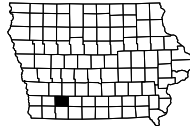


ADAMS COUNTY

Bridge Replacement-CCS
BRF-034-3(039)--38-02

LETTING DATE
OCT 20 2026



INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	Title Sheets
A.1	Title Sheet
B Sheets	Typical Cross Sections and Details
B.1 - 6	Typical Cross Sections and Details
D Sheets	Mainline Plan and Profile Sheets
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2	ML034
G Sheets	Survey Sheets
G.1 - 3	Reference Ties and Bench Marks
G.4	Horizontal Control Tab. & Super for all Alignments
J Sheets	Traffic Control and Staging Sheets
J.1	Traffic Control Plan and Staging Notes
* J.2	Traffic Control & Staging Legend & Symbol Info. Sheet
* J.3	Typical Staged Cross Sections
* J.4	Staging and Traffic Control Sheets Stage 1
* J.5	Staging and Traffic Control Sheets Stage 2
* J.6	Staging and Traffic Control Sheets Stage 3
U Sheets	500 Series, Mod.Stds. and Detail Sheets
* U.1 - 2	Modified DR-402
V Sheets	Bridge and Culvert Situation Plans
* V.1 - 4	Bridge and Culvert Situation Plans
W Sheets	Mainline Cross Sections
W.1 - 9	Mainline Cross Sections
	* Color Plan Sheets

<-- H Sheets



PLANS OF PROPOSED IMPROVEMENT ON THE
PRIMARY ROAD SYSTEM
ADAMS COUNTY
Bridge Replacement-CCS
US 34 over Metz Creek, 2.3 miles West of W. Jct. IA 25

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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



REVISIONS

TOTAL
..
PROJECT IDENTIFICATION NUMBER
22-02-034-010
PROJECT NUMBER
BRF-034-3(039)--38-02
R.O.W. PROJECT NUMBER
NHSN-034-3(040)--2R-02

FUTURE EVENT DATES:
D4 - 06/23/2026

DESIGN DATA RURAL			
2027	AADT	2,594	V.P.D.
2047	AADT	3,040	V.P.D.
2047	DHV	314	V.P.H.
	TRUCKS	21	%
	Total		
	Design ESALs	1,775,200	

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

PRELIMINARY PLANS

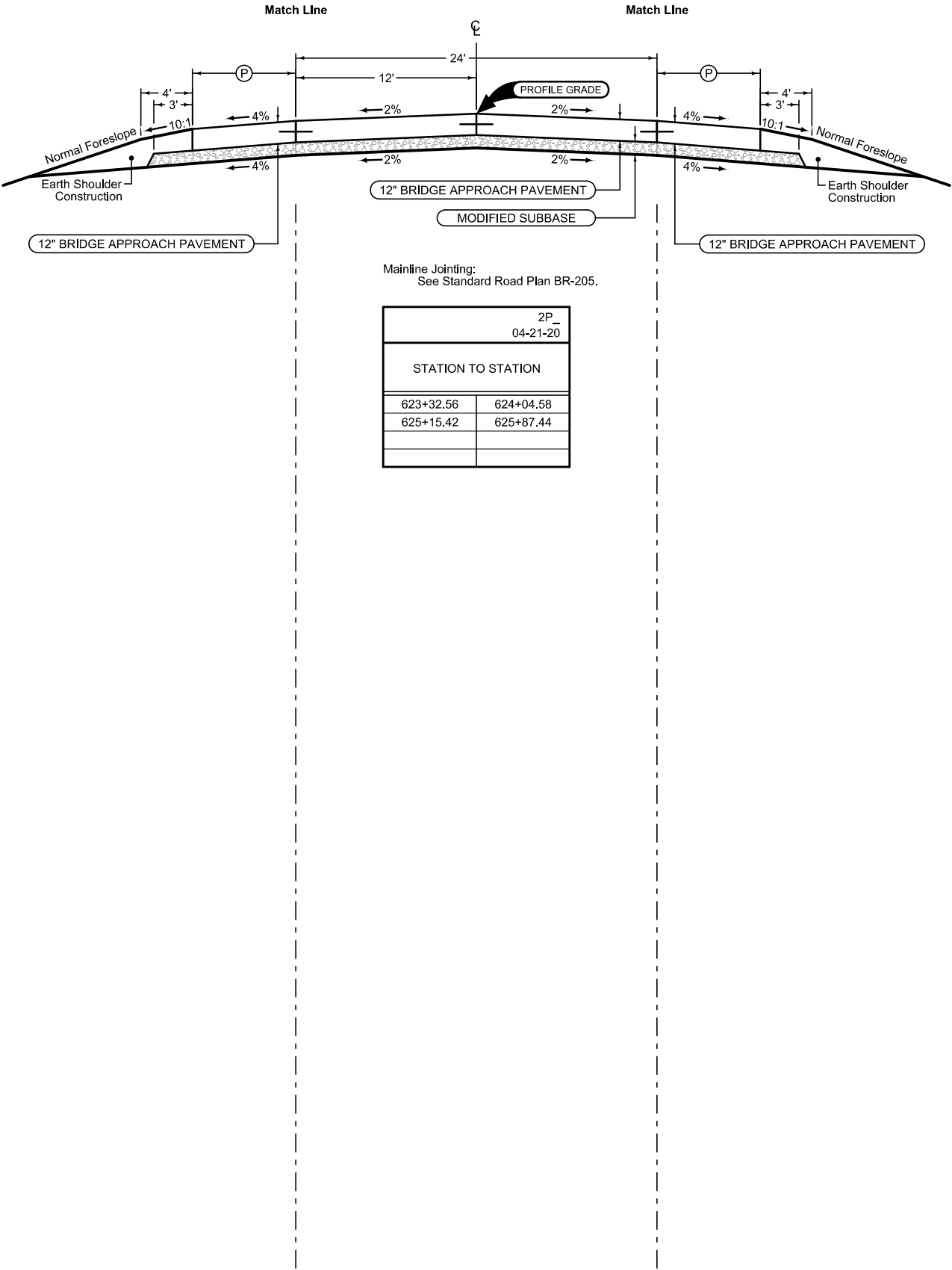
Subject to change by final design.

D5 PLAN - Date: 12/05/2024

Shoulder at Bridge Approach

Mainline Jointing:
See Standard Road Plan BR-205.

2_P_FullIPCC_04-20-21		
STATION TO STATION		(P) Feet
623+32.56	624+04.58	11.32
625+15.42	625+87.44	11.32



Mainline Jointing:
See Standard Road Plan BR-205.

2P_04-21-20	
STATION TO STATION	
623+32.56	624+04.58
625+15.42	625+87.44

Shoulder at Bridge Approach

Mainline Jointing:
See Standard Road Plan BR-205.

2_P_FullIPCC_04-20-21		
STATION TO STATION		(P) Feet
623+32.56	624+04.58	11.32
625+15.42	625+87.44	11.32

See Tab 112-6 for Bridge Approach Pavement quantities.
See Standard Road Plan BR-205 for details.

US 34
Bridge Approach Pavement

Full Depth PCC Shoulder

Shoulder Jointing:
Longitudinal joint: BT-2, L-2 or KT-2
Transverse joints: C at 17' spacing

2_P_FullPCC_04-20-21		
STATION TO STATION		Feet
619+88.90	622+98.90	10
627+70.00	630+80.94	10

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		Feet
622+54.50	622+74.50	3.44
622+74.50	623+26.35	3.44+1.32
623+26.35	623+32.56	1.32
625+87.44	626+06.15	1.32
626+06.15	626+57.99	1.32+3.44
626+57.99	626+77.99	3.44

Full Depth PCC Shoulder

Shoulder Jointing:
Longitudinal joint: BT-2, L-2 or KT-2
Transverse joints: C at 17' spacing

2_P_FullPCC_04-20-21		
STATION TO STATION		Feet
622+98.90	623+32.56	10
625+87.44	627+70.00	10

Full Depth PCC Shoulder

Shoulder Jointing:
Longitudinal joint: BT-2, L-2 or KT-2
Transverse joints: C at 17' spacing

2_P_FullPCC_04-20-21		
STATION TO STATION		Feet
619+88.90	622+98.90	10
627+70.00	630+80.94	10

Paved Shoulder at Guardrail

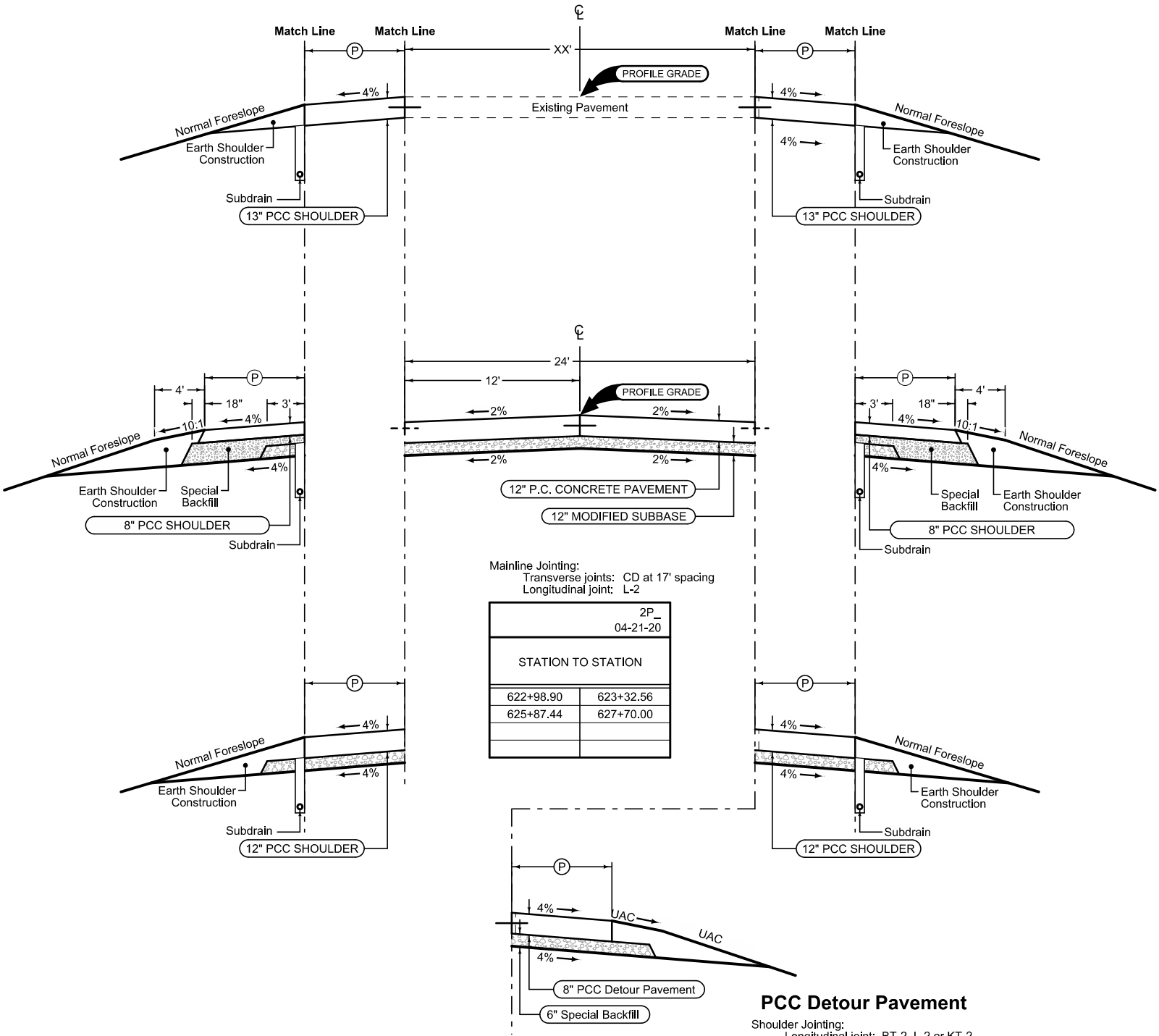
PCC Shoulder Jointing:
Longitudinal joint: BT-1 or BT-5
Transverse joints: C at mainline spacing
HMA Shoulder Jointing:
Longitudinal joint: B

2_P_Guard_04-21-20		
STATION TO STATION		Feet
622+42.01	622+62.01	3.44
622+62.01	623+13.85	3.44+1.32
623+13.85	623+32.56	1.32
625+87.44	625+93.65	1.32
625+93.65	626+45.49	1.32+3.44
626+45.49	626+65.49	3.44

Full Depth PCC Shoulder

Shoulder Jointing:
Longitudinal joint: BT-2, L-2 or KT-2
Transverse joints: C at 17' spacing

2_P_FullPCC_04-20-21		
STATION TO STATION		Feet
622+98.90	623+32.56	10
625+87.44	627+70.00	10



PCC Detour Pavement

Shoulder Jointing:
Longitudinal joint: BT-2, L-2 or KT-2
Transverse joints: C at 17' spacing

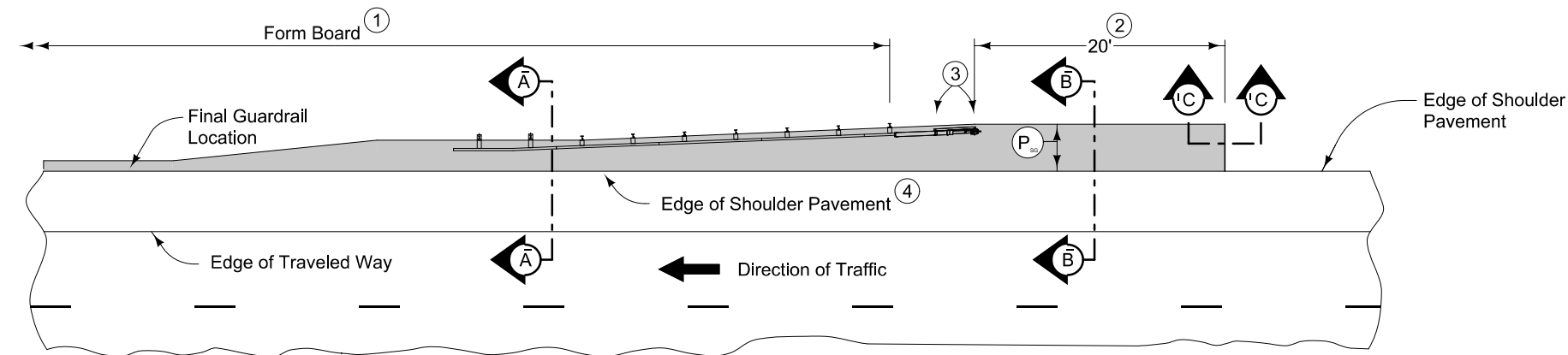
2_P_FullPCC_04-20-21		
STATION TO STATION		Feet
622+98.90	624+34.30	3.7
624+85.64	627+70.00	3.7

See Tab 100-24 or 100-25 for pavement quantities.

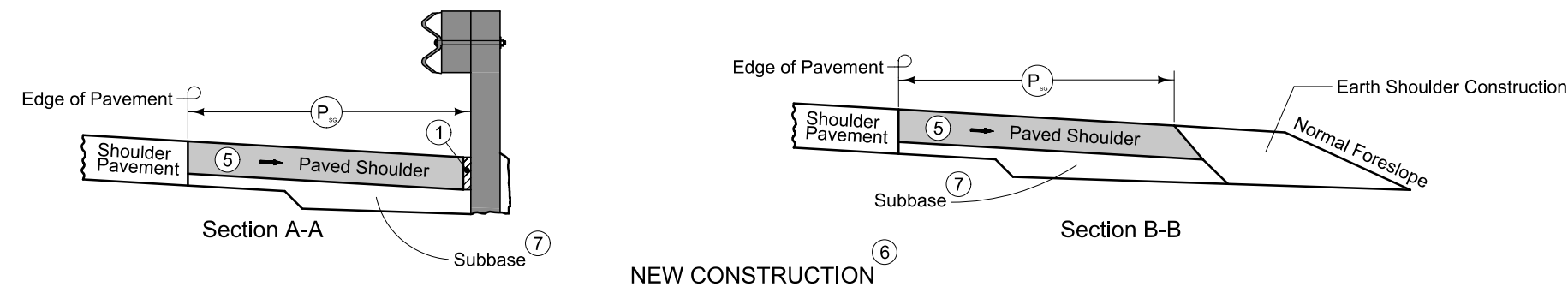
See Tab 112-9 for shoulder quantities.

US 34

Paved Shoulder at Guardrail,
Paved Shoulder, and Detour Pavement



PLAN VIEW



NEW CONSTRUCTION

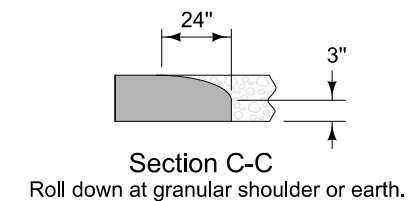
10" HMA Paved Shoulder at guardrail. 9" PCC may be substituted with the following jointing layout:

Match mainline pavement joint spacing. When mainline pavement is 8" or greater in thickness, place additional transverse 'C' joints in shoulder at mid-panel of the mainline pavement. Place longitudinal 'C' joint at P/2 from edge of mainline pavement when P is greater than 10' wide. Terminate longitudinal joint at transverse joint less than 10' in length.

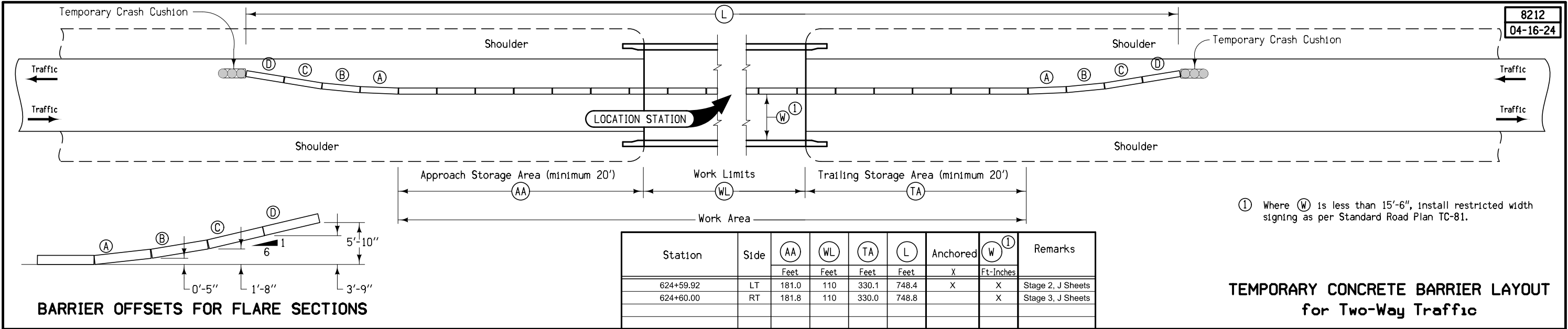
Compaction of HMA is required to face of guardrail post. Hand compaction will be allowed under guardrail. Removal and reinstallation of guardrail will be allowed with no additional payment.

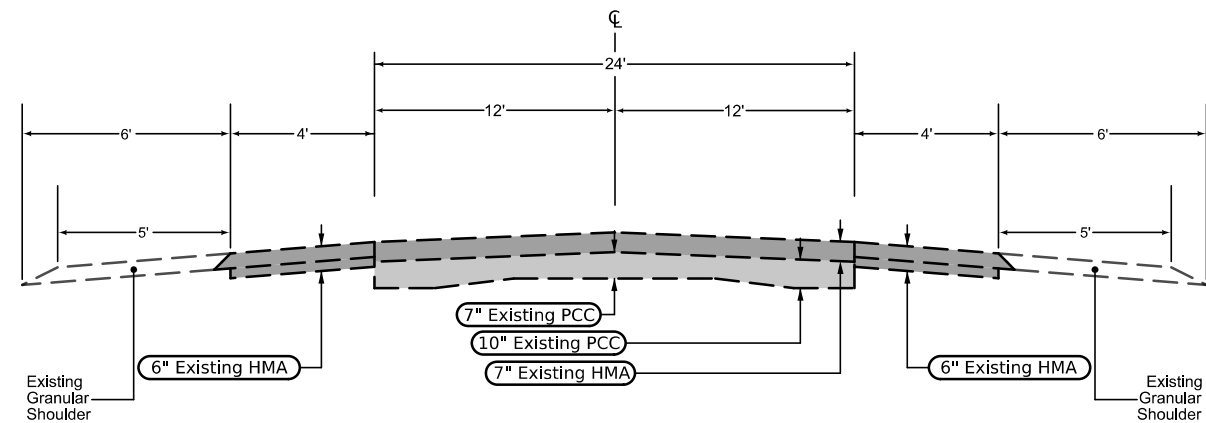
Refer to Tabulation 112-9 for shoulder quantities.

- ① PCC option only: When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown.
- ② Continue paved shoulder 20 feet beyond the center of the first post.
- ③ Shoulder may be notched for first 2 posts or post sleeves may be installed through pavement. Do not drive posts through pavement.
- ④ 'KT' (per PV-101) joint for PCC shoulder.
'B' (per PV-101) joint for HMA shoulder.
- ⑤ Match shoulder slope.
- ⑥ The Contractor has the option to pave the paved shoulder at guardrail and the full width paved shoulder as one operation.
- ⑦ Refer to other details in the plan.



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





US 34
Existing Pavement

SURVEY SYMBOLS

	Interstate Highway Symbol		Septic Tank
	U.S. Highway Symbol		Cistern
	Iowa Highway Symbol		L.P. Gas Tank (No Footing)
	County Road Highway Symbol		Underground Storage Tank
	Evergreen Tree		Latrine
	Deciduous Tree		Satellite TV Dish
	Fruit Tree		Water Hook Up
	Shrub (Bushes)		Radio Tower
	Timber		Tower Anchor
	Hedge		Guardrail (Beam or Cable)
	Stump		Guard Post (one or two)
	Swamp		Guard Post (over two)
	Rock Outcrop		Filler Pipe
	Broken Concrete		Gas Valve
	Revetment (Rip Rap)		Water Valve
	Cemetery		Speed Limit Sign
	Grave		Mile Marker Post
	Cave		Sign
	Sink Hole		Traffic Signal Control Box
	Board Fence		Rail Road Signal Control Box
	Chain Link or Security Fence		Telephone Switch Box
	Wire Fence		Electric Box
	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)		

UTILITY LEGEND

	FO	FO1D, AREON - Quality D
	F02	FO2D, Windstream - Quality D
	F03	FO3D, ICN - Quality D
	W	WL1D, SIRWA - 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

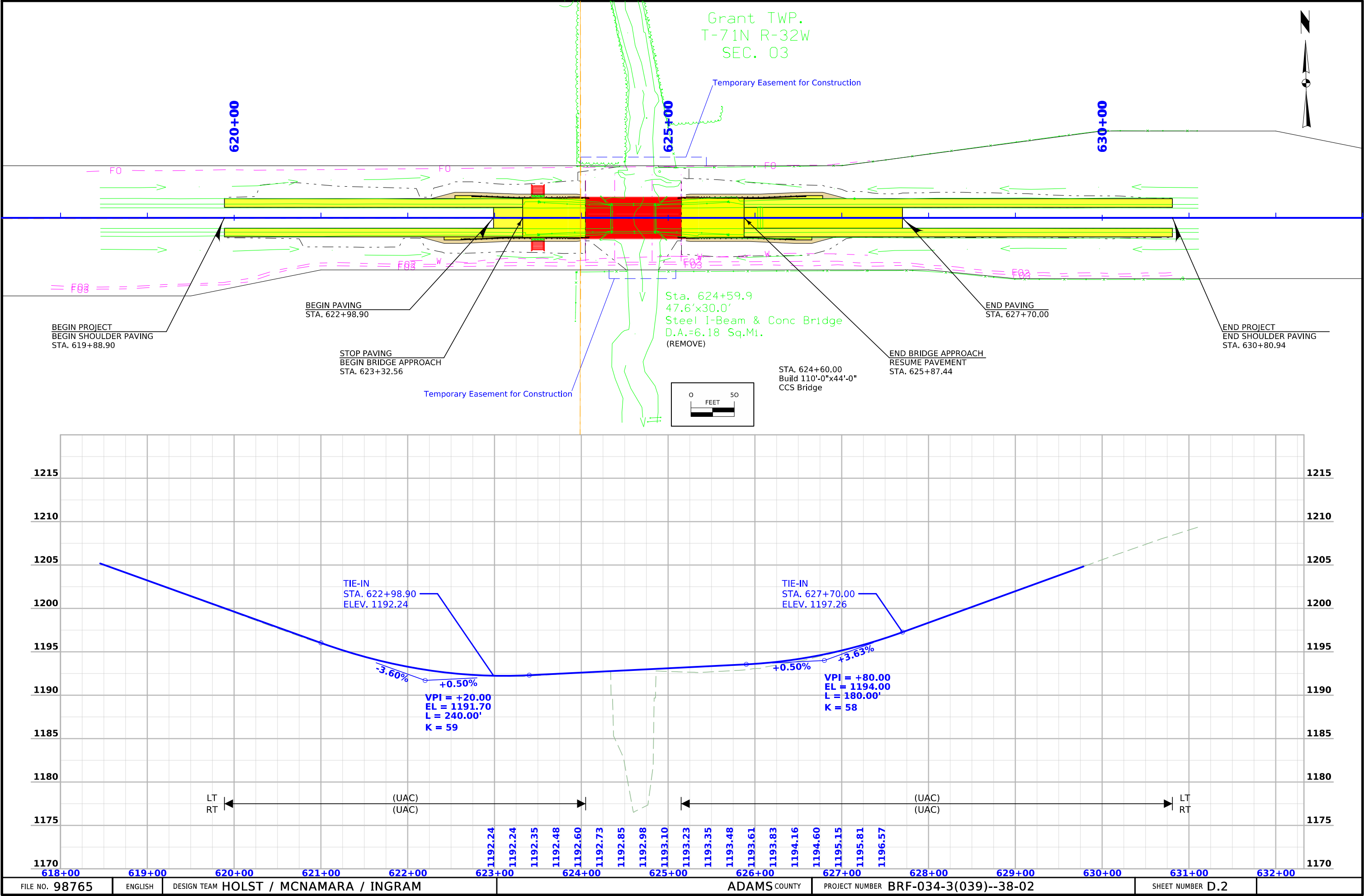
	Reference Point		Survey Line
	Station		Section Corner
	Ground Line Intercept		Saw Cut
	Guardrail		Trench Drain
	HighTension Cable Guardrail		Sheet Pile
	Pavement Removal		Clearing & Grubbing Area

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)



Survey Information

SURVEY INDEX

Adams County
BRF-034-3(39)--38-02
West Platte River 2.3 mi W of W Jct. IA 25
PIN: 22-02-034-010
Type of Work: Bridge Unspecified
Project Directory: 0203401022

Survey Personnel

Paul Harry – Survey Party Chief
Bob Fredrickson – Assistant Survey Party Chief

Date(s) of Survey

Begin Date 09/11/2023
End Date 09/28/2023

General Information

This survey is for US Hwy 34 bridge over W Platte River 2.3 miles west of west junction IA 25. 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 12
(U.S. SURVEY FOOT)
VERTICAL DATUM: NAVD88
GEOID MODEL: 2018u3

Alignment Information

The horizontal alignment was provided by District 4 ROW office.

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 12 (U.S. Survey Foot)

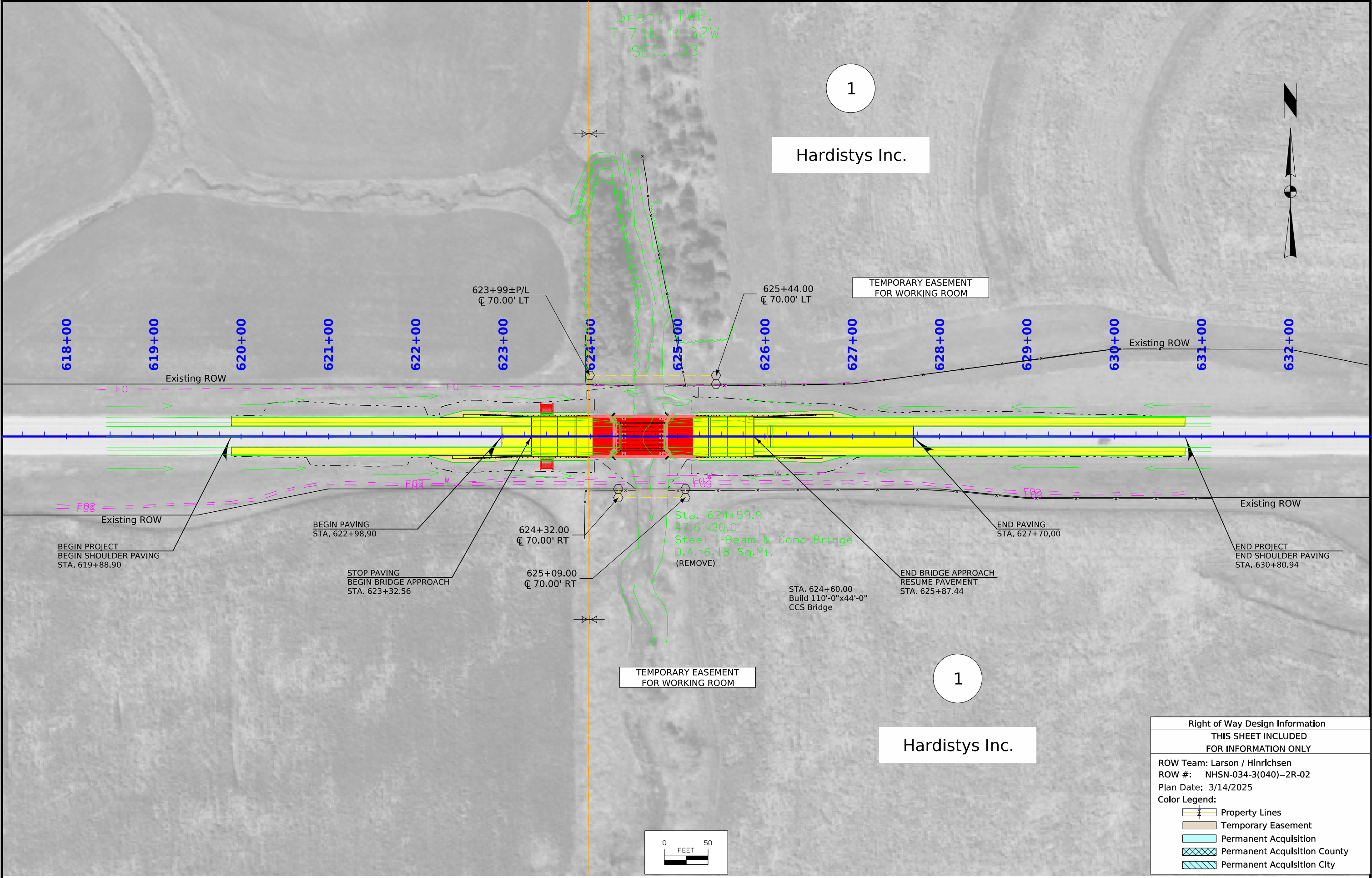
VERT. DATUM: NAVD88 - Geoid Model: 2018u3

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

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING
HORIZ. DATUM: NAD83(2011) for EPOCH 2010.00 (laRTN 2019 Adjustment)
la. Regional Coordinate System Zone 12 (U.S. Survey Foot)
VERT. DATUM: NAVD88
Geoid Model: 2018u3

Point Name	Northing	Easting	Elevation	Code-Description
02VANILLA AVE	6228751.08	22290504.25	1259.97	CP SET FENO MON IN WESTERLY ROW COUNTY ROAD VANILLA AVE 1.0 MILES NORTH OF HWY 34
02UNION AVE	6220325.39	22285244.78	1255.83	CP SET FENO MON IN EASTERLY ROW COUNTY ROAD UNION AVE 0.6 MILES SOUTH OF HWY 34
20340740	6223537.15	22289916.04	1212.01	CP FND IDOT CONC REF MON W 1/2IN RBR IN GOOD CONDITION
STRING	6223623.73	22284996.8	1271.21	CP FND NGS 2ND ORDER HORIZONTAL AZIMUTH MARK AS DESCRIBED

ALIGNMENT COORDINATES																		101-16 10-20-09	
Name	Location	Point on Tangent			Begin Spiral			Begin Curve			Simple Curve PI or Master PI of SCS		End Curve			End Spiral			
		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates	
			Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)
1	ML034	604+14.16	6223646.69	22287238.56															
2	ML034	631+21.88	6223605.91	22289945.98															
2	ML034	635+35.74	6223599.68	22290359.78															



Right of Way Design Information	
THIS SHEET INCLUDED FOR INFORMATION ONLY	
ROW Team: Larson / Hinrichsen	
ROW #: NHSN-034-3(040)--2R-02	
Plan Date: 3/14/2025	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition
	Permanent Acquisition County
	Permanent Acquisition City

108-23A
08-01-08

TRAFFIC CONTROL PLAN

Through traffic on US 34 shall be maintained at all times.

Utilize single lane closure with temporary signals for staged bridge and pavement construction. Refer to Staging Notes and Staging Detail sheets for additional details.

108-26A
08-01-08

STAGING NOTES

Stage 1:
Traffic: Single lane EB closure with signals, TC-216 Modified (signal timing and distances).
Construction: Widen EB lane with shoulder strengthening/detour pavement.

Stage 2:
Traffic: Single lane WB closure with signals, TC-217 Modified (signal timing and distances)
Construction: WB half of bridge approach, mainline pavement, and guardrail.

Stage 3:
Traffic: Single lane EB closure with TBR, TC-217 Modified (signal timing and distances)
Construction: EB half of bridge approach, mainline pavement, and guardrail.

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
To Be Determined	

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
US 34	WB/EB	Adams	US-34 Bridge over Metz Creek	Bridge	Barrier	FHWA 13331	Horizontal	N/A			N/A	
US 34	WB/EB	Adams	US-34 Bridge over Metz Creek	Bridge	Temporary Signal	FHWA 13331	Vertical	N/A			N/A	
US 34	WB/EB	Adams	US-34 Bridge over Metz Creek	Bridge	Barrier	FHWA 13331	Horizontal	N/A			N/A	
US 34	WB/EB	Adams	US-34 Bridge over Metz Creek	Bridge	Temporary Signal	FHWA 13331	Vertical	N/A			N/A	
US 34	WB/EB	Adams	US-34 Bridge over Metz Creek	Bridge	Barrier	FHWA 13331	Horizontal	N/A			N/A	
US 34	WB/EB	Adams	US-34 Bridge over Metz Creek	Bridge	Temporary Signal	FHWA 13331	Vertical	N/A			N/A	
NOTES: (1): Restriction is during Bridge Approach Reconstruction. (2): Vertical Height restriction of Temporary Traffic Signals shall follow clearance requirements in Article 2528.03.G.2.a.3)a) and 2528.03.G.2.a.3)d) of the Standard Specifications.												

CROSS SECTION VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS		
SHADING	Design Color No.	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Gray, Med	(80)	Previously Constructed Granular Surface Shading
Blue, Light	(230)	Proposed Pavement Shading
Lavender	(9)	Temporary Pavement Shading
Brown, Med	(237)	Future Proposed Pavement Shading

CROSS SECTION VIEW PATTERN AND SYMBOL LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS			
	Pavement Removal		Proposed Granular Shoulder
	Proposed Granular Subbase		Temporary Shoulder
	Proposed Special Backfill		Existing Shoulder Strengthening
	Temporary Barrier Rail		Permanent Barrier Rail
			Channelizing Device

PLAN VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS		
LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Magenta	(5)	Pavement Marking Call Outs
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Yellow	(4)	Pavement Markings, Yellow
Off White	(254)	Pavement Markings, White
Violet	(15)	Temporary barrier rail, Unpinned
Flush Orange	(228)	Temporary barrier rail, Pinned

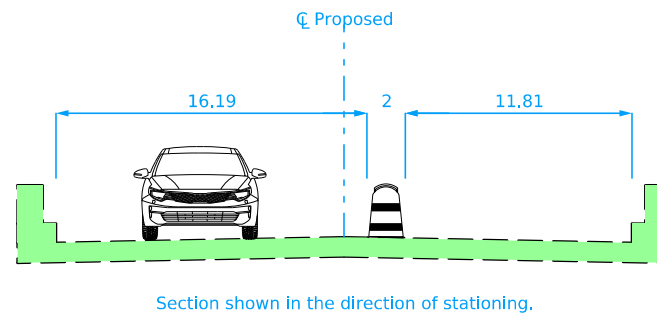
SHADING	Design Color No.	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Gray, Med	(6)	Proposed Granular Surface Shading
Gray, Med	(80)	Previously Constructed Granular Surface Shading
Blue, Light	(230)	Proposed Pavement Shading
Pink, Dark	(13)	Temporary Pavement Shading
Brown, Light	(236)	Proposed Grading Limits Shading
Cyan	(7)	Proposed MSE or CIP Wall Shading
Red	(3)	Proposed Bridge Shading and Sign Trusses
Black w/Gray, Light Fill	(0,48)	Previously Constructed Structure

PLAN VIEW PATTERN AND SYMBOL LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS			
	Channelizing Device		Crash Cushion (Temp or Perm)
	Drum		Traffic Signal
	Temporary Lane Separator		Flagger
	Tubular Marker		Temporary Floodlighting
	Channelizer Marker		Traffic Sign
	Concrete Barrier Marker		Type III Barricade
	Delineator		Type A Warning Light
	Temporary Barrier Rail		Direction of Traffic
	Pavement Removal		Safety Closure
	Sand Barrel Layout		Lane Identification

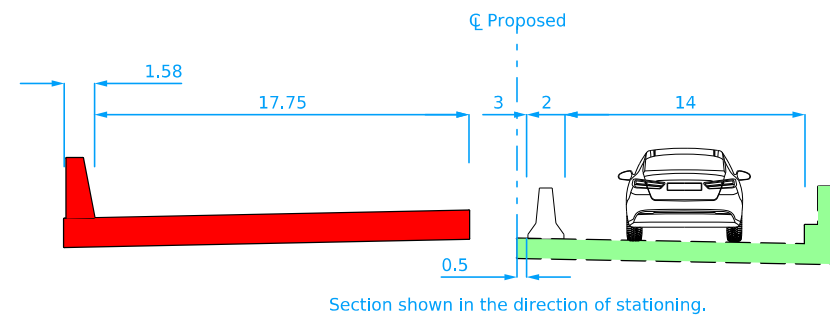
NOTE: Device spacing according to Standard Road Plans unless specifically dimensioned.

TRAFFIC CONTROL
AND
STAGING
LEGEND AND SYMBOL
INFORMATION SHEET

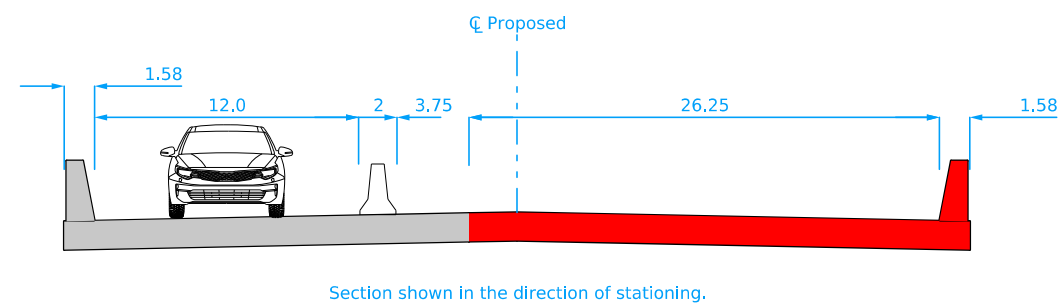
(COVERS SHEET SERIES J)



US 34 Stage 1
EB Shoulder Strengthening

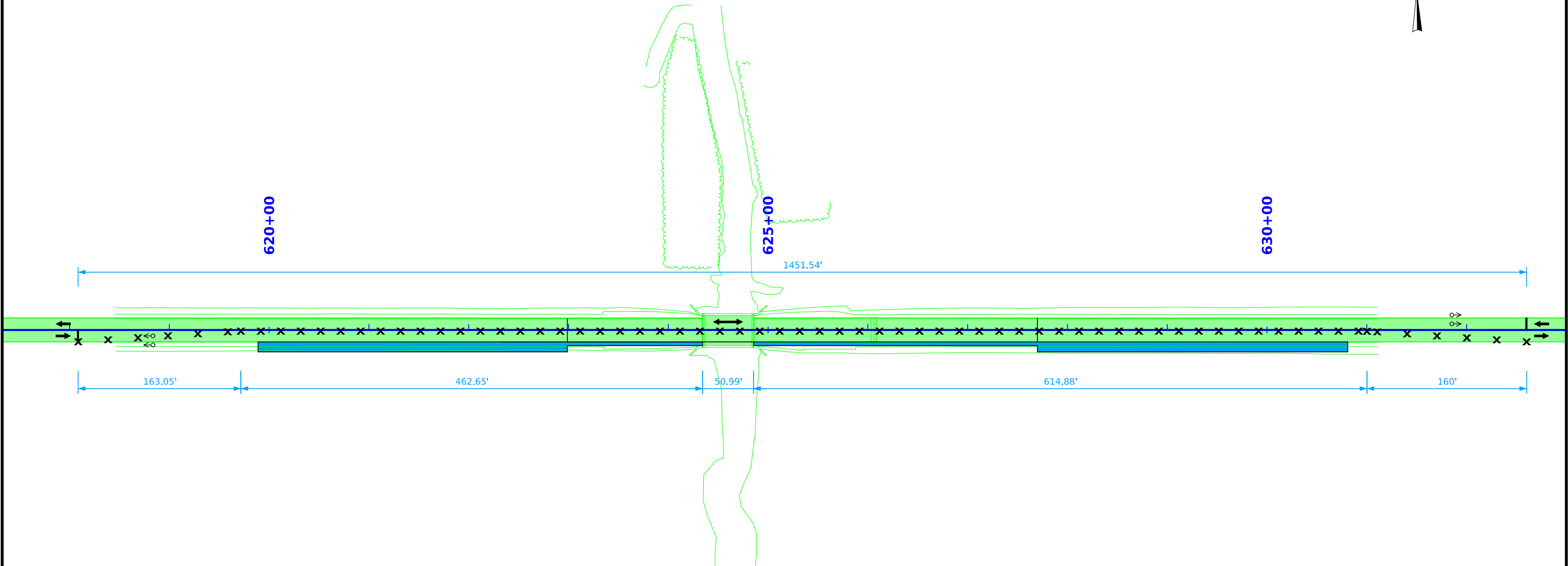


US 34 Stage 2
WB Bridge Construction
and Pavement



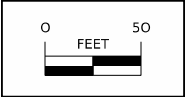
US 34 Stage 3
EB Bridge Construction
and Pavement

Grant TWP.
T-71N R-32W
SEC. 03

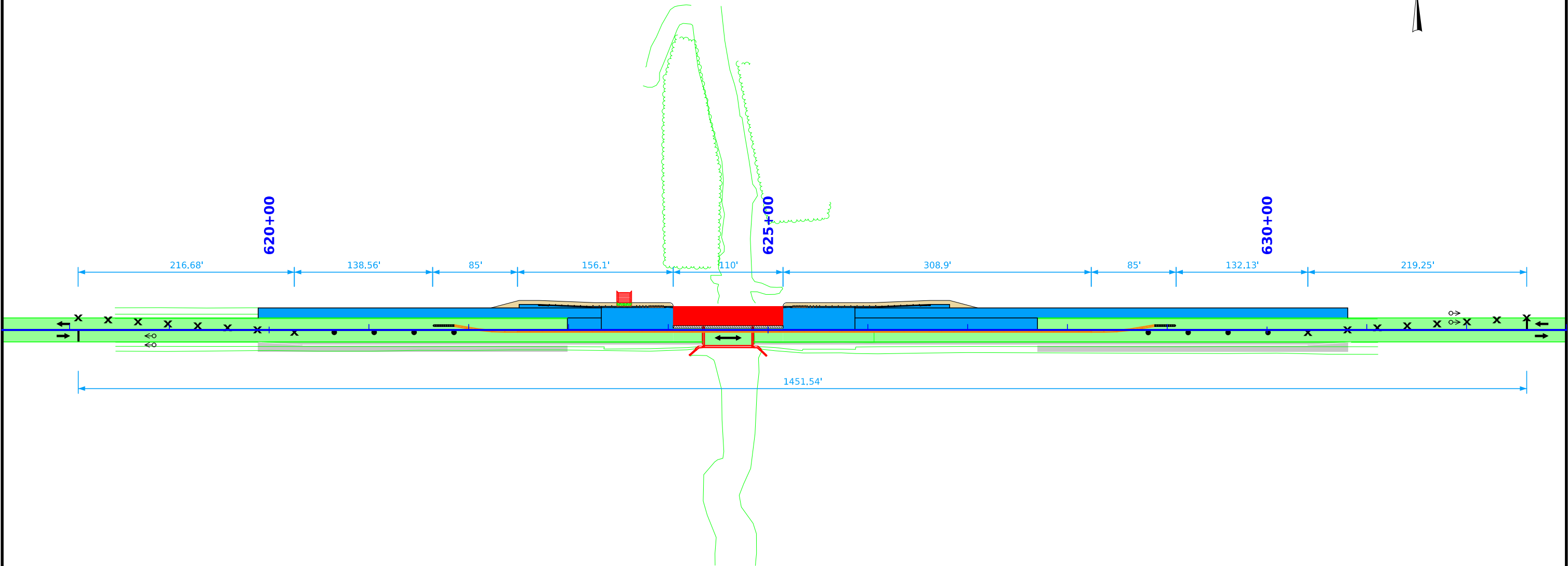


Notes:
Refer to Standard Road Plan TC-216
for additional details.

US 34 Stage 1
EB Shoulder Strengthening

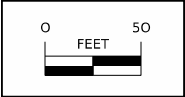


Grant TWP.
T-71N R-32W
SEC. 03

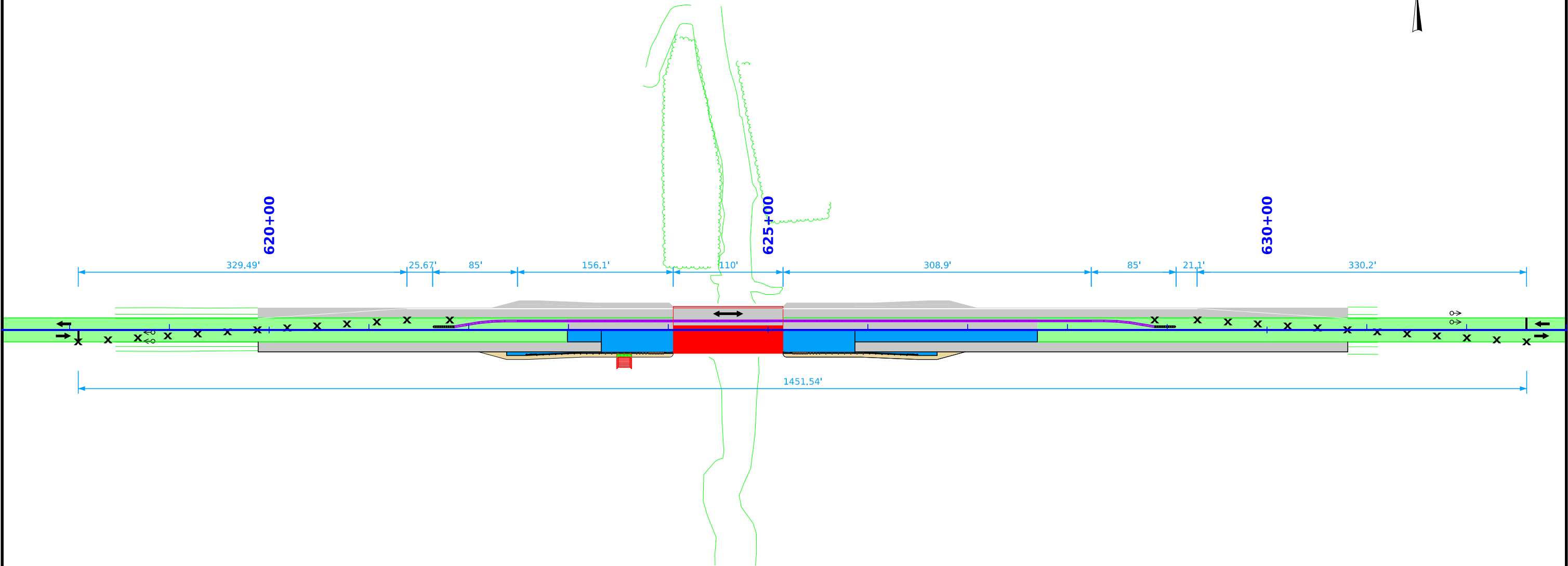


Refer to Standard Road Plan TC-217
for additional details.

US 34 Stage 2
WB Bridge Approach
and Pavement

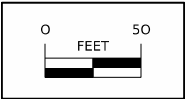


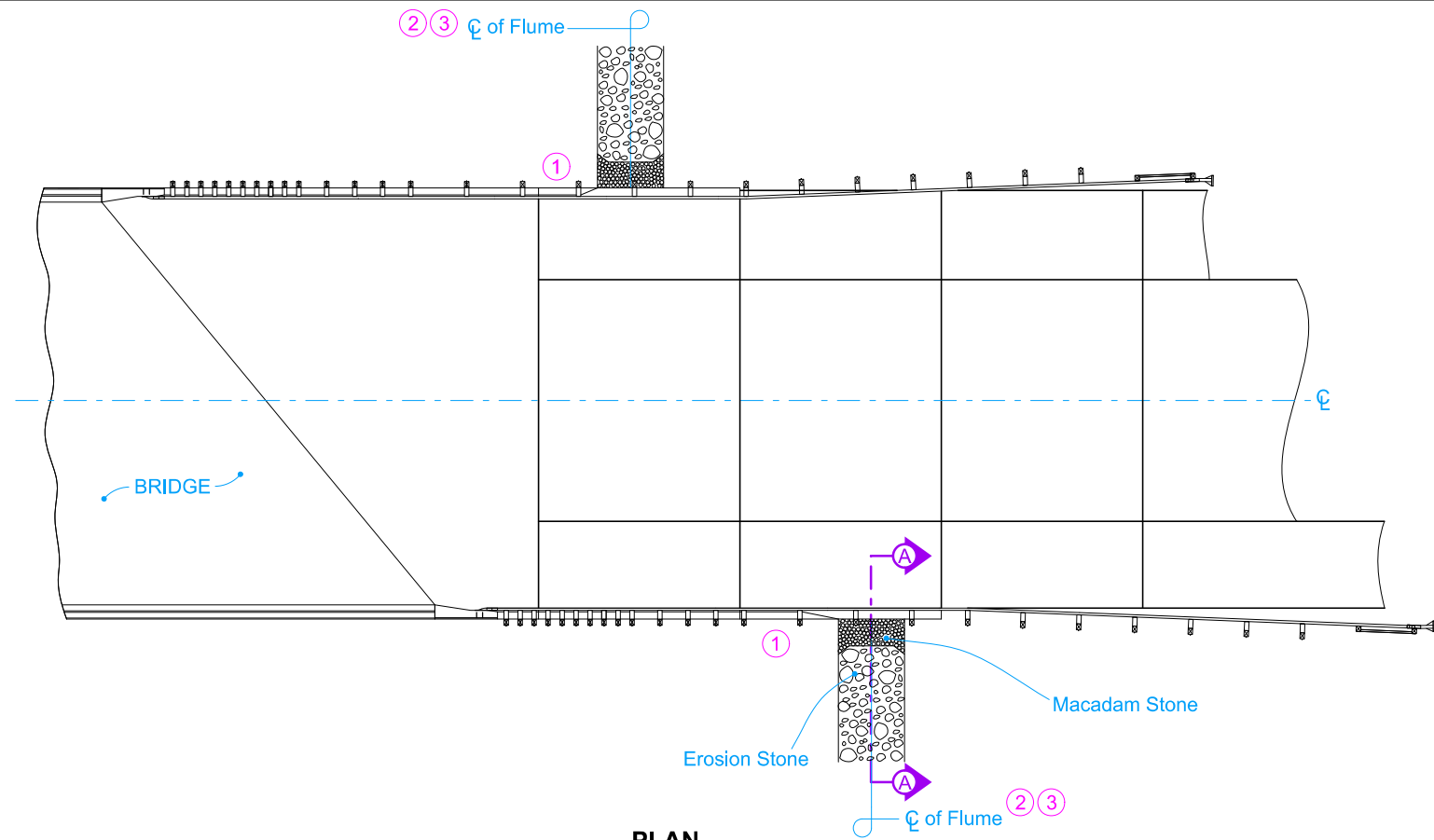
Grant TWP.
T-71N R-32W
SEC. 03



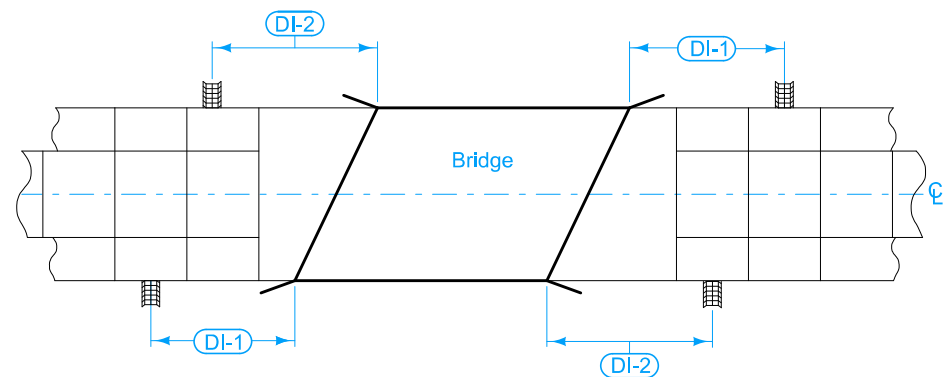
Refer to Standard Road Plan TC-217
for additional details.

US 34 Stage 3
EB Bridge Approach
and Pavement

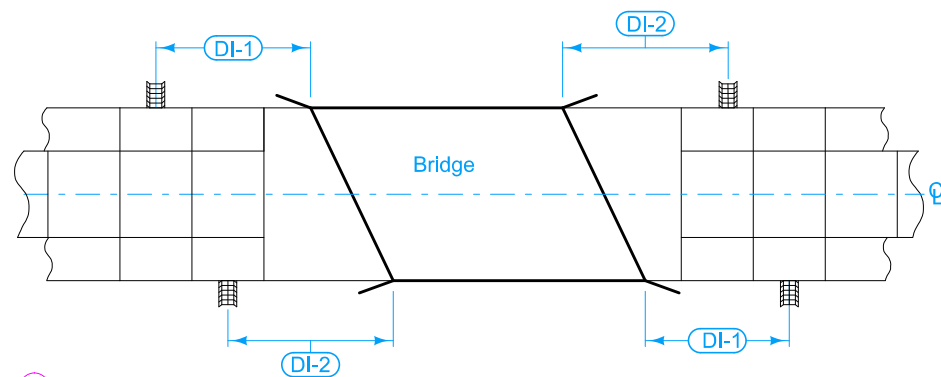




PLAN



FLUME LOCATIONS
(Skewed Bridge)



FLUME LOCATIONS
(Non-Skewed Bridge)

Price bid for "Bridge End Drain, DR-402" is full compensation for furnishing, installing, and constructing the Bridge End Drain as shown.

- 1 Continue 4 inch sloped curb to edge of flume per section B-B. Refer to [BR-201](#), [BR-202](#), [BR-203](#), [BR-204](#), or [BR-205](#) for details of 4 inch curb.
- 2 DI-1 and DI-2 distances measured from center of Bolt Pattern. Refer to BA-202.
- 3 Extend rock flume to toe of backslope. If no backslope exists, extend rock flume a minimum of 4 feet beyond the toe of foreslope.

Possible Contract Items:
Bridge End Drain, DR-402

Incidental to Bridge End Drain:
Macadam Stone Base Material
Erosion Stone
Engineering Fabric
Excavation, hauling, and disposing of material

Possible Tabulation:
[104-8A](#)

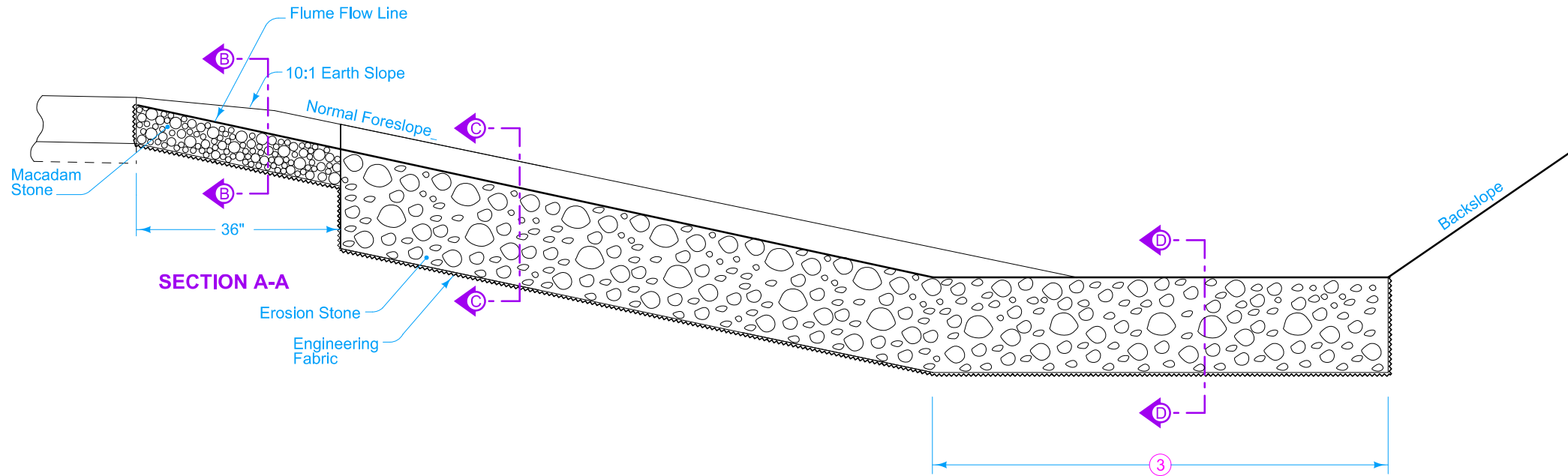
MODIFIED

MODIFICATIONS: Changed overall width of sections B-B, C-C, and D-D from 7'-6" to 15'-0".

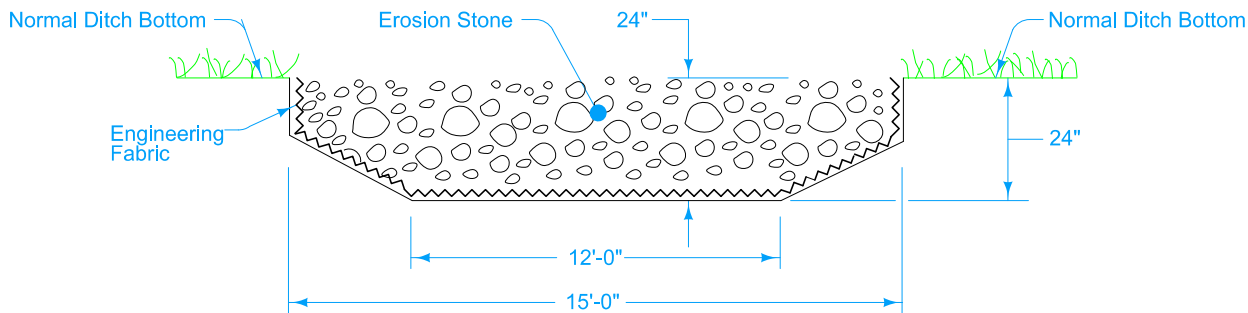
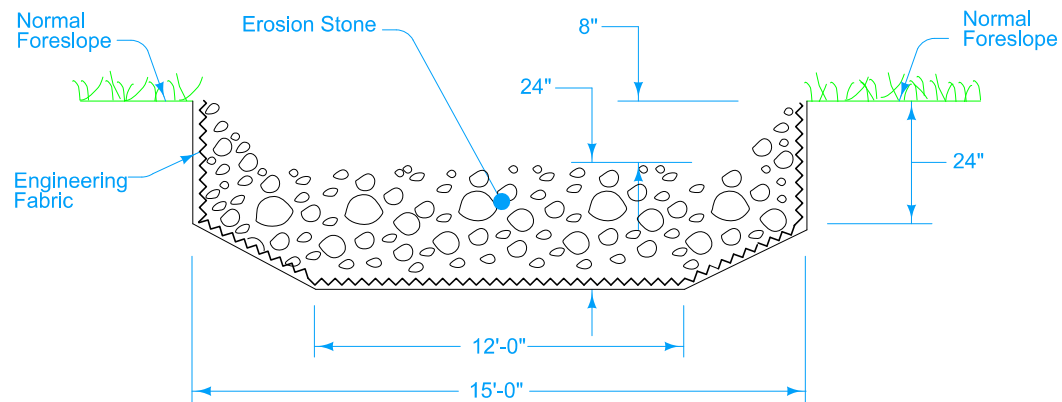
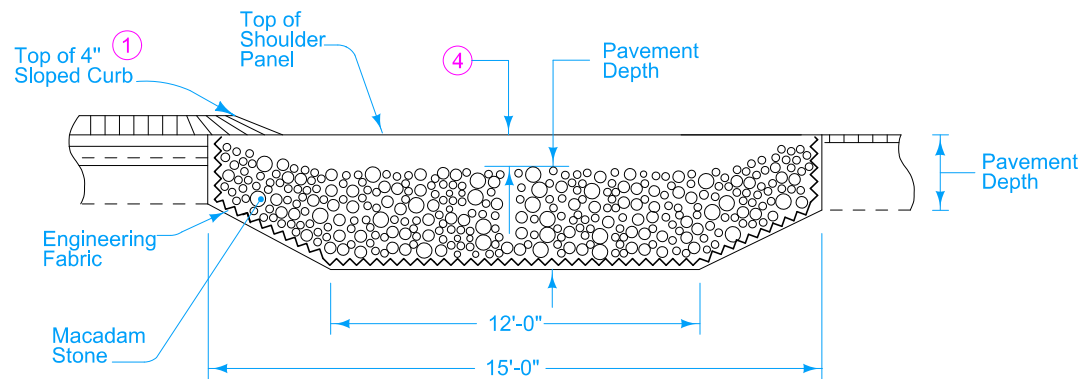
ROCK FLUME FOR BRIDGE END DRAIN

DR-402

Sheet 1 of 2



- ① Continue 4 inch sloped curb to edge of flume per section B-B. Refer to [BR-201](#), [BR-202](#), [BR-203](#), [BR-204](#), or [BR-205](#) for details of 4 inch curb.
- ③ Extend flume to toe of backlope. If no backslope exists, extend rock flume a minimum of 4 feet beyond the toe of foreslope.
- ④ Transitions from 2 inches at edge of pavement to 8 inches within 3 feet.
- ⑤ Transition the flume flow line depth from 8 inches at the toe of slope to 0 inches with an approximate transition rate of 2 inches per 1 foot horizontal.



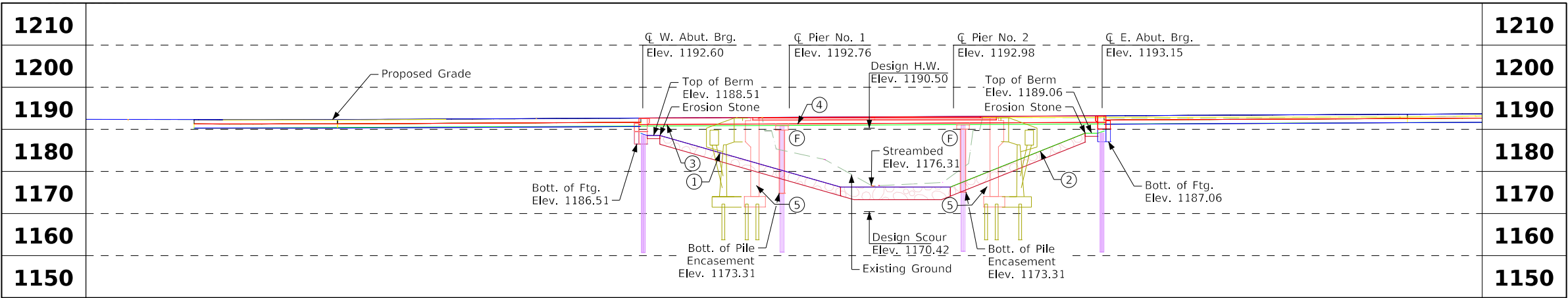
MODIFIED

MODIFICATIONS: Changed overall width of sections B-B, C-C, and D-D from 7'-6" to 15'-0".

**ROCK FLUME FOR
BRIDGE END DRAIN**

DR-402

Sheet 2 of 2



- 1 Class E Revetment - 2' Thickness, 3.5:1 Max, slope normal to abutment.
- 2 Class E Revetment - 2' Thickness, 2.5:1 Max, slope normal to abutment
- 3 Operational Low Beam, Elev. 1191.05
- 4 Channel Low Beam, Elev. 1191.22
- 5 Potential Pile Conflicts. Verify during final design.
- 6 110'-0" x 44'-0" PPCB Bridge, Sta. 624+73.00

Section A-A (Longitudinal Section Along CL Prop. US 34)

VPT Sta. = 623+40.00 VPC Sta. = 625+90.00
VPT Elev. = 1192.30 VPC Elev. = 1193.55

Proposed Profile Grade US 34

+0.50%

Hydraulic Data

RIDB: Not Applicable
Drainage Area = 6.13 Sq. Mi.
Stream Slope (HGL) = 11.56 ft./Mi.
Avg. Low Water Stage = 1185.07

Q₂₅ = 3,286 cfs
Stage = 1188.97

Q₅₀ = 4,164 cfs
Stage = 1189.65
Channel Low Beam = 1191.22
Avg. Bridge Velocity = 4.54 fps

Q₁₀₀ = 5,117 cfs
Stage = 1190.35
Operational Low Beam = 1191.05
Backwater = (+)0.42 ft.
Avg. Bridge Velocity = 5.63 fps

Q₂₀₀ = 6,152 cfs
Stage = 1191.02
Calculated Design Scour = 1170.42

Q Overtop = 6,665 cfs
Avg. Bridge Velocity = 6.79 fps
Calculated Check Scour = 1169.36

Q₅₀₀ = 7,400 cfs

Roadway Overtop 1192.23
Sta. 623+10.73

Site is located within
Adams County F.I.S., Dated 4/5/2017.
No datum or base flood.

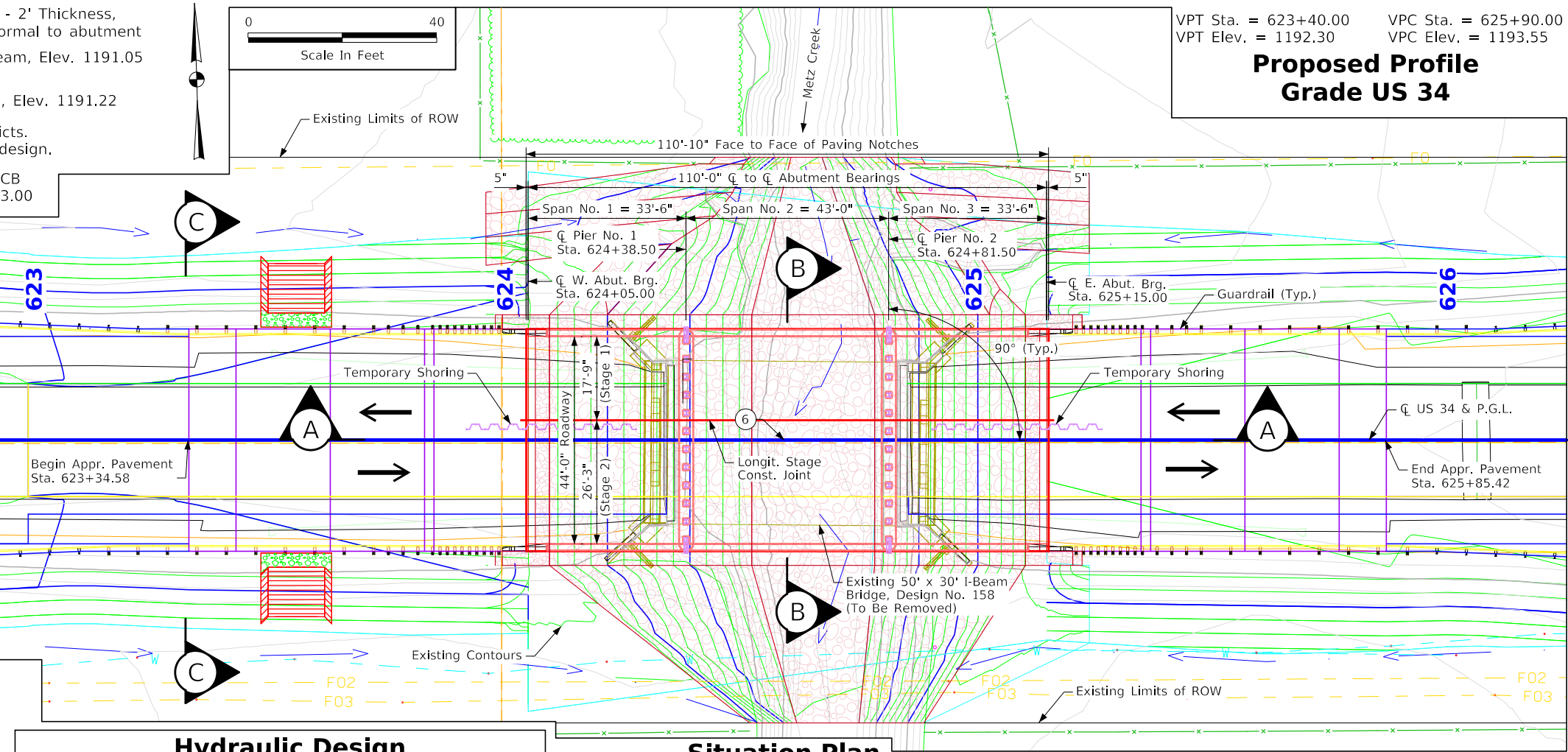
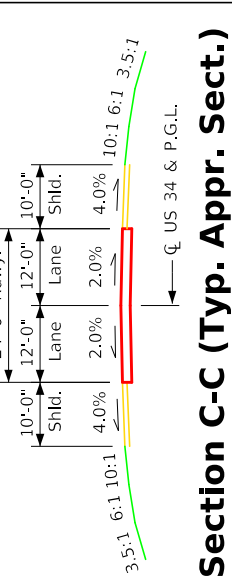
Scour depths based on preliminary data and shall
be verified once geotechnical report is available.

The bridge does not meet Iowa DOT's desired
(operational or channel) freeboard per BDM
3.2.2.4.

- The proposed bridge provides reduced velocities through the bridge to reduce scour concerns.
- Lower water surface elevations reduce overtopping and increase freeboard at the design flood event to the extent feasible.
- Proposed roadway profile matches existing to maintain overtopping point off bridge and prevent impact to flood plain.
- Final design to account for inundation of the bridge superstructure.

Plan Notes:

1. Top of bridge deck at centerline roadway is 0.03" below the profile grade to account for parabolic crown.
2. Class E Revetment Stone is embedded.



Location
US 34 over Metz Creek
T-71N R-32W
Section 3
Grant Township
Adams County
Bridge Maint.
No. 0273.85034
FHWA No. 13331
Latitude 40.978970°
Longitude -94.513196°

Hydraulic Design



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

Signature: *Jaclyn Gutman* Date: 11/08/2024
Printed or Typed Name: Jaclyn Gutman

My license renewal date is December 31, 2025

Pages or sheets covered by this seal: Sheets V.1 thru V.3

Situation Plan

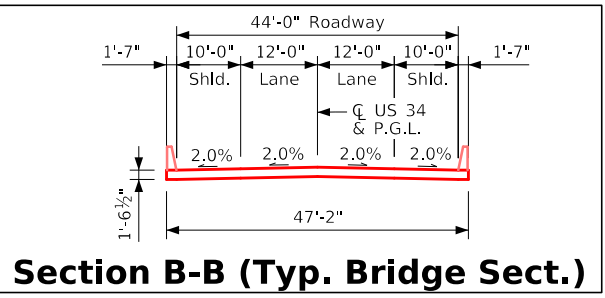
See Design Sheet 3 for General Notes
and Design Notes.

US 34 Traffic Est.

2027 AADT	2,594	V.P.D.
2047 AADT	3,040	V.P.D.
2047 DHV	314	V.P.H.
Trucks	21	%
Total		
Design ESALS	1,775,200	

Utilities Legend

-F0- AREON, Quality D
-F02- Windstream, Quality D
-F03- ICN, Quality D
-W- SIRWA, Quality D
Utilities shown on this sheet
are for information only, see
Road Design sheets for final
utility information.



Preliminary

Design For 0° Skew
**110'-0" x 44'-0" Continuous
Concrete Slab Bridge**

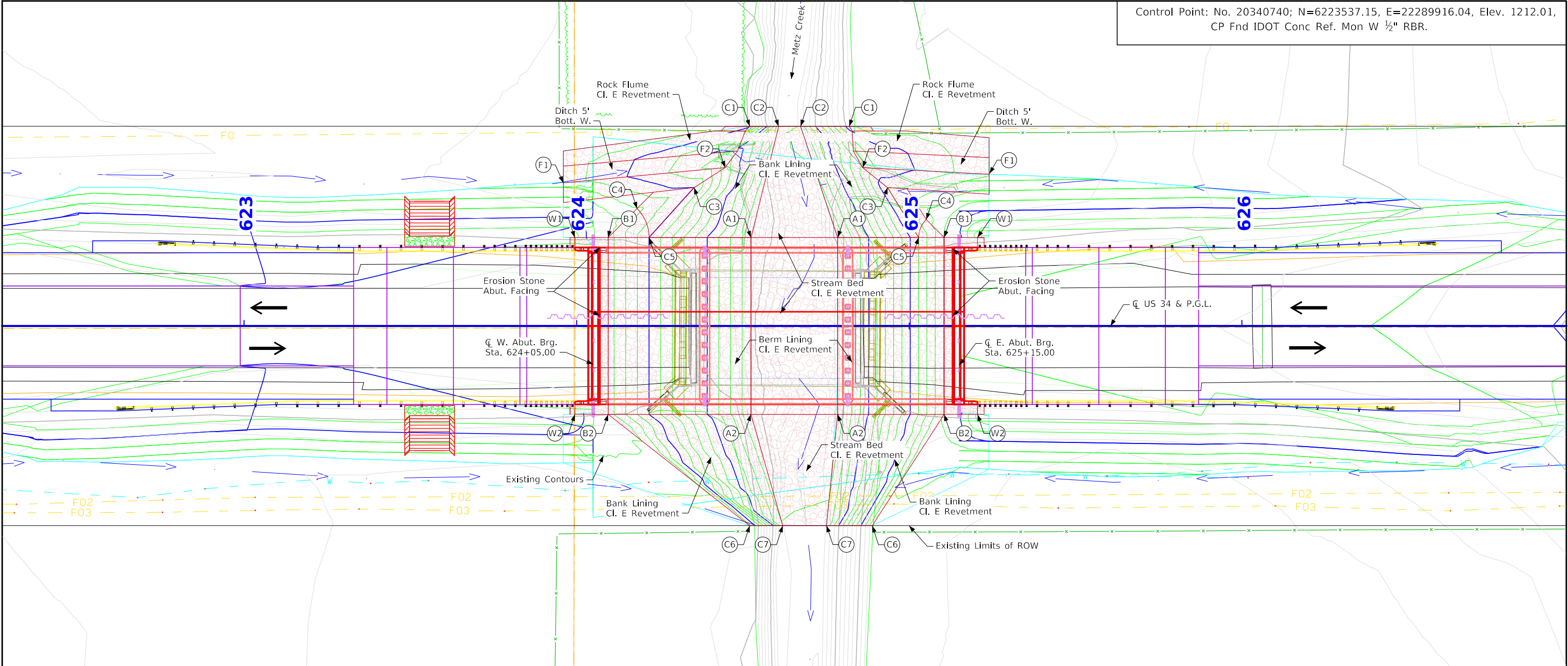
33'-6" End Spans 43'-0" Interior Span

Situation Plan

STA. 624+60.00 (US 34) Turn-in Date: October 2024

Adams County

IOWA DEPARTMENT OF TRANSPORTATION
Design No. 127 Design Sheet No. 1 of 4 FHWA No. 13331



Site Plan

See Design Sheet 3 for Revetment Layout Details

Berm Slope Location Table						
Points	West Abutment			East Abutment		
	Station	Offset	Elev.	Station	Offset	Elev.
A1	624+52.41	26.58' Lt.	1176.31	624+78.48	26.58' Lt.	1176.31
A2	624+52.41	26.58' Rt.	1176.31	624+78.48	26.58' Rt.	1176.31
B1	624+09.50	26.58' Lt.	1188.51	625+10.50	26.58' Lt.	1189.06
B2	624+09.50	26.58' Rt.	1188.51	625+10.50	26.58' Rt.	1189.06
W1	623+99.50	26.58' Lt.	1192.01	625+20.50	26.58' Lt.	1192.61
W2	623+99.50	26.58' Rt.	1192.01	625+20.50	26.58' Rt.	1192.61

Berm Slope Elevations Reflect The Grading Surface

Notes:
GCL - Grading Control Line

West Bank Grading Control:

- C1 624+51.99, 60.00' Lt., Top/Bank, GCL, Elev. 1185.00
- C2 624+60.74, 60.00' Lt., Toe/Bank, GCL, Elev. 1176.25
- C3 624+35.34, 41.58' Lt., Top/Bank, GCL, Elev. 1185.00
- C4 624+18.19, 35.27' Lt., Bench, GCL, Elev. 1185.00
- C5 624+21.79, 26.58' Lt., Top/Bank/Berm, GCL, Elev. 1185.00
- C6 624+51.96, 60.00' Rt., Top/Bank, GCL, Elev. 1186.00
- C7 624+61.96, 60.00' Rt., Toe/Bank, GCL, Elev. 1176.25

N.W. Ditch/Flume Grading Control:

- F1 624+96.00, 43.38' Lt., Bott./Edge Ditch/Flume, Elev. 1186.54
- F2 625+44.62, 47.58' Lt., Top/Bank/Flume, Elev. 1183.00

East Bank Grading Control:

- C1 624+81.97, 60.00' Lt., Top/Bank, GCL, Elev. 1186.00
- C2 624+67.34, 60.00' Lt., Toe/Bank, GCL, Elev. 1176.25
- C3 624+93.48, 41.58' Lt., Top/Bank, GCL, Elev. 1186.00
- C4 625+05.09, 31.99' Lt., Bench, GCL, Elev. 1186.00
- C5 625+02.86, 26.58' Lt., Top/Bank/Berm, GCL, Elev. 1186.00
- C6 624+88.89, 60.00' Rt., Top/Bank, GCL, Elev. 1187.00
- C7 624+75.14, 60.00' Rt., Toe/Bank, GCL, Elev. 1176.25

N.E. Ditch/Flume Grading Control:

- F1 625+24.00, 44.76' Lt., Bott./Edge Ditch/Flume, Elev. 1186.87
- F2 624+85.99, 47.58' Lt., Top/Bank/Flume, Elev. 1184.00

N



Preliminary

Design For 0° Skew

110'-0" x 44'-0" Continuous Concrete Slab Bridge

33'-6" End Spans 43'-0" Interior Span

Situation Plan - Site

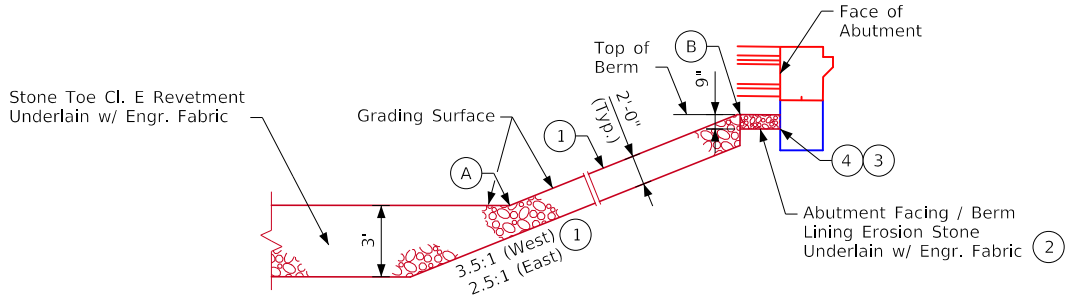
STA. 624+60.00 (US 34) Turn-In Date: October 2024

Adams County

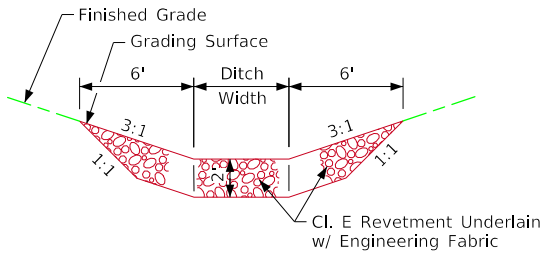
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 127 Design Sheet No. 2 of 4 FHWA No. 13331

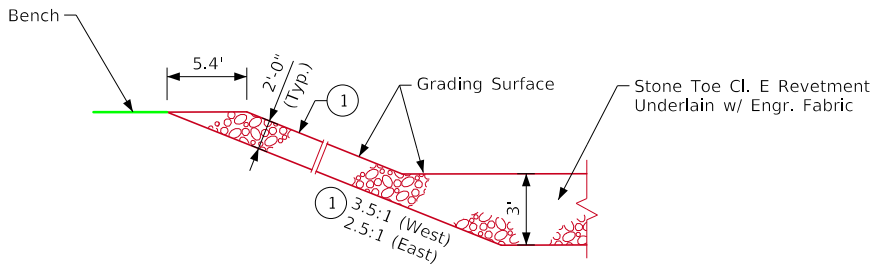
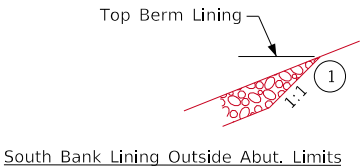




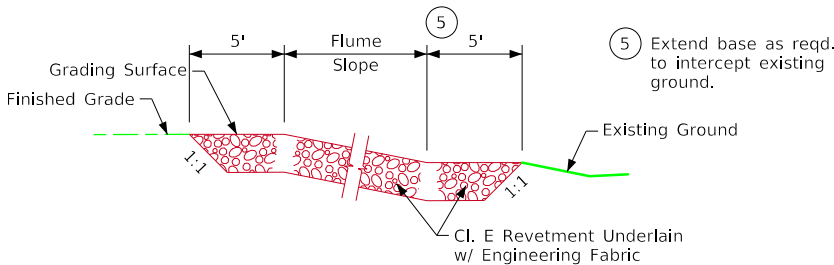
Section Through Embedded Berm Lining and Stream Bed



Section Through Rock Flume



Section Through Embedded North Bench/Bank Lining and Stream Bed



Section Along Rock Flume

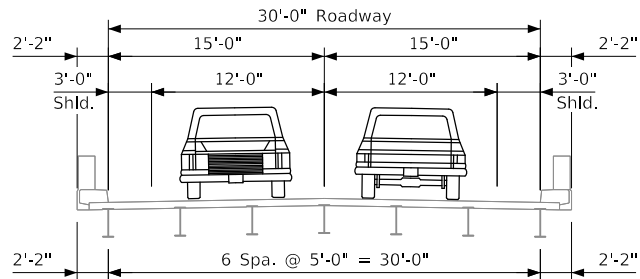
- General Notes:
This design is for the replacement of the existing 50' x 30' I-Beam Bridge, Adams Design No. 158. FHWA No. 13330. Maint. No. 0273.8S034
- Design Notes:
1. TL-4 single slope bridge railing proposed.
 2. Standard integral abutments.
 3. Pier Type - Individually Encased Pile Bent Pier
 4. Superstructure Type - CCS
 5. Class E Revetment Stone.
 6. Existing substructure and piles to be removed to 1' below prop. grade.
 7. Existing Articulating Block Mat and Reinforced Armor Unit are to be removed.
 8. Final design to take into account proposed pier piling may be in conflict with bridge substructure.
 9. Existing footing geometry is unknown.
 10. Construction will be staged (See Design Sheet 4).
 11. Final Design shall consider the need for temporary or stay-in-place shoring to accommodate staging of bridge construction.
 12. The proposed bridge channel freeboard is increased as compared to the existing bridge to the extent feasible.
 13. Road grade overflow readily provides relief in the event the bridge opening is obstructed.

Estimated Berm Armoring Quantities				
Revetment Type - Location	Revetment Cl. E (Ton)	Erosion Stone (Ton)	Engineering Fabric (SY)	Excavation Class 10, Channel (CY)
Berm Lining - West	281.2	9.9	285.9	181.9
Bank Lining - West	100.3	-	92.2	62.7
Flume Lining, N.W.	80.2	-	103.4	50.1
Berm Lining - East	217.3	9.9	221.6	142.0
Bank Lining - East	92.0	-	82.6	57.5
Flume Lining, N.E.	66.2	-	85.1	41.4
Stream Bed	461.8	-	292.1	288.6
Totals	1,299.0	19.8	1,162.9	824.2

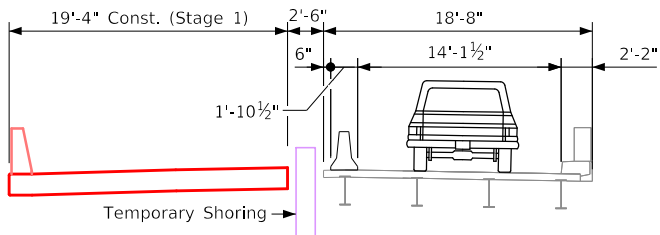
Excavation quantity calculated from grading surface.
Revetment and Erosion Stone estimated at 1.6 Ton/CY

- 1 Slope normal to $\perp$ Abut. / Grading Control Line.
- 2 Extend facing out to lateral limits of wing armoring.
- 3 Carry engineering fabric up to face of abutment.
- 4 Slope normal to bank grading control line (GCL).

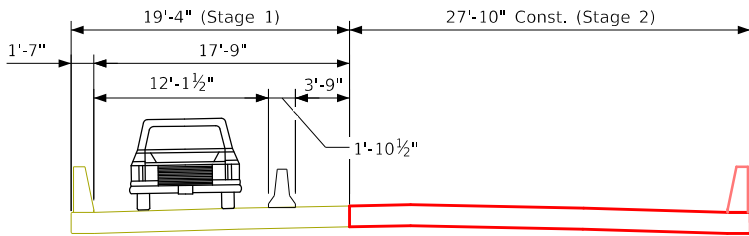




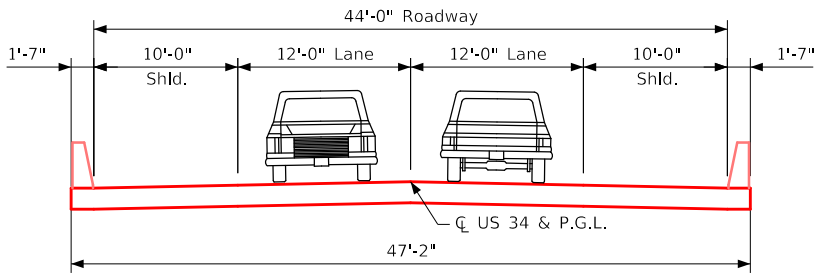
Existing Bridge Cross Section
(Looking East)



Stage 1 Cross Section
(Looking East)



Stage 2 Cross Section
(Looking East)



Final Cross Section
(Looking East)

Preliminary

Design For 0° Skew

**110'-0" x 44'-0" Continuous
Concrete Slab Bridge**

33'-6" End Spans

43'-0" Interior Span

Staging Plan

STA. 624+60.00 (US 34)

Turn-in Date: October 2024

Adams County

IOWA DEPARTMENT OF TRANSPORTATION

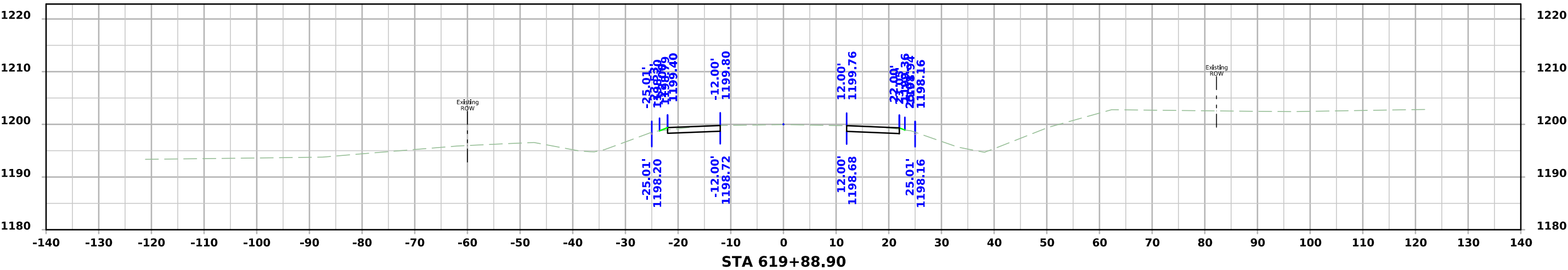
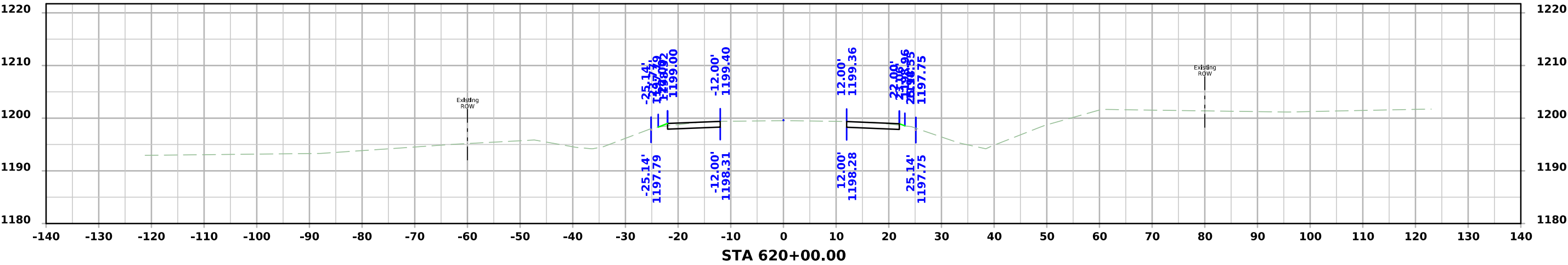
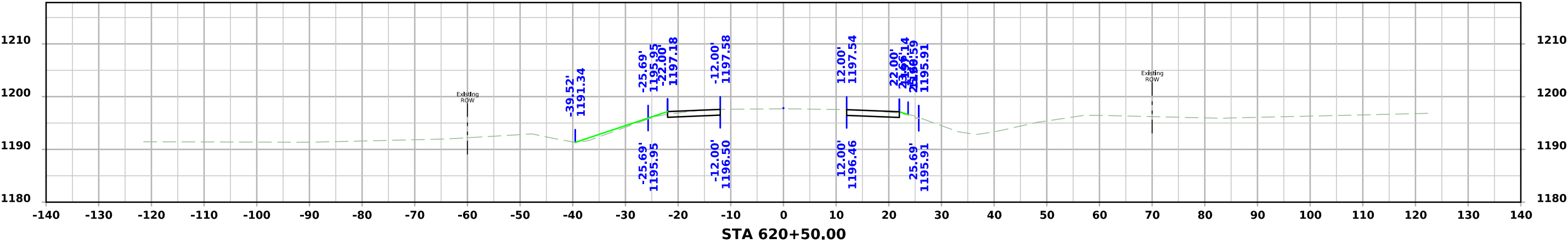
Design No. 127

Design Sheet No. 4 of 4

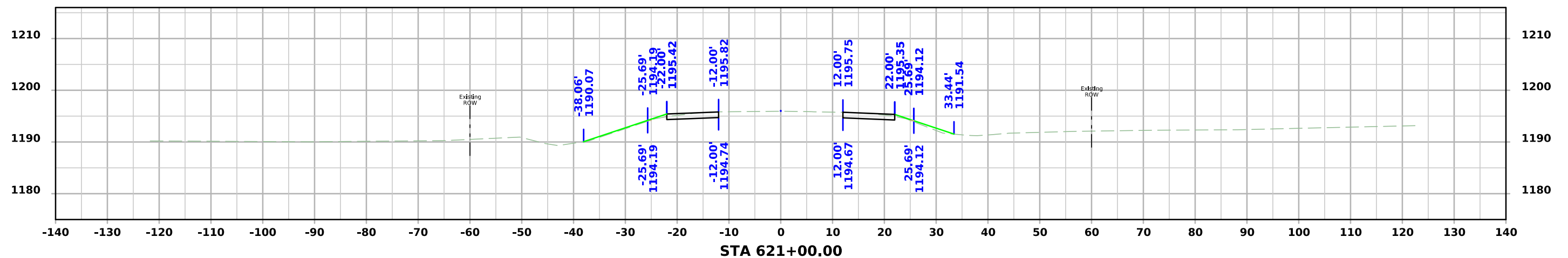
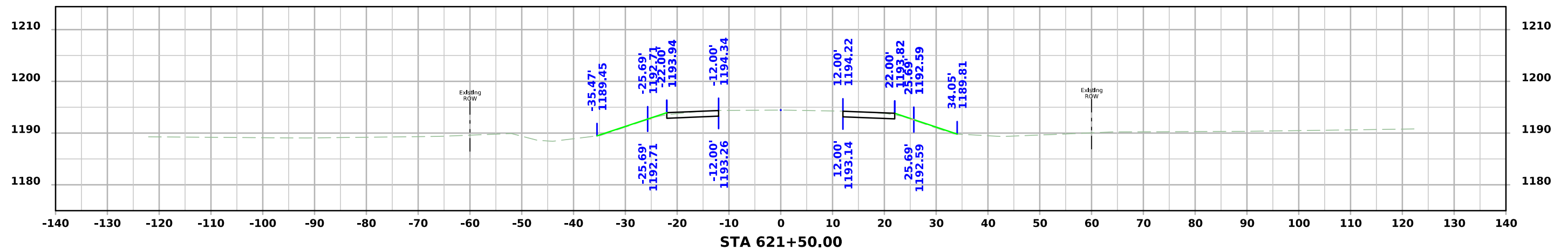
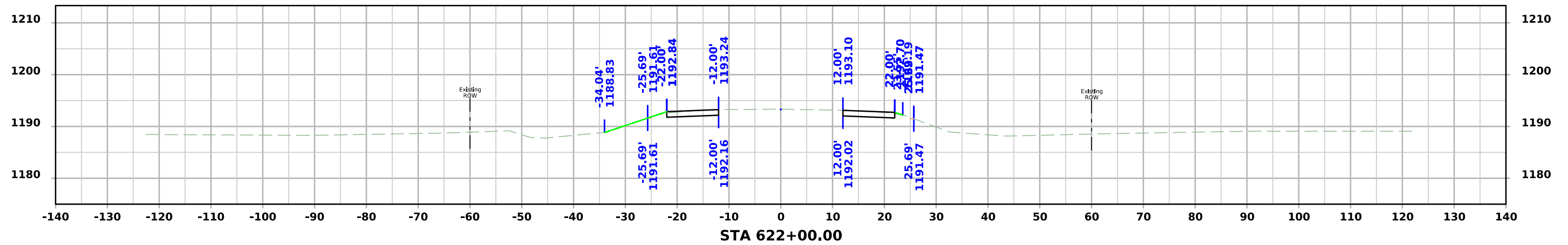
FHWA No. 13331



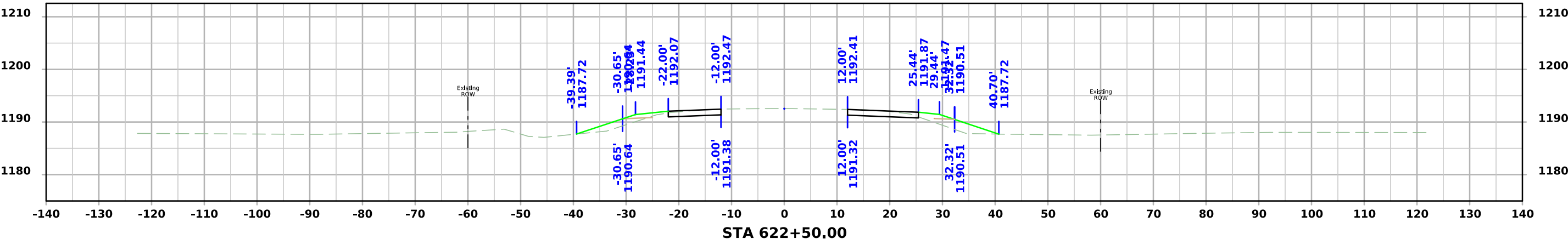
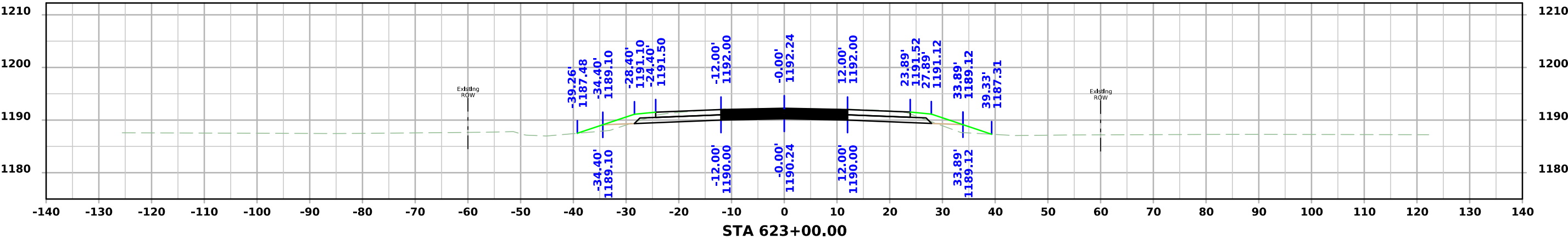
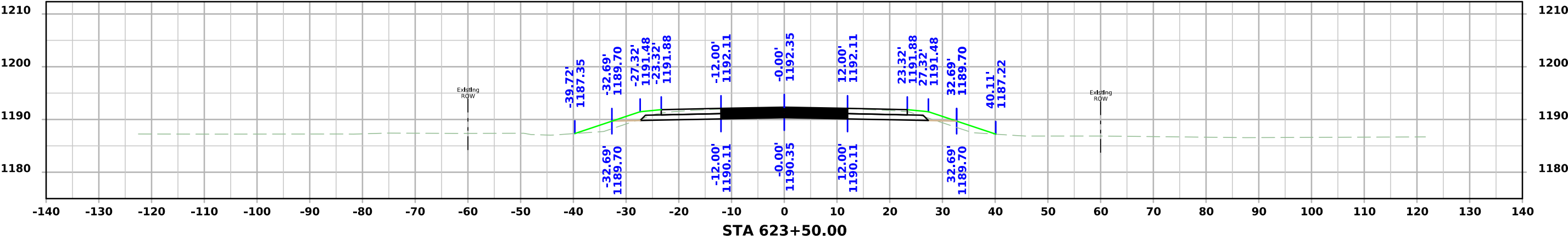
ML - US34



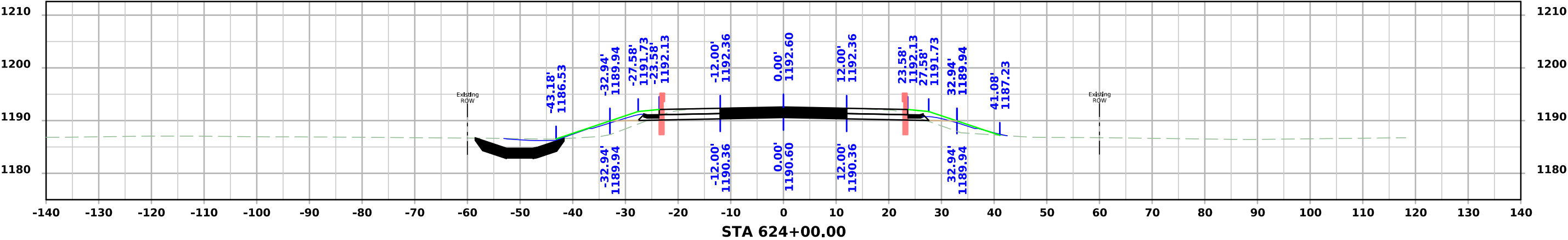
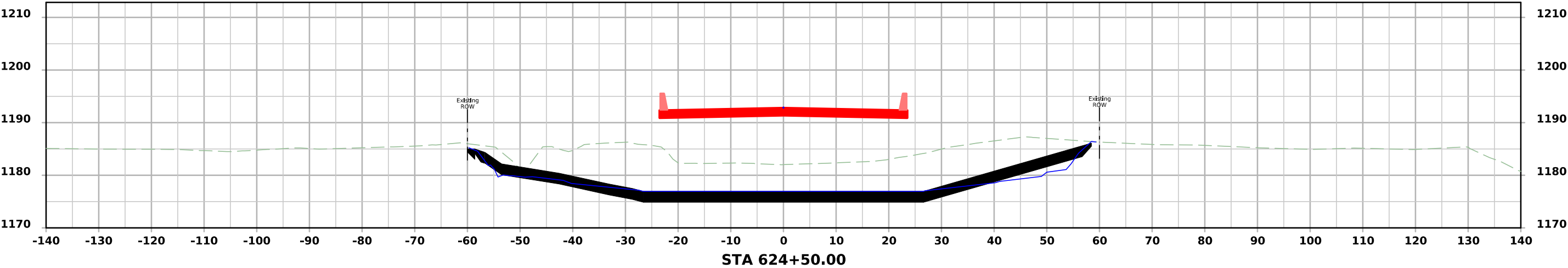
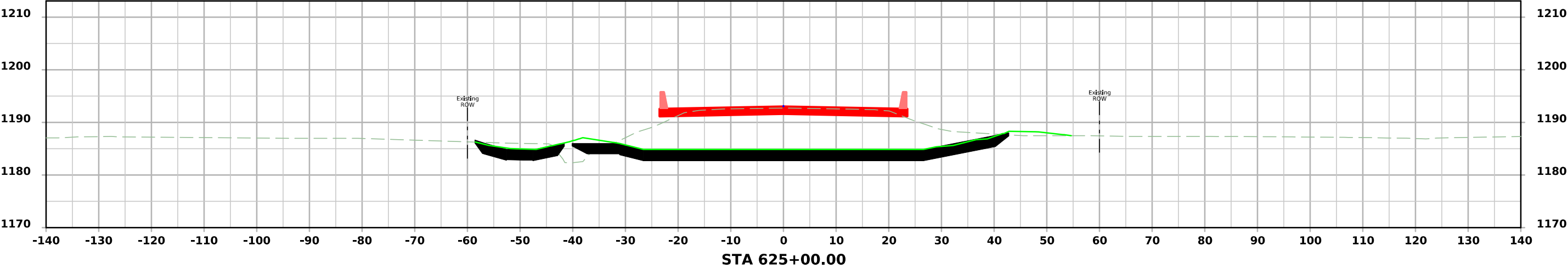
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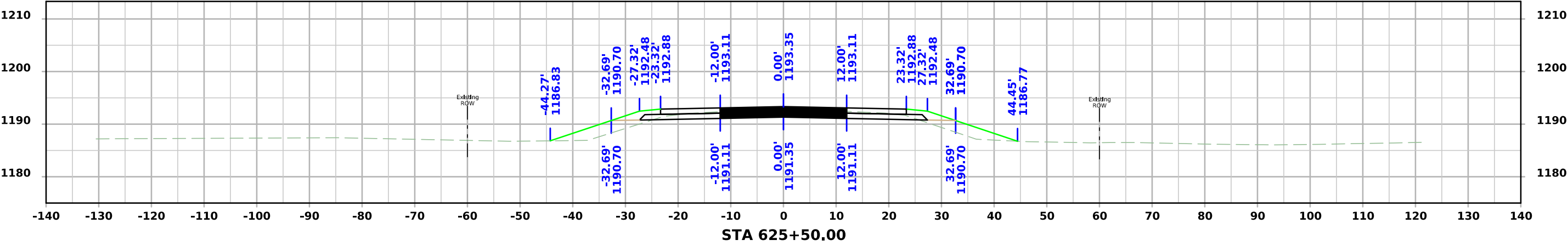
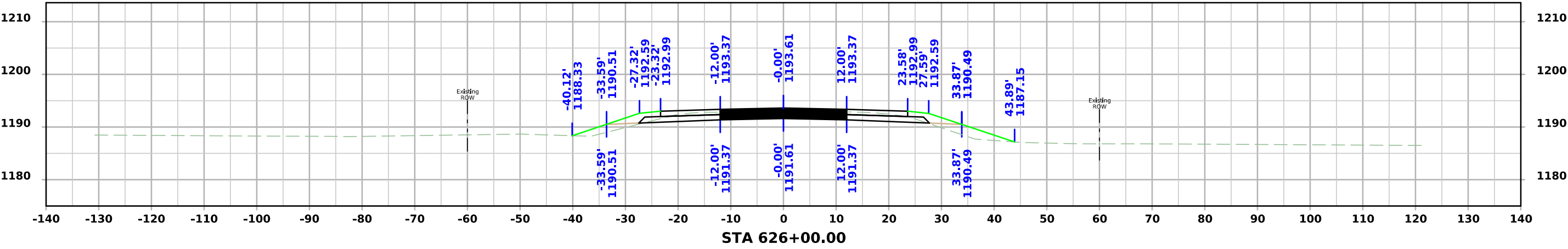
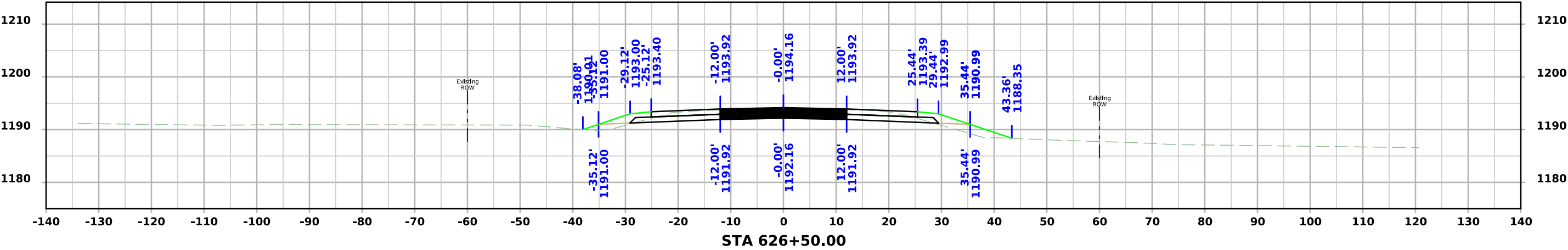
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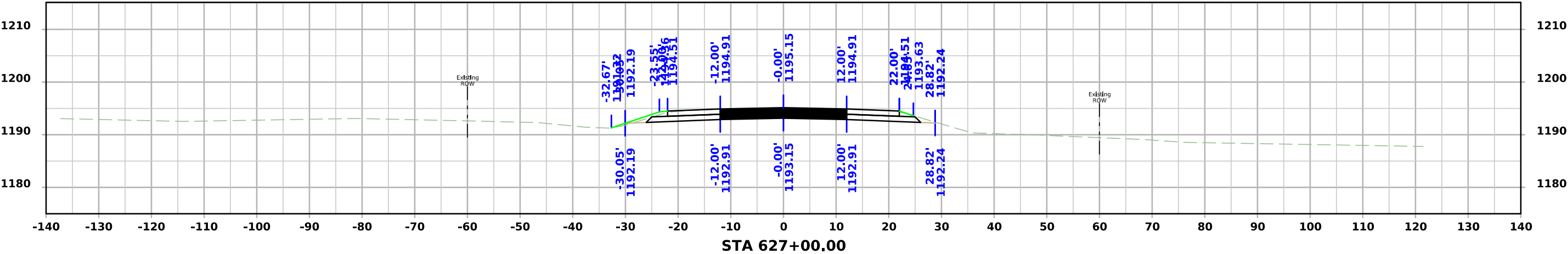
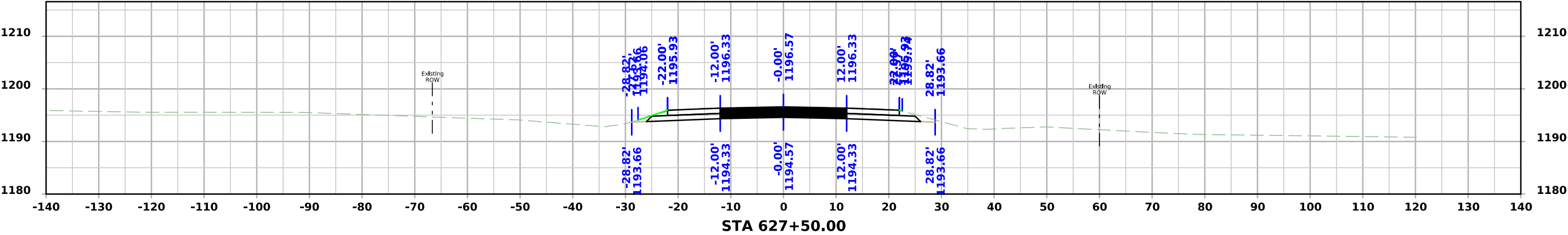
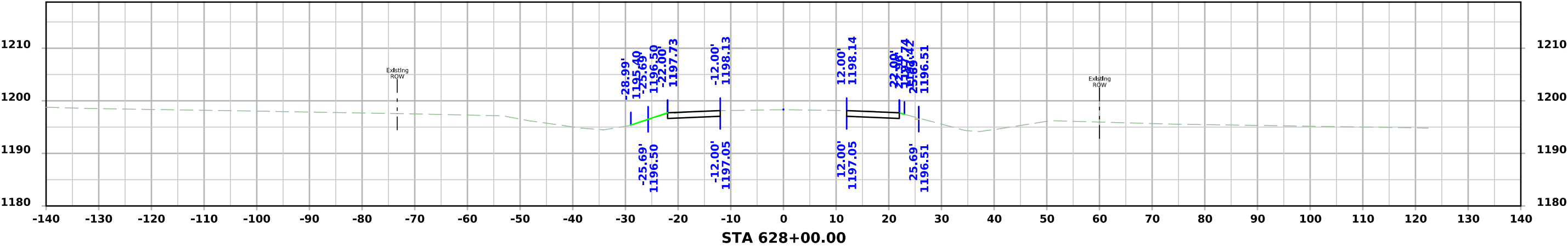
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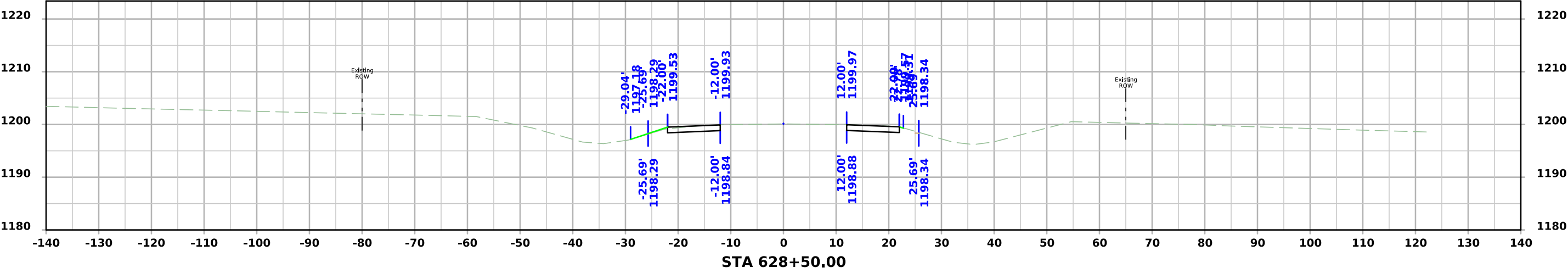
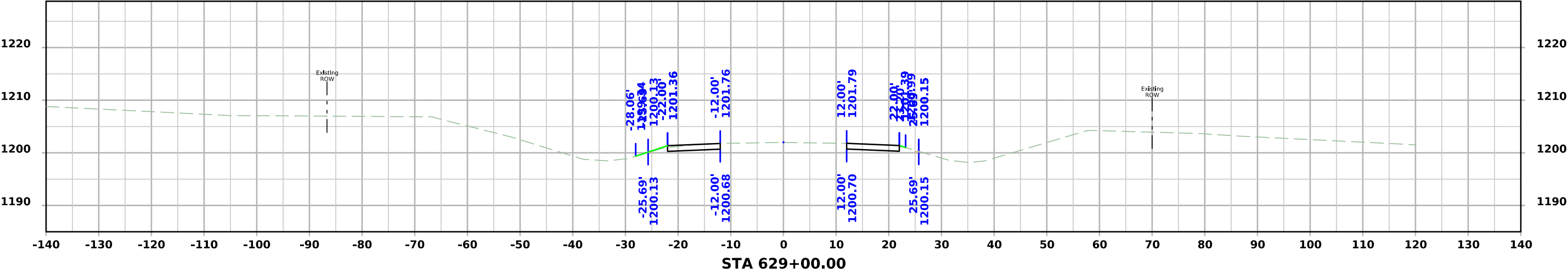
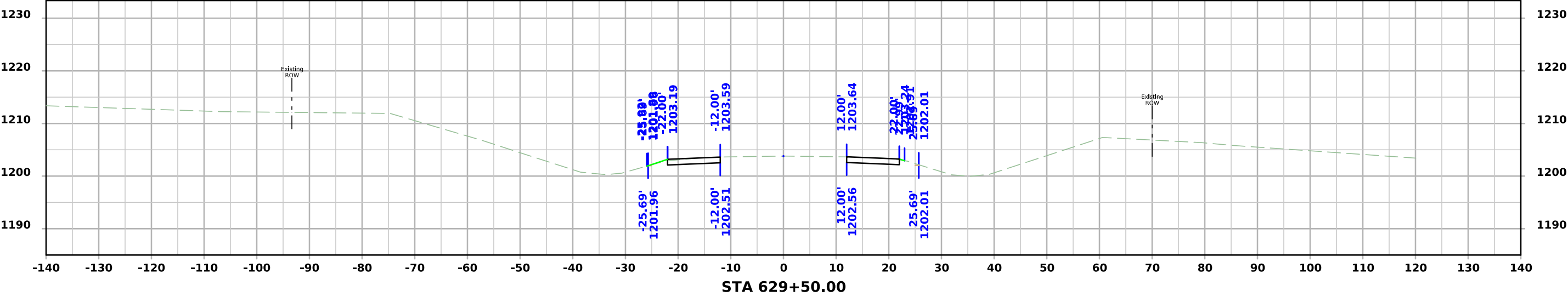
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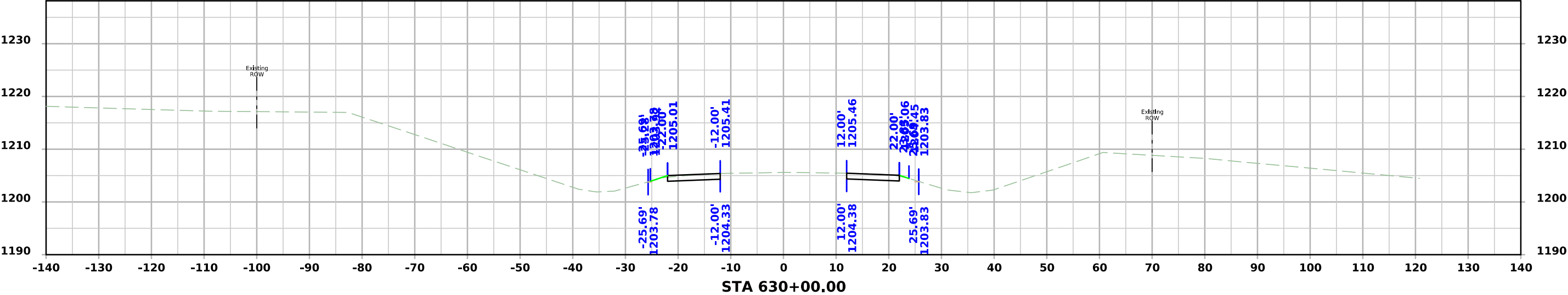
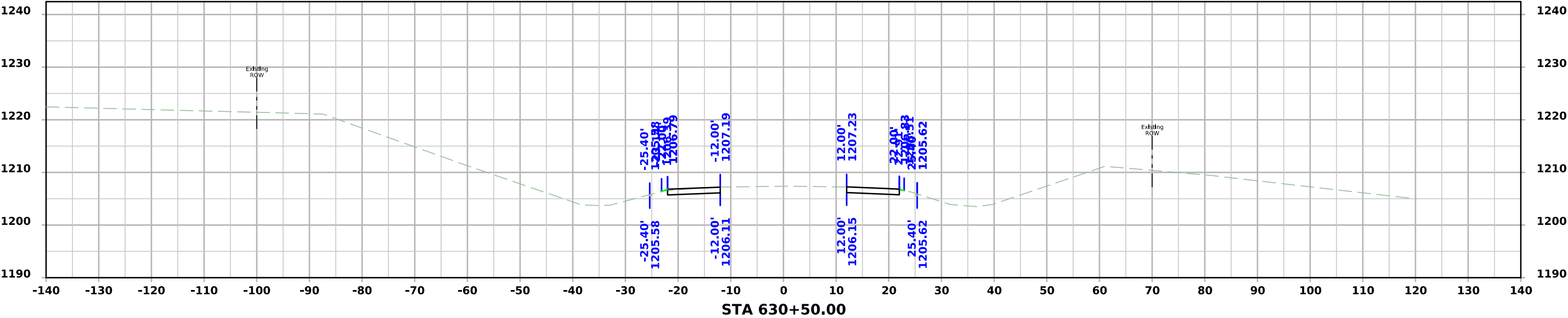
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ML - US34

