

Ref. Loc. 187.2  
FHWA # 25170



PLANS OF PROPOSED IMPROVEMENT ON THE  
**PRIMARY ROAD SYSTEM**  
**Franklin COUNTY**  
**Bridge Replacement-CCS**  
Beeds Creek 0.4 mi  
W of Co Rd S56

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	
PROJECT IDENTIFICATION NUMBER	--
22-35-003-020	
PROJECT NUMBER	
BRF-003-5(089)--38-35	
R.O.W. PROJECT NUMBER	
NHSN-003-5(090)--2R-35	
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P9 PLAN - Date: 05/14/2025  
D4 PLAN - Date: 09/23/2026

PRELIMINARY PLANS

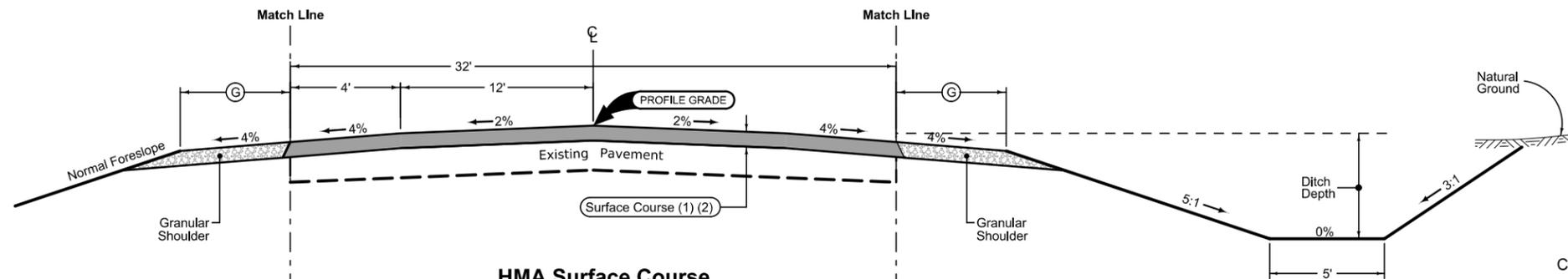
Subject to change by final design.

D5 PLAN - Date: 12/16/2024

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

**Granular Shoulder**

2_P_FullHMA_04-21-20		
STATION TO STATION		Ⓞ Feet
230+72.00	231+71.48	8



**HMA Surface Course**

2H_04-21-20	
STATION TO STATION	
230+72.00	232+24.56

- (1) Surface Course depth varies from 1.5" to 5".
- (2) Surface Course done in two lifts, with no lift thicker than 3.5".

**Granular Shoulder with Ditch**

2_P_FullHMA_04-21-20		
STATION TO STATION		Ⓞ Feet
230+72.00	231+46.51	8

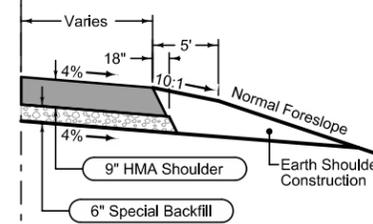
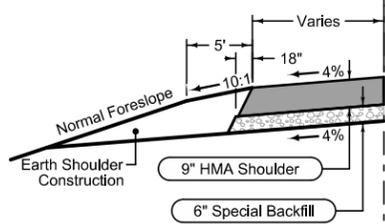
Normal section shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the Engineer.

See plan & profile sheets and cross sections for additional details of ditches and backslopes.

**Paved Shoulder at Guardrail**

HMA Shoulder Jointing:  
Longitudinal joint: B

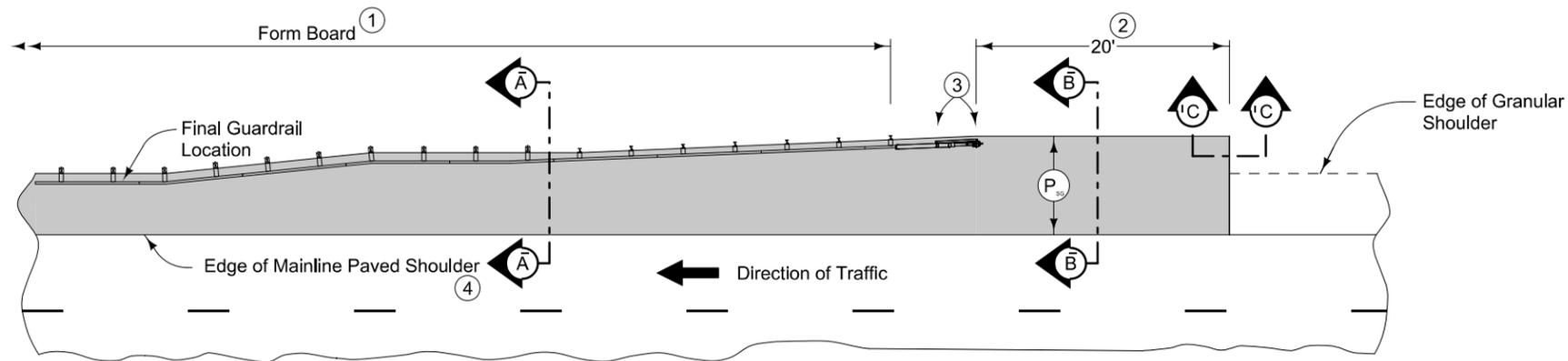
2_P_Guard_04-21-20		
STATION TO STATION		
231+71.48	232+24.56	
234+94.41	235+67.61	



**Paved Shoulder at Guardrail**

HMA Shoulder Jointing:  
Longitudinal joint: B

2_P_Guard_04-21-20		
STATION TO STATION		
231+46.51	232+24.56	
234+94.41	235+42.49	



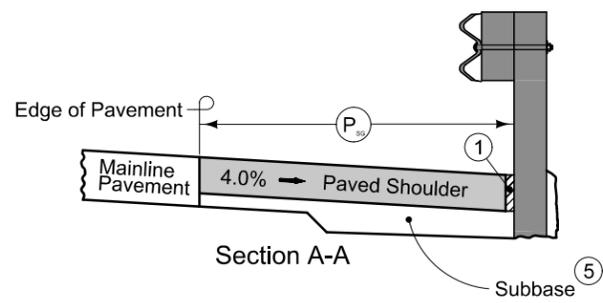
PLAN VIEW

9" HMA Paved Shoulder at guardrail.

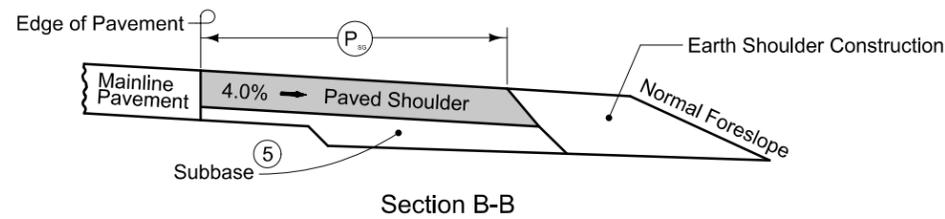
Compaction of HMA is required to face of guardrail post. Hand compaction will be allowed under guardrail. Removal and reinstallation of guardrail will be allowed with no additional payment.

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' joint (per PV-101) for PCC shoulder. 'B' joint (per PV-101) for HMA shoulder.
- ⑤ Refer to other details in the plan.

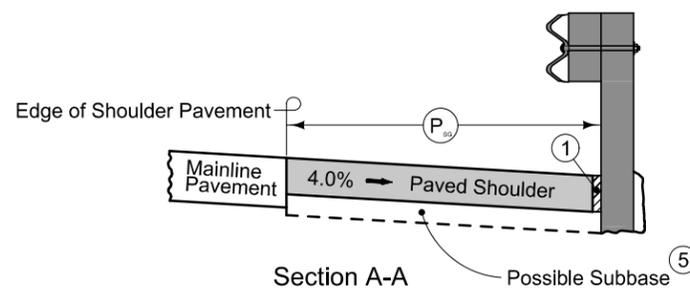


Section A-A

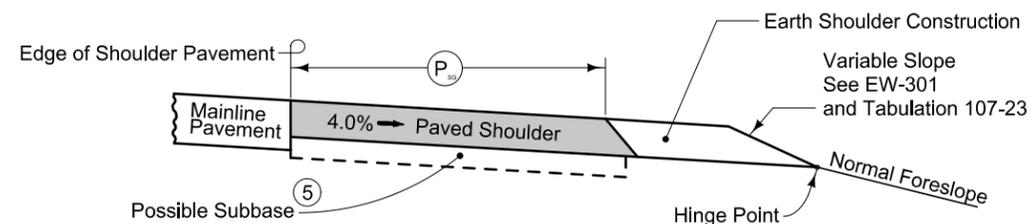


Section B-B

NEW CONSTRUCTION

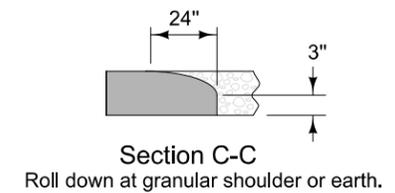


Section A-A



Section B-B

EXISTING SHOULDER



PAVED SHOULDER AT GUARDRAIL  
(GRANULAR SHOULDER ADJACENT TO MAINLINE)

### 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
- TCB Traffic Signal Control Box
- RRB Rail Road Signal Control Box
- TSB Telephone Switch Box
- EB Electric Box

### UTILITY LEGEND

- FO1D, Dumont Telephone Company - Quality D
- TL1D, CenturyLink - Quality D
- PPA, Power Pole MidAmerican Electric

### 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
Gray	(64)		Proposed Resurfacing Shading 50%
Yellow	(4)		Proposed Pavement Shading 50%
Orange	(6)		Proposed Granular Shading 50%
Orange	(70)		Proposed Shoulder Granular Shading 50%
Yellow	(68)		Proposed Shoulder Paved Full Depth Shading 50%
Yellow	(132)		Proposed Shoulder Paved Partial Depth Shading 50%
Brown, Light	(236)		Grading Shading 50%
Orange, Light	(134)		Proposed Granular Entrance Shading 50%
Yellow	(220)		Proposed Paved Entrance Shading 50%
Tan	(8)		Proposed Sidewalk Shading 50%
Blue, Light	(230)		Proposed Sidewalk Landing Shading 50%
Pink	(11)		Proposed Sidewalk Ramp Shading 50%
Red	(3)		Proposed Structure Shading 50%
Red	(3)		Delineates Restricted Areas 0%

### 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

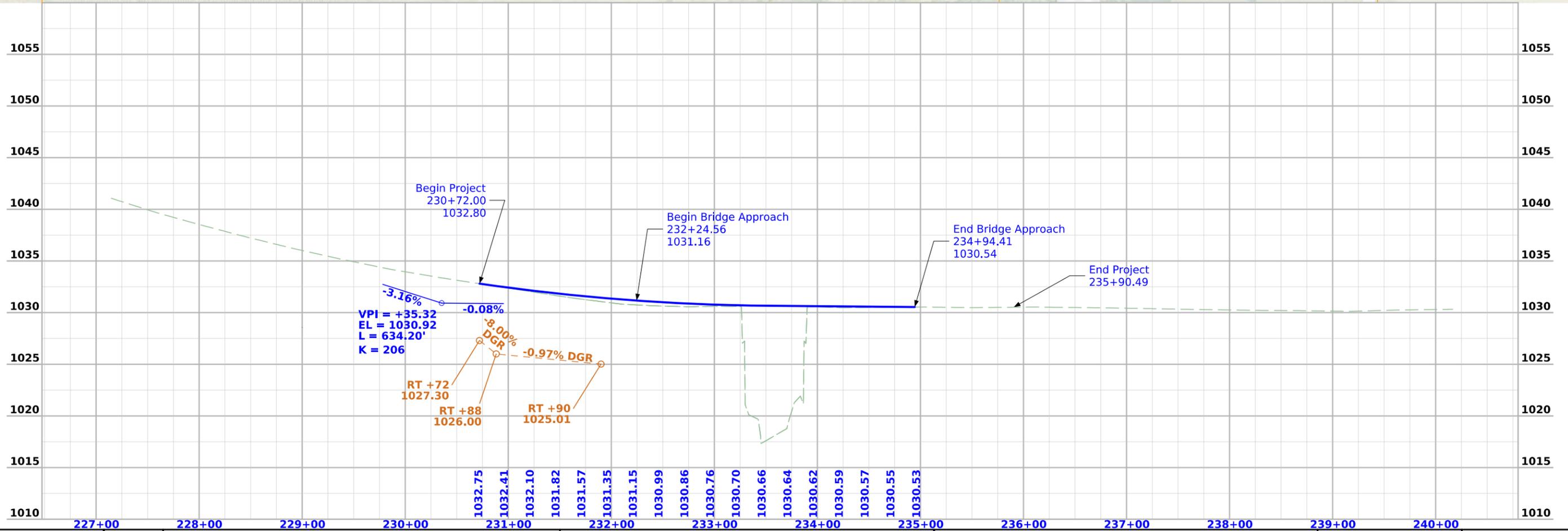
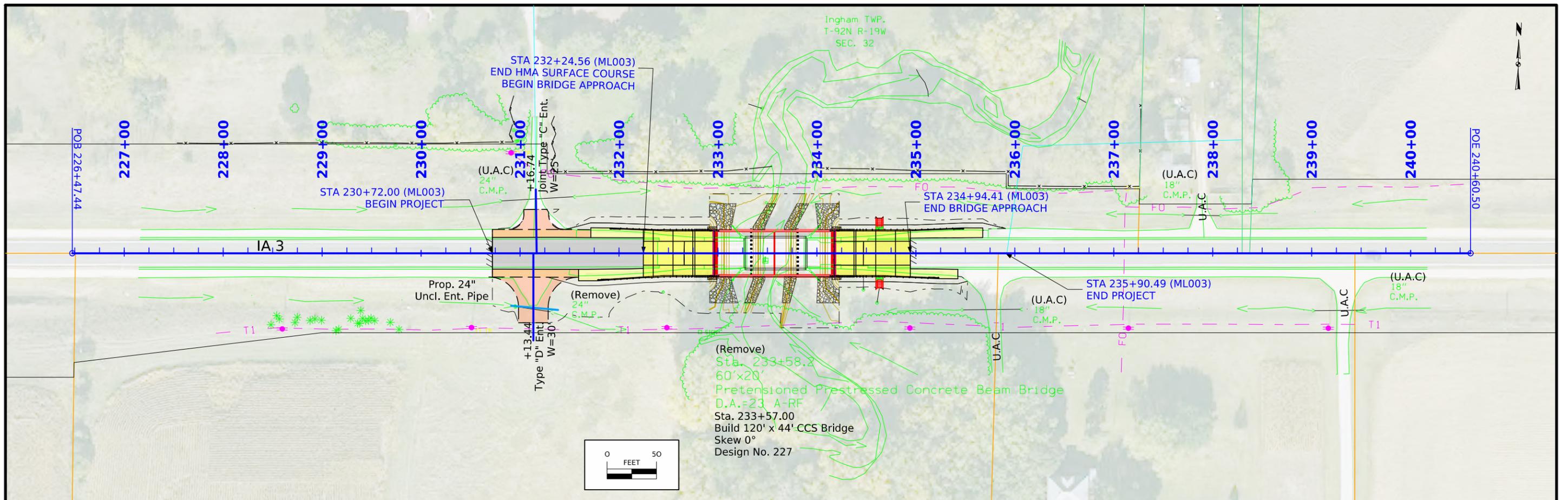
- Reference Point
- Station
- Survey Line
- Section Corner
- Ground Line Intercept
- Saw Cut
- Guardrail
- Trench Drain
- HighTension Cable Guardrail
- Sheet Pile
- Pavement Removal
- Clearing & Grubbing Area

### RIGHT-OF-WAY LEGEND

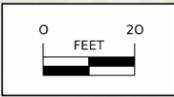
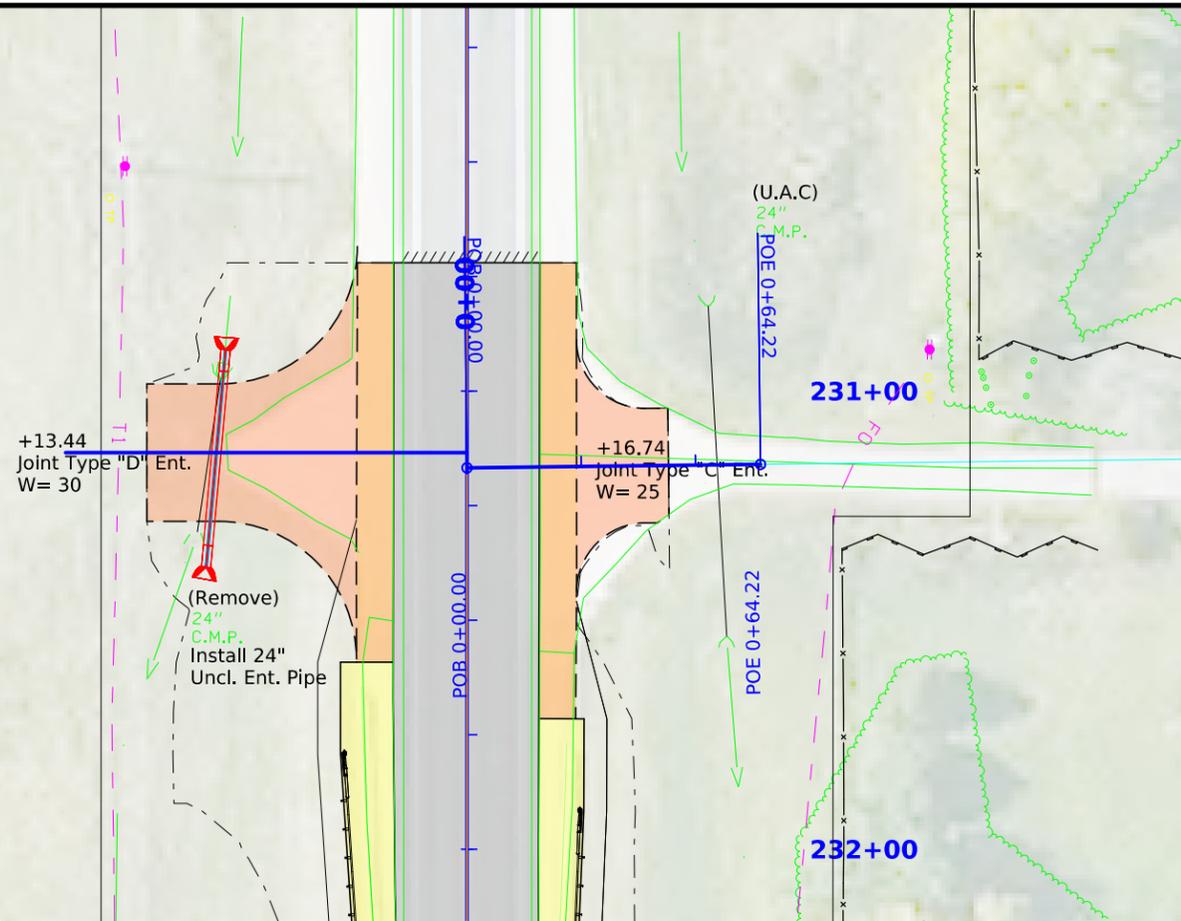
- Proposed Right-of-Way Symbol
- Proposed Right-of-Way Line
- Existing Right of Way
- Existing and Proposed Right-of-Way
- Easement and Existing Right-of-Way
- Easement (Temporary) Symbol
- Easement (Temporary) Line
- Easement
- C/A Access Control
- Property Line Symbol
- Property Line

## PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

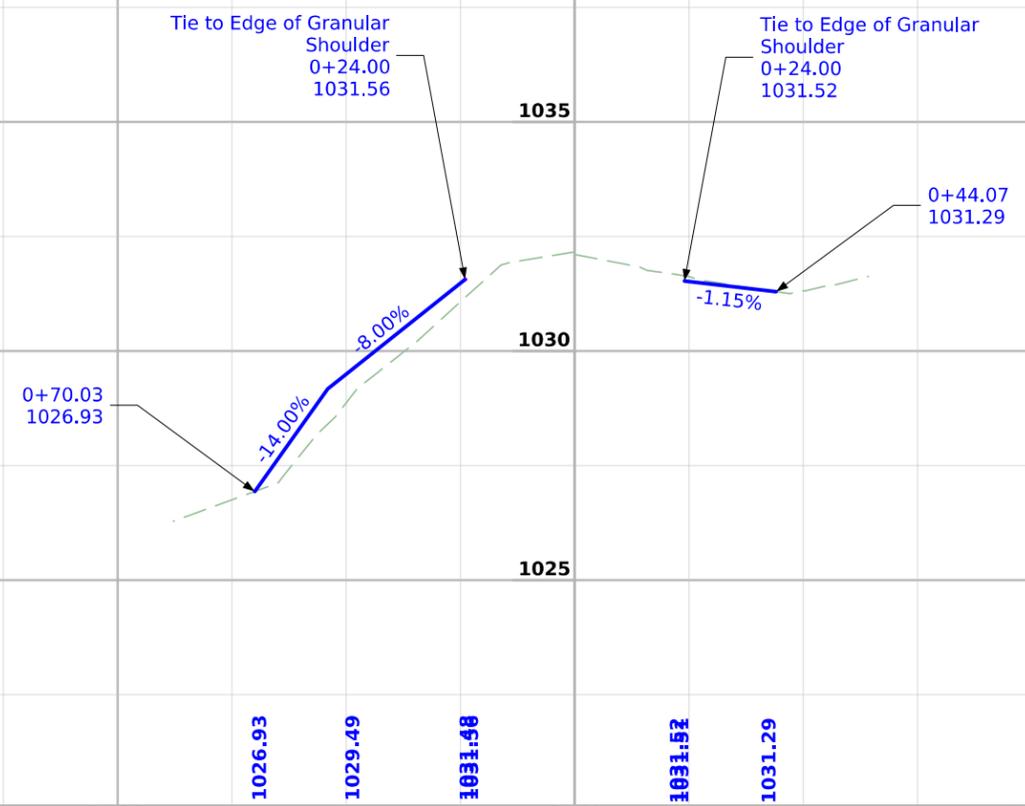
(COVERS SHEET SERIES D, E, F, & K)



Ingham TWP.  
T-92N R-19W  
SEC. 32



Entrances at Sta. 231+13.44  
and Sta. 231+16.74



## Survey Information

### SURVEY INDEX

**Franklin County**  
**BRF-003-5(089)--38-35**  
**Beeds Creek 0.4 mi W of Co Rd S56**  
**PIN: 22-35-003-020**  
**Type of Work: Bridge Replacement**  
**Project Directory: 3500302022**

### Survey Personnel

John Hahn – Survey Party Chief  
Dan Duncan – Survey Party Chief

### Date(s) of Survey

Begin Date                    09/20/2023  
End Date                      02/12/2024

### General Information

This survey is for a bride replacement on Iowa Highway 3 over Beeds Creek, .4 miles west of Franklin County Road S56. This project is a Full Field DTM survey.

### Utility Information

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

### Project Control

Coordinates were determined for primary project control points by conducting concurrent six-hour static observations. Post processing is constrained to nearby Iowa Real Time Network reference stations. For additional details of the control survey, contact the Preliminary Survey department.

**PROJECT DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 ADJUSTMENT)**  
**COORDINATE SYSTEM: IOWA REGIONAL COORDINATE SYSTEM ZONE 4**  
**(U.S. SURVEY FOOT)**  
**VERTICAL DATUM: NAVD88**  
**GEOID MODEL: 2018u3**

### Alignment Information

The horizontal alignment for Iowa Hwy 3 this survey is a retrace of As-built Plans No. STPN-3-5(45)--2J-35. Survey stationing was equated to the plan PI at Sta. 252+78.87 and carried back without equation throughout the survey.

Survey stationing relates to as built plan stationing as follows:

PI Sta. 252+78.87 W ¼ Corner Sec.33 As-built Plans Project No. STPN-3-5(45)--2J-35  
Survey POT Sta. 252+78.87

PI Sta. 200+16.6 E ¼ Corner Sec.31 As-built Plans Project No. STPN-3-5(45)--2J-35  
Survey PI Sta. 200+16.00

## 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 4 (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 4 (U.S. Survey Foot)  
VERT. DATUM: NAVD88  
Geoid Model: 2018u3

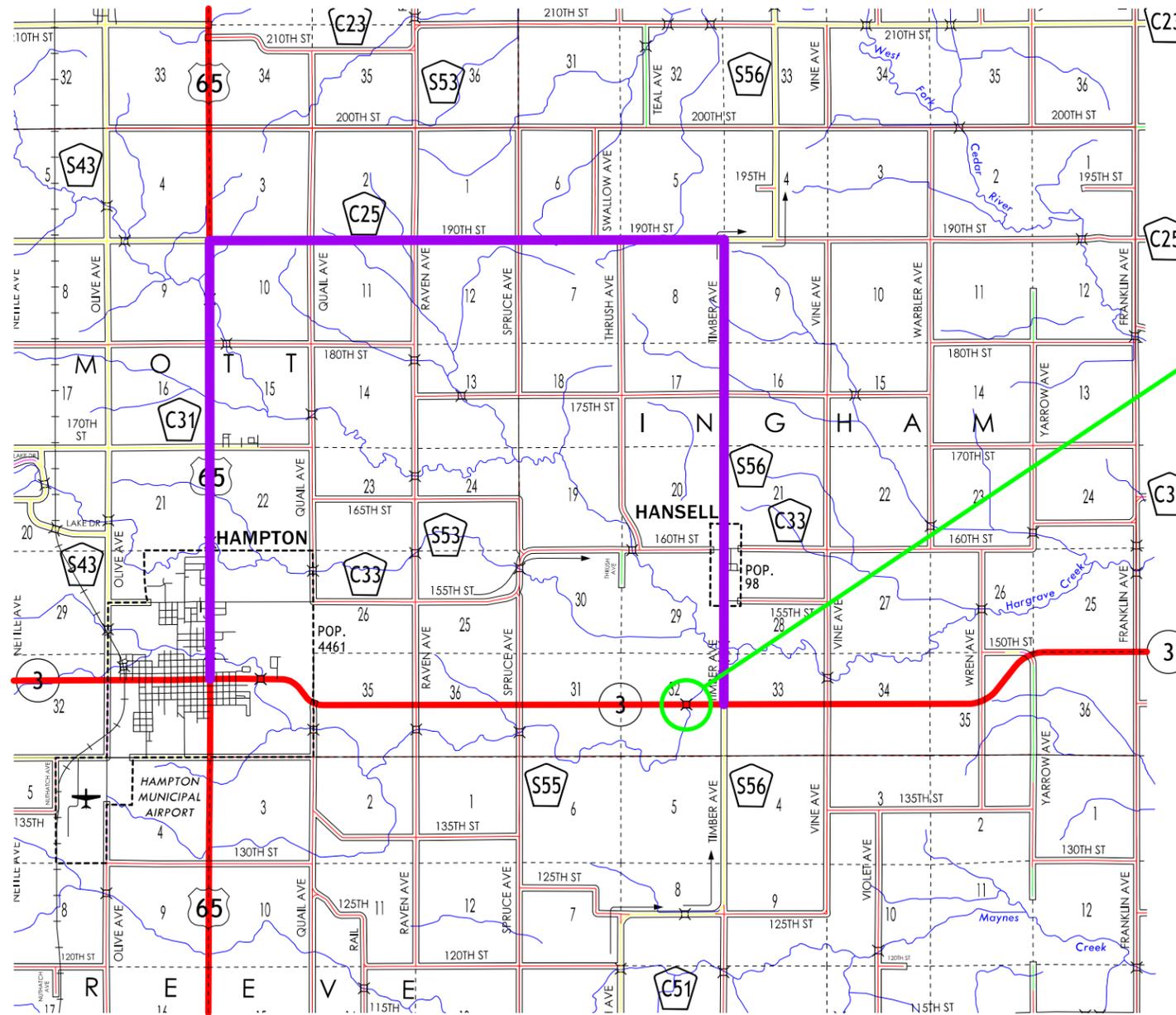
Point Name	Northing	Easting	Elevation	Code/Description
CPE	8679379.90	14963636.90	1026.24	CP SET FENO MON 36FT EAST OF CL OF FIELD ENTRANCE 55FT NORTH OF CL OF HWY3 494FT WEST OF RESIDENCE DRIVEWAY
48	8676858.33	14969797.59	1015.35	CP FND FRANKLIN CO GPS MON AS DESCRIBED IN GOOD CONDITION
41	8674116.65	14954014.13	1113.39	CP FND FRANKLIN CO GPS MON AS DESCRIBED IN GOOD CONDITION
CPW	8679335.63	14960799.60	1067.51	CP SET FENO MON 36FT EAST OF CL OF FIELD ENTRANCE 63FT NORTH OF CL OF HWY3 1473FT WEST OF RESIDENCE DRIVEWAY

108\_23A  
8/15/22

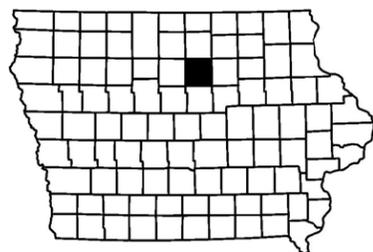
### TRAFFIC CONTROL PLAN

IA 3 will be closed during construction. Through traffic will be maintained by an offsite detour. Refer to Sheet J.2 for detour route.

# Franklin County



STA 233+57  
 FHWA 25170  
 MAINT. NO. 3587.2S003  
 DESIGN 129



ON IA 3, OVER BEEDS CREEK 0.4 MILES WEST  
 OF COUNTY ROAD S56  
 BRF-003-5(89)--38-35  
 PROJECT CODE: 22-35-003-020

35

 : DETOUR ROUTE

Control Point CPE: 8679379.90 N, 14963636.90 E, CP set FENO mon 36' E of  $\bar{C}$  of field entrance 55' N of  $\bar{C}$  of IA3 494' W of residence driveway, Elev. 1026.24

### Hydraulic Data

RIDB: BeedsC\_12.5  
 Drainage Area = 23.8 Sq. Mi.  
 Stream Slope (HGL) = 10.35 ft./Mi.  
 Avg. Low Water Stage = 1019.65

Operational Low Beam = 1028.46  
 Channel Low Beam = 1028.46

$Q_{50} = 3,150$  cfs (Design Event)  
 Stage = 1026.82  
 Operational Freeboard = 1.64 ft.  
 Avg. Bridge Velocity = 7.18 fps

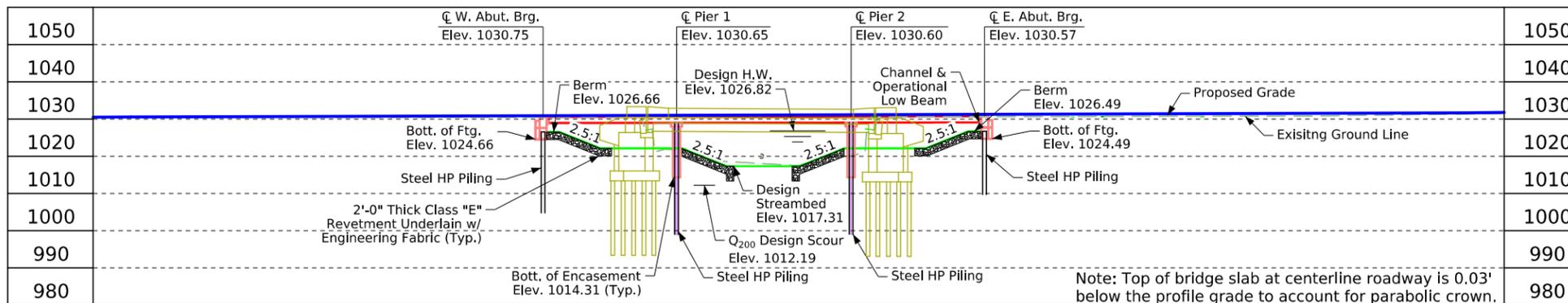
$Q_{100} = 3,850$  cfs  
 Stage = 1027.30  
 Operational Freeboard = 1.16 ft.  
 Backwater = 0.65 ft.  
 Avg. Bridge Velocity = 7.99 fps

$Q_{200} = 4,640$  cfs  
 Stage = 1027.77  
 Calculated Design Scour = 1012.19

$Q_{500} = 5,590$  cfs  
 Stage = 1028.28  
 Channel Freeboard = 0.18 ft.  
 Avg. Bridge Velocity = 9.74 fps  
 Calculated Check Scour = 1010.81

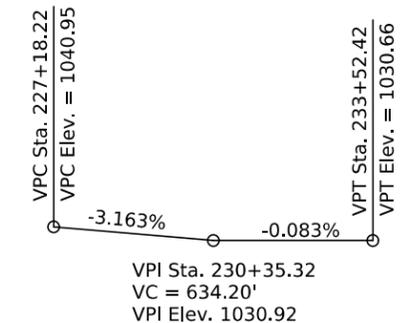
Roadway Overtop 1030.35  
 Sta. 237+26

Extreme HW Stage = Unknown  
 Date = Unknown

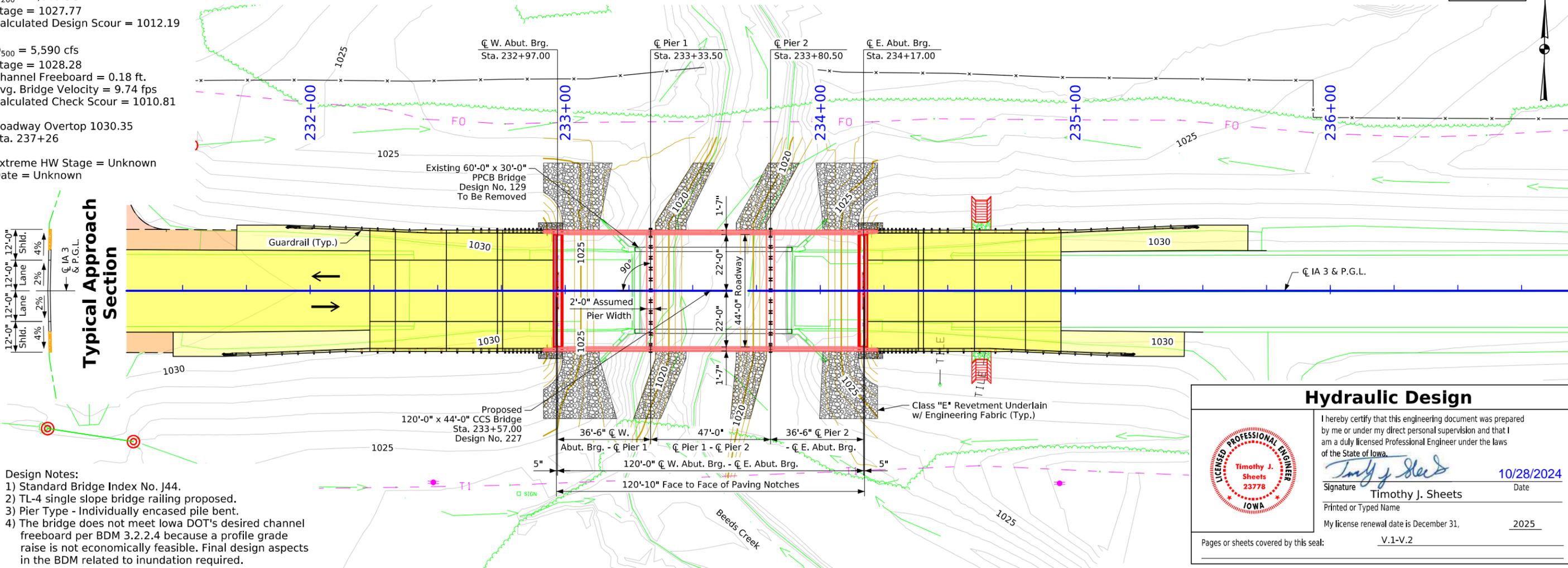


**BRG TSL Longitudinal Section Along  $\bar{C}$  Approach Roadway**

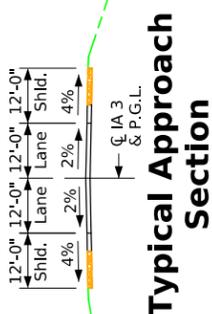
General Notes:  
 1) This design is for the replacement of the existing 60' x 30' PPCB bridge, Franklin Design No. 129, FHWA No. 25170, Maint. No. 3587.25003.



**Proposed Profile Grade IA 3**

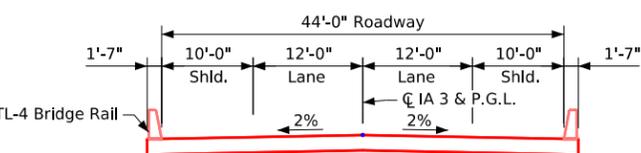


**Situation Plan**



**Typical Approach Section**

- Design Notes:
- Standard Bridge Index No. J44.
  - TL-4 single slope bridge railing proposed.
  - Pier Type - Individually encased pile bent.
  - The bridge does not meet lowa DOT's desired channel freeboard per BDM 3.2.2.4 because a profile grade raise is not economically feasible. Final design aspects in the BDM related to inundation required.



**Typical Deck Section**

### Utilities Note:

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

### General Utility Symbols:

- FO - Fiber Optic Line - Dumont Telephone Co.
- T1 - Telephone Line - Centurylink
- - Power Poles - MidAmerican Electric Co.

### Traffic Estimate

2027 AADT	1700 V.P.D.
2047 AADT	1770 V.P.D.
20?? DHV	?? V.P.H.
TRUCKS	12 %
Total Design ESALs	???

### Location

IA 3 over Beeds Creek  
 T-92N R-19W  
 Section 32  
 Ingham Township  
 Franklin County  
 FHWA No. 25171  
 Bridge Maint. No. 3587.25003  
 Latitude 42.738051°  
 Longitude -93.111817°

### 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: *Timothy J. Sheets* Date: 10/28/2024  
 Printed or Typed Name: Timothy J. Sheets  
 My license renewal date is December 31, 2025

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

Design For 0 Degree Skew  
**120'-0" x 44'-0" Reinforced Concrete Slab Bridge**

36'-6" End Spans 47'-0" Interior Span

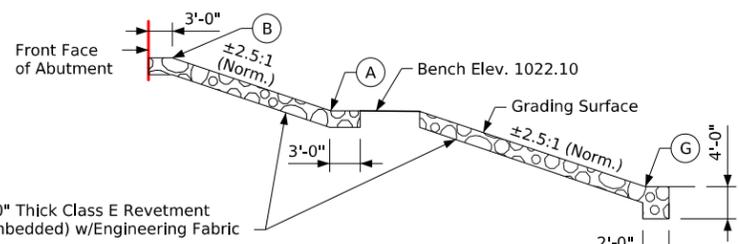
### Situation Plan

STA. 233+57.00 (IA 3) Turn-in Date: Oct 2024

### Franklin County

IOWA DEPARTMENT OF TRANSPORTATION  
 Design No. 227 Design Sheet No. 1 of 2 FHWA No. 25171

Control Point CPE: 8679379.90 N, 14963636.90 E, CP set FENO mon 36' E of  $\text{CL}$  of field entrance 55' N of  $\text{CL}$  of IA3 494' W of residence driveway, Elev. 1026.24



**Section Thru Embedded Revetment Berm**  
(Normal To Abutment)

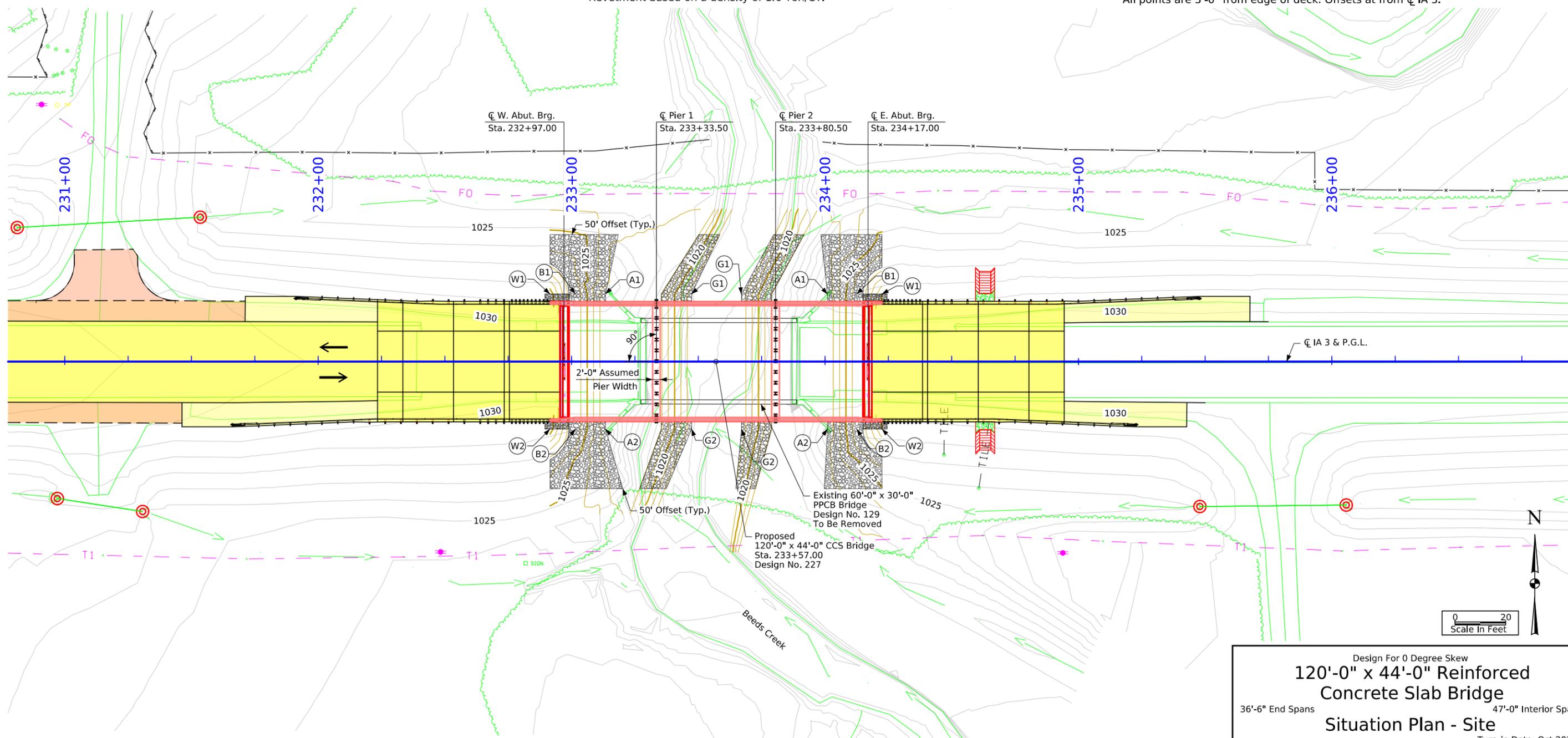
Estimated Berm Armoring Quantities				
Location	Revetment CL. E (Ton)	Erosion Stone (Ton)	Engineering Fabric (SY)	CL. 10 Channel Excavation (CY)
Berm Lining - West	355	N/A	360	220
Berm Lining - East	335	N/A	345	210
Totals	690	N/A	705	430

Excavation quantity calculated from grading surface. Excavation quantity is 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.

Revetment based on a density of 1.6 Ton/CY.

Points	West Abutment			East Abutment		
	Station	Offset	Elev.	Station	Offset	Elev.
A1	233+13.40	26.58' Lt.	1022.10	234+01.02	26.58' Rt.	1022.10
A2	233+13.40	26.58' Rt.	1022.10	234+01.02	26.58' Lt.	1022.10
B1	233+01.50	26.58' Lt.	1026.66	234+12.50	26.58' Rt.	1026.49
B2	233+01.50	26.58' Rt.	1026.66	234+12.50	26.58' Lt.	1026.49
G1	233+47.38	26.58' Lt.	1017.31	233+66.98	26.58' Rt.	1017.31
G2	233+47.38	26.58' Rt.	1017.31	233+66.98	26.58' Lt.	1017.31
W1	232+91.50	26.58' Lt.	1030.21	234+22.50	26.58' Rt.	1030.01
W2	232+91.50	26.58' Rt.	1030.21	234+22.50	26.58' Lt.	1030.01

Berm slope elevations reflect the grading surface. All points are 3'-0" from edge of deck. Offsets at from  $\text{CL}$  IA 3.



**Site Plan**

Design For 0 Degree Skew  
**120'-0" x 44'-0" Reinforced Concrete Slab Bridge**  
 36'-6" End Spans      47'-0" Interior Span  
**Situation Plan - Site**  
 STA. 233+57.00 (IA 3)      Turn-in Date: Oct 2024  
**Franklin County**  
 IOWA DEPARTMENT OF TRANSPORTATION  
 Design No. 227      Design Sheet No. 2 of 2      FHWA No. 25171

## CROSS SECTION VIEW COLOR LEGEND

Design Color No.	Feature	Design Color No.	Feature
<b>Aggregate</b>			
(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
<b>Grading</b>			
(8)	Revetment Class A	(128)	Boulder
(6)	Revetment Class B	(209)	Boulder Removed
(62)	Revetment Class C	(48)	Broken Weathered
(188)	Revetment Class D	(210)	Broken Weathered Removed
(28)	Revetment Class E	(3)	Core Out
(12)	Shoulder Special Backfill	(115)	Core Out Remove Only
(12)	Special Backfill	(195)	Core Out Remove and Replace
(20)	Subbase	(203)	Existing Pavement
(20)	Subbase Lower	(184)	Existing Pavement Remove Only
(20)	Subbase Upper	(200)	Existing Pavement Remove and Replace
(118)	Subgrade Treatment	(6)	Loam
<b>Substrata</b>			
(207)	HMA Base Course	(211)	Loam Removed
(207)	HMA Interim Course	(80)	Rock
(207)	HMA Surface Course	(212)	Rock Removed
(0)	Bridge	(4)	Select Sand
(0)	Barrier Concrete	(214)	Select Sand Removed
(0)	Barrier Concrete Footing	(3)	Shale
(0)	Curb Gutter	(215)	Shale Removed
(48)	Flowable Mortar	(10)	Topsoil
(0)	Median Concrete	(2)	Topsoil Remove Only
(0)	PCC Pavement	(4)	Topsoil Remove and Replace
(0)	Sidewalk	<b>Unsuitable / Waste</b>	
(0)	Existing Pavement	(3)	Unsuitable Type A
(209)	Shoulder HMA	(216)	Unsuitable Type A Removed
(0)	Shoulder PCC	(13)	Unsuitable Type B
(6)	Shoulder Granular	(217)	Unsuitable Type B Removed
(112)	Noise Wall	(11)	Unsuitable Type C
(112)	Noise Wall Footing	(218)	Unsuitable Type C Removed
(112)	Retaining Wall Back	(3)	Waste
(112)	Retaining Wall Back Excavate	(219)	Waste Removed
(112)	Retaining Wall Face		
(112)	Retaining Wall Front Excavate		
(112)	Retaining Wall Front Footing		
(112)	Retaining Wall MSE Gutter		
(112)	Retaining Wall Reinforced Earth		
<b>Asphalt</b>			
<b>Bridge</b>			
<b>Concrete</b>			
<b>Existing</b>			
<b>Shoulder</b>			
<b>Structural</b>			

**NOTES:**

Text

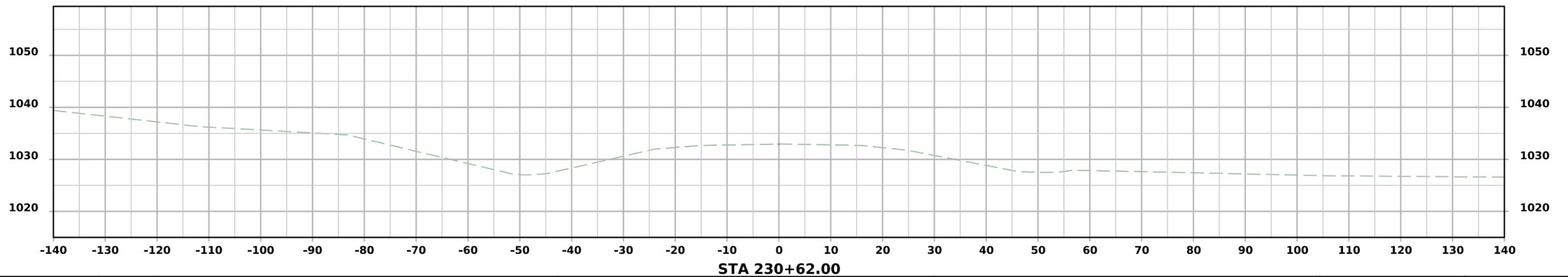
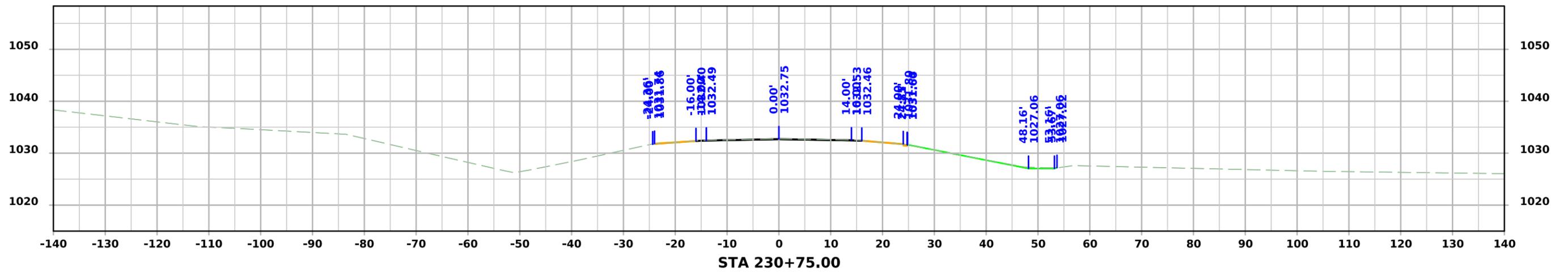
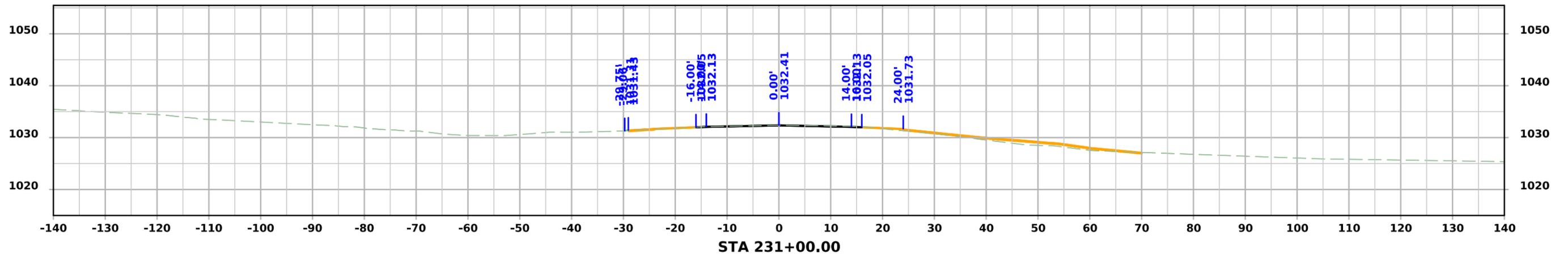
**NOTES:**

Text

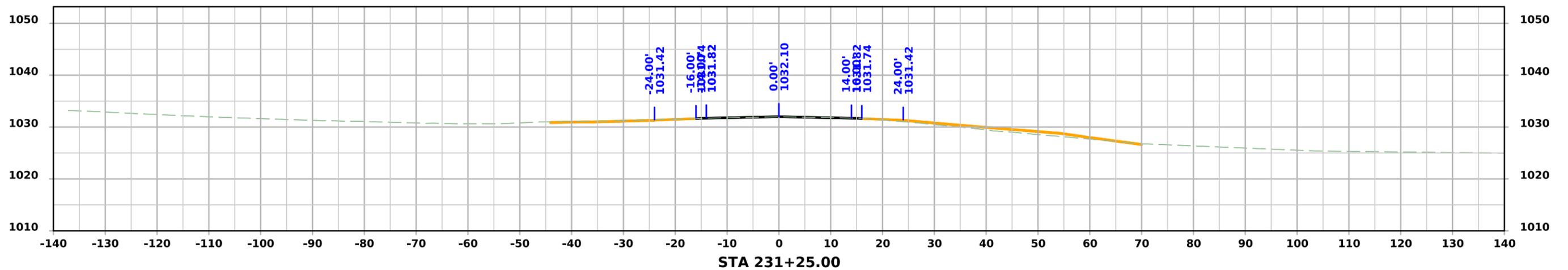
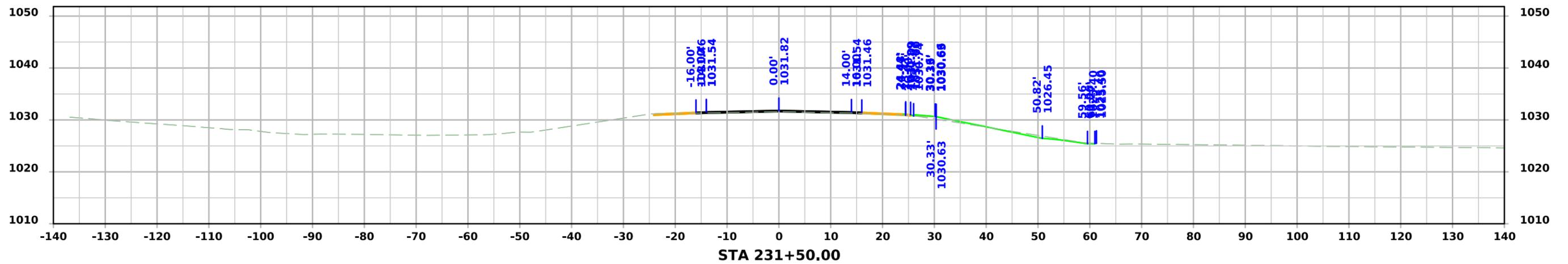
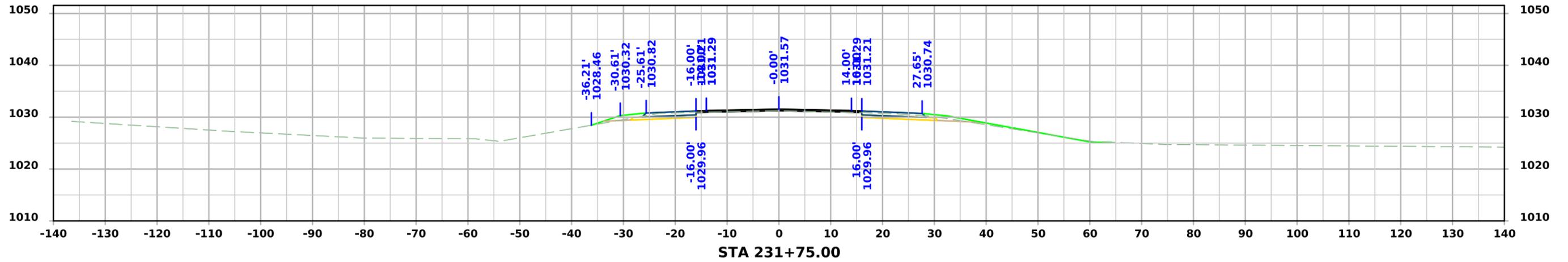
## CROSS SECTIONS LEGEND AND INFORMATION SHEET

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

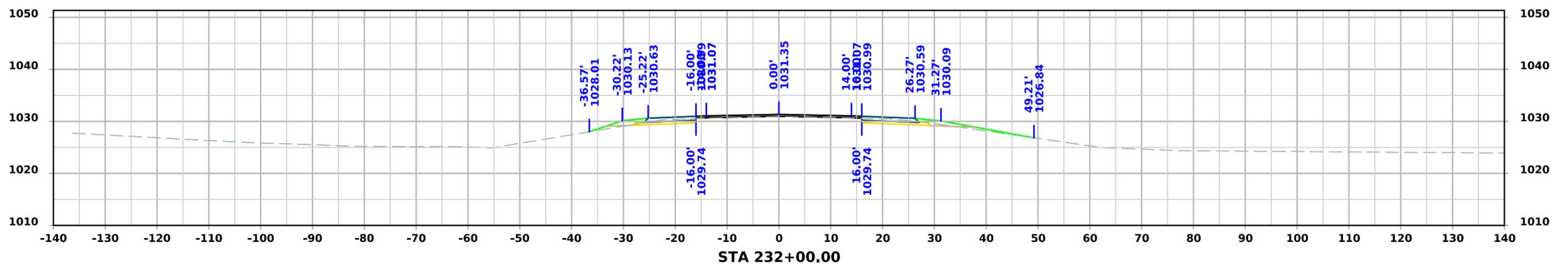
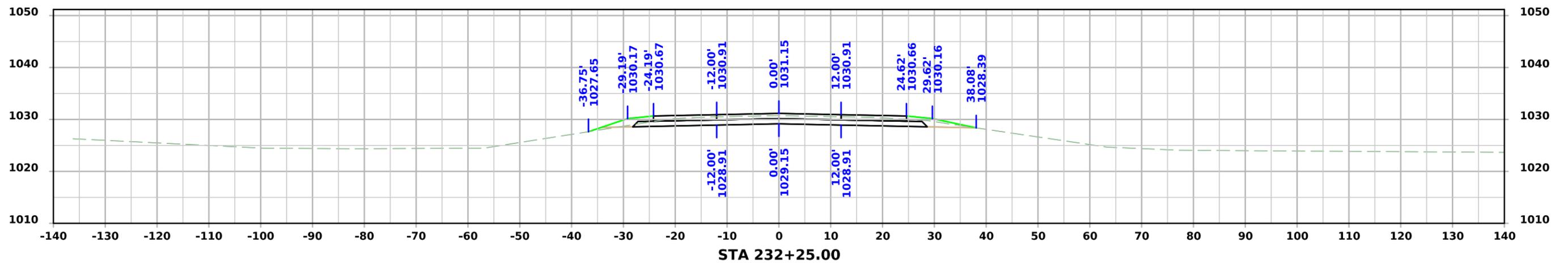
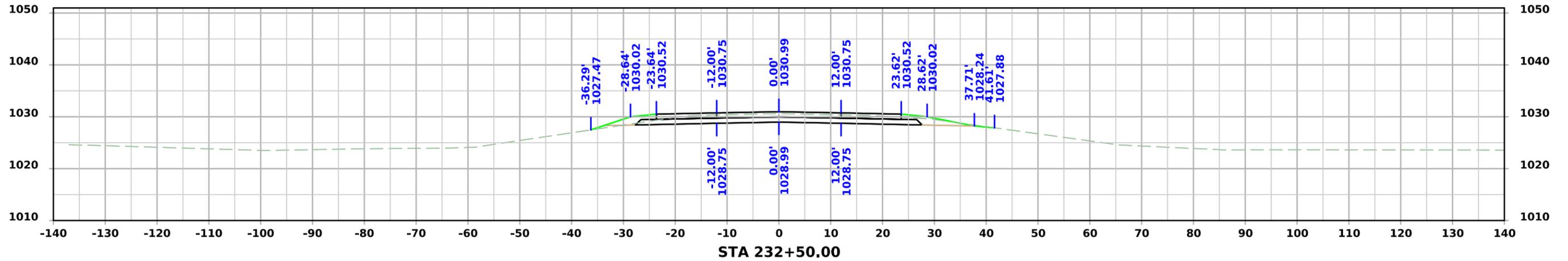
# ML - IA 3



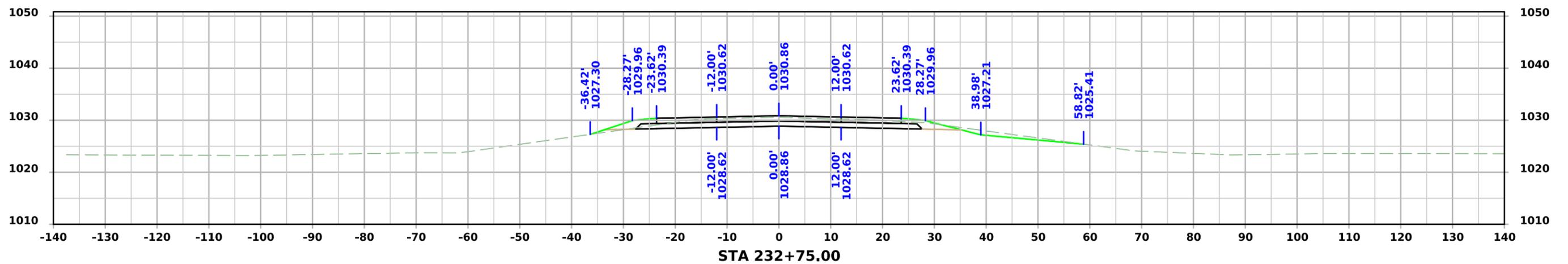
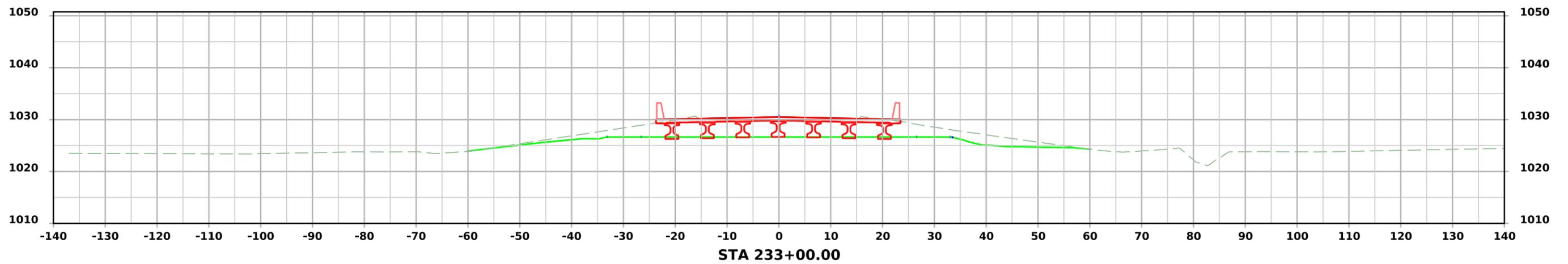
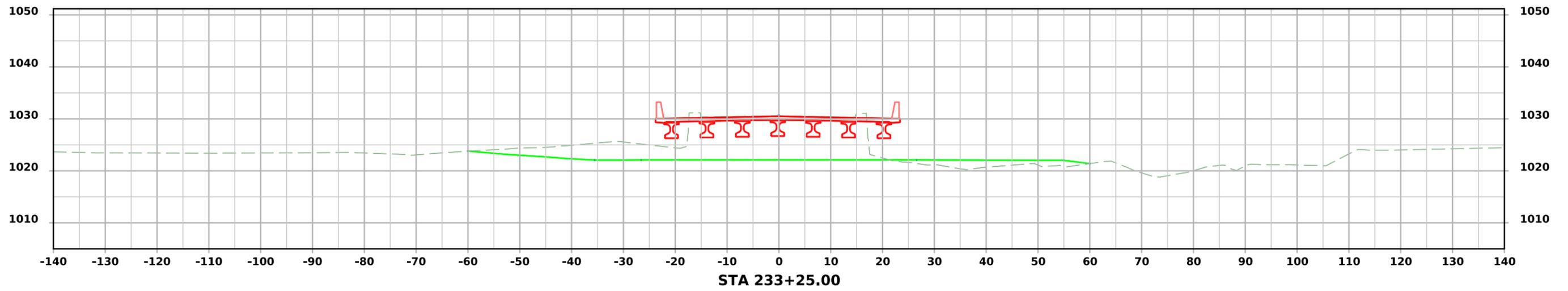
# ML - IA 3



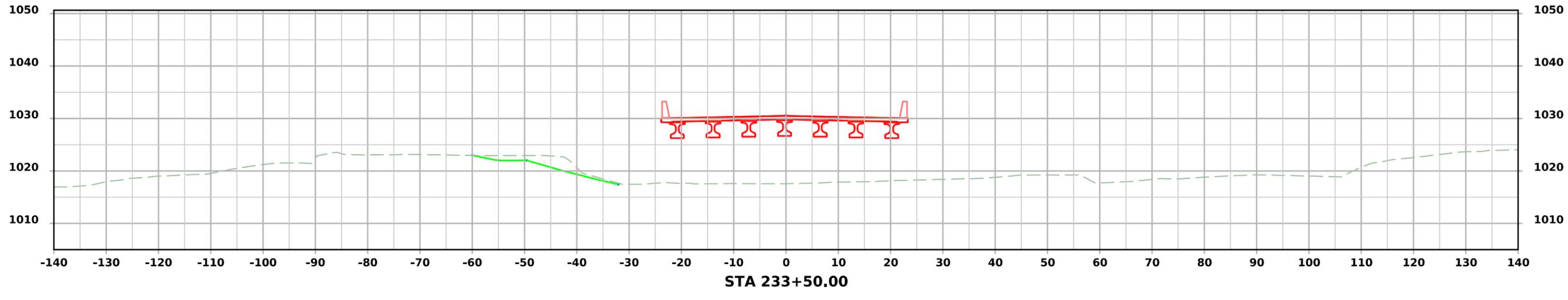
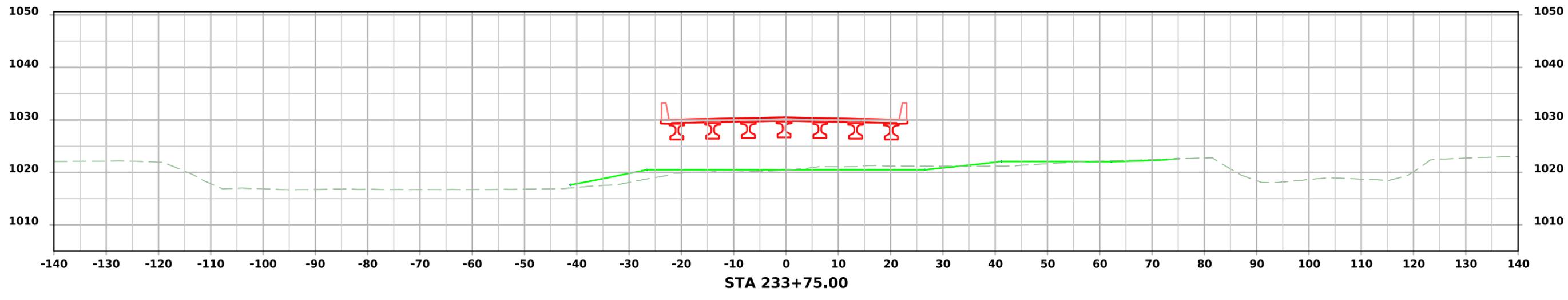
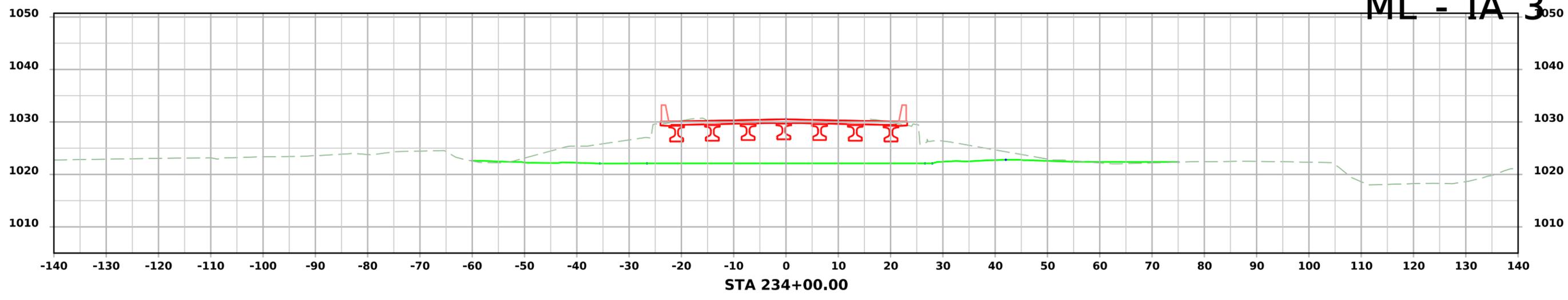
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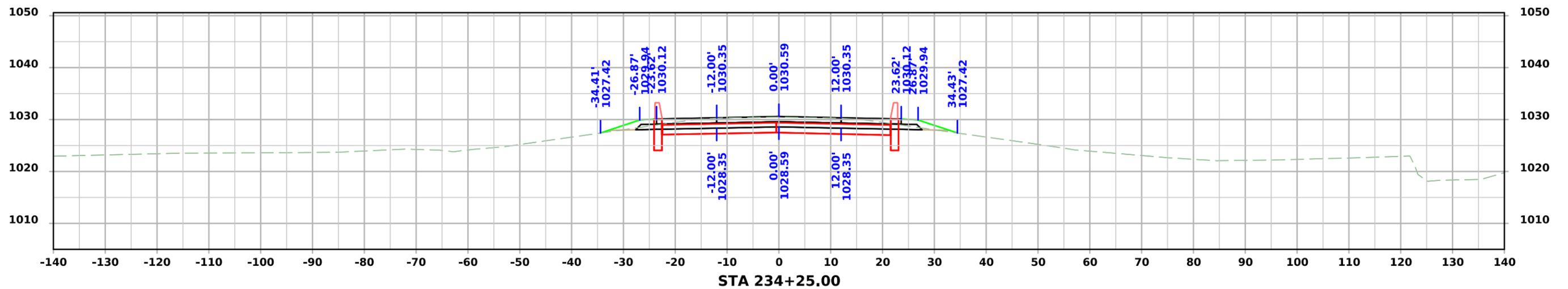
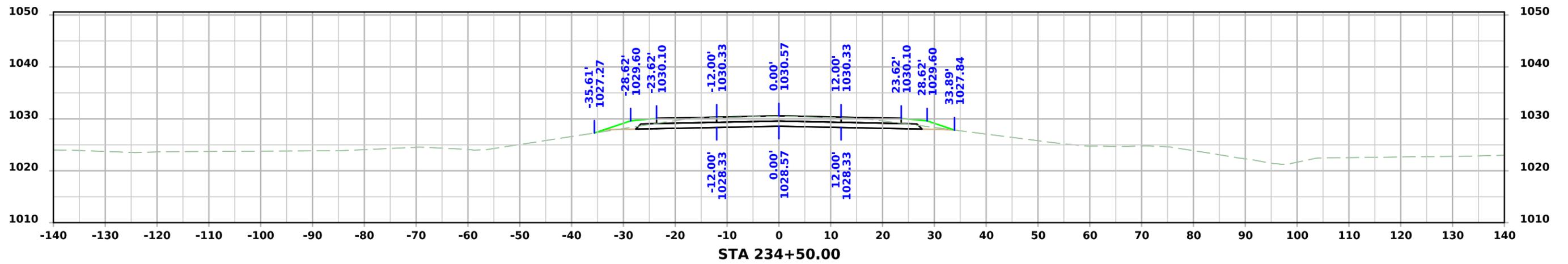
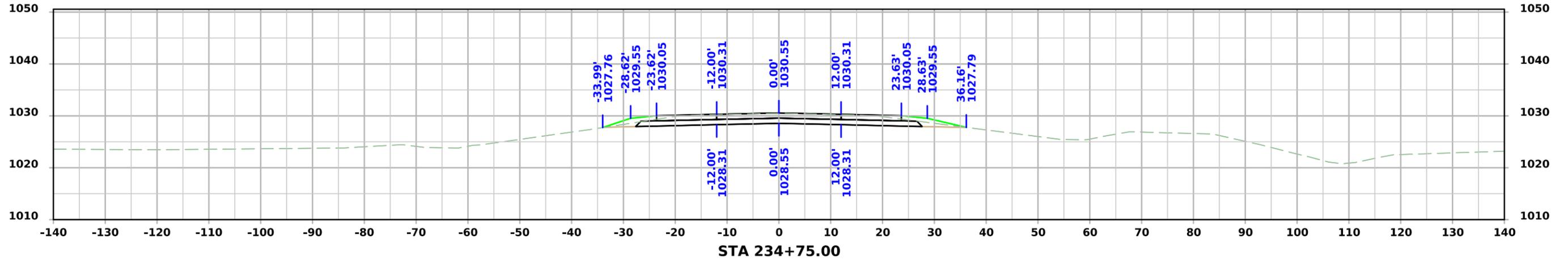
# ML - IA 3



# ML - IA 3



# ML - IA 3



# ML - IA 3

