

Appanoose COUNTY  
 Bridge Replacement-PPCB  
 BRF-005-1(74)--38-04

Appanoose COUNTY

LETTING DATE  
 Dec 20 2022



# Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

## PRIMARY ROAD SYSTEM Appanoose COUNTY Bridge Replacement-PPCB

Cooper Creek 1.5 mi N of IA 5

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. 941+25.00

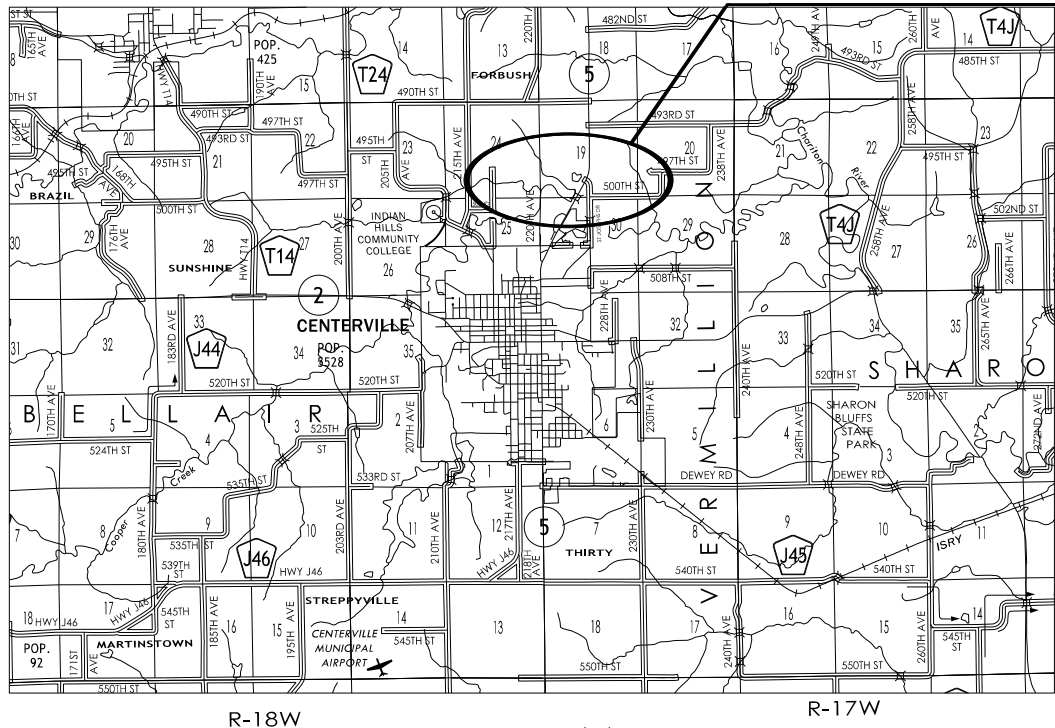
Ref. Loc. 15.20

FHWA #13930

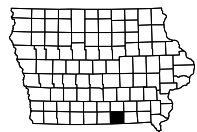
No.	DESCRIPTION
<b>INDEX OF SHEETS</b>	
<b>A Sheets</b>	<b>Title Sheets</b>
A.1	Title Sheet
<b>B Sheets</b>	<b>Typical Cross Sections and Details</b>
B.1	Typical Cross Sections and Details
B.2 - 3	Standards
<b>D Sheets</b>	<b>Mainline Plan and Profile Sheets</b>
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2	IA 5 Plan and Profile
<b>G Sheets</b>	<b>Survey Sheets</b>
G.1	Reference Ties and Bench Marks
G.2	Horizontal Control Tab. & Super for all Alignments
<b>J Sheets</b>	<b>Traffic Control and Staging Sheets</b>
* J.1	Traffic Control Plan
<b>V Sheets</b>	<b>Bridge and Culvert Situation Plans</b>
V.1	Bridge and Culvert Situation Plans
<b>W Sheets</b>	<b>Mainline Cross Sections</b>
W.1	Cross Sections Legend & Symbol Information Sheet
W.2 - 12	Mainline Cross Sections
	* Color Plan Sheets

REVISIONS	TOTAL
	..
PROJECT IDENTIFICATION NUMBER	
18-04-005-010	
PROJECT NUMBER	
BRF-005-1(74)--38-04	
R.O.W. PROJECT NUMBER	
NHSN-005-1(75)--2R-004	

INDEX OF SHEETS	
No.	DESCRIPTION



Schedule:	
B1-	05-07-2021
D5-	05-14-2021
D4-	08-23-2022
B3-	10-04-2022



DESIGN DATA RURAL			
2021	AADT	6000	V.P.D.
2041	AADT	6650	V.P.D.
20 --	DHV	--	V.P.H.
	TRUCKS	7	%
	Total		
	Design	ESALs	--

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

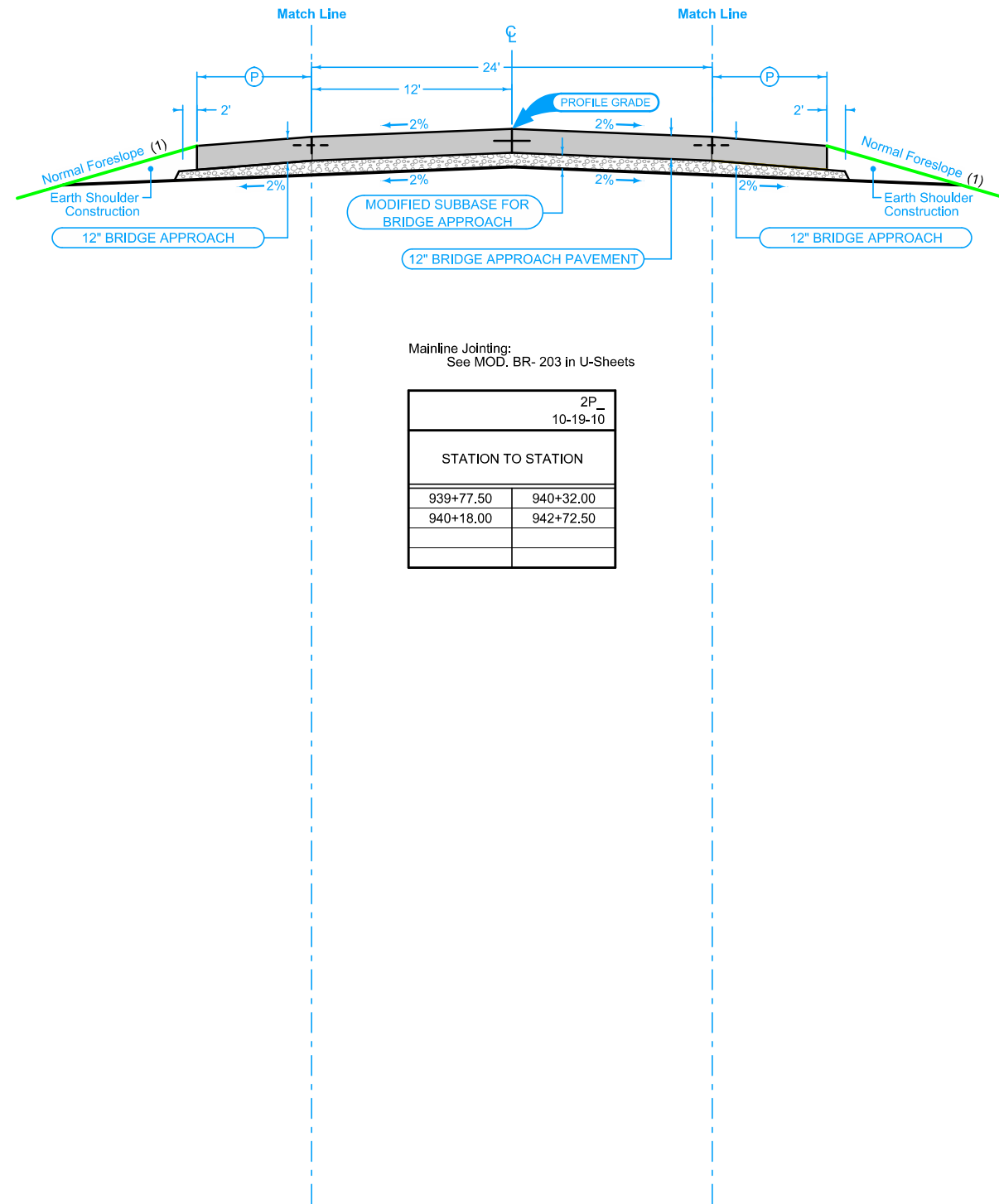
PRELIMINARY PLANS

Subject to change by final design.

D3 PLAN – Date: 3/19/2021

Shoulder at Bridge Approach

2_P_Guard_10-17-17		
STATION TO STATION		(P) Feet
939+77.50	940+32.00	10
940+18.00	942+72.50	10



Shoulder at Bridge Approach

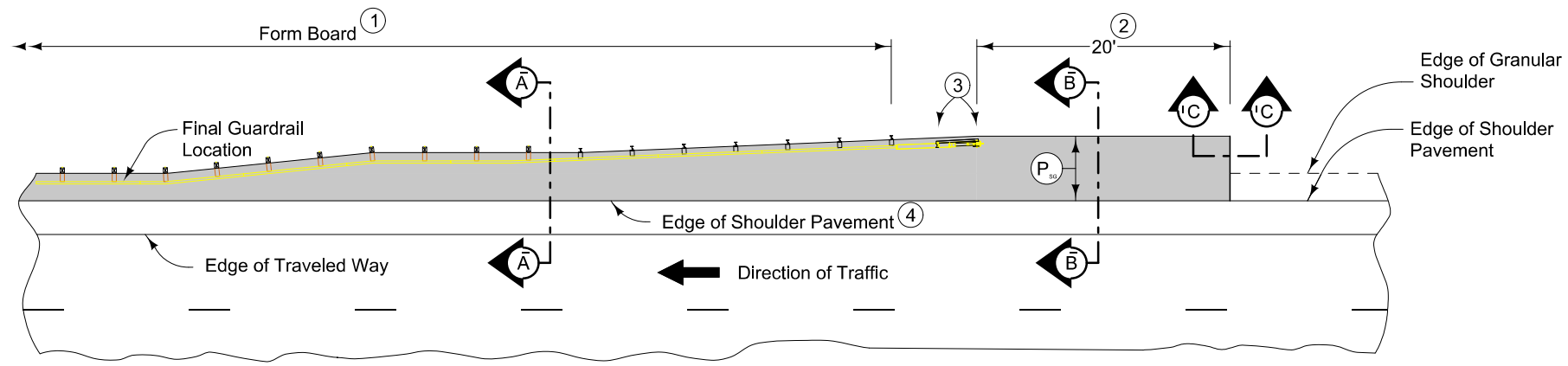
2_P_Guard_10-17-17		
STATION TO STATION		(P) Feet
939+77.50	940+32.00	10
940+18.00	942+72.50	10

(1) Refer Standard Road Plan EW 202 and X-sections for additional details

2P_10-19-10		
STATION TO STATION		
939+77.50	940+32.00	
940+18.00	942+72.50	

See Tab 100-24 or 100-25 for pavement quantities.  
See Tab 112-9 for shoulder quantities.

IA 5



PLAN VIEW

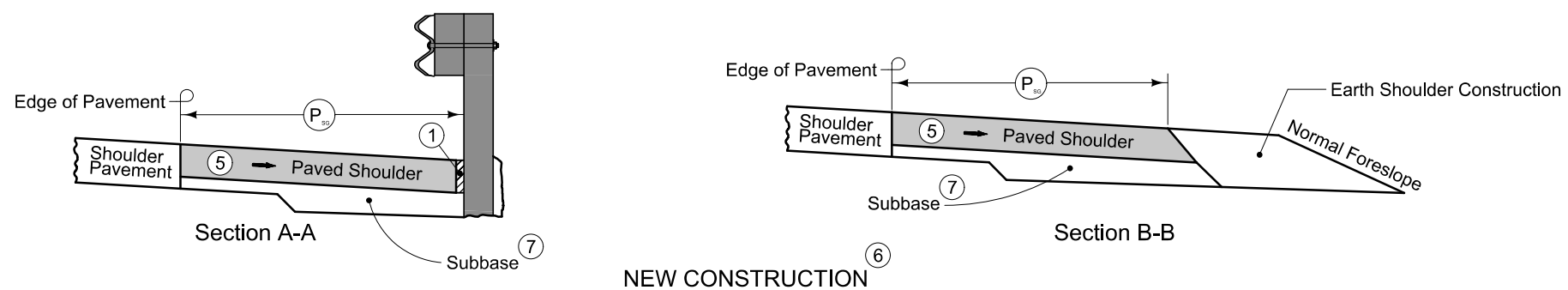
9" HMA Paved Shoulder at guardrail. 8" PCC may be substituted with the following jointing layout:

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.

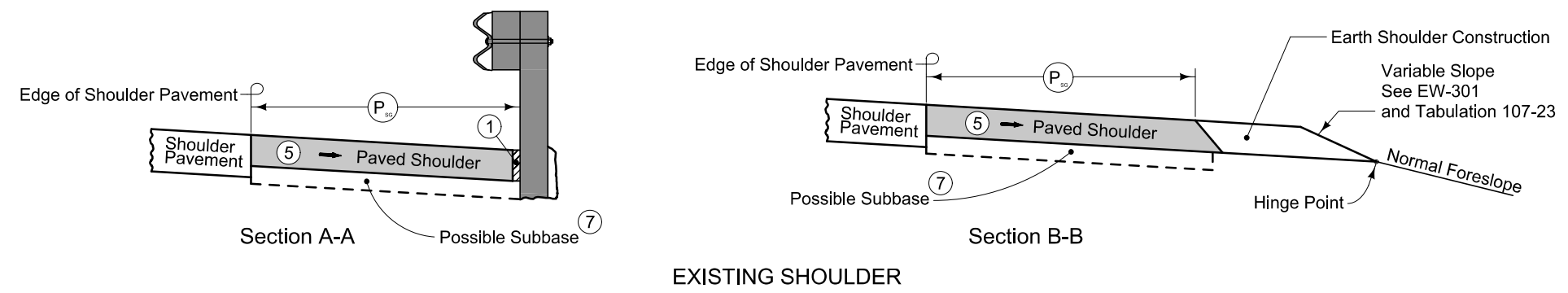
Compaction of HMA is required to face of guardrail post. Hand compaction will be allowed under guardrail. Removal and reinstallation of guardrail will be allowed with no additional payment.

Refer to Tabulation 112-9 for shoulder quantities.

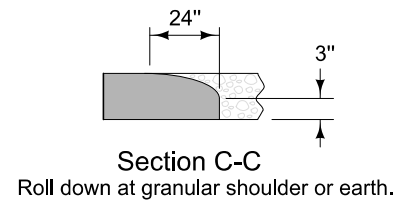
- ① PCC option only: When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown.
- ② Continue paved shoulder 20 feet beyond the center of the first post.
- ③ Shoulder may be notched for first 2 posts or post sleeves may be installed through pavement. Do not drive posts through pavement.
- ④ 'KT-1 joint for PCC shoulder. 'B' joint for HMA shoulder.
- ⑤ Match shoulder slope.
- ⑥ The Contractor has the option to pave the paved shoulder at guardrail and the partial width paved shoulder as one operation.
- ⑦ Refer to other details in the plan.



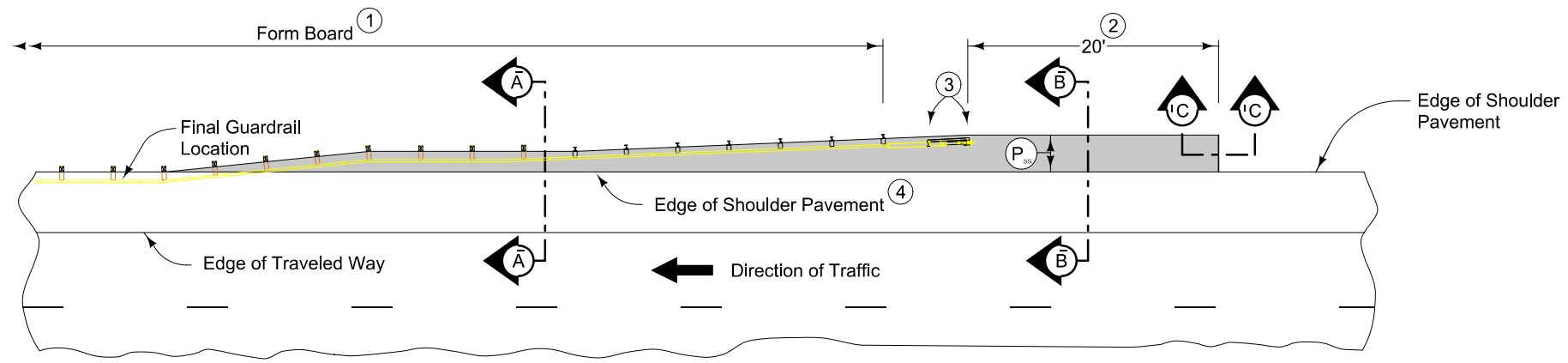
NEW CONSTRUCTION



EXISTING SHOULDER



PAVED SHOULDER AT GUARDRAIL (ADJACENT TO PARTIAL WIDTH PAVED SHOULDER)



PLAN VIEW

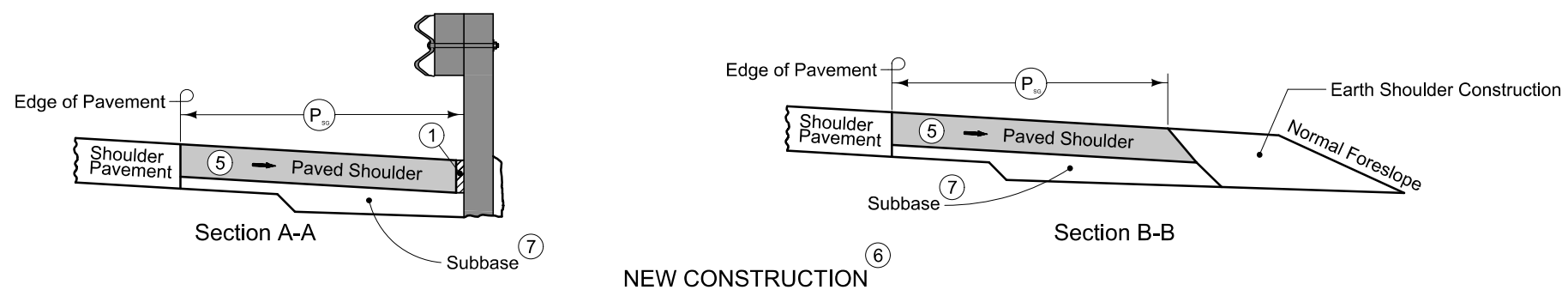
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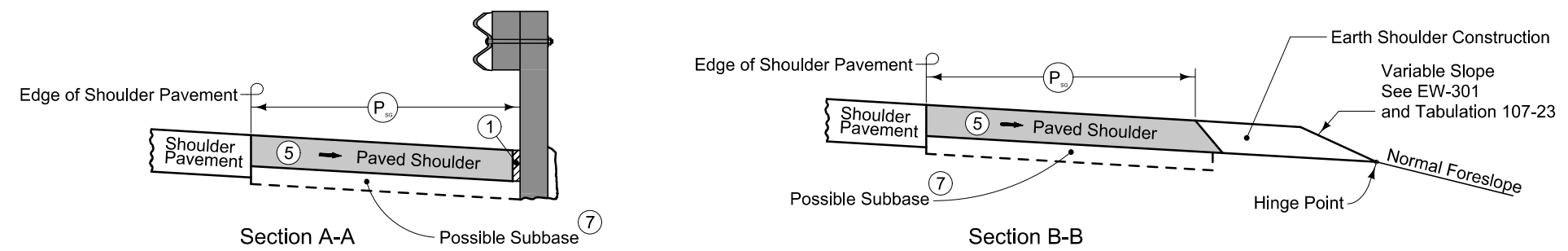
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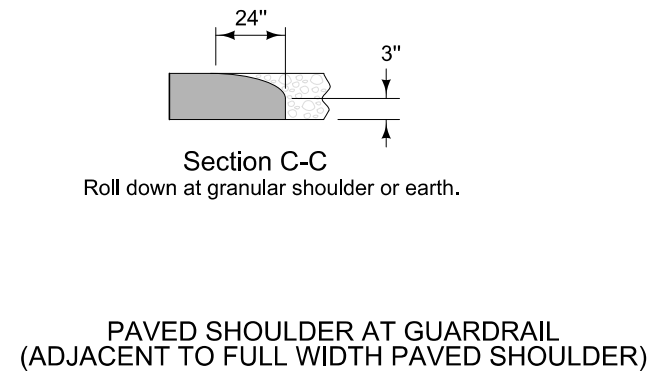
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- ⑤ Match shoulder slope.
- ⑥ The Contractor has the option to pave the paved shoulder at guardrail and the full width paved shoulder as one operation.
- ⑦ Refer to other details in the plan.



NEW CONSTRUCTION



EXISTING SHOULDER



PAVED SHOULDER AT GUARDRAIL  
(ADJACENT TO FULL WIDTH PAVED SHOULDER)

### SURVEY SYMBOLS

- POT Tangent Point
- SP Stream Profile
- CP Control Point
- WC Wlki Card (Misc. Field Shot)
- SNP Unpaved Shoulder
- BL Topo Breakline
- DU Centerline Draw or Stream (Up)
- D Centerline Draw or Stream (Down)
- ENP Edge Paved Entrance & Park Lot
- ENT Centerline BL of Entrance
- GR Ground Shot
- BNK Stream Bank
- RIP Rip-Rap
- ENU Edge Unpaved Entrance & Parking
- GDL Guard Rail Steel
- GU Gutter In Front of Curb
- CU Back of Curb
- EP Edge of Paved Roads (ML or SR)
- SH Paved Shoulder
- C Centerline BL of Road (ML or SR)
- PPA Power Pole Mkt/American Energy
- ROW Right of Way Mark
- PIP Pipe Culvert
- SOP Size of Pipe or Culvert
- CON Concrete or A/C Slab
- BRG Bridge
- BD Bridge Deck
- BCL Bridge Centerline
- SBR Size of Bridge
- RET Retaining Walls
- T1 TL1D Frontier Communications - Quality D
- F0 FO1D Windstream Communications - Quality D
- F02 FO2D ICN - Quality D
- V WL1D West Central Iowa Rural Water - Quality D
- PLG Location of General Photo
- CUL Culvert
- TP Telephone Pedestal
- PRO Profile Shot
- TLNR Tree Line Right
- TW Top of Water
- EW Edge of Water
- DIK Centerline of Dike or Dam
- INB Storm Sewer Beehive Intake
- TIL Tile Line
- TDC Tree Deciduous
- BLS Bridge Low Steel

### UTILITY LEGEND

- PPA Alliant Energy
- T1 TL1D Windstream
- F0 FO1D Iowa Communications Network
- F02 FO2D Aureon Network Services
- V WL1D Rathbun Regional Water

Alliant Energy  
Alliant Energy Field Engineer  
(800) 255-4268  
[locate\\_ipi@alliantenergy.com](mailto:locate_ipi@alliantenergy.com)

Windstream Communications  
Locate Desk  
(800) 289-1901  
[LOCATE\\_DESK@WINDSTREAM.COM](mailto:LOCATE_DESK@WINDSTREAM.COM)

Iowa Communications Network  
Shannon Marlow  
(800) 572-3940  
[icnoutsidesideplantoowaonecall@iowa.gov](mailto:icnoutsidesideplantoowaonecall@iowa.gov)

Aureon Network Services  
Jeff Klocko  
(515) 830-0445  
[jeff.klocko@areon.com](mailto:jeff.klocko@areon.com)

Rathbun Regional Water  
Scott Jackson  
(641) 647-1086  
[onecall@rrwa.net](mailto:onecall@rrwa.net)

### 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.	
Yellow	(4)	Highlight for Critical Notes or Features
Red	(3)	Delineates Restricted Areas
Lavender	(9)	Temporary Pavement Shading
Gray, Light	(48)	Proposed Pavement Shading
Gray, Med	(80)	Proposed Granular Shading
Gray, Dark	(112)	Proposed Grade and Pave Shading "In conjunction with a paving project"
Brown, Light	(236)	Grading Shading
Tan	(8)	Proposed Sidewalk Shading
Blue, Light	(230)	Proposed Sidewalk Landing Shading
Pink	(11)	Proposed Sidewalk Ramp Shading

### PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

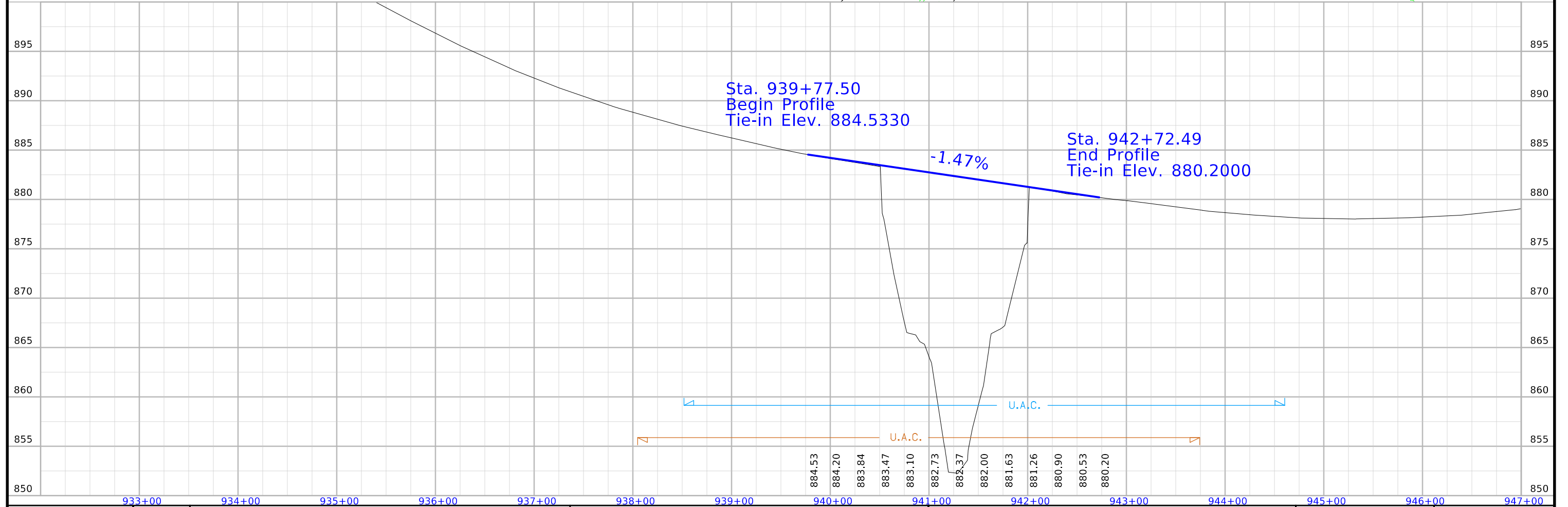
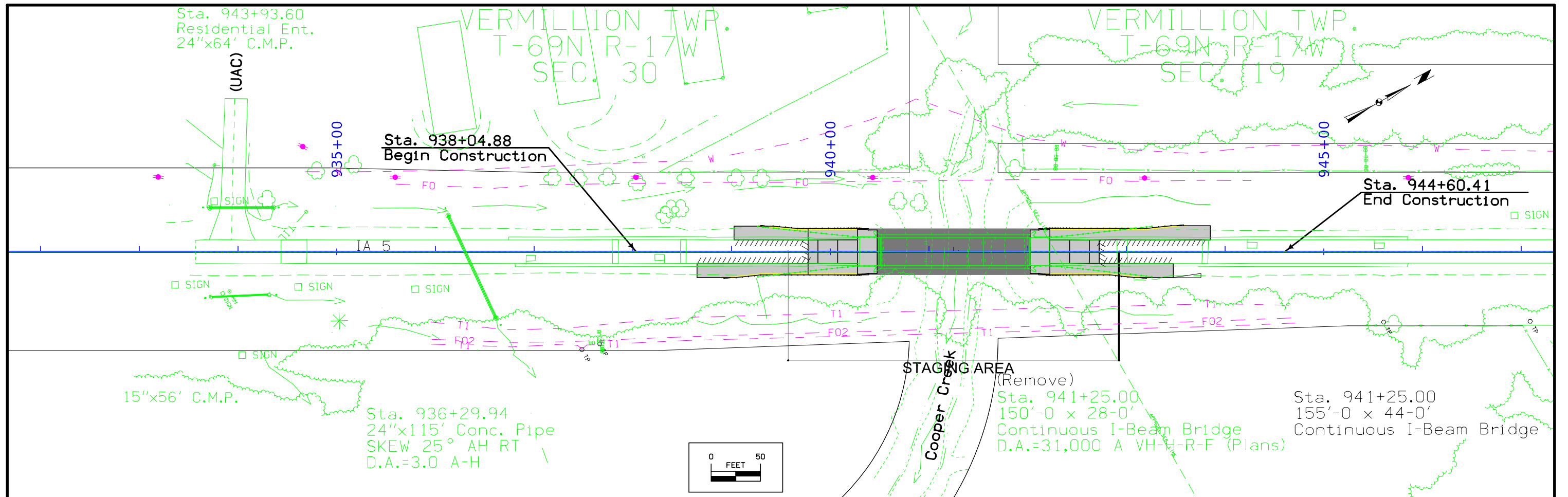
LINEWORK	Design Color No.	
Green	(2)	Existing Ground Line Profile
Blue	(1)	Proposed Profile and Annotation
Magenta	(5)	Existing Utilities
Blue, Light	(230)	Proposed Ditch Grades, Left
Black	(0)	Proposed Ditch Grades, Median
Rust	(14)	Proposed Ditch Grades, Right

- #### Reference Point
- Station
  - 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
  - Existing Right of Way
  - Existing and Proposed Right-of-Way
  - Easement and Existing Right-of-Way
  - Easement (Temporary)
  - Easement
  - Access Control
  - Property Line

## PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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



## Survey Information

Appanoose County  
BRF-005-1(74)--38-04  
PIN 18-04-005-010  
IA 5 – Partial Survey of IA 5 1.5 Miles North of IA 2,  
Approx. 1,400'X475'  
SAP 0922.3

### General Information

Measurement units for this survey are US survey feet. Project datum and control was established using 2 Hour Long static sessions that were processed in OPUS. This is a partial survey of IA 5. Starting 1.5 Miles north of IA 2 and ending 1.7 Miles north of IA 2

### Vertical Control

Vertical datum for this survey is relative to NAVD88. Geoid 12B was used in this survey. 2 Hour long static sessions were processed in OPUS and used to establish 4 control points surrounding the perimeter of the project. CP101-CP104 were then calibrated from CP100. Additional benchmarks were placed throughout the project using RTK GPS.

BM #500 EL= 882.819' this survey  
BM #501 EL=868.614' this survey

### Horizontal Control

The project coordinate system for this survey is IaRCS Zone 12(U.S. Survey Feet). This survey control is relative to 2-hour static sessions that were processed using OPUS. We establish 4 control points surrounding the perimeter of the project limits, observing each for 180 epochs. CP101-CP104 were then calibrated from CP100. Additional control points were placed throughout the project using GNSS Base-Rover setup relative to CP100.

### Alignment Information

The horizontal alignment for this survey is a retrace of As-Built Grading Plans No. 24371388. Survey stationing was equated to the plan PC at STA 955+14.5 at point #JP4003, Found Iron Pin Flush in Pavement, and run back without equation to the beginning of the survey.

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

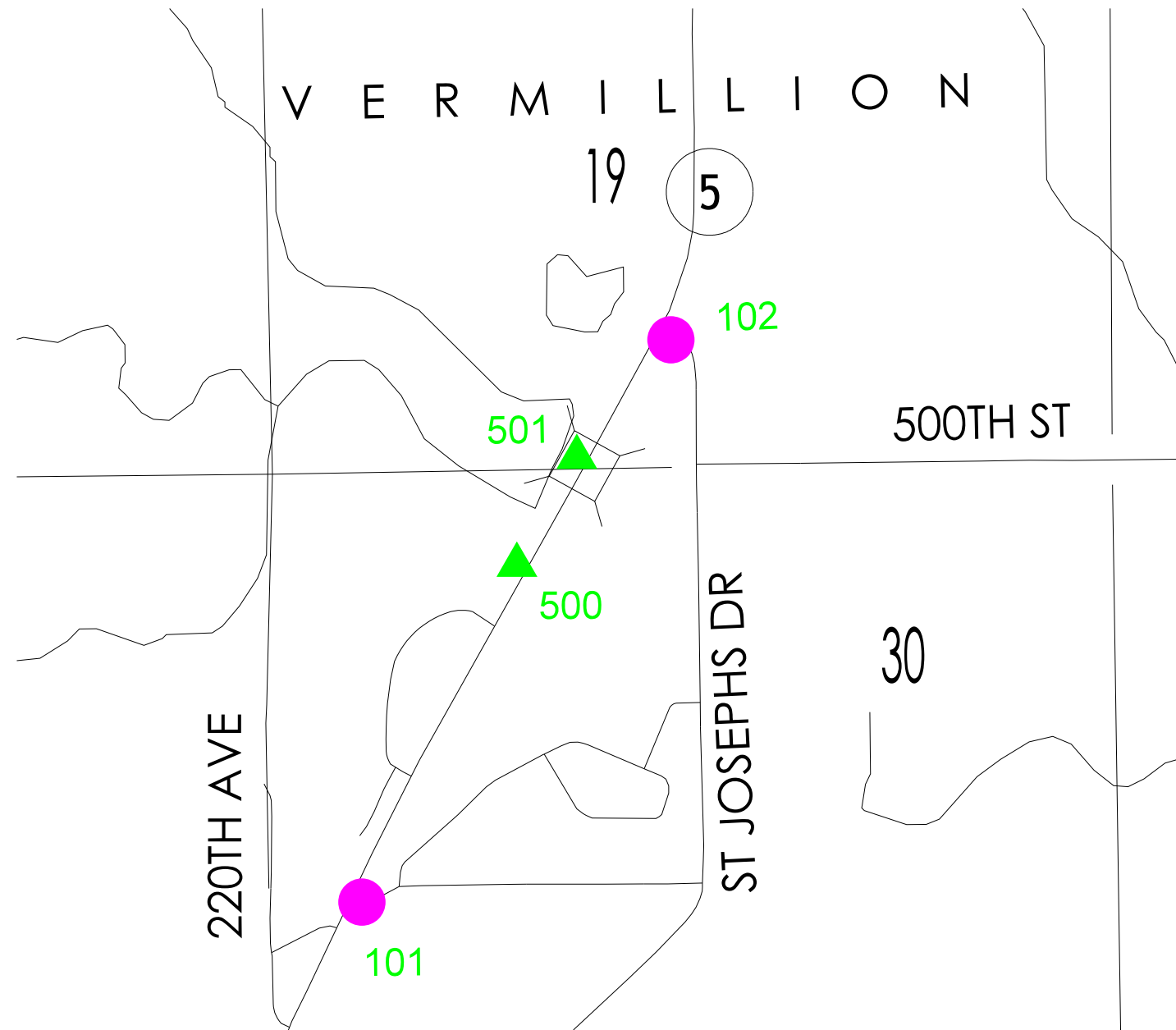
PT Sta. 923+48.6 Project No. 24371388  
Survey POT Sta. 923+48.60

PC Sta 955+14.5 Project No. 24371388  
Survey PC STA 955+14.50



### 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

VERT. DATUM: NAVD88

Ia. Regional Coordinate System Zone 12

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

VERT. DATUM: NAVD88

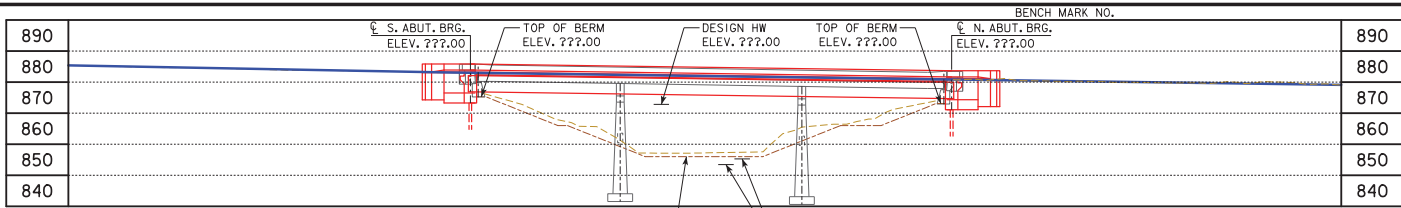
Ia. Regional Coordinate System Zone 12

Point Name	Northing	Easting	Elevation	Feature	Description
101	6139338.56	22744962.04	980.78	CP	SET FENO MONUMENT FLUSH W/ GROUND
102	6142907.59	22746923.32	916.67	CP	SET FENO MONUMENT FLUSH W/ GROUND
500	6141477.86	22745945.65	882.82	BM	SET RR SPIKE NORTH SIDE OF POWER POLE
501	6142162.17	22746326.17	868.61	BM	SET RR SPIKE EAST SIDE OF POWER POLE

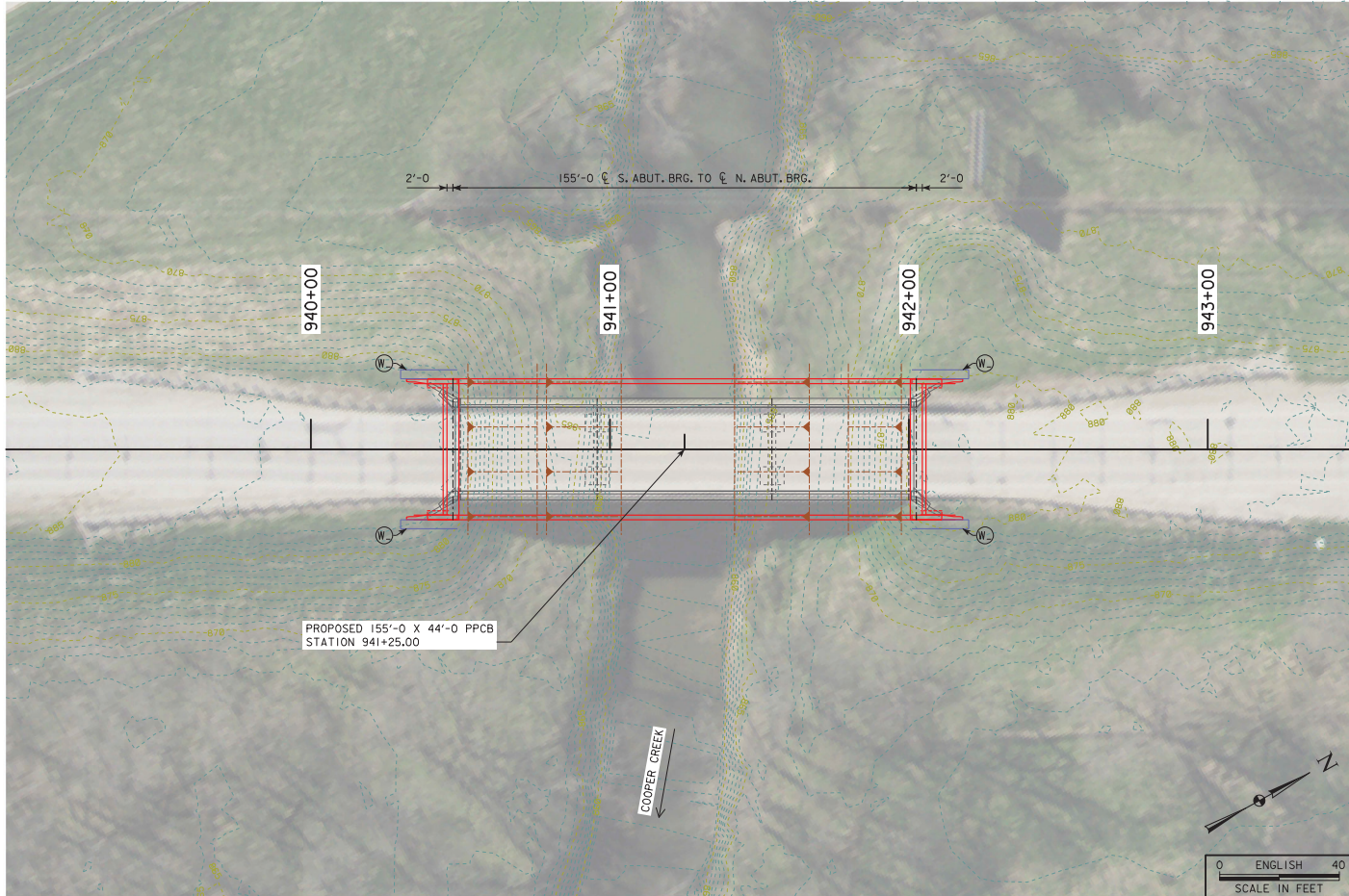
**ALIGNMENT COORDINATES**

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)
IA 5	ML005	923+48.60	6139338.56	22744962.04															
	ML005	955+14.50	6142907.59	22746923.32															





LONGITUDINAL SECTION ALONG CL APPROACH ROADWAY



SITUATION PLAN

**HYDRAULIC DATA**

DRAINAGE AREA = 47.5 SQ. MI.  
 STREAM SLOPE = ???.? FT./MI.  
 AVG. LOW WATER STAGE = ????.?  
 Q<sub>50</sub> = 9,280 CFS  
 STAGE = ????.?  
 REGULATORY LOW BEAM = ????.?  
 BACKWATER = ?? FT.  
 AVG. BRIDGE VELOCITY = ?? FPS

**UTILITIES LEGEND:**

UTILITY SURVEY NOT CONDUCTED

**LOCATION**

IA 5 OVER COOPER CREEK  
 T-69N R-17W  
 SECTION 30  
 VERMILLION TOWNSHIP  
 APPANOOSE COUNTY  
 FHWA NO. 013930 (EXISTING)  
 BRIDGE MAINT. NO. 0415.25005  
 LATITUDE 40.753292°  
 LONGITUDE -92.861525°

**TRAFFIC ESTIMATE**

2017 AADT	5,900	V.P.D.
2021 AADT	6,000	V.P.D.
202. DHV		V.P.H.
TRUCKS	7.0	%
TOTAL DESIGN ESALS		

PRELIMINARY - CONCEPT  
 DESIGN FOR 0° SKEW  
**155'-0" X 44'-0" PRETENSIONED  
 PRESTRESSED CONCRETE BEAM BRIDGE**  
 155'-0" SINGLE SPAN  
**SITUATION PLAN**  
 STATION 941+25.00 (CL IA 5) NOVEMBER, 2019  
**APPANOOSE COUNTY**  
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION  
 DESIGN SHEET NO. 1 OF 1 FILE NO. 31851 DESIGN NO. 0123

**LINE STYLE LEGEND OF CROSS SECTION SHEETS (ROAD)**

- Existing Ground Line
- ===== Proposed Template
- Proposed Topsoil Placement
- Additional Topsoil Removal
- Subgrade Treatment
- Granular Shoulder
- Pavement
- Existing Pipe\RCB
- Proposed Pipe\RCB
- Proposed Dike
- All Elements Associated with Proposed Entrances

**LINE STYLE LEGEND OF CROSS SECTION SHEETS (SOILS)**

- TOPSOIL ----- Topsoil (Class 10)
- Slope Dressing Only
- CL 10 ----- Class 10 Materials
- SEL L0 ----- Select Loams And Clay-Loams
- SEL SA ----- Select Sand
- UNS A ----- Unsuitable Type A Disposal
- UNS B ----- Unsuitable Type B Disposal
- UNS C ----- Unsuitable Type C Disposal
- SHALE ----- Shale
- WASTE ----- Waste
- B&W LS ----- Broken and Weathered Rock
- ROCK ----- Solid Rock
- BLDRS ----- Boulders

Note: All layer lines and descriptions identify layers above the line.  
 Note: Vertical or near vertical lines connecting soil layers at edges of cross sections are only for the purpose of calculating template quantities and do not depict soil stratification.

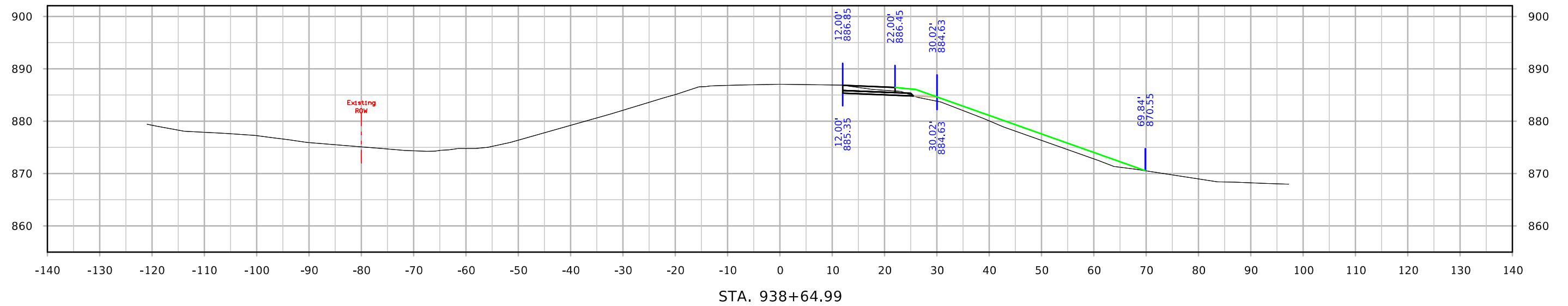
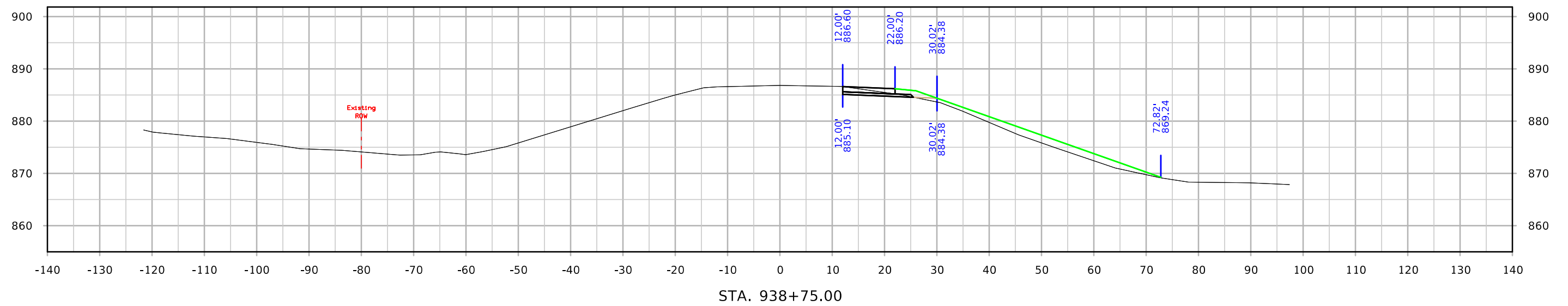
**SYMBOL LEGEND OF CROSS SECTION SHEETS**

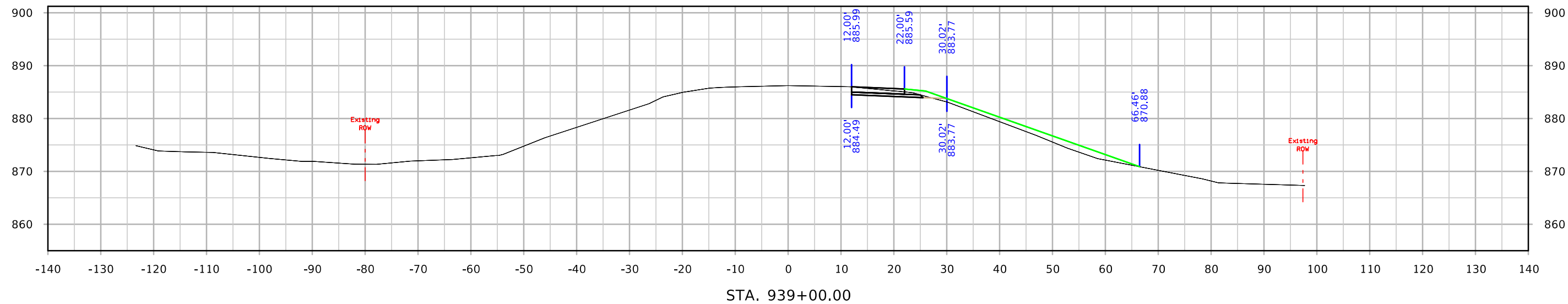
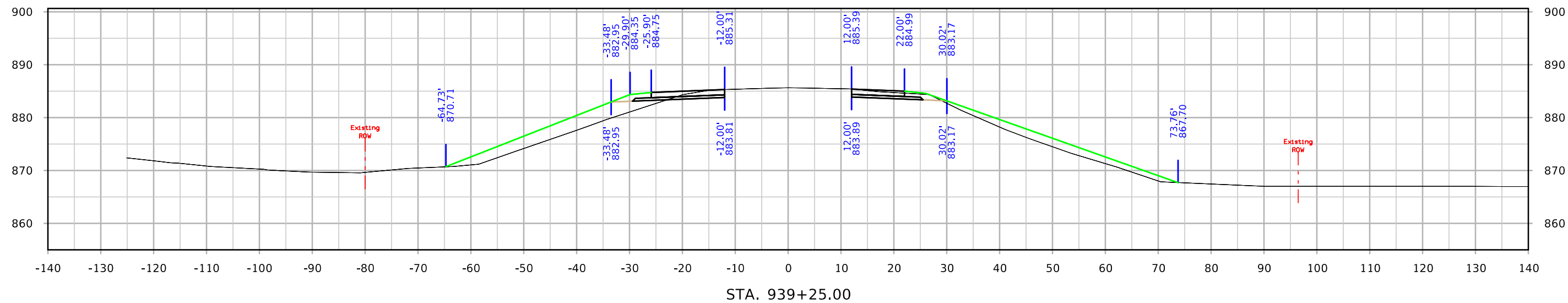
- Existing  
|  
-----  
|  
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|  
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Existing Right-of-Way Limit
- Proposed  
|  
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|  
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|  
-----  
Proposed Right-of-Way Limit
- Temporary  
|  
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|  
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|  
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Temporary Right-of-Way Limit

**CROSS SECTION  
LEGEND AND SYMBOL  
INFORMATION SHEET**

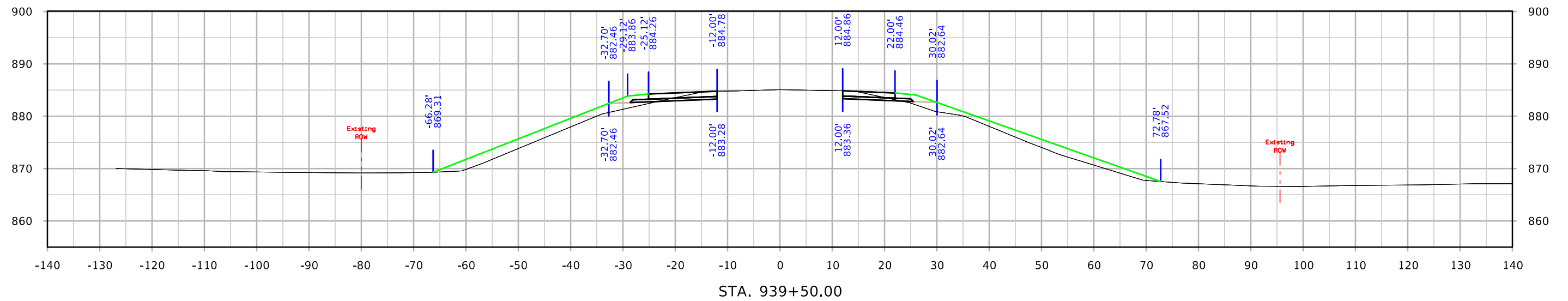
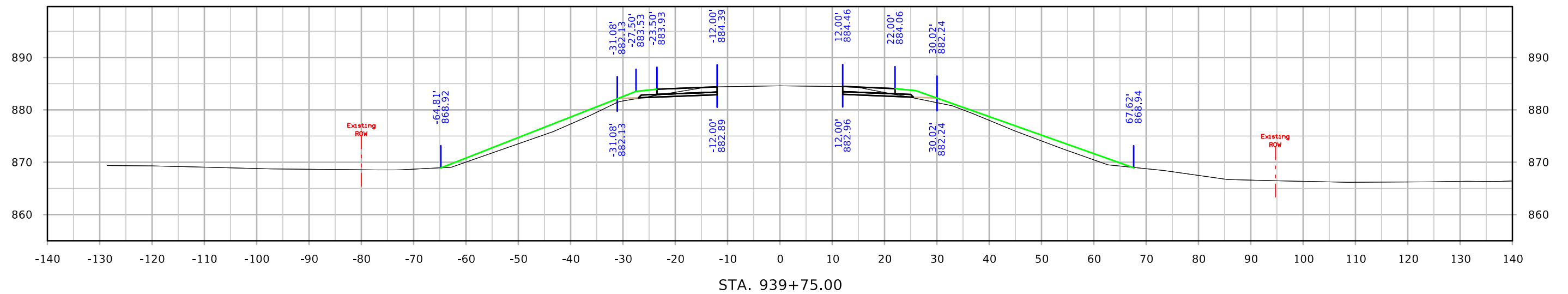
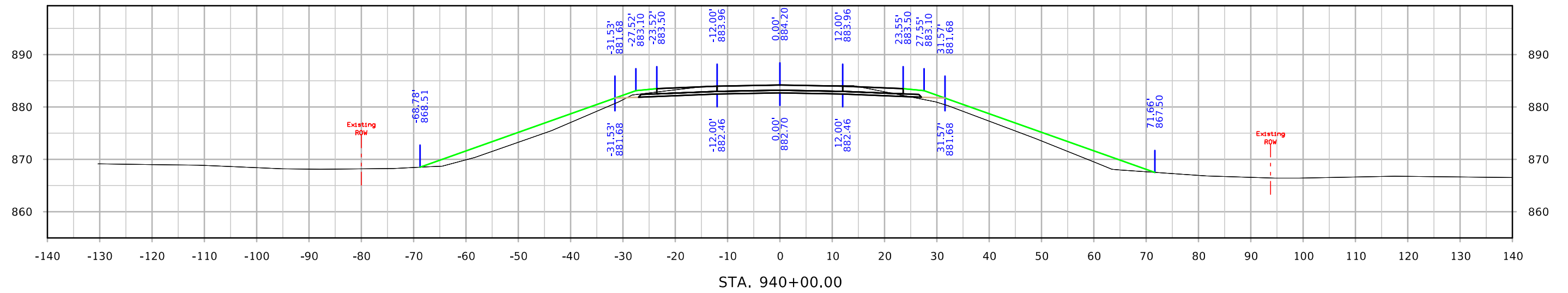
(COVERS SHEET SERIES W, X, Y, & Z)

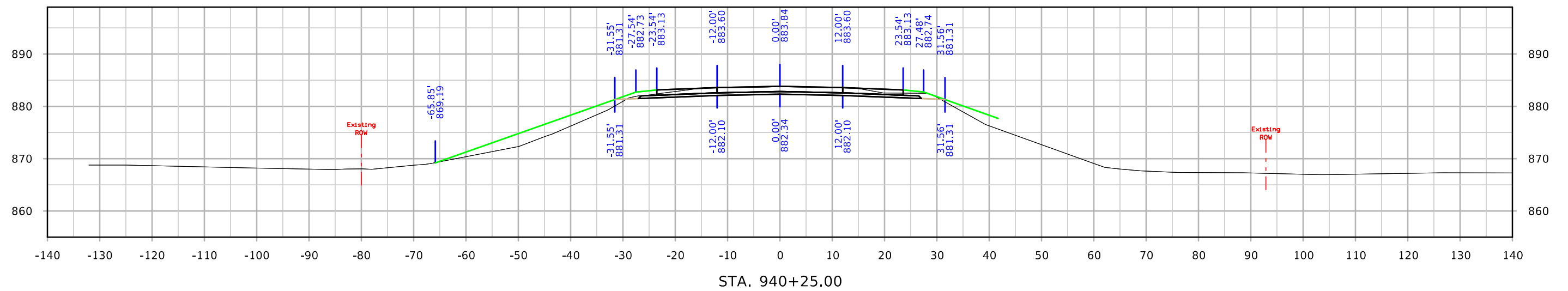
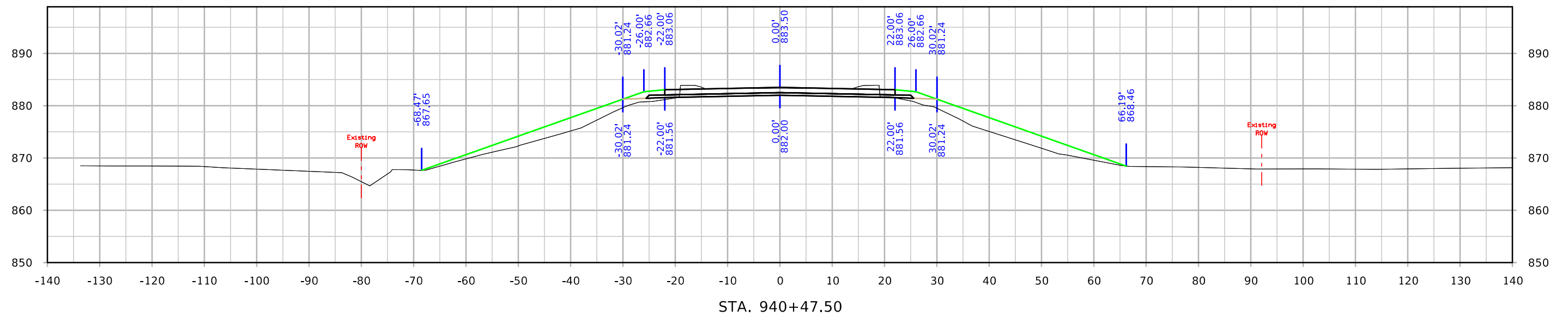
FILE NO.	ENGLISH	DESIGN TEAM <b>Holst \ Finch</b>	<b>APPANOOSE</b>	COUNTY	PROJECT NUMBER <b>BRF-005-1(74)--38-04</b>	SHEET NUMBER <b>W.1</b>
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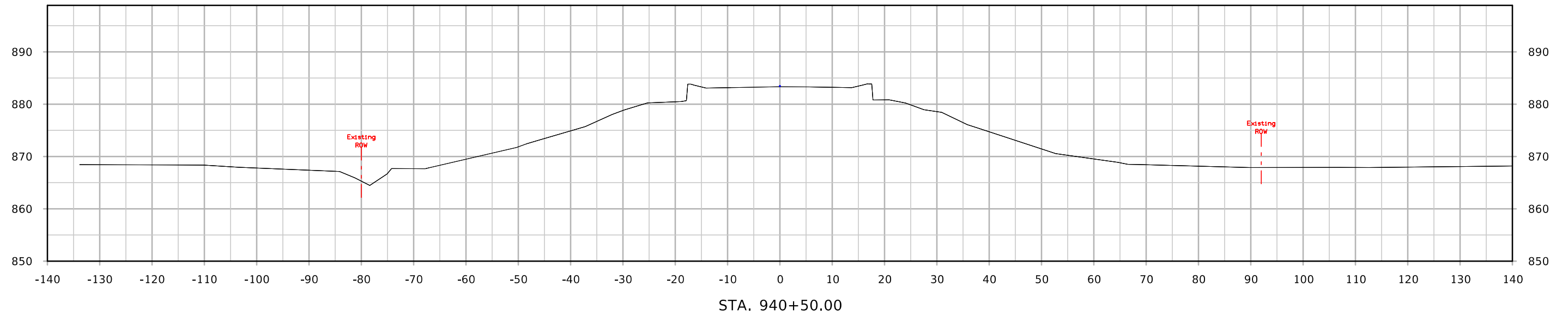
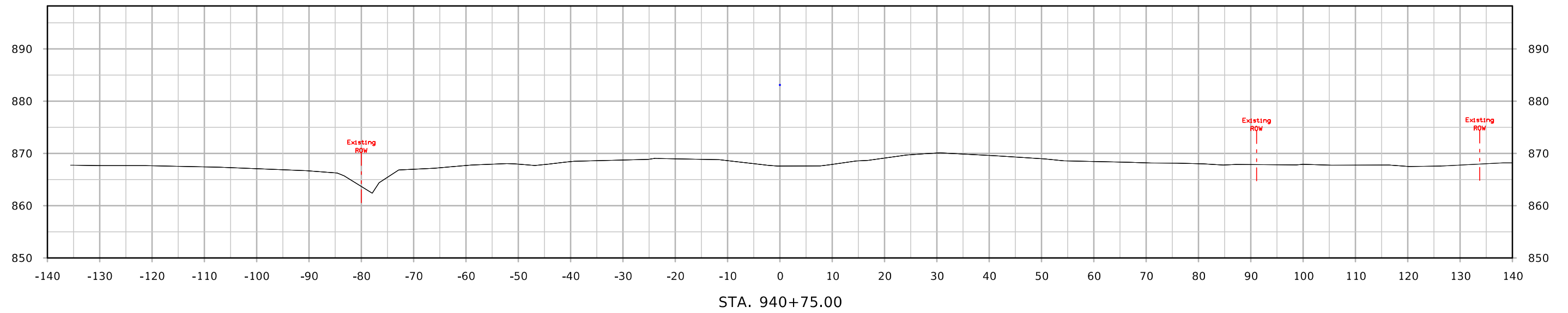


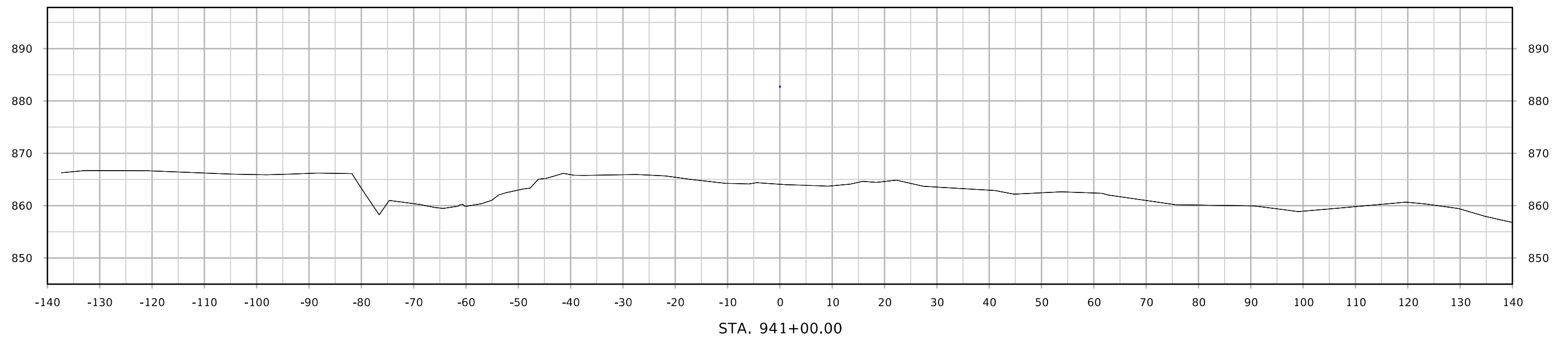
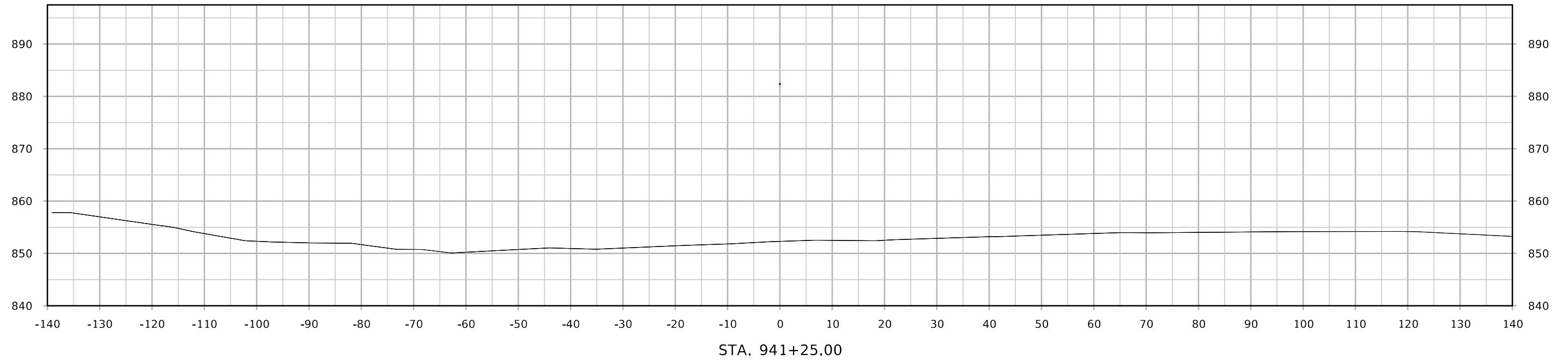


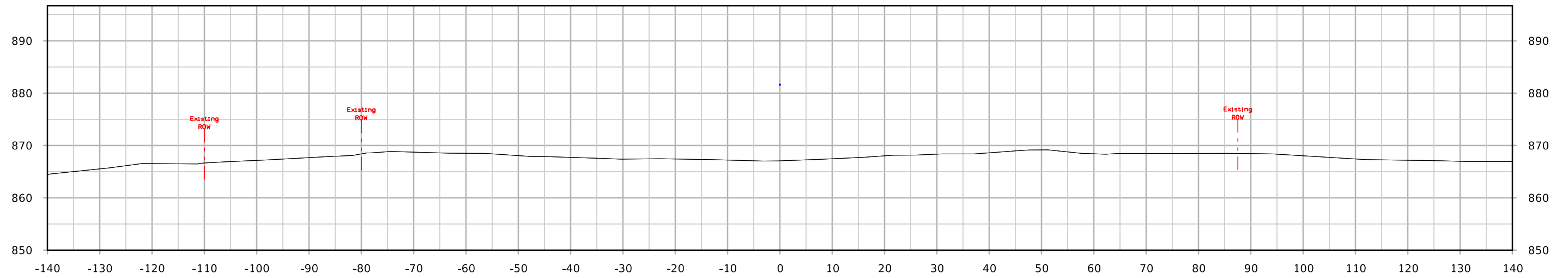




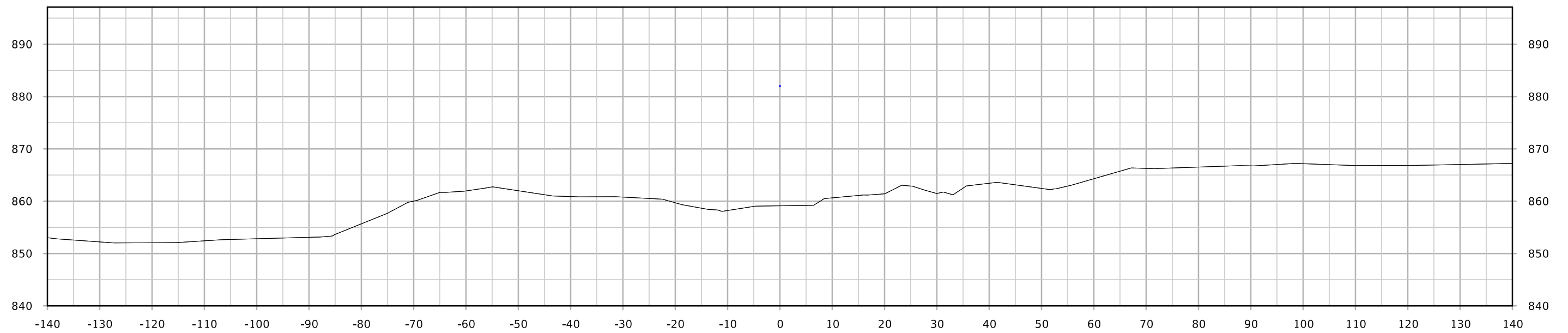




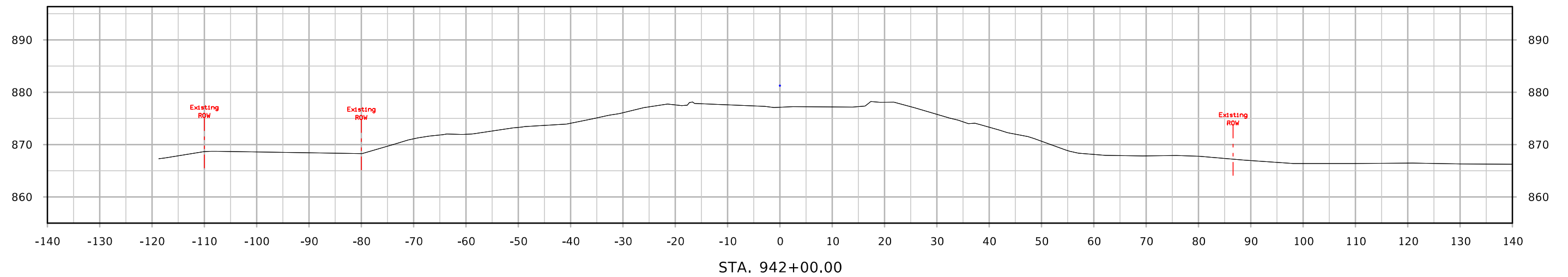
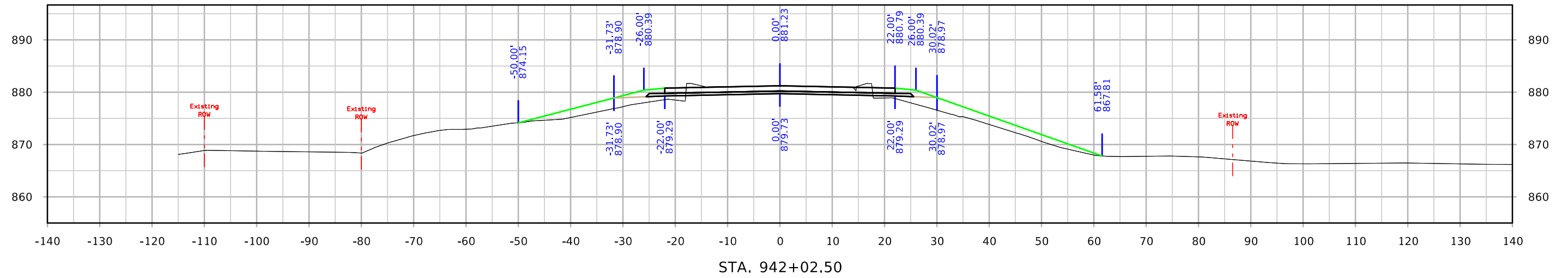
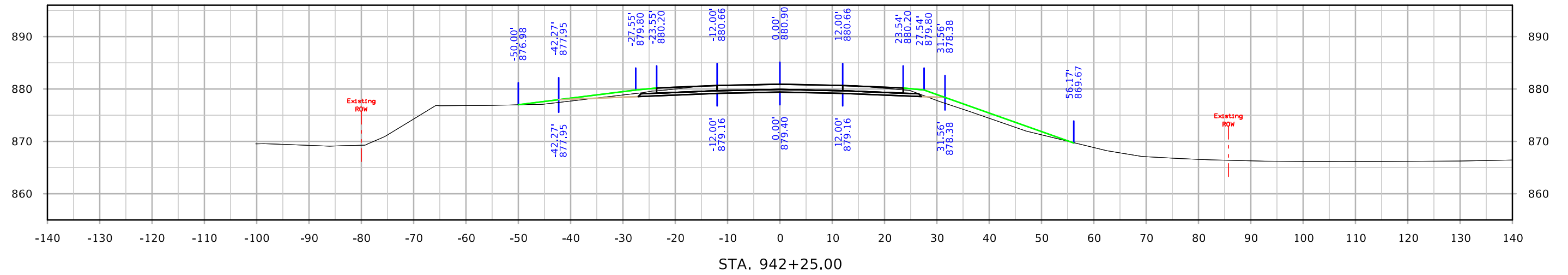


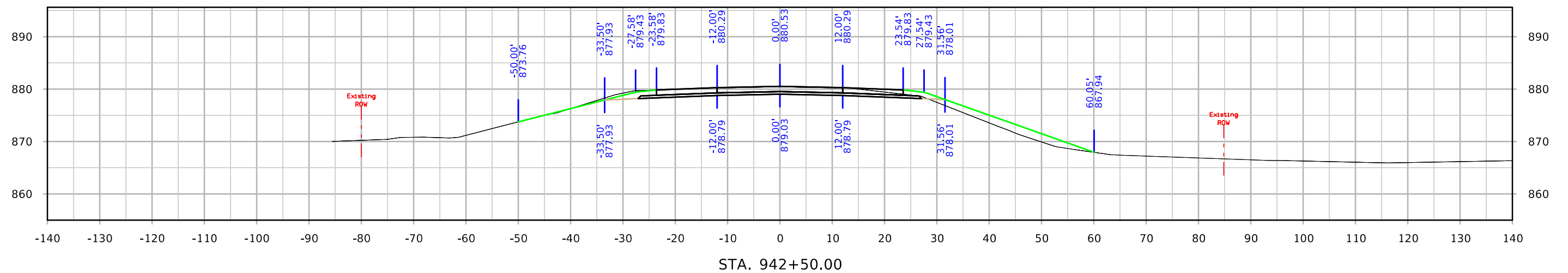
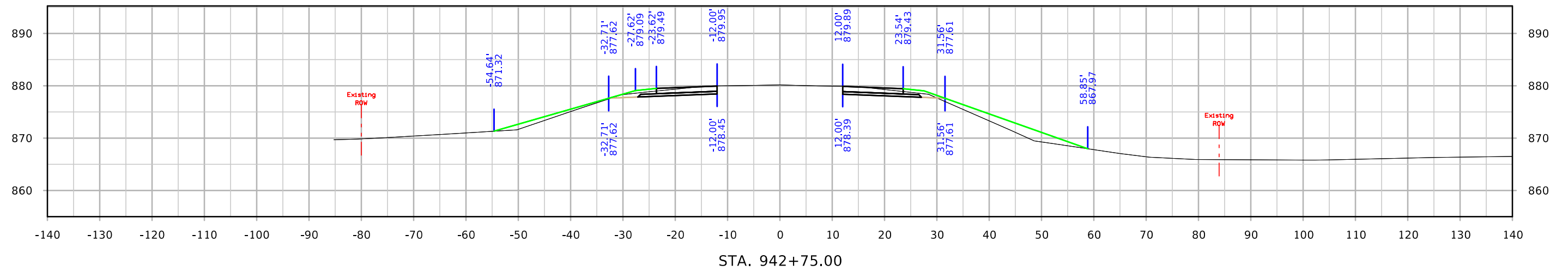
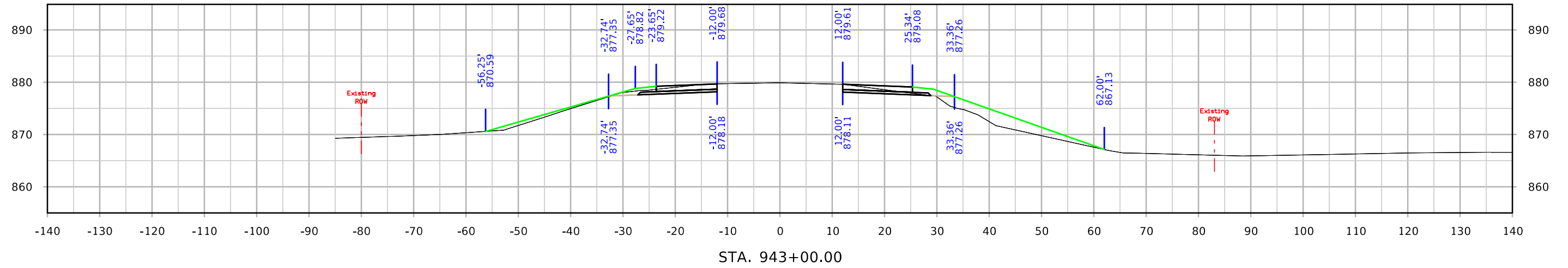


STA. 941+75.00

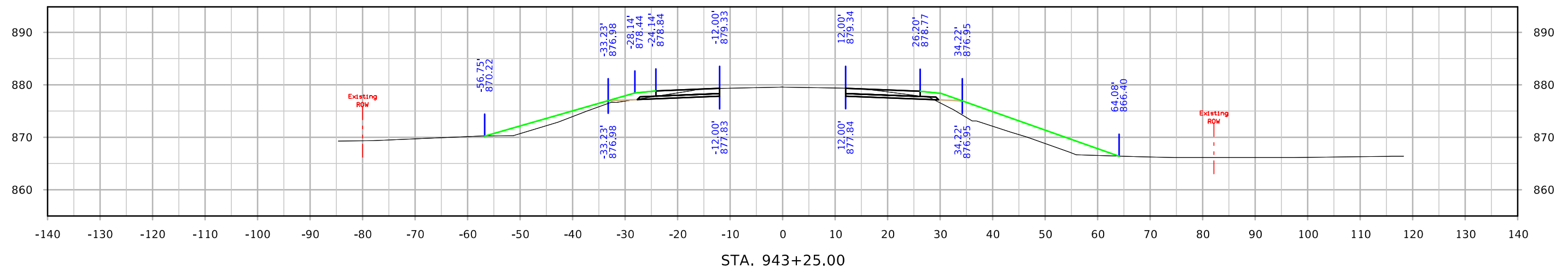
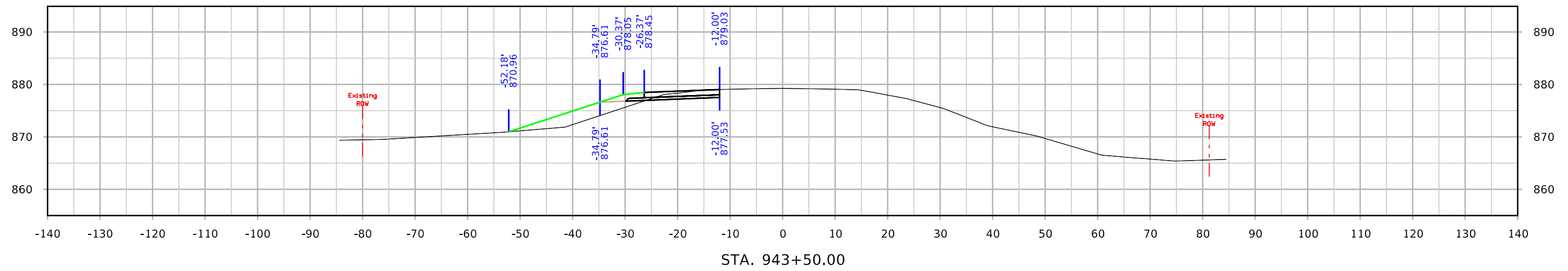
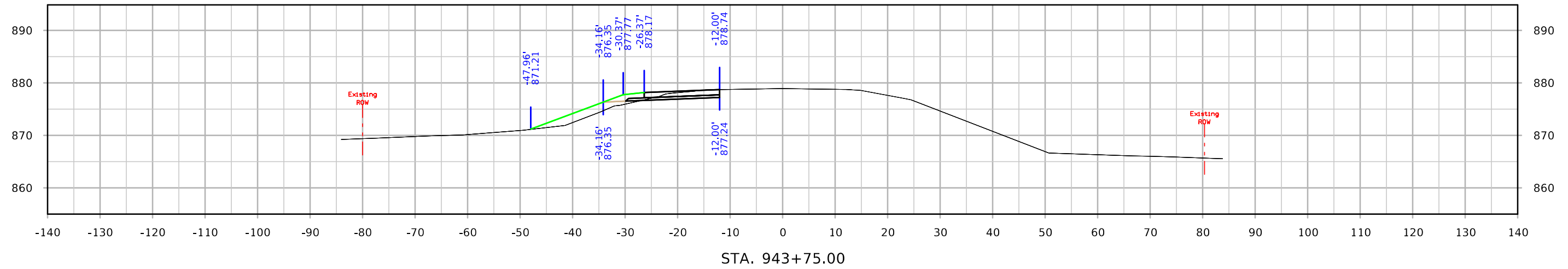


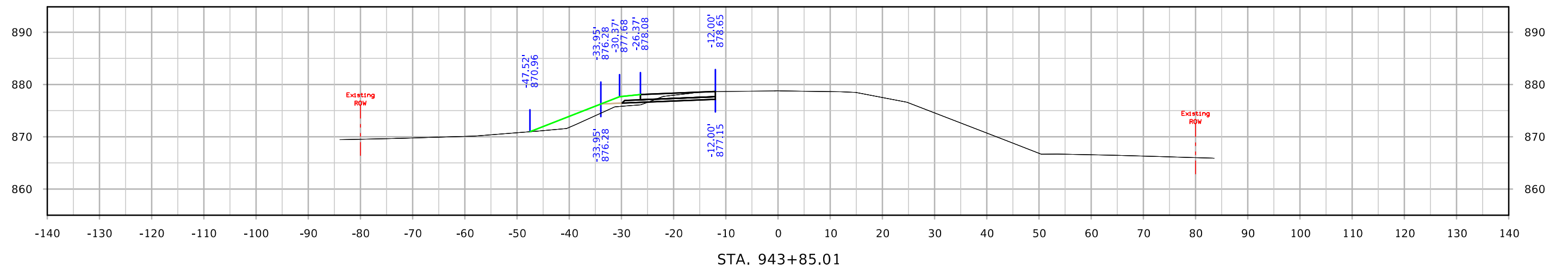
STA. 941+50.00











STA. 943+85.01