BRIDGE REPLACEMENT - OTHER
BRFN-059-2(024)--39-65

LETTING DATE
Dec 19 2028

MILLS COUNTY

INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	**Title Sheets**
A.1	Title Sheet
A.2	Design Criteria
A.3 - 5	Concept Letter
B Sheets	**Typical Cross Sections and Details**
B.1	Typical Cross Sections and Details
D Sheets	**Mainline Plan and Profile Sheets**
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2	U.S. 59 Plan and Profile Sheet
* D.3	U.S. 59 Plan Sheet
E Sheets	**Side Road Plan and Profile Sheets**
* E.1	Cary Avenue Plan and Profile Sheet
G Sheets	**Survey Sheets**
G.1 - 3	Reference Ties and Bench Marks
J Sheets	**Traffic Control and Staging Sheets**
J.1	Traffic Control and Staging Notes
V Sheets	**Bridge and Culvert Situation Plans**
* V.1	Bridge and Culvert Situation Plan
W Sheets	**Mainline Cross Sections**
W.1	Cross Sections Legend & Symbol Information Sheet
W.2 - 5	U.S. 59 Cross Sections
X Sheets	**Side Road Cross Sections**
X.1 - 3	Cary Avenue Cross Sections
	* Color Plan Sheets

IOWA DOT

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

MILLS COUNTY

BRIDGE REPLACEMENT - OTHER

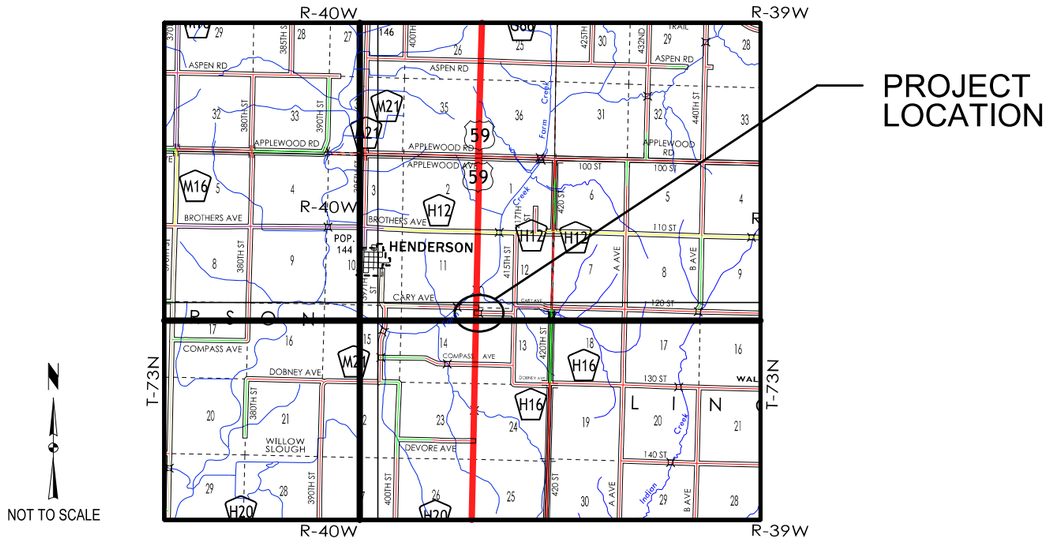
U.S. 59, Stream 1.1 mi S of Co Rd H12 (Side Ditch)

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

Value Engineering Saves. Refer to Article 1105.14 of the Specifications.

IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com
811 Know what's below. Call before you dig.



NOT TO SCALE

INDEX OF SEALS			
SHEET NO.	NAME	TYPE	BID QUANTITY SHEETS
A.1	X	Primary Signature Block	X
V.1	David Mulholland	Hydrolic Signature Block	X

PRELIMINARY PLANS

Subject to change by final design.

D5 PLAN - Date: 1-20-26

REVISIONS

	TOTAL
	23
PROJECT IDENTIFICATION NUMBER	
24-65-059-010	
PROJECT NUMBER	
BRFN-059-2(024)--39-65	
R.O.W. PROJECT NUMBER	
NHSN-059-2(025)--2R-65	
-	
-	

Roadway	Carey Ave.		
PIN Number	24-65-059-010	**Submittal Date**	
Project Number	BRFN-059-2(24)--39-65	**Revison Date**	
District	District 4		
County	MILLS		
Route	Carey Ave.		
Location	just E of U.S. 59		
Work Type	Bridge Replacement		
Segment Manager			
Designer	Snyder & Associates, Inc.		
Design year ADT =	20		

Design Manual Section 1C-1
Last Updated: 04-29-19

Secondary Roads

Design Elements		Project value	Local Systems I.M. 3.210 value	Remarks
Design speed (mph)			40	40
Design lane width (ft.)			10	10
Shoulder width (ft.)				
Bridge width - new (ft.)			24	
Bridge width - existing (ft.)			20	
Maximum super elevation rate (%)				
Minimum radius (ft.)				
Stopping sight distance (ft.)				
Vertical curve length (ft.)				
Minimum rate of vertical curvature (K)	Crest		44	
	Sag		64	
Minimum gradient (%)			7	
Maximum gradient (%)				
Foreslope			2:1	
Backslope				
Traverse slopes				
Clearzone			7-10	10

Notes: Rural local road, level, ADT under 50

Roadway Design Speed (mph) = 60

Design Manual Section 1C-1
Last Updated: 04-29-19

Design Criteria for High Speed Roadways

Design Element			Preferred Criteria, Design Speed, mph						Acceptable Criteria, Design Speed, mph						Project Values
			50	55	60	65	70	75	50	55	60	65	70	75	
Stopping sight distance (ft) (Refer to Section 6D-1)			425	495	570	645	730	820	425	495	570	645	730	820	570
Minimum horizontal curve radius (ft) (Refer to Sections 2A-2 and 2A-3)	Method 5 superelevation and side friction distribution	e_{max} = 6%	833	1060	1330	1660	2040	2500	833	1060	1330	1660	2040	2500	1330
		e_{max} = 8%	--	--	--	--	--	--	758	960	1200	1480	1810	2210	N/A
Minimum vertical curve length (ft) (Refer to Section 2B-1)			150	165	180	195	210	225	150	165	180	195	210	225	180
Minimum rate of vertical curvature (K) (Refer to Section 2B-1)	crest vertical curves		84	114	151	193	247	312	84	114	151	193	247	312	151
	sag vertical curves	roadways without fixed-source lighting	96	115	136	157	181	206	96	115	136	157	181	206	136
		roadways with fixed-source lighting	96	115	136	157	181	206	54	66	78	91	106	121	136
Minimum gradient (%)	(Refer to Section 2B-1)		0.5						0.3% with a curb, 0.0% without a curb						.5
Maximum gradient (%) (Refer to Section 2B-1)		Urban roadways	4		3				7	6	6	--	--	--	
		Rural roadways							5	5	4	4	4	4	3
		Interstates							5	5	4	4	4	4	
Clear zone			See "Preferred Clear Zone" table in Section 8A-2						See "Acceptable Clear Zone" table in Section 8A-2						24'

DRAFT PROJECT CONCEPT STATEMENT

Bridge on U.S. 59
Over Side Ditch at Cary Avenue

Mills County
Project # BRFN-059-2(24)--39-65
PIN: 24-65-059-010
Maint. No. 6538.2A059
FHWA No. 607585

Prepared for:
Iowa Department of Transportation
District 4
Wes Mayberry, P.E.

Prepared by: Snyder & Associates, Inc. / Shuck-Britson, Inc.

April 29, 2025

I. STUDY AREA

A. Project Description

This project involves replacement of the bridge on Cary Avenue over the east U.S. 59 ditch (Maintenance No. 6538.2A059), approximately 1.1 miles south of County Road H12, in Mills County.

B. Present Facility--Need for Project

The existing bridge is a 17' x 20' timber bridge, built in 1938 (Design No. 3638). Bridge floor, rail, and substructure are all timber.

The bridge was last inspected in February of 2024 and has a condition rating of fair. The bridge has deck, superstructure, and substructure condition ratings of 7, 7, and 5, respectively, on a scale of 0 to 9. A rating of 4 or less on any of the condition ratings would make the bridge "Structurally Deficient". The bridge is currently posted 20 tons for a single-unit truck, 31 tons for a standard semi-truck, and 37 tons for a combination truck.
Per the programming recommendations, dated 4/5/2023, contained with the Asset Details on SIIMS:

1. Proposed Work: Bridge Replacement
2. Priority of Work: Adjust Five Year Program to accept a project as soon as practical based on a preliminary cost estimate. Prepare concept soon.
3. Look at a box or pipe culvert.

For these reasons, the bridge is not a candidate for rehabilitation or widening but should be held as a replacement candidate for a future letting. The bridge's expected replacement type and total project cost will be determined with this Project Concept phase.

The bridge is located on Cary Avenue over the east U.S. 59 ditch. U.S. 59 in this vicinity is a 22 foot wide, two-lane paved rural section with granular shoulders. It is believed that the roadway foreslopes are graded to a 3:1 slope off the edge of shoulder, although they appear flatter in this location. The existing bridge is located approximately 48' from the edge of through pavement on U.S. 59, which would place it outside roadway clear zone. Cary Avenue east and west of the bridge is a granular surfaced rural section estimated at 20-24 feet wide. No entrances are present on Cary Avenue in the vicinity of the bridge.

C. Hydrology

As-built drawings indicate a drainage area at this location of 256 acres very rolling / rolling. An examination of the drainage area using LiDAR data indicates the drainage area is approximately 278 acres.

The design discharge is 770 cfs (50-year) for the 278 acre drainage area based on a TR-55 analysis. The TR-55 method is the recommended analysis to use for basins with less than a 2 square mile drainage area in flood region 3 as described in the United States Geological Survey (USGS) Report 2015-5055.

Mills County is participating in the National Flood Insurance Program (NFIP). The project area is within a Zone X flood hazard region. Floodwater surface elevations have not been established within this flood zone.

Since the project drainage area is less than 100 square miles and is located within an unincorporated area a DNR floodplain permit will not be required.

The ditch at the project location is not classified as "Protected" per DNR rules.

The ditch at the project location is not classified as "Meandered" per DNR rules.

A DNR Sovereign Lands permit is not required.

The project area is not within a drainage district.

D. Traffic Estimates

Year 2023 annual average daily traffic (AADT) volumes on U.S. 59 were 960 vehicles per day (VPD). Truck traffic was estimated at 308 VPD, which is approximately 32% of most recent ADT. Historic AADT volumes on U.S. 59 between 2000 and 2016 have varied between 860 VPD and 1,020 VPD.

Year 2016 AADT volume on Cary Avenue is estimated at 20 VPD. Truck traffic was not separately measured on this roadway.

No traffic forecasts were provided for this project. It is not anticipated that there will be any change to the Cary Avenue traffic counts moving forward.

E. Crash History

No crash history information at this location has been provided.

F. Bridge Condition Index (BCI)

The bridge has a current Bridge Condition Index (BCI) of 57.8.

G. Accelerated Bridge Construction Score

The Accelerated Bridge Construction (ABC) normalized score is 6, which is far below the threshold (50) that would qualify for further evaluation of ABC techniques. The contributing factors to the raw score are the Average Annual Daily Traffic (AADT) raw score of 10 and all other raw scores are zero.

H. Access Control

Access rights will not be acquired on this project.

II. PROJECT CONCEPT

A. Proposed Improvements

Per as-built bridge plans, there was approximately 6.4 feet from the stream flowline to the roadway profile grade at the time of construction. Given the size of opening required to facilitate design flows, a low clearance structure will be needed at this location. Some adjustment of Cary profile may be necessary to achieve two feet of cover over the proposed structure.

Per Local Systems I.M. 3.210, Cary Avenue is considered a rural local road. With an

ADT of less than 50 and level local terrain, the design speed is estimated at 40 mph. The proposed roadway for all options is a 28 foot wide granular surfaced rural section (12 foot lanes with 2 foot shoulders). Clear zone is estimated at 10 feet. Due to shallow cover, all proposed structures are estimated to extend to clear zone limits.

U.S. 59 clear zone is estimated at 24 feet (barnroof section) or 32 feet (4:1 foreslope). To be conservative, any proposed structure on Cary Avenue would be located such that its opening is outside the 32 foot U.S. 59 clear zone. U.S. 59 ditch grading north and south of the proposed structure would assume a 4:1 foreslope graded from the edge of shoulder to the ditch bottom. Preliminary modeling indicates that this is a good fit to the existing ditch bottom and will limit backslope cut and reduce overall project impact.

1. Alternative Number 1: Twin 72” Equivalent Low Clearance Reinforced Concrete Pipe Culverts, with buried flowlines

   Replace the existing 17’ x 20’ timber bridge with twin 32 foot long, 72” equivalent diameter low clearance concrete pipe culverts. Traffic will be detoured off Cary Avenue to adjacent roadways (Compass Ave. to 415th Street) to allow the removal of the existing bridge and the construction of the replacement culverts.

   Refer to the attached plan set for the proposed profile of Cary Avenue through the project area. Proposed profile approximates existing profile, based on survey information. Ditch flowline elevations were based on existing ditch elevations; these ditch flowlines would allow for a 60” equivalent diameter low clearance pipe to fit under the Cary profile with 2 feet of cover. Culvert flowlines were lowered 9 inches from the ditch flowlines. 72” equivalent diameter low clearance pipes with buried flowlines were chosen for this alternative because the pipes will provide a greater open area (56.6 sf estimated) than the existing condition (45.6 sf estimated). The additional open area will accommodate siltation.

   The headwater elevations for the Q50 and Q100 events are 1054.73 and 1054.90, respectively. Neither the traveled way (lowest elevation 1055.74) nor shoulders (lowest elevation 1054.97) of U.S. 59 will not be impacted by the Q50 or Q100 headwater. Overtopping of Cary Avenue will occur at the low point in the roadway profile east of the proposed structure for the Q50 and Q100 events; it is estimated that Carey overtopping will happen starting with the 5 year storm.

Estimated Construction Cost

Roadway Item	Estimated Cost
Removal of Existing Structure	$ 8,000
Granular Surfacing on Roadway	$ 4,528
Embankment-in-place	$ 7,500
72" Equivalent LCP Culverts and FES's	$ 75,400
Rip Rap	$ 1,716
Traffic Control (5%)	$ 5,092
Mobilization (5%)	$ 5,092
Contingency (30%)	$ 33,755
Project Total	**$146,270**

2. Alternative Number 2: twin 8' x 4' x 40 Reinforced Concrete Box Culvert

Replace the existing 17' x 20' timber bridge with a 40 foot long, twin 8' x 4' reinforced concrete box culvert. Traffic will be detoured off Cary Avenue to adjacent roadways (Compass Ave. to 415th Street) to allow the removal of the existing bridge and the construction of the replacement culvert.

Cary Avenue profile and culvert flowlines will be the same as for Alternative #1 (60" equivalent LCP). Culvert height plus wall thickness will be 4.67 feet (cast-in-place) or 4.75 feet (precast). Design cover at the roadway centerline with this option is 2.46 feet. Due to the width of the culvert, cover height will reduce to just under 2 feet at the east end of the structure.

The headwater elevations for the Q50 and Q100 events are 1054.39 and 1054.65, respectively. The traveled way of U.S. 59 will not be impacted by the Q50 or Q100 headwater. Overtopping of Cary Avenue will occur at the low point in the roadway profile east of the proposed structure for the Q50 and Q100 events (overtopping depths for the Q50 and Q100 are 0.6' and 0.8', respectively).

Estimated Construction Cost – Precast Culvert

Roadway Item	Estimated Cost
Removal of Existing Structure	$ 8,000
Granular Surfacing on Roadway	$ 4,527
Embankment-in-place	$ 7,500
8' x 4' Precast RCB and End Sections	$ 168,000
Rip Rap	$ 1,819
Traffic Control (5%)	$ 9,493
Mobilization (5%)	$ 9,493

Contingency (30%)	$ 62,650
Project Total	**$ 271,482**

B. Recommendations

Alternative Number 1 is our recommended solution because of its cost effectiveness, fit, and ease of construction.

C. Detour Analysis

Cary Avenue will be closed to traffic during construction. The proposed detour route will follow either Compass Avenue to 415th Street or Brothers Avenue to 415th Street. Because either detour route will utilize county roads, an agreement will need to be made with Mills County for its use.

U.S. 59 will remain open to traffic throughout construction. Shoulder closures will be necessary for grading in the right roadway ditch.

D. Special Considerations

No existing entrances will be impacted by construction.

There are no pedestrian accommodations within the project limits.

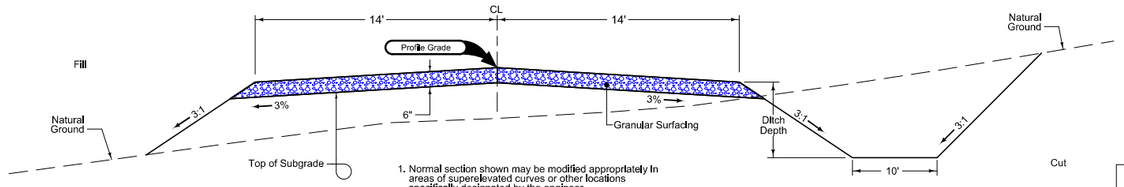
No utilities are noted within the project limits.

E. Construction Sequence

It is anticipated that all work will be awarded to one prime contractor. The Bridges and Structures Bureau will coordinate the plan preparation with Snyder & Associates, Inc. / Shuck-Britson, Inc.

F. Program Status

This project is listed in the 2025-2029 Iowa Transportation Improvement Program with $455,000 programmed for construction in FY 2029. The project is currently scheduled for a December 19, 2028 letting.

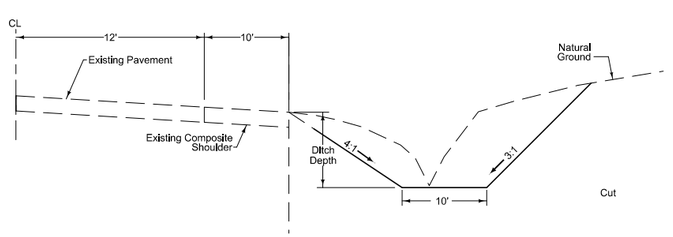


1. Normal section shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the engineer.

2. See plan & profile sheets and cross sections for additional details of ditches and backslopes.

Station To Station	
10+22.68	11+66.00

1/B.1 Grading and Granular Surfacing - Cary Avenue
No Scale



Station To Station	
1343+00.00	1345+00.00

2/B.1 Ditch Grading - U.S. 59
No Scale

FILE NO. 32875	ENGLISH	DESIGN TEAM Snyder & Associates, Inc.	MILLS COUNTY	PROJECT NUMBER BRFN-059-2(024)--39-65	SHEET NUMBER B.1

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SURVEY SYMBOLS

- Interstate Highway Symbol
- U.S. Highway Symbol
- Iowa Highway Symbol
- County Road Highway Symbol
- Evergreen Tree
- Deciduous Tree
- Fruit Tree
- Shrub (Bushes)
- Timber
- Hedge
- Stump
- Swamp
- Rock Outcrop
- Broken Concrete
- Revetment (Rip Rap)
- Cemetery
- Grave
- Cave
- Sink Hole
- Board Fence
- Chain Link or Security Fence
- Wire Fence
- Terrace
- Earth Dam or Dike (Existing)
- Tile Outlet
- Edge of Water
- Existing Drainage
- Right of Way Rail or Lot Corner
- Concrete Monument
- Well
- Windmill
- Beehive Intake
- Existing Intake
- Existing Utility Access (Manhole)
- Fire Hydrant
- WH Water Hydrant (Rural)
- ST Septic Tank
- C Cistern
- LP L.P. Gas Tank (No Footing)
- UST Underground Storage Tank
- Latrine
- Satellite TV Dish
- WHU Water Hook Up
- RT Radio Tower
- TA Tower Anchor
- Guardrail (Beam or Cable)
- GP Guard Post (one or two)
- Guard Post (over two)
- FP Filler Pipe
- GV Gas Valve
- WV Water Valve
- SL Speed Limit Sign
- MM Mile Marker Post
- SIGN Sign
- TCB Traffic Signal Control Box
- RRB Rail Road Signal Control Box
- TSB Telephone Switch Box
- EB Electric Box

UTILITY LEGEND

FO15 — — FO15 OMNITEL COMMUNICATIONS
Design Contact: Greg Manley
Email: gmanley@omnitel.biz

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.		
Green	(2)	Existing Topographic Features and Labels	
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation	
Magenta	(5)	Existing Utilities	
SHADING	**Design Color No.**		**Transparency**
Pink, Dark	(13)	Temporary Pavement Shading	50%
Yellow	(4)	Proposed Pavement Shading	50%
Orange	(6)	Proposed Granular Shading	50%
Orange	(70)	Proposed Shoulder Granular Shading	50%
Yellow	(68)	Proposed Shoulder Paved Full Depth Shading	50%
Yellow	(132)	Proposed Shoulder Paved Partial Depth Shading	50%
Brown, Light	(236)	Grading Shading	50%
Orange, Light	(134)	Proposed Granular Entrance Shading	50%
Yellow	(220)	Proposed Paved Entrance Shading	50%
Tan	(8)	Proposed Sidewalk Shading	50%
Blue, Light	(230)	Proposed Sidewalk Landing Shading	50%
Pink	(11)	Proposed Sidewalk Ramp Shading	50%
Red	(3)	Proposed Structure Shading	50%
Red	(3)	Delineates Restricted Areas	0%

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.	
Green	(10)	Existing Ground Line Profile
Blue	(1)	Proposed Profile and Annotation
Magenta	(5)	Existing Utilities
Blue, Light	(230)	Proposed Ditch Grades, Left
Black	(0)	Proposed Ditch Grades, Median
Rust	(14)	Proposed Ditch Grades, Right

- Reference Point / Station — Survey Line
- Section Corner
- Ground Line Intercept
- Saw Cut
- Guardrail
- Trench Drain
- HighTension Cable Guardrail
- Sheet Pile
- Pavement Removal
- Clearing & Grubbing Area

RIGHT-OF-WAY LEGEND

- Proposed Right-of-Way Symbol
- Proposed Right-of-Way Line
- Existing Right of Way
- Existing and Proposed Right-of-Way
- Easement and Existing Right-of-Way
- Easement (Temporary) Symbol
- Easement (Temporary) Line
- Easement
- C/A Access Control
- Property Line Symbol
- Property Line

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES D, E, F, & K)

FILE NO. 32875	ENGLISH	DESIGN TEAM Snyder & Associates, Inc.	MILLS COUNTY	PROJECT NUMBER BRFN-059-2(024)--39-65	SHEET NUMBER D.1

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ANDERSON TWP.
T-73N
R-40W
SEC. 14
MILLS COUNTY

ANDERSON TWP.
T-73N
R-40W
SEC. 13
MILLS COUNTY

Δ = 00°15'59.92" (LT)
T = 300.00'
L = 600.00'
R = 128926.00'
E = 0.35'
e = ___
Γ = ___
x = ___

POT Sta 1343+99.00 (GEOMBL_059)
= POT Sta 10+00.00 (GEOMBL_CARY)

Cary Avenue

PC 1344+91.50

PT 1350+91.50

PI 1347+91.50

POE 1351+91.49

POB 10+00.00

89°35'41.7"

U.S. 59

F015

Construction Limits

Proposed Fence

Sta. 1343+99, 66.8' RT
19'x20' Wood Bridge
D.A.=256 Ac V.R.-R.
(Remove)

0 50
FEET

-1.00% RT Ditch Grade

-0.22% RT Ditch Grade

RT +00 1048.55

RT +65 1047.90

RT +32 1047.35

RT +00 1047.20

Existing Ground Profile

Right Ditch Grade

Side Road

Right Ditch Grade

Lt Med Rt

1337+00 1338+00 1339+00 1340+00 1341+00 1342+00 1343+00 1344+00 1345+00 1346+00 1347+00 1348+00 1349+00 1350+00 1351+00

1075 1070 1065 1060 1055 1050 1045 1040 1030

FILE NO. 32875	ENGLISH	DESIGN TEAM Snyder & Associates, Inc.	MILLS COUNTY	PROJECT NUMBER BRFN-059-2(024)--39-65	SHEET NUMBER D.2

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ANDERSON TWP.
T-73N
R-40W
SEC. 14
MILLS COUNTY

West Branch East Nishnabotna River

PT 1350+91.50

1351+00

APPROX. SEC. LINE

U.S. 59

POE 1351+91.49

Proposed Fence

ANDERSON TWP.
T-73N
R-40W
SEC. 13
MILLS COUNTY

0 50
FEET

FILE NO. 32875	ENGLISH	DESIGN TEAM Snyder & Associates, Inc.	MILLS COUNTY	PROJECT NUMBER BRFN-059-2(024)--39-65	SHEET NUMBER D.3

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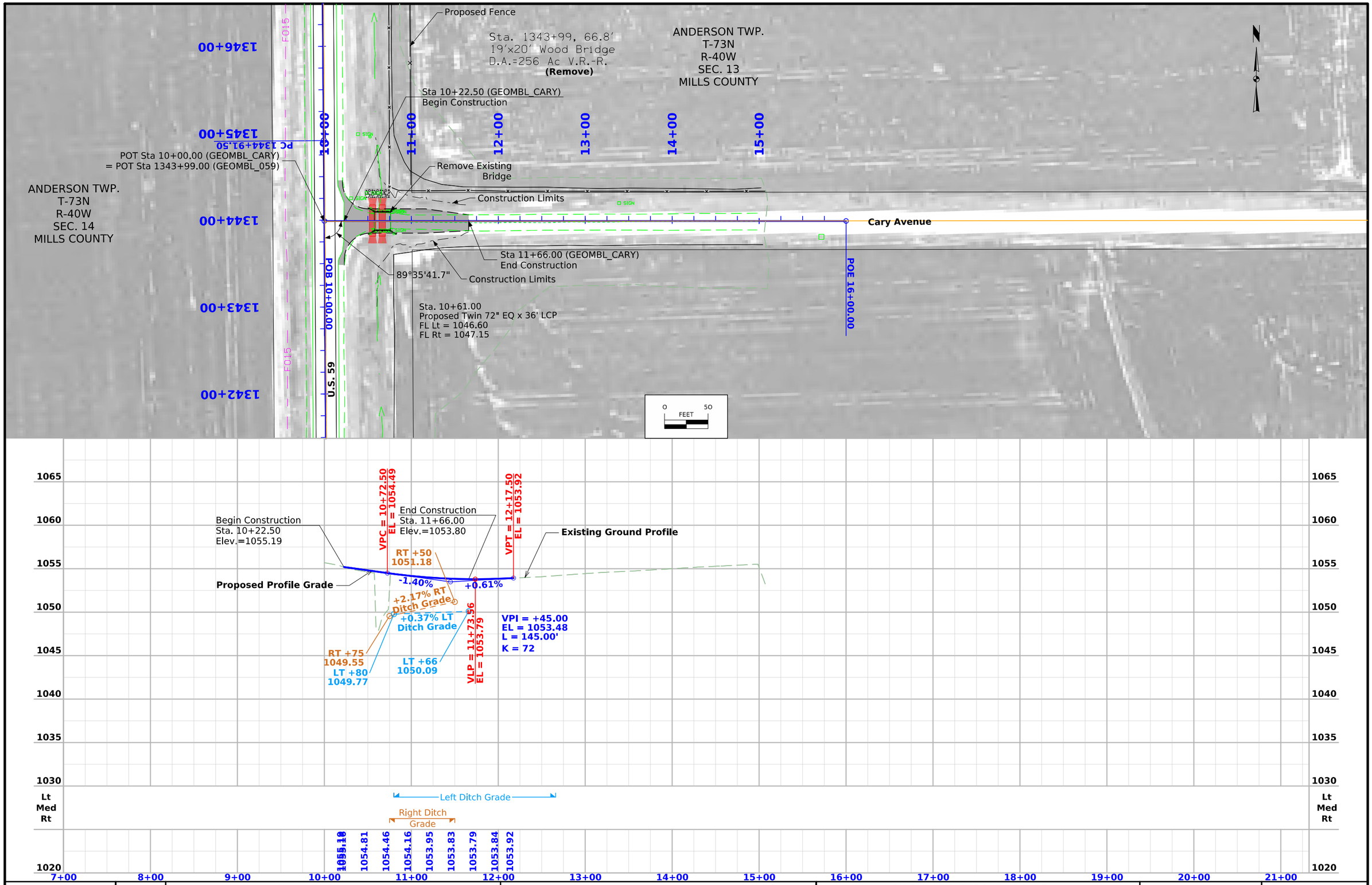

FILE NO. 32875	ENGLISH	DESIGN TEAM Snyder & Associates, Inc.	MILLS COUNTY	PROJECT NUMBER BRFN-059-2(024)--39-65	SHEET NUMBER E.1

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SURVEY INDEX
County: Mills
PIN: 24-65-059-010
Project Number: BRFN-059-2(024)--39-65
Location: Stream 1.1 mi S of Co Rd H12 (Side Ditch)
Type of Work: Bridge Repair
Project Directory: 6505901024

Survey Personnel

Eric Miller – Project Manager
Jeff Pavelka – Survey Party Chief
Sam Blaisdell – Office Technician

Date(s) of Survey

Begin Date	01/17/2025
End Date	02/04/2025

General Information

This survey is for Cary Avenue and US Hwy 59 Bridge Repair at locations 1.1 mi S of County Road H12 (Side Ditch). This project is a Full Field DTM survey.

Utility Information

For logging data and other utility details see Utility Survey and Ownership Report in the Utility folder of the PrelimSurvey project directory.

Project Control

Measurement units for this survey are US survey feet. Project coordinate system is relative to the Iowa Regional Coordinate System, Zone 6. Nearby Iowa Real Time Network reference stations were utilized to obtain horizontal and vertical positions on primary project control points. Three five-minute observations were taken with a minimum two-hour time span between and used in a weighted average to obtain final coordinate values.

Alignment Information

The horizontal alignment for U.S. Hwy 59 this survey is a retrace of As-built Plans No. FA-767 and FA-767(2). Survey stationing was equated to the plan PI at Sta. 1347+91.5 and carried back and ahead without equation throughout the survey. Due to lack of centerline monumentation, the roadway as constructed was used to establish alignment.

Survey stationing relates to as built plan stationing as follows:
PC Sta. 1291+91.9 As-built Plans Project No. FA-767(2)
This Survey PC Sta. 1291+91.9

PI Sta. 1294+91.9 As-built Plans Project No. FA-767(2)
This Survey PC Sta. 1294+91.9

PT Sta. 1297+91.9 As-built Plans Project No. FA-767(2)
This Survey PC Sta. 1297+91.9

POT Sta. 1302+95.9 As-built Plans Project No. FA-767(2)
This Survey POT Sta. 1302+95.9

POT Sta. 1321+57.8 As-built Plans Project No. FA-767(2)
This Survey POT Sta. 1302+57.8

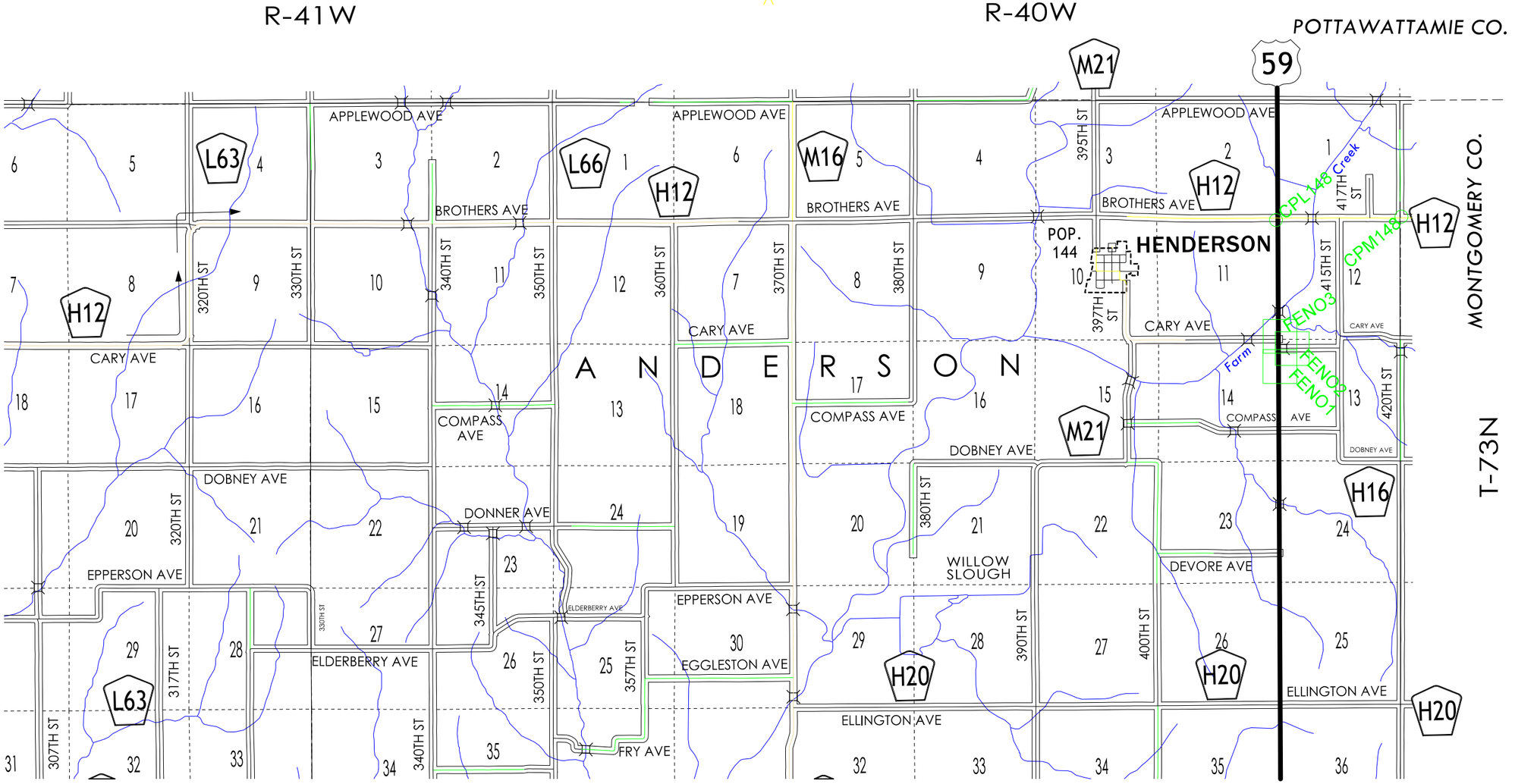
PC Sta. 1344+91.5 As-built Plans Project No. FA-767(2)
This Survey PC Sta. 1344+91.5

PI Sta. 1347+91.5 As-built Plans Project No. FA-767(2)
This Survey PC Sta. 1347+91.5

PT Sta. 1350+91.5 As-built Plans Project No. FA-767(2)
This Survey PC Sta. 1350+91.5

CONTROL POINT VICINITY MAP

This map is a guide to the vicinity of the primary project control points. Primary control is for use with RTK base stations and for RTN validation. Future surveys will use primary project control to establish temporary control as needed for construction or other surveying applications.



HORIZ. DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 Adjustment) - Iowa RCS Zone 06 (U.S. Survey Foot)

VERT. DATUM: NAVD88 - Geoid Model: 2018u3

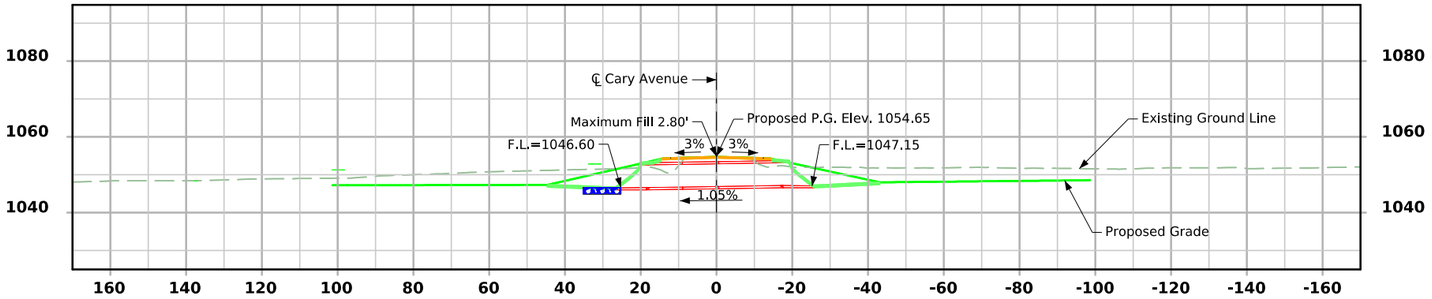
Coordinate listing from next sheet will be used with IaRTN for monument recovery. No other reference ties are given.

108-23A
08-01-08

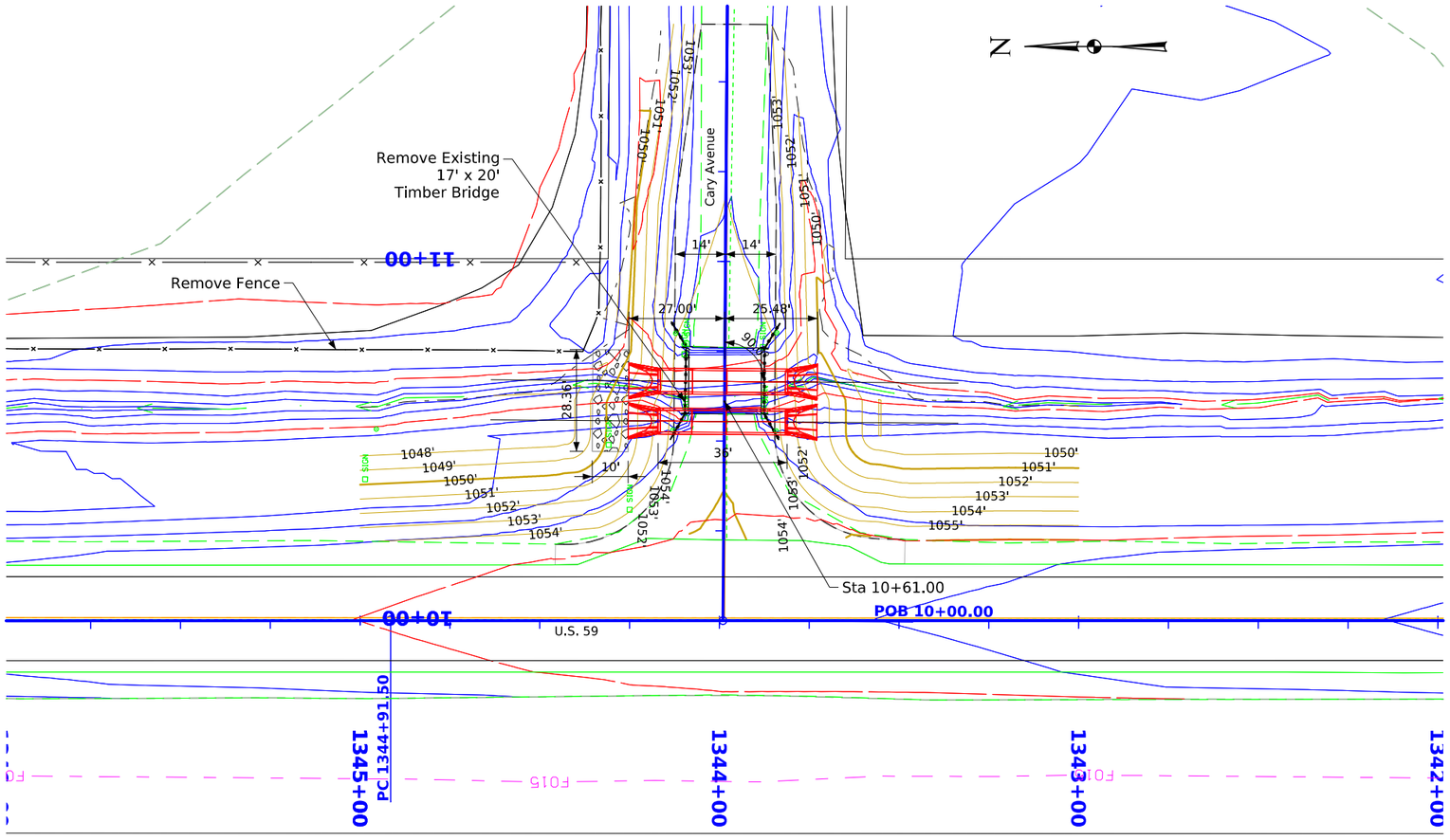
TRAFFIC CONTROL PLAN

1. Two lanes of U.S. 59 will remain open to traffic at all times. Shoulder closures as necessary will be permitted. Follow details referenced elsewhere in these plans.
2. Cary Avenue east of U.S. 59 will be closed to traffic during construction.
3. Detour for local traffic will be established by others.

Control Point: FENO2, FENO MONUMENT, NORTHING=6920960.03, EASTING=16591421.81, MONUMENT ELEVATION=1054.5

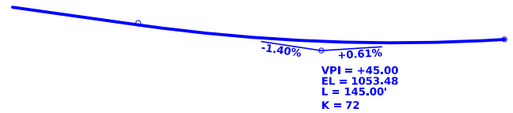


Longitudinal Section Along ℄ Culvert



0 20
Scale In Feet

Situation Plan



Proposed Profile Grade on Cary Avenue

(Use as Constructed)

Hydraulic Data

RIDB:
Drainage Area = 278 Acres
Stream Slope = 42.8 Ft./Mi.
Q_{50} = 770 cfs
HW Elev. = 1054.74
Exit Velocity = 9.2 fps

Traffic Estimate

2016 AADT	20 V.P.D.
2045 AADT	20 V.P.D.
2045 DHV	??? V.P.H.
TRUCKS	XX %
Total Design ESALs	???

Location

Cary Avenue over drainage ditch
T-73N R-40W
Section 13
Anderson Township
Mills County
FHWA No. 607585
Latitude: 41°07'49.74" N
Longitude: 95° 24' 11.78" W

Utilities Legend

Refer to Sheet D.1

Hydraulic Design

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

LICENSED PROFESSIONAL ENGINEER
DAVID J. MULHOLLAND
P14746
IOWA

David J. Mulholland, P.E. Date

License Number P14746

My License Renewal Date is December 31, 2026

Pages or sheets covered by this seal:

Design For 0 Degree RA

Twin 72" EQ x 36' LCP Culverts

STA. 10+61.00 (Cary Ave)

Turn-in Date:

Mills County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. Design Sheet No. 1 of 1 FHWA/Asset

FILE NO. 32875	ENGLISH	DESIGN TEAM Snyder & Associates	MILLS COUNTY	PROJECT NUMBER NHSN-059-2(025)--2R-65	SHEET NUMBER V.1

11:51:17 AM 11/24/2025 sgtheis pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6505901024\Bridge\BRPrelim\SHT_65059024_SA_PC_Z12.dgn

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING

HORIZ. DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 Adjustment)
Ia. Regional Coordinate System Zone 06 (U.S. Survey Foot)

VERT. DATUM: NAVD88
Geoid Model: 2018u3

Point Name	Northing	Easting	Elevation	Code-Description
FENO1	6920179.80	16590888.59	1059.46	FENO SET FENO MONUMENT EAST SIDE HIGHWAY 59// 20'+/- EAST OF PAVEMENT EDGE// 150'+/- NORTH OF NO PASSING SIGN
FENO2	6920960.03	16591421.81	1054.50	FENO SET FENO MONUMENT SOUTH SIDE OF CARY AVENUE// EAST OF HIGHWAY 59// 7'+/- SOUTH OF GRAVEL EDGE// 150'+/- EAST OF STOP SIGN AHEAD SIGN
FENO3	6921489.62	16590890.03	1048.85	FENO SET FENO MONUMENT EAST SIDE OF HIGHWAY 59// 30'+/- EAST OF PAVEMENT EDGE// 150'+/- SOUTH OF GUY ANCHOR POLE
L148	6926549.91	16590717.62	1075.56	CP 5/8IN REBAR IN CONC MONUMENT
M148	6926703.73	16596174.54	1135.37	CP 5/8IN REBAR IN CONC MONUMENT

CROSS SECTION VIEW COLOR LEGEND

Design Color No.	Feature
Aggregate	
(64)	Choke Stone
(42)	Engineering Fabric
(8)	Flooded Backfill
(92)	Macadam Stone
(20)	Modified
(12)	Plowing Shaping
(14)	Porous Backfill
(8)	Revetment Class A
(6)	Revetment Class B
(62)	Revetment Class C
(188)	Revetment Class D
(28)	Revetment Class E
(12)	Shoulder Special Backfill
(12)	Special Backfill
(20)	Subbase
(20)	Subbase Lower
(20)	Subbase Upper
(118)	Subgrade Treatment
Asphalt	
(207)	HMA Base Course
(207)	HMA Interim Course
(207)	HMA Surface Course
Bridge	
(0)	Bridge
Concrete	
(0)	Barrier Concrete
(0)	Barrier Concrete Footing
(0)	Curb Gutter
(48)	Flowable Mortar
(0)	Median Concrete
(0)	PCC Pavement
(0)	Sidewalk
Existing	
(0)	Existing Pavement
Shoulder	
(209)	Shoulder HMA
(0)	Shoulder PCC
(6)	Shoulder Granular
Structural	
(112)	Noise Wall
(112)	Noise Wall Footing
(112)	Retaining Wall Back
(112)	Retaining Wall Back Excavate
(112)	Retaining Wall Face
(112)	Retaining Wall Front Excavate
(112)	Retaining Wall Front Footing
(112)	Retaining Wall MSE Gutter
(112)	Retaining Wall Reinforced Earth

Design Color No.	Feature
Grading	
(8)	Behind Curb Cut
(6)	Granular
(13)	Granular Back Fill
(48)	Rock Undercut
(8)	Shoulder Earth Fill
(2)	Side Slopes
(226)	Side Slopes Dressing
Substrata	
(128)	Boulder
(209)	Boulder Removed
(48)	Broken Weathered
(210)	Broken Weathered Removed
(3)	Core Out
(115)	Core Out Remove Only
(195)	Core Out Remove and Replace
(203)	Existing Pavement
(184)	Existing Pavement Remove Only
(200)	Existing Pavement Remove and Replace
(6)	Loam
(211)	Loam Removed
(80)	Rock
(212)	Rock Removed
(4)	Select Sand
(214)	Select Sand Removed
(3)	Shale
(215)	Shale Removed
(10)	Topsoil
(2)	Topsoil Remove Only
(4)	Topsoil Remove and Replace
Unsuitable / Waste	
(3)	Unsuitable Type A
(216)	Unsuitable Type A Removed
(13)	Unsuitable Type B
(217)	Unsuitable Type B Removed
(11)	Unsuitable Type C
(218)	Unsuitable Type C Removed
(3)	Waste
(219)	Waste Removed

NOTES:

Text

NOTES:

Text

CROSS SECTIONS
LEGEND AND INFORMATION SHEET

(COVERS SHEET SERIES W, X, Y, & Z)

FILE NO. 32875	ENGLISH	DESIGN TEAM Snyder & Associates, Inc.	MILLS COUNTY	PROJECT NUMBER BRFN-059-2(024)--39-65	SHEET NUMBER W.1

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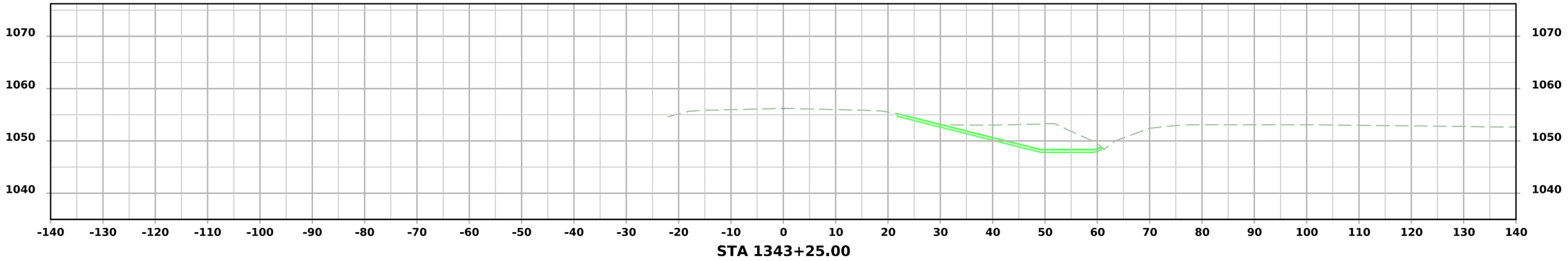

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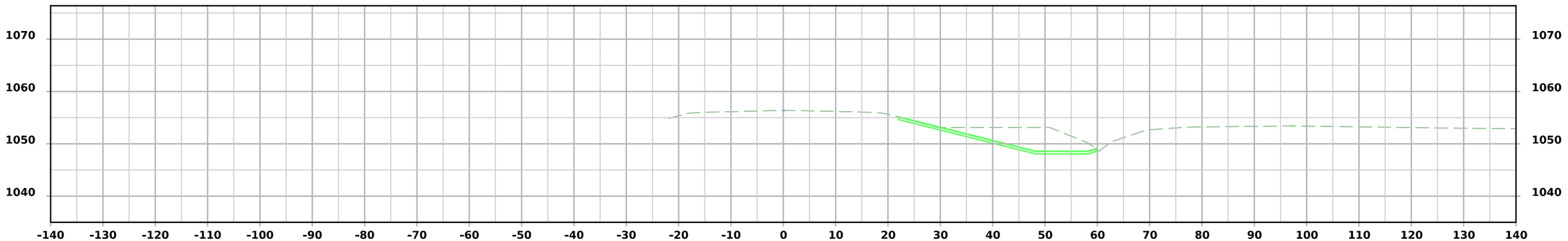

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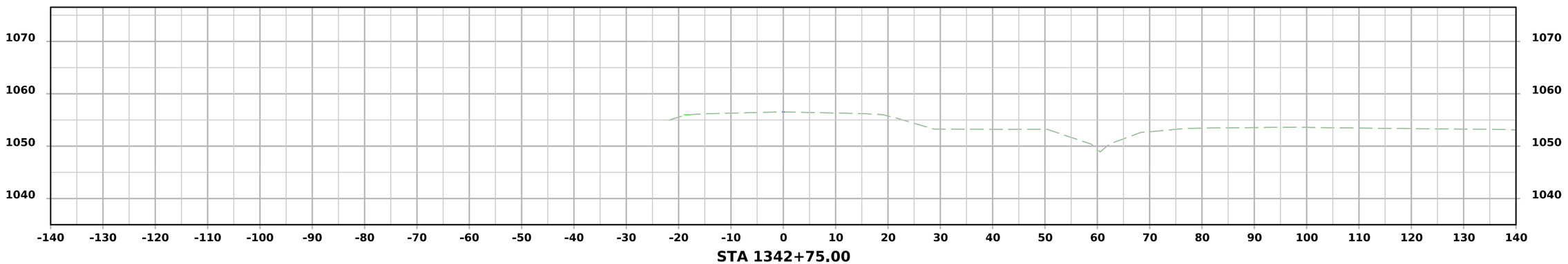

STA 1342+75.00

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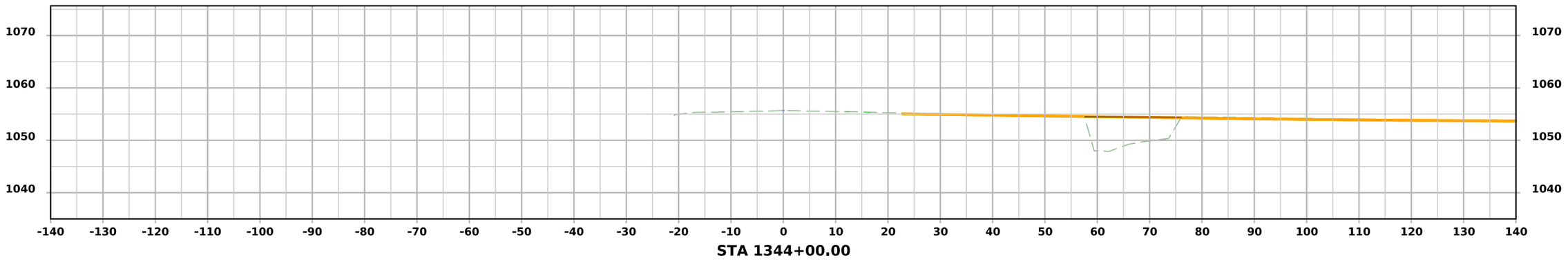

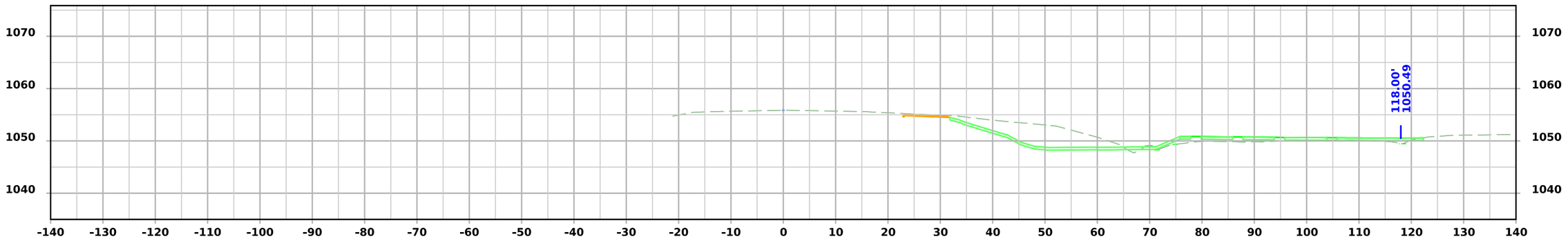

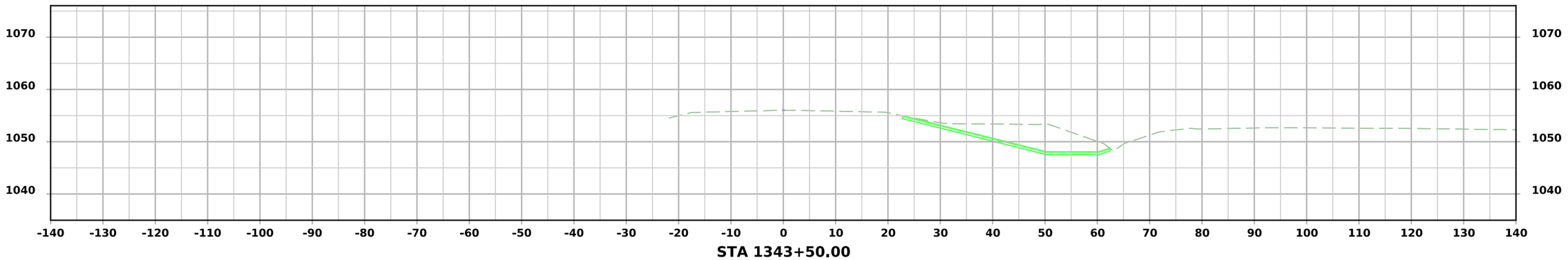

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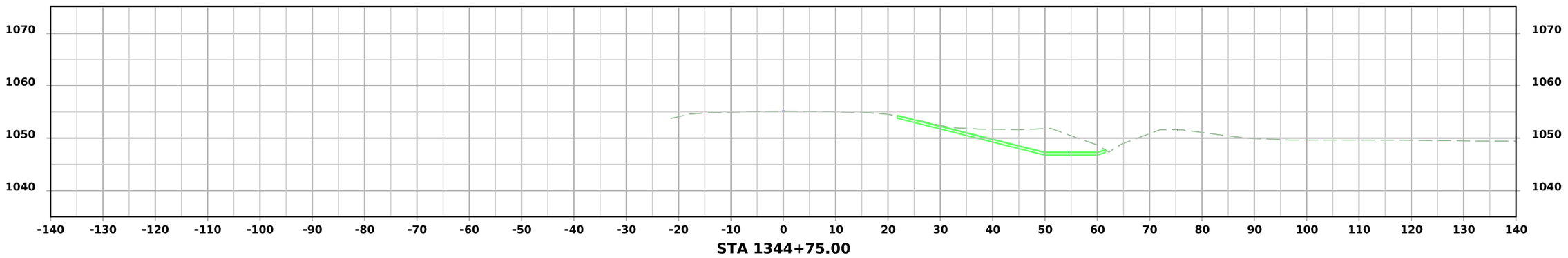

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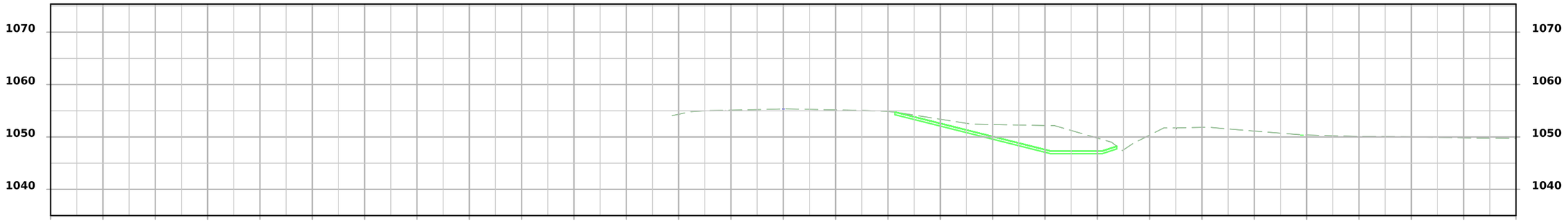

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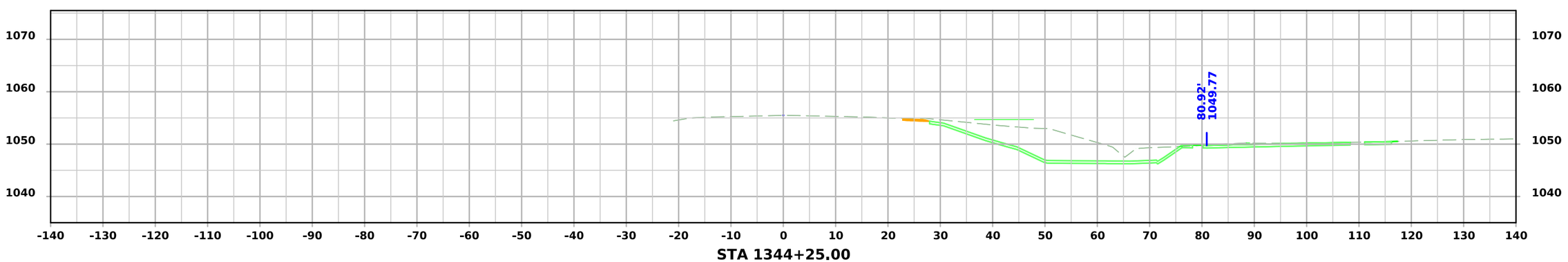

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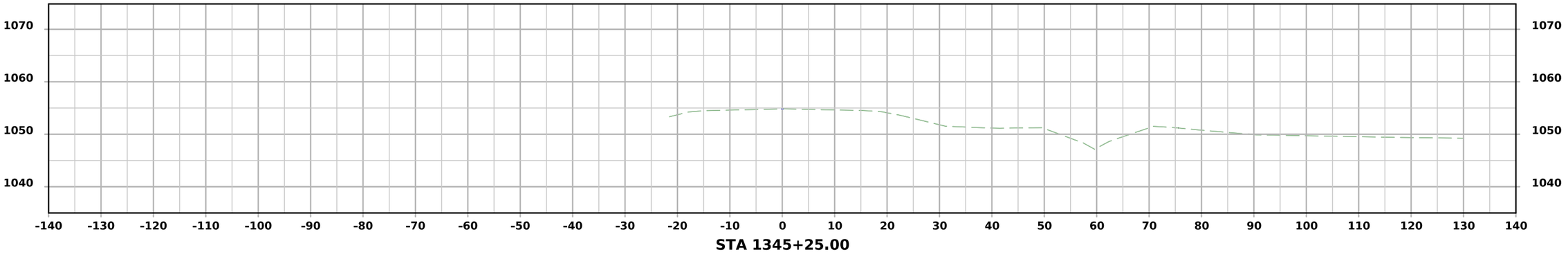
ML - US59



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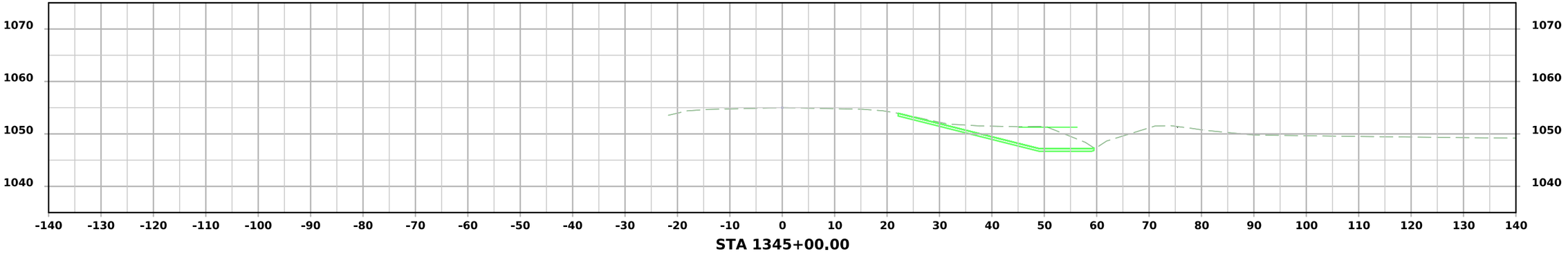

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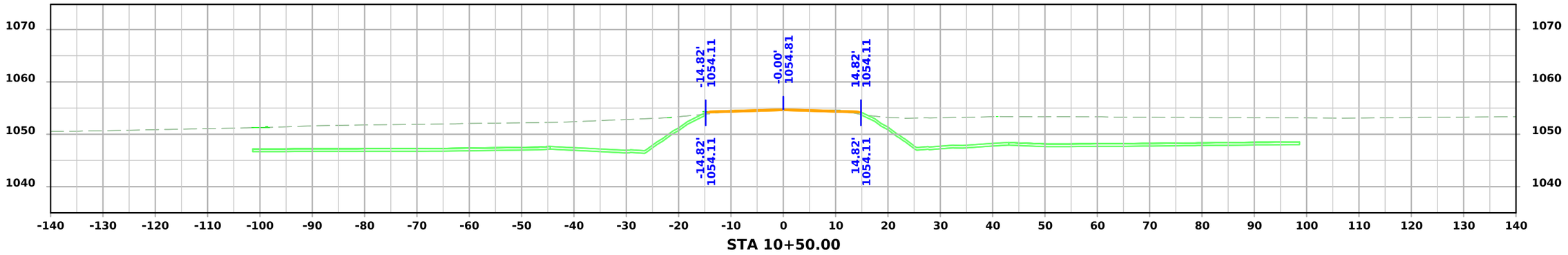
Cary Avenue



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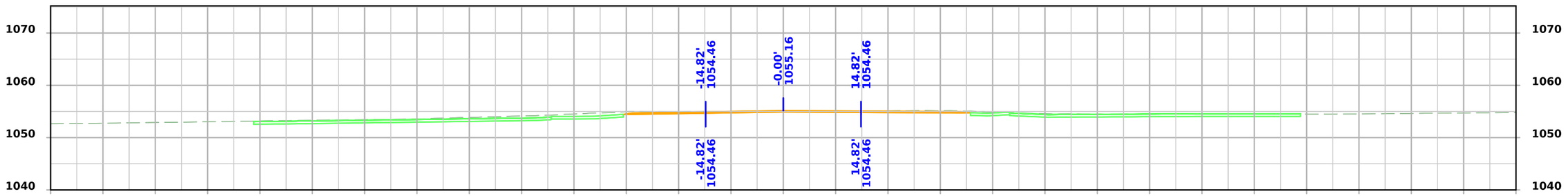

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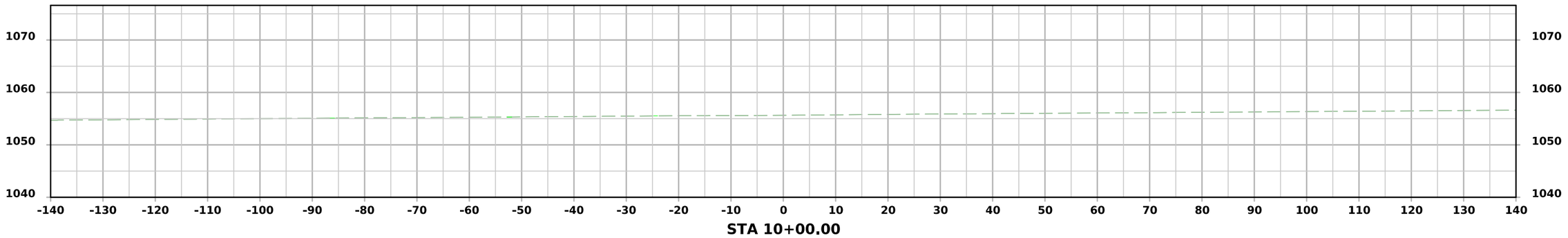

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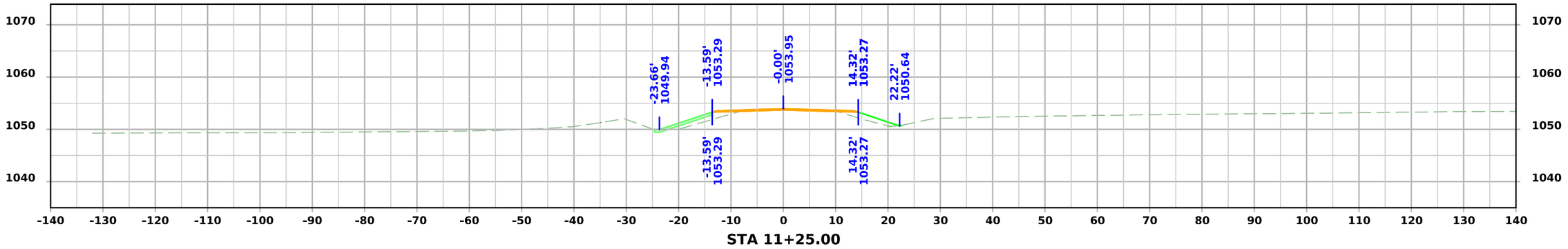
Cary Avenue



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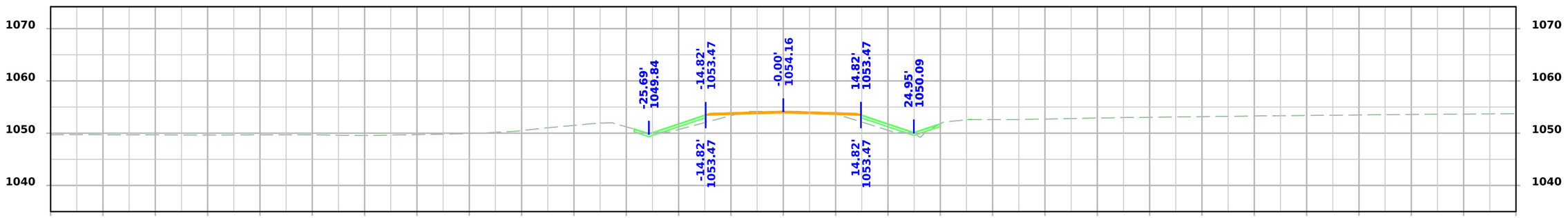

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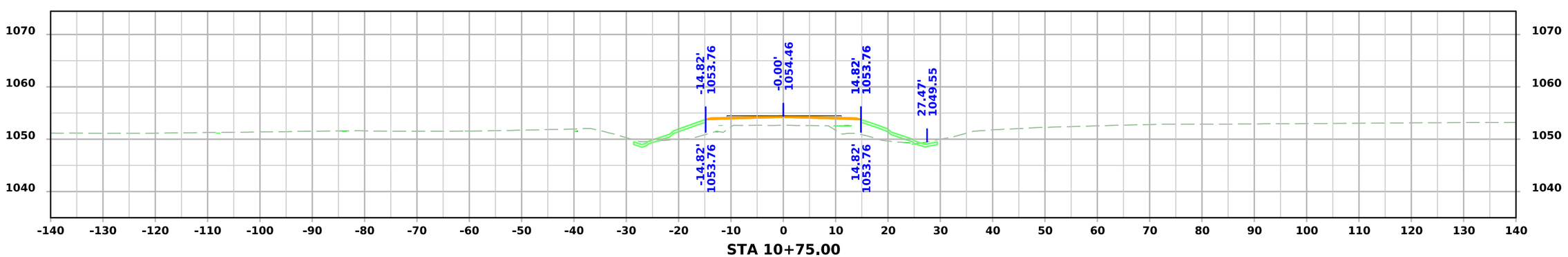

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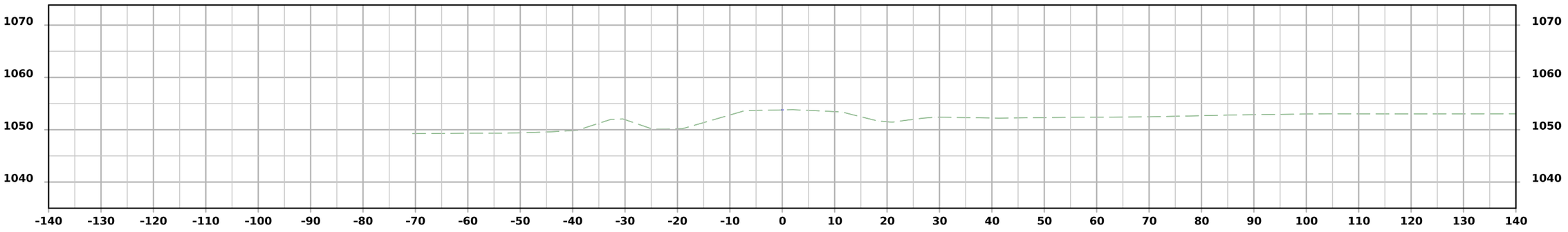
Cary Avenue



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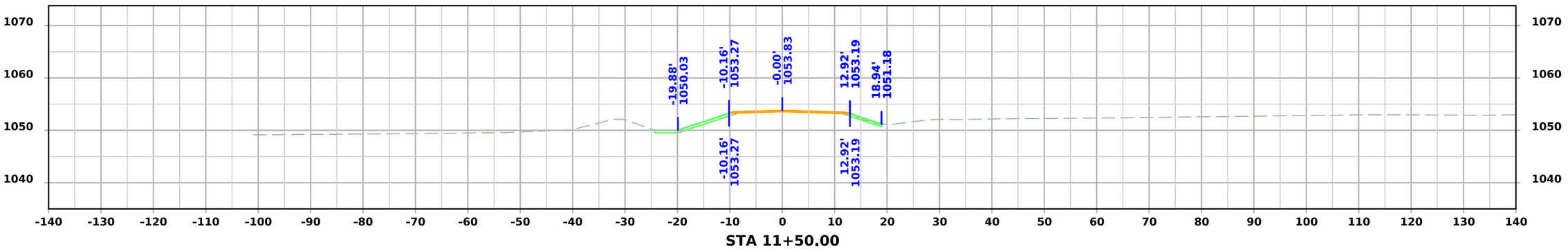

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