

## Proposed Improvements for Existing US 25 Between Levi Jackson Mill Road (KY 1006) and KY 192



Concepts for Operational and Safety Improvements Along Existing US 25

### Keys to Improving Safety <sup>[1, 11]</sup>

Concepts are being considered for operational and safety improvements along Existing US 25 between Levi Jackson Mill Road (KY 1006) and KY 192. Anticipated improvements include modifying signal timing, reconfiguring the median and turn lanes, and providing U-turns at signalized and unsignalized median openings.

The application of these **operational improvements can have a variety of positive results**, including the following:



- **An increase in overall safety, reflected by the reduction in crashes**
- **Fewer conflicts and potential hazards between vehicular, bicycle, and pedestrian movements**
- **Less diversion of through traffic into adjoining neighborhoods in an attempt to bypass added congestion**
- **Smoother, more reliable, and more efficient travel for through traffic**
- **Opportunities for more pleasing visual settings and an improved image for businesses along the corridor**

## Safety Improvements are Coming to US 25

The Kentucky Transportation Cabinet (KYTC) is beginning the process of designing operational improvements along existing US 25 from Levi Jackson Mill Road (KY 1006) and KY 192. The focus of these improvements is to enhance traffic operations by implementing improved design and safety concepts. This brochure provides users of existing US 25 with an overview of the concepts being considered for the existing US 25 corridor.



**Anticipated improvements for existing US 25 do not involve reducing access points. Instead, anticipated improvements include modifying signal timing, reconfiguring the median and turn lanes, and providing U-turns at signalized and unsignalized median openings.** Studies have shown that crashes can be reduced by as much as 50% by improving signal timing, properly designing and constructing median openings with left-turn lanes, and providing U-turns at intersections and median openings. <sup>[3]</sup> Eliminating direct left turns and replacing with right turns followed by U-turns has reduced vehicle conflicts by almost 40%. <sup>[3]</sup>

The primary function of major routes like US 25 is to move traffic over long distances at higher speeds. The numerous access points along this project are in direct conflict with this goal and negatively affect safety and performance which is indicated by the high crash rate. The combination of existing traffic volumes and numerous access points have resulted in exceeding the capacity allowable for the safe execution of left turns using the two way left turn lane. Between January 2000 and November 2010, more than 1200 crashes, with over 750 rear end crashes and more than 350 angle or sideswipe crashes were recorded in the Kentucky State Police database for this segment. Almost 30 crashes included entrances while almost 20 crashes included pedestrians. Over 200 of the crashes included injuries while 2 crashes resulted in fatalities.

The anticipated improvements along the US 25 corridor are similar to improvements that have been implemented in KY on US 27 in Somerset and KY 4 (New Circle Road) in Lexington and for US 441 in Pigeon Forge, TN. More specific data for KY experience is summarized below.

### Kentucky Examples

**Kentucky has successful projects that implemented similar improvements as those anticipated along existing US 25.** KYTC, in cooperation with the Federal Highway Administration, has sponsored research studies with the Kentucky Transportation Center of the University of Kentucky. <sup>[9,10]</sup> Key findings include:

- Operational improvements balance the competing needs of mobility and accessibility on roadways to reduce crashes, increase capacity, and enhance economic benefits to surrounding areas.
- US 27, (Somerset, KY) - This location showed a 16% reduction in total annual crashes in the 5.4-mile section (5 years after construction), compared to the crash history 2 years prior to construction. During the five-year period after completion of the project, only eight U-turn crashes occurred. <sup>[9, 10]</sup>
- KY 1817, Hurstborne Lane (Louisville, KY) - This project replaced a two-way left-turn lane with a raised concrete median. Crash data indicates that during the 6 months immediately following the project completion, monthly crash rates dropped to 4.4 crashes per month, compared to 7.6 crashes per month previously. <sup>[9, 10]</sup>
- KY 4, (Fayette County) - Operational improvement concepts were an integral aspect of a 2000 study for this project. Recommended improvements included a full range of concepts for reducing congestion and improving safety. Concepts included constructing raised medians and providing for U-turns at median openings and at signalized intersections. Surveys of businesses affected by implementing raised medians and U-turns did not indicate a loss in business.
- U-Turns - **An analysis of crash data shows that the U-turn design did not result in a large number of crashes involving U-turning vehicles for projects in Kentucky.** Also, at the Somerset location where the design eliminated median crossovers between intersections, total crashes decreased. <sup>[9, 10]</sup>



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## FURTHER EXPLANATION OF ANTICIPATED IMPROVEMENTS:

### Medians and Median Openings

A median is a divider in the center of the roadway that separates opposing traffic and prevents / discourages vehicles from crossing the divider. Medians may be raised, depressed, or flush. Median treatments for roadways represent one of the more effective means to regulate access, but they can also be controversial. Possible safety improvements involving medians may include controlling median openings, allowing U-turns at median openings, and providing for U-turns at signalized intersections.

Openings in the median provide for different turning or crossing maneuvers, depending on how they are designed.

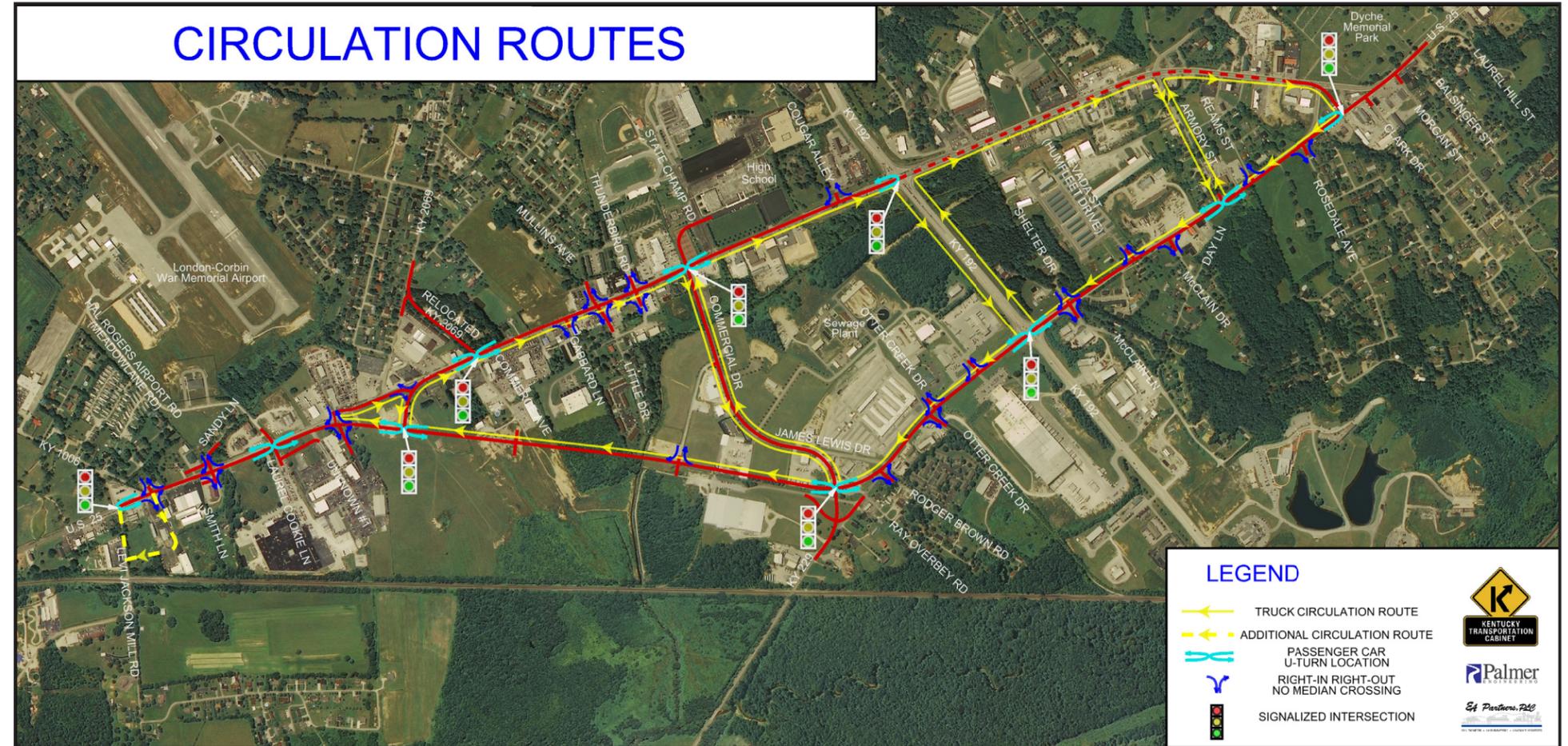
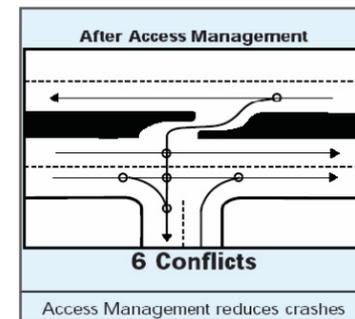
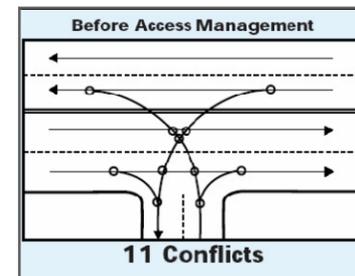
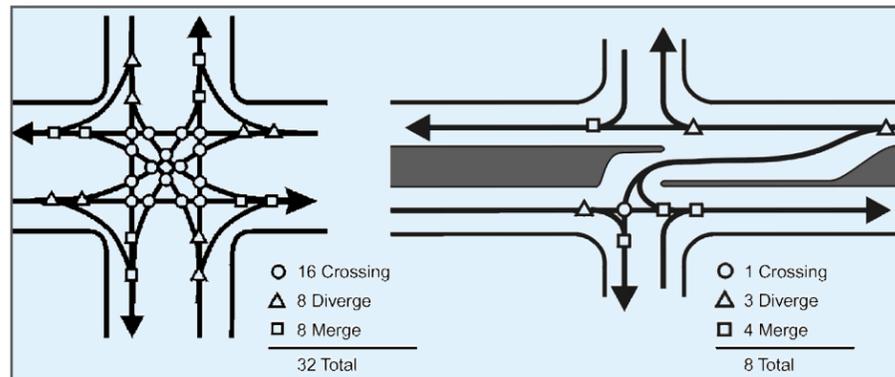
- A directional median opening only allows certain movements, usually a left-turn in or U-turn.
- A full median opening allows all turning and crossing movements and is often signalized. Where too many full median openings exist, agencies may reconstruct the median and close excess median openings.

Operational improvements may be approached in the context of either marginal or medial access control. Marginal access control reduces access points while medial access control uses a combination of median openings, left turns, and permitted U-turns to improve traffic flow and safety [1, 4, 5, 7, 8]. Medial access control improvements are recommended along existing US 25. **Anticipated improvements for US 25 include providing U-turns at signalized and unsignalized median openings and reconfiguring the median and turn lanes.**

### How Do Operational Improvements Enhance Safety? [1, 4, 5, 6, 9, 10]

Each access point creates potential conflicts between through traffic and traffic using that access point. Each conflict is a potential crash. Operational improvements enhance safety by separating access points so that turning and crossing movements occur at fewer locations, allowing drivers to predict where other drivers will turn and cross, and also provides space to add turn lanes.

The figures below and to the right show how basic changes in access design, such as incorporating a median or changing a full median opening to a directional opening, can reduce traffic conflicts and the potential for crashes.



Improvements along the US 25 corridor include restricting access to right turns into and out of unsignalized access points. Passenger cars and small trucks wishing to make left turns into or out of an unsignalized access point will be able to make U-turns at designated locations throughout the corridor or use local roads to get to their destinations. Larger trucks (semi-trailers, concrete mixers, and dump trucks, etc.) will not be able to make U-turns throughout the corridor. These vehicles will instead use the internal circulation routes, as detailed on the map above. The combination of existing routes and improved roads will enhance connectivity within the corridor.

### What About Congestion and the Effect It Has on Market Area? [2, 7, 11]

Safety improvements along US 25 are not only anticipated to improve roadway safety, but also to reduce the growing problem of traffic congestion. Frequent access points and closely spaced signals contribute to increased congestion. With increased congestion also comes increased delay. Resulting delays (traffic slow-downs) can adversely affect businesses by reducing service areas for customer markets, the work force, and suppliers. The net effect of increased congestion and delay is shrinkage of the business market area and increase in production costs. **Well-managed arterials can operate more efficiently than poorly managed roadways. For businesses, the effects are a more convenient and less stressful experience for customers.**

Increased crashes can be another by-product of increased congestion and delays. If crashes and congestion become frequent, drivers may seek out other routes or other locations to conduct business. Crashes can tie up traffic for hours and thus keep potential customers from the market area until traffic operations are restored.