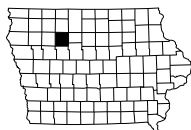


POCAHONTAS COUNTY

RCB CULVERT REPLACEMENT
BRF-003-3(75)--38-76

LETTING DATE
Oct 21 2025



INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	Title Sheets
A.1	Title Sheet
A.2	Location Map Sheet
A.3 - 8	Concept
B Sheets	Typical Cross Sections and Details
B.1 - 4	Typical Cross Sections and Details
D Sheets	Mainline Plan and Profile Sheets
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2 - 3	IA 3
J Sheets	Traffic Control and Staging Sheets
* J.1	Traffic Control Plan
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 - 7	Mainline Cross Sections
	* Color Plan Sheets



PLANS OF PROPOSED IMPROVEMENT ON THE
PRIMARY ROAD SYSTEM
POCAHONTAS COUNTY
RCB CULVERT REPLACEMENT
 Drainage Ditch 5.0 mi W of IA 4

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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



DESIGN DATA RURAL			
20 26	AADT	1600	V.P.D.
20 46	AADT	1800	V.P.D.
20 -	DHV	--	V.P.H.
	TRUCKS	36	%
	Total Design ESALs	--	

REVISIONS

TOTAL
24

PROJECT IDENTIFICATION NUMBER

21-76-003-050

PROJECT NUMBER

BRF-003-3(75)--38-76

R.O.W. PROJECT NUMBER

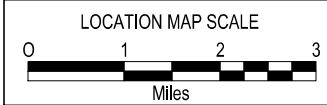
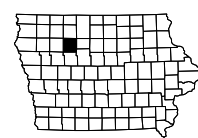
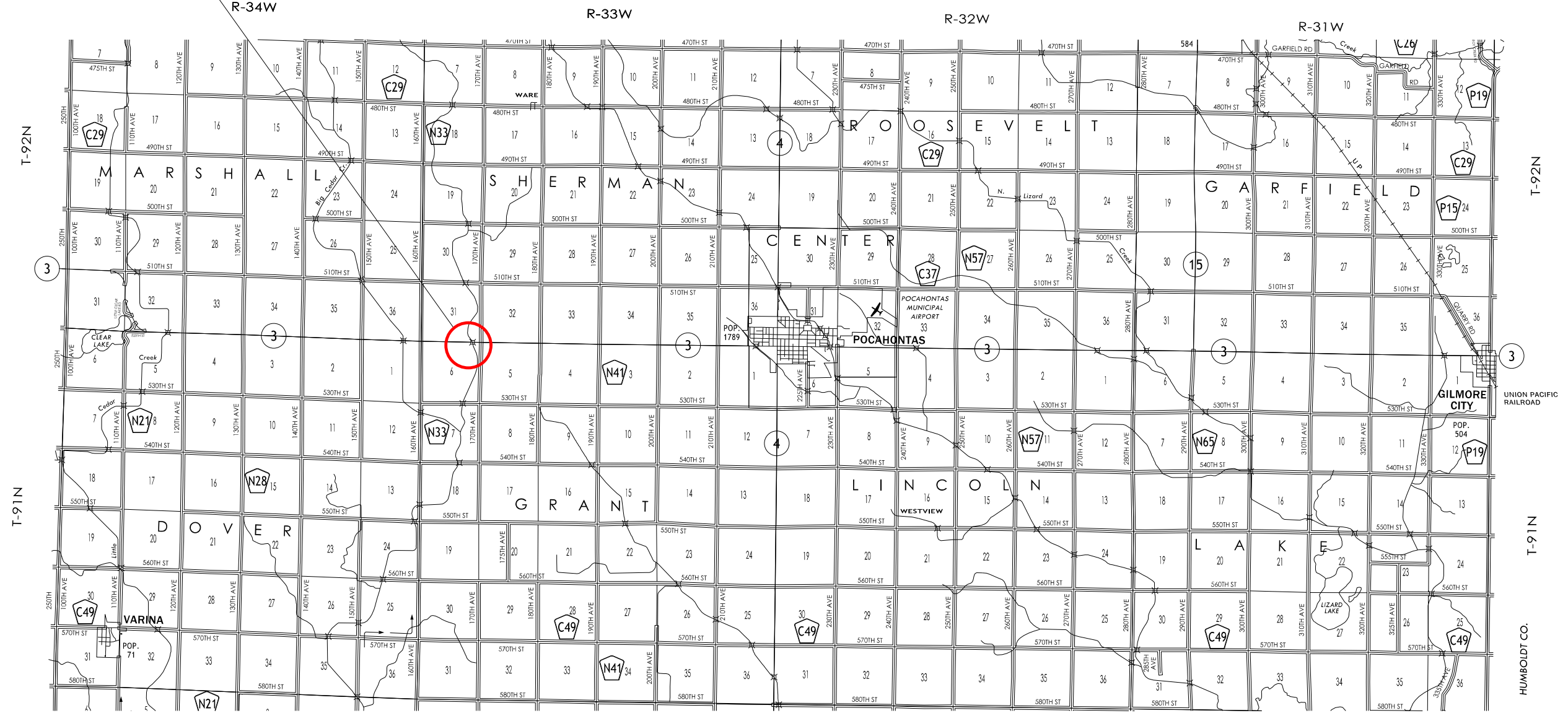
NHSN-003-3(76)--2R-76

PRELIMINARY PLANS

Subject to change by final design.

D2/D3 PLAN-Date: 12/08/2023

Drainage Ditch
 Sta. 396+54.00
 Existing FHWA# 40090
 Existing MAINT# 7601.2S003
 New Asset #



FINAL PROJECT CONCEPT STATEMENT

IA 3 Bridge over Drainage Ditch 5.0 mi W of IA 4

Pocahontas County
BRF-003-3(75)- -38-76
PIN: 21-76-003-050
Maint. No. 7601.2S003
FHWA No. 40090

Highway Division
Office of Design

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

March 30, 2022

Pocahontas County
BRF-003-3(75)- -38-76
PIN: 21-76-003-050
Page 2



With Route

Against Route

I. STUDY AREA

A. Project Description

This project involves the replacement of the IA 3 bridge (Maint. No 7601.2S003) over drainage ditch.

The only alternative considered is:

1. Replace with a culvert utilizing the flowable mortar method.

This alternate preferred due to lower cost and less disruption to traffic flow.

B. Need for Project

This is a 33'-8" X 30' steel beam bridge that was rebuilt in 1954. An overlay was added in 1982 and has reached the end of its service life. The deck has large hollows and leaching cracks. The abutments have leaching cracks, hollows, and severe scaling and requires reconstruction. Due to the condition of the overall structure, it is recommended the bridge be replaced.

C. Present Facility

The existing structure is a 34' x 30' I - beam bridge constructed in 1954.

IA 3 in the project area is 28' wide HMA pavement with 8' wide granular shoulders and 3:1 foreslopes, constructed in 1956. HMA resurfacing and widening was accomplished in 2019.

D. Traffic Estimates

The 2026 construction year and 2046 design year average daily traffic estimates are 1600 ADT with 36 % trucks and 1800 ADT with 36 % trucks, respectively.

E. Sufficiency Ratings

IA 3 is classified as an area development route and is a maintenance service level "B" roadway. The federal bridge sufficiency rating is 74.9.

F. Access Control

Access rights will not be acquired for this project.

G. Crash History

During the five-year study period from January 1, 2016 through December 31, 2020, there were 0 crashes.

II. PROJECT CONCEPT

A. Feasible Alternatives

Alternative #1 - Replace with a culvert utilizing the flowable mortar method

A twin 10' x 12' x 102' precast reinforced concrete box (RCB), will be constructed under the existing 33'-8" x 30' bridge utilizing the flowable mortar method.

The new RCB can be built under the existing bridge without disturbing the bridge. After the culvert has been constructed, flooded granular backfill and flowable mortar will be used to fill the void between the RCB and bridge deck. Once the new embankment for the shoulders and 6:1/3:1 foreslopes have been placed adjacent to the bridge, the existing concrete bridge barrier, curb, and guardrail can be removed. The new 8' wide granular shoulders can then be constructed. The flow line of the box will be buried 2' below the existing flow line in the channel. This will allow the bottom of the box to silt in and provide a natural bottom for fish passage. The existing ditches will need to be relocated to meet the inlet and outlet flowlines of the new RCB. Class E revetment will be placed at the ends of the RCB. A 2" HMA overlay with milled rumble strips will be applied to seal the bridge deck with 50' to 1" runout tapers will be used to transition down to the HMA surface.

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

Right of way may be required for this project.

Traffic will be maintained at all times. However, it will be necessary to reduce traffic down to one lane via the use of flaggers during the removal of the bridge rail, guardrail, placement of the flowable mortar and HMA resurfacing.

Bridge Items	<u>Estimated Cost</u>
New Culvert	\$ 431,000
Bridge Rail Removal	10,000
Revetment	11,000
Mobilization - 10%	43,000
M & C - 20%	<u>95,000</u>
Bridge Total	\$ 590,000
Roadway Items	
Clear & Grubb	\$ 1,100
Embankment in place, contractor furnished	17,100
Excavation, Class 13 waste	6,200
Topsoil, Strip, Salvage & Spread	10,100
Granular Shoulders	7,700
HMA HT Surf, 1/2" Fric L-2	3,700
Flooded Backfill	18,000
Removal of Steel Guardrail	2,200
Flowable Mortar	47,500
Removal of Pavement	700
Wetland Mitigation	50,000
Erosion Control	50,000
Stream Mitigation	15,000
Seed & Fertilize	1,000
Right of Way	5,000
Traffic Control @ 5%	19,600
Mobilization @ 5%	19,600
M&C @ 30%	<u>117,700</u>
Roadway Total	\$ 392,200
Project Total	\$ 982,200

B. Detour Analysis

There will be no off-site detour. Traffic will be maintained at all times. However, it will be necessary to reduce traffic down to one lane via the use of flaggers during the removal of the bridge rail, guardrail and placement of the flowable mortar.

C. Recommendations

It is recommended that the present structure be replaced, as described in Alternative No. 1.

JEB:jaa

D. Construction Sequence

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

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 9 is less than the first stage filter threshold of 50, therefore this bridge was not considered for accelerated construction.

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

Right of Way may to be required for this project.

The proposed project will require a Section 404 Permit as the Drainage Ditch is considered a jurisdictional Water under guidance of the U.S. by the Army Corps of Engineers. We expect the project to authorized under Nationwide Permit #14 which is a routine process. However, as the construction of the twin RCB under the existing bridge will fill an area greater than 0.03 acre of the active channel, stream mitigation will be required under the terms of the new Nationwide Permits taking effect in March 2022. One stream mitigation bank currently serves the project location and has credits available for sale. LEB requests a budget of \$15,000 be established to fund the project's anticipated mitigation requirement.

G. Program Status

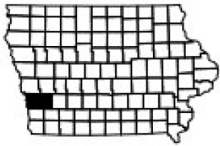
Site data has been developed by the Office of Design. This project is listed in the 2022-2026 Iowa Transportation Improvement Program, with \$5,000 programmed for right of way in FY 2026, and \$980,000 for replacement in FY 2026. Costs for this project may be eligible for bridge replacement funds. A schedule of events will be developed following approval of the Project Concept.

POCAHONTAS COUNTY

PROJECT LOC

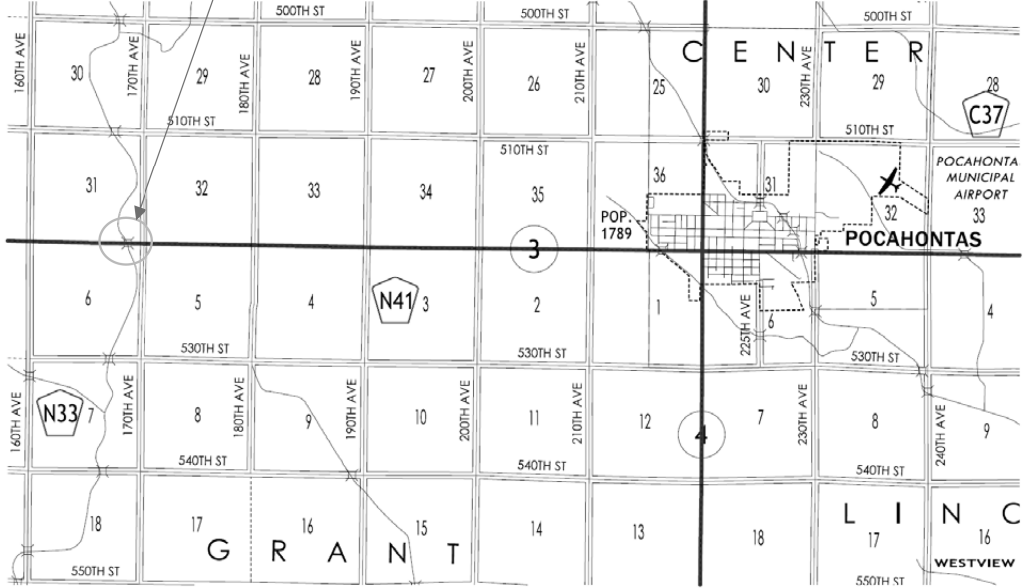


ON IA 3, DRAINAGE DITCH 5.0 mi W of IA 4
BRF-003-3(75)- -38-76
PIN: 21-76-003-050

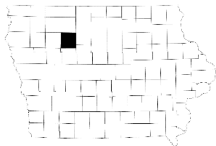


POCAHONTAS COUNTY

FHWA 40090
Maint. No. 7601.2S003



ON IA 3, DRAINAGE DITCH 5.0 mi W of IA 4
BRF-003-3(75)- -38-76
PIN: 21-76-003-050



Pocahontas County
BRF-003-3(75)--38-76
PIN: 21-76-003-050

UTILITIES

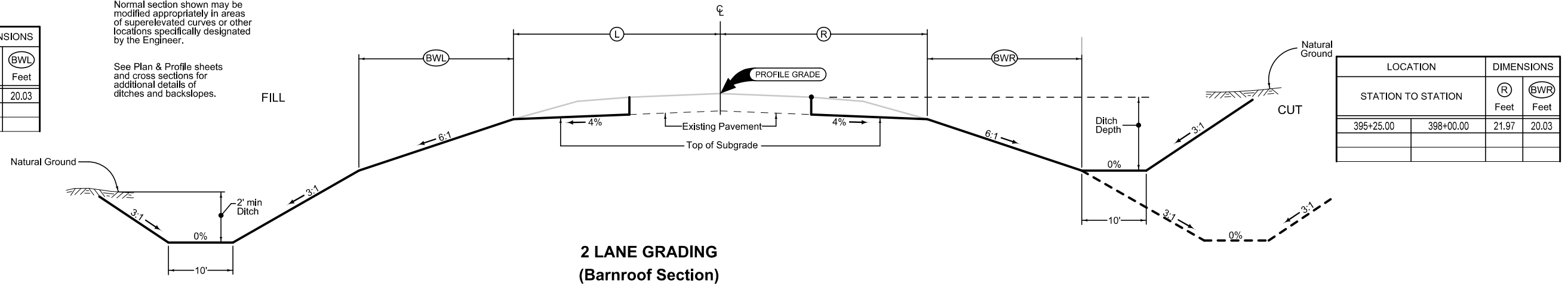
CenturyLink
Sadie Hull
918-547-0147
Sadie.hull@lumen.com
(Fiber Transmission)

Iowa Lakes Electrical Cooperative
Brian Scott
712-260-4012
BrianS@ilec.coop
(Electrical Distribution)

LOCATION		DIMENSIONS	
STATION TO STATION		(L) Feet	(BWL) Feet
395+25.00	398+00.00	21.97	20.03

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

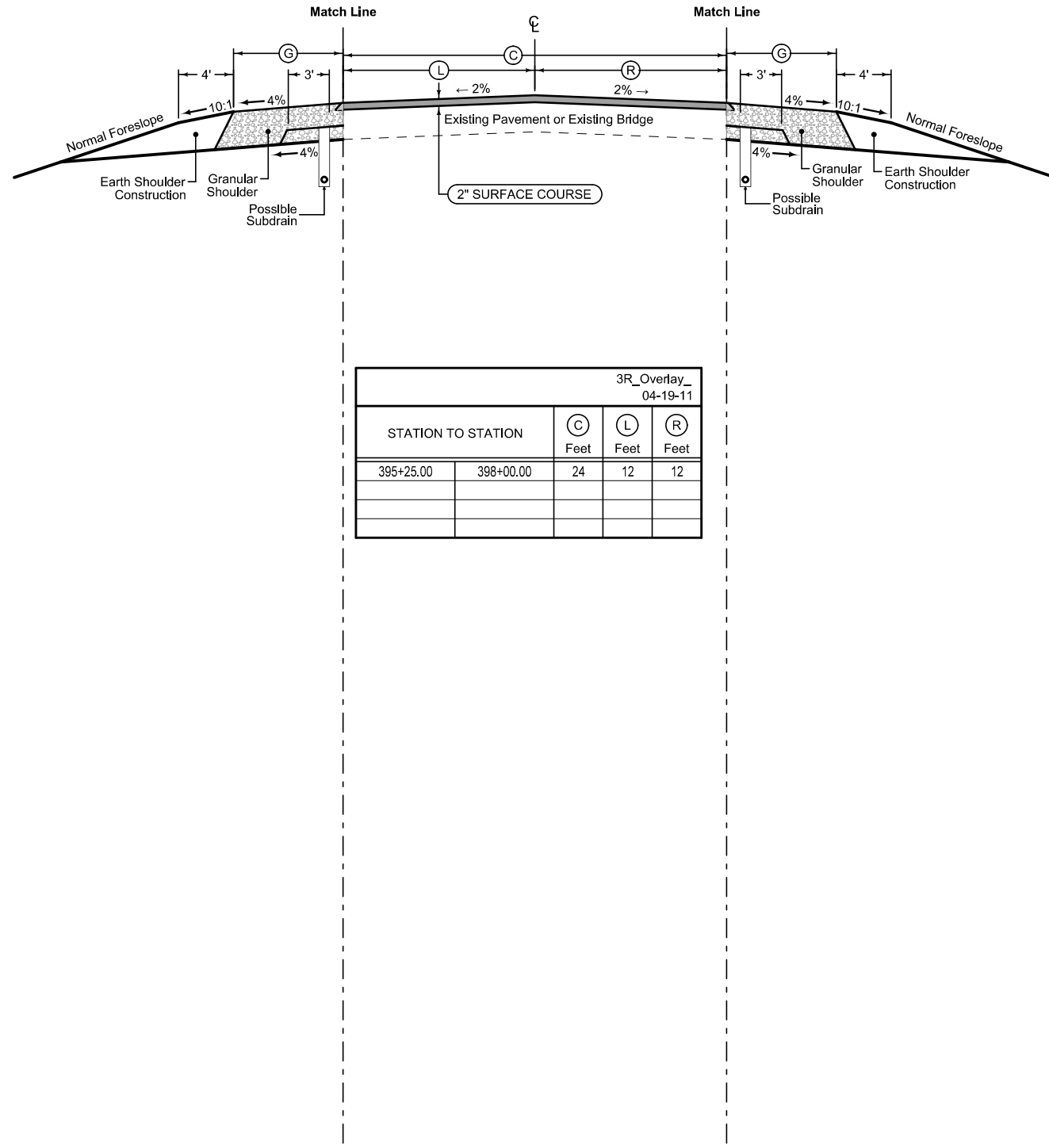
See Plan & Profile sheets and cross sections for additional details of ditches and backslopes.



LOCATION		DIMENSIONS	
STATION TO STATION		(R) Feet	(BWR) Feet
395+25.00	398+00.00	21.97	20.03

Granular Shoulder with Safety Edge

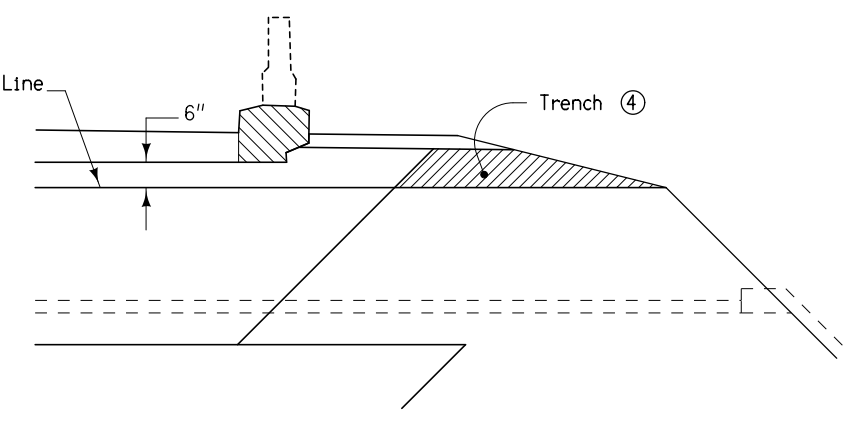
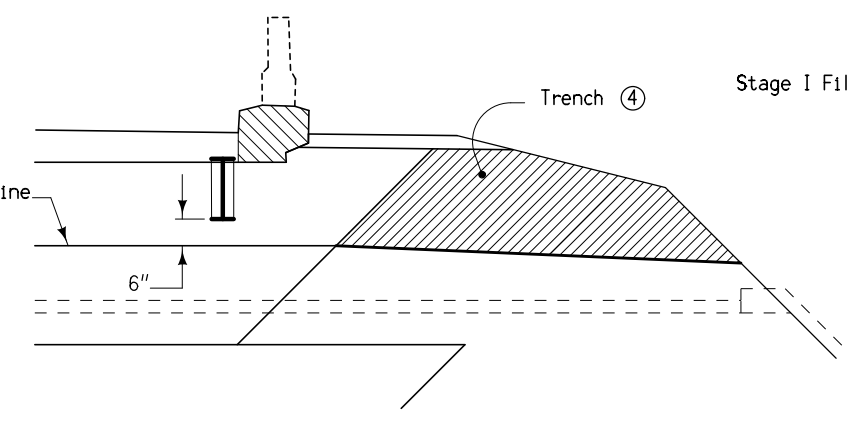
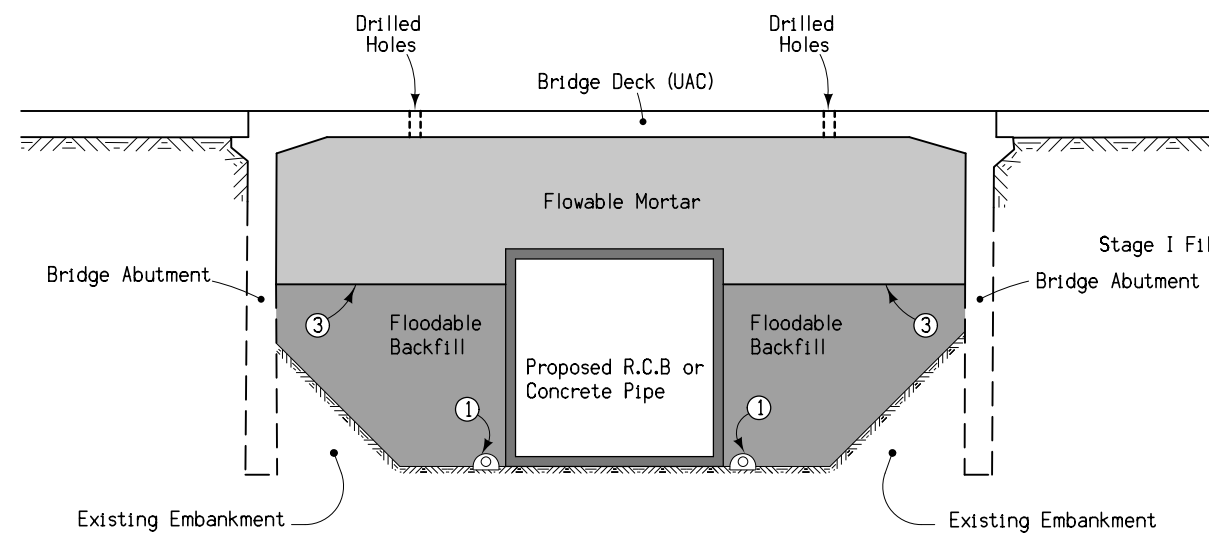
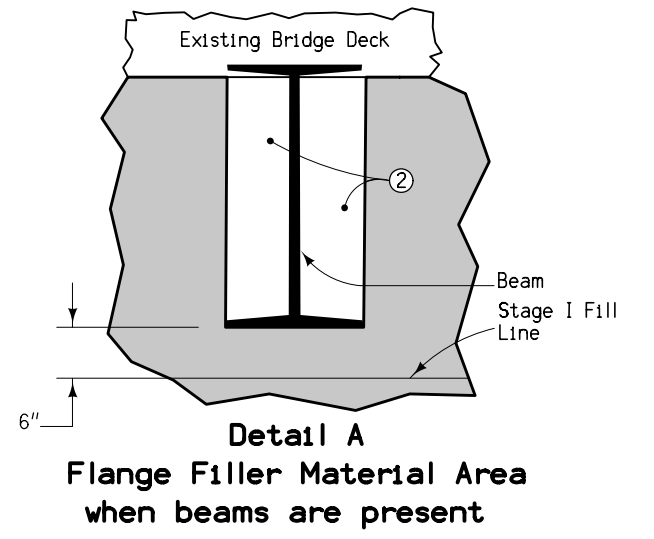
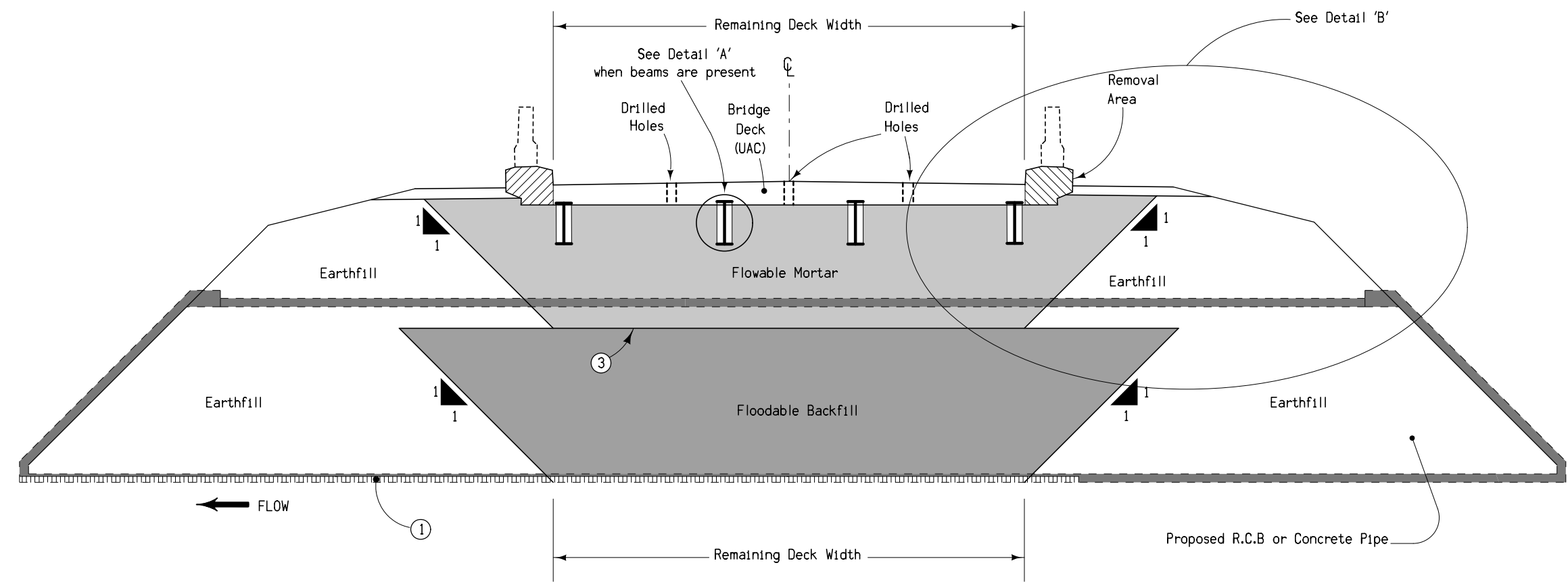
		2_G_ 04-21-20
STATION TO STATION		Ⓞ Feet
395+25.00	398+00.00	8



Granular Shoulder with Safety Edge

		2_G_ 04-21-20
STATION TO STATION		Ⓞ Feet
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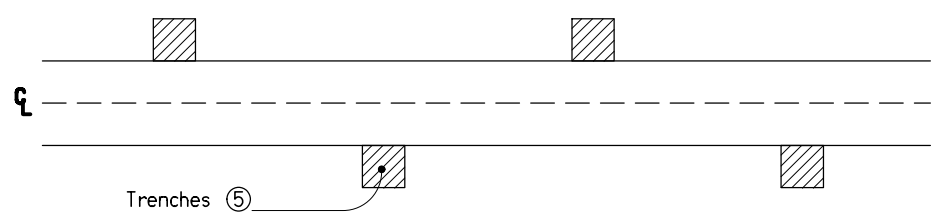
3R_Overlay_ 04-19-11				
STATION TO STATION		Ⓞ Feet	Ⓛ Feet	Ⓡ Feet
395+25.00	398+00.00	24	12	12



Section along Centerline

Detail B (Beam Bridge)

Detail B (Slab Bridge)

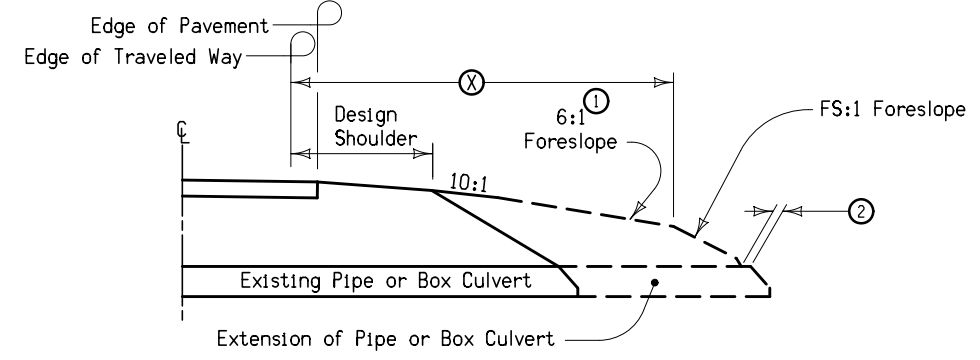
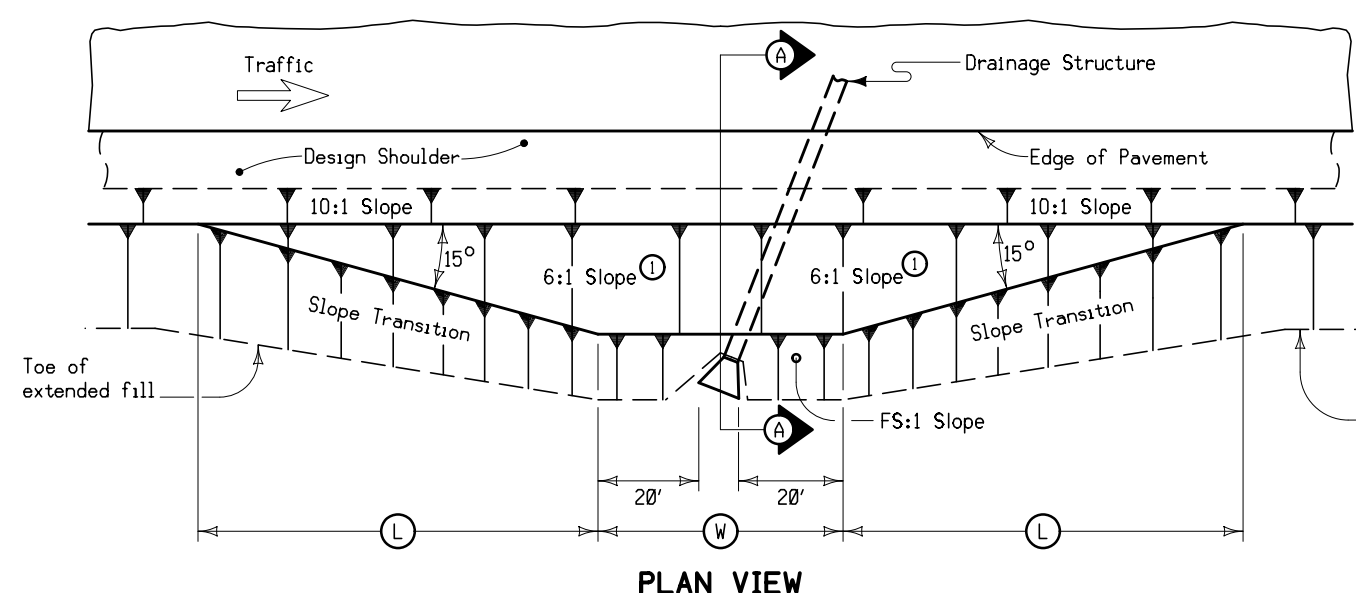


Trench Layout

Denotes pay limits for flowable mortar
 Denotes pay limits for flooded backfill

- ① 4" Subdrain at flowline elevation of culvert with 4" cover of porous backfill.
- ② Place Flange Filler Material to fill pocket area between flanges to prevent flowable mortar from building up. Flange Filler Material is incidental to flowable mortar.
- ③ Fill void with the maximum amount of Floodable Backfill possible. Distance from Floodable Backfill to bridge beams (when present) or bridge deck shall not exceed 5'.
- ④ Cut trenches in the soil plug to provide drainage for the flowable mortar. Backfill the trenches with open graded crushed stone, gravel, or recycled PCC to allow water to drain. Backfill material is incidental to flowable mortar.
- ⑤ Place trenches at 20' spacing with a minimum of two trenches on each side of the roadway.

FILL FOR CULVERT USED IN BRIDGE REPLACEMENTS

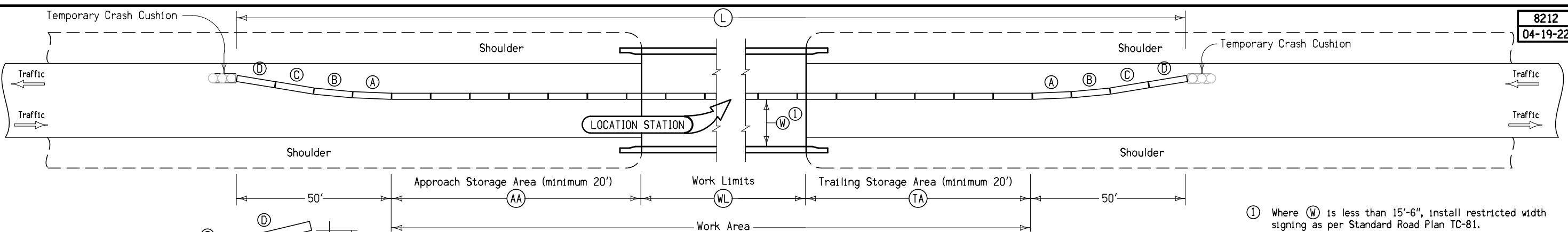


- At locations where an extended or newly constructed drainage structure extends beyond the normal foreslope cover, flatten as indicated so as to cover the structure. Minimum earth cover is 6 inches.
- ① Slope may be flatter than 6:1.
 - ② 6 inch minimum for pipe installations or to top of headwall on RCB.
 - ③ At \bar{C} of roadway.
 - Ⓜ = Pipe or RCB opening width plus 20 feet each side.

SECTION A-A

STRUCTURE LOCATION		Ⓜ	Ⓛ	ⓧ	ⓕS
STATION ③	SIDE	Feet	Feet	Feet	
396+79.64	R	68	82	30	3
396+29.26	L	68	82	30	3

BARNROOF FORESLOPE AT SKEWED DRAINAGE STRUCTURE



- ① Where Ⓜ is less than 15'-6", install restricted width signing as per Standard Road Plan TC-81.

BARRIER OFFSETS FOR FLARE SECTIONS

Station	Side	ⓂⓂ	ⓌⓁ	ⓉⓂ	Ⓛ	Anchored X	Ⓦ①	Remarks
		Feet	Feet	Feet	Feet		Ft-Inches	
396+54.00	Both	20	50	20	190		16	

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

UTILITY LEGEND

SURVEYED UTILITY OWNER SYMBOLS

Sub-Surface Utility Mapping Quality Level is in accordance with CI/ASCE 38-02 Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data.

Remark Abbreviations
 QLA Quality Level A Highest guideline quality level
 QLD Quality Level D Lowest guideline quality level

- TL1D, Centurylink - Quality D
- PPA, Iowa Lakes Elec Co-op

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

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

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

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

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

RIGHT-OF-WAY LEGEND

- Proposed Right-of-Way
- Existing Right of Way
- Existing and Proposed Right-of-Way
- Easement and Existing Right-of-Way
- Easement (Temporary)
- Easement
- Access Control
- Property Line

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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

Sherman TWP.
T-92N R-33W
SEC. 31



Sta. 394+75.00 (ML003)
Begin Construction

Sta. 398+25.00 (ML003)
End Construction

394+00

395+00

396+00

397+00

398+00

399+00

3

Extend?
21" C.M.P.
Outlet Approx. Location

+70 Prop.
Type "C" Ent.

Extend?
18"x96.5
C.M.P.

+77 Prop.
Type "C" Ent.

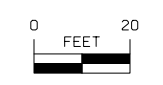
+65 Prop.
Type "C" Ent.

Extend?
18"x123'
C.M.P.

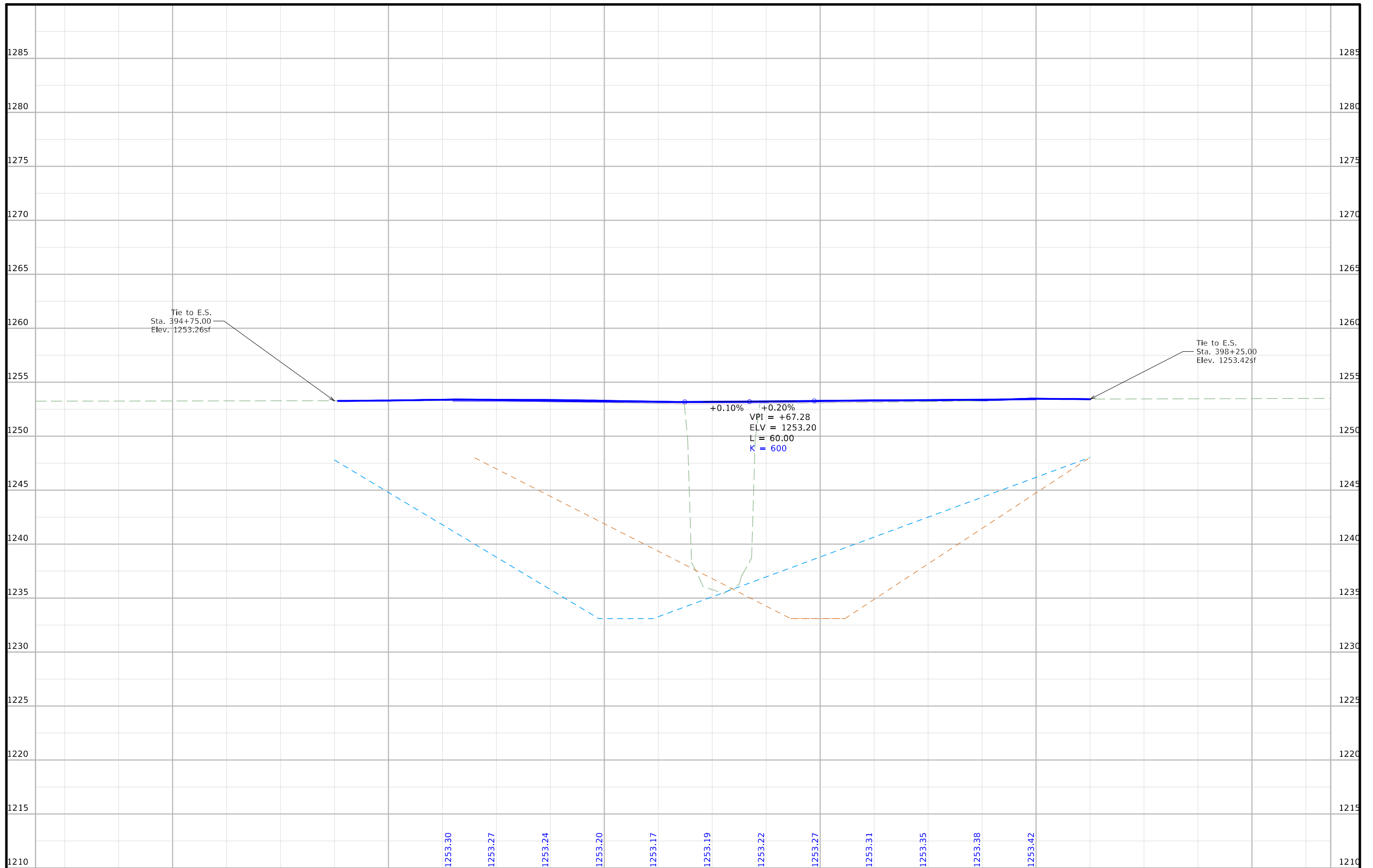
Extend?
15"x110'
C.M.P.

+65 Prop.
Type "C" Ent.

Sta. 396+54.7
Skew 26° RT AH
33'8"x30' Simple Span I-Beam Bridge
D.A.=19 Sq Miles R-F (Plans)
Sawcut and remove bridge rails.



Grant TWP.
T-91N R-33W
SEC. 6



FILE NO.	ENGLISH	DESIGN TEAM Flattery\Bell\Schneider	POCAHONTAS COUNTY	PROJECT NUMBER BRF-003-3(75)--38-76	SHEET NUMBER D.3
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108-23A
08-01-08

TRAFFIC CONTROL PLAN

Traffic on IA 3 shall be maintained at all times.

One lane of traffic shall be maintained at all times via the use of TC-217 with TBR and signals during the removal of bridge rail, guardrail, and flowable mortar.

111-01
04-17-12

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
None Provided	

108-25
10-21-14

511 TRAVEL RESTRICTIONS

Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No., Structure ID, or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
			None Anticipated									

CROSS SECTION VIEW COLOR LEGEND

Design Color No.	Feature	Design Color No.	Feature
Aggregate			
(64)	Choke Stone	(112)	Noise Wall
(42)	Engineering Fabric	(112)	Noise Wall Footing
(8)	Flooded Backfill	(112)	Retaining Wall Back
(92)	Macadam Stone	(112)	Retaining Wall Back Excavate
(20)	Modified	(112)	Retaining Wall Face
(12)	Plowing Shaping	(112)	Retaining Wall Front Excavate
(14)	Porous Backfill	(112)	Retaining Wall Front Footing
(8)	Revetment Class A	(112)	Retaining Wall MSE Gutter
(6)	Revetment Class B	(112)	Retaining Wall Reinforced Earth
(62)	Revetment Class C	Grading	
(188)	Revetment Class D	(8)	Behind Curb Cut
(28)	Revetment Class E	(6)	Granular
(12)	Shoulder Special Backfill	(13)	Granular Back Fill
(12)	Special Backfill	(48)	Rock Undercut
(20)	Subbase	(8)	Shoulder Earth Fill
(20)	Subbase Lower	(2)	Side Slopes
(20)	Subbase Upper	(226)	Side Slopes Dressing
(118)	Subgrade Treatment	Substrata	
Asphalt			
(207)	HMA Base Course	(128)	Boulder Substrata
(207)	HMA Interim Course	(48)	Broken Weathered Substrata
(207)	HMA Surface Course	(3)	Core Out Substrata
Concrete			
(0)	Barrier Concrete	(203)	Existing Pavement Substrata
(0)	Barrier Concrete Footing	(6)	Loam Substrata
(0)	Curb Gutter	(80)	Rock Substrata
(48)	Flowable Mortar	(4)	Select Sand Substrata
(0)	Median Concrete	(3)	Shale Substrata
(0)	PCC Pavement	(10)	Topsoil Substrata
(0)	Sidewalk	Unsuitable / Waste	
Shoulder			
(209)	Shoulder HMA	(3)	Unsuitable Type A
(0)	Shoulder PCC	(13)	Unsuitable Type B
(6)	Shoulder Granular	(11)	Unsuitable Type C
(6)	Shoulder Granular	(3)	Waste
Existing			
(0)	Existing Pavement		

NOTES:

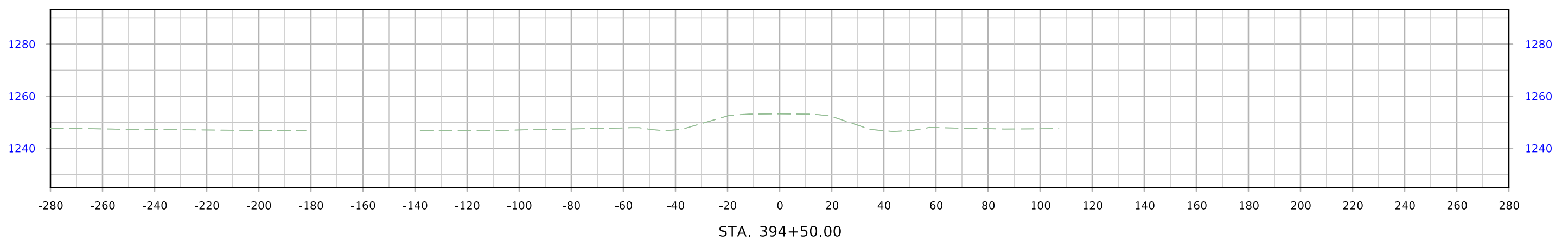
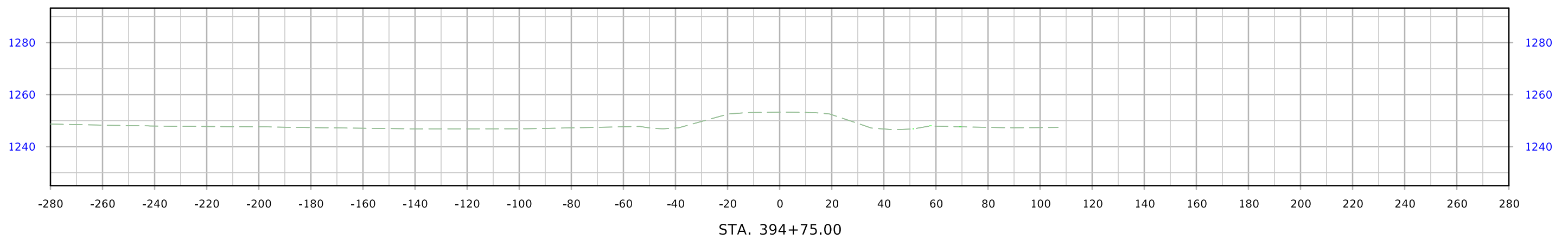
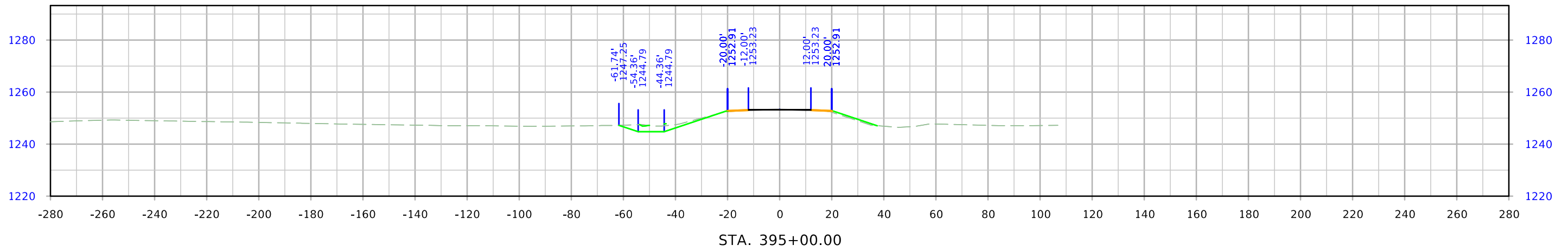
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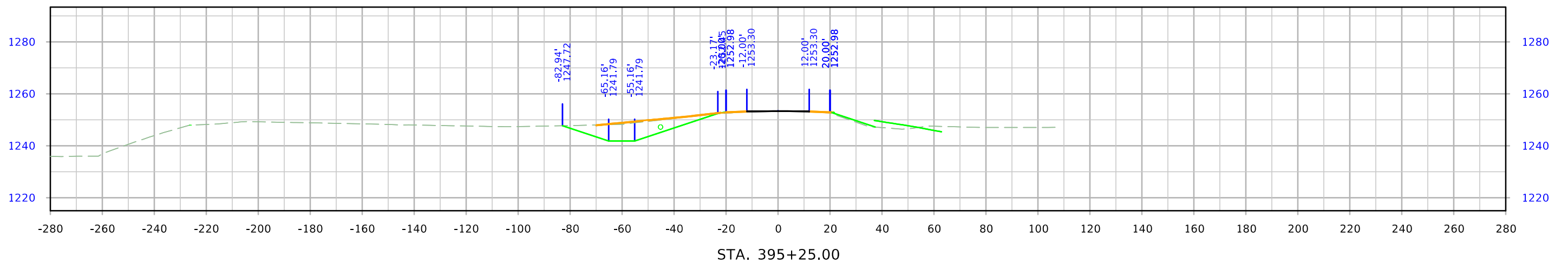
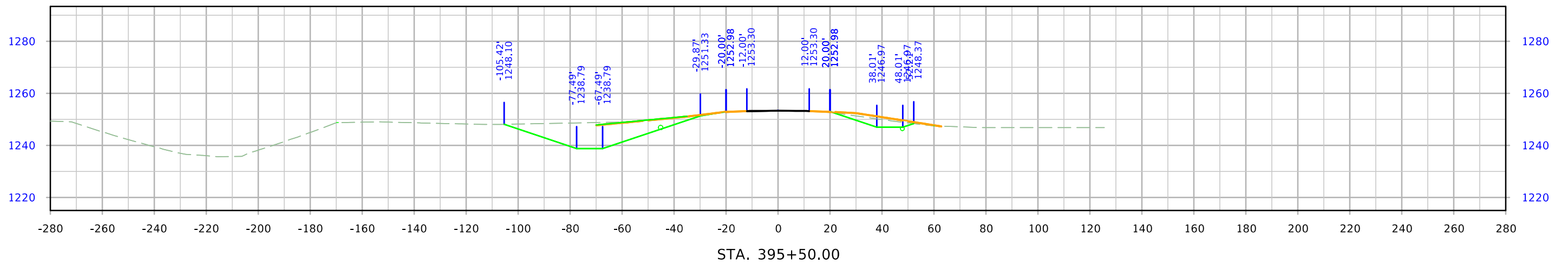
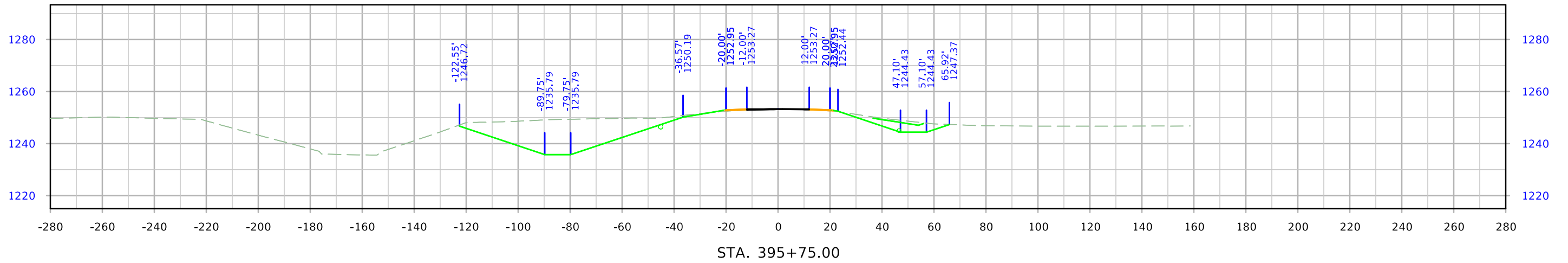
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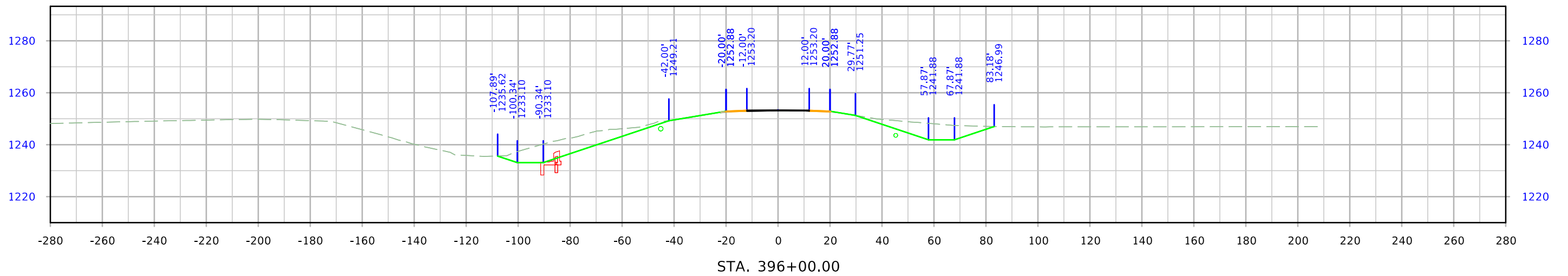
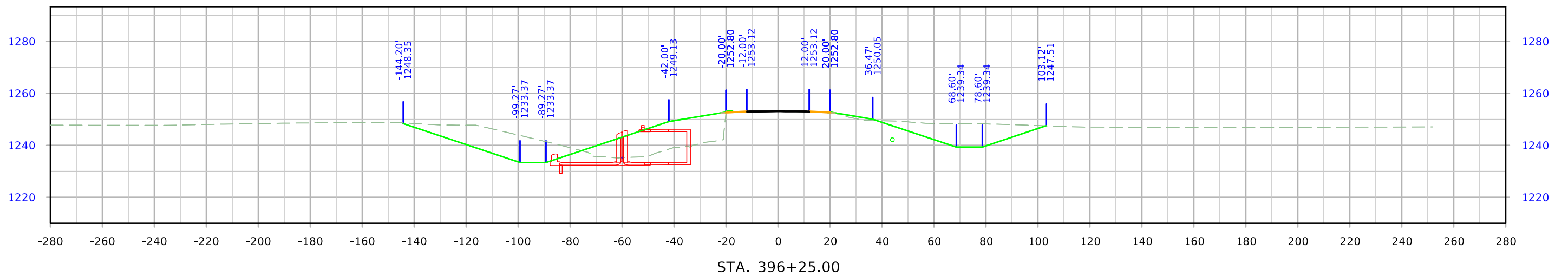
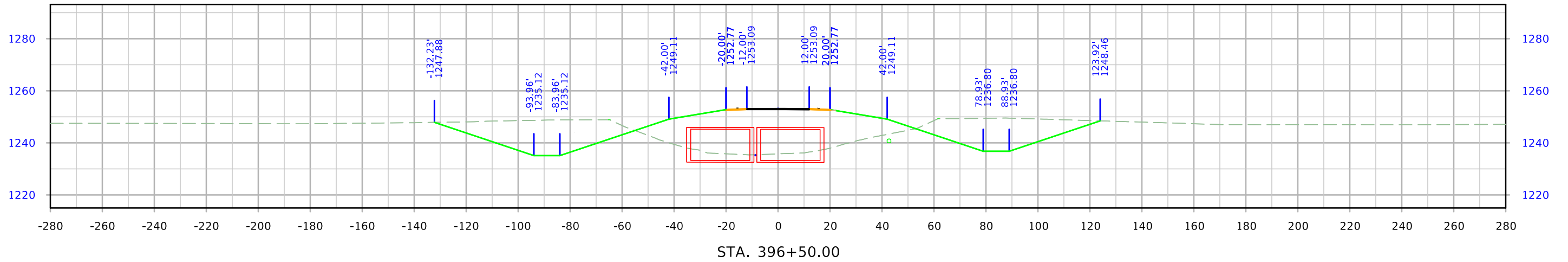
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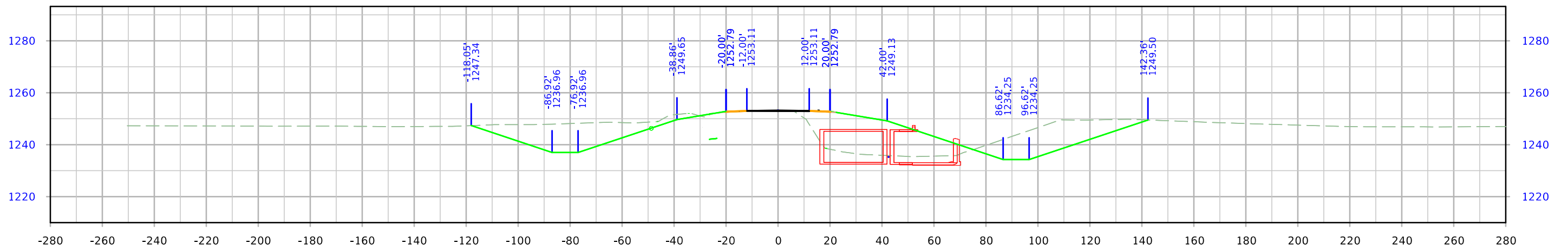
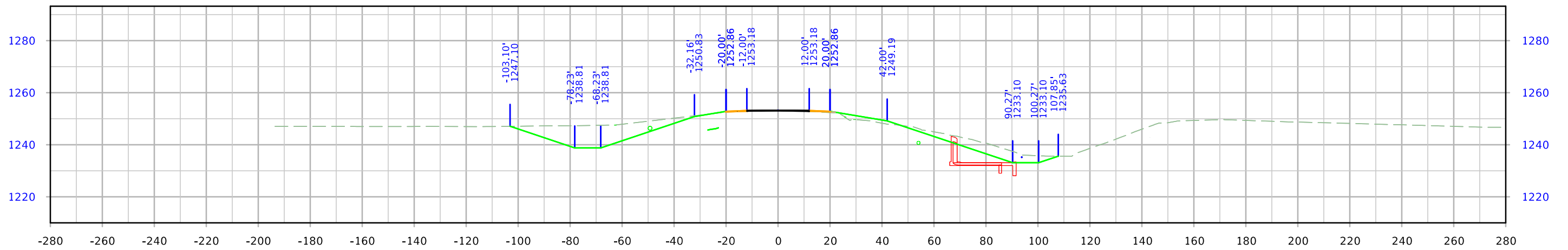
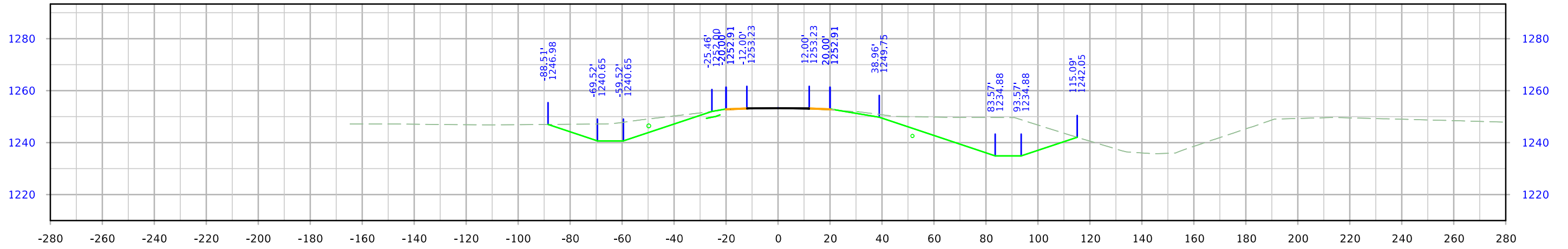
CROSS SECTIONS LEGEND AND INFORMATION SHEET

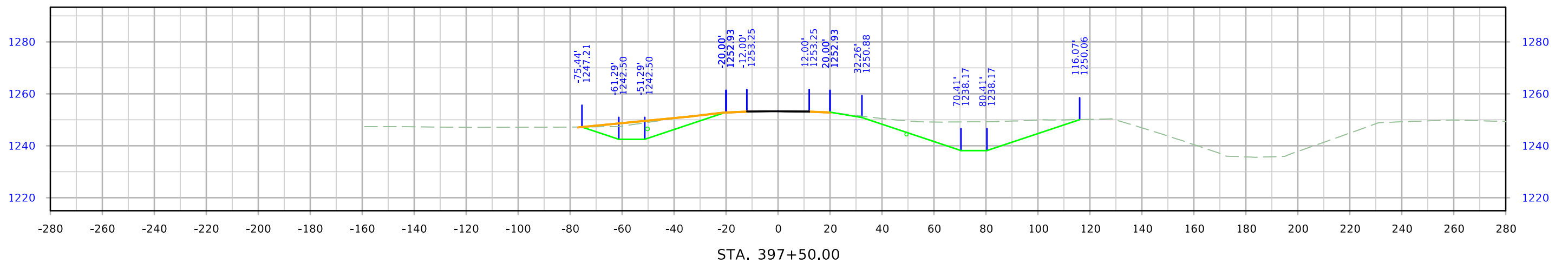
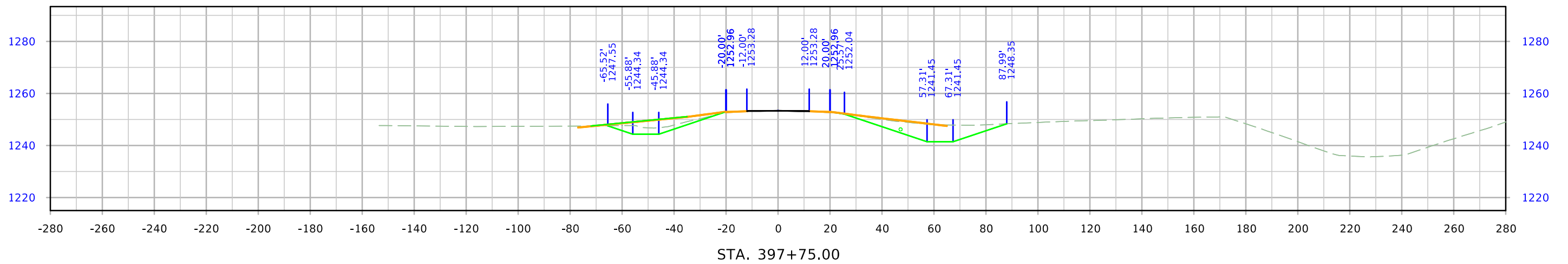
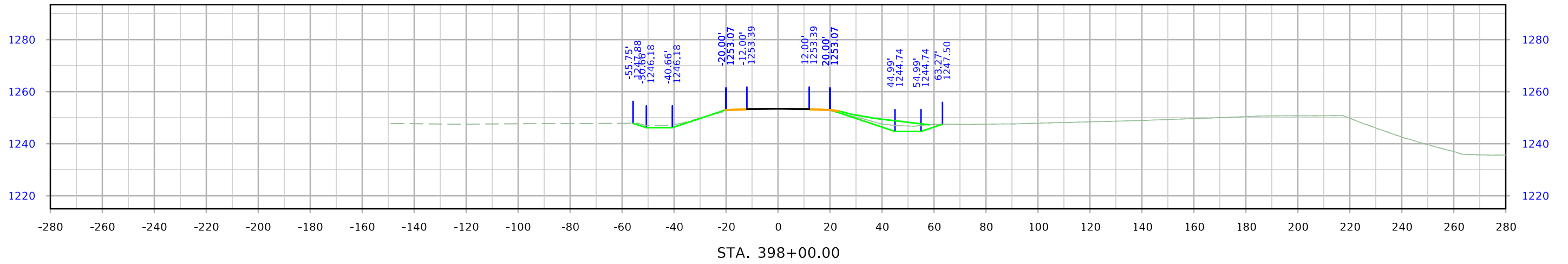
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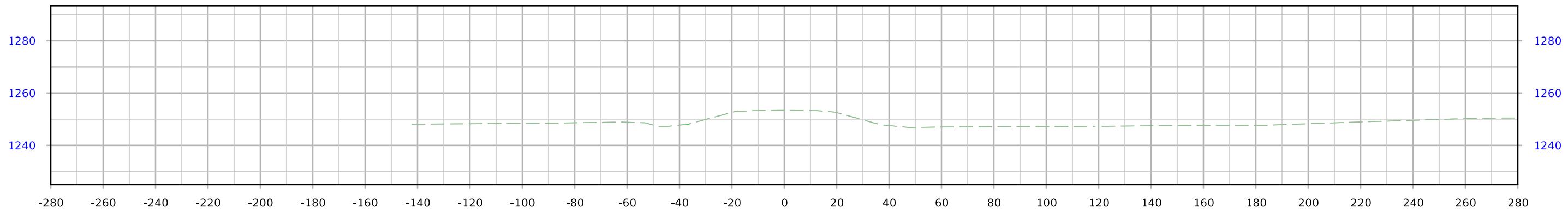




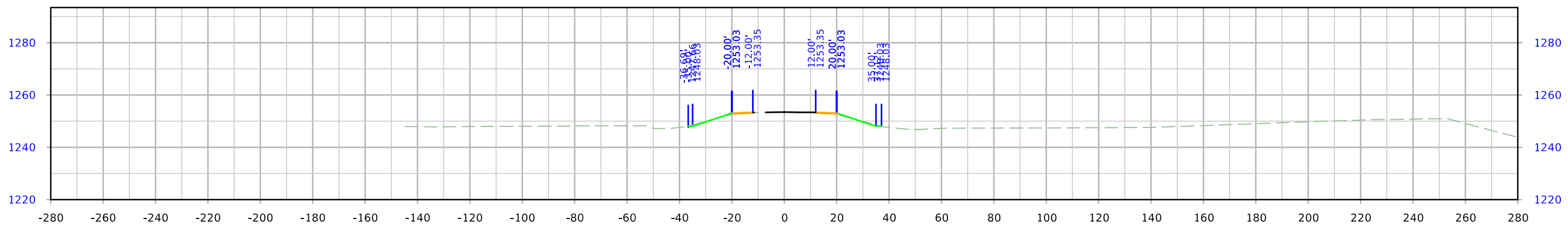








STA. 398+50.00



STA. 398+25.00