



# US 127 Russell Springs Improvement Study

Russell County, KYTC Item No. N/A



## Executive Summary

March 2022



## Executive Summary

The US 127 Russell Springs Improvement Study examined the need for and possible types of transportation improvements along the US 127 corridor in Russell Springs, Kentucky. The study included inventorying traffic and safety data, soliciting input from local officials, evaluating preliminary improvement concepts, and establishing the purpose and need of future projects.

### Existing and Future Conditions

The goal of the US 127 Russell Springs Improvement Study was to improve safety, mobility, and congestion on US 127 between the Jamestown Bypass (US 127X) and Lakeway Drive (KY 379) in Russell County. The study focused on issues, needs, and candidate concepts along this section of US 127, as highlighted in green on **Figure ES-1**. The area of influence, shown in purple, represents the entire area in which improvement options were considered to improve connectivity.

US 127 is the only north-south arterial in Russell County and the best option for drivers traveling between Russell Springs, Jamestown, Lake Cumberland, and the Cumberland Expressway. Consequently, US 127 is an important connection supporting local, regional, and statewide travel. Existing traffic volumes along the study portion of US 127 range between 6,900 and 15,600 vehicles per day (VPD). The concentration of high traffic from the afternoon dismissal of the Russell County High School and Middle School along with shift changes from local manufacturers and businesses cause congestion during the p.m. peak hour (2:30 to 3:30 p.m.). This not only increases travel times, but also results in traffic flow with minimal gaps, making it difficult to turn onto US 127 from unsignalized intersecting roadways.

By 2045, traffic volumes are expected to grow to up to 18,800 VPD on US 127. The 2045 traffic simulation model showed that without improvements, the US 127 intersection with Maple Street (KY 619) will operate at Level of Service (LOS) E and the US 127 intersection with French Valley Road (KY 3280) will operate at LOS F. Additionally, both unsignalized Cumberland Expressway exit ramp approaches are expected to operate at LOS F. LOS is a qualitative measure describing operational conditions within a traffic stream. In urban areas, LOS D or better is generally considered desirable.



**Afternoon Congestion from School Dismissal  
and Business Shift Changes on US 127**

### Improvement Concepts

Community outreach helped guide the study, particularly in identifying potential issues and developing improvement concepts. Due to the COVID-19 pandemic, the study team used virtual methods to engage with the public. A number of different tools were employed including



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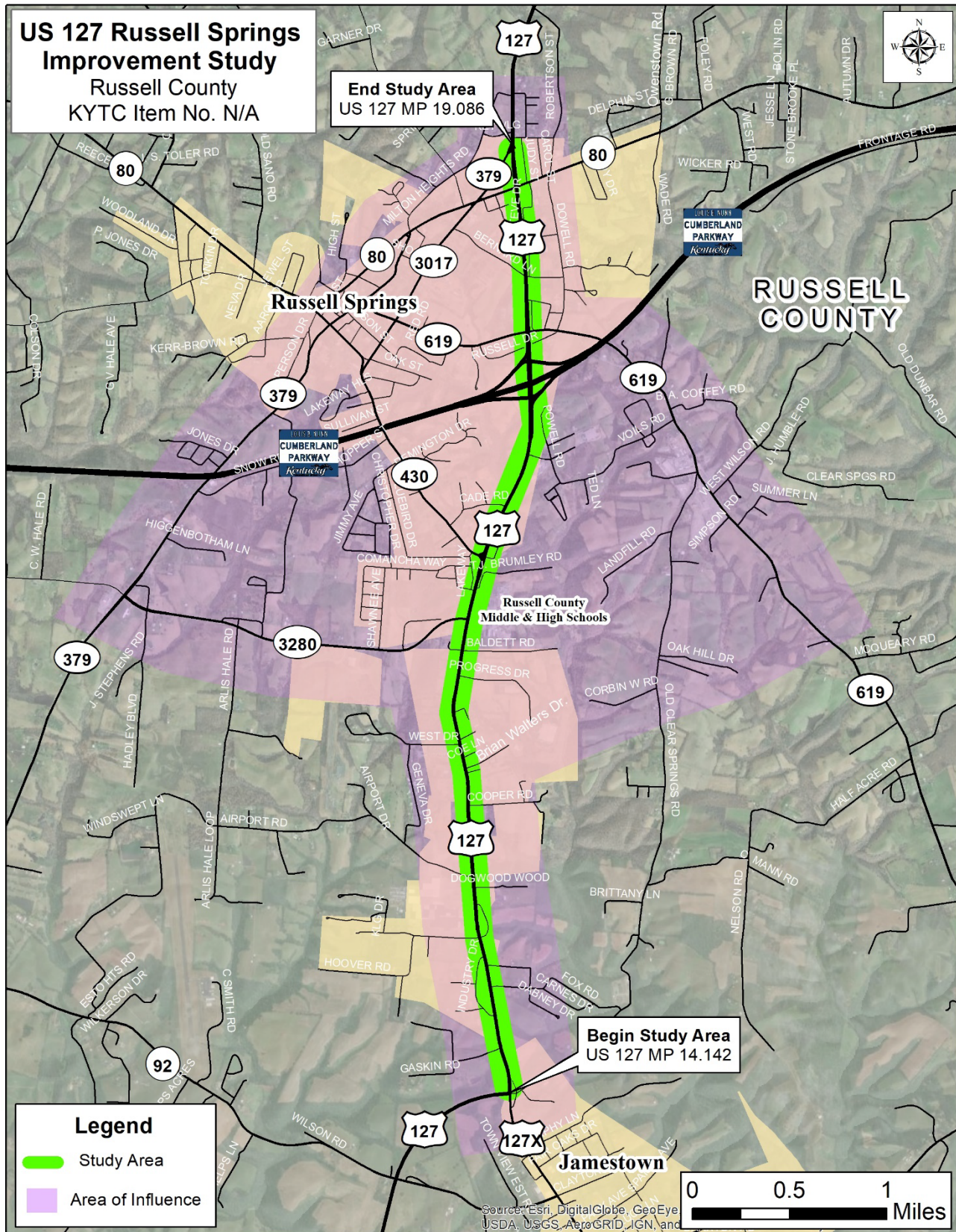


Figure ES-1: Study Area

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two virtual local officials/stakeholder meetings, the development of a project webpage, and the development of two online StoryMaps<sup>1,2</sup> to provide study information and solicit feedback through an online mapping exercise and surveys. Of the 152 participants in the first online survey, the top three concerns were traffic congestion from schools, traffic congestion from local businesses, and too many crashes.

Utilizing technical data, comments from stakeholders, and results of the survey, the project team identified short-term, “quick-win” improvements that can be implemented more quickly and independently in the event funding becomes available as well as long-term improvements that can be further developed and funded through Kentucky’s Highway Plan.

## Conclusions

Improvement concepts were prioritized based on results from the traffic analysis, safety analysis, benefit-cost analysis, and public outreach. This information is summarized in **Table ES-1**. Another factor affecting implementation of any proposed improvement concepts include the availability of existing funding. Outside of potential Highway Safety Improvement Program (HSIP) funds, KYTC District 8 does not have the funding to implement the Short-Term Improvement Concepts at this time. As a result, it is recommended that they be further developed and funded through Kentucky’s Highway Plan as part of the US 127 Safety and Mobility Plan (KYTC Item Nos. 8-156 and 8-166) shown in **Figure ES-2**. The one exception is working with Russell County Schools and local businesses to stagger dismissal and shift changes prior to the 2022-2023 school year (Improvement Concept #6 in Table ES-1). Given the immediate congestion relief that this improvement provides at no cost, this is the top overall recommendation of the study.

### Top Two Study Priorities

1. Stagger Afternoon School Dismissal and Business Shift Changes
2. US 127 Safety & Mobility Improvement Plan (Item Nos. 8-156 and 8-166)

## Prioritization of Long-Term Improvement Concepts:

### High Priority

- US 127 Safety and Mobility Plan (KYTC Item Nos. 8-156 and 8-166): The collection of projects included in the US 127 Safety and Mobility Improvement Plan, shown in **Figure ES-2**, would improve traffic operations so that all intersections in the study area operate at a desirable LOS D or better.

### Medium Priority

- KY 80 Access Management and Center Two-Way Left-Turn Lane from US 127 to Owenstown School Road

### Low Priority

- Realign Skewed Intersections on KY 80 at KY 430 and High Street

### Not Recommended at this Time

- New Cumberland Expressway Interchange at KY 379
- Connect Progress Drive and Brian Walters Drive
- New Connector Road between US 127 and KY 619

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<sup>1</sup> <https://storymaps.arcgis.com/stories/8587b5f7cc424920b2247c6f90f921a2>

<sup>2</sup> <https://storymaps.arcgis.com/stories/16464b55171943bdbbc7cd354dd6d5de>



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**Table ES-1: Evaluation Matrix**

US 127 Russell Springs Improvement Study Evaluation Matrix													
Improvement Concepts		Traffic			Safety		Cost Estimates (Year 2021 Dollars)					Benefit-Cost Ratio	Public Ranking
		Existing Build PM Level of Service	2045 Build PM Level of Service	10-Year Congestion Relief Savings	Crash Modification Factor	10-Year Crash Reduction Savings	Design	ROW	Utility	Construction	Total		
Short-Term (No Right-of-Way Acquisition Anticipated)	1. Left-Turn Lanes on US 127 between Stephens Pipe & Steel and Bernard Lane	Not Able to Model	Not Able to Model	Not Able to Model	0.73	\$ 600,000	\$ 50,000	\$ -	\$ -	\$ 300,000	\$ 350,000	1.71	2
	2. Left-Turn Lanes on KY 619 at US 127 Intersection	C	D	\$1,500,000	No CMF	No CMF	\$ 10,000	\$ -	\$ -	\$ 50,000	\$ 60,000	25.00	3
	3. Traffic Signals at the Cumberland Expressway Ramp Intersections & Extend Right-Turn Lane	B / C	C / D	\$2,100,000	0.95	\$ 600,000	\$100,000	\$ -	\$ -	\$ 400,000	\$ 500,000	5.40	1
	4. Remove "Cut-Through" Traffic on Cade Avenue	Not Able to Model	Not Able to Model	Not Able to Model	0.93	\$ 400,000	\$ -	\$ -	\$ -	\$ 20,000	\$ 20,000	20.00	7
	5. Realign Right-Turn Lane on KY 430 at US 127 Intersection	N/A	N/A	N/A	0.56	\$2,200,000	\$ -	\$ -	\$ -	\$ 60,000	\$ 60,000	36.67	5
	6. Stagger Afternoon School Dismissal and Employee Shift Changes	D	E	\$3,800,000	No CMF	No CMF	\$ -	\$ -	\$ -	\$ -	\$ -	3800000.00	4
	7. Remove Traffic Signal at Fruit of the Loom Drive	A	A	\$ 300,000	No CMF	No CMF	\$ -	\$ -	\$ -	\$ 50,000	\$ 50,000	6.00	6
Long-Term	1. US 127 Safety & Mobility Improvement Plan (KYTC Item Nos. 8-156 and 8-166)*	C	D	\$9,900,000	0.90 (Average)	\$3,800,000	\$600,000	\$ 900,000	\$1,900,000	\$ 3,800,000	\$7,200,000	1.90	1
	2. KY 80 Access Management and TWTL from US 127 to Owenstown School Road	Not Able to Model	Not Able to Model	Not Able to Model	0.78	\$7,800,000	\$300,000	\$3,000,000	\$2,500,000	\$ 1,700,000	\$7,500,000	1.04	2

\* Includes Short-Term Improvement Concepts 1-4, Additional Through-Lanes on US 127 North and South of KY 619, Align Entrance for Crossroads Development and Add Left-Turn Lanes on US 127, Green-T Intersection at KY 430, and Intersection Improvements at French Valley Road (assumes roundabout for estimating purposes).

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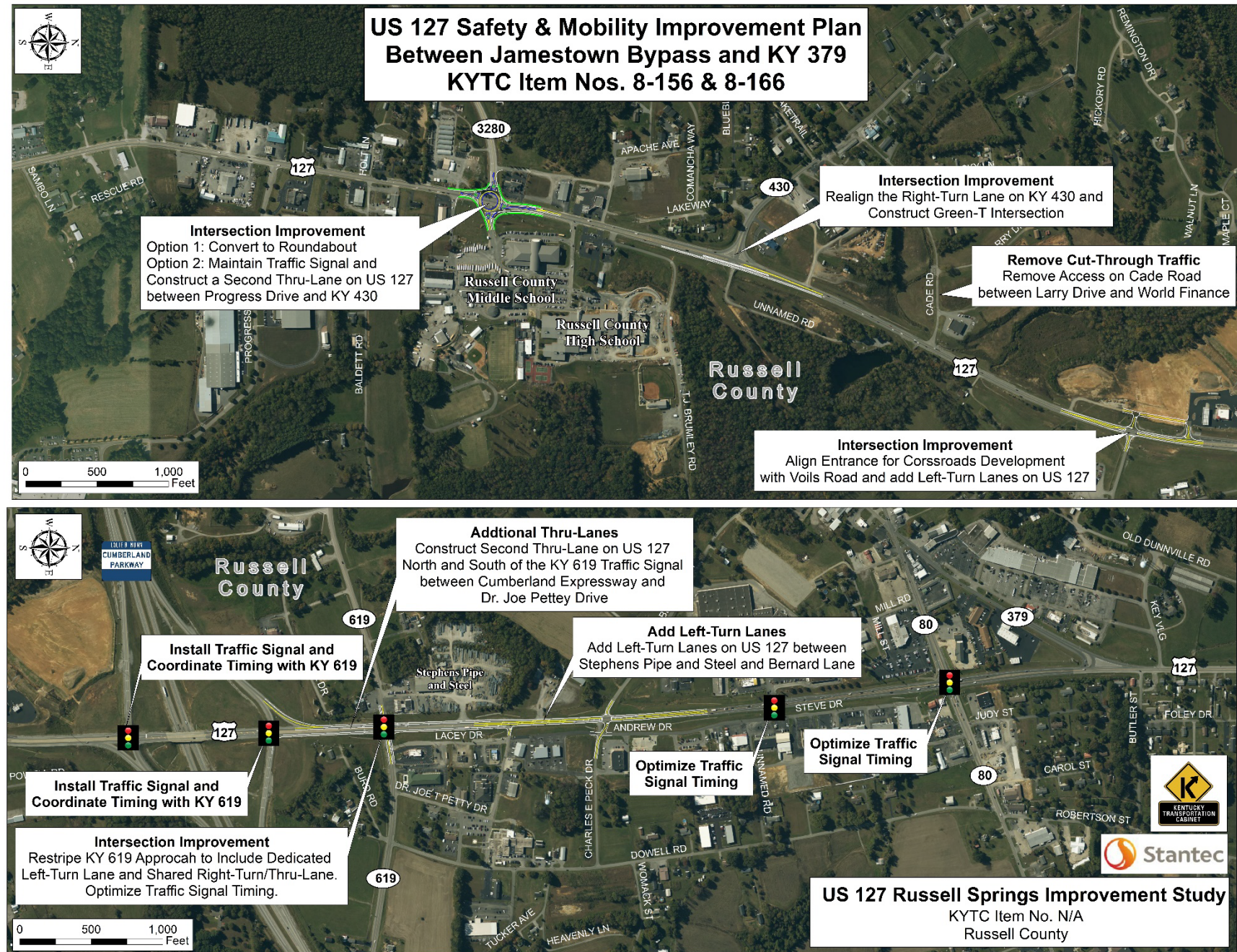


Figure ES-2: US 127 Safety and Mobility Improvement Plan (KYTC Item Nos. 8-156 and 8-166)



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**Prioritization for Short-Term Improvement Concepts:** The short-term improvement concepts address existing concerns on US 127 and are not anticipated to require right-of-way acquisition. Because the long-term US 127 Safety and Mobility Plan (KYTC Item Nos. 8-156 and 8-166) builds on the short-term improvement concepts, resources would not be wasted if any or all of the short-term improvement concepts were built first. In the event funding is not available for the short-term improvement concepts, those improvement concepts are included under the US 127 Safety and Mobility Plan (KYTC Item Nos. 8-156 and 8-166) in **Figure ES-2**.

#### High Priority

- Work with Russell County Schools and local businesses to stagger dismissal and shift changes prior to the 2022 – 2023 school year. This project had the highest benefit to cost ratio (BCR). Given the immediate congestion relief that this improvement provides at no cost, it is the top overall recommendation of the study.

#### Medium Priority (in no particular order)

- Construct left-turn lanes on US 127 between Stephens Pipe & Steel and Bernard Lane. This concept was ranked as the second highest concept by the public.
- Construct left-turn lanes on KY 619 at the US 127 intersection. This concept was ranked as the third highest concept by the public and had the third highest BCR.
- Install traffic signals at the Cumberland Expressway Interchange ramps and extend the right turn lane at KY 619 to the westbound off-ramp of the Cumberland Expressway. This concept was ranked as the highest concept by the public.
- Remove “cut-through” traffic on Cade Avenue. This concept had the fourth highest BCR.
- Realign the right-turn lane on KY 430 at US 127. This concept had the second highest BCR.

#### Low Priority

- Remove the traffic signal at Fruit of the Loom Drive. The intersection operates at a LOS A and has a negative excess expected crash rate, meaning there are less crashes than would be expected compared to roadways with similar characteristics. The public and local officials noted the gas station at this intersection generates significant traffic and therefore suggested the signal is still needed. Before moving forward with this concept, a signal warrant analysis will need to be completed with a new turning movement count.

## Next Steps

The next step following this study for any potential improvements would be prioritization within the next round of Strategic Highway Investment Formula for Tomorrow (SHIFT) to program funding for Phase 1 Design (Preliminary Engineering and Environmental Analysis). Because of the COVID-19 Pandemic and the resulting school closures, turning movement counts could not be collected as part of this study. As a result, additional traffic analysis should be included as part of future project development phases. Future phases will also need to update the milepoints shown in this report due to the on-going realignment of US 127 south the study area (KYTC Item Nos. 8-108 and 8-8601). Further funding will be necessary to advance an improvement to the design phase as additional phases of this project are not funded in *Kentucky's FY 2020 – FY 2026 Highway Plan*.