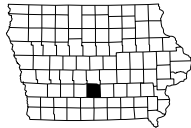


WARREN COUNTY

RCB Culvert Replacement - Twin Box
BRF-092-5(071)--38-91

LETTING DATE
1-19-2028



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 - 2	Typical Cross Sections and Details
D Sheets	Mainline Plan and Profile Sheets
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2	IA 92
G Sheets	Survey Sheets
G.1	Reference Ties and Bench Marks
G.2	Control Point Vicinity Map
G.3	Horizontal and Vertical Control Tab.
G.4	Alignment Coordinate and Curve Data Tab.
J Sheets	Traffic Control and Staging Sheets
* J.1	Traffic Control Plan
* J.1	Coordinated Operations
* J.1	511 Travel Restrictions
* J.2	Detour Route
V Sheets	Bridge and Culvert Situation Plans
V.1 - 2	TSL Sta. 106+98.06 Twin 12'x 8'x 86' RCB Culvert
W Sheets	Mainline Cross Sections
W.1	Cross Sections Legend & Symbol Information Sheet
W.2 - 6	IA 92 Cross Sections
Z Sheets	Entrance Cross Sections
Z.1	IA 92 Entrance Cross Sections
* Color Plan Sheets	



PLANS OF PROPOSED IMPROVEMENT ON THE
PRIMARY ROAD SYSTEM
WARREN COUNTY
RCB Culvert Replacement - Twin Box
Stream 1.9 mi E of IA 28

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	
21	
PROJECT IDENTIFICATION NUMBER	
23-91-092-010	
PROJECT NUMBER	
BRF-092-5(071)--38-91	
R.O.W. PROJECT NUMBER	
NHSX-092-5(072)--2R-91	

Dates:
D4 Sept. 22, 2027

PRELIMINARY PLANS

Subject to change by final design.

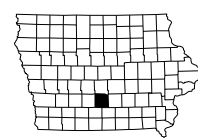
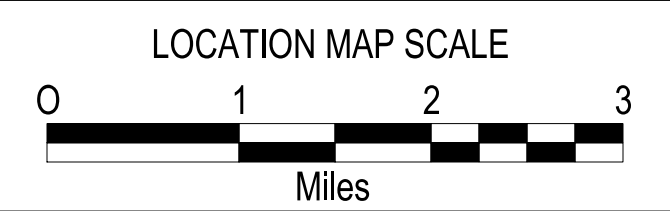
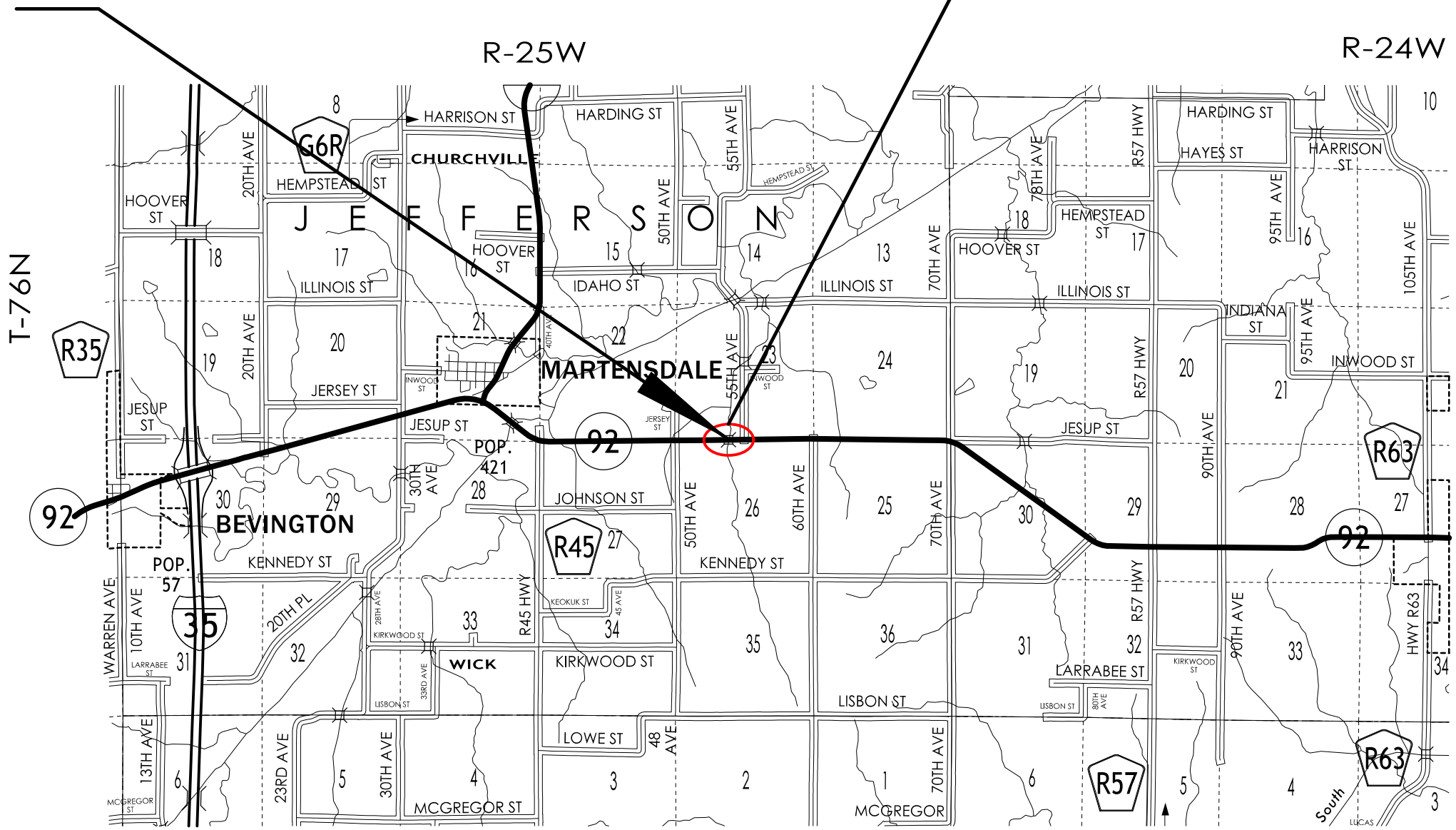
Revised D5 - Date: July 2, 2026

IA 92			
DESIGN DATA RURAL			
2028	AADT	3300	V.P.D.
2048	AADT	3800	V.P.D.
20	- DHV	-	V.P.H.
TRUCKS		12	%
Total			
Design ESALS		-	

INDEX OF SEALS			
SHEET NO.	NAME	TYPE	BID QUANTITY SHEETS
A.1	Kelly C. Bell	Primary Signature Block	X
V.1	Randall M.L. Friend	Hydraulic Design	X

BRIDGE
US-92 over drainage ditch
STA. 106+96.8
FHWA# 51120 (EXST)
FHWA# 051121 (NEW)

PROJECT LOCATION



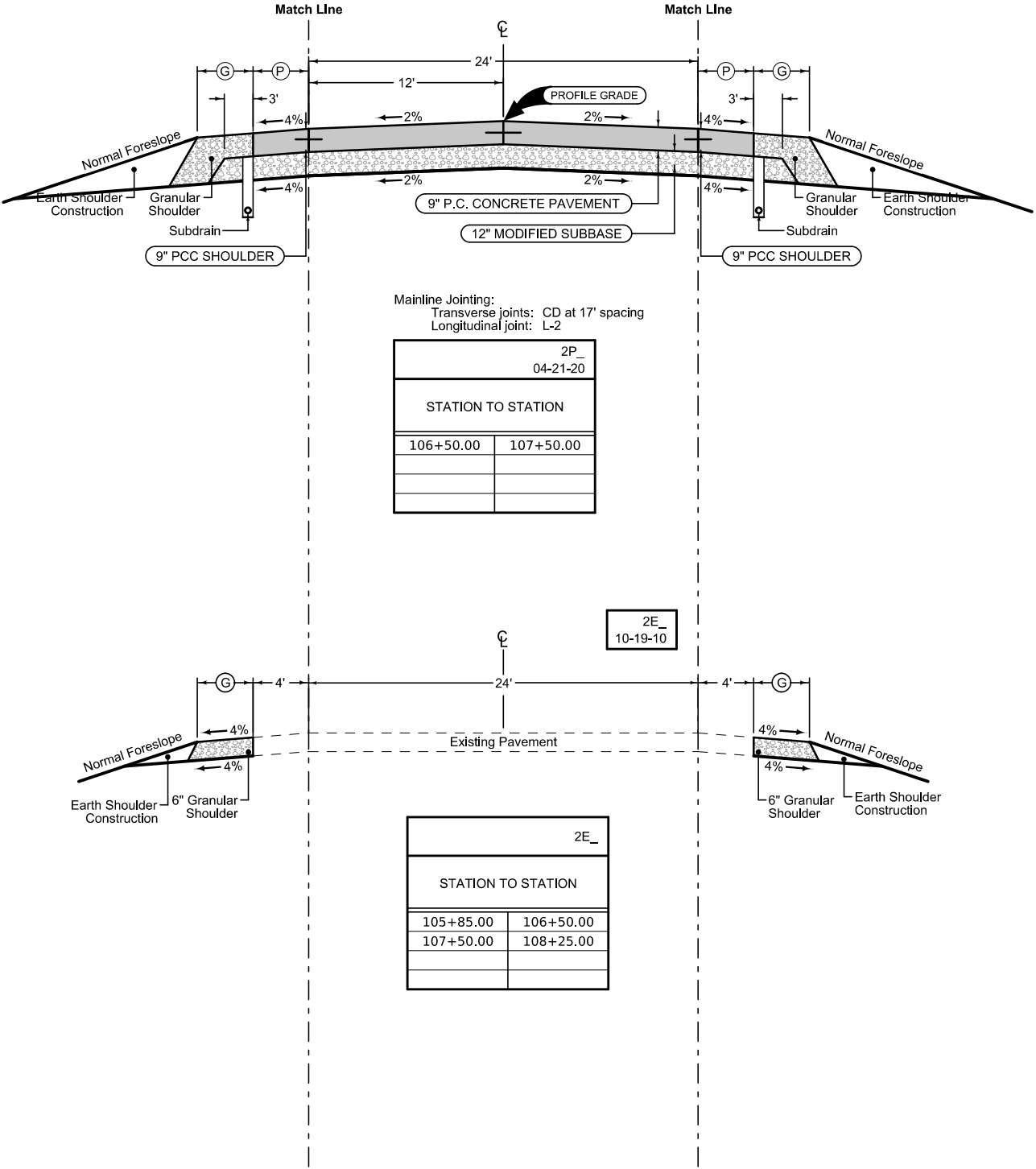
Full Depth PCC Combination Shoulder

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

2_C_FullPCC_04-15-25			
STATION TO STATION		(P) Feet	(G) Feet
106+50.00	107+50.00	4	4

Granular Shoulder

2_G_Modified		
STATION TO STATION		(G) Feet
105+85.00	106+50.00	4
107+50.00	108+25.00	4



Full Depth PCC Combination Shoulder

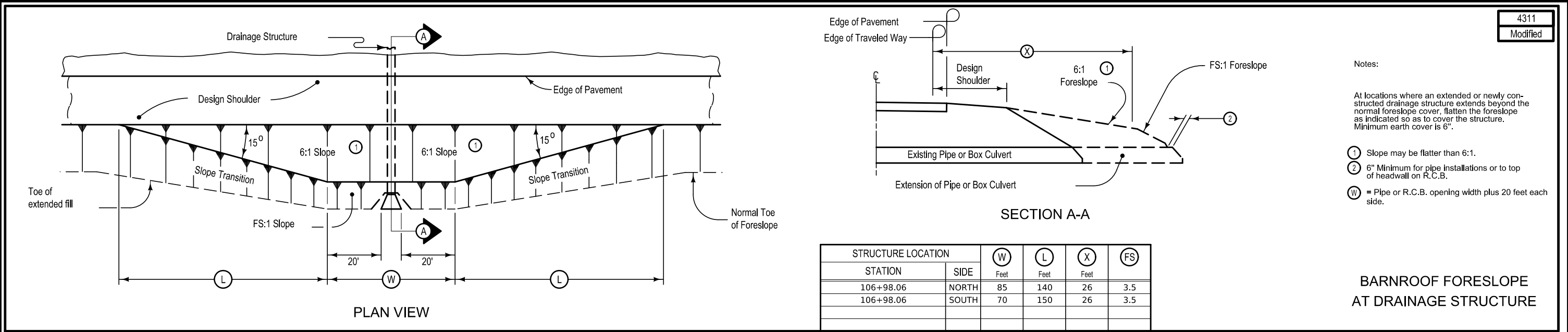
Shoulder Jointing:
Longitudinal joint: BT-2, or L-2
Transverse joints: C at 17' spacing

2_C_FullPCC_04-15-25			
STATION TO STATION		(P) Feet	(G) Feet
106+50.00	107+50.00	4	4

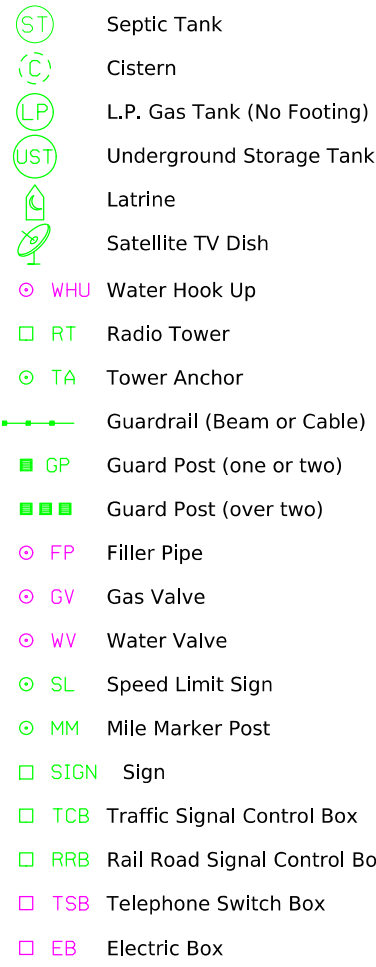
Granular Shoulder

2_G_Modified		
STATION TO STATION		(G) Feet
105+85.00	106+50.00	4
107+50.00	108+25.00	4

See Tab 100-24 for pavement quantities.
See Tab 112-9 for shoulder quantities.



	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)



SURVEYED UTILITY OWNER SYMBOLS

Sub-Surface Utility Mapping Quality Level is in accordance with CI/ASCE 38-02 Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data.

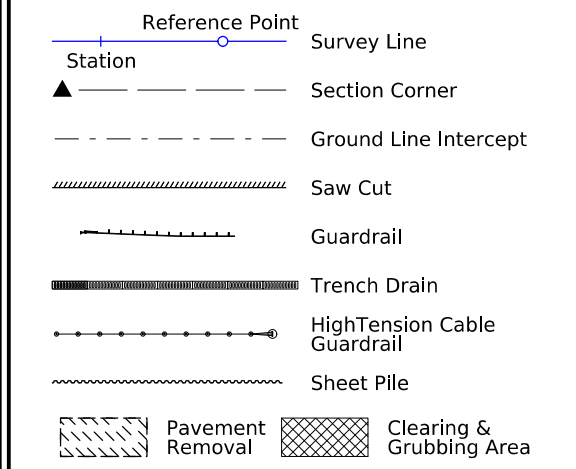
Remark Abbreviations

QLA Quality Level A Highest guideline quality level
QLD Quality Level D Lowest guideline quality level

- F0 — F01D, Centurylink - Quality D
- T1 — T11D, Centurylink - Quality D
- F02 — F02D, Aureon Network Services - Quality D
- W — WL1D, Warren Water District - Quality D
- ● — PPA, Clarke Electric COOP

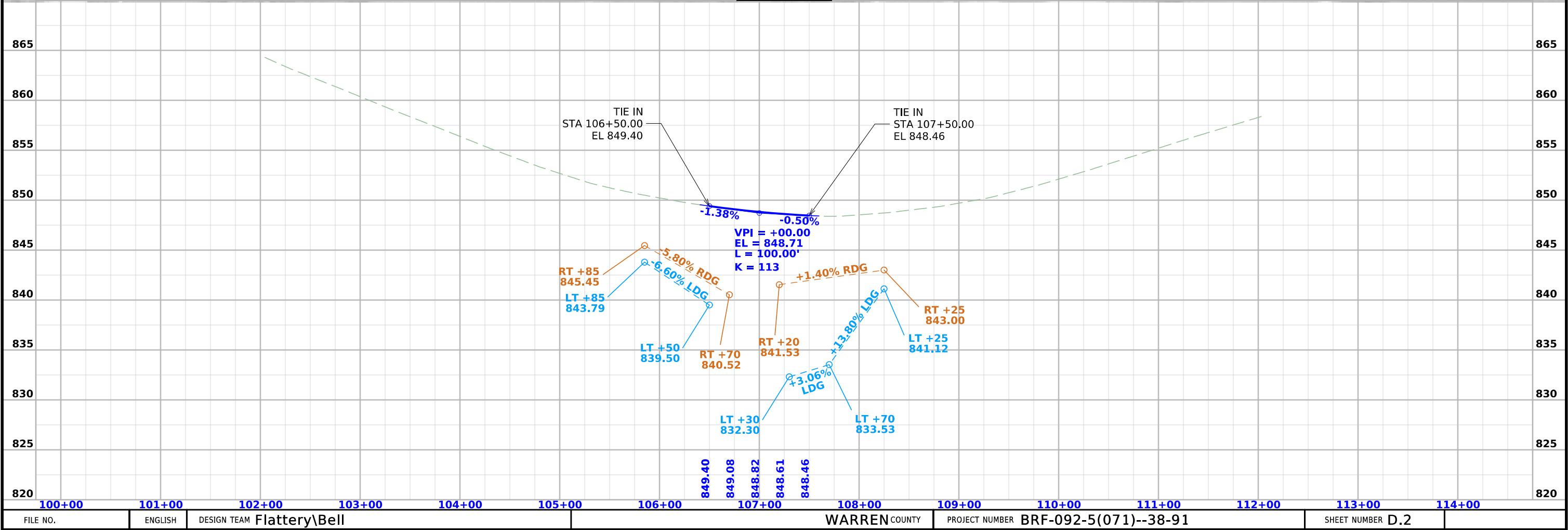
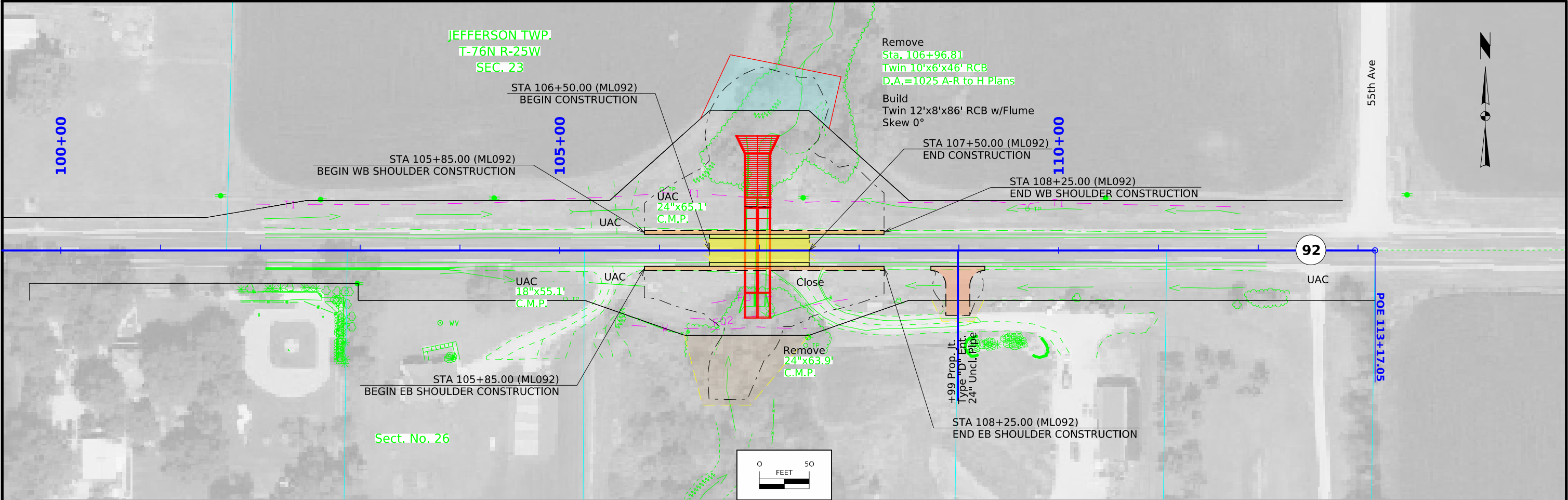
LINEWORK		Design Color No.		
Green	(2)		Existing Topographic Features and Labels	
Blue	(1)		Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation	
Magenta	(5)		Existing Utilities	
SHADING		Design Color No.		Transparency
Pink, Dark	(13)		Temporary Pavement Shading	50%
Yellow	(4)		Proposed 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

County: Warren
Project Code: 23-91-092-010
Phase Number: BRF-092-5(071)--38-91
Location: Stream 1.9 mi E of IA 28
Type of Work: Culvert-Unspecified
Project Directory: 9109201023

Survey Personnel

Clayton Henningsen – Survey Party Chief
Kokou Allade – Assistant Survey Party Chief

Date(s) of Survey

Begin Date 08/13/2024
End Date 12/04/2024

General Information

This survey is for IA Hwy 92 culvert repair at stream 1.9 mi east of IA 28. This survey request was for the IA Hwy 92 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 08
(U.S. SURVEY FOOT)
VERTICAL DATUM: NAVD88
GEOID MODEL: 2018u3

Alignment Information

The horizontal alignment for IA Hwy 92 this survey is a retrace of As-built Plans No. P-1023. Survey stationing was equated to the plan PI at Sta. 86+41.6 and carried ahead without equation throughout the survey.

Survey stationing relates to as built plan stationing as follows:

PI Sta. 86+41.6 As-built Plans Project No. P-1023
Survey PI Sta. 86+41.6

PI Sta. 113+17.6 As-built Plans Project No. P-1023
Survey PI Sta. 113+16.86

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 08 (U.S. Survey Foot)

VERT. DATUM: NAVD88 - Geoid Model: 2018u3

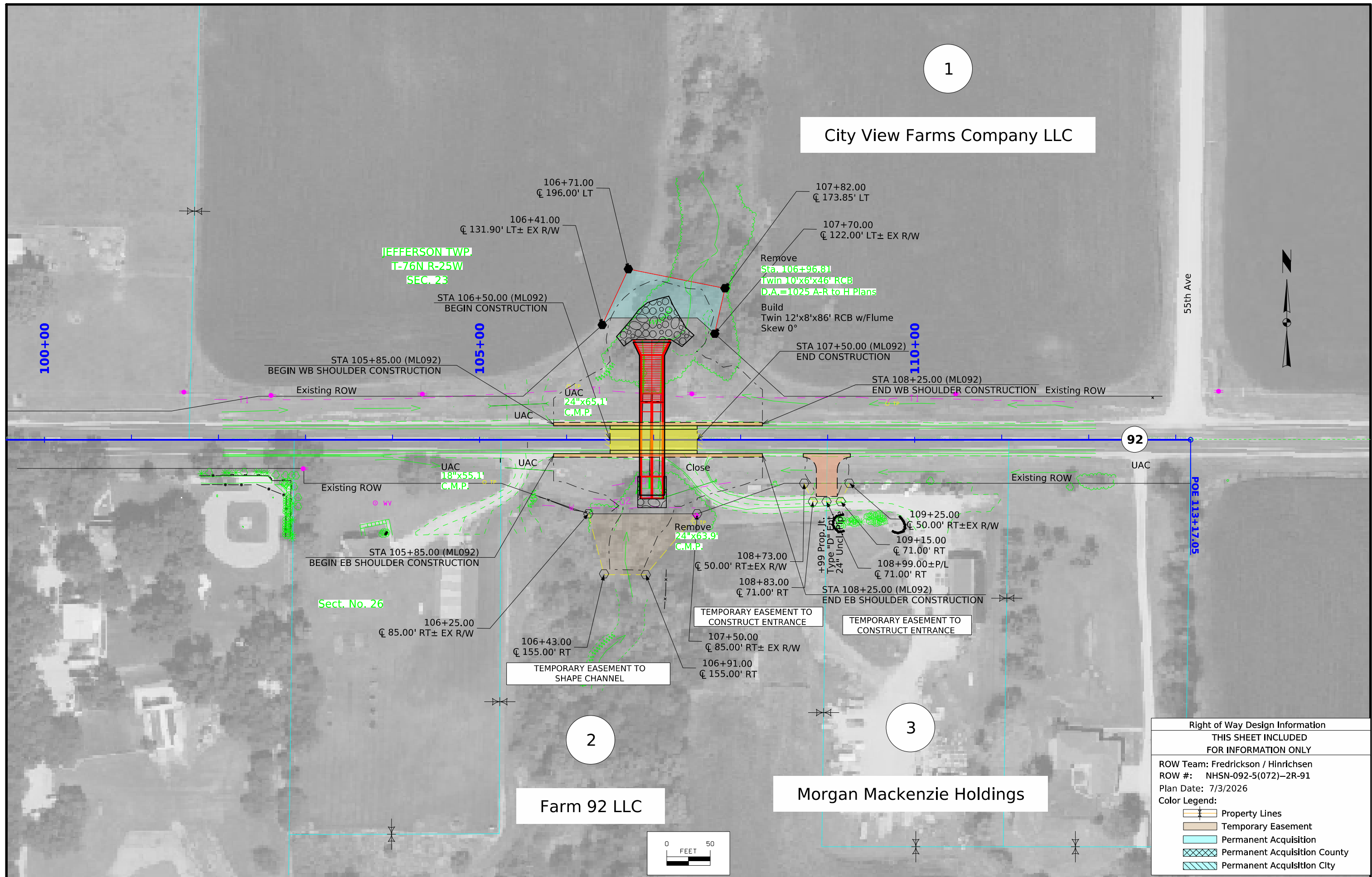
Coordinate listing from next sheet will be used with IaRTN for monument recovery. No other reference ties are given.

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING
HORIZ. DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 Adjustment)
Ia. Regional Coordinate System Zone 08 (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>
910921229	7406800.99	18502328.95	872.47	CP FENO MONUMENT SET ON SOUTH SIDE IA 92 ON WEST SIDE OF FIELD ENT
G018	7406772.35	18499353.62	884.37	CP REBAR AS DESRIBED LESS THE IDOT CAP
910921232	7406804.66	18503883.22	868.14	CP CONC MONUMENT IN SE QUAD INTERSECTION IA 92 & 55TH AVE

101-16 10-20-09																			
ALIGNMENT COORDINATES																			
Name	Location	Point on Tangent			Begin Spiral			Begin Curve			Simple Curve PI or Master PI of SCS			End Curve			End Spiral		
		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates	
			Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)
1	ML092	8641.740 R1	7406809.64	18501164.61															
1	ML092	11317.051 R1	7406850.91	18503839.60															
1	ENTR108	+00.00	7406844.46	18503421.60															
1	ENTR108	1+50.00	7406694.48	18503423.91															

NO ACCESS RIGHTS ARE TO BE ACQUIRED ON THIS PROJECT.



Right of Way Design Information	
THIS SHEET INCLUDED FOR INFORMATION ONLY	
ROW Team: Fredrickson / Hinrichsen	
ROW #: NHSN-092-5(072)--2R-91	
Plan Date: 7/3/2026	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition
	Permanent Acquisition County
	Permanent Acquisition City

108-23A
08-01-08

TRAFFIC CONTROL PLAN

IA 92 will be closed to thru traffic during construction.
IA 92 shall be maintained via offsite detour. Detour shall be signed and maintained by contractor. See J.2 for detour.

111-01
04-17-12

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.

108-25
10-21-14

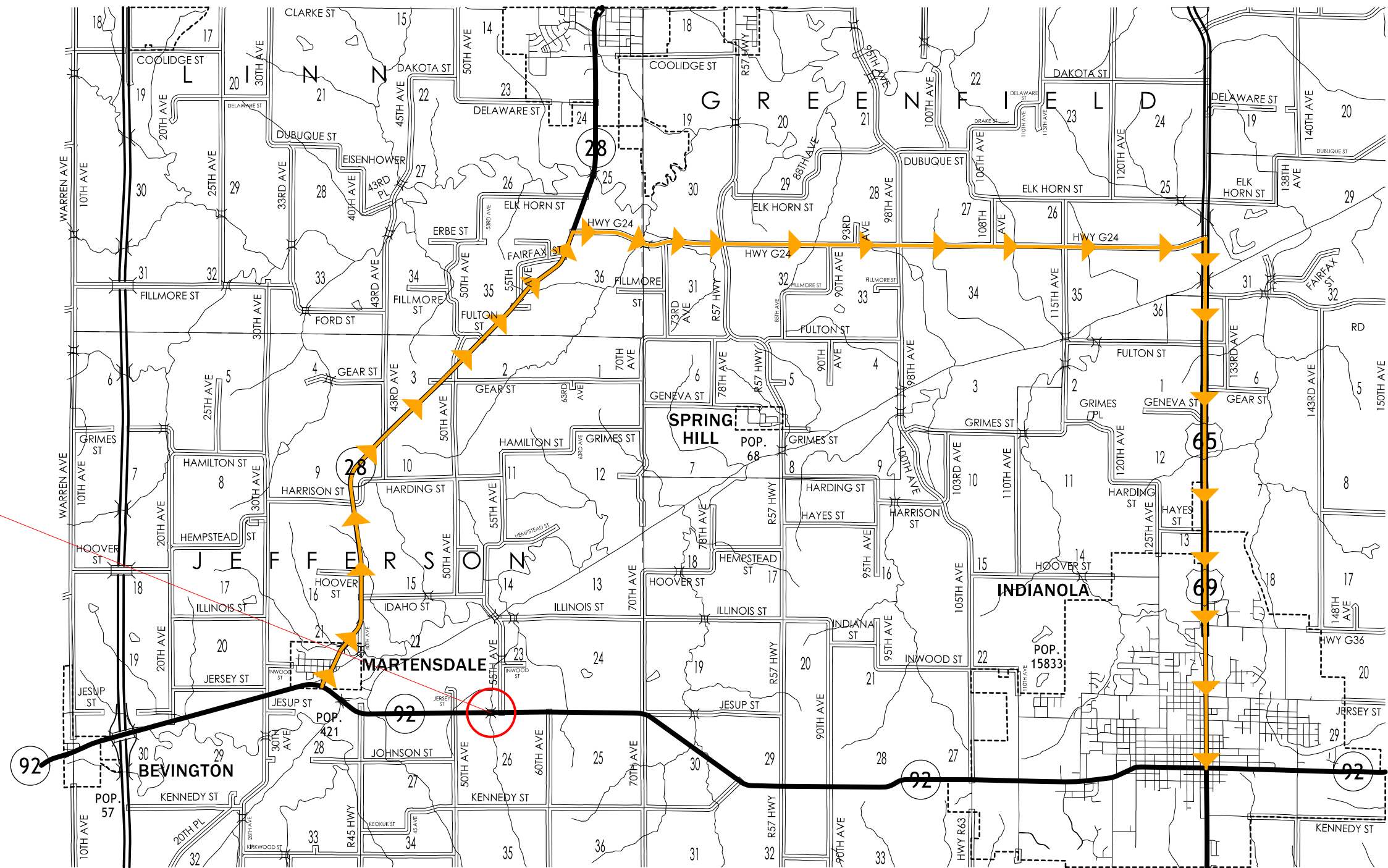
511 TRAVEL RESTRICTIONS												
Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No., Structure ID, or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
			No travel restrictions expected.									

NOT TO SCALE



Detour Route
→

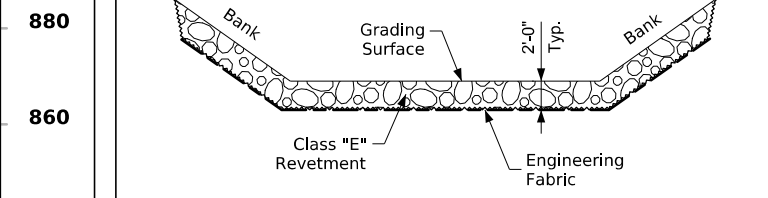
Project Location



[illegible]

10:53:40 AM	1/15/2026	rfriend	pw:\projectwise.dot.int.lan:PWMMain\Documents\Projects\9109201023\Bridge\071	RCB Culvert-Unspecified\SHT 91092071 HNTB 0528 051121 CIP Z08.dgn
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No Comments - hlane - 01/15/2026



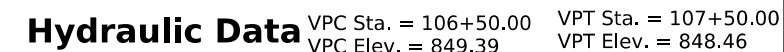
Estimated Revetment Quantities Included With Road Plans

Location	Revetment Class "E" (Ton)	Engineering Fabric (SY)	CL. 13 Channe Excavation (CY)
Inlet	68	68	45
Outlet	344	344	230
Totals	412	412	275

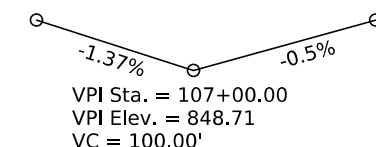
This design is for the replacement of an existing
Twin 10'x6' RCB Culvert with Flume and Basin.
Warren Design No. 391, Maint. No. 9123.2S092

1. Design fill for this P.C. Culvert is 3.7'
2. Anticipated settlement is negligible.
3. Permanent acquisition is required
revetment extends beyond existing ROW.
4. Density used for Class E quantity calculations is 1.5 Tons/CY.
5. Revetment is proposed at the culverts inlet and outlet due to outlet velocity exceeding the policy limits and steep approach ditch grades.
6. Proposed structure does not implicitly meet Iowa DOT BDM roadway overtopping criteria for the 100 year event, however the headwater elevation is improved as compared to existing conditions

1. Drainage through culvert/channel must be maintained throughout construction.
2. Embedment is not achievable downstream flume, existing conditions are matched.



RIDB: MiddleR_Trib22
Drainage Area = 1088 Acres
Stream Slope = 18.13 Ft./Mi.
Q₅₀ = 1931 cfs
HW Elev. = 846.97
Exit Velocity = 12.46 fps



Proposed Profile
Grade IA 92

IA 92 over Stream
T-76N R-25W
Section(s) 23
Jefferson Township
Warren County
FHWA No. 051121
Bridge Maint. No. 9123.2S092
Latitude 41.36665°
Longitude -93.70492°

Traffic Estimate

2028 AADT	3300 V.P.D.
2048 AADT	3800 V.P.D.
TRUCKS	12 %

Utilities Note:

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

General Utility Symbols:

E - Electric Line
G - Gas Line
SAN. - Sanitary Sewer
T - Telephone Line
W - Water Line
FO - Fiber Optic Line
GHP - Gas High Pressure
ST S - Storm Sewer
TV - TV
● - Power Poles

Design For 0°
Twin 12'-0" x 8'-0" x 92'-0" Reinforced
Conc Box Culvert With Flume & Basin

Situation Plan - P.C

STA. 106+98.06 (IA 92) Turn-in Date: Jan. 2026

Warren County

Design No. 0528 Design Sheet No. 2 of 2 FHWA No. 051121

Situation Plan

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

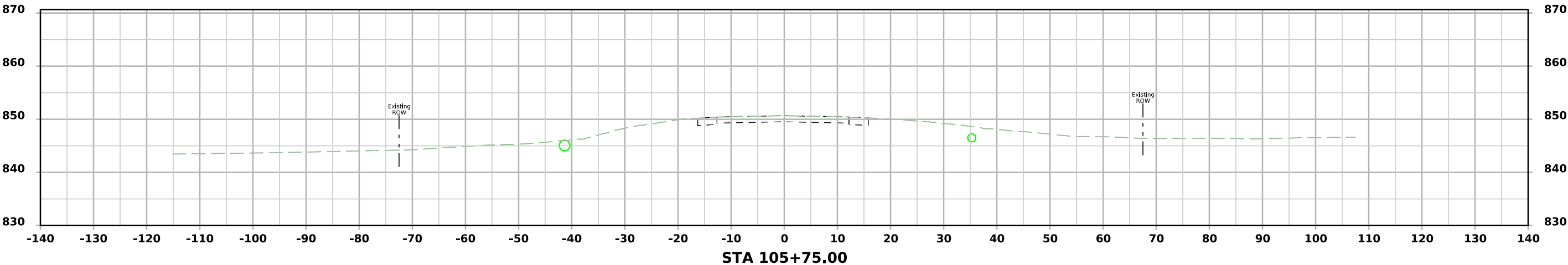
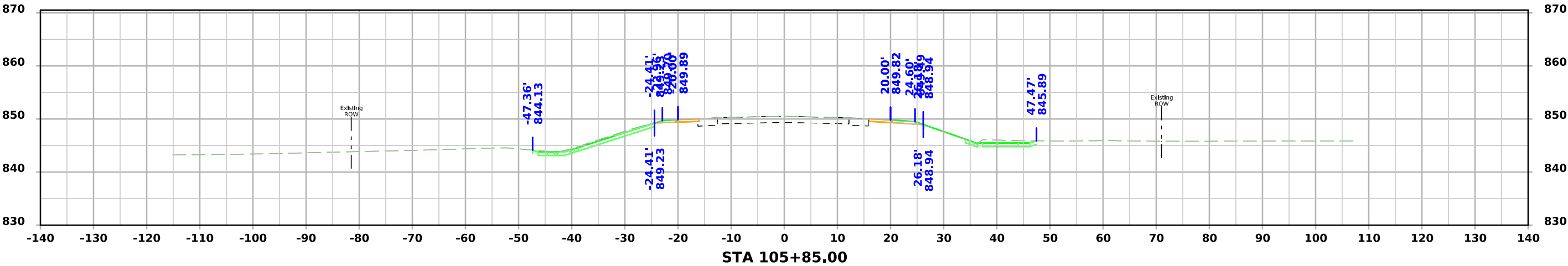
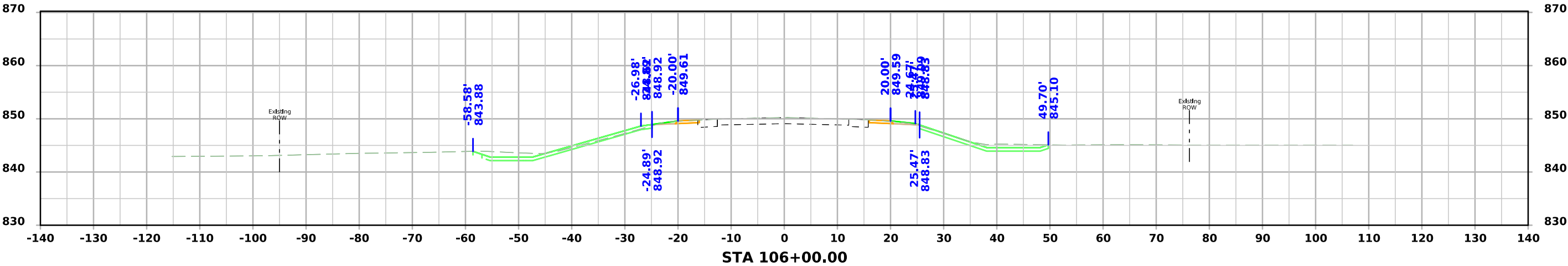
NOTES:

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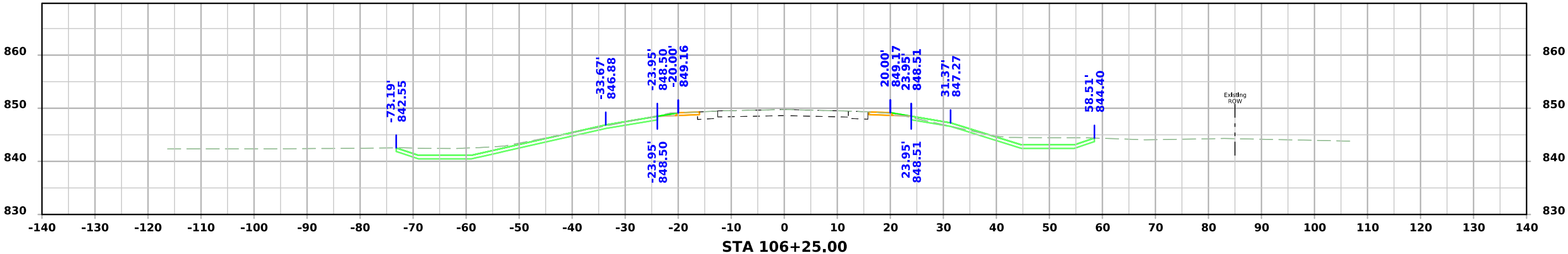
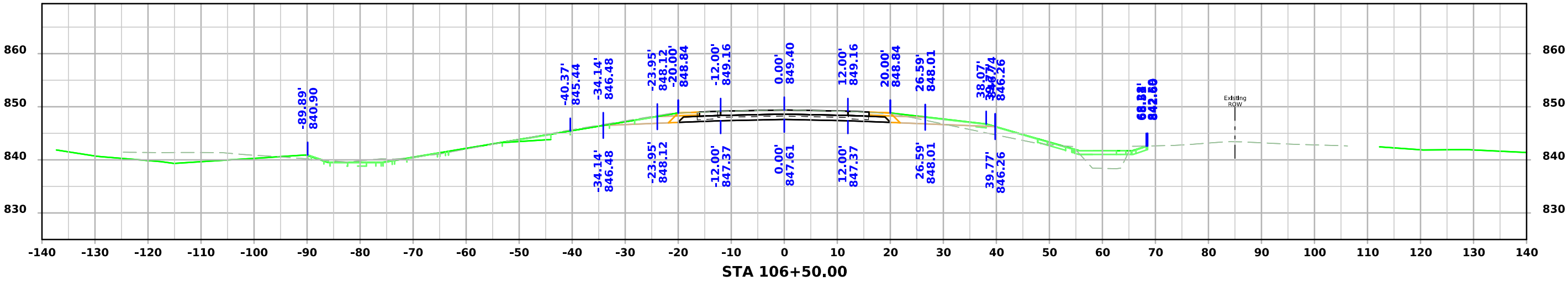
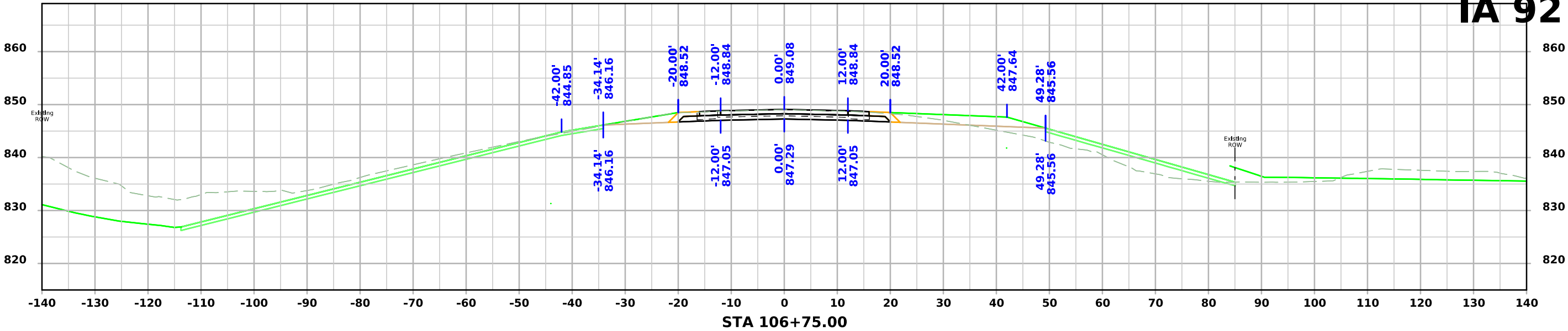
CROSS SECTIONS
LEGEND AND INFORMATION SHEET

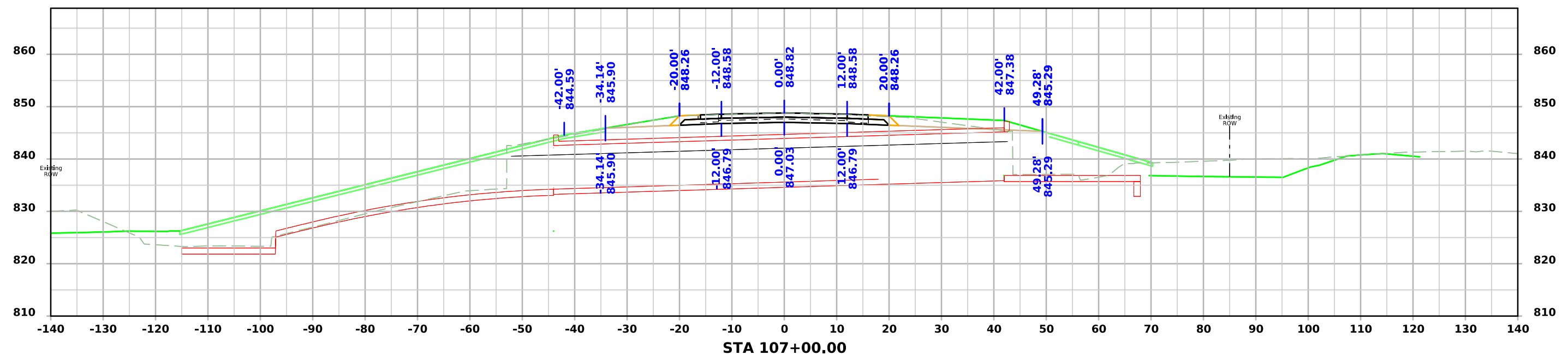
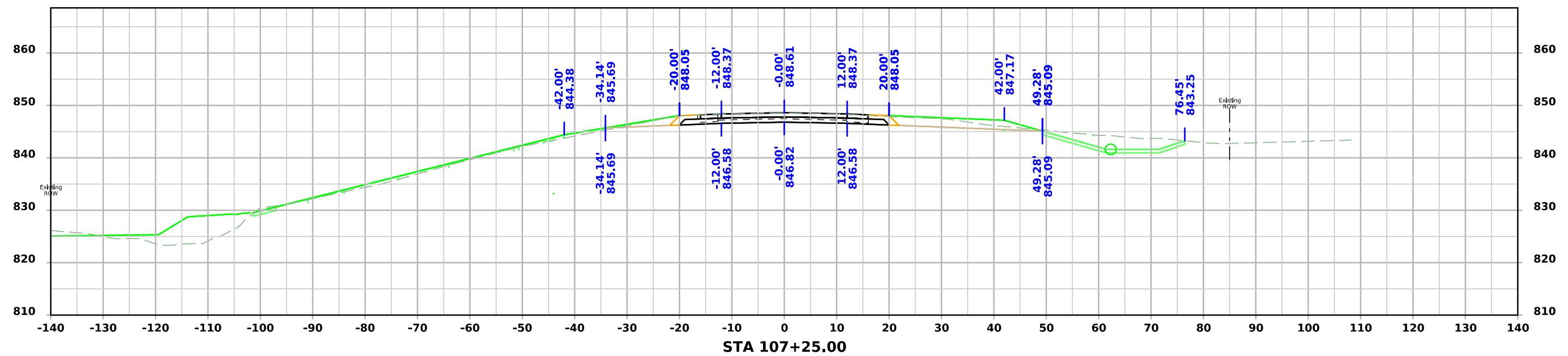
(COVERS SHEET SERIES W, X, Y, & Z)

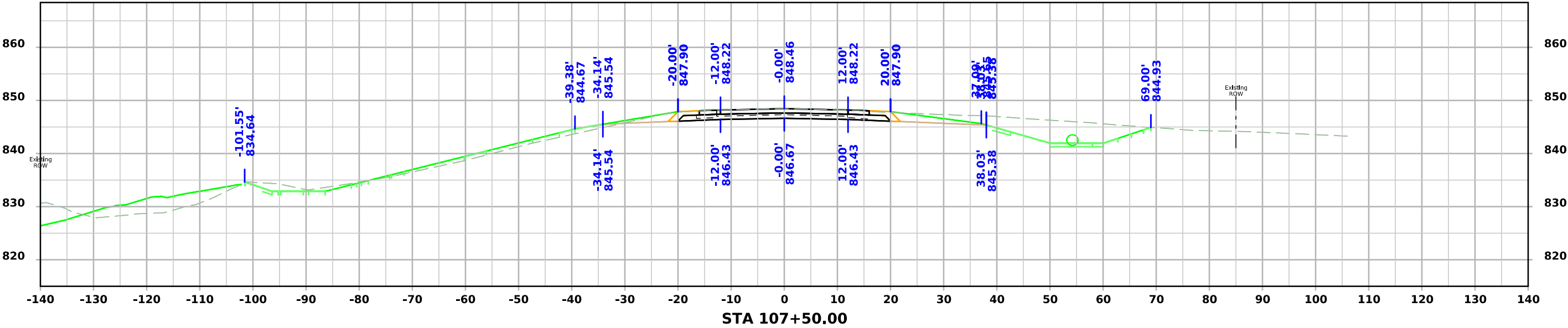
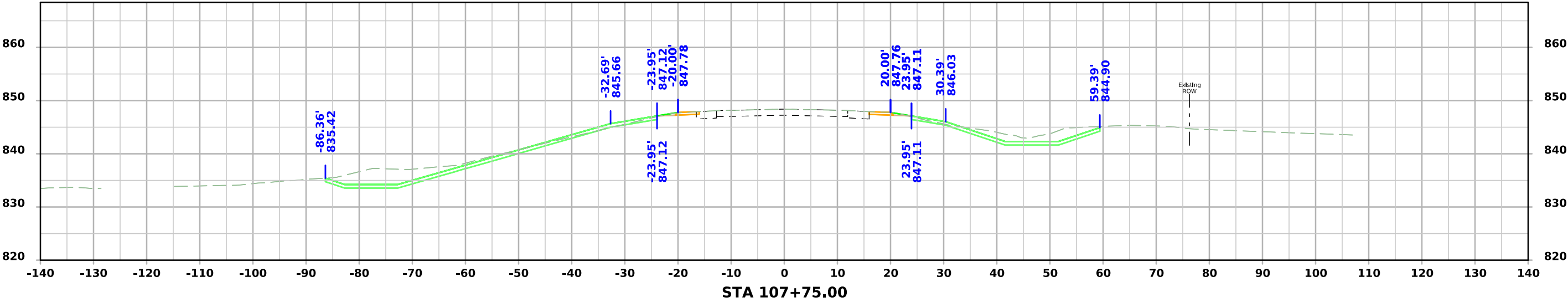
IA 92

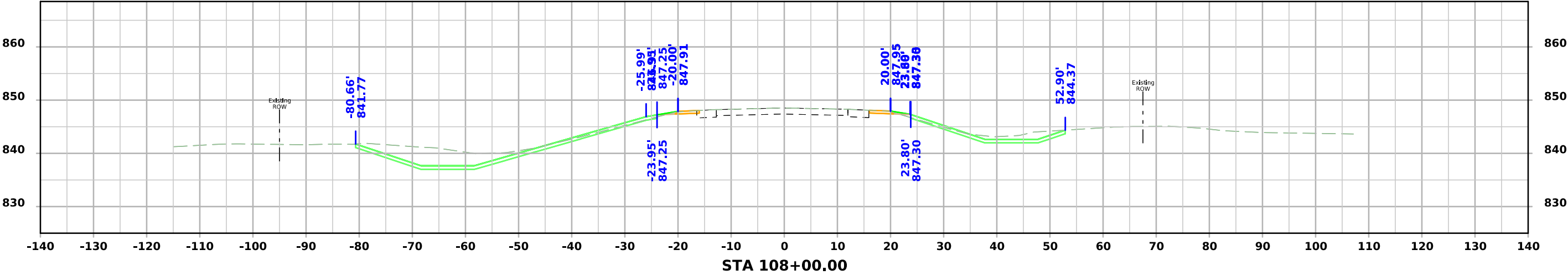
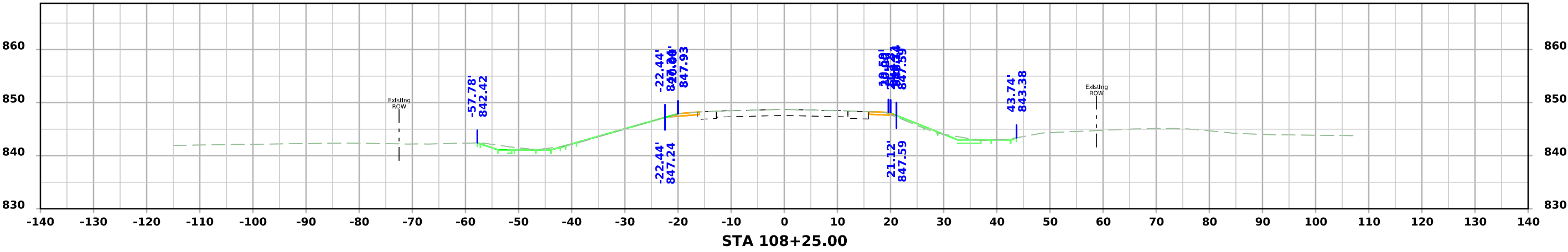
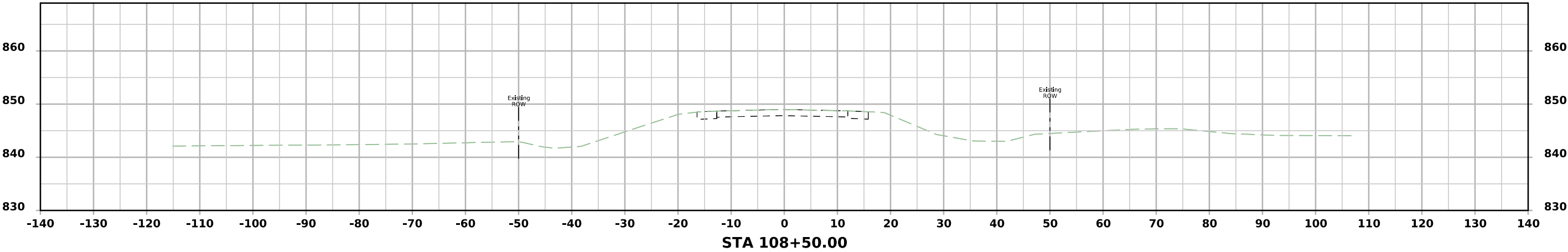


IA 92









IA 92 Entrances

