Bridge - Unspecified
BRF-149-1(096)--38-90

LETTING DATE 10/19/2027

WAPELLO COUNTY

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A.11	Field Exam Notes
B Sheets	**Typical Cross Sections and Details**
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	* Color Plan Sheets

IOWA DOT

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM
WAPELLO COUNTY
Bridge - Unspecified
DME RR 3.9 mi N of US 34 (NB/SB)

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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

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MILEAGE SUMMARY 105-1 09-27-94

Div.	Location	Lin. Ft.	Miles
1	IA 149 Sta. 1203+89.58 to 1214+00.81	1,011.23	0.192

DESIGN DATA URBAN

2027	AADT	6,200	V.P.D.
2047	AADT	6,800	V.P.D.
20 –	DHV	–	V.P.H.
TRUCKS		11	%
Total Design ESALs		–	

REVISIONS

	TOTAL 45
PROJECT IDENTIFICATION NUMBER	
22-90-149-030	
PROJECT NUMBER	
BRF-149-1(096)--38-90	
R.O.W. PROJECT NUMBER	
STPN-149-1(097)-2J--90	

Attendees:
Brandy Beavers - Iowa DOT
Bonnie Clancy - Iowa DOT
Nikki Cuva - Iowa DOT
Jim Ellis - Iowa DOT
Liz Finarty - Iowa DOT
Jeremy Harris - Iowa DOT
Steve McElmeel - Iowa DOT
Phil Mescher - Iowa DOT
Kevin Patel - Iowa DOT
Tami Quan - Iowa DOT
Brian Smith - Iowa DOT
Hector Torres-Cacho - Iowa DOT
Bob Younie - Iowa DOT
Scott Sweet - WHKS
Josh Opheim - WHKS
Chase Holien - WHKS

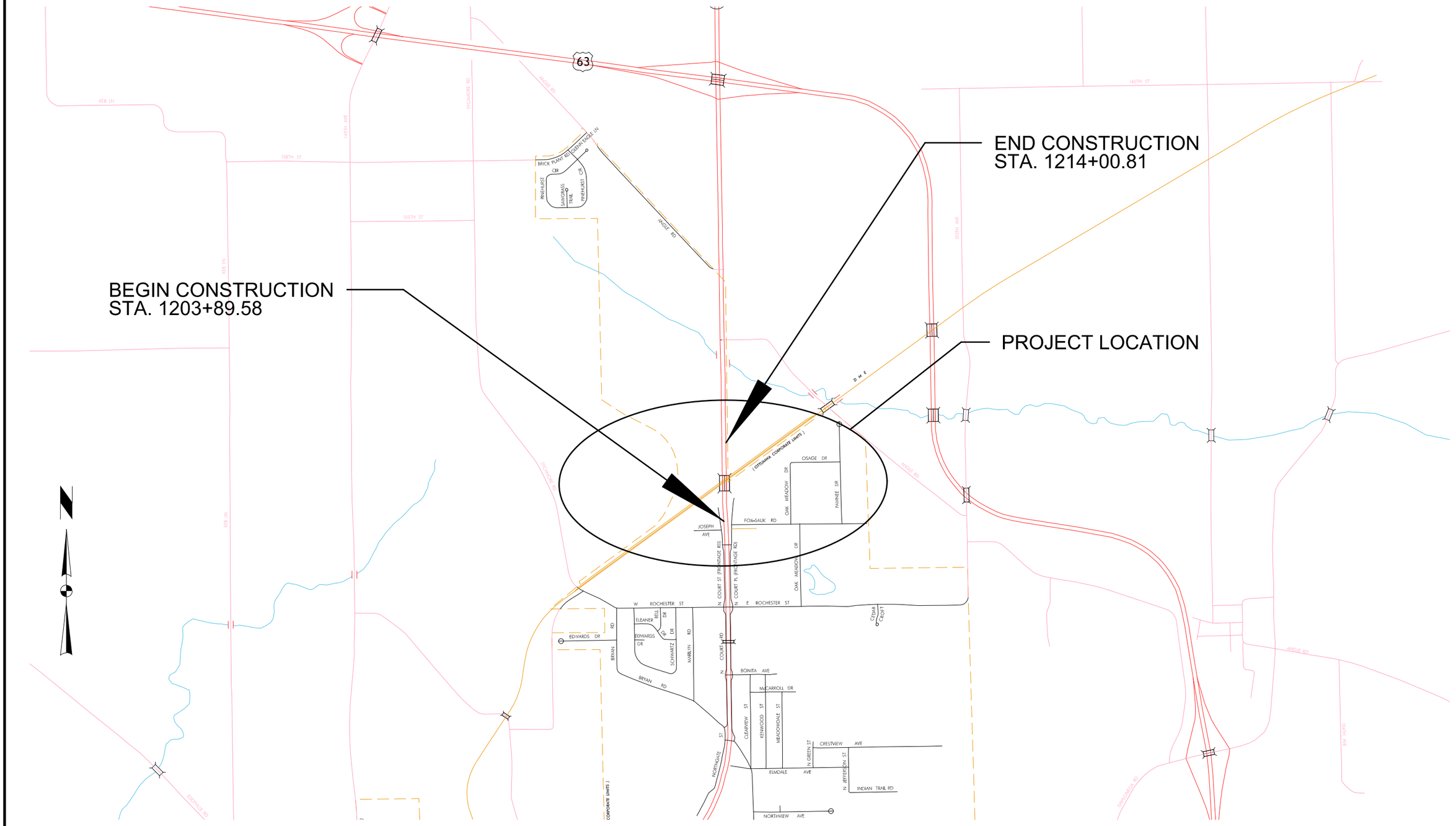
PRELIMINARY PLANS

Subject to change by final design.

D2 PLAN - Date: 04/17/2024

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	WAPELLO COUNTY	PROJECT NUMBER BRF-149-1(096)--38-90	SHEET NUMBER A.1

11:15:23 10/04/2024 skoontz pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9014903022\Design\CADD_Files\Sheet_Files\SHT_90149096_A01.dgn



FILE NO.	ENGLISH	DESIGN TEAM **WHKS & CO.**	**WAPELLO** COUNTY	PROJECT NUMBER **BRF-149-1(096)--38-90**	SHEET NUMBER **A.2**

11:15:24 10/04/2024 skoontz pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9014903022\Design\CADD_Files\Sheet_Files\SHT_90149096_A01.dgn

Wapello County BRF-149-1(096)- -38-90; D00 (draft) March 18, 2024

TO OFFICE: District 5

ATTENTION: Bob Younie

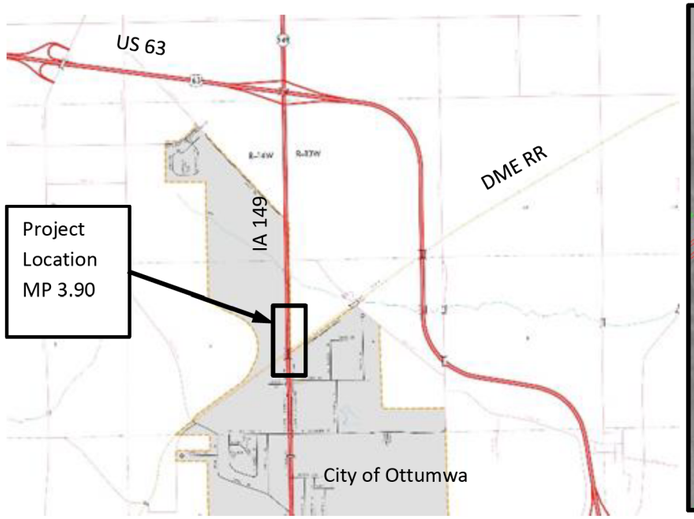
FROM: WHKS & Co., Mason City

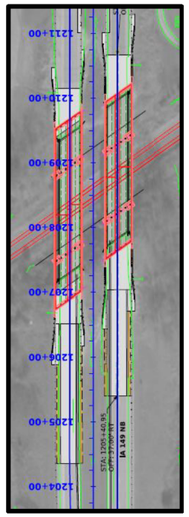
SUBJECT: D00, Concept Statement – Draft

DATE: March 18, 2024

COUNTY: Wapello
PROJ. NO.: BRF-149-1(096)- -38-90
PIN: 22-90-149-030
FOLDER: 9014903022

PROJECT LOCATION:
IA 149 over the Dakota, Minnesota, and Eastern Railroad in Ottumwa.





PROJECT DATA:

ROUTE: IA 149
LENGTH: 0.07 miles
PLANNING CLASSIFICATION: 3 (Area Development)
MAINTENANCE SERVICE LEVEL: C
NHS ROUTE: No
TRAFFIC: Year 2027: 6,200 ADT with 11% Trucks
Design Year 2047: 6,800 ADT with 11% Trucks

PURPOSE AND NEED:
This project provides for the replacement of the existing NB/SB dual bridges over the DME Railroad. Both bridges are 3-span continuous steel welded-girder structures, a design vulnerable to fatigue cracking caused by out-of-plane bending. Both bridges have cracked beams and were retrofitted in 2008 per the Fatigue Retrofit Plan. The bridges are narrow compared to the approach roadways. Neither bridge meets current criteria for vertical underclearance over the railroad, or horizontal underclearance to the bridge piers. The NB bridge has had one deck overlay (2002), and the SB bridge has had two deck overlays (1981, 2004).

FEASIBLE ALTERNATIVE(S):

Proposed Alternative:

Remove existing dual 215’ x 30’ bridges and replace with dual 274’ x 40’ PPCB bridges, three-span, skewed 35 degrees right-ahead, with BTB beams, frame piers, and integral abutments. Proposed span lengths are 71’ – 132’ - 71’. The profile grade will be raised ~16-inches to provide 23’-4” clearance over the existing two railroad tracks in the center span; each roadway has a unique profile grade due to the roadway’s skew angle in relation to the railroad’s alignment. Proposed main span length provides greater than 25.0 ft horizontal clearance to the centerline of the nearest track so “heavy” pier construction requirements do not apply and clear spans the 100-ft-wide railroad right-of-way east of the IA 149 centerline. 2.5H:1V berm slopes (normal to the bridge) are proposed. See draft Type, Size, and Location (TS&L) drawings attached as Exhibit B1 and B2.

Roadway reconstruction limits are shown on the attached plan and profile sheet; see Exhibits D1 and D2. For the purposes of this concept, 10” PCC pavement is assumed for the non-reinforced bridge approach panels. See Exhibits D1 and D2.

It is recommended to maintain as originally constructed the bridge berm foreslopes (ranging from 2.5H:1 to 3H:1V), due to the modest rise in the profile grade, the limited pavement reconstruction needed, a lack of crash history associated with these slopes, and the many likely utility conflicts that may occur if the foreslopes were to be flattened. Existing bridge approach guardrails and foreslope-protection cable barriers, updated in 2022, will be removed and reinstalled/replaced.

Bridges will be replaced one-at-a-time utilizing Two-Lane, Two-way Operations (TLTWO) with crossovers constructed south and north of the bridge locations.

Note that the railroad right-of-way west of IA 149 is 200 ft wide.

Alternatives considered, but not proposed:

1) Dual bridges providing a 25-foot minimum horizontal clearance from the two existing railroad tracks with piers located within the railroad right-of-way;
2) Dual bridges clear-spanning the 100 foot railroad right-of-way, providing a minimum 23’-4” vertical clearance over a third non-existing RR track north of the two existing tracks, and
3) Dual bridges clear-spanning the 200 ft railroad right-of-way.

Analysis of these alternatives is described in the “Concept Analysis and Supporting Data” section following.

RECOMMENDATIONS:
Proceed with the Proposed Alternative. Replace existing bridges with dual 274’ x 40’ PPCB three-span bridges. Total estimated project cost is $6,886,000 in current-year funds. Adjusted to FY 2028 funds, the cost estimate is $8,212,000.

FUNDS PROGRAMMED:
This project is currently listed in the 2024-2028 Iowa Transportation Improvement Program as a bridge replacement project scheduled for FY 2028 with an estimated cost of $8,127,000.

PROJECT IMPACTS:
Designed by: WHKS & Co. thru D5, Final Design Undetermined.

Design Impact	Assistance Requested (Y/N)	Remarks
ADA:	N	
Agreements/Notification Letters:	Y	City of Ottumwa and Wapello County
Bridges and Structures:	Y	
Consultant:	Y	WHKS & Co. thru D5
Contracts:	N	
Design/Methods:	N	
Location and Environment:	N	
Maintenance: (Shop Location)	N	Ottumwa Maintenance Garage
Project Management:	N	
Railroad:	Y	FRA # 375788T, DME / CP
RCE: (Office Name)	N	Fairfield RCE
Right of Way:	N	District 5 has assisted with confirming the RR right-of-way
Soils:	Y	Foundation Design, analysis of berm foreslope stability given raise in profile grade
Survey/Photogrammetry:	N	Survey by WHKS & Co.
Systems Planning:	N	
Traffic and Safety:	N	
Utilities:	Y	
Other:	N	

CC:
S. Anderson
B. Azeltine
J. Bartholomew
H. Beach
C. Brakke
D. Biesler
K. Brink
M. Buttz
G. Cagle
M. Chambers
M. Claeys
D. Claman
B. Clancy
N. Cuva
M. Dell
B. Dolan
E. Engle
E. Gansen
J. Garton

S. Gent
R Harris
J. Harris
J. Hart
M. Hobbs
B. Hofer
A. Karimpour
G. Karssen
M. Kennerly
J. Klein
J. Laaser-Webb
R. Larsen
B. Lauderman
N. Lind
D. Maifield
S. Majors
S. McElmeel
W. Musgrove
J. Nelson
D. Newell
K. Nicholson
T. Nicholson
S. Nielsen
M. Nop
K. Olson
M. Ortiz-Pagan
K. Patel
G. Pedersen
A. Poole
C. Poole
B. Porter
C. Purcell
K. Rauk
R. Reichter
J. Ridlen
M. Ross
M. Schmitt
M. Serio
W. Sorenson
D. Sprengeler
C. Steffensmeier
M. Swenson
B. Thede
H. Torres-Cacho
C. VanBuskirk
B. Walls
J. Weber
A. Welch
E. Wright
B. Younie
G. Zittergruen

CONCEPT ANALYSIS & SUPPORTING DATA:

Necessary supporting data may be linked in the analysis to ProjectWise.

Date of Field Review:
A combined DO/D2 field review is proposed at the time of the D2 (Field Exam) event.

Participants:
No concept review held in the field.

PAVEMENT:

Existing Conditions:
IA 149 is a dual-roadway facility. Each roadway has two 12-foot lanes, 4-foot paved outside and median shoulders separated by a 50-foot wide median (edge of travel lane to edge of travel lane, inclusive of median shoulders). A 2022 project, Wapello STP-149-1(90)- -2C-90, Mill/HMA Overlay, addressed pavement conditions on both roadways north and south of the dual bridges.

The existing SB pavement consists of a 10-7-10 PCC pavement, overlayed with 3 inches of HMA. The existing NB roadway consists of a 10-inch PCC pavement. Both roadways were later milled 0.75 inches and resurfaced with 3.5 inches of HMA. The 2022 project milled 2-inches of existing HMA, added a 1-inch interlayer course, a 1.5-inch HMA strengthening course north of the bridges only, and a 1.5-inch HMA surface course.

Pavement History [2023 Test Sections by Milepost]:
MP 003.53 to 004.21
Original Pavement: 1927, PCC, 10” – 7” – 10” inside lanes, Linwood C. LST.
Improvements: 1963, PCC, 10” outside Lanes, Douds, C. LST
1963, HMA, 3”, inside lanes, 1963, Douds, C. LST
2004, HMA, 3.5”, both roadways
2019, PCC Patching
2022, Mill 2”, place 1” HMA interlayer and 1.5” HMA surface course

Pavement Design & dTIMS Recommendation:
This concept assumes a 10” PCC pavement for the new pavement. Bridge approach sections to be constructed with subbase and drainage provisions per Standard Road Plan BR-106.

Patching/Curb Repairs:
No patching anticipated.

ADA/Sidewalk/Trails:
No pedestrian or trail facilities on existing facility. No such improvements are proposed.

Wapello County BRF-149-1(096)- -38-90; D00 (draft) March 18, 2024

SAFETY:

Roadway Design Criteria:
Proposed roadway design criteria were developed consistent with Section 1C-1 of the Design Manual for urban expressways. See Exhibit C for specific criteria and project values.

Crash Analysis
The safety study period and limits for this evaluation was determined to be January 1, 2019 through December 31, 2023 (5 year period), extending from the intersection with the N. Court Road Connectors on the south and the intersection with the Memorial Lawn Cemetery access on the north, inclusive of both intersections.

There were 12 total crashes within the study period and limits, resulting in zero (0) fatal injuries, zero (0) serious injuries, four (4) minor injuries, one (1) possible injury. Four (4) crashes produced injuries, and eight (8) crashes were property-damage-only.

Nine (9) of the 12 crashes, resulting in all five (5) of the reported injuries, were located at the intersection with Joseph Avenue and Fox-Salk Road south of the proposed bridge replacements.

One south-bound (SB), property-damage-only, fixed-object crash occurred at the bridge location, involving a single-vehicle impact with the face of a guardrail. Roadway conditions were reported as dry. The crash occurred on an April 2021 Thursday between 2:00 AM and 4:00 AM. Driver was female, age 31, and was reported as being asleep/fatigued. Two other crashes involved the north bridge berm foreslopes, both animal-related, property-damage-only crashes occurring in 2019 and 2023.

The one crash at the bridge location will be addressed by this project by providing updated bridge approach guardrails and full-shoulder-width bridges.

Intersection Analysis:
The project area, including the intersection south of the bridges at the N. Court Road Connection, was addressed by a 2002 HMA resurfacing project (Wapello STP-149-1(90)- -2C-90/HSIPX-149-1(91)- -3L-90) so no further safety improvements at this intersection will be considered in this bridge replacement project.

Railroads:
The dual bridges being replaced take IA 149 over the Dakota, Minnesota, and Eastern Railroad (DME), operating on a line owned by the Canadian Pacific Railroad. FRA # 375788T.

Additional Safety & Operation Considerations:
Major City Events include:

- American Gothic Performing Arts Festival – mid-June
- Wapello County Fair – mid-June
- Elks 347 Pro Balloon Races – Mid- to late June
- Wapello County 4-H Expo – Mid-July
- Ottumwa Octoberfest – Early October

Utilities:

Alliant Energy

- Overhead electric at the west ROW line.
- Overhead electric between IA 149 and N. Court Street, SE quadrant.
- Underground gas crossing IA 149 ~300 ft south of bridges.

Aureon Network Services

- Fiber optic east of N. Court Street – No Impact expected.

Century Link

- Multiple lines in both west and east ditches. One line crossing IA 149 diagonally under bridges.

Iowa Communications Network

- One underground fiber optic cable east ditch.

LISCO/LTDS

- One buried fiber optic cable east ditch south of bridges.
- One buried fiber optic cable crossing IA 149 ~1200 ft south of bridges.
- One aerial fiber optic cable east ditch south of bridges.

MidAmerican

- One underground gas crossing IA 149 ~300 ft south of bridges.

City of Ottumwa

- Sanitary Sewer under IA 149 NB lanes, beginning at manhole ~700 feet south of bridges and extending south.

STRUCTURES and DRAINAGE:

Bridges:

1) **Northbound:** Maint # 9003.9R149; FHWA #50670; 220’ x 30’ steel girder bridge. Built in 1963; design No. 260. Bridge Condition Index is 68.9.

   The NB bridge is a 3-span continuous steel welded-girder bridges with a 35° RA skew. The abutments are stub concrete, supported on treated wooden friction piling. The piers are open two-column concrete cantilever piers, supported on steel H-piling founded on rock.

   The deck is original PC concrete and was overlaid with dense low-slump concrete in 2002. Retrofit rectangular concrete bridge rails were installed in 1981. In 2008, the bridge was retrofitted by loosening diaphragm bolts to address the potential for fatigue cracking caused by out-of-plane bending.

   Among the distresses noted in the 2022 In-Depth Inspection report, are: cracks and spalls in both curbs adjacent to old post connections; crack in Beam 4, Span 3, Diaphragm 3 drilled in 2019; beam end deterioration for Beams 1, 2, 3, and 4; light to severe rust for the end diaphragms over the

abutments; moderate to severe erosion below deck drains; bottom of deck has several cracks, a few hollow areas and areas of light to heavy leaching; beams have some scattered light rust and areas with blistering paint; pier bearings with loose or protruding anchor bolts; abutments have cracks, light to heavy leaching, and some patches and hollow areas; abutment bearings have rust, light to heavy debris and some bent anchor bolts.

2) **Southbound:** Maint # 9003.9L149; FHWA #50680, 220’ x 30’ steel girder bridge. Built in 1963; design No. 260. Bridge Condition Index is 60.5.

   The bridge is a 3-span continuous steel welded-girder bridges with a 35° RA skew. The abutments are stub type, supported on treated wooden friction piling. The piers are open two-column concrete cantilever piers, supported on steel H-piling founded on rock.

   The deck is original PC concrete and were overlaid with dense low-slump concrete in 1981 and re-overlaid in 2004. In 2008, the bridge was retrofitted by loosening diaphragm bolts to address the potential for fatigue cracking caused by out-of-plane bending.

   Among the distresses noted in the 2022 In-Depth Inspection report, are: cracks, spalls, and hollow areas in both curbs, moderate erosion below deck drains; bottom of deck has numerous map and random cracks, a few hollow areas with exposed rebar and areas of light to heavy leaching; beams have some scattered light rust and areas with blistering paint, confirmed fatigue cracks with drilled holes; pier bearings with loose or protruding anchor bolts; abutments have cracks, light to heavy leaching, and some patches and hollow areas; abutment bearings have light to heavy rust.

Bridge Berm Foreslopes:

The existing bridge berm foreslopes are 3V:1H or steeper. North of the bridges, the foreslopes end in a non-ditch condition, i.e., sheet flow onto the adjacent properties. South of the bridges, the foreslopes end in defined ditches. Commercial developments adjacent to the SE and SW berm foreslopes may constrain the opportunity to flatten the slopes. Adjacent to the NE berm slope is the Memorial Lawn Cemetery where a circulating cemetery roadway and gravesites may preclude any flattening of the berm foreslope.

Culverts/Pipes: Existing 30” diameter reinforced concrete pipe culverts are located under the bridge berms, within the railroad right-of-way. An RCP culvert may be in conflict with a proposed pier. The conflict can be resolved by rerouting the RCP or performing hydraulic calculations to determine if it can be removed and the water handled with a ditch. This potential conflict will be further evaluated in Final Design.

Guardrail: Bridge approach guardrails were updated with the 2002 HMA resurfacing project. The 2022 HMA resurfacing project shielded the SE Berm foreslope (NB direction of travel, approaching the bridge) and a portion of the NW berm foreslope (SB direction of travel, approaching the bridge). These existing guardrail materials will be removed and reinstalled, as possible, with this bridge replacement project.

Drainage District:

None

PROJECT IMPACTS:

Impacts Map:
Memorial Lawn Cemetery is in the immediate NE quadrant of the project location.

Environmental:
No impacts identified during concept development.

TSMO/Traffic Control:
Posted speed limit is 55 mph. The regulatory speed drops to 45 mph approximately 850 feet south of the dual bridges. 2022 AADT is approximately 7,000 vehicles per day with 6% trucks.

Recommended is construction of the dual bridges one-at-a-time utilizing a two-lane, two-way operation (TWTLO) with mainline crossovers constructed north and south of the bridges' location. Workzone will comply with provisions of Iowa DOT Standard Road Plan TC-61 (55 mph, 50-foot median), with potential for a special crossover layout south of the dual bridges reflecting a variable width median, a reduced regulatory speed limit south of the dual bridges, and the presence of a minor intersection.

Possible detours routes (see map of routes considered in Exhibit F) were reviewed and found to be not recommended, as follows:

West Detour

A. IA 149 to 2nd Street to N Forest Avenue within Ottumwa (becoming 145th Avenue in Wapello County) to US 63 to IA 149. 2nd Street was former IA 23 (Eddyville Road), jurisdiction transferred to the local governments in 1997. 2nd Street is a two-lane facility, some portions with on-street parking. 2nd Street has an aging HMA surface for most of its length. 2nd Street passes through a downtown commercial area and transitions to residential developments. N. Forest Avenue (145th Avenue in the county) is a two-lane county road and parallels IA 149. In the rural portion, this roadway generally has an HMA surface showing some age and distress, narrow- to moderate-width granular shoulders, some horizontal and vertical geometry marked with no-passing zones. Out-of-distance travel for thru IA 149 motorists would be approximately 2.1 miles. Detour agreements with the City of Ottumwa and Wapello County would be needed. This detour option has many disadvantages and was dismissed from further consideration.

East Detour: All detour routes to the east of IA 149 involve a common section of US 63 between the IA 149 interchange and the H25 interchange.

B. IA 149 to West Woodland Avenue to N. Court Street to E Alta Vista Ave (becoming H25) to US 63 to IA 149. The county road/city street portions are two-lane roadways, portions with on-street parking, and aging HMA surfaces. Intersection geometry would need to be evaluated closely. This route would pass thru predominantly residential areas, and past Horace Mann Elementary School, the Ottumwa Cemetery, the Ottumwa Golf and Social Club, and Indian Hills Community College. Out-of-distance travel for thru IA 149 motorists would be approximately

Wapello County BRF-149-1(096)- -38-90; D00 (draft) March 18, 2024

2.6 miles. Detour agreements with the City of Ottumwa and Wapello County would be needed. This detour option has many disadvantages and was dismissed from further consideration.

C. IA 149 to Woodland Avenue to N. Court Street to E. Pennsylvania Ave (becoming 100th Street) to US 63 to IA 149. Much of E. Pennsylvania Avenue is a three-lane with a newer PCC pavement. This route passes the Ottumwa Regional Health Center, and otherwise mixed residential and commercial developments. Out-of-distance travel for thru IA 149 motorists would be approximately 3.39 miles. Detour agreements with the City of Ottumwa and Wapello County would be needed. Geometry and pavement conditions appear the most promising of the possible local road detour routes considered.

D. IA 149 to US 34 to US 63 to IA 149. This route has the advantage of being an all Primary Highway route, and pavement conditions and geometry are the best among the routes. This route also avoids residential and significant local developments to a large extent. Out-of-distance travel for thru IA 149 motorists would be approximately 4.58 miles. No detour agreements would be needed with local governments.

Detouring IA 149 is not recommended. Any of these detour routes would result in significant out-of-distance travel for thru IA 149 traffic, and significantly disrupt traffic operations for the large part of the City of Ottumwa that lies north of the Des Moines River.

ROW:
No ROW is anticipated for the roadway.

Agreements/Notification Letters:
Notification letters to City of Ottumwa and Wapello County. Construction agreements with DME/CP railroads.

Project Coordination
No other known projects with which to coordinate.

Previous Projects List:

- U-UG-F 159(6) – Grading/PCC Paving, 1963
- U-UG-F 159(6 – Bridges and Culverts, 1963
- Wapello STP-149-1(90)- -2C-90/HSIPX-149-1(91)- -3L-90, HMA Resurfacing with Milling/HMA Paved Shoulder, 2022.

FEASIBLE ALTERNATIVES & RECOMMENDATION:

Proposed Alternative:
Remove existing dual 215' x 30' bridges and replace with dual 274' x 40' PPCB bridges, three-span, skewed 35 degrees right-ahead, with BTB beams, frame piers, and integral abutments. Proposed span

lengths are 71’ – 132’ - 71’. See draft Type, Size, and Location (TS&L) drawings attached as Exhibit B1 and B2.

The profile grade will be raised ~16-inches to provide 23’-4” clearance over the existing two railroad tracks in the center span, and to account for the proposed beam depth. Proposed main span length provides greater than 25.0 ft horizontal clearance to the centerline of the nearest track so “heavy” pier construction requirements do not apply and clear spans the 100-ft- wide railroad right-of-way east of the IA 149 centerline. 2.5H:1V berm slopes (normal to the bridge) are proposed.

Roadway reconstruction limits are shown on the attached plan and profile sheets (See Exhibits D1 and D2). For the purposes of this concept, 10” PCC pavement is assumed for the non-reinforced bridge approach panels.

It is recommended to maintain as originally constructed the bridge berm foreslopes (ranging from 2.5H:1 to 3H:1V), due to the minimal rise in the profile grade, the limited pavement reconstruction needed, a lack of crash history associated with these slopes, and the many likely utility conflicts that may occur if the foreslopes were to be flattened. Existing bridge approach guardrails and foreslope-protection cable barriers, updated in 2022, will be removed and reinstalled/replaced.

Bridges will be replaced one-at-a-time utilizing Two-Lane, Two-way Operations (TLTWO) with crossovers constructed south and north of the bridge locations. See attached plan for the proposed location of the south median crossover (Exhibit E).

Alternatives Considered, but Not Proposed.

1) Dual bridges providing a 25-foot minimum horizontal clearance from the two existing railroad tracks with piers located within the railroad right-of-way. Alternative 1 was considered for baseline comparison purposes. This is the minimum bridge length determined by the FHWA method for full participation setting the bridge berms at the top of rail elevation 26’ from centerline of nearest track (BDM 3.4.1.4). Piers are located at least 25’ from centerline of nearest track. This option is not preferred due to potential for objection to construction of piers within railroad ROW.

2) Dual bridges clear-spanning the 100 foot railroad right-of-way, providing the minimum 23’-4” vertical clearance over a third non-existing track north of the two existing tracks. Originally, the existing bridges cleared 3 tracks. The railroad has since then removed one set of tracks. This option would not require any additional bridge length but would require a higher profile grade resulting in an estimated additional 1100 SY of pavement removal and replacement, along with undetermined additional earthwork quantities.

3) Dual bridges clear-spanning the 200 ft railroad right-of-way west of IA 149. Clear-spanning this 200 foot right-of-way is not feasible due to the required grade raise of 3.5’ or greater. The 35 degree skew requires a minimum center span length of 250 ft. Welded plate girders would be required because prestressed concrete beams are unable to span that distance. Structure depth of 8’ (min.) would be required. Per BDM 3.6.1.7, end span lengths of 75% of the center span are desired,

resulting in a bridge length of 625’. Profile runout to touchdown points would be hundreds of feet requiring a large amount of grading and pavement replacement. Roadway foreslopes are currently approximately 2H:1V and may require slope stability analysis and/or soil improvements due to the grade raise. Adjacent properties including a cemetery at the northeast corner prevent obtaining additional ROW for grading to flatten foreslopes.

Recommendation:

Proceed with the Proposed Alternative. Replace existing bridges with dual 274’ x 40’ PPCB three-span bridges.

Estimate:

Estimate Items Report
Version D00-Concept Cost Estimate
Project PRJ-54217 PHASE-1

Item Number	Item Description	Units	Quantity	Cost Used	Suggested Cost	Line Total
Roadway Items						
2102-0425070	SPECIAL BACKFILL	TON	289.000	$39.48	$39.48	$11,408.54
2102-2625000	EMBANKMENT-IN-PLACE	CY	1,000.000	$21.48	$21.48	$21,478.80
2115-0100000	MODIFIED SUBBASE	CY	492.000	$59.02	$59.02	$29,037.99
2121-7425020	GRANULAR SHOULDERS, TYPE B	TON	80.000	$40.24	$40.24	$3,219.26
2122-5190095	PAVED SHOULDER, P.C. CONCRETE, 9.5 IN.	SY	464.000	$85.52	$85.52	$39,681.28
2301-0690203	BRIDGE APPROACH, BR-203	SY	1,067.000	$199.43	$199.43	$212,794.90
2301-1033095	STANDARD OR SLIP FORM PORTLAND CEMENT CONCRETE PAVEMENT, CLASS C, CLASS 3 DURABILITY, 9.5 IN.	SY	3,193.000	$113.11	$113.11	$361,160.23
2304-0100000	DETOUR PAVEMENT	SY	4,135.000	$34.90	$34.90	$144,314.39
2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL	LF	600.000	$8.30	$8.30	$4,981.20
2505-4008300	STEEL BEAM GUARDRAIL	LF	200.000	$27.76	$27.76	$5,551.66
2505-4008410	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-201	EA	8.000	$2,683.06	$2,683.06	$21,464.49
2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED	EA	8.000	$299.20	$299.20	$2,393.61
2505-4021720	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205	EA	8.000	$2,850.50	$2,850.50	$22,804.04
2505-6000111	HIGH TENSION CABLE GUARDRAIL	LF	2,000.000	$20.00	$0.00	$40,000.00
2505-6000121	HIGH TENSION CABLE GUARDRAIL, END ANCHOR	EA	8.000	$4,000.00	$0.00	$32,000.00
2510-6745850	REMOVAL OF PAVEMENT	SY	6,252.000	$11.65	$11.65	$72,835.80
PCT-000-000	MOBILIZATION (000-000)	% of Project	1,518,705.470	10.00%	8.44%	$151,870.55
PCT-000-030-020	TEMPORARY TRAFFIC CONTROL (000-030-020)	% of Project	1,518,705.470	2.50%	0.57%	$37,967.64
PCT-999	UNQUANTIFIED	% of Project	1,518,705.470	20.00%		$303,741.09
Southbound Bridge Items						
2401-6745625	RMVL OF EXISTING BRIDGE	LS	1.000	$159,000.00		$159,000.00
PARA-020-020	Bridges	Parametric	11,094.000	$155.00	$135.94	$1,719,570.00
PCT-000-000	MOBILIZATION (000-000)	% of Project	2,683,671.430	10.00%		$268,367.14
PCT-999	UNQUANTIFIED	% of Project	2,683,671.430	20.00%		$536,734.29
Northbound Bridge Items						
2401-6745625	RMVL OF EXISTING BRIDGE	LS	1.000	$159,000.00		$159,000.00
PARA-020-020	Bridges	Parametric	11,094.000	$155.00	$135.94	$1,719,570.00
PCT-000-000	MOBILIZATION (000-000)	% of Project	2,683,671.430	10.00%	8.44%	$268,367.14
PCT-999	UNQUANTIFIED	% of Project	2,683,671.430	20.00%		$536,734.29
					Total:	**$6,886,048.33**

The estimate is calculated in 2024 dollars. Accounting for 4.5% annual inflation from 2024 to 2028, the estimated project cost is $8,212,000 for FY 2028.

Funds Programmed:

This project is currently listed in the 2024-2028 Iowa Transportation Improvement Program as a bridge replacement project scheduled for FY 2028 with an estimated cost of $8,127,000.

Development Schedule:

D01 Prel. Survey	01/26/2024
D00 Concept	02/23/2024
D02 Field Exam	03/29/2024
B01 Prel. Bridge	07/26/2024
D05 ROW Plans	09/26/2024
L05 Letting	10/19/2027

D2 is behind schedule, but WHKS will get the project back on schedule for the D5 event

The posted speed limit is 55 mph over the bridges, so the design speed would be 60 mph;
Refer to Sheet A.11 for more information regarding design speed

Wapello County BRF-149-1(096)- -38-90; D00 (draft) March 14, 2024

The Design Criteria was changed from the Concept. The new Design Criteria is included on the next sheet

Exhibit C: Project Design Criteria

Roadway	**IA 149 over the Dakota, Minnesota, and Eastern Railroad in Ottumwa.**			
PIN Number	PIN 22-90-149-030		**Submittal Date**	
Project Number	BRF-149-1(096)- -38-90			**Approval Date**
District	District 5	**Assistant District Engineer**		
County	WAPELLO	**or**		
Route	IA 149	**Office Director**		
Location	over the Dakota, Minnesota, and Eastern Railroad in Ottumwa. MP 3.90			
Work Type	Bridge Replacement			
Segment Manager				
Designer	WHKS & Co.			
Design Manual Section 1C-1 Last Updated: 04-29-19	**Urban Multilane Roadways (Urban Arterials)**			
Design Element		Preferred	Acceptable Criteria	Project Values
Design speed (mph)		The anticipated posted speed limit	55	55
Maximum superelevation rate (Refer to Section 2A-2)		4%	8%	N/A, Tangent Section
Design lane width (ft)		12	11	12
Full depth paved width (ft)	Outside lane	Design lane width + curb and gutter unit or 12 feet for roadways with shoulders	Match design lane width	12
	Inside lane(s)	Design lane width + curb and gutter unit. 12' for roadways without a curb and gutter unit	Match design lane width	12
Right turn lane or an auxiliary lane (ft)		12	10	N/A
Left turn lane (ft)	With raised or painted median	12 ft + median	10 ft + median	N/A
	With depressed median	12	10	N/A
Two-way left turn lane (ft)		14	11	N/A
Parking lane width (ft)		10	7	N/A
Pavement cross-slope (on tangent sections)	Through lanes	2%. However, when adjacent lanes slope in the same direction, increase slope by 0.5% per lane up to 3%	1.5% minimum, 3% 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)	Shoulders	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 and gutter units	Match pavement cross-slope	6% maximum	N/A
	Parking lanes	1% greater than pavement cross-slope	6% maximum	N/A
Curb type (Refer to Section 3C-2)	Design speed ≤ 45 mph	6-inch standard	any shape	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	
	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	2.5V:1V
Transverse Slopes	w/ drainage structures	8:1	6:1	6:1
	w/o drainage structures	10:1	6:1	6:1
Ditches (Refer to Section 3G-1)	Outside ditch (depth x width) (ft)	5 x 10	–	5 x 10
Median width (ft) (Refer to Section 3E-1)		See Section 3E-1	0	50 ft
Bridge width—new*	Bridge length ≤ 200 ft	design lane widths + effective shoulder widths or design lane width + 3 ft each side in curb and gutter section	design lane widths + effective shoulder widths or curb-to-curb width in curb and gutter section**	N/A
	Bridge length > 200 ft	design lane widths + effective shoulder widths or design lane width + 3 ft each side in curb and gutter section	design lane widths + 4 ft offset each side for roadways with shoulders or curb-to-curb width in curb and gutter section**	32
Bridge width—existing*		design lane widths + no less than 2 ft left and right	design lane widths + 2 ft left and right of the design widths	N/A
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	23' - 4"
	Sign truss and pedestrian crossings	17.5	17	N/A
Structural Capacity		Contact Office of Bridges and Structures	Contact Office of Bridges and Structures	
Level of Service		C	D	D

*FHWA notification via email is required if acceptable criteria is not met on the NHS system (No formal design exception required)
** If travel lanes are less than 12 ft wide contact the Methods Section for assistance.

Roadway	**IA 149 over the Dakota, Minnesota, and Eastern Railroad in Ottumwa.**		
PIN Number	PIN 22-90-149-030	**Submittal Date**	
Project Number	BRF-149-1(096)--38-90		**Approval Date**
District	District 5	**Assistant District Engineer**	
County	WAPELLO	**or**	
Route	IA 149	**Office Director**	
Location	over the Dakota, Minnesota, and Eastern Railroad in Ottumwa. MP 3.90		
Work Type	Bridge Replacement		
Segment Manager			
Designer	WHKS & Co.		

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

Urban Multilane Roadways (Urban Arterials)

Design Element		Preferred	Acceptable Criteria	Project Values
Design speed (mph)		The anticipated posted speed limit	55	45
Maximum superelevation rate (Refer to Section 2A-2)		4%	8%	N/A, Tangent Section
Design lane width (ft)		12	11	12
Full depth paved width (ft)	Outside lane	Design lane width + curb and gutter unit or 12 feet for roadways with shoulders	Match design lane width	12
	Inside lane(s)	Design lane width + curb and gutter unit. 12' for roadways without a curb and gutter unit	Match design lane width	12
Right turn lane or an auxiliary lane (ft)		12	10	N/A
Left turn lane (ft)	With raised or painted median	12 ft + median	10 ft + median	N/A
	With depressed median	12	10	N/A
Two-way left turn lane (ft)		14	11	N/A
Parking lane width (ft)		10	7	N/A
Pavement cross-slope (on tangent sections)	Through lanes	2%, However, when adjacent lanes slope in the same direction, increase slope by 0.5% per lane up to 3%	1.5% minimum, 3% 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)	Shoulders	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 and gutter units	Match pavement cross-slope	6% maximum	N/A
	Parking lanes	1% greater than pavement cross-slope	6% maximum	N/A
Curb type (Refer to Section 3C-2)	Design speed ≤ 45 mph	6-inch standard	any shape	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	
	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	2.5V:1V
Transverse Slopes	w/ drainage structures	8:1	6:1	6:1
	w/o drainage structures	10:1	8:1	6:1
Ditches (Refer to Section 3G-1)	Outside ditch (depth x width) (ft)	5 x 10	--	5 x 10
Median width (ft) (Refer to Section 3E-1)		See Section 3F-1	0	50 ft
Bridge width—new*	Bridge length ≤ 200 ft	design lane widths + effective shoulder widths or design lane width + 3 ft each side in curb and gutter section	design lane widths + effective shoulder widths or curb-to-curb width in curb and gutter section**	N/A
	Bridge length > 200 ft	design lane widths + effective shoulder widths or design lane width + 3 ft each side in curb and gutter section	design lane widths + 4 ft offset each side for roadways with shoulders or curb-to-curb width in curb and gutter section**	32
Bridge width—existing*		design lane widths + no less than 2 ft left and right	design lane widths + 2 ft left and right of the design widths	N/A
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	23' - 4"
	Sign truss and pedestrian crossings	17.5	17	N/A
Structural Capacity		Contact Office of Bridges and Structures	Contact Office of Bridges and Structures	
Level of Service		C	D	D

*FHWA notification via email is required if acceptable criteria is not met on the NHS system (No formal design exception required)
** If travel lanes are less than 12 ft wide contact the Methods Section for assistance.

Design year ADT =	

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

Effective Shoulder Width and Type for Multilane Arterials

Preferred (Values shown in feet)					Acceptable (Values shown in feet)					Project Values
	Rural Roadways		Urban Roadways			Rural Roadways		Urban Roadways		
Auxiliary lanes or turn lanes with shoulders	6		6		Auxiliary lanes or 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
Expressways	Outside		Median Side		Expressways	Outside		Median Side		
	Effective Shoulder Width	Paved Width	Effective Shoulder Width	Paved Width		Effective Shoulder Width	Paved Width	Effective Shoulder Width	Paved Width	
Routes where bicycles are to be accommodated	10	10	6	6	Routes where bicycles are to be accommodated	8	4	4	4	4' paved 4' granular (median and outside)
On roadways approaching urban areas (due to increased bike traffic)	10	10	6	6						
On all curves with a superelevation rate of 7.0% or greater	10	10	6	6	On all other Expressways (Multilane Arterials)	8	0*	4	4	
On roadways with design year ADT > 6500 vpd	10	6	6	6						
On all other Expressways (Multilane Arterials)	10	6	6	6						

*Requires safety edge-See 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:

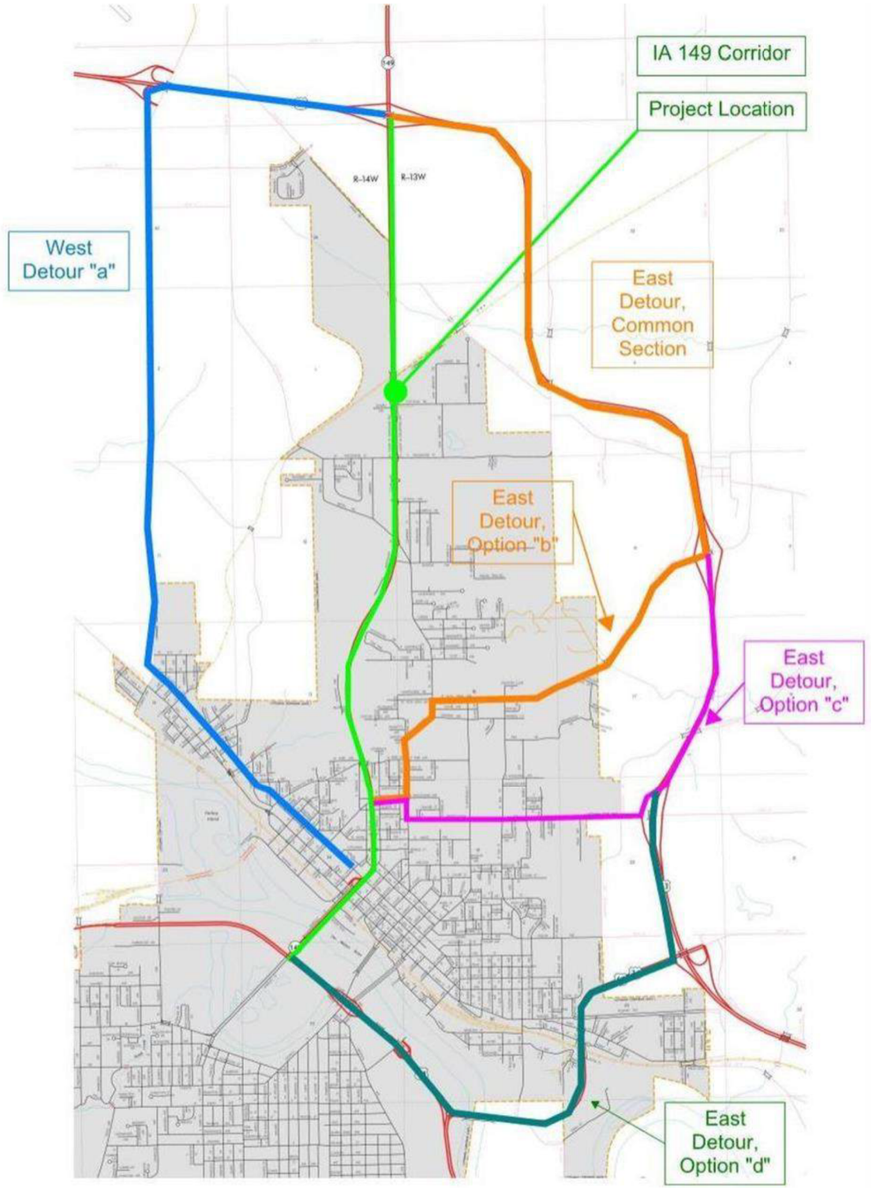
Roadway Design Speed (mph) =	

Design Manual Section 1C-1
Last Updated: 05-26-17

Design Criteria for Low Speed Roadways

Design Element			Preferred Criteria Design Speed, mph					Acceptable Criteria Design Speed, mph					Project Values
			25	30	35	40	45	25	30	35	40	45	
Stopping sight distance (ft) (Refer to Section 6D-1)			155	200	250	305	360	155	200	250	305	360	433
Minimum horizontal curve radius (ft) and superelevation rate (Refer to Sections 2A-2 and 2A-3)	Method 2 superelevation and side friction distribution	e = 4% max	See Table 10 in Section 2A-3					--					N/A
	Method 5 superelevation and side friction distribution	e_{max} = 6%	144	231	340	485	643	144	231	340	485	643	N/A
		e_{max} = 8%	--	--	--	--	--	134	214	314	444	587	N/A
Minimum vertical curve length (ft) (Refer to Section 2B-1)			75	90	105	120	135	75	90	105	120	135	200
Minimum rate of vertical curvature (K) (Refer to Section 2B-1)	crest vertical curves		12	19	29	44	61	12	19	29	44	61	87
	sag vertical curves	roadways without fixed source lighting	26	37	49	64	79	26	37	49	64	79	99
		roadways with fixed-source lighting	26	37	49	64	79	14	20	27	35	44	N/A
Minimum gradient (%)	(Refer to Section 2B-1)		0.5					0.3% with a curb, 0.0% without a curb					1.92%
Maximum gradient (%)	(Refer to Section 2B-1)	Urban roadways	5					--	9	8	8	7	5.01%
		Rural roadways						--	--	--	6	6	5.01%
Clear zone			See "Preferred Clear Zone" table in Section 8A-2					See "Acceptable Clear Zone" table in Section 8A-2					24

Exhibit F: Possible Detour Routes Reviewed



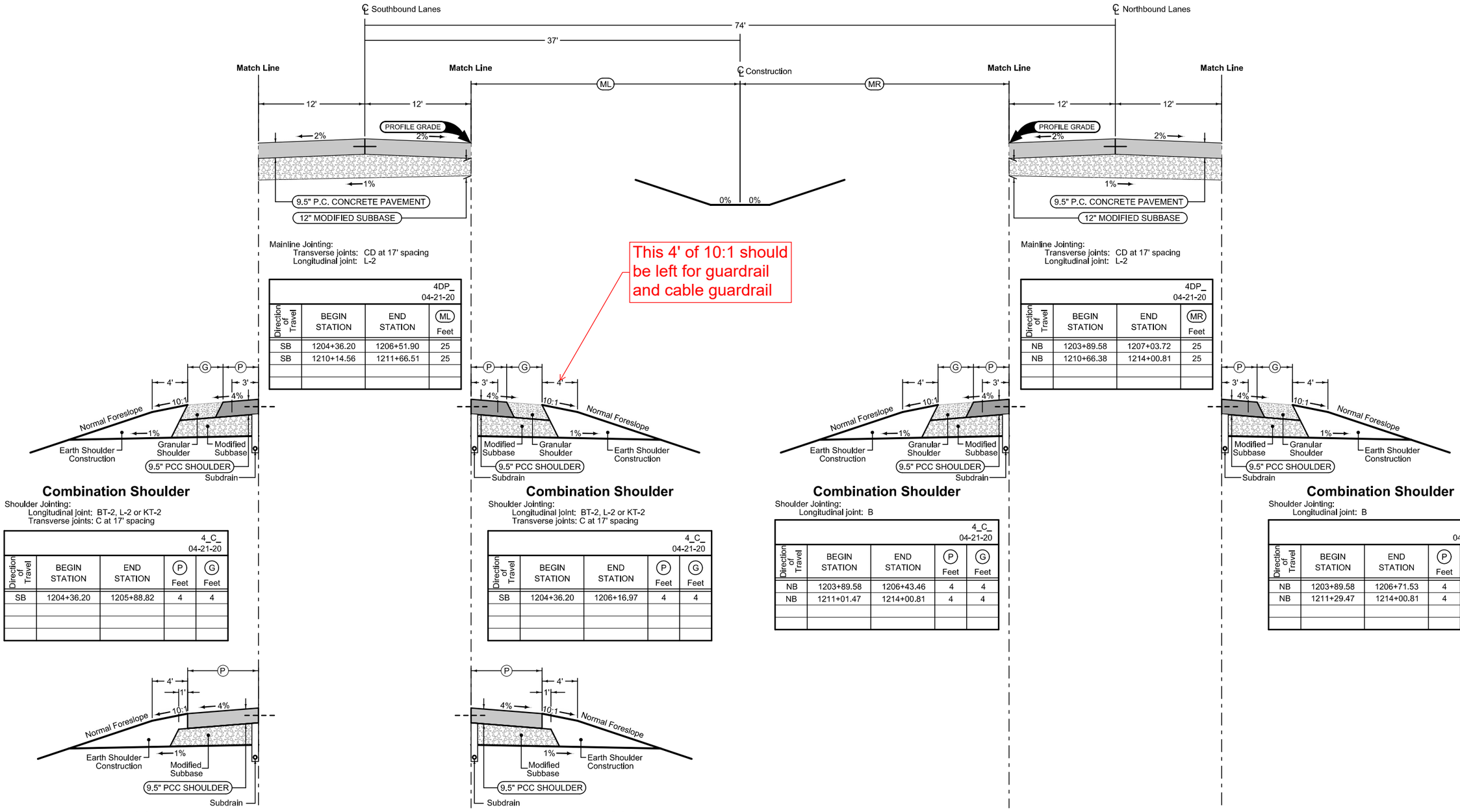
Field Exam Notes

After the Field Exam, WHKS evaluated profiles using design speeds of 50 mph and 60 mph:
The 50 mph vertical geometry expanded the profile by about 520'; The 60 mph vertical geometry expanded the profile by about 2700'
The existing vertical geometry correlates to a design speed of 45 mph
The 5-year crash history of this section of IA 149 includes 12 crashes, including 4 minor injuries and 1 possible injury; 9 of the 12 crashes occurred at the intersection just south of the bridges
AASHTO Green Book Section 3.2.2.5.1 pertains to this situation:

3.2.2.5.1 New Construction vs. Projects on Existing Roads

The stopping sight distance criteria in Tables 3-1 and 3-2 are appropriate for use in new construction projects where no constraints are present, since stopping sight distances that meet these criteria can typically be readily implemented. Sight distance improvements for projects on existing roads are often very costly. Recent research (*35*) has found little or no difference in crash experience between crest vertical curves that meet the stopping sight distance criteria in Tables 3-1 and 3-2 and those that do not, except where a design feature where drivers may need to change direction or speed is hidden from the driver's view. Therefore, in most cases, design elements at which the stopping sight distance is less than shown in Tables 3-1 and 3-2 may be left in place. However, where a roadway feature such as a horizontal curve, an intersection, a driveway, or a ramp terminal is hidden from the driver's view by the sight distance limitation or where a crash history review as part of the project development process finds a documented crash pattern that may be correctable by a sight distance improvement, improvement of stopping sight distance to the criteria presented in Tables 3-1 and 3-2 should be considered.

A meeting was held on 5/15, with staff from the Design Bureau, District 5 and WHKS, to discuss the design speed to be used going forward
Due to the lack of crash history and AASHTO Green Book Section 3.2.2.5.1, DOT staff decided to keep the profile shown in the D2 plans, 45 mph design speed (with minor tweaks)
The 45 mph speed limit sign will be moved from just south of the bridges to just north of the bridges with the project
A memo with more information has been uploaded to Projectwise in the following folder:
pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9014903022\Design\Correspondence\Decisions\



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

4DP_ 04-21-20

Direction of Travel	BEGIN STATION	END STATION	(ML) Feet
SB	1204+36.20	1206+51.90	25
SB	1210+14.56	1211+66.51	25

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

4DP_ 04-21-20

Direction of Travel	BEGIN STATION	END STATION	(MR) Feet
NB	1203+89.58	1207+03.72	25
NB	1210+66.38	1214+00.81	25

Combination Shoulder

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

4_C_ 04-21-20

Direction of Travel	BEGIN STATION	END STATION	(P) Feet	(G) Feet
SB	1204+36.20	1205+88.82	4	4

Combination Shoulder

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

4_C_ 04-21-20

Direction of Travel	BEGIN STATION	END STATION	(P) Feet	(G) Feet
SB	1204+36.20	1206+16.97	4	4

Combination Shoulder

Shoulder Jointing:
Longitudinal joint: B

4_C_ 04-21-20

Direction of Travel	BEGIN STATION	END STATION	(P) Feet	(G) Feet
NB	1203+89.58	1206+43.46	4	4
NB	1211+01.47	1214+00.81	4	4

Combination Shoulder

Shoulder Jointing:
Longitudinal joint: B

4_C_ 04-21-20

Direction of Travel	BEGIN STATION	END STATION	(P) Feet	(G) Feet
NB	1203+89.58	1206+71.53	4	4
NB	1211+29.47	1214+00.81	4	4

Full Depth PCC Shoulder

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

4_P_FullPCC_ 04-20-21

Direction of Travel	BEGIN STATION	END STATION	(P) Feet
SB	1210+46.84	1211+66.51	5.3

Full Depth PCC Shoulder

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

4_P_FullPCC_ 04-20-21

Direction of Travel	BEGIN STATION	END STATION	(P) Feet
SB	1210+74.85	1211+66.51	4

IA Highway 149

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	WAPELLO COUNTY	PROJECT NUMBER BRF-149-1(096)--38-90	SHEET NUMBER B.1

9:45:57 AM 4/3/2024 cholien pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9014903022\Design\CADD_Files\Sheet_Files\SHT_90149096_B01.dgn

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
- Cistern
- L.P. Gas Tank (No Footing)
- 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

- E1 — EL1D, Alliant Energy - Quality D
- FO — FO1D, LTSD / LISCO - Quality D
- FO2 — FO2D, Iowa Communications Network - Quality D (From Maps)
- FO3 — FO3D, Qwest - Quality D
- FO4 — FO4D, Aureon - Quality D (From Maps)
- GHP — GH1D, MidAmerican Energy - Quality D
- G — GL1D, MidAmerican Energy - Quality D
- SAN.(C) — SA1C, City of Ottumwa- Quality C
- T1 — TL1D, Century Link - Quality D (From Maps)
- TV — TV1D, Mediacom - Quality D
- W — WL1D, City of Ottumwa - Quality D
- PPA, Alliant Energy

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
- ROW Line

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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

FILE NO.	ENGLISH	DESIGN TEAM **WHKS & CO.**	**WAPELLO** COUNTY	PROJECT NUMBER **BRF-149-1(096)--38-90**	SHEET NUMBER **D.1**

13:23:44 10/04/2024 skoontz pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9014903022\Design\CADD_Files\Sheet_Files\LEGEND_SHEETS.dgn

Ideal Ready-Mix Co Inc

Palen, Daniel C Jr/Petrina J

Limits of Construction

(REMOVE NORTHBOUND)
Sta. 1208+38.59 (S.B.R.)
Sta. 1208+89.35 (N.B.R.)
Skew 35° RT AH
DUAL 215' X 30'
CONT. WELDED GIRDER BRIDGE

Limits of Construction

Existing ROW

OTT011

Scott, Brad/Jamie Trust

1205+00

1210+00

1215+00

Existing ROW

149

Sta. 1203+89.58, 37.00' Rt
Begin Paving

Current 55 mph speed limit

1210+06.38, 37.00' Rt.
Resume Paving

Sta. 1214+00.81, 37.00' Rt
End Paving

55 MPH Speed Limit Sign - Northbound (where grass median begins) - Move to north side of bridge

1207+63.72, 37.00' Rt.
Stop Paving

Limits of Construction

Existing ROW

Limits of Construction

Existing ROW

OTT012

(UAC)
Sta. 1204+23, 204' RT
24'x22' CMP

(UAC)
Sta. 1208+04.19
Skew 35° RT AH
30"x204' RCP

OTT010

Sta. 1208+89.01
Construct Northbound 254' x 40' PPCB Bridge

(UAC)
Sta. 1209+23.63
Skew 35° RT AH
30"x178' RCP

Cemetery, Memorial Park Services Inc

Stay out of this property

OTT007

Midwest Real Estate Holdings LLC

State of Iowa

0 50 FEET

IA HIGHWAY 149 NORTHBOUND

Don't want to use a 2:1 foreslope due to slope stability (slide issues). Slope Stability method is possible; this is to be investigated, from a soils perspective

+1.84%

-6.09%

PROPOSED PROFILE

This grade is greater than the maximum allowed by Design Criteria (4% for 60 mph); WHKS to evaluate the impacts of not exceeding maximum grade, if too great, justification will be provided for allowing grade higher than Design Criteria

VPI = +37.83
EL = 859.95
L = 595.84'

K = 75

EXISTING PROFILE

29.7'

24.4' to Bottom of Beam

28.8' to Bottom of Deck

-6.09%

-3.58%

Profile grade has been raised to provide minimum vertical clearance (23'-4") to railroad tracks

VPI = +73.94
EL = 833.38
L = 153.31'

K = 61

Refer to REV D.2

850 840 830 820 810

851.68 851.89 852.35 852.81 853.27 853.73 854.19 854.64 855.03 855.33 855.55 855.69 855.74 855.71 855.59 855.39 855.11 854.75 854.30 853.77 853.16 852.46 851.68 850.82 849.87 848.84 847.73 846.54 845.26 843.89 842.45 840.93 839.41 837.89 836.43 835.07 833.81 832.66 831.61 830.66 829.77 828.88

1205+00 1210+00 1215+00

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	WAPELLO COUNTY	PROJECT NUMBER BRF-149-1(096)--38-90	SHEET NUMBER D.2

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Δ = 05°02'00.00" (RT)
T = 251.85'
L = 503.37'
R = 5730.00'
E = 5.53'
e = ___
L = ___
x = ___

45 MPH Speed Limit Sign - Southbound (where grass median begins) - Move to north side of bridge

OTT008

OTT009

Palen, Daniel C Jr/Petrina J

Limits of Construction

Existing ROW

1204+36.20, 36.65' Lt
Begin Paving

1205+00

1207+11.90, 37.00' Lt
Stop Paving

Look at these cross sections; what can be done to avoid impacting this property?

(REMOVE SOUTHBOUND)
Sta. 1208+38.59 (S.B.R.)
Sta. 1208+89.35 (N.B.R.)
Skew 35° RT AH
DUAL 215' X 30'
CONT. WELDED GIRDER BRIDGE

1210+00

Limits of Construction

1211+66.51, 37.00' Lt.
End Paving

1209+54.56, 37.00' Lt
Resume Paving

Existing ROW

OTT011

Scott, Brad/Jamie Trust

1215+00

Current 55 mph speed limit

149

Cable Guardrail

Sta. 1208+39.05
Construct Southbound 254' x 40' PPCB Bridge

Existing ROW

Limits of Construction

Cable Guardrail

Existing ROW

OTT012

Limits of Construction

Cemetery, Memorial Park Services Inc

(UAC)
Sta. 1199+90.41
24"x75' RCP
D.A.=1.0 A-MEDIAN

(UAC)
Sta. 1204+25, 204' RT
24"x52' CMP

OTT010

(UAC)
Sta. 1208+04.19
Skew 35° RT AH
30"x204' RCP

(UAC)
Sta. 1209+23.63
Skew 35° RT AH
30"x178' RCP

0 FEET 50

IA HIGHWAY 149 SOUTHBOUND

+2.58%

-5.07%

PROPOSED PROFILE

VPI = +35.56
EL = 859.54
L = 479.16'

K = 63

-5.07%

-3.58%

EXISTING PROFILE

29.3'

23.8' to Bottom of Beam

28.4' to Bottom of Deck

This grade is greater than the maximum allowed by Design Criteria (4% for 60 mph); WHKS to evaluate the impacts of not exceeding maximum grade, if too great, justification will be provided for allowing grade higher than Design Criteria

VPI = +83.47
EL = 841.91
L = 90.87'

K = 61

Profile grade has been raised to provide minimum vertical clearance (23'-4") to railroad tracks

Refer to REV D.3

850 840 830 820 810

850.43 850.89 851.54 852.18 852.83 853.47 854.05 854.53 854.91 855.19 855.36 855.44 855.42 855.30 855.09 854.77 854.35 853.83 853.21 852.49 851.68 850.76 849.74 848.62 847.41 846.14 844.88 843.62 842.45 841.39 840.43 839.53 838.90

1205+00 1210+00 1215+00

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	WAPELLO COUNTY	PROJECT NUMBER BRF-149-1(096)--38-90	SHEET NUMBER D.3

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o Inc

Palen, Daniel C Jr/Petrina J

LIMITS OF CONSTRUCTION

Sta. 1208+38.59 (S.B.R.)
Sta. 1208+89.35 (N.B.R.)
Skew 35° RT AH
DUAL 215' X 30'
CONT. WELDED GIRDER BRIDGE

EXISTING ROW

OTT011

Scott, Brad/Jamie Trust

23+24

28+23

33+23

STA: 1202+94.00
OFF: 0.00' RT

STA: 1213+55.00
OFF: 0.00' RT

N

EXISTING ROW

(UAC)
Sta. 1204+25.204' RT
24"x52' CMP

OTT010

(UAC)
Sta. 1208+04.19
Skew 35° RT AH
30"x204' RCP

State of Iowa

LIMITS OF CONSTRUCTION

OTT012

Cemetery, Memorial Park Services Inc

(UAC)
Sta. 1209+23.63
Skew 35° RT AH
30"X178' RCP

ldings LLC

0 50
Scale In Feet

HIGHWAY 141 NB

+1.92%

-5.00%

VPI = +00.00
EL = 859.80
L = 600.00'
K = 87

1204+23.90

29.71' TO DECK

-5.00%

-2.24%

1216+22.09

VPI = +50.00
EL = 827.28
L = 275.00'
K = 99

850
840
830
820
810

853.09 853.57 854.05 854.49 854.86 855.16 855.39 855.54 855.63 855.64 855.57 855.44 855.24 854.96 854.61 854.19 853.69 853.13 852.49 851.78 851.00 850.14 849.22 848.22 847.15 846.00 844.79 843.54 842.29 841.04 839.79 838.53 837.28 836.03 834.78 833.54 832.35 831.23 830.16 829.16 828.23 827.35 826.54 825.79 825.11 824.49 823.92 823.43

1205+00 1210+00 1215+00

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	WAPELLO COUNTY	PROJECT NUMBER BRF-149-1(096)--38-90	SHEET NUMBER D.2

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Revised

OTT008

eady-Mix Co Inc

OTT009

Palen, Daniel C Jr/Petrina J

EXISTING ROW

Sta. 1208+38.59 (S.B.R.)
Sta. 1208+89.35 (N.B.R.)
Skew 35° RT AH
DUAL 215' X 30'
CONT. WELDED GIRDER BRIDGE

LIMITS OF CONSTRUCTION

OTT011

Scott, Brad/Jamie Trust

23+24

28+23

33+23

STA: 1202+94.00
OFF: 0.00' LT

STA: 1213+55.00
OFF: 0.00' RT

N

LIMITS OF CONSTRUCTION

EXISTING ROW

EXISTING ROW

OTT012

Cemetery, Memorial Park Services Inc

(UAC)
Sta. 1204+25. 204' RT

OTT010

(UAC)
Sta. 1208+04.19
Skew 35° RT AH
30"x204' RCP

(UAC)
Sta. 1209+23.63
Skew 35° RT AH
30"x178' RCP

0 50
Scale In Feet

HIGHWAY 141 SB

VPI = +45.00
EL = 861.22
L = 700.00'
K = 88

+2.97%

-5.01%

1202+94.03

292'-10" TO DECK

-5.01%

-3.47%

1213+55.00

VPI = +55.00
EL = 835.67
L = 200.00'
K = 130

850
840
830
820
810

847.83 848.00 848.75 849.49 850.23 850.97 851.67 852.29 852.84 853.32 853.72 854.06 854.32 854.52 854.64 854.69 854.67 854.58 854.42 854.19 853.88 853.51 853.06 852.54 851.95 851.29 850.56 849.75 848.88 847.93 846.91 845.83 844.67 843.44 842.18 840.93 839.70 838.51 837.36 836.27 835.22 834.23 833.28 832.37 832.18

1205+00 1210+00 1215+00

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	WAPELLO COUNTY	PROJECT NUMBER BRF-149-1(096)--38-90	SHEET NUMBER D.3

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Revised

IA 149
SOUTH TEMPORARY PAVING

149

1195+00

1200+00

1205+00

Joseph Ave

N Court Rd

N Court Rd

Fox Sauk Rd

Existing ROW

Existing ROW

(UAC)
Sta. 1194+69, 61' LT
24"x59' RCP

(UAC)
Sta. 1194+67, 58' RT
24"x64' RCP

(UAC)
Sta. 1199+99.41
24"x75' RCP
D.A.=1.0 A-MEDIAN

(UAC)
Sta. 1204+25, 204' RT
24"x52' CMP

OTT001 — Rentals LLC

OTT002 — Team Ottumwa Properties LLC

OTT003 — Kipple Company LLC

OTT004 — Sahjanand Inc

OTT005 — State of Iowa

OTT006 — WGMS Enterprises, LC

OTT007 — Midwest Real Estate Holdings LLC

OTT008 — Ideal Ready-Mix Co Inc

OTT009 — Palen, Daniel C Jr/Petrina J

OTT010 — State of Iow

STA 1195+41.16 (ML_149_CL)
BEGIN PAVING

STA 1200+04.71, 8.20' Lt (ML_149_CL)
END SOUTHBOUND PAVING

STA 1200+04.49, 13.08' Rt (ML_149_CL)
END NORTHBOUND PAVING

STA 1199+66 (ML_149_CL)
STOP MEDIAN PAVING

0 50
FEET

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	WAPELLO COUNTY	PROJECT NUMBER BRF-149-1(096)--38-90	SHEET NUMBER F.1	

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Discuss access to farm west of the highway and access to the cemetery east of the highway

WHKS to review elevations on each inside edge of the pavement slabs, to be sure cross over is feasible

STA 1214+00.81 (ML_149_CL)
BEGIN PAVING

OTT011

Scott, Brad/Jamie Trust

Existing ROW

STA 1223+38.19 (ML_149_CL)
END PAVING

1215+00

1220+00

1225+00

149

F02

T1

OTT012

Cemetery, Memorial Park Services Inc

Existing ROW

(UAC)
Sta. 1218+63.26
Skew 90° RT AH
24"X62' RCP
D.A.=1.5 A MEDIAN

(UAC)
Sta. 1209+23.63
Skew 35° RT AH
30"X178' RCP

0 50
FEET

IA 149
NORTH TEMPORARY PAVING

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	WAPELLO COUNTY	PROJECT NUMBER BRF-149-1(096)--38-90	SHEET NUMBER F.2	

11:07:32 10/04/2024 skoontz pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9014903022\Design\CADD_Files\Sheet_Files\SHT_90149096_F01.dgn

SURVEY INDEX
County: Wapello
PIN: 22-90-149-030
Project Number: BRF-149-1(96)—38-90
Location: DME Railroad 3.9 miles North of US 34 (NB/SB)
Type of Work: Bridge Replacement
Project Directory: 9014903022

Survey Personnel

Jeremy Leemon	Survey Project Manager / Party Chief
Chris Ries	Assistant Survey Project Manager
Jacob Powers	Instrument

Date(s) of Survey

Begin Date	01/08/2024
End Date	01/22/2024

General Information

This survey is for replacement of dual bridges on Iowa Highway 149 over Dakota, Minnesota and Eastern Railroad in Ottumwa. This project is a Full Field DTM survey. Measurement units for this survey are US survey feet.

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

Nearby Iowa Real Time Network reference stations were utilized to obtain horizontal and vertical control on primary project control points. Two 3-minute observations were taken with appropriate time spans between and used in a weighted average to obtain final coordinate values. The Horizontal Scale Factor is: 0.9999992580. Additional control was established from the calibration along the site. For additional details of the control survey, contact the Preliminary Survey

PROJECT DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 ADJUSTMENT)
COORDINATE SYSTEM: IOWA REGIONAL COORDINATE SYSTEM ZONE 12 (U.S. SURVEY FOOT)
VERTICAL DATUM: NAVD88
GEOID MODEL: 2018u3

Alignment Information

The horizontal alignment for IA Hwy 149 this survey is a retrace of As-built Plans Project No. U-U.G-F-159(6). Survey stationing was equated to the plan POT at Sta. 1207+39.4 and carried back and ahead without equation throughout the survey.

Survey stationing relates to as built plan stationing as follows:

SURVEY ALIGNMENT

PI Sta. 1181+76.5 As-built Plans Project No. U-U.G-F-159(6)
=Survey POT Sta. 1181+76.50

PI Sta. 1195+50 As-built Plans Project No. U-U.G-F-159(6)
=Survey PI Sta. 1195+50.00

POT Sta. 1207+39.4 As-built Plans Project No. U-U.G-F-159(6)
=Survey POT Sta. 1207+39.40

POT Sta. 1229+61.3 As-built Plans Project No. U-U.G-F-159(6)
=Survey POT Sta. 1229+61.30

NORTH BOUND ROAD ALIGNMENT

PC N.B.R. Sta. 1193+13.9 As-built Plans Project No. U-U.G-F-159(6)
=Survey N.B.R. PC Sta. 1193+13.90

PT N.B.R. Sta. 1195+13.9 As-built Plans Project No. U-U.G-F-159(6)
=Survey N.B.R. PT Sta. 1195+13.90

PT N.B.R. Sta. 1199+15.0 As-built Plans Project No. U-U.G-F-159(6)
=Survey N.B.R. PT Sta. 1199+15.00

SOUTH BOUND ROAD ALIGNMENT

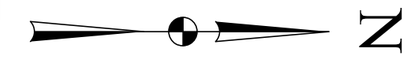
PC S.B.R. Sta. 1193+13.9 As-built Plans Project No. U-U.G-F-159(6)
=Survey S.B.R. PC Sta. 1193+13.90

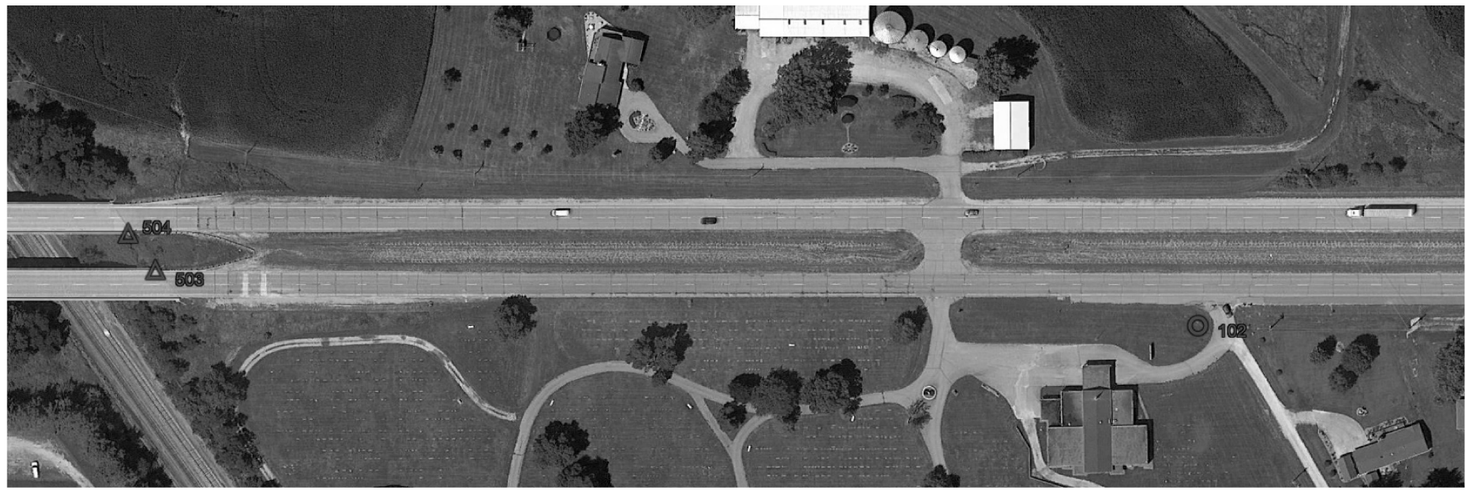
PT S.B.R. Sta. 1198+17.2 As-built Plans Project No. U-U.G-F-159(6)
=Survey S.B.R. PT Sta. 1198+17.20

PT S.B.R. Sta. 1205+00.7 As-built Plans Project No. U-U.G-F-159(6)
=Survey S.B.R. PT Sta. 1205+00.70

CONTROL POINT VICINITY MAP

This map is a guide to the vicinity of the primary project control points. Primary control is for use with RTK base stations and for RTN validation. Future surveys will use primary project control to establish temporary control as needed for construction or other surveying applications.





HORIZ. DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 Adjustment) - Iowa RCS Zone 12 (U.S. Survey Foot)

VERT. DATUM: NAVD88 - Geoid Model: 2018u3

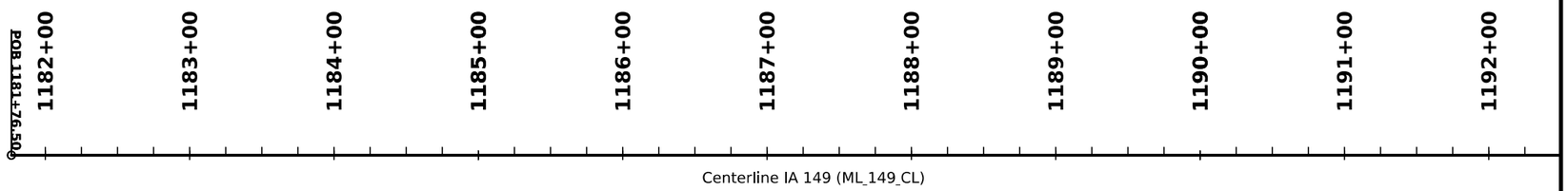
Coordinate listing from next sheet will be used with IaRTN for monument recovery. No other reference ties are given.

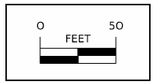
HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING

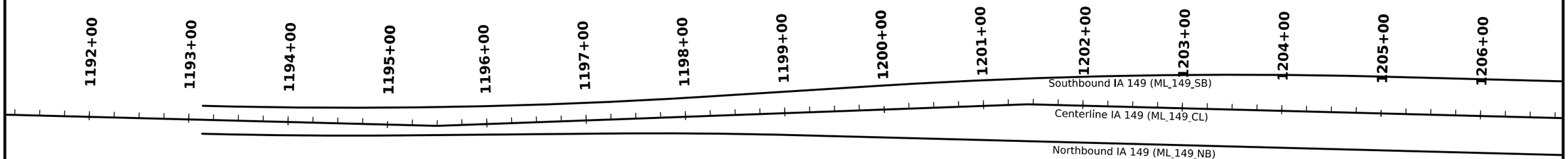
HORIZ. DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 Adjustment)
Ia. Regional Coordinate System Zone 12 (U.S. Survey Foot)
VERT. DATUM: NAVD88
Geoid Model: 2018u3

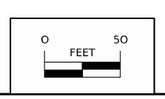
Point Name	Northing	Easting	Elevation	Feature Definition - Description
101	6256278.66	22869467.99	832.42	Set Feno Style Monument 1000mm W/ Brass Cap 28' West of N Ct St CL
502	6257623.04	22869500.84	853.04	Fd IHC Monument SE Wing of Bridge
501	6257655.58	22869536.64	853.72	Fd IHC Monument SW Wing of Bridge
504	6257840.78	22869497.35	847.01	Fd IHC Monument NE Wing of Bridge
503	6257872.85	22869533.28	847.13	Fd IHC Monument NW Wing of Bridge
102	6259035.43	22869584.71	805.44	Set Feno Style Monument 1000mm W/ Brass Cap 20' South of private entrance pavement

IA 149 SURVEY ALIGNMENTS









FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	WAPELLO COUNTY	PROJECT NUMBER BRF-149-1(096)--38-90	SHEET NUMBER G.4

14:45:54 27/03/2024 skoontz pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9014903022\Design\CADD_Files\Sheet_Files\SHT_90149096_G04.dgn

1206+00 1207+00 1208+00 1209+00 1210+00 1211+00 1212+00 1213+00 1214+00 1215+00 1216+00 1217+00 1218+00 1219+00 1220+00 1221+00

Southbound IA 149 (ML_149_SB)

Centerline IA 149 (ML_149_CL)

Northbound IA 149 (ML_149_NB)

0 50 FEET

IA 149 SURVEY ALIGNMENTS

1220+00 1221+00 1222+00 1223+00 1224+00 1225+00 1226+00 1227+00 1228+00 1229+00 POE 1229+61.30

Southbound IA 149 (ML_149_SB)

Centerline IA 149 (ML_149_CL)

Northbound IA 149 (ML_149_NB)

0 50 FEET

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	WAPELLO COUNTY	PROJECT NUMBER BRF-149-1(096)--38-90	SHEET NUMBER G.5

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ALIGNMENT COORDINATES

Line No.	Name	Location	Poin on Tangent Station	Point on Tangent Y Northing	Point on Tangent X Easting	Begin Spiral Station	Begin Spiral Y Northing	Begin Spiral X Easting	Begin Curve Station	Begin Curve Y Northing	Begin Curve X Easting	Simple Curve PI or Master PI Station	Simple Curve PI or Master PI Y Northing	Simple Curve PI or Master PI X Easting	End Curve Station	End Curve Y Northing	End Curve X Easting	End Spiral Station	End Spiral Y Northing	End Spiral X Easting
1.1	Mainline IA 149	ML_149_CL	1181+76.50	6255062.643	22869598.749															
1.2	Mainline IA 149	ML_149_CL	1195+50.00	6256435.951	22869575.806															
1.3	Mainline IA 149	ML_149_CL	1201+44.80	6257028.898	22869528.892															
1.4	Mainline IA 149	ML_149_CL	1229+61.30	6259845.005	22869481.8456															
2.1	NB IA 149	ML_149_NB							1193+13.90	6256200.118	22869593.748	1194+13.91	6256300.113	22869592.077	1195+13.90	6256399.988	22869586.917			
2.2	NB IA 149	ML_149_NB							1197+15.08	6256600.906	22869576.539	1198+15.10	6256700.791	22869571.379	1199+15.10	6256800.795	22869569.708			
2.3	NB IA 149	ML_149_NB	1229+60.35	6259845.623	22869518.840															
3.1	SB IA 149	ML_149_SB							1193+13.90	6256199.650	22869565.751	1195+65.71	6256451.427	22869561.543	1198+17.20	6256701.864	22869535.264			
3.2	SB IA 149	ML_149_SB							1199+97.40	6256881.111	22869516.455	1202+49.25	6257131.583	22869490.172	1205+00.77	6257383.395	22869485.965			
3.3	SB IA 149	ML_149_SB	1229+62.21	6259844.387	22869444.851															

SPIRAL OR CIRCULAR CURVE DATA

Line No.	Name	Location	SCS	S	Ls	Ts	Es	Xc	Yc	L.T.	S.T.	C	T	L	R	E	Remarks
1.1	C1	ML_149_NB										2.000	100.009	199.997	55730.000	0.873	
1.2	C2	ML_149_NB										2.000	100.018	200.016	5730.037	0.873	
2.1	C1	ML_149_SB										5.033	251.847	503.300	5730.000	5.530	
2.2	C2	ML_149_SB										5.033	251.847	503.370	5730.000	5.532	

Railroad ROW is 200 feet west and 100 feet east of IA 149.

DOT will obtain the necessary ROW for this project.

CENTER TWP.
T-72N R-14W
SEC. 1

Joseph Ave

Sta. 1194+69, 61' LT
24"x59' RCP

OTT002

tumwa Properties LLC

OTT004

Sahjanand Inc

N Court Rd

OTT006

WGMS Enterprises, LC

OTT008

Ideal Ready-Mix Co Inc

OTT009

Palen, Daniel C Jr/Petrina J

Existing ROW

1195+00

1200+00

1205+00

149

N Court Rd

OTT003

Company LLC

OTT005

State of Iowa

Existing ROW

Sta. 1194+67, 58' RT
24"x64' RCP

Sta. 1199+99.41
24"x75' RCP
D.A.=1.0 A-MEDIAN

OTT007

Midwest Real Estate Holdings LLC

Sta. 1204+25, 204' RT
24"x52' CMP

OTT010

State of Iowa

Sta. 1208+04.19
Skew 35° RT AH
30"x204' RCP

DAHLONEGA TWP.
T-72N R-13W
SEC. 6

Fox Sauk Rd

0 50 FEET

IA HWY 149

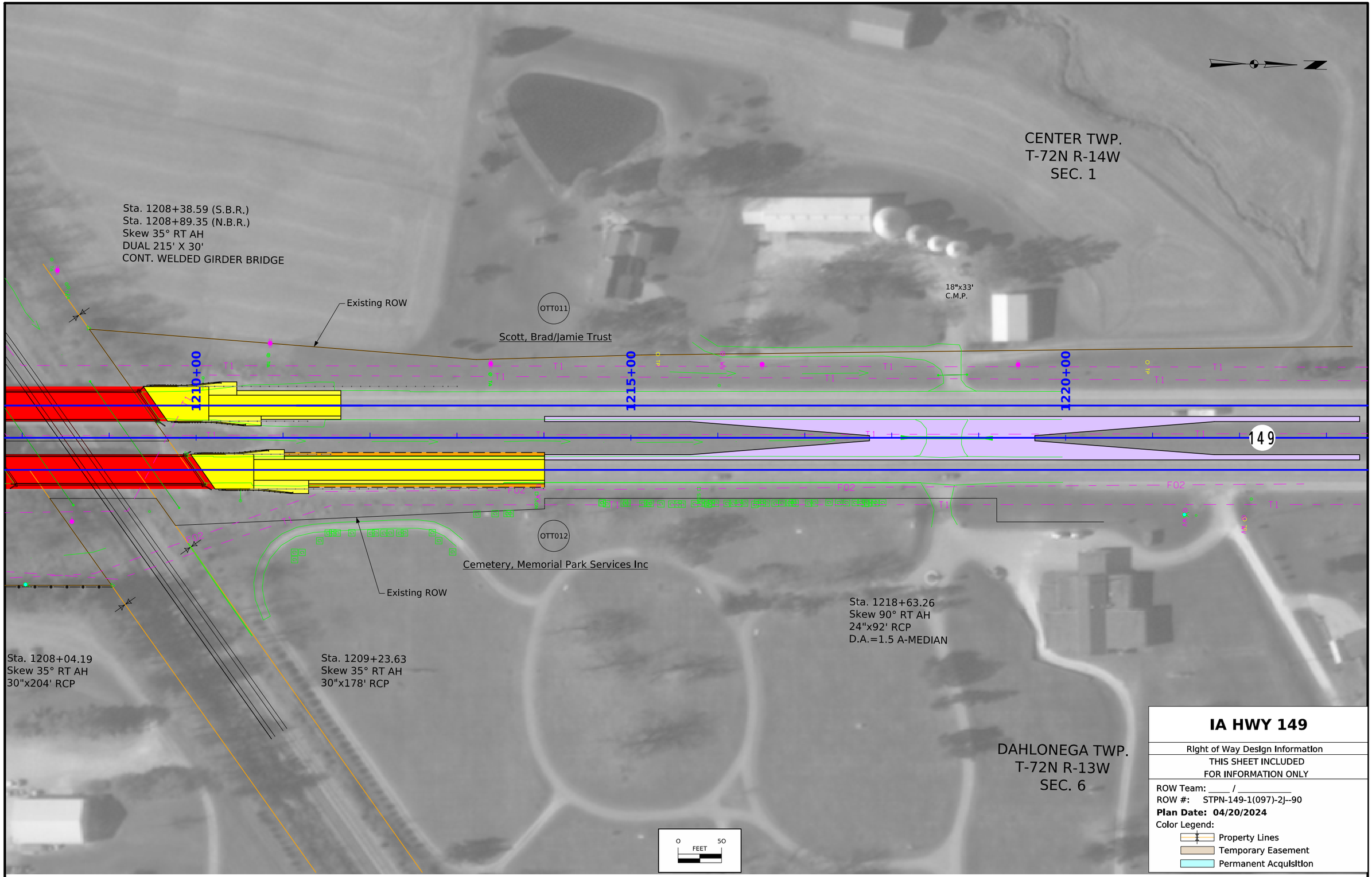
Right of Way Design Information

THIS SHEET INCLUDED
FOR INFORMATION ONLY

ROW Team: _____ / _____
ROW #: STPN-149-1(097)-2J--90
Plan Date: 04/20/2024
Color Legend:
- Property Lines
- Temporary Easement
- Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	WAPELLO COUNTY	PROJECT NUMBER BRF-149-1(096)--38-90	SHEET NUMBER H.1

10:52:34 10/04/2024 skoontz pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9014903022\Design\CADD_Files\Sheet_Files\SHT_90149096_H01.dgn



IA HWY 149

Right of Way Design Information

THIS SHEET INCLUDED
FOR INFORMATION ONLY

ROW Team: _____ / _____

ROW #: STPN-149-1(097)-2J--90

Plan Date: 04/20/2024

Color Legend:

- Property Lines
- Temporary Easement
- Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	WAPELLO COUNTY	PROJECT NUMBER BRF-149-1(096)--38-90	SHEET NUMBER H.2	

10:53:07 10/04/2024 skoontz pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9014903022\Design\CADD_Files\Sheet_Files\SHT_90149096_H01.dgn

108_23A
8/15/22

TRAFFIC CONTROL PLAN

1. Through traffic on IA 149 shall be maintained at all times. Maintain a minimum of one lane of traffic, in each direction, at all times during construction.

2. Access to all properties shall be maintained at all times.

Discuss access to farm north of the bridge on the west side of the Highway and access to the cemetery north of the bridge on the east side of the highway

→ Special traffic control layouts will be needed for all stages, to allow access to each of these properties.

Discuss access to North Ct St.; Advanced warning signs and tapers will extend into intersection

→ This intersection will be closed during construction, due to the advanced warning layout. Traffic will use the intersection to the south. All lanes will be left open at this intersection. If lane closures are located in this area, the additional lane can be used for a left turn lane.

FILE NO.	ENGLISH	DESIGN TEAM WHKS & Co.	WAPELLO COUNTY	PROJECT NUMBER BRF-149-1(096)--38-90	SHEET NUMBER J.1

3/27/2024 2:05:28 PM

511 TRAVEL RESTRICTIONS

Line No.	Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No. or Structure ID or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
1.0	IA 149	NB	Wapello	In Ottumwa	DME Railroad	Traffic Control Device	9003.9R149	Horizontal	N/A	14.5	13.5	N/A	
2.0	IA 149	SB	Wapello	In Ottumwa	DME Railroad	Traffic Control Device	9003.9L149	Horizontal	N/A	14.5	13.5	N/A	

108_26A
8/15/22

STAGING NOTES

Any requests to change the staging shall follow Article 1105.15 of the Standard Specifications. Maintenance of traffic shall be per Tab. 108-23A and the traffic control details described within. No Value Engineering proposals will be accepted that deviate from the intent of the traffic control shown in the plans.

Stage 1 Construction

- Construct temporary pavement south of the bridge and north of the bridge.

Stage 1 Traffic Control

- Close inside lanes per TC-418 and TC-419.

Stage 2 Construction

- Remove bullnose guardrail on both sides of the existing bridges. Install TBR and temporary crash cushions for approach side of southbound bridge.
- Construct northbound bridge and associated roadway work.

Stage 2 Traffic Control

- Shift southbound traffic to the outside, southbound lane using TC-418.
- Shift northbound traffic to the inside, southbound lane using TC-61.

Stage 3 Construction

- Construct southbound bridge and associated roadway work.

Stage 3 Traffic Control

- Shift northbound traffic to the outside, northbound lane using TC-418.
- Shift southbound traffic to the inside, northbound lane using TC-61.

Stage 4 Construction

- Remove temporary pavement south of the bridge and north of the bridge.

Stage 4 Traffic Control

- Close inside lanes per TC-418 and TC-419.

111_01
10/14/22

COORDINATED OPERATIONS

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

Project	Type of Work
District to	Provide

STP-149-1(88)--2C-90 PCC Pavement - Grade and Replace
Potential City RISE project south of the IA 149 project over DME Railroad

Possible Revision:
WHKS will shift the bridge to the north, to avoid the existing pier foundations. The interior span could not be extended, because the beam depths would get deeper, and the profile would need to be raised to maintain minimum vertical clearance thus increasing the length of reconstruction.

The south pier will encroach on the railroad ROW, but will still provide a greater horizontal clearance than what is provided today.
WHKS will provide a revised drawing for the Railroad Bureau to discuss with the railroad

The bridge will span the 100' wide railroad ROW, but not the 200' wide railroad ROW.

Conduit will be installed in the outside barrier rails (2 in each outside barrier rail), in case it is needed in the future.

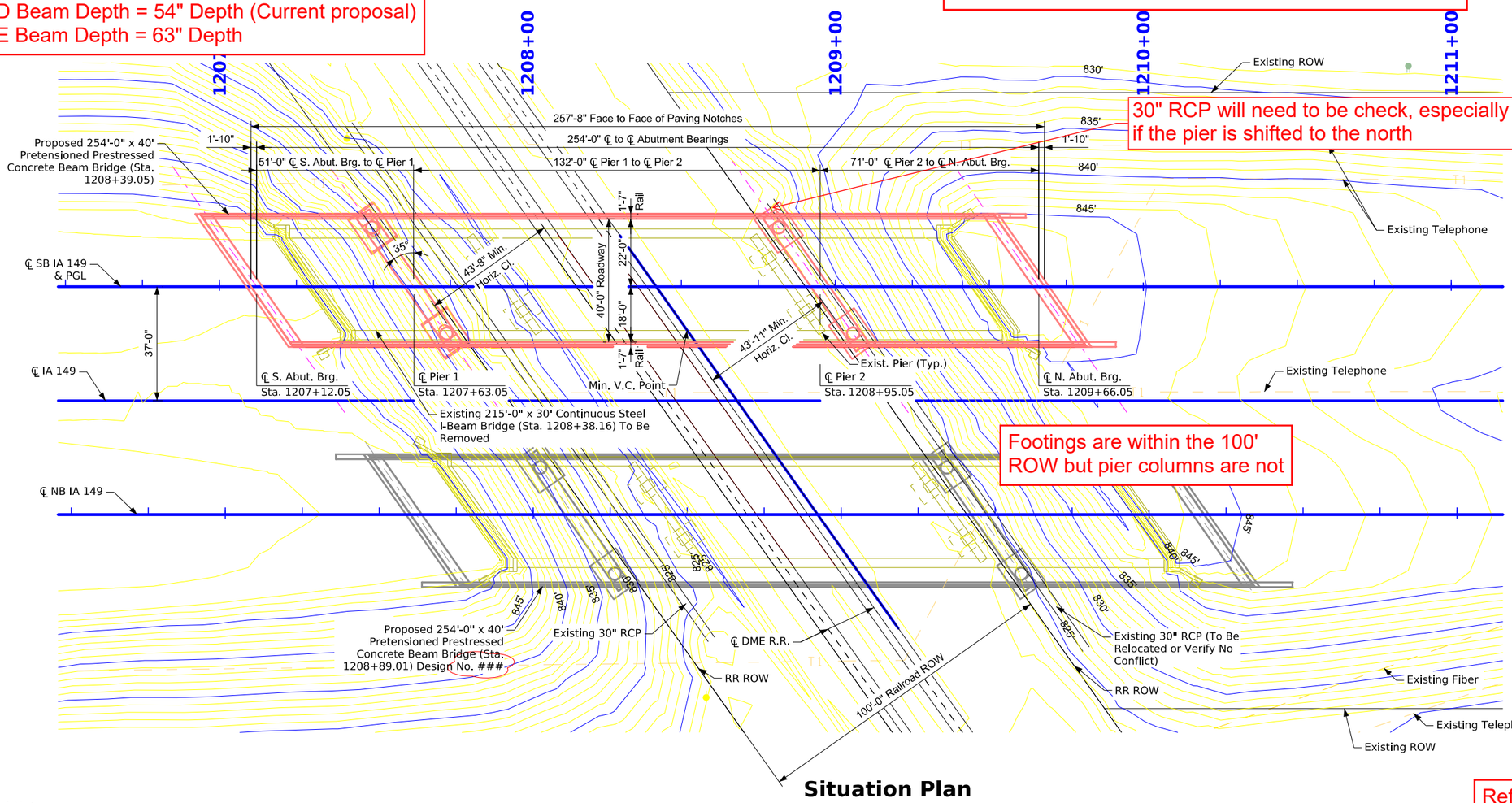
No need for aesthetics due to location and spanning the railroad

BTD Beam Depth = 54" Depth (Current proposal)
BTE Beam Depth = 63" Depth

$g_1 = 2.60\ \%$ $g_2 = -5.1\ \%$

VPI Sta. = 1207+35.56
VPI Elev. = 859.541
VC = 479.159'

Proposed Profile
Grade ℄ SB IA 149



30" RCP will need to be check, especially if the pier is shifted to the north

The FRA number should be included on the V Sheets

The Bridges and Structures Bureau can provide the Design and FHWA #'s

Minimum Vertical Clearance

Overhead Station = 1208+53.29, Offset 16.08' Rt.
Overhead Elevation = 852.02
Depth of Superstructure = 64.5 in.
Deck Thickness = 8.5 in.
Estimated Haunch = 2 in.
Beam Depth = 54 in.
Underpass Station = 3+57.41, Offset 0
Underpass Elevation = 823.29
Minimum Vertical Clearance = 23.36'

Situation Plan

General Notes:
--This design is for the replacement of the existing 215'-0" x 30'-0" Continuous I-Beam Bridge, Wapello County Design 260, FHWA No. 50680, Maint. No. 9003.9L149.

Design Notes:
--TL-5 Bridge Railing Proposed
--Pier Type - Frame (4' Assumed Column Diameter)

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.
--Proposed bridge will not effect flow in existing railroad ditches or drainage structures.

Utilities Note:

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

General Utility Symbols:

T - Telephone Line FO - Fiber Optic Line
- Power Poles

Location

SB IA 149 over DME RR
T-72N R-13 & 14W
Section 1 & 6
Center Township
Wapello County
City of Ottumwa
FHWA No. 50680 (Existing)
Bridge Maint. No. 9003.9L149
Latitude 41.067479°
Longitude -92.410135°

N

0 20
Scale In Feet

Traffic Data

2022 AADT	3,500	V.P.D.
TRUCKS	6	%

Refer to Revised V.1

Preliminary

Design For 35° Skew RA

254'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

51'-0" & 71'-0" End Spans BTD Beams 132'-0" Interior Span

Situation Plan

STA. 1208+39.05 (SB IA 149) August, 2024

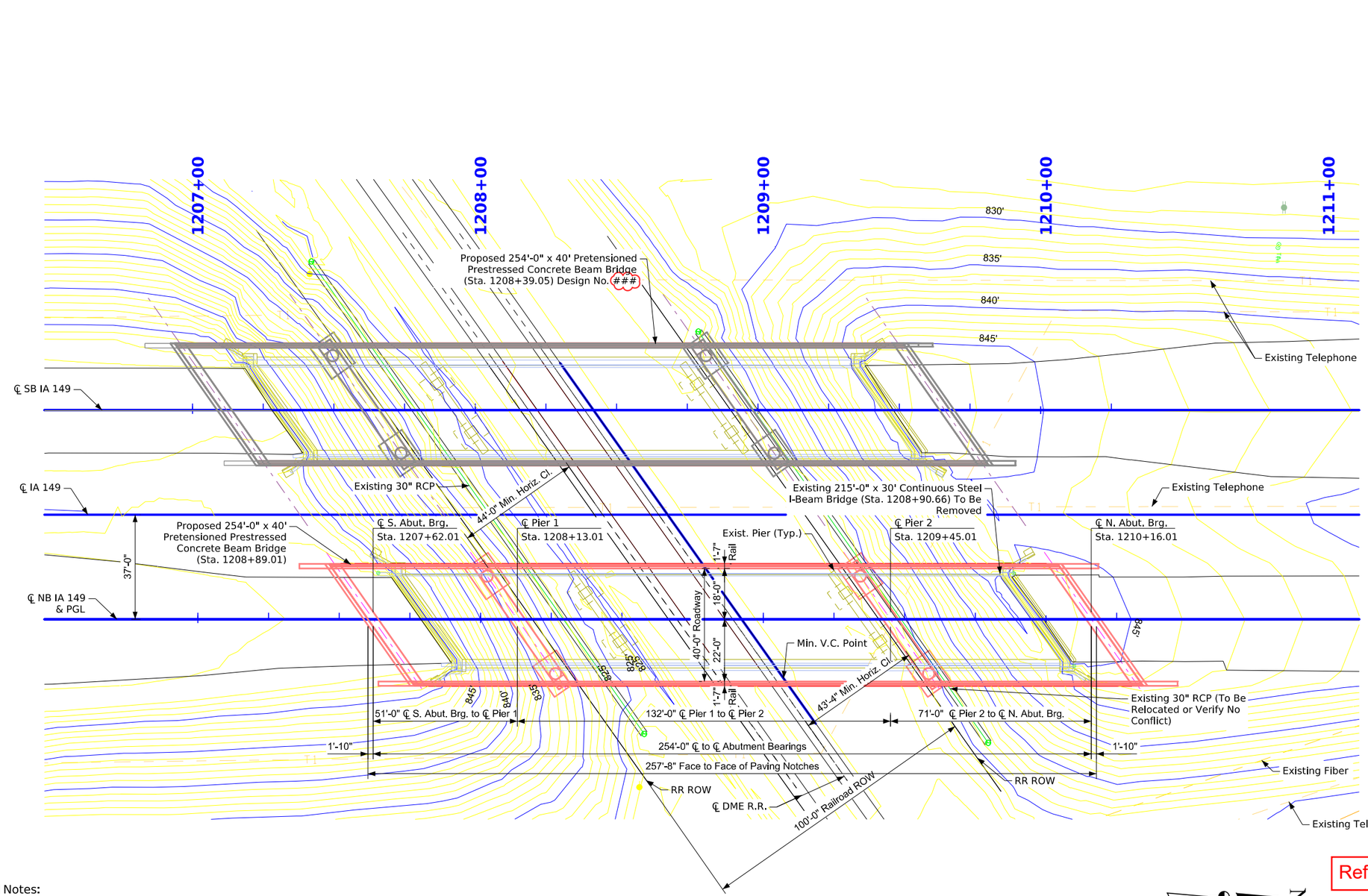
Wapello County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 45 Design Sheet No. 1 of 1 FHWA No. 50680

FILE NO.	ENGLISH	DESIGN TEAM JJO/BRH	Wapello COUNTY	PROJECT NUMBER BRF-149-1(096)- -38-90	SHEET NUMBER V.1

3:55:18 PM 3/18/2024 bhackman pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9014903022\Bridge\(096)_Bridge-Unspecified\SHT_90149096_DSN#_050680_Z12.dgn



Situation Plan

$g_1 = 1.80\ \%$ $g_2 = -6.10\ \%$

VPI Sta. = 1208+37.83
VPI Elev. = 859.95
VC = 595.84'

Proposed Profile
Grade ℄ NB IA 149

Minimum Vertical Clearance

Overhead Station = 1209+06.58, Offset 20.08' Rt.
Overhead Elevation = 851.87
Depth of Superstructure = 64.5 in.
Deck Thickness = 8.5 in.
Estimated Haunch = 2 in.
Beam Depth = 54 in.
Underpass Station = 4+53.05, Offset 0
Underpass Elevation = 822.72
Minimum Vertical Clearance = 23.78'

General Notes:
--This design is for the replacement of the existing 215'-0" x 30'-0" Continuous I-Beam Bridge, Wapello County Design 260, FHWA No. 50670, Maint. No. 9003.9R149.

Design Notes:
--TL-5 Bridge Railing Proposed
--Pier Type - Frame (4' Assumed Column Diameter)

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.
--Proposed bridge will not effect flow in existing railroad ditches or drainage structures.

Utilities Note:

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

General Utility Symbols:

T - Telephone Line FO - Fiber Optic Line
- Power Poles

Location

NB IA 149 over DME RR
T-72N R-13 & 14W
Section 1 & 6
Center Township
Wapello County
City of Ottumwa
FHWA No. 50670 (Existing)
Bridge Maint. No. 9003.9R149
Latitude 41.066988°
Longitude -92.409861°

N

0 20
Scale In Feet

Traffic Data

2022 AADT 3,500 V.P.D.
TRUCKS 6 %

Refer to Revised V.2

Preliminary

Design For 35 Skew RA

254'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

51'-0" & 71'-0" End Spans BTD Beams 132'-0" Interior Span

Situation Plan

STA. 1208+89.01 (NB IA 149) August 2024

Wapello County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 46 Design Sheet No. 1 of 1 FHWA No. 50670

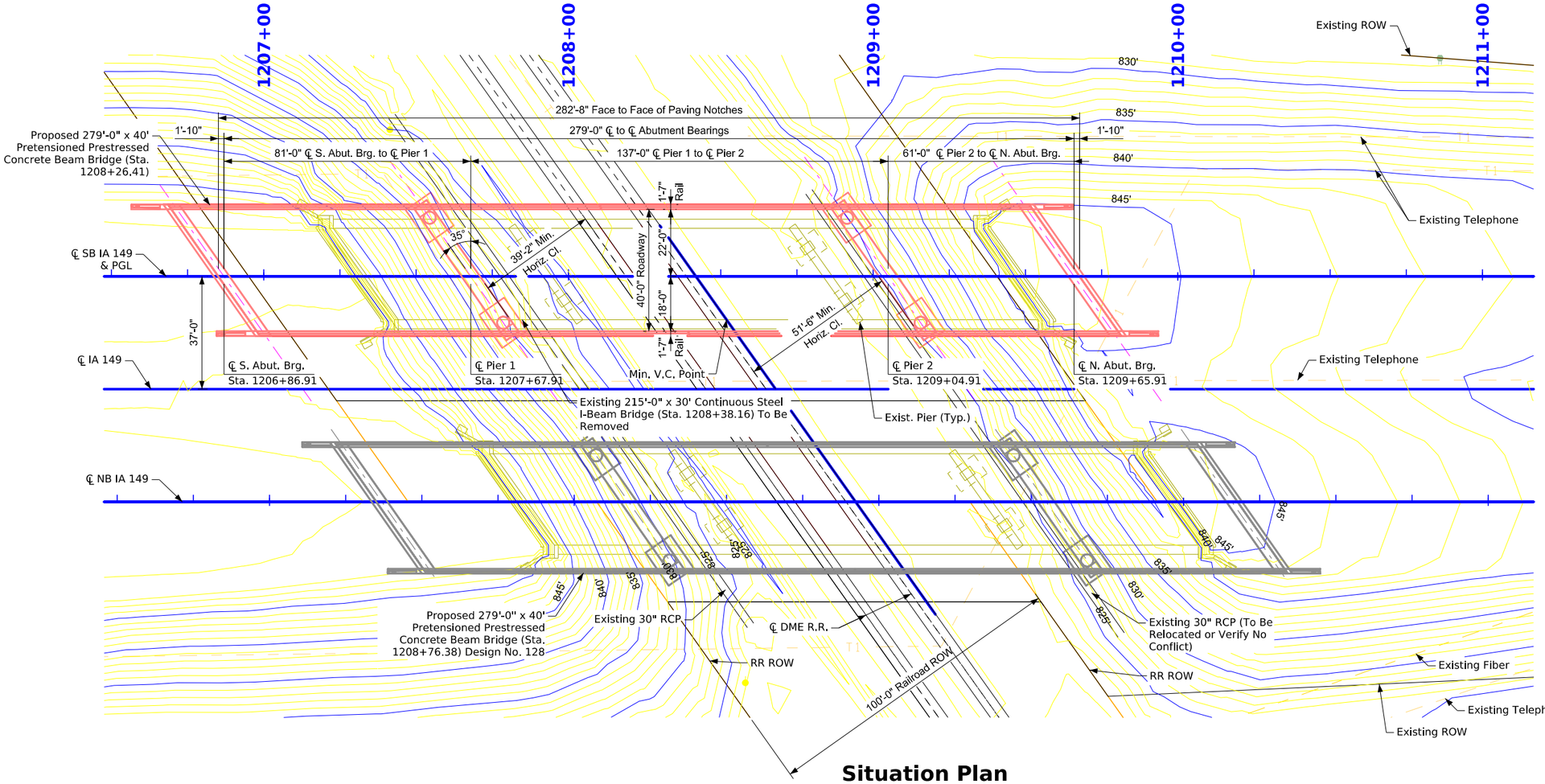
FILE NO.	ENGLISH	DESIGN TEAM JJO/BRH	Wapello COUNTY	PROJECT NUMBER BRF-149-1(096)--38-90	SHEET NUMBER V.2

3:55:29 PM 3/18/2024 bhackman pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9014903022\Bridge\(096)_Bridge-Unspecified\SHT_90149096_DSN#_050670_Z12.dgn

$g_1 = 2.97\ \%$ $g_2 = -5.01\ \%$

VPI Sta. = 1207+45.00
VPI Elev. = 861.220
VC = 700.00'

Proposed Profile
Grade ℄ SB IA 149



Situation Plan

Minimum Vertical Clearance

Overhead Station = 1208+53.29, Offset 16.08' Rt.
Overhead Elevation = 852.14
Depth of Superstructure = 64.5 in.
Deck Thickness = 8.5 in.
Estimated Haunch = 2 in.
Beam Depth = 54 in.
Underpass Station = 3+57.41, Offset 0
Underpass Elevation = 823.29
Minimum Vertical Clearance = 23.48'

General Notes:
--This design is for the replacement of the existing 215'-0" x 30'-0" Continuous I-Beam Bridge, Wapello County Design 260, FHWA No. 50680, Maint. No. 9003.9L149.

Design Notes:
--TL-5 Bridge Railing Proposed
--Pier Type - Frame (4' Assumed Column Diameter)
--Two conduits should be provided in the outside rail for future use

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.
--Proposed bridge will not effect flow in existing railroad ditches or drainage structures.

Utilities Note:

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

General Utility Symbols:

T - Telephone Line FO - Fiber Optic Line
- Power Poles

Location

SB IA 149 over DME RR
T-72N R-13 & 14W
Section 1 & 6
Center Township
Wapello County
City of Ottumwa
FHWA No. 50680 (Existing)
FHWA No. 50681 (Proposed)
Bridge Maint. No. 9003.9L149
Latitude 41.067479°
Longitude -92.410135°
FRA No. 375788T

N

0 20
Scale In Feet

Traffic Data

2022 AADT 3,500 V.P.D.
TRUCKS 6 %

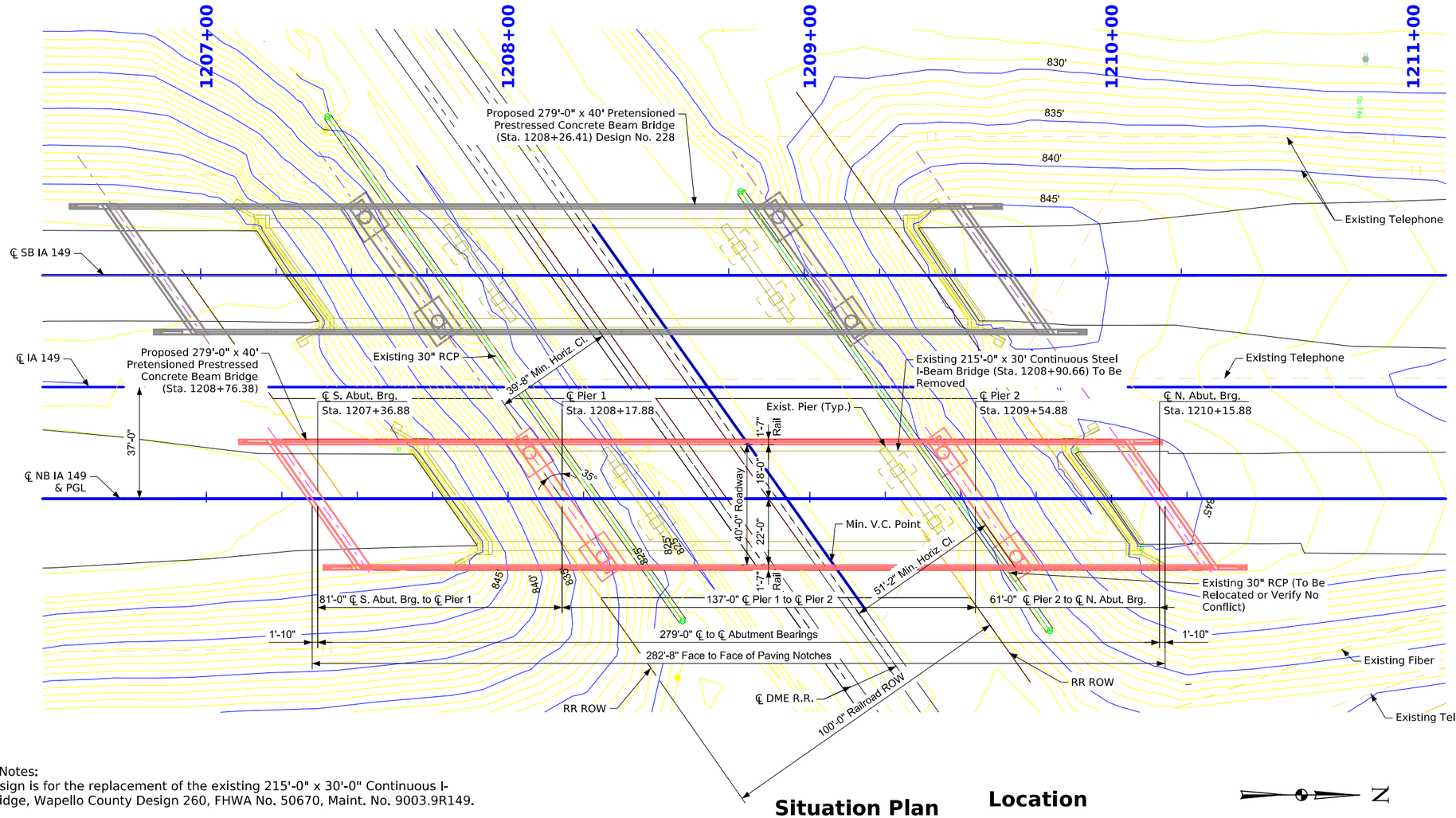
Preliminary

Design For 35° Skew RA
279'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge
81'-0" & 61'-0" End Spans BTD Beams 137'-0" Interior Span
Situation Plan
STA. 1208+26.41 (SB IA 149) August, 2024
Wapello County
IOWA DEPARTMENT OF TRANSPORTATION
Design No. 228 Design Sheet No. 1 of 1 FHWA No. 50681

FILE NO. 32549	ENGLISH	DESIGN TEAM **JJO/BRH**	**Wapello** COUNTY	PROJECT NUMBER **BRF-149-1(096)- -38-90**	SHEET NUMBER **V.1**

11:15:26 PM 5/9/2024 bhackman pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9014903022\Bridge\(096)_Bridge-Unspecified\SHT_90149096_DSN#_050680_Z12.dgn

Revised



$g_1 = 1.92\ \%$ $g_2 = -5.00\ \%$

VPI Sta. = 1208+00.00
VPI Elev. = 859.798
VC = 600.00'

Proposed Profile
Grade ℄ NB IA 149

Minimum Vertical Clearance

Overhead Station = 1209+06.58, Offset 20.08' Rt.
Overhead Elevation = 851.91
Depth of Superstructure = 64.5 in.
Deck Thickness = 8.5 in.
Estimated Haunch = 2 in.
Beam Depth = 54 in.
Underpass Station = 4+53.05, Offset 0
Underpass Elevation = 822.80
Minimum Vertical Clearance = 23.73'

Situation Plan

General Notes:
--This design is for the replacement of the existing 215'-0" x 30'-0" Continuous I-Beam Bridge, Wapello County Design 260, FHWA No. 50670, Maint. No. 9003.9R149.

Design Notes:
--TL-5 Bridge Railing Proposed
--Pier Type - Frame (4' Assumed Column Diameter)
--Two conduits should be provided in the outside rail for future use

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.
--Proposed bridge will not effect flow in existing railroad ditches or drainage structures.

Utilities Note:

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

General Utility Symbols:

T - Telephone Line FO - Fiber Optic Line
- Power Poles

Location

NB IA 149 over DME RR
T-72N R-13 & 14W
Section 1 & 6
Center Township
Wapello County
City of Ottumwa
FHWA No. 50670 (Existing)
FHWA No. 50671 (Proposed)
Bridge Maint. No. 9003.9R149
Latitude 41.066988°
Longitude -92.409861°
FRA No. 375788T

N

0 20
Scale In Feet

Traffic Data

2022 AADT 3,500 V.P.D.
TRUCKS 6 %

Preliminary

Design For 35 Skew RA

279'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

81'-0" & 61'-0" End Spans BTD Beams 137'-0" Interior Span

Situation Plan

STA. 1208+76.38 (NB IA 149) August 2024

Wapello County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 128 Design Sheet No. 1 of 1 FHWA No. 50671

FILE NO. 32549	ENGLISH	DESIGN TEAM JJO/BRH	Wapello COUNTY	PROJECT NUMBER BRF-149-1(096)--38-90	SHEET NUMBER V.2

11:15:37 PM 5/9/2024 bhackman pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9014903022\Bridge\(096)_Bridge-Unspecified\SHT_90149096_DSN#_050670_Z12.dgn

Revised

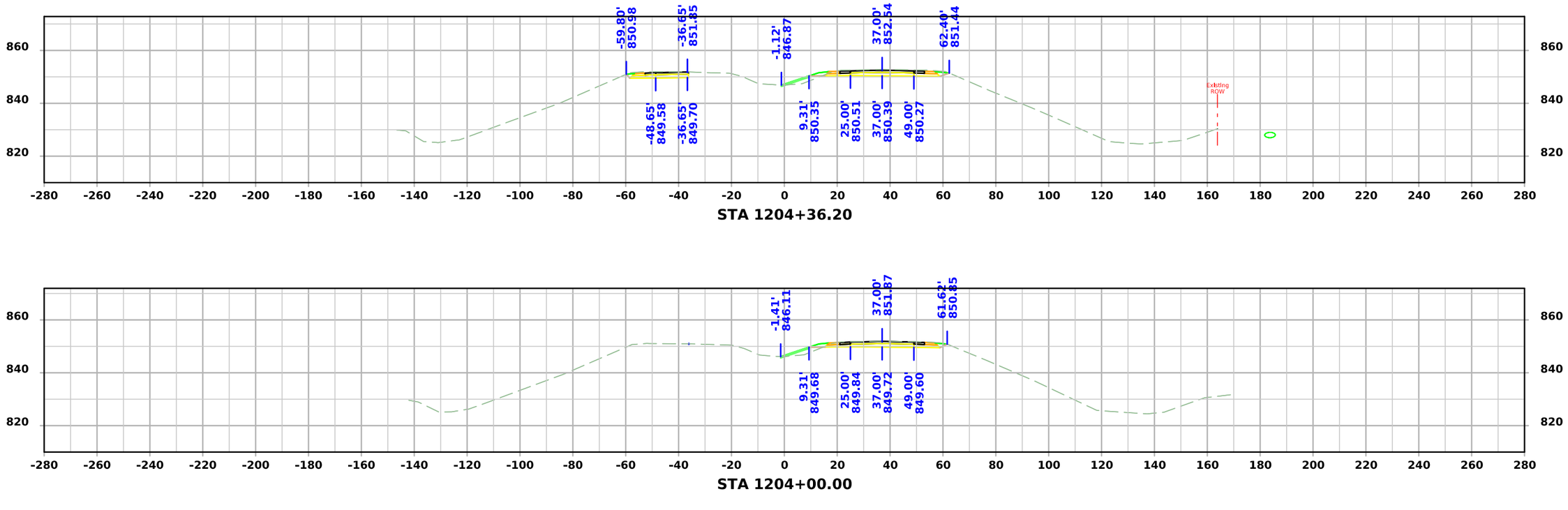
CROSS SECTION VIEW COLOR LEGEND

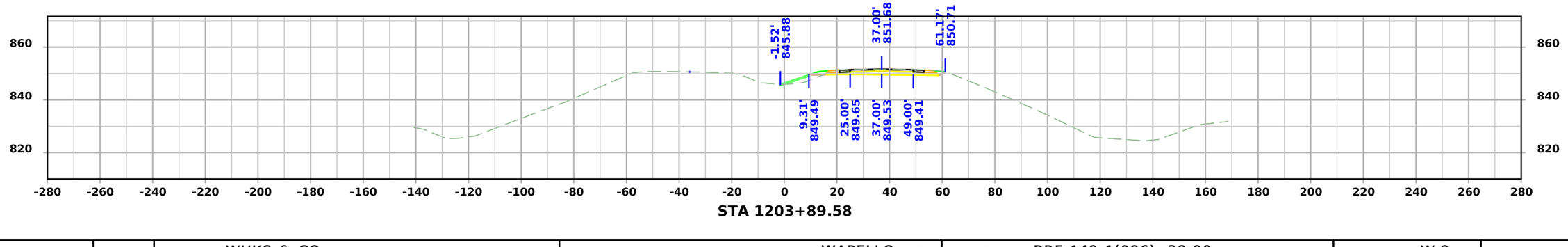
Design Color No.	Feature
Aggregate	
(64)	Choke Stone
(42)	Engineering Fabric
(8)	Flooded Backfill
(92)	Macadam Stone
(20)	Modified
(12)	Plowing Shaping
(14)	Porous Backfill
(8)	Revetment Class A
(6)	Revetment Class B
(62)	Revetment Class C
(188)	Revetment Class D
(28)	Revetment Class E
(12)	Shoulder 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

CROSS SECTIONS
LEGEND AND INFORMATION SHEET

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

IA HWY 149





FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	WAPELLO COUNTY	PROJECT NUMBER BRF-149-1(096)--38-90	SHEET NUMBER W.2

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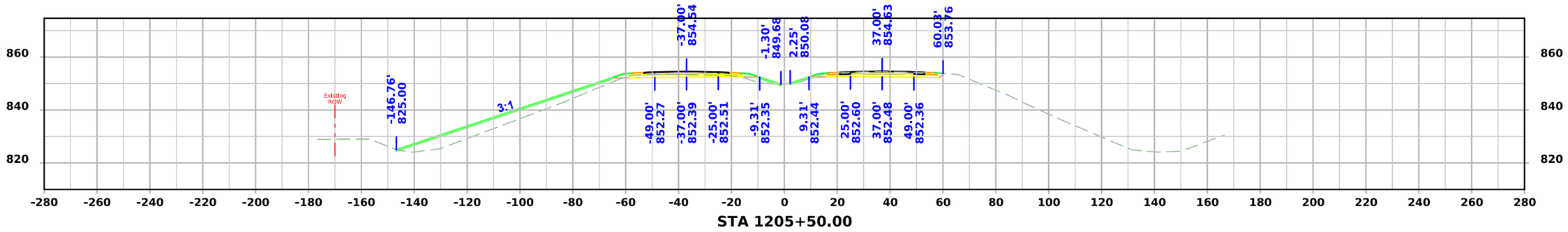
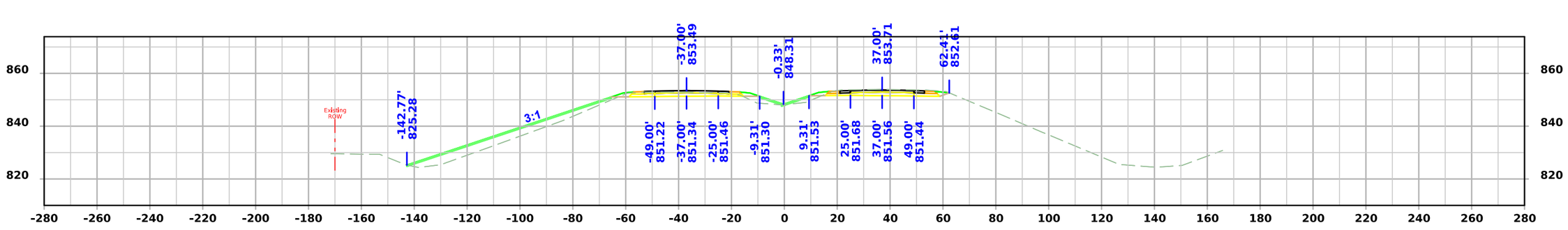
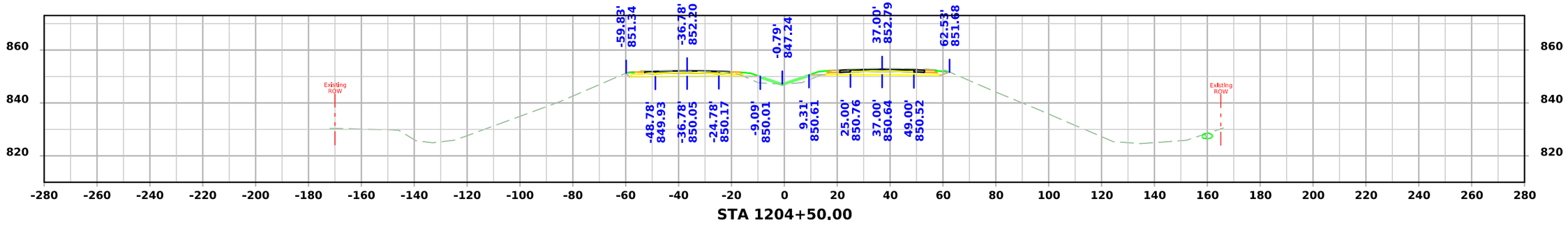
IA HWY 149



STA 1205+50.00



STA 1205+00.00

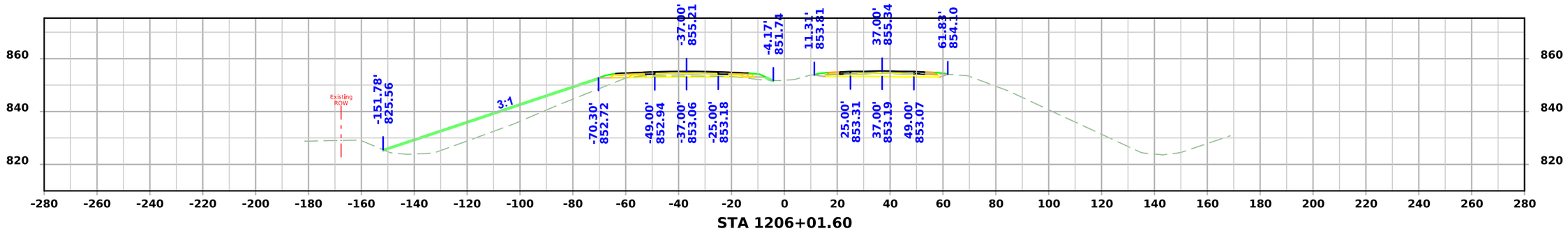


STA 1204+50.00

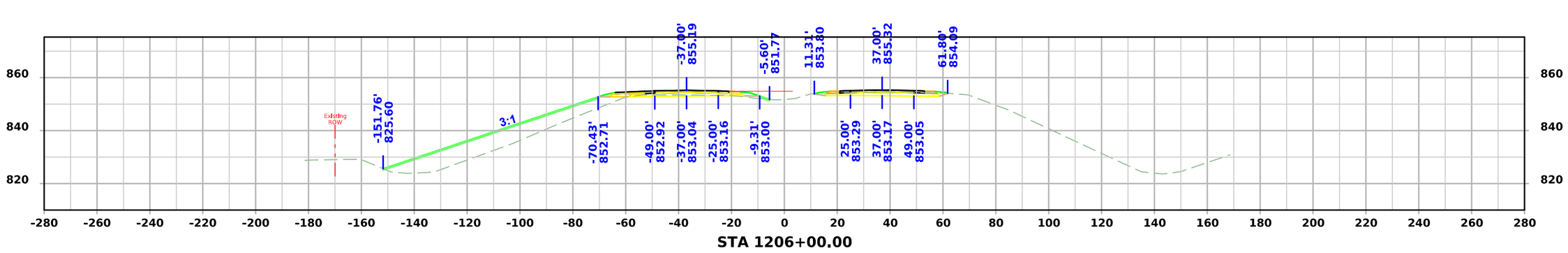
FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	WAPELLO COUNTY	PROJECT NUMBER BRF-149-1(096)--38-90	SHEET NUMBER W.3

09:34:35 10/04/2024 skoontz pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9014903022\Design\CADD_Files\Cross_Sections\XS_90149096Z12.dgn

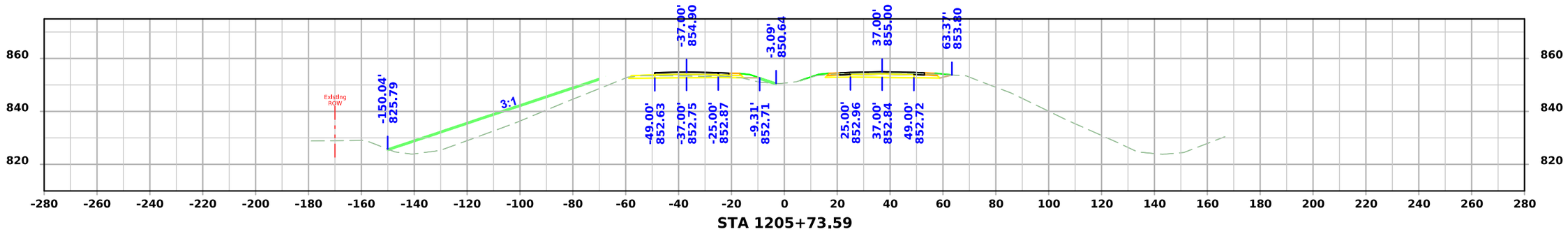
IA HWY 149



STA 1206+01.60



STA 1206+00.00

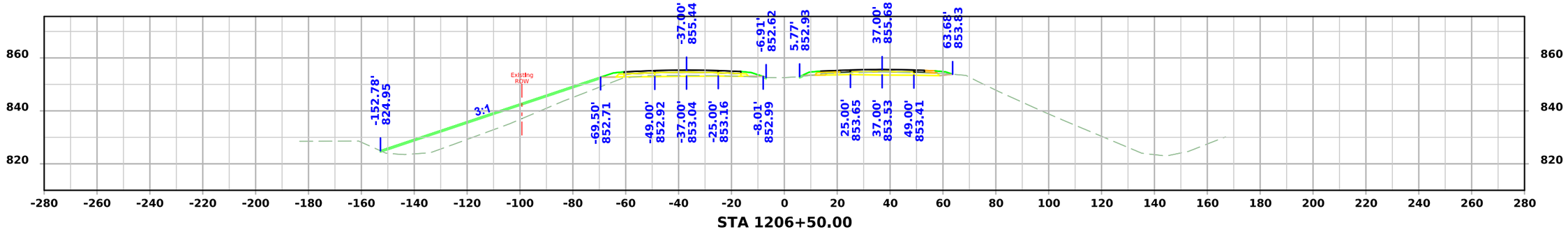


STA 1205+73.59

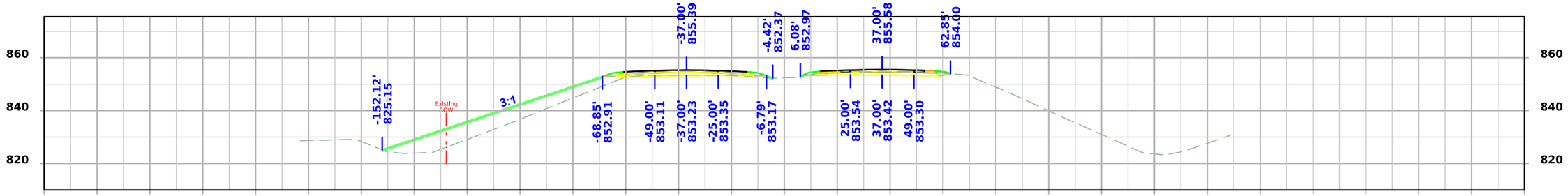
FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	WAPELLO COUNTY	PROJECT NUMBER BRF-149-1(096)--38-90	SHEET NUMBER W.4

09:34:36 10/04/2024 skoontz pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9014903022\Design\CADD_Files\Cross_Sections\XS_90149096Z12.dgn

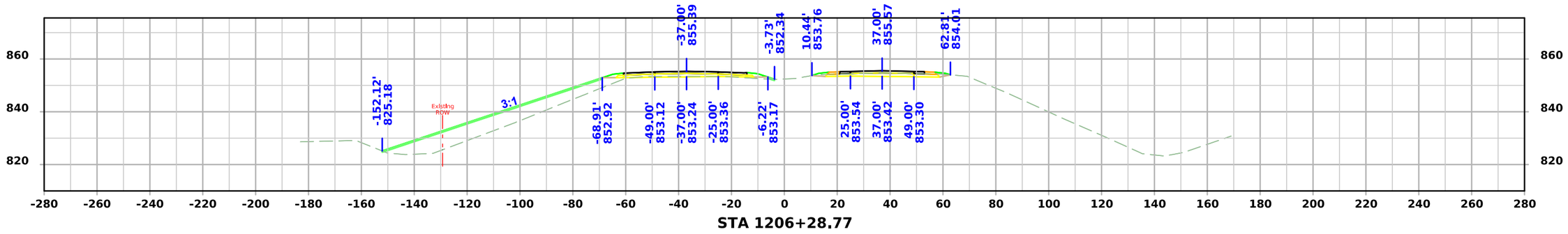
IA HWY 149



STA 1206+50.00



STA 1206+29.72

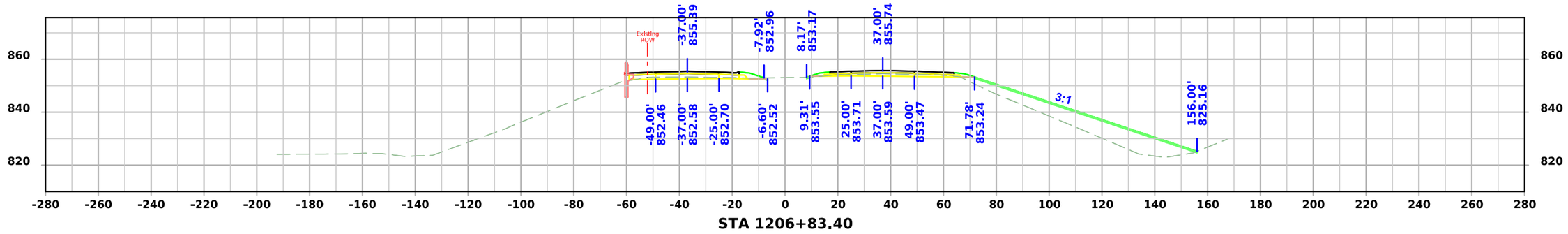


STA 1206+28.77

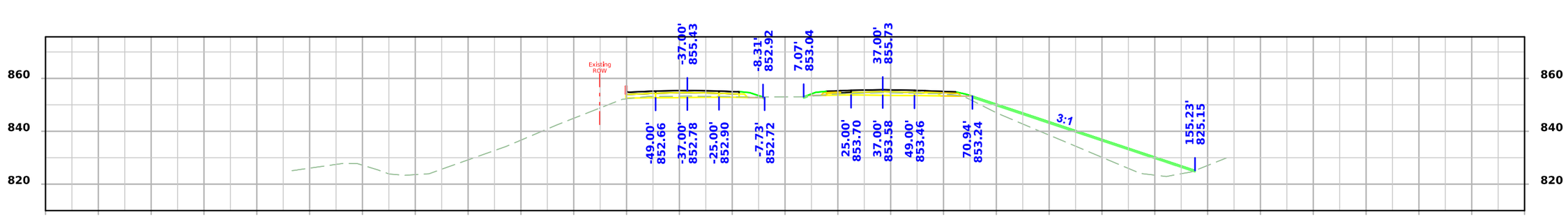
FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	WAPELLO COUNTY	PROJECT NUMBER BRF-149-1(096)--38-90	SHEET NUMBER W.5

09:34:37 10/04/2024 skoontz pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9014903022\Design\CADD_Files\Cross_Sections\XS_90149096Z12.dgn

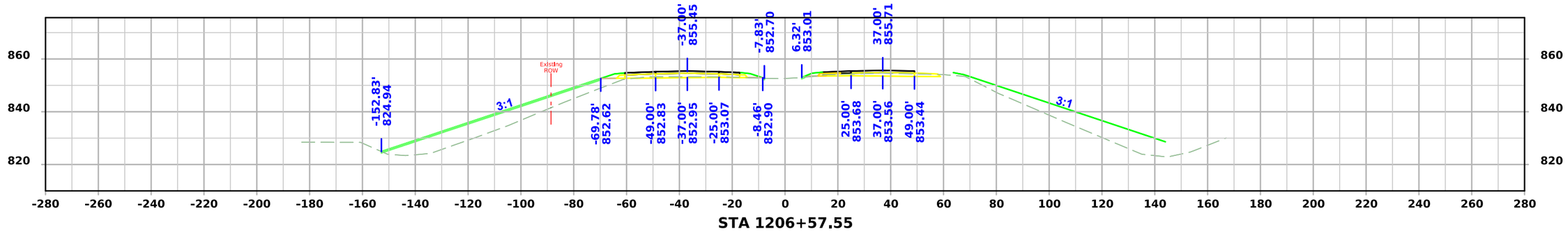
IA HWY 149



STA 1206+83.40



STA 1206+70.60

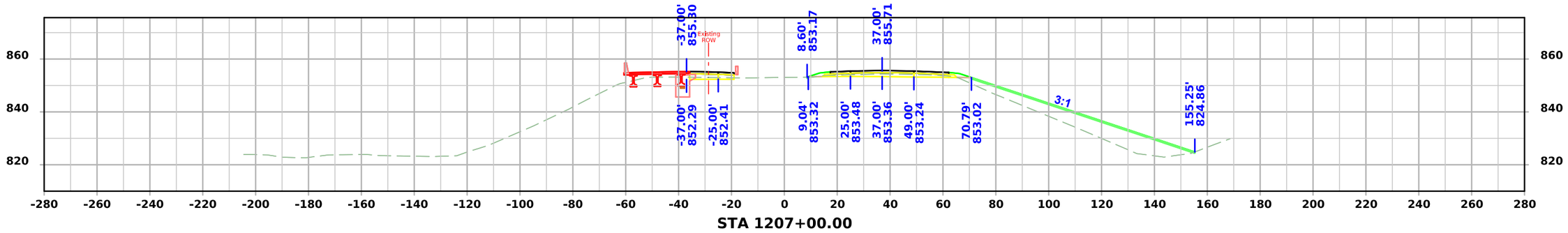


STA 1206+57.55

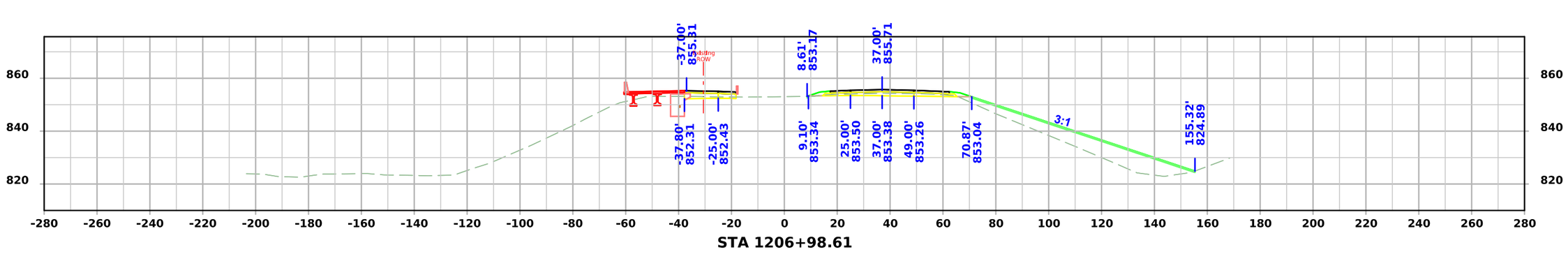
FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	WAPELLO COUNTY	PROJECT NUMBER BRF-149-1(096)--38-90	SHEET NUMBER W.6

09:34:39 10/04/2024 skoontz pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9014903022\Design\CADD_Files\Cross_Sections\XS_90149096Z12.dgn

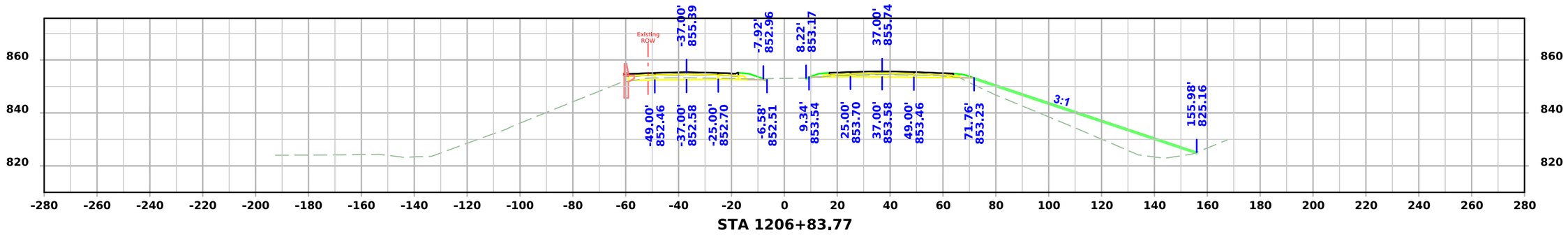
IA HWY 149



STA 1207+00.00



STA 1206+98.61

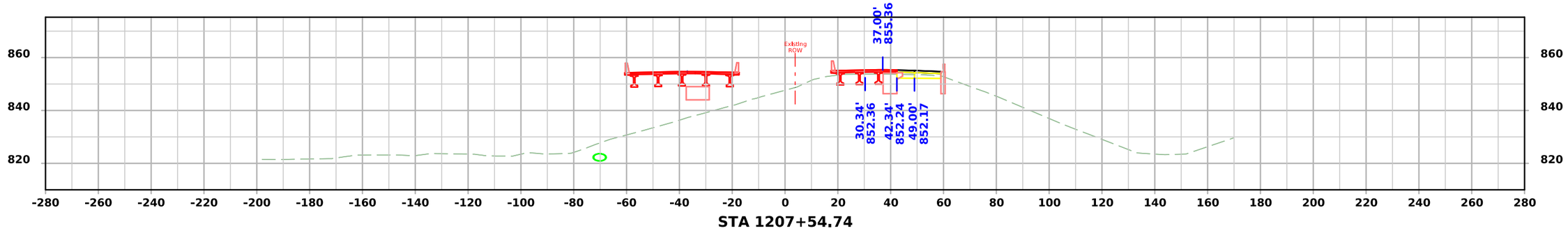


STA 1206+83.77

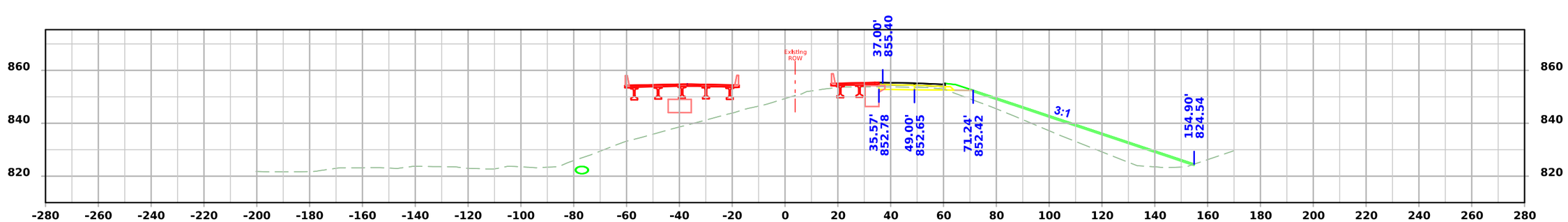
FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	WAPELLO COUNTY	PROJECT NUMBER BRF-149-1(096)--38-90	SHEET NUMBER W.7

09:34:41 10/04/2024 skoontz pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9014903022\Design\CADD_Files\Cross_Sections\XS_90149096Z12.dgn

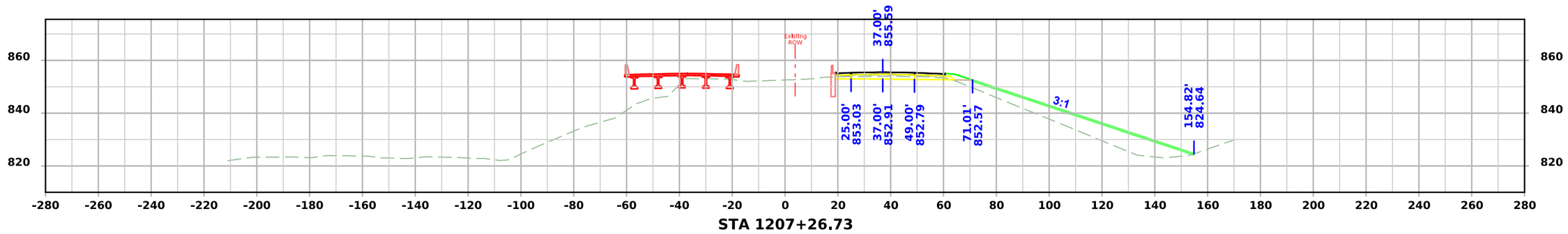
IA HWY 149



STA 1207+54.74



STA 1207+50.00

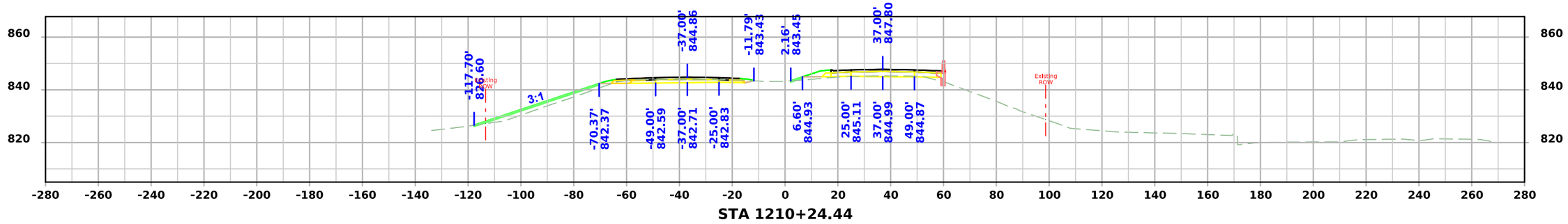


STA 1207+26.73

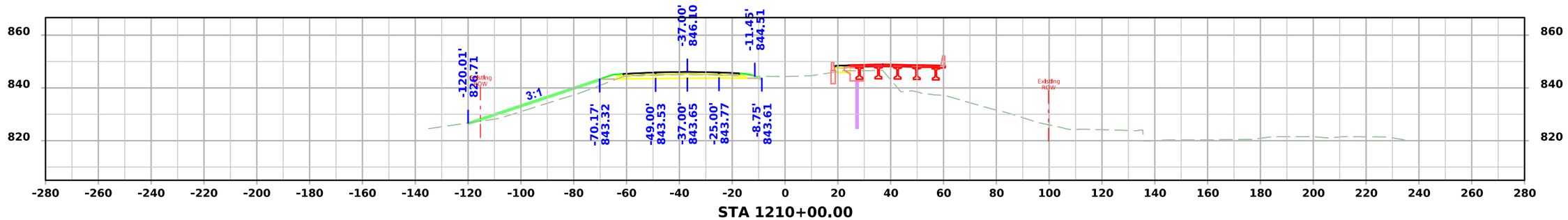
FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	WAPELLO COUNTY	PROJECT NUMBER BRF-149-1(096)--38-90	SHEET NUMBER W.8

09:34:42 10/04/2024 skoontz pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9014903022\Design\CADD_Files\Cross_Sections\XS_90149096Z12.dgn

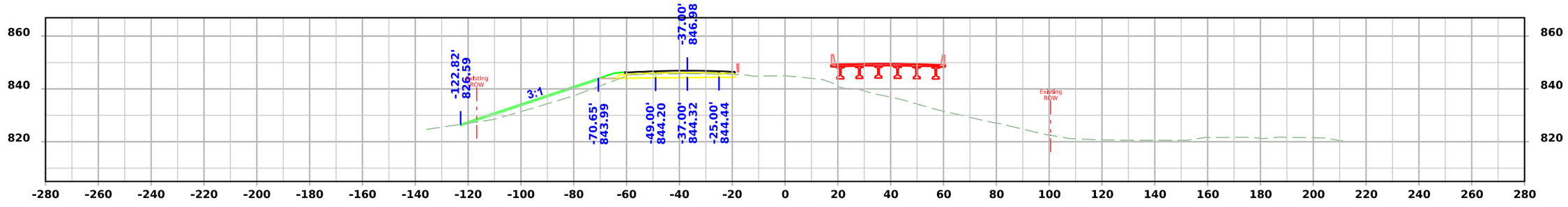
IA HWY 149



STA 1210+24.44



STA 1210+00.00

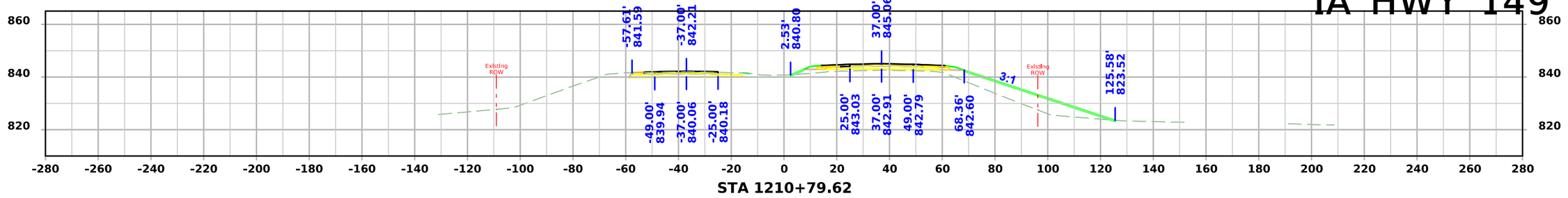


STA 1209+82.60

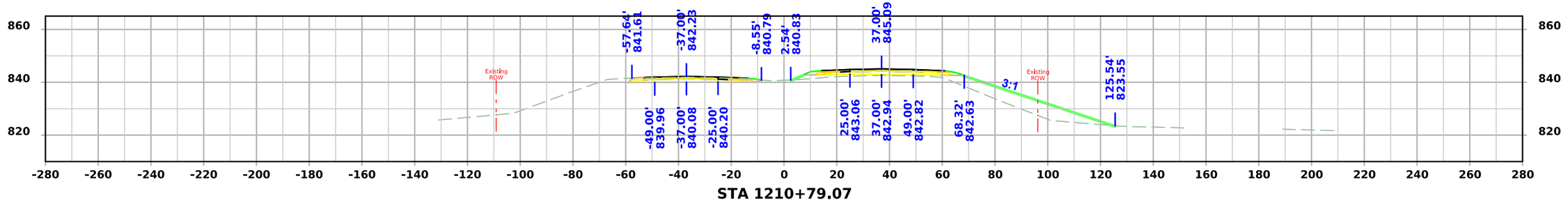
FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	WAPELLO COUNTY	PROJECT NUMBER BRF-149-1(096)--38-90	SHEET NUMBER W.9

09:34:44 10/04/2024 skoontz pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9014903022\Design\CADD_Files\Cross_Sections\XS_90149096Z12.dgn

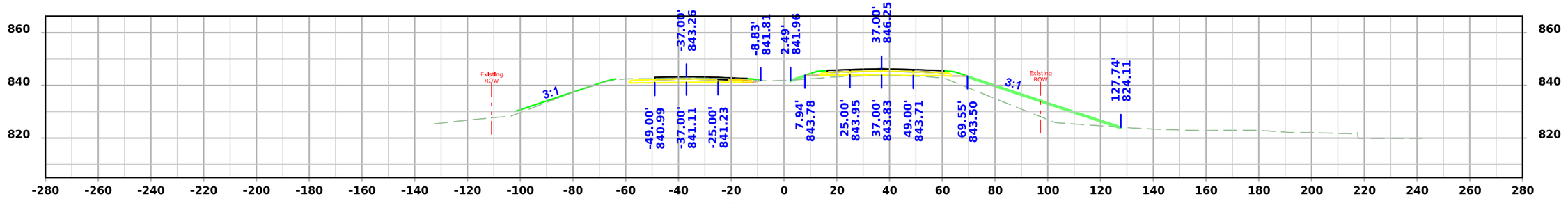
IA HWY 149



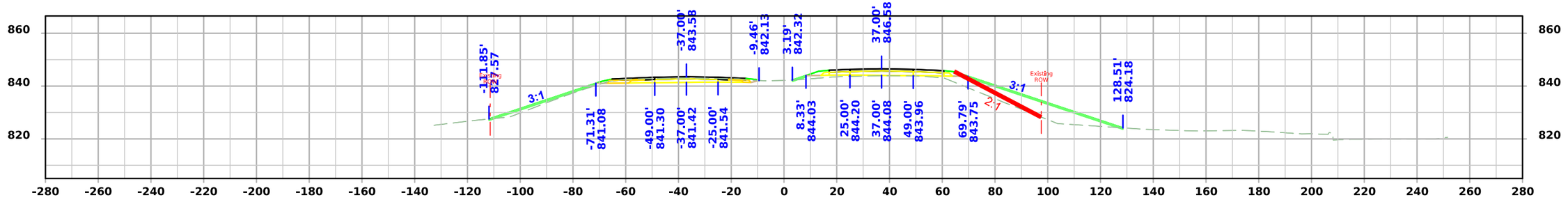
STA 1210+79.62



STA 1210+79.07



STA 1210+56.60

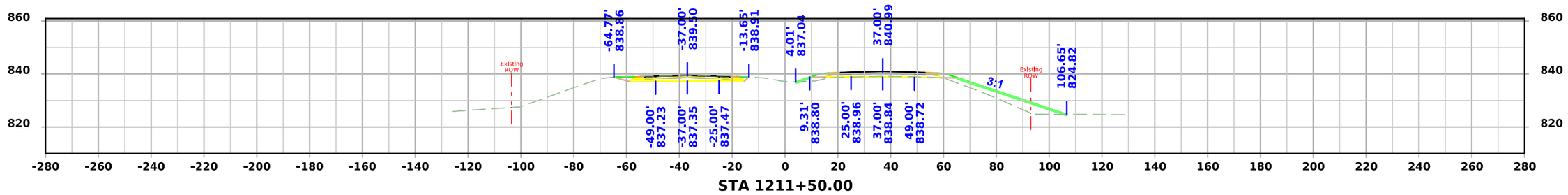


STA 1210+50.00

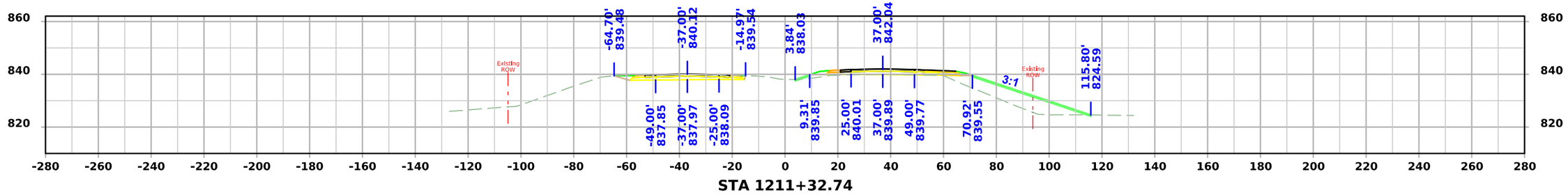
FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	WAPELLO COUNTY	PROJECT NUMBER BRF-149-1(096)--38-90	SHEET NUMBER W.10

09:34:46 10/04/2024 skoontz pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9014903022\Design\CADD_Files\Cross_Sections\XS_90149096Z12.dgn

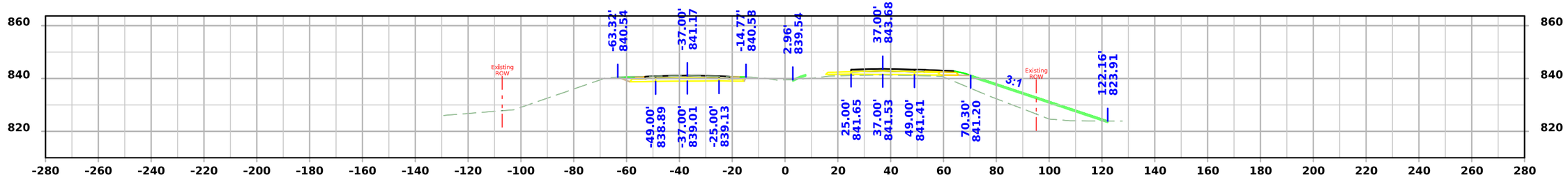
IA HWY 149



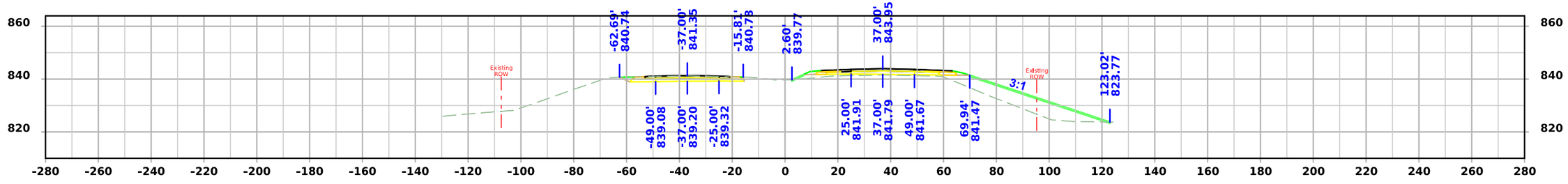
STA 1211+50.00



STA 1211+32.74



STA 1211+04.74

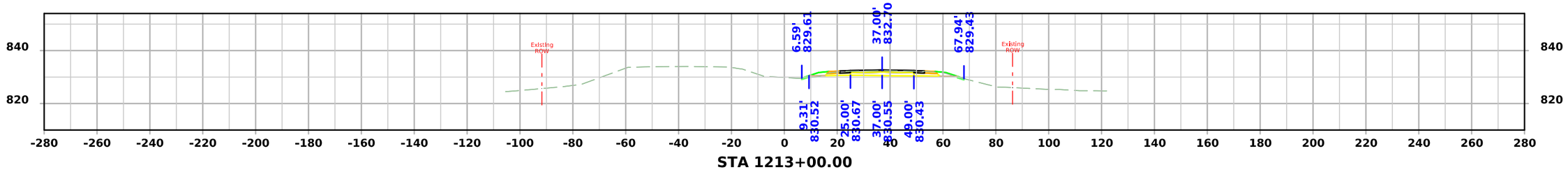


STA 1211+00.00

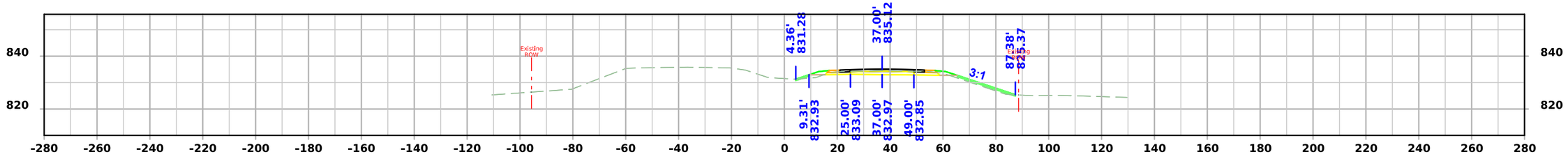
FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	WAPELLO COUNTY	PROJECT NUMBER BRF-149-1(096)--38-90	SHEET NUMBER W.11

09:34:47 10/04/2024 skoontz pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9014903022\Design\CADD_Files\Cross_Sections\XS_90149096Z12.dgn

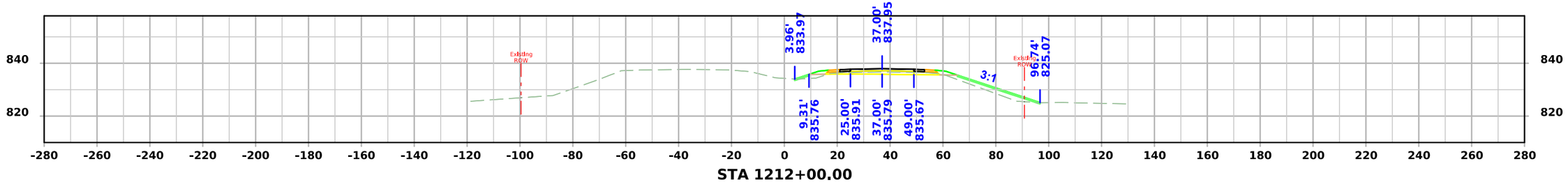
IA HWY 149



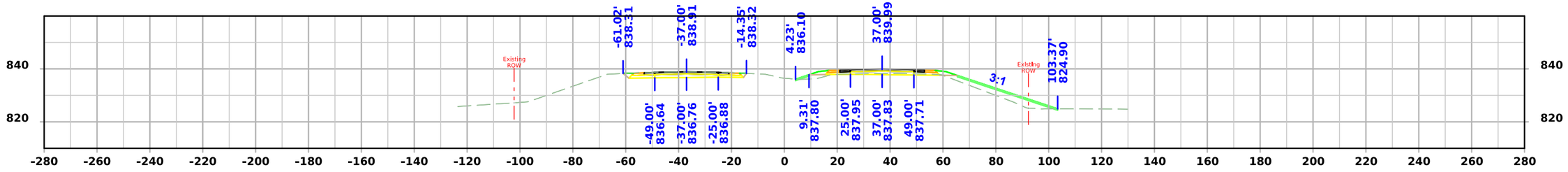
STA 1213+00.00



STA 1212+50.00



STA 1212+00.00

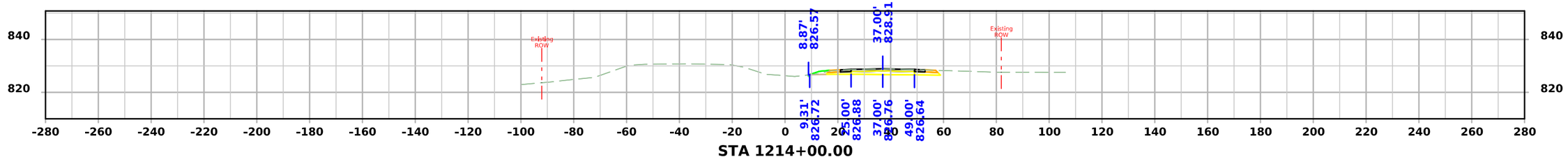


STA 1211+66.51

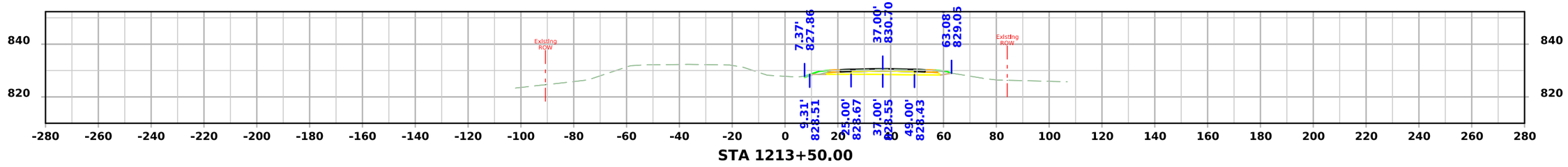
FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	WAPELLO COUNTY	PROJECT NUMBER BRF-149-1(096)--38-90	SHEET NUMBER W.12

09:34:48 10/04/2024 skoontz pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9014903022\Design\CADD_Files\Cross_Sections\XS_90149096Z12.dgn

IA HWY 149



STA 1214+00.00



STA 1213+50.00

FILE NO.	ENGLISH	DESIGN TEAM WHKS & CO.	WAPELLO COUNTY	PROJECT NUMBER BRF-149-1(096)--38-90	SHEET NUMBER W.13

09:34:49 10/04/2024 skoontz pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\9014903022\Design\CADD_Files\Cross_Sections\XS_90149096Z12.dgn