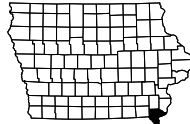


LEE COUNTY

Bridge Replacement-CCS
BRF-016-4(029)--38-56

LETTING DATE
Jan 19, 2028



INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	Title Sheets
A.1	Title Sheet
A.2	Location Map Sheet
B Sheets	Typical Cross Sections and Details
B.1 - 3	Typical Cross Sections and Details
D Sheets	Mainline Plan and Profile Sheets
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2 - 3	IA 16
G Sheets	Survey Sheets
G.1	Survey Index
G.2	Control Point Vicinity Map
G.3	Horizontal Control Tab. & Super for all Alignments
J Sheets	Traffic Control and Staging Sheets
J.1	Traffic Control Plan
J.2	511 Travel Restrictions
J.3	Coordinated Operations
* J.4	Detour Route Map
V Sheets	Bridge and Culvert Situation Plans
V.1 - 2	Bridge and Culvert Situation Plans
W Sheets	Mainline Cross Sections
W.1	Cross Sections Legend & Symbol Information Sheet
W.2 - 9	Mainline Cross Sections
	* Color Plan Sheets



PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

LEE COUNTY

Bridge Replacement-CCS

IA 16 Bridge over Sugar Creek
0.3 mi W of U.S. 218

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.iowadonecall.com

**811**
When you call 811 we'll find what's below. Call before you dig.

REVISIONS

TOTAL
..
PROJECT IDENTIFICATION NUMBER
22-56-016-010
PROJECT NUMBER
BRF-016-4(029)--38-56
R.O.W. PROJECT NUMBER

DESIGN DATA RURAL			
2027	AADT	1300	V.P.D.
2047	AADT	1300	V.P.D.
20	- DHV	-	V.P.H.
TRUCKS		16	%
Total			
Design ESALs		-	

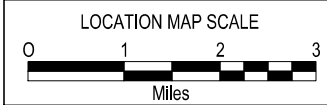
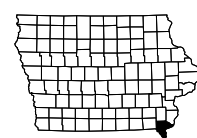
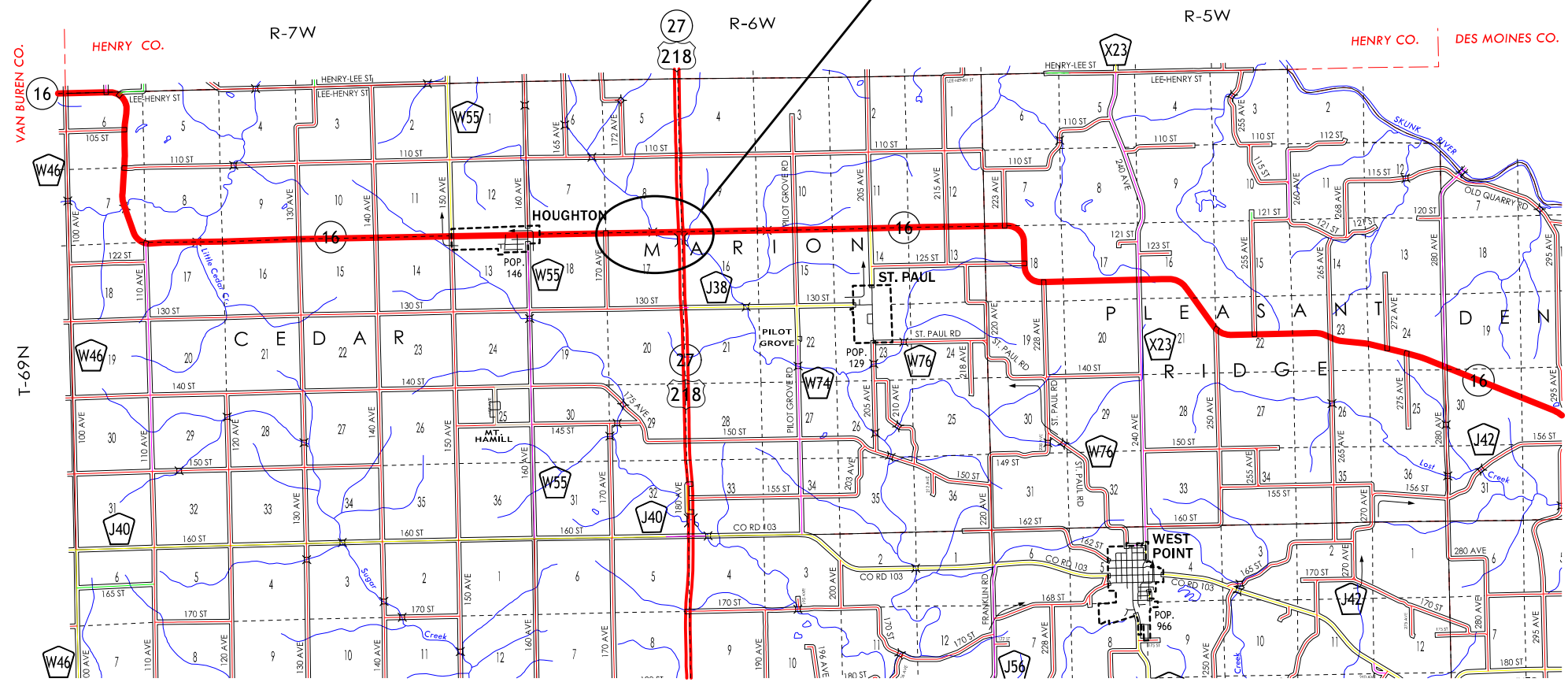
INDEX OF SEALS			
SHEET NO.	NAME	TYPE	BID QUANTITY SHEETS
A.1	Dung T. Ta	Primary Signature Block	X
V.1	Tamera C. Depke	Hydraulic Design	X

PRELIMINARY PLANS

Subject to change by final design.

D5 PLAN - Date: 12/23/2024

PROJECT LOCATION
Sta. 553+44.00
FHWA #: 33310
Maint #: 5645.2S016



Full Depth PCC Shoulder

Shoulder Jointing:
Longitudinal joint: BT-2, L-2 or KT-2
Transverse joints: C at 17' spacing

2_P_FullPCC_04-20-21		
STATION TO STATION		(P) Feet
552+20.44	552+88.70	8
Bridge		
553+90.28	554+66.06	8

Paved Shoulder at Guardrail

PCC Shoulder Jointing:
Longitudinal joint: BT-1 or BT-5
Transverse joints: C at mainline spacing
HMA Shoulder Jointing:
Longitudinal joint: B

2_P_Guard_04-21-20		
STATION TO STATION		(P) Feet
551+61.92	552+20.44	Varies
554+66.06	555+38.86	Varies

Partial Depth Paved Shoulder

PCC Shoulder Jointing:
Longitudinal joint: BT-1 or BT-5
Transverse joints: C at mainline spacing
HMA Shoulder Jointing:
Longitudinal joint: B

2_P_Guard_04-21-20		
STATION TO STATION		(P) Feet
549+18.00	551+61.92	Varies
555+38.86	557+69.00	Varies

Full Depth PCC Shoulder

Shoulder Jointing:
Longitudinal joint: BT-2, L-2 or KT-2
Transverse joints: C at 17' spacing

2_P_FullPCC_04-20-21		
STATION TO STATION		(P) Feet
552+20.44	552+97.69	8
Bridge		
553+98.59	554+66.06	8

Paved Shoulder at Guardrail

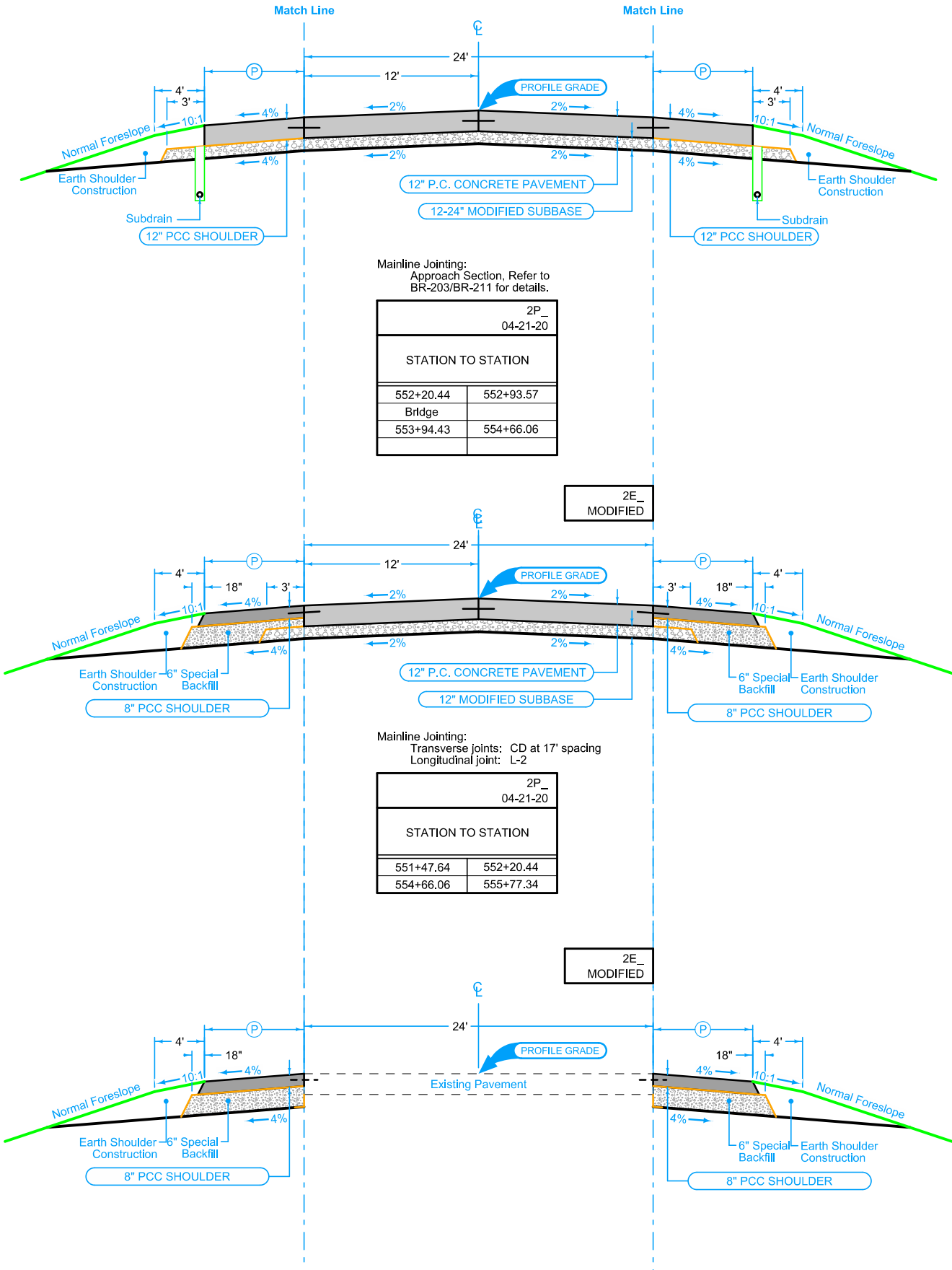
PCC Shoulder Jointing:
Longitudinal joint: BT-1 or BT-5
Transverse joints: C at mainline spacing
HMA Shoulder Jointing:
Longitudinal joint: B

2_P_Guard_04-21-20		
STATION TO STATION		(P) Feet
551+47.64	552+20.44	Varies
554+66.06	555+24.58	Varies

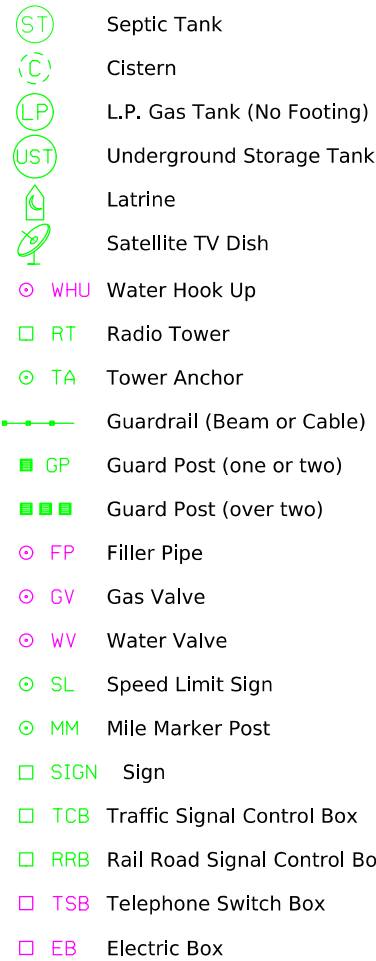
Partial Depth Paved Shoulder

PCC Shoulder Jointing:
Longitudinal joint: BT-1 or BT-5
Transverse joints: C at mainline spacing
HMA Shoulder Jointing:
Longitudinal joint: B

2_P_Guard_04-21-20		
STATION TO STATION		(P) Feet
549+18.00	551+47.64	Varies
555+24.58	557+69.00	Varies



	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
	Water Hydrant (Rural)

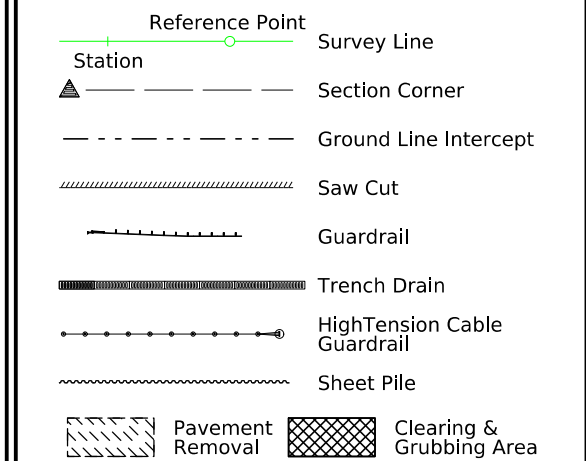


- T1 — Alliant Energy (ASE)
Alliant Energy Field Engineer
Phone: 800-255-4268
Email: locate_IPL@alliantenergy.com
- W — Rathbun Regional Water (RBW)
Scott Jackson
Phone: 641-647-1086
Email: onecall@rrwa.net
- T1 — Windstream Communications (WINIA)
Locate Desk
Phone 800-289-1901
Email: LOCATE.DESK@WINDSTREAM.COM

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

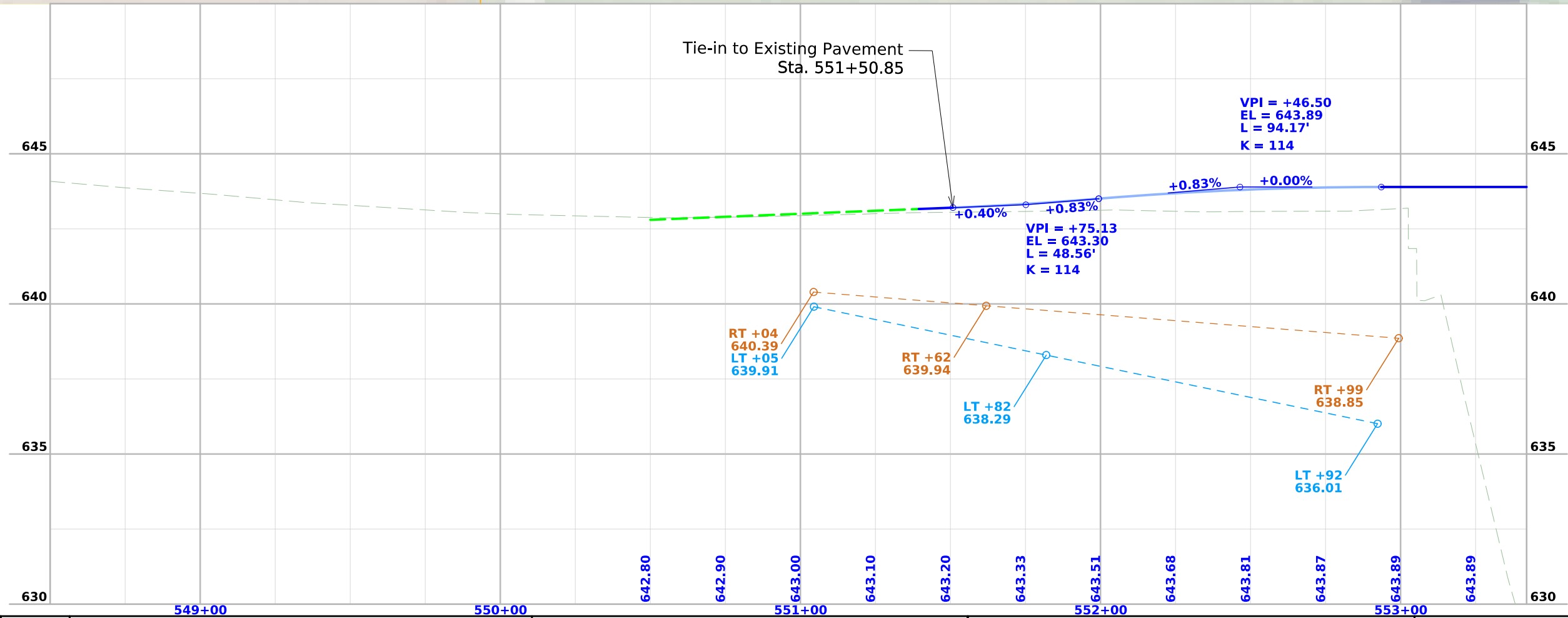
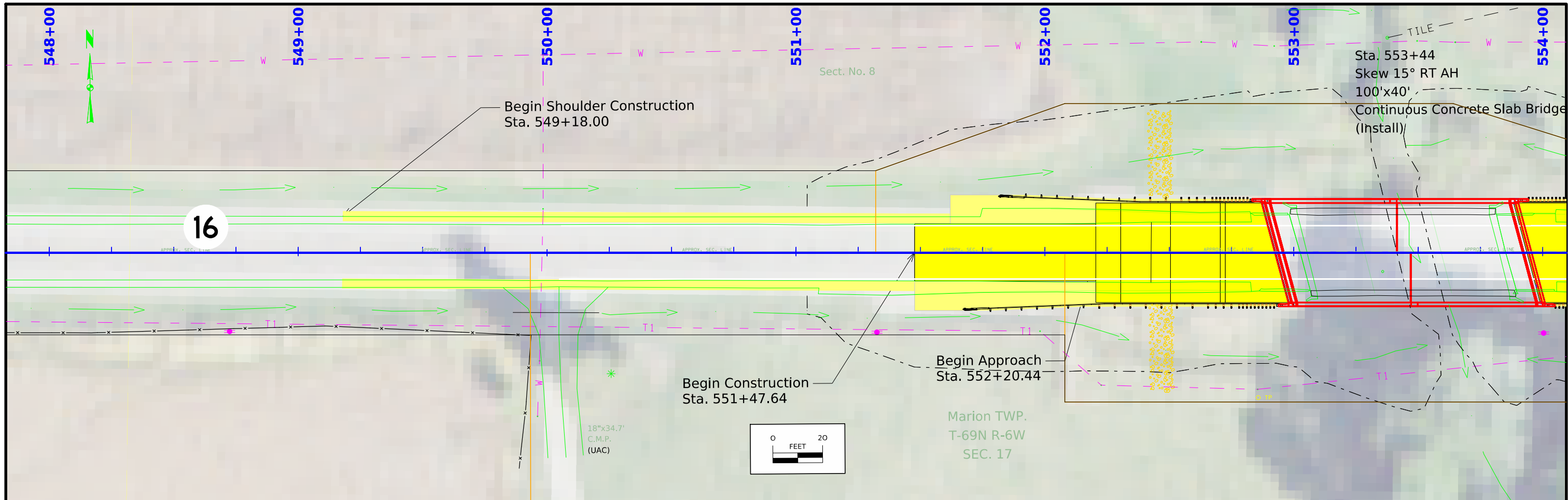
SHADING	Design Color No.			Transparency
Pink, Dark	(13)		Temporary Pavement Shading	50%
Yellow	(4)		Proposed Pavement Shading	50%
Orange	(6)		Proposed Granular Shading	50%
Orange	(70)		Proposed Shoulder Granular Shading	50%
Yellow	(68)		Proposed Shoulder Paved Full Depth Shading	50%
Yellow	(132)		Proposed 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%

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



	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
	Access Control
	Property Line Symbol
	Property Line

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



Survey Information

SURVEY INDEX

Lee County
BRF-016-4(29)--38-56
Sugar Creek 0.3 mi W of US 218
PIN: 22-56-016-010
Type of Work: Unspecified Bridge Work
Project Directory: 5601601022

Survey Personnel

Samuel Schilb – Assistant Survey Party Chief

Date(s) of Survey

Begin Date 08/10/2023
End Date 01/08/2024

General Information

This survey is for the unspecified bridge work at Sugar Creek 0.3 mi W of US 218 on Hwy 16. This survey request was for the Hwy 16 corridor only. 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

Coordinates were determined for primary project control points by conducting concurrent six-hour static observations. Post processing is constrained to nearby Iowa Real Time Network reference stations. For additional details of the control survey, contact the Preliminary Survey department.

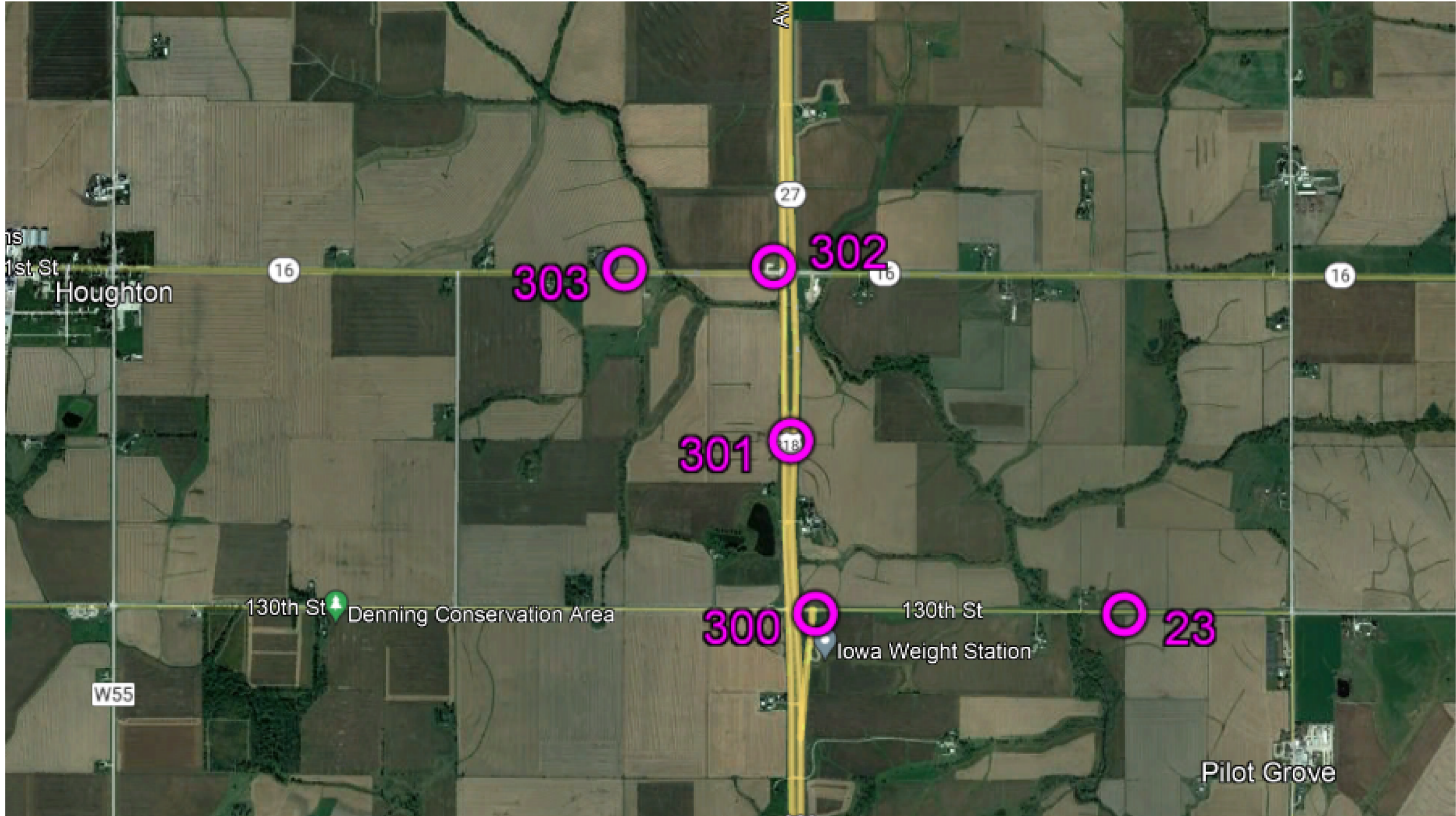
PROJECT DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 ADJUSTMENT)
COORDINATE SYSTEM: IOWA REGIONAL COORDINATE SYSTEM ZONE 14
(U.S. SURVEY FOOT)
VERTICAL DATUM: NAVD88
GEOID MODEL: 2018u3

Alignment Information

The horizontal alignment for U.S. Hwy 16 was created by using information provided by the district 5 land survey office. Survey stationing was equated to the bridge station from As-built Plans No. FN-16-4(2)—21-56 at Sta. 553+44 and carried back and ahead without equation throughout the survey.

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 14 (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.

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING
HORIZ. DATUM: NAD83(2011) for EPOCH 2010.00 (laRTN 2019 Adjustment)
la. Regional Coordinate System Zone 14(U.S. Survey Foot)
VERT. DATUM: NAVD88
Geoid Model: 2018u3

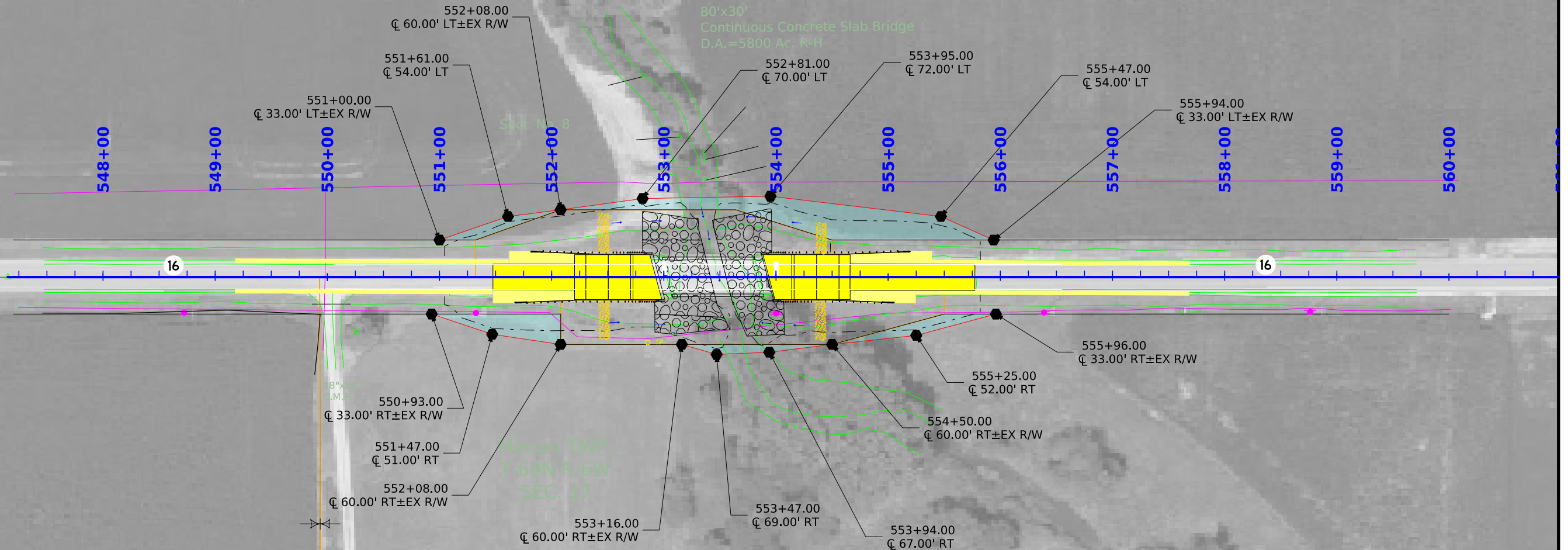
Point Name	Northing	Easting	Elevation	Code Description
300	6389473.63	24413402.52	691.88	CP Set 5/8th"x42" Rebar from the intersection of Hwy 218 and 130th St proceed E 400' point is 90' S 4" below surface
301	6392225.05	24413004.86	675.71	CP Set 5/8th"x42" Rebar from the intersection of Hwy 218 and 130th St proceed N 2657' point is 40' W of NBL near cross over 4" below surface
302	6394970.15	24412741.31	642.45	CP Set 5/8th"x42" Rebar from the intersection of Hwy 218 and Hwy 16 proceed W 240' point is 82' N of the CL of Hwy 16 4" below surface
303	6394937.18	24410370.86	641.73	CP Fnd 5/8th" Rebar W/ Blue Cap from the intersection of Hwy 16 and 170th Ave proceed E 2657' point is 34' N of the CL of Hwy 16 4" below surface
23	6389459.96	24418277.58	637.38	CP LEE Co GPS Ctl Point Fnd as described

1

Daniel A Hellweg
Amy L Hellweg

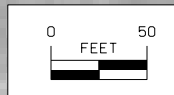


Sta. 553+44
Skew 15° RT AH
80'x30'
Continuous Concrete Slab Bridge
D.A.=5800 Ac. R-H



2

Kyle D Holtkamp



Right of Way Design Information	
THIS SHEET INCLUDED FOR INFORMATION ONLY	
ROW Team: Larson / Hinrichsen	
ROW #: STPN-016-4(030)--2J-56	
Plan Date: 4/25/2025	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition
	Permanent Acquisition County
	Permanent Acquisition City

FILE NO.

ENGLISH

DESIGN TEAM TA/TAP

Lee COUNTY

PROJECT NUMBER BRF-016-4(029)--38-56

SHEET NUMBER H1

9:25:37 AM 4/21/2025 thinric pw:\NTP\wint1.dot.int.lan:PWMain\Documents\Projects\5601601022\ROW\ROW_56016030.dgn

108_23A
8/15/22

TRAFFIC CONTROL PLAN

Traffic on IA 16 shall be maintained at all times via an offsite detour as shown in following J sheets.

108_25
3/28/24

511 TRAVEL RESTRICTIONS													
Line No.	Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No. or Structure ID or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
1.0	IA-16	Both	Lee	Bridge over Sugar Creek		Traffic Control Device		Road Closure					

111_01
10/14/22

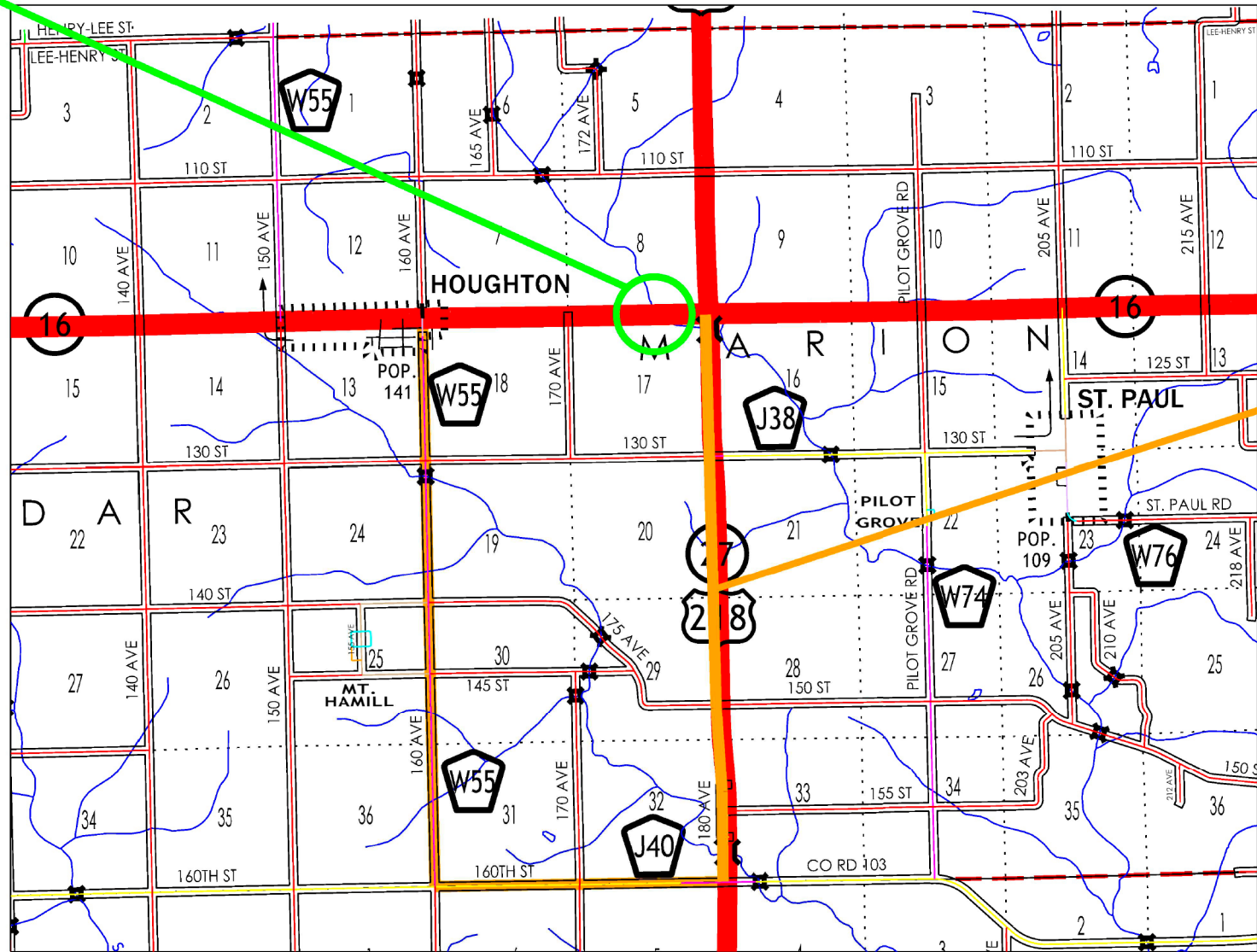
COORDINATED OPERATIONS

Other work in progress during the same period of time will include the construction of the projects listed. Coordinate operations with those of other contractors working within the same area.

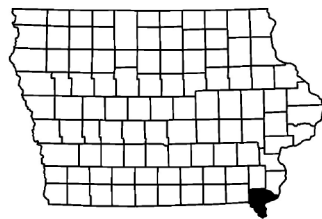
Project	Type of Work
None Provided	

STA 553+44.00
FHWA 33310
MAINT. 5645.2S016
DESIGN 466

LEE COUNTY



DETOUR



ON IA 16, OVER SUGAR CREEK 0.3 MILES W
OF US 218
BRF-016-4(029)-38-56
PIN: 22-56-016-010



General Notes:
This design is for the replacement of the existing 80' x 30' Continuous Concrete Slab Bridge, Lee design No. 0466, FHWA No. 033310., Maint. No. 5645.2S016

Top of bridge deck crown 0.03 feet below Profile Grade.

Design Notes:
Standard Bridge Index No. J40. Verify Abutment, Wingwall, and End Barrier geometries after Standard J40 is updated to the CONNECT Version.

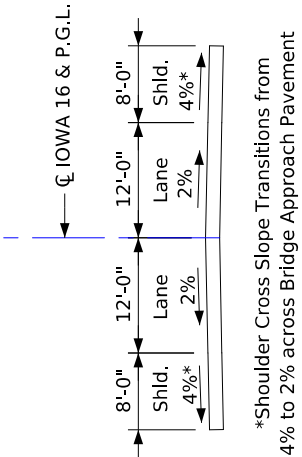
TL-4 Single Slope Bridge railing proposed.

Pier Type - Fully Encased Pile Bent with an assumed cap width of 3'-0" and encasement thickness of 22".

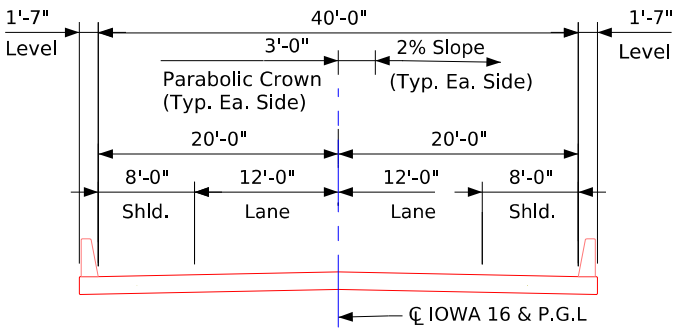
Class E Revetment Stone is embedded.

The bridge will be designed to withstand the applicable effects of Ice and Horizontal Stream loads and uplift forces associated with the Q100.

The bridge does not meet Iowa DOT's desired (operational or channel) freeboard per BDM 3.2.2.4. The proposed bridge does not increase backwater or reduce freeboard when compared to the existing bridge.



Typical Approach Section



Typical Bridge Section

(Looking East)

Location

IA 16 OVER SUGAR CREEK
0.3 MI. W. OF US 218
T-69-N R-6-W
SECTION 8 & SECTION 17
MARION TOWNSHIP
LEE COUNTY
FHWA NO. 033310
BRIDGE MAIN. NO. 5645.2S016
LATITUDE 40.78451393°
LONGITUDE -91.5714894°

Situation Plan

0 10
Scale In Feet

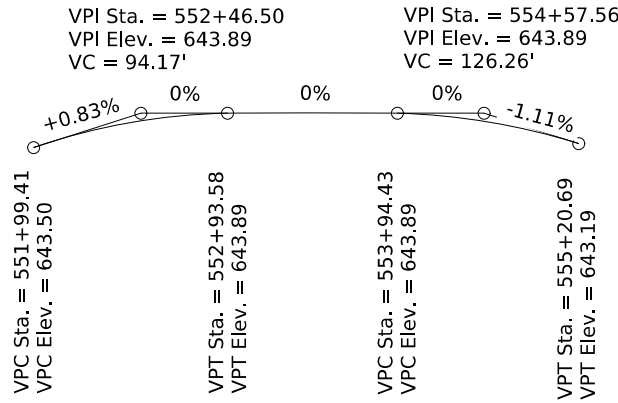


Hydraulic Design

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.

Signature *Tamera C. Depke* Date 12-20-2024
Printed or Typed Name Tamera C. Depke
My license renewal date is December 31, 2025

Pages or sheets covered by this seal: V.1 & V.2



Proposed Profile Grade On $\mathbb{C}$ Iowa 16

Hydraulic Data

RIDB: Stream ID: = SugarC_MR_Lee
Drainage Area = 8.93 Sq. Mi.
Stream Slope (HGL) = 5.6 ft./Mi.

Operational Low Beam = 642.0
Channel Low Beam = 642.0

Q_{50} = 3,990 cfs (Design)
Stage = 644.5
Operational Freeboard = -2.5 ft.*
Avg. Bridge Velocity = 1.0 fps

Q_{100} = 4,790 cfs
Stage = 645.4
Operational Freeboard = -3.4 ft.*
Backwater = 0.0 ft.
Avg. Bridge Velocity = 0.8 fps

Q_{200} = 5,640 cfs
Stage = 646.4

Q Overtop= 2,230 cfs
Avg. Bridge Velocity = 3.4 fps
Calculated Check Scour = 7.6 ft

Q_{500} = 6,760 cfs
Operational Freeboard = -5.6 ft.*

Roadway Overtop 641.6 ft.
Sta. 559+33

Site is located within
City or/County Lee County F.I.S., Dated 7/22/2020.
Zone A

*Operational Freeboard values have been approved by Iowa DOT.

Design For 15° Skew (RA)
100'-0" x 40'-0" Continuous
Concrete Slab Bridge

Situation Plan

30'-6" End Slabs 39'-0" Interior Span
STA. 553+44.00 (IA 16) December 2024

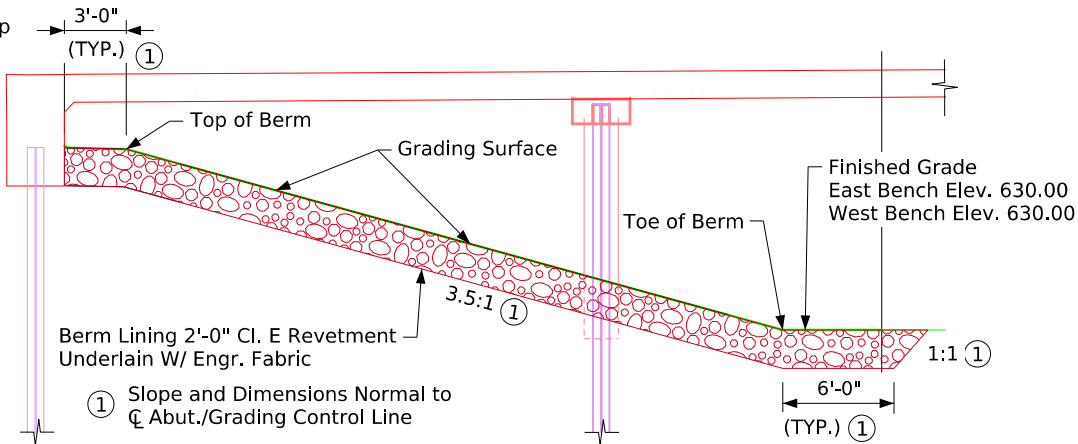
Lee County

IOWA DEPARTMENT OF TRANSPORTATION
Design No. 0127 Design Sheet No. 1 of 2 FHWA No. 033311

Control Point: CP3, N 6394937.18, E 24410370.86, 641.73, CP Fnd 5/8th" Rebar W/ Blue Cap from the intersection of Hwy 16 and 170th Ave proceed E 2657' point is 34' N of the CL of Hwy 16 4" below surface

Berm Slope Location Table						
Points	West Abutment			East Abutment		
	Station	Offset	Elev.	Station	Offset	Elev.
A1	553+27.51	24.58' LT	630.00	553+47.32	24.58' LT	630.00
A2	553+40.68	24.58' RT	630.00	553+60.49	24.58' RT	630.00
B1	552+92.07	24.58' LT	639.78	553+82.75	24.58' LT	639.78
B2	553+05.25	24.58' RT	639.78	553+95.93	24.58' RT	639.78
W1	552+83.09	24.58' LT	643.34	553+94.19	24.58' LT	643.34
W2	552+93.81	24.58' RT	643.34	554+04.91	24.58' RT	643.34

Berm slope elevations reflect the grading surface.



Section Through Berm Lining (Embedded)

Revetment Quantities				
Location	Revetment CL. E (Ton)	Erosion Stone (Ton)	Engineering Fabric (SY)	CL. 10 Channel Excavation (CY)
Berm Lining - East	649.8	-	609.2	363.2
Berm Lining - West	712.8	-	668.2	386.7
Stone Protection - East	-	-	-	-
Stone Protection - West	-	-	-	-
Totals	1362.6		1277.4	749.9

Revetment and erosion stone estimated at 1.6 Ton/CY.

IA 16 Traffic Estimate

2027 AADT	1,300	V.P.D.
2047 AADT	1,300	V.P.D.
2047 DHV	130	V.P.H.
TRUCKS	16	%
Total Design ESALs	???	

Utilities Note:

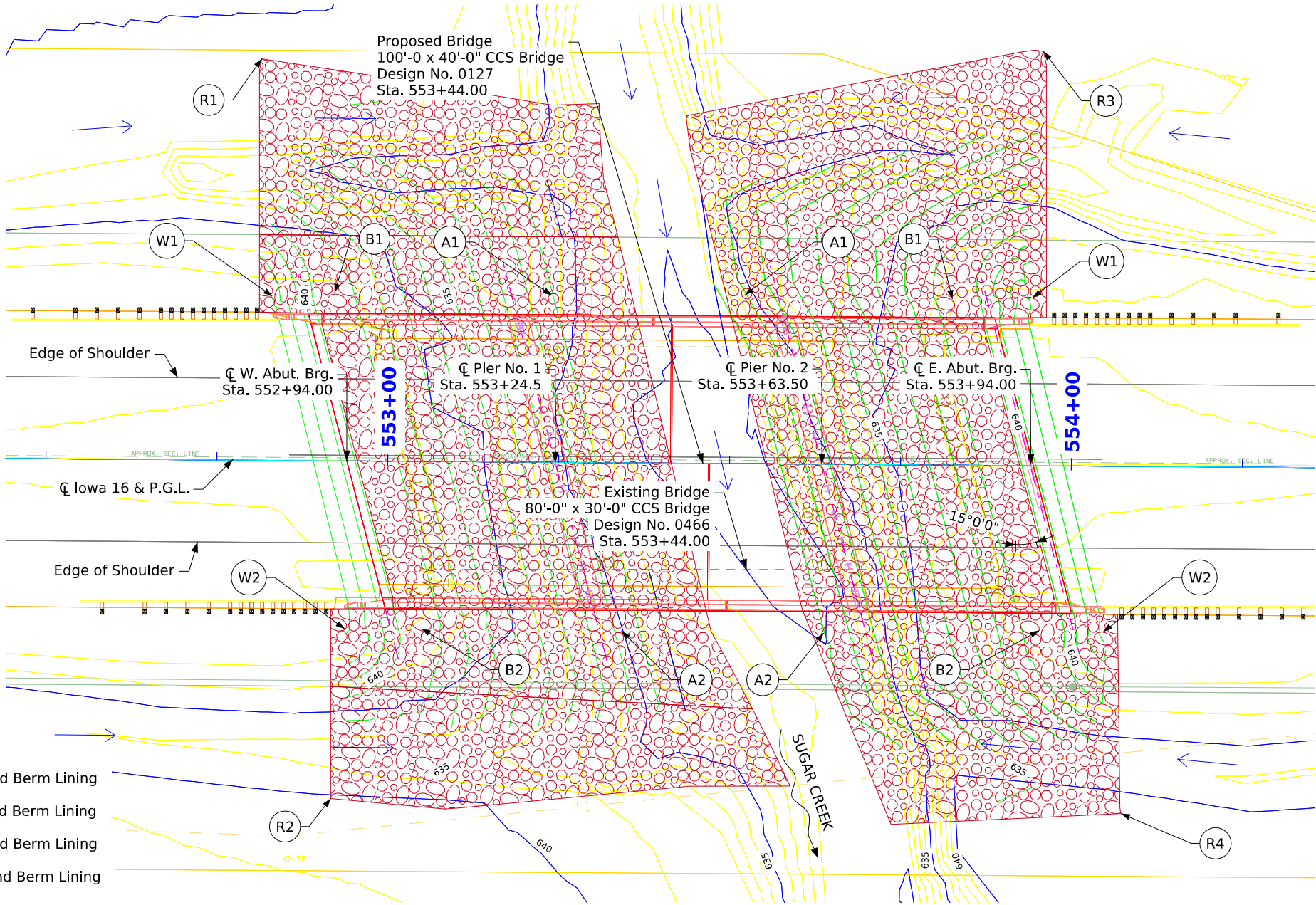
Utilities shown on this sheet are for information only. See Road Design sheets for utility information.

General Utility Symbols:

- T1 - Buried Tele. Cable, Windstream Communications (WINA)
- Power Poles, Alliant Energy (ASE)

Revetment Layout:

- R1 - Sta. 552+56.15, 58.74' LT, North End Berm Lining
- R2 - Sta. 552+92.01, 49.41' RT South End Berm Lining
- R3 - Sta. 553+95.51, 60.62' LT, North End Berm Lining
- R4 - Sta. 554+07.63, 50.81' RT, South End Berm Lining



Site Plan

Design For 15° Skew (RA)

100'-0" x 40'-0" Continuous Concrete Slab Bridge

30'-6" End Slabs39'-0" Interior Span

Site Plan

STA. 553+44.00 (IA 16)December 2024

Lee County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0127Design Sheet No. 2 of 2FHWA No. 033311

CROSS SECTION VIEW COLOR LEGEND			
Design Color No.	Feature	Design Color No.	Feature
Aggregate		Grading	
(64)	Choke Stone	(8)	Behind Curb Cut
(42)	Engineering Fabric	(6)	Granular
(8)	Flooded Backfill	(13)	Granular Back Fill
(92)	Macadam Stone	(48)	Rock Undercut
(20)	Modified	(8)	Shoulder Earth Fill
(12)	Plowing Shaping	(2)	Side Slopes
(14)	Porous Backfill	(226)	Side Slopes Dressing
(8)	Revetment Class A	Substrata	
(6)	Revetment Class B	(128)	Boulder
(62)	Revetment Class C	(209)	Boulder Removed
(188)	Revetment Class D	(48)	Broken Weathered
(28)	Revetment Class E	(210)	Broken Weathered Removed
(12)	Shoulder Special Backfill	(3)	Core Out
(12)	Special Backfill	(115)	Core Out Remove Only
(20)	Subbase	(195)	Core Out Remove and Replace
(20)	Subbase Lower	(203)	Existing Pavement
(20)	Subbase Upper	(184)	Existing Pavement Remove Only
(118)	Subgrade Treatment	(200)	Existing Pavement Remove and Replace
Asphalt		(6)	Loam
(207)	HMA Base Course	(211)	Loam Removed
(207)	HMA Interim Course	(80)	Rock
(207)	HMA Surface Course	(212)	Rock Removed
Bridge		(4)	Select Sand
(0)	Bridge	(214)	Select Sand Removed
Concrete		(3)	Shale
(0)	Barrier Concrete	(215)	Shale Removed
(0)	Barrier Concrete Footing	(10)	Topsoil
(0)	Curb Gutter	(2)	Topsoil Remove Only
(48)	Flowable Mortar	(4)	Topsoil Remove and Replace
(0)	Median Concrete	Unsuitable / Waste	
(0)	PCC Pavement	(3)	Unsuitable Type A
(0)	Sidewalk	(216)	Unsuitable Type A Removed
Existing		(13)	Unsuitable Type B
(0)	Existing Pavement	(217)	Unsuitable Type B Removed
Shoulder		(11)	Unsuitable Type C
(209)	Shoulder HMA	(218)	Unsuitable Type C Removed
(0)	Shoulder PCC	(3)	Waste
(6)	Shoulder Granular	(219)	Waste Removed
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		

NOTES:

Text

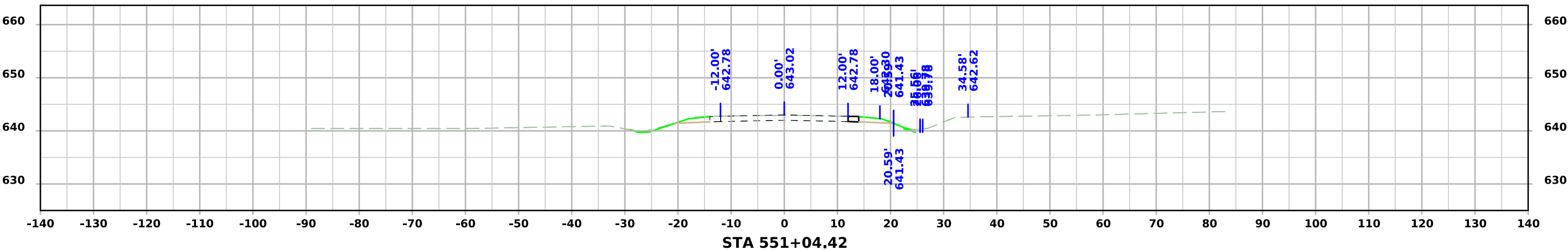
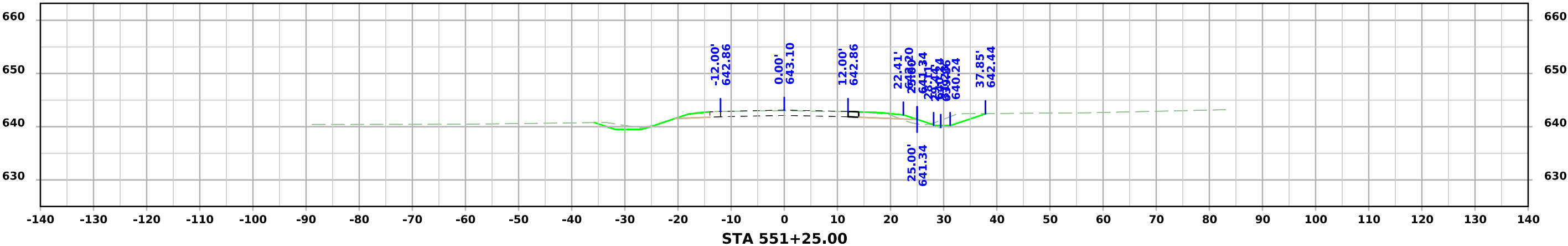
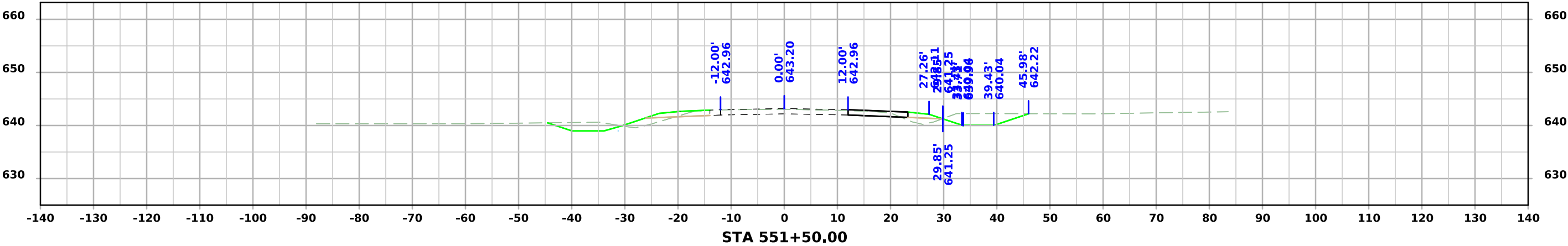
NOTES:

Text

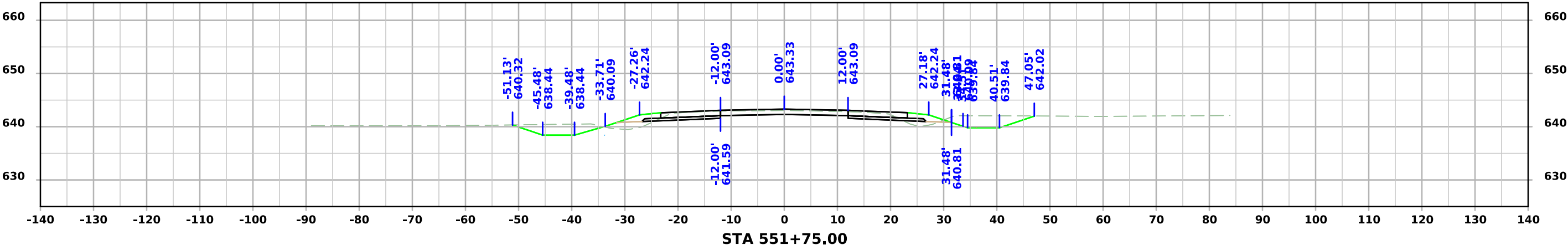
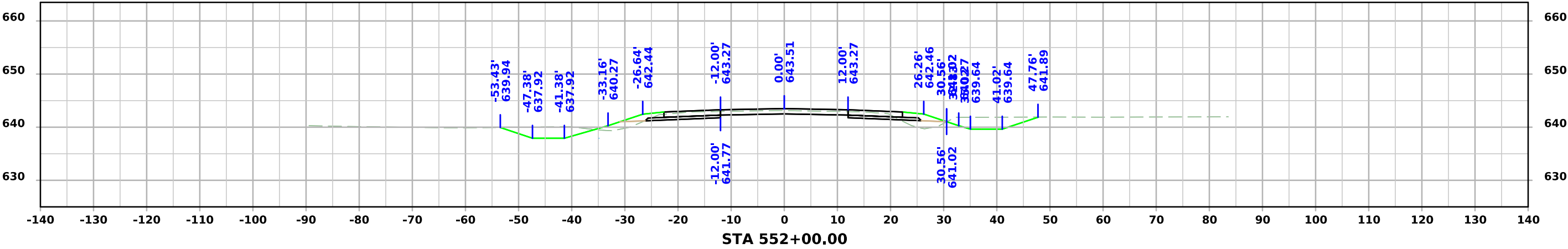
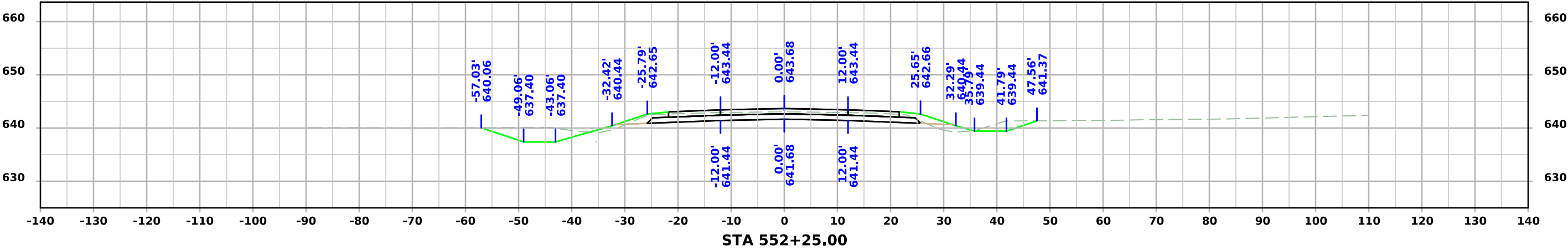
CROSS SECTIONS
LEGEND AND INFORMATION SHEET

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

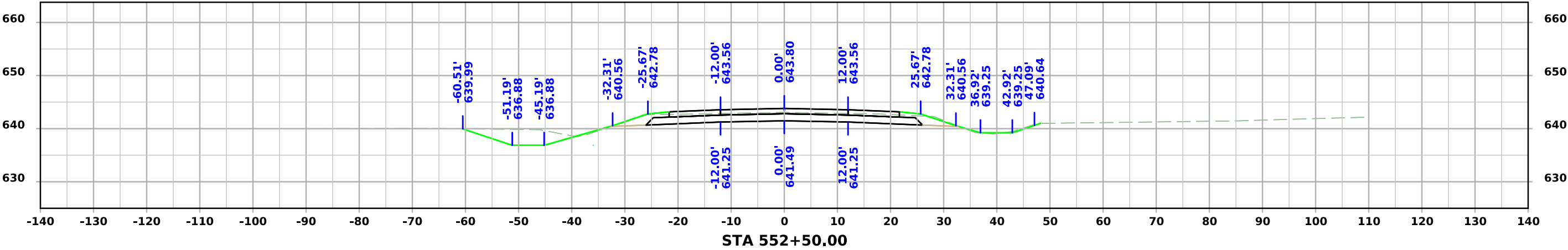
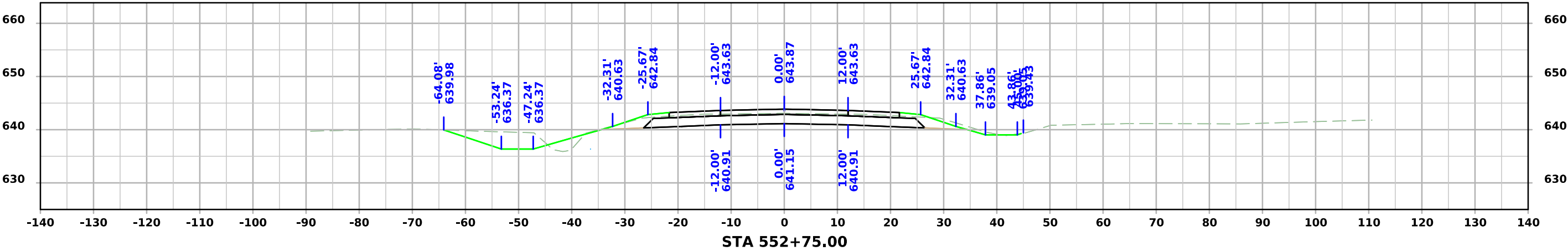
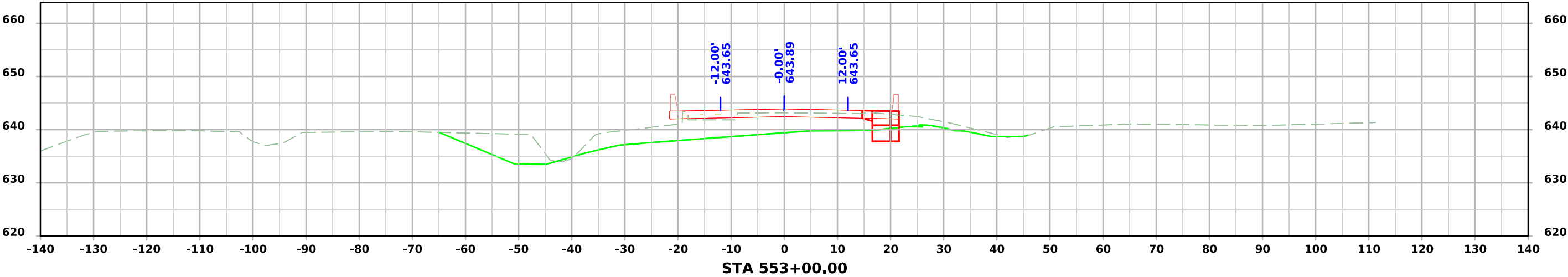
ML - IA 16



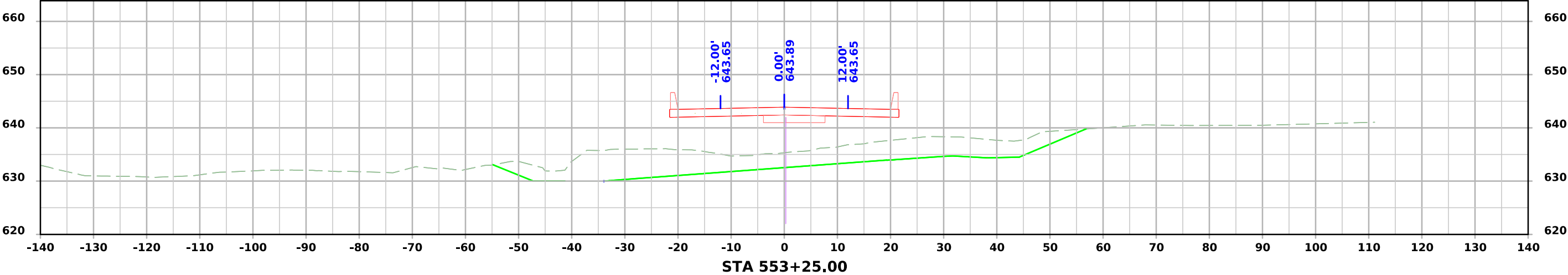
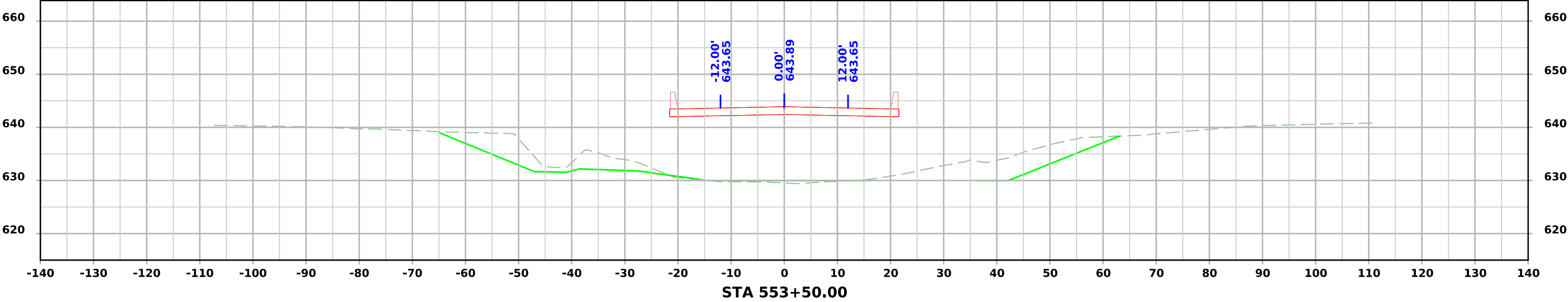
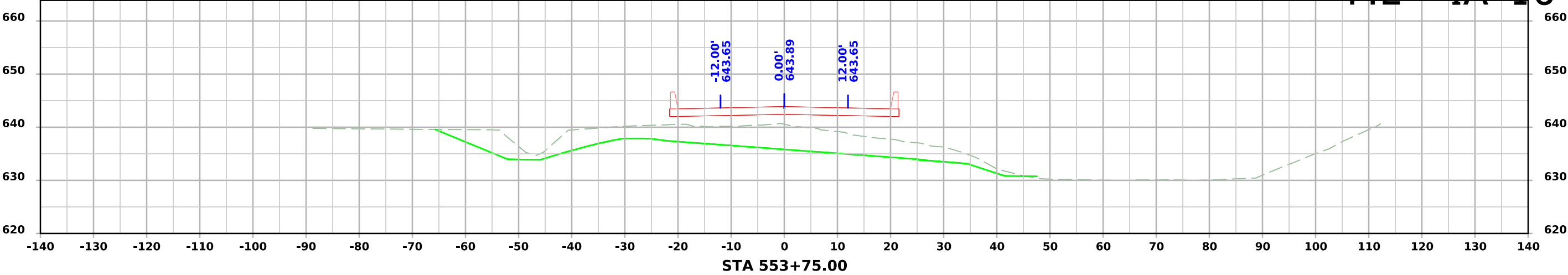
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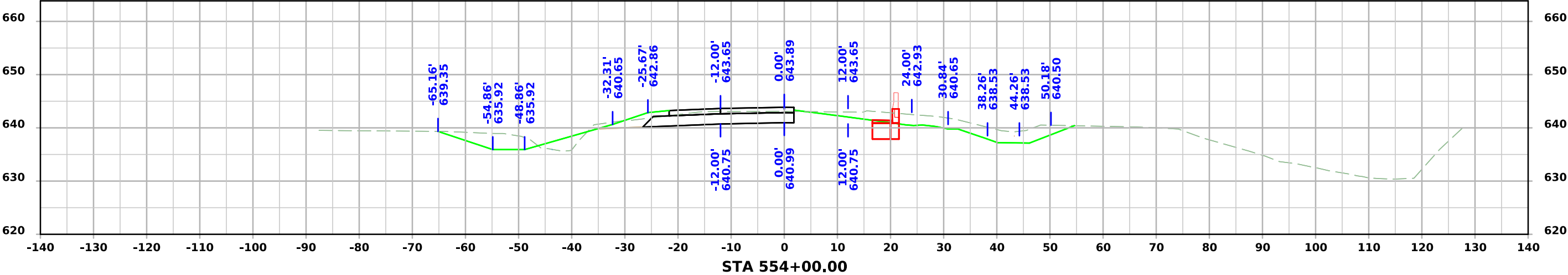
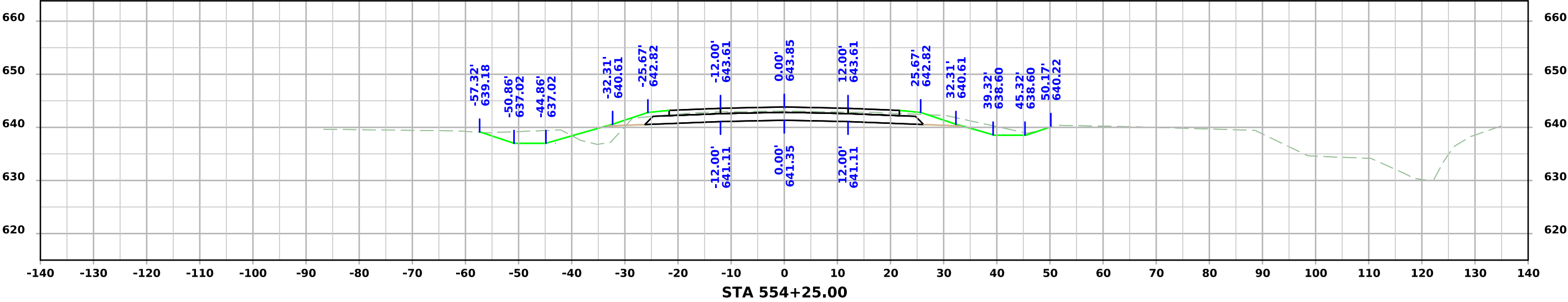


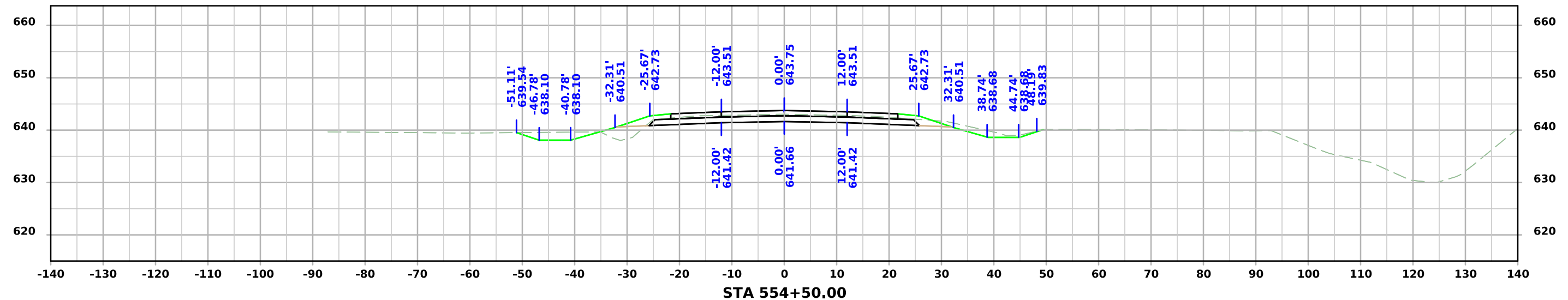
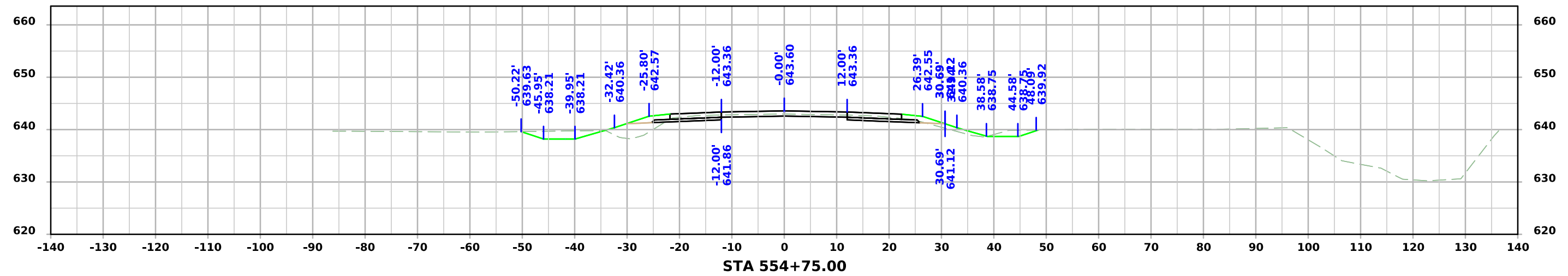
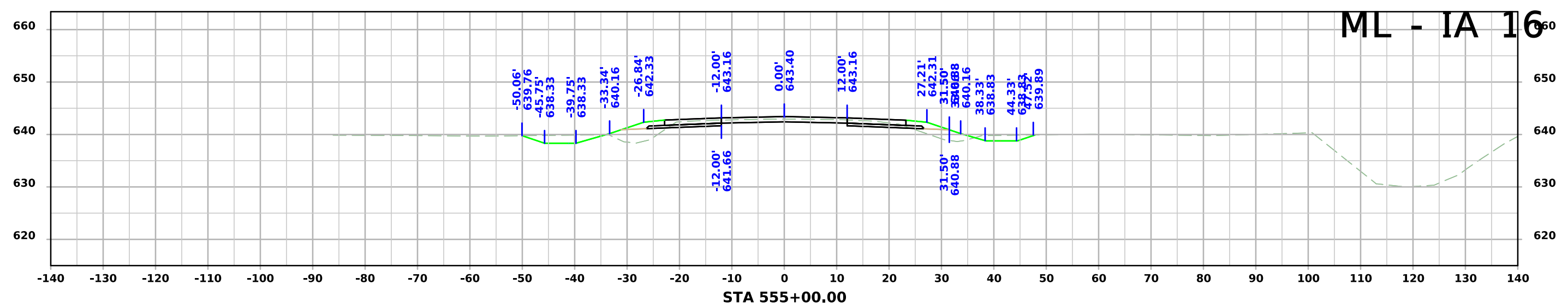
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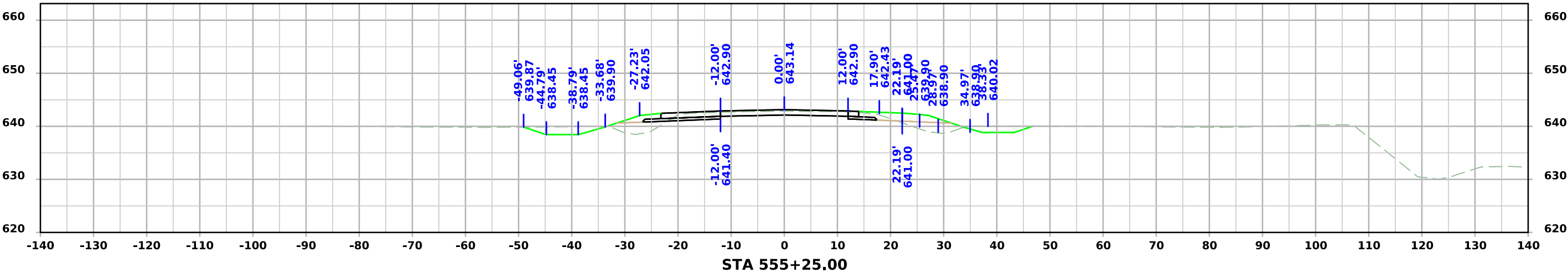
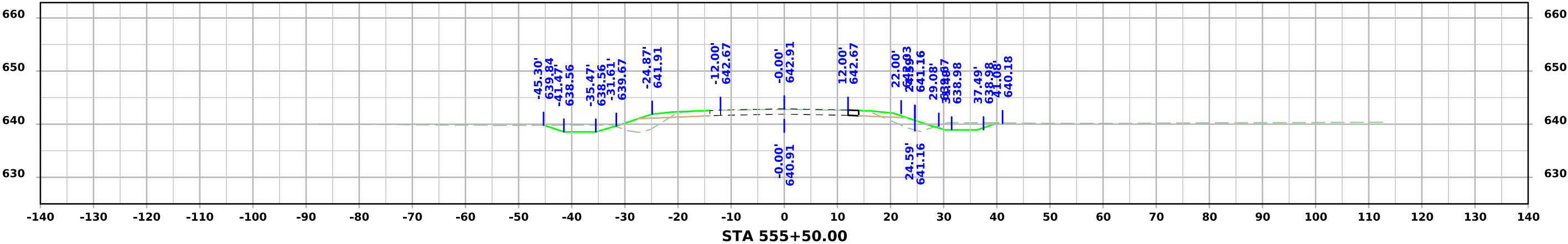
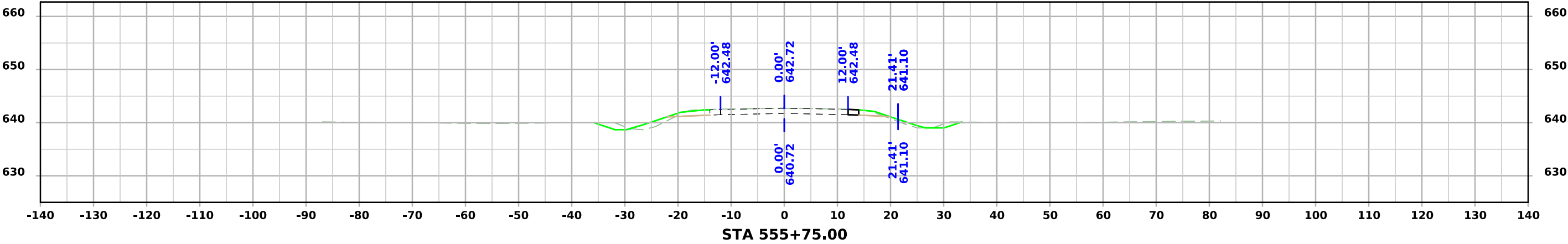
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