
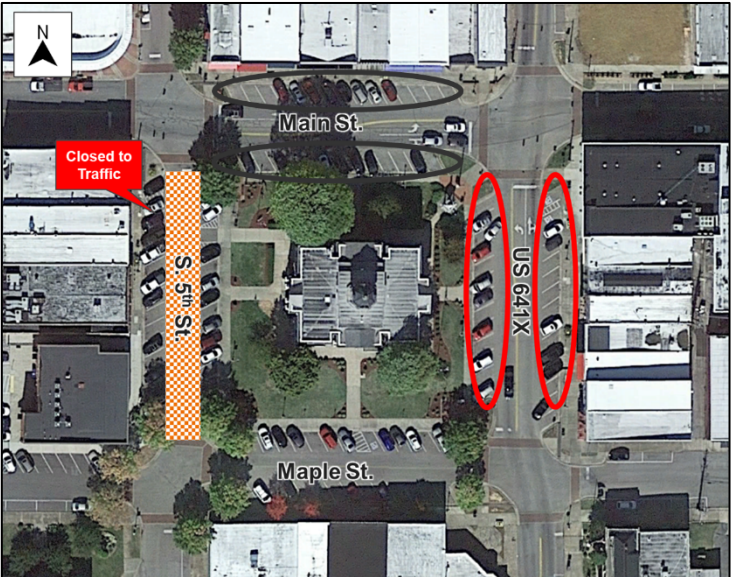


<p style="text-align: center;">A</p> <p style="text-align: center;">Short-Term</p>	<p>LOCATION</p> <p>US 641 Corridor (MP 6.666 – MP 10.62) US 641X (Glendale Road) to KY 80</p>	<p>PROJECT PRIORITY:</p> <p style="text-align: center;">High Priority</p>
<p>DESCRIPTION</p> <p>Perform a detailed traffic operations analysis with turning movement counts and a traffic simulation model along US 641 to examine the need for the following improvements:</p> <ul style="list-style-type: none"> • Updated signal timing and signage along US 641 • Construct a raised median on US 641 between Keepers Way and Lowes Drive • Restripe the eastbound KY 121 approach at the US 641 intersection • Construct a raised median on US 641 with access management on Chestnut Street 		<p>COST ESTIMATE</p> <p>Planning: \$250,000 Design: \$0 Right-of-Way: \$0 Utility: \$0 Construction: \$0 Total: \$250,000</p>
<p>Project Needs: US 641 is the only north-south principal arterial in Calloway County and the only Federally Authorized Truck Route in the area. This five-lane roadway provides a regional connection from I-69 in the north to Tennessee in the south. It also serves local trips and provides access to the many businesses on the commercial section through Murray and was the most identified corridor in the public survey as having transportation issues. Over the three-year period between 2017 and 2019, there were 800 reported crashes on the study portion of US 641, 97 of which resulted in an injury. Most of the crashes were rear end and angle collisions, indicating that traffic congestion may be contributing to the high number of crashes. On this stretch of US 641, the EEC ranges from 12 – 55 crashes per year, indicating that more crashes are occurring than expected based on similar roadways. Traffic is expected to grow on US 641 to 27,300 VPD by 2045.</p> <p>Improvement Concept: An improvement option for the US 641 corridor is to perform a detailed traffic operations analysis. This analysis will include collecting turning movement counts and developing a traffic simulation model to analyze intersection improvements including signal timing optimization and lane configuration. With the highest ADTs in the county, optimizing US 641 for current conditions and preparing it for future conditions is imperative to a healthy transportation system in Murray.</p> <div style="display: flex; align-items: flex-start;"> <div style="flex: 1;"> <p>As part of this effort, other improvements to US 641 will be considered including improved overhead signage, constructing a raised median on US 641 between Keepers Way and Lowes Drive, intersection improvements such as restriping the US 641 intersection with KY 121, and constructing a raised median on US 641 with access management on Chestnut Street.</p> </div> <div style="flex: 1;">  </div> </div>		

<p style="text-align: center;">A</p> <p>Short-Term</p>	<p>LOCATION</p> <p>US 641 Corridor (MP 6.666 – MP 10.62) US 641X (Glendale Road) to KY 80</p>	<p>PROJECT PRIORITY:</p> <p>High Priority</p>
<p>Updated signal timing and signage along US 641</p> <p>US 641 currently has a coordinated signal system from Keepers Way to Glendale Road (US 641X) intended to minimize delay for vehicles traveling on US 641. Based on the traffic analysis and feedback from the public, traffic on side street approaches has increased and a new coordination plan is needed. A detailed traffic analysis with a microsimulation model would provide the opportunity to analyze the impacts of signal timing changes to US 641 and the intersecting roadways. Additionally, many of the signs along US 641 have faded and need to be updated to MUTCD standards.</p> <p>Construct a raised median on US 641 between Keepers Way and Lowes Drive</p> <p>The section of US 641 between Keepers Way (signalized) and Lowes Drive (unsignalized) was identified in the public survey as an area of concern. Between 2017 and 2019, there were 24 crashes at the US 641 intersection with Keepers Way, three of which resulted in an injury. During this same period, there were 18 crashes at the Lowes Drive intersection, three of which resulted in an injury. With daily traffic around 23,700 vehicles per day (VPD) on this section of US 641, it can be challenging for vehicles to turn left from the unsignalized Lowes Drive approach. A raised median could be constructed between the two intersections to improve safety and restrict left turns from Lowes Drive. It is recommended that this improvement be analyzed as part of a detailed US 641 traffic analysis.</p> <p>Restripe the eastbound KY 121 approach at the US 641 intersection</p> <p>Between 2017 and 2019, there were 64 reported crashes at the US 641 intersection with KY 121, six of which resulted in an injury. This intersection, which was identified in the public survey, currently operates at LOS D during the PM peak hour with the westbound KY 121 approach operating at LOS E. An improvement option is to restripe the westbound approach to include a left-turn lane, a through lane, and a right-turn lane. This would also provide the opportunity to allow a right-turn overlap phase and results in an approach LOS C. It is recommended that these improvements be analyzed as part of a detailed US 641 traffic analysis.</p> <p>Construct a raised median on US 641 with access management on Chestnut Street</p> <p>Between KY 121 (Chestnut Street) and Arcadia Circle, US 641 has multiple access points to businesses including two fast food restaurants and two banks. These businesses also have access on Rushing Way, which runs parallel to US 641. There were 20 reported crashes on this section between 2017 and 2019, four of which resulted in an injury. An improvement option is to construct a raised median on US 641 to restrict left-turns in and out of the access points.</p> <p>Over the 0.3-mile section between US 641 and 8th Street, Chestnut Street has 30 access points. Between 2017 and 2019, there were 39 crashes on this section of Chestnut Street, five of which resulted in an injury. Of the 39 crashes, 12 (31 percent) were angle collisions and 11 (28 percent) were sideswipe. An improvement option is to create an access management plan to reduce the number of access points and examine frontage and backage road connections between properties. These improvements should be analyzed as part of a detailed US 641 traffic analysis.</p>		

<p>B Short-Term</p>	<p>LOCATION Courthouse Square US 641X, KY 94, S. 5th Street, & Maple Street</p>	<p>PROJECT PRIORITY: Medium Priority (Local Project)</p>
<p>DESCRIPTION Close 5th Street to traffic (Main Street to Maple Street) and convert to pedestrian area and convert on-street parking to back-in parking at Main Street and US 641X.</p>		<p>COST ESTIMATE Design: \$40,000 Right-of-Way: \$0 Utility: \$0 Construction: \$200,000 Total: \$240,000</p>
<p>Project Needs: The former Calloway County Courthouse is surrounded by US 641X to the east, Maple Street to the south, South 5th Street to the west, and Main Street (KY 94) to the north, all together referred to as the Courthouse Square. There are businesses facing all four sides of the courthouse, with angled parking available along both sides of the street. Between 2017 and 2019, there were 27 reported crashes around the Courthouse Square, all of which resulted in property damage only and nine (33 percent) of which were backing collisions. US 641X carries the most daily traffic around the courthouse, with 10,500 VPD expected in 2045. This location was identified as having transportation concerns through the public survey, especially relating to safety issues with the on-street parking and narrow lanes.</p> <p>Improvement Concept: An improvement option is to close 5th Street to vehicular traffic between Main Street and Maple Street and convert it to a pedestrian friendly area. This would provide a safer walking space for pedestrians and provide more opportunities for public events. Additionally, the on-street parking can be converted to back-in parking. Signs would direct drivers to pull past the parking spot, then back in. This would reduce the likelihood of backing collisions. This improvement concept tied for the fourth highest score from the Advisory Committee.</p>		
<p>This type of project would likely be developed further at the local level through the use of federal grants.</p>		
		

<p style="text-align: center;">C</p> <p style="text-align: center;">Short-Term</p>	<p>LOCATION KY 94 (MP 10.138) at North 8th Street</p>	<p>PROJECT PRIORITY: Medium Priority</p>
<p>DESCRIPTION Install four-way stop and curb bump out</p>		<p>COST ESTIMATE Design: \$10,000 Right-of-Way: \$0 Utility: \$0 Construction: \$50,000 Total: \$60,000</p>
<p>Project Needs: Near Murray Middle School, the KY 94 intersection with North 8th Street was identified as having more crashes than anticipated, with an EEC of 4 crashes per year. Between 2017 and 2019, there were 17 reported crashes at this intersection, 15 (88 percent) of which were angle collisions and all of which resulted in property damage only. Five of the crashes occurred during school arrival between 7:30 a.m. and 8:30 a.m. and six of the crashes occurred between 11:30 a.m. and 12:00 p.m. This portion of KY 94 has a 2021 ADT of 6,300 VPD.</p> <p>A turning movement count was collected at this intersection to analyze the traffic impacts of installing a four-way stop. The analysis showed all approaches would operate at a Level of Service B or better during the existing AM and PM peak hours.</p> <p>Improvement Concept: An improvement concept is to install a four-way stop at the KY 94 intersection with North 8th Street. This would require all vehicles to stop and would improve safety for vehicles and pedestrians by slowing traffic on KY 94. With the proximity of the school, there are a high number of pedestrians in the area. A curb bump out could be installed on the eastbound KY 94 approach to shorten the walking distance across the intersection and improve visibility of the proposed stop sign. This improvement concept tied for the fourth highest score from the Advisory Committee.</p>		



<p>D Short-Term</p>	<p>LOCATION US 641X (MP 1.135) at Sycamore Street</p>	<p>PROJECT PRIORITY: Low Priority</p>
<p>DESCRIPTION Remove the southbound channelized right-turn lane from US 641X to Sycamore Street</p>		<p>COST ESTIMATE Design: \$10,000 Right-of-Way: \$0 Utility: \$0 Construction: \$50,000 Total: \$60,000</p>

Project Needs: On the southern end of US 641X, the Sycamore Street intersection was identified in the public survey as having safety issues and needing intersection reconfiguration. The Sycamore Street approach is stop-controlled and southbound US 641X has a channelized right-turn onto Sycamore Street. Between 2012 and 2021, there were 22 reported crashes, 12 (55 percent) were rear end collisions and all of which resulted in property damage only. This section of US 641X is expected to carry 10,500 VPD in 2045 while Sycamore Street is expected to carry 7,200 VPD.



Improvement Concept: An improvement option is to remove the channelized right-turn and square up the intersection. Future phases of the project would determine if a right-turn lane is necessary and if the intersection could be converted to a three-way stop-controlled intersection. A turning movement count would be needed to analyze the traffic impacts.

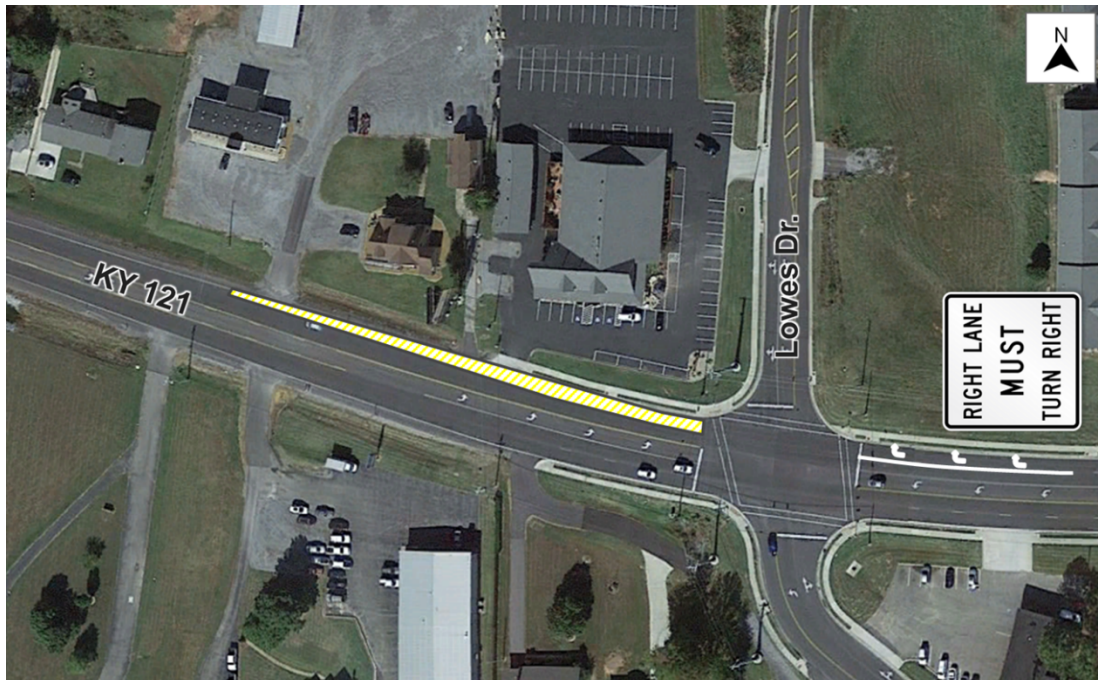


<p>E Short-Term</p>	<p>LOCATION KY 121 (MP 14.963) at Lowes Drive</p>	<p>PROJECT PRIORITY: Maintenance</p>
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<p>DESCRIPTION End the westbound KY 121 through lane at Lowes Drive</p>	<p>COST ESTIMATE Design: \$0 Right-of-Way: \$0 Utility: \$0 Construction: \$20,000 Total: \$20,000</p>
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Project Needs: West of the Murray State University (MSU) campus, KY 121 has two westbound through lanes at the Lowes Drive intersection. The left through lane continues to the west while the right lane ends just past the intersection. The merging of the through lanes was identified in the public survey as causing safety and congestion issues. Between 2017 and 2019, there were 21 crashes on this portion of KY 121, which has an EEC of 2 crashes per year. Three (15 percent) of the crashes resulted in an injury and 17 (85 percent) resulted in property damage only. Daily traffic on KY 121 is expected to be around 9,400 VPD in 2045.

Improvement Concept: An improvement option is to restripe the right through lane into a right-turn lane at the Lowes Drive intersection. This would improve safety and congestion by removing the merge west of the intersection.



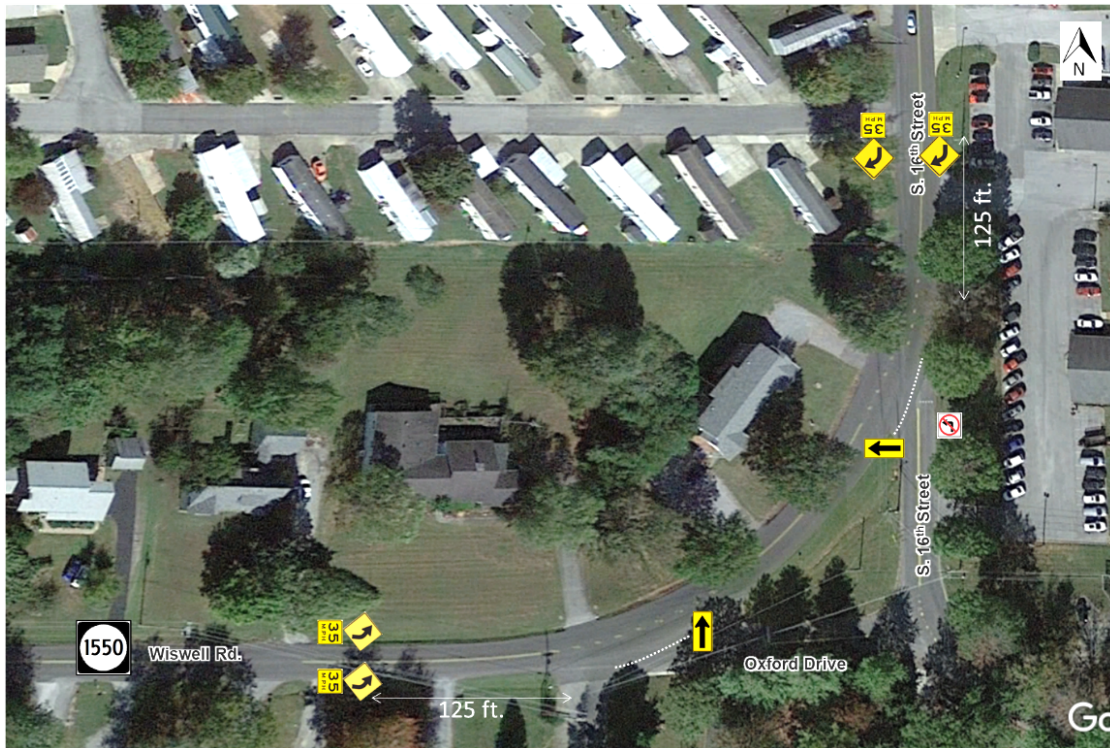
<p>F Short-Term</p>	<p>LOCATION KY 1550 (MP 6.108 - 6.74) at Oxford Drive</p>	<p>PROJECT PRIORITY: Maintenance</p>
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<p>DESCRIPTION Enhance signing and striping on the KY 1550 horizontal curve at Oxford Drive</p>

<p>COST ESTIMATE Design: \$0 Right-of-Way: \$0 Utility: \$0 Construction: \$15,000 Total: \$15,000</p>

Project Needs: In the southwestern residential section of Murray, KY 1550 has a horizontal curve with two channelized turn lanes at Oxford Drive and was identified in the public survey as having safety concerns and needing reconfiguration. Between 2017 and 2019, there were nine reported crashes on this curve, four (44 percent) of which were single vehicle and all of which resulted in property damage only. This section of KY 1550 is expected to carry 7,900 VPD in 2045.

Improvement Concept: Enhance signing and striping on the KY 1550 horizontal curve at Oxford Drive to encourage drivers to slow their speed before entering the curve.

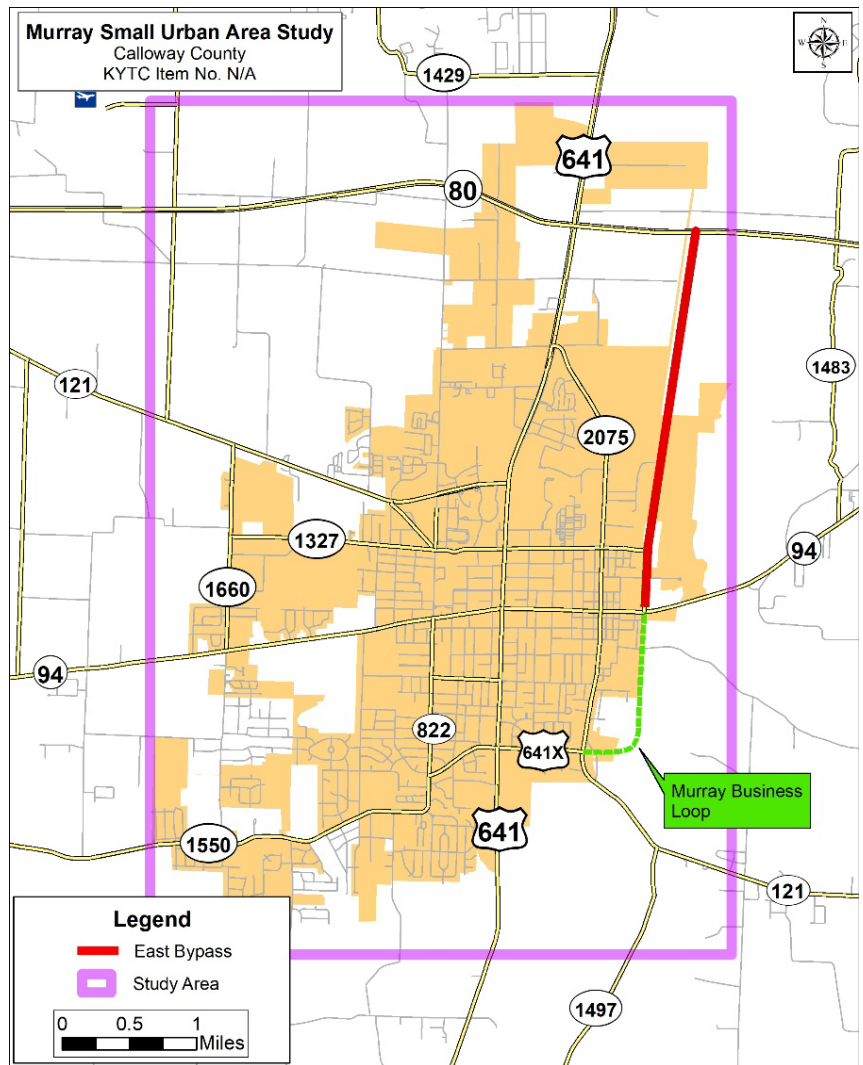


G Long-Term	LOCATION Murray East Bypass	PROJECT PRIORITY: High Priority
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DESCRIPTION Construct a new route (2 lanes) from the Murray Business Loop to KY 80	COST ESTIMATE Design: \$2.1 Million Right-of-Way: \$3.5 Million Utility: \$300,000 Construction: \$14 Million Total: \$19.9 Million
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Project Needs: US 641 is the only north-south principal arterial in Calloway County and the only Federally Authorized Truck Route in the area. This five-lane roadway provides a regional connection from I-69 in the north to Tennessee in the south. It also serves local trips and provides access to many businesses on the commercial corridor through Murray and was the most identified corridor in the public survey as having congestion issues. An option to relieve congestion on US 641 is to construct a bypass around Murray.

Improvement Concept: The East Bypass was identified as a possible bypass option in 2004 and completes the connection between the Murray Business Loop to KY 80 east of the US 641 intersection. This bypass is expected to carry up to 10,200 VPD in 2045 and is expected to reduce traffic on US 641 by up to 4,300 VPD, both of which are higher than what is expected from a West Bypass. Based on these traffic volumes a two-lane roadway was assumed for cost estimating purposes. This improvement concept received the third highest score from the Advisory Committee.



<p>H Long-Term</p>	<p>LOCATION KY 94 (MP 9.249 – 9.769) US 641 to 16th Street</p>	<p>PROJECT PRIORITY: High Priority</p>
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DESCRIPTION
Construct Two-Way Left-Turn Lane and multi-use path on KY 94 between US 641 and 16th Street. Consider access management and realigning skewed intersections in future design phases.


COST ESTIMATE
Design: \$300,000
Right-of-Way: \$2.5 Million
Utility: \$2.5 Million
Construction: \$1 Million
Total: \$6.2 Million

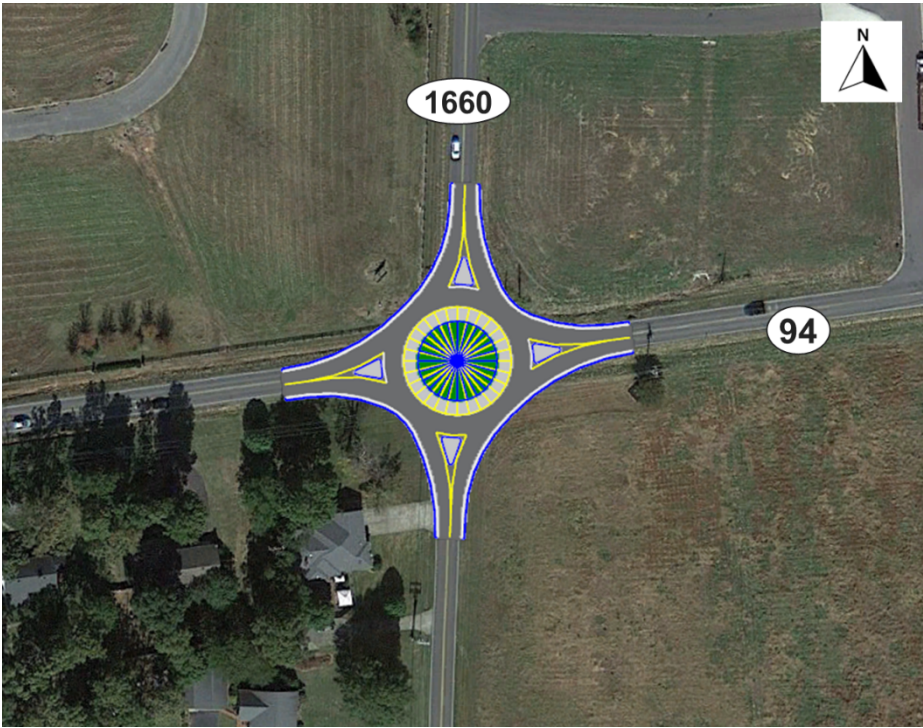
Project Needs: The KY 94 corridor between US 641 and 16th Street is in the center of Murray and provides an important connection between Murray State University (MSU) and US 641. Between 2017 and 2021, there were 69 reported crashes on the corridor, 28 of which were rear end collisions (40 percent) and 15 were angle collisions (22 percent). Three of these collisions resulted in injuries (4 percent). As of 2021, this section of KY 94 carries 13,300 vehicles per day (VPD) and is anticipated to grow to 18,300 VPD by 2045.

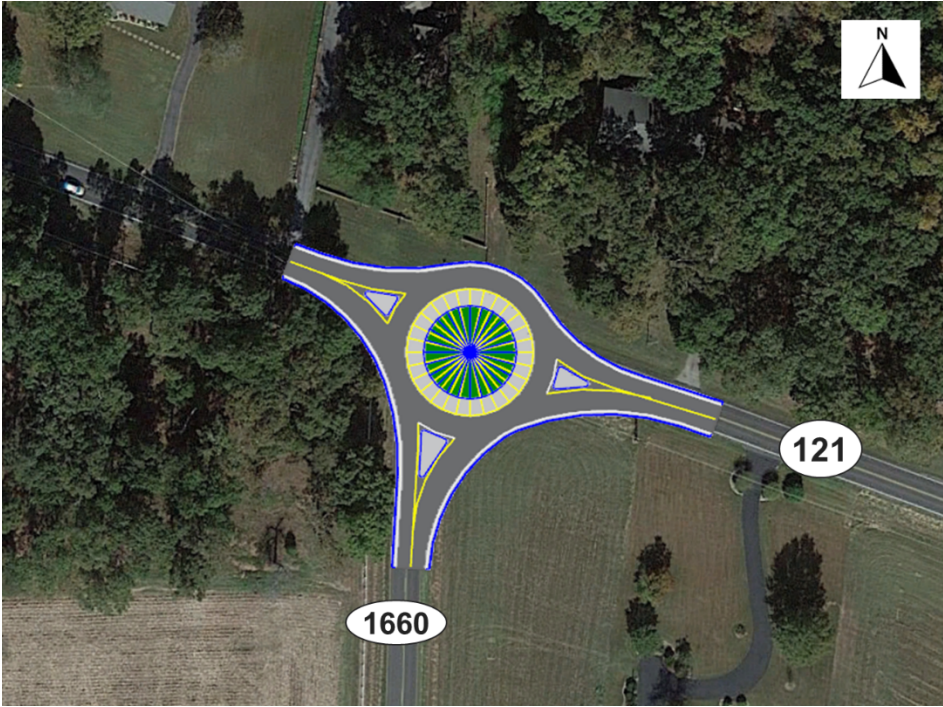
Improvement Concept: An improvement concept for KY 94 between US 641 and 16th Street is to construct a center two-way left turn lane (TWLTL) and a multi-use path. This proposed improvement concept aims to alleviate congestion along the corridor by providing ease of access to adjacent local roadways. Consideration should also be given in future phases for access management near 13th Street and the realignment of the offset intersections at 13th Street and 14th Street. This improvement concept received the highest score from the Advisory Committee.



Main Street Improvements with Additional Right-of-Way (60')
Proposed Bicycle and Pedestrian Improvement Concepts



<p style="text-align: center;">I</p> <p style="text-align: center;">Long-Term</p>	<p>LOCATION KY 94 (MP 7.698) at KY 1660 (MP 0.000)</p>	<p>PROJECT PRIORITY: Medium Priority</p>
<p>DESCRIPTION Convert the KY 94 intersection with KY 1660 to a roundabout</p>		<p>COST ESTIMATE Design: \$150,000 Right-of-Way: \$300,000 Utility: \$200,000 Construction: \$750,000 Total: \$1.4 Million</p>
<p>Project Needs: West of Murray, KY 94 and KY 1660 are rural two-lane roads that serve mainly residential and farmland areas. This western part of Murray is likely to experience residential growth over the next 20 years according to feedback from local officials. The KY 94/KY 1660 intersection is signalized and was identified in the public survey as having safety and congestion issues and needing additional turn lanes. Between 2017 and 2021, there were 11 reported crashes at this intersection, five (45 percent) of which were angle collisions. One angle collision resulted in a fatality and three resulted in an injury (two angle and one sideswipe). This portion of KY 94 is expected to carry 6,800 VPD in 2045 while KY 1660 is expected to carry 6,100 VPD.</p>		
<p>Improvement Concept: An improvement concept is to convert the intersection to a roundabout to promote lower speeds through the intersection, improve safety, and reduce delay for all approaches.</p>		
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<p style="text-align: center;">J</p> <p style="text-align: center;">Long-Term</p>	<p>LOCATION</p> <p>KY 121 (MP 16.192) at KY 1660 (MP 1.53)</p>	<p>PROJECT PRIORITY:</p> <p style="text-align: center;">Medium Priority</p>
<p>DESCRIPTION</p> <p>Convert the KY 121 intersection with KY 1660 to a roundabout</p>		<p>COST ESTIMATE</p> <p>Design: \$150,000 Right-of-Way: \$300,000 Utility: \$500,000 Construction: \$650,000 Total: \$1.6 Million</p>
<p>Project Needs: KY 1660 provides a north-south connection for the residential and rural areas in west Murray. Its northern terminus intersects with KY 121 and was identified in the public survey as having safety issues, especially related to poor sight distance. Over the three-year period between 2017 and 2019, there were six reported crashes, four (67 percent) of which were injury collisions. This portion of KY 121 is expected to carry 9,400 VPD in 2045 while KY 1660 is expected to carry 6,100 VPD.</p> <p>Improvement Concept: An improvement concept is to convert the intersection to a roundabout to promote lower speeds through the intersection, improve safety, and reduce delay for all approaches.</p>		
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<p style="text-align: center;">K</p> <p style="text-align: center;">Long-Term</p>	<p>LOCATION</p> <p>Murray West Bypass</p>	<p>PROJECT PRIORITY:</p> <p style="text-align: center;">Low Priority</p>
<p>DESCRIPTION</p> <p>Construct new route (2 lanes) between US 641 and KY 80 west of Murray</p>		<p>COST ESTIMATE</p> <p>Design: \$8.1 Million Right-of-Way: \$9 Million Utility: \$2 Million Construction: \$45 Million Total: \$64.1 Million</p>
<p>Project Needs: US 641 is the only north-south principal arterial in Calloway County and the only Federally Authorized Truck Route in the area. This five-lane roadway provides a regional connection from I-69 in the north to Tennessee in the south. It also serves local trips and provides access to many businesses on the commercial corridor through Murray and was the most identified corridor in the public survey as having congestion issues. An option to relieve congestion on US 641 is to construct a bypass around Murray.</p> <p>Improvement Concept: The West Bypass is a new route around the western portion of Murray that begins on US 641 south of Murray and utilizes some existing routes such as Oaks Country Club Road, Hudson Road, and Airport Road to connect to KY 121 corridor and the Murray State University (MSU) campus. The West Bypass is expected to carry up to 8,700 VPD in 2045 and is expected to divert up to 1,800 VPD from US 641. Based on these traffic volumes a two-lane roadway was assumed for cost estimating purposes.</p> <div style="display: flex; justify-content: space-between;"> <div data-bbox="170 829 609 1564" style="width: 30%;"> <p>Murray Small Urban Area Study Calloway County KYTC Item No. N/A</p> </div> <div data-bbox="641 814 1458 1829" style="width: 60%;"> </div> </div>		