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
A.2 - 10	Concept Sheets
A.11 - 13	Design Criteria
A.14	Field Exam Notes
B Sheets	**Typical Cross Sections and Details**
B.1	Typical Cross Sections and Details
D Sheets	**Mainline Plan and Profile Sheets**
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2	US 18
G Sheets	**Survey Sheets**
G.1 - 3	Reference Ties and Bench Marks
J Sheets	**Traffic Control and Staging Sheets**
* J.1	Traffic Control Plan
U Sheets	**500 Series, Mod.Stds. and Detail Sheets**
U.1	Entrance Sight Distance Check
V Sheets	**Bridge and Culvert Situation Plans**
V.1	Situation Plan
W Sheets	**Mainline Cross Sections**
W.1	Cross Sections Legend & Symbol Information Sheet
W.2 - 8	Mainline Cross Sections
	* Color Plan Sheets

IOWA DOT

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM
CLAY COUNTY
BRIDGE REPLACEMENT - CCS

Stoney Creek
5.5 miles W of W Jct US 71
Location
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
www.iowaonecall.com
811 Know what's below. Call before you dig.

REVISIONS

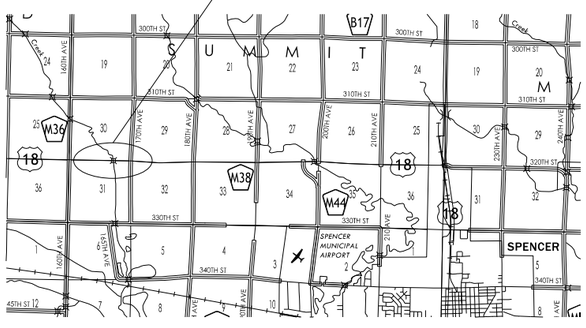
TOTAL
..

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

INDEX OF SHEETS

No.	DESCRIPTION

PROJECT LOCATION

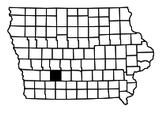


D3 PLAN - Date: 09/01/2023
D5 PLAN - Date: 12/29/2023
D4 PLAN - Date: 07/22/2025

PRELIMINARY PLANS

Subject to change by final design.

D2 PLAN - Date: 08/17/2023



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 A1

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IOWA DEPARTMENT OF TRANSPORTATION

TO OFFICE:	District 3	**DATE:**	June 22, 2023
ATTENTION:	Jessica Felix	**PROJECT:**	Clay County BRF-018-2(131)--38-21
FROM:	John E. Bartholomew		PIN: 21-21-018-020
BUREAU:	Design		
SUBJECT:	Project Concept Statement; (Final Approval, D0)		

This project involves the replacement of the U.S. 18 bridge (Maint. No. 2172.3S018) over Stoney Creek, 5.3 miles west of the west junction of U.S. 71.

A concept review was held on January 10, 2023. Those present included Jessica Felix, Darwin Bishop and Kelly Mulvihill from the District 3 Office; Jim Ellis and Abraham Kuol from the Bridges and Structures Bureau; Mike Carlson from the Location and Environment Bureau; and John Bartholomew, Kevin Patel and Hollie Richey from the Design Bureau.

The three alternatives considered were:
1. Continuous concrete slab bridge (CCS)
2. Reinforced concrete box culvert (RCB)
3. Pretensioned prestressed concrete beam bridge (PPCB)

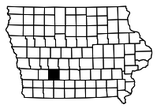
Alternative 1 is the preferred alternative due to the other alternatives being dismissed. Alternative 2 was dismissed due to there being too much flow for the largest standard box culvert. Alternative 3 was dismissed due to the PPCB bridge beam and deck thickness being too great and potentially causing backwater concerns (see attached concept for details). Right of way has been programmed for $5,000. Traffic will be maintained by off-site detour. The estimated cost of Alternative 1 is **$1,783,700**.

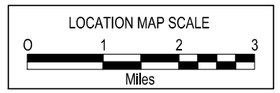
The Draft Project Concept Statement was sent out for review and comment with concerns to be resolved by Wednesday, June 21, 2023. Comments received during the review period have been considered and resolved.

This project is recommended for construction in FY 2026. The Bridges and Structures Bureau will coordinate plan preparation with assistance from the Design Bureau.

JEB:hsr
Attach.
cc:

C. Purcell	M. J. Kennerly	K. D. Nicholson
M. Dell	J. S. Nelson	M. Nop
M. A. Swenson	R. A. Younie	D. E. Sprengeler
S. Majors	A. Poole	K. Brink
D. L. Newell	B. Bradley	J. W. Laaser-Webb
W. A. Sorenson	E. C. Wright	M. E. Ross
A. A. Welch	J. Harris	C. C. Poole
B. Hofer	G. Karssen	B. E. Azeltine
S. J. Gent	S. Anderson	D. Stokes
T. Jerman	K. K. Patel	R. Harris
J. Vortherms	M. Todsen	M. Van Dyke
T. Lovan	L. Su	B. Dolan
R. Meyer	J. Hauber	S. Sersland
M. E. Khoda	K. Olson	S. Neubauer
J. Ellis	S. Seivert	A. Yates
D. Bishop	S. Tymkowicz	M. Carlson
J. Becker	T. Huju	K. Mulvihill
D. Schultz	B. Strueker	L. Sievers
S. Ebel	A. Kuol	FHWA





FINAL PROJECT CONCEPT STATEMENT

U.S. 18 bridge over Stoney Creek, 5.5 miles west of the west junction of U.S. 71.

Clay County
BRF-018-2(131)--38-21
PIN: 21-21-018-020
Maint. No. 2172.3S018
FHWA No. 20310

Highway Division
Design Bureau

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

June 22, 2023

I. STUDY AREA

A. Project Description

This project involves the replacement of the U.S. 18 bridge (Maint. No. 2172.3S018) over Stoney Creek, 5.3 miles west of the west junction of U.S. 71.

The three alternatives considered were:
1. Continuous concrete slab bridge (CCS)
2. Reinforced concrete box culvert (RCB)
3. Pretensioned prestressed concrete beam bridge (PPCB)

Alternative 1 is the preferred alternative due to the other alternatives being dismissed. Alternative 2 was dismissed due to there being too much flow for the largest standard box culvert. Alternative 3 was dismissed due to the PPCB bridge beam and deck thickness being too great and potentially causing backwater concerns. The estimated cost of Alternative 1 is **$1,783,700**.

B. Need for Project

The existing structure is a 76 ft. x 30 ft. steel beam bridge that was built in 1915 and reconstructed in 1958. An overlay was added in 1984 and has reached the end of its service life. The bottom of the deck has many areas of delamination, spalls with exposed steel, scaling, and leaching cracks. The joints need replacement. The ends of

the steel beams have section loss. There are spalls with exposed steel and a wide vertical crack at the pier. The abutments have leaching cracks, hollows, and spalling. The bridge was designed for live loads below current standards. Due to the overall condition of the bridge, a replacement is recommended.

Pictures from SIIMS

2021

2015

C. Present Facility

The existing structure is a 76 ft. x 30 ft. steel beam bridge constructed in 1915 and reconstructed in 1958.

U.S. 18 in the project area is 24 ft. pavement with 4 ft. paved shoulders and 3:1 foreslope.

U.S. 18 was constructed in 1931 with 18 ft. wide PC7 pavement with 6 ft. wide shoulders. AAC resurfacing of 3 in. was accomplished in 1962 and pavement was widened to 24 ft. with 3:1 foreslopes. In 1982 mill and overlay 1 in. of BAC resurfacing was accomplished. In 1996 mill 1.5 in. and overlay 7 in. AAC resurfacing (5.5 in. base and 1.5 in. surface) was accomplished.

D. Traffic Estimates

The 2026 construction year and 2046 design year average daily traffic estimates are 2,900 ADT with 25% trucks and 3,500 ADT with 25% trucks, respectively.

E. Sufficiency Ratings

U.S. 18 is classified as a commercial and industrial route and is a maintenance service level "B" roadway. The bridge condition index is 51.8 and the bridge condition rating is "fair".

F. Access Control

Access rights will not be acquired for this project.

G. Crash History

During the five-year study period from January 1, 2018 through December 31, 2022, there was one property damage only crash. US 18 in the project area has a PCR of -0.02 and is listed as "negligible".

II. PROJECT CONCEPT

A. Feasible Alternatives

Alternative #1 - Replace with a bridge

The existing 76 ft. x 30 ft., continuous steel I-beam bridge will be replaced with a 3 span, 140 ft. x 44 ft., continuous concrete slab bridge.

This bridge will be constructed on the existing vertical and horizontal alignment. New bridge approaches will be constructed. The existing guardrail will be replaced with new guardrail and the shoulders will be paved 20 ft. beyond the ends of the guardrail. Class 10 will be necessary to flatten the existing foreslopes and to construct the new guardrail blisters. Class E revetment will be placed under the bridge for slope protection. New bridge end drains will be constructed on the east end of the of the bridge.

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

It appears that right of way will be required for this project, it has been programmed for $5,000.

Traffic will be maintained by an off-site detour.

Bridge Items	Estimated Costs
New Bridge	$ 859,000
Bridge Removal	22,800
Revetment	25,000
Mobilization - 10%	90,700
M & C - 15%	181,400
Bridge Costs	**$ 1,178,900**
Programmed ROW	**$5,000**
Roadway Items	
Bridge Approaches	$194,300
Removal of Pavement	7,900
Excavation Class 13 Waste	23,500
Guardrail (Includes Removal)	21,800
Paved Shoulders for Guardrail	8,000
Class 10 for Guardrail Blisters	20,100
Bridge End Drains	8,100
Seeding and Fertilizing	1,200
Erosion Control	50,000
Wetland Mitigation	25,000
Traffic Control - 5%	30,000
Mobilization - 5%	30,000
M & C - 30%	179,900
Roadway costs	**$ 599,800**
Project Total	**$1,783,700**

B. Detour Analysis

U.S. 18 will be closed and an offsite detour will be utilized. It is anticipated the detour will be in place for approximately 120 days. The detour would follow County Road M27 south to County Road B24, then east to County Road M38, south to 360th St. east to U.S. 71 and continuing east to U.S. 18. Out of distance travel is 0.5 miles. The total distance user cost is anticipated to be $49,000. The cost for county road maintenance will be $49,832 as calculated by the Gas Tax Method. Detour signing costs will be $10,000.

C. Recommendations

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

D. Construction Sequence

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

E. ADA Accommodations

There are no bike paths or sidewalks adjacent to U.S. 18; therefore, no ADA accommodations are planned in conjunction with this project.

F. Special Considerations

This will not be a traffic critical project.

The ABC Rating Score of 33 is less than the first stage filter threshold of 50, therefore this bridge will be constructed using traditional methods.

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

Waterway is not on a state water trail or paddling route.

There are overhead utility lines (north/south) crossing the road on the east end of the bridge, may interfere with new piling.

Right of Way has been programmed for **$5,000** for this project.

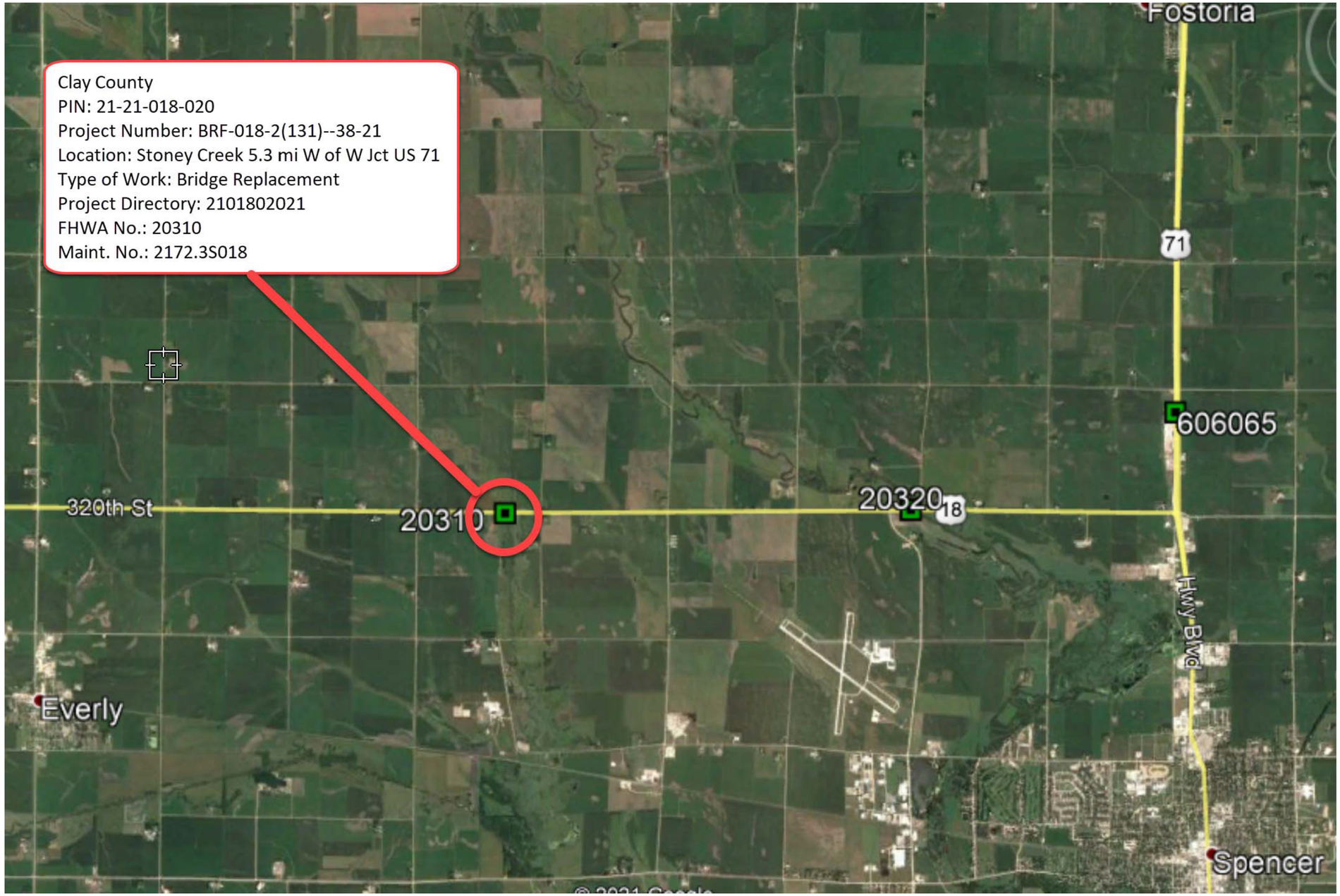
The Location and Environment Bureau has reviewed this project and based on preliminary desktop observations, has determined that a Section 404 Permit will be required. It is expected that the work will be covered by Nationwide Permit 14.

G. Program Status

Site data has been developed by the Design Bureau. This project is listed in the 2024-2028 Iowa Transportation Improvement Program, with $5,000 programmed for right of way in FY 2026, and $2,305,000 for replacement in FY 2026. Costs for this project may be eligible for bridge replacement funds. A schedule of events will be developed following approval of the Project Concept.

JEB:hsr

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
20310



FILE NO. 32272	ENGLISH	DESIGN TEAM JIA \ COOPER \ MCCLANAHAN	CLAY COUNTY	PROJECT NUMBER BRF-018-2(131)--38-21	SHEET NUMBER A7

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Utilities

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

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

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

Bridge Bureau Attachment for Concept Statement

Date: 12/4/22
By: Abraham Kuol / Jim Ellis
Location: On US 18 over Stony Creek, 5.3 miles W. of W. Jct. US 71

County: Clay County
Phase No.: BRF-018-2(131)--38-21
Project Code: 21-21-018-020

1. Regulatory/Coordination

a. Iowa DNR Flood Plain permit = No

b. Iowa DNR Sovereign Lands permit = No

c. Local Record of Coordination = Yes

d. Flood Insurance Study = No, Zone A - No Base Flood Elevation (BFE)

e. Drainage District = No

f. Corps of Engineers Section 408 = No

g. State Water Trail or Paddling Route = No

2. Hydrologic/Hydraulic Analysis/RIDB Dataset

a. Design discharges determined = Q50 = 3,530 cfs Q100 = 4,250 cfs

b. Hydraulic analysis done = Partial, Streamstats D.A. > 20 - Need to review AEPD spreadsheet. Also compare stream gauge data. Stream gauge downstream - NWSSPO14 - USGS - Ocheyedan River at Spencer.

c. Riverine Infrastructure Database (RIDB) = Yes - StonyC_Clay (RM 4.23)

d. Project development hydraulic analysis will comply with the RIDB Guidelines at a minimum.

3. Structure/Roadway Layout Considerations

a. A roadway profile grade raise is not anticipated.

b. No shallow rock indicated by existing borings.

c. Channel shift recommended - No

d. Additional information - None.

4. Special Construction Issues

a. No shallow bedrock is preset.

b. It is desirable for new structure foundations to avoid existing foundations when possible.

5. **Special Survey** = No

6. **Aesthetic Enhancements** = No

7. **Other**

   a. Offsite detour potential - approximately 6 miles. Also, could consider staged construction. If staged construction selected, need to develop staging diagrams to evaluate proposed lane widths, bridge cut-line location, and temporary barrier rail (TBR) placement.

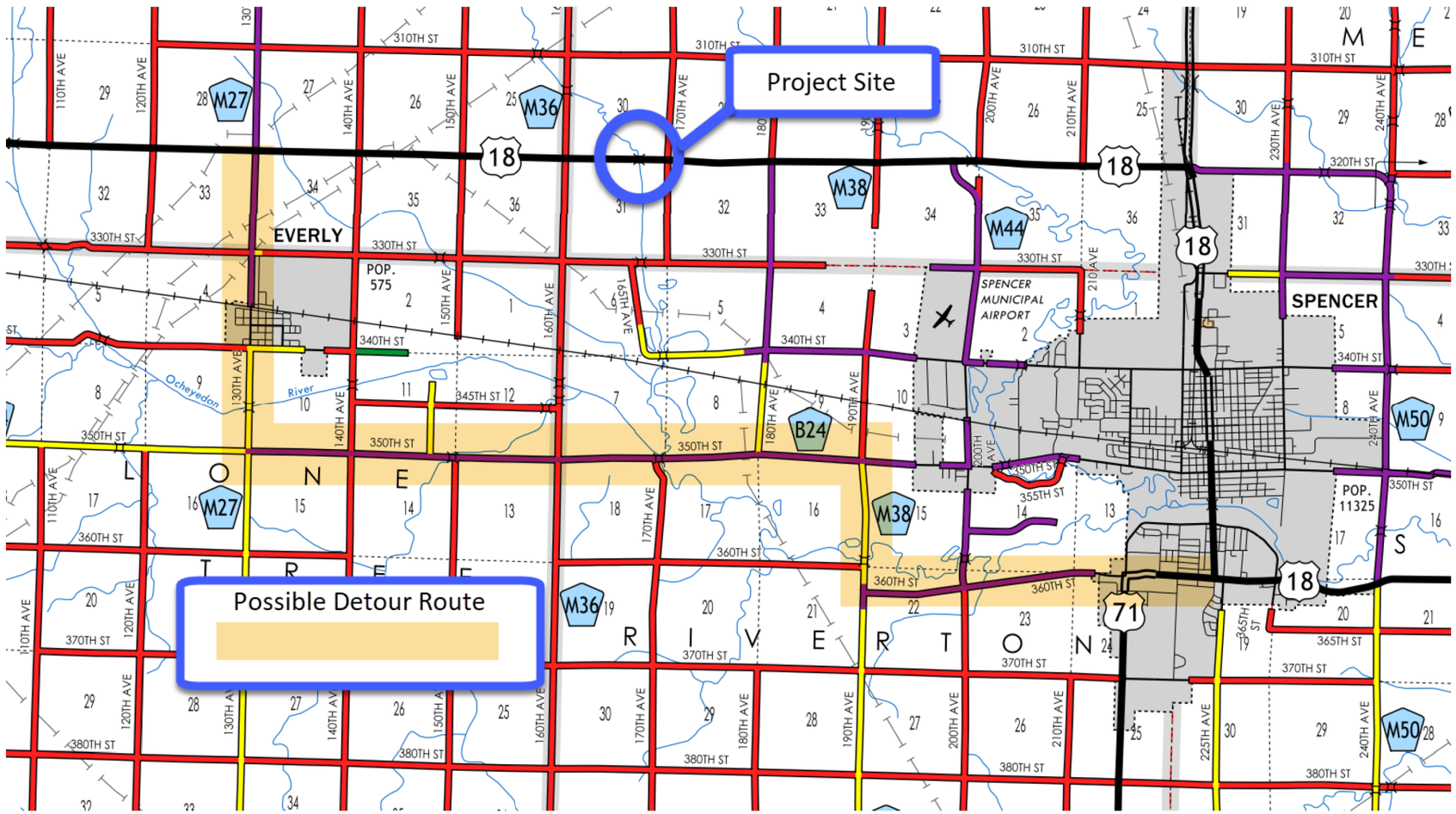
   b. No special survey needed.

Special Survey:

None

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



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Roadway	US 18			
PIN Number	21-21-018-020		**Submittal Date**	
Project Number	BRF-018-2(131)--38-21			**Approval Date**
District	District 3	**Assistant District Engineer**		
County	CLAY		**or**	
Route	US 18	**Office Director**		
Location	Stoney Creek 5.3 miles west of the west junction of US 71.			
Work Type	BRIDGE REPLACEMENT - CCS			
Segment Manager				
Designer	Yanxiao Jia\ Harrison Cooper\Sherrie McClanahan			

Design Manual Section 1C-1
Last Updated: 04-29-19

Rural Two-Lane Highways (Rural Arterials)

Design Element		Preferred	Acceptable	Project Values
Design speed (mph)		60	50	60
Maximum superelevation rate (Refer to Section 2A-2)		6%	8%	N/A
Design lane width (ft)		12	12	12
Full depth paved width (ft)		12	12	12
Right turn lane (ft)		12	10	N/A
Climbing Lane (ft)		12	12	N/A
Left turn lane (ft)		12	10	N/A
Pavement cross-slope (on tangent sections)	Through lanes	2%	1.5% minimum, 2% maximum	2%
	Auxiliary and turn lanes	3%	3% maximum	N/A
	Crown break at centerline	4%	4% maximum	4%
Shoulder cross-slope (on tangent sections)		4%	Shoulder cross-slope cannot be less than the adjacent lane, 6% max for paved or granular shoulders, 8% max for earth shoulders	4%
Curb type (Refer to Section 3C-2)	Design speed = 50 or 55 mph	6-inch sloped	6-inch standard	N/A
	Design speed ≥ 60 mph	4-inch sloped	6-inch sloped	N/A
Foreslope (For fill areas greater than 40 ft, contact the Soils Design Section for assistance)	Adjacent to shoulder	10:1 for 4' then 6:1	3:1	3:1
	Beyond standard ditch depth and design clear zone	3.5:1	3:1	3:1
	Curbed roadways	2%	not steeper than 3:1	N/A
Backslope (For cut areas greater than 25 feet, contact the Soils Design Section for assistance with backslope benches.)		3:1	2.5:1	3:1
Transverse Slopes	w/ drainage structures	8:1	6:1	8:1
	w/o drainage structures	10:1	6:1	N/A
Ditches (Refer to Section 3G-1)	Outside ditch (depth x width) (ft)	5 x 10	--	5 x 5
Bridge width—new*	Bridge length ≤ 200 ft	design lane widths + effective shoulder widths	design lane widths + effective shoulder widths	44
	Bridge length > 200 ft	design lane widths + effective shoulder widths	design lane width + 4' right and left of the design lane widths	N/A
Bridge width—existing*		design lane widths + no less than 2 ft left and right	design lane widths + 2 ft. offset left and right	30
Vertical clearance (ft) (above lanes, shoulders and 25 feet left and right of the center of railroad tracks)	Over primary	16.5	16	N/A
	Over non-primary	16.5 at interchange locations, 15 at all other locations	14	N/A
	Over railroad	23.3	23.3	N/A
	Sign trusses and pedestrian bridges	17.5	17	N/A
Structural Capacity		Contact Office of Bridges and Structures	Contact Office of Bridges and Structures	
Level of Service		B	B	

*FHWA notification via email is required if acceptable critera is not met on the NHS system (No formal design exeption is required)

Design year ADT =	2046

Design Manual Section 1C-1
Last Updated: 04-29-19

Effective Shoulder Width and Type for Two-Lane Highways

Preferred (values shown in feet)			Acceptable (values shown in feet)			Project Values
	Rural Roadways	Urban Roadways		Rural Roadways	Urban Roadways	
Turn lanes with shoulders	6	6	Turn lanes with shoulders	6	0	N/A
Turn lanes with curbs	6	See Section 3C-2	Turn lanes with curbs	6	0	N/A
	Effective Shoulder Width	Paved Width		Effective Shoulder Width	Paved Width	
Climbing Lanes	6	4	Climbing Lanes	4	0	N/A
Two-Lane Highways	Effective Shoulder Width	Paved Width	Two-Lane Highways	Effective Shoulder Width	Paved Width	
Routes where bicycles are to be accommodated	10	10	Design year ADT > 2000 vpd	8	0*	N/A
On roadways approaching urban areas (due to increased bike traffic)	10	10				
On all curves with a superelevation rate of 7.0% or greater	10	10				
On roadways with design year ADT > 5000	10	6	Design year ADT between 400 - 2000 vpd	6	0*	
On all other NHS	10	6				
On non-NHS routes with design year ADT > 3000	10	6	Design year ADT < 400 vpd	4	0*	
On non-NHS routes with design year ADT < 3000	8	0*				

*Requires safety edge-Refer to Section 3C-6

Curbs should be located beyond the outer edge of the effective shoulder width in rural areas

Refer to Section 3C-2 for curb offsets in urban areas

Notes:

Roadway Design Speed (mph) = 60

Design Manual Section 1C-1
Last Updated: 04-29-19

Design Criteria for High Speed Roadways

Design Element			Preferred Criteria						Acceptable Criteria						Project Values
			Design Speed, mph						Design Speed, mph						
			50	55	60	65	70	75	50	55	60	65	70	75	
Stopping sight distance (ft) (Refer to Section 6D-1)			425	495	570	645	730	820	425	495	570	645	730	820	
Minimum horizontal curve radius (ft) (Refer to Sections 2A-2 and 2A-3)	Method 5 superelevation and side friction distribution	e_{max} = 6%	833	1060	1330	1660	2040	2500	833	1060	1330	1660	2040	2500	N/A
		e_{max} = 8%	--	--	--	--	--	--	758	960	1200	1480	1810	2210	N/A
Minimum vertical curve length (ft) (Refer to Section 2B-1)			150	165	180	195	210	225	150	165	180	195	210	225	
Minimum rate of vertical curvature (K) (Refer to Section 2B-1)	crest vertical curves		84	114	151	193	247	312	84	114	151	193	247	312	N/A
	sag vertical curves	roadways without fixed source lighting	96	115	136	157	181	206	96	115	136	157	181	206	
		roadways with fixed-source lighting	96	115	136	157	181	206	54	66	78	91	106	121	N/A
Minimum gradient (%)	(Refer to Section 2B-1)		0.5						0.3% with a curb, 0.0% without a curb						.02
Maximum gradient (%)	(Refer to Section 2B-1)	Urban roadways	4		3				7	6	6	--	--	--	N/A
		Rural roadways							5	5	4	4	4	4	.02
		Interstates							5	5	4	4	4	4	N/A
Clear zone			See "Preferred Clear Zone" table in Section 8A-2						See "Acceptable Clear Zone" table in Section 8A-2						30

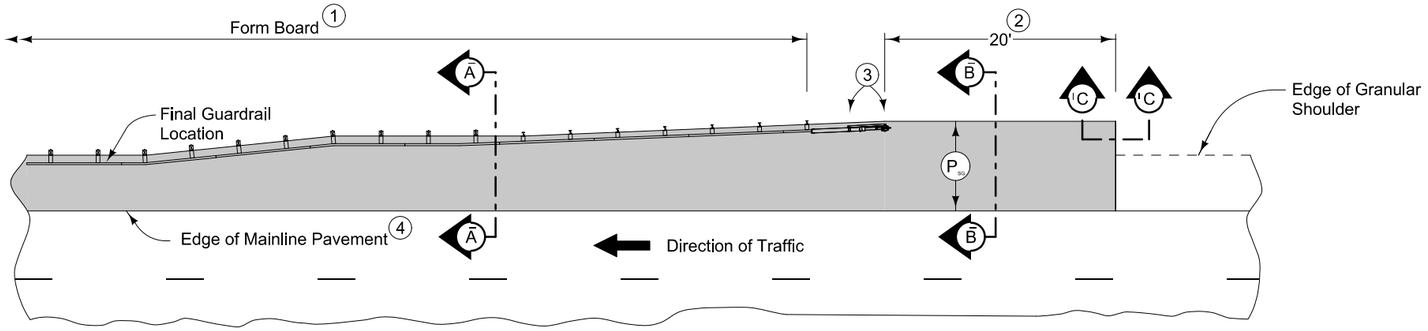
FIELD EXAM NOTES:

QUESTIONS/CONCERNS

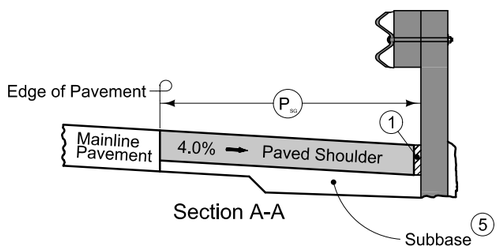
Detour Signing by District?

Disposal of Guardrail?

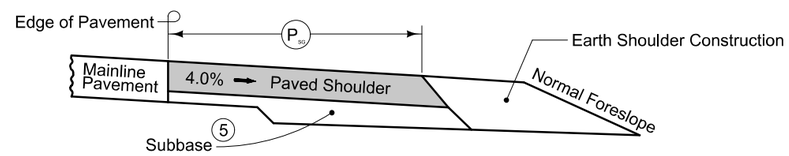
Discuss paved Shoulder in front of Guardrail?



PLAN VIEW

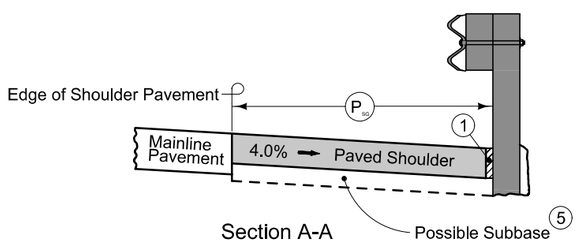


Section A-A

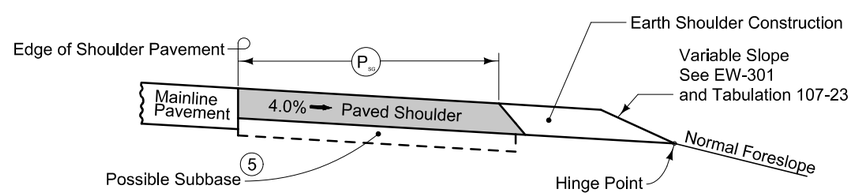


Section B-B

NEW CONSTRUCTION



Section A-A



Section B-B

EXISTING SHOULDER

DESIGNER INFO

7156
10-18-22

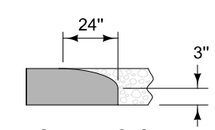
9" HMA Paved Shoulder at guardrail. 8" PCC may be substituted with the following jointing layout:

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

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

Refer to Tabulation 112-9 for shoulder quantities.

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



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

PAVED SHOULDER AT GUARDRAIL
(GRANULAR SHOULDER ADJACENT TO MAINLINE)

US 18

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

Utilities

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

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

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

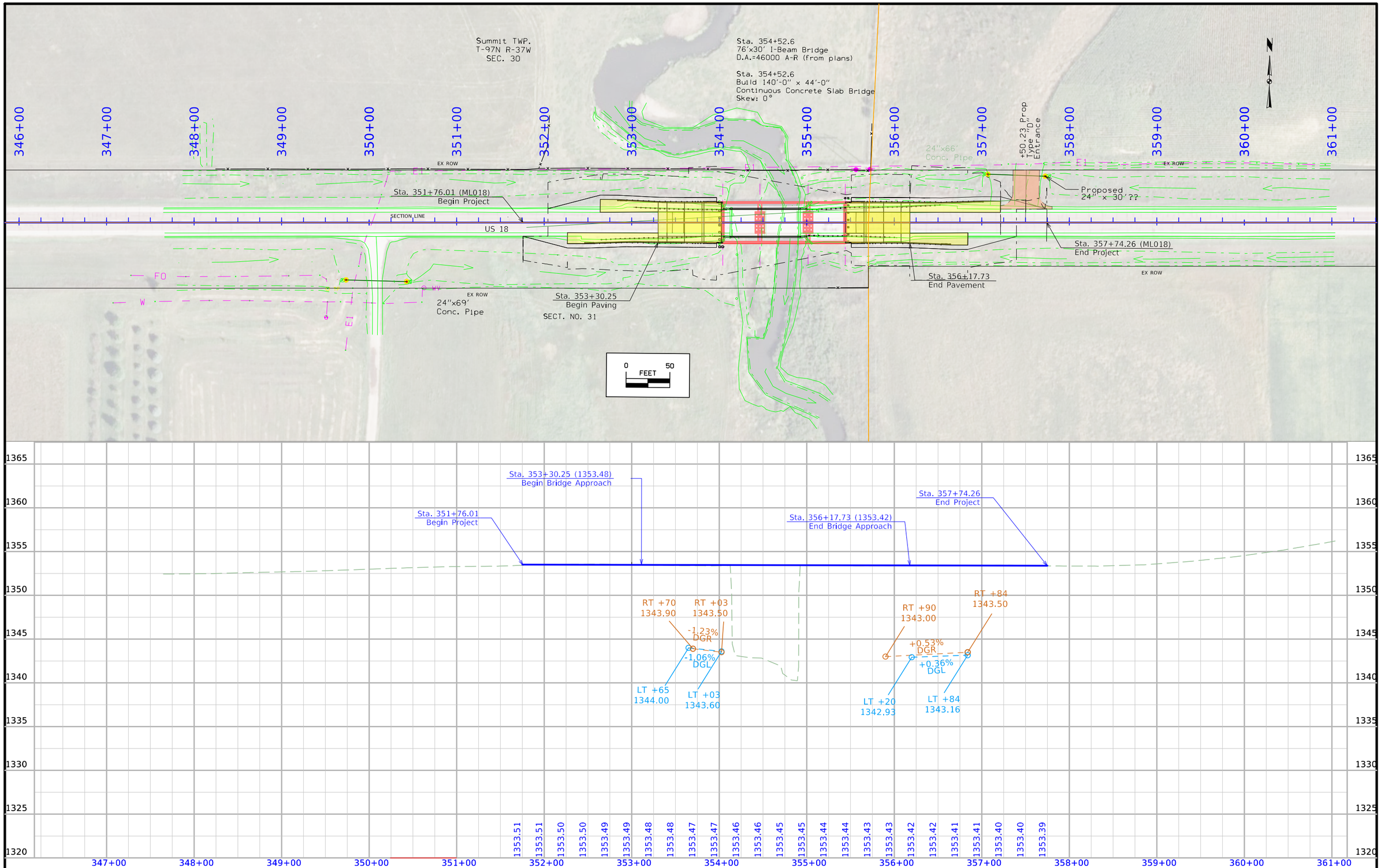
- Reference Point / Station — Survey Line
- Section Corner
- Ground Line Intercept
- Saw Cut
- Guardrail
- Trench Drain
- HighTension Cable Guardrail
- Sheet Pile
- Pavement Removal
- Clearing & Grubbing Area

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 D2

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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.

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.

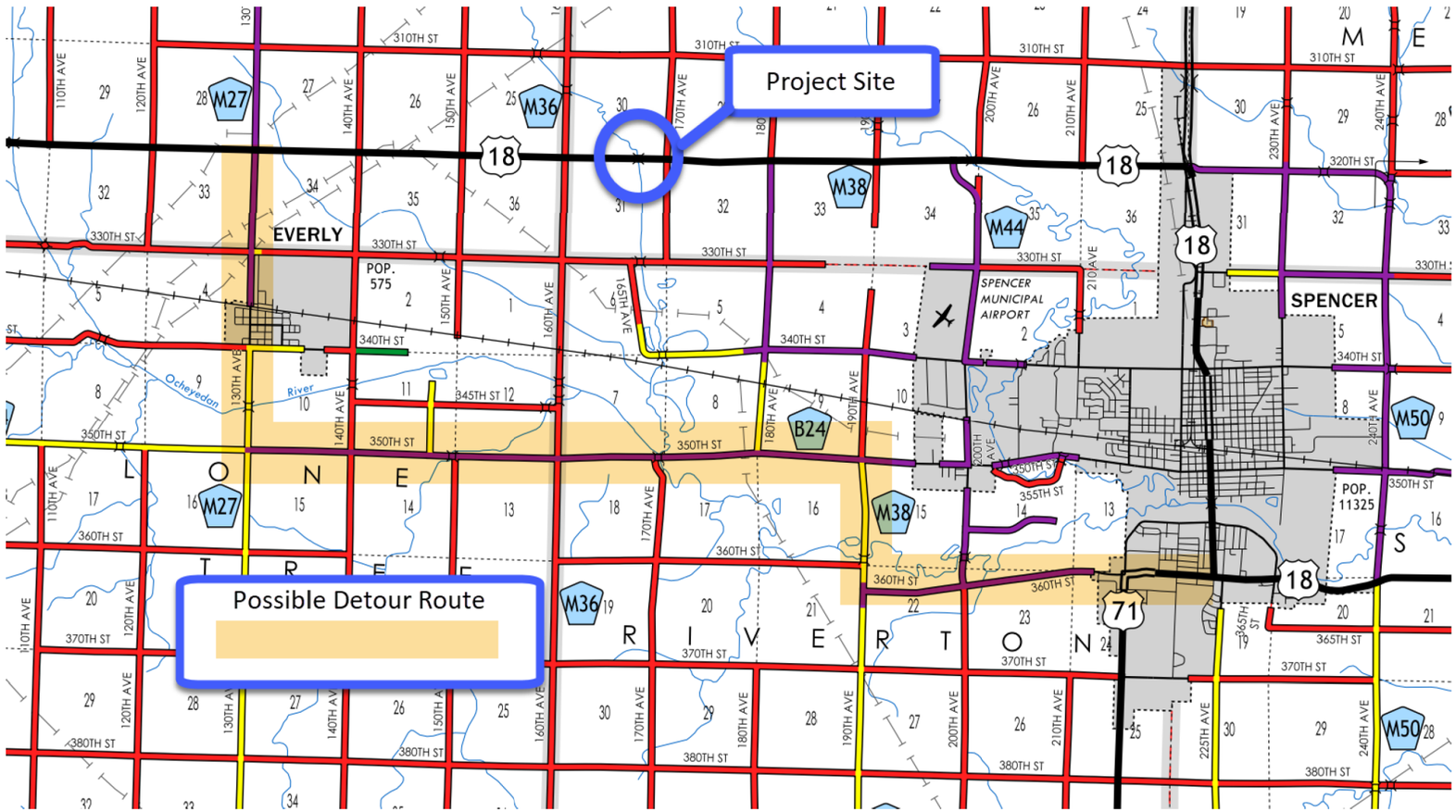
108-25
10-21-14

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



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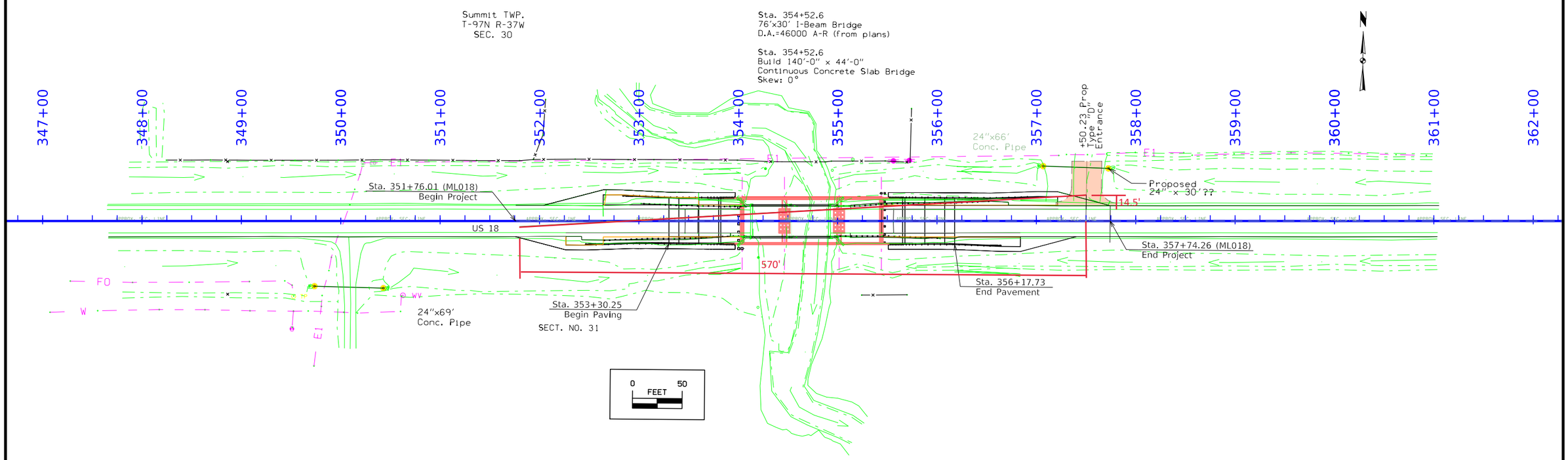

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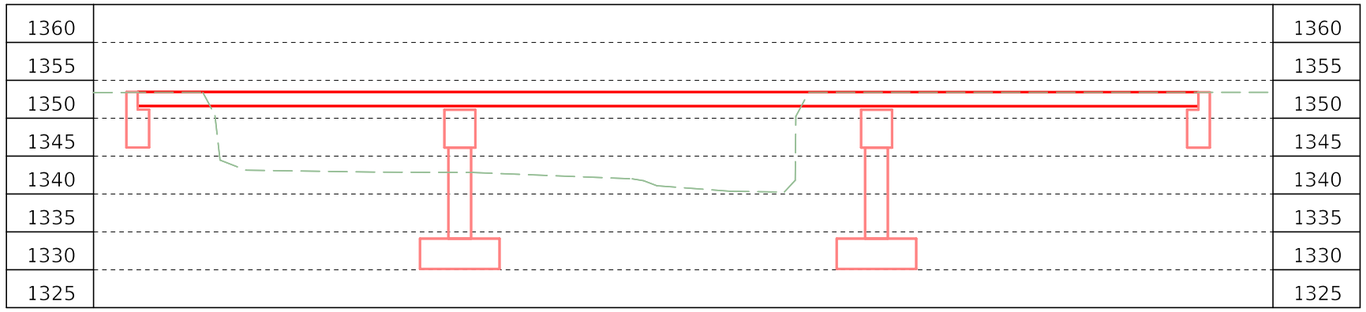
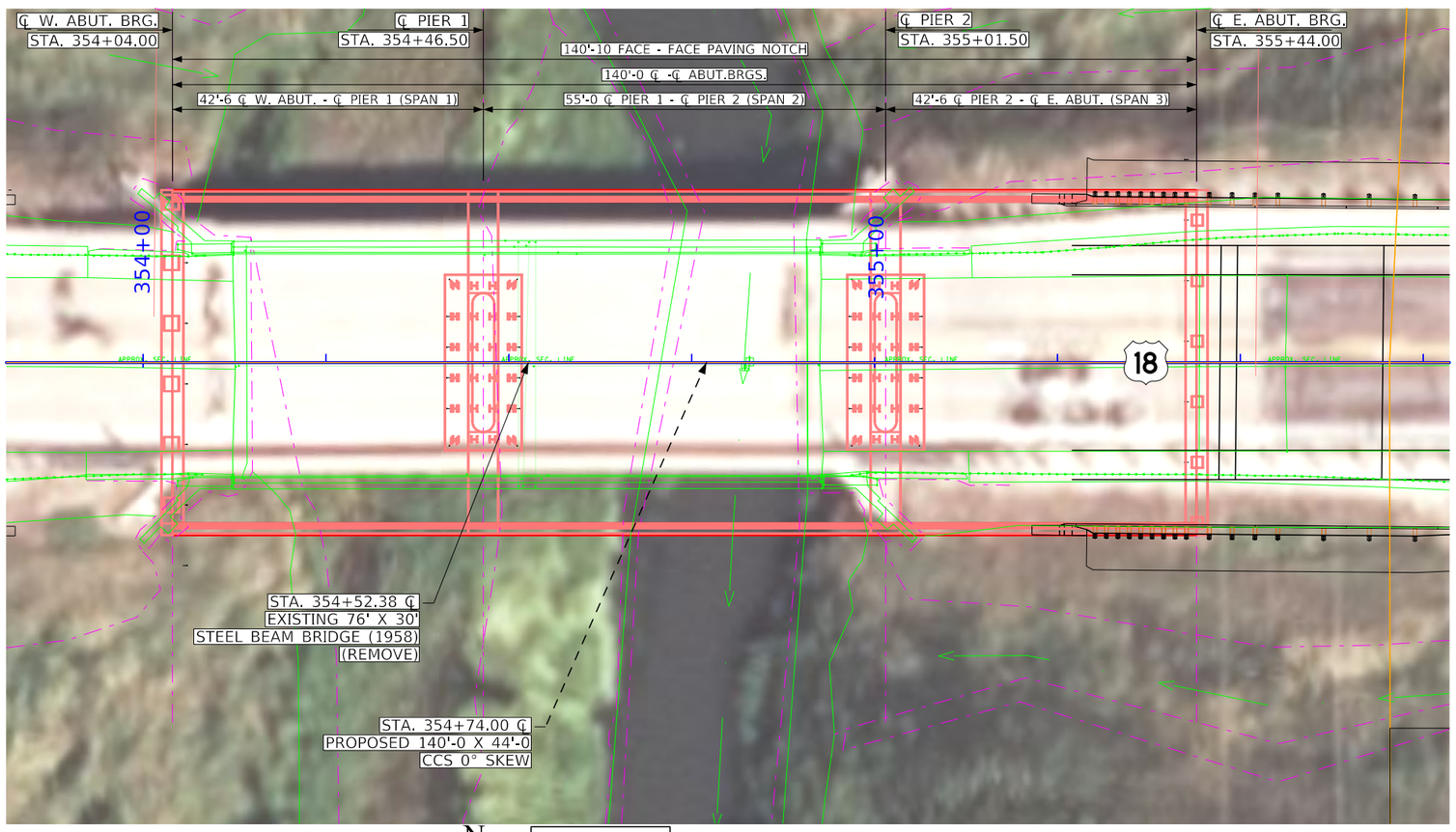


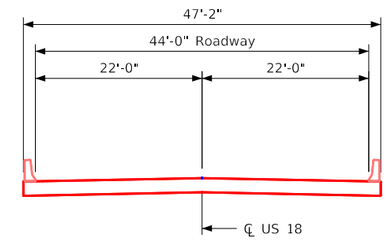
BRG TSL Longitudinal Section Along ℄ US 18



N

0 FEET 10

Situation Plan



Typical Bridge Section

Location

US 18 Over Stoney Creek
5.5 Mi. West of W Jct. US 71
T-97N R-37W
Section 30 & 31
Summit Township
Clay County
FHWA No. *20310*
Bridge Maint. No. 2*172.3S018*
Latitude 43.183622°
Longitude -95.255154°

Traffic Estimate

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

Design For 0 Degrees

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

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

STA. 354+52.00 (U.S. 18) Turn-in Date:

Clay County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. Design # Design Sheet No. 1 of 1 FHWA No. 20310

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

Design Color No.	Feature
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

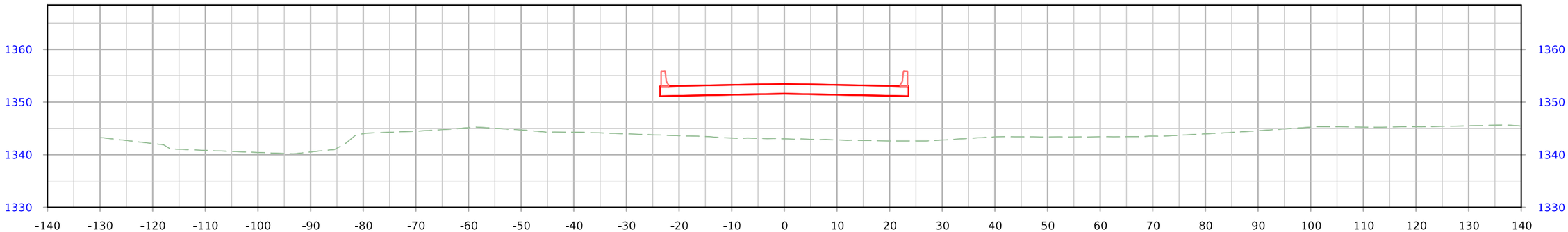
NOTES:

Text

CROSS SECTIONS
LEGEND AND INFORMATION SHEET

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

ML - US18



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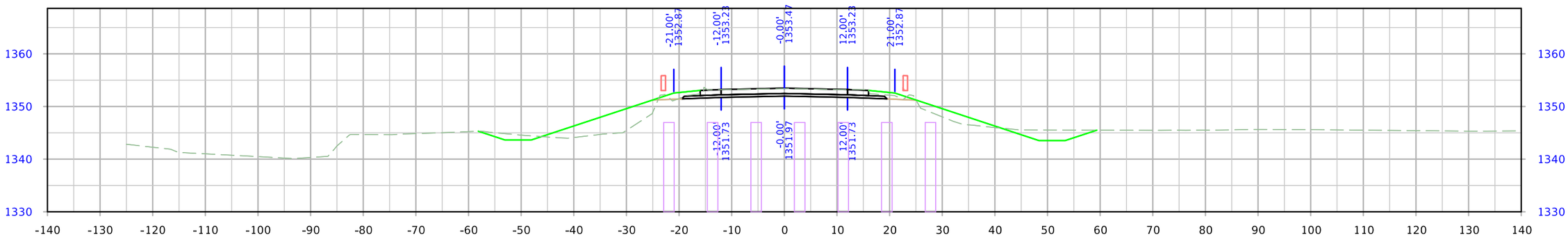

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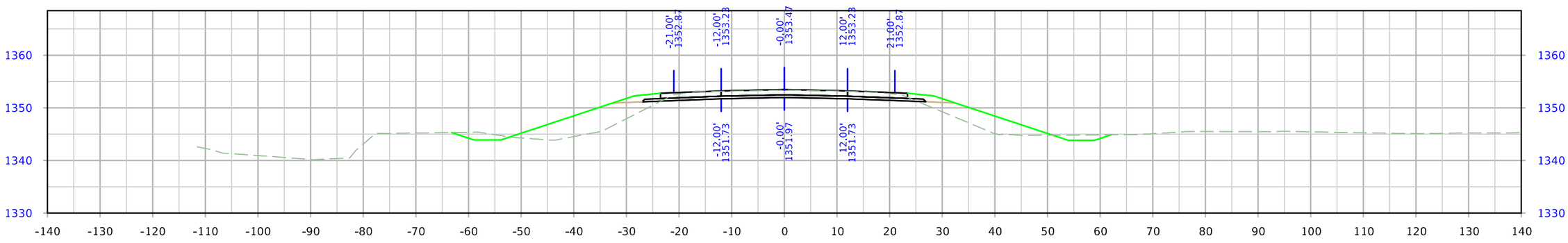

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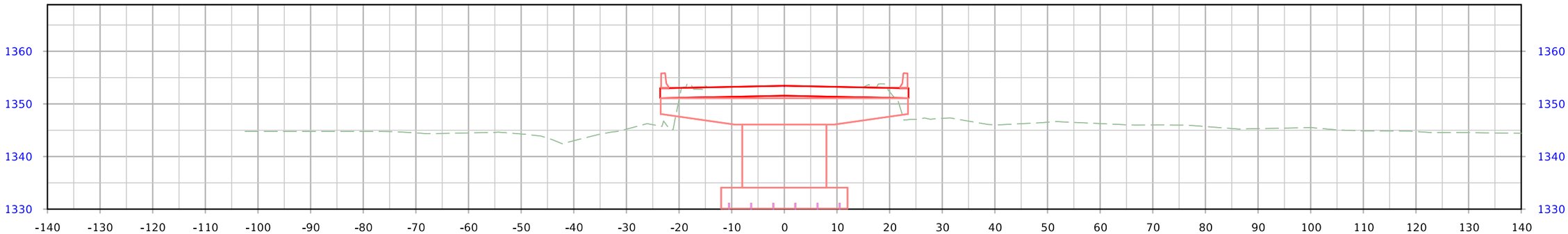

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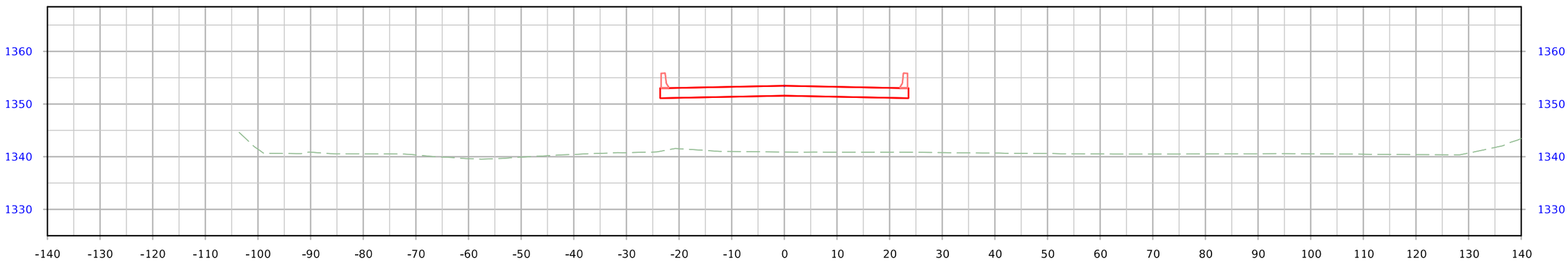

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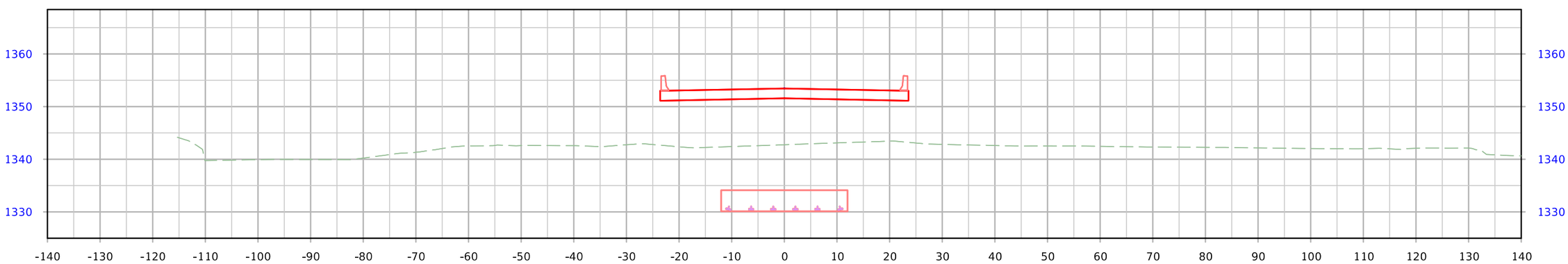

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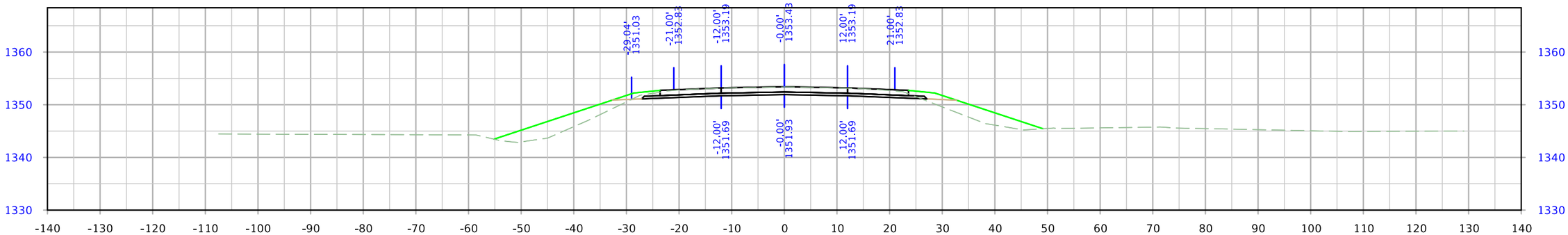
ML - US18



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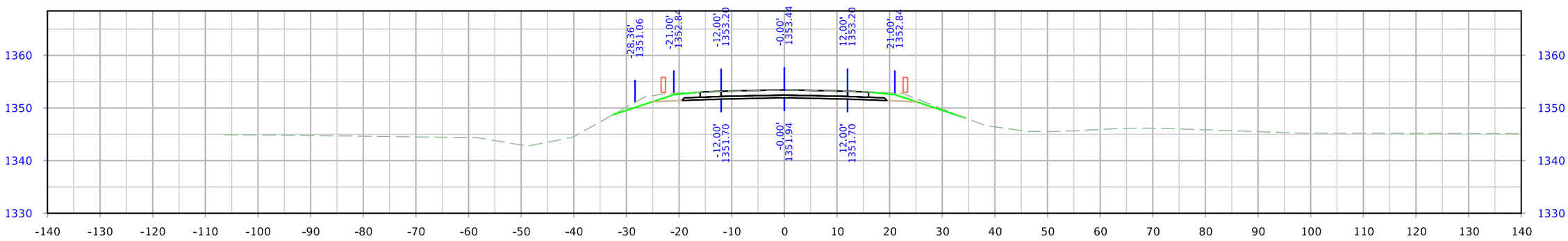

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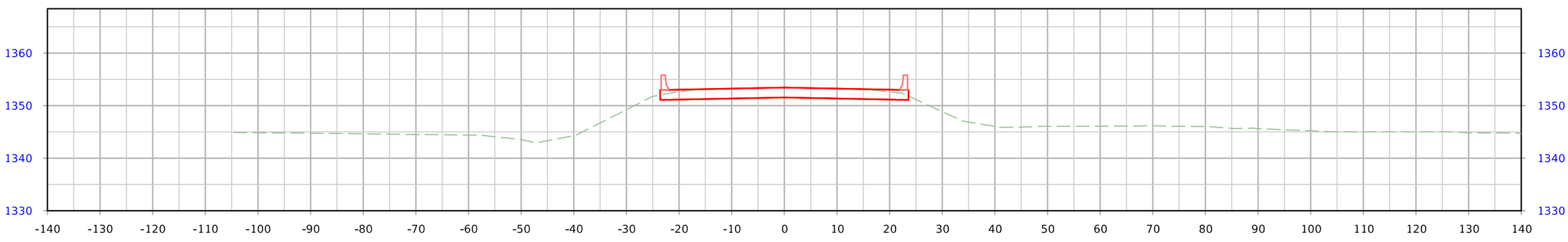

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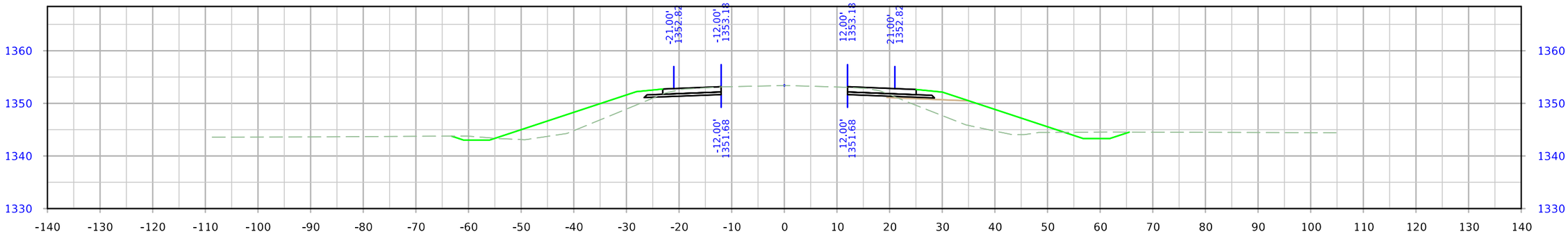
FILE NO. 32272	ENGLISH	DESIGN TEAM JIA \ COOPER \ MCCLANAHAN	CLAY COUNTY	PROJECT NUMBER BRF-018-2(131)--38-21	SHEET NUMBER W4

ML - US18



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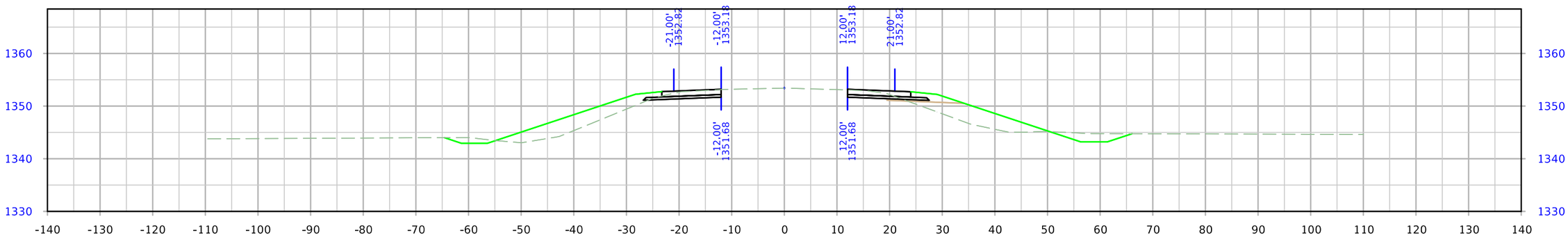

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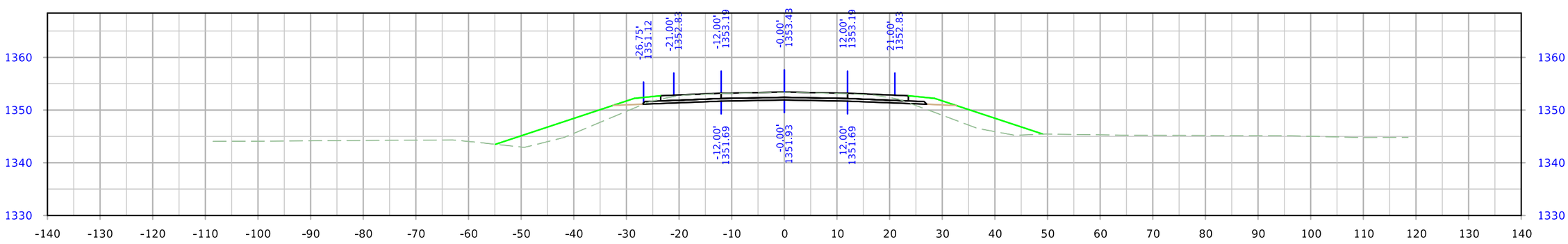

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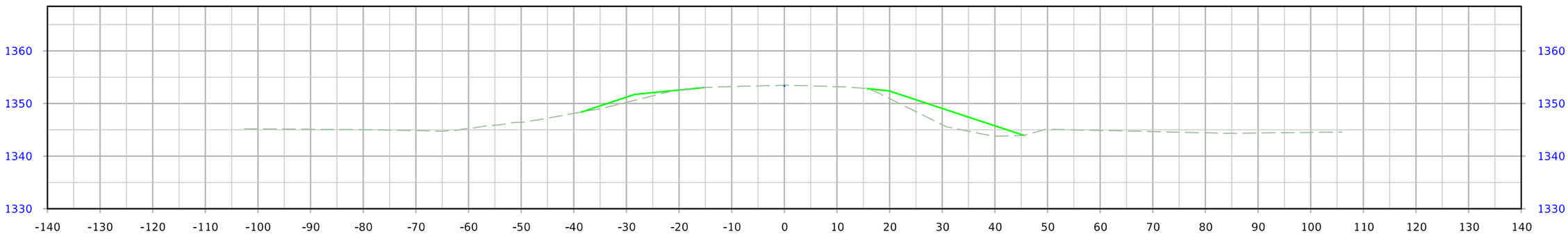
ML - US18



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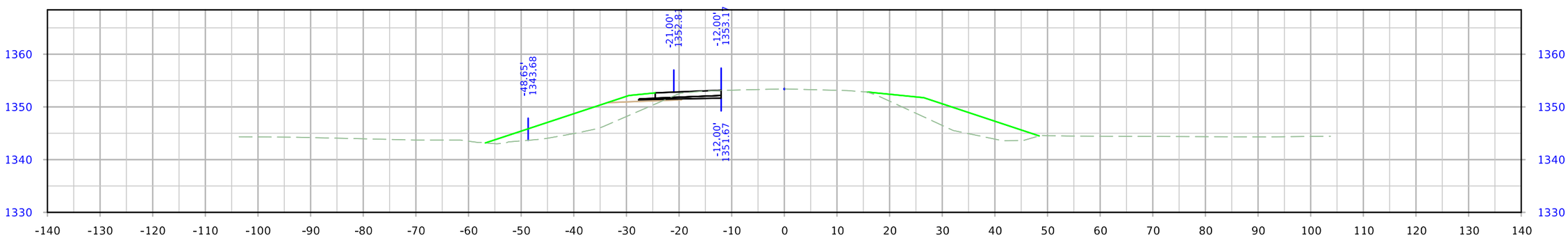

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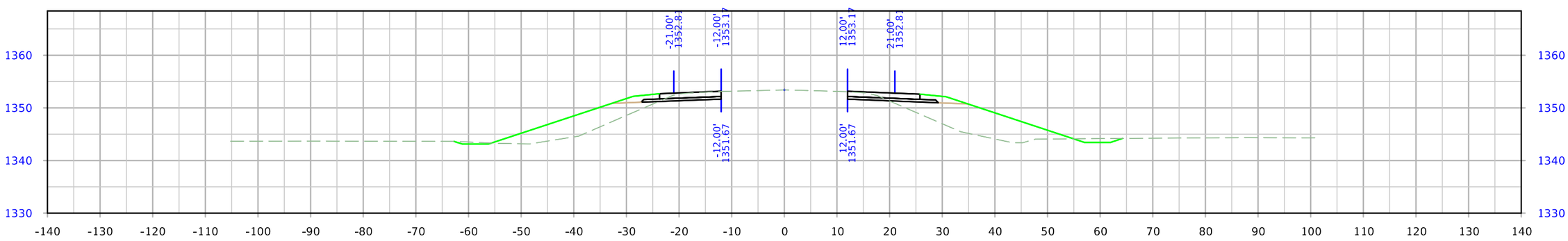
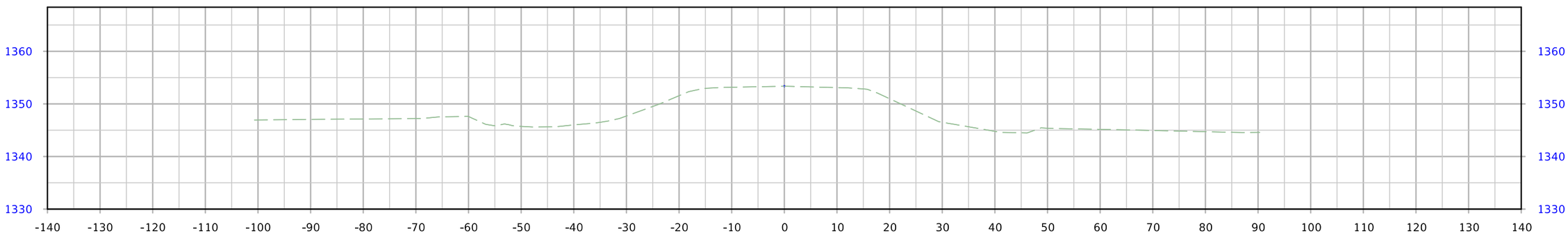


STA. 356+75.00

FILE NO. 32272	ENGLISH	DESIGN TEAM JIA \ COOPER \ MCCLANAHAN	CLAY COUNTY	PROJECT NUMBER BRF-018-2(131)--38-21	SHEET NUMBER W6

ML - US18



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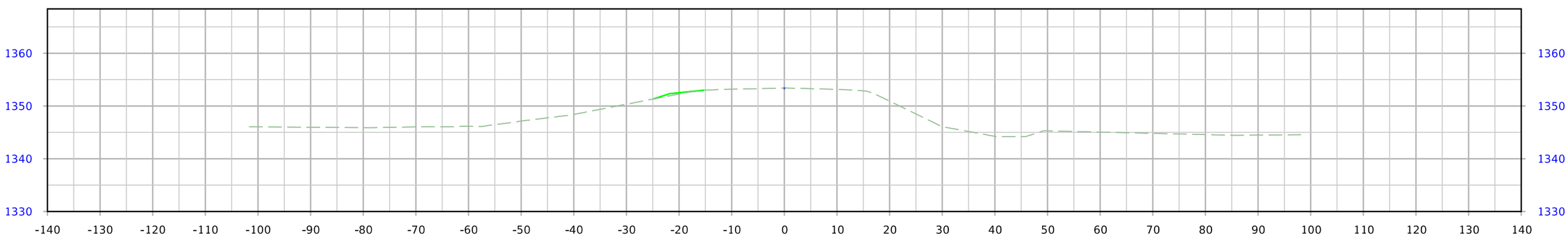

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