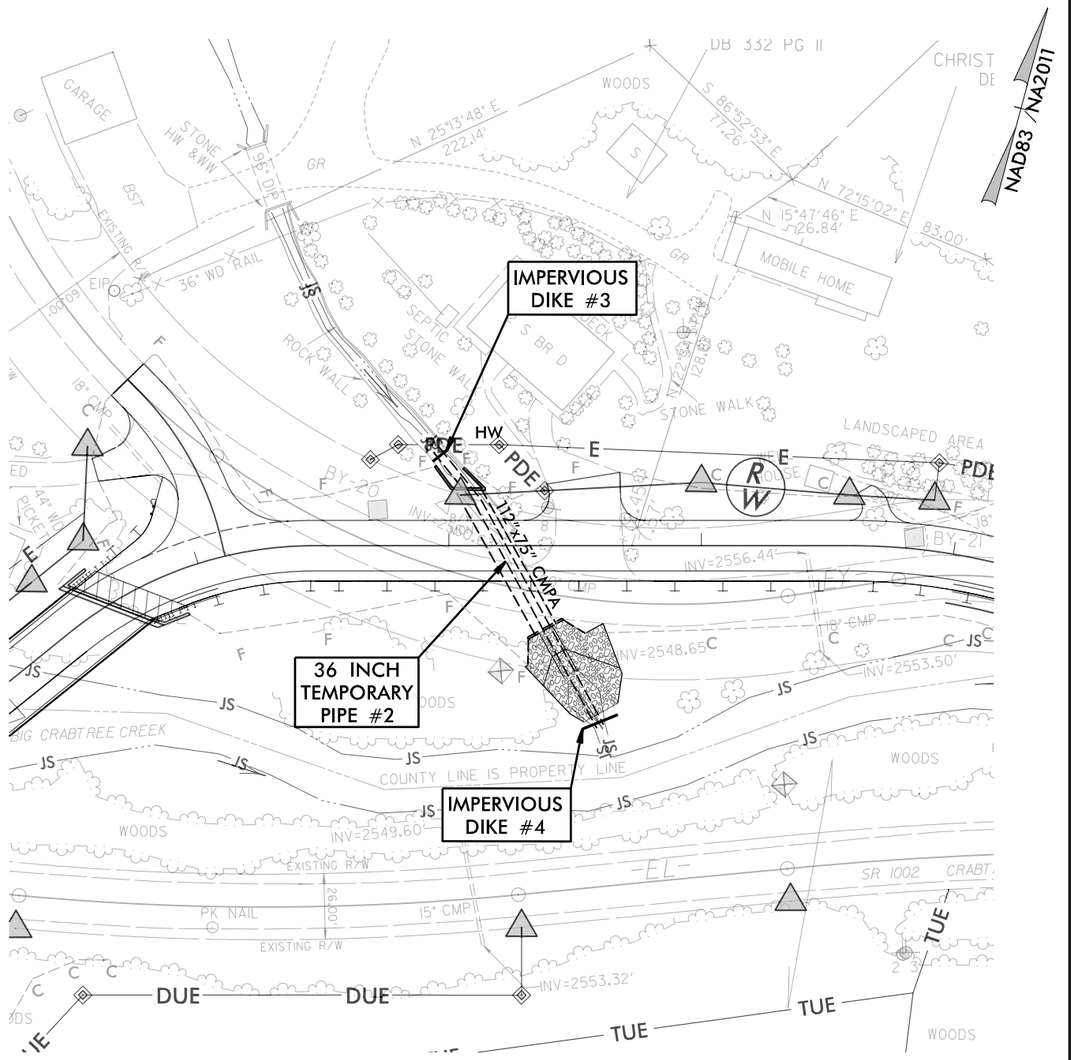
PHASE I

1.) CONSTRUCT NEW LOCATION BRIDGE OVER CRABTREE CREEK AND TEMPORARY DETOUR.
2.) SHIFT TRAFFIC TO DETOUR.
3.) INSTALL SPECIAL STILLING BASIN FOR DEWATERING.
4.) INSTALL TEMPORARY 36" PIPE #1, IMPERVIOUS DIKE #1, IMPERVIOUS DIKE #2 AND DIVERT FLOW THROUGH TEMPORARY PIPE #1.
5.) DEWATER CONSTRUCTION AREA, UTILIZING SPECIAL STILLING BASIN(S) FOR PUMPED EFFLUENT.
6.) REMOVE EXISTING 60" CMP AND ±35' OF UPSTREAM WALL.
7.) INSTALL 112"X75" CMPA, CONSTRUCT DOWNSTREAM HEADWALL AND ±20' OF DOWNSTREAM CULVERT OUTLET CHANNEL.



PHASE II

1.) REMOVE IMPERVIOUS DIKE #1, IMPERVIOUS DIKE #2 AND TEMPORARY PIPE 36" #1.
2.) INSTALL TEMPORARY PIPE #2, IMPERVIOUS DIKE #3, IMPERVIOUS DIKE #4 AND DIVERT FLOW THROUGH TEMPORARY PIPE #2.
3.) DEWATER CONSTRUCTION AREA, UTILIZING SPECIAL STILLING BASIN(S) FOR PUMPED EFFLUENT.
4.) CONSTRUCT UPSTREAM HEADWALL AND REMAINDER OF DOWNSTREAM CULVERT OUTLET CHANNEL.
5.) EXCAVATE ANY ACCUMULATED SILT AND DEWATER BEFORE REMOVAL OF IMPERVIOUS DIKES.
6.) REMOVE ANY REMAINING SPECIAL STILLING BASIN(S), IMPERVIOUS DIKES, TEMPORARY PIPES AND DIRECT FLOW THROUGH 112"X75" CMPA.
7.) COMPLETE ROADWAY.

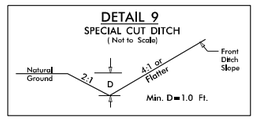


PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.184	EC-05/CONST.04A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

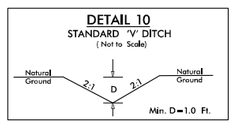
INTERMEDIATE EROSION CONTROL FOR CONSTRUCTION SHEET 04A

DETAIL 9
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 11+20 TO STA. 11+75 –DET– LT
FROM STA. 10+10.13 TO STA. 12+00 –DET– RT

DETAIL 10
STANDARD 'V' DITCH
(Not to Scale)



FROM STA. 12+00 TO STA. 13+48 –DET– RT

BEGIN CONST.
–Y– POT STA. 10+00.00

NAD 83/NA 2011

1 JOE GRINDSTAFF
DB 188 PG 316
DB 147 PG 59
DB 139 PG 469
DB 125 PG 257

2 DOUGLAS WILLIS
DB 332 PG 11

3 CHRISTOPHER L. RENFRO
DB 792 PG 348

4 KENNETH WINTERS, ET AL
DB 244 PG 389

5 ALMA H. PARKER (DATE)
DB 106 PG 225

6 CRABTREE PROPERTIES, LLLP
DB 484 PG 433
(MITCHELL CO.)

7 JOHN GRINDSTAFF
DB 623 PG 297

SR 1002 CRABTREE CREEK RD

SPEC. LAT. 'V' DITCH
SEE DETAIL 9

SPEC. LAT. 'V' DITCH
SEE DETAIL 9

STD. 'V' DITCH
EST. DDE 11 CY
SEE DETAIL 10
LENGTH=133 LF
SLOPE=0.5%

CL B RIPRAP
EST. TONS
EST. 7 SY GF

RETAIN

TIE TO EXISTING DITCH

NAIL SET IN BASE OF 18" WHITE PINE

BEGIN STATE PROJECT 17BP.13.R.184
–L– PC STA. 10+00.00

END STATE PROJECT 17BP.13.R.184
–L– PT STA. 24+39.27

UTILITY OWNERS

DUKE ENERGY
555 BREVARD RD.
ASHEVILLE, NC 28806

FRONTIER COMMUNICATIONS
215 S. MAIN ST.
BREVARD, NC 28787

COUNTRY CABLEVISION
9449 HWY 19/7 SOUTH
BURNSVILLE, NC 28714

For Slopes Excavated Greater Than 10 feet
Install Matting for Erosion Control on
Entire Slope as Work Allows.
FROM. STA. 10+00 TO 11+75 –DET– RT (EST. 800 SY)

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.184	EC-06/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

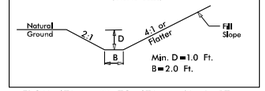
FINAL GRADING
EROSION CONTROL FOR
CONSTRUCTION SHEET 04

BRIDGE APPROACH SLAB

PAVEMENT REMOVAL

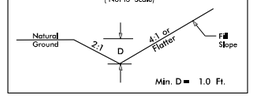
NAD 83/NA 2011

DETAIL 1
SPECIAL LATERAL BASE DITCH
(Not to Scale)



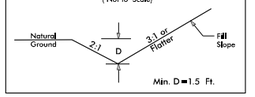
FROM STA. 11+00 TO STA. 11+60 –L– RT

DETAIL 2
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



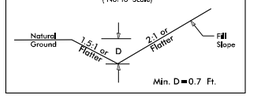
FROM STA. 11+60 TO STA. 12+50 –L– RT
FROM STA. 12+00 TO STA. 13+70 –L– LT
FROM STA. 15+60 TO STA. 15+85 –L– LT
FROM STA. 19+07 TO STA. 20+00 –L– LT

DETAIL 3
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



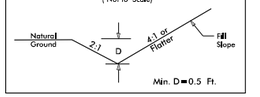
FROM STA. 17+60 TO STA. 18+70 –L– RT

DETAIL 4
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 21+50 TO STA. 22+20 –L– LT

DETAIL 5
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 17+82 TO STA. 18+50 –L– LT
FROM STA. 23+80 TO STA. 24+02 –L– LT
FROM STA. 24+02 TO STA. 24+35 –L– LT

BEGIN CONST.
–Y– POT STA. 10+00.00

END APPROACH SLAB
–L– STA. 15+74.73

END BRIDGE
–L– STA. 15+62.68

1
JOE GRINDSTAFF
DB 188 PG 313
DB 147 PG 59
DB 139 PG 469
DB 126 PG 257

2
DOUGLAS WILLIS
DB 332 PG 11

3
CHRISTOPHER L. RENFRO
DB 792 PG 348

4
KENNETH WINTERS, ET AL
DB 244 PG 389

5
ALMA H. PARKER (PATE)
DB 106 PG 227

6
CRABTREE PROPERTIES, LLLP
DB 484 PG 433
(MITCHELL CO.)

JOHN GRINDSTAFF
DB 623 PG 297

DO NOT DISTURB

IMPERVIOUS DIKE

SPEC LAT 'V' DITCH SEE DETAIL 2

SPEC LAT 'V' DITCH SEE DETAIL 3

SPEC LAT 'V' DITCH SEE DETAIL 4

SPEC LAT 'V' DITCH SEE DETAIL 5

SPEC LAT 2' BASE DITCH SEE DETAIL #1

TEMP. WORK PAD TO ELEV. 2551.0

CL 'II' RIP RAP TO TOP OF BERM

SHOULDER BERM GUTTER FROM STA. 19+02 –L– RT TO STA. 21+25 –L– RT

SHOULDER BERM GUTTER FROM END APP. SLAB TO STA. 16+05 –L–

SHOULDER BERM GUTTER FROM 13+10 –L– TO BEGIN APP. SLAB

CL 'II' RIP RAP AT RETAINING WALL SEE DETAIL 8

RIP RAP AT EMBANKMENT SEE DETAIL 7

CULVERT OUTLET CHANNELS W/CL II RIP RAP SEE DETAIL 6

EXCAVATION (SEE STRUCTURE PLANS TYP.)

CL B RIPRAP EST. 3 TONS EST. 10 SY GF

CL B RIPRAP EST. 2 TONS EST. 7 SY GF

CL B RIPRAP EST. 5 TONS EST 14 SY GF

CL B RIPRAP EST. 2 TONS EST. 7 SY GF

DRYLIGHT DITCH

RETAIN SPEC. LAT. 'V' DITCH CONSTRUCTED FOR DETOUR

REMOVE TEMP. 15" PIPE AND GRADE TO DRAIN

RETAIN STD. 'V' DITCH CONSTRUCTED FOR DETOUR

EXISTING BRIDGE TO BE REMOVED

BEGIN RETAINING WALL
–L– Sta. 19+00.00
O/S = 19.5' RT

END RETAINING WALL
–L– Sta. 23+00.00
O/S = 19.5' RT

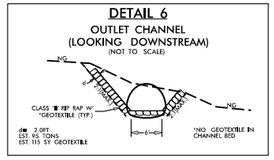
BEGIN BRIDGE
–L– STA. 14+09.13

BEGIN APPROACH SLAB
–L– STA. 13+98.43

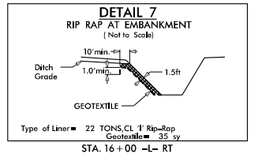
BEGIN STATE PROJECT 17BP.13.R.184
–L– PC STA. 10+00.00

END STATE PROJECT 17BP.13.R.184
–L– PT STA. 24+39.27

DETAIL 6
OUTLET CHANNEL
(LOOKING DOWNSTREAM)
(NOT TO SCALE)

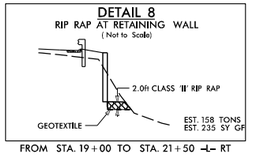


DETAIL 7
RIP RAP AT EMBANKMENT
(Not to Scale)



STA. 16+00 –L– RT

DETAIL 8
RIP RAP AT RETAINING WALL
(Not to Scale)



FROM STA. 19+00 TO STA. 21+50 –L– RT

FOR –L– PROFILE, SEE SHEET NO. 5
FOR –Y– PROFILE, SEE SHEET NO. 5
FOR –DET– PLAN & PROFILE, SEE SHEET NO. 2B-1
FOR ADDITIONAL ROADWAY DIMENSIONS, SEE SHEET 4A

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.184	RF-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

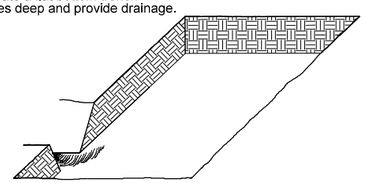
PLANTING DETAILS

SEEDLING / LINER BAREROOT PLANTING DETAIL

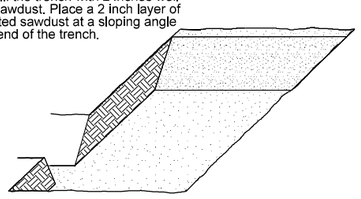
HEALING IN

1. Locate a healing-in site in a shady, well protected area.

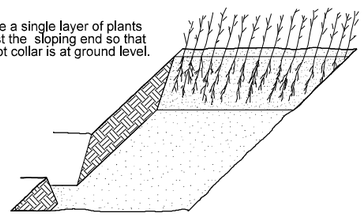
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



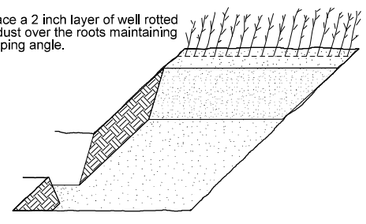
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

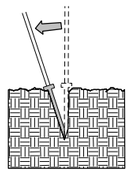


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

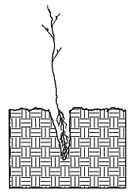


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

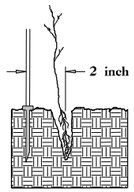
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



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



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



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

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

5. Push handle forward firming soil at top.

6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

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



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



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

REFORESTATION

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

REFORESTATION

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

25% LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in - 18 in BR
25% PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in - 18 in BR
25% NYSSA SYLVATICA	BLACK GUM	12 in - 18 in BR
25% BETULA NIGRA	RIVER BIRCH	12 in - 18 in BR

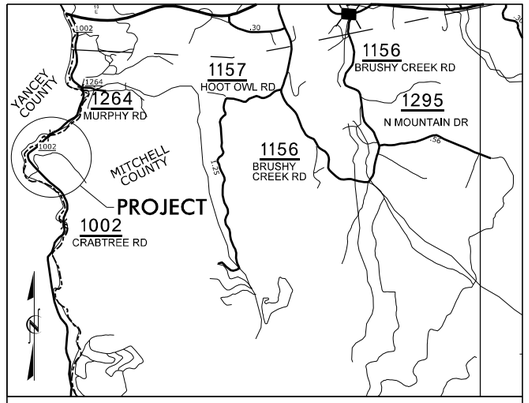
REFORESTATION DETAIL SHEET

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

09/08/99
13-OCT-2026 09:34
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$$$$USERNAME$$$$

TIP PROJECT: 17BP.13.R.184

CONTRACT: DM00528



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES BY OTHERS PLANS
MITCHELL COUNTY

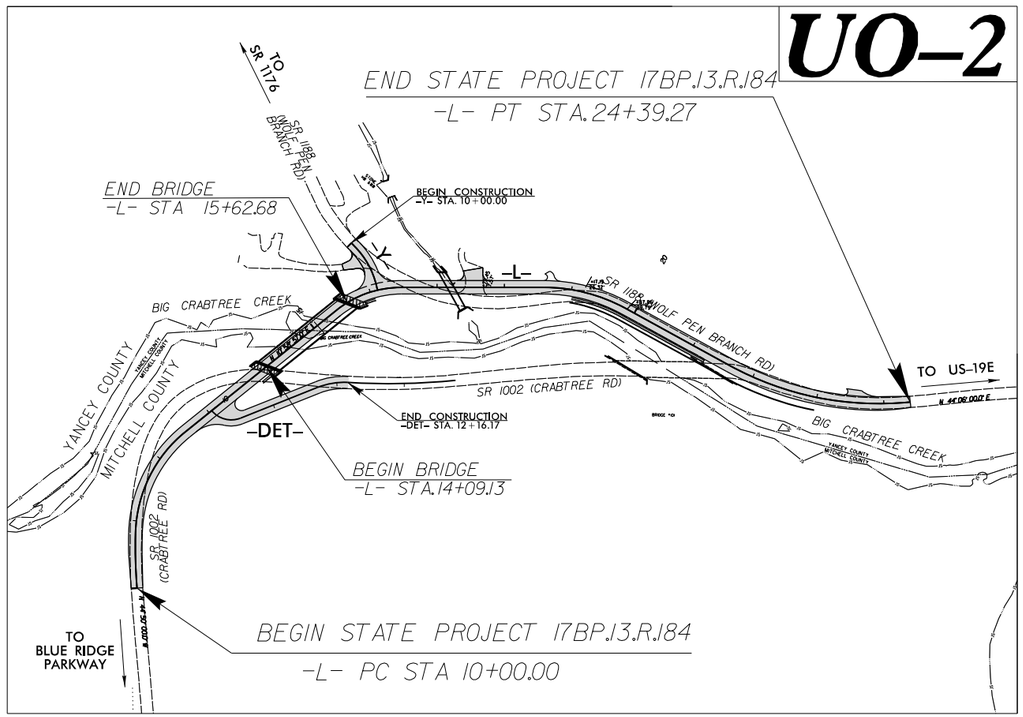
T.I.P. NO.	SHEET NO.
17BP.13.R.184	UO–1

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.

LOCATION: REPLACE BRIDGE NO. 600101 OVER BIG CRABTREE CREEK ON SR 1002 (CRABTREE RD.)

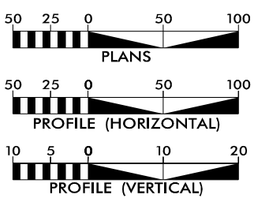
TYPE OF WORK: RELOCATION OF AERIAL POWER & COMMUNICATION FACILITIES

UO–2





GRAPHIC SCALES



INDEX OF SHEETS

SHEET NO.:	*DESCRIPTION:*
UO–01	*TITLE SHEET*
UO–02	*UBO PLAN SHEET*

UTILITY OWNERS WITH CONFLICTS

(A) TELEPHONE – AT&T

(B) POWER – DUKE ENERGY

PREPARED IN THE OFFICE OF:

KCI
http://www.kci.com

KCI Associates of N.C., P.A.
4505 Falls of Neuse Road, Suite 400
Raleigh, NC 27609
Phone (919) 783-9214
Fax (919) 783-9266

JOHN FAISON — *UTILITY PROJECT MANAGER*
DANIEL ALLEN — *PROJECT UTILITY DESIGNER*

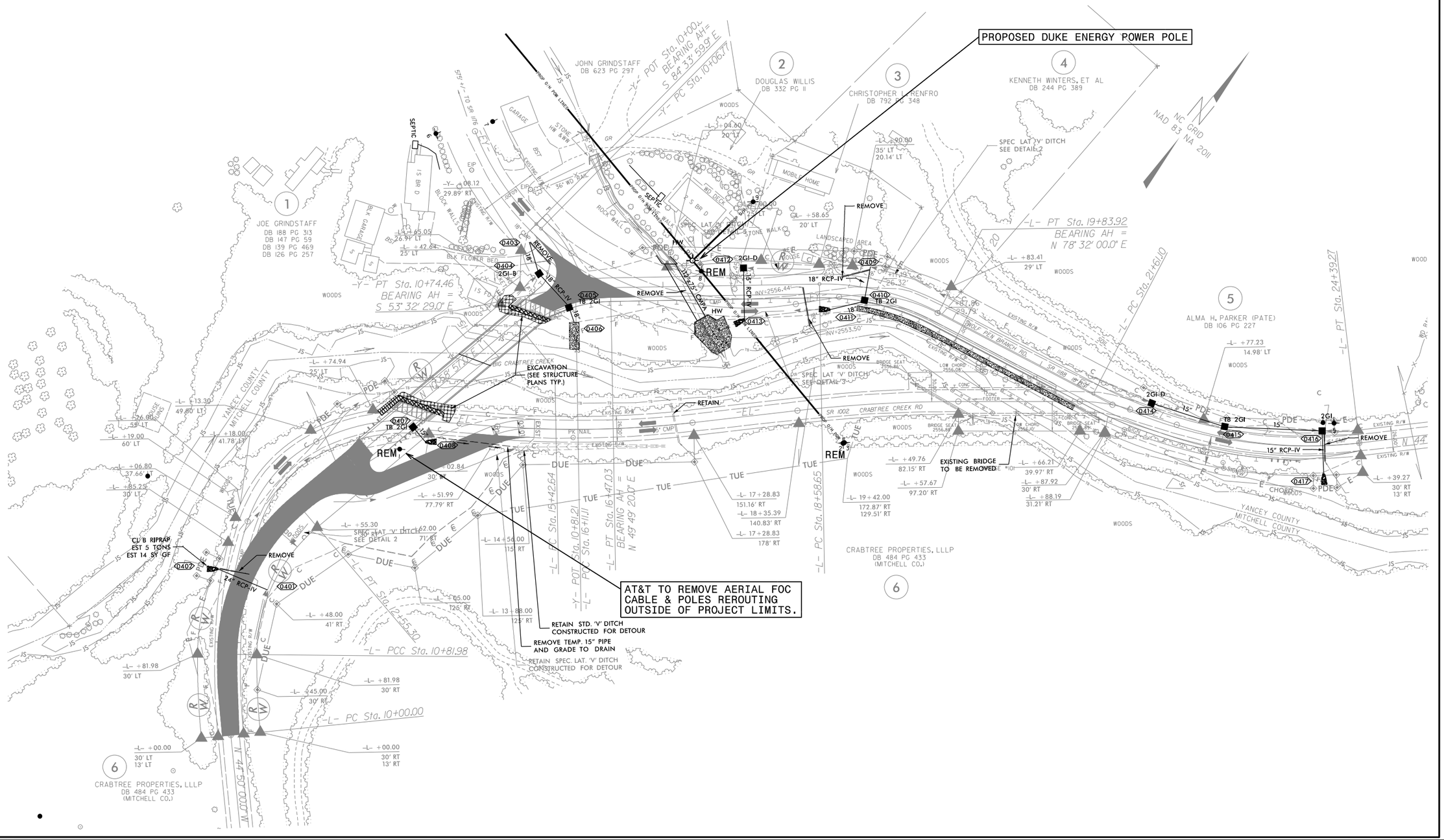
DIVISION OF HIGHWAYS
UTILITIES UNIT
1555 MAIL SERVICES CENTER
RALEIGH NC 27699–1555
PHONE (919) 707–6690
FAX (919) 250–4151

KEITH RADCLIFF — *SENIOR UTILITY COORDINATOR*
JOHN D. METCALF — *DIVISION UTILITY COORDINATOR*

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.184	U0-02

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.



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$$$$USERNAME$$$$
8/17/99

5/9/06

COMPUTED BY: J. BRYANT DATE: 4/2/2024
CHECKED BY: T. KRAUSS DATE: 4/2/2024

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PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.184	X-0

BRIDGE 600101

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

CROSS-SECTION SUMMARY

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+00.00000	0	0
10+50.00000	2	5
11+00.00000	5	31
11+50.00000	8	57
12+00.00000	103	55
12+50.00000	886	23
13+00.00000	1131	0
13+50.00000	545	46
14+00.00000	230	195
14+09.13000	10	54
BRIDGE		
15+62.68000	0	0
15+75.00000	0	97
16+00.00000	3	186
16+50.00000	5	258
17+00.00000	0	133
17+25.00000	0	70
17+50.00000	89	60
18+00.00000	221	37
18+50.00000	78	19
19+00.00000	35	17
19+15.00000	28	4
19+50.00000	78	16
20+00.00000	35	24
20+50.00000	31	11
21+00.00000	23	13
21+50.00000	19	20
22+00.00000	16	16
22+50.00000	11	19
22+75.00000	6	13
23+00.00000	7	13
23+50.00000	17	47
24+00.00000	89	65
24+39.26861	65	23

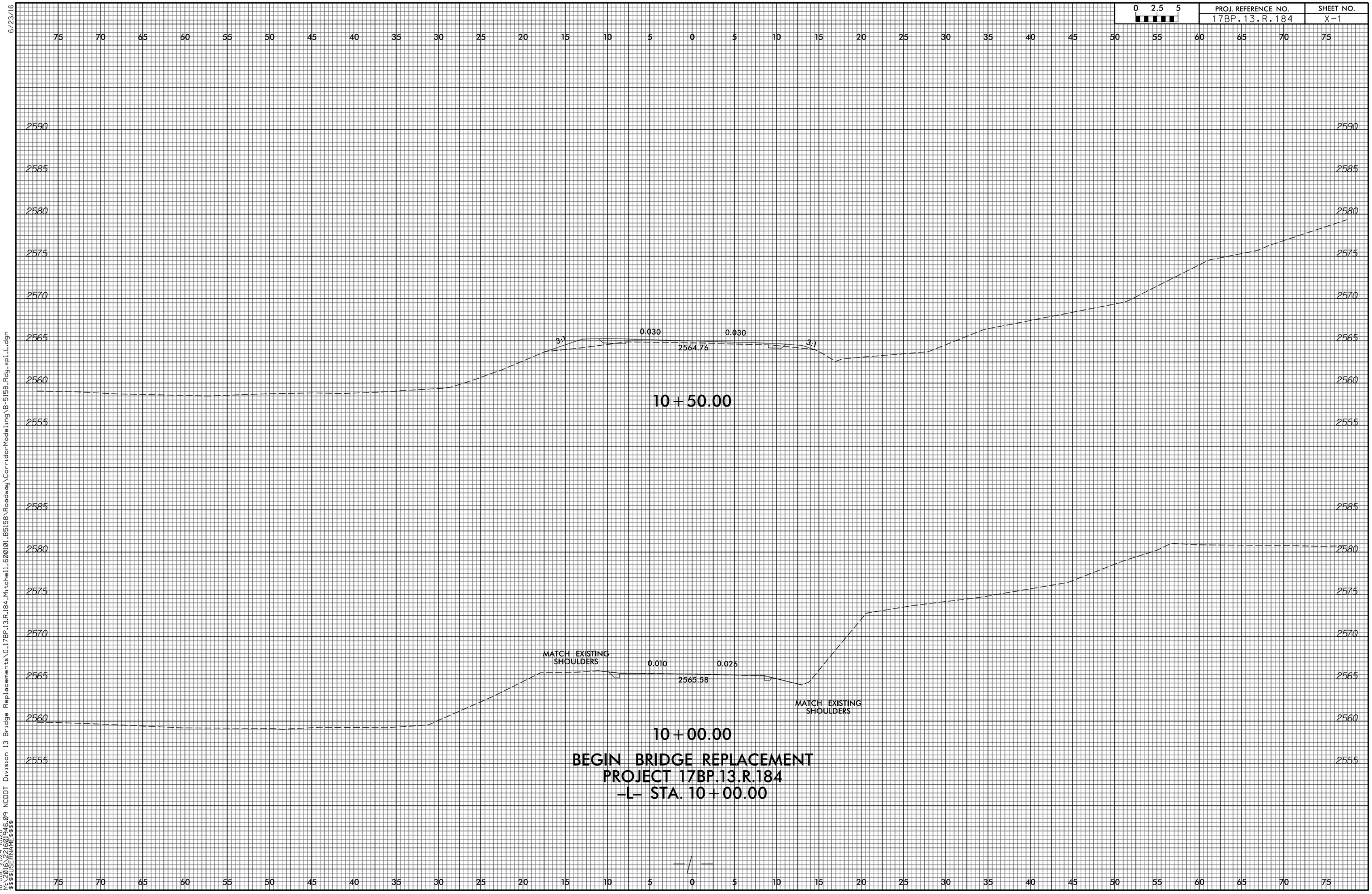
Station Y	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+00.00000	0	0
10+25.00000	7	1
10+50.00000	9	11
10+71.21000	4	18

Station DET	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+10.12592	0	0
10+25.00000	539	0
10+50.00000	908	0
10+75.00000	917	0
11+00.00000	812	0
11+25.00000	620	0
11+50.00000	318	0
11+75.00000	91	0
12+00.00000	23	0
12+16.17000	7	0

Note: Embankment column does not include backfill for undercut.

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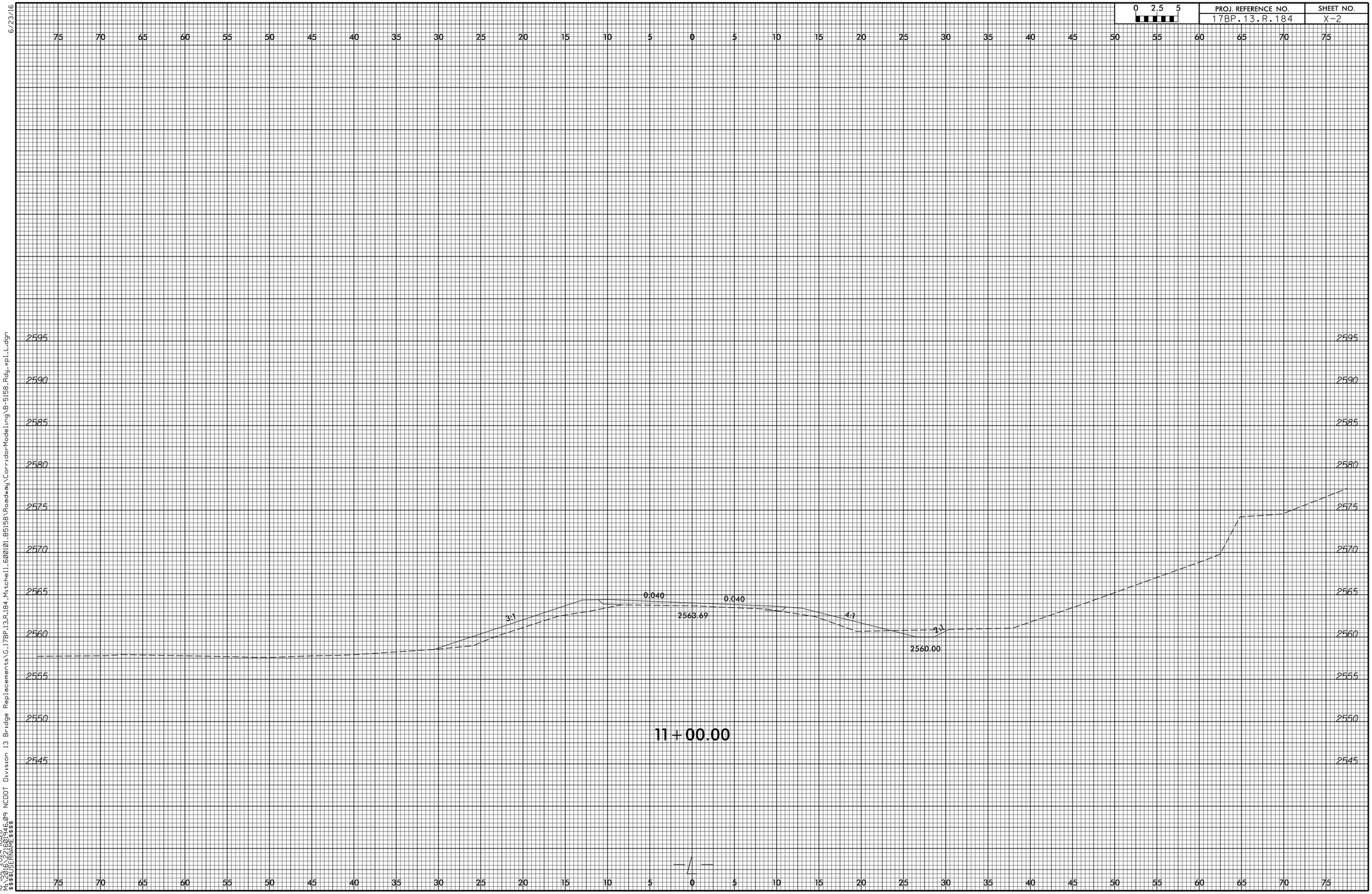
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6/23/16

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6/23/16

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	17BP.13.R.184	X-4

6/23/16

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

2600 2595 2590 2585 2580 2575 2570 2565 2560 2555 2550 2545

2:1 4:1 0.040 0.040 4:1 2:1

2560.80 2560.97 2559.54

12 + 00.00

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6/23/16

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6/23/16

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2595
2590
2585
2580
2575
2570
2565
2560
2555
2550
2545

2575.52

2559.15

4:1

2:1

0.040

0.040

SEE -DET-
CROSS SECTIONS

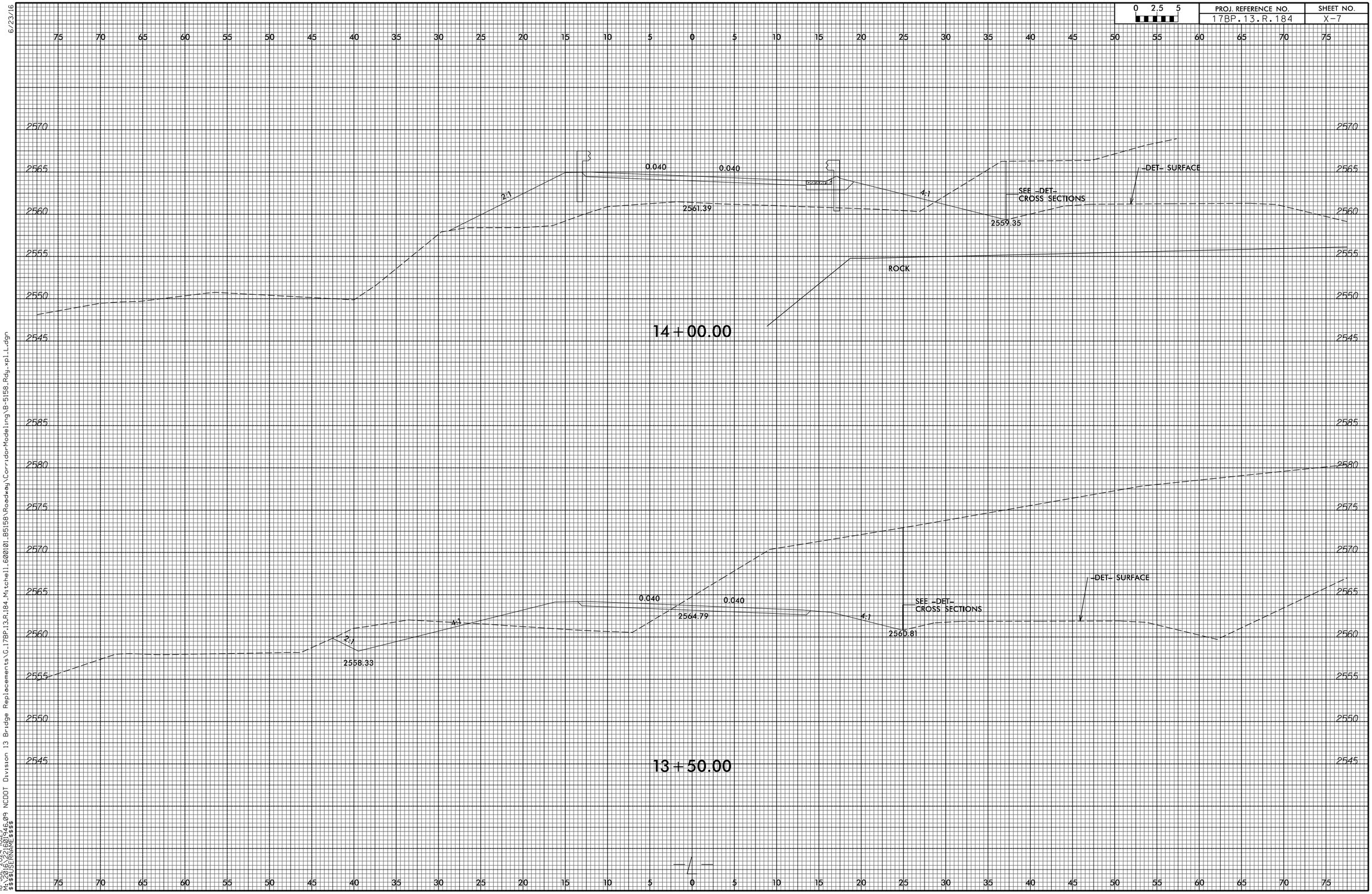
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13+00.00

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6/23/16

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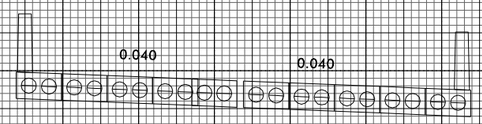
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6/23/16

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2590
2585
2580
2575
2570
2565
2560
2555
2550
2545



2552.11

14 + 50.00

BEGIN BRIDGE
–L– STA. 14 + 09.13



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

18-JUL-2024 10:29
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6/23/16

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	17BP.13.R.184	X-9

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2590
2585
2580
2575
2570
2565
2560
2555
2550
2545

0.040 0.040

2548.66

15+00.00

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	17BP.13.R.184	X-10

UNDERCUT EXCAVATION

SR 1188
WOLF PEN BRANCH ROAD
SEE -Y- CROSS SECTIONS

0.040 0.040

2:1

2559.61

16+00.00

END BRIDGE
-L- STA. 15+62.68

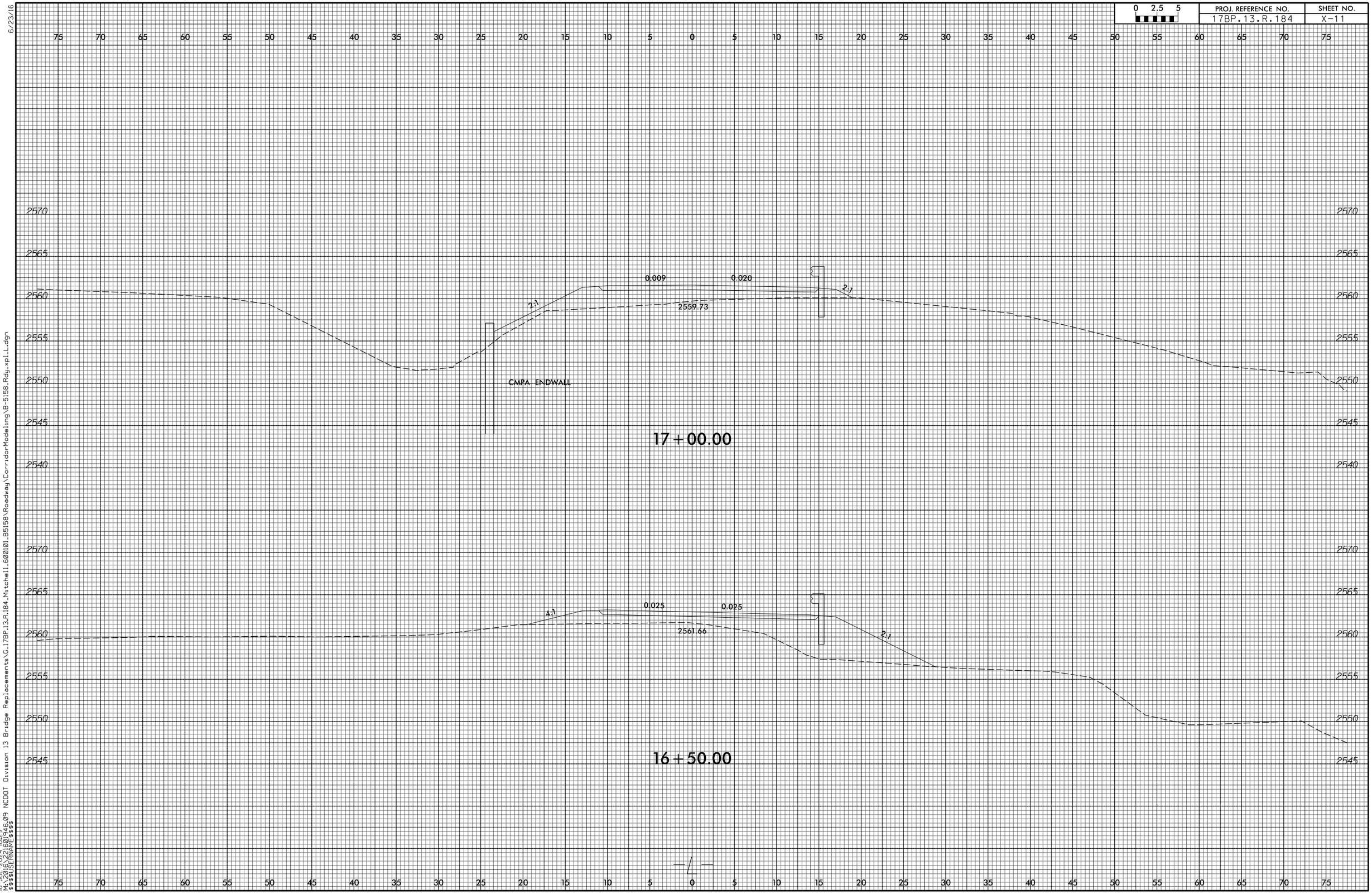
0.040 0.040

2557.27

15+50.00

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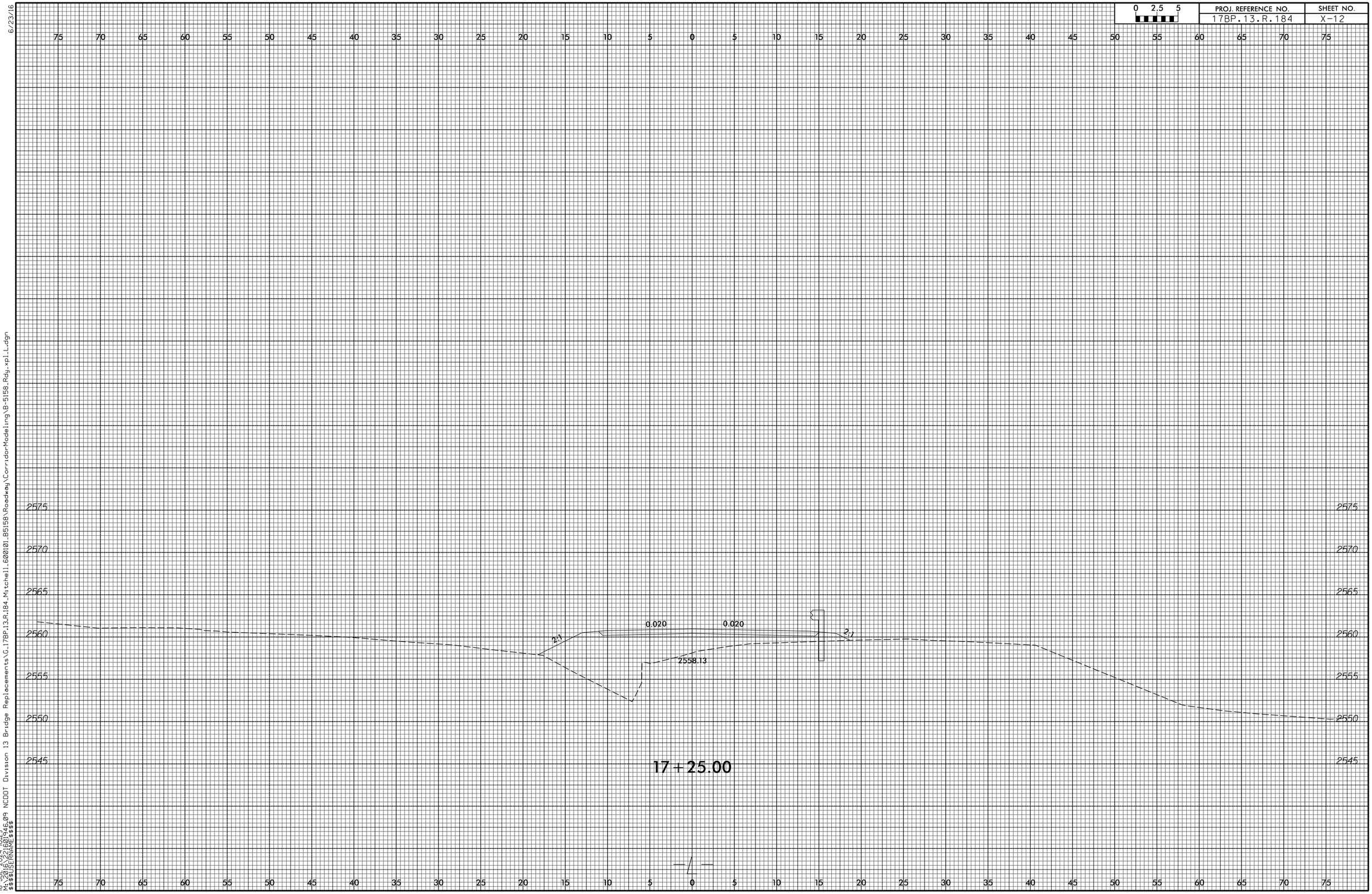


6/23/16

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6/23/16

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6/23/16

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2580
2575
2570
2565
2560
2555
2550
2545
2540

TIE TO EXISTING DRIVEWAY
0.070
0.020
0.020
2%
2558.57
CMPA ENDWALL

17+50.00

18-JUL-2024 10:29
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2590
2585
2580
2575
2570
2565
2560
2555
2550
2545
2540

3:1
4:1
2558.61
0.012
2559.19
0.020
3:1
2:1
2555.75

18+00.00

18-JUL-2024 10:29
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6/23/16

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2600
2595
2590
2585
2580
2575
2570
2565
2560
2555
2550
2545
2540

2:1
4:1
0.020
2559.20
0.020
2557.06
3:1
2:1
2555.93

18+50.00

18-JUL-2024 10:29
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6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.13.R.184	X-16

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

2605
2600
2595
2590
2585
2580
2575
2570
2565
2560
2555
2550
2545
2540

A1

0.040

0.040

0.080

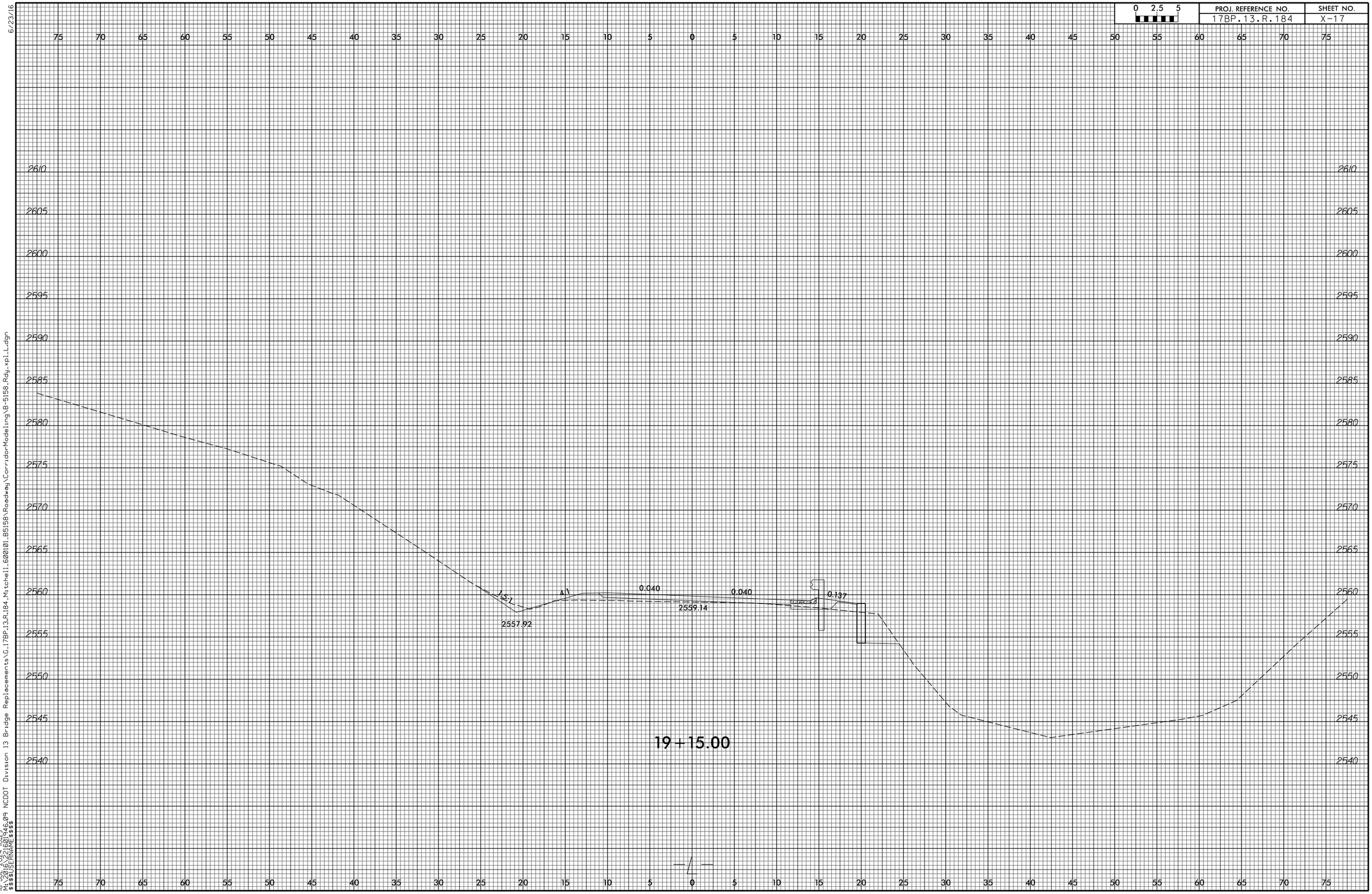
2559.01

19+00.00

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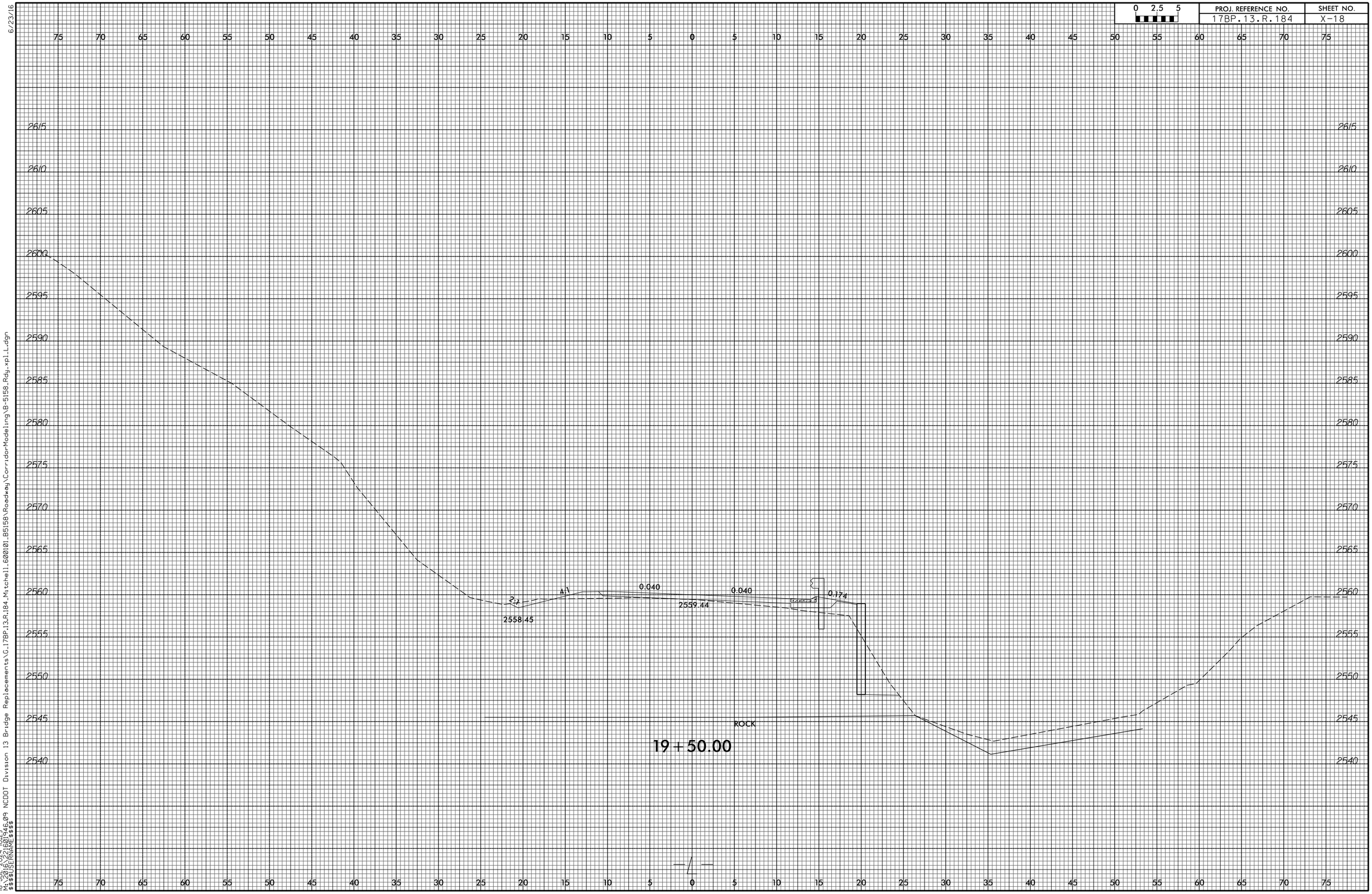
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	17BP.13.R.184	X-17



6/23/16

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0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.13.R.184	X-18



6/23/16

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6/23/16

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	17BP.13.R.184	X-19

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

2620 2615 2610 2605 2600 2595 2590 2585 2580 2575 2570 2565 2560 2555 2550 2545 2540

2:1 3:1 0.016 0.020 0.165

2559.20 2559.91

ROCK

20+00.00

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6/23/16

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	17BP.13.R.184	X-20

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2620 2615 2610 2605 2600 2595 2590 2585 2580 2575 2570 2565 2560 2555 2550 2545 2540

0.017 0.020 0.165

2560.07

ROCK

20+50.00

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6/23/16

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	17BP.13.R.184	X-21

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2620
2615
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2565
2560
2555
2550
2545
2540

0.020
0.020
0165
2559.96

ROCK

21+00.00

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	17BP.13.R.184	X-22



6/23/16

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6/23/16

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	17BP.13.R.184	X-23

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2620 2615 2610 2605 2600 2595 2590 2585 2580 2575 2570 2565 2560 2555 2550 2545 2540

0.030 0.030 0.030

2:1 3:1

2559.81

2558.50

ROCK

22+00.00

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6/23/16

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	17BP.13.R.184	X-24

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2620
2615
2610
2605
2600
2595
2590
2585
2580
2575
2570
2565
2560
2555
2550
2545
2540

0.030 0.030 0.030

2559.41

22 + 50.00

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6/23/16

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	17BP.13.R.184	X-26



6/23/16

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6/23/16

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	17BP.13.R.184	X-27

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2615
2610
2605
2600
2595
2590
2585
2580
2575
2570
2565
2560
2555
2550
2545
2540

TIE TO EXISTING DRIVEWAY
5:1
0.030
0.030
2558.50
2:1

23+50.00

18-JUL-2024 10:29
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6/23/16

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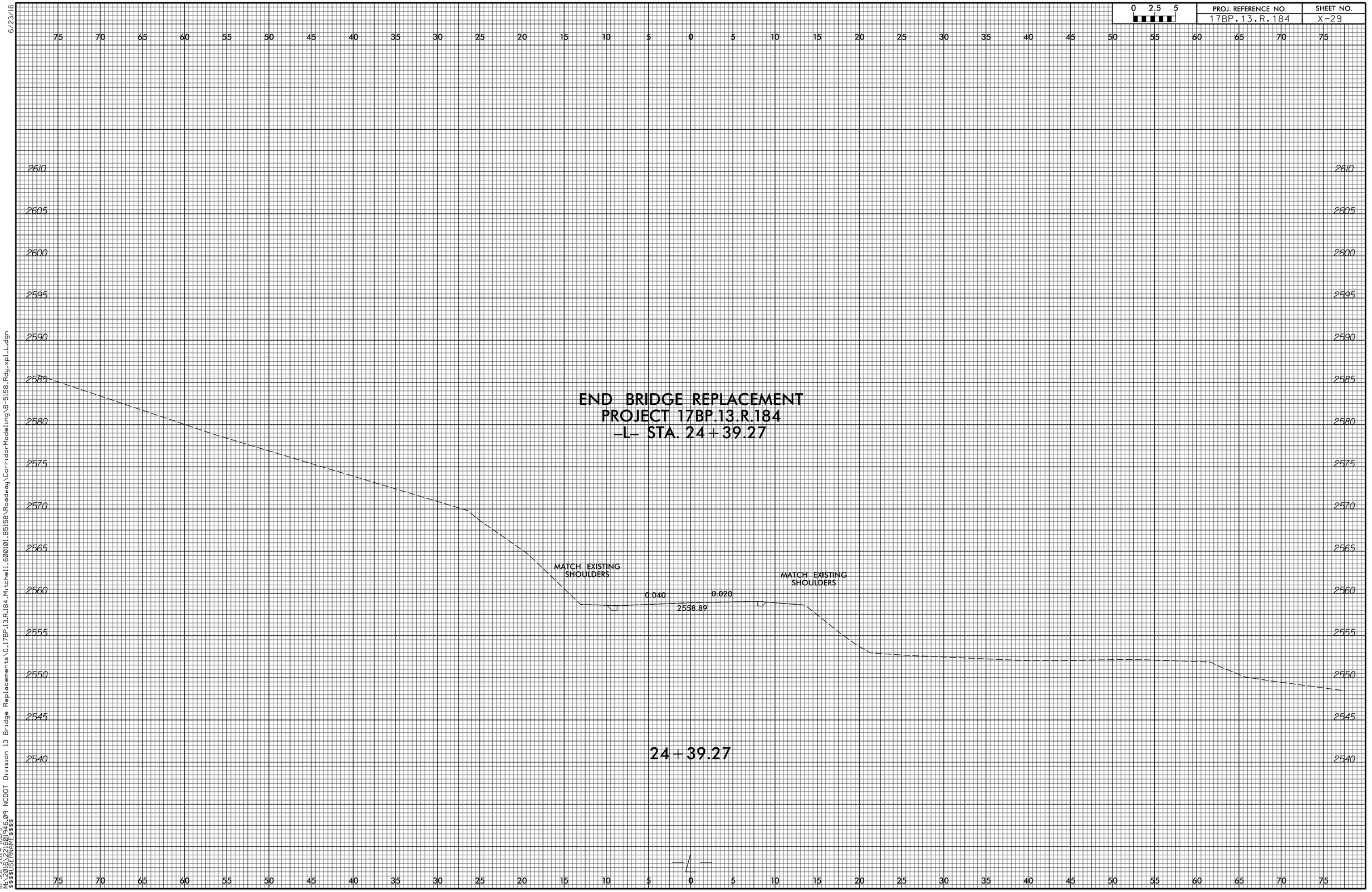


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6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.13.R.184	X-29

END BRIDGE REPLACEMENT
PROJECT 17BP.13.R.184
-L- STA. 24+39.27



18-JUL-2024 10:29
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PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.184	X-30

0 2.5 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

2570
2565
2560
2555
2550
2545
2575

TIE TO
EXISTING DRIVEWAY

0.037 0.027 0.026

2:1

2564.73

10+25.00

0.056 0.044

2:1

2565.82

10+00.00

BEGIN CONSTRUCTION
-Y- 10+00.00

-Y-

6/23/16

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6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.13.R.184	X-31

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

2570
2565
2560
2555
2550
2545

2560.34

10+75.00

END CONSTRUCTION (TIE WITH –L–)
–Y– STA 10+71.21

0.021 0.011 8.4:1 2:1

2563.71

10+50.00

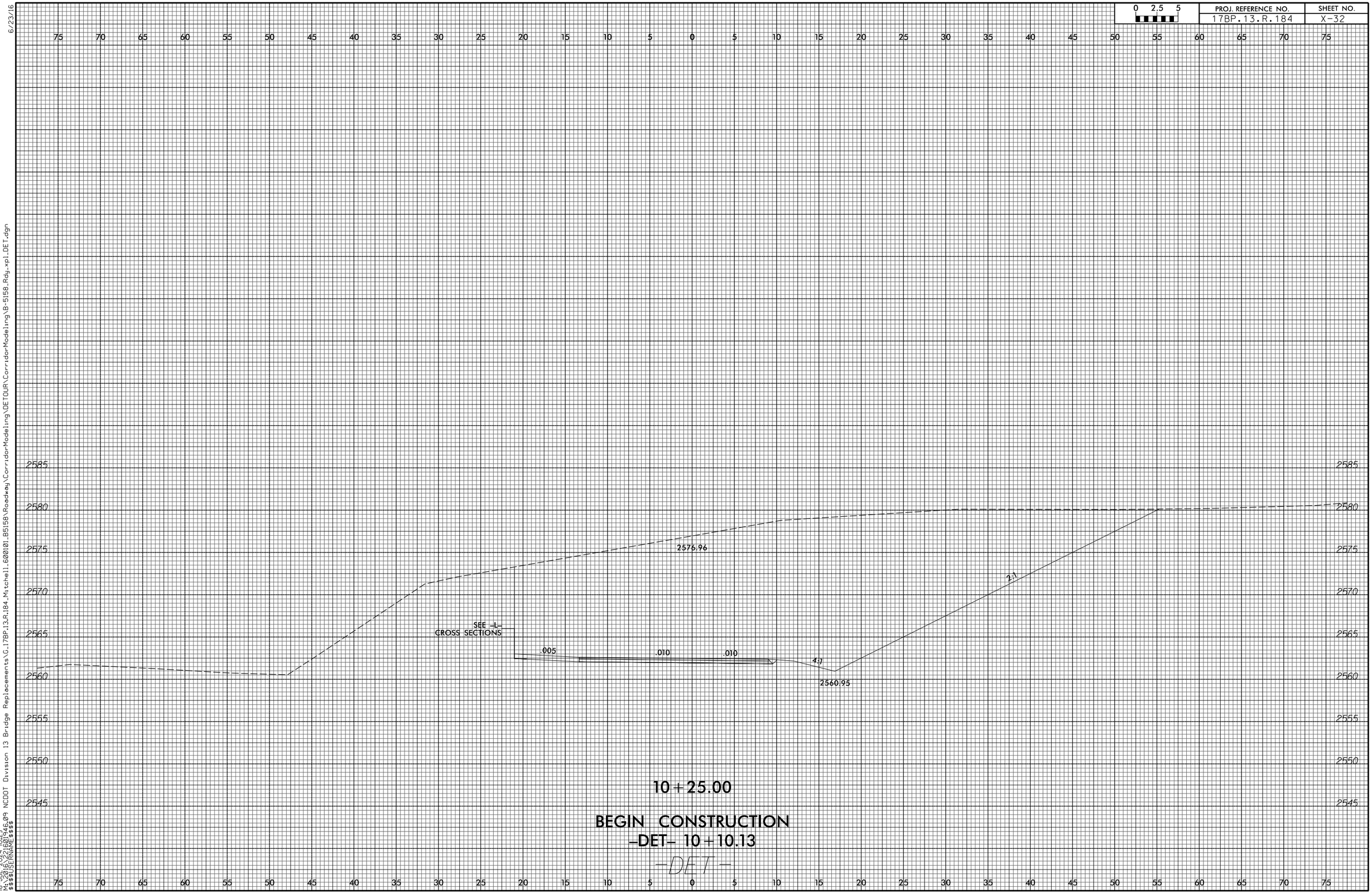
–Y–

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6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.13.R.184	X-33

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2600
2595
2590
2585
2580
2575
2570
2565
2560
2555
2550
2545

2577.21

2:1

SEE -L-
CROSS SECTIONS

4:1 .000 .000 4:1

2561.4

2560.54

10+50.00

-DET-

18-JUL-2024 10:29
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6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.13.R.184	X-34

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

2600
2595
2590
2585
2580
2575
2570
2565
2560
2555
2550
2545

2575.07

2:1

SEE -L-
CROSS SECTIONS

4:1

.010

.010

4:1

2560.50

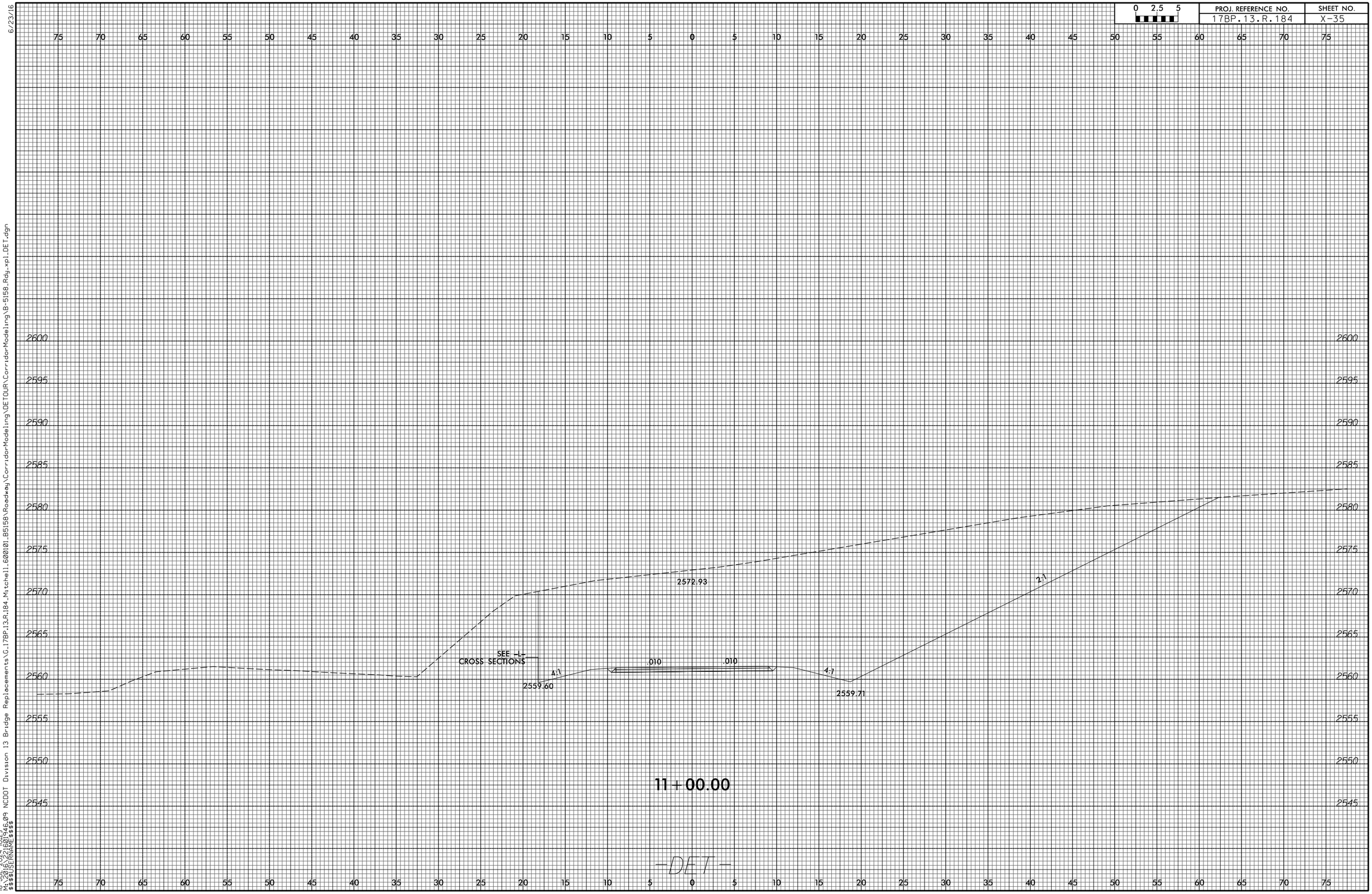
2560.12

10+75.00

-DET-

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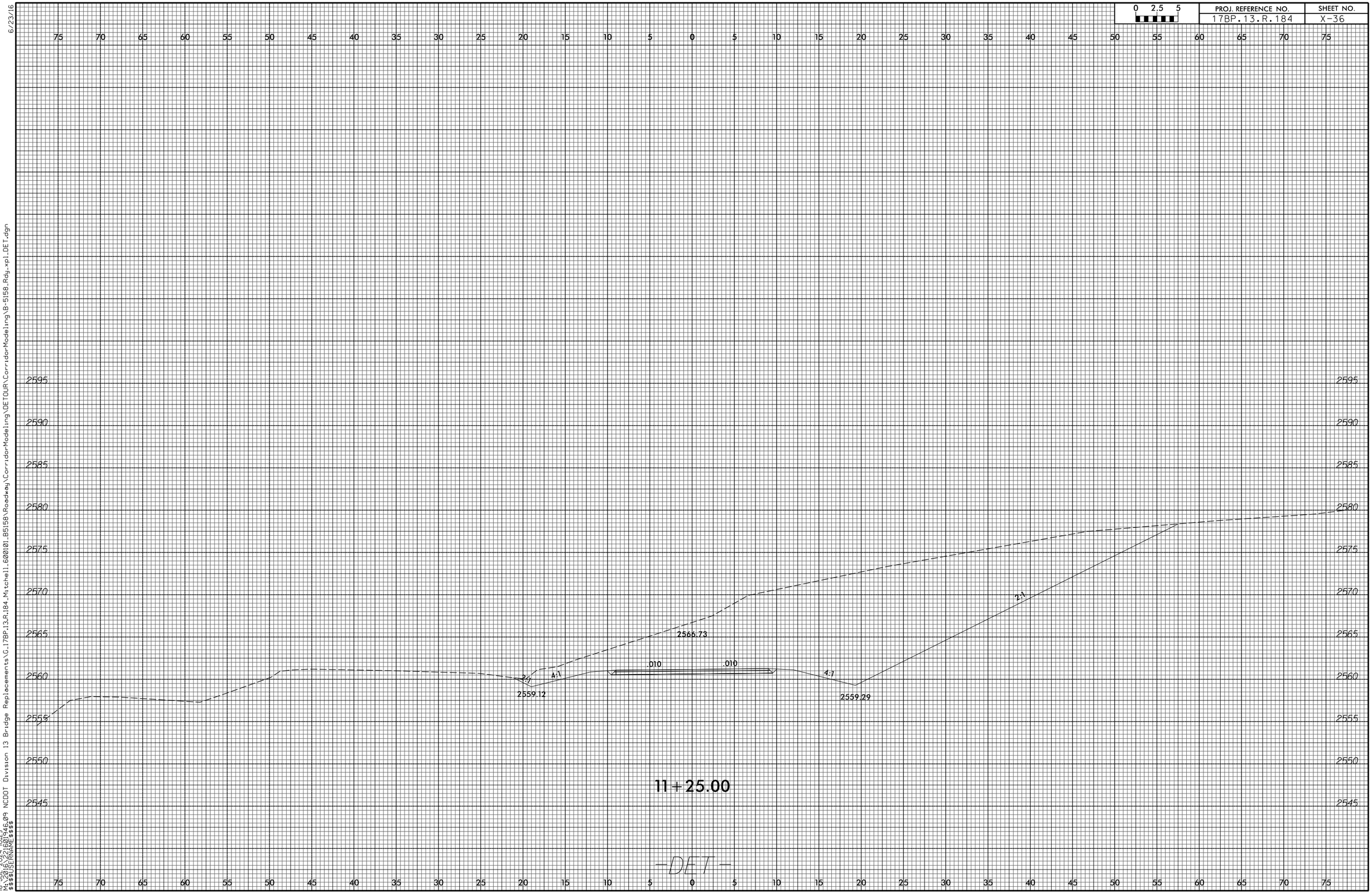
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6/23/16

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6/23/16

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0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.13.R.184	X-37

6/23/16

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2590
2585
2580
2575
2570
2565
2560
2555
2550
2545

.010
.010
2.7
4:1
4:7
2:1
2559.37
2560.85
2558.88

11+50.00

-DET-

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	17BP.13.R.184	X-38

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2590
2585
2580
2575
2570
2565
2560
2555
2550
2545

2559.60
.020
2560.80
.010
2558.79

11+75.00

-DET-

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	17BP.13.R.184	X-39



6/23/16

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0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.13.R.184	X-40

END GRADE
-DET- 12+16.17

12+16.17

-DET-

.030 .016

2560.33

2

6/23/16

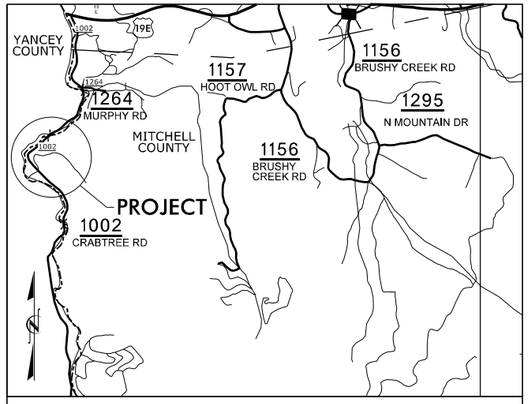
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09/08/09

TIP PROJECT: 17BP.13.R.184

CONTRACT: DM00528



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

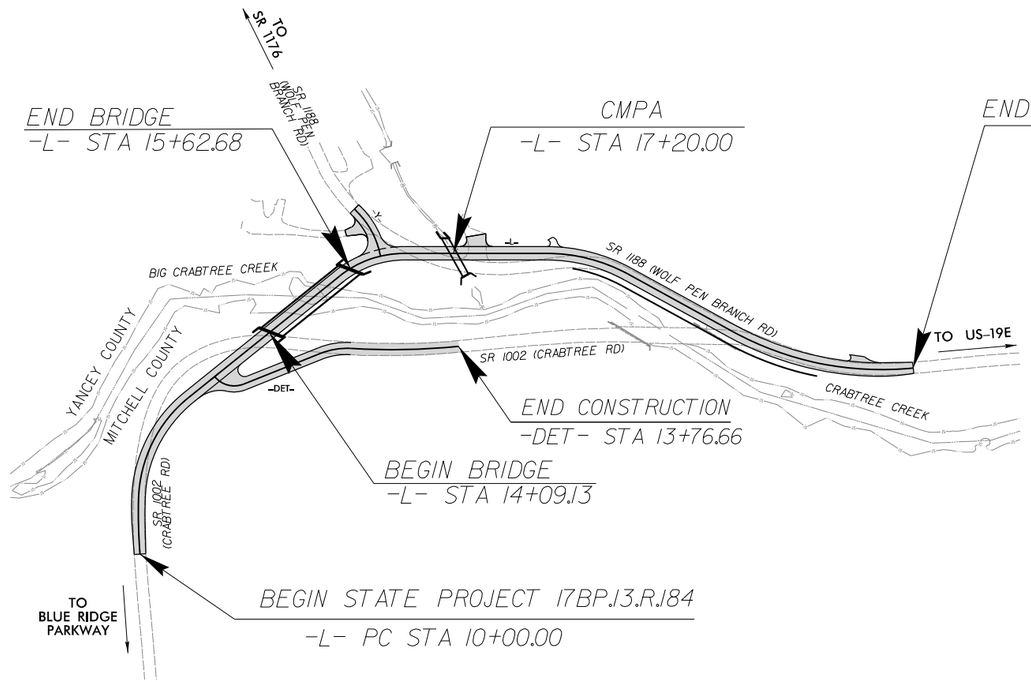
MITCHELL COUNTY & YANCEY COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.184	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.13.PE.184		PE
17BP.13.ROW.184		RW, UTIL
17BP.13.R.184		CON

LOCATION: REPLACE BRIDGE NO. 600101 OVER BIG CRABTREE CREEK ON SR 1002 (CRABTREE RD.)

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURES



STRUCTURES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

DESIGN DATA

ADT 2016 = 554
ADT 2036 = 708
K = 12 %
D = 60 %
T = 15 % *
V = 30 MPH
* TTST = 2 DUAL = 13
FUNC CLASS = Rural Local

SUBREG TIER

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT 17BP.13.R.184 = .244 MILES

LENGTH OF STRUCTURE PROJECT 17BP.13.R.184 = .029 MILES

TOTAL LENGTH OF PROJECT 17BP.13.R.184 = .273 MILES

NORTH CAROLINA PROFESSIONAL SEAL 12300 ENGINEER CHARLES LEE FLOWE

10/13/2026

DocuSigned by: Charlie Flowe

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

Plans Prepared For:
DIVISION 13
55 Orange Street
Asheville, NC 28801

2024 STANDARD SPECIFICATIONS

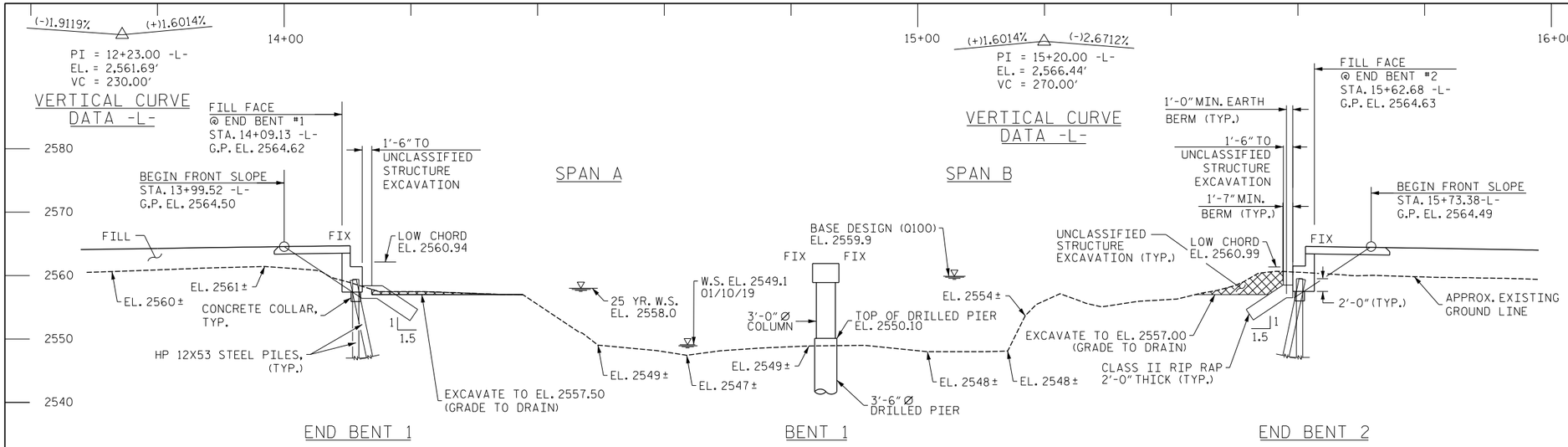
RIGHT OF WAY DATE: JANUARY 30, 2024

LETTING DATE: NOVEMBER 4, 2026

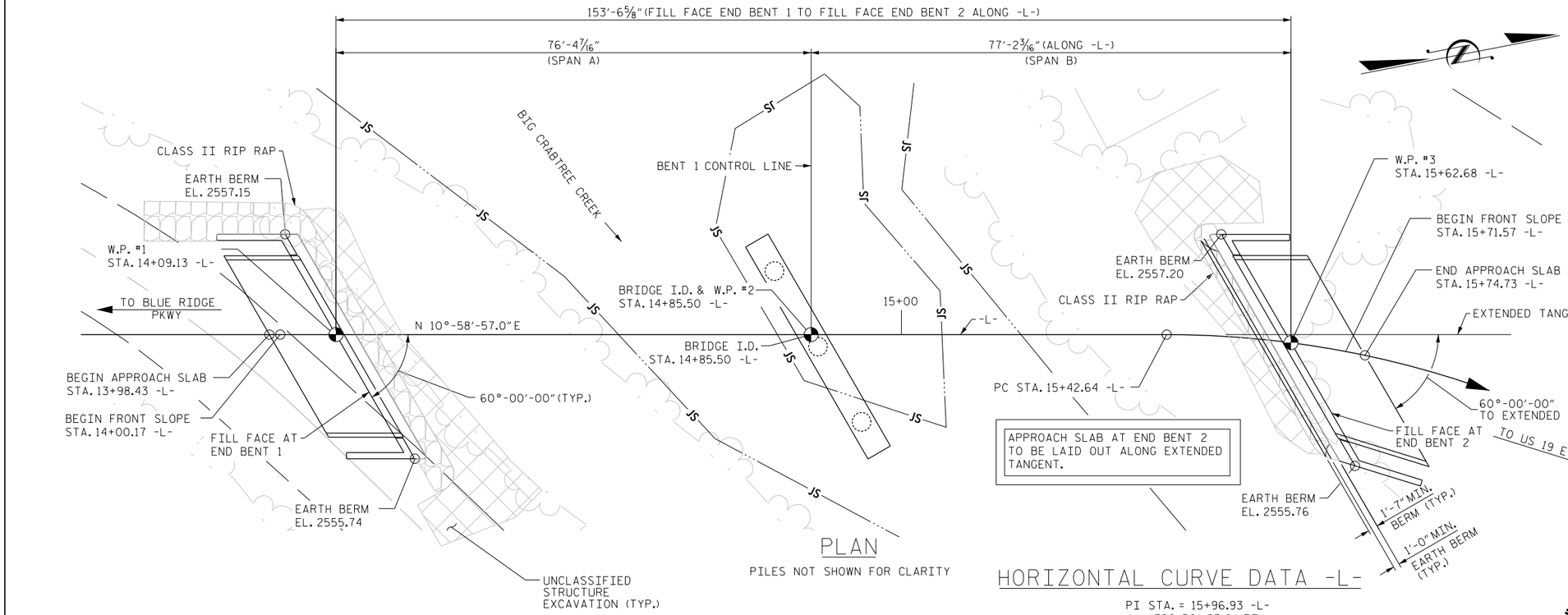
ROBERT F. DECOLA, P.E.
KCI PROJECT MANAGER

CHARLES L. FLOWE, P.E.
KCI ROADWAY DESIGN ENGINEER

NCDOT CONTACT: MARK HILL, P.E.
NCDOT DIVISION 13



SECTION ALONG -L-



PLAN

PILES NOT SHOWN FOR CLARITY

HORIZONTAL CURVE DATA -L-

PI STA. = 15+96.93 -L-
Δ = 38°-50'-23.0" (RT)
D = 37°-12'-18.19"
L = 104.39'
T = 54.29'
R = 154.00'

HYDRAULIC DATA

DESIGN DISCHARGE	= 2,800	CFS
FREQUENCY OF DESIGN FLOOD	= 25	YRS
DESIGN HIGH WATER ELEVATION	= 2558.0	
DRAINAGE AREA	= 14.9	SQ. MI.
BASE DISCHARGE (Q100)	= 3,900	CFS
BASE HIGH WATER ELEVATION	= 2559.9	

OVERTOPPING DATA

OVERTOPPING DISCHARGE	= > 5,300	CFS
FREQUENCY OF OVERTOPPING	= 500+	YRS
✳ OVERTOPPING FLOOD ELEVATION	= ✳✳ 2563.0	

✳✳ OVERTOPS LEFT SHOULDER AT SAG STA. 12+33.00 -L-

✳ OVERTOPPING EXCEEDS 500 YEAR FLOOD EVENT

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. 17BP.13.R.184

MITCHELL/YANCEY COUNTY

STATION: 14+85.50 -L-

SHEET 1 OF 4 BRIDGE 600101

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1002 (CRABTREE RD.) OVER BIG CRABTREE CREEK BETWEEN BLUE RIDGE PWKY AND US 19 E

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F. DECOLA 8/6/2026

Robert Decola

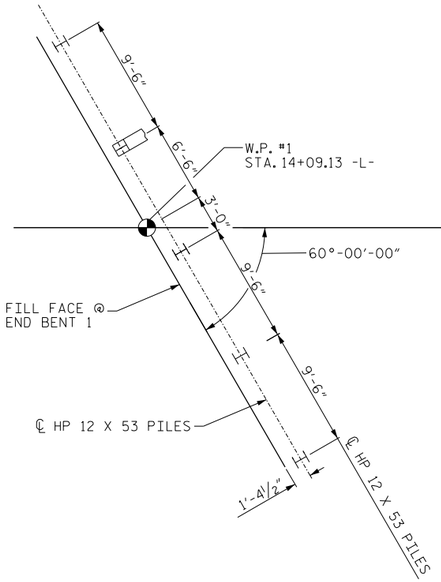
DESIGN ENGINEER OF RECORD: Robert Decola	DATE : 8/6/2026				
DRAWN BY : N. GIAGUNTO	DATE : 11/21/23				
CHECKED BY : R.F. DECOLA	DATE : 11/21/23				

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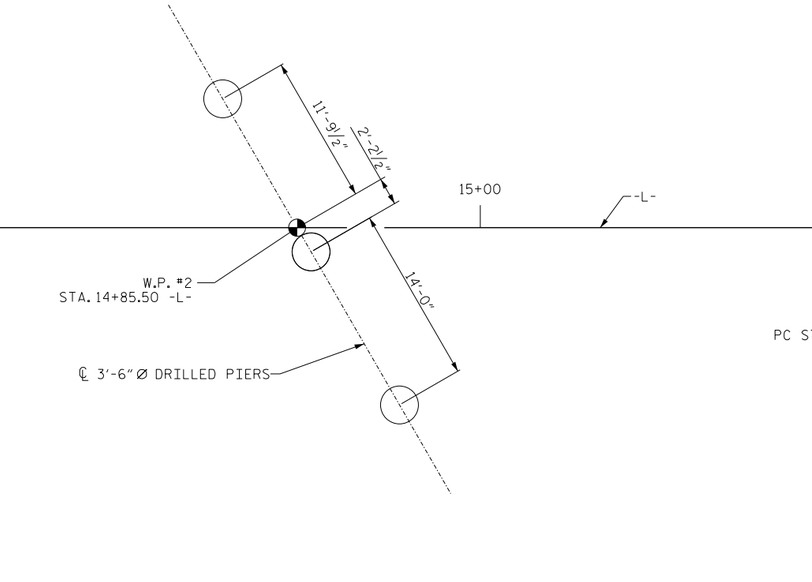
KCI Associates of North Carolina, P.A.
ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS LICENSE NUMBER: C-0764
4800 Falls of Neuse Road, Suite 200 Raleigh, NC 27609-6270 Phone (919) 783-9214

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-01
1			3			TOTAL SHEETS
2			4			23

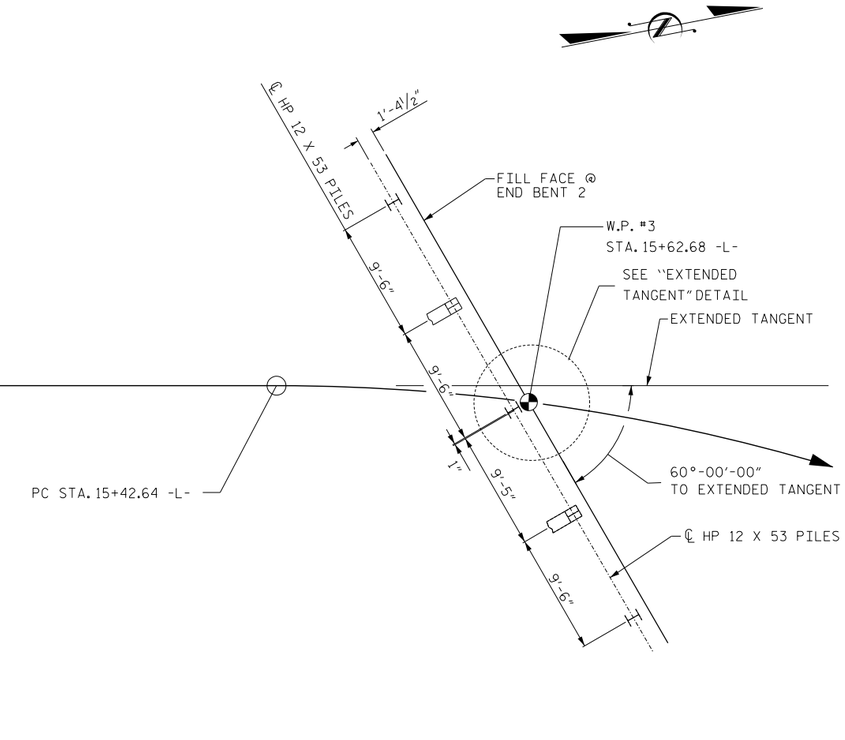
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END BENT 1



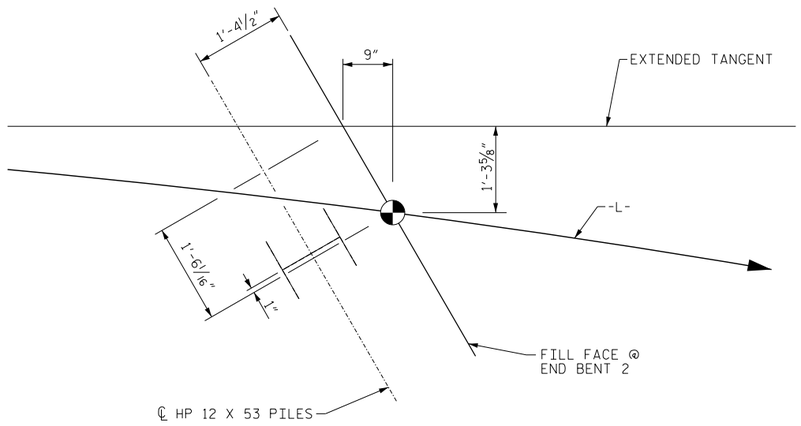
BENT 1



END BENT 2

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO CENTERLINE OF PILES



EXTENDED TANGENT DETAIL

FOUNDATION RECOMMENDATION NOTES:

1. FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
2. FILL HOLES FOR PILE EXCAVATION AT END BENT NO. 1 (PILE NO. 4 AND PILE NO. 5) WITH CONCRETE.
3. FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
4. SLURRY CONSTRUCTION IS REQUIRED FOR DRILLED PIERS AT BENT NO.1.
5. POLYMER SLURRY IS REQUIRED FOR DRILLED PIERS AT BENT NO. 1.

DESIGN ENGINEER OF RECORD: Robert Decola	DATE : 8/6/2026
DRAWN BY : N. GIAGUNTO	DATE : 11/20/23
CHECKED BY : R.F. DECOLA	DATE : 11/21/23

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F. DECOLA

8/6/2026

Drawing Signed by: Robert Decola

DocuSigned by: 0A1F1B8B8B2F4DF...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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KCI Associates of North Carolina, P.A.
4800 Falls of Neuse Road, Suite 200 Raleigh, NC 27609-6270 Phone (919) 783-9214

PROJECT NO. 17BP.13.R.184
MITCHELL/YANCEY COUNTY
STATION: 14+85.50 -L-
SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1002 (CRABTREE RD.)
OVER BIG CRABTREE CREEK
BETWEEN BLUE RIDGE PKWY
AND US 19 E

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-02
1			3			TOTAL SHEETS
2			4			23

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SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Plle(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 Plle TONS	Total Pile Redrives Quantlty EACH	Predrilling Length per Pile Lin FT	Predrilling Elevation (Elev Not To Predrlll 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, Pile 1	115	2559.44	25		2537.5	195							
End Bent No 1, Pile 2	115	2559.44	20		2541.0	195							
End Bent No 1, Pile 3	115	2559.44	15		2546.0	195							
End Bent No 1, Pile 4	115	2559.44	15		2547.4	195					2547.4	5.5	4.5
End Bent No 1, Pile 5	115	2559.44	15		2547.4	195					2547.4	10.0	0.0
End Bent No 2, Pile 1	115	2559.49	25		2538.5	195							
End Bent No 2, Plle 2	115	2559.49	25		2538.5	195							
End Bent No 2, Plle 3	115	2559.49	20		2542.0	195							
End Bent No 2, Pile 4	115	2559.49	15		2545.5	195							
End Bent No 2, Pile 5	115	2559.49	15		2547.5	195							

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

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #-# (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile TONS	Factored Downdrag Load per Pile TONS	Factored Dead Load* per Pile TONS	Dynamic Resistance Factor	Nominal Downdrag Resistance per Pile TONS	Nominal Scour Resistance per Pile TONS	Scour Resistance Factor (Default = 1.00)
End Bent No 1, Piles 1-5	115			0.60			1.00
End Bent No 2, Piles 1-5	115			0.60			1.00

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

SUMMARY OF DRILLED PIER 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 Pier TONS	Minimum Pier Tip (Tip No Higher Than) Elevation FT	Required Tip Resistance per Pier TSF	Scour Critical Elevation FT	MInImum Drilled Pier Penetration Into Rock per Pier Lin FT	Drilled Pier Length* per Pier Lin FT	Drllled Pier Length Not In Soil* per Pier LIn FT	Drilled Pier Length In Soil* per Pier Lin FT	Permanent Steel Caslng Required? YES or MAYBE	Permanent Steel Caslng Tlp Elevatlon (Elev Not To Extend Casing Below) FT	Permanent Steel Casing Length** per Pier Lin FT)
Bent No 1, Drilled Piers 1-3	375	2513.9	50	2539	10.0		13.5	21.6	YES	2540.0	10.1
TOTAL QTY:							40.5	64.8			30.3

*Drilled Pier Length, Drilled Pier Length Not in Soil and Drilled Pier Length in Soil represent estimated drilled pier quantities and are measured and paid for as either "____ Dia. Drilled Piers" or "____ Dia. Drilled Piers Not in Soil" and "____ Dia. Drilled Piers in Soil" in accordance with Article 411-7 of the NCDOT Standard Specifications .

**Permanent Steel Casing Length equals the difference between the ground line or top of drilled pier elevation, whichever is higher, and the permanent casing tip elevation and is measured and paid for as "Permanent Steel Casting for ____ Dia. Drilled Pier" in accordance with Article 411-7 of the NCDOT Standard Specifications .

SUMMARY OF DYNAMIC PILE TESTING/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

DYNAMIC PILE TESTING				Pile Order Lengths	
End Bent/ Bent No	Dynamic Pile Testlng Required? YES or MAYBE	Dynamic Pile Testlng Test Pile Length FT	Total Dynamlc Plle Testing Quantity EACH	End Bent/ Bent No(s)	Pile Order Length Basis* EST or Dynamic Pile Testing

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

SUMMARY OF PILE ACCESSORIES

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #-# (e.g., "Bent 1, Piles 1-5")	PIPE PILE PLATES REQUIRED? YES or MAYBE	STEEL PILE POINTS			STEEL PILE TIPS REQUIRED? YES
		PIPE PILE CUTTING SHOES REQUIRED? YES	PIPE PILE CONICAL POINTS REQUIRED? YES	H-PILE POINTS REQUIRED? YES	
End Bent No 1, Piles 1-3				YES	
End Bent No 2, Piles 1-5				YES	
TOTAL QTY:				8	

SUMMARY OF DRILLED PIER TESTING

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #-# (e.g., "Bent 1, Piles 1-5")	Standard Penetration Test (SPT) Required? YES or MAYBE	Crosshole Sonlc Logging (CSL) Required?* YES or MAYBE	Total CSL Tube Length (For All Tubes) per Pier Lin FT	Shaft Inspection Device (SID) Required? YES or MAYBE	Pile Integrity Test (PIT) Required? MAYBE
Bent No 1, Drilled Piers 1-3		MAYBE	150.8		
TOTAL QTY:		1	452.4		

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

PROJECT NO. 17BP.13.R.184

MITCHELL/YANCEY COUNTY

STATION: 14+85.50 -L-

SHEET 3 OF 4

NOTES:

1. The Pile and Drilled Pier Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Abner F. Riggs, Jr. # 14155) on 04-03-2024.
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 Dynamic Pile Testing, Pipe Pile Plates, Permanent Steel Casing, SPTs, CSL Testing, SID Inspections and PITs when these items may be required.

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F. DECOLA

8/6/2026

Robert Decola

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE AND DRILLED PIER FOUNDATION TABLES

DESIGN ENGINEER OF RECORD: Robert Decola DATE: 8/6/2026

DRAWN BY: N. GIAGUNTO DATE: 11/13/23

CHECKED BY: R.F. DECOLA DATE: 11/13/23

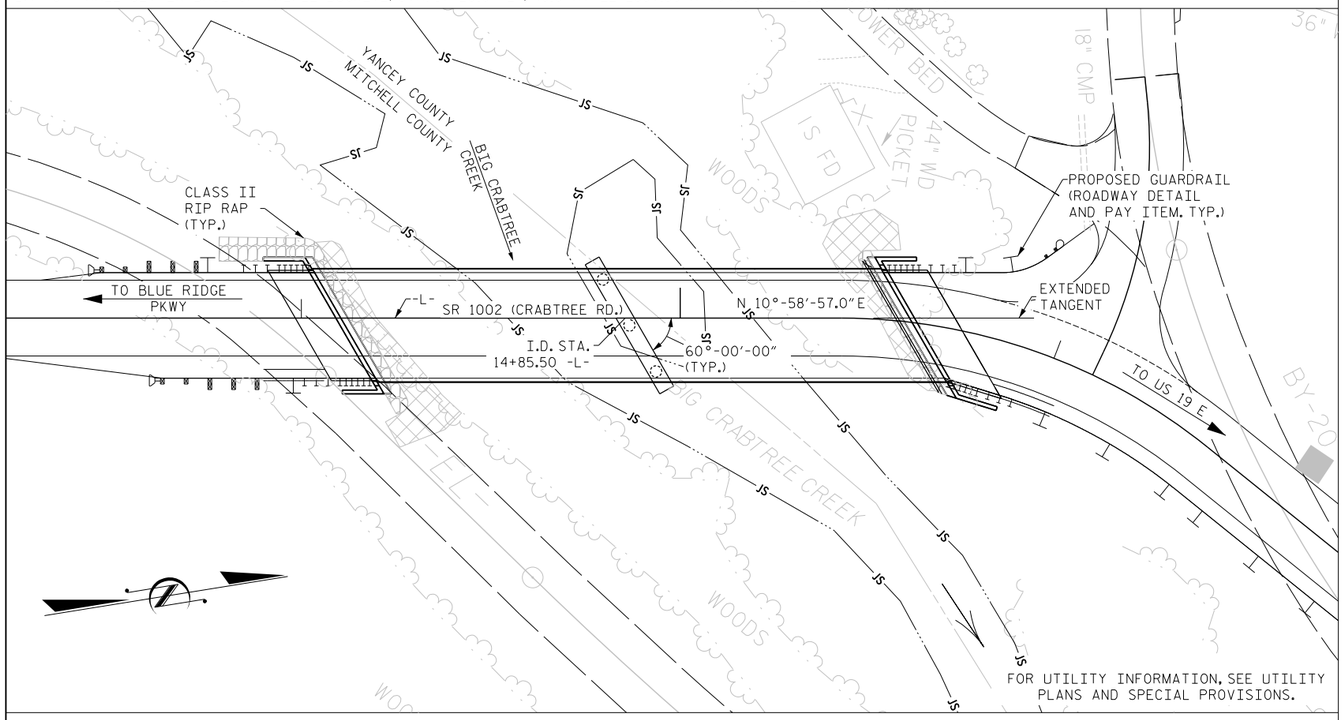
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BM #3 - NAIL SET IN BASE OF TRIPLE BUCKEYE, STA. 17+20.6 -L-, 49.6' RT EL 2557.39 N 794834.88 E 1067499.64 NAV 88



LOCATION SKETCH

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE 540' NORTHEAST OF PROPOSED STRUCTURE."

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 21 FT LEFT AND 34 FT RIGHT OF CENTERLINE ROADWAY AT END BENT 1 AND A DISTANCE OF 29 FT LEFT AND 19 FT RIGHT OF CENTERLINE ROADWAY AT END BENT 2 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.

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF (1) 30'-0" AND (2) 50'-0" RC DECKS ON STEEL I BEAMS ON CONC CAPS ON STEEL H-PILES W/VERTICAL CONC ABUTMENTS, SKEWED 30 DEG TO ROADWAY, WITH CLEAR ROADWAY OF 20'-2" AND LOCATED 540' DOWNSTREAM OF THE STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT 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.

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.

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

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

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE 540' NE OF PROPOSED	ASBESTOS ASSESSMENT	PILE EXCAVATION IN SOIL PER PILE	PILE EXCAVATION NOT IN SOIL PER PILE	3'-6" DIA DRILLED PIERS IN SOIL	3'-6" DIA DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-6" DIA DRILLED PIER	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION AT STA. 14+85.50 -L-	CLASS A CONCRETE	BRIDGE APPROACH SLABS @ STA. 14+85.50 -L-	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES	HP 12X53 GALVANIZED STEEL PILES		STEEL PILE POINTS	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-9" PRESTRESSED CONCRETE BOX BEAMS	
	LUMP SUM	LUMP SUM	LIN.FT.	LIN.FT.	LIN.FT.	LIN.FT.	LIN.FT.	EA.	LUMP SUM	CU.YDS.	LUMP SUM	LBS.	LBS.	EA.	NO.	LIN.FT.	EA.	LIN.FT.	TONS	SQ.YDS.	LUMP SUM	NO.	LIN.FT.
SUPERSTRUCTURE											LUMP SUM							300.0			LUMP SUM	20	1,500
END BENT 1			4.5	15.5						26.4		3,686		5	5	90	3		78	41			
BENT 1					64.8	40.5	30.3	1		25.1		12,449	2,903										
END BENT 2										26.9		3,710		5	5	100	5		36	19			
TOTAL	LUMP SUM	LUMP SUM	4.5	15.5	64.8	40.5	30.3	1	LUMP SUM	78.4	LUMP SUM	19,845	2,903	10	10	190	8	300.0	114	60	LUMP SUM	20	1,500

PROJECT NO. 17BP.13.R.184

MITCHELL/YANCEY COUNTY

STATION: 14+85.50 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1002 (CRABTREE RD.)
OVER BIG CRABTREE CREEK
BETWEEN BLUE RIDGE PKWY AND US 19 E

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F. DECOLA

8/6/2026

Documents signed by Robert Decola

DESIGN ENGINEER OF RECORD: Robert Decola DATE: 8/6/2026

DRAWN BY: R.C. LARSON DATE: 02/07/24

CHECKED BY: R.F. DECOLA DATE: 02/08/24

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4800 Falls of Neuse Road, Suite 200 Raleigh, NC 27609-6270 Phone (919) 783-9214

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2			4			23

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KCI PROJ. #22160946.09G

LOAD AND RESISTANCE FACTOR RATING (LRFD) 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						
							LIVELOAD FACTORS	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)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD		HL-93 (INVENTORY)	N/A	⟨1⟩	1.242	--	1.75	0.248	2.25	75'	ER	36.634	0.621	1.24	75'	ER	7.327	0.80	0.248	1.65	75'	ER	36.634	
		HL-93 (OPERATING)	N/A	--	1.610	--	1.35	0.248	2.92	75'	ER	36.634	0.621	1.61	75'	ER	7.327	N/A	--	--	--	--	--	
		HS-20 (INVENTORY)	36.000	⟨2⟩	1.569	56.490	1.75	0.248	2.96	75'	ER	36.634	0.621	1.57	75'	ER	7.327	0.80	0.248	2.16	75'	ER	36.634	
		HS-20 (OPERATING)	36.000	--	2.034	73.228	1.35	0.248	3.83	75'	ER	36.634	0.621	2.03	75'	ER	7.327	N/A	--	--	--	--	--	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500	--	4.674	63.099	1.4	0.248	8.35	75'	ER	36.634	0.621	4.67	75'	ER	7.327	0.80	0.248	4.88	75'	ER	36.634	
		SNGARBS2	20.000	--	3.322	66.437	1.4	0.248	6.22	75'	ER	36.634	0.621	3.32	75'	ER	7.327	0.80	0.248	3.63	75'	ER	36.634	
		SNAGRIS2	22.000	--	3.083	67.818	1.4	0.248	5.89	75'	ER	36.634	0.621	3.08	75'	ER	7.327	0.80	0.248	3.44	75'	ER	36.634	
		SNCOTTS3	27.250	--	2.333	63.582	1.4	0.248	4.16	75'	ER	36.634	0.621	2.33	75'	ER	7.327	0.80	0.248	2.43	75'	ER	36.634	
		SNAGGRS4	34.925	--	1.935	67.585	1.4	0.248	3.47	75'	ER	36.634	0.621	1.94	75'	ER	7.327	0.80	0.248	2.03	75'	ER	36.634	
		SNS5A	35.550	--	1.959	69.653	1.4	0.248	3.39	75'	ER	36.634	0.621	1.96	75'	ER	7.327	0.80	0.248	1.98	75'	ER	36.634	
		SNS6A	39.950	--	1.787	71.395	1.4	0.248	3.11	75'	ER	36.634	0.621	1.79	75'	ER	7.327	0.80	0.248	1.82	75'	ER	36.634	
		SNS7B	42.000	--	1.732	72.729	1.4	0.248	2.96	75'	ER	36.634	0.621	1.76	75'	ER	7.327	0.80	0.248	1.73	75'	ER	36.634	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000	--	2.127	70.200	1.4	0.248	3.80	75'	ER	36.634	0.621	2.13	75'	ER	7.327	0.80	0.248	2.22	75'	ER	36.634	
		TNT4A	33.075	--	2.074	68.588	1.4	0.248	3.81	75'	ER	36.634	0.621	2.07	75'	ER	7.327	0.80	0.248	2.23	75'	ER	36.634	
		TNT6A	41.600	--	1.820	75.725	1.4	0.248	3.12	75'	ER	36.634	0.621	1.87	75'	ER	7.327	0.80	0.248	1.82	75'	ER	36.634	
		TNT7A	42.000	--	1.829	76.824	1.4	0.248	3.13	75'	ER	36.634	0.621	1.83	75'	ER	7.327	0.80	0.248	1.83	75'	ER	36.634	
		TNT7B	42.000	--	1.714	71.997	1.4	0.248	3.24	75'	ER	36.634	0.621	1.71	75'	ER	7.327	0.80	0.248	1.89	75'	ER	36.634	
		TNAGRIT4	43.000	--	1.660	71.366	1.4	0.248	3.08	75'	ER	36.634	0.621	1.66	75'	ER	7.327	0.80	0.248	1.80	75'	ER	36.634	
		TNAGT5A	45.000	--	1.649	74.196	1.4	0.248	2.91	75'	ER	36.634	0.621	1.65	75'	ER	7.327	0.80	0.248	1.70	75'	ER	36.634	
		TNAGT5B	45.000	⟨3⟩	1.578	71.031	1.4	0.248	2.87	75'	ER	36.634	0.621	1.58	75'	ER	7.327	0.80	0.248	1.68	75'	ER	36.634	
EMERGENCY VEHICLE (EV)		EV2	28.750	--	2.469	70.979	1.3	0.248	4.80	75'	ER	36.634	0.621	2.47	75'	ER	7.327	0.80	0.248	3.03	75'	ER	36.634	
		EV3	43.000	⟨4⟩	1.664	71.547	1.3	0.248	3.14	75'	ER	36.634	0.621	1.66	75'	ER	7.327	0.80	0.248	1.98	75'	ER	36.634	

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

1.
2.
3.
4.

⟨#⟩ CONTROLLING LOAD RATING

⟨1⟩ DESIGN LOAD RATING (HL-93)

⟨2⟩ DESIGN LOAD RATING (HS-20)

⟨3⟩ LEGAL LOAD RATING **

⟨4⟩ EMERGENCY VEHICLE LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

FOR SPANS A AND B

PROJECT NO. 17BP.13.R.184

MITCHELL/YANCEY COUNTY

STATION: 14+85.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

LRFR SUMMARY FOR 75' BOX BEAM UNIT 60° SKEW
(NON-INTERSTATE TRAFFIC)

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F DECOLA

8/6/2026

Digitally signed by: Robert Decola

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-05
1			3			TOTAL SHEETS
2			4			23

DESIGN ENGINEER OF RECORD: Robert Decola DATE: 8/6/2026

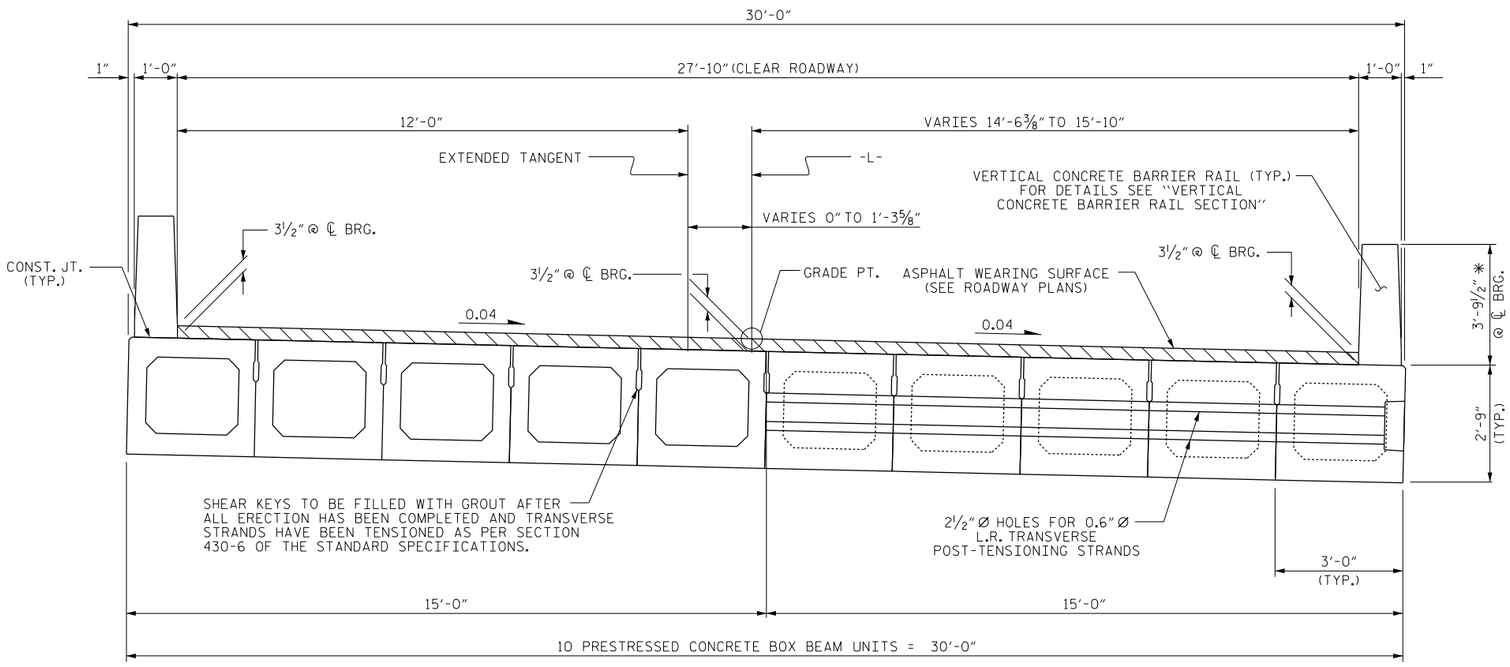
DRAWN BY: N. GIAGUNTO DATE: 02/07/24

CHECKED BY: R.F. DECOLA DATE: 02/08/24

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4800 Falls of Neuse Road, Suite 200 Raleigh, NC 27609-6270 Phone: (919) 783-9214

M:\2016\221601946.09 NCDOT Division 13 Bridge Replacements\G_17BP.13.R.184_Mitchell_600101_B5158\Structures\BoxBeam\DGN\402.011.17BP.13.R.184.SMU_LRFR_005.dgn
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KCI PROJ. #221601946.09G
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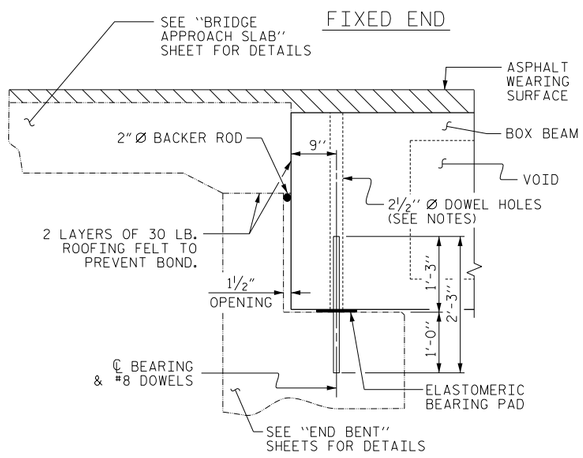


HALF SECTION
THROUGH VOIDS

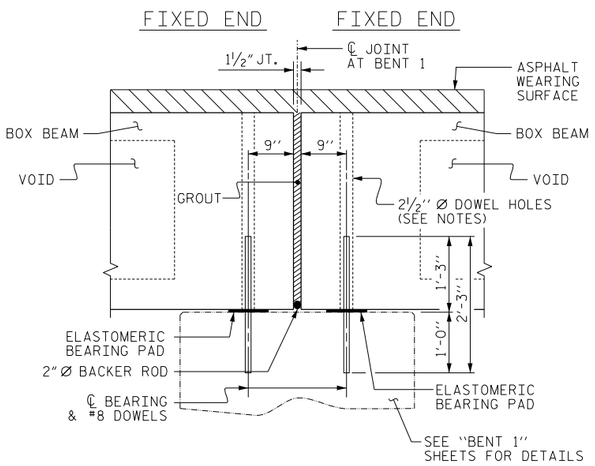
HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

TYPICAL SECTION

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

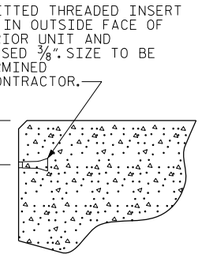


SECTION AT END BENT



SECTION AT BENT

PERMITTED THREADED INSERT
CAST IN OUTSIDE FACE OF
EXTERIOR UNIT AND
RECESSED 3/4". SIZE TO BE
DETERMINED
BY CONTRACTOR.



THREADED INSERT DETAIL

NOTES

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

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

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

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

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

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

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

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

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

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

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

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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

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

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

DESIGN ENGINEER OF RECORD: Robert DeCola		DATE : 8/6/2026	
ASSEMBLED BY : N. GIAGUNTO		DATE : 02/07/24	
CHECKED BY : R.F. DECOLA		DATE : 02/08/24	
DRAWN BY : DGE 8/11	REV. 8/14	MAA/TMG	
CHECKED BY : TMG 11/11			

PROJECT NO. 17BP.13.R.184
MITCHELL/YANCEY COUNTY
STATION: 14+85.50 -L-
SHEET 1 OF 6

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

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F. DECOLA
8/6/2026
Docusigned by: Robert Decola

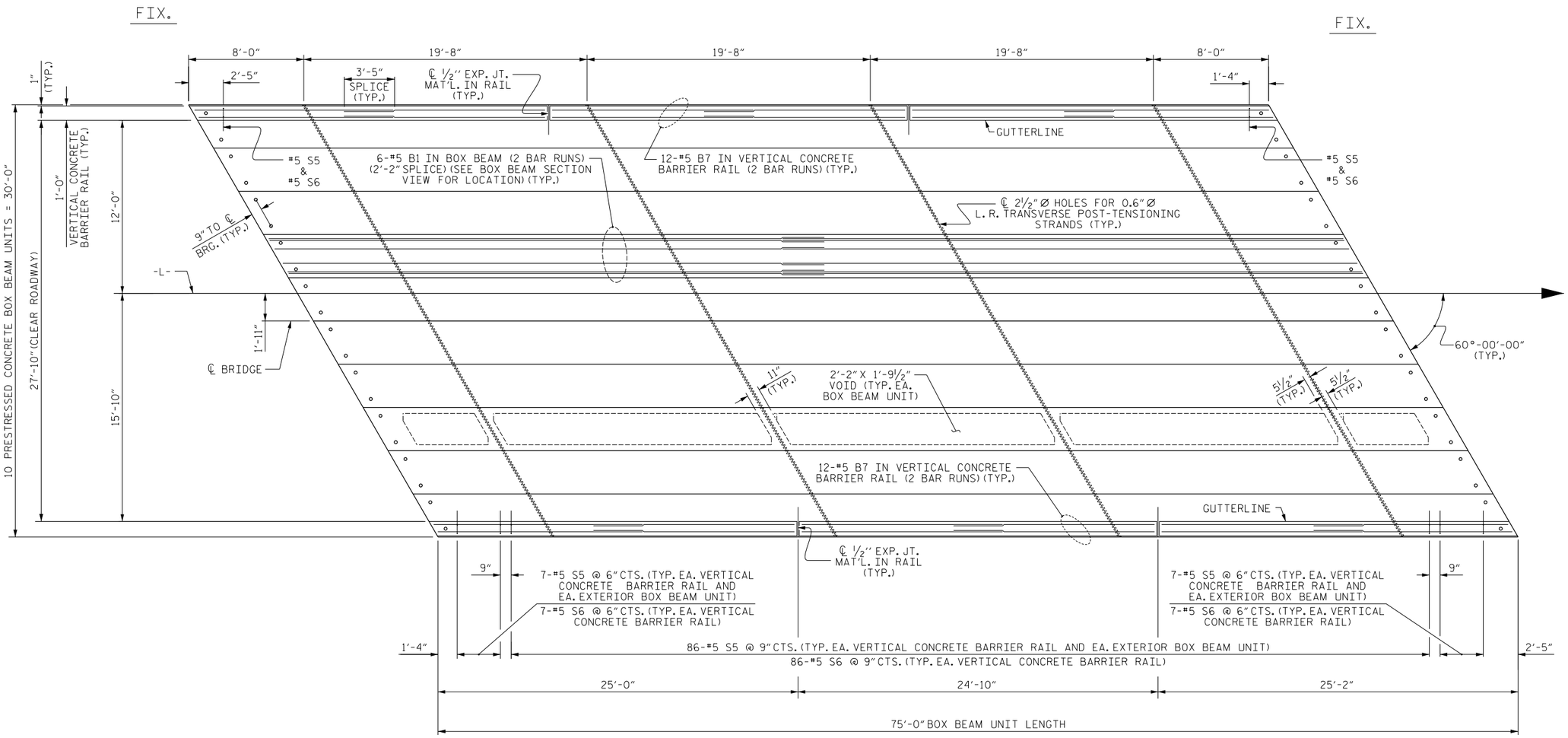
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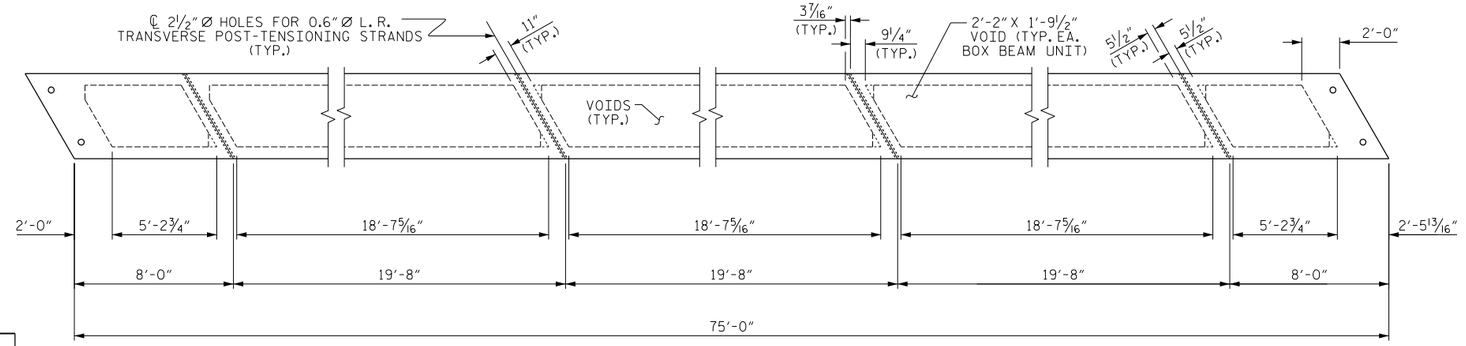
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STD. NO. STD.33PCBB1_30

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KCI PROJ. #221601946.09G



PLAN OF UNIT - SPAN A



DIAPHRAGM AND VOID LAYOUT

PROJECT NO. 17BP.13.R.184
MITCHELL/YANCEY COUNTY
STATION: 14+85.50 -L-
SHEET 2 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 75' UNIT 27'-10" CLEAR ROADWAY 60° SKEW SPAN A

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F. DECOLA
8/6/2026
Digitally signed by: Robert Decola
CN=Robert Decola, C=US

DESIGN ENGINEER OF RECORD: Robert Decola	DATE: 8/6/2026
DRAWN BY: N. GIAGUNTO	DATE: 02/07/24
CHECKED BY: R.F. DECOLA	DATE: 02/08/24

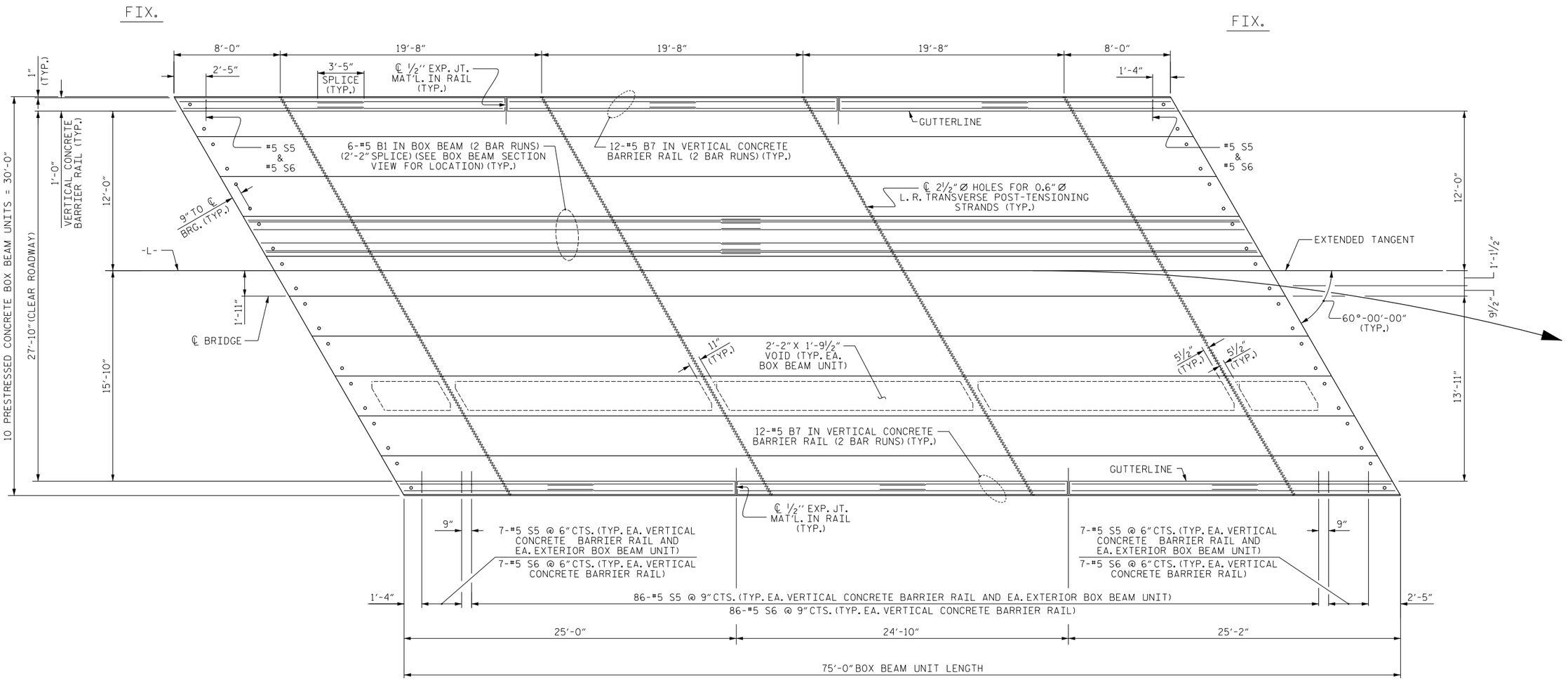
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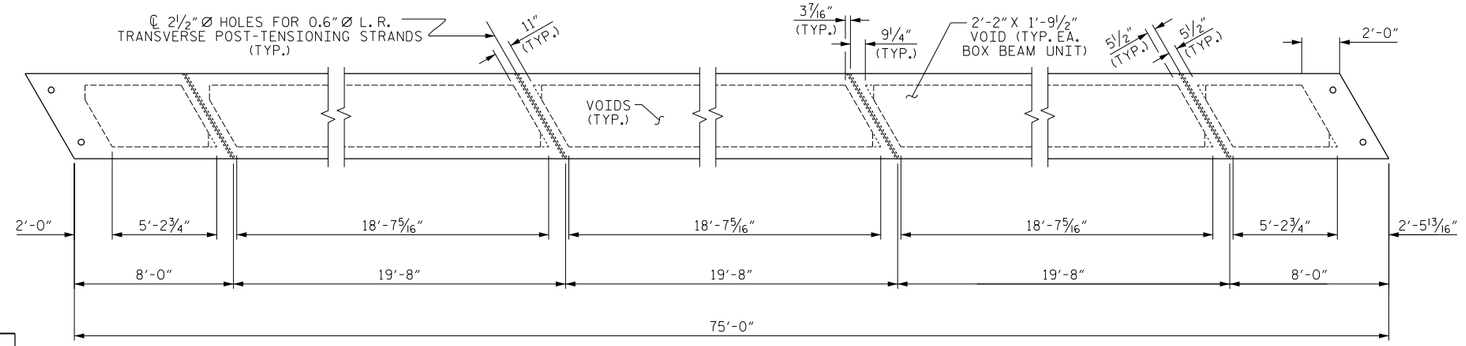
REVISIONS						SHEET NO.
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KCI PROJ. #221601946.09G



PLAN OF UNIT - SPAN B



DIAPHRAGM AND VOID LAYOUT

PROJECT NO. 17BP.13.R.184

MITCHELL/YANCEY COUNTY

STATION: 14+85.50 -L-

SHEET 3 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 75' UNIT 27'-10" CLEAR ROADWAY 60° SKEW SPAN B

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F. DECOLA
8/6/2026
Robert Decola

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-08
1			3			TOTAL SHEETS
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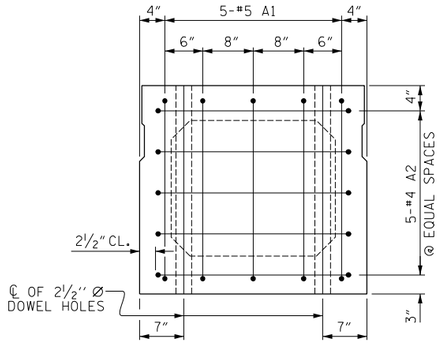
DESIGN ENGINEER OF RECORD: Robert Decola DATE: 8/6/2026
DRAWN BY: R.C. LARSON DATE: 06/02/22
CHECKED BY: R.F. DECOLA DATE: 06/08/22

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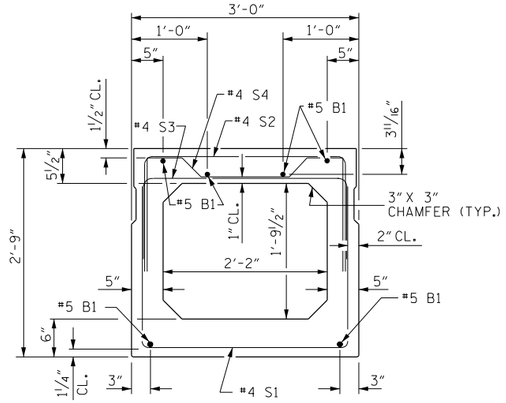
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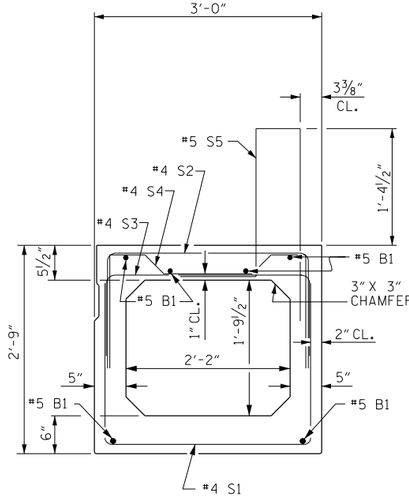
END ELEVATION

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



INTERIOR BOX BEAM SECTION

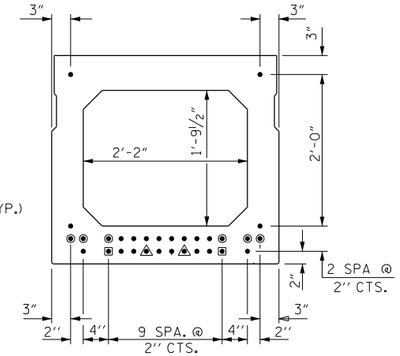
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT



TYPICAL STRAND LOCATION

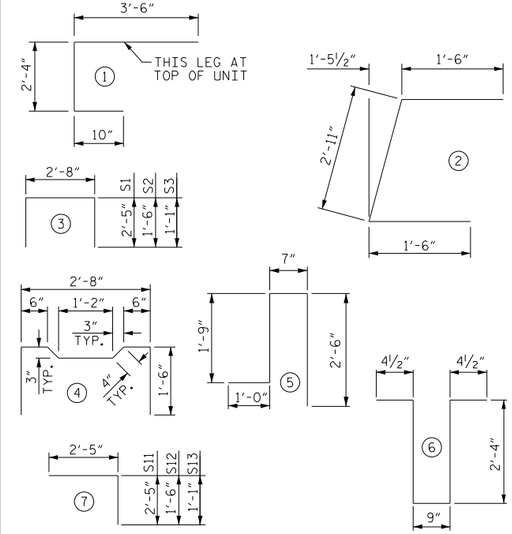
(24 STRANDS REQUIRED)

DEBONDING LEGEND

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

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

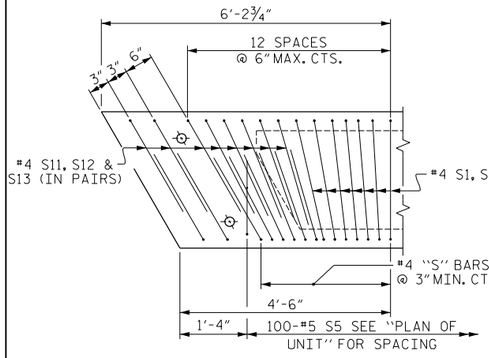
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

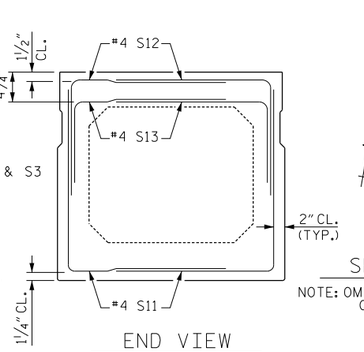
BILL OF MATERIAL FOR ONE BOX BEAM SECTION

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	6'-8"	70	6'-8"	70
A2	34	#4	2	5'-11"	134	5'-11"	134
B1	12	#5	STR	38'-5"	481	38'-5"	481
K1	12	#4	6	6'-2"	49	6'-2"	49
K2	8	#4	STR	2'-10"	15	2'-10"	15
S1	57	#4	3	7'-6"	286	7'-6"	286
S2	57	#4	3	5'-8"	216	5'-8"	216
S3	99	#4	3	4'-10"	320	4'-10"	320
S4	42	#4	4	5'-10"	164	5'-10"	164
S11	32	#4	7	4'-10"	103	4'-10"	103
S12	32	#4	7	3'-11"	84	3'-11"	84
S13	32	#4	7	3'-6"	75	3'-6"	75
✳ S5	100	#5	5	5'-10"	608	--	--
REINFORCING STEEL					1997 LBS.		1997 LBS.
✳ EPOXY COATED REINF. STEEL					608 LBS.		
8000 P.S.I. CONCRETE					13.5 CU. YDS.	13.4	CU. YDS.
0.6" Ø L.R. STRANDS					No. 24		No. 24



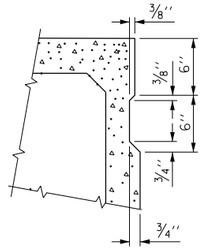
DETAIL "B"

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



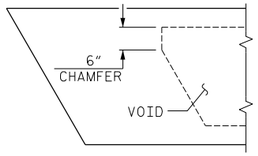
END VIEW

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



SHEAR KEY DETAIL

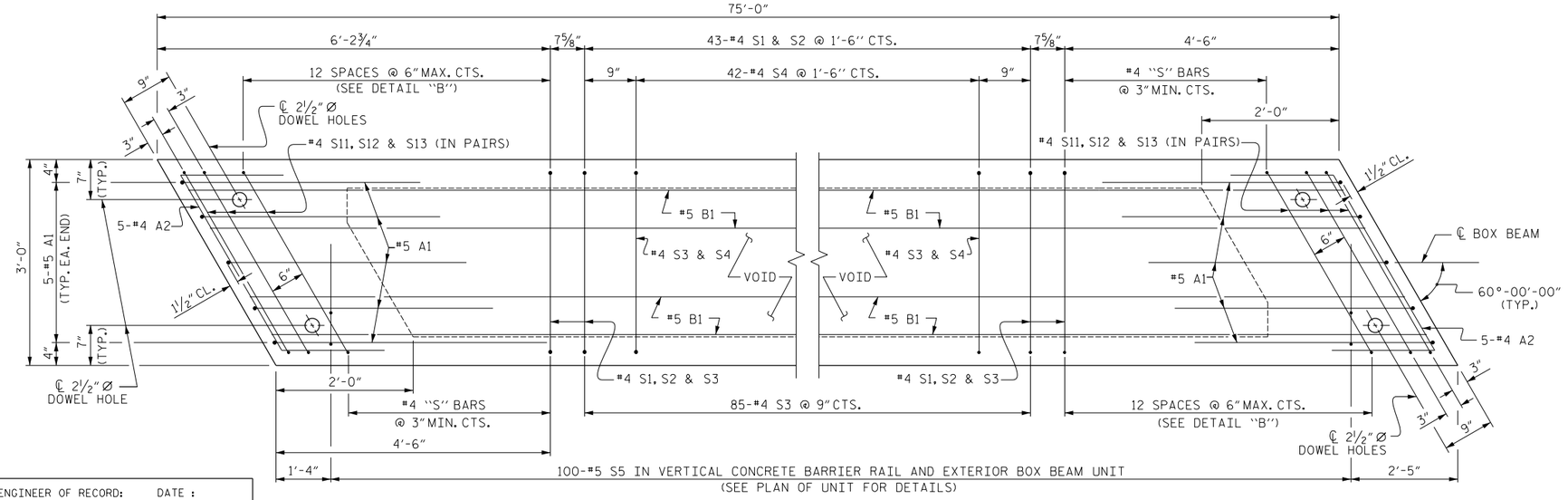
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.



CHAMFER DETAIL

SHOWING 6" VOID CHAMFER

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



PLAN OF BOX BEAM

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

PROJECT NO. 17BP.13.R.184
MITCHELL/YANCEY COUNTY
STATION: 14+85.50 -L-
SHEET 4 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

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

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F DECOLA
8/6/2026
Digitally signed by: Robert Decola
DN: cn=Robert Decola, o=KCI Associates of North Carolina, P.A., ou=Engineering, email=robert.decola@kci.com, c=US
Date: 2026.02.06 14:02:14 -05'00'

DESIGN ENGINEER OF RECORD: Robert Decola	DATE: 8/6/2026
ASSEMBLED BY : R. C. LARSON	DATE : 05/18/22
CHECKED BY : R. F. DeCOLA	DATE : 06/02/22
DRAWN BY : DGE II/II	REV. 4/15 MAA/TMG
CHECKED BY : TMG II/II	

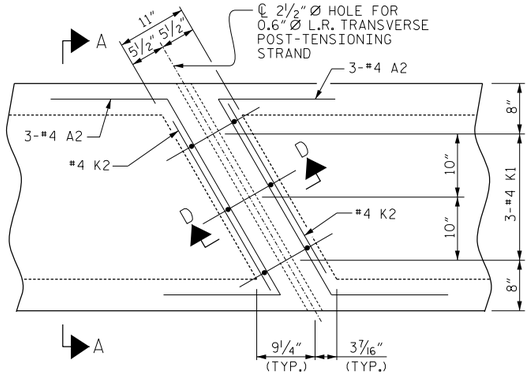
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4800 Falls of Neuse Road, Suite 200 Raleigh, NC 27609-6270 Phone: (919) 783-9214

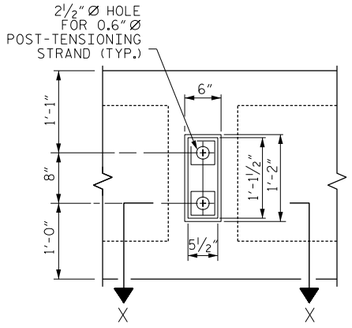
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-09
1			3			TOTAL SHEETS
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STD. NO. 33PCBB4_60S_75L

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7/10/2026 2:02:14 PM Robert.DeCola Structures.101.tbl Structures.pltcfg
KCI PROJ. #221601946.09G

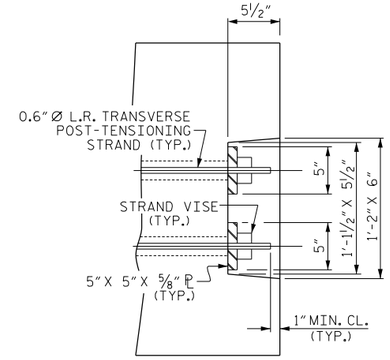


PLAN

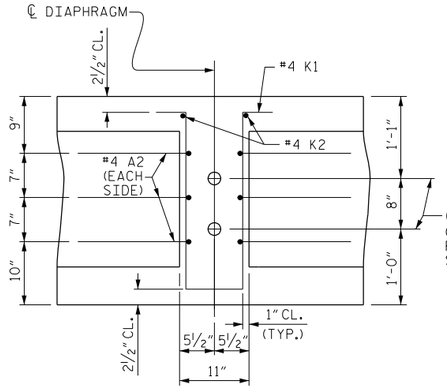


VIEW Y-Y

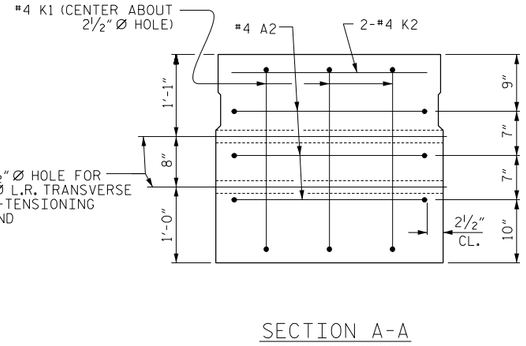
SHOWING ELEVATION VIEW OF GROUTED RECESS



DETAIL "C"



SECTION D-D

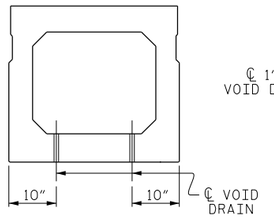


SECTION A-A

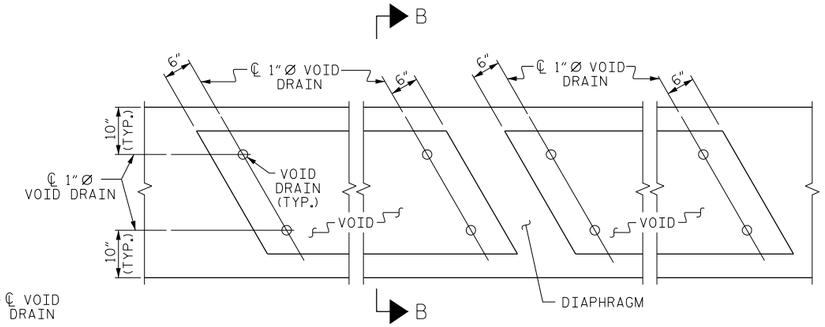
VOIDS NOT SHOWN

DOUBLE DIAPHRAGM DETAILS

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



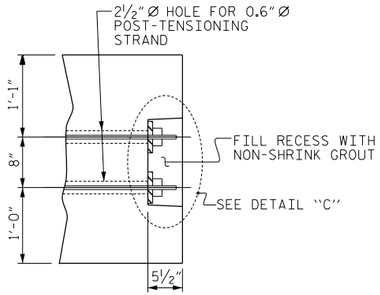
SECTION B-B



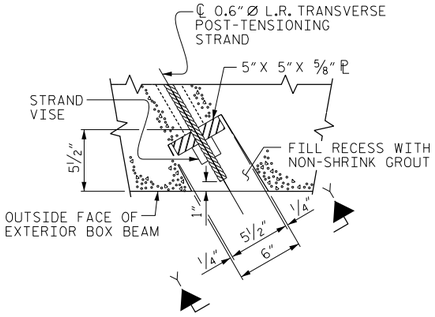
PART PLAN

VOID DRAIN DETAILS

(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)



PART SECTION AT RECESS



SECTION X-X

SHOWING PLAN VIEW OF GROUTED RECESS

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

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

** INCLUDES FUTURE WEARING SURFACE

PROJECT NO. 17BP.13.R.184

MITCHELL/YANCEY COUNTY

STATION: 14+85.50 -L-

SHEET 5 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-10
1			3			TOTAL SHEETS
2			4			23

DESIGN ENGINEER OF RECORD: Robert Decola	DATE: 8/6/2026
ASSEMBLED BY : R. C. LARSON	DATE : 05/19/22
CHECKED BY : R. F. DeCOLA	DATE : 06/01/22
DRAWN BY : DGE II/II	REV. 8/14 MAA/TMG
CHECKED BY : TMG II/II	

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F. DECOLA

8/6/2026

Digitally signed by: Robert Decola

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

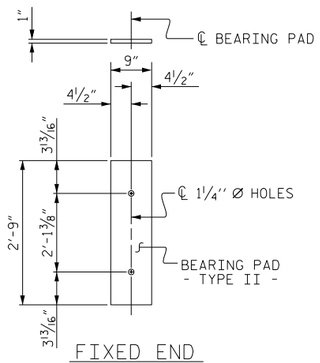
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STD.NO.33PCBB5_60S

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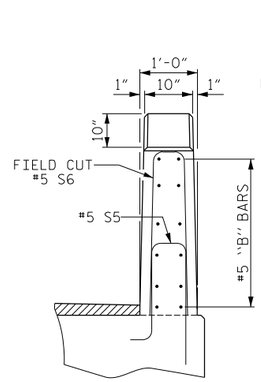


FIXED END

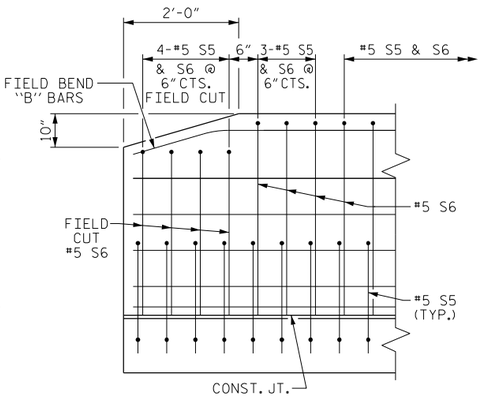
(TYPE II - 40 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



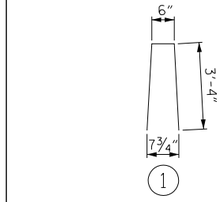
END VIEW



SIDE VIEW

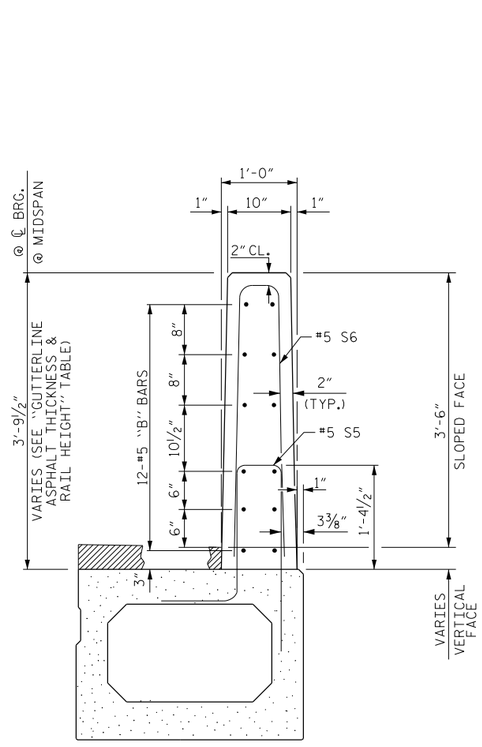
END OF RAIL DETAILS

BOX BEAM UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR B.B.	4	75'-0"	300'-0"
INTERIOR B.B.	16	75'-0"	1200'-0"
TOTAL	20	———	1500'-0"

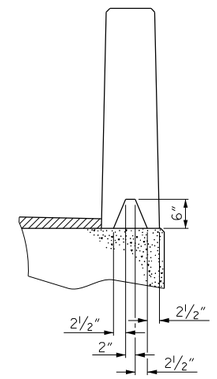


BAR TYPE

BAR DIMENSIONS ARE OUT TO OUT

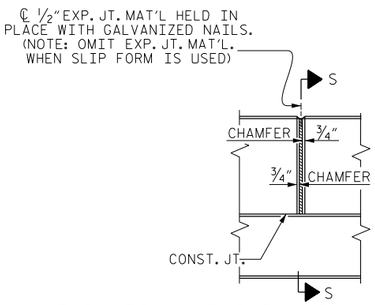


SECTION THRU RAIL



SECTION S-S

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



ELEVATION AT EXPANSION JOINTS

VERTICAL CONCRETE BARRIER RAIL DETAILS

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS 75' UNIT	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ B7	144	288	#5	STR	14'-3"	4280
✳ S6	200	400	#5	1	7'-2"	2990
✳ EPOXY COATED REINFORCING STEEL				LBS.		7270
CLASS AA CONCRETE				CU.YDS.		38.8
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		300.0

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
75' UNITS	2¼"	3'-8¼"

DESIGN ENGINEER OF RECORD: Robert Decola		DATE : 8/6/2026	
ASSEMBLED BY : R.C.LARSON		DATE : 05/18/22	
CHECKED BY : R.F.DeCOLA		DATE : 06/02/22	
DRAWN BY : DGE 10/11	REV. 5/18		MAA/THC
CHECKED BY : TMG 11/11			

PROJECT NO. 17BP.13.R.184

MITCHELL/YANCEY COUNTY

STATION: 14+85.50 -L-

SHEET 6 OF 6

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F DECOLA

8/6/2026

Robert Decola

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

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2			4			23

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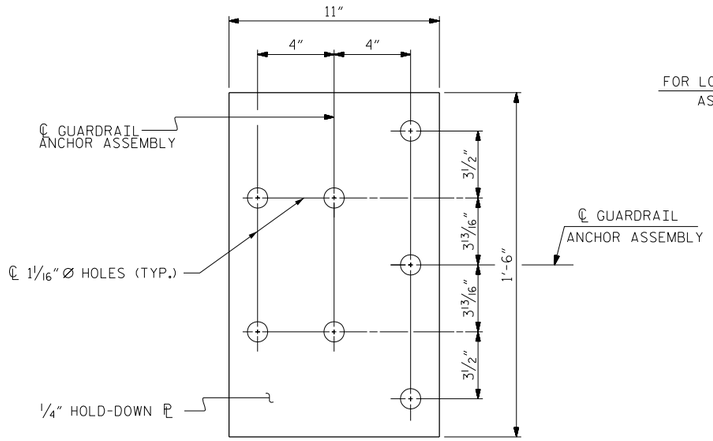
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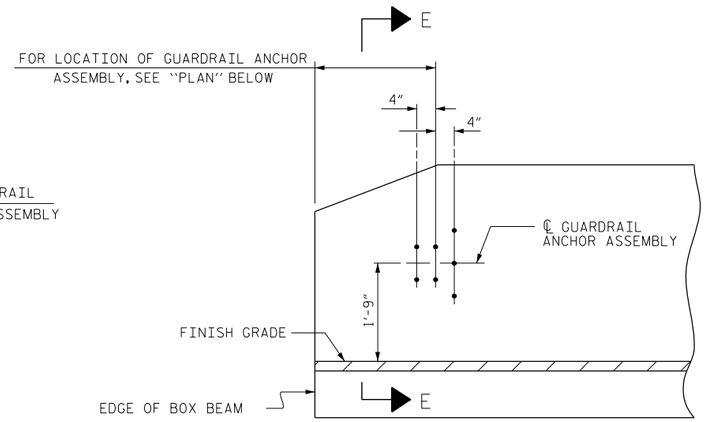
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STD. NO. 33PCBB8_60&120S

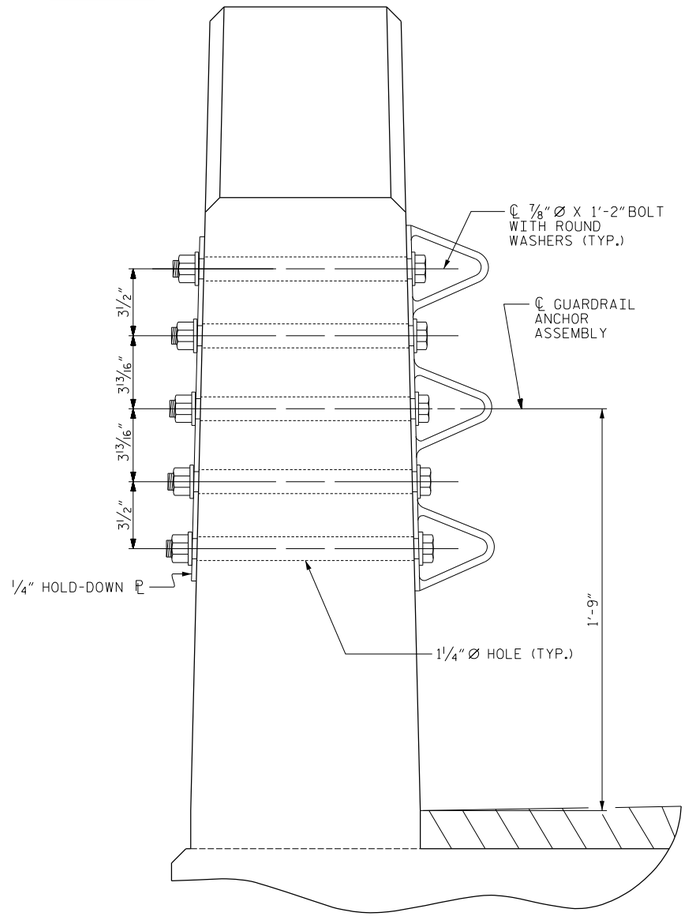
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PLAN

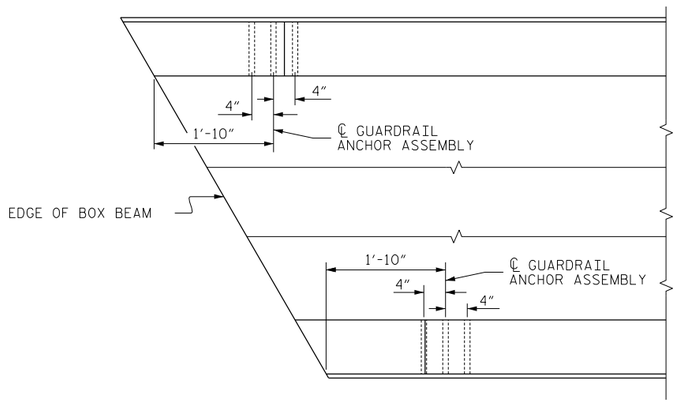


ELEVATION



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR.

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" Ø BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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



SKETCH SHOWING POINTS OF ATTACHMENT

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. 17BP.13.R.184

MITCHELL/YANCEY COUNTY

STATION: 14+85.50 -L-

DESIGN ENGINEER OF RECORD: Robert Decola	DATE: 8/6/2026
ASSEMBLED BY: R. C. LARSON	DATE: 05/18/22
CHECKED BY: R.F. DECOLA	DATE: 06/02/22
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

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F. DECOLA

8/6/2026

Digitally Signed by: Robert Decola

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD GUARDRAIL ANCHORAGE DETAILS FOR VERTICAL CONCRETE BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-12
1			3			TOTAL SHEETS
2			4			23

STD. NO. GRA3

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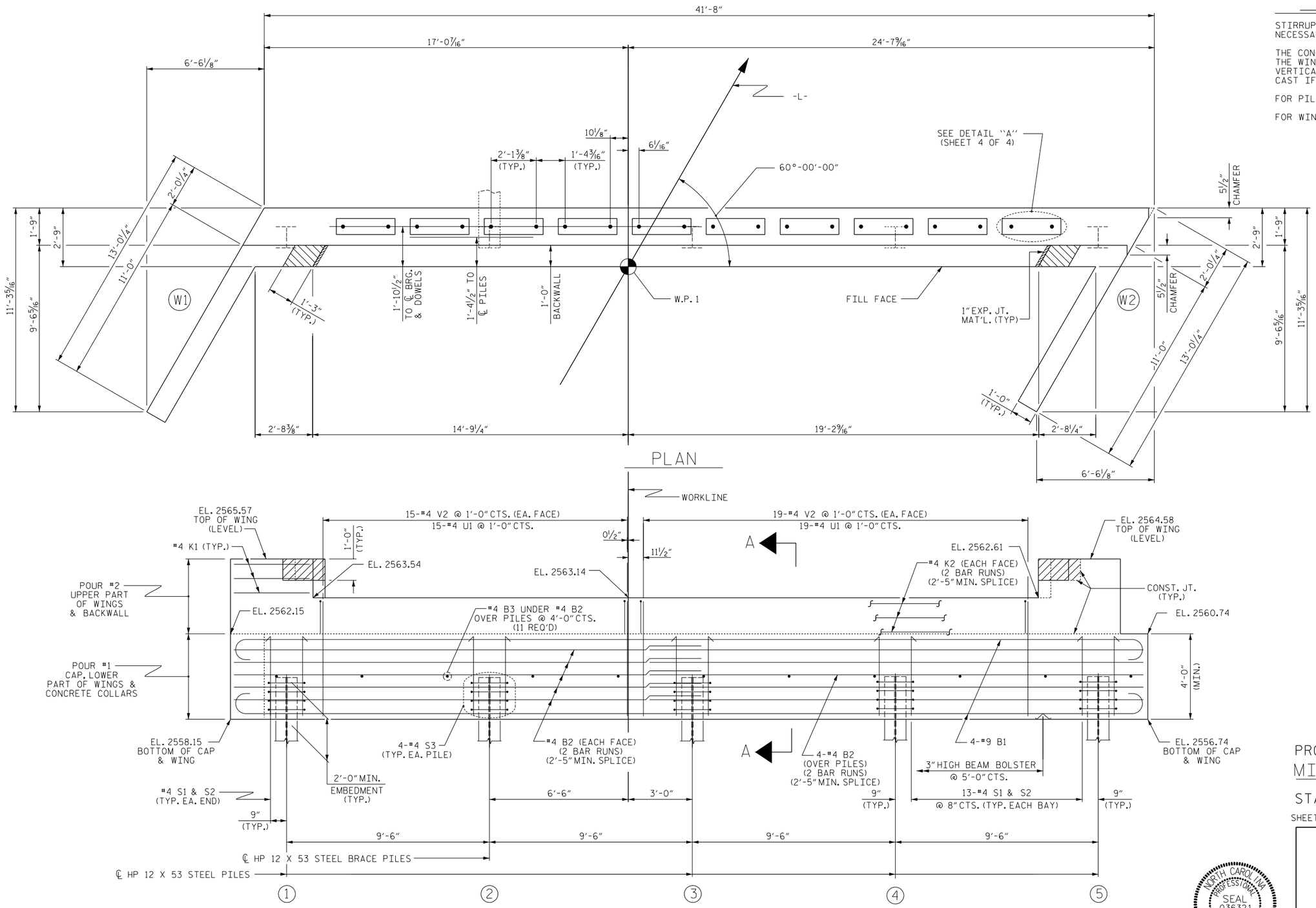
NOTES

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

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

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

FOR WING DETAILS, SEE SHEET 2 OF 3.



PLAN

ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 3 OF 3.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 3 OF 3.

TOP OF PILE ELEVATIONS	
1	2560.06
2	2559.74
3	2559.42
4	2559.10
5	2558.77

3.40% SLOPE

PROJECT NO. 17BP.13.R.184
MITCHELL/YANCEY COUNTY
STATION: 14+85.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1

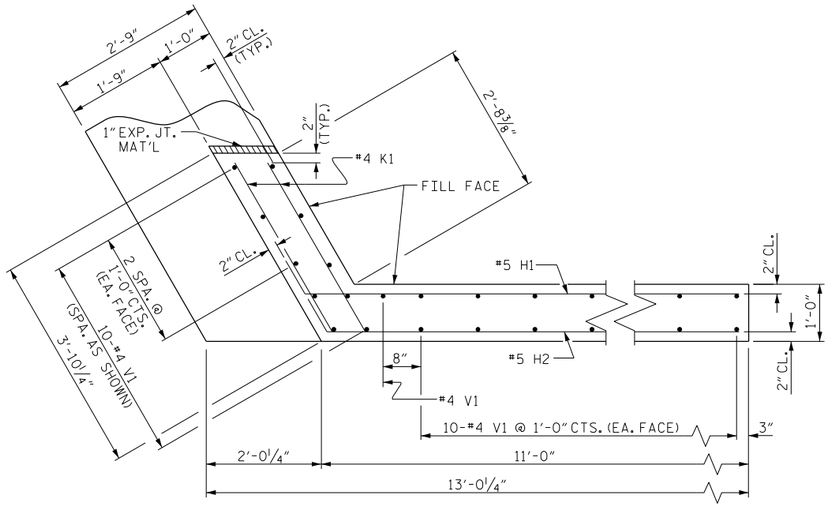
DESIGN ENGINEER OF RECORD: Robert Decola	DATE : 8/6/2026
ASSEMBLED BY : R.C. LARSON CHECKED BY : R.F. DECOLA	DATE : 06/03/22 DATE : 06/08/22
DRAWN BY : WJH 12/11 CHECKED BY : AAC 12/11	REV. 4/15 MAA/TMG

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F. DECOLA
8/6/2026
Digitally signed by: Robert Decola

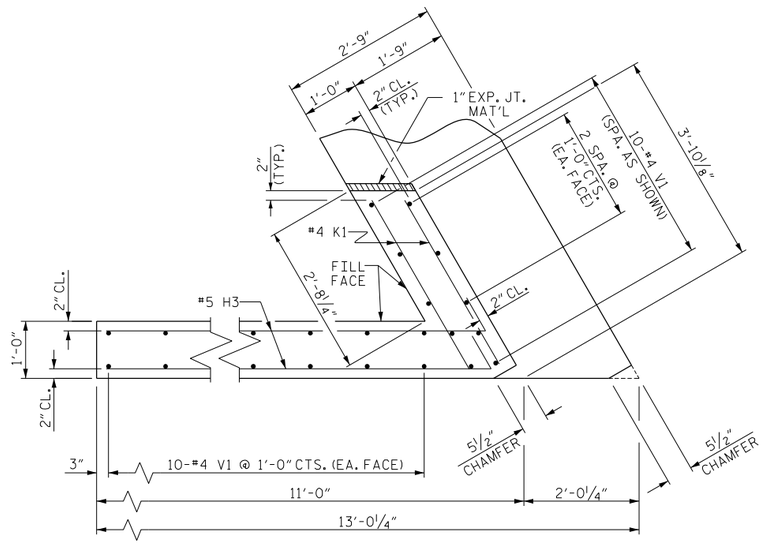
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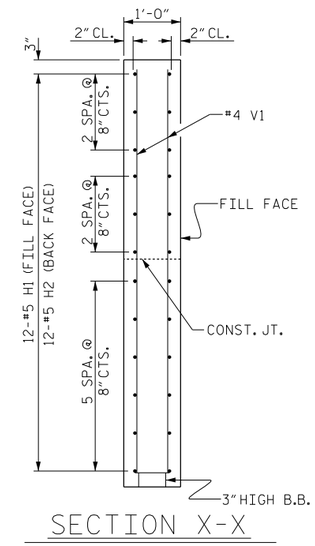
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-13
1			3			TOTAL SHEETS
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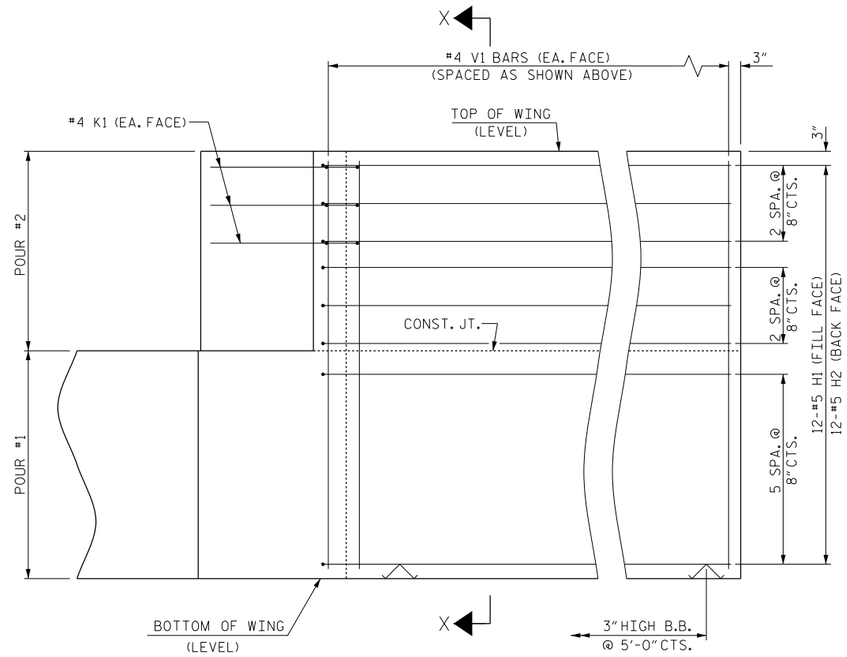
PLAN OF WING (W1)



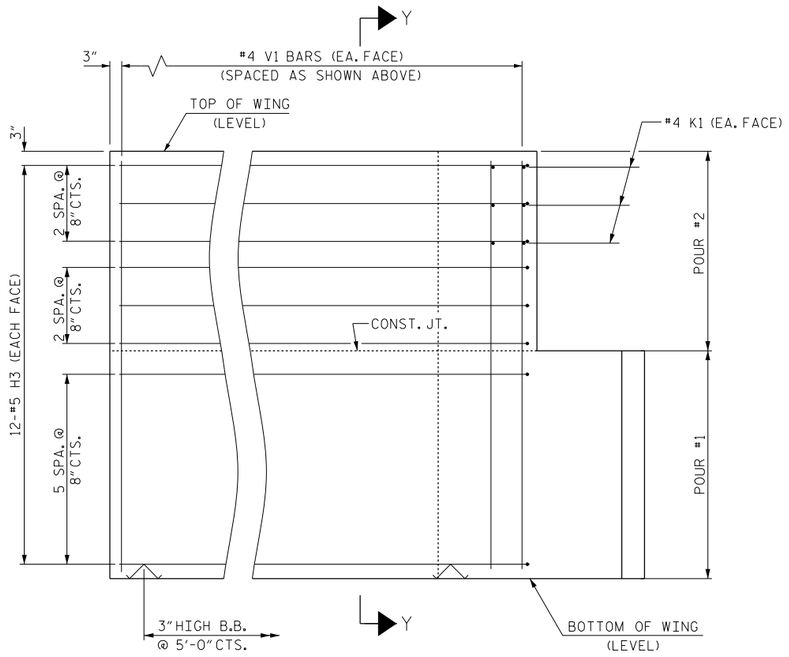
PLAN OF WING (W2)



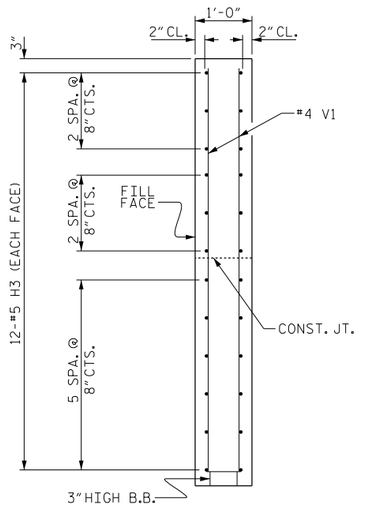
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION Y-Y

WING DETAILS

PROJECT NO. 17BP.13.R.184

MITCHELL/YANCEY COUNTY

STATION: 14+85.50 -L-

SHEET 2 OF 3

DESIGN ENGINEER OF RECORD: Robert Decola	DATE : 8/6/2026
ASSEMBLED BY : R.C. LARSON	DATE : 06/03/22
CHECKED BY : R.F. DECOLA	DATE : 06/08/22
DRAWN BY : WJH 12/11	REV. 4/15 MAA/TMG
CHECKED BY : AAC 12/11	

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F. DECOLA

8/6/2026

Robert Decola

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1
WING DETAILS

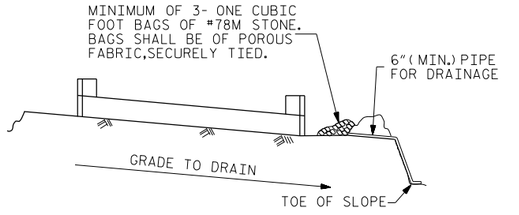
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STD. NO. EB_30_60S4_33BB

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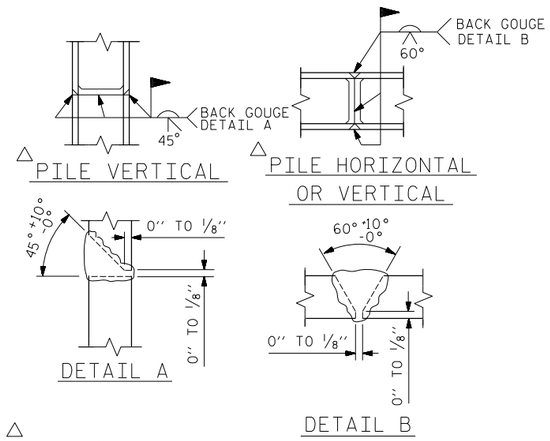


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

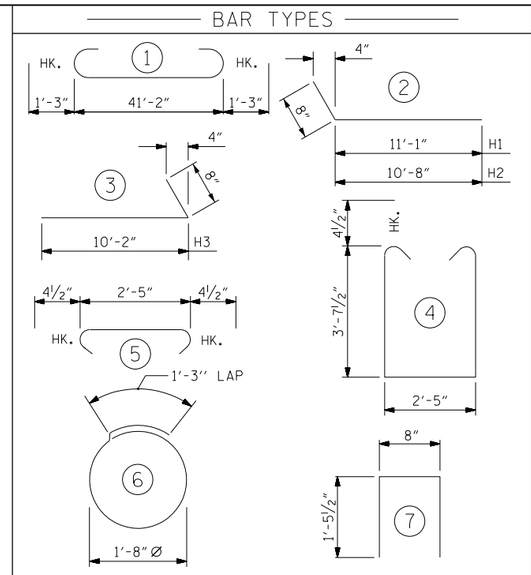
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

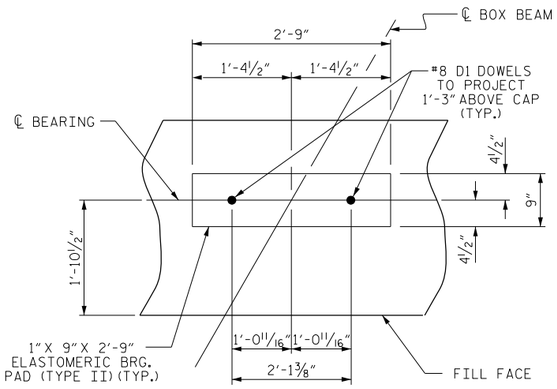
END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	43'-8"	1188
B2	28	#4	STR	21'-11"	410
B3	11	#4	STR	2'-5"	18
D1	20	#8	STR	2'-3"	120
H1	12	#5	2	11'-9"	147
H2	12	#5	2	11'-4"	142
H3	24	#5	3	10'-10"	271
K1	12	#4	STR	3'-3"	26
K2	12	#4	STR	21'-11"	176
S1	54	#4	4	10'-5"	376
S2	54	#4	5	3'-2"	114
S3	20	#4	6	6'-6"	87
U1	34	#4	7	3'-7"	81
V1	61	#4	STR	7'-2"	292
V2	68	#4	STR	5'-3"	238

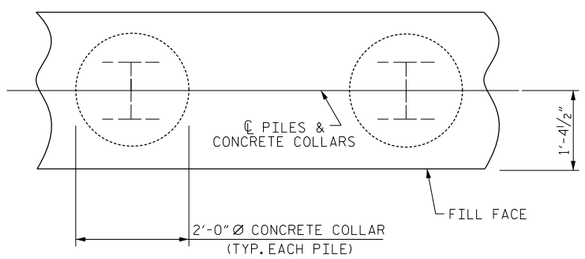
REINFORCING STEEL 3686 LBS.

CLASS A CONCRETE BREAKDOWN

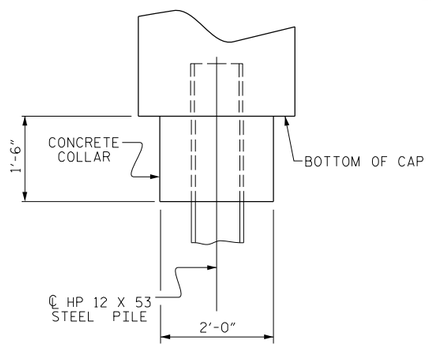
POUR #1	CAP, LOWER PART OF WINGS & COLLARS	20.8 C.Y.
POUR #2	BACKWALL & UPPER PART OF WINGS	5.6 C.Y.
TOTAL CLASS A CONCRETE		26.4 C.Y.



DETAIL ''A''

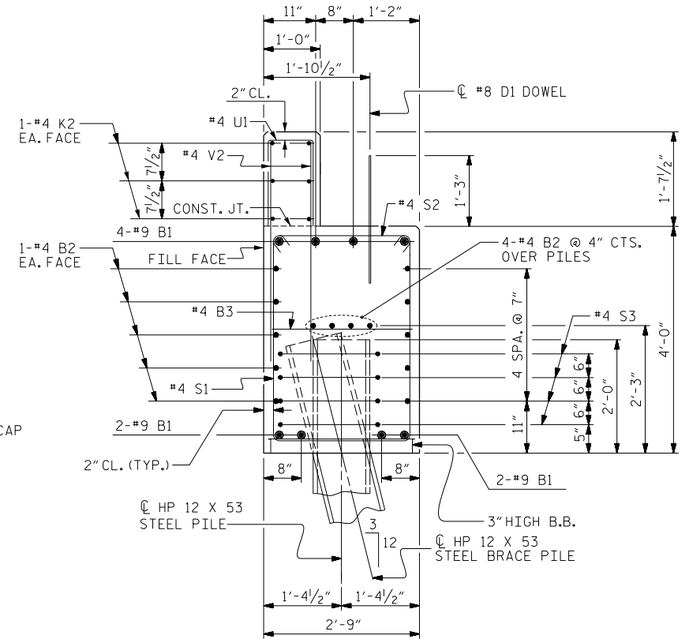


PLAN



ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL



SECTION A-A

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

PROJECT NO. 17BP.13.R.184

MITCHELL/YANCEY COUNTY

STATION: 14+85.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1 DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F. DECOLA
8/6/2026
Documents signed by:
Robert Decola
CP21B1026B0031B4BC

DESIGN ENGINEER OF RECORD: Robert Decola	DATE : 8/6/2026
DRAWN BY : R.C. LARSON	DATE : 06/03/22
CHECKED BY : R.F. DECOLA	DATE : 06/05/22

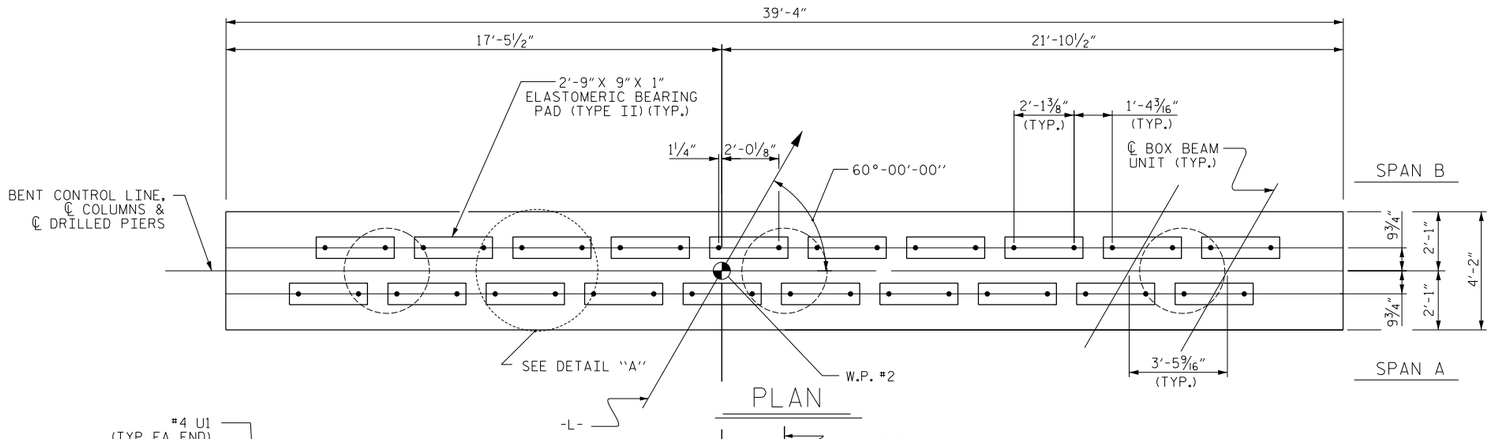
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS LICENSE NUMBER: C-0764
KCI Associates of North Carolina, P.A.
4800 Falls of Neuse Road, Suite 200 Raleigh, NC 27609-6270 Phone: (919) 783-9214

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-15
1			3			TOTAL SHEETS
2			4			23

STD. NO. EB_30_60S4_33BB

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7/10/2026 2:02:33 PM Robert.DeCola Structures_101.tbl Structures.pltcfg
KCI PROJ. #221601946.09G



ELEVATION

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

NOTES

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

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

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

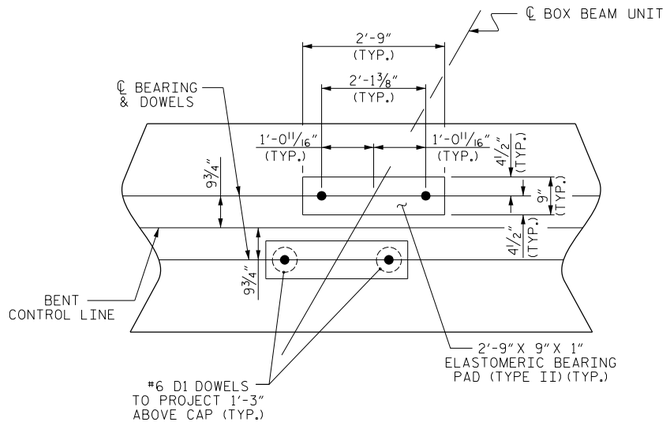
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

★ INVERT ALTERNATE STIRRUPS.

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

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

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



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. 17BP.13.R.184

MITCHELL/YANCEY COUNTY

STATION: 14+85.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F. DECOLA
Digitally signed by: Robert Decola
8/6/2026

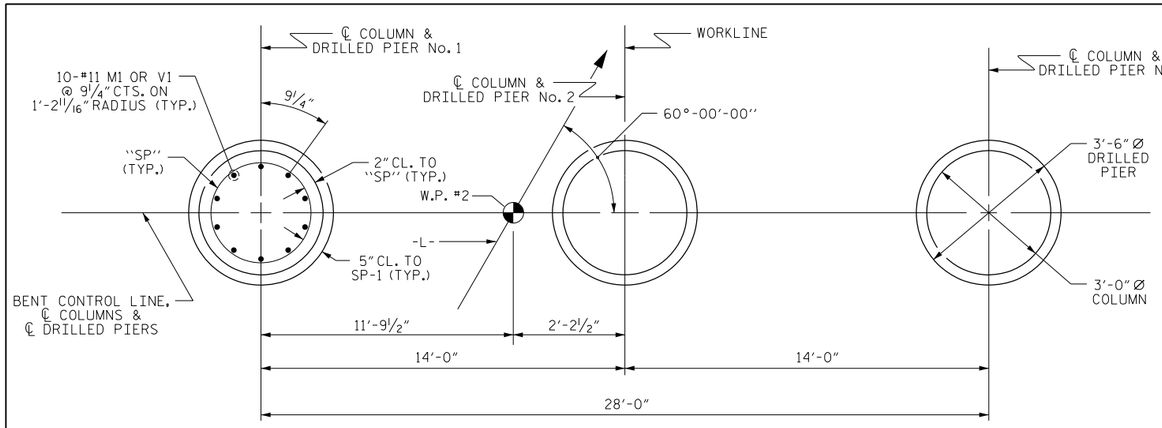
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NO.	BY:	DATE:	NO.	BY:	DATE:	S01-16
1			3			TOTAL SHEETS
2			4			23

DESIGN ENGINEER OF RECORD: Robert Decola	DATE :	8/6/2026
DRAWN BY : N.R. GIAGUNTO	DATE :	11/13/23
CHECKED BY : R.F. DECOLA	DATE :	11/21/23

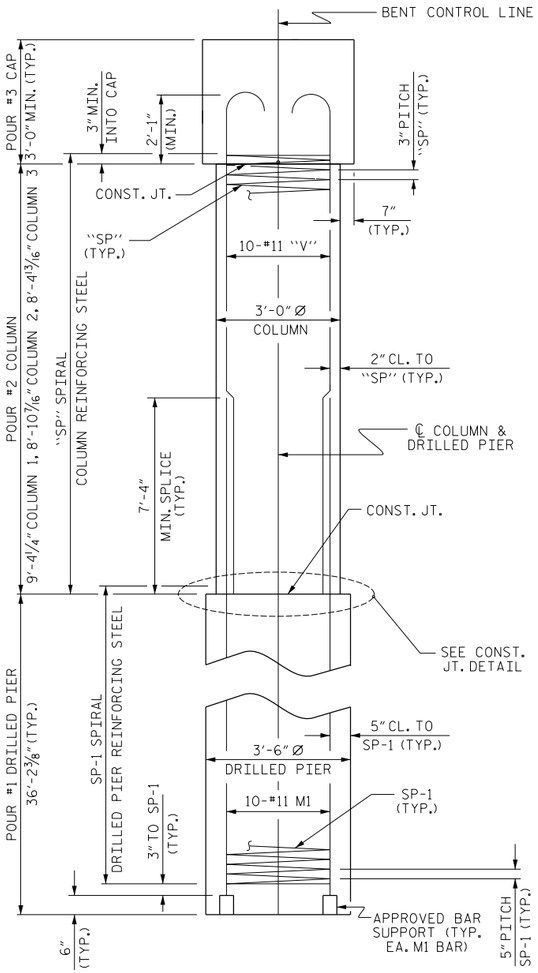
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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4601 Six Forks Road, Suite 200 Raleigh, NC 27609-6270 Phone (919) 783-9214

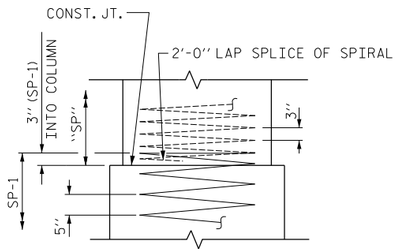
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KCI PROJ. #221601946.09G



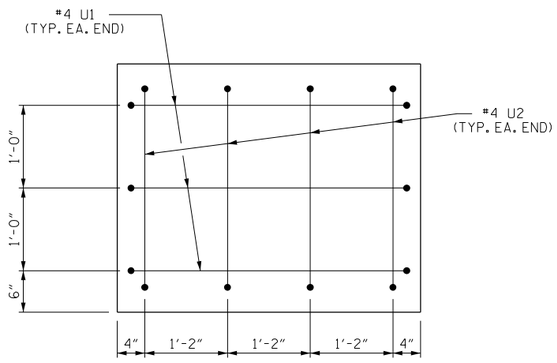
PLAN OF DRILLED PIERS & COLUMNS



END ELEVATION

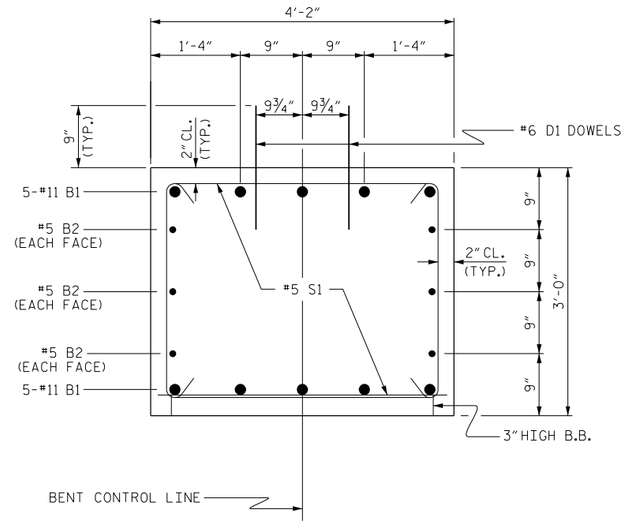


CONSTRUCTION JOINT DETAIL



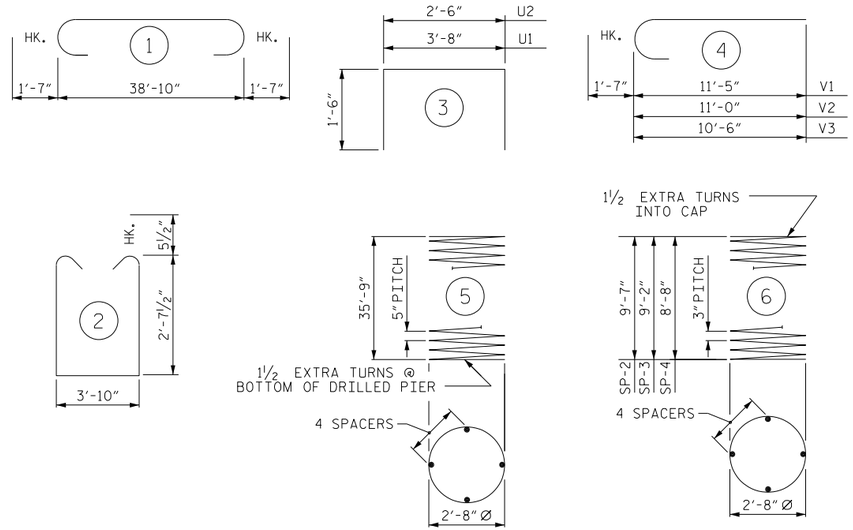
END OF CAP VIEW

(TYPICAL BOTH ENDS)



SECTION THRU CAP

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	1	42'-0"	2231
B2	6	#5	STR	39'-0"	244
D1	40	#6	STR	1'-6"	90
M1	30	#11	STR	43'-1"	6867
S1	92	#5	2	10'-0"	960
U1	6	#4	3	6'-8"	27
U2	8	#4	3	5'-6"	29
V1	10	#11	4	13'-0"	690
V2	10	#11	4	12'-7"	669
V3	10	#11	4	12'-1"	642
REINFORCING STEEL					12,449 LBS

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-1	3	*	5	726'-8"	2274
SP-2	1	**	6	328'-8"	220
SP-3	1	**	6	309'-4"	210
SP-4	1	**	6	295'-8"	199
SPIRAL COLUMN REINFORCING STEEL					2,903 LBS

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

** THE SP-2, SP-3 AND SP-4 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR

CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)

POUR #2 (COLUMNS)	6.9 C.Y.
POUR #3 (CAP)	18.2 C.Y.
TOTAL CLASS A CONCRETE	25.1 C.Y.

PROJECT NO. 17BP.13.R.184

MITCHELL/YANCEY COUNTY

STATION: 14+85.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F. DECOLA

8/6/2026

Digitally signed by: Robert Decola

DESIGN ENGINEER OF RECORD: Robert Decola — DATE: 8/6/2026

DRAWN BY: N. GIAGUNTO — DATE: 11/13/23

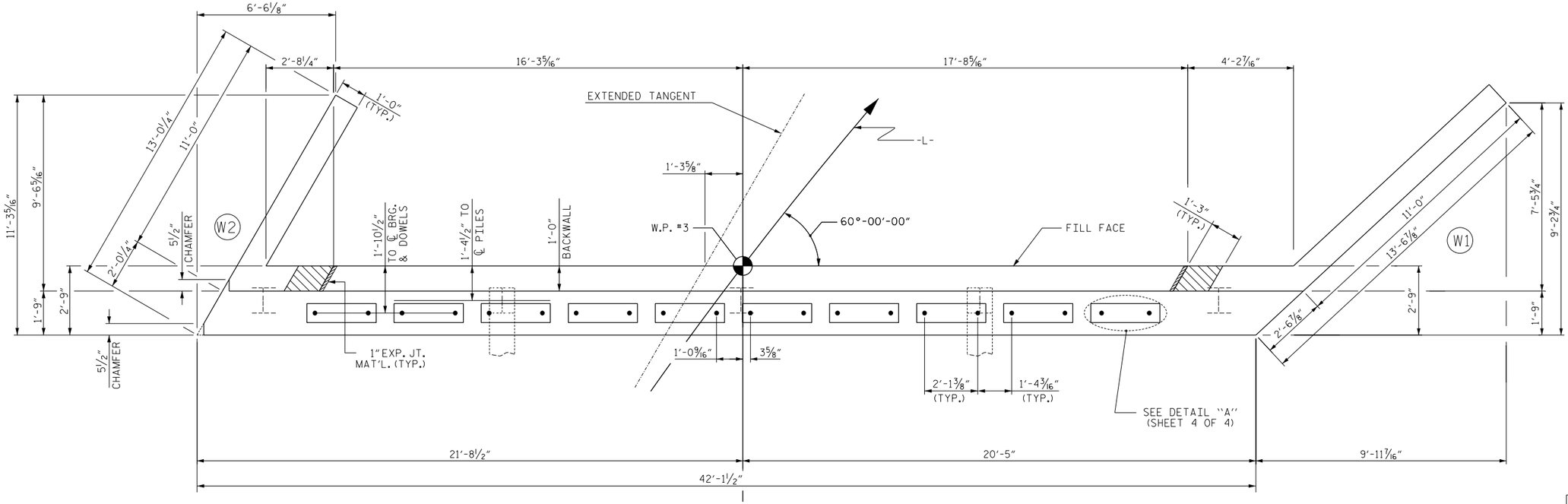
CHECKED BY: R.F. DECOLA — DATE: 11/14/23

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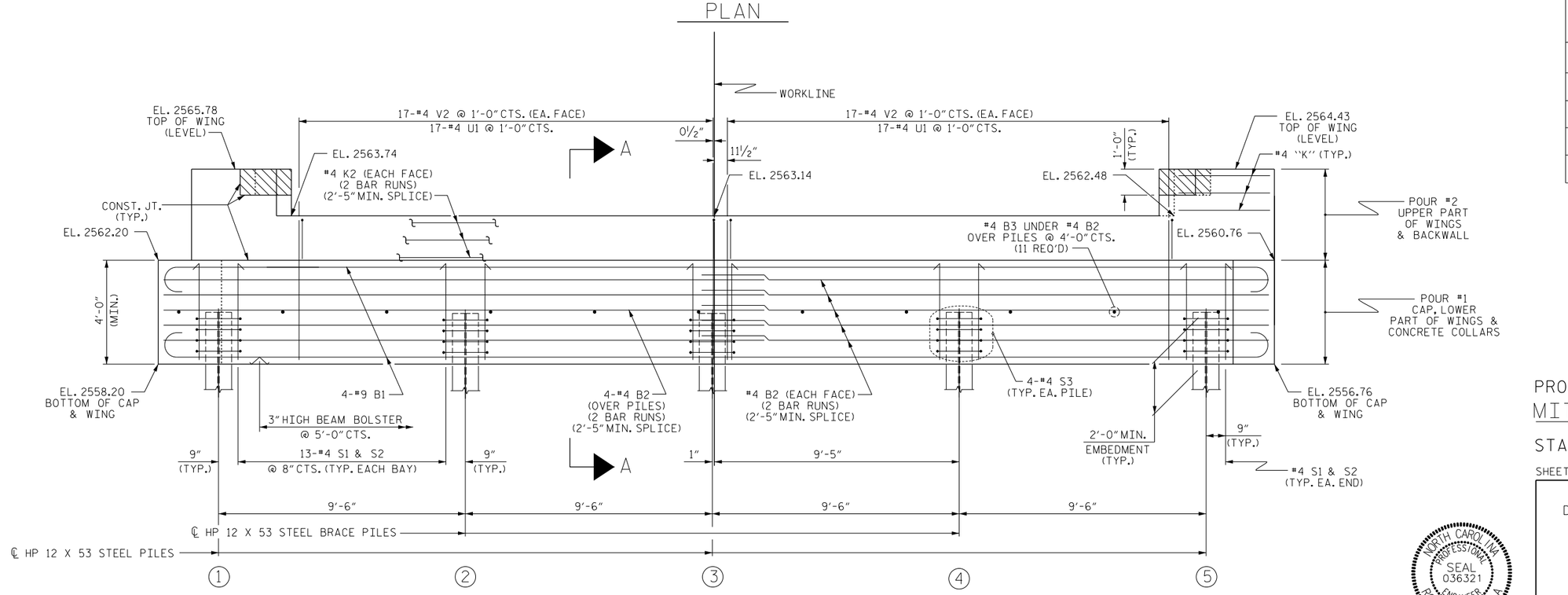
ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS LICENSE NUMBER: C-0764
KCI Associates of North Carolina, P.A.
4601 Six Forks Road, Suite 200 Raleigh, NC 27609-6270 Phone: (919) 783-9214

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2			4			23

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7/10/2026 2:02:56 PM Robert.DeCola Structures_101.tbl Structures.pltcfg
KCI PROJ. #221601946.09G



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 3 OF 3.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 3 OF 3.

NOTES

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

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

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

FOR WING DETAILS, SEE SHEET 2 OF 3.

TOP OF PILE ELEVATIONS

1	2560.17
2	2559.84
3	2559.51
4	2559.18
5	2558.85

PROJECT NO. 17BP.13.R.184
MITCHELL/YANCEY COUNTY
STATION: 14+85.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2

DESIGN ENGINEER OF RECORD: Robert Decola	DATE: 8/6/2026
ASSEMBLED BY : R.C. LARSON	DATE : 06/01/22
CHECKED BY : R.F. DECOLA	DATE : 06/03/22
CHECKED BY : AAC 12/11	REV. 4/15 MAA/TMG

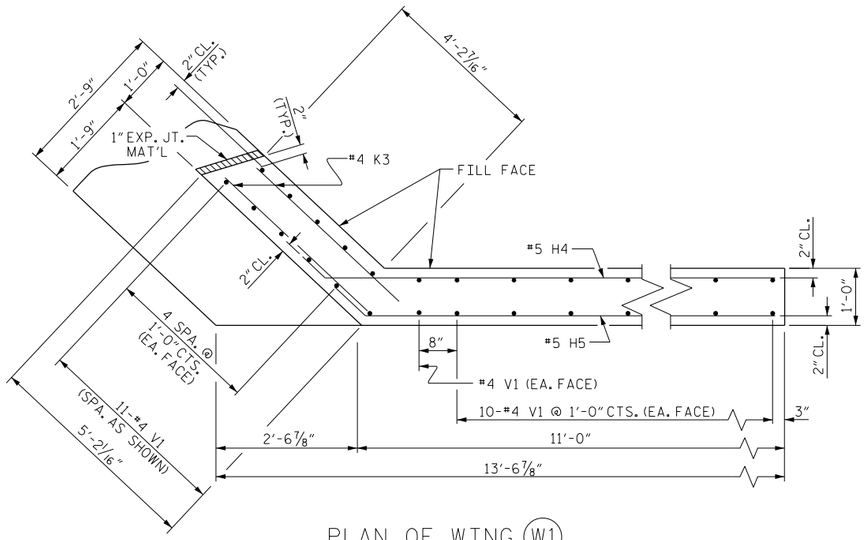
NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F. DECOLA
8/6/2026
Digitally signed by: Robert Decola

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

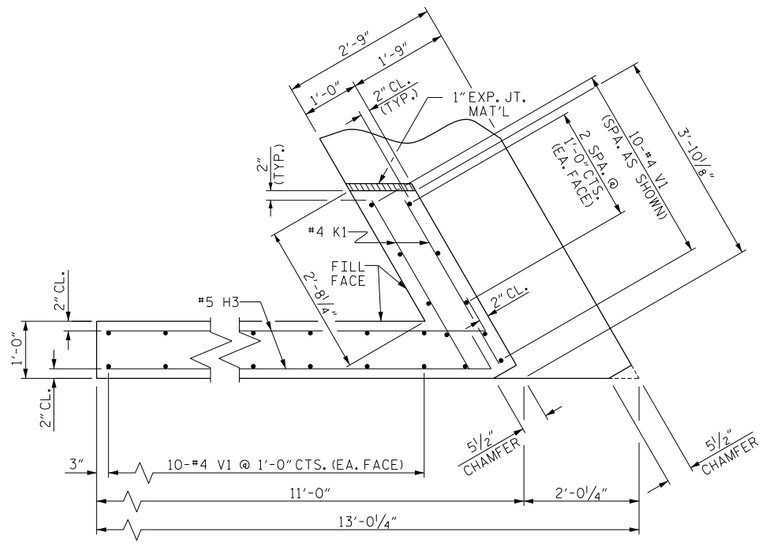
ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS LICENSE NUMBER: C-0764
KCI Associates of North Carolina, P.A.
4601 Six Forks Road, Suite 200 Raleigh, NC 27609-5270 Phone: (919) 783-9214

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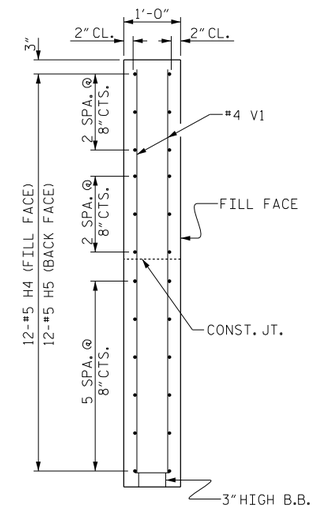
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KCI PROJ. #221601946.09G



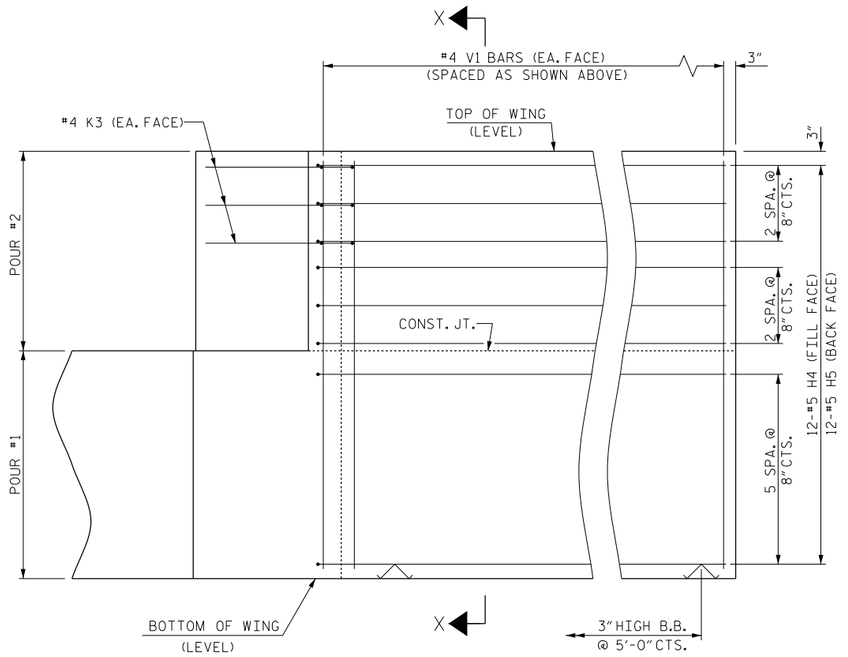
PLAN OF WING (W1)



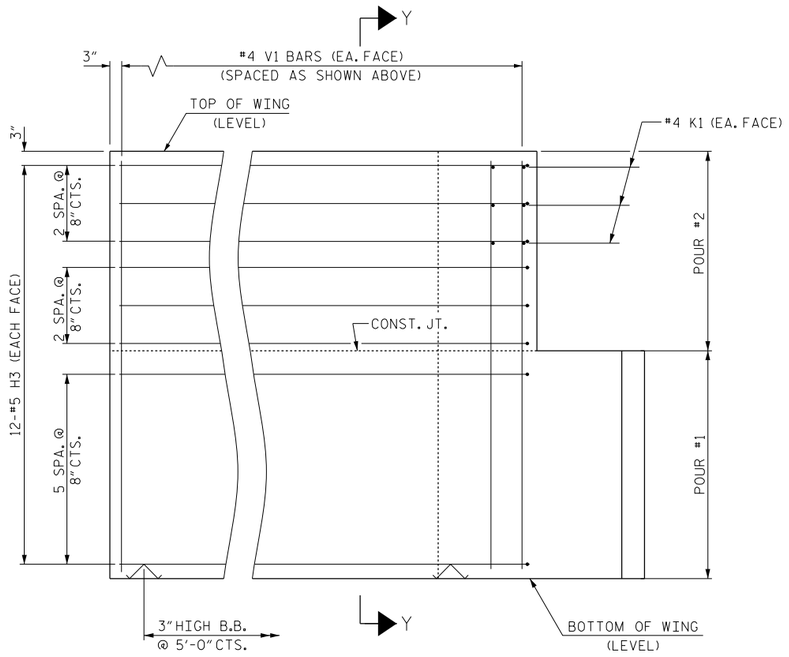
PLAN OF WING (W2)



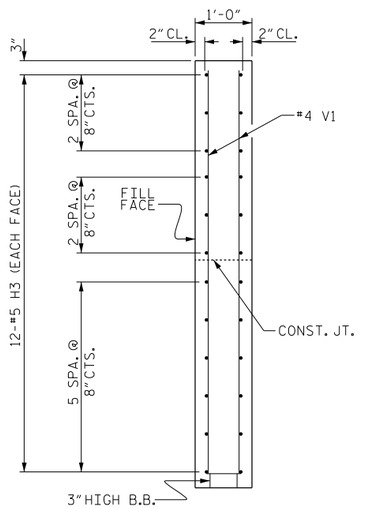
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION Y-Y

WING DETAILS

PROJECT NO. 17BP.13.R.184

MITCHELL/YANCEY COUNTY

STATION: 14+85.50 -L-

SHEET 2 OF 3

DESIGN ENGINEER OF RECORD: Robert Decola	DATE: 8/6/2026
ASSEMBLED BY : R.C. LARSON	DATE : 06/01/22
CHECKED BY : R.F. DECOLA	DATE : 06/03/22
DRAWN BY : WJH 12/11	REV. 4/15 MAA/TMG
CHECKED BY : AAC 12/11	

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F. DECOLA

8/6/2026

DocuSigned by: Robert Decola C81D1DED951D4FF...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS LICENSE NUMBER: C-0764

KCI Associates of North Carolina, P.A.

4800 Falls of Neuse Road, Suite 200 Raleigh, NC 27609-6270 Phone (919) 783-9214

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

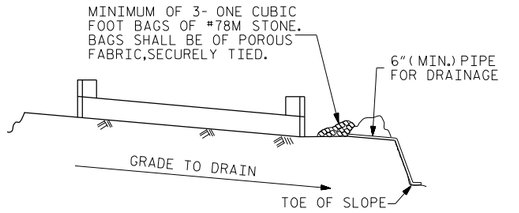
SUBSTRUCTURE

END BENT 2
WING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-19
1			3			TOTAL SHEETS
2			4			23

STD. NO. EB_30_60S4_33BB

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KCI PROJ. #221601946.09G

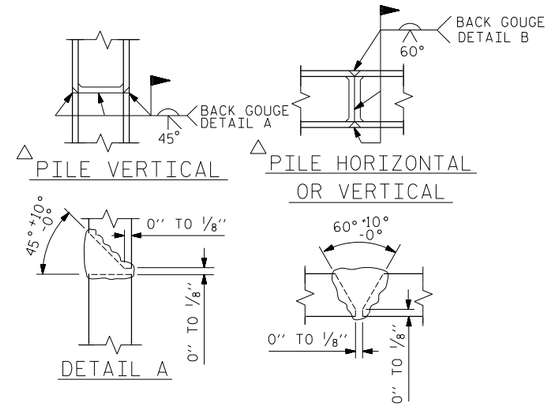


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

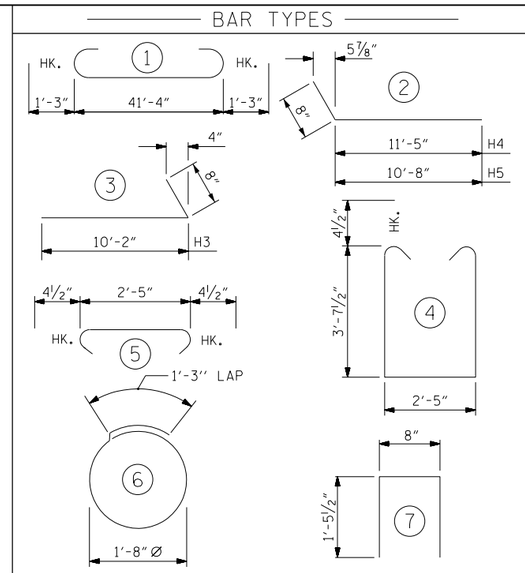
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



BILL OF MATERIAL

END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	43'-10"	1192
B2	28	#4	STR	21'-11"	410
B3	11	#4	STR	2'-5"	18
D1	20	#8	STR	2'-3"	120
H3	24	#5	3	10'-10"	271
H4	12	#5	2	12'-1"	151
H5	12	#5	2	11'-4"	142
K1	6	#4	STR	3'-3"	13
K2	12	#4	STR	21'-11"	176
K3	6	#4	STR	4'-10"	19
S1	54	#4	4	10'-5"	376
S2	54	#4	5	3'-2"	114
S3	20	#4	6	6'-6"	87
U1	34	#4	7	3'-7"	81
V1	63	#4	STR	7'-2"	302
V2	68	#4	STR	5'-3"	238

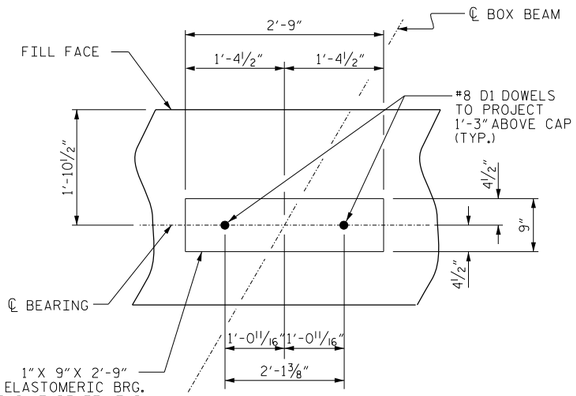
REINFORCING STEEL 3710 LBS.

CLASS A CONCRETE BREAKDOWN

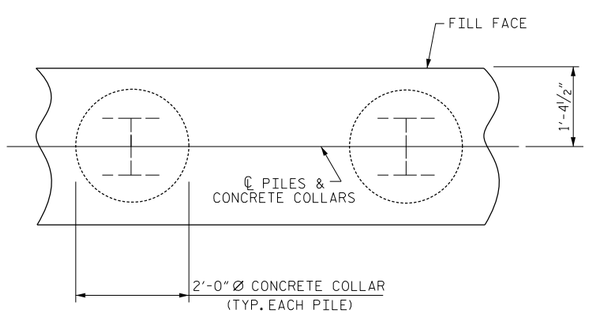
POUR #1 CAP, LOWER PART OF WINGS & COLLARS 21.2 C.Y.

POUR #2 BACKWALL & UPPER PART OF WINGS 5.7 C.Y.

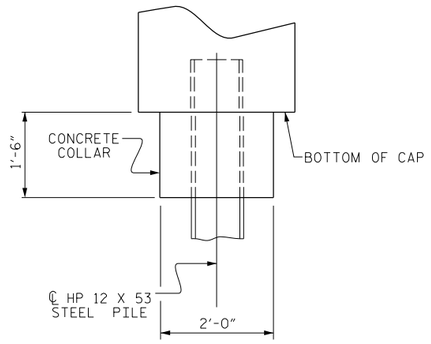
TOTAL CLASS A CONCRETE 26.9 C.Y.



DETAIL ''A''

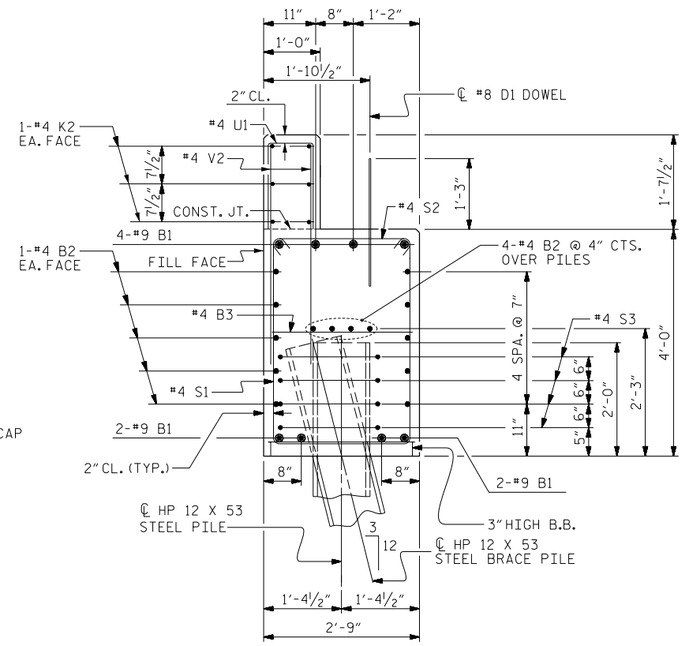


PLAN



ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL



SECTION A-A

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

PROJECT NO. 17BP.13.R.184

MITCHELL/YANCEY COUNTY

STATION: 14+85.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2 DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F DECOLA

Digitally signed by: Robert Decola 8/6/2026

DESIGN ENGINEER OF RECORD: Robert Decola DATE: 8/6/2026

DRAWN BY: R.C. LARSON DATE: 06/03/22

CHECKED BY: R.F. DECOLA DATE: 06/05/22

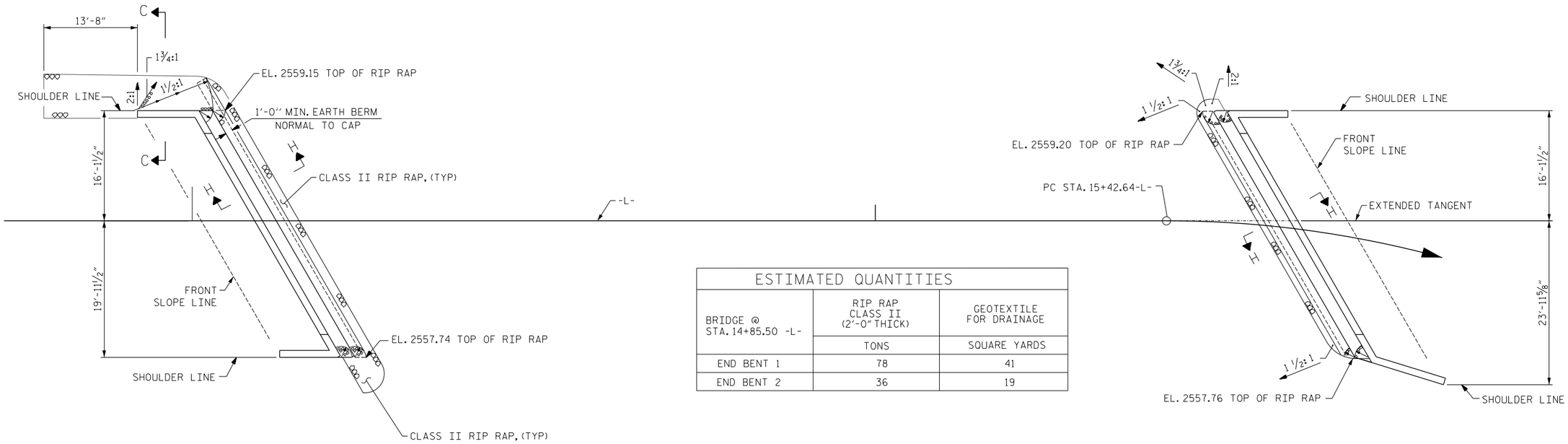
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ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS LICENSE NUMBER: C-0764
KCI Associates of North Carolina, P.A.
4800 Falls of Neuse Road, Suite 200 Raleigh, NC 27609-6270 Phone (919) 783-9214

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2			4			23

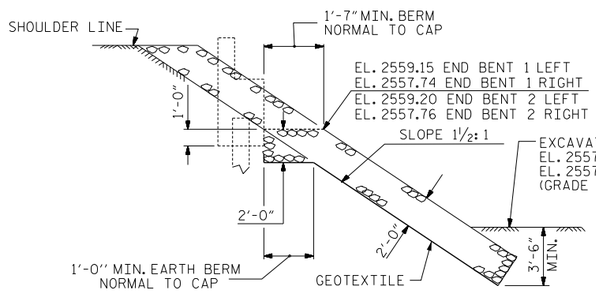
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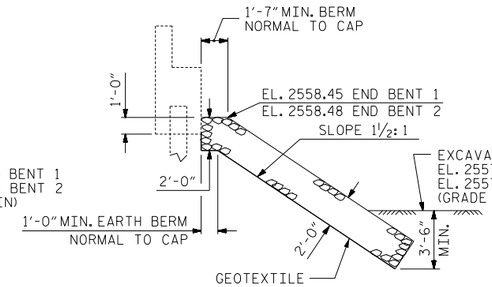


BERM RIP RAPPED

ESTIMATED QUANTITIES		
BRIDGE @ STA. 14+85.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	78	41
END BENT 2	36	19

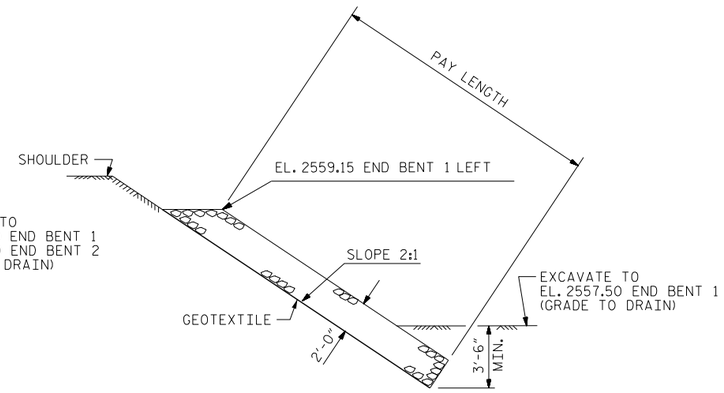


SECTION H-H



SECTION ALONG GRADE LINE

BERM RIP RAPPED



SECTION C-C

PROJECT NO. 17BP.13.R.184

MITCHELL/YANCEY COUNTY

STATION: 14+85.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT C DECOLA

8/6/2026

DocuSigned by: Robert Decola C91B1BEB951BAFF...

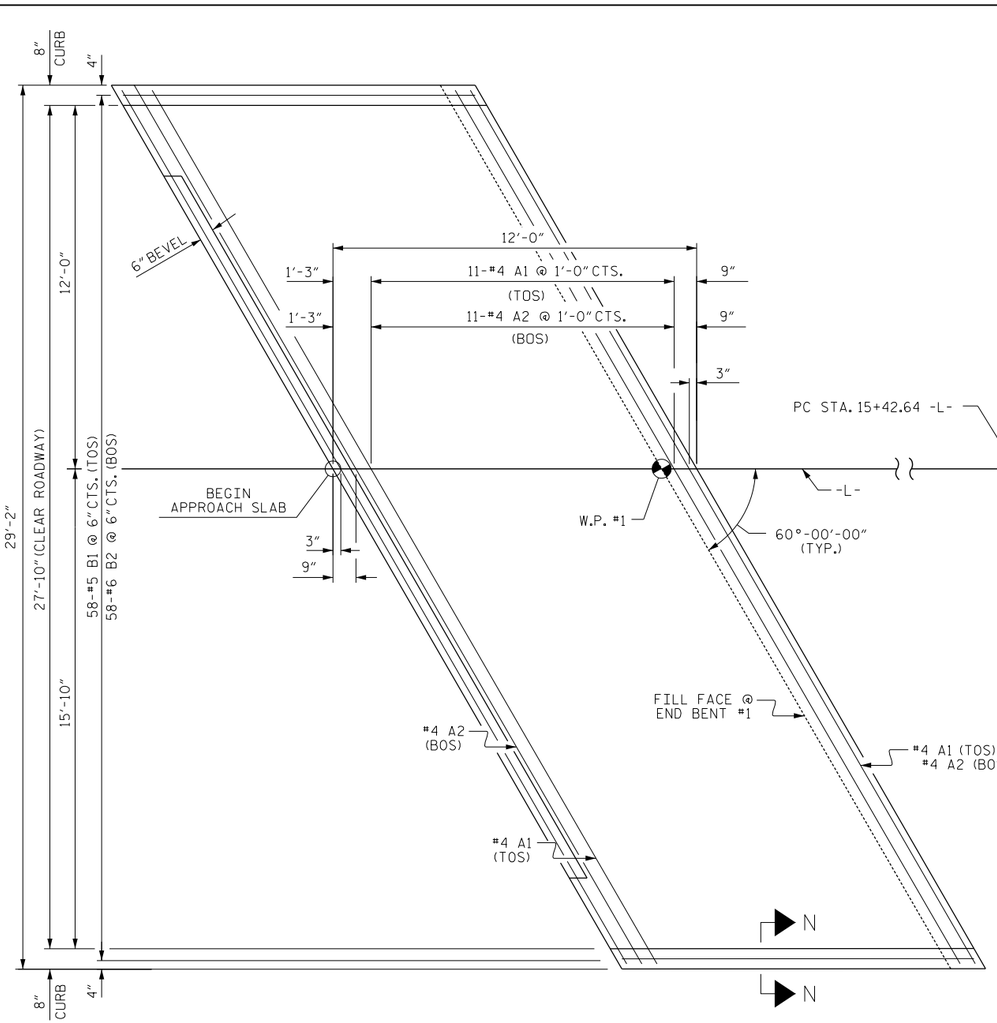
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DRAWN BY : R.C. LARSON	DATE : 06/02/22
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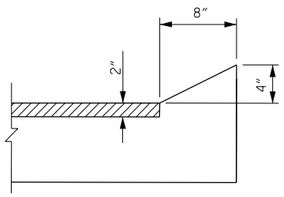
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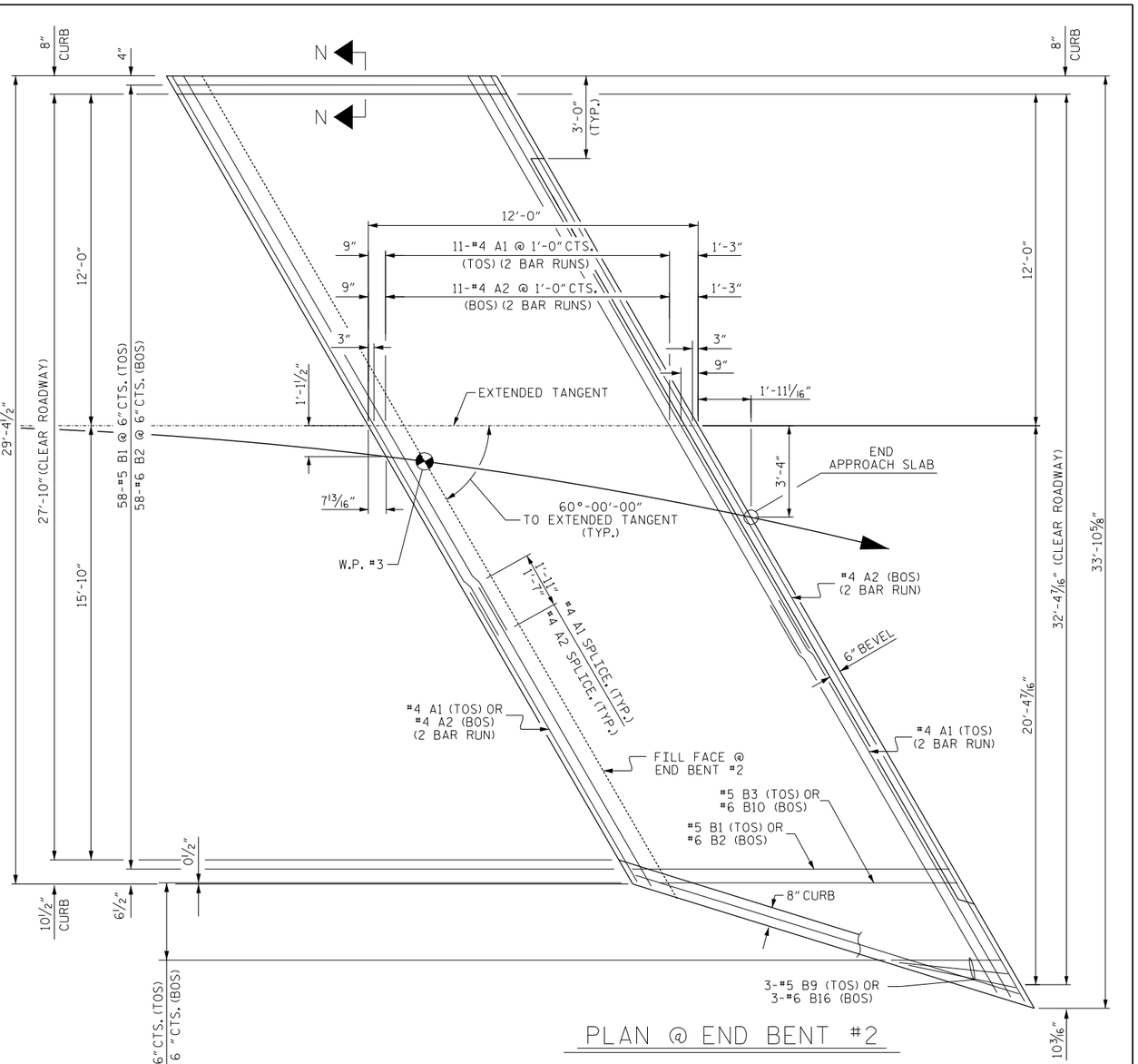


PLAN @ END BENT #1

(TOS) DENOTES TOP OF SLAB
(BOS) DENOTES BOTTOM OF SLAB



SECTION N-N



PLAN @ END BENT #2

PROJECT NO. 17BP.13.R.184
MITCHELL/YANCEY COUNTY
STATION: 14+85.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE BOX BEAM UNIT (SUB-REGIONAL TIER) 60° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F. DECOLA
8/6/2026
Robert Decola

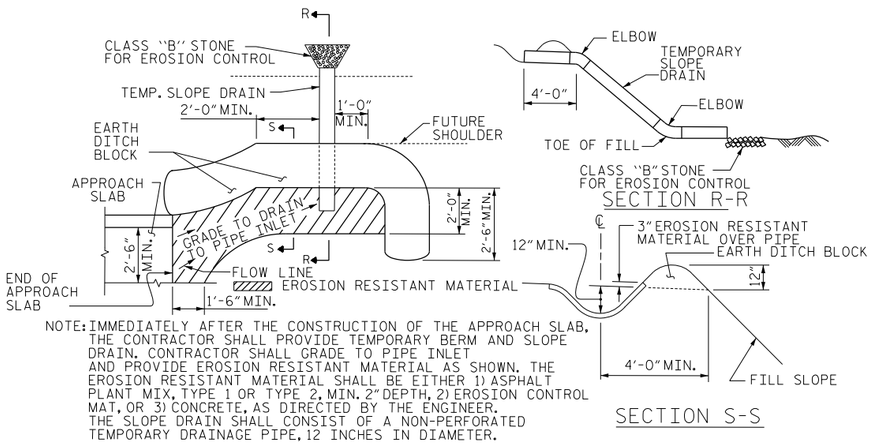
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NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE 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)

NOTES

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

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

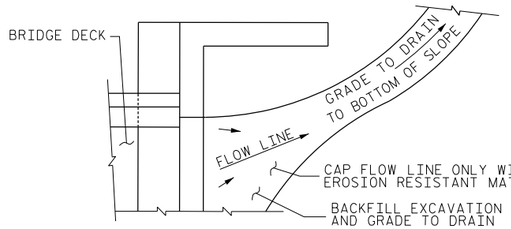
SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

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

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.

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

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

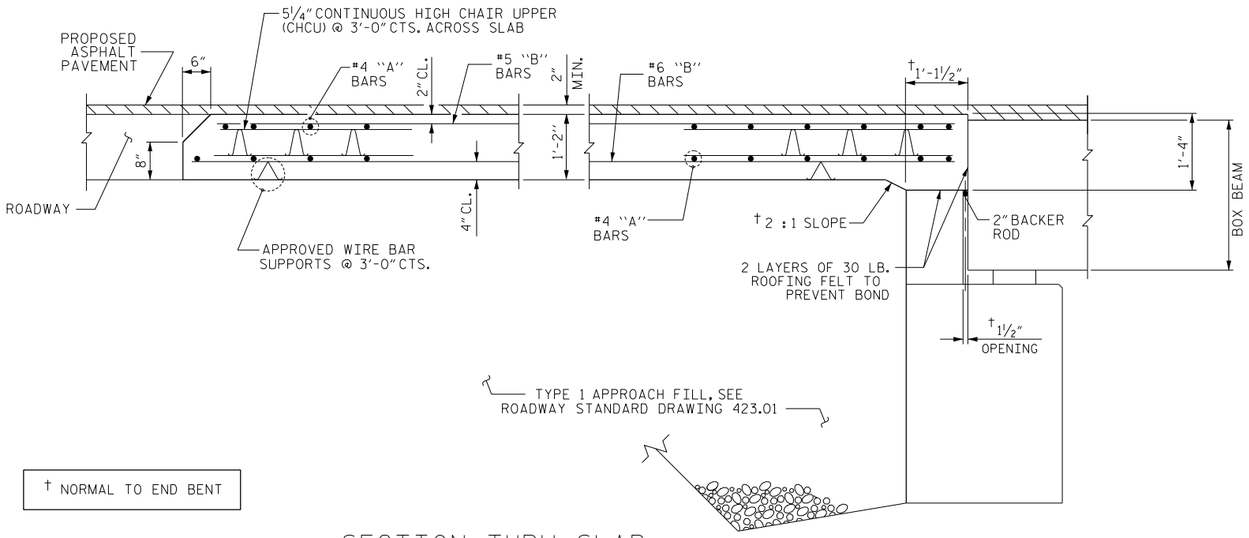
BILL OF MATERIAL

APPROACH SLAB AT EB #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱ A1	13	#4	STR	33'-3"	289
A2	13	#4	STR	33'-3"	289
✱ B1	58	#5	STR	11'-1"	670
B2	58	#6	STR	11'-7"	1009
REINFORCING STEEL				LBS.	1298
✱ EPOXY COATED REINFORCING STEEL				LBS.	959
CLASS AA CONCRETE				C. Y.	15.5

APPROACH SLAB AT EB #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱ A1	26	#4	STR	20'-5"	355
A2	26	#4	STR	20'-3"	352
✱ B1	58	#5	STR	11'-1"	670
B2	58	#6	STR	11'-7"	1009
✱ B3	1	#5	STR	11'-4"	12
✱ B4	1	#5	STR	10'-0"	10
✱ B5	1	#5	STR	8'-8"	9
✱ B6	1	#5	STR	7'-4"	8
✱ B7	1	#5	STR	6'-0"	6
✱ B8	1	#5	STR	4'-8"	5
✱ B9	3	#5	STR	3'-4"	10
B10	1	#6	STR	11'-4"	17
B11	1	#6	STR	10'-0"	15
B12	1	#6	STR	8'-8"	13
B13	1	#6	STR	7'-4"	11
B14	1	#6	STR	6'-0"	9
B15	1	#6	STR	4'-8"	7
B16	3	#6	STR	3'-4"	15
REINFORCING STEEL				LBS.	1448
✱ EPOXY COATED REINFORCING STEEL				LBS.	1085
CLASS AA CONCRETE				C. Y.	16.5



† 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"

PROJECT NO. 17BP.13.R.184

MITCHELL/YANCEY COUNTY

STATION: 14+85.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE BOX BEAM UNIT (SUB-REGIONAL TIER) 60° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F. DECOLA

8/6/2026

DocuSigned by: Robert Decola C81D1B2B001B4FF...

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STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

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

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

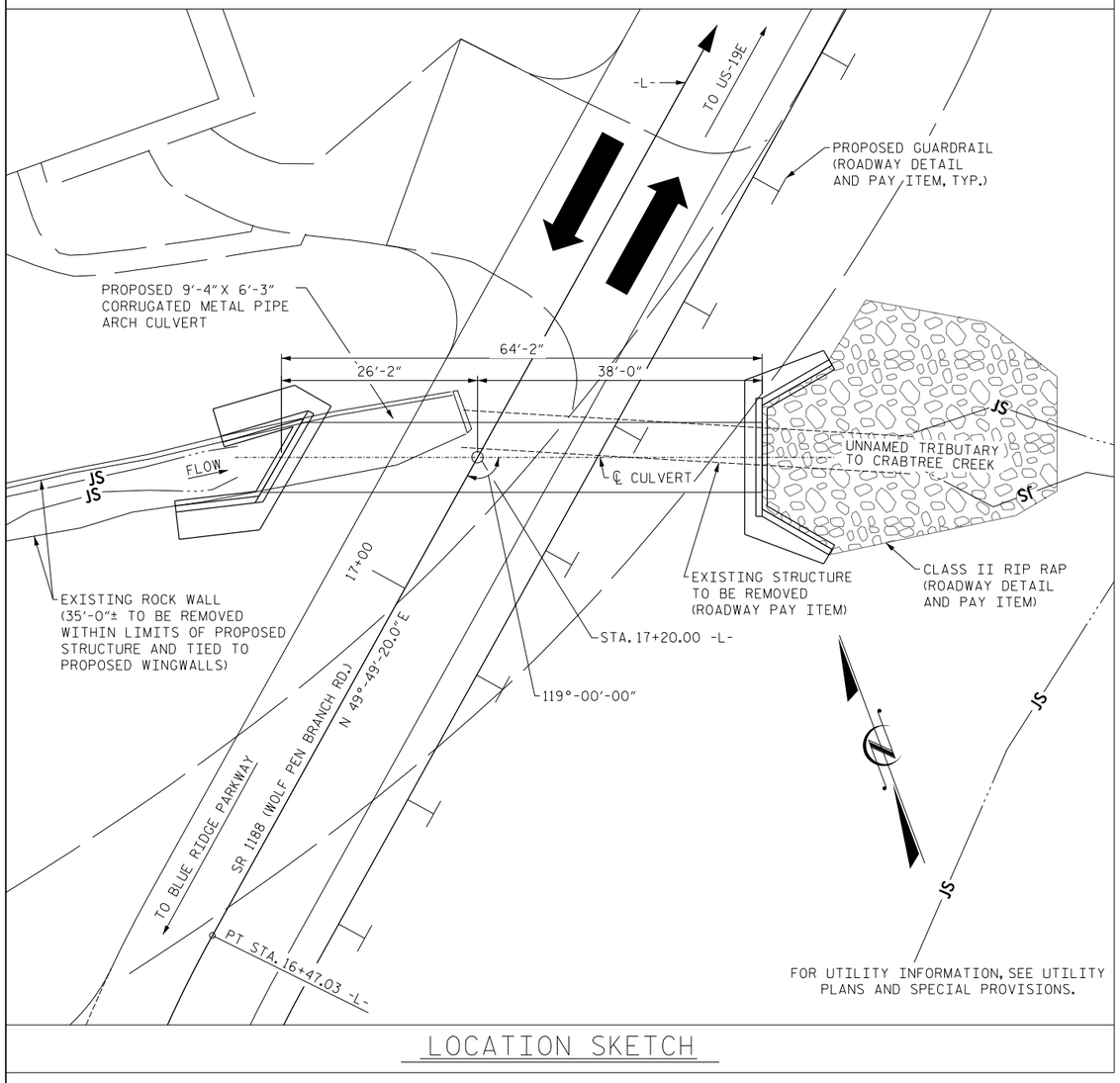
HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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



LOCATION SKETCH

ROADWAY DATA

GRADE POINT ELEV @ STA. 17+20.00 -L- = 2561.10
BED ELEV @ STA. 17+20.00 -L- = 2549.24
ROADWAY SLOPES = 2:1

HYDRAULIC DATA

DESIGN DISCHARGE	= 370 CFS
FREQUENCY OF DESIGN FLOOD	= 25 YRS
DESIGN HIGH WATER ELEVATION	= 2557.8
DRAINAGE AREA	= 428 AC
BASE DISCHARGE (Q100)	= 600 CFS
BASE HIGH WATER ELEVATION	= 2560.3

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 465 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 50± YRS
OVERTOPPING FLOOD ELEVATION	= 2559.7

OVERTOPS ROADWAY SHOULDER STA. 18+00 -L- LT

TOTAL STRUCTURE QUANTITIES

✳FOUNDATION CONDITIONING GEOTEXTILE	102 SY
112" x 75" CAA STRUCTURAL PLATE PIPE ARCH	64 LIN. FT.
✳FOUNDATION CONDITIONING MATERIAL	65 TONS
CLASS A CONCRETE	26.3 CY
REINFORCING STEEL	1847 LB

✳ROADWAY DETAIL & PAY ITEM.

NOTES:

ASSUMED LIVE LOAD ---------- HL-93 OR ALTERNATE LOADING.

DESIGN FILL---------- MIN = 4.8' MAX = 5.7'

MATERIALS SHALL MEET THE REQUIREMENTS OF THE NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES DATED JANUARY 2024.

THE DETAILS SHOWN ARE FOR GENERAL LAYOUT ONLY. THE FABRICATOR SHALL PROVIDE DESIGNS AND DETAILS THAT MEET THE REQUIREMENTS OF AASHTO SECTION 12 AND ARE SEALED BY A NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER.

THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF THE CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.

THE EXISTING STRUCTURE, CONSISTING OF 1 - 60" CORRUGATED METAL PIPE WITH A CLEAR ROADWAY WIDTH OF 18 FT±, AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED.

FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR "112" X 75" CAA STRUCTURAL PLATE PIPE ARCH", SEE SPECIAL PROVISIONS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR CULVERT BACKFILL, SEE SPECIAL PROVISIONS.

FOR CULVERT DIVERSION DETAIL AND PAY ITEM, SEE EROSION CONTROL PLANS.

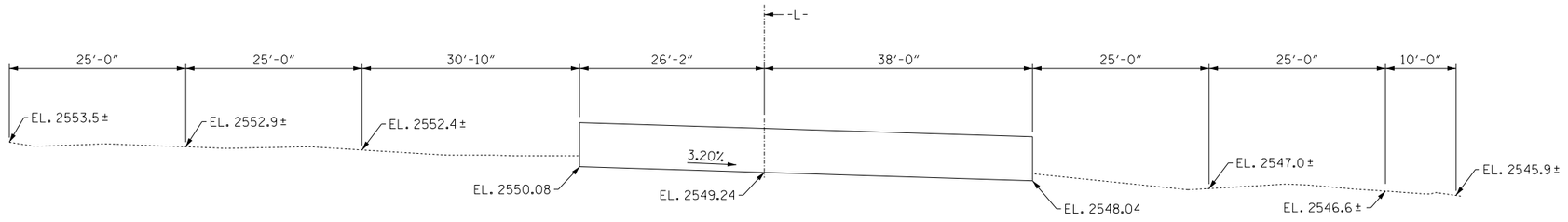
FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS.

FOUNDATION NOTES:

FOR PIPE CULVERT EXCAVATION, SEE SECTION 300 OF THE STANDARD SPECIFICATIONS.

THE PIPE CULVERT SHALL BE PLACED ON THE STANDARD 1.0 FOOT BLANKET OF FOUNDATION CONDITIONING MATERIAL.

UNDERCUT SOFT/VERY LOOSE SOILS THAT MAY BE ENCOUNTERED BENEATH THE BOTTOM OF THE FOUNDATION CONDITIONING MATERIAL. BACKFILL UNDERCUT AREAS WITH FOUNDATION CONDITIONING MATERIAL. IF MORE THAN 1 FT OF ADDITIONAL UNDERCUT IS REQUIRED, CONTACT THE OPERATIONS ENGINEER FOR APPROVAL.



PROFILE ALONG ℄ CULVERT

PROJECT NO. 17BP.13.R.184
YANCEY COUNTY
STATION: 17+20.00 -L-
PIPE ID BP-100-4064

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

9'-4" × 6'-3" CORRUGATED METAL PIPE ARCH CULVERT 119°-00'-00" SKEW

NORTH CAROLINA PROFESSIONAL SEAL 36321 ENGINEER ROBERT F. DECOLA
8/6/2026
DocuSigned by: Robert Decola C91B1BEB9B1B4FF...

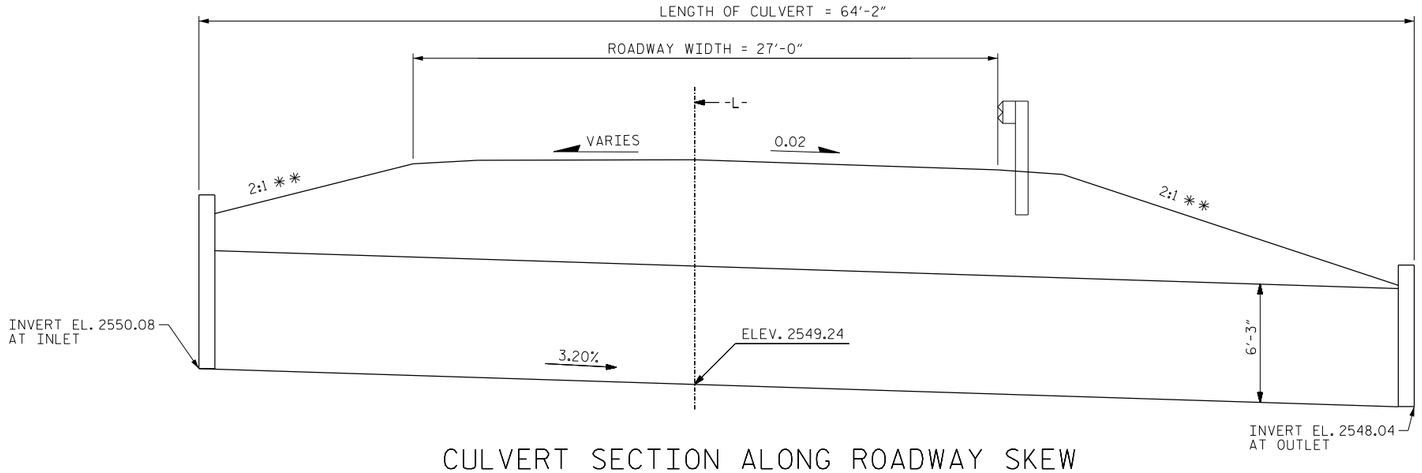
DESIGN ENGINEER OF RECORD: R.F. DECOLA	DATE: 8/6/2026
DRAWN BY: M.G. ARMSTRONG	DATE: 5/19/22
CHECKED BY: R.F. DECOLA	DATE: 6/01/22

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS LICENSE NUMBER: C-0764
KCI Associates of North Carolina, P.A.
4800 Falls of Neuse Road, Suite 200, Raleigh, NC 27609-6270 Phone (919) 783-9214

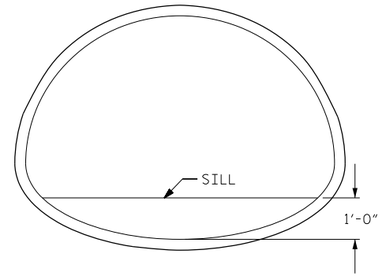
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S02-01
1			3			TOTAL SHEETS
2			4			5

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KCI PROJ. #22133395.05



CULVERT SECTION ALONG ROADWAY SKEW

** SLOPES SHALL BE AS SHOWN OR FLATTER
TO PROVIDE 1'-0" MIN. COVER AT INLET AND OUTLET



SECTION A-A

TYPICAL EACH SILL/BAFFLE LOCATION

NOTES:

1) NATIVE MATERIAL BETWEEN SILLS/BAFFLES IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL. NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED AT THE PROJECT SITE DURING CONSTRUCTION. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.
2) SILLS/BAFFLES ARE TO BE MECHANICALLY ATTACHED TO INVERT OF PIPE ARCH.
3) TOP OF LOW FLOW SILLS/BAFFLES SHOULD MATCH STREAM BED ELEVATION IN LOW FLOW CHANNEL OF STREAM. (THALWEG)

PLAN

NOTE: ALL DIMENSIONS NOT SHOWN TO BE PROVIDED BY FABRICATOR.

PROJECT NO. 17BP.13.R.184
YANCEY COUNTY
STATION: 17+20.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

9'-4" × 6'-3" CORRUGATED METAL PIPE ARCH CULVERT 119°-00'-00" SKEW

NORTH CAROLINA PROFESSIONAL SEAL 36321 ENGINEER ROBERT F. DECOLA
8/6/2026
Robert Decola
DocuSigned by:

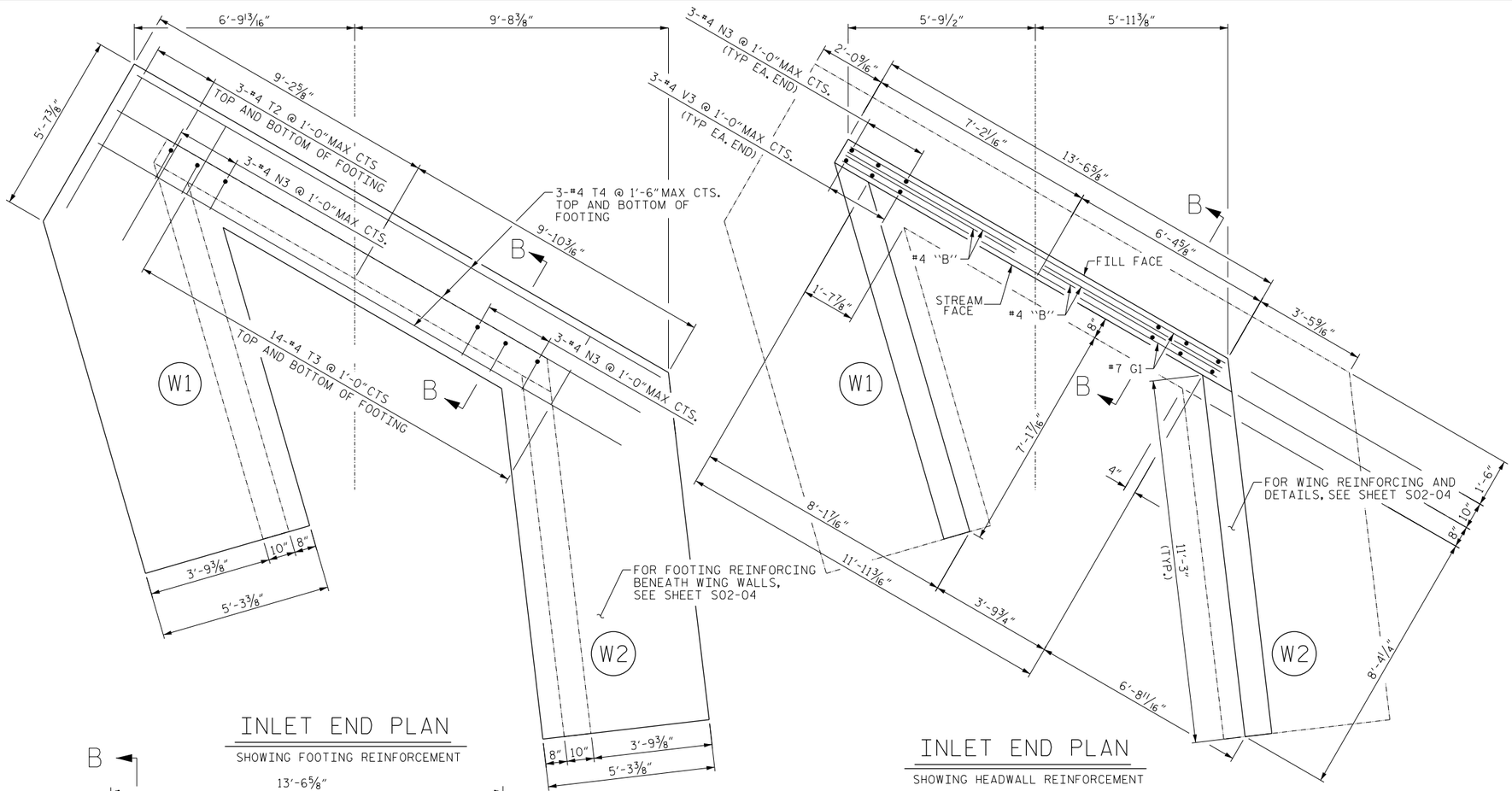
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DRAWN BY : M.G. ARMSTRONG	DATE : 5/19/22
CHECKED BY : R.F. DECOLA	DATE : 6/01/22

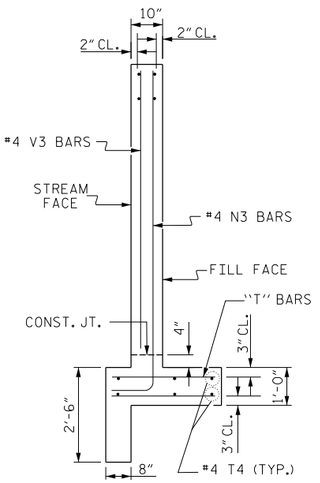
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2			4			5

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KCI PROJ. #22133395.05



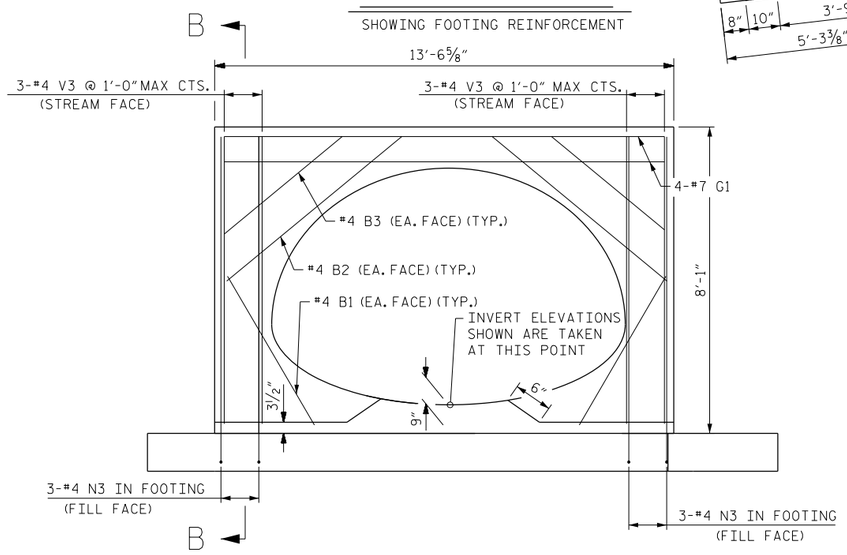


SECTION B-B

#4 "B" BARS NOT SHOWN FOR CLARITY

INLET END PLAN

SHOWING FOOTING REINFORCEMENT

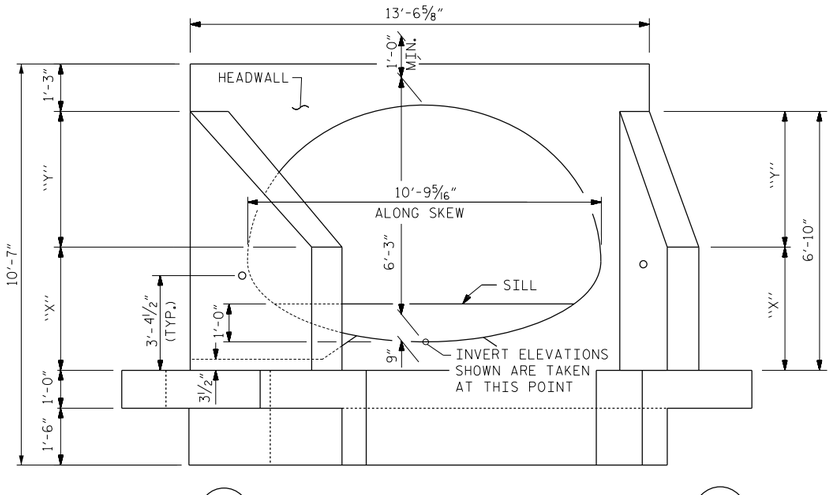


INLET END ELEVATION

SHOWING HEADWALL REINFORCEMENT

INLET END PLAN

SHOWING HEADWALL REINFORCEMENT



INLET END ELEVATION

FOR DIMENSIONS "X" AND "Y", SEE SHEET S02-04.

PROJECT NO. 17BP.13.R.184

YANCEY COUNTY

STATION: 17+20.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ENDWALL DETAILS
9'-4" × 6'-3"
CORRUGATED METAL
PIPE ARCH CULVERT
119°-00'-00" SKEW

NORTH CAROLINA PROFESSIONAL SEAL 36321 ENGINEER ROBERT F. DECOLA
8/6/2026

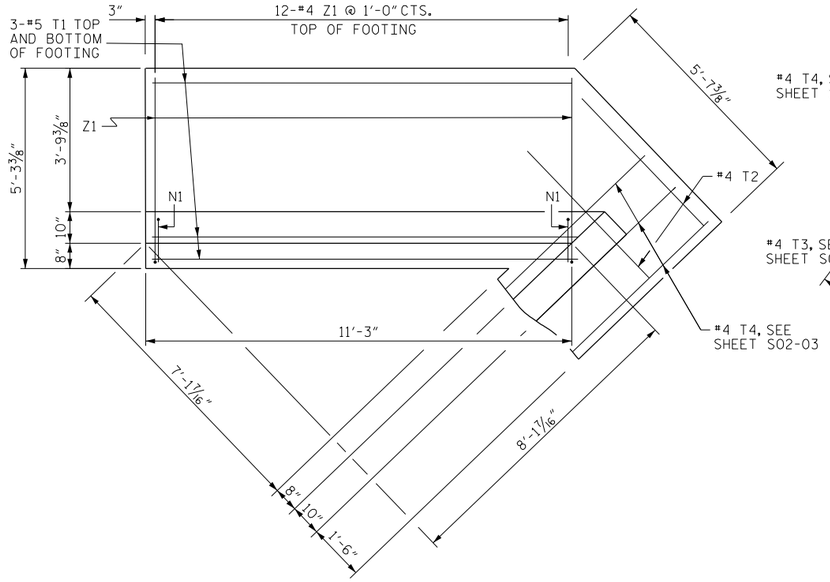
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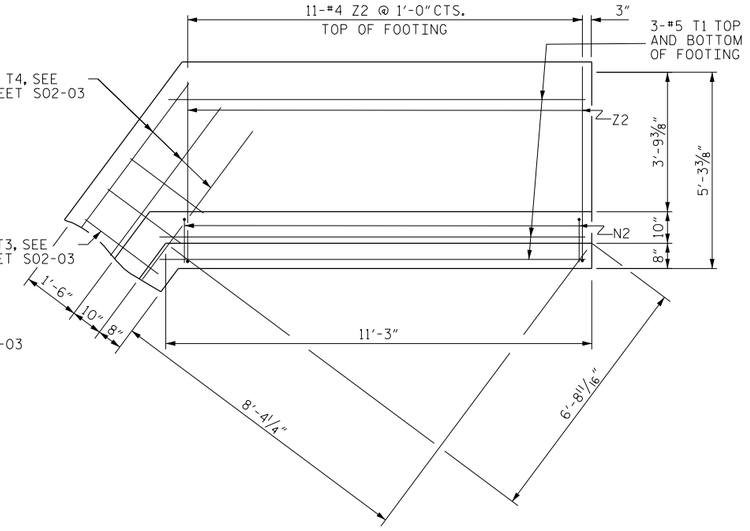
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KCI PROJ. #22133395.05



PLAN

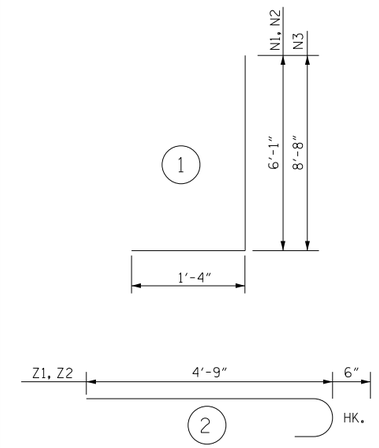
#6 D1 BARS NOT SHOWN FOR CLARITY



PLAN

#6 D1 BARS NOT SHOWN FOR CLARITY

BAR TYPES

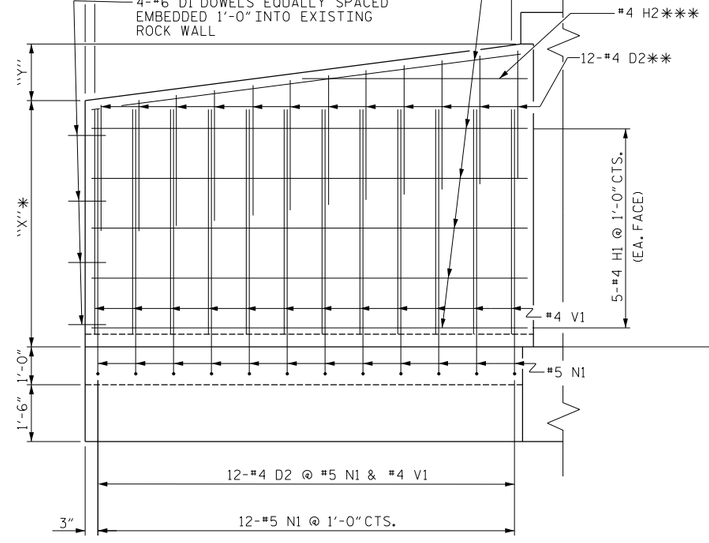


ALL BAR DIMENSIONS ARE OUT TO OUT.

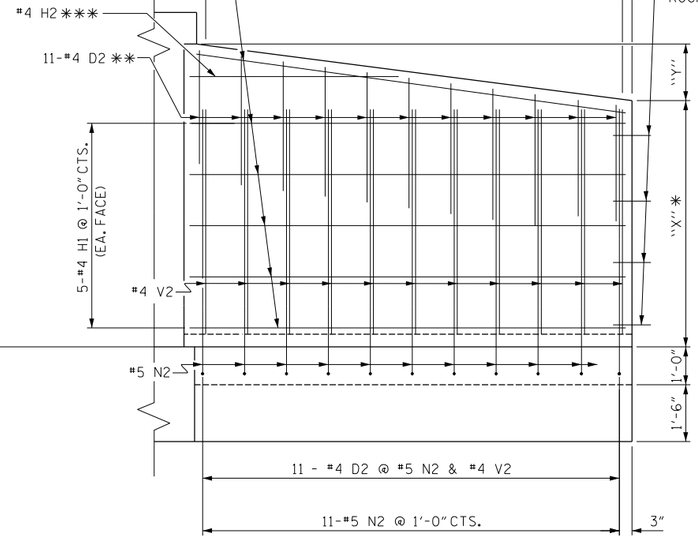
BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#4	STR	4'-6"	12
B2	4	#4	STR	6'-2"	17
B3	4	#4	STR	3'-1"	8
D1	8	#4	STR	2'-0"	11
D2	46	#4	STR	3'-8"	113
G1	4	#7	STR	13'-2"	108
H1	24	#4	STR	11'-0"	176
H2	4	#4	STR	11'-0"	29
N1	12	#5	1	7'-5"	93
N2	11	#5	1	7'-5"	85
N3	6	#5	1	10'-0"	63
T1	6	#4	STR	11'-0"	44
T2	12	#4	STR	5'-1"	41
T3	28	#4	STR	2'-8"	50
T4	6	#4	STR	18'-6"	74
V1	12	#4	STR	4'-6"	36
V2	11	#4	STR	4'-6"	33
V3	6	#4	STR	7'-5"	30
Z1	12	#4	2	5'-3"	42
Z2	11	#4	2	5'-3"	39

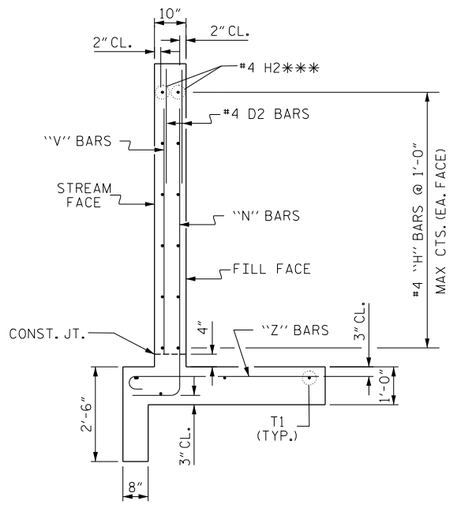
REINFORCING STEEL	1104	LBS
CLASS A CONCRETE		
2 WINGS	4.3	CY
1 HEADWALL	1.7	CY
1 END CURTAIN WALL	2.1	CY
1 FOOTING	6.3	CY
TOTAL	14.4	CY



W1 ELEVATION



W2 ELEVATION



TYPICAL WING SECTION

INLET END

"V" BARS SET ASSUMING "X" IS APPROXIMATELY 5'-0". THE RESIDENT ENGINEER SHALL VERIFY THE VALUE OF "X" AND ADJUST "V" AND "H" BARS AS NECESSARY.

THE TOTAL COST FOR ALL REINFORCEMENT AND CONCRETE SHOWN SHALL BE INCLUDED IN THE OVERALL BID PRICE FOR 112"X 75"CAA STRUCTURAL PLATE PIPE ARCH.

* HEIGHT "X" TO BE DETERMINED BY CONTRACTOR TO TIE TOP OF WING WALL WITH TOP OF EXISTING ROCK WALL.

  HEIGHT "Y" TO BE SET AS:
  "Y" = 6'-10" - "X"

** #4 D2 BARS TO BE TIED TO THE "V" BARS AND FIELD CUT TO PROVIDE 2" OF COVER FROM THE TOP OF WALL.

*** #4 H2 TO BE FIELD CLIPPED TO ACCOMODATE DIMENSION "Y" PROVIDING 1'-0" CTS. FROM #4 H1.

PROJECT NO. 17BP.13.R.184
YANCEY COUNTY
STATION: 17+20.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

9'-4" × 6'-3" CORRUGATED METAL PIPE ARCH CULVERT 119°-00'-00" SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S02-04
1			3			TOTAL SHEETS
2			4			5

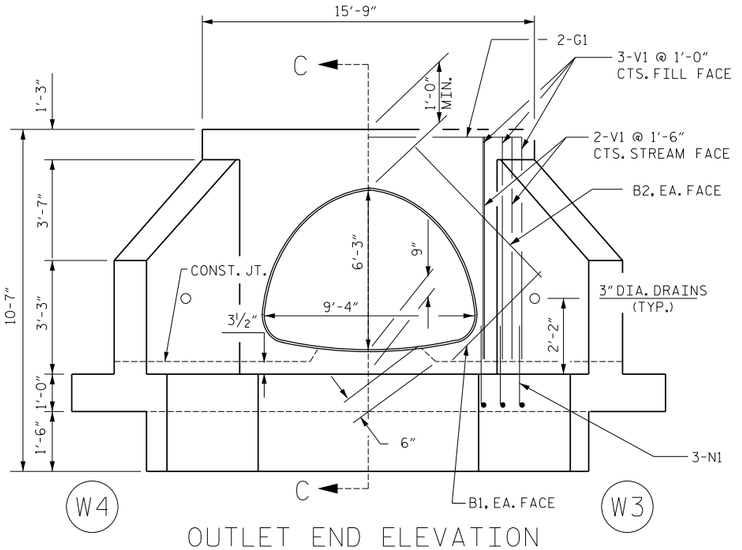
NORTH CAROLINA PROFESSIONAL SEAL 36321 ENGINEER ROBERT F. DECOLA
8/6/2026
Robert Decola
DocuSigned by:

DESIGN ENGINEER OF RECORD: R.F. DECOLA DATE: 8/6/2026
DRAWN BY: M.G. ARMSTRONG DATE: 5/19/22
CHECKED BY: R.F. DECOLA DATE: 6/01/22

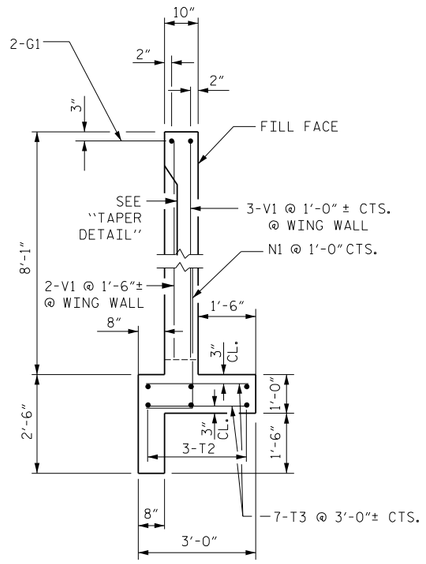
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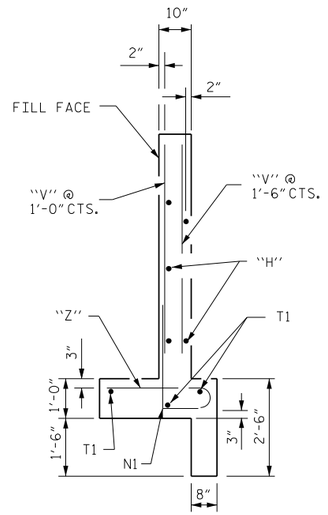
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OUTLET END ELEVATION

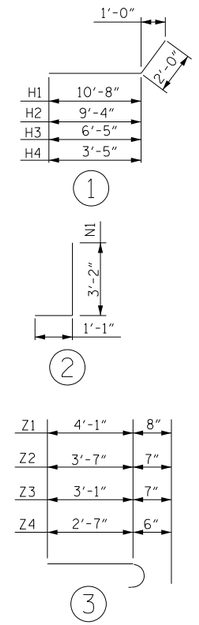


SECTION C-C
PIPE NOT SHOWN



SECTION D-D

BAR TYPES

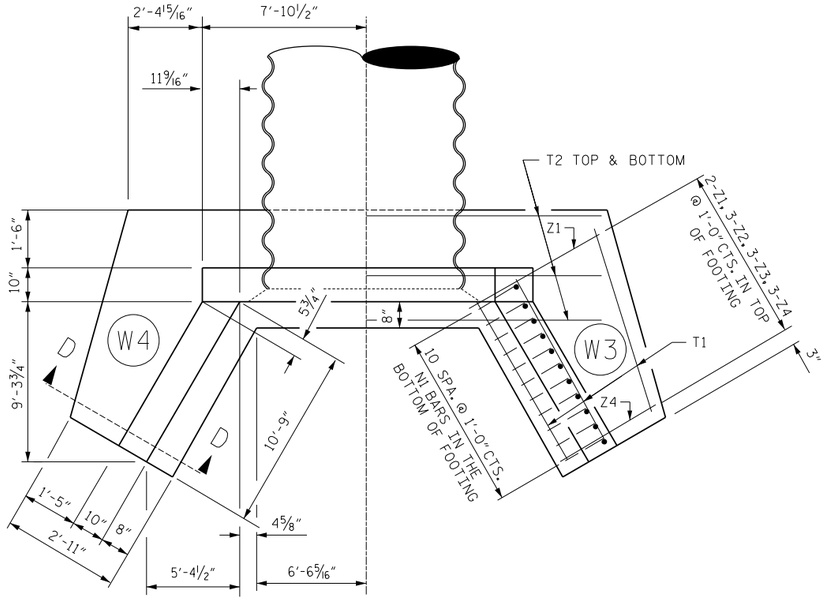


BILL OF MATERIAL

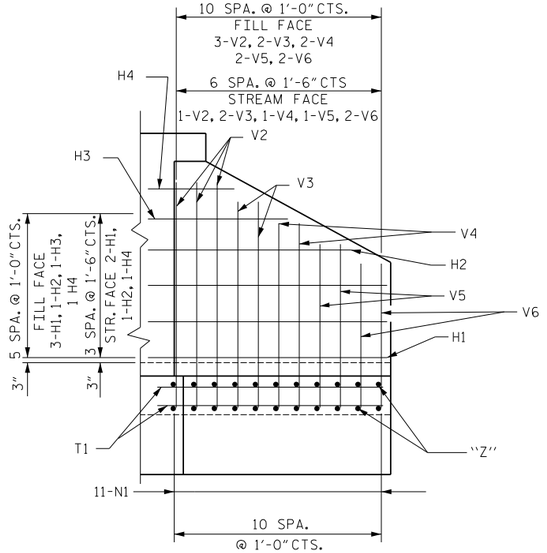
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
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H2	4	#4	1	11'-4"	30
H3	2	#4	1	8'-5"	11
H4	4	#4	1	5'-5"	14
N1	28	#5	2	4'-3"	124
T1	6	#4	STR	10'-9"	43
T2	6	#4	STR	20'-0"	80
T3	14	#4	STR	2'-6"	23
V1	10	#4	STR	7'-5"	50
V2	8	#4	STR	5'-6"	29
V3	8	#4	STR	4'-10"	26
V4	6	#4	STR	4'-2"	17
V5	6	#4	STR	3'-6"	14
V6	8	#4	STR	2'-9"	15
Z1	4	#6	3	4'-9"	29
Z2	6	#5	3	4'-2"	26
Z3	6	#5	3	3'-8"	23
Z4	6	#4	3	3'-1"	12
REINF. STEEL LBS.					743

CLASS A CONCRETE

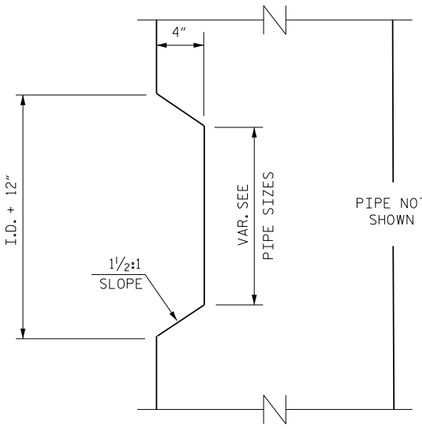
2 WINGS	3.3	CY
1 HEADWALL	2.5	CY
1 END CURTAIN WALL	2.1	CY
1 FOOTING	4.0	CY
TOTAL	11.9	CY



OUTLET END PLAN



WING ELEVATION



TAPER DETAIL

PROJECT NO. 17BP.13.R.184

YANCEY COUNTY

STATION: 17+20.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

9'-4" × 6'-3" CORRUGATED METAL PIPE ARCH CULVERT 119°-00'-00" SKEW

NORTH CAROLINA PROFESSIONAL SEAL 36321 ENGINEER ROBERT F. DECOLA
8/6/2026

Robert Decola
SIGNATURE

DESIGN ENGINEER OF RECORD: R.F. DECOLA	DATE : 8/6/2026
DRAWN BY : M.G. ARMSTRONG	DATE : 5/19/22
CHECKED BY : R.F. DECOLA	DATE : 6/01/22

THE TOTAL COST FOR ALL REINFORCEMENT AND CONCRETE SHOWN SHALL BE INCLUDED IN THE OVERALL BID PRICE FOR 112" X 75" CAA STRUCTURAL PLATE PIPE ARCH.

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KCI PROJ. #22133995.05

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

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

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

HANDRAILS AND POSTS:

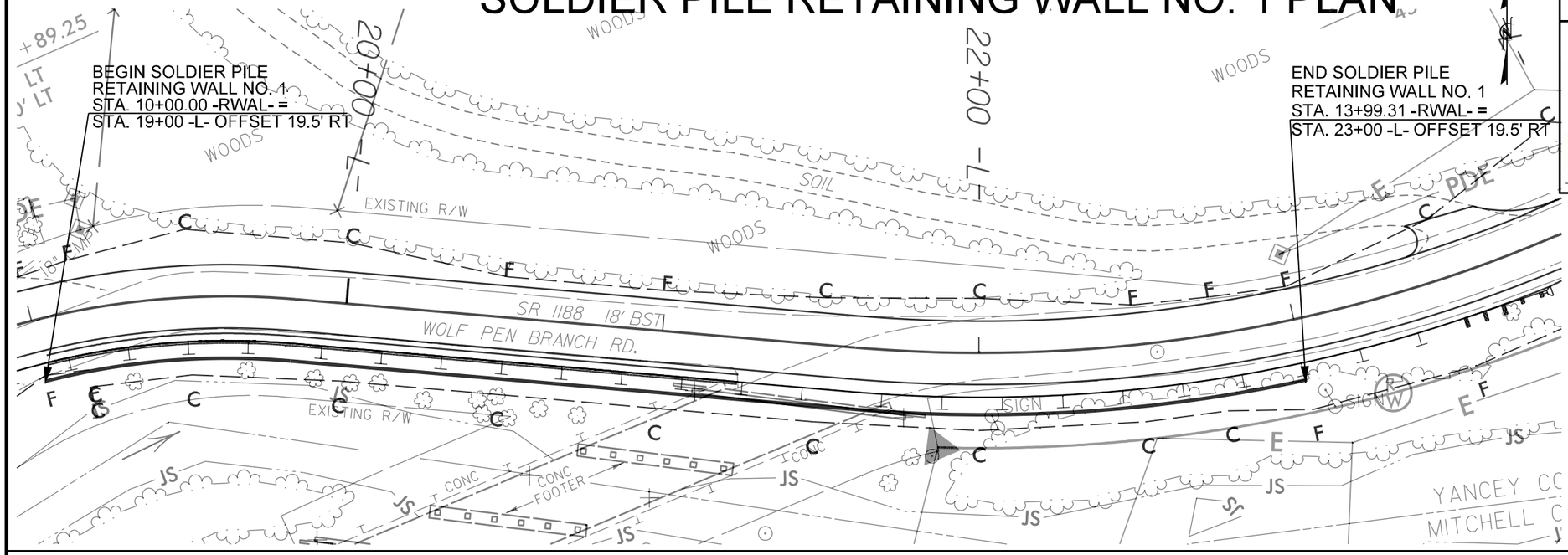
METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

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

SPECIAL NOTES:

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

SOLDIER PILE RETAINING WALL NO. 1 PLAN



PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.184	W-1

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 014155 ENGINEER ABNER F. RIGGS

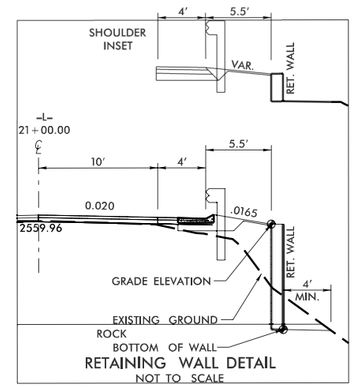
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SIGNATURE 07/24/2024 DATE

ENGINEER

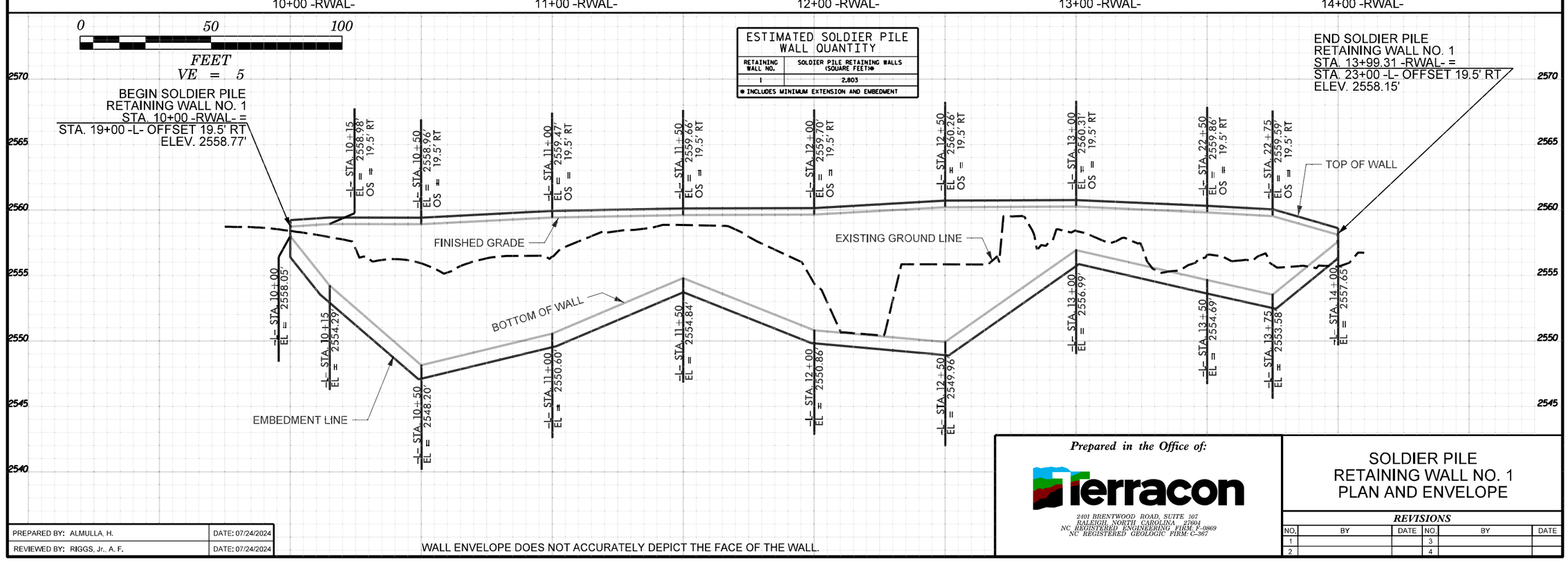
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MAINLINE TYPICAL \ CROSS-SECTION



RETAINING WALL DETAIL
NOT TO SCALE

SOLDIER PILE RETAINING WALL NO. 1 ENVELOPE



ESTIMATED SOLDIER PILE WALL QUANTITY

RETAINING WALL NO.	SOLDIER PILE RETAINING WALLS (SQUARE FEET)*
1	2,803

* INCLUDES MINIMUM EXTENSION AND EMBEDMENT

PREPARED BY: ALMULLA, H.	DATE: 07/24/2024
REVIEWED BY: RIGGS, Jr., A. F.	DATE: 07/24/2024

WALL ENVELOPE DOES NOT ACCURATELY DEPICT THE FACE OF THE WALL.

Prepared in the Office of:

Terracon

2401 BRENTWOOD ROAD, SUITE 107
RALEIGH, NORTH CAROLINA 27604
NC REGISTERED ENGINEERING FIRM: F-0869
NC REGISTERED GEOLOGIC FIRM: C-367

SOLDIER PILE RETAINING WALL NO. 1 PLAN AND ENVELOPE

REVISIONS

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

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.184	W-2

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 014155 ENGINEER ABNER F. RIGGS JR.

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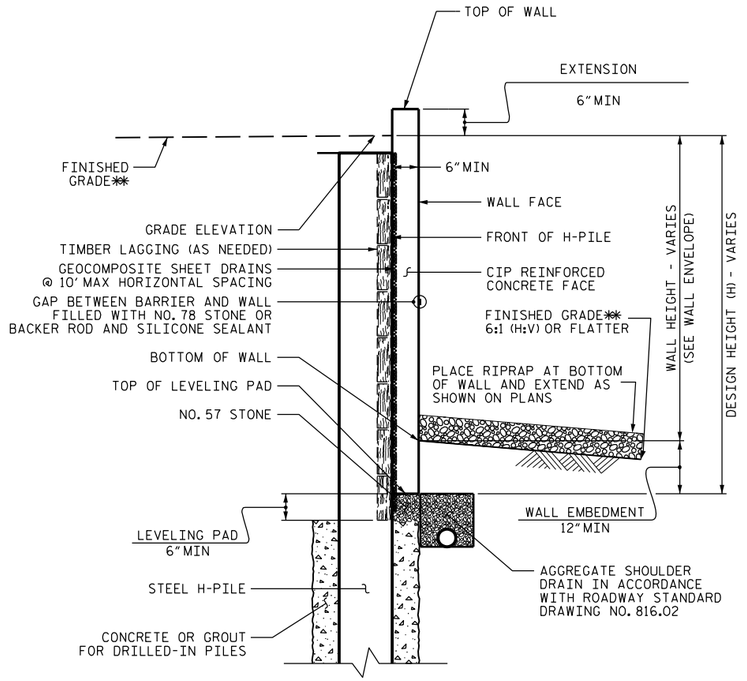
07/24/2024

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SOLDIER PILE WALL WITH CIP FACE - TYPICAL SECTION

*SEE CONCRETE DITCH BEHIND WALL DETAILS.
**SEE PLANS FOR FINISHED GRADE DETAILS.

NOTES:

FOR SOLDIER PILE RETAINING WALLS, SEE SOLDIER PILE RETAINING WALLS PROVISION.

FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

FOR SINGLE FACED PRECAST CONCRETE BARRIER, SEE ROADWAY PLANS AND SECTION 857 OF THE STANDARD SPECIFICATIONS.

DRILLED-IN H-PILES ARE REQUIRED FOR RETAINING WALL NO. 1.

USE A SOLDIER PILE RETAINING WALL WITH A CIP REINFORCED CONCRETE FACE FOR RETAINING WALL NO. 1.

BEFORE BEGINNING SOLDIER PILE WALL DESIGN FOR RETAINING WALL NO. 1, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL NO. 1 FOR THE FOLLOWING:
1) DESIGN HEIGHT (H) = WALL HEIGHT + WALL EMBEDMENT
2) DESIGN LIFE = 75 YEARS
3) MINIMUM WALL EMBEDMENT = 12''
4) MINIMUM PILE PENETRATION INTO ROCK/WEATHERED ROCK = 6 FT
5) IN-SITU ASSUMED MATERIAL PARAMETERS ABOVE ELEVATION OF WEATHERED ROCK:
   UNIT WEIGHT, γ = 120 PCF
   FRICTION ANGLE, ϕ = 28 DEGREES
   COHESION, c = 0 PSF
6) IN-SITU ASSUMED MATERIAL PARAMETERS BELOW ELEVATION OF WEATHERED ROCK:
   ROCK MASS SHEAR STRENGTH, Sm = 6,000 PSF
   UNIT WEIGHT, γ = 140 PCF
7) SEE RETAINING WALL STRUCTURE SUBSURFACE INVESTIGAITION REPORT FOR SUBSURFACE PROFILE AND ELEVATIONS OF WEATHERED ROCK.

THE MINIMUM WALL EMBEDMENT ELEVATION FOR RETAINING WALL NO. 1 INCLUDES EMBEDMENT FOR SCOUR.

DESIGN RETAINING WALL NO. 1 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

"TEMPORARY SHORING" MAY BE REQUIRED FOR RETAINING WALL NO. 1 IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. SEE ROADWAY, STRUCTURE or TRAFFIC CONTROL PLANS.

PROJECT NO.: 17BP.13.R.184 (SF-600101)

MITCHELL COUNTY

STATION: STA. 10+00 TO STA. 13+99.31 -RWAL1-

PREPARED BY: ALMULLA, H.	DATE: 07/24/2024
REVIEWED BY: RIGGS, Jr., A. F.	DATE: 07/24/2024

Prepared in the Office of:

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NC REGISTERED ENGINEERING FIRM: F-0869
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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

SOLDIER PILE RETAINING WALL NO. 1 TYPICAL SECTIONS AND NOTES

REVISIONS

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