IOWA DEPARTMENT OF TRANSPORTATION

TO OFFICE:	District 2	**DATE:**	July 8, 2014
ATTENTION:	E. Jon Ranney	**PROJECT:**	Wright County STPN-069-7(41)--2J-99
FROM:	Kevin K. Patel		PIN: 13-99-069-010
OFFICE:	Design		
SUBJECT:	Project Concept Statement; (Final Approval, D0)		

This project involves the reconstruction of U.S. 69 from just north of the Union Pacific Railroad in Belmond, north to just south of the north junction of County Road C20. This project also includes improvements to the intersection of the south junction of U.S. 69 and County Road C-20, the replacement of the bridges over the Iowa River and the West Branch of the Iowa River and an RCB will be added to minimize the frequency of roadway overtopping of U.S. 69 during heavy rainfall events.

A concept review was held on May 1, 2014. Those present included Nick Humpal, Scott Loge, Thad Boyington and Kevin Smith from the District 2 Office, Bill Kaufman from the Office of Bridges and Structures; Lindsay Edgar from the Office of Location and Environment and Kevin Patel and Jean Borton from the Office of Design.

The two alternatives considered were:

1. Pavement reconstruction of U.S. 69, including replacing both the Iowa River Bridge and the bridge over the West Branch of the Iowa River and the construction of a triple RCB. The total cost is approximately $6,799,100.

2. Alternative 2 is similar to alternative 1; however, in lieu of placing a triple RCB, a twin RCB will be constructed. The total cost of this alternative is $6,690,700.

Alternative 1 is the preferred alternative as it reduces the frequency of roadway overtopping to a 50 year event with a triple RCB. Alternative 2 estimates a 25 year event with a twin RCB. 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 Monday, June 31, 2014. Comments received during the review period have been considered and resolved.

This project is recommended for construction in FY 2019. The Office of Bridges and Structures will coordinate plan preparation with assistance from the Office of Design.

KKP: jmb
Attach.

cc:

J. F. Adam	J. R. Selmer	M. J. Kennerly
K. D. Nicholson	D. L. Maifield	R. L. Stanley
M. D. Masteller	B. R. Smith	A. A. Welch
N. M. Miller	C. C. Poole	N. L. McDonald
G. A. Novey	D. R. Claman	P. Lu
A. Abu-Hawash	K.M. Olson	B. C. Worrel
J. S. McClain	M. A. Swenson	J. W. Smith
M. J. Sankey	R. A. Younie	S. P. Anderson
Z. T. Bitting	D. R. Tebben	B. D. Hofer
D. D. Matulac	D. L. Newell	B. E. Azeltine
M. E. Khoda	S. J. Gent	T. D. Crouch
J.W. Laaser-Webb	W.A. Sorenson	D. E. Sprengeler
E. C. Wright	D. L. Little	D. L. Roeber
K. L. Rostad	N. J. Humpal	M. R. Callahan
P. Hjelmstad	D. Wiebke	L. B. Edgar
B. J. Dolan	L. C. Funnell	FHWA
M. E. Ross		

FINAL PROJECT CONCEPT STATEMENT

U.S. 69 from north of the Union Pacific Railroad in Belmond, north to just south of the north junction of County Road C-20

Wright County
U.S. 69
STPN-69-7(41)--2J-99

West Branch of the Iowa River
BRFN-069-7(34)--39-99
Maint. No.9975.6S069
FHWA No. 54330

Iowa River
BRFN-069-7(38)--39-99
Maint. No. 9975.3S069
FHWA No. 54320

New RCB
BRFN-069-7(40)--39-99

PIN: 13-99-069-010

Highway Division
Office of Design

Kevin K. Patel, P.E.
515-239-1540

July 8, 2014

I. STUDY AREA

A. Project Description

This project involves the reconstruction of U.S. 69 from just north of the Union Pacific Railroad in Belmond, north to just south of the north junction of County Road C20. This project also includes improvements to the intersection of the south junction of U.S. 69 and County Road C-20, the replacement of the bridges over the Iowa River and the West Branch of the Iowa River and an RCB will be added to minimize the frequency of roadway overtopping of U.S. 69 during heavy rainfall events.

The two alternatives considered were:

1. Pavement reconstruction of U.S. 69, including replacing both the Iowa River Bridge and the bridge over the West Branch of the Iowa River and the construction of a triple RCB. The total cost is approximately $6,799,100

2. Alternative 2 is similar to alternative 1; however, in lieu of placing a triple RCB, a twin RCB will be constructed. The total cost of this alternative is $6,690,700.

Alternative 1 is the preferred alternative as it reduces the frequency of roadway overtopping to a 50 year event with a triple RCB. Alternative 2 estimates a 25 year event with a twin RCB. Additional right of way will be required. Traffic will be maintained by an offsite detour.

B. Present Facility and Need for Project

U.S. 69 in the project area is 18 ft. wide 10”-7”-10” PCC concrete slab pavement constructed in 1935. This roadway was widened to a 24 ft. pavement. HMA resurfacing was accomplished in 1963, 1982 and 1999. This area has a history of flooding and water overtopping U.S. 69. Water currently overtops U.S. 69 on average, every 6 years. This project will allow the roadway to be raised to prevent overtopping, replace the existing pavement as well as improve the operational characteristics of the C 20 intersection with the addition of left and right turn lanes.

The existing West Branch of the Iowa River Bridge is a 111’-3 x 30’ concrete beam bridge constructed in 1927 and overlaid in 1979. Delamination was found on the tip of the slab for all three spans. The deck bottom has cracks and large hollow areas with exposed steel. The bridge railings have several vertical cracks with leaching. Spalls and hollows with exposed steel were found at the concrete beams. Both abutments have been patched with PC and Gunite. However, they still have a few vertical cracks with leaching. The bridge was originally designed for H15 load and needs to be strengthened to HS20. This bridge also needs to be widened to 70 ft. to accommodate left and right turn lanes and wider shoulders. The overlay is at the end of its service life. As the age of the bridge being over 80 years old, structural strengthening and widening in conjunction with bridge repair would not be an economical solution. The bridge should be replaced.

The existing Iowa River Bridge is a 182’-8 x 28’ concrete slab bridge constructed in 1956 and overlaid in 1979. This bridge was built using the abutments of previous bridge at this location. The abutments are supported by unknown type of wood piling and widened and raised in 1956. The deck, deck overlay, superstructure and substructure are all at the end of their service life and deteriorations are found in all the structure components. In addition, the structure was designed for H20 load and needs to be strengthened to HS20. This bridge also needs to be widened to 44’ to accommodate wider shoulders. As the West Branch of the Iowa River Bridge (FHWA #54330) is being replaced at this time, it is a cost effective and practical choice to replace this bridge at the same time.

West Branch of the Iowa River looking south

Iowa River looking south

C. Traffic Estimates

The 2017 and 2037 average daily traffic estimates are 3,000 ADT with 13% trucks and 4,000 ADT with 14% trucks, respectively.

D. Sufficiency Ratings

U.S. 69 is classified as an access route and is a maintenance service level "C" and is not on the national highway system (NHS). The federal bridge sufficiency rating is 65.4 for the West Branch of the Iowa River Bridge and 77.7 for the Iowa River Bridge.

E. Access Control

Access rights will not be acquired for this project.

F. Crash History

During the five-year study period from January 1, 2009 through December 31, 2013, there were seven property damage only crashes reported on this stretch of roadway. Two of these crashes were located at the south junction of U.S. 69 and County Road C-20. None of these crashes involved either of the bridges.

II. PROJECT CONCEPT

A. Feasible Alternatives

Alternative 1- Reconstruction of U.S. 69 (STPN-069-7(41)--2J-99)

This project involves the reconstruction of U.S. 69 from just north of the Union Pacific Railroad in Belmond, north to just south of the north junction of County Road C20, a distance of approximately 4,100 ft. The roadway will remain on the existing horizontal alignment; however, the vertical alignment will be raised to minimize the roadway overtopping that U.S. 69 currently experiences.

The typical cross section will consist of a 24 ft. roadway (28 ft. wide pavement) with 10 ft. effective shoulders (2 ft. outside pavement, 4 ft. additional paved and 4ft. granular) and 6:1/3:1 foreslopes. The pavement will be 9.5 in. PCC over 12 in. of modified subbase.

U.S. 69 at the south junction of County Road C-20 will be widened on the east side of the roadway to accommodate a 16 ft. wide left turn lane for northbound to westbound traffic. A right turn lane will also be added for the southbound to westbound movement. County Road C-20 will be reconstructed for approximately 200 ft. to tie in to the new profile grade of U.S. 69. A safety dike will also be constructed on the east side of U.S. 69.

The grade raise to U.S. 69 will require all of the existing entrances to be raised and reconstructed.

Site #1 West Branch of the Iowa River (BRFN-069-7(34)--39-99)

The existing 111'-3 x 30', concrete beam bridge will be replaced with a 209' x 70', continuous concrete slab bridge. The 70 ft. width will accommodate a 16 ft. center turn lane, 2-14 ft. thru lanes, a 12 ft. right-turn lane with a 6 ft. shoulder, and an 8 ft. shoulder adjacent to the northbound lanes. The grade raise at the bridge is approximately 2 ft.

Site #2 Iowa River (BRFN-069-7(38)--39-99)

The existing 182'-8 x 28' concrete slab bridge will be replaced with a 307' 10 x 44' prestressed beam bridge. This bridge will accommodate 2-14 ft. lanes along with 8 ft. shoulders. The grade raise required at this location is approximately 5 ft.

New bridge approach sections will be constructed at both bridge locations. The

existing guardrail will also be updated. The shoulders will be paved 20 ft. beyond the ends of the guardrails. Class 10 will be necessary to flatten the existing foreslopes and to construct the new guardrail blisters. Place class E revetment for slope protection under the bridges. Install 4 bridge end drains on each bridge.

Site #3 New Triple RCB (BRFN-069-7(40)--39-99)

Construct a triple 12' x 10' x 100' RCB, approximately 870 ft. south of the Iowa River Bridge. Place revetment at each end of the RCB. This new RCB would provide an overtopping frequency of 50 years.

Clearing and grubbing will be required adjacent to the new bridges and each end of the newly proposed RCB, as well as in the area of the safety dike. Apply erosion control and rural seeding and fertilizing to all disturbed areas.

Right of way will be required for this project.

Traffic will be maintained by an off-site detour. The contractor shall ensure that access to adjacent properties and businesses will be maintained at all times.

Roadway Items	Estimated Costs
Bridge Approaches	$201,500
PCC Pavement	870,900
Modified Subbase	137,300
Granular Shoulder	40,800
Paved Shoulder	84,300
Embankment In Place	589,300
Removal of Pavement	56,700
Excavation Class 13 Waste	24,200
Guardrail (Includes Removal)	41,900
Paved Shoulders for Guardrail	32,000
Class 10 for Guardrail Blisters	23,600
Bridge End Drains	22,800
Clearing and Grubbing	5,900
Seeding and Fertilizing	3,300
Erosion Control	5,000
Right of Way	50,000
Wetland Mitigation	50,000
Traffic Control - 5%	112,000
Mobilization - 5%	$ 112,000
	$2,463,500
M & C - 20%	492,700
Total Roadway costs	$2,956,200

Site #1 (34)	Estimated Costs
New Bridge	$ 1,164,500
Bridge Removal	30,000
Coffer Dam	50,000
Revetment	23,500
	1,268,000
Mobilization - 10%	126,800
	1,394,800
M & C - 20%	279,000
Site #1 Bridge Costs	$ 1,673,800

Site #2 (38)	Estimated Costs
New Bridge	$ 1,178,500
Bridge Removal	44,200
Coffer Dam	75,000
Revetment	34,000
	1,331,700
Mobilization - 10%	133,200
	1,464,900
M & C - 20%	293,000
Site #2 Bridge Costs	$ 1,757,900

Site #3 Alt. 1 (40)	Estimated Costs
New RCB	$ 304,000
Revetment	7,500
	311,500
Mobilization - 10%	31,200
	342,700
M & C - 20%	68,500
Site #3 Bridge Costs	$ 411,200

Alternate 1 Project Total	**$6,799,100**

Alternative 2

This alternative is very similar to alternative 1; however, in lieu of constructing a triple RCB a twin RCB will be constructed. The twin RCB would provide a frequency of roadway overtopping of 25 years versus 50 years with the triple RCB.

Site #3 New Twin RCB (BRFN-069-(40)--39-99)

Construct a twin 12' x 10' x 100' RCB, approximately 870 ft. south of the Iowa River Bridge.

Site #3 Alt. 2 (40)	Estimated Costs
New RCB	$ 223,000
Revetment	6,400
	229,400
Mobilization - 10%	22,900
	252,300
M & C - 20%	50,500
Bridge Costs	$ 302,800
Alternative 2 Project Total	**$6,690,700**

B. Detour Analysis

During construction, traffic will be maintained via an off-site detour. The detour will begin at the intersection of U.S. 69 and County Road C-25, and head east on C-25 for 7 miles to the intersection with S-14, then proceed north on S-14 for 4 miles to County Road C-20, west on C-20, for 7 miles to the intersection with U.S. 69. An agreement will be required with Wright County and Franklin County for this detour route. The out of distance travel is 14 miles. It is estimated that the detour will be in use for approximately 180 days. The total distance user cost is anticipated to be $1,554,000. The cost for county road maintenance will be $57,900 as calculated by the Gas Tax Method. Detour signing costs will be $10,000.

The contractor shall ensure that access to adjacent properties and businesses will be maintained at all times.

C. Recommendations

It is recommended that the present structures be replaced and roadway reconstructed as described in Alternative 1 at a total cost of $6,799,100. Alternative 1 is the preferred alternative as it reduces the frequency of roadway overtopping to a 50 year event with a triple RCB. Alternative 2 estimates a 25 year event with a twin RCB.

D. Construction Sequence

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

E. Special Considerations

The Draft ABC Policy Guideline dated fall 2012 was followed to determine whether or not the bridge replacements are good candidates for ABC construction. The ABC Rating Score of 21 is less than the first stage filter threshold of 50. The concept team does not propose that the project undergo further ABC evaluation. Therefore, an ABC bridge replacement option is not included.

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

Right of Way will be required for this project.

The Office of Location and Environment is currently reviewing this project. Based on a desktop review and observations during the concept field exam, this project will require an individual 404 permit. Wetland impacts are anticipated to exceed 0.1 acre and wetland mitigation will be required.

A railroad agreement will be needed due to the proximity of the location of the beginning of project.

F. Program Status

Site data has been developed by the Office of Design. This project is listed in the 2015-2019 Iowa Transportation Improvement Program, with $15,000 programmed for right of way in FY 2019, $2,700,000 for bridge replacement and $300,000 for wetland mitigation in FY 2019. Costs for this project may be eligible for bridge replacement funds. A schedule of events will be developed following approval of the Project Concept.

KKP: jmb

WRIGHT COUNTY

STA 473+30
FHWA 54330
MAINT. NO. 9975.6S069
DESIGN 355

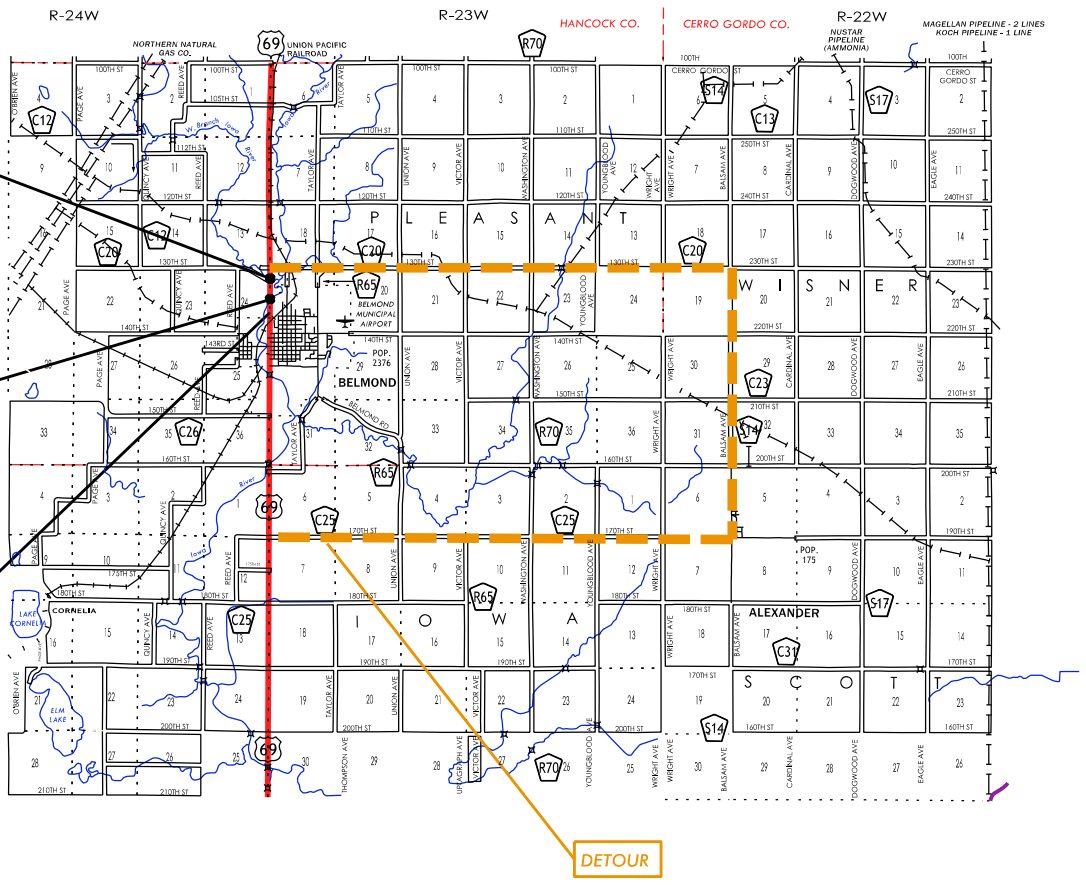
BRFN–069–7(34)—39–99
ON U.S. 69, OVER WEST BRANCH OF THE IOWA RIVER
AT SOUTH JUCTION OF COUNTY ROAD C–20

STA 456+80
FHWA 54320
MAINT. NO. 9975.3S069
DESIGN 255

BRFN–069–7(38)—39–99
ON U.S. 69, OVER IOWA RIVER
0.2 MILES SOUTH OF SOUTH JUNCTION OF COUNTY ROAD C–20

Sta 478
Proposed
Overflow RCB

BRFN–069–7(40)—39–99
ON U.S. 69, SOUTH
OF THE IOWA RIVER

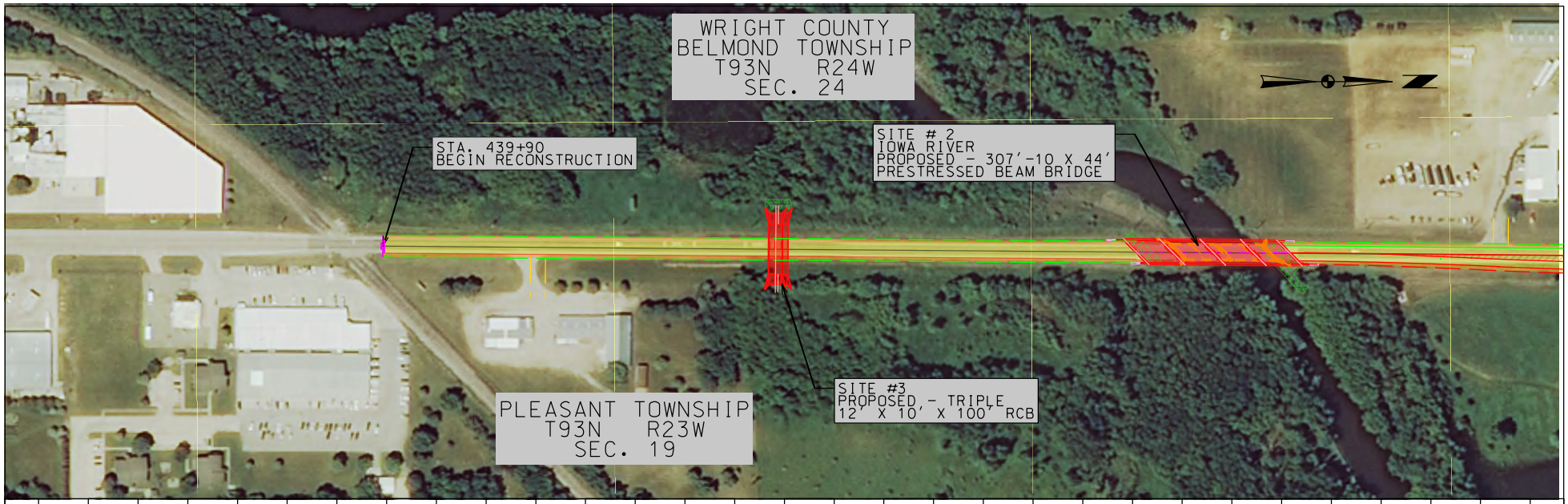


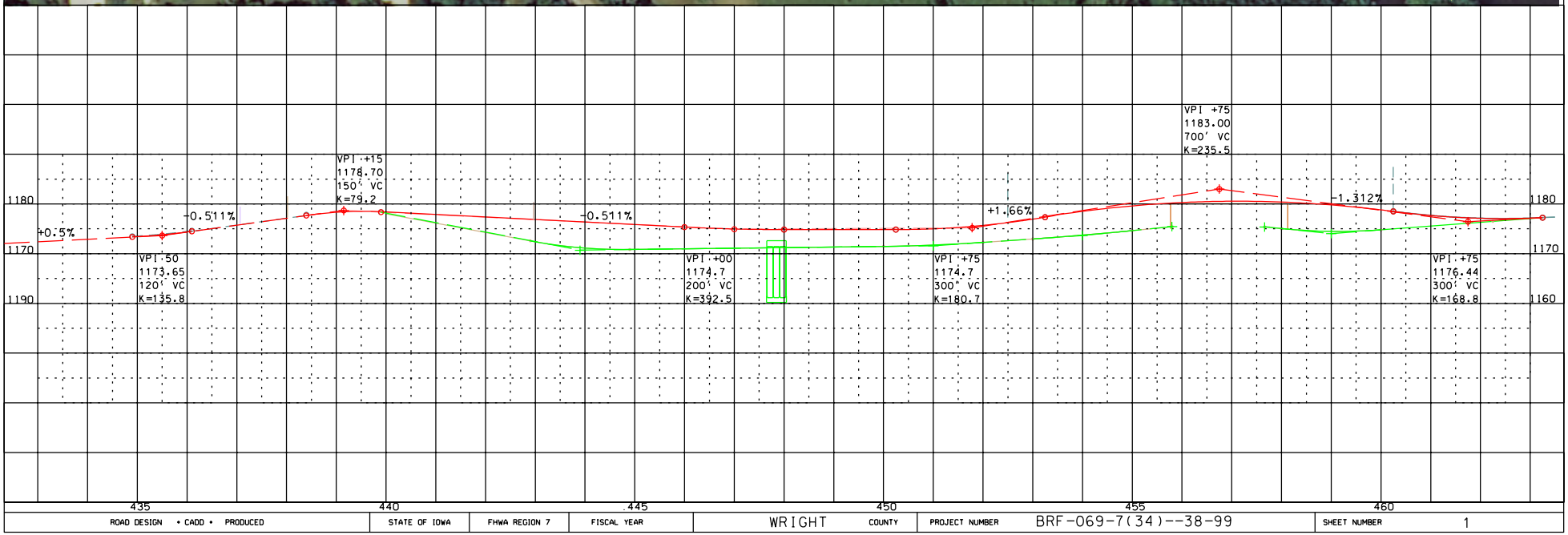
N

STPN–069–7(41)—2J–99

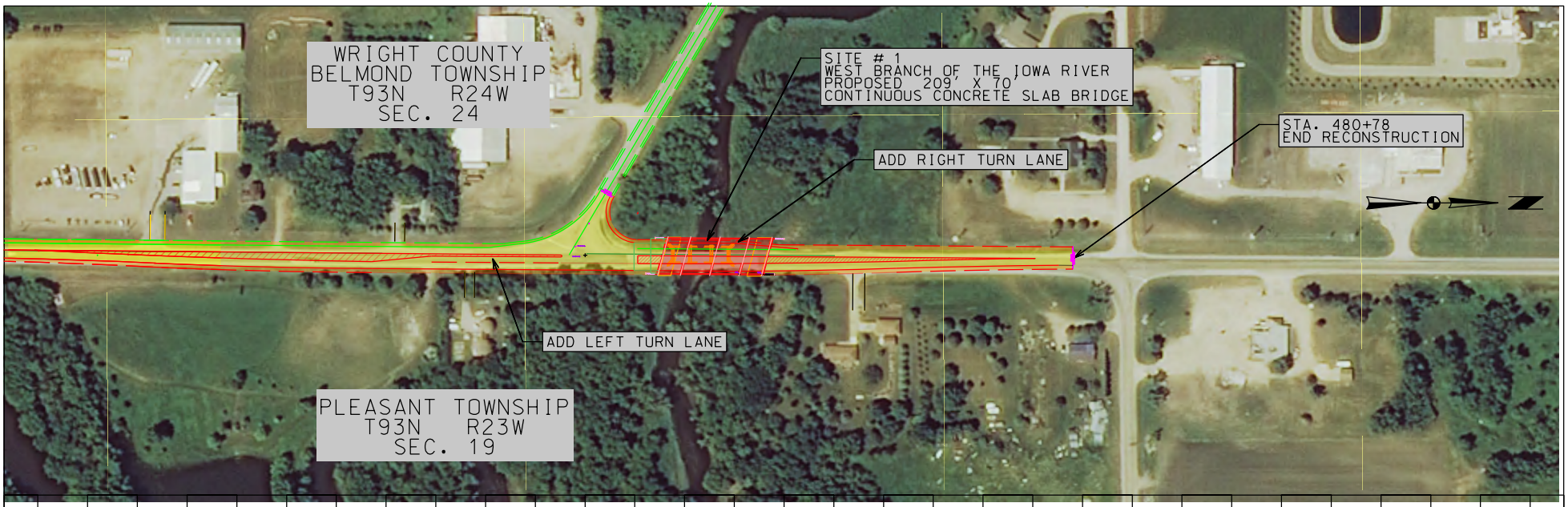
PIN: 13–99–069–010

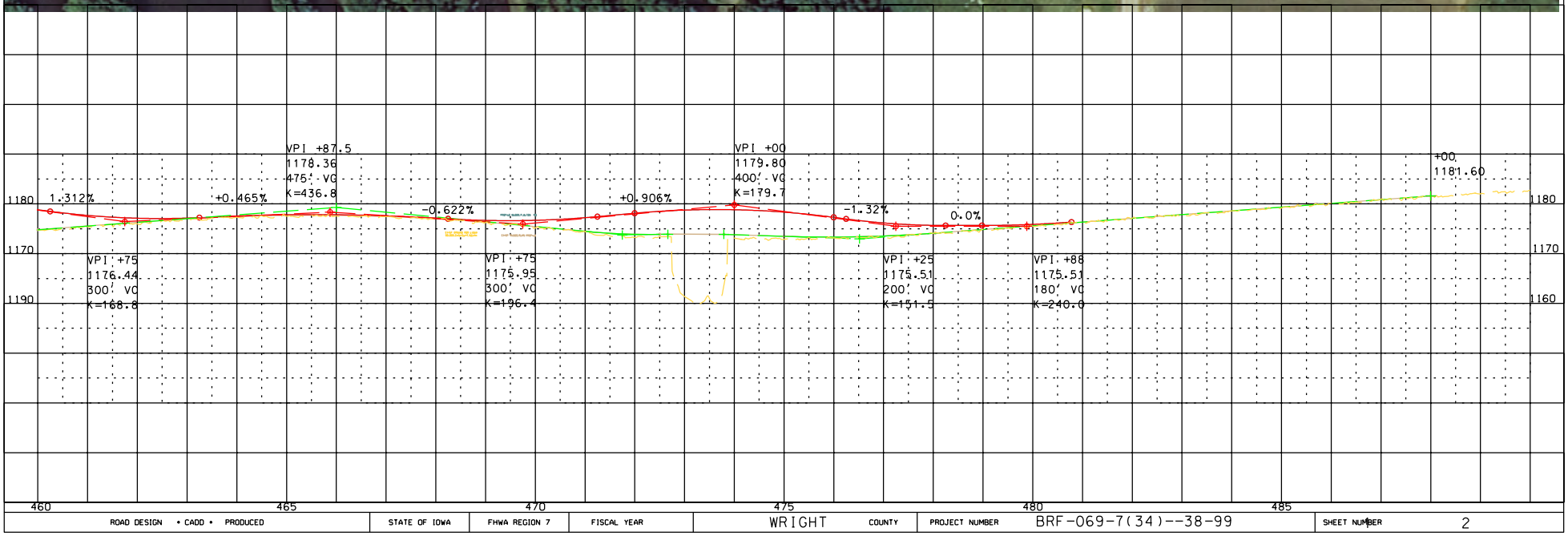
ROAD DESIGN • CADD • PRODUCED	STATE OF IOWA	FHWA REGION 7	FISCAL YEAR	WRIGHT COUNTY	PROJECT NUMBER BRFN–069–7(34&38)—39–99	SHEET NUMBER 1





ROAD DESIGN • CADD • PRODUCED	STATE OF IOWA	FHWA REGION 7	FISCAL YEAR	WRIGHT COUNTY	PROJECT NUMBER BRF-069-7(34)--38-99	SHEET NUMBER 1





ROAD DESIGN • CADD • PRODUCED	STATE OF IOWA	FHWA REGION 7	FISCAL YEAR	WRIGHT COUNTY	PROJECT NUMBER BRF-069-7(34)--38-99	SHEET NUMBER 2