

Executive Summary

The Kentucky Transportation Cabinet (KYTC) conducted a safety study for KY 151 from US 127 in Anderson County to Interstate 64 (I-64) in Franklin County as a special case study to address the safety concerns of the local residents and analyze the Commercial Motor Vehicle (CMV) crashes between January 1, 2010, and December 31, 2015. See **Figure ES-1, p. ES-5**.

The purpose of the KY 151 Safety Study is to:

- Review the existing roadway characteristics, traffic volumes, geometries, speeds, and crashes
- Determine which size of vehicles can be safely accommodated within the existing roadway geometry
- Identify and examine the CMV-specific issues

Background

In 2015, five CMV crashes were reported by the Kentucky State Police (KSP) along KY 151 between milepoint (MP) 0.0 in Anderson County and MP 2.3 in Franklin County. This segment of KY 151 serves as a shorter route between locations south of the KY 151 and US 127 intersection, and locations west of the KY 151 and I-64 interchange.

In March 2016, in response to local residents' concerns about the recent number of CMV crashes, KYTC and the Federal Highway Administration (FHWA) took immediate action to place an emergency ban on certain classes of large and oversized commercial motor vehicles, referred to as STAA vehicles, while the causes of the CMV crashes and safety aspects of the roadway were analyzed by KYTC. Banning of STAA vehicles permanently and removing KY 151 from the National Truck Network is contingent on FHWA's approval after providing formal notice to the public and offering opportunity for citizen comments in the Federal Register.

In May 2016, Civil Action No. 16-CI-440 was filed in the Franklin Circuit Court against the Commonwealth of Kentucky, KYTC, KYTC Secretary Greg Thomas, and the Department of Public Highways. The plaintiffs in the civil action are Mr. Thomas D. Isaac and Mr. Don McCormick, who are local residents representing "Group 151." In addition to the ban of the STAA vehicles, the plaintiffs have requested that KYTC ban all non-local trucks from the KY 151 study corridor. The plaintiffs define "trucks" as any vehicle having more than three axles. Exceptions would be made for single unit garbage trucks, emergency vehicles, and other similar vehicles.

KYTC evaluated the existing roadway characteristics, traffic volumes, roadway geometrics, speeds, crashes, and pavement conditions. The key transportation issues identified from this analysis are summarized on the next page.

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Roadway Geometrics

There are 31 horizontal curves along KY 151, between US 127 and I-64. All of the curves meet current design guidelines for the posted speed limits. Fourteen horizontal curves were further analyzed to determine which CMV sizes might have difficulty maneuvering without the rear wheels tracking off of the pavement. Two curves at MP 2.6 and MP 3.0 in Anderson County may not fully accommodate the offtracking of STAA vehicles, confirming that removing KY 151 from the National Truck Network and prohibiting STAA vehicles was an appropriate action to balance the concerns of the local residents, government officials, and commercial vehicle traffic, with the possibility of the geometric conditions of the roadway contributing to the CMV crashes.

A review of the crash report narratives did not appear to indicate any of the CMV crashes were related to sight distance issues.

Speed Analysis

Speed data was collected at five locations on KY 151 in May 2016. The analysis indicates the 85th percentile speeds recorded, both for trucks and non-trucks, are within 5 mph of the posted speed limits which indicates the posted speed limit is appropriate for the roadway conditions.

Crash Analysis

Between January 1, 2010, and December 31, 2015, there were 19 CMV crashes out of 177 all-vehicle type crashes on KY 151 between US 127 and I-64. Five of the 19 CMV-related crashes were recorded by the KSP as not being caused by the CMVs. The heaviest concentration of CMV crashes occurred between the community of Alton and the Anderson/Franklin County line. The crash analysis indicated low shoulders along the roadway may be a contributing factor in three locations. To mitigate the initial findings of this study, KYTC Maintenance crews widened the three low-shoulder locations in fall of 2015 and spring of 2016. The CMV crashes between Alton and the county line not related to low shoulders appear to be random events related to conditions such as icy weather and driver fatigue.

Overall statistical analysis of the all-vehicle-type crashes shows that KY 151 is experiencing lower crash rates and lower severity of crashes than Kentucky roadways of similar functional classification.

Pavement Condition Evaluation

In April 2016, the KYTC Division of Maintenance, Pavement Management Branch, conducted a review of KY 151 in order to assess potential impacts of heavy trucks on pavement conditions in accordance with KYTC *Pavement Management in Kentucky* procedures. The review involved investigation of:

- current pavement conditions
- historical construction data
- prior condition assessments

Analysis of pavement ride quality and visual distresses indicated no evidence of abnormal distress patterns. The pavement structure for KY 151 is considered sufficient to accommodate the existing 'AAA' truck weight classification.

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Road Safety Audit

The Road Safety Audit conducted on May 10, 2016, recommended improvements to the KY 151 corridor to improve the safety of the roadway.

Conclusions

Safety is a high priority with KYTC, as documented in KYTC's Mission statement:

"To provide a safe, efficient, environmentally sound and fiscally responsible transportation system that delivers economic opportunity and enhances the quality of life in Kentucky."

As part of the Strategic Plan, KYTC's goals and objectives are to make well-informed, data-driven decisions to reduce the number and severity of motor vehicle crashes. This must be accomplished while also considering the local citizens' concerns, promoting economic development through improving freight movement, and managing limited transportation funds responsibly.

The KY 151 Safety Study evaluated the existing roadway characteristics, traffic volumes, roadway geometrics, speeds, crashes, and pavement conditions. The analysis shows the following:

- roadway capacity is not currently an issue, and will not likely be an issue in the next 20 years
- roadway geometrics, although not up to current industry guidelines, are not contributing to crash rates higher than what would be expected due to random occurrence
- existing traffic control devices are within industry guidelines
- posted speed limits are appropriate
- there are no apparent crash patterns indicating the roadway geometry is insufficient
- pavement conditions are fair
- the KY 151 study corridor has a better safety record than Kentucky roadways of similar functional classification in both rural and urban areas

The CMV-specific data and physical evidence were examined along the KY 151 corridor. The analysis and physical evidence indicate some of the CMV crashes may be related to offtracking and shoulder drop-offs at two curves located at MP 2.6 and MP 3.0, and the abrupt change in pavement width at MP 4.1 in Anderson County.

Although the analysis indicates STAA vehicles may have difficulty tracking within their 11-foot travel lanes at two of the curves in Anderson County, it does not necessarily indicate that the STAA vehicles must be removed from the KY 151 corridor. However, because of the proximity of US 127 as a viable alternate route and with the possibility of the roadway geometric conditions contributing to the CMV crashes, the Official Order prohibiting STAA vehicles was an appropriate action to balance the concerns of the local residents, government officials, and commercial vehicle traffic. A further ban on all CMVs, or trucks over three axles as requested by the civil action lawsuit is not supported by the analysis and would unjustifiably restrict freight movement.

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While the crash analysis indicates the crashes along the corridor are likely occurring in a statistically random manner and are generally of lower severity than statewide averages, the overall evaluations indicate the CMV-related issues at MPs 2.6, 3.0, and 4.1 in Anderson County have the potential to be mitigated by a combination of improving the shoulders in the section of roadway between the community of Alton and the Anderson and Franklin County line, along with continuing to restrict the STAA vehicles. The STAA restriction reduced the overall percentage of CMVs on the study corridor by nearly half, thereby reducing the potential for CMV crashes along KY 151. Additional improvements to enhance safety along the corridor are listed in the Road Safety Audit section of this study. To address the initial findings of this study and improve safety along the corridor, the shoulders have been widened on the section of KY 151 between the community of Alton and the change in pavement width at MP 4.1.

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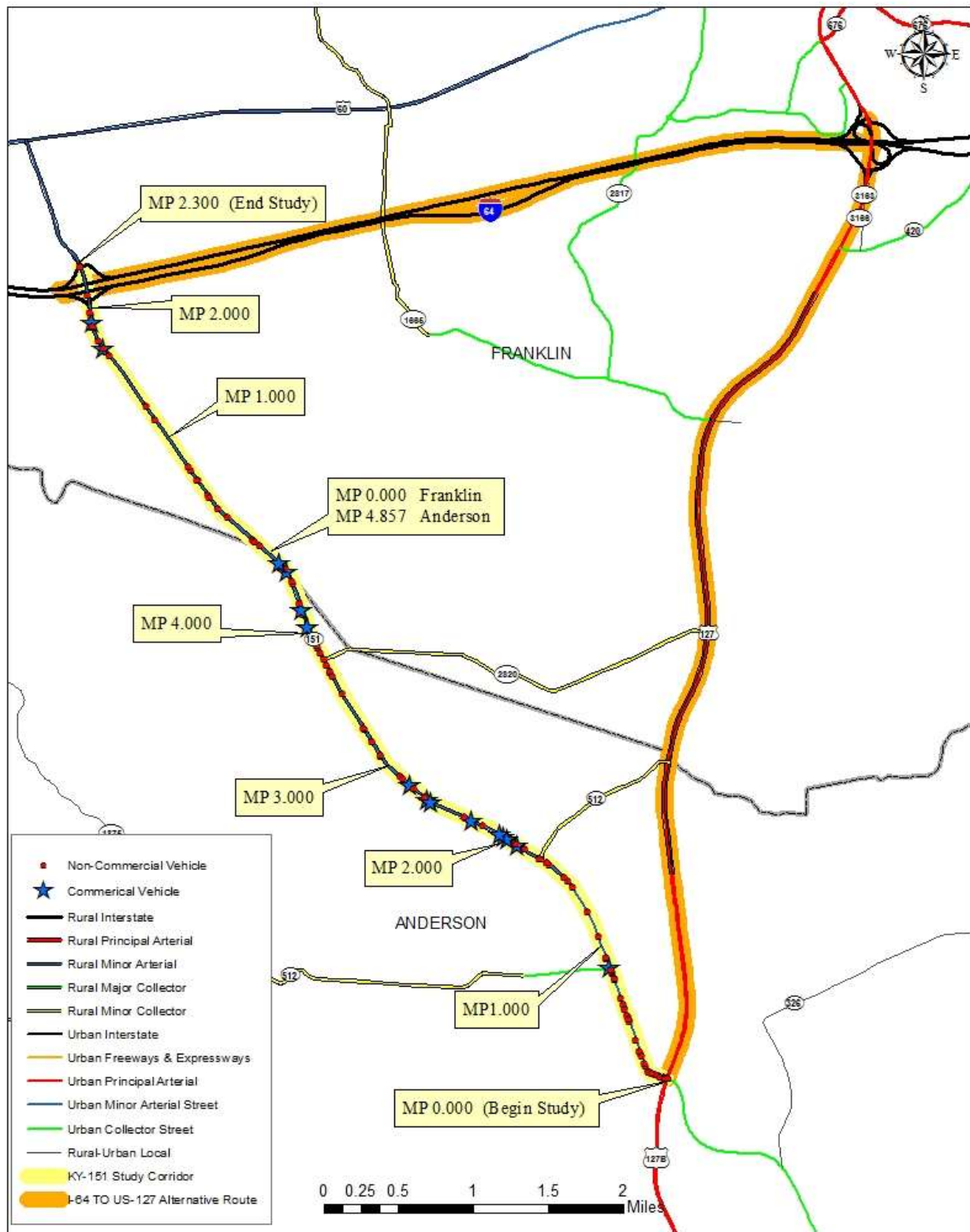


Figure ES-1 - KY 151 Safety Study Corridor