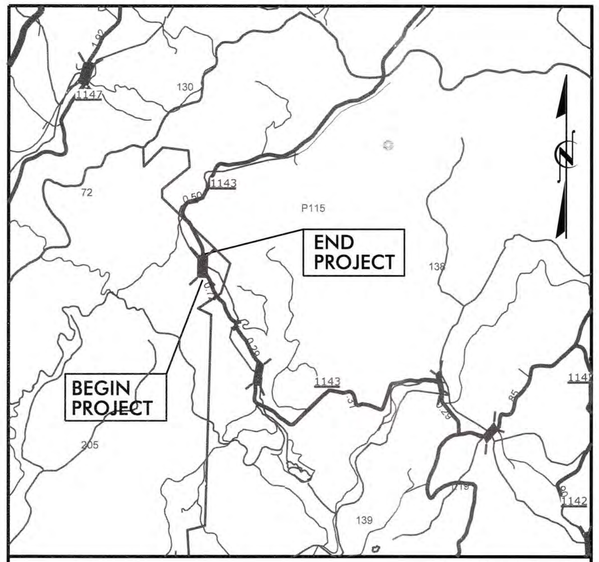
09/08/99

PROJECT: 17BP.14.R.49

CONTRACT: DN00176

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

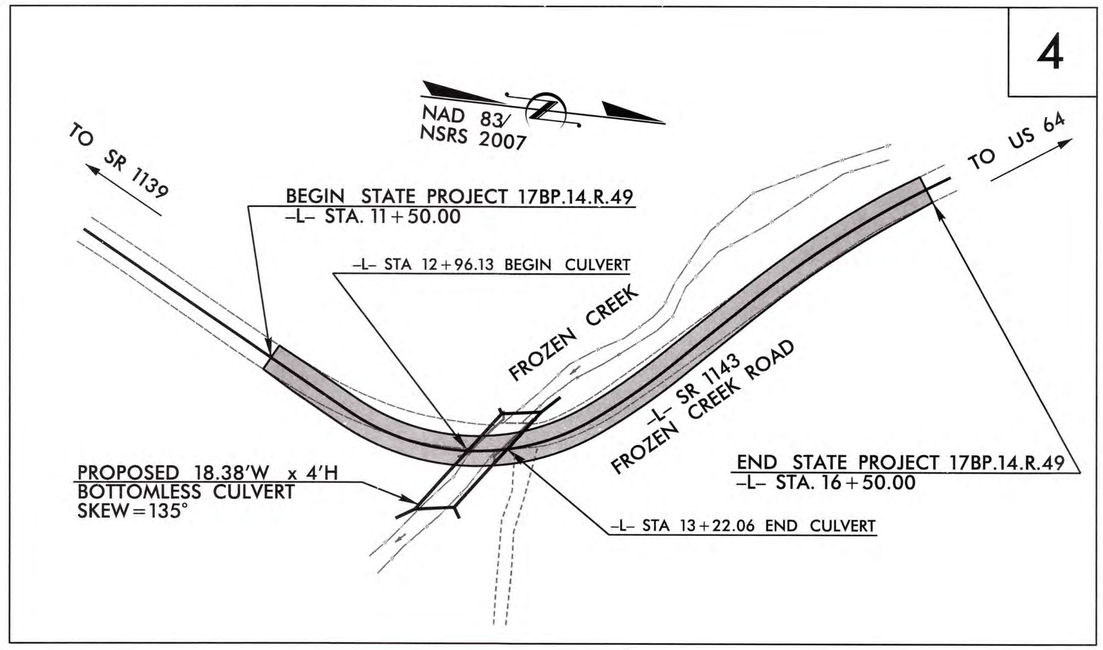
TRANSYLVANIA COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.49	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.14.R.49		PE
17BP.14.R.49		ROW & UTIL
17BP.14.R.49		CONST.

LOCATION: BRIDGE NO. 72 ON SR 1143 (FROZEN CREEK ROAD) OVER FROZEN CREEK

TYPE OF WORK: PAVING, GRADING, GUARDRAIL, DRAINAGE AND CULVERT



GRAPHIC SCALES

20 10 0 20 40
PLANS

20 10 0 20 40
PROFILE (HORIZONTAL)

5 2.5 0 5 10
PROFILE (VERTICAL)

DESIGN DATA

ADT 2013 = 630
ADT 2033 = 1,230
DHV = N/A %
D = N/A %
T = 6 % *
V = 25 MPH
* TTST = N/A DUAL 6%
FUNC CLASS =
LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT 17BP.14.R.49	=	0.090 mi.
LENGTH STRUCTURE PROJECT 17BP.14.R.49	=	0.005 mi.
TOTAL LENGTH PROJECT 17BP.14.R.49	=	0.095 mi.

Prepared for NCDOT In the Office of:
moffatt & nichol
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MARCH 7, 2013

LETTING DATE:
OCTOBER 28, 2014

TIM REID, P.E.
PROJECT ENGINEER

TRENT HUFFMAN, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
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NORTH CAROLINA PROFESSIONAL SEAL 026696 ENGINEER JEFFREY L. BECK
SIGNATURE: P.E. 9-24-2014

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NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER J. R. REID
SIGNATURE: P.E. 9/24/14

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

9/24/2014
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thuffman

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.49	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER R. REID 9/24/14

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INDEX OF SHEETS

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2-A THRU 2-B	SPECIAL DETAILS FOR ON-SITE DETOUR
3	SUMMARY OF QUANTITIES
3A	SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY PARCEL INDEX, RIP RAP SUMMARY
4	PLAN SHEET
5	PROFILE SHEET
TMP-1 THRU TMP-6	TRANPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-6	EROSION CONTROL PLAN
RF-1	REFORESTATION PLAN
UO-1 THRU UO-2	UTILITIES PLANS BY OTHERS
X-A, X-1 THRU X-29	CROSS-SECTION SUMMARY, CROSS-SECTIONS
C-1 THRU C-7	CULVERT PLANS
SN	STRUCTURE STANDARD NOTES

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-2012
REVISED: 07-30-2012

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

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"

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE:
HAYWOOD EMC - Power
COMPORIUM - Telephone & CTV

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 CONTRACT IN ACCORDANCE WITH SECTION 801 OF THE 2012 NORTH CAROLINA STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.

EFF. 01-17-2012
REV. 10-30-2012

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
310.10	Method of Pipe Installation
300.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30"
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units Sheet 7 of 7 - Anchorage for Guardrail Post on Box Culvert
876.01	Rip Rap in Channels

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thilfman

12/05/11

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.49	1–B

Note: Not to Scale

S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Known Soil Contamination: Area or Site
- Potential Soil Contamination: Area or Site

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H–Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Booth
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- Recorded U/G Telephone Cable — T
- Designated U/G Telephone Cable (S.U.E.*) — T
- Recorded U/G Telephone Conduit — TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC
- Recorded U/G Fiber Optics Cable — T FO
- Designated U/G Fiber Optics Cable (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

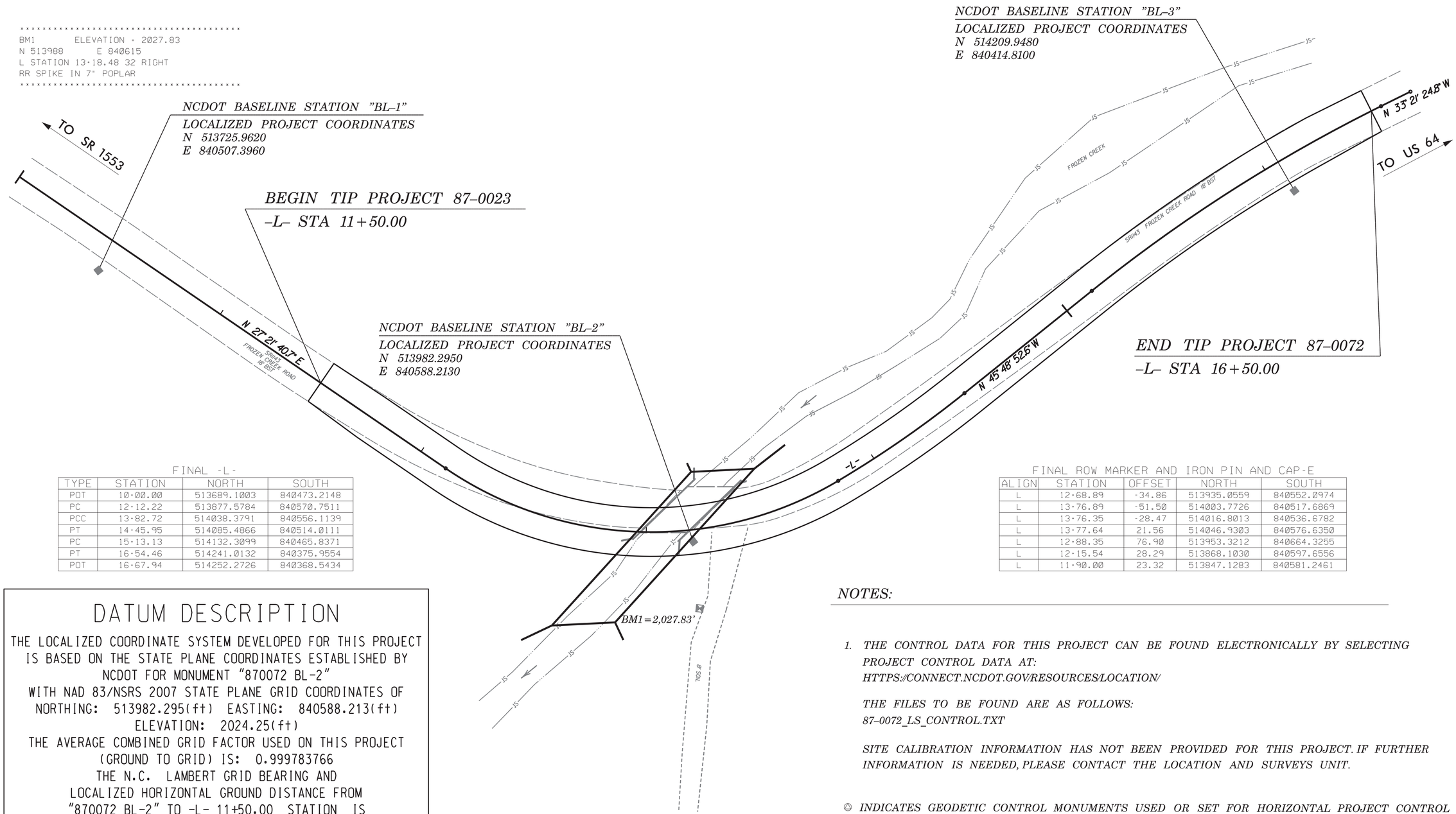
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole (S.U.E.*)
- Abandoned According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

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.49	1–C
Location and Surveys	

SURVEY CONTROL SHEET 87–0072
–FINAL–

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1	513725.9620	840507.3960	2024.72	10+48.45	13.42 RT
2	BL-2	513982.2950	840588.2130	2024.25	13+18.82	4.87 RT
3	BL-3	514209.9480	840414.8100	2033.33	16+06.09	13.61 RT

BM1 ELEVATION = 2027.83
N 513988 E 840615
L STATION 13+18.48 32 RIGHT
RR SPIKE IN 7" POPLAR



FINAL -L-

TYPE	STATION	NORTH	SOUTH
POT	10+00.00	513689.1003	840473.2148
PC	12+12.22	513877.5784	840570.7511
PCC	13+82.72	514038.3791	840556.1139
PT	14+45.95	514085.4866	840514.0111
PC	15+13.13	514132.3099	840465.8371
PT	16+54.46	514241.0132	840375.9554
POT	16+67.94	514252.2726	840368.5434

FINAL ROW MARKER AND IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	SOUTH
L	12+68.89	-34.86	513935.0559	840552.0974
L	13+76.89	-51.50	514003.7726	840517.6869
L	13+76.35	-28.47	514016.8013	840536.6782
L	13+77.64	21.56	514046.9303	840576.6350
L	12+88.35	76.90	513953.3212	840664.3255
L	12+15.54	28.29	513868.1030	840597.6556
L	11+90.00	23.32	513847.1283	840581.2461

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "870072 BL-2"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 513982.295(ft) EASTING: 840588.213(ft)
ELEVATION: 2024.25(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999783766
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "870072 BL-2" TO -L- 11+50.00 STATION IS
S 08° 00' 37.36" W 209.7203'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTES:

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/

THE FILES TO BE FOUND ARE AS FOLLOWS:
87–0072_LS_CONTROL.TXT

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

△ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

GEOIDAL MODEL –
NOTE: DRAWING NOT TO SCALE

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9/24/2014
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bwilson

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.49	2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID 9/24/14

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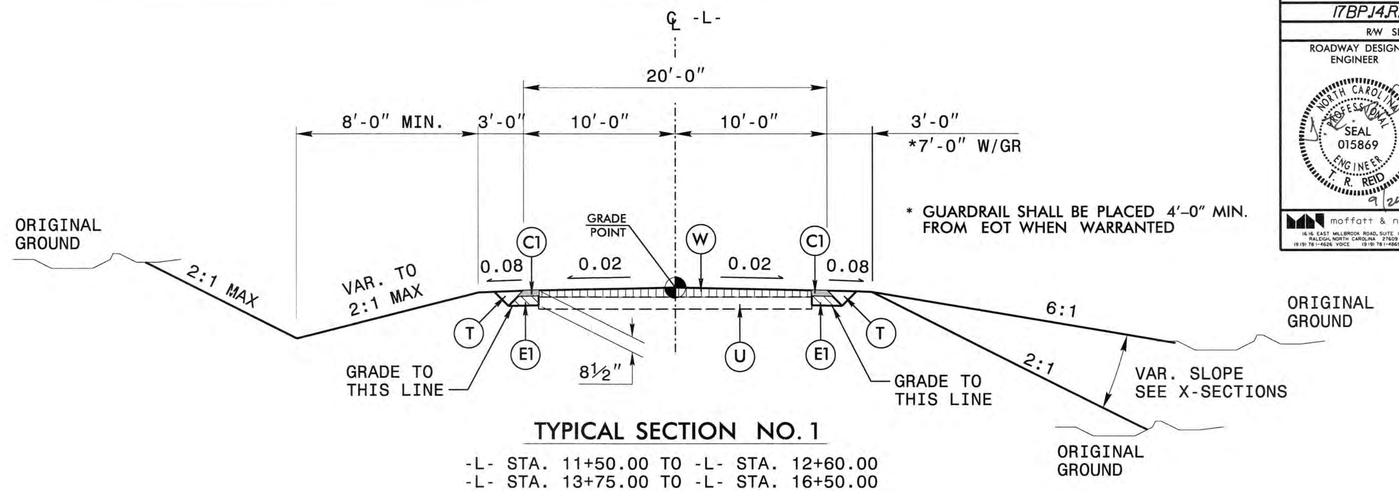
PAVEMENT SCHEDULE

(FINAL PAVEMENT DESIGN)

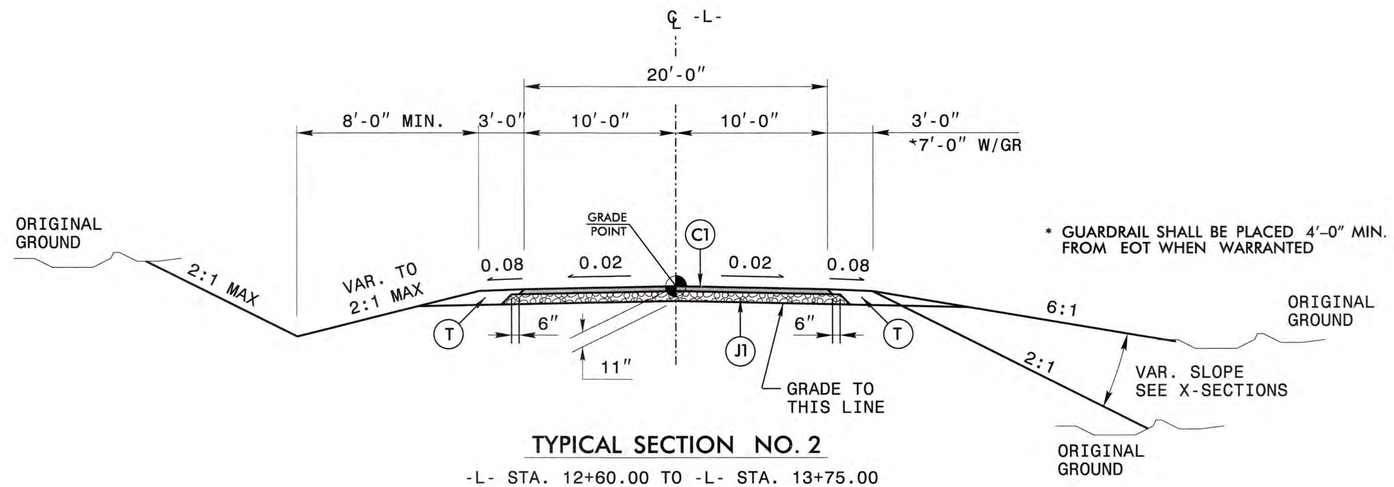
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
E1	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
J1	PROP. 8" AGGREGATE BASE COURSE.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL ON THIS SHEET)

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



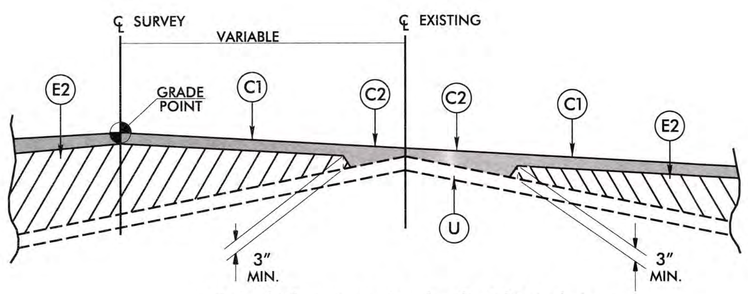
TYPICAL SECTION NO. 1

-L- STA. 11+50.00 TO -L- STA. 12+60.00
-L- STA. 13+75.00 TO -L- STA. 16+50.00

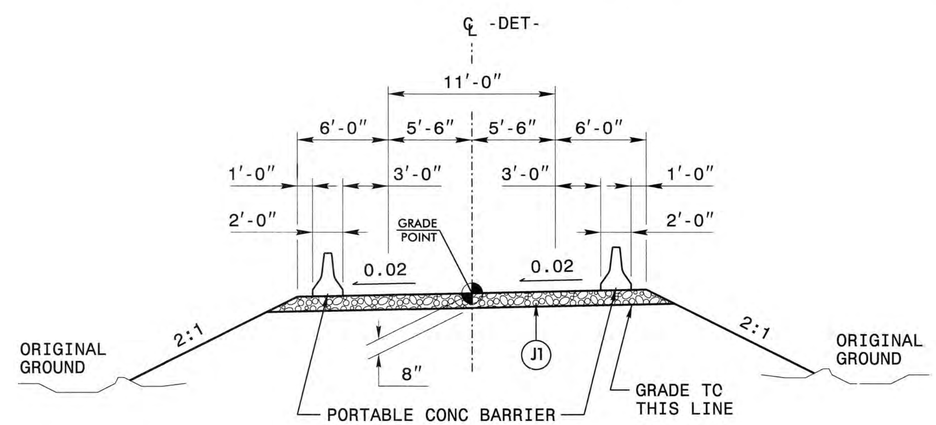


TYPICAL SECTION NO. 2

-L- STA. 12+60.00 TO -L- STA. 13+75.00



Detail Showing Method Of Wedging



USE TYPICAL SECTION NO. 3

-DET- STA. 11+56.96 TO -DET- STA. 14+15.04

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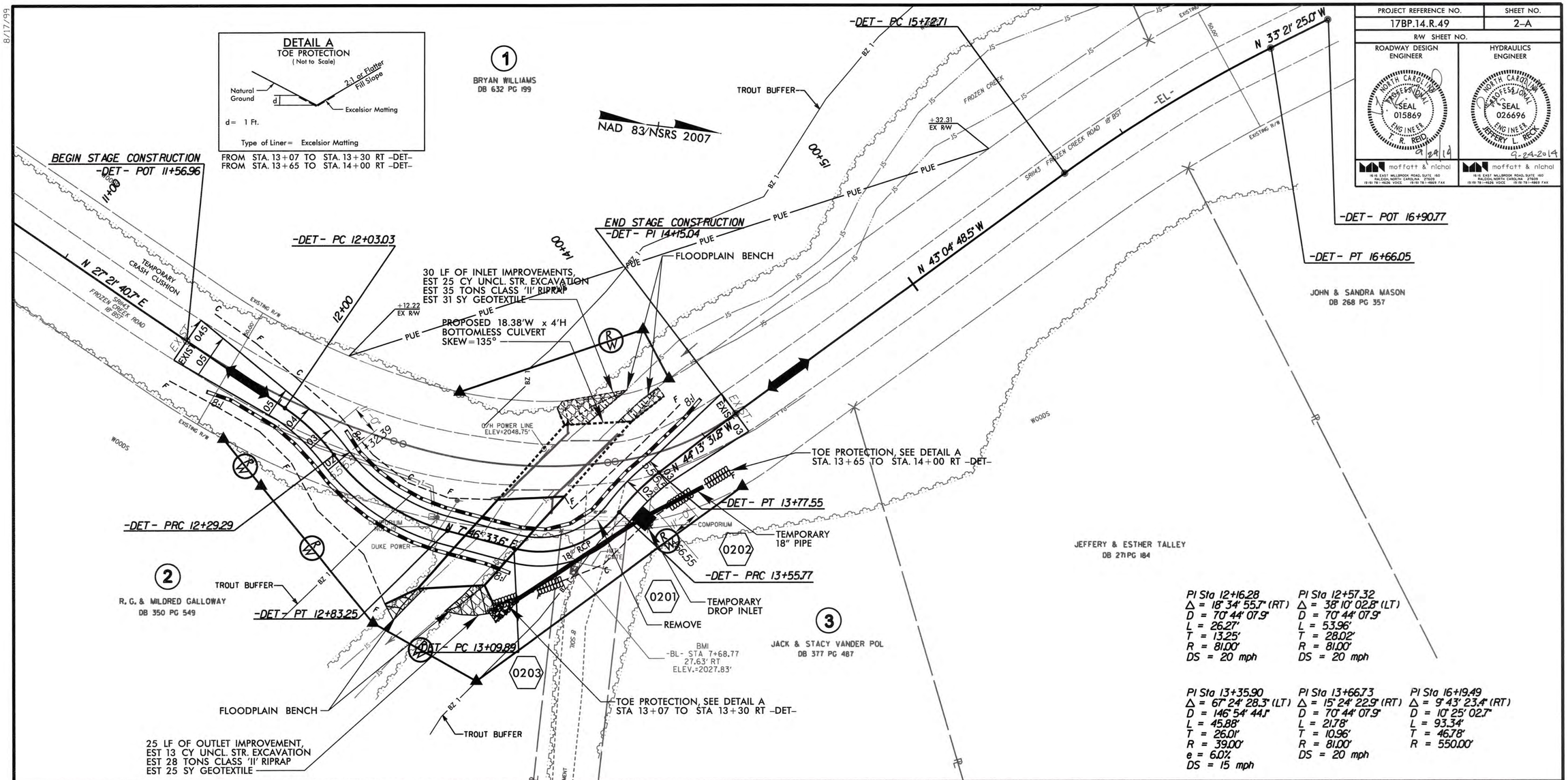
jmartinez

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.49	2-A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER R. REID 9/24/14 — moffatt & nichol, 16 E. MILLBROOK ROAD, SUITE 160, RALEIGH, NORTH CAROLINA 27609, (919) 781-4626 VOICE (919) 781-4865 FAX

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 026696 ENGINEER JEFFERY L. RECK 9-24-2014 — moffatt & nichol, 16 E. MILLBROOK ROAD, SUITE 160, RALEIGH, NORTH CAROLINA 27609, (919) 781-4626 VOICE (919) 781-4865 FAX



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PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.17	2-B
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER J. R. REID

9/24/14

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HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026696 ENGINEER JEFFERY L. RECK

9-24-2014

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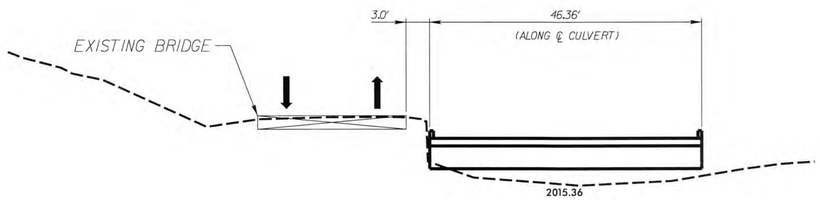
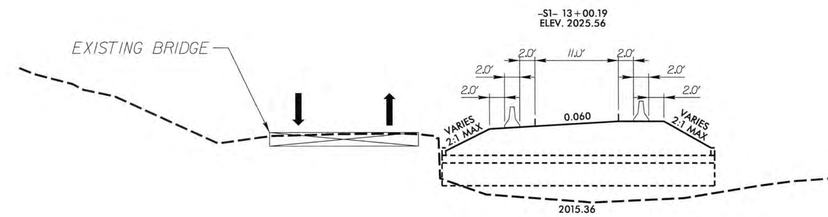
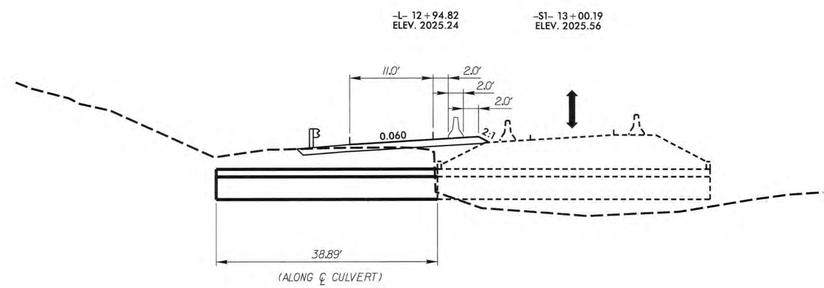
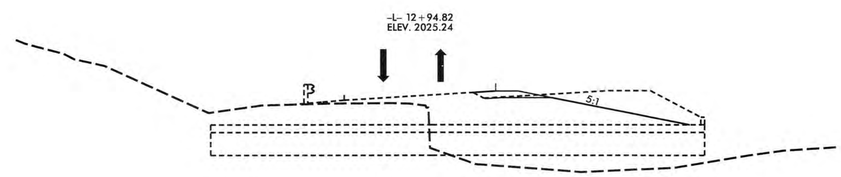




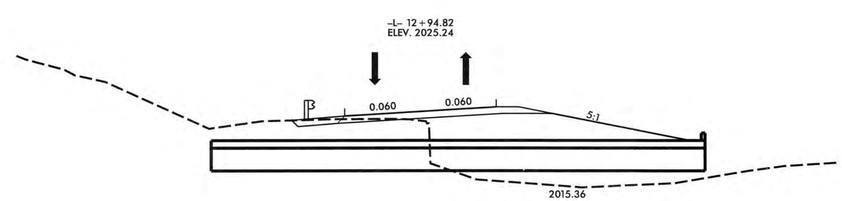
PHASE I



PHASE II



PHASE III



FINAL TRAFFIC PATTERN

STAGE CONSTRUCTION – TYPICAL SECTIONS

8/17/99

9/24/2014
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thiffman

COMPUTED BY: C. POWELL DATE: 9/2414
CHECKED BY: T. HUFFMAN DATE: 9/2414

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.49	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - 17BP.14.R.17

Item Number	Sec #	Qunatity	Unit	Description
0000100000-N	800	1	LS	Mobilization
0000400000-N	801	1	LS	Construction Surveying
0043000000-N	226	1	LS	Grading
0050000000-E	226	1	ACR	Supplemental Clearing and Grubbing
0057000000-E	226	50	CY	Undercut Excavation (Contingency)
0195000000-E	265	50	CY	Select Granular Material (Contingency)
0196000000-E	270	100	SY	Geotextile for Soil Stablilization (Contingency)
0199000000-E	SP	150	SF	Temporary Shoring
0335300000-E	305	26	LF	18" Drainage Pipe
0372000000-E	310	59	LF	18" RC Pipe Culverts, Class III
0995000000-E	340	47	LF	Pipe Removal
1121000000-E	520	210	TON	Aggregate Base Course
1220000000-E	545	50	TON	Incidental Stone Base (Contingency)
1489000000-E	610	50	TON	Asphalt Conc Base Course, Type B 25.0 B
1525000000-E	610	230	TON	Asphalt Conc Surface Course, Type SF 9.5 A
1575000000-E	620	20	TON	Asphalt Binder for Plant Mix PG64-22
2286000000-N	840	1	EA	Masonry Drainage Structures
2364000000-N	840	1	EA	Frame with Two Grates, STD 840.16
3030000000-E	862	187.50	LF	Steel Beam Guardrail
3150000000-N	862	4	EA	Additional Guardrail Posts
3165000000-E	SP	2	EA	Guardrail Anchor Units, Type 350 (TL-2)
3649000000-E	876	2	TON	Rip Rap Class B
3656000000-E	876	75	SY	Geotextile for Drainage
4400000000-E	1110	176	SF	Work Zone Signs (Stationary)
4410000000-E	1110	36	SF	Work Zone Signs (Barricade Mounted)
4430000000-N	1130	20	EA	Drums
4445000000-E	1145	16	LF	Barricades (Type III)
4450000000-N	1150	150	HR	Flagger
4485000000-E	1170	340	LF	Portable Concrete Barrier
4589000000-N	SP	1	LS	Temporary Traffic Signal (2 Signal System)
4810000000-E	1205	4,030	LF	Paint Pavement Marking Lines (4")
4835000000-E	1205	20	LF	Paint Pavement Marking Lines (24")
4870000000-E	1205	20	LF	Removal of Pavement Marking Lines (24")
6000000000-E	1605	825	LF	Temporary Silt Fence
6006000000-E	1610	15	TON	Stone for Erosion Control, Class A
6009000000-E	1610	55	TON	Stone for Erosion Control, Class B
6012000000-E	1610	45	TON	Sediment Control Stone
6015000000-E	1615	0.5	ACR	Temporary Mulching
6018000000-E	1620	50	LB	Seed for Temporary Seeding
6021000000-E	1620	0.25	TON	Fertilizer for Temporary Seeding

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - 17BP.14.R.17

Item Number	Sec #	Qunatity	Unit	Description
6024000000-E	1622	100	LF	Temporary Slope Drains
6029000000-E	SP	100	LF	Safety Fence
6030000000-E	1630	100	CY	Silt Excavation
6036000000-E	1631	1,250	SY	Matting for Erosion Control
6042000000-E	1632	60	LF	1/4" Hardware Cloth
6070000000-N	1639	1	EA	Special Stilling Basin
6071020000-E	SP	15	LB	Polyacrylamide (PAM)
6084000000-E	1660	0.5	ACR	Seeding & Mulching
6090000000-E	1661	50	LB	Seed for Repair Seeding
6093000000-E	1661	0.25	TON	Fertilizer for Repair Seeding
6096000000-E	1662	50	LB	Seed for Supplemental Seeding
6108000000-E	1665	0.50	TON	Fertilizer Topdressing
6111000000-E	SP	250	LF	Impervious Dike
6117000000-N	SP	9	EA	Response for Erosion Control
6123000000-E	1670	0.1	ACR	Reforestation
8035000000-N	402	1	LS	Removal of Existing Structure at Sta 13+16.00 -L-
8063000000-N	SP	1	LS	Precast Reinforced Conc Three-sided Culvert at Sta 13+08.54 -L-
8070000000-E	410	100	CY	Foundation Excavation
8121000000-N	412	1	LS	Unclassified Structure Excavation, Sta 13+08.54 -L-
8196000000-E	420	44.2	CY	Class A Concrete (Culvert)
8245000000-E	425	3,962	LB	Reinforcing Steel (Culvert)
8608000000-E	876	63	TON	Rip Rap Class II (2'-0" Thick)
8622000000-E	876	56	SY	Geotextile for Drainage

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thuffman

COMPUTED BY: DGM DATE: 01/10/2013
CHECKED BY: TEH DATE: 01/10/2013

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.49	3–A

SUMMARY OF EARTHWORK

ALIGNMENT	STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
–DET–	11+40.00	14+00.00	46	651	605	
–L–	11+60.00	16+40.00	45	682	637	
–DET– REMOVAL	11+40.00	14+00.00	204			204
SUBTOTALS:			295	1,333	1,242	204
SHOULDER MATERIAL				69	69	
REDUCTION FOR PREVIOUSLY PLACED FILL (–DET–)				–379	–379	
REDUCTION FOR CULVERT				–276	–276	
PROJECT TOTALS:			295	747	656	
5% TO REPLACE TOPSOIL ON BORROW PIT					33	
GRAND TOTALS:			295		689	204
SAY:			300		700	

EST 38 CY UNCLASSIFIED STRUCTURE EXCAVATION
EST 50 CY UNDERCUT EXCAVATION (CONTINGENCY)
EST 50 CY SELECT GRANULAR MAT'L (CONTINGENCY)
EST 100 SY GEOTEXTILE FOR SOIL STABILIZATION (CONTINGENCY)
EST 50 TON INCIDENTAL STONE (CONTINGENCY)

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

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

RIGHT OF WAY AREA DATA

PARCEL NO.	PROPERTY OWNERS NAMES	TOTAL ACREAGE	AREA TAKEN	AREA REMAINING RT.	AREA REMAINING LT.	CONST. EASE.	PERM. DRAIN. EASE.	TEMP. DRAIN. EASE.	PERM. UTIL. EASE.
1	BRYAN WILLIAMS	15.676 AC	0.026 AC	–	15.650 AC		–	–	0.139 AC
2	R.G. AND MILDRED GALLOWAY	3.137 AC	0.112 AC	3.025 AC	–		–	–	–
3	JACK & STACY VANDERPOL	1.893 AC	0.008 AC	1.885 AC	–		–	–	–

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
–L–	11+50.00	13+16.96	LT	88.48
–L–	13+33.44	15+25.84	LT	51.30
TOTAL:				139.78
SAY:				140

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

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"
13+60 –DET–	RT	0201													
		0201	0203	2025.7	2023.3	2021.7									
13+88 –DET–	RT	0202	0201		2023.8	2023.3				26					
13+50 –DET–	CL														
TOTALS										26					

STATION	C.S. PIPE (UNLESS NOTED OTHRWISE) 12" .064	15" .064	18" .064	24" .064	24"	30" .079	30"	36" .079	36"	42" .109	42"	48" .109	48"	CLASS III R.C. PIPE (UNLESS OTHERWISE NOTED) 12"	15"	18"	24"	30"	36"	42"	48"
13+60 –DET–																					
																59					
13+88 –DET–																					
13+50 –DET–																					
TOTALS																59					

STATION	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G		CONCRETE TRANSITIONAL SECTION CATCH BASIN	DROP INLET
13+60 –DET–						1									
13+88 –DET–															
13+50 –DET–															
TOTALS						1									

STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.D.I. STD. 840.36	G.D.I. FRAME WITH TWO GRATES STD. 840.37			CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	REMOVE TEMPORARY DROP INLET	PIPE REMOVAL LIN.FT.	REMARKS
13+60 –DET–	1	1																1		TEMPORARY DROP INLET
																				PERMANENT PIPE
13+88 –DET–																			26	TEMPORARY PIPE
13+50 –DET–																			21	
TOTALS	1	1																1	47	TOTALS

ABBREVIATIONS

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

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	SHOP CURVED	DOUBLE FACED	WARRANT POINT APPROACH END	TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	TRAILING END	W APPROACH END	TRAILING END
L	12+75.21	15+00.34	LT	225.13			13+68.45	13+22.72	4	7				
DET	11+45.59	14+28.51	LT											
DET	11+92.79	13+28.15	RT											
TOTAL				225.13										
LESS ANCHOR DEDUCTIONS														
GRAU–350 (TYPE TL–2)		2 @ 25.00		–50.00										
GRAND TOTALS				175.13										
SAY				187.50										

SURVEY LINE	ANCHORS XI MOD	XI	GRAU 350	III	XIII	CAT–1	VI MOD	BIC	AT–1	TL–2	IMPACT ATTENUATOR TYPE 350 EA	G	NG	PORTABLE CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
L										2							CULVERT / FILL WARRANT
DET														240			TEMPORARY
DET														100			TEMPORARY
TOTAL										2				340			TOTAL
LESS ANCHOR DEDUCTIONS																	
GRAU–350 (TYPE TL–2)																	
GRAND TOTALS										2				340			GRAND TOTALS
SAY										2				340			SAY

ADDITIONAL GUARDRAIL POSTS = 4

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thuffman

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.49	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER J. R. REID 9/24/14

NORTH CAROLINA PROFESSIONAL SEAL 026696 ENGINEER JEFFERY L. RECK 9-24-2014

moffatt & nichol
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX

NAD 83/NSRS 2007

DETAIL A
TOE PROTECTION
(Not to Scale)

d= 1 Ft.

Type of Liner= Excelsior Matting

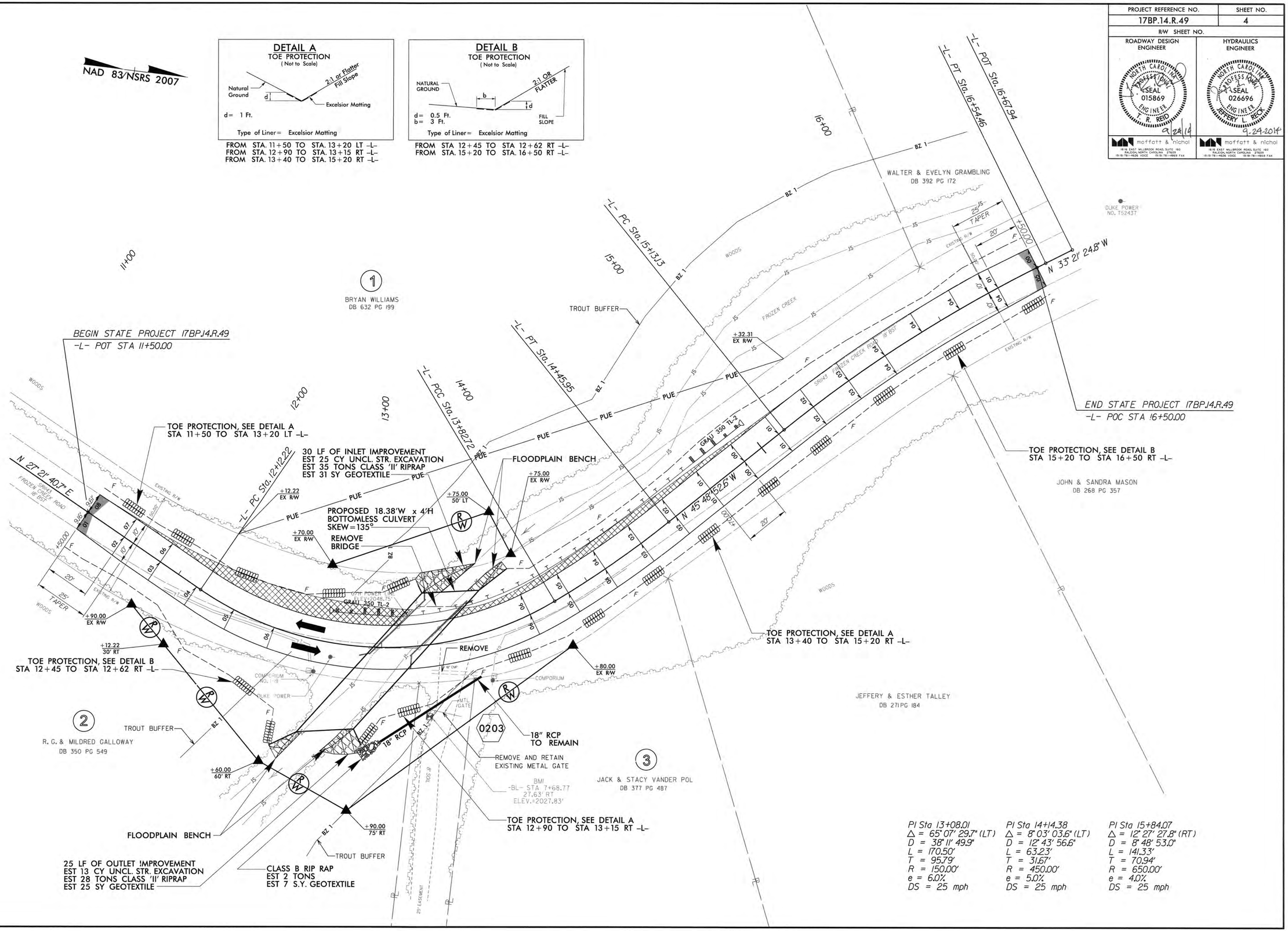
FROM STA. 11+50 TO STA. 13+20 LT -L-
FROM STA. 12+90 TO STA. 13+15 RT -L-
FROM STA. 13+40 TO STA. 15+20 RT -L-

DETAIL B
TOE PROTECTION
(Not to Scale)

d= 0.5 Ft.
b= 3 Ft.

Type of Liner= Excelsior Matting

FROM STA 12+45 TO STA 12+62 RT -L-
FROM STA. 15+20 TO STA. 16+50 RT -L-



PI Sta 13+08.01
Δ = 65° 07' 29.7" (LT)
D = 38° 11' 49.9"
L = 170.50'
T = 95.79'
R = 150.00'
e = 6.0%
DS = 25 mph

PI Sta 14+14.38
Δ = 8° 03' 03.6" (LT)
D = 12° 43' 56.6"
L = 63.23'
T = 31.67'
R = 450.00'
e = 5.0%
DS = 25 mph

PI Sta 15+84.07
Δ = 12° 27' 27.8" (RT)
D = 8° 48' 53.0"
L = 141.33'
T = 70.94'
R = 650.00'
e = 4.0%
DS = 25 mph

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9/25/2014
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mmallin

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.49	5

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

9/24/14

moffatt & nichol
16-16 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4628 FAX

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026696 ENGINEER JEFFERY L. RECK

9-24-2014

moffatt & nichol
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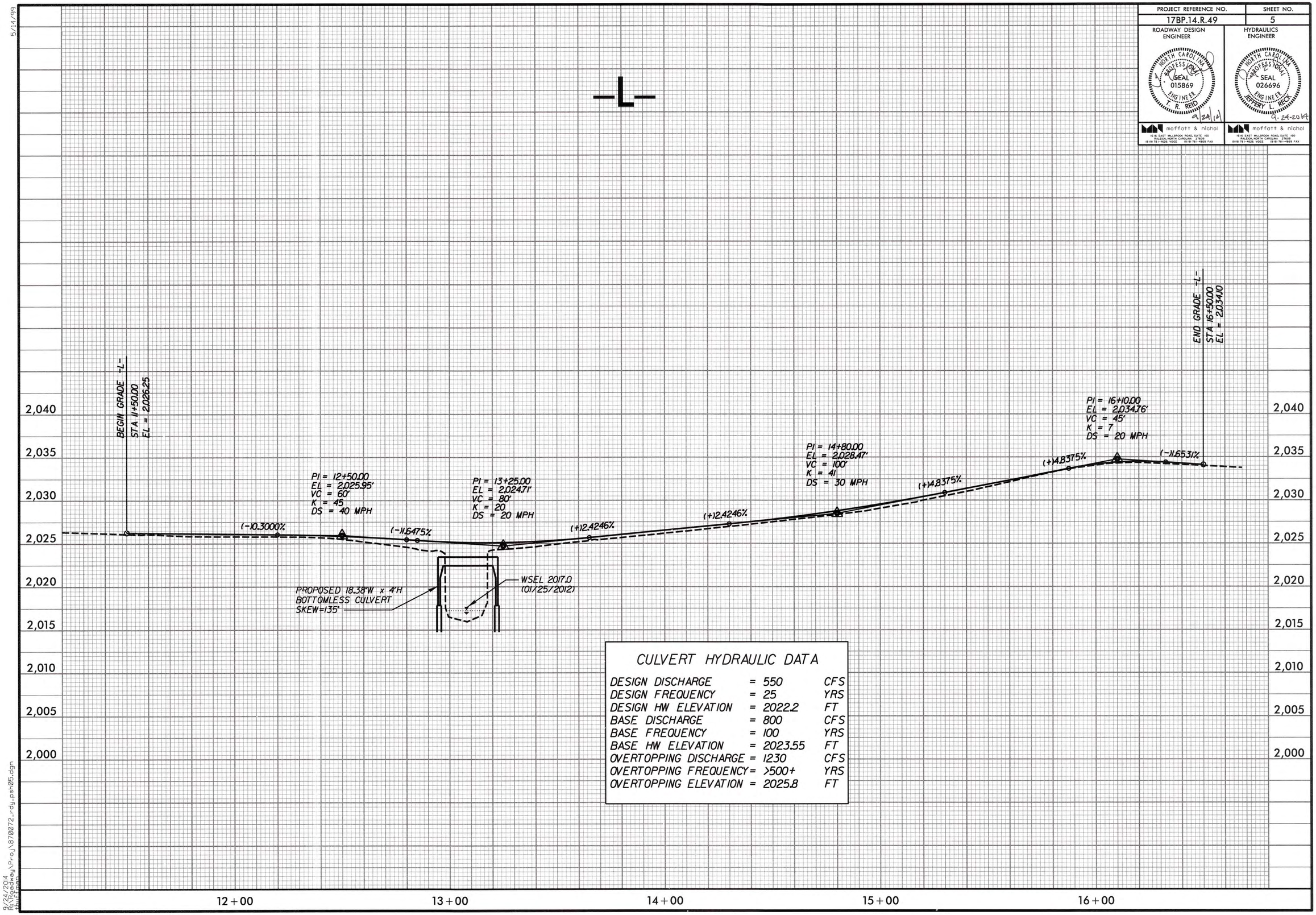
(919) 781-4626 VOICE (919) 781-4628 FAX



CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	=	550	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	2022.2	FT
BASE DISCHARGE	=	800	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	2023.55	FT
OVERTOPPING DISCHARGE	=	1230	CFS
OVERTOPPING FREQUENCY	=	>500+	YRS
OVERTOPPING ELEVATION	=	2025.8	FT

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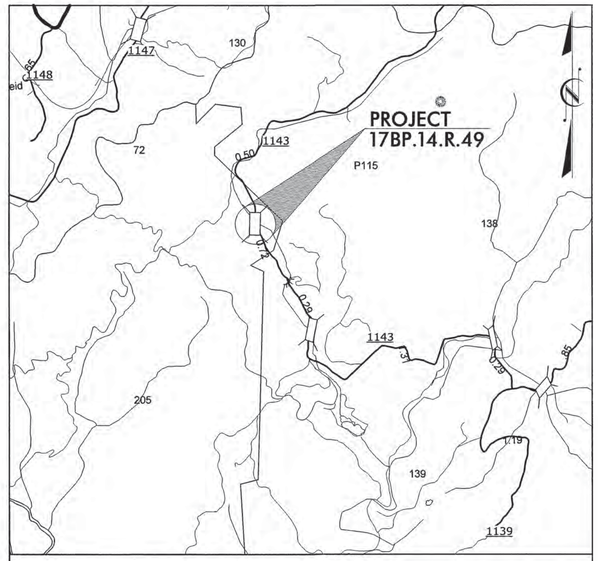
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

TRANSYLVANIA COUNTY

BRIDGE NO. 72 ON SR 1143 (FROZEN CREEK ROAD)



VICINITY MAP

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, AND TEMPORARY PAVEMENT MARKING
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (GENERAL NOTES AND LOCAL NOTES)
TMP-2A	PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS
TMP-3	TEMPORARY TRAFFIC CONTROL PHASING
TMP-4	TEMPORARY TRAFFIC CONTROL PHASE I DETAIL
TMP-5	TEMPORARY TRAFFIC CONTROL PHASE II DETAIL
TMP-6	TEMPORARY TRAFFIC CONTROL PHASE III DETAIL

SHEET NO.
TMP-1

PROJECT: 17BP.14.R.49

CONTRACT: DN00176

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

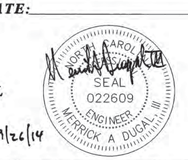
RAMEY KEMP & ASSOCIATES, INC.
Transportation Engineers
5808 Faringdon Place, Suite 100
Raleigh, North Carolina 27609
919-872-5115 Tel. 919-878-5416 Fax.
www.rameykemp.com
NC License No. C-0910

MERRICK "TRE" DUGAL III, PE — TRAFFIC CONTROL PROJECT DESIGN ENGINEER
TRENT HUFFMAN, P.E. — PROJECT ENGINEER

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

APPROVED: _____
DATE: _____

SEAL



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9/26/2014
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PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.49	TMP-1A

RAMEY KEMP & ASSOCIATES, INC.
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NC License No. C-0910

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANAUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1165.01	WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION
1170.01	PORTABLE CONCRETE BARRIER
1180.01	SKINNY - DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION

LEGEND

GENERAL

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

TRAFFIC CONTROL DEVICES

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

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

SIGNALS

- EXISTING
- PROPOSED
- TEMP — TEMPORARY
- PORTABLE SIGNAL

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

PAVEMENT MARKERS

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

PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

TEMPORARY PAVEMENT MARKING

SYMBOL	DESCRIPTION
	(PAINT 4")
PA	WHITE EDGELINE
PI	YELLOW DOUBLE CENTER

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022609 ENGINEER MERRICK A DUGAL III
9/26/14

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

ROADWAY STANDARD DRAWINGS & LEGEND

9/26/2014
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User:rdugal

PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.49	TMP-1B

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GENERAL NOTES / LOCAL NOTES

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

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

LANE AND SHOULDER CLOSURE REQUIREMENTS

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

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

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

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.

F) DO NOT INSTALL MORE THAN ONE LANE CLOSURE IN ANY ONE DIRECTION ON FROZEN CREEK ROAD.

G) PROVIDE TRAFFIC CONTROL FOR APPROPRIATE LANE CLOSURES FOR SURVEYING DONE BY THE DEPARTMENT.

PAVEMENT EDGE DROP OFF REQUIREMENTS

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

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

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

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

I) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 200 FT IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

J) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

K) 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.

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

M) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 200 FT IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC BARRIER

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

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

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

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

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

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

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

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

TRAFFIC CONTROL DEVICES

P) 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.

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

ROAD NAME	MARKING	MARKER
SR 1143	PAINT	NONE

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

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

T) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022609 ENGINEER MERRICK A. DUGAL, III

9/26/14

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

TRANSPORTATION OPERATIONS PLAN

9/26/2014
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PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.17	TMP-2A

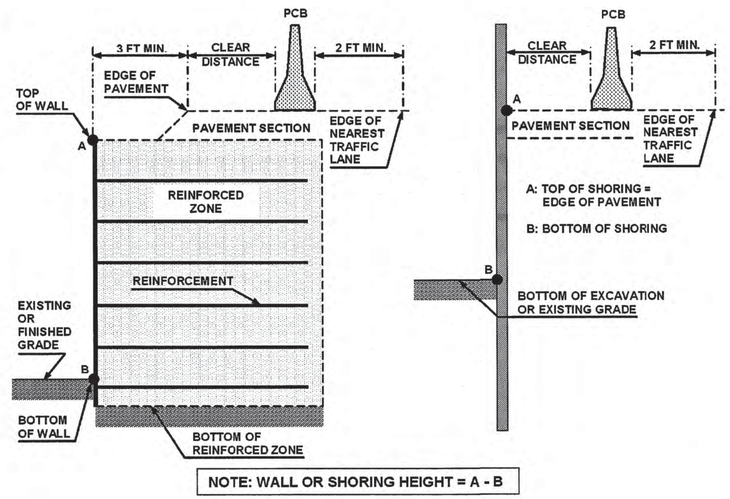

FIGURE A

NOTES

1- REFER TO THE TRAFFIC CONTROL PLANS FOR TEMPORARY SHORING LOCATIONS AND NOTES.

2- REFER TO THE "TEMPORARY SHORING" PROJECT SPECIAL PROVISION FOR INFORMATION ABOUT TEMPORARY SHORING AND PORTABLE CONCRETE BARRIER (PCB).

3- PCB IS REQUIRED IF TEMPORARY SHORING IS LOCATED WITHIN THE CLEAR ZONE IN ACCORDANCE WITH THE AASHTO ROADSIDE DESIGN GUIDE. DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE. (CONTACT NCDOT PAVEMENT MANAGEMENT UNIT FOR APPLICABLE PAVEMENT DESIGN).

4- BASED ON THE CLEAR DISTANCE, OFFSET, DESIGN SPEED AND PAVEMENT TYPE, CHOOSE AN UNANCHORED OR ANCHORED PCB FROM THE TABLE SHOWN IN FIGURE B. CLEAR DISTANCE IS DEFINED AS SHOWN IN FIGURE A AND OFFSET IS DEFINED AS SHOWN IN FIGURE B.

5- AT THE CONTRACTOR'S OPTION OR IF THE MINIMUM REQUIRED CLEAR DISTANCE IS NOT AVAILABLE, SET PCB NEXT TO AND UP AGAINST THE TRAFFIC SIDE OF THE TEMPORARY SHORING EXCEPT FOR BARRIER ABOVE TEMPORARY WALLS. PCB WITH THE MINIMUM REQUIRED CLEAR DISTANCE IS REQUIRED ABOVE TEMPORARY WALLS.

6- USE NCDOT PORTABLE CONCRETE BARRIER (PCB) IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1170.01 AND SECTION 1170 OF THE STANDARD SPECIFICATIONS.

7- PCB REQUIREMENTS FOR TEMPORARY WALLS APPLY TO TEMPORARY MECHANICALLY STABILIZED EARTH (MSE) WALLS AND TEMPORARY SOIL NAIL WALLS.

8- SET PCB WITH A MINIMUM HORIZONTAL DISTANCE OF 2 FT BETWEEN THE FRONT FACE OF THE BARRIER AND THE EDGE OF THE NEAREST TRAFFIC LANE AS SHOWN IN FIGURE A UNLESS OTHERWISE SHOWN IN THE PLANS AND OR AS APPROVED BY THE ENGINEER.

9- FOR PCB ABOVE AND BEHIND TEMPORARY WALLS, PROVIDE A MINIMUM DISTANCE OF 3 FT BETWEEN THE EDGE OF PAVEMENT AND THE WALL FACE AS SHOWN IN FIGURE A. IF THESE MINIMUM REQUIRED DISTANCES ARE NOT AVAILABLE, CONTACT THE ENGINEER.

10- TABLE SHOWN IN FIGURE B IS BASED ON NCDOT RESEARCH PROJECT NO. 2005-010 WITH VEHICLE TYPE USED FOR NCHRP 350 CRASH TESTS. BARRIER DEFLECTIONS AND RESULTING MINIMUM REQUIRED CLEAR DISTANCES MIGHT VARY SIGNIFICANTLY FOR LARGER HEAVIER VEHICLES, RUNS OF BARRIER LESS THAN 200 FT IN LENGTH AND WET OR DRY PAVEMENT.

MINIMUM REQUIRED CLEAR DISTANCE, inches

Barrier Type	Pavement Type	Offset * ft	Design Speed, mph <30	31-40	41-50	51-60	61-70	71-80
Unanchored PCB	Asphalt	<8	24	26	29	32	36	40
		8-14	26	28	31	35	38	42
		14-20	27	29	34	36	39	43
		20-26	28	31	35	38	40	44
		26-32	29	32	36	39	42	45
		32-38	30	34	38	41	43	46
		38-44	31	34	41	43	45	48
		44-50	31	35	41	43	46	49
		50-56	32	36	42	44	47	50
		>56	32	36	42	45	47	51
	Concrete	<8	17	18	21	22	25	26
		8-14	19	20	23	25	26	29
		14-20	22	22	24	26	28	31
		20-26	23	24	26	27	30	34
		26-32	24	25	27	28	32	35
		32-38	24	26	27	30	33	36
		38-44	25	26	28	30	34	37
		44-50	26	26	28	32	35	37
		50-56	26	26	28	32	35	38
		>56	26	27	29	32	36	38
Anchored PCB	Asphalt	All Offsets	24 for All Design Speeds					
Anchored PCB	Concrete (including bridge approach slabs)	All Offsets	12 for All Design Speeds					

* See Figure Below

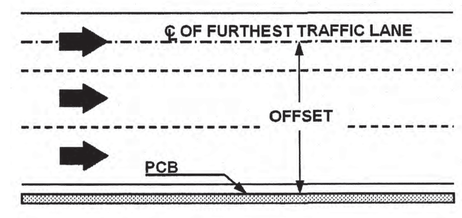

FIGURE B

APPROVED:_____ DATE:_____

SEAL

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

PORTABLE CONCRETE BARRIER
AT
TEMPORARY SHORING LOCATIONS

PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.49	TMP-3

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PHASING NOTES

PHASE I (SEE SHEET TMP-4)

STEP 1: - CONTRACTOR SHALL PLACE ADVANCE WORK ZONE WARNING SIGNS PER RSD NO. 1101.01, SHEET 3 OF 3.

STEP 2: - AWAY FROM TRAFFIC USING RSD NO. 1101.02, SHEET 1 OF 15 AND TEMPORARY SIGNAL AND/OR FLAGGERS AS NECESSARY, CONTRACTOR SHALL:

- CONSTRUCT PARTIAL BOTTOMLESS CULVERT.
- INSTALL FILL MATERIAL FOR TEMPORARY ON-SITE DETOUR (-S1-).

STEP 3: - USING FLAGGERS, INSTALL PCB AND TEMPORARY PORTABLE TRAFFIC SIGNALS AND SHIFT TRAFFIC TO ON-SITE DETOUR.

- NOTE: TEMPORARY PORTABLE TRAFFIC SIGNALS SHALL REMAIN IN OPERATION WHEN CONTRACTOR IS NOT PRESENT ON SITE.

PHASE II (SEE SHEET TMP-5)

STEP 1: - UPON COMPLETION OF PHASE I, INSTALLATION OF PCB, PORTABLE TRAFFIC SIGNALS, AND SHIFTING OF TRAFFIC,CONTRACTOR SHALL BEGIN ONE-LANE, TWO-WAY TRAFFIC OPERATION UTILIZING NEWLY CONSTRUCTED PORTION OF CULVERT AND TEMPORARY WIDENING SHOWN ON TMP-5.

STEP 2: - AWAY FROM TRAFFIC USING FLAGGERS AS NECESSARY, CONTRACTOR SHALL:

- REMOVE EXISTING BRIDGE.
- INSTALL REMAINDER OF PROPOSED BOTTOMLESS CULVERT.
- CONSTRUCT REMAINING PORTION OF ROADWAY FILL AND ROADSIDE DITCHES.
- INSTALL GUARDRAIL ON EAST SIDE OF FROZEN CREEK ROAD.

STEP 3: - USING FLAGGERS AS NECESSARY, SHIFT TRAFFIC TO FINAL ROAD ALIGNMENT.

PHASE III (SEE SHEET TMP-6)

STEP 1: - USING RSD NO. 1101.02, SHEET 1 OF 15 AND FLAGGERS AS NECESSARY, CONTRACTOR SHALL:

- UNDER TRAFFIC USING FLAGGERS, WEDGE EXISTING UP TO AND INCLUDING FINAL SURFACE COURSE TO TIE EXISTING GRADE TO PROPOSED GRADE.
- REMOVE TEMPORARY FILL/PAVEMENT.
- CONSTRUCT REMAINDER OF ROADSIDE DITCHES.
- INSTALL GUARDRAIL ON WEST SIDE OF FROZEN CREEK ROAD.

STEP 2: - UPON COMPLETION, OPEN ROAD TO TWO LANE TWO WAY TRAFFIC.

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 040040 ENGINEER R. KYLE PHINNEY
07/09/2014

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

PHASING NOTES

6/23/2014
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PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.49	TMP-4

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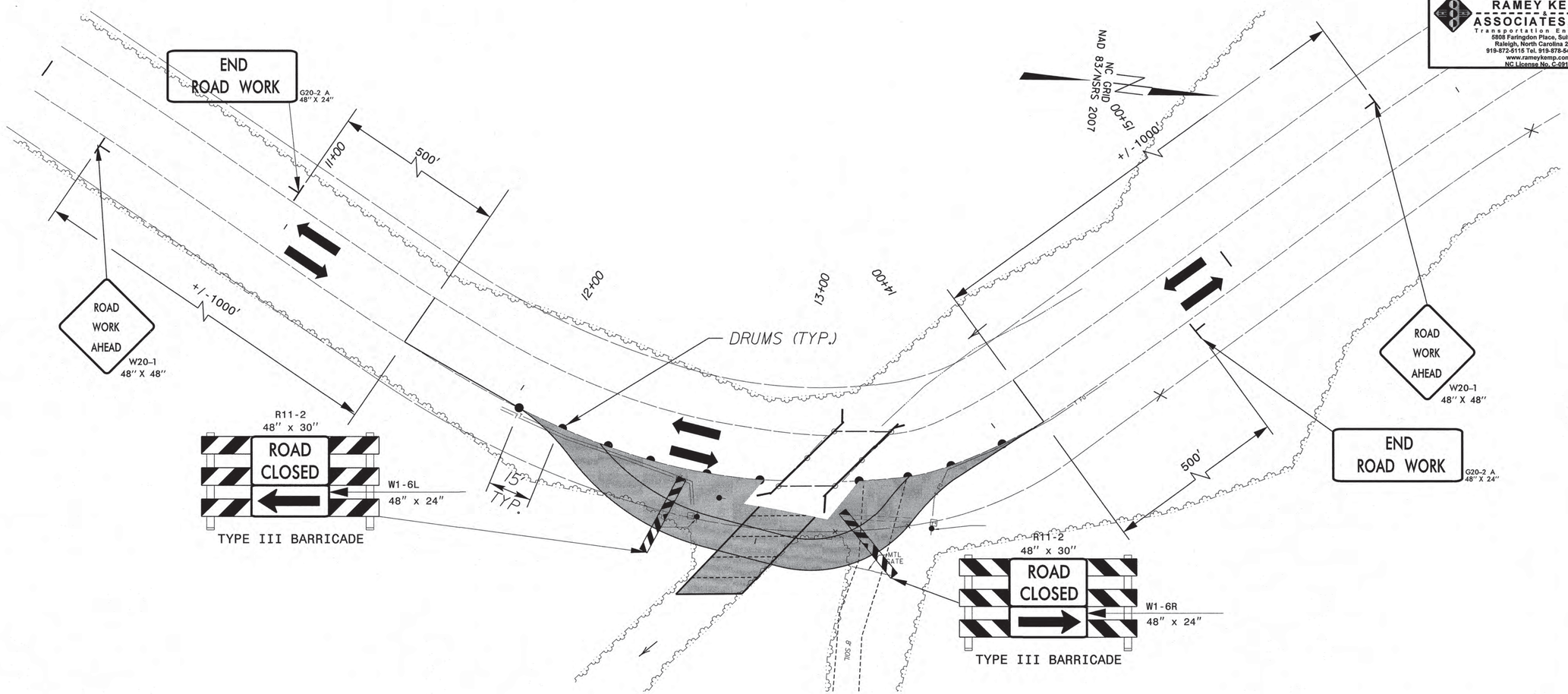

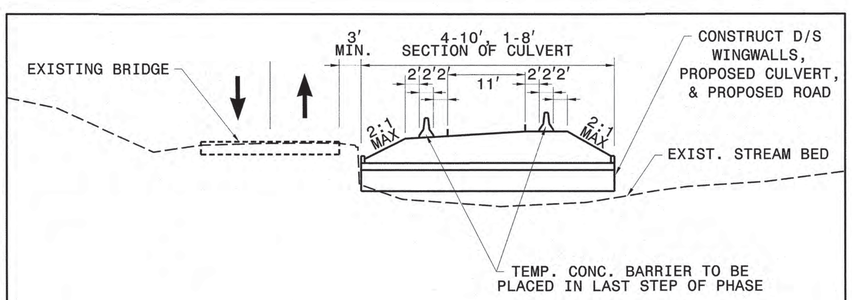

TYPICAL SECTION NO. 1

NOTES:

1. MAY USE FLAGGER OPERATION WHEN NEEDED TO TIE INTO EXISTING ROAD. ALL OTHER TIMES USE TEMPORARY SIGNALS.

2. 8' SOIL DRIVE DOES NOT APPEAR TO BE USED MUCH. COORDINATE TRAFFIC CONTROL OPERATIONS WITH PROPERTY OWNER PRIOR TO BEGINNING CONSTRUCTION.

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 040440 ENGINEER R. KYLE PHINNEY
07/09/2014

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

TEMPORARY TRAFFIC CONTROL PHASE I

7/9/2014
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PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.49	TMP-5

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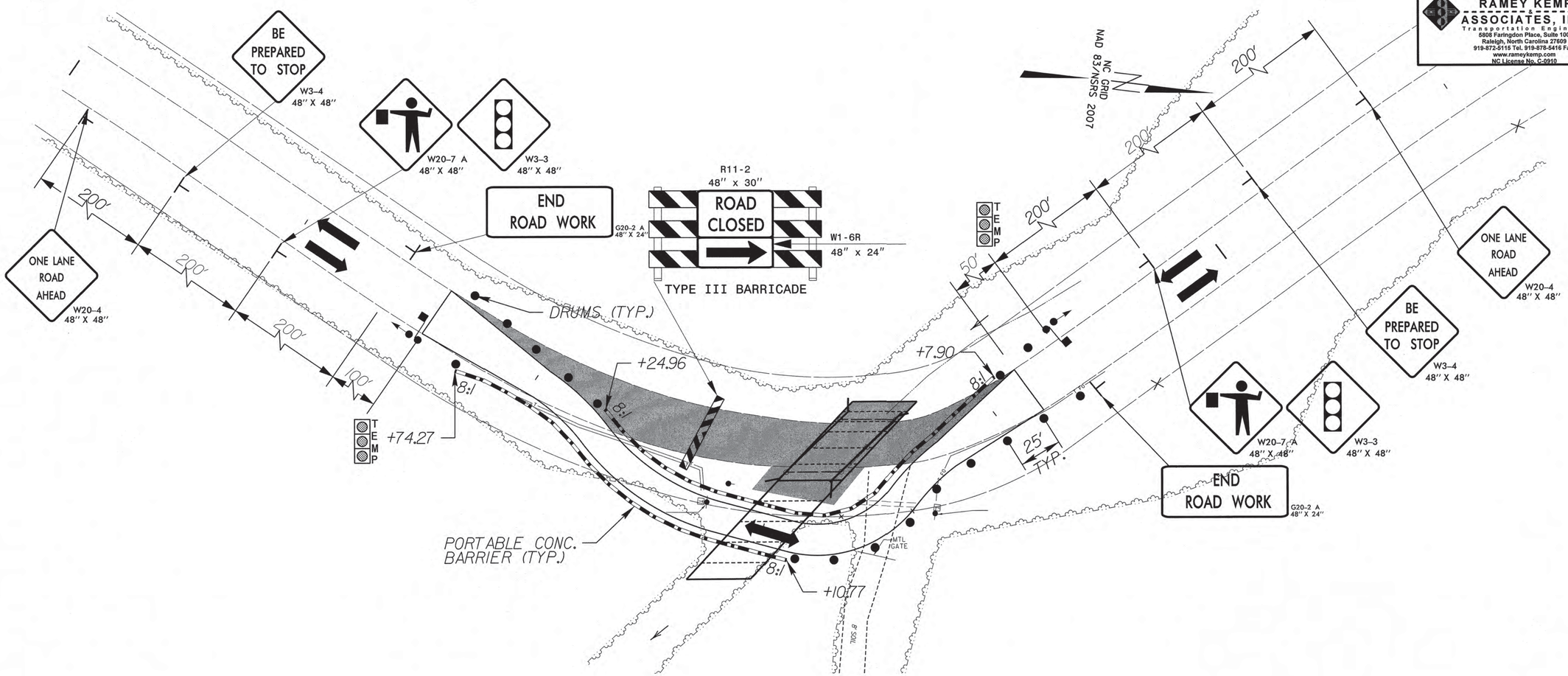

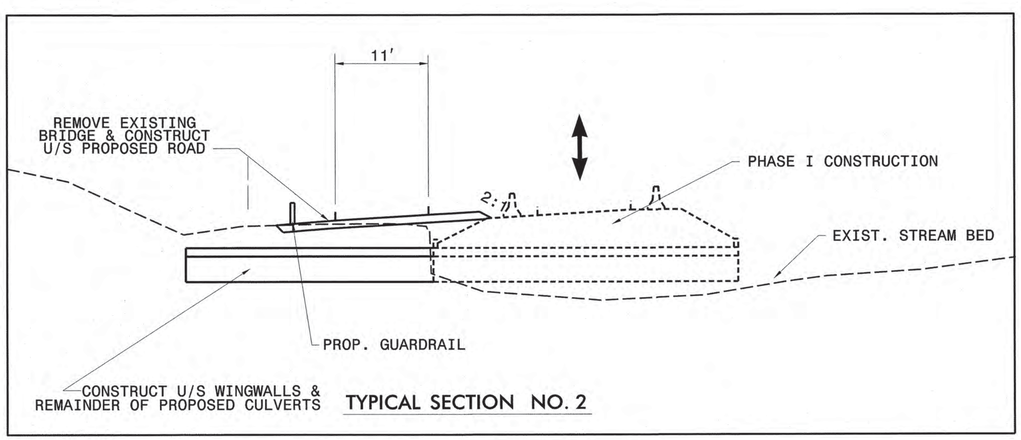

TYPICAL SECTION NO. 2

NOTES:

1. MAY USE FLAGGER OPERATION WHEN NEEDED TO TIE INTO EXISTING ROAD. ALL OTHER TIMES USE TEMPORARY SIGNALS.
2. SEE NCDOT STD. 1101.11 SHEET 3 FOR PORTABLE CONCRETE BARRIER FLARING.

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 040440 ENGINEER R. KYLE PHINNEY
08/19/2014

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

TEMPORARY TRAFFIC CONTROL PHASE II

8/19/2014
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User:rkphinney

PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.49	TMP-6

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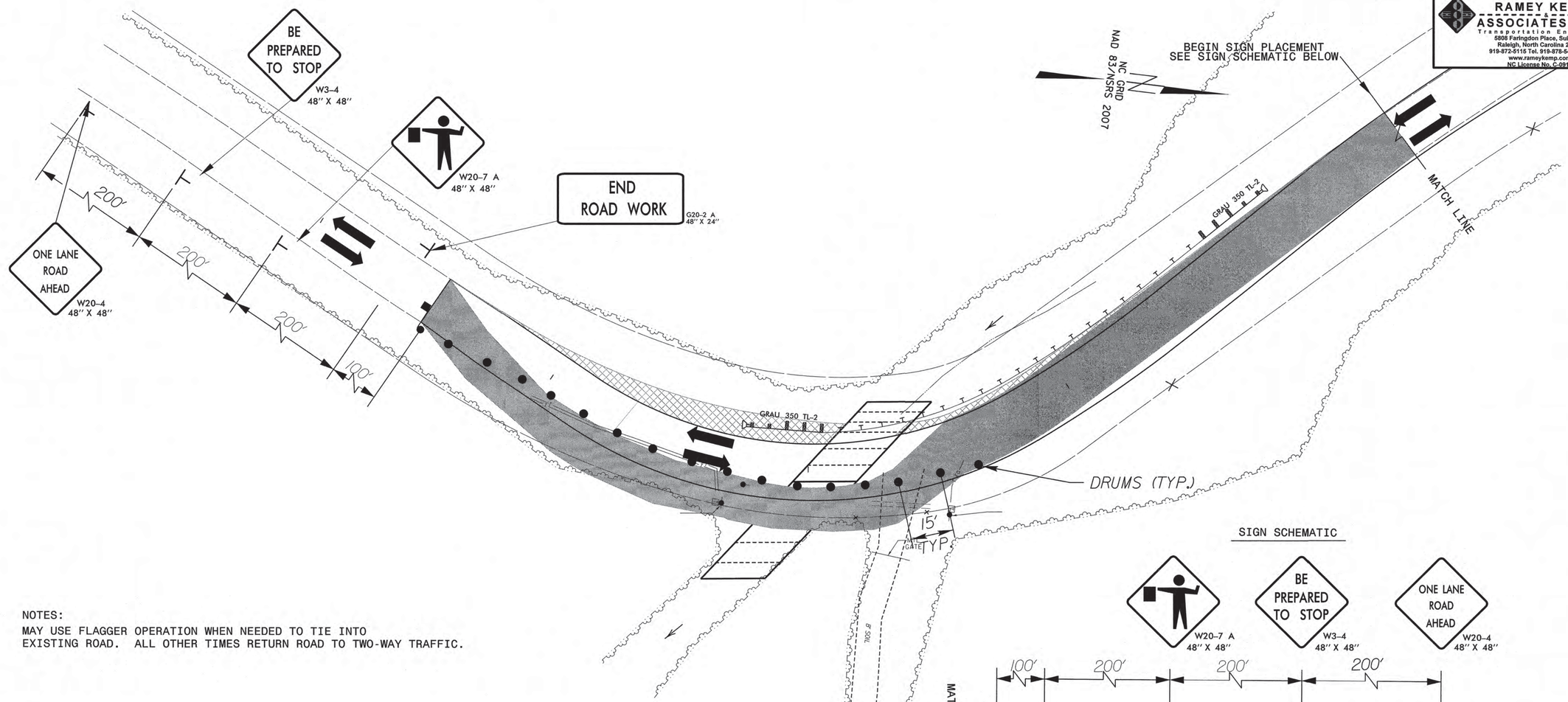
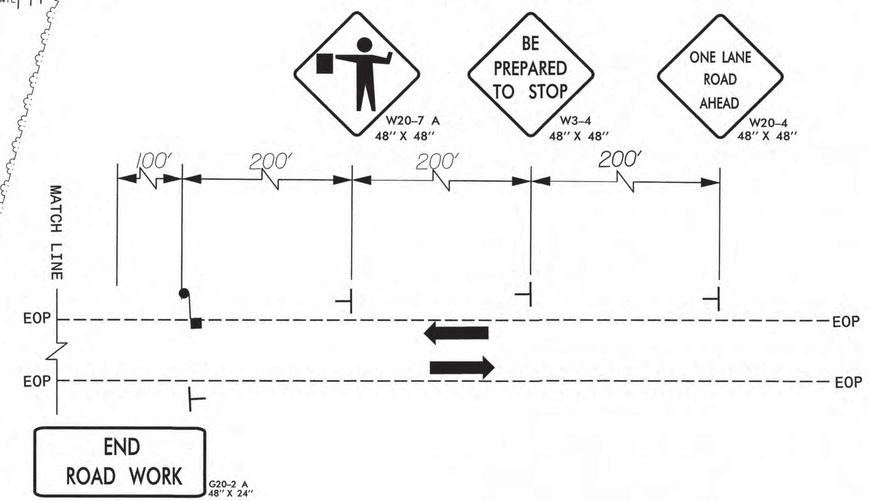
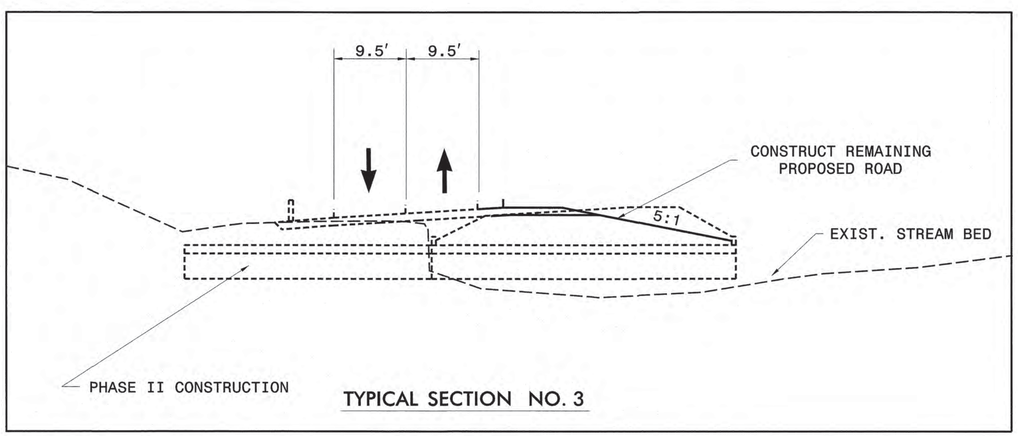


NOTES:
MAY USE FLAGGER OPERATION WHEN NEEDED TO TIE INTO EXISTING ROAD. ALL OTHER TIMES RETURN ROAD TO TWO-WAY TRAFFIC.

SIGN SCHEMATIC





TYPICAL SECTION NO. 3

APPROVED: _____ DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 040440 ENGINEER N. R. KYLE PHINNEY
08/19/2014

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

TEMPORARY TRAFFIC CONTROL PHASE III

8/19/2014
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User:kphinney

8/17/99

PROJECT: 17BP.14.R.49

CONTRACT: DN00176

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.49	PMP-01

APPROVED: _____

DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

9/24/14

moffatt & nichol
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLANS

LOCATION: BRIDGE NO. 72 ON SR 1143 (FROZEN CREEK ROAD) OVER FROZEN CREEK

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2012 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

PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION
PA - WHITE EDGE LINE (4")	PAINT
PI - YELLOW DOUBLE CENTER LINE (4")	PAINT

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 1143	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.

INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN COVER SHEET NOTES & SCHEDULE
PMP-2	PAVEMENT MARKING DETAIL

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PAVEMENT MARKING DETAIL
FROZEN CREEK ROAD

9/24/2014
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thuffman

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.49	PMP-2

APPROVED: _____

DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

9/24/14

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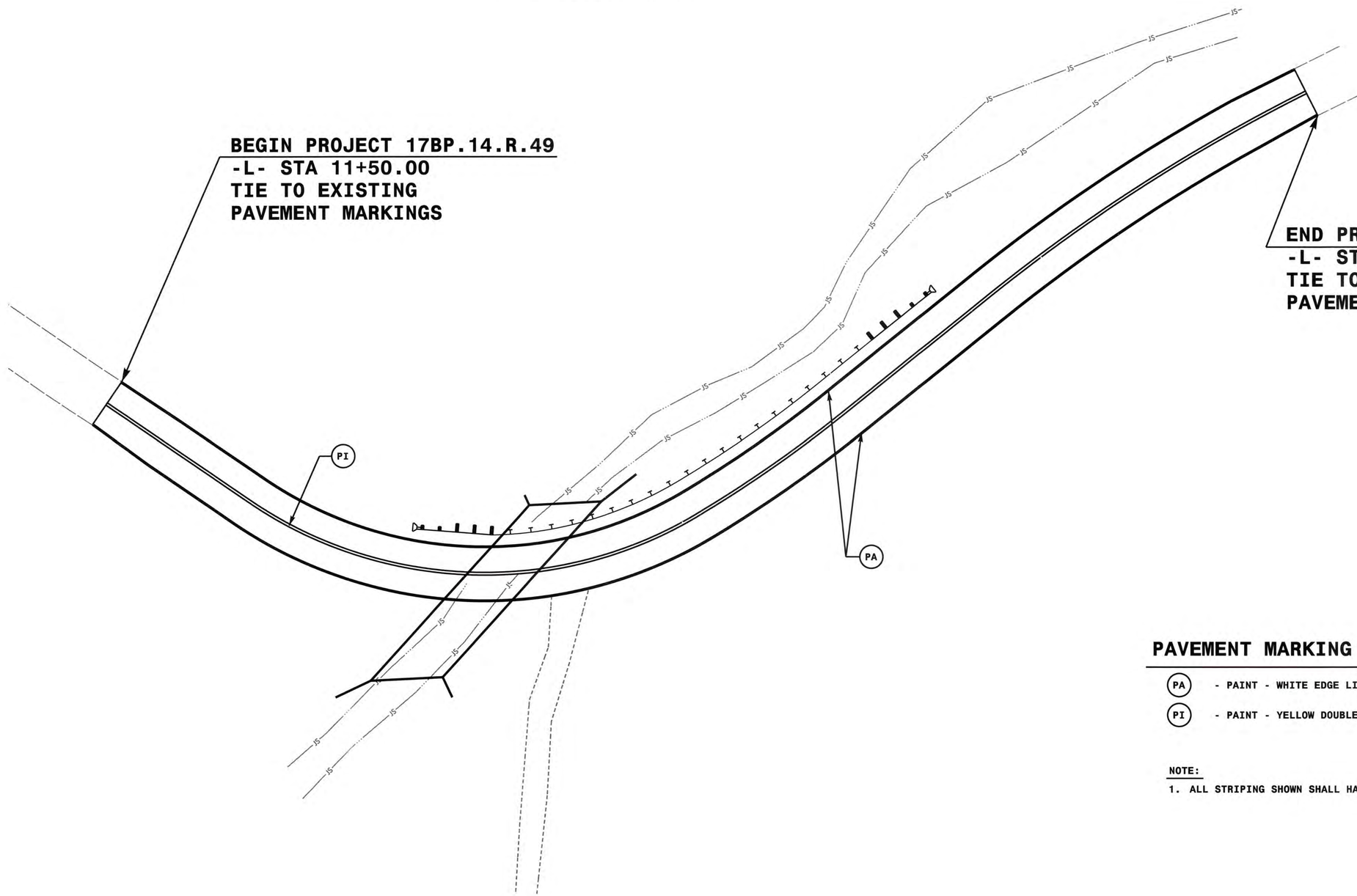
20 10 0 20 40
SCALE

NAD 83/NSRS 2007



PAVEMENT MARKING SCHEDULE

(PA) - PAINT - WHITE EDGE LINE (4")

(PI) - PAINT - YELLOW DOUBLE CENTER LINE (4")

NOTE:

1. ALL STRIPING SHOWN SHALL HAVE TWO COATS

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(919) 781-4626 VOICE (919) 781-4869 FAX

PAVEMENT MARKING DETAIL FROZEN CREEK ROAD

9/24/2014
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jhuffman

PROJECT: 17BP.14.R.49

CONTRACT: DN00176

BRIDGE 870072

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.49	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.14.R.49		PE
17BP.14.R.49		ROW & UTIL
17BP.14.R.49		CONSTR

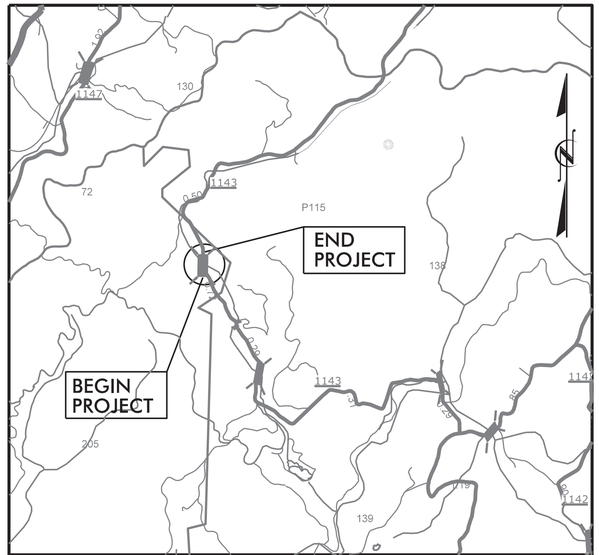
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

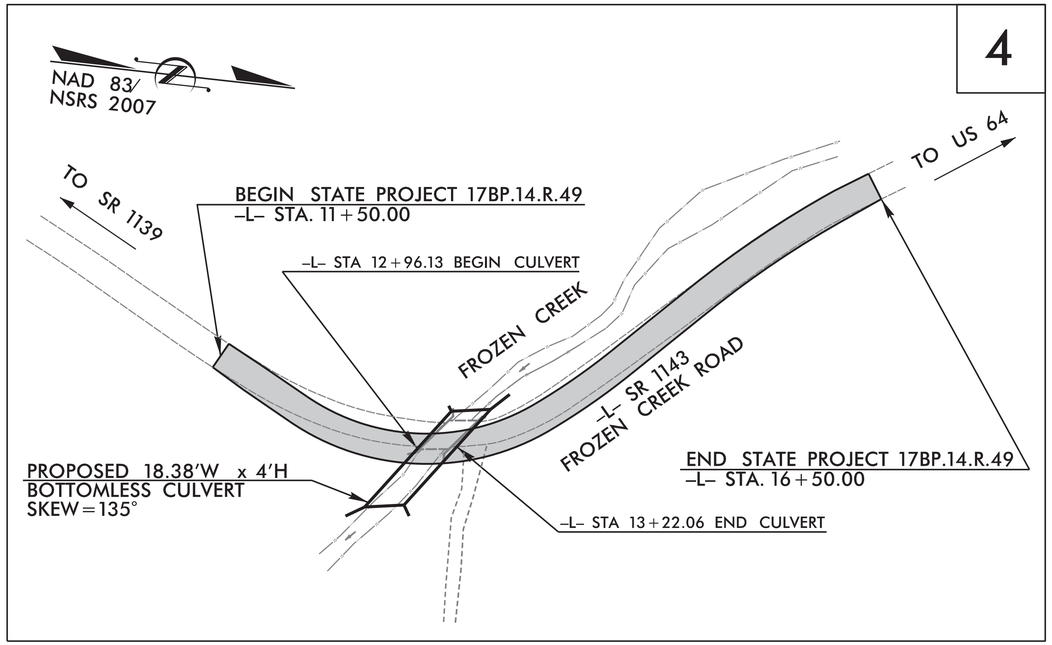
TRANSYLVANIA COUNTY

LOCATION: BRIDGE NO. 72 ON SR 1143 (FROZEN CREEK ROAD) OVER FROZEN CREEK

TYPE OF WORK: PAVING, GRADING, GUARDRAIL, DRAINAGE AND CULVERT



VICINITY MAP



EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TSD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
1633.02	Temporary Rock Silt Check Type-B	
	Wattle / Coir Fiber Wattle	SW CFW
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
1634.01	Temporary Rock Sediment Dam Type-A	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.04	Stilling Basin	
1630.06	Special Stilling Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	
	Tiered Skimmer Basin	
	Infiltration Basin	

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

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

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

GRAPHIC SCALE

10 0 20
PLANS

10 0 20
PROFILE (HORIZONTAL)

2.5 0 5
PROFILE (VERTICAL)

ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY.

PREPARED BY: moffatt & nichol
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX

DESIGN BY: *GREGORY W. BRICKHAM, PE*
NCDOT LEVEL III: DESIGNER OF EROSION AND SEDIMENT CONTROL PLANS CERT #3006

REVIEWED BY: *JEFFREY L. RECK, PE*
NCDOT LEVEL III-A: DESIGNER OF EROSION AND SEDIMENT CONTROL PLANS CERT #3585

Prepared for the Office of:

ROADSIDE ENVIRONMENTAL UNIT

1 South Wilmington St.
Raleigh, NC 27611

2012 STANDARD SPECIFICATIONS

Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2012 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type A
1622.01	Temporary Berms and Slope Drains	1633.02	Temporary Rock Silt Check Type B
1630.01	Riser Basin	1634.01	Temporary Rock Sediment Dam Type A
1630.02	Silt Basin Type B	1634.02	Temporary Rock Sediment Dam Type B
1630.03	Temporary Silt Ditch	1635.01	Rock Pipe Inlet Sediment Trap Type A
1630.04	Stilling Basin	1635.02	Rock Pipe Inlet Sediment Trap Type B
1630.05	Temporary Diversion	1640.01	Coir Fiber Baffle
1630.06	Special Stilling Basin	1645.01	Temporary Stream Crossing
1631.01	Matting Installation		

9/24/2014
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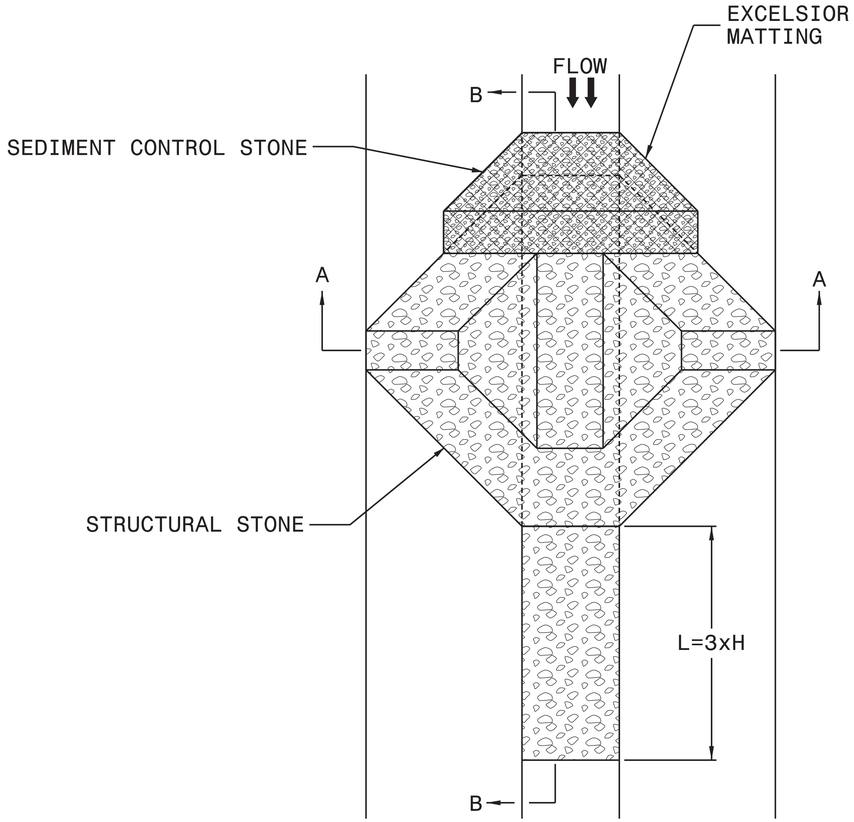
Chris Finch

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.49	EC-2

TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)



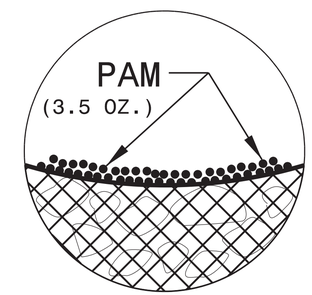
PLAN

NOTES

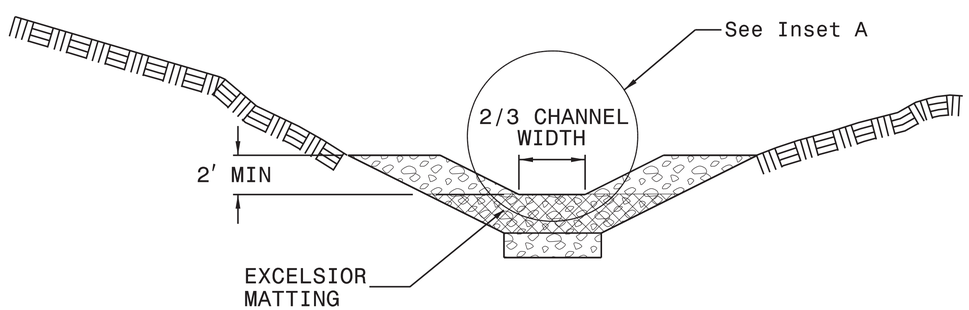
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH ROCK SILT CHECK.

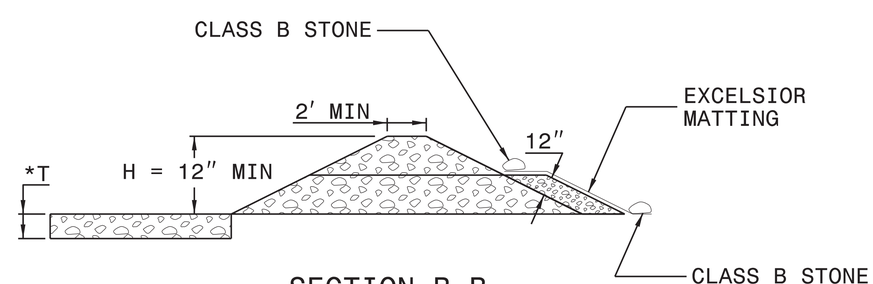
INITIALLY APPLY 3.5 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION A-A



SECTION B-B

*T = 12" MIN., 18" MAX.

NOT TO SCALE

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thuffman

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.49	EC-3

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	11+50	13+22	LT	140
4	-L-	11+50	12+88	RT	270
4	-L-	13+35	16+50	LT	260
4	-L-	12+90	13+25	RT	80
4	-L-	12+90	13+15	RT	20
4	-L-	13+40	15+20	RT	120
4	-L-	15+20	16+50	RT	90
4	-L-	12+45	12+62	RT	15
4	-L-	11+50	13+20	LT	115
2-A	-DET-	13+07	13+20	RT	20
2-A	-DET-	13+65	14+00	LT	25
				SUBTOTAL	1155
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					70
				TOTAL	1225
				SAY	1250

PERMANENT SOIL REINFORCEMENT MAT

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
				SUBTOTAL	
		ADDITIONAL PSRM TO BE INSTALLED			
				TOTAL	
				SAY	

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bhuffman

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

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

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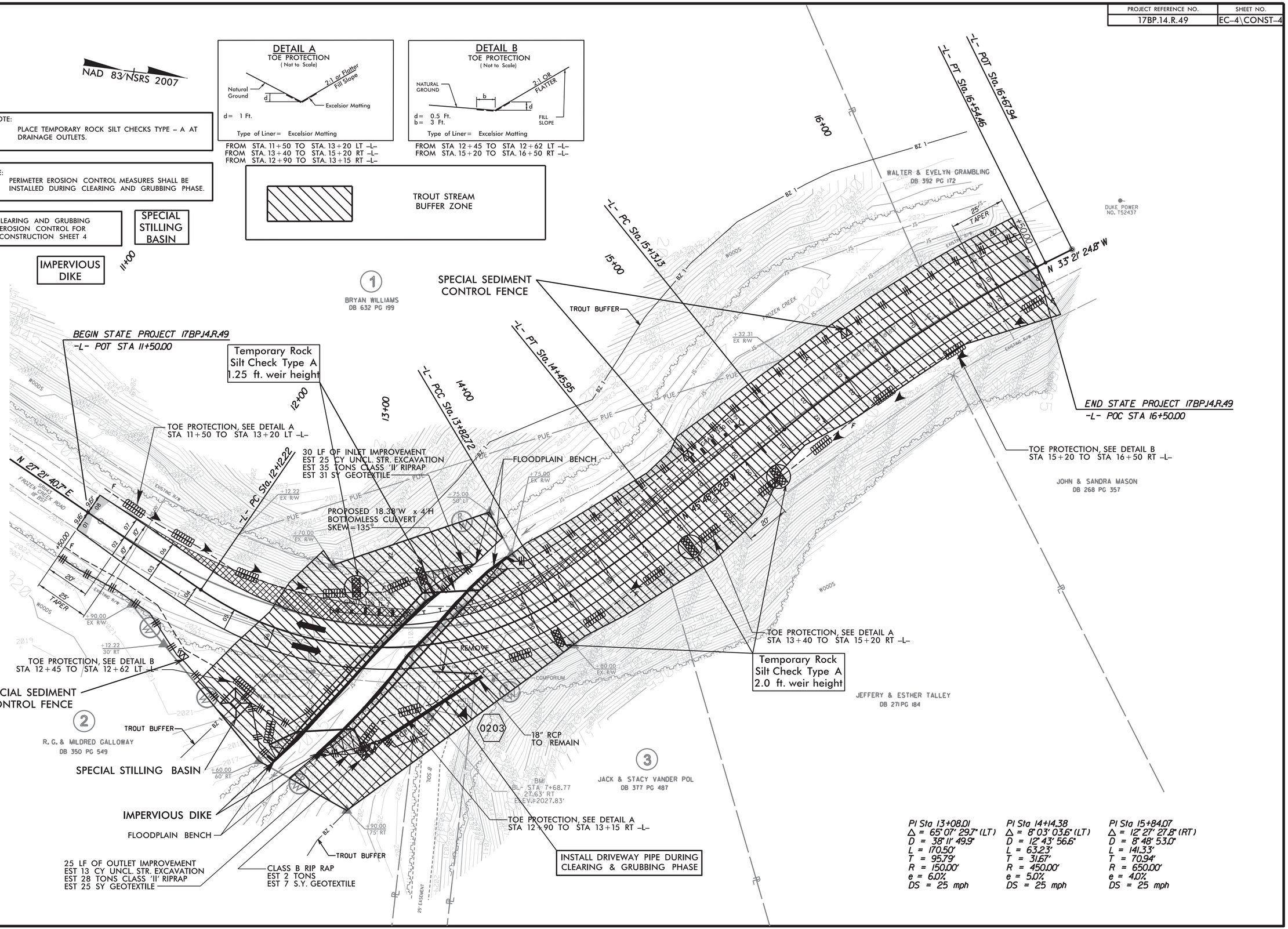
thriffman

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.49	EC-4\CONST-4



PI Sta 13+08.01	PI Sta 14+14.38	PI Sta 15+84.07
Δ = 65° 07' 29.7" (LT)	Δ = 8° 03' 03.6" (LT)	Δ = 12° 27' 27.8" (RT)
D = 38° 11' 49.9"	D = 12° 43' 56.6"	D = 8° 48' 53.0"
L = 170.50'	L = 63.23'	L = 141.33'
T = 95.79'	T = 31.67'	T = 70.94'
R = 150.00'	R = 450.00'	R = 650.00'
e = 6.0%	e = 5.0%	e = 4.0%
DS = 25 mph	DS = 25 mph	DS = 25 mph

8/17/99

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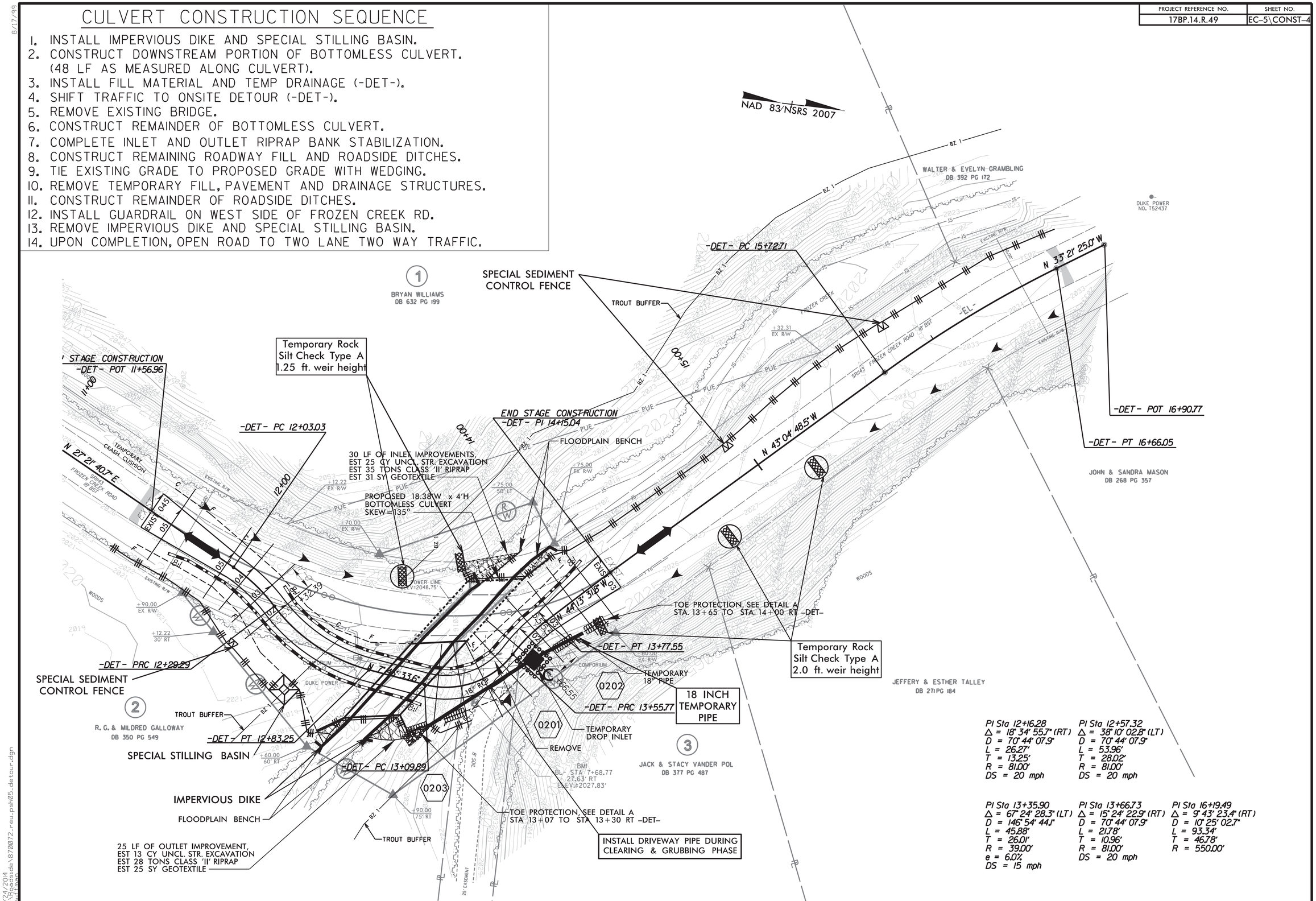
PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.49	EC-5\CONST-4

CULVERT CONSTRUCTION SEQUENCE

1. INSTALL IMPERVIOUS DIKE AND SPECIAL STILLING BASIN.
2. CONSTRUCT DOWNSTREAM PORTION OF BOTTOMLESS CULVERT. (48 LF AS MEASURED ALONG CULVERT).
3. INSTALL FILL MATERIAL AND TEMP DRAINAGE (-DET-).
4. SHIFT TRAFFIC TO ONSITE DETOUR (-DET-).
5. REMOVE EXISTING BRIDGE.
6. CONSTRUCT REMAINDER OF BOTTOMLESS CULVERT.
7. COMPLETE INLET AND OUTLET RIPRAP BANK STABILIZATION.
8. CONSTRUCT REMAINING ROADWAY FILL AND ROADSIDE DITCHES.
9. TIE EXISTING GRADE TO PROPOSED GRADE WITH WEDGING.
10. REMOVE TEMPORARY FILL, PAVEMENT AND DRAINAGE STRUCTURES.
11. CONSTRUCT REMAINDER OF ROADSIDE DITCHES.
12. INSTALL GUARDRAIL ON WEST SIDE OF FROZEN CREEK RD.
13. REMOVE IMPERVIOUS DIKE AND SPECIAL STILLING BASIN.
14. UPON COMPLETION, OPEN ROAD TO TWO LANE TWO WAY TRAFFIC.



PI Sta 12+16.28
Δ = 18° 34' 55.7" (RT)
D = 70° 44' 07.9"
L = 26.27'
T = 13.25'
R = 81.00'
DS = 20 mph

PI Sta 12+57.32
Δ = 38° 10' 02.8" (LT)
D = 70° 44' 07.9"
L = 53.96'
T = 28.02'
R = 81.00'
DS = 20 mph

PI Sta 13+35.90
Δ = 67° 24' 28.3" (LT)
D = 146° 54' 44.1"
L = 45.88'
T = 26.01'
R = 39.00'
e = 6.0%
DS = 15 mph

PI Sta 13+66.73
Δ = 15° 24' 22.9" (RT)
D = 70° 44' 07.9"
L = 21.78'
T = 10.96'
R = 81.00'
DS = 20 mph

PI Sta 16+19.49
Δ = 9° 43' 23.4" (RT)
D = 10° 25' 02.7"
L = 93.34'
T = 46.78'
R = 550.00'

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PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.49	EC-6\CONST-4

8/17/99

NAD 83/NSRS 2007

DETAIL A
TOE PROTECTION
(Not to Scale)

d = 1 Ft.

Type of Liner = Excelsior Matting

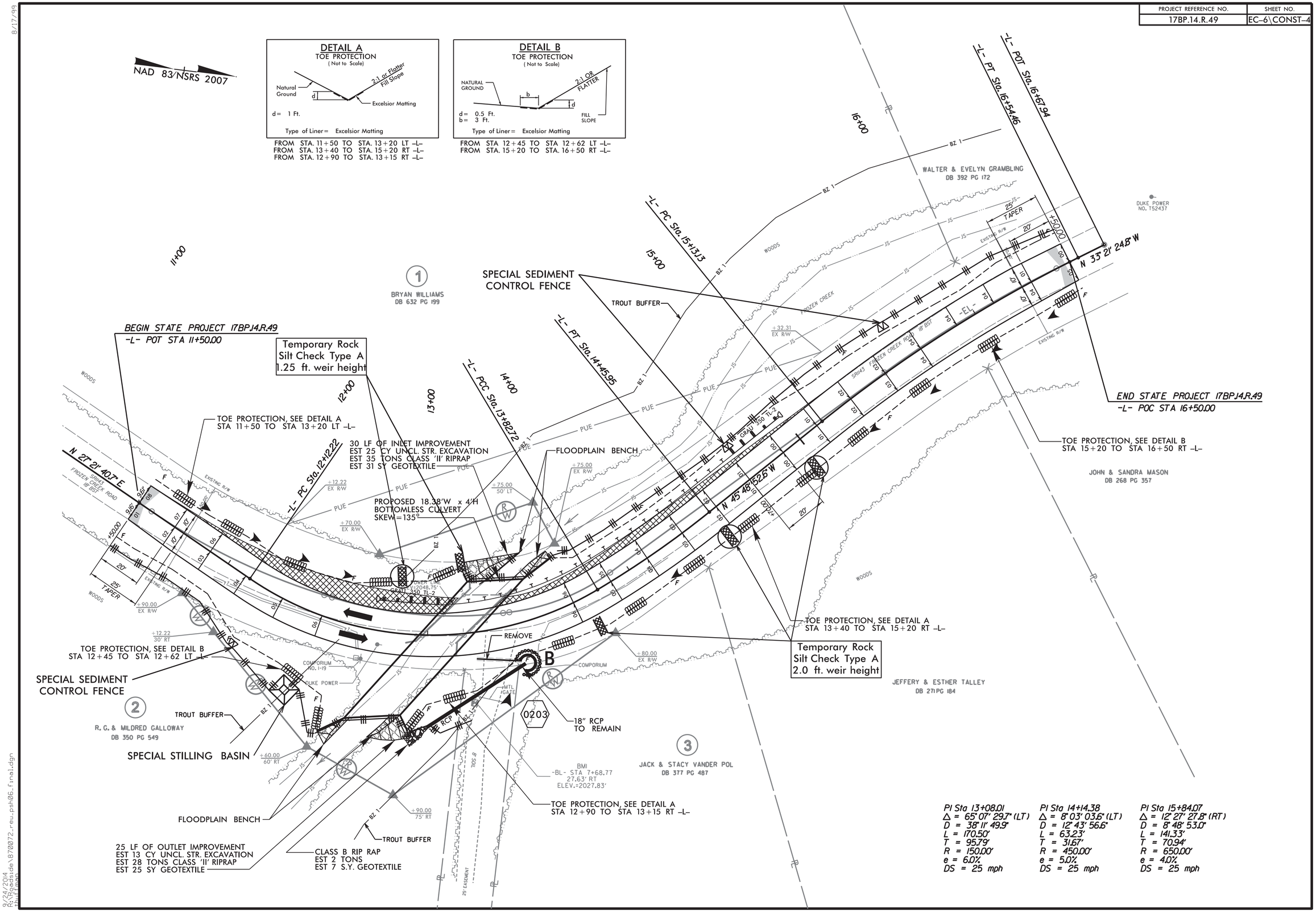
FROM STA. 11+50 TO STA. 13+20 LT -L-
FROM STA. 13+40 TO STA. 15+20 RT -L-
FROM STA. 12+90 TO STA. 13+15 RT -L-

DETAIL B
TOE PROTECTION
(Not to Scale)

d = 0.5 Ft.
b = 3 Ft.

Type of Liner = Excelsior Matting

FROM STA 12+45 TO STA 12+62 LT -L-
FROM STA. 15+20 TO STA. 16+50 RT -L-



PI Sta 13+08.01	PI Sta 14+14.38	PI Sta 15+84.07
Δ = 65° 07' 29.7" (LT)	Δ = 8° 03' 03.6" (LT)	Δ = 12° 27' 27.8" (RT)
D = 38° 11' 49.9"	D = 12° 43' 56.6"	D = 8° 48' 53.0"
L = 170.50'	L = 63.23'	L = 141.33'
T = 95.79'	T = 31.67'	T = 70.94'
R = 150.00'	R = 450.00'	R = 650.00'
e = 6.0%	e = 5.0%	e = 4.0%
DS = 25 mph	DS = 25 mph	DS = 25 mph

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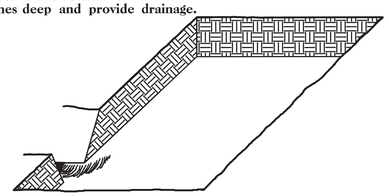
bhiffman

PLANTING DETAILS

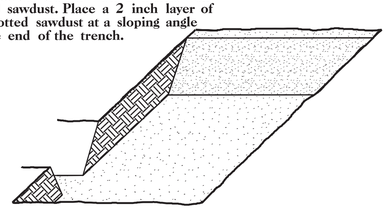
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

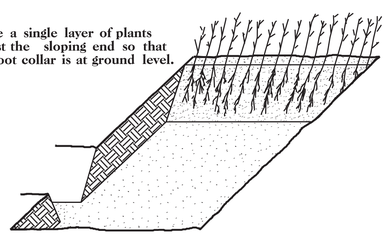
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



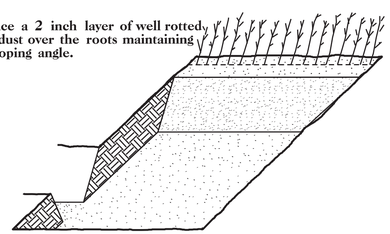
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

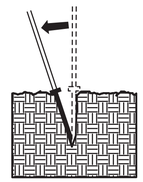


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

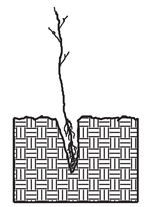


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

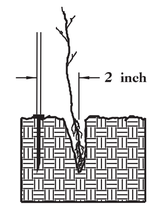
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



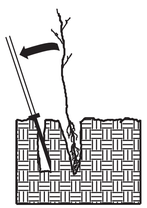
1. Insert planting bar as shown and pull handle toward planter.



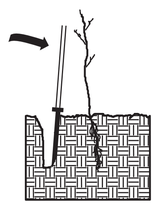
2. Remove planting bar and place seedling at correct depth.



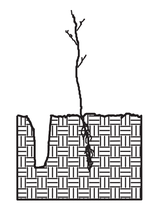
3. Insert planting bar 2 inches toward planter from seedling.



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.

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

REFORESTATION

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

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

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 DETAIL SHEET

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

8/17/99
9/24/2014
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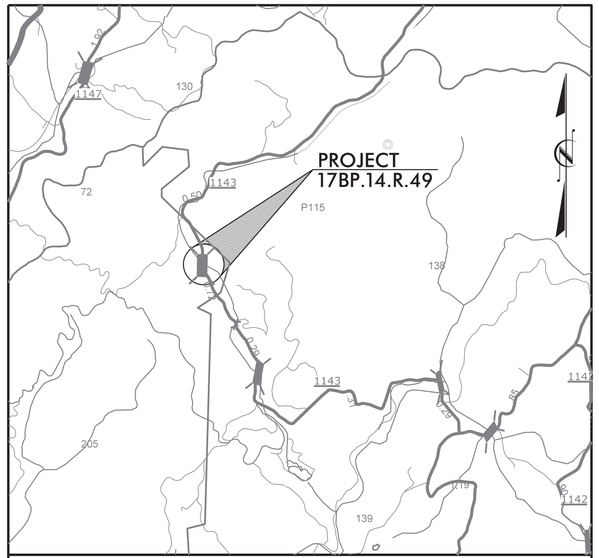
PROJECT: 17BP.14.R.49

CONTRACT: DN00176

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
17BP.14.R.49	UO–1

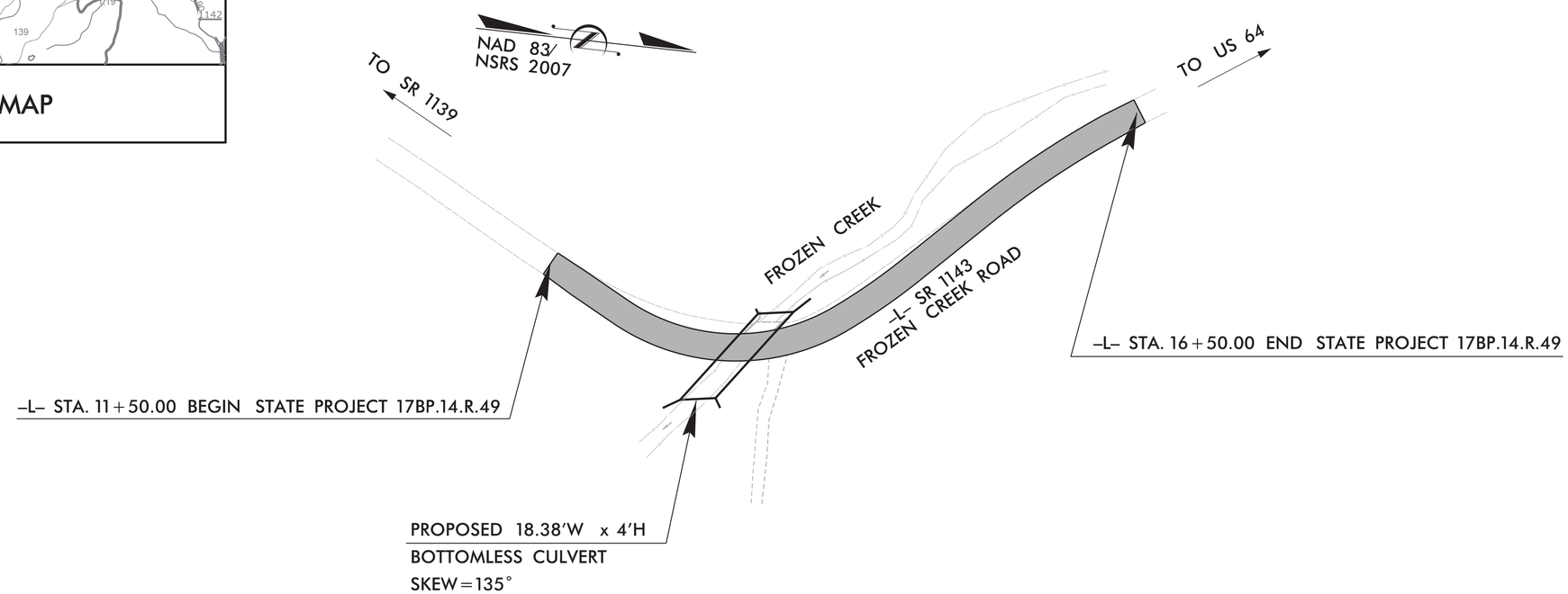
UTILITIES BY OTHERS PLANS
TRANSYLVANIA COUNTY



VICINITY MAP

LOCATION: BRIDGE NO. 72 ON SR 1143 (FROZEN CREEK ROAD) OVER FROZEN CREEK

TYPE OF WORK: UTILITIES BY OTHERS



GRAPHIC SCALES

20 10 0 20 40

PLANS

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UO–1	TITLE SHEET
UO–2	UTILITIES BY OTHERS PLAN SHEETS

UTILITY OWNERS ON PROJECT

(1) TELEPHONE & CATV – COMPORIUM
(2) POWER – HAYWOOD EMC

UTILITIES BY OTHER PLANS PREPARED BY:
DAVIS • MARTIN • POWELL
ENGINEERS & SURVEYORS
6415 OLD PLANK RD. HIGH POINT, NC 27265
PHONE: (336)886-4821 FAX: (336)886-4458
WWW.DMPINC.COM LICENSE: F-0245

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

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7/9/2014
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thuffman

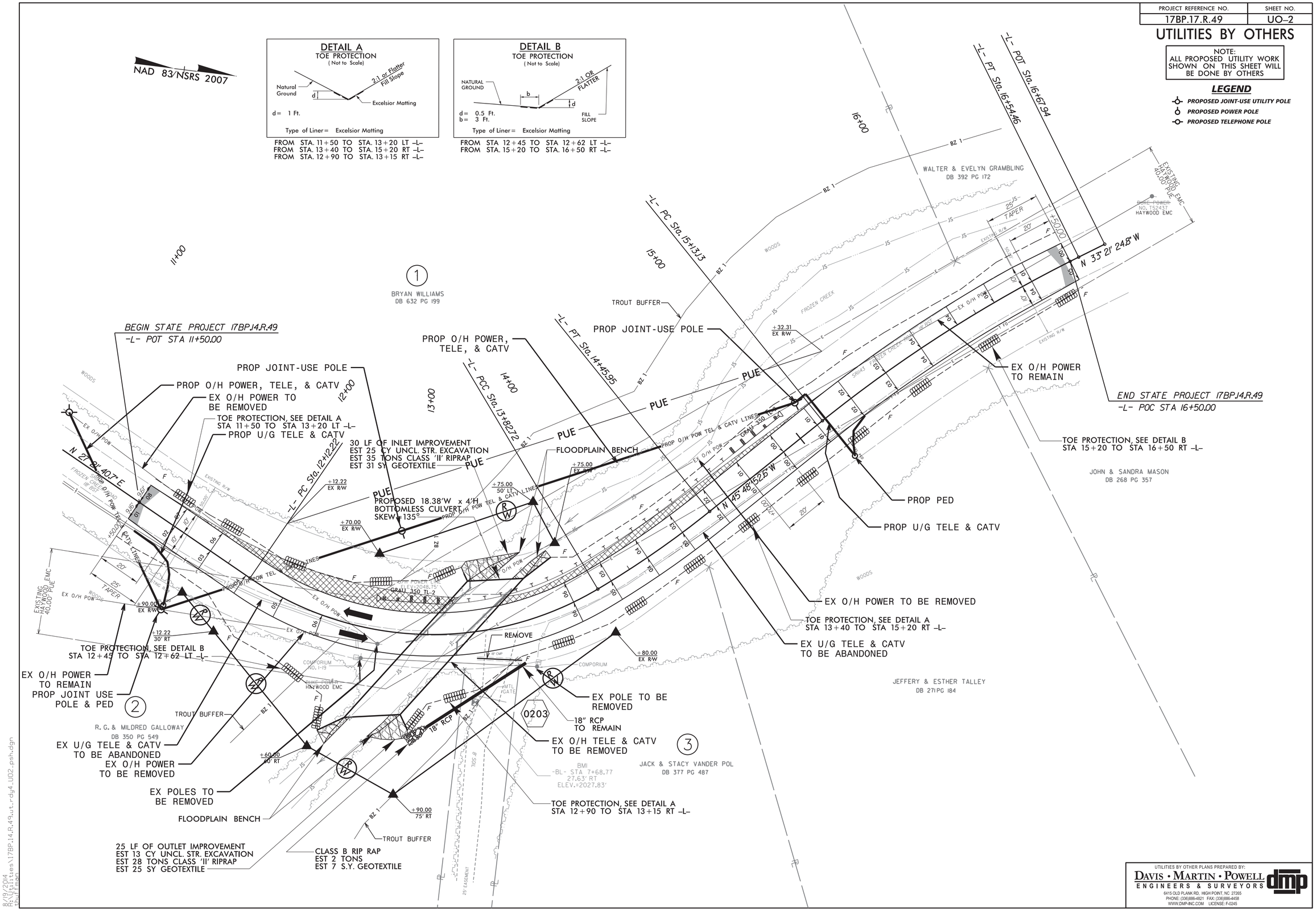
PROJECT REFERENCE NO.	SHEET NO.
17BP.17.R.49	UO-2

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS

LEGEND

- PROPOSED JOINT-USE UTILITY POLE
- PROPOSED POWER POLE
- PROPOSED TELEPHONE POLE



UTILITIES BY OTHER PLANS PREPARED BY:
DAVIS • MARTIN • POWELL
ENGINEERS & SURVEYORS
6415 OLD PLANK RD. HIGH POINT, NC 27265
PHONE: (336)886-4821 FAX: (336)886-4458
WWW.DMP-INC.COM LICENSE: F-0245

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PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.49	X-A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NOTE: EMBANKMENT COLUMN INCLUDES BACKFILL FOR UNDERCUT

CROSS-SECTION SUMMARY

Station DET	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
11+60.00	0	0
11+80.00	8	1
12+00.00	8	1
12+20.00	9	1
12+40.00	7	13
12+60.00	3	36
12+80.00	1	99
13+00.00	0	189
13+20.00	0	163
13+40.00	4	52
13+60.00	4	5
13+80.00	0	4
14+00.00	2	2

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
11+60.00	0	0
11+80.00	1	2
12+00.00	0	3
12+20.00	0	10
12+40.00	1	21
12+60.00	0	31
12+80.00	4	100
13+00.00	7	165
13+20.00	5	129
13+40.00	6	62
13+60.00	10	18
13+80.00	6	6
14+00.00	0	7
14+20.00	0	6
14+40.00	0	6
14+60.00	0	5
14+80.00	0	5
15+00.00	0	4
15+20.00	0	3
15+40.00	0	3
15+60.00	1	3
15+80.00	1	1
16+00.00	1	1
16+20.00	1	1
16+40.00	1	1

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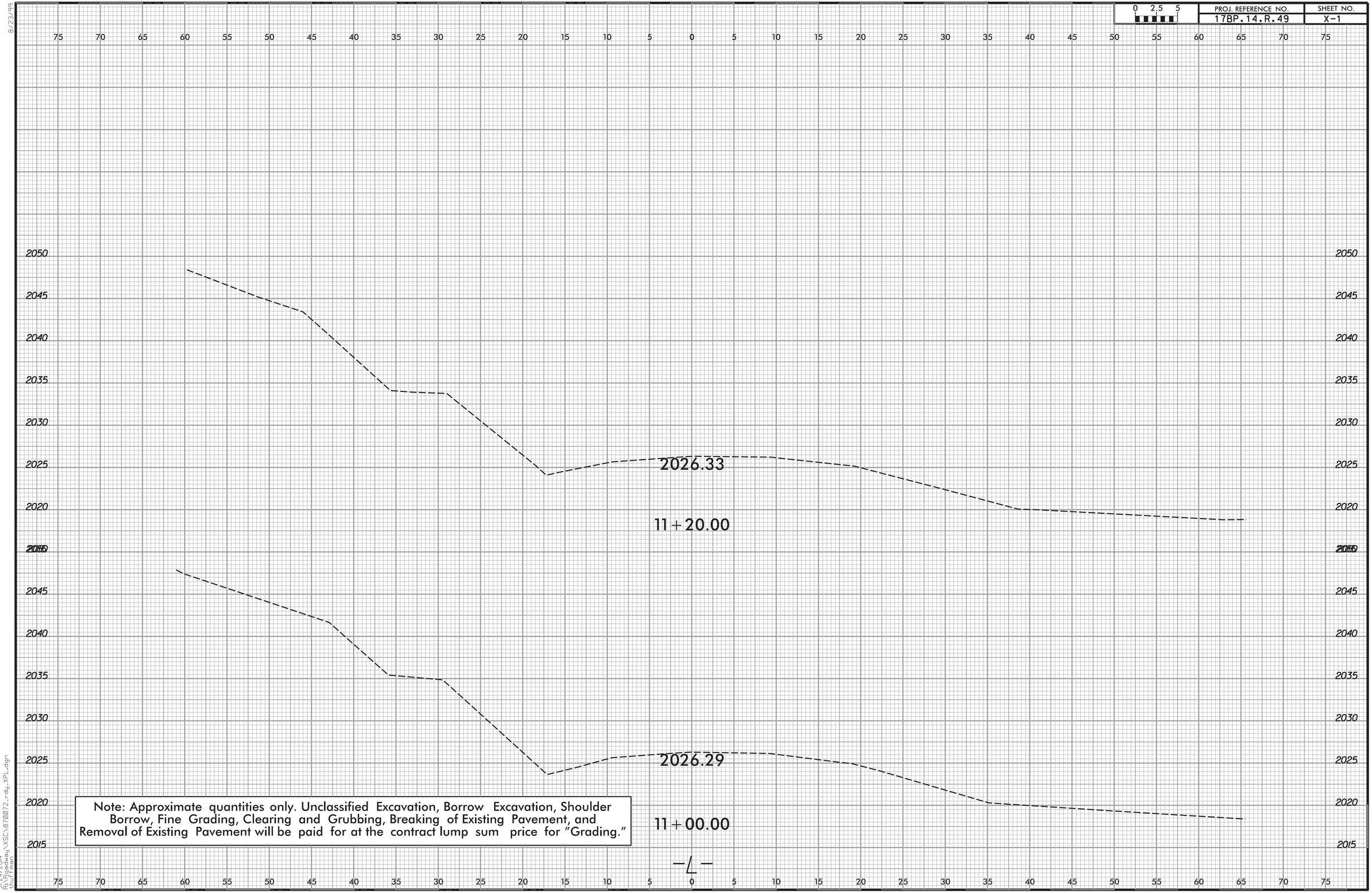
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.14.R.49	X-1



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

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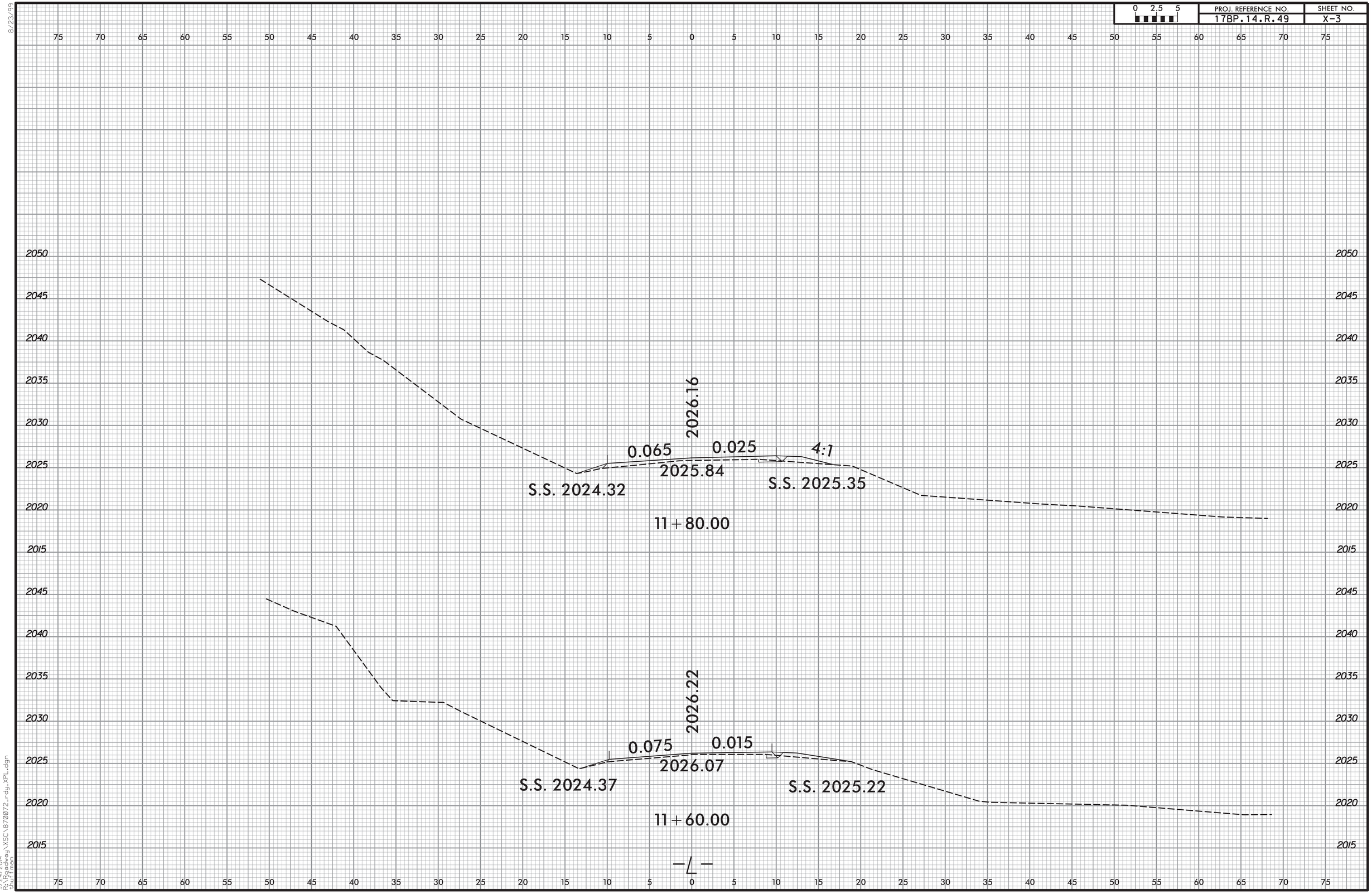

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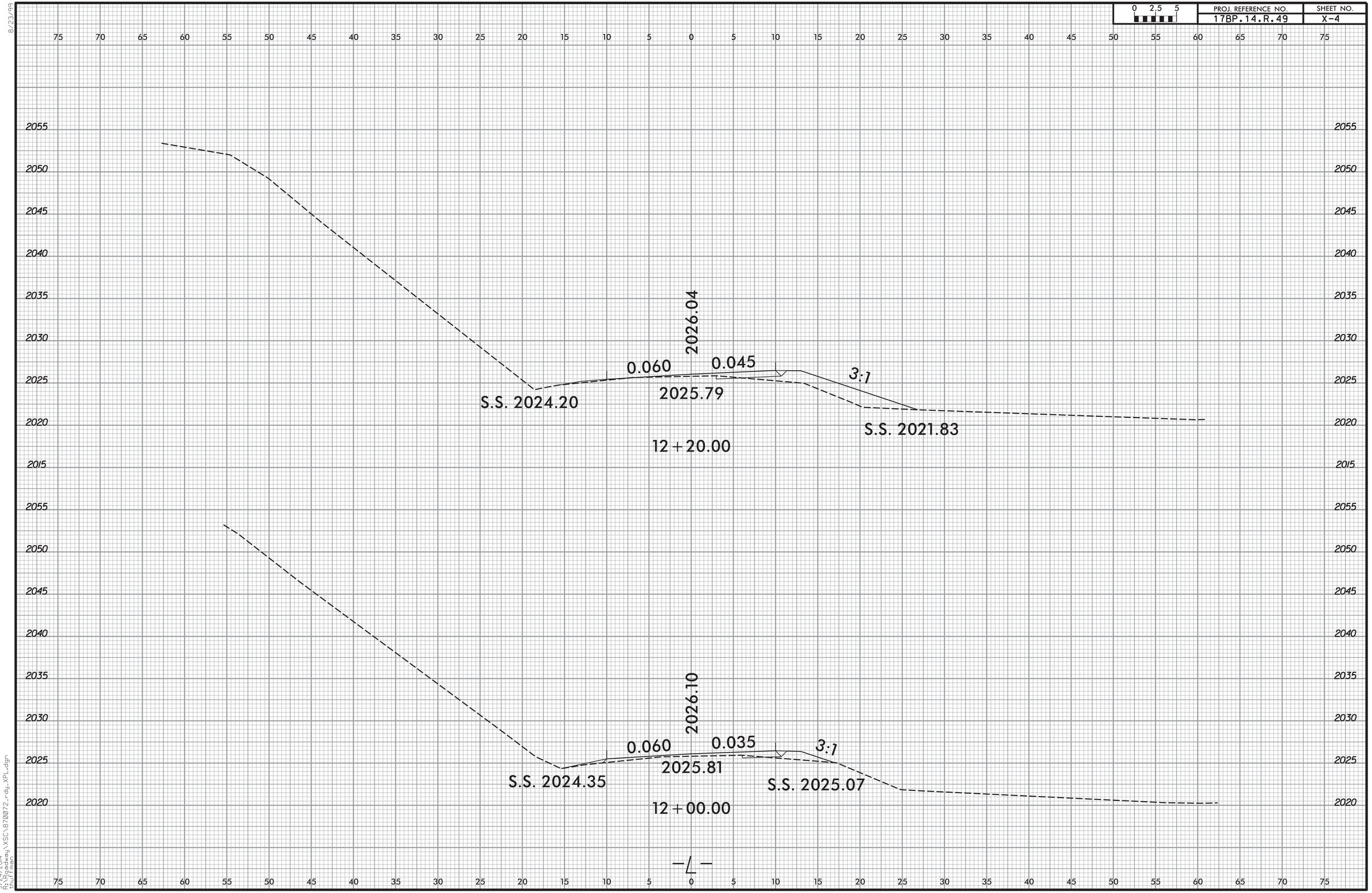

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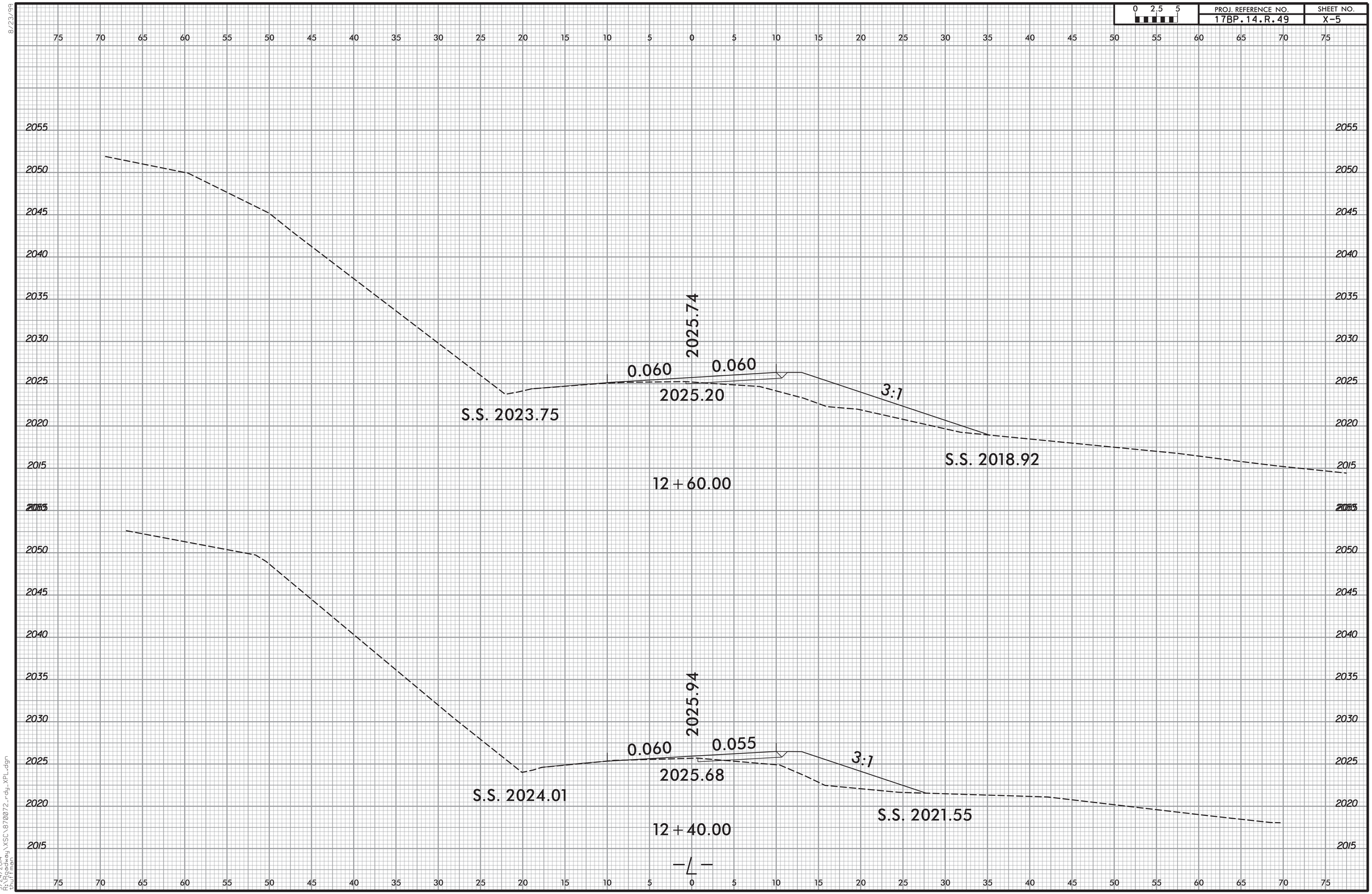

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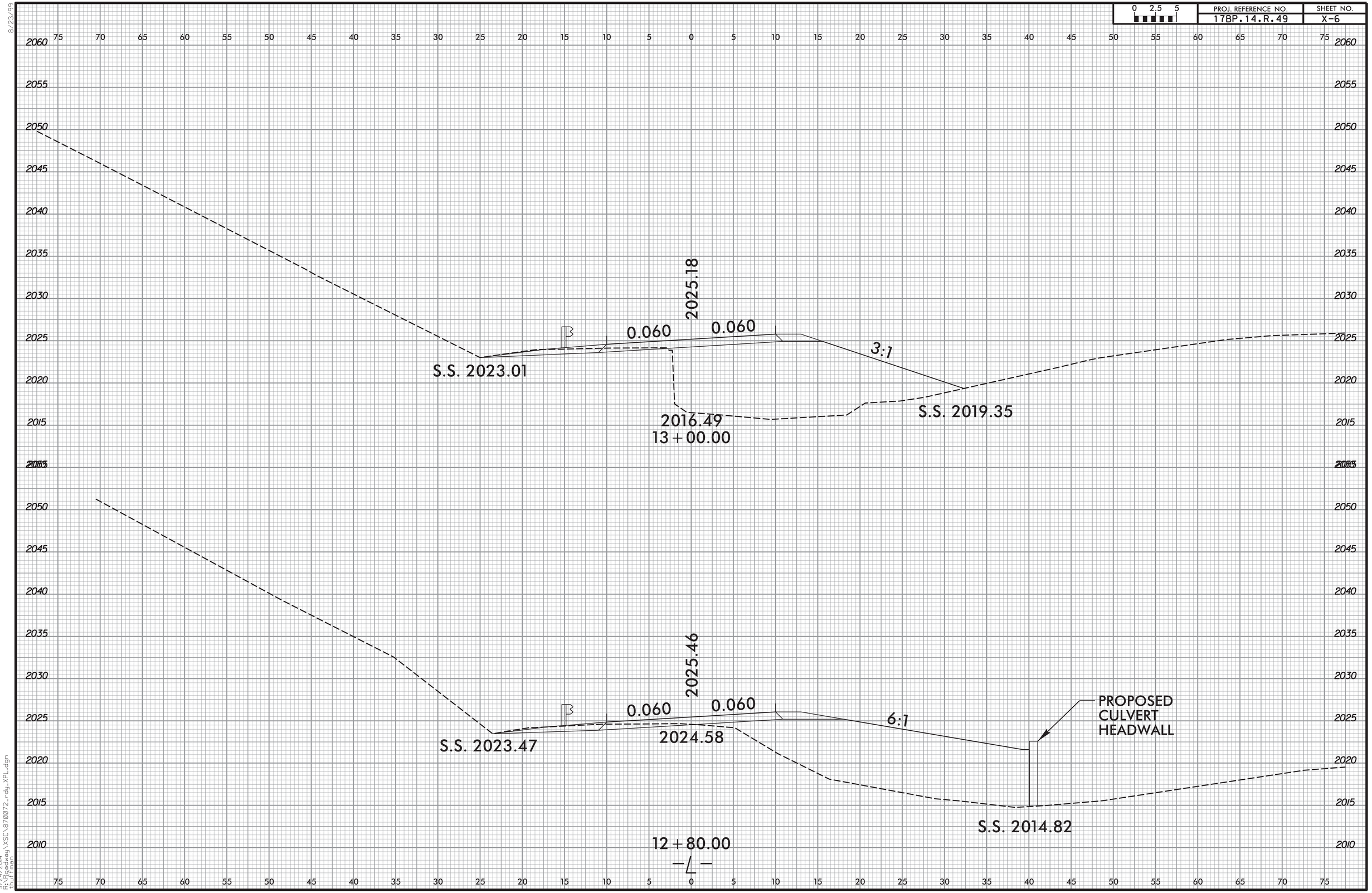

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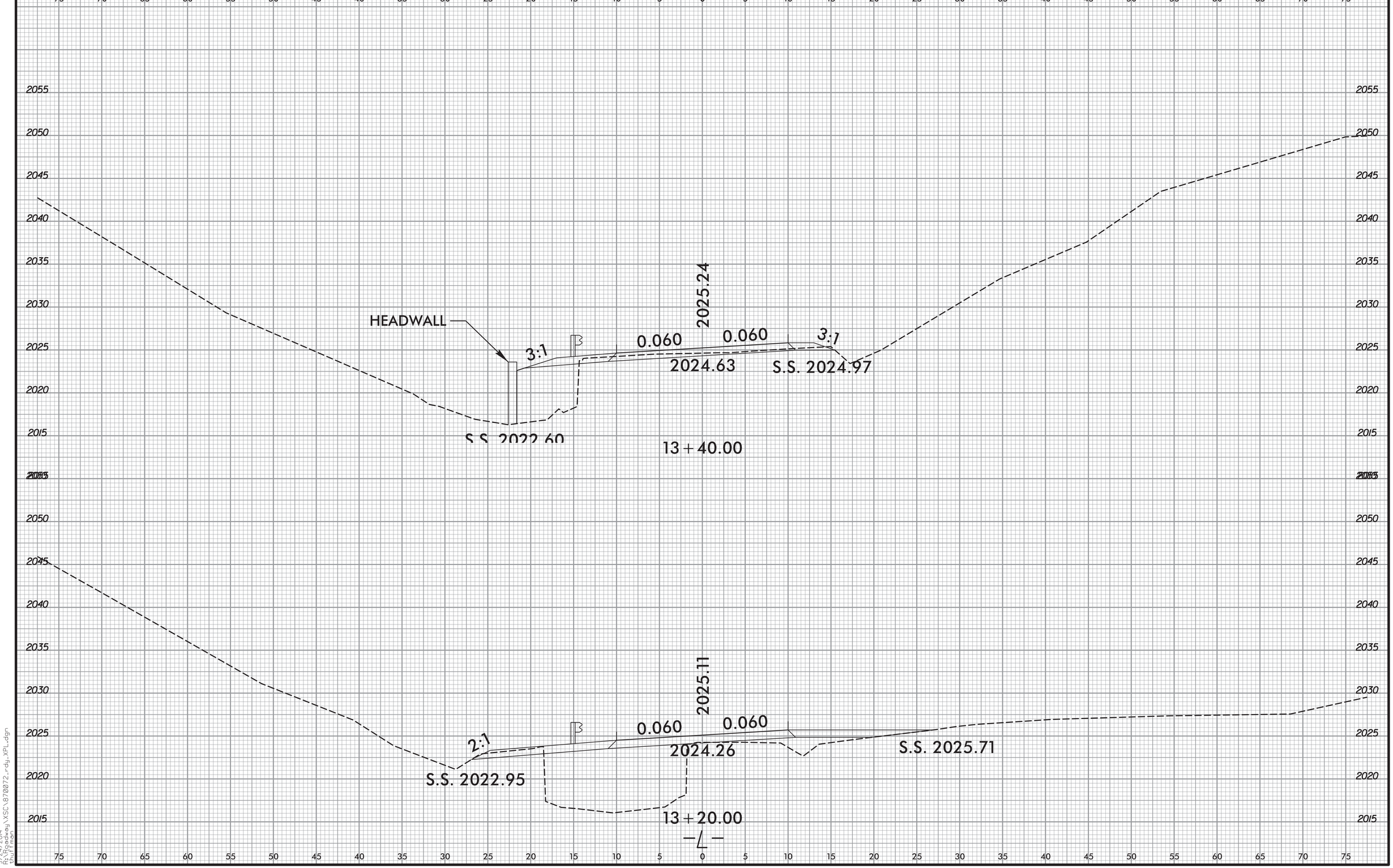

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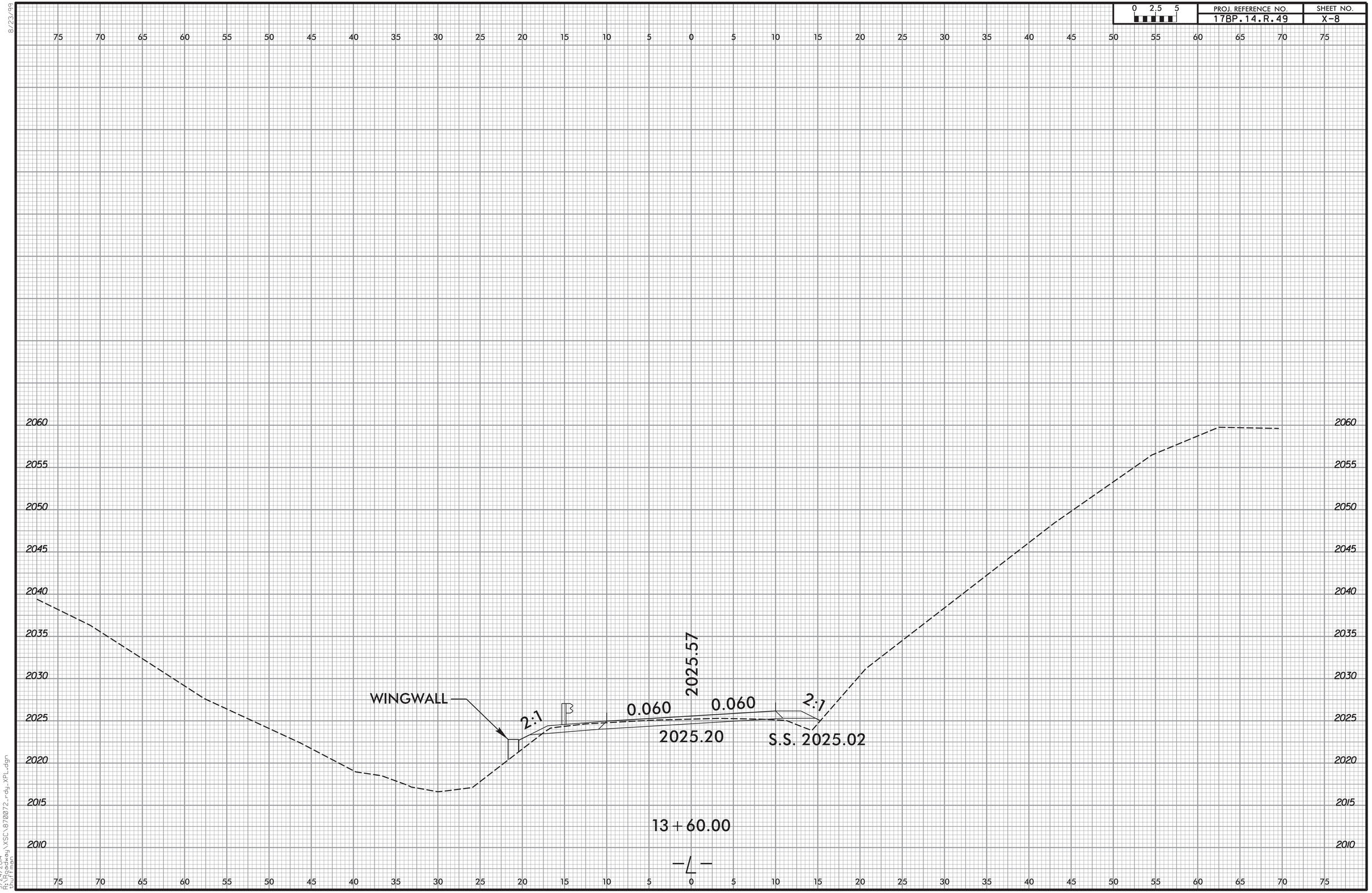

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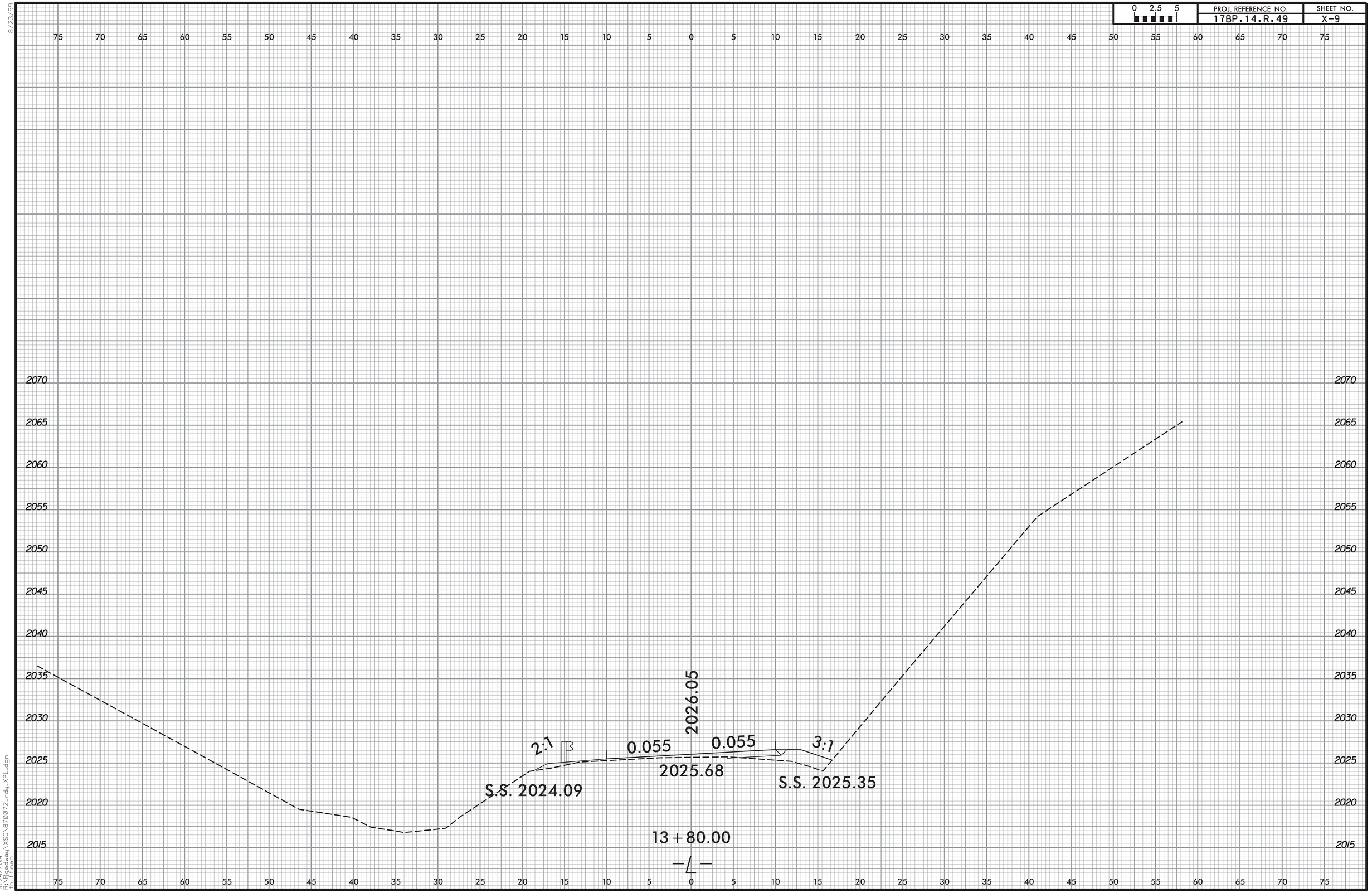

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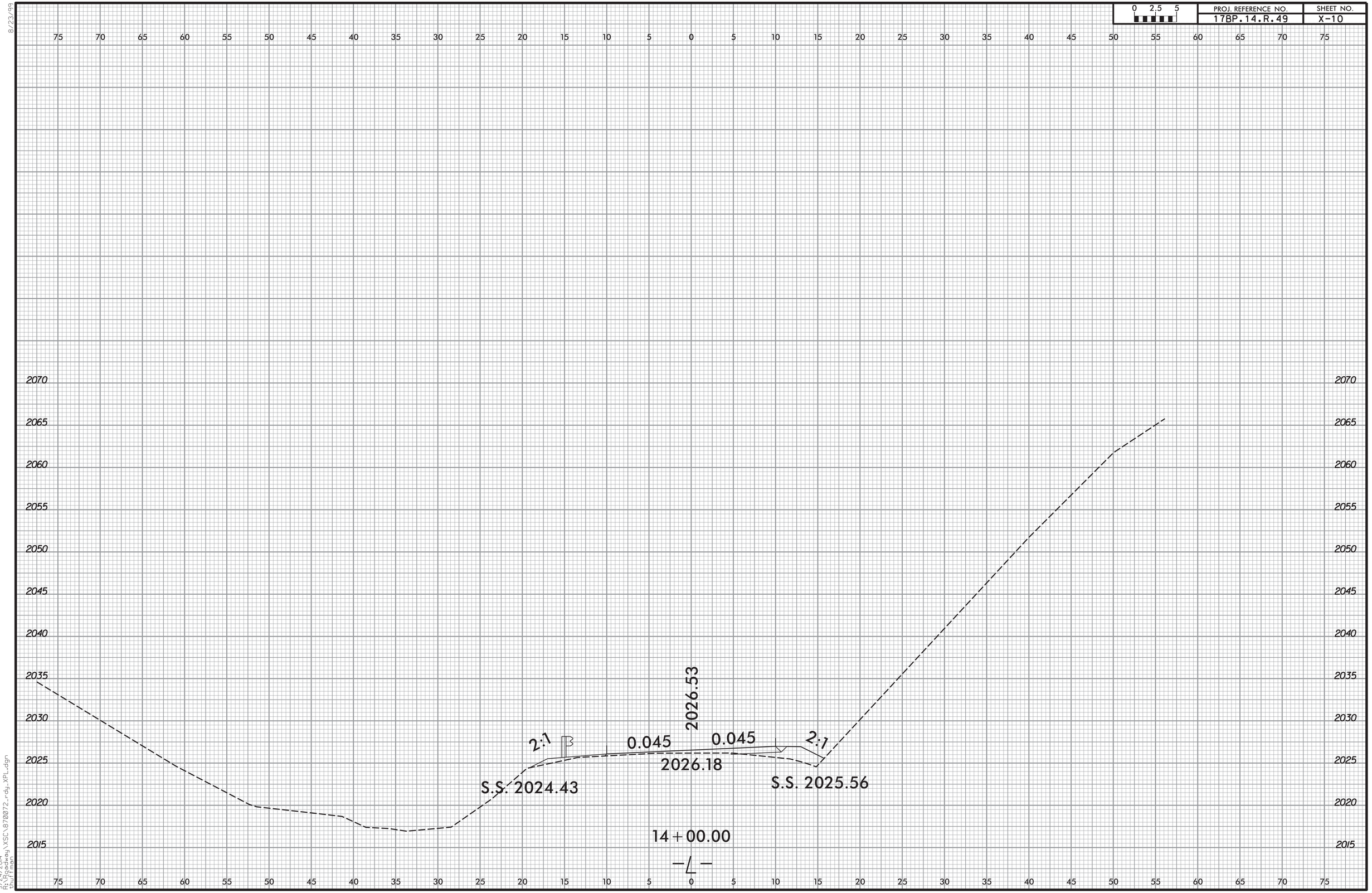

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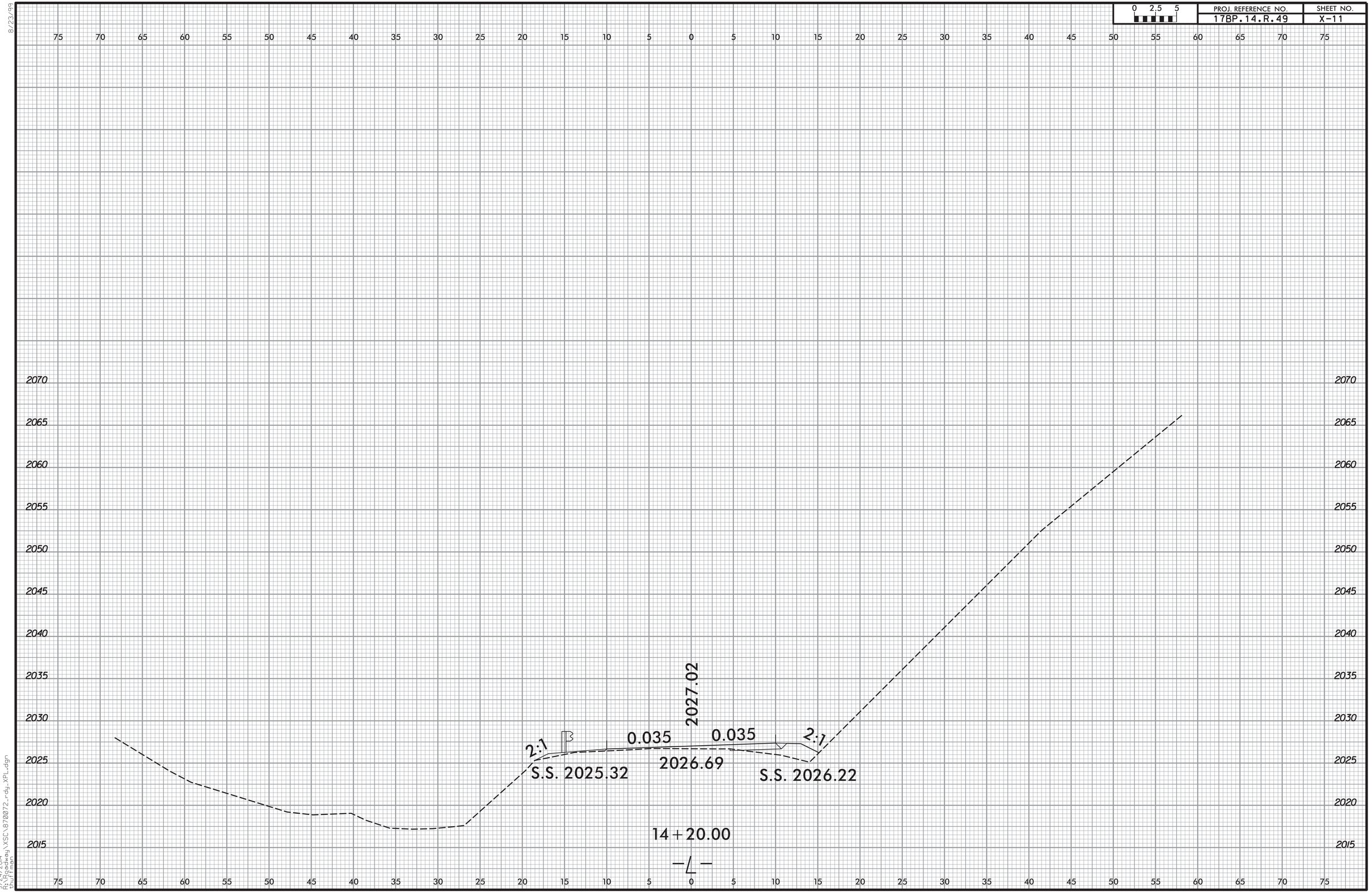

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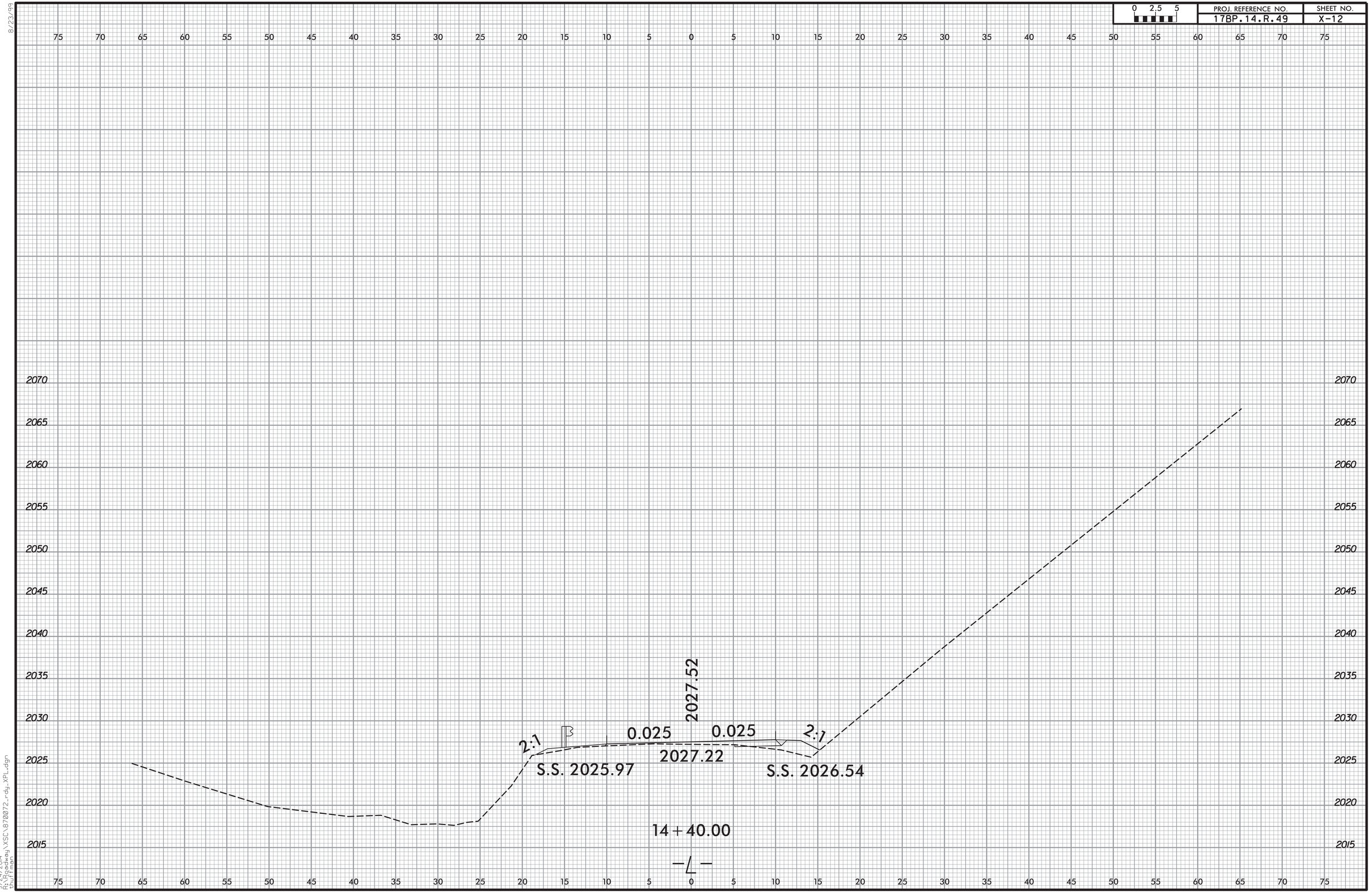

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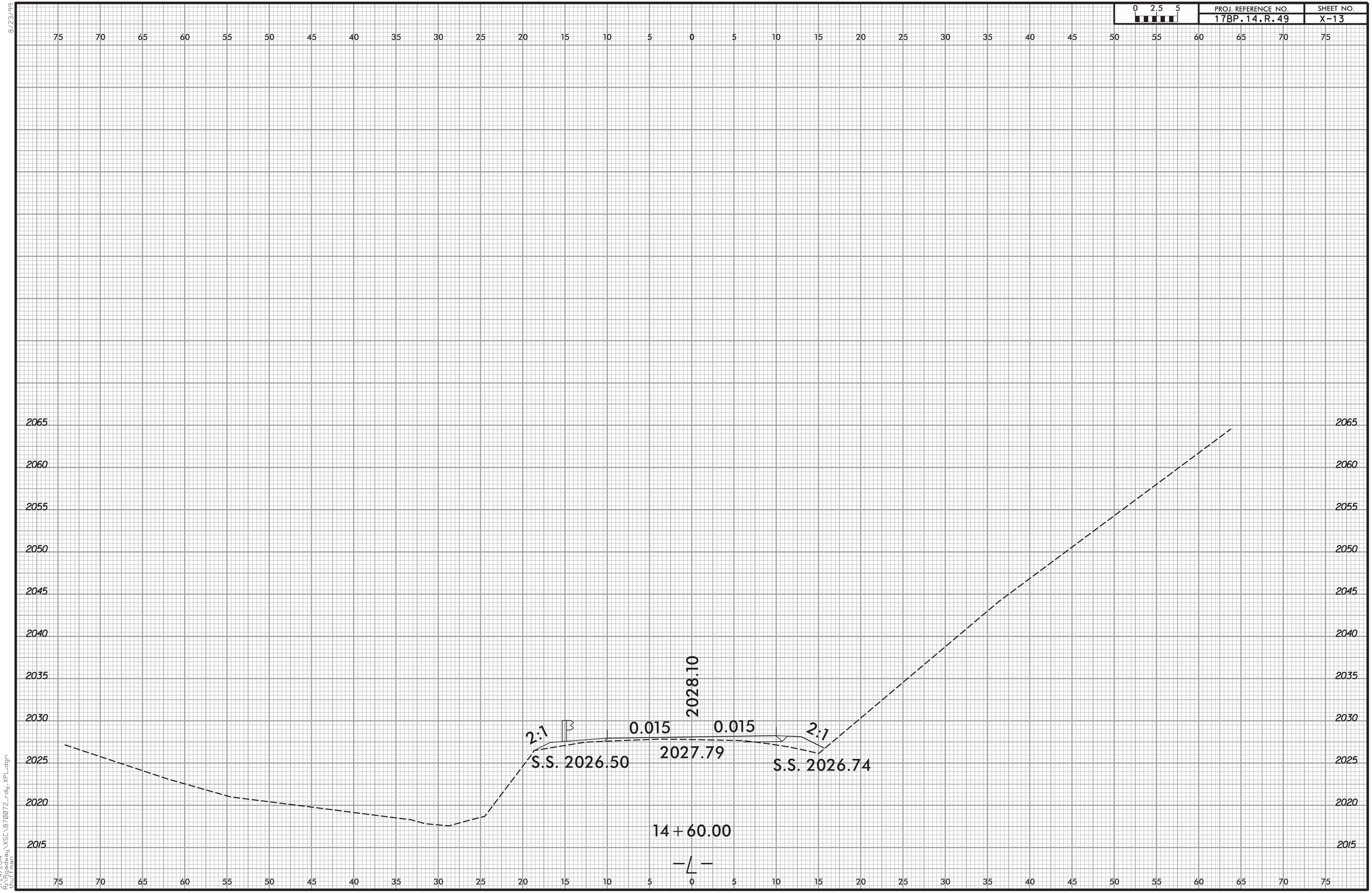

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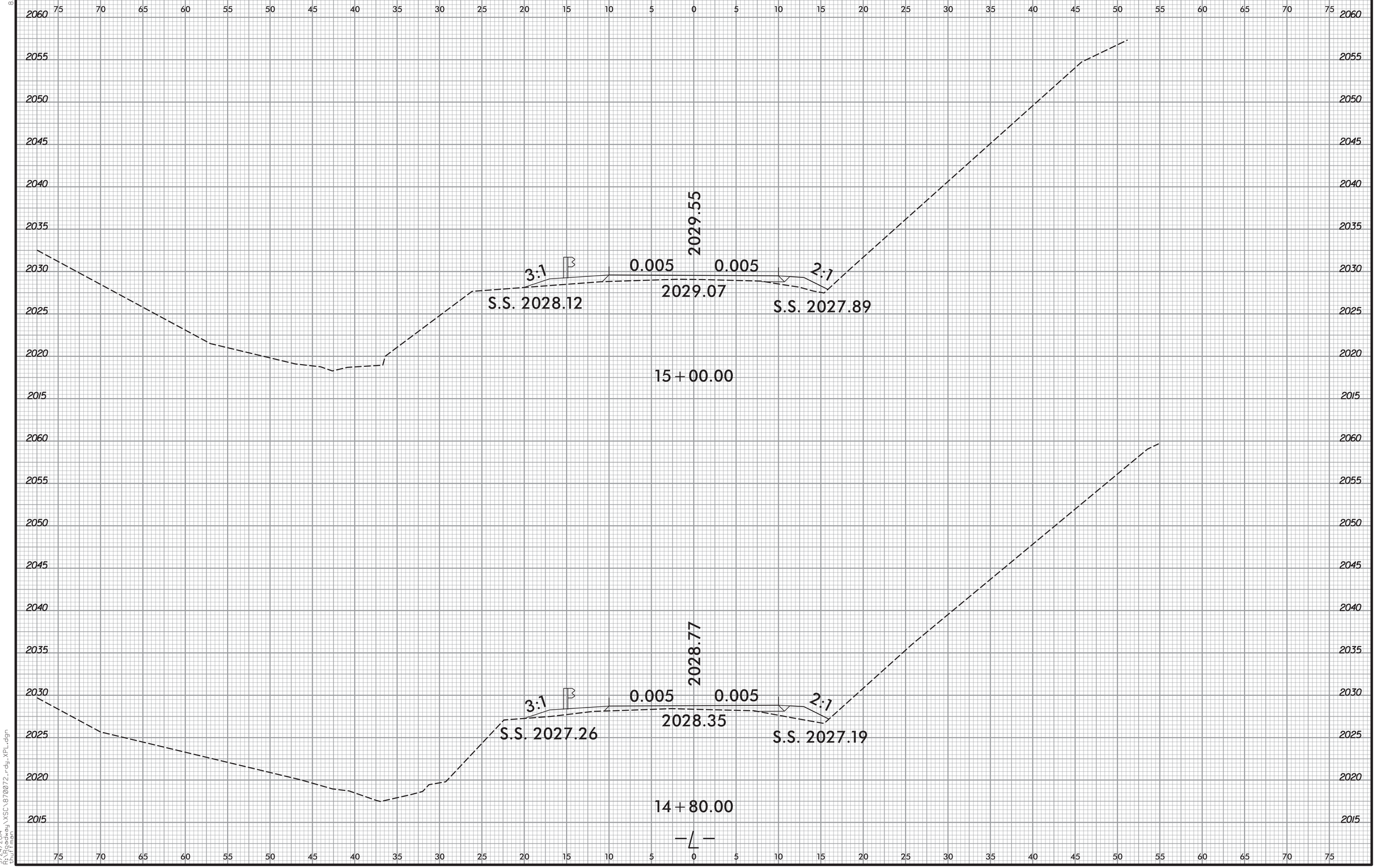

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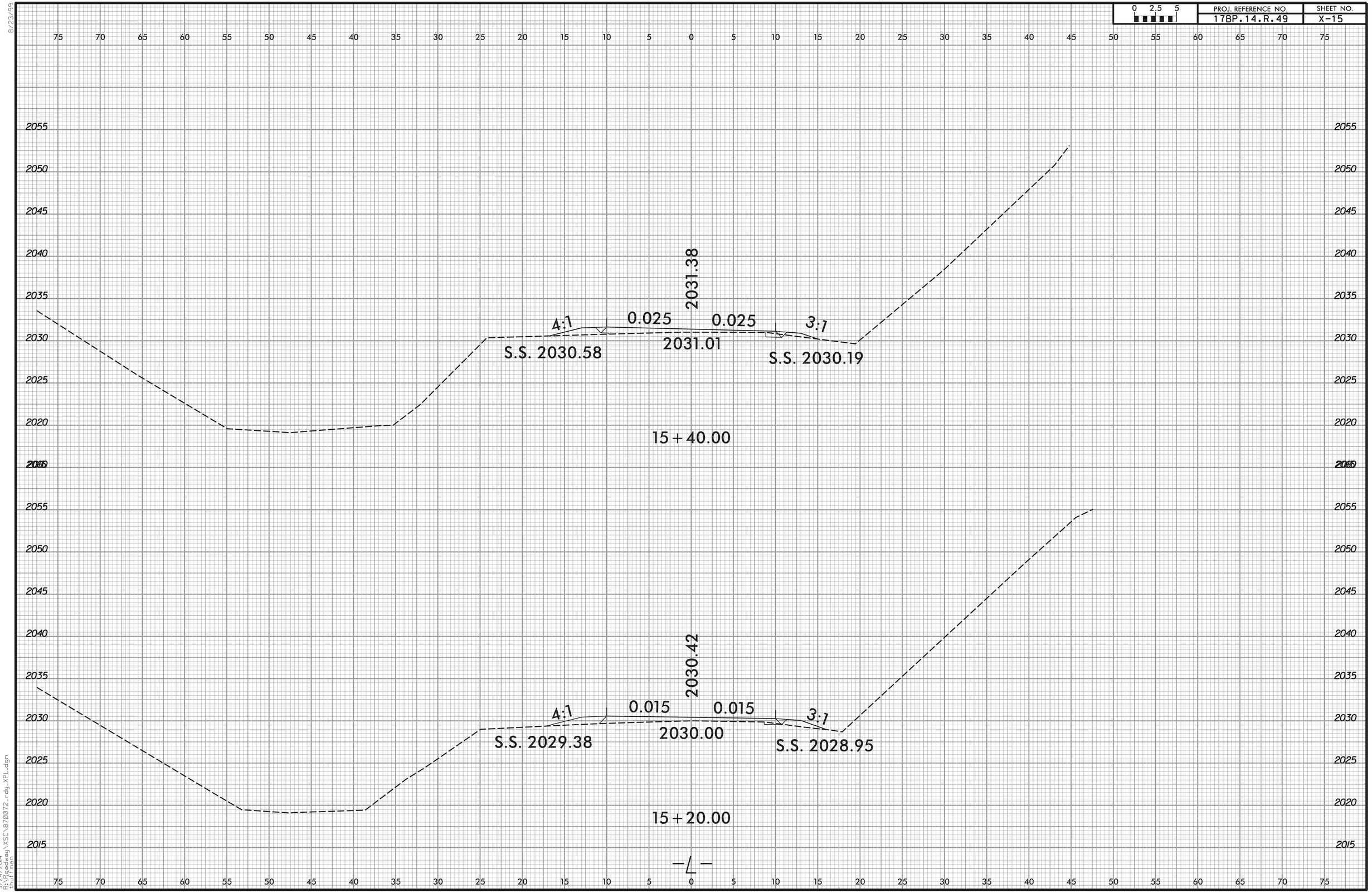

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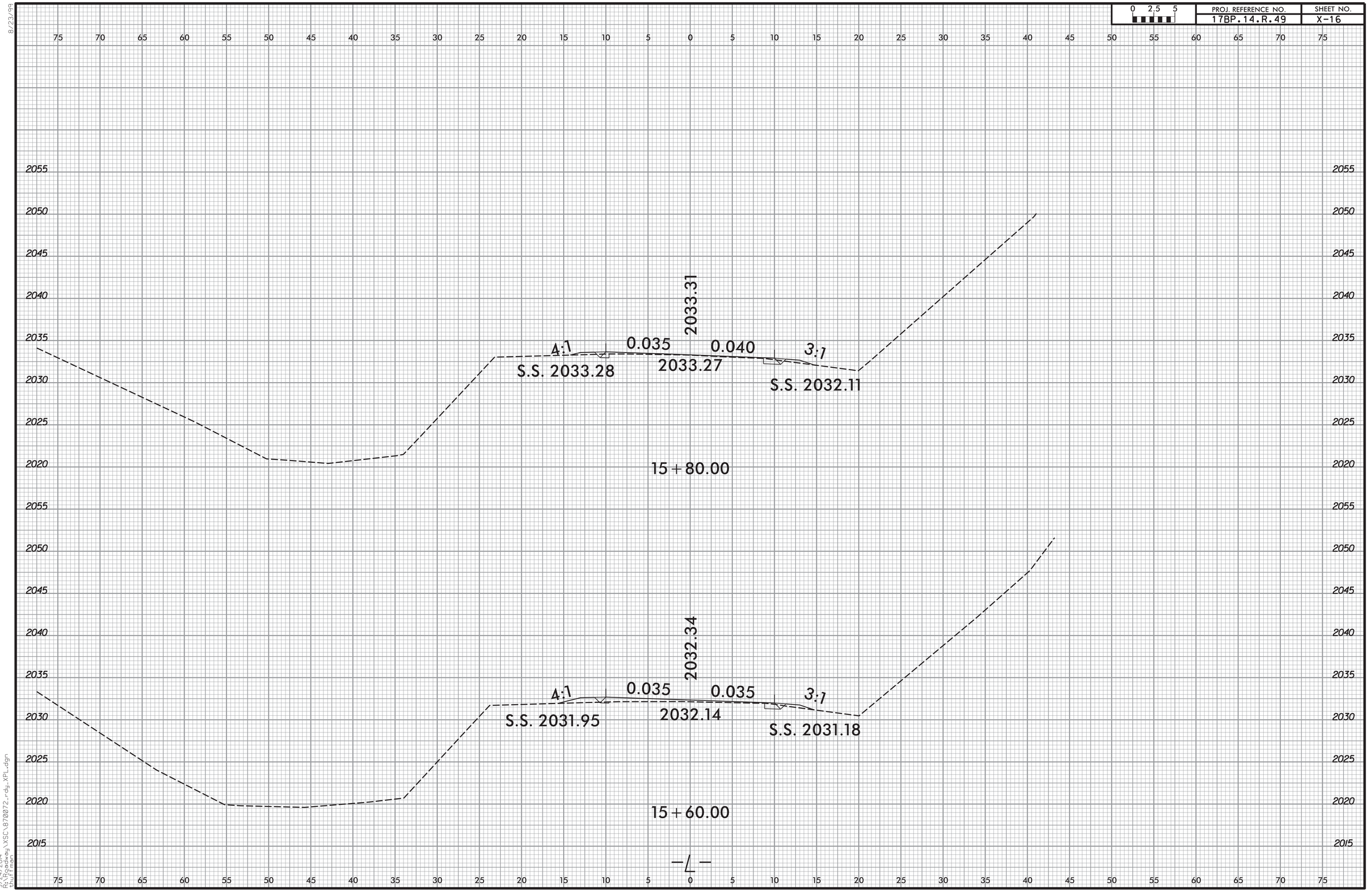

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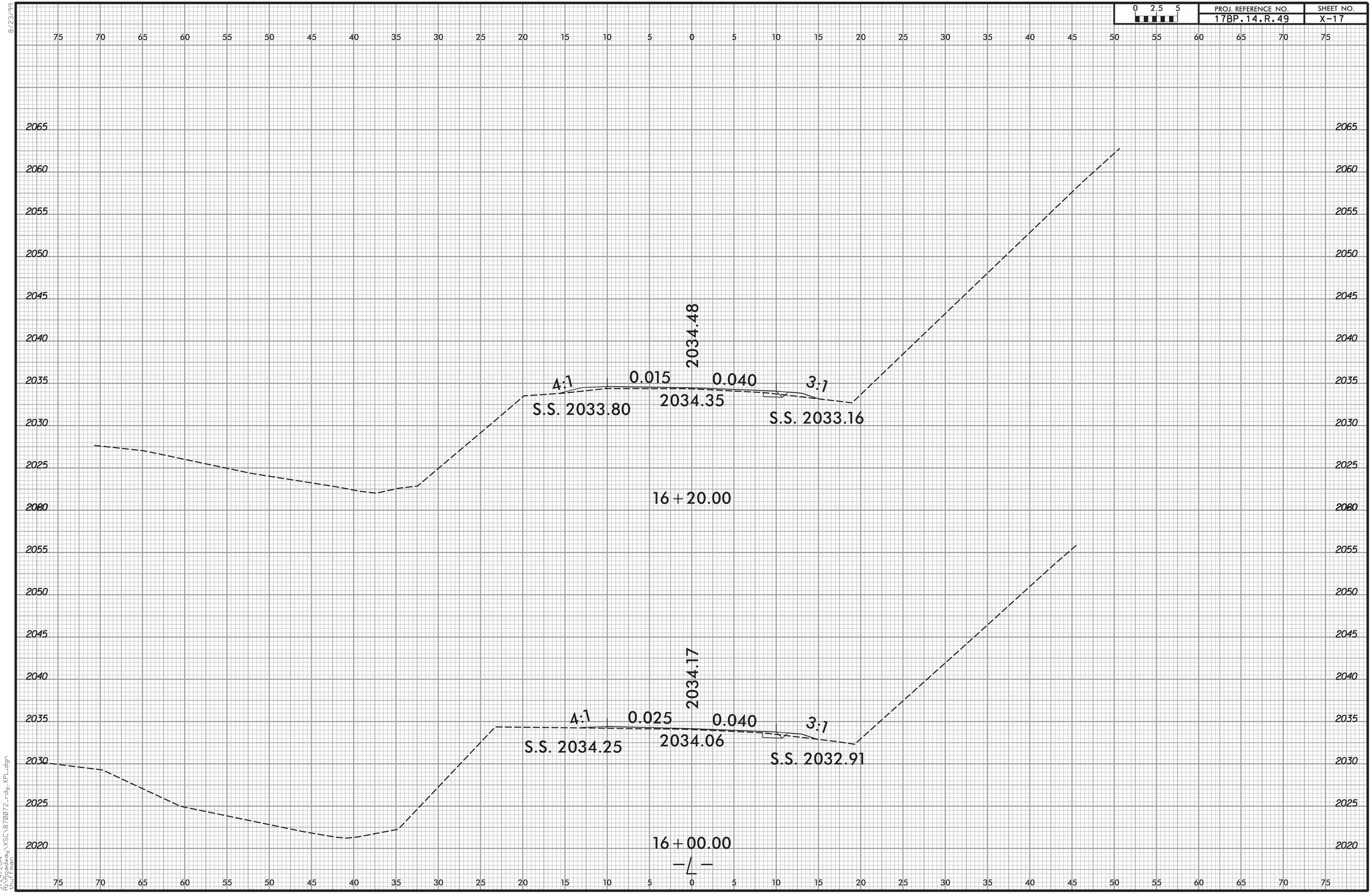

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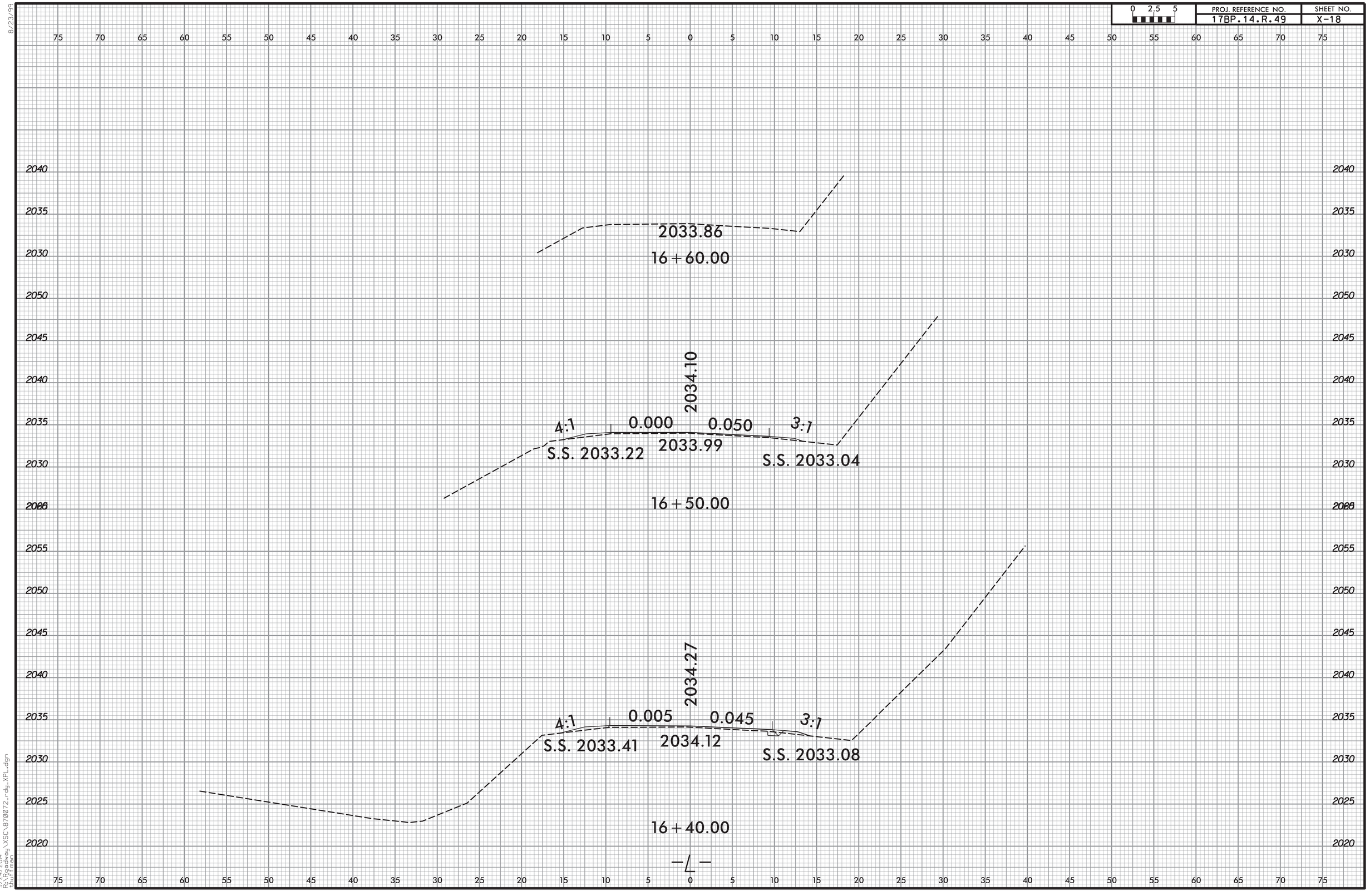

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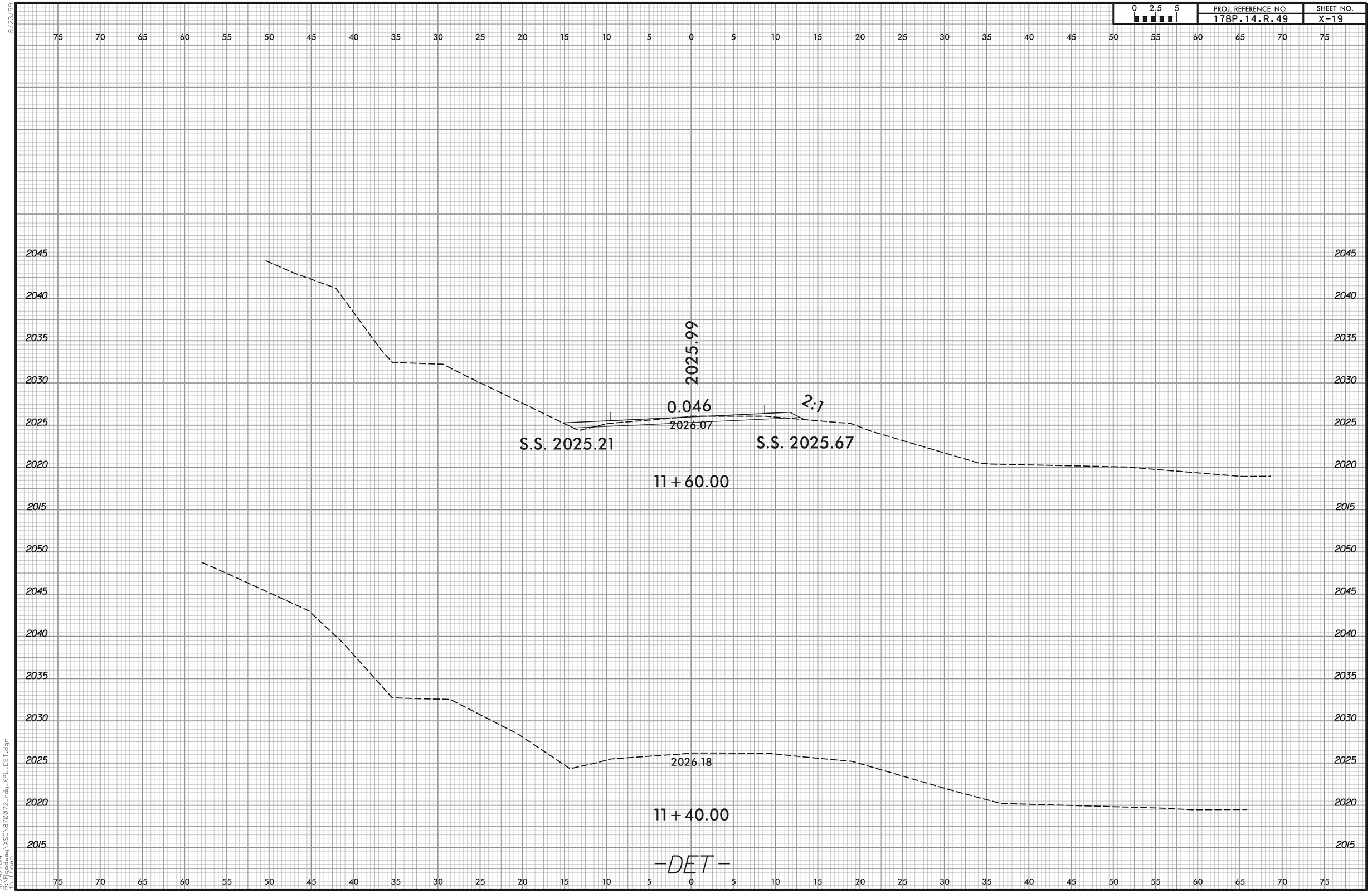

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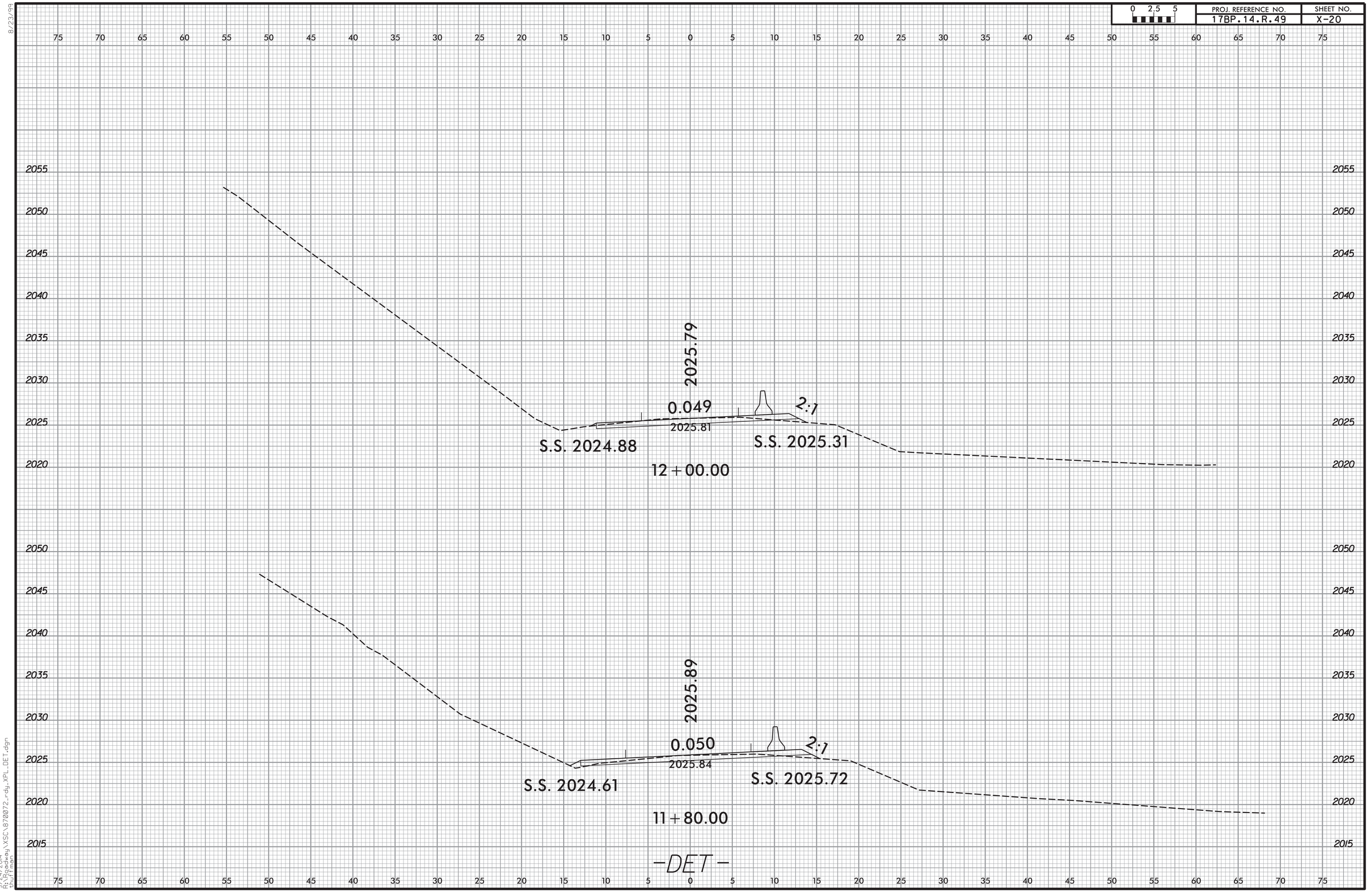

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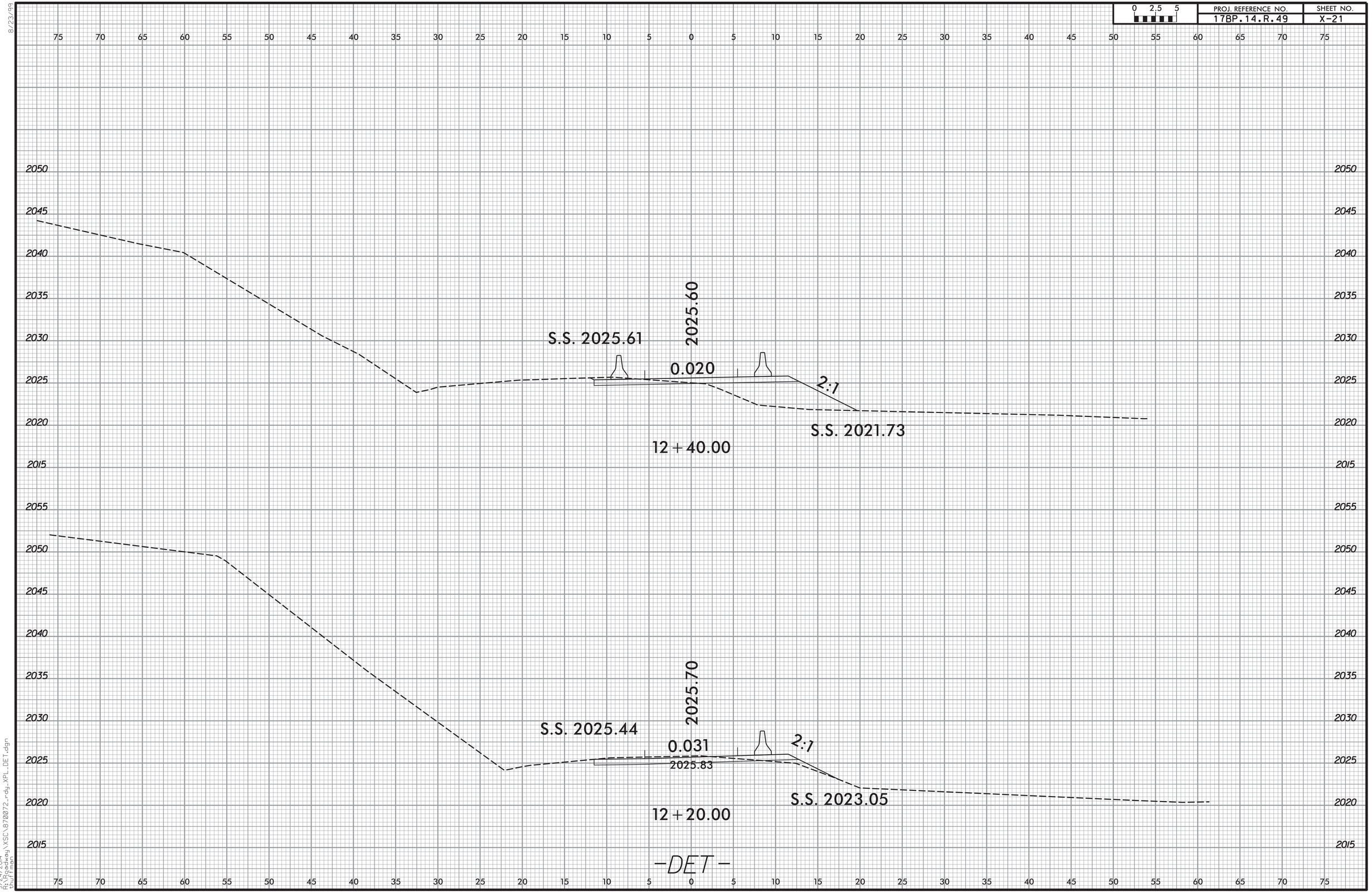

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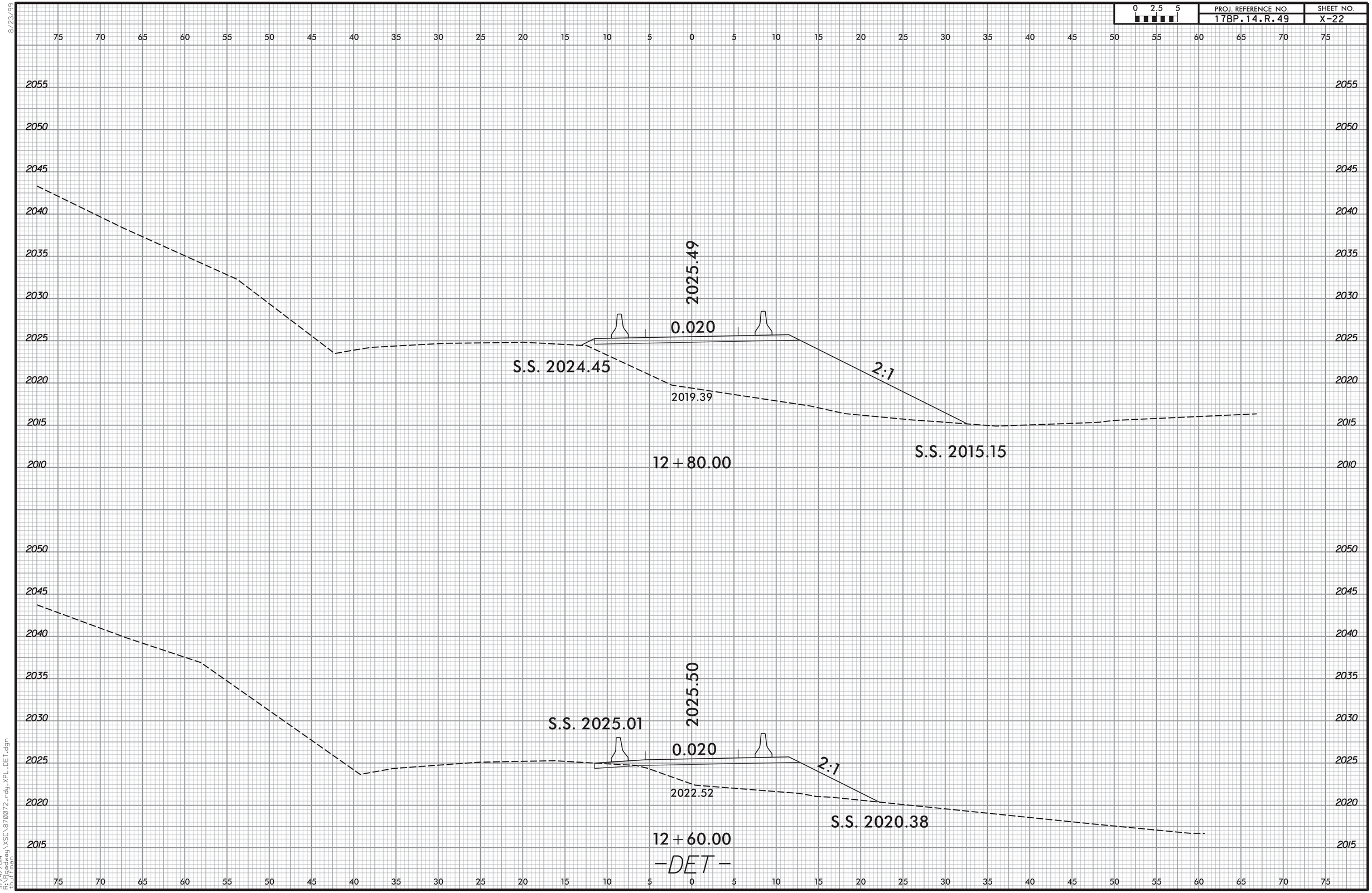

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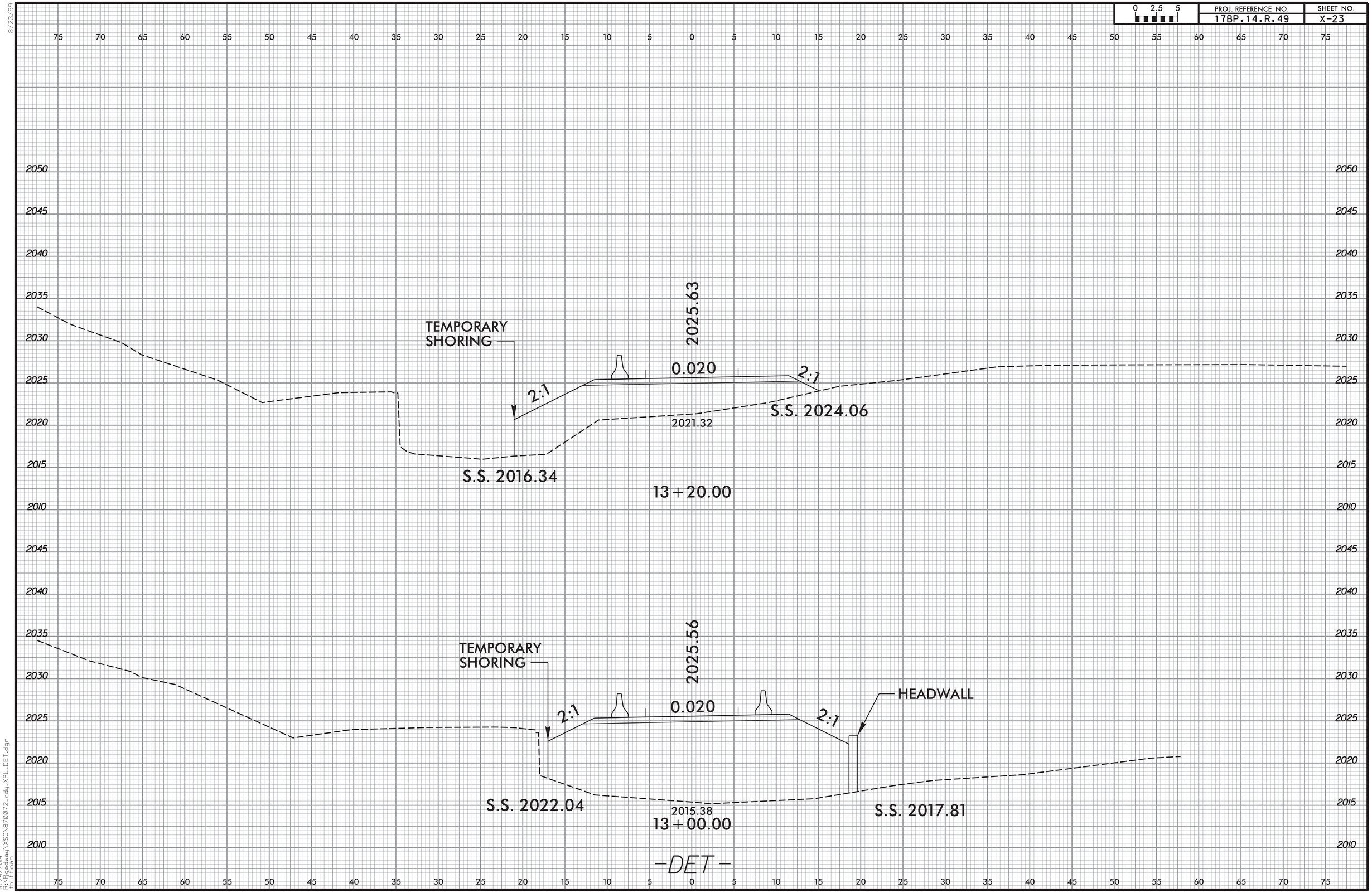

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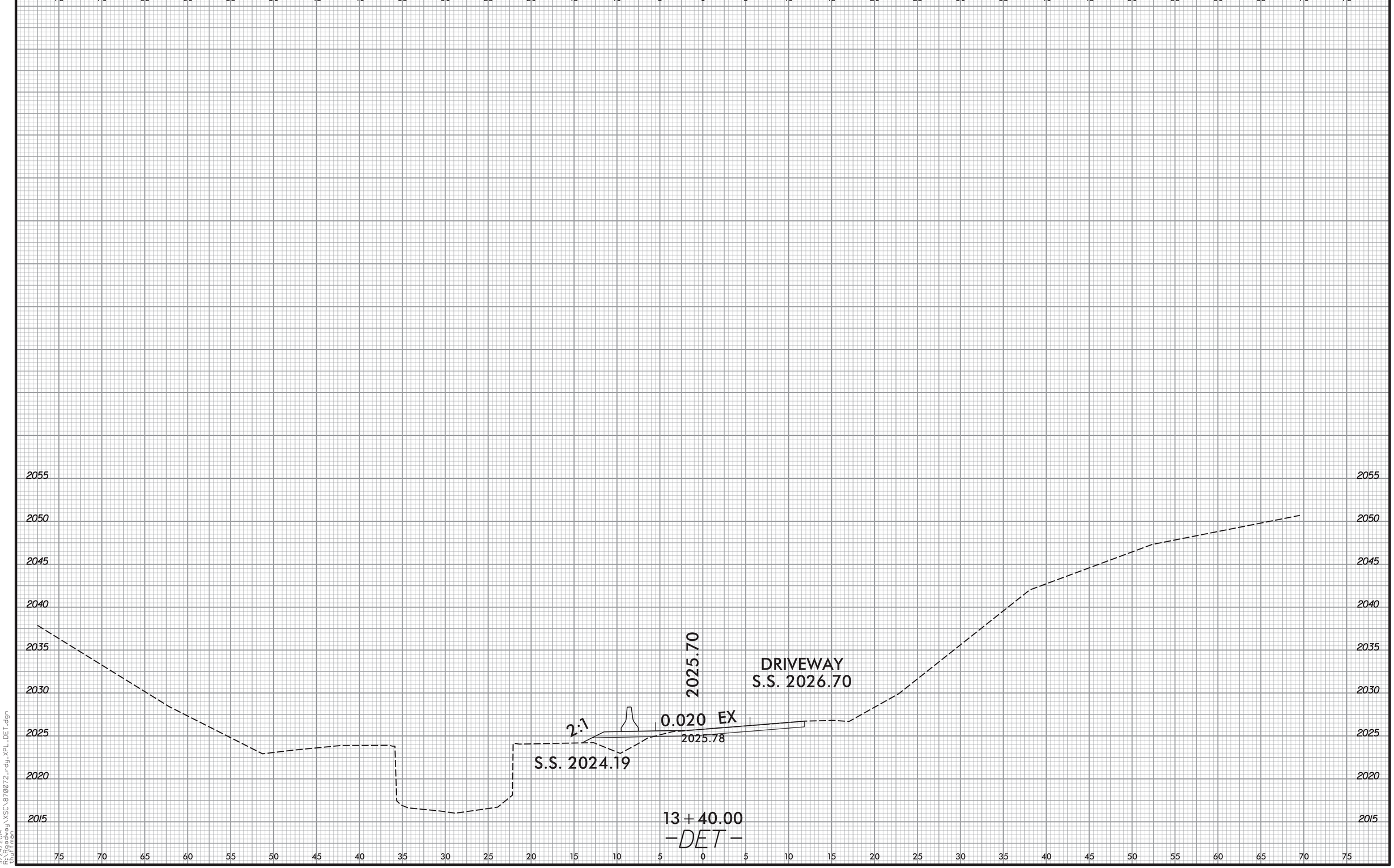

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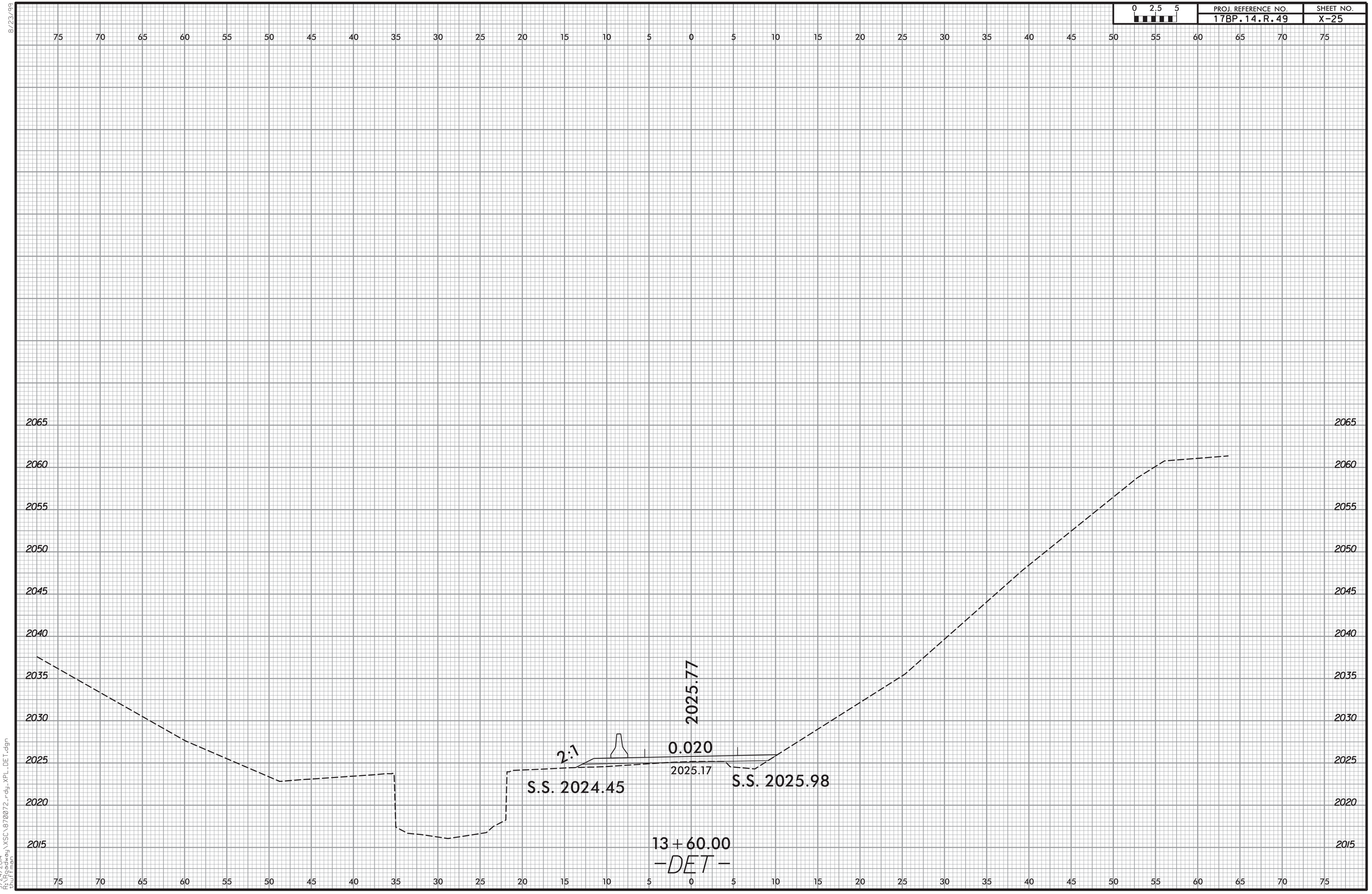

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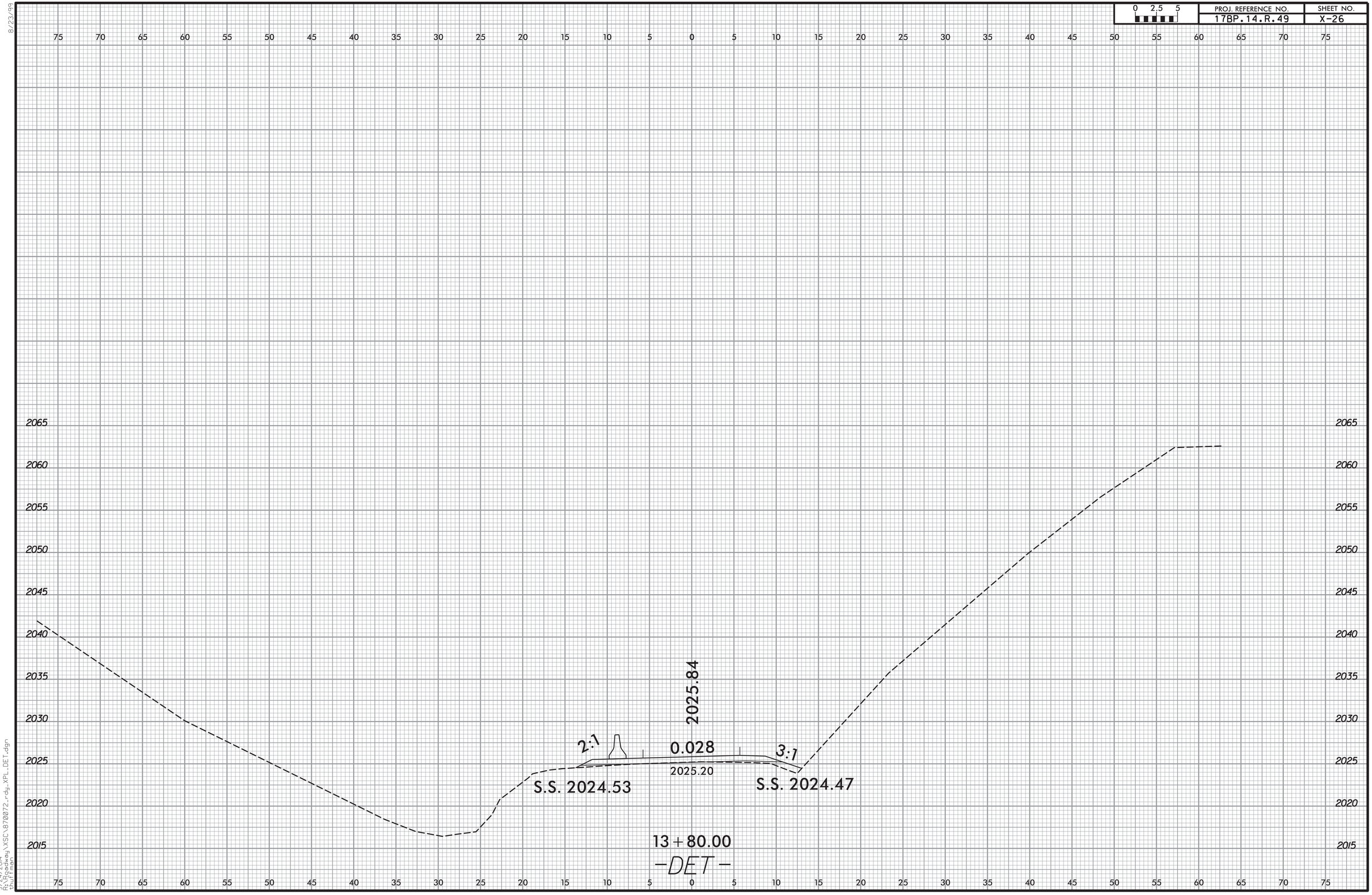

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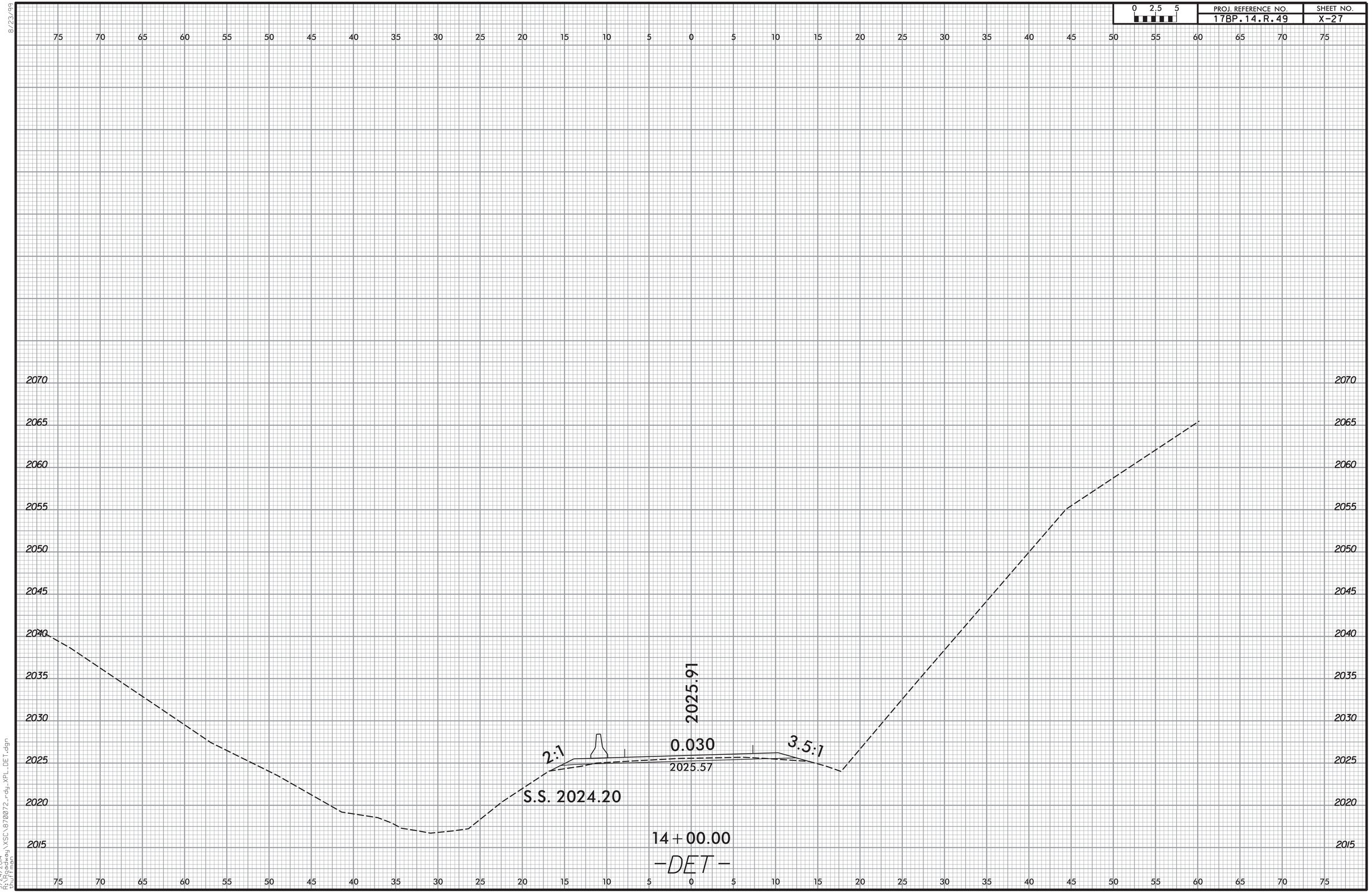

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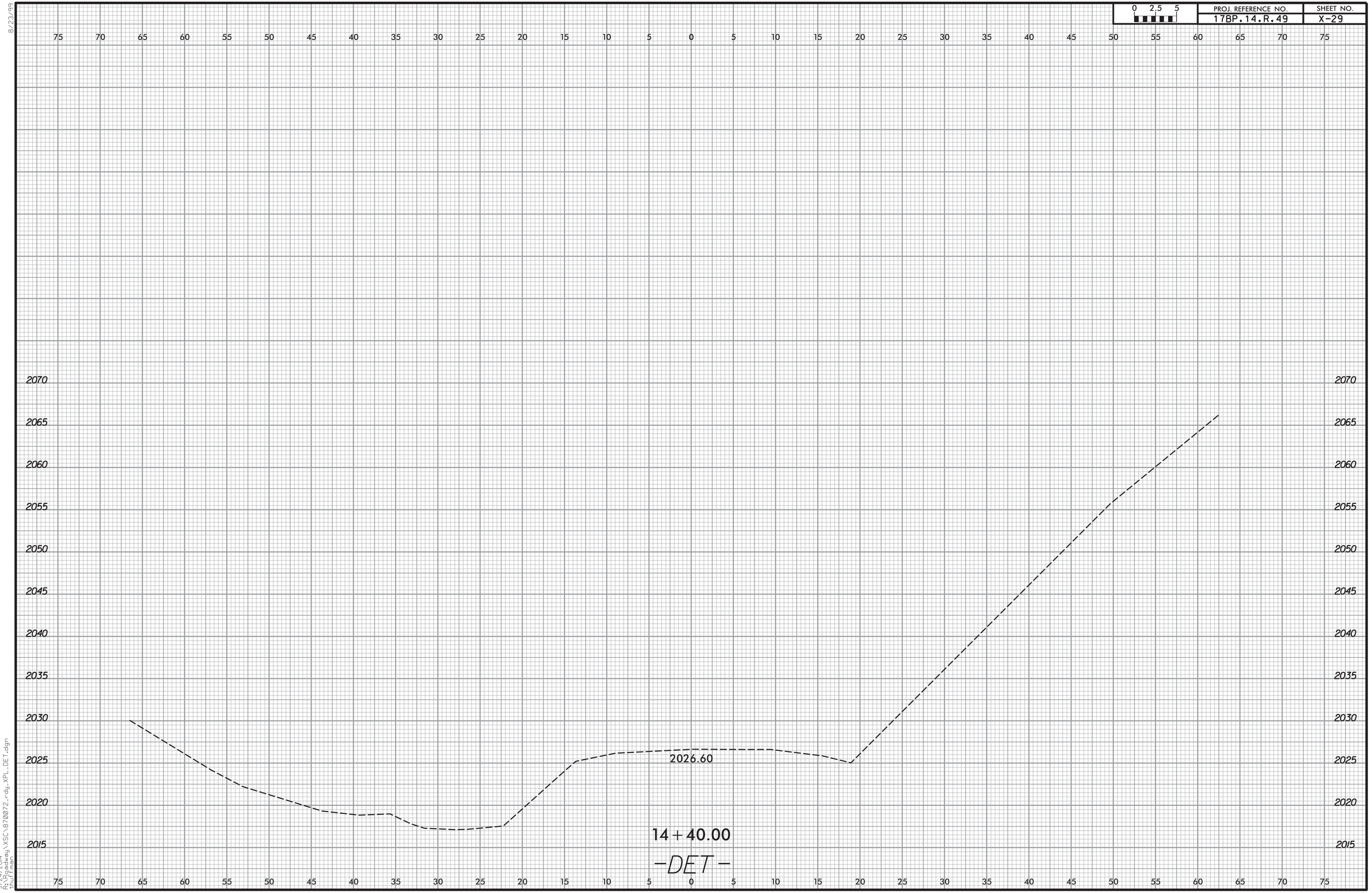

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PROJECT: 17BP.14.R.49

CONTRACT: DN00176

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.49	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
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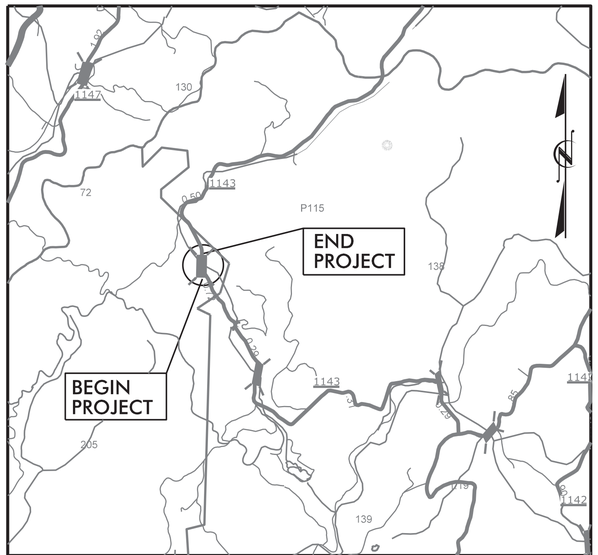
17BP.14.R.49		ROW & UTIL
17BP.14.R.49		CONST.



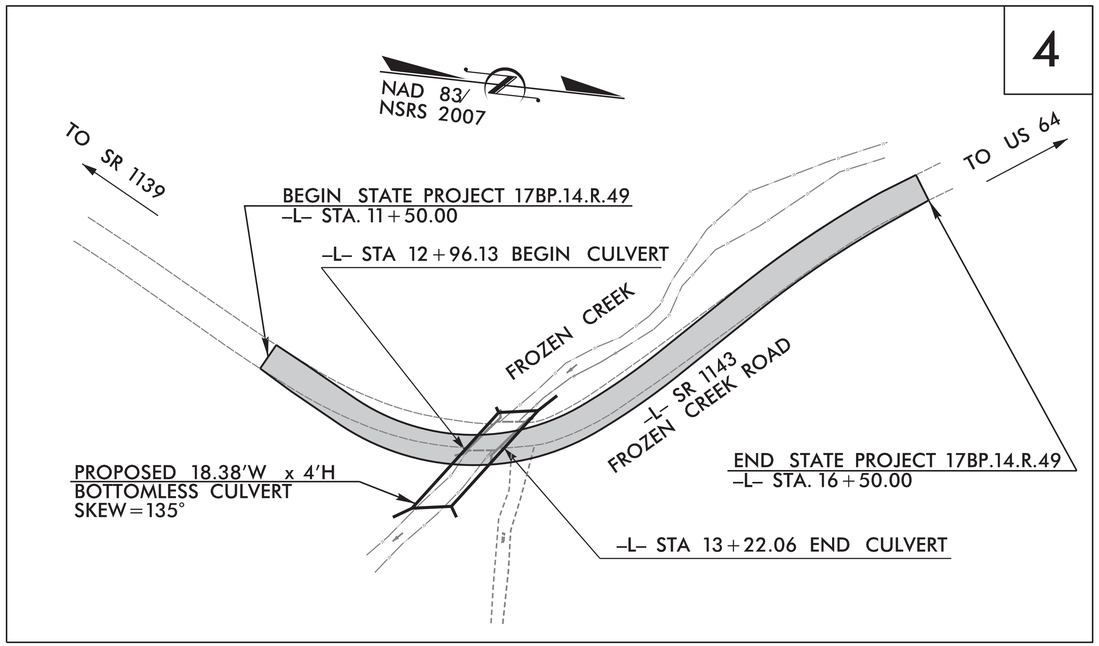
VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSYLVANIA COUNTY

LOCATION: BRIDGE NO. 72 ON SR 1143 (FROZEN CREEK ROAD) OVER FROZEN CREEK

TYPE OF WORK: PAVING, GRADING, GUARDRAIL, DRAINAGE AND CULVERT



CULVERT

DESIGN DATA

ADT 2013 = 630
ADT 2033 = 1,230
DHV = N/A %
D = N/A %
T = 6 % *
V = 25 MPH
* TTST = N/A DUAL 6%
FUNC CLASS =
LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY OF PROJECT 17BP.14.R.49 = 0.090 mi.
LENGTH STRUCTURE OF PROJECT 17BP.14.R.49 = 0.005 mi.
TOTAL LENGTH OF STATE PROJECT 17BP.14.R.49 = 0.095mi.

Prepared for NCDOT In the Office of:
moffatt & nichol
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX

2012 STANDARD SPECIFICATIONS

LETTING DATE :
OCTOBER 28, 2014

TIM REID, P.E.
PROJECT ENGINEER

MIKELE WINTERS, P.E.
PROJECT DESIGN ENGINEER

STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

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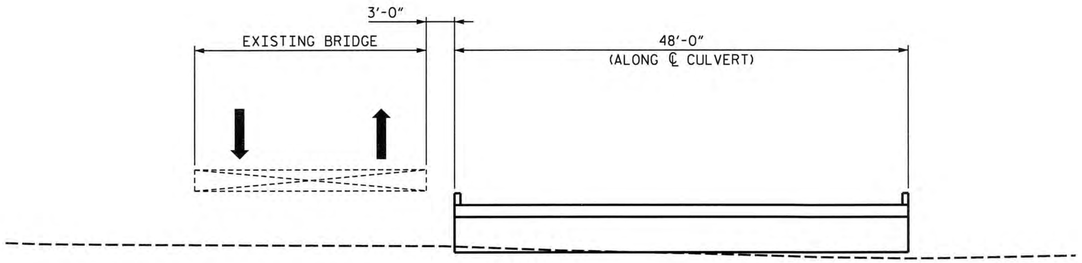
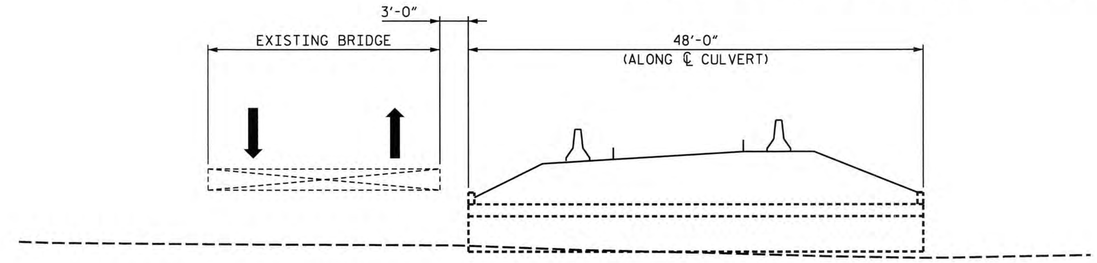
thuffman

NOTE:

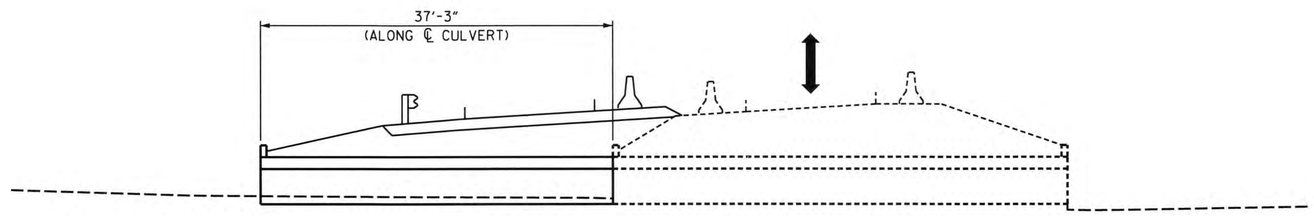
FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS.





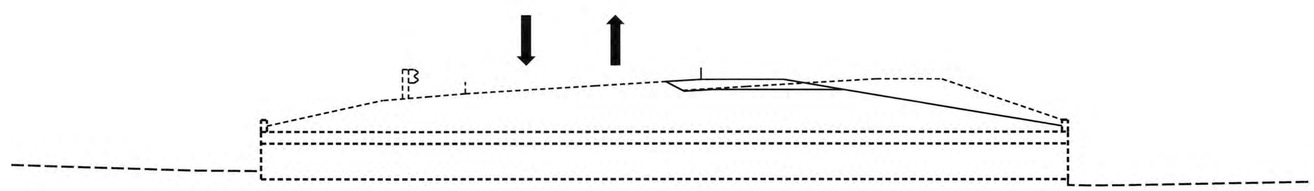
PHASE I

CONSTRUCT PROPOSED RIGHT SIDE OF CULVERT, CONSTRUCT DETOUR OVER RIGHT SIDE OF CULVERT & MAINTAIN TRAFFIC ON EXISTING BRIDGE.



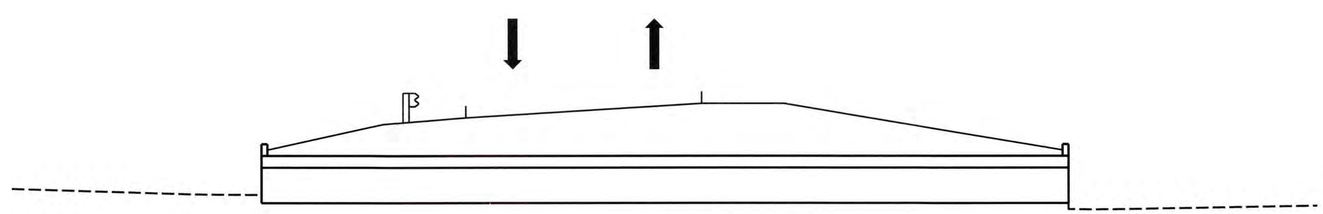
PHASE II

MOVE TRAFFIC ONTO DETOUR OVER RIGHT SIDE OF CULVERT, CONSTRUCT PROPOSED LEFT SIDE OF CULVERT, CONSTRUCT PROPOSED LEFT SIDE OF ROADWAY & TIE PROPOSED ROADWAY SLOPES TO LEFT SIDE OF DETOUR SLOPES.



PHASE III

MOVE TRAFFIC TO LEFT SIDE OF PROPOSED ROADWAY & COMPLETE CONSTRUCTION OF RIGHT SIDE OF PROPOSED ROADWAY.



FINAL TRAFFIC PATTERN

MOVE TRAFFIC TO FINAL LOCATION & COMPLETE CONSTRUCTION OF PROPOSED ROADWAY, INSTALL ASPHALT WEARING SURFACE.

PROJECT NO. 17BP.14.R.49
TRANSYLVANIA COUNTY
STATION: 13+08.54 -L-

SHEET 1 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STAGE CONSTRUCTION

FOR CULVERT ON SR 1143
OVER FROZEN CREEK
BETWEEN SR 1139 AND US 64

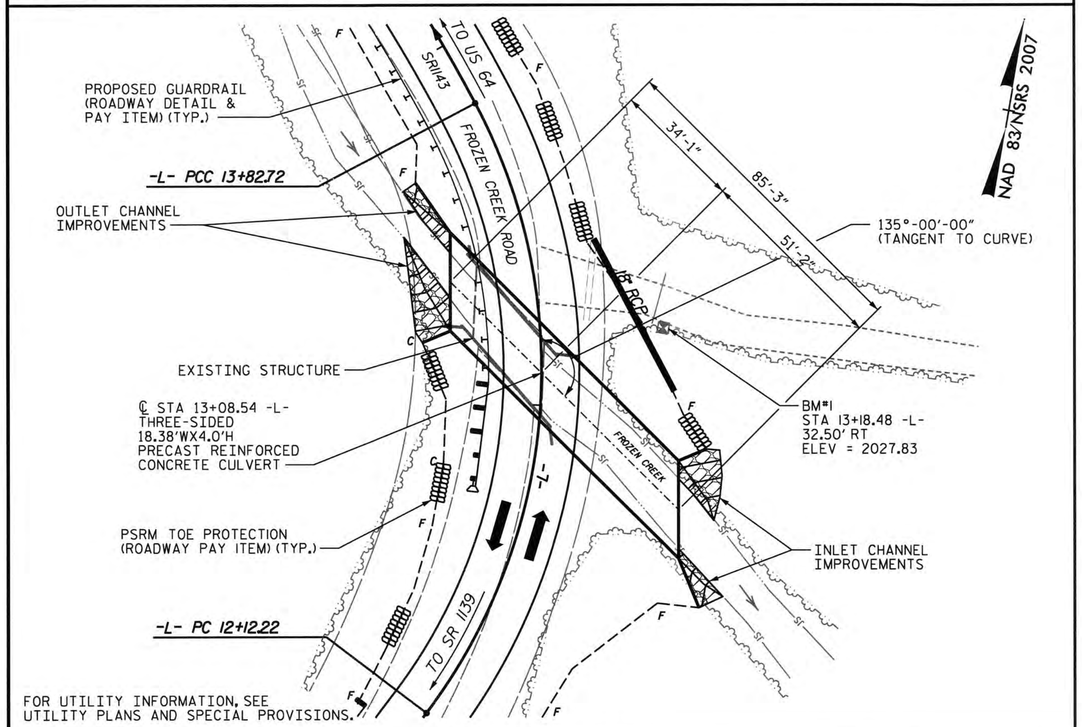
ASSEMBLED BY : C. POWELL	DATE : 04/2014		SPECIAL
CHECKED BY : M. WINTERS	DATE : 04/2014		
DESIGN ENGINEER OF RECORD : M. WINTERS	DATE : 04/2014		
DRAWN BY : CCJ	DATE : 01/2000		STANDARD
CHECKED BY : RWW	DATE : 01/2000		

moffatt & nichol
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX

NORTH CAROLINA PROFESSIONAL SEAL 026433 ENGINEER MIKELE E. WINTERS
9/24/2014

REVISIONS								SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:			C-1
1			3					TOTAL SHEETS
2			4					7

TBM BM#1 RR SPIKE IN 7"POPLAR LOCATED AT STA 13+18.48 -L-; 32.50' RT, EL 2027.83



LOCATION SKETCH

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

DESIGN FILL = 4.4'

FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.

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

FOR PRECAST REINFORCED CONCRETE THREE-SIDED CULVERT, SEE SPECIAL PROVISIONS.

THE EXISTING STRUCTURE CONSISTING OF ONE SPAN, 1 @ 46'-0" WITH AN ASPHALT WEARING SURFACE ON A TIMBER DECK AND STEEL GIRDERS AND A CLEAR ROADWAY WIDTH OF 24'-6" SUPPORTED ON A SUBSTRUCTURE OF TIMBER CAPS, POSTS, CONCRETE SILLS AND TIMBER POSTS AND STEEL CRUTCH BENTS SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATION.

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

THE SCOUR CRITICAL ELEVATION FOR THE EAST AND WEST SIDES OF THE CULVERT IS THE BOTTOM OF FOOTING ELEVATION. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SPREAD FOOTINGS ARE DESIGNED FOR A FACTORED RESISTANCE OF 4.0 TSF. CHECK FIELD CONDITIONS FOR THE REQUIRED RESISTANCE OF 9.0 TSF JUST BEFORE PLACING CONCRETE.

KEY SPREAD FOOTINGS AT LEAST 12 INCHES INTO WEATHERED ROCK WITH MINIMUM THICKNESS AS SHOWN ON THE PLANS.

TO PROVIDE PROTECTION FROM POSSIBLE SCOUR, DO NOT CONSTRUCT SPREAD FOOTINGS AT AN ELEVATION HIGHER THAN SHOWN ON THE PLANS.

SCOUR PROTECTION IS REQUIRED FOR SPREAD FOOTINGS. DO NOT PLACE RIP RAP ABOVE THE STREAM BED.

BACKFILL WITH SELECT MATERIAL, CLASS VI MEETING THE REQUIREMENTS OF SECTION 1016 OF THE STANDARD SPECIFICATIONS.

NO WORK SHALL BE DONE UNTIL THE UNDERCUT TO RESIDUAL/SUITABLE MATERIAL AND PROPER DISPOSAL OF THE ALLUVIAL/UNSUITABLE BEARING MATERIAL HAS BEEN COMPLETED. THE LIMITS OF THIS UNDERCUT ELEVATION AT THE EAST SIDE OF CULVERT SHALL BE TO AN ELEVATION NO GREATER THAN 2015 FEET. THE LIMITS OF THIS UNDERCUT ELEVATION AT THE WEST SIDE OF CULVERT SHALL BE TO AN ELEVATION NO GREATER THAN 2016 FEET.

THE SPREAD FOOTING ELEVATIONS AT THE EAST AND WEST SIDES OF THE CULVERT MAY BE MAY BE LOWERED TO SATISFY THE REQUIRED RESISTANCE AND MINIMUM EMBANKMENT IN RESIDUAL MATERIAL.

TEMPORARY SHORING MAY BE REQUIRED FOR THE CULVERT AND WALL CONSTRUCTION.

TEMPORARY COFFERDAMS MAY BE REQUIRED FOR CONSTRUCTION OF CULVERT FOUNDATIONS.

NO WAITING PERIOD IS REQUIRED FOR CULVERT CONSTRUCTION.

SETTLEMENT OF THE ROADWAY APPROACH EMBANKMENT IS ANTICIPATED. PLACEMENT OF ROADWAY EMBANKMENT SHALL BE DONE SOON AFTER CONSTRUCTION HAS STARTED TO ALLOW FOR SETTLEMENT WITHIN THE EMBANKMENT TO OCCUR PRIOR TO SURFACE COURSE CONSTRUCTION SO AS NOT TO DELAY THE COMPLETION OF THE PROJECT.

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

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

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

A THREE FOOT STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

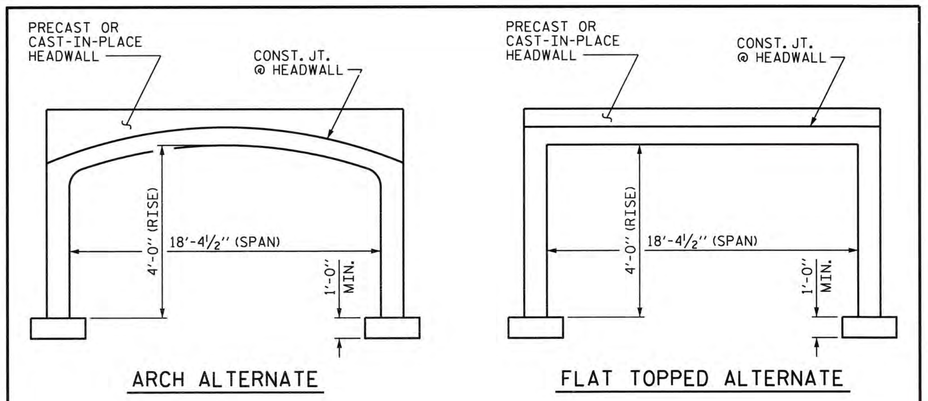
FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

FOR BLASTING ADJACENT TO HIGHWAY STRUCTURES, SEE STANDARD SPECIFICATIONS ARTICLE 410-12.



RIGHT ANGLE SECTION OF PRECAST CONCRETE THREE-SIDED CULVERT

MIN. REQUIRED WATERWAY OPENING = 87 SQ. FT.
MIN. LOW CHORD ELEV. = 2021.6 @ ℄ CULVERT

HYDRAULIC DATA

DESIGN DISCHARGE	= 550 CFS
FREQUENCY OF DESIGN DISCHARGE	= 25-YR
DESIGN HIGH WATER ELEVATION	= 2022.2
DRAINAGE AREA	= 1.57 SQ MI
BASIC DISCHARGE (Q100)	= 800 CFS
BASIC HIGH WATER ELEVATION	= 2023.55

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 1230 CFS
FREQUENCY OF OVERTOPPING	= 500+/-YR
OVERTOPPING ELEVATION	= 2025.8

GRADE DATA

GRADE POINT ELEV. @ STATION 13+08.54	= 2025.13
BED ELEV. @ STATION 13+08.54	= 2017.6
ROADWAY SLOPES	= 2:1

TOTAL STRUCTURE QUANTITIES

STRUCTURE REMOVAL	LUMP SUM
PRECAST REINFORCED CONCRETE THREE-SIDED CULVERT @ STA 13+08.54 -L-	LUMP SUM
CLASS A CONCRETE	
FOOTINGS	44.2 C.Y.
TOTAL	44.2 C.Y.
REINFORCING STEEL	
FOOTINGS	3,962 LBS.
TOTAL	3,962 LBS.

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. 17BP.14.R.49
TRANSYLVANIA COUNTY
STATION: 13+08.54 -L-

SHEET 2 OF 7 REPLACES BRIDGE No. 72

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRECAST REINFORCED CONCRETE THREE-SIDED CULVERT 135° SKEW

DRAWN BY : C. POWELL	DATE : 12/2012	SPECIAL	
CHECKED BY : M. WINTERS	DATE : 04/2013		
DESIGN ENGINEER OF RECORD : M. WINTERS	DATE : 04/2014		
DRAWN BY : R.W. WRIGHT	DATE : JULY, 1990	STANDARD	
CHECKED BY : D.A. GLADDEN	DATE : JULY, 1990		

ADDED NOV. 1, 1990

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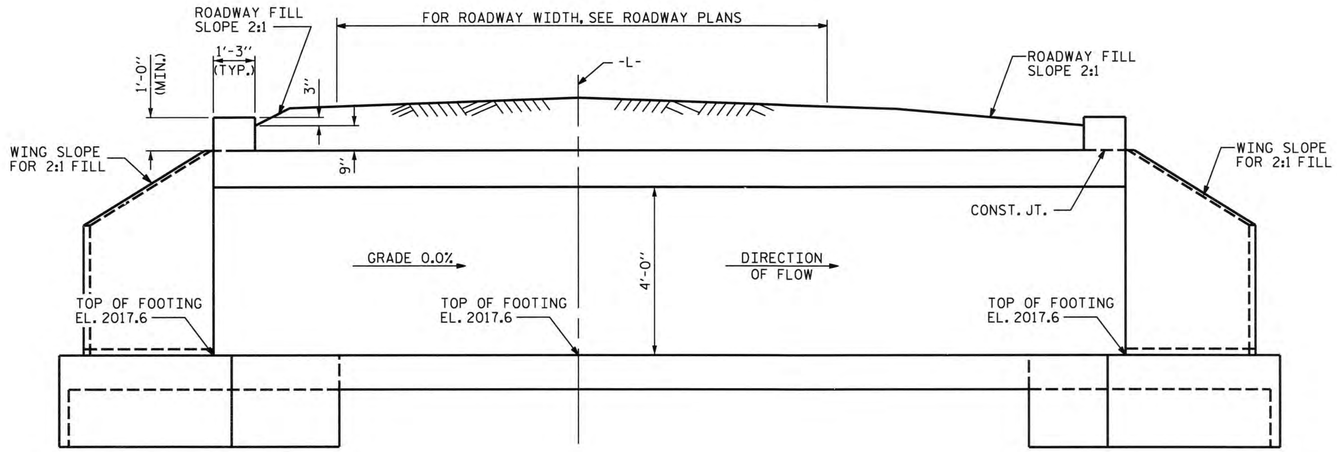
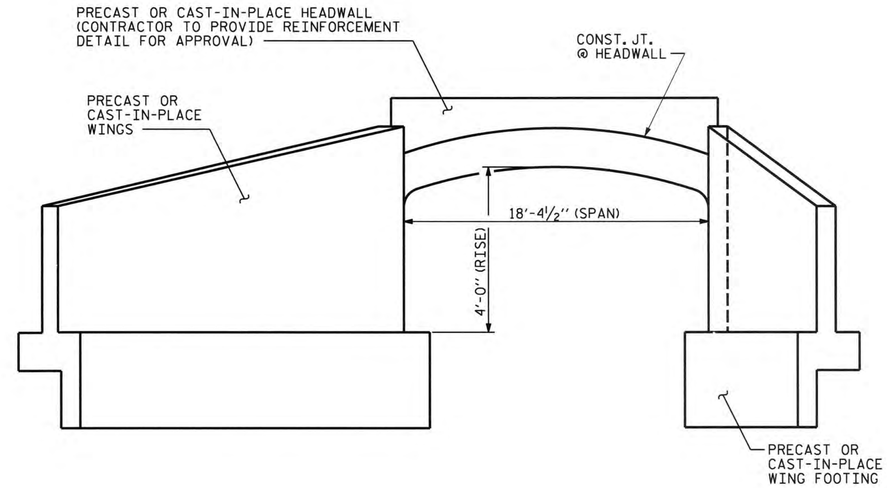
NORTH CAROLINA PROFESSIONAL SEAL 026433 ENGINEER MICHELE E. WINTERS
9/24/2014

REVISIONS							SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:		C-2
1			3				TOTAL SHEETS
2			4				7

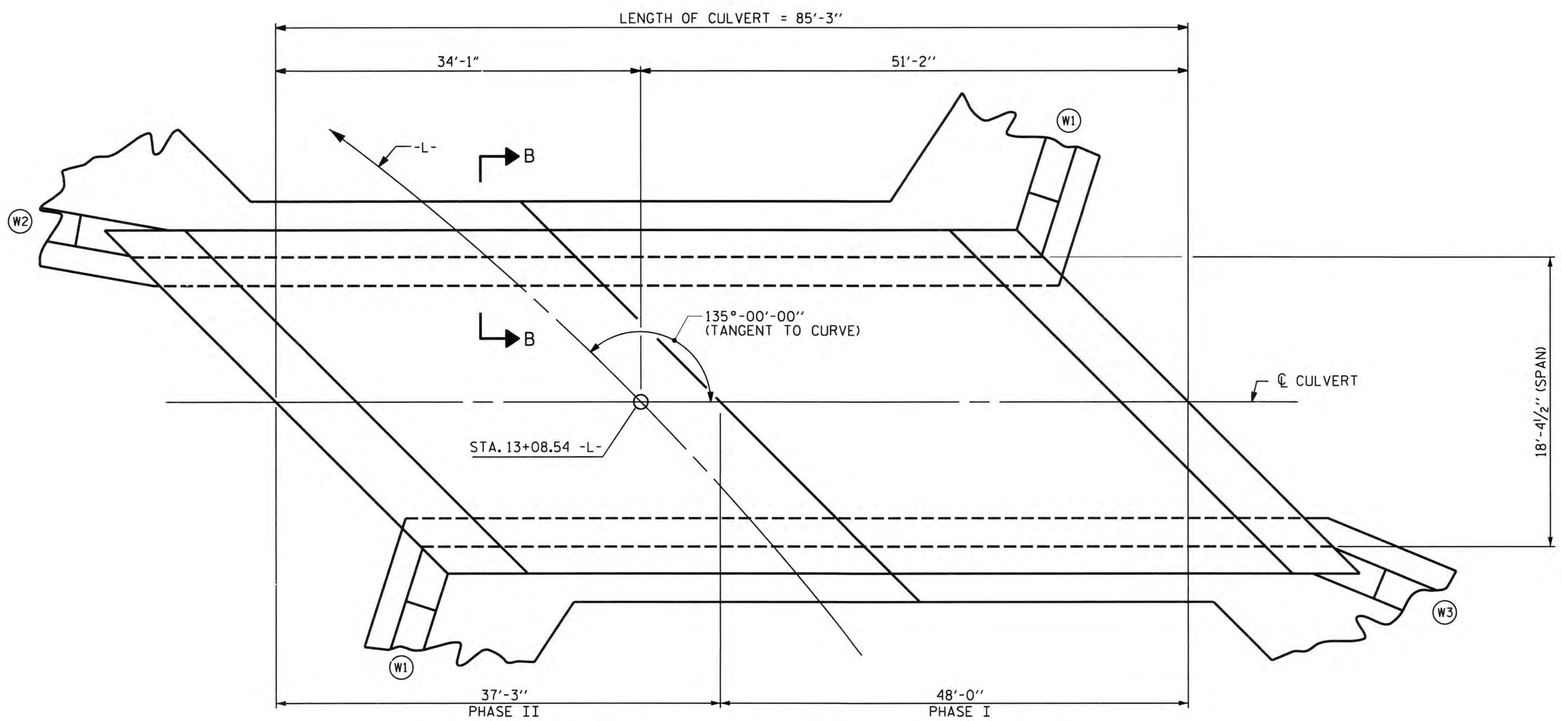
STD. NO. CB12A



CULVERT SECTION NORMAL TO ROADWAY



END ELEVATION



LENGTH FOR PRECAST THREE-SIDED CULVERT

(SEE SHEET 3 OF 5 FOR SECTION B-B)

REVISED 8-28-92 BY E.L.R. CHECKED BY G.R.P.
REVISED 8-22-89 BY A.R.B. CHECKED BY C.R.K.
REDRAWN 8-22-89

REVISED 11-19-99 BY M.M. CHECKED BY R.W.W.

ASSEMBLED BY : C. POWELL DATE : 12/2012
CHECKED BY : M. WINTERS DATE : 04/2013
DESIGN ENGINEER OF RECORD : M. WINTERS DATE : 04/2014

DRAWN BY : R.W. WRIGHT DATE : AUG. 1989
CHECKED BY : A.R. BISSETTE DATE : AUG. 1989

SPECIAL

STANDARD

moffatt & nichol
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RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX

NORTH CAROLINA PROFESSIONAL SEAL 026433 ENGINEER MIKELE E. WINTERS
9/24/2014

PROJECT NO. 17BP.14.R.49
TRANSYLVANIA COUNTY
STATION: 13+08.54 -L-

SHEET 3 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRECAST REINFORCED CONCRETE THREE-SIDED CULVERT 135° SKEW

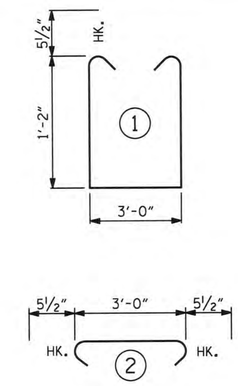
REVISIONS							SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:		C-3
1			3				TOTAL SHEETS
2			4				7

BILL OF MATERIAL

FOOTINGS

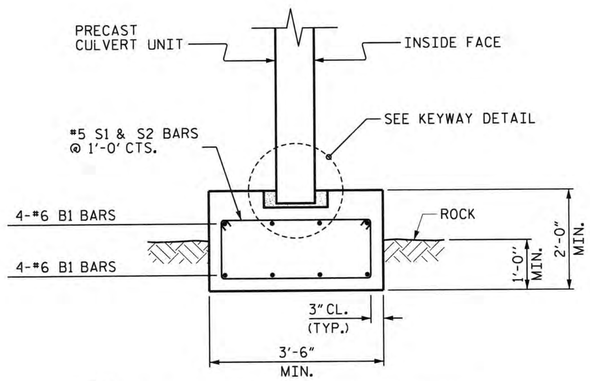
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	32	#6	STR	44'-6"	2139
S1	172	#5	1	6'-3"	1121
S2	172	#5	2	3'-11"	702
REINFORCING STEEL				LBS.	3962
CLASS A CONCRETE				C. Y.	44.2

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

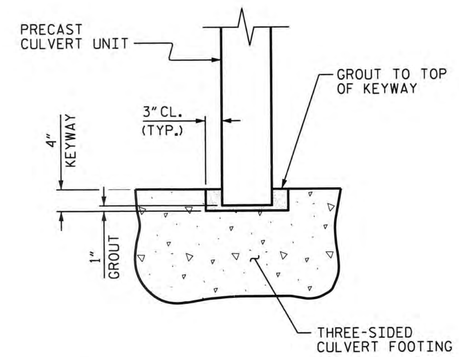
NOTE:
REINFORCEMENT AND CONCRETE QUANTITIES SHOWN ARE FOR BIDDING PURPOSES ONLY. THE CONTRACTOR SHALL PROVIDE REINFORCEMENT DETAILS TO ENGINEER FOR REVIEW AND APPROVAL.



NOTE:
REINFORCEMENT SHOWN IS FOR BIDDING PURPOSES ONLY. THE CONTRACTOR SHALL PROVIDE REINFORCEMENT DETAILS TO ENGINEER FOR REVIEW AND APPROVAL.

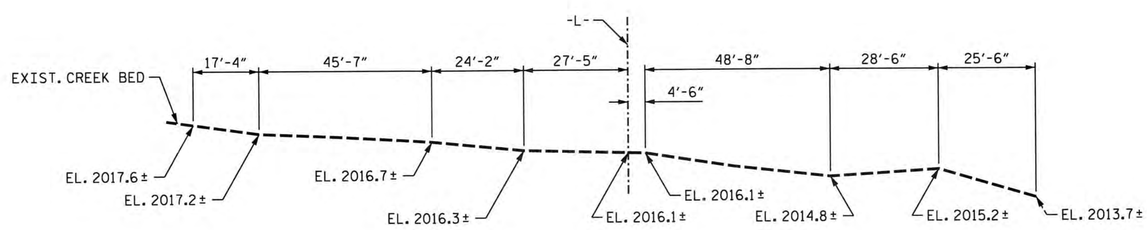
SECTION B-B

SIDES OF FOOTING SHALL BE IN CONTACT WITH UNDISTURBED MATERIAL FOR MINIMUM DIMENSION SHOWN



NOTE:
FILL ENTIRE KEYWAY, INCLUDING NOMINAL 1" VOID BETWEEN BOTTOM OF KEYWAY AND PRECAST CULVERT UNIT WITH NON-SHRINK GROUT.

KEYWAY DETAIL



PROFILE ALONG ℄ CULVERT

PROJECT NO. 17BP.14.R.49
TRANSYLVANIA COUNTY
STATION: 13+08.54 -L-

SHEET 4 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRECAST REINFORCED CONCRETE THREE-SIDED CULVERT 135° SKEW

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(919) 781-4626 VOICE (919) 781-4869 FAX

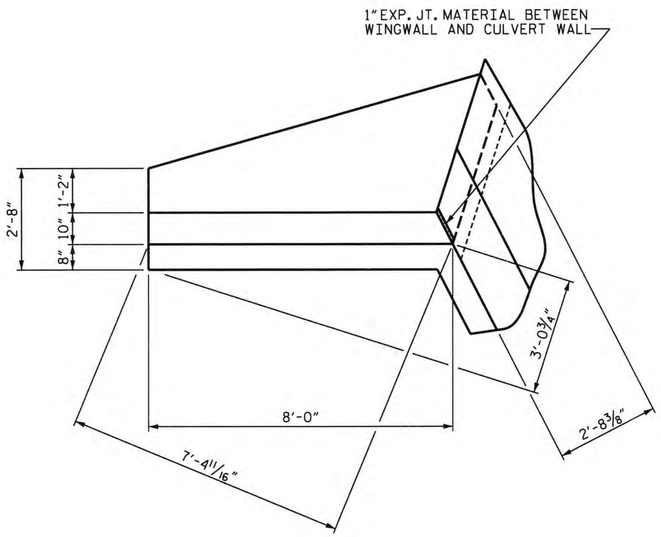
NORTH CAROLINA PROFESSIONAL SEAL 026433 ENGINEER MIKELE E. WINTERS
9/24/2014

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-4
1			3			TOTAL SHEETS
2			4			7

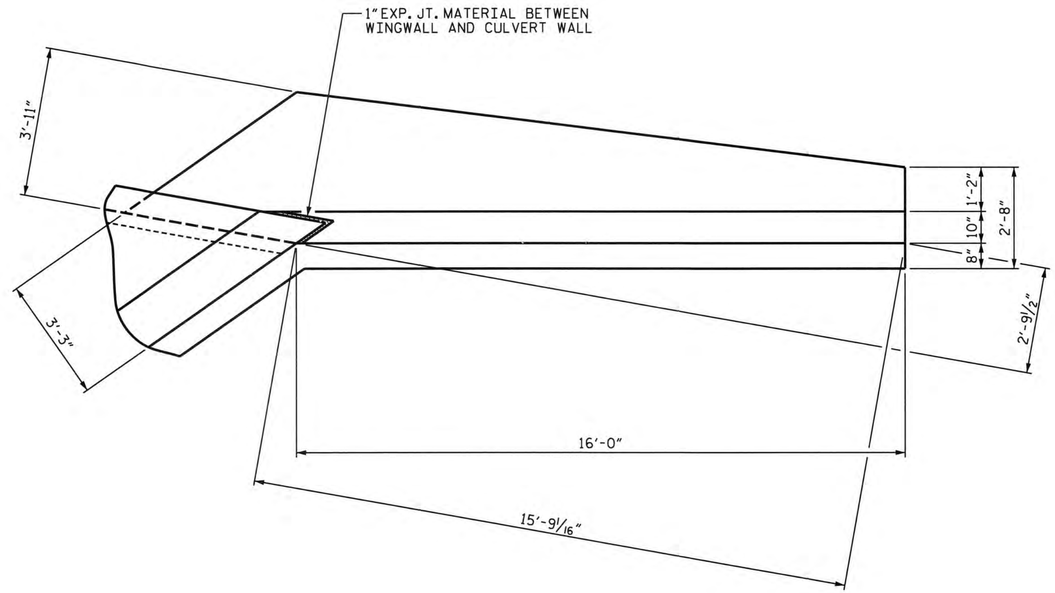
ASSEMBLED BY : C. POWELL DATE : 12/2012
CHECKED BY : M. WINTERS DATE : 04/2013
DESIGN ENGINEER OF RECORD : M. WINTERS DATE : 04/2014

NOTES:

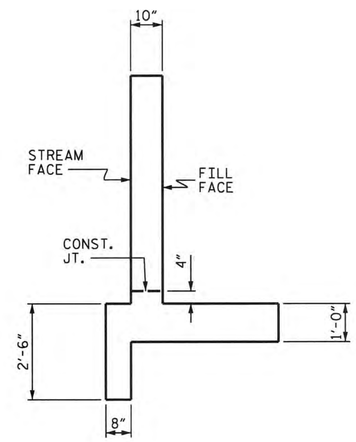
1. THE CONTRACTOR SHALL SUBMIT THE FOOTING DESIGN TO THE ENGINEER FOR REVIEW AND APPROVAL. PRECAST OR CAST-IN-PLACE WINGS WILL BE ALLOWED.
2. THE CONTRACTOR SHALL SUBMIT WING DESIGN TO THE ENGINEER FOR REVIEW AND APPROVAL. THE ENTIRE COST TO CONSTRUCT THE CULVERT WINGS, INCLUDING CONCRETE AND REINFORCING STEEL, SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR "PRECAST REINFORCED CONCRETE THREE-SIDED CULVERT".



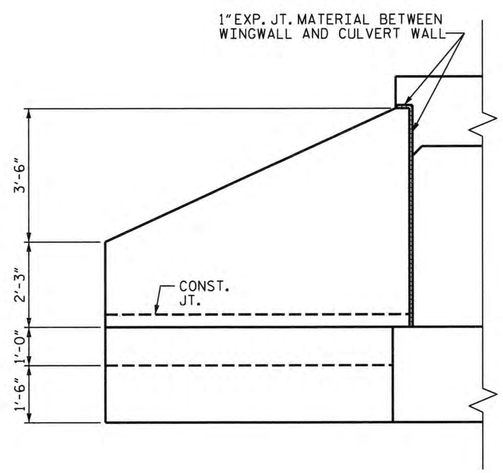
PLAN W1



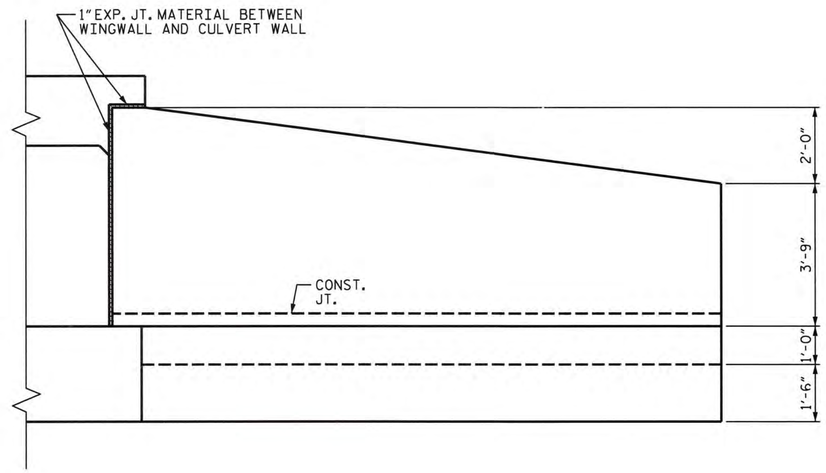
PLAN W2



TYPICAL WING SECTION



ELEVATION W1



ELEVATION W2

PROJECT NO. 17BP.14.R.49
TRANSYLVANIA COUNTY
STATION: 13+08.54 -L-

SHEET 5 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

WINGS FOR CONCRETE BOX CULVERT

H = 4'-0" SLOPE = 2:1
135° SKEW

ASSEMBLED BY : C. POWELL	DATE : 12/2012	SPECIAL	
CHECKED BY : M. WINTERS	DATE : 04/2013		
DESIGN ENGINEER OF RECORD : M. WINTERS	DATE : 04/2014		
DRAWN BY : CCJ	DATE : 01/2000	STANDARD	
CHECKED BY : RWW	DATE : 01/2000		

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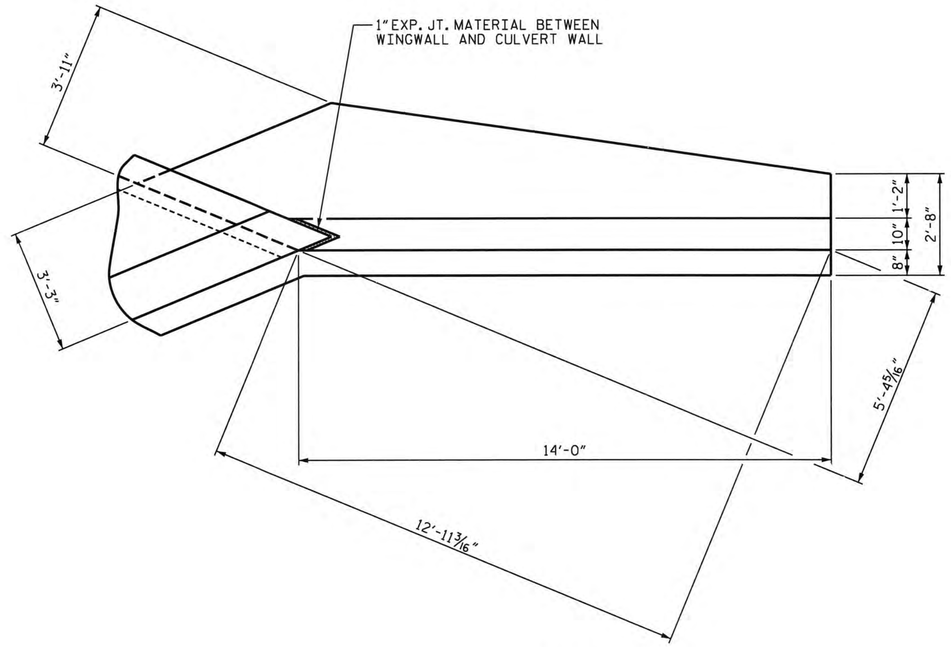
NORTH CAROLINA PROFESSIONAL SEAL 026433 ENGINEER MIKELE E. WINTERS 9/24/2014

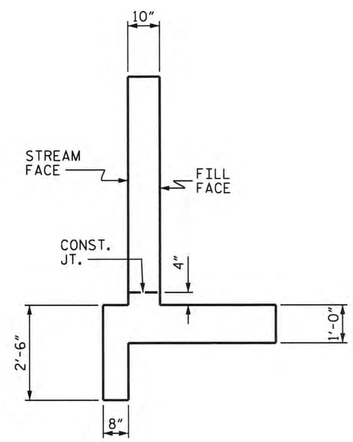
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO. C-5
1			3			TOTAL SHEETS 7
2			4			

NOTES:

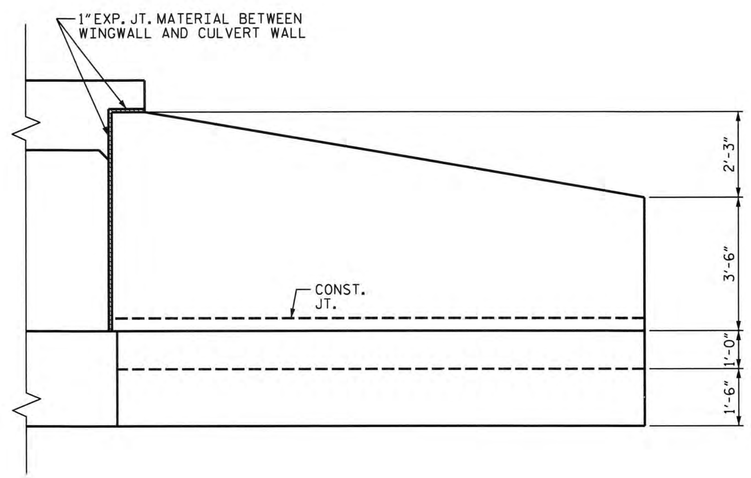
1. THE CONTRACTOR SHALL SUBMIT THE FOOTING DESIGN TO THE ENGINEER FOR REVIEW AND APPROVAL. PRECAST OR CAST-IN-PLACE WINGS WILL BE ALLOWED.
2. THE CONTRACTOR SHALL SUBMIT WING DESIGN TO THE ENGINEER FOR REVIEW AND APPROVAL. THE ENTIRE COST TO CONSTRUCT THE CULVERT WINGS, INCLUDING CONCRETE AND REINFORCING STEEL, SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR "PRECAST REINFORCED CONCRETE THREE-SIDED CULVERT".



PLAN W3



TYPICAL WING SECTION



ELEVATION W3

PROJECT NO. 17BP.14.R.49
TRANSYLVANIA COUNTY
STATION: 13+08.54 -L-

SHEET 6 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

WINGS FOR CONCRETE BOX CULVERT
H = 4'-0" SLOPE = 2:1
135° SKEW

ASSEMBLED BY : C. POWELL	DATE : 12/2012		SPECIAL
CHECKED BY : M. WINTERS	DATE : 04/2013		
DESIGN ENGINEER OF RECORD : M. WINTERS	DATE : 04/2014		
DRAWN BY : CCJ	DATE : 01/2000		STANDARD
CHECKED BY : RWW	DATE : 01/2000		

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NORTH CAROLINA PROFESSIONAL SEAL 026433 ENGINEER MICHELE E. WINTERS
9/24/2014

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NO.	BY:	DATE:	NO.	BY:	DATE:			C-6
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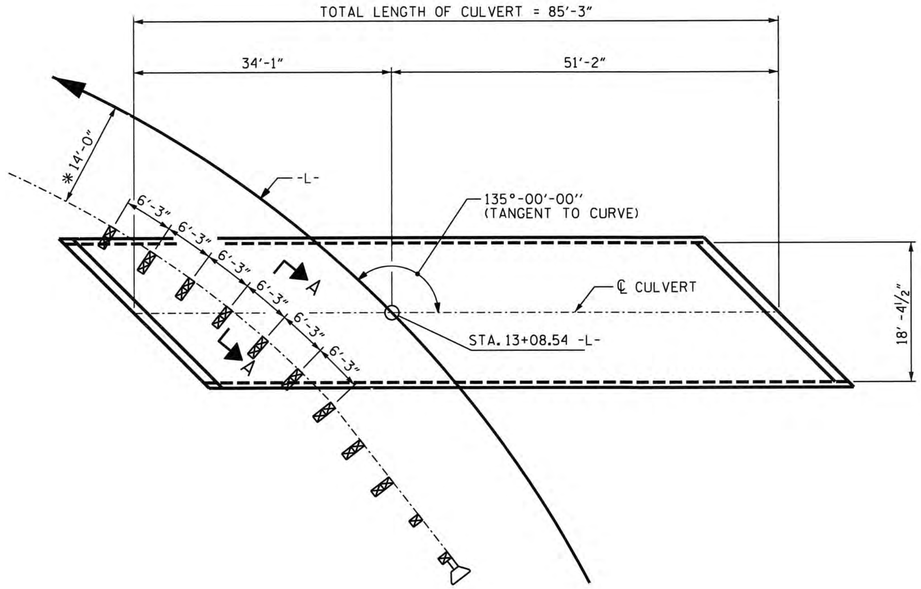


* THIS DIMENSION TO BE VERIFIED BY THE ENGINEER.

PLAN

SHOWING GUARDRAIL ANCHOR ASSEMBLY SPACING

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS SHALL CONSIST OF THE FOLLOWING COMPONENTS :

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2 1/2".

B. 4 - 1" Ø X 2 1/4" BOLTS WITH WASHERS, BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1" Ø X 2 1/4" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

C. WIRE STRUTS SHOWN IN THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS DETAIL ARE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 P.S.I. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

GUARDRAIL ANCHOR ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY TO INSURE FIT.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CLASS "A" CONCRETE.

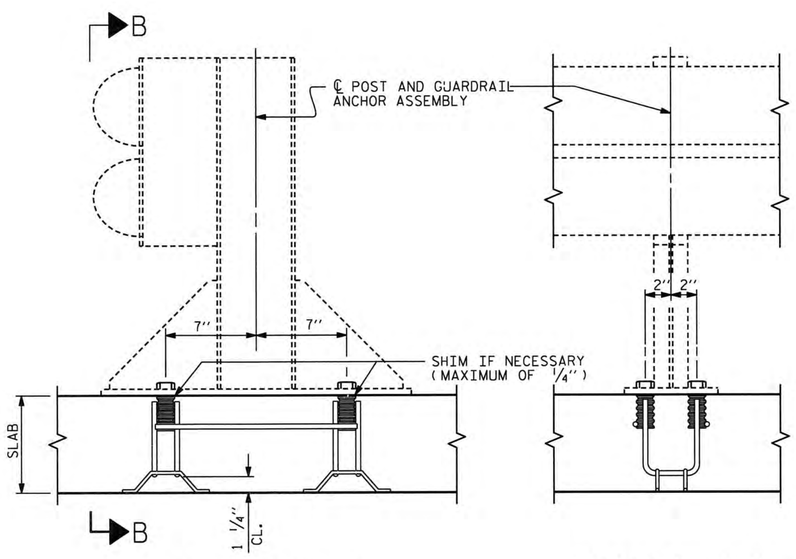
FERRULES TO BE PLUGGED DURING POURING OF SLAB AS RECOMMENDED BY THE MANUFACTURER.

AT THE CONTRACTOR'S OPTION, FERRULES WITH OPEN OR CLOSED ENDS MAY BE USED.

PAYMENT FOR GUARDRAIL, POSTS, AND POST BASE PLATES IS INCLUDED IN ROADWAY PAY ITEMS.

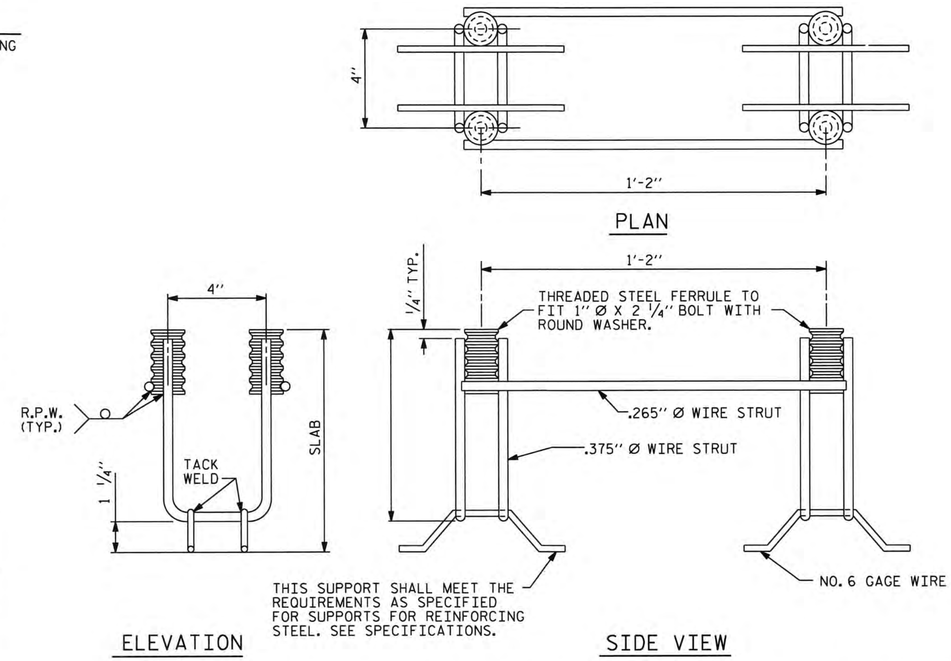
SLAB REINFORCING STEEL MAY BE SHIFTED AS NECESSARY TO CLEAR GUARDRAIL ANCHOR ASSEMBLY. CARE SHOULD BE TAKEN TO KEEP THE SHIFTING OF REINFORCING STEEL TO A MINIMUM.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF GUARDRAIL ANCHOR ASSEMBLY. LEVEL TWO FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 1" Ø BOLT IS 21.8 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS.



SECTION A-A

SECTION B-B



GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS

PROJECT NO. 17BP.14.R.49

TRANSYLVANIA COUNTY

STATION: 13+08.54 -L-

SHEET 7 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

ANCHORAGE DETAILS FOR GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS

ASSEMBLED BY : C. POWELL	DATE : 05/2014		
CHECKED BY : M. WINTERS	DATE : 05/2013		
DESIGN ENGINEER OF RECORD : M. WINTERS	DATE : 05/2014		
DRAWN BY : FCJ 6/88	REV. 7/10/01	LES/RDR	
CHECKED BY : ARB 6/88	REV. 5/7/03	RWW/JTE	
	REV. 5/1/06R	KMM/GM	

moffatt & nichol
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX

NORTH CAROLINA PROFESSIONAL SEAL 026433 ENGINEER MIKELE E. WINTERS 9/24/2014

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-7
1			3			TOTAL SHEETS
2			4			7

STD. NO. GRA1

9/24/2014
R:\Structures\B70072_C7_gra1_12.dgn
thuffman

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2012 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE ¾" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

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

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990