





EXECUTIVE SUMMARY

KY 8 Licking River Bridge Scoping Study Campbell and Kenton Counties

Item No. 6-1086.00

Prepared for:



Kentucky Transportation Cabinet Central Office, Division of Planning Highway District 6, Covington

Prepared by:



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Executive Summary

The Kentucky Transportation Cabinet (KYTC) initiated the KY 8 Licking River Bridge Scoping Study to evaluate the need for and impacts of rehabilitating or replacing the KY 8 (4th Street) bridge over the Licking River. This study serves as the first step in establishing the purpose and goals of the project, identifying potential concerns, and evaluating preliminary alternatives.

KY 8 is an east-west state highway through northern Kentucky and serves as one of only two connectors between Covington and Newport over the Licking River. KY 8 provides access to Ohio via the Clay Wade Bailey Bridge (US 25), Roebling Bridge (KY 17), and Brent Spence Bridge (I-75) to the west and the Taylor Southgate Bridge (US 27) and Daniel Carter Beard Bridge (I-471) to the east. The current location of the bridge serves as an ideal site for connectivity through Newport and Covington. The study was performed with the use of Federal State Planning and Research (SPR) funds. Future phases of the project are not funded in the current biennium. The project has Federal Bridge Replacement (BRX) funds allocated for 2023 for design, right-of-way, utility relocation, and construction.

Purpose and Need

The purpose of the project is to provide a safe, modern, efficient, and multi-modal crossing of the Licking River within the existing corridor. The KY 8 Licking River Bridge, also known as the Veterans Memorial Bridge, was constructed in 1936 and carries about 17,500 vehicles per day with over 10 percent trucks. The steel truss bridge has sidewalks on both sides and is a heavily-used bicycle and pedestrian corridor as a large housing complex is located southeast of the bridge as well as the historic neighborhoods to the west in Covington.

At 80 years old, the bridge has exceeded its original design life. The KY 8 Licking River Bridge is classified as functionally obsolete (FO) due to the narrow shoulder widths (one-foot) which do not meet current design standards. The bridge was load rated by KYTC in May 2016. After this load rating, the bridge was posted for 17 tons indicating that the bridge is also structurally deficient (SD). The load posting indicated several elements of the bridge would require replacement and/or strengthening, including full replacement of the deck truss approach spans. As the condition of the Veterans Memorial Bridge continues to worsen over time, additional reductions in the load rating will be required to maintain safety.

Historically, the KY 8 Licking River Bridge and the approach roads have had a AAA truck weight classification for loads up to 80,000 pounds. Large trucks traveling between Covington and Newport relied on the bridge for passage. However, the recent load rating of 17 tons will force trucks to detour to the 12th Street Bridge (Licking Valley Girl Scout Bridge) one mile to the south.

Under current conditions, bicycles traveling between Covington and Newport are forced to ride in the roadway since they are prohibited by law from riding on the sidewalks. The narrow lanes and minimal shoulders cause bicyclists to slow traffic over the bridge by blocking (impeding) a lane of travel. The addition of a shared-use facility or dedicated bicycle lanes would improve connectivity and safety for bicycles between Covington and Newport, better encourage and accommodate multimodal travel, and improve vehicular travel.

The KY 8 Licking River Bridge has narrow four-foot wide sidewalks for passage across the river. The American with Disabilities Act (ADA) requires walkways on pedestrian access routes that are less than five feet to have passing spaces at maximum intervals of 200 feet. A five-foot by five-foot passing space is required every 200 feet to provide an opportunity for wheelchairs to pass each other and provide maneuver run for a wheelchair to turn around. The existing bridge and its approaches do not accommodate adequate passing spaces.

Based on the Ohio-Kentucky-Indiana Regional Council of Governments (OKI) pedestrian count, over 700 pedestrians cross the KY 8 Licking River Bridge every day. A majority of these pedestrians come from low income households who are less reliant on cars and much more reliant on walking and biking. These are daily users who need this point of connection to go to work and for their day-to-day living needs. The Riverfront Commons Project, a proposed riverfront bicycle and pedestrian trail along the Licking River, plans to connect to this bridge which will add additional recreational users to its already overcrowded sidewalks.

Alternatives Development

Over the course of the study, the project team held three meetings to coordinate on key issues. The project team consisted of representatives from KYTC Central Office Planning, KYTC Central Office Design, District 6 staff, Northern Kentucky Area Development District (NKADD), OKI, and the consultant. Within the project study area, several factors influenced the roadway alignment. In Kenton County, on the western side of the Licking River Bridge, there are two historic districts: the Ohio Riverside Historic District and the Licking Riverside Historic District. The boundaries of these historic districts can be seen in **Figure ES-1**. In Campbell County, on the eastern side of the bridge, KYTC District 6 is working to realign KY 9 through Newport (KYTC Item No. 6-8101). A five-legged roundabout is being constructed east of the Licking River Bridge at the relocated KY 8 intersection with KY 9. The project location can be seen in Figure ES-1.

A range of initial concepts were developed based on the existing conditions analysis (bridge characteristics, multimodal considerations, traffic analysis, crash analysis, and environmental and geotechnical overviews), previous studies, roadway alignment, and input received from the project team. All alternatives hold the existing curb line on the north side of the bridge and widen to the south. This will create the least amount of impacts to adjacent properties and the historic districts. Widening to the south will directly impact an existing rock wall and an adjacent parking lot. The parking lot is for the Workforce Development Cabinet's building which is currently vacant.



Figure ES-1: Roadway Alignment Considerations

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In addition to the No-Build alternative and the Major Rehabilitation alternative, this study examined four initial concepts for bridge replacement: (1) a Truss Bridge, (2) a Plate Girder Vehicular Bridge and Signature Pedestrian Bridge, (3) a Stage-Constructed Plate Girder Bridge, and (4) a Signature Extradosed Bridge.

A new truss bridge would have a similar look to the existing bridge. The proposed bridge could maintain grades similar to the existing bridge and still meet United States Coast Guard (USCG) vertical clearance requirements.

The steel plate girder bridge concept provides the most straightforward and least expensive construction for the roadway structure, but would require an increase in the profile grade (approximately six feet) to maintain minimum USCG vertical clearance requirements. Stage-construction would maintain traffic and better provide for bicycle and pedestrian accommodations throughout construction. The staged construction would require a shift in alignment and additional widening into the Licking Riverside Historic District. This would also introduce a lane shift in the alignment of the KY 8 through lanes across the Garrard Street intersection. Eliminating the staged construction would remove the shift in alignment and reduce impacts to the historic district. As a result, the project team decided to move forward with the plate girder bridge alternative without the staged construction.

The project team also eliminated the signature pedestrian bridge option from further consideration. The community along Riverside Drive is adamantly against a bridge in their vicinity and a bridge closer to the mouth of the Licking River is problematic with barges, which makes a pedestrian bridge at this location cost prohibitive. As a result, the project team decided that pedestrians and bicycles would be accommodated on the new bridge.

The Extradosed Bridge is a hybrid of a cable stay and deck girder bridge. It has the highest cost of the concepts, but it would not require as high of a raised vertical grade as the plate girder bridge options. The project team eliminated the signature Extradosed Bridge from further consideration due to the high cost.

The project team considered several possible typical sections, understanding that the typical section will ultimately be decided during the design phase of the project. The potential for development in Covington and Newport, while not completely quantified in the OKI model, is very much expected. One example is the new Ovation development which is directly adjacent to the eastern side of the bridge. The development is a large, mixed-use site which will provide an estimated 1.1 million square feet of office space in five separate buildings. This development is not completely accounted for in the OKI model. Another significant redevelopment opportunity is the Internal Revenue Service (IRS) Service Center site located north of KY 8 just west of the study area. With its convenient location and availability of 23 acres, there has long been interest by private developers to redevelop this site and to allow expansion of the Northern Kentucky Convention Center which is currently landlocked by the IRS. Development of sites such as these can have a dramatic effect on travel demand through the KY 8 corridor.

Considering the potential for development and the desire of any newly constructed bridge to accommodate traffic demand over its entire design life (50 to 100 years), a four-lane bridge is recommended for consideration in future project phases. The recommended typical section includes four 11-foot lanes, a one-foot bicycle buffer (consisting of two four-inch wide white stripes with a four-inch gap), five-foot wide bike lanes, and 8.5-foot wide sidewalks. Southbank Partners, advocates for the Licking River Greenway that will create an urban trail along the banks of the Licking River through the cities of Covington, Taylor Mill, Newport and Wilder, support the proposed typical section for the bridge and approaches. The enhanced bicycle and pedestrian accommodations on a new Licking River Bridge would connect the Greenway trail segments across the Licking River, thus eliminating the need for constructing and maintaining a separate pedestrian-only river crossing.

The project team produced an evaluation matrix, shown in **Figure ES-2**, for the No-Build alternative, the Major Rehabilitation alternative, a Truss Bridge alternative, and a Steel Plate Girder Bridge alternative.

Recommendations

The project team recommended the steel truss alternative and the steel plate girder alternative move forward for consideration in future project phases. The major rehabilitation alternative was dismissed from further consideration because it does not satisfy the purpose and need of the project and its cost would likely grow significantly after additional structural studies are performed. The major rehabilitation alternative would increase the load carrying capacity of the bridge but the bridge would remain functionally obsolete with sidewalks that do not meet ADA requirements and shoulders that cause bicyclists to slow traffic over the bridge by blocking (impeding) a lane of travel.

The next phase for the project would be Phase 1 Design (Preliminary Engineering and Environmental Analysis) to further evaluate the two options recommended for advancement. Further funding will be necessary to advance this project to the design phase. Cost estimates for the two bridge replacement alternatives are shown **Table ES-1**. Regardless of which alternative is selected, a new truss bridge or a plate girder bridge, it will likely take a full construction season to build. A vehicular detour would be necessary during that time. Pedestrian and bicycle accommodations will also need to be considered.

Alternative	Design	Right-of-Way	Utilities	Construction	Total
TRUSS	\$2,100,000	\$920,000	\$1,000,000	\$20,800,000	\$24,820,000
STEEL PLATE GIRDER	\$1,700,000	\$920,000	\$1,000,000	\$16,500,000	\$20,120,000

Table ES-1: 2016 Cost Estimates

2016 Total Cost (All Phases)	ŝ	of \$5,700,000	e \$24,820,000	e \$20,120,000
Maintenance of Traffic Concerns	A/A	Would likely require closure the bridge for up to one construction season.	Would require closure of th bridge for one constructior season.	Would require closure of th bridge for one constructior season.
Satisfies Purpose and Need? (The purpose of this project is to provide a safe, modern, efficient, and multi-modal crossing of the Licking River within the existing corridor.)	No - does not improve efficiency, connectivity, or safety for any mode. The condition of the bridge and the recent reduction in load rating will result in on-going maintence costs. Trucks over 17 tons will have to use an alternate route.	No - would increases the load carrying capacity. Bridge would remain functionally obsolete with current (minimal) pedestrian accommodations and no dedicated bicycle accommodations.	Yes - provides wide sidewalks and bicycle lanes as well as an additional travel lane for vehicles.	Yes - provides wide sidewalks and bicycle lanes as well as an additional travel lane for vehicles.
Representative Graphic				
Description	Do nothing alternative.	Improvements to existing bridge to prolong structure life and increase load carrying capacity. Bridge was recently load rated for 17 tons.	Replace the existing bridge with a steel truss, similar in character to the existing bridge. Requires shifting the piers horizontally out of the river and minimal increase in roadway profile grade per U.S. Coast Guard requirements.	Replace the existing bridge with a steel plate girder bridge, similar in nature to the "Girl Scout Bridge" carrying 12th Street over the Licking River. Requires a significant increase in roadway profile (approximately 6').
Alternative	O-BUILD	MAJOR REHABILITATION	STEEL TRUSS	STEEL PLATE GIRDER

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Figure ES-2: Evaluation Matrix

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A new truss bridge would have a similar look to the existing bridge, shown in **Figure ES-3**. The proposed bridge could maintain grades similar to the existing bridge and still meet USCG vertical clearance requirements. To meet USCG horizontal clearance requirements, the river piers will be placed on the banks thereby increasing the truss span.



Figure ES-3: Truss Alternative Layout

The steel plate girder bridge alternative, shown in **Figure ES-4**, provides the most straightforward and least expensive construction for the roadway structure, but would require an increase in the profile grade (approximately six feet) to maintain minimum USCG vertical clearance requirements.



Figure ES-4: Steel Plate Girder Alternative Layout