Bridge Replacement
BRF-037-1(056)--38-67
LETTING DATE 11-21-2028

Monona COUNTY

IOWA DOT

REVISIONS

TOTAL
30
PROJECT IDENTIFICATION NUMBER
24-67-037-010
PROJECT NUMBER
BRF-037-1(056)--38-67
R.O.W. PROJECT NUMBER
STPN-037-1(057)--2J-67

INDEX OF SHEETS

Add U sheet for Guardrail layout.
Show CL offsets at keypoints.

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

Monona COUNTY

Bridge Replacement

IA 37 over Beaver Creek, 4.4 miles east of IA 175

SCALES: As Noted

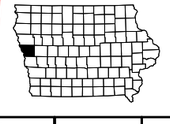
Refer to the Proposal Form for list of applicable specifications.

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

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

TBD

DOT will request and provide
Design #, File #, and new FHWA #.



DESIGN DATA RURAL			
2024	AADT	710	V.P.D.
2049	AADT	900	V.P.D.
2049	DHV	90	V.P.H.
TRUCKS		17	%
Total Design ESALs		–	

INDEX OF SEALS

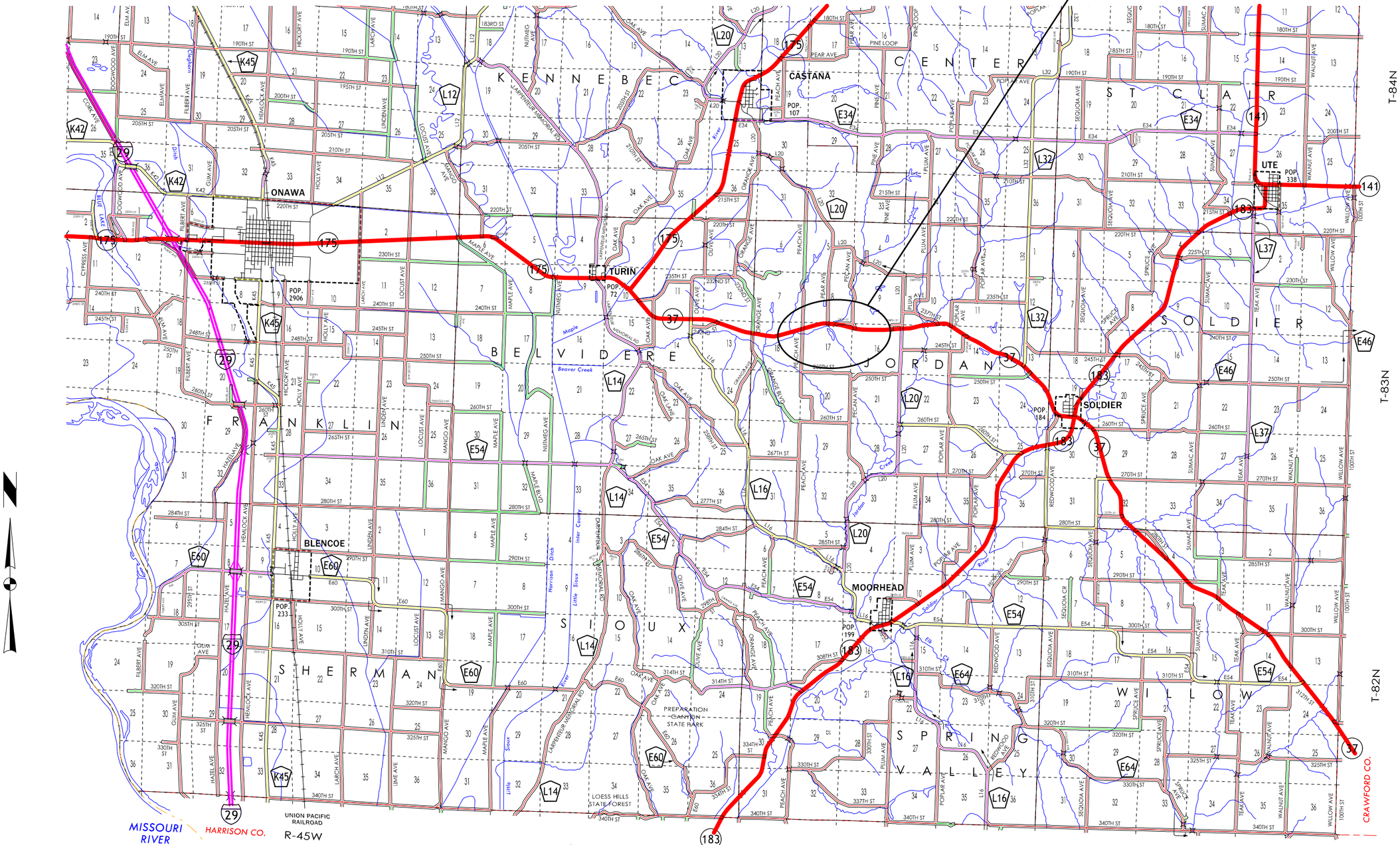
SHEET NO.	NAME	TYPE	BID QUANTITY SHEETS
A.1	X	Primary Signature Block	X
X	X	X	X

PRELIMINARY PLANS

Subject to change by final design.

D2 PLAN - Date: 8/12/2025

IA 37 BRIDGE REPLACEMENT
FHWA NO. 036660



FILE NO. 98765	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	Monona COUNTY	PROJECT NUMBER BRF-037-1(056)--38-67	SHEET NUMBER A.2

10:29:44 AM 8/5/2025 9474 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\6703701024\Design\CADD_Files\Sheet_Files\SHT_67037056_A01.dgn

Roadway	IA 37			
PIN Number	24-67-037-010		**Submittal Date**	06/25/25
Project Number	BRF-037-1(056)--38-67			**Approval Date**
District	District 3	**Assistant District Engineer**	Shane Tymkowicz	
County	MONONA		**or**	
Route	IA 37	**Office Director**		
Location	on IA 37 over Beaver Creek, 4.4 miles east of IA 175			
Work Type	Bridge Replacement			
Segment Manager				
Designer	Stanley Consultants			

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	60
Maximum superelevation rate (Refer to Section 2A-2)		6%	8%	NA
Design lane width (ft)		12	12	12
Full depth paved width (ft)		12	12	12
Right turn lane (ft)		12	10	NA
Climbing Lane (ft)		12	12	NA
Left turn lane (ft)		12	10	NA
Pavement cross-slope (on tangent sections)	Through lanes	2%	1.5% minimum, 2% maximum	2%
	Auxiliary and turn lanes	3%	3% maximum	NA
	Crown break at centerline	4%	4% maximum	4%
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	NA
	Design speed ≥ 60 mph	4-inch sloped	6-inch sloped	NA
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	10:1 for 4' then 6:1
	Beyond standard ditch depth and design clear zone	3.5:1	3:1	3.5:1
	Curbed roadways	2%	not steeper than 3:1	NA
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	8:1
	w/o drainage structures	10:1	6:1	10:1
Ditches (Refer to Section 3G-1)	Outside ditch (depth x width) (ft)	5 x 10	–	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	40
Bridge width—existing*		design lane widths + no less than 2 ft left and right	design lane widths + 2 ft. offset left and right	26
Vertical clearance (ft) (above lanes, shoulders and 25 feet left and right of the center of railroad tracks)	Over primary	16.5	16	NA
	Over non-primary	16.5 at interchange locations, 15 at all other locations	14	NA
	Over railroad	23.3	23.3	NA
	Sign trusses and pedestrian bridges	17.5	17	NA
Structural Capacity		Contact Office of Bridges and Structures	Contact Office of Bridges and Structures	HL-93
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)

Corridor Model currently at 3:1. Need DIS-T01 dgn to confirm ROW impacts.

Using acceptable criteria is okay

Design year ADT =	900 (year-2049)	

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	NA
Turn lanes with curbs	6	See Section 3C-2	Turn lanes with curbs	6	0	NA
	Effective Shoulder Width	Paved Width		Effective Shoulder Width	Paved Width	
Climbing Lanes	6	4	Climbing Lanes	4	0	NA
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' Paved
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) =	60

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	570
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	1330
		e_{max} = 8%	--	--	--	--	--	--	758	960	1200	1480	1810	2210	NA
Minimum vertical curve length (ft) (Refer to Section 2B-1)			150	165	180	195	210	225	150	165	180	195	210	225	180
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	151
	sag vertical curves	roadways without fixed-source lighting	96	115	136	157	181	206	96	115	136	157	181	206	136
		roadways with fixed-source lighting	96	115	136	157	181	206	54	66	78	91	106	121	136
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	--	--	--	
		Rural roadways							5	5	4	4	4	4	3
		Interstates							5	5	4	4	4	4	
Clear zone			See "Preferred Clear Zone" table in Section 8A-2						See "Acceptable Clear Zone" table in Section 8A-2						24'-32'

Match Existing = 100

Matching existing is okay

Existing = 4.9%

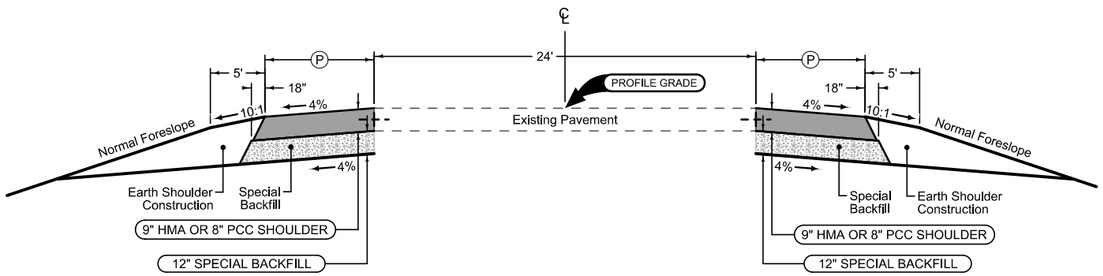
Discuss vs. 3:1 Foreslopes

3:1 FS are acceptable

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		(P) Feet
620+20.07	622+22.94	8
622+22.94	622+42.94	11.3
622+42.94	622+65.85	11.3-10.5
626+43.19	626+89.01	9.8-11.9
626+89.01	627+09.01	11.9
627+09.01	628+65.73	8

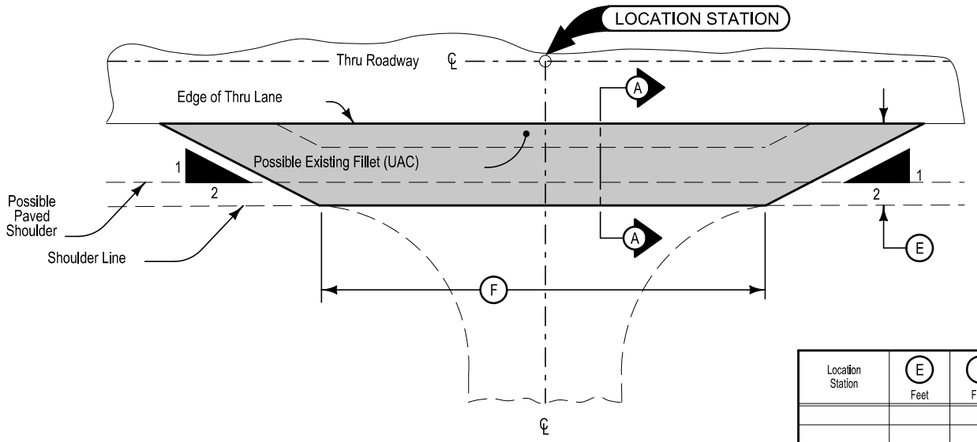


Paved Shoulder at Guardrail

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

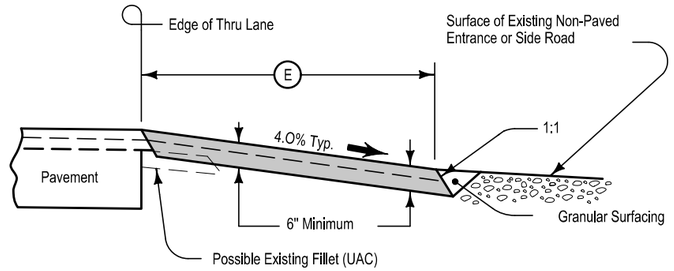
2_P_Guard_ 04-21-20		
STATION TO STATION		(P) Feet
620+20.07	622+00.00	8
622+00.00	622+20.00	11.6
622+20.00	622+65.81	11.6-9.7
626+43.16	626+65.97	10.8-11.9
626+65.97	626+85.97	11.9
626+85.97	628+65.73	8

IA 37



PLAN

Location Station	E Feet	F Feet

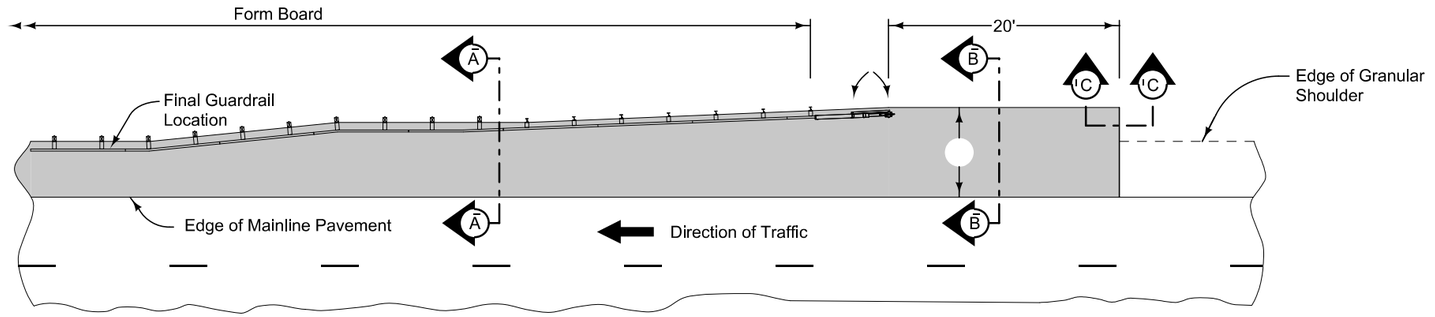


SECTION A-A

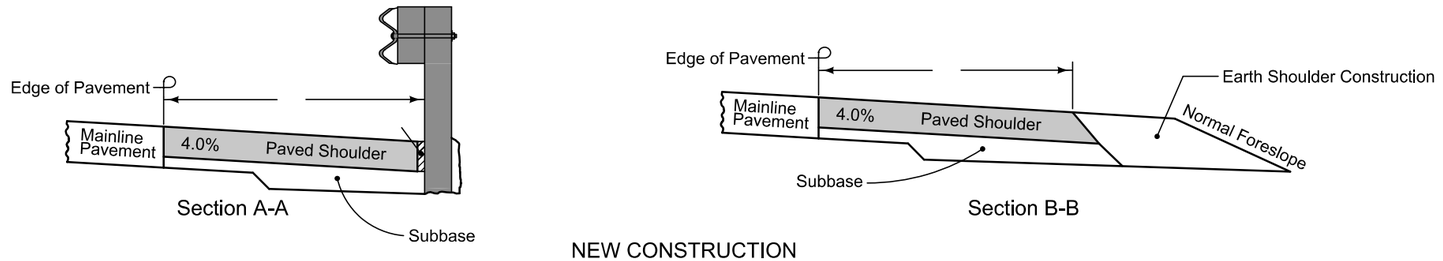
Special shaping of existing surface prior to placement of fillet may be required by the Engineer and is incidental to other work on the project.

Quantites included with mainline quantities.

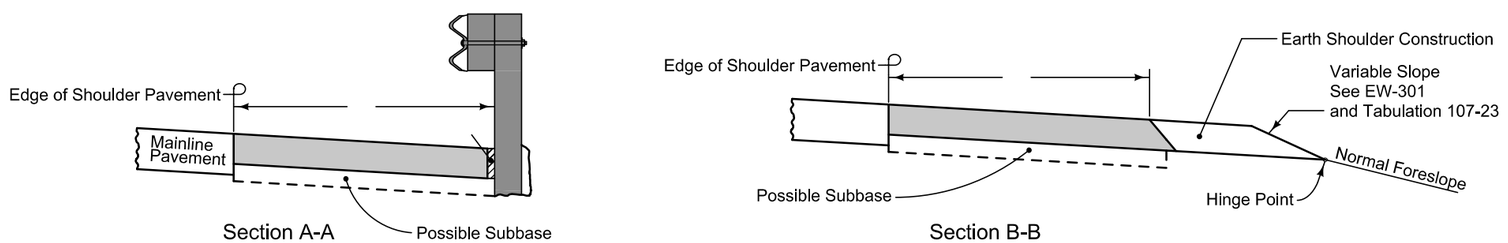
FILLET FOR NON-PAVED ENTRANCES OR SIDE ROADS



PLAN VIEW



NEW CONSTRUCTION



EXISTING SHOULDER

7156
10-21-25

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.

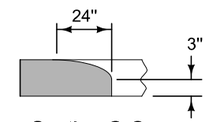
PCC option only: When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown.

Continue paved shoulder 20 feet beyond the center of the first post.

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

'BT' joint (per PV-101) for PCC shoulder.
'B' joint (per PV-101) for HMA shoulder.

Refer to other details in the plan.



Section C-C
Roll down at granular shoulder or earth.

PAVED SHOULDER AT GUARDRAIL
(GRANULAR SHOULDER ADJACENT TO MAINLINE)

100_01A
3/24/25

ESTIMATED PROJECT QUANTITIES

Line No.	Item No.	Item Code	Item	Unit	Total	As Built Qty.

100_01D
8/15/22

PROJECT DESCRIPTION

This project involves the replacement of the IA 37 bridge over Beaver Creek, 4.4 miles east of IA 175.

STANDARDS

The following Standards apply to construction work on this project.

Number	Date	Title
BA-200	4/15/2025	Steel Beam Guardrail Components
BA-202	4/15/2025	Steel Beam Guardrail Bolted End Anchor
BA-205	10/17/2023	Steel Beam Guardrail Tangent End Terminal (MASH TL-3)
BA-209	10/18/2022	Steel Beam Guardrail Barrier Transition Section (Mash Tl-3, 34in Mounting Height)
BA-221	10/18/2022	Steel Beam Guardrail Barrier Transition Section (MASH TL-2)
BA-225	10/17/2023	Steel Beam Guardrail Tangent End Terminal (MASH TL-2)
BA-250	10/21/2025	Steel Beam Guardrail Installation at Concrete Barrier or Bridge End Post (MASH TL-3)
BA-260	10/21/2025	Steel Beam Guardrail Installation at Concrete Barrier or Bridge End Post (MASH TL-2)
BR-203	10/21/2025	Double Reinforced 12in Approach
BR-211	10/21/2025	Bridge Approach (Abutting PCC or Composite Pavement)
DR-303	10/17/2017	Subdrains (Longitudinal)
DR-306	10/17/2023	Precast Concrete Headwall for Subdrain Outlets
DR-402	4/16/2024	Rock Flume for Bridge End Drain
EC-101	4/19/2016	Wood Excelsior Mat for Ditch Protection
EC-103	4/21/2015	Wood Excelsior Mat for Slope Protection
EC-201	4/20/2021	Silt Fence
EC-202	10/21/2014	Floating Silt Curtain
EC-204	10/19/2021	Perimeter, Slope and Ditch Check Sediment Control Devices
EC-303	10/19/2021	Stabilized Construction Entrance
EC-502	4/21/2015	Seeding in Rural Areas
EW-202	4/19/2016	Bridge Berm Grading without Recoverable Slope (Non-Barnroof Section)
EW-301	4/16/2024	Guardrail Grading
EW-401	10/20/2015	Temporary Stream Crossing, Causeway, or Equipment Pad
EW-402	4/18/2017	Temporary Stream Diversion
PM-110	10/15/2024	Line Types
PV-101	10/21/2025	Joints
PV-102	10/21/2025	PCC Curb Details
SI-172	4/19/2016	Delineators
SI-173	4/19/2016	Object Markers
SI-881	4/16/2019	Special Signs for Workzones
TC-1	10/15/2019	Work Not Affecting Traffic (Two-Lane or Multi-Lane)
TC-202	4/18/2023	Work Within 15 ft of Traveled Way
TC-252	10/21/2025	Routes Closed to Traffic

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

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

- FO — ***FO1D, Long Lines Broadband - Quality D***
- E1 — ***EL1D, Unknown Overhead - 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.**		**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 Stanley Consultants Inc.	Monona COUNTY	PROJECT NUMBER BRF-037-1(056)--38-67	SHEET NUMBER D.1

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JORDAN TWP.
T-83N R-43W
SEC. 8

APPROX. SEC. LINE

E1

619+00

620+00

621+00

622+00

623+00

624+00

SIGN

Pear Ave

FO

IA 037
(ML037)

Sta. 620+20.07
Begin Shoulder
Construction

Sta. 622+65.83
Begin Bridge Approach

WET

+73 Prop.
Type "C" Ent.

Sta. 623+43.27
End Bridge Approach
Begin Bridge Construction

Beaver Creek

Sta. 624+54.92
Proposed 213'-10" x 40'
PPCB Bridge

T01 is complete and
ROW line referenced

Waiting on DIS T01
for Existing ROW

Should existing steel beam
guardrail be salvaged?

No

JORDAN TWP.
T-83N R-43W
SEC. 17

0 20
FEET

Prop.
Type. "C" Ent.

Prop.
Pear Ave

-4%

-17.5%

-4%

-1.8%

620+86

Pear Ave

-0.59%

Sta. 622+65.83
Begin Bridge Approach
Elev. 1159.47

1160

1150

1140

1130

(U.A.C.)

(U.A.C.)

1160.99 1160.94 1160.75 1160.58 1160.39 1160.15 1159.99 1159.90 1159.84 1159.73 1159.58 1159.41 1159.26 1159.11 1158.96 1158.81 1158.66 1158.51

620+00

FILE NO. 98765	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	Monona COUNTY	PROJECT NUMBER BRF-037-1(056)--38-67	SHEET NUMBER D.2

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JORDAN TWP.
T-83N R-43W
SEC. 8

JORDAN TWP.
T-83N R-43W
SEC. 17

625+00
626+00
627+00
628+00
629+00
630+00

240th St (U.A.C)

Beaver Creek

Discuss Pavment Replacement Limits During Field Exam

Yes - Extend paving beyond joint

Sta. 626+43.17
End Bridge Approach

IA 037
(ML037)

Switch from dual entrance/drive to single.
Split 2nd drive off further to the south.

Sta. 625+65.73
End Bridge Construction
Begin Bridge Approach

+67 Prop. Type "C" Ent.

+90 Prop. Type "C" Ent.

(U.A.C.)
18"x37'
CMP

Discuss Entrances per Design Manual 3K-2. Update Widths vs. Match Existing

Sta. 628+65.85
End Shoudler
Construction

(U.A.C.)
30"x52'
C.M.P.

Sta. 624+54.92
Proposed 213'-10" x 40'
PPCB Bridge

Discuss Guardrail Options During Field Exam

0 FEET 20

Use TL-3 connection to end post and TL-2 for end treatment

Prop. Type. "C" Ent.

Prop. Type. "C" Ent.

1.7% 4%

4.6% 4%

626+67

626+91

Low point okay. Try to keep off the bridge. Deck drains will be located near end of bridge with rock flumes at end of full width approach pavement.

+4.29% RT Ditch Grade

+7.33% RT Ditch Grade

+4.14% RT Ditch Grade

+7.00% RT Ditch Grade

RT +65
1152.80

RT +80
1153.90

RT +15
1155.35

RT +30
1156.40

RT +44
1157.00

Discuss Vertical Curve Sag Point

Sta. 626+43.17
End Bridge Approach
Elev. 1158.11

-0.60%

+4.89%

VPI = +82.99
EL = 1156.36
L = 550.00'
K = 100

(U.A.C.)

(U.A.C.)

Ditch Grade

1170
1160
1150
1140

1158.36 1158.21 1158.06 1157.93 1157.85 1157.84 1157.88 1157.99 1158.17 1158.40 1158.70 1159.06 1159.49 1159.97 1160.52 1161.13 1161.80 1162.54 1163.33 1164.19 1165.12 1166.10 1167.15 1168.26

625+00

630+00

FILE NO. 98765	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	Monona COUNTY	PROJECT NUMBER BRF-037-1(056)--38-67	SHEET NUMBER D.3

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SURVEY INDEX

County: Monona
PIN: 24-67-037-010
Project Number: BRF-037-1(056)--38-67, STPN-037-1(057)--2J-67
Location: Beaver Creek 4.4 mi E of IA 175
Type of Work: Bridge-Unspecified
Project Directory: 6703701024

Survey Personnel

Dave Overman – Survey Party Chief
Lee Budde – Survey Party Chief
Eric Green - Survey Party Chief
Jimmy Michael - Survey Party Chief
Jason Flaherty - Survey Party Chief
Ronaldo Polanco - Survey Party Chief
Matthew Schnieder – Assistant Survey Tech

Date(s) of Survey

Begin Date	12/12/2024
End Date	06/30/2025

General Information

This survey is for Beaver Creek 4.4 miles east of IA 175. This survey request was for approximately 0.2 miles of Highway 37 (Pear Ave to 240th St), over Beaver Creek. This project is a Full Field DTM survey.

Utility Information

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

Project Control

Nearby Iowa Real Time Network reference stations were utilized to obtain horizontal and vertical control on 3 new primary project control points. Three five-minute observations were taken with a minimum two-hour time span between and used in a weighted average to obtain final coordinate values. 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 6 (U.S. SURVEY FOOT)
VERTICAL DATUM: NAVD88
GEOID MODEL: 2018u3

Alignment Information

The horizontal alignment for Highway 37 this survey is a retrace of State of Iowa State Highway Commission Federal Aid Project No.861. Total Distance inconsistency is 1.19 feet.

Survey stationing relates to as built plan stationing as follows:

POT Sta. 610+20.2 Federal Aid Project No. 861
Survey POT Sta. 610+20.2

PI Sta. 615+56.0 Federal Aid Project No. 861
Survey PI Sta. 615+56.0

POT Sta. 620+79.4 Federal Aid Project No. 861
Survey POT Sta. 620+79.57

POT Sta. 631+17.7 Federal Aid Project No. 861
Survey POT Sta. 631+17.48

PI Sta. 634+19.4 Federal Aid Project No. 861
Survey PI Sta. 634+19.12

POT Sta. 637+19.9 Federal Aid Project No. 861
Survey POT Sta. 637+19.51

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 06 (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.

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING
HORIZ. DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 Adjustment)
Ia. Regional Coordinate System Zone 06 (U.S. Survey Foot)
VERT. DATUM: NAVD88
Geoid Model: 2018u2

Point Name	Nothing	Easting	Elevation	Code - Description
100	7240577.84	16461283.01	1156.26	FENO SETMON SOUTH OF PEAR AVE AND HWY 37 INTERSECTION
101	7240597.70	16462247.56	1161.81	FENO SETMON NE OF 240TH ST AND HWY 37 INTERSECTION
102	7240422.31	16462849.33	1188.70	FENO SETMON 700 FT EAST OF 240TH ST AND HWY 37 INTERSECTION

ALIGNMENT COORDINATES

Line No.	Name	Location	Point on Tangent Station	Point on Tangent Y Northing	Point on Tangent X Easting	Begin Spiral Station	Begin Spiral Y Northing	Begin Spiral X Easting	Begin Curve Station	Begin Curve Y Northing	Begin Curve X Easting	Simple Curve PI or Master PI Station	Simple Curve PI or Master PI Y Northing	Simple Curve PI or Master PI X Easting	End Curve Station	End Curve Y Northing	End Curve X Easting	End Spiral Station	End Spiral Y Northing	End Spiral X Easting
1.0	1	ML037							610+20.96	7240488.997	16460245.61	615+56.77	7240648.913	16460756.99	620+80.33	7240613.21	16461291.6			
2.0	3	ML037							631+18.25	7240544.072	16462327.21	634+19.89	7240523.926	16462628.17	637+20.28	7240456.793	16462922.25			

SPIRAL OR CIRCULAR CURVE DATA

Line No.	Name	Location	SCS	S	Ls	Ts	Es	Xc	Yc	L.T.	S.T.	C	T	L	R	E	Remarks
1.0	C1	ML037										21.186	535.802	1059.367	2865	49.671	
2.0	C2	ML037										9.03	301.64	602.031	3820	11.891	

108_23A
8/15/22

TRAFFIC CONTROL PLAN

IA 37

Both lanes of IA 37 will be closed to traffic for the duration of the project. Offsite detour shall be as shown on J sheets.

State Hwy 175

Maintain traffic for the duration of the project.

Pear Ave

Maintain traffic for the duration of the project.

240th St

Maintain traffic for the duration of the project.

Private Entrances

Maintain traffic for the duration of the project.

Monona County Traffic Control Statement

The Bridge on IA 37 over Beaver Creek, 212' x 26' Continuous Steel I-Beam Bridge Built in 1942, located 4.4 mi E of IA 175. The posted speed limit is 55mph and 2022 AADT is 780 VPD with 21% trucks.

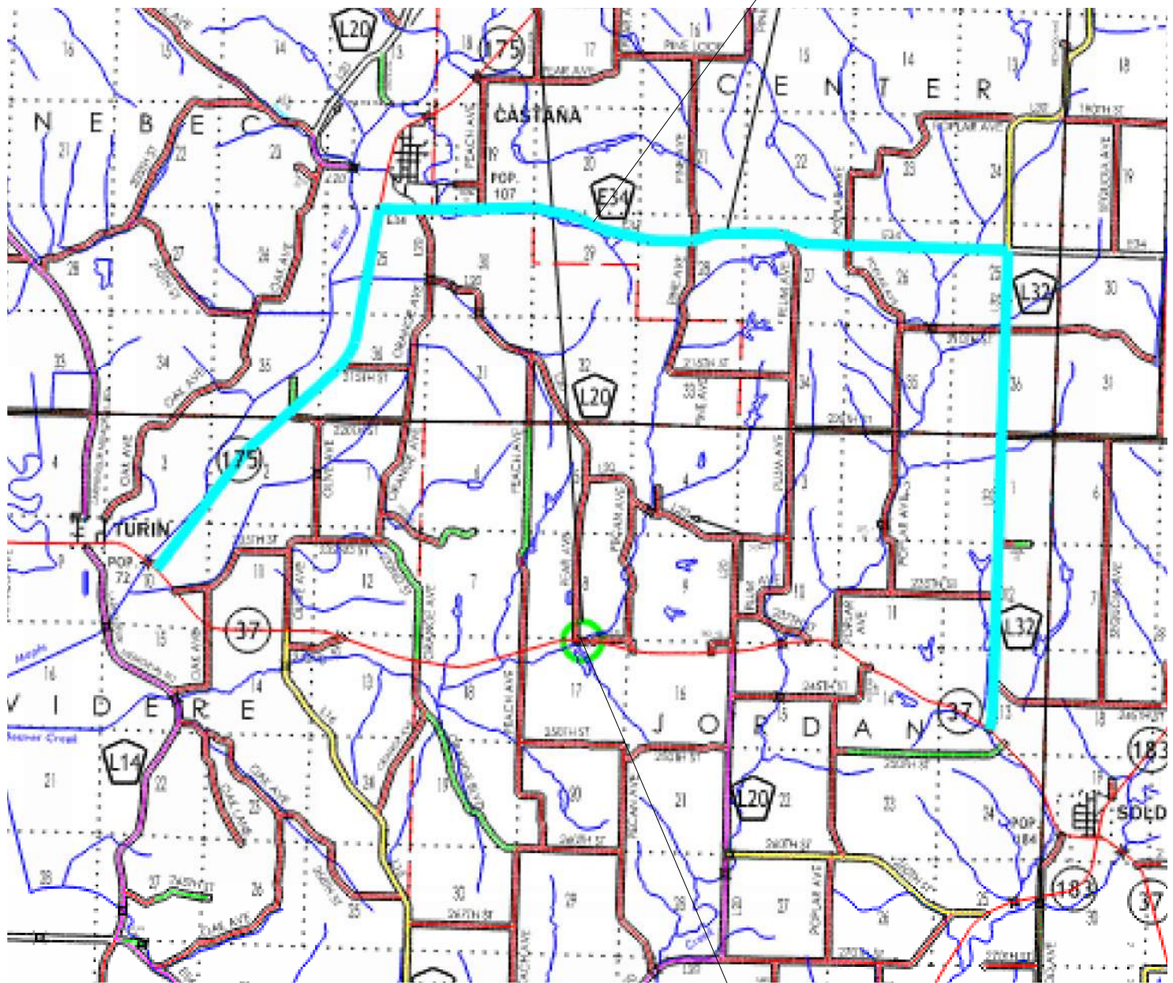
Traffic Control

Traffic will be detoured off-site during the project. This route will follow State Hwy 175 North, then East on County Hwy 34, then South on County Hwy L32.

Intersection of drives within 1,000 feet of the bridge:

- Field Entrance: 600 feet west of the bridge, North and South side (to remain open)
- Pear Ave: 300 feet west of the bridge, North side (to remain open)
- Residential Entrance: 100 feet east of bridge (to remain partially open)
- 240th St: 300 feet east of bridge (to remain open)

Traffic control will involve safety closures and detour signage.



NOT TO SCALE

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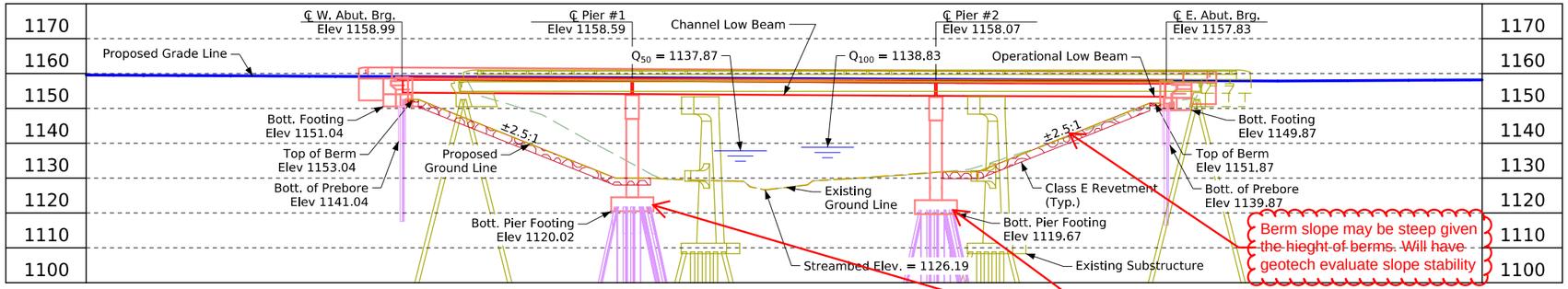
BENCH MARK NO. 100, N: 7240577.84, E: 16461283.01, ELEV 1156.26;
FENO SET MON SOUTH OF PEAR AVE AND HWY 37 INTERSECTION

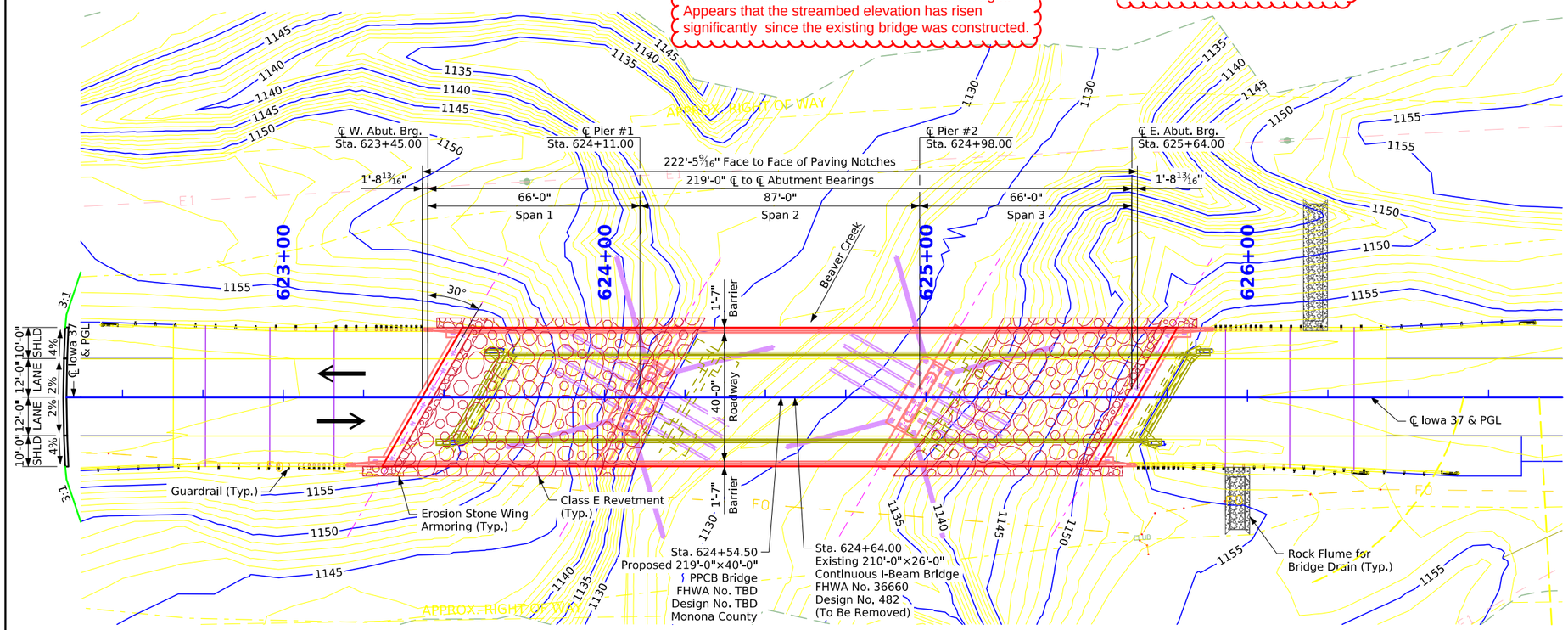


Note: CL elevations shown above reflect profile grade line elevations.
Top of bridge deck at centerline roadway is 0.03' below the profile grade to account for parabolic crown.

Longitudinal Section Along ℄ Iowa 37

Lower pier footing to help reduce risk of interference

Streambed elevation difference discussed at length. Appears that the streambed elevation has risen significantly since the existing bridge was constructed.



Situation Plan

N

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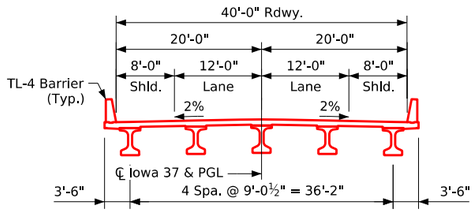
Scale In Feet



Typical Bridge Section
(Looking East)

Location

Iowa 37 over Beaver Creek
T-83N R-43W
Section 17
Jordan Township
Monona County
FHWA No. 36660
Bridge Maint. No. 6704.4S037
Latitude 42.007960°
Longitude -95.874831°

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.

LICENSED PROFESSIONAL ENGINEER
Mark D. Werner
15418
IOWA

Signature Mark D. Werner Date

Printed or Typed Name

My license renewal date is December 31, 2025

Pages or sheets covered by this seal: V.1

Hydraulic Data

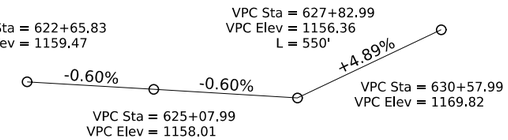
Drainage Area = 6.44 sq. mi.
Stream Slope (HGL) = 40.5 ft./mi.
Avg. Low Water Stage = 1126.69

Q_{50} = 3,550 cfs
Stage = 1137.87 ft
Channel Low Beam = 1154.16
Avg. Bridge Velocity = 6.93 fps
Freeboard = 16.29 ft

Q_{100} = 4,330 cfs
Stage = 1138.83 ft
Operational Low Beam = 1153.62
Backwater = 0.27 Ft.
Avg. Bridge Velocity = 7.50 fps

Q_{200} = 5,160 cfs
Stage = 1139.76 ft
Calculated Design Scour = TBD

Q_{500} = 6,160 cfs
Stage = 1140.77 ft
Avg. Bridge Velocity = 8.62 fps
Calculated Check Scour = TBD



Proposed Profile
Grade Iowa 37

Utilities Legend:

E1 — E1 - Electric Line - Unknown
FO — FO - Fiber Optic - Long Lines Broadband

Traffic Estimate

2022 AADT	780 V.P.D.
TRUCKS	21 %

Design For 30 Degree (L.A.)

219'-0"×40'-0" Pretensioned Prestressed Concrete Beam Bridge

65'-0" End Spans — 85'-0" Interior Span

Situation Plan

STA. 624+54.50 (Iowa 37) — Turn-in Date: Aug 2025

Monona County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. TBD — Design Sheet No. 1 of 2 — FHWA No. TBD

FILE NO. TBD	ENGLISH	DESIGN TEAM Stanley Consultants, Inc.	MONONA COUNTY	PROJECT NUMBER BRF-037-1(056)--38-67	SHEET NUMBER V.1

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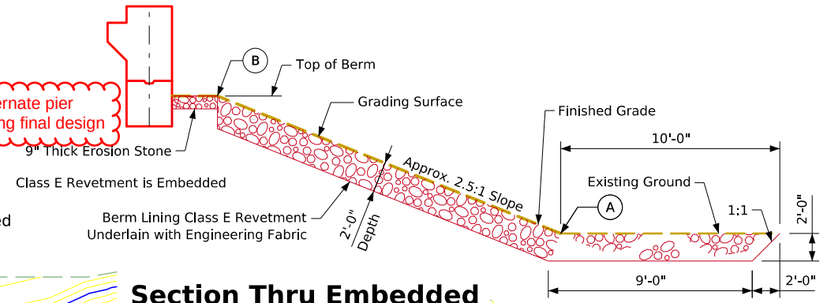
BENCH MARK NO. 100, N: 7240577.84, E: 16461283.01, ELEV 1156.26; FENO SET MON SOUTH OF PEAR AVE AND HWY 37 INTERSECTION

Design Notes

All units are in feet unless noted otherwise.
TL-4 Single Slope Bridge Railing proposed
Pier Type = Tee Piers
Beam Type = BTB Beams
Foundation type to be confirmed during final design.
Berm slopes to be confirmed during final design.
There is a potential for conflicts with existing foundations.
Existing pier footing pile could potentially interfere with proposed pier footing pile.

Add note indicating that alternate pier types to be considered during final design



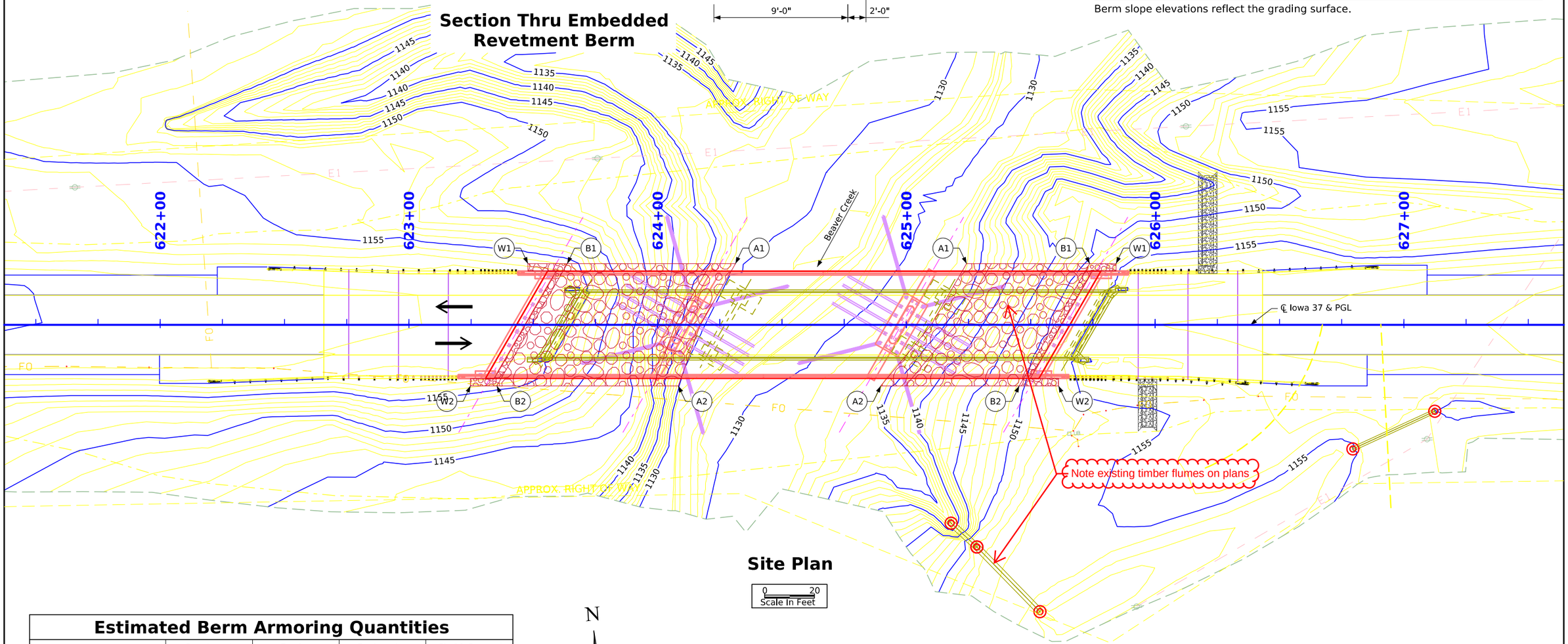
Berm Slope Location Table

Points	West Abutment			East Abutment		
	Station	Offset	Elev.	Station	Offset	Elev.
A1	624+31.29	24.58' LT	1130.00	625+24.19	24.58' LT	1131.84
A2	624+08.31	24.58' RT	1130.00	624+89.67	24.58' RT	1131.84
B1	623+63.69	24.58' LT	1153.04	625+73.69	24.58' LT	1151.87
B2	623+35.31	24.58' RT	1153.04	625+44.57	24.58' RT	1151.87
W1	623+47.81	24.58' LT	1158.57	625+84.28	24.58' LT	1157.44
W2	623+24.72	24.58' RT	1158.57	625+61.19	24.58' RT	1157.43

Berm slope elevations reflect the grading surface.

Section Thru Embedded Revetment Berm

Site Plan



0 20
Scale In Feet

N

Estimated Berm Armoring Quantities

Location	Revetment CL. E (Ton)	Erosion Stone (Ton)	Engineering Fabric (SY)	CL. 10 Channel Excavation (CY)
Berm Lining - West	600	10	650	400
Berm Lining - East	525	10	600	350
Totals	1,125	20	1,250	750

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.

Density used for Class E quantity calculations is 1.5 ton/cu. yd.

General Notes

This design is for the replacement of the existing 210'-0" × 26'-0" Continuous I-Beam Bridge, Monona Design No. 482, FHWA No. 36660, Maint No. 6704.4S037.

Design For 30 Degree (L.A.)

219'-0"×40'-0" Pretensioned Prestressed Concrete Beam Bridge

65'-0" End Spans — 85'-0" Interior Span

Site Plan

STA. 624+54.50 (Iowa 37)

Turn-in Date: Aug 2025

Monona County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. TBD — Design Sheet No. 2 of 2 — FHWA No. TBD

FILE NO. TBD	ENGLISH	DESIGN TEAM Stanley Consultants, Inc.	MONONA COUNTY	PROJECT NUMBER BRF-037-1(056)--38-67	SHEET NUMBER V.2

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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
Concrete	
(0)	Barrier Concrete
(0)	Barrier Concrete Footing
(0)	Curb Gutter
(48)	Flowable Mortar
(0)	Median Concrete
(0)	PCC Pavement
(0)	Sidewalk
Shoulder	
(209)	Shoulder HMA
(0)	Shoulder PCC
(6)	Shoulder Granular
Existing	
(0)	Existing Pavement
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
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 Substrata
(48)	Broken Weathered Substrata
(3)	Core Out Substrata
(203)	Existing Pavement Substrata
(6)	Loam Substrata
(80)	Rock Substrata
(4)	Select Sand Substrata
(3)	Shale Substrata
(10)	Topsoil Substrata
Unsuitable / Waste	
(3)	Unsuitable Type A
(13)	Unsuitable Type B
(11)	Unsuitable Type C
(3)	Waste

NOTES:

Text

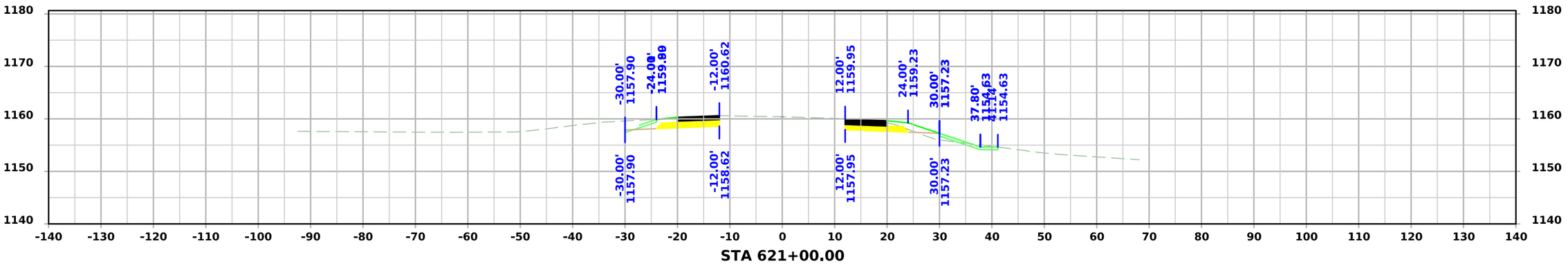
NOTES:

Text

CROSS SECTIONS
LEGEND AND INFORMATION SHEET

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

IA 37



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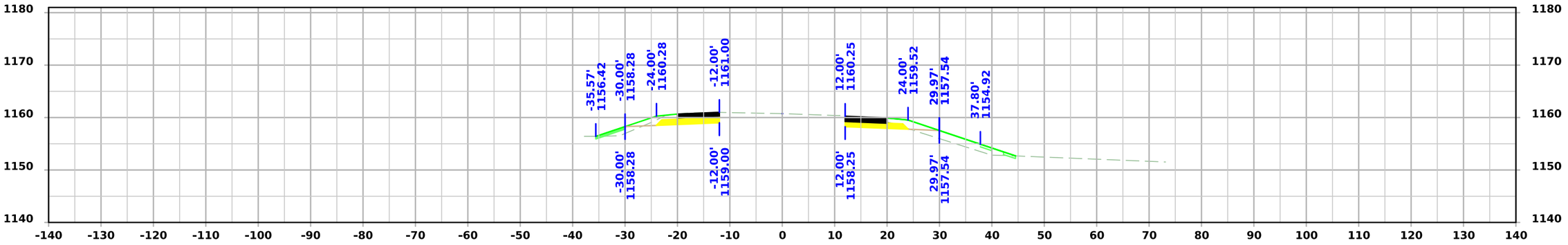

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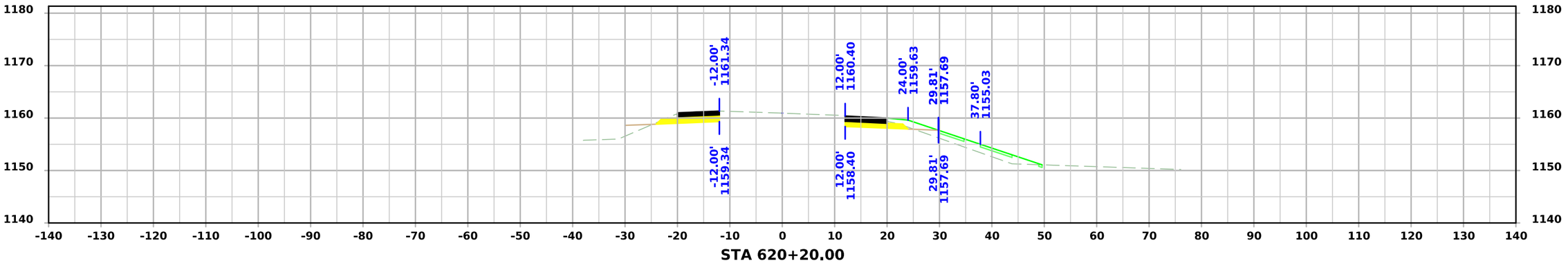

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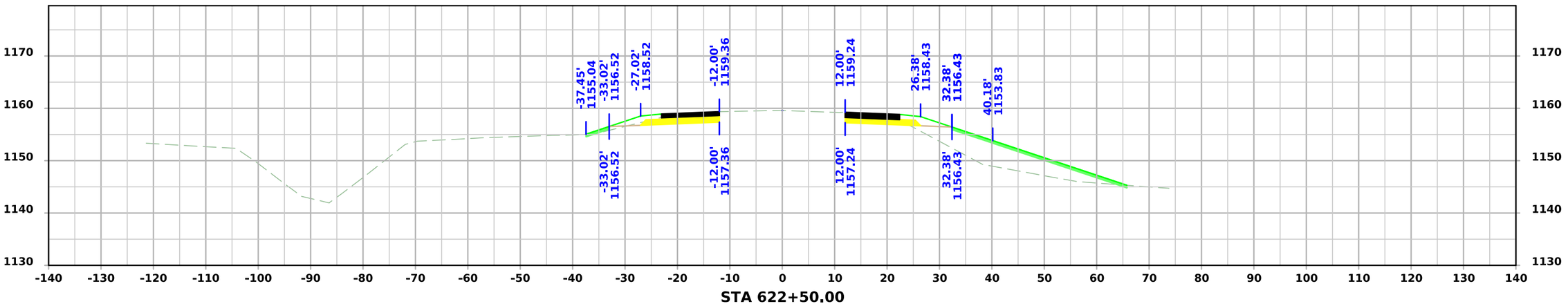
IA 37



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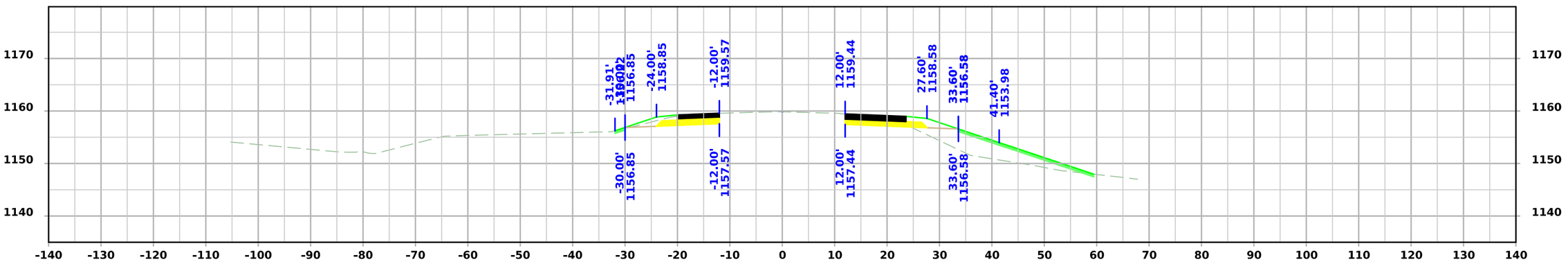

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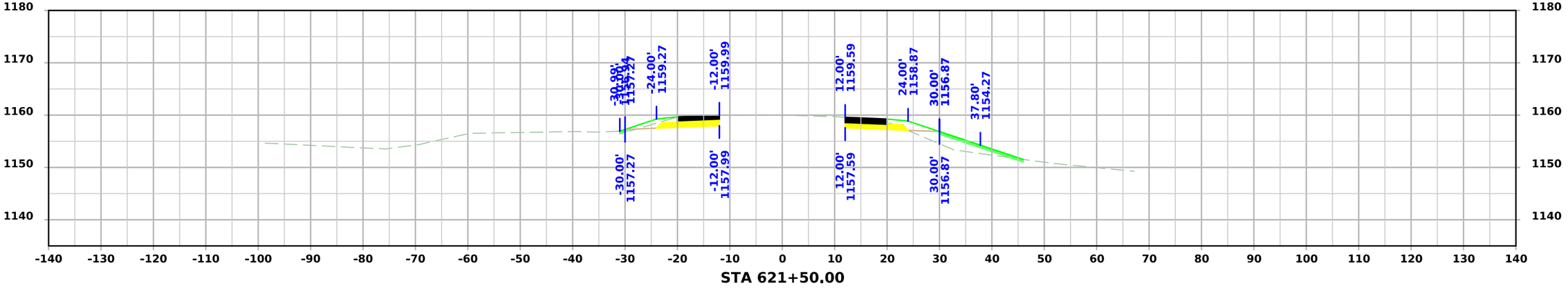

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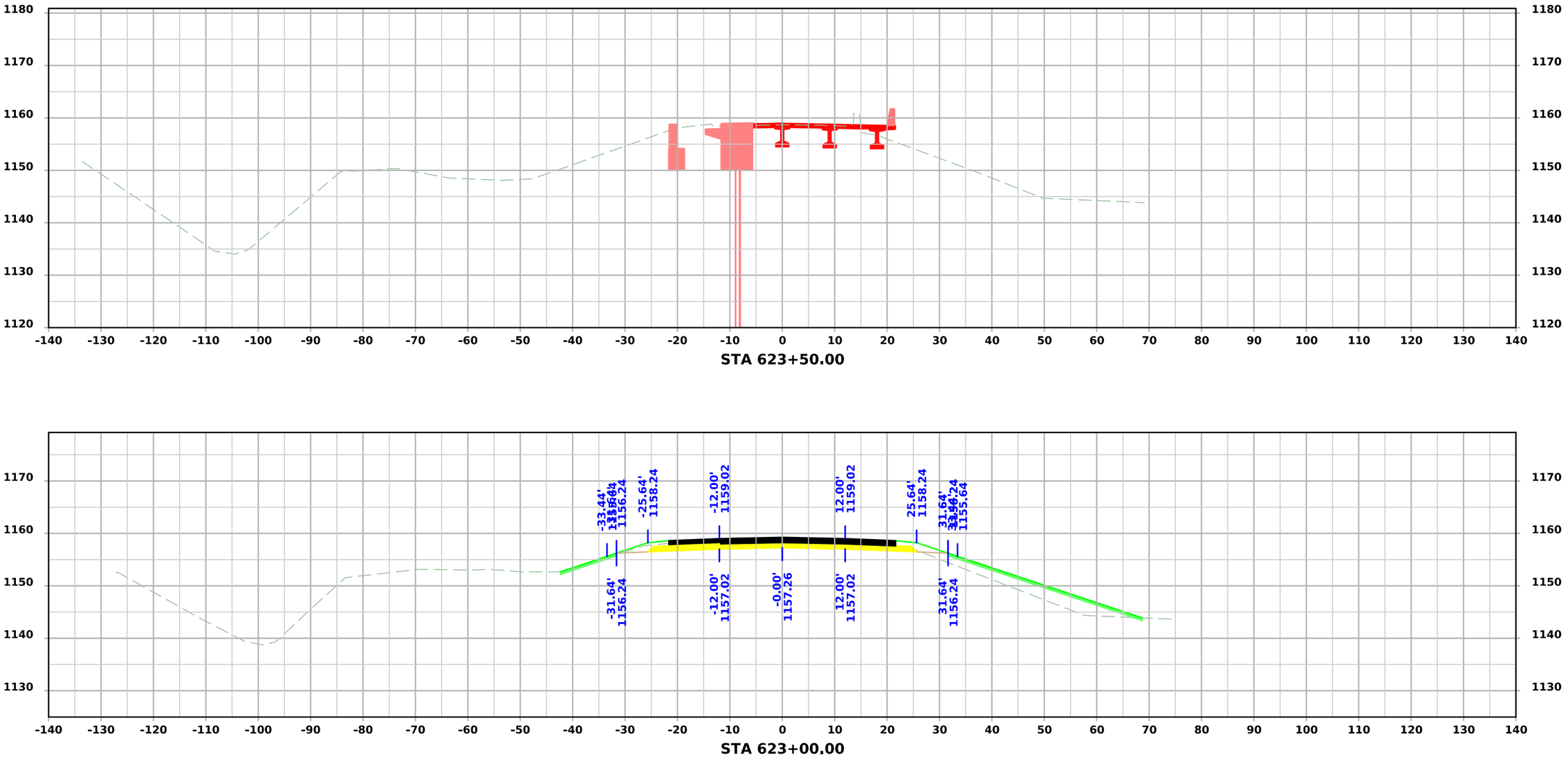

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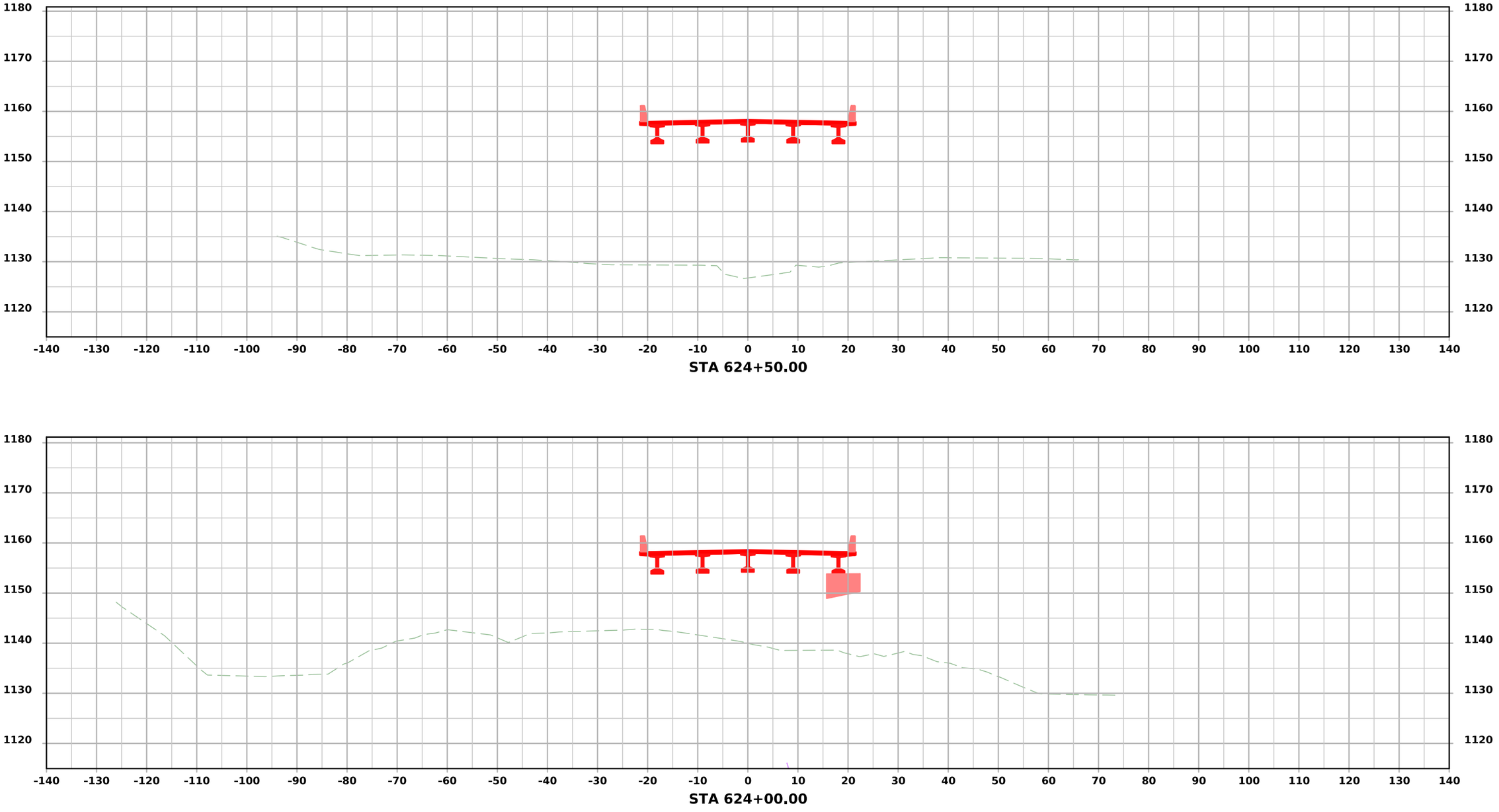
IA 37



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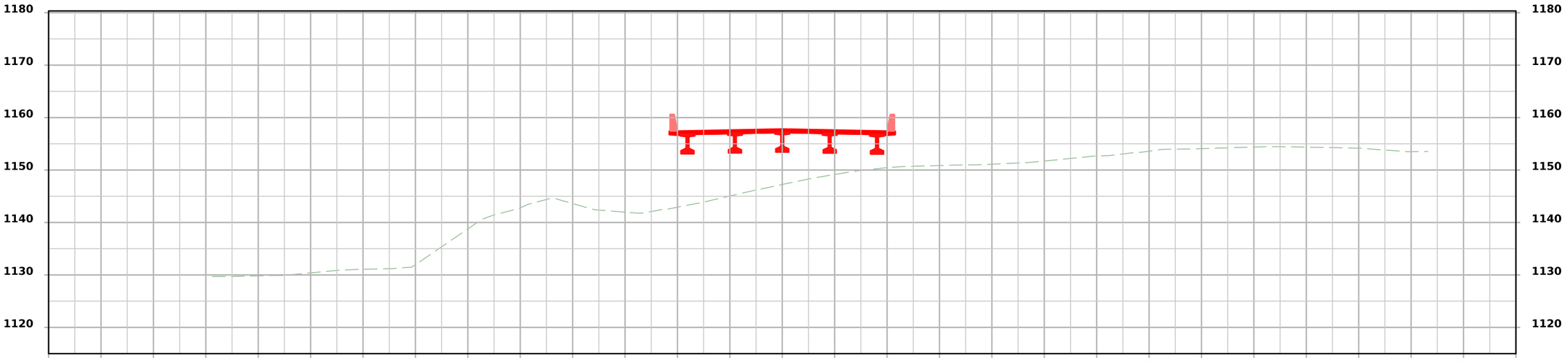

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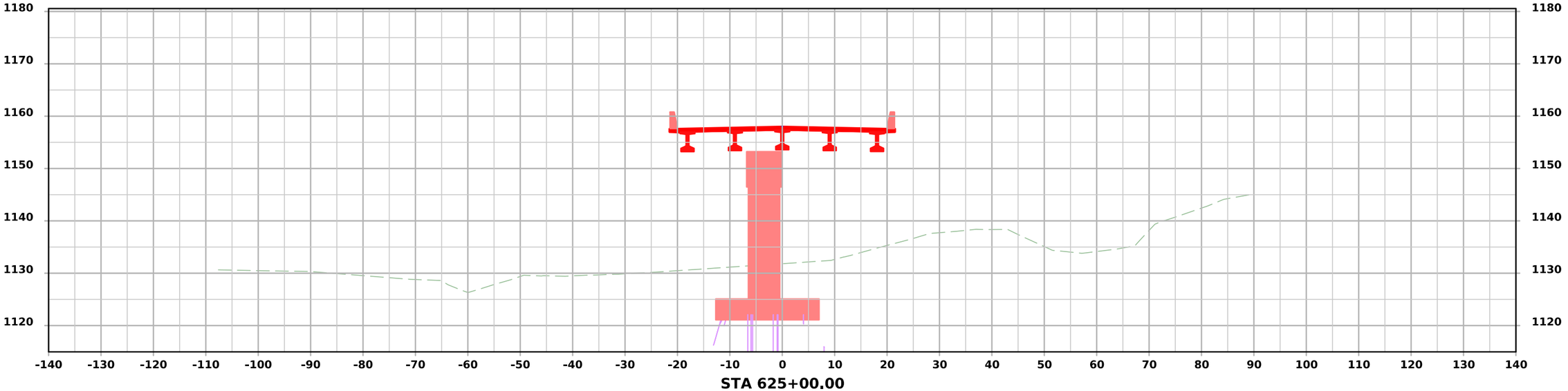

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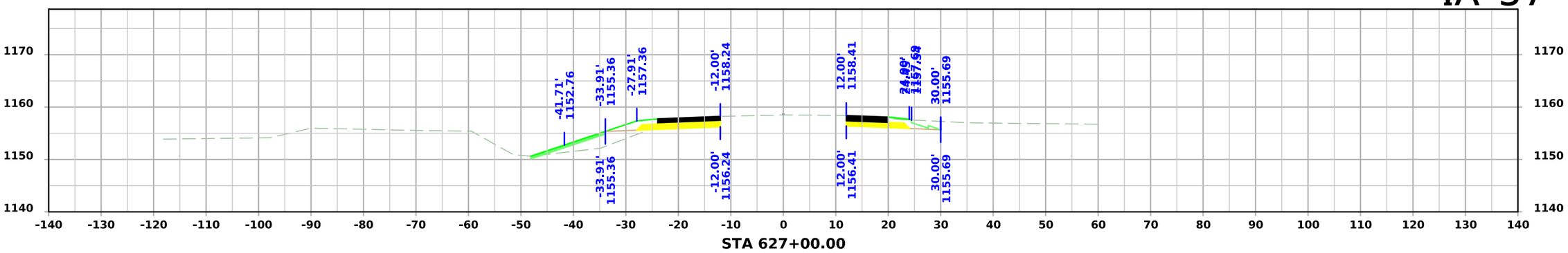

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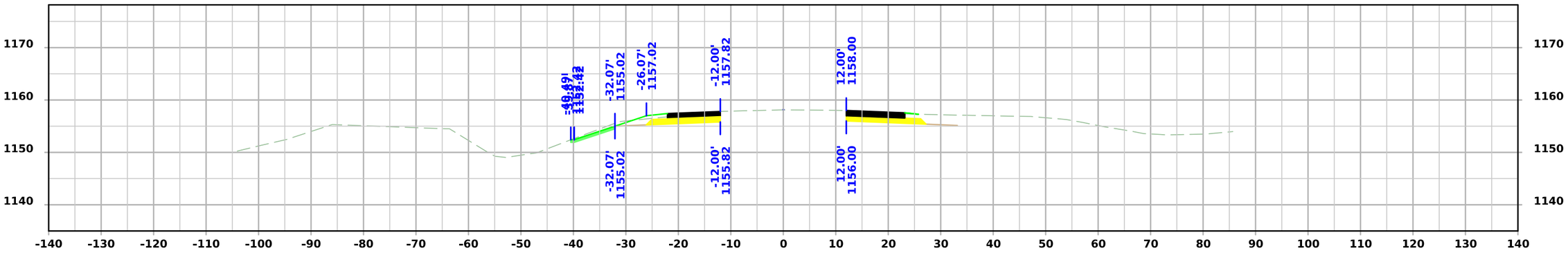

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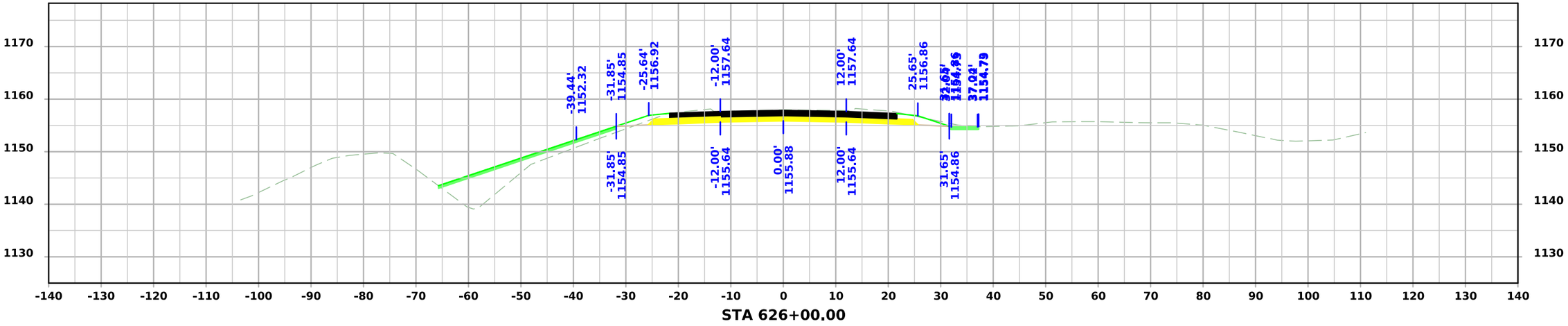

STA 626+00.00

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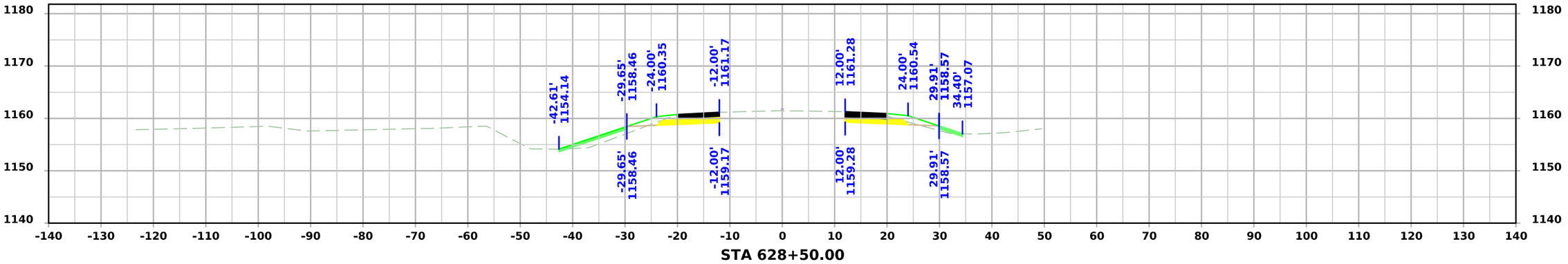

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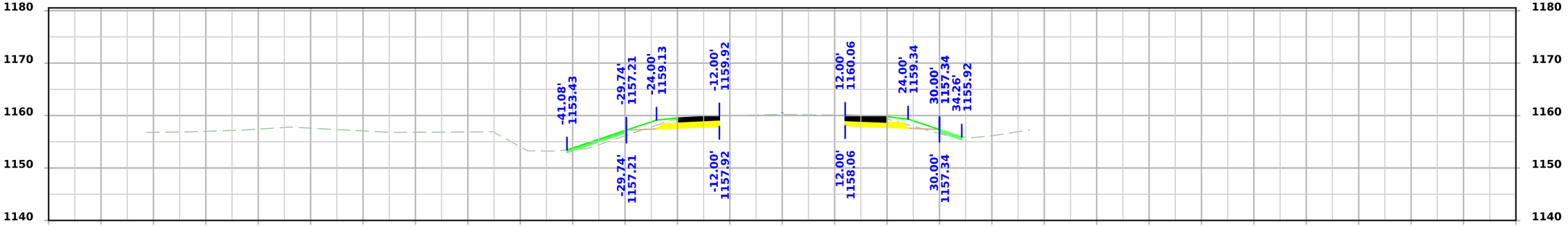

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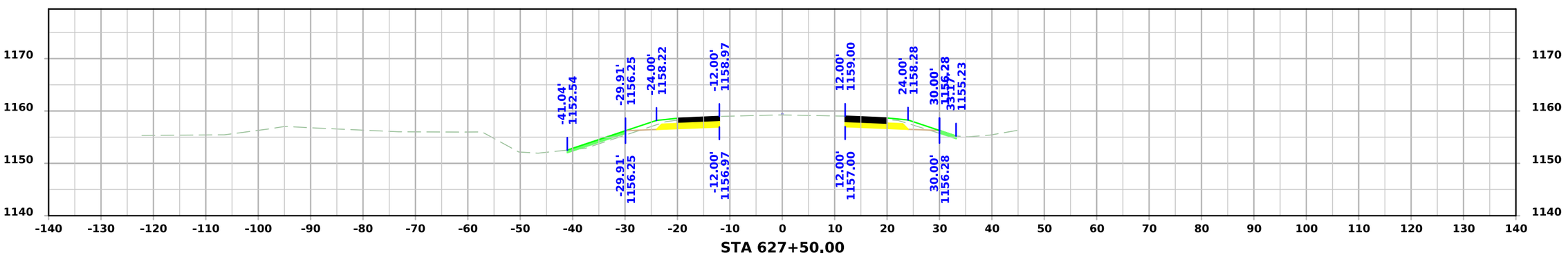

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FILE NO. 98765	ENGLISH	DESIGN TEAM Stanley Consultants Inc.	Monona COUNTY	PROJECT NUMBER BRF-037-1(056)--38-67	SHEET NUMBER W.8

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