

PURPOSE AND NEED

IL 100/106 ILLINOIS RIVER CROSSING AT FLORENCE

Submitted: October 3, 2016

What is the IL 100/106 Illinois River Crossing Project?

The project is a study of various alternatives to determine how to improve access across the Illinois River in Florence, Illinois while minimizing impacts to the environment and surrounding area.



Where is the IL 100/106 Illinois River Crossing project located?

IL 100 is a north-south route in west central Illinois that generally runs parallel to the Illinois River from south of Canton to Alton (Figure 1). IL 106 is an east-west route in west central Illinois that runs between East Hannibal and White Hall. Both share the same alignment from Detroit in Pike County to approximately 2 miles west of the Illinois River in Scott County. Florence, Illinois is the location where IL 100/106 crosses the Illinois River. Interstate-72 connects Hannibal, MO and Champaign, IL, and parallels the IL 100/106 crossing approximately 4 miles to the north. The study area includes Pike, Scott and Greene Counties and nearby communities that use the IL 100/106 river crossing, as well as the I-72 crossing (Figure 2).

Why do we need the project?

The project is needed because the existing IL 100/106 river bridge, constructed in 1929, is “functionally obsolete” and “structurally deficient” as defined by the Illinois Highway Information System Structure Information and Procedure Manual (July 2007). As a result, it can no longer be relied upon to maintain this crucial transportation link. This type of lift span bridge relies on electrical and mechanical systems operated manually by IDOT personnel to raise and lower a section of the bridge as needed to accommodate large vessels used in commercial river navigation. The narrow width between piers makes clearance difficult, resulting in numerous river vessel-bridge strikes (approximately 80 events from 2000 to 2016).

In case of electrical, mechanical or structural problems that cause the bridge to be closed until repairs can be made, traffic must use alternative routes. The nearest alternate river crossing is located on I-72 approximately 4 miles north near Valley City involving 32 miles of out-of-direction (adverse) travel for a detour route. Operators of farm machinery, bicycles, and smaller motor-driven cycles as well as pedestrians are prohibited from using I-72. For these users, it is necessary to use a longer detour route, requiring 47 miles of adverse travel.

The existing bridge does not meet the current policy standards. As a result, it is now classified as geometrically and functionally obsolete and does not meet the following standards or defined thresholds:

- Deck width
- Superstructure rating
- Sufficiency rating

The existing bridge is a through-truss type for its eight fixed spans and one lift-span, and a steel beam/concrete deck type for its 28 east approach spans. It has a roadway deck that is only 23' wide. With only two 11'-6" wide traffic lanes (one lane each way) and no shoulders, the bridge cannot accommodate wide farm equipment, disabled vehicles or bicycles. Due to the narrow deck, the wide and slow-moving farm implements impede traffic in both directions while crossing the river bridge. The bridge currently carries approximately 1,400 vehicles daily; the projected volume for the 2040 Design Year is 2311. A minimum deck width of 32 feet is required according to the current policy standards.

Since its construction in 1929, the existing bridge has been subject to numerous repairs. There have been three major closures of the IL 100/106 bridge to roadway traffic from 2004 to 2016 to repair or replace bridge components, as well as several minor closures to repair river vessel collision damage, to perform structural or mechanical work, and to occasionally perform routine maintenance work. It was most recently out of service from June 28, 2012 to April 22, 2013 when it was closed due to damage to a support column where the lift mechanism had shifted, making the bridge unsafe for roadway travel until repairs were made. The bridge was last inspected in June 2016 when its superstructure condition was rated as a three (out of nine), thus categorizing the bridge as structurally deficient. The rating of three represents "serious condition-significant section loss" which indicates that the primary steel members exhibit an advanced deterioration such as heavy rusting, a section (material) loss up to 41% in critical areas, cracks and loss of rivet heads.

In 2016, the bridge was rated as having a sufficiency rating of 22.6 out of 100.

Definitions

Functionally Obsolete: The bridge deck geometry, weight capacity, clearance, or approach roadway alignment no longer meet the demands of today's modern vehicles.

Structurally Deficient: A bridge's rating falls below the threshold for the deck, superstructure, substructure, culvert, structural evaluation, or the waterway adequacy. Being structurally deficient does not imply that a bridge is structurally unsafe. It means the bridge must be inspected, maintained and repaired as needed.

Bridge's Sufficiency Rating: This is a percentage indicative of a bridge's sufficiency to remain in service (0 being entirely insufficient and 100 being entirely sufficient). The rating is based on four different factors: (1) Structural Adequacy and Safety; (2) Serviceability and Functional Obsolescence; (3) Essentiality for Public Use; and (4) Special Reductions (based on certain limiting features).

Figure 1. IL 100, 106 and I-72 in west central Illinois

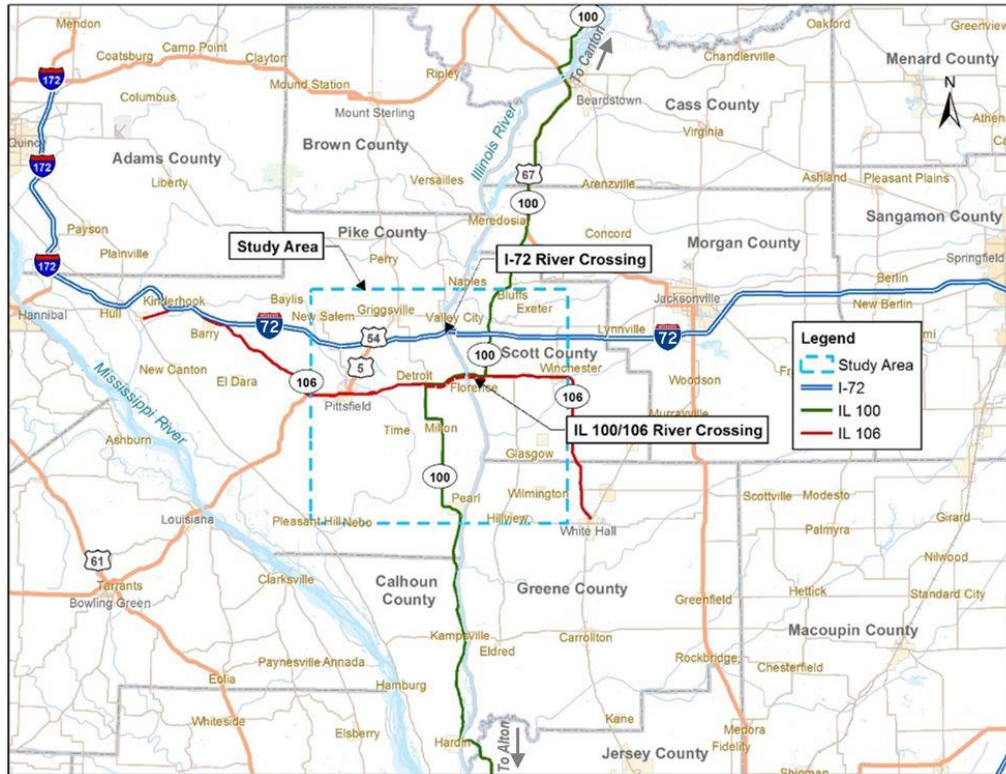
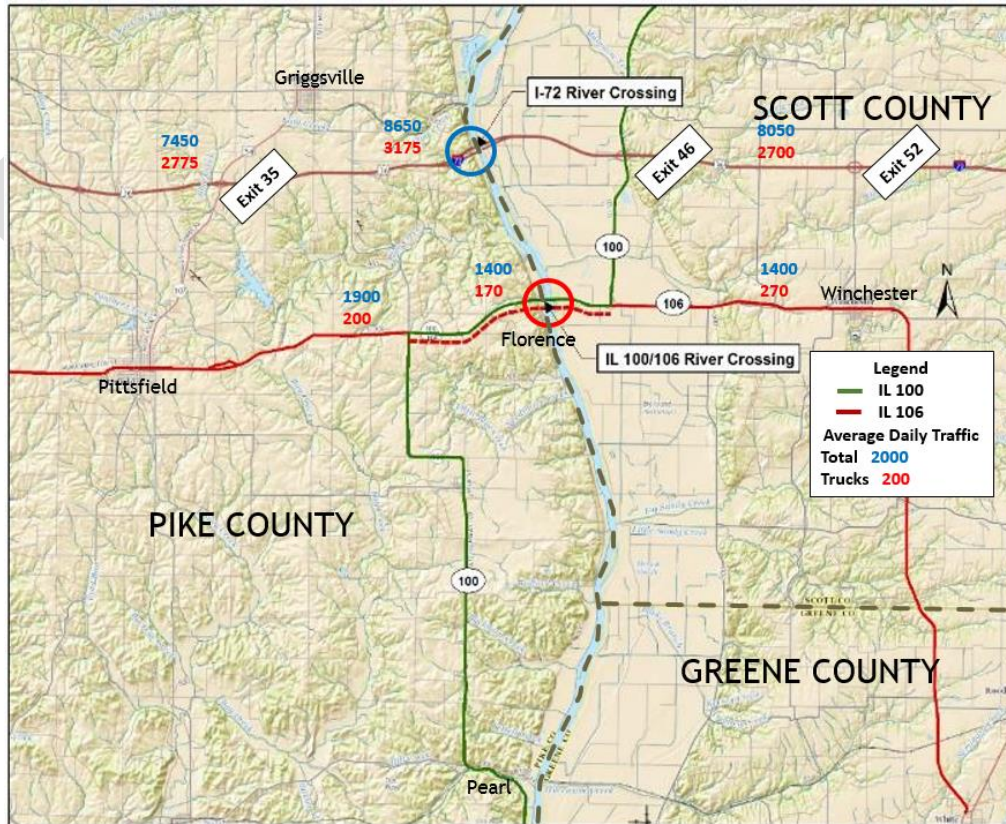


Figure 2. Study Area



What is the purpose of the project?

The purpose of the project is to evaluate transportation facilities across the Illinois River that are safe, reliable and meet current design standards. The project shall provide connectivity across the Illinois River for automobile and truck traffic as well as meet the needs of river traffic, and local and regional economic needs.

How is this study different than the Florence Bridge - Lower Illinois River Regional Crossing Study?

The previous Florence Bridge - Lower Illinois River Regional Crossing Study (LIRRCSS) was initiated to determine the feasibility for a replacement of the existing lift-span bridge carrying IL 100/106 over the Illinois River at Florence. It was concluded in 2013 with a recommendation of replacing the existing bridge with a new bridge at the same location. That study was a preliminary step to determine the need and feasibility of potential transportation solutions. It did not, however, complete the detailed study required under the National Environmental Policy Act (NEPA), nor did it develop the geometry and other preliminary details needed to prepare plan documents. The IL 100/106 Illinois River Crossing Project will consider the results of the earlier feasibility study, but will also consider a range of alternatives including a no-build alternative.

NEPA: The National Environmental Policy Act requires federal agencies to assess the environmental effects of their proposed actions prior to making a decision.
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What is the role of the IL 100/106 river bridge in the local and regional transportation system?

As illustrated in Figure 1, the IL 100/106 bridge directly connects the cities of Pittsfield and Winchester, as well as other communities in both Pike and Scott counties. Local businesses, farmers and industries from nearby communities including Florence, Glasgow, Pearl, and Detroit also rely on the bridge to transport goods, supplies, equipment and workers. Interstate 72 offers an alternate route over the Illinois River, but causes up to 32 miles of adverse travel for cars and trucks, and up to 47 miles of adverse travel is required for operators of farm machinery and motor-driven cycles as well as pedestrians and bicyclists if the IL 100/106 crossing is not used.

How will the study address the community's concerns and issues?

This project has been designated to be guided under the principles of Context Sensitive Solutions (CSS). CSS requires early coordination with stakeholders to better understand the concerns and needs of the community.

One of the means to involve stakeholders is to organize an advisory committee of representatives from local governments, businesses, industries and citizens that will provide direct and focused input in the development of the study. For this project, a Citizens Advisory Group (CAG) will be formed that periodically meets with the project's study group to review the project and provide input regarding community's views and concerns about the project.

What roles do the existing IL 100/106 and I-72 crossings play in the local and regional economies?

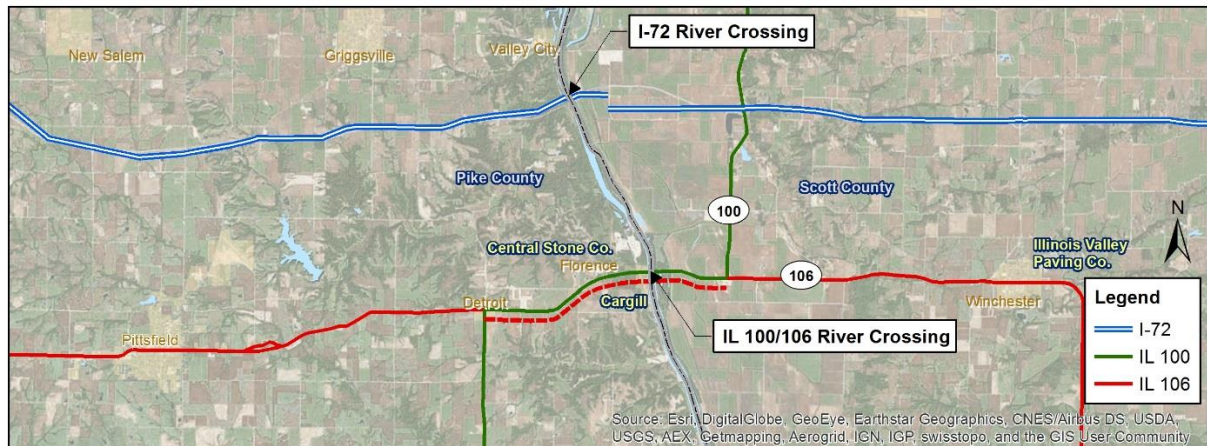
I-72 is classified as an interstate highway and provides a regional higher-speed linkage for longer-distance trips between Missouri and Illinois. I-72 also has three interchanges providing local access within the Study Area (at US 54/IL 107, IL 100, and Old US 36/Winchester) and serves 4,675 to 5,475 auto trips and 2,700 to 3,175 truck trips per day in the Study Area, for a total of 7,450- 8,650 Annual Average Daily Traffic (AADT).

IL 100/106, classified as a Minor Arterial highway, provides Pike and Scott County residents with access to emergency services and jobs located in both counties, and serves 1,130 to 1,700 auto trips and 170 to 270 truck trips per day within the Study Area. Near the river crossing at Florence, IL 100/106 serves two major businesses. The Cargill grain facility employs 5 full time workers, has capacity to store 1.8 million bushels of grain for river transport, ships all of its outgoing product by barge, and receives over 80% of its product from the east side of the Illinois River. The Central Stone facility sends approximately 90% of the quarry's outgoing truckloads east across the bridge, including the nearby Illinois Valley Paving asphalt plant in Winchester. According to the USDA Agricultural Census for 2012 (most recent year), there are 970 farms in Pike County with annual market product sales of \$232.2 million and 356 farms in Scott County with annual market product sales of \$89.2 million; it is noted that trucks with agricultural, quarry or other products can use either the IL 100/106 or the I-72 crossing, but farm machinery is limited to the IL 100/106 crossing within the Study Area (See Figure 3).

What other modes of transportation benefit from the IL 100/106 River Bridge Crossing?

In the project vicinity, the Illinois River is used commercially for the transport of goods by a number of businesses. There are docking facilities for loading and unloading of barges, including the Cargill grain facility located on the southwest side of the existing IL 100/106 river bridge and the Central Stone quarry on the northwest side of the bridge. There are nine to ten barge tows a day on average that traverse the IL 100/106 crossing. Because the Illinois River is a commercial waterway, the U.S. Army Corps of Engineers and U.S. Coast Guard have specific requirements for vertical and horizontal bridge clearances that must be maintained. Locally, there are no pedestrian or bicycle destinations on the west side of the river, but occasionally regional bicyclists cross over the existing bridge. The existing narrow bridge with no shoulders or sidewalks is make it unsafe for bicycle traffic and pedestrians to use.

Figure 3. Local and Regional Industry



What are the challenges relating to river navigation at the IL 100/106 River Bridge Crossing?

The bridge's navigation channel offers a horizontal clearance of only 202 feet between the north pier protection cells. This width does not allow adequate room for barge tows to safely navigate the opening under all river conditions. Commonly used three-wide barge tows are approximately 105 feet wide, allowing less than 50 feet of clearance on either side of the barge tow to the protection cells when the tow is centered through the opening. When the river is approaching flood stage (elevation 431 feet and above), it is more difficult to accurately steer barge tows

through the opening, especially in the downstream direction. The last two years of available data (2013 and 2014) show the river being at flood stage for 67 days over that period.¹

There have been numerous strikes of the existing bridge or its pier protection cells by river vessels (approximately 80 events from 2000 to 2016). A pier protection cell was badly damaged and replaced in 1984 after being struck by a barge tow, and the bridge was closed for repairs for three months in 2009 to repair damage from being struck by a barge tow.

¹ USACE Illinois River Basin Historic Data <http://mvs-wc.mvs.usace.army.mil/archive/il.html> (retrieved 10/31/16).