

## Executive Summary



KY 69 Scoping Study  
Hancock County  
KYTC Item No. 2-8708.00

Prepared for:



Kentucky Transportation Cabinet  
Central Office, Division of Planning  
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Prepared by:



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## **KY 69 SCOPING STUDY**

### **KYTC Item No. 2-8708.00**

#### **Executive Summary**

The Kentucky Transportation Cabinet (KYTC) initiated the KY 69 Scoping Study in Hancock County to examine the need for and types of improvements necessary along KY 69 between the Ohio County Line (MP 0.000) and US 60 (MP 13.080). The study serves as the first step in establishing the purpose and goals of the project, identifying potential concerns, and evaluating preliminary alternatives.

#### **Purpose and Need**

The purpose of the KY 69 Improvement Project is to enhance regional mobility and to provide a safer, more efficient north/south corridor through Hancock County. KY 69 provides the most direct regional connection for areas between the William H. Natcher Parkway, Wendell H. Ford/Western Kentucky Parkway, and the Bob Cummings Lincoln Trail Bridge over the Ohio River in Hawesville (which is the Hancock County seat). The Lincoln Trail Bridge provides easy access to Indiana and Interstate 64, and is the only Ohio River Bridge crossing between Maceo (18 miles west) and Brandenburg (45 miles east), Kentucky.

KY 69 was built in the 1930's and as a result, the existing alignment is characterized by horizontal and vertical curvature that does not meet current Green Book<sup>1</sup> guidelines. A review of the as-built plans reveals there are 63 horizontal curves in the study area, 23 (37 percent) of which have radii less than 960 feet, indicating they do not satisfy a 55 mph design speed. Of the 114 vertical curves in the study area, 67 (59 percent) have stopping sight distance less than 495 feet, which would not satisfy a 55 mph design speed. Additionally, the ten-foot driving lanes and two-foot shoulders are less than what is currently recommended. The narrow shoulders and shoulder breaks along the corridor do not provide sufficient recovery opportunity for vehicles leaving the travel way.

Safety is the primary concern along KY 69. Over the five-year period between January 2010 and December 2014, there were 103 crashes reported between the Ohio County Line and US 60 in Hancock County. This includes three fatal crashes and 36 injury collisions. The percentages of fatal and injury collisions are higher along KY 69 than similar roads in Kentucky. Injury crashes along rural major collectors generally make up 26 percent of the total crashes; but along KY 69 injury crashes represent 35 percent of the total crashes. Fatal crashes generally make up one percent of the total crashes, but represent three percent of the total crashes along this portion of KY 69.

Of the 103 reported crashes, 77 (75 percent) were single vehicle collisions. A majority of the single vehicle collisions are where a vehicle ran off the road. The high number of these types of

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<sup>1</sup> AASHTO's A Policy on Geometric Design of Highways and Streets, 6th Edition, 2011

collisions demonstrates the roadway geometry does not match driver expectations and may require improvement.

The current traffic volumes on KY 69 range from 1,300 vehicles per day (vpd) at the southern end of the study area to 3,000 vpd near the northern end of the study area, with 14 percent of that being trucks. Future traffic volumes are expected to reflect minimal growth. The results of the traffic analyses indicate a two-lane road can adequately accommodate the existing and future traffic demand.

## **Alternatives Development**

Community outreach helped guide the study, particularly in identifying potential issues and developing alternatives. Over the course of the study, the project team held three in-person project team meetings, two local officials/stakeholders meetings, and one meeting with the general public.

Based on early input from stakeholders and local officials, the project team decided the focus of the study would be to identify improvements that can be implemented quickly and independently, along with a complete reconstruction alternative that can be implemented if funding becomes available. As noted in the purpose and need, safety is the primary concern along KY 69. Conceptual projects developed using current design standards are aimed at improving safety along the study area by updating roadway geometrics. This study examined two types of improvement concepts: (1) Spot Improvements and (2) a Complete Reconstruction Alternative.

The Spot Improvements generally include short segments of the corridor with relatively lower cost improvements that can be implemented individually. Ten locations were identified as spot improvement projects, shown in **Figure ES-1**. In order to improve the vertical alignment and maintain traffic during construction, most of these spot improvements are shown on new alignment. However, the deficiencies found at each spot could be addressed in a number of ways and thus the ultimate alignment and design details will need to be examined in subsequent project phases.

The Complete Reconstruction Alternative widens KY 69 and improves the existing roadway alignment to a 55 mph design speed from the Ohio County Line to the improved portion of KY 69 near Happy Hollow Road (KY 1265). It would also replace or widen the existing structures. This corridor wide improvement can be obtained over time by connecting Spot Improvements 1 through 10. The Complete Reconstruction Alternative uses the proposed alignment from the spot improvements so resources would not be wasted if any or all of the spot improvements were built first.

Following the development of the improvement concepts, the project team met with local officials/stakeholders and interested members of the public in October 2015. Improvement concepts were presented and attendees were asked to complete a survey. Respondents were asked whether several transportation issues along KY 69 should be addressed as part of the project. Of the 11 transportation issues identified in the survey, safety, large trucks, sharp grades,

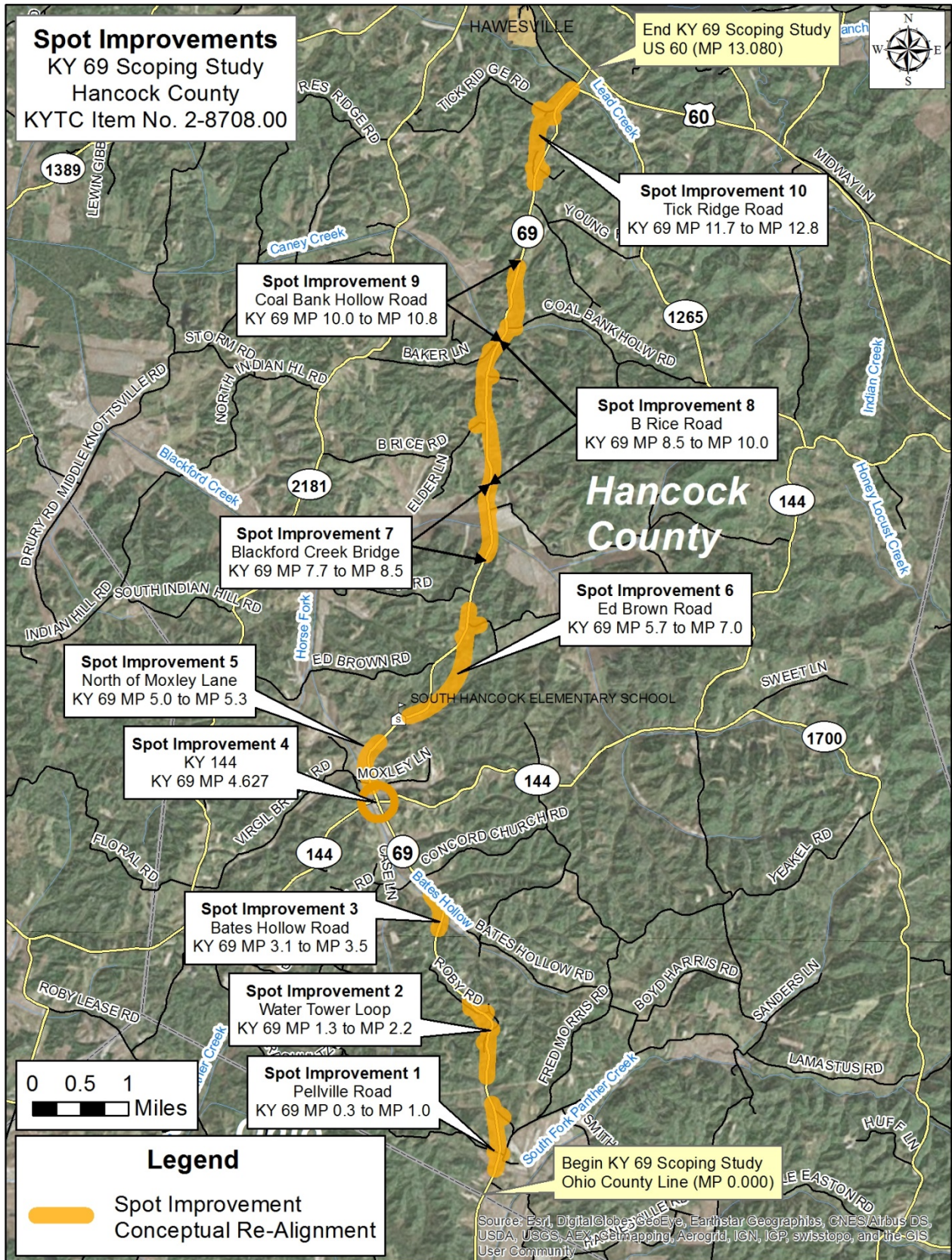


Figure ES-1: Spot Improvements

sharp curves, narrow lanes, and narrow shoulders were selected most. Respondents were then asked to rank their top five spot improvements. Looking at the total responses from the local officials/stakeholders and the public, Spot Improvement 9 (Coal Bank Hollow Road) scored the highest followed by Spot Improvement 10 (Tick Ridge Road).

In addition to the paper survey, each attendee at the public meeting was given one green sticker and one yellow sticker and they were asked to “vote” for their preferred projects by placing the stickers on the exhibit boards showing the alternatives. The green sticker was to be placed on the Spot Improvement project that should be, in their opinion, given the highest priority for moving forward. The yellow sticker was to be placed on the Spot Improvement project that should be, in their opinion, given the second highest priority for moving forward. Looking at the total responses, Spot Improvement 10 (Tick Ridge Road) received the most votes (15 votes) and Spot Improvements 9 (Coal bank Hollow Road) received the second most votes (11 votes).

## Recommendations

In light of the technical data, comments from local officials/stakeholders and the public, and results of the survey, the project team worked together to prioritize each of the individual spot improvements.

- **High Priority (in order)**

1. **Spot Improvement 10 – Tick Ridge Road:** This concept improves the existing roadway geometry to 55 mph along 1.1 miles of KY 69 near Tick Ridge Road. The proposed improvement also corrects the skew at the Tick Ridge Road intersection and ties back to the improved portion of KY 69 near Happy Hollow Road (KY 1265). This portion of KY 69 has a critical rate factor (CRF)<sup>2</sup> of 2.29, five deficient horizontal curves, and seven deficient vertical curves. This location is on KYTC's Unscheduled Needs list as PIF 02 046 D0069 78.44.
2. **Spot Improvement 9 – Coal Bank Hollow Road:** This concept improves the existing roadway geometry to 55 mph along 0.8 miles of KY 69 near Coal Bank Hollow Road. The proposed improvement also replaces the 1932 structurally deficient culvert for Caney Creek (SR 33.8). This portion of KY 69 has a CRF of 1.43, four deficient horizontal curves, and four deficient vertical curves. This location is on KYTC's Unscheduled Needs list as PIF 02 046 D0069 78.43.
3. **Spot Improvement 2 – Water Tower Loop:** This concept improves the existing roadway geometry to 55 mph along 0.9 miles of KY 69 near Water Tower Loop.

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<sup>2</sup> The CRF is one measure of the safety of a road, expressed as a ratio of the crash rate at the location compared to the average crash rate for similar roadways throughout the state. If the CRF is 1.00 or greater, it is assumed that crashes cannot likely be attributed to random occurrence.

This portion of KY 69 has a CRF of 1.10, eight deficient vertical curves, and five deficient horizontal curves.

4. **Spot Improvement 7 – Blackford Creek:** This concept replaces the 1932 functionally obsolete bridge over Blackford Creek (SR 59.7) and the 1932 culvert (SR 61.3) by Truman Young Road. This concept also improves the existing roadway geometry to 55 mph along 0.8 miles of KY 69. This portion of KY 69 has a CRF of 1.43, one deficient horizontal curve, and three deficient vertical curves. To maintain traffic during construction the structures are replaced on new alignment.
- **Medium Priority (in no particular order)**
    - **Spot Improvement 3 – Bates Hollow Road:** This concept improves the existing 35 mph horizontal curve to 55 mph. It also corrects the skew at the Bates Hollow Road intersection and replaces the 1935 culvert over Bates Hollow Stream. This portion of KY 69 has a CRF of 1.47 and one deficient horizontal curve.
    - **Spot Improvement 5 – Moxley Lane:** This concept improves the existing roadway geometry to 55 mph along 0.5 miles of KY 69 near Moxley Lane. This portion of KY 69 has a CRF of 2.00, one deficient horizontal curve, and three deficient vertical curves. The proposed alignment goes west to avoid the two homes along the existing road.
    - **Spot Improvement 6 – Ed Brown Road:** This concept improves the existing roadway geometry to 55 mph along 1.4 miles of KY 69 near Ed Brown Road. There are steep grades at this location. As a result the proposed improvement also adds northbound and southbound passing lanes/truck-climbing lanes for vehicles that get stuck behind slow moving trucks. This portion of KY 69 has a CRF of 1.15, four deficient horizontal curves, and twelve deficient vertical curves.
  - **Low Priority (in no particular order)**
    - **Spot Improvement 1 – Pellville Road:** This concept improves the existing roadway geometry to 55 mph along 0.7 miles of KY 69 near Pellville Road. This portion of KY 69 has a crash critical rate factor (CRF) of 1.47 and four deficient vertical curves. Improvements must avoid South Hancock Park and Roseville Cemetery. This location is on KYTC's Unscheduled Needs list as PIF 02 046 D0069 77.00.
    - **Spot Improvement 4 – KY 144 Intersection:** This concept converts the existing two-way stop intersection at KY 69 and KY 144 to a four-way stop intersection. Advanced warning signs on KY 69 would be placed and the existing flashing beacon would be converted from yellow to red so oncoming vehicles would have plenty of warning of the new stop signs on KY 69. This portion of KY 69 has a CRF of 1.72 and one deficient vertical curve. Four of the five crashes at this

location were angle collisions at the KY 69/KY 144 intersection. This location is on KYTC's Unscheduled Needs list as PIF 02 046 D0069 78.41. Note: additional traffic data and analysis is required to determine if this intersection meets the multi-way stop warrants from the Manual on Uniform Traffic Control Devices (MUTCD)<sup>3</sup>.

- **Spot Improvement 8 – B Rice Road:** This concept improves the existing roadway geometry to 55 mph along 1.5 miles of KY 69 near B Rice Road. This portion of KY 69 has a CRF of 1.15, one deficient horizontal curve, and eight deficient vertical curves. Improvements must avoid Mount Eden Baptist Church and its two cemeteries, located north of B Rice Road. This location is on KYTC's Unscheduled Needs list as PIF 02 046 D0069 78.42.

### **No Priority (not recommended)**

- **Complete Reconstruction Alternative:** Future design, right-of-way, utility and construction phases for this project are not included in the current Six Year Highway Plan. The project team has estimated the Complete Reconstruction Alternative to cost \$77.9 million, which will likely make such an undertaking infeasible as a single project.

The project team decided Spot Improvement 10 (Tick Ridge Road) should be the top priority and Spot Improvement 9 (Coal Bank Hollow Road) should be the second priority. Both received the most survey votes, have the highest number of total crashes, and have a number of geometric deficiencies. Spot Improvement 10 ties back to the improved portion of KY 69 near Happy Hollow Road (KY 1265) which makes it a logical starting point.

Spot Improvements 9 and 10 could be designed and constructed together depending on available funds. This would address the top two ranked spot improvements and tie back to the already improved portion of KY 69 at Happy Hollow Road (KY 1265). The total construction cost, including improving the 0.9 mile section between the two spot improvements, is estimated to be \$13 million.

A corridor-wide improvement can be obtained over time by connecting all the spot improvements. The spot improvements correct 8.1 miles of the route, leaving 4.7 miles of additional reconstruction to achieve a corridor-wide improvement. Studies have demonstrated that greater pavement widths encourage higher driving speeds, which is a concern for the spot improvement projects where improved sections could be located within a larger unimproved portion of the route. As a result, the project team recommended spot improvements include 11-foot lanes and six-foot shoulders (two-foot paved, four-foot graded) – a typical section that meets design guidelines, improves safety, and is more compatible with adjacent sections that may not be improved at the same time. This will provide a greater level of consistency between

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<sup>3</sup> <http://mutcd.fhwa.dot.gov/>

improved and unimproved sections and discourage higher driving speeds between improvements.

If funding becomes available for the Complete Reconstruction Alternative, logical termini for the project will need to be examined further. KY 69 extends almost 20 miles from KY 54 in Ohio County to US 60 in Hancock County. The KY 69 Scoping Study was scoped to examine the need for and types of improvements necessary along route in Hancock County between the Ohio County Line and US 60. Starting the project at the Ohio County line would likely not be a logical terminus for the Complete Reconstruction Alternative. Therefore, consideration should be given in the early design phases of the project to extend the Complete Reconstruction Alternative 5.7 miles to the south to KY 54 in Ohio County. KY 54 is an east/west connection between Owensboro and Leitchfield. Improving KY 69 between KY 54 in Ohio County and US 60 in Hancock County would better enhance regional mobility, which is one of the overall purposes of the project.

Cost estimates were prepared for each improvement concept, shown in **Table ES-1**, based on average KYTC unit costs plus additional costs for special features such as culverts and bridges. KYTC District 2 assisted in this effort by providing approximate right-of-way and utility cost estimates.



| Improvement Concept                       | Project Length (miles) | 2015 Cost Estimates (millions) |              |         |              |        |
|---|------------------------|--------------------------------|--------------|---------|--------------|--------|
|   |                        | Design                         | Right of Way | Utility | Construction | Total  |
| No Build                                  | 13.08                  | \$0.00                         | \$0.00       | \$0.00  | \$0.00       | \$0.0  |
| Spot Improvement 1: Pellville Road        | 0.7                    | \$0.60                         | \$1.00       | \$0.35  | \$3.90       | \$5.9  |
| Spot Improvement 2: Water Tower Loop Road | 0.9                    | \$0.80                         | \$1.00       | \$0.35  | \$5.50       | \$7.7  |
| Spot Improvement 3: Bates Hollow Road     | 0.4                    | \$0.40                         | \$0.50       | \$0.35  | \$2.90       | \$4.2  |
| Spot Improvement 4: KY 144 Intersection   | N/A                    | \$0.02                         | \$0.05       | \$0.05  | \$0.03       | \$0.1  |
| Spot Improvement 5: Moxley Lane           | 0.5                    | \$0.40                         | \$0.50       | \$0.35  | \$1.80       | \$3.1  |
| Spot Improvement 6: Ed Brown Road         | 1.4                    | \$1.00                         | \$1.50       | \$0.35  | \$6.60       | \$9.5  |
| Spot Improvement 7: Blackford Creek       | 0.8                    | \$0.60                         | \$0.50       | \$0.35  | \$4.10       | \$5.6  |
| Spot Improvement 8: B Rice Road           | 1.5                    | \$0.90                         | \$1.50       | \$0.35  | \$6.20       | \$9.0  |
| Spot Improvement 9: Coal Bank Hollow Road | 0.8                    | \$0.60                         | \$1.00       | \$0.35  | \$4.20       | \$6.2  |
| Spot Improvement 10: Tick Ridge Road      | 1.1                    | \$0.70                         | \$2.00       | \$0.35  | \$4.80       | \$7.9  |
| Complete Reconstruction                   | 12.8                   | \$5.30                         | \$15.00      | \$5.00  | \$52.60      | \$77.9 |

**Table ES-1: Spot Improvement and Complete Reconstruction Cost Estimates**