

# Iowa-Illinois I-74 Mississippi River Bridge Corridor Enhancement



Project Name	Iowa-Illinois I-74 Mississippi River Bridge Corridor Enhancement
Previously Incurred Project Costs	\$105,798,512
Future Eligible Project Costs	\$1,128,926,745
Total Project Costs (Phase 2)	\$1,003,000,000
NHSFHP Request	\$66,500,000
Total Federal Funding (including NSFHP)	\$786,757,193
Are matching funds restricted to a specific project component? If so which one?	No
Is the project or portion of the project located on the National Highway System	Yes
<ul style="list-style-type: none"> <li>Does the project add capacity to the Interstate System?</li> <li>Is the project in a national scenic area</li> </ul>	Yes No
Do the project components include an intermodal or freight rail project, or freight project within the boundaries of a public or private freight rail, water (including ports), or intermodal facility?	No
If answered yes to either of the two component questions above, how much of requested NSFHP funds will be spent on each of these projects components?	N/A
State(s) in which project is located	Iowa and Illinois
Small or large project	Large
Also submitting an application to TIGER for this project?	No
Urbanized Area in which project is located, if applicable	Quad Cities (Davenport and Bettendorf in Iowa and Rock Island Moline, and East Moline in Illinois)
Population of Urbanized Area (2010 Census)	379,690
Is the project currently programmed in the:	
<ul style="list-style-type: none"> <li>TIP</li> <li>STIP</li> <li>MPO Long Range Transportation Plan</li> <li>State Long Range Transportation Plan</li> <li>State Freight Plan</li> </ul>	Yes Yes Yes Yes Yes (Draft)

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## 1.0 Project Description

### 1.1 Project Overview

The Iowa-Illinois I-74 Mississippi River Bridge Corridor Enhancement Project (I-74 Project) will improve capacity, safety and reduce delays along the critical I-74 corridor in the Quad Cities (Davenport and Bettendorf Iowa, Rock Island and Moline, Illinois). The project will upgrade approximately seven miles of the existing 4-lane interstate, replace the aging and functionally obsolete Mississippi River crossing structure, improve six service interchanges, enhance the connecting arterial roadway system, and improve opportunities for transit, bicycle/pedestrian, and intermodal connections. This operationally independent project is part of a larger program to improve the I-74 corridor that has been approved by the Iowa and Illinois Departments of Transportation (Iowa DOT and Illinois DOT) along with the Federal Highway Administration (FHWA). The limits of the proposed FASTLANE project extend from 0.9 miles south of Avenue of the Cities (23rd Avenue) in Moline, Illinois to just south of the Middle Road interchange in Davenport/Bettendorf Iowa. The overall, approved, I-74 Project extends an additional 3.5 miles to the north to approximately one mile north of 53rd Street in Davenport, Iowa (refer to Figure 1.1: I-74 Corridor over the Mississippi River Location Map).

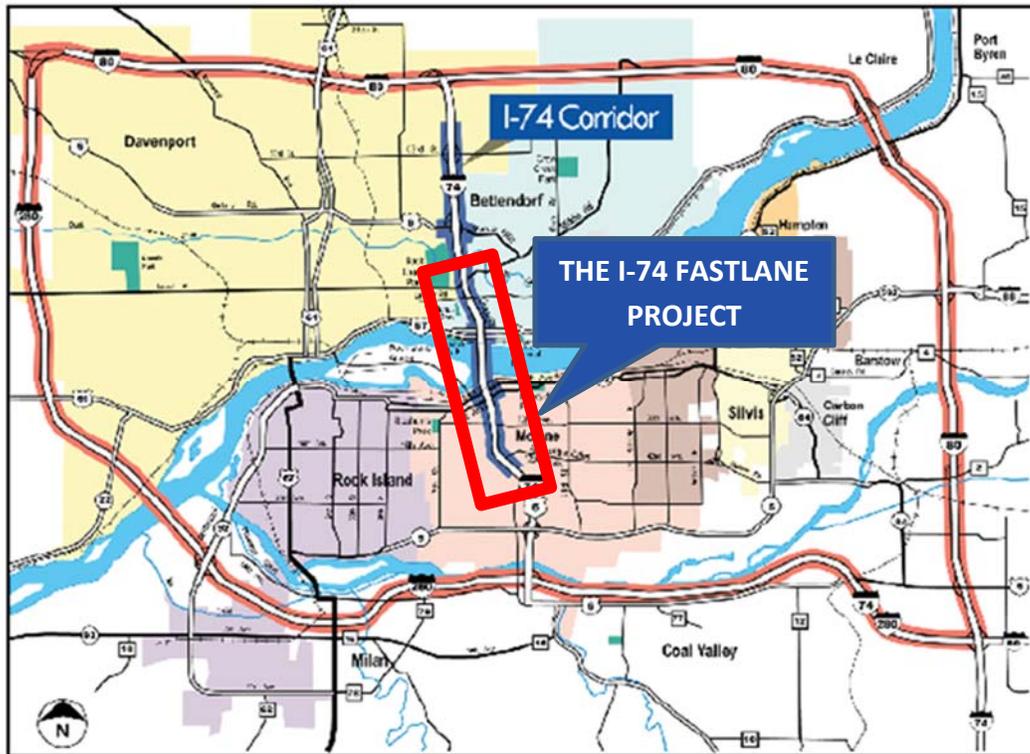
The proposed project represent the core section of the larger I-74 Project where the existing capacity deficiencies (high delays) occur. I-74 is the only interstate facility that crosses the Mississippi River through the central Quad Cities area. The I-74 corridor is the major transportation facility used to move people and goods through the area and across the Mississippi River. Commuters and other Quad City area residents rely on I-74 to reach destinations across the Mississippi River. I-74 also plays a critical role in the movement of freight in the region and is vital to provide broader cross-border and national freight system resiliency and reliability.

The I-74 corridor provides a vital link between Iowa and Illinois, and is an important gateway to the Quad Cities region. Growing population and employment during the past several decades has led to increasing traffic volumes. The current configuration of roadways and bridges along I-74 does not provide consistent travel times along this major transportation corridor. Traffic incidents and maintenance activities on the narrow Mississippi River bridges impede traffic flow resulting in significant congestion. The lack of bicycle/pedestrian accommodation on the existing bridge serves as a major barrier to connectivity and access within the metro area. Therefore, improvements to the I-74 corridor are needed to enhance the movement of persons and goods between Iowa and Illinois, and serve the transportation needs for continued economic development in the region.

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<sup>1</sup>See electronic appendix: [www.iowadot.gov/i74corridor/fastlane.html](http://www.iowadot.gov/i74corridor/fastlane.html)  
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The 2040 Quad Cities Area Long Range Transportation Plan (LRTP) predicts an increase in traffic on I-74 over the Mississippi River from 70,800 vehicles per day (vpd) in 2008 to 94,800 vpd in 2040. These traffic volumes amount to 45 percent of the total traffic crossing the Mississippi River in the greater Quad Cities region. The current traffic volumes already result in significant traffic delays, whereas the projected traffic volumes under the current roadway configuration will result in a detriment to the efficient movement of people and goods throughout the region.



**Figure 1.1 - I-74 Corridor over the Mississippi Location Map**

## 1.2 I-74 Freight

As a designated corridor on the National Highway Freight Network ([http://ops.fhwa.dot.gov/freight/infrastructure/ismt/state\\_maps/states/iowa.htm](http://ops.fhwa.dot.gov/freight/infrastructure/ismt/state_maps/states/iowa.htm)) and the US DOT's Multimodal Freight Network – draft representation ([https://www.transportation.gov/sites/dot.gov/files/docs/State\\_map\\_landscape\\_Alt\\_iowa\\_edits\\_alt\\_text\\_1.pdf](https://www.transportation.gov/sites/dot.gov/files/docs/State_map_landscape_Alt_iowa_edits_alt_text_1.pdf)), I-74 through the Quad Cities is a critical link the region's freight transportation infrastructure. From a freight system resiliency and reliability perspective, this enhanced I-74 corridor will serve that role for the heavily travelled I-80 corridor that runs on the eastern and northern borders of the Quad Cities. There have been occurrences in recent years where the I-80 bridge has had restricted lanes and/or closed to address bridge condition issues. This has resulted in significant operational issues across the Quad Cities metropolitan area and impacted the movement of freight across the region and nation. An enhanced, higher-capacity I-74 corridor would significantly mitigate those issues and increase freight system resiliency and reliability.

<sup>1</sup>See electronic appendix: [www.iowadot.gov/i74corridor/fastlane.html](http://www.iowadot.gov/i74corridor/fastlane.html)  
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### 1.2.1 Traffic

I-74 handles between 1,500 and 3,500 trucks per day. This includes traffic originating and terminating in the area, through traffic, and first- and last-mile connectivity to other modes. Figure 1.2.1 shows truck annual average daily traffic (AADT) in the Quad Cities. Truck movements to the Bi-State Region are anticipated to increase by 44 percent by 2040. A portion of this traffic will utilize I-74.



**Figure 1.2.1 Multi-Unit Truck AADT (Source: Bi-State Region Freight Plan<sup>1</sup>)**

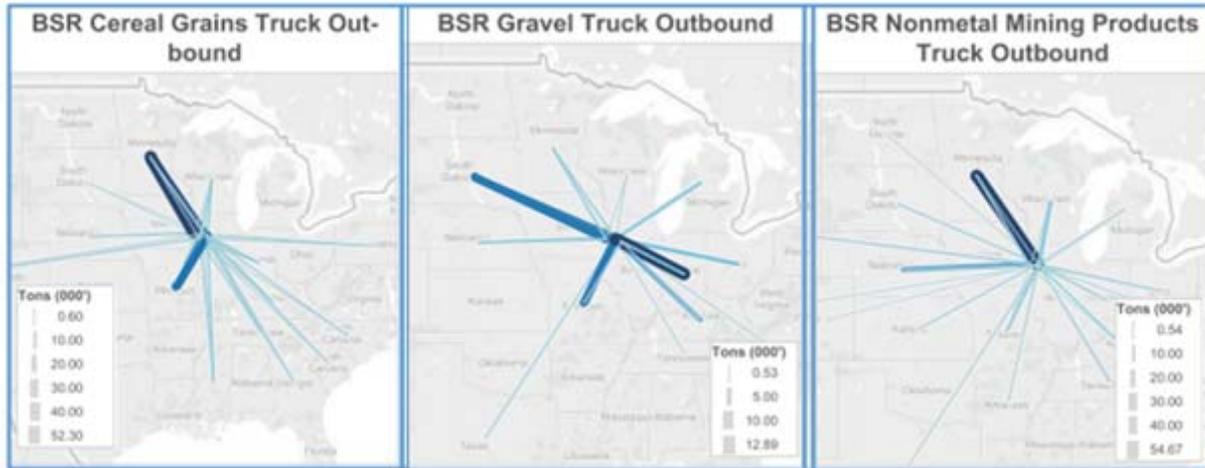
I-74 also connects two of the counties (Scott County, Iowa and Rock Island County, Illinois) in the region with the highest truck tonnages, as shown in Table 1.2.1.

	Truck Tons Originated	Truck Tons Received	Truck Tons Within County
Henry, IL	3,458	5,152	82.9
Mercer, IL	1,393	1,341	10.9
Rock Island, IL	5,129	5,766	136.9
Muscatine, IA	5,133	6,277	84.7
Scott, IA	8,032	10,741	365.3
<b>Total</b>	<b>23,145</b>	<b>29,277</b>	<b>681</b>

**Table 1.2.1 (Source: Bi-State Regional Commission, Disaggregation of Freight Analysis Framework, PB, 2007)**

Table 1.2.1 provides county-level detail on the tonnage of the flow identified in Figure 1.2.1. Scott County, IA is the main driver of trucking demand in the region but the other counties listed are also important. Both Scott County and Henry County are consumption centers that receive from 1/3 to 1/2 more freight than they originate.

<sup>1</sup>See electronic appendix: [www.iowadot.gov/i74corridor/fastlane.html](http://www.iowadot.gov/i74corridor/fastlane.html)  
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**Figure 1.2.2 Regional Commodity Distribution (Source: Bi-State Region Freight Plan<sup>1</sup>)**

Top commodities moving from the region include cereal grains, gravel, and nonmetal mining products.

As shown in Figure 1.2.2, cereal grains are primarily moving to Minnesota and Missouri, gravel is primarily moving to Indiana, Missouri, and South Dakota and nonmetal mining products are moving to Minnesota. (Source: Bi-State Region Freight Plan<sup>1</sup>)

### 1.2.2 Safety

Crashes are one of the primary causes of non-recurring congestion, which is a major source of traffic delay. Figure 1.2.3 illustrates the locations that have a high propensity of crashes involving trucks. These types of crashes often require more resources and time to clear the roadway, exacerbating the amount of delay. The location with the highest crash rate in the entire Bi-State MPO region is on I-74 between State Street and the I-74 on/off ramp.



**Figure 1.2.3 (Source: Bi-State Freight Plan<sup>1</sup>)**

<sup>1</sup>See electronic appendix: [www.iowadot.gov/i74corridor/fastlane.html](http://www.iowadot.gov/i74corridor/fastlane.html)  
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### 1.2.3 Congestion/Bottlenecks

The region’s bridges are also bottlenecks where both congestion and safety are issues. There are relatively higher numbers of truck-involved collisions around the Mississippi River bridges that link the Iowa and Illinois portions of the Bi-State Region.

Trucks, as well as passenger vehicles, must use these bridges for both local and long-distance travel.

Bridge	Sufficiency Rating (Iowa DOT)	Sufficiency Rating (Illinois DOT)	Avg. Truck AADT (Percentage) *
<i>Mississippi River</i>			
Government Bridge	** n/a	72.4	** n/a
US 67/ Centennial Bridge	10.8	3.4	9,545 (30.5%)
I-74	56.2 (EB); 49.6 (WB)	58.1 (EB); 60.2 (WB)	3,309 (4.7%)
I-280	67.9	80.9	4,329 (19.3%)
I-80	67.0	65	9,971 (29.2%)
SR 92	66.6	66	167 (4.6%)

**Table 1.2.3 Sufficiency Rating on Bi-State Regions Mississippi River Bridges**

The I-74 bridge connecting Davenport/ Bettendorf to Rock Island/Moline has been identified as a priority in multiple recently completed official regional planning documents due to its importance for freight, passenger traffic, and its poor condition (as noted in Table 1.2.3).

These plans include:

- **Bi-State Region Freight Plan:** The project anticipated to provide freight the greatest benefit is the enhancement of the I-74 Mississippi River Crossing. It is the number one transportation priority in the Bi-State Region.
- **Draft Iowa State Freight Plan:** The I-74 Mississippi River Crossing is identified as a highway freight bottleneck in the state with 706 total bottleneck occurrences in 2014 according to INRIX traffic data. This location was also analyzed as a future highway freight improvement. After evaluating the value, condition, and performance of the I-74 Mississippi River Crossing compared to 93 other highway freight improvements stateside, it is the third highest priority location in the state.
- **2045 Quad Cities Long Range Transportation Plan:** One of the primary corridors identified as having relatively high congestion is I-74 from 53rd St. (Davenport) to Airport Rd. (Moline).

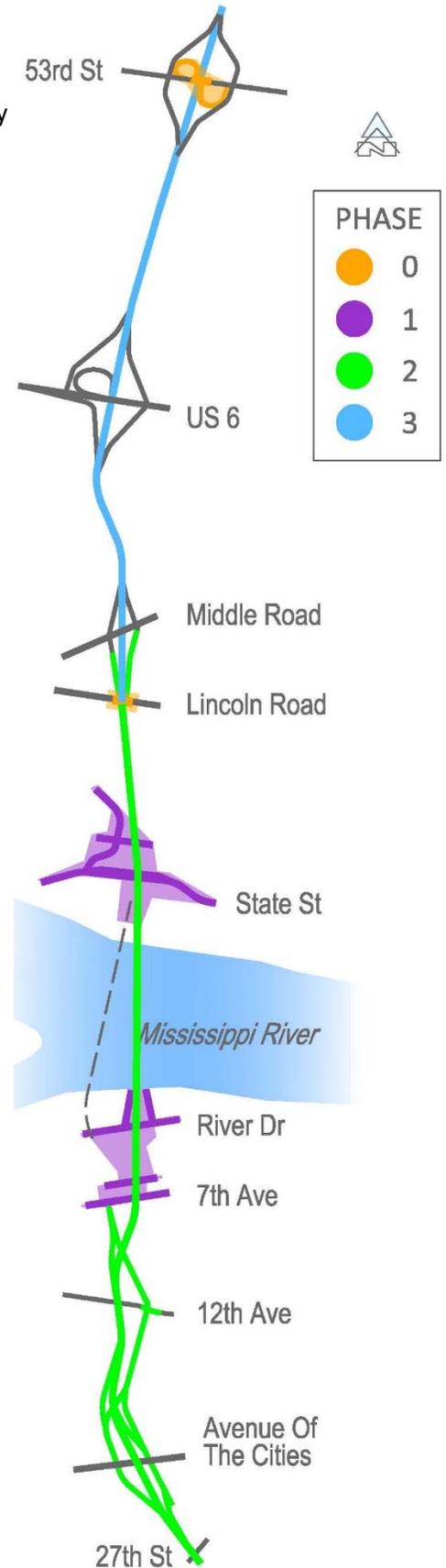
<sup>1</sup>See electronic appendix: [www.iowadot.gov/i74corridor/fastlane.html](http://www.iowadot.gov/i74corridor/fastlane.html)

### 1.3 Project Breakdown

The following three phases have been identified for the project construction (along with a pre-phase for already constructed entities). Each phase can be opened to the public and operated effectively without future phases being completed.

- Phase 0 (pre-phase) – Lincoln Road and 53rd Street Construction – Consists of the Lincoln Road bridge replacement and the widening of the 53rd Street bridge over I-74 along with local road improvements and the construction of I-74 loop ramps. (Cost = \$18.4 million)
- Phase 1 - Local Roads in Iowa and Illinois – Consists of local road improvements in downtown Bettendorf and Moline. This work was let as two separate construction contracts, one for work in Moline and one in Bettendorf. (Cost = \$32.9 million)
- Phase 2 – Operationally Independent Central and South Section – Consists of the I-74 mainline and ramp work from 27th Street in Moline to the south end of the Middle Road interchange in Bettendorf. It also includes the remainder of the local road work in downtown Moline and Bettendorf. (Cost = \$1.003 billion)
- Phase 3 – North Section – Consists of the I-74 mainline and ramp work from the south end of the Middle Road interchange to the north project limit. (Cost = \$168 million)

Phase 0 (pre-phase) has been completed. Final design has been completed on all Phase 1 construction contracts and the majority of the Phase 2 construction contracts. Funding is in place for all Phase 1 contracts while the project sponsors are in the process of securing all required funding for the Phase 2 contracts. The Nationally Significant Freight and Highway Projects (NSFHP) funds will be utilized for the Phase 2 contracts.



<sup>1</sup>See electronic appendix: [www.iowadot.gov/i74corridor/fastlane.html](http://www.iowadot.gov/i74corridor/fastlane.html)  
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## 2.0 Project Location

The I-74 corridor plays an important role in the local, regional, and national transportation network. Aside from I-74, three other interstate highways, five U.S. highways, 5 state highways, three railroads, one commercial airport, 20 barge terminals and one general aviation airport serve the Quad Cities region. In addition, a U.S. Customs Port of Entry and Foreign Trade Zone serve as economic entryways for the area. The roadway network provides vehicular and non-motorized access to trails, transit, rail, river, air, and intermodal freight facilities. Connections to these transportation links are enhanced throughout the corridor.

The Quad Cities is a region of four counties in northwest Illinois and southeastern Iowa. The urban core consists of five principal cities, Davenport and Bettendorf in Iowa and Rock Island, Moline, and East Moline in Illinois. These cities are the center of the Quad Cities Metropolitan Area, which, as of 2013, had a population estimate of 383,781 and a Combined Statistical Area population of 474,937.

## 3.0 Project Parties

The Iowa-Illinois I-74 Mississippi River Bridge Corridor Enhancement Project involves federal, state, and local agencies along with a robust public involvement process involving the adjacent communities and citizen committees. Each has contributed to the development of the project. The principal groups involved include:

**Iowa Department of Transportation (Iowa DOT)** - In addition to serving as the lead agency for the I-74 Project, the Iowa DOT serves as the lead agency for the development of the final engineering, construction documents and the construction of the I-74 Project. Iowa DOT will have maintenance responsibilities for this project along with half of the Mississippi River bridges and all portions of the I-74 Project.

**Illinois Department of Transportation (Illinois DOT)** - The Illinois DOT is working very closely with the Iowa DOT during all phases of the I-74 Project and is sharing funding and review responsibilities. The Illinois DOT will also have maintenance responsibilities for half of the Mississippi River bridges and all portions of the corridor project in Illinois.

**The Federal Highway Administration (FHWA)** - Both the Iowa and Illinois Divisions at the FHWA are responsible for the oversight and review of the I-74 Project.

There are numerous local agencies that have various levels of funding, management and review responsibilities for the I-74 Project. A listing of the principal agencies involved is as follows:

- Scott County Iowa
- City of Davenport, Iowa
- City of Bettendorf, Iowa
- Bi-State Regional Commission (MPO)
- City of Moline

## 4.0 Grants, Sources and Uses of Project Funds

The Iowa Department of Transportation, in concert with the Illinois Department of Transportation has developed a comprehensive Financial Plan for the Iowa/Illinois I-74 Mississippi River Bridge Corridor Enhancement Project in accordance with the requirements of Section 106, Title 23, United States Code, and the Financial Plan guidance issued by the Federal Highway Administration. The 2015 plan is available in the electronic Appendix.

### 4.1 Future Eligible Costs

Future Eligible Costs are outlined in the Financial Plan for the I-74 Project and are summarized in the Table 4.1.

Element	Iowa (\$YOE)	Illinois (\$YOE)	Total (\$YOE)
Cost to Complete	\$548,269,971	\$527,778,266	\$1,076,048,237
Cost Incurred to Date	\$93,992,249	\$51,975,372	\$145,967,620
Difference	\$454,277,722	\$475,802,894	\$930,080,617
Project Reserve	\$105,953,413	\$92,892,715	\$198,846,128
<b>Total Future Eligible Cost</b>			<b>\$1,128,926,745</b>

**Table 4.1 Future Eligible Costs (Source: Financial Plan<sup>1</sup>)**

### 4.2 Availability and Commitment of All Expected funds

The **I-74 Project** will be financed through a combination of federal, state, and local funding.

The Iowa DOT has fully funded Phase 1 and construction is currently ongoing. The Iowa DOT has committed funds to partially fund Phase 2 of the project. The current Iowa Transportation Improvement Program (2016-2020) has identified revenue sources for Phase 2 Right-of-Way (ROW) and construction. Iowa DOT projects are funded by the State Primary Road Fund in addition to federal and local funding contributions. Revenue sources include fuel taxes, sales taxes on new and used motor vehicles, and motor vehicle registration fees.

The Illinois DOT has also fully funded Phase 1 and the advance local road construction is completed. The Illinois DOT has committed funds to partially fund Phase 2 of the project. The current Illinois Transportation Improvement Program (2016-2021) has identified revenue sources for Phase 2 construction engineering, ROW, and construction equaling \$428.2 million.

Illinois DOT projects are funded by the state Highway Improvement Program. Revenue sources include the state motor fuel tax, motor vehicle registration fees and other user fees.

Currently neither state plans to utilize debt financing for the projects but rather to meet annual cash flow needs on a pay-as-you-go basis.

<sup>1</sup>See electronic appendix: [www.iowadot.gov/i74corridor/fastlane.html](http://www.iowadot.gov/i74corridor/fastlane.html)

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Revenues for Iowa's Highway Improvement Program come from three basic sources:

- State Primary Road Fund
- Formula Federal – Aid
- Congressionally Designated Federal - Aid

Future funding for Phases 2 and 3 of the I-74 Project will come from these categories of revenue. At the time of programming, a further evaluation of revenue eligibility versus project need will be completed by the Office of Program Management, the Engineering Bureau Director, and the District Engineer. Results and specifics from this evaluation will be included in Iowa DOT's Five-Year Transportation Improvement Program, that is updated and adopted every June, and in future updates to the project's Financial Plan.

Revenues for the Illinois DOT multi-modal Transportation Improvement Program come from federal, state and local sources. The primary source of state funds come from the motor fuel tax (MFT), motor vehicle registration (MVR) fees, other user fees, and bonds authorized through capital programs. Local sources for the highway program portion are normally planned reimbursements to the Illinois DOT for projects underway with local participation.

Approximately \$85.3 million of Congressionally-designated, federal funds have been identified for the I-74 project (this includes funds directed to Iowa and Illinois) which are broken down as follows: In the 2001 Appropriations Act, this project received NCPD funds of \$5,600,000. In the 2002 Appropriations Act, this project received TCSP funding of \$2,000,000 and Section 330 funds of \$2,000,000. In the 2003 Appropriations Act, this project received IMO funds of \$943,825, NCPD funds of \$3,000,000, and Bridge Discretionary funds of \$993,500. The 2004 Omnibus Appropriations Act also included \$1,250,000 in Bridge Discretionary funds for the project. The 2005 Omnibus Appropriations Bill included \$1,100,000 of Bridge Discretionary funds for the project. Most recently, the SAFETEA-LU

Authorization included a total of \$67.4 million for the I-74 project (\$35 million in Sec. 1114, \$15 million in National Corridor, \$3.5 million in Transportation Improvement, and \$13.9 million in High Priority Project funds). The Consolidated Appropriations Act of 2010 included \$2,200,000 in Interstate Maintenance Discretionary funds.

For purposes of the financial plan, any revenue needs beyond the current Iowa DOT Five-Year Transportation Improvement Program and the Illinois DOT Six-Year Transportation Improvement Program will be shown under a category of Future Funds. The revenue needs categorized under Future Funds are outlined in the 2045 Bi-State Long Range Transportation Plan. The Iowa Transportation commission and Illinois DOT are committed to continue funding on large projects where construction will span many years beyond the current program. The yearly updates for the financial plan will continue to be updated based on the new program cycle. Future Funds that are shown in the tables are consistent with current Iowa DOT and Illinois DOT project programming levels. Iowa and Illinois transportation programs have remained fairly constant over the past few years. These factors were considered in setting the future funding levels beyond the current program years. These estimates will be re-evaluated and updated with each of the annual updates of the plan.

It is expected that the remainder of the project will be funded through NHFP, NHPP and STP funds.

### 4.3 Federal Funds Already Provided

The Federal revenue sources for both Iowa DOT and Illinois DOT portions of the project are expended, committed, or planned.

IOWA SUMMARY				
	Expended or Obligated Funds	Committed Funds	Future Funds	Total
<b>Phase 0</b>				
Federal Apportionments	2,127,426	0	0	2,127,426
Federal Discretionary Funds	12,254,804	0	0	12,254,804
<b>Phase 1</b>				
Federal Apportionments	14,827,864	0	0	14,827,864
Federal Discretionary Funds	0	0	0	0
<b>Phase 2</b>				
Federal Apportionments	3,969,142	216,450,513	81,728,484	302,148,139
Federal Discretionary Funds	25,972,107	0	0	25,972,107
<b>Phase 3</b>				
Federal Apportionments	2,081	0	134,316,522	134,318,603
Federal Discretionary Funds	0	0	0	0
<b>Iowa Total</b>	<b>\$59,153,424</b>	<b>\$216,450,513</b>	<b>\$216,045,006</b>	<b>\$491,648,943</b>

*Table 4.3.1 Iowa Summary of Federal Revenue Sources (Source: Financial Plan<sup>1</sup>)*

ILLINOIS SUMMARY				
	Expended or Obligated Funds	Committed Funds	Future Funds	Total
<b>Phase 0</b>				
Federal Apportionments	0	0	0	0
Federal Discretionary Funds	0	0	0	0
<b>Phase 1</b>				
Federal Apportionments	6,349,000	0	0	6,349,000
Federal Discretionary Funds	0	0	0	0
<b>Phase 2</b>				
Federal Apportionments	7,232,488	363,929,685	54,817,257	425,979,430
Federal Discretionary Funds	33,063,600	0	0	33,063,600
<b>Phase 3</b>				
Federal Apportionments	0	0	0	0
Federal Discretionary Funds	0	0	0	0
<b>Illinois Total</b>	<b>\$46,645,088</b>	<b>\$363,929,685</b>	<b>\$54,817,257</b>	<b>\$465,392,030</b>

*Table 4.3.2 Illinois Summary of Federal Revenue Sources (Source: Financial Plan<sup>1</sup>)*

<sup>1</sup>See electronic appendix: [www.iowadot.gov/i74corridor/fastlane.html](http://www.iowadot.gov/i74corridor/fastlane.html)

#### 4.4 State and Local Funding

The cost participation of the state and local municipalities is summarized in the table below. Detailed information regarding the cost category the funds are designated for is contained in the financial plan<sup>1</sup>.

Phase	Bettendorf	Davenport	Iowa	Moline	Illinois	Total
0	\$0	\$0	\$3,994,767	\$0	\$0	\$3,994,767
1	\$5,239,595	\$0	\$3,706,966	\$1,236,000	\$1,587,250	\$11,769,811
2	\$9,381,490	\$0	\$94,607,322	\$5,759,137	\$106,494,858	\$216,242,807
3	\$0	\$431,969	\$33,579,651	\$0	\$0	\$34,011,620
<b>Totals</b>	<b>\$14,621,085</b>	<b>\$431,969</b>	<b>\$135,888,706</b>	<b>\$6,995,137</b>	<b>\$108,082,108</b>	<b>\$266,019,005</b>

**Table 4.4.1 Cost Participation Responsibilities (Source: Financial Plan<sup>1</sup>)**

#### 4.5 Amount of Requested NSFHP

\$66.5 million is being requested through the FASTLANE grant to be applied to the Phase 2 portion of the project.

Phase 2 Expected Cost (YOE)	\$ 1,003,000,000	Percent of Total
Expended or Obligate Federal Funds	\$ 70,237,337	7.0%
Committed Federal Funds	\$ 580,380,198	57.9%
State and Local Funds	\$ 216,242,807	21.6%
NSFHP Grant	\$ 66,500,000	6.6%
Future Federal Apportionments	\$ 69,639,658	6.9%

**Table 4.5.2 Proposed Funding Sources (Source: Financial Plan<sup>1</sup>)**

This amount request represents 6.6 percent of the overall Phase 2 cost and would bring the Federal contributions to this phase of the project to 78.4 percent of the total funding for the Phase 2. (Source: Financial Plan<sup>1</sup>)

<sup>1</sup>See electronic appendix: [www.iowadot.gov/i74corridor/fastlane.html](http://www.iowadot.gov/i74corridor/fastlane.html)  
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## 5.0 Cost Effectiveness

A benefit-cost analysis (BCA) is an evaluation of the economic advantages (benefits) and disadvantages (costs) of a set of investment alternatives. In order to evaluate the net benefit of the Iowa/Illinois I-74 Mississippi River Bridge Corridor Enhancement Project (I-74 Project) investment, the proposed improvements will be compared to the expected performance of the existing condition (Base Case). The analysis presented focuses primarily on the benefits that can be quantified and monetized as a result of the proposed improvements to the I-74 mainline and local roads. There are expected to be significant additional benefits associated with such things as improved pedestrian and bicycle access, improved aesthetics along the corridor and short-term job creation; however those benefits were not quantified for the BCA.

All costs are calculated using 2016 dollars in the years that they are incurred. Those costs are then discounted to present values using an appropriate discount rate that reflects the desired rate of return of the investment vehicle. Alternatively, a more liberal discount rate can be used that only reflects the expected rate of inflation. A larger discount rate will typically yield a more conservative BCA, as the benefits of an investment are generally realized in the years following the initial cost. A 7 percent discount rate is used for this analysis, while an alternative discount rate of 3 percent is also provided.

The primary transportation-related elements that are monetized for this analysis are travel time costs, vehicle operating costs (VOC), safety costs, maintenance costs, and remaining capital value (i.e. salvage value). The travel time costs and vehicle operating costs are analyzed together and will be referred to as User Costs. Safety costs reflect the savings related to the expected decrease in the number of accidents that will result from the implementation of the proposed improvements.

### 5.1 Traffic Data

The existing Average Annual Daily Traffic (AADT) for the I-74 Corridor was identified by current Illinois and Iowa Department of Transportation's 2014 traffic counts as posted on their websites:

Growth rates to develop long range 2045 ADT projections were developed based on forecasts prepared for the Long Range Transportation Plan prepared by the Bi-State Regional Commission, the Metropolitan Planning Organization (MPO) for the region.

### 5.2 Analysis Period

The BCA takes place over the period 2016 through the year 2045. The beginning of the analysis in 2016 corresponds to the planned start of construction, and therefore the beginning of capital expenditure. Construction of the entire I-74 Project is expected to be completed in 2023. 20 year post construction (typical design life) would extend to 2043. The year 2045 was selected for the end of the study period as it coincides with the current planning year horizon for the regional (MPO) long range transportation plan which was utilized for the traffic projections. Due to the nature of the project, it is expected that the ratio of benefits to costs will only increase in future years beyond the study period. This is because the current system already exhibits substandard geometry and the existing mainline is already operating at full capacity with a Level of Service of F. Given that traffic on the mainline is only expected to increase in the future, the capacity issues of the existing system will likely become more severe in the years beyond 2045.

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<sup>1</sup>See electronic appendix: [www.iowadot.gov/i74corridor/fastlane.html](http://www.iowadot.gov/i74corridor/fastlane.html)

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### 5.3 Travel Time Benefits

The travel time benefits in this analysis are calculated as the difference in user costs from the Base Case to the I-74 Project. The traffic analysis<sup>1</sup> is based on capacity and delay calculations based on estimated delays associated with congestion and queuing on the mainline when demand exceeds capacity (un-met demand) and the time required to service (dissipate) the unmet demand for both scenarios in order to accurately predict the expected delays for both the Base Case and the I-74 Project alternative.

The source for vehicular and truck user costs is the TIGER and FASTLANE BCA Resource Guide<sup>1</sup> which is presented in 2014 dollars.

- Intercity Auto = \$18.06/hr.
- Truck Drivers = \$25.80/hr.

Using the CPI Inflation Calculator on the US Department of Labor's website<sup>1</sup>, prices have inflated by approximately 7.7 percent from 2014 to 2016, which is the year that those dollars will be inflated and discounted

- Intercity Auto = \$18.09/hr.
- Truck Drivers = \$25.84/hr.

Per the referenced guideline, assumed travel should be distributed as 78.6 percent personal and 21.4 percent business resulting in a user delay of \$19.95/hr.

The PM peak hour traffic was used as the basis for analysis in the CORSIM model. The traffic demand for the I-74 Project does not exceed its capacity, therefore, only minimal delay due to routine travel is expected. The user delay costs incurred in the Base Case for the 29 year analysis period are benefits (or savings) that are attributed to the I-74 Project alternative.

The user costs for each year were tallied based on 260 days a year where congestion occurs; this assumes only Monday through Friday delays based on the five-day work week. The costs were calculated for each year over the analysis period and then discounted to 2016 dollars. The present value of the total travel time benefit resulting from the I-74 Project is approximately \$502 million. For a yearly breakdown of the user costs, refer to the I-74 BCA Summary on the Iowa DOT's FASTLANE website<sup>1</sup>.

### 5.4 Sustainability Benefits

Eliminating the queue delay experienced by travelers will reduce the amount of carbon emissions produced by each vehicle due to the shortened period of time the vehicle will spend on the road. For the purpose of calculating the monetized benefits of the shorter travel time, the total hours of delay experienced for each year was calculated first. Converting, the total hours of delay into equivalent miles of travel, the amount of CO<sub>2</sub>, VOC, NO<sub>x</sub>, and PM emissions saved by the construction of the I-74 Project was able to be calculated. Using the prescribed value of carbon emissions, the total savings is \$37.2 million. For a yearly breakdown of the savings, refer to the I-74 BCA Summary on the Iowa DOT's website.

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<sup>1</sup>See electronic appendix: [www.iowadot.gov/i74corridor/fastlane.html](http://www.iowadot.gov/i74corridor/fastlane.html)  
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## 5.5 Safety Benefits

The number and severity of crashes along the I-74 Project could be reduced by eliminating the geometric deficiencies and poor traffic operations that exist today. Crashes from 2010 to 2014 were analyzed along the I-74 corridor as provided by the Iowa and Illinois Departments of Transportation. Projected crashes were expected to increase similar to projected traffic growth.

The AASHTO Highway Safety Manual (HSM) provides tools to conduct safety analyses and estimate the expected crash frequency reductions resulting from implementing the design features specified in the corridor. Crash Modification Factors (CMF) published in the Highway Safety Manual and at the Crash Modification Factors Clearinghouse ([www.cmfclearinghouse.org](http://www.cmfclearinghouse.org)) were applied to the average expected crash frequency of the existing condition to obtain the average expected crash frequency of the proposed condition. The difference in estimated expected average crash frequencies of the two conditions was used to quantify the safety benefits of the I-74 Project.

Crash statistics along the I-74 Project corridor between 2010 through 2014 were reviewed as part of this analysis. No fatalities were reported during this timeframe. It was estimated that the crash rate would continue to increase as the traffic throughout the corridor increased.

Future crashes were assumed to increase linearly with traffic growth.

Costs associated with crashes were based upon the Maximum Abbreviated Injury Scale (MAIS). This rating system groups reported injuries according to the following:

0 No Injury	3 Serious Injury
1 Minor Injury	4 Severe Injury
2 Moderate Injury	5 Critical Injury

Because the existing crash data was reported via KABCO, crash data was converted. Injury crashes were converted as an average of A and B injuries and Non-injury crashes were converted as an average of C and O injuries<sup>1</sup>.

The cost benefit to the user was calculated as \$209 million in injury crashes and \$290 million in non-injury crashes. For a yearly breakdown of the savings, refer to the I-74 BCA Tables on the Iowa DOT's FASTLANE website<sup>1</sup>.

## 5.6 Capital Expenditure and State of Good Repair

The existing infrastructure throughout the corridor is nearing its projected design lives. The bridge over the Mississippi River's two spans are 86 and 46 years old respectively. In 2015 unplanned (beyond routine maintenance) bridge repairs were required. It is anticipated that some level of capital repair costs will only increase as the system continues to age. Over the course of the analysis period, it was estimated that 10 percent of the total reconstruction cost, would be required to keep existing structures and facilities in good standing (base condition capital costs). This will equate to a capital expenditure of \$80 million (\$35.4 million in present value dollars) in bridge and roadway repairs.

Due to the age of the system, additional maintenance costs will be incurred to maintain the ageing and overtaxed system (base condition maintenance costs). The present value of the maintenance

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<sup>1</sup>See electronic appendix: [www.iowadot.gov/i74corridor/fastlane.html](http://www.iowadot.gov/i74corridor/fastlane.html)  
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expenditures over the analysis period for the existing roadway and structures is \$2.9 million dollars. While replacing the existing I-74 bridges will require a substantial capital expenditure, doing so is expected to eliminate the need for significant maintenance spending until sometime after 2045.

### 5.7 Residual Value

In order to determine the residual capital value at the end of the study period, it is assumed that roadway items depreciates over 20 years, while structures items depreciate over 50 years. The residual capital value of the I-74 Project in the year 2045 at the end of the analysis period is estimated to be \$56.4 million. Conversely, by the year 2045 the existing bridges will be 74 years old and will have an insignificant salvage value. The remaining capital value of the Base Case is \$0 million. The residual value differential is \$56.4 million.

### 5.8 Benefit Cost Summary

The summary of the expected benefits and costs for the I-74 Project are presented in the Benefit-Cost Analysis Summary for discount rates of 7 percent and 3 percent. For a 7 percent discount rate, the project has an overall benefit-cost ratio of 0.6. Decreasing the discount rate from 7 percent to 3 percent increases the benefit-cost ratio to 1.5.

<b>BENEFIT-COST ANALYSIS SUMMARY</b>		
<b>DISCOUNT RATE</b>	<b>7%</b>	<b>3%</b>
<b>PRESENT VALUE OF ITEMIZED BENEFITS</b>		
USER DELAY BENEFITS	\$ 502,421,444	\$ 993,001,454
Emissions	\$ 37,203,900	\$ 71,529,504
CRASH REDUCTION BENEFITS	\$ 281,949,991	\$ 378,618,422
<b>PRESENT VALUE OF TOTAL BENEFITS</b>	<b>\$ 821,575,335</b>	<b>\$ 1,443,149,381</b>
<b>PRESENT VALUE OF ITEMIZED COSTS</b>		
CAPITAL COST DIFFERENTIAL	\$ 596,680,853	\$ 669,500,255
MAINTENANCE COST DIFFERENTIAL	\$ (2,636,593)	\$ (3,985,945)
REMAINING VALUE DIFFERENTIAL	\$ 56,439,066	\$ 170,543,464
<b>PRESENT VALUE OF TOTAL COSTS</b>	<b>\$ 537,605,194</b>	<b>\$ 494,970,846</b>
<b>SUMMARY</b>		
NET COST OF PROJECT	\$ 537,605,194	\$ 494,970,846
PRESENT VALUE OF BENEFITS	\$ 821,575,335	\$ 1,443,149,381
NET PRESENT VALUE	\$ 283,970,141	\$ 948,178,535
<b>BENEFIT COST RATIO</b>	<b>1.5</b>	<b>2.9</b>

*Table 5.8 – Benefit Cost Summary*

<sup>1</sup>See electronic appendix: [www.iowadot.gov/l74corridor/fastlane.html](http://www.iowadot.gov/l74corridor/fastlane.html)  
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## 6.0 Project Readiness

### 6.1 Technical Feasibility

The preliminary engineering and environmental studies for the project have been completed and are summarized in Section 6.3. Phase 1 Design Engineering and Construction are completed. Phase 2 Design Engineering is substantially completed with Construction anticipated to begin in May of 2017. Phase 3 Design Engineering has been started with construction slated for the later portion of the Iowa DOT program.

The Iowa and Illinois Departments of Transportation have drafted a Financial Plan for the I-74 Project in accordance with requirements of Section 106, Title 23, United States Code and the Financial Plan guidance issued by the Federal Highway Administration. The plan provides detailed costs estimates to complete the project and estimates the financial resources to be utilized to fully finance the project.

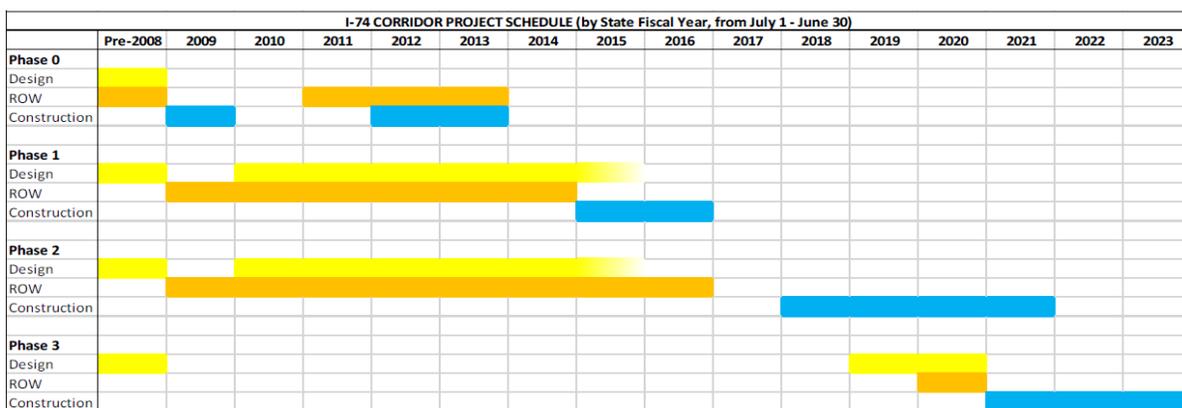
The I-74 Project has a formal process for the review and updating of cost and schedule risk assessment. On a bi-annual basis the cost and schedule risk are review and findings summarized in a Report in June and December. The review consists of three steps:

1. Review and Revise the Opinion of Cost – The revision includes changes to unit prices, quantities, and addition of new elements.
2. Review and Revise the Risk – Quantify the probabilistic costs of risks and update the cost.
3. Update the ASTM cost model that addresses today’s needs and future desires. Identify possible changes in the design or planning. Estimate their cost impact and place them under reserve

The December 2015 I-74 Iowa-Illinois Corridor Cost and Schedule Risk Assessment is part of the financial plan included in the electronic Appendix.

### 6.2 Project Schedule

A graphical depiction of the general project schedule for each of the construction phase is shown in Figure 6.2 below



**Figure 6.2 –I-74 Project Schedule**

<sup>1</sup>See electronic appendix: [www.iowadot.gov/l74corridor/fastlane.html](http://www.iowadot.gov/l74corridor/fastlane.html)

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### 6.2.1 Phase 1 Milestones

- June 2014 – Letting of the Illinois Advanced Local Road contract
- September 2014 – Letting of the Iowa Advanced Local Road project
- August 2015 – Completion of the Illinois Advanced Local Road construction
- November 2015 – Completion of the Iowa Advanced Local Road construction

### 6.2.2 Phase 2 Milestones

- May 2017 – Letting of the first Iowa Central Section projects
- June 2017 – Letting of the first Illinois Central Section contracts
- April 2018 – Pre-Stage work to be completed
  - Plug fill embankment and settlement
  - WB Arch and approach steel fabrication in progress
  - Arch and approach foundations in progress
- July 2018 – Stage 1A work to be completed
  - WB Arch and approach steel fabrication
  - WB Arch and approach substructure
  - Embankment for lower Ramp 6th-C in progress
  - Embankment for lower US 67 Ramp D in progress
  - US 67 Ramp D bridge substructure in progress
  - WB Iowa Viaduct substructure in progress
  - Illinois detour route upgrades – not required to be complete until November 2018
  - Iowa detour route upgrades – not required to be complete until November 2018
- April 2019 – Stage 1B work to be completed
  - Paving in plug fill area in progress
  - Modified existing WB entrance ramp from River Drive
  - WB Arch and approach superstructures in progress
  - Iowa trunk line storm sewer
  - Southern portion of Ramp 6th-C, including retaining wall
- May 2019 – Stage 2A work to be completed
  - EB Arch and approach steel fabrication
  - EB Arch and approach substructures
  - WB Arch and approach superstructures in progress
  - WB IL Viaduct Pier 3 and superstructure in progress
  - WB I-74 pavement in Iowa from approximately Station 6819+00 to Middle Road
  - Embankment adjacent to existing WB entrance ramp
- November 2019 – Stage 2B work to be completed
  - WB Arch and approach spans completed

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<sup>1</sup>See electronic appendix: [www.iowadot.gov/i74corridor/fastlane.html](http://www.iowadot.gov/i74corridor/fastlane.html)  
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- EB Arch and approach superstructures in progress
  - Ramp 6th-C Pier 3
  - EB IL Viaduct off-line work in progress
  - Illinois WB I-74 Mainline and Ramps, all structures and pavement completed
  - Iowa WB I-74 Mainline and Ramps, all structures and pavement completed
  - Temporary Middle Road Ramp C
- April 2020 – Stage 2 winter work to be completed
    - Illinois EB plug fill mainline pavement and Ramp 6th-C pavement and bridge superstructure
  - July 2020 – Stage 3A work to be completed
    - Iowa EB I-74 pavement
    - Middle Road Ramp C
    - US 67 Ramp A, including bridge and retaining wall
    - EB IA Viaduct and US 67 Ramp C in progress
    - EB Arch and approach superstructures in progress
  - November 2020 – Stage 3B work to be completed
    - EB Arch and approach spans completed
    - Illinois EB I-74 Mainline and Ramps, all structures and pavement completed
    - Iowa EB I-74 Mainline and Ramps, all structures and pavement completed
    - Remaining Iowa local roads
    - Iowa detention pond
  - May 2021 – Completion of various corridor-wide items
    - Landscaping
    - Demolition of the existing river crossing
    - Demolition of the existing viaduct structures in Bettendorf and Moline

### 6.2.3 Phase 3 Milestones

Currently the final design for Phase 3 (North Section – Iowa) is expected to be completed by the end of fiscal year 2020.

Construction for this phase is estimated to begin in fiscal year 2021; however, the timing is still fairly uncertain and is subject to funding availability. Phase 3 construction is tentatively estimated to complete in June 2023.

## 6.3 Required Approvals

### 6.3.1 Environmental Reviews (NEPA)

The environmental record for the I-74 Project includes the following documents, which can be found on the I-74 home page on the Iowa DOT's website and on the electronic Appendix.

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<sup>1</sup>See electronic appendix: [www.iowadot.gov/I74corridor/fastlane.html](http://www.iowadot.gov/I74corridor/fastlane.html)  
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These documents constitute the statements required by the National Environmental Policy Act (NEPA) and Title 23 of the United States Code (U.S.C.). The Record of Decision (ROD) for the Interstate 74 Quad Cities Corridor Study Project was approved on April 29, 2009 by the Federal Highway Administration. The following are results as applicable to the I-74 Project.

The I-74 Project was planned in compliance with the NEPA and all NEPA actions have been completed as shown below:

- Draft Environmental Impact Statement Complete October 30, 2003
- Draft Section 4(f) Evaluation Complete December 2003
- Final Environmental Impact Statement Complete January 8, 2009
- Final Section 4(f) Evaluation Complete January 2009
- Record of Decision Complete April 29, 2009

### **6.3.2 Federal, State, and Local Approvals**

A summary of the status with the following federal and state agencies is presented below. Each is current as of the Record of Decision dated April 29, 2009. **U.S. Department of Housing and Urban Development.** The U.S. Department of Housing and Urban Development stated that it does not expect any detrimental effects on any of its own projects as a result of the project.

**U.S. Department of Homeland Security, United States Coast Guard.** The United States Coast Guard noted that the FEIS addressed the concerns that the agency expressed in its comments on the DEIS.

**Natural Resources Conservation Service.** The Natural Resources Conservation Service stated that it had no comments or concerns regarding this project.

**U.S. Army Corps of Engineers.** The U.S. Army Corps of Engineers (Corps) commented that the project does not involve Rock Island District administered land; therefore, real estate coordination will not be required. The Corps also noted that the project will require a Section 404 permit and additional coordination, as part of the Section 404 process, will be required, including coordination regarding with the State Historic Preservation Officers of Iowa and Illinois and the U.S. Fish and Wildlife Service.

Finally, the Corps requested that the project sponsors contact the Rock Island District's Emergency Management Office to determine whether the project may affect local flood control projects. The Iowa DOT will apply for the required Section 404 permit and will continue to coordinate with the appropriate federal and state resource/regulatory agencies as the project progresses through the design phase.

**U.S. Environmental Protection Agency.** The U.S. Environmental Protection Agency (EPA) noted that its comments on the 2003 DEIS pertained to the disposition of the existing bridge as well as affects to natural areas, water quality, business relocations, and wetlands. The EPA expressed its appreciation for the additional investigation and analysis provided for those issues. The EPA suggested that the project sponsors continue to consult with the state agencies with jurisdiction over the project. The Iowa DOT will continue to consider the comments provided by the EPA as the I-74 Project moves into the design phase and will apply these suggestions where practicable.

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<sup>1</sup>See electronic appendix: [www.iowadot.gov/i74corridor/fastlane.html](http://www.iowadot.gov/i74corridor/fastlane.html)  
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**Iowa Department of Natural Resources.** The Iowa DNR requested that the project sponsors use Best Management practices to control erosion and protect water quality.

Section 408 Approval for Proposed Alterations/Modifications to Local Flood Protection Constructed by the United States. The Bettendorf Iowa Local Flood Protection Plan is a levee system along the Mississippi River. The Iowa DOT and the Final Design Team met with the USACE on December 19, 2013 to initiate the coordination process with the US Army Corps of Engineers regarding the Section 408 application. The conclusions reached at this meeting:

- The Bettendorf Advance Local Road project did not require submittal of 408 application but a letter submitted on behalf of the City requesting the USACE to review the 100 percent Unapproved Final Plans for determination if a 408 application is required. This letter and the appropriate exhibits were submitted to USACE on April 10, 2014 - Refer to Task 937 for this submittal and USACE final determination for the local road project.
- The I-74 Project will require the submittal of Section 408 application. The COE is tentatively considering this application as a Minor. The preliminary engineering 2-D hydraulic report, Let-down structure final documents and final landscaping plans will need to be included with the 408 application.
- The COE indicated that the review time for the Minor 408 is not extensive and is done parallel with Section 10 and Section 404 (both are required for I-74 and will be quite extensive - requiring minimum of 90 day review time). There is no time expiration on an approved/accepted Section 408.
- The Section 408 Application process is initiated when the 404 permit is submitted.

404 Permit - Iowa side: The Iowa DOT will submit a 404 Permit application covering Iowa portion of the project and new mainline bridges (to the point where the proposed bridge touches down in Illinois; roughly Station 6803+87). Mitigation for Illinois and Iowa wetland impacts will be separate, with these responsibilities being outlined in an Agreement and Special Conditions of the 404 Permit. The application will include a mitigation plan to replace any wetland or stream functions that will be impaired. A meeting for the I-74 Project is scheduled with the ACOE in June 2016. In summer of 2015, the Iowa DOT completed a new wetland delineation. The Iowa DOT will do this for both the Iowa and Illinois sides of the Mississippi River.

404 Permit – Illinois side: The Illinois DOT will submit a separate 404 Permit application for their portion of the project in Illinois. Their portion will begin at the east end of the new mainline bridges (roughly Station 6803+87) and extend eastward to the end of the project.

Incidental Take Permit for Endangered Species: The Iowa DOT performed the mussel survey in 2014 and has been in coordination with DNR for the Incidental Take Permit. In addition, the Iowa DOT is preparing the Biological Assessment. The Conservation Plan has been prepared. Due to the discovery of a significant population of the endangered Higgins Eye Mussels on existing I-74 Pier K, the Iowa DOT is pursuing the retention of Pier K rather than relocating the mussels prior to the piers demolition. The Iowa DOT has taken the lead to consult with the US Fish and Wildlife Service under Section 7 and with the US Coast

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<sup>1</sup>See electronic appendix: [www.iowadot.gov/i74corridor/fastlane.html](http://www.iowadot.gov/i74corridor/fastlane.html)  
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Guard and has prepared a Special Provision covering the requirements and restrictions regarding Mussels Conservation.

**Sovereign Lands Construction Permit:** The Joint Application Form that is used to apply for the Floodplain Permit triggers the review and issuance of the Sovereign Lands Permit. Any construction on, above or under state-owned lands and/or waters must secure a sovereign lands construction permit from the Iowa Department of Natural Resources (Iowa DNR) in advance of the work. If determined that a floodplain development permit is not needed, still need to apply for a sovereign lands permit and U.S. Army Corps of Engineers permit through the joint application form. The Floodplain Determination form needs to be attached to the joint application form. This permit is prepared and submitted by the Iowa DOT's Office of Bridges and Structures: Preliminary Bridge Section. The current understanding is that the DNR has all information required for signing-off the Sovereign Lands permit.

**FAA Coordination and Permits:** FAA coordination related to the I-74 Project was done during Preliminary Engineering. On July 5, 2007 and again on September 12, 2007, the FAA issued a "Determination of no hazard to air navigation" for the I-74 Arch. However, this determination expired on March 12, 2009. With a two year shelf life, another determination will be pursued in 2016.

**I-74 Coast Guard Bridge Permit Application:** The construction of the I-74 River Bridges across the Mississippi River (navigable waters of the United States) requires a permit from the Coast Guard in accordance with 33 CFR 115.50. As directed by the Iowa DOT, the final design team has begun preparing the permit application. A pre-application was held with the Coast Guard on September 28, 2015. Permit process involves review by Coast Guard and public comment period. The Coast Guard prepares public notice, coordination letters and Coast Guard Local Notice to Mariners once they considered the application is completed. The review is initiated through the Regulatory Functions Branch and the 404 permit process.

When issued, this bridge permit allows for up to five years before construction begins.

### **6.3.3 State and Local Planning**

The I-74 Project has been a major component of the long-term planning efforts of several agencies. The project is included in the Bi-State Regional Commission's 2045 LRTP and its FFY 2016-2019 Transportation Improvement Program.

The I-74 Project became a priority for programming out of the state's long-range transportation planning process. The project is consistent with the investment actions identified in the current long-range transportation plan "Iowa in Motion – Planning Ahead 2040" ([www.iowadot.gov/iowainmotion/files/iowaInMotion\\_final.pdf](http://www.iowadot.gov/iowainmotion/files/iowaInMotion_final.pdf)). This includes:

- Target selected capacity improvements to address access and operational needs.
- Enhance security of highways and bridge structures.
- Incorporate intelligent transportation systems (ITS) to improve system operation.
- Reduce transportation-related congestion and emissions.
- Provide accessible accommodations on Iowa's roadway corridors for bicycles and pedestrians.

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<sup>1</sup>See electronic appendix: [www.iowadot.gov/i74corridor/fastlane.html](http://www.iowadot.gov/i74corridor/fastlane.html)  
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Both Statewide Transportation Improvement Programs for Iowa and Illinois include the I-74 Project in their transportation programming efforts. The I-74 Project is also included in Iowa DOT's 2016-2020 5-year program. Links to these long term plans and programs can be found on the Iowa DOT's FASTLANE website<sup>1</sup>: [www.iowadot.gov/l74corridor/fastlane.html](http://www.iowadot.gov/l74corridor/fastlane.html)

## 6.4 Assessment of Project Risks and Mitigation Strategies

### 6.4.1 Risk Identification

The following risks have been identified in the Project Risk Assessment and still require monitoring throughout the project delivery process.

1. Lack of Competition in the Steel Fabrication Market when the River Bridge Contracts are Bid - There are currently only three steel fabricators in the United States that can handle the types, sizes and magnitude of steel required for the River Bridge contracts.
2. The Bids for the Arch Bridge Contract Exceed the Engineer's Estimate and Require a Rebid - There is some possibility that the bids for the Arch Bridge Contract will exceed the Engineer's Estimate (due to a combination of price escalation and market conditions) by enough that the project is rebid
3. Innovative Arch Bridge Construction Method - There is an opportunity for cost savings if the Contractor's means and methods result in more efficient construction.
4. Lack of Competition in the Steel Fabrication Market at the time the Other Bridges are Bid - The overall magnitude of structural steel fabrication required is large enough that steel prices may be driven up as a result.
5. Structural Steel Price Escalation - The potential supply and demand of structural steel at the time of construction could result in price increases beyond what is estimated in the current cost estimate
6. Portland Cement Price Escalation - The potential supply and demand of Portland cement at the time of construction could result in price increases beyond what is estimated in the current cost estimate
7. Rebar Price Escalation - The potential supply and demand of rebar at the time of construction could result in price increases beyond what is estimated in the current cost estimate
8. Change in Design Standards - Changes in design standards may impact the project cost as there is a large gap between the completion of construction documents and the beginning of construction. Any change in design standards initiated by FHWA, AASHTO, Iowa DOT, Illinois DOT or other agencies could impact construction and design costs.
9. Uncertainty in Pavement Structure in the North Section - Additional pavement structure beyond that identified in preliminary engineering may be required.
10. Uncertainty in Timing and Availability of Funding - If surface transportation is not enacted or transportation funding is not appropriated in time for the anticipated start of construction of Phases 3 the projects will be delayed until funding becomes available
11. Additional Right-of-Way Costs due to Condemnation and/or Appeal – Property owners may dispute the offer made for their property during the acquisition process, resulting in increased costs. No impact to the schedule is expected due to the multi-year gap between Right-of-Way acquisition and the beginning of construction.
12. Additional Local Improvements Required – Local public agencies may desire additional improvements as the project progresses

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<sup>1</sup>See electronic appendix: [www.iowadot.gov/l74corridor/fastlane.html](http://www.iowadot.gov/l74corridor/fastlane.html)  
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13. Encounter Unanticipated / Unknown Utilities or Damage to Utilities During Construction –During construction the contractor may find and/or damage utility lines that are not shown on the plans, resulting in additional costs and project delays.
14. Uncertainty in Quantity of Soil Treatment in Plug-Fill Area – The plug-fill area in Illinois has a large quantity of unsuitable and/or special waste material that will need to be removed, treated and disposed of. Additional quantity of material beyond what is currently identified in the plans may be required to be removed and treated.
15. Uncertainty in Quantities in the North Section – Additional quantities of items beyond those identified in preliminary engineering may be required for the North section.
16. Premium Cost for Staged Construction – The premium used for the staged construction of structures in the North section may increase beyond what is estimated in the current cost estimate.
17. Central Section Schedule Overrun – Several of the construction stages identified in the 3.5 year construction plan do not have a lot of room for unforeseen delays in construction.
18. Cofferdam Construction Cost – The construction of the spread footing foundation for the River Bridge will require the construction of six large cofferdams in a location of little to no overburden.
19. Moline Water Intake – The City of Moline’s drinking water supply is located immediately downstream of the existing I-74 river bridge. Additional measures may be required to ensure that the City of Moline’s water supply is protected during construction.
20. Mississippi River Water Level During Construction – Mississippi River flooding or low water issues could result in critical path work extending into the winter season, leading to increased cost of construction.
21. Stainless Steel Anchor Rods – Research is being performed on the potential for utilizing stainless steel anchor rods to connect the steel portion of the arch rib to the concrete portion.
22. MOT Modifications During Construction – Significant opposition to the revised I-74 MOT for the Central Section could lead to significant changes to the project’s maintenance of traffic protocol along the lines that were being pursued previously.
23. River Bridge Foundation Risk – Construction of foundation elements, in this case drilled shafts, in the Mississippi River presents significant risks that contractors are likely to include in their bids.
24. Lane Utilization / DMS – Corridor incident management needs could result in an increased demand for Lane Utilization / DMS structures.

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<sup>1</sup>See electronic appendix: [www.iowadot.gov/I74corridor/fastlane.html](http://www.iowadot.gov/I74corridor/fastlane.html)  
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### 6.4.2 Risk Evaluation

The 24 risks listed in section 6.4.1 have been evaluated for likelihood of occurrence and potential cost impact. The results of this evaluation are listed in Table 6.4.2 for each risk.

Risk	Likelihood of Occurrence	Minimum Cost Impact	Likely Cost Impact	Maximum Cost Impact	Minimum Schedule Impact	Likely Schedule Impact	Maximum Schedule Impact
1	75%	\$4.50	\$18.00	\$26.90	0	0	0
2	5%	\$23.60	\$23.60	\$23.60	12	12	12
3	25%	(\$1.30)	(\$2.70)	(\$5.30)	-3	-4	-6
4	50%	\$3.10	\$6.20	\$12.40	0	0	0
5	50%	\$5.10	\$20.30	\$30.40	0	0	0
6	50%	\$4.60	\$9.20	\$18.40	0	0	0
7	50%	\$1.40	\$2.80	\$4.20	0	0	0
8	25%	\$3.60	\$7.10	\$18.80	0	0	0
9	25%	\$0.60	\$1.10	\$2.80	0	0	0
10	75%	\$0.00	\$0.00	\$0.00	6	18	36
11	75%	\$1.00	\$1.40	\$1.70	0	0	0
12	75%	\$1.10	\$2.20	\$5.40	0	0	0
13	50%	\$0.60	\$1.20	\$1.90	3	4.5	12
14	75%	\$0.70	\$1.30	\$2.60	0	0	0
15	25%	\$2.80	\$3.30	\$5.60	0	0	0
16	50%	\$0.10	\$1.20	\$2.40	0	0	0
17	50%	\$0.00	\$0.00	\$0.00	9	12	24
18	50%	\$1.00	\$3.00	\$8.30	0	0	0
19	95%	\$0.50	\$1.00	\$2.00	0	0	0
20	50%	\$2.50	\$5.00	\$7.50	0	0	0
21	50%	\$0.60	\$1.10	\$2.20	0	0	0
22	5%	\$20.00	\$20.00	\$20.00	0	0	0
23	75%	\$1.70	\$9.00	\$17.90	0	0	0
24	50%	\$4.50	\$9.00	\$13.50	0	0	0
Cost presented in \$millions							
Schedule presented in months							

**Table 6.4.2 – Risk Evaluation**

<sup>1</sup>See electronic appendix: [www.iowadot.gov/l74corridor/fastlane.html](http://www.iowadot.gov/l74corridor/fastlane.html)  
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### 6.4.3 Risk Mitigation

The primary risk response and mitigation strategy for all the risks listed previously in Section 6.4.1 is acceptance. This requires setting an appropriate budget for responding to the listed risks in the event that they do occur. This budget number was determined by running a probabilistic analysis using Monte Carlo simulation to determine the potential range of cost impacts from the 24 risks evaluated in Section 6.4.2. A total amount of \$122,295,311 was added to the project budget to cover 80 percent of the potential outcomes, which is above and beyond the 70 percent level of confidence recommended by the FHWA. As design development progresses on Phases 2 and 3, the current project risks (as well as any new risks) will continue to be re-evaluated on a biannual basis

## 7.0 Summary

The Illinois-Iowa I-74 Mississippi River Bridge Corridor Enhancement Project (I-74 Project) will improve capacity, safety and reduce delays along the critical I-74 corridor in the Quad Cities (Davenport and Bettendorf Iowa, Rock Island and Moline, Illinois). It will provide freight system reliability between the regional interstate systems. It will allow for pedestrian and bicycle connectivity between the communities of the Quad Cities. It will eliminate the system bottlenecks. This, in turn will promote jobs and improve the economic vitality of the region.

The project meets multiple goals of FASTACT as outlined under 23 USC 150:

1. Safety – Improvements to the corridor are anticipated to significantly reduce the number of injury crashes.
2. Infrastructure Condition – The existing I-74 bridge is functionally obsolete, at the end of its design life and in the need of replacement. This new river crossing will achieve a state of good repair for years to come and will provide an improved alternative to the I-80 river crossing.
3. Congestion Reduction – The improvements will significantly reduce the delays on I-74 and therefore reduce congestion in the Quad Cities region.
4. System Reliability – I-74 serves as an alternate river crossing to I-80. Through its replacement, it will increase the system reliability and resiliency serving as an alternate route for the I-80 Mississippi River Crossing.
5. Freight Movement and Economic Vitality – The I-74 improvements will serve to strengthen the region’s economic development and will improve the regions ability to access national and international trade markets

Receipt of the requested funding will accelerate the project completion. This in turn will help to reduce project costs through reduction of risks. The funds can be fully obligated and support construction underway in CY 2017, and the remaining necessary funding has already been programmed in both the Iowa and Illinois Statewide Transportation Improvement Programs.

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<sup>1</sup>See electronic appendix: [www.iowadot.gov/i74corridor/fastlane.html](http://www.iowadot.gov/i74corridor/fastlane.html)  
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