BRIDGE REPLACEMENT - CCS
BRF-018-2(131)--38-21

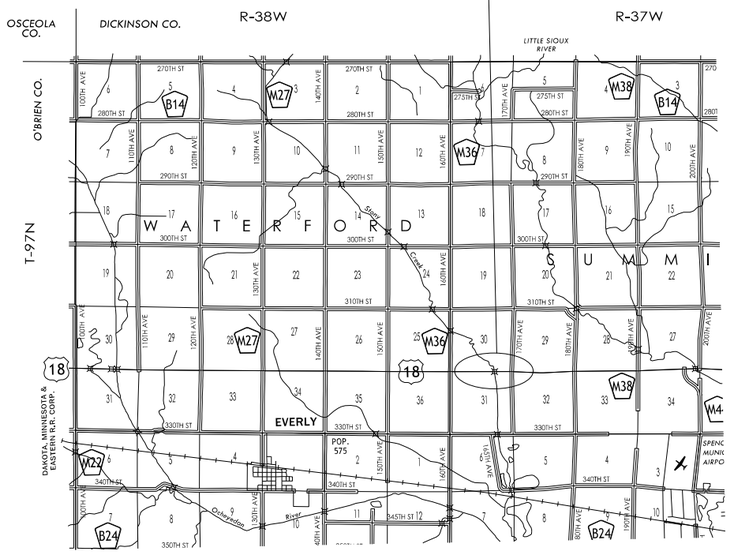
LETTING DATE
11/18/2025

CLAY COUNTY

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	US 18
E Sheets	**Side Road Plan and Profile Sheets**
* E.1	Entrance At Sta. 357+50
G Sheets	**Survey Sheets**
G.1 - 3	Reference Ties and Bench Marks
J Sheets	**Traffic Control and Staging Sheets**
* J.1	Traffic Control Plan
* J.2	Detour Map
V Sheets	**Bridge and Culvert Situation Plans**
* V.1 - 4	Situation Plan
W Sheets	**Mainline Cross Sections**
* W.1	Cross Sections Legend & Symbol Information Sheet
* W.2 - 10	Mainline Cross Sections
X Sheets	**Side Road Cross Sections**
* X.1 - 2	Entrance Cross Sections
Z Sheets	**Pipe Cross Sections**
* Z.1	Pipe Cross Section
	* Color Plan Sheets

H Sheets

PROJECT LOCATION



IOWA DOT

REVISIONS

TOTAL
..
PROJECT IDENTIFICATION NUMBER
21-21-018-020
PROJECT NUMBER
BRF-018-2(131)--38-21
R.O.W. PROJECT NUMBER
NHSN-018-2(132)--2R-21

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM
CLAY COUNTY
BRIDGE REPLACEMENT - CCS

Stony Creek
5.3 miles W of W Jct US 71

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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

IOWA ONE CALL
1-800-292-8989
811
www.iowaonecall.com

D4 PLAN - Date: 07/22/2025

PRELIMINARY PLANS

Subject to change by final design.

D5 PLAN - Date: 2/21/2024

DESIGN DATA RURAL			
2026	AADT	2900	V.P.D.
2046	AADT	3500	V.P.D.
2046	DHV	360	V.P.H.
TRUCKS		25	%
Total Design ESALs		–	

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

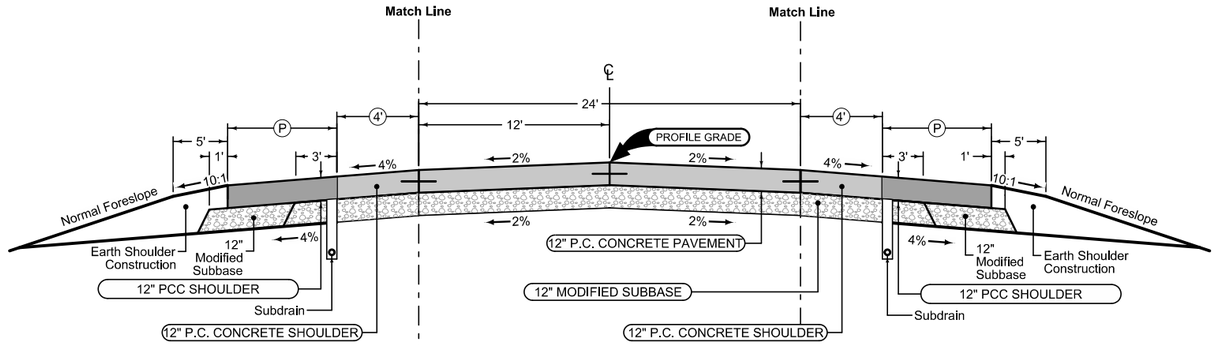
FILE NO. 32272	ENGLISH	DESIGN TEAM JIA \ COOPER \ MCCLANAHAN	CLAY COUNTY	PROJECT NUMBER BRF-018-2(131)--38-21	SHEET NUMBER A.1

9:55:46 AM 2/21/2024 smcclan pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\2101802021\Design\CADD_Files\Sheet_Files\210180131_A01.dgn

Full Depth PCC Shoulder with Paved Shoulder at Guardrail

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		(P) Feet
352+64.15	353+31.56	VAR
356+16.44	357+21.43	VAR



Mainline Jointing:
Transverse joints: CD at 17' spacing
Longitudinal joint: L-2

2P_ 04-21-20	
STATION TO STATION	
352+26.61	353+31.56
356+16.44	357+21.43

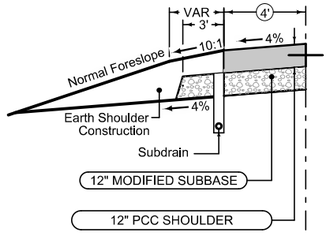
Full Depth PCC Shoulder with Paved Shoulder at Guardrail

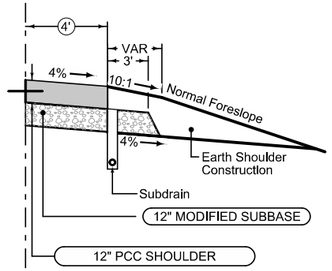
Shoulder Jointing:
Longitudinal joint: BT-2, L-2 or KT-2
Transverse joints: C at 17' spacing

2_P_FullPCC_ 04-20-21		
STATION TO STATION		(P) Feet
352+26.61	353+31.56	VAR
356+16.44	356+83.92	VAR

Full Depth PCC Shoulder

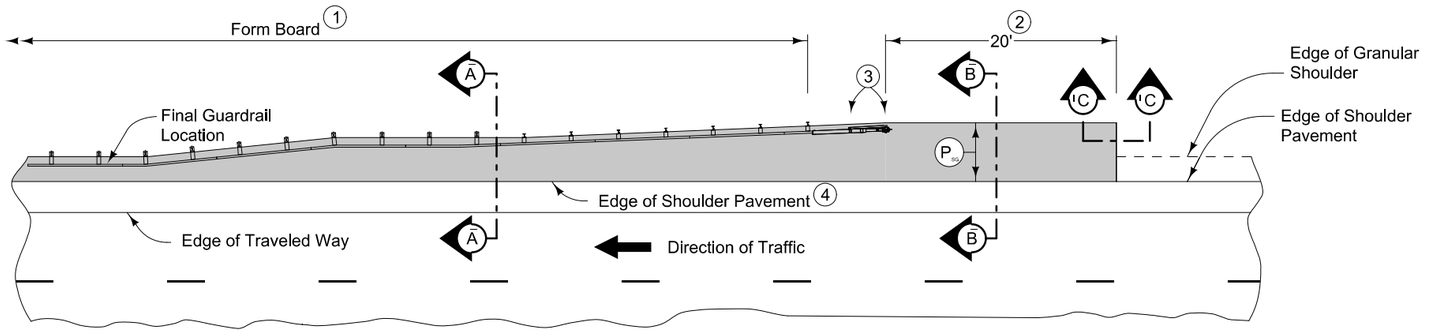
STATION TO STATION
352+26.61 352+64.15



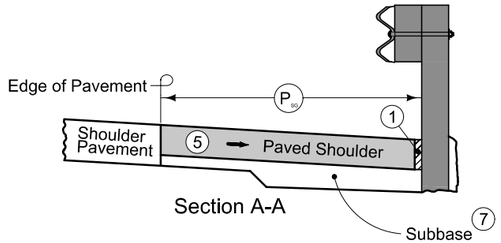


Full Depth PCC Shoulder

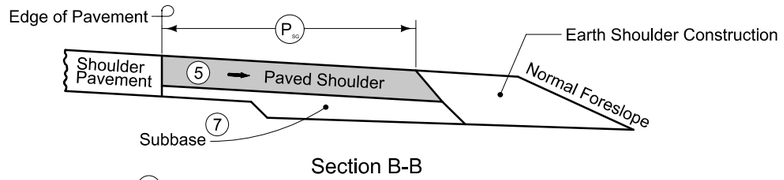
STATION TO STATION
356+83.92 357+21.43



PLAN VIEW

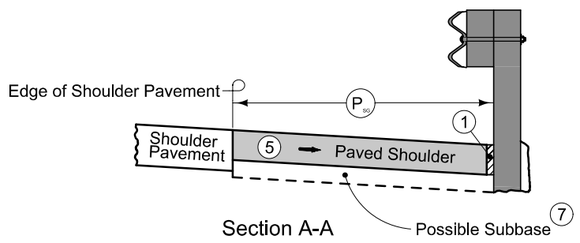


Section A-A

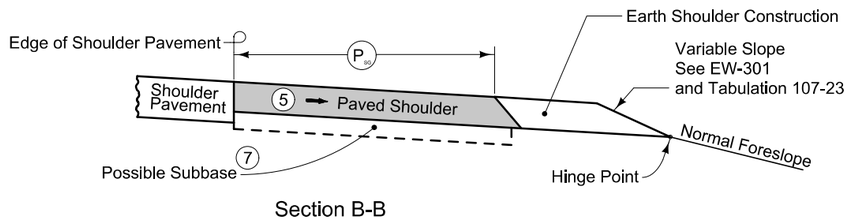


Section B-B

NEW CONSTRUCTION 6



Section A-A



Section B-B

EXISTING SHOULDER

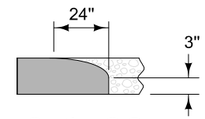
DESIGNER INFO | 7157 MODIFIED

12" 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.

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 partial width paved shoulder as one operation.
7. Refer to other details in the plan.



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

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

FILE NO. 32272 | ENGLISH | DESIGN TEAM JIA \ COOPER \ MCCLANAHAN | CLAY COUNTY | PROJECT NUMBER BRF-018-2(131)--38-21 | SHEET NUMBER B.2
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SURVEY SYMBOLS

- Interstate Highway Symbol
- U.S. Highway Symbol
- Iowa Highway Symbol
- County Road Highway Symbol
- Evergreen Tree
- Deciduous Tree
- Fruit Tree
- Shrub (Bushes)
- Timber
- Hedge
- Stump
- Swamp
- Rock Outcrop
- Broken Concrete
- Revetment (Rip Rap)
- Cemetery
- Grave
- Cave
- Sink Hole
- Board Fence
- Chain Link or Security Fence
- Wire Fence
- Terrace
- Earth Dam or Dike (Existing)
- Tile Outlet
- Edge of Water
- Existing Drainage
- Right of Way Rail or Lot Corner
- Concrete Monument
- Well
- Windmill
- Beehive Intake
- Existing Intake
- Existing Utility Access (Manhole)
- Fire Hydrant
- WH Water Hydrant (Rural)
- Septic Tank
- C Cistern
- LP L.P. Gas Tank (No Footing)
- UST Underground Storage Tank
- Latrine
- Satellite TV Dish
- WHU Water Hook Up
- RT Radio Tower
- TA Tower Anchor
- Guardrail (Beam or Cable)
- GP Guard Post (one or two)
- Guard Post (over two)
- FP Filler Pipe
- GV Gas Valve
- WV Water Valve
- SL Speed Limit Sign
- MM Mile Marker Post
- SIGN Sign
- TCB Traffic Signal Control Box
- RRB Rail Road Signal Control Box
- TSB Telephone Switch Box
- EB Electric Box

UTILITY LEGEND

FO

United Farmers Telephone
DBA Evertek, Inc
(Telephone)
Ryan Jacobsma
Broadband Manager
216 N Main St.
Everly, IA 51338
(712) 834-2255 Ext. 1014 Cell: (712) 230-0681
rjacobsma@evertekwireless.net

EI

Iowa Lakes Electric Cooperative
(Electric Transmission)
Brian Scott
Field Superintendent
702 South 1st St.
Estherville, IA 51334
(712) 362-6746 Cell: (712) 260-4012
brians@ilec.coop

W

Iowa Lakes Regional Water
(Water)
Kelly Graplar
Project Coordinator
1301 38 Ave W
Spencer, IA 51301
(712) 262-8847 Cell: (712) 580-6981
kelly.graplar@ilrw.org

MidAmerican Energy Company
(Electric Transmission)
William Schierbrock
Manager, High Voltage Engineering
MidAmerican Energy Company (Electric Transmission)
106 East Second Street
Davenport, IA 52801
(563) 333-8155
William.Schierbrock@midamerican.com

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

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

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

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

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

RIGHT-OF-WAY LEGEND

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

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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

FILE NO. 32272	ENGLISH	DESIGN TEAM JIA \ COOPER \ MCCLANAHAN	CLAY COUNTY	PROJECT NUMBER BRF-018-2(131)--38-21	SHEET NUMBER D.1

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(REMOVE)
Sta. 354+74
76'x30' I-Beam Bridge
D.A.=46000 A-R (from plans)

Sta. 354+74
Build 140'-0" x 44'-0"
Continuous Concrete Slab Bridge
Skew: 0°

Summit TWP.
T-97N R-37W
SEC. 30

Stony Creek

24"x66'
Conc. Pipe

Prop. 24" X 84'
Uncl. Ent. Pipe

450.00 Prop.
Type 30' Ent.

EX ROW

SECTION LINE

US 18

24"x69'
Conc. Pipe

SECT. NO. 31

STA 351+76.73
BEGIN PROJECT

STA 352+26.61
BEGIN PAVING

STA 357+21.43 (ML018)
END PAVING

STA 358+00
END PROJECT

0 50
FEET

Sta. 351+76.73
Begin Project

Sta. 352+26.61
Begin Paving

Sta. 353+31.56 (1353.48)
Begin Bridge Approach

Sta. 356+16,44 (1353.42)
End Bridge Approach

Sta. 357+21.43
End Paving

Sta. 358+00
End Project

0.02%

RT +00
1344.00

RT +97
1343.62

-0.39% RT
Ditch Grade

-0.49% LT
Ditch Grade

LT +50
1343.70

LT +97
1342.98

LT +51
1342.60

RT +51
1342.27

+0.65% LT
Ditch Grade

+0.92% RT
Ditch Grade

LT +90
1343.50

RT +40
1344.00

+1.55% LT
Ditch Grade

LT +00
1345.20

1353.43 1353.49 1353.54 1353.54 1353.54 1353.53 1353.52 1353.52 1353.51 1353.51 1353.50 1353.50 1353.49 1353.49 1353.48 1353.48 1353.47 1353.47 1353.46 1353.46 1353.45 1353.45 1353.44 1353.41 1353.38 1353.35

FILE NO. 32272	ENGLISH	DESIGN TEAM JIA \ COOPER \ MCCLANAHAN	CLAY COUNTY	PROJECT NUMBER BRF-018-2(131)--38-21	SHEET NUMBER D.2

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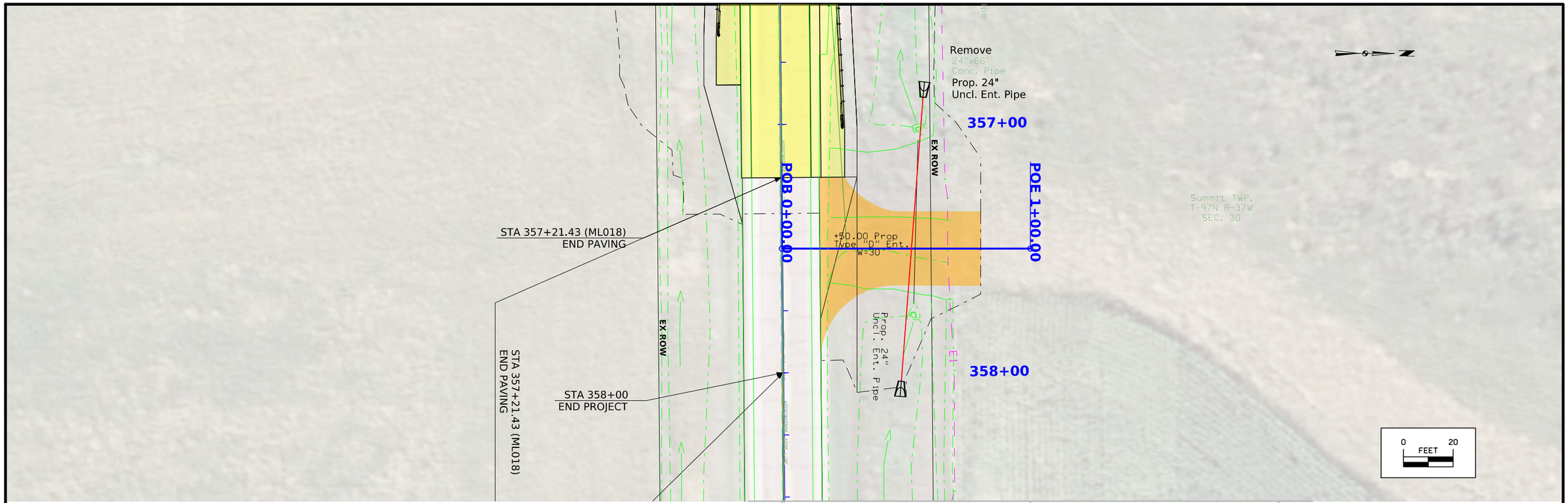

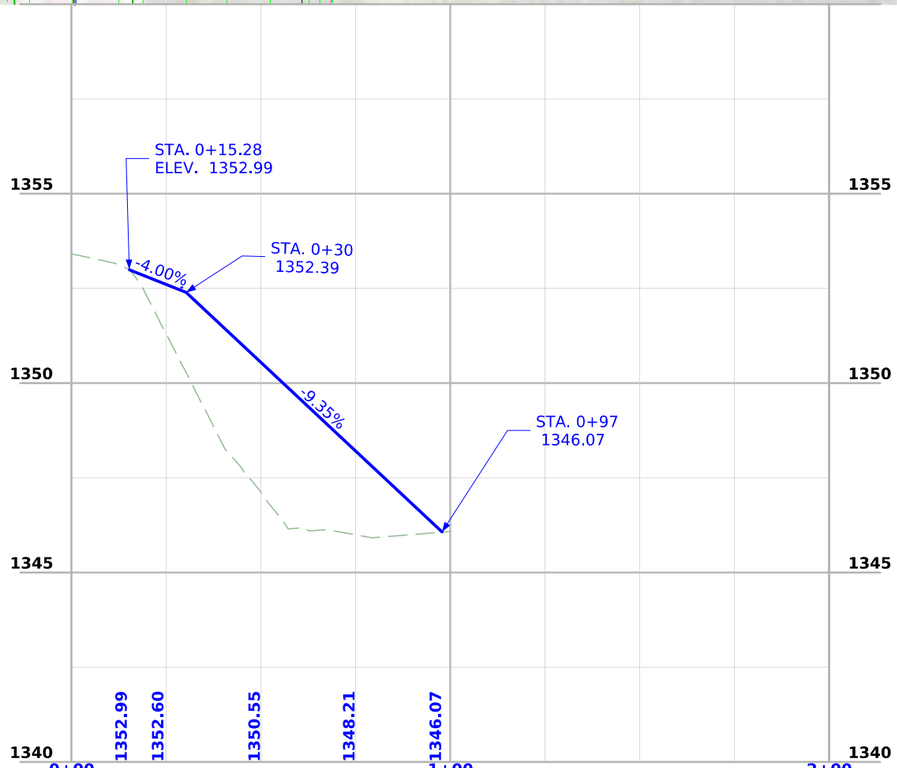

FILE NO. 32272	ENGLISH	DESIGN TEAM JIA \ COOPER \ MCCLANAHAN	CLAY COUNTY	PROJECT NUMBER BRF-018-2(131)--38-21	SHEET NUMBER E.1

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SURVEY INDEX

County: Clay
PIN: 21-21-018-020
Project Number: BRF-018-2(131)--38-21
Location: Stony Creek 5.3 mi W of W Jct US 71
Type of Work: Bridge
Project Directory: 2101802021

Survey Personnel

Clayton Henningsen – Survey Party Chief - Mapping
Dan Duncan – Assistant Survey Party Chief- Field Work

Date(s) of Survey

Begin Date	07/14/2022
End Date	08/03/2022

General Information

Project datum and control information is provided by the Design Survey Office. Measurement units for this survey are US survey feet. This survey is for US Hwy 18 bridge at Stony Creek, 5.3 miles west of junction US 71. This survey request was for the US Hwy 18 corridor only. This project is a Full Field DTM survey.

Project Control

Nearby Iowa Real Time Network reference stations were utilized to obtain horizontal and vertical control on primary project control points. Two five-minute observations were taken with appropriate time spans between and used in a weighted average to obtain final coordinate values. For additional details of the control survey, contact the Preliminary Survey department.

PROJECT DATUM: NAD83(2011) EPOCH 2010.00
VERTICAL DATUM: NAVD88
COORDINATE SYSTEM: IOWA REGIONAL COORDINATE SYSTEM ZONE 1
GEOID MODEL: 2012bu3

Alignment Information

The horizontal alignment for U.S. Hwy 18 this survey is a retrace of As-built Plans No. 259. Survey stationing was equated to the plan PI at Sta. 342+42.9 and run back and ahead without equation throughout the survey.

Survey stationing relates to as built plan stationing as follows:

PI Sta. 317+09.6 As-built Plans Project No. 259
Survey PI Sta. 317+09.81

PI Sta. 342+42.9 As-built Plans Project No. 259
Survey PI Sta. 342+42.90

PI Sta. 368+97.9 As-built Plans Project No. 259
Survey PI Sta. 368+97.93

Utility Information

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

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) EPOCH 2010.00 - Ia. RCS Zone 01
VERT. DATUM: NAVD88 - Geoid Model 2012bu3

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) EPOCH 2010.00
Ia. Regional Coordinate System Zone 01

VERT. DATUM: NAVD88
Geoid Model 2012bu3
Project Control Marks are Bench Marks

Point Name	Northing	Easting	Elevation	Code - Description
7021	9588744.96	11495556.77	1342.04	CP FOUND CLAY COUNTY GPS CONTROL MONUMENT 7021 AS DESCRIBED IN GOOD CONDITION
210180716	9593946.91	11494829.48	1362.86	CP FOUND 4X4 CM IN SW QUAD INTERSECTION US HWY 18 & 160TH AVE
210180721	9594075.52	11497368.82	1348.74	CP FOUND 4X4 CM 0.5 MILE EAST OF INTERSECTION US HWY 18 & 160TH AVE AT FIELD ENT TO NORTH
210180726	9594100.02	11500012.78	1350.18	CP FOUND 4X4 CM IN NW QUAD INTERSECTION US HWY 18 & 170TH AVE

NOTE:
The first two digits in the control point name refer to the county number.
The next 3 digits refer to the highway number.
The next 3 digits refer to the highway milepost.
The last digit refers to the distance from the referenced milepost to the nearest tenth of a mile.

NO ACCESS RIGHTS ARE TO BE ACQUIRED ON THIS PROJECT.

FILE NO.	ENGLISH	DESIGN TEAM	IOWA DOT * OFFICE OF ROW	COUNTY	PROJECT NUMBER	SHEET NUMBER	

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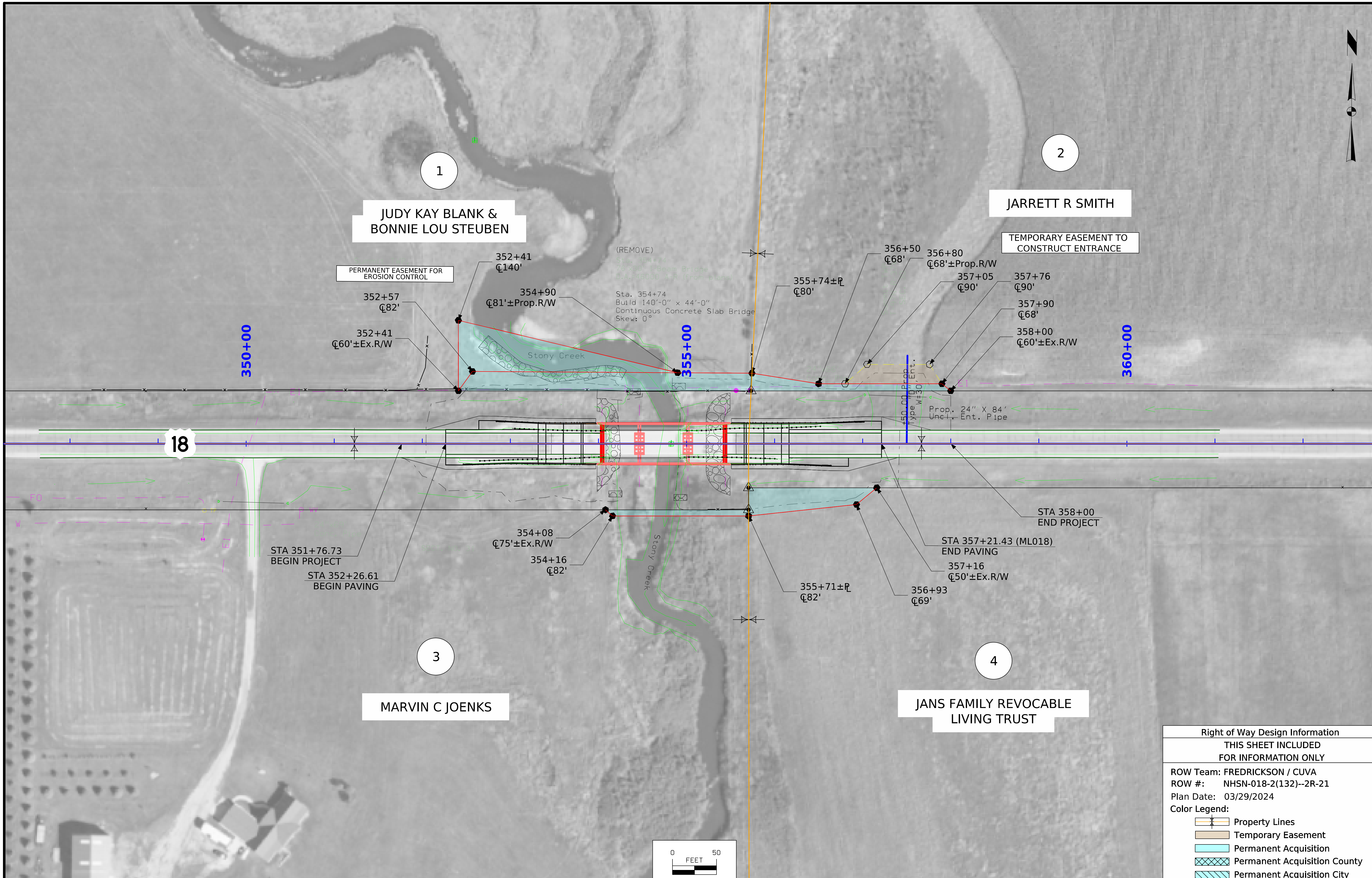
1
JUDY KAY BLANK &
BONNIE LOU STEUBEN
2
JARRETT R SMITH
TEMPORARY EASEMENT TO
CONSTRUCT ENTRANCE
PERMANENT EASEMENT FOR
EROSION CONTROL
(REMOVE)
Sta. 354+74
Build 140'-0" x 44'-0"
Continuous Concrete Slab Bridge
Skew: 0°
Stony Creek
352+41
℄140'
352+57
℄82'
354+90
℄81'±Prop.R/W
352+41
℄60'±Ex.R/W
355+74±℄
℄80'
356+50
℄68'
356+80
℄68'±Prop.R/W
357+05
℄90'
357+76
℄90'
357+90
℄68'
358+00
℄60'±Ex.R/W
350+00
355+00
360+00
18
Prop. 24" X 84'
Uncl. Ent. Pipe
STA 358+00
END PROJECT
STA 357+21.43 (ML018)
END PAVING
357+16
℄50'±Ex.R/W
356+93
℄69'
355+71±℄
℄82'
354+08
℄75'±Ex.R/W
354+16
℄82'
STA 351+76.73
BEGIN PROJECT
STA 352+26.61
BEGIN PAVING
3
MARVIN C JOENKS
4
JANS FAMILY REVOCABLE
LIVING TRUST
0
50
FEET
Right of Way Design Information
THIS SHEET INCLUDED
FOR INFORMATION ONLY
ROW Team: FREDRICKSON / CUVA
ROW #: NHSN-018-2(132)--2R-21
Plan Date: 03/29/2024
Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition
Permanent Acquisition County
Permanent Acquisition City

FILE NO.	ENGLISH	DESIGN TEAM **JIA \ COOPER \ MCCLANAHAN**	**CLAY** COUNTY	PROJECT NUMBER **BRF-018-2(131)--38-21**	SHEET NUMBER **H1**

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108-23A
08-01-08

TRAFFIC CONTROL PLAN

US 18 will be closed during construction. Through traffic will be maintained by an off-site detour. Refer to sheet J.2 for detour route.
The contractor shall provide access to all entrances at all times.

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

POSSIBLE DETOUR ROUTE

Clay County

PIN: 21-21-018-020

Project Number: BRF-018-2(131)--38-21

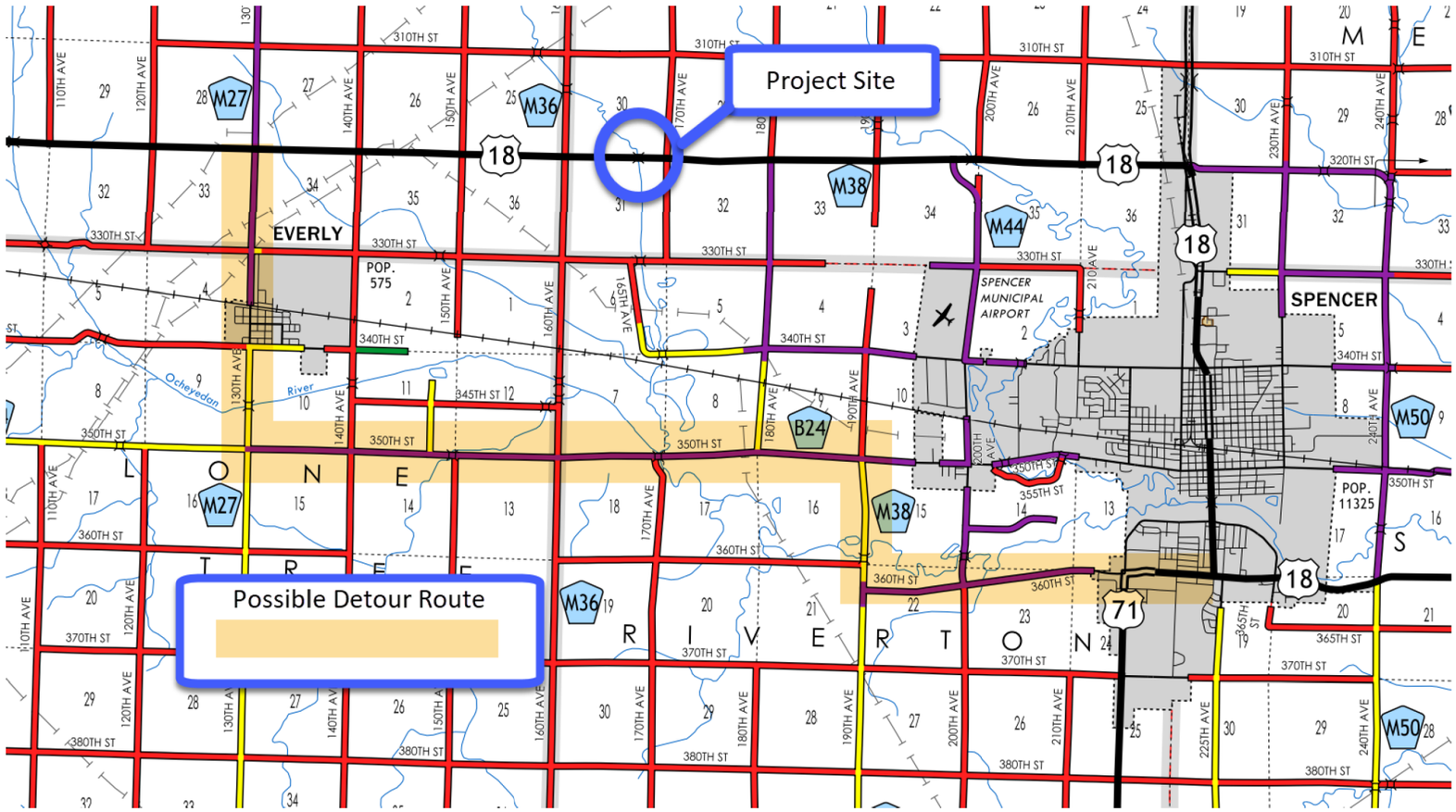
Location: Stoney Creek 5.3 mi W of W Jct US 71

Type of Work: Bridge Replacement

Project Directory: 2101802021

FHWA No.: 20310

Maint. No.: 2172.3S018



FILE NO. 32272	ENGLISH	DESIGN TEAM JIA \ COOPER \ MCCLANAHAN	CLAY COUNTY	PROJECT NUMBER BRF-018-2(131)--38-21	SHEET NUMBER J.2	

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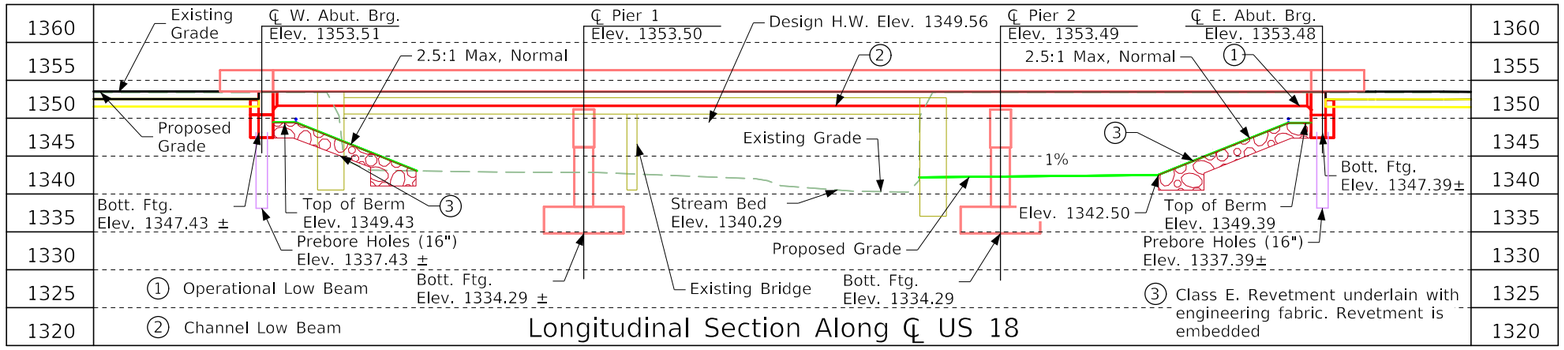
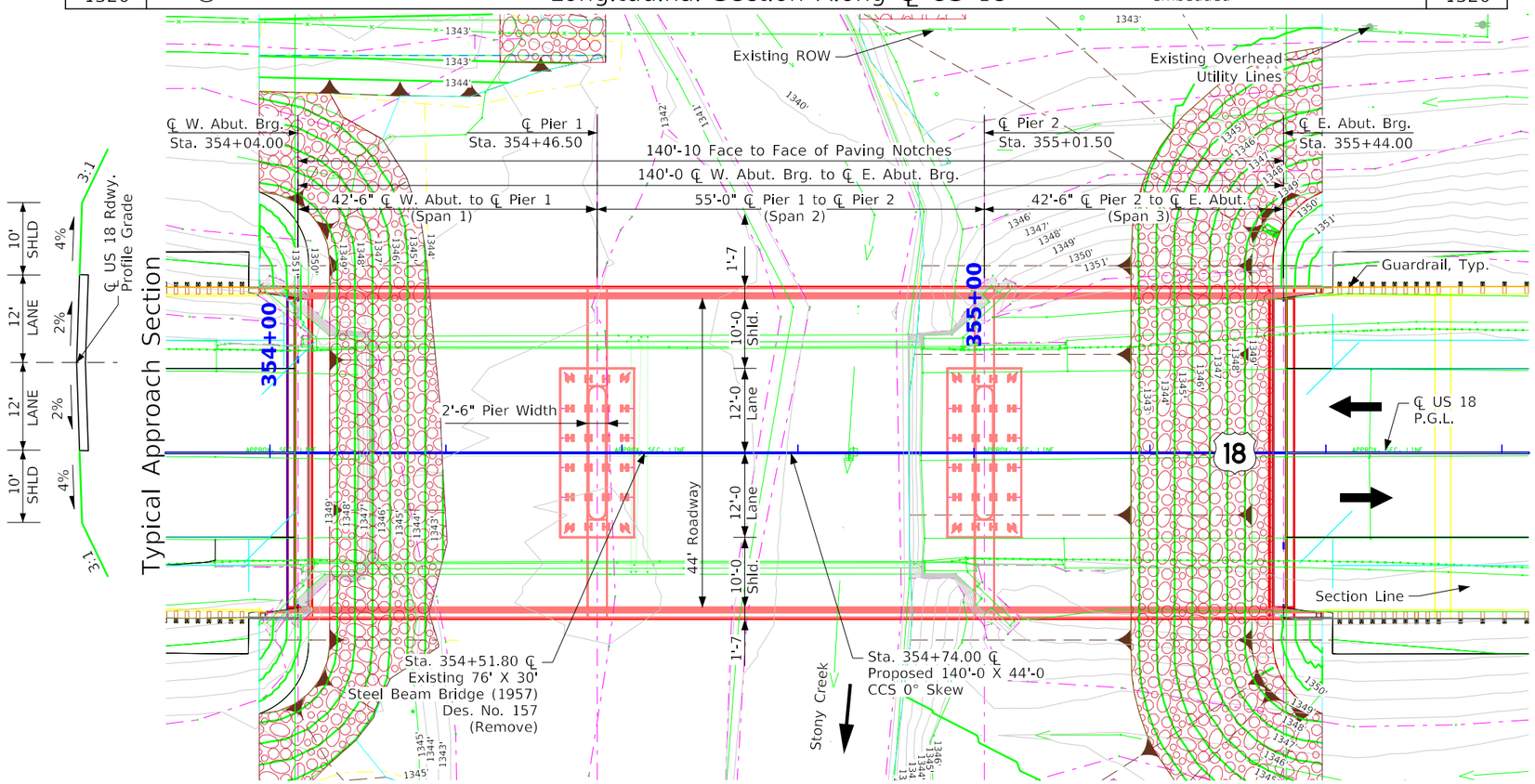
Control Point: No. 7021, N: 9588744.957, E: 11495556.769,1342.042, CP FOUND
CLAY COUNTY GPS CONTROL MONUMENT 7021 AS DESCRIBED IN GOOD CONDITION





General Notes:

The design is for the replacement of existing 76' x 30' I-Beam Bridge, Design NO. 157, FHWA No. 20310, Maint. No. 2172.3S018.

Class 'E' Revetment is embedded.

All dimensions are horizontal unless otherwise noted.

All units are in feet unless otherwise noted.

Work under this design shall include removal of remnants of existing bridge, Design No. 157. Includes remnants of substructure units.

Design Notes:

TSS TL-4 Bridge Railing

Pier Type - T-Pier

Standard Bridge Index No. J44

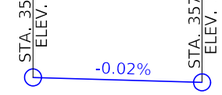
Integral Abutments

Berm slopes to be confirmed during final design.

Potential overhead electrical lines conflict with pile driving at east abutment.

Top of bridge slab at centerline roadway is 0.03' below the profile grade to account for parabolic crown.

Proposed Profile US 18 Over Stony Creek



Hydraulic Data

RIDB: StonyC_Clay_4.23
Drainage Area = 78.1 Sq. Mi.
Stream Slope (HGL) = 3.32 Ft./Mi.
Avg. Low Water Stage = 1341.72

Q_{25} = 3870 cfs
Stage = 1348.91

Q_{50} = 4730 cfs
Stage = 1349.56
Avg. Bridge Velocity = 6.24 fps
Channel Low Beam = 1351.14

Q_{100} = 5640 cfs
Stage = 1350.20
Backwater = 2.52 Ft.
Avg. Bridge Velocity = 6.87 fps
Operational Low Beam = 1351.12

Q_{200} = 6630 cfs
Stage = 1351.87
Calculated Design Scour = 1334.50

Q Overtop= 7695 cfs
Avg. Bridge Velocity = 7.08 fps
Calculated Check Scour = 1334.35

Q_{500} = 7870 cfs

Roadway Overtop 1352.2
Sta. 339+79

Traffic Estimate

2026 AADT	2,900 V.P.D.
2046 AADT	3,500 V.P.D.
2046 DHV	360 V.P.D.
TRUCKS	25 %

Hydraulic Design

LICENSED PROFESSIONAL ENGINEER — DANIEL D. KIMBALL 21090 — IOWA

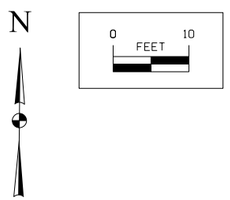
I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Dan Kimball — 2/19/24
Signature — Date
DANIEL D. KIMBALL
Printed or Typed Name

My license renewal date is December 31, 2025

Pages or sheets covered by this seal: All Sheets

Situation Plan



Utilities Note:

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

General Utility Symbols:

E - Electric Line
G - Gas Line
SAN. - Sanitary Sewer
T - Telephone Line
W - Water Line
FO - Fiber Optic Line
GHP - Gas High Pressure
ST S - Storm Sewer
TV - TV
- Power Poles

Location

US 18 Over Stony Creek
5.5 Mi. West of W Jct. US 71
T-97N R-37W
Section 30 & 31
Summit Township
Clay County
FHWA No. 20311
Bridge Maint. No. 2172.3S018
Latitude 43.183622°
Longitude -95.255154°

Design For 0 Degree
140'-0 x 44'-0 Continuous Concrete Slab Bridge
42'-6 End Spans — 55'-0 Interior Span
Situation Plan
STA. 354+74 (U.S. 18) — Turn-in Date: Oct 2023
Clay County
IOWA DEPARTMENT OF TRANSPORTATION
Design No. 0226 — Design Sheet No. 1 of 4 — FHWA No. 20311

FILE NO. 32272	ENGLISH	DESIGN TEAM AECOM	Clay COUNTY	PROJECT NUMBER BRF-018-2(131)--38-21	SHEET NUMBER V.1

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Control Point: No. 7021, N: 9588744.957, E: 11495556.769,1342.042, CP FOUND CLAY COUNTY GPS CONTROL MONUMENT 7021 AS DESCRIBED IN GOOD CONDITION

Berm Slope Location Table

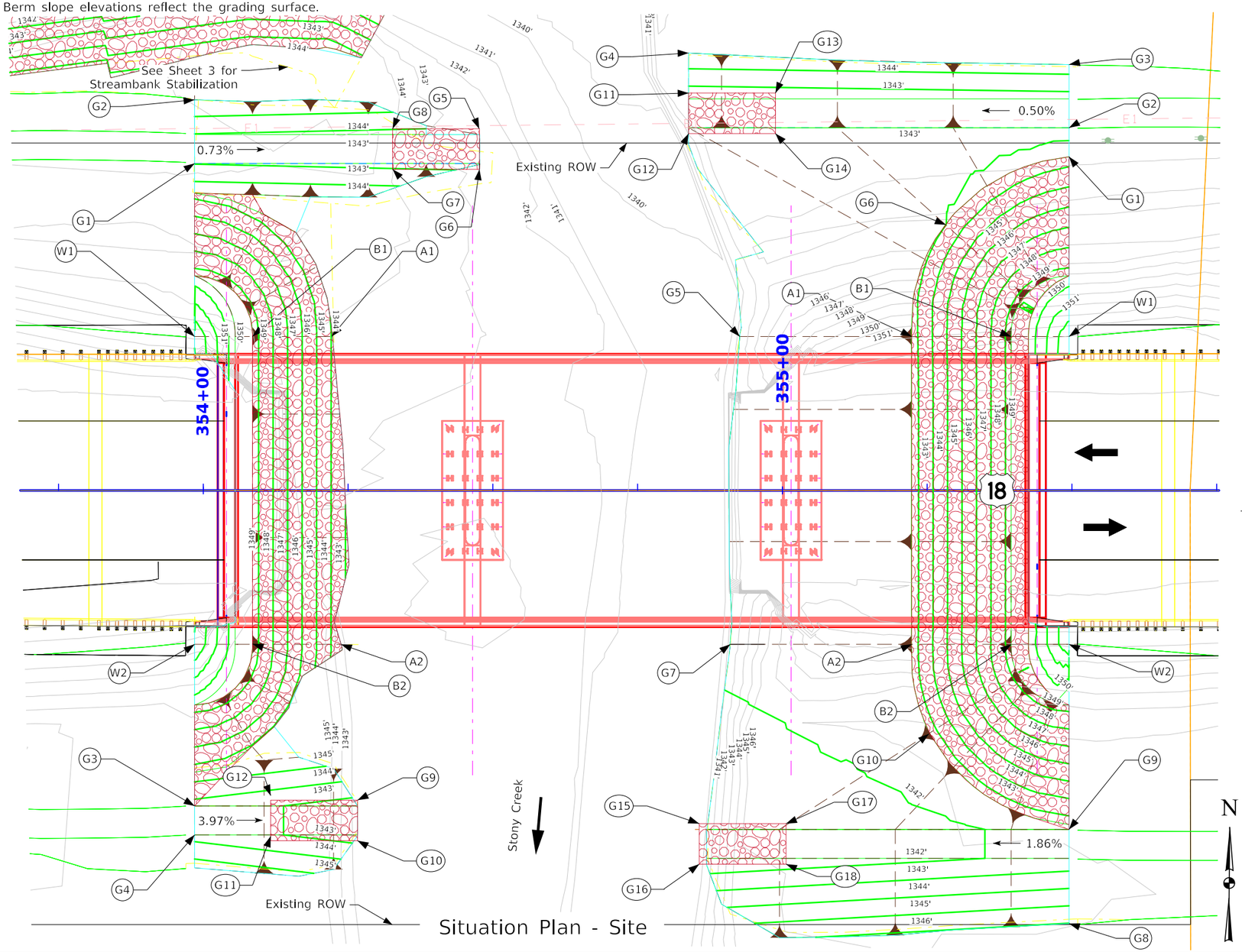
Points	West Abutment			East Abutment		
	Station	Offset	Elev.	Station	Offset	Elev.
A1	354+22.36	26.58' LT	1343.90	355+22.26	26.58' LT	1342.50
A2	354+23.80	26.58' RT	1343.41	355+22.26	26.58' RT	1342.50
B1	354+08.50	26.58' LT	1349.43	355+39.50	26.58' LT	1349.39
B2	354+08.50	26.58' RT	1349.43	355+39.50	26.58' RT	1349.39
W1	353+98.50	26.58' LT	1352.92	355+49.50	26.58' LT	1352.88
W2	353+98.50	26.58' RT	1352.92	355+49.50	26.58' RT	1352.88

Estimated Berm Armoring Quantities

Location	Revetment CL. E (Ton)	Engineering Fabric (SY)	CL. 10 Channel Excavation (CY)
Berm Lining - West Berm	247.9	231.5	114.6
Berm Lining - East Berm	195.7	278.3	145.0
Ditch Let Downs	29.4	68.4	20.7
Totals	473.0	578.2	280.3

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

Berm slope elevations reflect the grading surface.

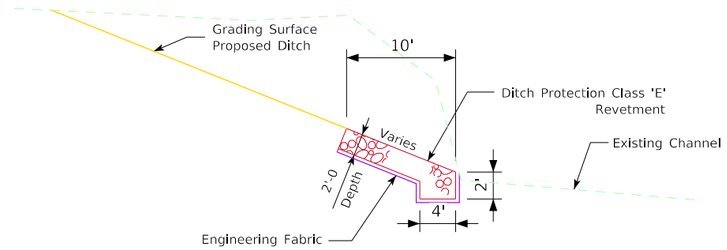


Situation Plan - Site

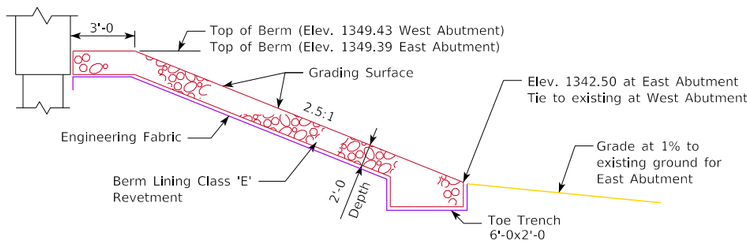
Grading/Revetment Limits

Points	West Abutment			East Abutment		
	Station	Offset	Elev.	Station	Offset	Elev.
G1	353+98.50	56.46' LT	1342.96	355+49.50	57.63' LT	1343.51
G2	353+98.50	67.47' LT	1344.96	355+49.50	62.64' LT	1342.59
G3	353+98.50	54.51' RT	1343.61	355+49.50	73.54' LT	1343.61
G4	353+98.50	65.20' RT	1343.61	354+83.82	75.56' LT	1344.91
G5	354+47.71	62.46' LT	1342.46	354+92.64	26.58' LT	1342.21
G6	354+47.71	55.46' LT	1342.72	355+28.21	48.74' LT	1343.04
G7	354+32.71	55.46' LT	1343.04	354+90.84	26.58' RT	1342.19
G8	354+32.71	62.46' LT	1343.04	355+49.50	74.81' RT	1346.02
G9	354+26.65	53.51' RT	1342.49	355+49.50	58.50' RT	1342.27
G10	354+26.65	60.51' RT	1342.54	355+25.42	41.92' RT	1342.50
G11	354+11.65	53.51' RT	1343.42	354+83.81	68.64' LT	1342.60
G12	354+11.65	60.51' RT	1343.42	354+83.81	61.64' LT	1342.27
G13	-	-	-	354+98.81	68.64' LT	1342.68
G14	-	-	-	354+98.81	61.64' LT	1342.36
G15	-	-	-	354+85.64	57.56' RT	1340.64
G16	-	-	-	354+85.64	64.56' RT	1340.66
G17	-	-	-	355+00.64	57.56' RT	1341.07
G18	-	-	-	355+00.64	64.56' RT	1341.35

Berm slope elevations reflect the grading surface.



Ditch Let Down Detail
(Not to Scale)



Typ. Embedded Riprap at Abutment

Design For 0 Degree

140'-0 x 44'-0 Continuous Concrete Slab Bridge

42'-6 End Spans — 55'-0 Interior Span

Grading Plan

STA. 354+74 (U.S. 18) — Turn-in Date: Oct 2023

Clay County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0226 — Design Sheet No. 2 of 4 — FHWA No. 20311

FILE NO. 32272	ENGLISH	DESIGN TEAM AECOM	Clay COUNTY	PROJECT NUMBER BRF-018-2(131)--38-21	SHEET NUMBER V.2

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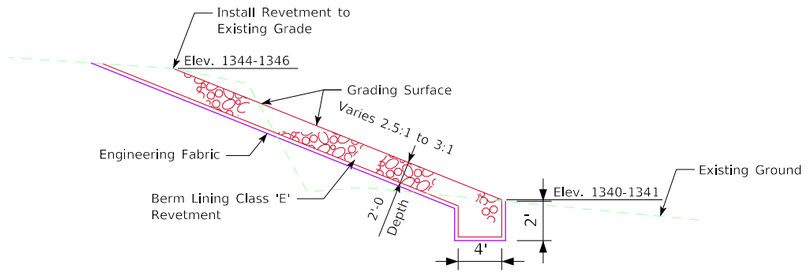


Bank Protection Detail

(Not to Scale)

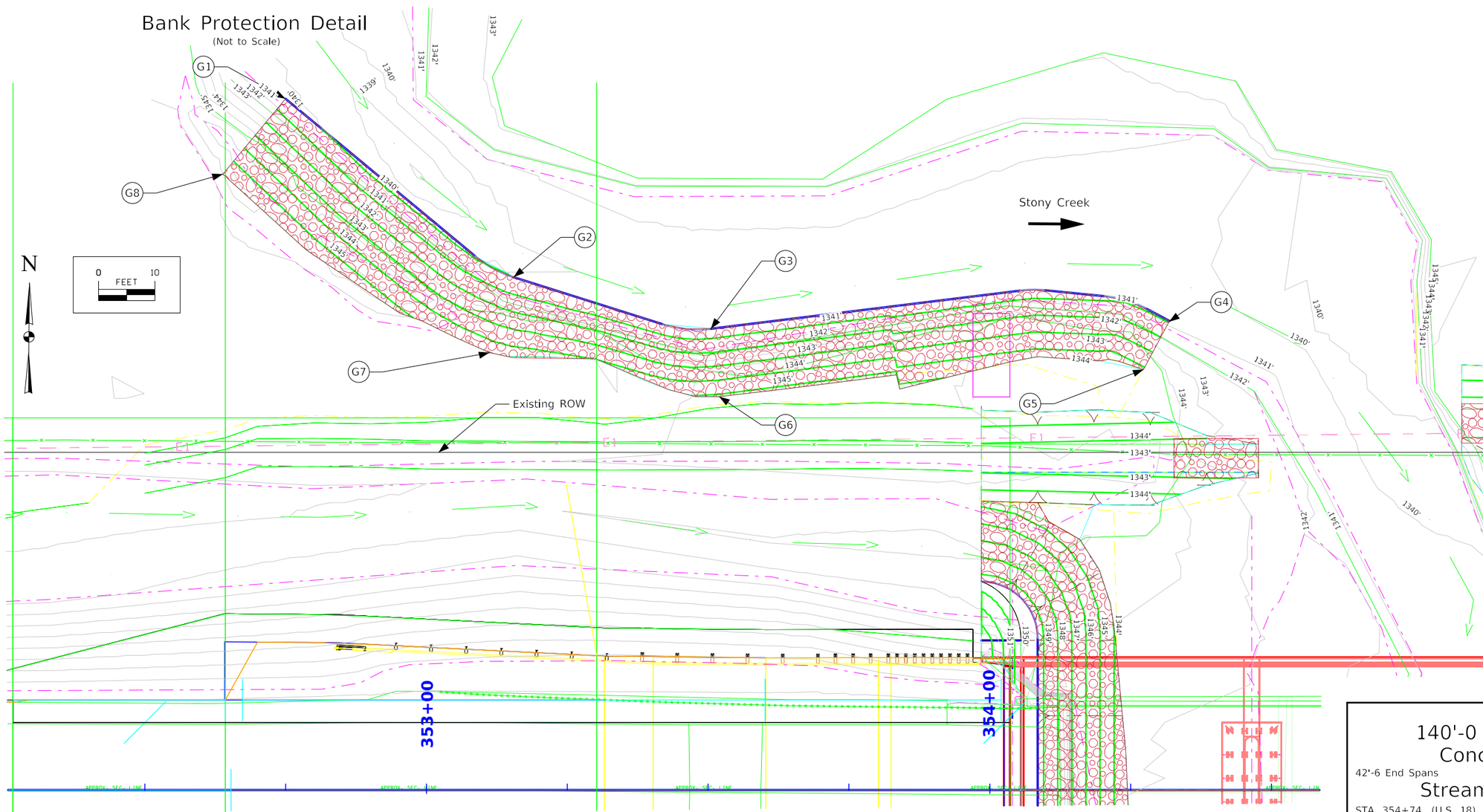
Estimated Berm Armoring Quantities

Location	Revetment CL. E (Ton)	Engineering Fabric (SY)	CL. 10 Channel Excavation (CY)
Streambank Stabilization	277.8	395.9	195.8
Totals	277.8	395.9	195.8

Grading/Revetment Limits

	Station	Offset	Elev.
G1	352+74.95	122.81' LT	1342.60
G2	353+15.47	91.12' LT	1344.55
G3	353+50.48	81.97' LT	1344.91
G4	354+31.90	83.34' LT	1342.26
G5	354+22.68	66.09' LT	1342.20
G6	353+51.97	69.91' LT	1342.19
G7	353+14.50	77.00' LT	1341.14
G8	352+63.84	109.43' LT	1342.31

See Design Sheet 2 for Estimated Berm Quantities.



Situation Plan - Site

Design For 0 Degree

140'-0 x 44'-0 Continuous Concrete Slab Bridge

42'-6 End Spans 55'-0 Interior Span

Streambank Stabilization

STA. 354+74 (U.S. 18) Turn-in Date: Oct 2023

Clay County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0226 Design Sheet No. 3 of 4 FHWA No. 20311

FILE NO. **32272**	ENGLISH	DESIGN TEAM **AECOM**	**Clay** COUNTY	PROJECT NUMBER **BRF-018-2(131)--38-21**	SHEET NUMBER **V.3**

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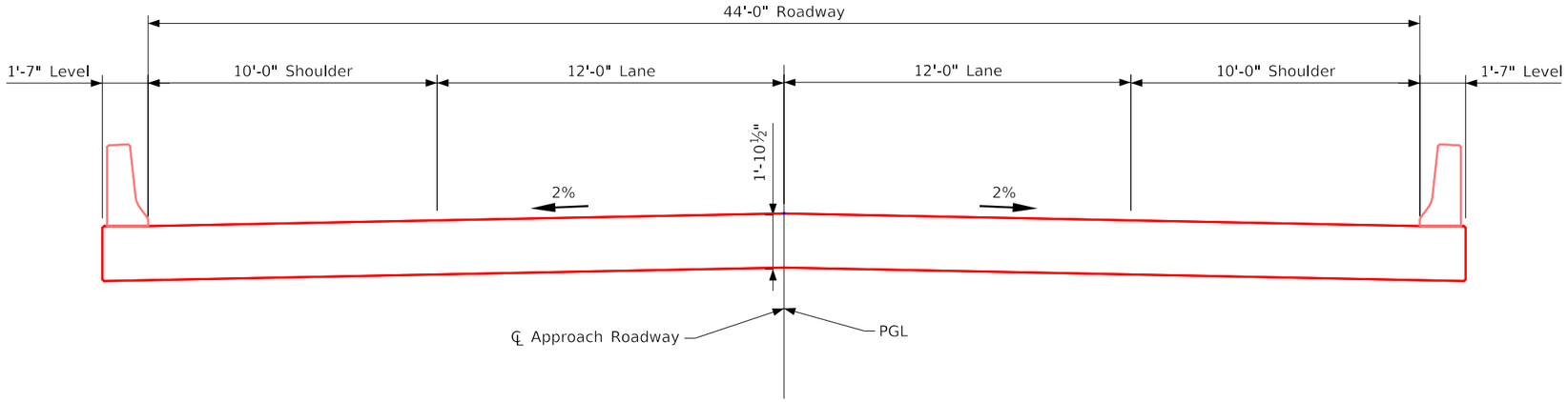

Design For 0 Degree

140'-0 x 44'-0 Continuous Concrete Slab Bridge

42'-6 End Spans 55'-0 Interior Span

Typical Section

STA. 354+74 (U.S. 18) Turn-in Date: Oct 2023

Clay County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0226 Design Sheet No. 4 of 4 FHWA No. 20311

FILE NO. **32272**	ENGLISH	DESIGN TEAM **AECOM**	**Clay** COUNTY	PROJECT NUMBER **BRF-018-2(131)--38-21**	SHEET NUMBER **V.4**	

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CROSS SECTION VIEW COLOR LEGEND

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

NOTES:

Text

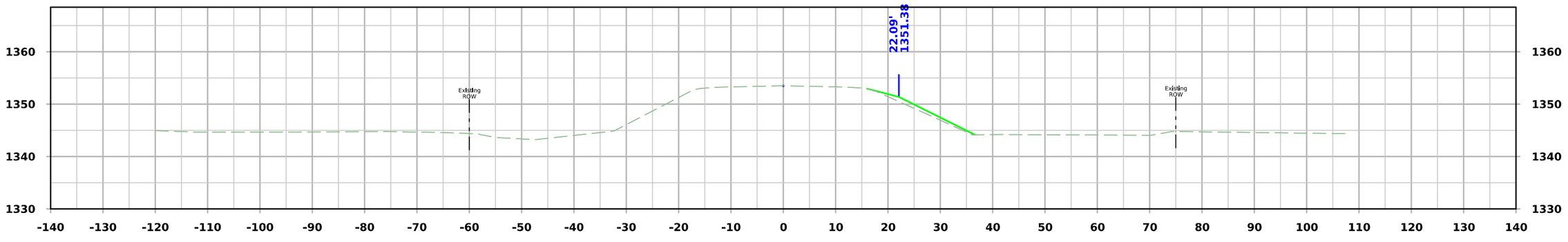
NOTES:

Text

CROSS SECTIONS
LEGEND AND INFORMATION SHEET

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

ML - US18



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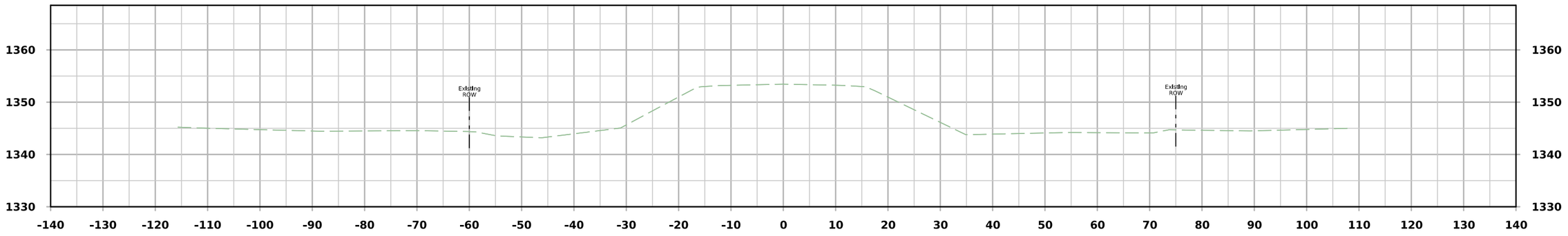

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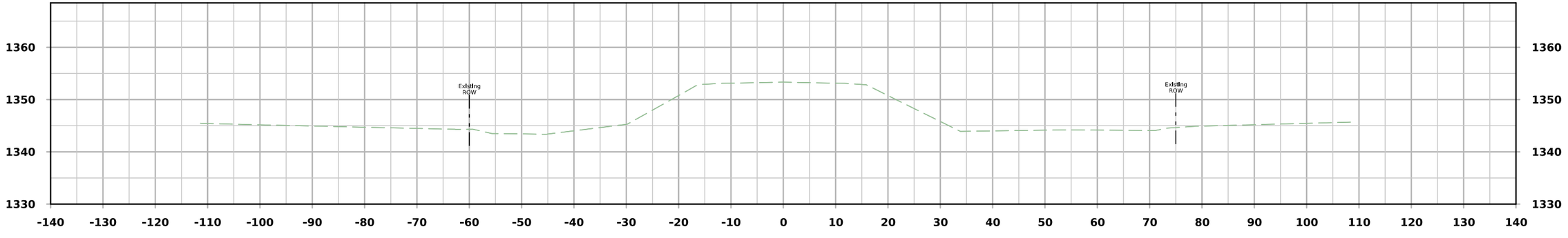

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FILE NO. 32272	ENGLISH	DESIGN TEAM JIA \ COOPER \ MCCLANAHAN	CLAY COUNTY	PROJECT NUMBER BRF-018-2(131)--38-21	SHEET NUMBER W.2

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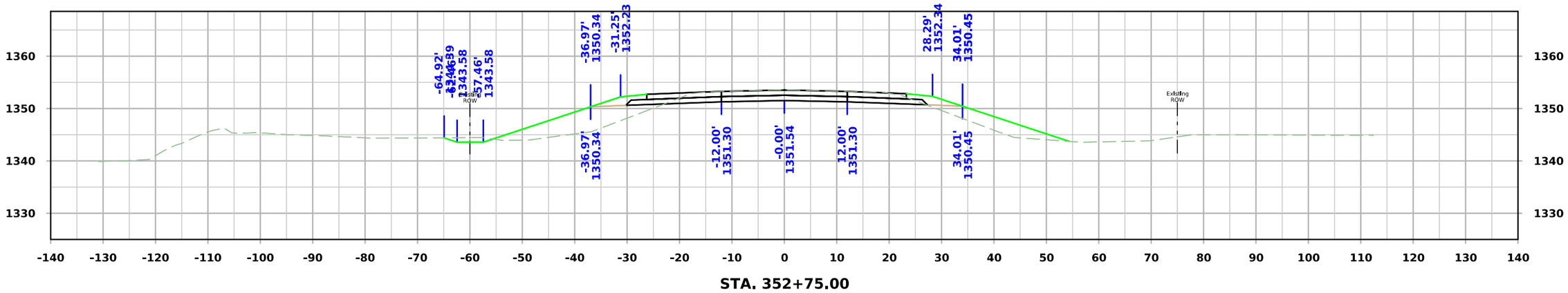
ML - US18



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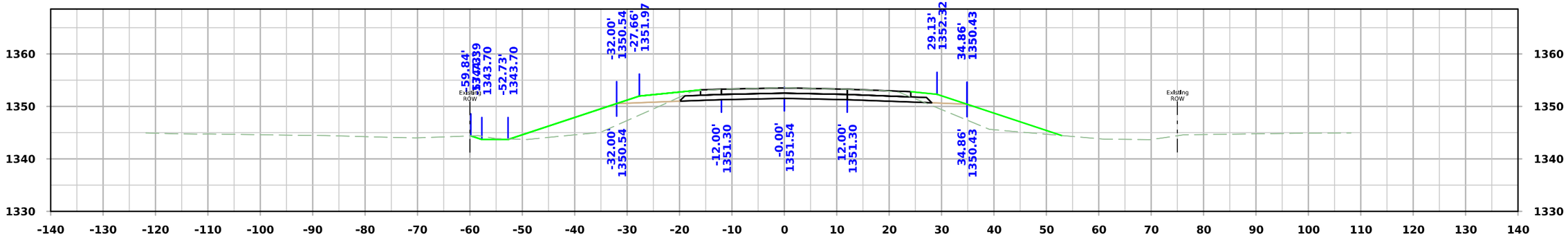

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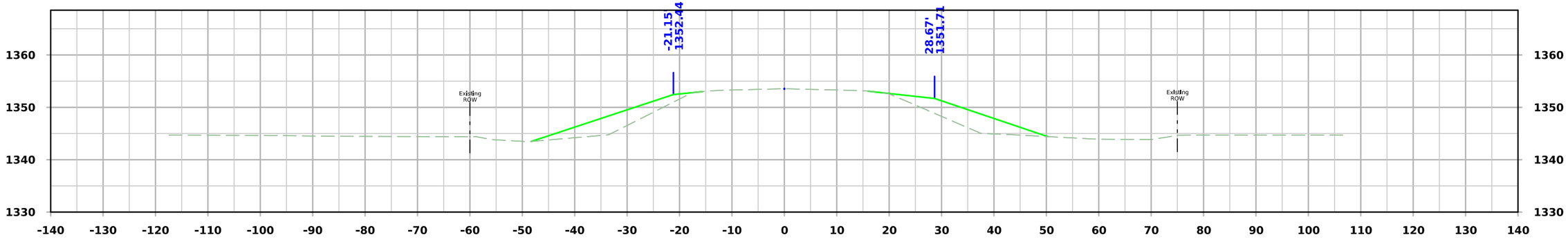

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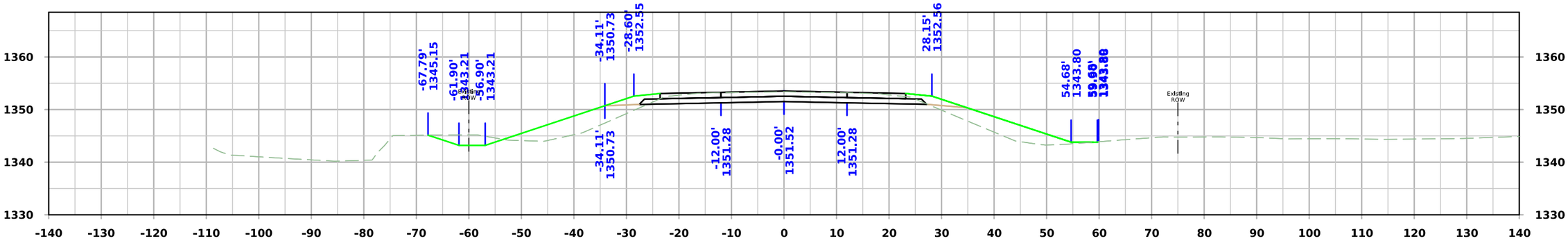
ML - US18



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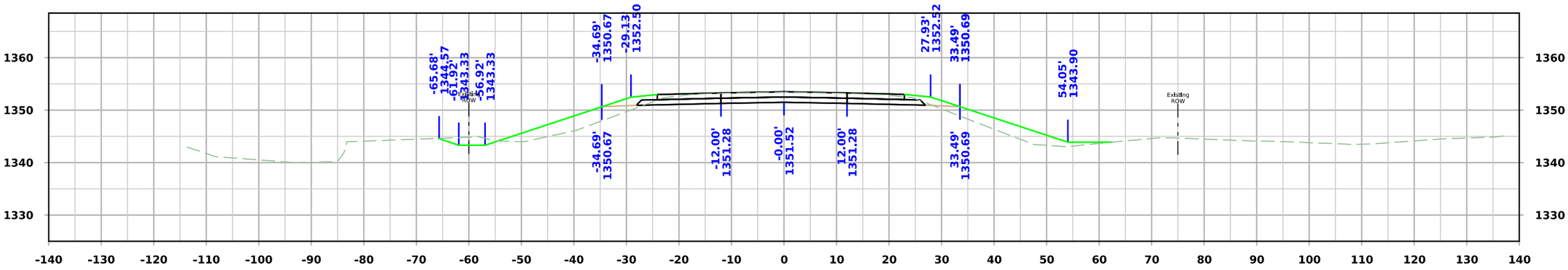

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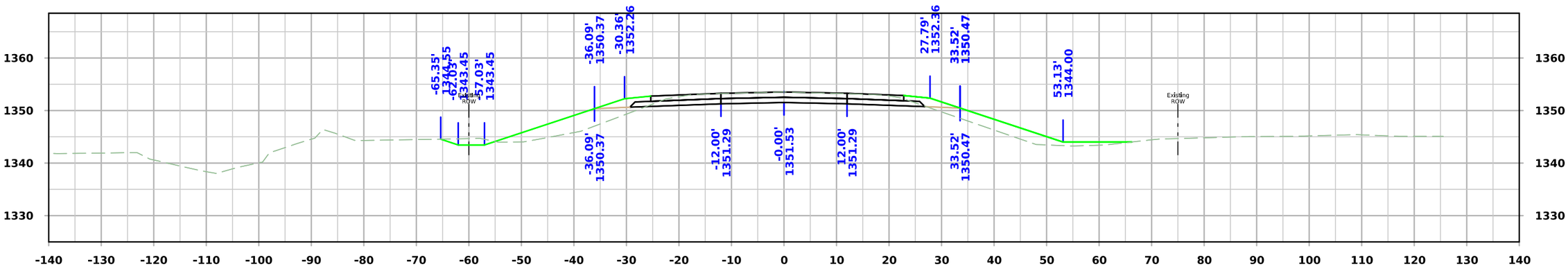

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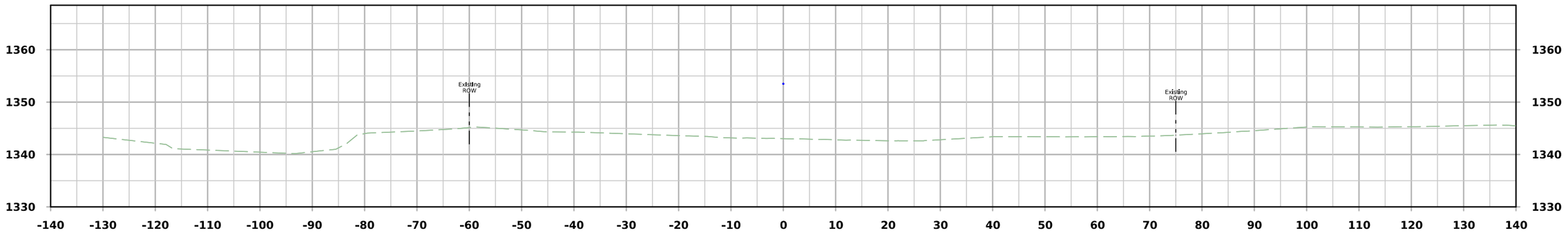

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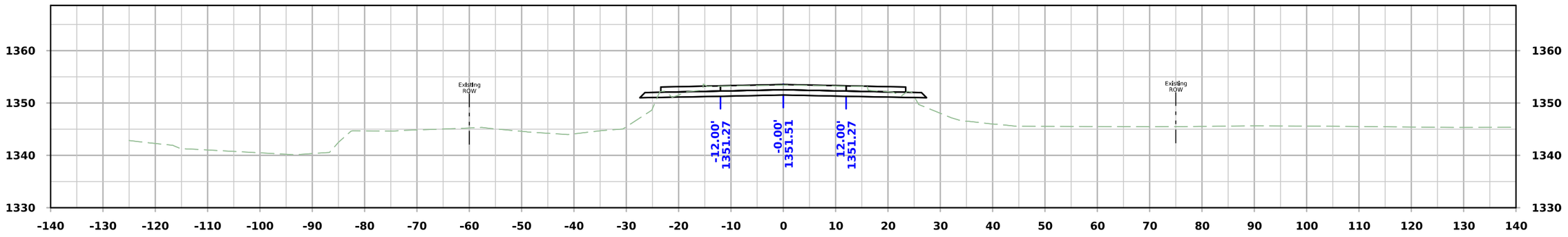

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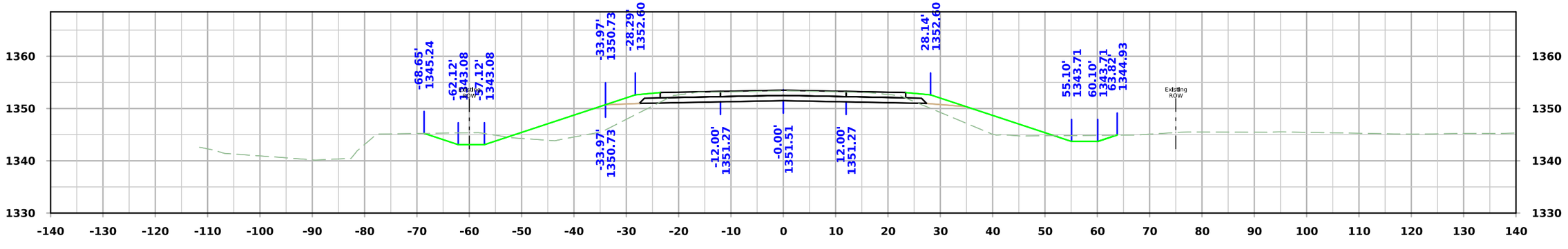

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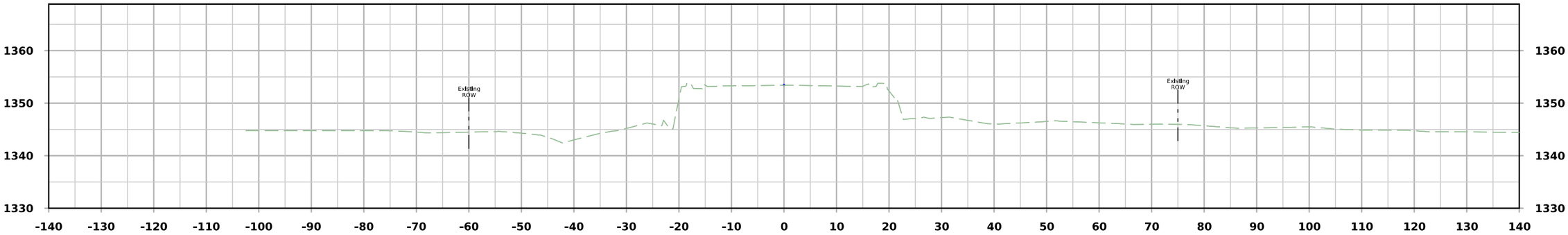

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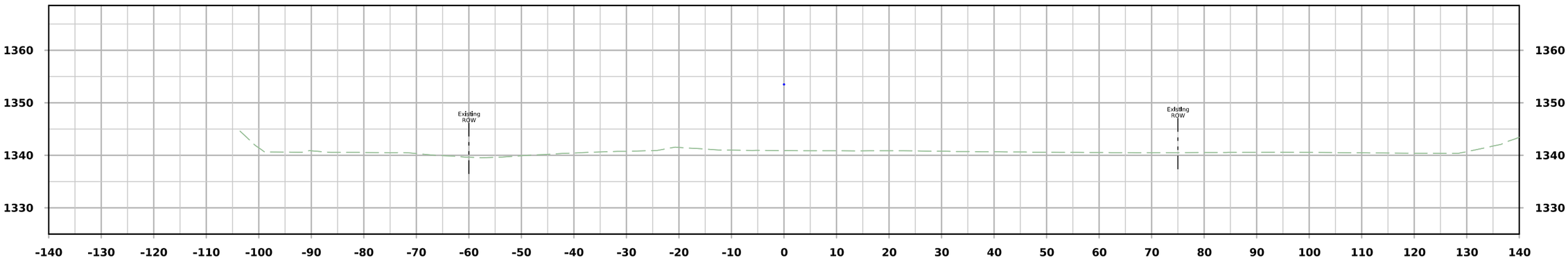

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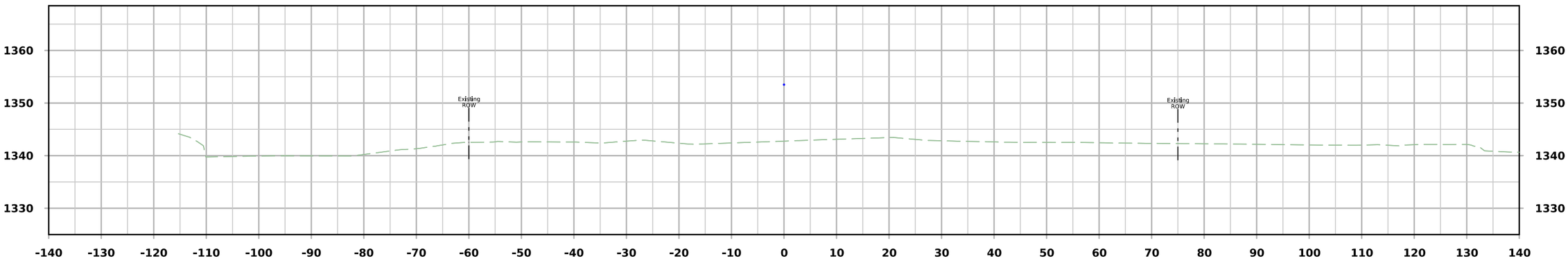
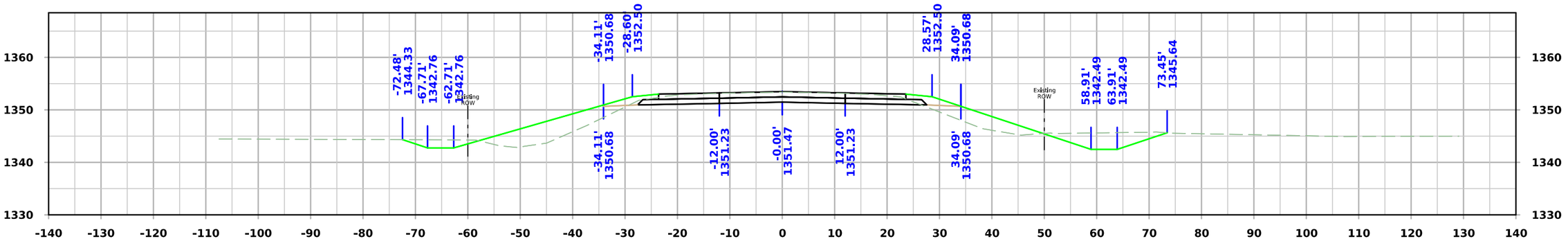


STA. 354+50.00

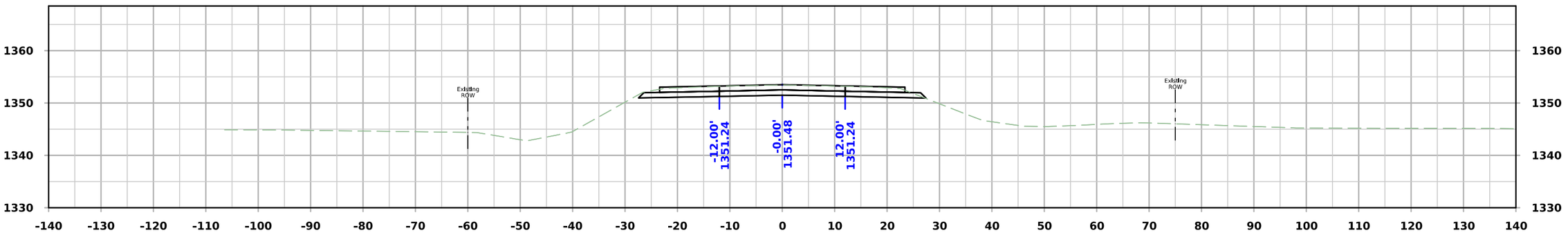
FILE NO. **32272**	ENGLISH	DESIGN TEAM **JIA \ COOPER \ MCCLANAHAN**	**CLAY** COUNTY	PROJECT NUMBER **BRF-018-2(131)--38-21**	SHEET NUMBER **W.6**

9:34:18 AM 2/21/2024 smcclan pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\2101802021\Design\CADD_Files\Sheet_Files\210180131_W02.dgn

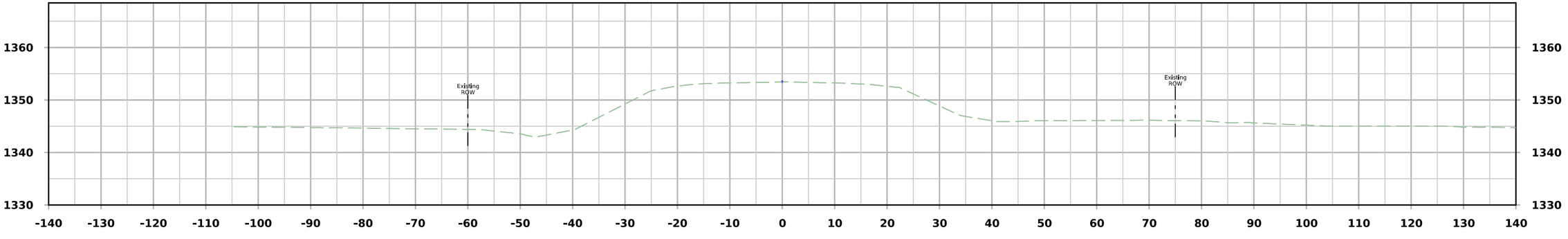
ML - US18



STA. 355+75.00



STA. 355+50.00

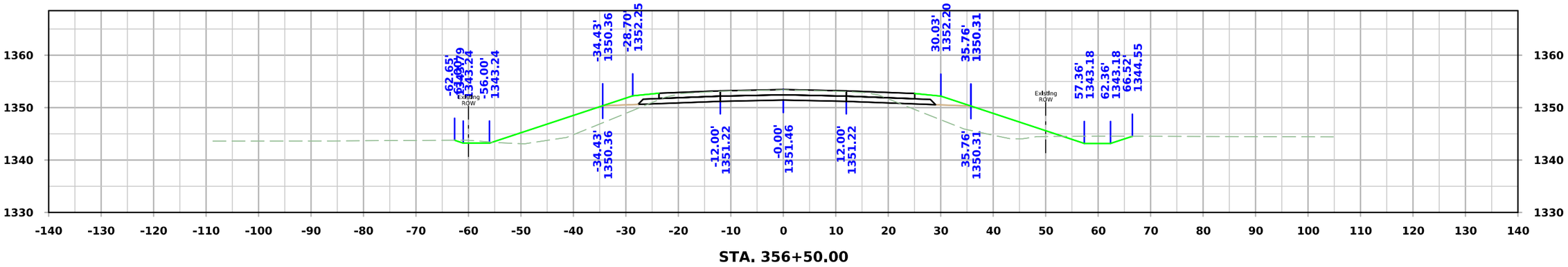


STA. 355+25.00

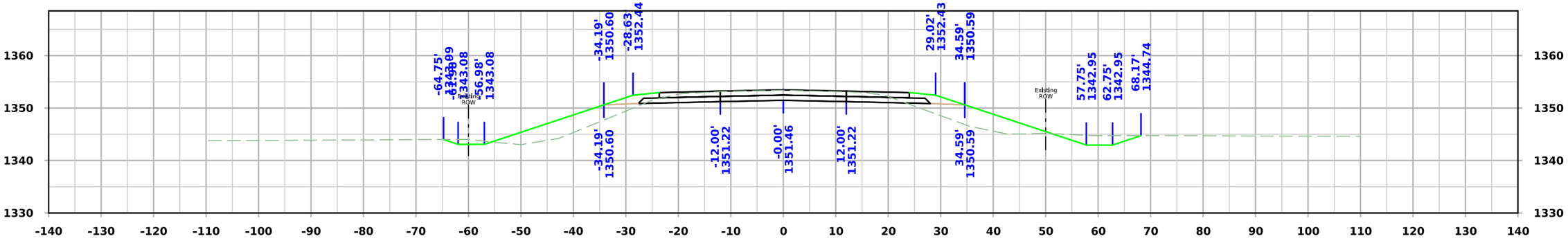
FILE NO. 32272	ENGLISH	DESIGN TEAM JIA \ COOPER \ MCCLANAHAN	CLAY COUNTY	PROJECT NUMBER BRF-018-2(131)--38-21	SHEET NUMBER W.7

9:34:19 AM 2/21/2024 smcclan pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\2101802021\Design\CADD_Files\Sheet_Files\210180131_W02.dgn

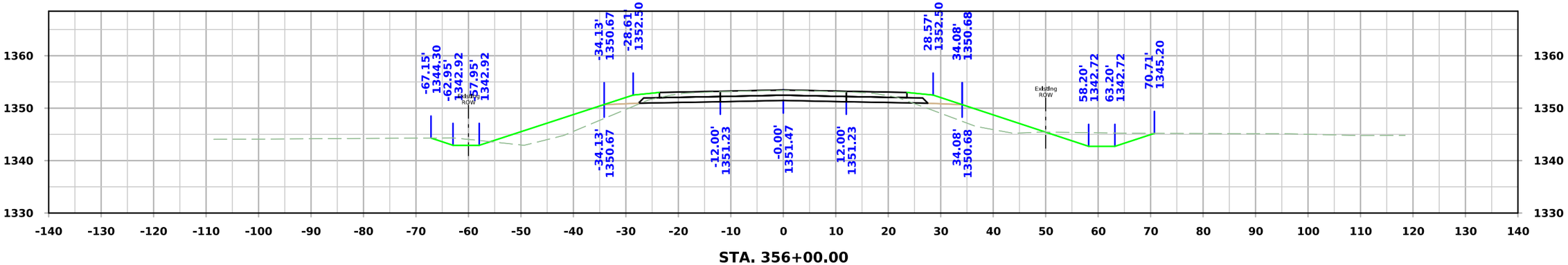
ML - US18



STA. 356+50.00



STA. 356+25.00

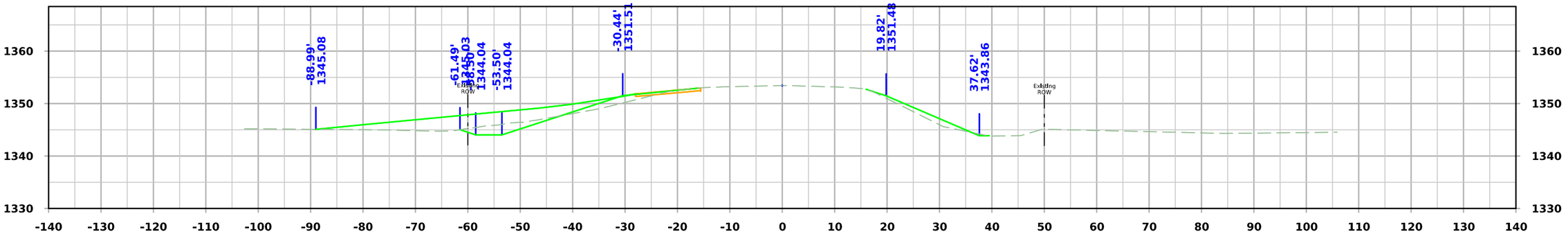


STA. 356+00.00

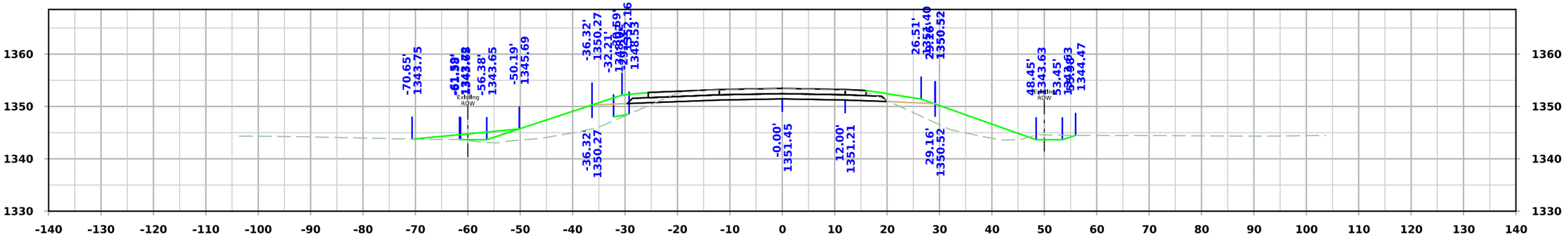
FILE NO. **32272**	ENGLISH	DESIGN TEAM **JIA \ COOPER \ MCCLANAHAN**	**CLAY** COUNTY	PROJECT NUMBER **BRF-018-2(131)--38-21**	SHEET NUMBER **W.8**

9:34:20 AM 2/21/2024 smcclan pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\2101802021\Design\CADD_Files\Sheet_Files\210180131_W02.dgn

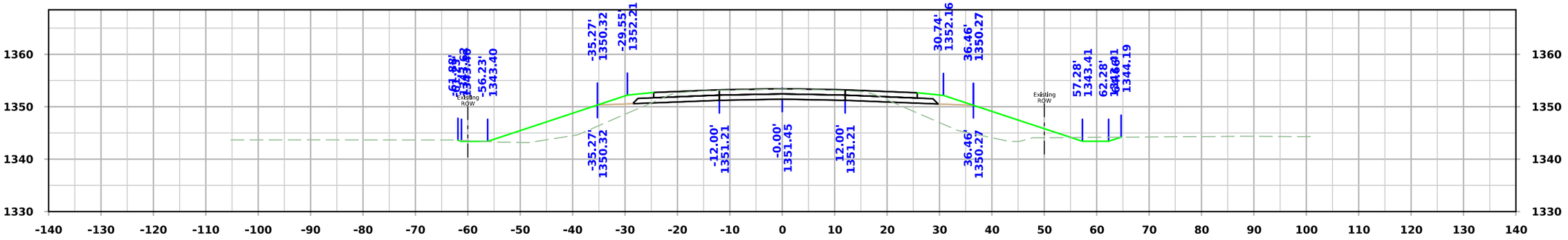
ML - US18



STA. 357+25.00



STA. 357+00.00

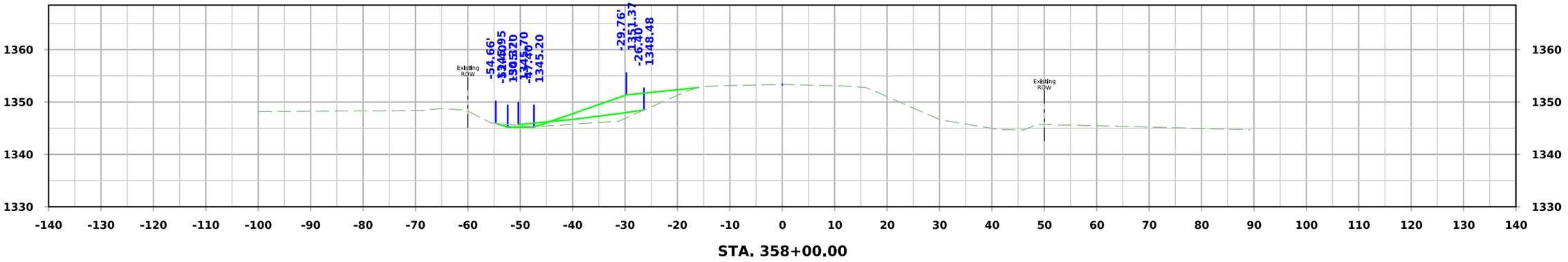


STA. 356+75.00

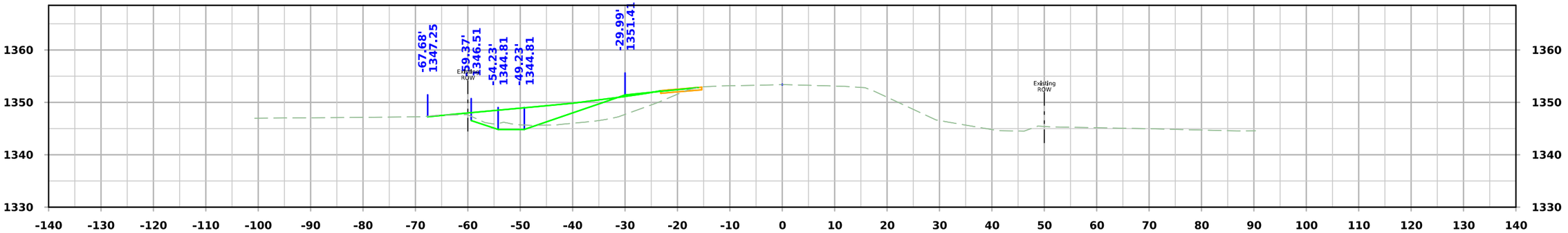
FILE NO. 32272	ENGLISH	DESIGN TEAM JIA \ COOPER \ MCCLANAHAN	CLAY COUNTY	PROJECT NUMBER BRF-018-2(131)--38-21	SHEET NUMBER W.9

9:34:20 AM 2/21/2024 smcclan pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\2101802021\Design\CADD_Files\Sheet_Files\210180131_W02.dgn

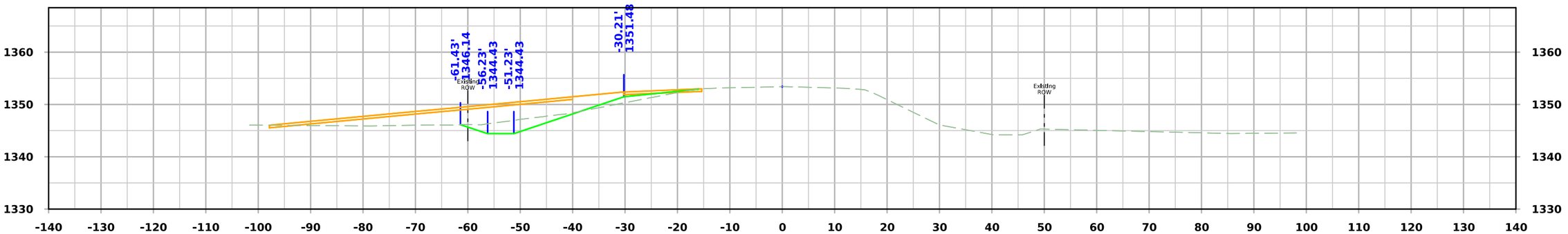
ML - US18



STA. 358+00.00



STA. 357+75.00

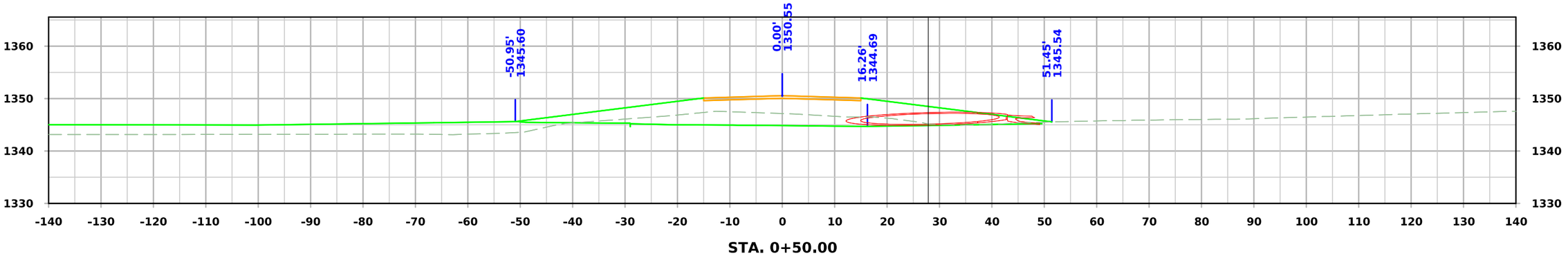


STA. 357+50.00

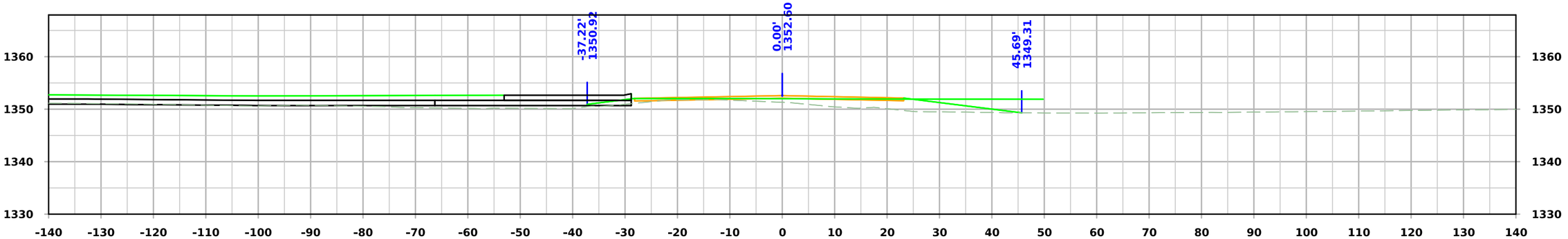
FILE NO. 32272	ENGLISH	DESIGN TEAM JIA \ COOPER \ MCCLANAHAN	CLAY COUNTY	PROJECT NUMBER BRF-018-2(131)--38-21	SHEET NUMBER W.10

9:34:21 AM 2/21/2024 smcclan pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\2101802021\Design\CADD_Files\Sheet_Files\210180131_W02.dgn

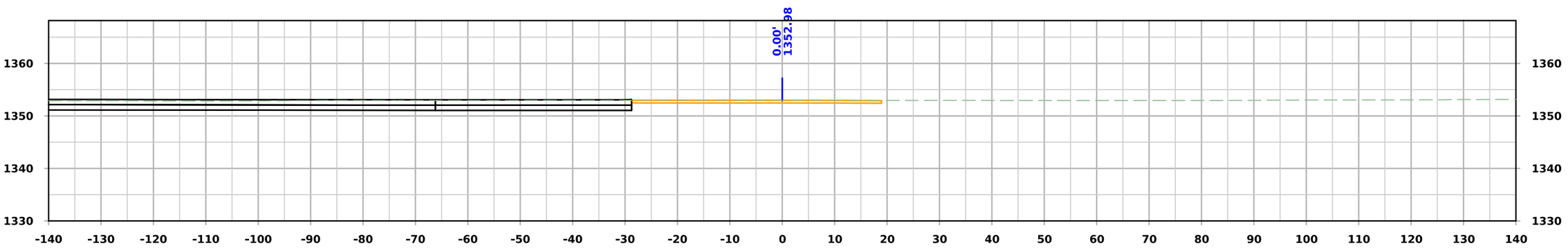
ENTRANCE



STA. 0+50.00



STA. 0+25.00

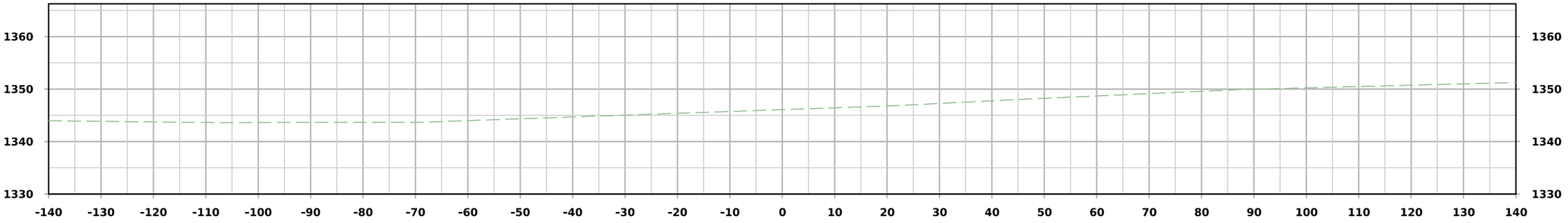


STA. 0+15.45

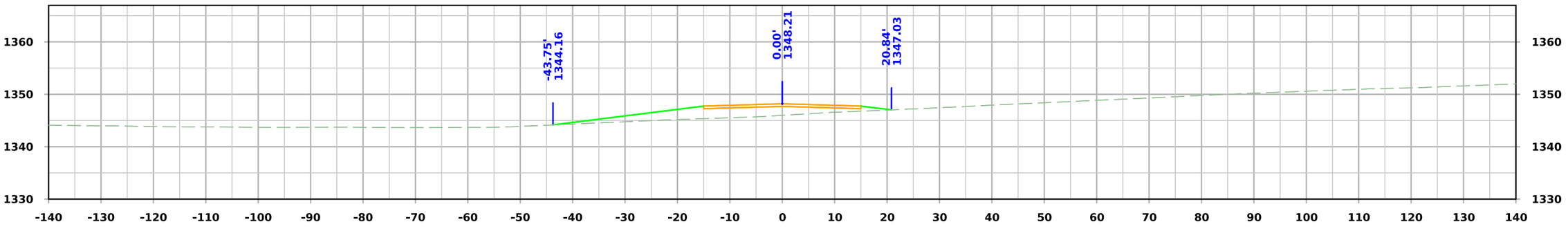
FILE NO. **32272**	ENGLISH	DESIGN TEAM **JIA \ COOPER \ MCCLANAHAN**	**CLAY** COUNTY	PROJECT NUMBER **BRF-018-2(131)--38-21**	SHEET NUMBER **X.1**

9:24:37 AM 2/21/2024 smcclan pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\2101802021\Design\CADD_Files\Cross_Sections\210180131_Ent_X01.dgn

ENTRANCE



STA. 1+00.00

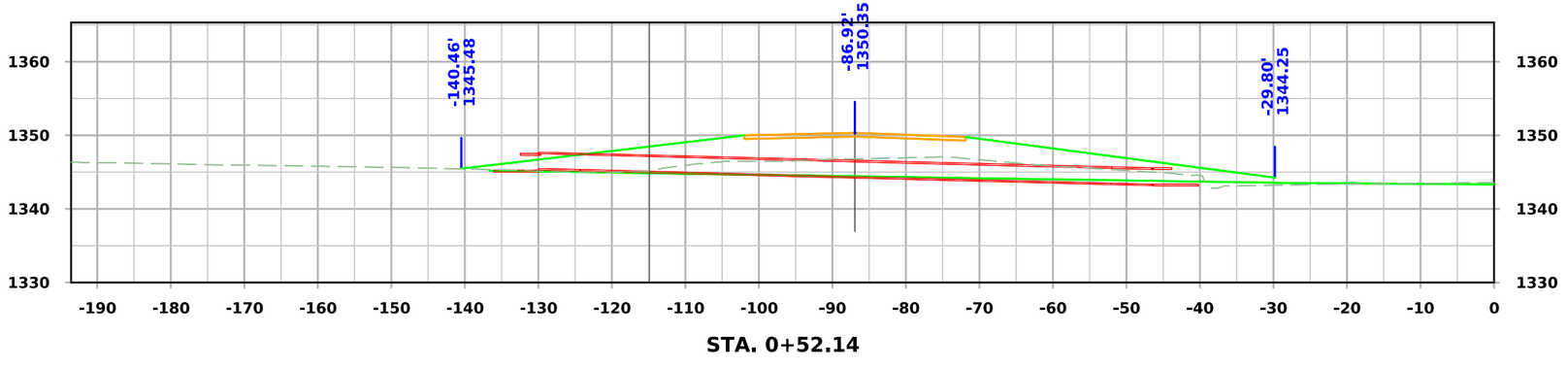


STA. 0+75.00

FILE NO. **32272**	ENGLISH	DESIGN TEAM **JIA \ COOPER \ MCCLANAHAN**	**CLAY** COUNTY	PROJECT NUMBER **BRF-018-2(131)--38-21**	SHEET NUMBER **X.2**

9:24:38 AM 2/21/2024 smcclan pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\2101802021\Design\CADD_Files\Cross_Sections\210180131_Ent_X01.dgn

ENTRANCE PIPE



STA. 0+52.14

FILE NO. **32272**	ENGLISH	DESIGN TEAM **JIA \ COOPER \ MCCLANAHAN**	**CLAY** COUNTY	PROJECT NUMBER **BRF-018-2(131)--38-21**	SHEET NUMBER **Z.1**

9:31:01 AM 2/21/2024 smcclan pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\2101802021\Design\CADD_Files\Cross_Sections\210180131_XS_Ent.dgn