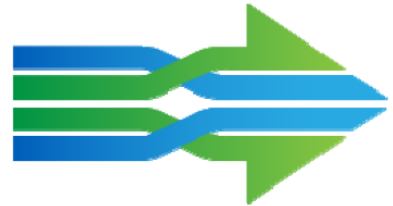


JESSAMINE/FAYETTE CONNECTIVITY STUDY



Fayette & Jessamine Counties

June 2022

Executive Summary



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Jessamine/Fayette Connectivity Study, Item No. 7-445

Introduction

The *Jessamine/Fayette Connectivity Study* was initiated by the Kentucky Transportation Cabinet (KYTC) to identify and evaluate potential improvement options to increase mobility and connectivity in northeast Jessamine County and southeast Fayette County by improving safety and reducing congestion. Future phases are not funded in *Kentucky's FY 2020 - FY 2026 Highway Plan*.

Study Area

In lieu of the traditional "study area," this study includes a project focus area, an area in which transportation improvement concepts and strategies will be considered, and an area of influence, a larger area within which traffic could potentially be affected by improvements in the focus area. The area of influence includes portions of northern Jessamine County and southeast Fayette County bounded to the east by I-75, to the south by the Kentucky River, to the west by US 68, and to the north by Man O' War Boulevard, as shown in **Figure ES-1**.

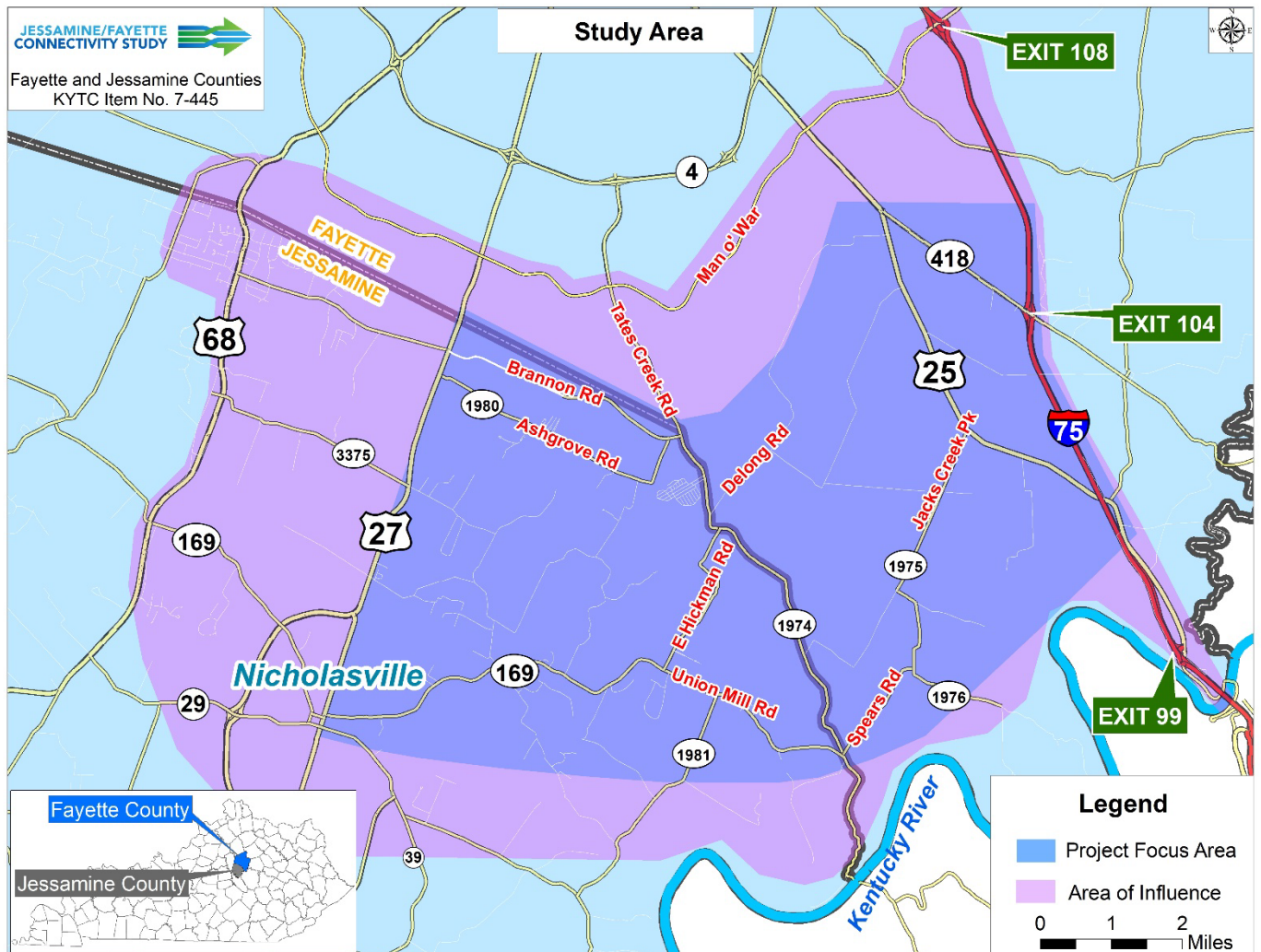


Figure ES-1: Focus Area and Area of Influence

Study Goals and Objectives

The primary goals and objectives of the *Jessamine/Fayette Connectivity Study* are to identify safety and congestion related transportation issues affecting mobility and to examine short-term, long-term, and local improvement concepts and strategies to address the identified issues. Southeast Fayette County and Northeast Jessamine County have experienced significant population growth in recent years, and projections provided by the Kentucky State Data Center suggest this growth will continue for the foreseeable future. A lack of adequate east-west connectivity south of Man O' War Boulevard has been an increasing concern of the traveling public and local officials. With the impending completion of the East Nicholasville Bypass and an increasing demand for travel between Jessamine County and Fayette County, geometrically undesirable roadways will be expected to handle high traffic volumes acting as "shortcuts" between US 27 and I-75. This study examined options to provide better, safer connections in the area.

While previous studies (*US 27 to I-75 Corridor Study* and *I-75 Connector Preliminary Design and Environmental Study*) have explored options to provide an east-west connector between US 27 and I-75, this study is not an extension of those studies. Instead, the project team took a different approach and looked at improvement options along existing roadways, where feasible, that do not cross the Kentucky River.

Project Needs

Conditions of the existing transportation network were examined, including roadway facilities and geometrics, crash history, and traffic volumes within the study area. Current KYTC design guidelines recommend a minimum of 11-foot-wide lanes on rural arterials and collector roadways like the 45 to 55-mph routes in the focus area. Several of the roadways in the focus area, such as KY 169 (Union Mill Road), KY 1981 (E Hickman Road), and KY 1975 (Jacks Creek Pike), have less than 11-foot travel lanes. Most of the east-west connections in the focus area also have narrow shoulders. Deficient roadway geometrics, however, were not a sole consideration for roadway improvements. Additional factors, such as crash history and traffic volumes, were also considered. A crash analysis was performed for the three-year period between July 1, 2016 and June 20, 2019. Excluding US 27, I-75, and parking lot collisions, there were 1,583 crashes in the focus area, 624 (40 percent) of which were single vehicle collisions (i.e., run off the road crashes) where narrow shoulders and sharp curves are present. High crash roadway segments were identified using both critical rate factor (CRF) and excess expected crash (EEC) analyses. KY 169 (Union Mill Road), KY 1981 (E Hickman Road), KY 1974 (Tates Creek Road), KY 1975 (Spears Road and Jacks Creek Pike), and DeLong Road all had higher than expected crashes.

The Lexington Area Metropolitan Planning Organization (LAMPO) Travel Demand Model (TDM) was used to develop traffic forecasts for the year 2045. With major routes in the area at or near capacity today and with additional traffic demand resulting from growth in both counties, rural two-lane roads are expected to see a significant increase in daily traffic by 2045. For example, with its proximity to the East Nicholasville Bypass, daily traffic on KY 169 (Union Mill Road) is

expected to more than double by 2045. Other routes expected to see significant growth include Delong Road, KY 1981 (E Hickman Road), Brannon Road, KY 1975 (Jacks Creek Pike), KY 1974 (Tates Creek Road), and Armstrong Mill Road.

Environmental Overview

An Environmental Overview was completed to identify environmental resources of significance, potential jurisdictional features, and other environmental areas of concern that should be considered during project development. Natural and human environmental resources within the study area were identified from a literature/database review, as well as a windshield survey. One particular noteworthy resource within the study area is the prevalence of Purchase of Development Rights (PDR)¹ properties. The PDR program, an Agricultural Conservation Easement program, serves to protect farmland. A goal of the study was to develop improvement concepts that would avoid directly impacting such properties, if possible.

Project Team Coordination

Over the course of the study, the project team, including representatives from KYTC Central Office, KYTC District 7, the Lexington Area MPO (LAMPO), the Bluegrass Area Development District (BGADD), Razor Marketing and the consultant Stantec, held three virtual meetings to coordinate on key issues. These meetings are summarized in **Table ES-1**.

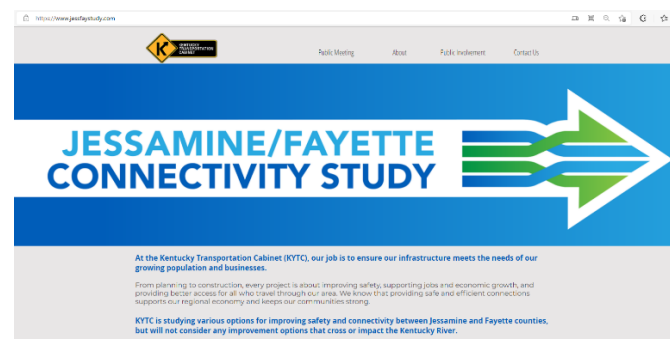
Table ES-1: Project Team Meetings

Project Team Meeting	Date	Meeting Purpose
#1	May 1, 2020	Discuss results from the existing conditions analysis, preliminary traffic forecasts, and public outreach strategies during Covid-19 pandemic.
#2	March 12, 2021	Discuss results from the first round of public involvement, preliminary improvement concepts, and plans for the second round of public outreach.
#3	October 18, 2021	Discuss results of the second round of public involvement and study conclusions.

Community Engagement

The project team also reached out to stakeholders, local officials, and the general public for input throughout in the study process to learn about transportation issues and needs affecting mobility within the study area. These meetings and engagement opportunities are summarized in **Table ES-2**.

¹ <http://www.lexingtonky.gov/pdr>



As the Covid-19 pandemic affected opportunities for in-person meetings, the project team used virtual options for community engagement, including a study website: <http://www.jessfaystudy.com>

Table ES-2: Community Engagement Activities

Community Outreach	Date	Purpose
Local Officials/ Stakeholders Meeting #1	September 17, 2020	Present the results from the existing conditions analysis and initiate the first round of public outreach.
Public Outreach Round #1	October 9 - December 11, 2020	Launch of study website with ArcGIS StoryMap and online mapping exercise and survey. Over 4,300 postcards were mailed to addresses within the study focus area, providing links to the online materials.
Local Officials/ Stakeholders Meeting #2	June 16, 2021	Present conceptual improvement strategies, solicit feedback from local officials and stakeholders, and discuss the upcoming second round of public outreach.
Public Outreach Round #2	July 22 - September 3, 2021	Present results from the first round of public involvement and solicit feedback on preliminary improvement concepts through a survey. Postcards were again mailed to all addresses within the study focus area. Updated study materials, including a video presentation, were made available on the study website after the July 22 in-person public meeting which was held at East Jessamine Middle School and broadcasted virtually over Zoom.

Corridor Improvements

With most of the connecting routes between US 27 and I-75 having less than desirable roadway characteristics for the type and volume of traffic they currently serve, corridor-wide improvements were investigated to improve mobility within the focus area. Based on a combination of project team discussions, a review of existing conditions, public input, travel demand model analyses, and field reconnaissance, the corridor concepts, shown on **Figure ES- 2**, are intended to provide improved, rural two-lane roads as a more consistent and reliable travel option for users. When considering the corridor concepts collectively, they would better serve traffic demand by providing multiple options as opposed to focusing traffic onto one single corridor.

Concept #1 – KY 169 (Union Mill Road) & KY 1975 (Jacks Creek Pike): Concept 1 includes upgrading KY 169 and KY 1975 to a more consistent 45-mph design speed by widening lanes/shoulders and improving curvature. In addition to upgrading the existing routes, Concept 1 includes a new connection between KY 169 and KY 1975 through Crawley Lane north of the existing KY 169 intersection with KY 1974. This would provide a safer, more direct east/west connection between Nicholasville and US 25 and would allow through traffic to avoid several of the horizontal curves to the south.

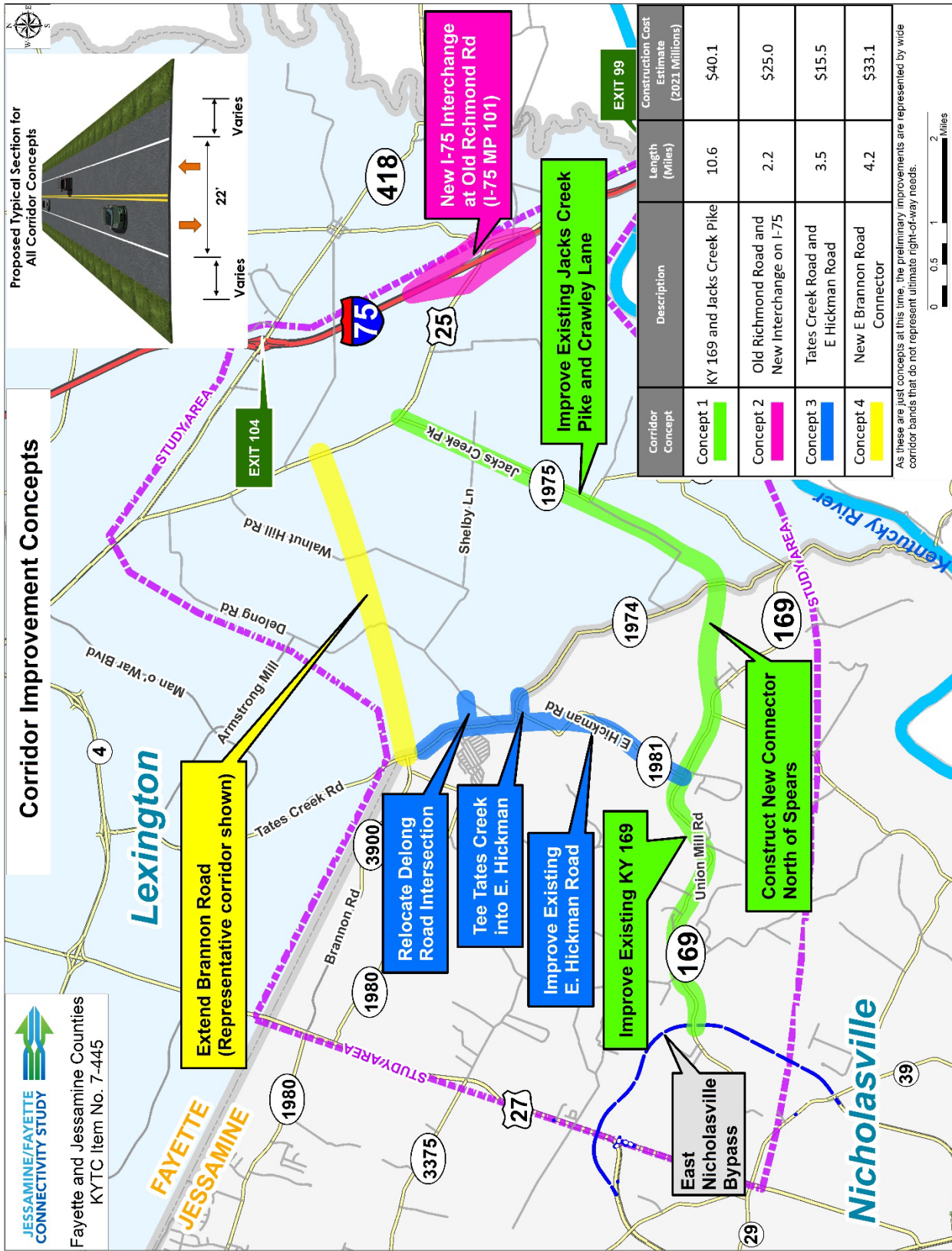


Figure ES-2: Preliminary Corridor Improvement Concepts

Concept #2 – New I-75 Interchange at US 25 (Old Richmond Road): Building upon Concept 1, Concept 2 includes the Concept 1 improvements along with a new I-75 interchange with US 25 at milepoint 101. The combination of these improvements would improve mobility by providing an additional access point to I-75 in southeast Fayette County.

Concept #3 - Realignment of Tates Creek Road (KY 1974) and East Hickman Road (KY 1981): Concept 3 realigns Tates Creek Road from Delong Road to East Hickman Road, including the intersections (the latter of which makes East Hickman Road the 'through' movement to Tates Creek Road), and improves horizontal curves on East Hickman Road. These improvements could be a stand-alone improvement or completed in conjunction with Concepts 1 and 2.

Concept #4 – Brannon Crossing Extension: Concept 4 would extend Brannon Road east to connect with US 25 as an alternative to Delong Road. This concept has been depicted as a straight line because given the preliminary nature of a planning study such as this, insufficient information is available to show a more specific alignment. Concept 4 could include the other corridor improvements or be completed as a stand-alone project.

Spot Improvements

In addition to the corridor-wide improvement concepts, spot improvements were developed to address safety issues at specific locations. These locations, shown on **Figure ES-3**, were identified from an analysis of crash and geometric data as well as results from the public outreach survey.

Spot Improvement 1 – US 25 (Old Richmond Road) at KY 1975 (Jacks Creek Pike): The US 25 (Old Richmond Road) intersection with KY 1975 (Jacks Creek Pike) is currently unsignalized with the KY 1975 approach stop-controlled. Over the three-year period, there were 12 crashes at this location, five of which resulted in an injury and four of which were rear end collisions. An improvement option is to construct turn lanes on US 25 to reduce the conflict between through traffic and turning vehicles.

Spot Improvement 2 – US 25 (Old Richmond Road) at Delong Road: The US 25 (Old Richmond Road) intersection with Delong Road is currently unsignalized with the Delong Road approach stop-controlled. There were 11 crashes at this location over the past three years, eight of which were angle collisions. An improvement option at this intersection is to construct turn lanes on US 25 to reduce the conflict between through traffic and turning vehicles. Like the Jacks Creek Pike intersection, there is currently an HSIP project examining innovative intersection options at this intersection.

Spot Improvement 3 – Delong Road between Walnut Hill Road and Colliver Lane: The section of Delong Road between Walnut Hill Road and Colliver Lane has four horizontal curves with 25 mph advisory speeds and carries 1,300 VPD. There were 26 crashes reported on this portion of Delong Road over the past three years, 10 of which resulted in an injury and 17 of which were single vehicle collisions. An improvement option is to realign this portion of Delong Road and eliminate several of the horizontal curves.

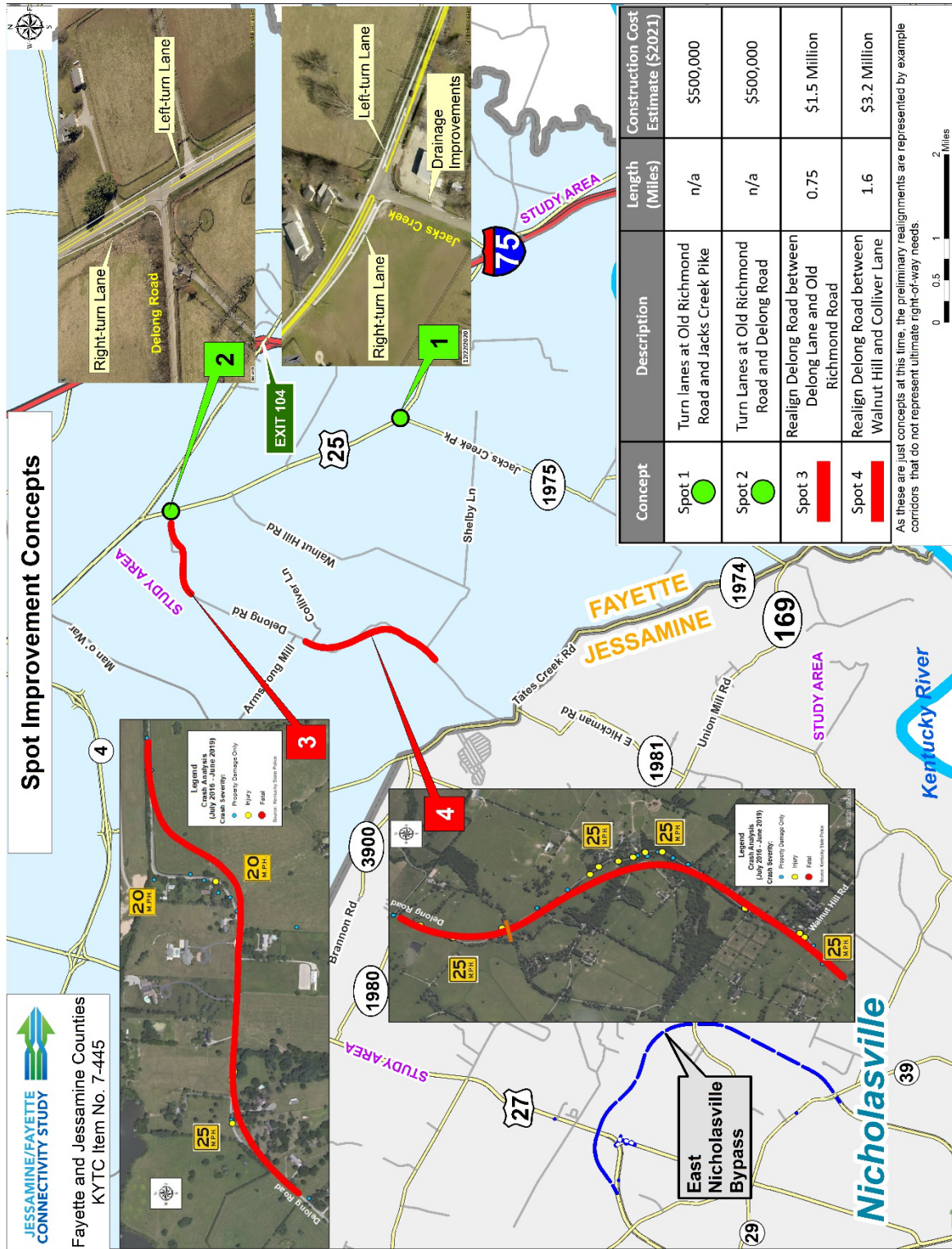


Figure ES-3: Preliminary Spot Improvement Concepts

Spot Improvement 4 – Delong Road between Delong Lane and US 25 (Old Richmond Road): The section of Delong Road between Delong Lane and US 25 has three horizontal curves with advisory speeds of 25 mph or slower and carries 3,600 VPD. There were 13 crashes on this portion of Delong Road over the past three years, four of which resulted in an injury. An improvement option is to realign this portion of Delong Road to improve several of the horizontal curves.

Conclusions

After the second round of public involvement and the final project team meeting, improvement concepts were revised based on feedback from the project team, local officials/stakeholders, and the public. The concepts were then grouped into the following categories: Spot Improvements / Lower-Cost Concepts to Consider as Funding Allows, Concepts for Future Consideration after the East Nicholasville Bypass is completed, and Concepts for Consideration as Part of Future Development. The revised concepts fulfill the study goals and objectives by improving safety and congestion issues affecting mobility in Southeast Fayette and Northeast Jessamine Counties. This study will not be making specific recommendations to advance transportation concepts; however, the following section presents the improvement concepts analyzed in this study that may be further considered under various future conditions.

Spot Improvements / Lower-Cost Concepts to Consider as Funding Allows

Based on the crash analysis and generally positive public feedback, the following concepts could be considered if funding becomes available:

- **Concept #3 - Realignment of Tates Creek Road (KY 1974) and East Hickman Road (KY 1981)**
- **Spot Improvements #1 - #4:**
 - Construct turn Lanes at the US 25 (Old Richmond Road) intersections with KY 1975 (Jacks Creek Pike) and Delong Road.
 - Realign Delong Road between Delong Lane and US 25 (Old Richmond Road)
 - Realign Delong Road between Walnut Hill and Colliver Lane

Concepts for Future Consideration after the East Nicholasville Bypass is Completed

The completion of the East Nicholasville Bypass will significantly increase traffic on many of the rural two-lane roadways in the focus area such as KY 169, KY 1974, KY 1975, and KY 1981. Improvements to these routes and better connections to I-75 will be essential to handle this increased traffic. The following concepts could be reevaluated and further considered after the East Nicholasville Bypass is completed:

- **Concept #1 - Improvements to KY 169 (Union Mill Road) and KY 1975 (Jacks Creek Pike)**
- **Concept #2 - New I-75 Interchange at US 25 (Old Richmond Road)**

Concept #1 could be implemented in phases, split into segments of independent utility or spot improvements along the corridor to address safety concerns. A new I-75 interchange at US 25 would improve mobility and allow easier access to I-75 for those who live and work within the eastern portion of the study area. The combination of a new interchange and improvements to KY 169 and KY 1975 would provide better access to I-75 for drivers on US 27 and the East Nicholasville Bypass.

Concepts for Consideration as Part of Future Development

- **Concept #4B - Tates Creek Road/Delong Road Connector**

At this time, the project team is not considering the need for a new, more direct connection between Tates Creek Road and US 25 as was depicted under Concept #4. However, anticipated growth within nearby portions of the Urban Service Boundary (USB) in Southeastern Fayette County warrant consideration of potential future enhancement, such as a new connection from the east end of Brannon Road at Tates Creek Road to Delong Road near Armstrong Mill, as shown in **Figure ES-4**. Such a concept could be implemented completely within the USB and should only be considered as development within the USB warrants it.

Next Steps

As the Jessamine/Fayette Connectivity Study did not result in specific recommendations for implementing transportation improvements, there are currently no planned “next steps”. However, should a concept(s) be considered for advancement, the next step would be to include it in the Lexington Area MPO’s Metropolitan Transportation Plan (MTP), further evaluate / refine the concept, and continue public and stakeholder engagement. In particular, Concept #3 and the spot improvements could be further explored in the nearer term as they received generally favorable feedback from the public and would improve safety along segments of two corridors that are anticipated to experience significant growth in traffic demand.

More detailed environmental studies will be required should any conceptual improvements be advanced. If a future project is federally funded, the National Environmental Policy Act (NEPA) requires that potential environmental impacts regarding jurisdictional wetlands and streams, archaeological sites, cultural historic sites, and federally endangered species must be avoided if possible. If not, then impact minimization/mitigation efforts are required.

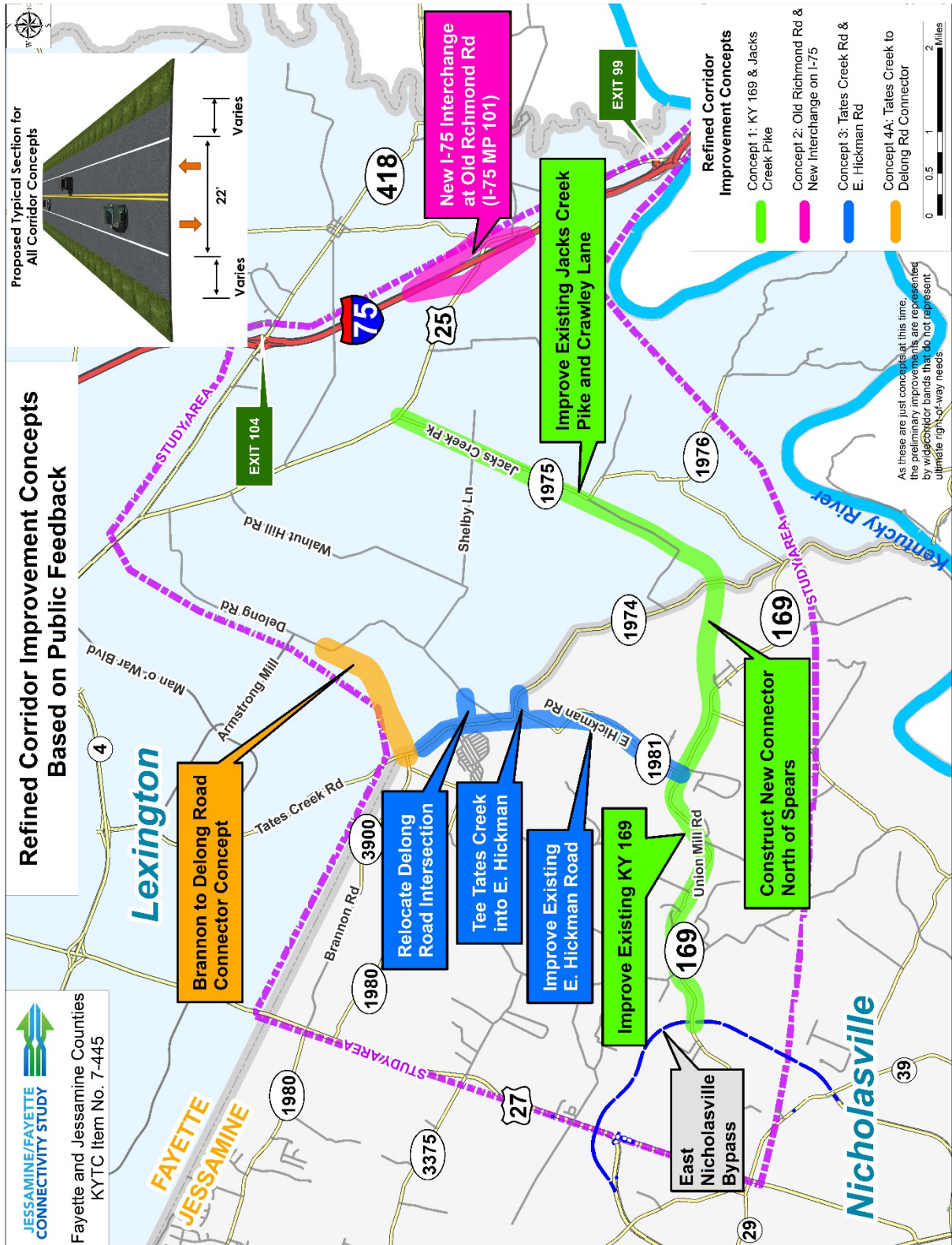


Figure ES-4: Refined Corridor Improvement Concepts Based on Public Feedback