

LETTING DATE
12-17-2024

Bridge - Unspecified
BRFN-078-4(25)--39-44

Henry COUNTY



PLANS OF PROPOSED IMPROVEMENT ON THE
PRIMARY ROAD SYSTEM
Henry COUNTY
Bridge - Unspecified
IA 78 Bridge over Stream 0.3 mi W of E Jct Co Rd W66

REVISIONS

TOTAL

17

PROJECT IDENTIFICATION NUMBER

20-44-078-010

PROJECT NUMBER

BRFN-078-4(25)--39-44

R.O.W. PROJECT NUMBER

STPN-078-4(26)--2J-44

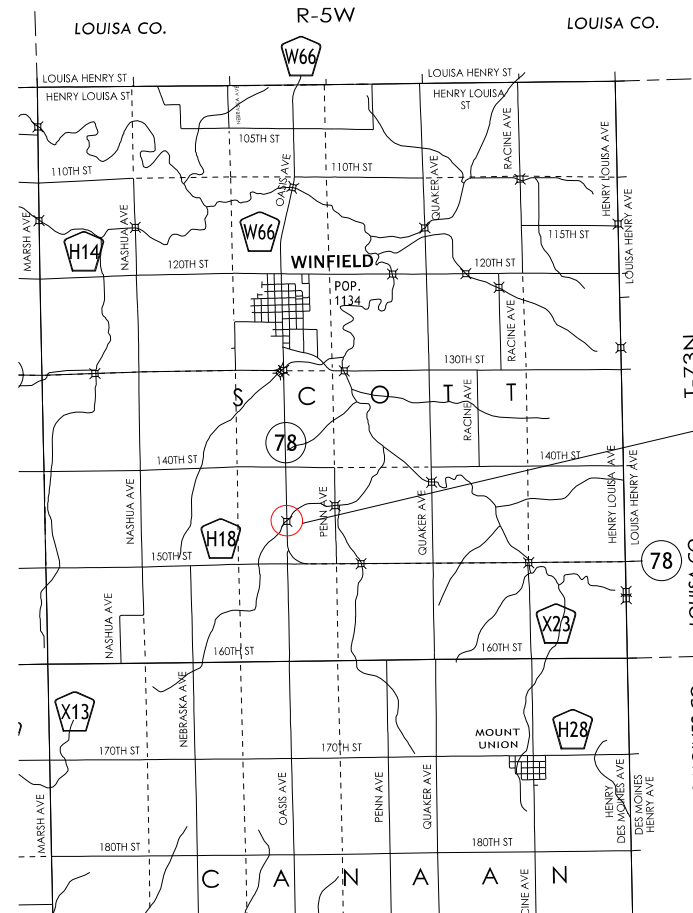
INDEX OF SHEETS

No.	DESCRIPTION
A Sheets	Title Sheets
A.1	Title 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	IA 78
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V Sheets	Bridge and Culvert Situation Plans
V.1	Bridge and Culvert Situation Plans
W Sheets	Mainline Cross Sections
W.1	Cross Sections Legend & Symbol Information Sheet
W.2 - 5	Mainline Cross Sections

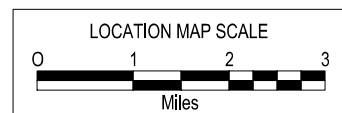
SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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



PROJECT LOCATION
Sta. 96+22.67
M.P. 44.98



DESIGN DATA RURAL			
2025	AADT	800	V.P.D.
2045	AADT	1000	V.P.D.
20 -	DHV	-	V.P.H.
	TRUCKS	9	%
	Total		
	Design ESALs	-	

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

PRELIMINARY PLANS

Subject to change by final design.

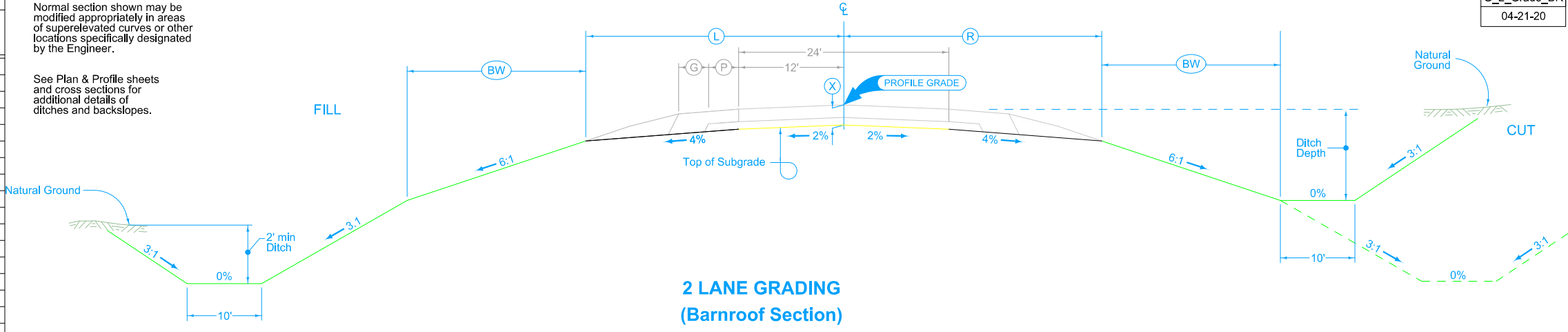
D3 PLAN - Date: 10-03-2022

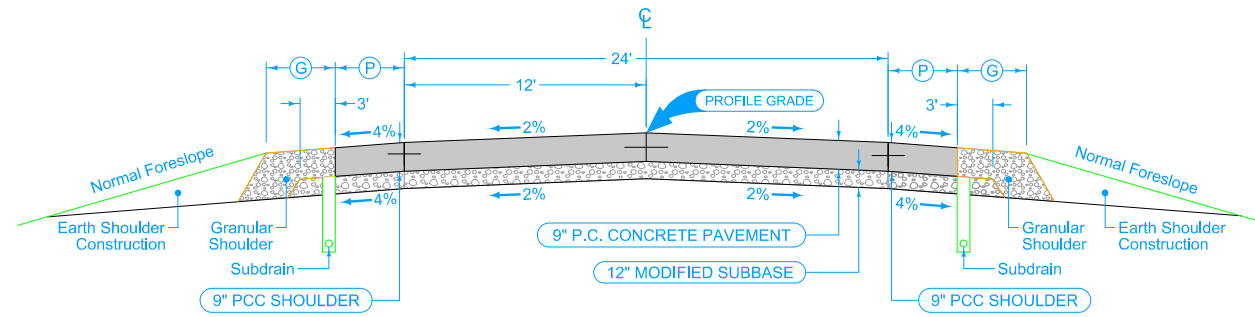
LOCATION		DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION	L Feet	R Feet	X Inches	BW Feet
IA 78	95+00.00 97+45.00	35.8	35.8	21	0.2

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

See Plan & Profile sheets and cross sections for additional details of ditches and backslopes.

G_2_Grade_BR
04-21-20





Full Depth PCC Combination Shoulder

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

2_C_FullPCC_04-21-20			
STATION TO STATION		(P) Feet	(G) Feet
95+00.00	97+45.00	4	6

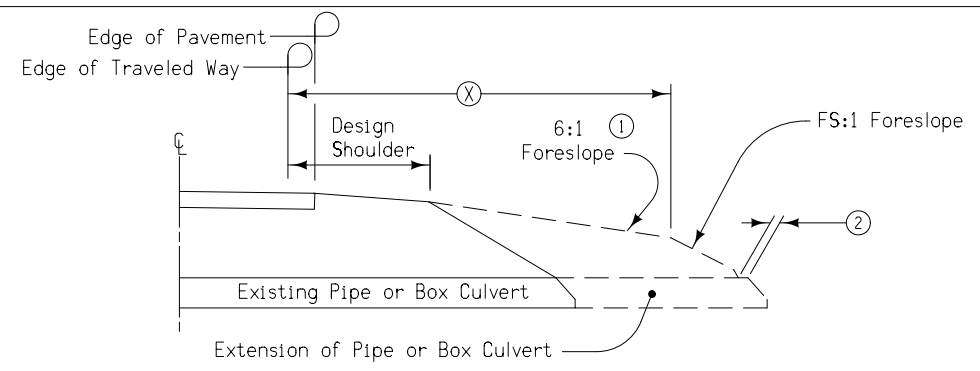
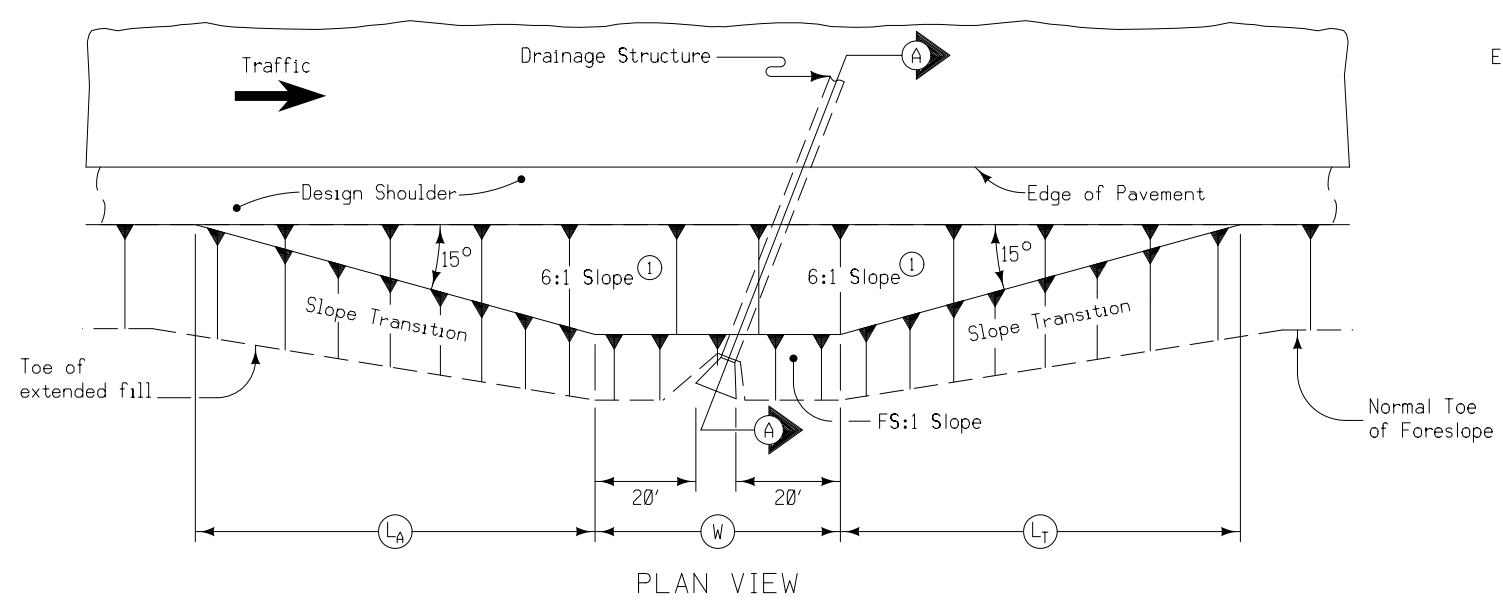
Mainline Jointing:
 Transverse joints: CD at 17' spacing
 Longitudinal joint: L-2

2P_04-21-20	
STATION TO STATION	
95+00.00	97+45.00

Full Depth PCC Combination Shoulder

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

2_C_FullPCC_04-21-20			
STATION TO STATION		(P) Feet	(G) Feet
95+00.00	97+45.00	4	6



SECTION A-A

At locations where an extended or newly constructed drainage structure extends beyond the normal foreslope cover, flatten as indicated so as to cover the structure. Minimum earth cover is 6 inches.

- ① Slope may be flatter than 6:1.
- ② 6 inch minimum for pipe installations or to top of headwall on RCB.
- ③ At \bar{C} of road.
- Ⓜ = Pipe or RCB opening width plus 20 feet each side.

STRUCTURE LOCATION		Ⓜ	L _A	L _T	X	FS
STATION ③	SIDE	Feet	Feet	Feet	Feet	
96+22.67	RT	55	53	53	24	3:1
96+22.67	LT	55	53	53	24	3:1

BARNROOF FORESLOPE AT
SKEWED DRAINAGE STRUCTURE

SURVEY SYMBOLS

<ul style="list-style-type: none"> ⊕ AST, Above Ground Storage Tank BB Billboard BBB, Bottom of Bridge Beam BCL, Bridge Centerline BD, Bridge Deck ⊙ BIN, Grain Bin BL, Topo Breakline BLD, Building or Foundation BLS, Bridge Low Steel △ BM, Bench Mark BNK, Stream Bank BRG, Bridge C, Centerline BL of Road -ML or SR CAV, Cave CEL, Cell Phone Tower CIS, Cistern CON, Concrete or A/C Slab CP, Control Point CRP, Corporation Line CS, Curve Point CU, Back of Curb CUL, Culvert D, Centerline Draw or Stream -Down DAB, Drainage Area Boundary DIK, Centerline of Dike or Dam DTM, Photogrammetry Elevation Control Check DU, Centerline Draw or Stream -Up EB, Electrical Box EG, Edge of Gravel Road ENP, Edge Paved Entrance and Park Lot ENT, Centerline BL of Entrance ENU, Edge Unpaved Entrance and Parking EP, Edge of Paved Roads -ML or SR EW, Edge of Water FCL, Chain Link and Security Fence FENO, FENO Monument FHD, Fire Hydrants FLG, Flag Poles FP, Filler Pipe FW, Wire Fence FWD, Wood Fence GDC, Guard Rail Cable GDL, Guard Rail Steel GP, Guard Post -Less Than 4 Posts GPR, Guard Post -4 or More Posts GR, Ground Shot GRV, Grave GU, Gutter In Front of Curb GV, Gas Valve HDG, Hedge Row HS, Hydric Soil -Wetlands HT, Electrical Highline Tower IN, Storm Sewer Intake INB, Storm Sewer Beehive Intake LC, Lot Corner LIN, Miscellaneous Line LP, L.P. Tank LUM, Luminaire MH, Utility Access -Manhole MIS, Miscellaneous MM, Mile Marker Post OUT, Tile Outlet PC, Curve Point PCP, Photo Control Point PCT, Photo Control Target PI, Tangent Point PIP, Pipe Culvert PL, Location of Photo -Wetlands PLG, Location of General Photo POC, Curve Point POST, Spiral Point 	<ul style="list-style-type: none"> PR, Electric Riser Pole PRO, Profile Shot PT, Curve Point REF, Reference Tie Point RET, Retaining Walls RIP, Rip-Rap ROC, Rock Outcropping ROW, Right of Way Mark RR, Centerline of Railroad Tracks RRB, Railroad Signal Box RRF, Railroad Frog RRR, Railroad Rail RRS, Railroad Signal RRW, Railroad Switch RT, Radio Tower S, Soil Sampling Site -Wetlands SBR, Size of Bridge SC, Spiral Point SCR, Section Corner SEP, Septic Tank SF, Silt Fence -Wetlands SG, Staff Gauge -Wetlands SH, Paved Shoulder SHR, Shrub SI, Sign SL, Speed Limit Sign SLN, Section Line SLO, Silo SNK, Sink Hole SNP, Unpaved Shoulder SP, Stream Profile STP, Stump SWK, Sidewalk SWP, Swamp or Marsh TA, Tower Anchor TBO, Telephone Booth TCB, Traffic Signal Box TDC, Tree Deciduous TDL, Traffic Detection Loop TER, Terrace TEV, Evergreen Tree TFR, Tree Fruit TGP, Telegraph Pole TIL, Tile Line TLNL, Tree Line Left TLNR, Tree Line Right TOP, Top of Bridge Pier TPA, Telephone Pole Co. 1 TPB, Telephone Pole Co. 2 TPC, Telephone Pole Co. 3 TR, Telephone Riser Pole TRL, Trail TS, Spiral Point TSB, Telephone Switch Box TSG, Traffic Signal TSL, Traffic Signal and Luminare TV, Satellite TV Dish TVP, TV Pedestal TW, Top of Water UB, Utility Box UE, Utility Elevation UPH, Utility Pot Hole - Quality A UST, Underground Tank UV, Underground Utility Vault VS, Channel Cross Section WC, Wild Card -Misc. Field Shot WEL, Well WHD, Water Hydrant WHU, RV Water Hook Up WM, Wind Mill WND, Wind Turbine WV, Water Valve
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SURVEYED UTILITY OWNER SYMBOLS

Sub-Surface Utility Mapping Quality Level is in accordance with CII/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

— TI	TLID, Windstream Communications - Quality D
— W	WLID, Rathbun Rural Water - Quality D
— G	PPA, Alliant Energy
— FO	GLID, Winfield, City of - Quality D
— FO	FOID, Windstream Communications - Quality D

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.	Description
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.	Description	
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	

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.	Description
Green	(2)	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	

Symbol	Description
○	Reference Point
—	Station
△	Section Corner
---	Ground Line Intercept
	Saw Cut
—	Guardrail
—	Trench Drain
—	HighTension Cable Guardrail
—	Sheet Pile
▨	Pavement Removal
▩	Clearing & Grubbing Area

Symbol	Description
▲	Proposed Right-of-Way
△	Existing Right of Way
▲△	Existing and Proposed Right-of-Way
▲△	Easement and Existing Right-of-Way
○	Easement (Temporary)
●	Easement
C/A	Access Control
—	Property Line

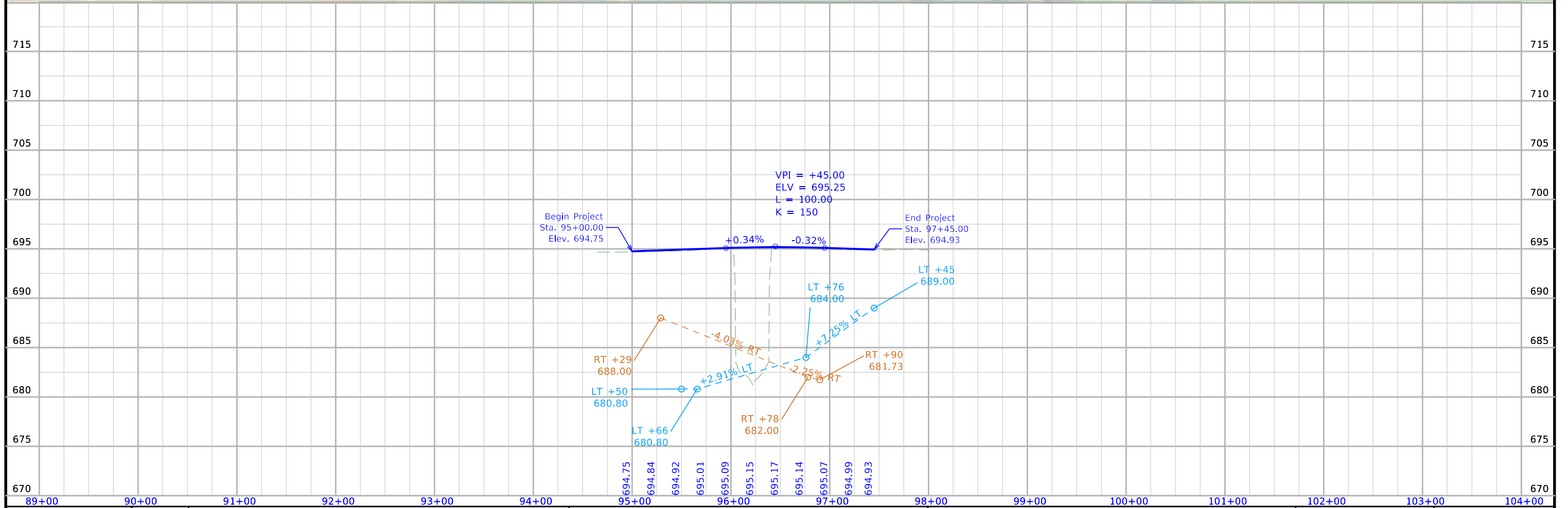
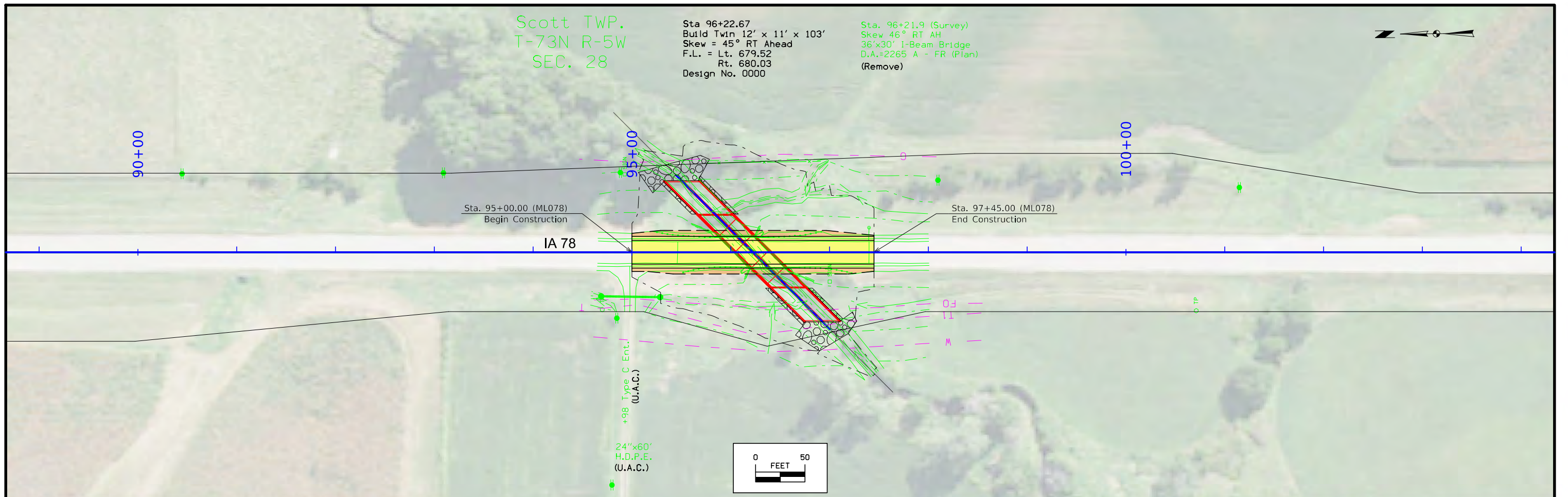
PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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

Scott TWP.
T-73N R-5W
SEC. 28

Sta 96+22.67
Build Twin 12' x 11' x 103'
Skew = 45° RT Ahead
F.L. = Lt. 679.52
Rt. 680.03
Design No. 0000

Sta. 96+21.9 (Survey)
Skew 46° RT AH
36'x30' I-Beam Bridge
D.A.=2265 A - FR (Plan)
(Remove)



Survey Information

SURVEY INDEX

County: Henry
PIN: 20-44-078-010
Project Number: BRFN-078-4(25)—39-44
Location: IA 78 0.3 mi W of E Jct Co Rd W66
Type of Work: Bridge Replacement
Project Directory: 4407801020

Survey Personnel

Nels Sutherland – Survey Party Chief
Myron Fox – Survey Party Chief

Date(s) of Survey

Begin Date 11/10/2021
End Date 03/14/2022

General Information

Measurement units for this survey are US survey feet. This survey is for IA 78 bridge replacement 0.3 mi W of E Jct Co Rd W66. This project is a Full DTM Survey.

Project Control

Nearby Iowa Real Time Network reference stations were utilized to obtain horizontal and vertical control on primary project control points. Two or more five-minute observations were taken with appropriate time spans between and used in a weighted average to obtain final coordinate values. For additional details of the control survey, contact the Preliminary Survey department.

PROJECT DATUM: NAD83(2011) EPOCH 2010.00
VERTICAL DATUM: NAVD88
COORDINATE SYSTEM: IOWA REGIONAL COORDINATE SYSTEM ZONE 14
GEOID MODEL: 2012bu3

Alignment Information

The alignment created for this project was based off as-built plan set F-352(6) and coordinates provided by the district 5 Land Survey office in Fairfield, Ia.

Survey stationing relates to as-built plan stationing as follows:

POT Sta. 79+79.70 Plan
= Survey POT Sta. 79+79.70 (Held)

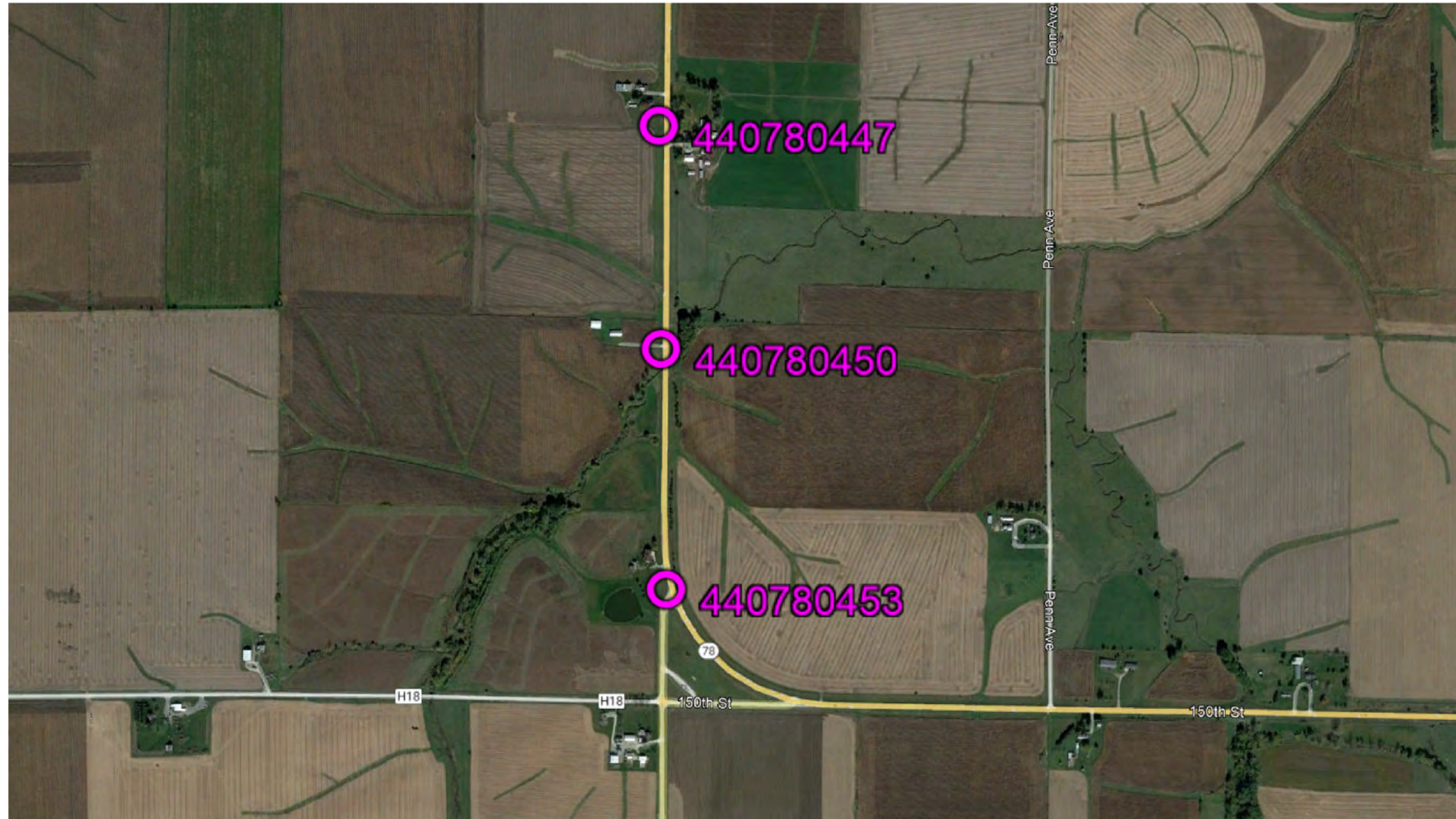
TS Sta. 106+36.60 Plan
= Survey TS Sta. 106+39.69

Utility Information

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

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) EPOCH 2010.00 - Ia. RCS Zone 14
VERT. DATUM: NAVD88 - Geoid Model 2012bu3

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) EPOCH 2010.00
 1a. Regional Coordinate System Zone 14

VERT. DATUM: NAVD88
 Geoid Model 2012bu3
 Project Control Marks are Bench Marks

Point Name	Northing	Easting	Elevation	Code Description
440780453	6506723.89	24448179.38	729.33	CP from the intersection of H18 and Oasis Ave proceed N 780ft along Oasis Ave point is 55ft NW of cl of Oasis Ave Idot FENO mon w/brass disc 4in below surface
440780450	6508403.99	24448146.76	693.59	CP from the intersection of 140th st and hwy 78 proceed S 2875ft along hwy 78 point is 31ft W of cl of hwy 78 5/8th x 42in rebar 4in below surface
440780447	6509937.38	24448138.26	726.93	CP from the intersection of 140th st and hwy 78 proceed S 1335ft along hwy 78 point is 55ft W of cl of hwy 78 ROW rail cut x on ball 1ft above ground

NOTE:

The first two digits in the control point name refer to the county number.
 The next 3 digits refer to the highway number.
 The next 3 digits refer to the highway milepost.
 The last digit refers to the distance from the referenced milepost to the nearest tenth of a mile.

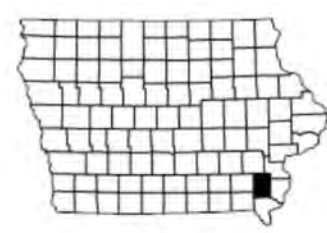
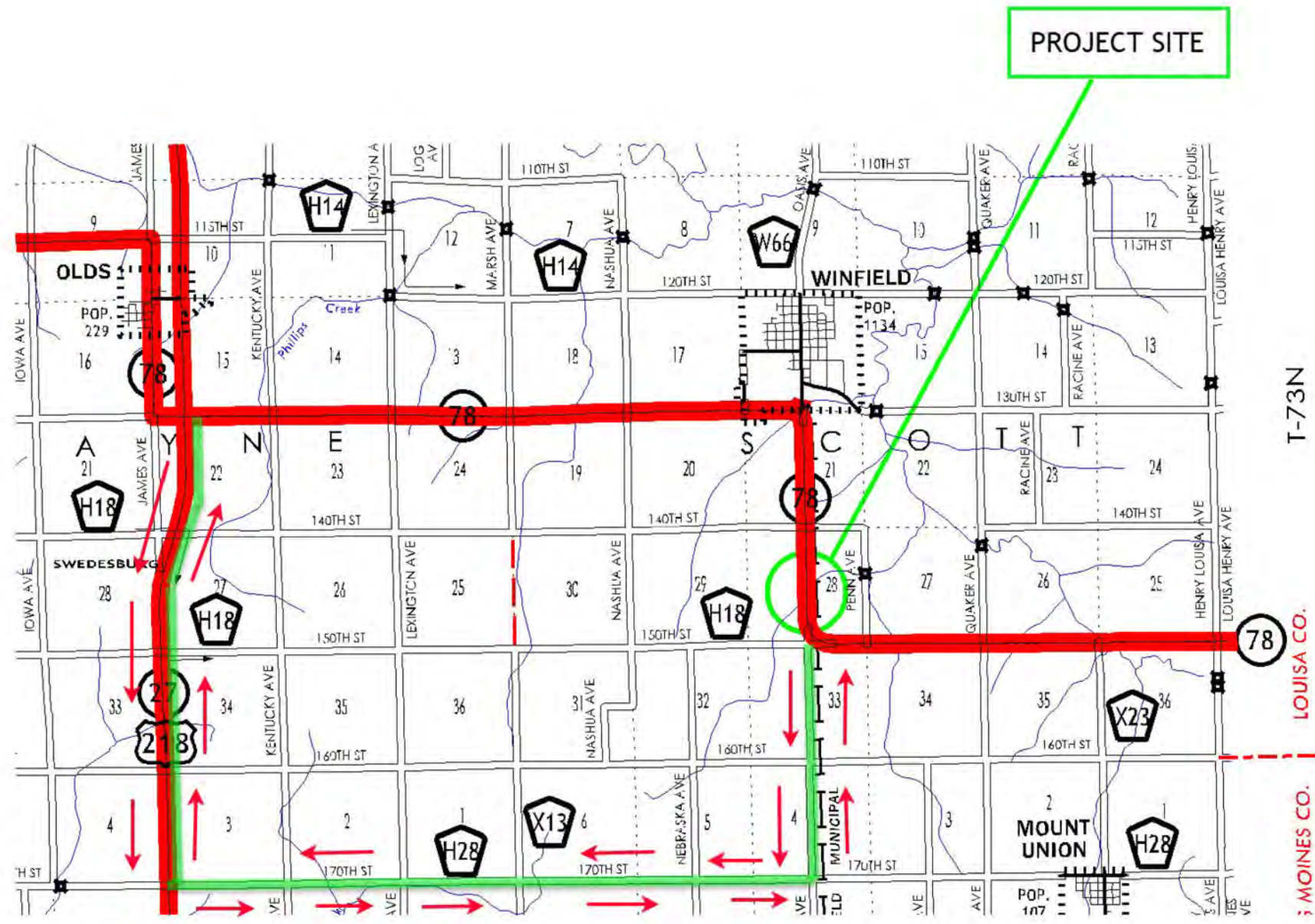
511 TRAVEL RESTRICTIONS

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
IA 78	Both	Henry	IA 78 Bridge over stream 0.3 mi W of E Jct Co Rd W66				Closure					

108-23A
08-01-08

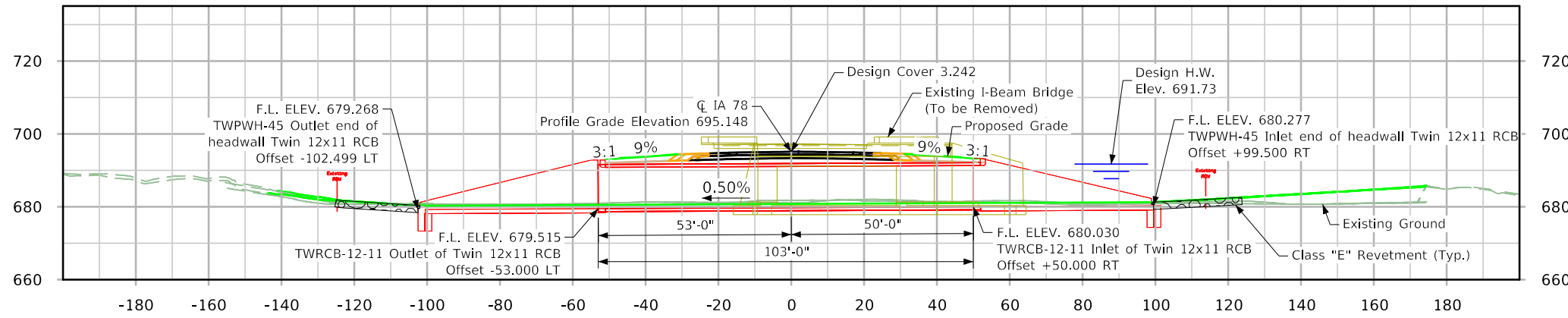
TRAFFIC CONTROL PLAN

IA 78 will be closed, and an offsite detour will be utilized.
 Access to properties shall be maintained at all times.
 The Contractor shall install, maintain, and remove signing for the detour. Detour signs will become property of the Contractor.
 Refer to J-sheets for the detour signing plan.

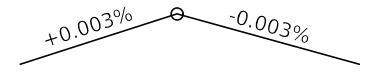


HENRY COUNTY
 On IA 78 Over Stream 0.3 mi W of E Jct
 Co Rd W66
 BRFN-078-4(25)- -39-44
 PIN: 20-44-078-010

DETOUR



Control Point: 440780450, CP from the intersection of 140th St. and Hwy. 78, proceed S 2875 ft. along Hwy 78, point is 31 ft. W of CL of Hwy. 78, 5/8th x 42 in. rebar 4 in. below surface, Elev. 693.59, N.6508403.99, E.24448146.76



VPI Sta. = 96+45.000
 VPI Elev. = 695.250
 VC = 100'

**Proposed Profile
 Grade IA 78**

STA. 96+22.67

LONGITUDINAL SECTION ALONG CL CULVERT

Notes:
 All units are in feet unless noted otherwise.
 Class "E" revetment stone is embedded.
 Flow line of the culvert has been set 1' below streambed.
 Final design plans should include precast concrete alternative.

Utilities Legend:

- FO - Fiber Optic - Windstream Communications
- G - Gas - City of Winfield
- T1 - Telephone - Windstream Communications
- W - Water - Rathbun Rural Water
- Electric - Alliant Energy

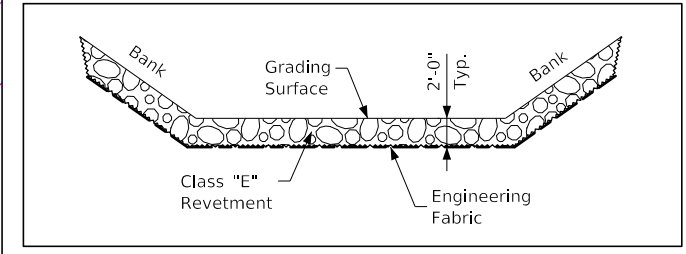
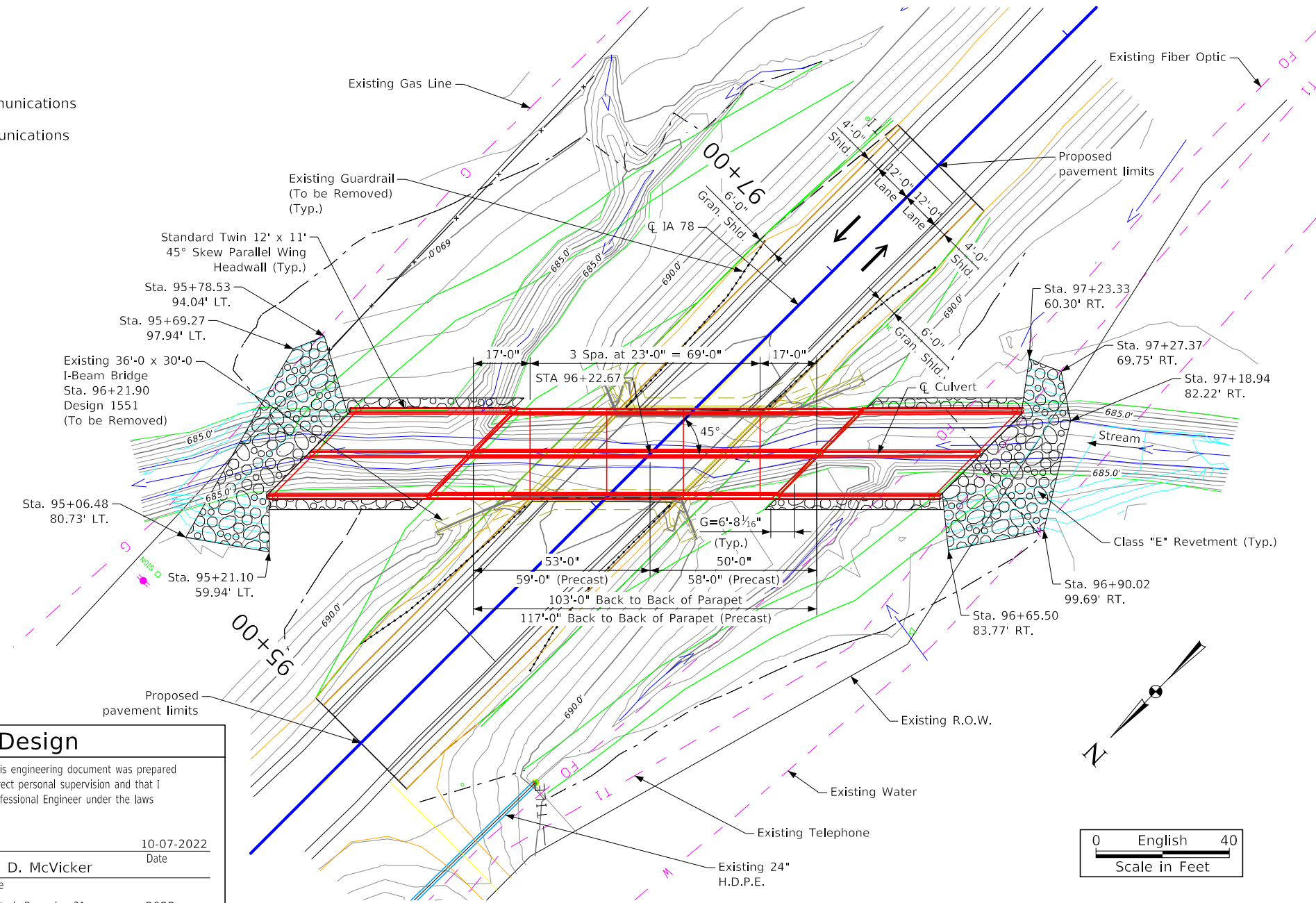
Utilities shown on this sheet are for information only, see road design sheets for final utility information.

Hydraulic Data

Drainage Area = 3.3 Sq. Mi.
 Q₅₀ = 2,140 CFS
 HW Elev. = 691.73
 Stream Slope = 17.1 Ft./Mi.
 Q₁₀₀ = 2,550 CFS
 HW Elev. = 693.19
 Q Overtop = 3,050 CFS
 Overtop Elev. = 695.15

Traffic Estimate

2025 AADT 800 V.P.D.
 2045 AADT 1,000 V.P.D.
 202? DHV - V.P.H.
 Trucks 9 %
 Total
 Design ESALS



Typical Channel Protection

**Estimated Revetment Quantities
 Included With Road Plans**

Location	Revetment Class "E" (Ton)	Engineering Fabric (SY)	Excavation (CY)
Inlet	189	175	118
Outlet	195	185	122
Totals	384	360	240

Excavation quantity calculated from grading surface. Quantities shown for information only. See Road Sheets.

Location

IA 78 over Stream
 T-73N R-5W Section 28
 Scott Township
 Henry County
 FHWA No. 28590
 Bridge Maint. No. 4445.0S078
 Asset ID No. ??
 Latitude 41.096028°
 Longitude -91.438015°
 Sta. 96+22.67
 Build Twin 12' x 11' x 103' RCB
 Section 28
 Skew 45° RT Ahead
 Length LT 53'
 Length RT 50'
 F.L. LT 679.515
 F.L. RT 680.030
 DA 3.3 Sq. Mi.
 DES # ??

Hydraulic Design

LICENSED PROFESSIONAL ENGINEER

Aaron D. McVicker
25251

IOWA

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.

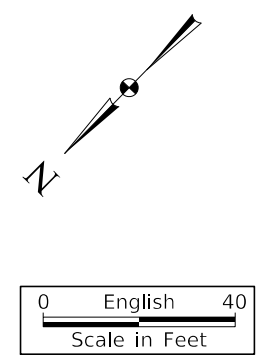
Signature _____ Date 10-07-2022

Printed or Typed Name Aaron D. McVicker

My license renewal date is December 31, 2022

Pages or sheets covered by this seal: V.1

SITUATION PLAN



Design For 45 Degree RA
**Twin 12' x 11' x 103' Reinforced
 Concrete Box Culvert**

Situation Plan

STA. 96+22.67 (IA 78) Turn-In Date: Oct 07 2022

Henry County

IOWA DEPARTMENT OF TRANSPORTATION

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

CROSS SECTION VIEW COLOR LEGEND

Design Color No.	Feature	Design Color No.	Feature
Aggregate			
(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			
(207)	HMA Base Course	(128)	Boulder Substrata
(207)	HMA Interim Course	(48)	Broken Weathered Substrata
(207)	HMA Surface Course	(3)	Core Out Substrata
Concrete			
(0)	Barrier Concrete	(203)	Existing Pavement Substrata
(0)	Barrier Concrete Footing	(6)	Loam Substrata
(0)	Curb Gutter	(80)	Rock Substrata
(48)	Flowable Mortar	(4)	Select Sand Substrata
(0)	Median Concrete	(3)	Shale Substrata
(0)	PCC Pavement	(10)	Topsoil Substrata
(0)	Sidewalk	Unsuitable / Waste	
Shoulder			
(209)	Shoulder HMA	(3)	Unsuitable Type A
(0)	Shoulder PCC	(13)	Unsuitable Type B
(6)	Shoulder Granular	(11)	Unsuitable Type C
(6)	Shoulder Granular	(3)	Waste
Existing			
(0)	Existing Pavement		

NOTES:

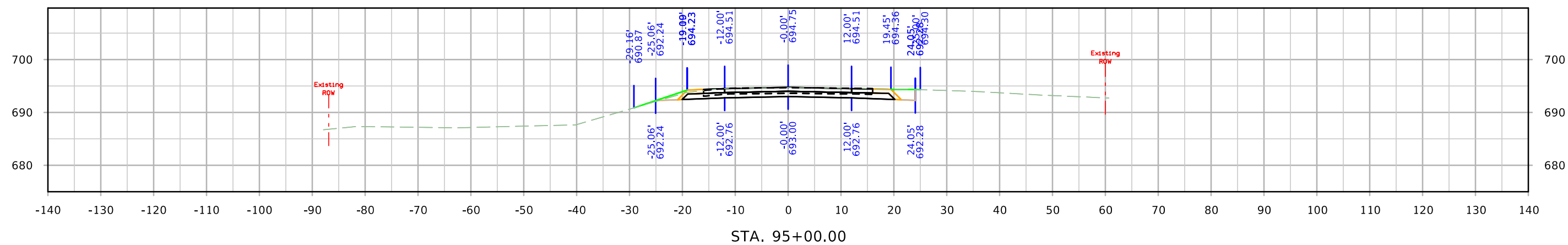
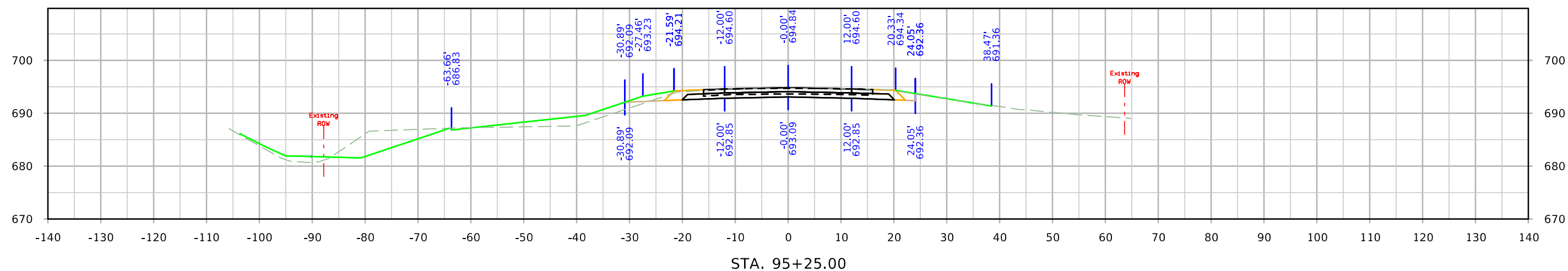
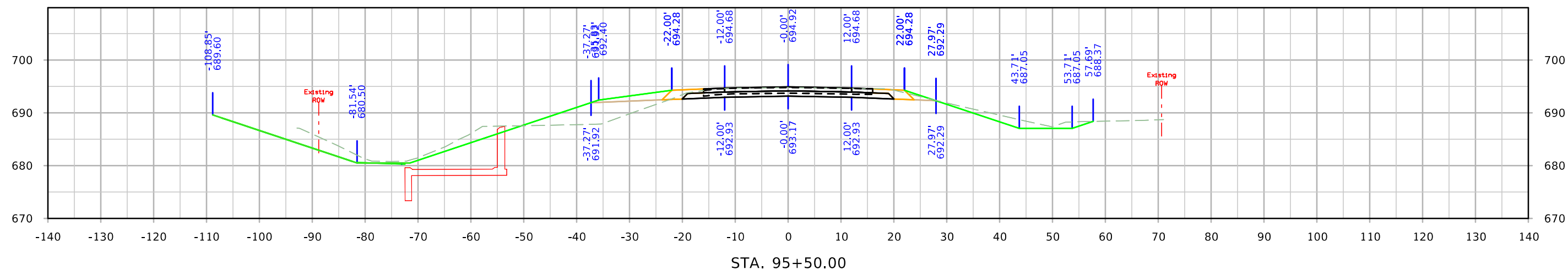
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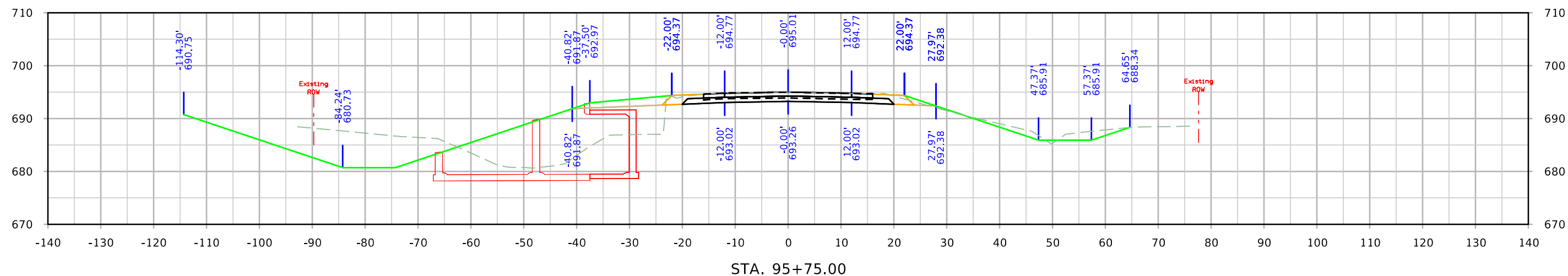
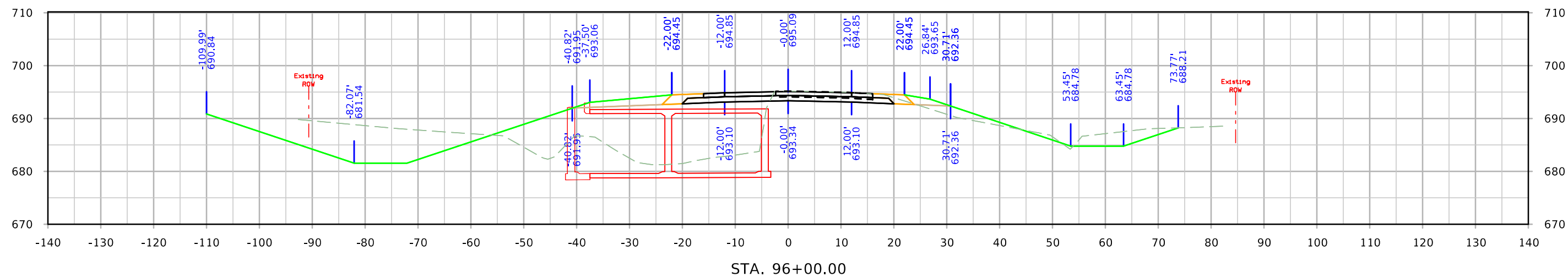
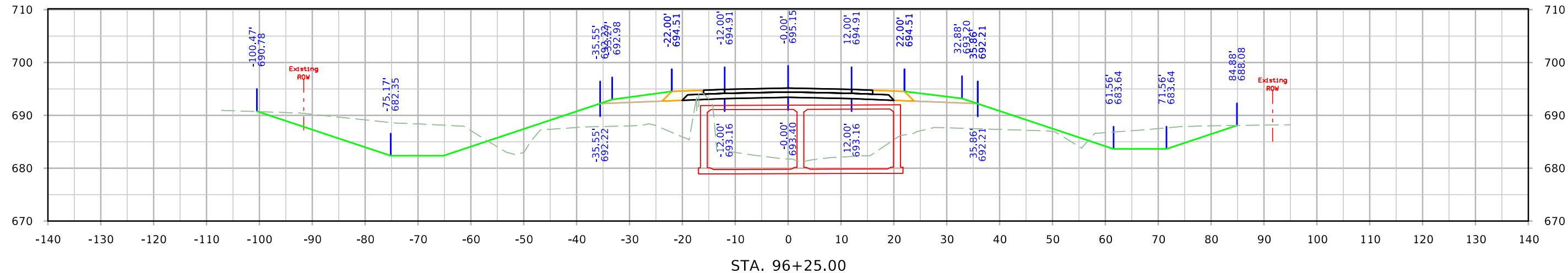
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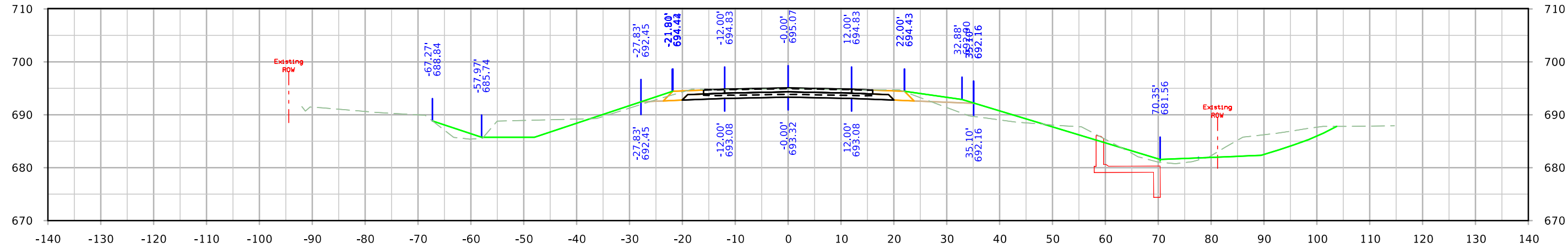
CROSS SECTIONS LEGEND AND INFORMATION SHEET

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

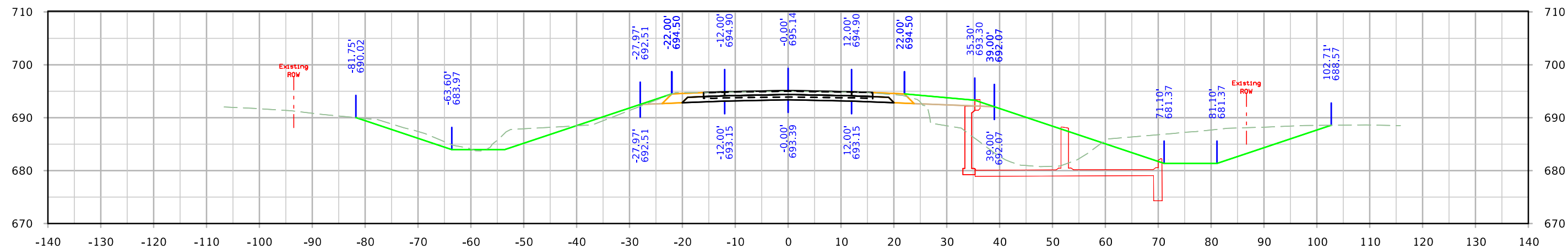




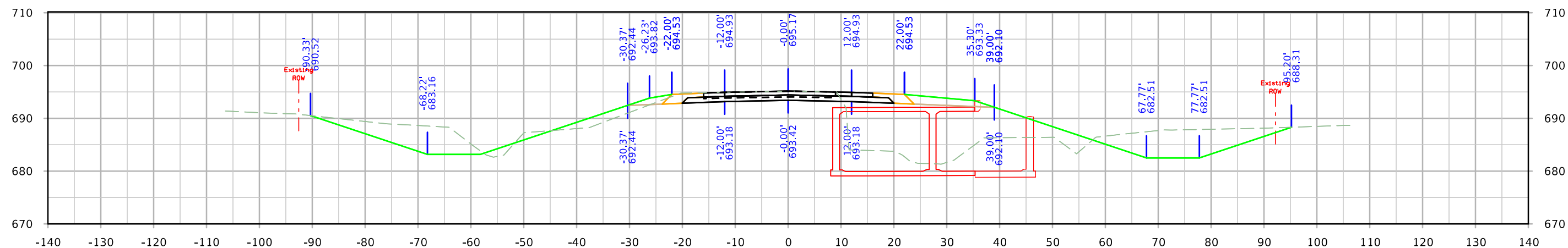
IA 78



STA. 97+00.00



STA. 96+75.00



STA. 96+50.00

