

**PALO ALTO COUNTY**  
 Bridge Replacement - CCS  
 BRF-004-5(053)--38-74

LETTING DATE  
**Jan 20 2027**



REVISIONS

TOTAL

PROJECT IDENTIFICATION NUMBER	22-74-004-010
PROJECT NUMBER	BRF-004-5(053)--38-74
R.O.W. PROJECT NUMBER	STPN-004-5(054)--2J-74

No.	DESCRIPTION
<b>A Sheets</b>	<b>Title Sheets</b>
A.1	Title Sheet
<b>B Sheets</b>	<b>Typical Cross Sections and Details</b>
B.1 - 3	Typical Cross Sections and Details
<b>D Sheets</b>	<b>Mainline Plan and Profile Sheets</b>
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2	IA 4
<b>G Sheets</b>	<b>Survey Sheets</b>
G.1 - 2	Reference Ties and Bench Marks
G.3	Horizontal Control Tab. & Super for all Alignments
<b>J Sheets</b>	<b>Traffic Control and Staging Sheets</b>
J.1	Traffic Control Plan
J.2	511 Travel Restrictions
J.3	Staging Notes
J.4	Coordinated Operations
* J.5	Traffic Control & Staging Legend & Symbol Info. Sheet
* J.6 - 9	Staging and Traffic Control Sheets
<b>U Sheets</b>	<b>500 Series, Mod.Stds. and Detail Sheets</b>
U.1	TBR Pinned to Unpinned Transition Detail
<b>V Sheets</b>	<b>Bridge and Culvert Situation Plans</b>
* V.1	Bridge and Culvert Situation Plans
<b>W Sheets</b>	<b>Mainline Cross Sections</b>
* W.1	Cross Sections Legend & Symbol Information Sheet
* W.2 - 12	Mainline Cross Sections
* Color Plan Sheets	

PLANS OF PROPOSED IMPROVEMENT ON THE

# PRIMARY ROAD SYSTEM

## PALO ALTO COUNTY

### Bridge Replacement - CCS

Drainage Ditch 1.3 mi S of Co Rd B57

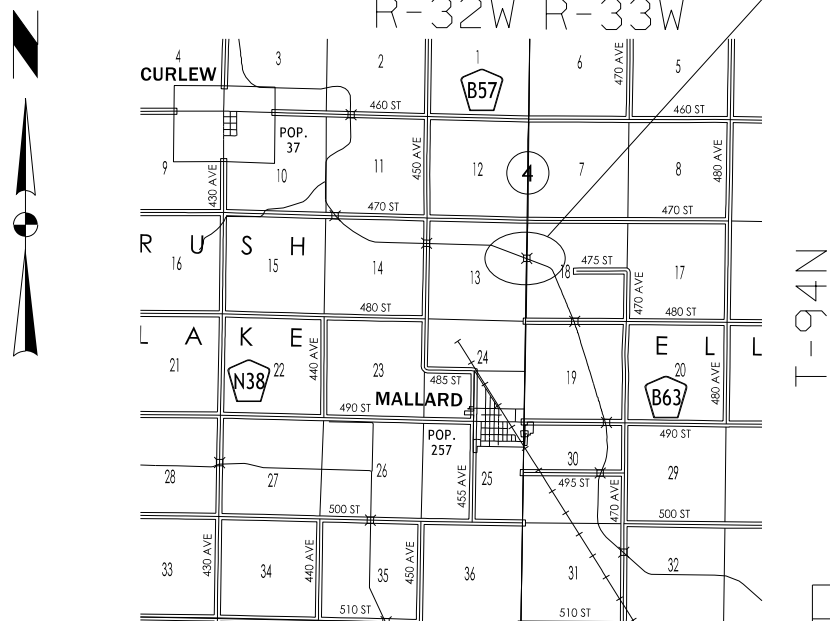
SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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



**PROJECT LOCATION**  
 FHWA 39200  
 REF LOC 102.6



T-94N

DESIGN DATA RURAL			
2027	AADT	2800	V.P.D.
2047	AADT	2900	V.P.D.
20 -	DHV	-	V.P.H.
	TRUCKS	13	%
	Total		
	Design ESALs	-	

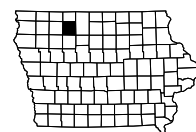
INDEX OF SEALS			
SHEET NO.	NAME	TYPE	BID QUANTITY SHEETS
A.1	X	Primary Signature Block	X
X	X	X	X

D5 PLAN - Date: 12/16/24  
 P9 PLAN - Date: 5/15/25  
 D4 PLAN - Date: 9/23/26

PRELIMINARY PLANS

Subject to change by final design.

D3 PLAN - Date: 8/5/24

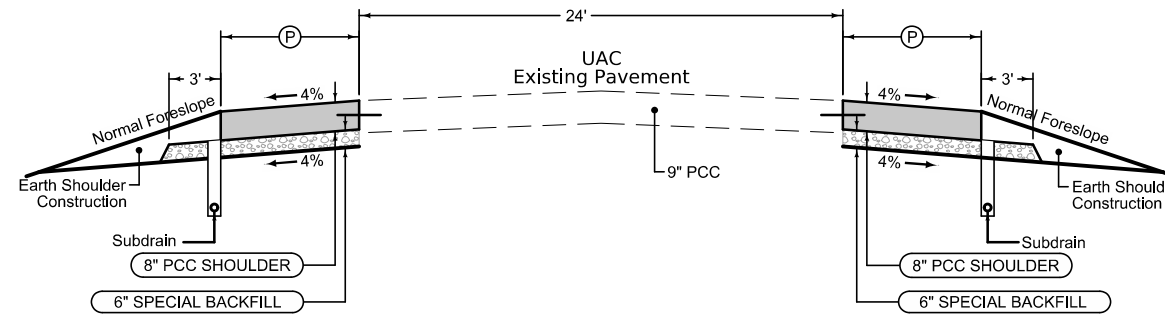


Checking with Soils on Subdrain needs.

**PCC Shoulder**

Shoulder Jointing:  
 Longitudinal joint: BT-2, L-2 or KT-2  
 Transverse joints: C, Match ML spacing

2_P_FullPCC_MODIFIED		
STATION TO STATION	(P)	Feet
282+16.00	283+97.87	10
287+17.73	288+13.00	10



**PCC Shoulder**

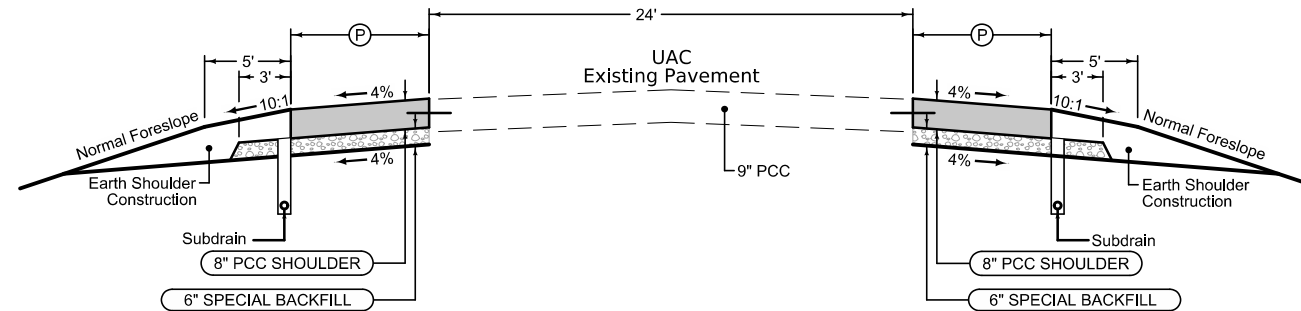
Shoulder Jointing:  
 Longitudinal joint: BT-2, L-2 or KT-2  
 Transverse joints: C, match ML spacing

2_P_FullPCC_MODIFIED		
STATION TO STATION	(P)	Feet
281+93.00	283+55.69	10
286+75.55	289+04.00	10

**Paved Shoulder at Guardrail**

Shoulder Jointing:  
 Longitudinal joint: BT-2, L-2 or KT-2  
 Transverse joints: C, match ML spacing

2_P_FullPCC_MODIFIED		
STATION TO STATION	(P)	Feet
283+97.87	284+41.24	Varies
286+32.18	287+17.73	Varies



**Paved Shoulder at Guardrail**

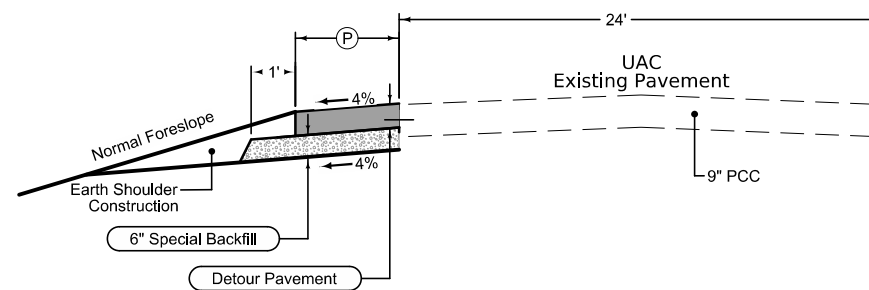
Shoulder Jointing:  
 Longitudinal joint: BT-2, L-2 or KT-2  
 Transverse joints: C, match ML spacing

2_P_FullPCC_MODIFIED		
STATION TO STATION	(P)	Feet
283+55.69	284+41.24	Varies
286+32.18	286+75.55	Varies

**Detour Pavement ①**

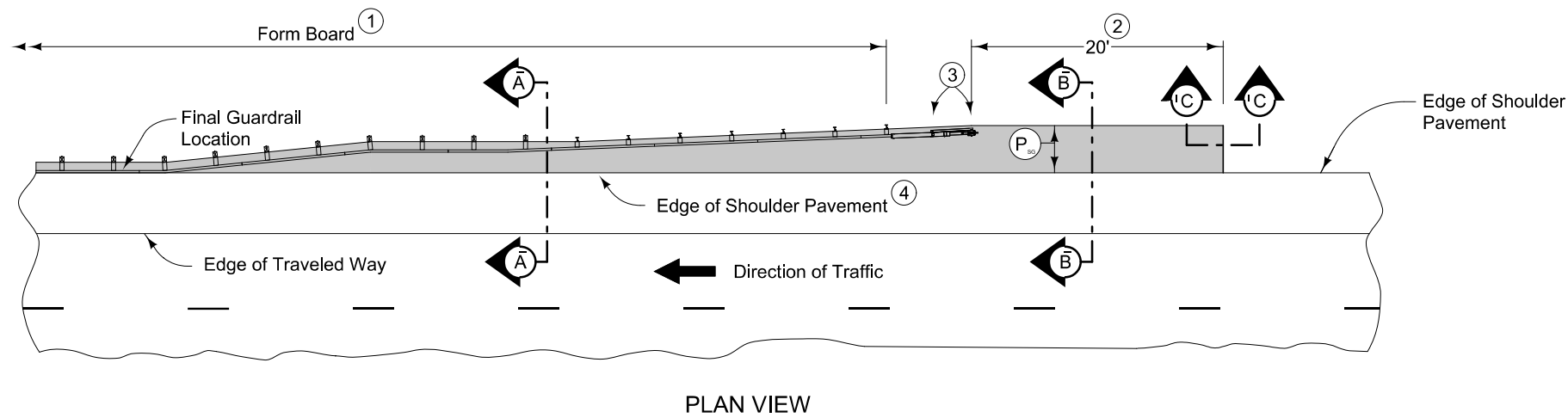
PCC Shoulder Jointing:  
 Longitudinal joint: B  
 Transverse joints: C  
 HMA Shoulder Jointing:  
 Longitudinal joint: B

Custom				
Direction of Travel	BEGIN STATION	END STATION	(P) Feet	SPECIAL BACKFILL (CY)
SB	284+41.23	285+28.59	3	6.5
SB	285+53.62	286+57.20	3	7.7



① Refer to J Sheets.

IA 4



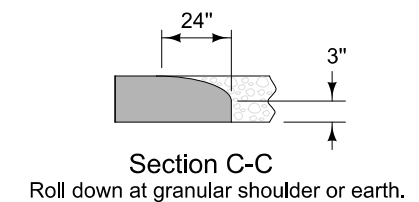
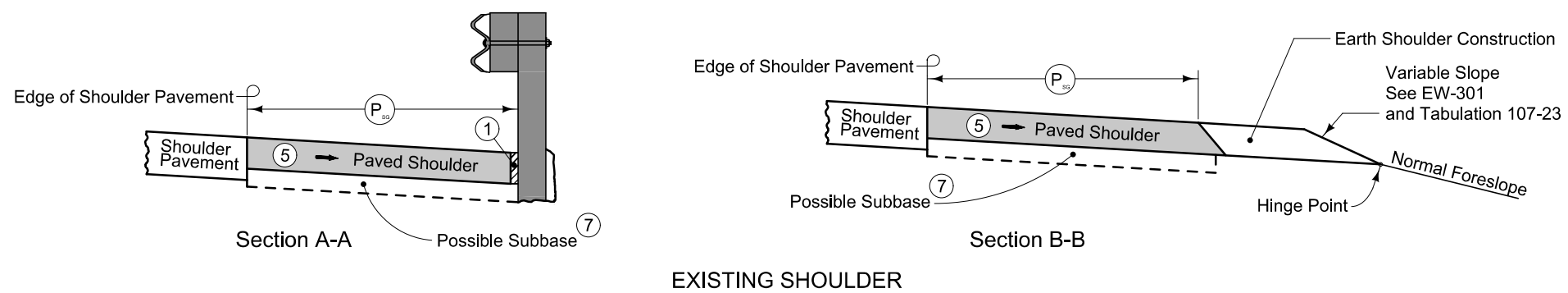
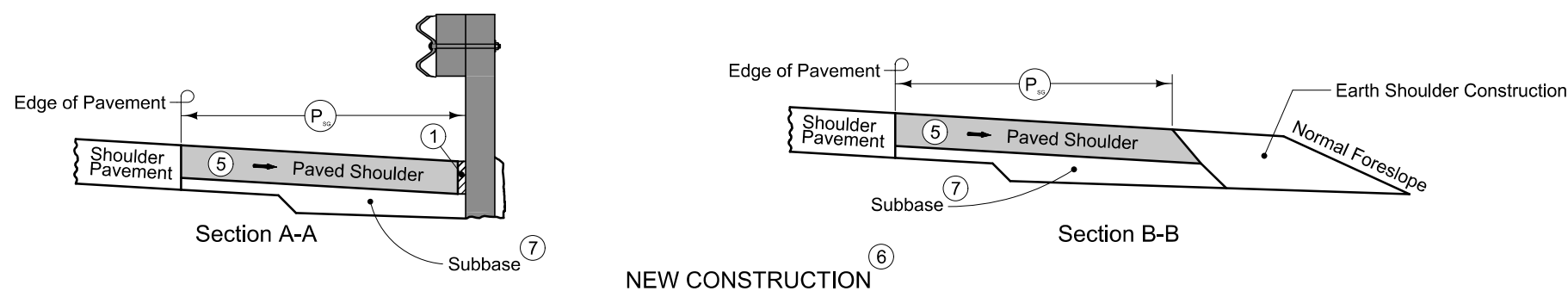
8" PCC Paved Shoulder at guardrail.

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.

Removal and reinstallation of guardrail will be allowed with no additional payment.

Refer to Tabulation 112-9 for shoulder quantities.

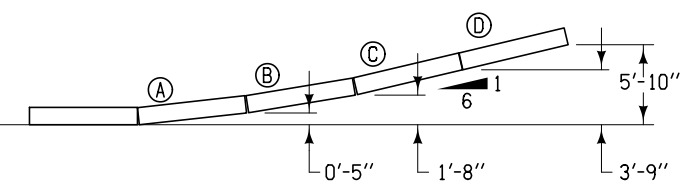
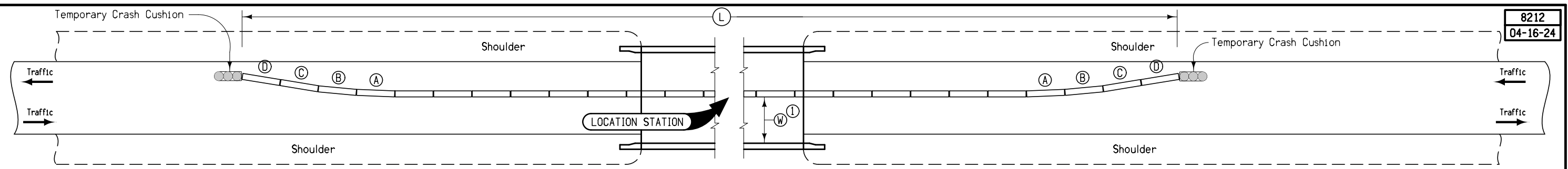
- ① PCC option only: When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown.
- ② Continue paved shoulder 20 feet beyond the center of the first post.
- ③ Shoulder may be notched for first 2 posts or post sleeves 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.



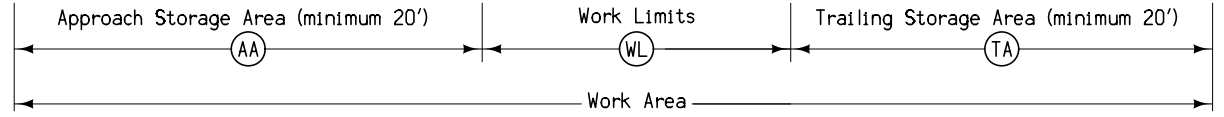
PAVED SHOULDER AT GUARDRAIL  
(ADJACENT TO FULL WIDTH PAVED SHOULDER)

# DESIGNER INFORMATION

8212  
04-16-24



**BARRIER OFFSETS FOR FLARE SECTIONS**



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

Station	Side	(AA)	(WL)	(TA)	(L)	Anchored X	(W) ①	Remarks
		Feet	Feet	Feet	Feet		Ft-Inches	

## 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

- Centurylink  
Sadie Hull (Telephone)  
sadie.hull@lumen.com  
918.547.0147
- Iowa Communications Network  
Brandon Haines  
brandon.haines@iowa.gov  
800.572.3940
- Iowa Lakes Electric COOP-Elec  
Kay Dahl  
ioc-dir@ilec.coop  
712.362.2694
- Windstream Communications  
Locate Desk  
locate.desk@windstream.com  
800.289.1901

### 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

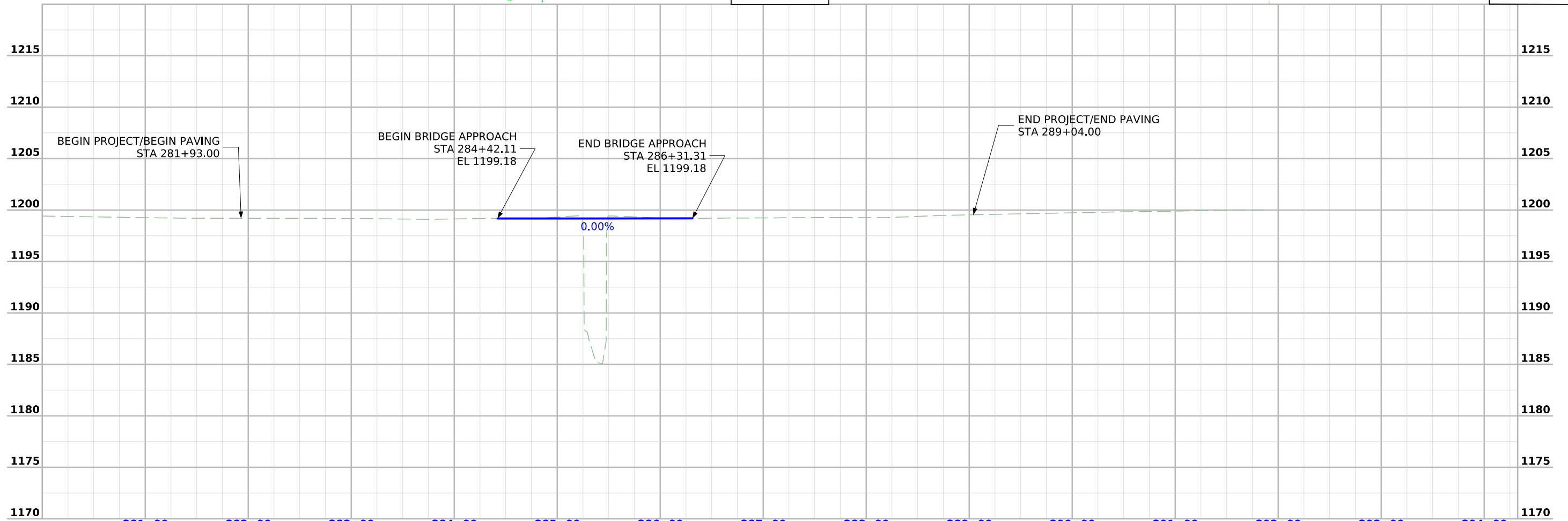
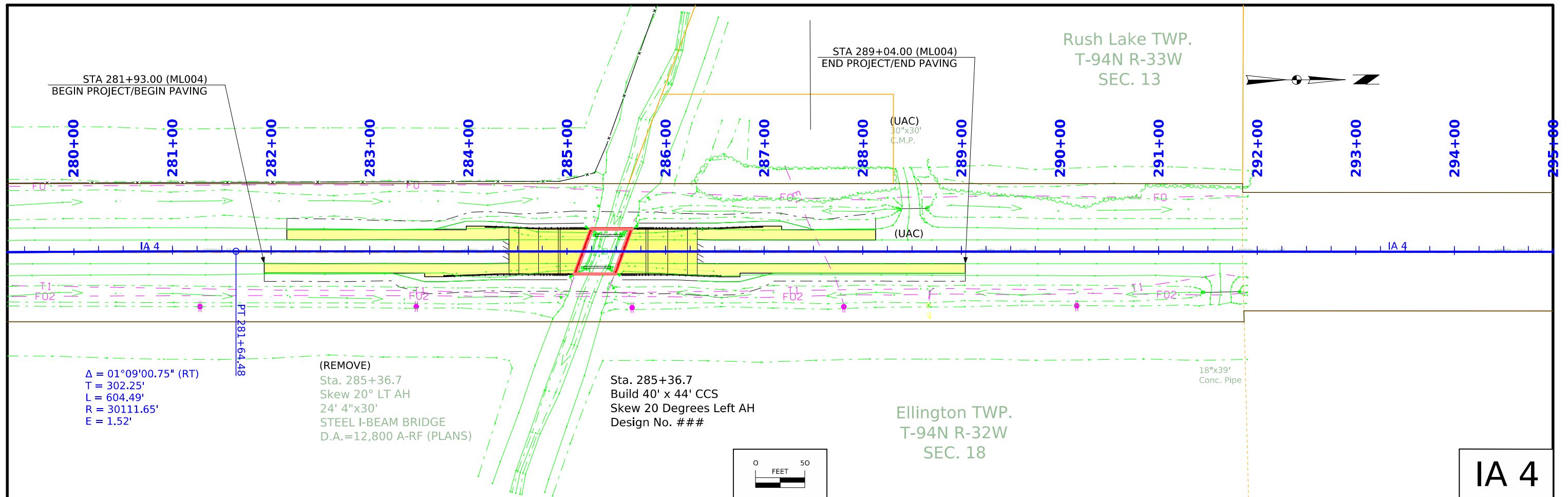
- Reference Point
- Station
- Section Corner
- Ground Line Intercept
- Saw Cut
- Guardrail
- Trench Drain
- HighTension Cable Guardrail
- Sheet Pile
- Pavement Removal
- Clearing & Grubbing Area

### 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
- C/A Access Control
- Property Line

## PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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



## Survey Information

### SURVEY INDEX

**Palo Alto County**  
**BRF-004-5(53)--38-74**  
**Drainage Ditch 1.3 mi S of Co Rd B57**  
**PIN: 22-74-004-010**  
**Type of Work: Bridge Replacement**  
**Project Directory: 7400401022**  
**SAP: 991.1**

### Survey Personnel

Daniel Duncan – Survey Party Chief

### Date(s) of Survey

Begin Date            09/25/2023  
End Date              11/16/2023

### General Information

This survey is for the replacement of the Beaver Creek Bridge on IA 4 which is 1.3 miles South of County Road B57 in Palo Alto County. 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 \_01\_**  
**(U.S. SURVEY FOOT)**  
**VERTICAL DATUM: NAVD88**  
**GEOID MODEL: 2018u3**

### Alignment Information

The horizontal alignment for IA. Hwy 4 this survey is a retrace of As-built Plans No. F-17-5(2)—20-74. Survey stationing was equated to the plan PI at Sta. 278+62.25 and carried back and ahead without equation throughout the survey.

Survey stationing relates to as built plan stationing as follows:

PC Sta. 275+62.25 As-built Plans Project No. F-17-5(2)—20-74  
Survey PC Sta. 275+59.99

PI Sta. 278+62.25 As-built Plans Project No. F-17-5(2)—20-74  
Survey PI Sta. 278+62.25

PI Sta. 305+07.23 As-built Plans Project No. F-17-5(2)—20-74  
Survey PI Sta. 305+08.09

## 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 01 (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 01 (U.S. Survey Foot)  
 VERT. DATUM: NAVD88  
 Geoid Model: 2018u3

Point Name	Northing	Easting	Elevation	Feature Definition-Description
484	9508648.69	11647802.27	1246.25	CP FND PALO ALTO CO GPS CONTROL POINT AS DESCRIBED IN GOOD CONDITION .3MI South of 480th Street on 450th Ave in East Ditch
740041014	9507588.52	11653077.93	1205.46	CP FND IDOT CONC REF MON IN GOOD CONDITION WITH DIMPLE IN REBAR .5MI North of 490th Street in East Ditch
740041024	9512729.14	11652912.90	1198.52	CP FND IDOT CONC REF MON IN GOOD CONDITION WITH DIMPLE IN REBAR .5MI North of 480th Street in West Ditch
740041029	9515141.72	11652929.31	1198.63	CP FND IDOT ROW RAIL IN GOOD CONDITION SET DIMPLE IN BALL 300FT South of 470th Street in West Ditch

108\_23A  
8/15/22

### TRAFFIC CONTROL PLAN

One lane of alternating traffic on IA 4 shall be maintained at all times. Refer to traffic control notes and staging plans. The Contractor shall provide access to entrances at all times.

**511 TRAVEL RESTRICTIONS**

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

### STAGING NOTES

STAGE 1A

Traffic:

Maintain one lane of alternating traffic on NB lane of IA 4 via temporary traffic signals.  
Close SB lane.

Construction:

- (1) Pave proposed SB shoulders from 282+16.00 to 284+41.23
- (2) Pave temporary SB shoulders from 284+41.23 to 285+28.59
- (3) Pave temporary SB shoulders from 285+53.62 to 286+57.20
- (4) Pave proposed SB shoulders from 286+57.20 to 288+13.00

STAGE 1B

Traffic:

Maintain one lane of alternating traffic on SB lane of IA 4 via temporary traffic signals.  
Close NB lane.

Construction:

- (1) Pave proposed NB shoulders from 281+93.00 to 283+83.08
- (2) Pave proposed NB shoulders from 286+57.18 to 289+04.00

STAGE 1C

Traffic:

Maintain one lane of alternating traffic on SB lane of IA 4 via temporary traffic signals and TBR.  
Close NB lane.

Construction:

- (1) Construct 18' of NB side of proposed bridge.
- (2) Pave proposed NB shoulders from 283+83.08 to 284+41.24
- (3) Pave NB side of Bridge approach on each side of the bridge.
- (4) Pave proposed NB shoulders from 286+32.18 to 286+57.18

STAGE 2

Traffic:

Maintain one lane of alternating traffic on NB lane of IA 4 via temporary traffic signals and TBR.  
Close SB lane.

Construction:

- (1) Construct 26' of SB side of proposed bridge.
- (2) Pave SB side of Bridge approach on each side of the bridge.
- (3) Pave proposed SB shoulders from 286+32.18 to 286+57.18

111\_01  
10/14/22

### COORDINATED OPERATIONS

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

Project	Type of Work
BRF-004-5(51)--38-74	Bridge Replacement - PPCB

**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

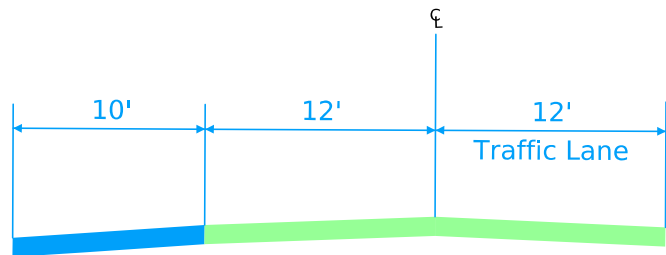
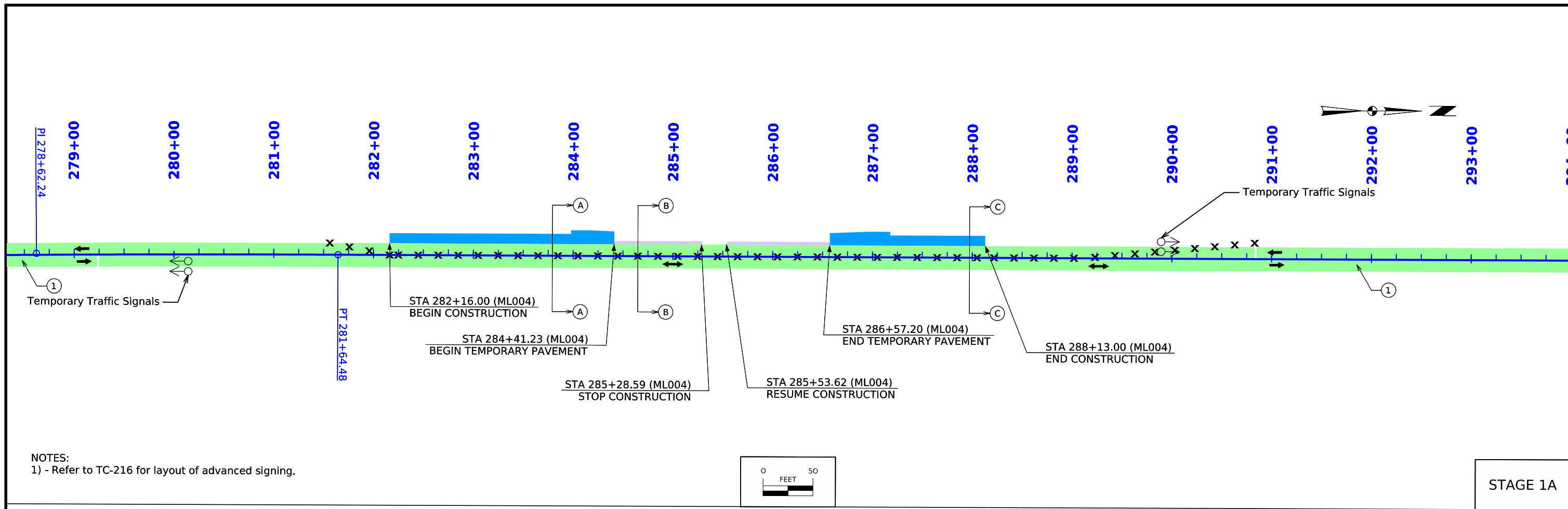
**PLAN VIEW PATTERN AND SYMBOL LEGEND  
OF TRAFFIC CONTROL AND STAGING SHEETS**

	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

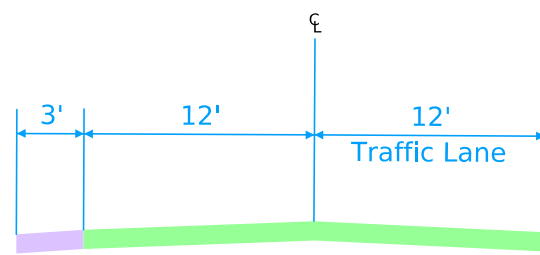
**NOTE: Device spacing according to Standard Road Plans unless specifically dimensioned.**

**TRAFFIC CONTROL  
AND  
STAGING  
LEGEND AND SYMBOL  
INFORMATION SHEET**

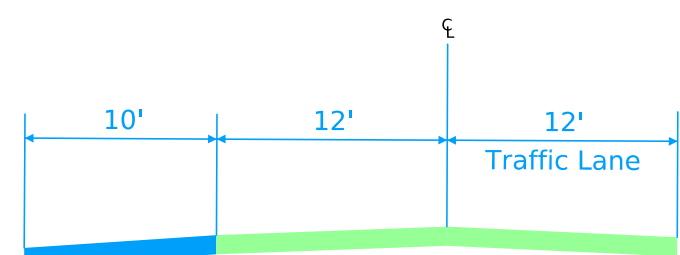
(COVERS SHEET SERIES J)



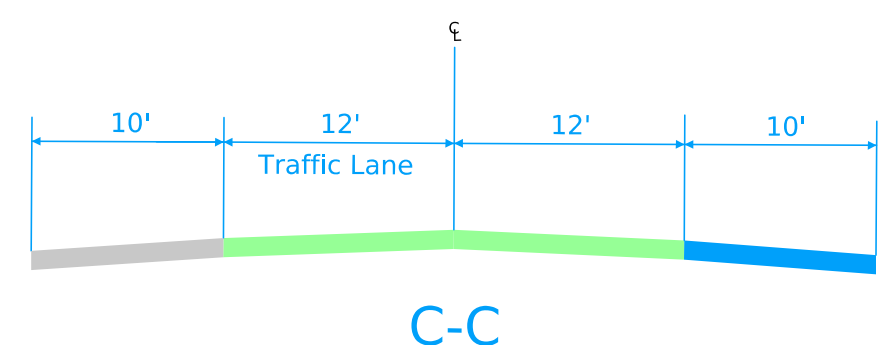
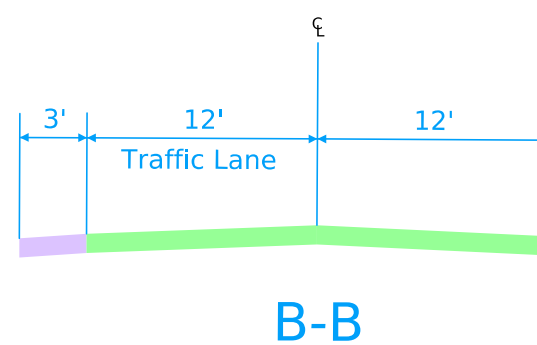
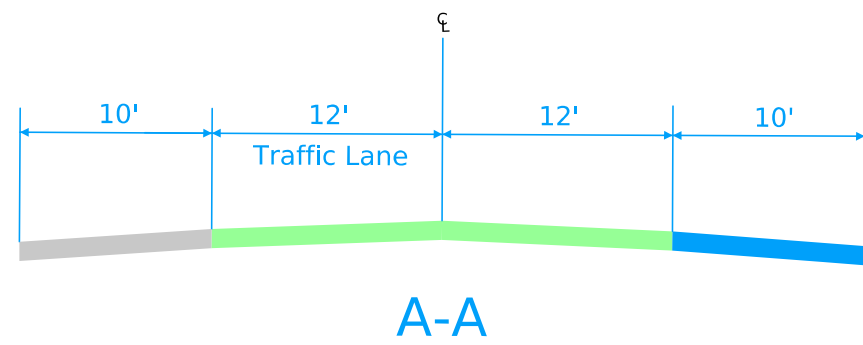
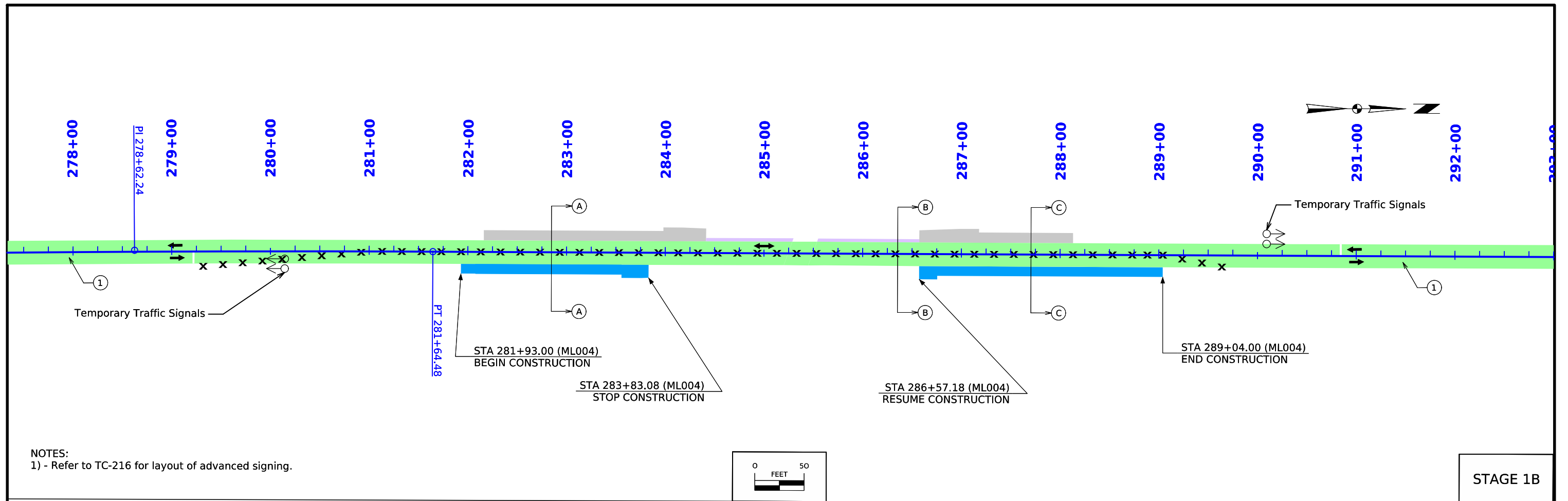
A-A



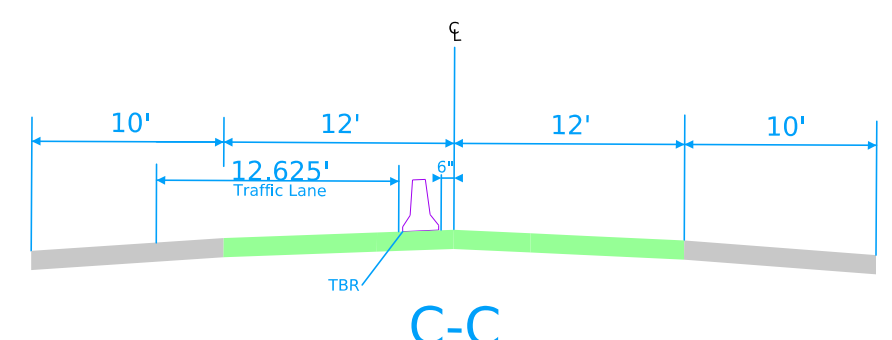
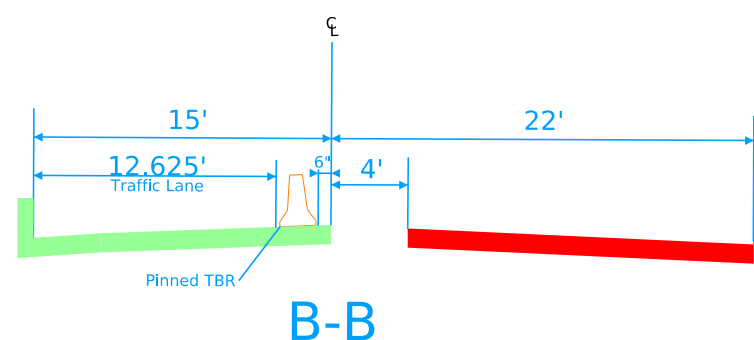
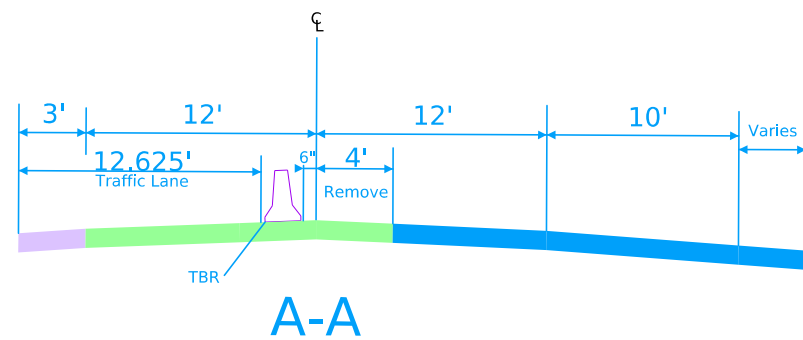
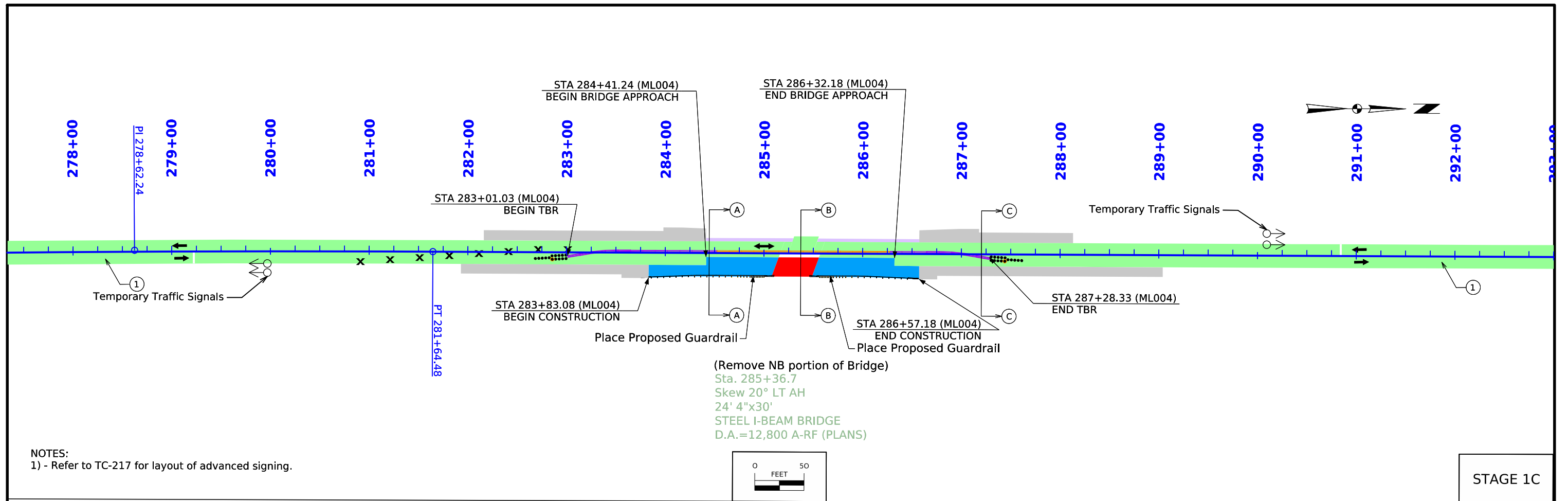
B-B

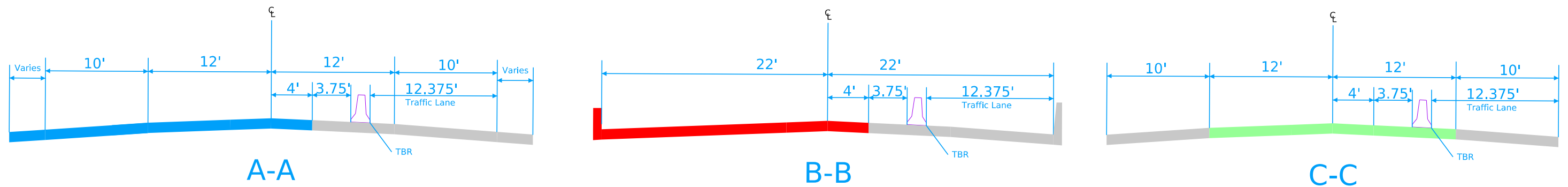
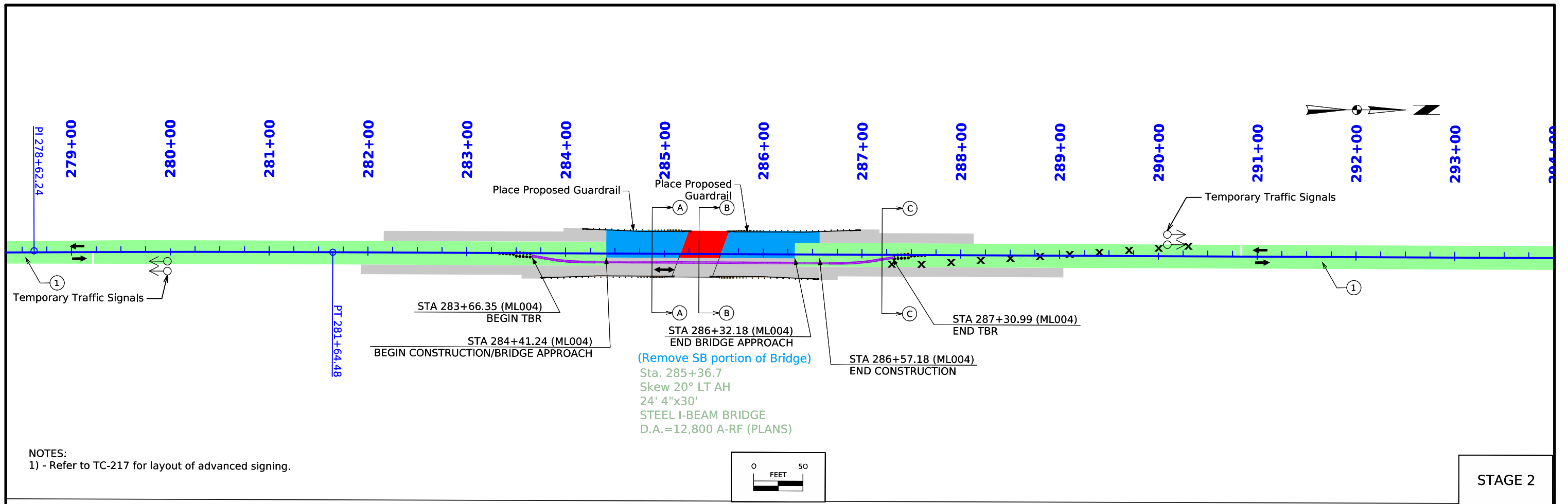


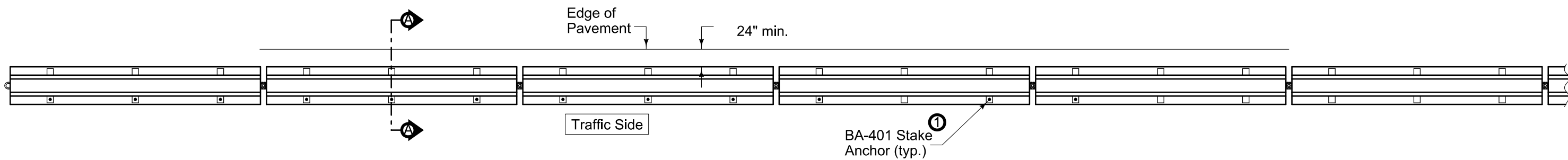
C-C



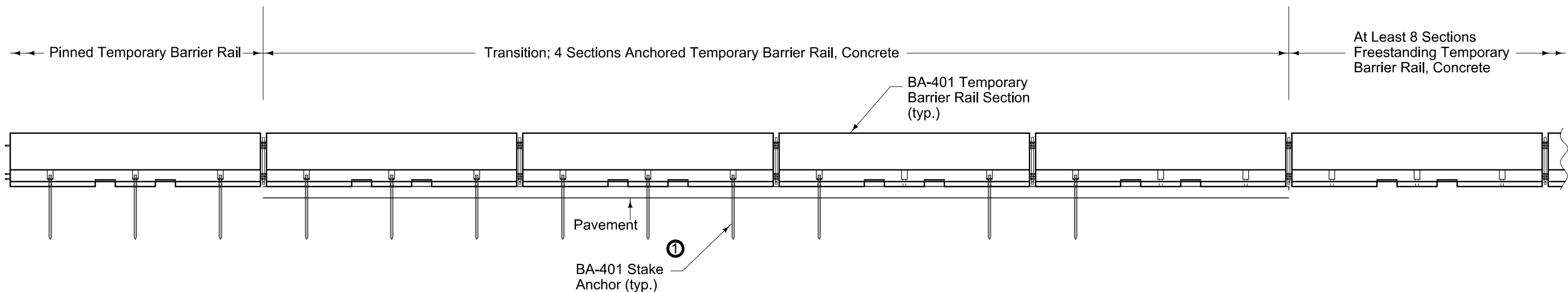








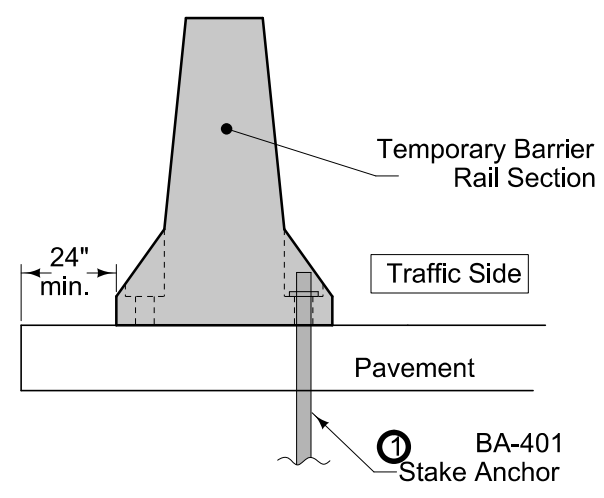
PLAN



ELEVATION

Install temporary barrier rail on a flat, level surface. Where anchored TBR sections are not located on existing pavement, construct a 2 inch minimum thickness HMA pad.

① Each transition requires nine (9) BA-401 stake anchors as shown. Use of the strap anchorage is not allowed in transition. When transition is placed on Composite or PCC Pavement pre-drill holes for stakes with 1 5/8 inch core bit.



SECTION A-A

Transition from Pinned TBR to Unpinned TBR

### Utilities Legend:

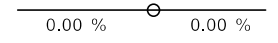
Sub-Surface Utility Mapping Quality Level is in accordance with CI/ASCE 38-02 Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data.

#### Remark Abbreviations

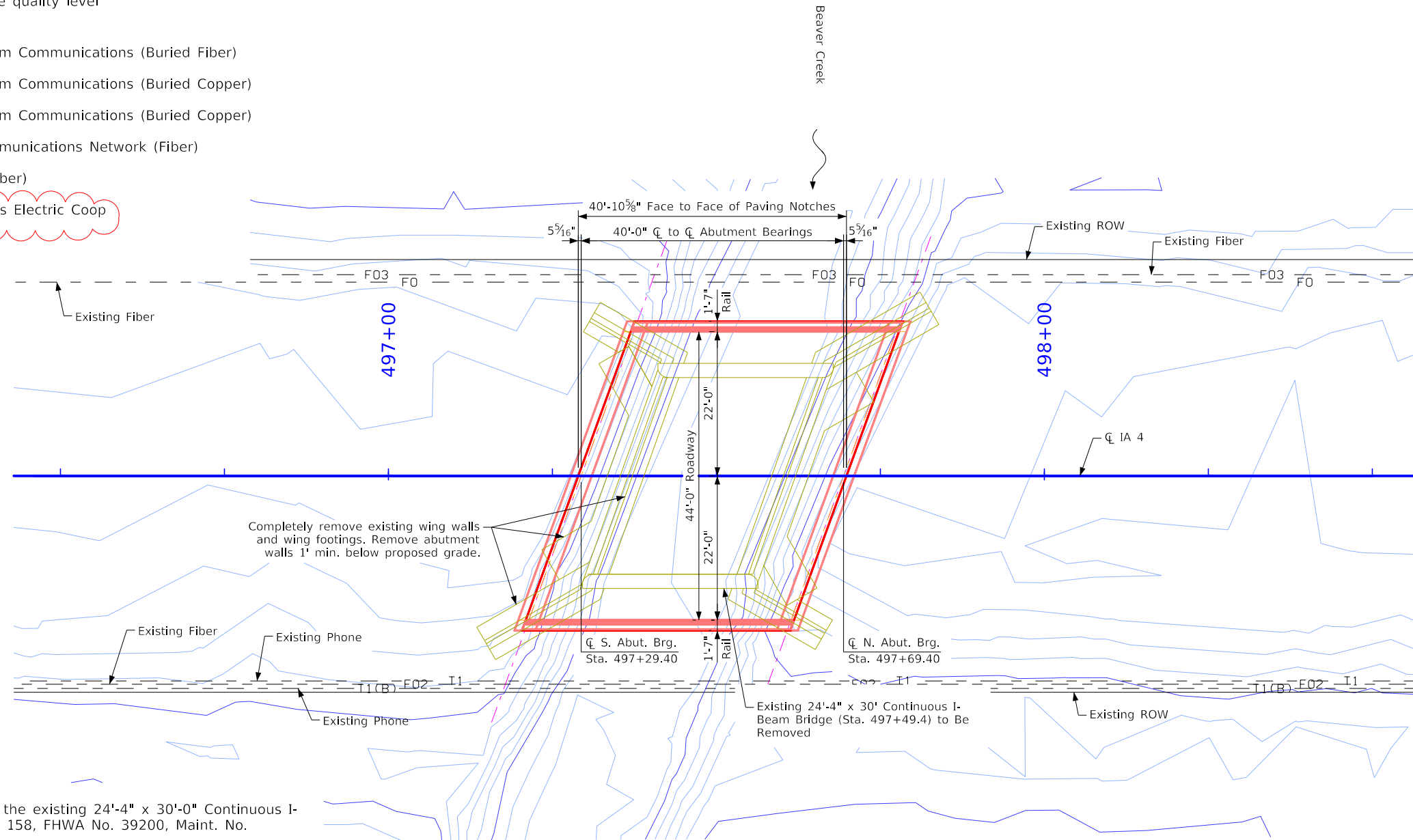
QLA Quality Level A Highest guideline quality level  
 QLD Quality Level D Lowest guideline quality level

- F0 — Windstream Communications (Buried Fiber)
- T1 — Windstream Communications (Buried Copper)
- T1(B) — Windstream Communications (Buried Copper)
- F02 — Iowa Communications Network (Fiber)
- F03 — Lumen (Fiber)

Iowa Lakes Electric Coop



VPI Sta. = 497+48.00  
 VPI Elev. = 1199.15  
**Proposed Profile  
 Grade  $\bar{C}$  IA 4**



### Hydraulic Data

(Preliminary)

Drainage Area = 23.2 Sq. Mi.  
 Stream Slope (HGL) = 5.33 Ft./Mi.  
 Avg. Low Water Stage = ~1187.3

$Q_{50}$  = 1,400 cfs  
 Stage = 1195.84  
 Channel Low Beam = 1197.00  
 Avg. Bridge Velocity = 7.1 fps

$Q_{100}$  = 1,670 cfs  
 Stage = 1196.33  
 Operational Low Beam = 1197.00  
 Backwater = 0.34 Ft.  
 Avg. Bridge Velocity = 7.8 fps

$Q_{200}$  = 1,970 cfs  
 Stage = 1196.52  
 Avg. Bridge Velocity = 8.9 fps  
 Calculated Design Scour = TBD

$Q_{500}$  = 2,300 cfs  
 Stage = 1196.84  
 500-yr Waterway Opening Area = 232 sf  
 Avg. Bridge Velocity = 9.9 fps  
 Calculated Check Scour = TBD

Roadway Overtop 1199.15 (> $Q_{500}$ )

Discharges from USGS Report 2013-5086  
 Region 1 Regression Equations

### Traffic Data

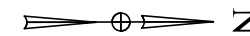
2022 AADT 2,040 V.P.D.  
 TRUCKS 19 %

**General Notes:**  
 --This design is for the replacement of the existing 24'-4" x 30'-0" Continuous I-Beam Bridge, Palo Alto County. Design 158, FHWA No. 39200, Maint. No. 7402.65004.  
 --Work under this design shall include removal of remnants of Palo Alto Design 31-A (1918). Includes removal of remaining wings and footings below grade.

**Design Notes:**  
 --TL-4 Bridge Railing Proposed  
 --Non-standard abutment footing depth is required due to top of berm elevations set 2 ft. lower than typical to achieve required hydraulic open area. Maximum depth (top of deck to bottom of footing) is 8.5 ft.  
 --Non-standard abutment wing walls are required.  
 --There is a potential for conflicts with existing wing piles. Final Design shall design pile spacing to miss existing piles.

**Plan Notes:**  
 --Top of bridge deck at centerline roadway is 0.03' below the profile grade to account for deck cross slope and parabolic crown.  
 --Class B revetment stone is embedded.

### Situation Plan



### Location

IA 4 over Beaver Creek (DD)  
 T-94N R-33W  
 Section 13  
 Rush Lake Township  
 Palo Alto County  
 FHWA No. 39200 (Existing)  
 Bridge Maint. No. 7402.65004  
 Latitude 42.961136°  
 Longitude -94.678563°



Preliminary

Design For 20 Degree LA  
**40'-0" x 44'-0" Single Span  
 Concrete Slab Bridge**

40'-0" Single Span  
**Situation Plan**  
 STA. 497+49.40 (IA 4) Turn-in Date: September 22, 2023  
**Palo Alto County**  
 IOWA DEPARTMENT OF TRANSPORTATION  
 Design No. Design Sheet No. 1 of 1 FHWA No. 39200

## CROSS SECTION VIEW COLOR LEGEND

Design Color No.	Feature	Design Color No.	Feature
<b>Aggregate</b>			
(64)	Choke Stone	(8)	Behind Curb Cut
(42)	Engineering Fabric	(6)	Granular
(8)	Flooded Backfill	(13)	Granular Back Fill
(92)	Macadam Stone	(48)	Rock Undercut
(20)	Modified	(8)	Shoulder Earth Fill
(12)	Plowing Shaping	(2)	Side Slopes
(14)	Porous Backfill	(226)	Side Slopes Dressing
(8)	Revetment Class A	<b>Substrata</b>	
(6)	Revetment Class B	(128)	Boulder
(62)	Revetment Class C	(209)	Boulder Removed
(188)	Revetment Class D	(48)	Broken Weathered
(28)	Revetment Class E	(210)	Broken Weathered Removed
(12)	Shoulder Special Backfill	(3)	Core Out
(12)	Special Backfill	(115)	Core Out Remove Only
(20)	Subbase	(195)	Core Out Remove and Replace
(20)	Subbase Lower	(203)	Existing Pavement
(20)	Subbase Upper	(184)	Existing Pavement Remove Only
(118)	Subgrade Treatment	(200)	Existing Pavement Remove and Replace
<b>Asphalt</b>			
(207)	HMA Base Course	(6)	Loam
(207)	HMA Interim Course	(211)	Loam Removed
(207)	HMA Surface Course	(80)	Rock
<b>Bridge</b>			
(0)	Bridge	(212)	Rock Removed
<b>Concrete</b>			
(0)	Barrier Concrete	(4)	Select Sand
(0)	Barrier Concrete Footing	(214)	Select Sand Removed
(0)	Curb Gutter	(3)	Shale
(48)	Flowable Mortar	(215)	Shale Removed
(0)	Median Concrete	(10)	Topsoil
(0)	PCC Pavement	(2)	Topsoil Remove Only
(0)	Sidewalk	(4)	Topsoil Remove and Replace
<b>Unsuitable / Waste</b>			
(0)	Existing Pavement	(3)	Unsuitable Type A
<b>Shoulder</b>			
(209)	Shoulder HMA	(216)	Unsuitable Type A Removed
(0)	Shoulder PCC	(13)	Unsuitable Type B
(6)	Shoulder Granular	(217)	Unsuitable Type B Removed
<b>Structural</b>			
(112)	Noise Wall	(11)	Unsuitable Type C
(112)	Noise Wall Footing	(218)	Unsuitable Type C Removed
(112)	Retaining Wall Back	(3)	Waste
(112)	Retaining Wall Back Excavate	(219)	Waste Removed
(112)	Retaining Wall Face		
(112)	Retaining Wall Front Excavate		
(112)	Retaining Wall Front Footing		
(112)	Retaining Wall MSE Gutter		
(112)	Retaining Wall Reinforced Earth		

**NOTES:**

Text

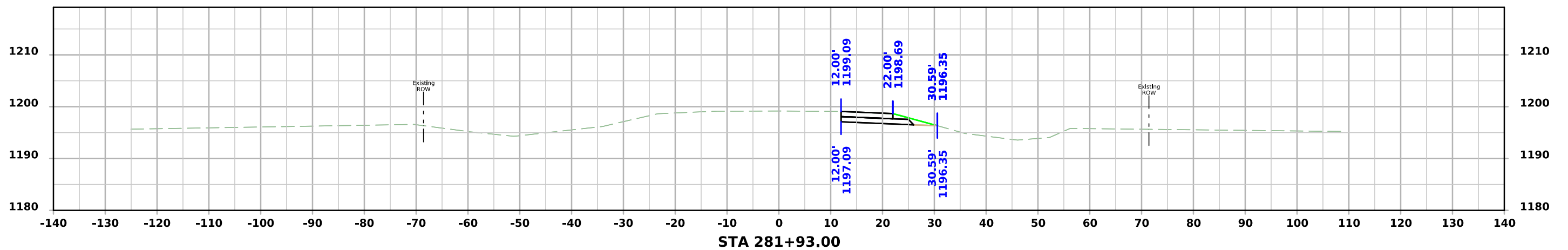
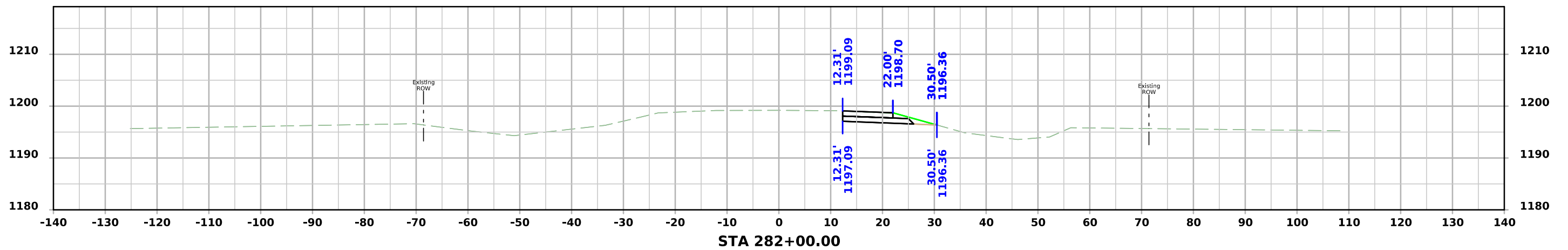
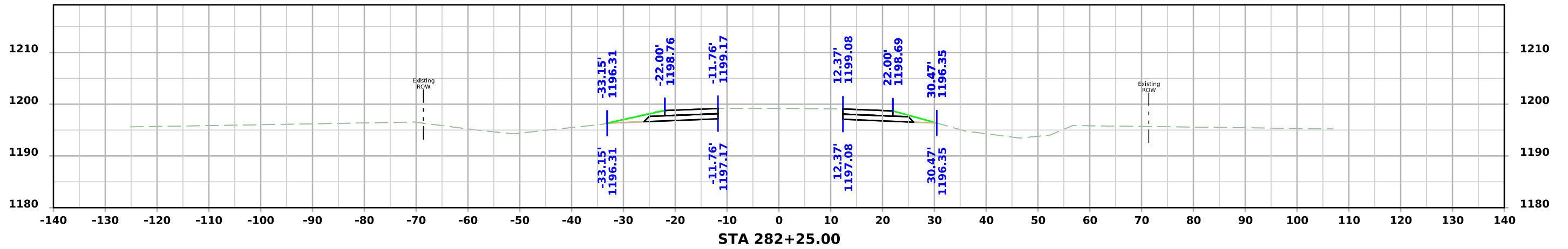
**NOTES:**

Text

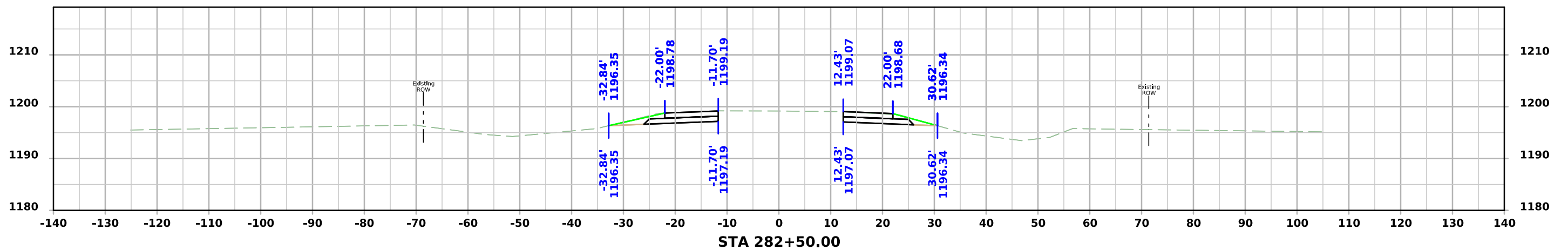
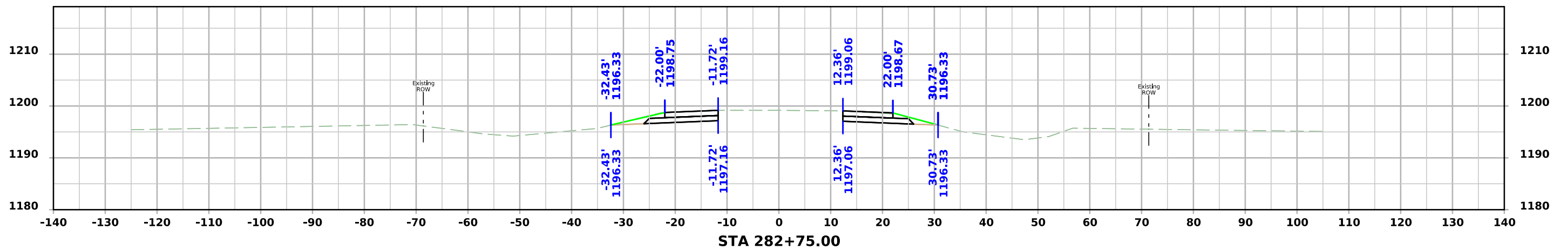
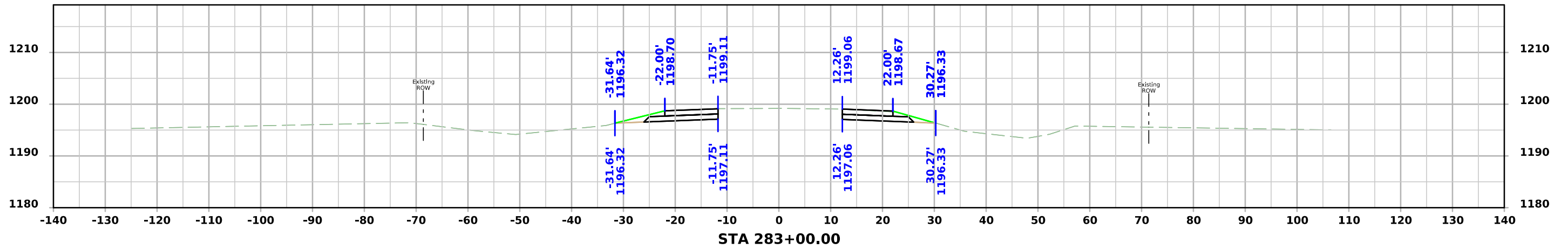
## CROSS SECTIONS LEGEND AND INFORMATION SHEET

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

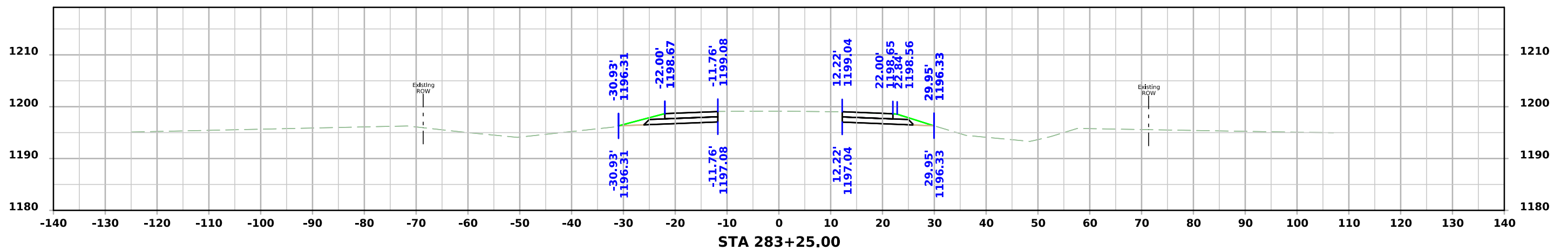
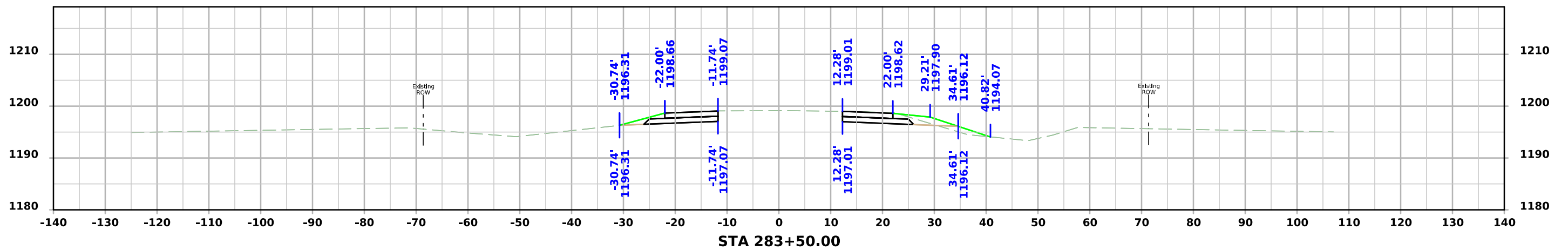
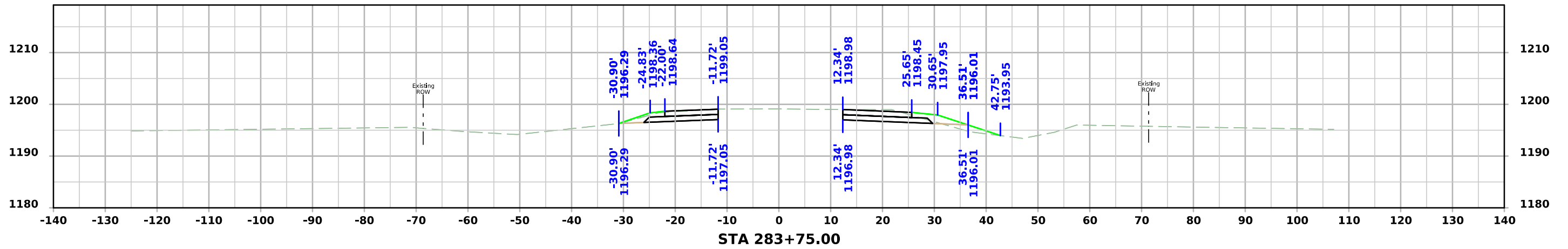
# ML - IA 4



# ML - IA 4

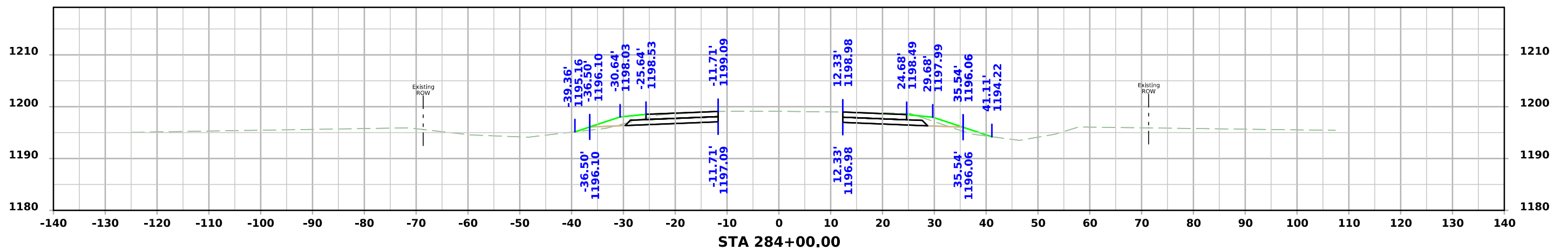
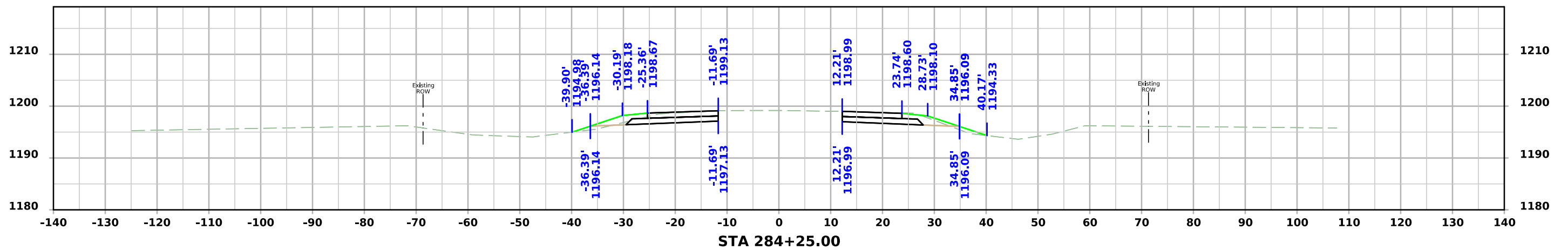
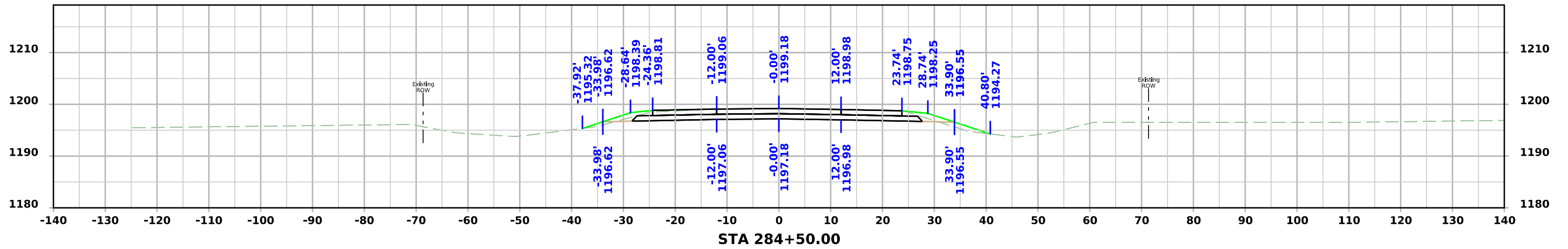


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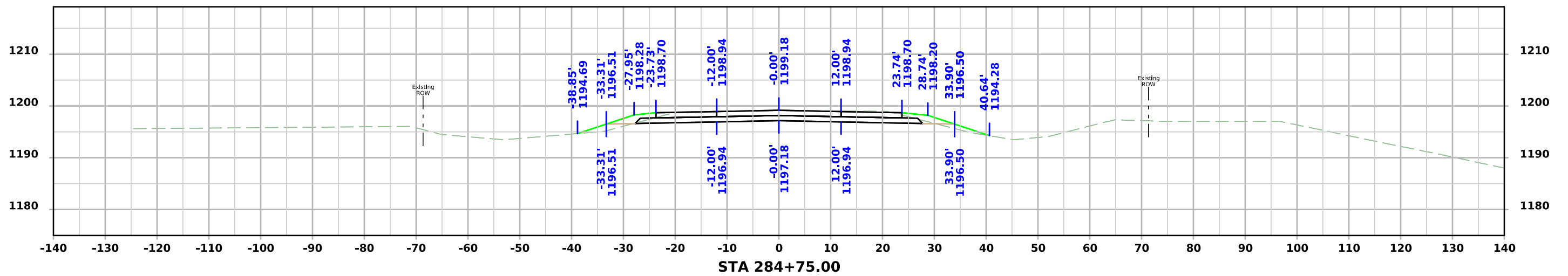
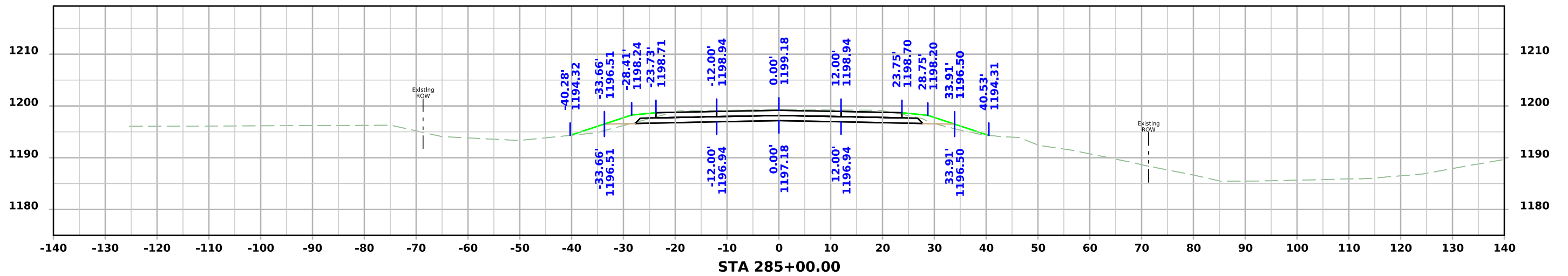
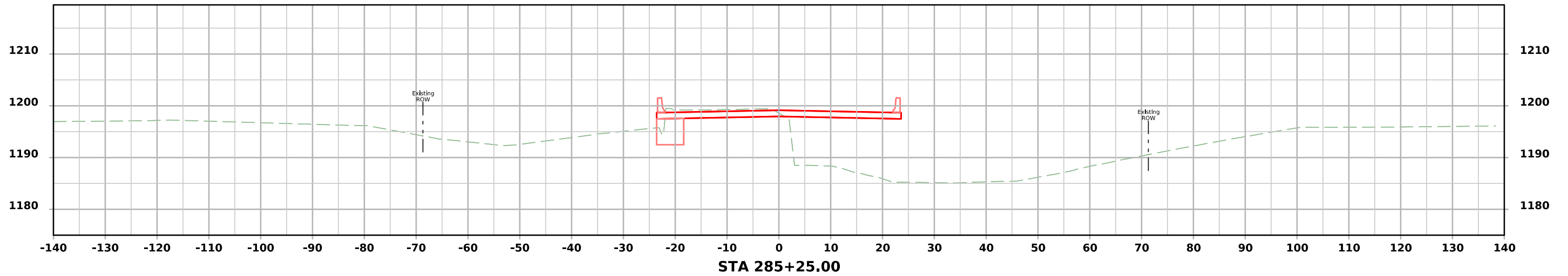




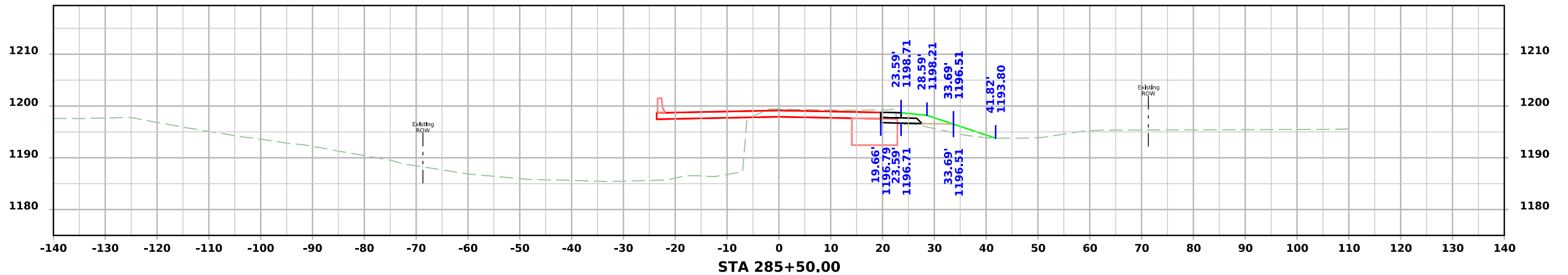
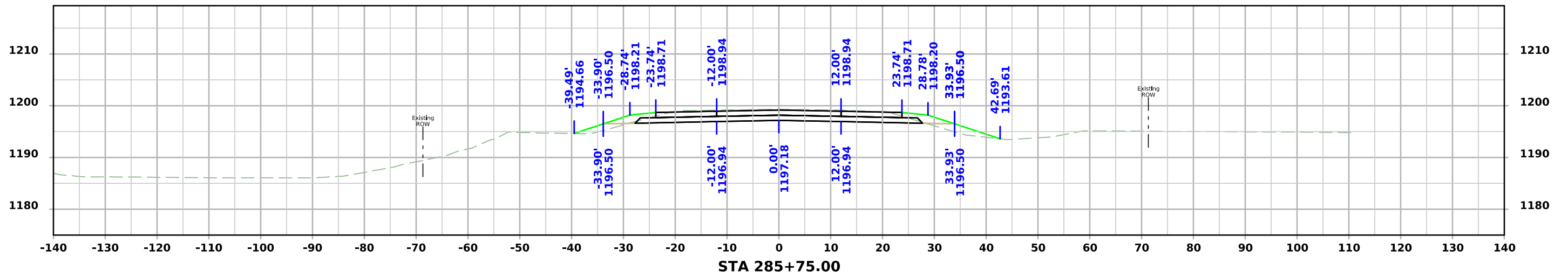
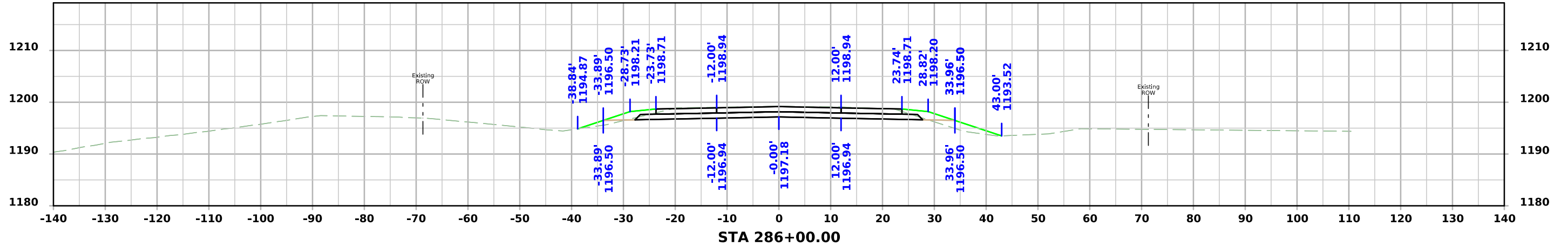
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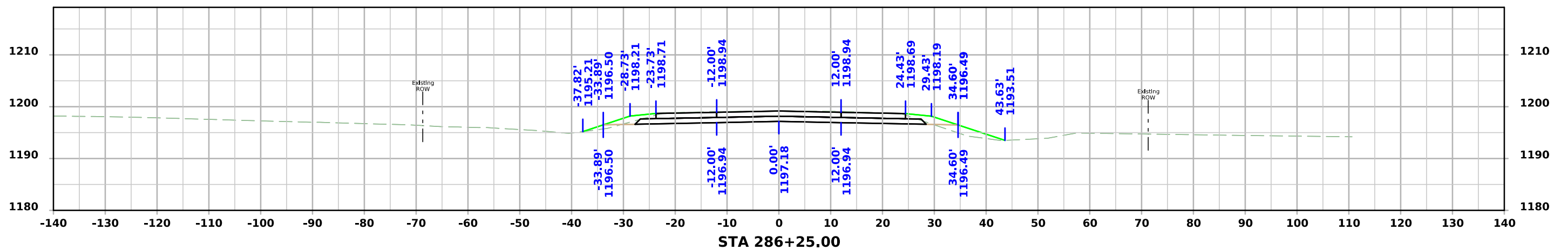
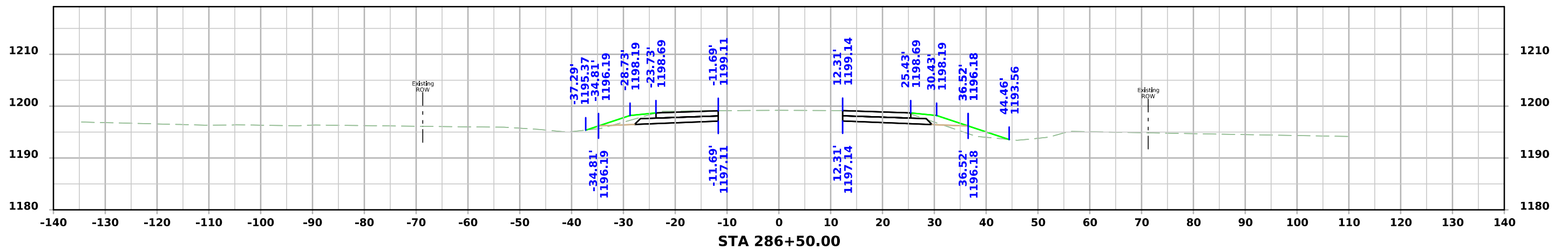
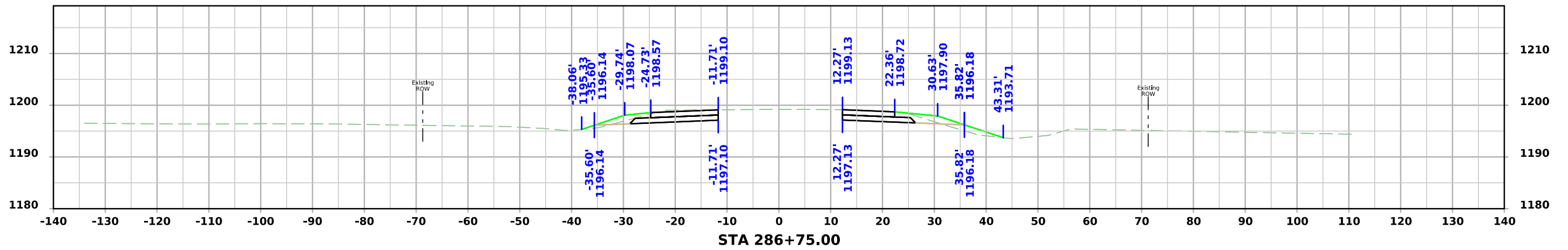
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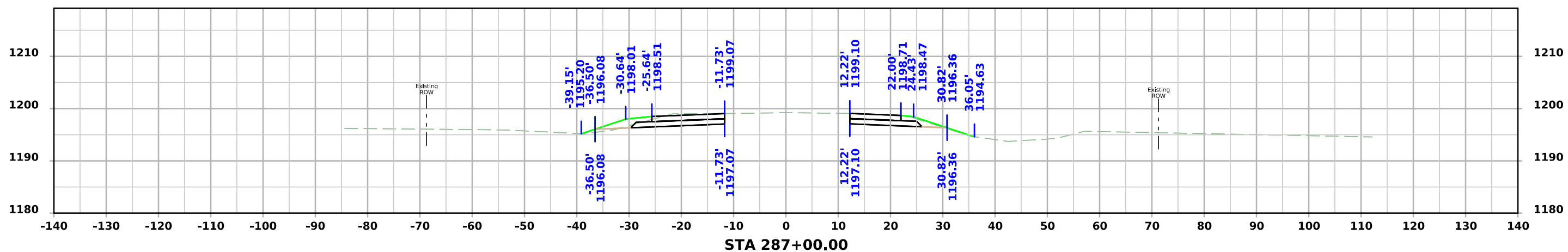
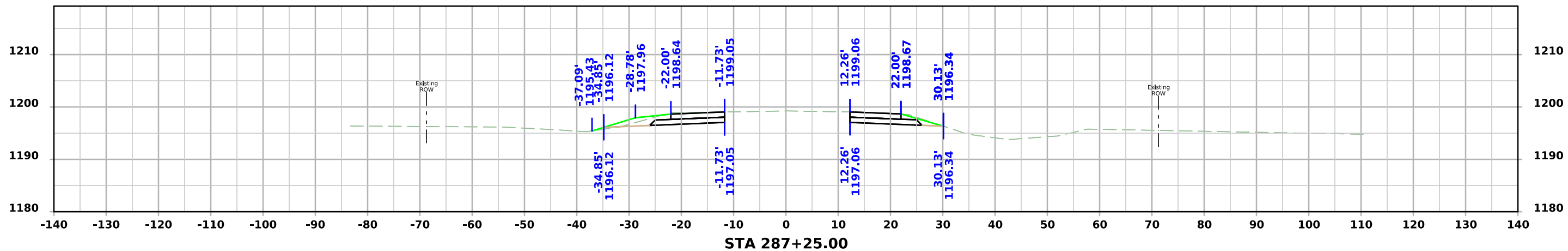
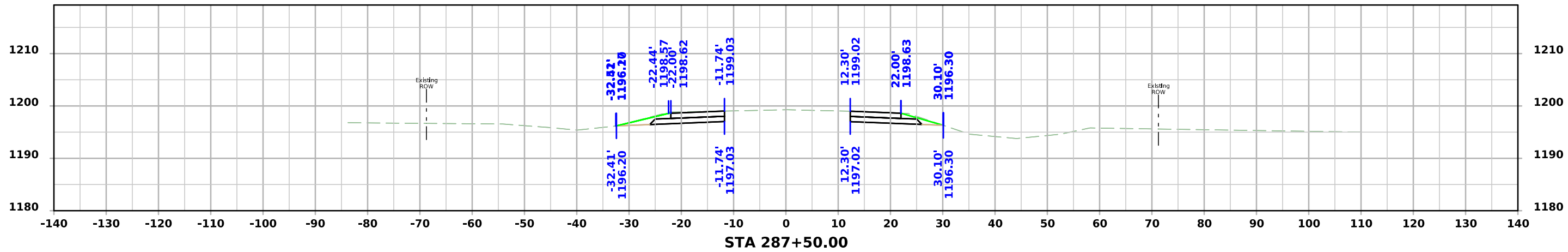
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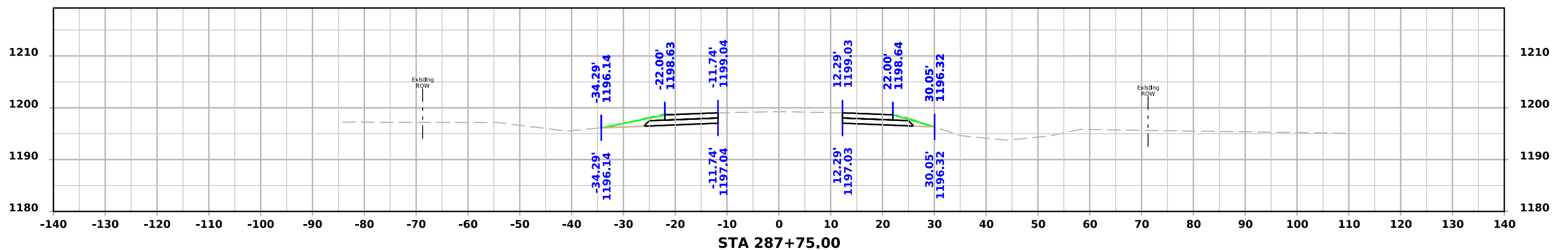
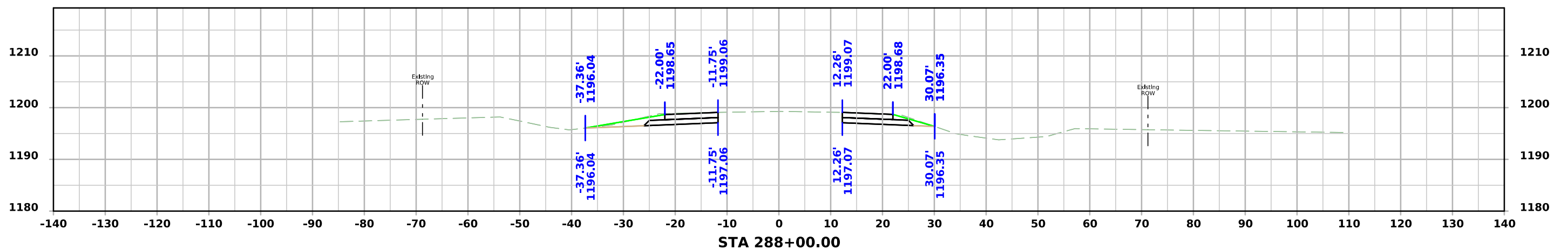
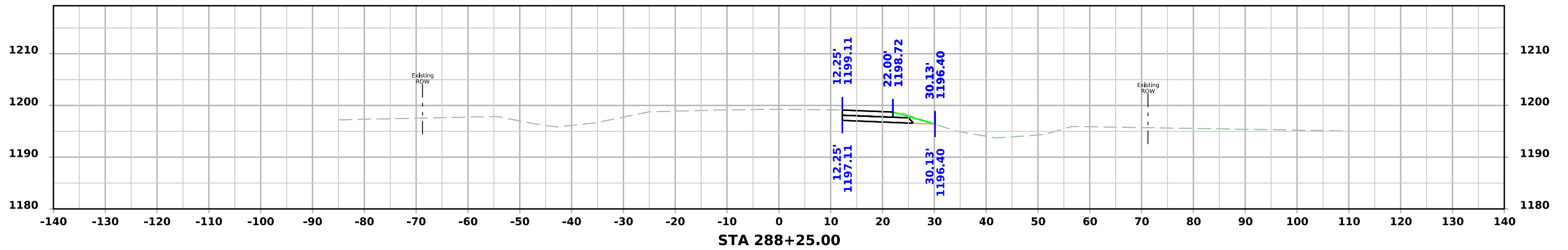
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# ML - IA 4



# ML - IA 4



# ML - IA 4

