

US 51 OHIO RIVER BRIDGE PROJECT

KYTC Item No. 1-100.00 & 1-1140.00

Wickliffe, KY to Cairo, IL

EXECUTIVE SUMMARY

PROJECT OVERVIEW

The US 51 Bridge Project proposes replacement or rehabilitation of the existing US 51 Bridge that connects Ballard County, Kentucky with Cairo, Illinois. The planning phase of this project was completed in 2014; this *Executive Summary* summarizes the findings of the planning phase.

The US 51 Bridge carries US 51, US 60, and US 62 traffic across the Ohio River. It also provides a connection to the US 60/US 62 Mississippi River Bridge to Missouri, approximately ½ mile to the south. Maintaining the cross-river connectivity is important to the local communities, resident farms, and other businesses in the region. During the traffic counts completed in January 2013, over 150 large trucks (including farm, grain, and logging trucks) were observed using the US 51 bridge over an 8-hour period.

If the US 51 Bridge were not available for local traffic, the detour trip between Wickliffe, KY and Cairo, IL increases from 7 miles to 80+ miles per direction. Adding approximately 70 miles per direction to trips between Illinois and Kentucky would be a hardship to area residents. This is especially true for the population of Cairo, IL which exhibits elevated concentrations of minority and low income populations, which rely on the US 51 Bridge to access jobs in Wickliffe, KY. On the Kentucky side of the river, the US 51 Bridge is essential to farmers. Agriculture is a major component of Ballard County's economy and the bridge facilitates transport of crops and livestock from the county's farms to the interstates and ports in Illinois.



Existing US 51 Bridge

PROJECT PURPOSE & NEED

The primary purpose of the proposed project is to rehabilitate or replace the existing US 51 Ohio River Bridge in order to: improve or replace the functionally obsolete/structurally deficient bridge; maintain cross-river connectivity between Wickliffe, KY and Cairo, IL; and improve safety on the bridge and its approaches.

CONDITION OF THE EXISTING BRIDGE

The existing bridge was constructed between 1936 and 1938.

The bridge is rated both Functionally Obsolete (because of its substandard geometric features) and Structurally Deficient (because the original design load for the bridge is less than today's current design standards). This does not mean the existing bridge is unsafe.

Following the 2012 inspection and 2013 load rating analysis, KYTC assigned the US 51 Bridge a sufficiency rating of 39.8 on a 100-point scale. Bridges considered structurally deficient or functionally obsolete with a sufficiency rating less than 50.0 are eligible for replacement with federal funds under the Federal-Aid Highway Bridge Replacement or Rehabilitation Program.

The existing bridge was designed before seismic design was required. Applying today's seismic design criteria, preliminary estimates indicate that severe damage or collapse is probable in the event of a major earthquake.

The functional and geometric deficiencies affect the bridge's ability to carry traffic over the river in an effective manner.

Bridge Geometric Deficiencies:

- Narrow 10-foot lanes
- Narrow 1'-3" shoulders
- No accommodations for pedestrians or bicyclists
- One of the sag vertical curves in Span 2 does not meet current AASHTO design standards for headlight sight distance.
- The horizontal curve on the Kentucky approach does not meet current AASHTO or state design standards.

Currently the bridge is allowed to carry legal loads, but permit loads (i.e. oversize or overweight vehicles) are not allowed. **Under the no-build scenario it is anticipated the bridge would be closed to truck traffic around 2025 and closed to all traffic around 2030.**



Narrow lanes and shoulders

TRAFFIC OPERATIONS

The 2013 Average Annual Daily Traffic (AADT) volume on the US 51 Bridge is 5,400 vehicles per day (vpd). Approximately 35% of the bridge traffic is trucks. By 2040, the bridge AADT is anticipated to increase to 6,200 vpd, which translates to 370 vehicles per hour traveling in the peak direction during the 2040 design hour. Based on these volumes, a two lane facility provides adequate capacity for anticipated future traffic demands.

CRASHES AND SAFETY

During October 2008-September 2012, there were 18 vehicle crashes on the bridge between the 20 mph curve in Kentucky and the US 60/US 62/US 51 intersection in Illinois. Of these, there were no fatalities and one injury collision. Crashes were largely concentrated at either end of the bridge. The bridge approach in Kentucky has a critical rate factor (CRF) of 1.13 and the bridge approach in Illinois has a CRF of 1.52; both are considered high crash spots under KYTC analysis methodology. The primary crash types were sideswipes and single vehicle collisions.

INPUT

During coordination activities in April and May 2013, agencies, local officials, and members of the public were given opportunities to review and comment on the range of alternatives considered. Input indicated that the bridge is a vital link for farming operations; therefore, closures and lane restrictions should be minimized during any future construction efforts. Survey respondents indicated a strong preference for constructing a new river crossing at or near the existing location.

RECOMMENDATION

Combined Alternate 2 shown in the attached map is recommended to advance for additional development. Combined Alternate 2 represents a range of potential crossing locations located upstream of the current US 51 Bridge structure - within 2,000 feet of its present location. In future project development phases, designers should look at alignment, cross-section, and bridge type options that best fit within this corridor. Cable stay, truss, and arch bridges are all considered suitable bridge types at this location.

Combined Alternate 2 is approximately 1.8 miles in length and would require a horizontal clearance of 900 feet for the navigational channel based on correspondence provided by the US Coast Guard. A vertical clearance of at least 113 feet above the zero gage at Cairo is recommended for the mid 700-foot portion of the primary navigation channel. Final vertical clearance requirements will be determined in future phases of project development when more detailed information is available.

Construction is estimated to cost \$180-210 million¹ depending on the selected cross-section.

Combined Alternate 2 Planning Level Cost Estimate (44 ft Clear Roadway Width on Bridge)	
Phase	Cost (millions) ¹
Design	\$25.2
Right-of-Way	\$0.9
Utilities	\$0.1
Construction	\$210.0
Total	\$236.2

¹ Cost Estimates in 2013 Dollars

ENVIRONMENTAL CONCERNS FOR RECOMMENDED ALTERNATE

A windshield survey was conducted in Fall 2013 to identify environmental concerns that should be addressed as part of any future project development activities. The survey found the following environmental considerations in the Combined Alternative 2 footprint that will require further analysis in future project phases:

- Habitat for endangered species: Indiana bat, Gray bat, listed mussel species, pallid sturgeon
- Potential bald eagle habitat, including a known nest site in the vicinity
- Streams, Floodplains, & Wetlands
- Potential for economic effects associated with barge moorings along shore



- Interstate
- US Highway
- State Highway
- Local Road
- Railroad
- State Boundary
- County Boundary
- Study Area
- Streams
- Combined Alternate 2

- Community Resources**
- Airport
 - Boat Ramp
 - Cemetery
 - Health Facility
 - Park
 - School
- Major Employers**
- Industrial Area
 - Marine Transportation



**US 51
Ohio River Bridge
Recommended
Alternate**