LETTING DATE 10/19/2027

Bridge-Unspecified

BRF-169-6(093)--38-94

WEBSTER COUNTY

IOWA | DOT

REVISIONS

	TOTAL
	..
PROJECT IDENTIFICATION NUMBER	
22-94-169-020	
PROJECT NUMBER	
BRF-169-6(093)--38-94	
R.O.W. PROJECT NUMBER	
NHSN-169-6(096)--2R-94	

PLANS OF PROPOSED IMPROVEMENT ON THE

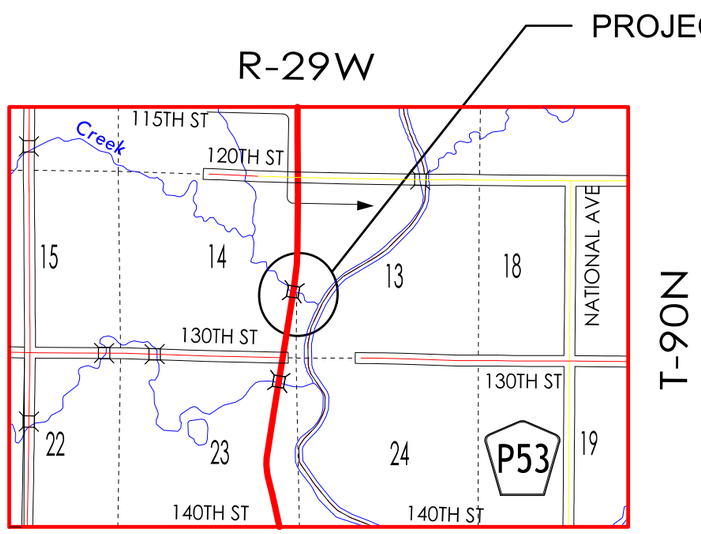
PRIMARY ROAD SYSTEM
WEBSTER COUNTY
Bridge-Unspecified
Bass Creek 0.6 mi S of Co Rd C56

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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

IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com
811 Know what's below. Call before you dig.



INDEX OF SEALS			
SHEET NO.	NAME	TYPE	BID QUANTITY SHEETS
A.1	Jeremey Vortherms	Primary Signature Block	C.01

PRELIMINARY PLANS

Subject to change by final design.

D2 PLAN - Date: X

FILE NO.	ENGLISH	DESIGN TEAM Vortherms/Breitbach/Ringgenberg	WEBSTER COUNTY	PROJECT NUMBER BRF-169-6(093)--38-94	SHEET NUMBER A.1

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FIELD EXAM CHECKLIST

1 - Duration of project?

2 - Speed Limit

55 mph

3 - Speed Limit during construction

Road will be closed

4 - Is sight distance a problem?

No

5 - Patching quantities-full depth, partial depth, and surface.

No

6 - Does patching need to be done in the project area or do the construction limits need to be extended?
Who will provide locations of patches by milepost?

No

7 - Are rumble strips going to be placed with this project or a separate project?

With Project

8 - Leveling and strengthening locations and lengths (i.e. station to station).

None

9 - Areas of haul-outs.

None

10 - Any survey needed? (culvert extensions, safety dikes,right turn lanes,horizontal curves, ext..)

Survey is done - include construction survey in bid items

11 - Do any of the utilities need to be relocated (power/telephone poles) either
permanently or temporarily for construction?

Sean Passick

12 - Names and addresses of affected utility companies.

Sean Passick

13 - Locations of entrances to be reshaped.

N/A

14 - Are there existing drainage problems?

No

FIELD EXAM CHECKLIST

15 - Note any special features not shown on plan.

None

16 - Note condition of existing culverts.

N/A - Replacing bridge with culvert

17 - Names of affected special events.

18 - Locations of mailboxes to be relocated to a minimum of 8' from the pavement edge.

N/A

19 - Number and location of EF joints.

EF joints will be removed with bridge removal

20 - Disposition of bridge handrail and guardrail, including posts.

N/A

21 - Inventory of existing guardrail.

Jefferson?

22 - Remove & Reinstall Signs - District Maintenance or by the Contractor?

N/A

23 - Longitudinal joint repair locations (station to station).

N/A

24 - Locations and quantities of engineering fabric to be placed over random cracks.

N/A

25 - Tabulation of adjustment of fixtures.

N/A

26 - Clearing and grubbing quantities - by unit or by area?

By Area

27 - Resurfacing Projects - is District Survey able to preserve Section Corners & Points?
If "no", then add these items under Construction Survey.

Tony H

FIELD EXAM CHECKLIST

Contractor furnish borrow? (Yes) / (No)

Full depth patches to be PCC? (Yes) / (No)

Full depth PCC patches to be doweled? (Yes) / (No)

Soils to determine and provide tabulation of subdrains? (Yes) / (No)

Pollution Prevention Plan required? (Yes) / (No)

Field Office? (Yes) / (No)

Construction Survey and or Point Preservation by DOT or Contractor? See Dist. 1 Surveyor for this (DOT) / (Contractor).

Survey by Office of Design? (Yes) / (No)

~~Pavement markings for turn lanes as determined by the District? (Yes) / (No)~~

~~Any RWIS or Traffic Recorder Sites within project limits? (Yes) / (No)~~

IOWA DEPARTMENT OF TRANSPORTATION

TO OFFICE: District 1 **DATE:** February 18, 2025

ATTENTION: Allison Smyth **PROJECT:** Webster County
BRF-169-6(093)--38-94
PIN: 22-94-169-020

FROM: John E. Bartholomew

BUREAU: Design

SUBJECT: Project Concept Statement; (Final, D0)

This project involves the replacement of the U.S. 169 bridge (Maint. No. 9465.6S169) over Bass Creek, 0.6 mi S of Co Rd C56.

A concept review was held on 08/05/2024. Those present included Allison Smyth, Jeremy Vortherms, and Sean Passick, from The District 1 Office; Jimmy Ellis, and Matt Erickson from The Bridges and Structures Bureau; Kenneth Brink, Brennan Dolan, Micheal Carlson, Jill Garton, Jim Galliart and Shawn Goetz from The Location and Environment Bureau; Samuel Sturtz, from Local Systems; and John Bartholomew, and Hollie Richey, from The Design Bureau.

The three alternatives considered were:

1. Replace the existing 109 ft. x 30 ft. pretensioned prestressed concrete beam bridge (PPCB) with a 100 ft. x 40 ft. PPCB bridge with bulb tee beams.
   This alternative was dismissed due to increased lifetime costs of the structure
2. Replace the existing 109 ft. x 30 ft. pretensioned prestressed concrete beam bridge (PPCB) with a twin 12 ft. x 11 ft. x 130 ft. reinforced concrete box (RCB) culvert.
   The cost of this alternative is **$1,307,200**
3. Replace the existing 109 ft. x 30 ft. pretensioned prestressed concrete beam bridge (PPCB) with a 36 ft. x 12 ft. x 48 ft. precast arch.
   This alternative was dismissed due to the need for a guard rail.

Alternative 2 is the preferred alternative. Additional right of way will be required. Traffic will be maintained by an offsite detour.

The draft project concept statement was sent out for review and comment with concerns to be resolved by Friday February 14, 2025. Comments received during the review period have been considered and resolved.

This project is recommended for construction in FY 2028. The Bridges and Structures Bureau will coordinate plan preparation with assistance from the Design Bureau.

JEB: JDL
Attach.
cc:

C. Purcell	K. D. Nicholson	M. Dell
J. S. Nelson	M. Nop	M. A. Swenson
D. E. Sprengeler	C. C. Poole	S. Majors
A. Poole	K. Brink	D. L. Newell
B. Bradley	J. W. Laaser-Webb	W. A. Sorenson
E. C. Wright	M. E. Ross	A. A. Welch
J. Harris	M. Van Dyke	B. Hofer
G. Karssen	H. Naraghi	S. Anderson
D. Stokes	R. Harris	M. Todsen
B. Dolan	T. Lovan	M. Solberg
T. Gustafson	D. Dudley	L. Armstrong
B. Smith	A. Swisher	J. Vortherms
S. Nixon	J. Becker	J. Garton
S. Passick	R. Ellis	S. Ebel
B. Walter	R. Meyer	J. Hauber
S. Sersland	M. E. Khoda	J. Ellis

FINAL PROJECT CONCEPT STATEMENT

U.S. 169 Bridge over Bass Creek, 0.6 miles south of County Road C56.

Webster County
BRF-169-6(093)--38-94
PIN: 22-94-169-020
Maint. No. 9465.6S169
FHWA No. 52250

Highway Division
Design Bureau

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

February 18, 2025

I. STUDY AREA

A. Project Description

This project involves the replacement of the U.S. 169 bridge (Maint. No. 9465.6S169) over Bass Creek, 0.6 mi S of Co Rd C56.

The three alternatives considered were:

1. Replace the existing 109 ft. x 30 ft. pretensioned prestressed concrete beam bridge (PPCB) with a 100 ft. x 40 ft. PPCB bridge with bulb tee beams.
   This alternative was dismissed due to increased lifetime costs of the structure
2. Replace the existing 109 ft. x 30 ft. pretensioned prestressed concrete beam bridge (PPCB) with a twin 12 ft. x 11 ft. x 130 ft. reinforced concrete box (RCB) culvert.
   The cost of this alternative is **$1,307,200**
3. Replace the existing 109 ft. x 30 ft. pretensioned prestressed concrete beam bridge (PPCB) with a 36 ft. x 12 ft. x 48 ft. pre-cast arch.
   This alternative was dismissed due to the need for a guard rail.

Alternative 2 is the preferred alternative

B. Need for Project

This is a 109 ft. x 30 ft. pretensioned prestressed concrete beam bridge that was built in 1958. The bridge was overlaid in 2001 and exhibits extensive cracking in the wearing surface. The bottom of the deck has numerous leaching areas with rust staining, hollows, and spalls. The beams have spalls with exposed steel and delamination. The substructure also has cracking and leaching cracks. The bridge was designed for live loads below current standards. Due to the overall condition of the bridge, a replacement is recommended. (see page 2 for imagery)

(Webster county 52250)

IA 169 southbound over Bass Creek

Bridge profile

Barrier rail deterioration

Pier 1 far face

C. Present Facility

The existing structure is a 109 ft. long x 30 ft. wide, PPCB bridge constructed in 1958.

US 169 in the project area is 24 ft. wide 10 in. depth PCC pavement with 10 ft. effective shoulders (6 ft. HMA, 4 ft. granular), and 6:1/3:1 foreslopes, constructed in 1930. HMA resurfacing was accomplished in 2009.

D. Traffic Estimates

The 2028 construction year and 2048 design year average daily traffic estimates are 4,900 ADT with 18 % trucks and 5,300 ADT with 18 % trucks, respectively.

E. Sufficiency Ratings

U.S. 169 is classified as a "commercial and industrial" route and is a maintenance service level "B" roadway. The Bridge Condition Index is 65.6 and the Bridge Condition Rating is "Poor".

F. Access Control

Access rights will not be acquired for this project.

G. Crash History

During the five-year study period from January 1, 2019, through December 31, 2023, there were 3 crashes including, 1 personal injury crashes, and 2 personal property crashes. U.S. 6 in the project area has a PCR of 0.01 crash/mile/year and is listed as "negligible".

II. PROJECT CONCEPT

A. Feasible Alternatives

Alternative #1 - Replace with a bridge

The existing 109 ft. x 30 ft., PPCB bridge will be replaced with a 100 ft. long' x 40 ft. wide, PPCB bridge with bulb tee beams. The typical cross section adjacent to the bridge will consist of a 24' roadway with 10' effective shoulders (, 6 ft. HMA and 4 ft. granular) and 6:1/3:1 foreslopes.

This alternative was dismissed due to the increased maintenance cost of the structure.

Alternative #2 - Replace with a 12 ft. x 11 ft. x 130 ft. twin RCB culvert

The existing 109 ft. x 30 ft., PPCB bridge will be replaced with a twin 12 ft. wide x 11 ft. tall x 130 ft. long reinforced concrete box (RCB) placed at a 0 degree right ahead skew. The typical cross section will consist of a 24' roadway with 10' effective shoulders (6 ft. HMA and 4 ft. granular) and 6:1/3:1 foreslopes.

The roadway will be reconstructed on the existing vertical and horizontal alignment. The flow line of the box will be buried 1 ft. below the existing flow line in the channel. This will allow the bottom of the box to silt in and provide a natural bottom for fish passage. The existing ditches will need to be relocated to meet the inlet and outlet flowlines of the new RCB. Class E revetment will be placed at the ends of the RCB. Apply erosion control and rural seeding and fertilizing to all disturbed areas.

Right of way is required. Traffic will be maintained by an off-site detour.

Bridge Items	Estimated Costs
New Culvert	$ 517,000
Bridge Removal	40,400
Revetment	15,000
Mobilization - 10%	67,200
M & C - 20%	147,900
Bedrock Excavation	100,000
Bridge Costs	**$ 887,500**
Roadway Items	
Removal of Pavement	11,100
PCC Pavement	44,200
Modified Subbase	10,600
Flooded Backfill	47,500
Granular Shoulder	2,300
HMA Shoulder	9,700
Embankment in place, contractor furnished	104,200
Guardrail Removal	4,600
Pavement markings	5500
Seeding and Fertilizing	2,000
Erosion Control	10,000
Right of Way	10,000
Wetland Mitigation	50,000
Traffic Control - 5%	18,000
Mobilization - 5%	18,000
M & C - 30%	72,000
Roadway Costs	**$ 419,700**
Project Total	**$1,307,200**

Alternative #3 - Replace with a 36 ft. x 12 ft. x 48 ft. pre-cast arch

The existing 109 ft. x 30 ft., PPCB bridge will be replaced with a 36 ft. long x 12 ft. wide x 48 ft. tall precast arch. The typical cross section will consist of a 24' roadway with 10' effective shoulders (, 6 ft. HMA and 4 ft. granular) and 6:1/3:1 foreslopes.

This alternative was dismissed due to the need for a guard rail to protect the structure.

B. Detour Analysis

U.S. 169 will be closed, and an offsite detour will be utilized. It is anticipated the detour will be in place for approximately 120 days. The detour would follow County Road D14 east for 2.5 miles, then north on IA 413 for 5 miles and west on County Road C56 for 2.5 miles. Out of distance travel is 5 miles. The total distance user cost is anticipated to be $750,000. The cost for county road maintenance will be $59,075.78 as calculated by the Gas Tax Method. Detour signing costs will be $10,000.

C. Recommendations

It is recommended that the present structure be replaced with a twin 12 ft. wide x 11 ft. tall x 130 ft. long reinforced concrete box as described in Alternative 2. The cost of this alternative is expected to be: **$1,307,200.**

D. Construction Sequence

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

E. ADA Accommodations

There are no bike paths or sidewalks adjacent to U.S. 169; therefore, no ADA accommodations are planned in conjunction with this project.

F. Special Considerations

This will not be a traffic critical project.

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

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

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

Special survey is requested to correlate LiDAR to project survey. 3.5 shots approximately 20 feet apart along the flat pavement surface within a lane on U.S. 169 near the bridge (9465.6S169) replacement.

Right of Way does appear to be required for this project.

The environmental resource study area attached to this concept should be reviewed by district staff, project designers and all project team members. The environmental resource teams are looking for your input and collaboration to ensure the environmental resource study area encapsulates the project needs. If project needs surpass these limits, it is important that you communicate with the environmental resource teams as soon as possible. Changes to the environmental resource study area after the final concept will likely result in project schedule changes and may cause delays to the project letting.

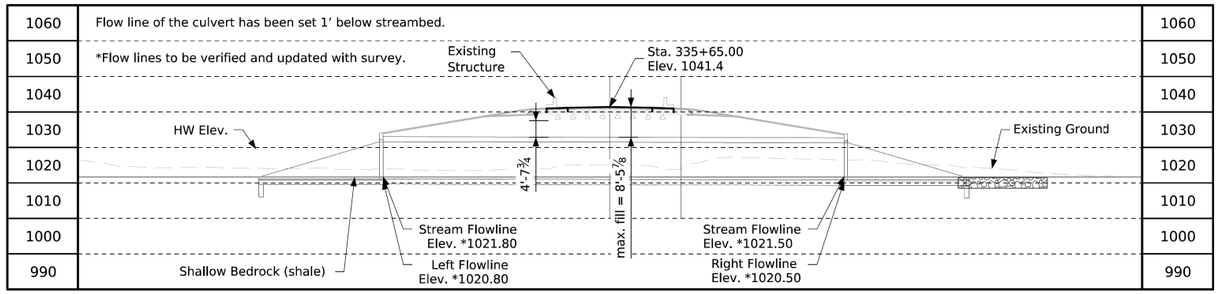
Water Resources has reviewed this project and based on preliminary desktop observations, has determined that a Section 404 Permit will be required. Mitigation may be required, but it is considered unlikely. Fieldwork will have to be completed to make a final determination.

G. Program Status

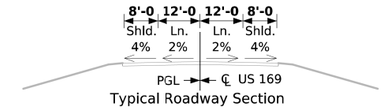
Site data has been developed by the Design Bureau. This project is listed in the 2025-2029 Iowa Transportation Improvement Program, with $742,000 for replacement in FY 2028. Costs for this project may be eligible for bridge replacement funds. A schedule of events will be developed following approval of the Project Concept.

JEB: JDL

Control Point:

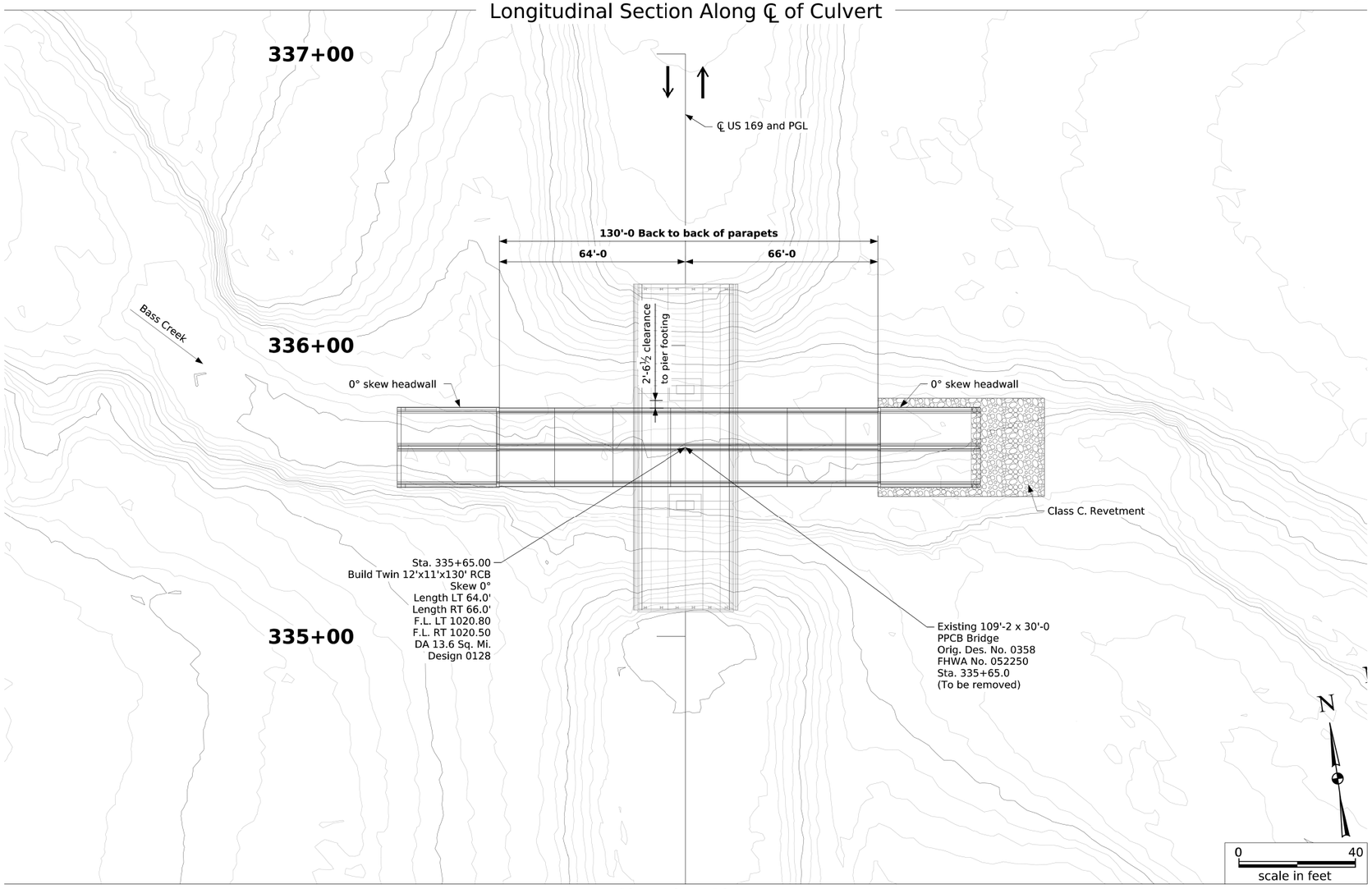


Longitudinal Section Along ℄ of Culvert



Typical Roadway Section

General Notes
This design is for the replacement of the existing 109'-2 x 30'-0 PPCB Bridge, Design No. 0358, FHWA No. 052250, Maint. No. 9465.6S169



Situation Plan

Location

US 169 over Bass Creek
T-90N, R-29W
Section 14
Deer Creek Township
Webster County
FHWA No. 052250 (existing)
FHWA No. 0522xx (proposed)
Maint. No. 9465.6S169
Latitude 42.6065985° (SIA)
Longitude -94.22774889° (SIA)

US 169 Traffic Est.

20?? AADT ___? ??? V.P.D.
20?? AADT ___? ??? V.P.D.
20?? DHV ___ ??? V.P.H.
Trucks ___? ? %
Total
Design ESALs ---

Hydraulic Data

RIDB: BassC_Webs_0.18
Drainage Area = 13.6 Sq. Mi.
Q_{50} = 1,590 cfs
HW Elev. = 1029.6
Exit Velocity = 10.5 fps
Stream Slope = ??.? Ft./Mi.

Roadway alignments are not designed and are to be designed by others at a later time to meet current design criteria.

Preliminary - Concept

Design for 0° skew

Twin 12'-0 x 11'-0 x 130'-0 CIP Reinforced Concrete Box Culvert

Situation Plan - Concept

Sta. 335+65.0 (℄ US 169)
TSL Date: August 2024

Webster County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0128
FHWA No. XXXXXX

FILE NO. 32517	ENGLISH	DESIGN TEAM MJE	Webster COUNTY	PROJECT NUMBER BRF-169-6(093)--38-94	SHEET NUMBER

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FILE NO.	ENGLISH	DESIGN TEAM	COUNTY	PROJECT NUMBER	SHEET NUMBER A.08

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Utilities

Webster-Calhoun Co-op Telephone Assn. Telephone
Daryl Promes
5153510833 dpromes@wccta.com

MidAmerican Energy Company
Matt Novy
515-252-6730 matthew.novy@midamerican.com

Iowa Communications Network Fiber Transmission
David Augspurger
daugspurger@icn.state.ia.us

Lumen Centurylink
Steve Parker
5073581978 Steven.Parker4@lumen.com

Bridge Bureau Attachment for Concept Statement

Date: July, 2024
By: Matt Erickson
Location: US 169 over Bass Creek, 0.6 mi. S of jct. SR C56

Webster County
Phase No.: BRF-169-6(093)--38-94
Project Code: 22-94-169-020
Maintenance No.: 9465.6S169

1. Regulatory/Coordination
   a. Iowa DNR Flood Plain permit = No
   b. Iowa DNR Sovereign Lands permit = No
   c. Local Record of Coordination = Yes, Webster County
   d. Flood Insurance Study = Yes, non-detailed, Zone A, panel 19187C0200C, effective 2012-12-04
   e. Drainage District = No
   f. Corps of Engineers Section 408 = No
   g. State Water Trail or Paddling Route = No
   h. Historic Structure = No
   i. Federally owned land in vicinity = No
   j. USGS or Iowa Flood Center (IFC) gage or sensor impacted? No

2. Hydrologic/Hydraulic Analysis/RIDB Dataset
   a. Design discharges determined = Yes, MRRE 2013-5086
   b. Hydraulic analysis done = Partial, 1D HEC-RAS with statewide LiDAR. Hydraulics will need to be updated / verified with survey data.
   c. Riverine Infrastructure Database (RIDB) dataset is required with B1 submittal = Yes, location: BassC_Webs, river mile: 0.18
   d. Project development hydraulic analysis will comply with the RIDB Guidelines at a minimum.

3. Structure/Roadway Layout Considerations
   a. Shallow bedrock indicated by existing borings.
   b. Roadway profile grade raise is not anticipated.
   c. Existing pier removal cannot be staged.

4. Special construction issues
   a. Shallow bedrock may require consideration of drilled shafts.
   b. Bedrock will need to be excavated for the placement of the RCB.
   c. Rock excavation will cause issues with the existing bridge in place and will cause constructability issues. RCB placement with flowable mortar is not an option.

5. Special survey = Yes, see below.

6. Aesthetic enhancements = No

7. Other
   a. N/A

Special Survey:

For the purpose of correlating LiDAR to project survey. 3-5 shots approximately 20 feet apart along the flat pavement surface within a lane on US 169 near the bridge (9465.6S169) replacement.

FILE NO.	ENGLISH	DESIGN TEAM	COUNTY	PROJECT NUMBER	SHEET NUMBER A.11

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US 169 (093) Draft Environmental Resources Survey Area

Write a description for your map.

FILE NO.	ENGLISH	DESIGN TEAM Vortherms/Breitbach/Ringgenberg	WEBSTER COUNTY	PROJECT NUMBER BRF-169-6(093)--38-94	SHEET NUMBER A.13

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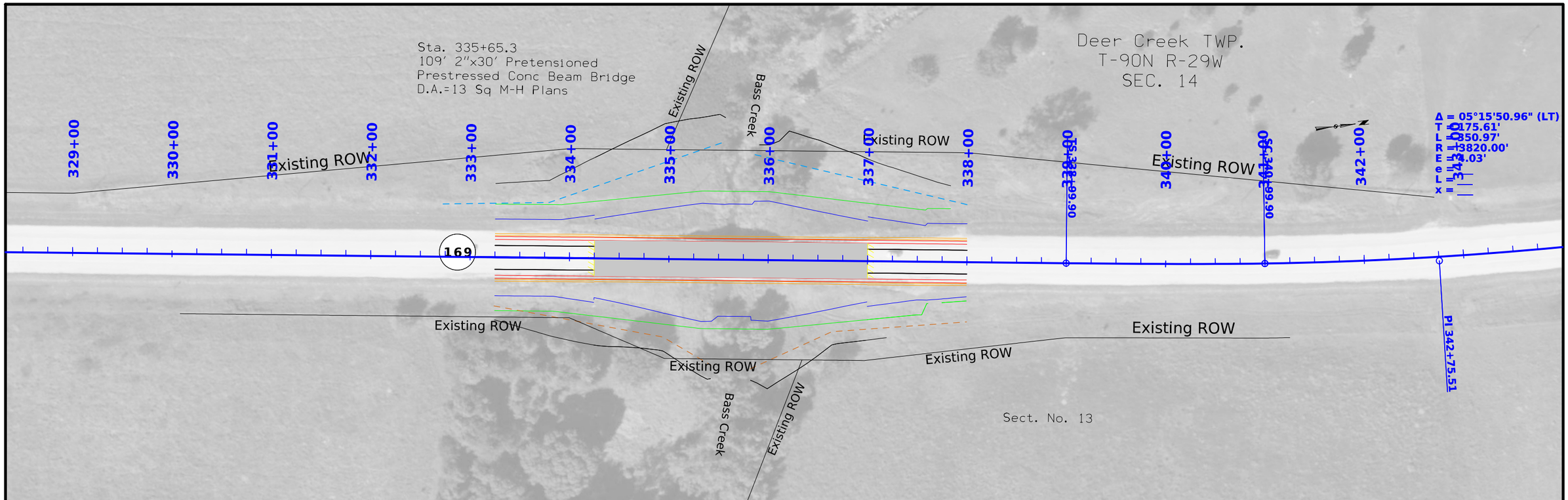

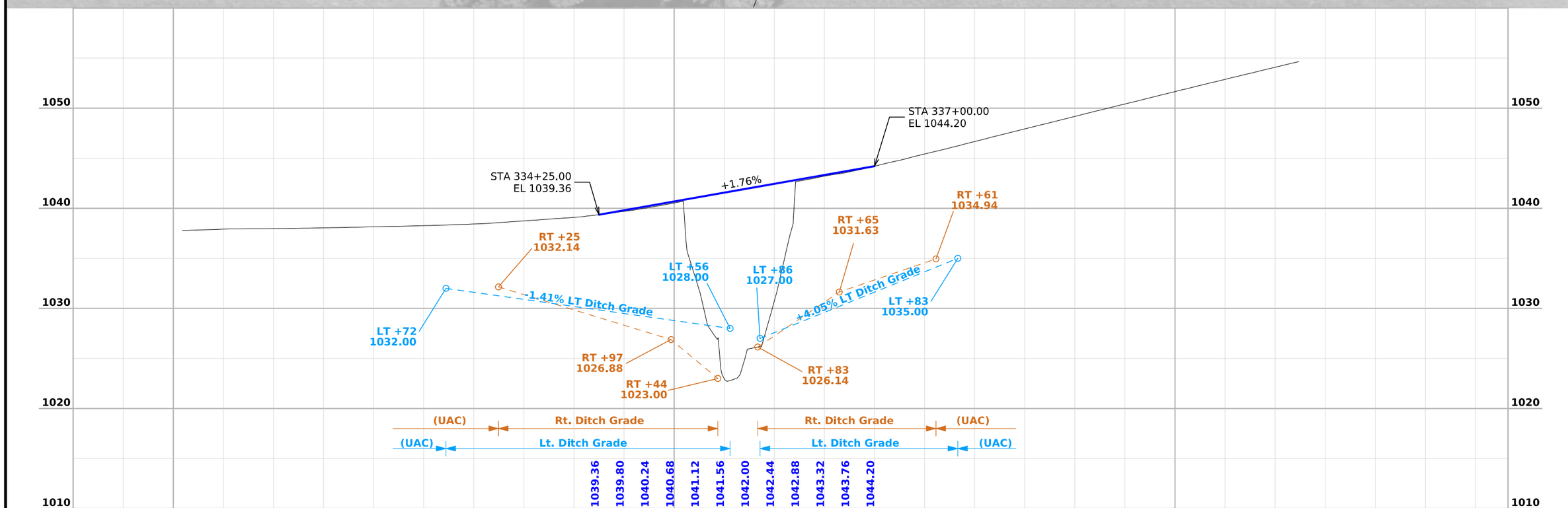

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108-23A
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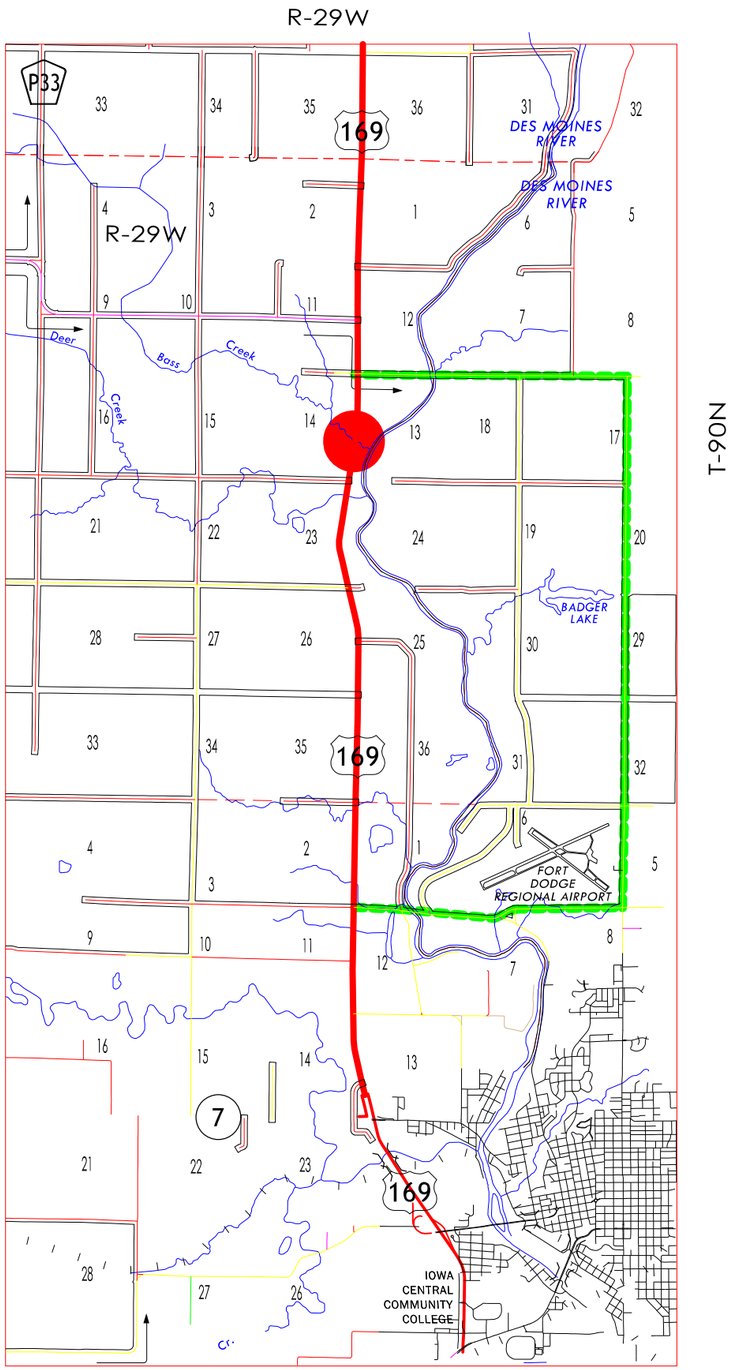
TRAFFIC CONTROL PLAN

IA 169 will be closed to traffic. Refer to detour on sheet J.2.



DETOUR ROUTE

[redacted]

FILE NO.	ENGLISH	DESIGN TEAM **Vortherms/Breitbach/Ringgenberg**	**WEBSTER** COUNTY	PROJECT NUMBER **BRF-169-6(093)--38-94**	SHEET NUMBER **J.2**

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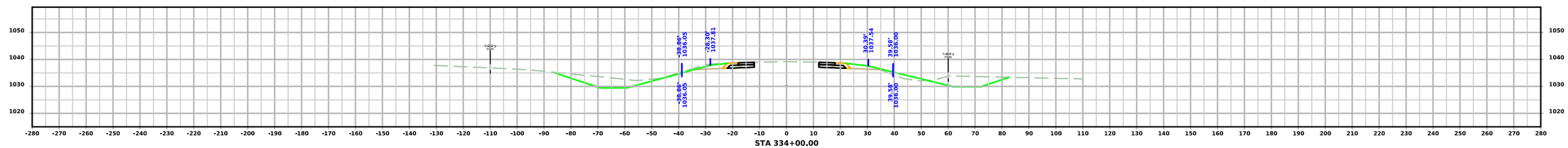

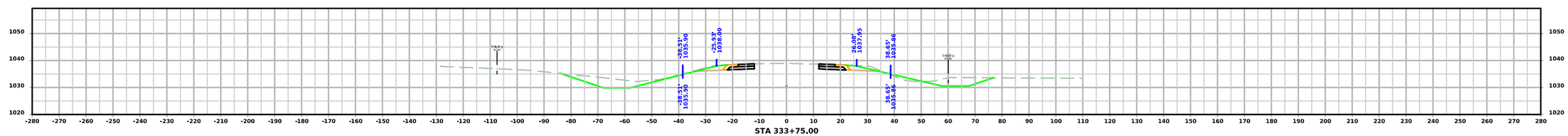

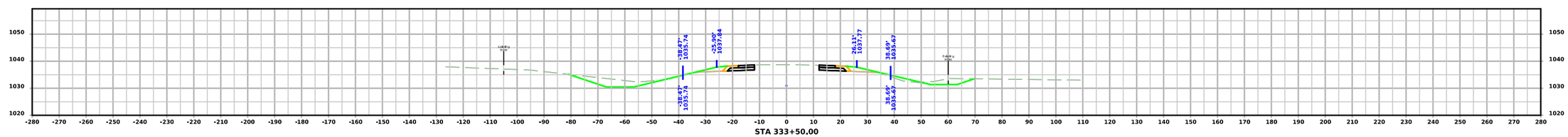

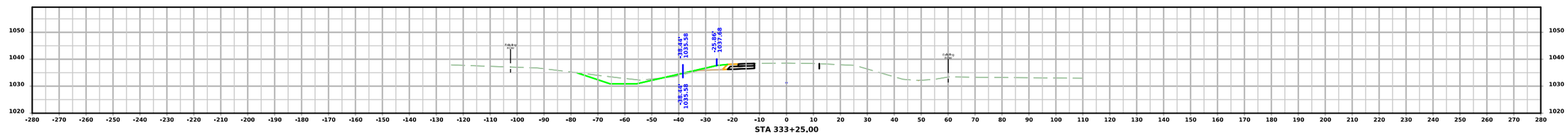

FILE NO.	ENGLISH	DESIGN TEAM Vortherms/Breitbach/Ringgenberg	WEBSTER COUNTY	PROJECT NUMBER BRF-169-6(093)--38-94	SHEET NUMBER W.1

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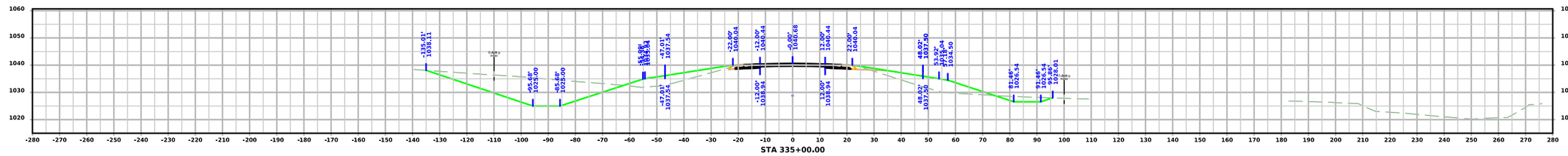

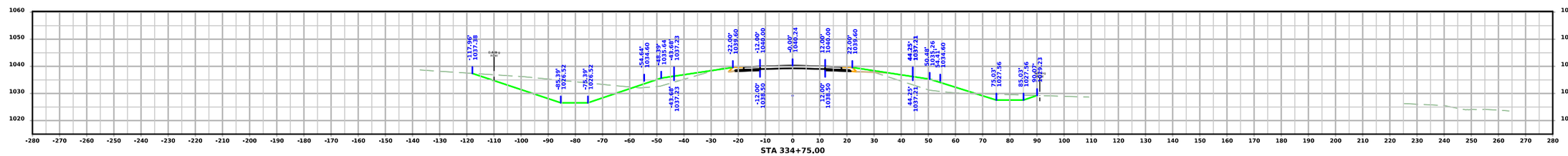

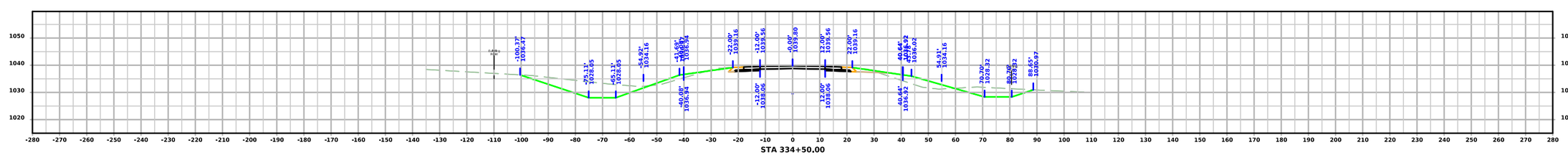

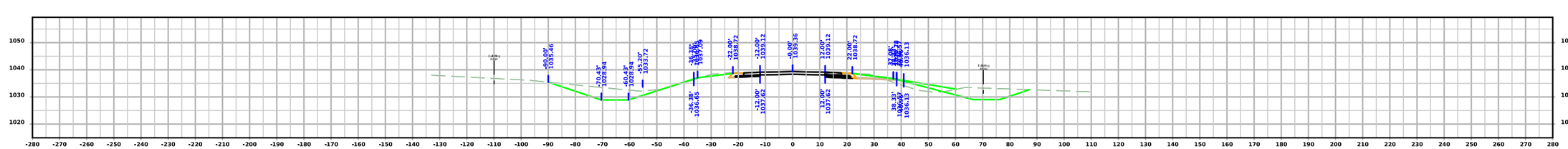

FILE NO.	ENGLISH	DESIGN TEAM Vortherms/Breitbach/Ringgenberg	WEBSTER COUNTY	PROJECT NUMBER BRF-169-6(093)--38-94	SHEET NUMBER W.2

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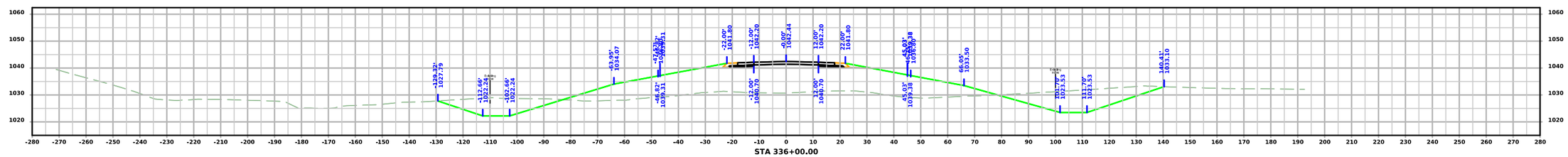

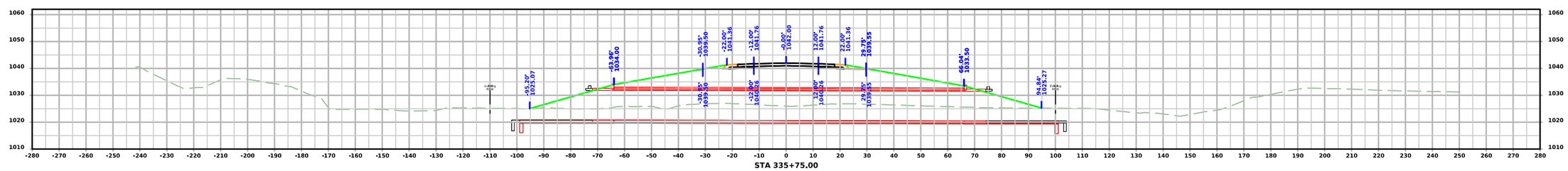

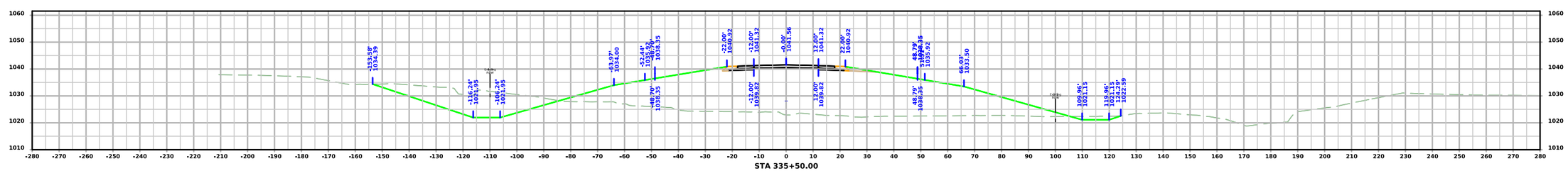

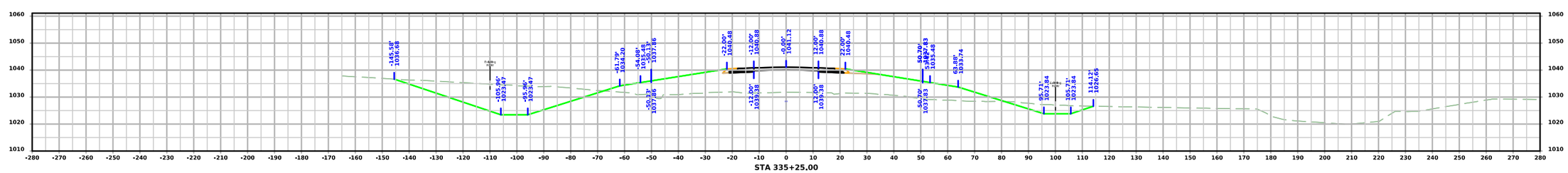

FILE NO.	ENGLISH	DESIGN TEAM Vortherms/Breitbach/Ringgenberg	WEBSTER COUNTY	PROJECT NUMBER BRF-169-6(093)--38-94	SHEET NUMBER W.3

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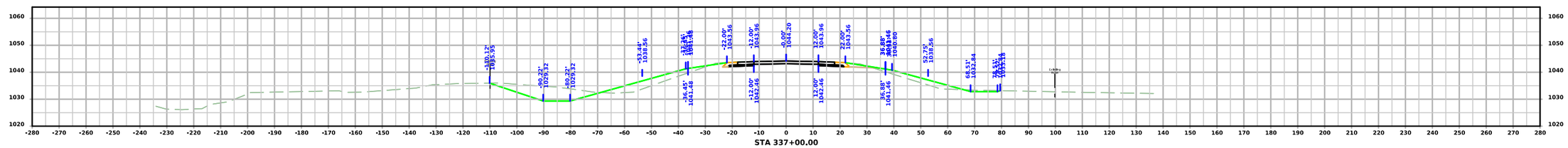

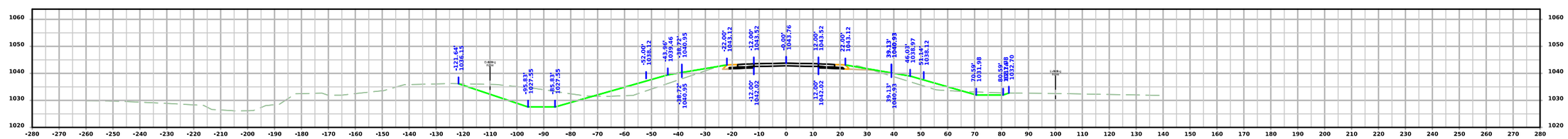

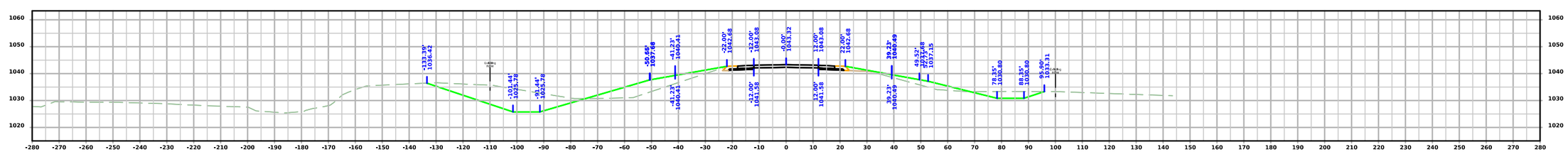

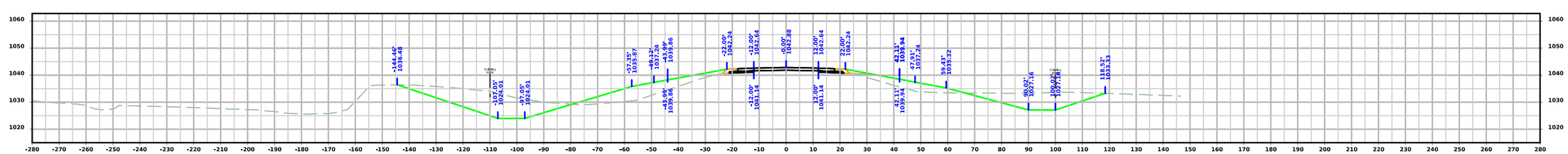

FILE NO.	ENGLISH	DESIGN TEAM Vortherms/Breitbach/Ringgenberg	WEBSTER COUNTY	PROJECT NUMBER BRF-169-6(093)--38-94	SHEET NUMBER W.4

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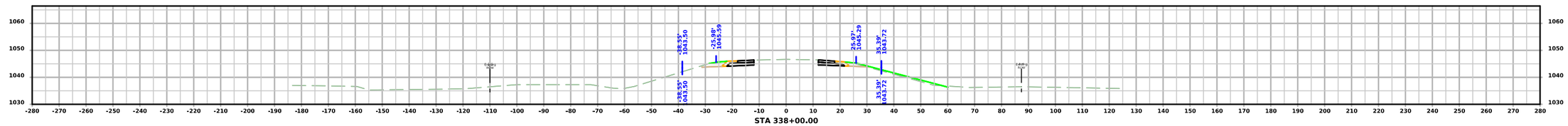

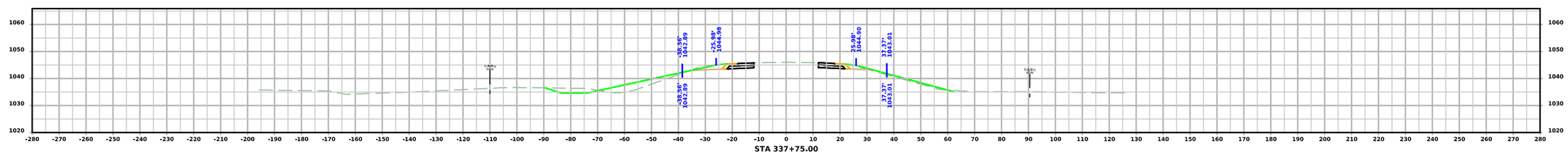

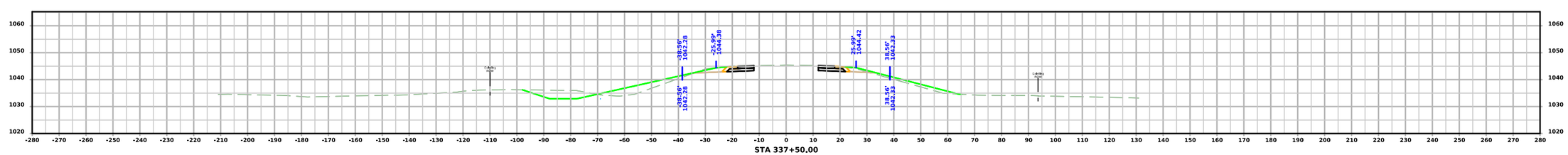

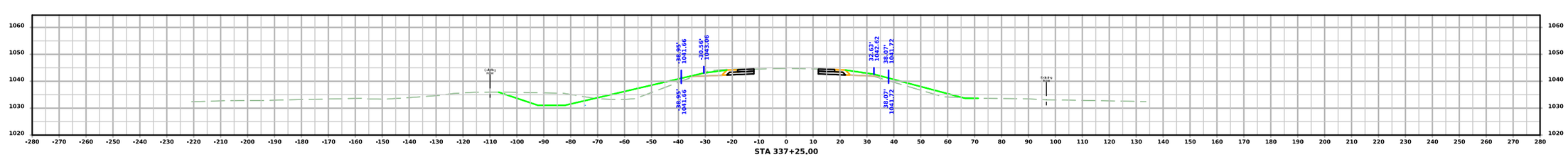

FILE NO.	ENGLISH	DESIGN TEAM Vortherms/Breitbach/Ringgenberg	WEBSTER COUNTY	PROJECT NUMBER BRF-169-6(093)--38-94	SHEET NUMBER W.5

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