KY 32
CORRIDOR STUDY

Executive Summary

March 2024

TEAM KENTUCKY®
TRANSPORTATION CABINET

Stantec

Executive Summary

The KY 32 Corridor Study was initiated by the Kentucky Transportation Cabinet (KYTC) to identify and evaluate the need for and scope of potential options to improve safety, mobility, and capacity along KY 32 in Morehead, Kentucky.

Existing Conditions

The KY 32 study corridor, shown in **Figure ES-1**, extends from the intersection at KY 377 (MP 4.496) to the intersection at US 60 (MP 8.439) in Morehead, Kentucky and includes an interchange with I-64.

The study portion of KY 32 is a five-lane urban minor arterial with 12-foot lanes and a center two-way left-turn lane (TWLTL). The northern portion of the corridor has ten-foot paved shoulders which transition to curb & gutter and sidewalks south of Mabry Drive, approaching downtown Morehead. KY 32 carries a mixture of local, commercial, and regional traffic with daily volumes ranging from 15,200 vehicles per day (VPD) north of Walmart Way to 28,000 VPD east of the I-64 interchange.

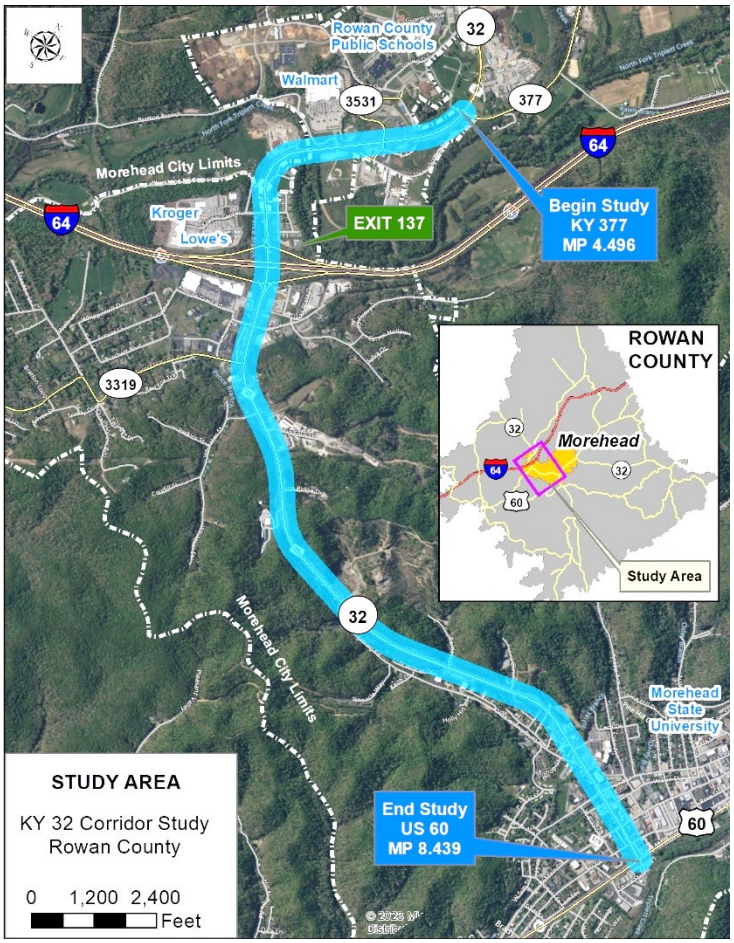


Figure ES-1: KY 32 Study Corridor

Over the five-year period between 2017 and 2021, a total of 780 crashes were reported on the study portion of KY 32. Of the 780 crashes, five (0.6 percent) resulted in a fatality and 94 (12 percent) resulted in an injury. Rear end collisions were the most common crash type (51 percent) with a high concentration of crashes occurring at the signalized intersections near the I-64 interchange and the US 60 intersection.

Public Outreach

Early in the study process, the project team met with local officials and stakeholders and created an online MetroQuest survey to solicit feedback from the public on transportation concerns in the study area. Nearly 700 people responded to the public survey and most (94 percent) indicated they drive the corridor daily or two to three times per week. Respondents were asked to rank their overall transportation concerns on KY 32. Traffic congestion was the highest priority, followed by safety, and excessive speeds.

A heat map of the congestion concerns from the public survey, with red representing a higher density of concern, is shown in **Figure ES-2**.

Future Conditions

Based on population projections from the Kentucky State Data Center (KSDC), Rowan County is expected to be one of the higher growing areas in the region, around 0.8 percent per year between 2020 and 2040. This growth is due in part, at least, to Morehead State University, a public university with a Fall 2022 enrollment of 8,218[1] located north of the KY 32 intersection with US 60.

In addition to population growth, this area is also expected to experience significant commercial growth. There are 10 development sites, all in different stages of advancement, located along the study portion of KY 32. Due to the unknowns surrounding many of these development sites, low and high growth scenarios were developed for use in estimating future traffic demand. Based on the high growth scenario, daily traffic on KY 32 is expected to reach 44,000 VPD in 2045, a more than 50 percent increase from existing count of 28,000.

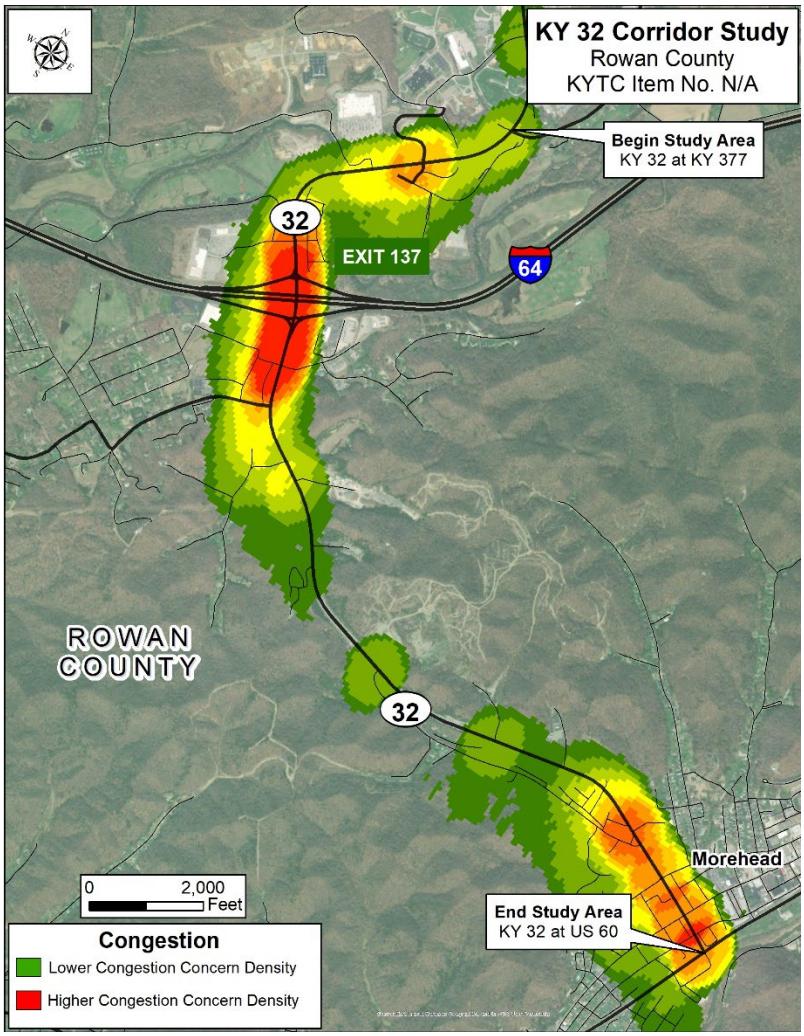


Figure ES-2: Public Survey Results – Congestion Concerns Heat Map

Improvement Concept Development

Improvement concepts were developed based on a combination of input from the project team, a review of the existing conditions, traffic analyses, safety analyses, field reconnaissance, and input from local officials and public. Concepts focused on three sections of KY 32: Downtown Morehead / US 60 intersection, the Corridor section between Viking Drive and Mabry Drive, and the I-64 interchange, as shown in **Figure ES-3**.

[1] www.usnews.com/best-colleges/morehead-state-university-1976

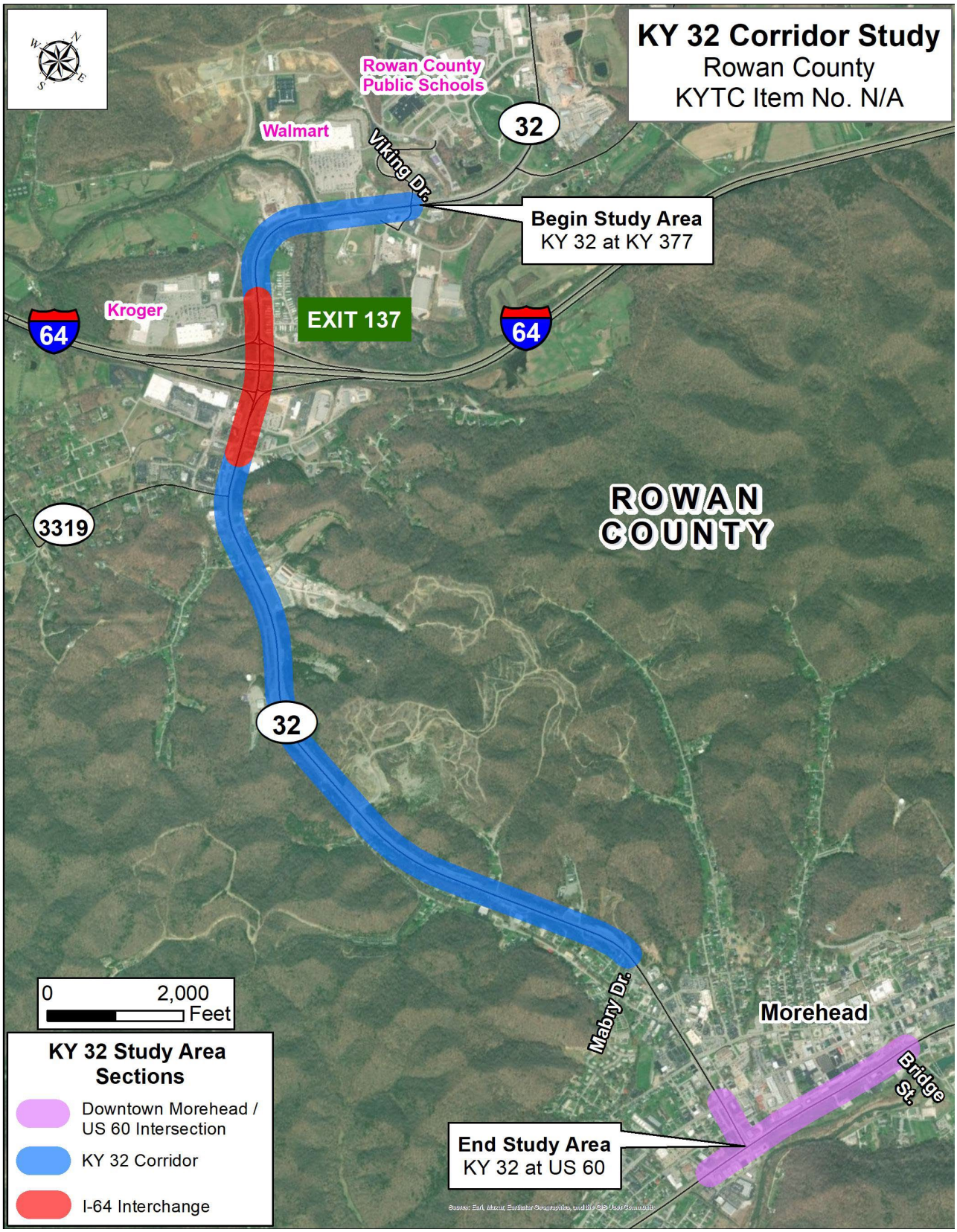


Figure ES-3: KY 32 Improvement Concept Sections

Downtown Morehead / US 60 Intersection

Based on results from traffic simulation modeling, the KY 32 intersection with US 60 currently operates at a Level of Service (LOS) D during the AM and PM peak hours and is expected to operate at LOS F during the AM peak hour in 2030. LOS D is considered acceptable for traffic operations in an urban area. Between 2017 and 2021, there were 88 crashes at this intersection, six (7 percent) of which resulted in an injury and 64 (73 percent) of which were rear end collisions. An Excess Expected Crashes (EEC) analysis, as discussed in more detail in Section 2.5, revealed that there were 2.1 more crashes per year at this intersection than expected, indicating an opportunity to improve safety. This intersection was also identified by the local officials and public as having congestion and safety issues.

The short-term option, showing in **Figure ES-4**, includes converting the 1st Street approaches to right-in/right-out by installing delineator posts on KY 32. Emergency vehicles, including ambulances, firetrucks, and police cars, are able to drive over the posts if needed during emergencies, so response times would remain unchanged. Additionally, the westbound KY 32 left-turn lane to 1st Street could be restriped to an eastbound left-turn lane onto eastbound US 60. This would create more storage by adding a dedicated left turn lane to eastbound US 60. The westbound US 60 left-turn lane could also be restriped to a northbound through lane to Bridge Street to provide a receiving lane for the eastbound KY 32 turn lane. The southbound US 60 left-turn movement would be eliminated, and vehicles would be rerouted to the southern Stone Street intersection.

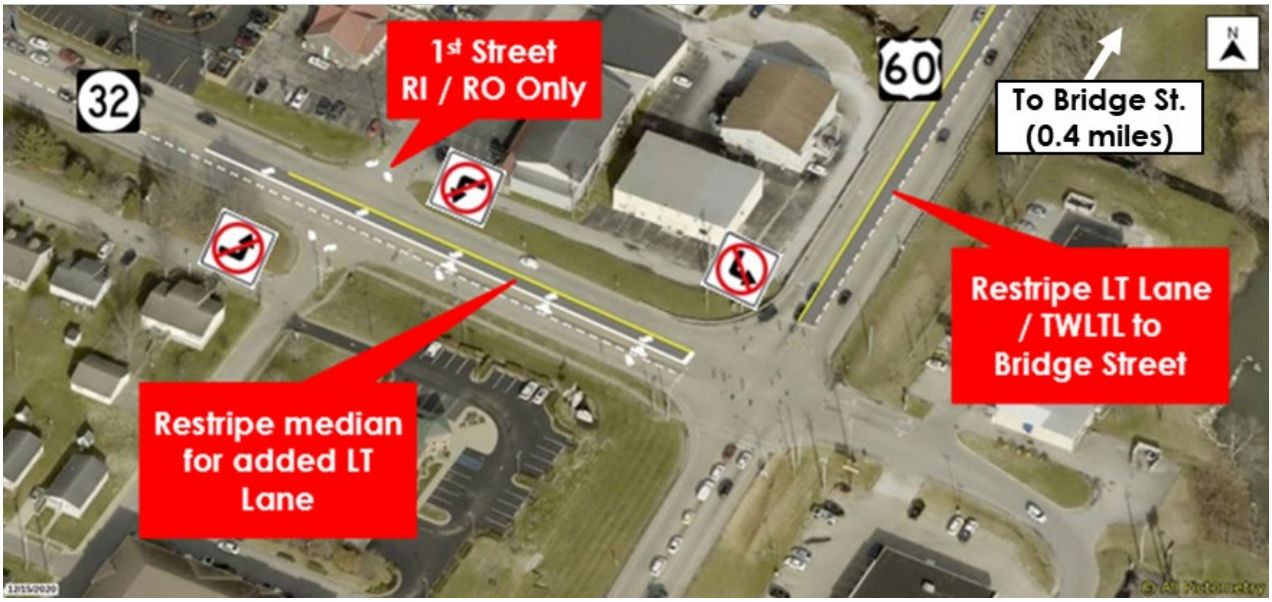


Figure ES-4: KY 32 / US 60 Short-Term Improvement Concept

The long-term option for this area, shown on **Figure ES-5**, includes restriping the eastbound KY 32 approach to include a left-turn lane, a shared left / through lane, and a right-turn lane. US 60 would be widened from the southern Stone Street intersection to Bridge Street, 2,700 feet north of the KY 32 intersection, to accommodate the dual left-turn lanes on KY 32 and the dual northbound left-turn lanes from US 60 to KY 32. At the southern Stone Street intersection, offset left-turn lanes would be constructed to accommodate the increased left turning traffic due to the westbound US 60 left-turn to Stone Street being relocated from the KY 32 intersection to the southern Stone Street entrance. This concept would also include converting the 1st Street approaches at KY 32 to right-in/right-out by constructing "porkchop" islands and delineator posts. The westbound KY 32 left-turn lane to 1st Street would also be restriped to an eastbound left-turn lane onto northbound US 60. This concept would also include the extension of a culvert on US 60 north of the KY 32 intersection.

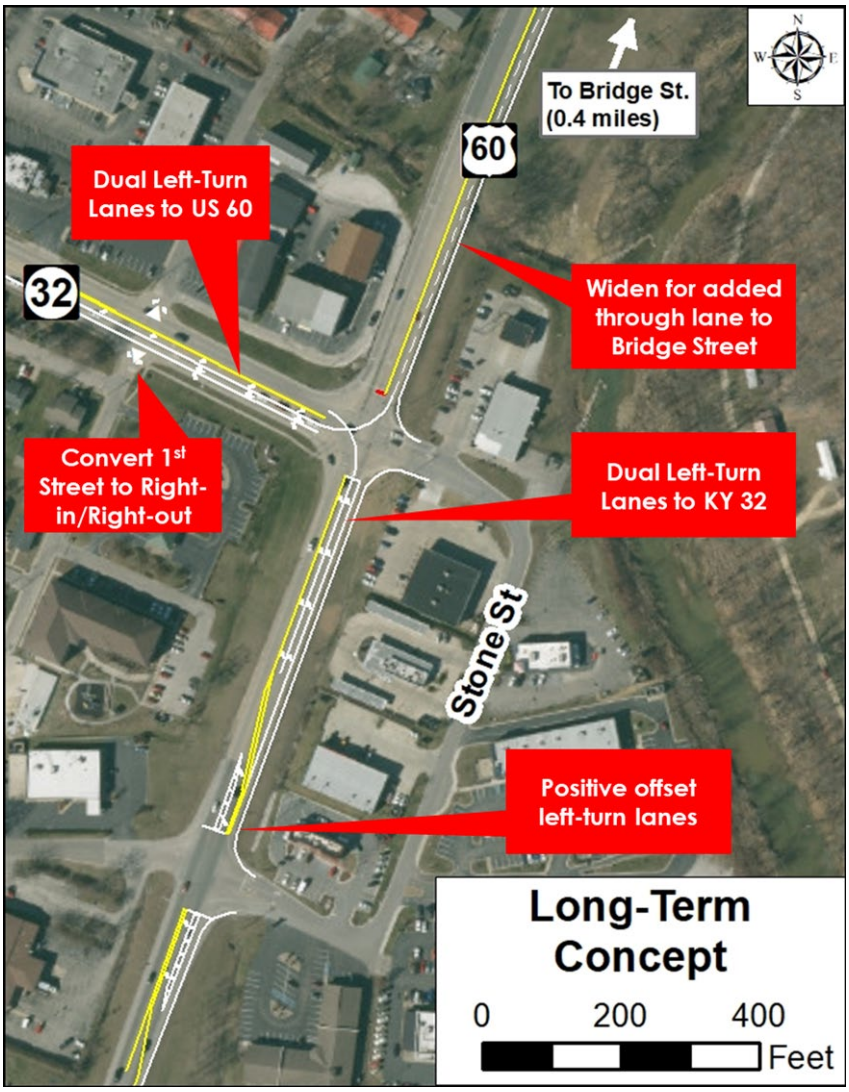


Figure ES-5: KY 32 / US 60 Long-Term Improvement Concept

An alternative to the long-term concept for the intersection includes the improvements from the short-term concept along with converting Stone Street to one-way. Shown on **Figure ES-6**, converting Stone to one-way would allow the US 60 intersection to be restriped (no pavement widening required) to provide dual left-turn lanes from KY 32 by eliminating the need for the southbound left from US 60 (see inset). Both options should be considered during future phases of project development.

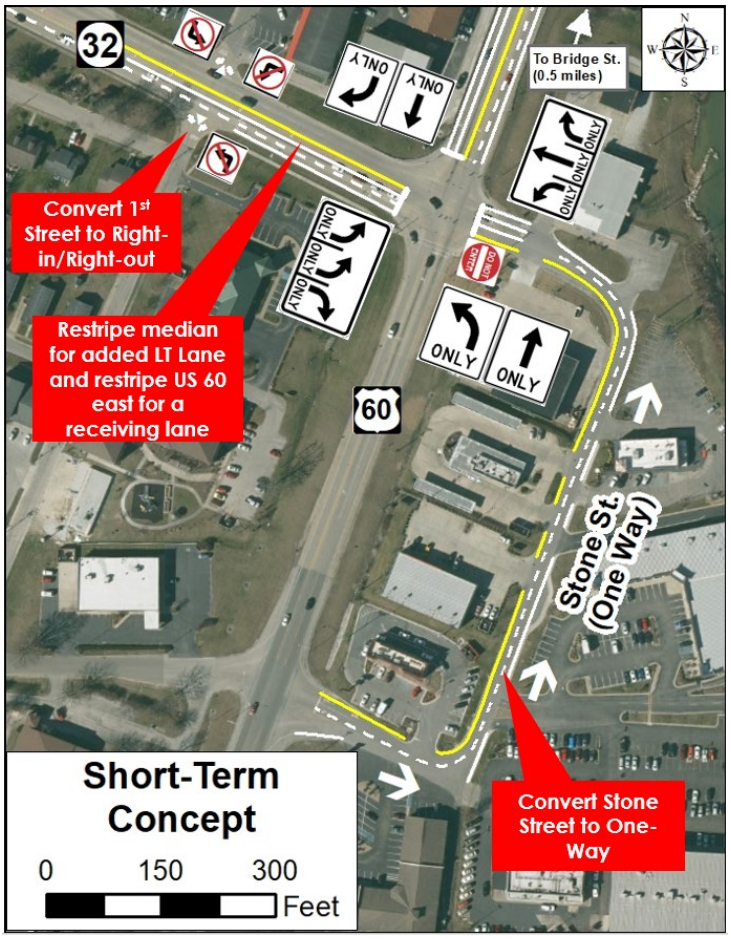


Figure ES-6: US 60 Intersection Concept with Stone Street Converted to One-Way

The KY 32 Corridor

Between Viking Drive west of the I-64 interchange and Mabry Drive just west of the commercial section in Morehead, KY 32 has four 12-foot lanes with ten-foot shoulders and a center two-way left-turn lane (TWLTL) and currently carries up to 28,000 vehicles per day (VPD). Based on traffic forecasts, which include significant developments in the area, this section of KY 32 is expected to carry up to 43,900 in 2045. Between 2017 and 2021, there were 157 crashes on this section of KY 32 not including the I-64 interchange area between Kroger Center Drive and Fraley Drive. Of the 157 crashes, two (one percent) resulted in a fatality and 26 (17 percent) resulted in an injury. The most common crash type was rear end (62 crashes, 39 percent) followed by single vehicle (34, 22 percent).

A concept to improve safety along the KY 32 corridor is to convert the center TWLTL to a raised 14-foot median, as shown in **Figure ES-7**. Major intersections would remain full access while minor intersections would be converted to right-in/right-out. U-turn opportunities would be provided along the corridor, with loons to accommodate wider-turning trucks. Drivers turning left onto KY 32 currently cross two directions of traffic traveling at 55 MPH. This concept would allow these vehicles to cross one stream of traffic at a time. A multi-use path could also be constructed along the south side of KY 32 to facilitate bicycle and pedestrian trips between the I-64 interchange and Morehead.

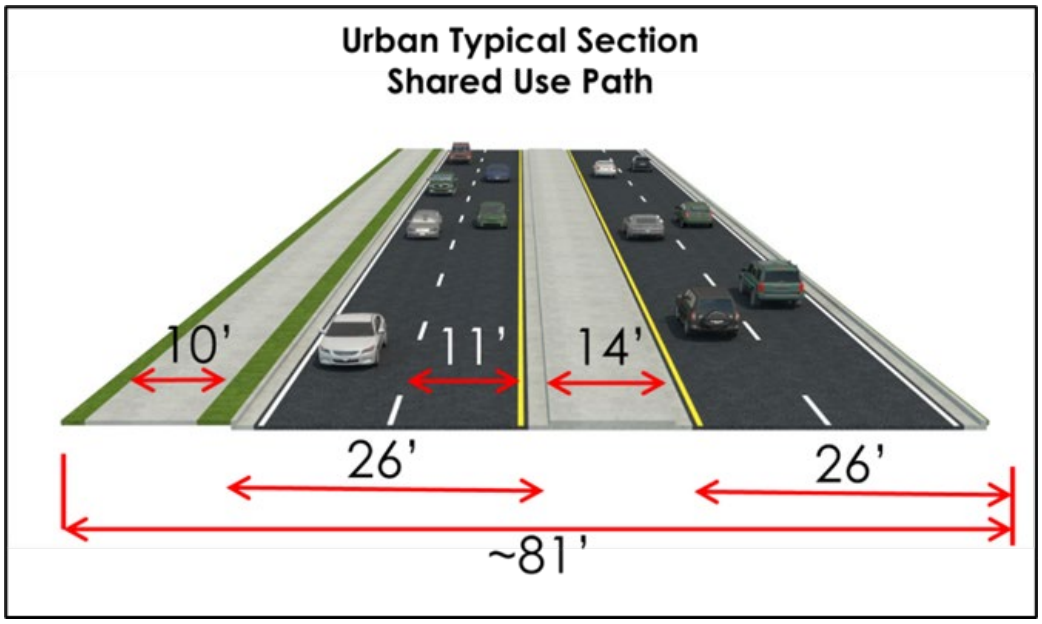


Figure ES-7: The KY 32 "Corridor" Improvement Concept - Urban Typical Section with Raised Median & Shared-Use Path

The I-64 Interchange

The I-64 interchange with KY 32 was the most identified area with traffic issues and the need for improvement based on feedback from local officials and the public. I-64 carries around 20,700 vehicles per day (VPD) south of KY 32 and 13,000 VPD to the north, indicating that many of the trips on this section of the interstate utilize KY 32. The interchange area is one of the busiest sections of KY 32, carrying between 21,800 and 28,500 VPD. Based on traffic forecasts, this area is expected to experience significant growth, with several developments anticipated in the next 10 years. In 2030, the KY 32 intersection with the eastbound I-64 ramps is expected to operate at LOS E during the PM peak hour. Between 2017 and 2021, there were 128 collisions at the interchange, 13 (10 percent) of which resulted in an injury. The most common crash type was rear end (83, 65 percent), indicating that congestion could be a contributing factor. An Excess Expected Crashes (EEC) analysis revealed that there were 19.5 more crashes per year than expected at the eastbound ramp intersection, indicating a significant opportunity to improve safety.

Short-term improvements have been implemented or initiated to improve traffic operations, including widening the eastbound off ramp to include storage for a dedicated right-turn lane to KY 32 and signal re-timing along KY 32. While these short-term improvements aim to maximize the efficiency of the existing infrastructure, long-term solutions are needed at the I-64 interchange to manage future traffic conditions.

The proposed long-term improvement at the I-64 interchange is to construct a Single Point Urban Interchange (SPUI), as shown in **Figure ES-8**. This type of interchange combines the eastbound and westbound ramps into one centralized intersection to operate with only one signal. Under this concept, the existing I-64 bridges will be replaced but the new ramps will be constructed within the existing right-of-way.

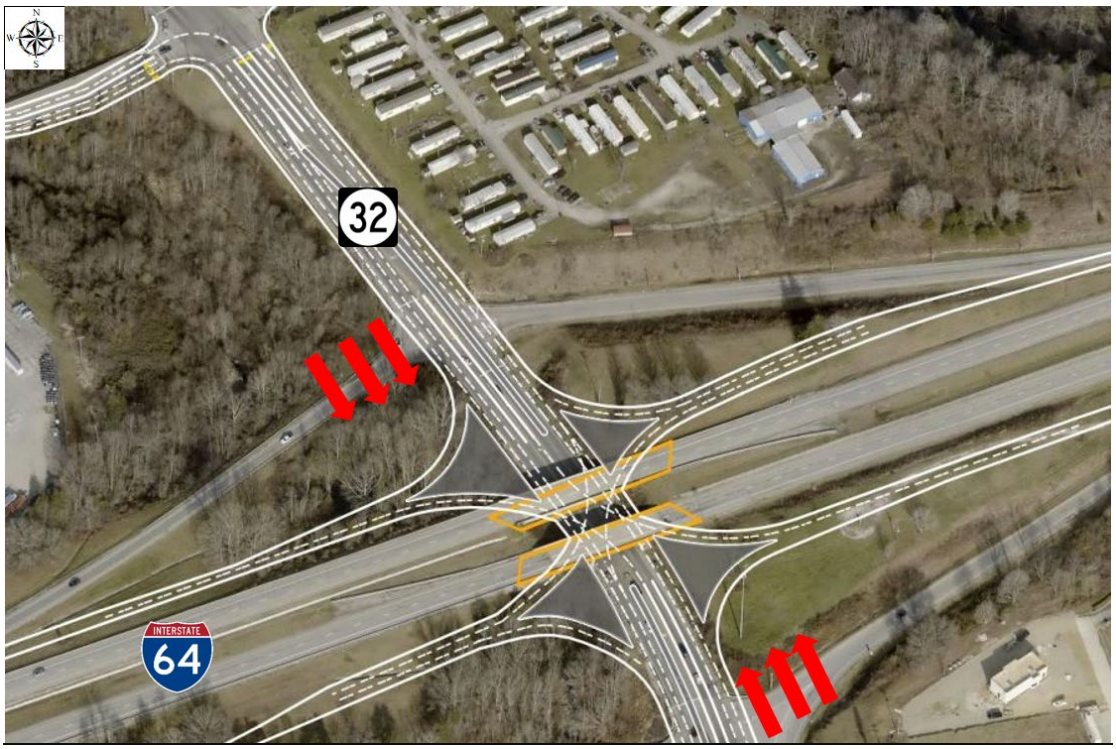


Figure ES-8: I-64 Interchange Improvement Concept

Conclusions

Improvement concepts were prioritized based on their ability to address the study goals of improving safety, mobility, and capacity on KY 32. **Table ES-1** presents the prioritization and cost estimates (in 2023 dollars) for the recommended concepts. Conceptual improvement descriptions for each of the recommended strategies are included on the following pages.

Table ES-1: Improvement Concept Prioritization & Cost Estimates

Priority	Alternative	Description	2023 Cost Estimates				
			Design	Right-of-Way	Utilities	Construction	Total
#1a	US 60	Convert 1st St. to right-in/right-out, restripe KY 32 & US 60 north approaches, convert Stone St. to one-way, update signal timing	$50,000	$0	$0	$250,000	$300,000
#1b		Widen US 60, provide dual left-turn lanes from KY 32 to US 60 and from US 60 to KY 32	$420,000	$275,000	$400,000	$2,830,000	$3,925,000
#2	SPUI	Construct a single point urban interchange (SPUI) at I-64	$2,000,000	$1,000,000	$4,950,000	$19,990,000	$27,940,000
#3	KY 32 Corridor	Construct raised, non-traversible median and provide left-turn, u-turn opportunities	$1,150,000	$1,000,000	$2,350,000	$11,460,000	$15,960,000
		TOTAL	$3,620,000	$2,275,000	$7,700,000	$34,530,000	$48,125,000

1a **Short-Term**	**LOCATION** KY 32 at US 60	**PROJECT PRIORITY:** Recommended

DESCRIPTION

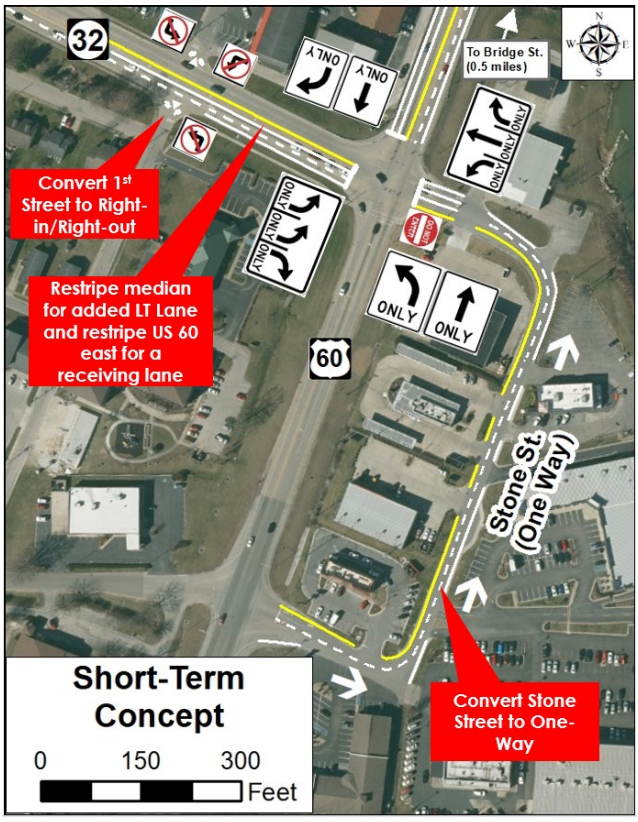
Intersection Improvements including:

- Converting 1st Street to right-in/right-out at KY 32
- Restriping the KY 32 and US 60 north approaches
- Converting Stone Street to One-Way Traffic Flow
- Updating KY 32 / US 60 traffic signal phasing

COST ESTIMATE

Design: $50,000
Right-of-Way: $0
Utility: $0
Construction: $250,000
Total: $300,000

Project Needs: The mix of local traffic using KY 32 to access businesses and Morehead State University (MSU), along with regional through traffic traveling between I-64 and Morehead, cause congestion during the peak periods. This is especially true at the intersection with US 60, which currently operates at a Level of Service (LOS) D during the AM and PM peak hours. Based on 2030 traffic projections, which include several expected developments in the area, congestion is expected to worsen, and the intersection will operate at LOS F. Between 2017 and 2021, there were 88 crashes at this intersection, six (seven percent) of which resulted in an injury and 64 (73 percent) of which were rear end collisions. An Excess Expected Crashes (EEC) analysis revealed that there were 2.1 more crashes per year at this intersection than expected, indicating an opportunity to improve safety. This intersection was also identified by the local officials/public as having congestion and safety issues.



Improvement Concept: A short-term option at the KY 32 intersection with US 60 includes converting the 1st Street approaches to right-in/right-out by installing delineator posts with quick-curb on KY 32. While the existing "No Left Turns" signs are consistently disregarded, the curbing would eliminate the ability for vehicles to turn left. Emergency vehicles would still be able to drive over the curb and posts, so response time would remain unchanged. Eliminating left turns from westbound KY 32 to 1st Street allows eastbound KY 32 to be restriped to include a second left-turn lane onto US 60 north, dramatically increasing left-turn storage. Converting Stone Street to one-way traffic flow (two northbound lanes) would allow US 60 north to be restriped to Bridge Street to provide the extra through lane necessary to accommodate the dual left turn lanes from KY 32. Restriping the Stone Street approach, now one-way, with dedicated turn lanes would provide for more efficient traffic signal phasing as the KY 32 and Stone Street approaches would no longer need to be split phase. The construction cost includes either the reconstruction of the US 60 / KY 32 traffic signal or the installation of a new signal at the US 60 intersection with Stone Street.

1b **Long-Term**	**LOCATION** KY 32 at US 60	**PROJECT PRIORITY:** Recommended

DESCRIPTION

Intersection Improvements including:

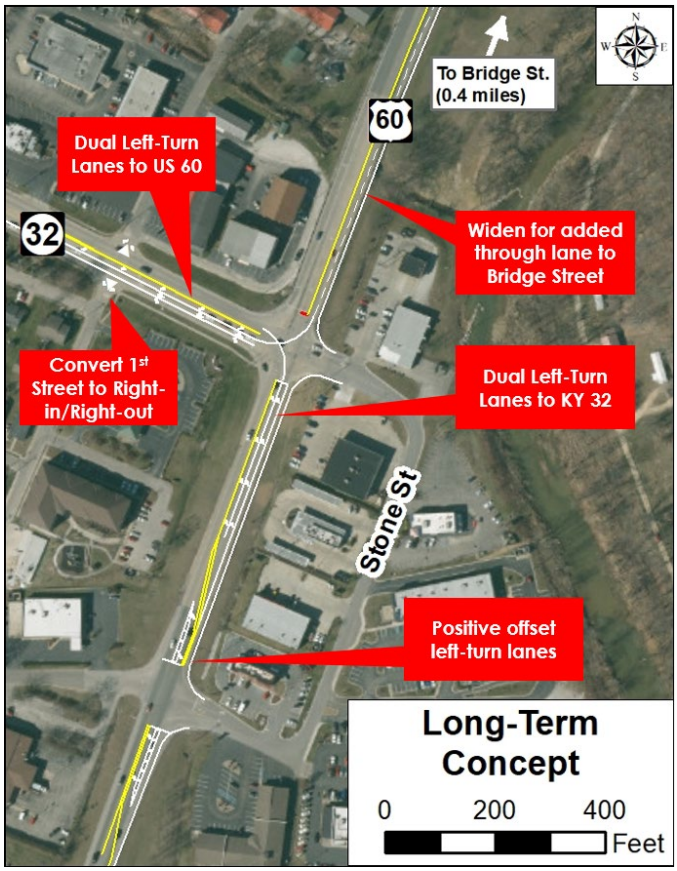
- Widening US 60 from southern Stone Street to Bridge Street
- Converting 1st Street to right-in/right-out at KY 32
- Widen eastbound KY 32 approach for dual left-turn lanes
- Widen northbound US 60 approach for dual left-turn lanes

COST ESTIMATE

Design: $420,000
Right-of-Way: $275,000
Utility: $400,00
Construction: $2,830,000
Total: $3,925,000

Project Needs: Near its eastern terminus in Morehead, Kentucky, KY 32 transitions to a commercial corridor with business entrances lining both sides of the roadway. The mix of local traffic to the businesses and Morehead State University (MSU), along with regional through traffic traveling between I-64 and Morehead cause congestion during the peak periods. This is especially true at the KY 32 intersection with US 60, which currently operates at a Level of Service (LOS) D during the AM and PM peak hours. Based on 2030 traffic projections, which include several expected developments in the area, congestion is expected to worsen, and the intersection will operate at LOS F during the AM peak hour. Between 2017 and 2021, there were 88 crashes at this intersection, 6 (7 percent) of which resulted in an injury and 64 (73 percent) of which were rear end collisions. An Excess Expected Crashes (EEC) analysis revealed that there were 2.1 more crashes per year at this intersection than expected, indicating an opportunity to improve safety. This intersection was also identified by the local officials and the public as having congestion and safety issues.

Improvement Concepts: A long-term option to accommodate future traffic growth includes widening US 60 from the southern Stone Street intersection to Bridge Street to provide dual northbound left-turn lanes to KY 32. At the southern Stone Street intersection, offset left-turn lanes would be constructed to accommodate the increased left turning traffic. A culvert extension will be required beneath US 60 north of the KY 32 intersection. The westbound KY 32 left-turn lane to 1st Street would also be restriped to an eastbound left-turn lane onto northbound US 60. This concept would also include converting the 1st Street approaches at KY 32 to right-in/right-out by constructing "porkchop" islands and installing delineator posts on KY 32.



2 **Long-Term**	**LOCATION** **The I-64 interchange with KY 32**	**PROJECT PRIORITY:** Recommended

DESCRIPTION

Construct a Single-Point Urban Interchange (SPUI) at I-64 (Exit 137) and provide six lanes (three in each direction between Fraley Drive and Kroger Center Drive

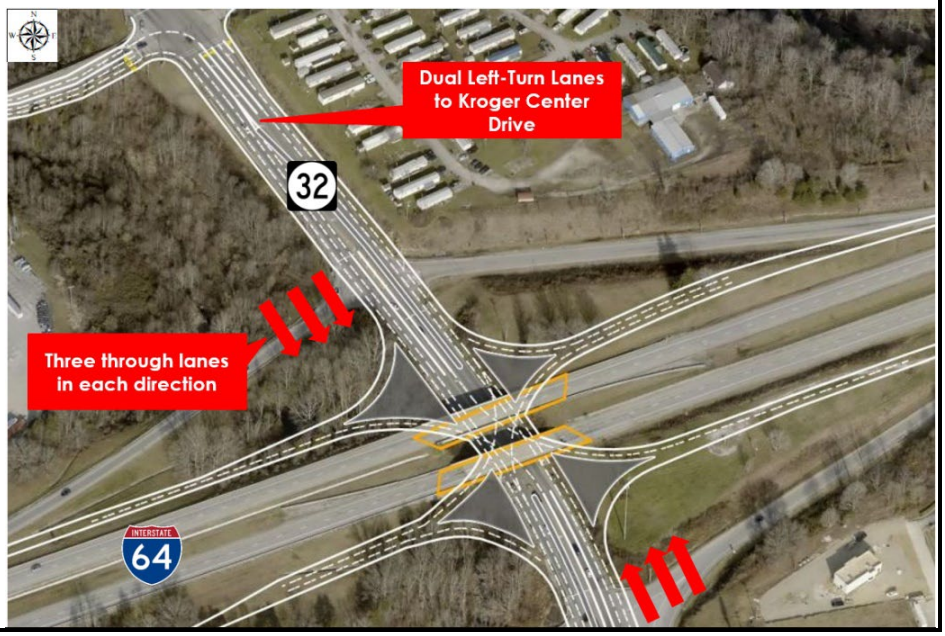
COST ESTIMATE

Design: $2,000,000
Right-of-Way: $1,000,000
Utility: $ 4,950,000
Construction: $19,990,000
Total: $27,940,000

Project Needs: The I-64 interchange with KY 32 was the most identified area with traffic issues and the need for improvement based on feedback from local officials and the public. I-64 carries around 20,700 vehicles per day (VPD) south of KY 32 and 13,000 VPD to the north, indicating that many of the trips on this section of the interstate utilize KY 32. The interchange area is one of the busiest sections of KY 32, carrying between 21,800 and 28,500 VPD. Based on traffic forecasts, this area is expected to experience significant growth, with several developments anticipated by 2045. The eastbound I-64 off-ramp was recently widened to include storage for a dedicated right-turn lane. While this improvement helped reduce queueing on the ramp, more extensive improvements are needed to accommodate future traffic. In 2030, the KY 32 intersection with the eastbound I-64 ramps is expected to operate at LOS E during the PM peak hour.

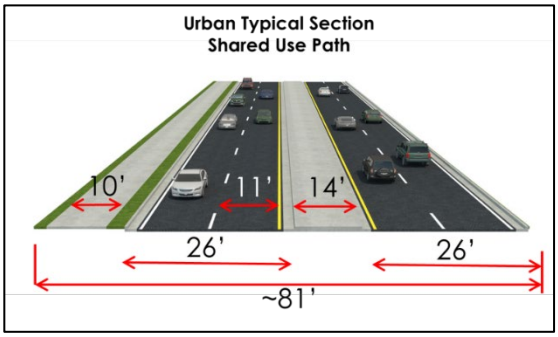
Between 2017 and 2021, there were 128 collisions at the interchange, 13 (ten percent) of which resulted in an injury. The most common crash type was rear end (83, 65 percent), indicating that congestion could be a contributing factor. An Excess Expected Crashes (EEC) analysis revealed that there were 19.5 more crashes per year than expected at the eastbound ramp intersection, indicating a significant opportunity to improve safety.

Improvement Concept:
The proposed improvement at the I-64 interchange is to construct a Single Point Urban Interchange (SPUI). This type of interchange combines the eastbound and westbound ramps into one centralized intersection. Under this concept, the existing I-64 bridges will be replaced, but the new ramps will be constructed within the existing right-of-way.



3 **Long-Term**	**LOCATION** KY 32 from Viking Drive to Mabry Drive	**PROJECT PRIORITY:** Recommended
DESCRIPTION Convert the two-way left-turn lane (TWLTL) to a raised 14' median		**COST ESTIMATE** Design: $1,150,000 Right-of-Way: $1,000,000 Utility: $2,350,000 Construction: $11,460,000 **Total: $15,960,000**

Project Needs: Between Viking Drive west of the I-64 interchange and Mabry Drive just west of the commercial section and the US 60 intersection in Morehead, KY 32 has four 12-foot lanes with ten-foot shoulders and a center two-way left-turn lane (TWLTL). This section of KY 32 has speed limits ranging from 45 to 55 miles per hour (MPH) and currently carries up to 28,000 vehicles per day (VPD). Based on traffic forecasts, which include significant developments in the area, KY 32 is expected to carry up to 43,900 in 2045. Between 2017 and 2021, there were 157 crashes on this section of KY 32 not including the I-64 interchange area between Kroger Center Drive and Fraley Drive. Of the 157 crashes, two (one percent) resulted in a fatality and 26 (17 percent) resulted in an injury. The most common crash type was rear end (62 crashes, 39 percent) followed by single vehicle (34, 22 percent).



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