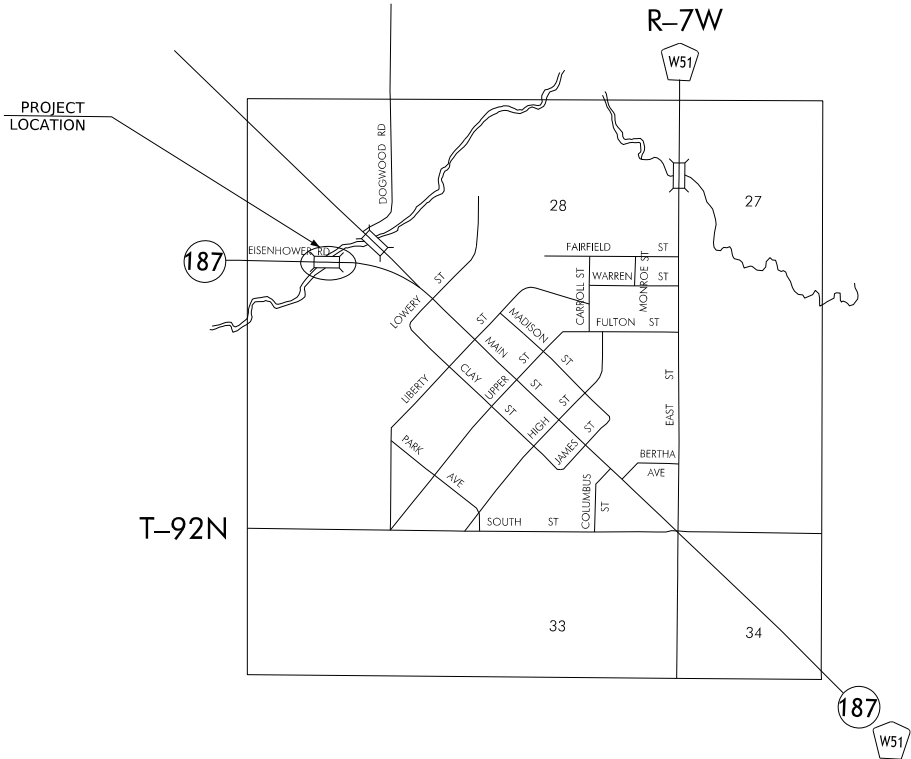
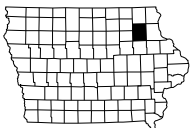




DESIGN DATA RURAL				
20 27	AADT	1100	V.P.D.	
20 47	AADT	1100	V.P.D.	
20 47	DHV	120	V.P.H.	
TRUCKS		13	%	
Total				
Design ESALs		--		

INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	Title Sheets
* A.1	Title Sheet
B Sheets	Typical Cross Sections and Details
B.1 - 2	Typical Cross Sections and Details
D Sheets	Mainline Plan and Profile Sheets
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2	IA 187
G Sheets	Survey Sheets
G.1 - 3	Reference Ties and Bench Marks
J Sheets	Traffic Control and Staging Sheets
J.1 - 2	Traffic Control Plan
* J.3	Detour Map
U Sheets	Super Elevation Detail Sheets
U.1 - 2	Superelevation Information Only
V Sheets	Bridge and Culvert Situation Plans
V.1 - 2	Bridge Situation Plans
W Sheets	Mainline Cross Sections
* W.1	Cross Sections Legend & Symbol Information Sheet
* W.2 - 11	Mainline Cross Sections
* Color Plan Sheets	



PLANS OF PROPOSED IMPROVEMENT ON THE
PRIMARY ROAD SYSTEM
Fayette COUNTY
BRIDGE REPLACEMENT - CCS
Brush Creek
0,5 miles W of Co Rd W51
-

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
22-33-187-010
PROJECT NUMBER
BRF-187-1(034)--38-33
R.O.W. PROJECT NUMBER
STPN-187-1(035)--2J-33
-
-

D4 PLAN - Date: 7/21/2026

PRELIMINARY PLANS

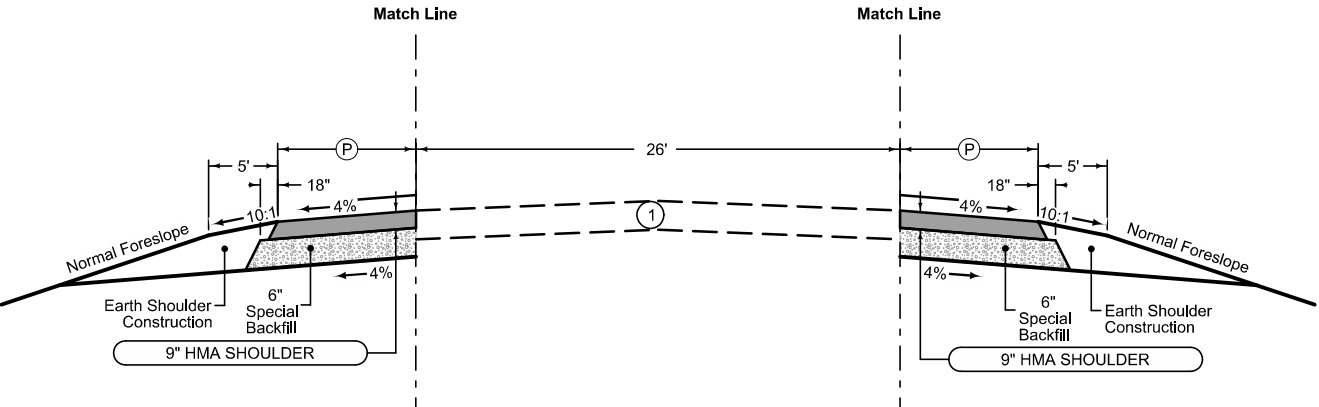
Subject to change by final design.

D5 PLAN - Date: 12/06/2024

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

Paved Shoulder at Guardrail

Shoulder Jointing:		
Longitudinal joint: B		
2_P_Guard_04-21-20		(P)
STATION TO STATION		Feet
401+18.69	401+35.78	Var.
404+64.17	405+20.42	Var.

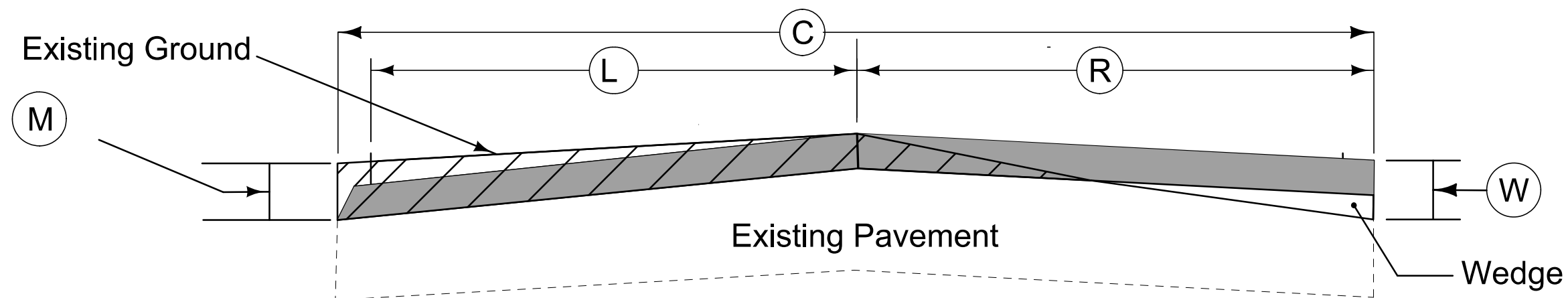


Paved Shoulder at Guardrail

Shoulder Jointing:		
Longitudinal joint: B		
2_P_Guard_04-21-20		(P)
STATION TO STATION		Feet
400+78.73	401+35.78	Var.
404+64.17	404+81.31	Var.

- ①
- West of Bridge: Existing Pavement
- East of Bridge: Existing Pavement with 2.5" HMA Resurfacing

IA 187



							3R_MillingOverlay_04-19-11			
DIRECTION OF TRAVEL	STATION TO STATION		Ⓒ	Ⓓ	Ⓔ	Pavement Scarification SY	SLOPE TO SLOPE		Ⓜ	Ⓦ
			Feet	Feet	Feet					
WB	404+64.17	405+65.00	26	13		291.28	0.67%	6.49%	5.5 - 2.5	2.5
EB	404+64.17	405+65.00			13		2.00%	6.36%		5.5 - 2.5



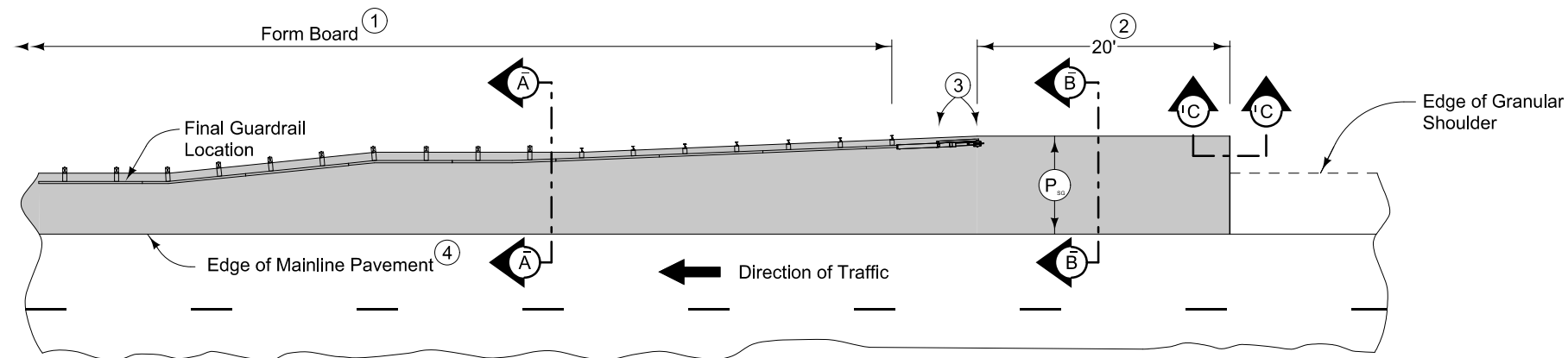
Milling



2.5" HMA Resurfacing

East of Bridge

IA 187



PLAN VIEW

DESIGNER
INFO

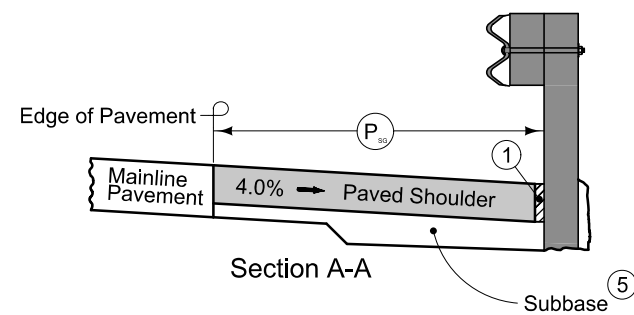
7156
Modified

9" HMA Paved Shoulder at guardrail.
following jointing layout:

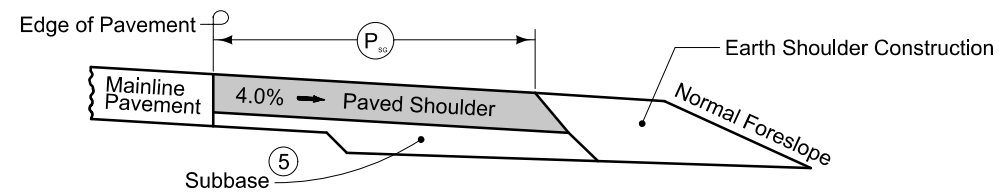
Compaction of HMA is required to face of guardrail post. Hand
compaction will be allowed under guardrail. Removal and reinstallation of
guardrail will be allowed with no additional payment.

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' joint (per PV-101) for PCC shoulder.
'B' joint (per PV-101) for HMA shoulder.
- ⑤ Refer to other details in the plan.

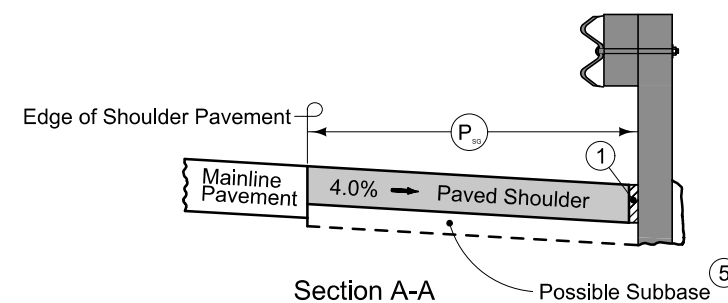


Section A-A

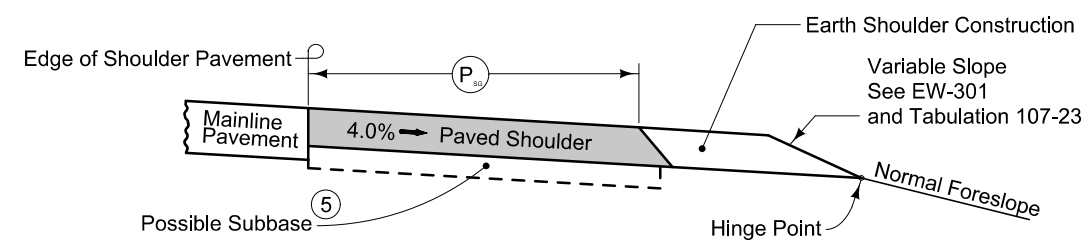


Section B-B

NEW CONSTRUCTION

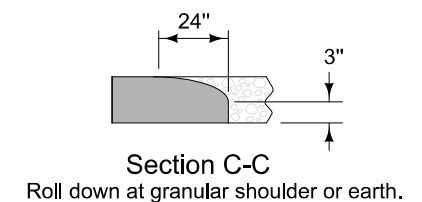


Section A-A



Section B-B

EXISTING SHOULDER



PAVED SHOULDER AT GUARDRAIL
(GRANULAR SHOULDER ADJACENT TO MAINLINE)

IA 187

	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

— F02 —

City of Arlington
Virginia Mitchell
vmitchell@arlingtonia.com
563-633-2345

— F02 —

Hawkeye Telephone Company
Craig Schmitt
Craig.schmitt@hawkeyetelephone.com
563-412-9765

— F02 —

Black Hills Energy Manchester
Brian McWilliams
brian.mcwilliams@blackhillscorp.com
563-927-1017

— F02 —

Windstream Communications
Locate Desk
locate.desk@windstream.com
800-289-1901

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
Gray	(64)		HMA Resurfacing	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%

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

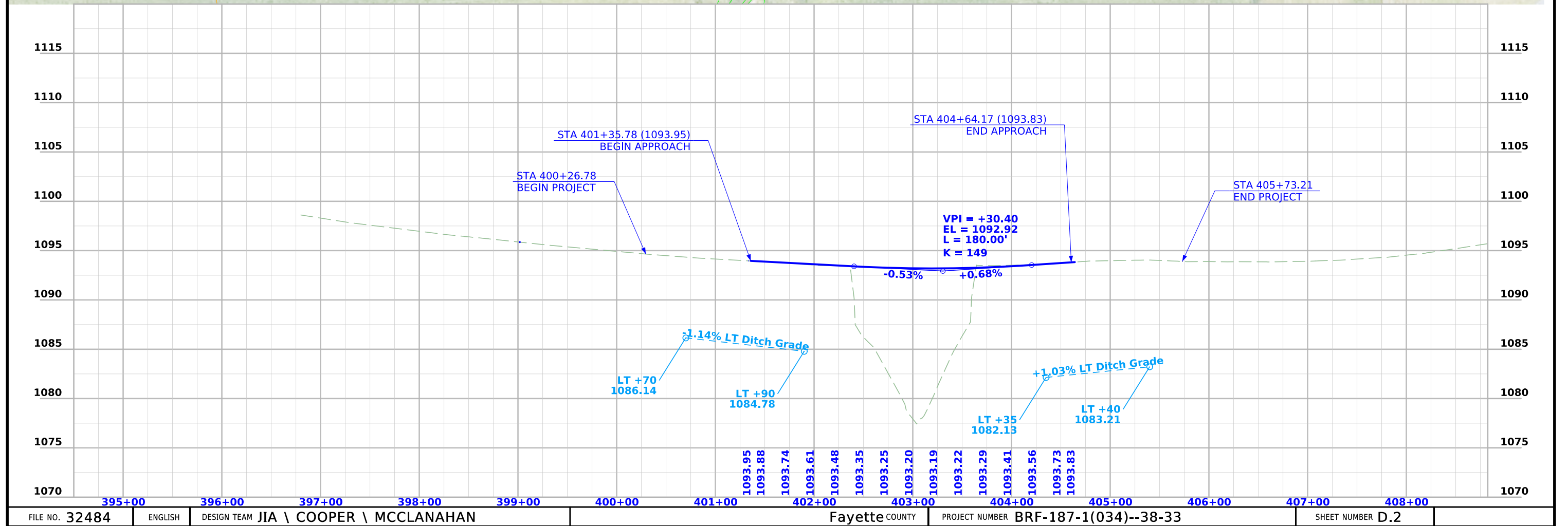
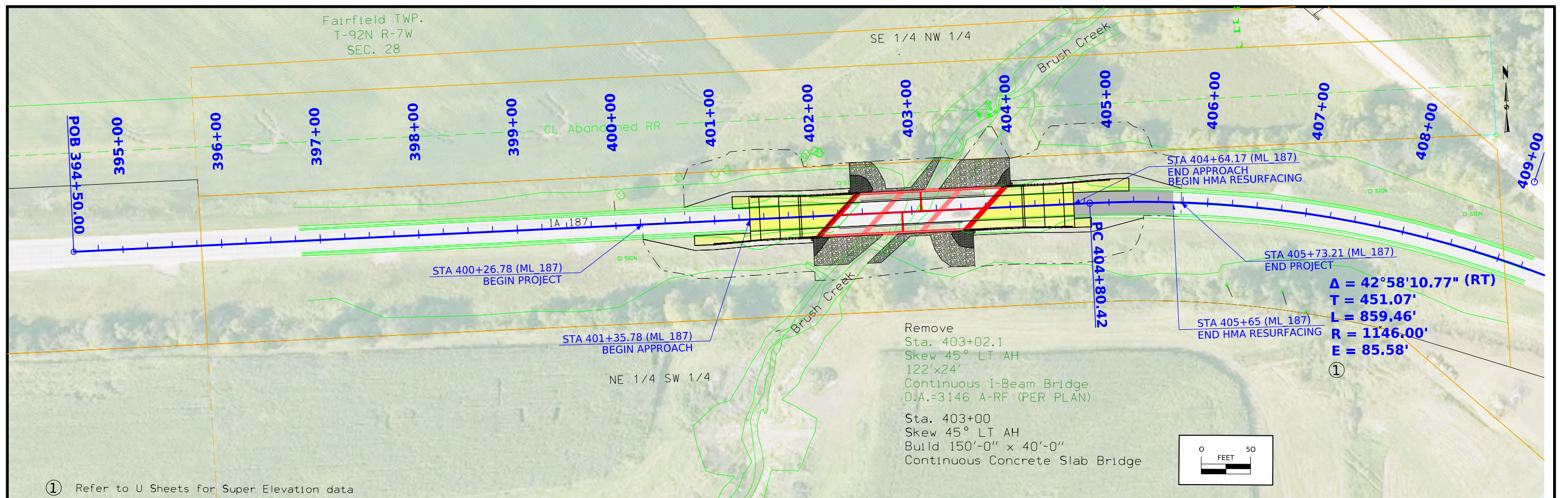
LEFT-OF-WAY LEGEND

-  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 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

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



Survey Information

SURVEY INDEX

County: Fayette
PIN: 22-33-187-010
Project Number: BRF-187-1(34)--38-33
Location: Brush Creek 0.5 mi W of Co Rd W51
Type of Work: Bridge Replacement
Project Directory: 3318701022

Survey Personnel

John Hahn – Survey Party Chief
Dan Duncan- Survey Party Chief

Date(s) of Survey

Begin Date 08/23/2023
End Date 01/24/2024

General Information

This survey is for the replacement of a bridge on Iowa Highway 187 over Brush Creek, .5 miles west of Fayette County Road W51.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 5
(U.S. SURVEY FOOT)
VERTICAL DATUM: NAVD88
GEOID MODEL: 2018u3

Alignment Information

The horizontal alignment for Iowa Highway 187 this survey is a retrace of As-built Plans No. 611 D.E.F. Survey stationing was equated to the plan PI at Sta. 409+31.5 and carried back and ahead without equation throughout the survey.

Survey stationing relates to as built plan stationing as follows:

PI Sta. 369+59.6 As-built Plans Project No. 611 D.E.F.
Survey PI Sta. 369+46.64

PI Sta. 409+31.5 As-built Plans Project No. 611 D.E.F.
Survey PI Sta. 409+31.5

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 05 (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 (IaRTN 2019 Adjustment)
Ia. Regional Coordinate System Zone 05 (U.S. Survey Foot)
VERT. DATUM: NAVD88
Geoid Model: 2018u3

Point Name	Northing	Easting	Elevation	Code/Description
362	8947029.16	15656546.00	1189.77	CP FND FAYETTE CO GPS MON AS DESCRIBED IN GOOD CONDITION
369	8930204.88	15656966.67	1154.37	CP FND FAYETTE CO GPS MON AS DESCRIBED IN GOOD CONDITION
CP1	8937378.22	15654583.04	1104.06	CP FND FENO MON 65FT NE OF CL HWY187 27FT NW OF CL OF LOWERY ST 210FT WNW OF SW CRNR OF COMMUNITY CENTER
CP2	8937801.97	15649829.37	1114.72	CP FND ROW RAIL 81FT ESE OF CL FIELD ENTRANCE 49FT NNW OF CL OF HWY187 520FT WNW OF FIELD ENTRANCE

NO ACCESS RIGHTS ARE TO BE ACQUIRED ON THIS PROJECT.

Fayette

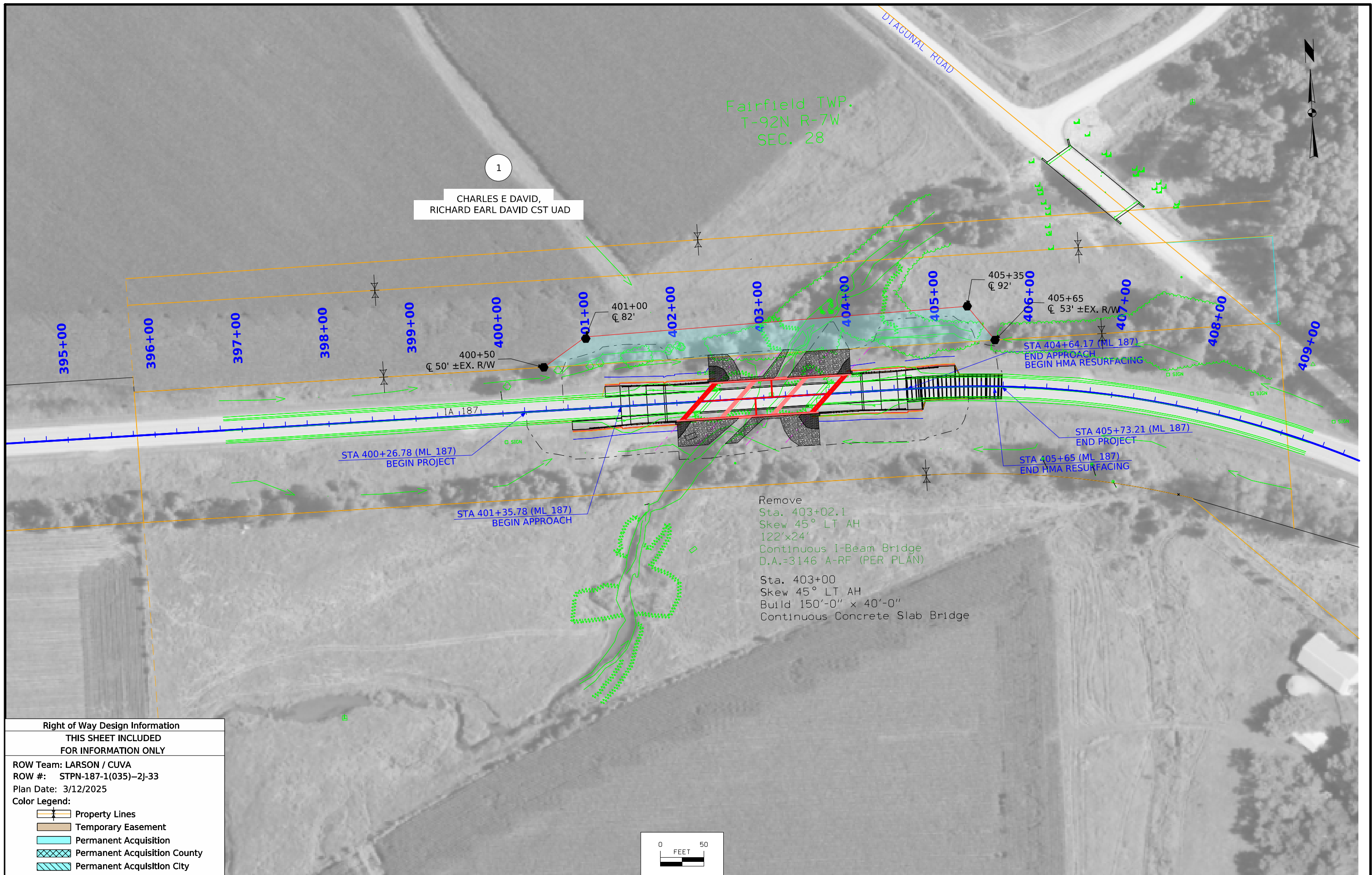
STPN-187-1(035)--2J-33
Brush Creek 0.5 mi W of Co Rd W51
[3318701022](#)

Project Code22-33-187-010

RouteIA 187

		State			County			City				Temp Ease						
Parcel No	Owner Name	Fee	Ease		Fee	Ease		Fee	Ease		Excess			Mitigation	Other	Relocation Needed	A/C Only	Total Acq
1	Charles E. David, Richard Earl David CST UAD		0.40 AC													No	No	No

1 Parcels



Right of Way Design Information
THIS SHEET INCLUDED
FOR INFORMATION ONLY

ROW Team: LARSON / CUVA
ROW #: STPN-187-1(035)-2J-33
Plan Date: 3/12/2025
Color Legend:

- Property Lines
- Temporary Easement
- Permanent Acquisition
- Permanent Acquisition County
- Permanent Acquisition City

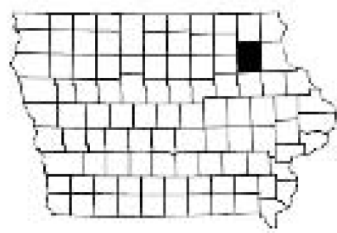
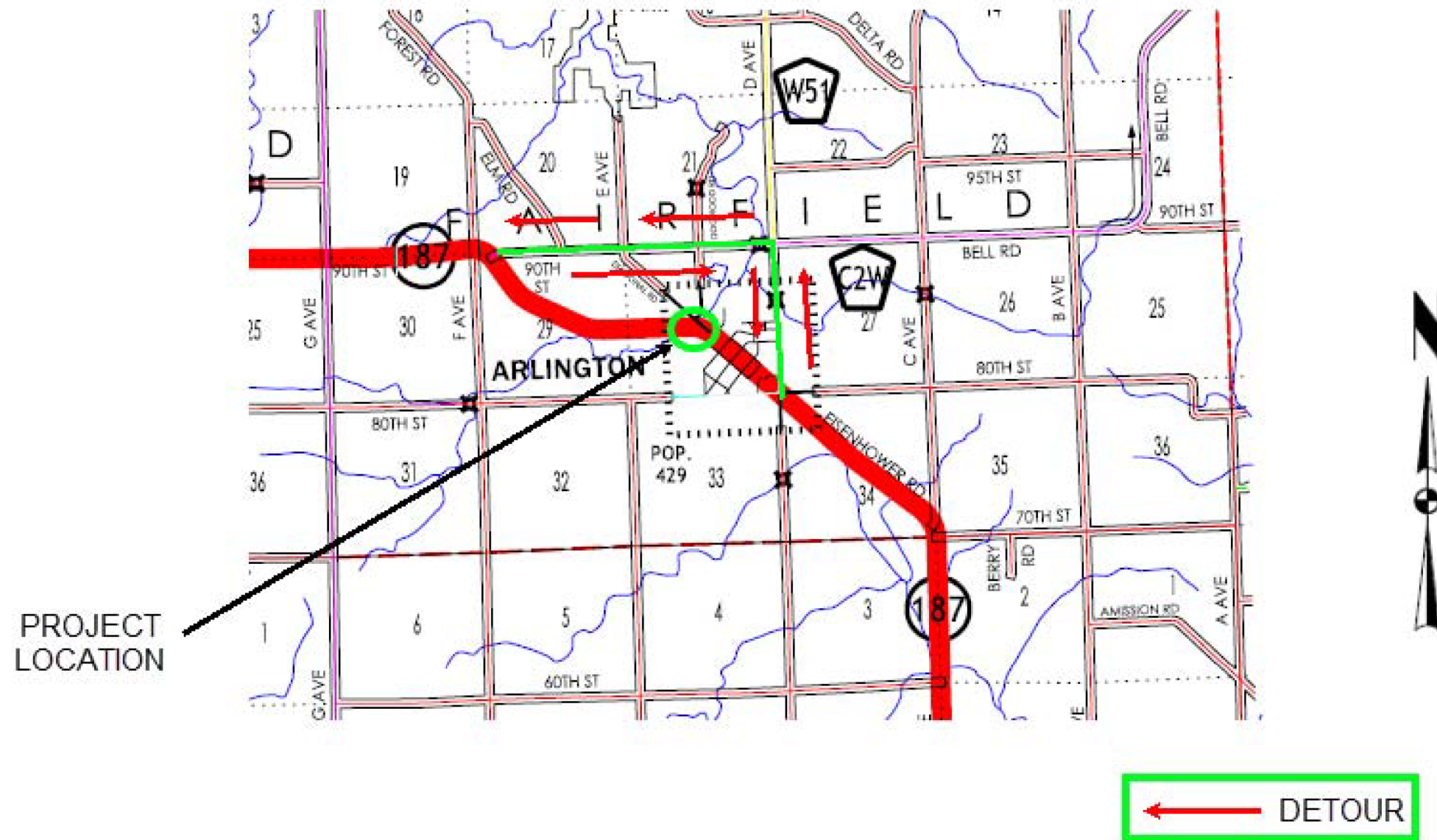
108_23A
8/15/22

TRAFFIC CONTROL PLAN

IA 187 will be closed during construction. Through traffic will be maintained by an off-site detour.
Refer to sheet J.3 for detour route.

108_25
2/22/24

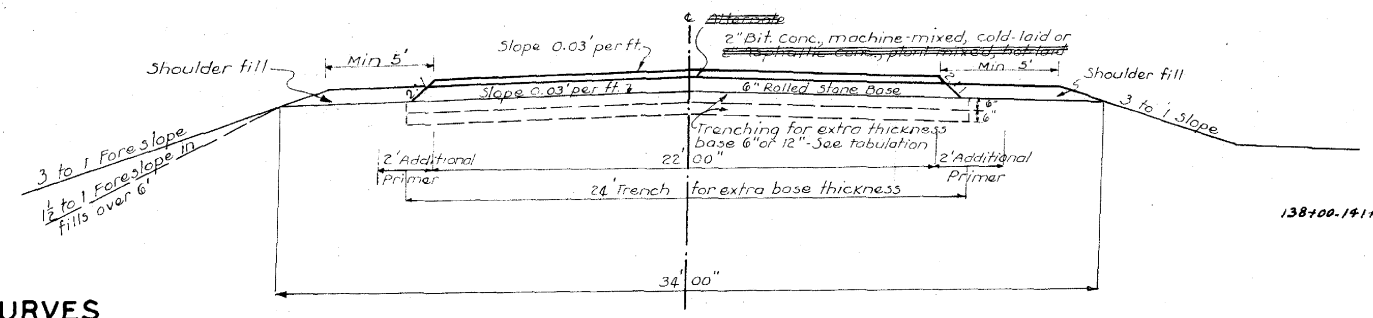
511 TRAVEL RESTRICTIONS													
Line No.	Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No. or Structure ID or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks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



Fayette County
Brush Creek 0.5 mi W of Co Rd W51
BRF-187-1(034)--38-33
PIN: 22-33-187-010



TYPICAL CROSS SECTION



SUPERELEVATED CURVES

P.I. Station	A	D	e	S
1008+10.0	88° 57'	10°	0.0033	220
58+13.7	88° 09'	6°	0.0033	220
292+68.6	3° 05'	0° 30'	0.0146	80
322+43.6	58° 50'	6°	0.0033	220
342+53.8	29° 39'	3°	0.0458	110
369+59.6	26° 44'	3°	0.0458	110
409+31.5	42° 57'	5°	0.0708	187
479+72.7	6° 07'	1°	0.0208	80
615+94.0	51° 47'	4°	0.0583	140

On a prepared subbase 28 ft. wide and 6 inches deep, place 6 inch rolled stone base course.
Design weight - 150 pounds per cu. ft.
Prime 26 ft. wide using 0.2 gals. per sq. yd. with an additional application of 0.3 gals. per sq. yd. on the outer 2 ft. of each edge.
Place surfacing course ~~asphaltic~~ consisting of
~~asphaltic concrete course, plant mixed, hot laid or~~
2" bituminous concrete course, machine-mixed, cold laid.

ESTIMATE OF QUANTITIES

Div.	Construction of Soil Aggregate Subbase	Rolled Stone Base Course	Shoulder Excavation	Primer Bitumen	Surface Course	Asphaltic Concrete Surface Course	Driveway Surfacing Material	Project Signs
	Miles	Tons	Cu. Yds.	Gal.	Tons	Plant Mixed Hot Laid Tons	Cu. Yds.	No.
1	9.677	66,059.8	21,104	4,817	14,304.3		773.2	2
2	2.007	17,766.7	3,179	746	2,853.5		96.0	
3	0.310	2,378.1	490	1,209	474.1		60.2	
4	0.446	3,031.6	707	2,253	667.9		136.8	
Total	12.440	89,236.2	25,480	8,829	18,299.8		1,066.2	2

- Includes ~~28,000 tons~~ for added base thickness. See tabulation for areas.
- Includes material for returns at end.
- Estimated at 30 Cu. Yds. per sta. No overhaul will be allowed. See tabulation for location of shoulder material.
- Signs to be furnished and erected. Cost to be included and considered incidental to other work on the project.

TABULATION OF SHOULDER MATERIAL AVAILABLE AND EXTRA THICKNESS BASE REQUIRED

Station to Station	Side	Shoulder Material Available Cu. Yds.	Extra Base Material Required Tons	Remarks
16+00 " 23+00	Rt	400		Make 4' ditch
26+00 " 33+00	Both	267	540	Trench 1'x24' for extra base
30+00 " 43+00	Both	300		Berm along toe of slope
77+00 " 91+00	Rt	400		Make 4' ditch
84+00 " 91+00	Both	300	630	Trench 1'x24' for extra base
101+00 " 108+00	Both	300	630	Make 4' ditch
108+00 " 115+00	Both	300	450	Make 4' ditch
121+00 " 123+00	Rt	400		Make 4' ditch
138+00 " 141+00	Both	352	720	Trench 1'x24' for extra base
150+00 " 154+00	Both	352	360	Make 4' ditch
164+00 " 169+00	Both	352	450	Make 4' ditch
173+00 " 187+00	Both	352	1260	Trench 1'x24' for extra base
206+00 " 216+00	Both	1000		Clean ditches
240+50 " 244+50	Both	500		Clean ditches
240+50 " 244+50	Both	356	720	Trench 1'x24' for extra base
256+50 " 261+50	Both	356	450	Make 4' ditch
267+50 " 274+50	Both	1100		Clean ditches
269+00 " 291+00	Both	680	1980	Trench 1'x24' for extra base
291+00 " 295+00	Both	356	720	Clean ditches
291+00 " 295+00	Both	356	2070	Trench 1'x24' for extra base
302+50 " 314+00	Both	400		Clean ditches
303+00 " 308+00	Both	400		Clean ditches
319+50 " 330+00	Both	440	900	Make 4' ditch
352+50 " 355+50	Both	356	540	Make 4' ditch
365+00 " 371+50	Both	2000	1170	Make 4' ditch
371+50 " 379+00	Both	1364	2790	Trench 1'x24' for extra base
403+00 " 413+95	Both	110	531	Trenching for bridge
443+00 " 446+00	Both	351	540	Trench 1'x24' for extra base
455+00 " 459+50	Both	198	405	Make 4' ditch
466+00 " 507+00	Both	3510		Make 4' ditch
518+00 " 523+00	Both	350	450	Make 4' ditch
523+00 " 528+50	Both	490	990	Trench 1'x24' for extra base
566+85 " 569+00	Both	110	1080	Trenching to meet bridge
585+00 " 591+00	Both	300	900	Trench 1'x24' for extra base
599+00 " 609+00	Both	512	1035	Clean ditches
621+00 " 626+75	Both	500		Clean ditches
631+00 " 644+00	Both	630	630	Make 4' ditch
659+00 " 666+00	Both	355	585	Make 4' ditch
668+00 " 671+25	Both	200		Clean ditches
674+50 " 678+61	Both	452	869	Trench for extra 6" base (includes returns)
Totals				

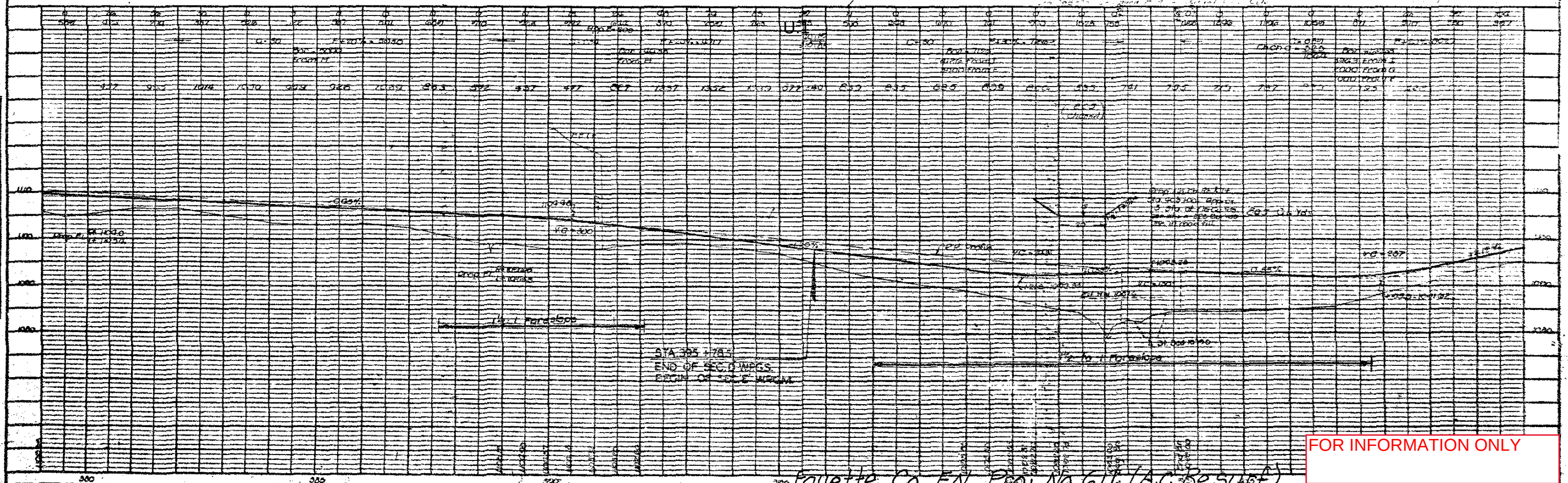
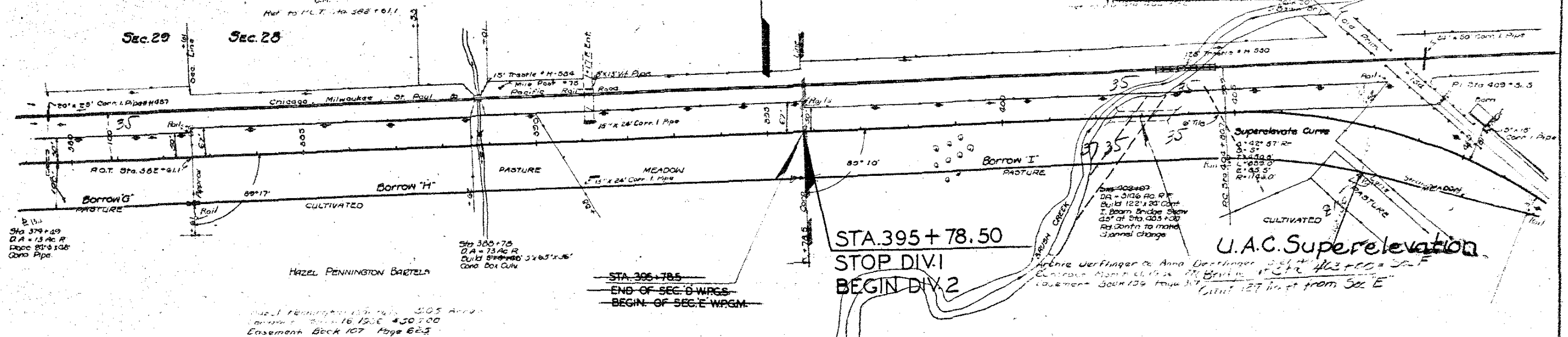
In order to take advantage of material on roadbed for construction of soil/aggregate subbase, 6" core out for extra thickness rolled stone base as per plan. In most cases was eliminated and instead base was placed on top of prepared soil aggregate subbase.

In order to correct unstable condition of subgrade Sta 440+00 to Sta 449+00 a new 6" tile line was placed connecting with existing tile line 14' Lt. of Sta 440+00 and outletting 28' Lt. with a 8"x10' c.i.p. Sta 444+00.

FOR INFORMATION ONLY

TOWN OF ARLINGTON

FED. ROAD DIST. NO.	STATE	FISCAL PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	611		15	28



FOR INFORMATION ONLY

Fayette Co. EN Proj. No. 617 (A.C. Result)

U2

Control Point CP1: 8937378.22 N, 15654583.04 E, CP fnd FENO mon 65 Ft. NE of CL Hwy 187, 27 Ft. NW of CL of Lowery St., 210 Ft. WNW of SW corner of Community Center, Elev. 1104.06.

Hydraulic Data

RIDB: Not Applicable
Drainage Area = 5.15 Sq. Mi.
Stream Slope (HGL) = 14.10 Ft./Mi.
Avg. Low Water Stage = 1078.40

$Q_{50} = 3,090$ cfs
Stage = 1087.96
Channel Low Beam = 1090.76
Freeboard = 2.80'
Avg. Bridge Velocity = 6.07 fps

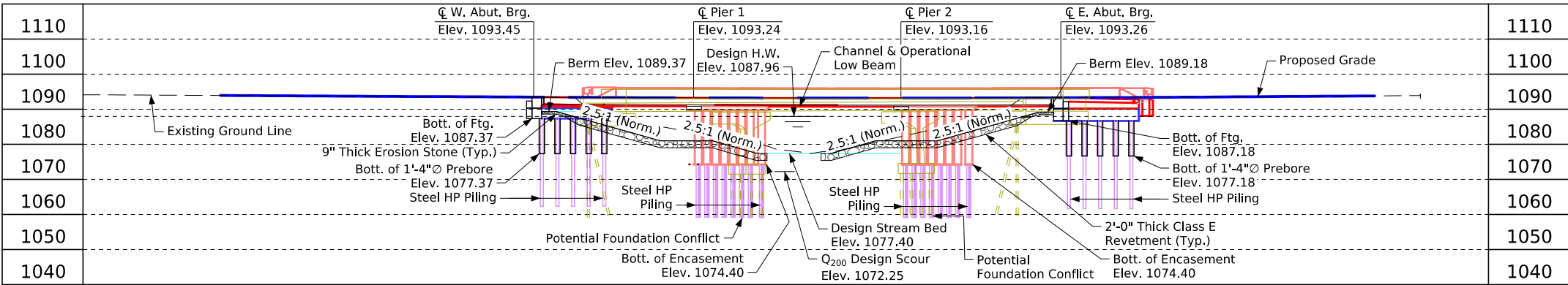
$Q_{100} = 3,730$ cfs
Stage = 1088.46
Backwater = 0.09 Ft.
Avg. Bridge Velocity = 6.66 fps

$Q_{200} = 4,410$ cfs
Stage = 1088.92
Calculated Design Scour = 1072.25

$Q_{500} = 5,310$ cfs
Stage = 1089.45
Avg. Bridge Velocity = 8.00 fps
Calculated Check Scour = 1071.43

Roadway Overtop 1093.19
Sta. 403+19.26

Extreme HW Stage = Unknown
Date = Unknown



Utilities Note:

Utilities shown on this sheet are for information only. See Road Design sheets for utility information.

General Utility Symbols:

None

General Notes:

This design is for the replacement of the existing 122' x 24' continuous I-beam bridge, Fayette Design No. 5036, FHWA No. 24800, Maint. No. 3320.2S187.

BRG TSL Longitudinal Section Along CL Approach Roadway

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 E revetment stone is embedded.
- The bridge will be designed to withstand the applicable effects of ice and the horizontal stream loads and uplift forces associated with the Q_{100} .

Proposed Profile Grade IA 187

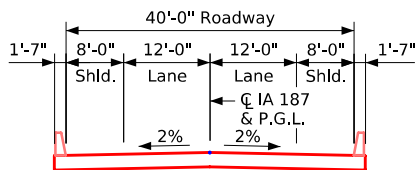
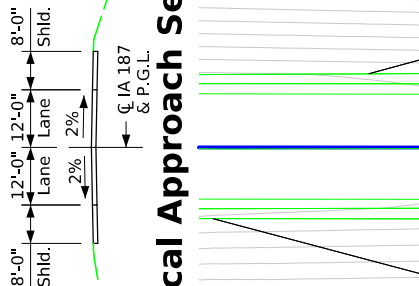
Curve Data

PI Sta. 409+31.50
 $\Delta = 42^\circ 58' 10.77''$ Rt.
D = 16,403'
T = 451.07'
L = 859.46'
E = 85.58'
R = 1146.00'
PC Sta. 404+80.42
PT Sta. 413+39.88

0 20
Scale In Feet

N

Typical Approach Section



Typical Deck Section

1085

Design Notes:

- Standard bridge index No. J40.
- TSS TL-4 bridge railing proposed.
- Pier Type - individually encased pile bent, assumed 2-ft wide.
- An Iowa DNR Floodplain Permit is required. Preliminary design will submit the application and place the permit in the PW Regulatory_Permits subdirectory folder upon receipt.
- The bridge does not meet Iowa DOT's desired channel freeboard per BDM 3.2.2.4 due to the substantial cost of raising the vertical profile of the roadway. Final design aspects in the BDM related to inundation required.
- There is potential for conflicts with existing Pier 1 and Pier 2 foundations.
- The bridge approach width differs from the existing pavement width but is approved.

Situation Plan

Traffic Estimate

2027 AADT	1100 V.P.D.
2047 AADT	1100 V.P.D.
2047 DHV	120 V.P.H.
TRUCKS	13 %
Total Design ESALS	???

Location

IA 187 over Brush Creek
T-92N R-7W
Section 28
Fairfield Township
Fayette County
City of Arlington
FHWA No. 24801
Bridge Maint. No. 3320.2S187
Latitude 42.751796°
Longitude -91.678254°

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 Timothy J. Sheets Date 10/28/2024

Printed or Typed Name
My license renewal date is December 31, 2025

Pages or sheets covered by this seal: V.1 - V.2

Design For 45° Skew LA
150'-0" x 40'-0" Continuous Concrete Slab Bridge

45'-6" End Spans 59'-0" Interior Span

Situation Plan

STA. 403+00.00 (IA 187) Turn-In Date: Oct 2024

Fayette County

IOWA DEPARTMENT OF TRANSPORTATION
Design No. 227 Design Sheet No. 1 of 2 FHWA No. 24801

FILE NO. 32484

ENGLISH

DESIGN TEAM Foth

Fayette COUNTY

PROJECT NUMBER BRF-187-1(034)--38-33

SHEET NUMBER V.1

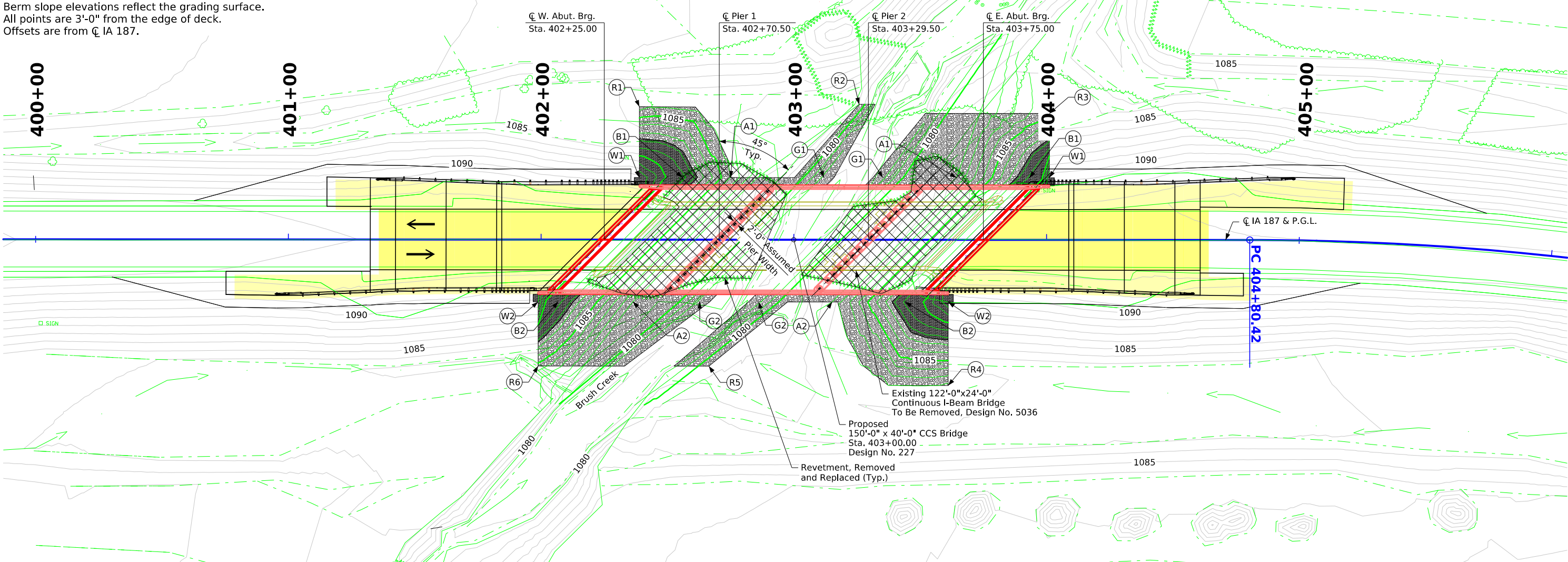
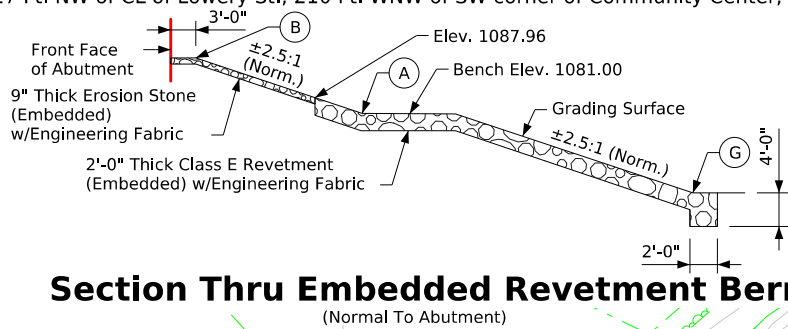
Control Point CP1: 8937378.22 N, 15654583.04 E, CP fnd FENO mon 65 Ft. NE of CL Hwy 187, 27 Ft. NW of CL of Lowery St., 210 Ft. WNW of SW corner of Community Center, Elev. 1104.06.

0 20
Scale In Feet



Points	West Abutment			East Abutment		
	Station	Offset	Elev.	Station	Offset	Elev.
A1	402+85.15	24.58' Lt.	1081.00	403+64.35	24.58' Lt.	1081.00
A2	402+36.33	24.58' Rt.	1081.00	403+15.18	24.58' Rt.	1081.00
B1	402+55.95	24.58' Lt.	1089.37	403+93.22	24.58' Lt.	1089.18
B2	402+06.78	24.58' Rt.	1089.37	403+44.05	24.58' Rt.	1089.18
G1	403+13.09	24.58' Lt.	1077.40	403+34.09	24.58' Lt.	1077.40
G2	402+63.92	24.58' Rt.	1077.40	402+84.92	24.58' Rt.	1077.40
W1	402+38.88	24.58' Lt.	1092.86	404+01.12	24.58' Lt.	1092.86
W2	401+98.88	24.58' Rt.	1093.07	403+61.12	24.58' Rt.	1092.70

Berm slope elevations reflect the grading surface.
All points are 3'-0" from the edge of deck.
Offsets are from CL IA 187.



Estimated Berm Armoring Quantities					
Location	Revetment CL. E (Ton)	Revetment, Rem. & Replaced (CY)	Erosion Stone (Ton)	Engineering Fabric (SY)	CL. 10 Channel Excavation (CY)
Berm Lining - West Berm	360	125	40	690	375
Berm Lining - East Berm	505	100	40	785	440
Totals	865	225	80	1,475	815

Excavation quantity calculated from grading surface. Excavation quantity is for embedded revetment core out only, and does not include excavation to the grading surface. Excavation quantity to the grading surface is determined by Road Design and included in the Road Plans.

Revetment based on a density of 1.6 Ton/CY.
Erosion Stone based on a density of 120 Lb/CF.
Revetment, Remove & Replaced is based on a uniform thickness of 1'-6" and a density of 1.6 Ton/CY.

The total revetment needed for each berm is as follows:
West Berm: 560 tons
East Berm: 665 tons

Site Plan

- (R1) Sta. 402+39, 52' Lt.
- (R2) Sta. 403+25, 52' Lt.
- (R3) Sta. 404+01, 50' Lt.
- (R4) Sta. 403+61, 58' Rt.
- (R5) Sta. 402+66, 50' Rt.
- (R6) Sta. 401+99, 50' Rt.

Note: Offsets are from CL IA 187

Design For 45° Skew LA

150'-0" x 40'-0" Continuous Concrete Slab Bridge

45'-6" End Spans 59'-0" Interior Span

Site Plan

STA. 403+00.00 (IA 187) Turn-in Date: Oct 2024

Fayette County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227 Design Sheet No. 2 of 2 FHWA No. 24801

PRELIMINARY BRIDGE TSL DEVELOPMENT REPORT
IA 187 over Brush Creek
Project No. BRF-187-1(034)--38-33
PIN: 22-33-187-010
File No. 32484
Fayette County - Design No. 227
150'-0 x 40'-0 Continuous Concrete Slab (CCS) Bridge
Location: 0.5 mi. W of Co. Rd. W51
Station 403+00.00 (CL IA 187)
Maintenance No. 3320.2S187
FHWA No. 24801
Work Description: Bridge Replacement - CCS
Prepared for: Iowa DOT
Prepared by: Foth IE

August 9, 2024

TSL DEVELOPMENT DETAILS

1. BDM 3.2.2.4 - Freeboard

a. Q₅₀ design elevation is 1087.96 on the downstream edge of the proposed bridge.

b. Channel low beam at Sta. 403+19.26 and is 1090.76.
Freeboard for the proposed bridge is 2.80', which is less than the DNR requirement of 3'. Calculation is below:
 Profile grade at Sta. 403+19.26: 1093.19
 Crown ordinate to edge of deck: -0.4'
 Deck Edge thickness: -2'-0 3/8" = -2.03'
 Low Beam Elevation = 1090.76
 Freeboard = 1090.76 - 1087.96 = 2.80'
2. BDM 3.2.2.7 - Scour

a. Design scour does extend below the proposed bottom of encased piers.
3. BDM 3.6.1.1 - Superstructures

a. A 150' x 40' CCS Bridge with a 2'-0" deck thickness is proposed.
4. BDM 3.6.2.1 - Width - Highway

a. The width of the bridge was set by adding together the proposed lane widths and effective shoulder widths. IA 187 is not on the NHS and has an estimated traffic count below 3000 VPD, therefore, 8' effective shoulders are allowed.
5. BDM 3.6.2.2 - Sidewalk, Shared Use Path, and Bicycle Lane

a. No pedestrian or bicycle facilities are included in the proposed bridge.
6. BDM 3.6.6 - Deck Drainage

a. The proposed bridge is located on a sag vertical curve. Deck drains will be required at the profile low points. Deck drain locations will be determined during final design.
7. BDM 3.6.8 - Barrier Rails

a. TL-4 barrier rails conform with the BDM requirements for a mainline non-interstate bridge.

b. Barrier rails for this project will be the TSS TL-4 rails.
8. BDM 3.7.1 - Substructures - Skew

a. The bridge abutments and piers will be placed at a 45 degree skew to match the channel flow direction.
7. BDM 3.7.2 - Abutments

a. Integral abutments with 10' prebored HP piling are proposed.
8. BDM 3.7.3.5 - Slope Protection

a. Embedded Class E revetment is proposed to an elevation equal to the Design Q₅₀ water surface elevation.

b. Embedded erosion stone is proposed above the Class E revetment to the face of the abutment.
8. BDM 3.7.4 - Piers and Pier Footings

a. Individually encased piling are proposed for the piers.
9. BDM 3.7.6 - Foundation Conflicts

a. The bridge abutments and piers will be placed behind the existing abutments and piers. There is potential conflict with the existing and proposed pier piling for Pier 1 and Pier 2. Adjust proposed pile spacing during final design to clear existing piling.

Design For 45º Skew LA

150'-0" x 40'-0" Continuous Concrete Slab Bridge

45'-6" End Spans59'-0" Interior Span

TSL Development Report

STA. 403+00.00 (IA 187)Turn-In Date: Oct 2024

Fayette County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227Design Sheet No.FHWA No. 24801

CROSS SECTION VIEW COLOR LEGEND			
Design Color No.	Feature	Design Color No.	Feature
Aggregate		Grading	
(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	Substrata	
(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
Asphalt		(6)	Loam
(207)	HMA Base Course	(211)	Loam Removed
(207)	HMA Interim Course	(80)	Rock
(207)	HMA Surface Course	(212)	Rock Removed
Bridge		(4)	Select Sand
(0)	Bridge	(214)	Select Sand Removed
Concrete		(3)	Shale
(0)	Barrier Concrete	(215)	Shale Removed
(0)	Barrier Concrete Footing	(10)	Topsoil
(0)	Curb Gutter	(2)	Topsoil Remove Only
(48)	Flowable Mortar	(4)	Topsoil Remove and Replace
(0)	Median Concrete	Unsuitable / Waste	
(0)	PCC Pavement	(3)	Unsuitable Type A
(0)	Sidewalk	(216)	Unsuitable Type A Removed
Existing		(13)	Unsuitable Type B
(0)	Existing Pavement	(217)	Unsuitable Type B Removed
Shoulder		(11)	Unsuitable Type C
(209)	Shoulder HMA	(218)	Unsuitable Type C Removed
(0)	Shoulder PCC	(3)	Waste
(6)	Shoulder Granular	(219)	Waste Removed
Structural			
(112)	Noise Wall		
(112)	Noise Wall Footing		
(112)	Retaining Wall Back		
(112)	Retaining Wall Back Excavate		
(112)	Retaining Wall Face		
(112)	Retaining Wall Front Excavate		
(112)	Retaining Wall Front Footing		
(112)	Retaining Wall MSE Gutter		
(112)	Retaining Wall Reinforced Earth		

NOTES:

Text

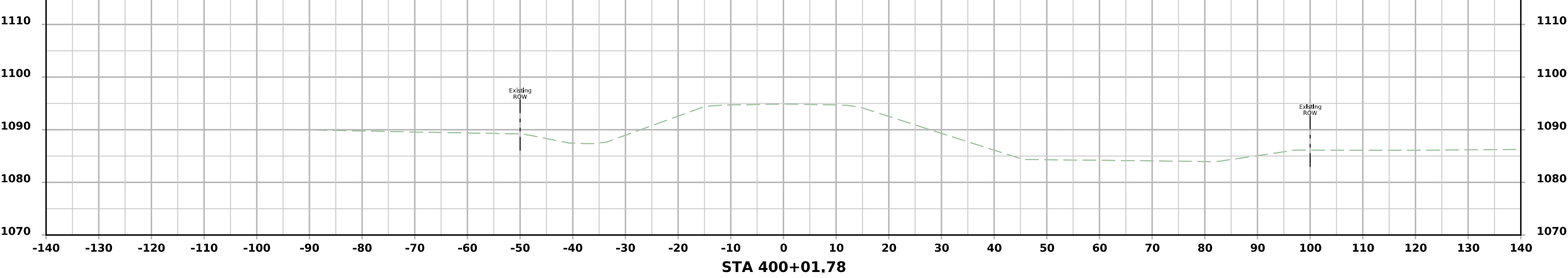
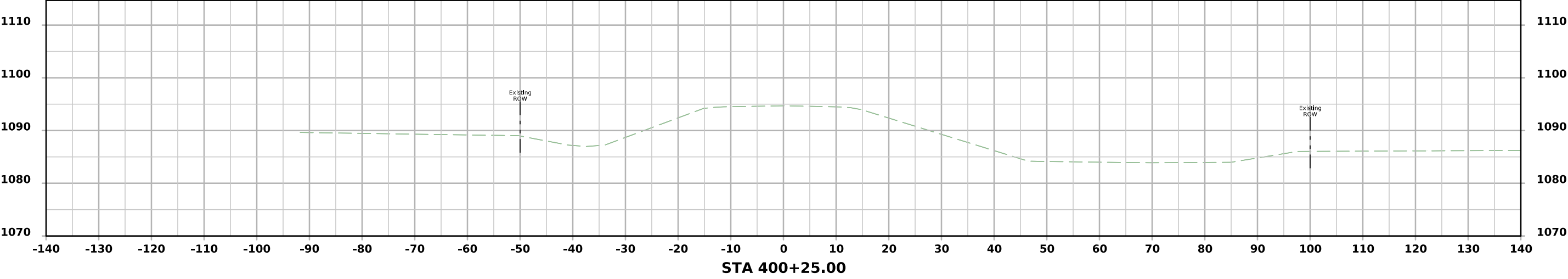
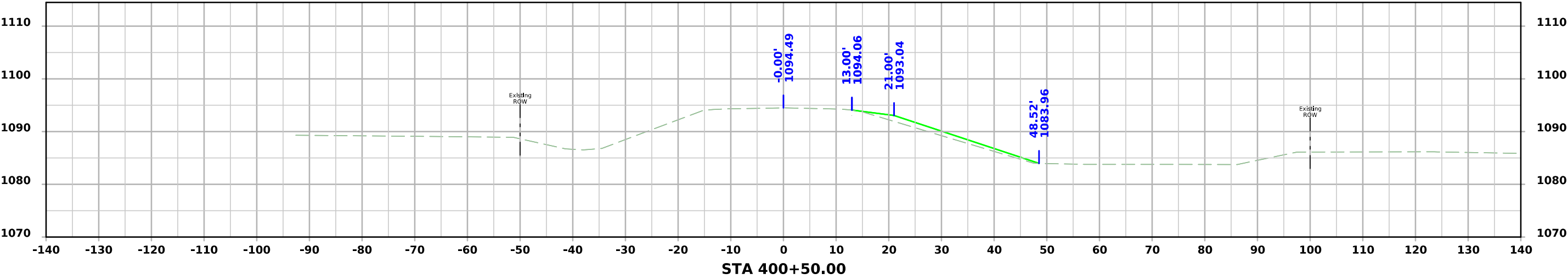
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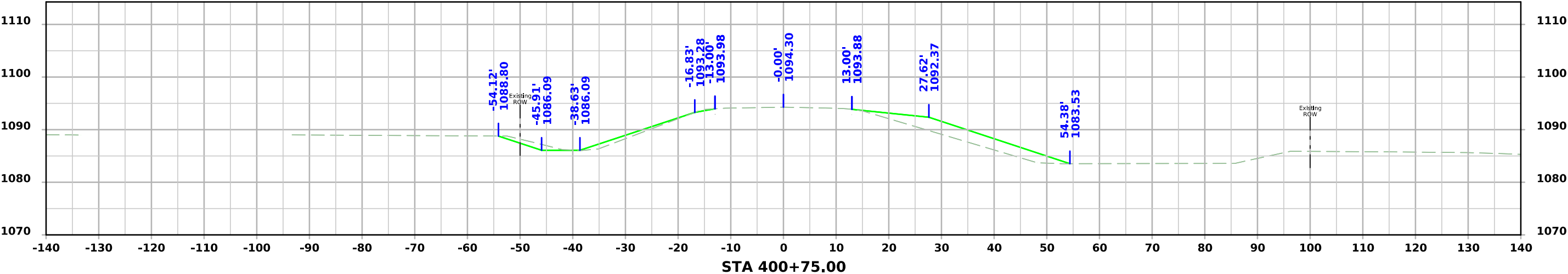
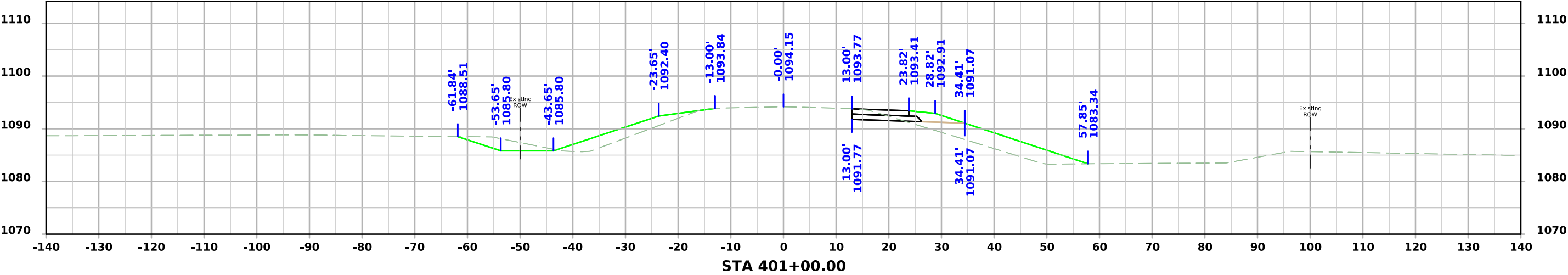
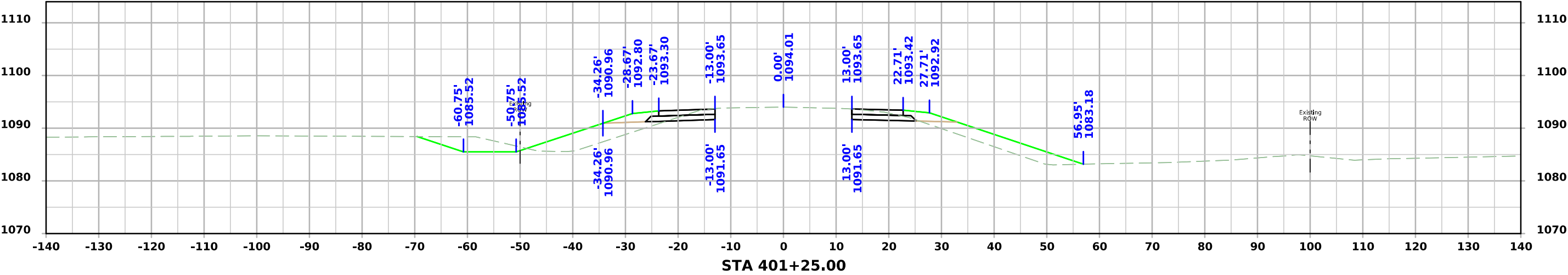
CROSS SECTIONS
LEGEND AND INFORMATION SHEET

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

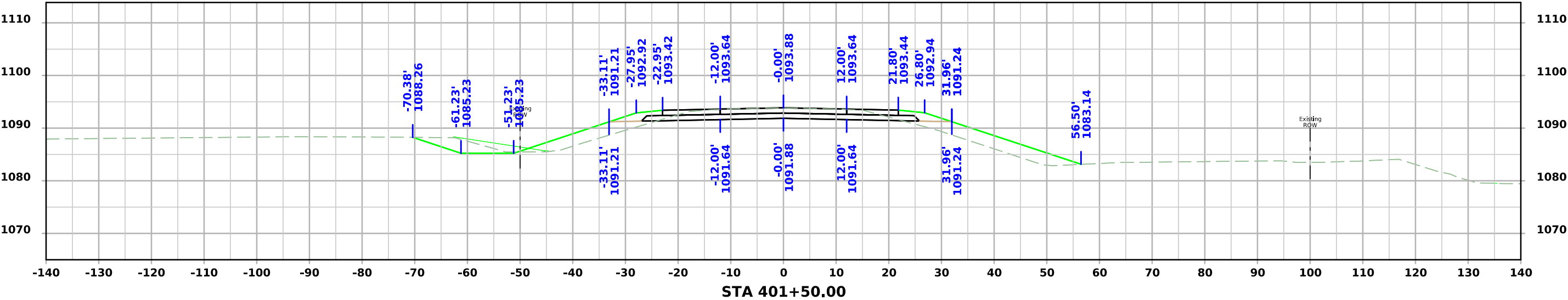
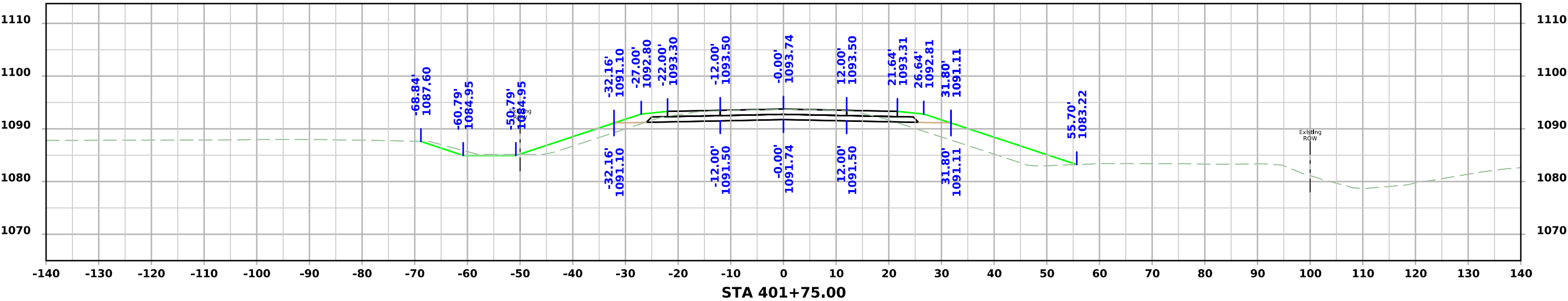
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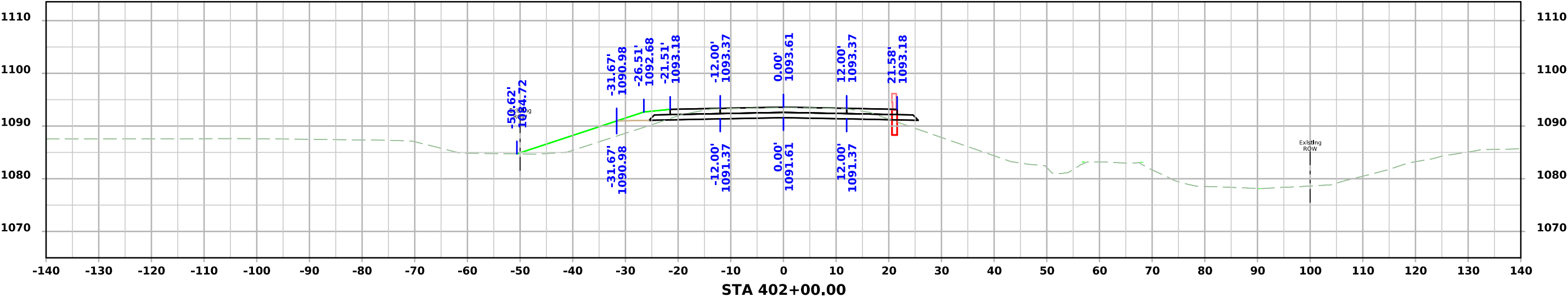
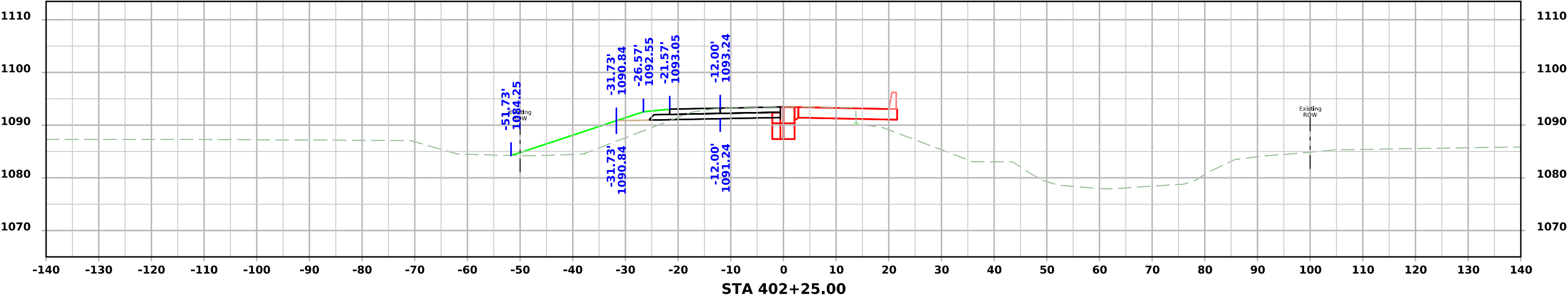
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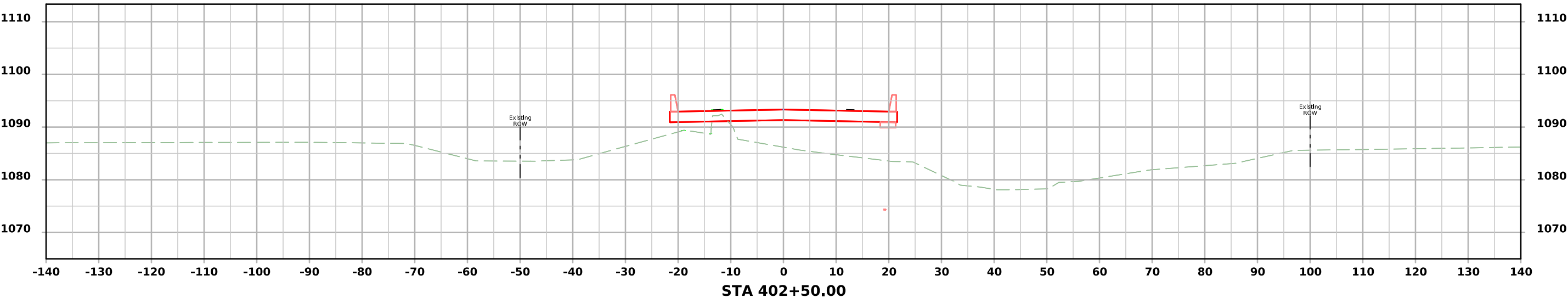
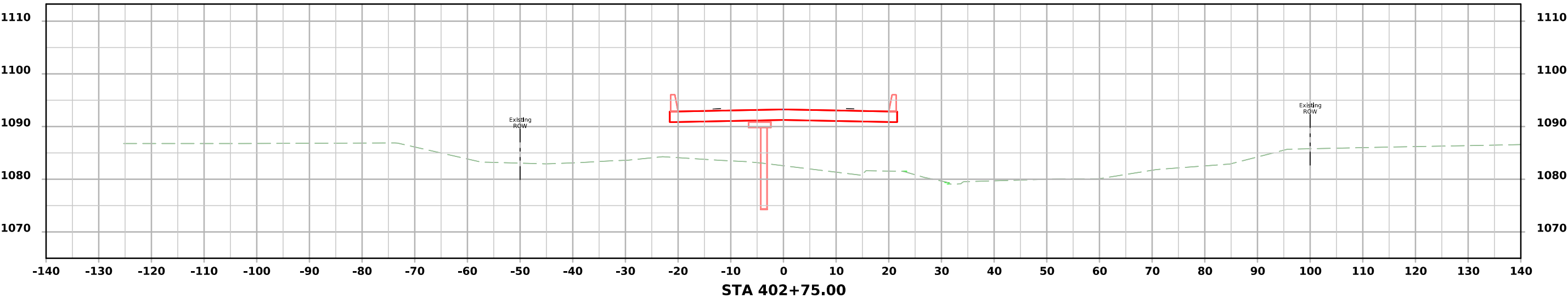
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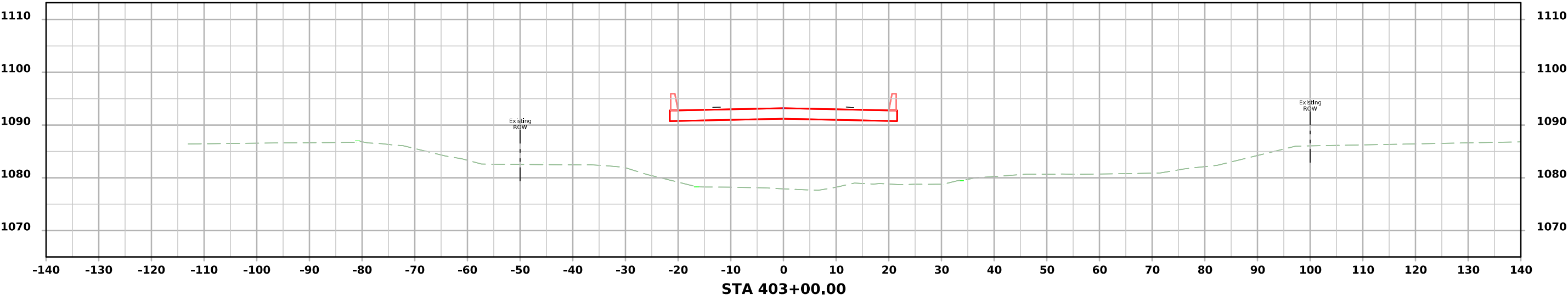
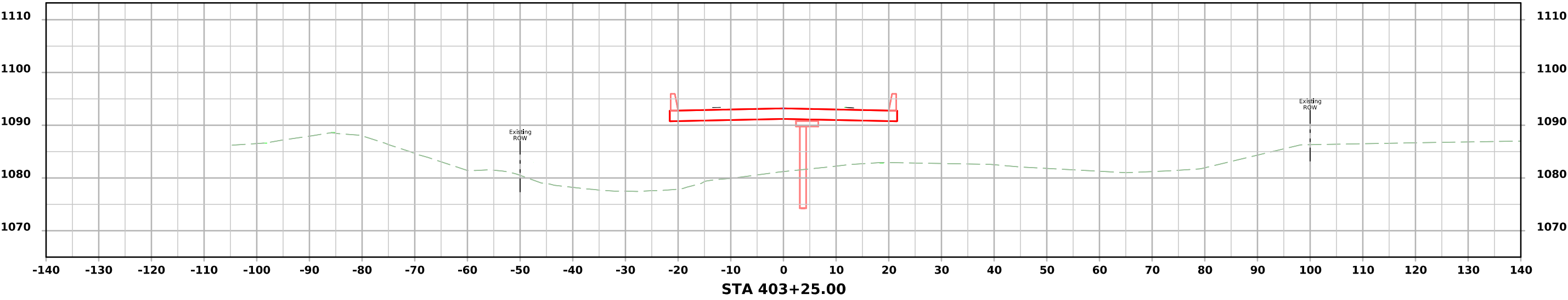
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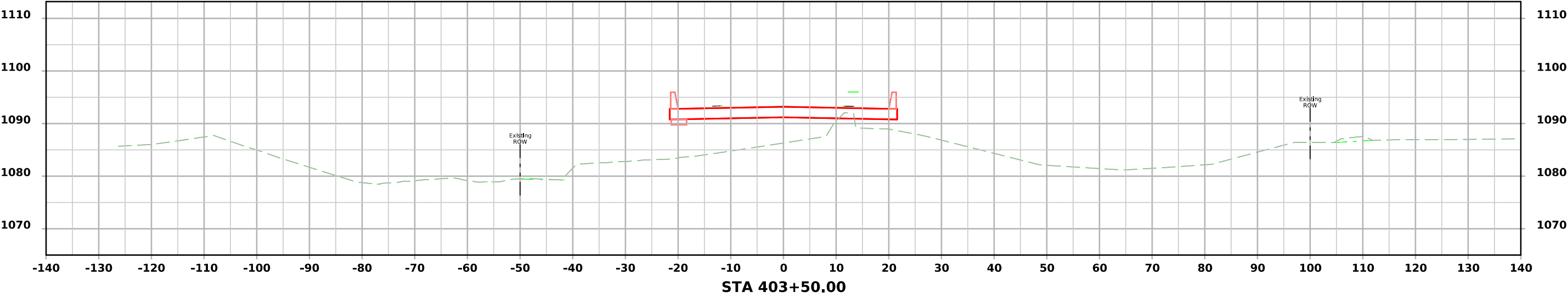
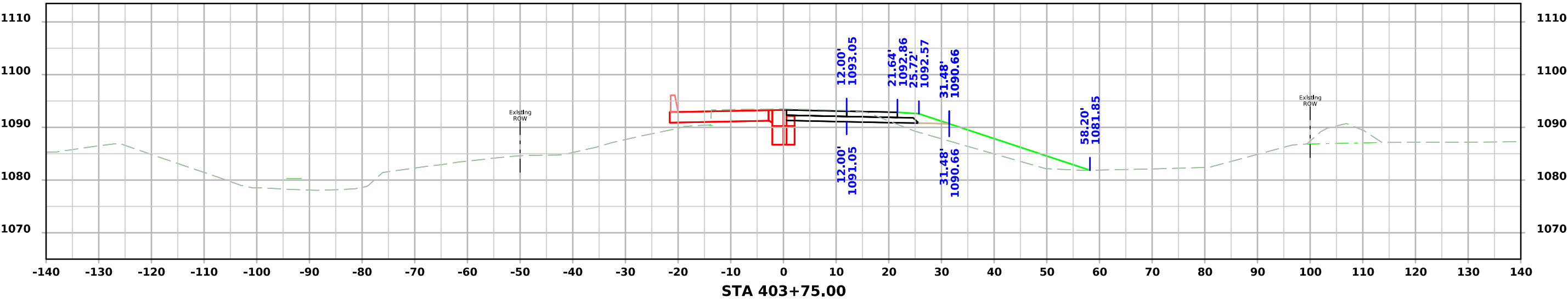
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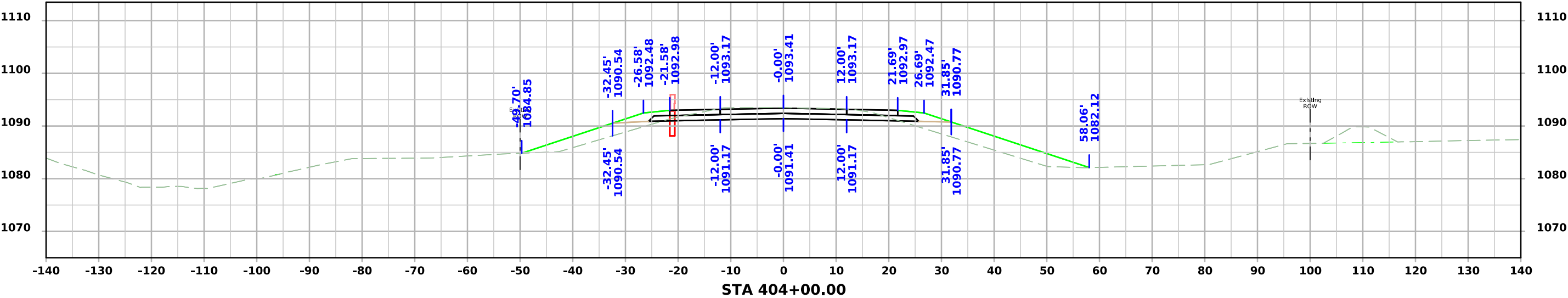
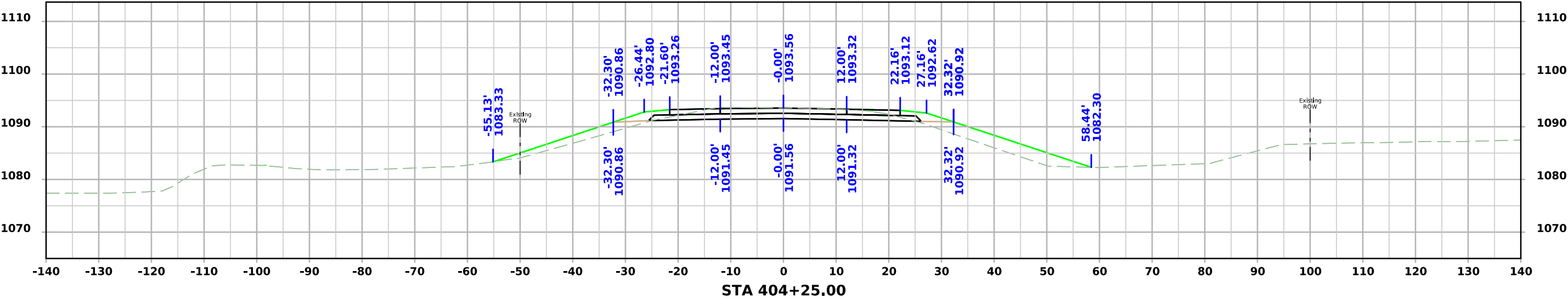
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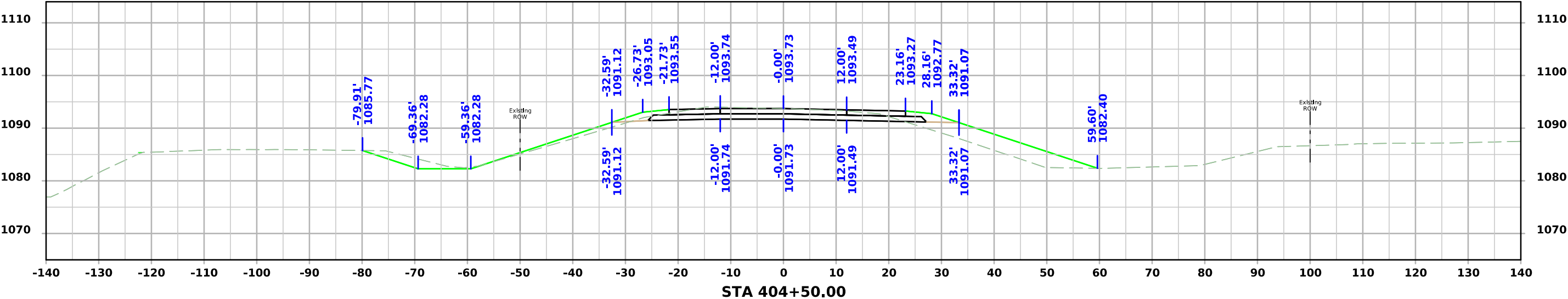
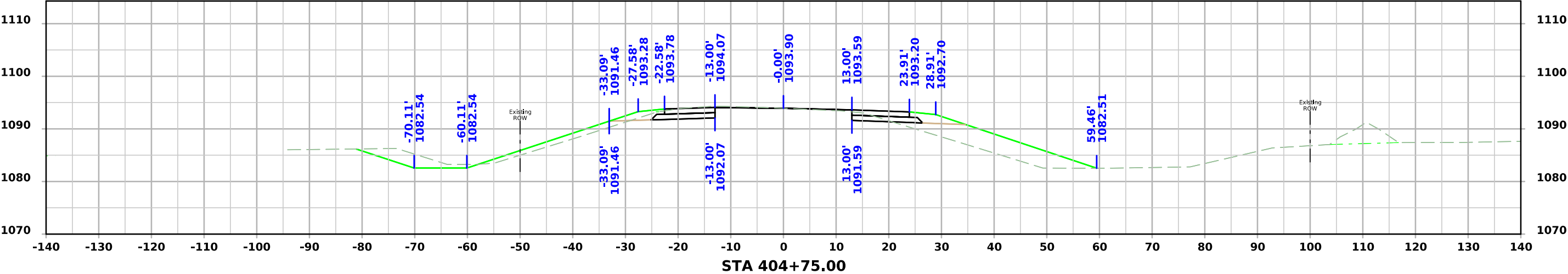
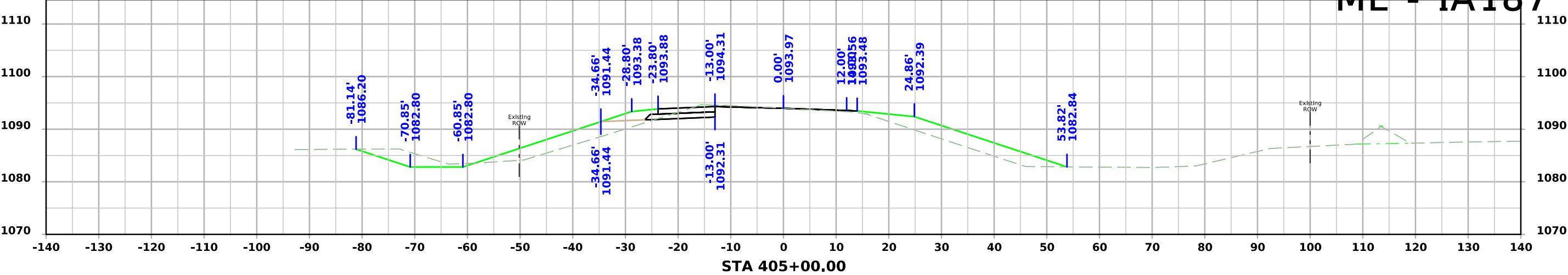
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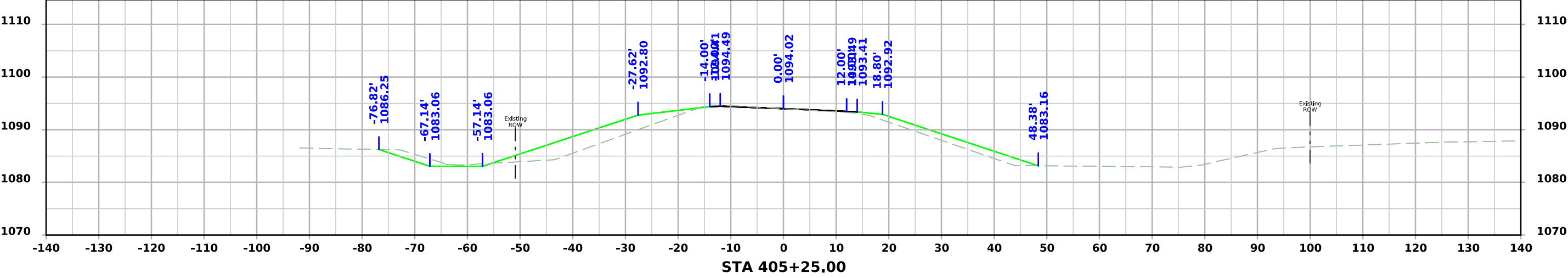
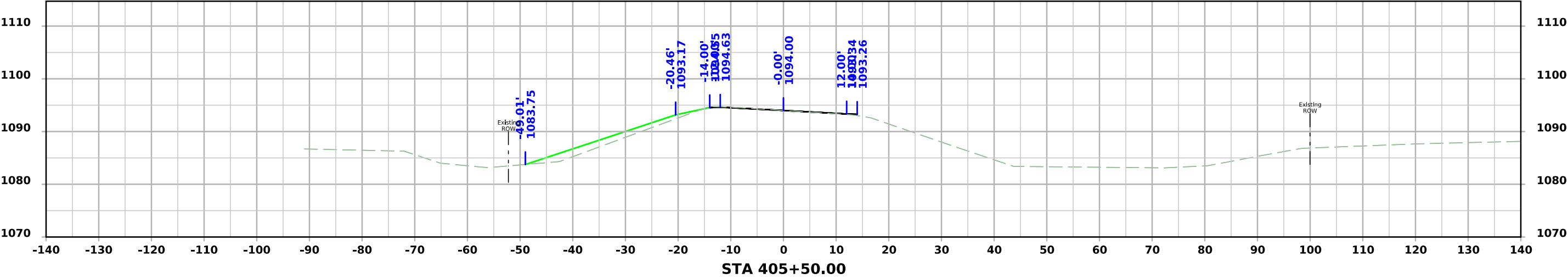
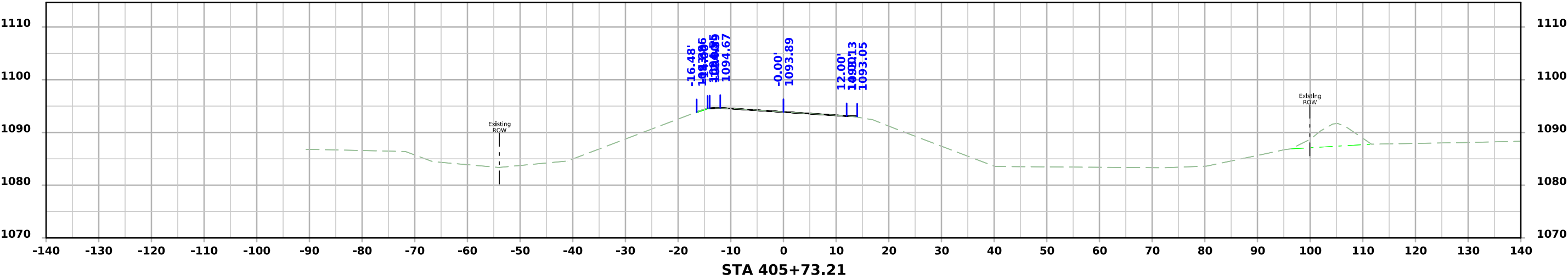
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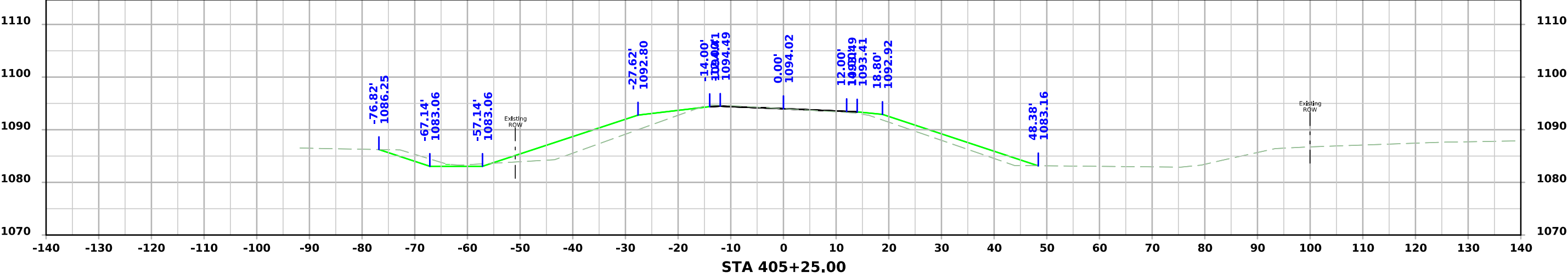
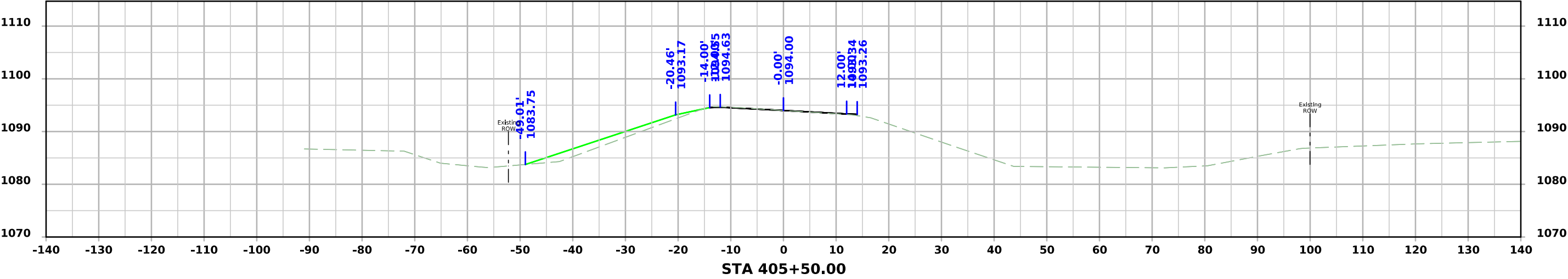
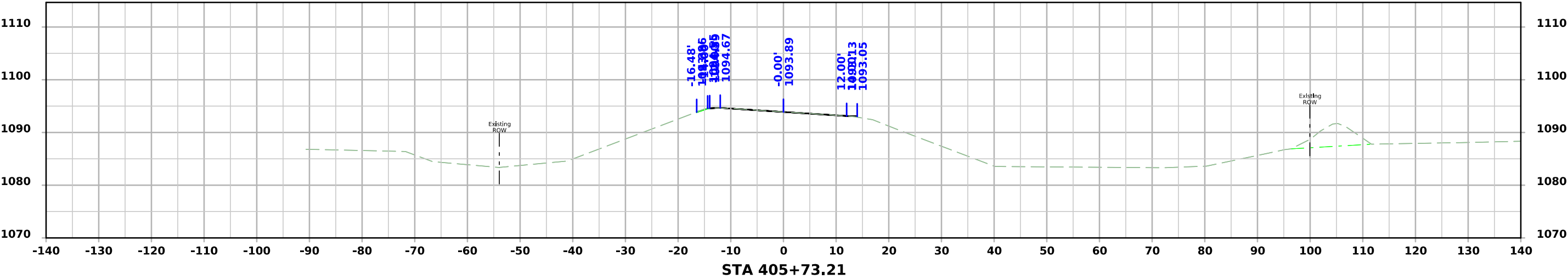
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