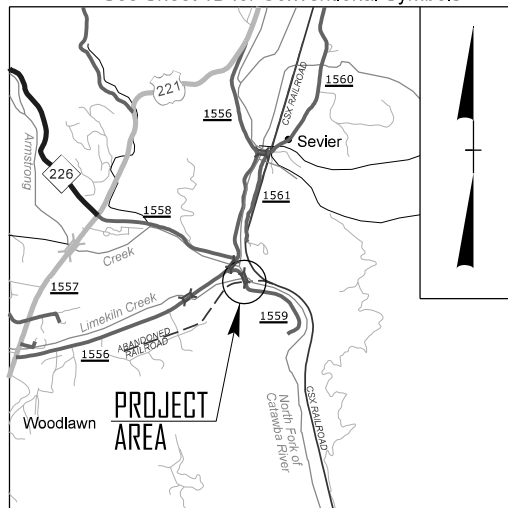


TIP PROJECT: BP13-R026

CONTRACT: DM00428

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



VICINITY MAP (NTS)

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

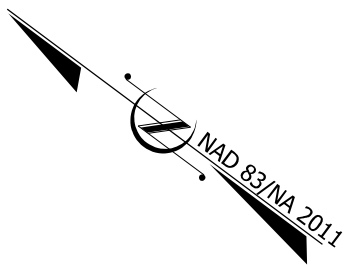
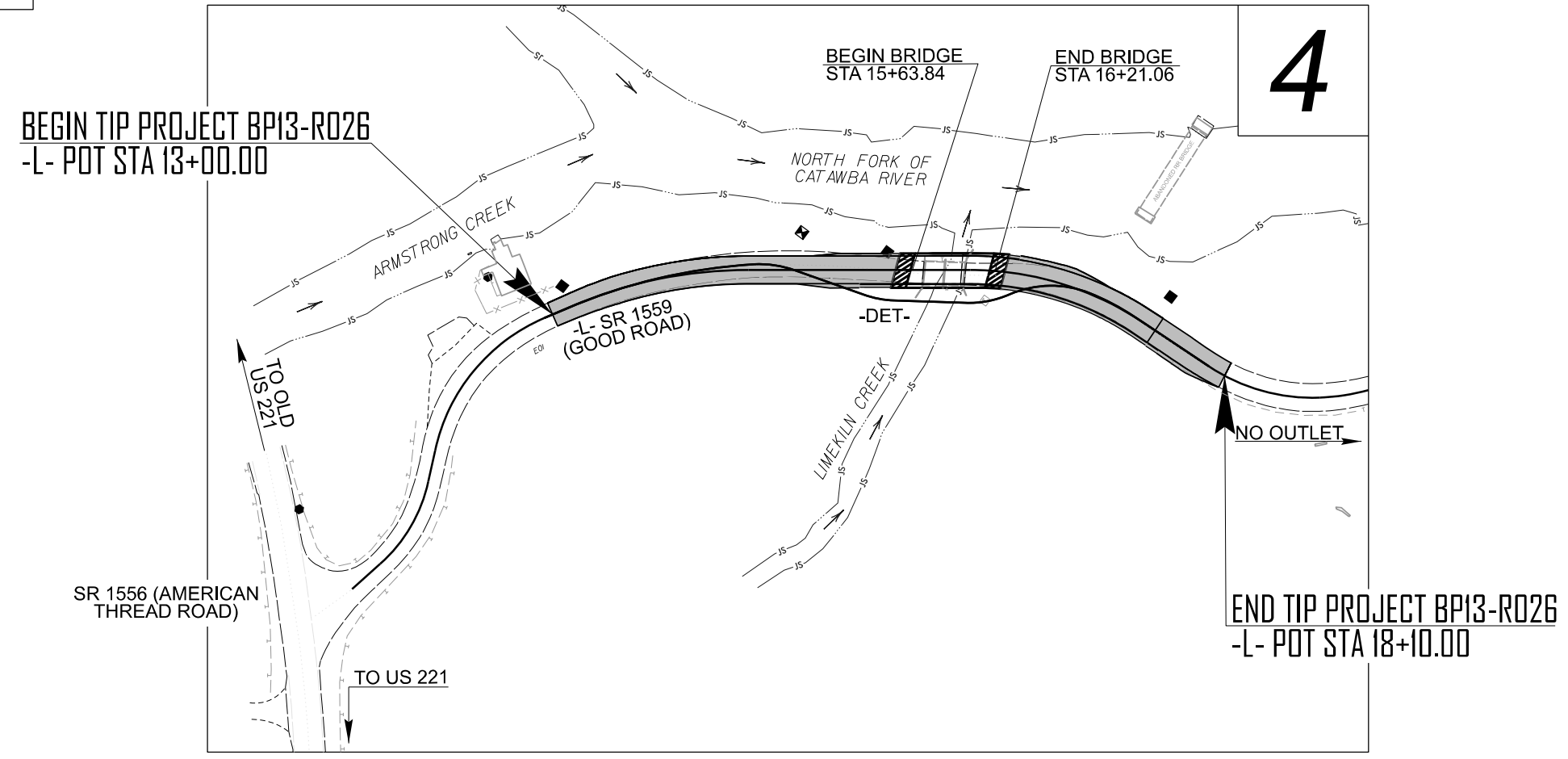
MCDOWELL COUNTY

LOCATION: *REPLACE BRIDGE NO. 194 ON SR 1559
(GOOD ROAD) OVER LIMEKILN CREEK*

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

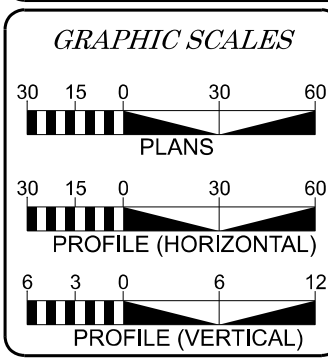
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP13-R026	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
BP13.R026.1		P.E.	
BP13.R026.2		R/W & UTIL.	
BP13.R026.3		CONSTRUCTION	

FINAL PLANS



* DESIGN EXCEPTION FOR DESIGN SPEED.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2025 = 100
(ESTIMATED)

V = 15 MPH *

FUNC CLASS =
RURAL LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT BP13-R026 = 0.086 MILES

LENGTH STRUCTURE PROJECT BP13-R026 = 0.011 MILES

TOTAL LENGTH PROJECT BP13-R026 = 0.097 MILES

Prepared By:
 ms consultants, inc.
544 W. Park Blvd.
Raleigh, NC 27607
NC License Number: C-3229

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MARCH 28, 2025

LETTING DATE:
DECEMBER 3, 2025

Prepared For:
DIVISION OF HIGHWAYS
DIVISION 13
55 Orange St., Asheville NC, 28801

MARK HILL
NCDOT PROJECT ENGINEER

TRAVIS POTTS
PROJECT ENGINEER

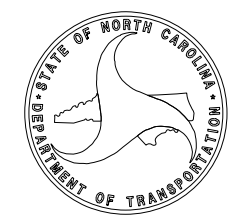
SKYLAR STULTZ
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

Decoded by: 9/9/2025
P.E.

ROADWAY DESIGN ENGINEER

Decoded by: 9/9/2025
P.E.



INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1 THRU 2B-2	DETOUR PLAN AND PROFILE SHEET
2C-1	DETAIL IN LIEU OF STANDARD 300.01 METHOD OF PIPE INSTALLATION (SHEET 1 OF 2)
2C-2	DETAIL IN LIEU OF STANDARD 300.01 METHOD OF PIPE INSTALLATION (SHEET 2 OF 2)
2C-3	DETAIL IN LIEU OF STANDARD 862.01 GUARDRAIL PLACEMENT (SHEET 4 OF 15)
2C-4	DETAIL IN LIEU OF STANDARD 862.01 GUARDRAIL PLACEMENT (SHEET 6 OF 15)
2G-1	GEOTECHNICAL STANDARD DETAIL 1801.01
2G-2 THRU 2G-4	GEOTECHNICAL STANDARD DETAIL 1801.02
3B-1	ROADWAY SUMMARIES
3D-1 THRU 3D-2	DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
4 THRU 5	PLAN AND PROFILE SHEET
RW01 THRU RW04	RIGHT-OF-WAY PLANS
TMP-1 THRU TMP-6	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1 THRU RF-3	REFORESTATION PLANS
UO-1 THRU UO-2	UTILITY BY OTHER PLANS
X-1	CROSS-SECTION INDEX
X-1A	CROSS-SECTION SUMMARY SHEET
X-2 THRU X-9	DETOUR CROSS-SECTIONS
X-10 THRU X-22	CROSS-SECTIONS
S-1 THRU S1-19	STRUCTURE PLANS

GENERAL NOTES:

2024 SPECIFICATIONS
EFFECTIVE: 01-16-2024
REVISED:

2024 ROADWAY ENGLISH STANDARD DRAWINGS

EFF. 01-16-2024
REV.

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 PLACE. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SUBSURFACE DRAINS:

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

GUARDRAIL:

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

TEMPORARY SHORING:

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

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE RUTHERFORD EMC (ELECTRIC), COATS AMERICAN (WATER), AND FRONTIER (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.

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 Standard)

DIVISION 4 - MAJOR STRUCTURES
423.01 Bridge Approach Fills - Type I Approach Fill for Bridge Abutment

DIVISION 5 - SUBGRADE, BASES AND SHOULDERS
560.01 Method of Shoulder Construction - High Side of Superelevated Curve - Method I

DIVISION 8 - INCIDENTALS
815.02 Subsurface Drain
840.00 Concrete Base Pad for Drainage Structures
840.25 Anchorage for Frames - Brick or Concrete or Precast
840.29 Frames and Narrow Slot Flat Grates
840.35 Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46 Traffic Bearing Precast Drainage Structure
840.66 Drainage Structure Steps
846.01 Concrete Curb, Gutter and Curb & Gutter
846.04 Drop Inlet Installation in Shoulder Berm Gutter
862.01 Guardrail Placement (Use Details in Lieu of Standard for Sheets 4 and 6 of 15)
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

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:

BP13-R026

001A

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
McDOWELL COUNTY



ROADWAY DESIGN UNIT
ENGINEER



M. Travis Potts 9/11/2025

4281027E00040F

PREPARED BY



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

REVISIONS

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin (EIP)	○
Computed Property Corner	×
Existing Concrete Monument (ECM)	□
Parcel / Sequence Number	(23)
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	-MLB-
Proposed Wetland Boundary	-MLB-
Existing Endangered Animal Boundary	-EAB-
Existing Endangered Plant Boundary	-EPB-
Existing Historic Property Boundary	-HPB-
Known Contamination Area: Soil	-S-S-
Potential Contamination Area: Soil	-S-S-
Known Contamination Area: Water	-W-W-
Potential Contamination Area: Water	-W-W-
Contaminated Site: Known or Potential	☠ ☡

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○
Well	⊕
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	▬
False Sump	▬

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

Primary Horiz Control Point	○
Primary Horiz and Vert Control Point	⬢
Secondary Horiz and Vert Control Point	⬢
Vertical Benchmark	⊕
Existing Right of Way Monument	△
Proposed Right of Way Monument (Rebar and Cap)	▲
Proposed Right of Way Monument (Concrete)	⬢
Existing Permanent Easement Monument	◇
Proposed Permanent Easement Monument (Rebar and Cap)	⬢
Existing C/A Monument	△
Proposed C/A Monument (Rebar and Cap)	▲
Proposed C/A Monument (Concrete)	⬢
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Existing Control of Access Line	-----
Proposed Control of Access Line	-----
Proposed ROW and CA Line	-----
Existing Easement Line	-----
Proposed Temporary Construction Easement	-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	-----

EXISTING STRUCTURES:

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

UTILITIES:

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

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

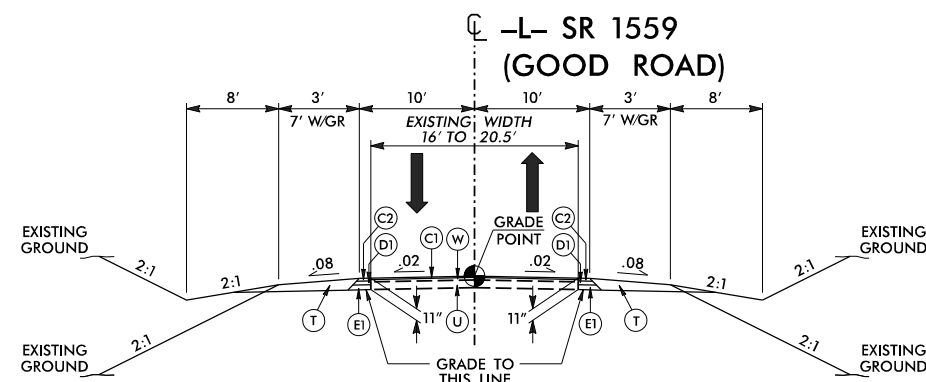
Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	-----
Above Ground Sanitary Sewer	-----
SS Force Main Line Test Hole (SUE - LOS A)*	⊕
SS Force Main Line (SUE - LOS B)*	-----
SS Force Main Line (SUE - LOS C)*	-----
SS Force Main Line (SUE - LOS D)*	-----

MISCELLANEOUS:

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

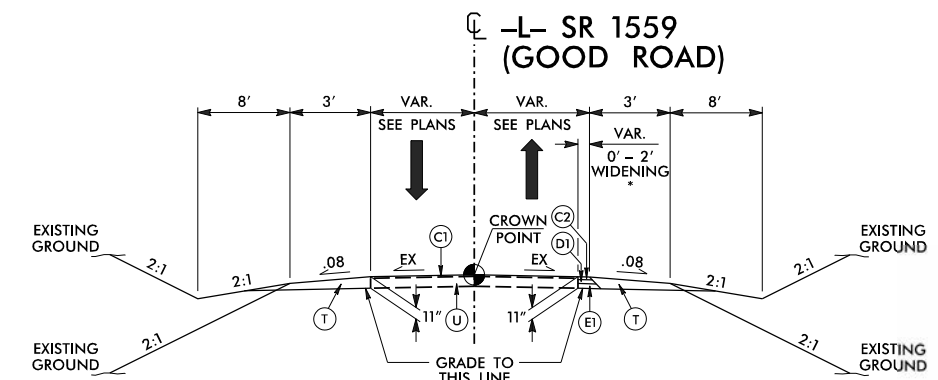
FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1" OR GREATER THAN 1½" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2½" OR GREATER THAN 4" 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" OR GREATER THAN 5½" IN DEPTH.
J	8" AGGREGATE BASE COURSE.
P	PRIME COAT, 0.35 GAL/SY.
R	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	MILLING, INCIDENTAL.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING).

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



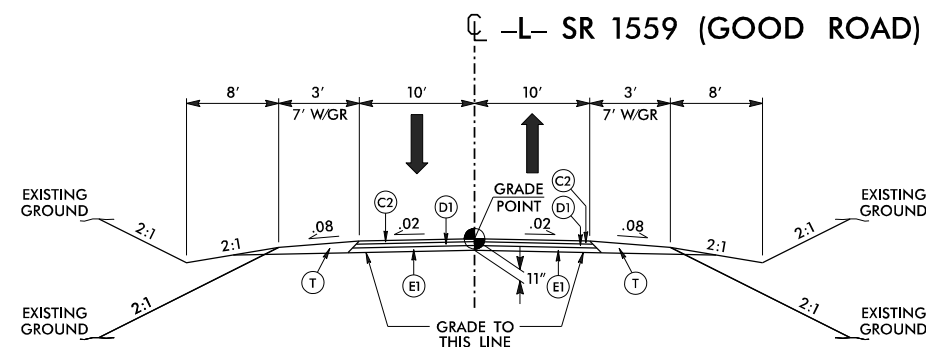
TYPICAL SECTION NO. 1

-L- STA. 13+00.00 TO -L- STA. 15+10.00
-L- STA. 16+80.00 TO -L- STA. 17+50.00



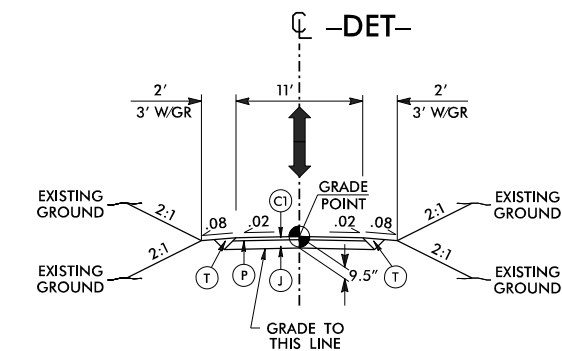
TYPICAL SECTION NO. 4

-L- STA. 17+50.00 TO -L- STA. 18+10.00



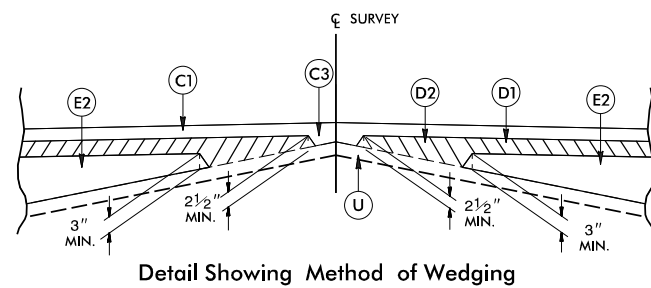
TYPICAL SECTION NO. 2

-L- STA. 15+10.00 TO -L- STA. 15+63.84 (BEGIN BRIDGE)
-L- STA. 16+21.06 (END BRIDGE) TO -L- STA. 16+80.00

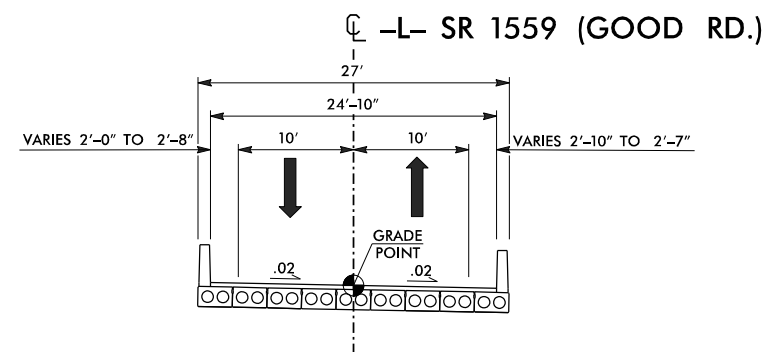


TYPICAL SECTION NO. 5

-DET- STA. 11+39.54 TO -DET- STA. 14+23.00

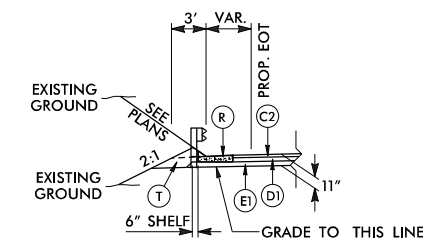


Detail Showing Method of Wedging



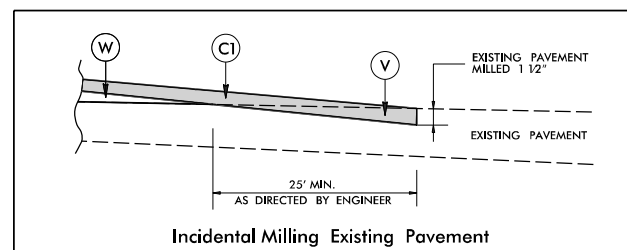
TYPICAL SECTION NO. 3

-L- STA. 15+63.84 (BEGIN BRIDGE) TO -L- STA. 16+21.06 (END BRIDGE)
*SEE STRUCTURE PLANS FOR ASPHALT WEARING SURFACE DEPTH

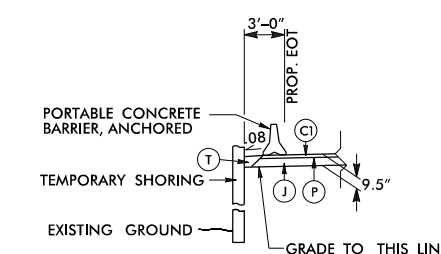


SHOULDER BERM GUTTER DETAIL
(USE IN CONJUNCTION WITH TYP. NO. 1, 2 AND 4)

SEE PLAN FOR LOCATIONS

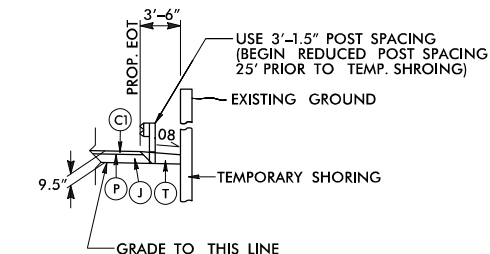


Incidental Milling Existing Pavement



TEMPORARY SHORING DETAIL A
(USE IN CONJUNCTION WITH TYP. NO. 5)

-DET- STA. 12+65 +/- TO -DET- STA. 13+45 +/-, LT



TEMPORARY SHORING DETAIL B
(USE IN CONJUNCTION WITH TYP. NO. 5)

-DET- STA. 13+15 +/- TO -DET- STA. 13+85 +/-, RT

BP13-R026
2A-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
McDOWELL COUNTY

ROADWAY DESIGN UNIT
ROADWAY DESIGN ENGINEER

PROFESSIONAL SEAL
041453
TRAVIS POTTS

9/9/2025
M. Travis Potts
ROADWAY DESIGN ENGINEER

PROFESSIONAL SEAL
038176
SHIHAI ZHANG

9/9/2025
Shihai Zhang
ROADWAY DESIGN ENGINEER

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UNLESS ALL SIGNATURES COMPLETED

REVISIONS

BP13-R026
2B-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
McDOWELL COUNTY

ROADWAY DESIGN UNIT
ROADWAY DESIGN
ENGINEER

PROFESSIONAL SEAL
041453
M. TRAVIS POTTS
ENGINEER

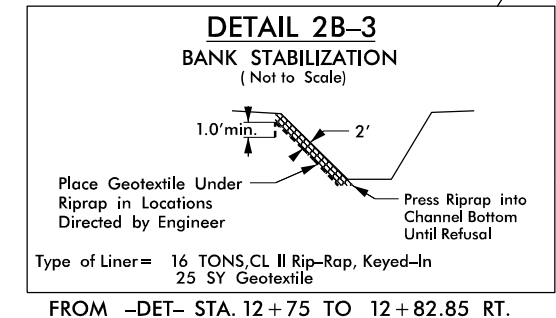
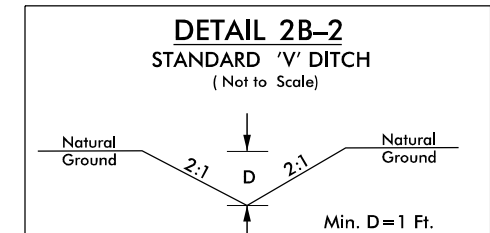
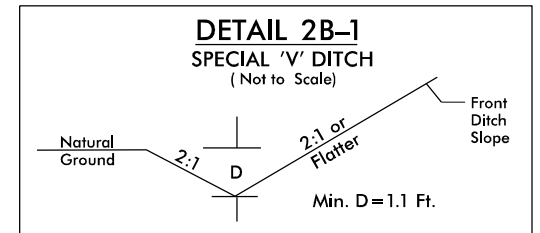
M. Travis Potts 9/9/2025

PROFESSIONAL SEAL
021162
W. HERBERT TURNER JR.
ENGINEER

Herb Turner 9/9/2025

ms consultants, inc.
2644 Trade Park Blvd.
Suite 110
Raleigh, NC 27607
NC License Number: C-3239

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



BEGIN CONSTRUCTION
-DET- STA. 11+39.54=
-EL- STA. 14+33.00=
-L- STA. 14+33.27, 2.87' LT

END CONSTRUCTION
-DET- STA. 14+23.00=
-EL- STA. 17+11.46=
-L- STA. 17+11.94, 0.55' LT

FROM -DET- STA. 12+17 TO STA. 12+45 RT.
FROM -DET- STA. 12+45 TO STA. 12+75 RT.
DDE=12 CY.

1
COATS AMERICAN, INC.
DB 115 PG 439

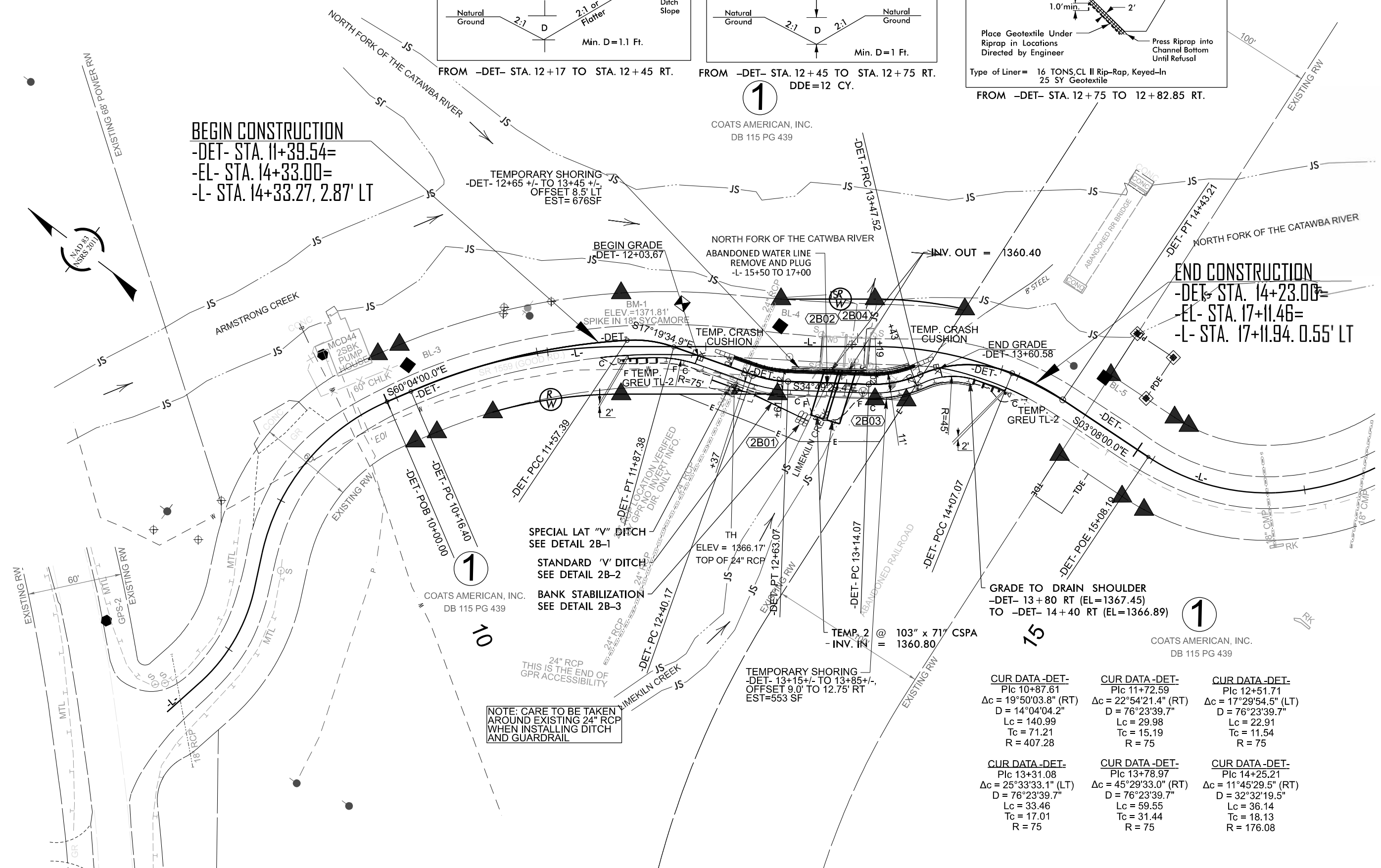
1
COATS AMERICAN, INC.
DB 115 PG 439

1
COATS AMERICAN, INC.
DB 115 PG 439

NOTE: CARE TO BE TAKEN
AROUND EXISTING 24" RCP
WHEN INSTALLING DITCH
AND GUARDRAIL

CUR DATA -DET- Plc 10+87.61 Δc = 19°50'03.8" (RT) D = 14°04'04.2" Lc = 140.99 Tc = 71.21 R = 407.28	CUR DATA -DET- Plc 11+72.59 Δc = 22°54'21.4" (RT) D = 76°23'39.7" Lc = 29.98 Tc = 15.19 R = 75	CUR DATA -DET- Plc 12+51.71 Δc = 17°29'54.5" (LT) D = 76°23'39.7" Lc = 22.91 Tc = 11.54 R = 75
CUR DATA -DET- Plc 13+31.08 Δc = 25°33'33.1" (LT) D = 76°23'39.7" Lc = 33.46 Tc = 17.01 R = 75	CUR DATA -DET- Plc 13+78.97 Δc = 45°29'33.0" (RT) D = 76°23'39.7" Lc = 59.55 Tc = 31.44 R = 75	CUR DATA -DET- Plc 14+25.21 Δc = 11°45'29.5" (RT) D = 32°32'19.5" Lc = 36.14 Tc = 18.13 R = 176.08

SEE SHEET 2B-2 FOR -DET- PROFILE
SEE SHEET 004 FOR -L- PLAN



BP13-R026
2B-2

NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 McDOWELL COUNTY

ROADWAY DESIGN UNIT
 ROADWAY DESIGN
 ENGINEER

PROFESSIONAL SEAL
 041453
 ENGINEER
 M. TRAVIS POTTS

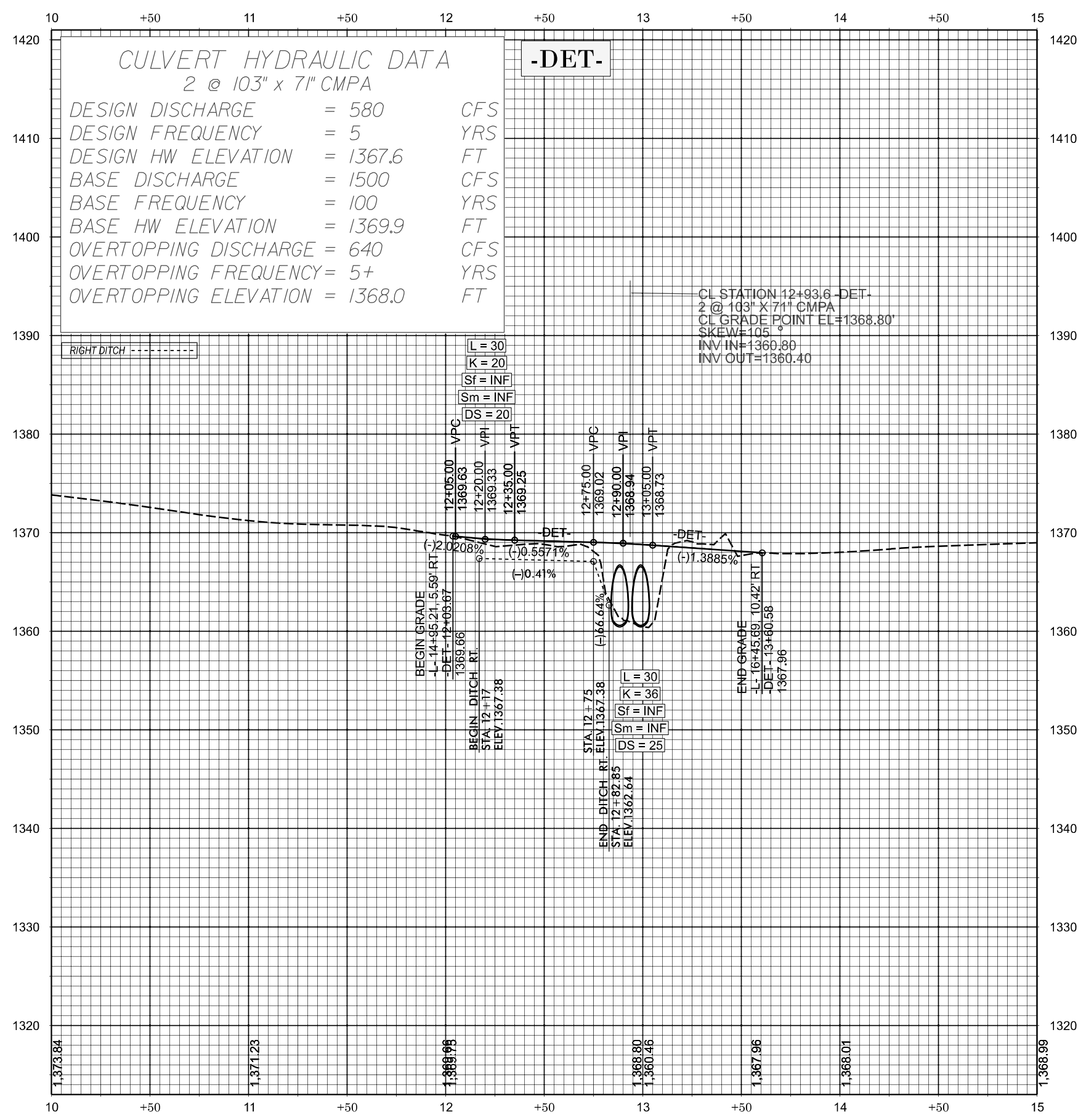
M. Travis Potts 9/9/2025

PROFESSIONAL SEAL
 021162
 ENGINEER
 W. HERBERT TURNER JR.

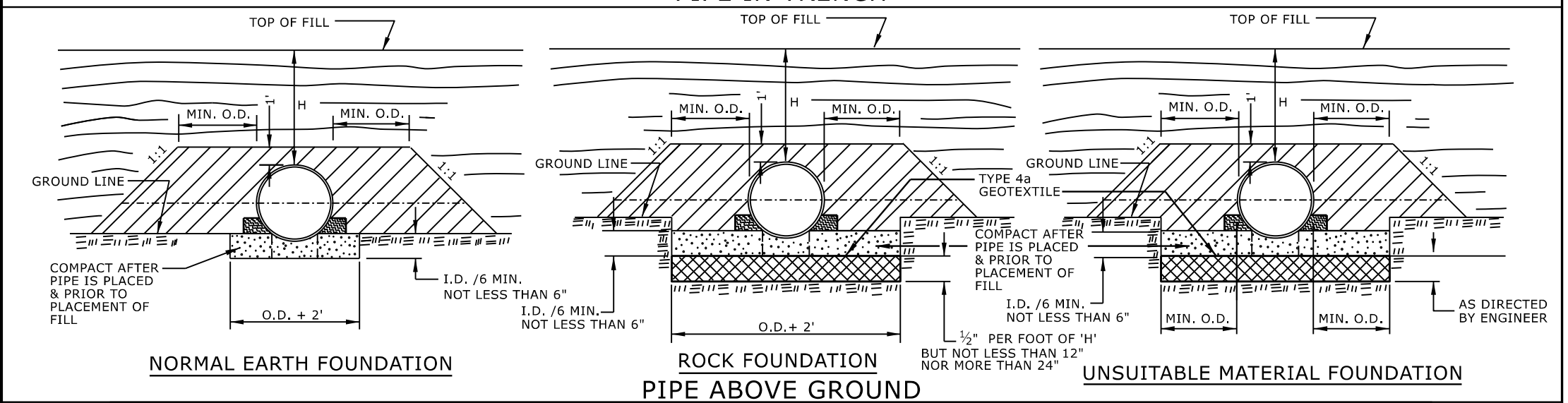
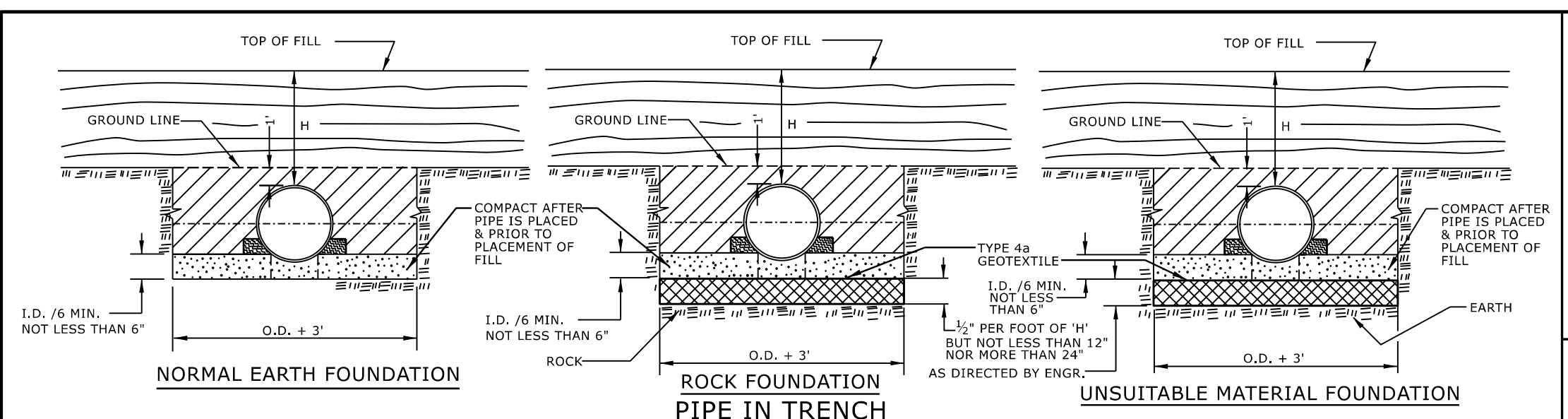
Herb Turner 9/9/2025

ms consultants, inc.
 2644 Wade Park Blvd.
 Suite 100
 Raleigh, NC 27607
 NC License Number: C-3239




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REVISIONS

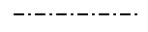
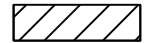
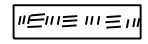



GENERAL NOTES:
 I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
 O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.
 H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

 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.

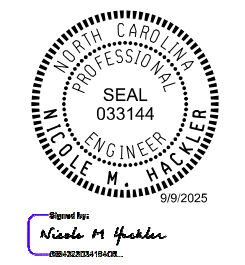
DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

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.

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ROADWAY DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
 FLEXIBLE PIPE



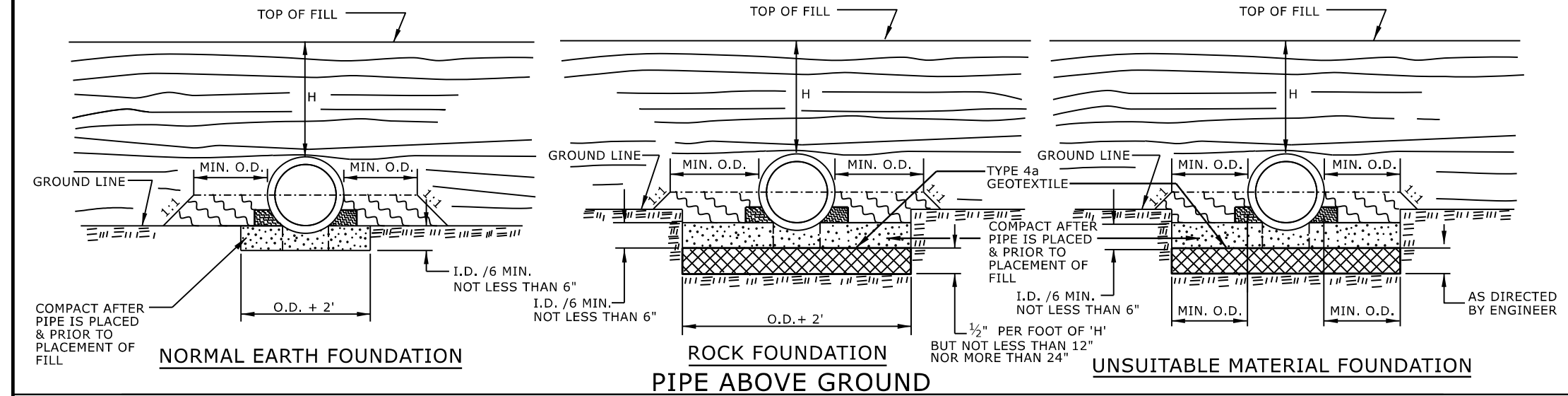
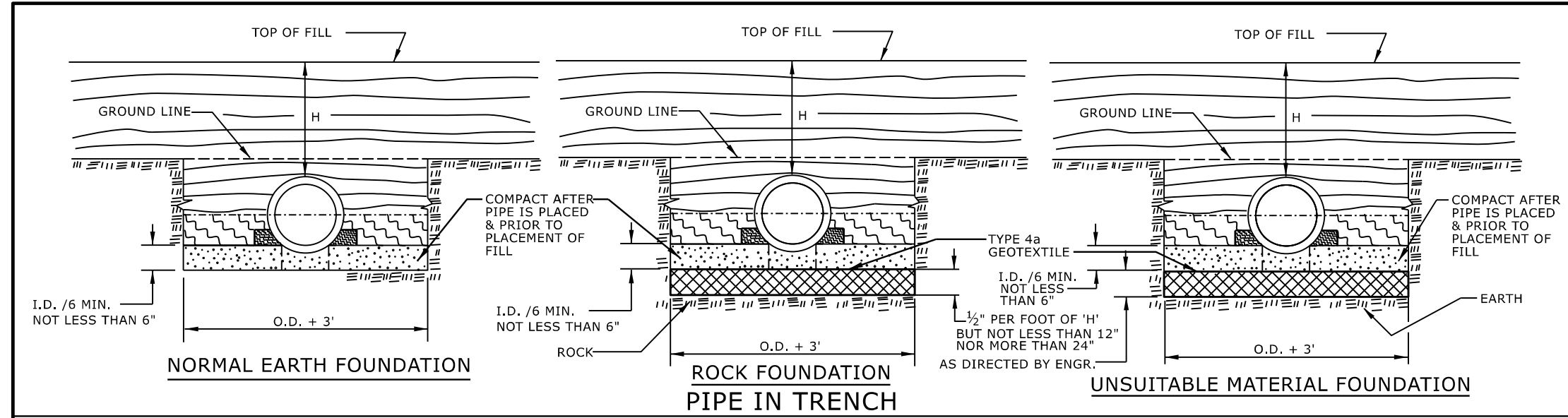
SHEET 1 OF 2
300.01

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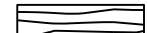


**CONTRACTS STANDARDS
 AND DEVELOPMENT UNIT**
 Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

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

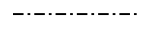
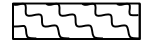
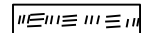



GENERAL NOTES:
 I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
 O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.
 H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

-  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.

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ROADWAY DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
 RIGID PIPE

SHEET 2 OF 2
300.01



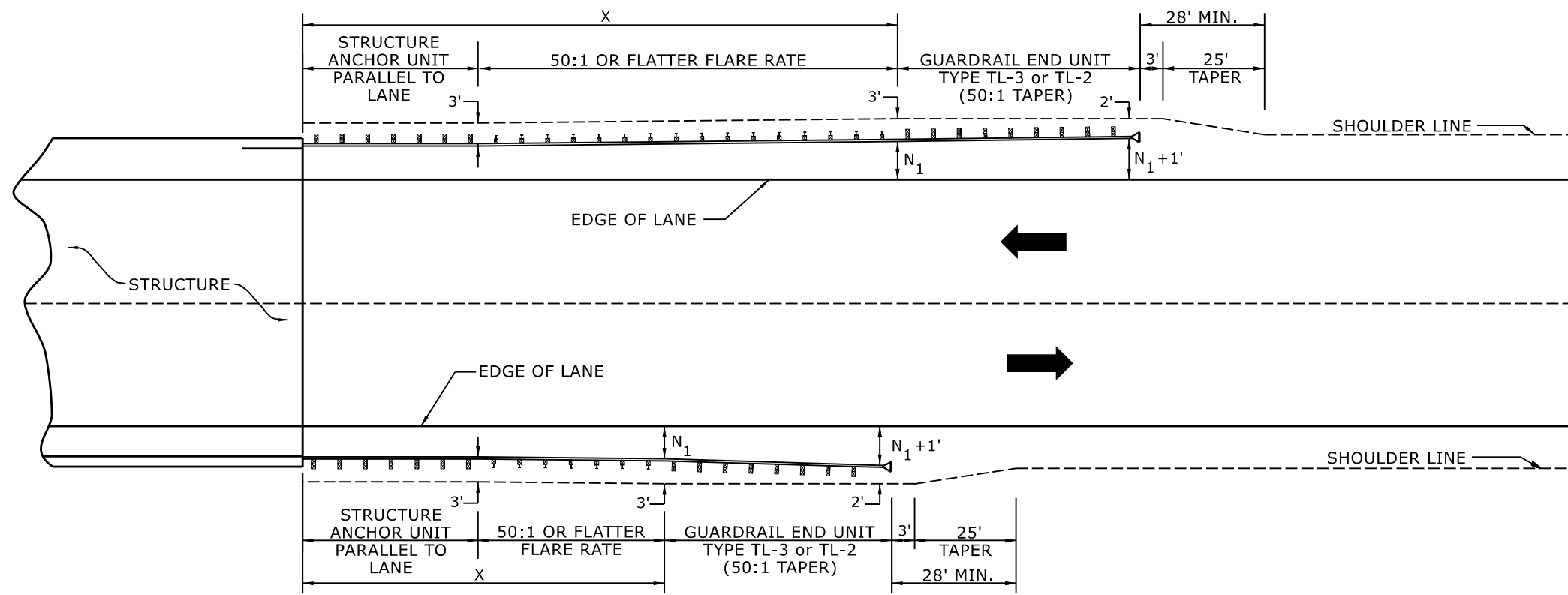
9/9/2025
 Signed By: *Nicole M. Haskler*
 910-333-2510 (ext. 100)

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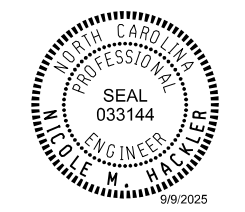


USE FLARE RATE AS THE CONTROL IF THE "N₁" DISTANCE IS NOT OBTAINED.
 ("N₁" IS BASED ON SHOULDER WIDTHS IN THE ROADWAY DESIGN MANUAL)
 SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS
 FOR POSTED SPEEDS ≥ 45MPH USE GREU TYPE TL-3
 FOR POSTED SPEEDS < 45MPH USE GREU TYPE TL-2
 GUARDRAIL LENGTH OF NEED (X) IS CALCULATED BASED ON THE AASHTO ROADSIDE DESIGN GUIDE.

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

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 RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT



9/9/2025
 Nicole M. Hackler
 00842020413402

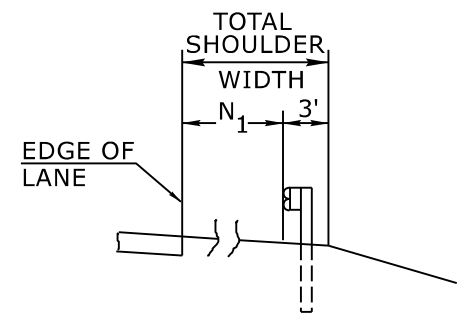
SHEET 4 OF 15
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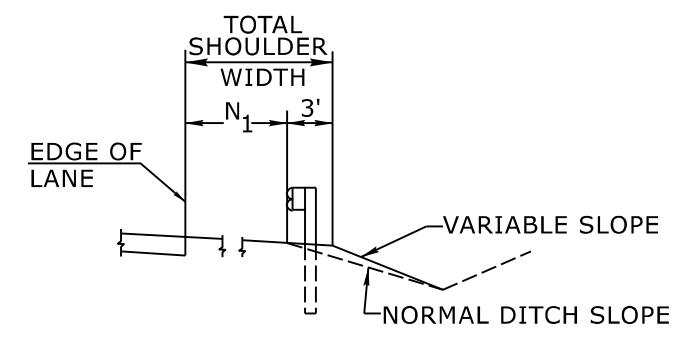
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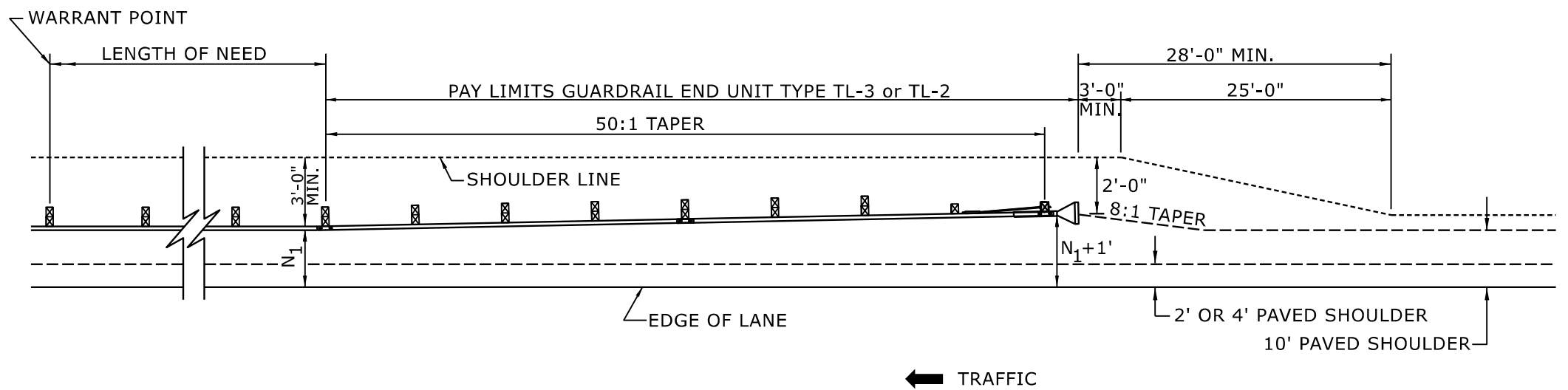


FILL SECTION



CUT SECTION

"N₁" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.



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

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT



Designed by:
Nicole M. Hacker
SAS&S CONTRACTORS

SHEET 6 OF 15
862D01

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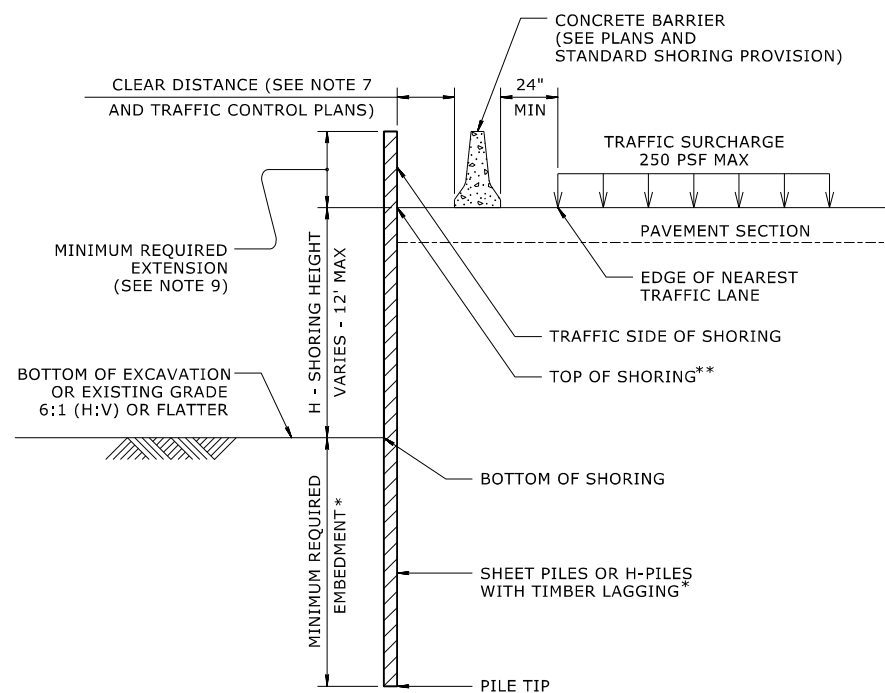
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN ⁴ /FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN ⁴ /FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
				HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73
GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5	

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

*DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".

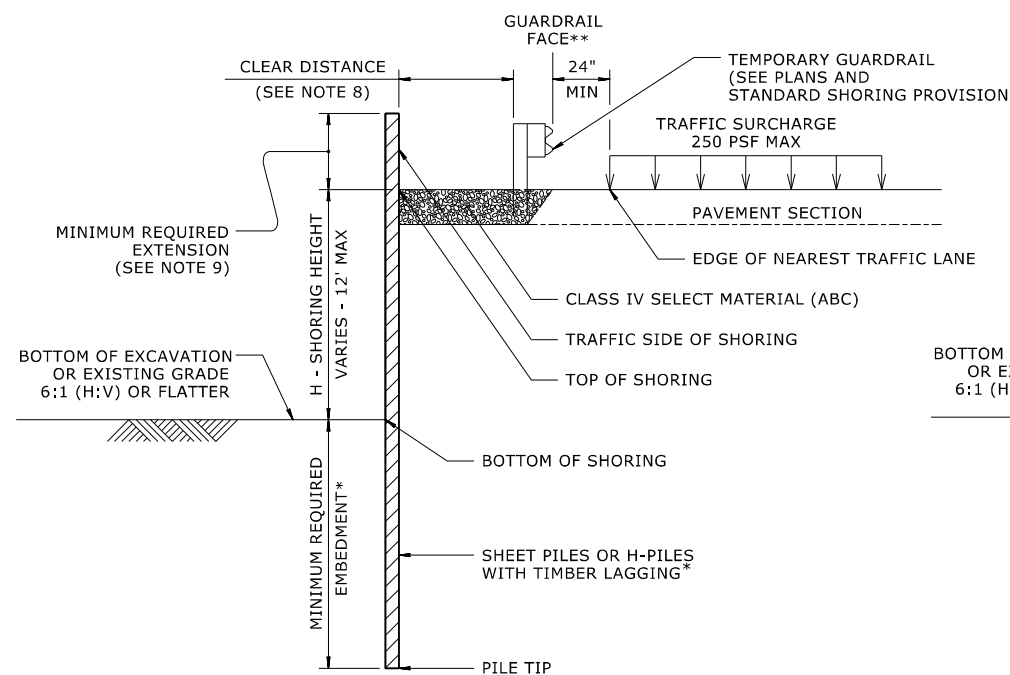
NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
UNIT WEIGHT, $\gamma = 120$ PCF
FRICTION ANGLE, $\phi = 30$ DEGREES
COHESION, $c = 0$ PSF
4. DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
7. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
8. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
9. MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
10. MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
11. SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM:
connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
12. CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.



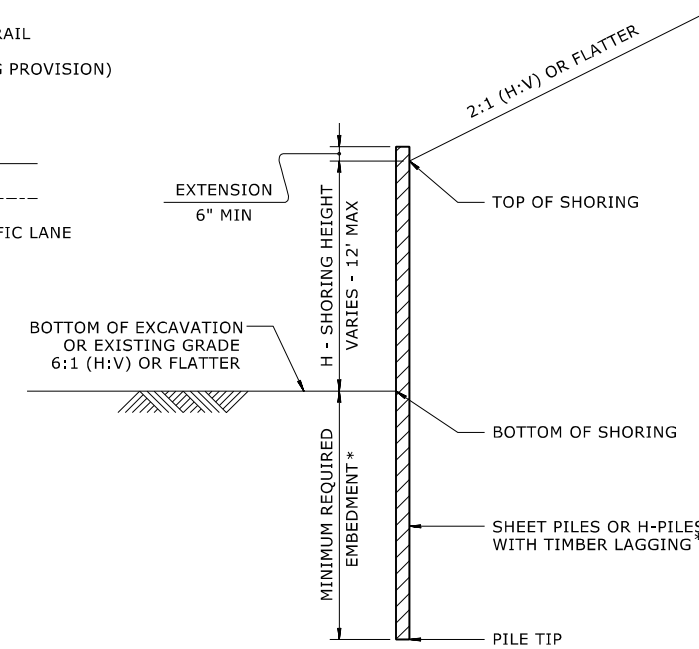
CONCRETE BARRIER

**TOP OF SHORING = EDGE OF PAVEMENT



TEMPORARY GUARDRAIL

**GUARDRAIL FACE = EDGE OF PAVEMENT



STANDARD TEMPORARY SHORING

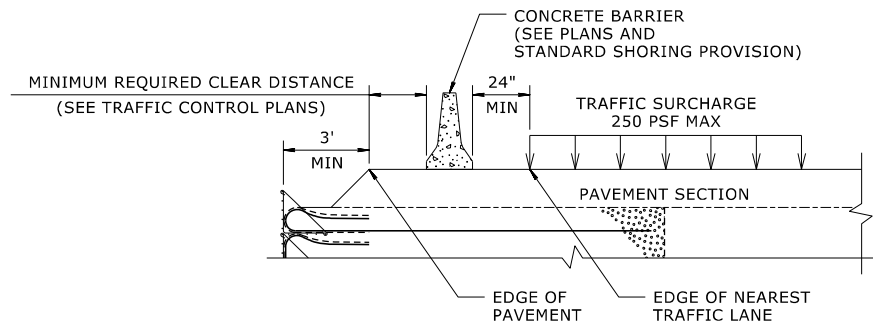
(SLOPE CASE)
*SEE TABLE ABOVE.

STANDARD TEMPORARY SHORING

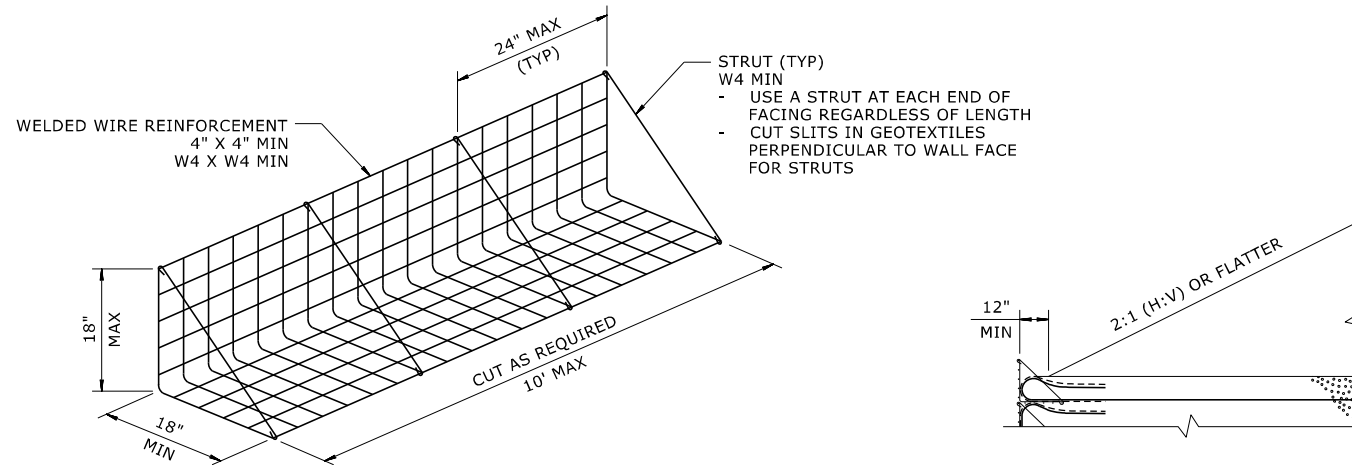
(SURCHARGE CASE)
*SEE TABLE ABOVE.



GEOTECHNICAL STANDARD DETAIL FOR
TEMPORARY SHORING

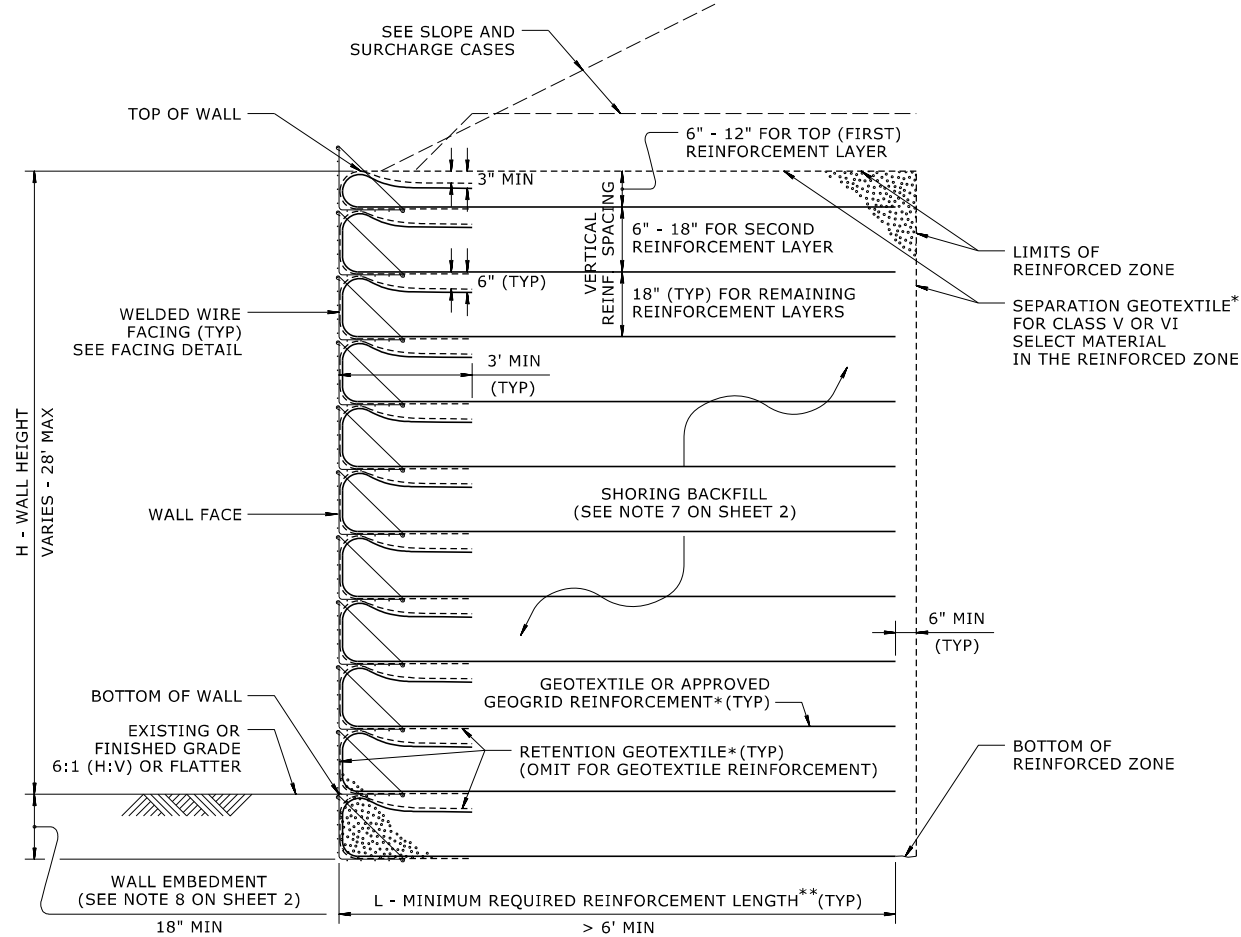


SURCHARGE CASE



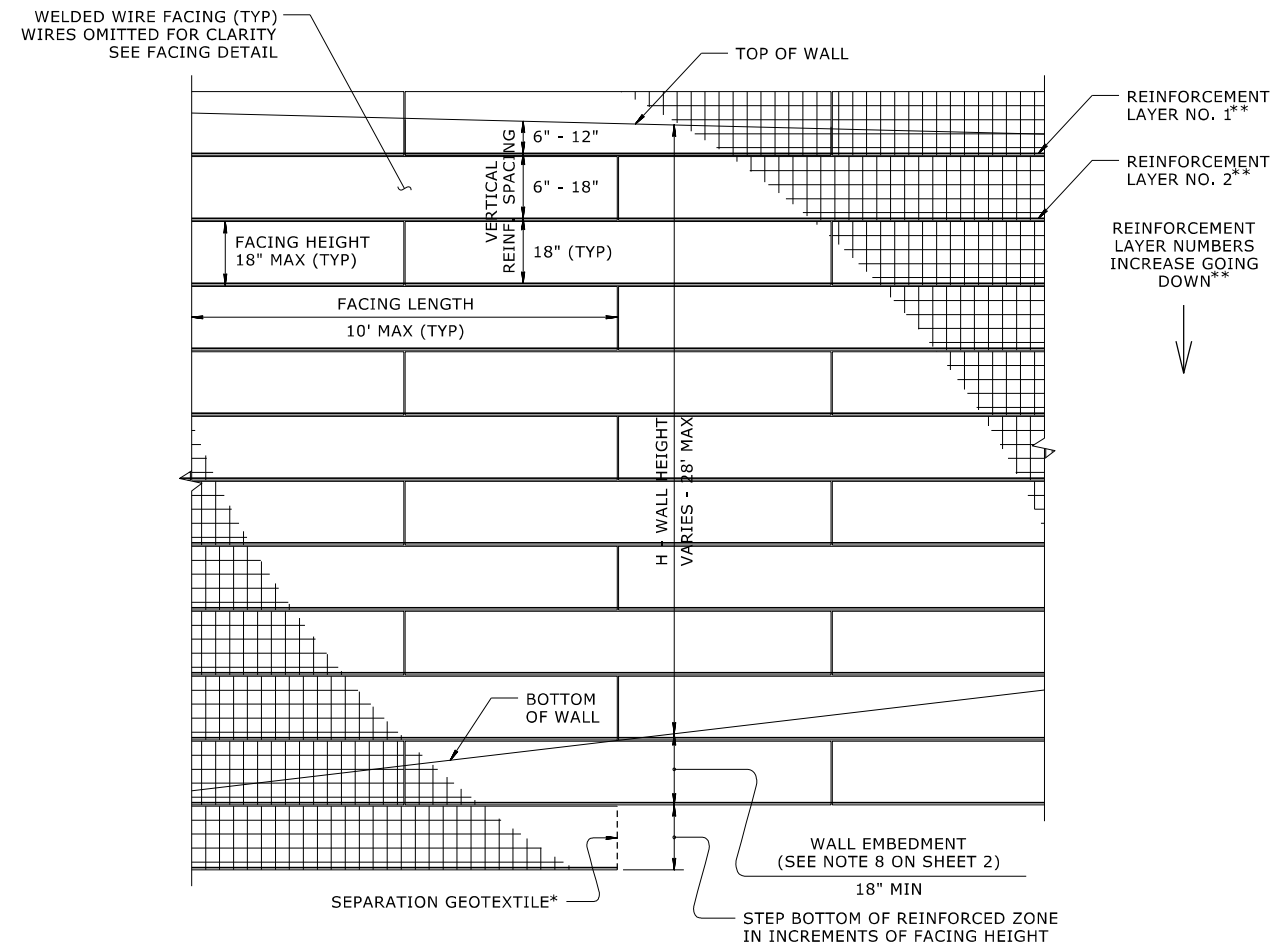
FACING DETAIL

SLOPE CASE



STANDARD TEMPORARY WALL

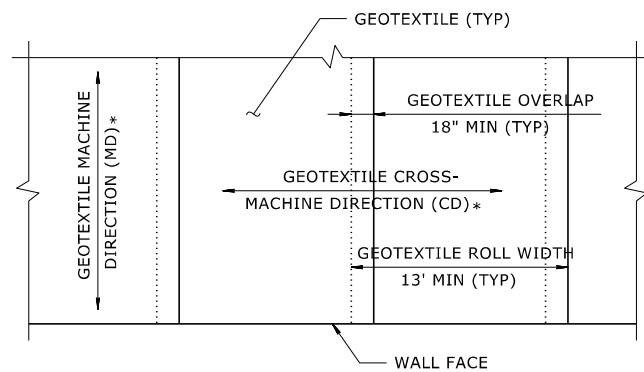
(FOR STANDARD TEMPORARY WALLS ON STRUCTURES, SEE TEMPORARY WALL ON STRUCTURE DETAIL ON SHEET 2.)
*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.



STANDARD TEMPORARY WALL - PARTIAL ELEVATION

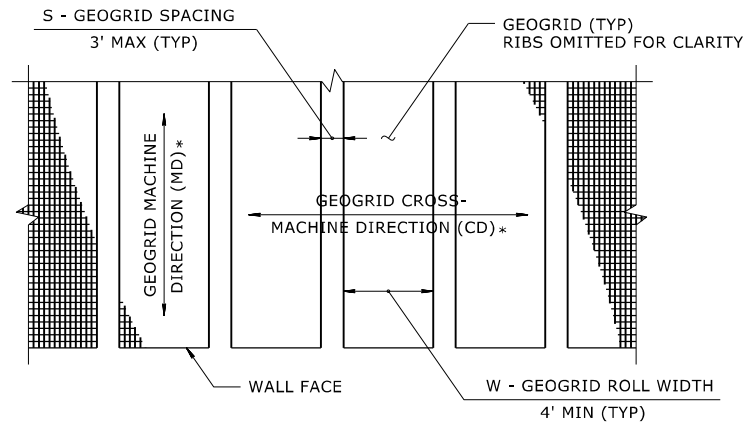
*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.

GEOTECHNICAL STANDARD DETAIL FOR
TEMPORARY WALL (SHEET 1 OF 3)



GEOTEXTILE PLACEMENT

(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)

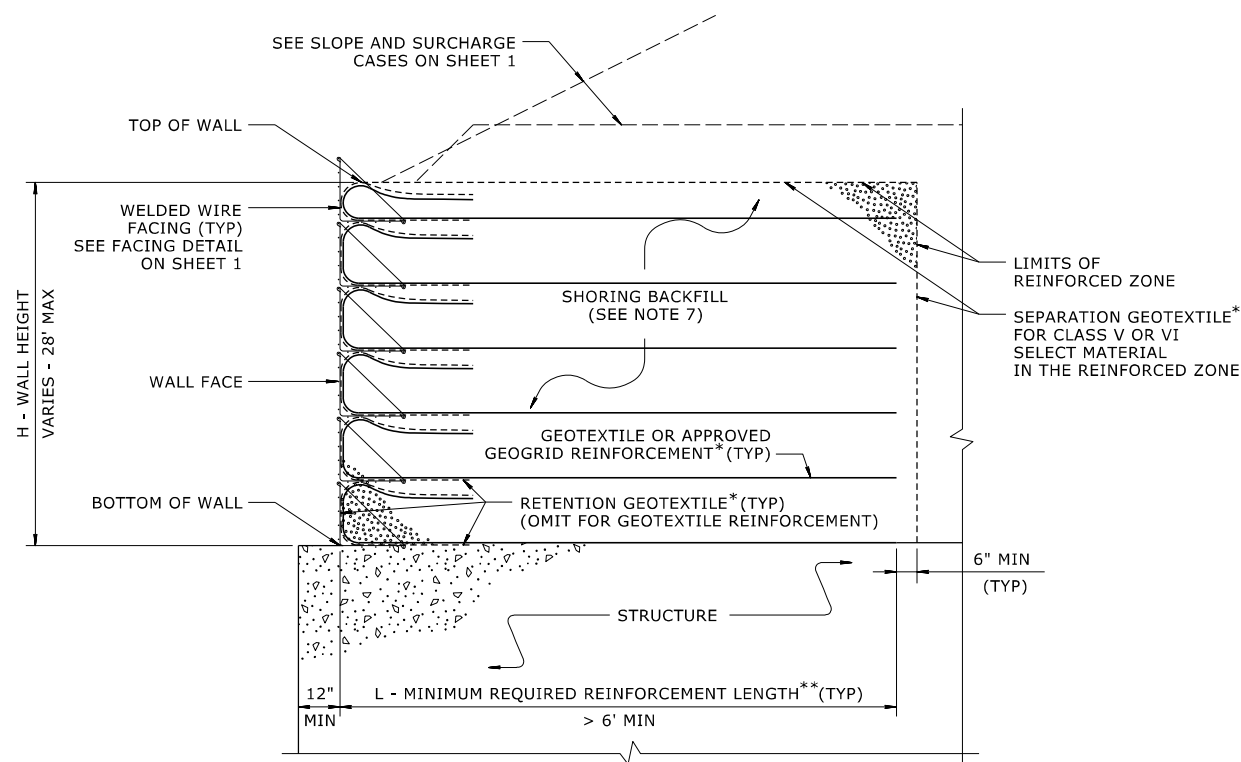


GEOGRID PLACEMENT

(80% COVERAGE MIN FOR GEOGRID REINFORCEMENT - $\frac{W}{W+S} \times 100 \geq 80\%$, SEE NOTE 11)

GEOSYNTHETIC PLACEMENT DETAILS

(PLAN VIEW)
*SEE NOTE 12.



TEMPORARY WALL ON STRUCTURE DETAIL

*SEE GEOSYNTHETIC PLACEMENT DETAILS.
**SEE REINFORCEMENT TABLES ON SHEET 3.

NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY WALLS AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY WALLS, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
UNIT WEIGHT, $\gamma = 120$ PCF
FRICTION ANGLE, $\phi = 30$ DEGREES
COHESION, $c = 0$ PSF
4. DO NOT USE STANDARD TEMPORARY WALLS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW TEMPORARY WALLS.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, ASSUME GROUNDWATER DEPTH IS LESS THAN 7' BELOW BOTTOM OF REINFORCED ZONE. DO NOT USE STANDARD TEMPORARY WALLS IF GROUNDWATER OR FLOOD ELEVATION IS ABOVE BOTTOM OF REINFORCED ZONE.
7. DO NOT USE A-2-4 SOIL FOR STANDARD TEMPORARY WALLS AROUND CULVERTS OR IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS FOR SLOPE CASES. DO NOT USE CLASS VI SELECT MATERIAL IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS WITH GEOTEXTILE REINFORCEMENT.
8. WALL EMBEDMENT IS NOT REQUIRED FOR STANDARD TEMPORARY WALLS ON STRUCTURES OR ROCK AS DETERMINED BY THE ENGINEER.
9. DO NOT USE MORE THAN 4 DIFFERENT REINFORCEMENT STRENGTHS FOR EACH STANDARD TEMPORARY WALL.
10. GEOGRIDS FOR GEOGRID REINFORCEMENT ARE APPROVED FOR SHORT TERM DESIGN STRENGTHS (3-YEAR DESIGN LIFE) IN THE MD AND CD BASED ON MATERIAL TYPE. THE LIST OF APPROVED GEOGRIDS WITH DESIGN STRENGTHS IS AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Products.aspx DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SHORING BACKFILL AS FOLLOWS:

MATERIAL TYPE	SHORING BACKFILL
BORROW	A-2-4 SOIL
FINE AGGREGATE	CLASS II, TYPE 1 OR CLASS III SELECT MATERIAL
COARSE AGGREGATE	CLASS V OR VI SELECT MATERIAL

11. FOR GEOGRID REINFORCEMENT WITH LESS THAN 100% COVERAGE, STAGGER REINFORCEMENT SO GEOGRIDS ARE CENTERED OVER GAPS IN THE REINFORCEMENT LAYER BELOW.
12. AT THE CONTRACTOR'S OPTION, REINFORCEMENT MAY BE INSTALLED WITH THE MD PARALLEL TO THE WALL FACE IF BOTH OF THE FOLLOWING CONDITIONS OCCUR:
- W (REINFORCEMENT ROLL WIDTH) > (MINIMUM REQUIRED REINFORCEMENT LENGTH) + 4.5' AND
- REINFORCEMENT STRENGTH IN CD > MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD.
13. SUBMIT A "STANDARD TEMPORARY WALL SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY WALL CONSTRUCTION. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
14. DO NOT PLACE SHORING BACKFILL OR REINFORCEMENT UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
15. FOR STANDARD TEMPORARY WALLS WITH PILE FOUNDATIONS IN THE REINFORCED ZONE, DRIVE PILES THROUGH REINFORCEMENT AFTER CONSTRUCTING TEMPORARY WALLS.
16. DO NOT SPLICE OR OVERLAP REINFORCEMENT SO SEAMS ARE PARALLEL TO THE WALL FACE.
17. CONTACT THE ENGINEER WHEN EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT.
18. FOR STANDARD TEMPORARY WALLS WITH INTERIOR ANGLES LESS THAN 90 DEGREES, WRAP GEOSYNTHETICS AT ACUTE CORNERS AS DIRECTED BY THE ENGINEER.
19. FOR STANDARD TEMPORARY WALLS WITH TOP OF WALL WITHIN 5' OF FINISHED GRADE, REMOVE TOP FACING AND INCORPORATE TOP REINFORCEMENT LAYER INTO FILL WHEN PLACING FILL IN FRONT OF WALL.

BP13.R026
- 2G-3
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT
GEOLOGICAL ENGINEER
SEAL 039779
JEREMY R. HANN
9/9/2025
UNLESS ALL SIGNATURES COMPLETED
STANDARD DETAIL NO. 1801.02

GEOTECHNICAL STANDARD DETAIL FOR
TEMPORARY WALL (SHEET 2 OF 3)

SLOPE OR SURCHARGE CASE	GROUNDWATER DEPTH BELOW BOTTOM OF REINFORCED ZONE (SEE NOTE 6 ON SHEET 2) (FT)	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)	H - WALL HEIGHT (FT)																									
			< 4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
SLOPE CASE	> 0	CLASS II, TYPE 1, CLASS III, CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	8	9	11	12	13	13	14	15	16	17	18	19	20	21	22	23	24	24	25	26	27	27	
SURCHARGE CASE	> 0 TO 7 FOR H < 20' > 0 TO 10 FOR H > 20'	ALL SHORING BACKFILL TYPES	6	7	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	17	17	18	19	19	20	21	22	
		A-2-4 SOIL	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16	17	18	18	19	20	20	21	
		CLASS II, TYPE 1 OR CLASS III SELECT MATERIAL	6	6	7	7	8	8	9	10	10	11	11	12	12	13	14	15	15	16	16	17	17	18	18	19	20	
	> 7 FOR H < 20' > 10 FOR H > 20'	CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	7	7	8	8	9	9	10	10	11	12	13	13	14	14	15	15	16	17	17	18	19	19	

L - MINIMUM REQUIRED REINFORCEMENT LENGTH (FT)
(FOR ALL REINFORCEMENT TYPES)

WALL HEIGHT (H) + WALL EMBEDMENT (FT)	NUMBER OF REINFORCEMENT LAYERS*
2.5 - 4	3
4 - 5.5	4
5.5 - 7	5
7 - 8.5	6
8.5 - 10	7
10 - 11.5	8
11.5 - 13	9
13 - 14.5	10
14.5 - 16	11
16 - 17.5	12
17.5 - 19	13
19 - 20.5	14
20.5 - 22	15
22 - 23.5	16
23.5 - 25	17
25 - 26.5	18
26.5 - 28	19
28 - 29.5	20

*BASED ON VERTICAL REINFORCEMENT SPACING SHOWN ON SHEET 1.

REINFORCEMENT LAYER NUMBER *	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II, TYPE 1 OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL	A-2-4 SOIL	CLASS II, TYPE 1 OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL
1	2400	2400	2400	2400	2400
2	2400	2400	2400	2400	2400
3	2400	2400	2400	2400	2400
4	2400	2400	2500	2400	2400
5	2500	2400	3000	2400	2400
6	3000	2400	3500	2800	2400
7	3500	2700	4000	3200	2600
8	4000	3100	4500	3600	2900
9	4500	3500	5000	4000	3200
10	5000	3900	5500	4400	3500
11	5500	4300	6000	4800	3800
12	6000	4700	6500	5200	4100
13	6500	5100	7000	5600	4400
14	7000	5400	7500	6000	4700
15	7500	5800	8000	6400	5000
16	8000	6200	8500	6800	5300
17	8500	6600	9000	7200	5600
18	9000	7000	9500	7600	5900
19	9500	7400	10000	8000	6200
20	10000	7800	10500	8400	6500



**GEOTEXTILE REINFORCEMENT
ULTIMATE TENSILE STRENGTH (LB/FT)**

REINFORCEMENT LAYER NUMBER *	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II, TYPE 1 OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL	A-2-4 SOIL	CLASS II, TYPE 1 OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL
1	240	200	340	290	240
2	380	310	520	430	350
3	530	420	700	570	460
4	690	550	870	720	570
5	860	690	1050	860	680
6	1030	830	1220	1000	790
7	1200	970	1400	1150	900
8	1370	1110	1580	1290	1010
9	1550	1240	1750	1430	1120
10	1720	1380	1930	1580	1230
11	1890	1520	2100	1720	1340
12	2060	1660	2280	1860	1450
13	2240	1800	2450	2010	1560
14	2410	1940	2630	2150	1670
15	2580	2080	2800	2290	1780
16	2750	2220	2980	2440	1890
17	2930	2360	3160	2580	2000
18	3100	2500	3330	2720	2110
19	3270	2640	3510	2860	2220
20	3440	2780	3690	3000	2330

**GEOGRID REINFORCEMENT
SHORT-TERM DESIGN STRENGTH (LB/FT)**

MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD

(SEE NOTE 9 ON SHEET 2.)
*SEE PARTIAL ELEVATION ON SHEET 1 FOR REINFORCEMENT LAYER NUMBERING.

BP13.R026
- 2G-4
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT
GEOTECHNICAL ENGINEER

9/9/2025
UNLESS ALL SIGNATURES COMPLETED
STANDARD DETAIL NO. 1801.02

GEOTECHNICAL STANDARD DETAIL FOR
TEMPORARY WALL (SHEET 3 OF 3)

COMPUTED BY: CLAYTON ELLIOTT, PG DATE: 07/31/2025
 CHECKED BY: SHANE C. CLARK, PE DATE: 07/31/25

(9-17-24)

PROJECT NO.
BP13.R026

SHEET NO.
3G-1

**STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS**

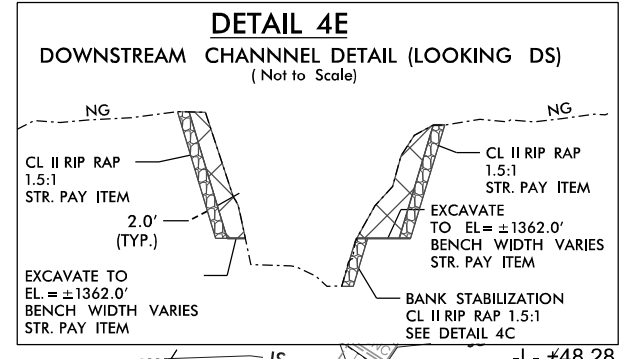
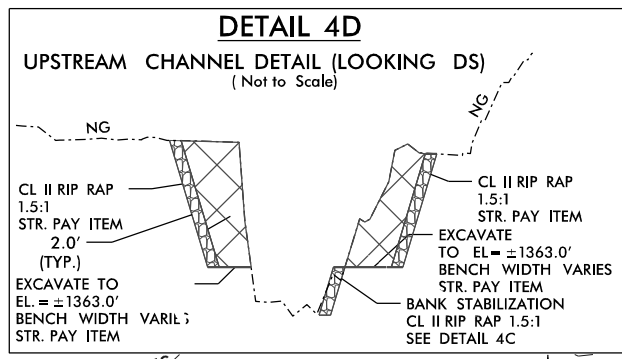
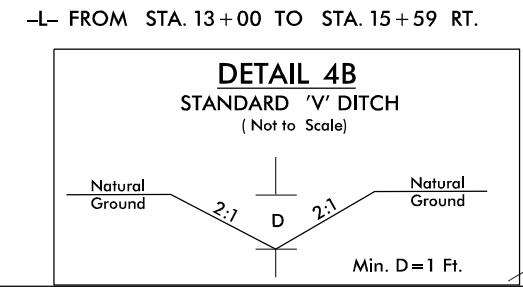
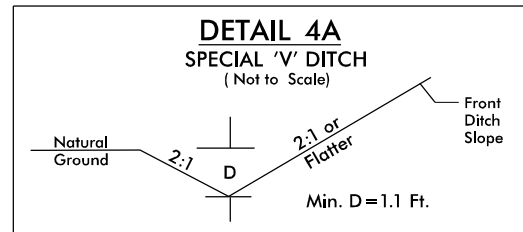
SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				SD	100
				TOTAL LF:	100

*UD = Underdrain

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

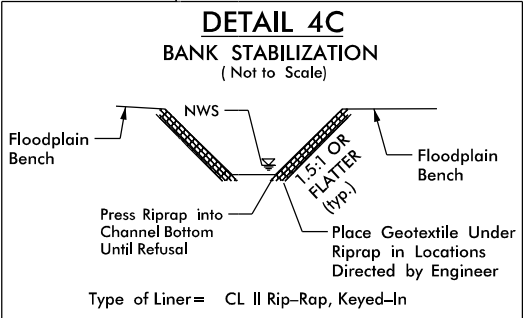
LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Subgrade Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			ASU 1		50	100	150		
					TOTAL CY/TONS/SY:	50	100**	150**	0



-L- FROM STA. 13+00 TO STA. 15+59 RT.
-L- FROM STA. 17+31, 19' RT, EL=1366.32 TO STA. 17+55, 23' RT, EL=1363.64, L=23', S=11.65%, DDE=10 CY
-L- FROM STA. 17+55, 23' RT, EL=1363.64 TO STA. 17+55, 51' RT, EL=1363.79, L=28', S=0.54%, DDE=15 CY

NOTE: CARE TO BE TAKEN AROUND EXISTING 24" RCP WHEN INSTALLING DITCH AND GUARDRAIL

DECK DRAINS REQUIRED
8" X 4" SLOTS ON 3' CENTERS FROM STA. 15+66 TO STA. 15+72 RT. ± FROM STA. 16+06 TO STA. 16+12 RT. ±



FROM -L- STA. 15+65 RT. TO STA. 15+96 LT. EST. 49 TONS, 68 SY GEOTEXTILE
FROM -L- STA. 15+84 RT. TO STA. 16+08 LT. EST. 25 TONS, 41 SY GEOTEXTILE

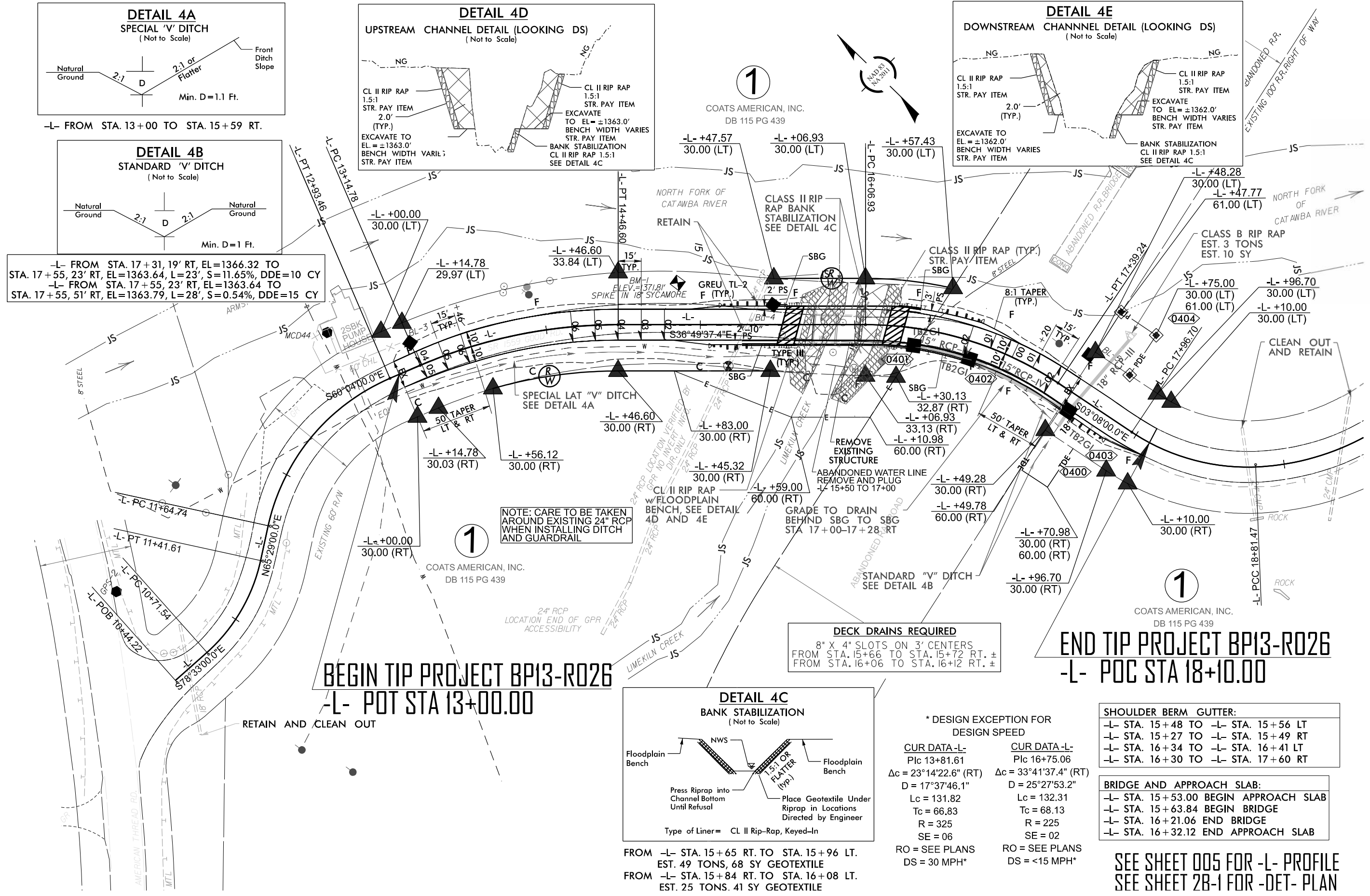
* DESIGN EXCEPTION FOR DESIGN SPEED

CUR DATA -L-	CUR DATA -R-
Pic 13+81.61	Pic 16+75.06
Δc = 23°14'22.6" (RT)	Δc = 33°41'37.4" (RT)
D = 17°37'46.1"	D = 25°27'53.2"
Lc = 131.82	Lc = 132.31
Tc = 66.83	Tc = 68.13
R = 325	R = 225
SE = 06	SE = 02
RO = SEE PLANS	RO = SEE PLANS
DS = 30 MPH*	DS = <15 MPH*

SHOULDER BERM GUTTER:
-L- STA. 15+48 TO -L- STA. 15+56 LT
-L- STA. 15+27 TO -L- STA. 15+49 RT
-L- STA. 16+34 TO -L- STA. 16+41 LT
-L- STA. 16+30 TO -L- STA. 17+60 RT

BRIDGE AND APPROACH SLAB:
-L- STA. 15+53.00 BEGIN APPROACH SLAB
-L- STA. 15+63.84 BEGIN BRIDGE
-L- STA. 16+21.06 END BRIDGE
-L- STA. 16+32.12 END APPROACH SLAB

SEE SHEET 005 FOR -L- PROFILE
SEE SHEET 2B-1 FOR -DET- PLAN



BEGIN TIP PROJECT BP13-R026
-L- POT STA 13+00.00

END TIP PROJECT BP13-R026
-L- POC STA 18+10.00

REVISIONS

BP13-R026
005

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
McDOWELL COUNTY

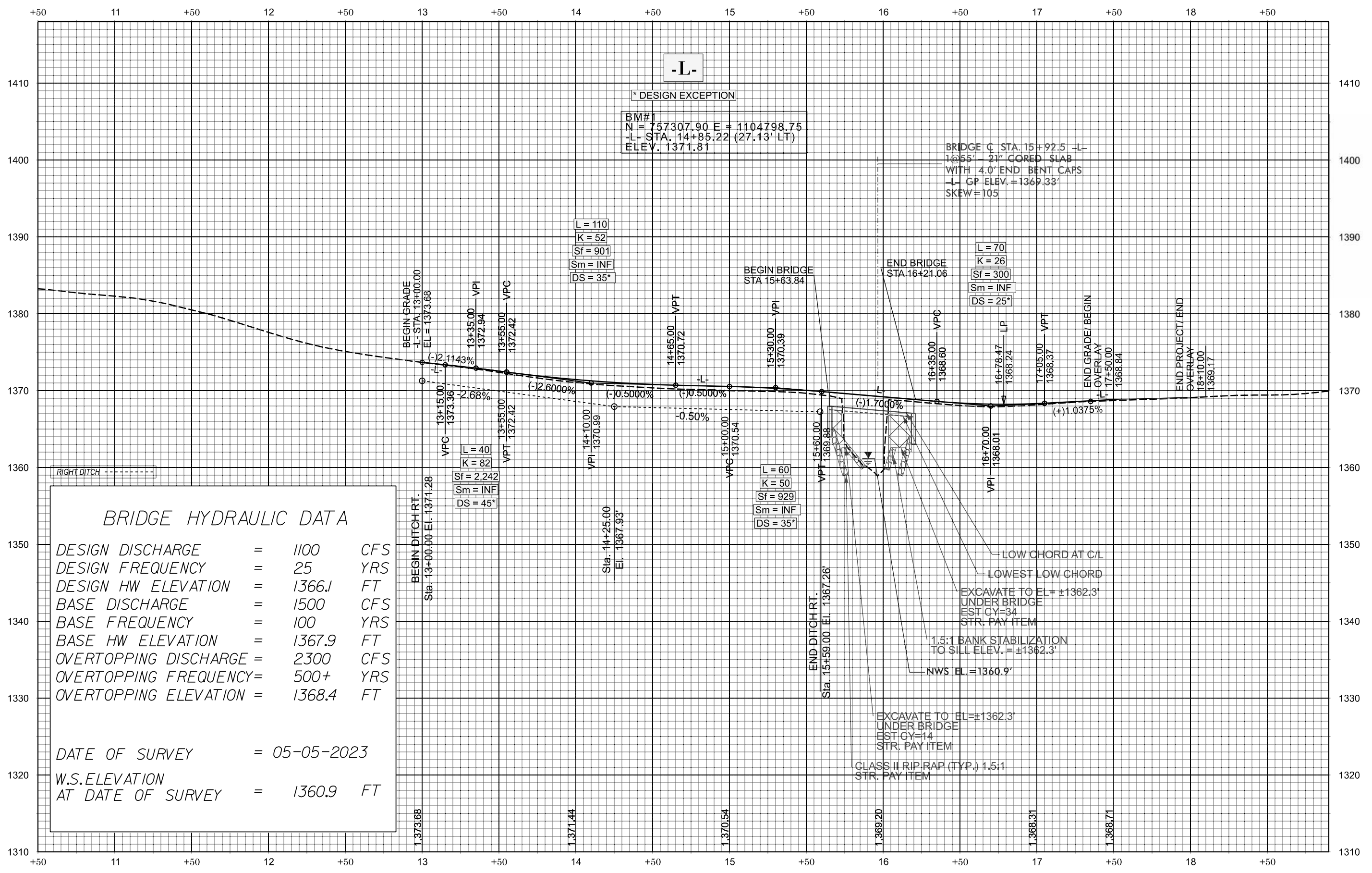
ROADWAY DESIGN UNIT
ROADWAY DESIGN ENGINEER

PROFESSIONAL SEAL
041453
M. Travis Potts
9/9/2025

PROFESSIONAL SEAL
021162
Herb Turner
9/9/2025

ms consultants, inc.
5444 Wade Park Blvd.
Suite 100
Raleigh, NC 27607
NC License Number: C-3239

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	1100	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	1366.1	FT
BASE DISCHARGE	=	1500	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	1367.9	FT
OVERTOPPING DISCHARGE	=	2300	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	1368.4	FT

DATE OF SURVEY	=	05-05-2023
W.S.ELEVATION AT DATE OF SURVEY	=	1360.9 FT

REVISIONS

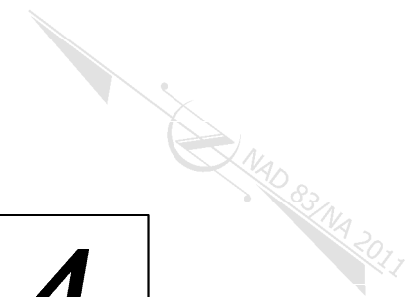
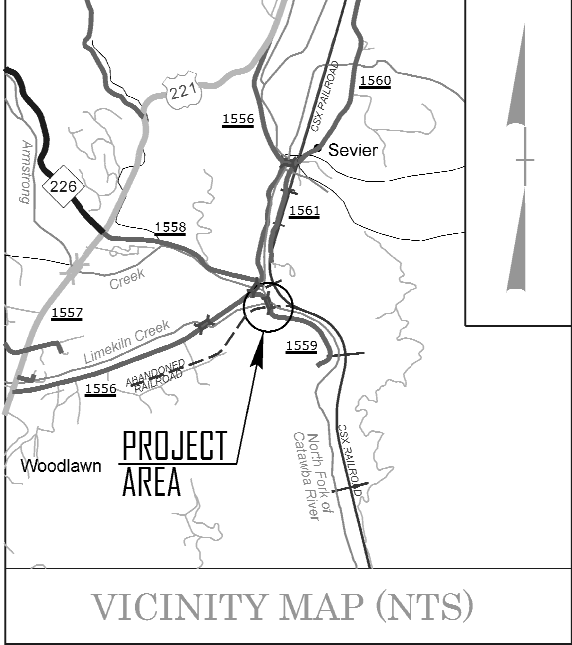
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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP13-R026	RW01	4

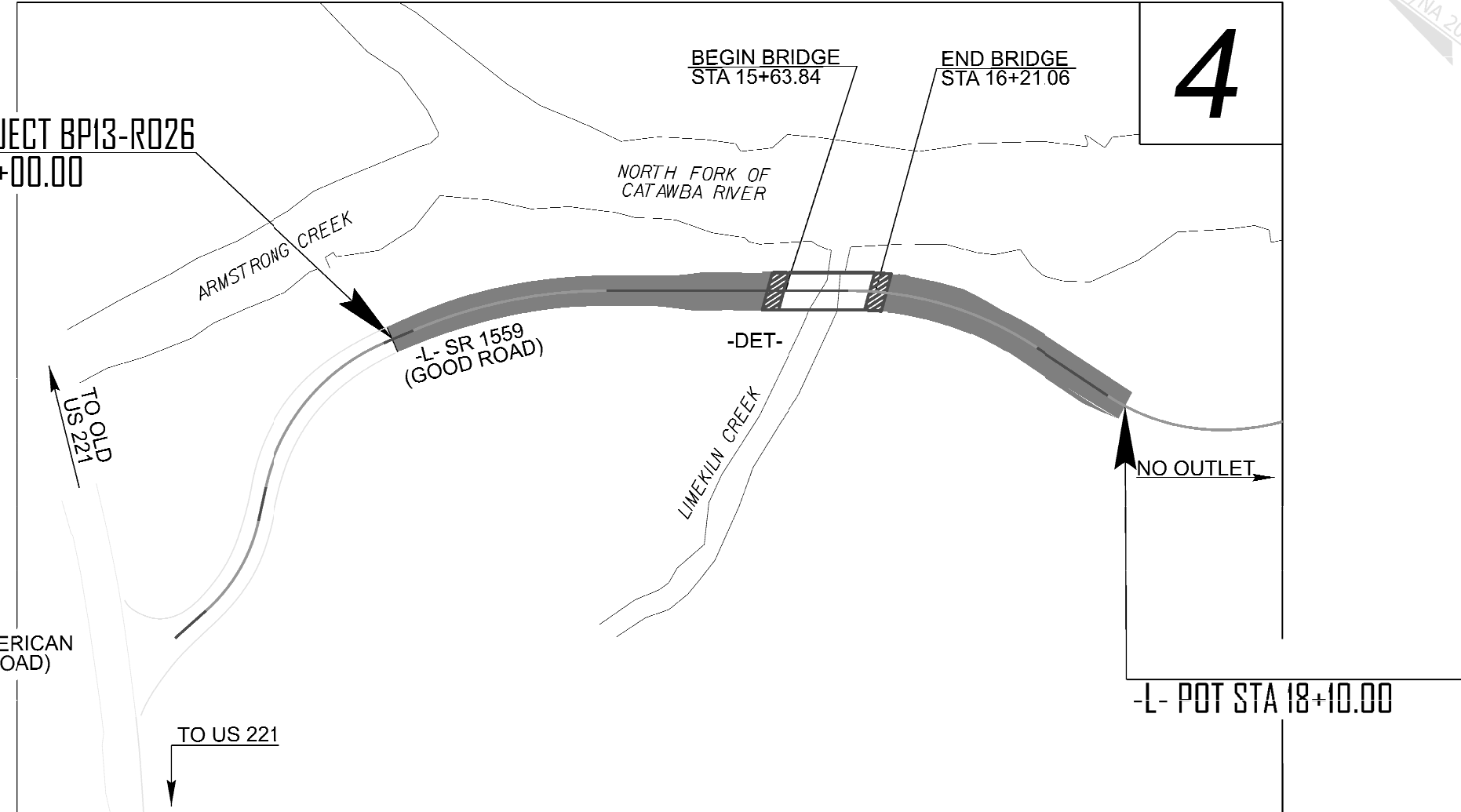
STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

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

MCDOWELL COUNTY

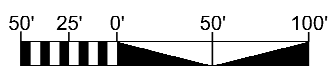


BEGIN TIP PROJECT BP13-R026
-L- POT STA 13+00.00



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT GPS-2 WITH NAD 83 / NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 757479.019 EASTING: 1104420.486 ELEVATION: 1374.76

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999855972

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

Prepared in the Office of:



JOHNSON, MIRMIRAN, & THOMPSON, INC.
1318-F Patton Avenue
Asheville NC, 28806

2021 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
APRIL 28, 2025

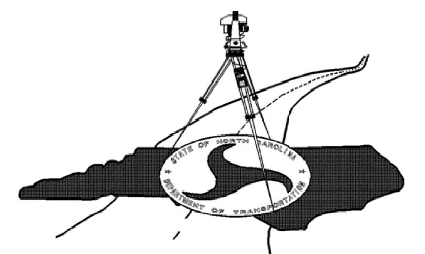
LETTING DATE:
OCTOBER 15, 2025

PROFESSIONAL LAND SURVEYOR



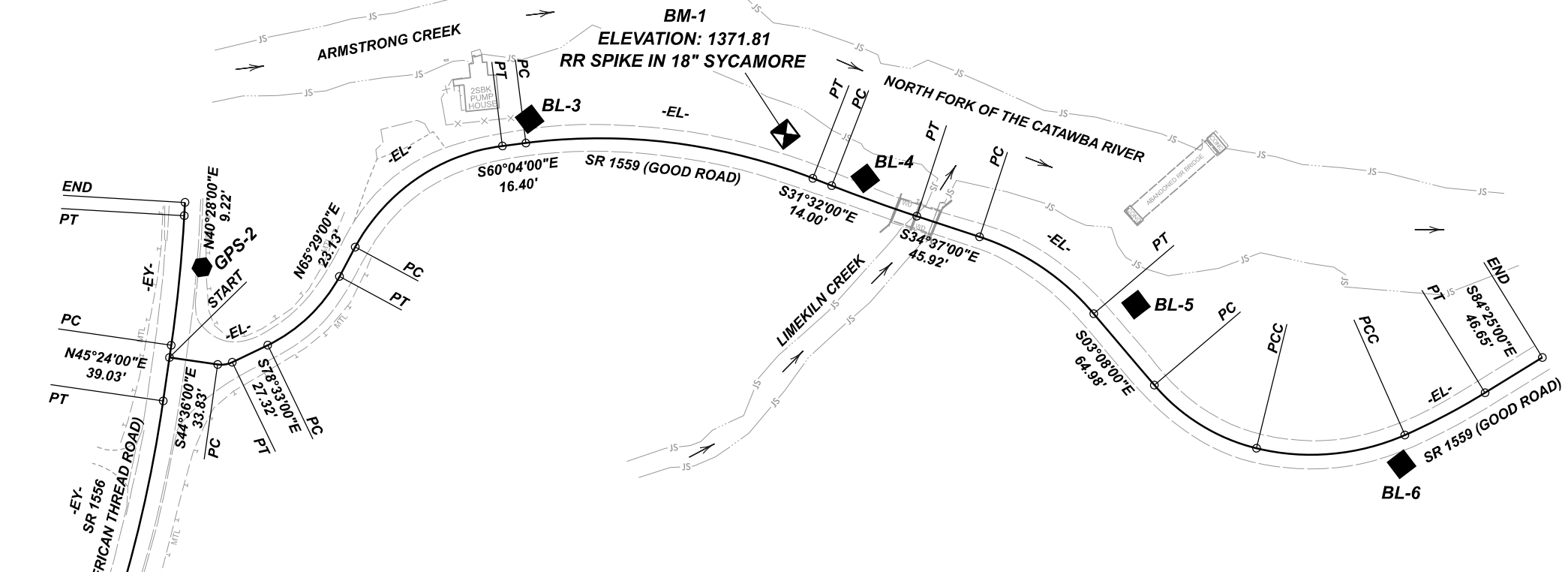
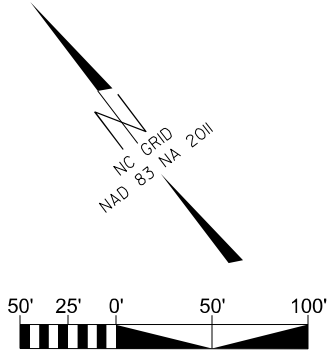
Signed by:
Mark A. Parris
F1570CE85C7248A...
SIGNATURE

6/24/25
DATE



PRIMARY / SECONDARY SURVEY CONTROL SHEET

WITH EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION



GPS-1

BP13R026 - EL CONTROL TABLE									
POINT	NORTHING	EASTING	BEARING	DISTANCE	DELTA	DEGREE CURVE	LENGTH	TANGENT	RADIUS
START	757442.8308	1104364.5835							
LINE			S44°36'00.0"E	33.83					
PC	757418.7398	1104388.3405							
CURVE					33°57'00.0" Left	327°01'02.1"	10.38	5.35	17.52
PT	757413.8700	1104397.3376							
LINE			S78°33'00.0"E	27.32					
PC	757408.4461	1104424.1163							
CURVE					35°58'00.0" Left	51°19'44.0"	70.07	36.23	111.62
PT	757416.2886	1104492.5949							
LINE			N65°29'00.0"E	23.13					
PC	757425.8873	1104513.6410							
CURVE					54°27'00.0" Right	42°18'02.2"	128.72	69.69	135.45
PT	757420.0313	1104637.4346							
LINE			S60°04'00.0"E	16.40					
PC	757411.8471	1104651.6482							
CURVE					28°32'00.0" Right	14°04'04.2"	202.83	103.56	407.28
PT	757271.9001	1104795.5589							
LINE			S31°32'00.0"E	14.00					
PC	757259.9661	1104802.8816							
CURVE					03°05'00.0" Left	04°54'40.0"	62.78	31.40	1166.66
PT	757207.3632	1104837.1403							
LINE			S34°37'00.0"E	45.92					
PC	757169.5753	1104863.2247							
CURVE					31°29'00.0" Right	32°32'19.5"	96.76	49.63	176.08
PT	757079.1892	1104894.1335							
LINE			S03°08'00.0"E	64.98					
PC	757014.2821	1104897.6856							
CURVE					35°58'35.6" Left	42°26'28.7"	84.77	43.83	135.00
PCC	756936.5019	1104927.7322							
CURVE					37°35'41.7" Left	35°42'36.9"	105.28	54.61	160.45
PCC	756881.5669	1105015.3309							
CURVE					07°42'42.7" Left	12°14'53.0"	62.96	31.53	467.80
PT	756871.2485	1105077.3955							
LINE			S84°25'00.0"E	46.65					
END	756866.7094	1105123.8279							

BP13R026 - EY CONTROL TABLE									
POINT	NORTHING	EASTING	BEARING	DISTANCE	DELTA	DEGREE CURVE	LENGTH	TANGENT	RADIUS
START	757313.2385	1104211.4965							
LINE			N55°11'00.0"E	8.25					
PC	757317.9491	1104218.2699							
CURVE					09°47'00.0" Left	06°01'52.1"	162.21	81.30	950.00
PT	757421.4583	1104342.9105							
LINE			N45°24'00.0"E	39.03					
PC	757448.8618	1104370.6993							
CURVE					04°56'00.0" Left	05°27'24.3"	90.41	45.23	1050.00
PT	757515.0333	1104432.2614							
LINE			N40°28'00.0"E	9.23					
END	757522.0515	1104438.2485							

BP13R026 - PRIMARY SURVEY CONTROL TABLE				
Monument	Northing	Easting	Elevation	Description
GPS-1	757186.8770	1104057.5980	1379.99	REBAR & METAL CAP
GPS-2	757479.0197	1104420.4861	1383.99	REBAR & METAL CAP

BP13R026 - SECONDARY SURVEY CONTROL TABLE				
Monument	Northing	Easting	Elevation	Description
BL-3	757423.4180	1104663.6880	1373.67	REBAR & METAL CAP
BL-4	757249.9100	1104824.4150	1369.39	REBAR & METAL CAP
BL-5	757066.4430	1104921.2340	1367.48	REBAR & METAL CAP
BL-6	756866.8340	1105001.1170	1372.06	REBAR & METAL CAP

BP13R026 - BENCHMARK CONTROL TABLE			
Benchmark	Northing	Easting	Description
BM-1	757307.9020	1104798.7500	RR SPIKE IN 18" SYCAMORE

NOTES:

1. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

I, MARK A. PARRIS, PLS, CERTIFY THAT THE PRIMARY PROJECT CONTROL WAS PERFORMED UNDER MY SUPERVISION FROM AN ACTUAL GPS SURVEY MADE UNDER MY SUPERVISION AND THE FOLLOWING INFORMATION WAS USED TO PERFORM THE SURVEY:

CLASS OF SURVEY: AA
 TYPE OF GPS FIELD PROCEDURE: RTN
 DATES OF SURVEY: 11/18/2022 - 11/19/2022
 DATUM/EPOCH: NAD 83 / NA 2011
 PUBLISHED/FIXED-CONTROL USE: PROJECT CONTROL
 LOCALIZED AROUND: GPS-2
 NORTHING: 757479.0197
 EASTING: 1104420.4861
 NAVD 88 ELEVATION: 1383.99
 COMBINED GRID FACTOR: 0.999855972
 GEOID MODEL: GEOID 18
 UNITS: US SURVEY FEET

I ALSO DO HEREBY CERTIFY THAT THE SECONDARY BASELINE CONTROL FOR THIS PROJECT WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION UTILIZING PRIMARY GPS CONTROL SET BY OTHERS; THAT ALL HORIZONTAL CLOSURES HAD A MINIMUM RATIO OF PRECISION OF 1:20,000 (CLASS AA) AND VERTICAL ACCURACY TO 1:10,000 (CLASS A). FIELD WORK WAS PERFORMED DURING THE MONTH OF NOVEMBER IN THE YEAR 2022, AND ALL COORDINATES ARE BASED ON NAD 83 / NA 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 9TH DAY OF JUNE, 2025.

DocuSigned by:

 F150C288C7248A
 PROFESSIONAL LAND SURVEYOR L-4529



BP13R026
 R/W 02C-1
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED
 2024 STANDARD SPECIFICATIONS

TIP PROJECT: BP13R026
 County: McDowell

PREPARED FOR

LOCATION AND SURVEYS UNIT

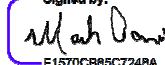
PREPARED BY



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.

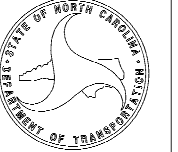
THIS 2nd DAY OF JUNE, 2025.

Signed by:

 F1570CB85C7248A...
 PROFESSIONAL LAND SURVEYOR L-4529

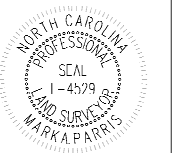
BP13-R026

R/W 020-1

NORTH CAROLINA
 DEPARTMENT
 OF TRANSPORTATION



PROFESSIONAL LAND
 SURVEYOR



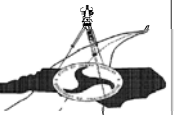
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 FINAL UNLESS ALL SIGNATURES
 ARE COMPLETED
 2024 STANDARD
 SPECIFICATIONS

PROPOSED ALIGNMENT: L

POINT	STATION	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R	LT	ST
START	10+44.22	757413.8700	1104397.3376	S78°33'00"E	27.32							
PC	10+71.54	757408.4461	1104424.1163	N83°28'00"E	68.93			70.07	36.23	111.62		
PT	11+41.61	757416.2886	1104492.5949	N65°29'00"E	23.13							
PC	11+64.74	757425.8873	1104513.6410	S87°17'30"E	123.93			128.72	69.69	135.45		
PT	12+93.46	757420.0313	1104637.4346	S60°04'00"E	21.32							
PC	13+14.78	757409.3937	1104655.9091	S48°26'49"E	130.92			131.82	66.83	325		
PT	14+46.60	757322.5520	1104753.8825	S36°49'37"E	160.33							
PC	16+06.93	757194.2190	1104849.9823	S19°58'49"E	130.42			132.31	68.13	225		
PT	17+39.24	757071.6522	1104894.5450	S03°08'00"E	57.46							
PC	17+96.70	757014.2821	1104897.6856	S21°07'18"E	83.38			84.77	43.83	135		
PCC	18+81.47	756936.5018	1104927.7322	S57°54'26"E	103.4			105.28	54.61	160.45		
PCC	19+86.75	756881.5669	1105015.3310	S80°33'39"E	62.92			62.96	31.53	467.8		
PT	20+49.71	756871.2485	1105077.3955	S84°25'00"E	46.65							
END	20+96.36	756866.7094	1105123.8279									

TIP PROJECT: BP13-R026
 County: McDowell

PREPARED FOR



LOCATION AND
 SURVEYS UNIT

PREPARED BY



NOTES:

1. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

RIGHT OF WAY CONTROL SHEET

PERMANENT ROW MARKER IRON PIN AND CAP: L				
Northing	Easting	Alignment	Station	Offset
757442.7674	1104658.0697	L	13+00.00	-30.0000
757390.7710	1104628.1302	L	13+00.00	30.0000
757435.3679	1104670.8651	L	13+14.78	-29.9724
757383.3677	1104640.9234	L	13+14.78	30.0320
757362.6582	1104672.1786	L	13+56.12	30.0000
757342.8370	1104780.9713	L	14+46.60	-33.8420
757304.5700	1104729.8690	L	14+46.60	30.0000
757225.5533	1104789.0392	L	15+45.32	30.0000
757259.7184	1104838.4133	L	15+47.57	-30.0000
757212.2011	1104873.9958	L	16+06.93	-30.0000
757174.3631	1104823.4664	L	16+06.93	33.1263
757158.0754	1104834.7096	L	16+30.13	32.8691
757162.9428	1104902.8928	L	16+57.43	-30.0000
757064.2662	1104924.9943	L	17+48.28	-30.0000
757059.9920	1104865.1384	L	17+49.28	30.0000
757012.6423	1104867.7304	L	17+96.70	30.0000
757015.9219	1104927.6407	L	17+96.70	-30.0000
756996.4817	1104869.4163	L	18+10.00	30.0000
757005.6379	1104928.7135	L	18+10.00	-30.0000

NOT SET FALLS IN ROCK
 NOT SET FALLS IN RIVER
 NOT SET FALLS IN ROCK

PERMANENT EASEMENT IRON PIN AND CAP: L					
Northing	Easting	Alignment	Start Station	Start Offset	LOC
757066.4739	1104955.9198	L	17+47.77	-61.0000	LT
757037.5910	1104926.4551	L	17+75.00	-30.0006	LT
757039.2845	1104957.4082	L	17+75.00	-61.0000	LT

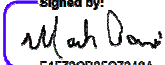
NOT SET FALLS IN RIVER

NOTES:

1. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

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.

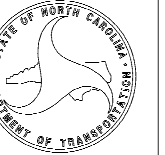
THIS 2nd DAY OF JUNE, 2025.

Signed by:

 F1570CB95C7248A
 PROFESSIONAL LAND SURVEYOR L-4529

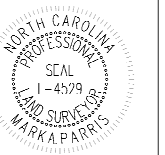
BP13-R026

R/W 02E-1

NORTH CAROLINA
 DEPARTMENT
 OF TRANSPORTATION



PROFESSIONAL LAND
 SURVEYOR



DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL SIGNATURES
 ARE COMPLETED
 2024 STANDARD
 SPECIFICATIONS

TIP PROJECT: BP13-R026
 County: McDowell

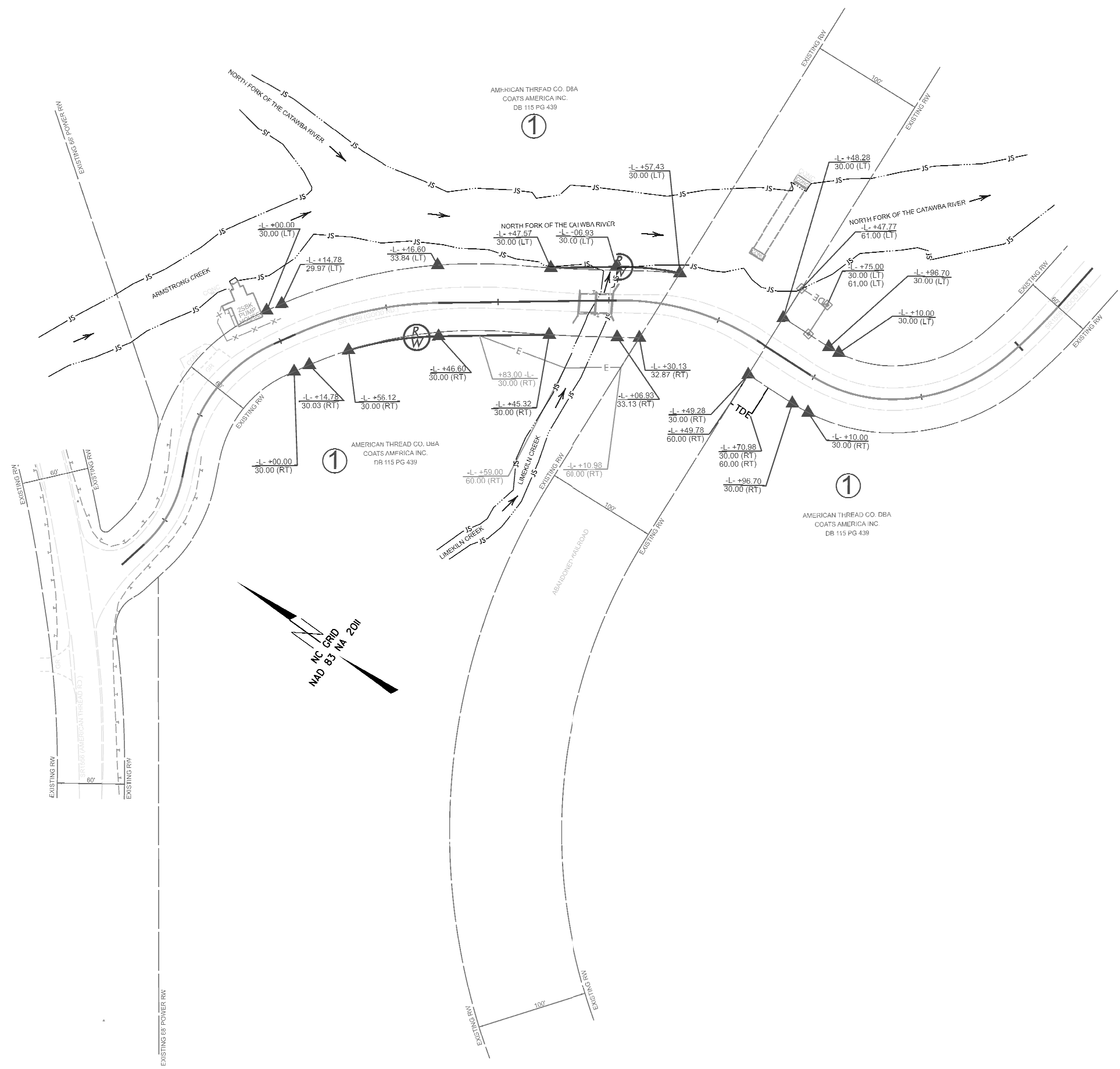
PREPARED FOR



LOCATION AND
 SURVEYS UNIT


PREPARED BY





I, MARK A. PARRIS, PLS, 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 3/27/25 TO 3/31/25, AND ALL COORDINATES ARE BASED ON NAD83/NA 2011; THAT THIS SURVEY WAS PERFORMED TO MEET THE REQUIREMENTS OF 21NCAC 56.1600 AS APPLICABLE.

THIS 2nd DAY OF JUNE, 2025.

Signed by:

 E1670C885C7248A

PROFESSIONAL LAND SURVEYOR L-4529



BP13-R026
 R/W 04



PROFESSIONAL LAND SURVEYOR

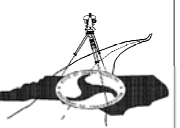


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2024 STANDARD SPECIFICATIONS

TIP PROJECT: BP13-R026
 County: McDowell

PREPARED FOR



LOCATION AND SURVEYS UNIT

PREPARED BY

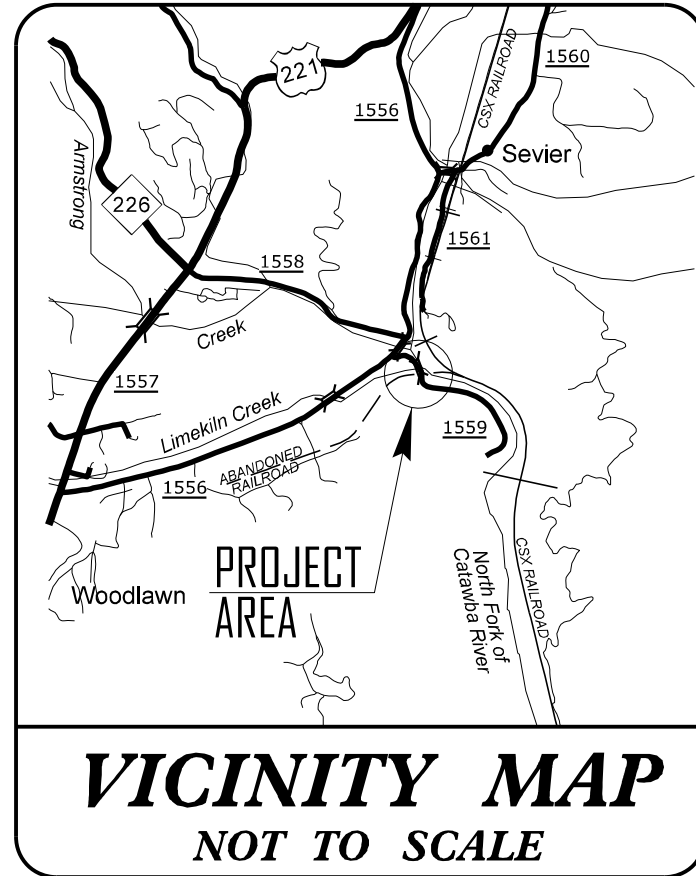
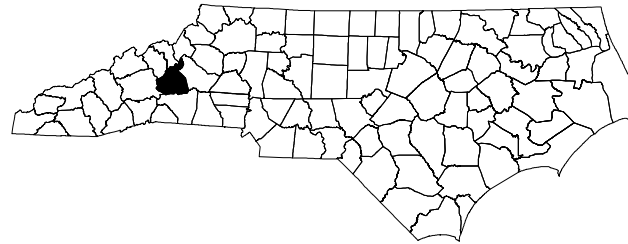


NOTES:

- IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN
MCDOWELL COUNTY



SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND
TMP-2	GENERAL NOTES
TMP-2A	PHASING
TMP-3	PHASE I DETAIL
TMP-4	PHASE II DETAIL
TMP-5	PHASE III DETAIL
TMP-6	GEOTECHNICAL NOTES

SHEET NO.
TMP-1

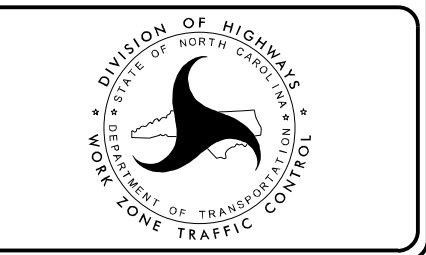
TIP PROJECT:
BP13R026

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PLANS PREPARED BY:
 TYSON GRAVES, PE
 CASSIDY MENGELKAMP, EI

NCDOT CONTACT:
 ZACHARY CLARK, PE
 PROJECT MANAGER



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UNLESS ALL SIGNATURES COMPLETED

APPROVED: *Tyson Graves*
 DATE: 09-11-2025

SEAL
 94C02A344CD34E6...
 NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 021080 TYSON A. GRAVES

TIP PROJECT:
BP13R026

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:

<u>STD. NO.</u>	<u>TITLE</u>
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.02	PORTABLE WORK ZONE SIGNS
1135.01	CONES
1150.01	FLAGGERS
1160.01	TEMPORARY CRASH CUSHION
1170.01	PORTABLE CONCRETE BARRIER

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- PORTABLE CONCRETE BARRIER
- WORK AREA
- REMOVAL AREA

SIGNALS

- P
 - O
 - R
 - T
- PORTABLE

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TRAFFIC CONTROL DEVICES

- CONE
- DRUM
- TEMPORARY CRASH CUSHION
- PORTABLE CONCRETE BARRIER

TEMPORARY SIGNING

- STATIONARY SIGN

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APPROVED: DATE: 09-11-2025 SEAL	DocuSigned by: 	
ROADWAY STANDARD DRAWINGS & LEGEND		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

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.

- 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.

WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 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.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

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

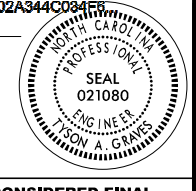
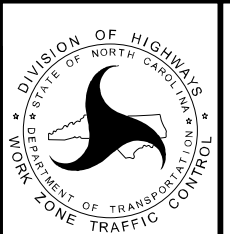
TRAFFIC CONTROL DEVICES

- I) 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.

9/11/2025 pwr/ncdot-pw.bentley.com:ncdot-pw-01/Documents/Division_13/13BP13.R026/Work Zone Traffic Control/13R026-TC-TMP-STAGING 1A User:jgraves



ms consultants, inc.
5444 Wake Park Blvd.
Suite 160
Raleigh, NC 27607
NC License Number : C-3239

<p>DocuSigned by: <i>Lynna Adams</i> 94C02A344C034F5</p> <p>APPROVED: _____ DATE: 09-11-2025</p> <p style="text-align: center;">SEAL</p>			<h1 style="margin: 0;">GENERAL NOTES</h1>
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>			

PHASING

PRIOR TO BEGINNING WORK, INSTALL ADVANCE WARNING SIGNS ACCORDING TO ROADWAY STANDARD DRAWING 1101.03 SHEET 3 OF 3.

PHASE I

STEP 1 - USING ROADWAY STANDARD DRAWING (RSD) 1101.02 SHEET 1 OF 19, INSTALL TEMPORARY SIGNAL AND PORTABLE CONCRETE BARRIER (PCB) AS SHOWN ON SHEET TMP-3 (SEE ALSO RSD 1101.02 SHEET 17 OF 19), PLACING TRAFFIC IN A TWO-WAY, ONE-LANE TRAFFIC PATTERN.

STEP 2 - CONSTRUCT TEMPORARY DETOUR BRIDGE AND APPROACHES UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT.

PHASE II

STEP 1 - USING RSD 1101.02 SHEET 1 OF 19, INSTALL TEMPORARY SIGNAL AS SHOWN ON SHEET TMP-4(SEE ALSO RSD 1101.02 SHEET 17 OF 19), PLACING TRAFFIC INTO A TWO-WAY, ONE-LANE TRAFFIC PATTERN ON THE TEMPORARY DETOUR BRIDGE.

STEP 2 - RESET PCB, REMOVE EXISTING BRIDGE, AND CONSTRUCT PARTIAL PROPOSED BRIDGE.

PHASE III

STEP 1 - USING RSD 1101.02 SHEET 1 OF 19, INSTALL TEMPORARY SIGNAL AS SHOWN ON SHEET TMP-4(SEE ALSO RSD 1101.02 SHEET 17 OF 19), PLACING TRAFFIC INTO A TWO-WAY, ONE-LANE TRAFFIC PATTERN ON THE PROPOSED BRIDGE.

STEP 2 - CONSTRUCT REMAINDER OF PROPOSED BRIDGE, AND REMOVE TEMPORARY BRIDGE ALONG THE SOUTHBOUND LANE AND SHOULDER.

PHASE IV

STEP 1 - AS NECESSARY, CLOSE SHOULDER USING RSD 1101.04, SHEET 1 OF 2.

STEP 2 - USING RSD 1101.02 SHEET 1 OF 19, PAVE UP THROUGH THE FINAL LAYER OF SURFACE COURSE, AND PLACE FINAL PAVEMENT MARKINGS.

STEP 3 - REMOVE TEMPORARY TRAFFIC CONTROL DEVICES AND OPEN TO FINAL TRAFFIC PATTERN.

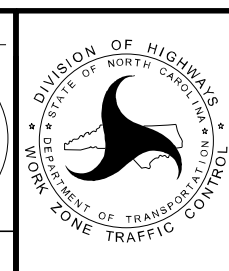
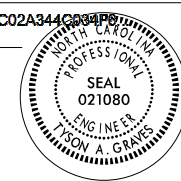
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ms consultants, inc.
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 Suite 160
 Raleigh, NC 27607
 NC License Number : C-3239

DocuSigned by:

APPROVED: *Lyon Graves*
 DATE: 09-11-2025
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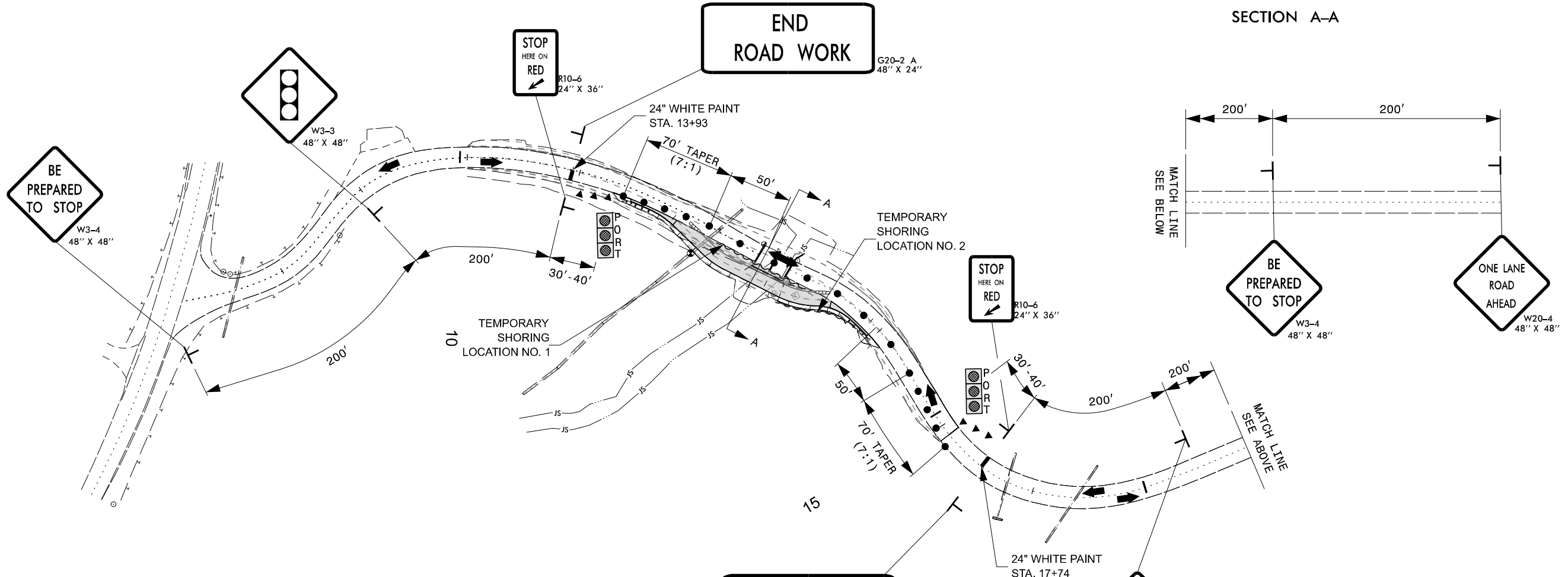
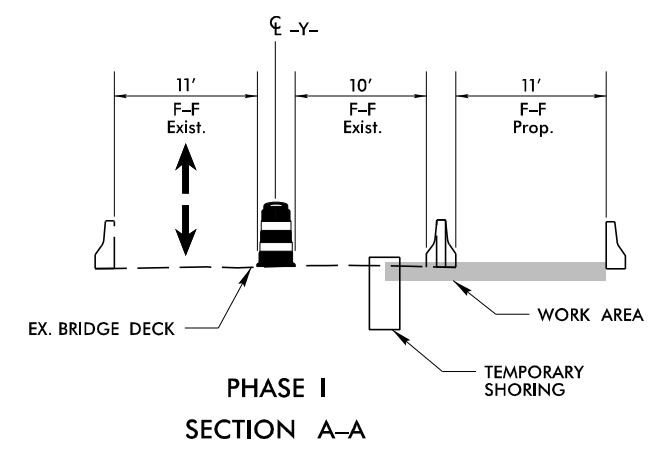


PHASING

NOTE: TEMPORARY SHORING LOCATION/OFFSET SHOWN ON ROADWAY PLANS.

TEMPORARY SHORING NOTES ARE LOCATED ON SHEET TMP-6.

ANCHORED BARRIER AND ATTENUATORS PLACED AS SHOWN IN ROADWAY PLANS.



- LEGEND**
- ┃ STATIONARY SIGN
 - ➔ DIRECTION OF TRAFFIC FLOW
 - Ⓜ PORTABLE SIGNAL
 - ▲ CONE
 - DRUM



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 Suite 160
 Raleigh, NC 27607
 NC License Number : C-3239

DocuSigned by:
Lynon Graves

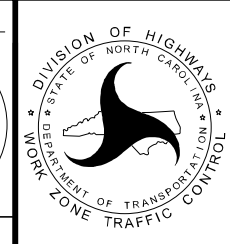
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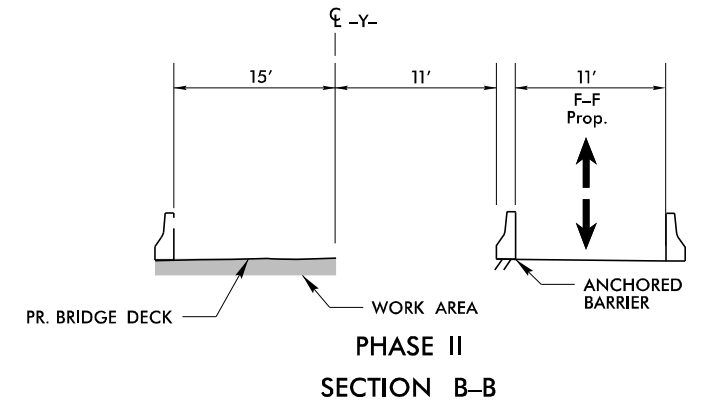
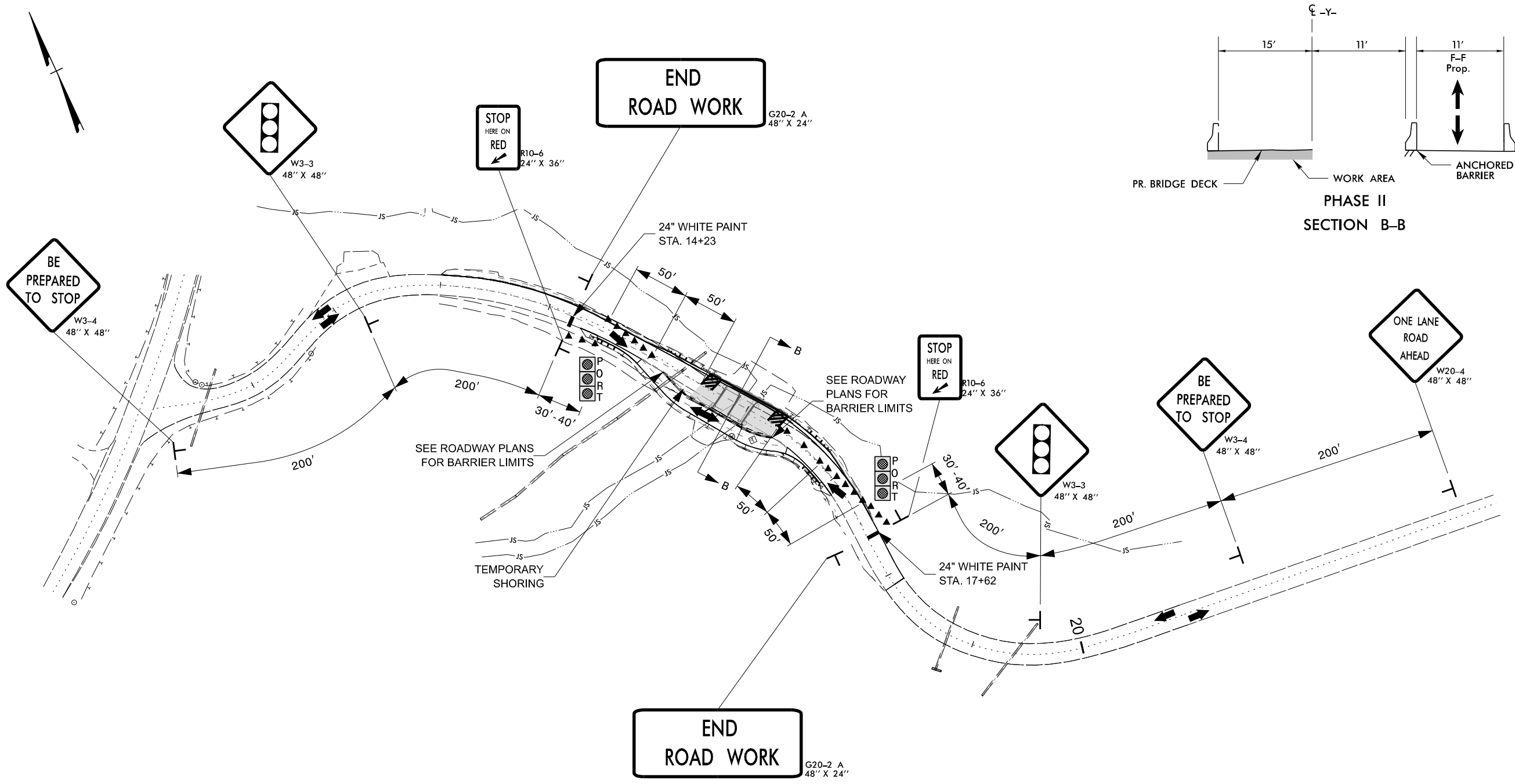
SEAL 021080

PROFESSIONAL ENGINEER
 LYNON A. GRAVES



PHASE I

9/11/2025
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 User: jgraves



- LEGEND**
- ┆ STATIONARY SIGN
 - ← DIRECTION OF TRAFFIC FLOW
 - P
O
R
T PORTABLE SIGNAL
 - ▲ CONE
 - DRUM
 - ▬ PORTABLE CONCRETE BARRIER

ms consultants, inc.
 5444 Wake Park Blvd.
 Suite 160
 Raleigh, NC 27607
 NC License Number : C-3239

DocuSigned by:
Lynn Alava

APPROVED: _____
 DATE: 09-11-2025

SEAL

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SEAL 021080

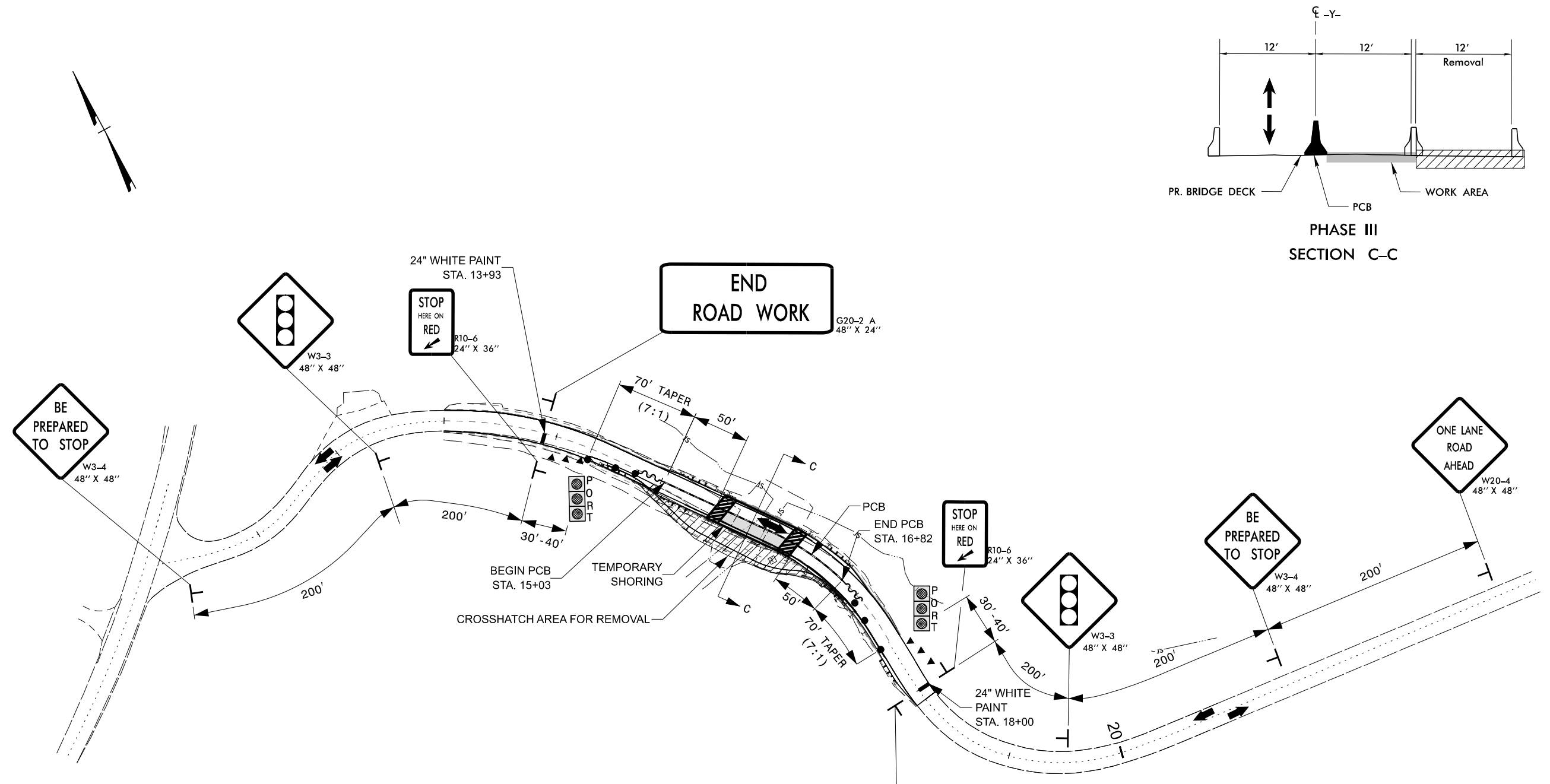
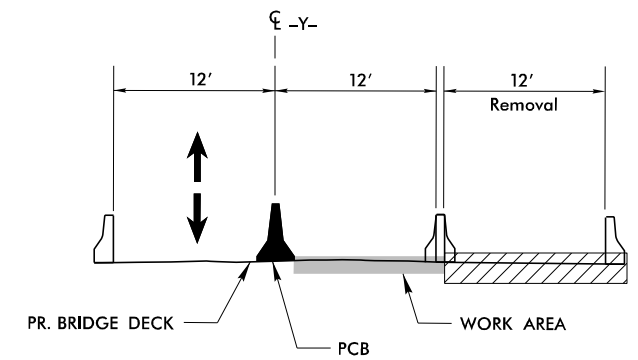
PROFESSIONAL ENGINEER
 LYNN A. GRAVES

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

PHASE II

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 User: jgraves



LEGEND

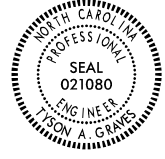
- ┃ STATIONARY SIGN
- ➔ DIRECTION OF TRAFFIC FLOW
- PORTABLE SIGNAL
- ▲ CONE
- DRUM
- ▬ PORTABLE CONCRETE BARRIER



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Raleigh, NC 27607
NC License Number : C-3239

APPROVED: <i>Lynson Graves</i> DATE: 09-11-2025 SEAL 94C02A344C034F6 NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 021080 TROY A. GRAVES	DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL	PHASE III
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9/11/2025
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 User:graves

TIP NO.	SHEET NO.
BP13-R026	1
APPROVED: <i>Tyson Graves</i>	Signed by: PMP - 1
DATE: 9-11-2025	94CQ2A844C034F8...
	
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**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

**PAVEMENT MARKING PLAN
MCDOWELL COUNTY**

T.I.P.: BP13-R026

CONTRACT: DM00428

INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN TITLE AND SCHEDULE SHEET
PMP-2	PAVEMENT MARKING DETAIL

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

PAVEMENT MARKING SCHEDULE

	PAINT (4")
P1	WHITE EDGELINE
P13	YELLOW DOUBLE CENTER

GENERAL NOTES

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

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

ROAD NAME	MARKING	MARKER
SR 1512	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.

PLAN SUBMITTED TO:

NCDOT DIVISION OF HIGHWAYS
DIVISION 13



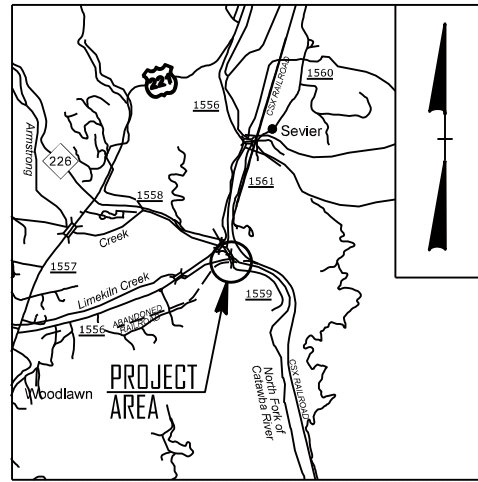
PLAN PREPARED BY: ms consultants, inc.

Tyson A. Graves, PE Project Engineer
Cassidy Mengelkamp, EI Project Design Engineer



ms consultants, inc.
5444 Wake Park Blvd.
Suite 160
Raleigh, NC 27607
NC License Number : C-3239

TIP PROJECT: BPI3-R026



VICINITY MAP
NOT TO SCALE

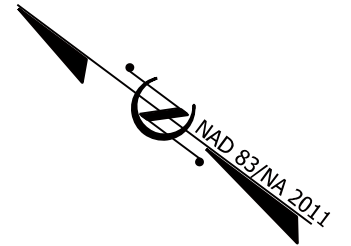
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

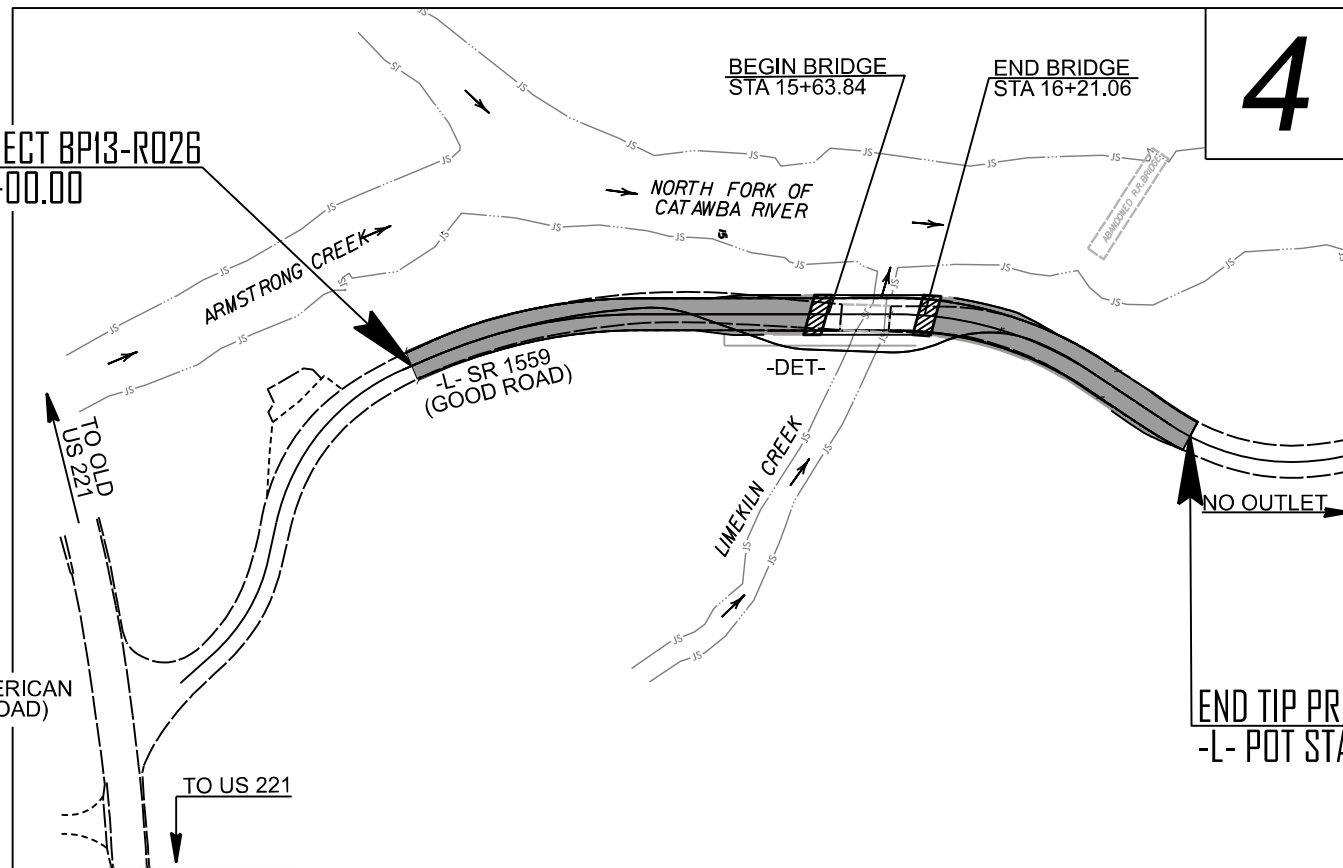
MCDOWELL COUNTY

LOCATION: REPLACE BRIDGE NO. 194 ON SR 1559
(GOOD ROAD) OVER LIMEKILN CREEK

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BPI3-R026	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	



BEGIN TIP PROJECT BPI3-R026
-L- POT STA 13+00.00

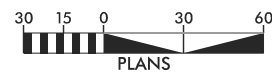


END TIP PROJECT BPI3-R026
-L- POT STA 18+10.00

- THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.
- THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.
- HIGH QUALITY WATER(S) EXIST ON THIS PROJECT
High Quality Water Zone(s) Exist From Sta. 13+00 to Sta. 14+25 LT. Refer To E. C. Special Provisions for Special Considerations.
- ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT
Refer To E. C. Special Provisions for Special Considerations.

* DESIGN EXCEPTION FOR DESIGN SPEED.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

GRAPHIC SCALE



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:
MI ENGINEERING, PLLC
1011 SCHAUB DR, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER: P-0671

Designed by:
KAREN HEFNER, PE 3824
NAME LEVEL III CERTIFICATION NO.

Roadway Standard Drawings

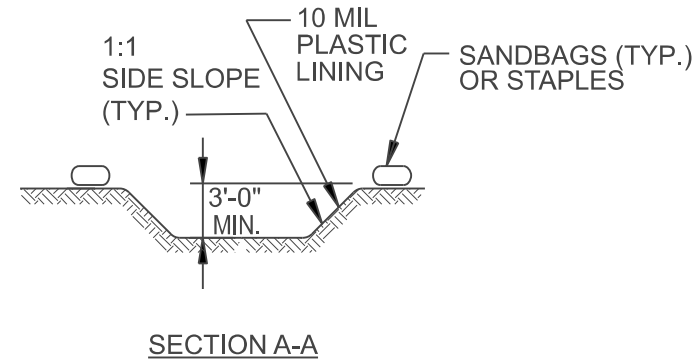
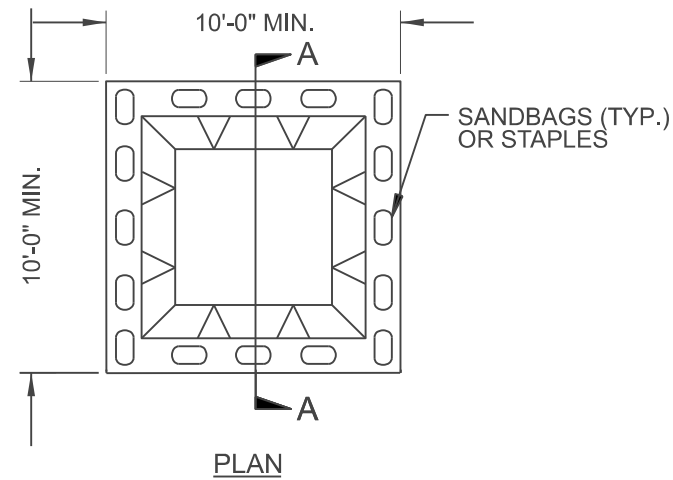
The "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2024 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

EROSION & SEDIMENT CONTROL LEGEND

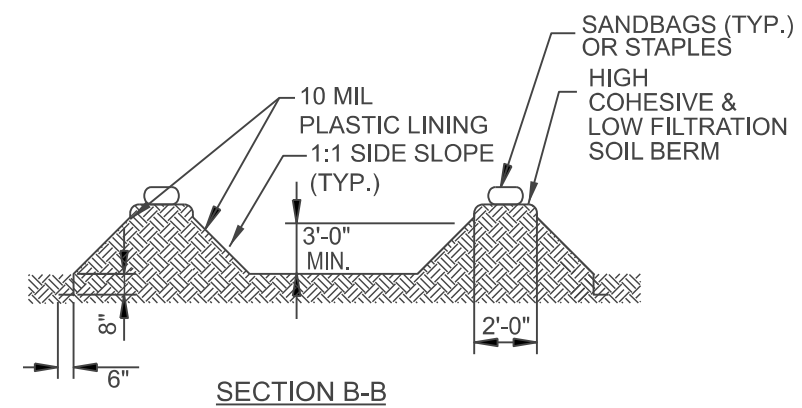
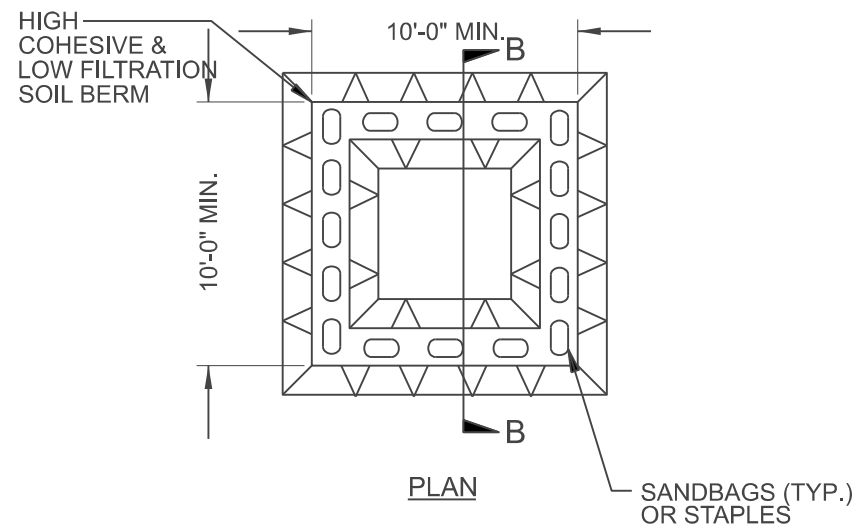
<u>Std. #</u>	<u>Description</u>	<u>Symbol</u>	<u>Std. #</u>	<u>Description</u>	<u>Symbol</u>
1605.01	Temporary Silt Fence		1633.01	Temporary Rock Silt Check Type A	
1606.01	Special Sediment Control Fence		1633.02	Temporary Rock Silt Check Type B	
1622.01	Temporary Berms and Slope Drains		1633.03	Temporary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

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



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 CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.



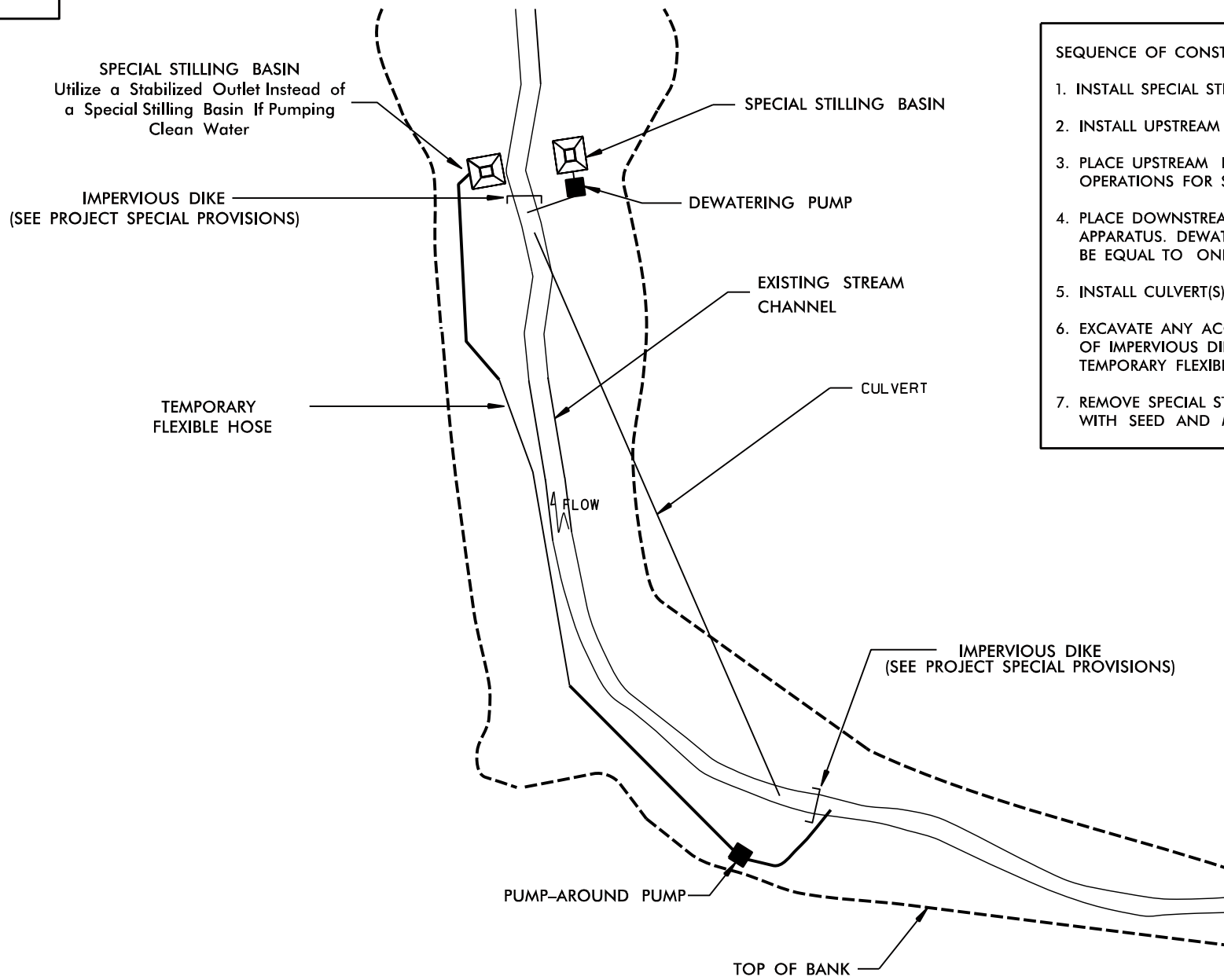
ABOVE GRADE WASHOUT STRUCTURE
NOT TO SCALE

- 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 CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

EXAMPLE OF PUMP-AROUND OPERATION

NOTES:

- 1) All excavation shall be performed in only dry or isolated areas of the work zone.
- 2) Impervious dikes are to be used to isolate work from stream flow when necessary.
- 3) Maintenance of stream flow operations shall be incidental to the work. This includes polyethylene sheeting, diversion pipes, pumps and hoses.
- 4) Pumps and hoses shall be of sufficient size to dewater the work area.



SEQUENCE OF CONSTRUCTION FOR TYPICAL WORK AREA

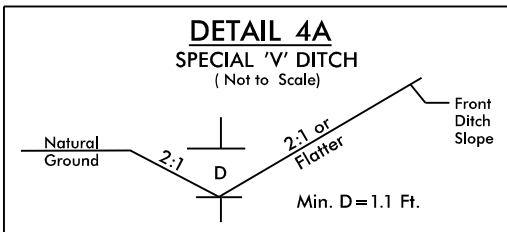
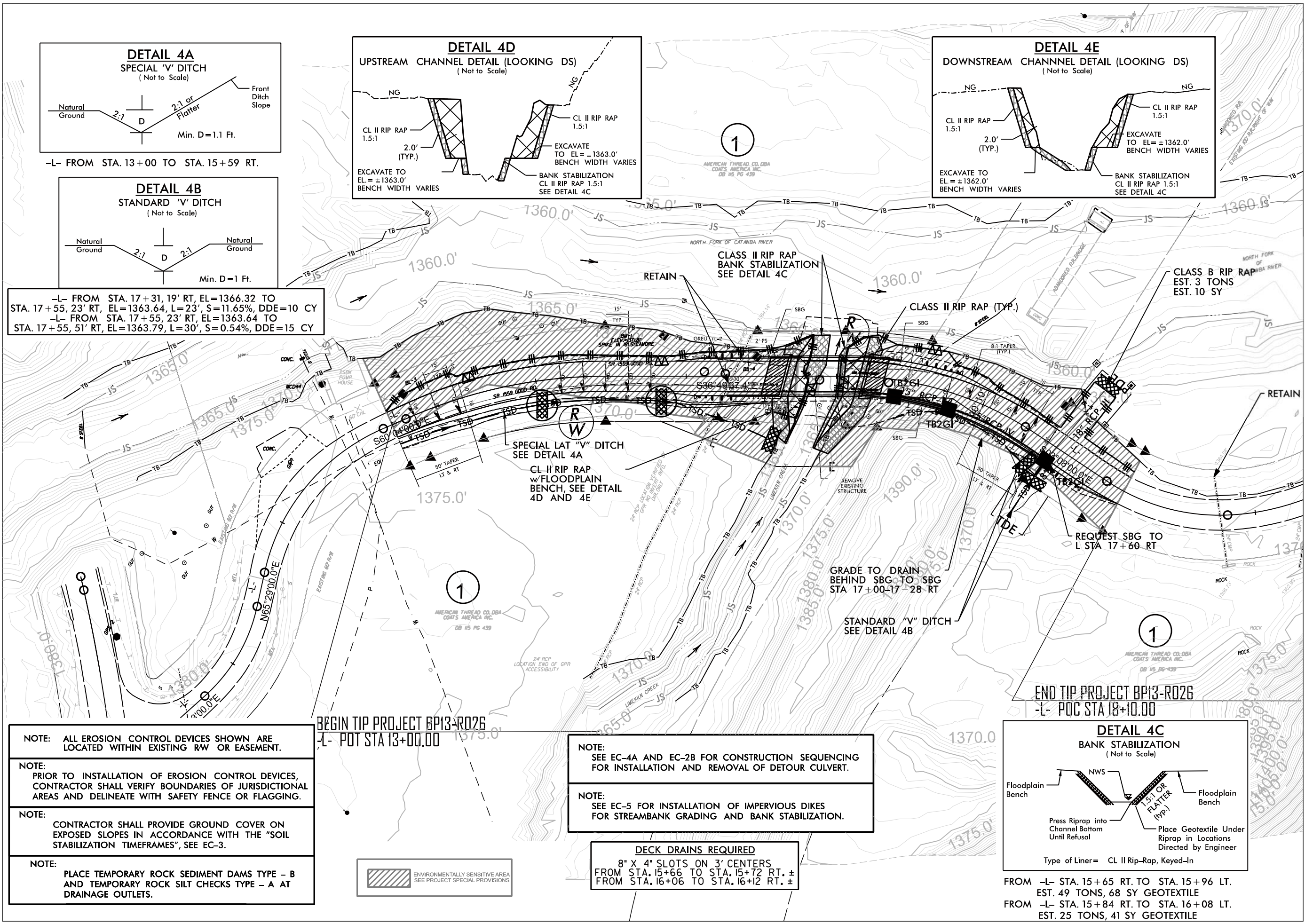
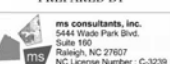
1. INSTALL SPECIAL STILLING BASIN(S).
2. INSTALL UPSTREAM PUMP AND TEMPORARY FLEXIBLE HOSE.
3. PLACE UPSTREAM IMPERVIOUS DIKE AND BEGIN PUMPING OPERATIONS FOR STREAM DIVERSION.
4. PLACE DOWNSTREAM IMPERVIOUS DIKE AND PUMPING APPARATUS. DEWATER ENTRAPPED AREA. AREA TO BE DEWATERED SHALL BE EQUAL TO ONE DAY'S WORK.
5. INSTALL CULVERT(S) IN ACCORDANCE WITH THE PLANS.
6. EXCAVATE ANY ACCUMULATED SILT AND DEWATER BEFORE REMOVAL OF IMPERVIOUS DIKES. REMOVE IMPERVIOUS DIKES, PUMPS, AND TEMPORARY FLEXIBLE HOSE. (DOWNSTREAM IMPERVIOUS DIKES FIRST).
7. REMOVE SPECIAL STILLING BASIN(S) AND BACKFILL. STABILIZE DISTURBED AREA WITH SEED AND MULCH.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

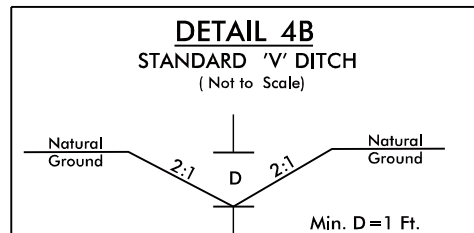
SOIL STABILIZATION TIMEFRAMES

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

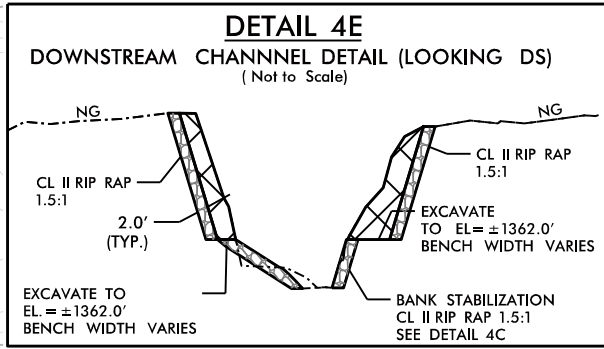
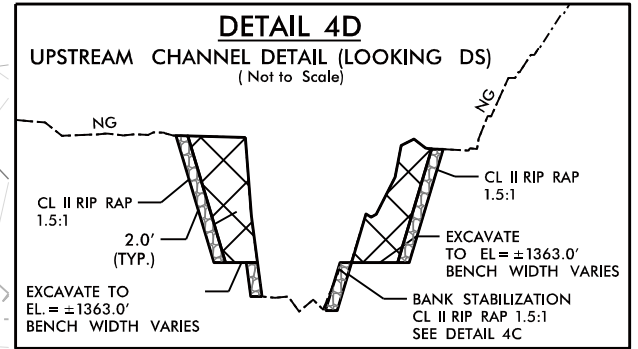
9/9/2025
 N:\NC_Hydro\19008.05_BP13_R026_McDowell\194\BP13_R026_Roadside_Environmental\Erosion_Contra\Design\BP13R026_EC_03A_STAB.dgn
 MI ENGINEERING, RALEIGH, N.C.



-L- FROM STA. 13+00 TO STA. 15+59 RT.



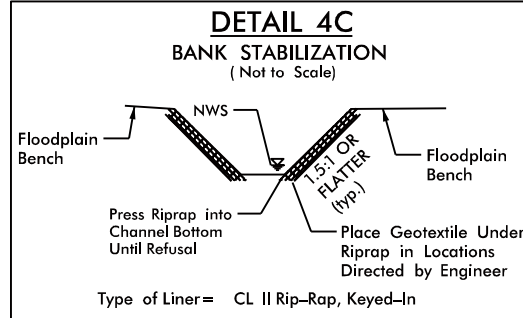
-L- FROM STA. 17+31, 19' RT, EL=1366.32 TO STA. 17+55, 23' RT, EL=1363.64, L=23', S=11.65%, DDE=10 CY
-L- FROM STA. 17+55, 23' RT, EL=1363.64 TO STA. 17+55, 51' RT, EL=1363.79, L=30', S=0.54%, DDE=15 CY



NOTE: ALL EROSION CONTROL DEVICES SHOWN ARE LOCATED WITHIN EXISTING RW OR EASEMENT.
NOTE: PRIOR TO INSTALLATION OF EROSION CONTROL DEVICES, CONTRACTOR SHALL VERIFY BOUNDARIES OF JURISDICTIONAL AREAS AND DELINEATE WITH SAFETY FENCE OR FLAGGING.
NOTE: CONTRACTOR SHALL PROVIDE GROUND COVER ON EXPOSED SLOPES IN ACCORDANCE WITH THE "SOIL STABILIZATION TIMEFRAMES", SEE EC-3.
NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

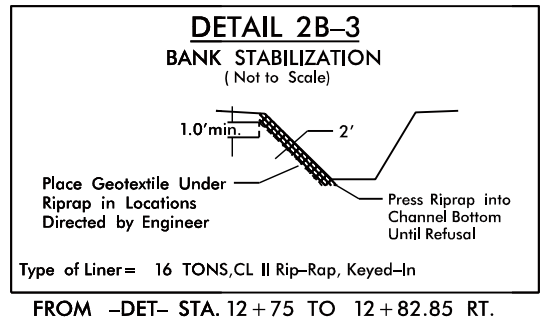
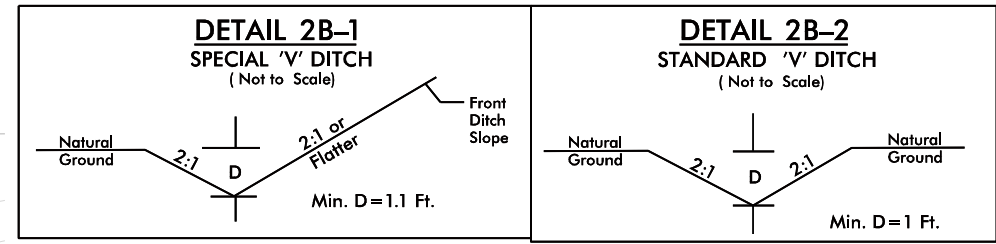
NOTE: SEE EC-4A AND EC-2B FOR CONSTRUCTION SEQUENCING FOR INSTALLATION AND REMOVAL OF DETOUR CULVERT.
NOTE: SEE EC-5 FOR INSTALLATION OF IMPERVIOUS DIKES FOR STREAMBANK GRADING AND BANK STABILIZATION.

DECK DRAINS REQUIRED
8" X 4" SLOTS ON 3' CENTERS
FROM STA. 15+66 TO STA. 15+72 RT. ±
FROM STA. 16+06 TO STA. 16+12 RT. ±



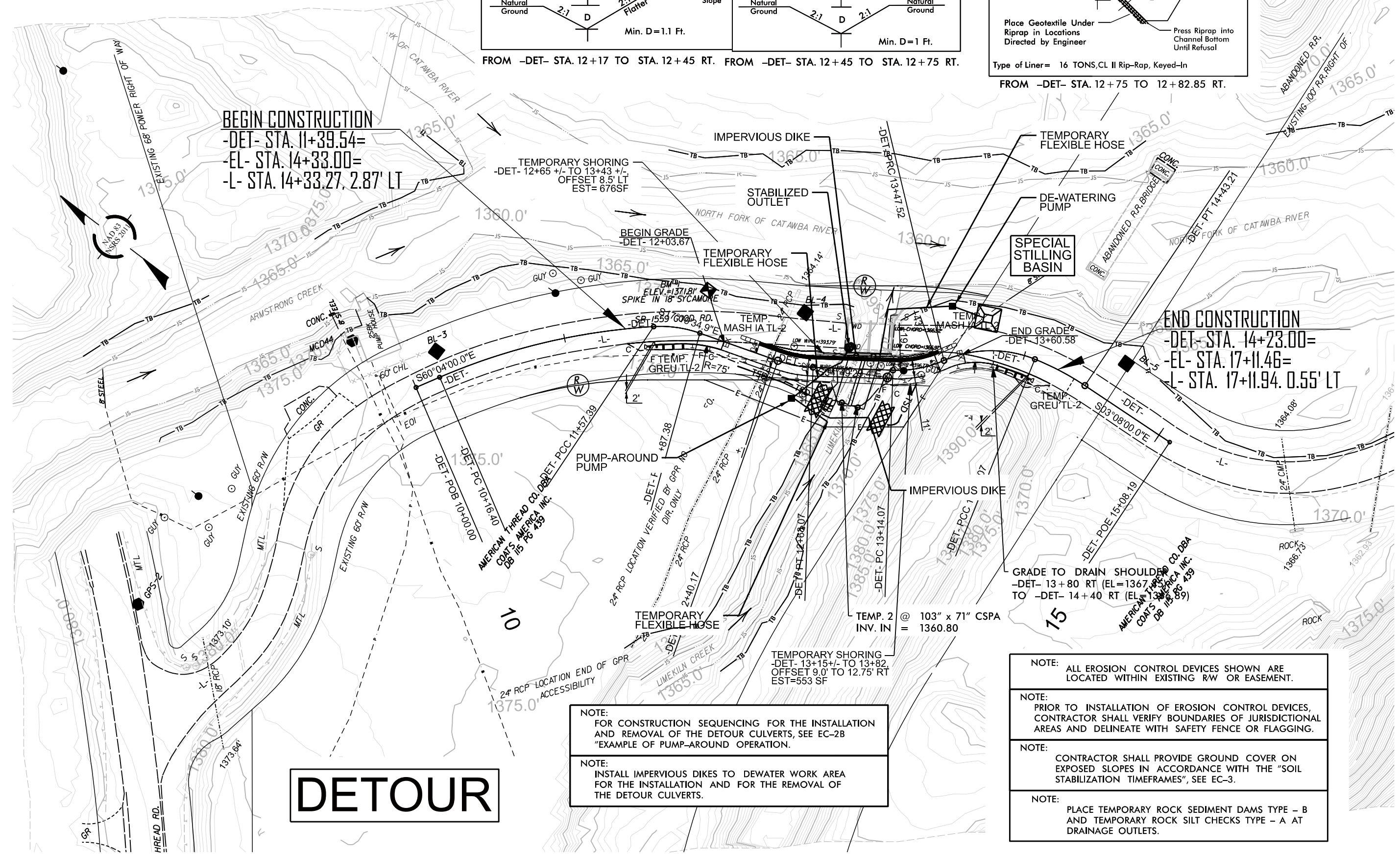
FROM -L- STA. 15+65 RT. TO STA. 15+96 LT. EST. 49 TONS, 68 SY GEOTEXTILE
FROM -L- STA. 15+84 RT. TO STA. 16+08 LT. EST. 25 TONS, 41 SY GEOTEXTILE





FROM -DET- STA. 12+17 TO STA. 12+45 RT. FROM -DET- STA. 12+45 TO STA. 12+75 RT.

FROM -DET- STA. 12+75 TO 12+82.85 RT.

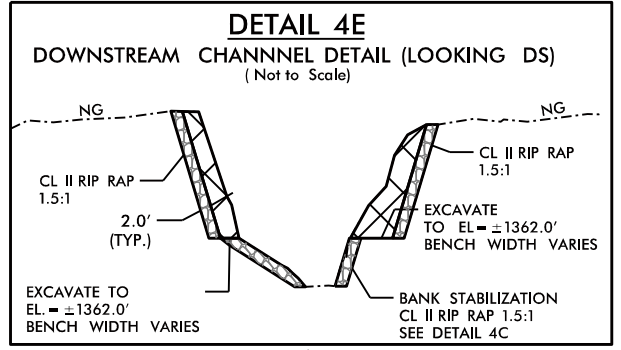
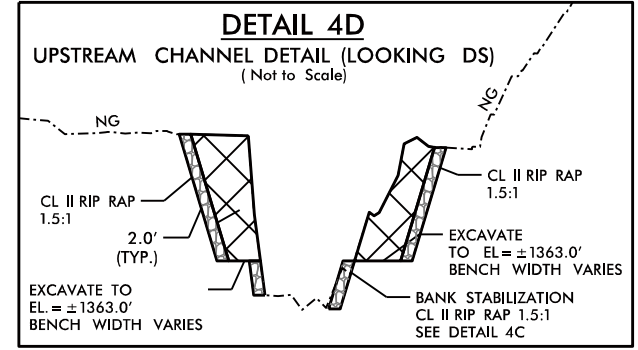
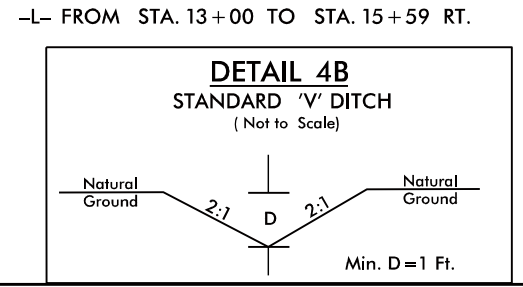
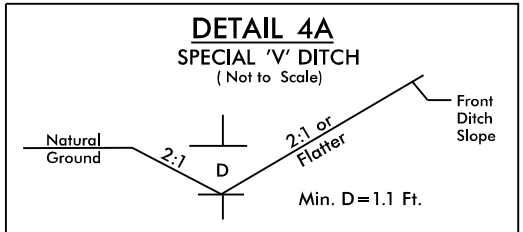
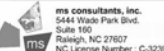
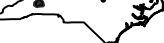


DETOUR

NOTE:
FOR CONSTRUCTION SEQUENCING FOR THE INSTALLATION AND REMOVAL OF THE DETOUR CULVERTS, SEE EC-2B "EXAMPLE OF PUMP-AROUND OPERATION."

NOTE:
INSTALL IMPERVIOUS DIKES TO DEWATER WORK AREA FOR THE INSTALLATION AND FOR THE REMOVAL OF THE DETOUR CULVERTS.

SEE SHEET 2B-2 FOR -DET- PROFILE
SEE SHEET 004 FOR -L- PLAN



-L- FROM STA. 13+00 TO STA. 15+59 RT.
-L- FROM STA. 17+31, 19' RT, EL=1366.32 TO STA. 17+55, 23' RT, EL=1363.64, L=23', S=11.65%, DDE=10 CY
-L- FROM STA. 17+55, 23' RT, EL=1363.64 TO STA. 17+55, 51' RT, EL=1363.79, L=30', S=0.54%, DDE=15 CY

1 AMERICAN THREAD CO. DBA COAT'S AMERICA INC. DB 115 PG 439

1 AMERICAN THREAD CO. DBA COAT'S AMERICA INC. DB 115 PG 439

1 AMERICAN THREAD CO. DBA COAT'S AMERICA INC. DB 115 PG 439

END TIP PROJECT BP13-R026

-L- POT STA 13+00.00

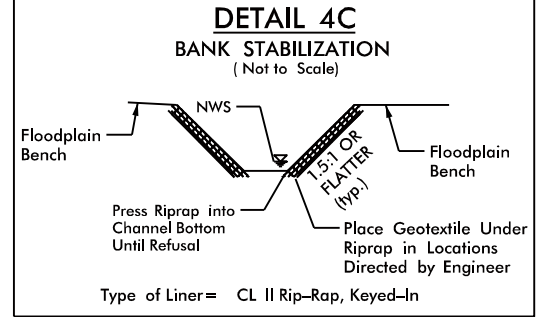
BEGIN TIP PROJECT BP13-R026

-L- POT STA 13+00.00

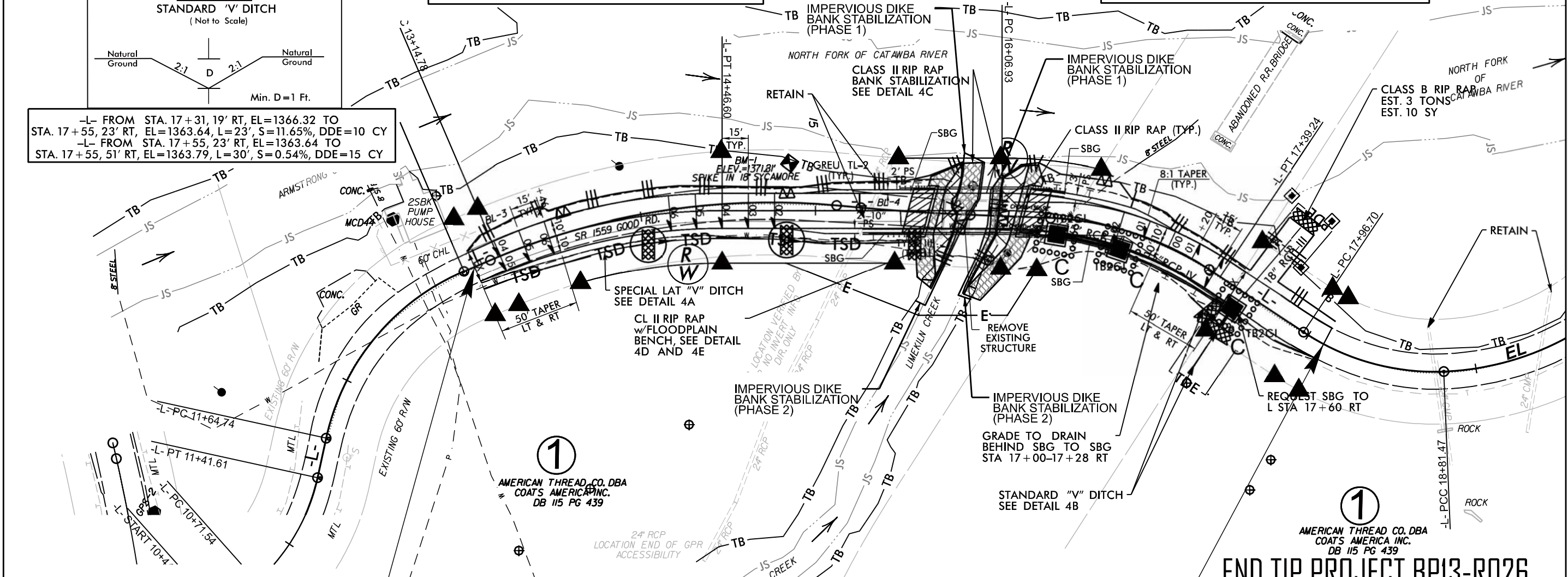
- NOTE: ALL EROSION CONTROL DEVICES SHOWN ARE LOCATED WITHIN RW OR EASEMENT.
- NOTE: CONTRACTOR SHALL PROVIDE INLET PROTECTION FOR PARTIALLY INSTALLED STORM DRAINS. THIS MEASURE SHOULD BE INSTALLED AT THE END OF EACH WORKING DAY.
- NOTE: CONTRACTOR SHALL MAINTAIN ALL DEVICES AS PROJECT IS BROUGHT UP TO GRADE.
- NOTE: INSTALL MATTING FOR EROSION CONTROL IN ALL PROPOSED DITCH LINES EXCEPT WHERE PERMANENT LINERS ARE SPECIFIED ON THE PLANS OR DIRECTED OTHERWISE BY THE ENGINEER.
- NOTE: CONTRACTOR SHALL PROVIDE GROUND COVER ON EXPOSED SLOPES IN ACCORDANCE WITH THE "SOIL STABILIZATION TIMEFRAMES", SEE EC-3.

- NOTE: INSTALL IMPERVIOUS DIKES (PHASE 1 & PHASE 2) TO DEWATER WORK AREAS FOR STREAMBANK GRADING AND BANK STABILIZATION.
- NOTE: SEE EC-4A AND EC-2B FOR CONSTRUCTION SEQUENCING FOR INSTALLATION AND REMOVAL OF DETOUR CULVERT.

DECK DRAINS REQUIRED
8" X 4" SLOTS ON 3' CENTERS
FROM STA. 15+66 TO STA. 15+72 RT. ±
FROM STA. 16+06 TO STA. 16+12 RT. ±



FROM -L- STA. 15+65 RT. TO STA. 15+96 LT. EST. 49 TONS, 68 SY GEOTEXTILE
FROM -L- STA. 15+84 RT. TO STA. 16+08 LT. EST. 25 TONS, 41 SY GEOTEXTILE



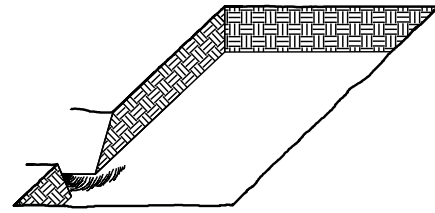
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP13-R026	RF-1	

PLANTING DETAILS

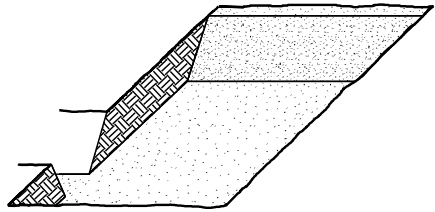
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

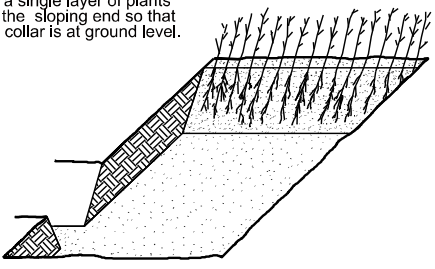
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



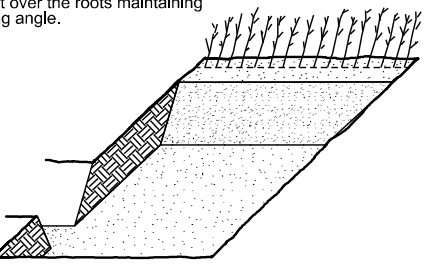
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

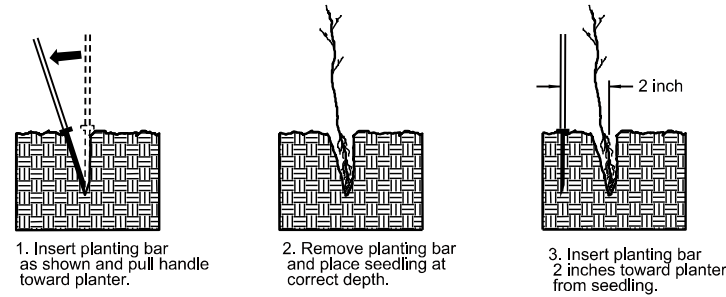


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

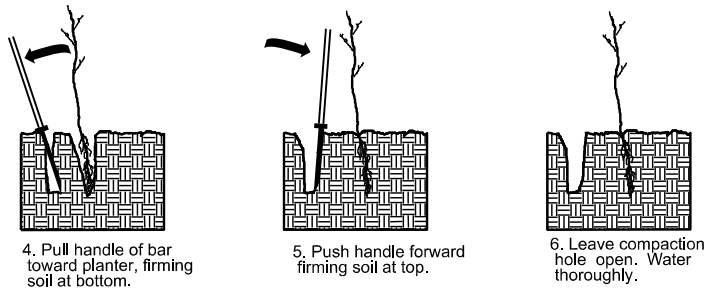


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

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:

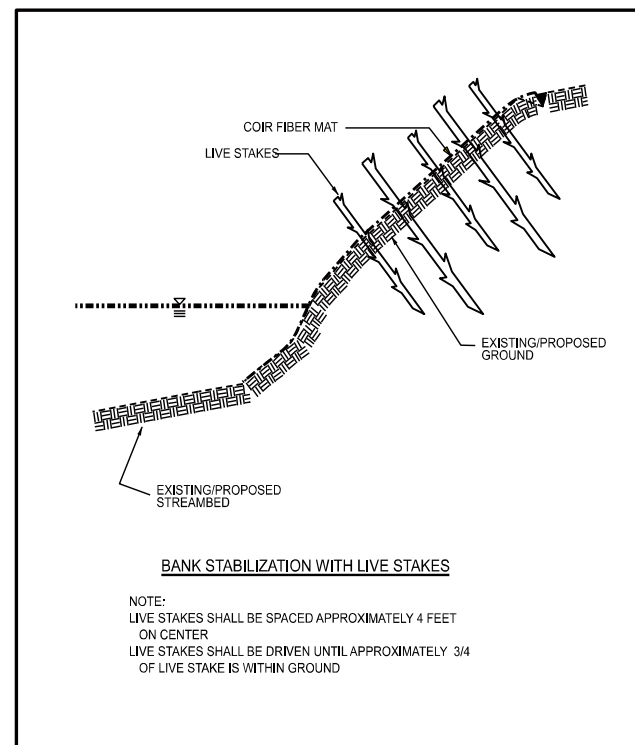
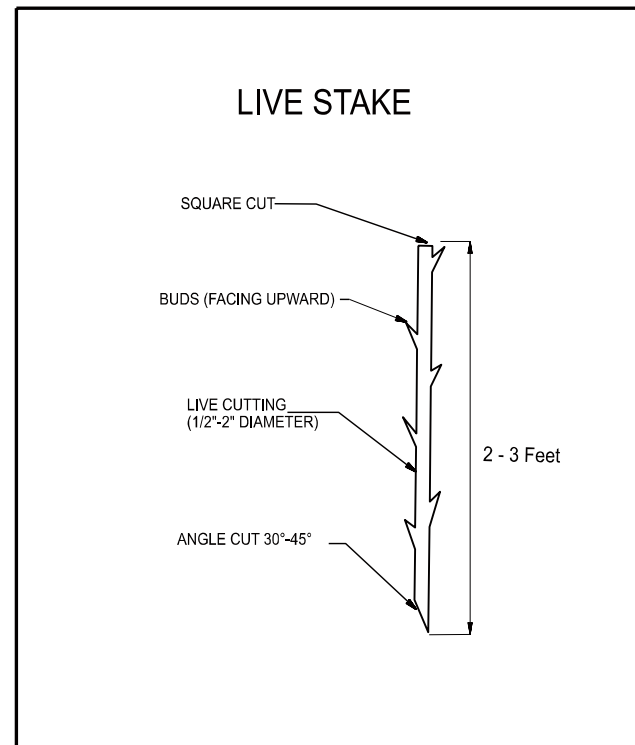
34% LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in - 18 in BR
33% PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in - 18 in BR
33% BETULA NIGRA	RIVER BIRCH	12 in - 18 in BR

REFORESTATION DETAIL SHEET

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

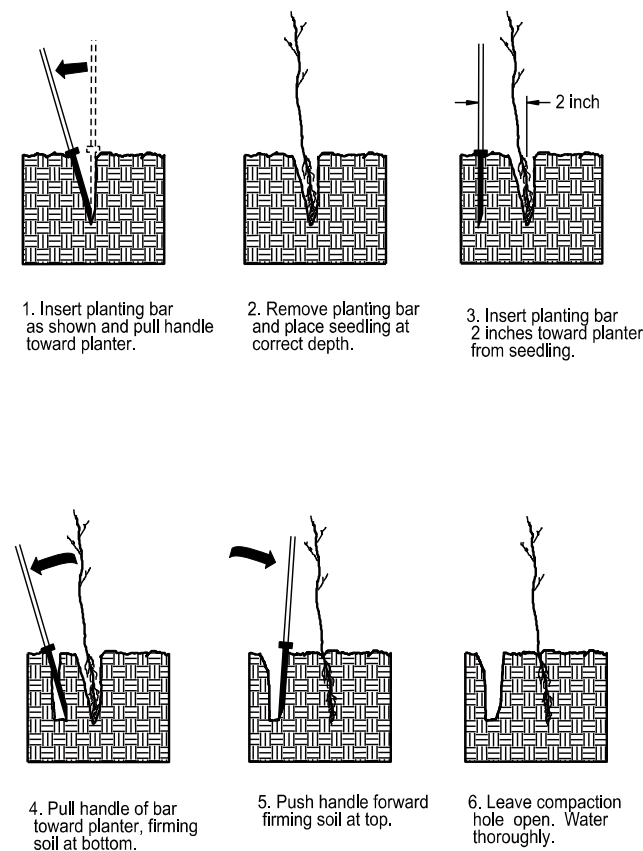
PLANTING DETAILS

LIVE STAKES PLANTING DETAIL



BAREROOT PLANTING DETAIL

DIBBLE PLANTING METHOD USING THE KBC PLANTING BAR



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.



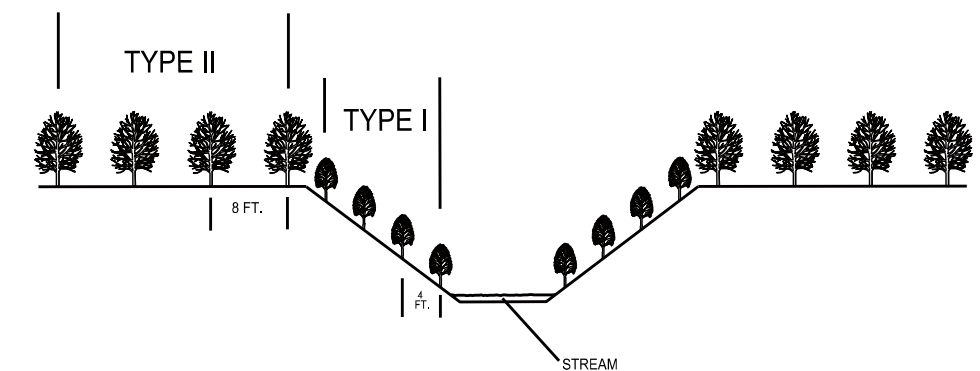
KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.



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

- TYPE 1 STREAMBANK REFORESTATION SHALL BE PLANTED 3 FT. TO 5 FT. ON CENTER, RANDOM SPACING, AVERAGING 4 FT. ON CENTER, APPROXIMATELY 2724 PLANTS PER ACRE.
- TYPE 2 STREAMBANK REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.
- NOTE: TYPE 1 AND TYPE 2 STREAMBANK REFORESTATION SHALL BE PAID FOR AS "STREAMBANK REFORESTATION"

STREAMBANK REFORESTATION TYPICAL



STREAMBANK REFORESTATION

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

TYPE 1

50% SALIX NIGRA	BLACK WILLOW	2 ft - 3 ft LIVE STAKES
50% CORNUS AMOMUM	SILKY DOGWOOD	2 ft - 3 ft LIVE STAKES

TYPE 2

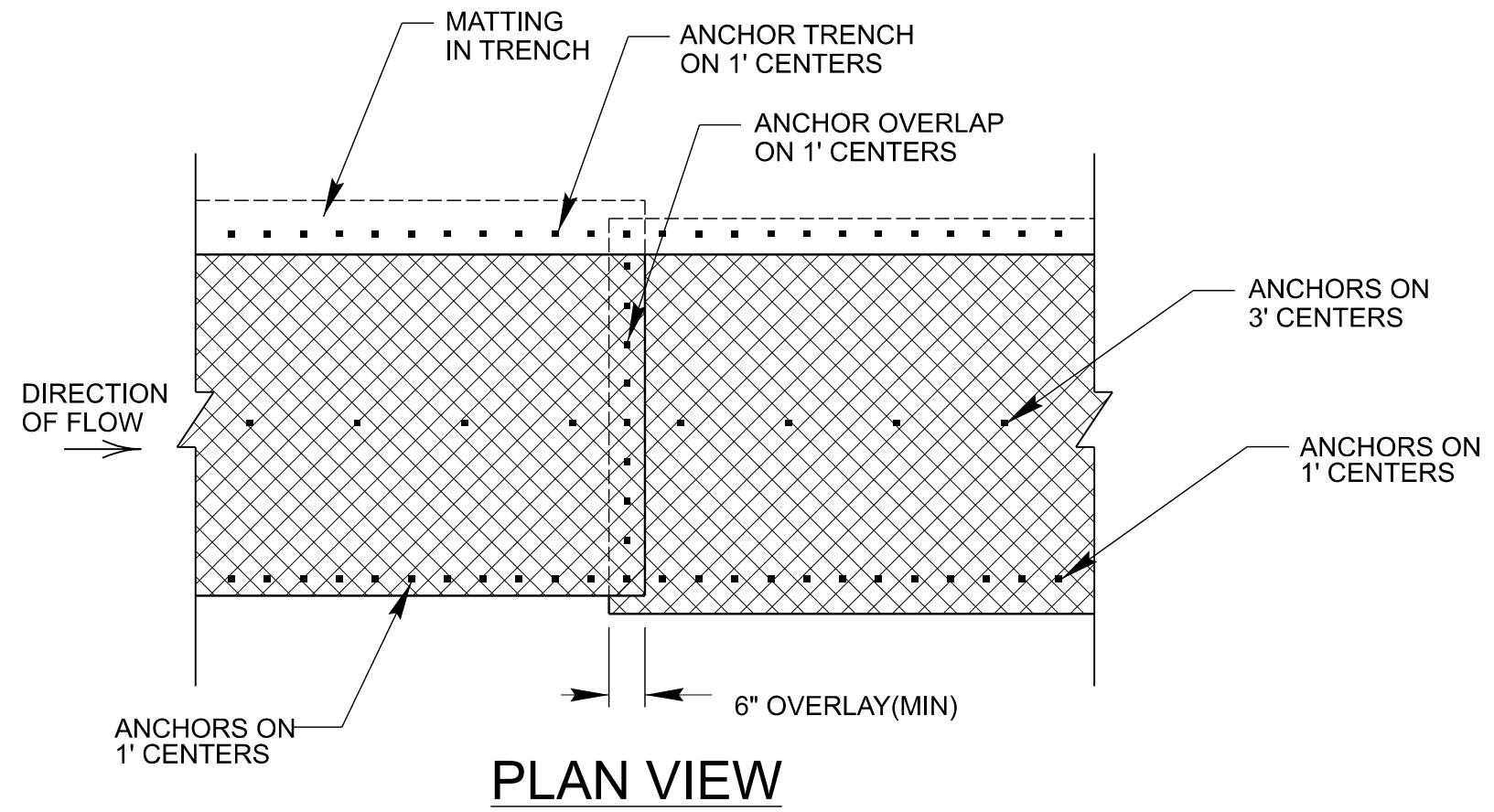
25% LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in - 18 in BR
25% PLATANUS OCCIDENTALIS	SYCAMORE	12 in - 18 in BR
25% NYSSA SYLVATICA	BLACK GUM	12 in - 18 in BR
25% BETULA NIGRA	RIVER BIRCH	12 in - 18 in BR

- SEE PLAN SHEETS FOR AREAS TO BE PLANTED

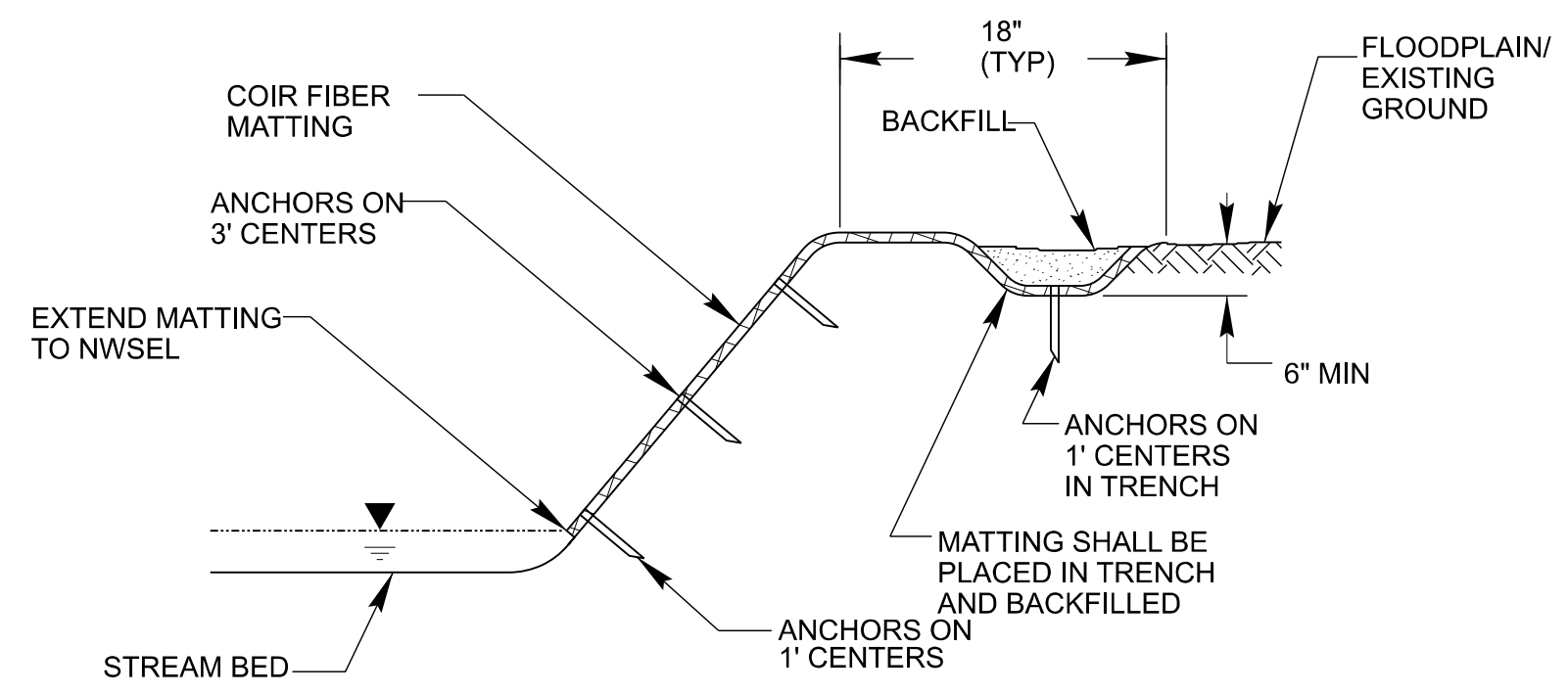
STREAMBANK REFORESTATION

DETAIL SHEET 1 OF 2

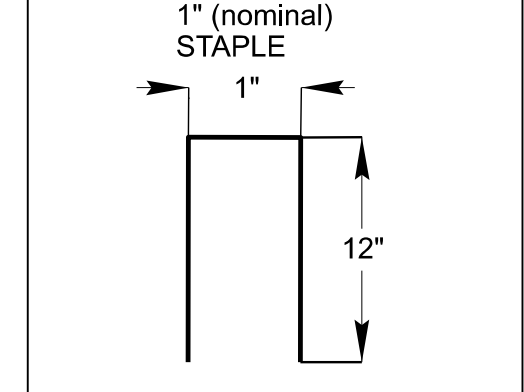
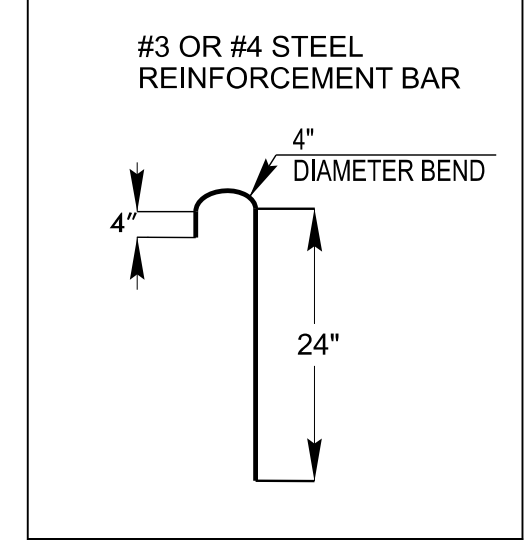
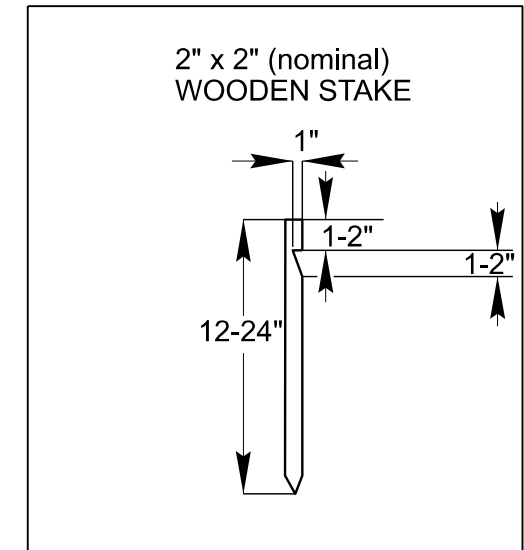
N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT



PLAN VIEW



TYPICAL CROSS SECTION



ANCHOR OPTIONS

COIR FIBER MATTING DETAIL

NOT TO SCALE

STREAMBANK REFORESTATION
DETAIL SHEET 2 OF 2
 N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

9/9/2025
 N:\NC_Hydro\0\M9008.05_BP13_R026_McDowell\94\BP13_R026_Roadside_Environmental\Erosion_Contra\Design\BP13R026_EC_RF2_RF3.dgn
 M ENGINEERING, RALEIGH, N.C.

TIP PROJECT: BP13R026

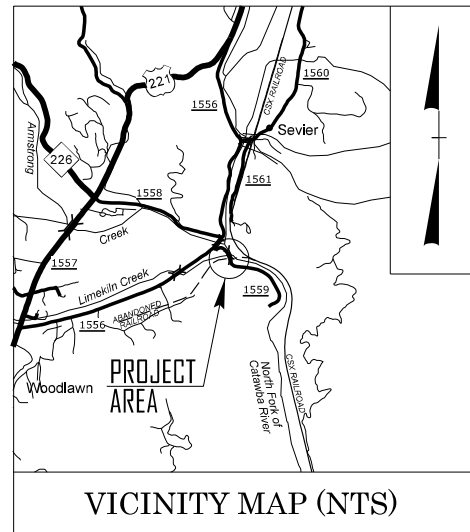
CONTRACT: -----

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES BY OTHERS PLANS
McDOWELL COUNTY

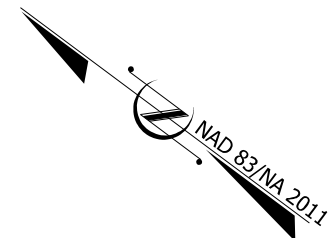
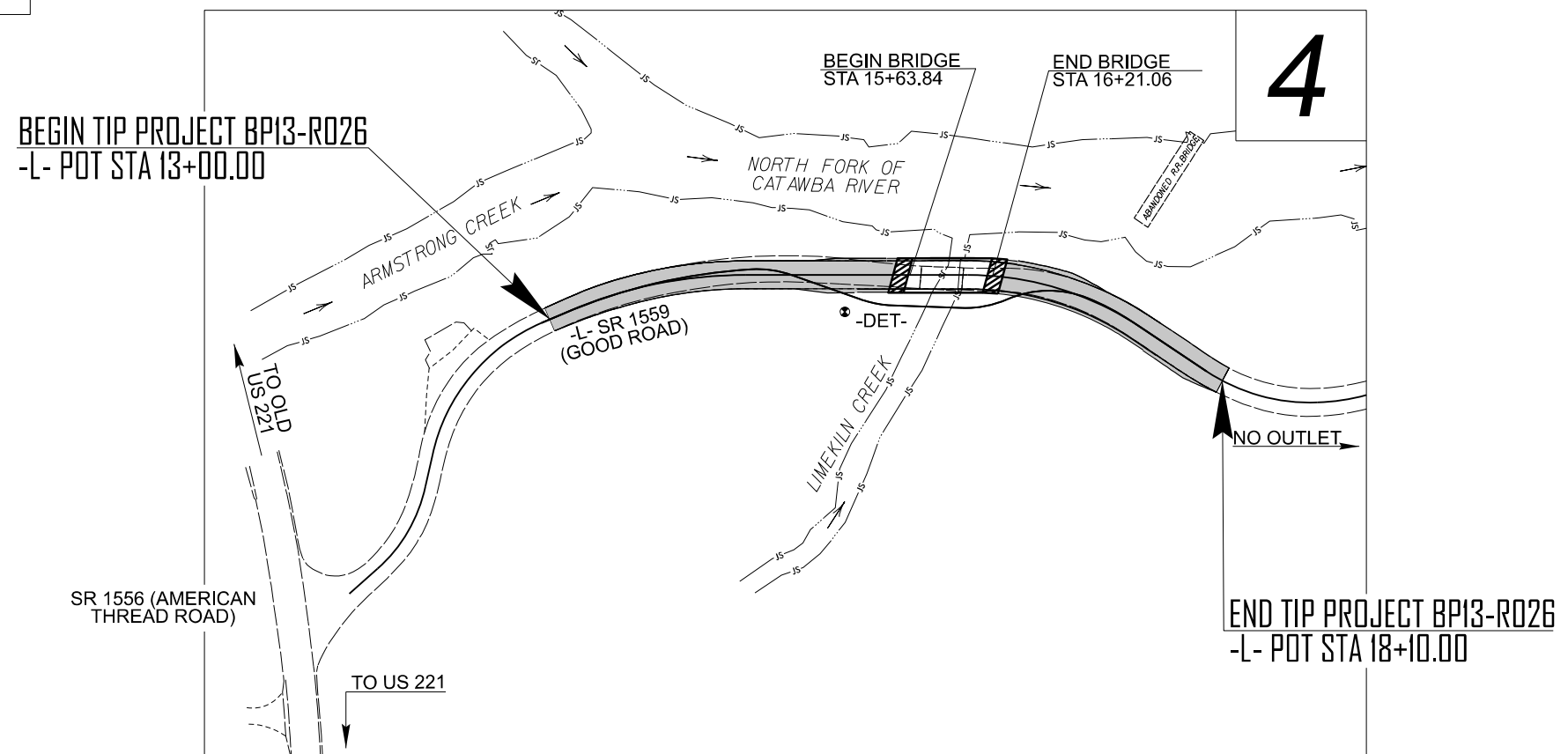
**LOCATION: REPLACE BRIDGE NO. 194 ON SR 1559
(GOOD ROAD) OVER LIMEKILN CREEK**

TYPE OF WORK: TELECOMMUNICATIONS RELOCATION

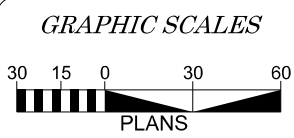


T.I.P. NO.	SHEET NO.
BP13R026	UO-1

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.



INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UO-1	TITLE SHEET
UO-2	PLAN SHEET

UTILITY OWNERS WITH CONFLICTS

(A) WATER: COATS
(B) COMMUNICATION: FRONTIER

PREPARED IN THE OFFICE OF

Pennoni
PENNONI ASSOCIATES INC.
5430 WADE PARK BLVD., SUITE 106,
RALEIGH, NC 27607 PHONE: 919.929.1173
FAX: 919.493.6548 NC LICENSE #F-1267

ERIC TWEED, PE UTILITY COORDINATOR
LEVI SMITH UTILITY COORDINATOR
BRIAN WILES, PE PROJECT MANAGER

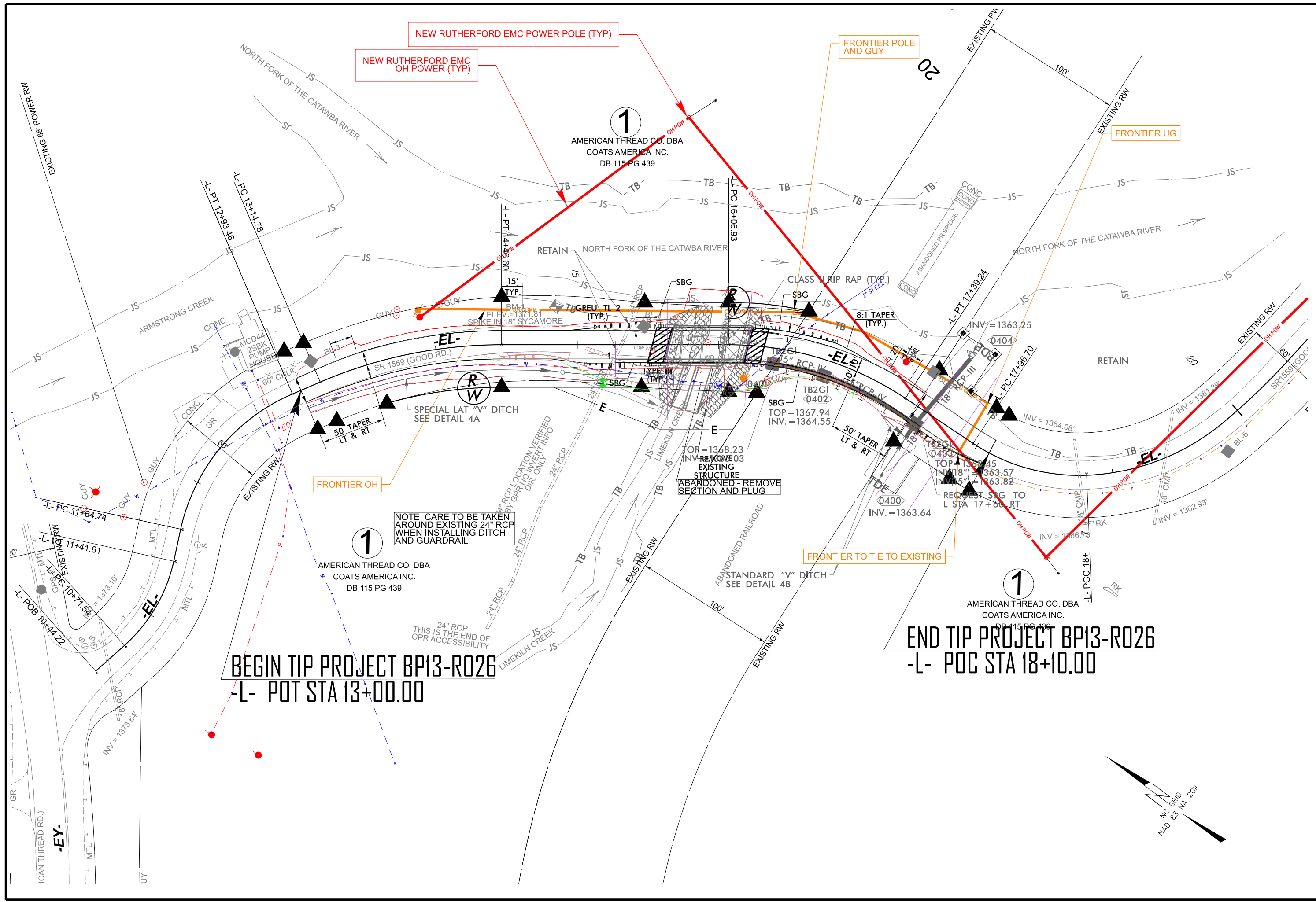


**DIVISION OF HIGHWAYS
UTILITIES UNIT**
1555 MAIL SERVICES CENTER
RALEIGH, NC 27699-1555
PHONE: (919) 707-6690
FAX: (919) 250-4151

KEITH RADCLIFF DIVISION UTILITIES ENGINEER
JOHN METCALF DIV. UTILITIES COORDINATOR
EDDIE DOUGLAS DIV. BRIDGE PROGRAM MGR.
SHANE CLARK, PE REGIONAL DESIGN ENGINEER



Pennoni
 PENNONI ASSOCIATES INC.
 6400 WADE PARK BLVD., SUITE 106
 RALEIGH, NC 27607 PHONE: 919.963.1173
 FAX: 919.483.6596 NC LICENSE #P1287

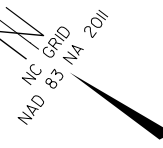


NOTE: CARE TO BE TAKEN
 AROUND EXISTING 24" RCP
 WHEN INSTALLING DITCH
 AND GUARDRAIL

ABANDONED - REMOVE
 EXISTING
 STRUCTURE

END TIP PROJECT BPI3-R026
 -L- POC STA 18+10.00

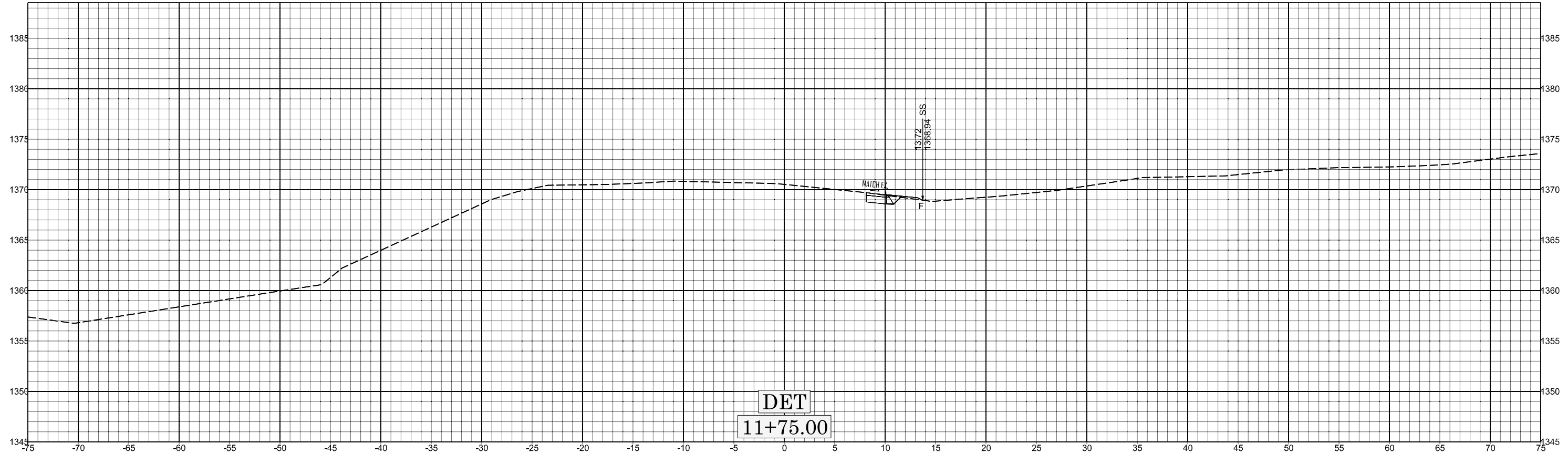
BEGIN TIP PROJECT BPI3-R026
 -L- POT STA 13+00.00



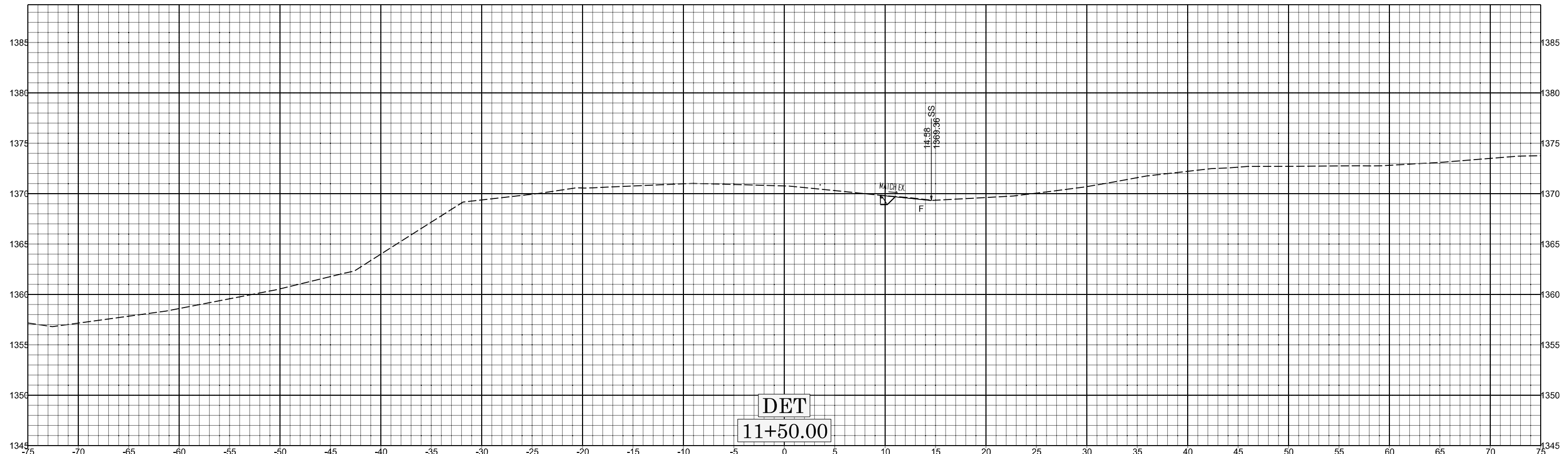
PROJ. REFERENCE NO.	SHEET NO.
BP13-R026	X-1

CROSS SECTION INDEX

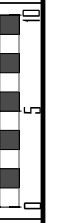
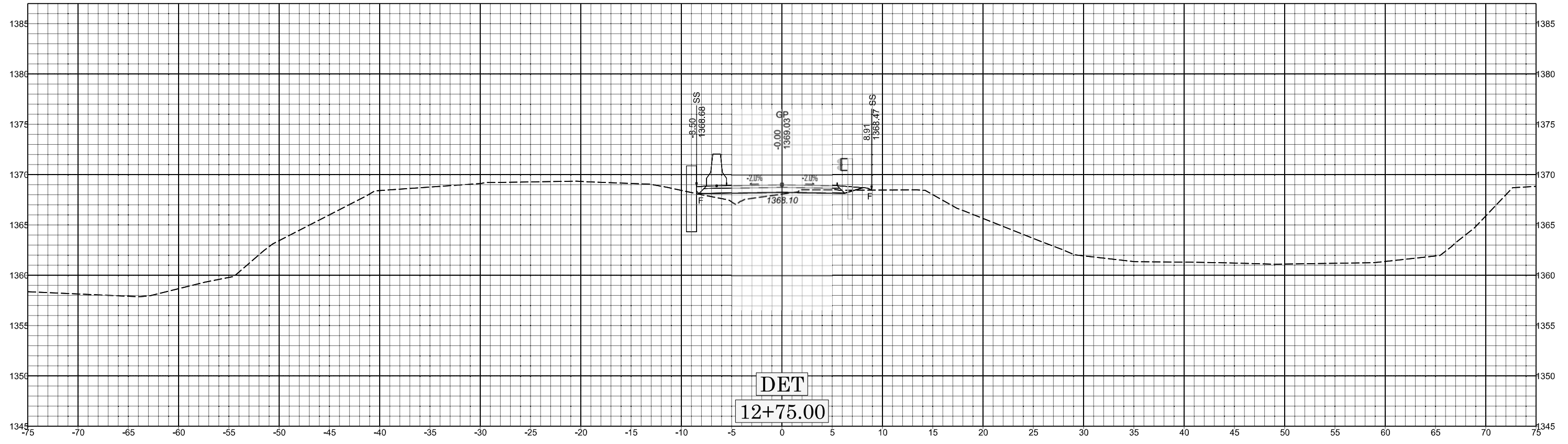
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<i>X-1A</i>	<i>CROSS SECTION SUMMARY</i>
<i>X-2 THRU X-9</i>	<i>-DET- SECTIONS</i>
<i>X-10 THRU X-22</i>	<i>-L- SECTIONS</i>



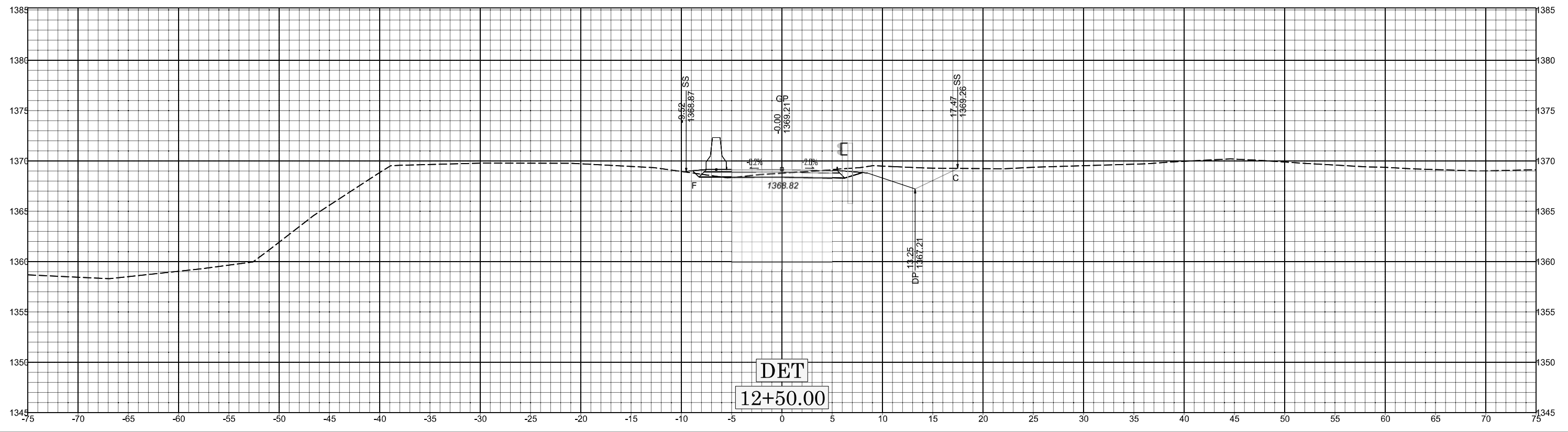
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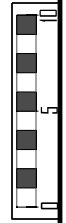
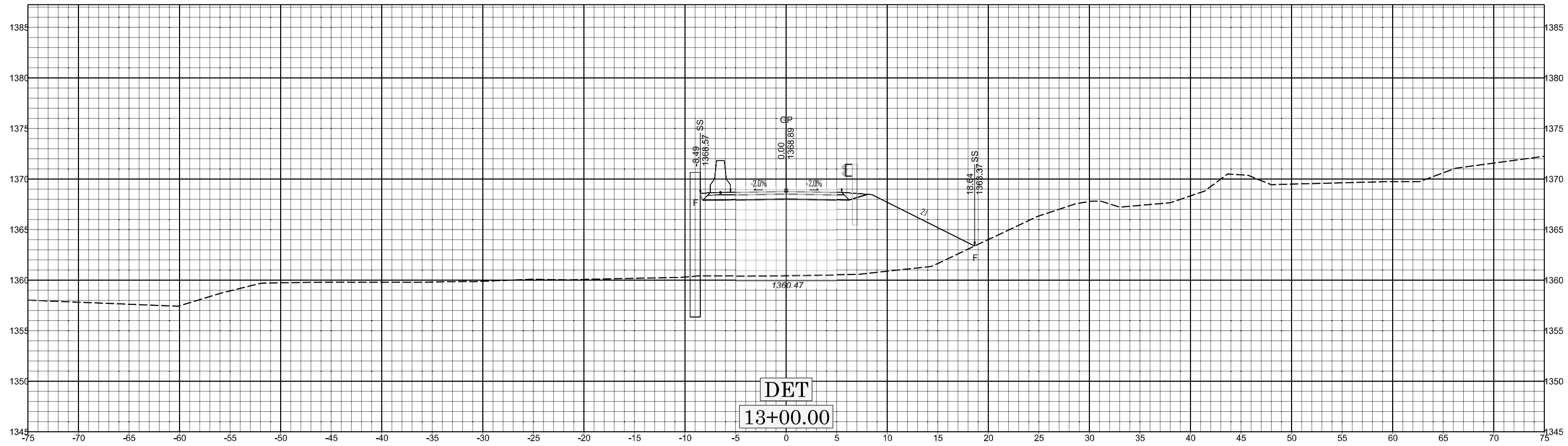
BP13-R026



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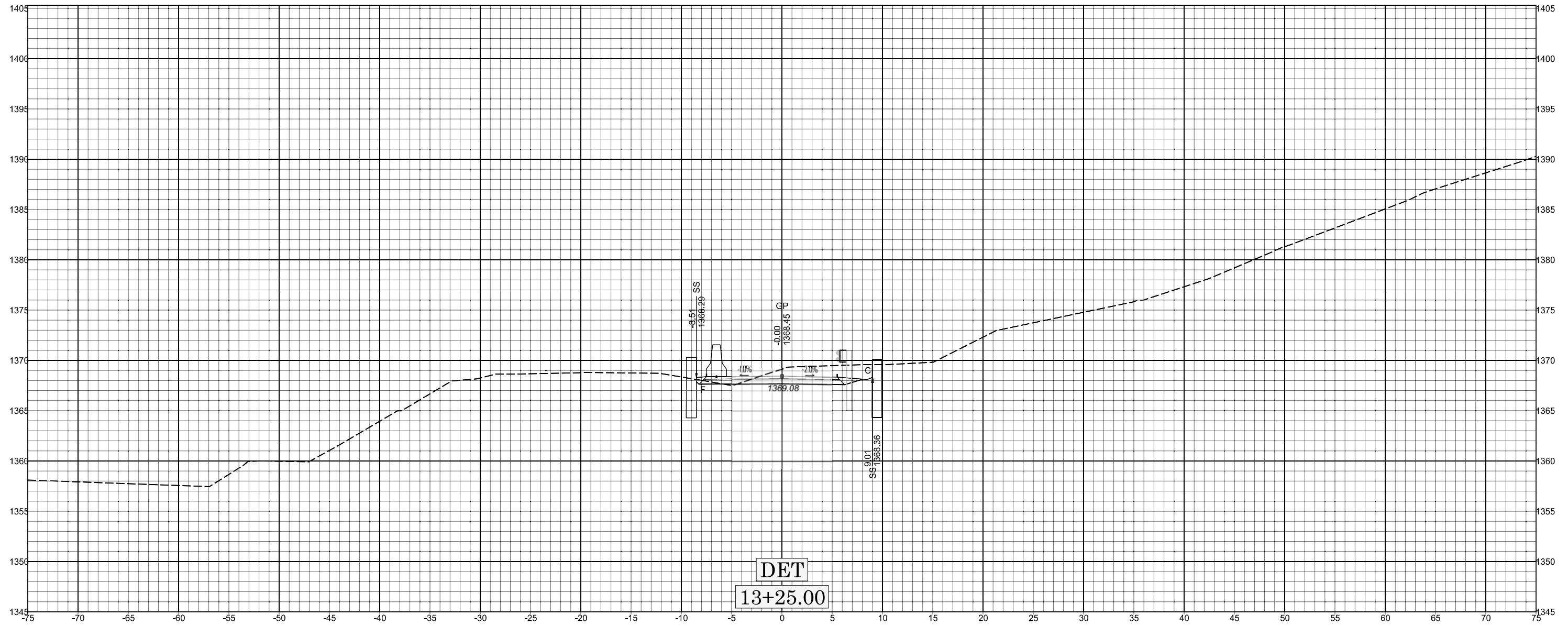


BP13-R026



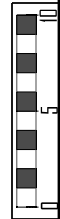
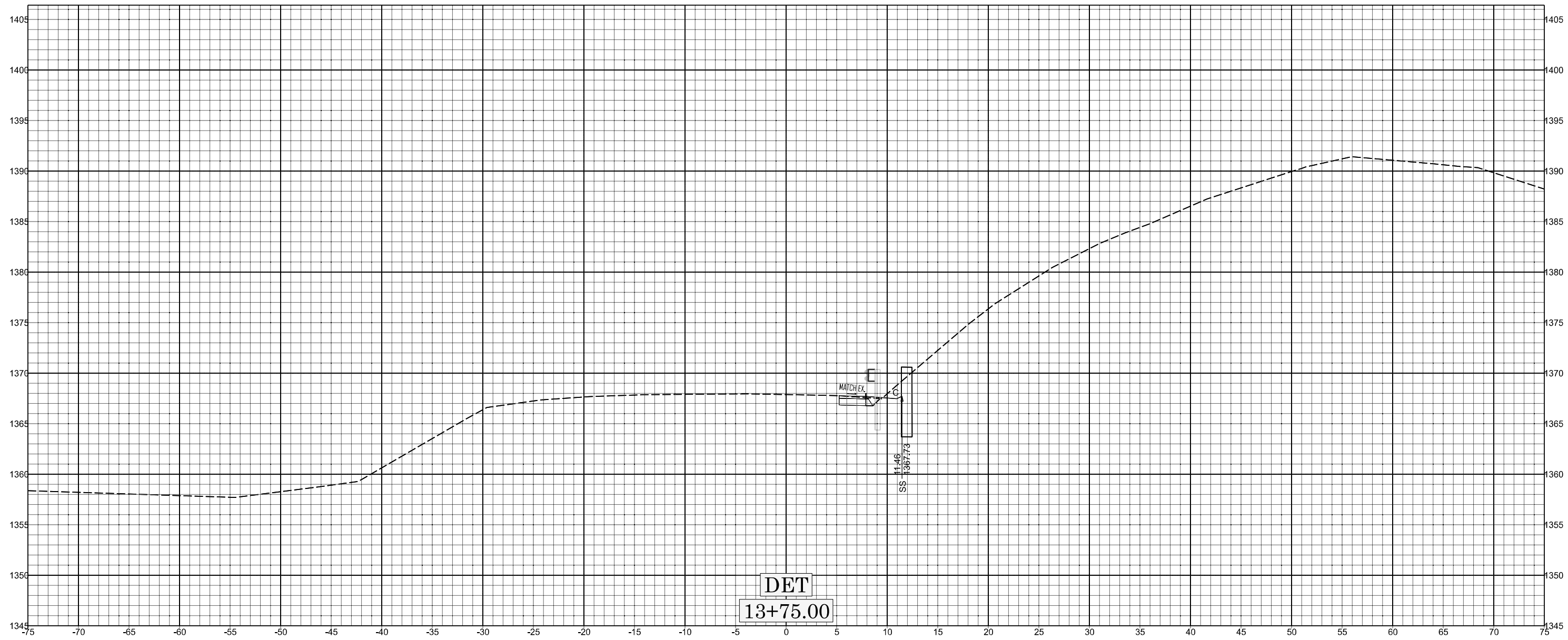
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BP13-R026



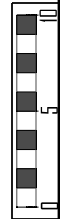
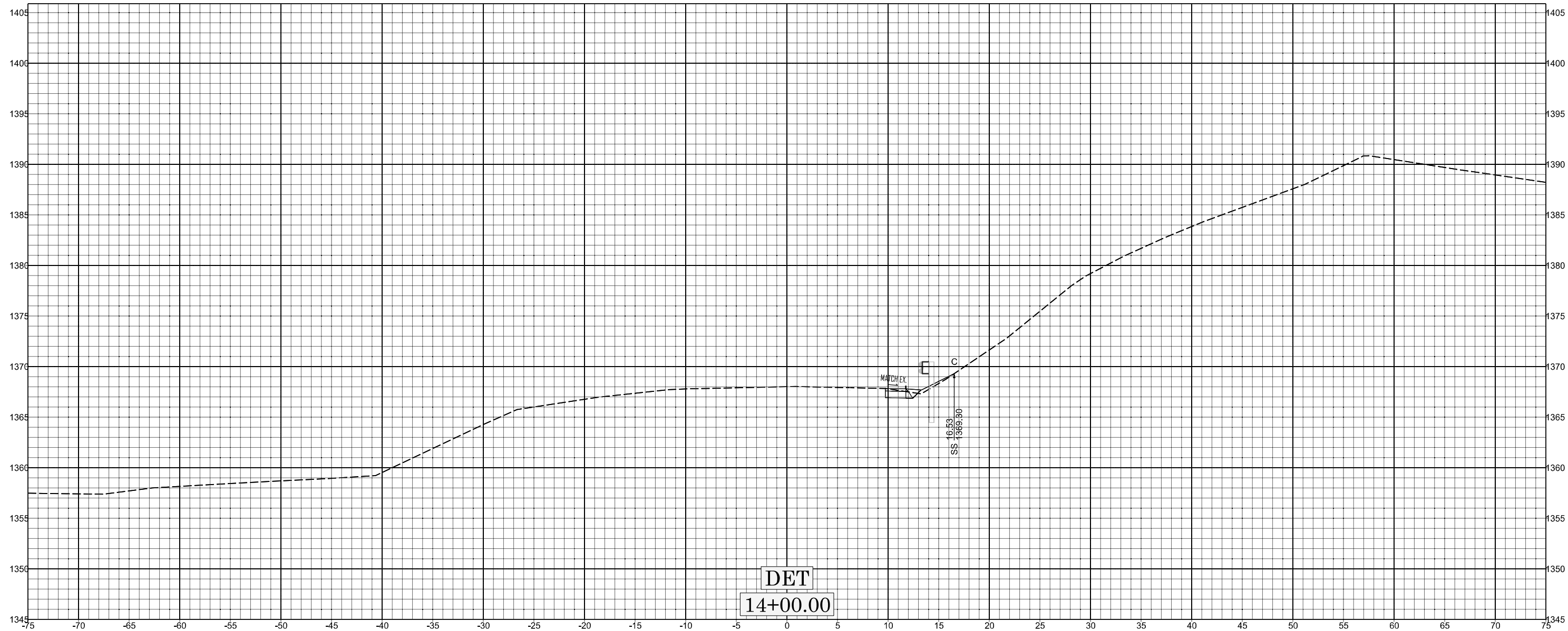
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BP13-R026



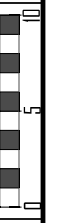
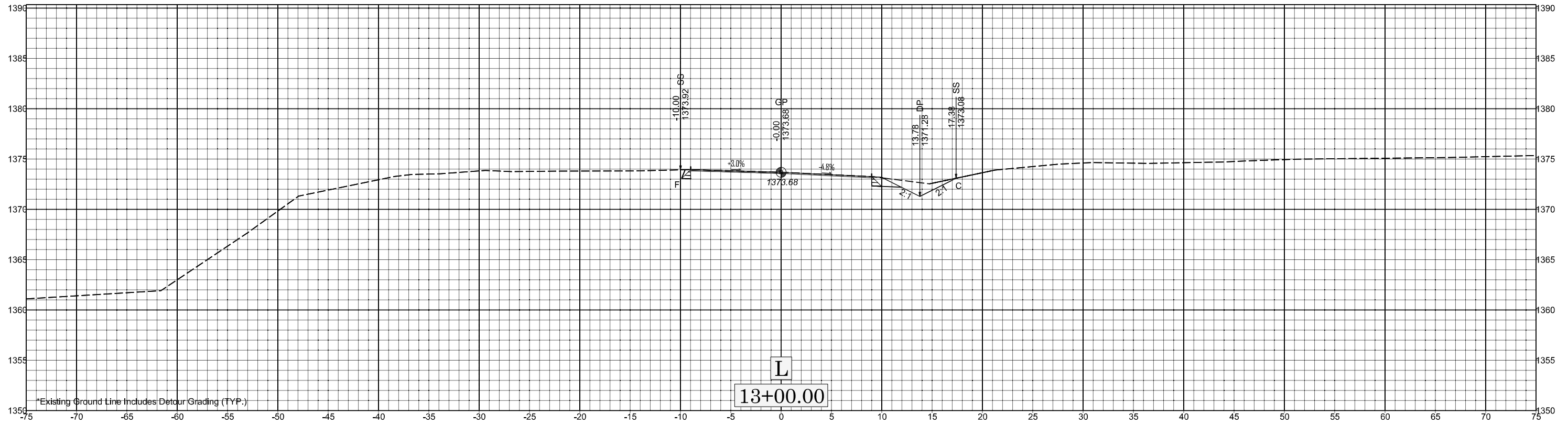
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BP13-R026

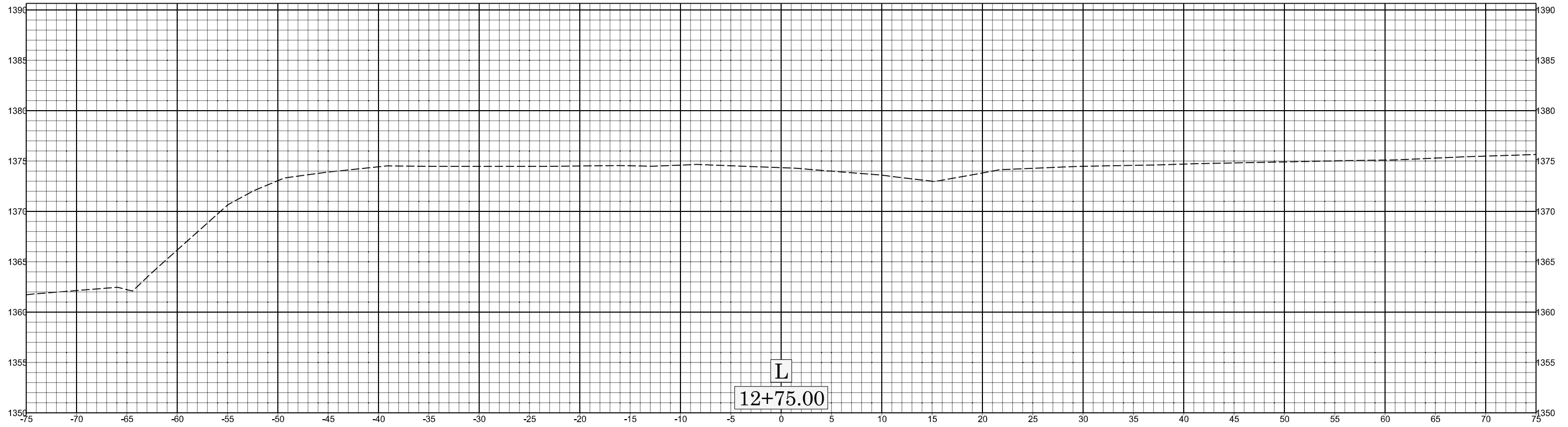


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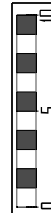
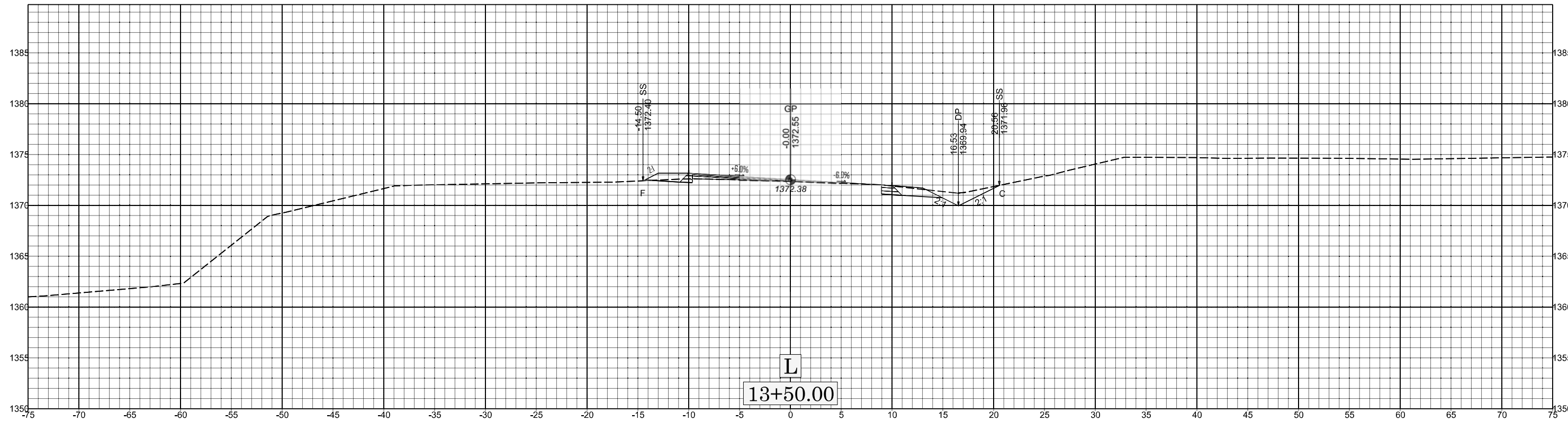
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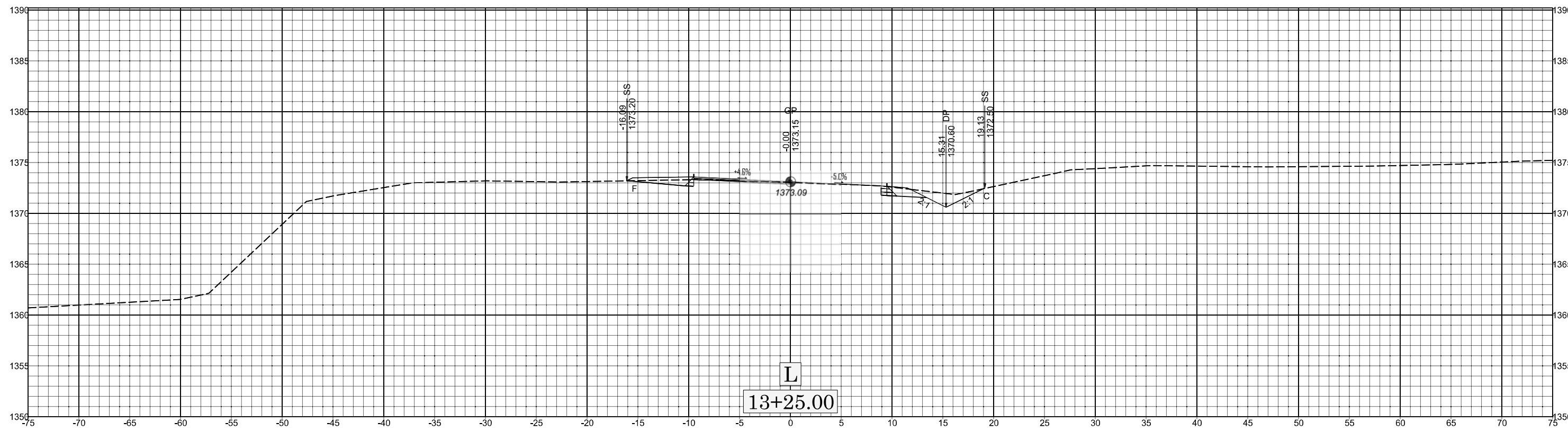
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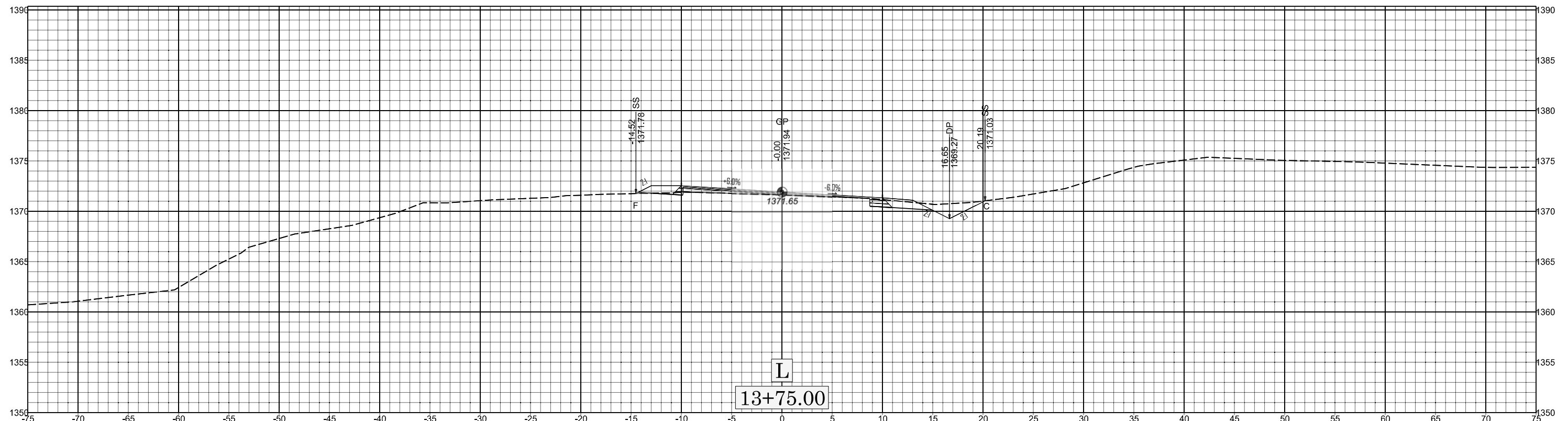
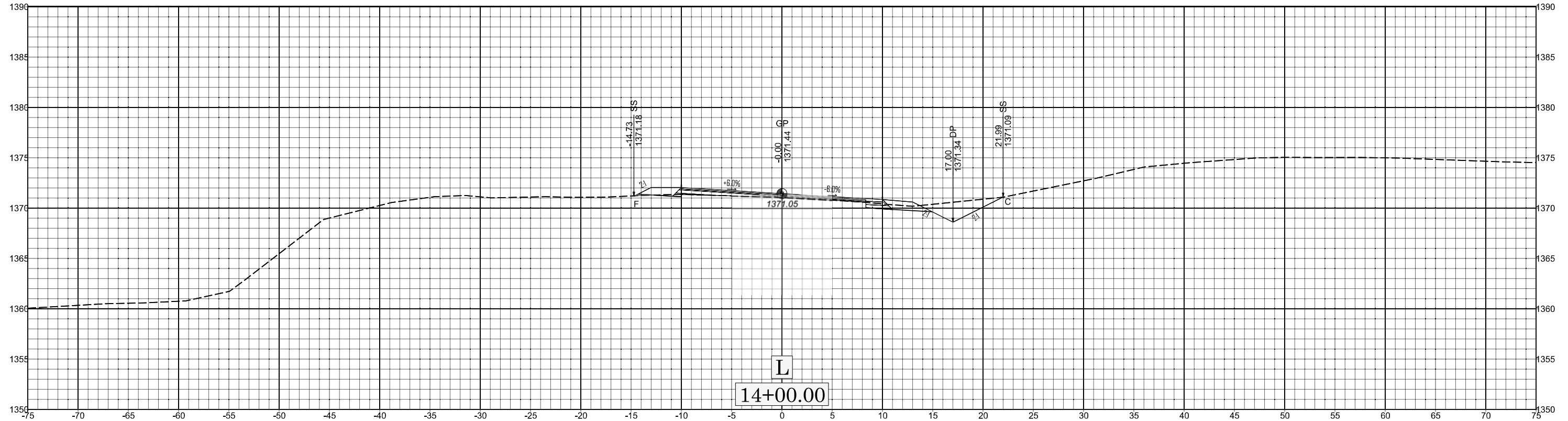
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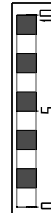
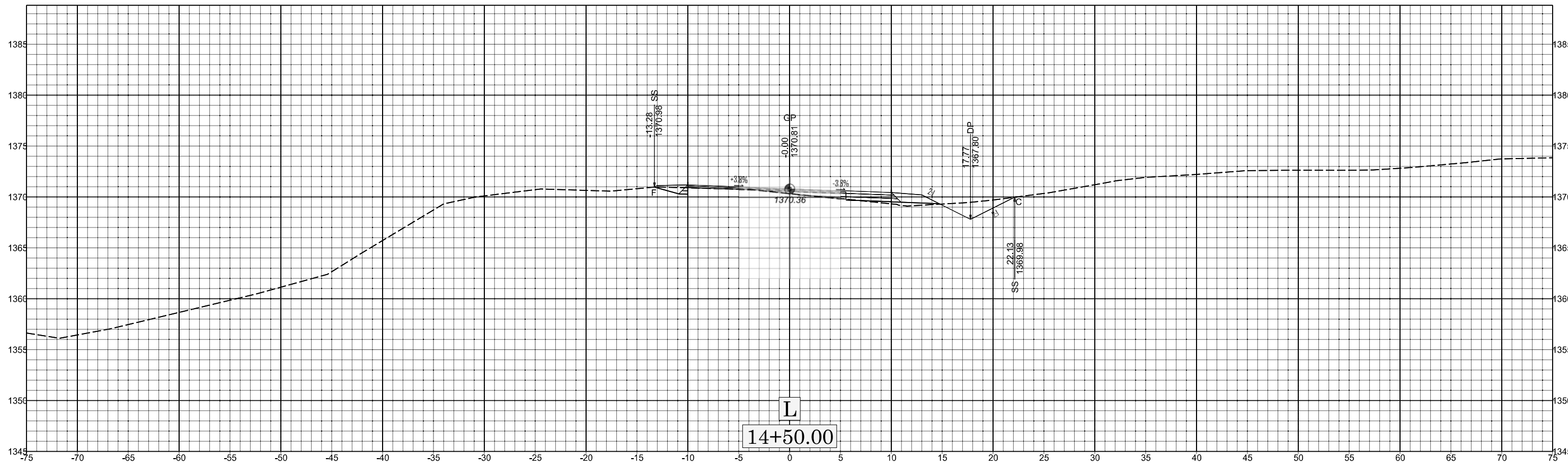


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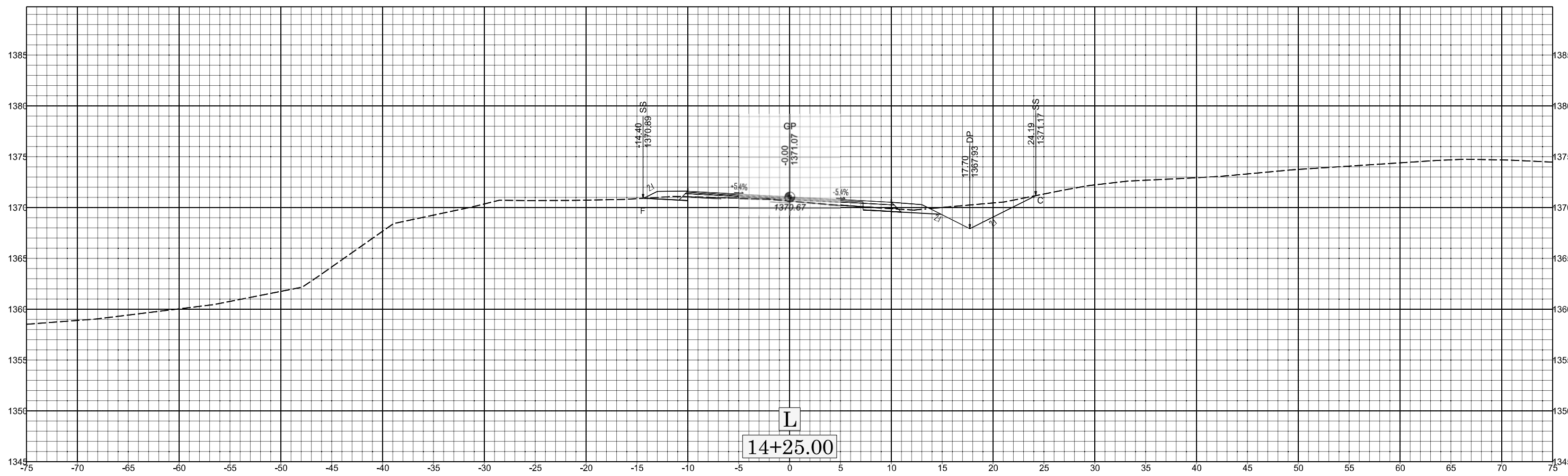


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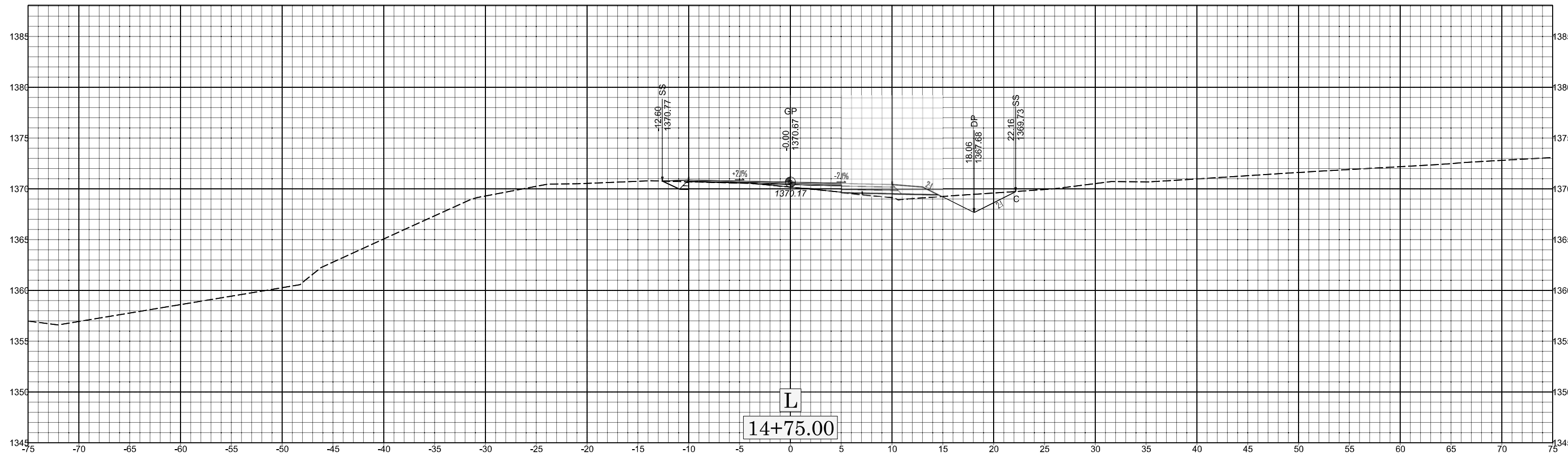
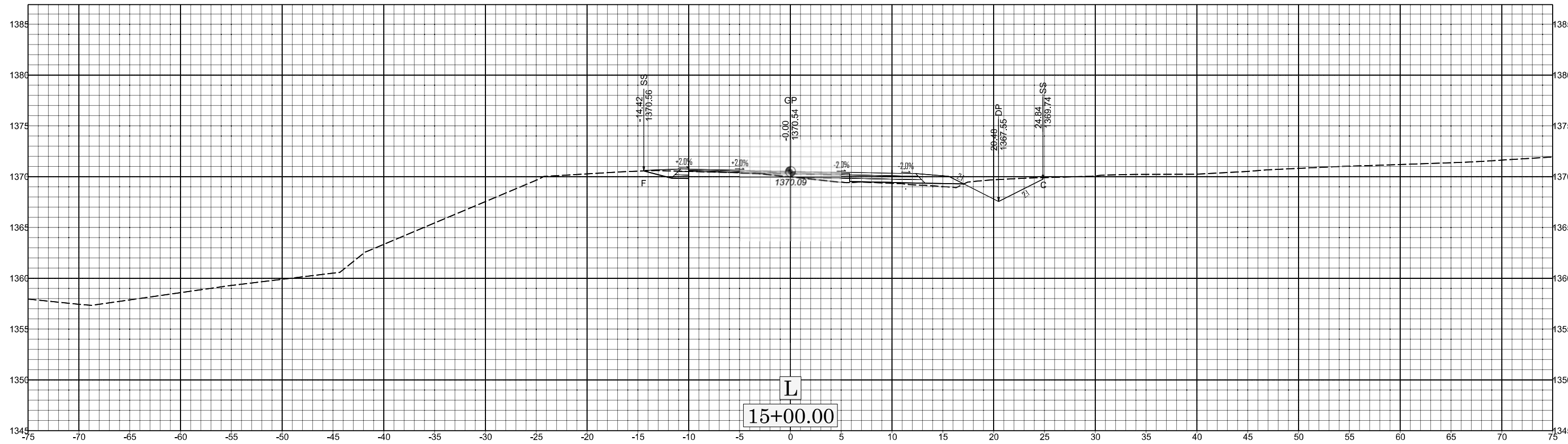


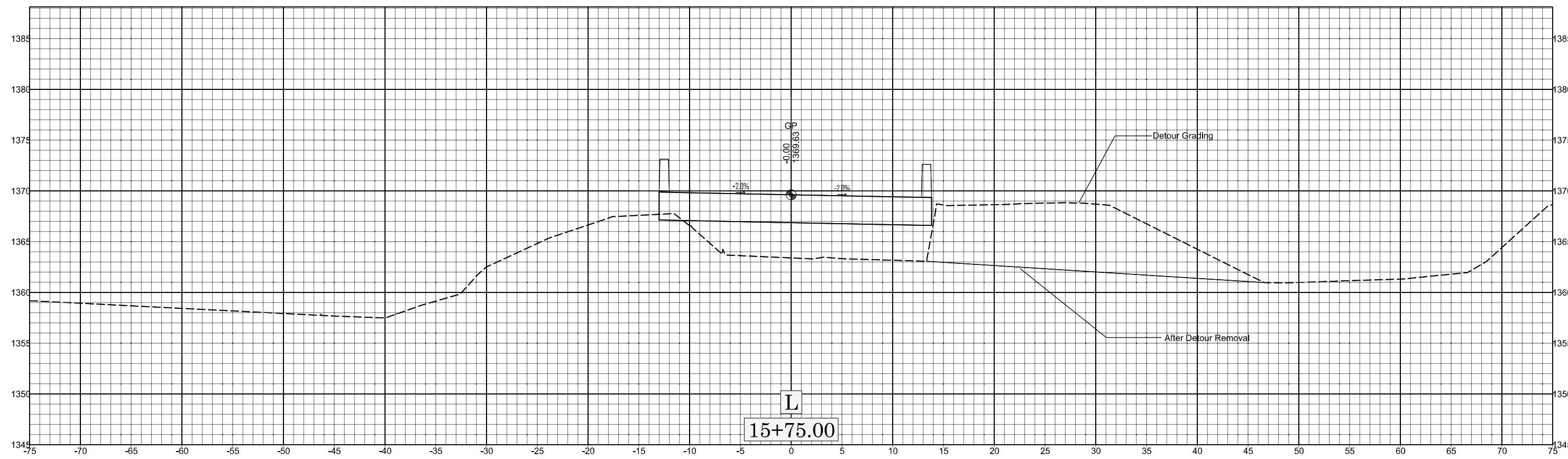
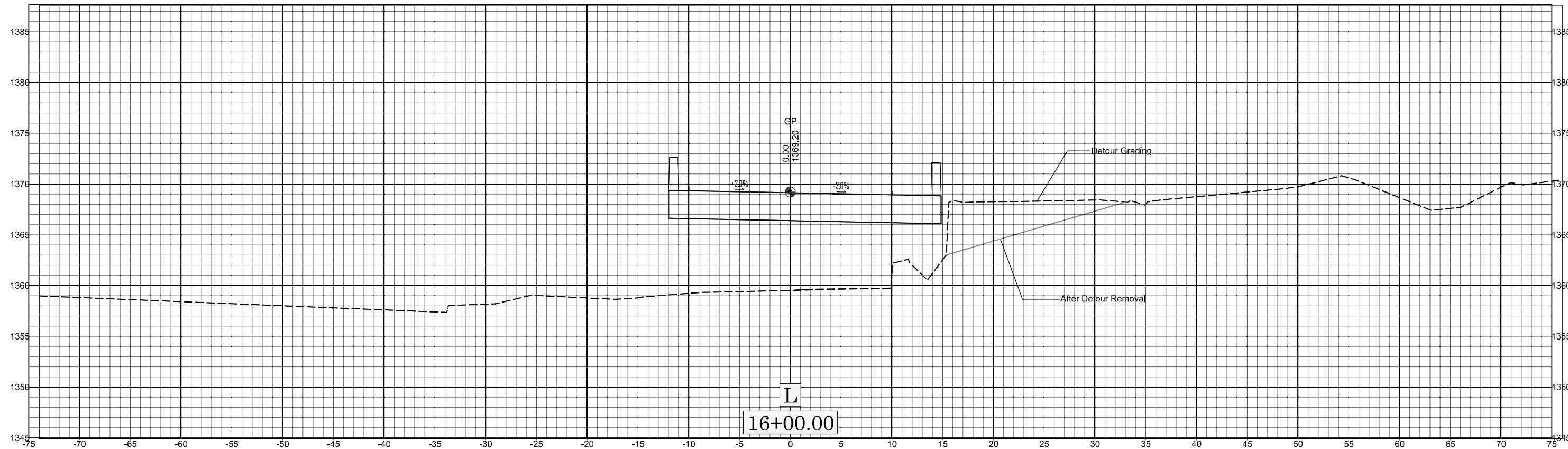


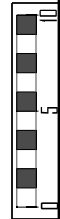
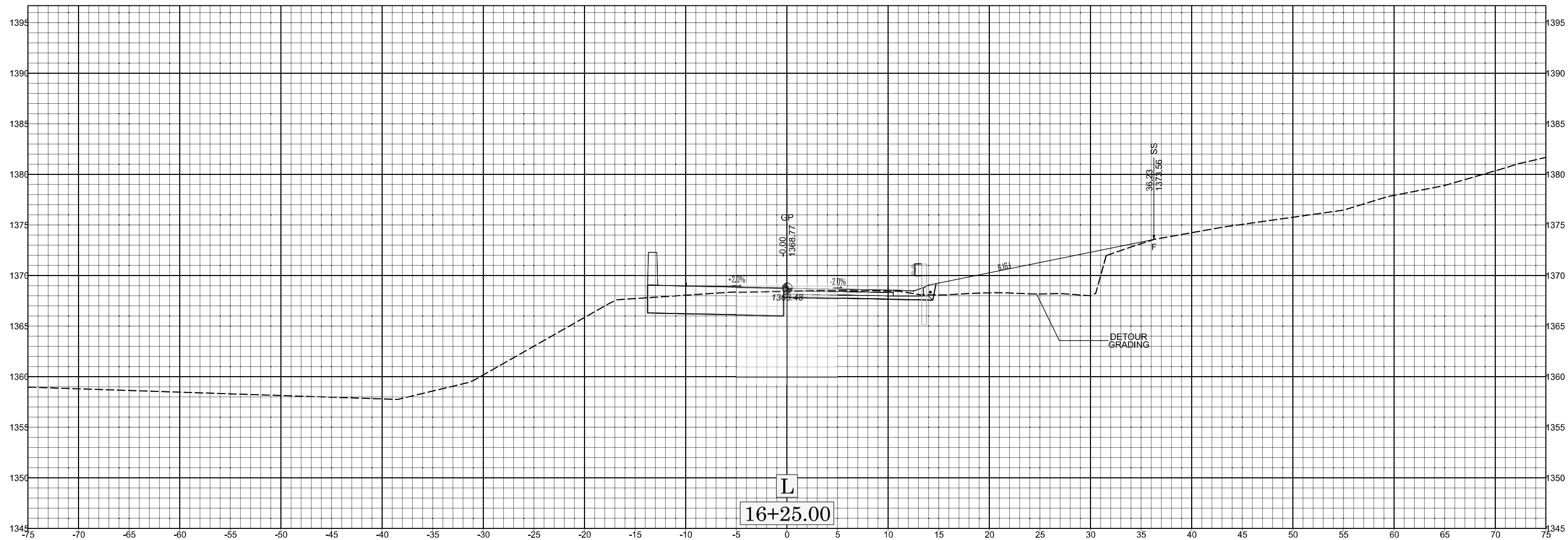
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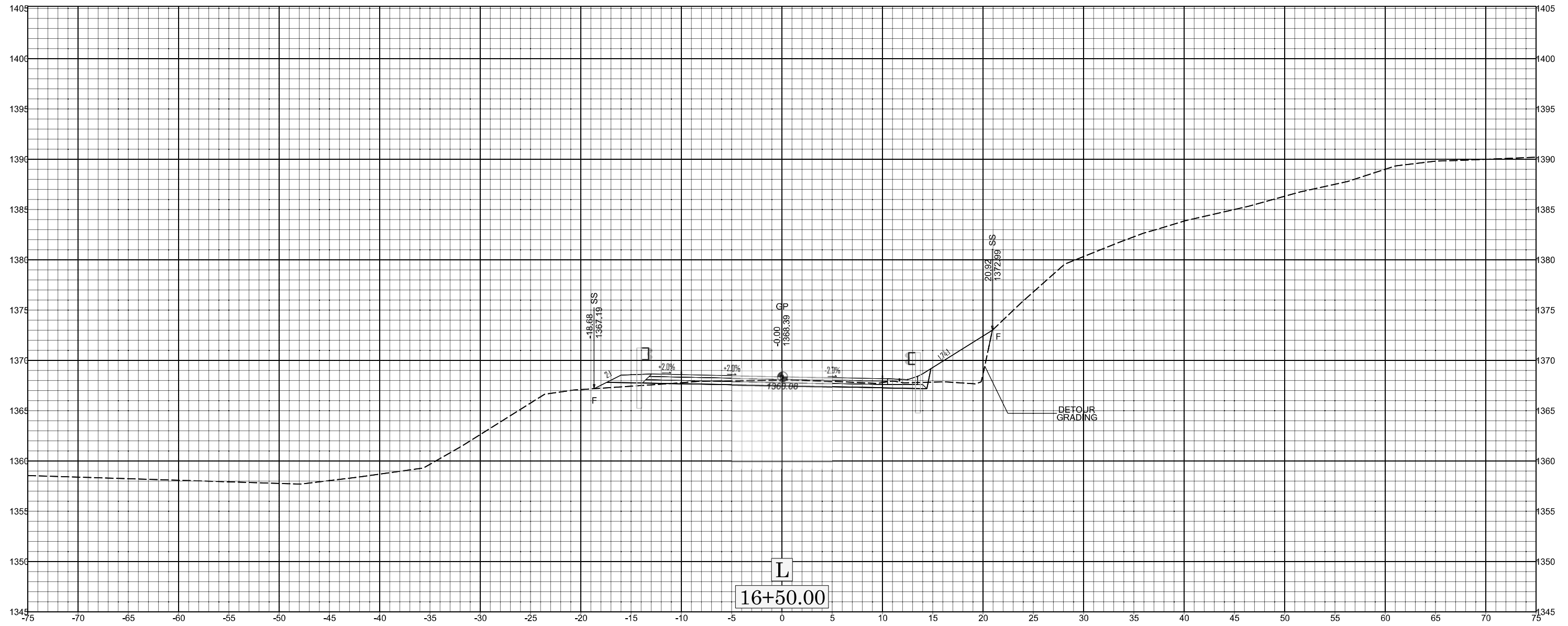






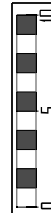
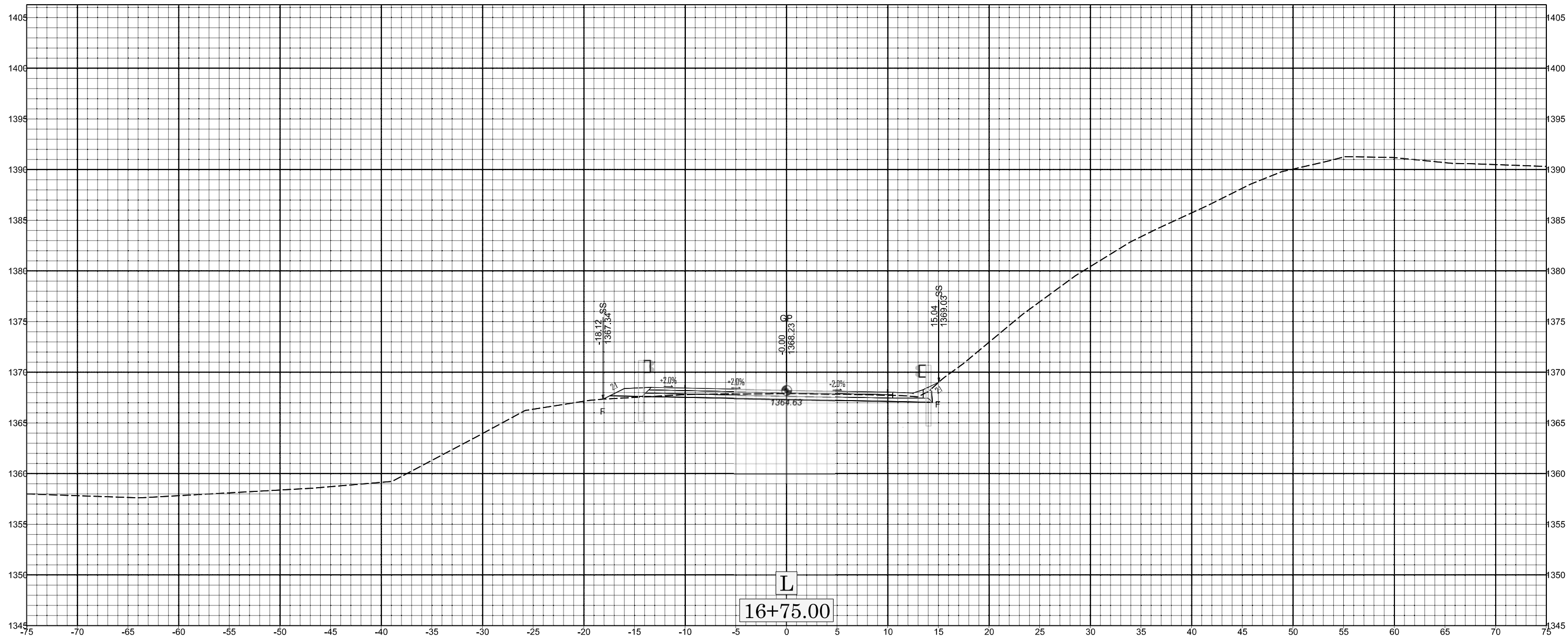
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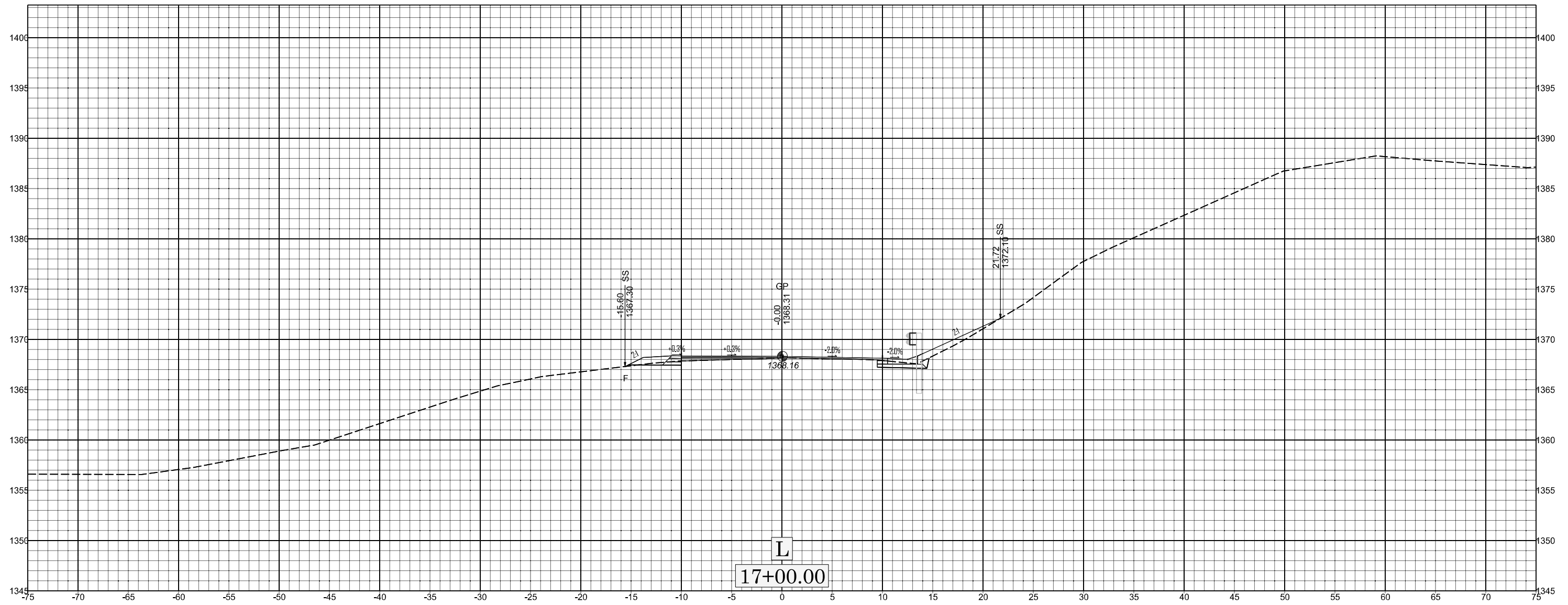
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BP13-R026



X 019

BP13-R026



X 020

BP13-R026

