

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	Typical Cross Sections and Details
D Sheets	Mainline Plan and Profile Sheets
* D.1	Legend & Symbol Information Sheet
* D.2	Plan & Profile
G Sheets	Survey Sheets
G.1 - 3	Reference Ties and Bench Marks
G.4	Survey Alignments
G.5	Alignment Coordinates
J Sheets	Traffic Control and Staging Sheets
* J.1	Detour Plan
V Sheets	Bridge and Culvert Situation Plans
V.1	Situation Plan
V.2	Situation Plan - Misc.
V.3	Situation Plan - Site
W Sheets	Mainline Cross Sections
* W.1	Cross Sections Legend & Symbol Information Sheet
* W.2 - 8	Mainline Cross Sections
	* Color Plan Sheets



PLANS OF PROPOSED IMPROVEMENT ON THE
PRIMARY ROAD SYSTEM
WOODBURY COUNTY
BRIDGE REPLACEMENT - PCCB
IA 175 over Reynolds Creek 1.6 mi W of Co Rd L37

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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



REVISIONS

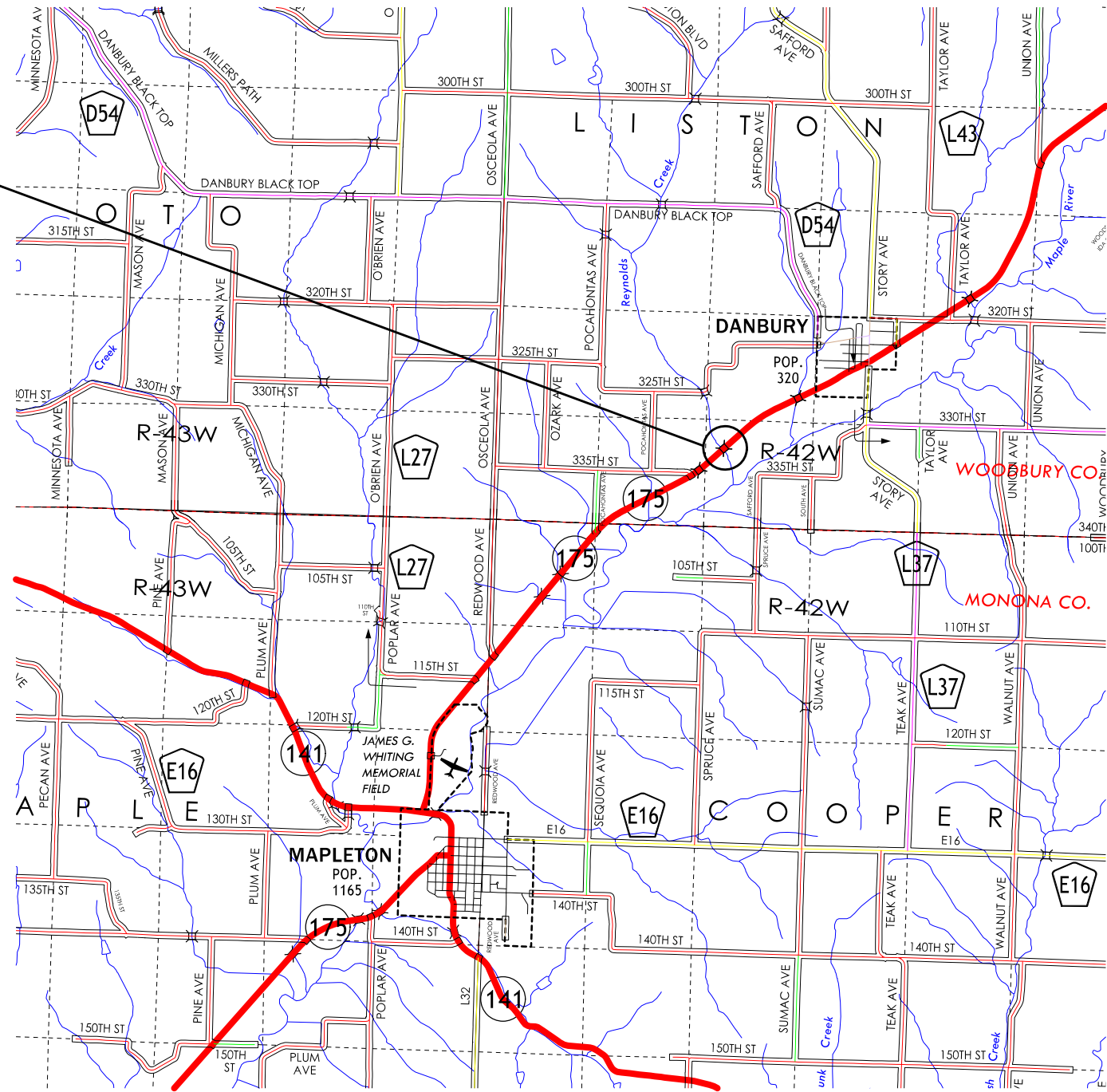
	TOTAL
	22
PROJECT IDENTIFICATION NUMBER	
20-97-175-010	
PROJECT NUMBER	
BRF-175-2(009)--38-97	
R.O.W. PROJECT NUMBER	

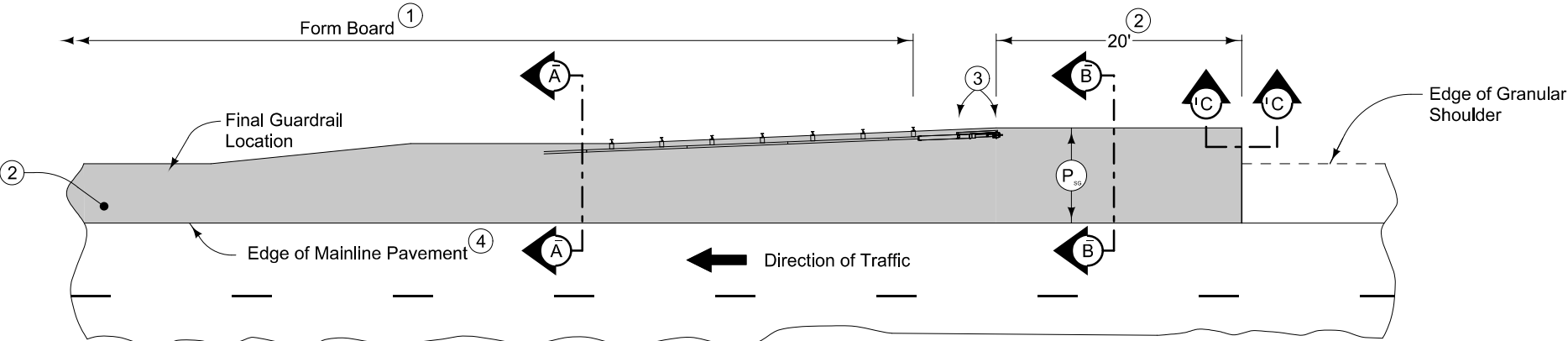
PRELIMINARY PLANS

Subject to change by final design.

D5 PLAN - 11/1/2024

PROJECT LOCATION
Existing FHWA# 53360





PLAN VIEW

7156
10-20-20

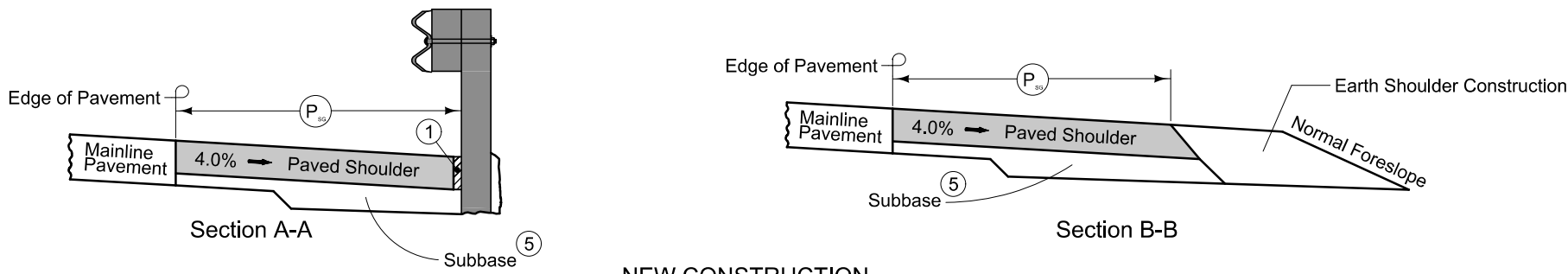
9" HMA Paved Shoulder at guardrail. 8" PCC may be substituted with the following jointing layout:

Match mainline pavement joint spacing. When mainline pavement is 8" or greater in thickness, place additional transverse 'C' joints in shoulder at mid-panel of the mainline pavement. Place longitudinal 'C' joint at P/2 from edge of mainline pavement when P is greater than 10' wide. Terminate longitudinal joint at transverse joint less than 10' in length.

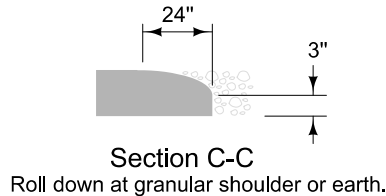
Compaction of HMA is required to face of guardrail post. Hand compaction will be allowed under guardrail. Removal and reinstallation of guardrail will be allowed with no additional payment.

Refer to Tabulation 112-9 for shoulder quantities.

- ① PCC option only: When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown.
- ② Continue paved shoulder 20 feet beyond the center of the first post.
- ③ Shoulder may be notched for first 2 posts or post sleeves may be installed through pavement. Do not drive posts through pavement.
- ④ 'KT-1 joint for PCC shoulder. 'B' joint for HMA shoulder.
- ⑤ Refer to other details in the plan.



NEW CONSTRUCTION



PAVED SHOULDER AT GUARDRAIL
(GRANULAR SHOULDER ADJACENT TO MAINLINE)

SURVEY SYMBOLS

	Interstate Highway Symbol		Septic Tank
	U.S. Highway Symbol		Cistern
	Iowa Highway Symbol		L.P. Gas Tank (No Footing)
	County Road Highway Symbol		Underground Storage Tank
	Evergreen Tree		Latrine
	Deciduous Tree		Satellite TV Dish
	Fruit Tree		Water Hook Up
	Shrub (Bushes)		Radio Tower
	Timber		Tower Anchor
	Hedge		Guardrail (Beam or Cable)
	Stump		Guard Post (one or two)
	Swamp		Guard Post (over two)
	Rock Outcrop		Filler Pipe
	Broken Concrete		Gas Valve
	Revetment (Rip Rap)		Water Valve
	Cemetery		Speed Limit Sign
	Grave		Mile Marker Post
	Cave		SIGN Sign
	Sink Hole		TCB Traffic Signal Control Box
	Board Fence		RRB Rail Road Signal Control Box
	Chain Link or Security Fence		TSB Telephone Switch Box
	Wire Fence		Electric Box
	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)		

UTILITY LEGEND

— F02 — — —
— T2 — — —

CENTURYLINK
Sadie Hull
918-547-0247
sadie.hull@lumen.com

— F0 — — —

LONG LINES BROADBAND
Miles Patton
712-271-5550
miles.patton@longlines.biz

MIDAMER-ELEC
Gerald Rickabaugh
712-277-7476
gerald.rickabaugh@midamerican.com

MIDAMER-GAS
Gerald Rickabaugh
712-277-7476
gerald.rickabaugh@midamerican.com

— F03 — — —

MIDAMER-FIBER
Telecom On Call
515-281-2313
telecomoncall@midamerican.com

TEKSTAR COMMUNICATIONS INC
Steve Hoffman
218-346-8887
steve.hoffman@arvig.com

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.
Lavender	(9)	 Temporary Pavement Shading
Yellow	(4)	 Proposed Pavement Shading
Orange	(6)	 Proposed Granular Shading
Orange	(70)	 Proposed Shoulder Granular Shading
Yellow	(68)	 Proposed Shoulder Paved Full Depth Shading
Yellow	(132)	 Proposed Shoulder Paved Partial Depth Shading
Gray, Dark	(112)	 Proposed Grade and Pave Shading "In conjunction with a paving project"
Brown, Light	(236)	 Grading Shading
Orange, Light	(134)	 Proposed Granular Entrance Shading
Yellow	(220)	 Proposed Paved Entrance Shading
Tan	(8)	 Proposed Sidewalk Shading
Blue, Light	(230)	 Proposed Sidewalk Landing Shading
Pink	(11)	 Proposed Sidewalk Ramp Shading
Green, Light	(225)	 Existing Pavement Shading
Red	(3)	 Proposed Structure Shading
Red	(3)	 Delineates Restricted Areas

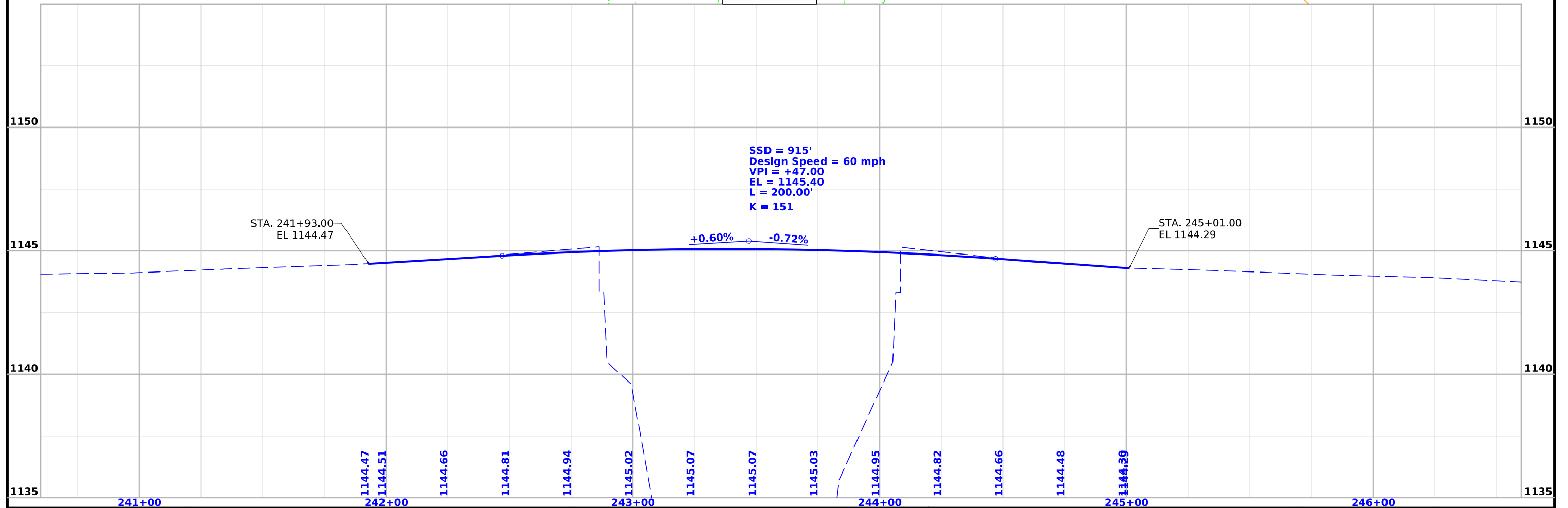
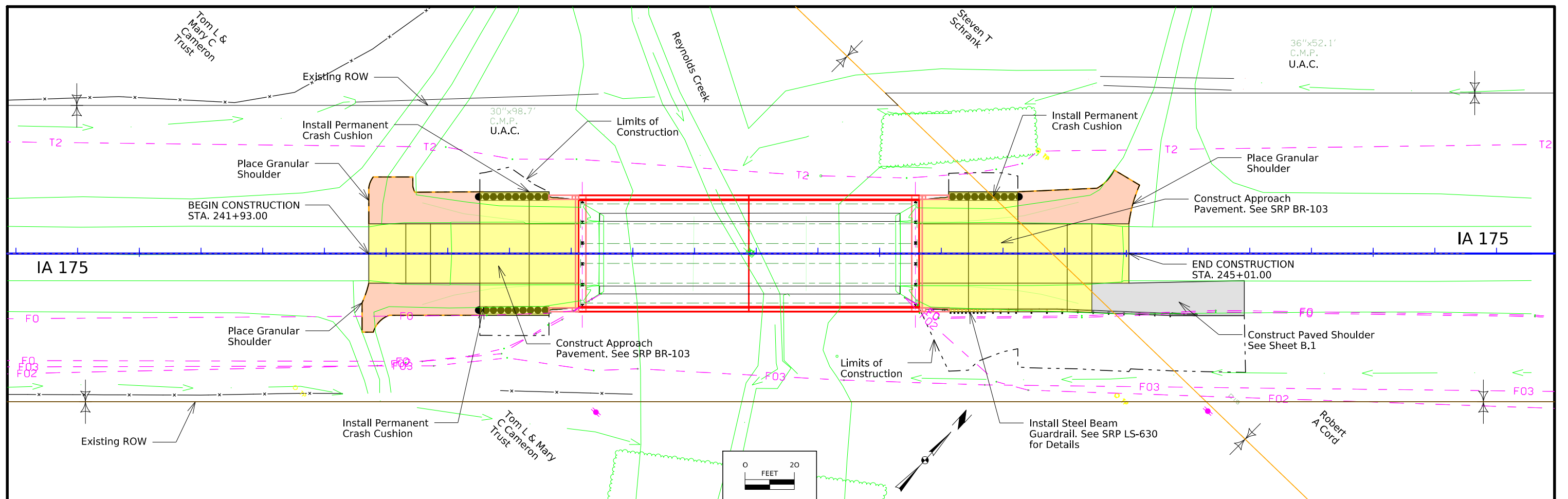
PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

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		Proposed Right-of-Way
	Station		Existing Right of Way
	Section Corner		Existing and Proposed Right-of-Way
	Ground Line Intercept		Easement and Existing Right-of-Way
	Saw Cut		Easement (Temporary)
	Guardrail		Easement
	Trench Drain		Access Control
	HighTension Cable Guardrail		Property Line
	Sheet Pile		

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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



Survey Information

SURVEY INDEX

Woodbury County
BRF-175-2(009)--38-97
Reynolds Creek 1.6 mi W of Co Rd L37
PIN: 20-97-175-010
Type of Work: Bridge
Project Directory: 9717501020
SAP: 868.1

Survey Personnel

Clayton Henningsen – Survey Party Chief
Jason Arn – Survey Party Chief

Date(s) of Survey

Begin Date 08/08/2023
End Date 02/17/2024

General Information

This survey is for IA Hwy 175 at Reynolds Creek bridge 1.6 mi west of county road L37.
This survey request was for the IA Hwy 175 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.

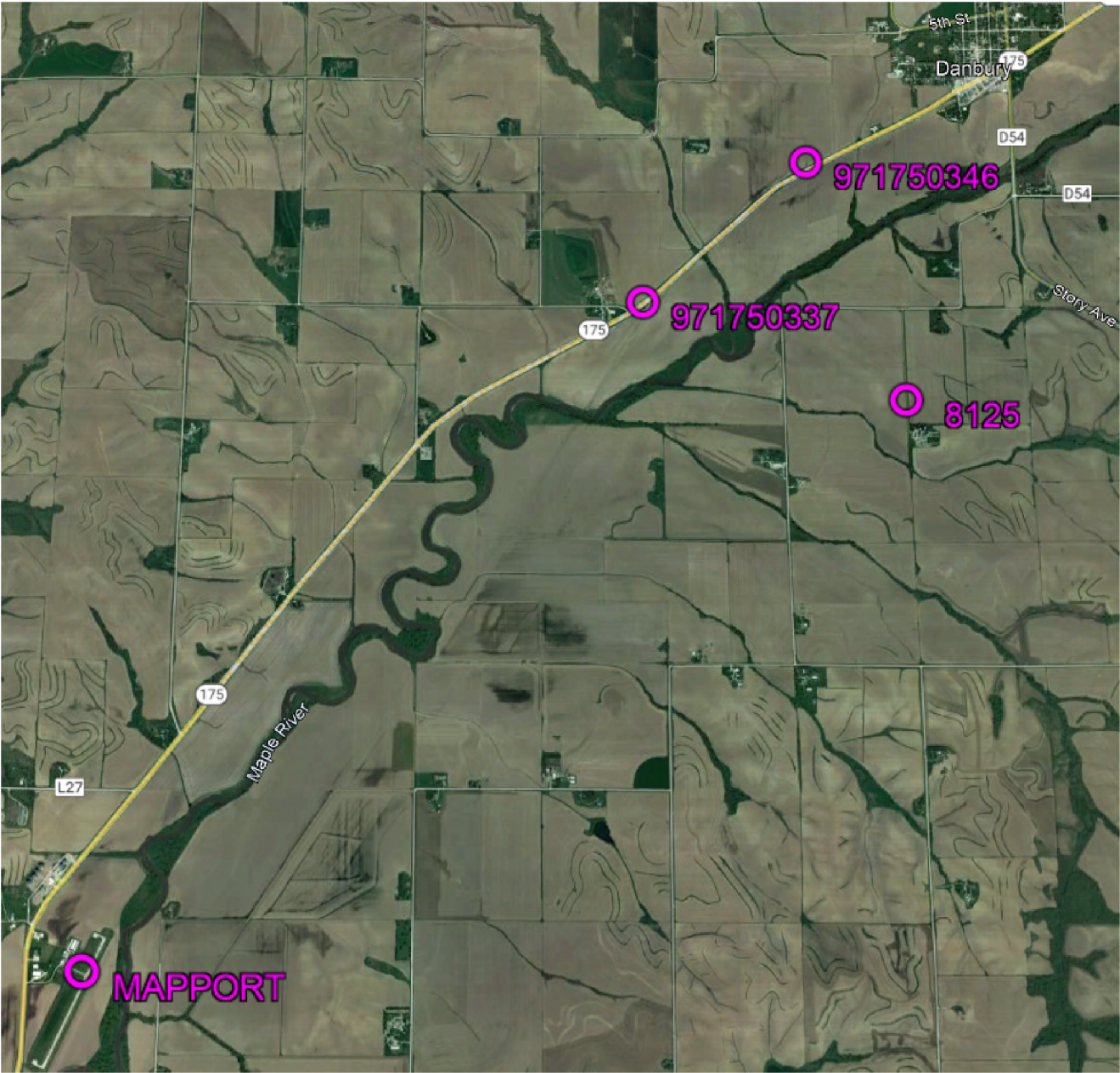
PROJECT DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 ADJUSTMENT)
COORDINATE SYSTEM: IOWA REGIONAL COORDINATE SYSTEM ZONE 04
(U.S. SURVEY FOOT)
VERTICAL DATUM: NAVD88
GEOID MODEL: 2018u3

Alignment Information

The horizontal alignment for IA Hwy 175 has been provided by the district 3 survey
office.

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.



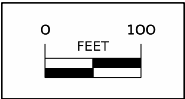
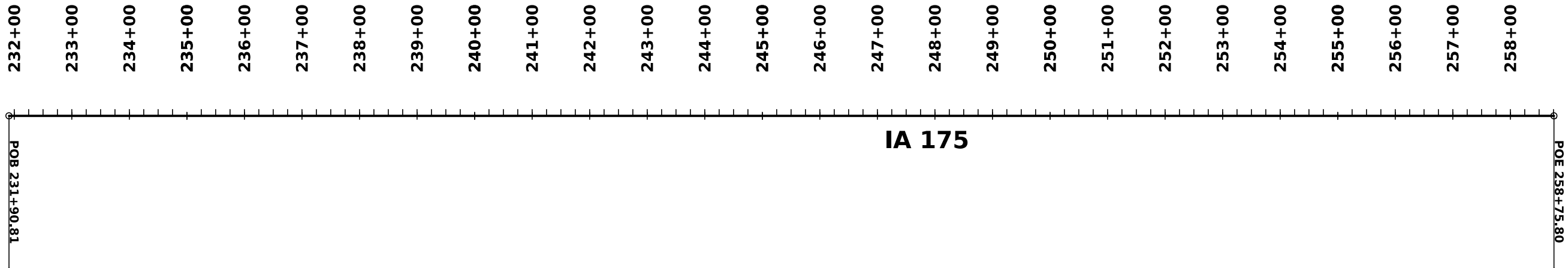
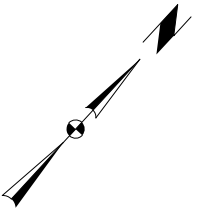
HORIZ. DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 Adjustment) - Iowa RCS Zone 04 (U.S. Survey Foot)

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.

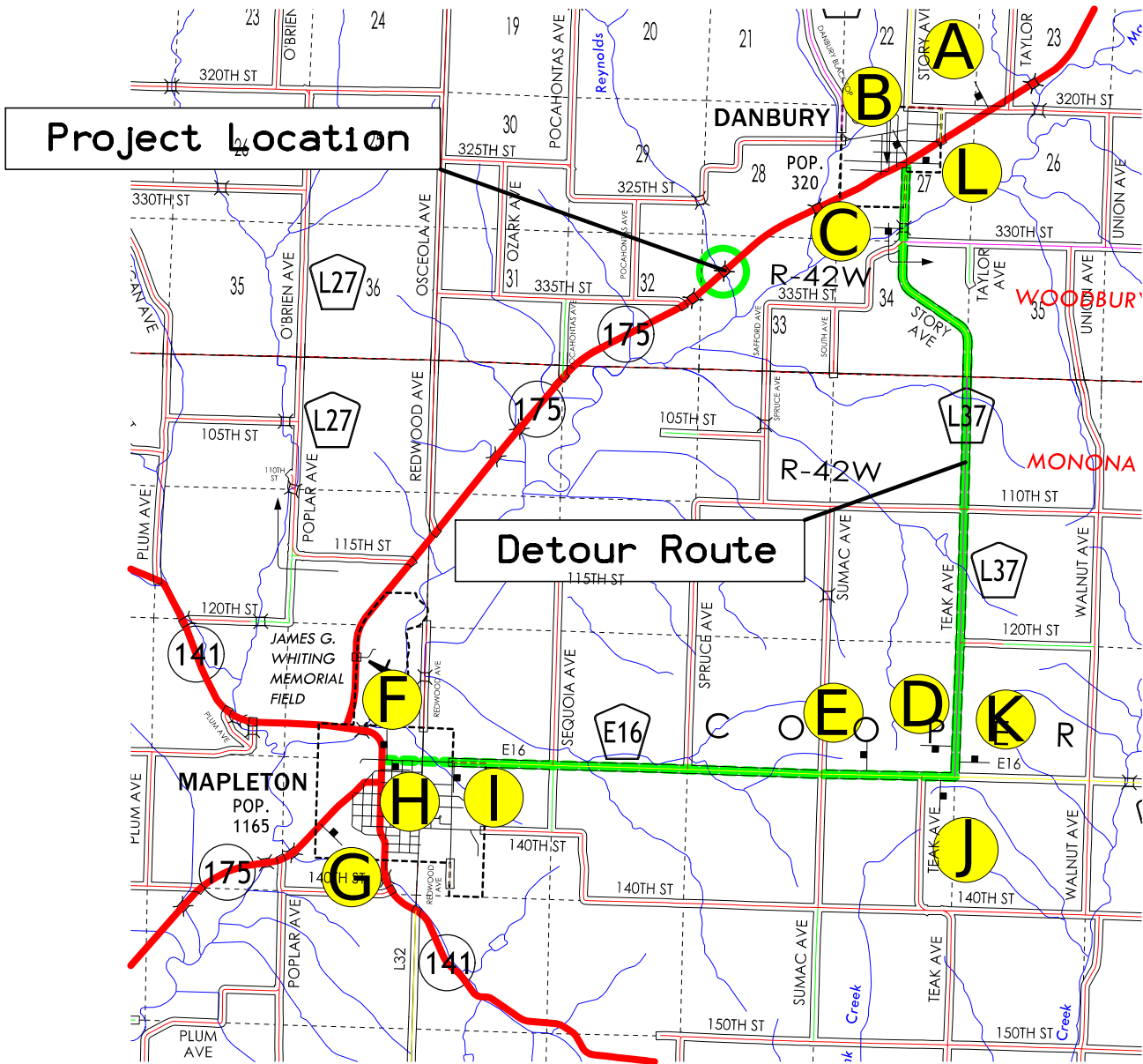
HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING
HORIZ. DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 Adjustment)
Ia. Regional Coordinate System Zone 04 (U.S. Survey Foot)
VERT. DATUM: NAVD88
Geoid Model: 2018u3

<u>Point Name</u>	<u>Northing</u>	<u>Easting</u>	<u>Elevation</u>	<u>Feature Definition-Description</u>
8125	8484299.16	14257298.73	1196.43	CP WOODBURY CO MONUMENT AS DESCRIBED IN GOOD CONDITION
971750337	8486713.73	14251639.34	1142.60	CP SET FENO MONUMENT EAST EDGE FIELD ENT ON S. SIDE IA 175 APPROX. 350 FT EAST INTERSECTION IA 175 & 335TH ST
971750346	8489919.34	14255377.65	1138.91	CP SET FENO MONUMENT ON N. SIDE IA 175 NEAR ROW POST APPROX. 1 MILE WEST OF D54
MAPPORT	8472597.31	14239857.37	1114.43	CP NGS MONUMENT AS DESCRIBED IN GOOD CONDITION



**IA 175
SURVEY ALIGNMENT**

ALIGNMENT COORDINATES																				101_16 1/17/24
Line No.	Name	Location	Poin on Tangent Station	Point on Tangent Y Northing	Point on Tangent X Easting	Begin Spiral Station	Begin Spiral Y Northing	Begin Spiral X Easting	Begin Curve Station	Begin Curve Y Northing	Begin Curve X Easting	Simple Curve PI or Master PI Station	Simple Curve PI or Master PI Y Northing	Simple Curve PI or Master PI X Easting	End Curve Station	End Curve Y Northing	End Curve X Easting	End Spiral Station	End Spiral Y Northing	End Spiral X Easting
1.0	SURML175A	IA 175	231+90.85	8487154.289	14252135.249															
2.0	SURML175A	IA 175	258+75.85	8488971.030	145254112.276															

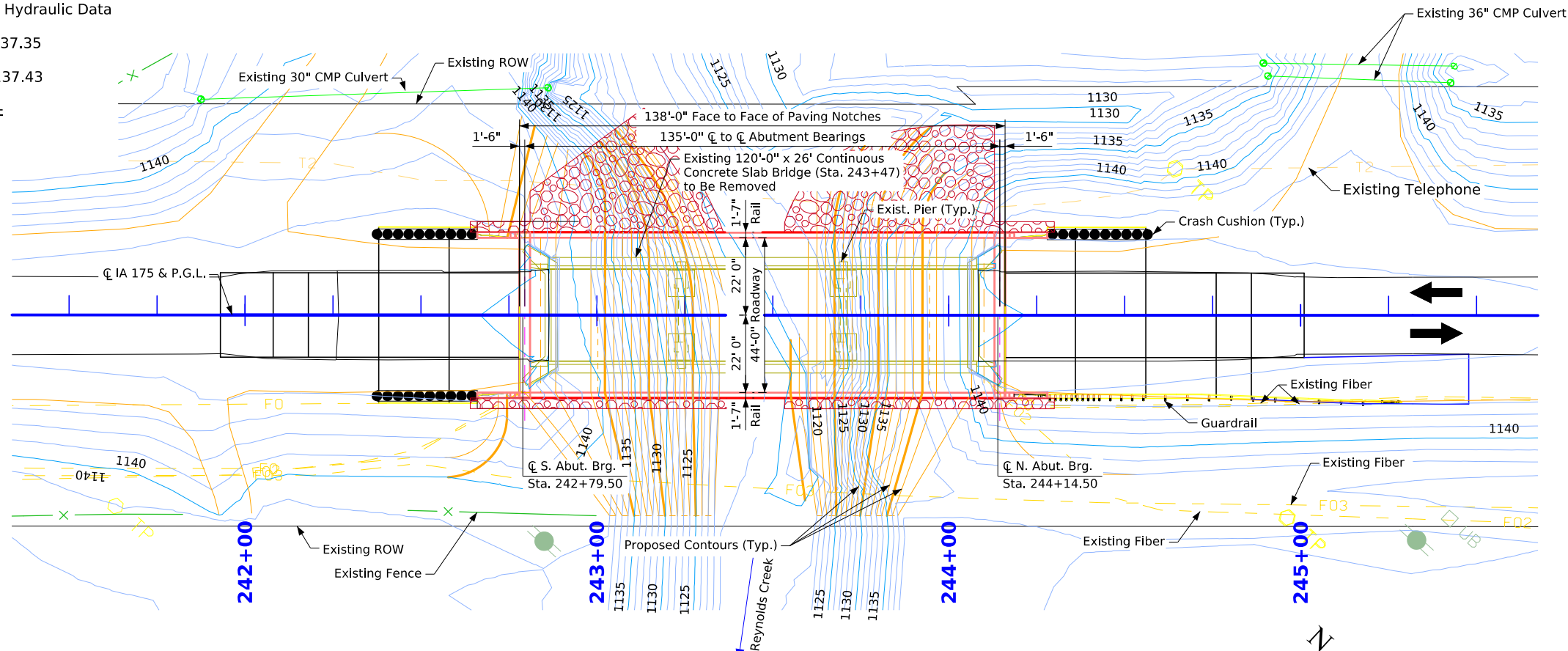
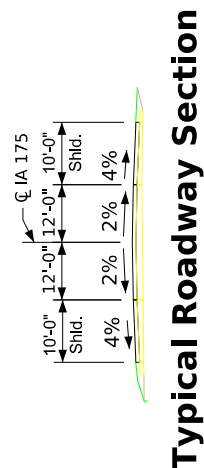


A DETOUR M4-3, 24" X 12" WEST M3-1, 24" X 12" 175 M1-4, 24" X 24" ↑ M5-1R, 21" X 15"	B DETOUR M4-3, 24" X 12" WEST M3-1, 24" X 12" 175 M1-4, 24" X 24" ↶ M5-1R, 21" X 15"	C DETOUR M4-3, 24" X 12" WEST M3-1, 24" X 12" 175 M1-4, 24" X 24" ↑ M5-1R, 21" X 15"	D DETOUR M4-3, 24" X 12" WEST M3-1, 24" X 12" 175 M1-4, 24" X 24" ↷ M5-1R, 21" X 15"
E DETOUR M4-3, 24" X 12" WEST M3-1, 24" X 12" 175 M1-4, 24" X 24" ↑ M5-1R, 21" X 15"	F END DETOUR M4-8A, 24" X 18" WEST M3-1, 24" X 12" 175 M1-4, 24" X 24"	G DETOUR M4-3, 24" X 12" EAST M3-1, 24" X 12" 175 M1-4, 24" X 24" ↑ M5-1R, 21" X 15"	H DETOUR M4-3, 24" X 12" EAST M3-1, 24" X 12" 175 M1-4, 24" X 24" ↷ M5-1R, 21" X 15"
I DETOUR M4-3, 24" X 12" EAST M3-1, 24" X 12" 175 M1-4, 24" X 24" ↑ M5-1R, 21" X 15"	J DETOUR M4-3, 24" X 12" EAST M3-1, 24" X 12" 175 M1-4, 24" X 24" ↶ M5-1R, 21" X 15"	K DETOUR M4-3, 24" X 12" EAST M3-1, 24" X 12" 175 M1-4, 24" X 24" ↑ M5-1R, 21" X 15"	L END DETOUR M4-8A, 24" X 18" EAST M3-1, 24" X 12" 175 M1-4, 24" X 24"

Detour Route Detail

[illegible]

Longitudinal Section Along C Bridge



2022 AADT	1,300 V.P.D.
TRUCKS	20 %

--This design is for the replacement of the existing 120'-0" x 26'-0" Concrete Slab Bridge, Woodbury County. Design 6451, FHWA No. 53360, Maint. No. 9734.0S175.

- TL-4 Bridge Railing Proposed
- Beam type - BTD
- There is a potential for conflicts with existing abutment piling. Final design to check clearance and space new abutment piling to miss existing piling.

--Top of bridge deck at centerline roadway is 0.03' below the profile grade to account for deck cross slope and parabolic crown.
--Class E revetment stone is embedded.

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

FO - Fiber Optic Line T - Telephone Line

IA 175 over Reynolds Creek
T-86N R-42W
Section 33
Liston Township
Woodbury County
FHWA No. 53360 (Existing)
FHWA No. 53361 (Proposed)
Bridge Maint. No. 9734.0S175
Latitude 42.222031°
Longitude -95.745518°

The seal is circular with a red border. The text "LICENSED PROFESSIONAL ENGINEER" is written in red, uppercase letters around the top half of the border. The text "IOWA" is written in red, uppercase letters at the bottom. In the center, the name "Brian J. Birkland" is written in red, and the license number "17375" is written below it. Two red stars are positioned on the left and right sides of the seal.

Signature Brian J. Birkland Date 10-23-2024
Brian J. Birkland

Printed or Typed Name _____

My license renewal date is December 31, _____ 2024

Pages or sheets covered by this seal: V.1-V.3

Year	Percentage change
2000	-0.10%
2001	0.00%
2002	0.10%
2003	0.20%
2004	0.30%
2005	0.60%
2006	0.30%
2007	0.00%
2008	-0.30%
2009	-0.60%
2010	-0.72%

Proposed Profile Grade & IA 175

RIDB: REYNOLDSC_WOOD_0.48
Drainage Area = 24.2 Sq. Mi.
Site Stream Slope (HGL) = 0.24% (12.7 Ft./Mi.)

Operational Low Beam = 1139.10
Channel Low Beam = 1139.29

Avg. Low Water Stage = 1183.8
Extreme Highwater = Unknown
Roadway Overtop 1142.0
Overtopping ~0.2mi. Northeast of Bridge

Q₅₀ (Design)= 5,530 cfs
Stage = 1135.58
Avg. Bridge Velocity = 6.6 fps
Operational Freeboard = 3.52 Ft.

Q₁₀₀ = 6,500 cfs
Stage = 1136.68
Backwater = 0.00 Ft.
Avg. Bridge Velocity = 6.9 fps
Operational Freeboard = 2.42 Ft.

Q₂₀₀ = 8,370 cfs
Stage = 1138.17
Backwater = 0.04 Ft.
Avg. Bridge Velocity = 7.4 fps
Operational Freeboard = 0.93 Ft.
Calculated Scour = 1118.3

Q₅₀₀ = 9,080 cfs
Stage = 1138.61
Backwater 0.07 Ft.
Avg. Bridge Velocity = 7.6 fps
Operational Freeboard = 0.49 Ft.
Calculated Scour = 1118.2

Design For 0 Degree Skew
135'-0" x 44'-0" Pretensioned
Prestressed Concrete Beam Bridge

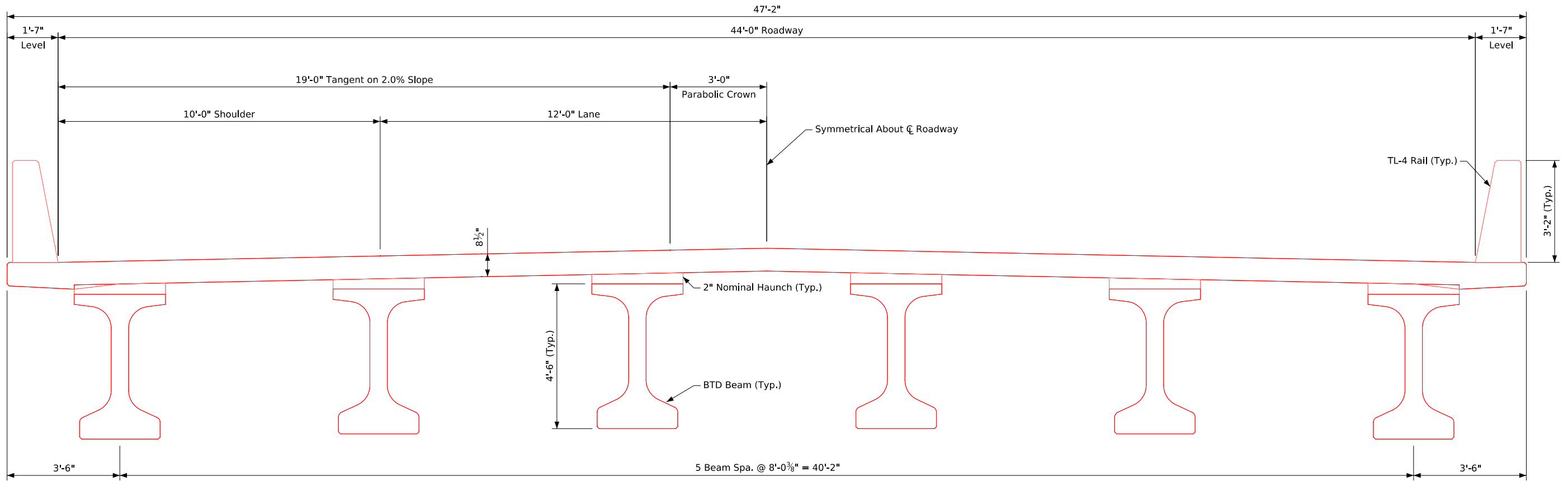
135'-0" Span

Situation Plan

STA. 243+47.00 (IA 175) Turn-in Date: October, 2024

Woodbury County

IOWA DEPARTMENT OF TRANSPORTATION
 Design No. 0125 Design Sheet No. 1 of 3 FHWA No. 053361

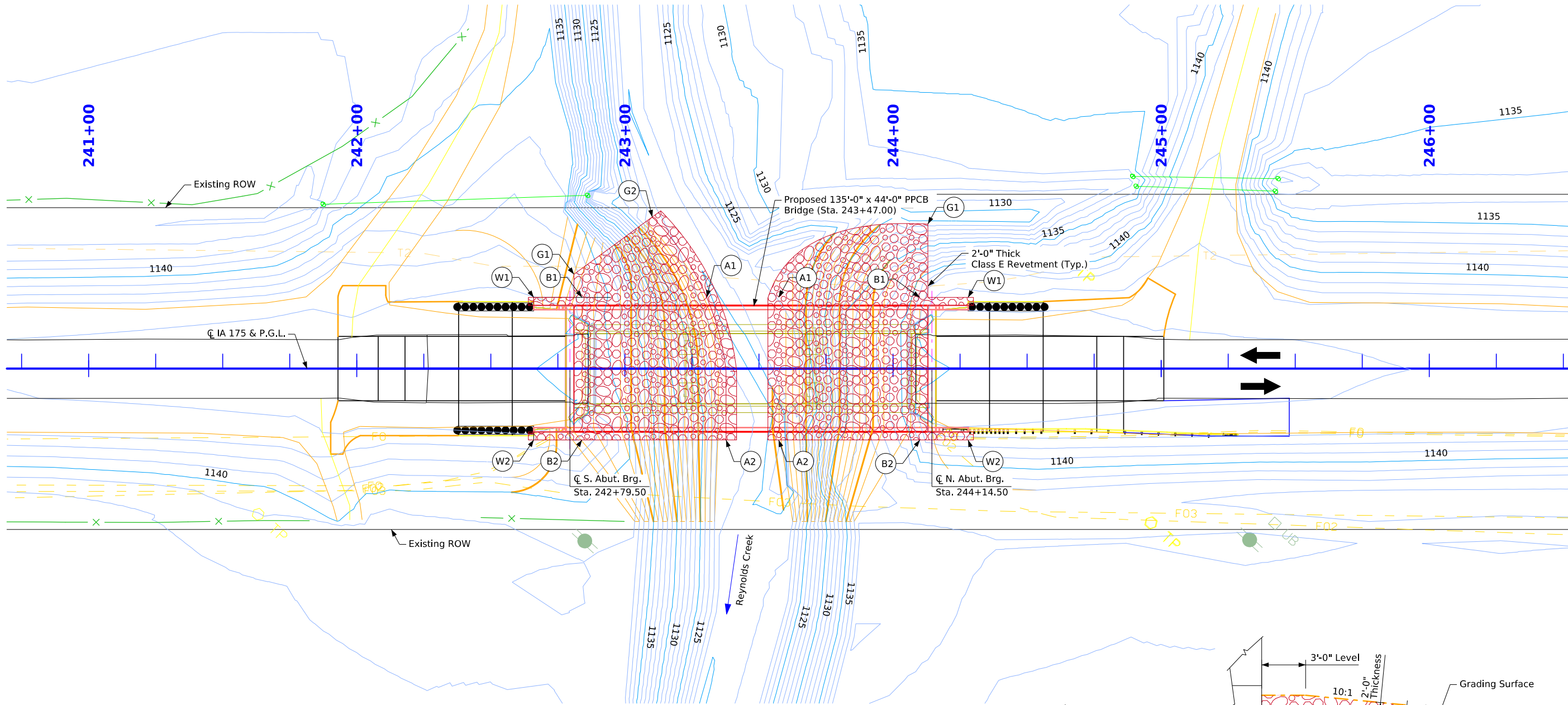


Transverse Section

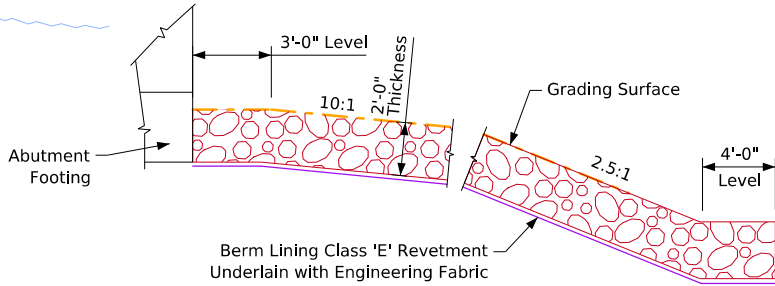
Preliminary

Design For 0 Degree Skew
**135'-0" x 44'-0" Pretensioned
Prestressed Concrete Beam Bridge**
135'-0" Span
Situation Plan - Misc.
STA. 243+47.00 (IA 175) Turn-in Date: October, 2024
Woodbury County
IOWA DEPARTMENT OF TRANSPORTATION
Design No. 0125 Design Sheet No. 2 of 3 FHWA No. 053361

Control Point: 971750337 CP SET FENO MONUMENT EAST EDGE FIELD ENT ON S. SIDE IA 175 APPROX. 350 FT EAST INTERSECTION IA 175 & 335TH ST, N=8486713.73, E=14251639.34, EL.=1142.60
971750346 CP SET FENO MONUMENT ON N. SIDE IA 175 NEAR ROW POST APPROX. 1 MILE WEST OF D54, N=8489919.34, E=14255377.65, EL.=1138.91



Site Plan



Section Thru Embedded Berm Lining
Normal to Berm Slope

Berm Slope Location Table						
Points	South Abutment			North Abutment		
	Station	Offset	Elev.	Station	Offset	Elev.
A1	243+30.52	26.58' Lt.	1120.57	243+57.33	26.58' Lt.	1122.09
A2	243+37.73	26.58' Rt.	1121.53	243+57.33	26.58' Rt.	1120.66
B1	242+84.00	26.58' Lt.	1137.43	244+10.00	26.58' Lt.	1137.35
B2	242+84.00	26.58' Rt.	1137.43	244+10.00	26.58' Rt.	1137.35
G1	242+81.00	35.18' Lt.	1139.00	244+13.00	53.90' Lt.	1130.67
G2	243+10.18	56.54' Lt.	1121.50	--	--	--
W1	242+66.00	26.58' Lt.	1144.31	244+28.00	26.58' Lt.	1144.21
W2	242+66.00	26.58' Rt.	1144.31	244+28.00	26.58' Rt.	1144.21

Berm slope elevations reflect the grading surface.

Estimated Berm Armoring Quantities			
Location	Revetment CL, E (Ton)	Engineering Fabric (SY)	CL, 10 Channel Excavation (CY)
South Berm Abutment	525.4	549.4	328.4
North Abutment Berm	561.0	584.7	350.7
Totals	1086.4	1134.1	679.1

Excavation quantity calculated from grading surface. Excavation quantity if for embedded revetment core out only, and does not include excavation to the grading surface. Excavation quantity to the grading surface is determined by Road Design and included in the Road Plans.

Preliminary

Design For 0 Degree Skew

135'-0" x 44'-0" Pretensioned Prestressed Concrete Beam Bridge

135'-0" Span

Situation Plan - Site

STA. 243+47.00 (IA 175) Turn-in Date: October, 2024

Woodbury County

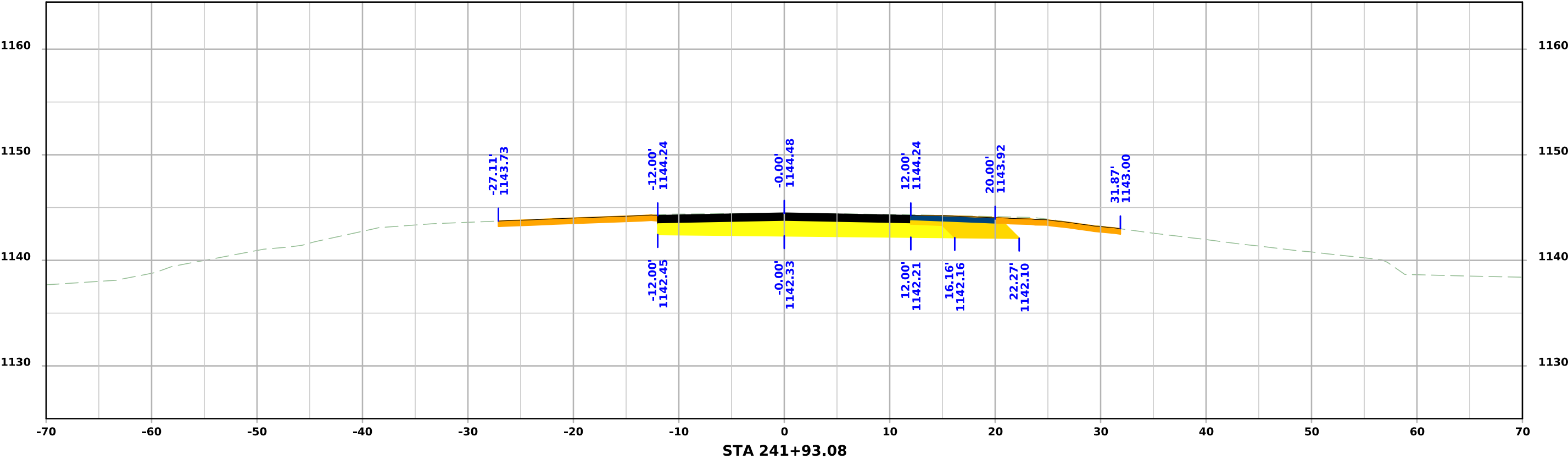
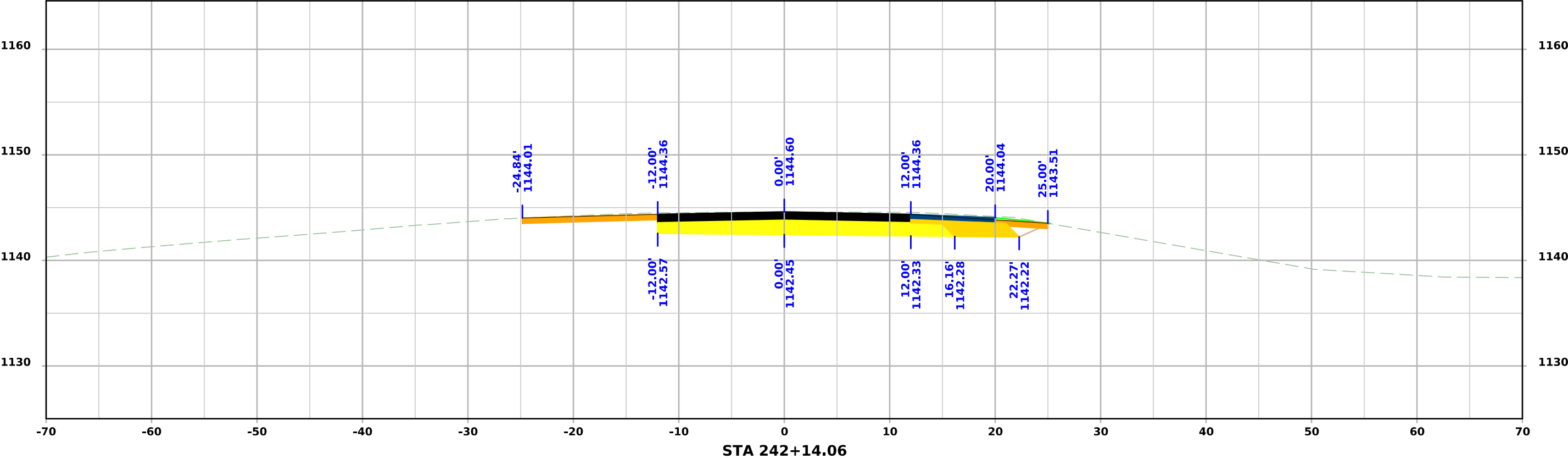
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0125 Design Sheet No. 3 of 3 FHWA No. 053361

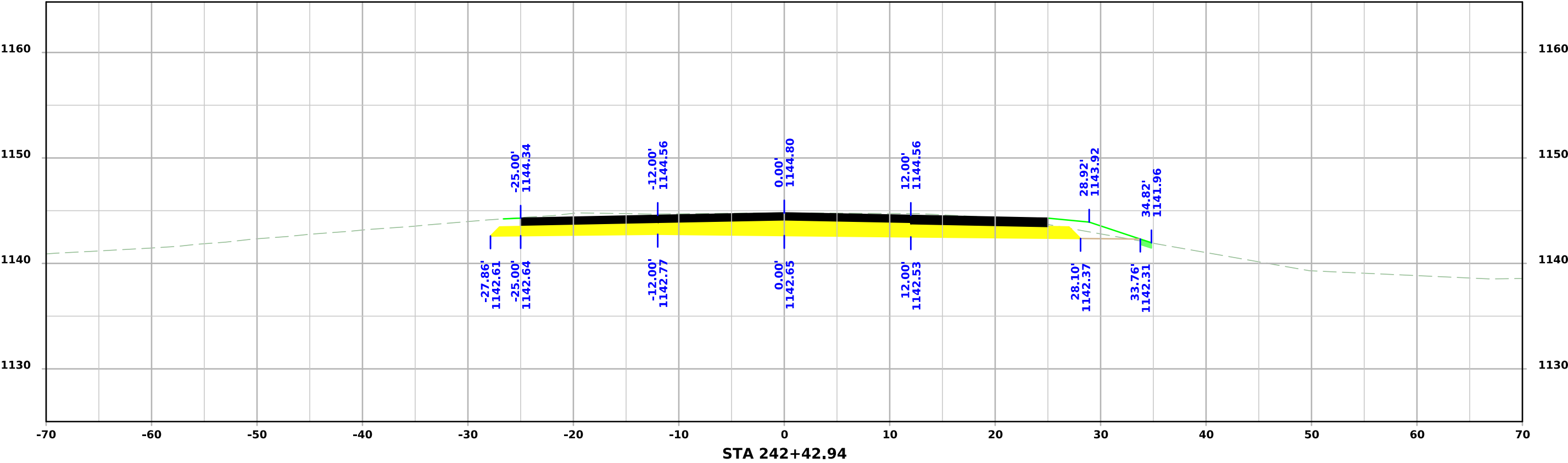
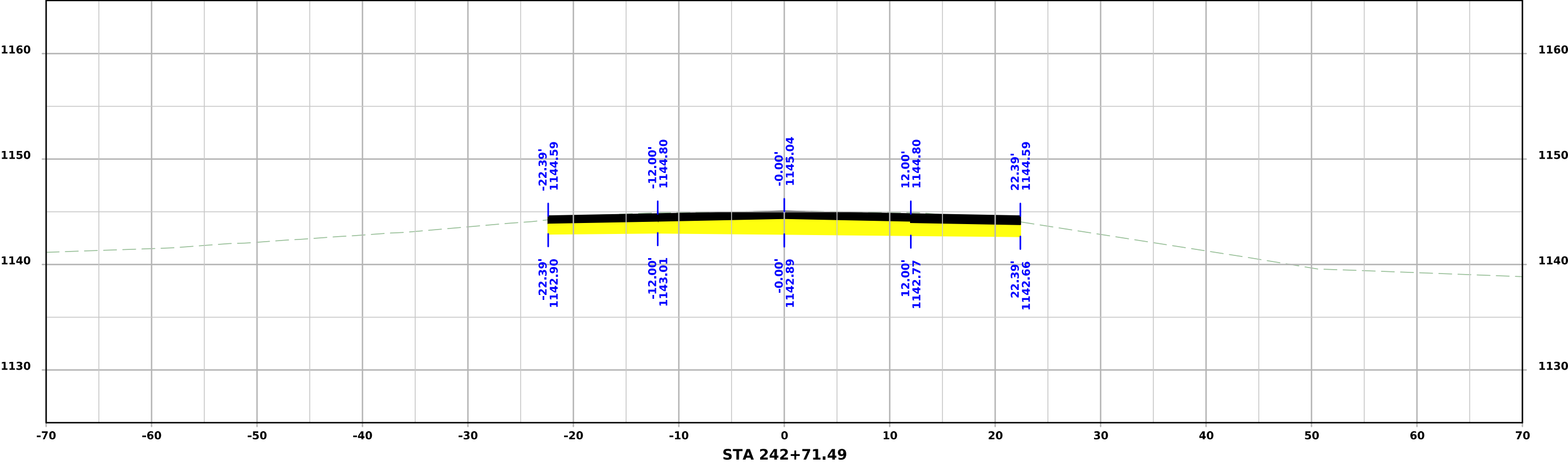
CROSS SECTION VIEW COLOR LEGEND			
Design Color No.	Feature	Design Color No.	Feature
Aggregate		Structural	
(64)	Choke Stone	(112)	Noise Wall
(42)	Engineering Fabric	(112)	Noise Wall Footing
(8)	Flooded Backfill	(112)	Retaining Wall Back
(92)	Macadam Stone	(112)	Retaining Wall Back Excavate
(20)	Modified	(112)	Retaining Wall Face
(12)	Plowing Shaping	(112)	Retaining Wall Front Excavate
(14)	Porous Backfill	(112)	Retaining Wall Front Footing
(8)	Revetment Class A	(112)	Retaining Wall MSE Gutter
(6)	Revetment Class B	(112)	Retaining Wall Reinforced Earth
(62)	Revetment Class C	Grading	
(188)	Revetment Class D	(8)	Behind Curb Cut
(28)	Revetment Class E	(6)	Granular
(12)	Shoulder Special Backfill	(13)	Granular Back Fill
(12)	Special Backfill	(48)	Rock Undercut
(20)	Subbase	(8)	Shoulder Earth Fill
(20)	Subbase Lower	(2)	Side Slopes
(20)	Subbase Upper	(226)	Side Slopes Dressing
(118)	Subgrade Treatment	Substrata	
Asphalt		(128)	Boulder Substrata
(207)	HMA Base Course	(48)	Broken Weathered Substrata
(207)	HMA Interim Course	(3)	Core Out Substrata
(207)	HMA Surface Course	(203)	Existing Pavement Substrata
Concrete		(6)	Loam Substrata
(0)	Barrier Concrete	(80)	Rock Substrata
(0)	Barrier Concrete Footing	(4)	Select Sand Substrata
(0)	Curb Gutter	(3)	Shale Substrata
(48)	Flowable Mortar	(10)	Topsoil Substrata
(0)	Median Concrete	Unsuitable / Waste	
(0)	PCC Pavement	(3)	Unsuitable Type A
(0)	Sidewalk	(13)	Unsuitable Type B
Shoulder		(11)	Unsuitable Type C
(209)	Shoulder HMA	(3)	Waste
(0)	Shoulder PCC		
(6)	Shoulder Granular		
Existing			
(0)	Existing Pavement		

CROSS SECTIONS
LEGEND AND INFORMATION SHEET
(COVERS SHEET SERIES W, X, Y, & Z)

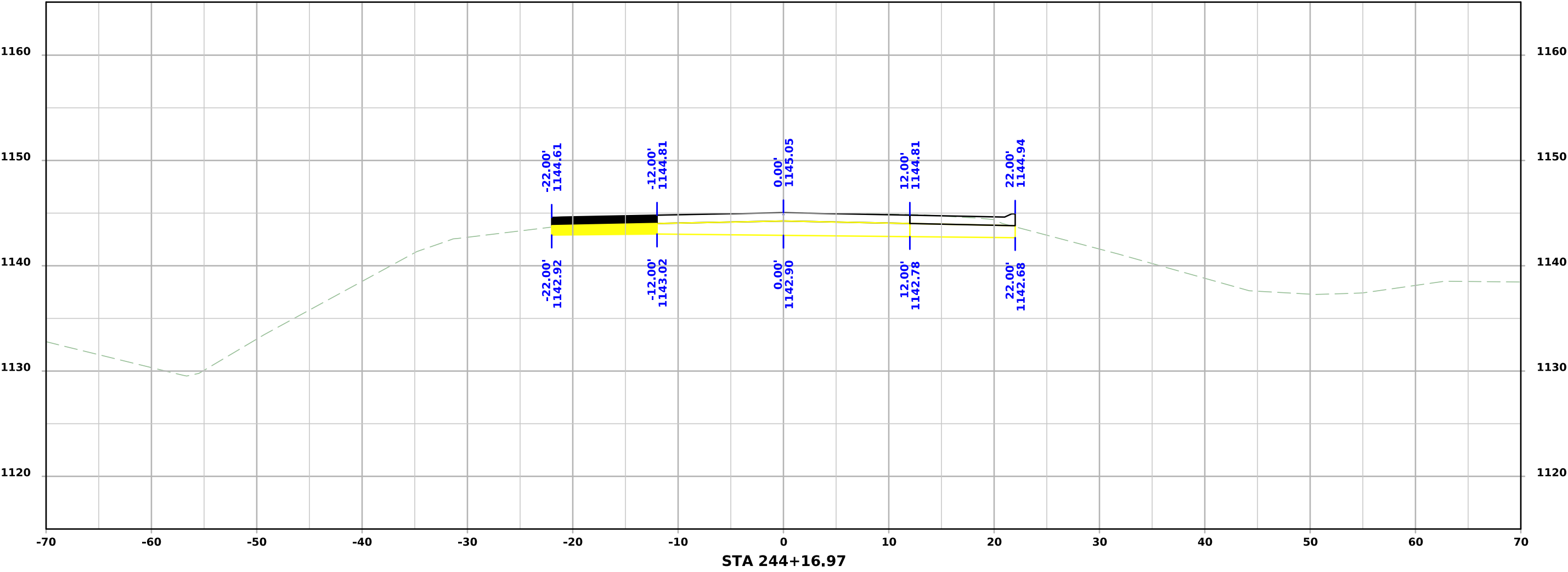
ML - IA175



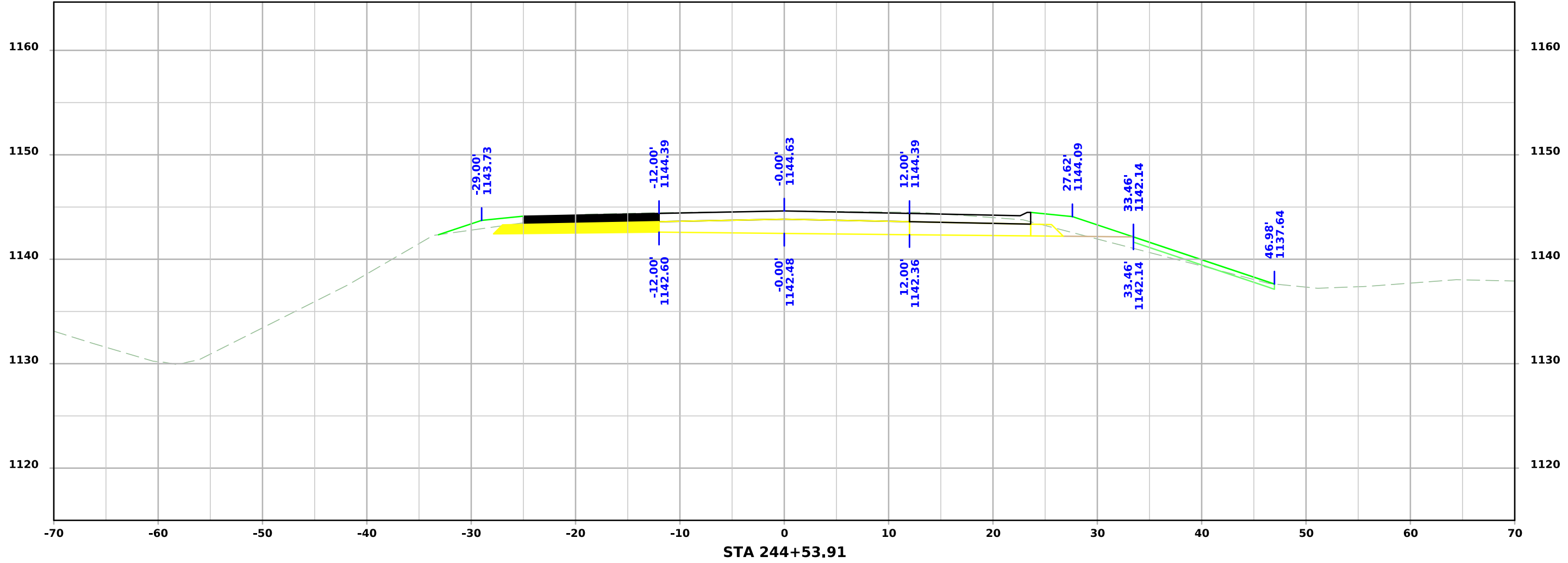
ML - IA175



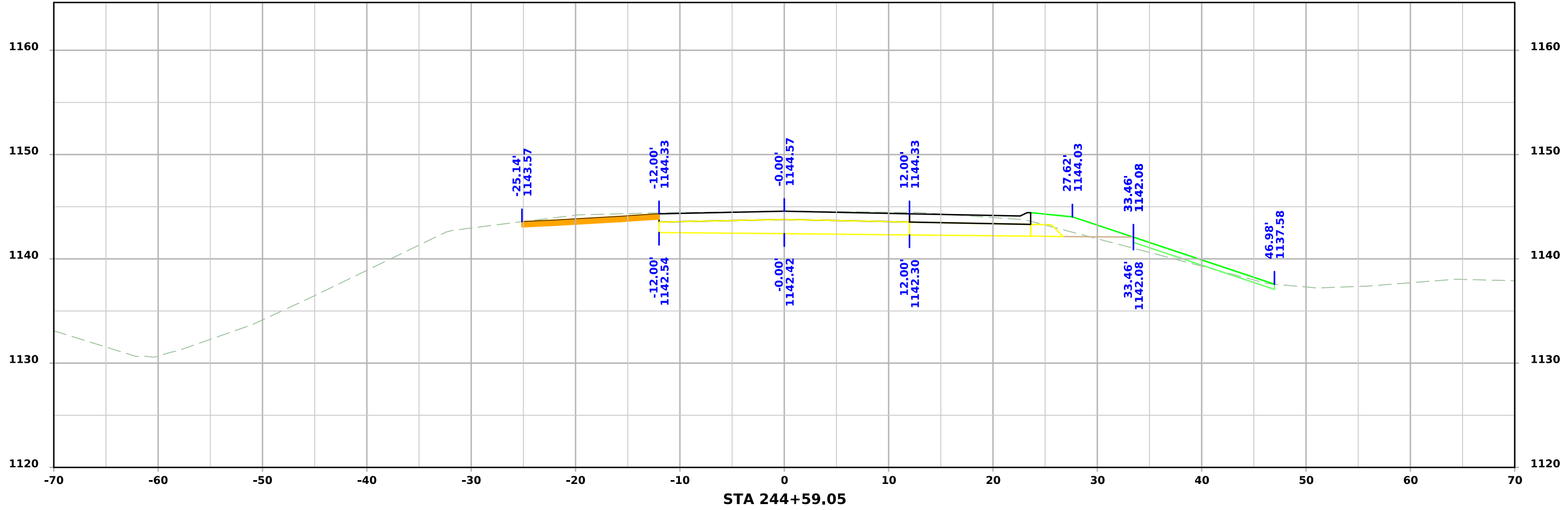
ML - IA175



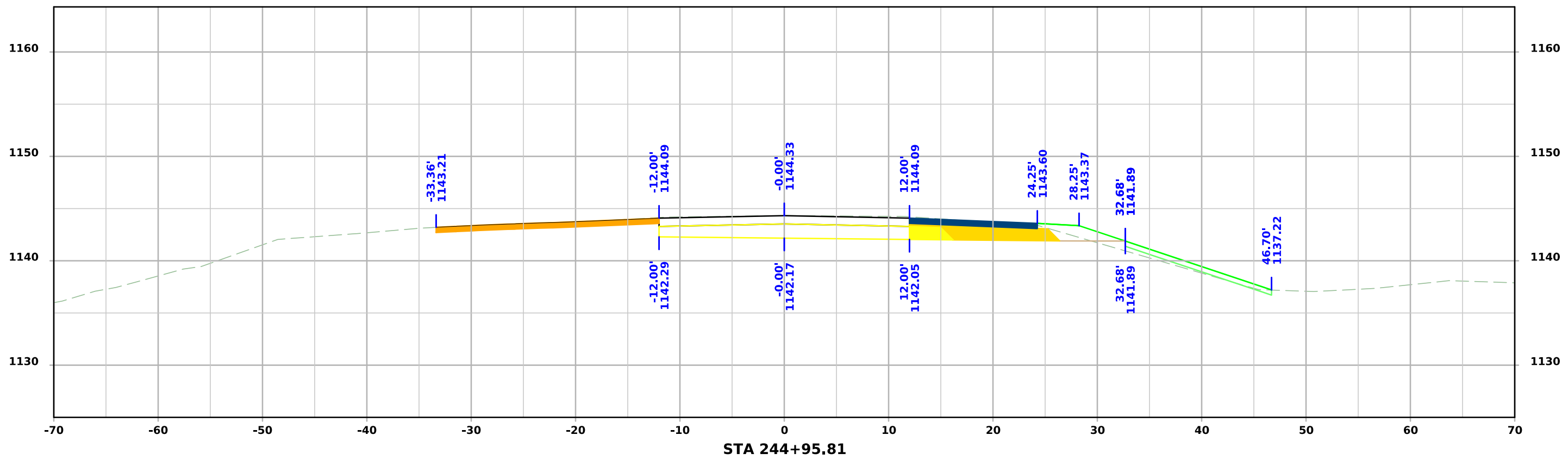
ML - IA175



ML - IA175



ML - IA175



ML - IA175

