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IOWA DEPARTMENT OF TRANSPORTATION

To Office District 5 Date December 31, 2019

Attention Mark Van Dyke, Assistant District Engineer Ref No. Van Buren County
BRFN-002-9(40)--39-89
From WHKS / Joe Stanisz PIN 19-89-002-010
Design No. 121
Bureau Bridges and Structures File No. 31862
FHWA No. 50210

Subject Final Concept for Bridge Deck Replacement of 250' x 32' Continuous Welded Girder Bridge
Bridge Maintenance No. 8918.7S002

The bridge on IA 2 over Fox River, 1.5 mi E of Jct SR V64, has been programmed for bridge deck replacement to be let on 10/17/2023, with a possibility for advancement to October 2021. The current cost estimate is $1,214,275, which includes inflation based on the advanced letting date and 20% contingency. The MB program budgeted amount is $2,000,000.

The bridge concept review on 9/26/2019 was attended by Casey Faber and Lucas Fatka with WHKS; and Mark Van Dyke and Junior Jones with District 5.

EXISTING CONDITIONS

The bridges were constructed in 1969 (Design No. 5067).

The bridge deck is PC concrete with a PC overlay placed in 1994 (Design No. 194). The top of deck has been patched in some locations and has areas of cracking and several areas of delamination. Epoxy injection has been performed in several locations. The bottom of deck is cracked with some leaching and areas of delamination and spalling especially in the center span over the river.

The existing sliding plate joints are rusty. The top of backwall and bridge deck concrete is deteriorating adjacent to the joint. The joints are leaking causing corrosion of the bearings and berm erosion.

The paint system has failed and is peeling in several locations especially on the outside of the fascia girders.

The backwalls are cracked with some rust staining. There is some delamination of the backwalls and bridge seats.

The channel has shifted, and a large tree trunk was caught on the south pier.

Retrofit concrete barrier rails were installed in 1990 (Design No. 290). The rails and end sections are 32.5" above the riding surface and have thrie beam connections. The curbs are in poor condition with several areas of cracking with heavy leaching. The rails are in fair condition.

IA 2 in the vicinity of the bridge is a 2-lane, 24-foot HMA/PCC pavement with 11-foot shoulders (3-foot PCC and 8-foot granular). The roadway is posted 55 mph and has a 2018 ADT of 1,490 vehicles per day including 14.8% trucks.

The south approach is in fair condition and has been mud jacked and resurfaced. The north approach is in poor condition and has been mud jacked and patched.

The guardrail does not meet current standards for height, transition sections, and terminal sections.

There is an RWIS Sensor located in the SW Quadrant of the bridge deck. The RWIS Tower is located 380' south of the bridge on the right side of the road.

There are three utility conduits running along the west overhang and curb for the full length of the bridge.

There is an intersection (265th Rd.) approximately 270' north of the bridge on the right. There are field entrances approximately 250' south of the bridge on the right and approximately 950' south of the bridge on the left.

RECOMMENDATIONS

It is recommended that the following repairs be made:

1. Remove bridge deck, joints and barrier rails and construct new 8" thick bridge deck with 32-foot roadway and standard TL-4, F-shape barrier railings.
2. Remove and reconstruct top of backwall to original construction joint below paving support.
3. Install new strip seal joints.
4. Repaint superstructure.
5. Perform concrete repairs to abutment seat.
6. Clean and seal abutments.
7. Install berm armoring.
8. Remove and replace the guardrail.
9. Construct HMA paved shoulders in front of the guardrail as per Typical Detail 7156.
10. Remove and replace double reinforced section of bridge approach at both ends.

Construction will be staged half of the bridge at a time while maintaining at least one lane of traffic.

This project is not considered a Traffic Critical Project. Traffic control will involve TBR and a lane closure with signals in accordance with Standard Road Plan TC-217.

The District should provide a site survey of the utilities. Asbestos inspection should be performed. A paint scrape sample is requested.

Estimated cost of repairs is as follows:

BRIDGE ESTIMATE:				
Item	**Quantity**	**Unit**	**Rate**	**Amount**
Concrete Repair	10	SF	$180	$1,800
Removals, As Per Plan	1	LS	$150,000	$150,000

Structural Concrete (Bridge)	250	CY	$700	$175,000
Reinforcing Steel, Epoxy Coated	64200	LB	$2	$128,400
Excavation, Class 20	37	CY	$150	$5,550
Steel Extrusion Joint With Neoprene	73	LF	$200	$14,600
Neoprene Gland Installation and Testing	73	LF	$38	$2,774
Concrete Barrier Rail	568	LF	$70	$39,760
Bridge Cleaning for Painting	1	LS	$7,500	$7,500
Blast Cleaning of Structural Steel	1	LS	$37,500	$37,500
Painting of Structural Steel	1	LS	$45,000	$45,000
Containment	1	LS	$60,000	$60,000
Bank Shaping	1	LS	$20,000	$20,000
Revetment, Class E	445	TON	$75	$33,375
Engineering Fabric	415	SY	$4	$1,660
Mobilization	1	LS	10%	$72,292
	Base Cost:			$795,211
	Contingency:		20%	$159,042
	2 Years Inflation:		4.5%	$87,815
	BRIDGE TOTAL:			**$1,042,068**

ROADWAY ESTIMATE:

Item	Quantity	Unit	Rate	Amount
Removal of Steel Beam Guardrail	288	LF	$7	$2,016
Steel Beam Guardrail	125	LF	$22	$2,750
Steel Beam Guardrail Barrier Transition Section, BA-201	4	EACH	$2,036	$8,144
Steel Beam Guardrail Tangent End Terminal, BA-205	4	EACH	$2,535	$10,140
Embankment-in-place	200	CY	$18	$3,600
Bridge Approach Pavement, As Per Plan	144	SY	$215	$30,960
Removal of Pavement	144	SY	$20	$2,880
Temporary Traffic Signals	2	EACH	$3,900	$7,800
Temporary Barrier Rail, Concrete	900	LF	$14	$12,600
Temp Crash Cushion	4	EACH	$1,250	$5,000
Paved Shoulder, Hot Mix Asphalt Mixture, 9 in.	415	SY	$59	$24,485
Additional Roadway Items	1	LS	$10,000	$10,000
Mobilization	1	LS	10%	$11,038
	Base Cost:			$131,413
	Contingency:		20%	$26,283
	2 Years Inflation:		4.5%	$14,512
	ROADWAY TOTAL:			**$172,207**

PROJECT TOTAL:	**$1,214,275**

CVF/LDF

Distributed to:
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