CONTRACT: DM00426

TIP PROJECT: 17BP.13.R.184

09/08/99

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

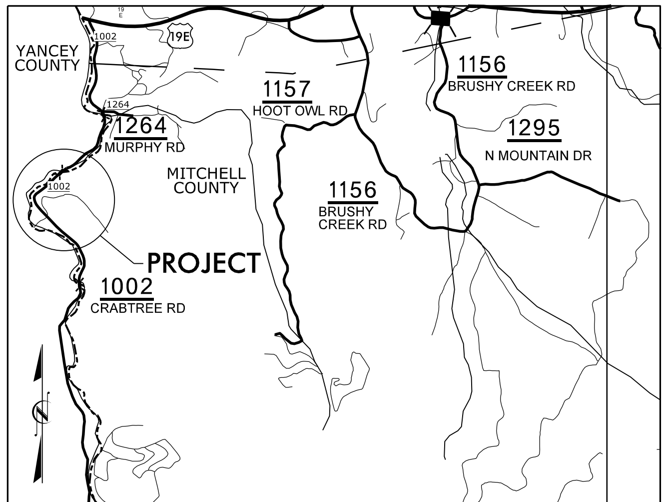
See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

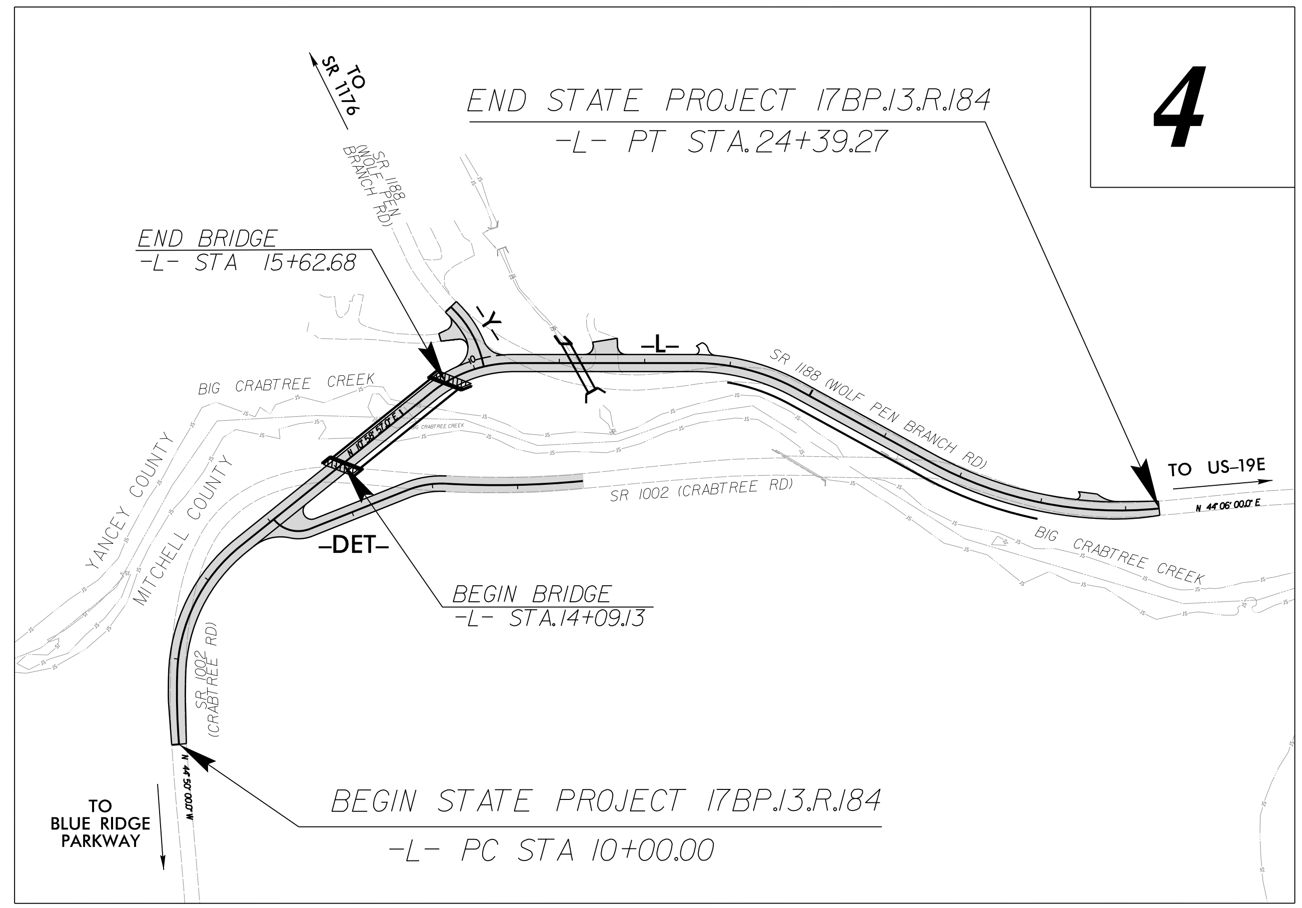
MITCHELL COUNTY & YANCEY COUNTY

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

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURES



VICINITY MAP



SUNGATE DESIGN GROUP, P.A.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 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:
FEBRUARY 18, 2026

NCDOT CONTACT:

Plans Prepared For:

DIVISION 13
55 Orange Street
Asheville, NC 28801

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

TYLER M. KRAUSS, P.E.
KCI ROADWAY DESIGN ENGINEER

MARK HILL, P.E.
NCDOT DIVISION 13

HYDRAULICS ENGINEER

JOSHUA DALTON 11/17/2025
SIGNATURE: P.E.

NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON

ROADWAY DESIGN ENGINEER

Tyler Krauss 11/17/2025
SIGNATURE: P.E.

NORTH CAROLINA PROFESSIONAL SEAL 052888 ENGINEER TYLER M. KRAUSS

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 052888 ENGINEER TYLER KRAUSS

Tyler Krauss 1/23/2026

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INDEX OF SHEETS

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.

SUBSURFACE DRAINS:

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

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 NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE FRENCH BROAD ELECTRIC (POWER)

FRONTIER COMMUNICATIONS (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.

2024 ROADWAY ENGLISH STANDARD DRAWINGS

EFF. 01-16-2024
REV.

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	
423.03	Bridge Approach Fills - Type 2 Approach Fill for Bridge Abutment with MSE Wall
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
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
840.27	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
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

9/10/2021

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.R84	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin (EIP) — 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 — R/W
- Existing Control of Access Line — C/A
- Proposed Control of Access Line — C/A
- Proposed ROW and CA Line — RW/CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage/Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

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

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.R184	2A-1

ROADWAY DESIGN ENGINEER — 9/4/2024 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052888 — TYLER M. KRAUS — Tyler Kraus

PAVEMENT DESIGN ENGINEER — 9/4/2024 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024964 — JOSEPH T. HOLLAND — Joseph Holland

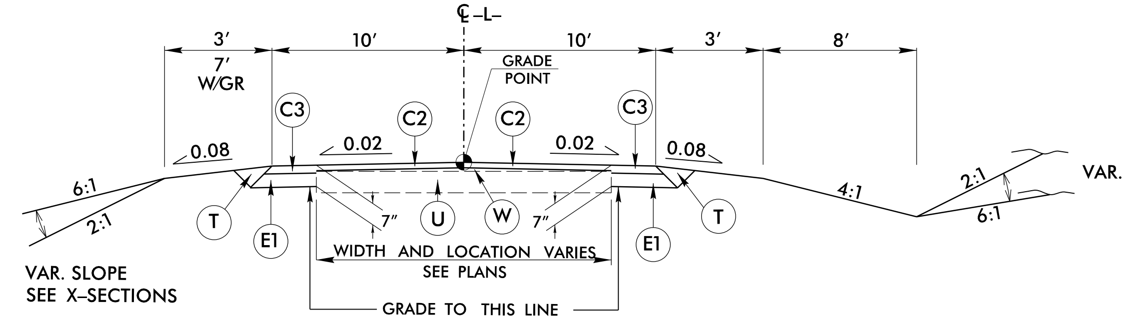
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

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

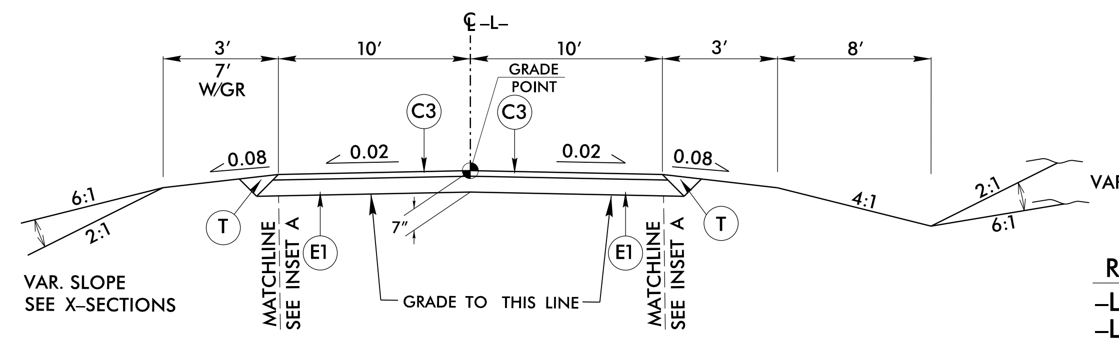
ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.



ROADWAY TYPICAL SECTION NO. 1

ROADWAY TYPICAL SECTION NO. 1

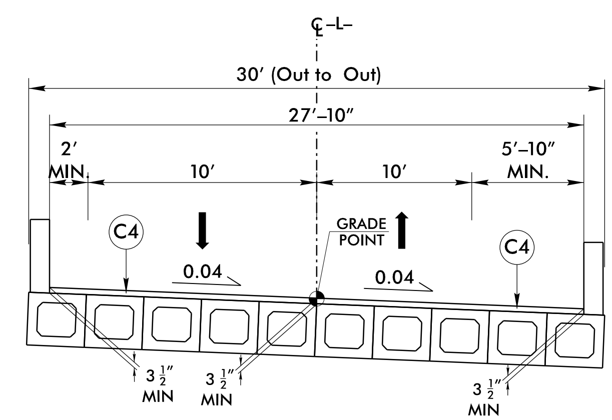
-L- STA. 10+00.00 TO STA. 11+00.00
-L- STA. 22+00.00 TO STA. 24+39.27



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

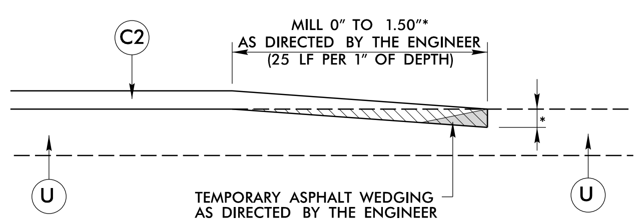


BRIDGE TYPICAL SECTION
SEE STRUCTURE PLANS FOR CONSTRUCTION

-L- BRIDGE TYPICAL SECTION

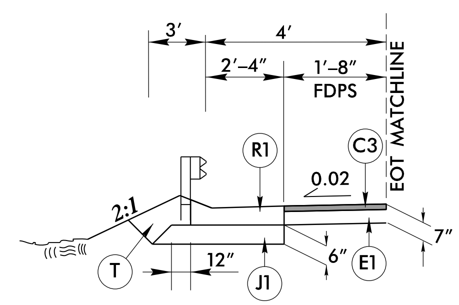
-L- STA. 14+09.13 TO STA. 15+62.68

PROFILE KEY-IN DETAIL



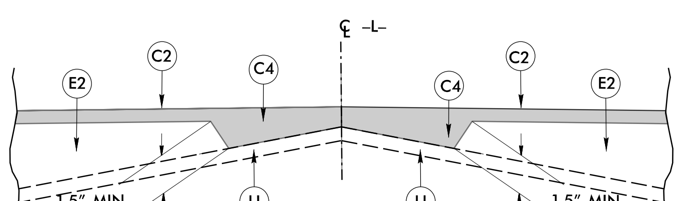
* MILL DEPTH AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER

** SEE TYPICALS FOR MIX TYPE

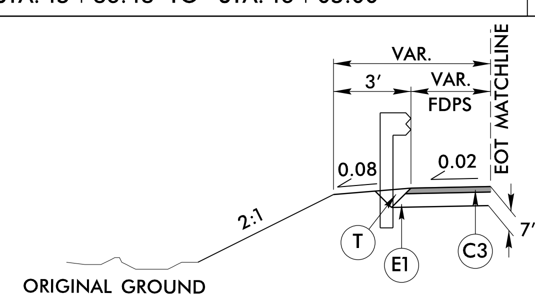


SHOULDER BERM GUTTER DETAIL 1

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



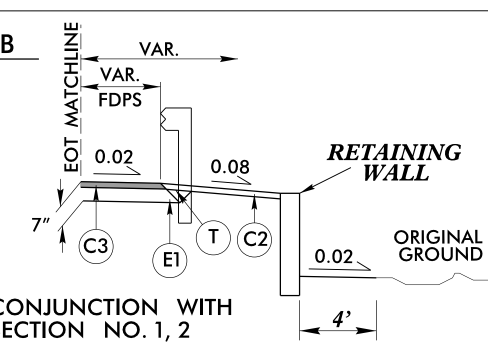
Detail Showing Method of Wedging



INSET A

USE IN GUARDRAIL LOCATIONS

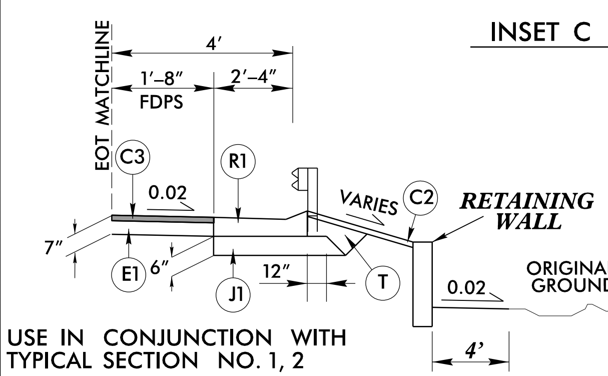
INSET B



USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1, 2

-L- STA. 19+00.00 TO STA. 19+02.00 AND
-L- STA. 21+25.00 TO STA. 23+00.00

INSET C



USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1, 2

-L- STA. 19+02.00 TO STA. 21+25.00

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.R184	2A-2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
9/4/2024	9/4/2024
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052888 TYLER M. KRAUS	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 024964 JOSEPH T. HOLLAND

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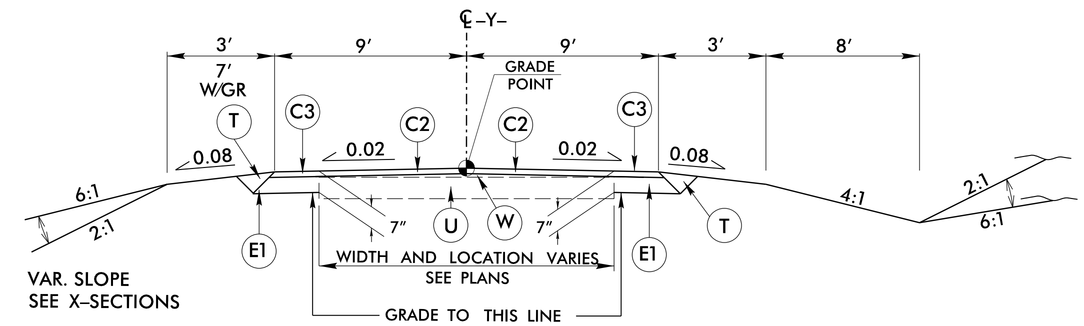
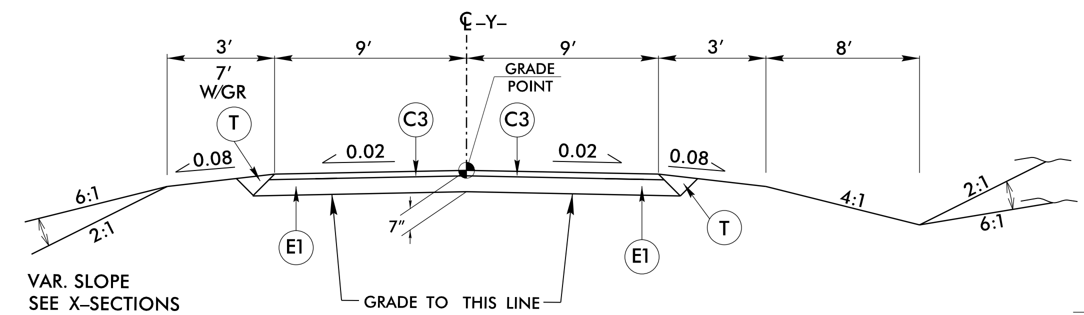


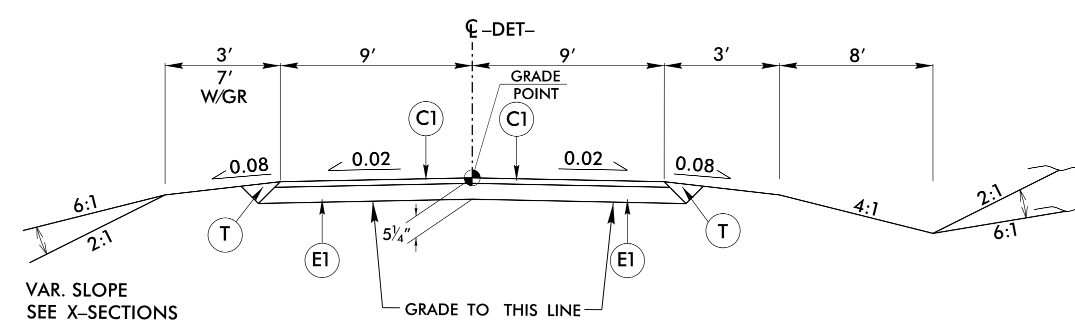
ROADWAY TYPICAL SECTION NO. 3

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

TEMPORARY DETOUR DETAIL SHEET

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

ROADWAY DESIGN ENGINEER 7/26/2024 — NORTH CAROLINA PROFESSIONAL SEAL 052888 ENGINEER — Tyler Krause

HYDRAULICS ENGINEER 7/29/2024 — NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER — Joshua G. Dalton

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

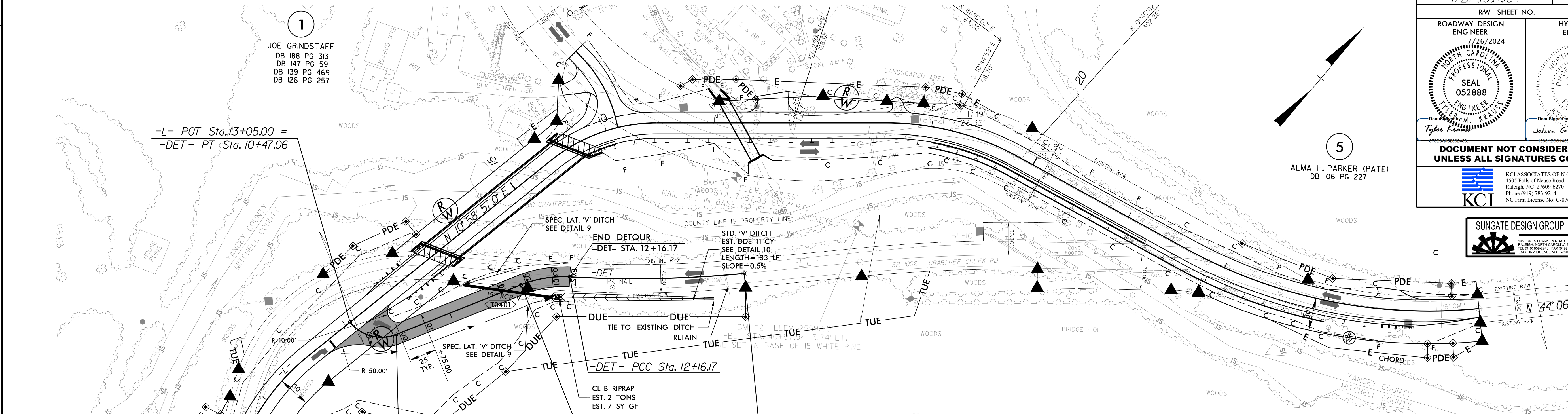
KCI ASSOCIATES OF N.C., P.A.
4505 Falls of Neuse Road, Suite 400
Raleigh, NC 27609-6270
Phone (919) 783-9214
NC Firm License No: C-0764

SUNGATE DESIGN GROUP, P.A.

REVISIONS

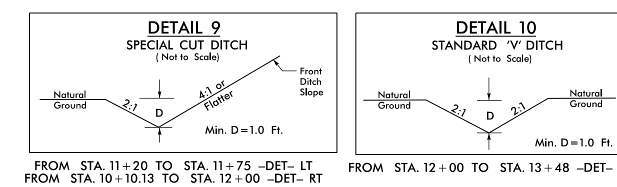
ROW REV.- MARCH 14, 2024 - REVISED THE SURVEY FILE FIXING PROPERTY LINES SEPARATING PARCELS 2 AND 3

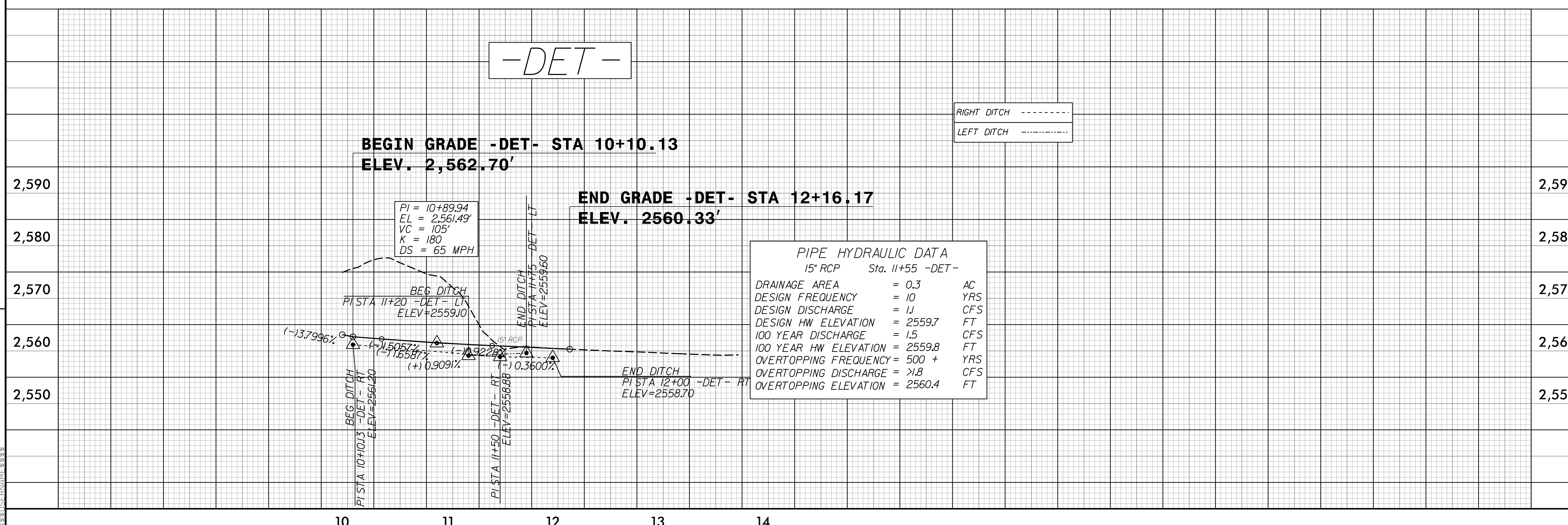
8/17/99



-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'



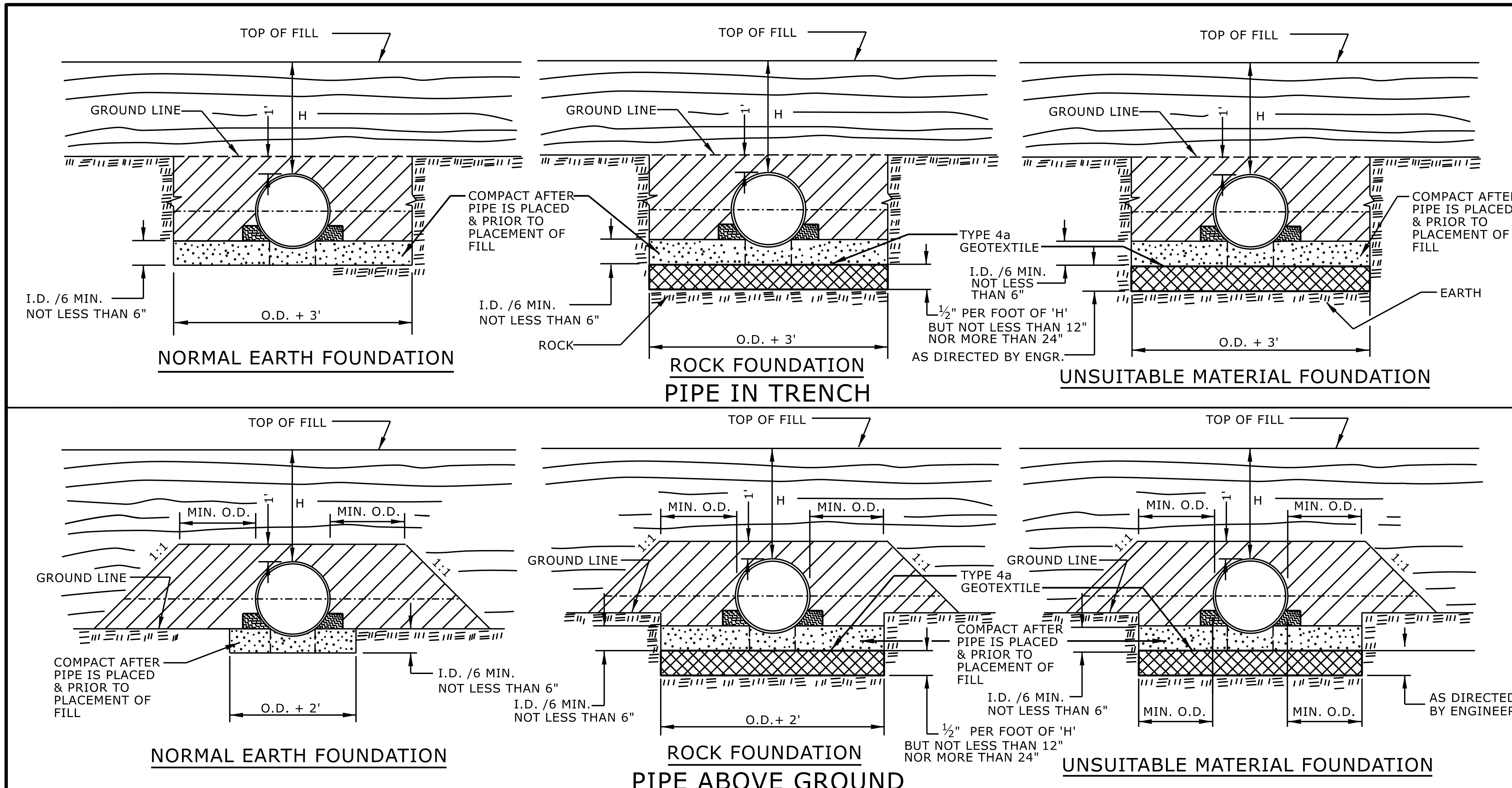


PIPE HYDRAULIC DATA

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

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

ROADWAY DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
FLEXIBLE PIPE

SHEET 1 OF 2
300.01

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKLER

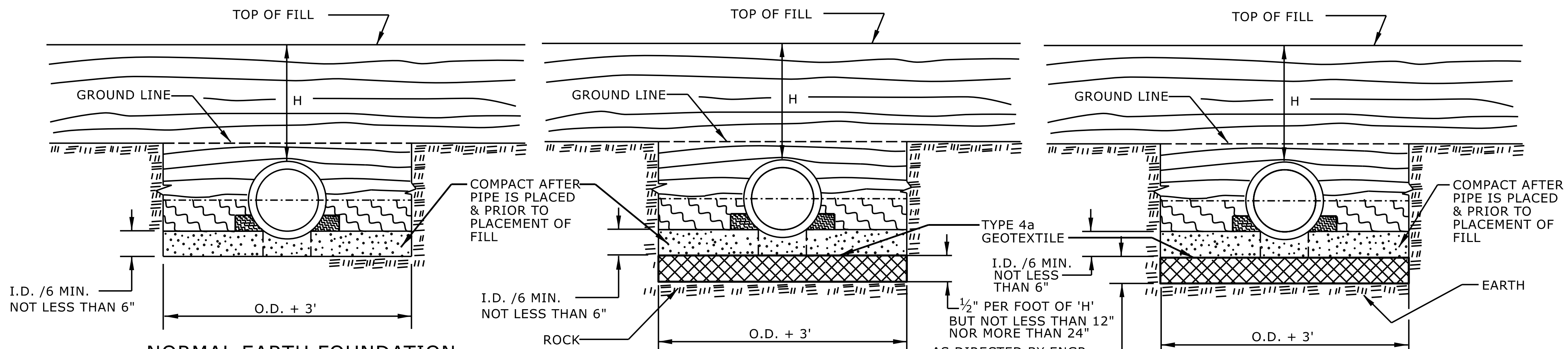
Signed by:
Nicole M Hackler 11/7/2025
5684323D34164C5...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

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

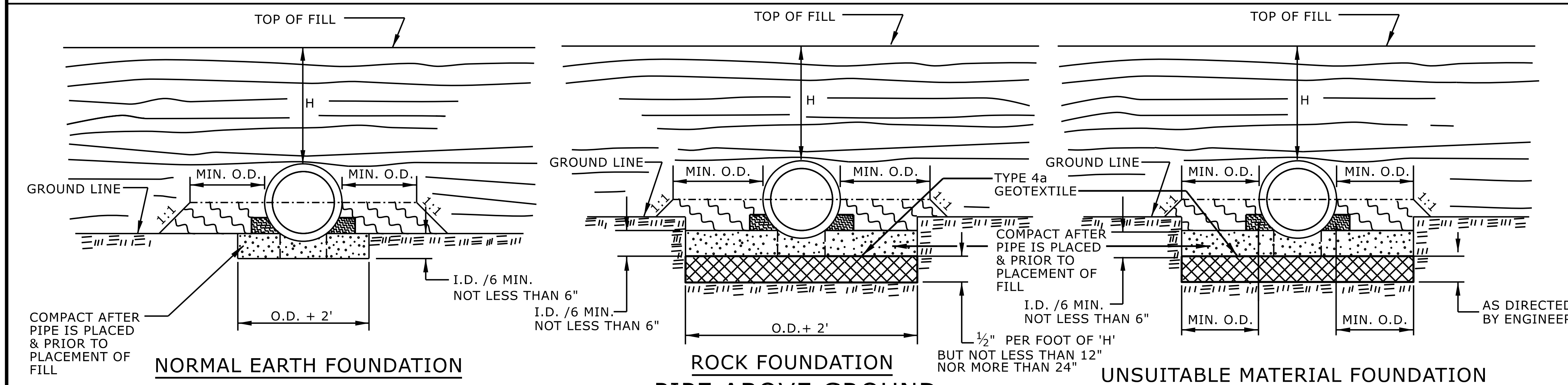


NORMAL EARTH FOUNDATION

ROCK FOUNDATION

UNSUITABLE MATERIAL FOUNDATION

PIPE IN TRENCH



NORMAL EARTH FOUNDATION

ROCK FOUNDATION

UNSUITABLE MATERIAL FOUNDATION

PIPE ABOVE GROUND

GENERAL NOTES:

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

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

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

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

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

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

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

SPRINGLINE OF PIPE

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

UNDISTURBED EARTH MATERIAL

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

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

ROADWAY DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
RIGID PIPE

SHEET 2 OF 2

300.01

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by: Nicole M Hackler 11/7/2025

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

SEE TITLE BLOCK

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

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.
17BP.13.R.184	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		1901	487	6969
LOSS DUE TO CLEARING & GRUBBING		–230				–230
ADDITIONAL UNDERCUT			260	299	299	260
SELECT GRANULAR MATERIAL, CLASS III					–350	–350
WASTE IN LIEU OF BORROW:					–436	–436
PROJECT TOTALS:		7803	960	2200	0	6213
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT:					0	
GRAND TOTALS:		7803	960	2200	0	6213
SAY (10%):		8583				6835

PER GEOTECH REC. LETTER, SELECT GRANULAR MATERIAL, CLASS III = 100 CY
GEOTEXTILE FOR SOIL STABILIZATION = 510 SY

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.

REMOVAL OF EXISTING ASPHALT PAVEMENT SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
–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	YD^2
–L–	16+33	22+00	CL	837.70
			TOTAL:	837.70
			SAY:	840

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH
–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	CLASS & TONS II	CLASS & TONS 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	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END
–L–	13+63 +/–	14+20 +/–	RT	56.25										
–L–	13+47 +/–	14+03 +/–	LT	56.25										
–L–	15+72 +/–	23+76 +/–	RT	756.25	50.00									
–L–	15+52 +/–	15+92 +/–	LT	25.00	12.50									
–EL–	43+60 +/–	44+95 +/–	LT											
–EL–	44+05 +/–	45+43 +/–	RT											
			SUBTOTAL	893.75	62.50									
		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									
			SAY	737.50	62.50									
		ADDITIONAL GUARDRAIL POST =		6										

SURVEY LINE / ROW	ANCHORS TL–2	ANCHORS TL–3	ANCHORS GRAU 350	ANCHORS M–350	ANCHORS TYPE III	ANCHORS CAT–1	ANCHORS VI MOD	ANCHORS BIC	ANCHORS AT–1	IMPACT ATTENUATOR TYPE 350 EA	IMPACT ATTENUATOR TYPE 350 G	IMPACT ATTENUATOR TYPE 350 NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
–L– 13+63 +/–	1				1											
–L– 13+47 +/–	1				1											
–L– 15+72 +/–	1				1											
–L– 15+52 +/–					1				1							
–EL– 43+60 +/–														136		
–EL– 44+05 +/–														136		
PROJECT TOTAL														272		
SAY														272		

COMPUTED BY: BNE	DATE: 4/9/2024
CHECKED BY: JGD	DATE: 4/9/2024

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) 12"	DRAINAGE PIPE 15"	DRAINAGE PIPE 18"	DRAINAGE PIPE 24"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE (UNLESS NOTED OTHRWISE) 12"	C.S. PIPE 15"	C.S. PIPE 18"	C.S. PIPE 24"	C.S. PIPE 30"	C.S. PIPE 36"	C.S. PIPE 42"	C.S. PIPE 48"	CLASS IV R.C. PIPE (UNLESS OTHERWISE NOTED) 12"	CLASS IV R.C. PIPE 15"	CLASS IV R.C. PIPE 18"	CLASS IV R.C. PIPE 24"	CLASS IV R.C. PIPE 30"	CLASS IV R.C. PIPE 36"	CLASS IV R.C. PIPE 42"	CLASS IV R.C. PIPE 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.	ENDWALLS CU. YDS. C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES 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
SIZE / THICKNESS OR GAUGE																.064	.064	.064	.079	.079	.109	.109																																								
L 11+60	CL	0401	0402		2259.1	2558.8																					56																																			
Y 10+08	RT	0403	0404		2563.2	2560.0				36																																																				
L 15+85	LT	0404		2563.0																																	1										1							1											
		0404	0405		2560.0	2559.5																				44																																				
L 16+00	RT	0405		2563.4																																	1																		1	1							
		0405	0406		2559.5	2557.3				16		X																																																		
L 13+95	RT	0407		2563.8																																	1																		1	1							
		0407	0408		2561.0	2559.7			20																																																						
L 19+07	LT	0409	0410		2557.8	2556.2																				36																																				
L 19+07	RT	0410		2559.2																																	1																		1	1							
		0410	0411		2556.2	2556.0				36																																																				
L 17+82	LT	0412		2558.4																																	1											1				1											
		0412	0413		2556.4	2555.7																			52																																					
L 22+20	LT	0414		2558.2																																	1											1				1											
		0414	0415		2556.2	2555.8			76																																																					
L 23+00	LT	0415		2558.6																																	1															1			1							
		0415	0416		2555.8	2554.9			96																																																					
L 24+02	LT	0416		2557.7																																	1										1							1											
		0416	0417		2554.9	2552.5																			44																																		29	REMOVE EXTG 15" CMP
DET 11+55	CL	T0401			2559.1	2558.7																										80																														
L 11+67	CL																																																											31	REMOVE EXTG 15" CMP
Y 10+25	RT																																																											31	REMOVE EXTG 18" CMP
L 18+45	RT																																																											40	REMOVE EXTG 18" CMP
L 18+96	LT																																																											30	REMOVE EXTG 18" CMP
L 17+25	CL																																																											60	REMOVE EXTG 60" CMP
PROJECT TOTALS									192	88															96	80	56					80					8										2	2				5		3	4						221	

* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B')

ABBREVIATIONS

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

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

(2-3-23)

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

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

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

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

ROADWAY DESIGN ENGINEER 7/26/2024 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052888 TYLER M. KRAUSS — Tyler Krauss

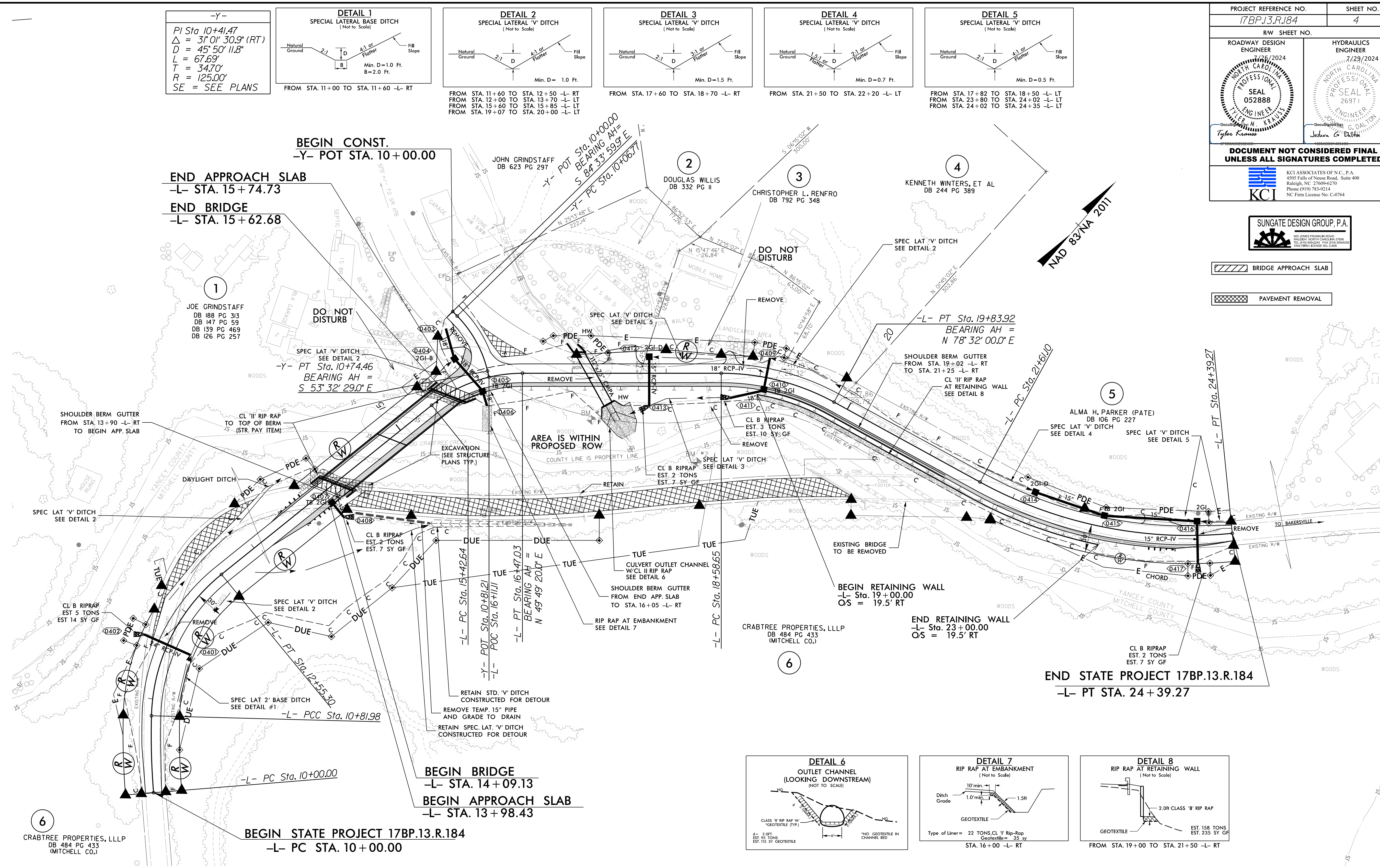
HYDRAULICS ENGINEER 7/29/2024 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26971 JOSHUA G. DALTON — Joshua G. Dalton

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SUNGATE DESIGN GROUP, P.A.

-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



-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 ADDITIONAL ROADWAY DIMENSIONS, SEE SHEET 4A

REVISIONS

8/17/99

REVISIONS

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

R/W SHEET NO.

ROADWAY DESIGN ENGINEER — 7/26/2024 — NORTH CAROLINA PROFESSIONAL SEAL 052888 ENGINEER TYLER M. KRAUSS — Tyler Krauss

HYDRAULICS ENGINEER — 7/29/2024 — NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON — Joshua G. Dalton

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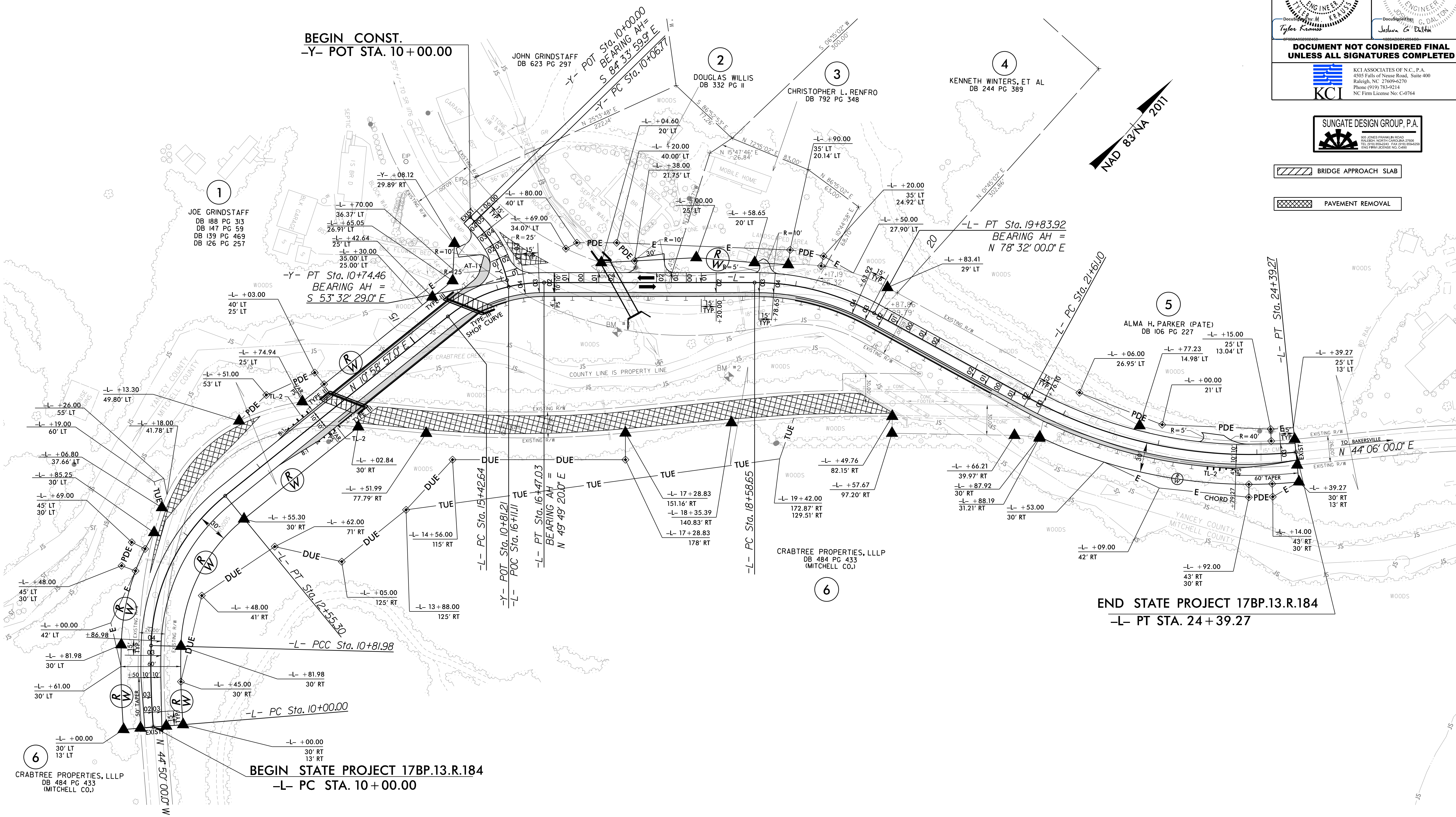
SUNGATE DESIGN GROUP, P.A.

-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



-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 DRAINAGE INFO, SEE SHEET 4

5/28/99

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

ROADWAY DESIGN ENGINEER 7/26/2024 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052888 — Tyler M. Kraus

HYDRAULICS ENGINEER 7/29/2024 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26971 — Joshua G. Dalton

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SUNGATE DESIGN GROUP, P.A.

—L—

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

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

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'

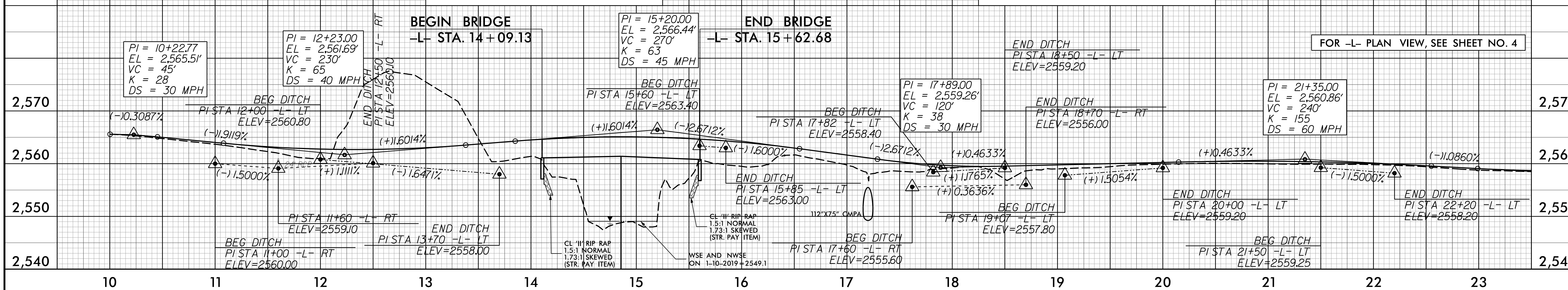
PIPE HYDRAULIC DATA

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

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

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



—L—

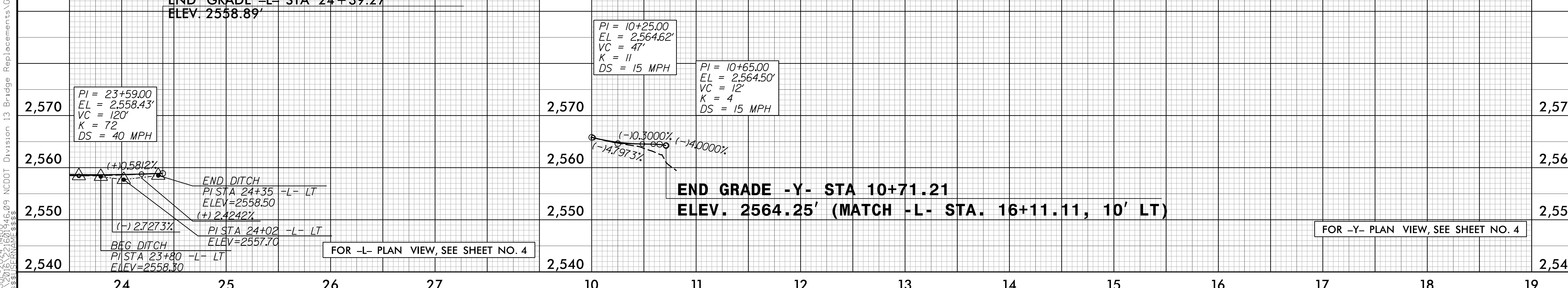
RIGHT DITCH	- - - - - - -
LEFT DITCH	—·—·—·—

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

—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 -L- PLAN VIEW, SEE SHEET NO. 4

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

11-JUL-2024 16:00
M:\2016\216018846.09 NCDOT Division 13 Bridge Replacements\G_17BP.13.R.184_Mitchell_600101_B5158\Roadway\Proj\B5158_Rdy_pfl_sheets.dgn
$$$$USERNAME$$$$

Docusign Envelope ID: 0AAC582D-22C0-426E-9C49-8F130F8D4065

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

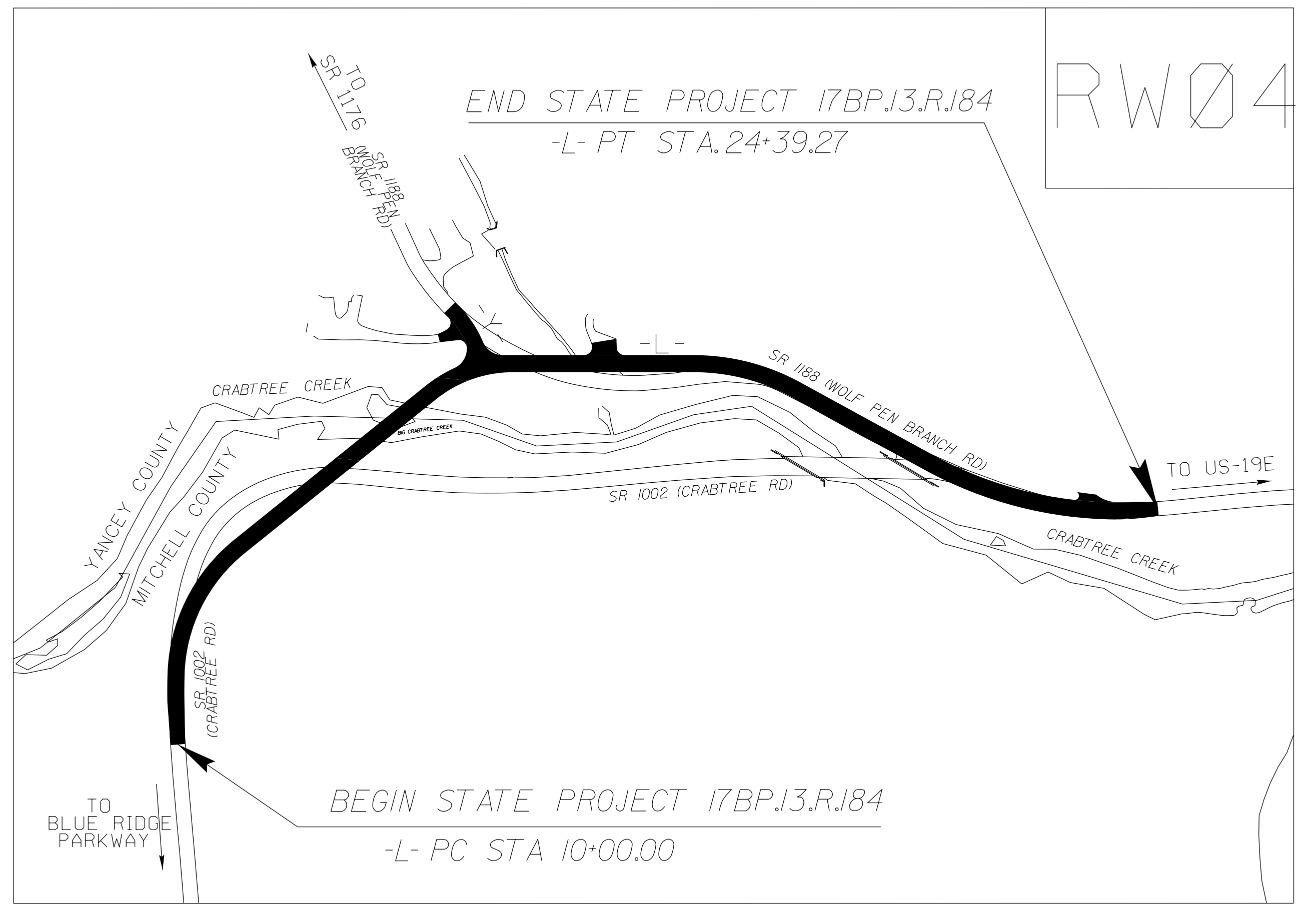
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

MITCHELL & YANCEY COUNTY

TIP PROJECT: 17BP.13.R.18

09/08/99



GRAPHIC SCALE

50 25 0 50 100

PLANS

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "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 29

Prepared in the Office of:

JMT

NC FIRM LICENSE # C-3097
1318-F PATTON AVENUE
Asheville, NC 28806
828-253-2796

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JANUARY 30, 2024

LETTING DATE: FEBRUARY 18, 2026

PROFESSIONAL LAND SURVEYOR

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

DocuSigned by:
F1570CB85C7248A...

SIGNATURE: Date: 4/18/2025

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

14-APR-2025 10:17
V:\NC\Survey\23-00572-050_600101_com_jmt\Survey\To Send\B5158_ls_RW01.dgn
jcgordon AT MYPC-VDI-22

6/2/99

REVISIONS

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

Location and Surveys

NC FIRM LICENSE # C-3097
1318-F PATTON AVENUE
Asheville, NC 28806
828-253-2796

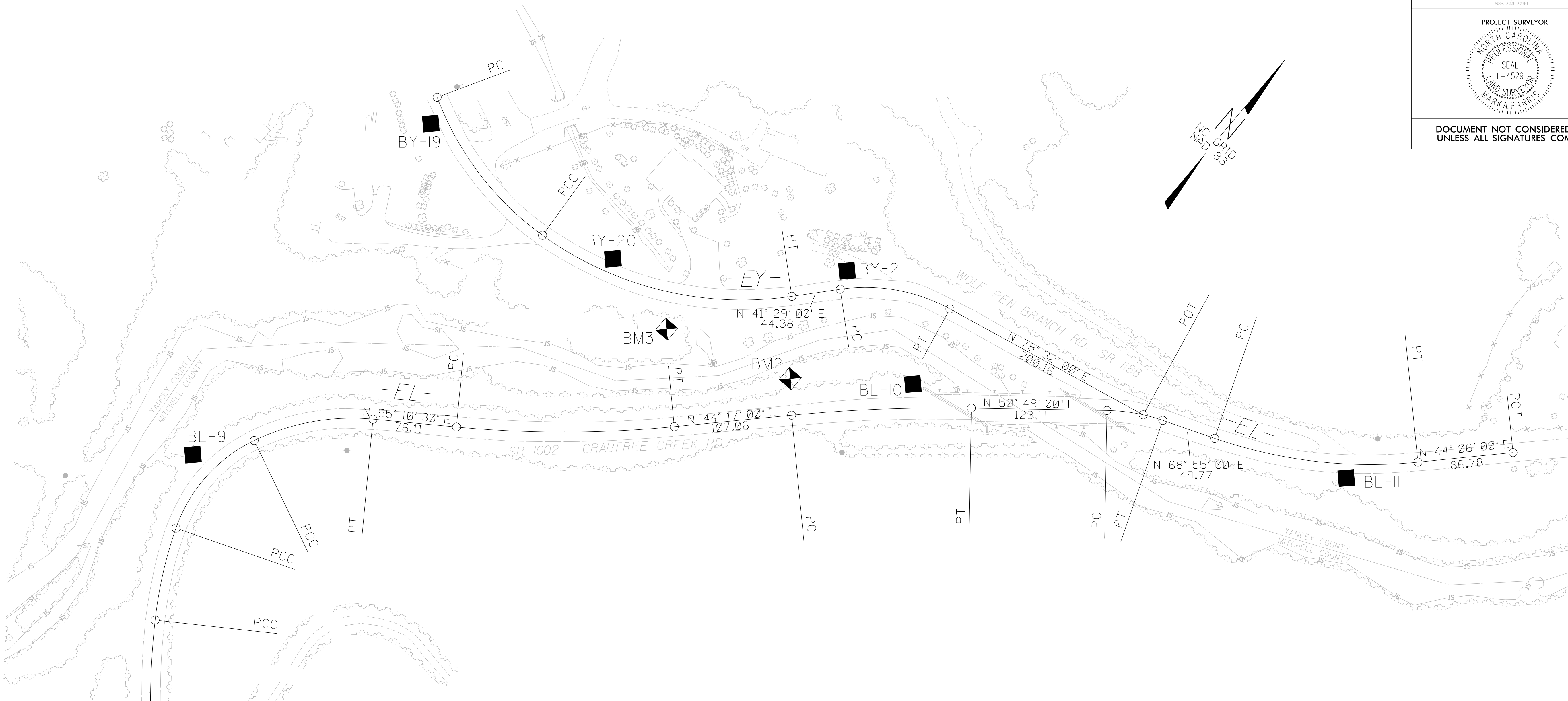
PROJECT SURVEYOR

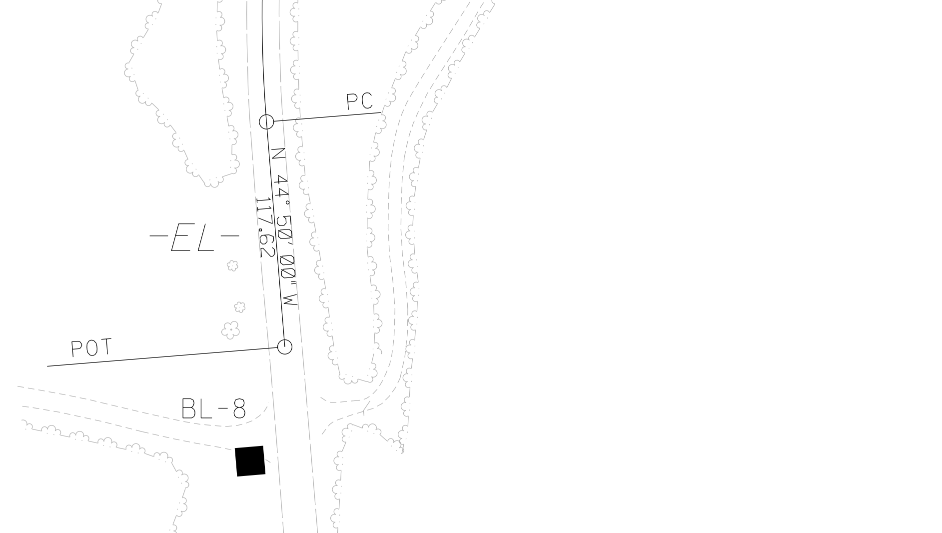
NORTH CAROLINA PROFESSIONAL SEAL L-4529 LAND SURVEYOR MARK A. PARRIS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION





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:
F1570CB85C7248A...
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.

6/2/99

REVISIONS

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

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

Location and Surveys

NC FIRM LICENSE # C-3097
1318-F PATTON AVENUE
Asheville, NC 28806
828-253-2796

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:
F1570CB85C7248A...
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.

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

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

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

Location and Surveys

NC FIRM LICENSE # C-3097
1318-F PATTON AVENUE
Asheville, NC 28806
828-253-2796

PROJECT SURVEYOR

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROPOSED ALIGNMENT CONTROL SHEET

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:

F1570CB85C7246A...

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.

REVISIONS

6/2/99

02-FEB-2024 11:42
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jcgordon AT P40V-21H1-17

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
1318-F PATTON AVENUE
Asheville, NC 28806
828-253-2796

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.

DocuSigned by:
Mark Parris
F1570CB85C7248A...
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 .

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

Location and Surveys

NC FIRM LICENSE # C-3692
1105 F PATTON AVENUE
Asheville, NC 28806

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 , 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.

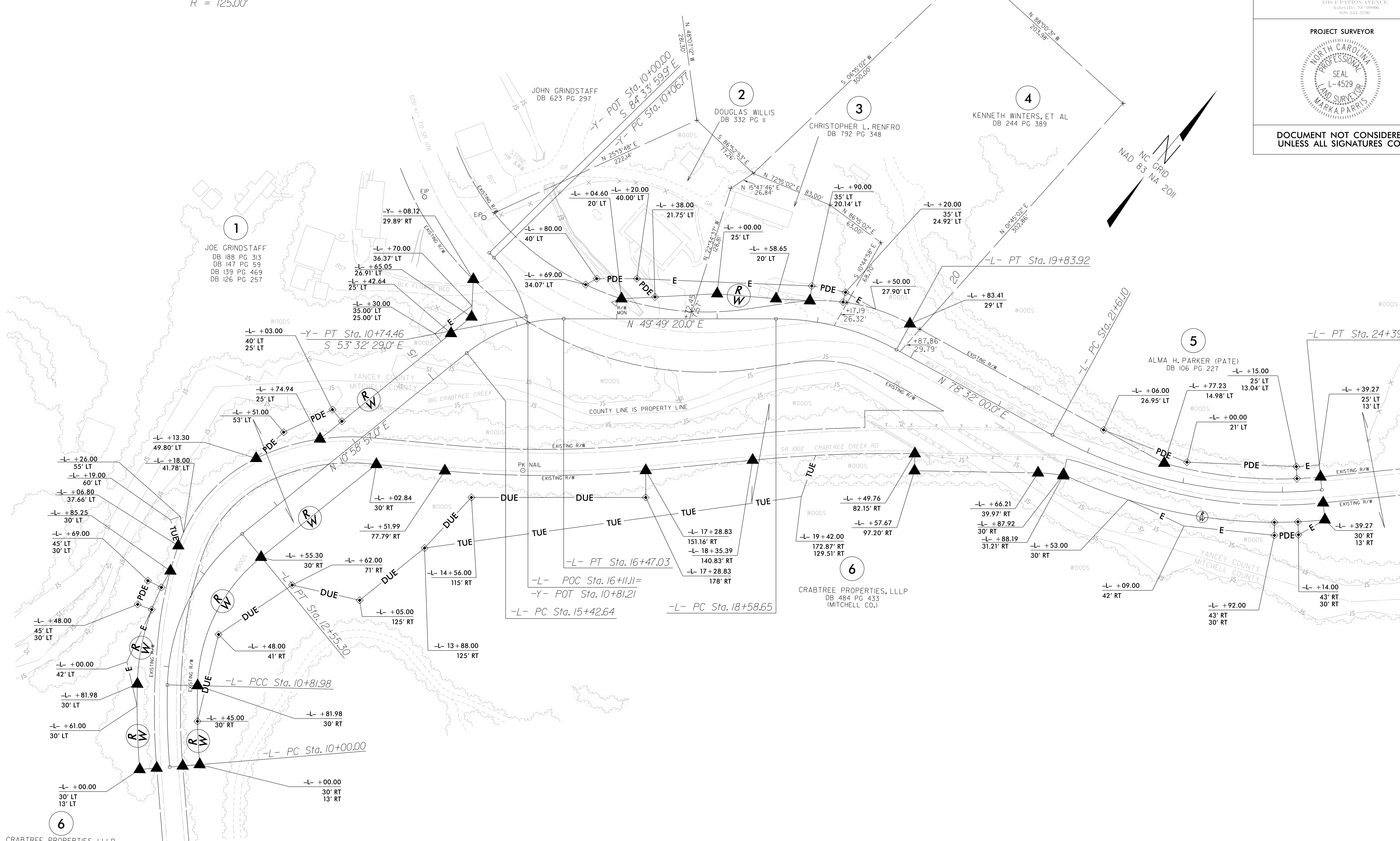
This 2nd day of February, 2024.

Professional Land Surveyor L-4529

-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'

REVISIONS



-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
Δ = 6° 09' 50.8" (RT)	Δ = 49° 39' 06.2" (RT)	Δ = 38° 50' 23.0" (RT)	Δ = 28° 42' 40.0" (RT)	Δ = 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.

13-MAY-2024 14:00
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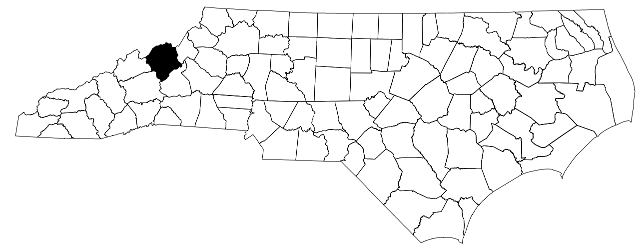
jegordon AT PC-VDI-39

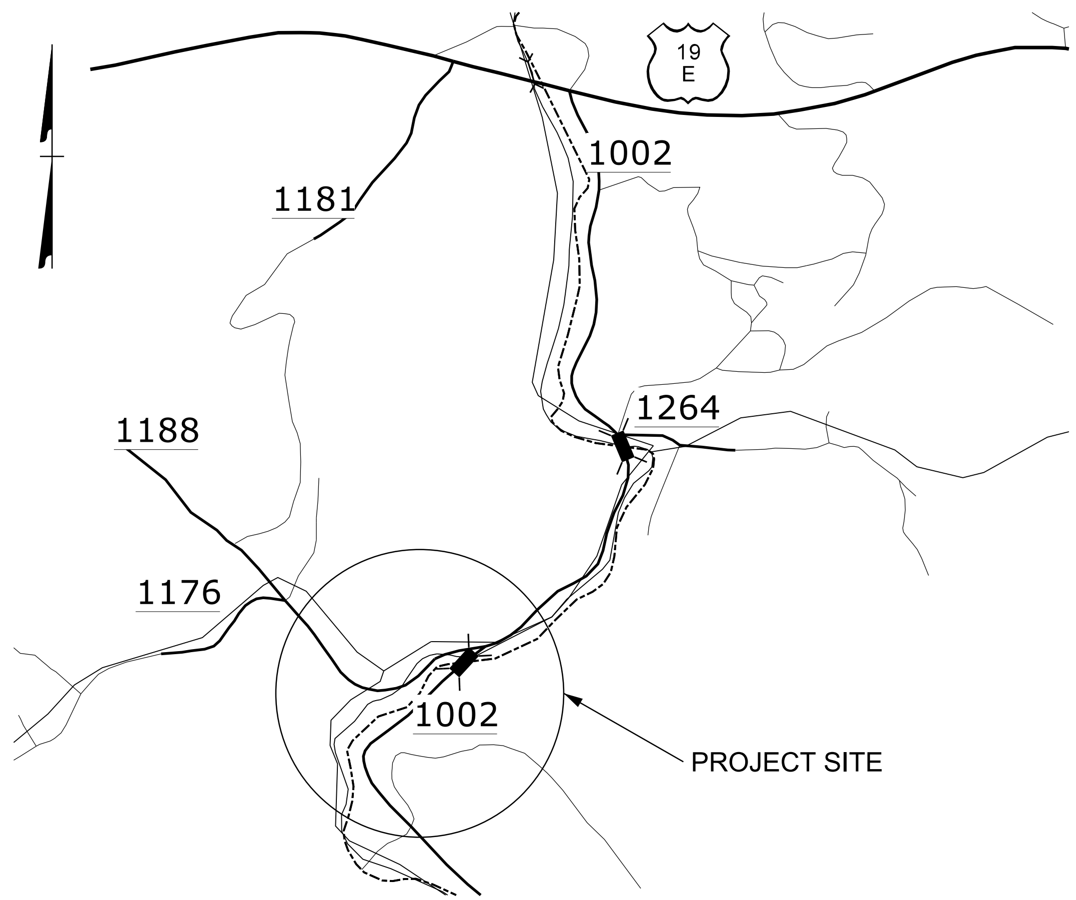
6/2/99

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

MITCHELL COUNTY & YANCEY COUNTY



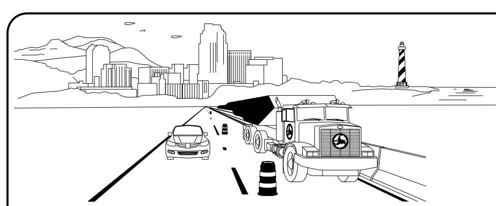


VICINITY MAP

NOT TO SCALE

INDEX OF SHEETS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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

PLANS PREPARED BY:

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

TYLER M. KRAUSS, P.E.
KCI DESIGN ENGINEER

NCDOT CONTACTS:

D. A. PARKER, PE
PROJECT ENGINEER

KARMEN DAIS
PROJECT DESIGN ENGINEER

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

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: Tyler Krauss 6F9B8A952062458...

DATE: 1/23/2026

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 052888 ENGINEER TYLER M. KRAUSS

SHEET NO. TMP-1

DM00426

TIP PROJECT: 17BP.13.R.184

23-JAN-2026 09:02
M:\2016\22160I946.09 NCDOT Division 13 Bridge Replacements\G_17BP.13.R.184_Mitchell_600101_B5158\Traffic\TrafficControl\TCP\600101_TMP_01.dgn
$$$$USERNAME$$$$

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
- USER DEFINED (IF NEEDED)
- USER DEFINED (IF NEEDED)

SIGNALS

EXISTING — PROPOSED — T E M P TEMPORARY — PORTABLE

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

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APPROVED: Tyler Krauss
DATE: 11/13/2025
SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052888 TYLER M. KRAUSS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

ROADWAY STANDARD DRAWINGS & LEGEND

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 ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, 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	TEMPORARY RAISED

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.

KCI ASSOCIATES OF N.C., P.A.
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Phone (919) 783-9214
NC Firm License No: C-0764

DocuSigned by:
APPROVED: Tyler Krauss
6F9B8A952062458...

DATE: 11/13/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 052888 ENGINEER TYLER M. KRAUSS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

TRANSPORTATION OPERATIONS PLAN

13-NOV-2025 11:33
M:\2016\22160946.09 NCDOT Division 13 Bridge Replacements\G_17BP_13_R_184_Mitchell_600101_B5158\Traffic\TrafficControl\TCP\600101_TMP_01B.dgn
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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 AND 1101.03, SHEET 3 OF 9) 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. 11+00+/- AND -L- STA. 13+45+/-. 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 NEWLY CONSTRUCTED PAVEMENT AND CONSTRUCT TEMPORARY PAVEMENT FROM -L- STA. 13+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: 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.

STEP 2: INSTALL STOP SIGNS (STD. 1110.01, SHEETS 1 & 2 OF 3) AT THE -L- AND -DET- INTERSECTION.

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: COMPLETE WEDGING AND RESURFACING OF -Y- LINE (SR 1188) USING FLAGGERS (STD 1101.02, SHEET 1 OF 19 AND 1150.01, SHEET 1 OF 1).

PHASE 3 (SEE TMP-6)

STEP 1: UPON COMPLETION OF THE BRIDGE AND CONSTRUCTION OF THE NORTH END APPROACH FILL, INSTALL WORK ZONE ADVANCE WARNING SIGNS (STD. 1101.03, SHEET 3 OF 9) 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 III.

STEP 4: ONCE DETOUR SIGNING IS IN PLACE, CONSTRUCT 112" X 75" CMPA AT APPROXIMATE -L- STA. 17+20 +/-.

STEP 5: CONSTRUCT NEW MAINLINE PAVEMENT FROM -L- STA. 16+50 +/- TO -L- STA. 21+00 +/- INCLUDING CONSTRUCTION OF RETAINING WALL. CONTRACTOR TO MAINTAIN ACCESS TO DRIVEWAY ON PARCEL 3.

PHASE 4 (SEE TMP-7)

STEP 1: 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+39.27 (STD 1101.02, SHEET 17 of 19). 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, ADJUST 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: CONTINUE PAVEMENT REMOVAL THROUGHOUT THE PROJECT.

PHASE 6

STEP 1: REMOVE REMAINDER OF THE EXISTING BRIDGE 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. INSTALL FINAL PAVEMENT MARKINGS AND OPEN TO FINAL TRAFFIC PATTERN.

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Phone (919) 783-9214
NC Firm License No: C-0764

DocuSigned by:
APPROVED: Tyler Krauss
6F9B8A952062458...

DATE: 11/13/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 052888 ENGINEER TYLER M. KRAUSS

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
PHASING

13-NOV-2025 11:33
M:\2016\22160194 6.09 NCDOT Division 13 Bridge Replacements\G_17BP.13.R.184_Mitchell_600101_B5158\Traffic\TrafficControl\TCP\600101_TMP_02.dgn
$$$$USERNAME$$$$

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"

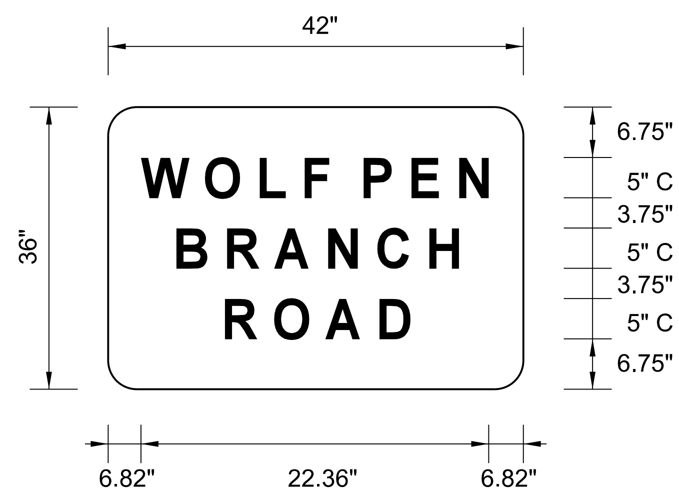
NO. Z BARS: N/A
LENGTH: N/A

BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

SYMBOL	X	Y	WID	HT

MAT'L: 0.080" ALUMINUM

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



Spacing Factor is 1 unless specified otherwise

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.

LETTER POSITIONS

Letter spacings are to start of next letter

										Series/Size Text Length
	W	O	L	F		P	E	N		C 2000
6.82	4.59	3.94	3.34	2.50	4.10	3.79	3.34	2.74	6.82	24.24
	B	R	A	N	C	H				C 2000
10.28	3.79	3.58	3.97	3.79	3.58	2.74	10.28			21.45
	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

DocuSigned by:
Tyler Krauss

APPROVED:
DATE: 11/13/2025

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052888 TYLER M. KRAUSS

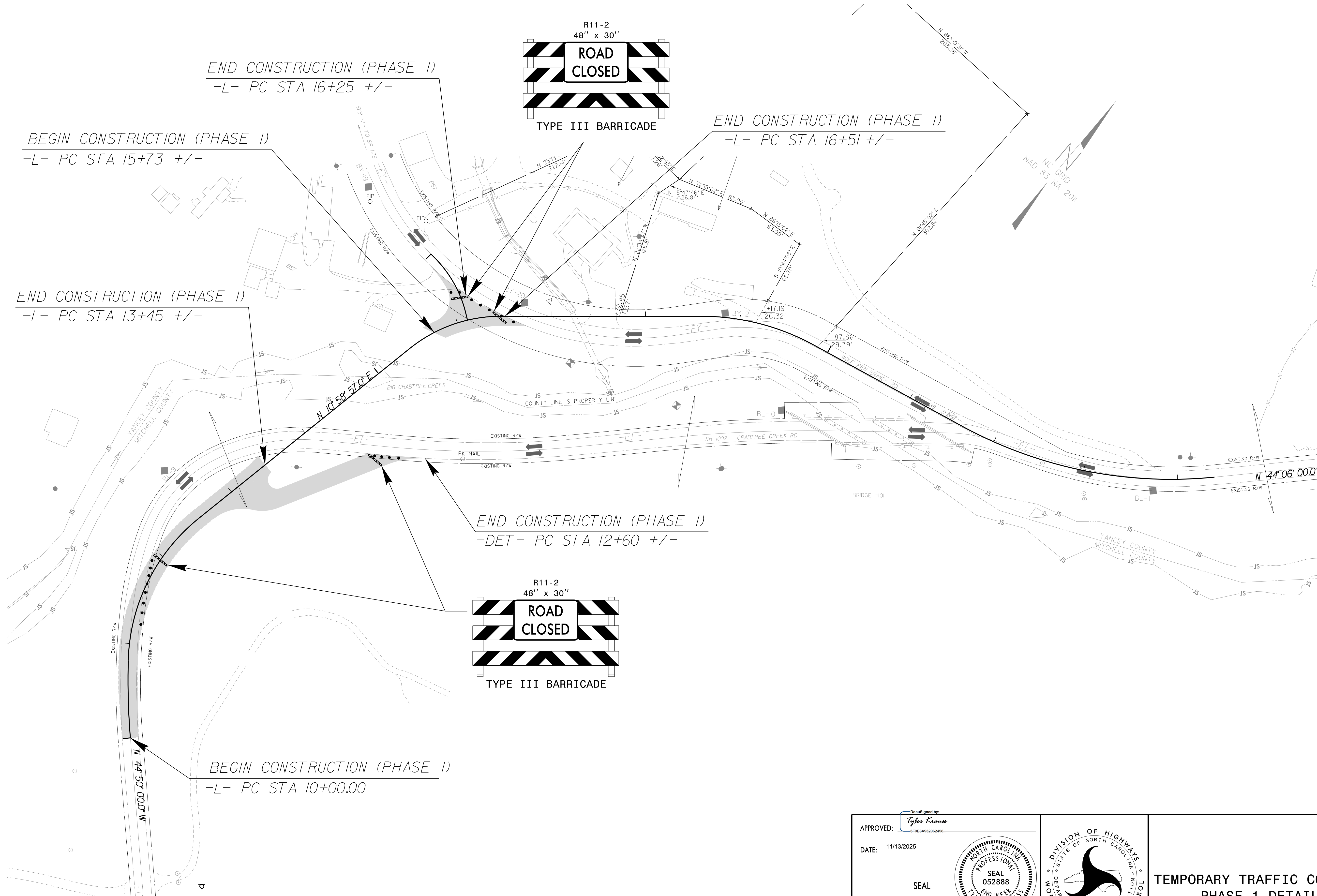
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

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

SPECIAL SIGN DESIGN

PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.184	TMP-4



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NC Firm License No: C-0764

APPROVED: Tyler Krauss

DATE: 11/13/2025

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052888 TYLER M. KRAUSS

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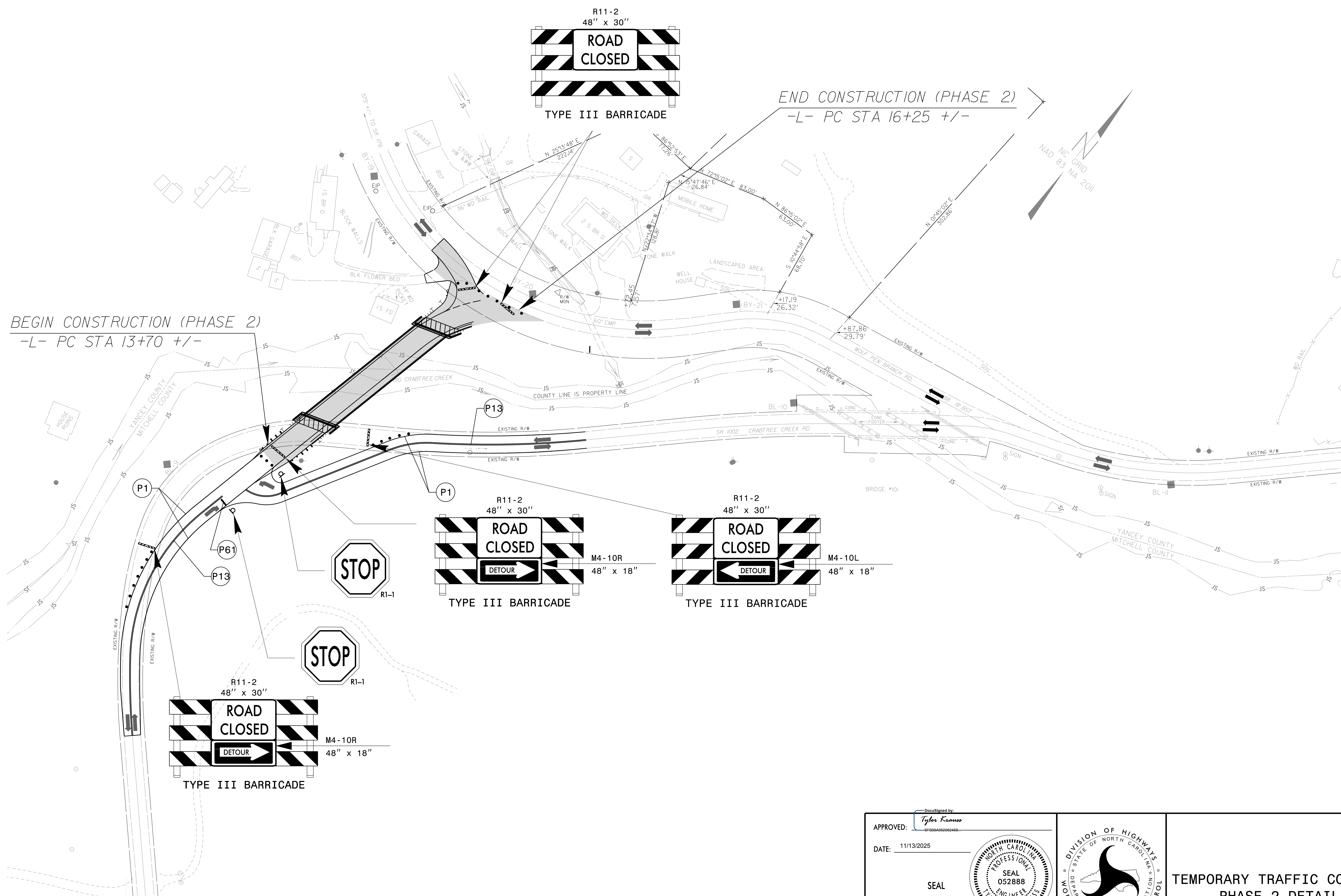
DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

TEMPORARY TRAFFIC CONTROL
PHASE 1 DETAIL

13-NOV-2025 11:33
M:\2016\22160946.09 NCDOT Division 13 Bridge Replacements\G.17BP.13.R.184_Mitchell.600101_B5158\Traffic\TrafficControl\TCP\600101_TMP_04.dgn
$$$$USERNAME$$$$

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



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$$$$USERNAME$$$$

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NC Firm License No: C-0764

APPROVED: Tyler Krauss

DATE: 11/13/2025

SEAL

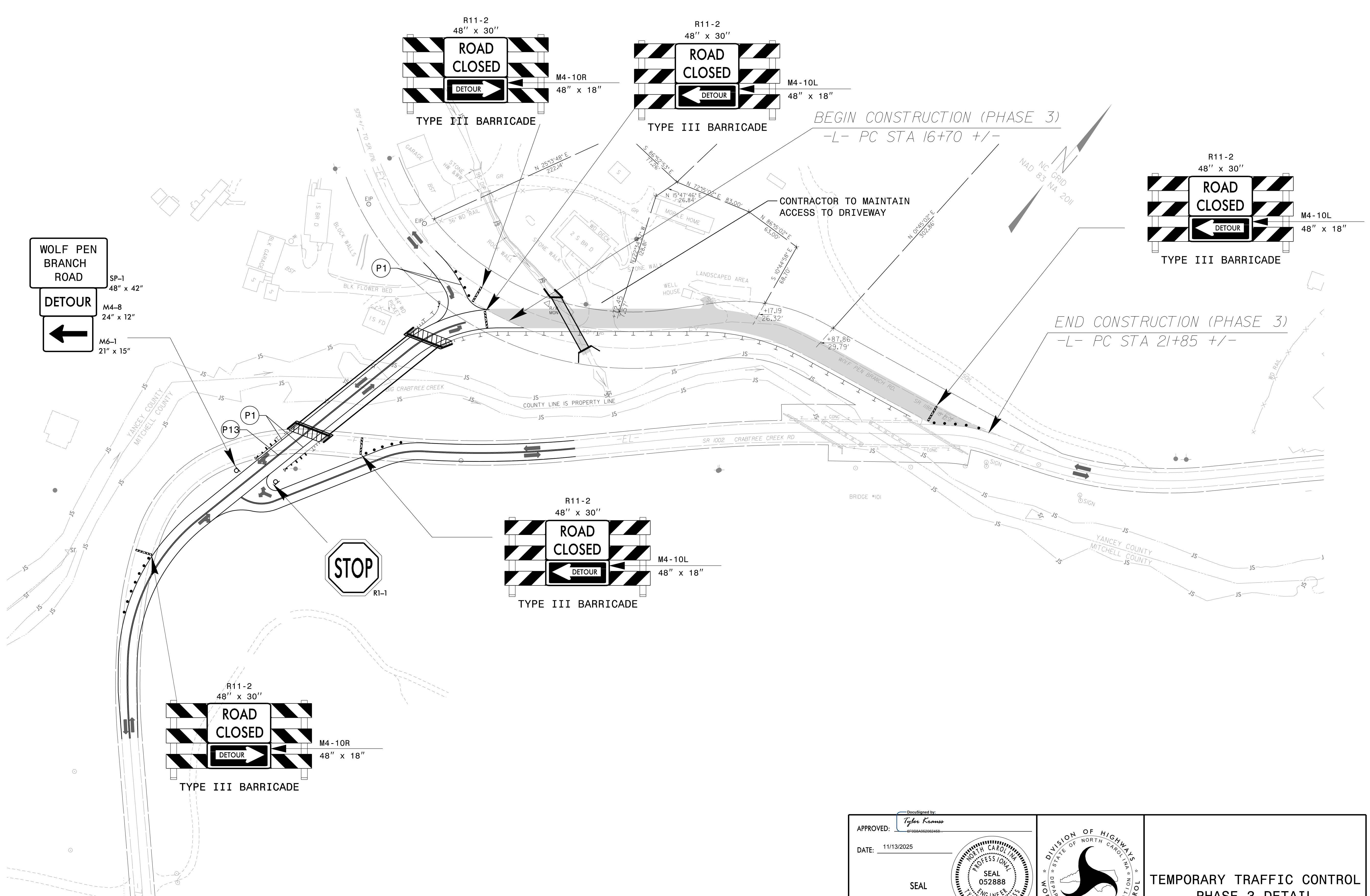
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052888 TYLER M. KRAUSS

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 2 DETAIL

PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.184	TMP-6



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KCI ASSOCIATES OF N.C., P.A.
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Phone (919) 783-9214
NC Firm License No: C-0764

APPROVED: DocuSigned by: Tyler Krauss

DATE: 11/13/2025

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052888 TYLER M. KRAUSS

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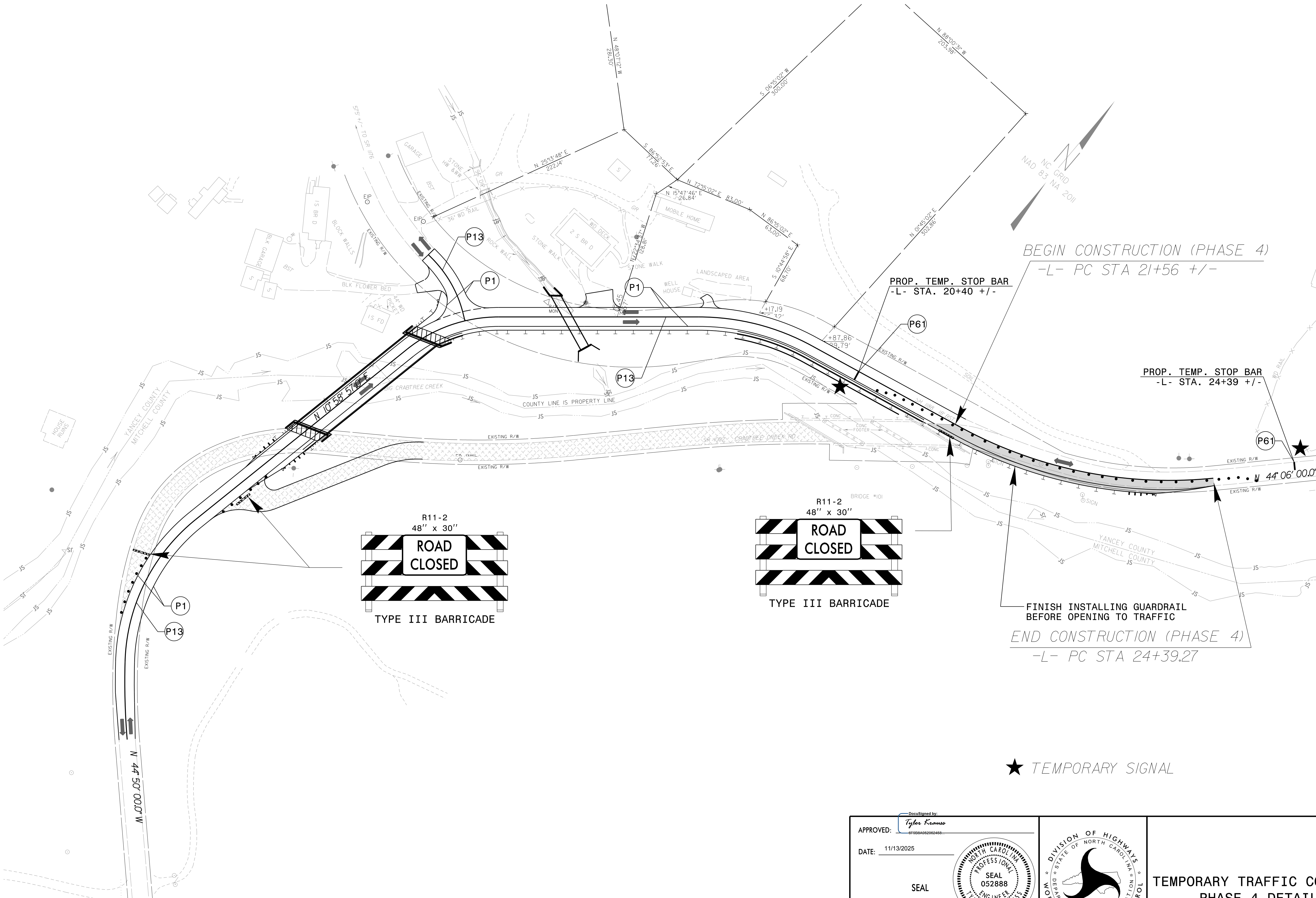
DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

TEMPORARY TRAFFIC CONTROL
PHASE 3 DETAIL

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



★ TEMPORARY SIGNAL

KCI ASSOCIATES OF N.C., P.A.
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Raleigh, NC 27609
Phone (919) 783-9214
NC Firm License No: C-0764

APPROVED: Tyler Krauss

DATE: 11/13/2025

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052888 TYLER M. KRAUSS

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 4 DETAIL

13-NOV-2025 11:33
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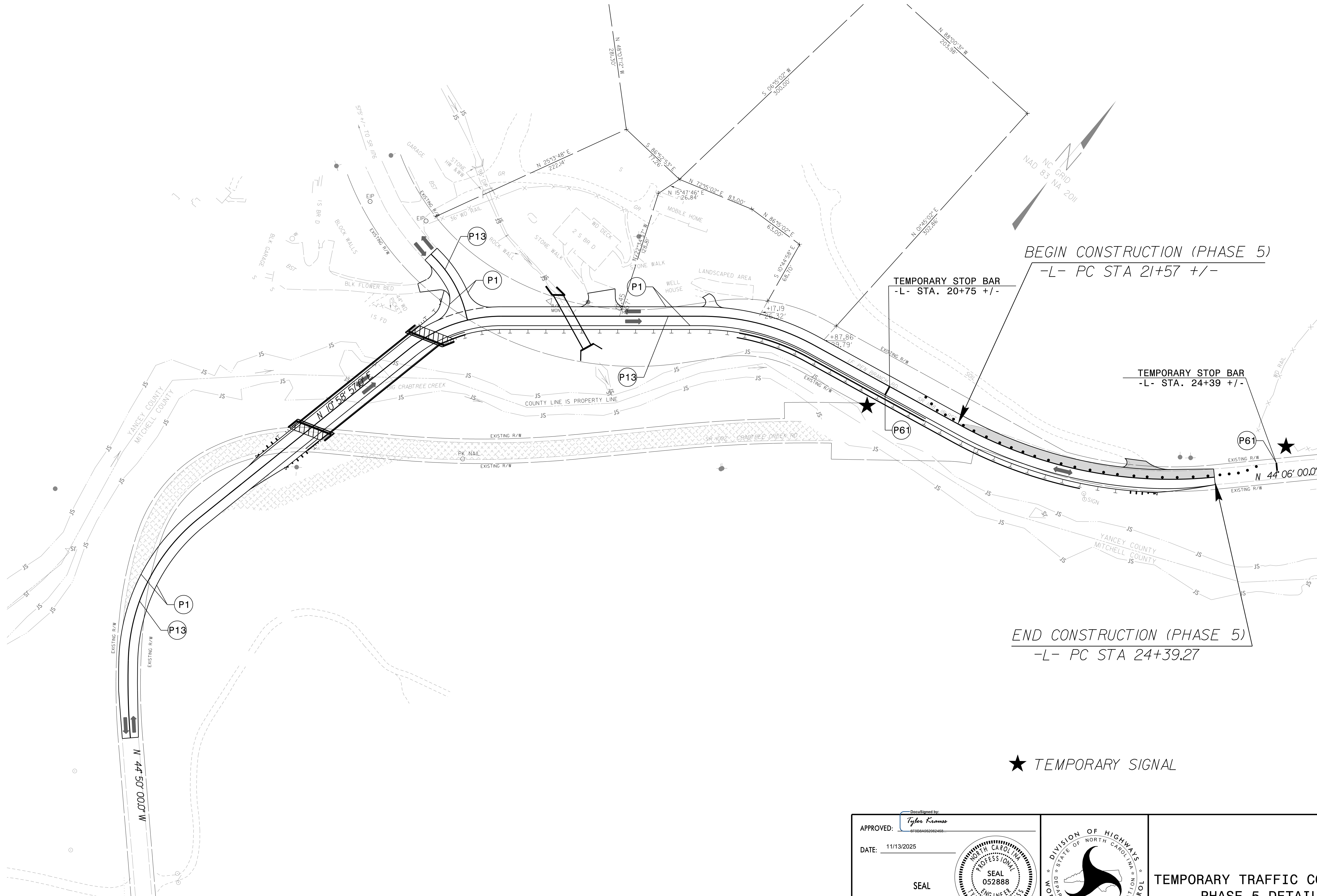
PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.184	TMP-8



★ TEMPORARY SIGNAL

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NC Firm License No: C-0764

APPROVED: Tyler Krauss

DATE: 11/13/2025

SEAL

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

TEMPORARY TRAFFIC CONTROL
PHASE 5 DETAIL

PROJECT: 17BP.13.R.184

CONTRACT: DM00426

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

APPROVED: Tyler Krauss

DATE: 1/23/2026

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 052888 ENGINEER TYLER M. KRAUSS

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KCI ASSOCIATES OF N.C., P.A.
4505 Falls of Neuse Road, Suite 400
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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

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:

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

TYLER KRAUSS, P.E. — 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

23-JAN-2026 09:23
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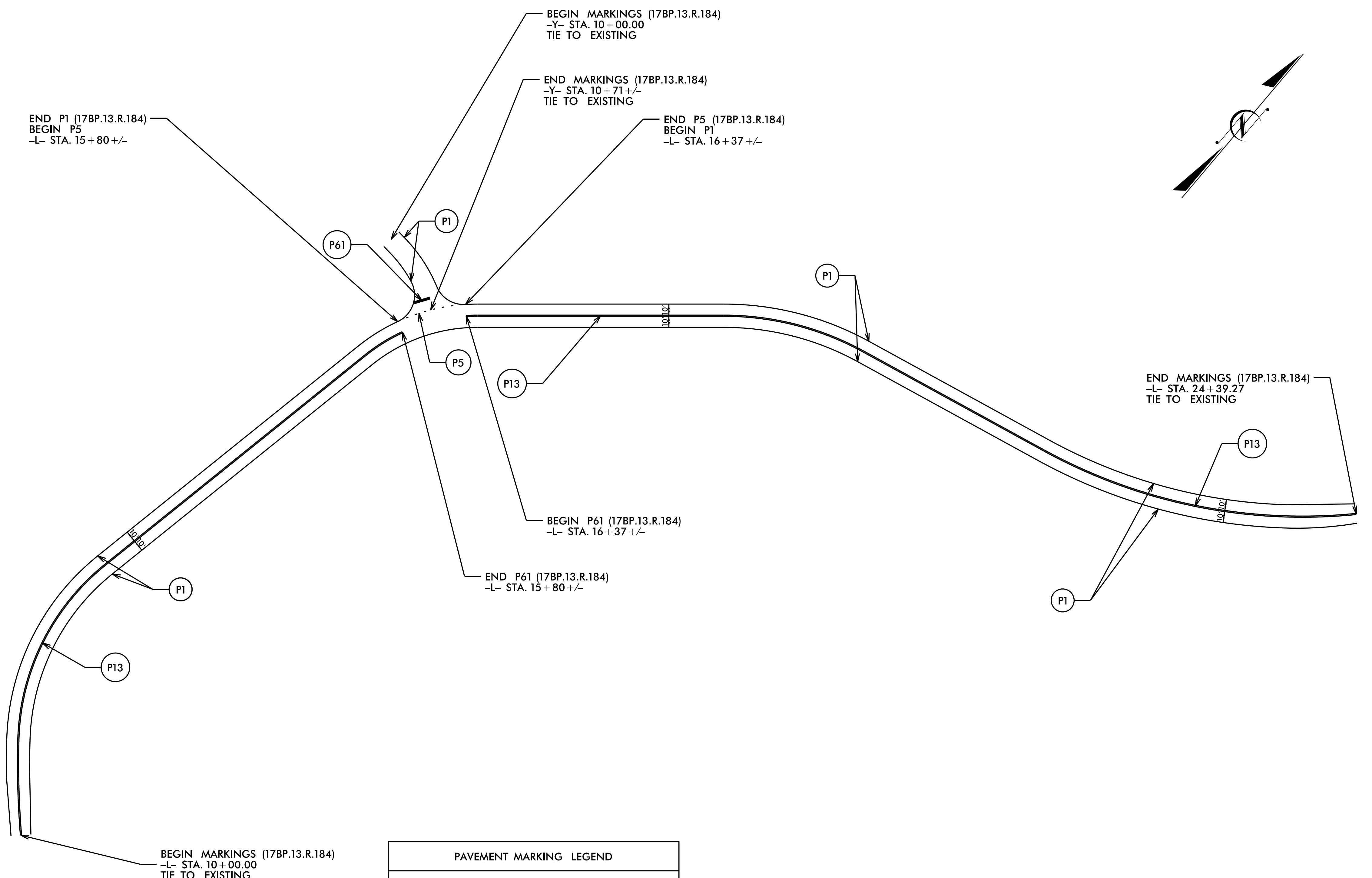
PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.184	PMP-02



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.
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NC Firm License No: C-0764

APPROVED: Tyler Krauss

DATE: 11/13/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 052888 ENGINEER TYLER M. KRAUSS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

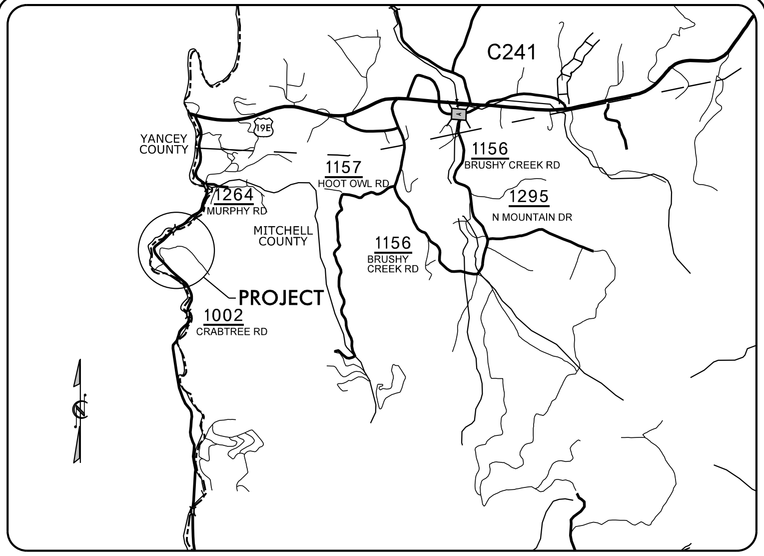
DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

PAVEMENT MARKING DETAIL

CONTRACT: DM00426 TIP PROJECT: 17BP.13.R.184

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



VICINITY MAP

NOT TO SCALE

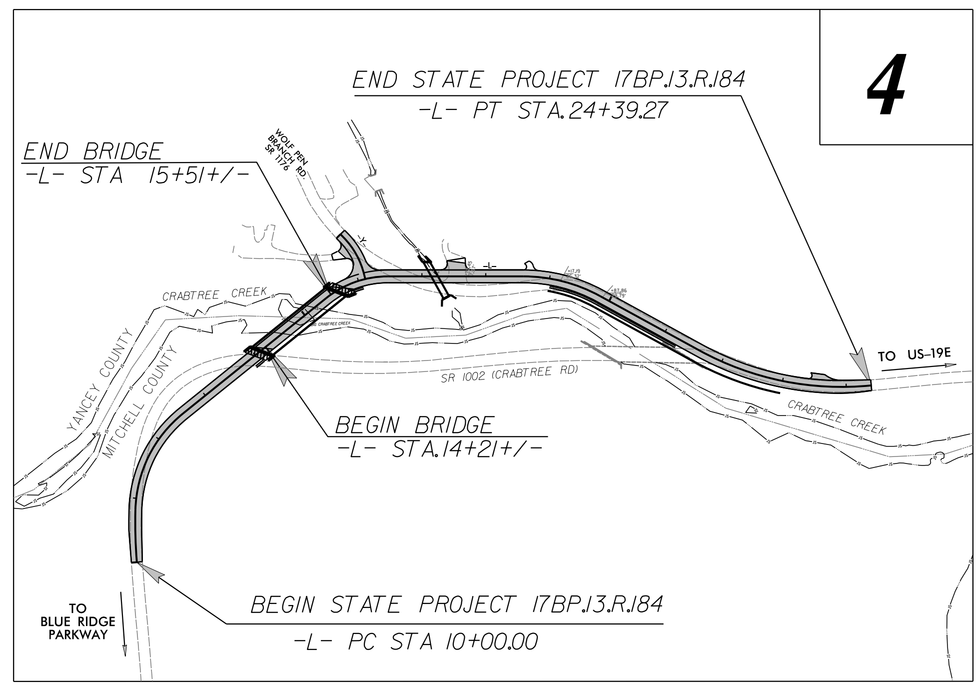
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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



NAD 83/ NA 2011

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.

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

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

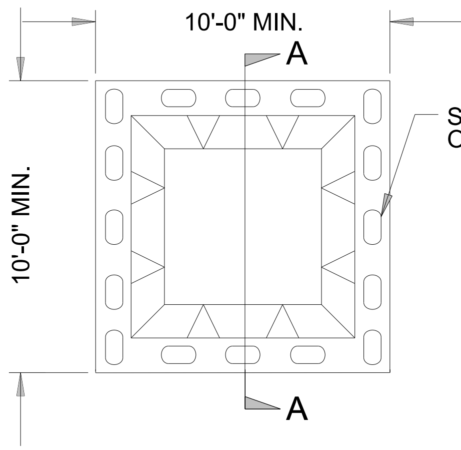
EROSION & SEDIMENT CONTROL LEGEND

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

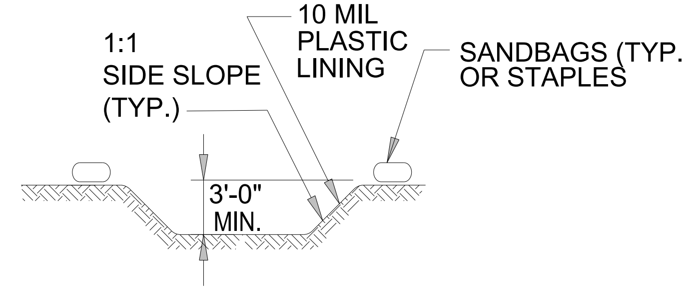
Std. #	Description	Symbol
1633.01	Temporary Rock Silt Check Type A	
1633.02	Temporary Rock Silt Check Type B	
1633.03	Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant	
1634.01	Temporary Rock Sediment Dam Type A	
1634.02	Temporary Rock Sediment Dam Type B	
1635.01	Rock Pipe Inlet 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

CLEARLY MARKED SIGNAGE NOTING DEVICE (18"X24" MIN.)

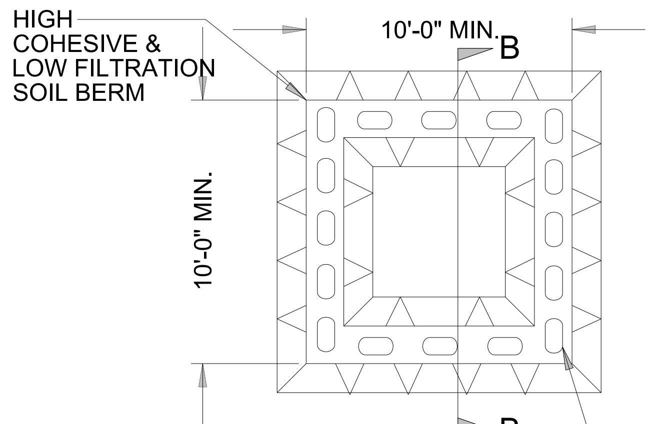
BELOW GRADE WASHOUT STRUCTURE

NOT TO SCALE

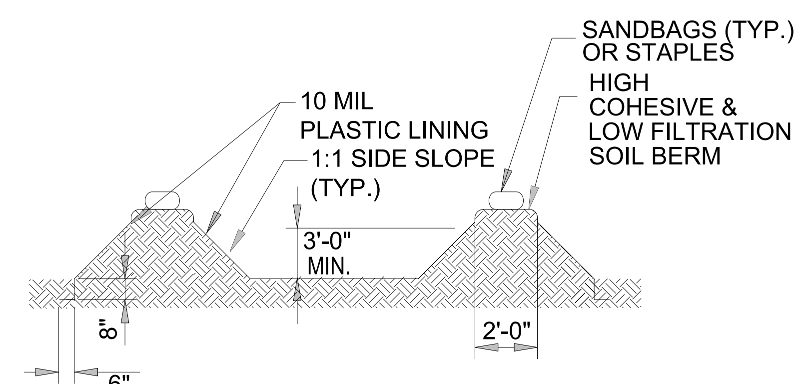
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

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

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



PLAN



SECTION B-B

CLEARLY MARKED SIGNAGE NOTING DEVICE (18"X24" MIN.)

ABOVE GRADE WASHOUT STRUCTURE

NOT TO SCALE

NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

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

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

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.
17BPJ3.RJ84	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

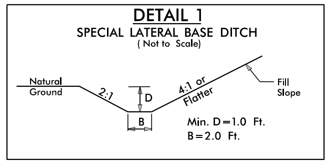
NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE – B AND TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

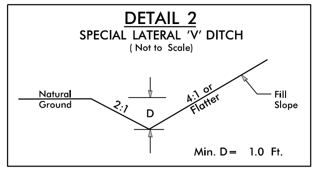
CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 04

BRIDGE APPROACH SLAB

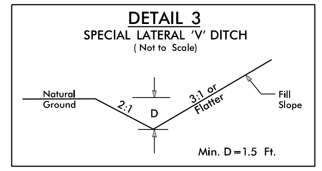
PAVEMENT REMOVAL



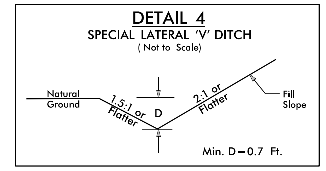
FROM STA. 11+00 TO STA. 11+60 –L– RT



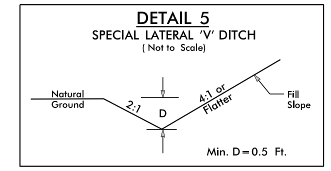
FROM STA. 11+60 TO STA. 12+50 –L– RT
FROM STA. 12+00 TO STA. 13+70 –L– LT
FROM STA. 15+60 TO STA. 15+85 –L– LT
FROM STA. 19+07 TO STA. 20+00 –L– LT



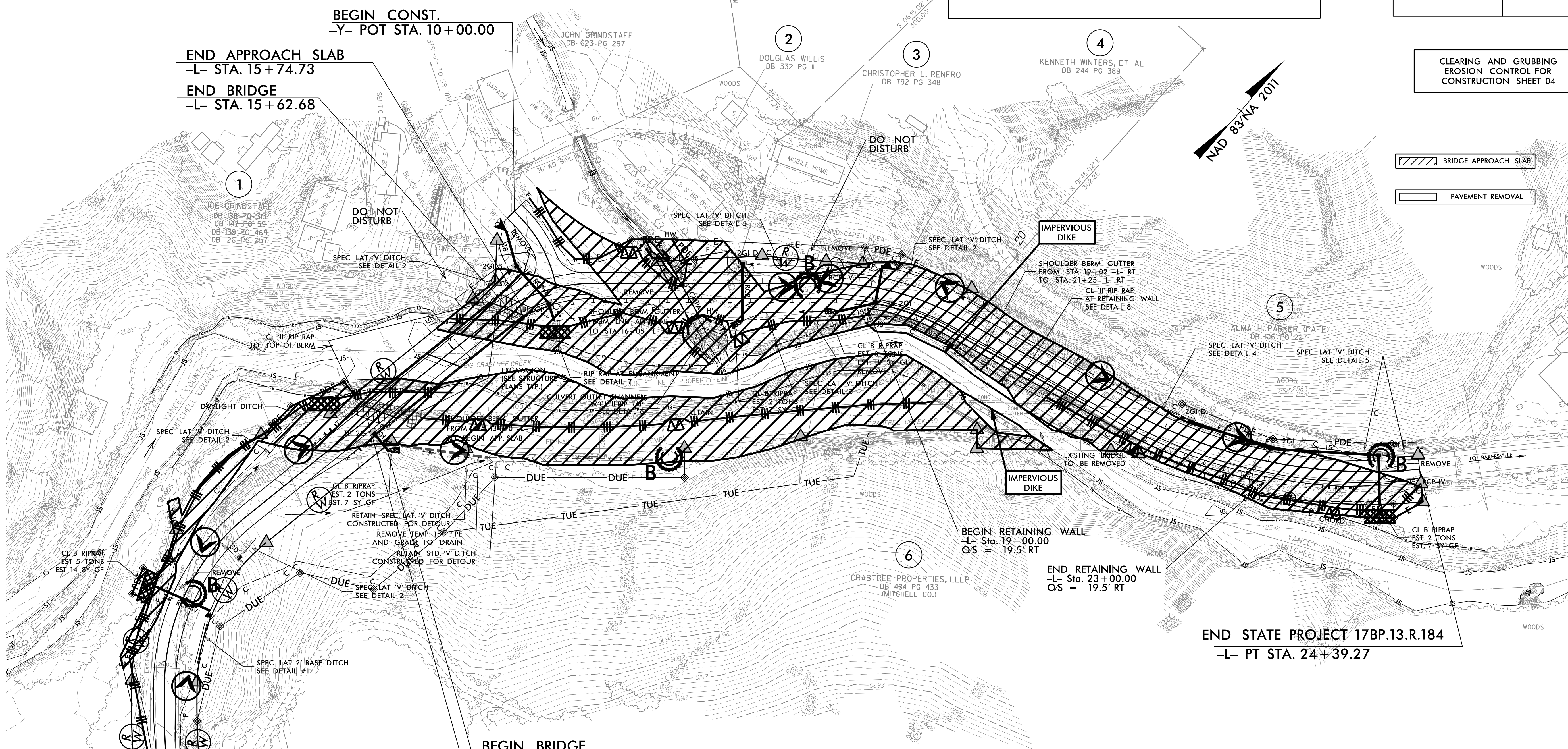
FROM STA. 17+60 TO STA. 18+70 –L– RT

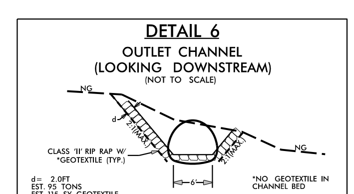


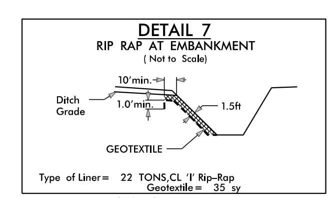
FROM STA. 21+50 TO STA. 22+20 –L– LT



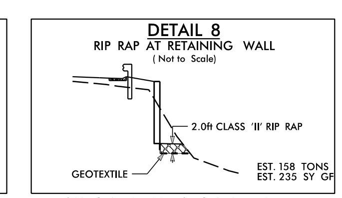
FROM STA. 17+82 TO STA. 18+50 –L– LT
FROM STA. 23+80 TO STA. 24+02 –L– LT
FROM STA. 24+02 TO STA. 24+35 –L– LT







STA. 16+00 –L– RT



FROM STA. 19+00 TO STA. 21+50 –L– RT

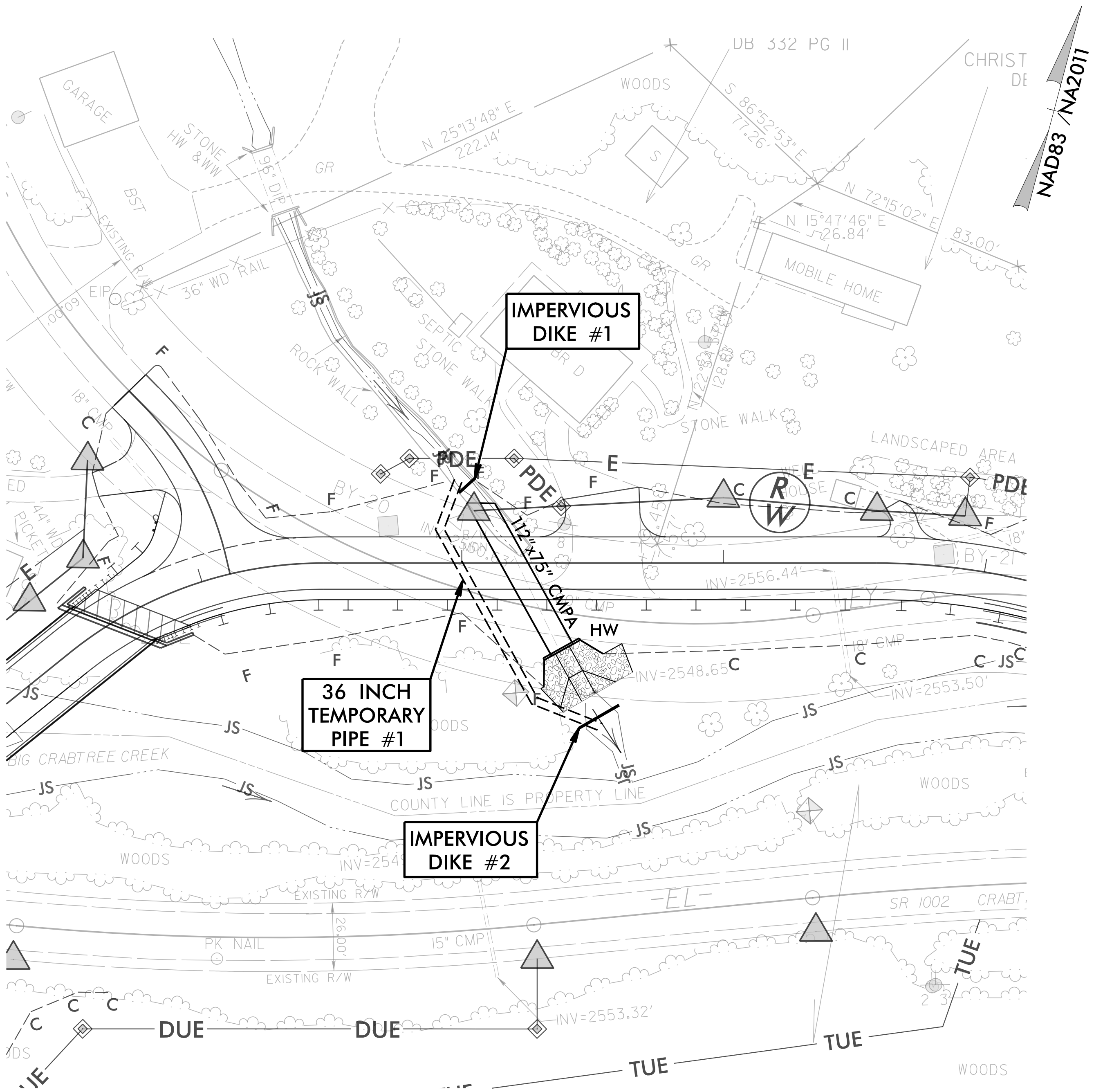
FOR –L– PROFILE, SEE SHEET NO.5
FOR –Y– PROFILE, SEE SHEET NO.5
FOR –DET– PLAN & PROFILE, SEE SHEET NO.2B-1
FOR ADDITIONAL ROADWAY DIMENSIONS, SEE SHEET 4A

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.84	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

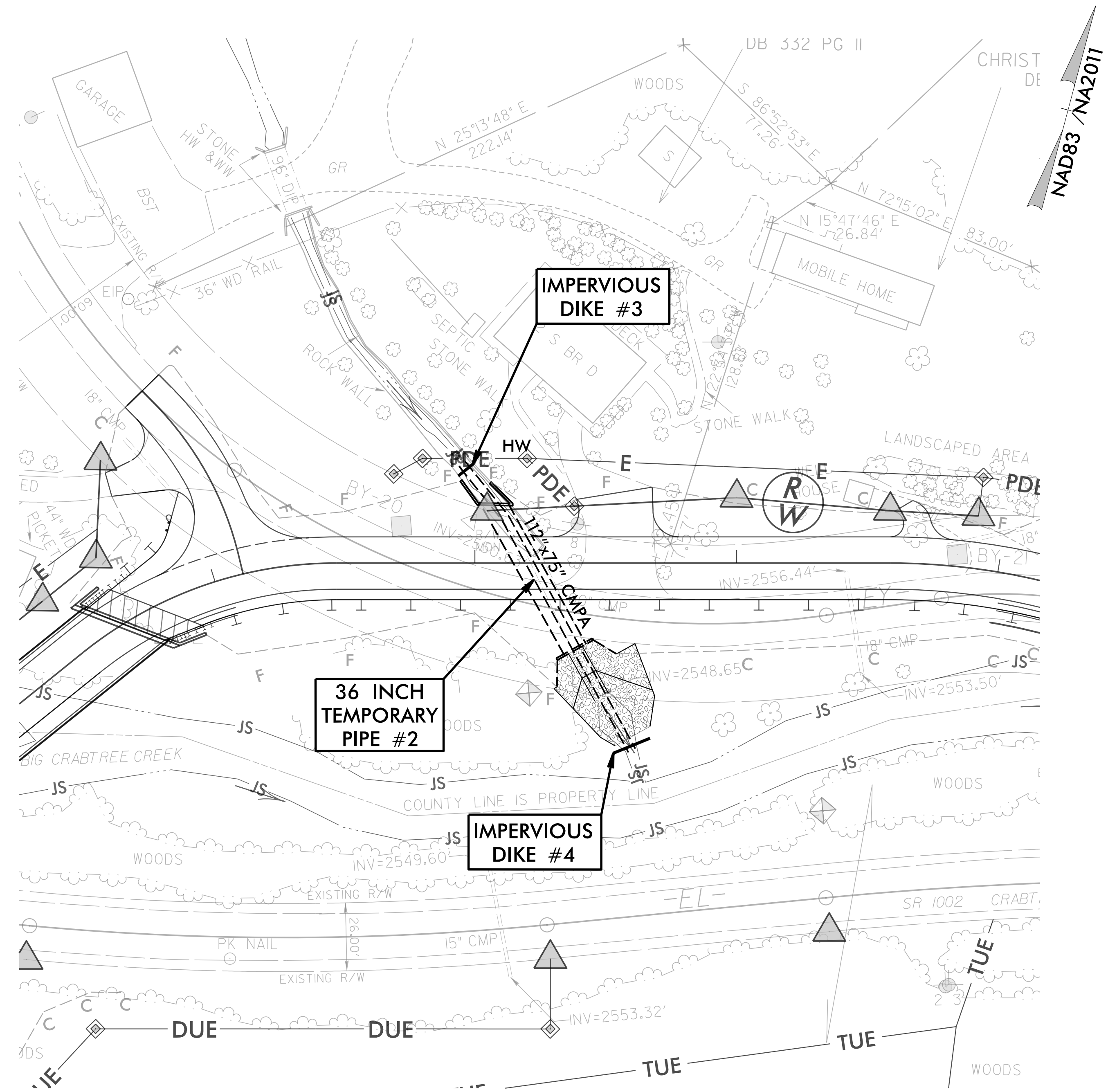
PHASE I

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.



30' 15' 0 30' 60'
SCALE: 1"=30'

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

INTERMEDIATE
EROSION CONTROL FOR
CONSTRUCTION SHEET 04A

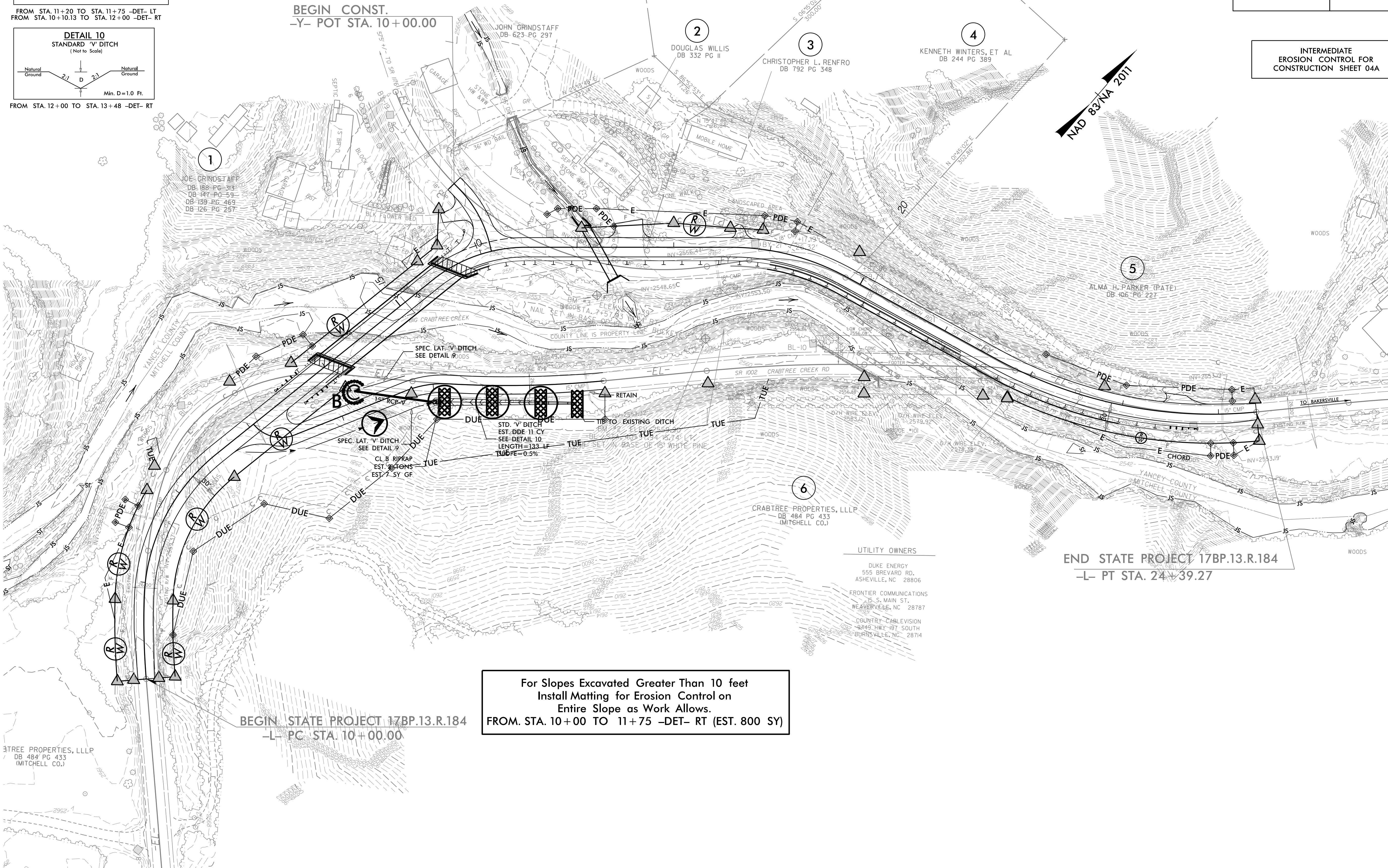
NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE – B AND TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.

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



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

DETAIL 1
SPECIAL LATERAL BASE DITCH
(Not to Scale)
Natural Ground; 2:1; D; B; 4:1 or Flatter; Fill Slope
Min. D=1.0 Ft.
B=2.0 Ft.
FROM STA. 11+00 TO STA. 11+60 -L- RT

DETAIL 2
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground; 2:1; D; 4:1 or Flatter; Fill Slope
Min. D= 1.0 Ft.
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

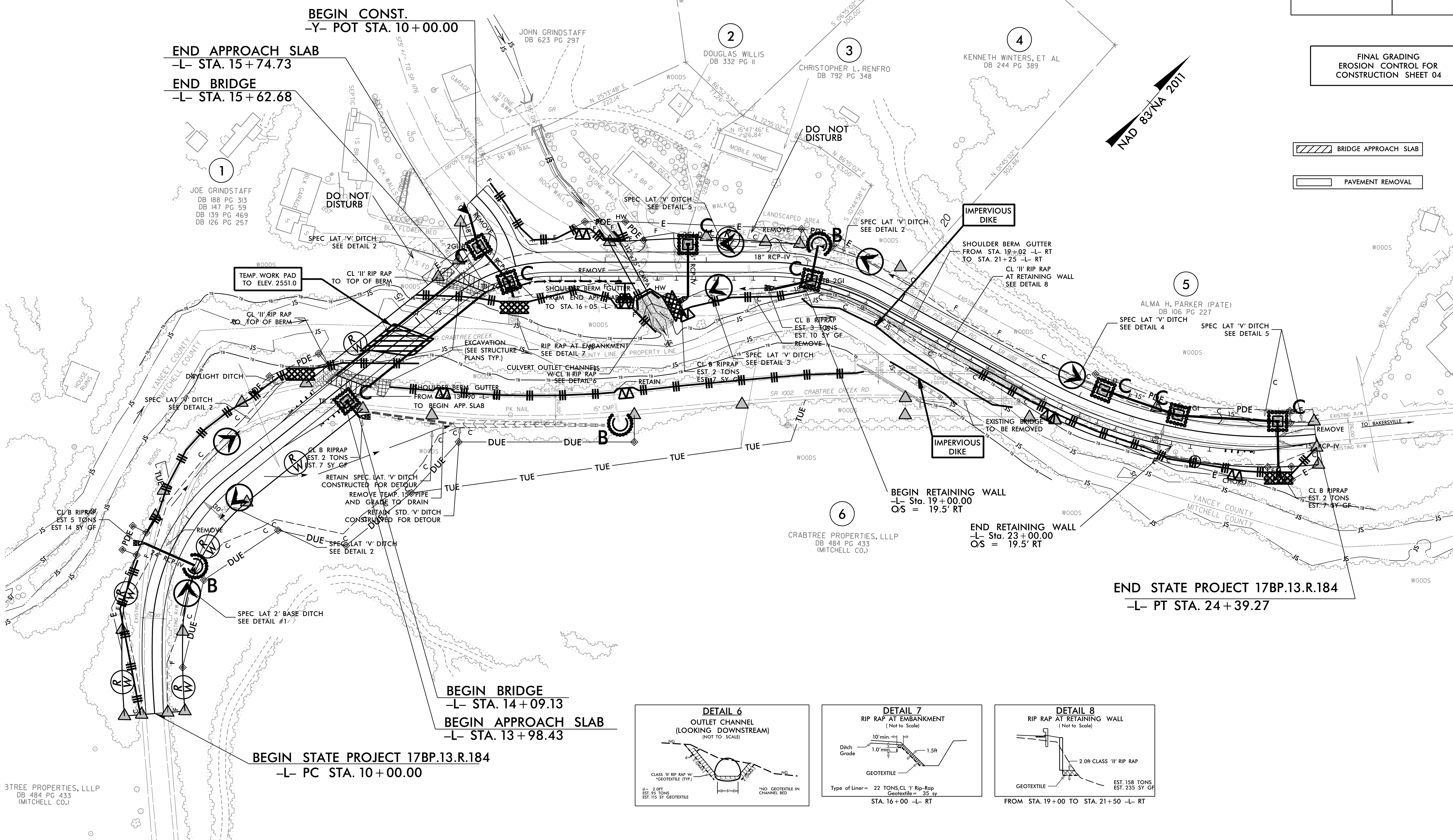
DETAIL 3
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground; 2:1; D; 3:1 or Flatter; Fill Slope
Min. D=1.5 Ft.
FROM STA. 17+60 TO STA. 18+70 -L- RT

DETAIL 4
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground; 1.5:1 or Flatter; D; 2:1 or Flatter; Fill Slope
Min. D=0.7 Ft.
FROM STA. 21+50 TO STA. 22+20 -L- LT

DETAIL 5
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground; 2:1; D; 4:1 or Flatter; Fill Slope
Min. D=0.5 Ft.
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

FINAL GRADING
EROSION CONTROL FOR
CONSTRUCTION SHEET 04

BRIDGE APPROACH SLAB
PAVEMENT REMOVAL



DETAIL 6
OUTLET CHANNEL
(LOOKING DOWNSTREAM)
(NOT TO SCALE)
CLASS 'II' RIP RAP W/ *GEOTEXTILE (TYP.)
d= 2.0FT
EST. 95 TONS
EST. 115 SY GEOTEXTILE
*NO GEOTEXTILE IN CHANNEL BED

DETAIL 7
RIP RAP AT EMBANKMENT
(Not to Scale)
Ditch Grade; 10'min.; 1.0'min.; 1.5ft; GEOTEXTILE
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)
2.0ft CLASS 'II' RIP RAP
GEOTEXTILE
EST. 158 TONS
EST. 235 SY GF
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-I
FOR ADDITIONAL ROADWAY DIMENSIONS, SEE SHEET 4A

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

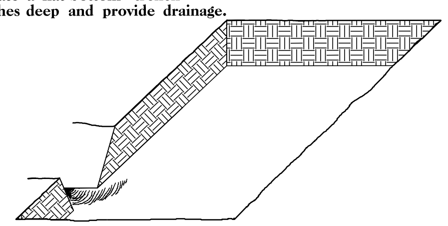
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION

PLANTING DETAILS

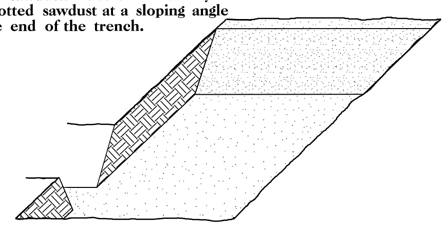
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

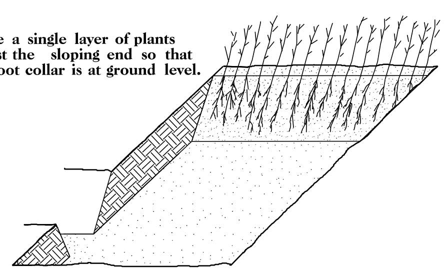
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



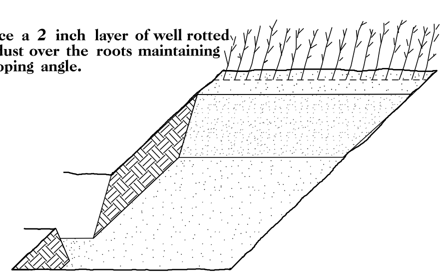
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

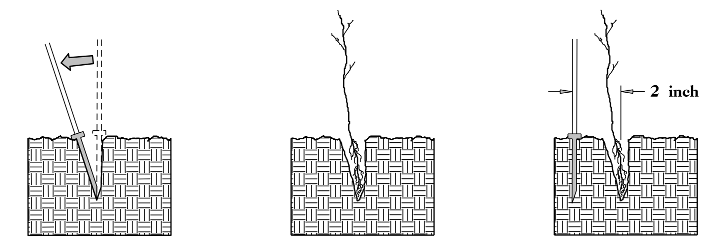


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

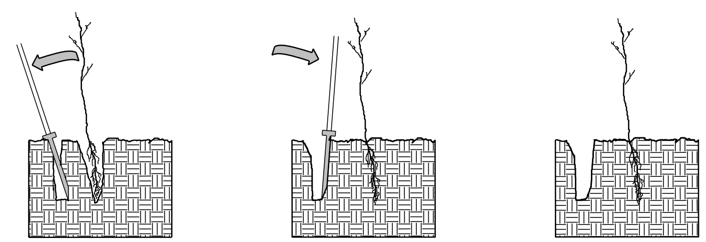


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



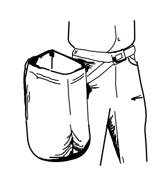
1. Insert planting bar as shown and pull handle toward planter.
2. Remove planting bar and place seedling at correct depth.
3. Insert planting bar 2 inches toward planter from seedling.



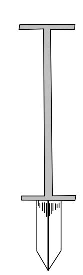
4. Pull handle of bar toward planter, firming soil at bottom.
5. Push handle forward firming soil at top.
6. Leave compaction hole open. Water thoroughly.

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%	FRAXINUS PENNSYLVANICA	GREEN ASH	12 in - 18 in BR
25%	BETULA NIGRA	RIVER BIRCH	12 in - 18 in BR

REFORESTATION DETAIL SHEET

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

TIP PROJECT: 17BP.13.R.184

CONTRACT: DM00426

02-APR-2024 10:41
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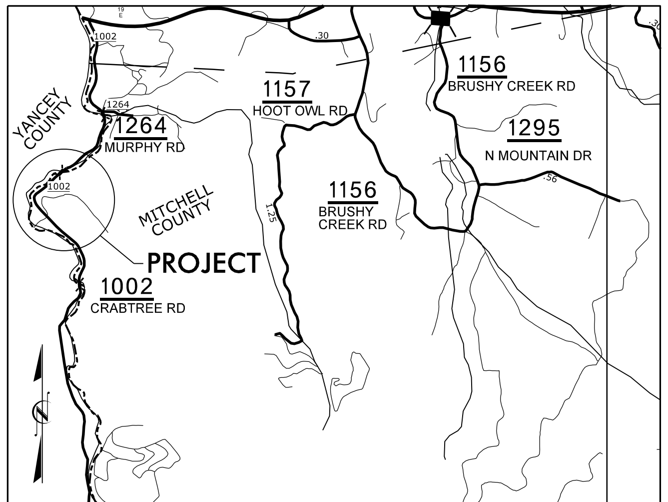
09/08/99



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

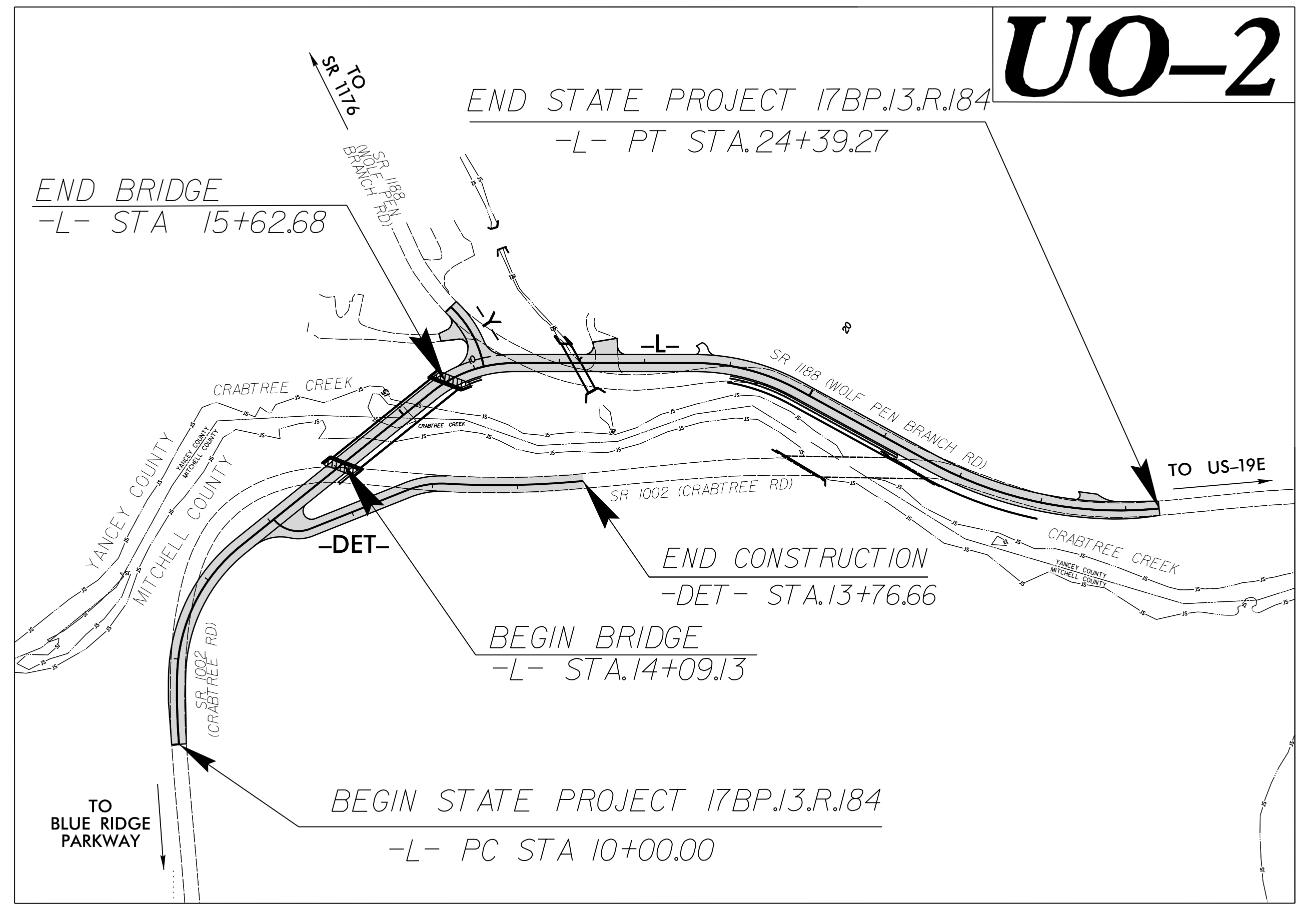
UTILITIES BY OTHERS PLANS
MITCHELL & YANCEY COUNTY

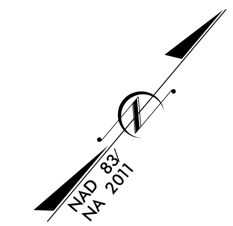
LOCATION: REPLACE BRIDGE NO. 600101 OVER BIG CRABTREE CREEK ON SR 1002 (CRABTREE RD.)

TYPE OF WORK: RELOCATION OF AERIAL POWER & COMMUNICATION FACILITIES

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.





GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

SHEET NO.:	*DESCRIPTION:*
UO–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.
4800 Falls of Neuse Road, Suite 200
Raleigh, NC 27609
Phone (919) 783-9214
Fax (919) 783-9266

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

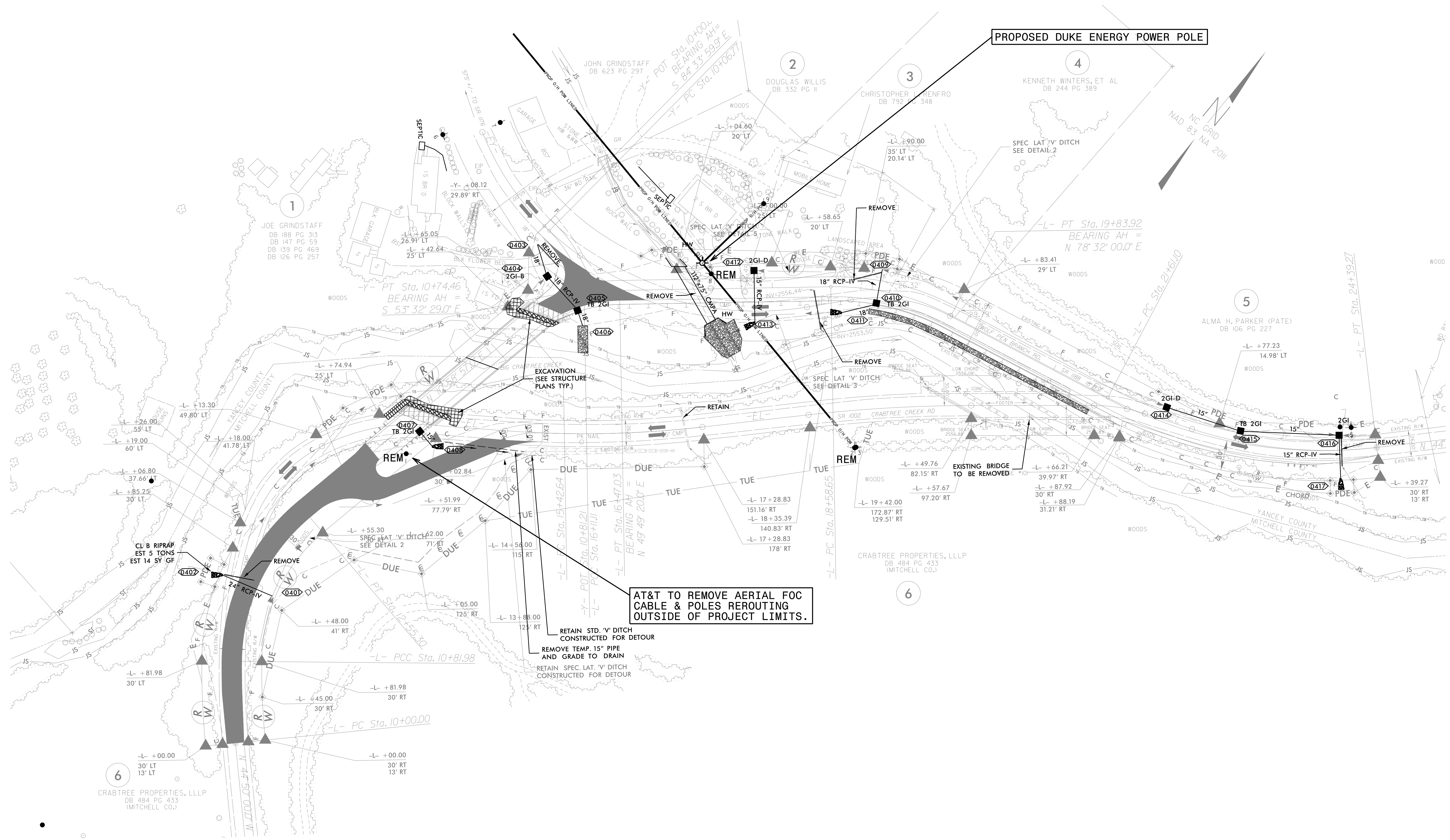
DIVISION OF HIGHWAYS
UTILITIES UNIT
1555 MAIL SERVICES CENTER
RALEIGH NC 27699-1555
PHONE (919) 707-6690
FAX (919) 250-4151

KEITH RADCLIFF *DIVISION UTILITY ENGINEER*
JOHN D. METCALF *DIVISION UTILITY COORDINATOR*

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.184	UO-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.



COMPUTED BY: J. BRYANT DATE: 4/2/2024
CHECKED BY: T. KRAUSS DATE: 4/9/2024

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	PROJ. REFERENCE NO.	SHEET NO.
BRIDGE 600101	17BP.13.R.184	X-0

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

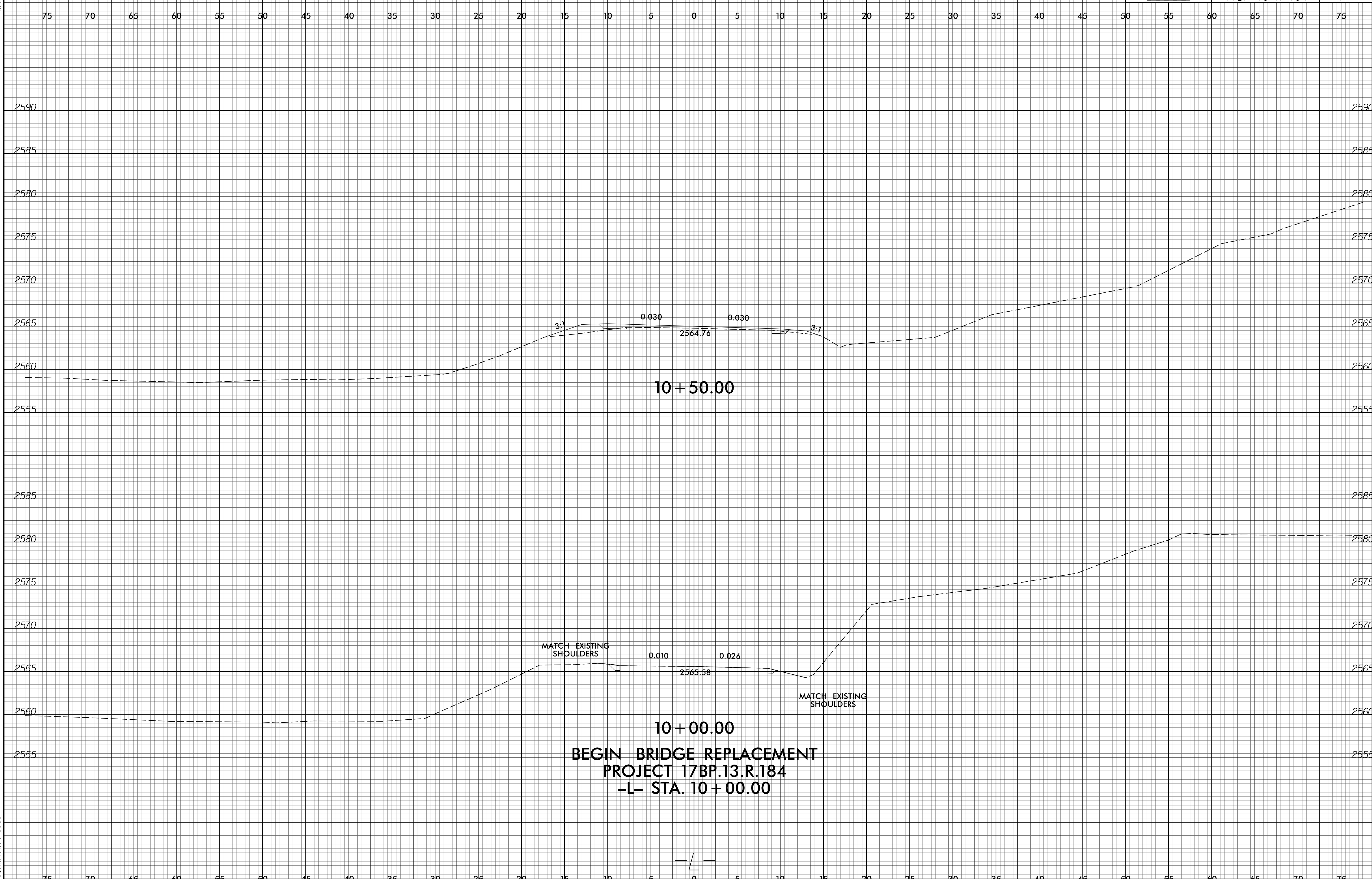
CROSS-SECTION SUMMARY

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

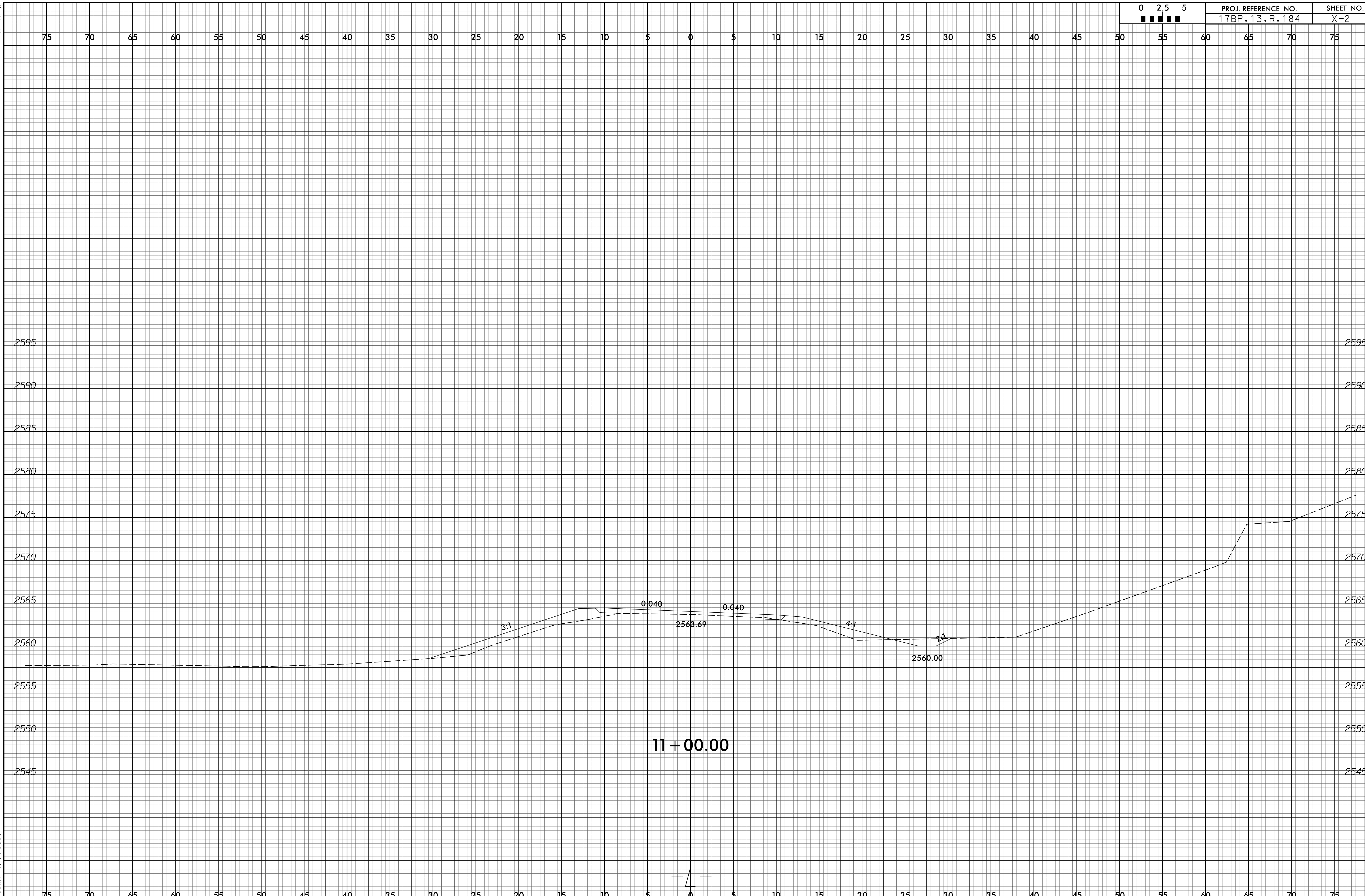
Station DET	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+10.12592	0	0
10+25.00000	539	0
10+50.00000	908	0
10+75.00000	917	0
11+00.00000	812	0
11+25.00000	620	0
11+50.00000	318	0
11+75.00000	91	0
12+00.00000	23	0
12+16.17000	7	0

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



BEGIN BRIDGE REPLACEMENT
PROJECT 17BP.13.R.184
–L– STA. 10 + 00.00

PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.184	X-2



6/23/16

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PROJ. REFERENCE NO.	SHEET NO.
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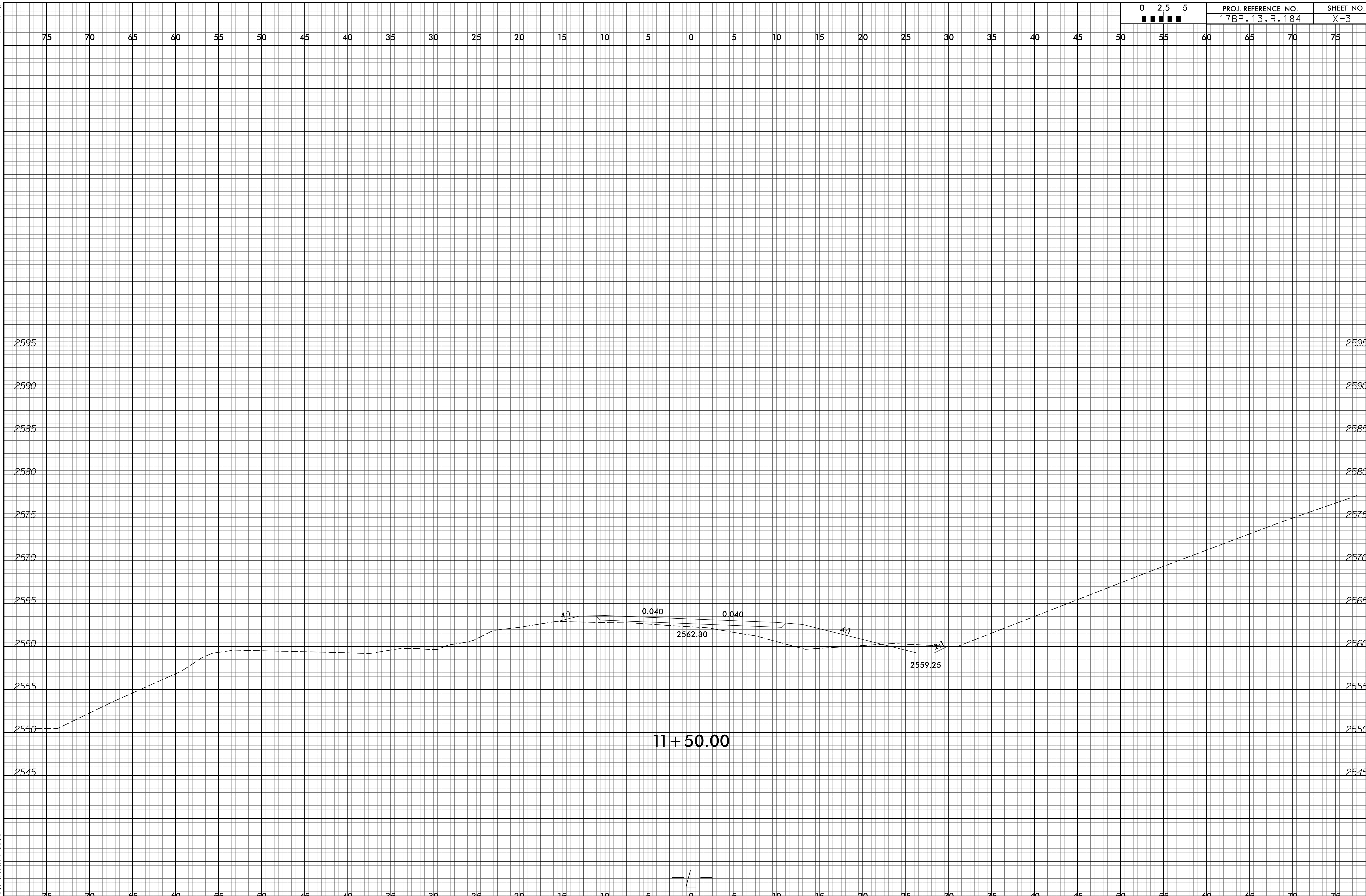

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0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
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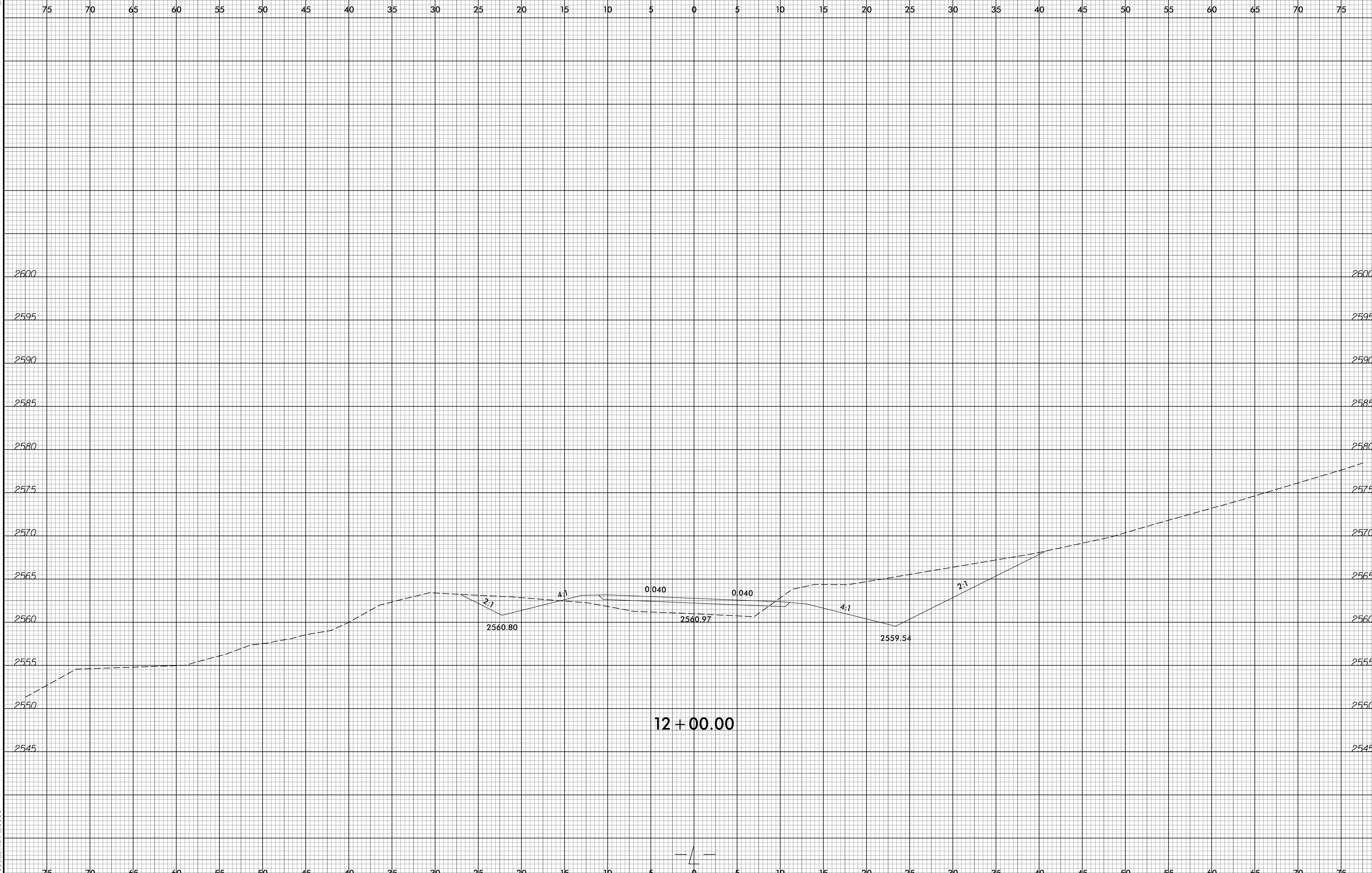

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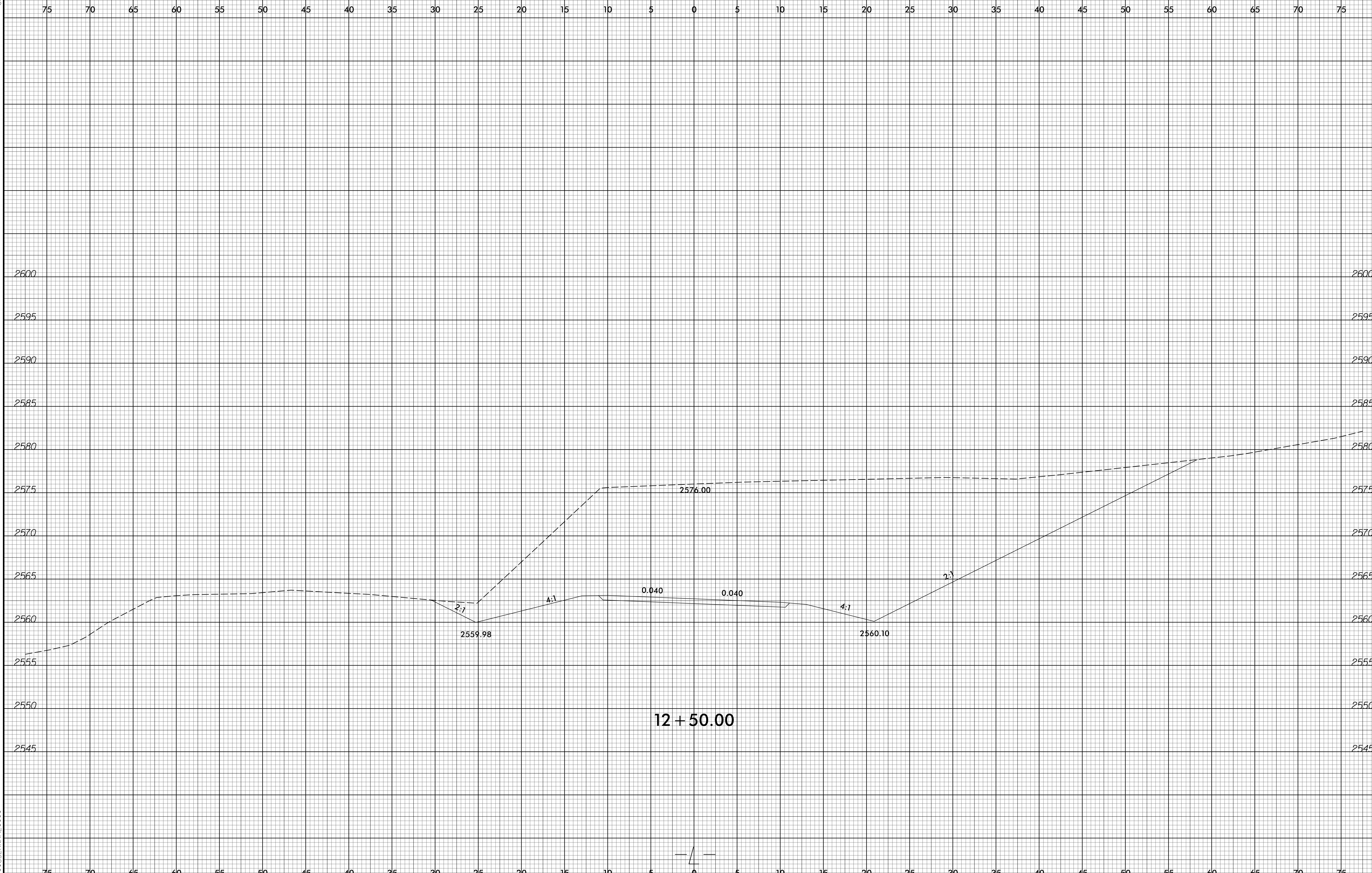

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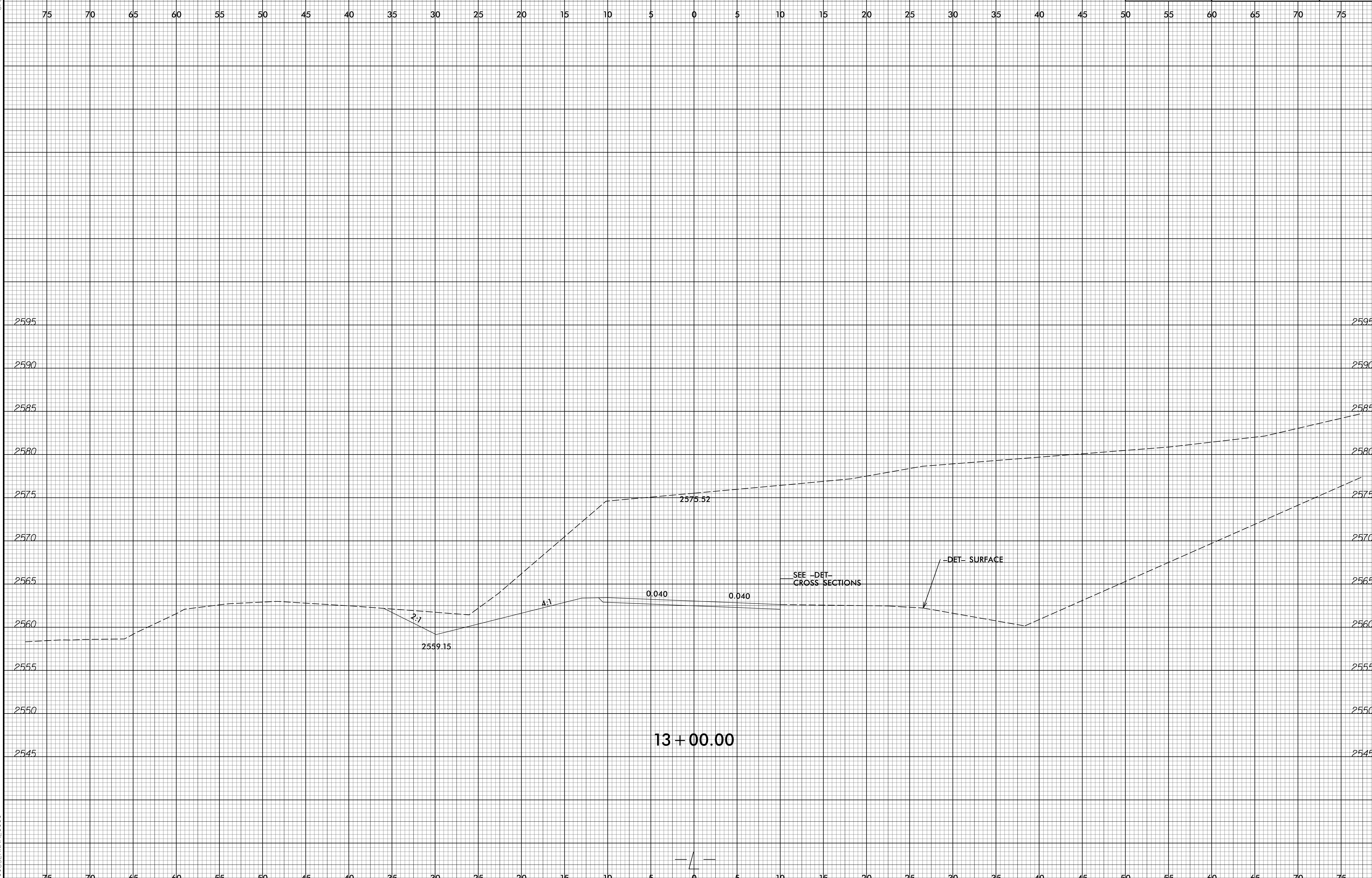
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.13.R.184	X-6

6/23/16



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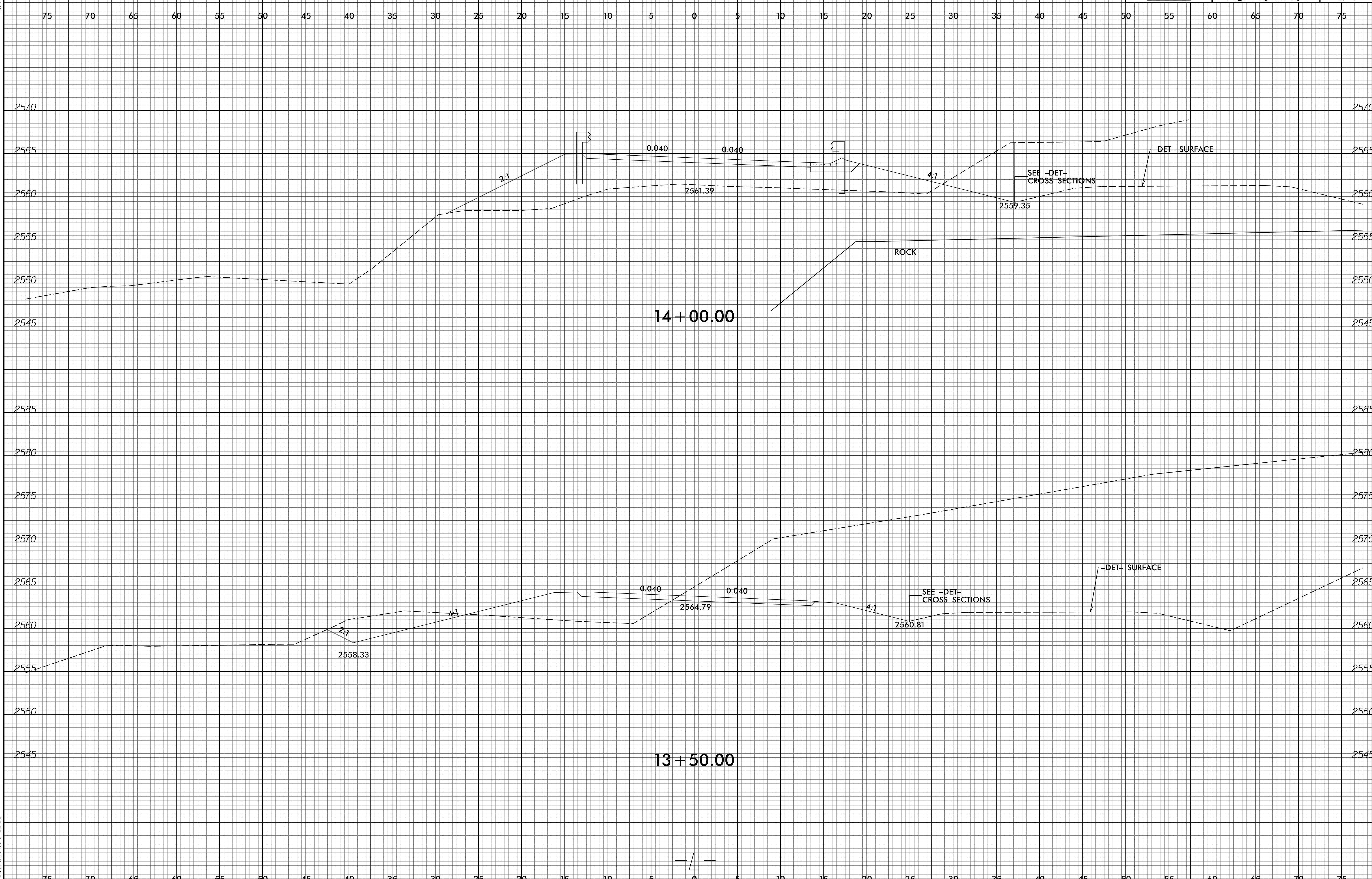
17BP.13.R.184	X-7

0 2.5 5



6/23/16

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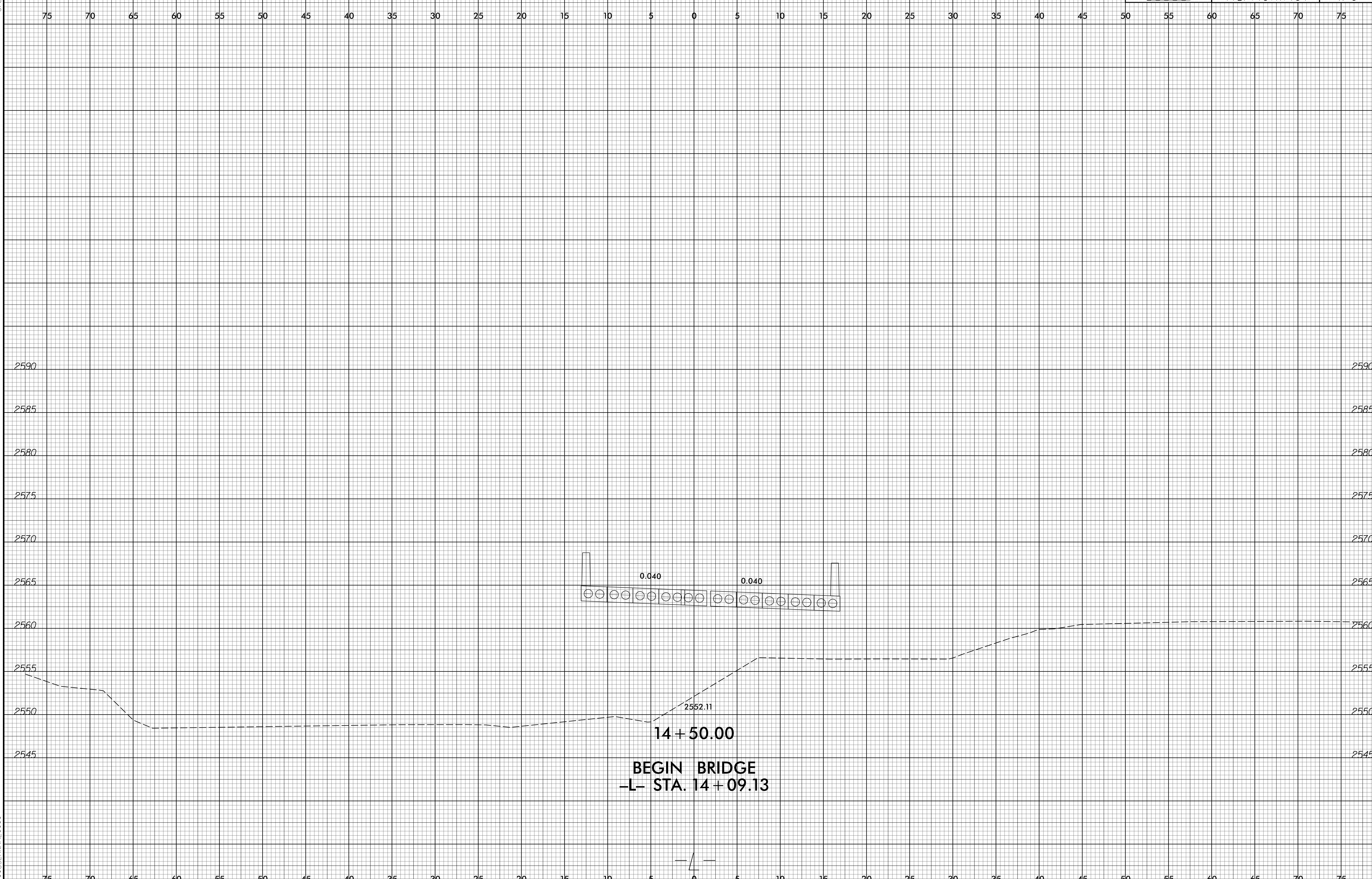
PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.184	X-8

0 2.5 5



6/23/16

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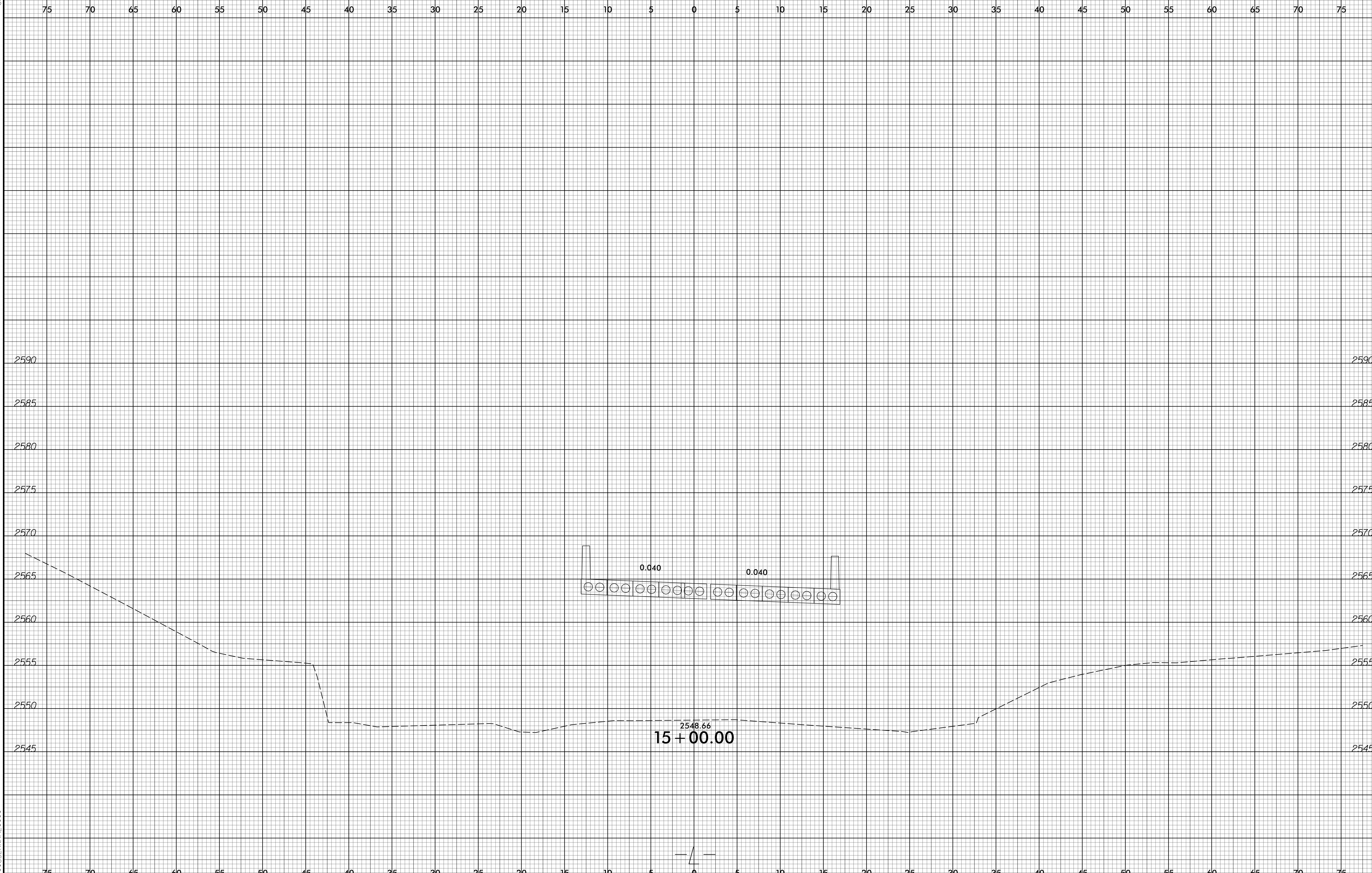
PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.184	X-9

0 2.5 5



6/23/16

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6/23/16

PROJ. REFERENCE NO.	SHEET NO.
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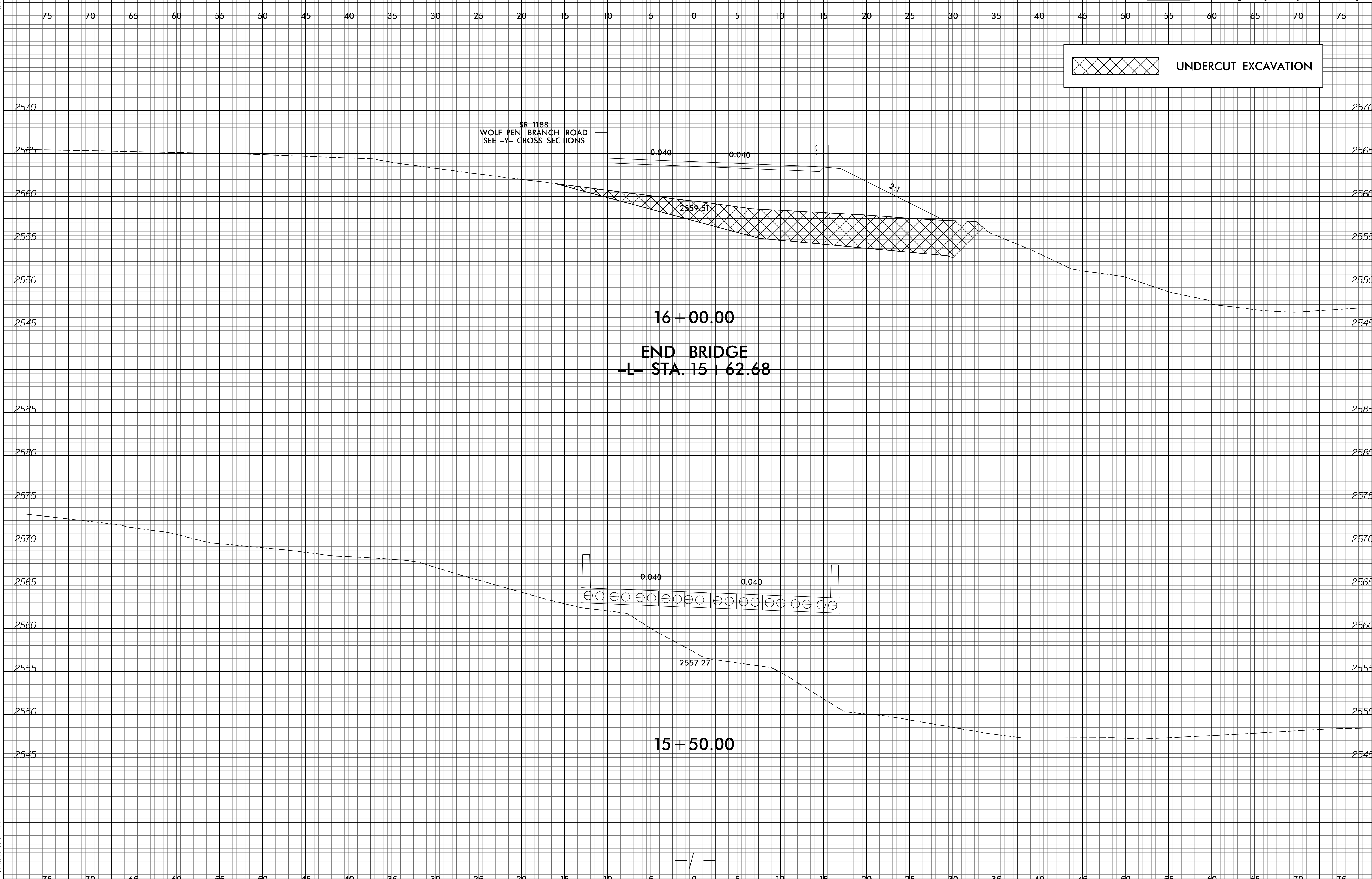

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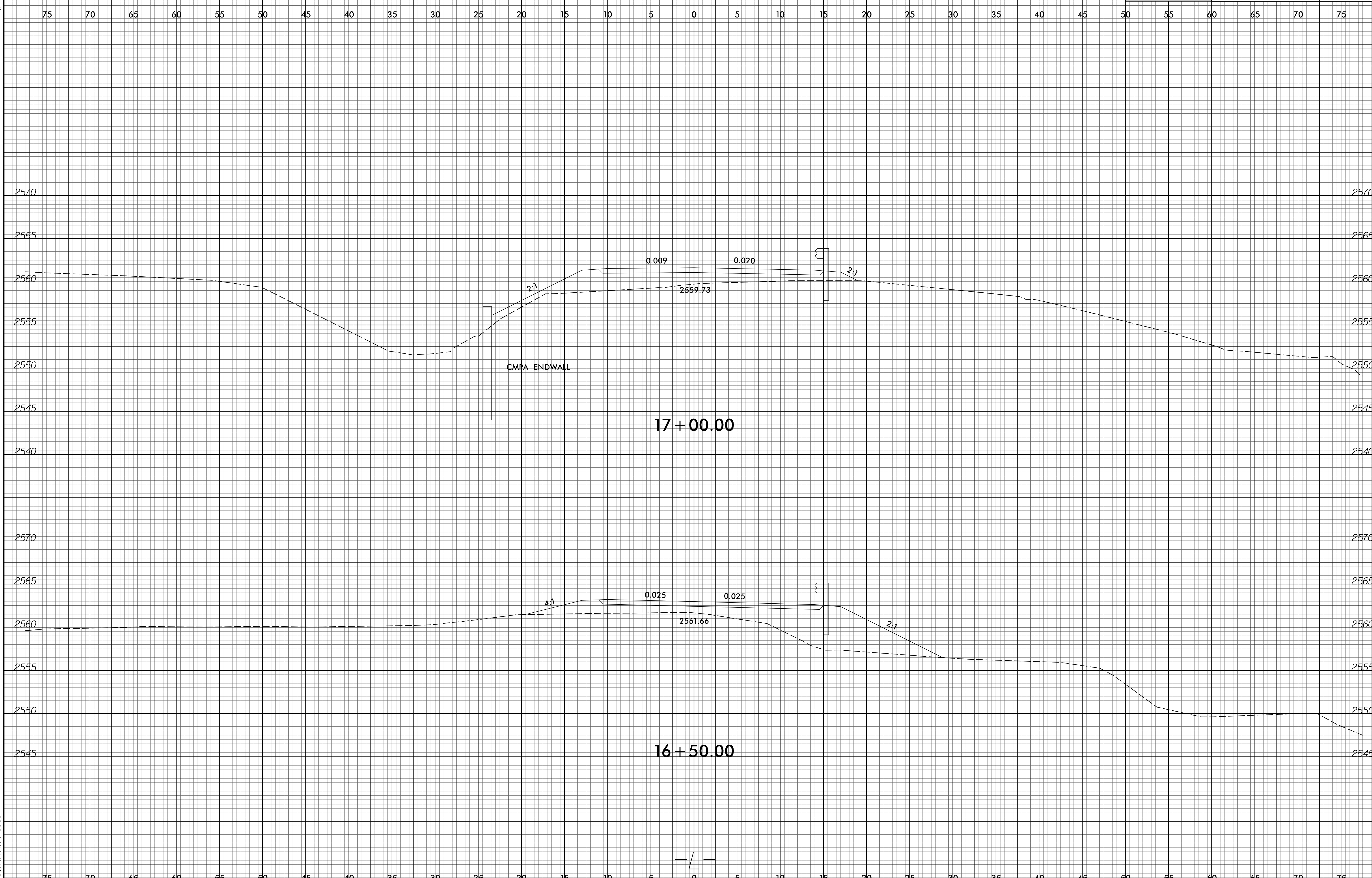

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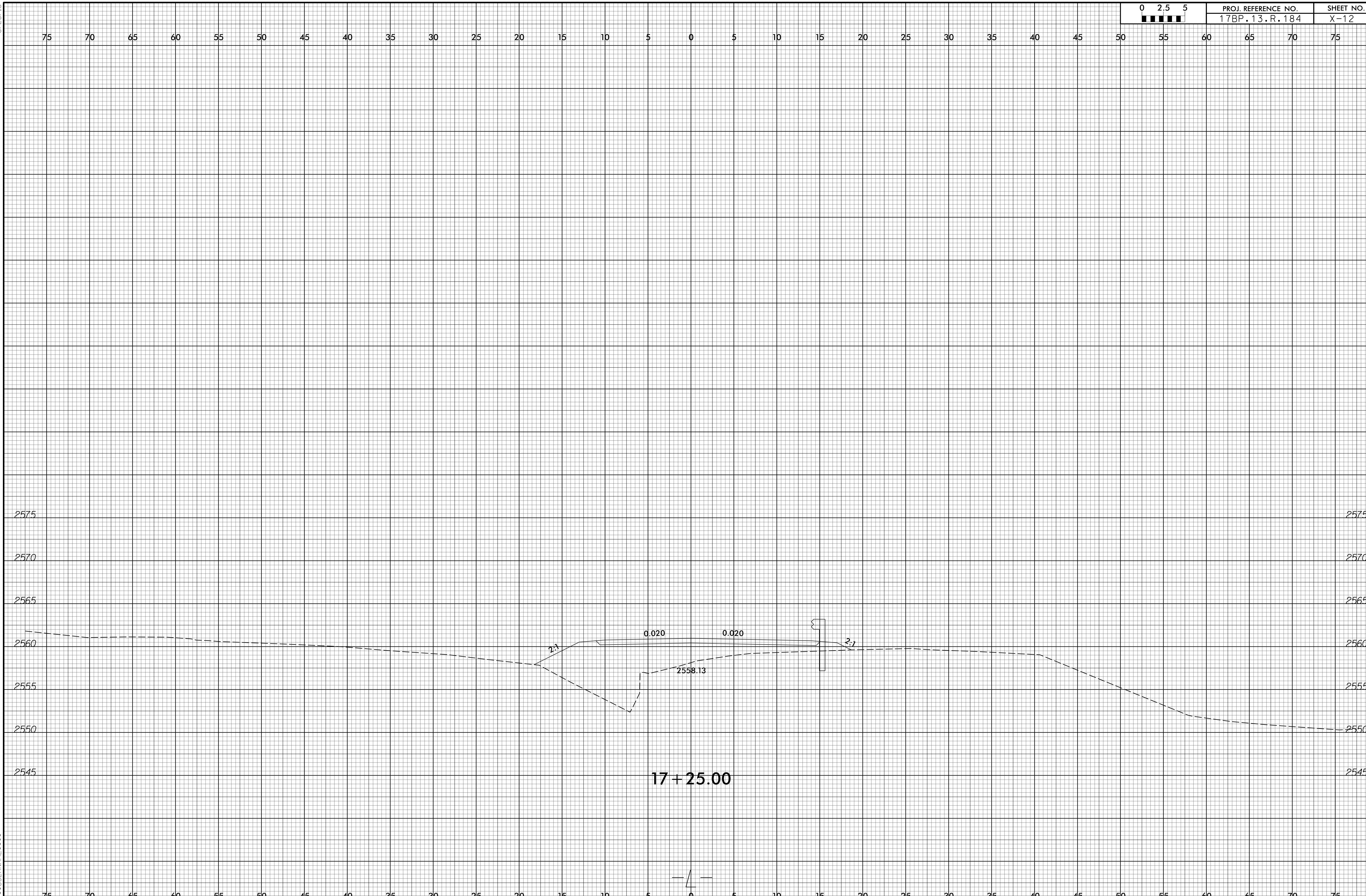

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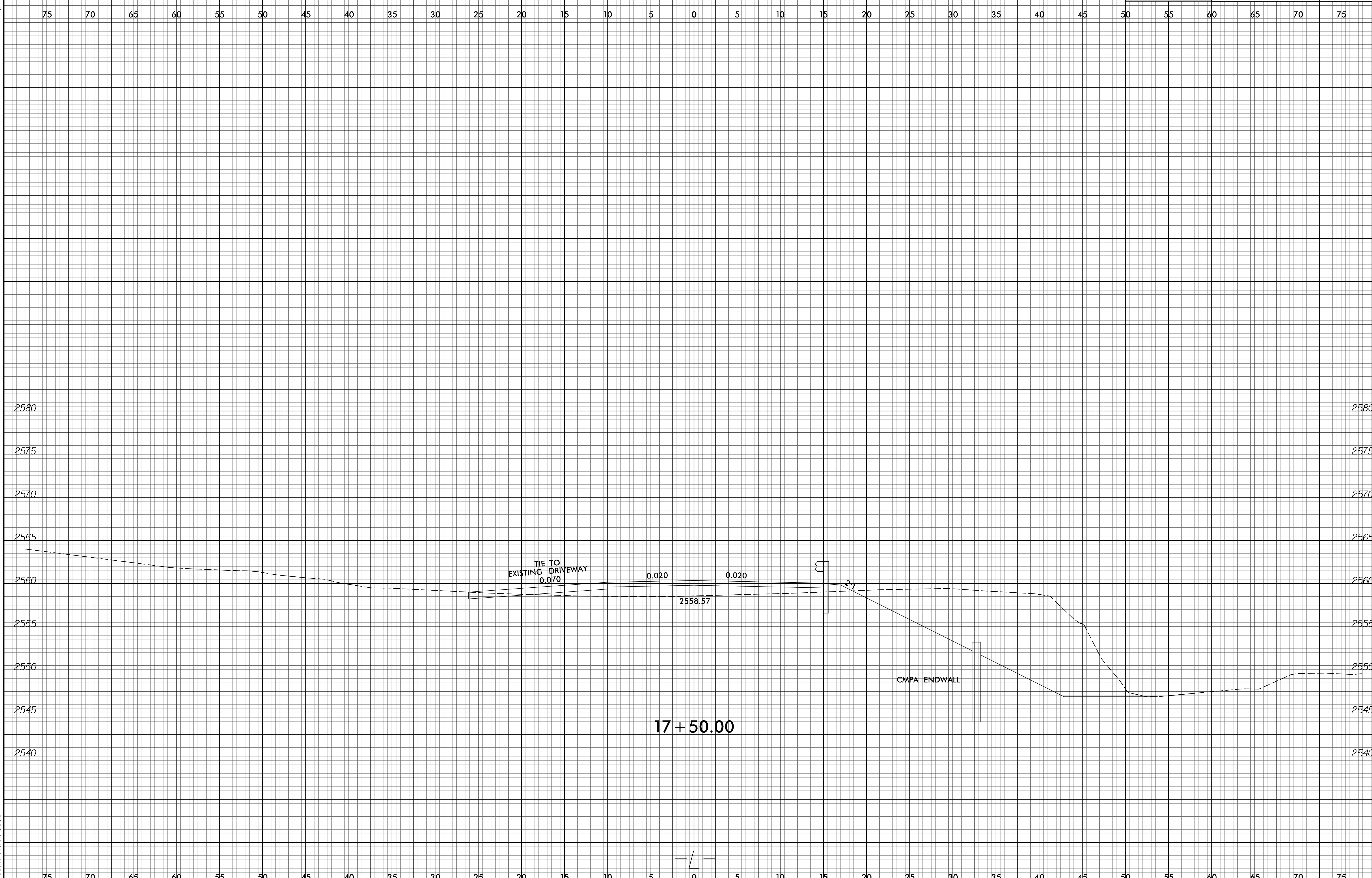

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PROJ. REFERENCE NO.
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6/23/16
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PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.184	X-15

6/23/16

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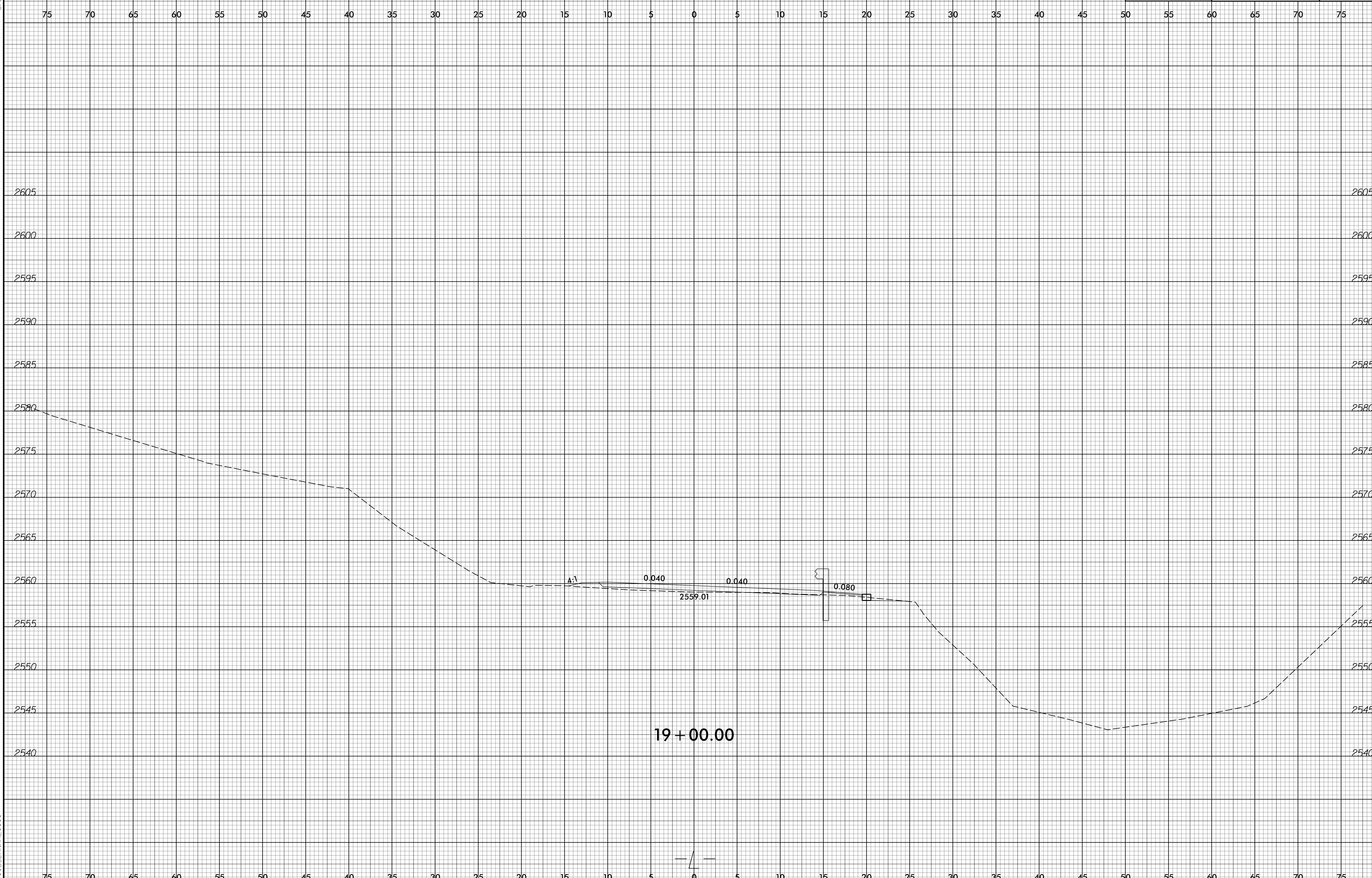

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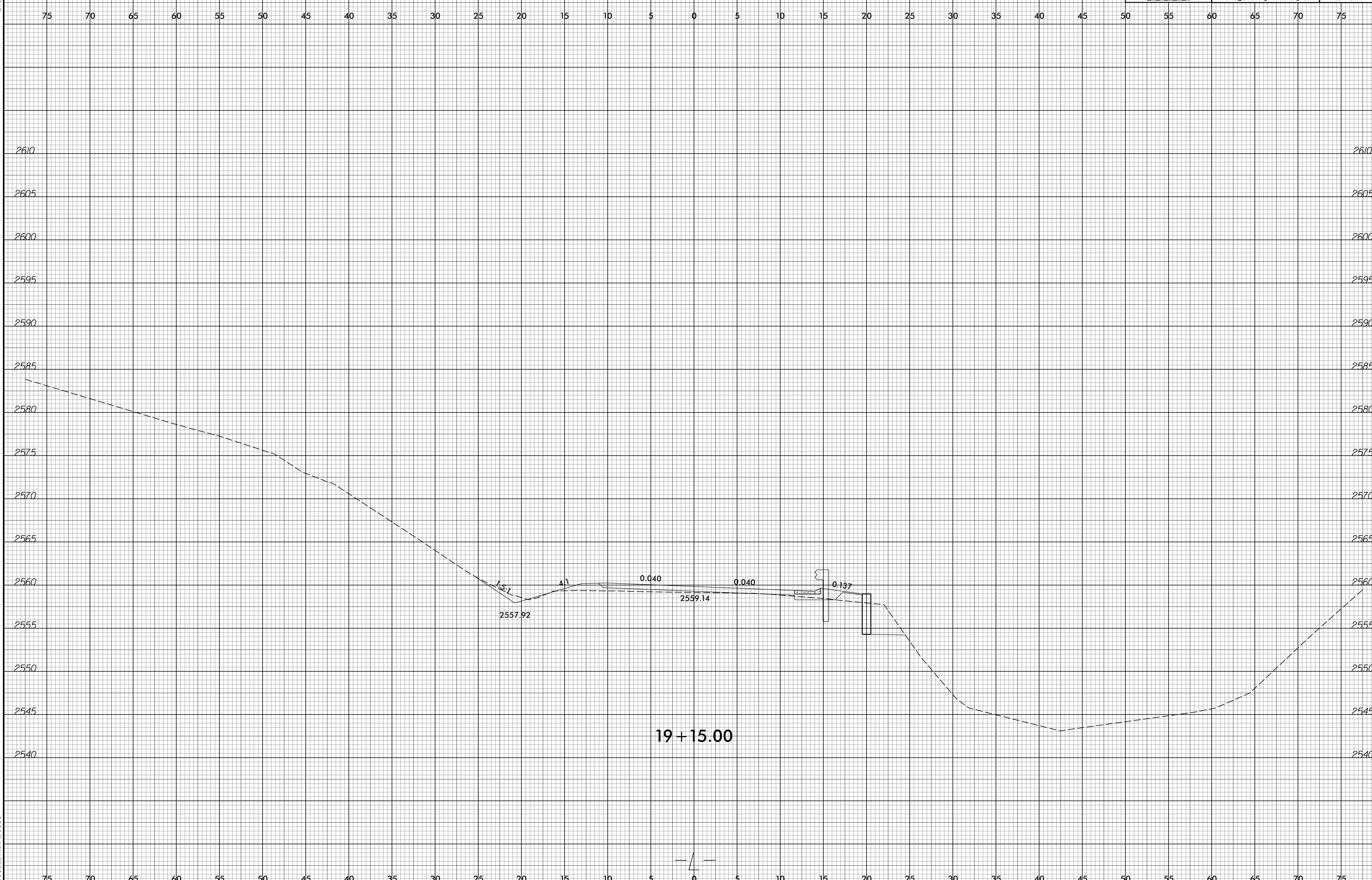

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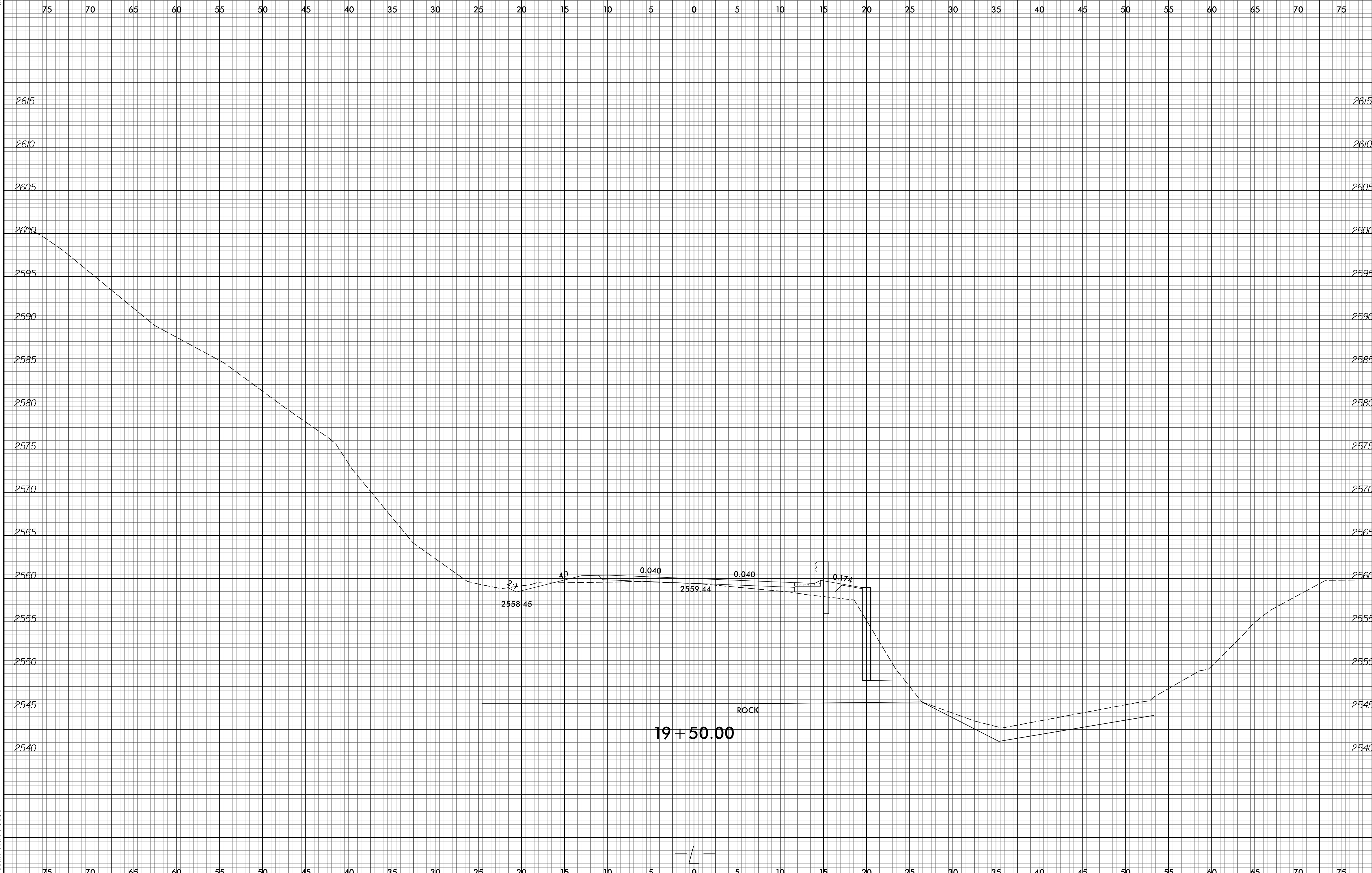

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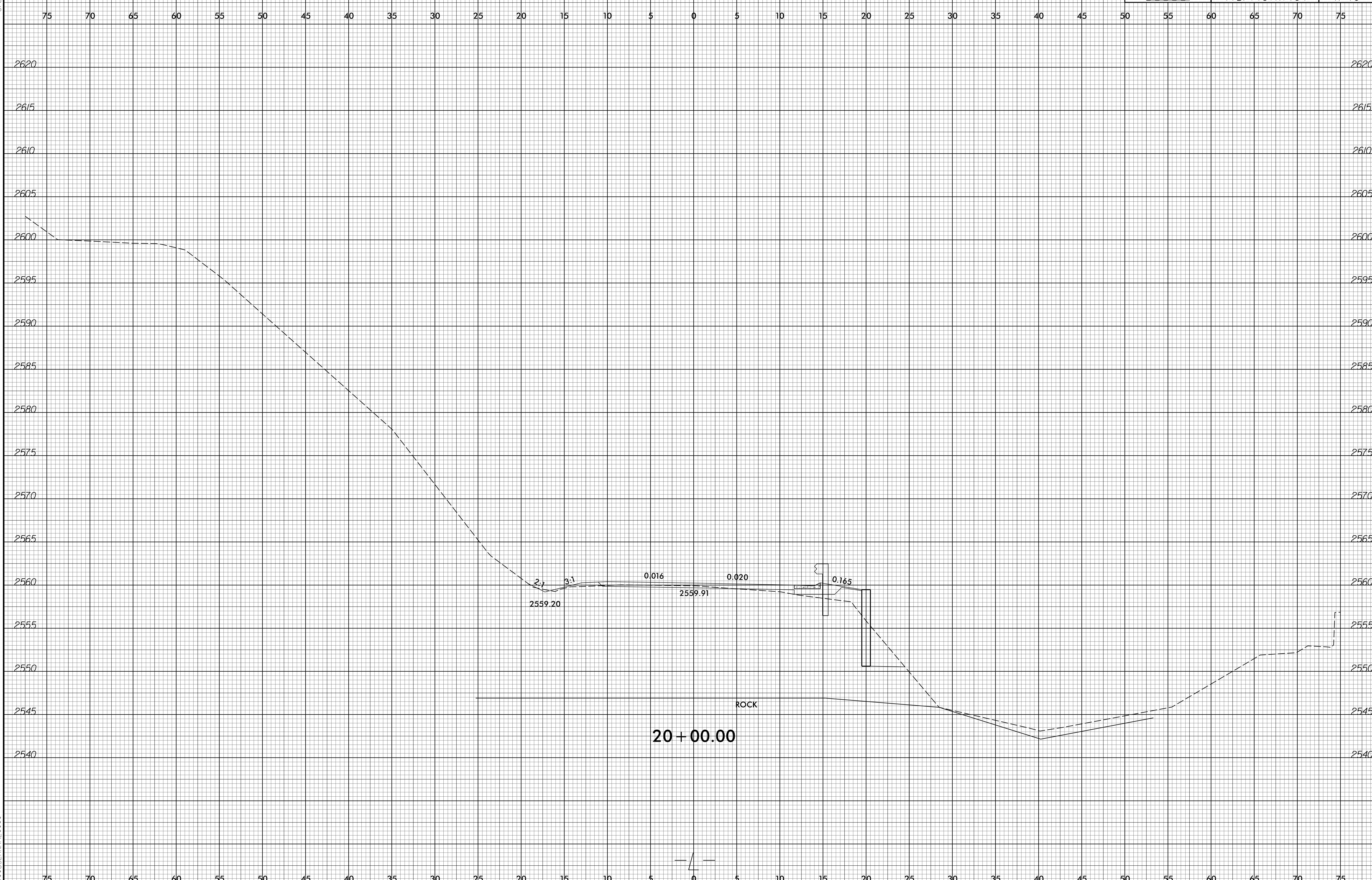

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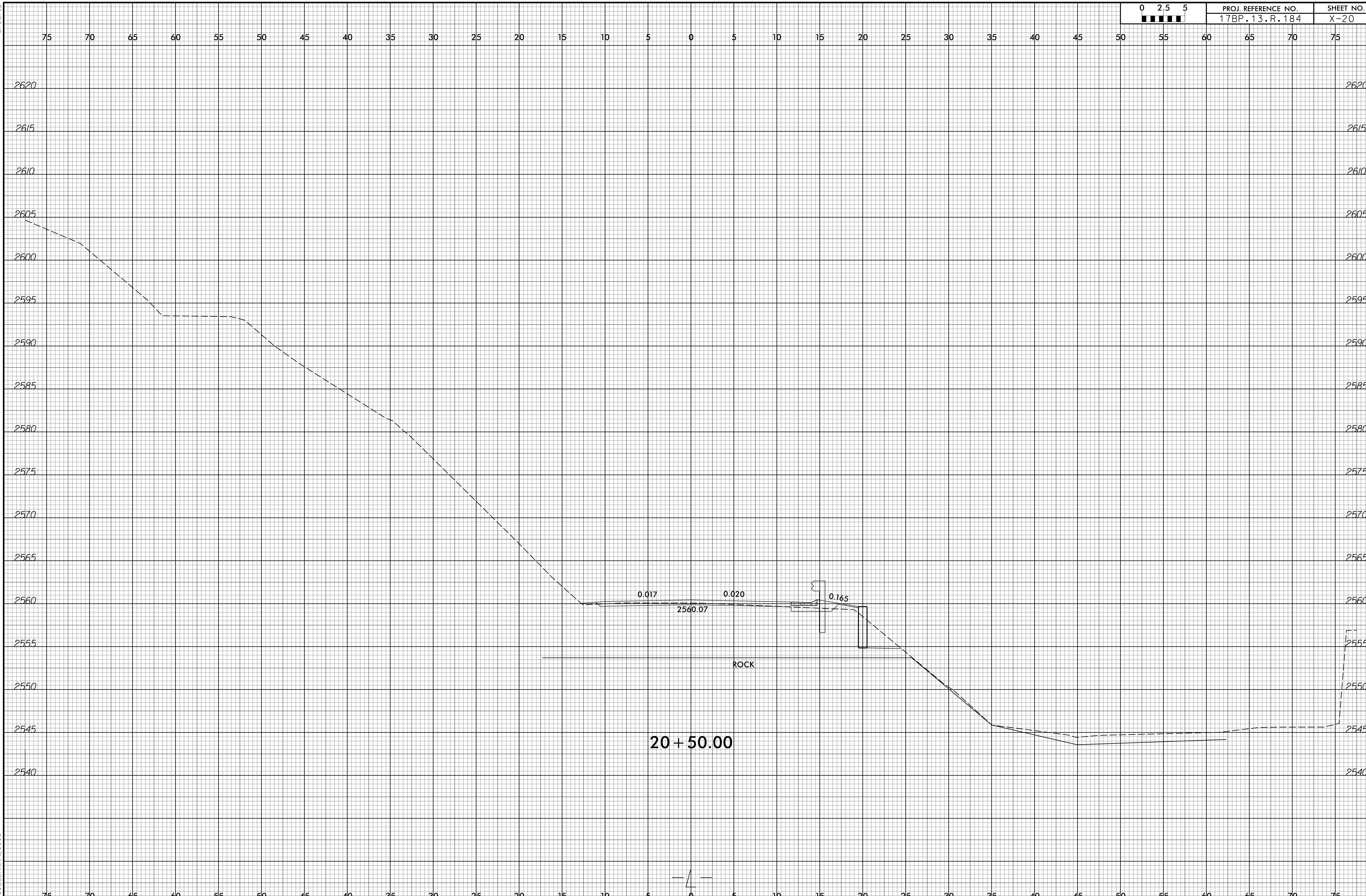

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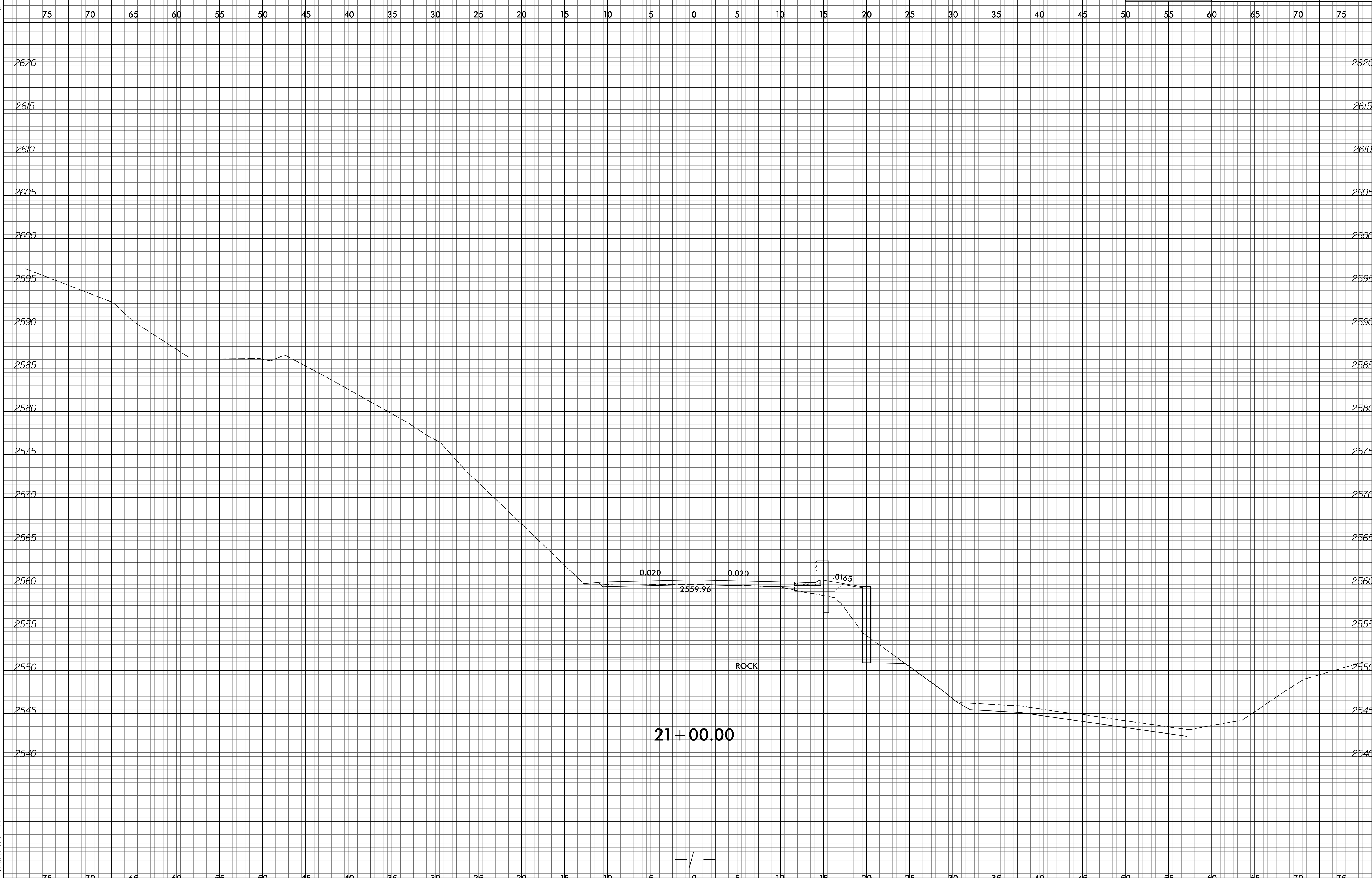

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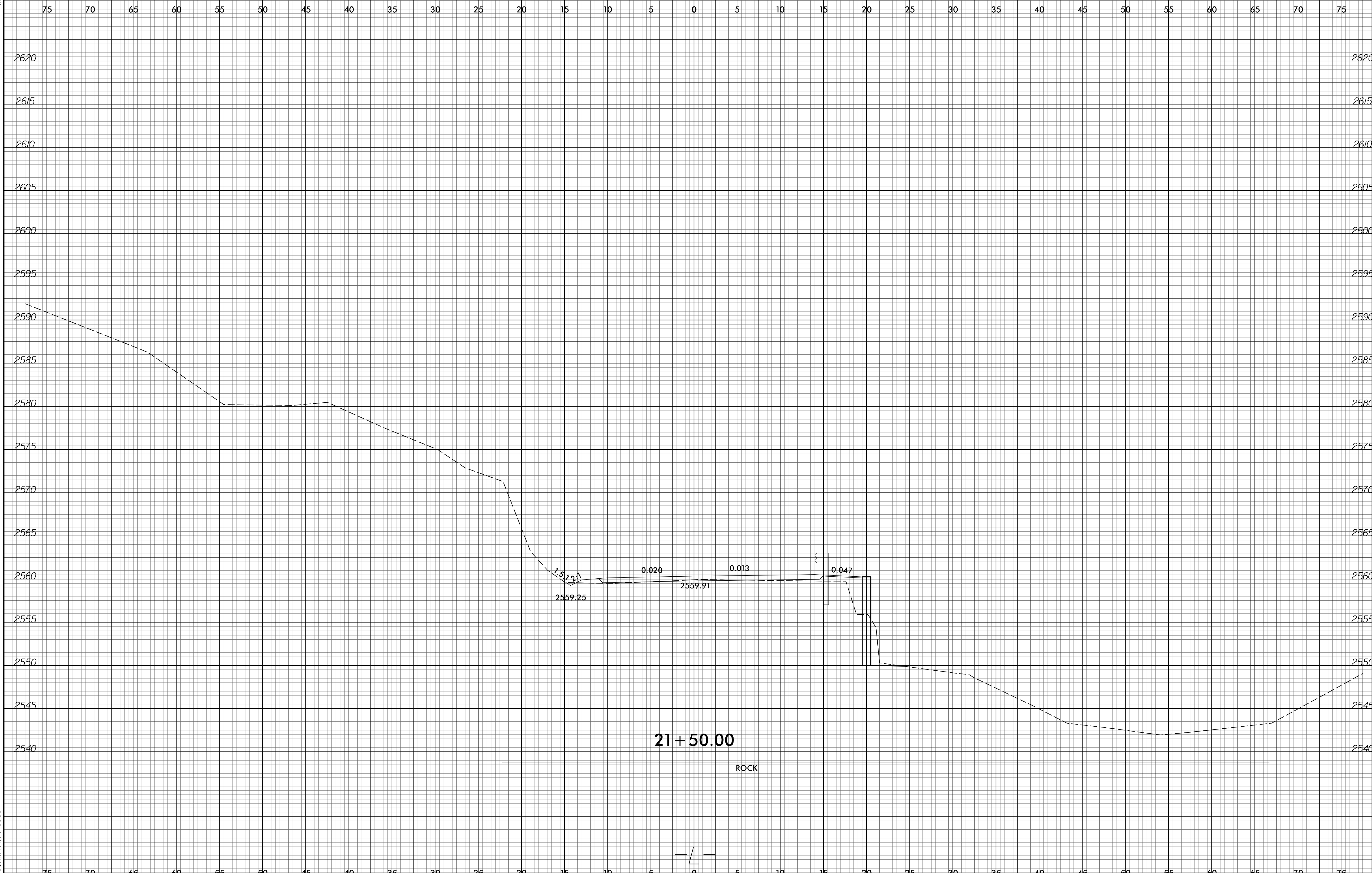

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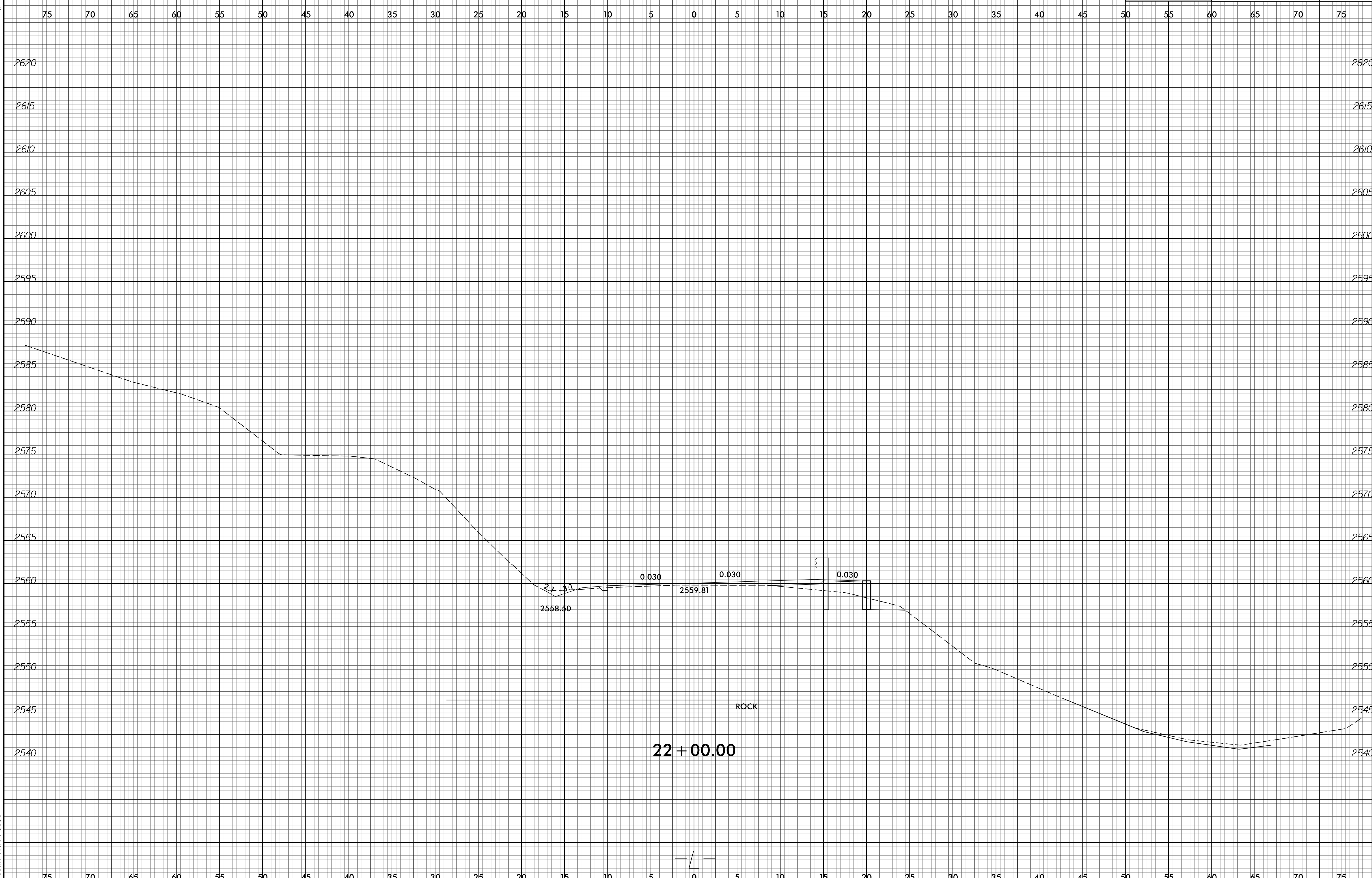

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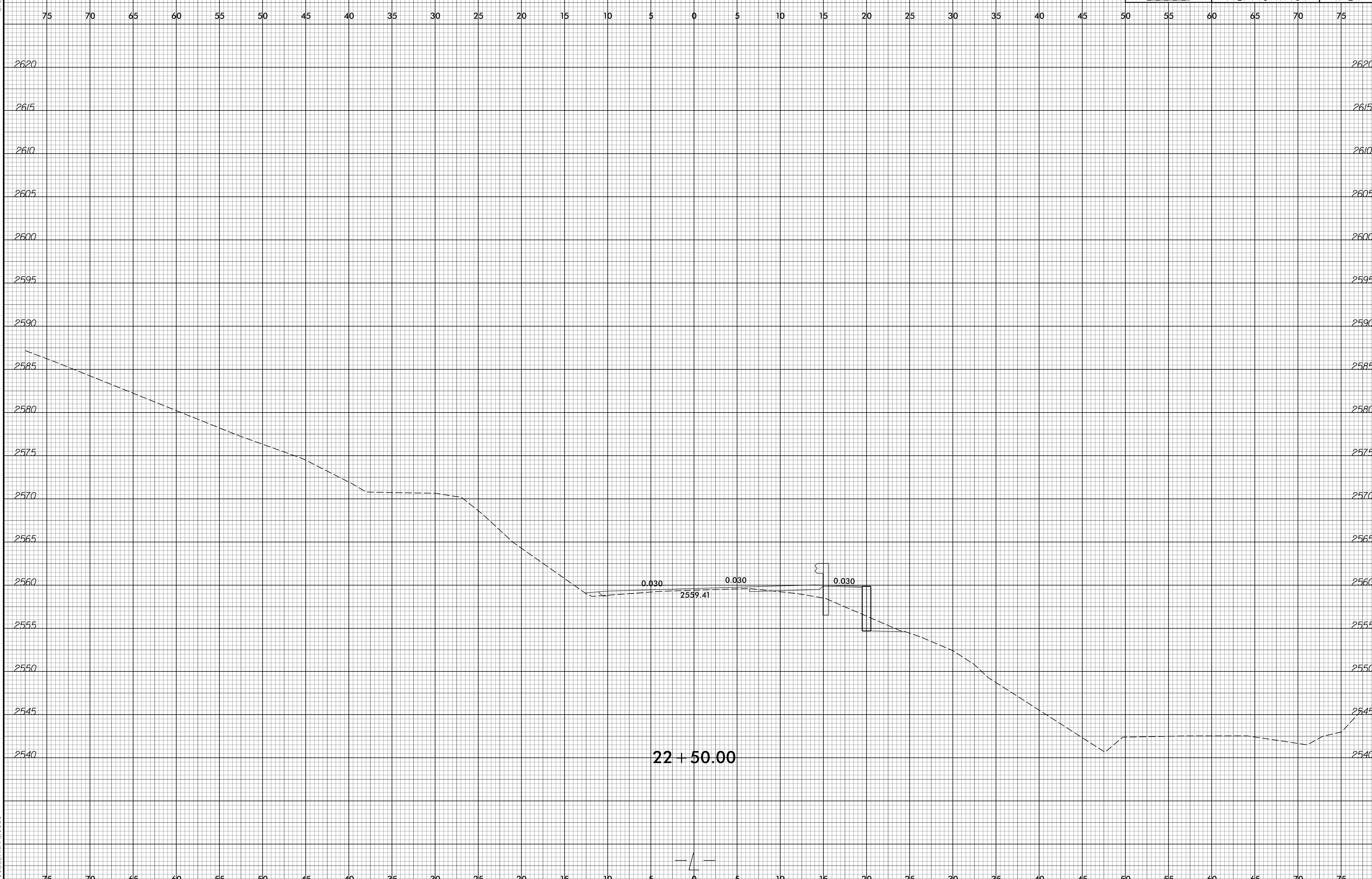

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6/23/16

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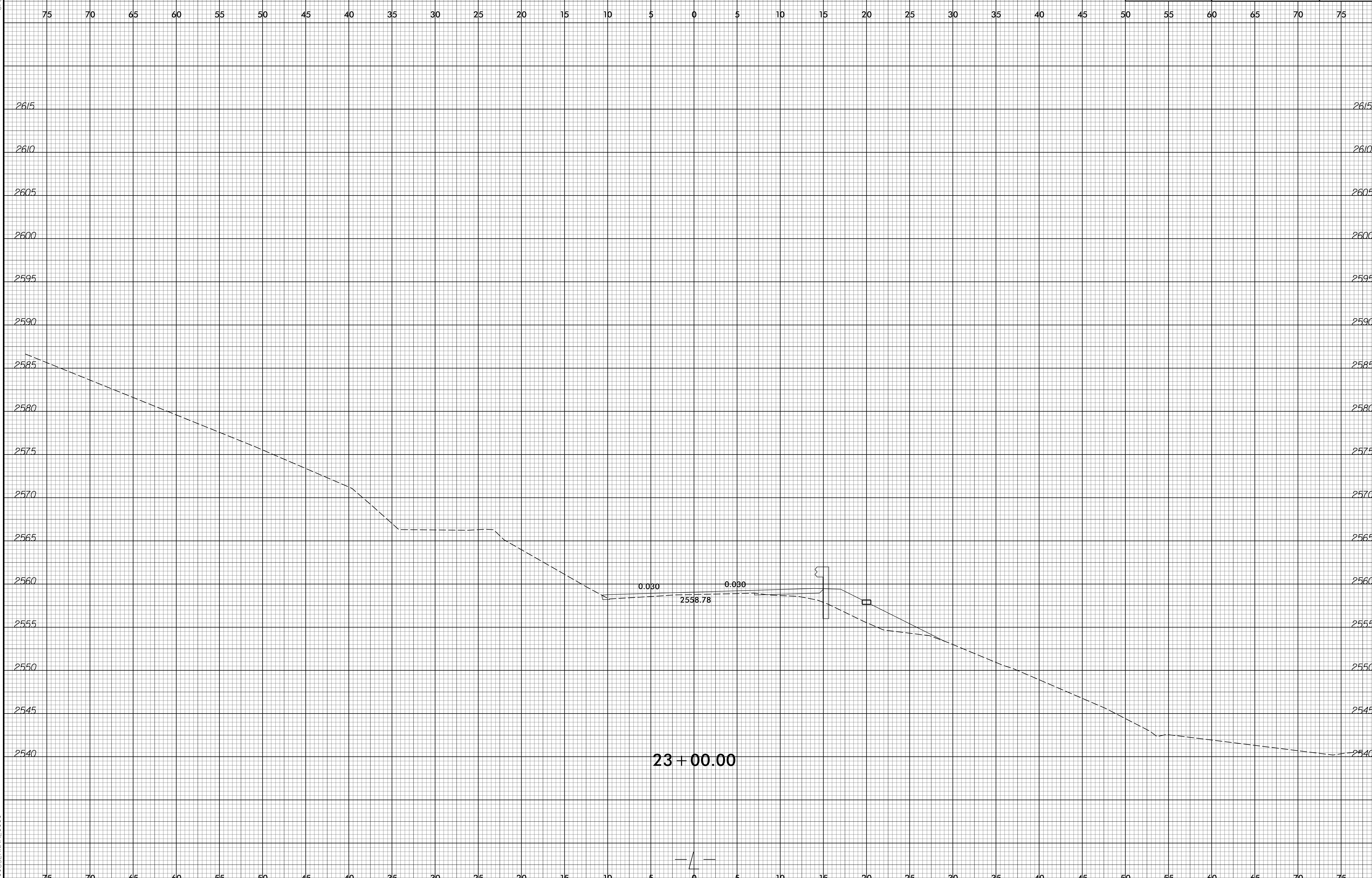

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6/23/16

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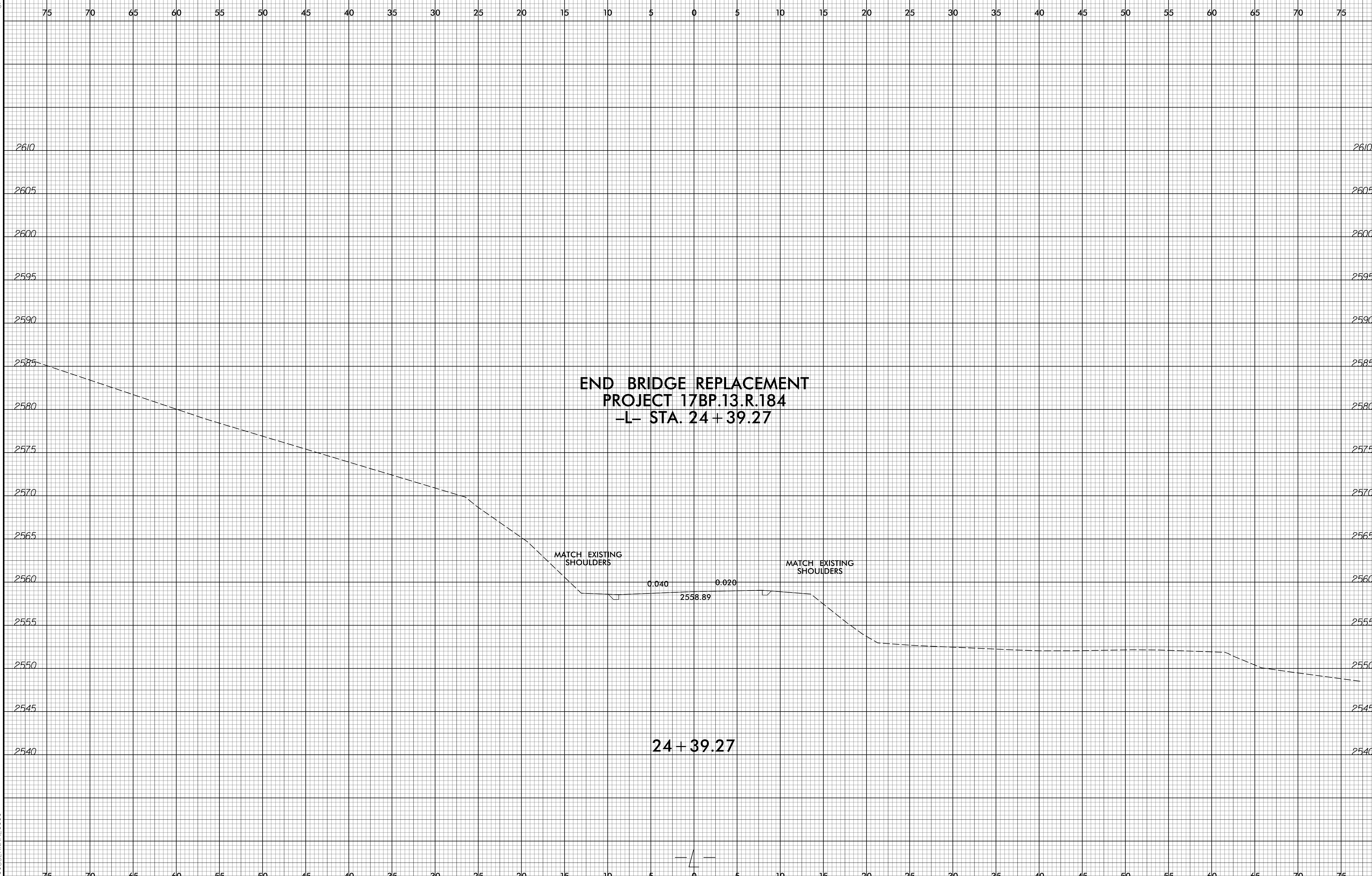

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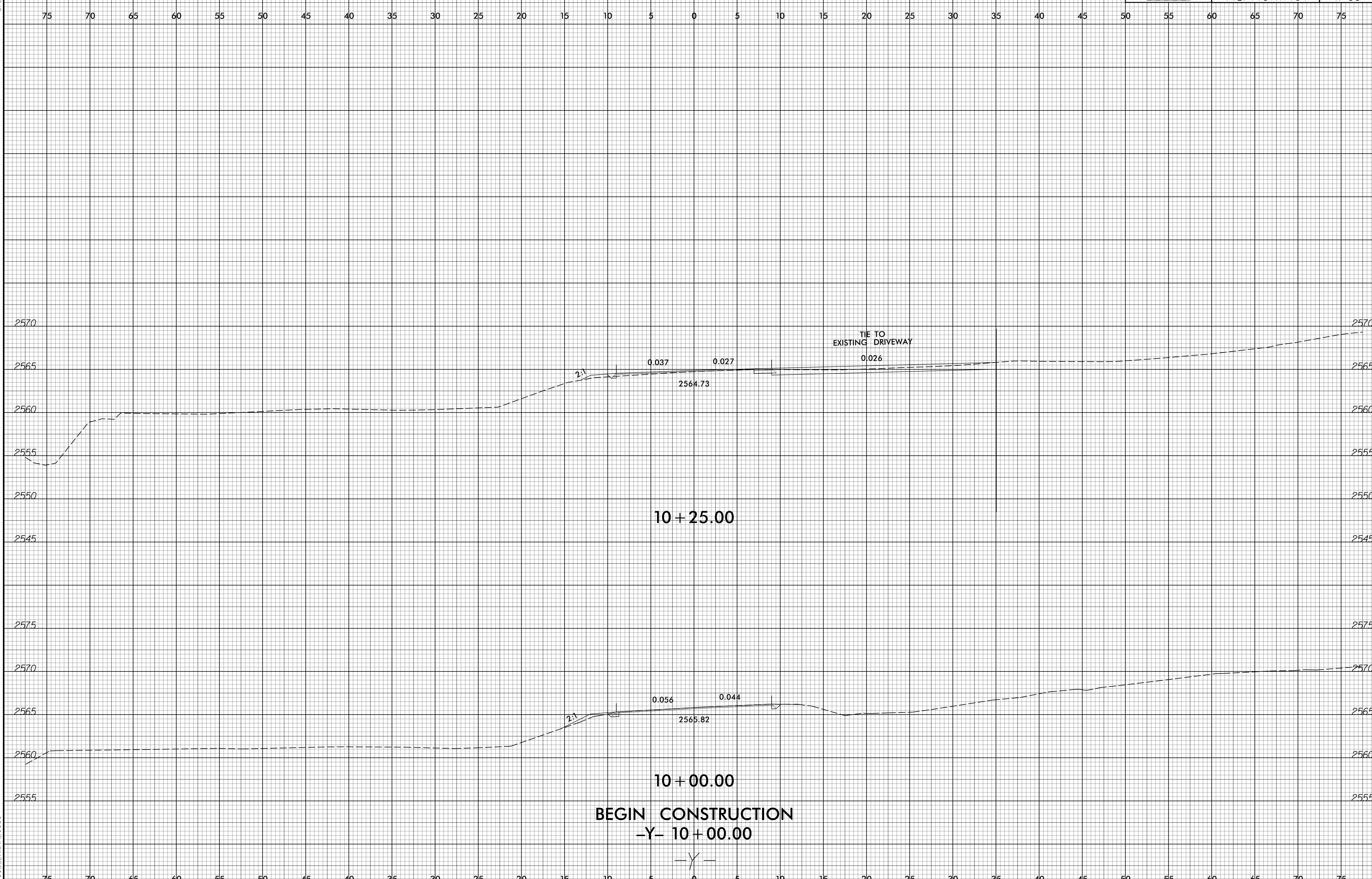

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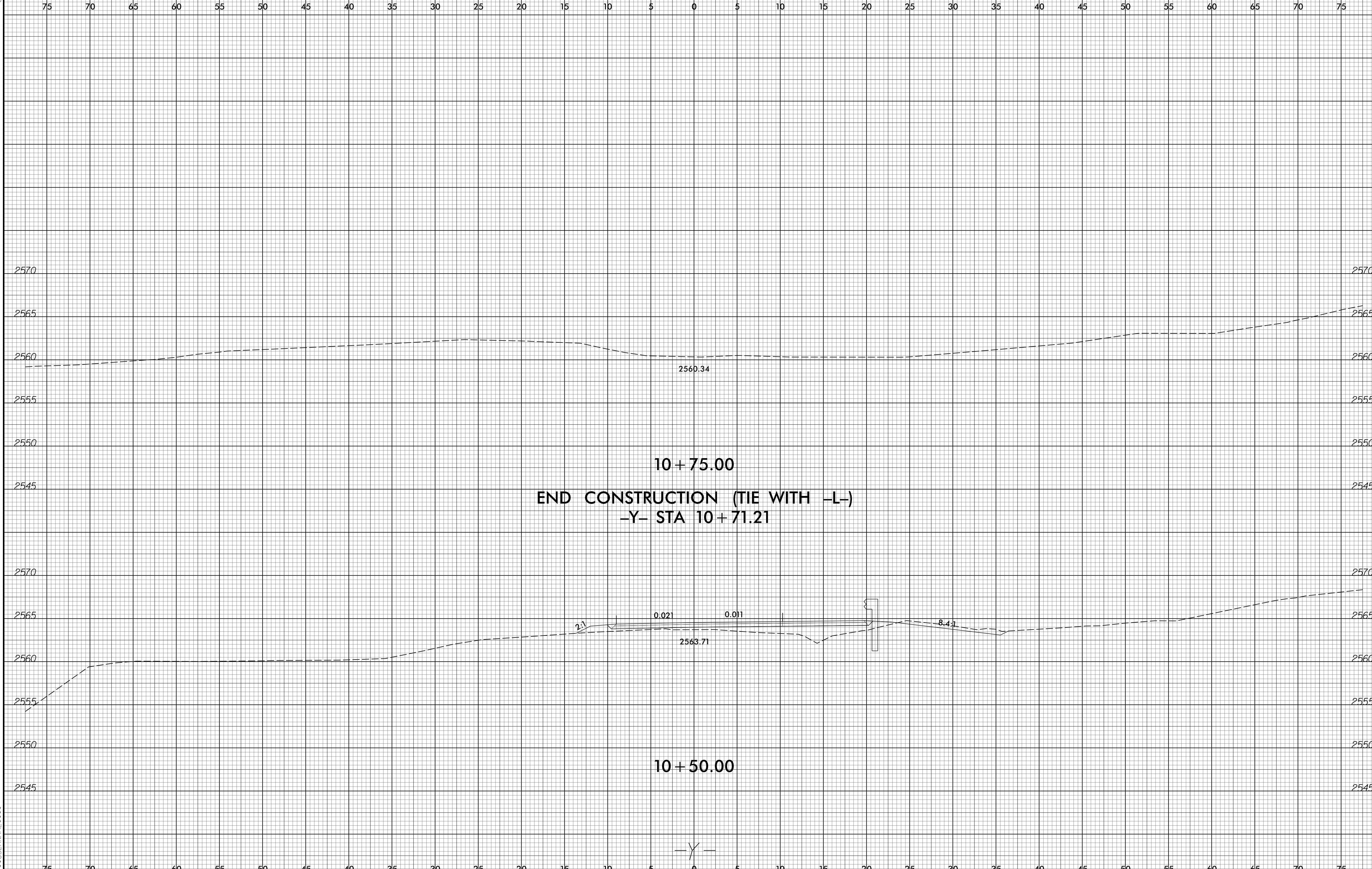

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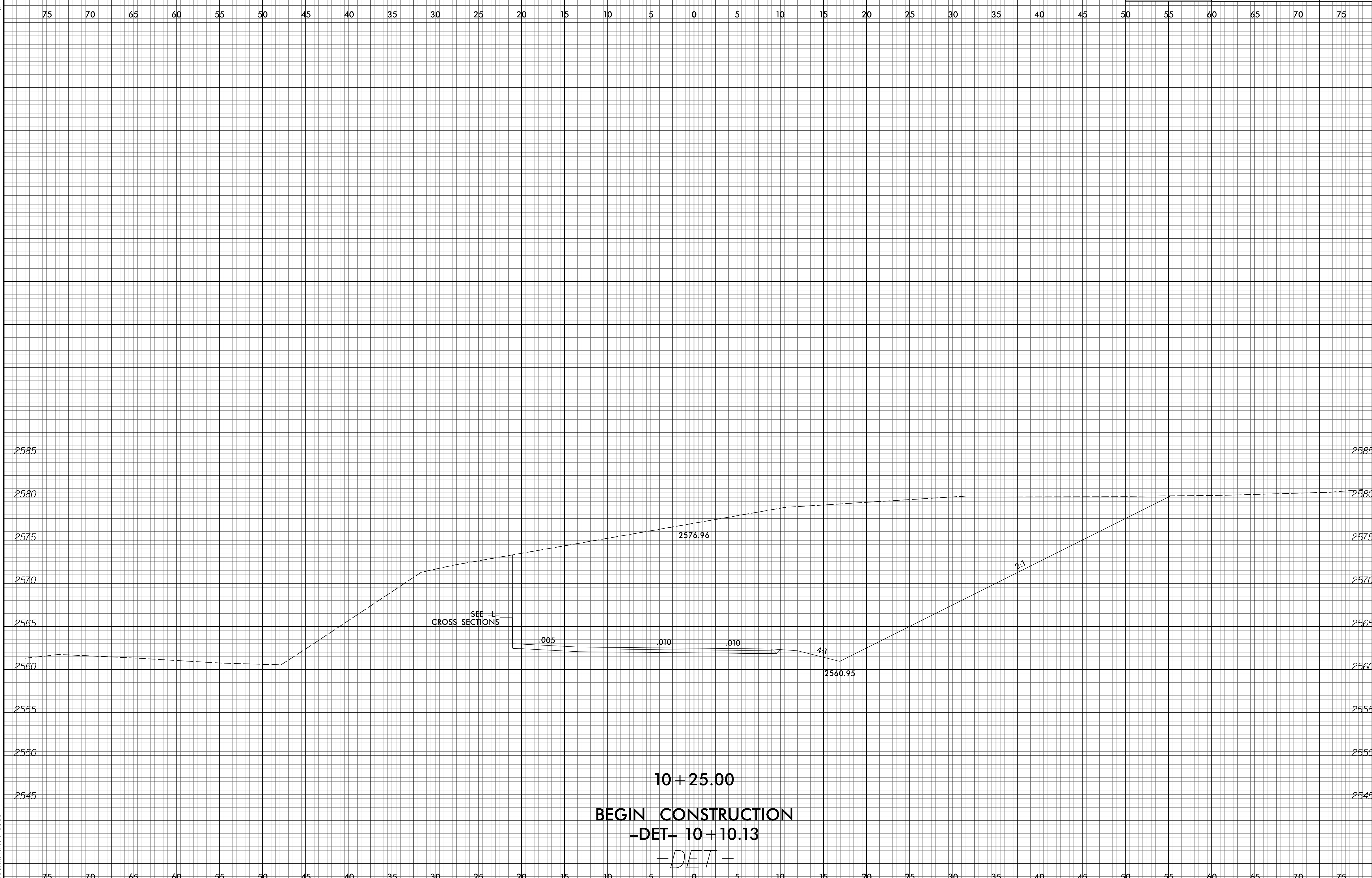

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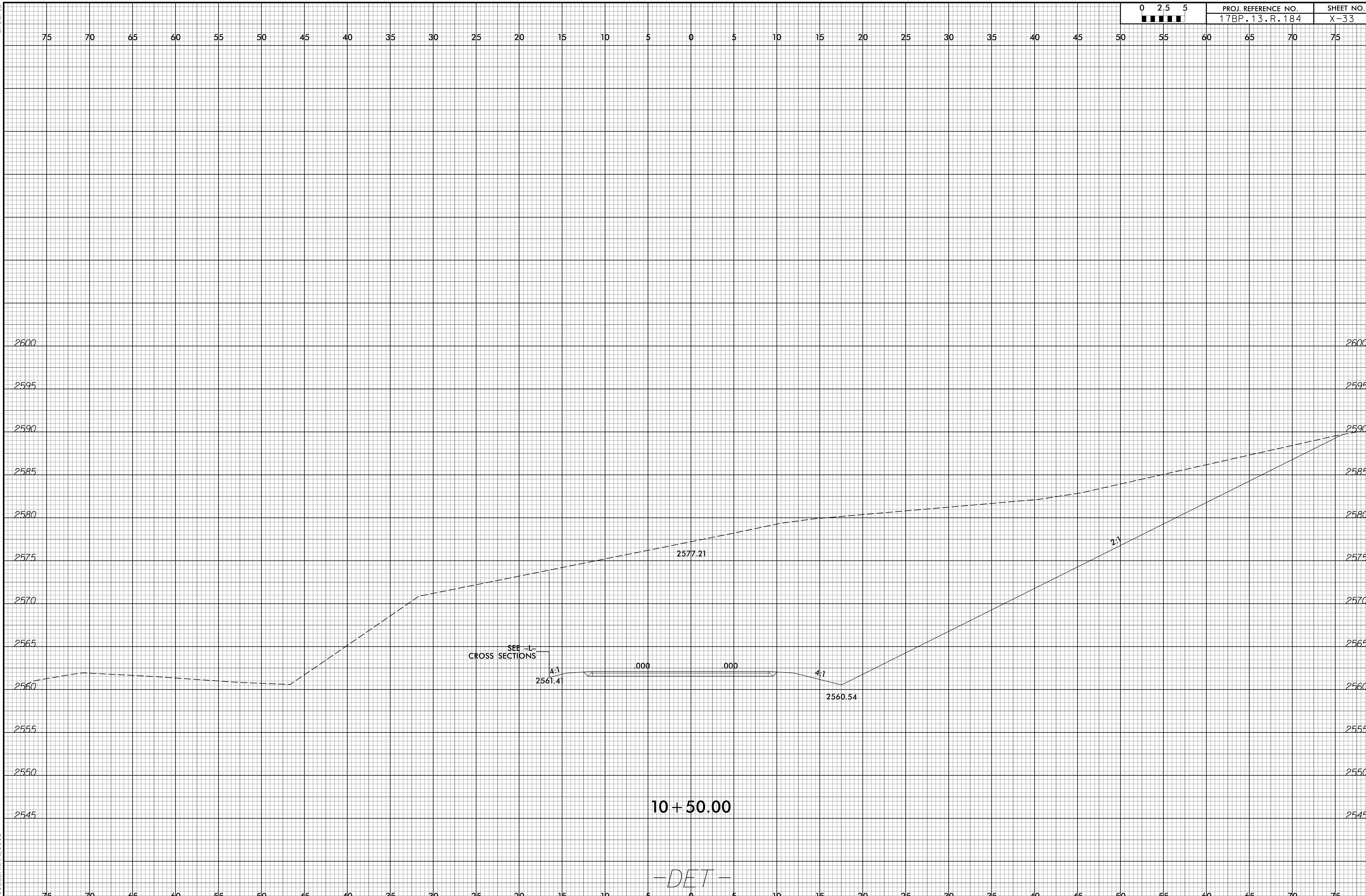

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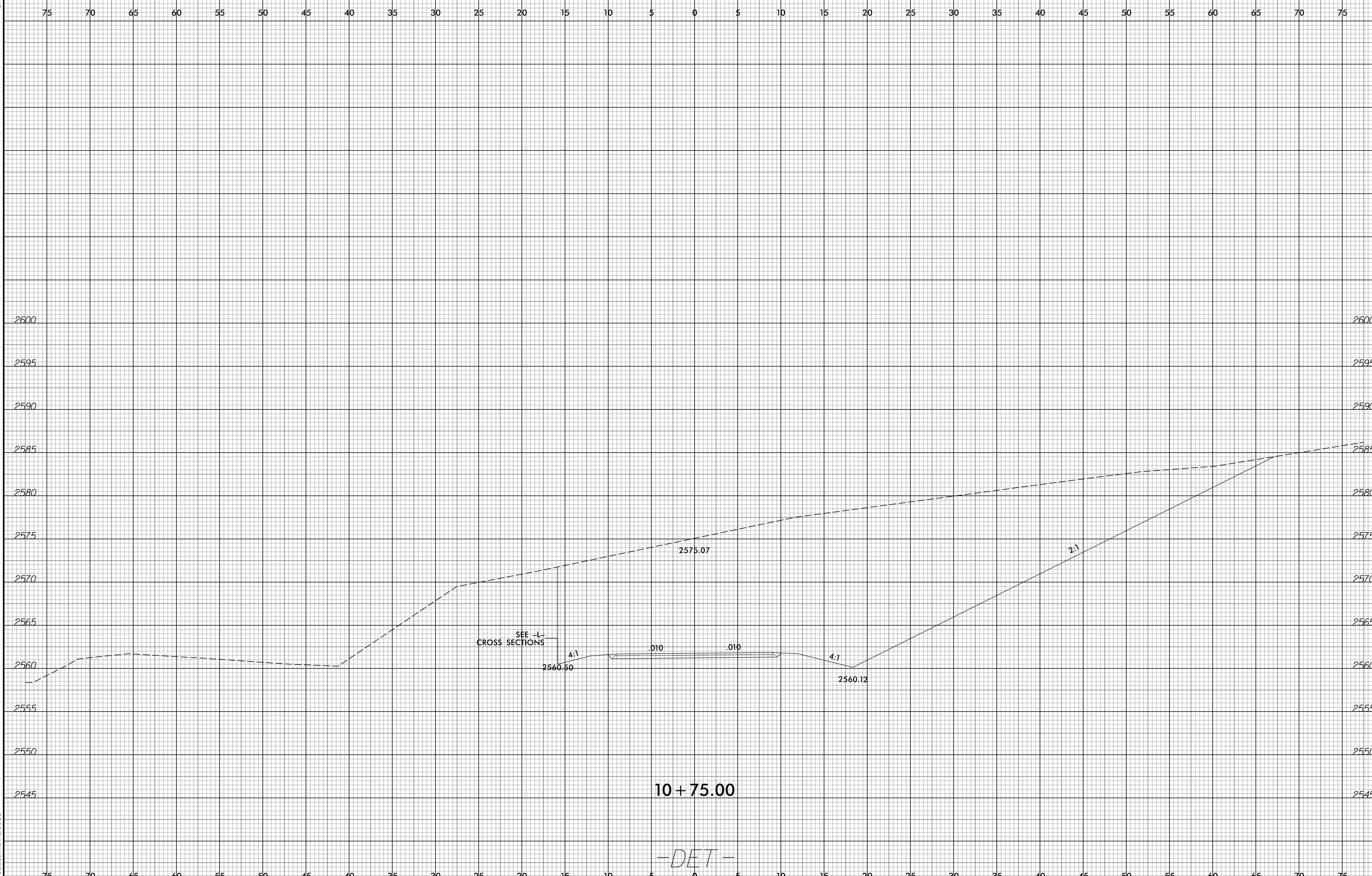

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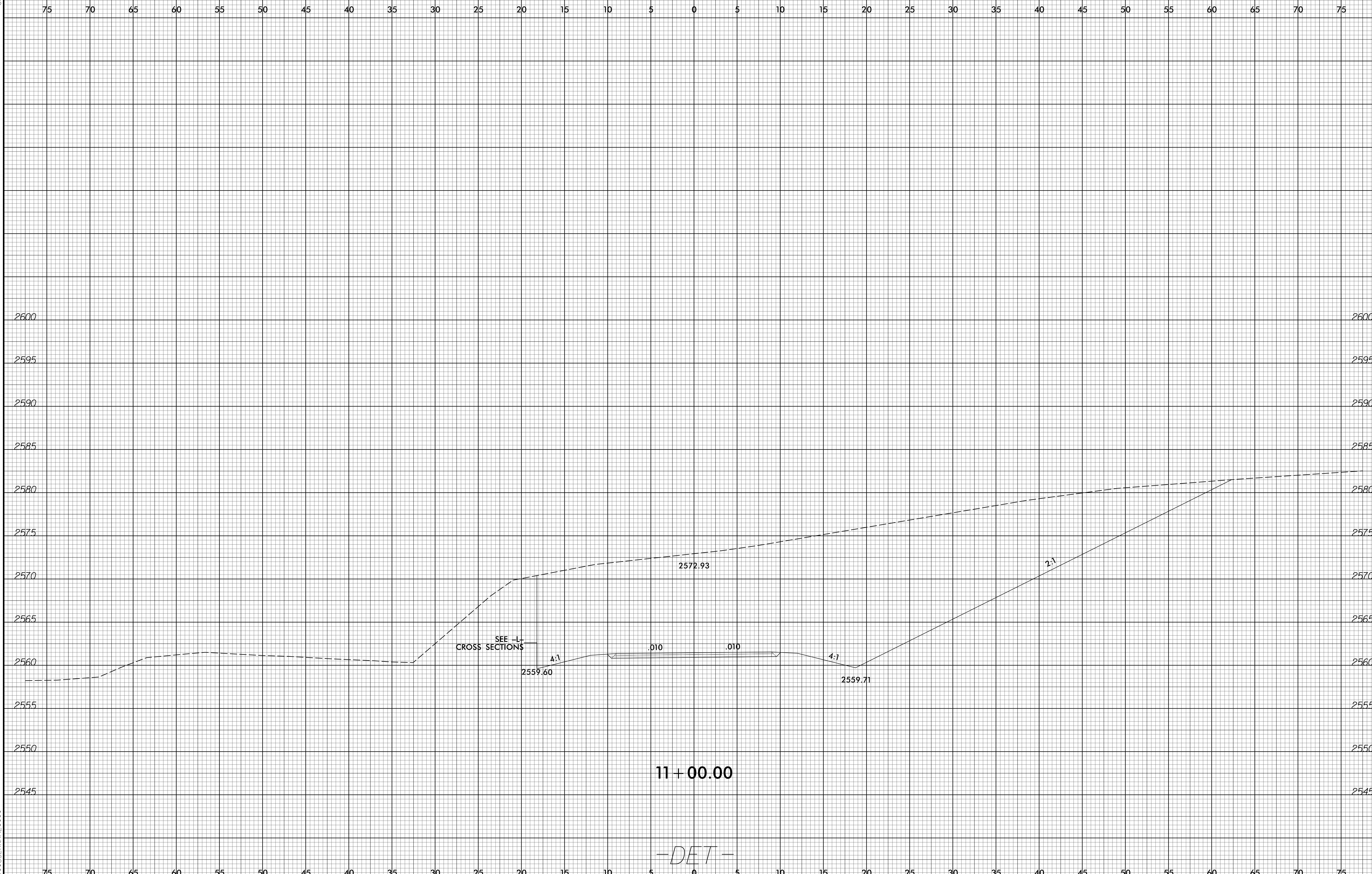

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6/23/16

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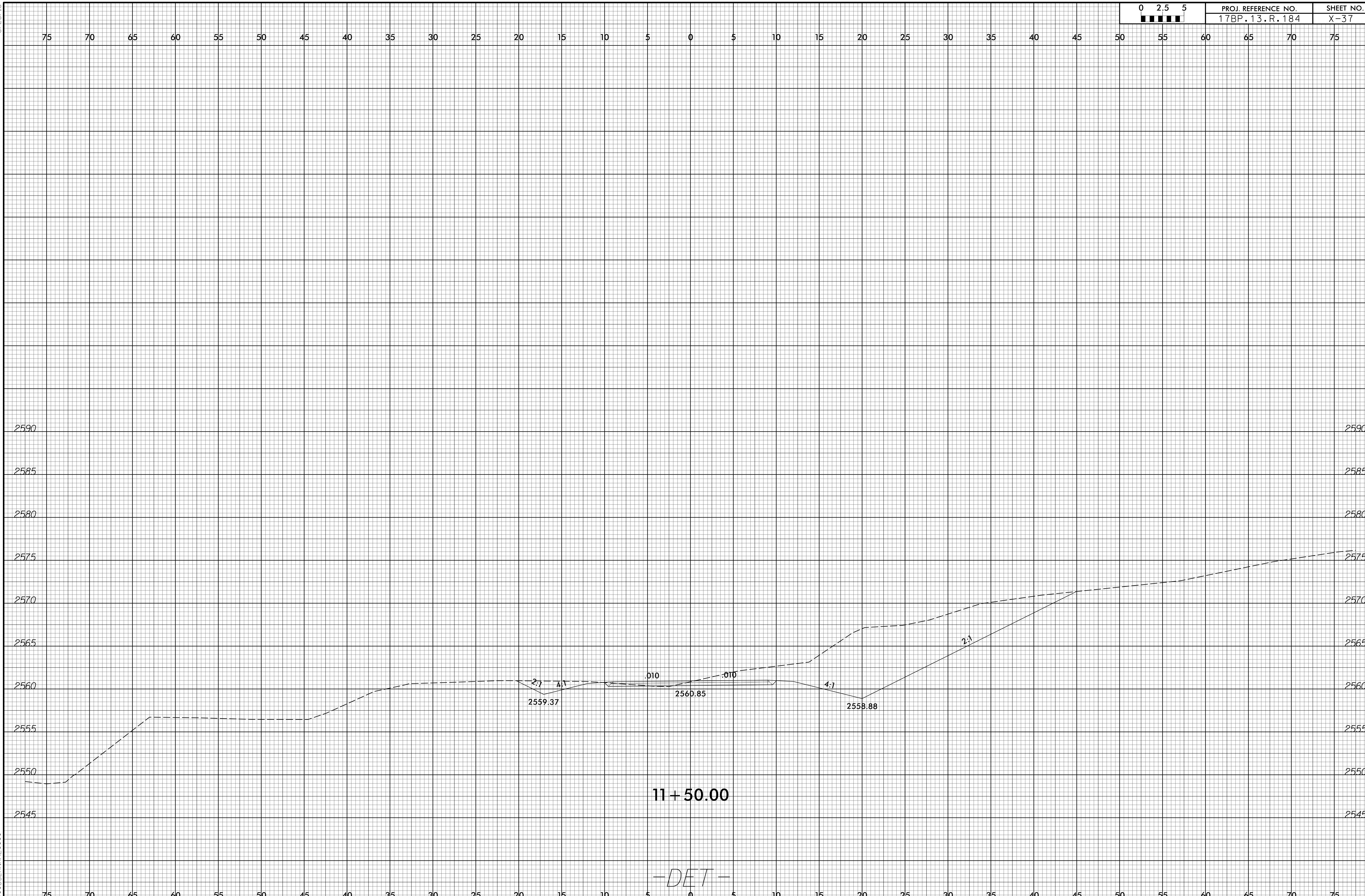

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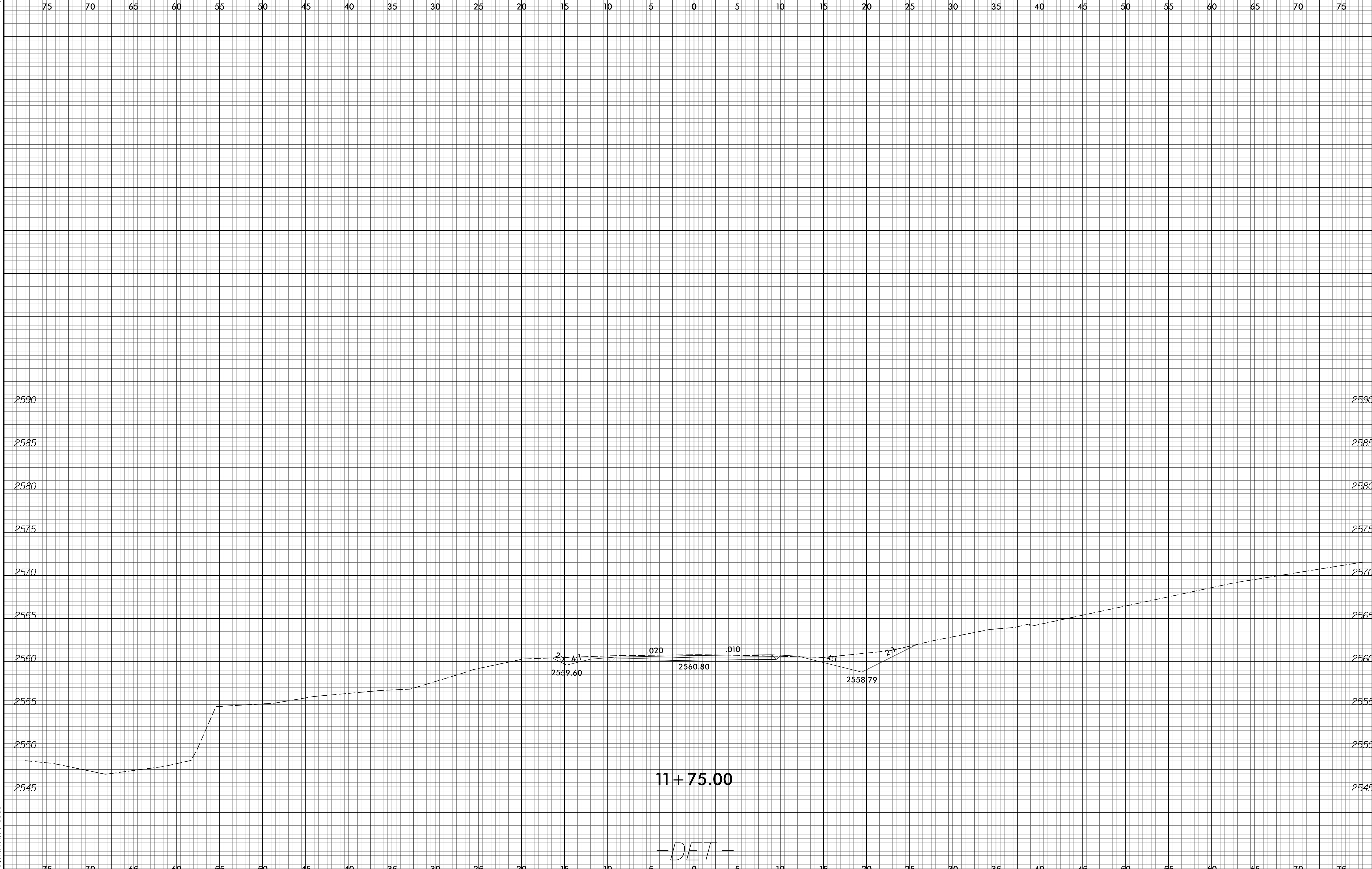

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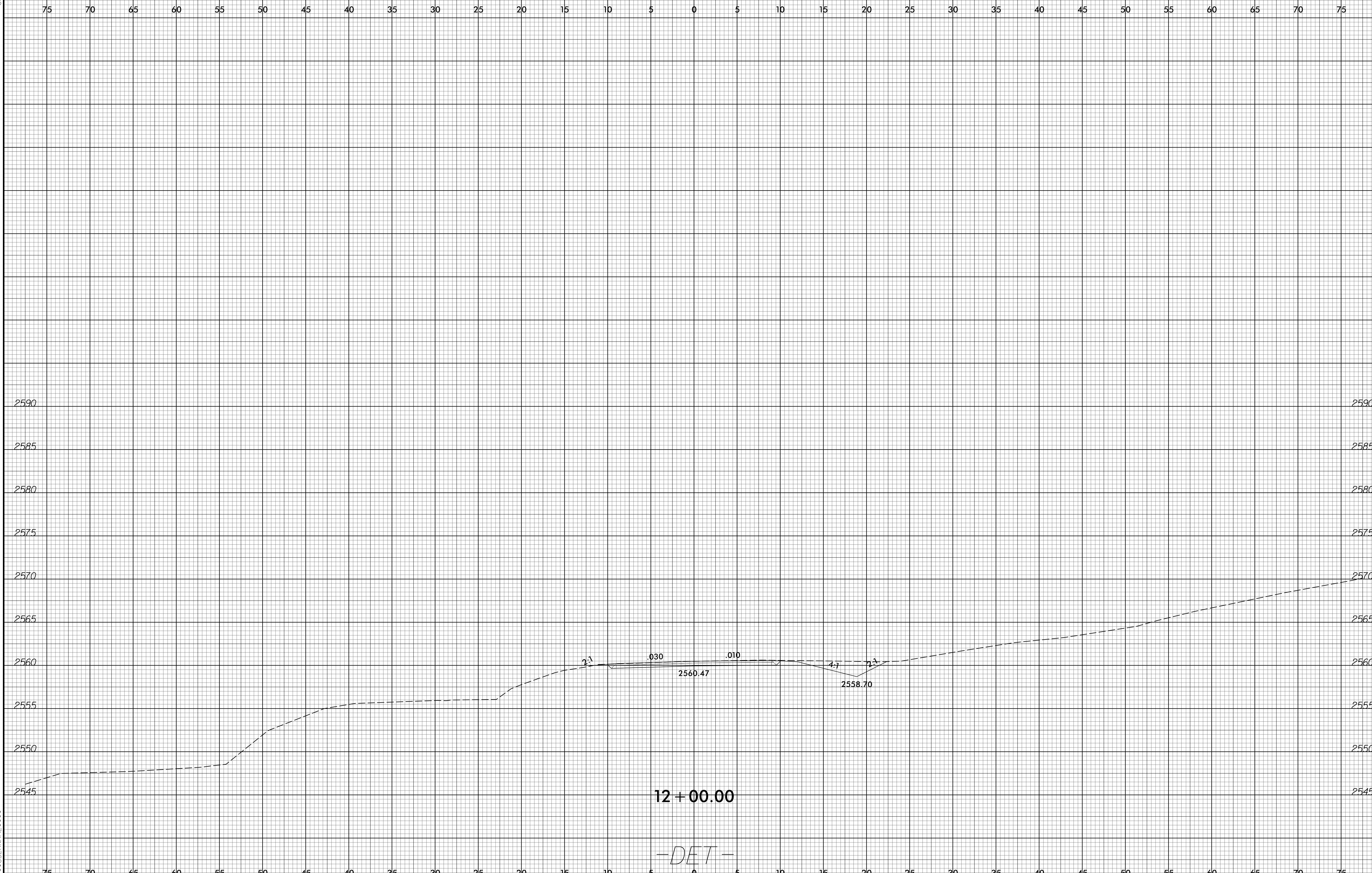

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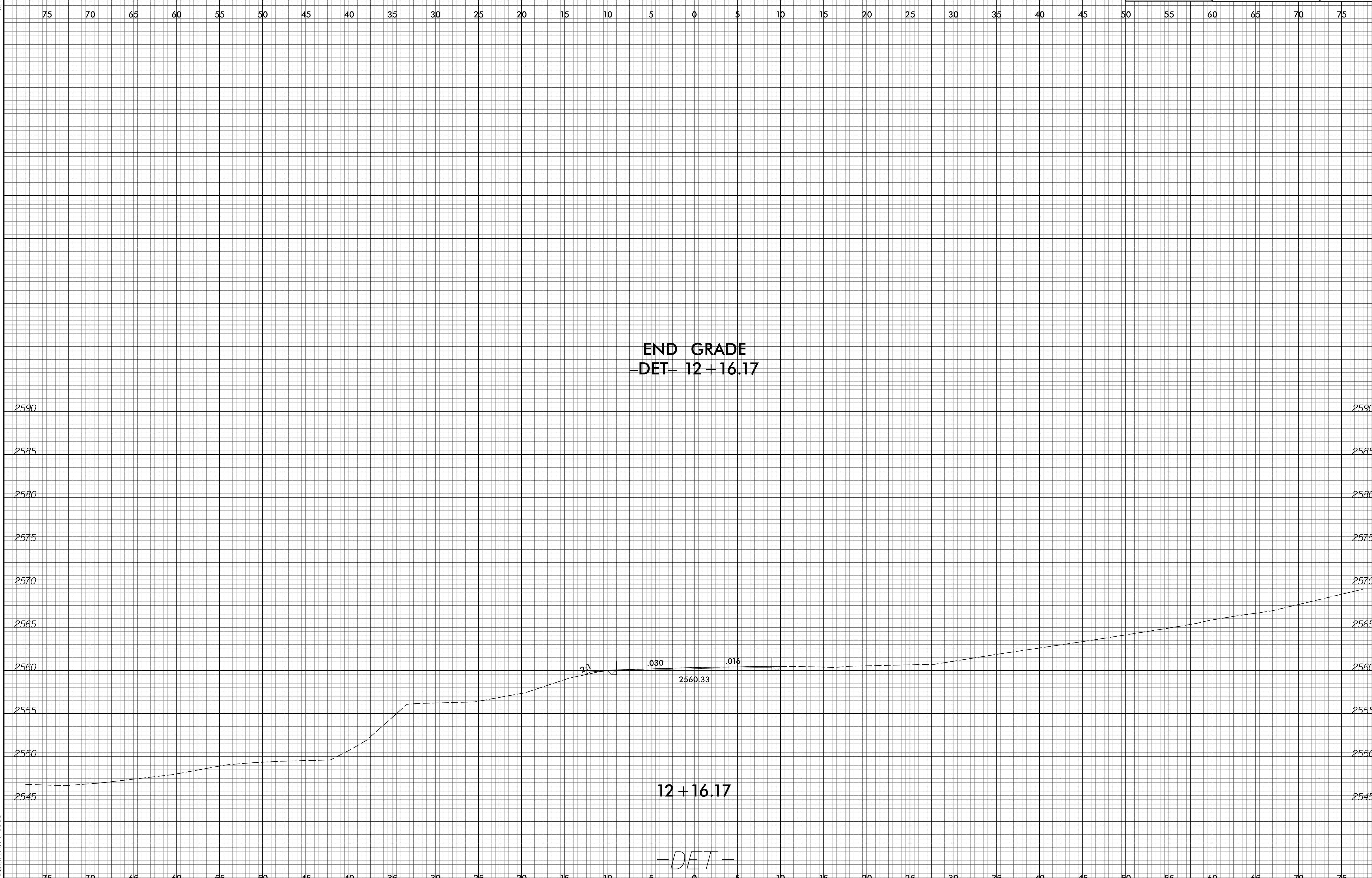

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TIP PROJECT: 17BP.13.R.184

CONTRACT: DM00426

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

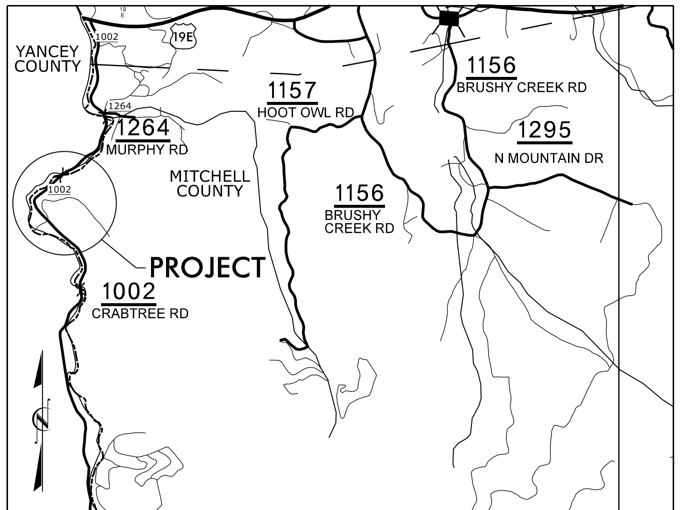
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.184	1	

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

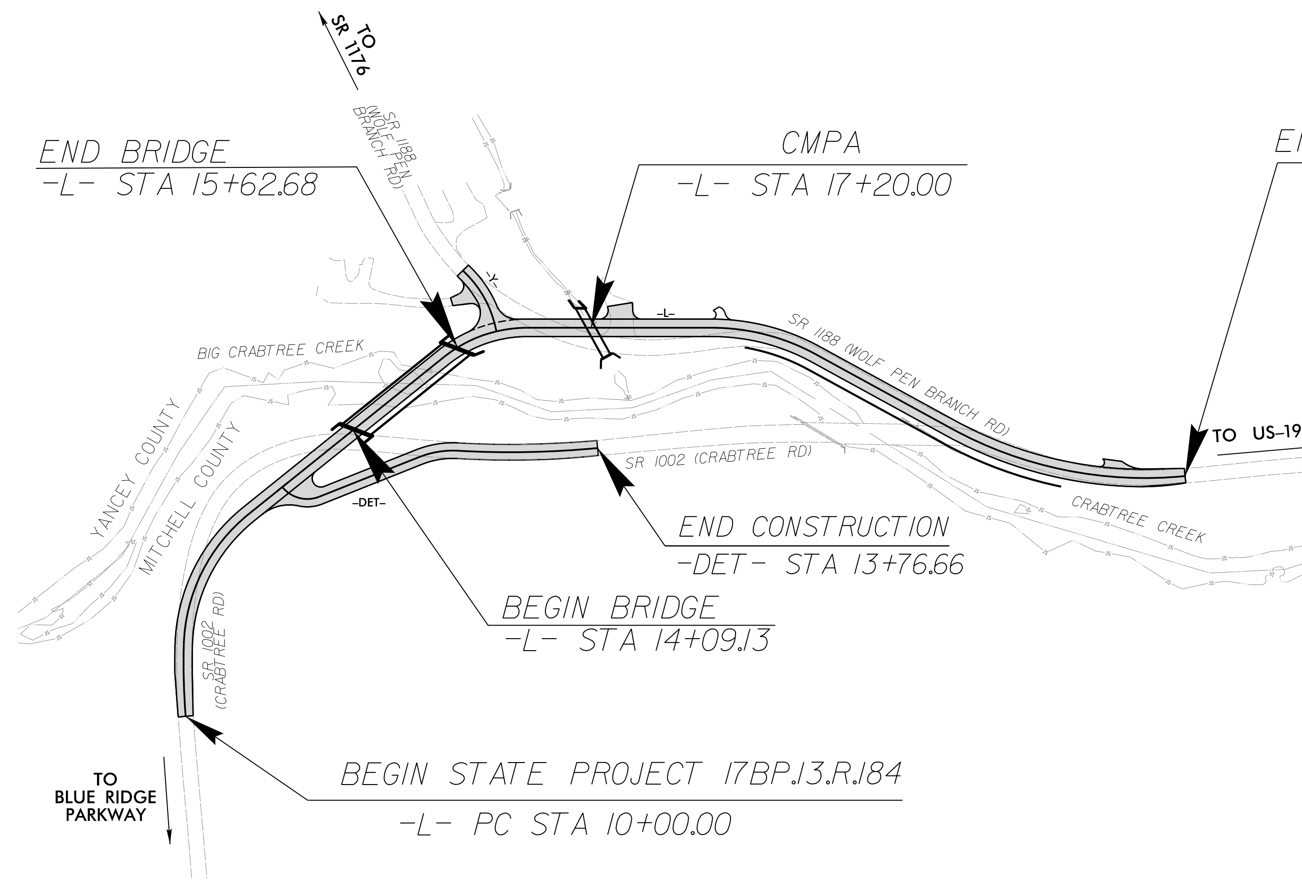
MITCHELL COUNTY & YANCEY COUNTY

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

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURES



VICINITY MAP



STRUCTURES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 36321 ENGINEER ROBERT F. DECOLA
11/17/2025
DocuSigned by: Robert Decola

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

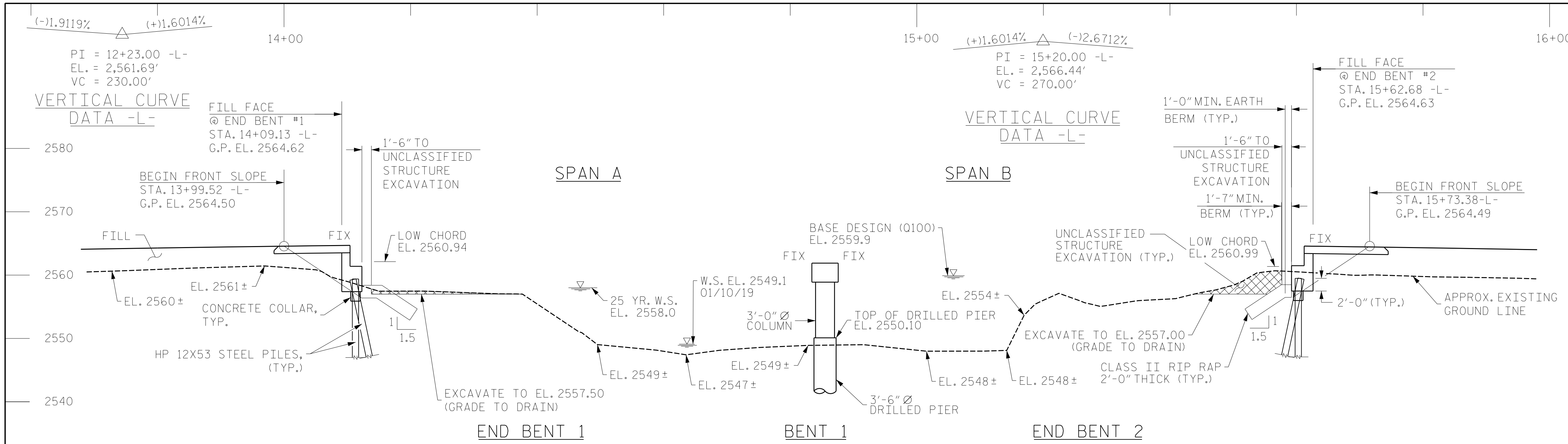
LETTING DATE: FEBRUARY 18, 2026

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

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

TYLER M. KRAUSS, P.E.
KCI ROADWAY DESIGN ENGINEER

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



SECTION ALONG -L-

HYDRAULIC DATA

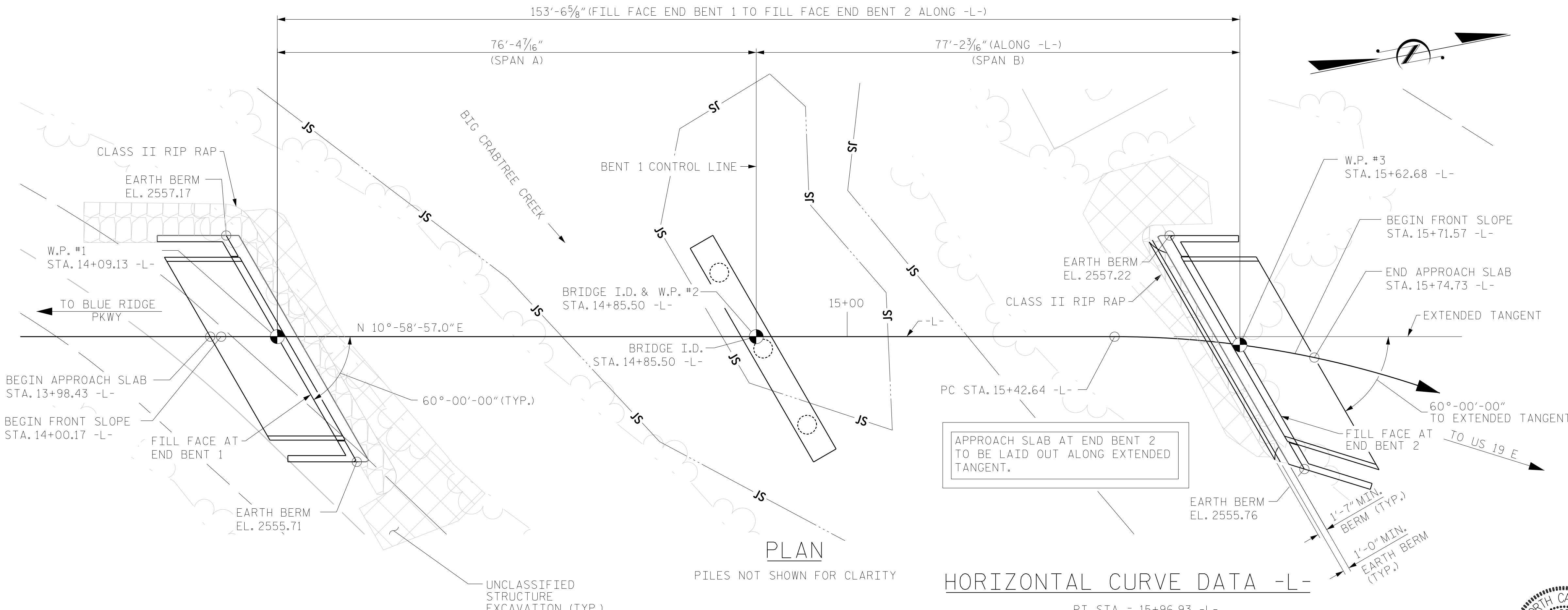
DESIGN DISCHARGE	= 2,800 CFS
FREQUENCY OF DESIGN FLOOD	= 25 YRS
DESIGN HIGH WATER ELEVATION	= 2558.0
DRAINAGE AREA	= 14.9 SQ. MI.
BASE DISCHARGE (Q100)	= 3,900 CFS
BASE HIGH WATER ELEVATION	= 2559.9

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



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'

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

4/29/2025 DocuSigned by: Robert Decola C91B1BEB951B4FF...

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

SHEET NO. S01-01
TOTAL SHEETS 23

DESIGN ENGINEER OF RECORD: DATE :

DRAWN BY : N. GIAGUNTO DATE : 11/21/23
CHECKED BY : R.F. DECOLA DATE : 11/21/23

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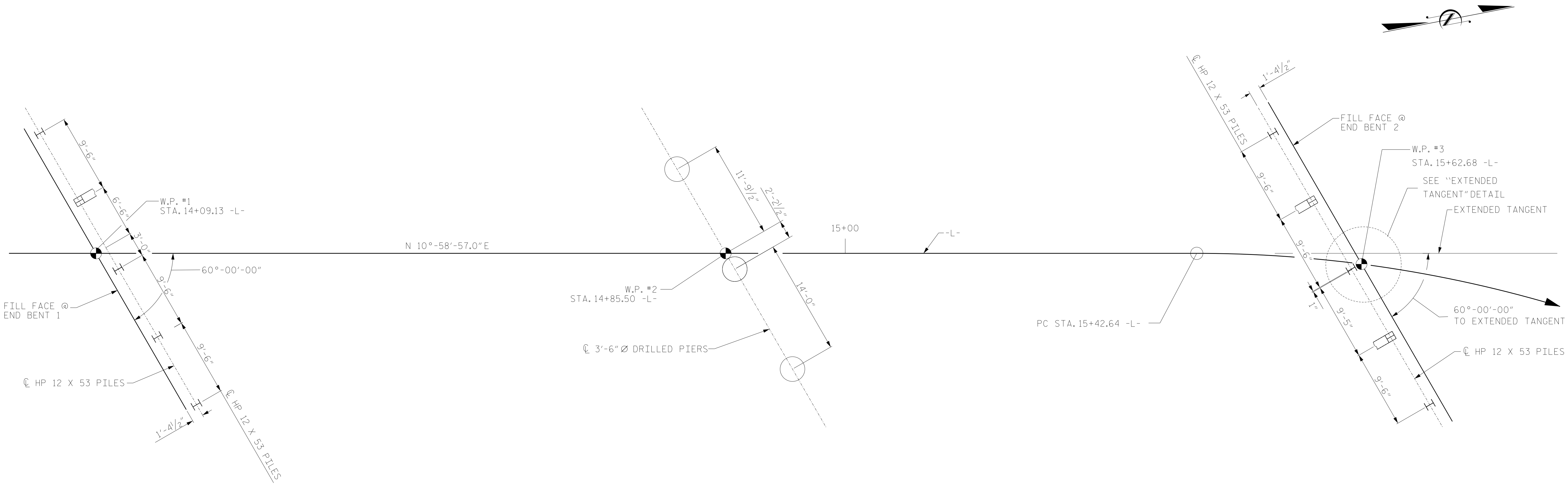
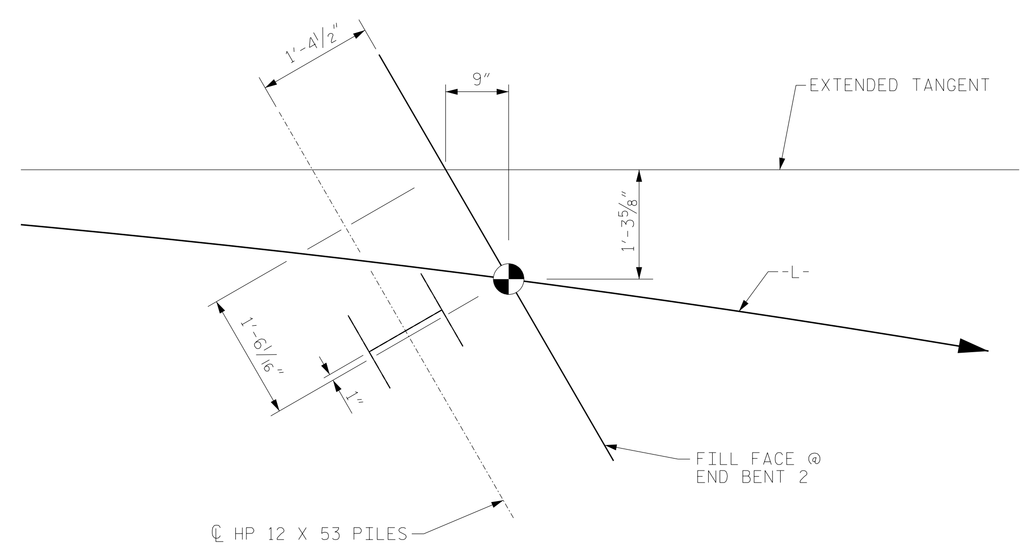
4800 Falls of Neuse Road, Suite 200 Raleigh, NC 27609-6270 Phone (919) 783-9214



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.

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

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036321 ROBERT F. DECOLA

4/29/2025
DocuSigned by: Robert Decola
C91B1BE8951B4FF...

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

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

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

SHEET NO. S01-02
TOTAL SHEETS 23

M:\2016\221601946.09 NCDOT Division 13 Bridge Replacements\G.17BP.13.R.184_Mitchell_600101_B5158\Structures\BoxBeam\DGN\402_005_17BP.13.R.184_SMU_FL_002.dgn
4/3/2025 1:42:43 PM Violet.0hl Structures_101.tbl Structures.pltcfg
KCI PROJ. #221601946.09G

SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

					Driven Piles			Predrilling for Piles*			Drilled-In Piles		
End Bent/ Bent No, Pile(s) #-# (e.g., "Bent 1, Piles 1-5")	Factored Resistance per Pile TONS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Min Pile Tip (Tip No Higher Than) Elev FT	Required Driving Resistance (RDR)** per Pile TONS	Total Pile Redrives Quantity EACH	Predrilling Length per Pile Lin FT	Predrilling Elevation (Elev Not To Predrill Below) FT	Maximum Predrilling Dia INCHES	Pile Excavation (Bottom of Hole) Elev FT	Pile Exc Not In Soil per Pile Lin FT	Pile Exc In Soil per Pile Lin FT
End Bent No 1, 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, Pile 2	115	2559.49	25		2538.5	195							
End Bent No 2, Pile 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.**

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

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	Drilled Pier Length Not In Soil* per Pier Lin FT	Drilled Pier Length In Soil* per Pier Lin FT	Permanent Steel Casing Required? YES or MAYBE	Permanent Steel Casing Tip Elevation (Elev Not To Extend Casing Below) FT	Permanent Steel Casing Length** per Pier Lin FT)
Bent No 1, 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 Casing 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 Testing Required? YES or MAYBE	Dynamic Pile Testing Test Pile Length FT	Total Dynamic Pile 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)

		STEEL PILE POINTS			
End Bent/ Bent No, Pile(s) #-# (e.g., "Bent 1, Piles 1-5")	PIPE PILE PLATES REQUIRED? YES or MAYBE	PIPE PILE CUTTING SHOES REQUIRED? YES	PIPE PILE CONICAL POINTS REQUIRED? YES	H-PILE POINTS REQUIRED? YES	STEEL PILE TIPS 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 Sonic Logging (CSL) Required?* YES or MAYBE	Total CSL Tube Length (For All Tubes) per Pier Lin FT	Shaft Inspection Device (SID) Required? YES or MAYBE	Pile Integrity Test (PIT) Required? MAYBE
Bent No 1, 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

DocuSigned by: Robert Decola

4/29/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE AND DRILLED PIER FOUNDATION TABLES

DESIGN ENGINEER OF RECORD: DATE :

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

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KCI Associates of North Carolina, P.A.

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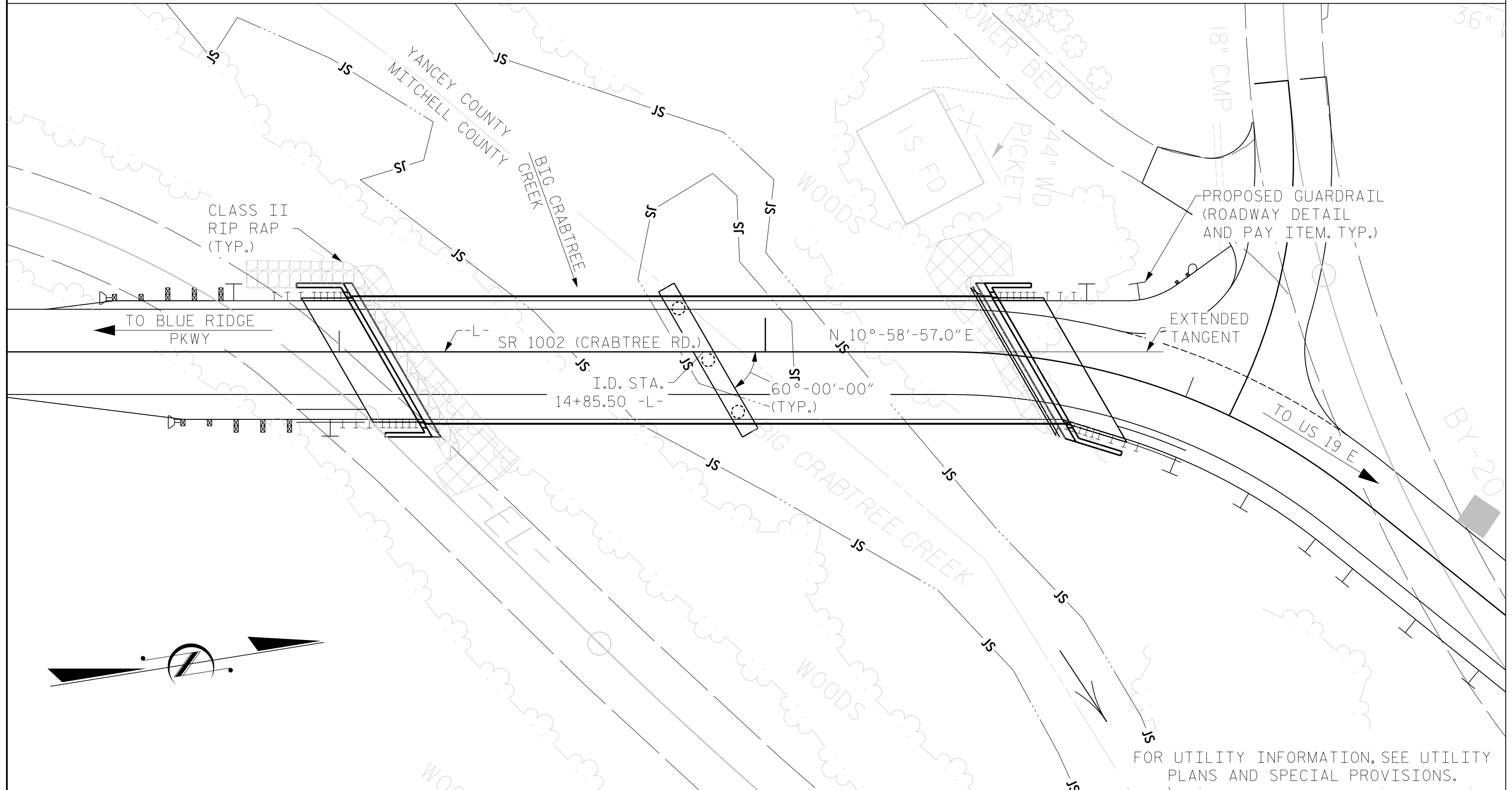
1				3			
2				4			

SHEET NO. S01-03
TOTAL SHEETS 23

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

4/29/2025

DocuSigned by: Robert Decola
C91B1BEB95184FF...

KCI Associates of North Carolina, P.A.
ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS LICENSE NUMBER: C-0764
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SHEET NO. S01-04

TOTAL SHEETS 23

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DESIGN ENGINEER OF RECORD: DATE :

DRAWN BY : R.C. LARSON DATE : 02/07/24
CHECKED BY : R.F. DECOLA DATE : 02/08/24

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4/3/2025 1:42:50 PM Violet.Ohl Structures_101.tbl Structures.pltcfg
KCI PROJ. #221601946.09G

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-

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F. DECOLA

4/29/2025

DocuSigned by: Robert Decola C91B1BEB951B4FF...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR 75′ BOX BEAM UNIT 60° SKEW

(NON-INTERSTATE TRAFFIC)

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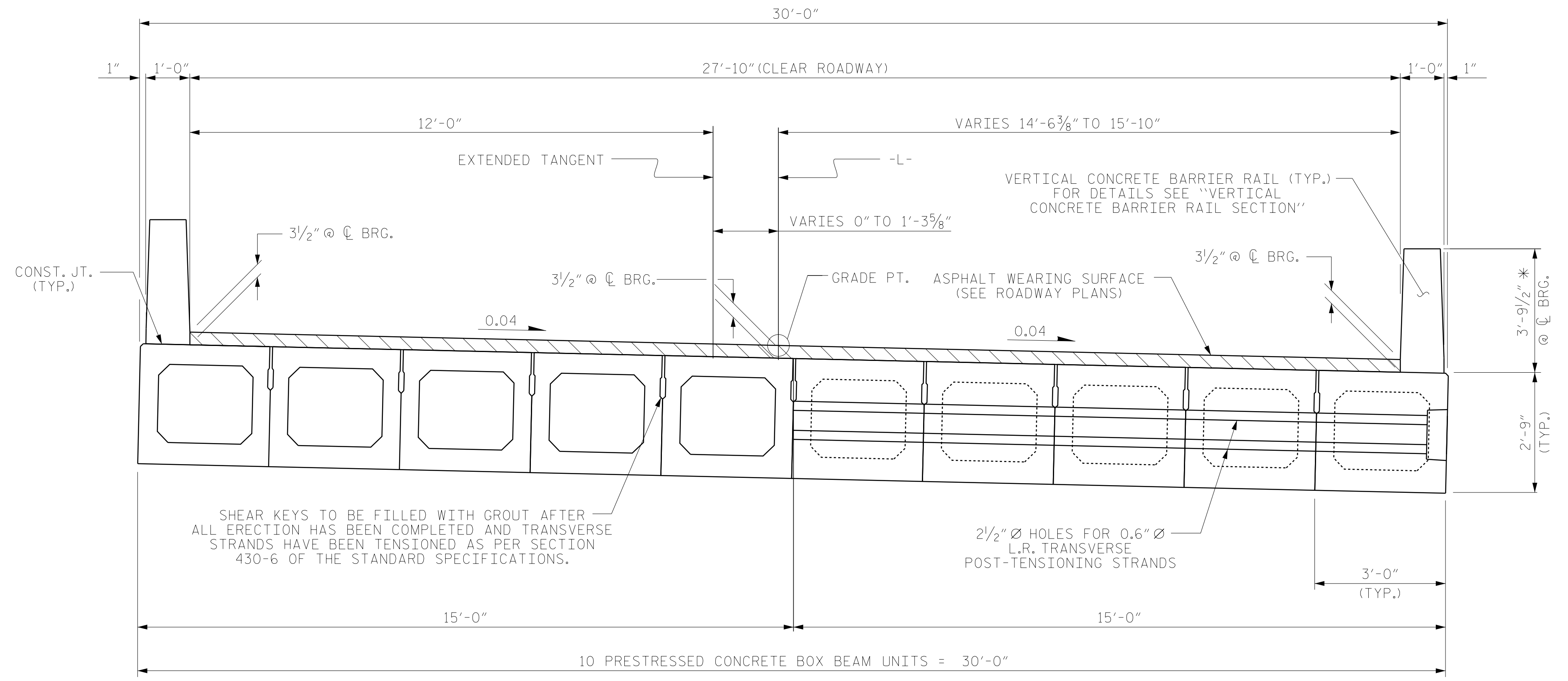


HALF SECTION
THROUGH VOIDS

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.

NOTES

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

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

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

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

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

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

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

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

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

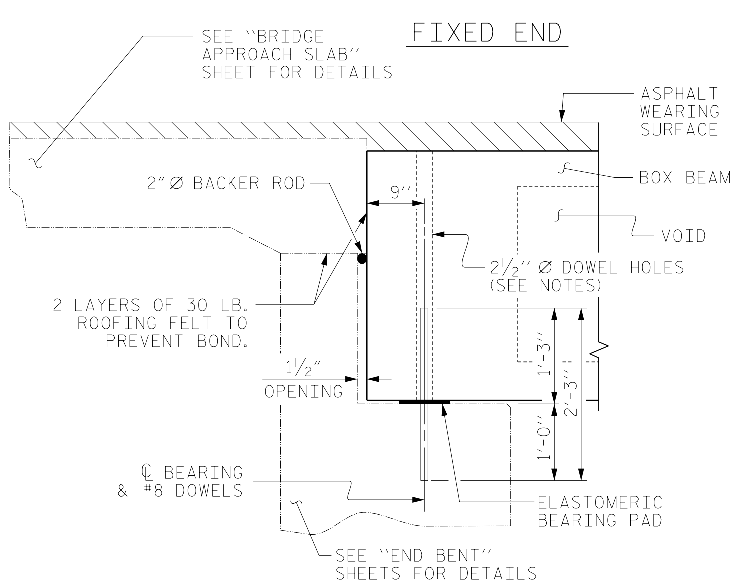
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

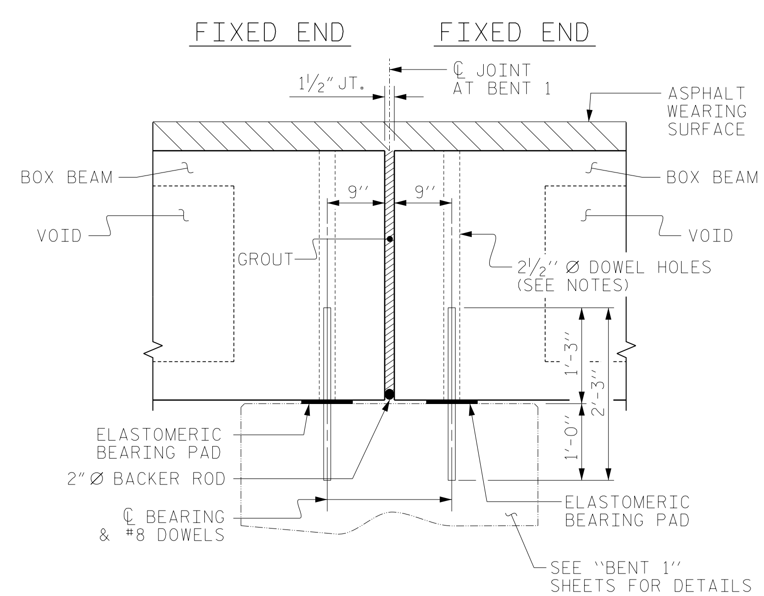
THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

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

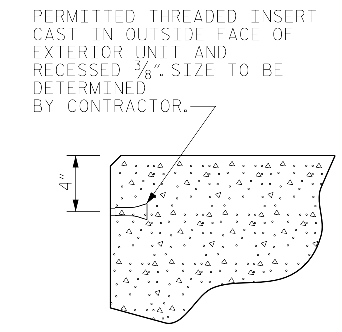
THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.



SECTION AT END BENT



SECTION AT BENT



THREADED INSERT DETAIL

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

4/29/2025
DocuSigned by: Robert Decola
C91B1BEB951B4FF...

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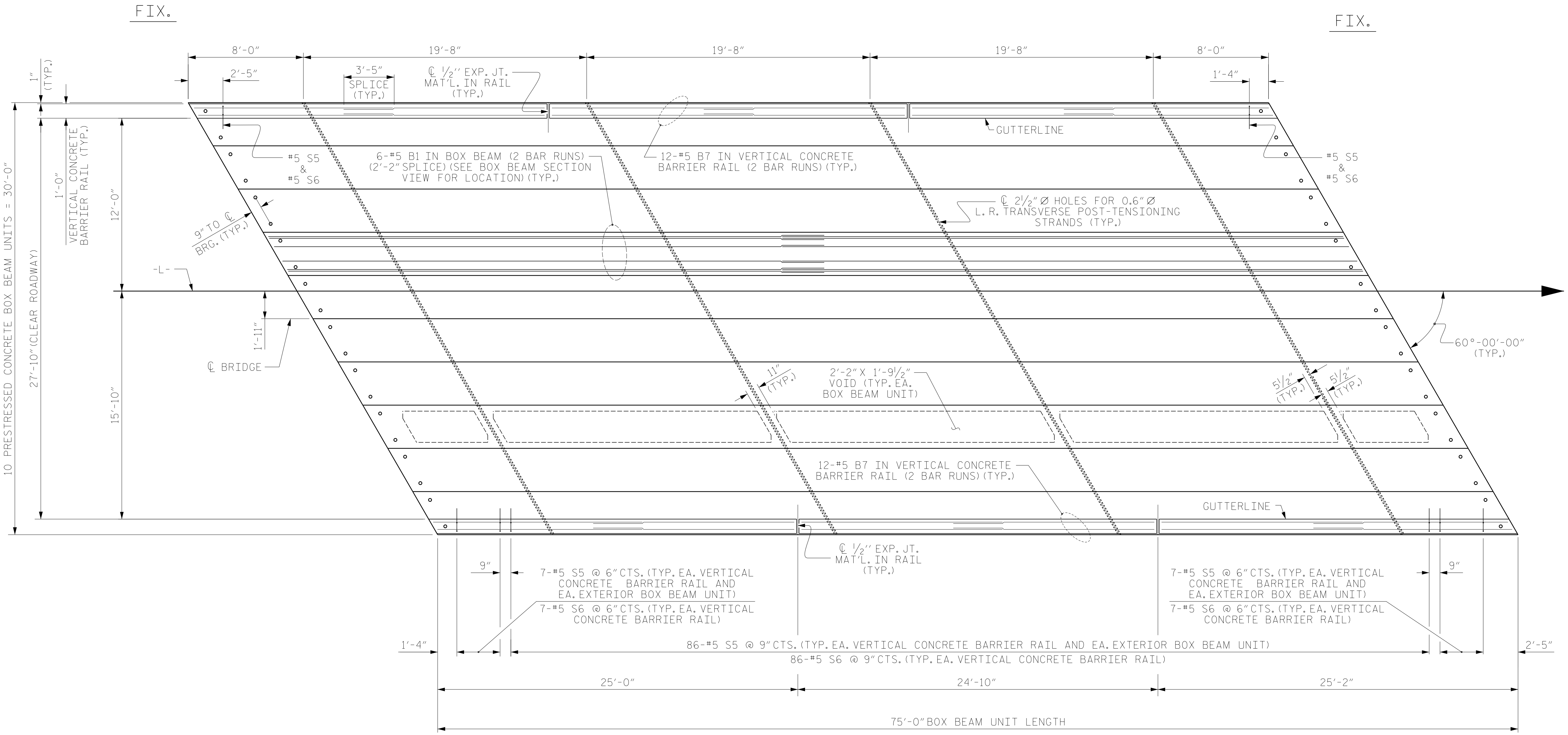
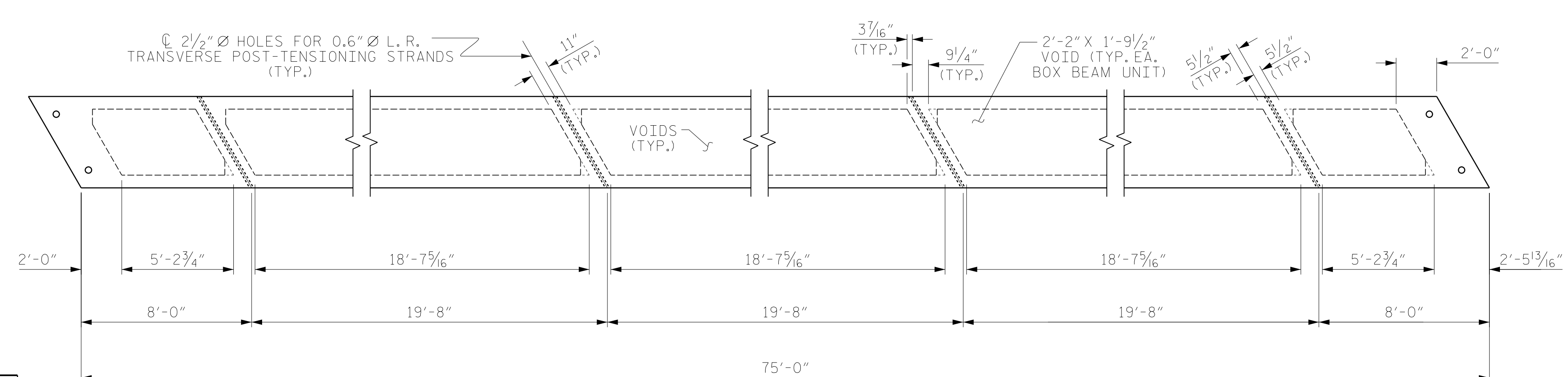


PLAN OF UNIT - SPAN A



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

4/29/2025

DocuSigned by: Robert Decola C91B1BEB961B4FF...

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

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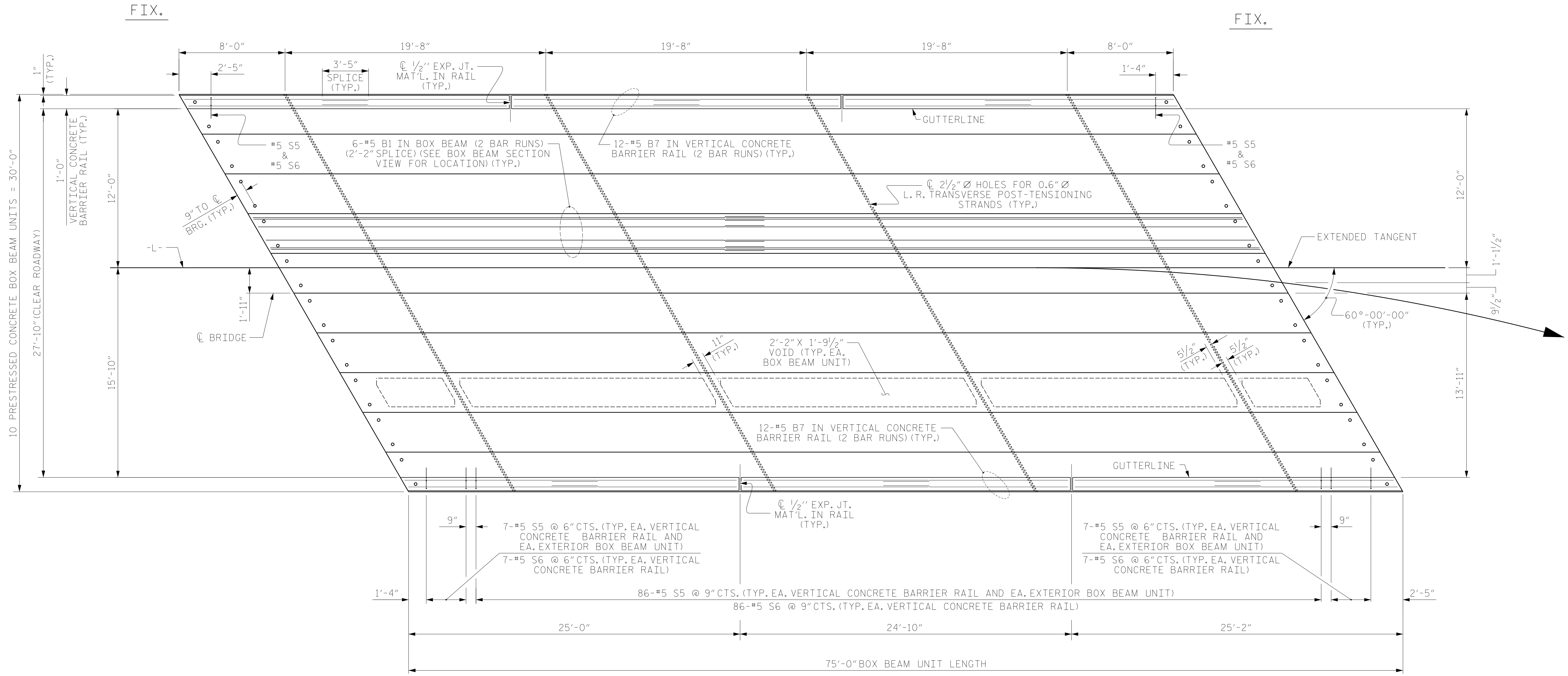
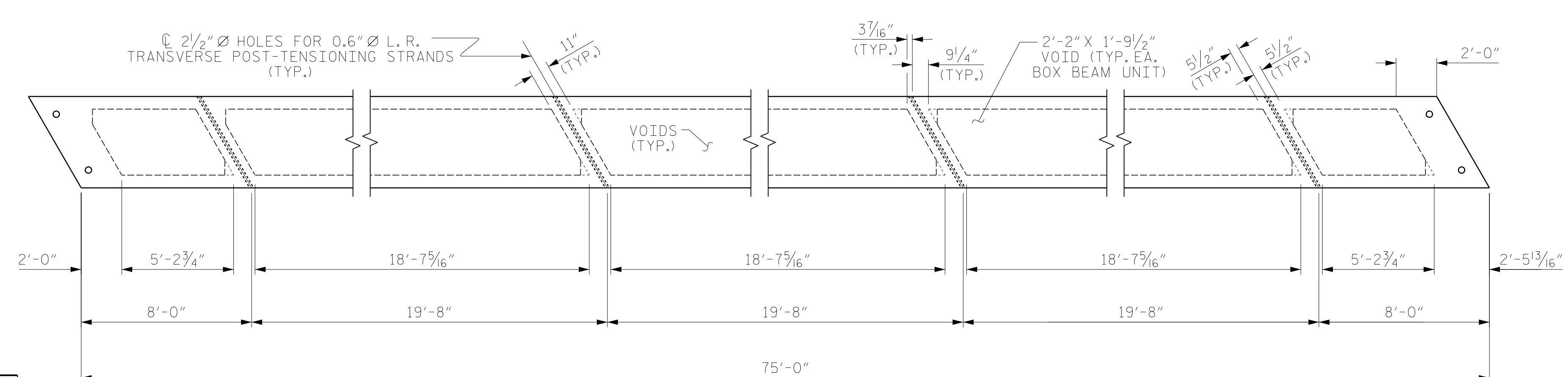


PLAN OF UNIT - SPAN B



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

4/29/2025

DocuSigned by:
Robert Decola
C91B1BEB95184FF...

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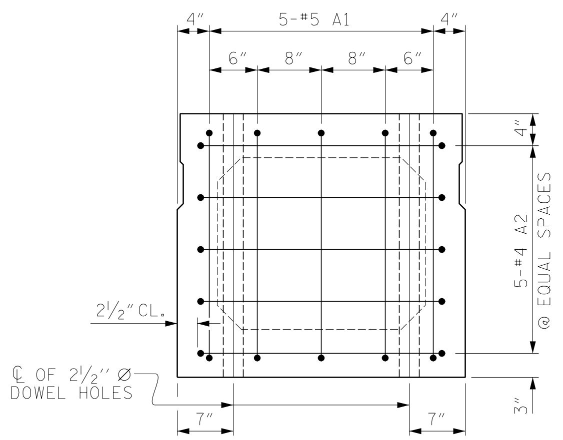
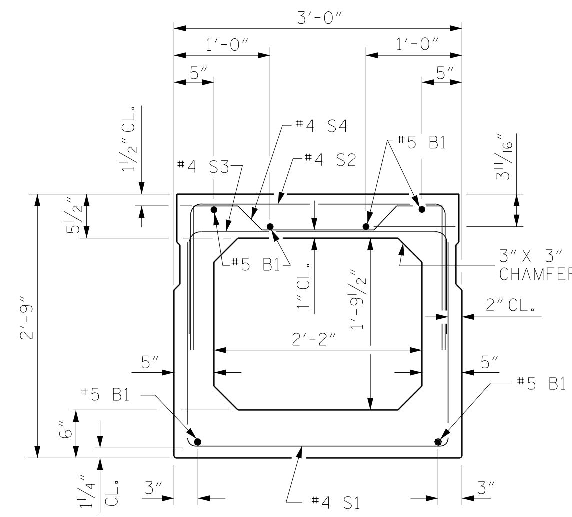


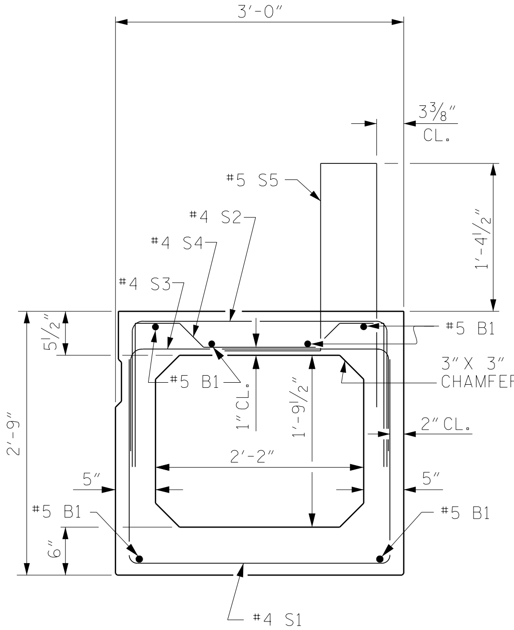
END ELEVATION

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

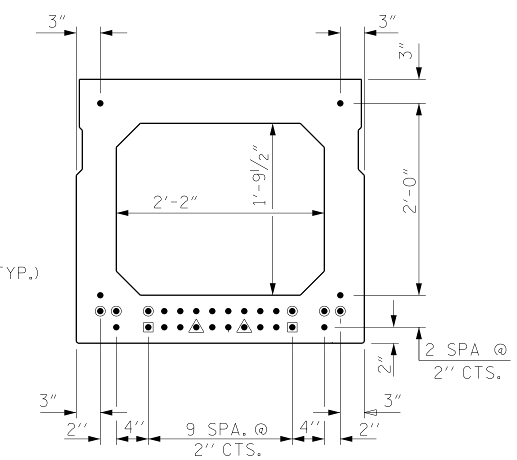
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT



TYPICAL STRAND LOCATION

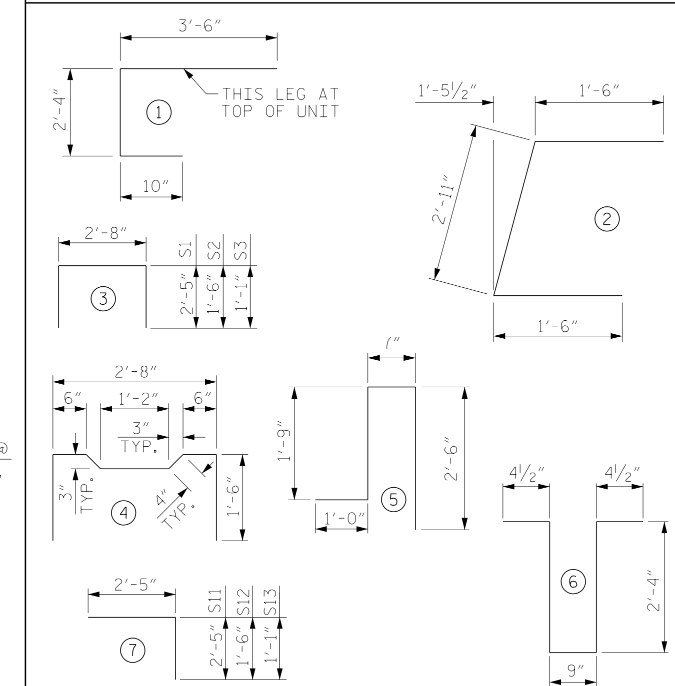
(24 STRANDS REQUIRED)

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.

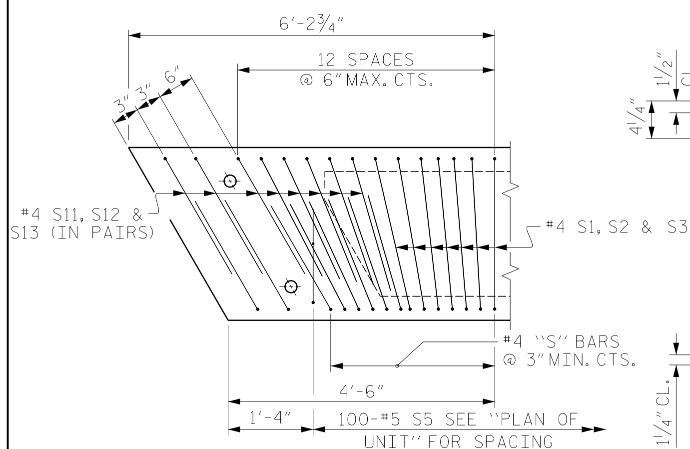
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

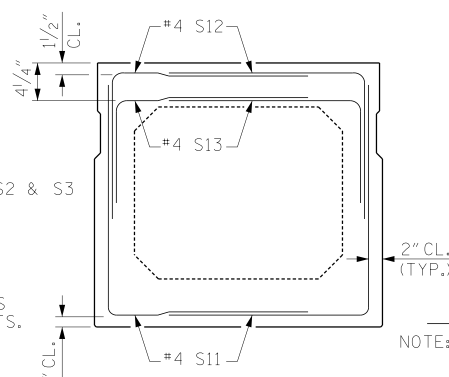
BILL OF MATERIAL FOR ONE BOX BEAM SECTION

				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



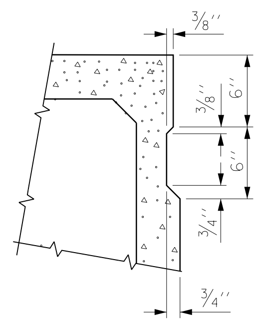
DETAIL "B"

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



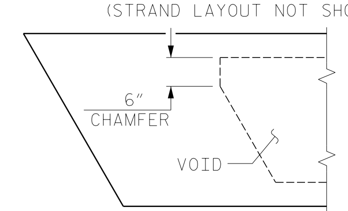
END VIEW

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



SHEAR KEY DETAIL

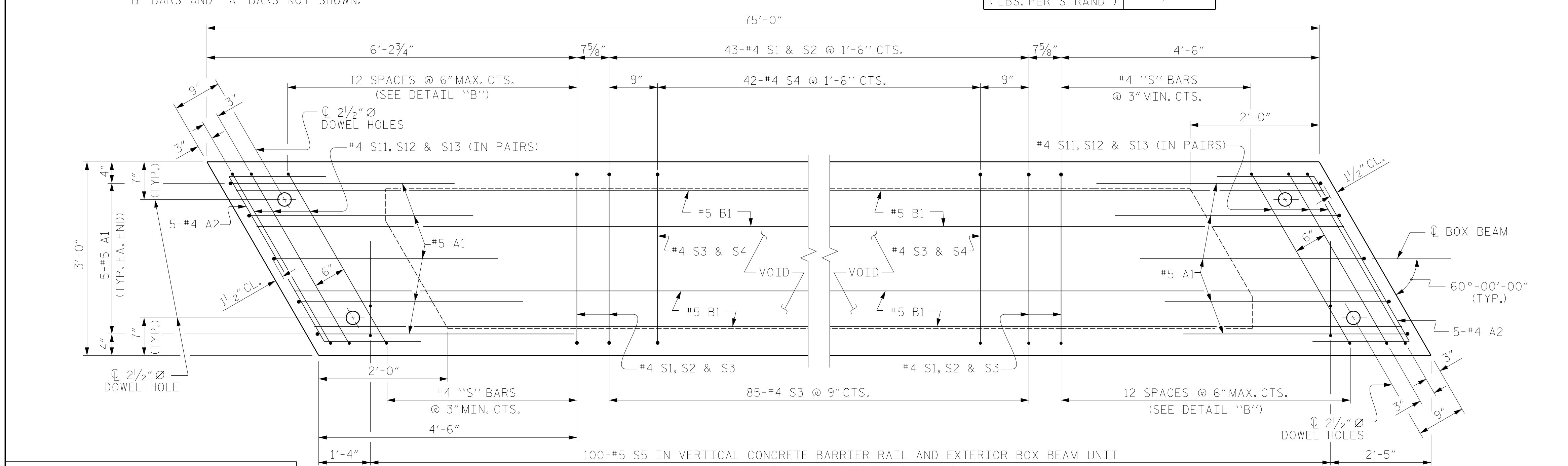
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.



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



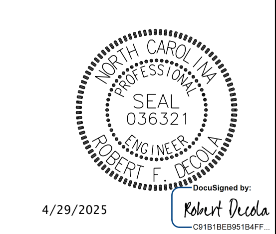
PLAN OF BOX BEAM

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



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ASSEMBLED BY : R.C. LARSON DATE : 05/18/22
CHECKED BY : R.F. DeCOLA DATE : 06/02/22

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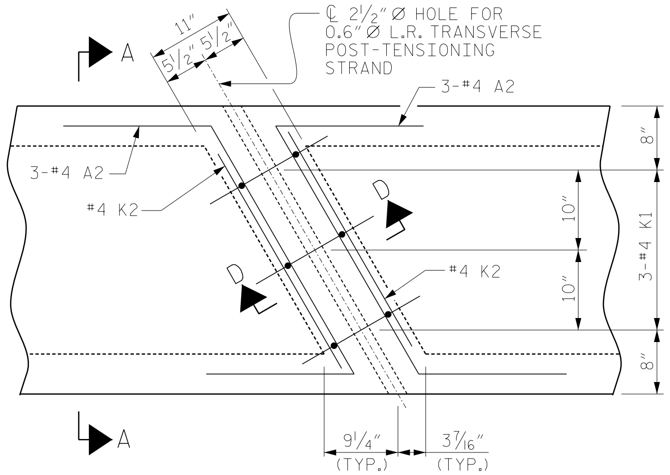
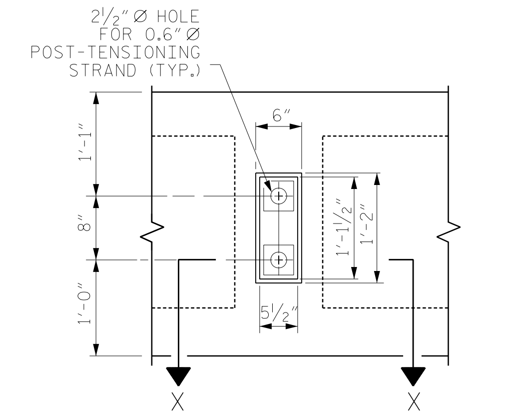
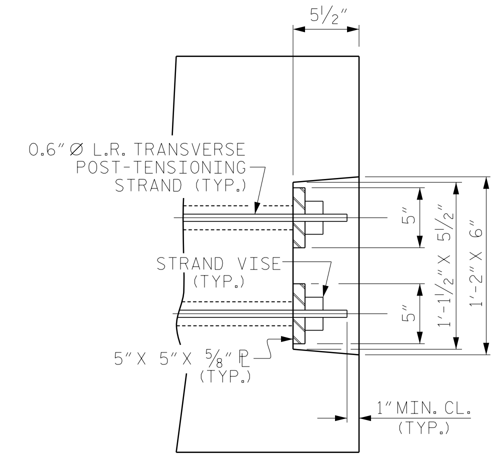


PLAN

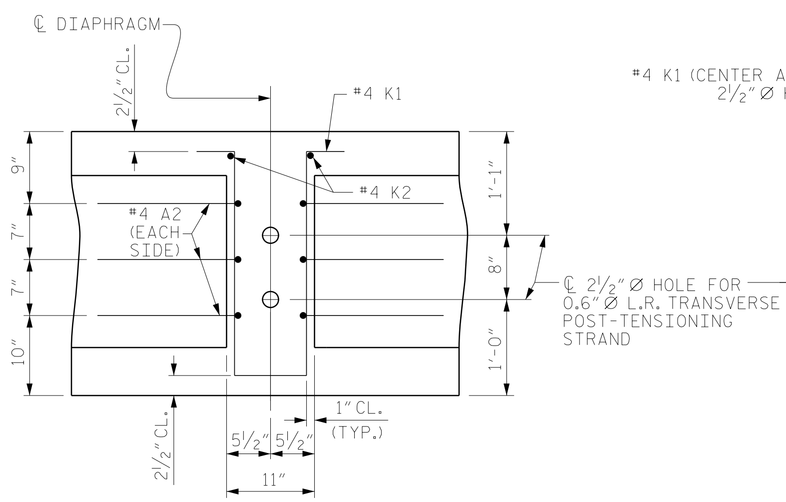


VIEW Y-Y

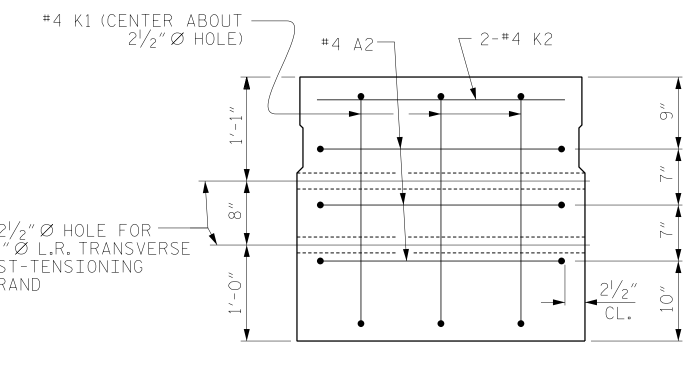
SHOWING ELEVATION VIEW OF GROUTED RECESS



DETAIL "C"



SECTION D-D

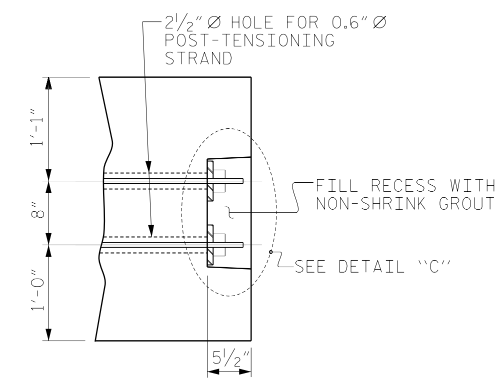


SECTION A-A

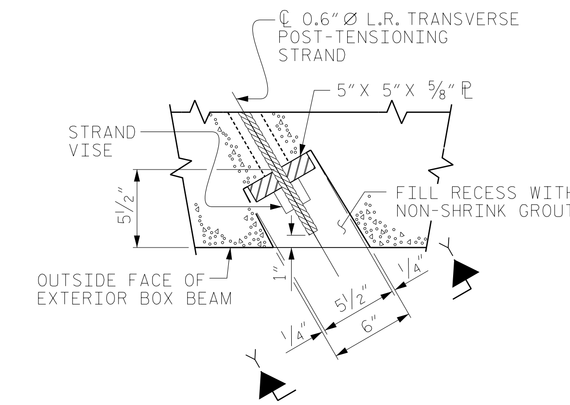
VOIDS NOT SHOWN

DOUBLE DIAPHRAGM DETAILS

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



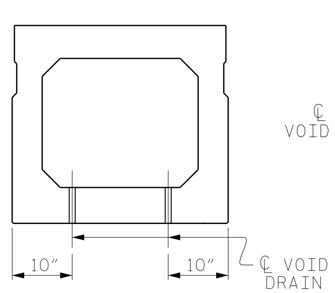
PART SECTION AT RECESS



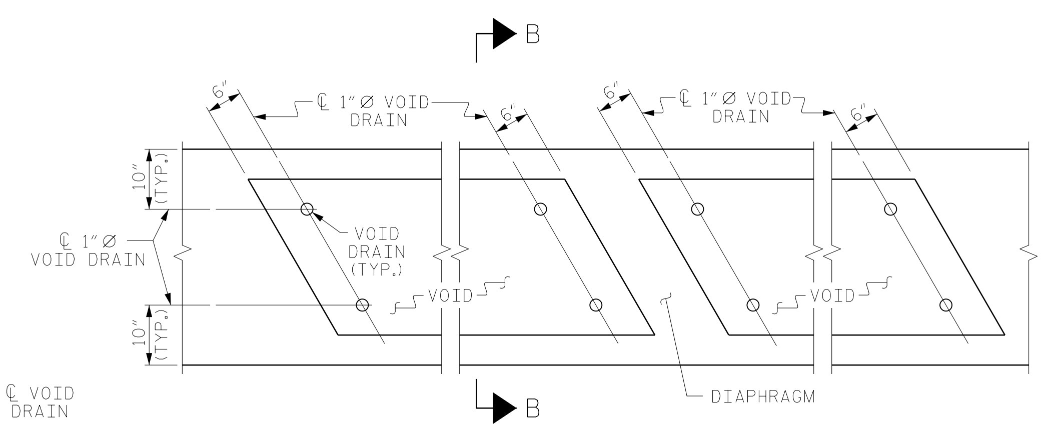
SECTION X-X

SHOWING PLAN VIEW OF GROUTED RECESS

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



SECTION B-B



PART PLAN

VOID DRAIN DETAILS

(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 2'-9"
75' BOX BEAM UNIT	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

4/29/2025

DocuSigned by: Robert Decola

DESIGN ENGINEER OF RECORD:	DATE :
ASSEMBLED BY : R.C.LARSON	DATE : 05/19/22
CHECKED BY : R.F.DeCOLA	DATE : 06/01/22
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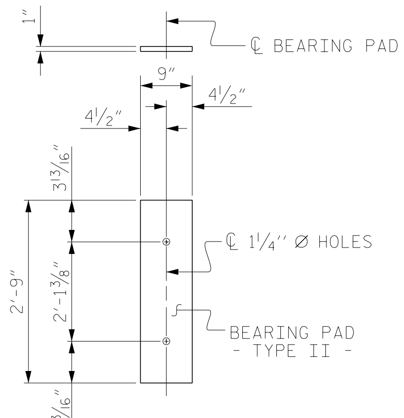
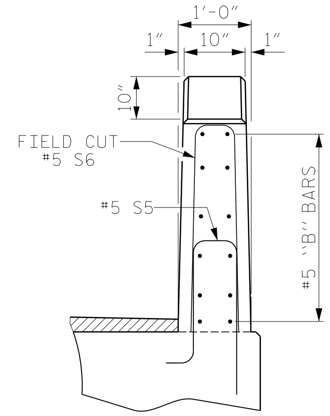


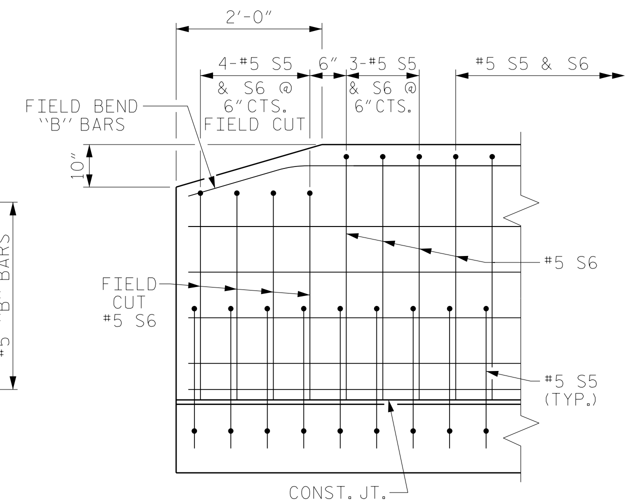
FIXED END
(TYPE II - 40 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



END VIEW

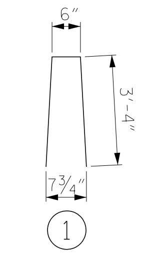


SIDE VIEW

END OF RAIL DETAILS

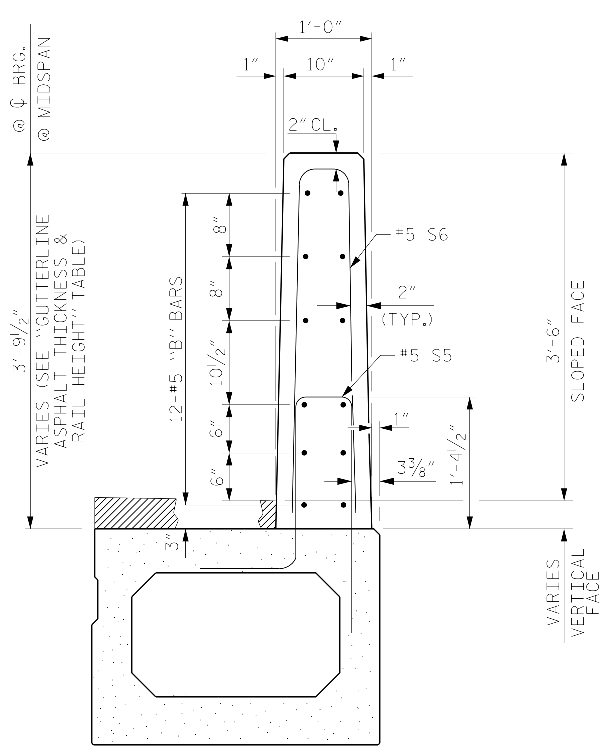
BOX BEAM UNITS REQUIRED

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

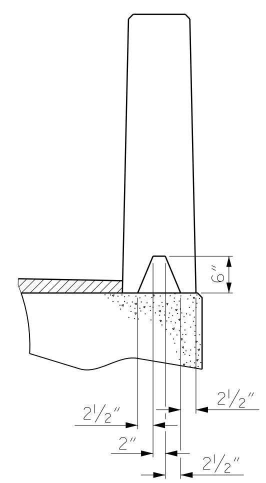


BAR TYPE

BAR DIMENSIONS ARE OUT TO OUT

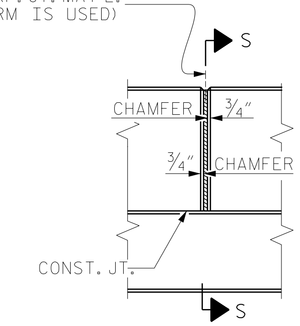


SECTION THRU RAIL



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

℄ ½" EXP. JT. MAT'L HELD IN
PLACE WITH GALVANIZED NAILS.
(NOTE: OMIT EXP. JT. MAT'L.
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"

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

SHEET 6 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F. DECOLA

4/29/2025

DocuSigned by: Robert Decola C91B1BEB951B4FF...

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

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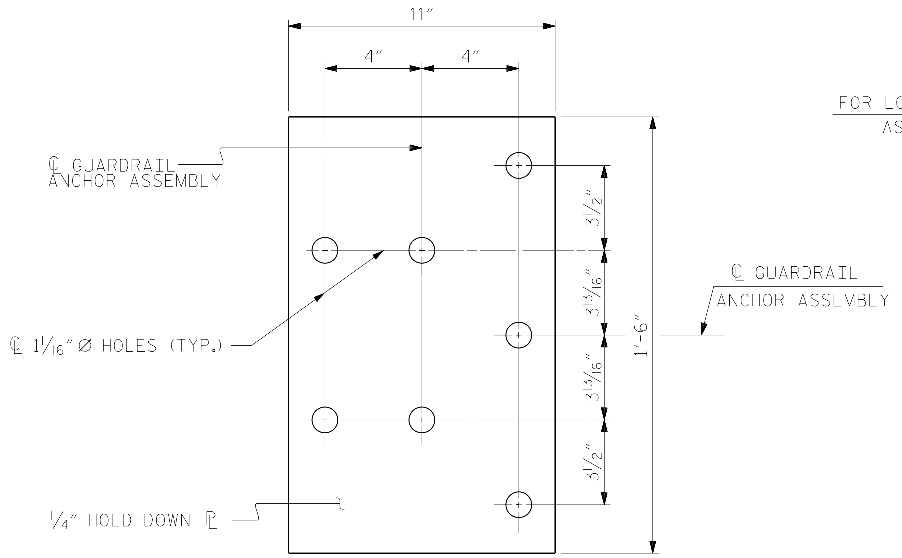
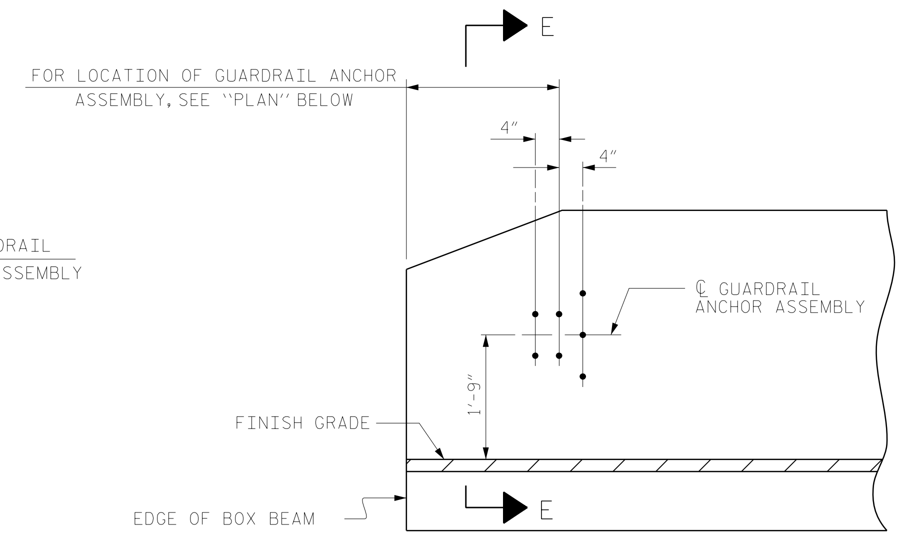


PLAN



ELEVATION

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A ¼″ HOLD DOWN PLATE AND 7 - ⅞″ 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 ⅞″ 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.)

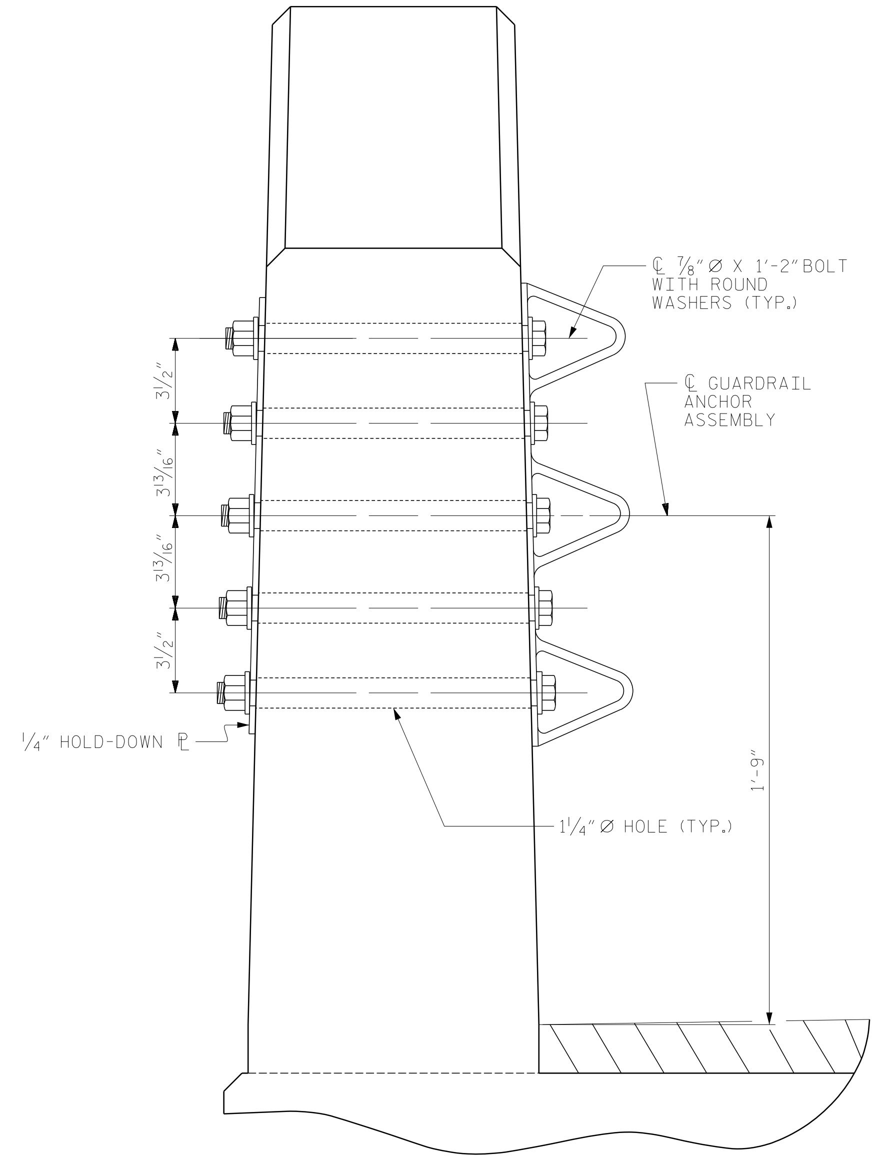
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

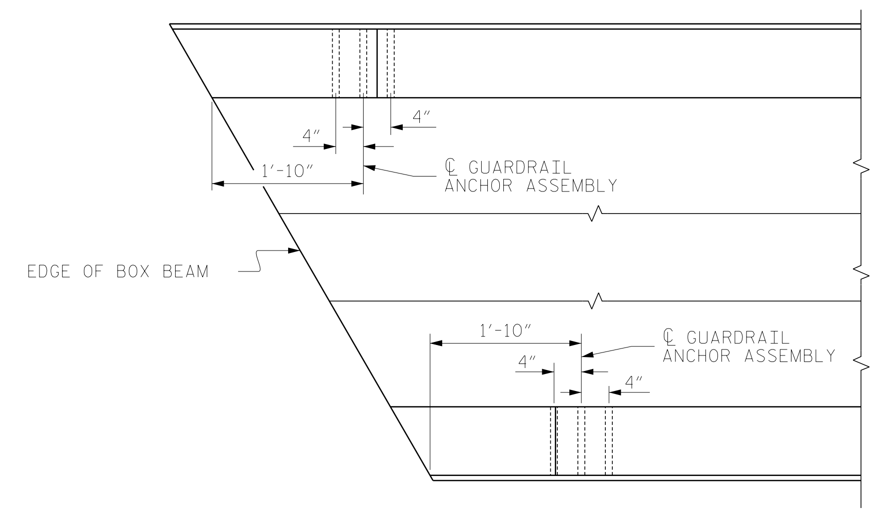
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

THE 1 ¼″ 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.



SECTION E-E

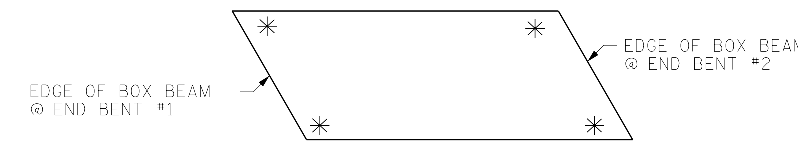
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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



SKETCH SHOWING POINTS OF ATTACHMENT

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

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

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F. 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.
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1				3				TOTAL SHEETS
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ASSEMBLED BY : R. C. LARSON	DATE : 05/18/22		
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CHECKED BY : GM 5/10	REV. 12/17	MAA/THC	
	REV. 5/18	MAA/THC	

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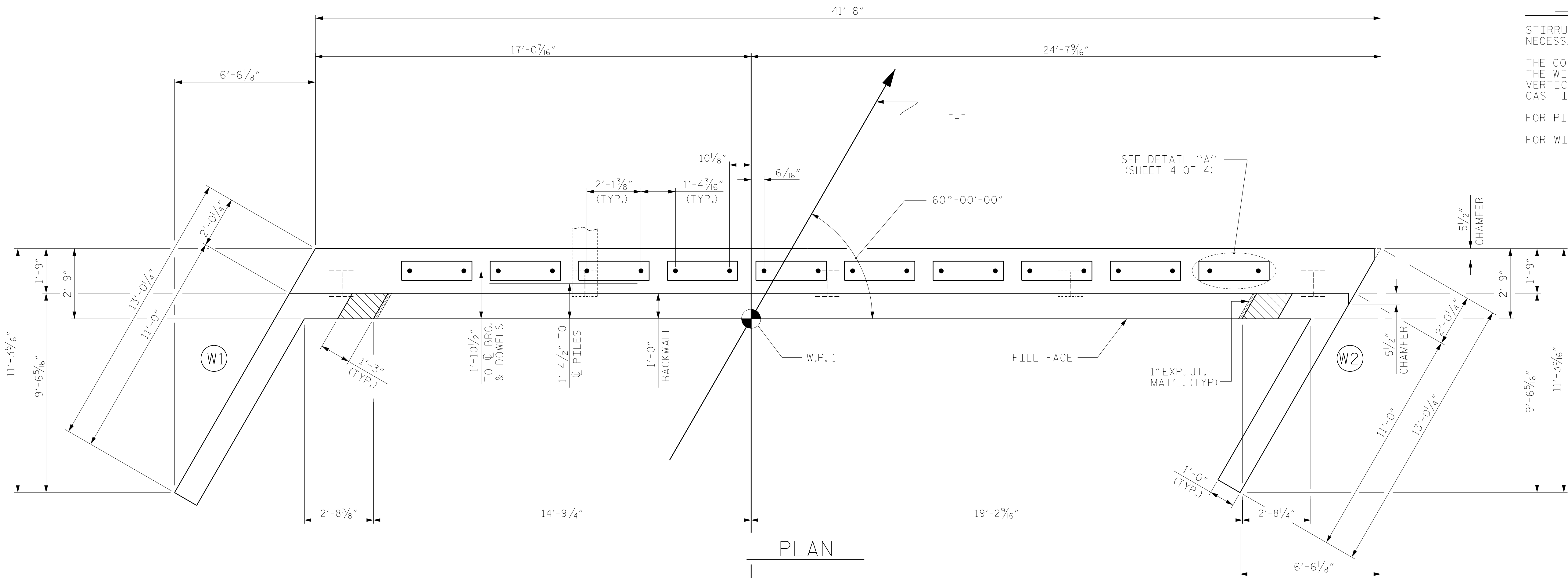
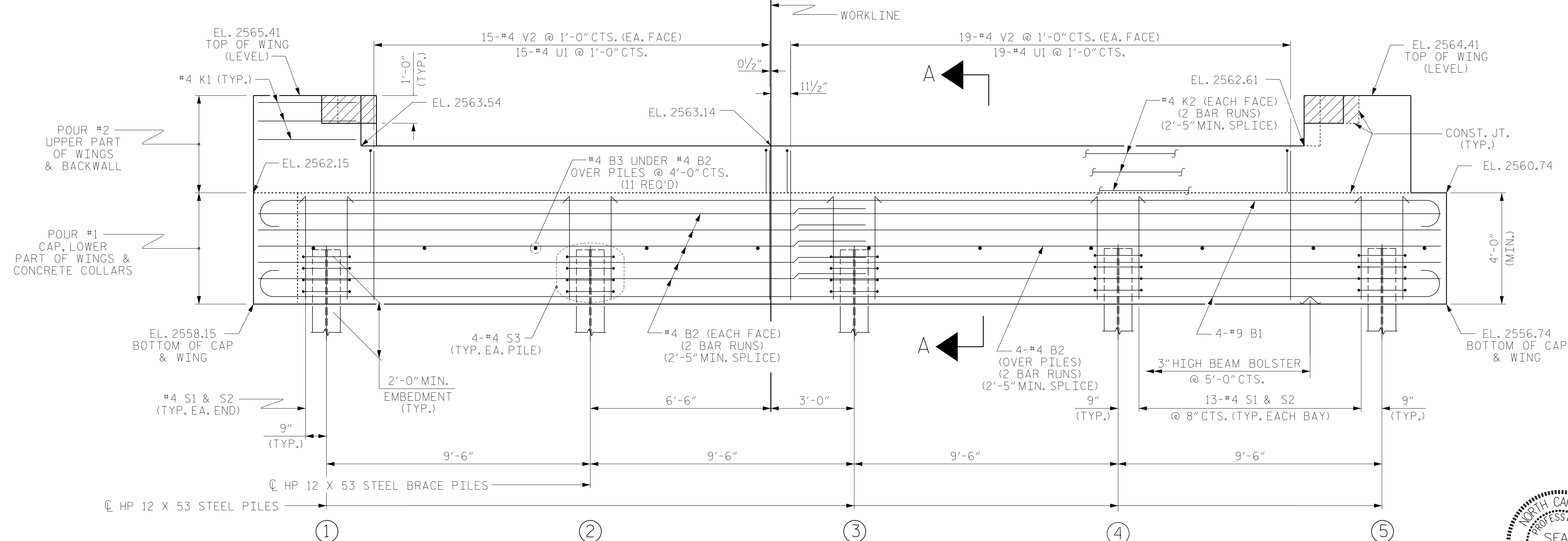


PLAN



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	2560.06
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

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F. DECOLA
4/29/2025
DocuSigned by: Robert Decola

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ASSEMBLED BY : R.C. LARSON DATE : 06/03/22
CHECKED BY : R.F. DECOLA DATE : 06/08/22
DRAWN BY : WJH 12/11 CHECKED BY : AAC 12/11
REV. 4/15 MAA/TMG

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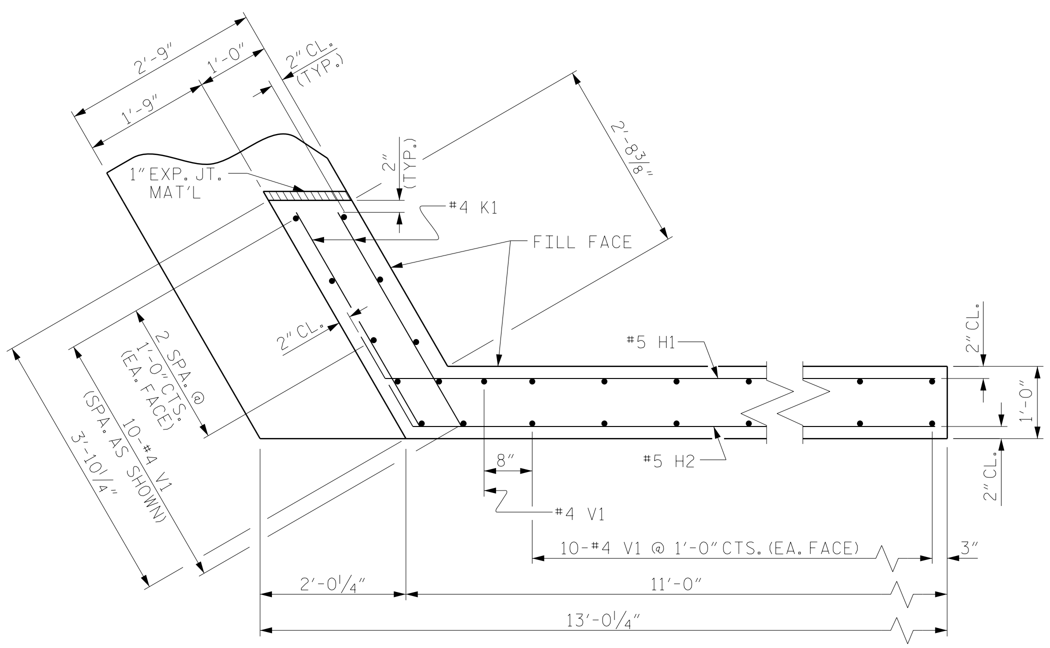
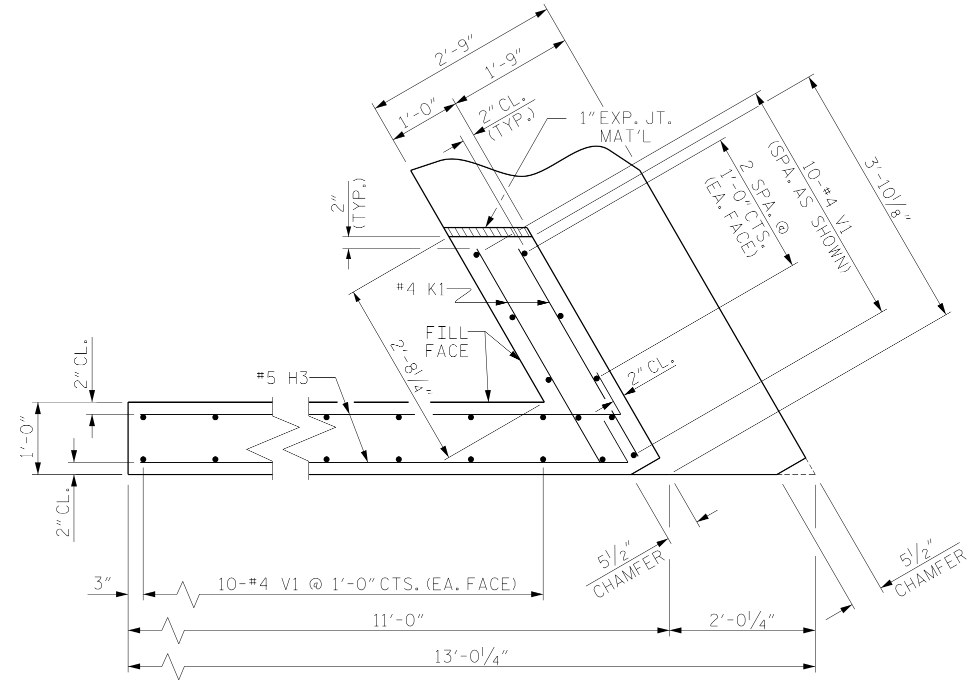
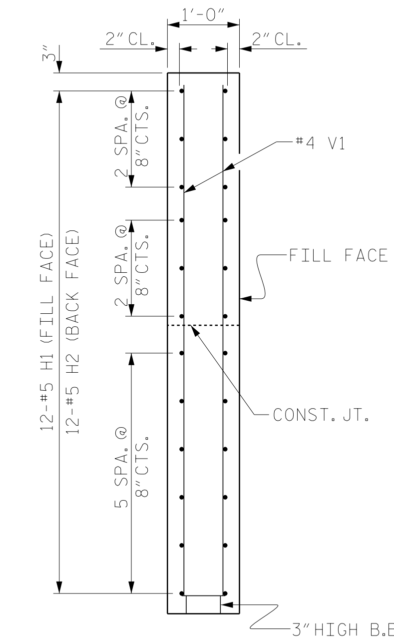


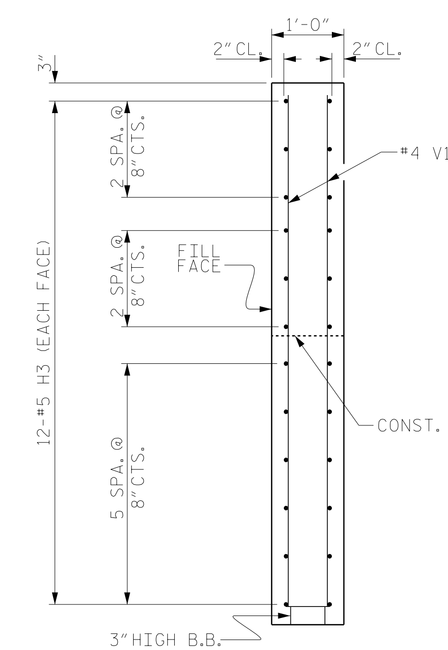
PLAN OF WING (W1)



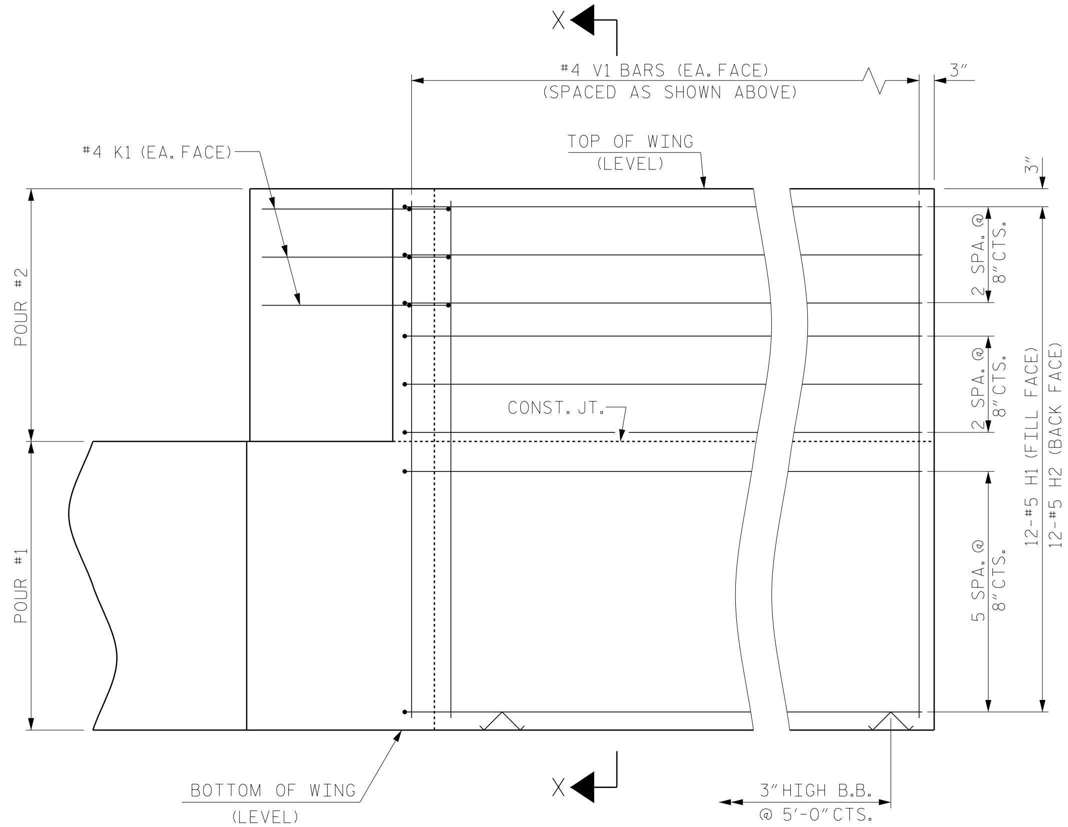
PLAN OF WING (W2)



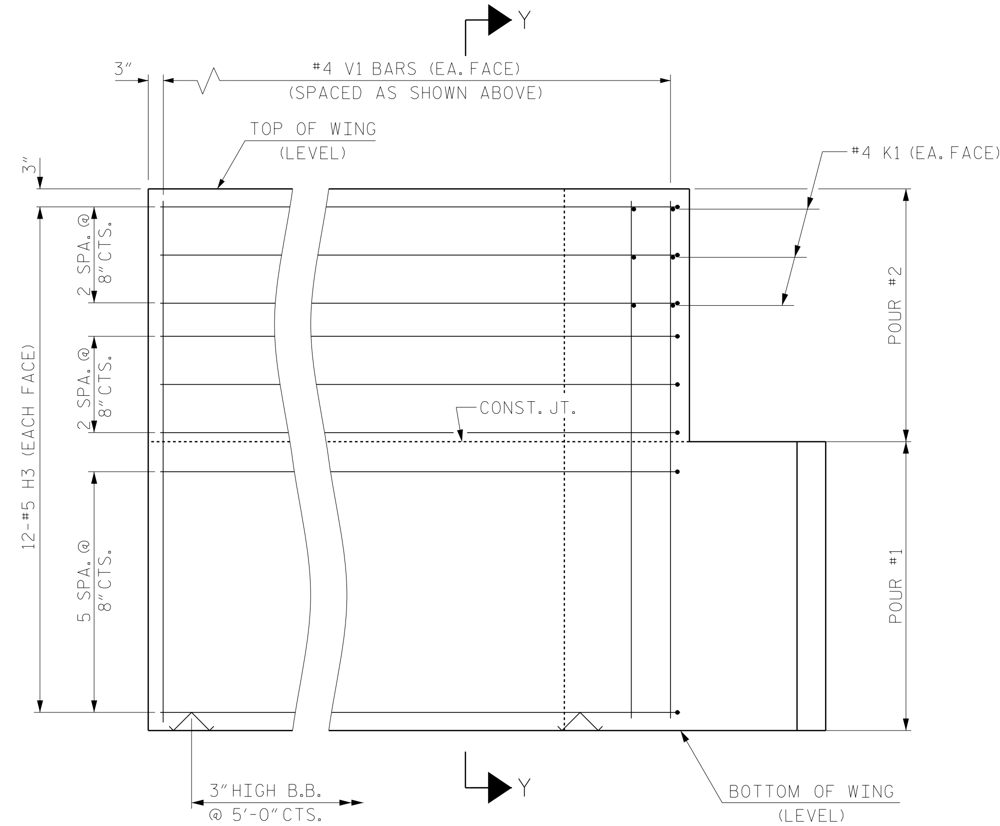
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS

PROJECT NO. 17BP.13.R.184

MITCHELL/YANCEY COUNTY

STATION: 14+85.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1
WING DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F. DECOLA

4/29/2025

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1			3				TOTAL SHEETS
2			4				23

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CHECKED BY : R.F. DECOLA DATE : 06/08/22

DRAWN BY : WJH 12/11 | REV. 4/15 | MAA/TMG
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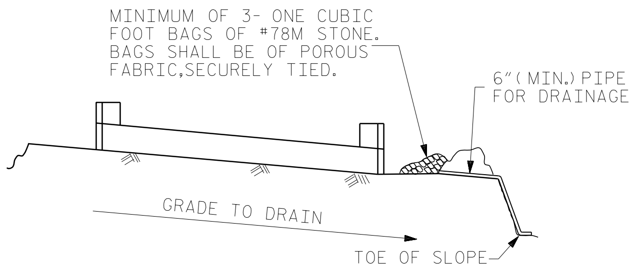
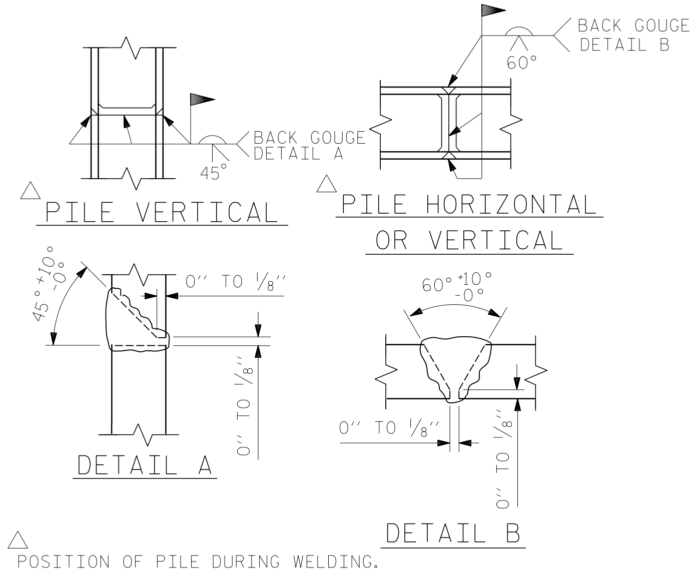


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

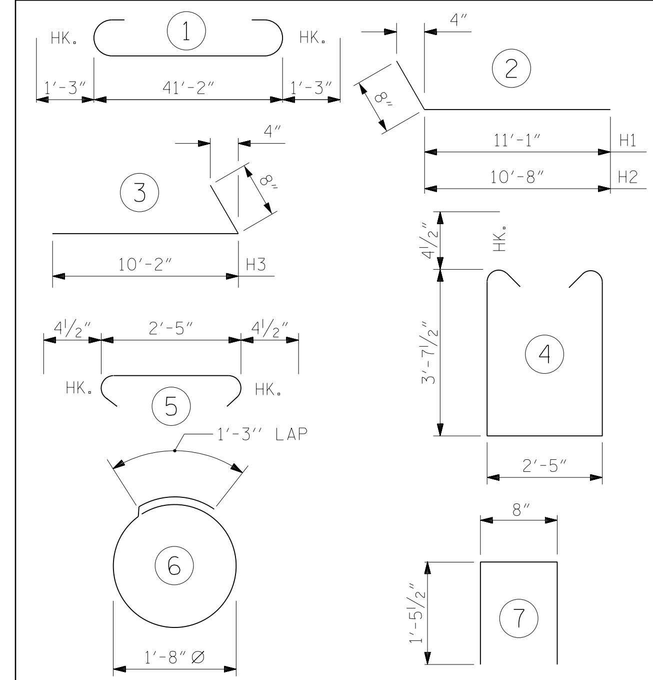
TEMPORARY DRAINAGE AT END BENT



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

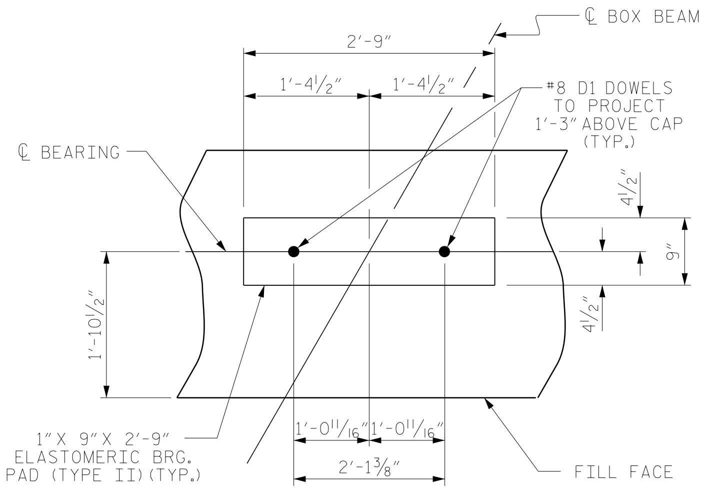
END BENT 1

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

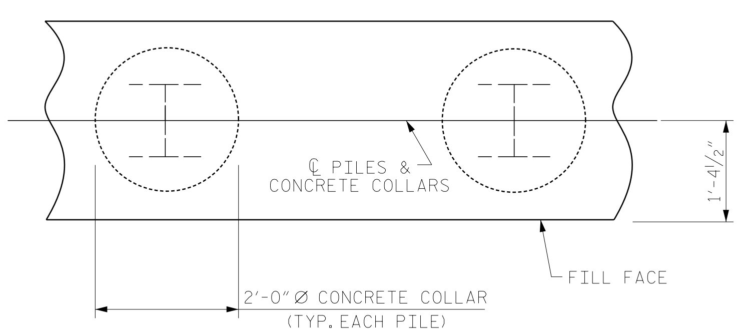
REINFORCING STEEL 3686 LBS.

CLASS A CONCRETE BREAKDOWN

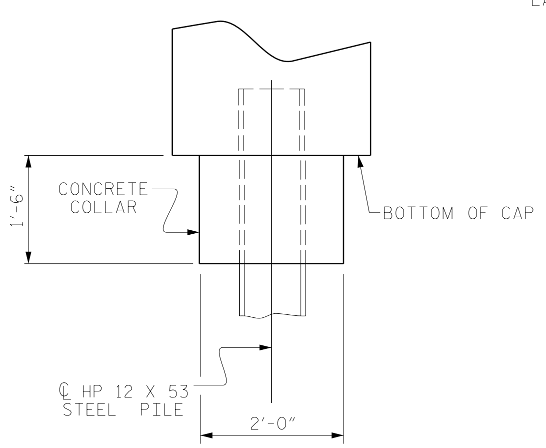
POUR #1	CAP, LOWER PART OF WINGS & COLLARS	20.8 C.Y.
POUR #2	BACKWALL & UPPER PART OF WINGS	5.6 C.Y.
TOTAL CLASS A CONCRETE		26.4 C.Y.



DETAIL "A"

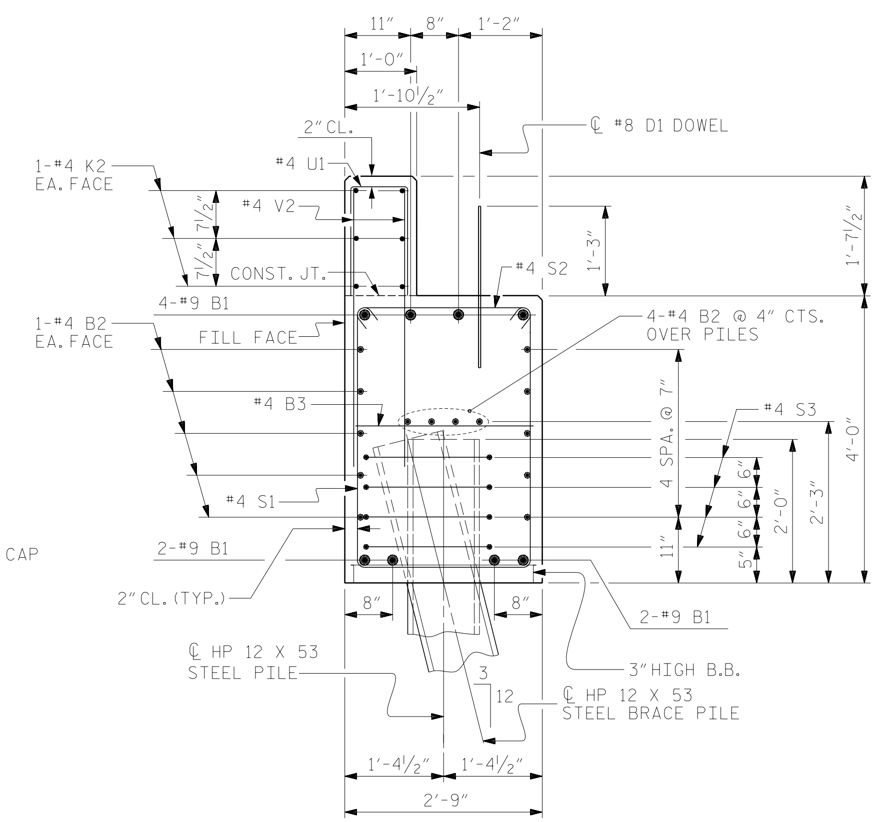


PLAN



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

4/29/2025

DocuSigned by: Robert Decola
C91B1BEB951B4FF...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1
DETAILS

DESIGN ENGINEER OF RECORD: DATE :

DRAWN BY : R.C. LARSON DATE : 06/03/22
CHECKED BY : R.F. DECOLA DATE : 06/05/22

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KCI PROJ. #221601946.09G

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.

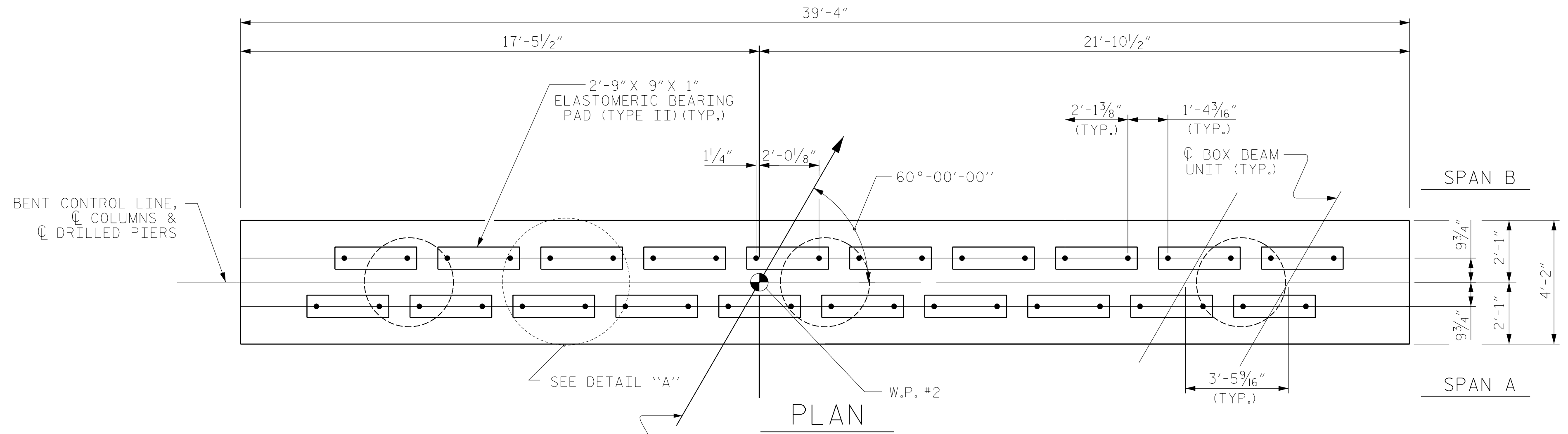
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

★ INVERT ALTERNATE STIRRUPS.

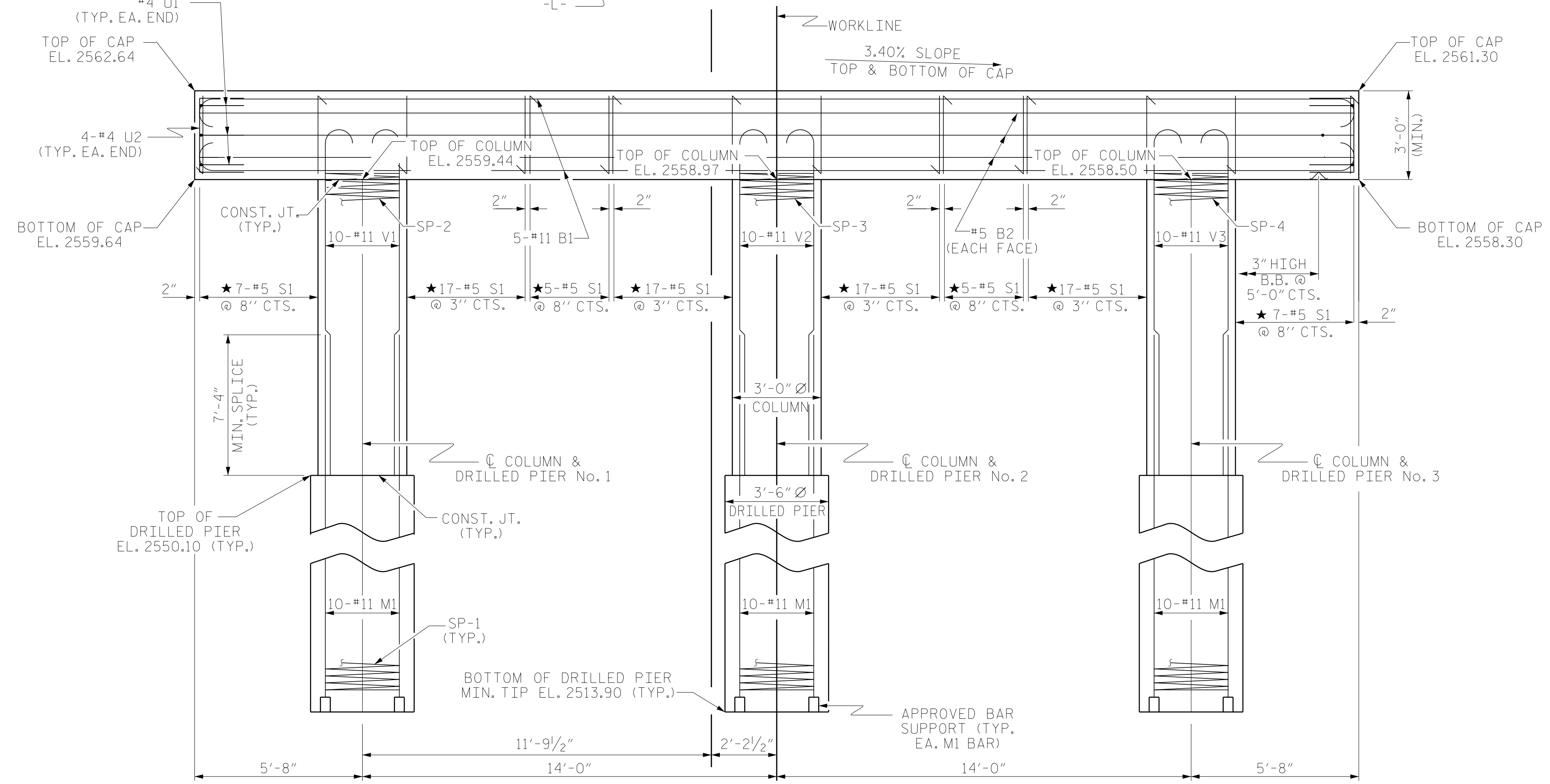
THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT ONE FOOT BELOW THE GROUND LINE.

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.

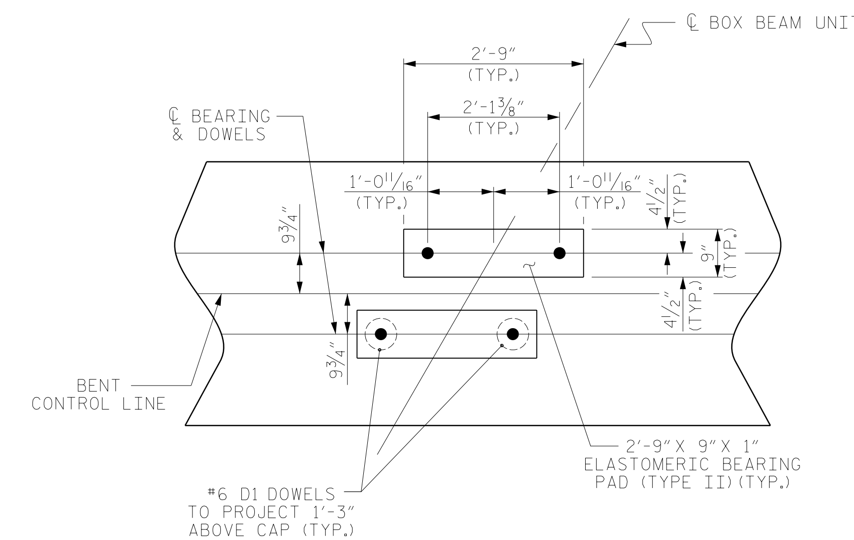


PLAN



ELEVATION

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



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

4/29/2025

DocuSigned by: Robert Decola
C91B1BEB951B4FF...

REVISIONS								SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:			S01-16
1			3					TOTAL SHEETS
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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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DESIGN ENGINEER OF RECORD: DATE :

DRAWN BY : N.R. GIAGUNTO DATE : 11/13/23
CHECKED BY : R.F. DECOLA DATE : 11/21/23

M:\2016\22160194 6.09 NCDOT Division 13 Bridge Replacements\G.17BP.13.R.184_Mitchell_600101_B5158\Structures\BoxBeam\DGN\402_033_17BP.13.R.184_SMU_B1_016.dgn
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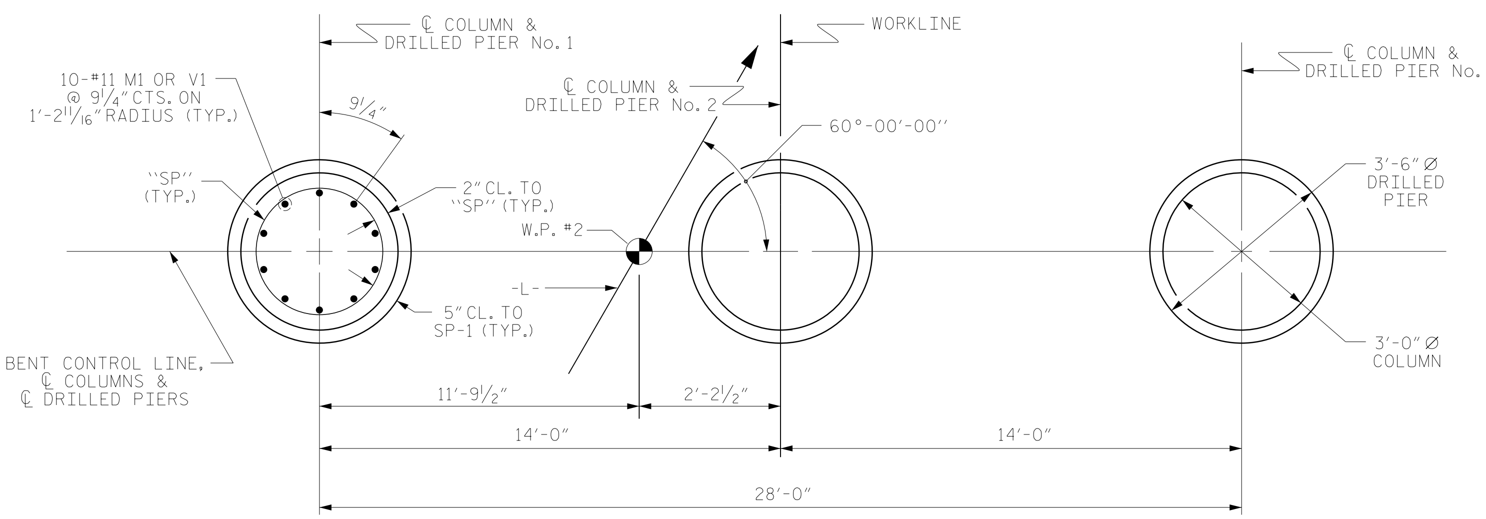
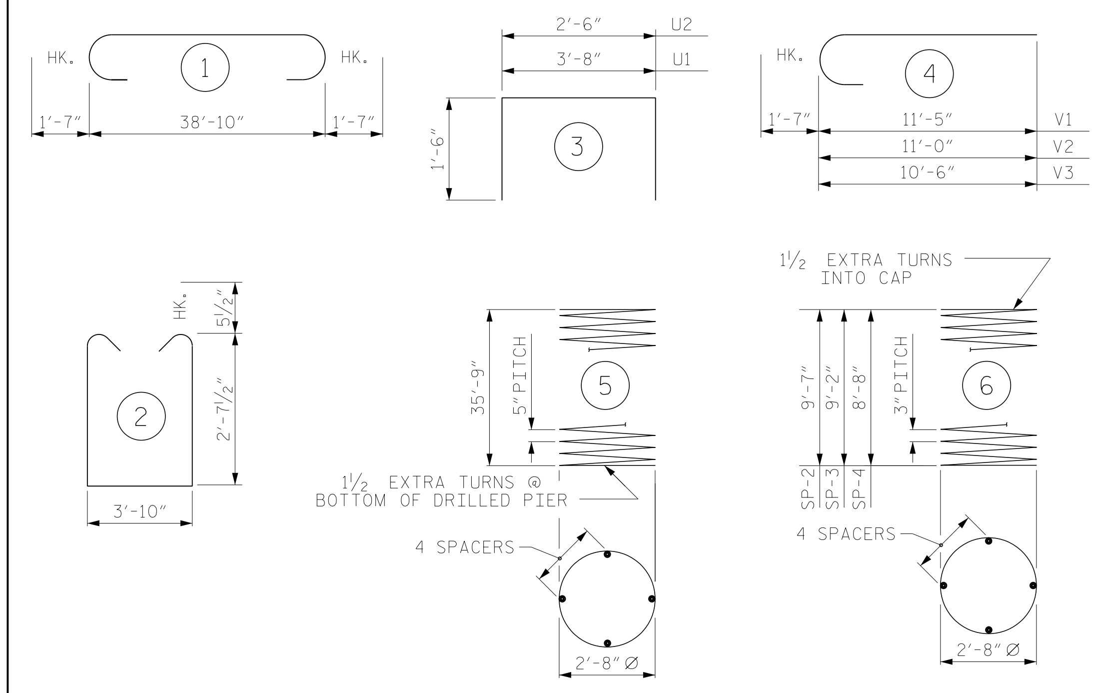


PLAN OF DRILLED PIERS & COLUMNS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

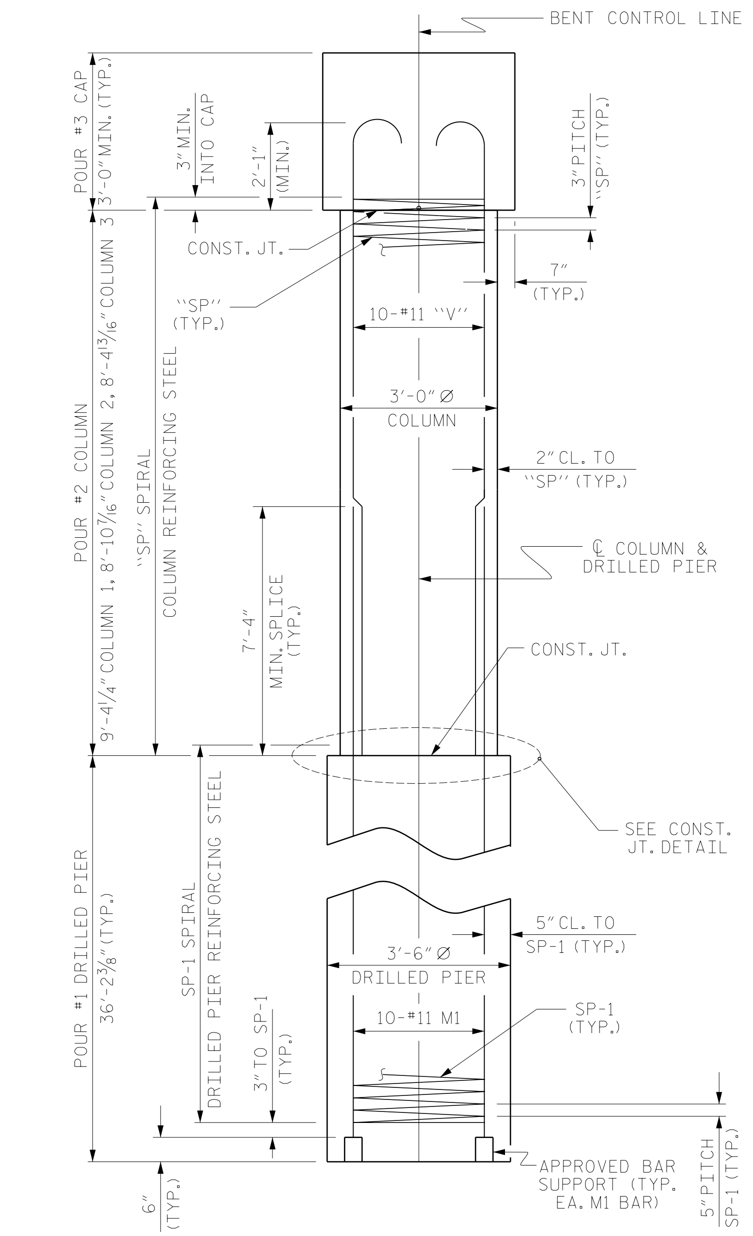
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	1	42'-0"	2231
B2	6	#5	STR	39'-0"	244
D1	40	#6	STR	1'-6"	90
M1	30	#11	STR	43'-1"	6867
S1	92	#5	2	10'-0"	960
U1	6	#4	3	6'-8"	27
U2	8	#4	3	5'-6"	29
V1	10	#11	4	13'-0"	690
V2	10	#11	4	12'-7"	669
V3	10	#11	4	12'-1"	642
REINFORCING STEEL					12,449 LBS

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

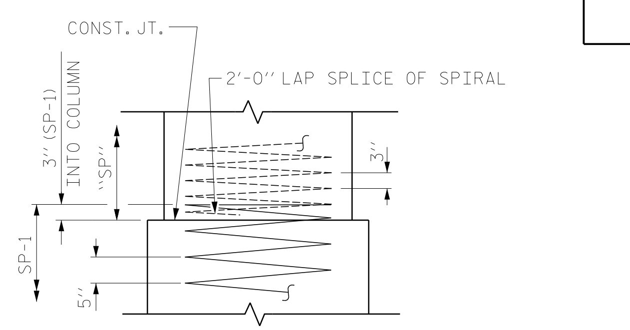
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR

** 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

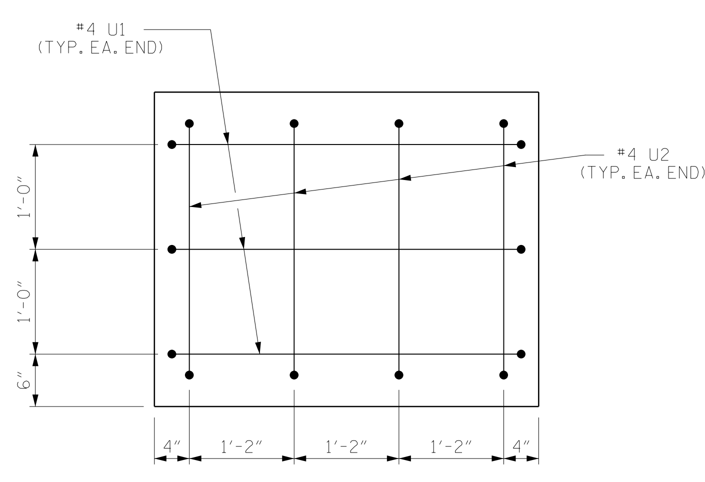
CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)	
POUR #2 (COLUMNS)	6.9 C.Y.
POUR #3 (CAP)	18.2 C.Y.
TOTAL CLASS A CONCRETE	25.1 C.Y.



END ELEVATION

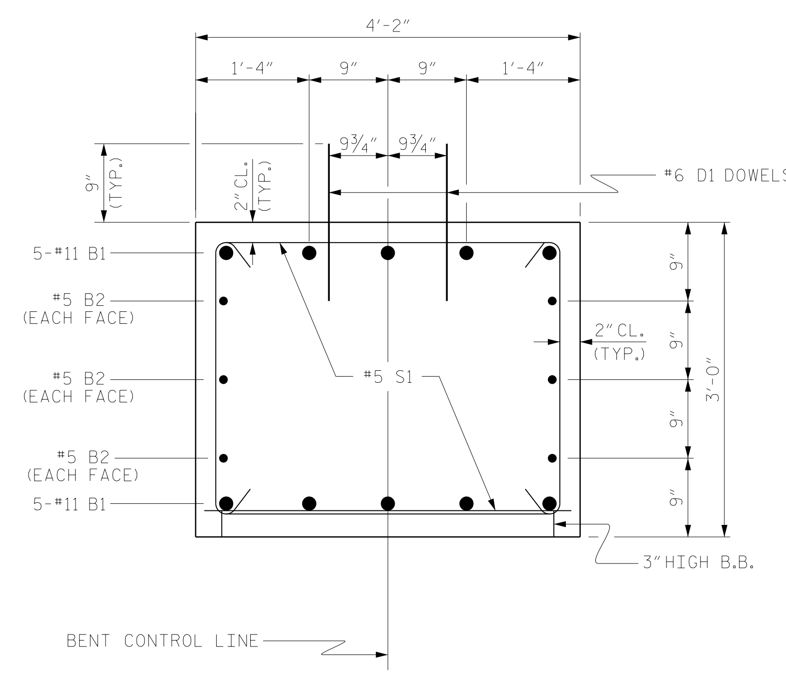


CONSTRUCTION JOINT DETAIL



END OF CAP VIEW

(TYPICAL BOTH ENDS)



SECTION THRU CAP

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

4/29/2025

DocuSigned by: Robert Decola C91B1BE8951B4F...

DESIGN ENGINEER OF RECORD:	DATE :
DRAWN BY : N. GIAGUNTO	DATE : 11/13/23
CHECKED BY : R.F. DECOLA	DATE : 11/14/23

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SHEET NO. S01-17

TOTAL SHEETS 23

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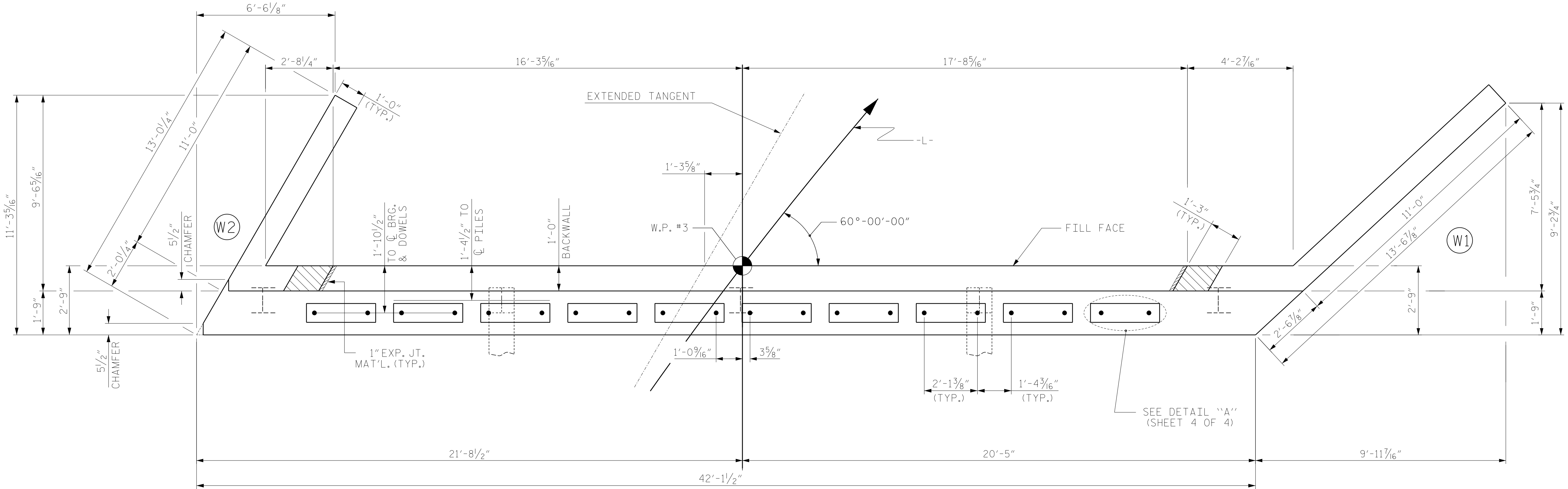
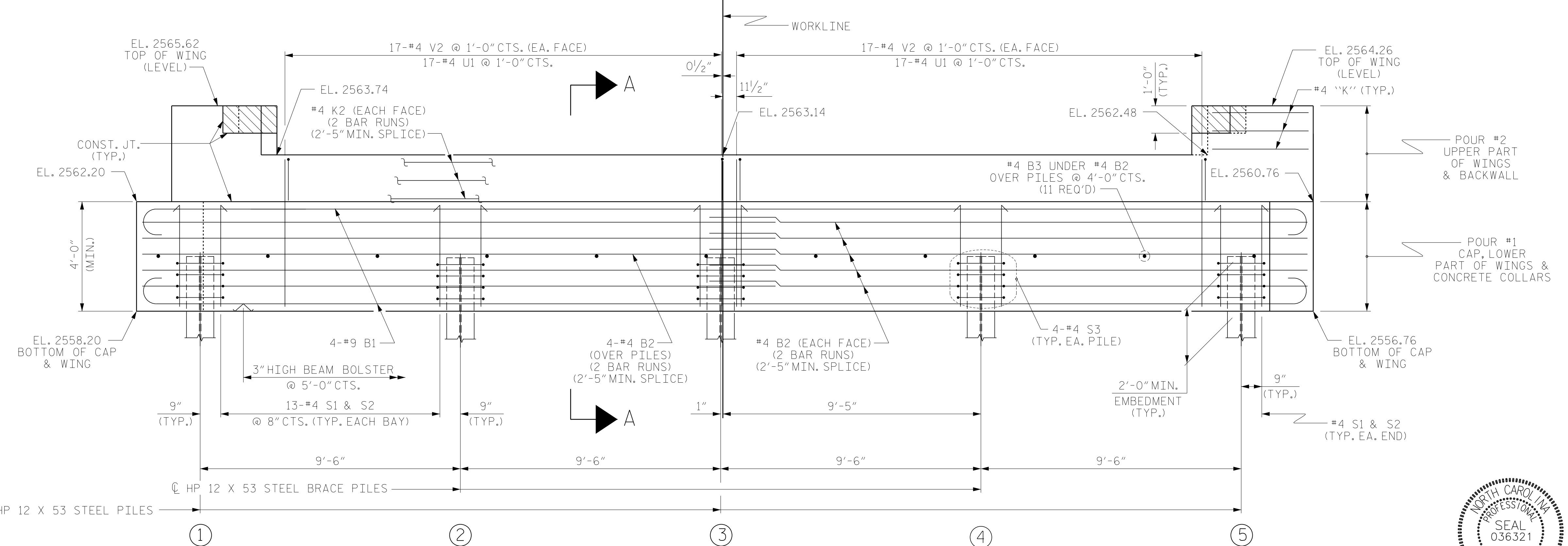


PLAN



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

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 2

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F. DECOLA

DocuSigned by: Robert Decola C91B1BEB951B4FF...

4/29/2025

DESIGN ENGINEER OF RECORD:	DATE :
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

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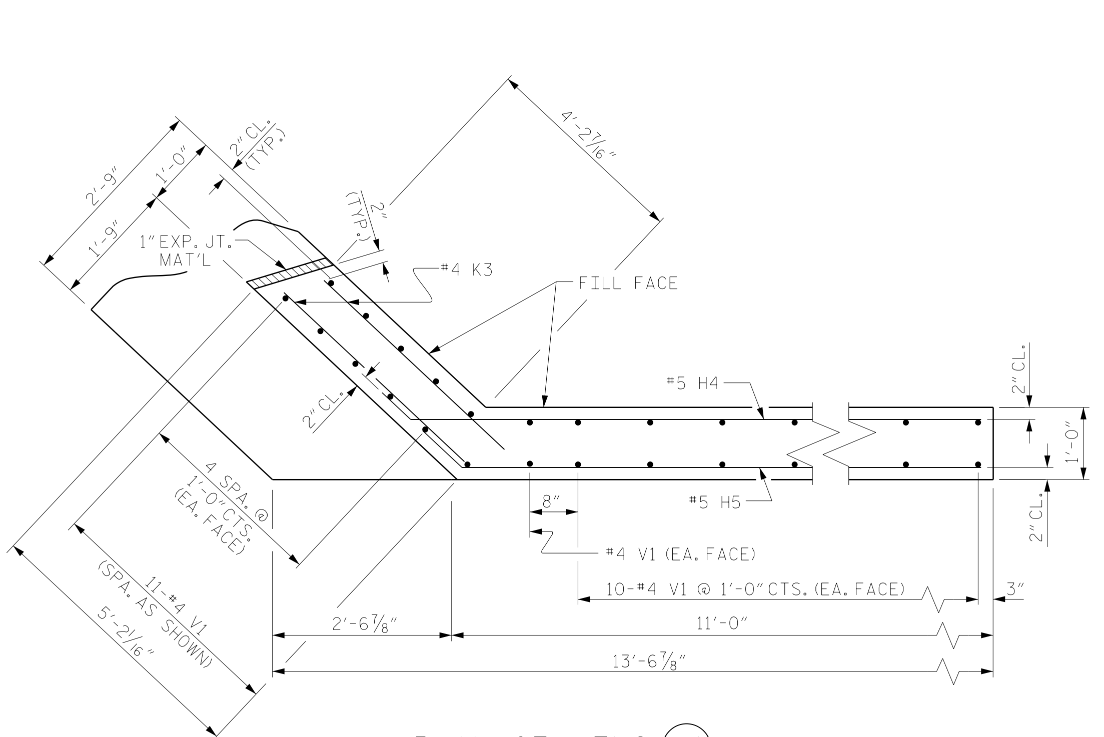
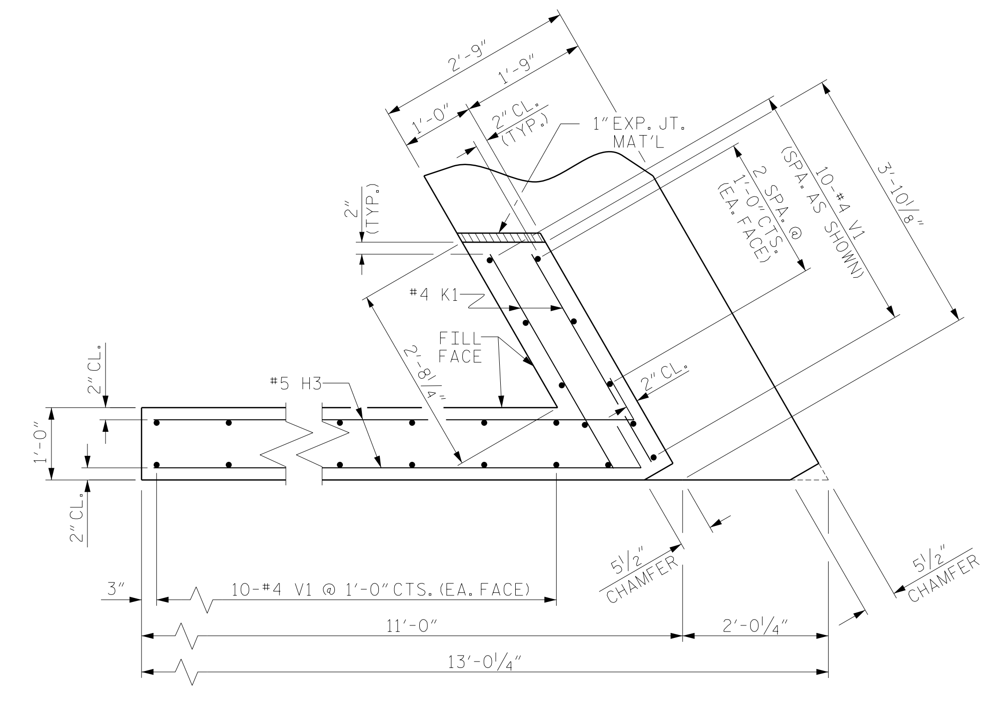
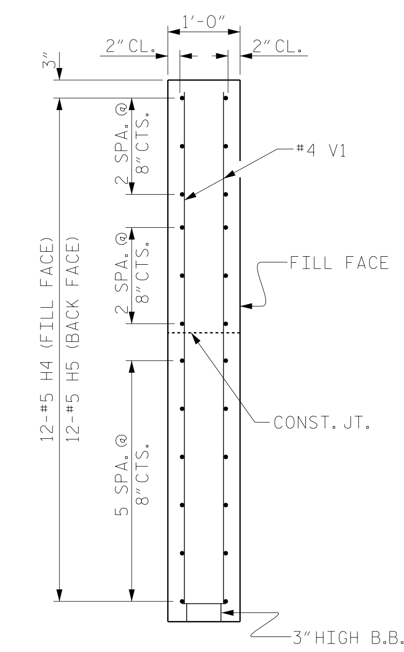


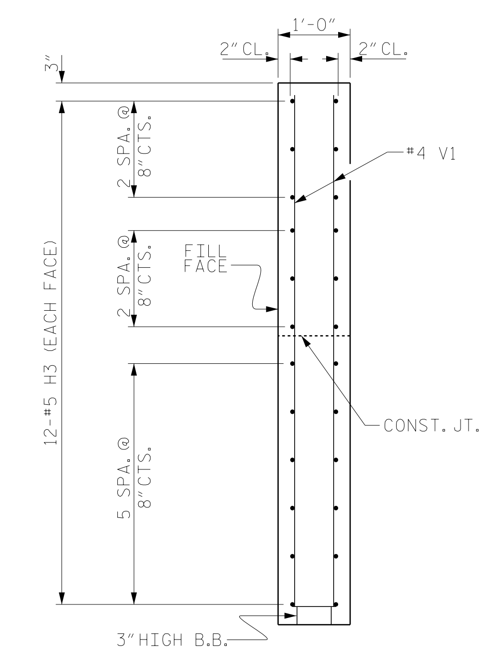
PLAN OF WING (W1)



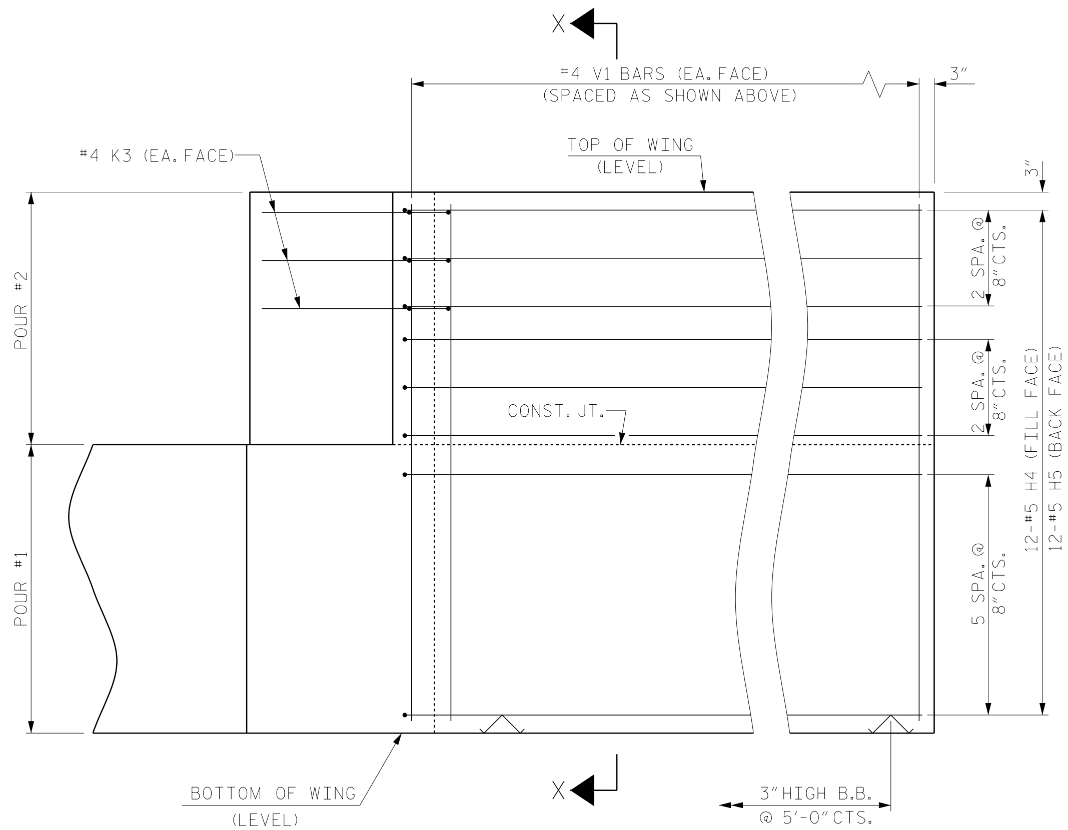
PLAN OF WING (W2)



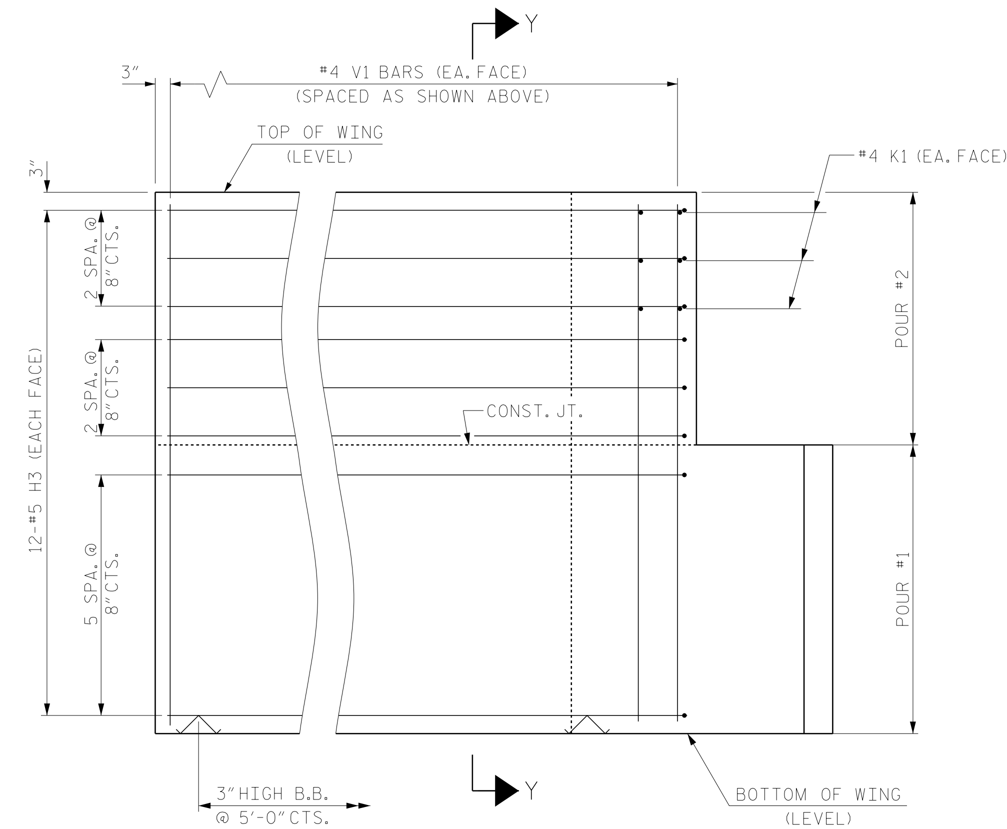
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS

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

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2
WING DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F. DECOLA

4/29/2025

Robert Decola

DESIGN ENGINEER OF RECORD:	DATE :
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	

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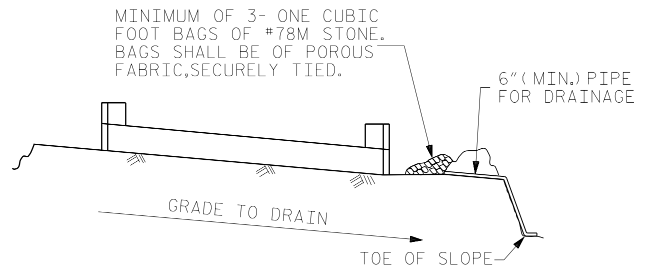
STD. NO. EB_30_60S4_33BB

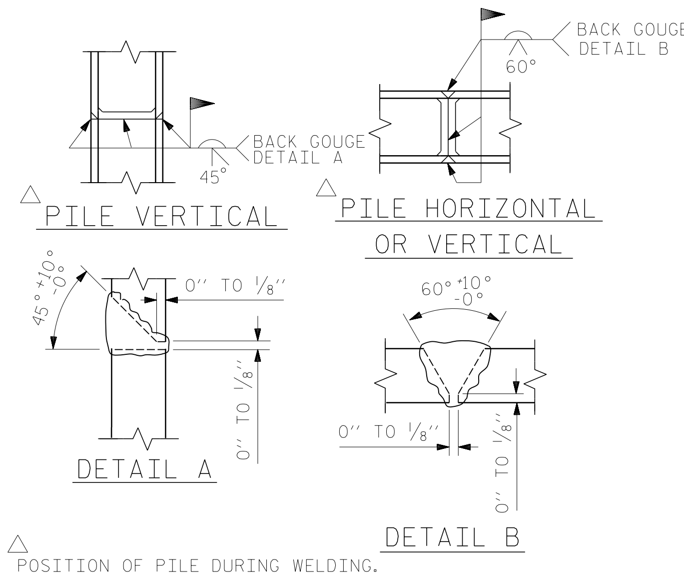


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

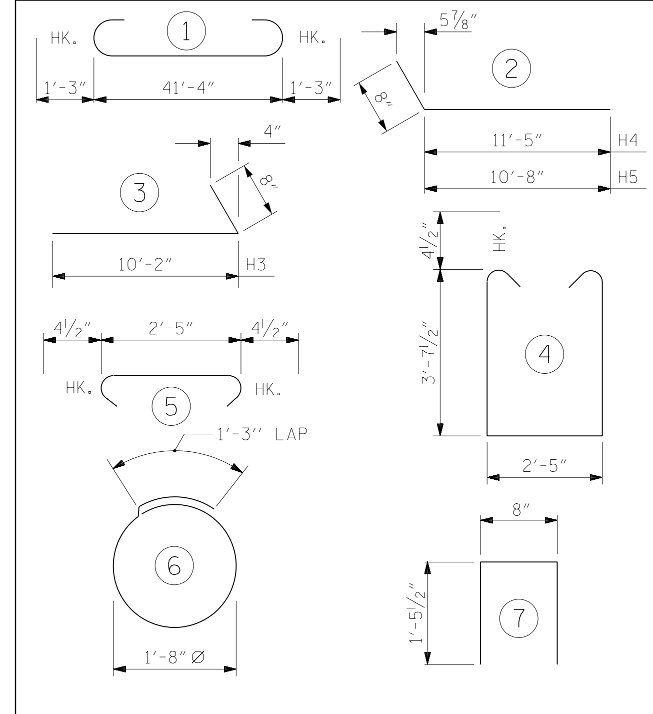
TEMPORARY DRAINAGE AT END BENT



POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



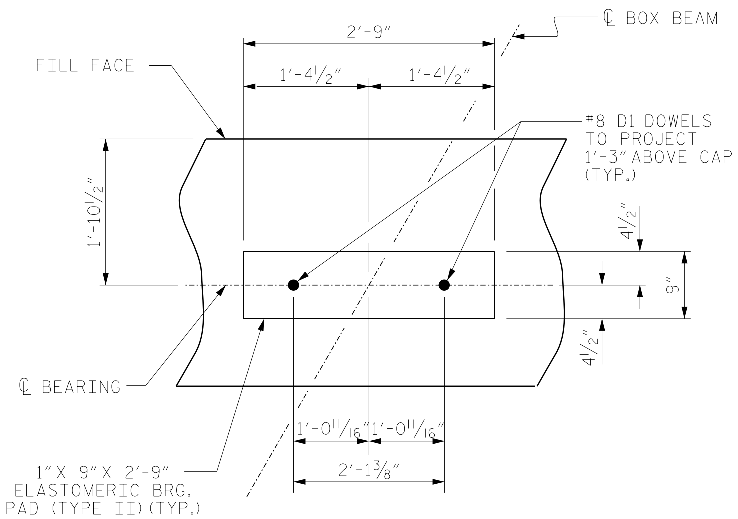
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL
END BENT 2

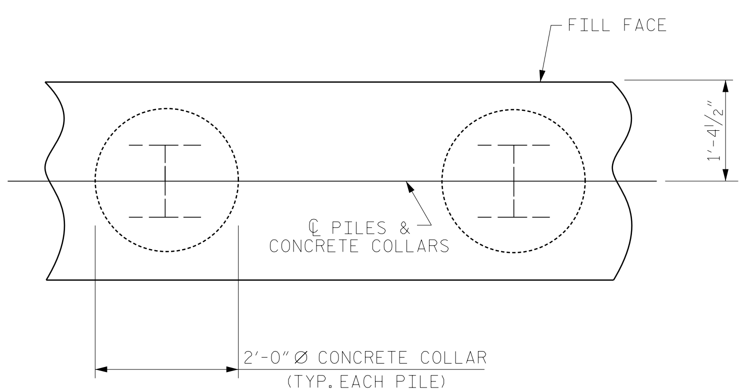
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	43'-10"	1192
B2	28	#4	STR	21'-11"	410
B3	11	#4	STR	2'-5"	18
D1	20	#8	STR	2'-3"	120
H3	24	#5	3	10'-10"	271
H4	12	#5	2	12'-1"	151
H5	12	#5	2	11'-4"	142
K1	6	#4	STR	3'-3"	13
K2	12	#4	STR	21'-11"	176
K3	6	#4	STR	4'-10"	19
S1	54	#4	4	10'-5"	376
S2	54	#4	5	3'-2"	114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

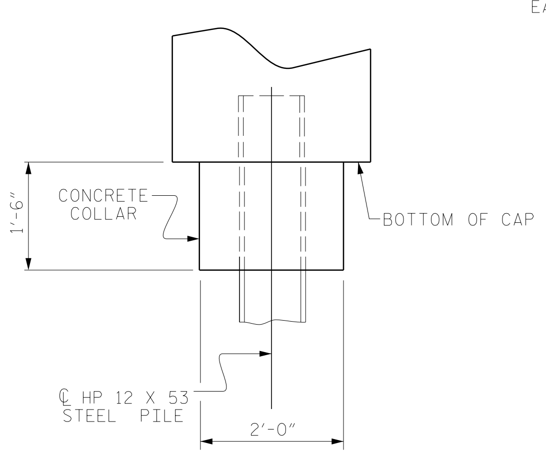
POUR #1	CAP, LOWER PART OF WINGS & COLLARS	21.2 C.Y.
POUR #2	BACKWALL & UPPER PART OF WINGS	5.7 C.Y.
TOTAL CLASS A CONCRETE		26.9 C.Y.



DETAIL "A"

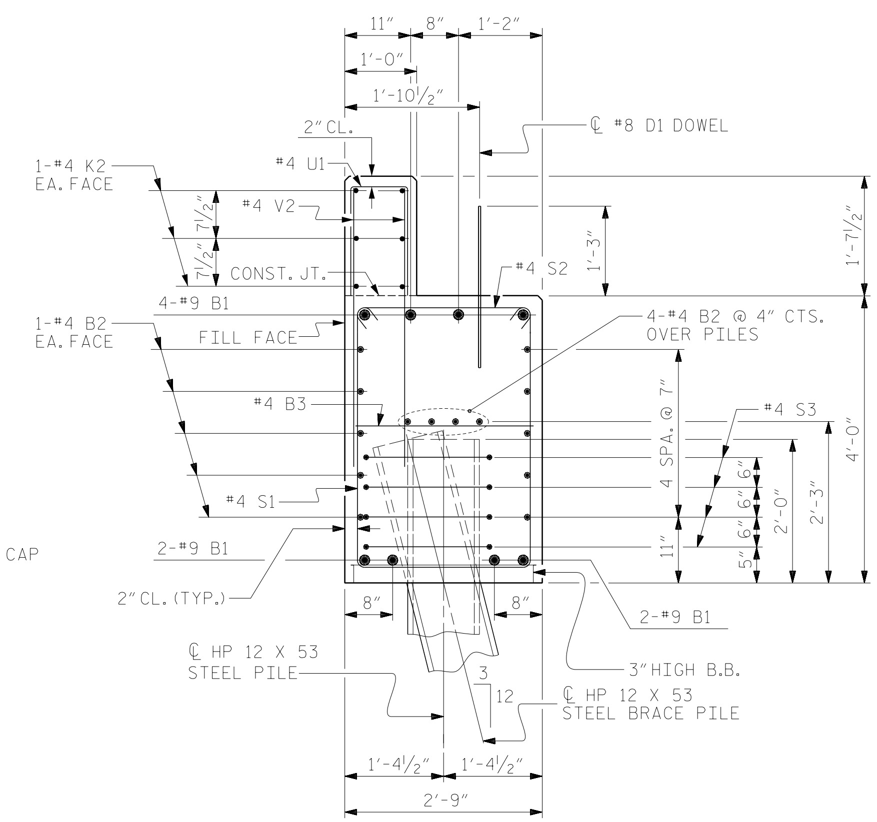


PLAN



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

4/29/2025
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Robert Decola
C91B1BE8951B4FF...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2
DETAILS

REVISIONS								SHEET NO.
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DESIGN ENGINEER OF RECORD: DATE :

DRAWN BY : R.C. LARSON DATE : 06/03/22
CHECKED BY : R.F. DECOLA DATE : 06/05/22

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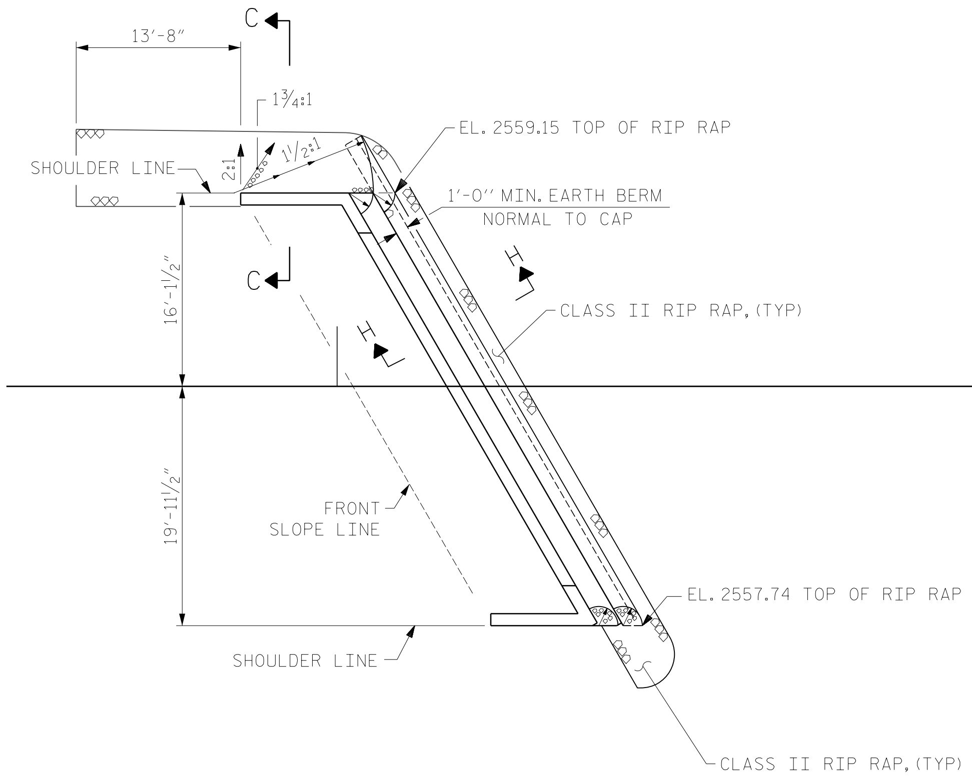
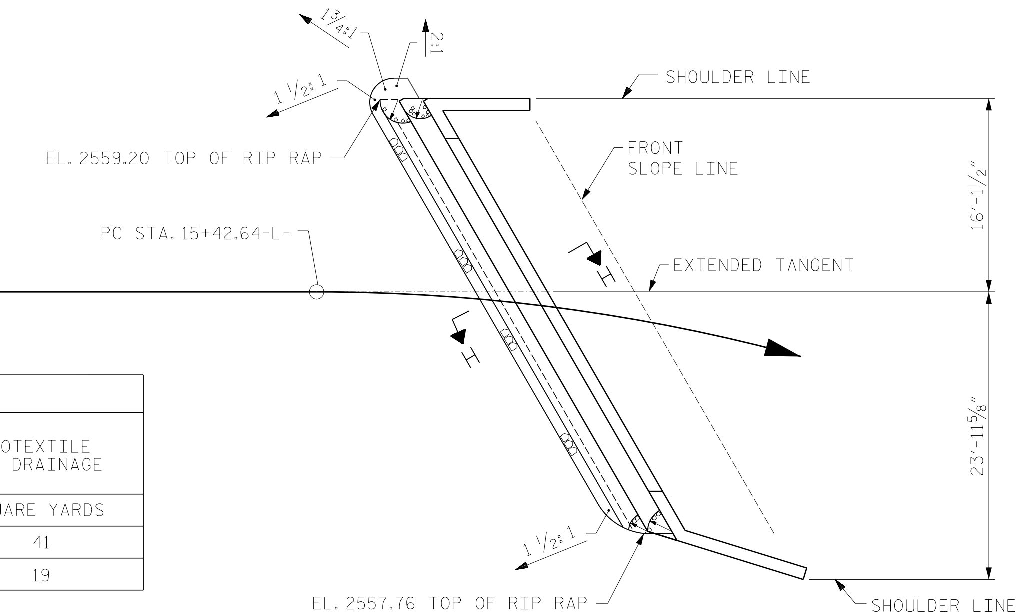
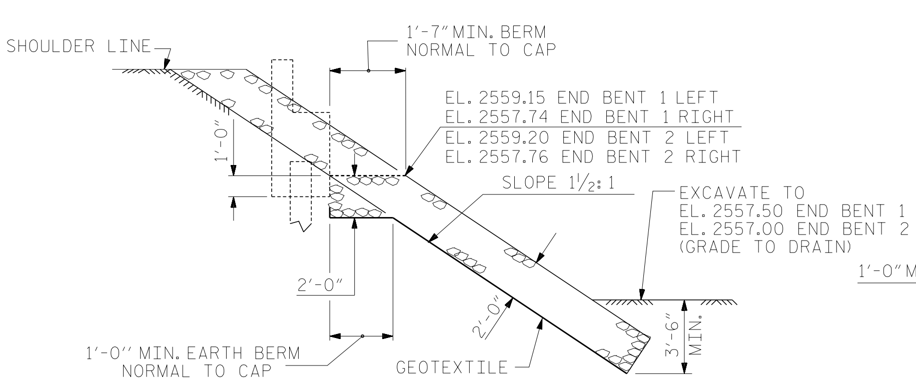


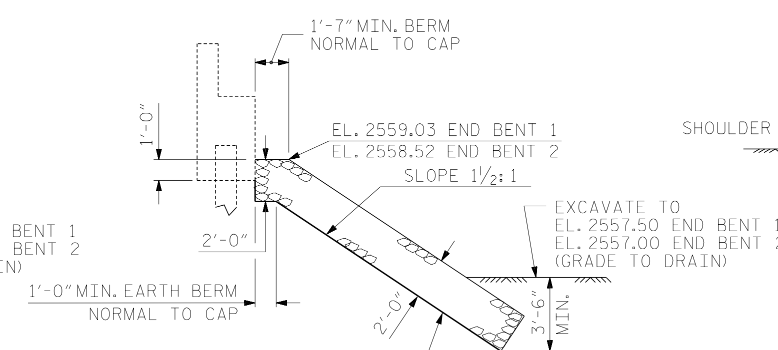


ESTIMATED QUANTITIES		
BRIDGE @ STA. 14+85.50 -L-	RIP RAP CLASS II (2′-0″ THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	78	41
END BENT 2	36	19

BERM RIP RAPPED

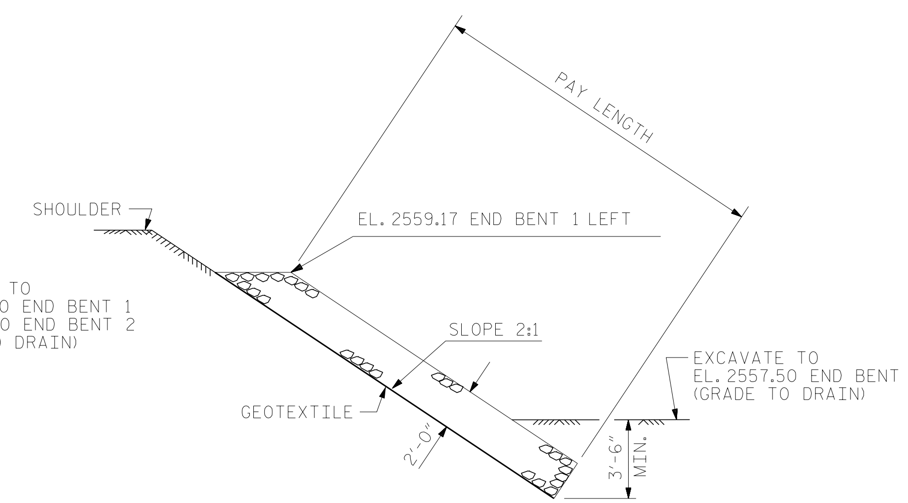


SECTION H-H



SECTION ALONG GRADE LINE

BERM RIP RAPPED



SECTION C-C

PROJECT NO. 17BP.13.R.184

MITCHELL/YANCEY COUNTY

STATION: 14+85.50 -L-

NORTH CAROLINA PROFESSIONAL SEAL 036321 ENGINEER ROBERT F. DECOLA

4/29/2025

DocuSigned by: Robert Decola C91B1BEB95184FF...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

DESIGN ENGINEER OF RECORD: DATE :

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

CHECKED BY : R.F. DECOLA DATE : 06/08/22

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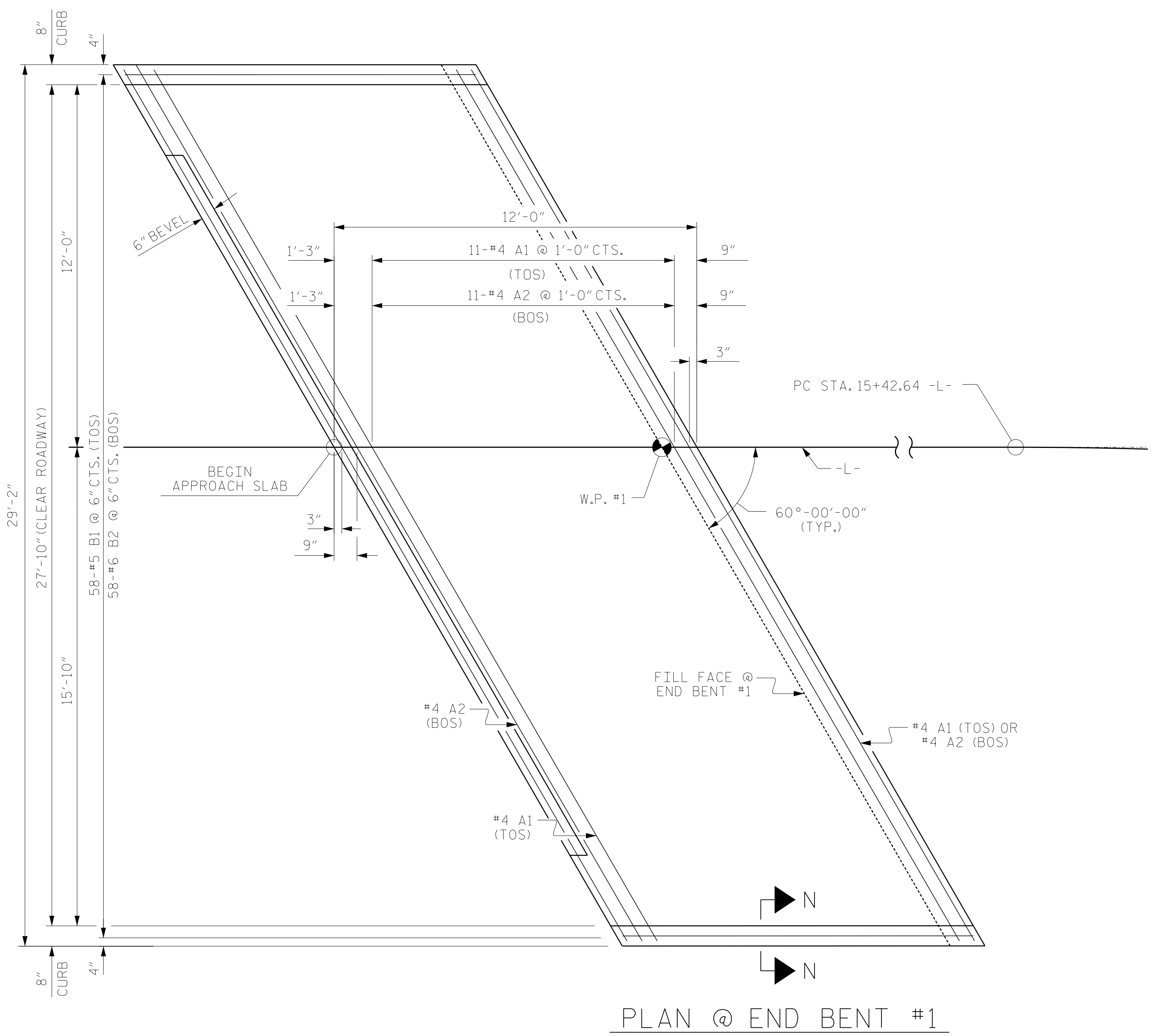
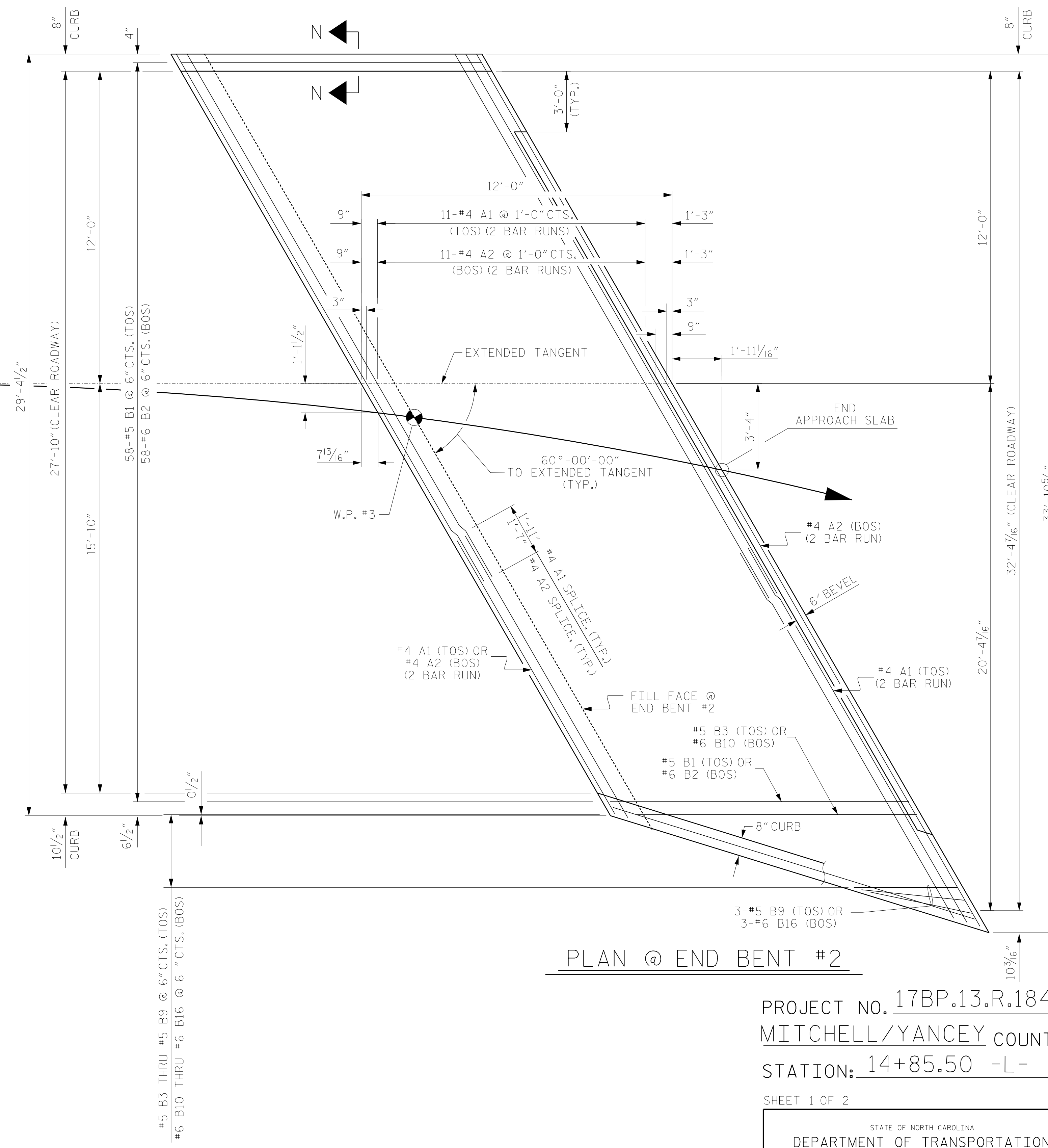
TOTAL SHEETS 23

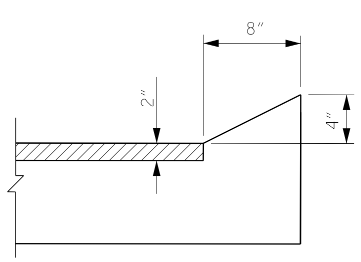


PLAN @ END BENT #1



PLAN @ END BENT #2

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



SECTION N-N

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

4/29/2025 Signed by: Robert Decola C91B1BEB9518AFF...

REVISIONS								SHEET NO.
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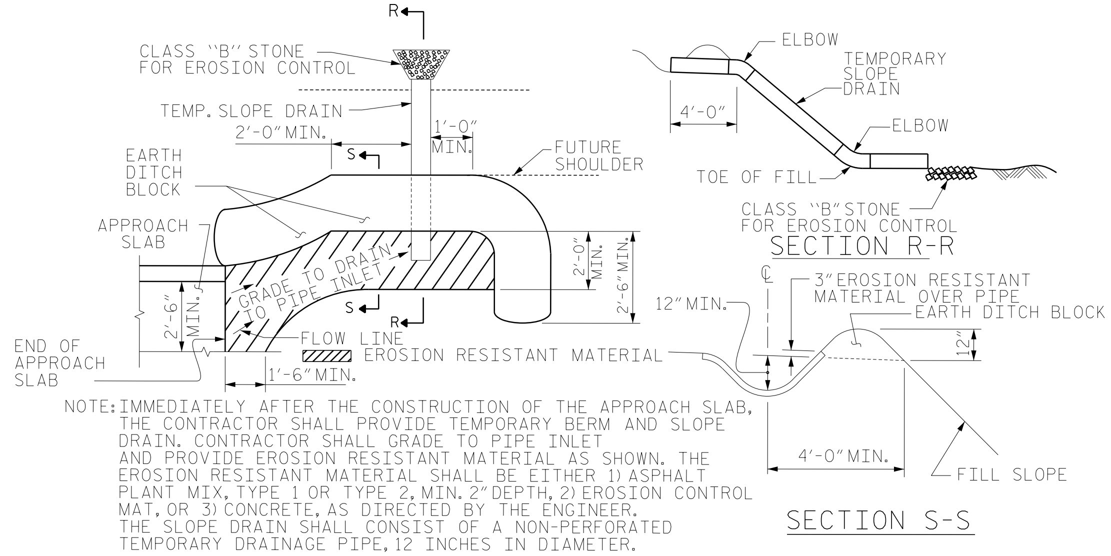
KCI PROJ. #221601946.09G Violet.Ohl



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

PLAN VIEW

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

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.

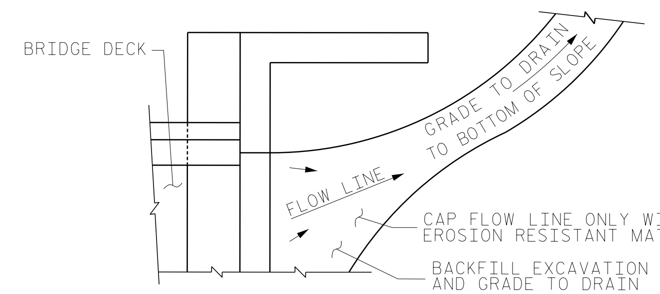
SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

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

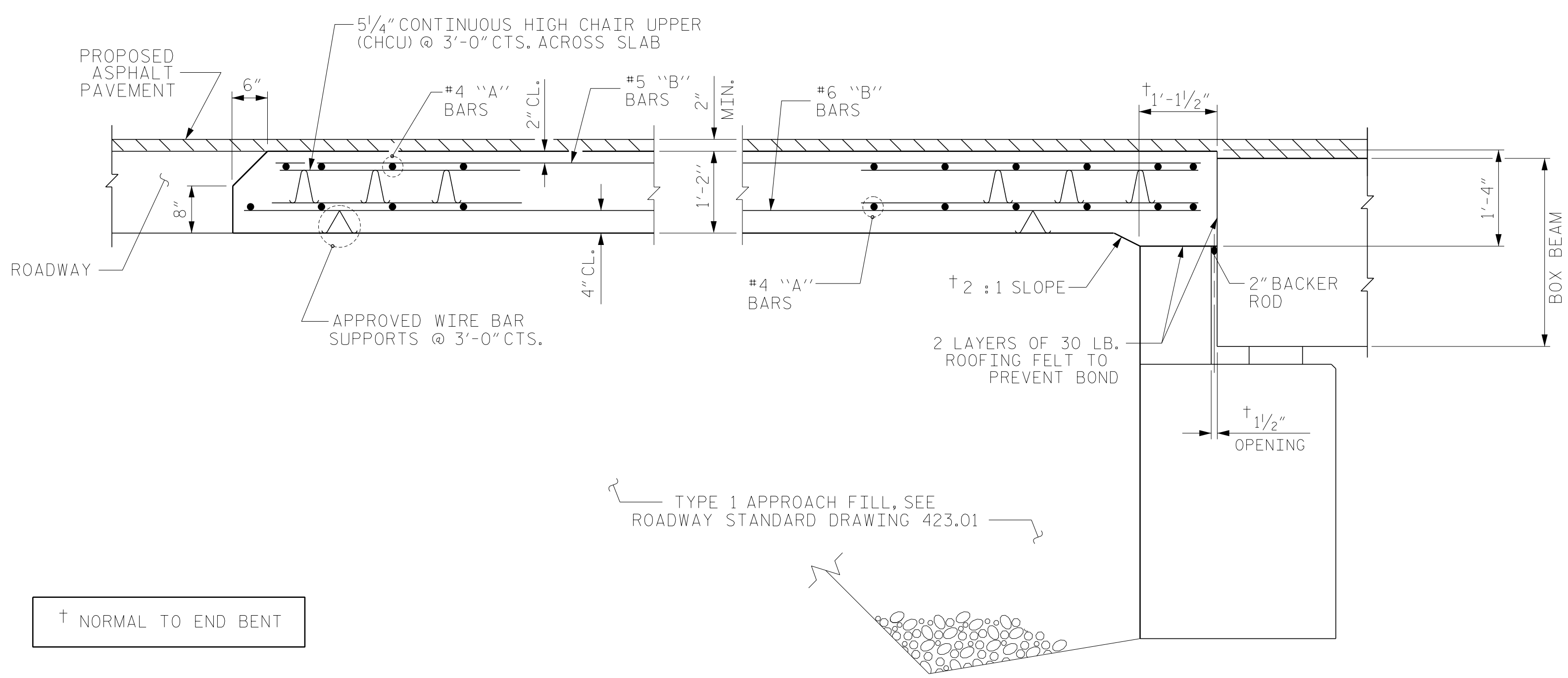
BILL OF MATERIAL

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 ENGINEER SEAL 036321 ROBERT F. DECOLA

4/29/2025

DocuSigned by: Robert Decola
C91B1BEB951B4F...

REVISIONS								SHEET NO.
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4800 Falls of Neuse Road, Suite 200 Raleigh, NC 27609-6270 Phone (919) 783-9214

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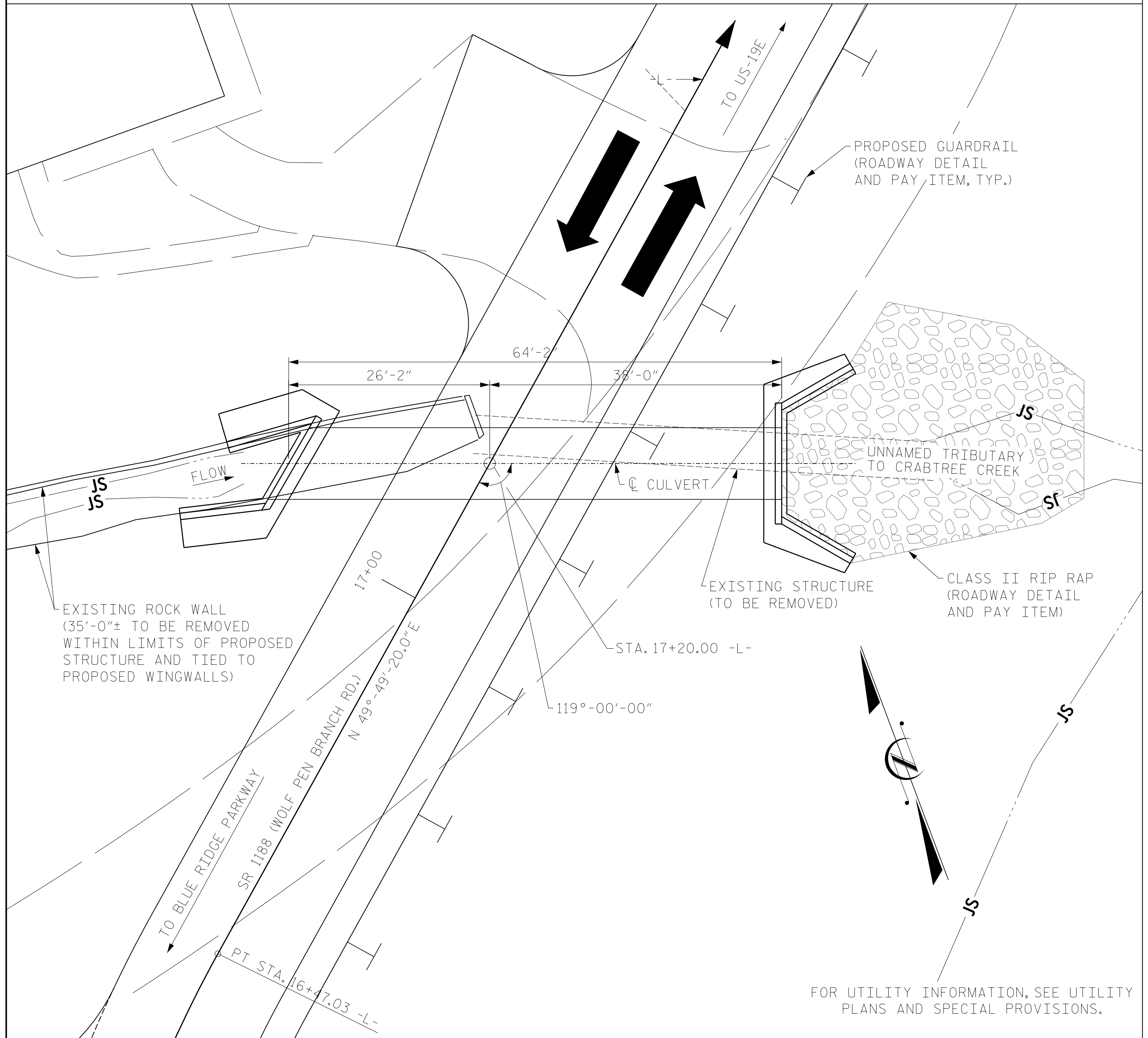
DESIGN ENGINEER OF RECORD: DATE :

DRAWN BY : R.C. LARSON DATE : 06/02/22
CHECKED BY : R.F. DECOLA DATE : 06/08/22

STD.BAS6

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



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	34 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 1825 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.

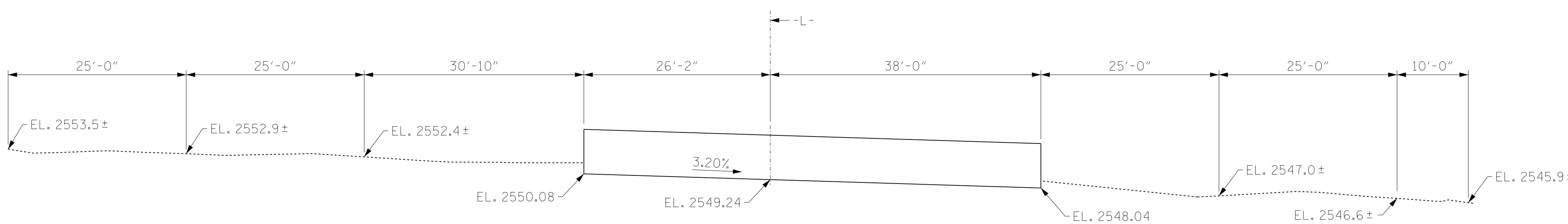
FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS.

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" x 6'-3"
CORRUGATED METAL
PIPE ARCH CULVERT
119°-00'-00" SKEW

NORTH CAROLINA PROFESSIONAL SEAL 36321 ENGINEER ROBERT F. DECOLA

4/29/2025 DocuSigned by: Robert Decola C91B1BEB951B4FF...

KCI Associates of North Carolina, P.A.
ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS LICENSE NUMBER: C-0764
4600 Falls of Neuse Road, Suite 200 Raleigh, NC 27609-6270 Phone (919) 783-9214

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SHEET NO. S02-01
TOTAL SHEETS 5

DESIGN ENGINEER OF RECORD: R.F. DECOLA DATE :
DRAWN BY : M.G. ARMSTRONG DATE : 5/19/22
CHECKED BY : R.F. DECOLA DATE : 6/01/22

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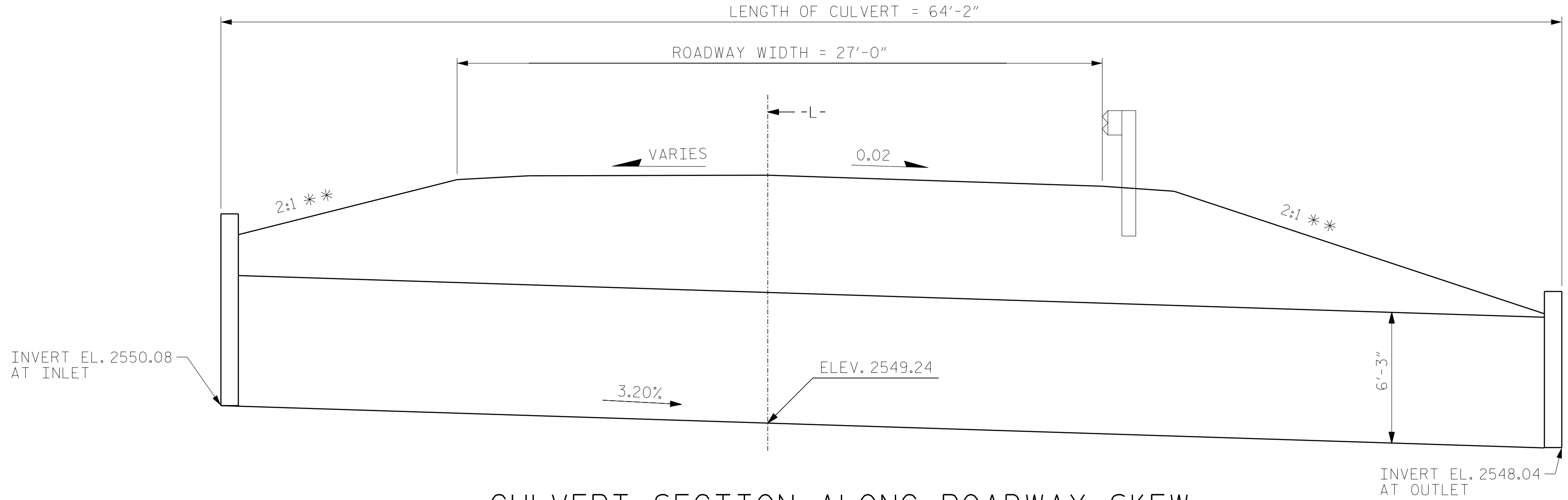
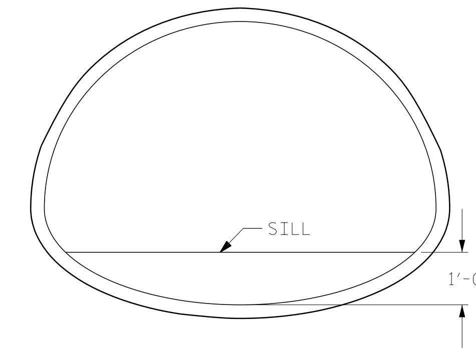


CULVERT SECTION ALONG ROADWAY SKEW

✳✳ SLOPES SHALL BE AS SHOWN OR FLATTER
TO PROVIDE 1'-0" MIN. COVER AT INLET AND OUTLET

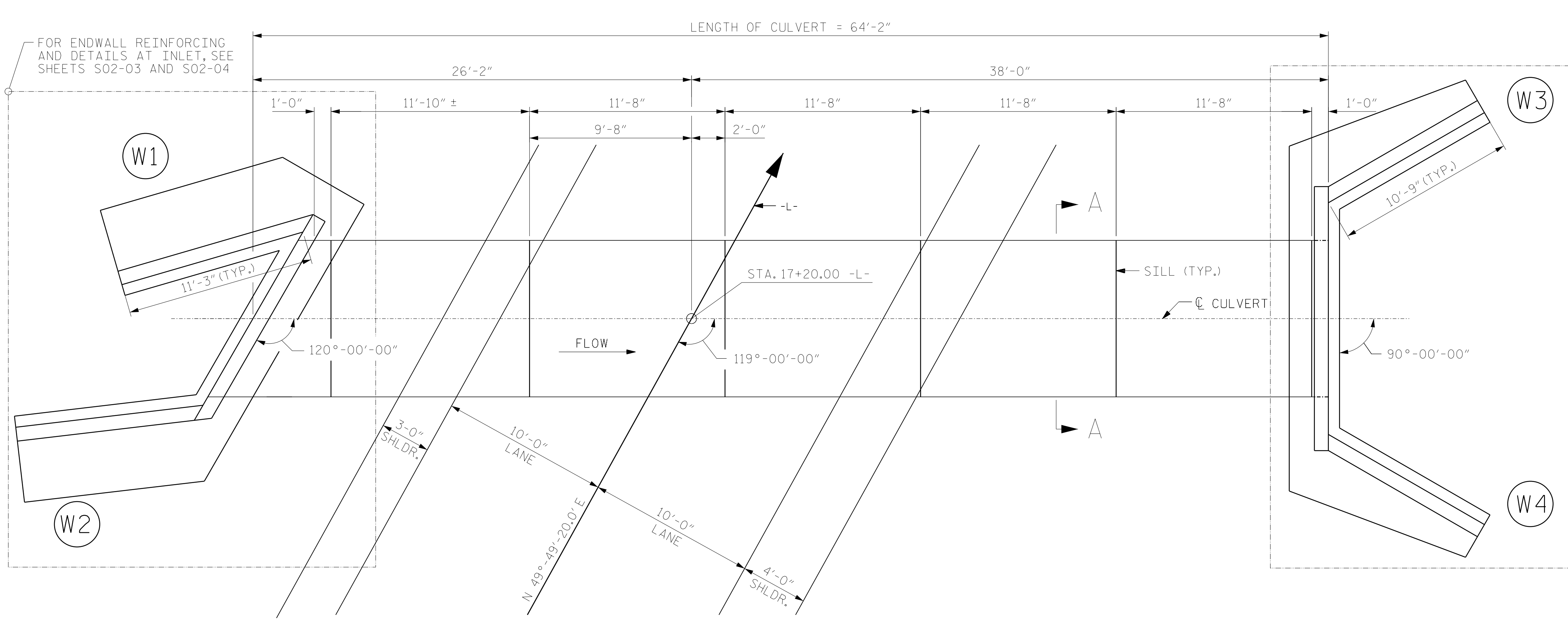


SECTION A-A

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-

NORTH CAROLINA PROFESSIONAL SEAL 36321 ENGINEER ROBERT F. DECOLA
DocuSigned by: Robert Decola
C91B1BEB951B4FF...
4/29/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

9'-4" × 6'-3"
CORRUGATED METAL
PIPE ARCH CULVERT
119°-00'-00" SKEW

DESIGN ENGINEER OF RECORD: R.F. DECOLA	DATE :
DRAWN BY : M.G. ARMSTRONG	DATE : 5/19/22
CHECKED BY : R.F. DECOLA	DATE : 6/01/22

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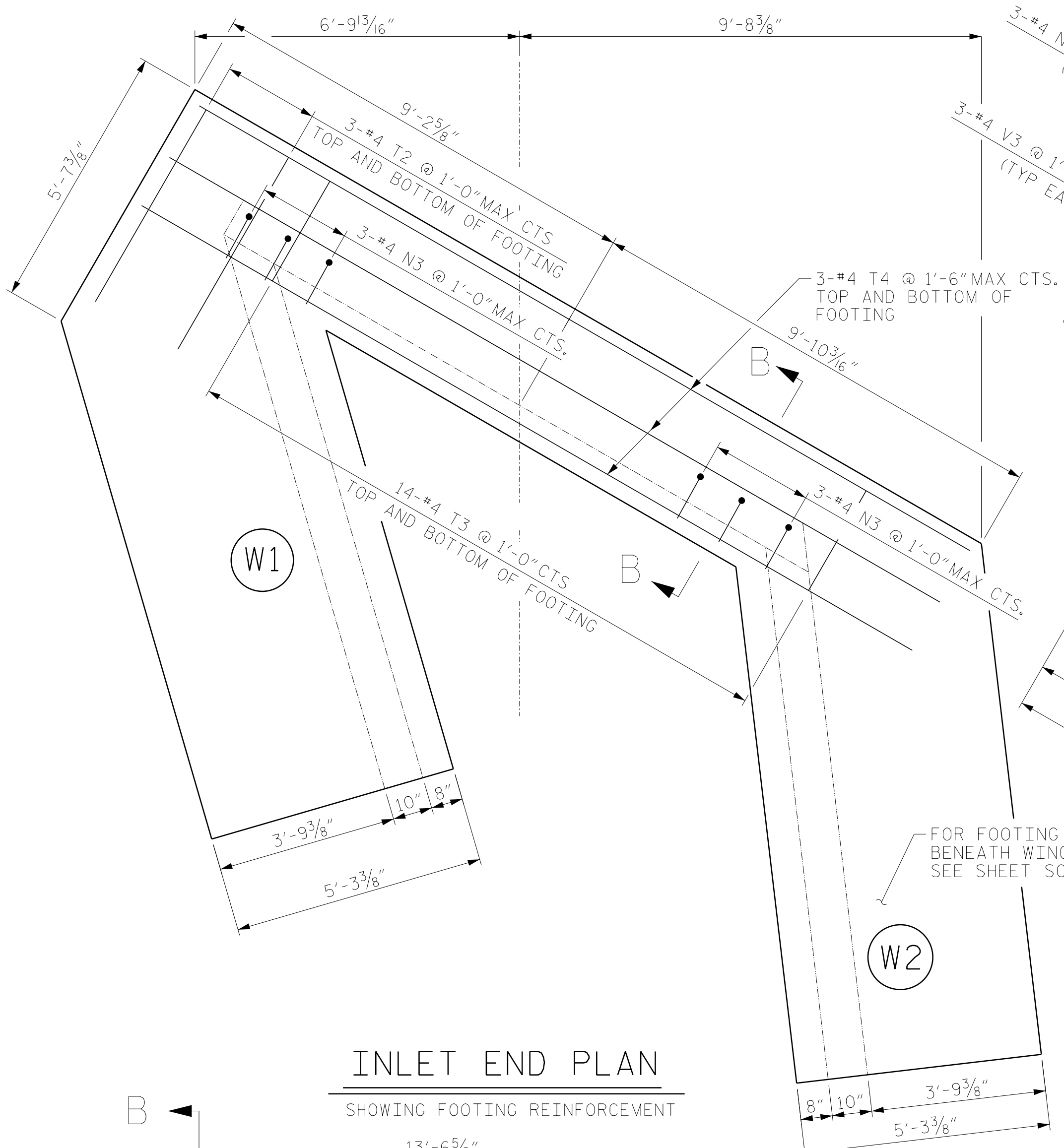
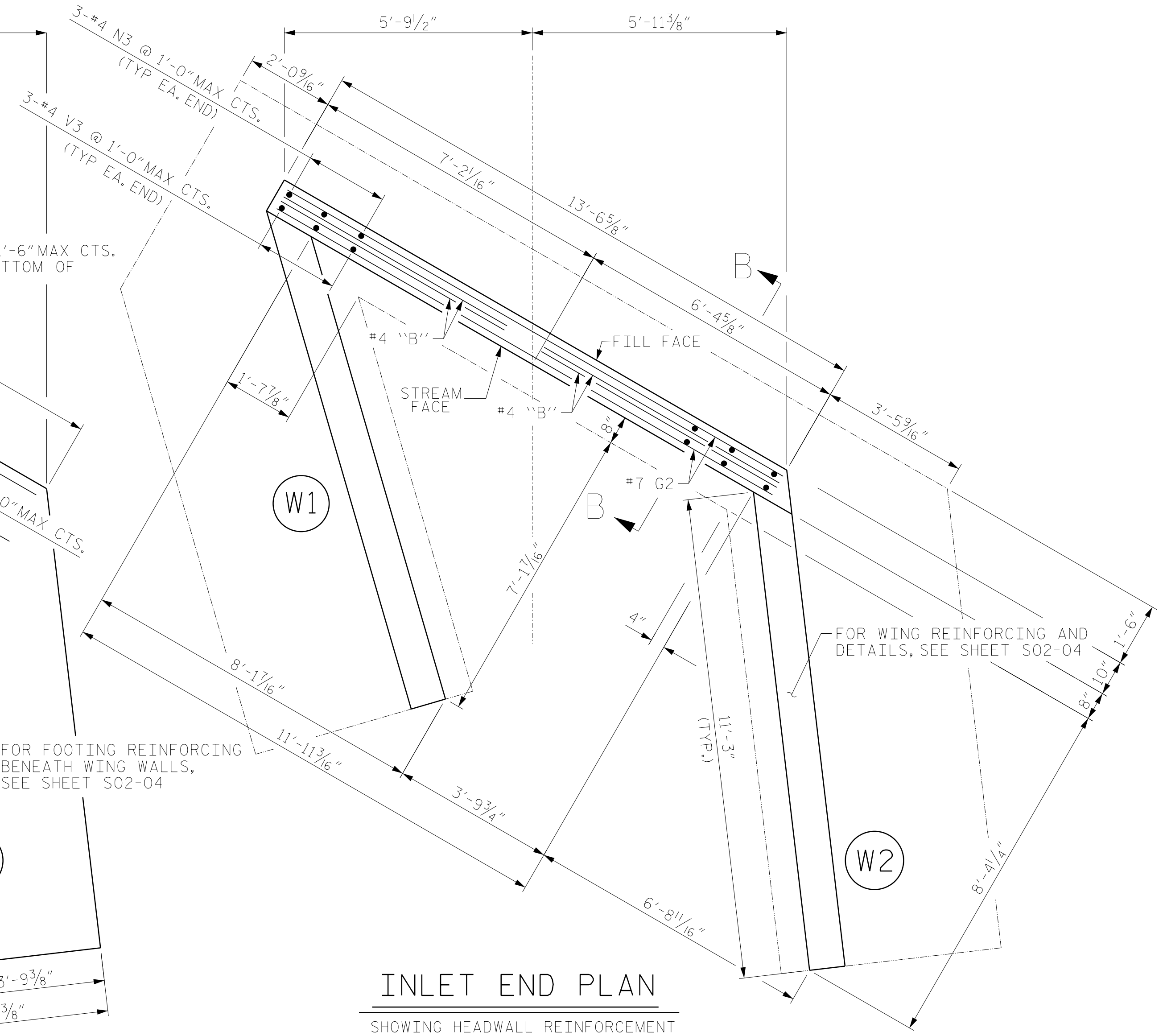


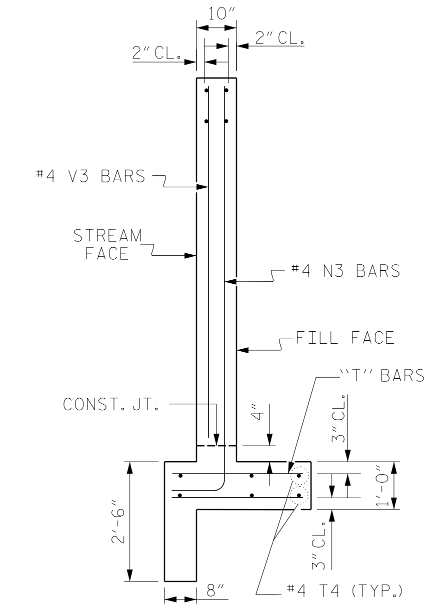
INLET END PLAN

SHOWING FOOTING REINFORCEMENT



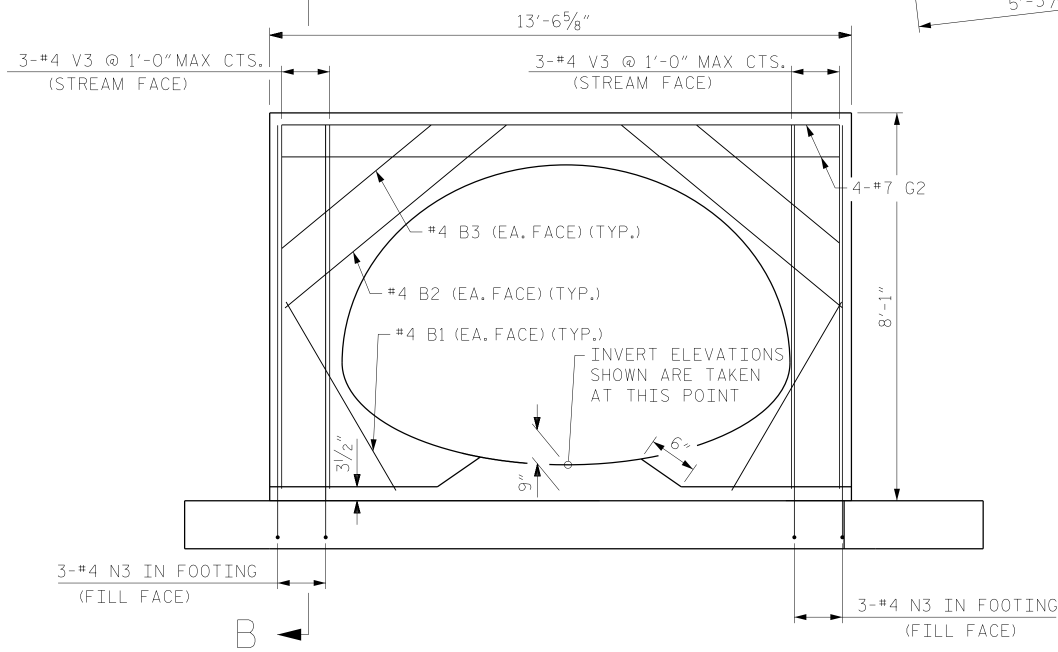
INLET END PLAN

SHOWING HEADWALL REINFORCEMENT



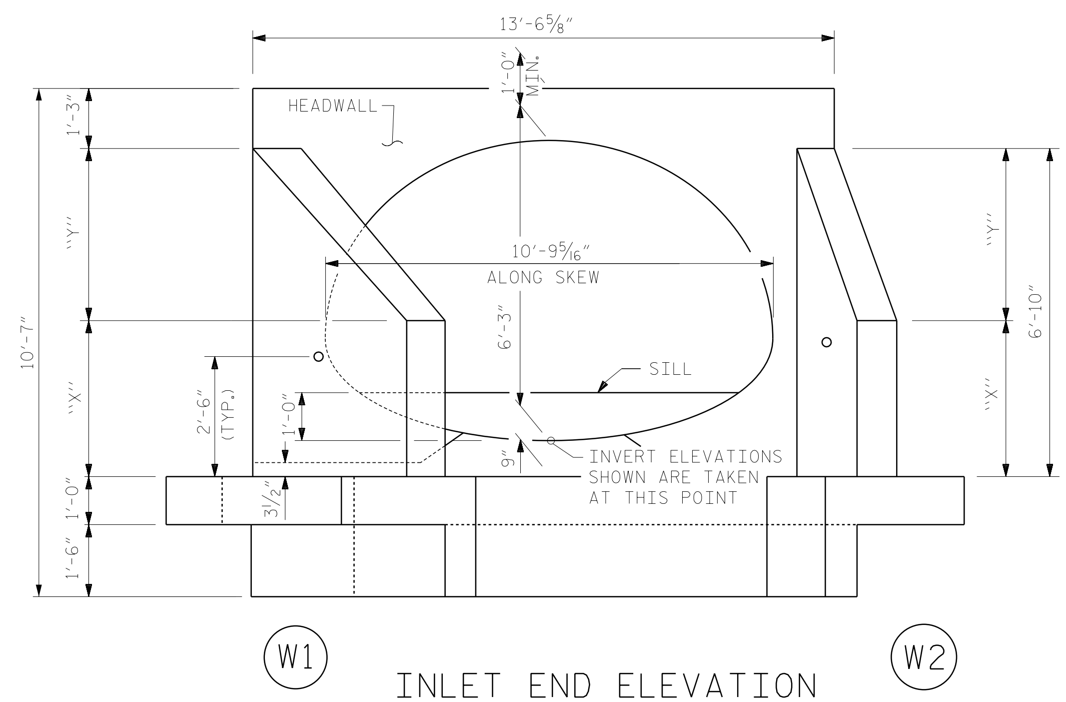
SECTION B-B

#4 "B" BARS NOT SHOWN FOR CLARITY



INLET END ELEVATION

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" x 6'-3"
CORRUGATED METAL
PIPE ARCH CULVERT
119°-00'-00" SKEW

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NORTH CAROLINA PROFESSIONAL SEAL 36321 ENGINEER ROBERT F. DECOLA

4/29/2025 Robert Decola C91B1BEB95184FF...

DESIGN ENGINEER OF RECORD: R.F. DECOLA DATE :

DRAWN BY : M.G. ARMSTRONG DATE : 5/19/22
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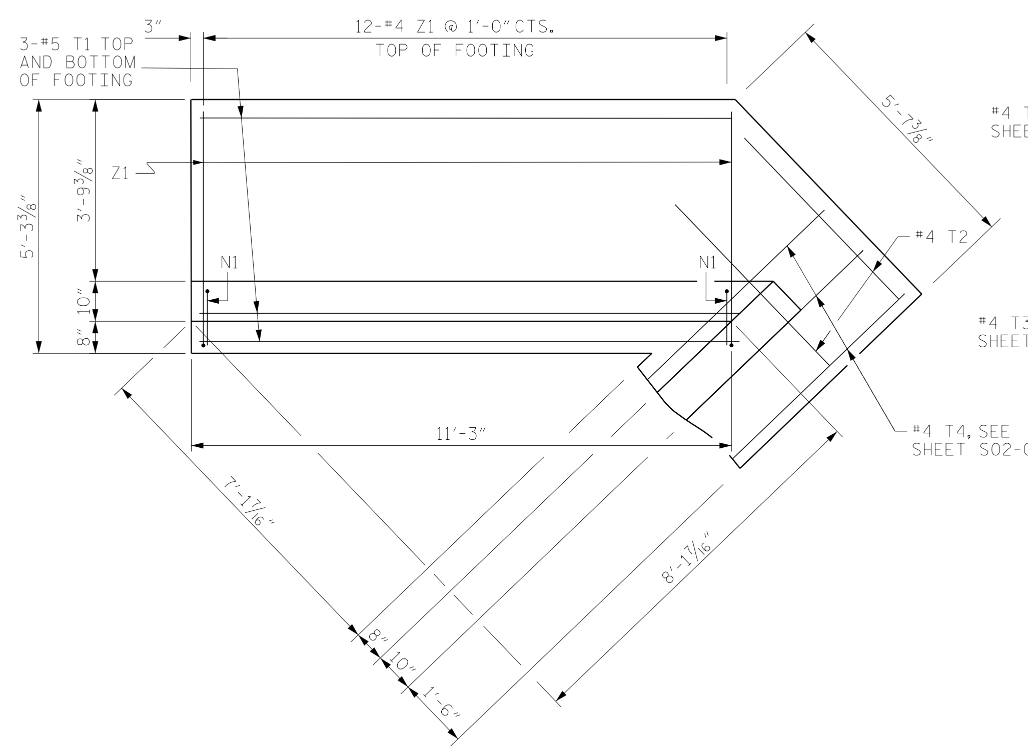
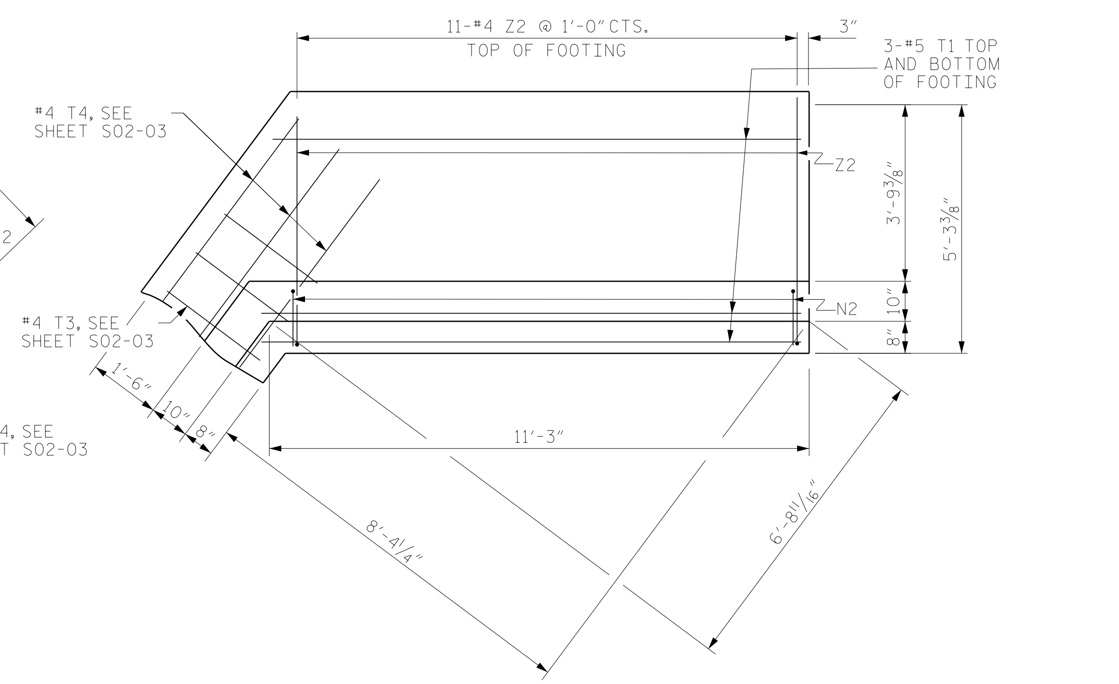


PLAN

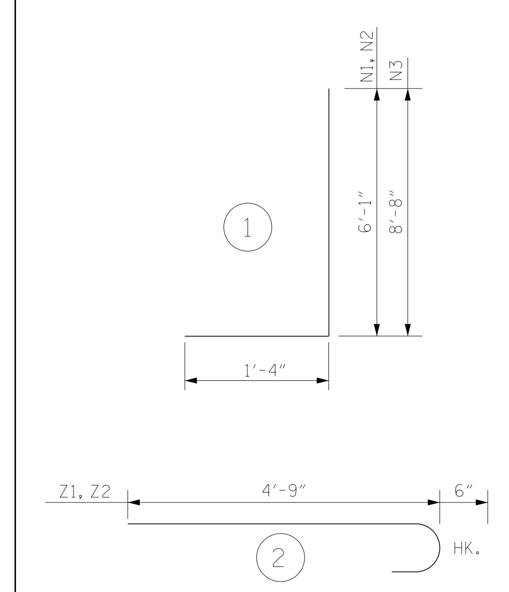
#6 D1 BARS NOT SHOWN FOR CLARITY



PLAN

#6 D1 BARS NOT SHOWN FOR CLARITY

BAR TYPES



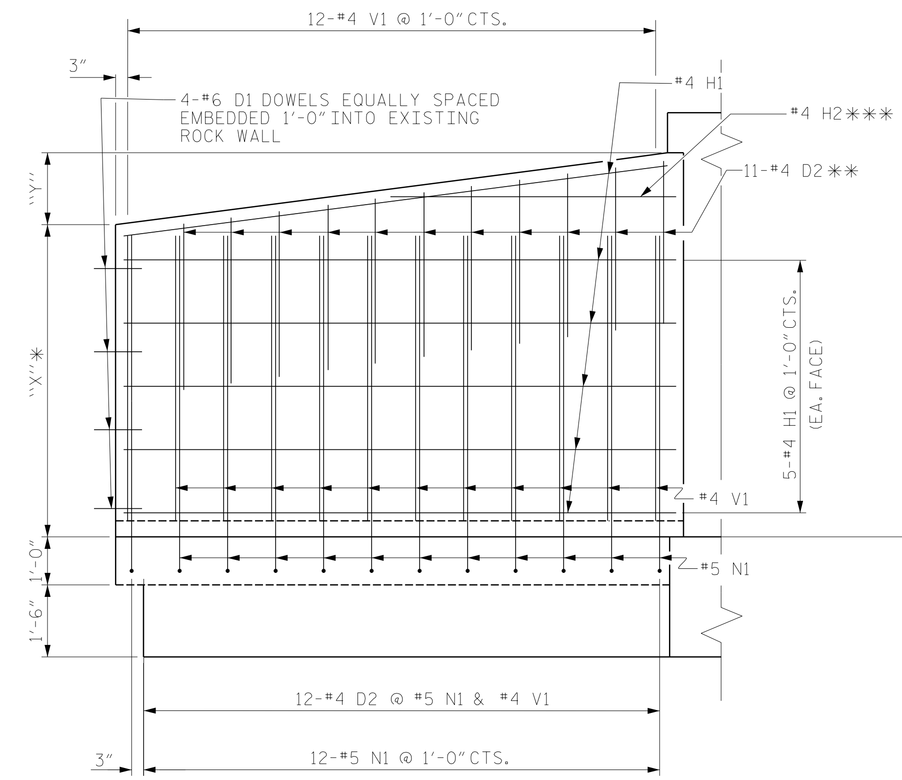
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

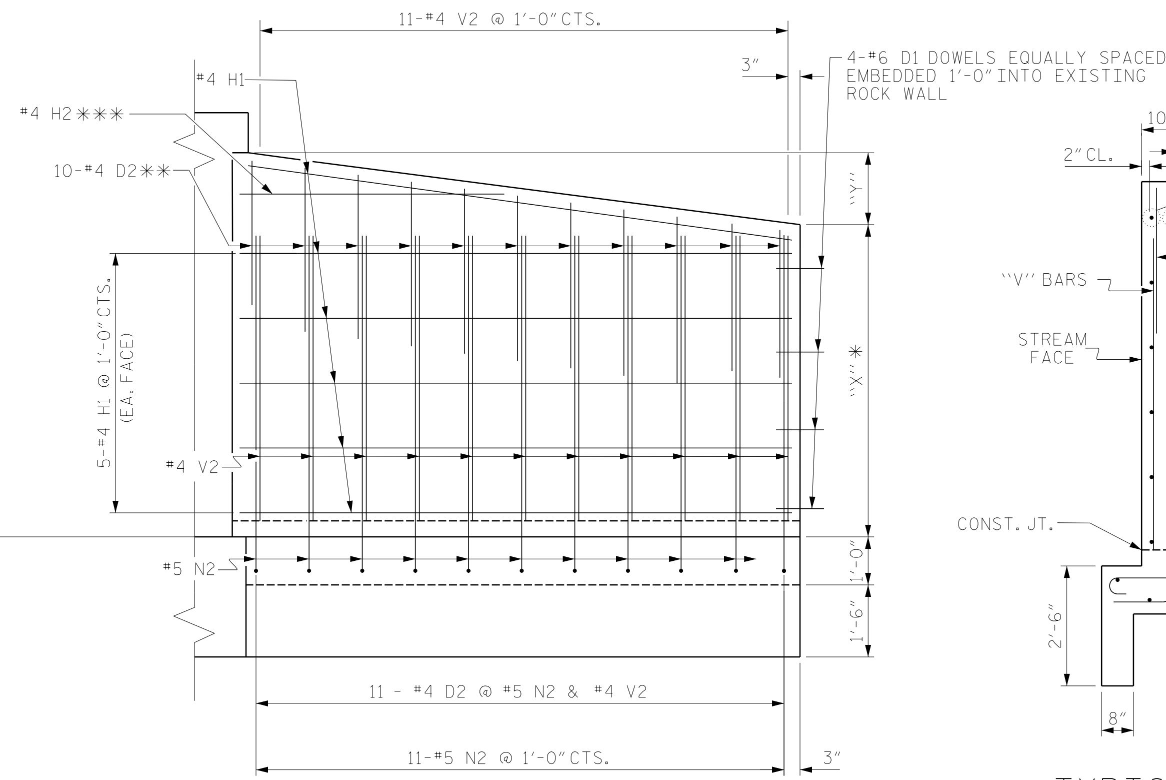
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#4	STR	4'-6"	12
B2	4	#4	STR	6'-2"	17
B3	4	#4	STR	3'-1"	8
D1	8	#4	STR	2'-0"	11
D2	46	#4	STR	3'-8"	113
G1	4	#7	STR	13'-2"	108
H1	24	#4	STR	11'-0"	176
H2	4	#4	STR	11'-0"	29
N1	12	#5	1	7'-5"	93
N2	11	#5	1	7'-5"	85
N3	6	#5	1	10'-0"	63
T1	3	#4	STR	11'-0"	22
T2	12	#4	STR	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 1082 LBS

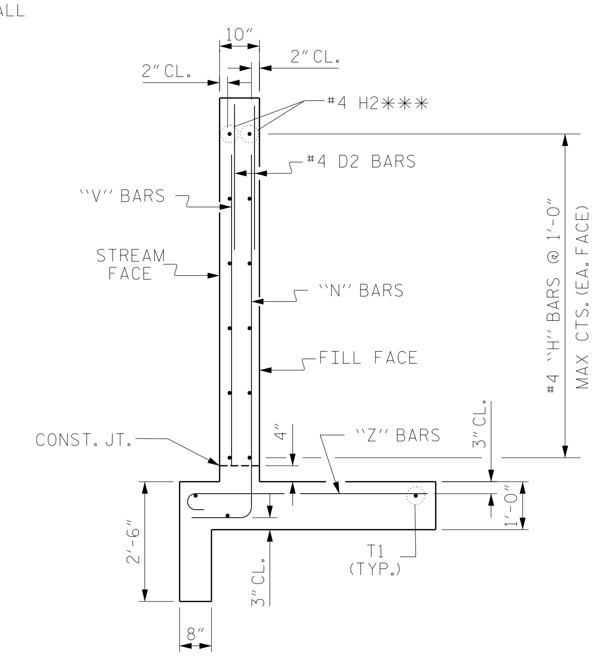
CLASS A CONCRETE
- 2 WINGS 4.3 CY
- 1 HEADWALL 1.7 CY
- 1 END CURTAIN WALL 2.1 CY
- 1 FOOTING 6.3 CY
- TOTAL 14.4 CY



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 AND #4 D3 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-

NORTH CAROLINA PROFESSIONAL SEAL 36321 ENGINEER ROBERT F. DECOLA
4/29/2025 Robert Decola
C91B1BEB951B4FF...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

9'-4" × 6'-3"
CORRUGATED METAL
PIPE ARCH CULVERT
119°-00'-00" SKEW

DESIGN ENGINEER OF RECORD: R.F. DECOLA	DATE :
DRAWN BY : M.G. ARMSTRONG	DATE : 5/19/22
CHECKED BY : R.F. DECOLA	DATE : 6/01/22

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2			4				

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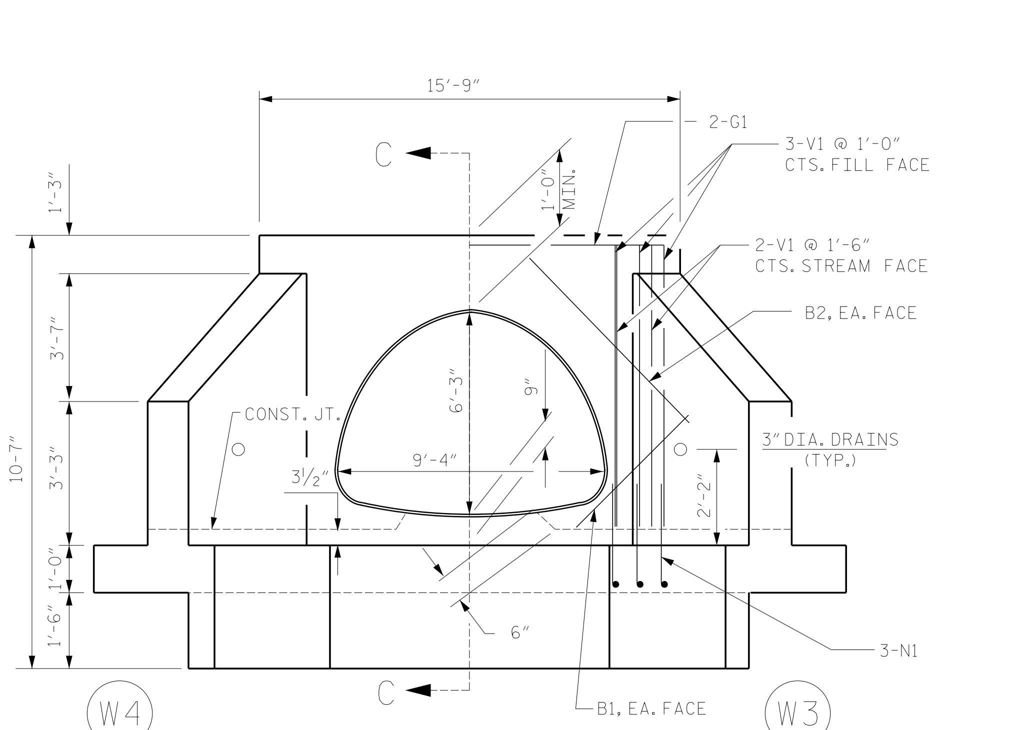
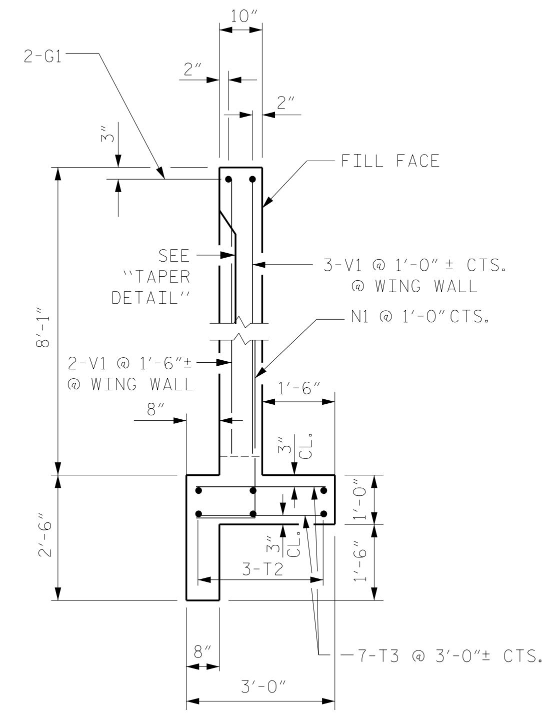
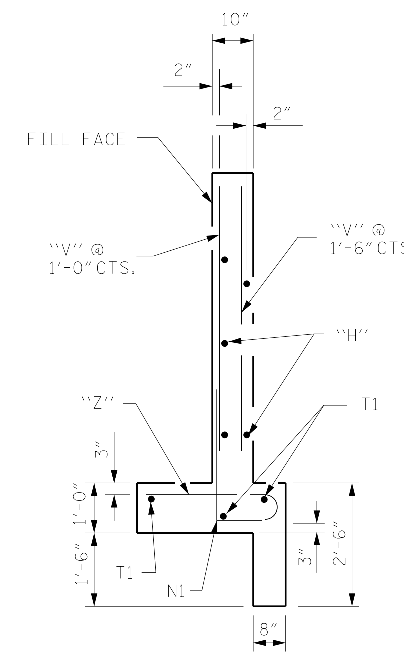


OUTLET END ELEVATION



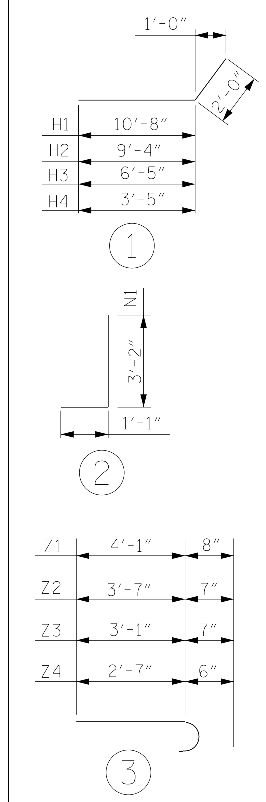
SECTION C-C

PIPE NOT SHOWN



SECTION D-D

BAR TYPES

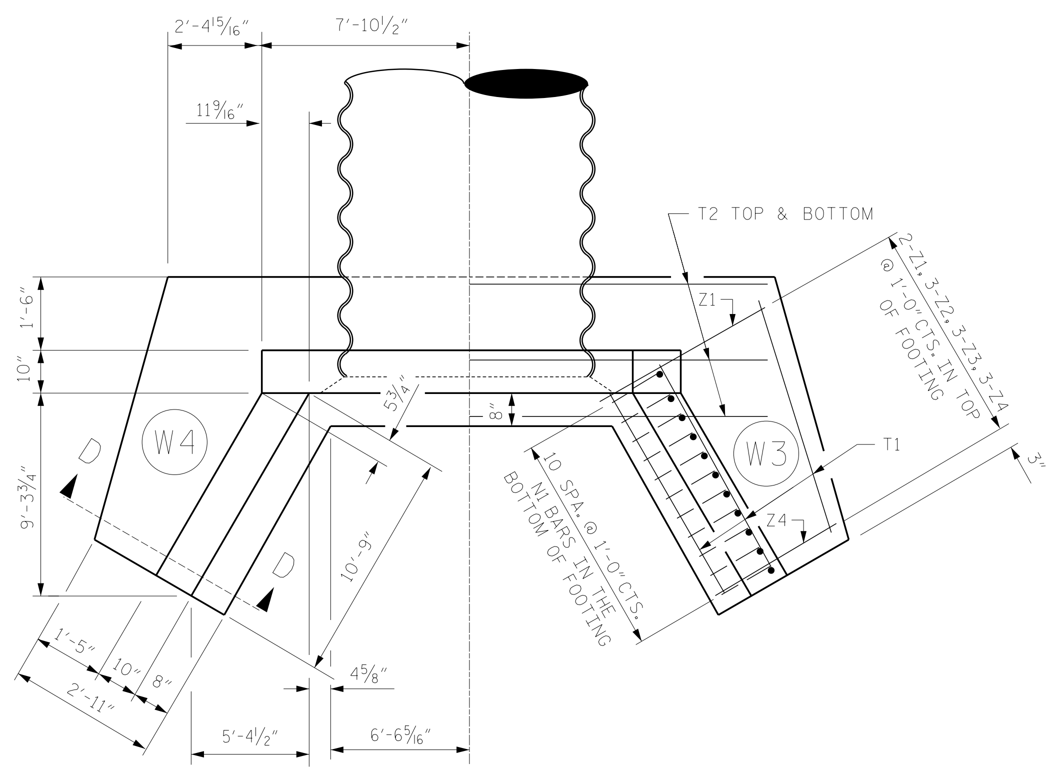


BILL OF MATERIAL

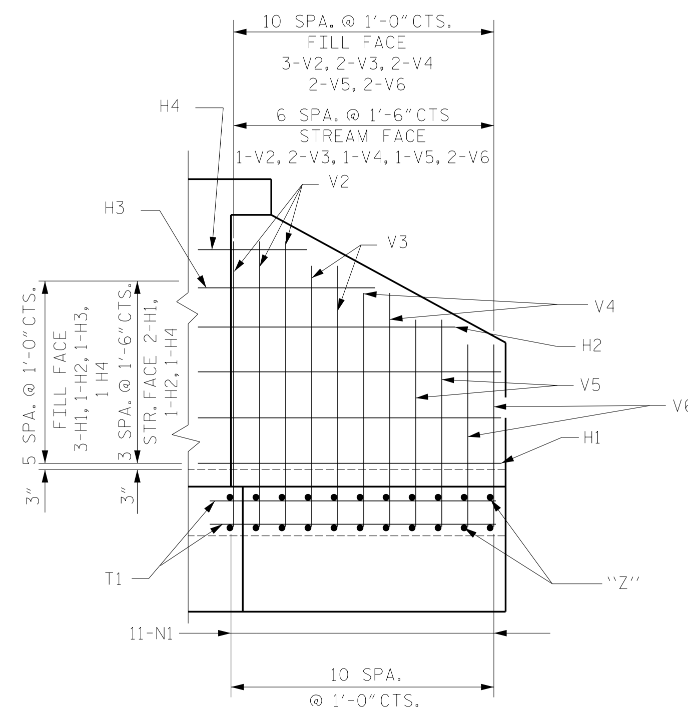
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#4	STR	4'-6"	12
B2	4	#4	STR	6'-6"	17
G1	2	#7	STR	15'-5"	63
H1	10	#4	1	12'-8"	85
H2	4	#4	1	11'-4"	30
H3	2	#4	1	8'-5"	11
H4	4	#4	1	5'-5"	14
N1	28	#5	2	4'-3"	124
T1	6	#4	STR	10'-9"	43
T2	6	#4	STR	20'-0"	80
T3	14	#4	STR	2'-6"	23
V1	10	#4	STR	7'-5"	50
V2	8	#4	STR	5'-6"	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

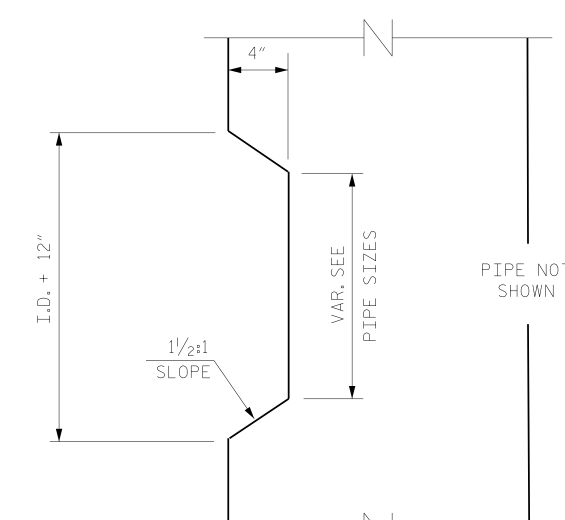
2 WINGS	3.3	CY
1 HEADWALL	2.5	CY
1 END CURTAIN WALL	2.1	CY
1 FOOTING	4.0	CY
TOTAL	11.9	CY



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

4/29/2025

Signed by: Robert Decola
C91B1BE895184FF...

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.

DESIGN ENGINEER OF RECORD: R.F. DECOLA	DATE :
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

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

SHEET NO. S02-05
TOTAL SHEETS 5

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.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$$$$USERNAME$$$$
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SOLDIER PILE RETAINING WALL NO. 1 PLAN

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

GEOTECHNICAL ENGINEER

ENGINEER

SEAL 014155

DocuSigned by: Abner F. Riggs

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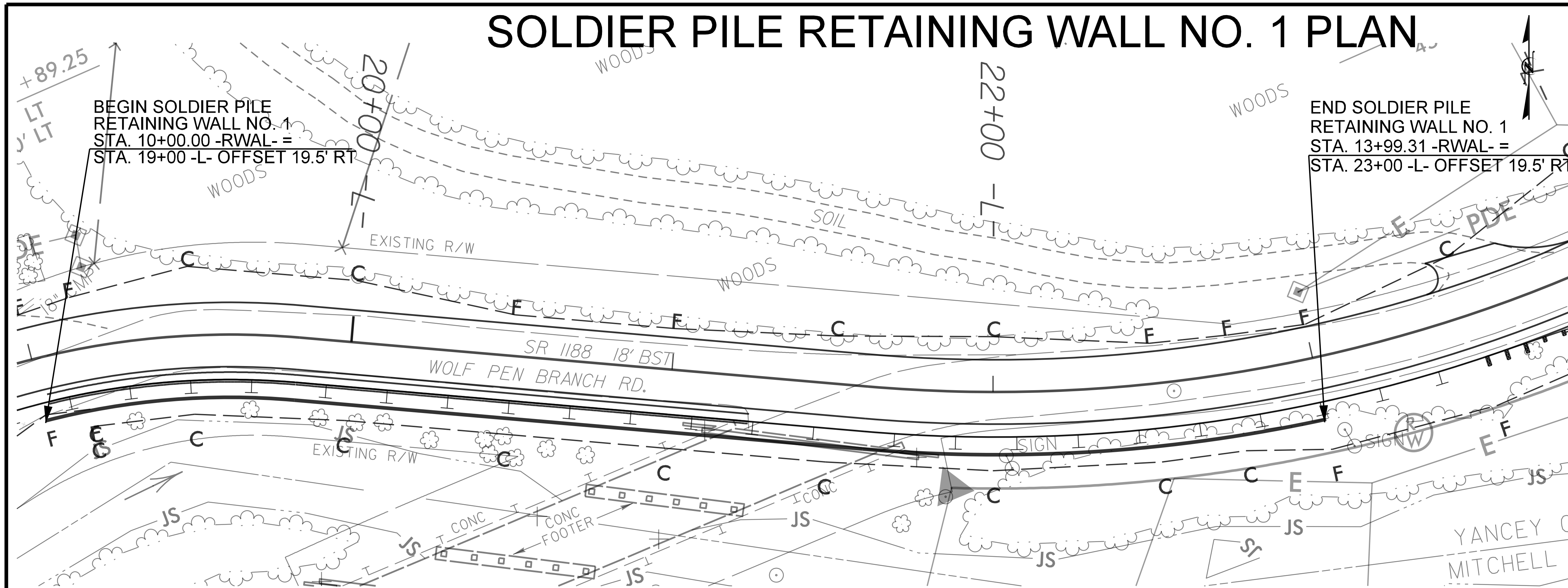
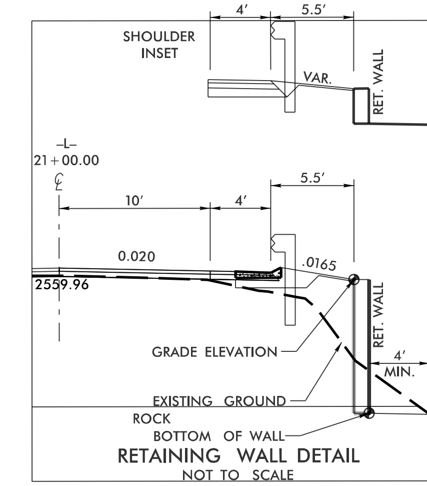
07/24/2024



MAINLINE TYPICAL \ CROSS-SECTION

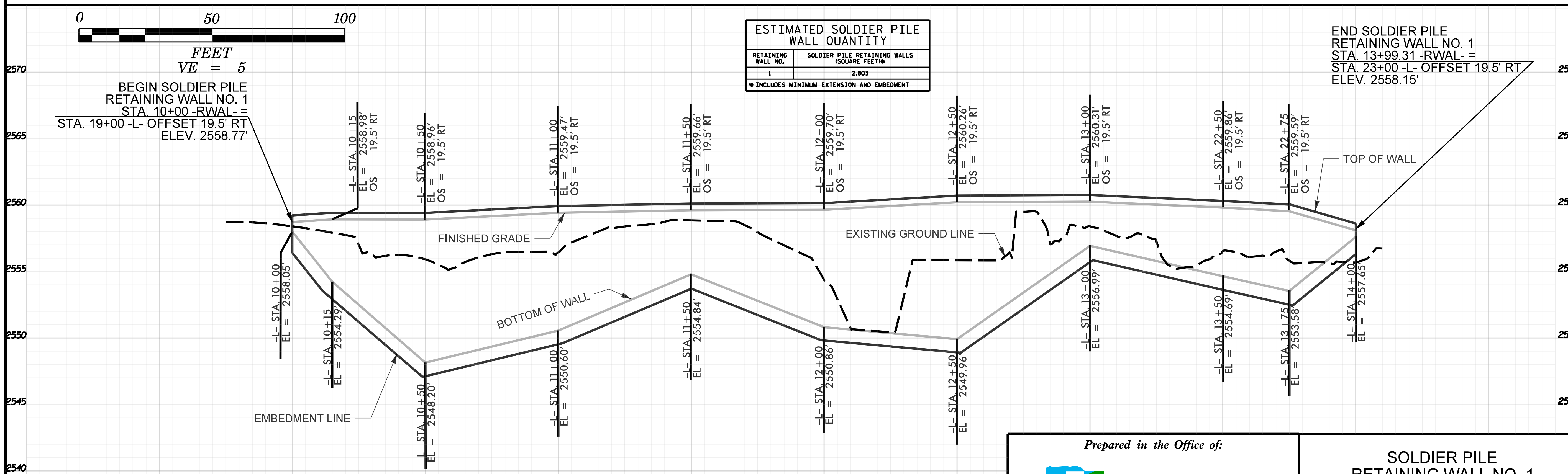


RETAINING WALL DETAIL
NOT TO SCALE

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 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		

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.

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

GEOTECHNICAL ENGINEER

SEAL 014155

07/24/2024

Abner F. Riggs

ENGINEER

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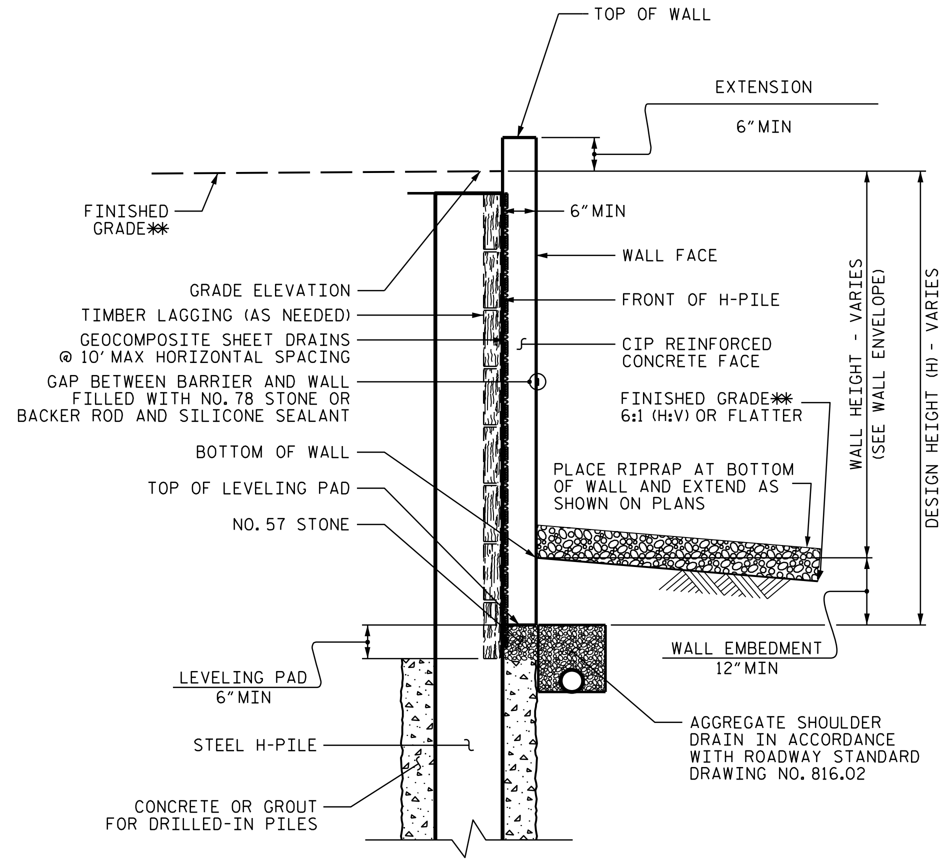

SOLDIER PILE WALL WITH CIP FACE - TYPICAL SECTION

✱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:

Terracon
2401 BRENTWOOD ROAD, SUITE 107
RALEIGH, NORTH CAROLINA 27604
NC REGISTERED ENGINEERING FIRM: F-0869
NC REGISTERED GEOLOGIC FIRM: C-367

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		