LETTING DATE 11/20/2029

Bridge Replacement
BRF-003-14(123)--38-75

Plymouth COUNTY

IOWA DOT

REVISIONS

TOTAL 43
PROJECT IDENTIFICATION NUMBER
25-75-003-050
PROJECT NUMBER
BRF-003-14(123)--38-75
R.O.W. PROJECT NUMBER
STPN-003-1(124)--2J-75
56478
98765

INDEX OF SHEETS

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A Sheets	**Title Sheets**
A.1	Title Sheet
A.2	Location Map Sheet
A.3 - 19	Copncept and Design Criteria
B Sheets	**Typical Cross Sections and Details**
B.1 - 2	Typical Cross Sections and Details
D Sheets	**Mainline Plan and Profile Sheets**
D.1	Plan & Profile Legend & Symbol Information Sheet
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G Sheets	**Survey Sheets**
G.1	Survey Information
G.2	Reference Ties and Bench Marks
G.3	Horizontal Control Tab. & Super for all Alignments
J Sheets	**Traffic Control and Staging Sheets**
J.1	Traffic Control Plan
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J.3	Detour Sheet
V Sheets	**Bridge and Culvert Situation Plans**
V.1	Bridge and Culvert Situation Plans
W Sheets	**Mainline Cross Sections**
W.1	Cross Sections Legend & Symbol Information Sheet
W.2 - 13	Mainline Cross Sections

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

Plymouth COUNTY

Bridge Replacement

Westfield Creek
0.2 mi W of W Jct IA 12

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

Value Engineering Saves. Refer to Article 1105.13 of the Specifications.

IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com
811 Know what's below. Call before you dig.

D3 PLAN: 10-30-26
B1 PLAN: 1-29-27
D5 PLAN: 3-26-27
R1 PLAN: 6-25-27

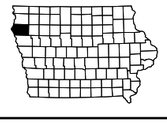
PRELIMINARY PLANS

Subject to change by final design.

D2 PLAN: 9-25-26

Scan the QR code or click the link below to leave plan quality feedback and help us improve future projects.

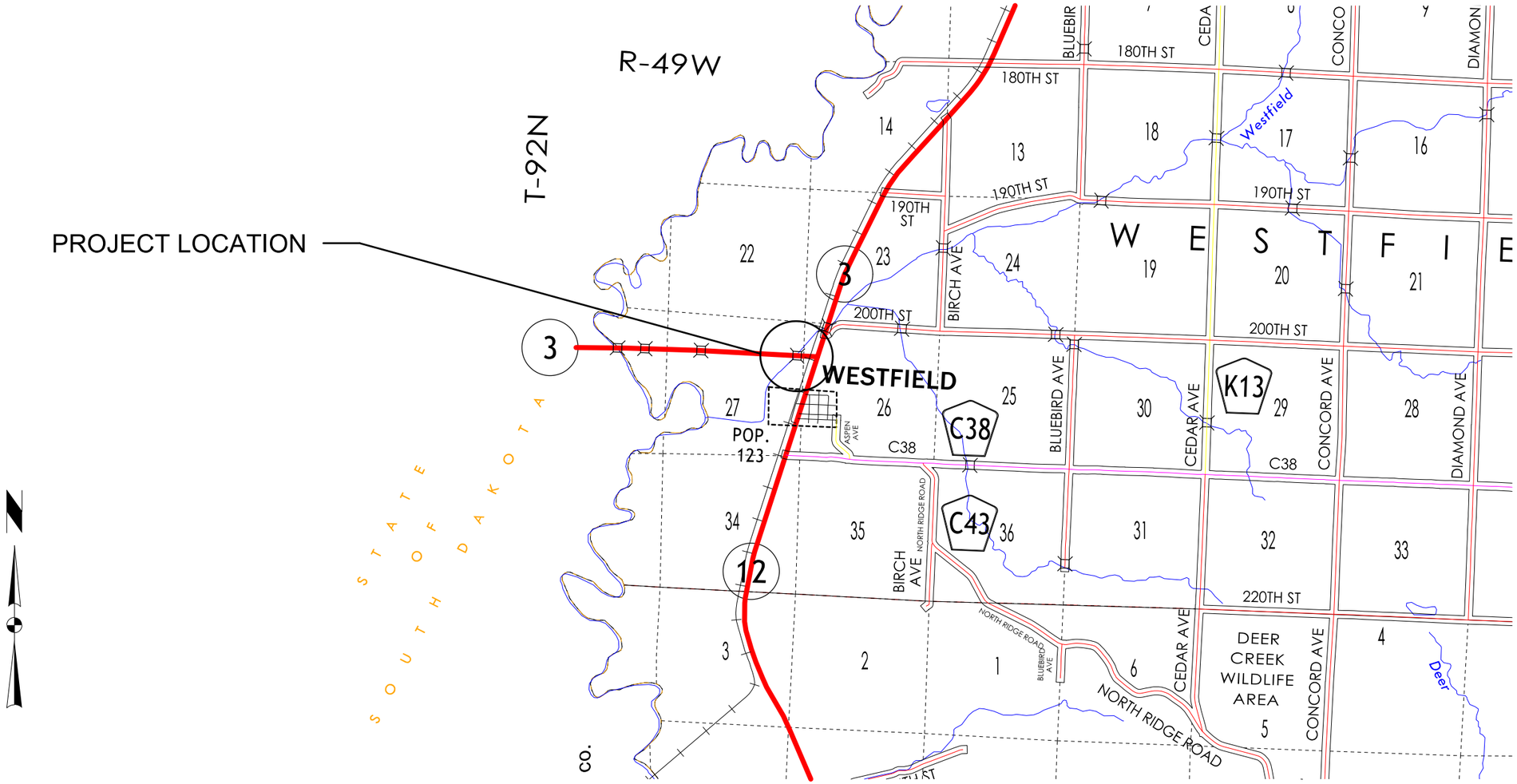
Design QR Feedback Link



DESIGN DATA RURAL			
2030	AADT	1200	V.P.D.
2050	AADT	1300	V.P.D.
20 --	DHV	–	V.P.H.
TRUCKS		34	%
Total Design ESALs		–	

FILE NO. 98765	ENGLISH	DESIGN TEAM Miller/Krug	Plymouth COUNTY	PROJECT NUMBER BRF-003-14(123)--38-75	SHEET NUMBER A.1

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FILE NO. 98765	ENGLISH	DESIGN TEAM Miller/Krug	Plymouth COUNTY	PROJECT NUMBER BRF-003-14(123)--38-75	SHEET NUMBER A.2

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IOWA DEPARTMENT OF TRANSPORTATION

TO OFFICE: District 3 **DATE:** January 29, 2026

ATTENTION: Jessica Felix **PROJECT:** Plymouth County
BRF-003-1(123)--38-75
PIN: 25-75-003-050

FROM: John E. Bartholomew

BUREAU: Design

SUBJECT: Project Concept Statement; (Final, D0)

This project involves the replacement of the IA 3 bridge (Maint. No. 7501.4S003) over Westfield Creek, 0.2 miles west of W Jct IA 12.

A concept review was held on December 10, 2025. Those present included Todd Huju, Shane Tymkowicz, Bethany Waltersdorf, Dylan Pryor and Mike Thayer from the District 3 Office; Jimmy Ellis and George Sefain from the Bridges and Structures Bureau; Brian Birkland, Josh Opheim and Scott Sweet from WHKS; Chelsea Duncan, Jim Galliart, Christine Schwienebart, Marc Solberg, Samuel Sturtz, Janee Becker and Shawn Goetz from the Location and Environment Bureau; Tami Quam from Project Management Bureau and John Bartholomew, Jason Holst, Yan Jia, Yuejia Gu, and Hollie Richey from the Design Bureau.

The two alternatives considered were:
1. Replace the existing IA 3 bridge with a 130 ft. x 40 ft. continuous concrete slab (CCS) bridge, utilizing an off-site detour. Estimated cost for this project is **$2,005,500**.
2. Replace the existing IA 3 bridge with a 130 ft. x 40 ft. continuous concrete slab (CCS) bridge, utilizing staged construction. This alternative has been dismissed due to staged construction difficulties.

Alternative 1 is the preferred alternative. Additional right of way may be required. Traffic will be maintained by an off-site detour.

The Draft Project Concept Statement was sent out for review and comment with concerns to be resolved by Wednesday, January 28, 2026. Comments received during the review period have been considered and resolved.

This project is recommended for construction in FY 2030. The Bridges and Structures Bureau will coordinate plan preparation with assistance from the Design Bureau.

JEB:hsr
Attach.
cc:

C. Purcell
M. Dell
M. A. Swenson
S. Majors
D. L. Newell
W. A. Sorenson
A. A. Welch
B. Hofer
W. Musgrove
J. Holst
T. Lovan
D. Dudley
R. Miller
L. Narigon
M. E. Khoda
J. Klemme
J. Becker
S. Tracy
B. Waltersdorf
S. Sturtz
S. Goetz
A. Wiertzema
K. D. Nicholson
S. Sweet
B. Smith
A. Poole
D. Breitbach
E. C. Wright
J. Harris
G. Karssen
S. Anderson
R. Harris
M. Solberg
L. Armstrong
A. Yates
J. Hauber
M. Gordy
S. Tymkowicz
C. Schwienebart
B. Strueker
D. Pryor
G. Sefain
B. Krug
C. Duncan
Y. Jia
M. Nop
C. C. Poole
K. Brink
J. W. Laaser-Webb
M. E. Ross
M. Van Dyke
D. Johnson
D. Stokes
B. Dolan
T. Gustafson
A. Knight
J. Ellis
S. Sersland
M. Todsen
T. Quam
M. Thayer
J. Pottorff
FHWA
B. Birkland
J. Opheim
J. Galliart

FINAL PROJECT CONCEPT STATEMENT

IA 3 Bridge over Westfield Creek, 0.2 miles W of W Jct IA 12.

Plymouth County
BRF-003-1(123)--38-75
PIN: 25-75-003-050
Maint. No. 7501.4S003
FHWA No. 39690

Highway Division
Design Bureau

John Bartholomew, P.E.
515-239-1540

January 29, 2026

I. STUDY AREA

A. Project Description

This project involves the replacement of the IA 3 bridge (Maint. No. 7501.4S003) over Westfield Creek, 0.2 miles W of W Jct IA 12.

The two alternatives considered were:

1. Replace the existing IA 3 bridge with a 130 ft. x 40 ft. continuous concrete slab (CCS) bridge, utilizing an off-site detour. Estimated cost for this project is **$2,005,500**.
2. Replace the existing IA 3 bridge with a 130 ft. x 40 ft. continuous concrete slab (CCS) bridge, utilizing staged construction. This alternative has been dismissed due to staged construction difficulties.

Alternative 1 is the preferred alternative due to construction difficulties with staging, project coordination along IA 3, and the availability of an off-site detour. Estimated cost for this project is $2,005,500.

B. Need for Project

This is a 150 ft. x 30 ft. steel beam bridge that was built in 1962. The bridge was overlaid in 1996 and re-overlaid in 2009. The bottom of the deck has several transverse leaching cracks, hollow areas, and spalled areas. The steel girders have severe rust and section loss. The substructure has several heavy leaching cracks and spalled areas with

exposed steel. Moving Bearings also have severe rust with section loss. Due to the overall condition of the bridge, a replacement is recommended.

Photos from SIIMS



2016
Looking west



2016
Looking east



2024

C. Present Facility

The existing structure is a 150 ft. x 30 ft., steel beam bridge constructed in 1962, overlaid in 1996 and re-overlaid in 2009.

IA 3 in the project area is 24 ft. wide 8 in. PCC pavement with 8 ft. wide earth shoulders and 3:1 foreslopes, constructed in 1963. Diamond grinding was accomplished in 2022.

D. Traffic Estimates

The 2030 construction year and 2050 design year average daily traffic estimates are 1,200 ADT with 35% trucks and 1,300 ADT with 34% trucks, respectively.

E. Sufficiency Ratings

IA 3 is classified as an "Access Route" and is a maintenance service level "C" roadway. The Bridge Condition Index is 68.1 and the Bridge Condition Rating is "Fair".

F. Access Control

Access rights will not be acquired for this project.

G. Crash History

During the five-year study period from January 1, 2020 through December 31, 2024, there were zero crashes. The PCR Level is 'Negligible' with a PCR Value All Crashes of 0.133143.

II. PROJECT CONCEPT

A. Feasible Alternatives

Alternative #1 - Replace the existing IA 3 bridge with a 130 ft. x 40 ft. continuous concrete slab (CCS) bridge, utilizing an off-site detour

The existing 150 ft. x 30 ft., steel beam bridge will be replaced with a three span, 130 ft. x 40 ft., continuous concrete slab (CCS) bridge.

The typical cross section adjacent to the bridge approach will consist of a 24 ft. roadway with 8 ft. earth shoulders and 3:1 foreslopes.

This bridge will be constructed on the existing vertical and horizontal alignment. New bridge approaches will be constructed. The existing guardrail will be replaced with new guardrail and the shoulders will be paved 20 ft. beyond the ends of the guardrail. Class 10 will be necessary to flatten the existing foreslopes and to construct the new guardrail blisters. Class E revetment will be placed under the bridge for slope protection. New bridge end drains will be constructed on both ends of the bridge.

Apply erosion control and rural seeding and fertilizing to all disturbed areas.

It appears that right of way will be required for this project. It is programmed for $5,000.

Traffic will be maintained by an off-site detour.

This project will be constructed in coordination with two other projects on IA 3 and utilize the same proposed detour route.

These projects are:

BRFN-003-1(116)--39-75
PIN Number: 24-75-003-030
Big Sioux Overflow 1.0 mi W of IA 12
FHWA No: 39670
Maint. No.: 7500.6S003

BRF-003-1(121)--38-75
PIN Number: 24-75-003-040
Big Sioux Overflow 1.3 mi W of IA 12
FHWA No. 39660
Maint. No.: 7500.2S003

Bridge Items	Estimated Costs
New Bridge	$ 820,000
Bridge Removal	200,000
Revetment	50,000
Mobilization - 10%	119,000
M & C - 20%	306,000
Bridge Costs	**1,495,000**

Right of Way	**$ 5,000**
Roadway Items	
Bridge Approaches	$172,600
Removal of Pavement	8,200
Excavation Class 13 Waste	5,800
Guardrail (Includes Removal)	18,900
Paved Shoulders for Guardrail	65,800
Class 10 for Guardrail Blisters	19,100
Bridge End Drains	12,400
Seeding and Fertilizing	1,000
Erosion Control	50,000
Traffic Control - 5%	25,300
Mobilization - 5%	25,300
M & C - 20%	101,100
Roadway costs	**$ 505,500**
Project Total	**$2,005,500**

Alternative #2 - Replace the existing IA 3 bridge with a 130 ft. x 40 ft. continuous concrete slab (CCS) bridge, utilizing staged construction

This alternative was dismissed because staged construction is not desirable for CCS bridge (BDM 3.6.9) due to construction difficulties. Staging would result in maximum 11 ft. 4 in. lane widths with 0 ft. shy distance.

A layout of the proposed staged construction is available in the concept attachments.

B. Detour Analysis

IA 3 will be closed and an offsite detour will be utilized. It is anticipated the detour will be in place for approximately 180 days. The detour would follow IA 3/SD 50 to CR2/477th Ave. traveling north to SD 48/Big Sioux River Rd. east to IA 12 then traveling south to return to IA 3. Out of distance travel is 5.16 miles. The total distance user cost is anticipated to be $351,200. The cost for county road maintenance will be $15,300 as calculated by the Gas Tax Method. Detour signing costs will be $10,000.

C. Recommendations

It is recommended that the present structure be replaced, as described in Alternative No. 1. Estimated cost for this project is **$2,005,500**.

D. Construction Sequence

It is anticipated that all work on this project will be awarded to one prime contractor. The Bridges and Structures Bureau will coordinate the plan preparation with assistance from the Design Bureau.

E. ADA Accommodations

There are no bike paths or sidewalks adjacent to IA 3; therefore, no ADA accommodations are planned in conjunction with this project.

F. Special Considerations

This will not be a traffic critical project.

The ABC Rating Score of 45 is less than the first stage filter threshold of 50, therefore this bridge will be constructed using traditional methods.

No bike path or sidewalk will be required as part of this project.

Waterway is not on a state water trail or paddling route.

Right of Way appears to be required for this project. It is programmed for $5,000.

Location and Environment Bureau members attended the Concept Review Meeting and no special concerns were noted. NRCS easements are located to the north and south of the bridge and should be avoided by staying within right of way limits. An exhibit can be viewed in the concept attachments.

- EWPP-FPE NRCS Parcels: ID 08-27-200-002 & 08-27-200-006
  - NOTE: Impacts to this property of any magnitude (temporary or permanent) should be avoided entirely.

An Environmental Research Study Area (ERSA) has been developed for this project and can be viewed in the concept attachments.

This project will need to be coordinated with the following projects:
BRFN-003-1(116)--39-75
BRF-003-1(121)--38-75

G. Program Status

Site data has been developed by the Design Bureau. This project is listed in the 2026-2030 Iowa Transportation Improvement Program, with $5,000 programmed for right of way in FY 2030, and $3,712,000 for replacement in FY 2030. Costs for this project may be eligible for bridge replacement funds. A schedule of events will be developed following approval of the Project Concept.

JEB:hsr



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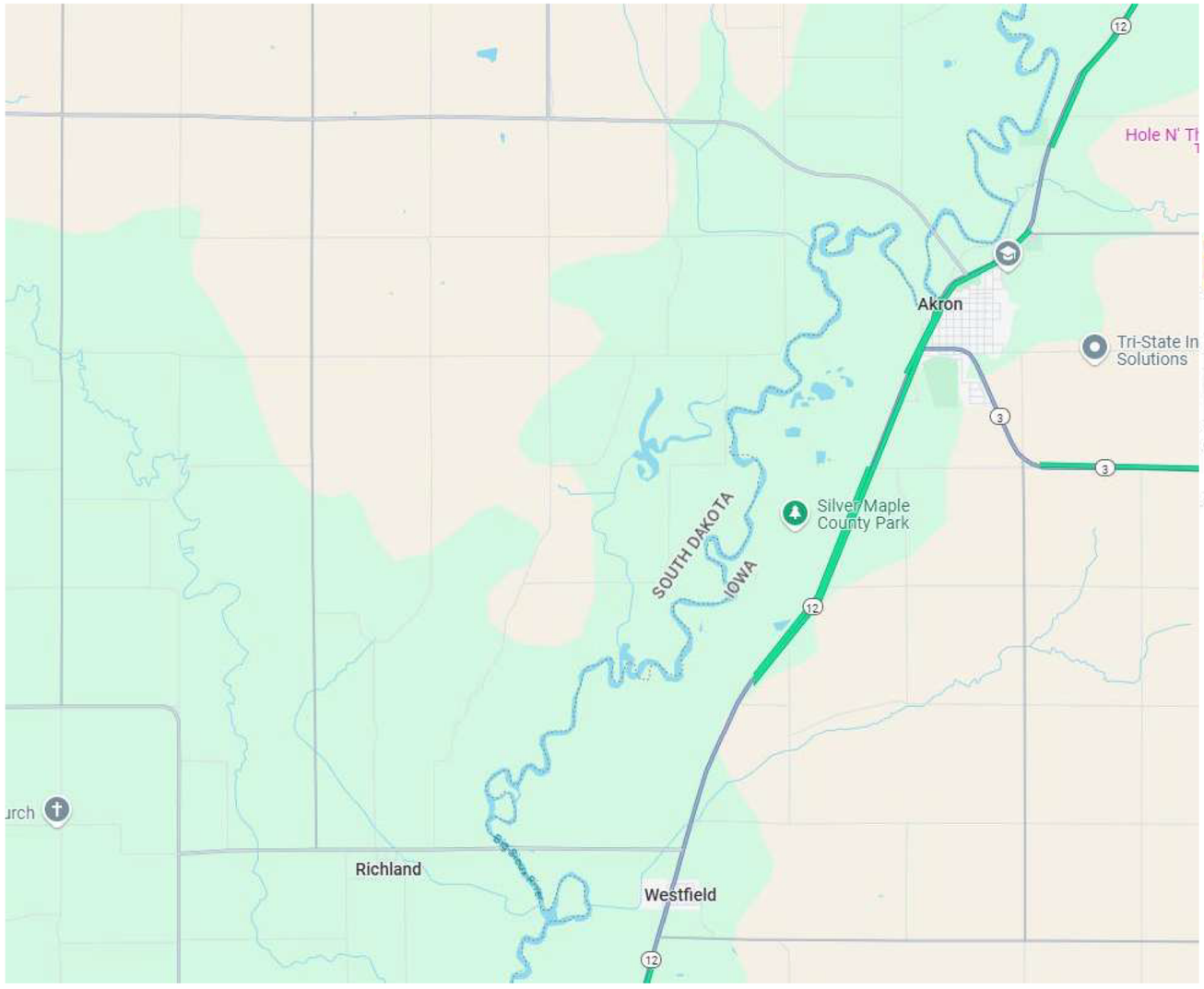
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PROPOSED DETOUR





Plymouth County
Plymouth County
PIN Number: 25-75-003-050
Project Number: BRF-003-1(123)--38-75
Location: Westfield Creek 0.2 mi W of W Jct IA 12
Type of Work: Bridge replacement
Project Directory: 7500305025
Maint. No.: 7501.4S003
FHWA No.: 39690



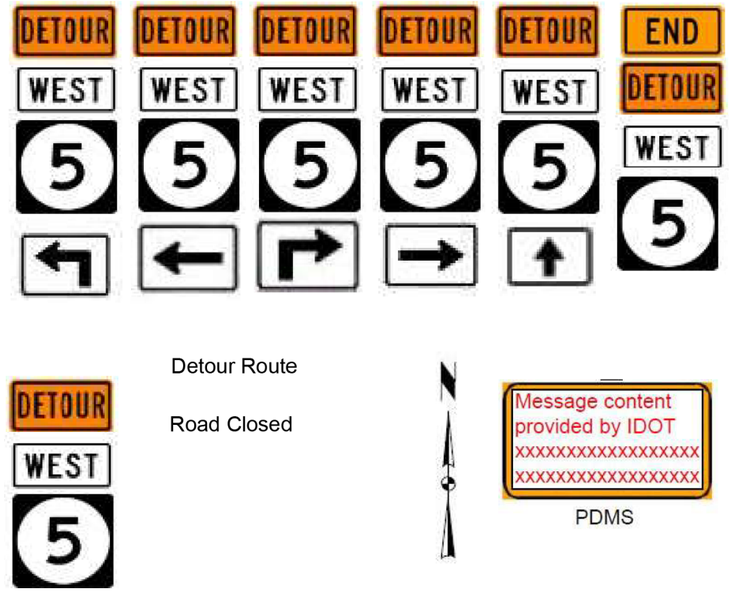












Detour Route

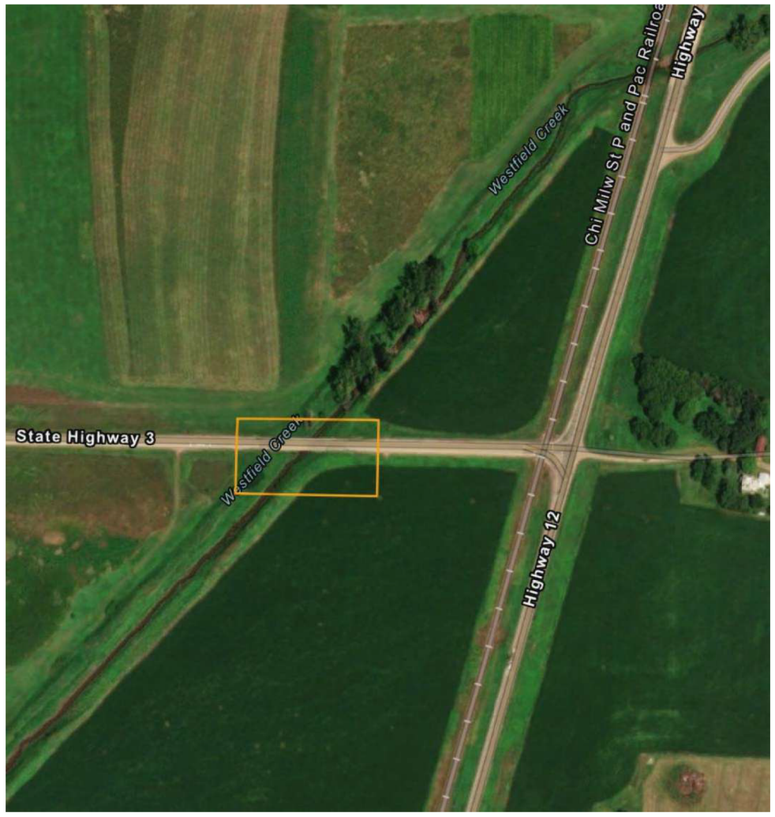
Road Closed

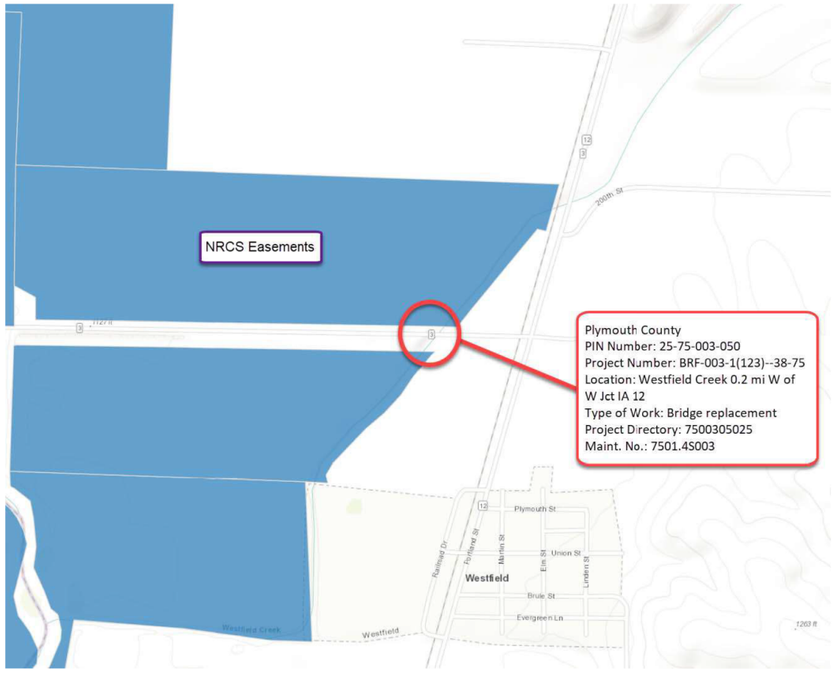
PDMS

FILE NO. 98765	ENGLISH	DESIGN TEAM Miller/Krug	Plymouth COUNTY	PROJECT NUMBER BRF-003-14(123)--38-75	SHEET NUMBER A.11

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ERSA LIMITS







Plymouth County
Plymouth County
PIN Number: 25-75-003-050
Project Number: BRF-003-1(123)--38-75
Location: Westfield Creek 0.2 mi W of W Jct IA 12
Type of Work: Bridge replacement
Project Directory: 7500305025
Maint. No.: 7501.4S003
FHWA No.: 39690
ERSA Phase ID: 68421

Utilities

City of Akron
Gary Horton
Ph: 712-551-6711
ghorton@akronia.org

Premier Communications
Jake Van Roekel
Ph: 712-722-3451
jakevr@mypremieronline.com

Sprint/Cogent Communications
Michael Chebul
Ph: 402-880-8720
mchebul@cogento.com

Bridge Bureau Attachment for Concept Statement

Date: November 25, 2025 (rev. 1/15/2026)
By: J. Opheim & B. Birkland, WHKS
Location: IA 3 over Westfield Creek, 0.2 mi W of IA 12

County: Plymouth
Phase No.: BRF-003-1(123)--38-75
Project Code: 25-75-003-050

1. Regulatory/Coordination

   a. Iowa DNR Flood Plain permit = No
   b. Iowa DNR Sovereign Lands permit = No
   c. Local Record of Coordination = Yes
   d. Flood Insurance Study = Yes - Zone A, Panel 19149C0213E, 10/27/22
   e. Drainage District = No
   f. Corps of Engineers Section 408 = No
   g. State Water Trail or Paddling Route = No
   h. Historic Structure = No
   i. Federally owned land in vicinity = No
   j. USGS or Iowa Flood Center (IFC) gage or sensor impacted? = No
   k. Obstruction Evaluation/Airport Airspace Analysis per FAA website = No

2. Hydrologic/Hydraulic Analysis/RIDB Dataset

   a. Design discharge methodology = StreamStats (SIR 2013-5086 Region 3)
   b. Hydraulic analysis done = Yes, HEC-RAS pre-survey level (LiDAR)
   c. If DA > 10 sq. mi. Riverine Infrastructure Database (RIDB) dataset is required with B1 submittal = Yes - WestfieldC_Plym_1.04
   d. Project development hydraulic analysis will comply with the RIDB Guidelines at a minimum.

3. Structure/Roadway Layout Considerations

   a. Proposed bridge is on existing alignment.
   b. Roadway profile grade raise is not anticipated.

4. Special construction issues

   a. Non-standard CCS design is required. Span lengths were adjusted to avoid existing foundations.
   b. Proposed abutment piles have a potential to conflict with the existing battered timber piles. A proposed pile layout as shown on the TS&L was developed that avoids existing pile locations. Final design should confirm layout to avoid existing piles.
   c. Construction of piers and berm slope grading may require removal of remnants of the original 80’ x 20’ pony truss with wood abutments. The existing substructure was removed to 1’ below grade.

5. Special survey = No

6. Aesthetic enhancements = No

7. Other

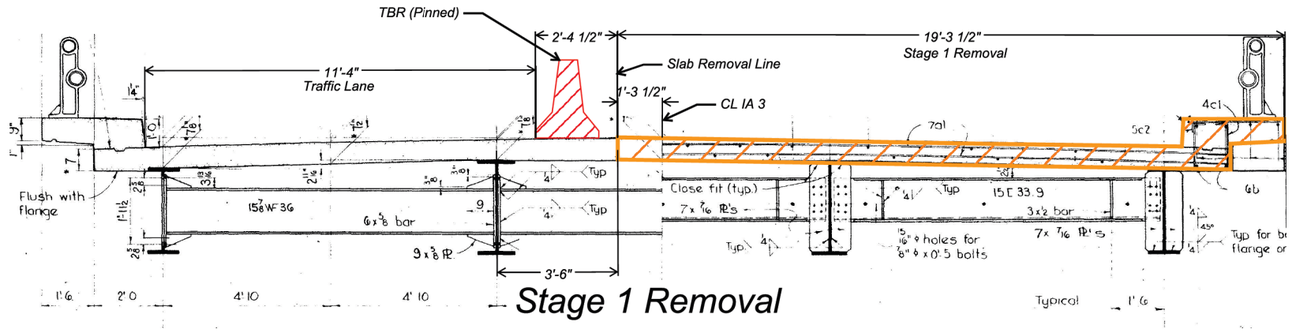
   a. Coordinate with construction of Big Sioux Cverflow bridges.
   b. Maintenance of Traffic
      i. Staged construction is not desirable for CCS bridge due to construction difficulties (BDM 3.6.9). If approved, staging would result in approx. 11’-4” lane widths. See Staging Diagram.
      ii. On-Site detour appears to be feasible. ROW width ~ 150’ on the south side. Construction would involve temporary fill, drainage pipes, and detour pavement.
      iii. Off-site detour is preferred by the District. Preferred detour route: IA 12 north to Akron, SD 48 west to CR2/477th Ave, south to SD 50/IA 3. Out of distance travel ~ 15 miles.

Special Survey: None

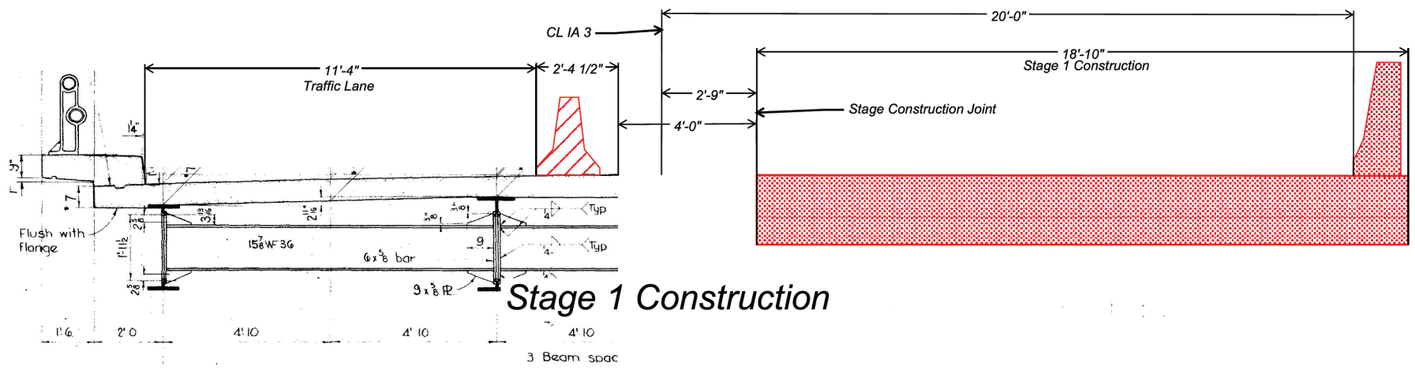
IA 3 over Westfield Creek

Possible Staging Diagrams

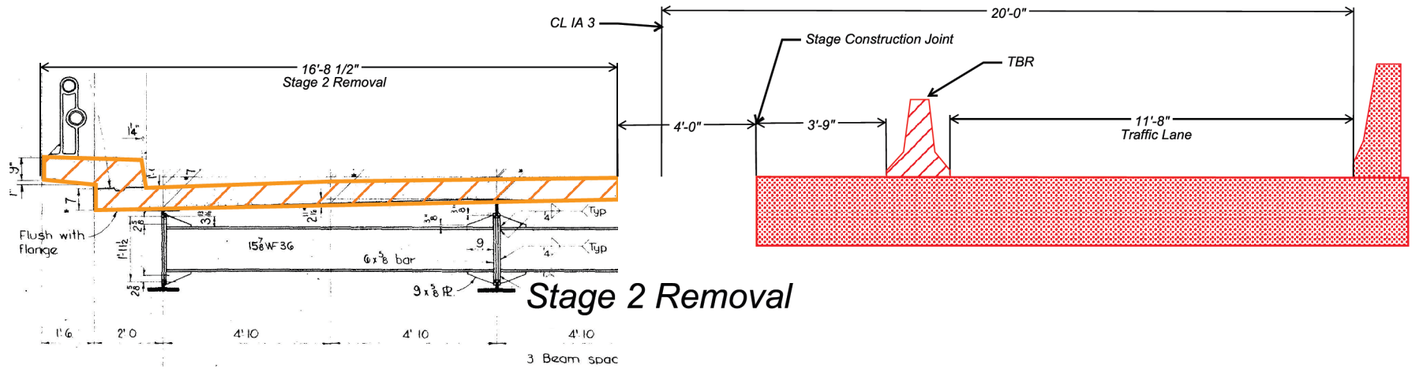
WHKS-J. Opheim
11/25/25



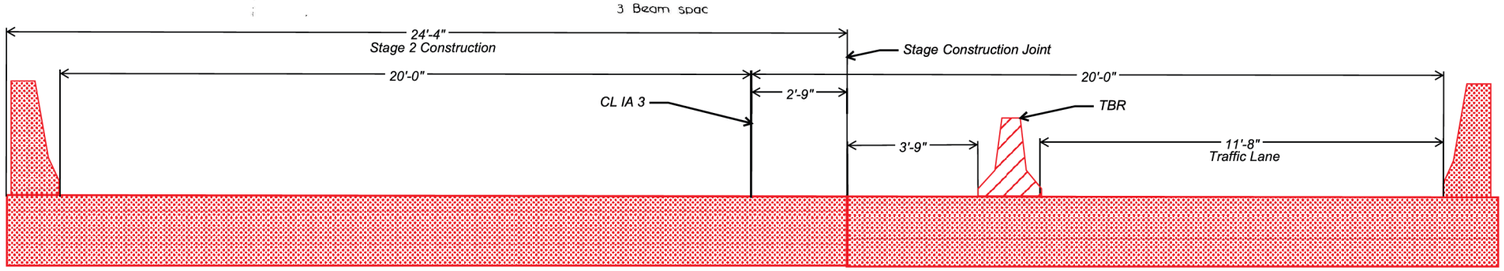
Stage 1 Removal



Stage 1 Construction



Stage 2 Removal



Stage 2 Construction

Roadway	IA 3			
PIN Number	25-75-003-050		**Submittal Date**	
Project Number	BRF-003-1(123)--38-75			**Approval Date**
District	District 3	**Assistant District Engineer**	Shane Tymkowicz	
County	PLYMOUTH		**or**	
Route	IA 3	**Office Director**		
Location	IA 3 Bridge over Westfield Creek 0.2 mi W of IA 12			
Work Type	Bridge Replacement			
Segment Manager	Ryan Miller			
Designer	Bobbi Krug			

Design Manual Section 1C-1
Last Updated: 04-29-19

Rural Two-Lane Highways (Rural Arterials)

Design Element		Preferred	Acceptable	Project Values
Design speed (mph)		60	50	65
Maximum superelevation rate (Refer to Section 2A-2)		6%	8%	-
Design lane width (ft)		12	12	-
Full depth paved width (ft)		12	12	-
Right turn lane (ft)		12	10	-
Climbing Lane (ft)		12	12	-
Left turn lane (ft)		12	10	-
Pavement cross-slope (on tangent sections)	Through lanes	2%	1.5% minimum, 2% maximum	-
	Auxiliary and turn lanes	3%	3% maximum	-
	Crown break at centerline	4%	4% maximum	-
Shoulder cross-slope (on tangent sections)		4%	Shoulder cross-slope cannot be less than the adjacent lane, 6% max for paved or granular shoulders, 8% max for earth shoulders	4%
Curb type (Refer to Section 3C-2)	Design speed = 50 or 55 mph	6-inch sloped	6-inch standard	-
	Design speed ≥ 60 mph	4-inch sloped	6-inch sloped	-
Foreslope (For fill areas greater than 40 ft, contact the Soils Design Section for assistance)	Adjacent to shoulder	10:1 for 4' then 6:1	3:1	4:1
	Beyond standard ditch depth and design clear zone	3.5:1	3:1	3.5:1
	Curbed roadways	2%	not steeper than 3:1	-
Backslope (For cut areas greater than 25 feet, contact the Soils Design Section for assistance with backslope benches.)		3:1	2.5:1	3:1
Transverse Slopes	w/ drainage structures	8:1	6:1	-
	w/o drainage structures	10:1	6:1	-
Ditches (Refer to Section 3G-1)	Outside ditch (depth x width) (ft)	5 x 10	--	-
Bridge width—new*	Bridge length ≤ 200 ft	design lane widths + effective shoulder widths	design lane widths + effective shoulder widths	40'
	Bridge length > 200 ft	design lane widths + effective shoulder widths	design lane width + 4' right and left of the design lane widths	-
Bridge width—existing*		design lane widths + no less than 2 ft left and right	design lane widths + 2 ft. offset left and right	30'
Vertical clearance (ft) (above lanes, shoulders and 25 feet left and right of the center of railroad tracks)	Over primary	16.5	16	-
	Over non-primary	16.5 at interchange locations, 15 at all other locations	14	-
	Over railroad	23.3	23.3	-
	Sign trusses and pedestrian bridges	17.5	17	-
Structural Capacity		Contact Office of Bridges and Structures	Contact Office of Bridges and Structures	
Level of Service		B	B	B

*FHWA notification via email is required if acceptable critera is not met on the NHS system (No formal design exeption is required)

Design year ADT = 1300

Design Manual Section 1C-1
Last Updated: 04-29-19

Effective Shoulder Width and Type for Two-Lane Highways

Preferred (values shown in feet)			Acceptable (values shown in feet)			Project Values
	Rural Roadways	Urban Roadways		Rural Roadways	Urban Roadways	
Turn lanes with shoulders	6	6	Turn lanes with shoulders	6	0	-
Turn lanes with curbs	6	See Section 3C-2	Turn lanes with curbs	6	0	-
	Effective Shoulder Width	Paved Width		Effective Shoulder Width	Paved Width	
Climbing Lanes	6	4	Climbing Lanes	4	0	-
Two-Lane Highways	Effective Shoulder Width	Paved Width	Two-Lane Highways	Effective Shoulder Width	Paved Width	
Routes where bicycles are to be accommodated	10	10	Design year ADT > 2000 vpd	8	0*	8
On roadways approaching urban areas (due to increased bike traffic)	10	10				
On all curves with a superelevation rate of 7.0% or greater	10	10				
On roadways with design year ADT > 5000	10	6	Design year ADT between 400 - 2000 vpd	6	0*	
On all other NHS	10	6				
On non-NHS routes with design year ADT > 3000	10	6	Design year ADT < 400 vpd	4	0*	
On non-NHS routes with design year ADT < 3000	8	0*				

*Requires safety edge-Refer to Section 3C-6

Curbs should be located beyond the outer edge of the effective shoulder width in rural areas

Refer to Section 3C-2 for curb offsets in urban areas

Notes:

Roadway Design Speed (mph) =	65

Design Manual Section 1C-1
Last Updated: 04-29-19

Design Criteria for High Speed Roadways

Design Element			Preferred Criteria – Design Speed, mph						Acceptable Criteria – Design Speed, mph						Project Values
			50	55	60	65	70	75	50	55	60	65	70	75	
Stopping sight distance (ft) (Refer to Section 6D-1)			425	495	570	645	730	820	425	495	570	645	730	820	645
Minimum horizontal curve radius (ft) (Refer to Sections 2A-2 and 2A-3)	Method 5 superelevation and side friction distribution	e_{max} = 6%	833	1060	1330	1660	2040	2500	833	1060	1330	1660	2040	2500	1560
		e_{max} = 8%	--	--	--	--	--	--	758	960	1200	1480	1810	2210	1480
Minimum vertical curve length (ft) (Refer to Section 2B-1)			150	165	180	195	210	225	150	165	180	195	210	225	195
Minimum rate of vertical curvature (K) (Refer to Section 2B-1)	crest vertical curves		84	114	151	193	247	312	84	114	151	193	247	312	193
	sag vertical curves	roadways without fixed source lighting	96	115	136	157	181	206	96	115	136	157	181	206	-
		roadways with fixed-source lighting	96	115	136	157	181	206	54	66	78	91	106	121	-
Minimum gradient (%)	(Refer to Section 2B-1)		0.5						0.3% with a curb, 0.0% without a curb						0.5
Maximum gradient (%)	(Refer to Section 2B-1)	Urban roadways	4		3				7	6	6	–	–	–	3
		Rural roadways							5	5	4	4	4	4	3
		Interstates							5	5	4	4	4	4	3
Clear zone			See "Preferred Clear Zone" table in Section 8A-2						See "Acceptable Clear Zone" table in Section 8A-2						

	FORESLOPES		BACKSLOPES			
design speed	design ADT	6:1 or flatter	Steeper than 6:1, up to and including 4:1	Steeper than 4:1	Steeper than 4:1*	4:1 or flatter, up to 6:1	6:1 or flatter
40 mph or less	ADT < 750	10	10	**	10	10	10
	750 ≤ ADT < 1500	12	14	**	12	12	12
	1500 ≤ ADT < 6000	14	16	**	14	14	14
	ADT ≥ 6000	16	18	**	16	16	16
45 – 50 mph	ADT < 750	12	14	**	10	10	12
	750 ≤ ADT < 1500	16	20	**	12	14	16
	1500 ≤ ADT < 6000	18	26	**	14	16	18
	ADT ≥ 6000	22	28	**	16	20	22
55 mph	ADT < 750	14	18	**	10	12	12
	750 ≤ ADT < 1500	18	24	**	12	16	18
	1500 ≤ ADT < 6000	22	30	**	16	18	22
	ADT ≥ 6000	24	32	**	18	22	24
60 mph	ADT < 750	18	24	**	12	14	16
	750 ≤ ADT < 1500	24	32	**	14	18	22
	1500 ≤ ADT < 6000	30	40	**	18	22	26
	ADT ≥ 6000	32	44	**	22	26	28
65 – 70 mph	ADT < 750	20	26	**	12	16	16
	750 ≤ ADT < 1500	26	36	**	16	20	22
	1500 ≤ ADT < 6000	32	42	**	20	24	28
	ADT ≥ 6000	34	46	**	24	30	30

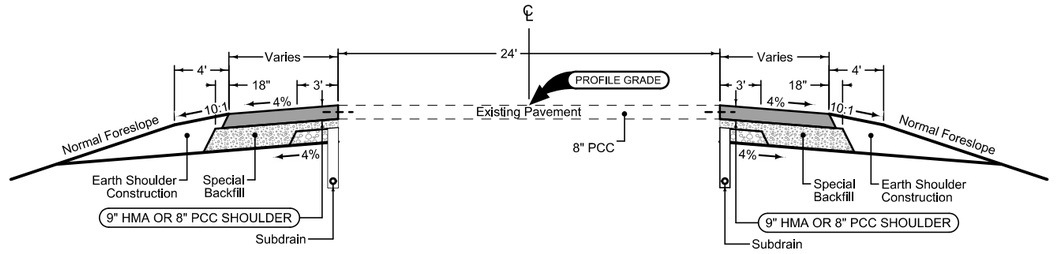
Questions:

1) How are we maintaining access to field entrances?

2) Do we want to do any work to the pavement between the bridges?

3) Will coordination with the railroad be needed?

4) Do we want to replace pavement out to the extent of new guardrail shoulders?



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_ 04-21-20	
STATION TO STATION	
216+18.50	217+06.10
220+04.27	221+62.95

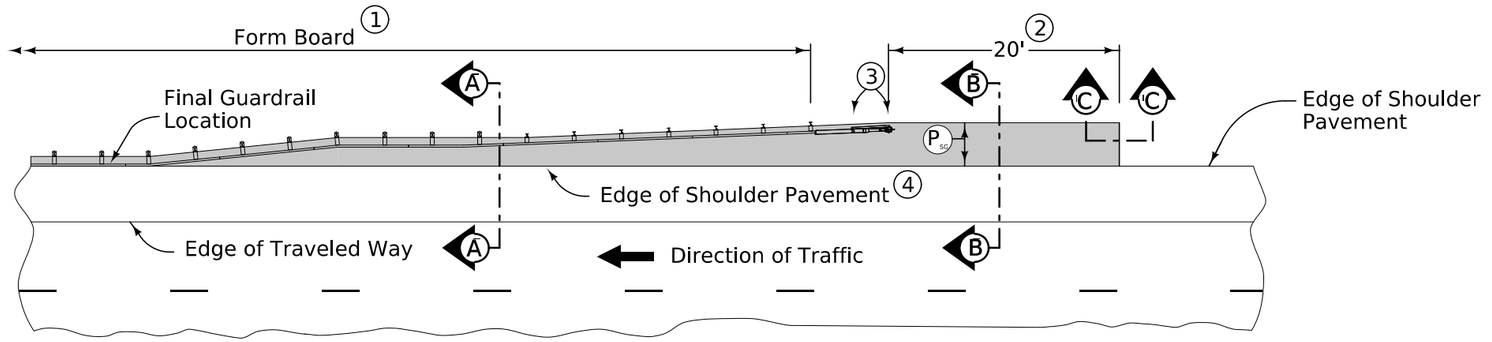
Paved Shoulder at Guardrail

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

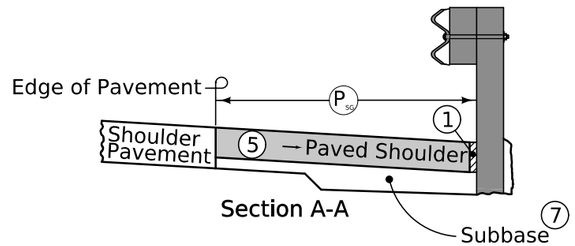
2_P_Guard_ 04-21-20	
STATION TO STATION	
215+47.45	217+06.10
220+04.27	221+85.01

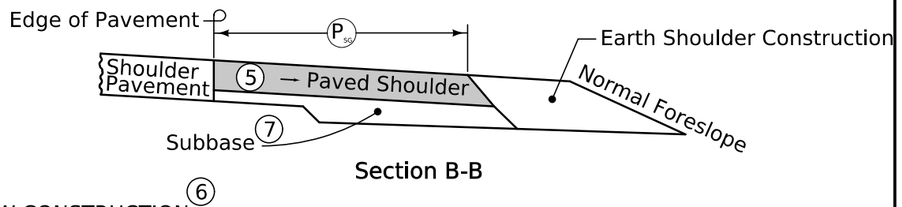
DESIGNER INFORMATION

7158
10-21-25

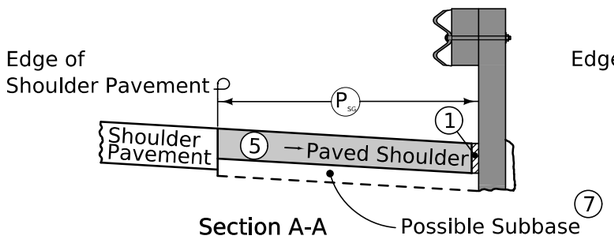


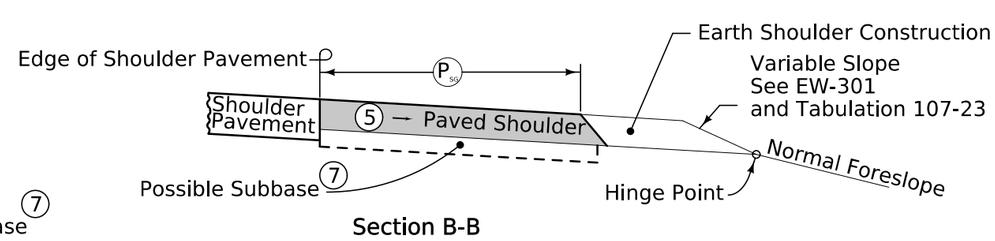
PLAN VIEW





NEW CONSTRUCTION





EXISTING SHOULDER

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.

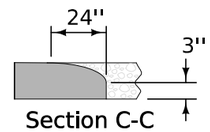
(3) Shoulder may be notched for first 2 posts or post sleeves may be installed through pavement. Do not drive posts through pavement.

(4) '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.



Roll down at granular shoulder or earth.

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
- WH Water Hydrant (Rural)
- ST Septic Tank
- C Cistern
- LP L.P. Gas Tank (No Footing)
- UST Underground Storage Tank
- Latrine
- Satellite TV Dish
- WHU Water Hook Up
- RT Radio Tower
- TA Tower Anchor
- Guardrail (Beam or Cable)
- GP Guard Post (one or two)
- Guard Post (over two)
- FP Filler Pipe
- GV Gas Valve
- WV Water Valve
- SL Speed Limit Sign
- MM 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

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	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)

FILE NO. 98765	ENGLISH	DESIGN TEAM Miller/Krug	Plymouth COUNTY	PROJECT NUMBER BRF-003-14(123)--38-75	SHEET NUMBER D.1

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Westfield TWP.
T-92N R-49W
SEC. 27

N

STA 215+47.45 (ML_003)
BEGIN PROJECT

3

(U.A.C.)

(Close)

+75.00
Type 'D' Ent.
(W = 30.0')

STA 221+85.01 (ML_003)
END GUARDRAIL SHOULDER

(Close)

+40.00
Type 'D' Ent.
(W = 30.0')

(U.A.C.)
Sta. 221+95.22
30"x58.2' RCP
D.A.=8 A-F

Sta. 218+65.00
Install: 130'-0" x 40'-0" Cont. Conc. Slab Bridge
Skew: 40° LA
Design N. XXX

(Remove)
Sta. 218+59.58
Skew 40° LT AH
150'x30' Cont. I-Beam Bridge
D.A.=26 Sq Mi-R

0 50
FEET

IA 3

Begin Bridge Approach
Sta. 217+07.85
Elev. 1133.24

VPI = +65.00
EL = 1133.95
L = 200.00'
K = 210

+0.45%
-0.50%

End Bridge Approach
Sta. 220+02.52
Elev. 1133.26

1140
1130
1120
1110
1100

129.72 129.72 129.73 129.74 129.74 129.75 129.75 129.76 129.76 129.77 129.77 129.99 130.28 130.57 130.87 131.16 131.45 131.74 131.91 132.05 132.19 132.34 132.48 132.62 132.76 132.91 133.05 133.19 133.31 133.43 133.54 133.63 133.68 133.71 133.71 133.67 133.61 133.52 133.40 133.27 133.17 133.06 132.95 132.85 132.74 132.64 132.53 132.43 132.32 132.21 132.11 132.00 131.90 131.84 131.80 131.75 131.71 131.66

215+00 220+00

FILE NO. 98765	ENGLISH	DESIGN TEAM Miller/Krug	Plymouth COUNTY	PROJECT NUMBER BRF-003-14(123)--38-75	SHEET NUMBER D.2

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SURVEY INDEX

County: Plymouth
PIN: 21-51-034-010
Project Number: BRF-003-1(123)--38-75
Location: Westfield Creek 0.2 mi W of W Jct IA 12
Type of Work: Bridge Unspecified
Project Directory: 7500305025

Survey Personnel

Clayton Henningsen – Survey Party Chief
Jason Arn – Survey Party Chief

Date(s) of Survey

Begin Date	08/20/2025
End Date	03/03/2026

General Information

This survey is for IA Hwy 3 Westfield Creek bridge repair at location 0.2 mi W of IA Hwy 12. This survey request was for the US Hwy 34 corridor only. 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 04 (U.S. SURVEY FOOT)
VERTICAL DATUM: NAVD88
GEOID MODEL: 2018u2

Alignment Information

The horizontal alignment for IA Hwy 3 this survey is a retrace of PCC Paving Plans No. F-1010(3) 1963. Survey stationing was equated to the plan PI at Sta. 1780+00.00 and carried back and ahead with/without equation throughout the survey.

Survey stationing relates to as built plan stationing as follows:

PI Sta. 1780+00.00 PCC Paving Plans No. F-1010(3) 1963
Survey PI Sta. 1780+00.00

PI Sta. 185+05.63 PCC Paving Plans No. F-1010(3) 1963
Survey PI Sta. 185+00.81

POT Sta. 226+63.03 PCC Paving Plans No. F-1010(3) 1963
Survey POT Sta. 226+57.98

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 04 (U.S. Survey Foot)

VERT. DATUM: NAVD88 - Geoid Model: 2018u2

Coordinate listing from next sheet will be used with IaRTN for monument recovery. No other reference ties are given.

Point Name	Northing	Easting	Elevation	Feature Definition-Description
50 426	8688338.01	14014750.69	1119.88	CP SOUTH DAKOTA MONUMENT AS DESCRIBED IN GOOD CONDITION
75003001	8688193.72	14022384.74	1119.63	CP FD REBAR IN SOUTH ROW LINE IA HWY 3
CP1	8688310.86	14018647.92	1117.33	CP FD T POST IN SOUTH DITCH IA HWY 3
X 145	8681500.06	14022430.18	1121.13	CP NGS MONUMENT AS DESCRIBED IN GOOD CONDITION
Z 145	8690697.64	14025253.99	1131.93	CP NGS MONUMENT AS DESCRIBED IN GOOD CONDITION

108_23A

8/15/22

TRAFFIC CONTROL PLAN

Traffic on IA 3 will be maintained at all times via an off-site detour.
Refer to Sheet J.2 for detour route.

111_01

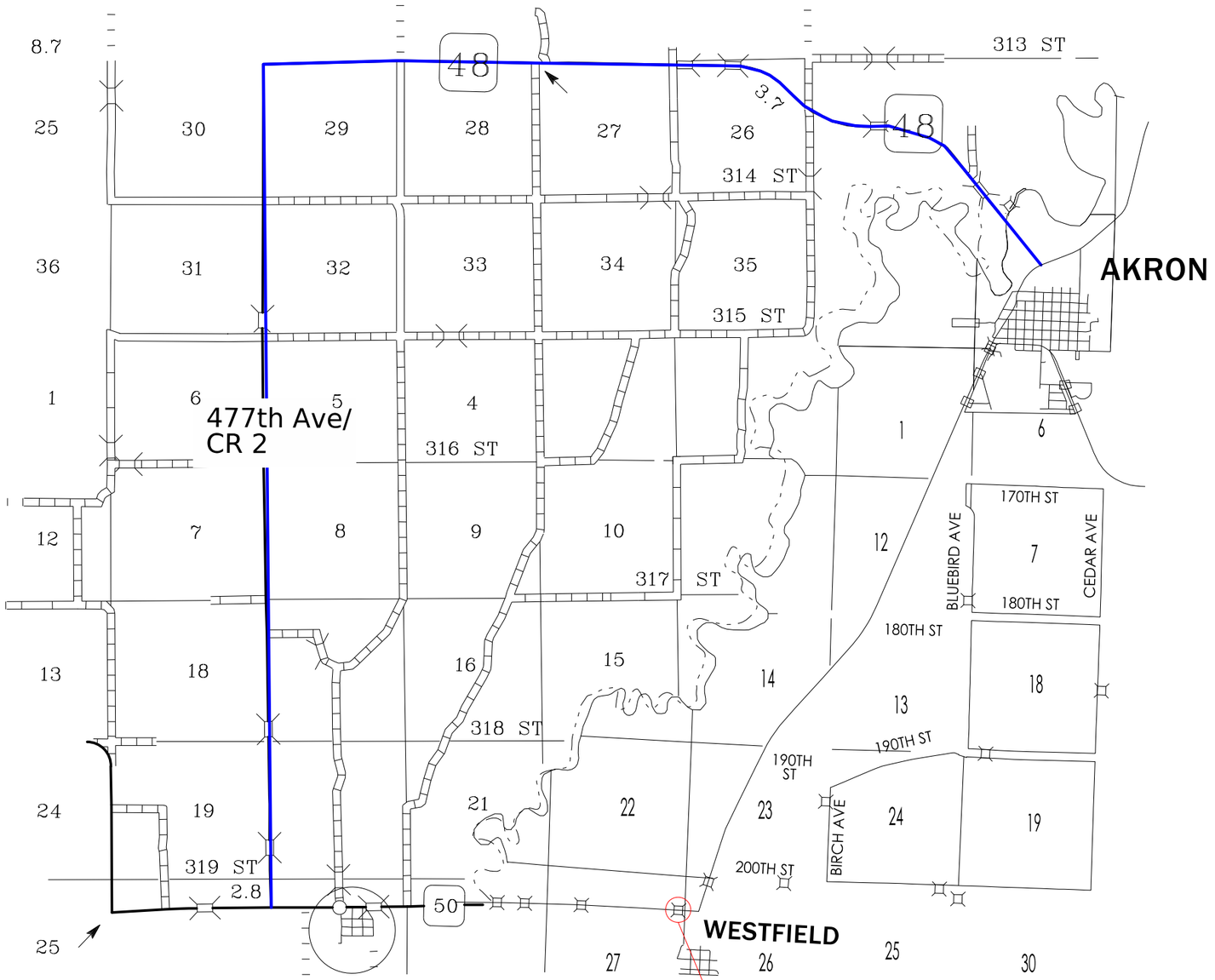
10/14/22

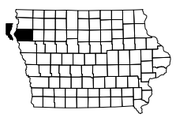
COORDINATED OPERATIONS

Other work in progress during the same period of time will include the construction of the projects listed. Coordinate operations with those of other contractors working within the same area.

Project	Type of Work
BRFN-003-1(116)--39-75	Bridge Replacement
BRF-003-1(121)--38-75	Bridge Replacement

Detour Route





Plymouth County, IA
Union County, SD

FILE NO. 98765	ENGLISH	DESIGN TEAM Miller/Krug	Plymouth COUNTY	PROJECT NUMBER BRF-003-14(123)--38-75	SHEET NUMBER J.3

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Control Point:

1. Bottom of Streambed Elev. = 1116.50±
2. Channel Low Beam Elev. = See Hydraulic Data
3. Operational Low Beam Elev. = See Hydraulic Data
4. P10L Piles, Type & Size T.B.D. (Typ.)

General Notes:

This design is for the replacement of the existing 150' x 30' Continuous Steel I-Beam Bridge, Plymouth County, Design 360, Maint. No. 7501.4SO03.

Construction and grading may require removal of remnants of the original 80' x 20' pony truss with wood abutments. Existing substructure was removed to 1' below finished grade.

The existing contours shown are from LIDAR. The alignment shown is based on the existing bridge plans (Design No. 360).

Plan Notes:

Top of bridge slab at ℄ roadway is 0.03' below the P.G.L. to account for deck cross slope and parabolic crown.

Class "E" revetment stone is embedded.

Design Notes:

TL-4 Single Slope Bridge Railing Proposed.

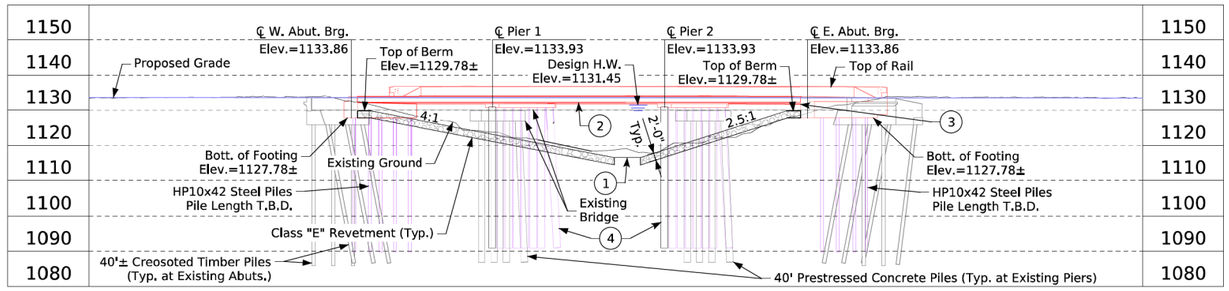
Pier Type - Pile Bent Pier with individually Encased Piles (P10L Standard). Assumed pier width = 24".

Abutment Type - Integral.

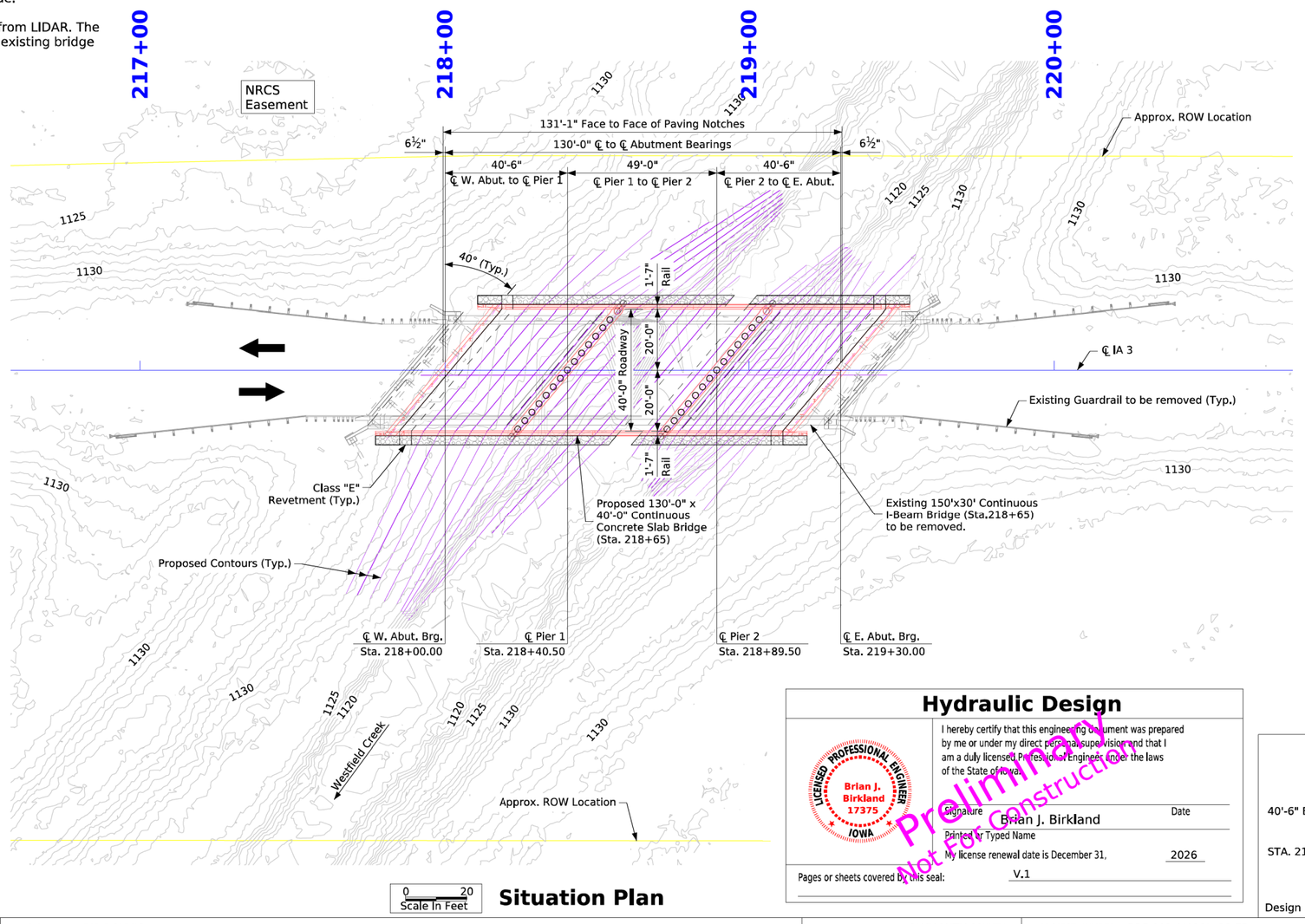
There is a potential for conflicts between the existing battered abutment timber piles and new H-piles at the proposed abutments. The proposed abutment piles have been laid out so that they miss existing timber piles.

The standard J40 (130' length bridge) span lengths were adjusted so the existing piers and proposed piers have no conflicts. Both end spans are 1' longer, which decreased the interior span by 2'. Non-standard design is required.

Proposed bridge length shorter than existing is feasible due to improved bank shaping and raised low chord elevation causing greater bridge open area. See Hydraulic Data, Hydraulic Report, and Bridge Concept Statement Analysis for additional comments and justification.



Longitudinal Section Along ℄ Bridge

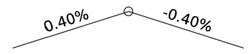


0 20 Scale In Feet

Situation Plan

Location

IA 3 over Westfield Creek
T-92N R-49W
Section 27
Westfield Township
Plymouth County
FHWA No. 39690 (Existing)
Bridge Maint. No. 7501.4SO03
Latitude 42.761658°
Longitude -96.606521°



VPI Sta. = 218+65.00 VC = 200'
VPI Elev. = 1134.17

Proposed Profile Grade ℄ IA 3

Hydraulic Data

RIDB: WESTFIELDC_PLYM_1.04
Drainage Area = 27.9 Sq. Mi.
Site Stream Slope (HGL) = 0.09% (4.8 ft./Mi.)

Discharges from USGS Regression Equations of the Scientific Investigations Report 2013-5086, Region 3

The upstream private levees breach at approximately a 10-yr event. Higher frequency flows drain to the Big Sioux River floodplain utilizing the (3) Big Sioux River bridges.

Operational Low Slab = 1131.69
Channel Low Slab = 1131.77
Avg. Low Water Stage = 1117.5
Existing Bridge Open Area = 613 sq ft
Proposed Bridge Open Area = 740 sq ft

Q_{10} (Design) = 4,450 cfs (~Max. Flow to Bridge)
(Downstream) Stage = 1131.45
Backwater = 0.34 ft.
Avg. Bridge Velocity = 6.1 fps
Operational Freeboard = 0.24 ft
Scour = TBD

N

Design Data Rural

2024 AADT	1,200 V.P.D.
TRUCKS	35 %

Hydraulic Design

LICENSED PROFESSIONAL ENGINEER Brian J. Birkland 17375 IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature Date

Brian J. Birkland

Printed or Typed Name

My license renewal date is December 31, 2026

Pages or sheets covered by this seal: V.1

Preliminary

Not for construction

Design For 40° Degree LA

130'-0" x 40'-0" Continuous Concrete Slab Bridge

40'-6" End Spans 49'-0" Interior Span

Situation Plan

STA. 218+65.00 (IA 3) Turn-in Date: January 2026

Plymouth County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. XXX Design Sheet No. 1 of 1 FHWA No. 39690

whks engineers + planners + land surveyors

FILE NO. XXXXX	ENGLISH	DESIGN TEAM BJB\RCM\JJO	PLYMOUTH COUNTY	PROJECT NUMBER BRF-003-1(123)--38-75	SHEET NUMBER V.1

4:11:32 PM 1/16/2026 CalvinMartin pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7500305025\Bridge\(123)_Bridge-Unspecified\SHT_75003123_WHKS_DSN#_39690_Z04

FILE NO. 98765	ENGLISH	DESIGN TEAM Miller/Krug	Plymouth COUNTY	PROJECT NUMBER BRF-003-14(123)--38-75	SHEET NUMBER A.15

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CROSS SECTION VIEW COLOR LEGEND

Design Color No.	Feature
Aggregate	
(64)	Choke Stone
(42)	Engineering Fabric
(8)	Flooded Backfill
(92)	Macadam Stone
(20)	Modified
(12)	Plowing Shaping
(14)	Porous Backfill
(8)	Revetment Class A
(6)	Revetment Class B
(62)	Revetment Class C
(188)	Revetment Class D
(28)	Revetment Class E
(12)	Shoulder Special Backfill
(12)	Special Backfill
(20)	Subbase
(20)	Subbase Lower
(20)	Subbase Upper
(118)	Subgrade Treatment
Asphalt	
(207)	HMA Base Course
(207)	HMA Interim Course
(207)	HMA Surface Course
Bridge	
(0)	Bridge
Concrete	
(0)	Barrier Concrete
(0)	Barrier Concrete Footing
(0)	Curb Gutter
(48)	Flowable Mortar
(0)	Median Concrete
(0)	PCC Pavement
(0)	Sidewalk
Existing	
(0)	Existing Pavement
Shoulder	
(209)	Shoulder HMA
(0)	Shoulder PCC
(6)	Shoulder Granular
Structural	
(112)	Noise Wall
(112)	Noise Wall Footing
(112)	Retaining Wall Back
(112)	Retaining Wall Back Excavate
(112)	Retaining Wall Face
(112)	Retaining Wall Front Excavate
(112)	Retaining Wall Front Footing
(112)	Retaining Wall MSE Gutter
(112)	Retaining Wall Reinforced Earth

Design Color No.	Feature
Grading	
(8)	Behind Curb Cut
(6)	Granular
(13)	Granular Back Fill
(48)	Rock Undercut
(8)	Shoulder Earth Fill
(2)	Side Slopes
(226)	Side Slopes Dressing
Substrata	
(128)	Boulder
(209)	Boulder Removed
(48)	Broken Weathered
(210)	Broken Weathered Removed
(3)	Core Out
(115)	Core Out Remove Only
(195)	Core Out Remove and Replace
(203)	Existing Pavement
(184)	Existing Pavement Remove Only
(200)	Existing Pavement Remove and Replace
(6)	Loam
(211)	Loam Removed
(80)	Rock
(212)	Rock Removed
(4)	Select Sand
(214)	Select Sand Removed
(3)	Shale
(215)	Shale Removed
(10)	Topsoil
(2)	Topsoil Remove Only
(4)	Topsoil Remove and Replace
Unsuitable / Waste	
(3)	Unsuitable Type A
(216)	Unsuitable Type A Removed
(13)	Unsuitable Type B
(217)	Unsuitable Type B Removed
(11)	Unsuitable Type C
(218)	Unsuitable Type C Removed
(3)	Waste
(219)	Waste Removed

NOTES:

Text

NOTES:

Text

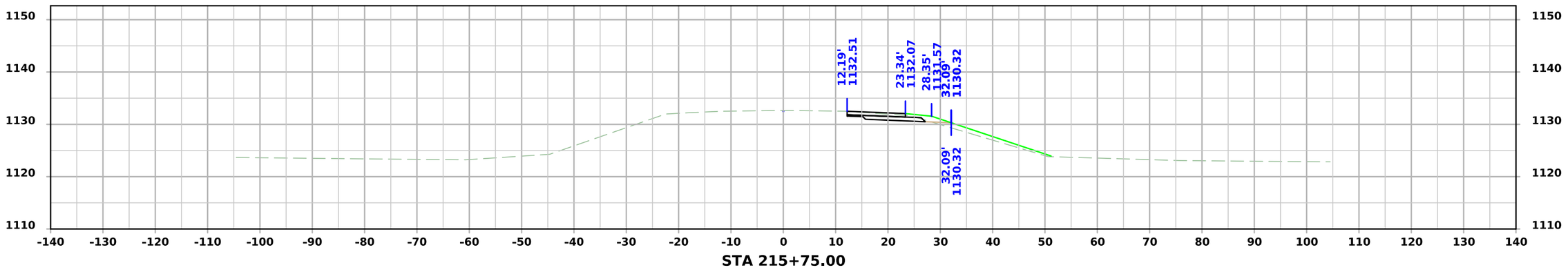
CROSS SECTIONS
LEGEND AND INFORMATION SHEET

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

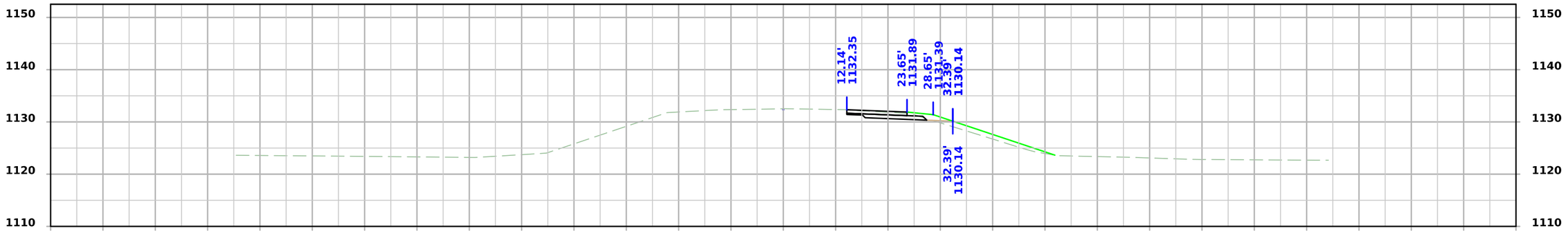
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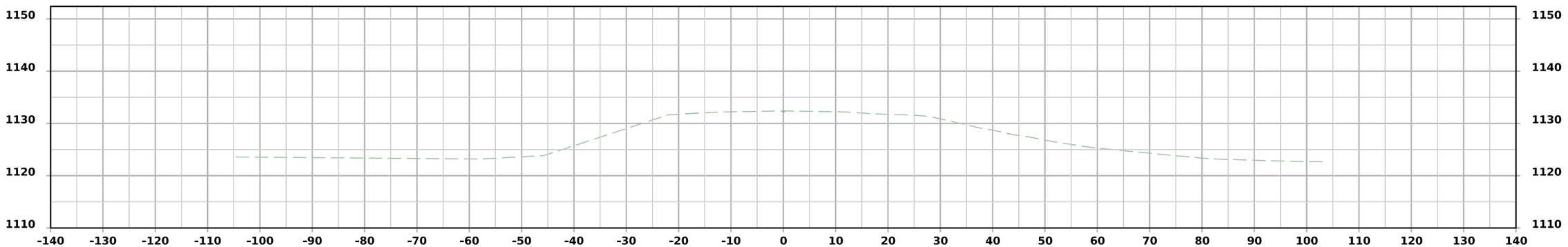
ML - IA 3



STA 215+75.00



STA 215+50.00

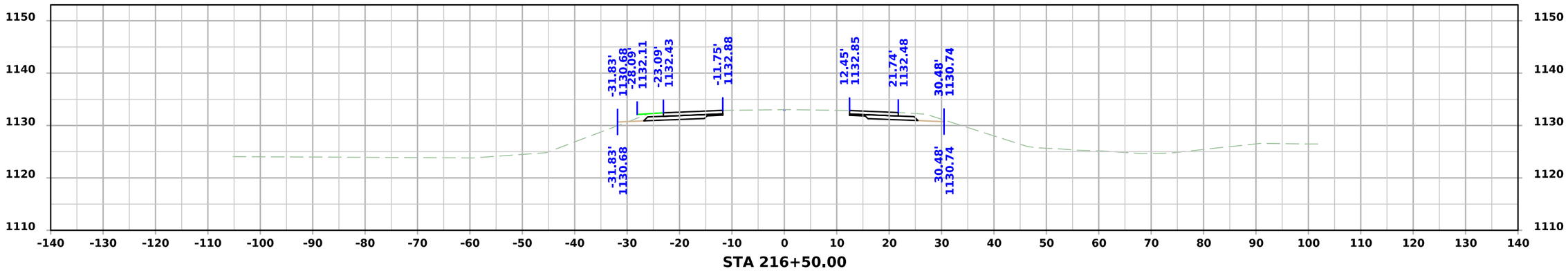


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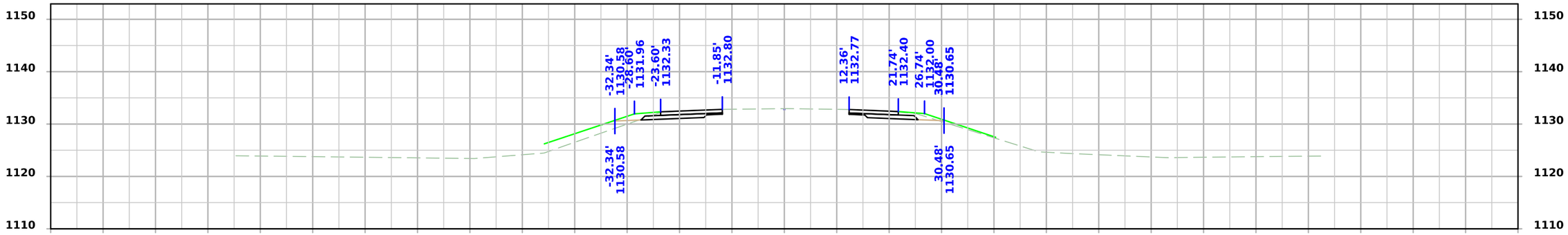
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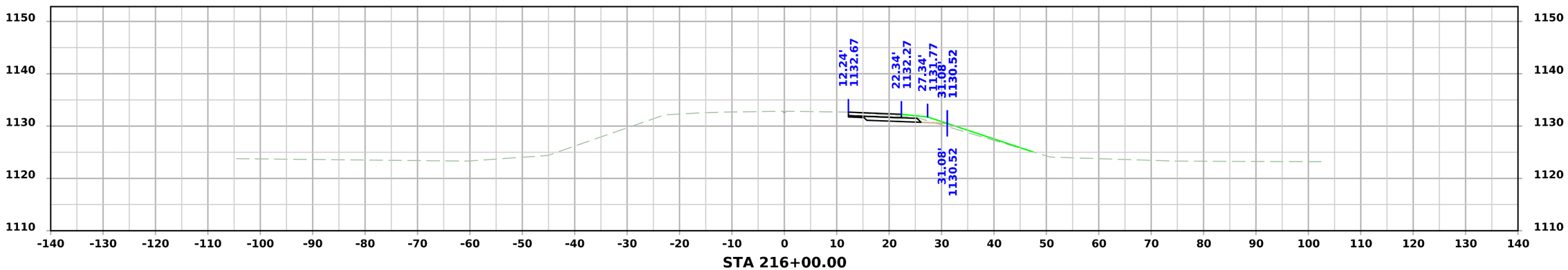
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STA 216+50.00



STA 216+25.00

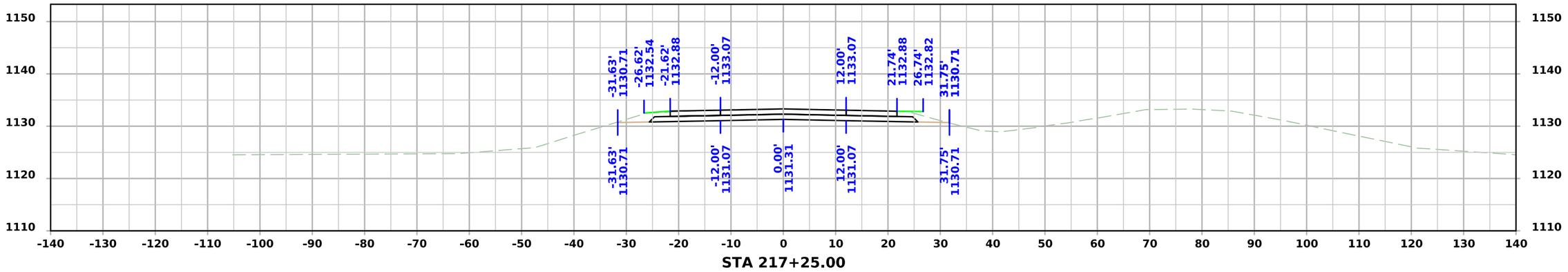


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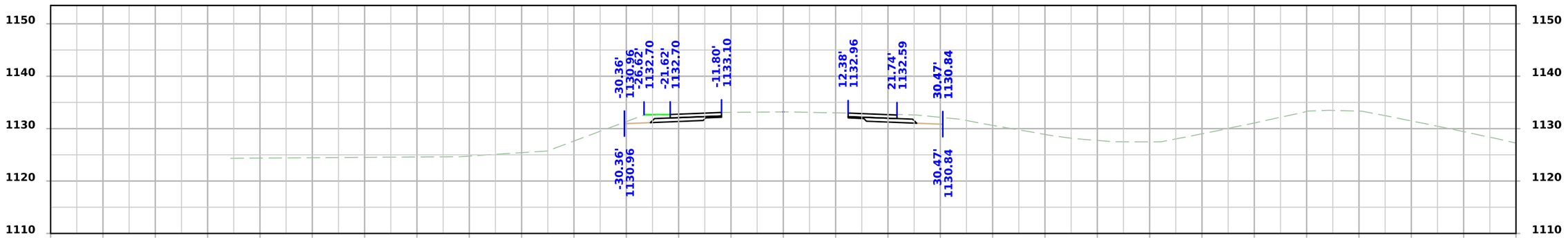
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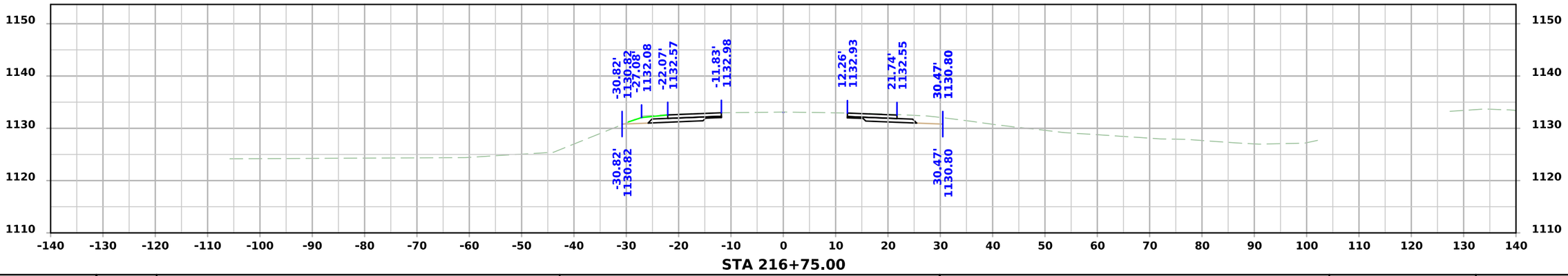
ML - IA 3



STA 217+25.00



STA 217+00.00

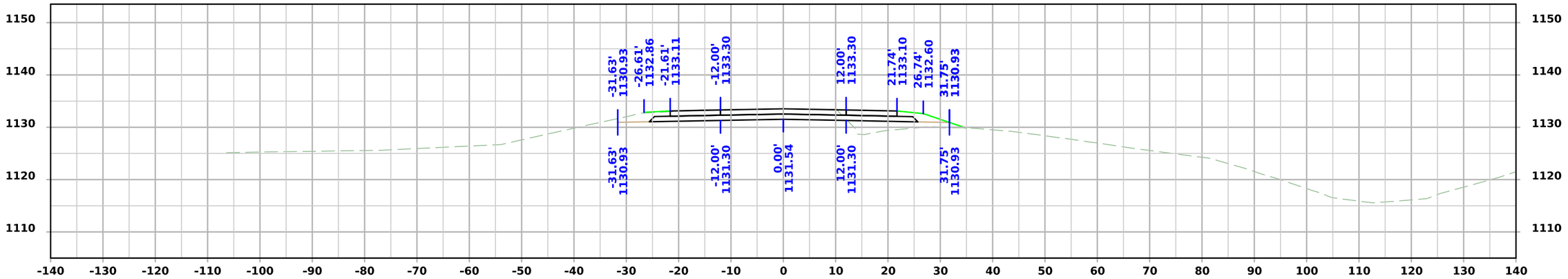


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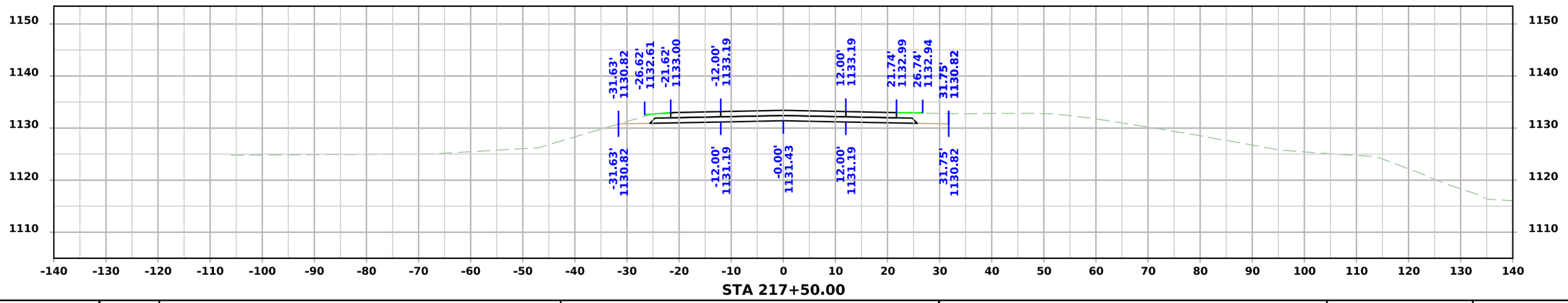
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ML - IA 3



STA 217+75.00

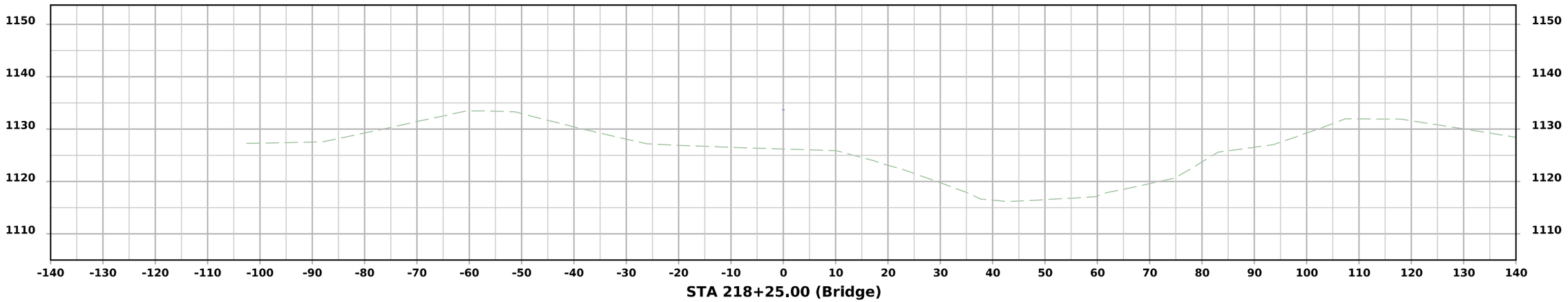


STA 217+50.00

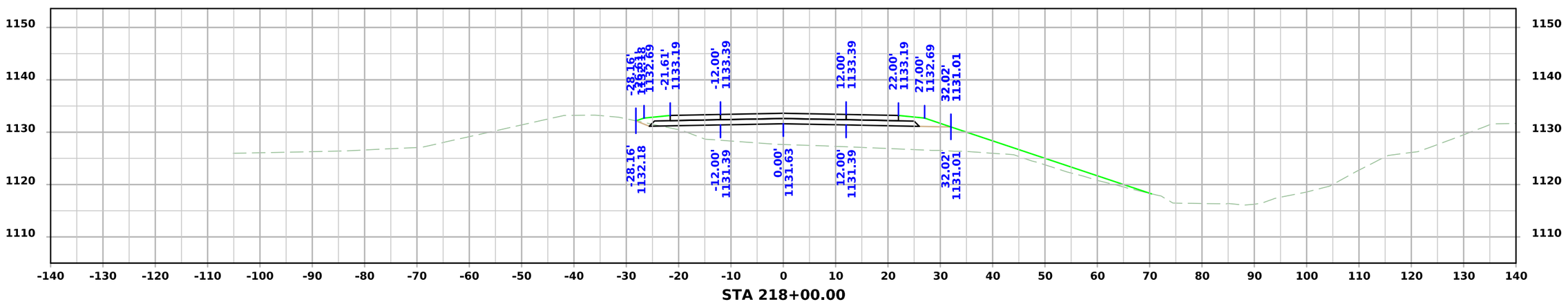
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ML - IA 3



STA 218+25.00 (Bridge)

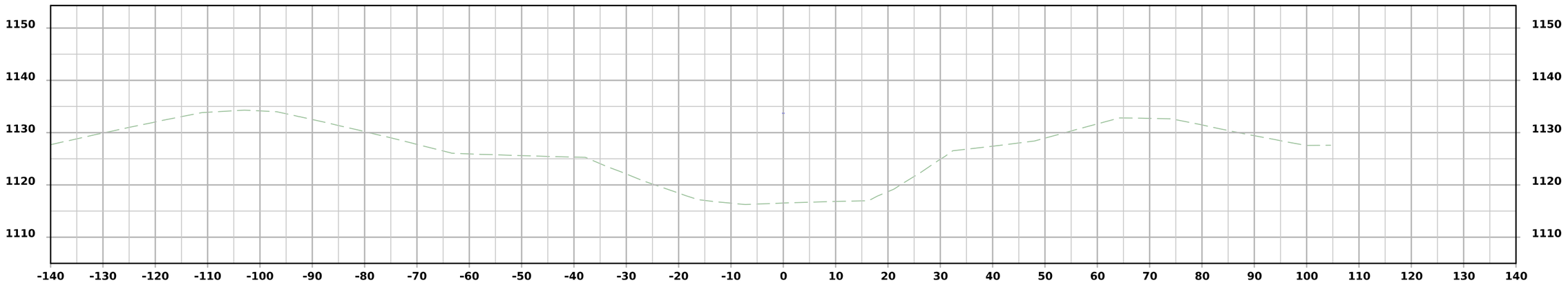


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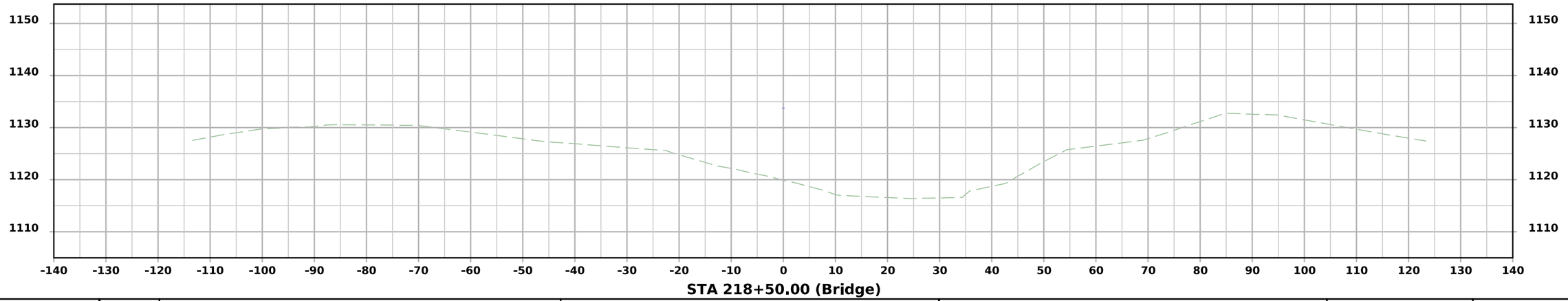
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ML - IA 3



STA 218+75.00 (Bridge)

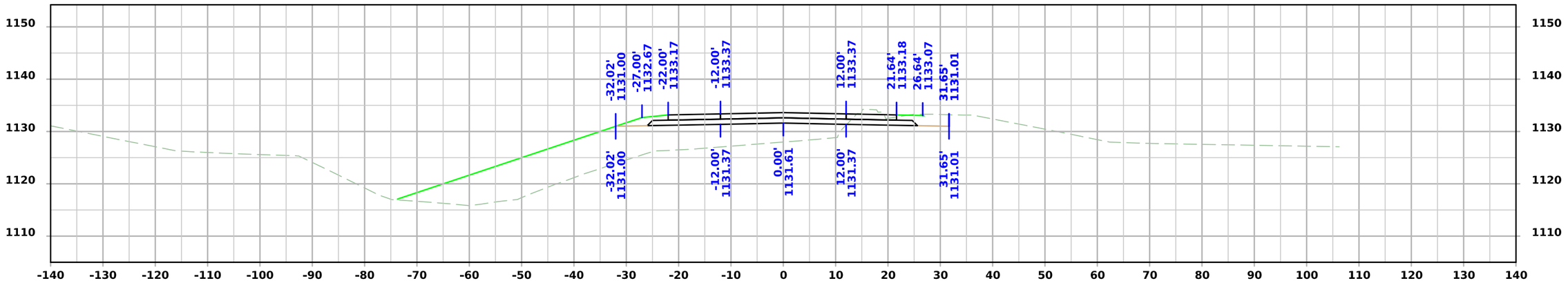


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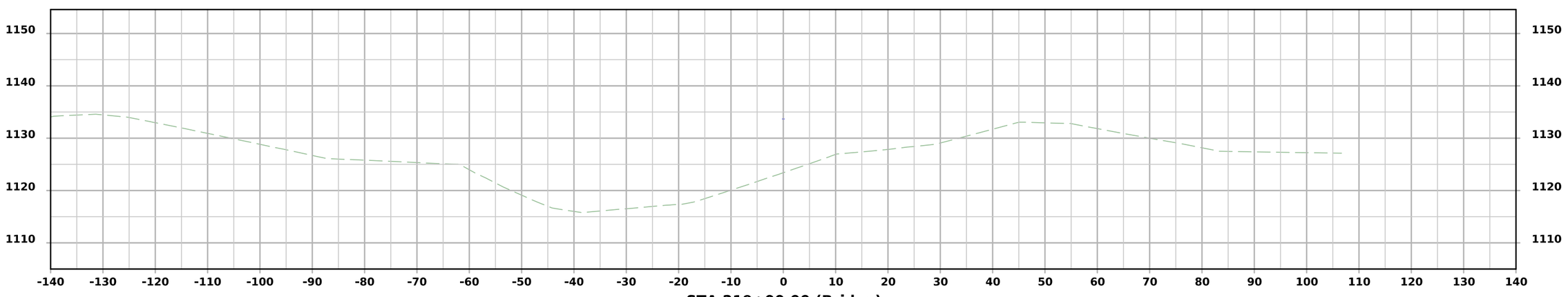
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ML - IA 3



STA 219+25.00

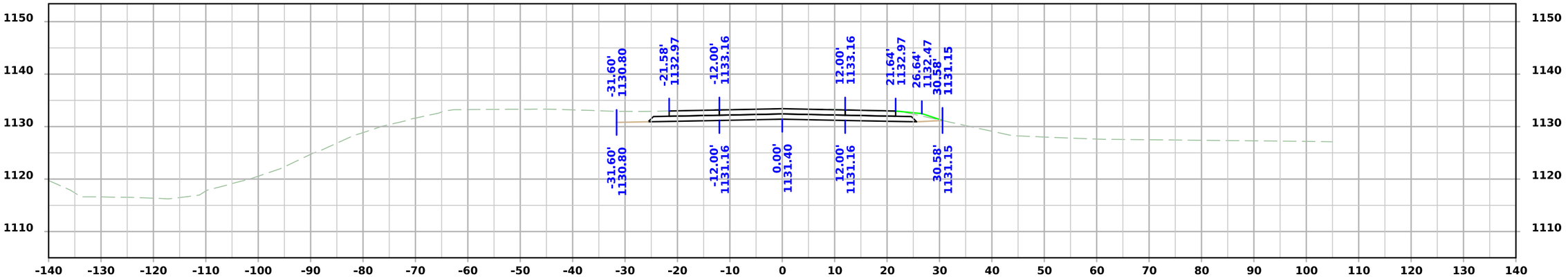


STA 219+00.00 (Bridge)

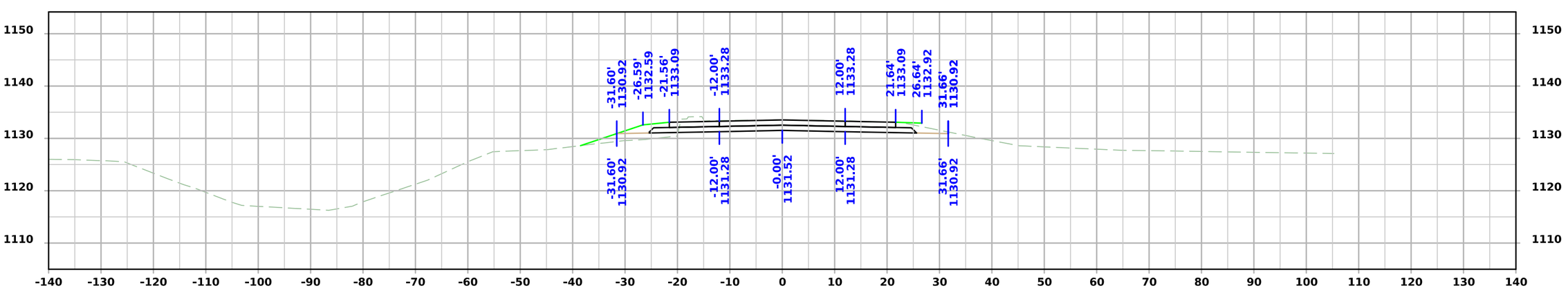
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ML - IA 3



STA 219+75.00

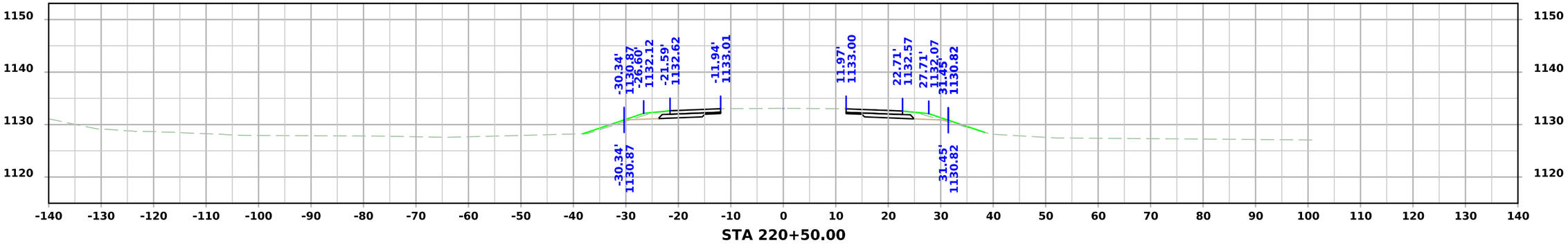


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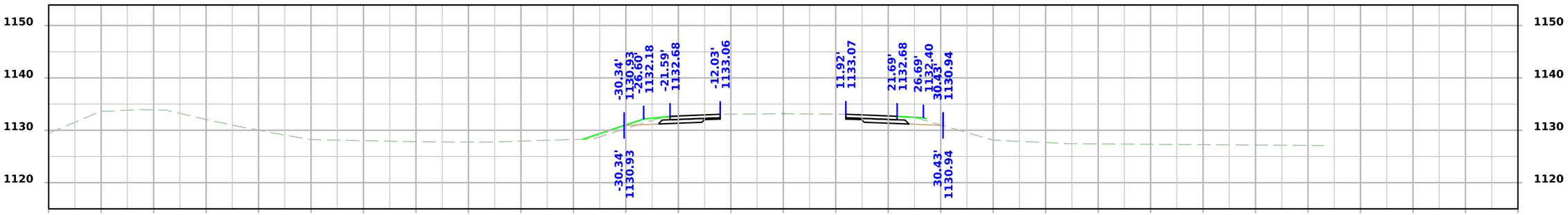
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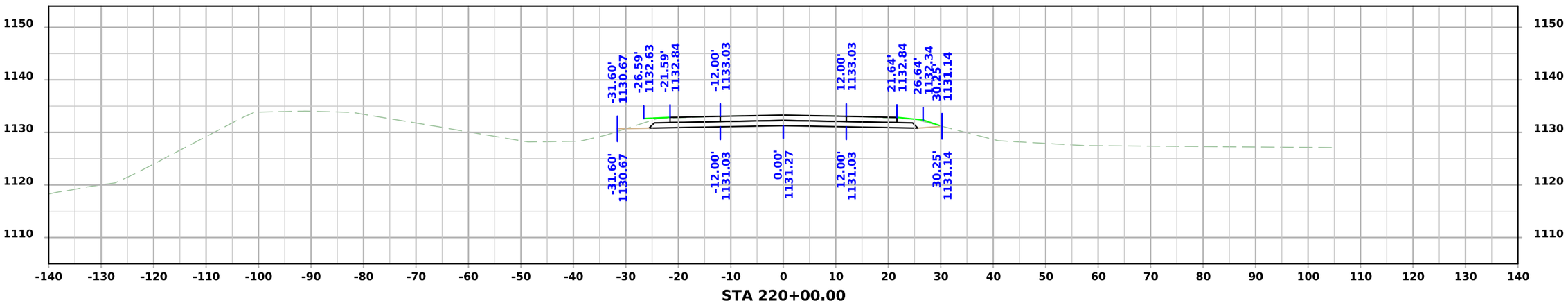
ML - IA 3



STA 220+50.00



STA 220+25.00

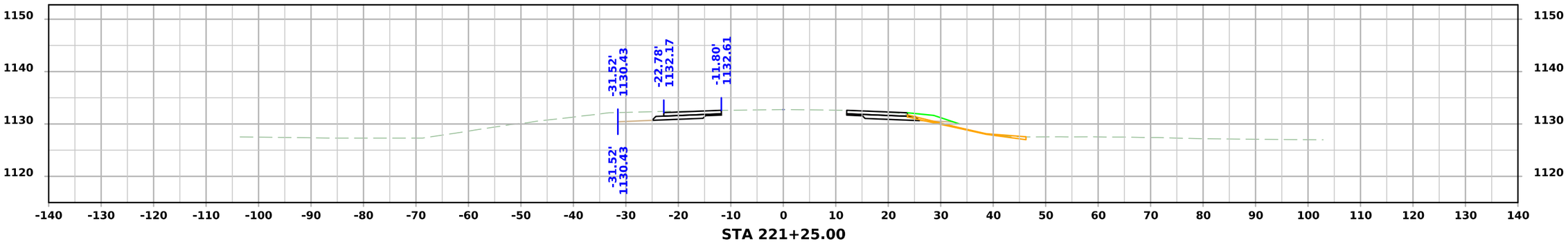


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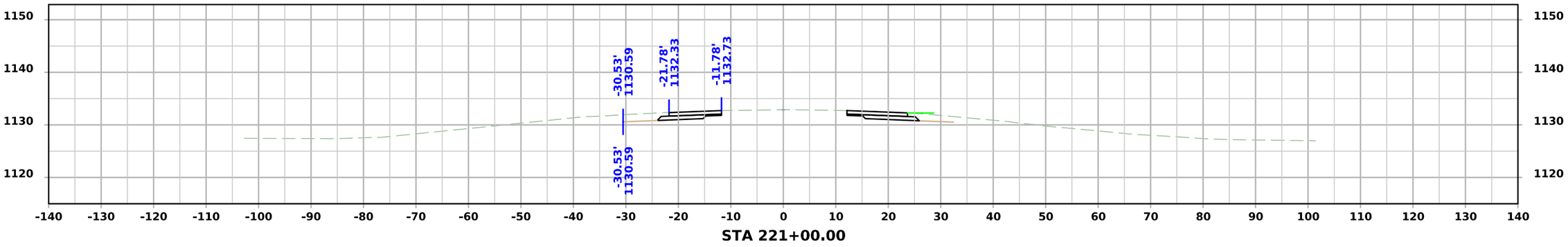
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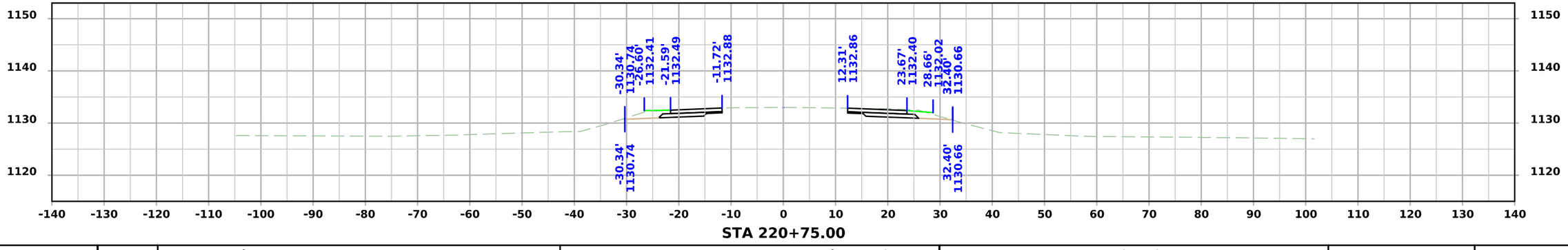
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STA 221+00.00

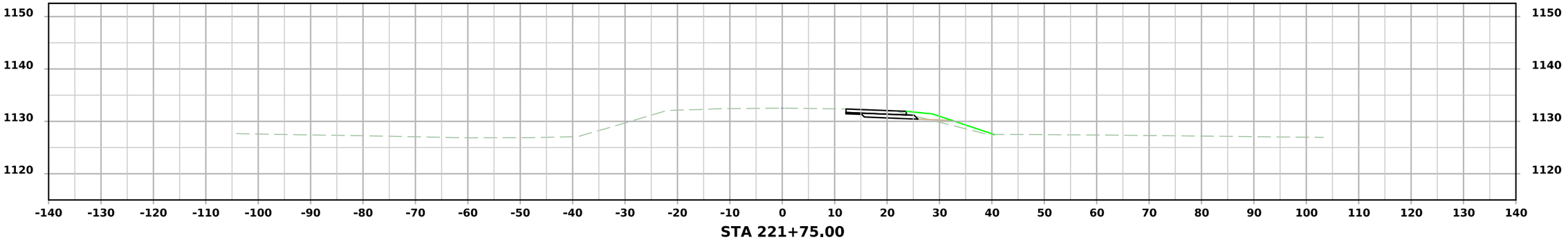


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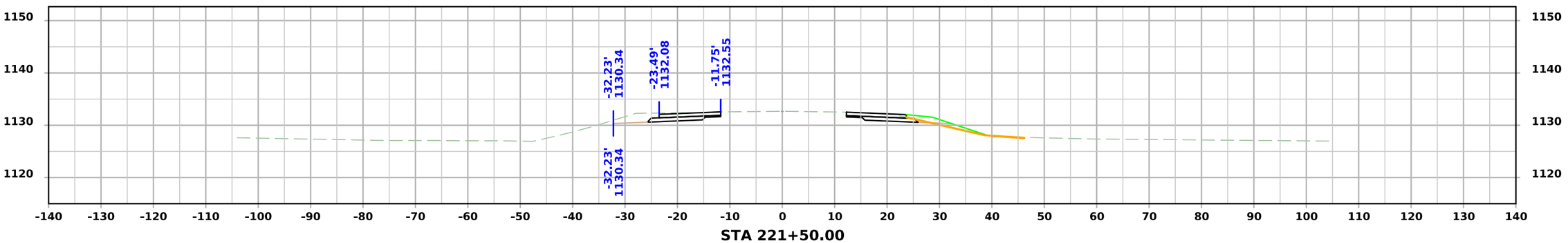
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ML - IA 3



STA 221+75.00

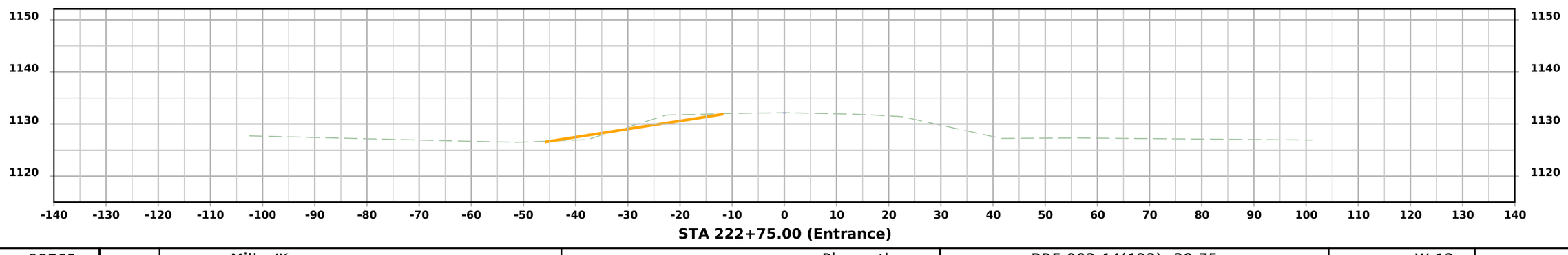


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ML - IA 3



FILE NO. 98765	ENGLISH	DESIGN TEAM Miller/Krug	Plymouth COUNTY	PROJECT NUMBER BRF-003-14(123)--38-75	SHEET NUMBER W.13

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