

CRAWFORD COUNTY

BRIDGE NEW/REPLACE
BRF-030-2(174)--38-24

LETTING DATE
Oct 20, 2026

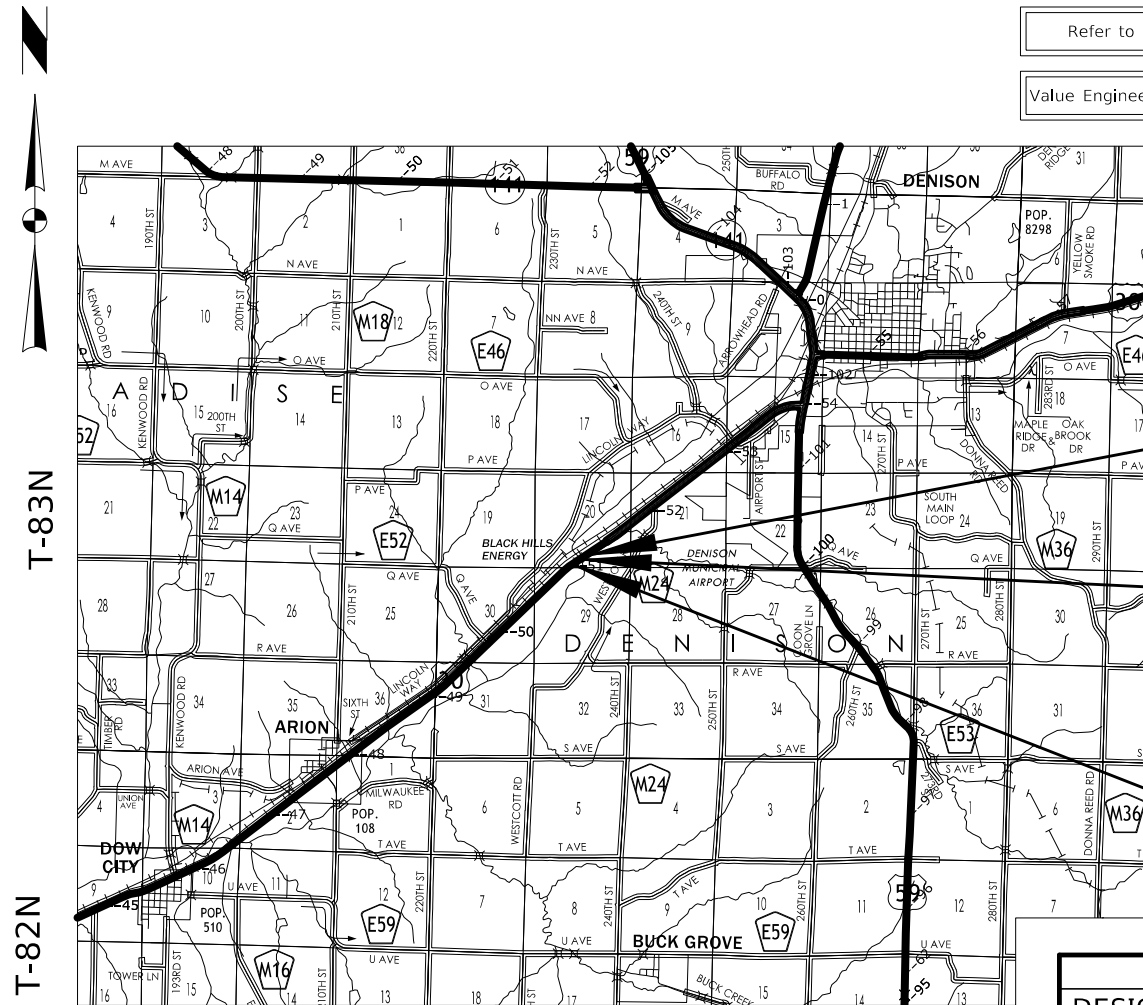


PLANS OF PROPOSED IMPROVEMENT ON THE
PRIMARY ROAD SYSTEM
CRAWFORD COUNTY
BRIDGE NEW/REPLACE
Boyer River 2.7 mi W of US 59

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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



END PROJECT
STA. 703+33.19

BRIDGE
FHWA #21310

BEGIN PROJECT
STA. 696+84.42

MILEAGE SUMMARY			
			105-1 09-27-94
Div.	Location	Lin. Ft.	Miles
1	Sta. 696+84.42 to Sta. 703+33.19 Deduct Bridge at Sta. 700+16.40	648.77 294.00	0.123 0.056
Total Length of Roadway in Project		354.77	0.067
Total Length of Bridge in Project		294.00	0.056
Total Net Length of Project		648.77	0.123

REVISIONS

TOTAL

41

PROJECT IDENTIFICATION NUMBER

20-24-030-010

PROJECT NUMBER

BRF-030-2(174)--38-24

R.O.W. PROJECT NUMBER

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
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C Sheets	Quantities and General Information
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C.2	Tabulations
D Sheets	Mainline Plan and Profile Sheets
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2	US 30
G Sheets	Survey Sheets
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G.4	Horizontal Control Tab. & Super for all Alignments
J Sheets	Traffic Control and Staging Sheets
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* J.2	Detour Route
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R Sheets	Erosion Control Sheets
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* RR.2 - 3	Erosion Control Plan
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* V.1 - 2	Bridge Situation Plan
W Sheets	Mainline Cross Sections
W.1	Cross Sections Legend & Symbol Information Sheet
W.2 - 16	Mainline Cross Sections
* Color Plan Sheets	

DESIGN DATA RURAL

2026	AADT	3700	V.P.D.
2046	AADT	4200	V.P.D.
2046	DHV	430	V.P.H.
	TRUCKS	22	%
	Total		
	Design ESALs	--	

INDEX OF SEALS

SHEET NO.	NAME	TYPE
A.1	Brian T. Higginbotham	Primary Signature Block
V.1	Jonathan E. Peterson	Hydraulic Design

PRELIMINARY PLANS

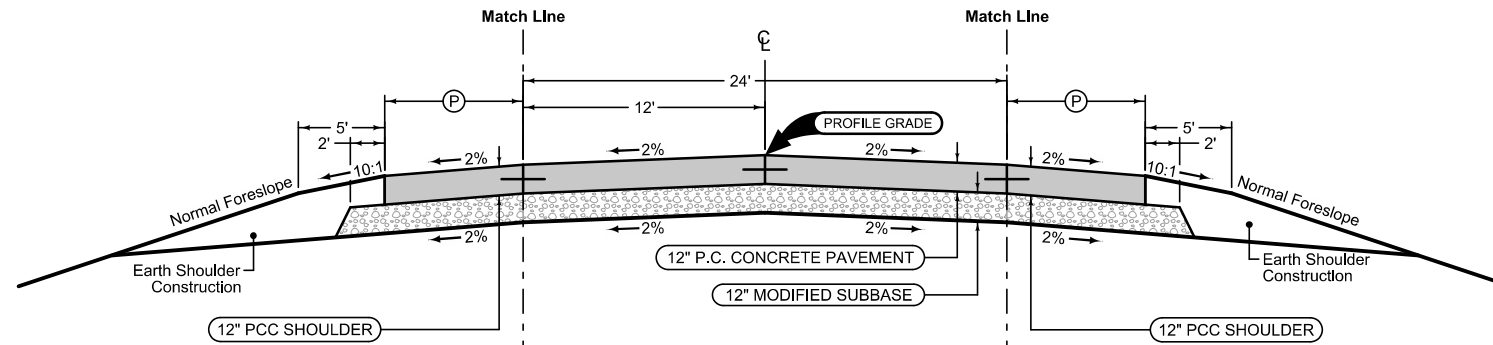
Subject to change by final design.

D3 PLAN-Date: 01/29/24

Full Depth PCC Shoulder

Shoulder Jointing:
 Longitudinal joint: BT-2, L-2 or KT-2
 Transverse joints: C at 20' spacing

2_P_FullPCC_MODIFIED		
STATION TO STATION	(P)	Feet
697+99.40	698+35.40	11.5
Bridge		
701+97.40	702+33.40	11.5



Refer to BR-203

Mainline Jointing:
 Transverse joints: CD at 20' spacing
 Longitudinal joint: L-2

2P_MODIFIED	
STATION TO STATION	(P)
697+99.40	698+35.40
Bridge	
701+97.40	702+33.40

Full Depth PCC Shoulder

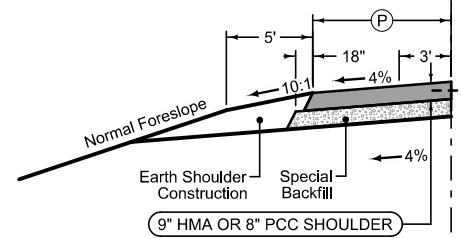
Shoulder Jointing:
 Longitudinal joint: BT-2, L-2 or KT-2
 Transverse joints: C at 20' spacing

2_P_FullPCC_MODIFIED		
STATION TO STATION	(P)	Feet
697+99.40	698+35.40	11.5
Bridge		
701+97.40	702+33.40	11.5

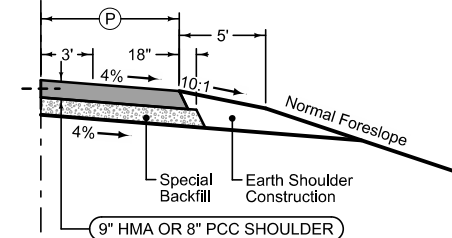
Paved Shoulder at Guardrail

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

2_P_Guard_MODIFIED		
STATION TO STATION	(P)	Feet
697+84.42	697+45.53	13.5
697+45.53	697+99.40	13.5-11.5
Bridge & Approach		
702+33.40	702+62.25	11.5
702+62.25	703+12.26	11.5-13.5
703+12.26	703+33.19	13.5



Refer to Detail 7157



Paved Shoulder at Guardrail

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

2_P_Guard_MODIFIED		
STATION TO STATION	(P)	Feet
696+99.61	697+20.54	13.5
697+20.54	697+70.55	13.5-11.5
697+70.55	697+99.40	11.5
Bridge & Approach		
702+33.40	702+38.40	11.5
702+38.40	702+87.25	11.5-13.5
702+87.25	703+08.28	13.5

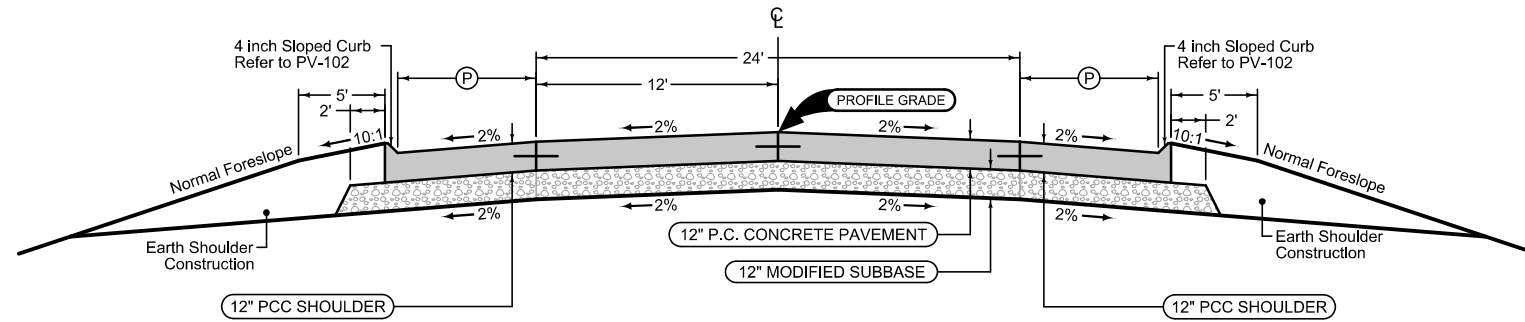
Refer to Detail 7157

U.S. 30

Full Depth PCC Shoulder

Shoulder Jointing:
 Longitudinal joint: BT-2, L-2 or KT-2
 Transverse joints: C at 20' spacing

2_P_FullPCC_MODIFIED		
STATION TO STATION		(P) Feet
698+35.40	698+69.40	11.5
Bridge		
701+63.40	701+97.40	11.5



Refer to BR-203

Mainline Jointing:
 Transverse joints: CD at 20' spacing
 Longitudinal joint: L-2

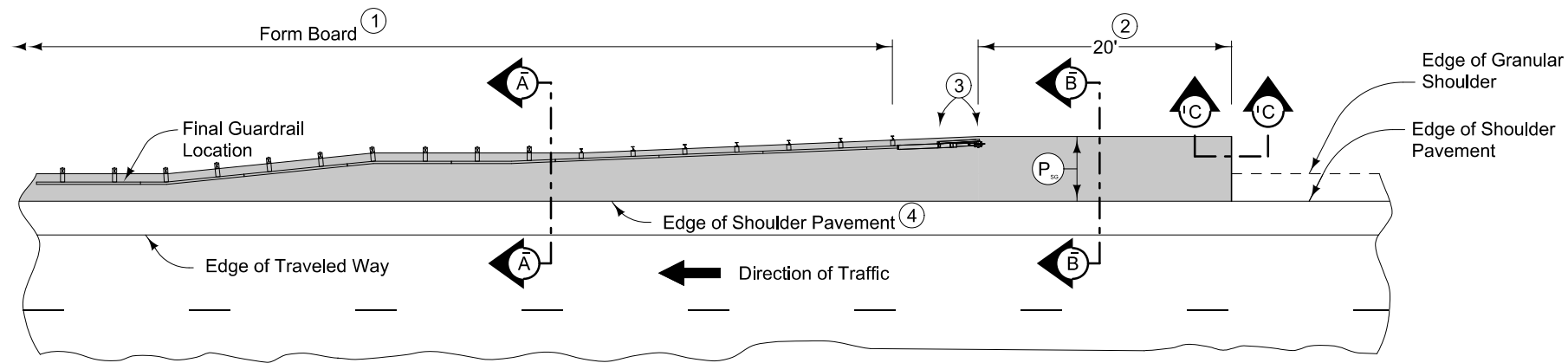
2P_MODIFIED	
STATION TO STATION	
698+35.40	698+69.40
Bridge	
701+63.40	701+97.40

Full Depth PCC Shoulder

Shoulder Jointing:
 Longitudinal joint: BT-2, L-2 or KT-2
 Transverse joints: C at 20' spacing

2_P_FullPCC_MODIFIED		
STATION TO STATION		(P) Feet
698+35.40	698+69.40	11.5
Bridge		
701+63.40	701+97.40	11.5

U.S. 30



PLAN VIEW

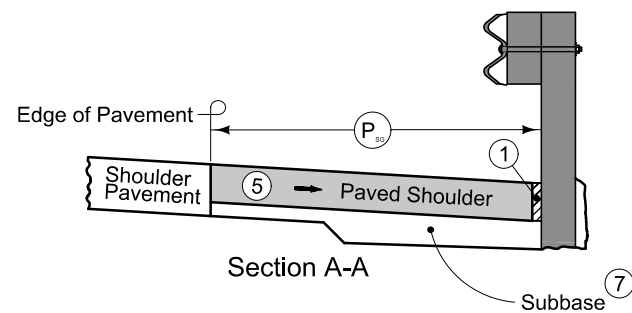
9" HMA Paved Shoulder at guardrail. 8" PCC may be substituted with the following jointing layout:

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.

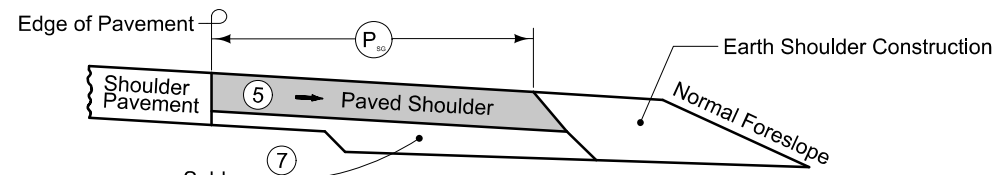
Compaction of HMA is required to face of guardrail post. Hand compaction will be allowed under guardrail. Removal and reinstallation of guardrail will be allowed with no additional payment.

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' (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 partial width paved shoulder as one operation.
- ⑦ Refer to other details in the plan.

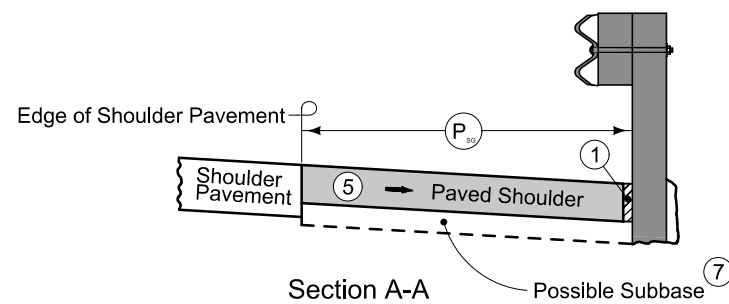


Section A-A

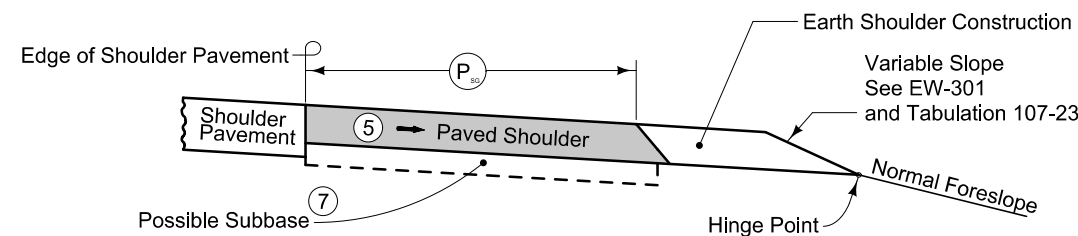


Section B-B

NEW CONSTRUCTION

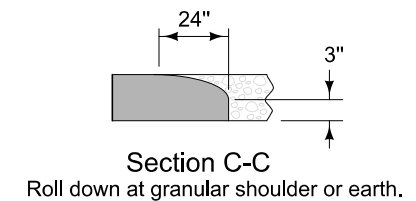


Section A-A



Section B-B

EXISTING SHOULDER



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

100_01D
8/15/22

PROJECT DESCRIPTION

This project involves the replacement of the US 30 bridge (Maint. No. 2451.15030) over the Boyer River 2.7 mi W of US 59 with a new 294' x 44' 3-span Pretension Prestressed Concrete Beam Bridge (BTD) Beams a 0-degree skew.

EXISTING PAVEMENT

Line No.	County	Route	Direction of Travel	Begin Ref. Location Sign	End Ref. Location Sign	Year	Type	Project Number	Surface Type	Surface Depth (IN)	Base Type	Base Depth (IN)	Subbase Type	Subbase Depth (IN)	Removal Type	Removal Depth (IN)	Coarse Aggregate Source	Coarse Aggregate Type	Course Aggregate Durability Class	Reinforcement Type	Remarks
	Crawford	US 30	EB	46.12	51.43	2020	M	MP-030-3(710)38--76-24	PCC												PCC patching, HMA patching, Slurry
	Crawford	US 30	EB	46.12	51.43	2015		HSIPX-30-2(157)--3L-24	HMA	6.0											6" HMA Shoulders 4' Wide or Fullwidth at Guardrail
	Crawford	US 30	EB	46.12	51.43	1960		F-232(9)	PCC	10.0	GSB	4.0					Sacton	Gravel	3		GND 1993

SURVEY SYMBOLS

- DU Centerline Draw or Stream (Up)
- D Centerline Draw or Stream (Down)
- T1 TL1D Frontier - Quality D
- FO FO1D Frontier - Quality D
- BNK Stream Bank
- BL Topo Breakline
- RET Retaining Walls
- CUL Culvert
- PIP Pipe Culvert
- SOP Size of Pipe or Culvert
- WC Wild Card (Misc. Field Shot)
- BD Bridge Deck
- BCL Bridge Centerline
- BRG Bridge
- CON Concrete or A/C Slab
- SBR Size of Bridge
- EW Edge of Water
- SP Stream Profile
- TW Top of Water
- CP Control Point
- SNP Unpaved Shoulder
- C Centerline BL of Road (ML or SR)
- SH Paved Shoulder
- EP Edge of Paved Roads (ML or SR)
- ENU Edge Unpaved Entrance & Parking
- ENT Centerline BL of Entrance
- CU Back of Curb
- GU Gutter In Front of Curb
- GDL Guard Rail Steel
- TOP Top of Bridge Pier
- BLS Bridge Low Steel
- PRO Profile Shot
- PLG Location of General Photo

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

- T1 TL1D Frontier - Quality D
- FO FO1D Frontier - Quality D

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design	Color No.	
Green	(2)		Existing Topographic Features and Labels
Blue	(1)		Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Magenta	(5)		Existing Utilities
SHADING	Design	Color No.	
Lavender	(9)		Temporary Pavement Shading
Yellow	(4)		Proposed Pavement Shading
Orange	(6)		Proposed Granular Shading
Orange	(70)		Proposed Shoulder Granular Shading
Orange	(68)		Proposed Shoulder Paved Full Depth Shading
Yellow	(132)		Proposed Shoulder Paved Partial Depth Shading
Gray, Dark	(112)		Proposed Grade and Pave Shading "In conjunction with a paving project"
Brown, Light	(236)		Grading Shading
Orange, Light	(134)		Proposed Granular Entrance Shading
Yellow	(220)		Proposed Paved Entrance Shading
Tan	(8)		Proposed Sidewalk Shading
Blue, Light	(230)		Proposed Sidewalk Landing Shading
Pink	(11)		Proposed Sidewalk Ramp Shading
Green, Light	(225)		Existing Pavement Shading
Red	(3)		Proposed Structure Shading
Red	(3)		Delineates Restricted Areas

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design	Color No.	
Green	(10)		Existing Ground Line Profile
Blue	(1)		Proposed Profile and Annotation
Magenta	(5)		Existing Utilities
Blue, Light	(230)		Proposed Ditch Grades, Left
Black	(0)		Proposed Ditch Grades, Median
Rust	(14)		Proposed Ditch Grades, Right

- Reference Point
- 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
- 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

Crawford County
BRF-030-2(174)--38-24
Location: Boyer River 2.7 mi W of US 59
Type of Work: Bridge-Unspecified
Project Directory: 2403001020
PIN: 20-24-030-010
Sap-0434.2

Horizontal Control

The project coordinate system for this survey is Iowa RCS Zone 6 (U.S. Survey Feet). This survey control is relative to IaRTN reference stations. IaRTN Reference Station coordinates are relative to the National Reference Station network datum: NAD83 (2011) for Epoch 2010.00. Coordinates were determined by conducting concurrent 6 hour static observations on Project Pts. 24030007, 24030008, 24030009, 24030010, DENIPORT, W 90, and RB 14.

Alignment Information

The horizontal alignment for this survey is a retrace of Paving Plans No. F-232(9). Survey stationing was equated to the plan PI at Sta. 596+25.4 and run ahead without equation throughout the survey.

Survey stationing relates to as built plan stationing as follows:

PI Sta. 596+25.4 Paving Plans Project No. F-232(9)
Survey PI Sta. 596+25.4

PI Sta. 691+91.5 Paving Plans Project No. F-232(9)
Survey PI Sta. 691+86.70

Utility Information

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

Party Personnel

Clayton Henningsen- Survey Party Chief
Jason Arn- Survey Party Chief
Paul Harry- Asst. Party Chief

Date(s) of Survey

Begin Date 08/07/2020
End Date 09/08/2020

General Information

Measurement units for this survey are US survey feet. This survey is for proposed bridge reconstruction on US 30 2.7 miles west of US 59. This is a partial terrain and underground structure field survey with aerial image and lidar acquired terrain added in the Photogrammetry section of the Design Office.

Vertical Control

Vertical datum for this survey is NAVD88 (Computed using Geoid12b). GRS80 Ellipsoidal Height was computed at project Pts. 24030007, 24030008, 24030009, 24030010, DENIPORT, W 90, and RB 14 by doing concurrent 6 hour static observations. The project control is relative to nearby Iowa RTN Base Stations.

This survey observed 2 NGS GPS control with published NAVD88 heights to compare to local ground control:

NGS mark designated W 90 (PID MJ0342) has a published Elev. of 1233.54
Survey Elev. = 1233.888

NGS mark designated DENIPORT (PID MJ1427) has a published Elev. of 1264.
Survey Elev. = 1263.977

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

1a. Regional Coordinate System Zone 6

Coordinate listing from next sheet will be used with 1aRTN 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

1a. Regional Coordinate System Zone 6

<u>Point Number</u>	<u>Northing</u>	<u>Easting</u>	<u>Elevation</u>	<u>Point Description</u>
24030009	7229282.34	16585627.59	1150.21	CP 24030009 SET FENO MONUMENT 0.3 DEEP ON NORTH SIDE 46 FEET NORTHEAST OF FIELD ENTRANCE CENTERLINE AND 76 FEET NORTHWEST OF US 30 CENTERLINE
24030010	7232520.85	16589641.52	1151.82	CP 24030010 IRON PIN IN CONC MONUMENT ON NORTH SIDE 37 FEET NORTHWEST OF EDGE OF PAVEMENT 22 FEET SOUTHEAST OF RR TRACK 107 FEET NORTHEAST OF FIELD ENTRANCE
DENIPOINT	7232942.18	16595890.38	1263.98	CP FOUND NGS STANDARD DISC STAMPED DENIPOINT AS DESCRIBED IN GOOD CONDITION

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)
20001	ML030						591+97.10	7223252.91	16579686.50	596+25.40	7223509.33	16580029.56	600+52.11	7223813.98	16580330.61				
20004	ML030						687+66.80	7230012.65	16586456.17	691+86.70	7230311.32	16586751.32	696+04.25	7230551.31	16587095.87				
20006	ML030	721+48.08	7232005.22	16589183.27															

SPIRAL OR CIRCULAR CURVE DATA

Name	Location	ΔSCS	Horizontal Alignment Data													Remarks			
			Spiral Data						Curve Data										
			θS	Ls	Ts	Es	Xc	Yc	L.T.	S.T.	ΔC	T	L	R	E				
20001	ML030														8.564°	428.3	855.005	5720.577	16.011
20004	ML030														10.482°	419.9	837.456	4577.673	19.218

SUPERELEVATION DATA

See PV-300 Series

Road Identification	Circular Curve or Spiral Curve Name	Radius FT	Superelevation Data			Standard Road Plan	Section A-A	Section B-B	Section C-C	Section D-D	Section E-E	Section F-F	Case A	Case B	Case C	Case S	Case T	Case U	Remarks
			e	L	x														
			%	FT	FT														
ML030	20001	5720.6	2.8	75	53	PV-301	590+91.60	591+44.60	591+97.60	592+19.60			591+97.10						
							601+57.61	601+04.61	600+51.61	600+29.61			600+52.11						
ML030	20004	4577.7	3.4	91	53	PV-301	686+50.10	687+03.10	687+56.10	687+94.10			687+66.80						
							697+20.95	696+67.95	696+14.95	695+76.95			696+04.25						

TRAFFIC CONTROL PLAN

Traffic on US 30 will be closed to traffic. Traffic will be maintained on an off-site detour which will be signed by the Department staff.

The detour will begin in Dow City at the US 30 and N. Clark St. Intersection, going south 0.2 miles, then east on Co. Rd. E-59 for about 8.1 miles, then north on US 59 for 6.1 miles to the junction of US 59 and US 30.

Access to each parcel shall be maintained at all times during construction.
TC-202 may be used during seeding operations.

All local access will be maintained.

For US 30 road closure follow TC-252 Situation 1.

Refer to Standard Road Plans TC-1, TC-202, and TC-252.

Paddling Route Notifications and Signage;

Notifications:

The contractor supplies, installs, maintains, and removes all paddle route signs.

Notify John Wenck via email @ John.Wenck@idr.iowa.gov when temporary channel obstruction is placed and removed so that hazard symbol can be added to the DNR's interactive river mapping system and removed once project is completed.

The contractor is to contact the Iowa DNR no later than 72 hours in advance of the beginning or ending of construction activities.

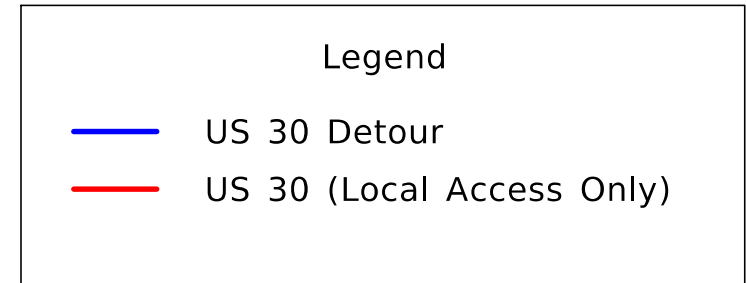
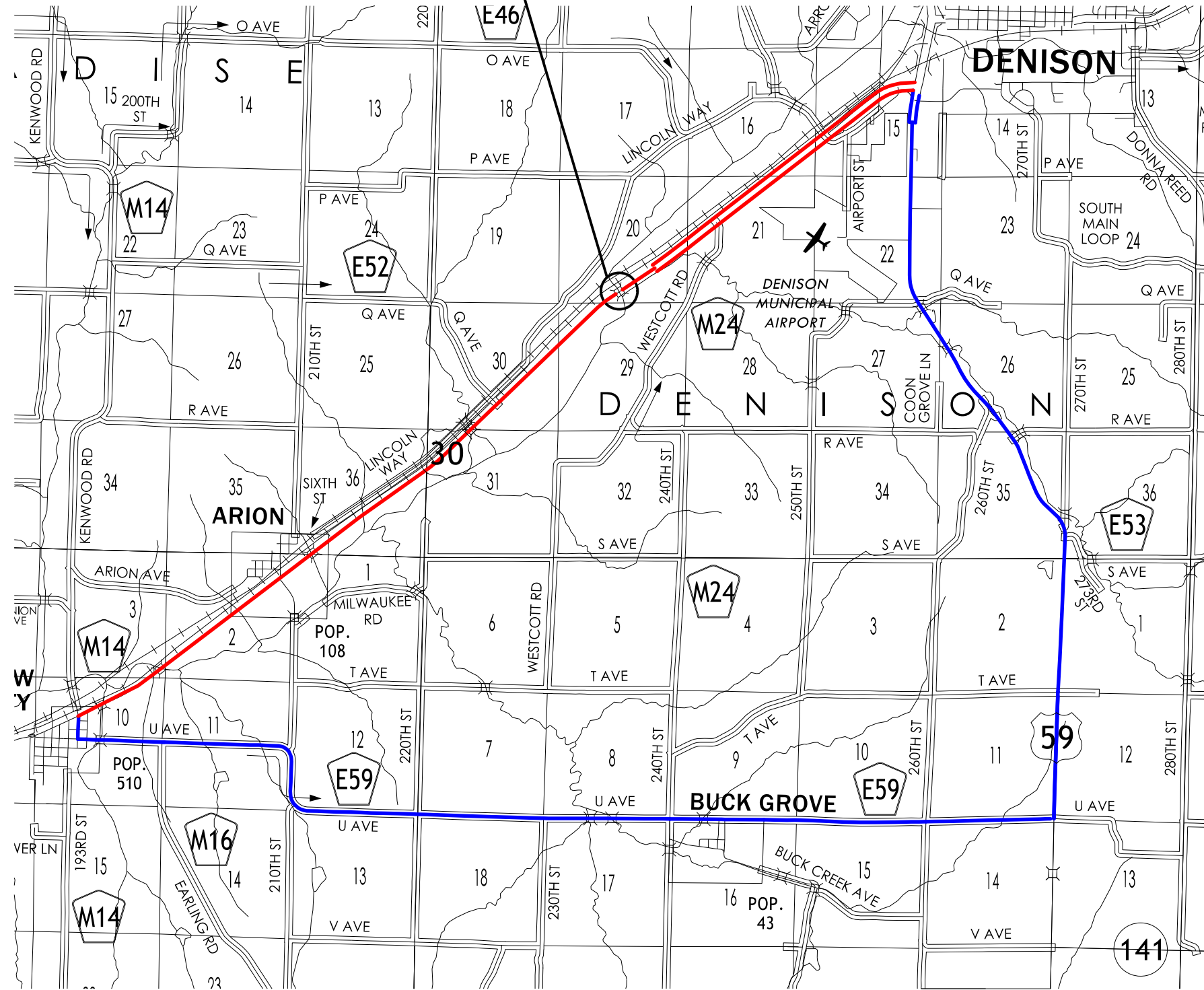
Notify Conservation Officer Gary Sisco at Gary.Sisco@dnr.iowa.gov or 712-420-1486.

Contact Crawford County Conservation Board at conservation@ crawfordcounty.iowa.gov or (712) 263-2748 regarding sign placement and management for the Fairgrounds Access.
Coordinate with new law enforcement officer Gary Sisco at Gary.Sisco@dnr.iowa.gov for advice on placement as crews install signs.

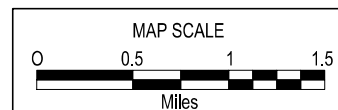
Refer to J.3 - J.6 for signage locations and details.

Maintenance of paddle route signage is the same as the roadway traffic control following Articles 2528.01C, 2528.02, and 2528.03A of the Standard Specifications.


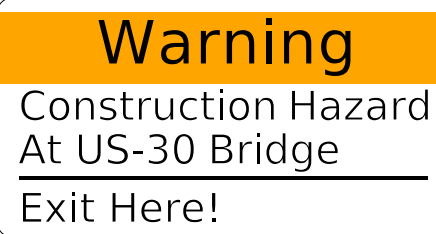

Project Location
(No through Access)



US 30 Detour Route



Boyer River Paddling Route Sign Summary
(Refer to Sheet J.4 for Sign Location Map)

Specialty Sign #	QTY	Syle of Sign	Legend W/ 3" Letters	Legend W/ 2" Letters	Legend W/ 6" Letters	Legend W/ 4" Letters	Location / Orientation
1	1		Warning	Construction Hazard at US-30 Bridge <hr/> Don't Launch Here For Downstream Trip			Crawford County Fairgrounds Near top of boat ramp facing parking area.
2	1				Warning	Construction Hazard at US-30 Bridge <hr/> Exit Here!	Crawford County Fairgrounds At boat ramp, facing upstream at 45 degree angle toward the center of the river.
3	2				Danger	No Thru Traffic	Center of westbound bridge facing upstream and downstream until westbound bridge is removed, then move to similar position on eastbound bridge when westbound project commences.

Note:

Refer to the Iowa DNR Water Trail Development Manual for paddling route temporary signs color coding and style (<https://www.iowadnr.gov/Things-to-Do/Canoeing-Kayaking/Water-Trail-Development>)

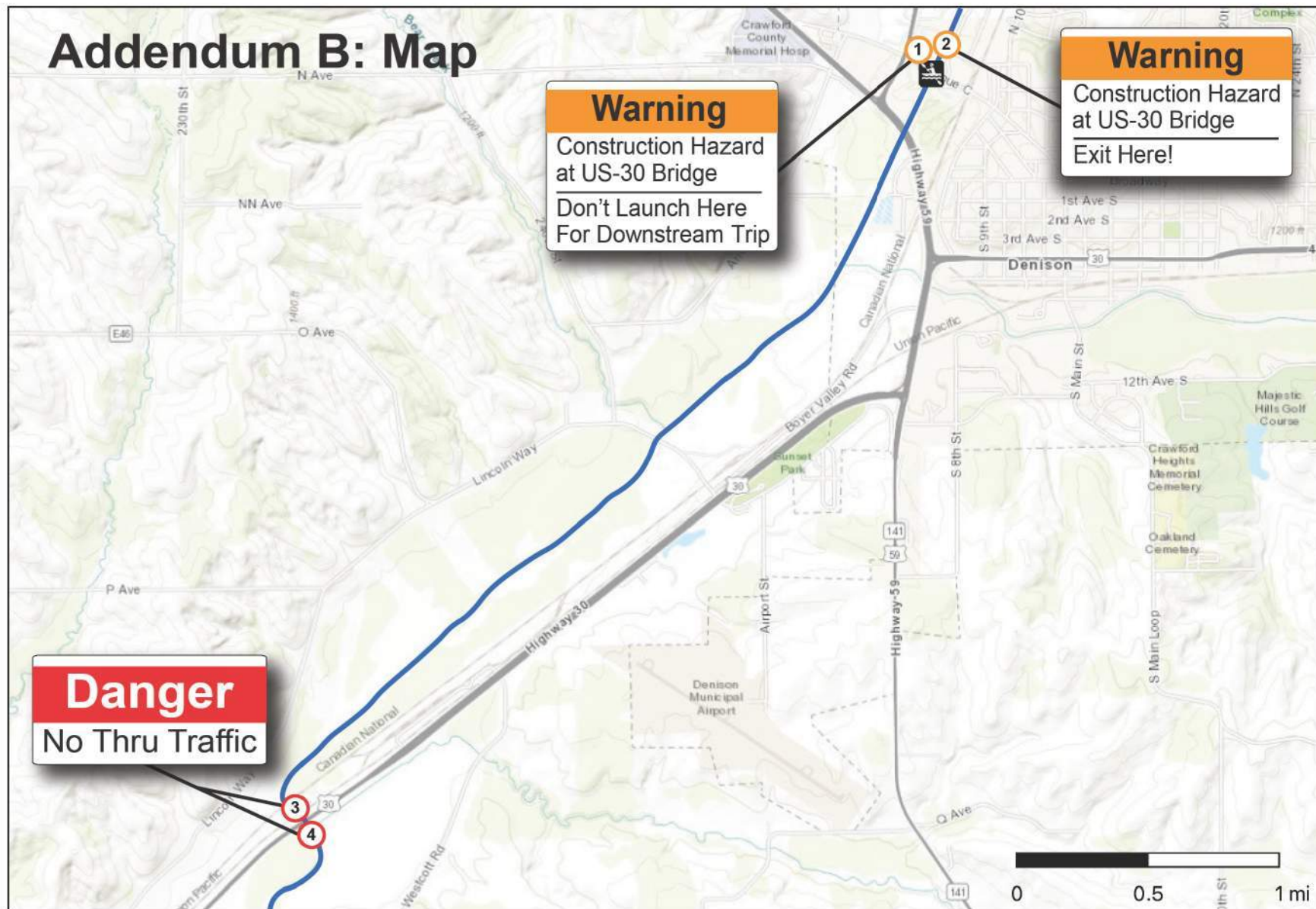
Install signs on land and over water per guidance in the Iowa DNR Water Trail Development Manual Chapter 6.

Some signs may be available for purchase through Iowa Prison Industries. <https://www.iaprisoinind.com/store/c/36-signs.aspx>

The Contractor shall provide all temporary signs, posts and hardware necessary for installation and maintenance of the temporary paddling route signage. Upon completion of the project, the Contractor shall remove all paddling route signage, posts, and hardware. All removed materials will become the property of the Contractor. All materials and operations necessary for providing, installing, maintaining, and removing paddling route temporary signage is considered incidental to 'TRAFFIC CONTROL' and will not be measured or paid separately.

**Boyer River Paddling
Route Temporary Signage**

Addendum B: Map



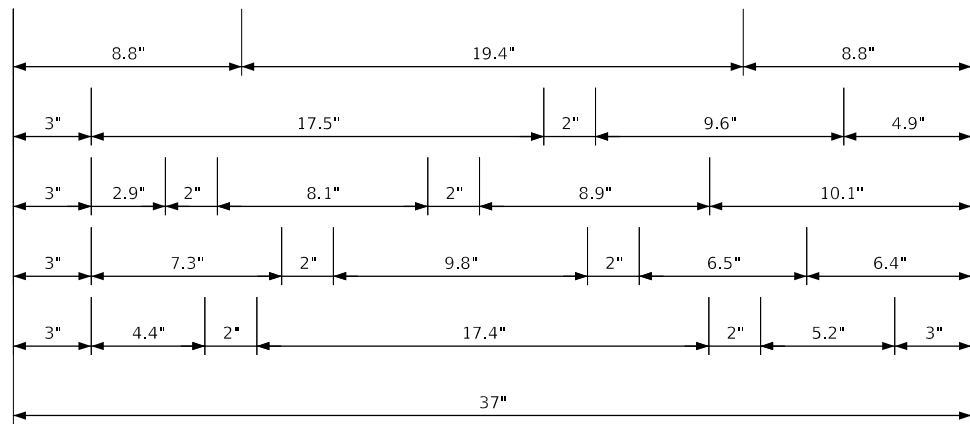
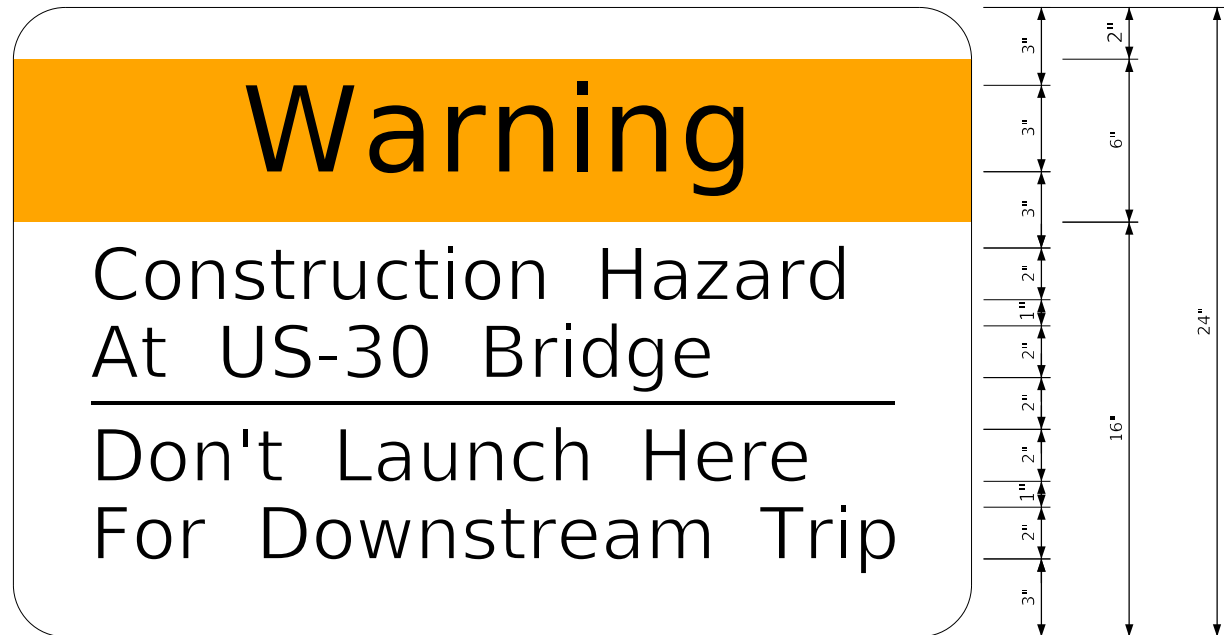
Crawford County Fairgrounds



US-30 Crossing the Boyer River

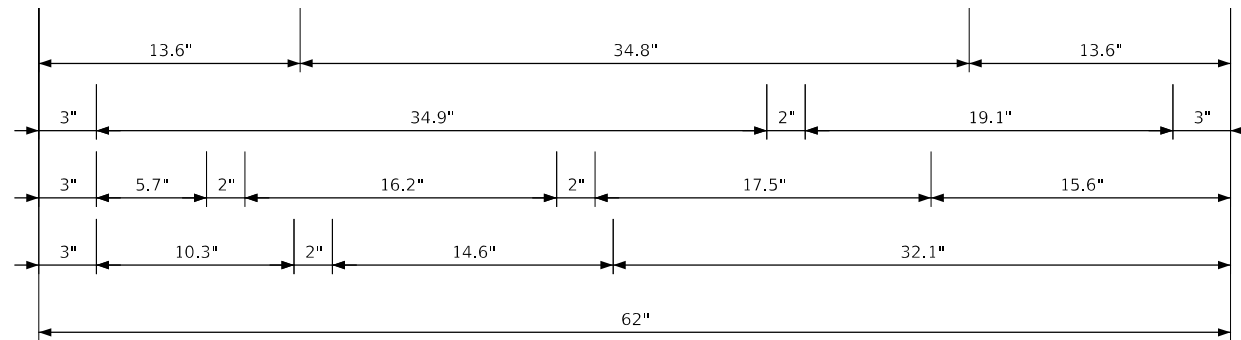
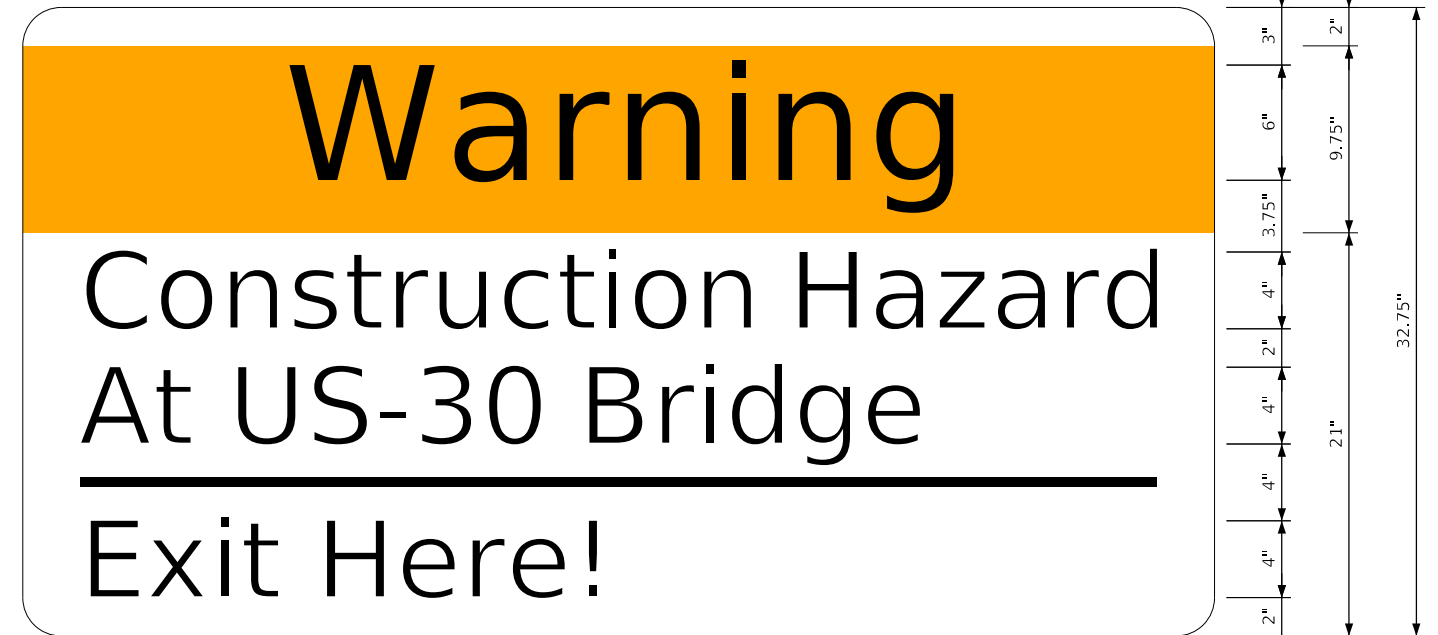
Note:
 - Temporary sign placement locations depicted in these key maps are approximate. The Contractor shall coordinate per notes on Sheet J.1 to confirm locations prior to installation at each river access point and bridge over the Boyer River.

Boyer River Paddling Route
 Speciality Sign Locations and Key Map



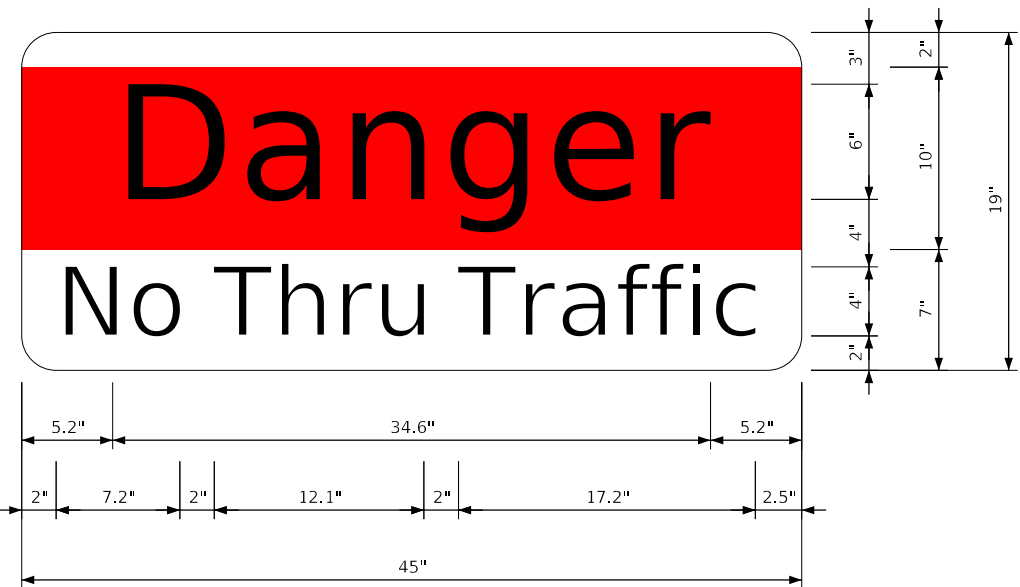
No border, White on White;
 No border, White on Fluorescent orange;
 [Warning] Black Arial
 No border, Black on White
 [Construction Hazard] Arial; [At US-30 Bridge]; [Don't Launch Here] Arial; [For Downstream Trip] Arial;

SPECIALTY SIGN 1



No border, White on White;
 No border, White on Fluorescent orange;
 [Warning] Black Arial
 No border, Black on White
 [Construction Hazard] Arial; [At US-30 Bridge]; [Exit Here!] Arial;

SPECIALTY SIGN 2



No border, White on White;
 No border, White on Red;
 [Danger] Arial
 No border, Black on White
 [No Thru Traffic] Arial;

SPECIALTY SIGN 3

LINE STYLE LEGEND OF LANDSCAPE SHEETS

LINETYPE	Design Element
-----	Living Snow Fence Single Row
-----	Living Snow Fence Double Row
-----	Mechanical Edge

CELL LEGEND OF LANDSCAPE SHEETS

CELL	Design Element	Plant Diameter
	Clearing	
	Proposed Shrub	6 FT
	Proposed Understory Tree	12 FT
	Proposed Conifer Tree	18 FT
	Proposed Overstory Tree	30 FT

PATTERN LEGEND OF LANDSCAPE SHEETS

	Brush Clearing		Spray Area
	Clearing & Grubbing		

LINE STYLE LEGEND OF EROSION CONTROL SHEETS

LINETYPE	Design Element
	Silt Fence
	Perimeter and Slope Sediment Control Device (9")
	Perimeter and Slope Sediment Control Device (12")
	Perimeter and Slope Sediment Control Device (20")
	Open-Throat Curb Intake Sediment Filter
	Concentrated Flow
	Rock Check and Rock Check Dam
	Sheet Flow

CELL LEGEND OF EROSION CONTROL SHEETS

CELL	Design Element
	Temporary Sediment Control basin
	Erosion Control for Circular Intake or Manhole Well
	Erosion Control for Rectangular Intake or Manhole Well
	Grate Intake Sediment Filter Bag
	Silt Basin
	Silt Fence Tail
	Stormwater Drainage Basin Discharge Point

PLAN VIEW COLOR LEGEND OF EROSION CONTROL SHEETS

LINWORK	Design Color No.	Design Element
Green	(2)	Existing Topographic Features and Labels
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Magenta	(5)	Existing Utilities
Black	(0)	Permanent Erosion Control Features
Blaze Orange	(222)	Temporary Erosion Control Features

SHADING	Design Color No.	Design Element	Transparency
Citron	(234)	Mulching, All Types	50%
Light Brown	(238)	Special Ditch Control, Wood Excelsior Mat	0%
Grass Green	(233)	8FT Mow Strip	50%
Red	(3)	Delineates Restricted Areas	0%
Blue	(1)	Basin 1	50%
Green	(2)	Basin 2	50%
Red	(3)	Basin 3	50%

PATTERN LEGEND OF EROSION CONTROL SHEETS

	Seeding and Fertilizing		Turf Reinforcement Mat Type 1
	Seeding and Fertilizing (Rural)		Turf Reinforcement Mat Type 2
	Seeding and Fertilizing (Urban)		Turf Reinforcement Mat Type 3
	Native Grass Seeding		Turf Reinforcement Mat Type 4
	Salt Tolerant Seeding		Slope Protection, Wood Excelsior Mat
	Wetland Grass Seeding		Transition Mat
	Wildflower Seeding		Rock Features, Permanent
	Sodding		Rock Features, Temporary

EROSION CONTROL LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES R)

Denison TWP.
T-83N R-39W
SEC. 20

693+00 694+00 695+00 696+00 697+00 698+00 699+00 700+00 701+00 702+00 703+00 704+00 705+00 706+00 707+00 708+00

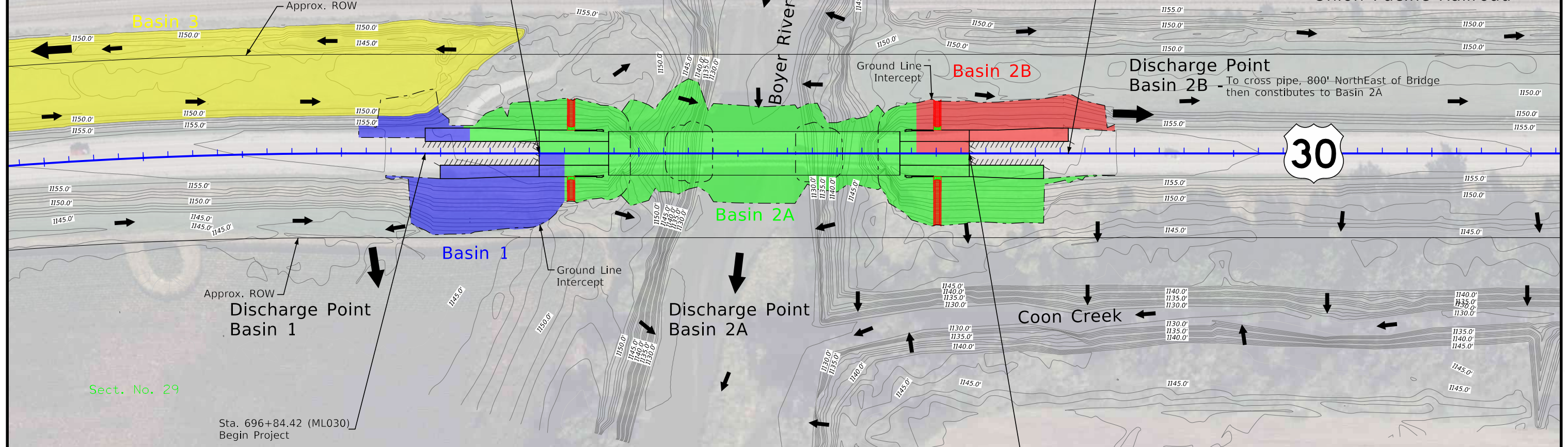


Discharge Point
Basin 3 - To tributary, 1200' SouthWest
of Bridge then to Boyer River

Sta. 697+99.40 (ML030)
Begin PCC Paving

Sta. 703+33.19 (ML030)
End Project

Union Pacific Railroad



Discharge Point
Basin 1

Discharge Point
Basin 2A

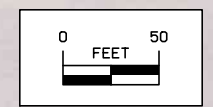
Discharge Point
Basin 2B - To cross pipe, 800' NorthEast of Bridge
then constitutes to Basin 2A

Sect. No. 29

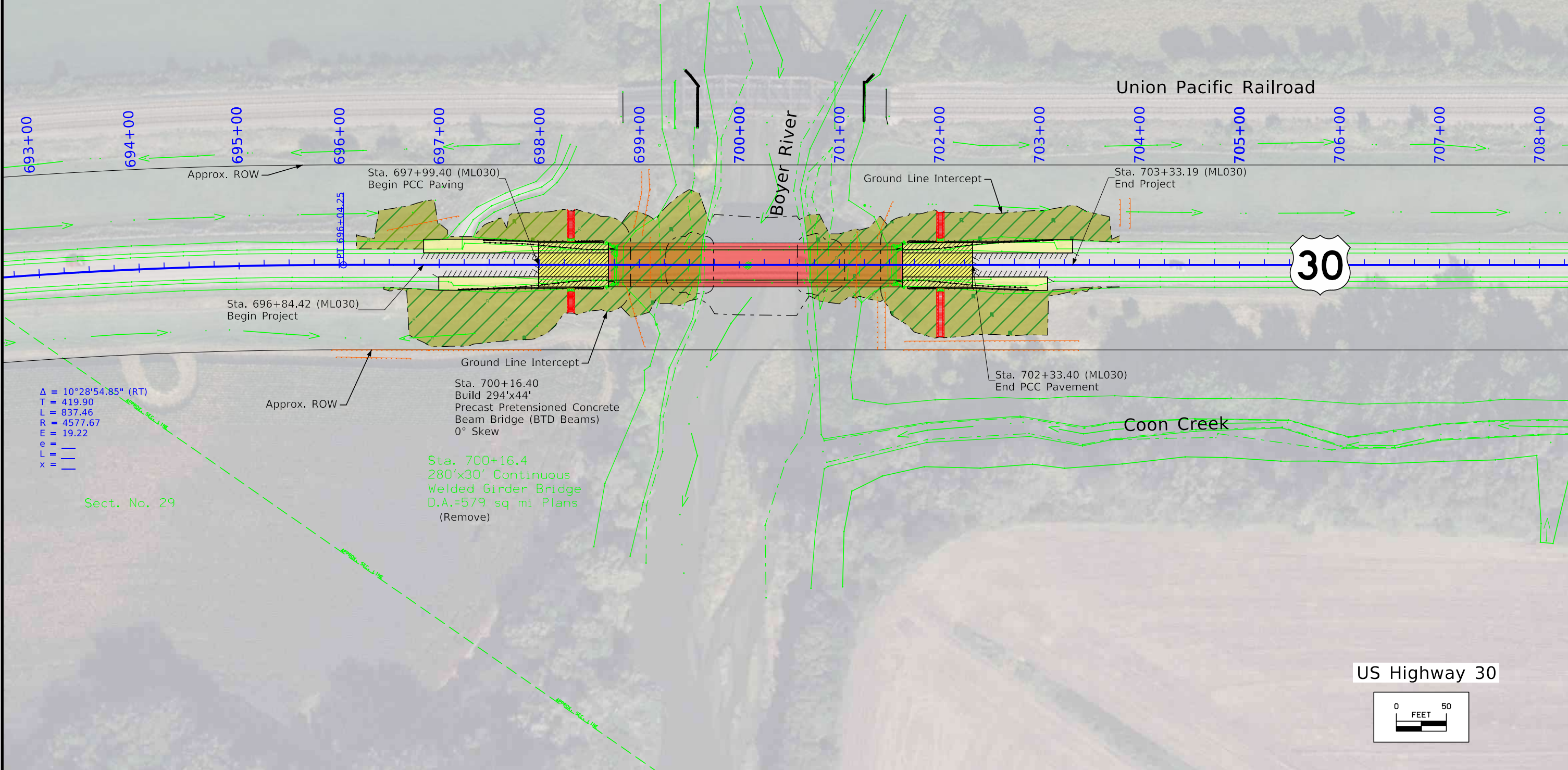
Sta. 696+84.42 (ML030)
Begin Project

Sta. 702+33.40 (ML030)
End PCC Pavement

US Highway 30



Denison TWP.
T-83N R-39W
SEC. 20

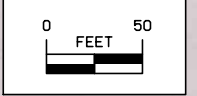


$\Delta = 10^\circ 28' 54.85''$ (RT)
 $T = 419.90$
 $L = 837.46$
 $R = 4577.67$
 $E = 19.22$
 $e =$
 $L =$
 $x =$

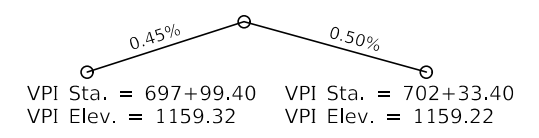
Sect. No. 29

Sta. 700+16.4
 280'x30' Continuous
 Welded Girder Bridge
 D.A.=579 sq mi Plans
 (Remove)

US Highway 30

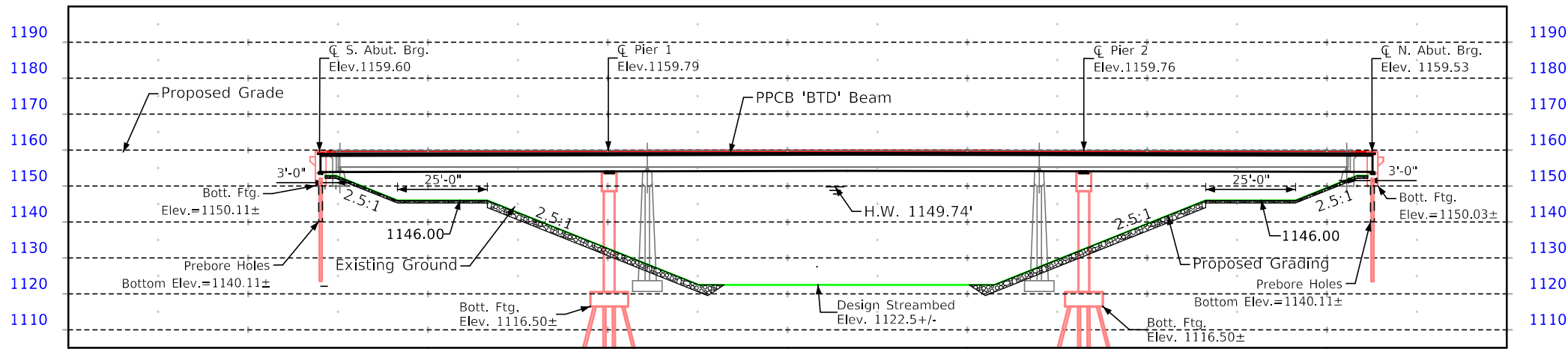


Control Point: 24030009 Northing: 7229282.34 Easting: 16585627.59 Elev.: 1150.21
 Control Point: 24030010 Northing: 7232520.85 Easting: 16589641.52 Elev.: 1151.82



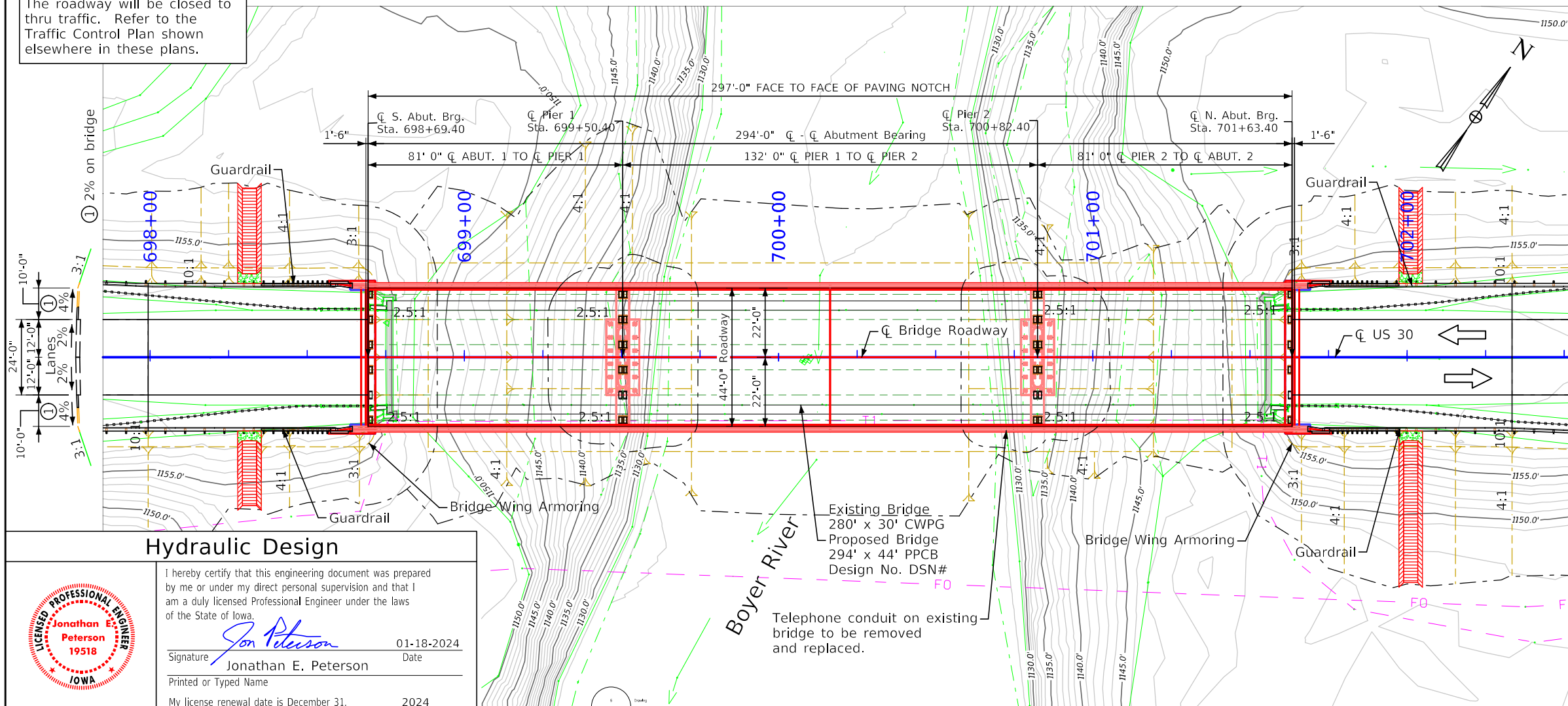
Proposed Profile Grade

Moveable bridge abutments



BRG TSL Longitudinal Section Along Centerline Approach Roadway

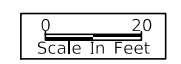
Traffic Control Plan
 The roadway will be closed to thru traffic. Refer to the Traffic Control Plan shown elsewhere in these plans.



RIDB: BoyerR_CRA_48.44
 Drainage Area = 522 Sq. Mi.
 Stream Slope (HGL) = 3.5 Ft./Mi.
 Avg. Low Water Stage = 1128.49
 Q₂₅ = 20,700 cfs
 Stage = 1146.93'
 Q₅₀ = 24,300 cfs
 Stage = 1148.51'
 Regulatory Low Beam = 1154.17'
 Avg. Bridge Velocity = 8.4 fps
 Q₁₀₀ = 27,700 cfs
 Stage = 1149.74'
 Operational Low Beam = 1153.92'
 Backwater = 0.39 Ft.
 Avg. Bridge Velocity = 8.8 fps
 Q₂₀₀ = 34,700 cfs
 Stage = 1151.76'
 Calculated Design Scour = 1118.70'
 Q₅₀₀ = 36,600 cfs
 Stage = 1152.16'
 Avg. Bridge Velocity = 9.8 fps
 Calculated Check Scour = 1118.60'

Location

US 30 over Boyer River
 2.7 mi West of US 59
 T-83N R-39W
 Section 20
 Denison Township
 Crawford County
 FHWA No. 21310
 Bridge Maint. No. 2451.1S030
 Asset ID No.
 Latitude 41.980491°
 Longitude -95.412236°



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: *Jonathan E. Peterson* Date: 01-18-2024
 Printed or Typed Name: Jonathan E. Peterson
 My license renewal date is December 31, 2024



Situation Plan

Telephone conduit on existing bridge to be removed and replaced.
 TL-4 Bridge Railing Proposed
 T Piers Proposed

Utilities Note:

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

Utility Legend:

FO - Frontier Communications
 T1 - Frontier Communications

Traffic Estimate

2026 AADT	3700 V.P.D.
2046 AADT	4200 V.P.D.
2046 DHV	430 V.P.H.
TRUCKS	22 %
Total Design ESALS	

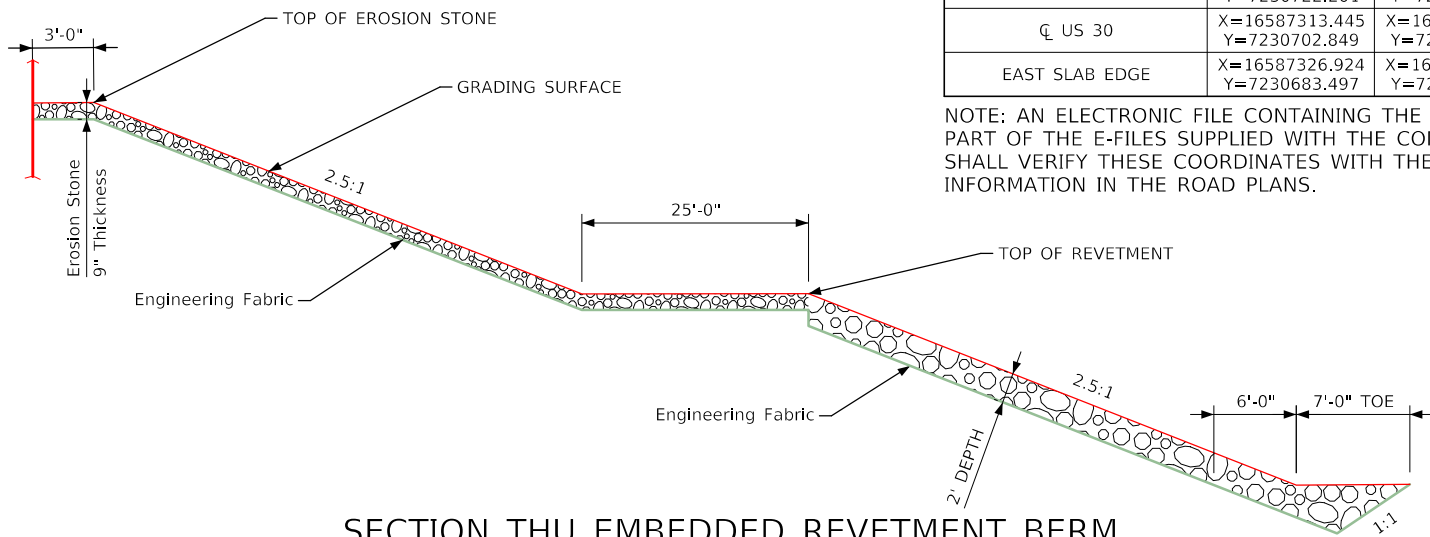
This design is for the replacement of the existing 280'x30' Continuous Welded Girder Bridge, Crawford Design No. 1758, FHWA No. 21310, Maint No. 2451.1S030
 Requirements for a safe water trail or paddling route are applicable. Signage, plan notes, and bid items shall be addressed by the Design Bureau and included in the road plans.

Design For 0 Degree Skew RA
294'-0x44'-0 Pretensioned Prestressed Concrete Beam Bridge (BTD Beams)
 81'-0 End Spans 132'-0 Center Span
Bridge Preliminary Situation Plan
 STA. 700+16.40 (US 30) Current TS&L Date: Oct. 2023
CRAWFORD County
 IOWA DEPARTMENT OF TRANSPORTATION
 Design No. DSN # Design Sheet No. V.1 of 2 FHWA No. 21310

Bridge Coordinates

Location	☐ S. ABUT BRG.	☐ PIER 1	☐ PIER 2	☐ N. ABUT BRG.
WEST SLAB EDGE	X=16587299.966 Y=7230722.201	X=16587366.43 Y=7230768.496	X=16587474.748 Y=7230843.940	X=16587541.214 Y=7230890.235
☐ US 30	X=16587313.445 Y=7230702.849	X=16587379.911 Y=7230749.144	X=16587488.237 Y=7230824.595	X=16587554.690 Y=7230870.882
EAST SLAB EDGE	X=16587326.924 Y=7230683.497	X=16587393.390 Y=7230729.792	X=16587501.705 Y=7230805.236	X=16587568.172 Y=7230851.531

NOTE: AN ELECTRONIC FILE CONTAINING THE BRIDGE COORDINATE DATA IS AVAILABLE AS PART OF THE E-FILES SUPPLIED WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL VERIFY THESE COORDINATES WITH THE PROJECT HORIZONTAL CONTROL INFORMATION IN THE ROAD PLANS.



SECTION THU EMBEDDED REVETMENT BERM

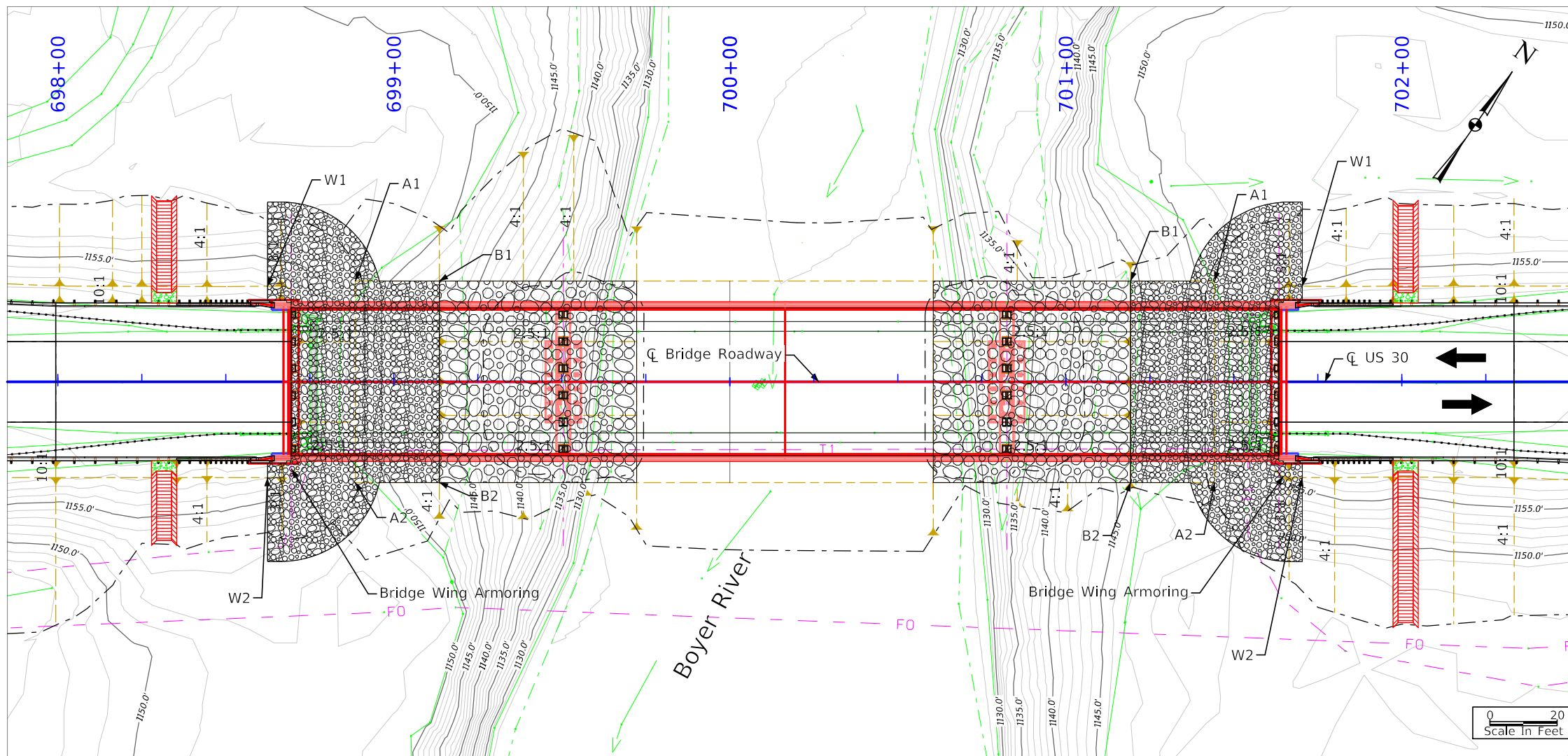
Berm Slope Location Table

Points	South Abutment			North Abutment		
	Station	Offset	Elev.	Station	Offset	Elev.
A1	699+88.52	30.00' LT	1146.00	701+44.28	30.00' LT	1146.00
A2	699+88.52	30.00' RT	1146.00	701+44.28	30.00' RT	1146.00
B1	699+13.52	30.00' LT	1146.00	701+19.28	30.00' LT	1146.00
B2	699+13.52	30.00' RT	1146.00	701+19.28	30.00' RT	1146.00
W1	698+62.40	28.50' LT	1153.37	701+70.40	28.50' LT	1153.30
W2	698+62.40	28.50' RT	1153.37	701+70.40	28.50' RT	1153.30

Estimated Berm Armoring Quantities

Location	Revetment CL. E (Ton)	Erosion Stone (Ton)	Engineering Fabric (SY)	CL. 10 Channel Excavation (CY)
Berm Lining - South Abutment	370.2	147.7	756.5	352.3
Berm Lining - North Abutment	370.2	147.7	756.5	352.3
Totals	740.4	295.4	1513	704.6

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.



Site Plan

Design For 0 Degree Skew RA
294'-0x44'-0 Pretensioned Prestressed Concrete Beam Bridge (BTD Beams)
 81'-0 End Spans 132'-0 Interior Span
Bridge Preliminary Grading Plan
 STA. 700+16.40 (US 30) Turn-In Date: Oct. 2023
CRAWFORD County
 IOWA DEPARTMENT OF TRANSPORTATION
 Design No. DSN # Design Sheet No. V.2 of 2 FHWA No. 21310

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		
(188)	Revetment Class D	Grading	
(28)	Revetment Class E	(8)	Behind Curb Cut
(12)	Shoulder Special Backfill	(6)	Granular
(12)	Special Backfill	(13)	Granular Back Fill
(20)	Subbase	(48)	Rock Undercut
(20)	Subbase Lower	(8)	Shoulder Earth Fill
(20)	Subbase Upper	(2)	Side Slopes
(118)	Subgrade Treatment	(226)	Side Slopes Dressing
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
		(3)	Waste
Existing			
(0)	Existing Pavement		

Cross Section Cells

- ⊕ T1 TL1D Frontier - Quality D (Assumed Depth 30")
 - ⊕ F0 FO1D Frontier - Quality D (Assumed Depth 30")
- Approximate Existing Right-of-Way

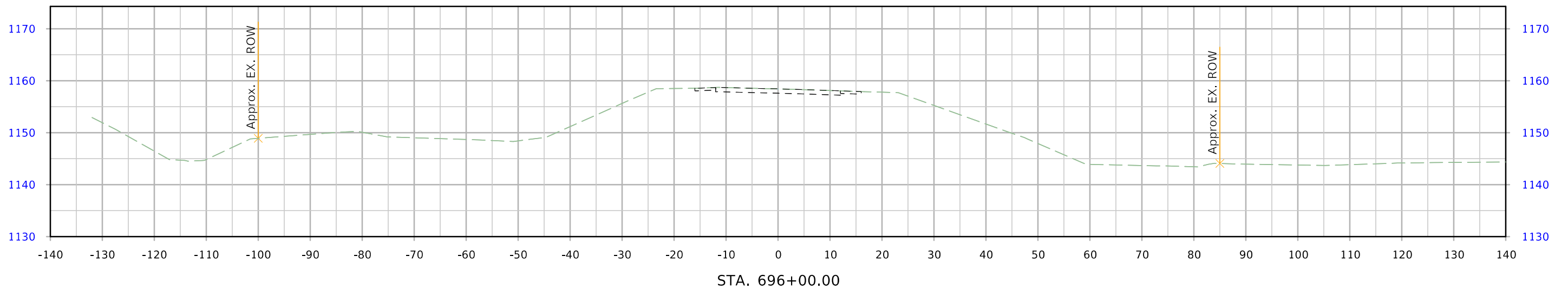
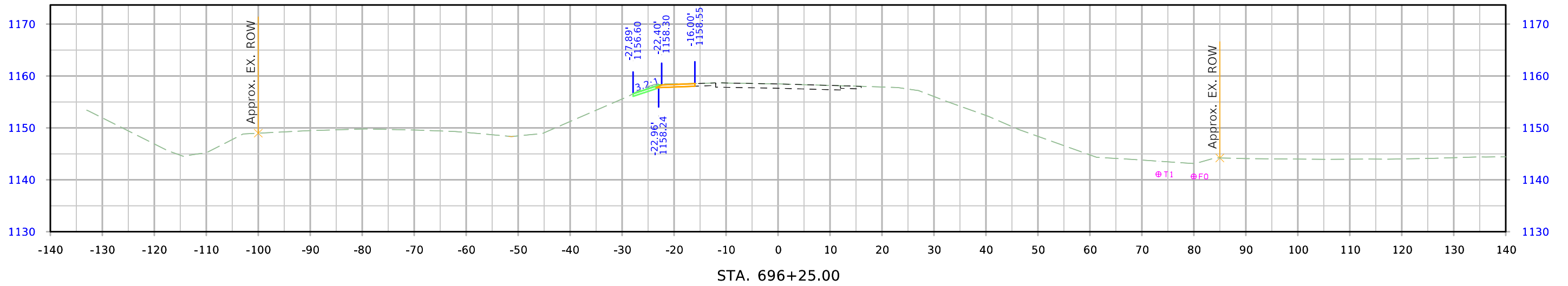
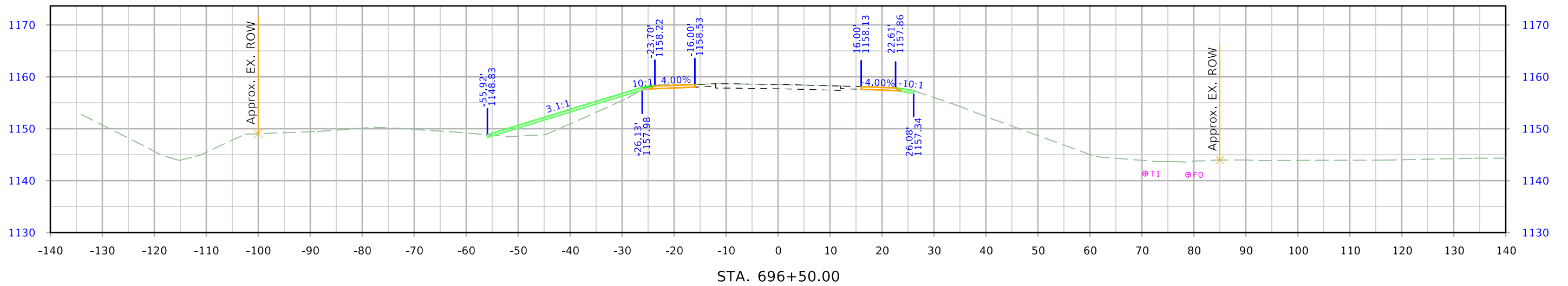
NOTES:

NOTES:

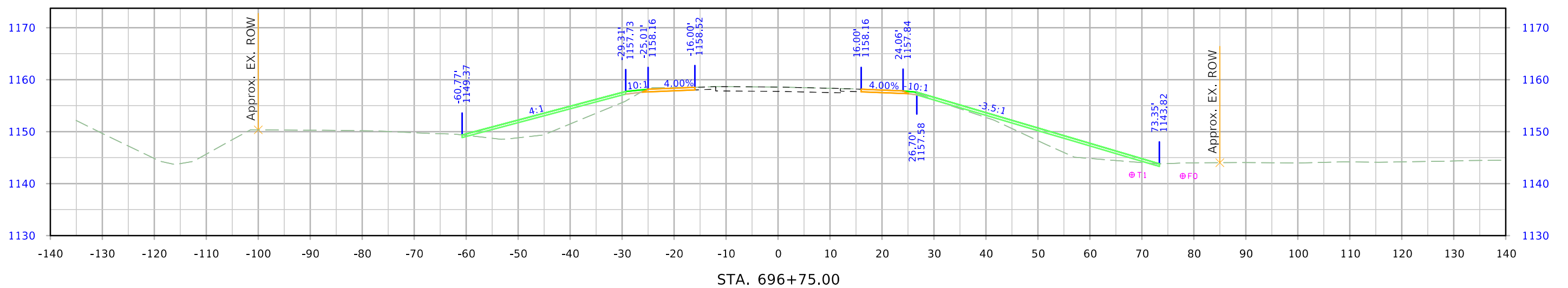
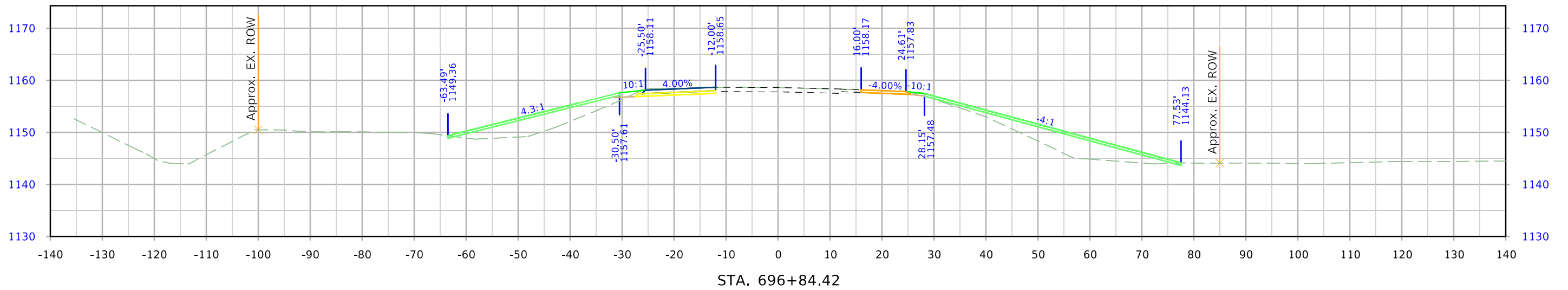
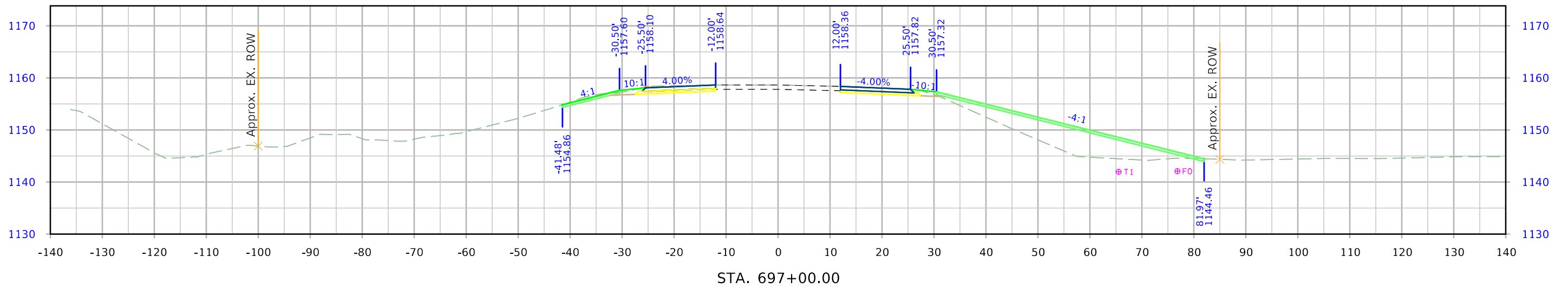
CROSS SECTIONS LEGEND AND INFORMATION SHEET

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

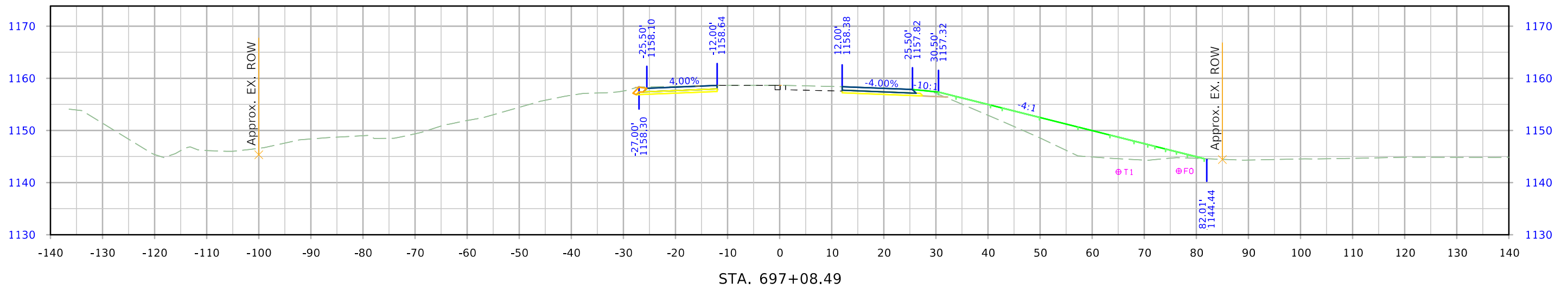
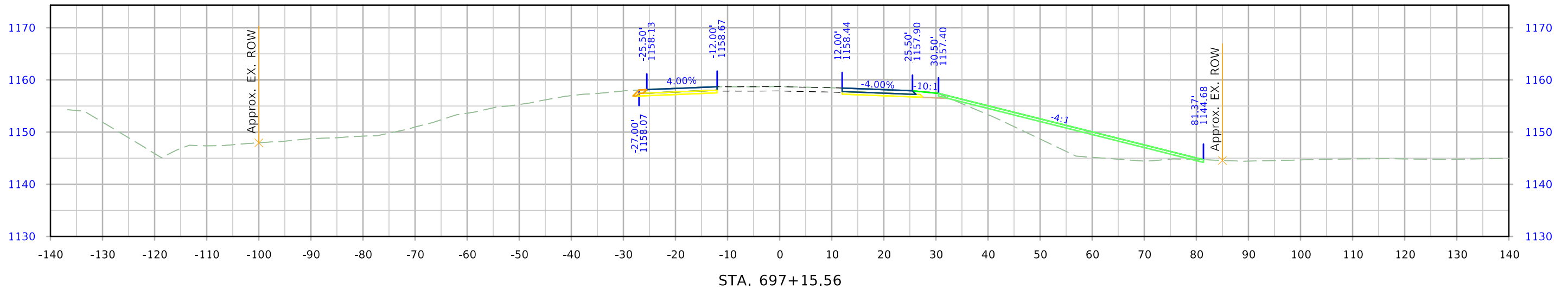
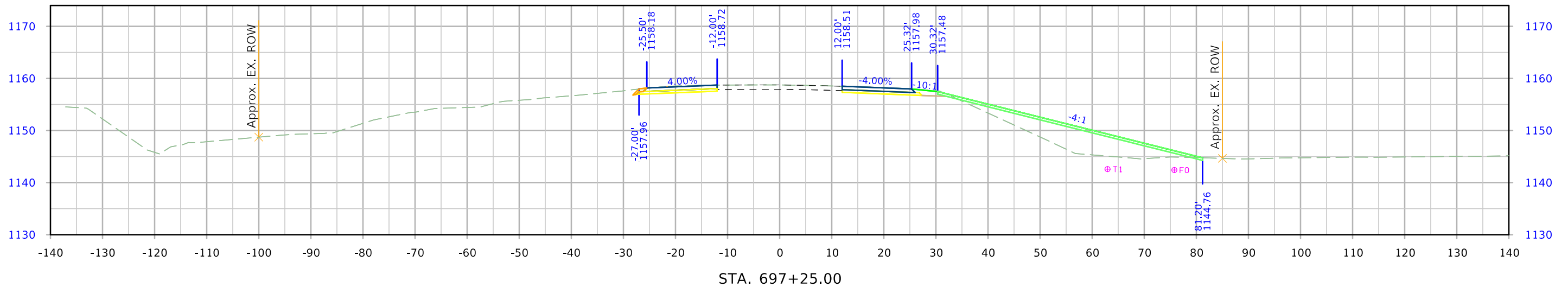
ML - US 30



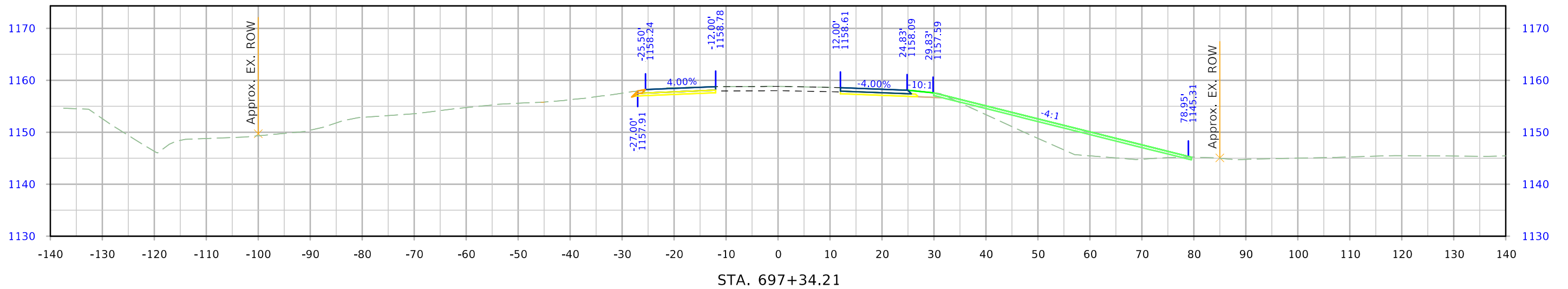
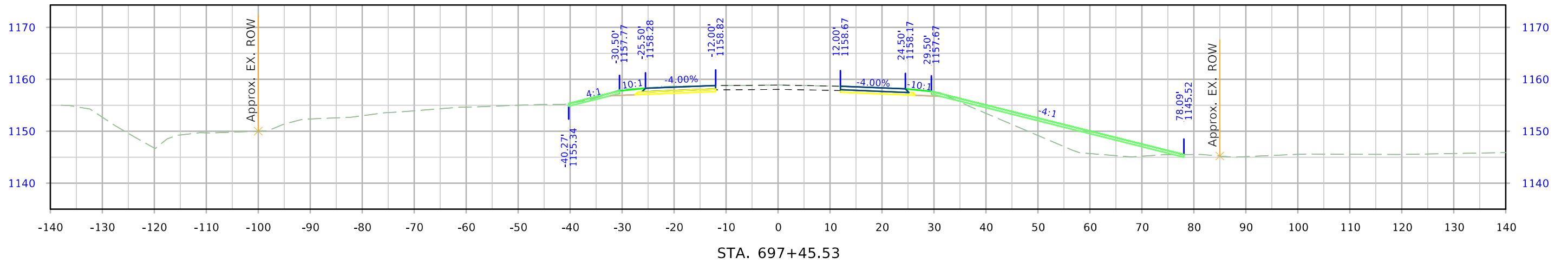
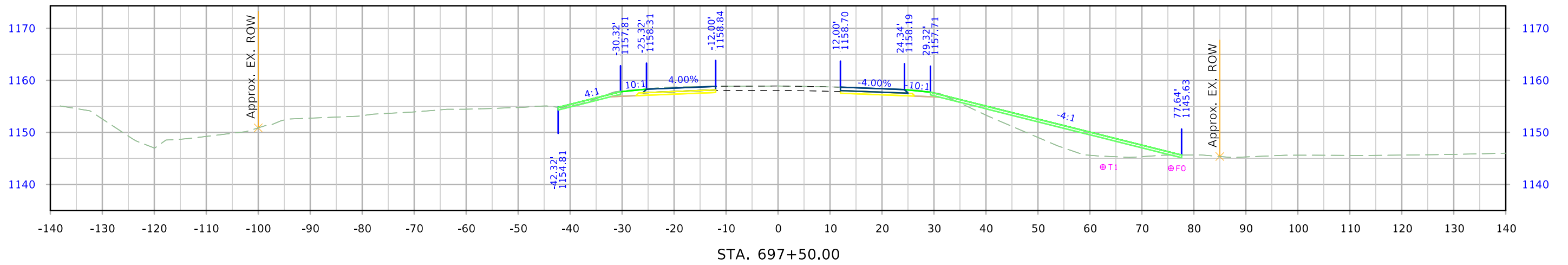
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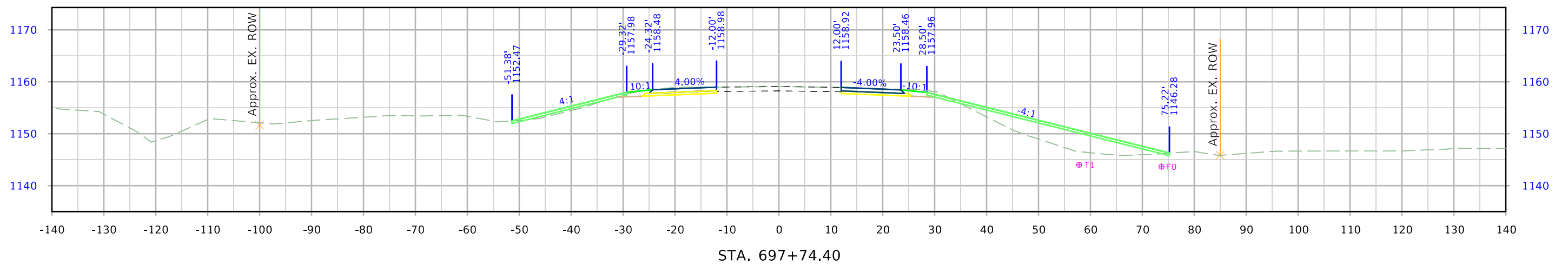
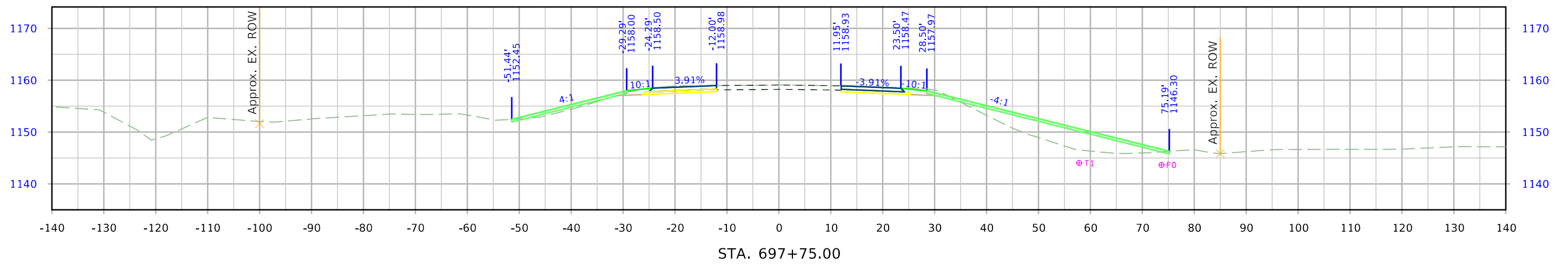
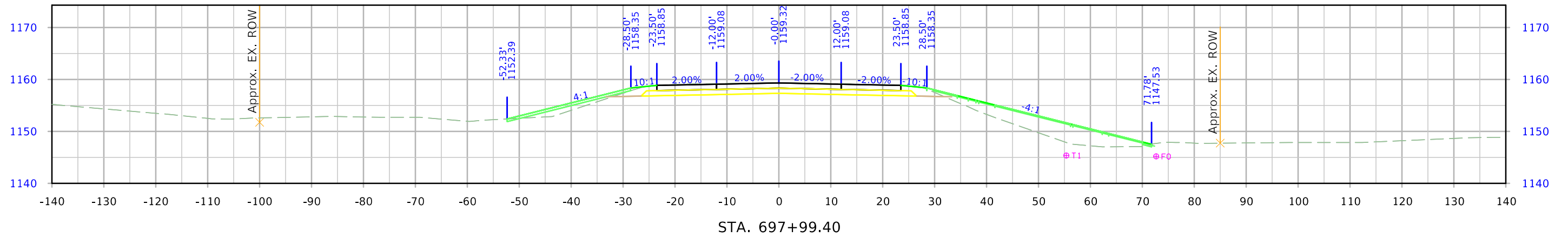
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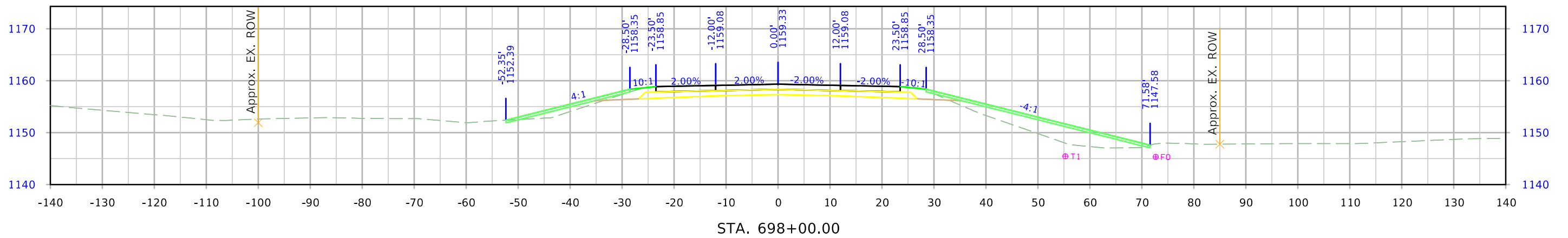
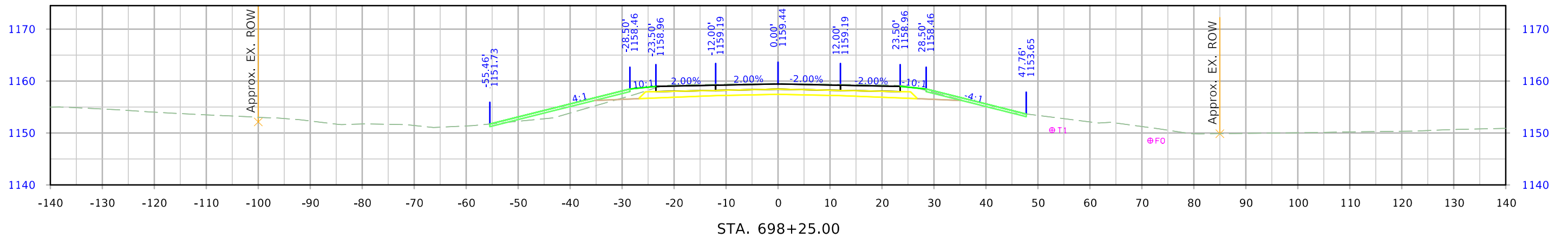
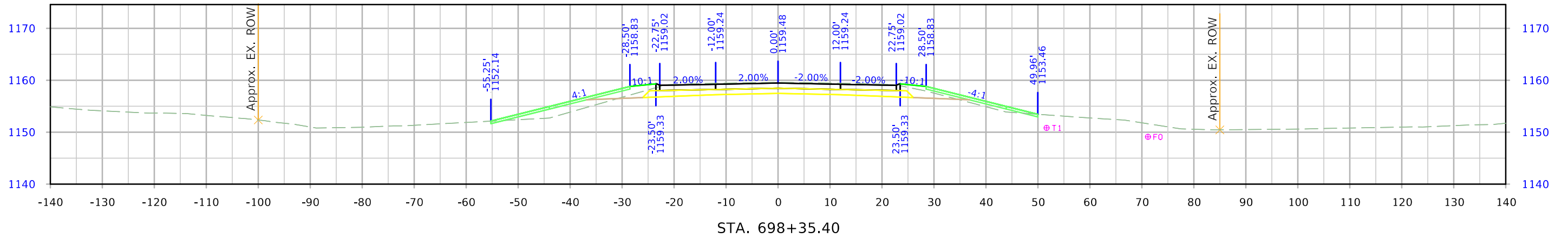
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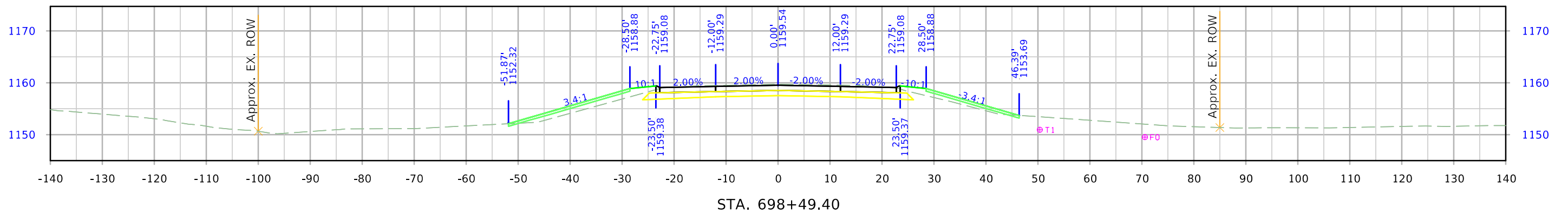
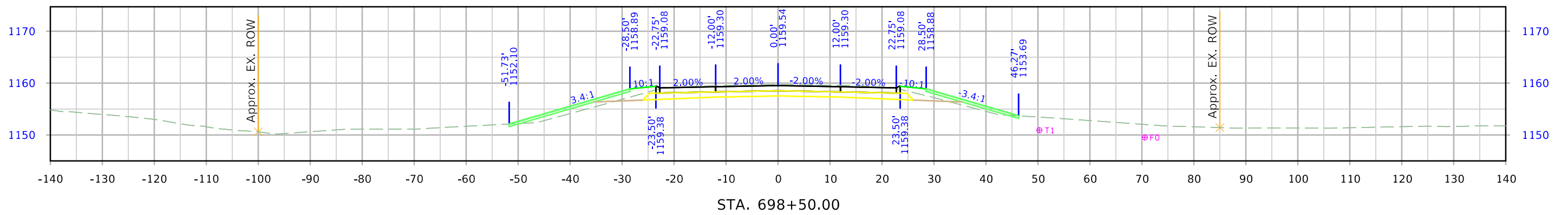
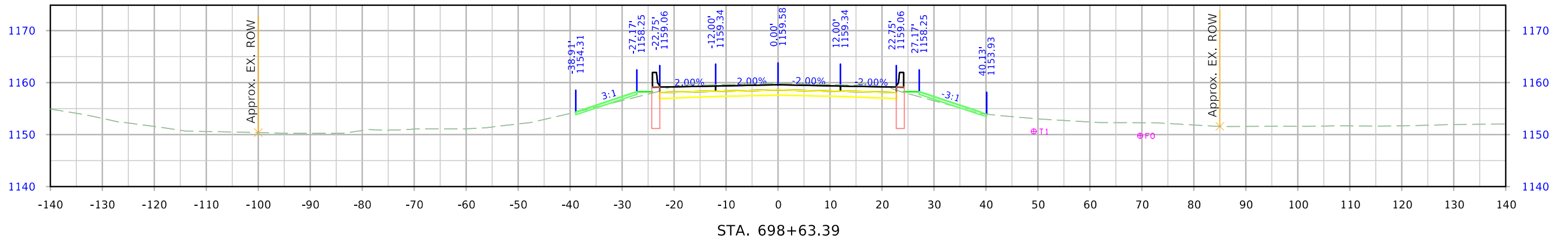
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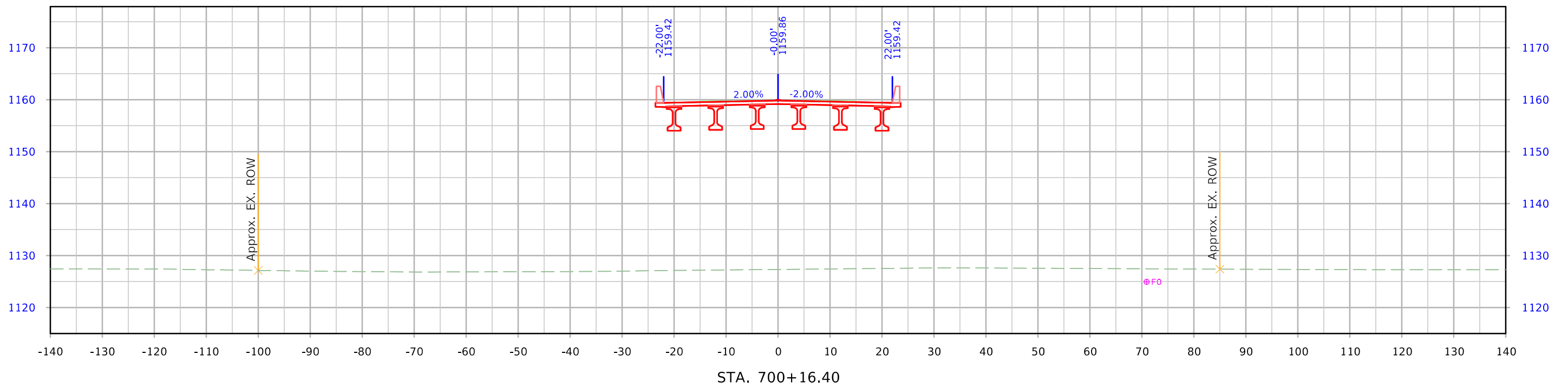
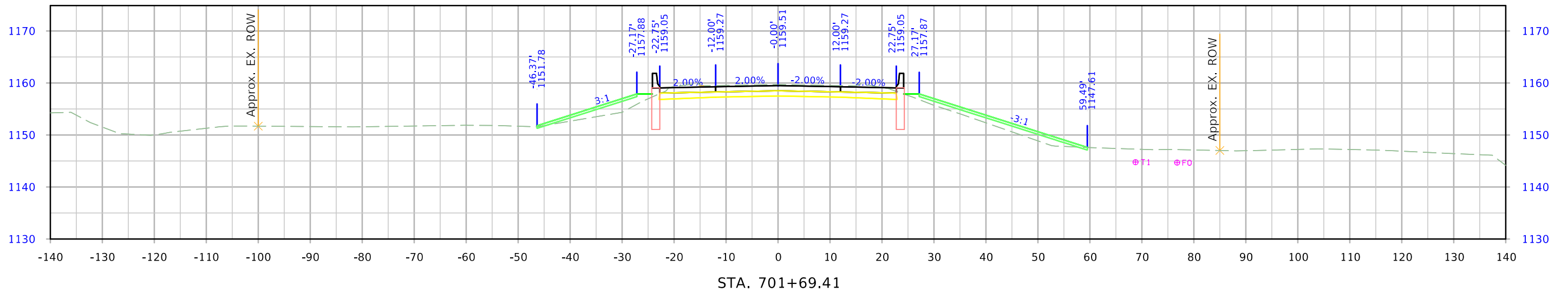
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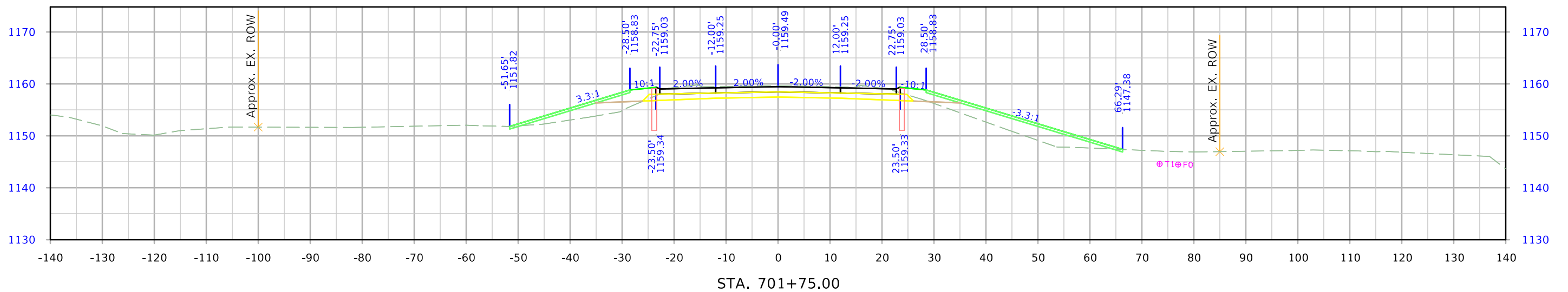
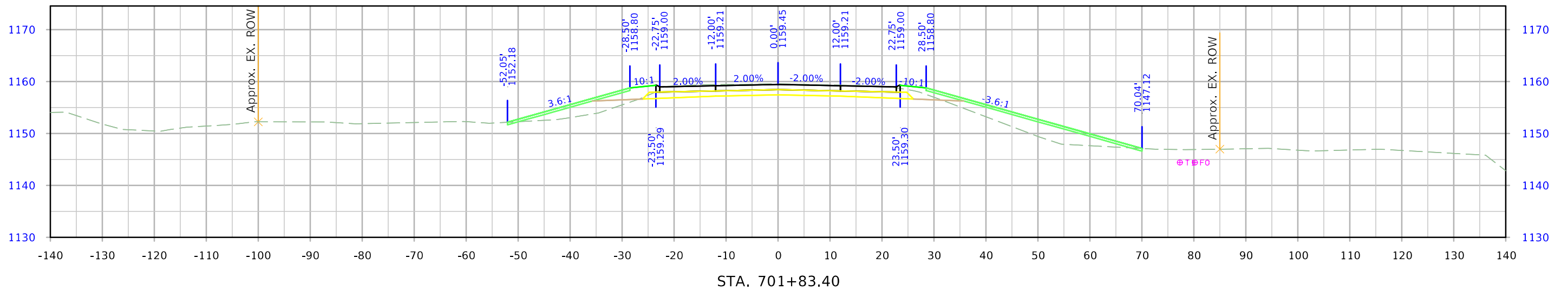
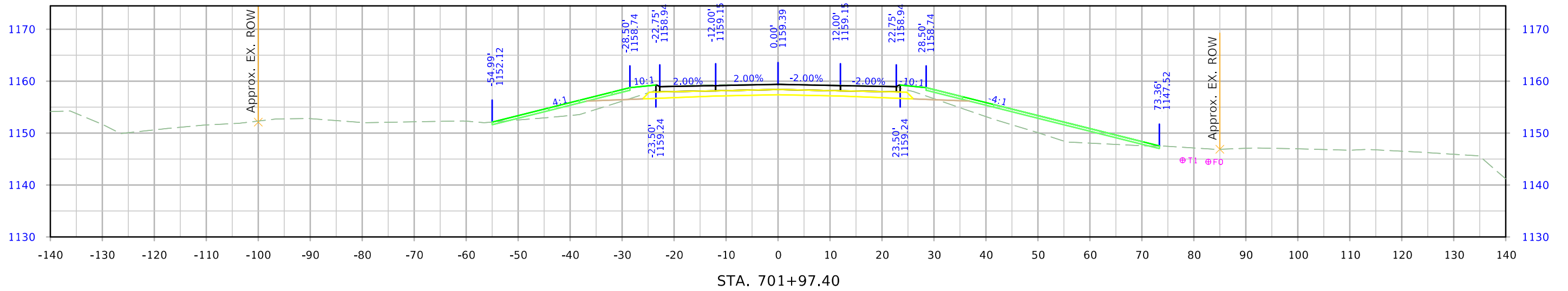
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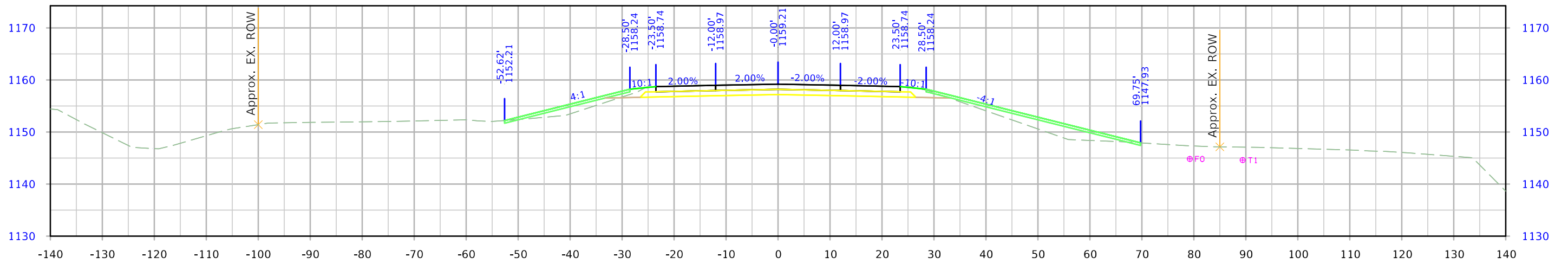
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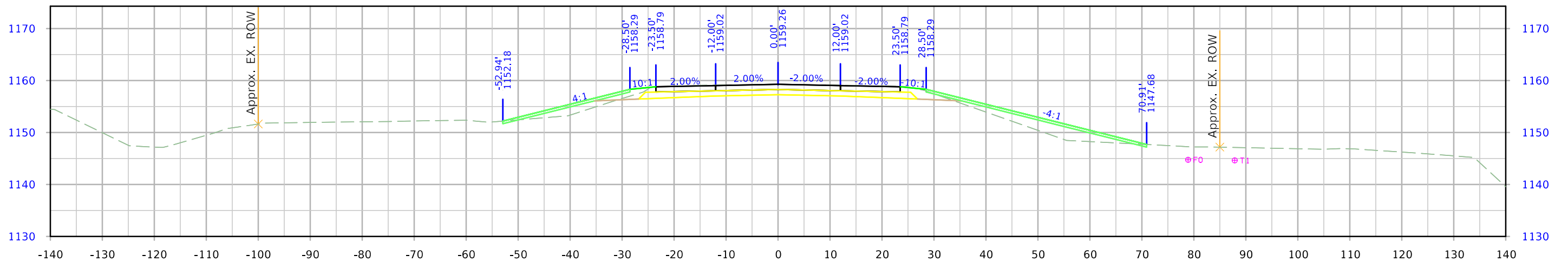
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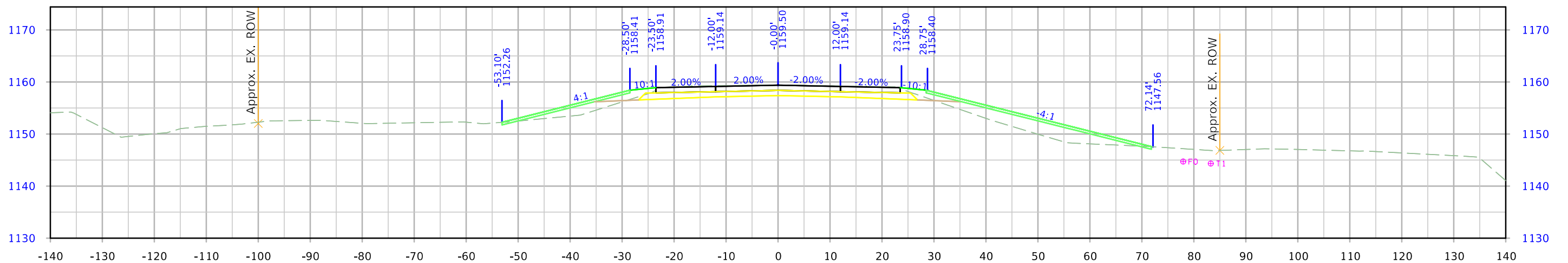
ML - US 30



STA. 702+33.40

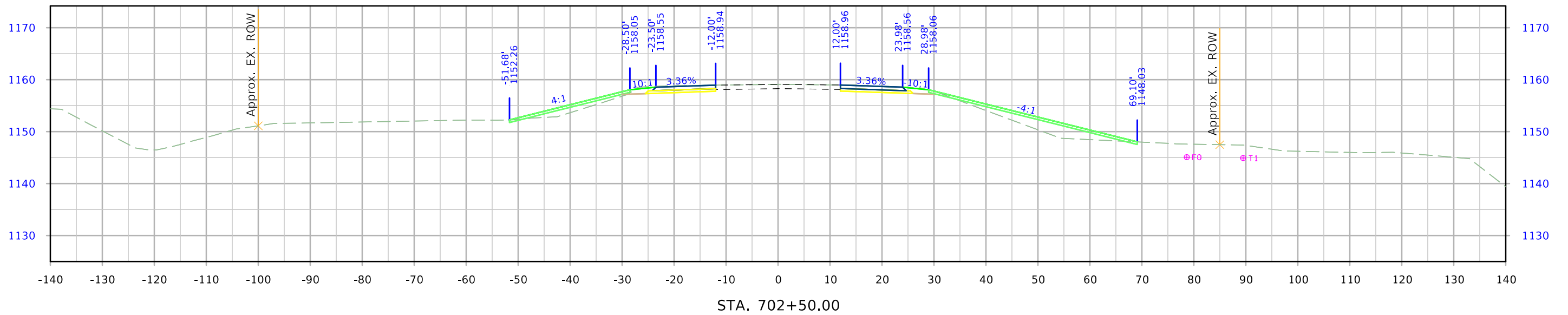
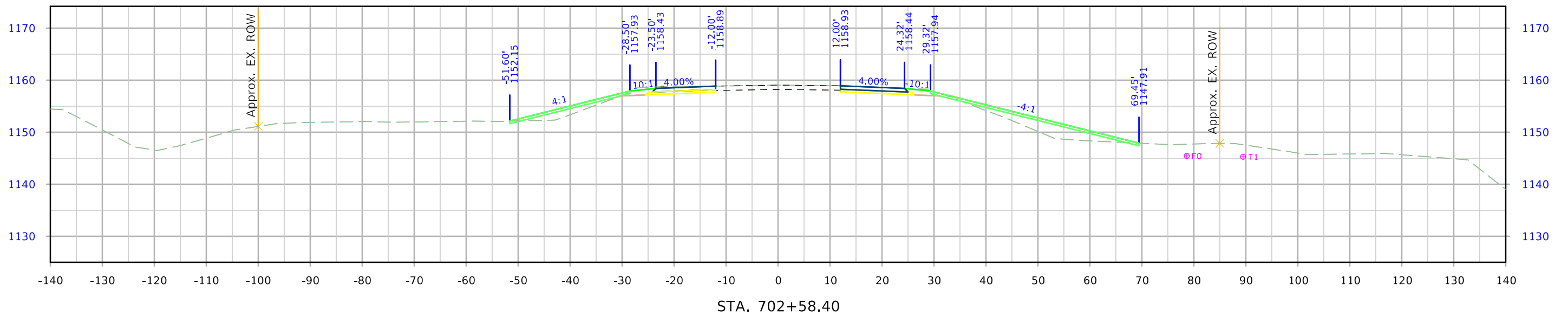


STA. 702+25.00

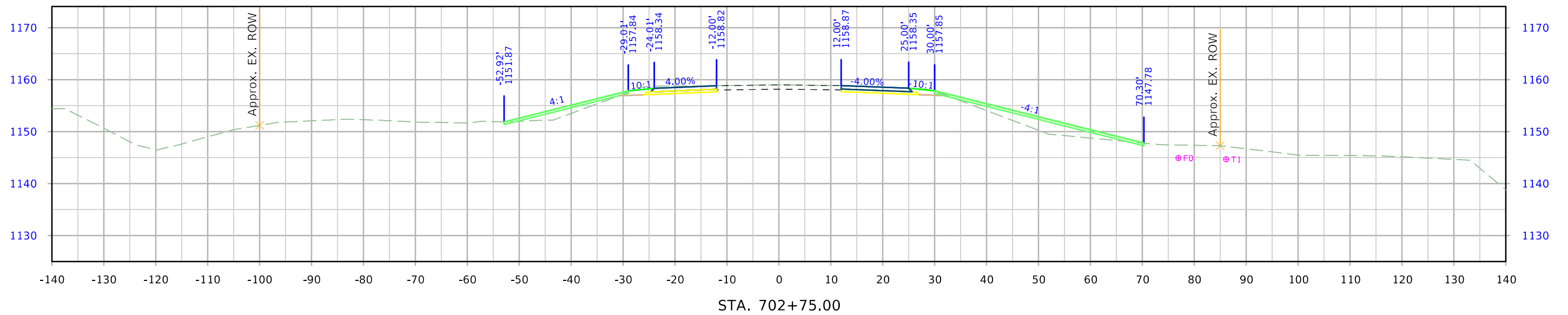
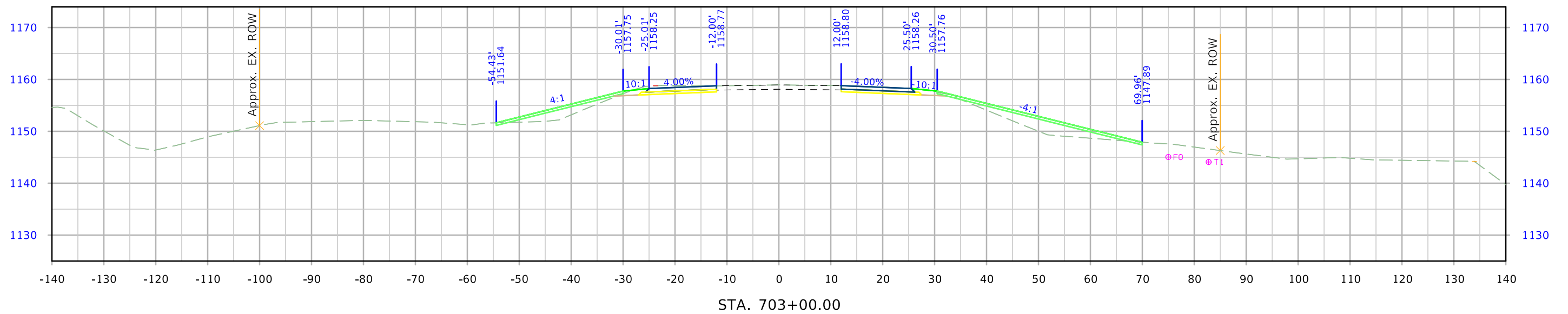


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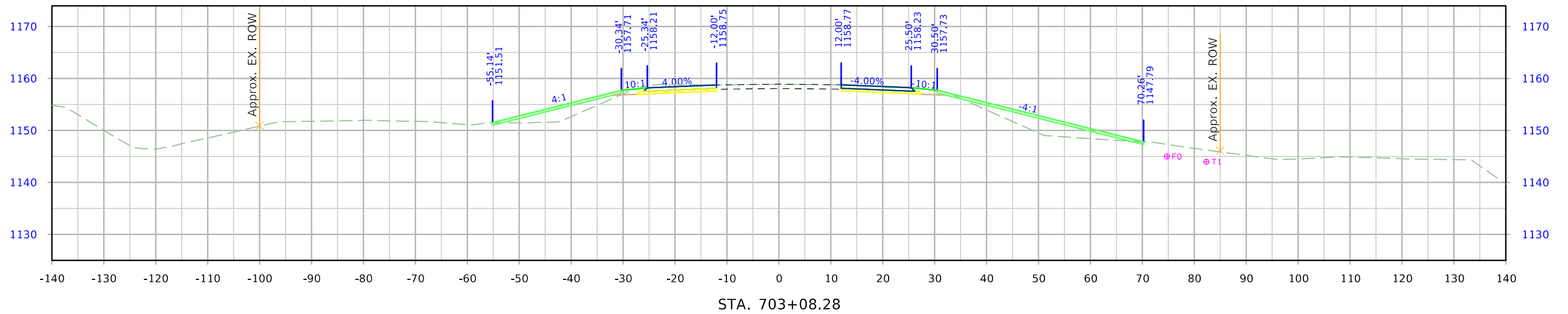
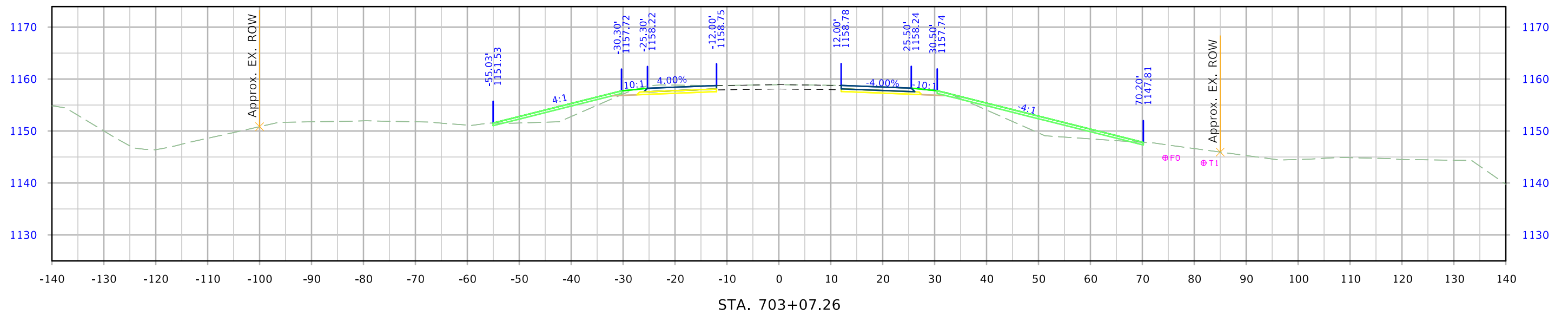
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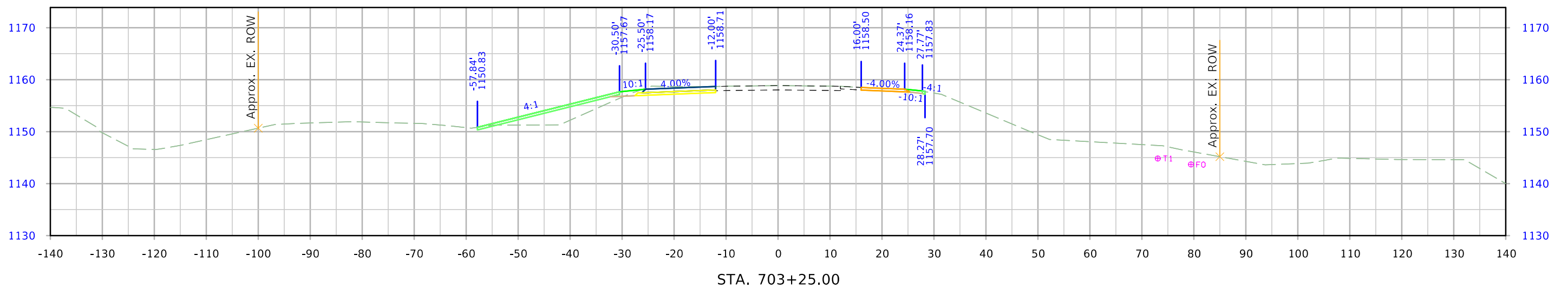
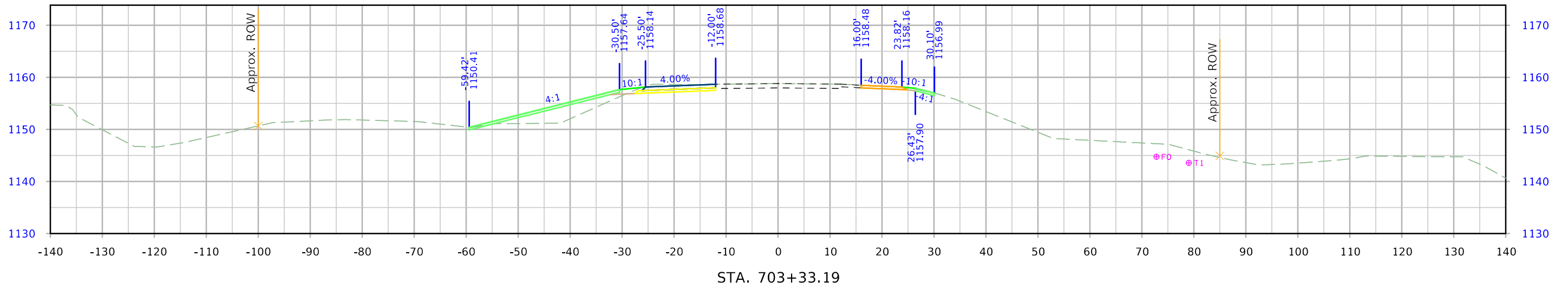
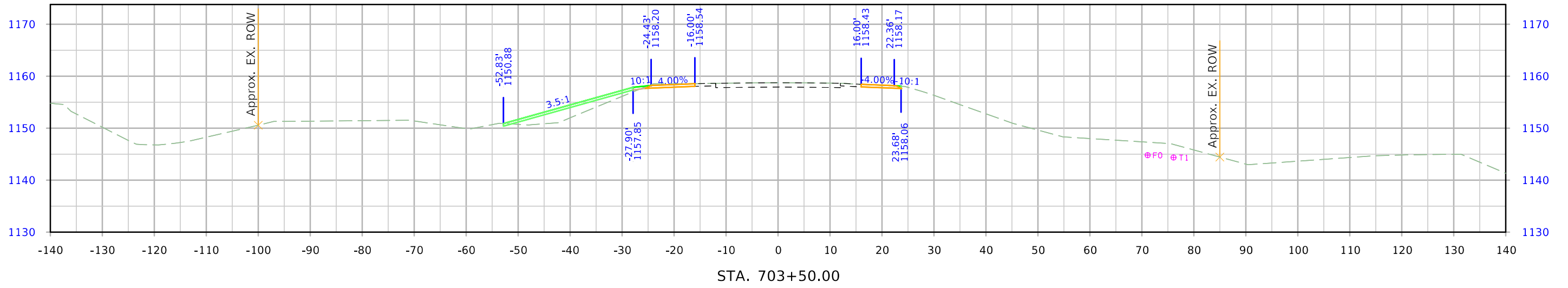
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