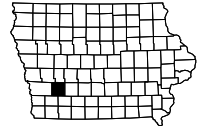


LETTING DATE
Oct 19, 2027
 Bridge - Unspecified
 BRF-006-2(048)--38-15

Cass COUNTY



INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	Title Sheets
A.1	Title and 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	US 6 Plan and Profile
G Sheets	Survey Sheets
G.1	Reference Ties and Bench Marks
G.2	Control Point Vicinity Map
G.3	Horizontal and Vertical Control Tab.
J Sheets	Traffic Control and Staging Sheets
J.1	Traffic Control Plan
J.2	Detour 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 - 16	US 6 Cross Sections



PLANS OF PROPOSED IMPROVEMENT ON THE
PRIMARY ROAD SYSTEM
Cass COUNTY
 Bridge - Unspecified
 Turkey Creek 3.7 mi E of IA 48

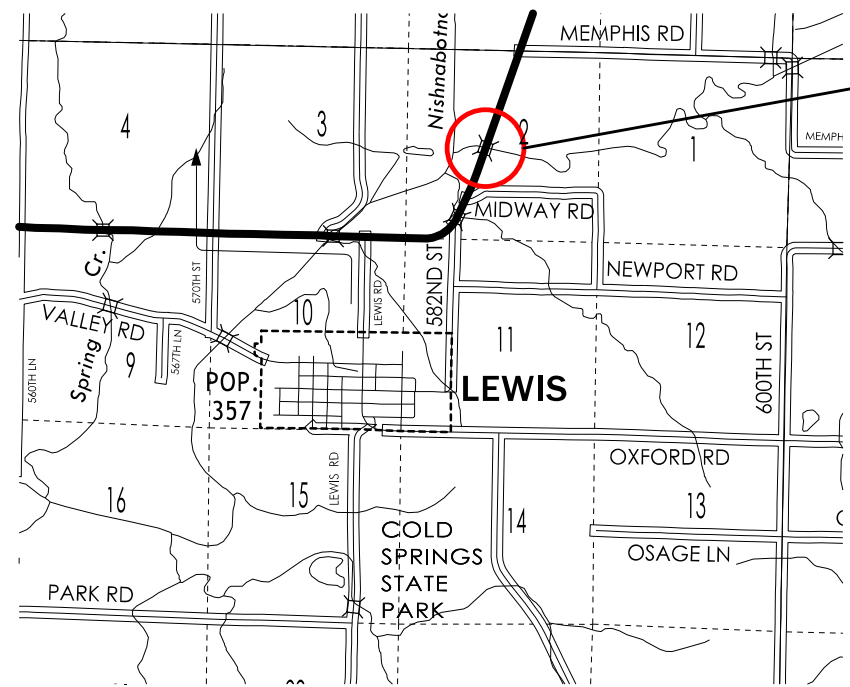
SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.
 Value Engineering Saves. Refer to Article 1105.14 of the Specifications.



REVISIONS

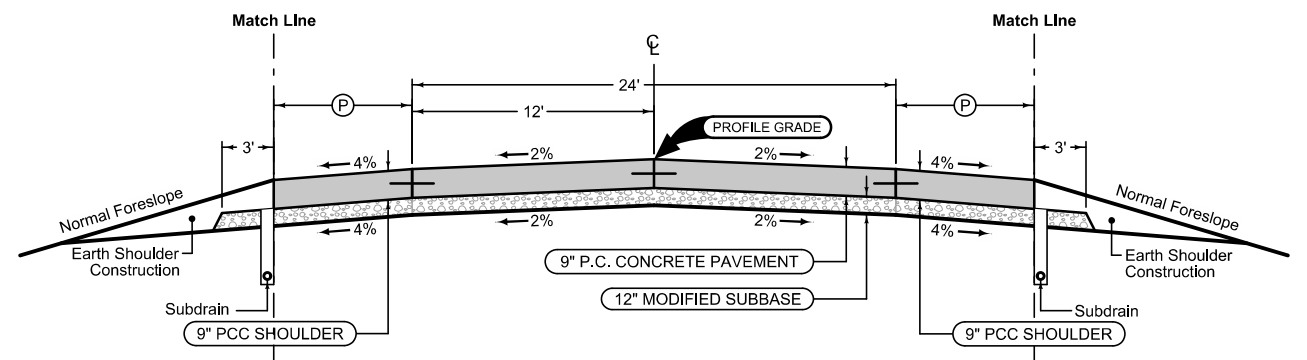
TOTAL	29
PROJECT IDENTIFICATION NUMBER	23-15-006-010
PROJECT NUMBER	BRF-006-2(048)--38-15
R.O.W. PROJECT NUMBER	STPN-006-2(049)--2J-15



PROJECT LOCATION
 STA 958+15.00
 MP 46.4
 FHWA # 17420

DESIGN DATA RURAL		
2028	AADT	2000 V.P.D.
2048	AADT	2100 V.P.D.
20	- DHV	-- V.P.H.
	TRUCKS	12 %
	Total	
	Design ESALs	--

PRELIMINARY PLANS
 Subject to change by final design.
D5 PLAN - Date: 02/20/2026



Full Depth PCC Shoulder

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

2_P_FullPCC_ Modified		
STATION TO STATION		(P) Feet
955+00.00	955+91.51	4
961+65.99	962+30.00	4

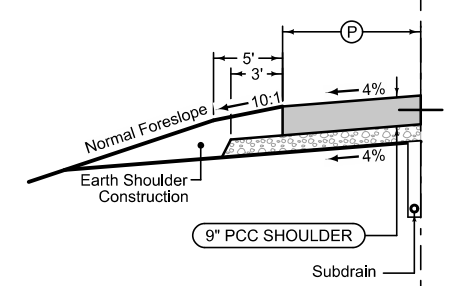
Mainline Jointing:
 Transverse joints: CD at 17' spacing
 Longitudinal joint: L-2

2P_ Modified	
STATION TO STATION	
955+00.00	956+73.50
960+46.50	962+30.00

Full Depth PCC Shoulder

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

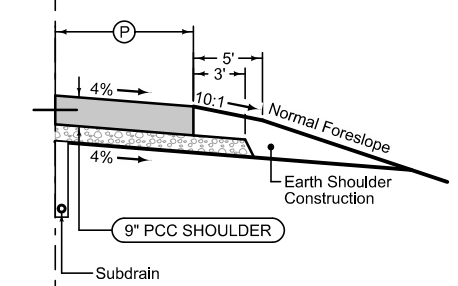
2_P_FullPCC_ Modified		
STATION TO STATION		(P) Feet
955+00.00	955+54.01	4
961+28.49	962+30.00	4



Paved Shoulder at Guardrail

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

2_P_Guard_ Modified		
STATION TO STATION		(P) Feet
955+91.51	956+73.50	Var.
960+46.50	961+65.99	Var.

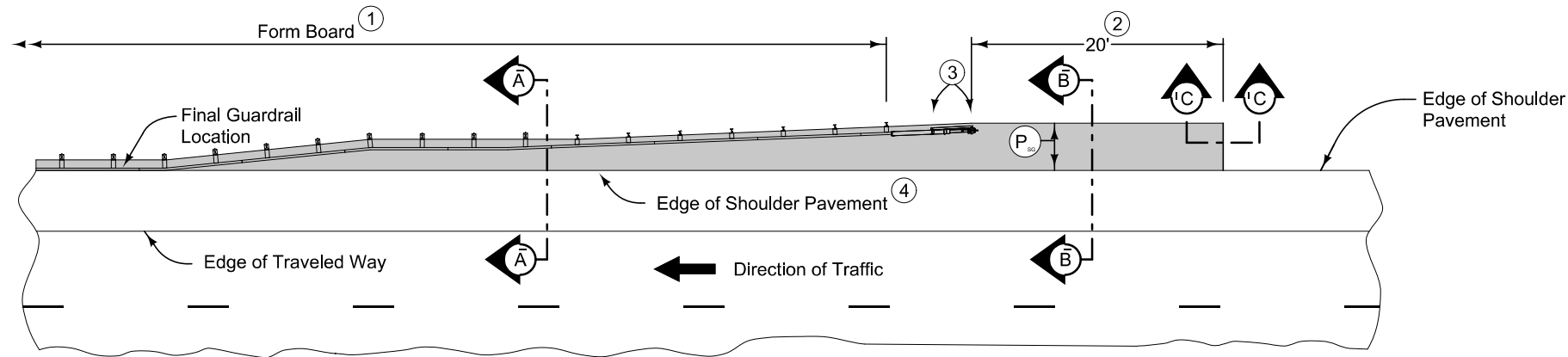


Paved Shoulder at Guardrail

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

2_P_Guard_ Modified		
STATION TO STATION		(P) Feet
955+54.01	956+73.50	Var.
960+46.50	961+28.49	Var.

7158
Modified



PLAN VIEW

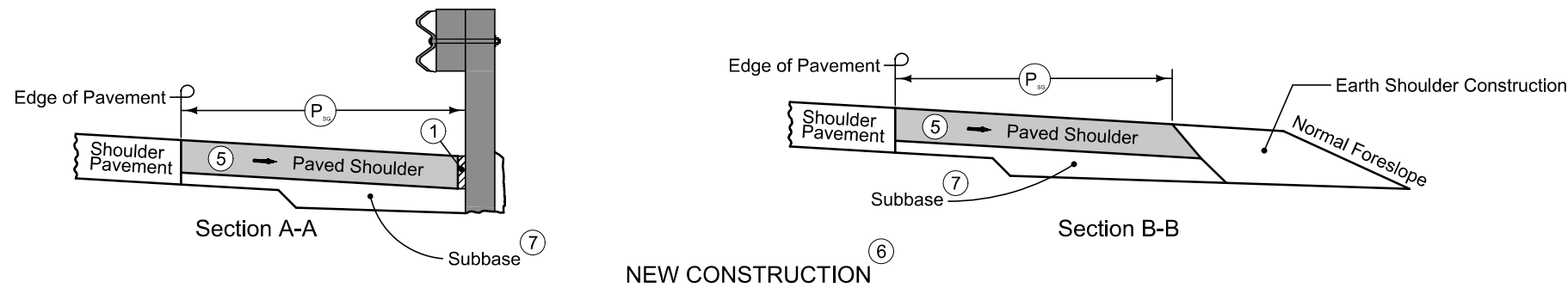
9" PCC Paved Shoulder at guardrail with the following jointing layout:

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.

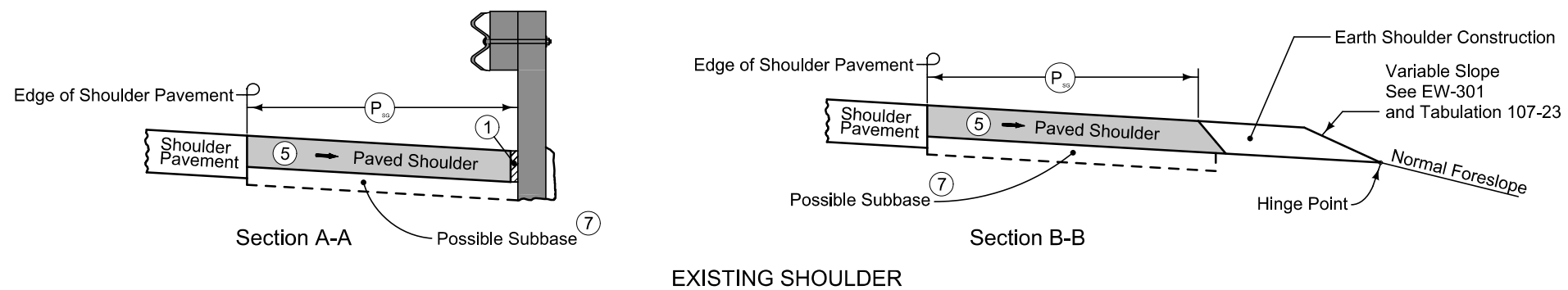
Compaction of HMA is required to face of guardrail post. Hand compaction will be allowed under guardrail. Removal and reinstallation of guardrail will be allowed with no additional payment.

Refer to Tabulation 112-9 for shoulder quantities.

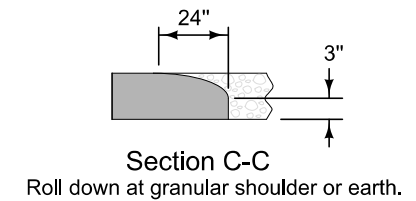
- ① PCC option only: When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown.
- ② Continue paved shoulder 20 feet beyond the center of the first post.
- ③ Shoulder may be notched for first 2 posts or post sleeves may be installed through pavement. Do not drive posts through pavement.
- ④ 'BT' (per PV-101) joint for PCC shoulder. 'B' (per PV-101) joint for HMA shoulder.
- 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

- 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)
- Septic Tank
- Cistern
- L.P. Gas Tank (No Footing)
- Underground Storage Tank
- Latrine
- Satellite TV Dish
- Water Hook Up
- Radio Tower
- Tower Anchor
- Guardrail (Beam or Cable)
- Guard Post (one or two)
- Guard Post (over two)
- Filler Pipe
- Gas Valve
- Water Valve
- Speed Limit Sign
- Mile Marker Post
- SIGN Sign
- Traffic Signal Control Box
- Rail Road Signal Control Box
- Telephone Switch Box
- Electric Box

UTILITY LEGEND

- Griswold Communications Fiber Distribution
Brent Milner, Outside Plant Manager
(712) 778-2000
Brentmilner34@gmail.com
- MidAmerican Energy Company Electric Distribution
Scott Behrens, Lead Electric Distribution Engineering SW Iowa
3003 S. 11th St.
Council Bluffs, IA 51501
Phone: (712) 366-5636 Cell: (402) 657-1059
scott.behrens@midamerican.com
- Nishnabotna Valley Rural Electric Cooperative Electric Distribution
Kert Barnum, Manager of Operations
P.O. Box 714
Harlan, IA 51537
Phone: (712) 755-2166 Cell: (712) 579-5072
kbarnum@nvrec.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.	Transparency
Pink, Dark	(13)		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
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
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

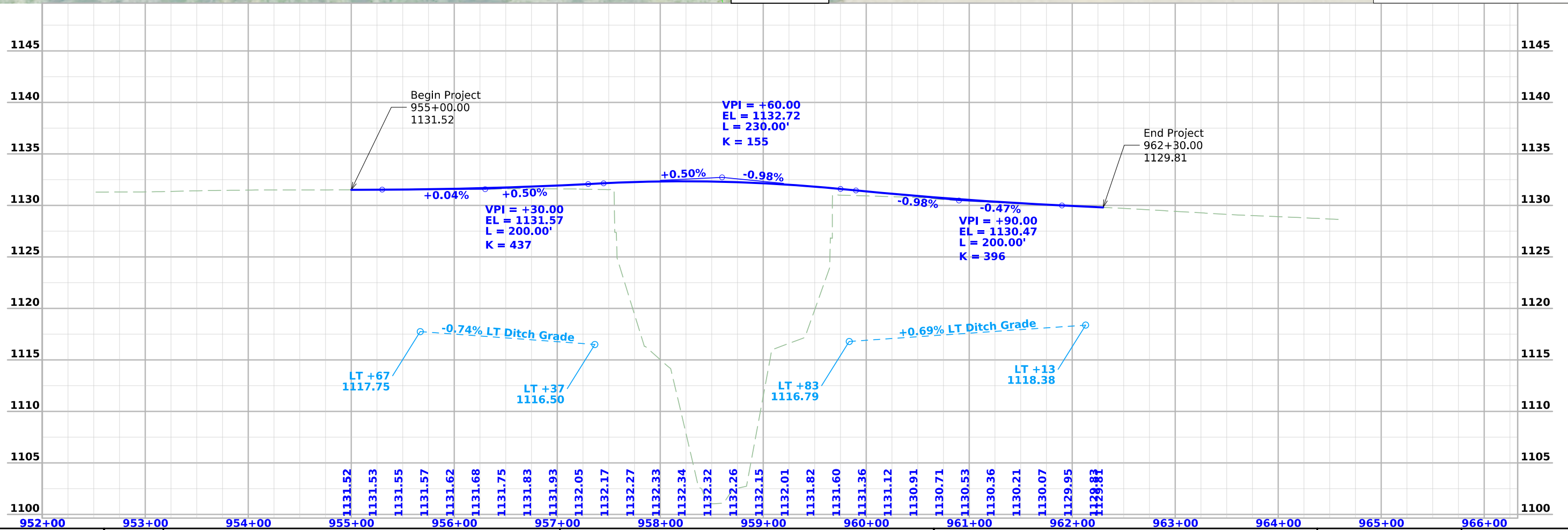
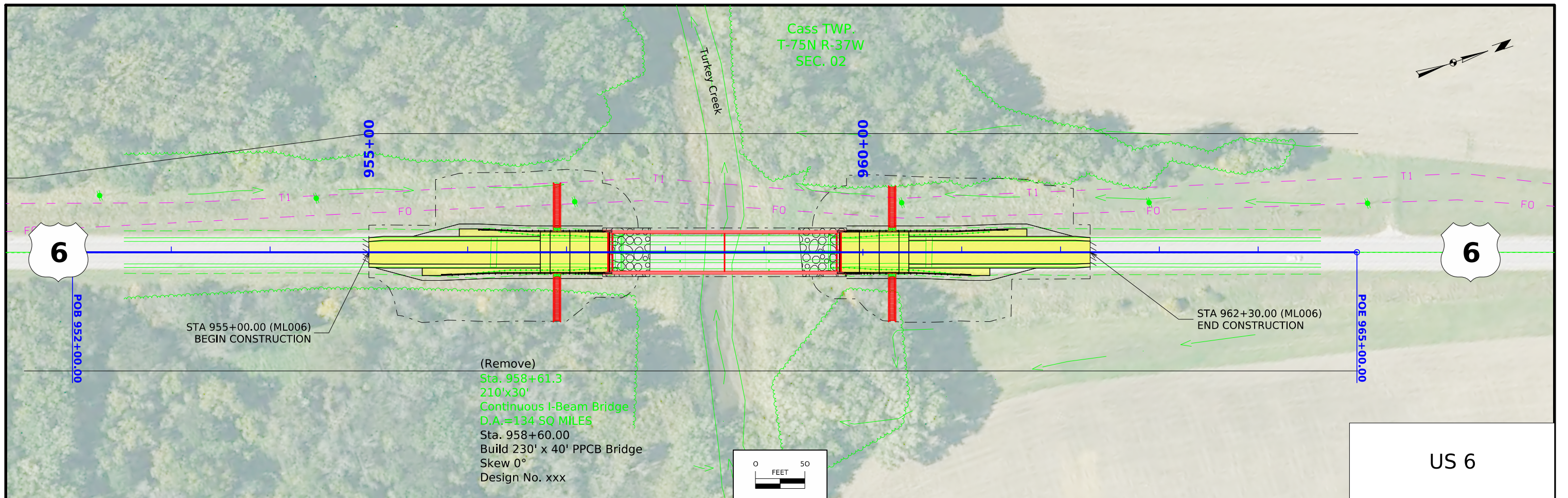
- Reference Point
- Station
- Survey Line
- Section Corner
- Ground Line Intercept
- Saw Cut
- Guardrail
- Trench Drain
- HighTension Cable Guardrail
- Sheet Pile
- Pavement Removal
- Clearing & Grubbing Area

RIGHT-OF-WAY LEGEND

- Proposed Right-of-Way 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
- C/A Access Control
- Property Line Symbol
- Property Line

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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



Survey Information

SURVEY INDEX

County: Cass
PIN: 23-15-006-010
Project Number: BRF-006-2(048)--38-15
Location: Turkey Creek 3.7 mi E of IA 48
Type of Work: Bridge-Unspecified
Project Directory: 1500601023

Survey Personnel

Paul Harry – Survey Party Chief
Bob Fredrickson – Assistant Survey Party Chief

Date(s) of Survey

Begin Date 03/25/2024
End Date 05/01/2024

General Information

This survey is for US Hwy 6 bridge replacement over Turkey Creek. 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

Previously established coordinate values from Project BRF-006-2(46)—38-15 were used for control points LEWIS and 150060448. Five-minute Base-Rover observations were taken from both known control points to establish weighted average coordinate values for control point 150060469. 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 07
(U.S. SURVEY FOOT)
VERTICAL DATUM: NAVD88
GEOID MODEL: 2018u3

Alignment Information

The horizontal alignment for U.S. 6 this survey is a retrace of As-built Plans No. STPN-006-2(39)—2J-15. Survey stationing was equated to the plan PT at Sta. 937+51.64 and carried ahead to plan Equation PC Sta. 945+48.35 (BK) Sta. 945+51.50(AH) Thence carried throughout the survey.

Survey stationing relates to as built plan stationing as follows:

PT Sta. 937+51.64 As-built Plans Project No. STPN-006-2(39)—2J-15.
Survey PT Sta. 937+51.64.

EQ. PC Sta. 945+48.35(BK) As-built Plans Project No. STPN-006-2(39)—2J-15.
Survey EQ. PC Sta 945+48.33(BK).

EQ. PC Sta. 945+51.50(AH) As-built Plans Project No. STPN-006-2(39)—2J-15.
Survey EQ. PC Sta 945+51.50(AH).

PI Sta. 947+15.90 As-built Plans Project No. STPN-006-2(39)—2J-15.
Survey PI Sta. 947+15.76.

EQ. PI Sta. 977+02.99(BK) As-built Plans Project No. STPN-006-2(39)—2J-15.
Survey EQ. PI Sta. 977+03.07.

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 07 (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 07 (U.S. Survey Foot)
 VERT. DATUM: NAVD88
 Geoid Model: 2018u3

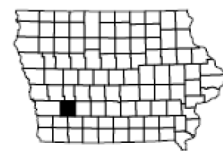
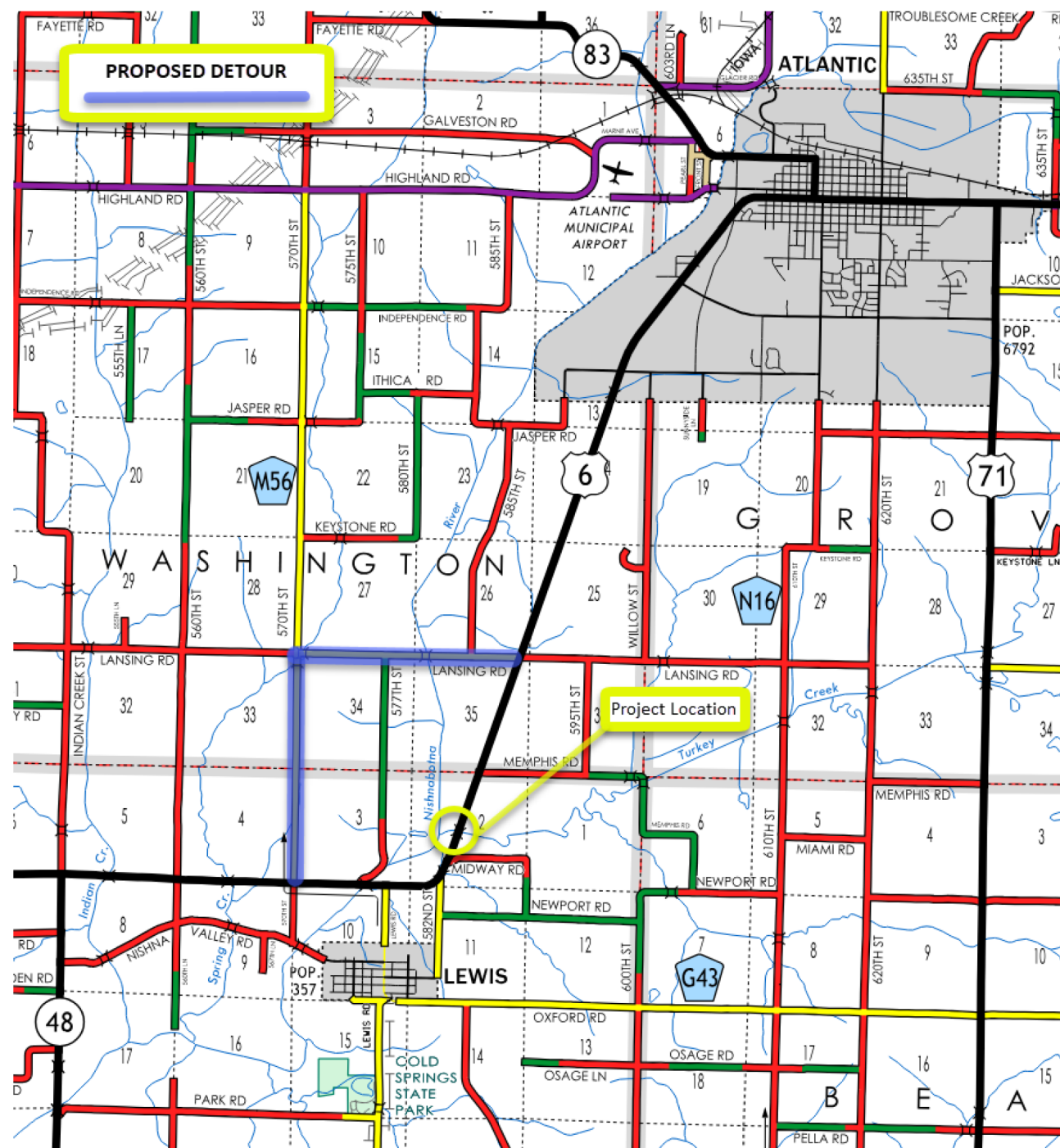
Point Name	Northing	Easting	Elevation	Code Description
150060448	7189312.01	17372202.75	1199.07	CP FD FENO MONUMENT IN THE NORTHEAST QUADRANT OF THE INTERSECTION OF US HWY 6 AND 570TH ST
LEWIS	7197048.17	17372399.8	1272.67	CP FND NGS 2ND ORDER HORIZONTAL MARK AS DESCRIBED
150060469	7194316.97	17380580.51	1138.45	CP SET IDOT FENO MON IN THE SOUTHEAST QUADRANT OF THE INTERSECTION OF HWY 6 AND MEMPHIS RD ***DESTROYED***
150060469RESET	7194331.48	17380623.22	1137.00	CP SET IDOT FENO MON IN THE SOUTHEAST QUADRANT OF THE INTERSECTION OF HWY 6 AND MEMPHIS RD

108-23A
08-01-08

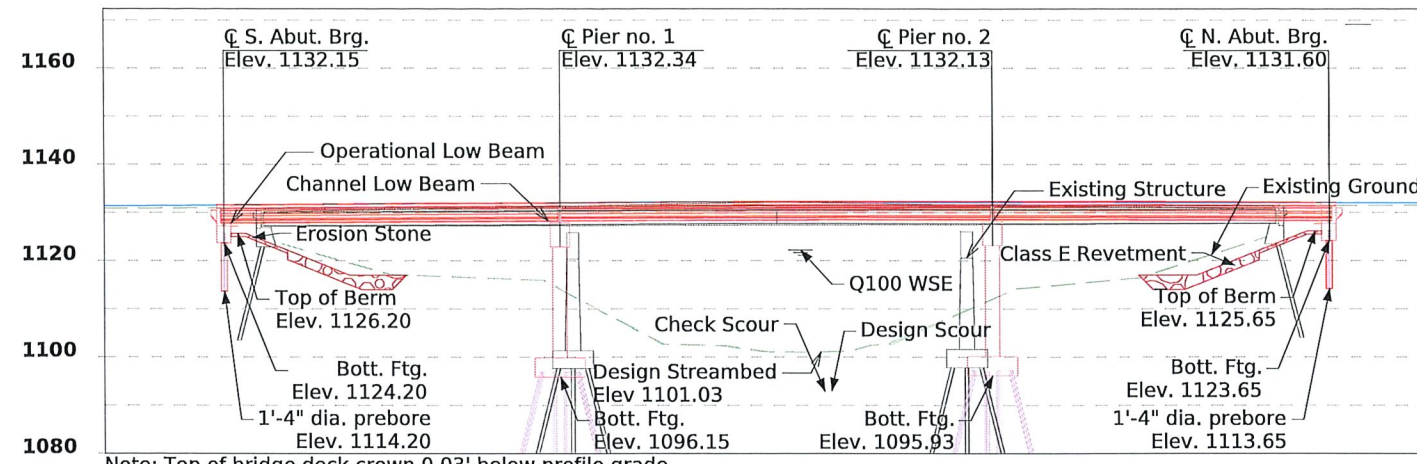
TRAFFIC CONTROL PLAN

Traffic on US 6 will be maintained at all times via an offsite detour. Refer to J.2 for Detour Route.

Access to the Turkey Creek Wildlife Area parking and Midway Road shall be maintained at all times.



Cass County
 PIN: 23-15-006-010
 Project Number: BRF-006-2(048)--38-15
 Location: Turkey Creek 3.7 mi E of IA 48
 Type of Work: Bridge Replacement
 Project Directory: 1500601023
 FHWA No.: 17420
 Maint. No.: 1546.4S006

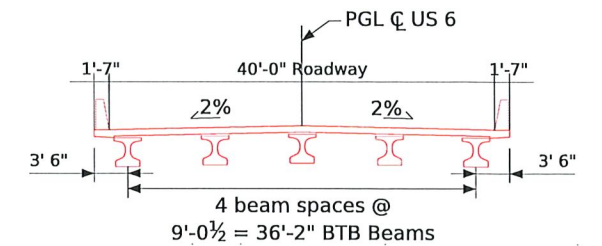


Longitudinal Section

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 Notes
 • TL-4 bridge railing proposed
 • Pier type is T Pier with 3'-6" column width assumed
 • Design aspects of the pier including type, piling, geometry, etc. to be determined during final design.
 • Beam layout to be determined by final design.
 • There is a potential for conflicts with existing foundations at pier 1 and pier 2.
 • Density used for class E quantity calculations is 1.5 T/CY and 1.6 T/CY for erosion stone.
 • An Iowa DNR Flood Permit is required. Preliminary design will submit the application and place the permit in the PW Regulatory_Permits subdirectory folder upon receipt.



Typical Bridge Cross Section

General Notes
 This design is for the replacement of the existing 210' x 30' continuous I-beam bridge, design number 7858, FHWA number 017420, maintenance number 1546.4S006.

Hydraulic Data

RIDB: TURKEYC_CASS_0.19
 Drainage Area = 128 Sq. Mi.
 Stream Slope (HGL) = 5.28 ft./Mi.
 Avg. Low Water Stage = 1102.51

Operational Low Beam = 1127.40
 Channel Low Beam = 1128.28

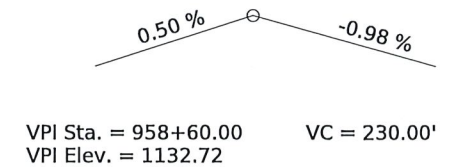
Q₂₅ = 11,800 cfs
 Stage = 1,120.33

Q₅₀ = 14,200 cfs
 Stage = 1,121.08
 Operational Freeboard = 7.29 ft.
 Avg. Bridge Velocity = 7.93 fps

Q₁₀₀ = 16,700 cfs (Design)
 Stage = 1,121.72
 Operational Freeboard = 6.65 ft.
 Backwater = 1.03 ft.
 Avg. Bridge Velocity = 8.72 fps

Q₂₀₀ = 19,200 cfs
 Stage = 1,122.22
 Calculated Design Scour = 1093.0

Q₅₀₀ = 22,100 cfs
 Stage = 1,122.73
 Channel Freeboard = 5.64 ft.
 Avg. Bridge Velocity = 10.46 fps
 Calculated Check Scour = 1092.9



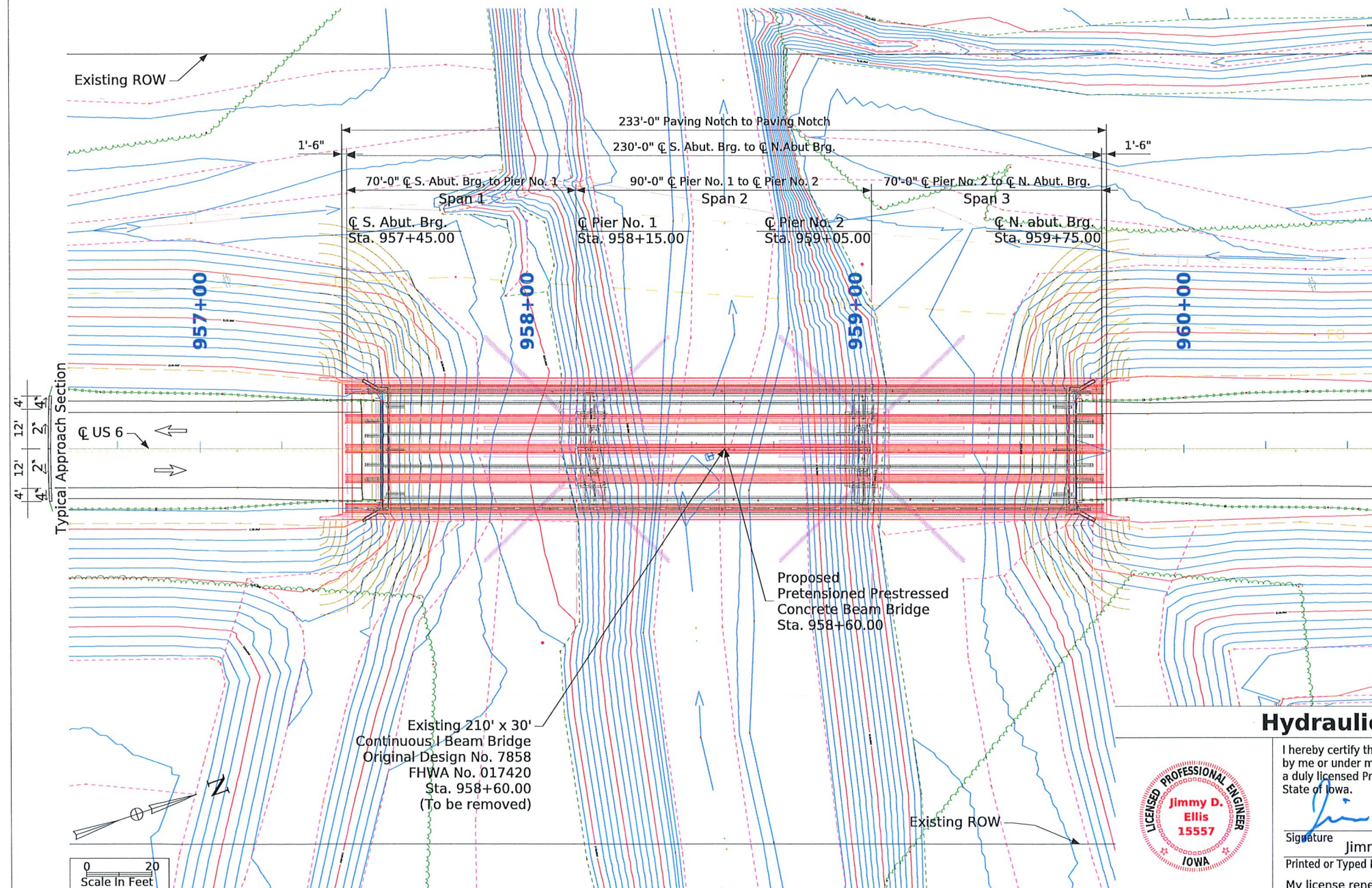
Proposed Profile Grade US 6

Traffic Estimate

2028 AADT	2000 V.P.D.
2048 AADT	2100 V.P.D.
2048 DHV	210 V.P.H.
TRUCKS	12 %
Total	???
Design ESALS	

Location

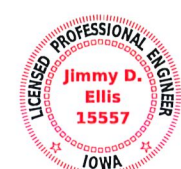
U.S. 6 over Turkey Creek, 3.7 mi E of IA 48
 T-75N R-37W
 Section 2
 Cass Township
 Cass County
 FHWA No. 017421
 Bridge Maint. No. 1546.4S006
 Latitude 41.32390798
 Longitude -95.07172536



Situation Plan

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: *Jimmy D. Ellis* Date: *1/8/26*
 Printed or Typed Name: Jimmy D. Ellis
 My license renewal date is December 31, 2026

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

Design For 0 Degree
**230'-0" x 40'-0" Prestensioned
 Prestressed Concrete Beam Bridge**
 70'-0" End Spans
 90'-0" Interior Span

Situation Plan

STA. 958+60.00 (US 6) Turn-in Date: Jan 2026

Cass County

IOWA DEPARTMENT OF TRANSPORTATION
 Design No. 0428 Design Sheet No. 1 of 2 FHWA No. 17421

CONTROL POINT 150060469RESET: 7194331.48 NORTHING, 17380623.22 EASTING, 1137.00 ELEV, CP SET IDOT FENO MON IN THE SOUTHEAST QUADRANT OF THE INTSESECTION OF HWY 6 AND MEMPHIS RD

Berm Slope Location Table

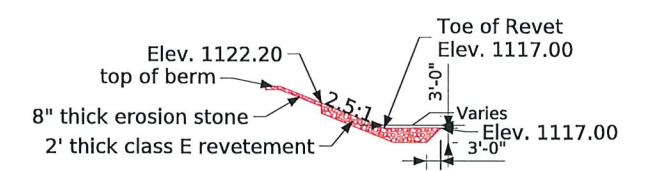
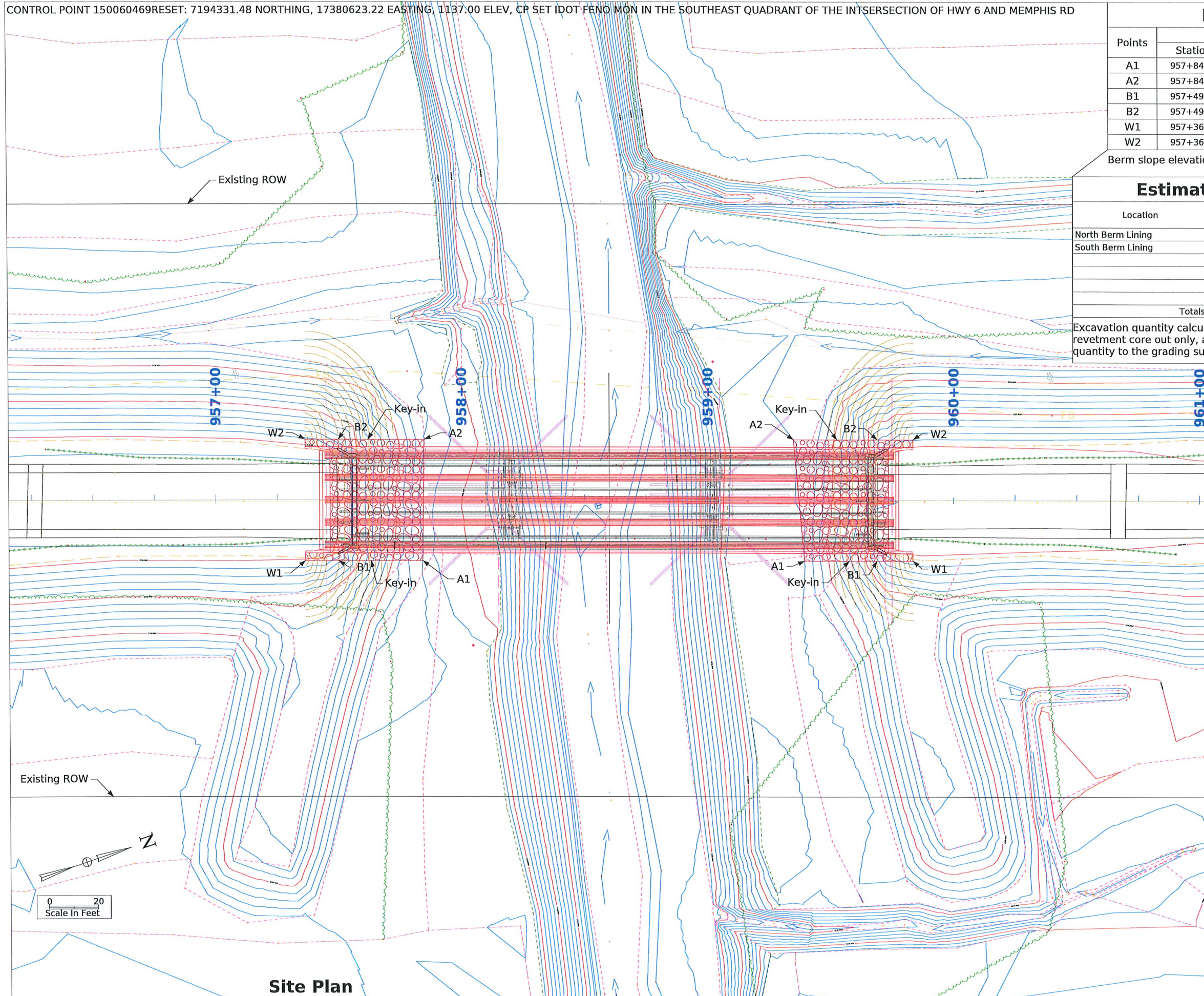
Points	South Abutment			North Abutment		
	Station	Offset	Elev.	Station	Offset	Elev.
A1	957+84.25	24.58' Rt.	1117.00	959+39.36	24.58' Rt.	1117.00
A2	957+84.92	24.58' Lt.	1117.00	959+34.82	24.58' Lt.	1117.00
B1	957+49.50	24.58' Rt.	1126.20	959+70.50	24.58' Rt.	1125.65
B2	957+49.50	24.58' Lt.	1126.20	959+70.50	24.58' Lt.	1125.65
W1	957+36.50	24.58' Rt.	1131.59	959+83.50	24.58' Rt.	1131.03
W2	957+36.50	24.58' Lt.	1131.59	959+83.50	24.58' Lt.	1131.03

Berm slope elevations reflect the grading surface.

Estimated Berm Armoring Quantities

Location	Revetment CL. E (Ton)	Erosion Stone (Ton)	Engineering Fabric (SY)	CL. 10 Channel Excavation (CY)
North Berm Lining	152	20	205	114
South Berm Lining	155	20	215	115
Totals	307	40	420	229

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.



Typical Section Embedded Revetment Berm

Design For 0 Degree
230'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge
 70'-0" End Spans 90'-0" Interior Span
Situation Plan
 STA. 958+60.00 (US 6) Turn-in Date: Jan 2026
Cass County
 IOWA DEPARTMENT OF TRANSPORTATION
 Design No. 0428 Design Sheet No. 2 of 2 FHWA No. 17421

Site Plan

0 20
Scale In Feet

CROSS SECTION VIEW COLOR LEGEND

Design Color No.	Feature	Design Color No.	Feature
Aggregate			
(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			
(207)	HMA Base Course	(6)	Loam
(207)	HMA Interim Course	(211)	Loam Removed
(207)	HMA Surface Course	(80)	Rock
Bridge			
(0)	Bridge	(212)	Rock Removed
Concrete			
(0)	Barrier Concrete	(4)	Select Sand
(0)	Barrier Concrete Footing	(214)	Select Sand Removed
(0)	Curb Gutter	(3)	Shale
(48)	Flowable Mortar	(215)	Shale Removed
(0)	Median Concrete	(10)	Topsoil
(0)	PCC Pavement	(2)	Topsoil Remove Only
(0)	Sidewalk	(4)	Topsoil Remove and Replace
Existing			
(0)	Existing Pavement	Unsuitable / Waste	
Shoulder			
(209)	Shoulder HMA	(3)	Unsuitable Type A
(0)	Shoulder PCC	(216)	Unsuitable Type A Removed
(6)	Shoulder Granular	(13)	Unsuitable Type B
Structural			
(112)	Noise Wall	(217)	Unsuitable Type B Removed
(112)	Noise Wall Footing	(11)	Unsuitable Type C
(112)	Retaining Wall Back	(218)	Unsuitable Type C Removed
(112)	Retaining Wall Back Excavate	(3)	Waste
(112)	Retaining Wall Face	(219)	Waste Removed
(112)	Retaining Wall Front Excavate		
(112)	Retaining Wall Front Footing		
(112)	Retaining Wall MSE Gutter		
(112)	Retaining Wall Reinforced Earth		

NOTES:

Text

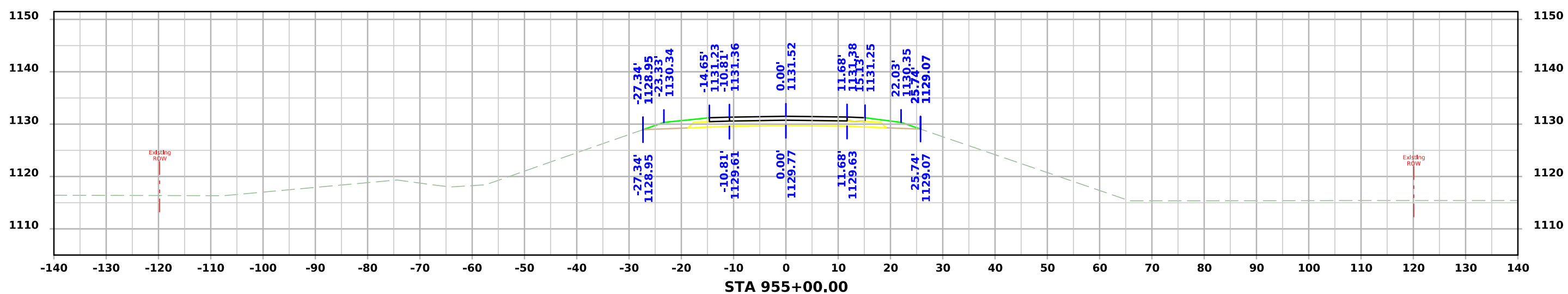
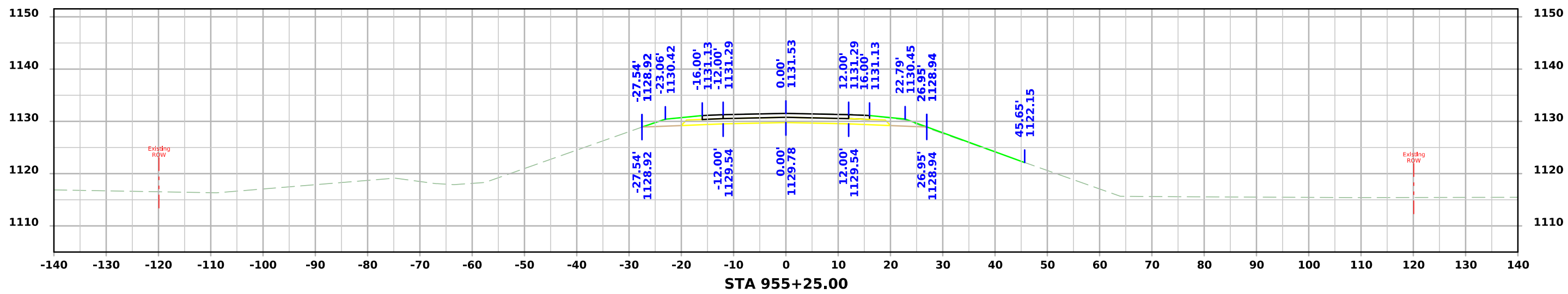
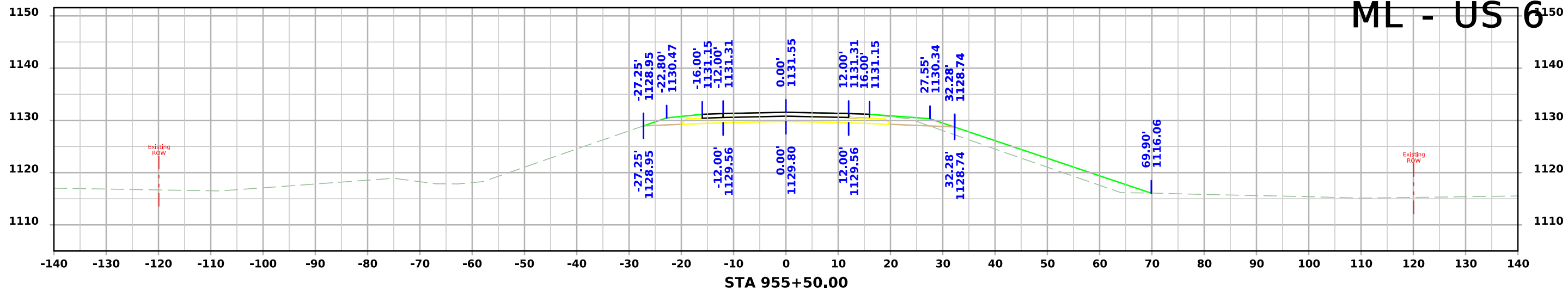
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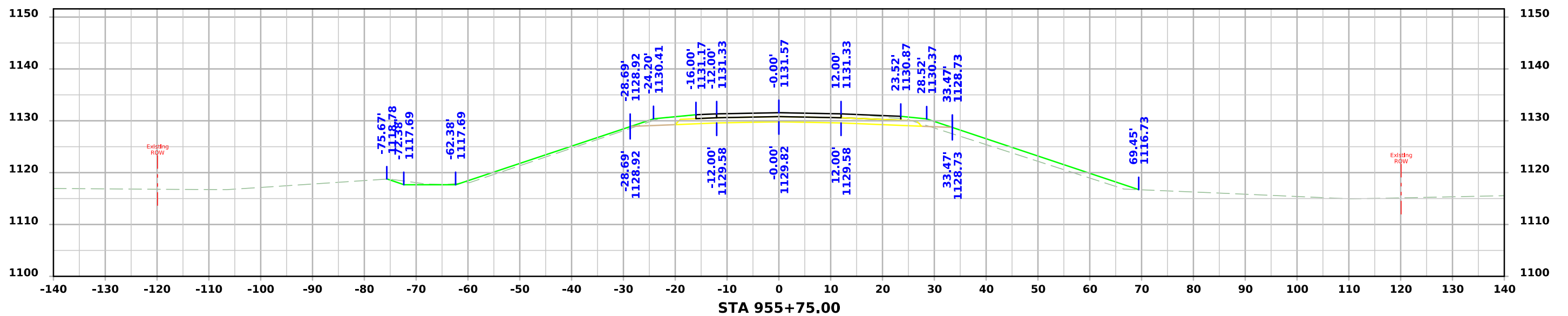
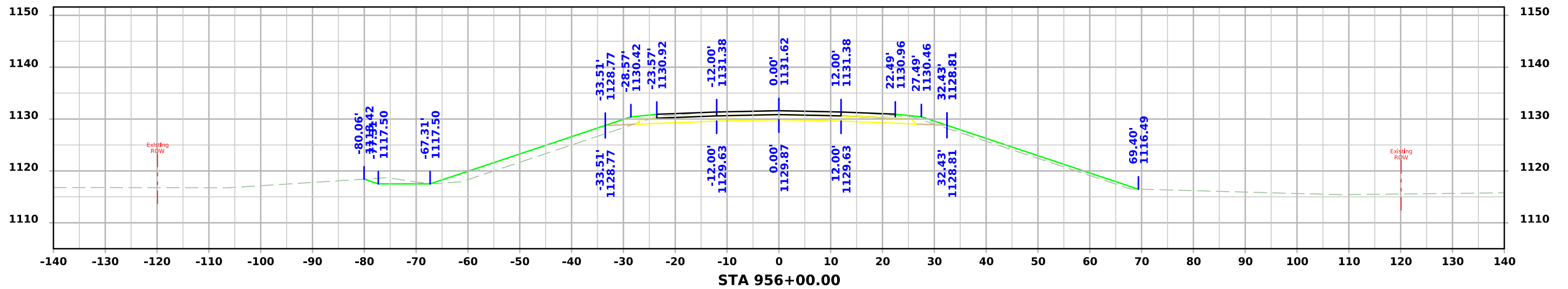
CROSS SECTIONS LEGEND AND INFORMATION SHEET

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

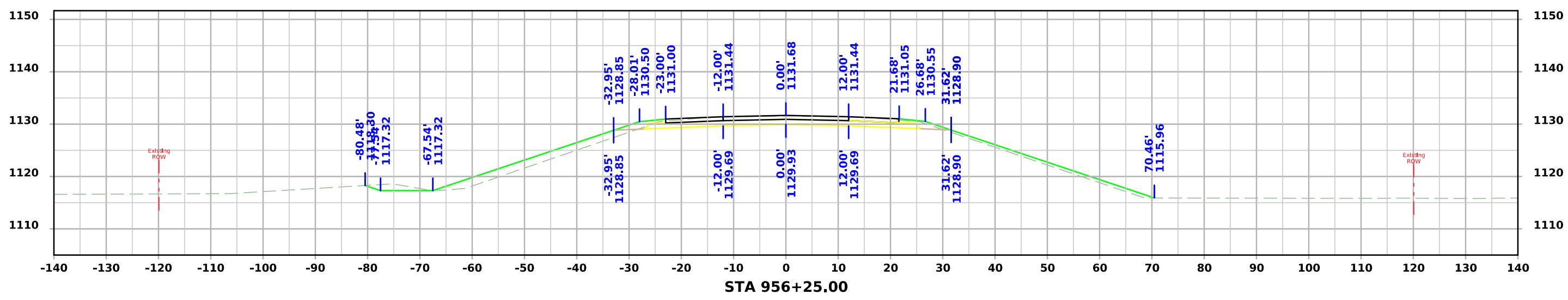
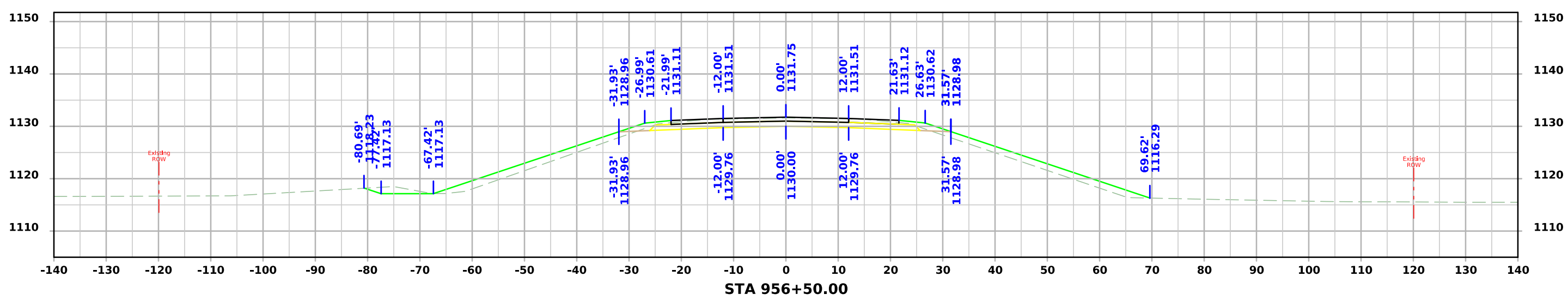
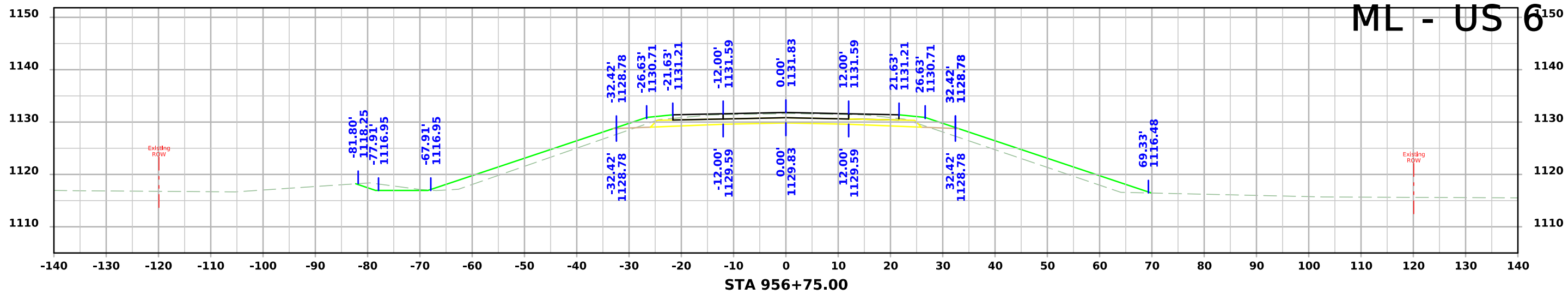
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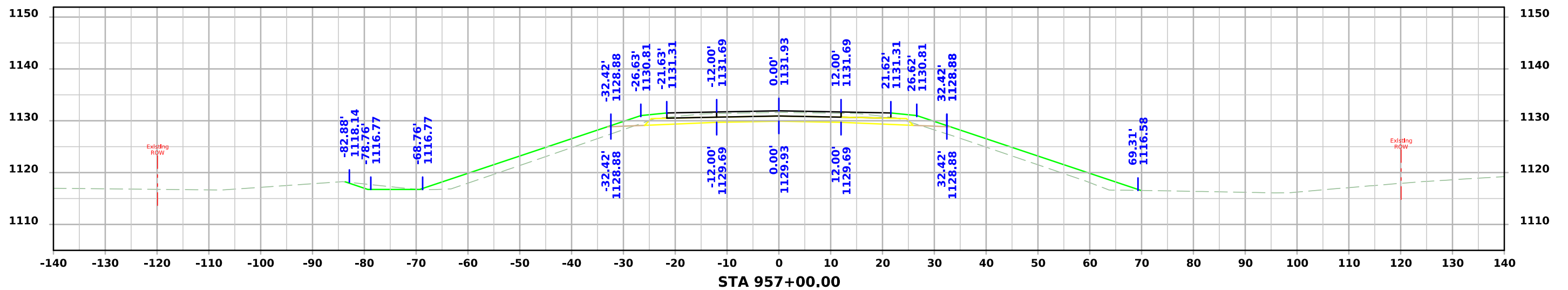
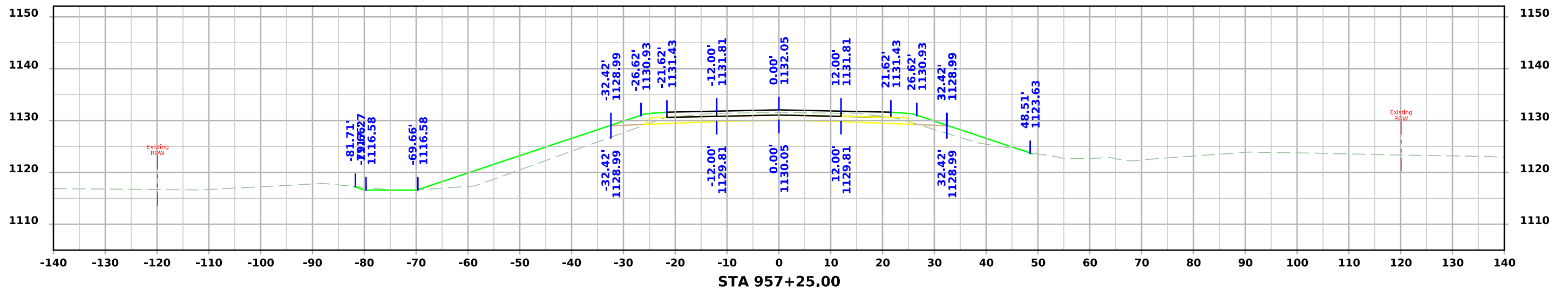
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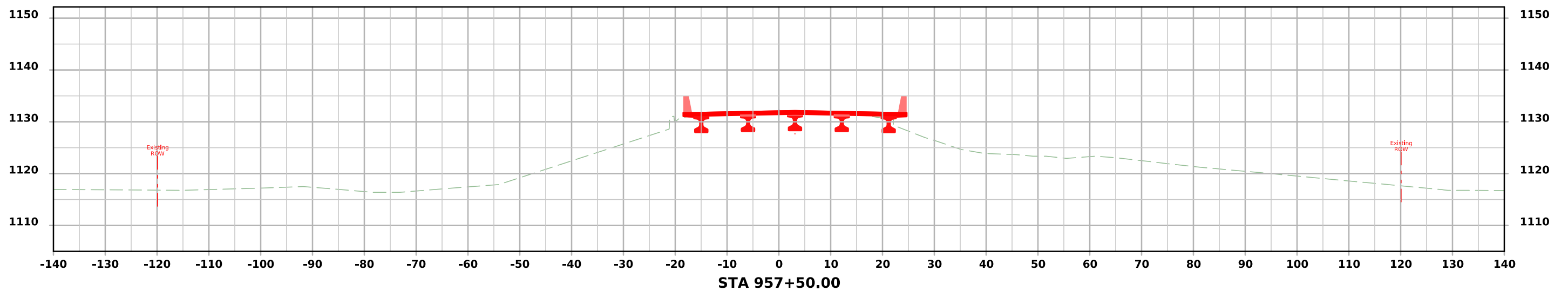
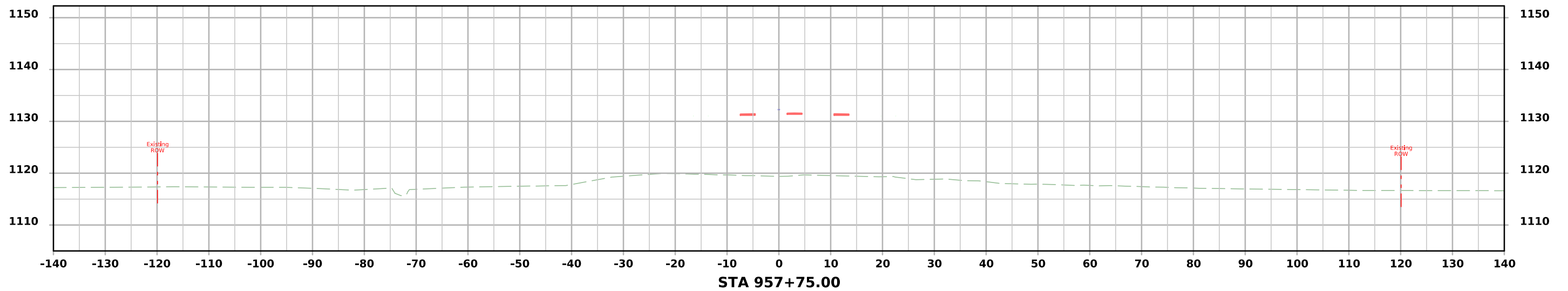
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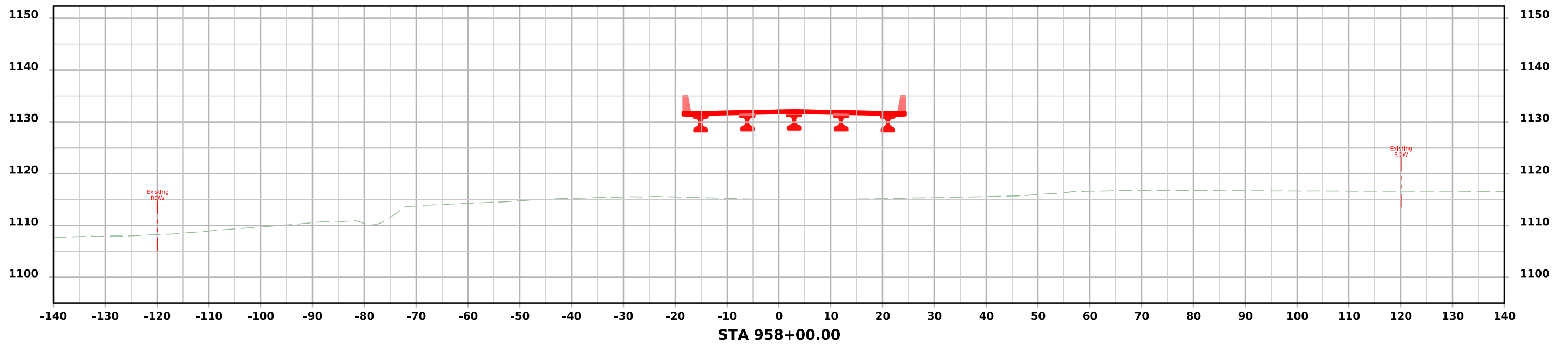
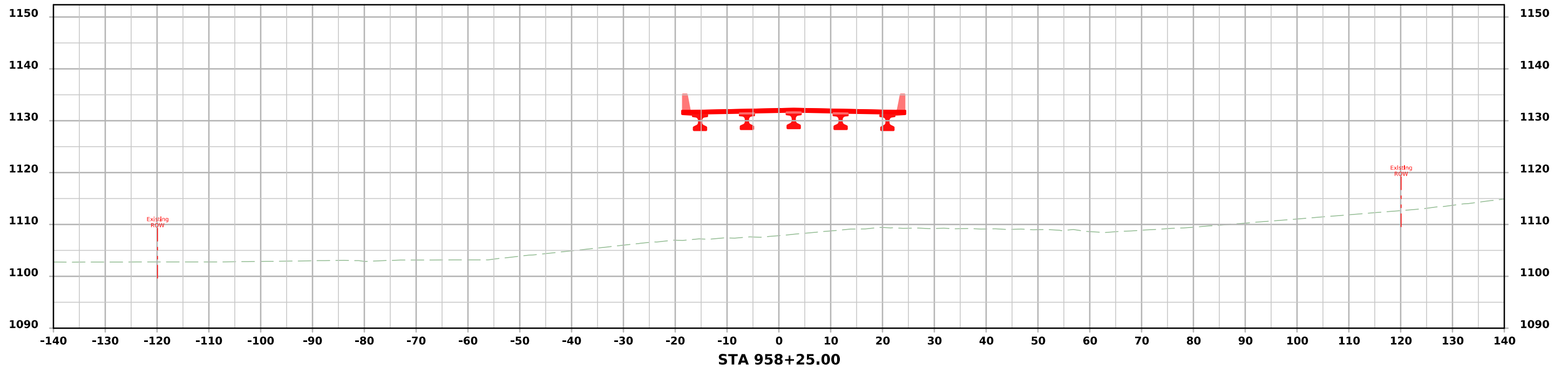
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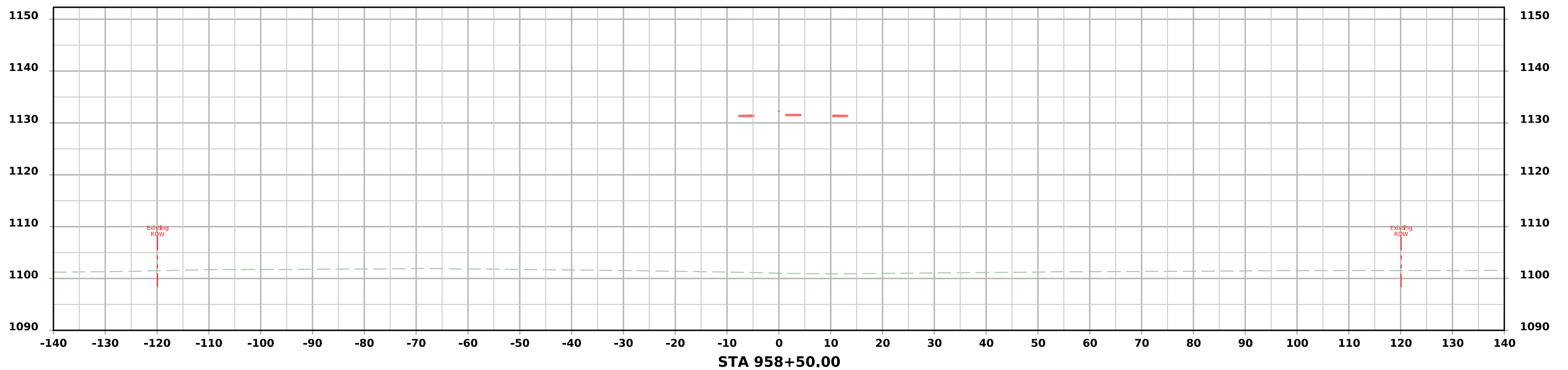
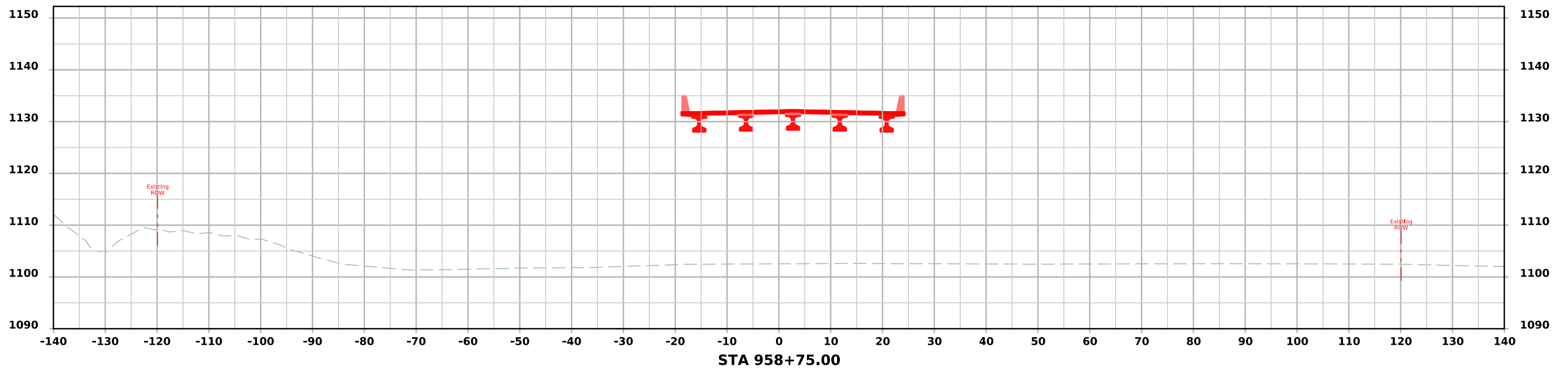
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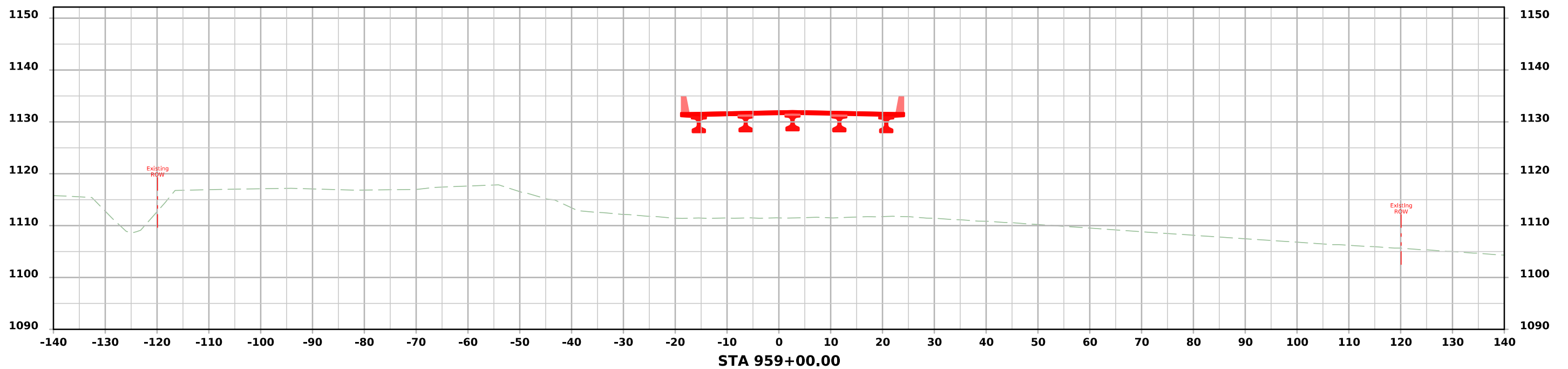
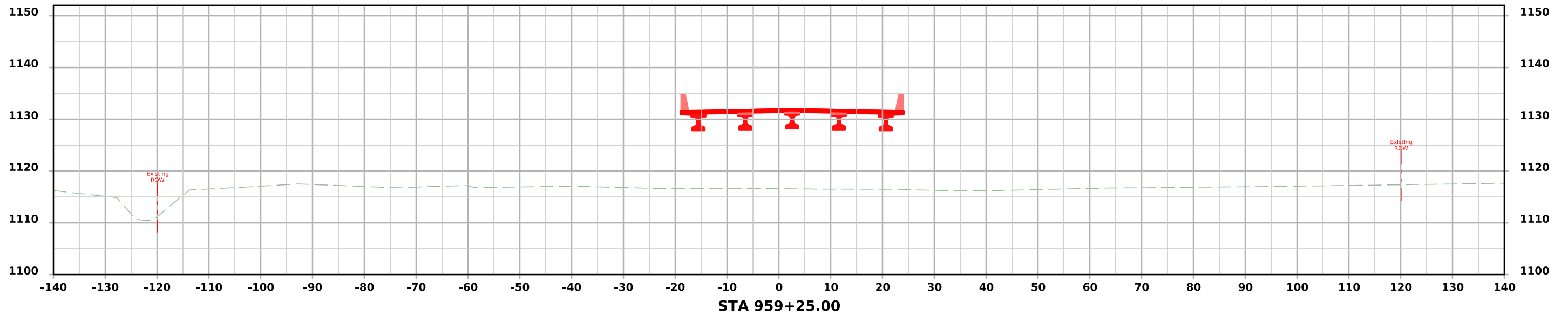
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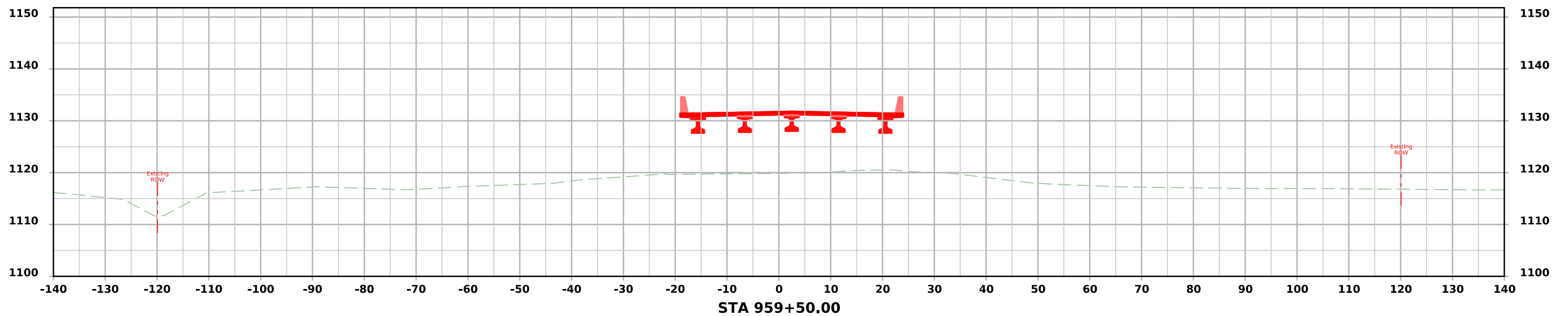
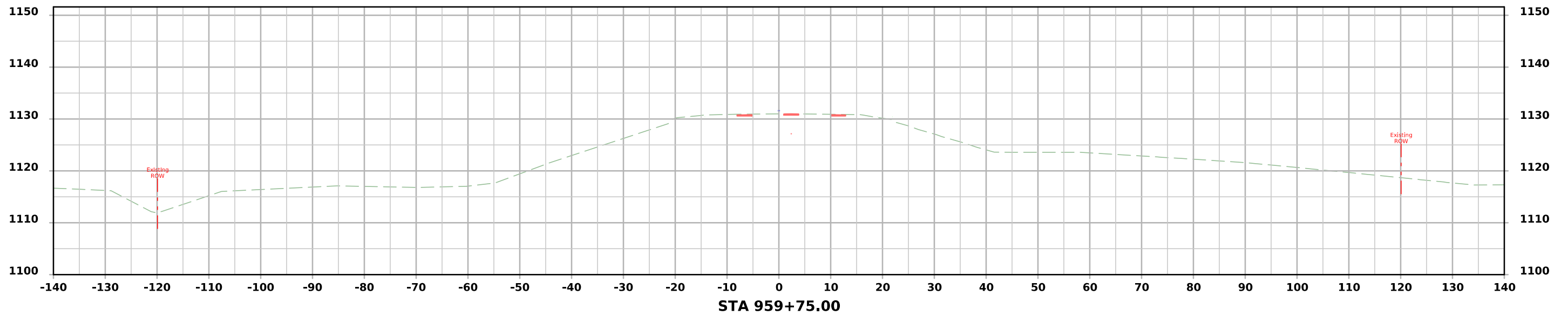
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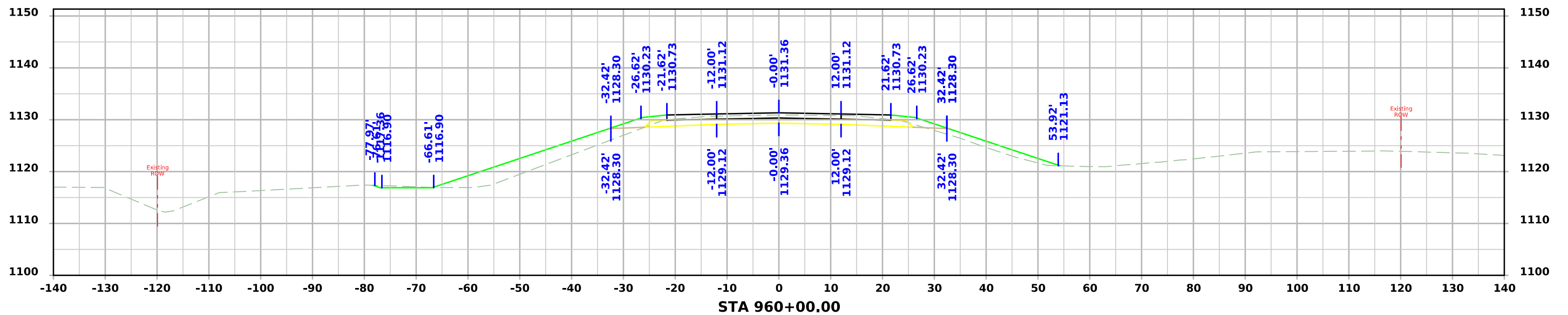
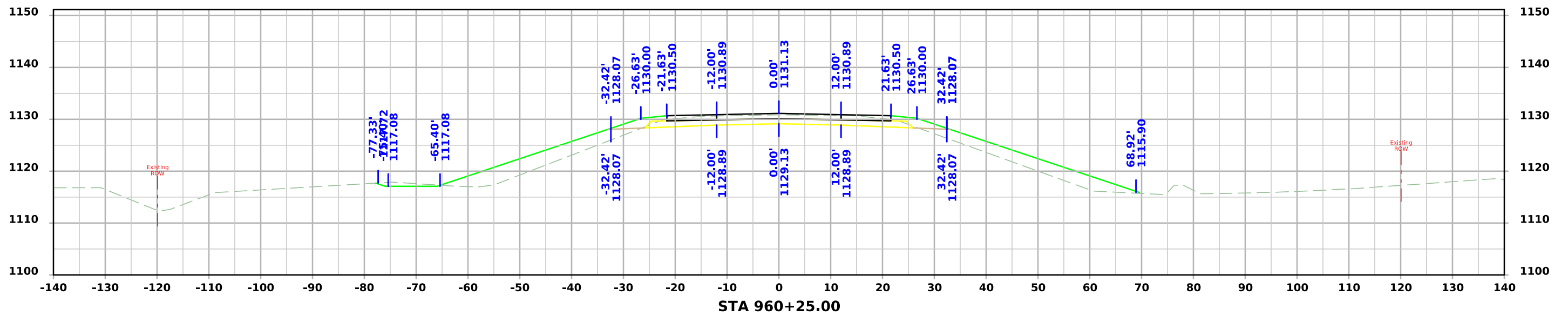
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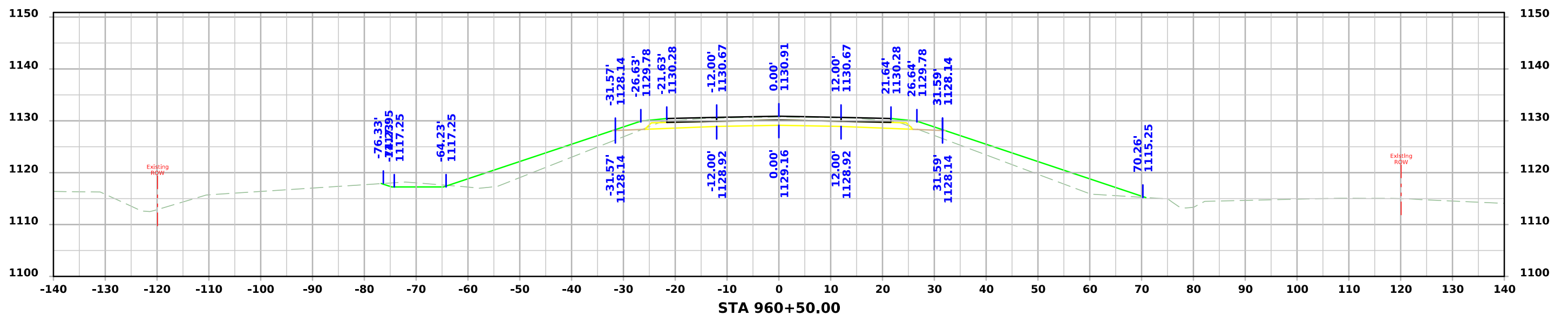
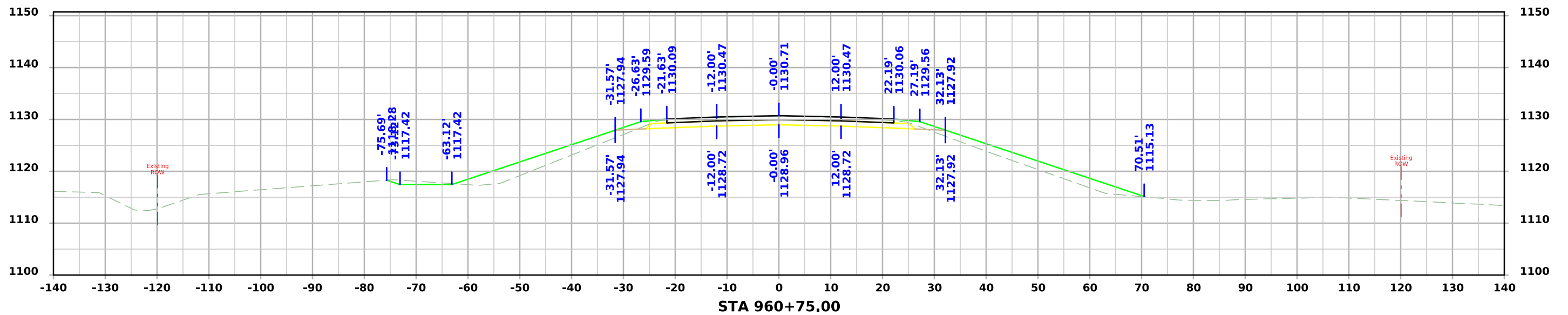
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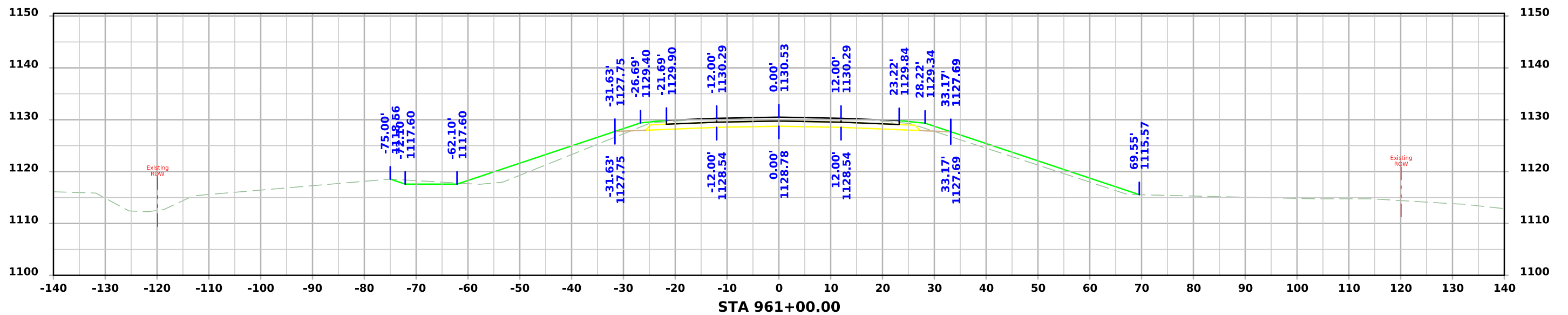
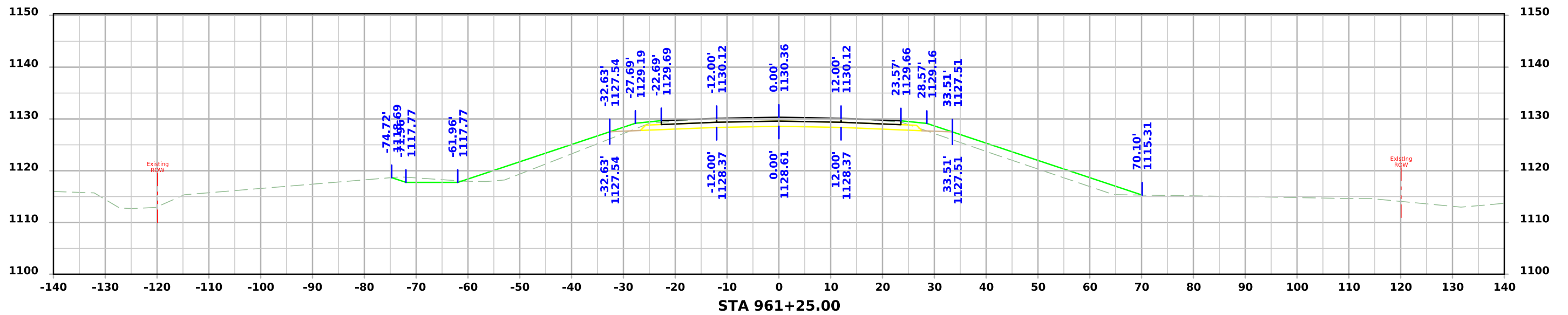
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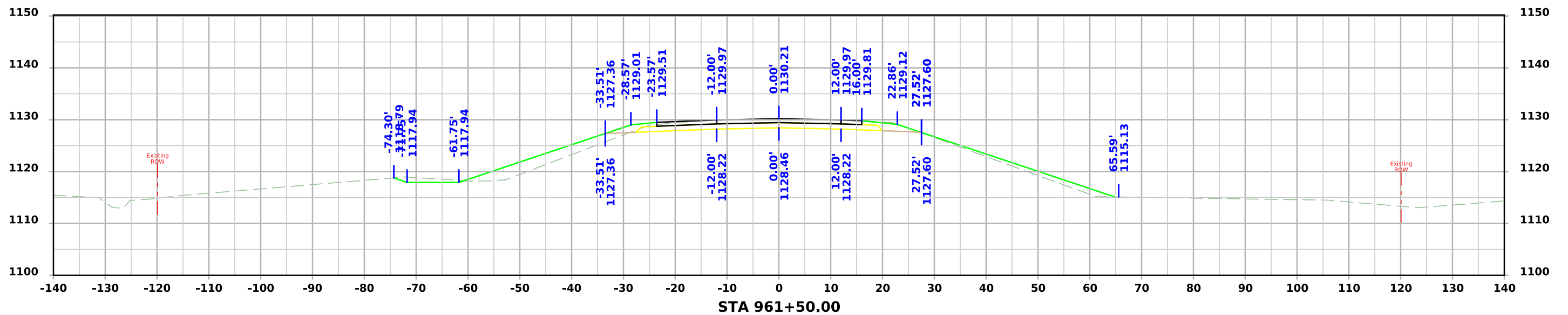
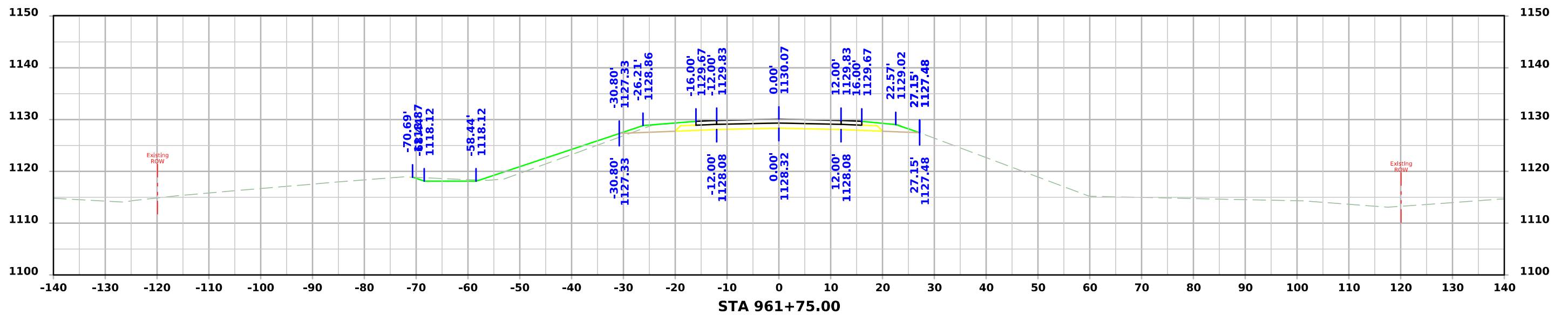
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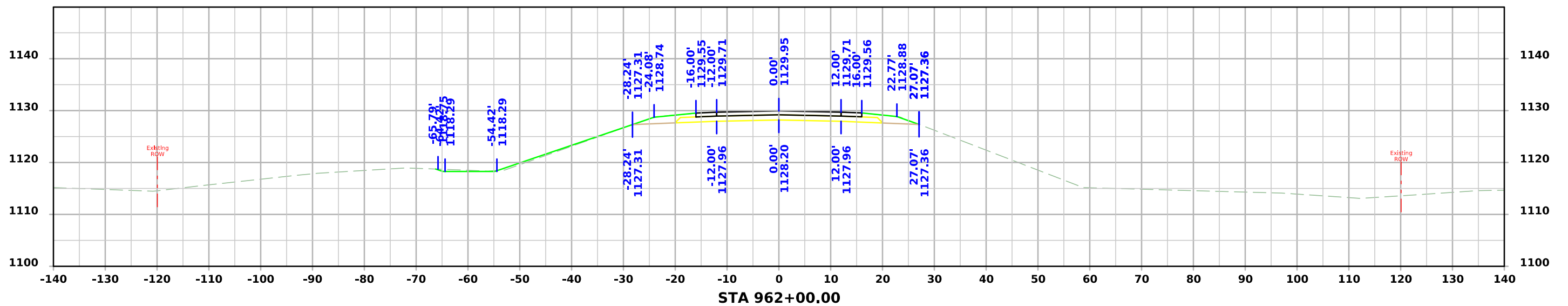
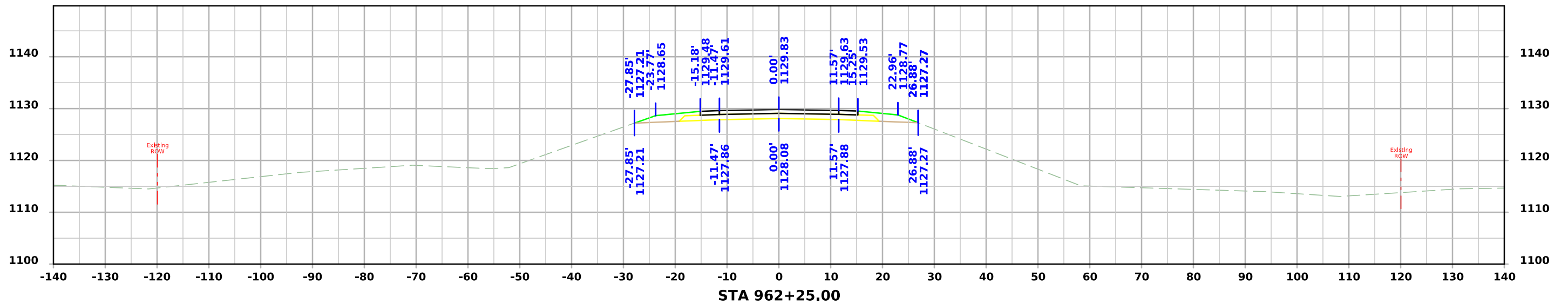
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