

## **Executive Summary**

The *KY 90 Corridor Study* identified and evaluated the need for and scope of concepts to improve the safety, mobility, and capacity of KY 90 in Monticello, KY. The study included analyzing existing conditions, soliciting input from local officials, developing traffic forecasts, and developing and evaluating potential improvement concepts.

### **Existing and Future Conditions**

The study area includes KY 90 from KY 90X / KY 1275 to KY 3106, as shown in **Figure ES-1**. Based on an analysis by the Kentucky State Data Center (KSDC), Wayne County is expected to experience a decrease in population with a projected annual growth rate of -0.47 percent between 2020 and 2040. Population projections are not available for individual cities, but Monticello's 2020 Census shows 5,753, a 0.19 percent decrease in population compared to the 2000 Census of 5,981. However, KY 90 is one of the only arterials in Wayne County and serves as a regional connection for southeastern Kentucky. Based on results from the Kentucky Statewide Travel Demand Model (KYSTMv19), traffic on KY 90 is expected to grow with annual growth rates ranging from 0.2 – 0.3 percent per year. Therefore, a growth rate of 0.3 percent per year was chosen and applied to the latest traffic counts in the study area to develop 2021 daily traffic estimates.

An existing conditions analysis was performed and summarized as follows:

- The study portion of KY 90 has 12' lanes, and 10' shoulders (2' paved and 8' gravel).
- Horizontal and vertical geometry meet the posted 55 mph design speed
- Highway Capacity Software (HCS) analysis indicates KY 90, including all study area intersections, will operate at LOS B or C in 2045.
- Turning lane evaluations using 2021 traffic counts indicate that warrants for left turn lanes and right turn lanes were not satisfied.
- Crash data (1/2016 – 12/2020) indicated a concentration of crashes between Access Drive and Tate Drive and also in the vicinity of the Valero gas station between Sunstar Boulevard and Farmington Avenue as shown in **Figure ES-2**.
- Excess expected crashes (EEC) was found to be positive at the KY 90 intersections with Access Drive, Tate Drive, Cumberland Drive, Francie Boulevard, Sunstar Boulevard, Farmington Avenue, and KY 3106 (Cooley Drive). All positive EEC values were slightly above one, indicating more crashes are occurring than what is expected.
- Based on a MetroQuest survey completed by local officials and stakeholders, the primary concern on the corridor was lack of turn lanes

Based on the existing conditions analysis, capacity is not an issue on the study portion of KY 90 during weekday peak hour traffic and is not expected to be an issue in 2045 based on traffic forecasts. Special events and holidays can increase traffic due to the proximity of Lake Cumberland, so turning movement counts were collected on Friday, June 17<sup>th</sup> and Saturday, June 18<sup>th</sup> during the Thunder Run event weekend. The turning movement counts showed an 11 percent increase in traffic on June 17<sup>th</sup> and a 13 percent decrease on June 18<sup>th</sup> compared to counts collected on an average weekday in October 2021. This increase in traffic was not enough to warrant consideration of additional lanes on KY 90.

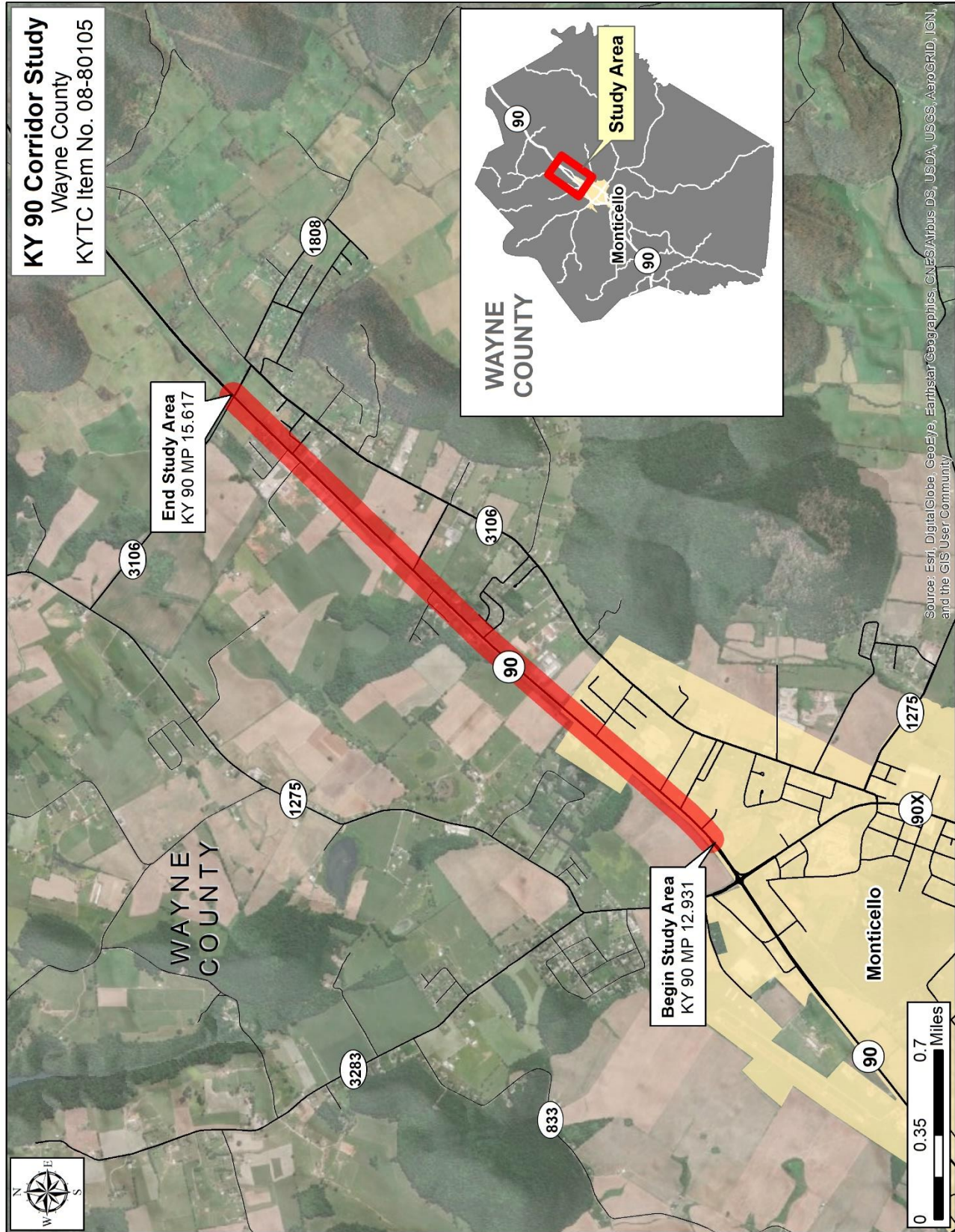


Figure ES-1: KY 90 Study Area

## Improvement Concept Development

Improvement concepts were developed based on a combination of input from the project team, a review of existing conditions, Advisory Committee input, and field reconnaissance.

### Intersection Improvements

Side road signs could be installed at intersections along the study corridor to warn drivers of approaching access points and potential turning traffic particularly at locations without intersection delineation lighting. It is recommended that signs (30" x 30") are placed 325 feet in advance of an intersection with supplemental street name plaques. Possible intersections include Cooley Drive, Kings Boulevard, and Francie Boulevard.



Although left-turn lanes are not warranted based on current vehicular traffic, turn lanes were considered as safety improvements. Based on results from the Crash Density Heat Map there are two areas where the crash density is higher: the southern area between Access Drive and Tate Drive and the northern area near the Valero gas station between Sunstar Boulevard and Farmington Avenue. An option to improve safety is to provide a center two-way left-turn lane (TWLTL) for a section of KY 90 at each of these locations.

### Driver Feedback Signs

Driver Feedback Signs are used to display the speed of motorists that are approaching the sign. The posted speed limit on KY 90 is 55 mph. Based on HERE speed data, the 85<sup>th</sup> percentile on the study portion of KY 90 is 56.6 mph during the AM peak, 56.9 mph during the PM peak, and 56.6 mph during the off peak. Based on a review of the crash data, June had the highest number with nine, while the months of May, August, September, and October had six each. June is the beginning of tourism season in Wayne County as more people travel through the county to access Lake Cumberland. Because of the increased lake traffic, the month of June would be a likely candidate for consideration for temporary placement of a portable driver feedback sign.



### Variable Advisory Speed Limit Signs

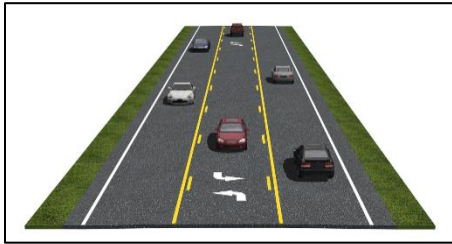
A variable advisory speed limit sign is a changeable message signs that is used to display speed limits that change based on ambient or operational conditions. Although not common, a variable advisory speed limit sign (warning) is a speed recommendation traffic control device for specified times. Based on a review of the crash data, 18 percent of crashes occur between 4 pm and 5 pm. Further analysis and discussion would be required to determine if the application of this warning device would be considered as a potential countermeasure to reduce crashes when activated.



Variable speed limits (regulatory) are currently not an option for use in Kentucky.

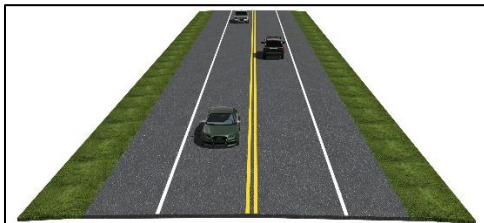
### **Construct TWLTL Along Entire KY 90 Corridor**

A long-term concept to improve safety on KY 90 is to construct a center TWLTL along the entire study area.



### **Paved Shoulders**

A long-term concept to improve safety on KY 90 is to provide 10-foot paved shoulders along the entire study area.



## **Conclusions**

The project team determined that the recommended improvement concept will include a TWLTL from south of Access Drive to Cumberland Drive and a 10' full-depth paved shoulder from Cumberland Drive to Cooley Lane (KY 3106). This provides 44 feet of full depth pavement to accommodate a TWLTL section or future turn lanes as needed through the paved shoulder section. The archive plans show the existing full depth pavement on KY 90 is 24 feet wide and the total roadway width (including gravel shoulders) is 48 feet. The estimated construction cost of this project, including 44 feet of full-depth pavement, is \$5.5 million. The improvements are not expected to require any utility relocations or additional right-of-way. The proposed typical sections on KY 90 are as follows:

### **KY 90 from south of Access Drive to Cumberland Drive**

Two 12-foot lanes, a 14-foot TWLTL, five-foot shoulders (three-foot paved), and edge-line rumble strips, as shown in **Figure ES-2**.

### **KY 90 from Cumberland Drive to Cooley Lane**

Two 12-foot lanes, 12-foot shoulders (10-foot full depth paved), centerline rumble strips, and edge-line rumble strips, as shown in **Figure ES-3**. The 44 feet of full depth pavement would match the TWLTL section above so a TWLTL section or turn lane could be added with future striping.

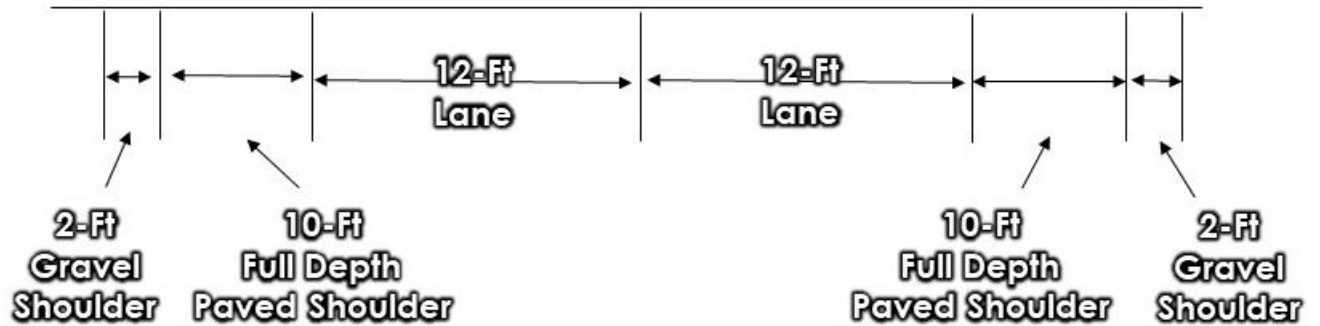
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As part of the next phase of this project, Phase 1 Design, consideration should be given to extending the full depth paved shoulders north of Cooley Lane approximately 1.8 miles to the end of the current construction project near Old Mill Springs Road. This would provide a consistent shoulder between Monticello and US 27 in Bronston.



**Figure ES-2: TWLTL Typical Section**



**Figure ES-3: Paved Shoulder Typical Section**

### **Next Steps**

The next step following this study for the recommended improvements is Phase 1 Design (Preliminary Engineering and Environmental Analysis). This project is listed in *Kentucky's FY 2022 – FY 2028 Enacted Highway Plan* as 08-80105.00 and has \$6.078 million in Right-of-Way (2023), \$2.92 million in Utilities (2025), and \$22.143 million in Construction (2026).